IRC2018

IET INTERNATIONAL RADAR CONFERENCE 2018

17-19 October, 2018, Nanjing, China

FINAL PROGRAM

Sponsors:

- The Institution of Engineering and Technology
- Beijing Institute of Technology
- Radar Society of Chinese Institute of Electronics
- Signal Processing Society of Chinese Institute of Electronics

Organizer:

- Beijing Institute of Technology

Co-organizers:

- The 14th Research Institute of China Electronics Technology Group Corporation
- Beijing Institute of Spacecraft System Engineering
- National Key Laboratory Of Science and Technology on Test Physics & Numerical Mathematical
- Overseas Expertise Introduction Center for Discipline Innovation of Novel Radar Theory and Key Technology (National 111 Center)
- Intelligent Information Processing Industrialization Society of China High-tech Industrialization Association

Technical co-sponsor:

- IEEE Aerospace and Electronic Systems Society

Content

Welcome Message from IET President

Thank you Professor Teng Long, and hello everyone. I'm delighted to be here and it gives me great pleasure to welcome you to the IET International Radar Conference 2018 in Nanjing city. I know that the aim of this conference is to introduce the latest technological developments and academic research hot topics of radar technology, especially the latest research and applications of civilian radar technology. It's fantastic to see so many esteemed experts and technicians across Radar in this room. I'm sure you'll agree that the next few days will be unique in providing opportunities for subject-matter experts like yourselves to exchange achievements, views and ideas with peers.

As Professor Teng Long mentioned in his introduction, I am President of the Institution of Engineering and Technology – most people refer to it as the IET. We are one of the world's largest engineering institutions with 169,000 members in over 150 countries. We have a Royal Charter and Her Majesty The Queen is our patron. We offer membership to individuals from a range of engineering disciplines, sectors and interests. And as a multidisciplinary institution we reflect the increasingly diverse nature of engineering in the 21st century. By inspiring both today's and tomorrow's engineers and technologists to drive innovation, it will ultimately benefit society. We also want to develop skilled individuals and promote and share knowledge – for example, the IET has more than 100 local networks and 22 technical networks – including the IET Radar, Sonar and Navigation Network. These enable engineering and technology professionals to communicate with each other around the globe. We are a respected international publisher and we have an invaluable resource called 'Inspec', which has more than 16 million abstracts and specialised indexing to quality research literature in physics and engineering.

We work internationally, with offices and staff in the UK, Asia Pacific, India, the USA and China. Our work here in China more broadly includes a partnership with Chinese government bodies to deliver a professional registration programme for Chinese engineers. We also publish the best research that is coming out of China and we support the professional development of Chinese students – helping them become ready for the world of work and giving them international exposure. We also run a range technical conferences aimed at bringing the best researchers and engineers together – we are always looking for topic ideas that address the latest challenges so it is a great pleasure to be one of the sponsors for this well respected event.

Back to today… It has been a great pleasure to work with the Beijing Institute of Technology to organise this event – this is our 4th time working with you on the Radar Conference. I'd also like to thank the other sponsors, technical sponsor and co-organisers who have all worked hard to ensure it is a great success. It's fantastic to see so many radar experts and technicians attending and I'm sure that the outcomes of the next few days will benefit the developments of this field – I know there will be some excellent discussions.

Thank you!

Mr. Michael Douglas Carr
President of the Institution of Engineering and Technology
Honorary Chair of IET International Radar Conference 2018

Welcome Message from Honorary Chair

Distinguished guests, dear ladies and gentleman,

On behalf of Beijing Institute of Technology, it is my pleasure to welcome you to IET International Radar Conference 2018, and to the beautiful city Nanjing. IET International Radar Conference was initiated by The Institution of Engineering and Technology and Beijing Institute of Technology on 2008. The first conference was held on April 2009 in Guilin, China. The second one was held on April 2013 in Xi'an, China. The third one was held on Oct 2015 in Hangzhou, China. This series of conference will be held twice every five years, that means the next one will be held in 2020, in the beautiful autumn season in China.

This year's conference also got the sponsorship from Radar Society of Chinese Institute of Electronics, Signal Processing Society of Chinese Institute of Electronics, and was co-organized by the 14th Research Institute of China Electronics Technology Group Corporation (CETC), Beijing Institute of Spacecraft System Engineering (ISSE), National Key Laboratory of Science and Technology on Test Physics & Numerical Mathematical (TPNM NKL), Overseas Expertise Introduction Center for Discipline Innovation of Novel Radar Theory and Key Technology (National 111 Center), China Hi-Tech Industrialization Association Intelligent Information and Processing Industrialization Branch. As one of the organizers of the conference, I would like to take this opportunity to extend my appreciation to all the organizations and individuals who have contributed their time and efforts to this conference. Thank you for your hard work.

This time, I am very glad to see many familiar faces. Hope you will take the opportunity to meet new friends and visit with old friends. This conference will feature world-class plenary speakers, major technical symposia, and several professional workshops. I hope that you will find the conference informative and enjoyable, and you will have a great stay in Nanjing. Also, I hope all our friends and colleagues could meet again in the next conference in 2020.

Thank you!

Prof. Long Teng
Vice-president, Beijing Institute of Technology
Honorary Chair of IET International Radar Conference 2018

Welcome Message from General Chair

It is our great pleasure to welcome you to one of the most ancient cities of China – Nanjing – to participate in IET International Radar Conference 2018.

Over the years, Radar has grown up and become a powerful tool in various civilian and military applications. Academic conferences on radar have emerged one after another. IET International Radar Conference 2018 is the fourth IET International Radar Conference series in China after the first three successful conferences held in April 2009, Guilin, April 2013, Xi'an, and October 2015, Hangzhou, respectively. Becoming more and more active, this conference continues to provide a platform for radar experts and technicians to exchange ideas and achievements by introducing the latest technological development and academic research hot issues of the radar technology.

This conference is organized by Beijing Institute of Technology and sponsored by the Institution of Engineering and Technology (IET), Beijing Institute of Technology (BIT), Radar Society of Chinese Institute of Electronics (CIE) and Signal Processing Society of Chinese Institute of Electronics. Co-organizers include the 14th Research Institute of China Electronics Technology Group Corporation (CETC), Beijing Institute of Spacecraft System Engineering (ISSE), National Key Laboratory of Science and Technology on Test Physics & Numerical Mathematical (TPNM NKL), Overseas Expertise Introduction Center for Discipline Innovation of Novel Radar Theory and Key Technology (National 111 Center), China Hi-Tech Industrialization Association Intelligent Information and Processing Industrialization Branch. We would like to thank the technical co-sponsor, IEEE Aerospace and Electronics System Society (AESS), for its strong support to this conference. We would also express appreciation to all authors including those whose papers were not accepted. We thank keynote and tutorial speakers for sharing their unique insight into their professional specific areas. Special thanks to the Technical Program Committee for reviewing and selecting the excellent papers as well as other support and expertise.

The conference site, Nanjing, known as the capital of six dynasties, is a more than 2500 years old historic city. On behalf the entire organizing committee, our technical sponsors and supporters, we hope you participate in passionate discussions, exchange ideas and enjoy IET International Conference 2018 in this beautiful city.

Thank you!

Prof. Cheng Hu, Beijing Institute of Technology, China
General Chair of IET International Radar Conference 2018

Welcome Message from Technical Program Committee Chair

On behalf of the program board I would like to welcome you to the IET International Radar Conference 2018 (IRC 2018). IET International Radar Conference 2018 is IET's 4th international conference held in China specifically dedicated to Radar concepts and technologies. The lively response to our call for papers confirms us again that IET International Radar Conference is becoming the world-wide forum in the field of radar.

This conference has received a total of 924 papers from 17 countries and regions. All submitted papers were reviewed by IRC 2018 program committee which includes 65 renowned international scientists. After the rigorous review process, 153 papers were selected for oral presentation and 511 papers for interactive poster presentation. The accepted rate of the submitted paper is 71.9%. To our pleasure, the selected papers cover a wide range of Advanced Radar including Distributed /MIMO /Passive Radar, Radar Signal Processing, Target Scattering Analysis and Modeling, Marine Target detection, SAR/ISAR Imaging and Interferometry, Deep Learning for SAR Automatic Target Recognition, Radar Medical Applications for Assisted Living, Understanding flight Behavior of Animals with Radar and Lidar, etc. This conference is honored to feature 12 keynote speeches, 14 tutorials and 24 invited talks from distinguished experts which will share with us their latest research result and their insight to the future radar development. And the workshop for MMW-Radar Development in Automotive Applications is held to show the advances of the automotive radar technology.Throughout three conference days, the 30 oral presentation sessions will be given in 5 parallel sessions. The poster presentation sessions will be on display in 3 parallel sessions. Parallel to the conference, a commercial exhibition is arranged showing the advances in the radar related technology and publishment.

I would like to express my thanks to all the authors for their outstanding contributions. In particular I would like to send my appreciation to all technical program committees for their hard work and contribution to the conference.

I wish IET International Radar Conference 2018 a great success. And I hope you will enjoy the conference and your stay in Nanjing.

Thank you!

Prof. Zegang Ding, Beijing Institute of Technology
Technical Program Committee Chair of IET International Radar Conference 2018

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Beijing Institute of Technology
Radar Society of Chinese Institute of Electronics
Signal Processing Society of Chinese Institute of Electronics

Organizer:
Beijing Institute of Technology

Co-organizers:
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National Key Laboratory of Science and Technology on Test Physics & Numerical Mathematical
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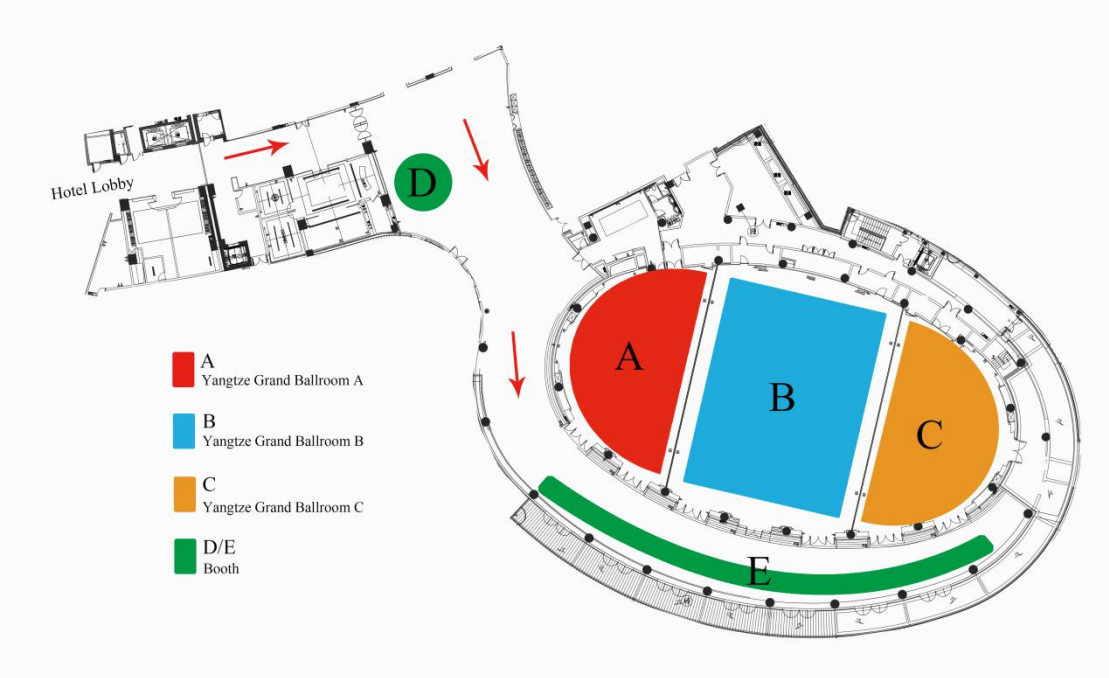
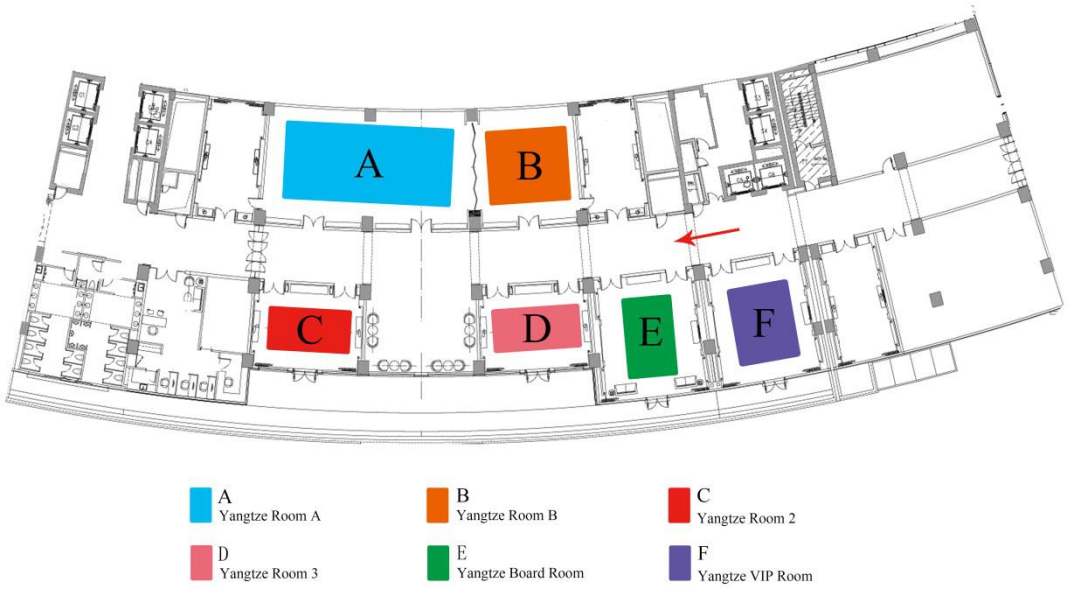
Layout of Conference Venue

Layout of 1st floor:



Layout of 2nd floor:



Schedule at a Glance

Date	Time	Content		Place
October 16 Tuesday	08:00-22:00	Registration		Hotel Lobby
	19:00-21:30	Tutorial 1	Prof. Mihai Datcu, Big SAR Data Science: Physics Based Machine Learning and Artificial Intelligence	Yangtze Room A
		Tutorial 2	Dr. Eli Brookner, Radar, Phased-Arrays, Metamaterials, Stealth, Anti-Stealth, Ultra-Wideband, Cognitive Adaptivity, Mimo-- Basics and Breakthroughs	Yangtze VIP Room
		Tutorial 3	Dr. Ozlem Kilic, Electromagnetic Modeling of Vital Sign Detection and Human Motion Sensing Validated by Non-Contact Radar	Yangtze Board Room
		Tutorial 4	Prof. François Le Chevalier, Wideband Moving Targets Surveillance	Yangtze Room B
		Tutorial 5	Prof. Marco Martorella, Introduction to Inverse Synthetic Aperture Radar	Yangtze Room 2
October 17 Wednesday	08:00-12:00	Registration		Hotel Lobby
	08:30-09:00	Opening Ceremony		Yangtze Grand Ballroom B+C
	09:00-09:40	Keynote Speech 1	Prof. Hugh D. Griffiths, Clutter Diversity: A New Degree of Freedom in Multistatic Radar	Yangtze Grand Ballroom B+C
	09:40-10:20	Keynote Speech 2	Prof. Teng Long, Research Progress on Geosynchronous SAR System Analysis and Information Processing	Yangtze Grand Ballroom B+C
	10:20-10:30	Special Memory for Prof. Jia Xu		Yangtze Grand Ballroom B+C
	10:30-11:00	Committee Group Photo/ Tea Break		Foyer (1F)
	11:00-11:40	Keynote Speech 3	Prof. Motoyuki Sato, GPR Applied to Humanitarian Demining and UXO clearance	Yangtze Grand Ballroom B+C
	11:40-12:20	Keynote Speech 4	Prof. Mingchun Hu, Next Generation Radar Perspective	Yangtze Grand Ballroom B+C
	12:20-13:30		Lunch	River Coffee
	13:30-15:30	Oral Session 1	Advanced Radar I Chairs: Alfonso Farina, Teng Long	Yangtze Room A
		Oral Session 2	SAR Imaging I Chairs: Motoyuki Sato, Tao Zeng	Yangtze VIP Room

October 17 Wednesday		Oral Session 3	Interference and Clutter Suppression Chairs: Simon Watts, Quanhua Liu	Yangtze Room B
		Oral Session 4	UAV Detection, Signatures and Classification with Radar Chairs: Francesco Fioranell, Qian He	Yangtze Room 2
		Oral Session 5	Passive Radar I Chairs: Guifu Zhang, Jianxin Yi	Yangtze Room 3
	15:30-16:00	Tea Break		Foyer (1F)
	15:30-16:30	Poster Session 1	Distributed /MIMO /Passive Radar	Yangtze Grand Ballroom A
		Poster Session 2	Radar System	Yangtze Grand Ballroom A
		Poster Session 3	Advanced Radar	Yangtze Grand Ballroom A
	16:30-18:30	Oral Session 6	Radar Signal Processing I Chairs: Mark E. Davis, Zhenhai Xu	Yangtze Room A
		Oral Session 7	Radar Medical Applications for Assisted Living Chairs: Julien Le Kernec, Guolong Cui	Yangtze VIP Room
		Oral Session 8	Advanced Radar II Chairs: Maria Sabrina Greco, Xianrong Wan	Yangtze Room B
		Oral Session 9	Marine Target Detection Chairs: François Le Chevalier, Xiaolong Chen	Yangtze Room 2
		Oral Session 10	SAR Imaging II Chairs: Fabio Rocca, Yachao Li	Yangtze Room 3
		Workshop	IET Journals: How to publish with the IET and introduction to IET Open	Yangtze Board Room
	18:30-19:30	Dinner		River Coffee
	19:30-22:00	Tutorial 6	Prof. Simon Watts, Radar Clutter Modelling and Exploitation	Yangtze Room A
		Tutorial 7	Prof. Antonio De Maio, Constant False Alarm Rate Techniques	Yangtze Board Room
		Tutorial 8	Prof. Andrea Monti Guarnieri, Geostationary SARs for Continuous SAR Imaging: Systems and Application	Yangtze Room B
		Tutorial 9	Dr. Carmine Clemente, Micro-Doppler Signatures: Principles, Analysis and Applications	Yangtze Room 2
	21:00-22:30	IEEE AESS BOG Meeting		Yangtze VIP Room
	08:00-18:30	Exhibition Time		Foyer (1F)

October 18 Thursday	08:30-09:10	Keynote Speech 5	Prof. Maria Sabrina Greco, Cognitive Active and Passive Radars: a signal processing perspective	Yangtze Grand Ballroom B+C
	09:10-09:50	Keynote Speech 6	Prof. Guifu Zhang, Weather and Phased Array Radar Polarimetry: Looking Forward to Future?	Yangtze Grand Ballroom B+C
	09:50-10:20	Tea Break		Foyer (1F)
	09:50-10:50	Poster Session 4	Radar Signal Processing	Yangtze Grand Ballroom A
		Poster Session 5	Radar Target Identification and Recognition	Yangtze Grand Ballroom A
		Poster Session 6	Radar Modeling and Analysis	Yangtze Grand Ballroom A
	10:50-11:30	Keynote Speech 7	Prof. Cheng Hu, Entomological Radar Signal Processing & Experimental Validation	Yangtze Grand Ballroom B+C
	11:30-12:10	Keynote Speech 8	Prof. Moeness Amin, Dual Function Radar Communication Systems	Yangtze Grand Ballroom B+C
	12:10-13:30	Lunch		River Coffee
	13:30-15:30	Oral Session 11	Millimeter Wave Radar and Terahertz Radar Chairs: Leo.P. Ligthart, Weidong Hu	Yangtze Room A
		Oral Session 12	Thru-wall Radar Chairs: Moeness Amin, Tian Jin	Yangtze VIP Room
		Oral Session 13	MIMO Radar Chairs: Wenqin Wang, Altunkan Hizal	Yangtze Room B
		Oral Session 14	Radar Target Detection,Identification and Recognition I Chairs: Antonio De Maio, Jianbing Li	Yangtze Room 2
		Oral Session 15	Understanding Flight Behavior of Animals with Radar and Lidar I Chairs: Hongqiang Feng, Phillip Stepanian	Yangtze Room 3
		Workshop	MMW-Radar Development in Automotive Applications (Part A1)	Yangtze Board Room
	15:30-16:00	Tea Break		Foyer (1F)
	15:30-16:30	Poster Session 7	Radar Target Detection	Yangtze Grand Ballroom A
		Poster Session 8	ECM/ECCM	Yangtze Grand Ballroom A
		Poster Session 9	Radar Waveform Design and Optimization	Yangtze Grand Ballroom A
	16:30-18:30	Oral Session 16	Radar Target Detection, Identification and Recognition II Chairs: Aly E. Fathy, Lan Du	Yangtze Room A

October 18 Thursday		Oral Session 17	Target Scattering Analysis and Modeling I Chairs: Hugh D. Griffiths, Shunjun Wu	Yangtze VIP Room
		Oral Session 18	Inverse Synthetic Aperture Radar Chairs: Marco Martorella, Yong Wang	Yangtze Room B
		Oral Session 19	SAR Interferometry I Chairs: Stephen Edward Hobbs, Junhuan Peng	Yangtze Room 2
		Oral Session 20	Understanding Flight Behavior of Animals with Radar and Lidar II Chairs: Mikkel Brydegaard, Rui Wang	Yangtze Room 3
		Workshop	MMW-Radar Development in Automotive Applications (Part A2)	Yangtze Board Room
	18:30-19:30	Dinner		River Coffee
	19:30-22:00	Tutorial 10	Prof. Hugh D. Griffiths, Spectrum Engineering and Waveform Diversity	Yangtze Room A
		Tutorial 11	Prof. Leo P. Ligthart, Tutorial on Wide-Band, Wide-Angular Scanning Antennas for Future Radar	Yangtze VIP Room
		Tutorial 12	Prof. Fabio Rocca, Phase Calibration of Airborne SAR Data for Tomographic Applications	Yangtze Board Room
		Tutorial 13	Prof. Mark E. Davis, Ultra Wide Band Surveillance Radar	Yangtze Room B
		Tutorial 14	Prof. Kyung-Tae Kim, Radar Target Recognition via ISAR Images	Yangtze Room 2
	08:30-18:30	Exhibition Time		Foyer (1F)
October 19 Friday	08:00-10:00	Oral Session 21	Deep Learning for SAR Automatic Target Recognition I Chairs: Ozlem Kilic, Xiaolan Qiu	Yangtze Room A
		Oral Session 22	Target Scattering Analysis and Modeling II Chairs: Mihai Datcu, Lianlin Li	Yangtze VIP Room
		Oral Session 23	Array Signal Processing Chairs: Tapan K. Sarkar, Xichao Dong	Yangtze Room B
		Oral Session 24	Radar Waveform Design and Optimization Chairs: Zongbo Wang, Yimin Liu	Yangtze Room 2
		Oral Session 25	SAR Interferometry II Chairs: Tian Xia, Guo Zhang	Yangtze Room 3
		Workshop	MMW-Radar Development in Automotive Applications (Part B1)	Yangtze Board Room
	10:00-10:30	Tea Break		Foyer (1F)
	10:30-12:30	Oral Session 26	Deep Learning for SAR Automatic Target Recognition II Chairs: Kyung-Tae Kim, Feng Xu	Yangtze Room A

October 19 Friday		Oral Session 27	Passive Radar II Chairs: Stuart Anderson, Yan Wang	Yangtze VIP Room
		Oral Session 28	GEO SAR Chairs: Andrea Monti Guarnieri, Yu Zhu	Yangtze Room B
		Oral Session 29	Radar Signal Processing II Chairs: Carmine Clemente, Gang Li	Yangtze Room 2
		Oral Session 30	Moving Target Detection Chairs: Eli Brookner, Shengqi Zhu	Yangtze Room 3
		Workshop	MMW-Radar Development in Automotive Applications (Part B2)	Yangtze Board Room
	12:30-13:30	Lunch		Foyer (1F)
	13:30-14:10	Keynote Speech 9	Prof. Aly E. Fathy, Radars for Non-contact Vital Sign Detection and Human Gait Analysis	Yangtze Grand Ballroom B+C
	14:10-14:50	Keynote Speech 10	Prof. Tapan K. Sarkar, A Brief History of the Early Evolution of Radar	Yangtze Grand Ballroom B+C
	14:50-15:20	Tea Break		Foyer (1F)
	14:50-15:50	Poster Session 10	SAR/InSAR	Yangtze Grand Ballroom A
		Poster Session 11	Deep Learning for Radar	Yangtze Grand Ballroom A
		Poster Session 12	Array Signal Processing	Yangtze Grand Ballroom A
	15:50-16:30	Keynote Speech 11	Dr. Zongbo Wang, Intelligent Radar Sensing for Smart Drones and Autonomous Driving	Yangtze Grand Ballroom B+C
	16:30-17:10	Keynote Speech 12	Prof. Alfonso Farina, Cognition and Radar Technology	Yangtze Grand Ballroom B+C
	18:30	Awards Banquet/ Closing Ceremony		Yangtze Grand Ballroom A+B+C
	08:00-18:00	Exhibition Time		Foyer (1F)

Hotel Lobby/酒店大堂: 1st Floor of Hotel
Yangtze Room A/扬子厅A: 2rd Floor of Hotel (A)
Yangtze Room B /扬子厅B: 2rd Floor of Hotel (A)
Yangtze Room 2 /扬子会议室2: 2rd Floor of Hotel (C)
Yangtze Room 3 /扬子会议室3: 2rd Floor of Hotel (D)
Yangtze Board Room /扬子董事会议室: 2rd Floor of Hotel (E)
Yangtze VIP Room /扬子贵宾厅: 2rd Floor of Hotel (F)
Yangtze Grand Ballroom A /扬子大宴会厅 A: 1st Floor of Hotel (A)
Yangtze Grand Ballroom B /扬子大宴会厅 B: 1st Floor of Hotel (B)
Yangtze Grand Ballroom C /扬子大宴会厅 C: 1st Floor of Hotel (C)
Foyer /走廊: 1st Floor of Hotel (D/E)

Keynote Speeches

Title: Clutter Diversity: A New Degree of Freedom in Multistatic Radar
Speaker: Prof. Hugh D. Griffiths, University College London, UK
Time: 09: 00 – 09: 40, October 17, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: Radar clutter has been studied since the earliest days of radar, and sophisticated models have been developed and used to predict and to optimize radar detection performance. However, the behaviour of radar clutter in bistatic configurations is much less well understood, both because such measurements are difficult to make and because the clutter depends on many variables. Experimental measurements with the NetRAD and NeXtRAD radars developed by University College London (UCL) and the University of Cape Town (UCT) have shown that bistatic sea clutter may be less 'spiky' (i.e. shorter-tailed) than the equivalent monostatic clutter, which means there may be a sensitivity advantage in detecting weak targets against such clutter.
We believe that the radars of the future will be distributed, intelligent, multistatic and spectrally-efficient. This may allow us to take advantage of the additional degree of freedom associated with the bistatic geometry. We have named this effect 'clutter diversity'.

The presentation will describe the measurements and results, and speculate on other advances that will be necessary to realize an intelligent, adaptive radar network.

Biography: Hugh D. Griffiths holds the THALES/Royal Academy Chair of RF Sensors in the Department of Electronic and Electrical Engineering at University College London, England. From 2006–2008 he served as Principal of the Defence Academy College of Management and Technology. He received the MA degree in Physics from Oxford University in 1975, then spent three years working in industry, before joining University College London, where he received the PhD degree in 1986 and the DSc(Eng) degree in 2000, and served as Head of Department from 2001–2006.

He served as President of the IEEE AES Society for 2012/13. His research interests include radar systems and signal processing (particularly bistatic radar and synthetic aperture radar), and antenna measurement techniques. He serves as Editor-in-Chief of the IET Radar, Sonar and Navigation journal. He has published over five hundred papers and technical articles in the fields of radar, antennas and sonar. He has received several awards and prizes, including the IEEE Picard Medal (2017), IET Achievement Medal (2017), the IEEE AES Mimno Award (2015), the IET A.F. Harvey Prize (2012) and the IEEE AES Nathanson Award (1996). He is a Fellow of the IET (previously IEE), Fellow of the IEEE, and in 1997 he was elected to Fellowship of the Royal Academy of Engineering.

Title: Research Progress on Geosynchronous SAR System Analysis and Information Processing
Speaker: Prof. Teng Long, Beijing Institute of Technology, China
Time: 09: 40 – 10: 20, October 17, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: The geosynchronous SAR (GEO SAR) runs on a geosynchronous orbit at a height of 36000 km, which has a certain inclination and thus is not geostationary. The relative movement between GEO SAR and ground targets can be obtained to achieve two-dimensional SAR imaging. Compared with the traditional low Earth orbit SAR (LEO SAR), GEO SAR has irreversible advantages of short revisit period (several hours), large observation coverage (hundreds to thousands of kilometers), etc.

However, the orbit height of GEO SAR increase by two orders of magnitude than LEO SAR, leading to great changes of the information acquisition and recovery: the synthetic aperture time reaching several minutes or even tens of minutes, echo round-trip delay reaching up to the sub-second level, wide swath covering thousands of kilometers.

The influences of non-ideal factors, such as ionosphere, will be time-space varying accordingly as the integration time and the swath increase. Due to the huge variance of the slant range history in time-space dimension, the classical SAR system design and signal processing methods have obvious errors or even fail.

The scope of this speech is to generally state the GEO SAR concept, the key problems and the corresponding solutions, including system design and performance analysis, accurate imaging algorithms under curved trajectory and large wide swath, time-space varying ionospheric effects and compensation, the equivalent validation experiment based on Beidou navigation satellites. Finally, the representative achievements and research institutes in China are summarized, and the development trends of GEO SAR in future are prospected.

Biography: Prof. Teng Long was born in January 1968. He received the Ph.D. degree from Beijing Institute of Technology (BIT) in 1995. Afterwards, he joined the faculty of BIT, where he became Professor in 2002, Director of Radar Research Laboratory from 2004, Dean of School of Information and Electronics from 2009 to 2016, Assistant President from 2016 to 2018 and Vice President from 2018.

His research interests include the fundamental and significant issues of the novel radar system and signal processing. His work includes the novel one-dimensional high resolution imaging radar, two-dimensional synthetic aperture imaging radar and the new technology and application of the real-time signal processing technology in air to Earth detection. He has published two academic books and over 300 academic papers including 100 papers indexed by SCI and 200 papers indexed by EI. He has been authorized more than 80 patents for invention and applied more than 50 patents for invention. He has received 1 second prize of National Technological Invention Award (ranks first), 1 first prize of Education and Teaching Achievements of Beijing (ranks second).

He was the Chief Scientist of National Basic Research Program and National High Technology Research and Development Program of China. He is the Member of Experts Group of National Science and Technology Major Project. He is the Yangtze River Scholar Distinguished Professor by the Ministry of Education of China. He received the Distinguished Young Scholar Fund of the National Natural Science Foundation. He received the National High-level Personnel of Special Support Program (Ten Thousand Leading Talent Plan), Award of National Hundred, Thousand

and Ten Thousand Talent Project, Award of National Young and Middle-aged Experts with Outstanding Contributions, Award of Youth Science and Technology Innovation Leader of National Talent Project and Award of Hundred Leading Talent of Beijing Science and Technology. He is the leader of the Novel Radar System and Real-Time Signal Processing Team of the Ministry of Education of China, and the Leader of Program of Introducing Talents of Discipline to Universities. He is also the Member of the 7th Evaluation Committee of Academic Degrees of the State Council.

He is the President of Signal Processing Society of Chinese Institute of Electronics (CIE), the President of the Signal Processing Branch of China Instrument and Control Society (CIS), the Vice Director of Radio Location Society of CIE and the President of Intelligent Information Processing Industrialization Society of China High-Tech Industrialization Association (CHIA). He is also a Fellow of the Institute of Engineering and Technology (IET) and a Fellow of CIE. He was the General-Chair of IET International Radar Conference 2009, the Honorary-Chair of IET International Radar Conference2013 and 2015 respectively, and the General-Chair of National Conference on Signal Processing Engineer and National Academic Annual Conference of Signal Processing for many times.

He was awarded the Special Government Allowances of the State Council, the May 4th Youth Medal of Beijing, the Outstanding Teacher of Beijing, the Fok Ying-Tong University Outstanding Young Teacher and the Top Ten Outstanding Youth of Beijing. His team was awarded the Excellent Scientific and Technological Innovation Team of National Defense Science and Technology Industry and the Advanced Group of National Education System.

Title: GPR Applied to Humanitarian Demining and UXO Clearance
Speaker: Prof. Motoyuki Sato, Tohoku University, Japan
Time: 11: 00 – 11: 40, October 17, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: Humanitarian demining and UXO clearance have gathered interest all over the world last 20 years. However, it is still quite important activity in many mine/UXO affected countries. Since the Ottawa treaty established in 1997, land mine problems have been widely known, and we have continued efforts to demolish all the landmines including buried mines in mine affected countries. Even though, we have noticed that in many mine affected countries, mine clearance is not an easy task and we have to continue this effort. It is reported that accidents caused by landmines occurred in 56 countries in 2016, and more than 9,000 people were killed or injured. As of November 2017, landmines remain in 61 countries.

In order to detect buried landmines and UXO, electromagnetic techniques have widely been used. Electromagnetic Induction Sensor (EMI sensor) is one of the most commonly used sensor for detection of metal objects. Most of UXO are made of metal and most types of landmines contain metal components, which can be detected by EMI sensor. In addition, recently, Ground Penetrating Radar (GPR) has also been used for humanitarian demining, because it can detect non-metal objects. In this workshop, at first I will introduce these techniques. Then, we introduce more actual activities. Tohoku University has developed ALIS for humanitarian demining. ALIS is a handheld "Dual sensor" which combines EMI sensor and GPR. This is a hand held sensor, equipped with position tracking system, therefore ALIS can acquire the EMI and GPR signal together with its position information, while it is scanned on the ground surface by an operator by hand manually. Then, the data can be processed using Synthetic Aperture Radar (SAR) processing (migration) and can reconstruct 3-D subsurface image. GPR of ALIS operates at 1-3GHz, and the penetration depth of the GPR is 20- 50cm. The development of ALIS started in 2002, and after evaluation test in some mine affected countries including Afghanistan, a long-term evaluation test has been conducted in Cambodia since 2009.We found that the prototype of ALIS is capable for imaging buried mines, and can reduce the false alarm ratio drastically. We have detected more than 80 buried land mines in Cambodia mine fields. The ALIS is based on these practical evaluation conducted together with CMAC (Cambodian Mine Action Center). The new ALIS system is compact and light weight which is less than 3.1kg, and can be used for more than 6 hours. It was evaluated in CMAC test site in 2018, and we demonstrated its high performance.

Biography: Motoyuki Sato received the B.E., M.E degrees, and Dr. Eng. degree in information engineering from the Tohoku University, Sendai, Japan, in 1980, 1982 and 1985, respectively. Since 1997 he is a professor at Tohoku University and a distinguished professor of Tohoku University since 2007, and he was the Director of Center for Northeast Asian Studies, Tohoku University during 2009-2013. In 1988, he was a visiting researcher at the Federal German Institute for Geoscience and Natural Resources (BGR) in Hannover, Germany. His current interests include transient electromagnetics and antennas, radar polarimetry, ground penetrating radar (GPR), borehole radar, electromagnetic induction sensing, interferometric and polarimetric SAR. He has conducted the development of GPR sensors for humanitarian demining, and his sensor ALIS which is a hand-held dual sensor, has detected more than 80 mines in mine fields in Cambodia. He received 2014 Frank Frischknecht Leadership Award from SEG for his contribution to his sustained and important contributions to near-surface geophysics in the field of ground-penetrating radar. He received IEICE Best paper award (Kiyasu Award), and IEEE Ulrich L. Rohde Innovative Conference Paper Awards on Antenna Measurements and Applications both in 2017. He is a visiting Professor at Jilin University, China, Delft University of Technology, The Netherlands, and Mongolian University of Science and Technology.

Title: Next Generation Radar Perspective
Speaker: Prof. Mingchun Hu, The 14th Research Institute of China Electronics Technology Group Corporation, China
Time: 11: 40 – 12: 20, October 17, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: The presentation summarizes development requirements, typical technical patterns and key technologies for Next Generation of Radars (NGR).

It summarizes radar evolution history, pointing out development law is objective and predictive, and In the new era of "Digitization, Networking and Intelligence", next generation radars will play an important role in space science, remote sensing, intelligent traffic, intelligent weather, intelligent city, room monitoring, deformation measurement, target characteristics research and other domains.

Application demands, classical idea or projects of typical NGR patterns are introduced, such as Conformal Radar, Digital Wideband Radar, Software Radar, Cognitive & Intelligent Radar etc.

Technical definitions, technical advantages, realization means and application of key NGR-enabling techniques are also depicted, including AI, Microwave Photonics, Microsystem, Terahertz and Quantum technologies etc.

Biography: Mingchun Hu received his M.S degree from Nanjing Electronics Engineering Research Center in 1989, and since then he has been working in Nanjing Research Institute of Electronics Technology (NRIET) for about 30 years. Now, he is a professor of engineering, working as the Chairman of NRIET.

He has been focusing on radar system engineering and radar antenna theory, achieving significant academic achievements: two monographs "Novel Radar Microwave Techniques" and "T/R Module Technique of Phased Array Radar", dozens of papers related to AESA systems, patch antennas, beam forming techniques and novel antenna materials.

Due to his significant contributions, professor Hu has been awarded as State Council Expert for Special Allowance, 10 Leading Figures in Industrialization & Informatization Integration, Specialist of "333 High Level Talents Project" in Jiangsu Province and so on. He has also been awarded First Prize & Second Prize of National Science & Technology Progress, and more than 20 provincial and ministerial prizes for S&T progress.

Title: Cognitive Active and Passive Radars: a signal processing perspective
Speaker: Prof. Maria Sabrina Greco, University of Pisa, Italy
Time: 08: 30 – 09: 10, October 18, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: This presentation focuses on some applications of cognitive radars from the signal processing perspective. Cognitive radars are systems based on a perception-action cycle that sense the environment and learn from it important information on the target and the background, then adapt the transmitted waveform to optimally satisfy the needs of their mission according to a desired goal. Both active and passive radars are considered, highlighting the limits and the path forward. In particular, we consider cognitive active radars that work in spectrally dense environment and change the transmitted waveform on-the-fly to avoid interference with the primary user of the channel, such as broadcast or communication systems. In the framework of active radars, we present as well a reinforcement learning based technique to focus the antenna beampattern of collocated MIMO radars. We also describe cognitive passive/hybrid radars, that contrary to the active ones cannot directly change the transmitted waveforms on-the-fly but can instead select the best source of opportunity to improve the detection and tracking performance.

Biography: Maria Sabrina Greco graduated in Electronic Engineering in 1993 and received the Ph.D. degree in Telecommunication Engineering in 1998, from University of Pisa, Italy. From December 1997 to May 1998 she joined the Georgia Tech Research Institute, Atlanta, USA as a visiting research scholar where she carried on research activity in the field of radar detection in non-Gaussian background. In 1993 she joined the Dept. of Information Engineering of the University of Pisa, where she is Full Professor since Dec. 2016. She's IEEE fellow since Jan. 2011 and she was co-recipient of the 2001 and 2012 IEEE Aerospace and Electronic Systems Society's Barry Carlton Awards for Best Paper and recipient of the 2008 Fred Nathanson Young Engineer of the Year award for contributions to signal processing, estimation, and detection theory.

She has been general-chair, technical program chair and organizing committee member of many international conferences over the last 10 years. She's guest editor of the upcoming special issue on "Machine Learning for Cognition in Radio Communications and Radar" of the IEEE Journal on Special Topics of Signal Processing and she has been lead guest editor of the special issue on "Advanced Signal Processing for Radar Applications" of the IEEE Journal on Special Topics of Signal Processing, guest co-editor of the special issue of the Journal of the IEEE Signal Processing Society on Special Topics in Signal Processing on "Adaptive Waveform Design for Agile Sensing and Communication," published in June 2007 and lead guest editor of the special issue of International Journal of Navigation and Observation on" Modelling and Processing of Radar Signals for Earth Observation published in August 2008. She's Associate Editor of IET Proceedings – Sonar, Radar and Navigation, member of the Editorial Board of the Springer Journal of Advances in Signal Processing, and Senior Editorial board member of IEEE Journal on Selected Topics of Signal Processing and Senior area chair of the IEEE Transactions on Signal Processing. She has been member of the IEEE AES and IEEE SP Board of Governors and she's Past Chair of the IEEE AESS Radar Panel. She has been as well SP Distinguished Lecturer for the years 2014-2015, and now she's AESS Distinguished Lecturer for the years 2015-2018, member of the IEEE Fellow Committee and AESS VP Publications. Her general interests are in the areas of statistical signal processing, estimation and detection theory. In particular, her research interests include clutter models, coherent and incoherent detection in non-Gaussian clutter, CFAR techniques, radar waveform diversity and bistatic/mustistatic active and passive radars, cognitive radars. She co-authored many book chapters and more than 190 journal and conference papers.

Title: Weather and Phased Array Radar Polarimetry:Looking Forward to Future?
Speaker: Prof. Guifu Zhang, University of Oklahoma, USA
Time: 09: 10 – 09: 50, October 18, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: Radar polarimetry with multi-parameter measurements has matured to the point that it has been or is being implemented on the operational Doppler radar networks. While the technology of radar polarimetry has matured, and polarimetric radar data (PRD) are available nationally and globally, radar polarimetry is still in its initial stages for operational usage. There is a lot of room for research and development, especially in using PRD. Phased array technology has recently been introduced to the weather community to increase data update rates to lengthen the lead-time of weather hazard warnings. Polarimetric phased array radar is desirable for future weather observations and multi-mission capabilities. This talk will provide the background information on radar polarimetry and its applications in weather observation, quantification and forecast. The status and challenges of polarimetric phased array radar research and development will be reviewed, and possible solutions will be discussed and examined. Research, design, and development of the Cylindrical Polarimetric Phased Array Radar demonstrator will be presented.

Biography: Guifu Zhang received his B.S. in Physics from Anhui University in 1982, M.S. in Radio Physics from Wuhan University in 1985, and Ph.D. in Electrical Engineering from the University of Washington in 1998.

He was an Assistant and Associate Professor in the Space Physics Department at Wuhan University from 1985 to 1993. In 1989, he worked as a Visiting Scholar at the Communication Research Laboratory in Japan. From 1993 to 1998, Dr. Zhang studied and worked in the Department of Electrical Engineering at the University of Washington, where he was first a Visiting Scientist and later a Ph.D. student. He was a Scientist with the National Center for Atmospheric Research (NCAR) during the period between 1998 and 2005. In 2005, he joined the School of Meteorology at the University of Oklahoma, where he is now a professor. Dr. Zhang formulated theories of weather radar interferometry and phased array radar polarimetry. Among his current projects, he is working on topics such as the optimal use of polarimetric radar data (PRD) in quantitative precipitation estimation (QPE) and quantitative precipitation forecast (QPF) and the research and development of polarimetric phased array radars for weather measurements and multi-mission capability.

Dr. Zhang is the author of Weather Radar Polarimetry, and he has received three US patent awards, filed over ten intellectual property disclosures, and published over 100 journal publications for his research work in radar theory/technology, signal processing and applications.

Title: Entomological Radar Signal Processing & Experimental Validation
Speaker: Prof. Cheng Hu, Beijing Institute of Technology, China
Time: 10: 50 – 11: 30, October 18, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: Insect migration is a significant ecological phenomenon in nature and massive insects do long-distance migration annually. Because most species of insect migrants are nocturnal to avoid their predators, it makes radar, with the advantages of all weather and all day work, to be the most effective tool to observe insect migration. Many important progresses have been made by entomological radars, such as high-density layering and common orientation.

This presentation will focus on the entomological radar research for monitoring individual insect migration. To improve the entomological radar performance of individual insect monitoring, novel entomological radar is designed and proposed with several new technologies for species identification and trajectory analysis, including: Insect body length/mass measurements based on multi-frequency RCS, Wingbeat frequency measurement based on micro-Doppler effect, Orientation estimation based on instantaneous full-polarization system and Trajectory measurement using high-resolution phased array radar;

A series of experiments were carried out both in the anechoic chamber and the field, so as to validate the feasibility of these new radar techniques above, where 29 insect species were involved. Up to now, a Ku-band entomological radar prototype has been built with the high range resolution of 0.2m and the capability of instantaneous full-polarization measurement. The field observations were carried out in Langfang, Hebei Province, Xilinhot, Inner Mongolia, etc. The wingbeat frequency, head orientation and aerial density of migratory insects were successfully measured.

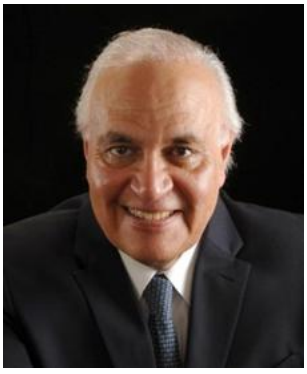
Biography: Cheng Hu, Full professor of School of Information and Electronics, Beijing Institute of Technology. He received the Bachelor's degree in electronic engineering from National University of Defense Technology, Changsha, China, in 2003 and the Ph.D. degree in target detection and recognition from Beijing Institute of Technology (BIT), Beijing, China, in 2009. During 2006.03 to 2007.06, he worked as a Research Associate in Microwave Integrate System Lab, University of Birmingham, U.K. From 2009.09 to 2014.06, he worked as a lecturer and associate professor in the School of Electronic Engineering, BIT. From 2014.07 to now, he was promoted to be full professor. From 2015.09 to now, he has hold the post of deputy director of radar research institute. He has been mainly working on the image formation and differential interferometry theory and methodology for Geosynchronous Synthetic Aperture Radar (GEO SAR), and Entomological Radar signal and information processing. In these radar research fields, he has been the principal investigators and main participants of more than 20 grants and funding from different national or governmental sources, e.g., the Chinese National Science Foundation, the pre-researcher project of Equipment Ministry, the China Academy of Space Technology Foundation, and the Young Elite Teacher Project of Beijing Higher Education and so on.

He has been elected as National Ten-thousand Talents Program 'Young top talent', and published more than 150 refereed Journal and Conference papers, and an English monograph (Geosynchronous SAR: System and Signal Processing, Springer), and granted more than 30 and filed 30 national invention patents of China. In addition, He has been the IET Fellow and CIE (Chinese Institute of Electronics) Fellow and IEEE senior member, and served as the TPC chair of IET International Radar Conference 2015, Session Chairs of several international conferences (such as IGARSS/ChinaSIP/ICSP). He also was elected as the editors of Journal of China Science Information Science, Journal of Modern radar, Journal of System Engineering and Electronics.

Title: Dual Function Radar Communication Systems
Speaker: Prof. Moeness Amin, Villanova University, USA
Time: 11: 30 - 12: 10, October 18, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: The limited nature of the radio spectrum and the explosion in commercial communications services are putting other essential modalities, such as radar, under immense pressure. In this high stakes game, radar is losing out to the commercial interests behind the communications revolution. One of the most pressing problems in the area of spectral congestion and dynamic frequency allocations is to provide uncontested shared bandwidth between radar and communications. This has recently spurred extensive efforts towards devising solutions for simultaneous operations of radar target illuminations and wireless services using the same frequency bandwidth, a drive that is referred to as co-existence. This talk discusses how to enable communication systems to capitalize on the resources of radar infrastructure while striving to be transparent to radar operations and mission. In particular, we consider the radar as a "system of opportunity" to communications, and show the various strategies which can be adopted to communicate over the radar pulse as well as over the radar beam. In essence, the goal is to use the radar spatio-temporal resources to achieve desirable communications data rates for different application purposes.

The talk establishes and promotes the area of dual system functionality, allowing radar to house voice and data transmission, leading to technological advances in radar and communications systems. The research develops novel signaling schemes for embedding information into the radar pulsed emissions, which, in most cases, is blind to the primary radar operation. It considers different antenna configurations, including multiple-input multiple-output radars, and applies amplitude and phase-shift keying modulations with waveform-diversity, while satisfying an overall power constraint.



Biography: Dr. Amin is a Fellow of the Institute of Electrical and Electronics Engineers; Fellow of the International Society of Optical Engineering; Fellow of the Institute of Engineering and Technology; and a Fellow of the European Association for Signal Processing. He is the Recipient of: : the 2017 Fulbright Distinguished Chair in Advanced Science and Technology; the 2016 Alexander von Humboldt Research Award; the 2016 IET Achievement Medal; the 2014 IEEE Signal Processing Society Technical Achievement Award; the 2009 Individual Technical Achievement Award from the European Association for Signal Processing; the 2015 IEEE Aerospace and Electronic Systems Society Warren D White Award for Excellence in Radar Engineering; the 2010 NATO Scientific Achievement Award; and the 2010 Chief of Naval Research Challenge Award. Dr. Amin is the Recipient of the IEEE Third Millennium Medal. He was a Distinguished Lecturer of the IEEE Signal Processing Society, 2003-2004, and is the past Chair of the Electrical Cluster of the Franklin Institute Committee on Science and the Arts. Dr. Amin has over 750 journal and conference publications in signal processing theory and applications, covering the areas of Wireless Communications, Radar, Sonar, Satellite Navigations, Ultrasound, Healthcare, and RFID. He has co-authored 21 book chapters and is the Editor of three books titled, "Through the Wall Radar Imaging", "Compressive Sensing for Urban Radar", "Radar for Indoor Monitoring", published by CRC Press in 2011, 2014, 2017, respectively.

Title: Radars for Non-contact Vital Sign Detection and Human Gait Analysis
Speaker: Prof. Aly E. Fathy, University of Tennessee, USA
Time: 13: 30 - 14: 10, October 19, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: Technology to detect vital signs and analyze human motion has significantly advanced in the last few years. Use of wearable devices for vital sign detection could be impractical in some scenarios like in case of baby's sleep apnea monitoring and locating victims of earthquakes covered under debris. Meanwhile, locomotion studies have proved useful and have been practically applicable to some gait analysis. But its use still being hampered by the amount of data generated and the limitations to the interpretation capabilities of these massive data. New techniques need to be developed to capture data rapidly, accurately, efficiently and preferably remotely using non-invasive techniques. Our effort aims at improving the current state of the art by developing a non-invasive, cost effective system that can be installed both indoors (e.g. hospital rooms, elderly care centers, homes, etc.) and outdoors (e.g. sports facilities or events), and can be functional 24/7 without hindering the normal course of events for the human(s) being monitored, and without any loss of privacy as often encountered with camera based systems. In this talk I will give overview about the use of UWB radars in this application, and touch on relevant optical techniques as well.

Biography: Aly E. Fathy received his Ph.D. degree from the Polytechnic Institute of New York, Brooklyn NY (NYU Poly), in 1984. In February 1985, he joined the RCA Research Laboratory (currently the Sarnoff Corporation), Princeton, NJ, as a Member of the Technical Staff. In 2001, he became a Senior Member of the Technical Staff. In 2003, he joined UT, currently he is a distinguished Professor. He has authored or coauthored numerous transactions and conference papers. He holds 12 U.S. patents, and co-authored many book chapters on radars for medical applications. His current research interests include DBS Antennas, wireless reconfigurable antennas, see-through walls, UWB systems, and high-efficiency high-linearity combining of digital signals for base-station amplifiers. He has developed various UWB microwave radar systems such as non-contact vital signs detection using impulse radar, CW radar, SFCW radar, and collaborated extensively with many international scientists. He was the recipient of five Sarnoff Outstanding Achievement Awards (1988, 1994, 1995, 1997, 1999), Gonzalez family research excellence award (2005), two research excellence awards from the College of Engineering, University of Tennessee (2009, 2011), one teaching fellow award from the college of Engineering (2014) and Lamar Alexander Chancellor's Excellence Award in teaching and research in 2011, he is a fellow of IEEE.

Title: A Brief History of the Early Evolution of Radar
Speaker: Prof. Tapan K. Sarkar, Syracuse University, USA
Time: 14: 10 - 14: 50, October 19, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: This presentation provides a cursory overview of the history of the German, British and the American efforts on the initial evolution of RADAR which necessitated the development of several microwave components. Finally, a short summary is presented about the evolution of the magnetron in radar.

Biography: Tapan K. Sarkar is a Professor in the Department of Electrical and Computer Engineering, Syracuse University. From 1975 to 1976, he was with the TACO Division of the General Instruments Corporation. He was with the Rochester Institute of Technology, Rochester, NY, from 1976 to 1985. He was a Research Fellow at the Gordon McKay Laboratory, Harvard University, Cambridge, MA, from 1977 to 1978. His current research interests deal with numerical solutions of operator equations arising in electromagnetics and signal processing with application to system design. He obtained one of the "best solution" awards in May 1977 at the Rome Air Development Center (RADC) Spectral Estimation Workshop. He received the Best Paper Award of the IEEE Transactions on Electromagnetic Compatibility in 1979 and in the 1997 National Radar Conference. He has authored or coauthored more than 360 journal articles and numerous conference papers and 32 chapters in books and sixteen books.

Dr. Sarkar is a Registered Professional Engineer in the State of New York. He received the College of Engineering Research Award in 1996 and the Chancellor's Citation for Excellence in Research in 1998 at Syracuse University. He was an Associate Editor for feature articles of the IEEE Antennas and Propagation Society Newsletter (1986-1988), Associate Editor for the IEEE Transactions on Electromagnetic Compatibility (1986-1989), Chairman of the Inter-commission Working Group of International URSI on Time Domain Metrology (1990–1996), distinguished lecturer for the Antennas and Propagation Society from (2000-2003, 2011-2013), Member of Antennas and Propagation Society ADCOM (2004-2007), IEEE Fellows Committee (2017-2018), vice president of the Applied Computational Electromagnetics Society (ACES), a member of the IEEE Electromagnetics Award board (2004-2007), an associate editor for the IEEE Transactions on Antennas and Propagation (2004-2010) and on the editorial board of Digital Signal Processing –A Review Journal (2003-2012). He is on the editorial board of Journal of Electromagnetic Waves and Applications and Microwave and Optical Technology Letters. He was the 2014 President of the IEEE Antennas and Propagation Society.

He received Docteur Honoris Causa from Universite Blaise Pascal, Clermont Ferrand, France in 1998, from Politechnic University of Madrid, Madrid, Spain in 2004, and from Aalto University, Helsinki, Finland in 2012. He received the medal of the friend of the city of Clermont Ferrand, France, in 2000.

Title: Intelligent Radar Sensing for Smart Drones and Autonomous Driving
Speaker: Dr. Zongbo Wang, Ainstein, USA
Time: 15: 50 - 16: 30, October 19, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: The recent emerge of autonomous unmanned systems, including drones and self-driving cars, have been generating new opportunities and challenges for advanced sensing solutions. mmWave radar has been known as one of the most important sensing devices as part of the perception packages, along with Lidar and Camera. In this talk, I will present the recent development in commercial radar systems, as well as the applications in drones and automotive industries. A "thinking outside of the box" approach to understanding intelligent radar systems, in comparison with other sensors and solutions, will also be shared in the presentation.

Biography: Dr. Zongbo Wang is the co-Founder and CEO of Ainstein (ainstein.ai), USA and Muniu Technology (muniu.tech), Beijing, China. He honed his expertise by leading and contributing to numerous large scale research projects at universities and research institutes in China, the United States, Spain, Singapore and the Netherlands. He received his B.S and Ph.D. in Electronic Engineering from the Beijing Institute of Technology, in 2004 and 2009, respectively. In 2007, he was with the Group of Microwave and Radar (GMR), Universidad Politecnica de Madrid, Madrid, Spain. From 2009 to 2011, he worked in the International Research Centre for Telecommunications and Radar (IRCTR) at the Delft University of Technology, Delft, The Netherlands. He joined the Institute of Microelectronics, Agency for Science, Technology and Research (A*STAR), Singapore, in 2011, and later joined the Faculty of the Department of Electrical Engineering, Dalian University of Technology, Dalian, China. In 2013, He joined the Center for Remote Sensing of Ice Sheets (CReSIS), University of Kansas, Lawrence, KS, USA. From 2015, Dr.Wang started to work on the commercialization of radar technologies, with the vision to define the future of flying and driving with innovative sensing system, processing and control technologies. Dr.Wang and his team have been well recognized as the leading innovators in developing the collision-avoidance radar, radar altimeters, FPGA-based flight controllers for drones and UAVs, and advanced automotive radar systems for ADAS and self-driving cars.

Title: Cognition and Radar Technology
Speaker: Prof. Alfonso Farina, Leonardo, Land & Naval Division Consultant, Italy
Time: 16: 30 - 17: 10, October 19, 2018
Place: Yangtze Grand Ballroom B+C, 1st Floor of Hotel (B+C)

Abstract: The main starting point and the general question behind my presentation are the following: the design of a communicate system can take into account the optimal transfer of intelligence? Can radar technology become able to capture brain behavior and benefit of cognition? Do exist relationships between the Information Theory and the Natural Intelligence? How is it possible to move toward the Theory of Intelligence?

To these questions and much other, interest readers can find some even partial answers in the recently published book "The Impact of Cognition on Radar Technology", that I co-authored with Antonio De Maio and Simon Haykin [1].
In my presentation I will go through some topics discussed in the book, where the history of radar is presented, from the origins up to the modern era, where the new radars "think", "decide" and "reason" as living beings.

A review of modern operational requirements and the enabling key technologies to respectively motivate and support the implementation of the cognitive radar is provided with the goal to recommend the Cognitive Radar as a key technology, that opens the way to get Intelligence from the sensed data, to convince engineers from the industry, who need to ascertain whether a new technology is valuable from an operational point of view. Moreover today's phased-array radars are analyzed by showing that they are already in some manner cognitive.

Cognitive Radar concept is explored explaining the inspiring principles and illustrating the basic system architecture, also in comparison with a classic adaptive radar. Some distinctive features will be highlighted, such as Adaptivity, Mindful, Contextual and Intelligent.

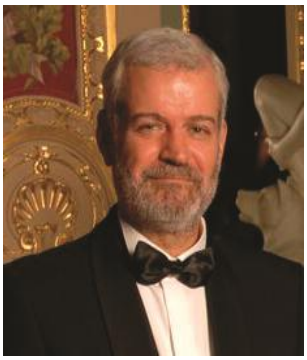
The cognitive design of radar waveforms in a spectrally crowded environment where some frequency bands are shared among the radar and other telecommunication systems will be presented, by explaining how cognition provided by a REM (Radio Environmental Map) is used as the key to an intelligent and dynamic spectrum allocation. Either global or local spectral compatibility requirements will be considered at the design stage. Polynomial computational complexity solution procedures developed to synthesize optimized radar waveforms will be discussed and the performance of the synthesized signals analyzed.

As regard the Transmitter-Receiver Pair, cognition about the surrounding environment is exploited to adapt the system to the interfering environment. Precisely, the robust joint optimization of the transmit signal and receive filter bank in the presence of signal-dependent interference will be considered. The effectiveness of the cognitive architecture will be investigated when the target Doppler frequency is a-priori unknown. In fact, while a rough Doppler knowledge is very reasonable during the detection confirmation or for an already tracked target, it is usually not available during the standard search radar operations and suitable cognitive algorithms are required. Alternating optimization procedure over the transmit signal and the receive filter bank will be presented and several numerical examples provided to assess the effectiveness of the considered method in diverse challenging scenarios.

Radar Target Tracking will be presented when a tracker exploiting cognition at multiple levels is designed. Specifically, environmental maps and characteristics of the targets, available in the dynamic database possibly learned from the feedback channel, are used to gain improved tracking performance in a multiple targets scenario. In fact, unlike the conventional tracking radar (which is very sensitive to false alarms and/or missed detections), the main advantage of the cognitive paradigm is the significant reduction in the number of false alarms, missed detections, false tracks

and improved true target track life. In addition, it will be shown how the choice of the most suitable waveform will further optimize the target tracking process. The proposed algorithm is based on the use of feedback information from the receiver and exploits a standard Kalman filter. The performance of the proposed strategy will be highlighted. Moreover, the definition of Anticipative Target Tracking will be given, by illustrating some case studies to increase the confidence of the Reader with this technology and with related algorithms. Anticipative Target Tracking encompasses a number of operational cases and relates to the possibility to exploit some a-priori information to help the task of prediction. A-priori information (like maps, roads, gallery terrain orography, multipath exploitation to mitigate blind conditions for instance in urban tracking, etc.) are very helpful in assisting the target tracking and predicting ahead in time the target trajectory. This is a form of cognitive tracking also referred to as Knowledge Based Tracker (KBT), synonymous with Proactive Tracking (PT) and analyzed with respect to the classical Reactive Tracking (RT).

An Overview on the Exploitation of Cognition in MIMO Radar, Electronic Warfare, and Synthetic Aperture Radar will be given, together with the presentation of some miscellanea application domains which could significantly benefit by the use of cognition. An attempt to shed some light on the path to follow from Information to Intelligence theory will be sketched, by taking into account that “Intelligence" has been mentioned as a capability of Cognitive Radar (CR), but a definition and a theory are not yet available today. Furthermore, some particular and innovative topics, ranging from Cyber Security to the powerfulness of networks, inspired by brain connectivity and social behavior, will be discussed. Several open issues will be considered.



Biography: Alfonso Farina, LFIEEE, FIET, FREng, Fellow of EURASIP, received the degree in Electronic Engineering from the University of Rome (IT) in 1973. In 1974, he joined Selenia, then Selex ES, where he became Director of the Analysis of Integrated Systems Unit and subsequently Director of Engineering of the Large Business Systems Division. In 2012, he was Senior VP and Chief Technology Officer of the company, reporting directly to the President. From 2013 to 2014, he was senior advisor to the CTO. He retired in October 2014. From 1979 to 1985, he was also professor of “Radar Techniques” at the University of Naples (IT). He is the author of more than 700 peer-reviewed technical publications and of books and monographs (published worldwide), some of them also translated in to Russian and Chinese. Some of the most significant awards he’s received include: (2004) Leader of the team that won the First Prize of the first edition of the Finmeccanica Award for Innovation Technology, out of more than 330 submitted projects by the Companies of Finmeccanica Group; (2005) International Fellow of the Royal Academy of Engineering, U.K., and the fellowship was presented to him by HRH Prince Philip, the Duke of Edinburgh; (2010) IEEE Dennis J. Picard Medal for Radar Technologies and Applications for “Continuous, Innovative, Theoretical, and Practical Contributions to Radar Systems and Adaptive Signal Processing Techniques”; (2012) Oscar Masi award for the AULOS® “green” radar by the Italian Industrial Research Association (AIRI); (2014) IET Achievement Medal for “Outstanding contributions to radar system design, signal, data and image processing, and data fusion”. He is a Visiting Professor at University College London (UCL), Dept. Electronic and Electrical Engineering, CTIF (Center for TeleInFrastructures) Industry Advisory Chair, and a Distinguished Lecturer (DL) of IEEE AESS. (2017) IEEE SPS Industrial Leader Award for contributions to radar array processing and industrial leadership. (2017) Chair of Italy Section Chapter, AES10. (2018) The IEEE Signal Processing Society announced the 2018 Class of Distinguished Industry Lecturers for the term of 1 January 2018 to 31 December 2019. Main received best paper awards: B. Carlton of IEEE – Trans. on AES (2001, 2003, and 2013), IET – Proc. on Radar Sonar and Nav. (2009-2010) and Int. Conf. on Fusion (2004, 2009). He is consultant to Leonardo S.p.A. “Land & Naval Defence Electronics Division”, Rome (I).

Tutorials

Title: Big SAR Data Science: Physics Based Machine Learning and Artificial Intelligence
Speaker: Prof. Mihai Datcu, German Aerospace Center (DLR), Germany
Time: 19: 00 - 21: 30, October 16, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)

Abstract: Radar imaging, particularly Synthetic Aperture Radar (SAR) are pioneer technologies in the field of Computational Sensing and Imaging. The challenges of the image formation principles, high data volume and very high acquisition rate stimulated the elaborations of techniques witch today are ubiquitous. SAR technologies have immensely evolved, the state of the art sensors deliver widely different images, and have made considerable progress in spatial and radiometric resolution, target acquisition strategies, imaging modes, or geographical coverage and data rates. Generally imaging sensors generate an isomorphic representation of the observed scene. This is not the case for SAR, the observations are a doppelganger of the scattered field, an indirect signature of the imaged object. This positions the load of SAR image understanding, and the outmost challenge of Big SAR Data Science, as new and particular challenge of Machine Learning (ML) and Artificial Intelligence (AI). The presentation reviews and analyses the new approaches of SAR imaging leveraging the recent advances in physical process based ML and AI methods and signal processing, and leading to Computational Imaging paradigms where intelligence is the analytical component of the end-to-end sensor and Data Science chain design. A particular focus is on the scientific methods of Deep Learning and an information theoretical model of the SAR information extraction process.

Biography: Mihai Datcu, received the MS and Ph.D. degrees in Electronics and Telecommunications from the University Politechnica Bucharest UPB, Romania, in 1978 and 1986. In 1999 he received the title Habilitationà diriger des recherché in Computer Science from University Louis Pasteur, Strasbourg, France. Since 1981 he is Professor with the Department of Applied Electronics and Information Engineering, Faculty of Electronics, Telecommunications and Information Technology (ETTI), UPB. Since 1993, he has been a scientist with the German Aerospace Center (DLR), Oberpfaffenhofen. Currently he is Senior Scientist and Image Mining research group leader with the Remote Sensing Technology Institute (IMF) of DLR, Oberpfaffenhofen. Since 2011 he is leading the Immersive Visual Information Mining research lab at the Munich Aerospace Faculty and he is director of the Research Center for Spatial Information at UPB. His interests are in Big Data Analytics, Data Science, Artificial Intelligence, Machine Learning and Computational Sensing. He has held Visiting Professor appointments with the University of Oviedo, Spain, the University Louis Pasteur and the International Space University, both in Strasbourg, France, University of Siegen, Germany, University of Innsbruck, Austria, University of Alcala, Spain, University Tor Vergata, Rome, Italy, Universidad Pontificia de Salamanca, campus de Madrid, Spain, University of Camerino, Italy, the Swiss Center for Scientific Computing (CSCS), Manno, Switzerland, China Academy of Science, Shenyang. From 1992 to 2002 he had a longer Invited Professor assignment with the Swiss Federal Institute of Technology, ETH Zurich. Since 2001 he has initiated and leaded the Competence Centre on Information Extraction and Image Understanding for Earth Observation, at ParisTech, Paris Institute of Technology, Telecom Paris, a collaboration of DLR with the French Space Agency (CNES). He has been Professor holder of the DLR-CNES Chair at ParisTech, Paris Institute of Technology, Telecom Paris. He initiated the European frame of projects for Image Information Mining (IIM) and is involved in research programs for information extraction, data mining and

knowledge discovery and data understanding with the European Space Agency (ESA), NASA, and in a variety of national and European projects. He is a member of the ESA Big Data from Space Working Group. He and his team have developed and are currently developing the operational IIM processor in the Payload Ground Segment systems for the German missions TerraSAR-X, TanDEM-X, and the ESA Sentinel 1 and 2. He received in 2006 the Best Paper Award, IEEE Geoscience and Remote Sensing Society Prize, in 2008 the National Order of Merit with the rank of Knight, for outstanding international research results, awarded by the President of Romania, and in 1987 the Romanian Academy Prize Traian Vuia for the development of SAADI image analysis system and activity in image processing. He is representative of Romanian in the ESA Industrial Policy Committee (IPC) and Earth Observation Program Board (EO-PB). He is IEEE Fellow. In 2017 he was awarded the Chair Blaise Pascal for international recognition in the field of Data Science in Earth Observation, with the Centre d'Etudes et de Recherche en Informatique (CEDRIC) at the Conservatoire National des Arts et Métiers (CNAM) in Paris.

Title: Radar, Phased-Arrays, Metamaterials, Stealth, Anti-Stealth, Ultra-Wideband, Cognitive Adaptivity, Mimo--Basics and Breakthroughs
Speaker: Dr. Eli Brookner, Raytheon Company, USA
Time: 19: 00 - 21: 30, October 16, 2018
Place: Yangtze VIP Room, 2nd Floor of Hotel (F)

Abstract: This tutorial covers recent developments in phased arrays updated to 2018. It provides a concise, introductory level survey of the fundamentals without dwelling on extensive mathematical derivations or abstruse theory. Instead a physical understanding is given. Covered in easy terms will be sidelobe cancellation (SLC), COGNITIVE ADAPTIVE ARRAY PROCESSING (CAAP) which provides full adaptive array processing without suffering its computation complexity. Finally, Space-Time Adaptive Array (STAP) for airborne platforms will be explained and related to the displaced phase center antenna (DPCA).

This course is intended for the engineer or scientist not familiar with phased-array antennas as well as the antenna specialist who wants to learn about other aspects of phased-array antenna systems as well as get the latest developments in array systems, such as: MIMO, metamaterial arrays, Extreme MMIC arrays, stealthing and cloaking, COGNITIVE ADAPTIVITY. The major emphasis will be on the system aspects of phased-arrays.

BASICS of Passive Electronic Scanned Arrays (ESAs) and Active Electronic Scanned Arrays (AESAs): Phase Steering, Time Delay Steering, Subarraying, Array Weighting, Monopulse, Duplexing, Array Thinning, Embedded Element, Array Weighting, Array Factor, Triangular vs Square Lattice, Tour of COBRA DANE ESA and PAVE PAWS AESA (both 6 stories high) via color slides. Limited and hemispherical scan phased arrays.

RECENT AESA DEVELOPMENTS: Patriot upgrade to 2016 state-of-the-art AESA; S-band AMDR AESA radar provides 30X sensitivity of SPY-1D(V). LOW COST PACKAGING: AESAs using commercial-off-the-shelf (COTS) hardware and packaging. EXTREME MMIC: Whole 256 element phased array on single chip at 60 GHz. DIGITAL BEAM FORMING (DBF): Reduces search power and time by almost a factor of two; Makes cognitive radars realizable; enables ultra low antenna sidelobes; MOORE'S LAW: Potential future continuation of Moore's Law via Spintronics, Memristors, Graphene, Quantum Computing. VERY LOW COST RADARS: for cars, UAVs, watch cell phones.

METAMATERIALS: low cost 2-D ESAs for satellite internet communications (at 10-15 GHz); for cell towers, for cars and UAV radars; Stealthing by absorption and by cloaking; wideband fractal metamaterials; Army 250-505 MHZ conformal antenna to replace tall whip antennas. WIDEBAND LOW PROFILE ANTENNA: 20:1 bandwidth.

COGNITIVE ADAPTIVE ARRAY PROCESSING (CAAP): Applied to jammers. Tremendous advantages over classical adaptive processing detailed. STAP and DPCA. SLC.

QUANTUM RADAR: Has potential to defeat stealth targets. LOW COST PRINTED MICROWAVE ELECTRONICS: 1.6 GHz printed diodes achieved (goal 2.4 GHZ). ELECTRICAL AND OPTICAL SIGNALS ON SAME CHIP: Will allow data transfer at the speed of light. BIODEGRADABLE ARRAYS OF TRANSISTORS OR LEDs: Imbedded under skin for detecting cancer or low glucose.

New MIMO (MULTIPLE INPUT MULTIPLE OUTPUT) Radar: Explained in simple physical terms instead of with heavy math. Covered are performance, waveforms, signal processing load, ability to handle jamming, performance re conventional radars. Where it makes sense to use: OTH, automobile radars, to combining existing radars to increased performance.

Biography: Dr. Eli Brookner worked at Raytheon Company from 1962 to retirement July 2014. There he was a Principal Engineering Fellow and worked on ASDE-X airport radar, ASTOR Air Surveillance Radar, RADARSAT II, Affordable Ground Based Radar (AGBR), major Space Based Radar programs, NAVSPASUR S-Band upgrade, COBRA DANE, PAVE PAWS, Missile Site Radar (MSR), COBRA JUDY Replacement, THAAD, Brazilian SIVAM, SPY-3, Patriot, BMEWS, UEWR, Surveillance Radar Program (SRP), Pathfinder marine radar, Long Range Radar (upgrade for >70 ATC ARSRs across USA), COBRA DANE Upgrade, AMDR, Space Fence, 3DELRR, FAA NexGen ATC radar program. Prior to Raytheon he worked on radar at Columbia University Electronics Research Lab. (now RRI), Nicolet and Rome AF Lab.

Received IEEE 2006 Dennis J. Picard Medal for Radar Technology & Application "For Pioneering Contributions to Phased Array Radar System Designs, to Radar Signal Processing Designs, and to Continuing Education Programs for Radar Engineers"; IEEE '03 Warren White Award; Radio Club of America (RCA) Armstrong Medal 2017; 2017 IEEE AESS Outstanding Organizational Leadership Award; Journal of the Franklin Institute Premium Award for best paper of 1966; IEEE Wheeler Prize for Best Applications Paper for 1998. Fellow of IEEE, AIAA and MSS. Member of the National Academies Panel on Sensors and Electron Devices for Review of Army Research Laboratory Sensors and Electron Devices Directorate (SEDD)

Published four books: Tracking and Kalman Filtering Made Easy, John Wiley and Sons, Inc., 1998; Practical Phased Array Antenna Systems (1991), Aspects of Modern Radar (1988), and Radar Technology (1977), Artech House. Gives courses on Radar, Phased Arrays and Tracking around the world (26 countries). Over 10,000 attended these courses. Published more than 230 papers, talks and correspondences. Six papers reprinted in Books of Reprints (one in two books). Contributed chapters to three books. Nine patents. Has given 6 webinars on radar (5 for the Microwave Journal [MJ]). Over 700 registered from over 60 countries for the last one given May 2, 2018.

Title: Electromagnetic Modeling of Vital Sign Detection and Human Motion Sensing Validated by Non-Contact Radar Measurements
Speaker: Dr. Ozlem Kilic, Catholic University of America, USA
Time: 19: 00 - 21: 30, October 16, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)

Abstract: The technology to analyze human motion activities has significantly advanced in the last few years. Even some gait analyses techniques have been recognized, however, most of these analyses are quite expensive, inefficient, require multitude of wearable sensors and produce vast amounts of data. On the other hand, it is still hard to understand these data and interpret them; while clinical use is hampered by the length of time and costs for carrying out these studies. Add to that in many biomedical applications, it is difficult to conduct realistic experiments or even obtain repeatable and identical experimental data due to the complex nature of human movements. Such capability is essential in understanding the human motion kinematics. In situations like this, it is imperative to use accurate models emulating closely real-life and utilize wave interpretation. Definitely, accurate electromagnetic (EM) modeling is essential for in depth analysis and prototyping and will significantly help in understanding the motion kinematics; but not for real-time testing. In this presentation, we have utilized such know-how capabilities to thoroughly investigate various human activities, ranging from tiny motions such as: vital signs detection in complex scenarios like victims under rubbles to the regular human activities such as walking and jogging. The models we have developed can be extended to investigate other activities like falling and motion abnormalities. In this effort, we validate our EM model for non-contact vital sign detection, and gait analysis using our radar system and will be discussed in details.

Biography: Ozlem Kilic received her D.Sc. and M.S. degrees from the George Washington University, Washington, DC in 1991 and 1996, respectively, and B.S. degree from the Bogazici University, Istanbul, Turkey in 1989, all in electrical engineering. She joined the Catholic University of America in 2005, where she is currently serving as the department chair. Prior to that, she was an Electronics Engineer at the U.S. Army Research Laboratory, Adelphi MD, where she managed Small Business Innovative Research (SBIR) Programs for the development of hybrid numerical electromagnetic tools. Dr. Kilic has over five years of industry experience at COMSAT Laboratories as a Senior Member of the Technical Staff and a Program Manager with specialization in satellite communications, link modeling and analysis, and phased arrays and reflector antennas for satellite communications system. Her research interests include antennas, wave propagation, satellite communications, numerical electromagnetics, and microwave remote sensing. She has been serving in leadership positions in a number of organizations such as IEEE AP-S, USNC URSI and ACES and has wide range of experience in education, membership development, technical committees, government/industry interface, program management.

Title: Wideband Moving Targets Surveillance
Speaker: Prof. François Le Chevalier, Delft University of Technology, Netherlands
Time: 19: 00 - 21: 30, October 16, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)

Abstract: When designing a new radar system, standard resolution trade-offs play a major role, providing the basic parameters of the radar, such as size, update rate, and range. Moreover, diversity has long been used for mitigating fading effects due to the fluctuation of targets and clutter. However, with the arrival of more flexible systems, using multiple parallel channels on transmit and receive, and wider instantaneous bandwidths, these standard trade-offs are becoming less simple – and more flexible. For example, resolution in velocity becomes dependent on the bandwidth, or diversity gains depend on range resolution. This is especially true for wideband radar waveforms, and can lead to significant benefits for detection of moving targets in adverse clutter.

Obviously, limitations still exist – although they are not always clearly evidenced in modern publications. In this tutorial, we will analyze the relations between range, Doppler, and angle, for detection, location and analysis of moving targets in clutter. The idea is to contribute to a better understanding of the real benefits of agile transmissions for detection of moving targets, focusing on the velocity and angular measurement improvements, and on the benefits in terms of power budget.

Special attention will be given to the quality of the different wideband sensor modes for long range surveillance, evaluated through their ambiguity functions, and new results on detection of moving targets in clutter will be provided to demonstrate the effectiveness of these new architectures for small targets detection at long range, in difficult environments.

Biography: François Le Chevalier is Emeritus Professor "Radar Systems Engineering" at Delft University of Technology (The Netherlands), and retired Chief Scientist of Thales Air & Land Systems. Mr. Le Chevalier began his career at the Office National d'Etudes et de Recherches Aérospatiales (Onera), where he initiated research on radar target and background signatures processing. In 1986, Mr. Le Chevalier joined Thomson-CSF (now Thales), where he pioneered French developments in adaptive digital beamforming and STAP radar systems demonstrations, and shared apertures and multisensor concepts design and validation. In 1998, he joined the Thales Airborne Systems group, as Scientific Director, in charge of advanced research and developments coordination (airborne radars, electronic warfare, airborne mission systems). His current research activities include space-time coding for active antenna systems, and wideband unambiguous radar systems.

He has been active in- or chairing- the Technical Program Committees of most IEEE International Radar Conferences since Brest, 1999, has recently been the Honorary Chair of SEE/IEEE International Radar Conference 2014 in Lille, France, and will be the Honorary Chair of SEE/IEEE International Radar Conference 2019 in Toulon, France.

An author of many papers, tutorials, and patents in radar and electronic warfare, Prof. Le Chevalier, an Emerite member of the Société des Electriciens et des Electroniciens (SEE), is the author of a book on "Radar and Sonar Signal Processing Principles" published by Artech House in 2002, editor of "Non-Standard Antennas", published by Wiley in 2010, and co-author of "Principles of Modern Radar: Advanced Techniques", Scitech, IET Publishing, 2013, and of "Advanced Ultrawideband Radar: Signals, Targets, and Applications", CRC Press, 2016.

Title: Introduction to Inverse Synthetic Aperture Radar
Speaker: Prof. Marco Martorella, University of Pisa, Italy
Time: 19: 00 - 21: 30, October 16, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)

Abstract: Inverse Synthetic Aperture Radar (ISAR) is a technique used for reconstructing radar images of moving targets. Often, modern high-resolution radars implicitly offer the system requirements needed for implementing ISAR imaging. ISAR images can be obtained by means of a signal processing that can be enabled both on and off-line by using dedicated image formation algorithms. Automatic Target Recognition (ATR) systems are often based on the use of radar images because they provide a 2D e.m. map of the target reflectivity. Therefore, classification features that contain spatial information can be extracted and used to increase the performance of classifiers. The understanding of ISAR image formation is crucial for optimizing ATR systems that are based on such images.

Description: This tutorial aims at providing an introduction to ISAR. The lecture is divided in three parts: the first part deals with principles of ISAR, the second part concerns ISAR processing and the third part focuses on advanced ISAR systems, such as bistatic, passive and multistatic ISAR systems. The ISAR system is introduced by defining the radar-target geometry and by considering simple radar concepts. The derivation of the ISAR processor is obtained by defining the signal model and by interpreting it in the Fourier domain. Differences between ISAR and SAR are also highlighted in order to better understand ISAR concepts.Basic and advanced techniques are presented in order to provide an overview of the current methods used for implementing ISAR and improving its performance. In particular, the problem of ISAR image autofocus is analysed in details and several solutions are presented. Bistatic and multistatic ISAR will also be introduced together with suitable ISAR techniques that aim at forming bistatic and multistatic ISAR images.Several examples with simulations and real data are provided throughout the tutorial in order to demonstrate the effectiveness and potentiality of ISAR imaging. 2.5. Interpretation of the received signal in the Fourier Domain.

Biography: Marco Martorella received his Laurea degree (Bachelor+Masters) in Telecommunication Engineering in 1999 (cum laude) and his PhD in Remote Sensing in 2003, both at the University of Pisa. He is now an Associate Professor at the Department of Information Engineering of the University of Pisa where he lectures “Fundamentals of Radar” and “Digital Communications” and an external Professor at the University of Cape Town where he lectures “High Resolution and Imaging Radar” within the “Masters in Radar and Electronic Defence”. He is author of about 170 international journal and conference papers, three book chapters and a book entitled “Inverse Synthetic Aperture Radar Imaging: Principles, Algorithms and Applications”. He has presented several tutorials at international radar conferences and organised a special issue on Inverse Synthetic Aperture Radar for the Journal of Applied Signal Processing. He is a member of the IET Radar Sonar and Navigation Editorial Board, a senior member of the IEEE and a member of AFCEA. He is currently the chair of the NATO-awarded research task group NATO SET-196 on “Multichannel/Multistatic radar imaging of non-cooperative targets” and co-chair of NATO SET-236 on “Robust compressive sensing techniques for radar and ESM applications”. He was also chair of the specialist meeting NATO SET-228 on “Radar Imaging for Target Identification”. He has been recipient of the 2008 Italy-Australia Award for young researchers, the 2010 Best Reviewer for the IEEE GRSL, the IEEE 2013 Fred Nathanson Memorial Radar Award and the 2017 NATO SET Panel Excellence Award. He is co-founder of a radar systems-related spin-off company, namely ECHOES. His research interests are mainly in the field of radar imaging and multichannel signal processing.

Title: Radar Clutter Modelling and Exploitation
Speaker: Prof. Simon Watts, University College London, UK
Time: 19: 30 - 22: 00, October 17, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)

Abstract: Clutter and the need to detect targets in clutter is a significant part of radar design. The development of methods to model clutter and CFAR detection schemes for targets in clutter are still at the forefront of radar research, as evidenced by the numbers of papers on these topics in the radar journals and at the radar conferences. Models of clutter are only of value if they can be used in practice for the development of real radar systems. The tutorial will help attendees to understand the impact of clutter on radar design and performance, and how to use clutter models to develop better designs. This insight is relevant not only to radar systems engineers but also to those responsible for specifying and procuring new radar systems for operational use.

The first part of the tutorial will introduce the methods used to describe radar clutter and show how physical and empirical models are developed. The second part of the tutorial will describe how clutter models are used in different ways to predict and analyse the performance of radar systems in the various stages of the life cycle of a radar system. The tutorial will particularly emphasise the modelling of sea clutter and it use in the design and development of airborne maritime surveillance radars. The third part of the tutorial will describe how clutter models are used to develop realistic simulations of radar signals. Finally, the prediction of performance using the radar range equation and the various statistical models of clutter will be described for both non-coherent and coherent radar detection processing.

Biography: Prof. Simon Watts graduated from the University of Oxford in 1971, obtained an MSc and DSc from the University of Birmingham in 1972 and 2013, respectively, and a PhD from the CNAA in 1987. He was deputy Scientific Director and Technical Fellow in Thales UK until 2013 and is a Visiting Professor in the department of Electronic and Electrical Engineering at University College London. He is author and co-author of over 65 journal and conference papers, a book on sea clutter and several patents. He was chairman of the international radar conference RADAR-97 in Edinburgh UK. He was appointed MBE in 1996 for services to the UK defence industry and is a Fellow of the Royal Academy of Engineering, Fellow of the IET, Fellow of the IMA and Fellow of the IEEE.

Title: Constant False Alarm Rate Technique
Speaker: Prof. Antonio De Maio, University of Naples Federico II, Italy
Time: 19: 30 - 22: 00, October 17, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)

Abstract: The objective of this tutorial is to teach the theory of Constant False Alarm Rate (CFAR) techniques according to a rigorous academic style based on the use of statistical decision theory.

Intended Audience:

This course is suitable both for young students who are approaching radar signal processing and for radar practitioners needing a rigorous and academic point of view on the fundamentals of CFAR algorithms.

Biography: Antonio De Maio (S'01-A'02-M'03-SM'07-F'13) was born in Sorrento, Italy, on June 20, 1974. He received the Dr.Eng. degree (with honors) and the Ph.D. degree in information engineering, both from the University of Naples Federico II, Naples, Italy, in 1998 and 2002, respectively. From October to December 2004, he was a Visiting Researcher with the U.S. Air Force Research Laboratory, Rome, NY. From November to December 2007, he was a Visiting Researcher with the Chinese University of Hong Kong, Hong Kong. Currently, he is a Professor with the University of Naples Federico II. His research interest lies in the field of statistical signal processing, with emphasis on radar detection and optimization theory applied to radar signal processing. Dr. De Maio is a Fellow member of IEEE and the recipient of the 2010 IEEE Fred Nathanson Memorial Award as the young (less than 40 years of age) AESS Radar Engineer 2010 whose performance is particularly noteworthy as evidenced by contributions to the radar art over a period of several years, with the following citation for ``robust CFAR detection, knowledge-based radar signal processing, and waveform design and diversity". Dr. De Maio is a co-editor of the recent book “Modern Radar Detection Theory”, Scitech publishing 2015.

Title: Geostationary SARs for Continuous SAR Imaging: Systems and Application
Speaker: Prof. Andrea Monti Guarnieri, Politecnico di Milano, Italy
Time: 19: 30 - 22: 00, October 17, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)

Abstract: This age is experiencing an increase and densification in systems for ubiquitous and continuous remote sensing. Constellation of optical and SAR sensors attains the sub-metric resolution and nearly daily revisit, while drones are becoming the primary source for fast surveillance and small scale observations, even in presence of cloud cover. In this frame, dense SAR systems are developing fast, and dense constellations of cubesat and micro-satellite are planned for the near future.

The capability of all-day-all-weather observations, makes of SAR a game changer in the future of monitoring and surveillance and, in this respect, a constellation placed in geostationary orbit is the most effective in providing fast revisit and super-continental access.
In the keynote, we review the concept of geostationary SARs, in a seamless configuration from a single satellite to a constellation, the pie in the sky. We discuss about orbits, technologies and challenges, occurring from atmospheric turbulence, target motion in the long integration time and interferences from on-ground and on-space systems.

We then discuss about applications, we show the potentials of coherent change detection for surveillance and mapping damages after hazards, and latest results in SAR interferometry particularly in precise deformation monitoring, penetration in canopies and subsurfaces (glacier and deserts), 3D imaging of volumes, sensitivity to soil moisture and generation of water vapor maps.

Biography: Andrea Monti Guarnieri, M.Sc. cum laude (1988) in electronic engineering, IEEE-member, full professor within "Dipartimento di Elettronica, Informazione e Bioingegneria". He has been teaching several courses on digital and statistical signal & image processing, telecommunications and RADAR.

Forty years of professional activities in SAR systems design and processing, led him in 2003 to found aresys, a PoliMI spin-off, that he served as president up to 2015. Aresys complements the most promising innovations introduced in his research activity at PoliMI by developing them into customized solutions involving RADAR and geophysical systems. He has been leading European Space Agency projects since the eighties, he has been a member of the ESA Quality Working Group for spaceborne SAR missions ERS and ENVISAT programs, he supported the commissioning phases for ENVISAT and SENTINEL-1, and he is cooperating with CONAE (Argentinean space agency) in the development of SAOCOM constellation. He is present member of POLIMI laboratory Geolab. His current interests focus on processing and calibration of RADAR based systems: ground, airborne and spaceborne SAR, multi-baseline interferometric and MIMO configurations and in studying new systems and applications for remote sensing, like SAOCOM-CS bistatic mission and geostationary SAR.

Prof. Monti Guarnieri co-authored over 200 scientific publications, of which 45 international peer reviewed publications, (H-Index 29, ~4000 citations); he was awarded four "Best Paper" in international symposia (IGARSS '89, EUSAR 2004, EUSAR 2012, IET 2015) and he is co-author of four patents. He is reviewer of journals in remote sensing, signal processing, image processing, geophysics, geodynamics and antennas and propagations, and he has been in many technical boards of SAR and RADAR conferences. In 2014 he was appointed by the board of directors member of Technical-scientific Committee of Italian Space Agency (ASI). In 2016 he has been nominated by the Italian ministry alternate member in the High Level Working Group of GEO.

Title: Micro-Doppler Signatures: Principles, Analysis and Applications
Speaker: Dr. Carmine Clemente, University of Strathclyde, UK
Time: 19: 30 - 22: 00, October 17, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)

Abstract: The micro-Doppler analysis is the study of the time varying Doppler effect from multiple scattering centres with different dynamics. Over the past few years the potentials of micro-Doppler signature analysis has been demonstrated in areas such as enhanced target detection, characterization and tracking. The advantage of micro-Doppler resides in the distinctive Doppler modulation from different targets components that allow unique features to be obtained.

This topic is highly relevant to the conference as micro-Doppler can play a significative role in modern radar systems in both civilian and defence applications. For instance, thanks to the enhance in computational capabilities, the exploitation of micro-Doppler analysis is possible in a plethora of applications such as condition monitoring, urban surveillance, automotive and manufacturing.

This topic is of great interest to both the academic and industrial community and it is expected that a good number of attendees (10-15) will be at the tutorial. The target attendees include all levels of professionals, from graduate students to professors and from engineers to industrial managers.

Outline:Introduction: the introduction to the basic Doppler principle will be given together with some basic concepts relevant to micro-Doppler acquisition and processing. The micro-Doppler phenomenon will be defined, then the importance of proper sampling and I/Q demodulation will be highlighted. Slow-time and fast-time differences together with the trade-offs required to observe micro-Doppler will be depicted;

Time-Frequency Analysis: introductions to the time-frequency analysis and the most used tools will be given. Wide-band and Narrowband Spectrogram, Gabor Uncertainty principle and Energy distributions will be explained with illustrative examples to provide a useful set of tools for micro-Doppler analysis;

Canonical Cases- Rigid Bodies: The basic principles of kinematic motion of rigid bodies will be given in order to investigate some canonical cases, rotation matrices will be also introduced in order to have all the audience at the same level of knowledge. The case of a vibrating point target and rotating body will be analysed, completing the first part of the tutorial with the case study of the micro-Doppler from a helicopter rotor;

Non Rigid Bodies: the micro-Doppler analysis from non-rigid bodies will be introduced. Modelling and simulation approaches will be described. Two cases will be investigated in detail: human gait and trotting of a German shepherd. For both cases the kinematic models translation in MATLAB environment will be analysed. Furthermore, the micro-Doppler signatures from different human activities will be introduced, including some resulting relevant in healthcare applications;

Signature Extraction Techniques: The importance of the extraction of the micro-Doppler from clutter and from the main body return will be introduced using some example signal processing techniques, such as background subtraction, filtering and subspace decompositions;

Algorithms for Feature Extraction for Micro-Doppler Based ATR: The specific case of target recognition based on micro-Doppler will be illustrated as example of micro-Doppler application.

The principles of feature extraction and example of features extraction techniques applied to micro-Doppler will be given;

Real time recording and visualization of real radar data: Using a 24 GHz CW radar some real time data acquisition will be performed. The real time micro-Doppler will be shown in MATLAB allowing interactions from the tutorial attendees. A set of tips for experimental campaigns will be also provided.

Biography: Dr. Carmine Clemente is Lecturer and Chancellor's Fellow in Sensors Systems and Asset Management at the Department of Electronic and Electrical Engineering at the University of Strathclyde, Glasgow, UK since 2016. He obtained his PhD in Signal Processing from the University of Strathclyde in 2012. He received the Laurea cum laude (BSc) and Laurea Specialistica cum laude (MSc) degrees in Telecommunications Engineering from Universita' degli Studi del Sannio, Benevento, Italy, in 2006 and 2009, respectively. Dr. Clemente research interests lie on advanced radar signal processing algorithms, MIMO radars, passive radar systems and micro-Doppler analysis, extraction and classification. He published over 60 papers in journals and proceedings and he was co-recipient of the best student paper competition at the IEEE Radar conference 2015.

Title: Spectrum Engineering and Waveform Diversity
Speaker: Prof. Hugh D. Griffiths, University College London, UK
Time: 19: 30 - 22: 00, October 18, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)

Abstract: The RF electromagnetic spectrum, extending from below 1 MHz to above 100 GHz, represents a precious resource. It is used for a wide range of purposes including communications, radio and television broadcasting, radio navigation, and sensing. Radar represents a fundamentally important use of the EM spectrum, in applications which include air traffic control, geophysical monitoring of Earth resources from space, automotive safety, severe weather tracking, and surveillance for defence and security.

Nearly all services have a need for greater bandwidth. As the demand continues to grow for more access to spectrum by all these interested parties, there will be ever-greater competition for this finite resource. At the same time, modern digital signal processing techniques allow precise wide-bandwidth radar waveforms to be generated, with high spectral purity and whose properties can be varied adaptively, and this capability forms the basis of the subject of waveform diversity. The purpose of this tutorial is to describe and explain current work in spectrum engineering and waveform diversity, including the nature of the spectrum congestion problem, radar transmitter spectral purity, Passive Radar and Commensal Radar, approaches to spectrum regulation, and dynamic waveform optimization.

Biography: Hugh D. Griffiths holds the THALES/Royal Academy Chair of RF Sensors in the Department of Electronic and Electrical Engineering at University College London, England. From 2006–2008 he served as Principal of the Defence Academy College of Management and Technology. He received the MA degree in Physics from Oxford University in 1975, then spent three years working in industry, before joining University College London, where he received the PhD degree in 1986 and the DSc(Eng) degree in 2000, and served as Head of Department from 2001–2006.

He served as President of the IEEE AES Society for 2012/13. His research interests include radar systems and signal processing (particularly bistatic radar and synthetic aperture radar), and antenna measurement techniques. He serves as Editor-in-Chief of the IET Radar, Sonar and Navigation journal. He has published over five hundred papers and technical articles in the fields of radar, antennas and sonar. He has received several awards and prizes, including the IEEE Picard Medal (2017), IET Achievement Medal (2017), the IEEE AES Mimno Award (2015), the IET A.F. Harvey Prize (2012) and the IEEE AES Nathanson Award (1996). He is a Fellow of the IET (previously IEE), Fellow of the IEEE, and in 1997 he was elected to Fellowship of the Royal Academy of Engineering.

Title: Tutorial on Wide-Band, Wide-Angular Scanning Antennas for Future Radar
Speaker: Prof. Leo P. Ligthart, Delft University of Technology, Netherlands
Time: 19: 30 - 22: 00, October 18, 2018
Place: Yangtze VIP Room, 2nd Floor of Hotel (F)

Abstract: In modern radio and radar the antenna arrays play an important multi-function role with respect to angular pattern and frequency characteristics. Most literature exists on so called 'dense' arrays with equidistant spacing between the antenna elements in the order of half the wavelength. Mutual coupling between the elements and wide-angular scanning requirements give degradation in the dense array performance and cause many headache problems for generations of antenna engineers.

For wide-angular scanning, individual transmit-receive modules are needed meaning that high gain dense antenna arrays with many elements are costly. In so called 'sparse' arrays the mutual spacing is larger. Sparse arrays are interesting because they use 'array thinning' and have therefore a potential lower cost.

In order to maximize the array efficiency in sparse phased array radar, the transmit power per element should be equal with a threat of high side lobes near the main lobe and unwanted grating lobes. For avoiding grating lobes in sparse arrays the spacing between elements should be non-equidistant. The so obtained spatial distribution of elements leads to a spatial field distribution over the array. Special design of this spatial field distribution can benefit the lowering of side lobes near the main lobe.

Biography: Prof. L.P. Ligthart, Em. Prof. Delft University of Technology Chairman Conasense.

Career/Employment:

1968-2011: Faculty of Electrical engineering, Delft University

1976-1977 : Chalmers University Gothenburg, Sweden

1988-2011: Professor Microwaves, Remote Sensing and Radar, Delft University

1994-2011: Director IRCTR, Delft University of Technology

2011-present: Emeritus Prof. Delft University of Technology

2011-present: Chairman CONASENSE

2012-present: Adjunct-professor UI, Jakarta, Indonesia

2014-present: Adjunct-professor ITS, Surabaya, Indonesia

2014-present: Adjunct-professor Beijing Institute of Technology, China

2017-present: World Class Professor, Indonesia.

Specialization

Main fields: antennas & propagation, radar and remote sensing

Other fields: satellite, mobile and radio communication

Selection of Honours, Awards, Fellowships, Memberships of Professional Societies:
Veder radio award, 1981, IEE-Blumlein-Brown-Willans Premium Award, 1982, FIET(1983), FIEEE (2001), Doctor Honoris Causa MSTUCA, Russia, 1999, Doctor Honoris Causa TUCSR , Russia, 2001, Academician Russia (2000), Tsiolkorsky Award (2003), IEEE–MIKON award (2004), Distinguished Service Award EuMA (2008), Doctor Honoris Causa MTA, Romania, 2010

Selected activities in organisations:
Board of Directors EuMA, Board of Governors IEEE AESS, International Director IEEE-AESS Europe, TUD Student Counsellor IET, TUD Student Counsellor IEEE, Member Organising Committee URSI2002 General Assembly, Maastricht, Chairman 28th EuMC, 1st EuMW98, Chairman 1st EuRAD conference 2004.

Scientific output:
H-index: 35 and 5450 citations, over 600 papers ,4 Patents,7 books

Major achievements of Prof Ligthart, director of IRCTR-Delft University (1994-2011):

1. State of the art experimental research facilities in the field of antennas, radar and radio.
2. International co-operations with more than 21 universities and 23 scientific institutes.
3. Over 40 international Project Agreements.
4. Project leader in the field of polarimetric atmospheric radar, collision avoidance radar, GPR and wireless communications with support from industries and institutes
5. Co-operations in Russia and in Indonesia via IRCTR branches in Tomsk, Russia and Bandung, Indonesia
6. Founder of the first European Microwave Week (EuMW) in Amsterdam in 1998. Founding member of the European Microwave Association (EuMA)
7. Initiator of the yearly European Radar (EuRAD) conference in 2004
8. Advisor of over 55 PhD candidates

Title: Phase Calibration of Airborne SAR Data for Tomographic Applications
Speaker: Prof. Fabio Rocca, Politecnico di Milano, Italy
Time: 19: 30 - 22: 00, October 18, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)

Abstract: Synthetic Aperture Radar (SAR) data collected over a two dimensional (2D) synthetic aperture can be processed to focus the data in the 3D space, using SAR Tomography. A fundamental requirement for this processing is to have precise knowledge of the platform position along the 2D synthetic aperture. This requirement is not easily met in the case of repeat-pass flights. Sub-wavelength platform position errors give rise to residual phase screens among different passes, which hinder coherent focusing in the 3D space. We propose a strategy for calibrating repeat-pass tomographic SAR data in the absence of reference targets, prior information about terrain topography, and even in the absence of any point- or surface-like target within the illuminated scene. The problem is tackled by observing that multiple flight lines provide enough information to jointly estimate platform and target positions. The proposed approach is validated using real data from the ESA campaigns AlpTomoSAR, BioSAR 2008, and TropiSAR. A cross-check of the results from simultaneous P- and L-Band acquisitions from the TropiSAR data-set indicates that the dispersion of the retrieved flight trajectories is limited to a few millimeters.

Biography: Fabio Rocca, (Dr. Ing. Electronics, 1962) is emeritus Professor of Telecommunications at the Politecnico di Milano and Associate to the Italian Space Agency. Co-founder of two technological companies, Tele-Rilevamento Europa and Aresys, both spin off of Politecnico di Milano.

He invented in 1968 the motion compensation technique, nowadays generally used for video compression. In seismic prospecting for oil, in cooperation with ENI, he studied multichannel filtering, interpolation of faulted surfaces, migration in the frequency domain, bistatic and multistatic processing, blind deconvolution. In Synthetic Aperture Radar he first used seismic migration for focusing, and jointly proposed the use of Permanent Scatterers. He is currently working on the design of bistatic and geosynchronous SAR systems, Polarimetric Tomography, and on airborne radar systems.

Prof. Rocca is former member (1993-2016) of the Scientific Advisory Groups of the European Space Agency for the radar satellites ERS, Envisat, Sentinel–1, BIOMASS, and currently of the ESA Advisory Committee for Earth Observation, ACEO. In cooperation with LIESMARS, Wuhan University, he participates from 2004 to the Chinese European space research programs Dragon (1 - 4), sponsored by ESA and by NRSCC.

Prof. Rocca is Past President of the European Association of Geoscientists and Engineers (1987), honorary Member of the Society of Exploration Geophysicists (1989) and of the EAGE (1998). Italgas Award 1989 and Rhein Foundation 1999 Technology Award for the invention of motion compensation. Doctor Honoris Causa in Geophysics of the Institut Polytechnique de Lorraine, 2001. EAGE Erasmus award for lifetime achievements, 2009. ENI Prize for New Frontiers for Hydrocarbons (shared with A. Ferretti, CEO of TRE), 2012. Chinese Government International Scientific Technological Cooperation Award, 2013. Prof. Rocca coauthored more than 300 publications and participates to 12 patents.

Title: Ultra Wide Band Surveillance Radar
Speaker: Prof. Mark E. Davis, Independent Consultant, USA
Time: 19: 30 - 22: 00, October 18, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)

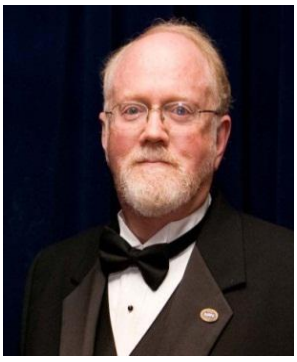
Abstract: Ultra Wide Band Surveillance Radar is an emerging technology for detecting and characterizing targets and cultural features for military and geosciences applications. To characterize objects near and under severe clutter, it is necessary to have fine range and cross range resolution. The resultant wide bandwidth classifies the systems as ultra wideband, requiring special treatment in frequency allocation. This Tutorial is divided into four parts.

The early history of Battlefield Surveillance Radar: battlefield surveillance from manned and unmanned aircraft, along with early experiments in foliage penetration are covered. There were some very interesting developments in radar technology that enabled our ability to detect fixed and moving objects under dense foliage. Examples of airborne phased array antennas and UWB radars will be summarized.

UWB Frequency Allocation Process: The current US regulations on UWB spectral design, along with the need for frequency avoidance will be covered. With the characterization of UWB, it is necessary to tailor the transmit pulses to avoid sensitive emergency and communications receivers. Particular note will be taken on the benefits and difficulties in designing these ultra-wideband (UWB) systems, and operation in real world electromagnetic environments.

UWB Synthetic Aperture Radar (SAR) A brief description of several UWB surveillance SAR systems will be provided, along with illustrations of the SAR image and fixed object detection capability. Techniques developed for ultra wideband and ultra wide angle image formation will be presented. Next the benefits of polarization diversity will be quantified in detecting and characterizing both man made and natural objects. There is a clear benefit for use of polarization in the target characterization and false alarm mitigation.

New research in Multi-mode Ultra-Wideband Radar, with the design of both SAR and moving target indication (MTI) FOPEN systems. The last two sections of the tutorial will illustrate new technologies that have promise for future multimode operation: the need to detect low minimum discernable velocity movement; and the operation of bistatic SAR in concert with a stationary GMTI illumination waveform.



Biography: Dr Mark E Davis has over 50 years' experience in Radar technology and systems development. He has held senior management positions in the Defense Advanced Research Projects Agency (DARPA), Air Force Research Laboratory, and General Electric Aerospace. At DARPA, he was the program manager on both the foliage penetration (FOPEN) radar advanced development program and the GeoSAR foliage penetration mapping radar. Dr Davis wrote the text "Foliage Penetration Radar – Detection and Characterization of Objects Under Trees", published by Scitech Raleigh NC in March 2011, His education includes a PhD in Physics from The Ohio State University, and Bachelor and Masters Degrees in Electrical Engineering from Syracuse University. He is a Life Fellow of both the IEEE and Military Sensing Symposia, and a member of the Board of Governors, VP Conferences, and past-Chair the Radar Systems Panel of the IEEE Aerospace Electronics Systems Society. He is the 2011 recipient of the AESS Warren D White Award for Excellence in Radar Engineering, and the 2018 IEEE Dennis J. Pickard Medal for Radar Technologies and Applications.

Title: Radar Target Recognition via ISAR Images
Speaker: Prof. Kyung-Tae Kim, Pohang University of Science and Technology, South Korea
Time: 19: 30 - 22: 00, October 18, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)

Abstract: Inverse Synthetic Aperture Radar (ISAR) images show a two-dimensional (2-D) spatial distribution of scattering features of a target. There are several important issues in forming robust and high resolution ISAR images: translational and rotational motion compensation for focused ISAR images, selection of time-frame and length for robust image formation, and cross-range scaling for proper image interpretation. Over the past ten years, many researchers have been dealing with these issues via various signal processing tools and techniques. However, the applications of ISAR images have not been satisfactorily addressed. In particular, some researchers made an attempt to recognize target types using ISAR images via their own distinctive ways, but it seems that those attempts did not based on any solid theoretical background and could not suggest any unified framework for target recognition via ISAR images. The goal of target recognition via ISAR images can be achieved, only when the knowledge on scattering phenomenology, ISAR image formation, pattern recognition, and machine learning is effectively combined and merged to identify a specific ISAR image of a target. In this tutorial, various endeavors for past 20 years in my laboratory to enhance the target recognition performance using ISAR images will be summarized and reviewed. First, several issues of ISAR images to be addressed for target recognition will be reviewed: scattering phenomenology, cross-range scaling, variable cross-range resolution. Then, the process of feature extraction from ISAR images is discussed to enhance target recognition capability, compared to the direct use of ISAR image itself, i.e., template matching. Finally, the classifier architectures for ISAR images, developed in my laboratory, are presented, and they are extended to bi-static and multi-static ISAR images via information fusion strategy.

Biography: Prof. Kyung-Tae Kim received the B.S. (1994), M.S. (1996), and Ph.D. (1999) degrees from Pohang University of Science and Technology (POSTECH), Pohang, South Korea, all in Electrical Engineering. From 2002 to 2010, he was a faculty member with the Department of Electronic Engineering, Yeungnam University. Since 2011, he has been with the Department of Electrical Engineering, POSTECH, Pohang, South Korea, and he is currently a Professor. During 2012-2017, He served as the Director of the Sensor Target Recognition Laboratory, sponsored by the Defense Acquisition Program Administration and the Agency for Defense Development. Currently, he is the Director of both the Unmanned Surveillance and Reconnaissance Technology (USRT) Research Center, and Radar & ElectroMagnetics Signal Processing (REMS) Laboratory at POSTECH. He is an author of about 200 papers on journals and conference proceedings, and has been the recipient of several outstanding research awards and best paper awards from the Korea Institute of Electromagnetic Engineering and Science (KIEES), and international conferences. He is a member of the IEEE and of the KIEES. He is currently carrying out several research projects funded by Korean government and several industries. His research interests are mainly in the field of radar signal processing and system modeling: SAR/ISAR imaging, target recognition, direction of arrival estimation, micro-Doppler analysis, automotive radars, digital beamforming, electronic warfare, and lectromagnetic scattering.

Oral Sessions

13: 30 – 15: 30, October 17					
Sessions	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
13:30	F1092	D1130	Quanhua Liu	S1753	A1141
13:50	C0411	Junfeng Wang	C0786	S1366	S7436
14:10	F0028	Zegang Ding	C0846	C0472	S7266
14:30	C0646	D0589	C0464	C0429	S7844
14:50	A0981	D0295	C0728	C0386	S7858
15:10	A0721	D0040	C0234	A1148	C0503
16: 30 – 18: 30, October 17					
Sessions	**Session 6**	**Session 7**	**Session 8**	**Session 9**	**Session 10**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
16:30	C0073	S3688	C0306	Xiaolong Chen	D0132
16:50	A0751	S3732	A0985	S2267	D0923
17:10	Xiaoya Lee	S3794	E1018	S2488	D1016
17:30	D0597	C0281	B0679	C0642	D0921
17:50	E0669	S3673	E0955	D0643	D1094
18:10	C1040	S3687	C1052	S2879	A0968
13: 30 – 15: 30, October 18					
Sessions	**Session 11**	**Session 12**	**Session 13**	**Session 14**	**Session 15**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
13:30	Weidong Hu	A1070	Junli Liang	Jianbing Li	S81159
13:50	Bin Deng	S101021	A0218	C0554	A0183
14:10	A0124	S101028	A1116	C0263	Zhi Zhang
14:30	B0866	S101080	A0087	C0467	S81160
14:50	B1059	S101076	C1024	C0523	S81091
15:10	F0223	S10903	D0162	C0810	
16: 30 – 18: 30, October 18					
Sessions	**Session 16**	**Session 17**	**Session 18**	**Session 19**	**Session 20**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
16:30	Lan Du	E0508	S61118	Xiaolei Lv	Hongqiang Feng
16:50	F0275	Kunyi Guo	Ling Wang	Junhuan Peng	Haikou Wang
17:10	C0744	C0346	D0668	D1015	Gao Hu
17:30	C1060	C1155	D0416	D0321	S81093
17:50	C1127	E0764	D0485	D0716	C0569
18:10	C0960	C0706	D0697	C1132	

08: 00 – 10: 00, October 19					
Sessions	**Session 21**	**Session 22**	**Session 23**	**Session 24**	**Session 25**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
08:00	Xiaolan Qiu	D0188	C1101	C0198	Tian Xia
08:20	S5237	E0349	C0626	D0675	Zhiwei Li
08:40	S5595	E0273	S41105	C1078	Yuzhi Zheng
09:00	S51020	E1106	C0842	F0752	D0364
09:20	S5978	F1196	C1035	C0834	C1022
09:40	C0781	D0335	C0712	C0212	D0390
10: 30 – 12: 30, October 19					
Sessions	**Session 26**	**Session 27**	**Session 28**	**Session 29**	**Session 30**
Place&Time	**Yangtze Room A**	**Yangtze VIP Room**	**Yangtze Room B**	**Yangtze Room 2**	**Yangtze Room 3**
10:30	Bo Chen	S7398	S91102	Gang Li	C0941
10:50	D0543	S7421	Junjie Wu	C1019	S6274
11:10	C0648	S71075	F0164	C0376	D0420
11:30	S61138	S7527	D1121	C0509	D1131
11:50	C0255	S7593	D0815	B0365	C0994
12:10	C1061	S7952	F0116	C0270	D0093

Oral Session 1: Advanced Radar I

Time: 13: 30 - 15: 30, October 17, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)
Chairs: Prof. Alfonso Farina, Leonardo, Land & Naval Division Consultant, Italy
Prof. Teng Long, Beijing Institute of Technology, China

F1092 **COGNITIVE HF RADAR**
13: 30
Stuart Anderson
Department of Physics, University of Adelaide, Adelaide, SA 5009, Australia

C0411 **QUANTUM DETECTION THEORY AND OPTIMUM STRATEGY IN**
13: 50 **QUANTUM RADAR SYSTEM**
Sheng-Zhi Zhao[1, 2*]
[1]Nanjing Research Institute of Electronics Technology, Nanjing 210039, China
[2]Key Laboratory of IntelliSense Technology, CETC, Nanjing 210039, China

F0028 **COGNITIVE TARGET DETECTION BASED ON BAYESIAN APPROACH**
14: 10 **IN RADAR**
Ning Ma[1], Li Wang[1*], Jun Tang[1], Qingmin Liao[1], Yunlei Zhang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, P.R. China

C0646 **NARROW BAND SPACE SCANNING TWO DIMENSIONAL**
14: 30 **LINEAR FREQUENCY DIVERSE ARRAY RADAR**
Ramazan Çetiner[1] and Altunkan Hizal[1]
[1]Radar and Electronic Warfare Systems, Aselsan, Ankara, Turkey

A0981 **A PROPOSAL OF MULTIPLE ACCESS FMCW RADAR FOR**
14: 50 **INTER-RADAR INTERFERENCE AVOIDANCE**
Mikihiro Kurosawa[1], Takuya Nozawa[1], Masahiro Umehira[1*], Xiaoyan Wang, Shigeki Takeda[1], Hiroshi Kuroda[2]
[1]Graduate School of Science and Engineering, Ibaraki University Hitachi, Japan
[2]Hitachi Automotive Systems, Ltd., Hitachinaka, Japan

A0721 **COMMUNICATING RADAR USING FSK AND FRACTIONAL FOURIER**
15: 10 **TRANFROM FOR AUTOMOTIVE APPLICATIONS**
Pasquale Striano, Christos V. Ilioudis, Carmine Clemente and John J. Soraghan
Center for Excellence in Signal and Image Processing University of Stratclyde Glasgow, UK

Oral Session 2: SAR Imaging I

Time: 13: 30 - 15: 30, October 17, 2018
Place: Yangtze VIP Room, 2nd Floor of Hotel (F)
Chairs: Prof. Motoyuki Sato, Tohoku University, Japan
Prof. Tao Zeng, Beijing Institute of Technology, China

D1130 **COHERENT 3D IMAGING USING L-SHAPED ANTENNA ARRAY AND**
13: 30 **GROUND BASED NOISE WAVEFORM SAR**
Sergii Lukin, Pavlo Vyplavin, Volodymir Palamarchuk, Peter Sushchenko, Nikolai Zaets and Konstantin Lukin
LNDES, O.Ya. Usikov Institute for Radiophysics and Electronics
National Academy of Sciences of Ukraine, Kharkiv, Ukraine

13: 50 **DEVELOPMENT IN SAR MOVING-TARGET DETECTION (INVITED TALK)**
Junfeng Wang
Shanghai Jiao Tong University, China

14: 10 **RESEARCH ON STEPPED FREQUENCY UAV SAR IMAGING TECHNOLOGY (INVITED TALK)**
Zegang Ding
Beijing Institute of Technology, China

D0589 **HIGH-RESOLUTION DISTRIBUTED ISAR IMAGING BY OMP METHOD**
14: 30 Yuanyuan Li, Yaowen Fu*, Wenpeng Zhang
College of Electronic Science, National University of Defence Technology, Changsha, China

D0295 **THE SUPER-RESOLUTION RECONSTRUCTION OF SAR IMAGE BASED**
14: 50 **ON THE IMPROVED FSRCNN**
Zhenyu Luo[1], Junpeng Yu[2], Zhenhua Liu[3]
[1]Nanjing Institute of Electronic Technology, Nanjing, China
[2]China Electronics Technology Group Corporation Key Laboratory of Intelligent Sensing Technology, Nanjing, China

D0040 **SIGNAL PROCESSING FOR MULTI-ROTORS UAV SAR**
15: 10 Xinhua Mao*, Danqi Li, Lan Ding, Dayin Zhu, Xiang Yu
College of Electronic and Information Engineering,
Nanjing University of Aeronautics and Astronautics, Nanjing, China

Oral Session 3: Interference and Clutter Suppression

Time: 13: 30 - 15: 30, October 17, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)
Chairs: Prof. Simon Watts, University College London, UK
Dr. Quanhua Liu, Beijing Institute of Technology, China

13: 30 **MAIN LOBE JAMMING SUPPRESSION TECHNIQUE FOR LARGE APERTURE DISTRIBUTED ARRAY RADAR**
Quanhua Liu
Beijing Institute of Technology, China

C0786 **RADIO FREQUENCY INTERFERENCE SUPPRESSION FILTERS**
13: 50 **DESIGN FOR HF RADAR BASED ON SOCP**
Zhaoyi Wang[1], Shengnan Shi[1]*, Zishu He[1], Jinfeng Hu[1]
[1]Department of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

C0846 **ADAPTIVE PROCESSING METHOD FOR INTERFERENCE**
14: 10 **CANCELLATION IN SKY-WAVE OTHR**
Dongdong Jia[1], Baiqiang Zhang[1], Junhao Xie[1]*
Key Laboratory of Marine Environmental Monitoring and Information Processing, Ministry of Industry and Information Technology, Harbin Institute of Technology, Harbin, China

C0464 **ADAPTIVE SIGNAL SUPPRESSION BASED ON MODIFIED PCA**
14: 30 **FOR SINGLE POINT RADIATION SOURCE IN RADAR NETWORKS**
Yingjie Miao[1,2],Feifeng Liu[1,2]*,Lun Tian[1,2] and Quanhua Liu[1,2]
[1]School of Information and Electronics, Beijing Institute of Technology, 100081, Beijing, P.R. China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, 10081, Beijing, P.R. China

C0728 **AN APPROXIMATE REGULARIZED ML APPROACH FOR**
14: 50 **CENSORING OUTLIERS**
Sudan Han[1]*, Antonio De Maio[2], Luca Pallotta[2], Vincenzo Carotenuto[2], Salvatore Iommelli[3], Xiaotao Huang[1]
[1]College of Electronic Engineering, National University of Defense Technology, Changsha, China
[2]Università degli Studi di Napoli `Federico Ⅱ', via Claudio 21, I-80125 Napoli, Italy
[3]Ente di Formazione Professionale Maxwell, via G. A. Campano 103/105, I-80145 Napoli, Italy

C0234 **ROBUST ADAPTIVE BEAMFORMING WITH MAINLOBE MAINTENANCE**
15: 10 **OF MONOPULSE BEAMS**
Manuel F. Fernández[1], Kai-Bor Yu[2]*
[1]Independent Researcher, Syracuse, USA
[2]Shanghai Key Laboratory of Intelligent Sensing and Recognition, Shanghai Jiao Tong University, China

Oral Session 4: UAV Detection, Signatures and Classification with Radar

Time: **13: 30 - 15: 30, October 17, 2018**
Place: **Yangtze Room 2, 2nd Floor of Hotel (C)**
Chairs: **Prof. Francesco Fioranell, University of Glasgow, UK**
Prof. Qian He, University of Electronic Science and Technology of China, China

S1753 **MULTI-TIME FREQUENCY ANALYSIS & CLASSIFICATION OF**
13: 30 **A MICRO DRONE CARRYING PAYLOADS USING MULTISTATIC RADAR**
Jarez S Patel[1]*, Caesar Al-Ameri[1], Francesco Fioranelli[1], David Anderson[1]
[1]School of Engineering, University of Glasgow, University Avenue, Glasgow, UK

S1366 **UAV TARGET DETECTION AND PARAMETER ESTIMATION**
13: 50 **IN NONHOMOGENEOUS CLUTTER**
Rui Huang*, Xiao-Yong Du, Wei-Dong Hu
ATR Lab., National University of Defense Technology, 410073, Changsha, China

C0472 **METHOD OF MULTI-CHANNEL CALIBRATION FOR**
14: 10 **UAV SURVEILLANCE RADAR**
Yanan Hou, Hui Shang, Ming Yang, Cheng Jin
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

C0429 **TARGET MOVING TRAJECTORY ESTIMATION BY MULTIPLE**
14: 30 **RECEIVERS BASED ON GPS FORWARD SCATTERING RADAR**
Chaoqun Gao[1], Dongkai Yang[1], Bo Wang[1], Yunlong Zhu[1]*
[1]School of Electronic Information Engineering, Beihang University, Beijing 100191, China

C0386 **EFFICIENT AUTOFOCUS OF SMALL MULTI-ROTOR UAV SAR**
14: 50 **BY MINIMUM ENTROPY BP ALGORITHM**
Hao Su[1], Shunjun Wei[1*], Xiaoling Zhang[1], Limin Pu[1], Xiaoliang Yang[2]
School of Communication and Information Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, P.R.China
The 54th Research Institute of China Electronics Technology Group Corporation, Shijiazhuang, Hebei, P.R.China

A1148 **A DDMA MIMO RADAR SYSTEM FOR LOW SLOW AND SMALL**
15: 10 **TARGET DETECTION**
Fawei Yang[1], Feng Xu[1], Xiaopeng Yang[1], Quanhua Liu[1]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

Oral Session 5: Passive Radar I

Time: **13: 30 - 15: 30, October 17, 2018**
Place: **Yangtze Room 3, 2nd Floor of Hotel (D)**
Chairs: **Prof. Guifu Zhang, University of Oklahoma, USA**
Dr. Jianxin Yi, Wuhan University, China

A1141 **WIFI-BASED IMAGING FOR GPR APPLICATIONS:**
13: 30 **FUNDAMENTAL STUDY AND EXPERIMENTAL RESULTS**
Weike Feng[1*], Jean-Michel Friedt[2], Zhipeng Hu[3], Grigory Cherniak[1], and Motoyuki Sato[4]
[1]Graduate School of Environmental Studies, Tohoku University, Sendai, Japan
[2]FEMTO-ST, Time & Frequency department, Besancon, France
[3]College of Geoexploration Science and Technology, Jilin University, Changchun, China
[4]Center for Northeast Asian Studies, Tohoku University, Sendai, Japan

S7436 **MAINLOBE INTERFERENCE CANCELLATION BASED ON**
13: 50 **PCA+ECA IN PASSIVE BISTATIC RADAR**
Bo Gao[1]*, Shuai Guo[2], Jue Wang[1], Jun Wang[2] , Baofang Lou[1], Yifei Yan[1]
[1]Xi'an Research Institute of Navigation Technology, Xi'an, China
[2]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, China

S7266 **EXPERIMENTAL RESEARCH OF DRONE MONITORING USING**
14: 10 **MULTISTATIC PASSIVE RADAR**
Min Lü, Jianxin Yi*, Xianrong Wan, Yuqi Liu
School of Electronic Information, Wuhan University, Wuhan, China

S7844 **TDOA-BASED ADAPTIVE OBSERVER TRAJECTORY OPTIMIZATION**
14: 30 **ALGORITHM FOR TRACKING IN PASSIVE COHERENT LOCATION SYSTEM**
Tong Jing, Wei Tian, Gaoming Huang*
School of Electronic Engineering, Naval University of Engineering, Wuhan, China

S7858 **CS BASED PROCESSING FOR HIGH RESOLUTION PASSIVE RADAR**
14: 50 **WITH INCOHERENT DICTIONARY**
Jiatong Han, Xia Bai*, Juan Zhao and Tao Shan
School of Information and Electronics, Beijing Institute of Technology, Beijing, P.R. China

C0503 **A TARGET DETECTION APPROACH FOR DRM-BASED PASSIVE**
15: 10 **BISTATIC RADAR**
Zhixin Zhao*, Xinhua Zhou, Tao Weng, Xin Zhou, Kaikai Zhang
School of Information Engineering, Nanchang University, Nanchang 330031, China

Oral Session 6: Radar Signal Processing I

Time: **16: 30 - 18: 30, October 17, 2018**
Place: **Yangtze Room A, 2nd Floor of Hotel (A)**
Chairs: **Prof. Mark E. Davis, Independent Consultant, USA**
Prof. Zhenhai Xu, National University of Defense Technology, China

C0073 **SEGMENTED DISCRETE POLYNOMIAL-PHASE TRANSFORM**
16: 30 **WITH COPRIME SAMPLING**
Shengheng Liu[1,2*], Yahui Ma[2,3], Tao Shan[2]
[1]School of Information Science and Engineering, Southeast University, Nanjing 210096, China
[2]School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[3]China Academy of Electronics and Information Technology, Beijing 100041, China

A0751 **MICRO DOPPLER SIGNATURE FOR DRONE DETECTION USING FSR:**
16: 50 **A THEORETICAL & EXPERIMENTAL VALIDATION**

Surajo A. Musa[1], Raja Abdullah RSA[1], Aduwati S.[1], Alyani Isma'il[1], NE Abd Rashid[2]
[1]Wireless and Photonic Network (WIPNET), Comp.& Comm. Engr. Dept,, UPM, 43400 Selangor, Malaysia
[2]Electrical Engr. Dept., University Technology MARA, 40450 Shah Alam, Selangor, Malaysia

17: 10 **AN AUTOMATED ALERTING SYSTEM OF LOW-LEVEL WINDSHEAR AND TURBULENCE BASED ON INFRARED DOPPLER LIDAR**

Xiaoya Lee
Qingdao Huahang Seaglet Environmental Technology Ltd., China

D0597 **AN AIRCRAFT ALTITUDE ESTIMATION METHOD BASED ON**
17: 30 **MULTI-BEAM PITCHING SUM AND DIFFERENCE CHANNELS FOR SAR**

Linghao Li[1], Wenfu Yang[2], Zhichao Zhou[1], Zegang Ding[1*]
[1]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Beijing, China
[2]China academy of launch vehicle technology, Beijing, China

E0669 **UNDERDETERMINED DOA ESTIMATION USING SUPER NESTED ARRAY**
17: 50

Zhengming Jiang, Peichang Zhang*, Lei Huang, Jihong Zhang
[1]Shenzhen Key Lab of Multi-dimensional Signal Processing, College of Information Engineering, Shenzhen University, China

C1040 **SAR IMAGE COMPRESSION USING OPTRONIC PROCESSING**
18: 10

Jiacheng Ma[1], Baozhang Yang[2], Yesheng Gao[3]*, Lei Tao[4], Xingzhao Liu[5]
School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China

Oral Session 7: Radar Medical Applications for Assisted Living

Time: **16: 30 - 18: 30, October 17, 2018**
Place: **Yangtze VIP Room, 2nd Floor of Hotel (F)**
Chairs: **Prof. Julien Le Kernec, University of Glasgow, UK**
Prof. Guolong Cui, University of Electronic Science and Technology of China, China

S3688 **ACTIVITY RECOGNITION WITH COOPERATIVE RADAR SYSTEMS AT C**
16: 30 **AND K BAND**

Aman Shrestha[1], Haobo Li[1], Francesco Fioranelli[1]*, Julien Le Kernec[1,2]
[1]Communication, Sensing, and Imaging Group, School of Engineering, University of Glasgow, Glasgow, UK
[2]School of Information and Electronics, University of Electronic Science and Technology of China, Chengdu, China

S3732 **INDOOR NON-RHYTHMIC HUMAN MOTION CLASSIFICATION USING**
16: 50 **FREQUENCY-MODULATED CONTINUOUS-WAVE RADAR**
Yu Zou[1], Chuanwei Ding[1], Hong Hong[1], Changzhi Li[2], Xiaohua Zhu[1]
[1]Nanjing University of Science and Technology, Nanjing, China
[2]Texas Tech University, Lubbock, USA

S3794 **ELDERLY CARE: ACTIVITIES OF DAILY LIVING CLASSIFICATION**
17: 10 **WITH AN S BAND RADAR**
Aman Shrestha[1], Julien Le Kernec[1,2]*, Francesco Fioranelli[1] , Yier Lin[2], Qian He[2], Jordane Lorandel[3], Olivier Romain[3]
[1]Communication, Sensing and Imaging group, School of Engineering, University of Glasgow, Glasgow, UK
[2]School of Information and Electronics, University of Electronic Science and Technology of China, Chengdu, China
[3]ETIS-ASTRE, Université Cergy-Pontoise, Cergy-Pontoise, France

C0281 **STACKED GATED RECURRENT UNIT NETWORK BASED HUMAN**
17: 30 **ACTION CLASSIFICATION**
Mingyang Wang, Guolong Cui*, Xiaobo Yang, Lingjiang Kong
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

S3673 **FROM KINECT SKELETON DATA TO HAND GESTURE RECOGNITION**
17: 50 **WITH RADAR**
Jiayi Li[1], Aman Shrestha[2], Julien Le Kernec[1,2]*, Francesco Fioranelli[2]
[1]School of Information and Electronics, Univ.of Electronic Science and Technology of China, Chengdu, China
[2]Communicaiton, Sensing and Imaging Group, School of Engineering, University of Glasgow, Glasgow, UK

S3687 **FMCW RADAR AND INERTIAL SENSING SYNERGY**
18: 10 **FOR ASSISTED LIVING**
Haobo Li[1], Aman Shrestha[1], Francesco Fioranelli[1]*, Julien Le Kernec[1,2], Hadi Heidari[1]
[1]School of Engineering, University of Glasgow, Glasgow, UK
[2]School of Information and Electronics, Univ. of Electronic Science and Technology of China, Chengdu, China

Oral Session 8: Advanced Radar II

Time: **16: 30 - 18: 30, October 17, 2018**
Place: **Yangtze Room B, 2nd Floor of Hotel (B)**
Chairs: **Prof. Maria Sabrina Greco, University of Pisa, Italy**
Prof. Xianrong Wan, Wuhan University, China

C0306 **PROSPECTS OF FMCW BASED FREQUENCY DIVERSE ARRAY RADAR**
16: 30 Ramazan Çetiner[1], Çağrı Çetintepe[2], Şimşek Demir[2] and Altunkan Hizal[1]
[1]Radar and Electronic Warfare Systems, Aselsan, Ankara, Turkey
[2]Middle East Technical University, EEED, Ankara, Turkey

A0985 **INTER-RADAR INTERFERENCE ANALYSIS OF FMCW RADARS WITH**
16: 50 **DIFFERENT CHIRP RATES**

Yuya Makino[1], Takuya Nozawa[1], Masahiro Umehira[1]*, Xiaoyan Wang[1], Shigeki Takeda[1], Hiroshi Kuroda[2]
[1]Graduate School of Science and Engineering, Ibaraki University, Hitachi-shi, Japan
[2]Hitachi Automotive Systems, Ltd., Hitachinaka-shi, Japan

E1018 **HIGH RESOLUTION SAR ALTIMETER WITH WIDE-ANGLE ECHOES**
17: 10 **COHERENT ACCUMULATION**

Weijie Tang[1], Zenghui Zhang[2]*, Wenxian Yu
[1]Shanghai Key Lab. Of Intelligent Sensing and Recognition, School of Electronic, Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China

B0679 **THE INPUT IMPEDANCE OF A MICROSTRIP ANTENNA WITH A CHIRAL**
17: 30 **SUBSTRATE BASED ON LEFT-HANDED SPIRALS**

Vladimir Y. Abramov[1], Dmitriy S. Klyuev[1], Anatoly M. Neshcheret[1], Oleg V. Osipov[1], Alexander A. Potapov[2,3]*
[1]Volga State University of Telecommunications and Informatics, Samara, Russia
[2]V.A. Kotel'nikov Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Moscow, Russia
[3]JNU-IREE Joint Laboratory of Fractal Method & Signal Processing, Department of Electronic Engineering, College of Information Science and Technology, JiNan University, Guangzhou, China

E0955 **DEFLECTION CHARACTERISATION OF ROTARY SYSTEMS USING A**
17: 50 **GROUND-BASED RADAR**

Francis X. Ochieng[1], Haoyang Jiang[4], Craig M. Hancock[1]*, Gethin W. Roberts[2], Julien Le Kernec[3,4], Xu Tang[1], Huib de Ligt[1]
[1]University of Nottingham Ningbo China – Dept. of Civil Engineering
[2]The University of the Faroe Islands, Faroe Islands
[3]The University of Glasgow, UK
[4]University of Electronic, Science and Technology of China, Chengdu, China

C1052 **TASK SCHEDULING SCHEME BASED ON GREEDY ALGORITHM IN**
18: 10 **INTEGRATED RADAR AND COMMUNICATION SYSTEMS**

Ling Huang[1,2]*, Yu Zhang[1,2], Qingyu Li[1,2], Changyong Pan[1,2] and Jian Song[1,2]
[1]Tsinghua National Laboratory for Information Science and Technology (TNList), Tsinghua University
[2]Department of Electronics Engineering, Tsinghua University, Beijing, 100084, China

Oral Session 9: Marine Target Detection

Time: 16: 30 - 18: 30, October 17, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)
Chairs: Prof. François Le Chevalier, Delft University of Technology, Netherlands
Dr. Xiaolong Chen, Naval Aviation University, China

16: 30 **MARINE TARGET DETECTION TECHNIQUE: CHALLENGES AND SOLUTIONS (INVITED TALK)**
Xiaolong Chen
Naval Aviation University, China

S2267 **SHIP WAKE REGION DETECTION BY USING MULTI-FEATURE**
16: 50 **RECOMBINATION AND AREA-BASED MORPHOLOGICAL ANALYSIS IN ATI-SAR SYSTEMS**
Min Tian[1], Zhiwei Yang[1, 2]*, Zhijie Mao[3], Guisheng Liao[1,2]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, Shaanxi, China
[2]Collaborative Innovation Center of Information Sensing and Understanding, Xidian University, Xi'an, Shaanxi, China
[3]College of Information and Communication, National University of Defense Technology, Xi'an, Shaanxi, China

S2488 **SQUEEZE AND EXICITATION FASTER R-CNN FOR SHIP DETECTION**
17: 10 **IN SAR IMAGES**
Zhao Lin, Kefeng Ji*, Xiangguang Leng, Xiangli Huang
State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, National University of Defense Technology, Changsha, 410073, China

C0642 **SEA-SURFACE FLOATING SMALL TARGET DETECTION BASED ON**
17: 30 **FEATURE COMPRESSION**
Zixun Guo[1]*, Penglang Shui[2]*
National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071, P. R. China

D0643 **FAST SHIP CONTOUR EXTRACTION IN SAR IMAGES**
17: 50 Yuan-Ying Nie[1]*, Shu-Chen Fan[2], Peng-Lang Shui[3]*
National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071, P. R. China

S2879 **A MULTISCALE SALIENCY DETECTION METHOD FOR SHIP TARGETS**
18: 10 **IN SAR IMAGES**
Cheng Z Yan[1,2], Chang Liu[1,2], Ying Pang [1,2]*
[1]Insititute of Electrics, Chinese Academy of Sciences, Beijing, China
[2]University of Chinese Academy of Science, Beijing, China

Oral Session 10: SAR Imaging II

Time: 16: 30 - 18: 30, October 17, 2018
Place: Yangtze Room 3, 2nd Floor of Hotel (D)
Chairs: Prof. Fabio Rocca, Politecnico di Milano, Italy
Prof. Yachao Li, Xidian Univerisity, China

D0132 **DESIGN AND PRELIMINARY VERIFICATION OF L-BAND**
16: 30 **GROUND-BASED SAR SYSTEM FOR THE VEGETATED AREA**
Wenyu Yang[1], Weiming Tian[1, 2]*, Hongyan Mei[1], Cheng Hu[1, 2], Tao Zeng[1, 2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Tech-nology), Ministry of Education, Beijing, China

D0923 **WAVEFRONT CURVATURE COMPENSATION IN PFA FOR SPOTLIGHT**
16: 50 **BISTATIC SAR WITH ARBITRARY PLATFORMS PATHS**
Yuxuan Miao, Tianfu Chen, Junjie Wu, Jianyu Yang
School of Electronic Engineering,
University of Electronic Science and Technology of China, Chengdu, P.R. China

D1016 **3D RECONSTRUCTION AND ERROR ANALYSIS OF MULTI-VIEW**
17: 10 **SPACEBORNE SAR IMAGES UNDER DIFFERENT CONFIGURATIONS**
Chao Wang[1,2,3], Xiaolan Qiu[2,3], Fangfang Li[2,3], Bin Lei[2,3]
[1]University of the Chinese Academy of Sciences, Beijing, China
[2]Institute of Electrics, Chinese Academy of Sciences, Beijing, China
[3]Key Laboratory of Technology in Geo-spatial Information Processing and Application System, Institute of Electrics, Chinese Academy of Sciences, Beijing, China

D0921 **IMPROVED ENTROPY-BASED AUTOFOCUS CORRECTION FOR**
17: 30 **SYNTHETIC APERTURE RADAR**
Qianrong Lu[1,]*, Penghui Huang[1], Yesheng Gao[1] and Xingzhao Liu[1]
[1]Shanghai Jiao Tong University, 800 Dongchuan Road, Shanghai, China

D1094 **A NOVEL ACCELERATION COMPENSATION METHOD FOR HIGHLY**
17: 50 **SQUINT MODE SAR WITH CURVE TRAJECTORY**
Zhichao Zhou[1,2], Zegang Ding[1,2]*, Tao Zeng[1,2] , Gen Li[1,2], Linghao Li[1,2]
[1]School of Information and Electronics, Beijing Institute Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing, China

A0968 **SYNTHETIC APERTURE RADAR 3-D SPARSE IMAGING BASED ON**
18: 10 **COPRIME LINEAR ARRAY**
Bokun Tian, Shunjun Wei*, Liwei Dang, Min Yan, Xiaoling Zhang
School of Communication and Information Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, P.R.China

Oral Session 11: Millimeter Wave Radar and Terahertz Radar

Time: 13: 30 - 15: 30, October 18, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)
Chairs: Prof. Leo P. Ligthart, Delft University of Technology, Netherlands
Dr. Weidong Hu, Beijing Institute of Technology, China

13: 30 **THE STATE-OF-THE-ART OF TERAHERTZ RADAR APPLICATIONS (INVITED TALK)**
Weidong Hu
Beijing Institute of Technology, China

13: 50 **THREE DIMENSIONAL IMAGING WITH MULTI-CHANNEL TERAHERTZ RADAR (INVITED TALK)**
Bin Deng
National University of Defense Technology, China

A0124
14: 10 **LOW POWER MILLIMETER WAVE RADAR SYSTEM FOR THE VISUALLY IMPAIRED**
Ningbo Long, Kaiwei Wang*, Ruiqi Cheng, Weijian Hu and Kailun Yang
College of Optical Science and Engineering, Zhejiang University, Hangzhou, China

B0866
14: 30 **PROXIMITY COUPLED FEED PATCH ANTENNA ARRAY FOR 79GHz AUTOMOTIVE RADAR**
Haiyan Tian[1], Changjiang Liu[2]*, Xiang Gu[3]
[1]School of computer science and engineering, Beihang University, Beijing, China
[2]School of transportation science and engineering, Beihang University, Beijing, China
[3]Beijing Runketongyong Technology Co., Ltd., Beijing, China

B1059
14: 50 **A TERAHERTZ ULTRA-WIDEBAND METAMATERIAL POLARIZATION CONVERTER**
Xueqi Yuan[1]*, Meng Zhang[2], Xuetian Wang[3], Hongmin Gao[4], Sibo Qi[5], Jing Sun[6], Shuang Yao[7]
Beijing Institute of Technology, School of Information and Electronics, Beijing, China

F0223
15: 10 **TERAHERTZ GENERATION BY OPTICALLY INJECTED SEMICONDUCTOR LASER FOR RADAR AND COMMUNICATION APPLICATIONS**
Fangzheng Zhang*, Pei Zhou, Shilong Pan, and Daocheng Zhang
Key Laboratory of Radar Imaging and Microwave Photonics, Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China

Oral Session 12: Thru-wall Radar

Time: 13: 30 - 15: 30, October 18, 2018
Place: Yangtze VIP Room, 2nd Floor of Hotel (F)
Chairs: Prof. Moeness Amin, College of Engineering at Villanova University, USA
Prof. Tian Jin, National University of Defense Technology, China

A1070 **PARTICLE FILTER BASED HUMAN TARGET TRACKING IN IMAGE**
13: 30 **DOMAIN FOR THROUGH-WALL IMAGING RADAR**
Guohao Chen, Guolong Cui*, Lingjiang Kong, Shisheng Guo, Lingxiao Cao
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

S101021 **A NOVEL AUTOFOCUSING METHOD FOR THROUGH-THE-WALL**
13: 50 **BIORADAR IMAGERY OF HUMAN VITAL SIGNS**
Fulai Liang[1], Haonan Li[2], Miao Liu[1], Pengfei Wang[1], Jianqi Wang[1]
[1]Department of Electronics, School of Biomedical Engineering, the Fourth Military Medical University, Xi' an, China
[2]Basic Medicine College, the Fourth Military Medical University, Xi' an, China

S101028 **THROUGH-THE-WALL RADAR SPARSE IMAGING FOR BUILDING WALLS**
14: 10 Zhao Jifang[2], Jin Liangnian[1,2]*, Liu Qinghua[2]
[1]Guangxi Key Lab of Wireless Wideband Communication &Signal Processing, Guilin 541004, China
[2]Institute of Information and Communication , Guilin University of Electronic Technology, Guilin 541004, China

S101080 **THROUGH-THE-WALL IMAGING USING WI-FI SIGNALS**
14: 30 Wei Zhong[1], Kai He[1], Longgang Wang[1] and Lianlin Li[1]*
[1]School of Electronics Engineering and Computer Science, Peking University, Beijing, China

S101076 **CNN BASED MIMO RADAR IMAGE ENHANCEMENT METHOD**
14: 50 Yongpeng Dai[1]*, Tian Jin[1], Yongping Song[1], Hao Du[1], Dizhi Zhao[1]
[1]College of Electronic Science, National University of Defense Technology,Changsha, Hunan, 410073, PR China

S10903 **CORRELATION-MATCHING MULTIPATH SUPPRESSION ALGORITHM IN**
15: 10 **THREE-DIMENSIONAL THROUGH-WALL RADAR IMAGING**
Cao Lingxiao, Cui Guolong*, Song Yilin, Guo Shisheng, Kong Lingjiang
School of Electronic Engineering, University of Electronic Science and Technology of China, Chengdu, China

Oral Session 13: MIMO Radar

Time: 13: 30 - 15: 30, October 18, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)
Chairs: Prof. Wenqin Wang, University of Electronic Science and Technology of China, China
Prof. Altunkan Hizal, Aselsan Inc., Turkey

13: 30 **COMPLEX WAVEFORM DESIGN IN MIMO RADAR SYSTEMS (INVITED TALK)**
Junli Liang
Northwestern Polytechnical University,China

A0218 **SPARSE-BASED DIRECTION FINDING IN MIMO RADAR WITH**
13: 50 **MUTUAL COUPLING**
Peng Chen[1*], Zhenxin Cao[1], Zhimin Chen[2*], Yi Jin[3], Can Zhu[4]
[1]State Key Laboratory of Millimeter Waves, School of Information Science and Engineering, Southeast University, Nanjing 210096, China
[2]School of Electronic and Information, Shanghai Dianji University, Shanghai 201306, China
[3]Xi'an branch of China Academy of Space Technology, Xi'an 710100, China
[4]NO.724 Research institute of CSIC, Nanjing 211153, China

A1116 **DESIGN OF DUAL-FUNCTION MIMO RADAR COMMUNICATIONS**
14: 10 **USING CORRELATED WAVEFORMS (INVITED TALK)**
Xiangrong Wang[1]*, Xianbin Cao[1]
[1]School of Electronic and Information Engineering, Beihang University, XueYuan Road No.37, HaiDian District, Beijing, China

A0087 **THEORETICAL ANALYSIS AND EXPERIMENTAL VERIFICATION**
14: 30 **OF WIDEBAND MIMO IMAGING RADAR**
Jingyang WANG[1,2], Cheng HU[1,2], Weiming TIAN[1,2*] and Rui WANG[1,2]
[1]Radar Research Laboratory, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

C1024 **A FAST ALGORITHM FOR MOVING TARGET LOCALIZATION**
14: 50 **USING FDA-MIMO RADAR**
Jian Xu[1], Wenqin Wang[1], Senior Member, IEEE,Can Cui[2], Bang Huang[1], Student Member, IEEE
[1]School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, 611731, China;
[2]School of Electronic Engineering and Optoelectronic Technology, Nanjing University of Science and Technology, Nanjing,210094,China

D0162 **IMPACT OF PRF DESIGN ON GMTI PERFORMANCE OF MIMO- SAR**
15:10 **FOR HYPERSONIC PLATFORM WITH CURVED TRAJECTORY**
Rui Zhou[1], Jinping Sun[1*], Qixin Zhao[1], Yaolong Qi[1]
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China

Oral Session 14: Radar Target Detection, Identification and Recognition I

Time: 13: 30 - 15: 30, October 18, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)
Chairs: Prof. Antonio De Maio, University of Naples Federico II, Italy
Prof. Jianbing Li, National University of Defense Technology, China

13: 30 **CHARACTERISTICS, DETECTION AND PARAMETER-RETRIEVAL OF AIRCRAFT WAKE VORTICES (INVITED TALK)**
Jianbing Li
National University Of Defense Technology

C0554 **RADAR TARGET CLASSIFICATION USING IMPROVED**
13: 50 **DEMPSTER-SHAFER**
Parth Mehta[1]*, Anindita De[2], D Shashikiran[2], Prof K P Ray[1]
[1]Defence Institute of Advanced Technology, Pune, India
[2]Defence Research and Development Organization, Bengaluru, India

C0263 **TARGET TRACKING BASED ON SPARSE RECOVERY METHOD**
14: 10 Li Wang[1]*, Jun Tang[1], Qingmin Liao[1], Ning Ma[1], Jian Pan[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, P.R. China

C0467 **RADAR/ESM ANTI-BIAS TRACK ASSOCIATION ALGORITHM BASED ON**
14: 30 **TRACK DISTANCE VECTOR DETECTION**
Baozhu Li[1]*, Yunlong Dong[1], Gaodong Huang[1], Xiaolong Chen[2], Jian Guan[1]
[1]Institute of Information Fusion, Naval Aeronautical University, NAU, Yantai, Shandong P.R. China, 264001
[2]Radar Detection Research Section, Naval Aeronautical University, NAU, Yantai, Shandong P.R. China, 264001

C0523 **A TARGET SEPARATION DETECTION AND MOTION PARAMETER**
14: 50 **ESTIMATION METHOD BASED ON TIME-VARYING AUTOREGRESSIVE MODEL**
Yaolin Zhang[1,2]*,Yuhao Yang[1,2], Qiang Cheng[1,2], Yanjun Hao[1,2]
[1]Key Laboratory of IntelliSense Technology, CETC, Nanjing, China
[2]Nanjing Research Institute of Electronics Technology, GuoRui Road No.8, Nanjing, China

C0810 **THE APPLICATION OF JOINT DOMAIN LOCALIZED MATRIX CFAR**
15: 10 **DETECTOR FOR HFSWR**
Lei Ye[1], Qiang Yang[1, 2], Qiushi Chen[1], Weibo Deng[1, 2]
[1]Department of Electronic and Information Engineering, Harbin Institute of Technology, China
[2]Key Laboratory of Marine Environmental Monitoring and Information Processing, Ministry of Industry and Information Technology, China

Oral Session 15: Understanding Flight Behavior of Animals with Radar and Lidar I

Time: 13: 30 - 15: 35, October 18, 2018
Place: Yangtze Room 3, 2nd Floor of Hotel (D)
Chairs: Prof. Hongqiang Feng, Henan Academy of Agricultural Sciences, Institute of Plant Protection, China
Prof. Phillip Stepanian, University of Oklahoma, USA

S81159 13: 30 **DEVELOPMENT OF METHOD TO FORECAST SOYBEAN LEAF DAMAGE BY COMMON CUTWORM USING ENTOMOLOGICAL RADAR AND SEARCHLIGHT TRAP**
Akira Otuka[1]*, Masaya Matsumura[2], Makoto Tokuda[3]
[1]National Agriculture and Food Research Organization, Tsukuba, Japan
[2]National Agriculture and Food Research Organization, Koshi, Japan
[3]Saga University, Saga, Japan

A0183 13: 55 **EXTRACTING ANIMAL MIGRATION PATTERN FROM WEATHER RADAR OBSERVATION BASED ON DEEP CONVOLUTIONAL NEURAL NETWORKS**
Cheng Hu[1], Siwei Li[1], Rui Wang[1]*, Kai Cui[1], Dongli Wu[2], Shuqing Ma[2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Observation Centre of China Meteorological Administration, Beijing, China

14: 20 **A DUAL MODE ENTOMOLOGICAL RADAR: COMBINATION OF BOTH AUTOMATIC TARGET IDENTIFICATION AND INTEGRATED LARGE VOLUME SAMPLING (INVITED TALK)**
Zhi Zhang[1], Yunhui Zhang[2]
[1]Beijing Plant Protection Station, Beijing, China
[2]Institute of Plant Protection, Chinese Academy of Agricultural Sciences, China

S81160 14: 45 **ADVANCES IN ENTOMOLOGICAL LASER RADAR**
Mikkel Brydegaard[1,2,3,4]*, Samuel Jansson[1,2]
[1]Lund Laser Centre, Dept. Physics, Lund University, Sölvegatan 14, Lund, Sweden
[2]Center for Animal Movement Research, Dept. Biology, Lund University, Sölvegatan 37, Lund, Sweden
[3]Norsk Elektro Optikk AS, Prost Stabels vei 22, Skedsmokorset, Norway
[4]FaunaPhotonics ApS, Ole Maaløes Vej 3, København N, Denmark.

S81091 15: 10 **WEATHER SURVEILLANCE RADAR AS AN OBJECTIVE TOOL FOR MONITORING BAT PHENOLOGY AND BIOGEOGRAPHY**
Phillip M Stepanian[1]*, Charlotte E Wainwright[1], Winifred F Frick[2,3], Jeffrey F Kelly[1,4]
[1]Corix Plains Institute, University of Oklahoma, Norman, USA
[2]Ecology & Evolutionary Biology Department, University of California Santa Cruz, Santa Cruz, USA
[3]Bat Conservation International, Austin, USA
[4]Department of Biology, University of Oklahoma, Norman, USA

Oral Session 16: Radar Target Detection, Identification and Recognition II

Time: 16: 30 - 18: 30, October 18, 2018
Place: Yangtze Room A, 2nd Floor of Hotel (A)
Chairs: Prof. Aly E. Fathy, University of Tennessee, USA
Prof. Lan Du, Xidian University, China

16: 30 **DEEP LEARNING WITH APPLICATIONS TO RADAR TARGET DETECTION AN RECOGNITION (INVITED TALK)**
Lan Du
Xidian University, China

F0275 **FRACTALS, SCALING, TEXTURES, FRACTIONAL OPERATORS AND**
16: 50 **DETERMINISTIC CHAOS AS THE PHYSICAL AND MATHEMATICAL COMPONENTS OF THE NEW CONCEPTIONS AND METHODS IN RADAR AND RADIO PHYSICS**
A.A. Potapov[1,2]*
[1]V.A. Kotel'nikov Institute of Radio Engineering and Electronics, Russian Academy of Sciences, Moscow, Russia
[2]JNU-IREE Joint Laboratory of Fractal Method & Signal Processing, Department of Electronic Engineering, College of Information Science and Technology, JiNan University, Guangzhou, China

C0744 **RADAR HRRP RECOGNITION BASED ON CONVOLUTIONAL**
17: 10 **NEURAL NETWORK**
Jia Song[1,2], Yanhua Wang[1,2]*, Wei Chen[1,2], Yang Li[1,2] , Junfu Wang[3]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China
[3]Beijing Racobit Electronic Information Technology Co., Ltd., Beijing, China

C1060 **A HIGH-SPEED OPTICAL SYNTHETIC APERTURE RADAR TARGET**
17: 30 **RECOGNITION SYSTEM**
Baozhang Yang, Jiacheng Ma, Yesheng Gao, Lei Liu and Xingzhao Liu
Department of Electronic Engineering, Shanghai Jiao Tong University

C1127 **RESEARCH ON RADAR CLUTTER RECOGNITION METHOD**
17: 50 **BASED ON LSTM**
Li Song[1]*, Wang Shengli[1], Xie Dingbao[1]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China

C0960 **A DETECTION & TRACKING METHOD FOR RADAR TARGET BASED ON**
18: 10 **PLOT-TRACK QUALITY EVALUATION**
Yonghong Xia*, Ning Zhang, Huaxing Kuang, Yutao Zhang
Nanjing Marine Radar Institute, Nanjing, China

Oral Session 17: Target Scattering Analysis and Modeling I

Time: 16: 30 - 18: 30, October 18, 2018
Place: Yangtze VIP Room, 2nd Floor of Hotel (F)
Chairs: Prof. Hugh D. Griffiths, University College London, UK
Prof. Shunjun Wu, Xidian University, China

E0508 **EXPERIMENTAL MEASUREMENTS OF RADAR SIGNATURES OF LARGE**
16: 30 **WIND TURBINE**
Francesco Fioranelli[1]*, Jarez Patel[1], Colin Horne[2], Riccardo Palamà[2], Hugh Griffiths[2], Laith Danoon[3], Anthony Brown[3]
[1]School of Engineering, University of Glasgow, Glasgow, UK
[2]School of Electrical & Electronic Engineering, University of Manchester, Manchester, UK
[3]Department of Electronic & Electrical Engineering, University College London, London, UK

16: 50 **DEVELOPMENT IN PARAMETRIC SCATTERING CENTER MODELS (INVITED TALK)**
Kunyi Guo
Beijing Institute of Technology, China

C0346 **AN APPROACH OF SAR IMAGES SIMULATIONS**
17: 10 **FOR TARGET INTERPRETATIONS**
Yueting zhang[1,2,3*] , Chibiao Ding[1,2,3] , Bin Lei[1,2,3], Fangfang Li[1,2,3], Xiaolan Qiu[1,2,3]
[1]Institute of Electronics, Chinese Academy of Sciences, Beijing, China
[2]Key Laboratory of Geo-spatial Information Processing and Application System Technology, Chinese Academy of Sciences, Zhongguancun Beiyitiao No.9, Beijing, China
[3]University of Chinese Academy of Sciences, Yuquan Road No.19, City, Country

C1155 **A MULTI-SOURCE DATA-BASED METHOD FOR RETRIEVAL OF SOIL**
17: 30 **MOISTURE IN GRASSLAND**
Pingping Huang[1,2], Ritu Su[1,2]*, Wei Xu[1,2], Weixian Tan[1,2], Wen Yang[3]
[1]College of Information Engineering, Inner Mongolia University of Technology, Hohhot 010051, China
[2]Inner Mongolia Key Laboratory of Radar Technology and Application, Hohhot 010051, China
[3]School of Electronic information，Wuhan University，Wuhan 430072，China

E0764 **ANALYSIS OF AMPLITUDE STATISTICAL AND CORRELATION**
17: 50 **CHARACTERISTICS OF HIGH GRAZING ANGLE SEA-CLUTTER**
Hengyan Liu, Jie Song, Wei Xiong*, Yaqi Cui, Yafei Lv, Jun Liu
The Institute of Information Fusion of Naval Aviation University, No.188, Erma Road, Zhifu District, Yantai, China

C0706 **REGION MATCHING BASED ON 3-D SCATTERING CENTER MODEL FOR**
18: 10 **SAR ATR**
Baiyuan Ding, Gongjian Wen and Qi Wang
National University of Defense Technology, Science and Technology on Automatic Target Recognition Laboratory, Changsha, China, 410073

Oral Session 18: Inverse Synthetic Aperture Radar

Time: 16: 30 - 18: 30, October 18, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)
Chairs: Prof. Marco Martorella, University of Pisa, Italy
Prof. Yong Wang, Harbin Institute of Technology, China

S61118 **THREE-DIMENSIONAL ISAR IMAGING: A REVIEW**
16: 30 Marco Martorella[1,2], Federica Salvetti[2]*, Daniele Staglianò[1], Elisa Giusti[2]
[1]Department of Information Engineering, University of Pisa, Pisa, Italy
[2]Radar and Surveillance Systems (RaSS) National Laboratory, National Inter-university Consortium for Telecommunications (CNIT), Pisa, Italy

16: 50 **RESEARCH PROGRESS ON COMPRESSIVE SENSING BASED ISAR IMAGING (INVITED TALK)**
Ling Wang
Nanjing University of Aeronautics and Astronautics, China

D0668 **THE RESEARCH OF INISAR IMAGING BASED ON JOINT**
17: 10 **TRANSLATIONAL COMPENSATION**
Kai Zhang[1, 2],*, Yingni Hou[1, 2], Lin Jin[1]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China
[2]Key Laboratory of IntelliSense Technology, CETC, Nanjing, China

D0416 **A NOVEL ISAR AUTOFOCUSING METHOD BASED ON BAYESIAN**
17: 30 **INFERENCE**
Xueru Bai[1]*, Ge Wang[1]
[1]National Lab of Radar Signal Processing, Xidian University, Xi'an, China

D0485 **BAYESIAN 3-D INTERFEROMETRIC ISAR IMAGING FOR THE TARGETS**
17: 50 **WITH LIMITED PULSES**
Xuefei Chen, Yong Wang
Harbin Institute of Technology, P R. China

D0697 **NOVEL METHOD OF IMAGING AND PARAMETER ESTIMATION FOR**
18: 10 **MOVING TARGETS WITH SINGLE-CHANNEL SAR**
Bo-Hyun Ryu[1], Byung-Soo Kang[2], Myung-Jun Lee[3], and Kyung-Tae Kim[4]*
[1-4]Pohang University of Science and Technology (POSTECH), Pohang, South Korea

Oral Session 19: SAR Interferometry I

Time: 16: 30 - 18: 30, October 18, 2018
Place: Yangtze Room 2, 2nd Floor of Hotel (C)
Chairs: Prof. Stephen Edward Hobbs, Cranfield University, UK
Prof. Junhuan Peng, China University of Geosciences (Beijing), China

16: 30 **JOINT SCATTERER TIME-SERIAL INSAR PROCESSING AND APPLICATION (INVITED TALK)**
Xiaolei Lv
The Institute of Electronics, Chinese Academy of Sciences, China

16: 50 **INSAR MEASUREMENTS OF SURFACE DEFORMATION OVER PERMAFROST ON FENGHUOSHAN MOUNTAINS SECTION, QINGHAI-TIBET PLATEAU (INVITED TALK)**
Junhuan Peng
China University of Geosciences (Beijing), China

D1015 **A NON-UNIFORM PHASE FILTER FOR TIANGONG-2 INTERFEROMETRIC**
17: 10 **IMAGING RADAR ALTIMETER**
Xiao Dong[1]*, Yunhua Zhang[1, 2]
[1]CAS Key Laboratory of Microwave Remote Sensing, National Space Science Center, Chinese Academy of Sciences, No.1 Nanertiao Zhongguancun, Haidian, Beijing, China
[2]University of Chinese Academy of Sciences, 19 A Yuquan Rd, Shijingshan, Beijing, China

D0321 **AN IMPROVED COMPENSATION METHOD OF AZIMUTH PHASE**
17: 30 **UNDULATIONS IN AIRBORNE INSAR**
Dawei Zhou[1]*, Zheng Lv[2], Shi Yan[1], Jiabao Wu[1], Tiandong Liu[1]
[1]BEIJING INSTITUTE OF REMOTE SENSING EQUIPMENT, BEIJING, CHINA, 100854
[2]Beijing Institute of Spacecraft System Engineering, Beijing, China

D0716 **ANALYSIS AND CORRECTION OF SPATIAL VARIANT BACKGROUND**
17: 50 **IONOSPHERE IMPACTS ON SINGLE-PASS INSAR SYSTEM**
Lei Yu[1], Yongsheng Zhang[1]*, Anxi Yu[1], Zhen Dong[1], Jinhui Li[1], Yifei Ji[1]
[1]Colledge of Electronic Science and Engineering, National University of Defense Technology, Changsha, Hunan, P. R. China

C1132 **AN IMPROVED MORPHOLOGICAL FILTERING METHOD FOR**
18: 10 **INTERFEROGRAMS**
Bin Zhang[1,2], Shuang Li[1]*
[1]Beijing Institute of Radio Measurement, Beijing, China
[2]The Second Academy of China Aerospace Science and Industry Corporation (CASIC), Beijing, China

Oral Session 20: Understanding Flight Behavior of Animals with Radar and Lidar II

Time: **16: 30 - 18: 35, October 18, 2018**
Place: **Yangtze Room 3, 2nd Floor of Hotel (D)**
Chairs: **Dr. Mikkel Brydegaard, Lund University, Sweden**
Dr. Rui Wang, Beijing Institute of Technology, China

16: 30 **RADAR ENTOMOLOGY IN CHINA: PAST, PRESENT AND FUTURE (INVITED TALK)**
Hongqiang Feng
Henan Academy of Agricultural Sciences, China

16: 55 **AN UPGRADED INSECT MONITORING RADAR: ENHANCING OBSERVATION CAPABILITIES WITH MODERN DIGITAL TECHNOLOGY (INVITED TALK)**

Haikou Wang
Australian Plague Locust Commission, Australian Government Department of Agriculture and Water Resources, Australia

17: 20 **MASS SEASONAL BIOFLOW OF HIGH-FLYING INSECT MIGRANTS (INVITED TALK)**

Gao Hu
Nanjing Agricultural University, Nanjing, China

S81093 17: 45 **INVESTIGATING THE VERTICAL MOTION OF SMALL INSECTS IN THE ATMOSPHERIC BOUNDARY LAYER USING MILLIMETER-WAVELENGTH RADAR AND DOPPLER LIDAR**

Charlotte E Wainwright[1,3]*, Phillip M Stepanian[1,4], Don R Reynolds[1,2], Andy M Reynolds[1]
[1]Computational and Analytical Sciences Department, Rothamsted Research, Harpenden, UK
[2]Natural Resources Institute, University of Greenwich, Chatham, Kent, UK
[3]Now at Department of Civil and Environmental Engineering and Earth Sciences, University of Notre Dame, South Bend, Indiana, USA
[4]Now at Corix Plains Institute, University of Oklahoma, Norman, Oklahoma, USA

C0569 18: 10 **EXPERIMENTAL VALIDATIONS OF INSECT ORIENTATION EXTRACTION BASED ON FULLY POLARIMETRIC MEASUREMENT**

Weidong Li[1,2], Cheng Hu[1,2]*, Rui Wang[1,2], Changjiang Liu[1,2], Wenqing Li[1,2]
[1]Radar Research Lab, Schoolof Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation(Beijing Institute of Technology), Ministry of Education,Beijing, China

Oral Session 21: Deep Learning for SAR Automatic Target Recognition I

Time: **08: 00 - 10: 00, October 19, 2018**
Place: **Yangtze Room A, 2nd Floor of Hotel (A)**
Chairs: **Dr. Ozlem Kilic, Catholic University of America, USA**
Prof. Xiaolan Qiu, Institute of Electrics, Chinese Academy of Sciences, China

08: 00 **DEEP LEARNING IN SAR CALIBRATION AND SIMULATION (INVITED TALK)**

Xiaolan Qiu
Institute of Electrics, Chinese Academy of Sciences, China

S5237 08: 20 **AN ADAPTIVE CONVOLUTIONAL NETWORK FOR SAR IMAGE CLASSIFICATION**

Shuang Xia[1], Ze Yu[2], JinDong Yu[3]
School of Electronics and Information Engineering, BeiHang University, Beijing, China

S5595 **TRANSFER LEARNING BASED DEEP LEARNING METHOD FOR**
08: 40 **SAR TARGET DETECTION**

Jiashun Mao[1,2], Lan Du[1,2]*, Zhaocheng Wang[1,2], Haonan He[1,2]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071,China
[2]Collaborative Innovation Center of Information Sensing and Understanding, Xidian University, Xi'an, 710071, China

S51020 **FEATURE CLUSTERING BASED DISCRIMINATION OF SHIP TARGETS**
09: 00 **FOR SAR IMAGES**

Wei Ao*, Feng Xu, Yutong Qian, Qian Guo
Key Lab for Information Science of Electromagnetic Waves (MoE),
Fudan University, Shanghai 200433, China

S5978 **MULTITASK FULLY CONVOLUTIONAL NETWORKS FOR BUILDING**
09: 20 **SEGMENTATION ON SAR IMAGE**

Wenhao Yu[1], Weiwei Guo[1], Zenghui Zhang[1]*, Wenxian Yu[1]
[1]Shanghai Key Laboratory of Intelligent Sensing and Recognition, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China

C0781 **CREVASSE DETECTION IN ANTARCTIC PENINSULA USING SENTINEL-1**
09: 40 **SAR IMAGERY**

Tianheng Yan[1,*], Ting Pan[1], Xinwu Li[2], Wen Yang[1]
[1]School of Electronic Information, Wuhan University, Wuhan 430079, China
[2]Key Laboratory of Digital Earth Sciences, Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, Beijing, 100094, China

Oral Session 22: Target Scattering Analysis and Modeling II

Time: **08: 00 - 10: 00, October 19, 2018**
Place: **Yangtze VIP Room, 2nd Floor of Hotel (F)**
Chairs: **Prof. Mihai Datcu, German Aerospace Center DLR, Germany**
Prof. Lianlin Li, Peking University, China

D0188 **POLARIMETRIC SAR TARGET SCATTERING INTERPRETATION IN**
08: 00 **ROTATION DOMAIN: THEORY AND APPLICATION**

Si-Wei Chen*, Xue-Song Wang, Shun-Ping Xiao
State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, National University of Defense Technology, Changsha 410073, China

E0349 **HIGH-FIDELITY INHOMOGENEOUS GROUND CLUTTER SIMULATION**
08: 20 **OF AIRBORNE PD RADAR BASED ON DEM AND DLCD**

Hai Li[1*], Jie Wang[1], Di Song[1], Yi Fan[1], Jun G Han[2]
[1]Tianjin Key Lab for Advanced Signal Processing, Civil Aviation University of China, Tianjin, China
[2]School of Computing & Communications, Lancaster University, Lancaster, UK

E0273 **SPATIAL-TEMPORAL CORRELATED SEA CLUTTER SIMULATION**
08: 40 **BASED ON THE PROBABILITY DEFINITION WITH EXTENDED SAMPLES FOR AIRBORNE RADAR**

Mao Huihuang[1]*, Xie Wenchong[1], Zhao Xinggang[2], Xia Saiqiang[1]
[1]Airforce Early Warning Academy, Wuhan, China
[2]Troops 66136, Beijing, China

E1106 **HF RADAR SIGNATURES OF SHIP AND SUBMARINE WAKES**
09: 00

Stuart J Anderson[1]*
[1]Department of Physics, University of Adelaide, North Terrace, Adelaide, SA 5005, Australia

F1196 **PARAMETER-RETRIEVAL OF AIRCRAFT WAKE VORTEX BASED ON ITS**
09: 20 **MAX-MIN DISTRIBUTION OF DOPPLER VELOCITIES MEASURED BY A LIDAR**

Hang Gao[1], Jianbing Li[1]*, P. W. Chan[2], K. K. Hon[2]
[1]State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, National University of Defense Technology, Changsha, China
[2]Hong Kong Observatory, 134A Nathan Road, Hong Kong, China

D0335 **ANALYSIS AND IDENTIFICATION OF CONTINUOUS LINE TARGET IN**
09: 40 **SAR ECHO BASED ON SIDE LOBE FEATURES**

Yangkai Wei[1], Xinliang Chen[1]*,Yujie Fan[1],Zegang Ding[1],Cheng Wen[1]
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology Beijing Institute of Technology, Beijing,China,100081

Oral Session 23: Array Signal Processing

Time: **08: 00 - 10: 00, October 19, 2018**
Place: **Yangtze Room B, 2nd Floor of Hotel (B)**
Chairs: **Prof. Tapan K. Sarkar, Syracuse University, USA**
Dr. Xichao Dong, Beijing Institute of Technology, China

C1101 **PERFORMANCE ANALYSIS OF ADAPTIVE ALGORITHMS FOR**
08: 00 **SPACE-TIME ADAPTIVE PROCESSOR (STAP) IN PHASED ARRAY RADAR**

Raafia Irfan[1]*, Haroon-ur-Rasheed[2], Waqas A Toor[3], Muhammad Ashraf[4]
[1,2]Pakistan Institute of Engineering & Applied Sciences (PIEAS), Department of Electrical Engineering (DEE), Islamabad, Pakistan
[3,4]Capital University of Science & Technology (CUST), Department of Electrical Engineering (DEE), Islamabad, Pakistan

C0626 **A SPACE-TIME ADAPTIVE PROCESSING METHOD BASED ON ITERATIVE**
08: 20 **ADAPTIVE APPROACH WITH OFF-GRID SELF-CALIBRATION**

Huadong Yuan[1]*, Keqing Duan[1], Hong Xu[2], Wenchong Xie[1], Yongliang Wang[1]
[1]Key Research Laboratory, Wuhan Early Warning Academy, Wuhan, People's Republic of China
[2]Department of Electrical Engineering, Naval University of Engineering, Wuhan, People's Republic of China

S41105 **DESIGN OF A TERAHERTZ FREQUENCY SCANNING REFLECTOR**
08: 40 **ANTENNA AND ITS APPLICATION IN DIRECTION OF ARRIVAL ESTIMATION**

Shichao Li[1]*, Peipei Hou[2], Pengcheng Zhang[3], Congjing Hao[1], Jian Qu[1], Qu Jia[1], and Gang Li[1], Chao Li[3]

[1]Beijing Aerospace Yilian Science & Technology Development co., ltd, No. 18 Ke Chuang thirteen Street, Building No.24, Beijing economic and technological development zone, Beijing, China

[2]Beijing No.11 High School, No. 1 Jinyuchi west street, Dongcheng District, Beijing, China

[3]Institute of Electronics, Chinese Academy of Sciences, No. 19 North fourth ring road, Haidian district, Beijing, China

C0842 **DOA ESTIMATION WITH EXTENDED SPARSE AND PARAMETRIC**
09: 00 **APPROACH IN MULTI-CARRIER MIMO HFSWR**

Aihua Liu[1], Xin Zhang[1], Qiang Yang[1], Weibo Deng[1]

[1]Department of Electronic and Information Engineering, Harbin Institute of Technology, Harbin, P.R. China

C1035 **EXPLOITING PERSYMMETRY FOR JDL-STAP**
09: 20

Sha Wang[1], Bo Shi[1], Chengpeng Hao[1]*, Minggang Liu[1], Da Xu[1]

[1]Institute of Acoustics, Chinese Academy of Sciences, No.21 North 4th Ring Road, Haidian District, 100190 Beijing, People's Republic of China

C0712 **ROBUST SPACE TIME ADAPTIVE PROCESSING BASED ON COVARIANCE**
09: 40 **MATRIX RECONSTRUCTION AND STEERING VECTOR CORRECTION**

Xueyao Hu[1], Xinyu Zhang[2], Yang Li[1], Hongyu Wang[1], Yanhua Wang[1]*

[1]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, School of Information and Electronics, Beijing Institute of Technology, 100081, Beijing, China

[2]College of Electronic Sciences, National University of Defence Technology, 410073, Changsha, China

Oral Session 24: Radar Waveform Design and Optimization

Time: **08: 00 - 10: 00, October 19, 2018**
Place: **Yangtze Room 2, 2nd Floor of Hotel (C)**
Chairs: **Dr. Zongbo Wang, Ainstein, USA**
Prof. Yimin Liu, Tsinghua University, China

C0198 **SPACE SCANNING FMCW BASED TWO DIMENSIONAL FREQUENCY**
08: 00 **DIVERSE ARRAY RADAR**

Savaş Karadağ[1,2], Şimşek Demir[1,2] and Altunkan Hızal[3]

[1]Middle East Technical University, EEED, Ankara, Turkey,

[2]PRF-R&D Inc., Technopark, METU, Ankara, Turkey

[3]Radar and Electronic Warfare Systems, Aselsan Inc., Ankara, Turkey

D0675 **ORTHOGONAL WAVEFORM SEPARATION BASED ON ECHO**
08: 20 **COMPRESSION FOR AIRBORNE MIMO-SAR SYSTEMS**

Jie Wang[1*], Longyong Chen[2], Xingdong Liang[2]
[1]School of Electronic & Information Engineering, Nanjing University of Information Science & Technology, Nanjing, Jiangsu, China
[2]Science and Technology on Microwave Imaging Laboratory,
Institute of Electronics, Chinese Academy of Sciences, Beijing, China

C1078 **POWER OPTIMIZATION OF SIMULTANEOUSLY TRANSMITTED**
08: 40 **COMMUNICATION AND RADAR WAVEFORMS FROM A COMMON ARRAY**

Xiang Liu[1], Huaiying Tan[2], Tianyao Huang[3], Yimin Liu[4]*, Jie Zhou[5]
[1,3,4]Department of Electronic Engineering, Tsinghua University, China
[2]Radar Research Institute, Beijing, China
[1,5]Institute of Electronic Engineering, China Academy of Engineering Physics, China

F0752 **AMBIGUITY FUNCTION ANALYSIS OF HUMAN ECHOLOCATOR**
09: 00 **WAVEFORM BY USING GAMMATONE FILTER PROCESSING**

Raja S.A. R. Abdullah[1]*, Nur L. Saleh[1], Sharifah M.S. Ahmad[1], Asem A. Salah[1], Nur E.A. Rashid[2]
[1]Wireless and Photonic Networks Research Centre,Faculty of Engineering, Universiti Putra Malaysia (UPM) 43400 Serdang, Selangor, Malaysia
[2]Faculty of Electrical Engineering, Universiti Teknologi MARA (UiTM), 40450 Shah Alam, Selangor, Malaysia

C0834 **SEQUENTIAL OPTIMIZATION OF ORTHOGONAL WAVEFORMS FOR**
09: 20 **MIMO RADAR**

Zhongrui Huang*, Bo Tang, Shuo Zhang
College of Electronic Engineering, National University of Defense Technology, Hefei, China

C0212 **LOW SIDELOBE WAVEFORM DESIGN WITH CONSTANT MODULUS**
09: 40 **CONSTRAINT FOR HIGH FREQUENCY RADAR**

Shengnan Shi[1]*, Zhaoyi Wang[1], Zishu He[1], Ziyang Cheng[1]
[1]Department of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

Oral Session 25: SAR Interferometry II

Time: **08: 00 - 10: 00, October 19, 2018**
Place: **Yangtze Room 3, 2nd Floor of Hotel (D)**
Chairs: **Prof. Tian Xia, University of Vermont, USA**
Prof. Guo Zhang, Wuhan University, China

08: 00 **BACK PROJECTION ALGORITHM DESIGN FOR MULTISTATIC GROUND PENETRATING RADAR TOMOGRAPHY (INVITED TALK)**

Tian Xia
University of Vermont

08: 20 **THREE-DIMENSIONAL DEFORMATION MONITORING WITH INSAR (INVITED TALK)**
Zhiwei Li
Central South University

08: 40 **INTERFEROMETRIC TECHNOLOGY AND APPLICATION OF CHINESE GAOFEN-3 SAR SATELLITE (INVITED TALK)**
Yuzhi Zheng
Wuhan University, China

D0364 **IONOSPHERIC CORRECTION OF ALOS-2 FULL-APERTURE SCANSAR**
09: 00 **INTERFEROMETRIC DATA FOR SURFACE DEFORMATION MEASUREMENT IN BEIJING**
Jiaqi Ning[1,2]*, Robert Wang[1], Jili Wang[1,2], Bowen Zhang[1,2], Shuang Zhao[3]
[1]The Department of Space Microwave Remote Sensing System, The Institute of Electronics, Chinese Academy of Sciences, Beijing, China
[2]The University of Chinese Academy of Sciences, Beijing, China
[3]Harbin Engineering University, Harbin, China

C1022 **A SUPERPIXEL COSEGMENTATION ALGORITHM FOR SAR IMAGE**
09: 20 **CHANGE DETECTION**
Ningyuan Shao[1], Huanxin Zou[1]*, Cheng Chen[1], Meilin Li[1], Jiachi Sun[1], Xianxiang Qin[2]
[1]College of Electronic Science, National University of Defense Technology, Changsha, 410073, China
[2]School of Information and Navigation, Air Force Engineering University, Xi'an, 710077, China

D0390 **A NOVEL CHANGE DETECTION METHOD FOR SAR IMAGE BASED ON**
09: 40 **SIFT KEYPOINT AND SEGMENTATION**
Yan Wang[1, 2], Lan Du[1, 2]*, and Hui Dai[1, 2]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071,China
[2]Collaborative Innovation Center of Information Sensing and Understanding, Xidian University, Xi'an, 710071, China

Oral Session 26: Deep Learning for SAR Automatic Target Recognition II

Time: **10: 30 - 12: 30, October 19, 2018**
Place: **Yangtze Room A, 2nd Floor of Hotel (A)**
Chairs: **Prof. Kyung-Tae Kim, Pohang University of Science and Technology, South Korea**
Prof. Feng Xu, Fudan University, China

10: 30 **LEARNING HIERARCHICAL FEATURES FROM SAR IMAGES BASED ON THE PROBABILISTIC DEEP MODEL (INVITED TALK)**
Bo Chen
Xidian University

D0543 **BLOCK SPARSE BAYESIAN LEARNING BASED MULTIBAND FUSION**
10: 50 **ISAR IMAGING**

Di Xiong[1], Junling Wang[1]*, Lizhi Zhao[2], Meiguo Gao[1]
[1]School of information and electronics, Beijing Institute of technology, Beijing, China
[2]School of information engineering, Minzu University of China, Beijing,China

C0648 **SAR IMAGE SYNTHESIS BASED ON CONDITIONAL GENERATIVE**
11: 10 **ADVERSARIAL NETWORKS**

Jianyu Wang[1], Jingwen Li[1], Bing Sun[1]*, Zhixiong Zuo[1]
[1]School of Electronics and Information Engineering, Beihang University, Beijing, China

S61138 **INVERSE SYNTHETIC APERTURE RADAR IMAGING USING**
11: 30 **COMPLEX-VALUE DEEP NEURAL NETWORK**

ChangYu Hu[1], Ling Wang[1]*, Ze Li[1], Lingling Sun[1], Otmar Loffeld [2]
[1]Key Laboratory of Radar Imaging and Microwave Photonics of the Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China
[2]Center for Sensor Systems, University of Siegen, Siegen, Germany

C0255 **A HIERARCHICAL SHIP DETECTION METHOD FOR SPACE-BORNE SAR**
11: 50 **IMAGE**

Wei Tang[1,2], Baojun Zhao[1,2], Linbo Tang[1,2]*, Jinghong Nan[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China

C1061 **MF-SARNET: AN EFFECTIVE CNN WITH DATA AUGMENTATION**
12: 10 **FOR SAR AUTOMATIC TARGET RECOGNITION**

Yikui Zhai[1]*, Hui Ma[1], He Cao[1], Wenbo Deng[1], Jian Liu[1], Zhongyi Zhang[1], Huixin Guan[2],Yihang Zhi[2], Jinxing Wang[1], Jihua Zhou[2]
[1]School of Information Engineering, Wuyi University, Jiangmen, China
[2]School of Computer, Wuyi University, Jiangmen, China

Oral Session 27: Passive Radar II

Time: **10: 30 - 12: 30, October 19, 2018**
Place: **Yangtze VIP Room, 2nd Floor of Hotel (F)**
Chairs: **Prof. Stuart Anderson, University of Adelaide, Austalia**
Dr. Yan Wang, Beijing Institute of Technology, China

S7398 **FEASIBILITY ANALYSIS OF NON-ORTHOGONAL WAVEFORMS FOR**
10: 30 **MIMO PASSIVE RADAR APPLICATION**

Qing Wang[1], Tong Li[1], Tongdong Dou[1]*, Weifeng Zhu[2]
[1]School of Electrical and Information Engineering, Tianjin University, Tianjin, China
[2]Department of Electronic Engineering, Shanghai Jiao Tong University, Shanghai, China

S7421 **AN IMPROVED SCHEME FOR CLUTTER REJECTION AND DOA**
10: 50 **ESTIMATION IN PASSIVE RADAR**

Ke Wang, Xianrong Wan*, Jianxin Yi, Yucheng Yi
School of Electronic Information, Wuhan University, Wuhan, China

S71075 **JOINT PARAMETER ESTIMATION EMPLOYING COHERENT PASSIVE**
11: 10 **MIMO RADAR**

Liming Wang[1], Qian He[1]*, Rick S. Blum[3], Huiyong Li[1]
[1]University of Electronic Science and Technology of China, Chengdu, China
[2]Lehigh University, Bethlehem, USA

S7527 **EXPERIMENTAL RESULTS OF MARITIME MOVING TARGET DETECTION**
11: 30 **BASED ON PASSIVE BISTATIC RADAR USING NON-COOPERATIVE RADAR ILLUMINATORS**

Song Jie, Cai Fu-qing, Zhang cai-sheng, He You
Research Institute of Information Fusion, Naval Aviation University, Yantai, China

S7593 **THE EXPERIMENTAL RESEARCH OF PASSIVE BISTATIC RADAR BASED**
11: 50 **ON PIPELINE PROCESSING**

Guangyong Zheng, Huabing Wang, TingPeng Li
State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, Luoyang, China

S7952 **MICRO-DOPPLER FEATURE EXTRACTION UNDER PASSIVE RADAR**
12: 10 **BASED ON OFDM COMMUNICTION SIGNAL**

Xiao-yu Qu[1], Kai-ming Li[1], Qun Zhang[1,2], Bi-Shuai Liang[1]
[1]Institute of Information and Navigation, Air Force Engineering University, Xi'an 710077, China
[2]Key Laboratory for Information Science of Electromagnetic Waves(Ministry of Education), Fudan University, Shanghai 200433, China

Oral Session 28: GEO SAR

Time: 10: 30 - 12: 30, October 19, 2018
Place: Yangtze Room B, 2nd Floor of Hotel (B)
Chairs: Prof. Andrea Monti Guarnieri, Politecnico di Milano, Italy
Dr. Yu Zhu, Beijing Institute of Spacecraft System Engineering, China

S91102 10: 30 **G-CLASS: GEOSYNCHRONOUS RADAR FOR WATER CYCLE SCIENCE – ORBIT SELECTION AND SYSTEM DESIGN**

Stephen E. Hobbs[1]*, Andrea Monti Guarnieri[2], Antoni Broquetas[3], Jean-Christophe Calvet[4], Nicola Casagli[5], Marco Chini[6], Rossella Ferretti[7], Thomas Nagler[8], Nazzareno Pierdicca[9], Christel Prudhomme[10] and Geoff Wadge[11]
[1]Cranfield University, Cranfield, Bedford, UK
[2]DEIB, Politecnico di Milano, Milano, Italy
[3]Universitat Politècnica de Catalunya, Barcelona, Spain
[4]Centre Nationale de Recherches Météorologiques, Toulouse, France
[5]Universita degli Studi, Firenze, Italy
[6]Luxembourg Institute of Science and Technology, Luxembourg, Luxembourg
[7]Universita degli Studi dell'Aquila, Aquila, Italy
[8]Enveo IT GmbH, Innsbruck, Austria
[9]Sapienza Universita di Roma, Roma, Italy
[10]European Centre for Medium-Range Weather Forecasting, Reading, UK
[11]University of Reading, Reading, UK

10: 50 **BISTATIC SYNTHETIC APERTURE RADAR IMAGING WITH GEOSYNCHRONOUS ILLUMINATION (INVITED TALK)**

Junjie Wu
University of Electronic Science and Technology of China, China

F0164 11: 10 **DECORRELATION IN GEO SARS DUE TO RADIO FREQUENCY INTERFERENCES**

Yuanhao Li[1], Andrea Monti Guarnieri[2], Cheng Hu[1]
[1]Beijing Institute of Technology, China
[2]Politecnico di Milano, Italy

D1121 11: 30 **EFFECT ANALYSIS OF THE ANTENNA TRANSLATION VIBRATION ON GEO SAR IMAGE**

Tianyi Zhang[1], Zheng Lv[2], Wei Yin[3,*], Meng Ke[1], Gen Li[1], Zegang Ding[1, 4]
[1]Radar Research Lab., School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Spacecraft System Engineering, Beijing, China
[3]The 54th Research Institute of China Electronics Technology Group Corporation (CETC), Shijiazhuang, China
[4]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Beijing Institute of Technology, Beijing, China

D0815 **MULTI-BASELINE GEO SAR 3-D IMAGING ALGORITHM**
11: 50 **VIA NON-UNIFORM FFT**
Shunsheng Zhang[1]*, Lifang Zheng[1], Huihui Ding[1], Wen-Qing Wang[2], Zheng Lv[3], Bingji Zhao[3]
[1]Research Institute of Electronic Science and Technology, University of Electronic Science and Technology of China, Chengdu, China
[2]School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China
[3]Beijing Institute of Spacecraft System Engineering, Beijing, China

F0116 **MODELLING AND QUANTITATIVE ANALYSIS OF TROPOSPHERIC**
12: 10 **TURBULENCE IMPACTS ON GEO SAR IMAGING**
Cheng Hu[1,2], Jiaqi Hu[1], Xichao Dong[1]*, Yuanhao Li[1]
[1]Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

Oral Session 29: Radar Signal Processing II

Time: **10: 30 - 12: 30, October 19, 2018**
Place: **Yangtze Room 2, 2nd Floor of Hotel (C)**
Chairs: **Dr. Carmine Clemente, University of Strathclyde, UK**
Prof. Gang Li, Tsinghua University, China

10: 30 **MICRO-D0PPLER ANALYSIS FOR HUMAN ACTIVITY RECOGNITION (INVITED TALK)**
Gang Li
Tsinghua University, China

C1019 **BROADBAND DIRECTION OF ARRIVAL ESTIMATION VIA SPATIAL**
10: 50 **CO-PRIME SAMPLING AND POLYNOMIAL MATRIX METHODS**
William Coventry, Carmine Clemente and John Soraghan
University of Strathclyde, CESIP, EEE, 204, George Street, G1 1XW, Glasgow, UK

C0376 **MICRO-VIBRATION DISTINGUISHMENT BETWEEN HUMANS AND**
11: 10 **ANIMALS BASED ON EEMD USING UWB RADAR**
Yue Yin, Xiao Yu, Hao Lv, Miao Liu, Fugui Qi, Jianqi Wang*
Department of Electronics, School of Biomedical Engineering, the Fourth Military Medical University, Xi'an, China

C0509 **FOUR-CHANNEL MONOPULSE ANGLE ESTIMATION FOR PHASED**
11: 30 **ARRAY RADAR WITH ELLIPTICAL PLANE**
Xuemin Cao, Zhenhai Xu*, Xinghua Liu, Luoshengbin Wang, Wei Dong
State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, National University of Defense Technology, Changsha, China

B0365 **AN EFFECTIVE LOCALIZATION METHOD FOR MIXED FAR-FIELD**
11: 50 **AND NEAR-FIELD NONCIRCULAR SOURCES**

Qing Wang[1], Xiaotian Zhu[1], Hua Chen[2]*, Xian Wang[1], Wei Liu[3], Weiqing Yan[4]
[1]School of Electronic Information Engineering, Tianjin University, Tianjin, China
[2]Faculty of Information Science and Engineering, Ningbo University, Ningbo, 315211, China
[3]Department of Electronic and Electrical Engineering, University of Sheffield, Sheffield, UK S1 3JD
[4]School of Computer and Control Engineering, Yantai University, Yantai, 264005, China

C0270 **ANALYSIS OF PHASE NOISE INFLUENCE ON MICRO DOPPLER**
12: 10 **FEATURE EXTRACTION OF VIBRATING TARGET**

Zihao Liu[1], Bo Peng[1]*, Xiang Li[1]
[1]School of Electronic Science, National University of Defence Technology, Changsha 410073, China

Oral Session 30: Moving Target Detection

Time: **10: 30 - 12: 30, October 19, 2018**
Place: **Yangtze Room 3, 2nd Floor of Hotel (D)**
Chairs: **Dr. Eli Brookner, Raytheon Company, USA**
Prof. Shengqi Zhu, Xidian Univerisity, China

C0941 **IMPROVED MOVING TARGET DETECTOR USING SEQUENTIAL**
10: 30 **COMBINATION OF DPCA AND ATI**

Myung-Jun Lee[1]*, Min-Seok Kang[1], Bo-Hyun Ryu[1], Seung-Jae Lee[2], Byung-Gyun Lim[2], Tae-Bong Oh[2], and Kyung-Tae Kim[1]
[1]REMS Laboratory of Dept. Electrical Engineering, POSTECH, Pohang, Gyeongbuk, Korea
[2]Korea Aerospace Research Institute, Daejeon, Korea

S6274 **COMPRESSIVE SENSING APPROACH FOR HIGH-RESOLUTION ISAR**
10: 50 **IMAGE RECONSTRUCTION AND AUTOFOCUS**

Min-Seok Kang[1],Kyung-Tae Kim[1]*
[1]Department of Electrical Engineering, Pohang University of Science and Technology, Pohang 37673, Republic of Korea

D0420 **RESEARCH ON GMTI SIGNAL PROCESSING TECHNOLOGY OF VISAR**
11: 10 **SYSTEM BASED ON LOW-RANK AND SPARSE MATRIX SEPARATION**

Liu Yadong[1], Zhang Qingjun[1], Chen Qian[2], He Dehua[1]
[1]China Academy of Space Technology, Beijing 100094, China
[2]Institute of Electronics, Chinese Academy of Sciences, Beijing, 100190, China

D1131 **SAR GROUND MOVING TARGET'S ALONG-TRACK VELOCITY**
11: 30 **ESTIMATION IN THE COMPLEX IMAGE DOMAIN VIA SOWVD**

Zuzhen Huang[1], Zegang Ding[1]*, Canzhen Meng[2], Yinchao Ge[3]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Air Force Early Warning Academy, PLA, Wuhan, 430019, China
[3]Wuhan Second Ship Design and Research Institute, Wuhan 430205, China.

C0994 **MOTION CLASSIFICATION FOR RADAR MOVING TARGET VIA STFT**
11: 50 **AND CONVOLUTION NEURAL NETWORK**

Xiaoqian Mou, Xiaolong Chen*, Ningyuan Su, Jian Guan
Radar Target Detection Research Group, Naval Aviation University, Erma Road 188, Yantai, China

D0093 **A NEW MOVING TARGET DOPPLER CENTROID EXPRESSION IN**
12: 10 **GEOSYNCHRONOUS SAR**

Mounir Melzi*, Cheng Hu, Xichao Dong, Chang Cui
Department of Electronic Engineering, Beijing Institute of Technology, Beijing 100081, P. R. China

Poster Sessions

Time: 15: 30 - 16: 30, October 17, 2018 Place: Yangtze Grand Ballroom A									
Session 1	D0080	A0091	A0663	A0662	A1083	D1084	D0727	A1156	C0901
A1031	A0120	D0491	A0024	A0041	A0203	A0245	A0562	A1096	C0107
C0155	C0247	C0302	C0699	D0170	S101048	A0553	A0358	F0915	A1089
A0410	B0896	C0808	C0090	C0979	B0798	D0211	C0147	A1050	S7578
A0579	C0292	A0135	A0888	C0367	C0394	C0396	S7409	S71054	C1133
C0208	S7972	D0082	**Session 2**	A0709	E0769	C1163	B0563	C0912	B1171
B0870	B1139	C0678	A0291	C0469	S91122	B0756	B0766	B0130	B0342
B0685	B0741	B0799	B0875	B0963	B0996	B0683	C0757	B0961	B0616
B0777	**Session 3**	S4250	B0874	E0197	A0694	D1038	F0322	F0328	C1174
A0308	C0653	F0715	B0061	C0353	A0395	A0493	C0037	C0820	S121126
A0157	C0408	A0622	A0089	A0778	A0942	A1069	B0615	B0881	B1087
C0195	C0618	C0849	E0821	S8230	S8238	C1051	C0307	C0444	D0144
S71112	C1082	A0240	B0354	E0119	C0964	C0818	D0649	D0958	S7953
A0108	D0557	A0905	D0424	C0865	A0577				
Time: 09: 50 - 10: 50, October 18, 2018 Place: Yangtze Grand Ballroom A									
Session 4	F0486	C0824	C0098	D1037	E0759	C0201	C0591	E0112	E0747
C0052	C0213	C0586	C0947	B0558	C1023	D0373	C0722	C1136	C0139
C0381	C0422	C0719	C0847	C1001	C1027	C0695	C0887	C0066	B0606
A0086	C0863	B0825	C0169	C0383	C0462	C0552	C0084	C1013	F0338
F0499	F0644	F0614	A1123	C0224	C0293	C0332	C0547	C0605	C0758
C0805	C0995	C0997	C0133	C0738	C0434	C0784	C0734	C0034	C0380
C0788	E0440	**Session 5**	C0077	D0911	C0294	C0387	C0592	C1065	C1100
D0265	C0134	C0143	C0544	C0568	C0806	C0816	C0927	C1017	C1114
C1176	C1081	C0549	C0470	C0463	D0655	C0940	C0705	C0859	C0651
D1011	C0807	S5876	**Session 6**	F0160	E0339	C0153	A0064	S11929	A0145
E0792	C1036	D0385	D0216	D0288	D0585	D1010	E0521	E0703	E1170
C0172	C0272	C0450	C0548	D0817	E0984	E1164	E1109	E0913	C1057
D0286	D0431	D0397	A0954	E0803	E0650	E1151	E0158	C0370	E0271
F0639									
Time: 15: 30 - 16: 30, October 18, 2018 Place: Yangtze Grand Ballroom A									
Session 7	A0438	A0309	F0371	F0401	F0067	C0378	C0479	C0992	C0324
C0551	C0691	C0768	C0885	C0950	D0115	D0246	D0298	D0492	D0800
S2535	D0765	C0036	C0078	C0083	C0146	C0232	C0348	C0459	C0528
C0564	C0610	C0681	C0812	C0826	C0949	C0956	C0814	C1025	C1039
S2402	C0299	C0340	C0413	C0530	C0613	C0932	C0711	C0822	C0959
C1108	C1158	S2448	C0063	C0739	C0454	S7689	F1107	C0110	C0297
C0343	C1097	C0708	S2690	D0588	C0151	**Session 8**	C1134	E0982	E0199
E0280	E0363	C0209	E0566	E0848	E0233	E0612	C0889	E1098	C0215
E0329	E0850	C1166	C0368	C0517	C0326	C0717	C1167	A0836	C0918
E0623	C0726	**Session 9**	D0384	C0835	C0898	C0686	F0861	C0883	C0680
B0900	C0100	C0761	C0877	C0917	C1004	C0141	C0760	C0804	C0126
C0449	C0598	C0895	B0351	C0480	C0609	C0624	C1012	C0379	F0482
C0184	C0334	C0443	C0550	C0755	C0793				

Time: 14: 50 - 15: 50, October 19, 2018 Place: Yangtze Grand Ballroom A									
Session 10	S11518	D0163	D0951	D1103	E0811	D0969	C0226	C1157	D0621
C1140	D0374	D0749	C0315	A0857	A1099	A1125	C0081	C0256	C0323
C0388	C0432	C0489	D0070	D0127	D0287	D0290	D0851	D0970	D1149
C1005	D1000	F0248	A0607	A0833	A0880	C0258	D0665	E0333	A1154
D0437	S6878	D0125	D1152	C0776	D0231	D0468	D0537	D0919	F0620
S6762	S6514	D0542	D0023	D0361	D0541	A1072	C0930	D0111	D0433
D0481	D0572	D1026	D1068	D1071	D0447	B0767	D1162	**Session 11**	S5840
S51007	C0740	C0987	C0415	C1161	C0529	C0219	C0510	C0631	C1124
C0993	C0507	C0074	C0483	C0704	C0936	C0937	C1030	C1172	F0439
C0236	S5839	C0279	A0574	C0565	C0185	C1137	Session 12	B0723	C0506
C1175	C0742	C0785	C1169	C1165	C0478	C0735	C1173	C0724	C1168
C0511	C0966	C0731	C0696	C0105	C0512	C0933	C1067	C0235	C0175
C0296	C0619	C0114	S7375	A0590	C0161	A0242	A0707	C0121	C0204

Poster Session 1: Distributed /MIMO /Passive Radar

Time: 15: 30 - 16: 30, October 17, 2018
Place: Yangtze Grand Ballroom A
Chair: Prof. Hai Li, Civil Aviation University of China, China

D0080 **ULTRA-LONG SYNTHETIC APERTURE TIME SPACE-SURFACE BISAR USING BEIDOU-2 MEO & IGSO SATELLITES AS ILLUMINATORS OF OPPORTUNITY**

Weiming Tian[1,2*], Tian Zhang[1,2], Cheng Hu[1,2], and Tao Zeng[1,2]
[1]Radar Research Laboratory, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing 100081, China

A0091 **NON-COOPERATIVE GAME THEORY BASED DISTRIBUTED POWER ALLOCATION STRATEGY IN RADAR NETWORK**

Chenguang Shi[1], Fei Wang[1*], Mathini Sellathurai[2], Jianjiang Zhou[1]
[1]Key Laboratory of Radar Imaging and Microwave Photonics, Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China
[2]School of Engineering and Physical Sciences, Heriot Watt University, Edinburgh, the United Kingdom

A0663 **A DEMONSTRATION OF DISTRIBUTED DIGITAL ARRAY RADAR EXPERIMENT SYSTEM**

Lu Wang[*], Yingjun Li，Zhengshuai An, HuanHuan Xie
Xi'an Research Institute of Navigation Technology, Xi'an, P. R. China

A0662 **SIGNAL-TO-NOISE RATIO GAIN BOUND ANALYSIS FOR MULTI-RADAR COHERENT COMBINATION**

Xinghua Liu[1*], Zhenhai Xu[1], Luoshengbin Wang[1], Wei Dong[1], Shunping Xiao[1]
[1]State Key laboratory of CEMEE, National University of Defense Technology, Changsha, P.R.China

A1083 **FAST MESH FORMING FOR DISTRIBUTED DIGITAL ARRAY RADAR**

Jin Guanghu[1*], Chen Tao[1], Dong Zhen[1]
[1]School of Electronic Science, National University of Defense Technology, Changsha, Hunan 410073, P. R. China

D1084 **RESOLUTION ANALYSIS FOR GEOSTATIONARY SPACEBORNE-AIRBORNE BISTATIC FORWARD-LOOKING SAR**

Meng Ke[1*], Wei Yin[2], Tianyi Zhang[1], Yanjiao Yang[3], Zegang Ding[1]
[1]Beijing Key Laboratory of Embedded Real-Time Information Processing Technology, Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology
[2]The 54th Research Institute of China Electronics Technology Group Corporation (CETC), No. 589 Zhongshan West road, Shijiazhuang, China
[3]Beijing Electro-Mechanical Engineering Institute, Beijing, China

D0727 UNAMBIGUOUS SIGNAL RECONSTRUCTION FOR GEO-LEO BISTATIC SAR WITH AZIMUTH MULTICHANNEl

Yuekun Wang[1*], Zheng Lu[2], Mingming Xu[2], Yu Zhu[2], Zhenfang Li[1]
[1]National Laboratory of Radar Signal Processing, Xidian University, Xi'an 710071, China
[2]Beijing Institute of Spacecraft System Engineering, Beijing 100094, China

A1156 AN INTEGRATED TIME-FREQUENCY SYNCHRONIZATION METHOD FOR COOPERATIVE BISTATIC RADAR

Youwang Chen[1], Weiming Tian[1,2]*, Lilei Yin[1], Jingyang Wang[1,2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China

C0901 DUAL-STATION RADAR BASED LIVING BODY DETECTION AND LOCALIZATION

Chao Yan, Yong Jia*, Yong Guo, Xiaoling Zhong
College of Information Science and Technology, Chengdu University of Technology, Chengdu, China

A1031 A BASELINE DESIGNING AND IMPLEMENTATION APPROACH FOR GEO-SAR TOMOGRAPHY SYSTEM

Zhao Bingji[1*], Zhang Qingun[1], Dai Chao[1], Shu Weiping[1], and Xu MingMing[1]
[1]Beijing Institute of Spacecraft System Engineering CAST, Beijing 100094, China

A0120 IMPROVEMENT OF NONLINEAR CHIRP SCALING ALGORITHM FOR HIGHLY SQUINT BISTATIC SAR DATA FOCUSING

Yu Li[1*], Chongdi Duan[1], Weiwei Wang[1], Xiaochao Yang[1], Zhimei Yang[1]
[1]Xi'an Institute of Space Radio Technology, No.504, East Chang'an street, Changan district, Xi'an, China

D0491 WIDE APERTURE IMAGING PROCESSING AND ANALYSIS FOR BSAR WITH GNSS TRANSMITTERS

Lingzhi Zhang[1,2], Ke Li[1,2], Feifeng Liu[1,2*], Cheng Hu[1,2]
[1]Radar Research Laboratory, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

A0024 ELEMENT POSITION ERROR ESTIMATION FOR GROUND-BASED MIMO RADAR

Qian He[1], Wenyu Yang[1], Weiming Tian[1,2*], Jingyang Wang[1]
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A0041 **MIMO RADAR SIGNALS MODULATION RECOGNITION BASED ON PARTIAL INSTANTANEOUS AUTOCORRELATION SPECTRUM**

Xian Rao[1], Xuezhi Zhao[2], Ling Zhang[3], Xuezhi Zhao[4*]
[1,2,3,4]Department of Electronic Engineering Xidian University, Xi'an, China

A0203 **TRANSMIT BEAMPATTERN DESIGN FOR AIRBORNE PHASED- MIMO RADAR**

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[1]AVIC Leihua Electronic Technology Research Institute, Wuxi 214063, China

A0245 **DETECTION PERFORMANCE ANALYSIS OF HYBRID MIMO RADAR**

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[1]China Academy of Electronics and Information Technology, Beijing, China
[2]School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai, China

A0562 **MIMO RADAR TECHNIQUES: TWO-STAGE CONSTANT FALSE ALARM RATE DETECTION FOR FAST-FLUCTUATING TARGETS**

Zhihua Li[1], Hongtao Su[1*], Qinzhen Hu[1], Shenghua Zhou[1]
National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071, China

A1096 **A PREDICTION BASED PSO ALGORITHM FOR MIMO RADAR ANTENNA DEPLOYMENT IN DYNAMIC ENVIRONMENT**

Ziqin Wang, Tianxian Zhang*, Lingjiang Kong, Guolong Cui
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

C0107 **MOVING TARGET DETECTION IN CLUTTER BACKGROUND WITH FDA-MIMO RADAR VIA THREE-DIMENSIONAL FOCUS PROCESSING**

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C0155 **DOA ESTIMATION FOR SUBARRAY MIMO RADAR WITH LIMITED SAMPLES**

Jiaolong Shan[1]*, Tao Yuan[1], Guanglei Zhang[1]
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C0247 **DESIGN AND CHARACTERISTIC ANALYSIS OF HYBRID OFD-LFM-PC WAVEFORMS IN THE MIMO RADAR**

Sheng Hong*, Yantao Dong, Yu Ai, Yuhao Wang, Zhixin Zhao
Cognitive Radio Sensor Networks Laboratory, School of Information Engineering, Nanchang University, Nanchang, Jiangxi, People's Republic of China

C0302 **THE MULTI-HYPOTHESIS TEST FOR CLOSE TARGETS DETECTION IN COLOCATED MIMO RADAR**

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C0699 MOVING TARGET DETECTION WITH POLARIMETRIC DISTRIBUTED MIMO RADAR IN HETEROGENEOUS CLUTTER

Yan Xiang, Zhiwen Liu*, Yulin Huang, Yougen Xu
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

D0170 WAVEFORM DIVERSITY DESIGN FOR MIMO SAR SYSTEM BASED ON OFDM CHIRP

Yujiu Zhao[1], Xingyu Lu[1], Jianchao Yang [1], Hong Gu[1*], Weimin Su[1]
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S101048 DETECTION OF STATIONARY HUMANS USING TIME-DIVISION UWB MIMO THROUGH-WALL RADAR

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A0553 A COMPENSATION METHOD OF MULTIPLE-CHANNEL AMPLITUDE AND PHASE ERRORS FOR MIMO IMAGING RADAR

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A0358 MMSE-BASED WAVEFORM DESIGN FOR DISTRIBUTED MIMO RADAR IN SPECTRALLY CROWDED ENVIRONMENTS

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F0915 SPARSE DIRECTION OF ARRIVAL ESTIMATION OF CO-PRIME MIMO RADAR USING SPARSE APERTURE COMPLETION

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A1089 MIMO RADAR USING FREQUENCY INCREMENTAL WAVEFORMS FOR JOINT DOA AND TDOA ESTIMATION

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A0410 GENERALIZED AMBIGUITY FUNCTION ANALYSIS OF DISTRIBUTED MIMO SAR

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B0896 DESIGN OF A COMPACT ULTRA-WIDEBAND MIMO ANTENNA

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C0808 SPACE-TIME ADAPTIVE DETECTION FOR BISTATIC MIMO SYSTEM UNDER COVARIANCE MATRIX PERSYMMETRY AND SYMMETRIC SPECTRUM

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C0090 DESIGN AND IMPLEMENTATION OF MIMO RADAR REAL-TIME IMAGING SYSTEM BASED ON MULTICORE DSP

Hongyan Mei[1,2], Weiming Tian[1,2*], Ruiguo Huo[1,2], Jingyang Wang[1,2]
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C0979 PARAMETER ESTIMATION FOR SPARSE TARGETS IN PHASED-MIMO RADAR

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B0798 APPLYING OF LUNEBURG LENS FOR MULTI-BEAM TEM-HORN ANTENNA

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D0211 GROUND-BASED DEFORMATION MEASUREMENT RADAR CONFIGURED WITH MULTIPLE-INPUT MULTIPLE-OUTPUT ANTENNAS

Haofei Wang[1*], Jiandong Li[2,3], Erke Mao[2], Jian Yang[1]
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C0147 **A FAST ALGORITHM OF FREQUENCY SYNTHESIS FOR MULTI-SUBBAND WIDEBAND WAVEFORM**

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A1050 **BEAM-SPACE DIRECT LOCALIZATION USING PASSIVE ARRAYS WITH RANDOM SHAPE ERRORS**

Ning Zhang[1,2*], Hanying Zhao[2], Ran Zhang[1], and Naiti Jiang[1]
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S7578 **MULTISTATIC AIRBORNE PASSIVE SAR IMAGING USING CROSS VALIDATION BASED SOMP ALGORITHM**

Lele Qu, Yu Liu, Shimiao An, Tianhong Yang, Yanpeng Sun
College of Electronic Information Engineering, Shenyang Aerospace University, Shenyang, China

A0579 **WEAK TARGET DETECTION TECHNOLOGY OF THE PASSIVE RADAR BASED ON NAVIGATION SATELLITE SIGNAL**

Xiaoyan Fan, She Shang, Dawei Song, Wenfeng Sun, Yuanyuan Wen
National Key Laboratory of Science and Technology on Space Microwave, Xi'an China, 710100

C0292 **AN ATTRACTIVE PASSIVE DIRECT POSITIONING ALGORITHM FOR LOCALIZATION OF MULTIPLE TRANSMITTERS BASED ON EIGENVALUE MAXIMAZING**

Fangxiang Chen[1*], Tao Zhou[1], Bin Sun[2], and Lingjiang Kong[1]
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[2]Beijing Institute of tracking and telecommunication technology, Beijing, China

A0135 **EXPERIMENTAL RESULTS OF DTTB-BASED PASSIVE RADAR WITH POLARIZATION DIVERSITY RECEPTION**

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A0888 **K-COVERAGE BASED RECEIVER PLACEMENT OPTIMIZATION IN PASSIVE RADAR NETWORK**

Rui Xie[1], Xianrong Wan[2], Kai Luo[1*], Jianxin Yi[2], and Tao Jiang[1]
[1]Huazhong University of Science and Technology, School of Electronic Information and Communication, Wuhan, China
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C0367 **DIRECT WAVE SUPPRESSION TECHNOLOGY OF PASSIVE RADAR SYSTEM**

Ren Xiaohang[1], Liu Ning[2*], Wang Jinghua[3], Zhang Running[4]
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C0394 COGNITIVE PASSIVE RADAR SYSTEM: SOFTWARE DEFINED RADIO AND DEEP LEARNING APPROACH

Qing Wang[1], Panfei Du [1*], Tongdong Dou[1], Lirong Gao[1], Chun Li[2]
[1]School of Electronic Information Engineering, Tianjin University, Tianjin, China
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C0396 PASSIVE RADAR POLARIZATION FILTERING TECHNOLOGY RESEARCH

Yucheng Yi, Xianrong Wan*, Jianxin Yi and Ke Wang,
Laboratory of Radio waves Propagation, School of Electronic Information, Wuhan University, Wuhan, China

S7409 LTE-BASED PASSIVE RADAR FOR DRONE DETECTION AND ITS EXPERIMENTAL RESULTS

Yangpeng Dan, Jianxin Yi*, Xianrong Wan, Yunhua Rao, Benjing Wang
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S71054 APPLICATION OVERVIEW AND DEVELOPMENT TREND OF PASSIVE RADAR IN CIVIL AVIATION

Qiang Zhang*, Qingyu Zhang, Zhengyuan Wu, Yixin Zhao, Hua Li, Weijun Pan
Air Traffic Management College, Civil Aviation Flight University of China, Guanghan 618307, China

C1133 A DATA BLOCK PROCESSING STRUCTURE FOR AIRSHIP BORNE PASSIVE BISTATIC RADAR

Feng Xu[1*], Xin Liu[1], Li Liu[2], Chao Wang[1], YiFei Wang[1]
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C0208 TARGET LOCALIZATION FROM BISTATIC RANGE MEASUREMENTS IN MULTISTATIC PASSIVE RADAR USING MULTIDIMENSIONAL SCALING

Yongsheng Zhao, Zhixin Liu, Dexiu Hu*, Yongjun Zhao, Chuang Zhao
National Digital Switching System Engineering and Technological Research Center, Zhengzhou, China

S7972 PASSIVE RADAR SPARSE IMAGING WITH TRANSMITTER AND RECEIVER POSITION ERRORS

Tianyun Wang, Bing Liu, Kai Kang, Qiang Wei, Yong Liu
China Satellite Maritime Tracking and Control Department, Jiangyin, 214431, P.R. China

D0082 A NOVEL MIMO-SAR SYSTEM APPLIED FOR HIGH-SPEED AND HIGH-ACCURACY DEFORMATION MEASUREMENT

Cheng Hu[1], Yunkai Deng[1], Weiming Tian[2]*, Jingyang Wang[2], Tao Zeng[2]
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Poster Session 2: Radar System

Time: 15: 30 - 16: 30, October 17, 2018
Place: Yangtze Grand Ballroom A
Chair: Dr. Yanhua Wang, Beijing Institute of Technology, China

A0709 **DESIGN OF LARGE APERTURE SPARSE ARRAY FOR MAINLOBE INTERFERENCE CANCELLATION**

Honggang Zhang[1], Wei Liu[2,3], Quanhua Liu[2,3*], Jian Yang[1]
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[2]Radar Research Laboratory, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[3]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China

E0769 **EFFECTIVE POWER ANALYSIS OF MULTI-TONE EXCITATION TRANSMITTING SYSTEM**

Maogang Wei, Furong Yang, Haiyan Huang, Kun Shan
Southwest Institude of Electronic Equipment, Chengdu,China

C1163 **NULL WIDENING METHOD FOR CONFORMAL ARRAY BASED ON COVARIANCE MATRIX ENHANCEMENT**

Zhanze Wang[1], Yuze Sun[2], Shuai Li[1], Xiaopeng Yang[1*]
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[2]Department of Electronic Engineering, Tsinghua University, Beijing, China

B0563 **SYNTHESIS OF ISOPHORIC CONCENTRIC RING ARRAYS WITH MULTIPLE CONSTRAINTS**

Dingcheng Dai*, Minli Yao, Wei Jin, Fenggan Zhang
Xi'an Research Institute of High Technology, Xi'an, China

C0912 **A HYBRID OPTIMIZATION ALGORITHM AND ITS APPLICATION FOR PATTERN SYNTHESIS OF PLANAR ARRAYS**

Zhengdong Qi, Yangyi Lu, Yue Kong,Youji Cong
No.724 institute of CSIC, Nanjing, China

B1171 **HYBRID OPTIMIZATION METHOD OF IMPROVED GENETIC ALGORITHM AND IFT FOR LINEAR THINNED ARRAY**

Zheng Wang[1], Yuze Sun[2], Xiaopeng Yang[1*], Shuai Li
[1]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, School of Information and Electronics, Beijing Institute of Technology, Beijing, China.
[2]Department of Electronic Engineering, Tsinghua University, Beijing, China

B0870 **SYNTHESIS OF UNIFORMLY EXCITED SPARSE RECTANGULAR PLANAR ARRAY FOR SIDELOBE SUPPRESSION USING MULTI-OBJECTIVE OPTIMIZATION ALGORITHM**

Chengyan Zhang[1], Xiongjun Fu[1*], Xu Chen[2], Shuilian Peng[3], Xie Min[1]
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B1139 RESEARCH ON NEAR-FIELD FOCUSINGING ALGORITHM OF RECONFIGURABLE REFLECT-ARRAY

HongYan Liu, Pei Zheng*, Chao Wang, Lei Guo, XinYu Zhang
Natioal Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, Beijing, P.R. China

C0678 ITERATIVE PHASE FEEDING METHOD FOR PLANAR ARRAY WITH DIGITAL PHASE SHIFTER

Ziyi Bian[1], Renli Zhang[1], Weixing Sheng[1], Xiaofeng Ma[1], Yubing Han[1], Jie Cui[1], Fan Kong[2]
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A0291 DESIGN OF AN ANTI-IRRADIATION BEAM-STEERING UNIT BASED ON ASIC CIRCUIT

Wenguang Xiao[1], Baidong Yao[2]
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[2]Key Laboratory of Aperture Array and Space Application, Hefei, China

C0469 RADAR WORKING STATE IDENTIFICATION USING HIDDEN MARKOV MODEL

Wei Zhang*, Youbing Gao, Kun Zheng
Science and Technology on Electronic Information Control Laboratory, Chengdu 610036, China

S91122 A LARGE APERTURE SCANNING MEMBRANE PHASED ARRAY ANTENNA FOR GEO SAR APPLICATIONS

Mingming Xu[1,2*], Qinjun Zhang[1], Yu Zhu[1], Bingji Zhao[1], Zheng Lv[1], Weihua Yu[2]
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[2]Beijing Institute of Technology, Beijing, 100081, China

B0756 A WIDEBAND PLANAR DIPOLE BASED ON DUAL-LAYER ARTIFICIAL MAGNETIC CONDUCTOR

Suyang Shi*, Peigang Yang, Lei Zhou, Wenjun Chen
Antenna and Microwave Department of No.724 Institute, Nanjing, China

B0766 A BROADBAND HORIZONTALLY-POLARIZED OMNI-DIRECTIONAL ANTENNA WITH STABLE RADIATION PATTERNS

Zhou Lei, Cui Mantang, Lu Yangyi
No. 724 Institute of China Shipbuilding Industry Corporation, Nanjing, China

B0130 RESEARCH ON DUAL-POLARIZATION PRINTED DIPOLE ANTENNA FOR SPHERICAL NEAR-FIELD MEASUREMENTS

Pei Zheng*, JiaQi Liu, ShangYue Wang, Ran Zhang, Hu Fan
National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, Beijing, P.R. China

B0342 **A MULTILAYER BROADBAND ASYMMETRIC TRANSMISSION OF LINEAR POLARIZATION IN ACTIVE METASURFACE**

You Li[1], Xiaochun Liu[1,2], Lili Liu[1], Qunsheng Cao[1]
[1]Nanjing University of Aeronautics and Astronautics, Nanjing, China
[2]AVIC Research Institute for Special Structures of Aeronautical Composites, Jinan, China

B0685 **A DIAMOND SHAPED METASURFACE LOW-PROFILE WIDEBAND ANTENNA**

Chenyun Shi, Jie Cui, Zhang Renli, Yubing Han*
School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing, China

B0741 **ANALYSIS OF A NEW COAXIAL WAVEGUIDE SLOT ANTENNA**

Jianxin Li[1,2*], Tong Li[1], Wei Yu[1, 2]
[1]Nanjing Research Institute of Electronics Technology, Yuhuatai District Tru No. 8th, Nanjing, Jiangsu province, China
[2]National Key Laboratory of Antenna Microwave Technology, Yuhuatai District Tru No. 8th, Nanjing, Jiangsu, China

B0799 **A NOVEL BROADBAND DESIGN OF SIW DIRECTIONAL COUPLER**

Jia Wang[1], Tianqing Ling[2]
[1,2]Nanjing Research institute of Electronics Technology, Nanjing 210013, People's Republic of China

B0875 **MINIATURIZATION OF THE HIGH FREQUENCY SURFACE WAVE RADAR TRANSMITTING ANTENNA**

Hong-Bo Li, Yang Song, Chang-Jun Yu*
School of Information and Electrical Engineering, Harbin Institute of Technology，Weihai, China

B0963 **A LOW LOSS FREQUENCY SCANNING PLANAR ARRAY WITH HYBRID FEEDING STRUCTURE FOR LOW-ALTITUDE DETECTION RADAR**

Hao Wang[1], Yaodan Zhang[1], Yan Wang[1], Shuanglong Quan[1], Dalong Xu[1]
[1]School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing 210094, China

B0996 **A W-BAND LOW-SIDELOBE SERIES-FED MICROSTRIP ANTENNA ARRAY BASED ON IMPEDANCE MATCHING SECTION WEIGHTING METHOD**

Song Song [1], Wei Wang[*2], Xuetian Wang [2]
[1]Space Engineering University, Beijing, China
[2]Beijing Institute of Technology, Beijing, China

B0683 **A FAST MEASUREMENT METHOD FOR RECEIVED ARRAY ANTENNA**

Liu Lingge[1], Zhang Qitao[2], ChenYe[3]
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[2]Zhang Qitao Institute of Space Radio Technology of Xi'an, Xi'an, China
[3]Chen Ye Institute of Space Radio Technology of Xi'an, Xi'an, China

C0757 **DESIGN AND IMPLEMENTATION OF PARALLEL CRC ALGORITHM FOR FIBRE CHANNEL ON FPGA**

Wu Chuxiong*, Shi Haifeng
Nanjing Research Institute of Electronics Technology, Nanjing, China

B0961 **INTEGRATED DESIGN OF ACTIVE PHASED ARRAY FOR LOW-ALTITUDE DETECTION RADAR**

Hao Wang[1], Juanjuan Ding[1], Yongrong Shi[2], Junzhi Zhang[2], Shuanglong Quan [1], Dalong Xu[1], Yan Wang[1]
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[2]Nanjing Electronic Devices Institute, Nanjing 210094, China

B0616 **100 GHZ SILICON-BASED MICROMACHINED PATCH ANTENNA AND ARRAYS**

Jingtian Liu[1], Shuming Chen[1*], Ke Xiao[2], Xiaowen Chen[1]
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[2]College of Electronic Science and Engineering, National University of Defense Technology, Changsha 410073, China

B0777 **DESIGN OF AN OMNI-DIRECTIONAL ANTENNA WITH COMPACT SIZE**

Chuo Yang[1*], Xiao-ning Huo[1], Xiao-fei Wang[1], Bo-kun Yang[1], Yu-dong Zhao[1], Geng Zhang[1]
[1]Beijing Institute of Space Long March Vehicle, Beijing 100076, China

Poster Session 3: Advanced Radar

Time: **15: 30 - 16: 30, October 17, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Prof. Raja S.A. R. Abdullah, Universiti Putra Malaysia, Malaysia**

S4250 **STUDY OF ONE MICROWAVE IMAGING SYSTEM BASED ON AUTOMOTIVE RADAR CHIP**

Fuwei Wu[1,2], Siming Li[1,2], Shize Shang[1,2], Yuanji Li[1,2], Yuhao Yang[1,2*]
[1]Nanjing Research Institute of Electronic Technology, Nanjing Jiangsu, China
[2]Key Laboratory of Intellisense Technology, CETC, Nanjing Jiangsu, China

B0874 **DESIGN OF DETECTION TERMINAL FOR ACTIVE MILLIMETER-WAVE IMAGING**

Hanxue Mei[1,3], Jinbang Wang[1,3], Tao Zhang[1,2,3], Zhiguo Liu[1,2.3]
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[3]Applied optics Beijing key laboratory

E0197 **SIMULATION -BASED CONFIGURATIONS STUDY OF ACTIVE MILLIMETER-WAVE IMAGING SYSTEM FOR PERSONAL SECURITY**

Yan You[1], LingBo Qiao[1,2], ZiRan Zhao[2*]
[1]Nuctech Company Limited, Beijing 100084, P.R. China
[2]Department of Engineering Physics, Tsinghua University, Beijing 100084, P.R. China

A0694 POSITIONING OF A MOVING TARGET BEHIND A CORNER USING A SIMO RADAR

Qingsong Zhao, Guolong Cui, Lifang Feng, Wei Yi, Lingjiang Kong
*School of Electronic Engineerring, University of Electronic Science and Technology of China Chengdu, Sichuan, P.R.China, 611731

D1038 A MULTI-FUNCTION ARRAY SAR SYSTEM ON A SPACEBORNE DUAL-PLATFORM

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F0322 OPTICAL-CONTROLLED ARRAY BASED ON LINEAR CHIRP GRATING

Hongxia Guo[1], Shaoyao Zhang[1], Shanxiang Mu[1*]
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F0328 INVESTIGATION OF DIFFERENT TARGET'S MICRO VIBRATION FEATURE BASED ON A COHERENT SHOT-NOISE LIMITED LIDAR

Chi Xu[1, 2, *], Huixin Huang[1, 2], Linghao Xia[1, 2], Shen Dong[1, 2]
[1]Nanjing Research Institute of Electronics Technology, Nanjing 210039, China
[2]Key Laboratory of Intelli Sense Technology, CETC, Nanjing 210039, China

C1174 A SUBARRAY PARTITION METHOD BASED ON PARTICLE SWARM OPTIMIZATION FOR LARGE APERTURE PHASED ARRAY RADAR

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[2]Department of Electronic Engineering, Tsinghua University, Beijing 100084, China

A0308 IMPROVED HYBRID SCRUBBING SCHEME FOR SPACEBORNE SRAM-BASED FPGAS

Yue Li[1], Zhichun Chen[2], Yuyao Shen[3*], Yongqing Wang[1]
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[2]Shanghai Astronomical Observatory, Chinese Academy of Sciences, Shanghai, China
[3]Academy of Opto-electronics, Chinese Academy of Sciences, Beijing, China

C0653 EXPERIMENTAL VERIFICATION OF AN INTEGRATED RADAR COMMUNICATION SYSTEM

Zengliang Li[2], Jie Liu[2*], Ning Yin[2], Youcheng Wang[1*]
[1]Sicence and Technology on Complex System Control and Intelligent Agent Cooperation Labrotary, Beijing 100074, P. R. China
[2]Beijing Institute of Beijing electro-mechanical engineering, Beijing 100074, P. R. China

F0715 A SOFTWARE RECEIVER DESIGN FOR GNSS-R USING MULTIPLE GNSS SATELLITES AS TRANSMITTERS

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B0061 **EQUIVALENT CIRCUIT MODEL OF A ULTRA-WIDEBAND FREQUENCY SELECTIVE SURFACE COMPOSITE ABSORBING MATERIAL**

Jiaao Yu*, Shirui Peng, Hao Nan, Jianhao Liu
No.6 Department, Air Force Early Warning Academy, Wuhan, China

C0353 **MIXED JAMMING SUPPRESSION ALGORITHM FOR PHASED ARRAY RADAR**

Meng Zhang[1], Xinyu Zhang[2], Wanjie Song[1], Wenqing Kong[1], Zijing Zhang[1]
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A0395 **APPLICATION AND ANALYSIS OF ELECTRONIC MECHANICAL DUAL STABILITY PLATFORM OF THREE-AXIS STABILIZED TURNTABLE RADAR**

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A0493 **STUDY ON THE BEST CALCULATON SCHEME OF EQUIVALENT EVAPORATION DUCT FEATURE**

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C0037 **MIXED H_2/H_∞ FAULT TOLERANT COOPERATIVE FORMATION FOR MULTI-VEHICLE SYSTEMS WITH TIME-VARYING DYNAMICS**

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C0820 **AN APPROACH OF SYSTEM ERROR REGISTRATION FOR TWO-STATION COAST RADARS FOR SEA SURFACE MONITORING**

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S121126 **A UNIFIED OSTBC BASED COMMUNICATION SCHEME FOR COOPERATIVE SPACE VEHICLES**

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A0157 **RESEARCH ON RADAR TASK SCHEDULING WITH POWER CONSTRAINT**

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C0408 **A NOVEL INDEX FOR TASK SCHEDULING IN PHASED ARRAY RADAR**

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A0622 RESOURCE ALLOCATION OF RADAR NETWORK BASED ON PARTICLE SWARM OPTIMIZATION

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A0089 WEAK VIBRATION MEASUREMENT TECHNOLOGY AND VERIFICATION BASED ON FMCW GROUND-BASED RADAR

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A0778 QUANTIFYING INSECT MIGRATION ACROSS BOHAI STRAIT USING WEATHER RADAR

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A0942 LIFE-DETECTION RADAR BASED ON WIDEBAND CHAOTIC SIGNAL

Hang Xu[1, 2*], Liqiang Li[1,2], Ying Li[1,2], Jianguo Zhang[1,2], Hong Han[1,2], Li Liu[1, 2], Bingjie Wang[1,2]
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A1069 STUDY OF OCEAN RADAR REMOTE SENSING AND OCEAN WAVE MODEL DATA ANALYSIS

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B0615 A SILICON-BASED ON-CHIP FOUR-CHANNEL PHASED-ARRAY RADAR TRANSMITTER WITH FERROELECTRIC THIN FILM AT 100 GHZ

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B0881 **DESIGN OF DIRECT WAVE CANCELLATION SYSTEM FOR HIGH FREQUENCY CW RADAR**

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B1087 **RESEARCH ON THE INFLUENCE OF SPECIAL-SHAPED HONEYCOMB RADAR ABSORBING STRUCTURE FOR WIDE-BAND ABSORBING DESIGN**

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C0195 **INSECT SPEED EXTRACTION METHOD BASED ON A HIGH RESOLUTION AND FULL POLARIZATION RADAR WITH VERTICAL-LOOKING MODE**

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C0618 **APPLICATION OF AHP AND D-S EVIDENTIAL THEORY IN RADAR SEEKER ANTI-INTERFERENCE PERFORMANCE EVALUATION**

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C0849 **DESIGN AND IMPLEMENTATION OF LFMCW RADAR SYSTEM BASED ON ZYNQ**

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E0821 **MEASUREMENT OF INSECT MASS BASED ON ELLIPSOID SCATTERING MODEL**

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S8230 AN INSECT TRAJECTORY SIMULATION METHOD BASED ON RADAR OBSERVATION

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S8238 INSECT DETECTION AND DENSITY ESTIMATION BASED ON A KU-BAND SCANNING ENTOMOLOGICAL RADAR

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C1051 OPTIMIZATION OF SPARSE ARRAY CONFIGURATION USING AMBIGUITY FUNCTION IN AUTOMOTIVE RADAR APPLICATION

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C0307 SIMULTANEOUS SPATIOTEMPORAL BIAS AND STATE ESTIMATION FOR ASYNCHRONOUS MULTI-SENSOR SYSTEM

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C0444 USING INTEGER AND FRACTIONAL MEASURE FOR PROCESSING AND RECOGNITIONS OF SMALL AND DISTORTED IMAGES IN OPTICAL LOCATION AND MEDICINE

Alexander A. Potapov[1,2*], Vitaly A. German[1], Andrey A. Pakhomov[1], Vladimir I. Grachev[1], Wei Zhang[2], Tianhua Feng[2]
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D0144 SLANT-RANGE ACCURACY ASSESSMENT FOR THE YAOGAN 13

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S71112 RESEARCH ON MODERN RADAR EMITTER MODELING TECHNIQUE UNDER COMPLEX ELECTROMAGNETIC ENVIRONMENT

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C1082 ANALYSIS OF THE CHARACTERISTICS OF PHASE NOISE GNERATED BY 90 150 CELLULAR AUTOMATA

An Di[1], Cao Xin[1], Ji Qingwei[1] , Shi Wenqiang[1] , Gao Xinghan[1]
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A0240 A THREE-DIMENSIONAL OPTIMAL FOCUSING IMAGING ALGORITHM FOR WALL-PENETRATING RADAR

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B0354 ARRAY SELF-CALIBRATION FOR SKY-WAVE OVER-THE-HORIZON RADAR WITH GAIN-PHASE ERRORS

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E0119 A NOVEL RADAR SIGNAL TO EFFICIENTLY UTILIZE SPECTRUM BASED ON CONTINUOUS-PHASE FREQUENCY-SHIFT KEYING

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C0964 DESIGN ABOUT THE SYSTEM OF HIGH-SPEED DATA TRANSMISSION AND DATA PREPROCESSING FOR SAR IMAGING BASED ON SOPC

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C0818 A FPGA-BASED RECONFIGURABLE MATRIX INVERSION IMPLEMENTATION FOR INVERSE FILTERING OF MULTI-CHANNEL SAR IMAGING

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D0649 A DESIGN OF NON-UNIFORM PULSE INTERVALS FOR SPACEBORNE STRIPMAP RANGE SWEEP SAR

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D0958 STUDY ON SPACEBORNE HRWS TOPSAR MODE BASED ON AZIMUTH MULTICHANNEL

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S7953 A DEINTERLEAVING METHOD OF COMPLEX STAGGERED PRI RADAR SIGNALS BASED ON EDW FUSION

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A0108 AN ADAPTIVE SPACE-TIME CANCELLER FOR CLUTTER SUPPRESSION IN AIRBORNE RADARS

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D0557 LOCATION DISPLACEMENT ANALYSIS ON TARGET HEIGHT IN VIDEOSAR IMAGE SEQUENCE

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A0905 CASCADED KALMAN FILTER FOR TARGET TRACKING IN AUTOMOTIVE RADAR

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D0424 THREE-DIMENSIONAL RECONSTRUCTION OF SPACE ROTATING TARGET BASED ON NARROW-BAND RADAR NETWORKS

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C0865 MULTI-FRAME TRACK-BEFORE-DETECT ALGORITHM FOR DISAMBIGUATION

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A0577 A MULTI-PATH SUPPRESSION ALGORITHM FOR THROUGH-THR-WALL IMAGING

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Poster Session 4: Radar Signal Processing

Time: 09: 50 - 10: 50, October 18, 2018
Place: Yangtze Grand Ballroom A
Chair: Dr. Xiangrong Wang, Beihang University, China

F0486 **ROBUST LOW-RANK ABUNDANCE MATRIX ESTIMATION FOR HYPERSPECTRAL UNMIXING**

Fan Feng[1,2], Baojun Zhao[1,2], Linbo Tang[1,2*], Wenzheng Wang[1,2], Sen Jia[1,2]
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C0824 **A NEW METHOD TO SUPPRESS NARROWBAND INTERFERENCE FOR OFDM RADAR**

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C0098 **RESEARCH ON THE METHOD OF FAST INVERSE REALIZATION OF VANDERMONDE MATRIX BASED ON FPGA**

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D1037 **MONOPULSE SAR ANGLE MEASUREMENT BASED ON TOTAL VARIATION AND MONOTONIC ITERATIVE ALGORITHM**

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E0759 **STUDY OF WIND DIRECTION FACTOR BASED ON SEA CLUTTER IN LITTORAL ENVIRONMENTS**

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C0201 ADAPTIVE HIGH DEGREE CUBATURE KALMAN FILTER In the presence of UNKNOWN MEASUREMENT NOISE COVARIANCE MATRIX

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C0591 LATERAL VELOCITY MEASUREMENT AND ERROR ANALYSIS

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E0112 INFLUENCE OF THE FREQUENCY DEVIATION ON THE SIMULTANEOUS PSM MEASUREMENT

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E0747 COMPENSATION METHODS FOR RADIO WAVE PROPAGATION INFLUENCE ON THE OPERATION OF THE ABOVE-THE-HORIZON VHF RADARS. MODERN TRENDS

V.B. Ivanov[1], I.P. Nasarenko[1], A. A. Potapov[2], S.M. Savelyev[1], A.I. Stuchilin[1], A.V. Scherbinko[1], E.I. Shustov[1]
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C0052 FREQUENCY DOMAIN DETECTION OF SINUSOIDAL SIGNAL UNDER COLORED GAUSSIAN NOISE

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C0213 RESEARCH ON SIGNALS EXTRAPOLATION IN THE TIME DOMAIN BASED ON WAVELET ANALYSIS

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C0586 RADAR EMITTER INTRAPULSE SIGNAL BLIND SORTING UNDER MODIFIED WAVELET DENOISING

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C0947 ON TIME DELAY ESTIMATION TECHNIQUES FOR RADAR SIGNAL

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B0558 **RESEARCH ON DESIGN AND KEY TECHNOLOGY OF WIDEBAND RADAR INTERMEDIATE FREQUENCY DIRECT ACQUISITION MODULE BASED ON VIRTEX-7 SERIES FPGA**

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C1023 **IMAGE DENOISING BASED ON WAVELET THRESHOLDING AND WIENER FILTERING IN WAVELET DOMAIN**

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D0373 **3D IMAGE PECONSTRUCTION OF SPINNING CONE-SHAPED TARGET**

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C0722 **A NOVEL SPREAD SPECTRUM ALGORITHM RESISTANCE TO WIDEBAND NON-STATIONARY INTERFERENCE**

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C1136 **DIMENSION DEGRADATION OF FRACTIONALLY SPACED SUPER EXPONENTIAL ALGORITHM FOR SPARSE CHANNEL EQUALIZATION**

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C0139 **A NOVEL DYNAMIC PARTIAL PECONFIGURATION SCHEME FOR FAULT-TOLERANT FFT PROCESSOR BASED-ON FPGA**

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C0381 A GENERATION SCHEME OF CHIRP SCALING PHASE FUNCTIONS BASED ON FLOATING-POINT CORDIC PROCESSOR

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C0422 A SIMPLIFIED LLR ALGORITHM FOR M-QAM DEMODULATION

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C0719 A SINGLE CHANNEL PIPELINED VARIABLE-LENGTH FFT PROCESSOR DESIGN

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C0847 IMPLEMENTATION AND OPTIMIZATION OF PULSE COMPRESSION ALFORITHM ON OPENCL-BASED FPGA

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C1001 REINFORCEMENT DESIGN OF RADAR PULSE COMPRESSION ALGORITHM IN SPACEBORNE ENVIRONMENT

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C1027 TWO DIMENSIONAL FFT AND TWO DIMENSIONAL CA-CFAR BASED ON ZYNQ

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C0695 AN FPGA-BASED FAULT INJECTION DESIGN FOR 16K-POINT FFT PROCESSOR

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C0887 EDGE ESTIMATION METHOD FOR NON-UNIFORM ENVELOPE PULSE BASED ON INSTANTANEOUS FREQUENCY

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C0066 FAST ALGORITHM FOR DESIGNING UNIMODULAR SEQUENCE AND RELATED MISMATCHED FILTER WITH FLEXIBLE CORRELATION PROPERTIES

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B0606 DYNAMIC RANGE ANALYSIS OF ONE-BIT COMPRESSIVE SAMPLING WITH TIME-VARYING THRESHOLDS

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A0086 CHANNEL EQUALIZATION METHOD FOR WIDEBAND DIGITAL ARRAY RADAR

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C0863 ANGULAR GLINT COMPENSATION FOR SEEKERS BASED ON MULTICARRIER TECHNIQUES

Haoxing Li[1*], Di Zhu[2], Ruiheng Lv[3], Chen Chen[4], Di Zhang[5], Cunfeng Gu6*, Feng Chen[7]
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B0825 LOCATION METHOD STUDY BASED ON P440 ULTRA-WIDE BAND RANGING AND COMMUNICATION MODULES

Xu Zhang[1,4], Hui Liu[1,4*], Lei Zhang[1,4], Lei Pang[2], Fang Li[3], Xin Yan[1,4]
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C0169 AN EXTRACTION METHOD OF WIDE-BAND PHASED ARRAY RADAR SIGNALS BASED ON PULSE AMPLITUDE CHARACTERISTIC

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C0383 DATA COMPRESSION METHOD BASED ON INFORMATION PRESERVATION FOR WIDEBAND RADAR LFM SIGNAL ECHO

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C0462 AN IMPLEMENTATION ARCHETECTURE OF SIGNAL PROCESSING IN PULSE DOPPLER RADAR SYSTEM BASED ON FPGA

Ming Yang, Jing Yang, Yanan Hou, Cheng Jin*
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C0552 A COHERENT INTEGRATION ADAPTIVE PULSE COMPRESSION ALGORITHM FOR RANDOM FREQUENCY-HOPPING RADAR

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C0084 AN IMPROVED RECEIVER AUTONOMOUS INTEGRITY MONITORING ALGORITHM

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C1013 EXTENDED MAXIMUM LIKELIHOOD REGISTRATION FOR MULTIPLE RADARS ON MOBILE PLATFORM

Jun Wang[1], Shuheng Ma[1], Yuxi Zhang*, Shaoming Wei[1], Zhichang Wu[1]
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F0338 PASSAGE OF FRACTAL SIGNALS VIA CIRCUIT WITH A FERROELECTRIC CAPACITOR WITH A NEGATIVE CAPACITANCE

Gadgymurad O. Abdullaev[1], Agalar M.-Z. Agalarov[1], Alexander A. Potapov[2,3*], Alexander A. Rassadin[4], Anton A. Tronov[4]
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F0499 A HIGH SENSITIVE ACQUISITION METHOD OF GPS SIGNAL BASED ON IRIDIUM ASSISTANCE

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F0644 **ANALYSIS OF IRIDIUM-AUGMENTED GPS POSITIONING PERFORMANCE**

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F0614 **QUALITY EVALUATION OF AGILE PLATFORM GPS RECEIVER OBSERVATIONS BASED ON GROUND SIMULATION**

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A1123 **A NEW ROBUST TAYLOR SERIES METHOD FOR TARGET LOCALIZATION BASED ON EXTERNAL EMITTER RADAR**

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C0224 **MICRO-DOPPLER SEPARATION OF MULTI-TARGET BASED ON ACO IN MIDCOURSE**

Yizhe Wang[1*], Yongshun Zhang[2], Cunqian Feng[2, 3], Bin Chen[1], Qichao Ge[1]
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[3]Collaborative Innovation Center of Information Sensing and Understanding, Shaanxi Xi'an, China

C0293 **A LABELED GM-CBMEMBER FILTER WITH ADAPTIVE TRACK INITIATION**

Hemin Sun, Muyang Luo, Xiaobiao Wu, Xin Xie, Zhimin Jiang
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C0332 **δ-GENERALIZED LABELED MULTI-BERNOULLI FILTER BASED ON DOPPLER INFORMATION IN CLUTTER**

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C0547 **ADAPTIVE CARDINALITY BALANCED MULTI-TARGET MULTI-BERNOULLI FILTER BASED ON CUBATURE KALMAN**

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C0605 BLUE FILTER WITH FUSED RANGE ESTIMATION

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C0758 PROJECTION-BASED STATE ESTIMATION USING NOISY DESTINATION

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C0805 POLARIZED HRRP SCATTERING CENTRE ESTIMATION VIA ATOMIC NORM MINIMIZATION

Haibo Liu[1,2], Ying Xi[1,2], Yanhua Wang[1,2]*, Yang Li[1,2], Tong Zhao[3]
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C0995 A RANDOM FOREST-BASED TRACK INITIATION METHOD

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C0997 NOVEL MULTIPLE HYPOTHESIS METHOD FOR TRACKING MOVE-STOP-MOVE TARGET

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C0133 LOCALIZATION OF UNRESOLVED TARGETS WITH FREQUENCY DIVERS ARRAY RADAR

Shengbin Luo Wang[1]*, Zhenhai Xu[1], Xinghua Liu[1], Wei Dong[1], Guoyu Wang[1]
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C0738 LONG-TIME COHERENT INTEGRATION FOR HIGH DYNAMIC DSSS SIGNAL

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C0434 NOVEL LONG TIME COHERENT ACCUMULATION ALGORITHM BASED ON ACCELERATION BLIND ESTIMATION

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C0784 BAYESIAN ANGULAR SUPERRESOLUTION FOR SEA-SURFACE TARGET IN FORWARD-LOOKING SCANNING RADAR

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C0734 A METHOD FOR ELIMINATING LOCATION GHOST BASED ON MULTI-MOMENT CORRELATION

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C0034 COOPERATIVE FORMATION FOR MULTI-AGENT SYSTEMS WITH TIME-VARYING DYNAMICS IN FINITE-HORIZON

Jiantao Shi[1,2]*, Yuhao Yang[1,2], Jun Sun[1,2], Ning Wang[1,2]
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C0380 A MAXIMUM LIKELIHOOD DISTANCE ESTIMATION ALGORITHM FOR MULTI-CARRIER RADAR SYSTEM

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C0788 METEOROLOGICAL CLUTTER SUPPRESSION METHOD FOR BALL-BORNE RADAR BASED ON KALMUS FILTER

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E0440 ANTI-MULTIPATH INTERFERENCE METHOD OF SEMI-ACTIVE SEEK

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Poster Session 5: Radar Target Identification and Recognition

Time: 9: 50 - 10: 50, October 18, 2018
Place: Yangtze Grand Ballroom A
Chair: Prof. Ling Wang, Nanjing University of Aeronautics and Astronautics, China

C0077 **COMPRESSED SPATIAL-SPECTRAL FEATURE REPRESENTATION FOR HYPERSPECTRAL GROUND CLASSIFICATION**

ZHOU Shichao[1,2], Zhao Baojun[1,2], Tang Linbo[1,2*], WANG Wenzheng[1,2]
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D0911 **AN ADAPTIVE SCALE SEGMENTATION ALGORITHM FOR POLARIMETRIC SAR IMAGE**

Yifan Xu[1*], Aifang Liu[1], Long Huang[1]
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C0294 **FAST SIGNAL RECONSTRUCTION AND RECONGNITION ALGORITHM BASED ON CASCADING REDUNDANT DICTIONARY AND BLOCK SPARSITY FOR COMPRESSED SENSING RADAR RECEIVER**

Chaozhu Zhang[1], Peipei Qiu[1*], Hongyi Xu[1]
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C0387 **WAVEFRONT FEATURE EXTRACTION FOR SAR TARGET RECOGNITION**

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C0592 **STOCHASTIC CONFIGURATION NETWORK -BASED SAR IMAGE TARGET CIASSIFICATION APPROACH**

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[2]Army aviation research institute, Tongzhou, Beijing, China

C1065 **A NOVEL SAR ATR WITH FULL-ANGLE DATA AUGMENTATION AND FEATURE OLYMERIZATION**

Yikui Zhai[1*], Hui Ma[1], Jian Liu[1], Wenbo Deng[1], Lijuan Shang[1], Bing Sun[2], Ziyi Jiang[3], Huixin Guan[3], Yihang Zhi[1], Xi Wu[1], Jihua Zhou[1]
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[3]School of Computer, Wuyi University, Jiangmen, China

C1100 **DENSE CONVOLUTIONAL NETWORK RECOGNITION ARCHITECTURE FOR SAR IMAGE TARGET**

Zhang Ye[1], Zhu Weigang[2], Fan Xinyan[3], Wu Xu[4]
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D0265 **SHIP GEOMETRIC FEATURES EXTRACTION USING TERRASAR-X DATA**

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C0134 **ROBUST AND FAST ALGORITHM FOR EXTRACTING THE PERIODIC FEATURE FROM JET ENGINE MODULATION SIGNALS**

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C0143 **CLASSIFICATION OF RCS SEQUENCES BASED ON KL DIVERGENCE**

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C0544 **GPU PARALLEL IMPLEMENTATION AND OPTIMIZATION OF SAR TARGET RECOGNITION METHOD**

Hongbin Quan, Zongyong Cui, Runqiang Wang, Zongjie Cao*
School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

C0568 **AIRCRAFT CLASSIFICATION METHOD BASED ON KURTOSIS-SKEWNESS FEATURE AND WD-LDA**

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C0806 **RADAR HRRP TARGET RECOGNITION BASED ON STACKED DENOSING SPARSE AUTOENCODER**

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C0816 **A NOVEL POLARIMETRIC RADAR TARGET RECOGNITION FRAMEWORK BASED ON LSTM**

Wei Chen[1,2], Liang Zhang[1,2], Jia Song[1,2], Yanhua Wang[1,2*], Yang Li[1,2]
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C0927 **RADAR HIGH RESOLUTION RANGE PROFILE RECOGNITION VIA MULTI-SV METHOD**

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C1017 SHIP DETECTION AND RECOGNITION COMBING ONE-DIMENSIONAL RANGE PROFILE WITH SAR IMAGE

Yang Li[1,2], Miaomiao Cheng[1,2], Xiangjun Peng[1,2], Bangsheng Zhuo[1,2], Feng Li[1,2*]
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C1114 TARGET RECOGNITION IN SYNTHETIC APERTURE RADAR IMAGE BASED ON PCANET

Baogui Qi[1], Haitao Jing[2], He Chen[1*], Yin Zhuang[1], Zhuo Yue[1], Chonglei Wang[1]
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C1176 TARGET RECOGNITION BASED ON STACKED AUTOENCODER

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C1081 AERIAL TARGET CLASSIFICATION BASED ON FEATURE ANALYSIS

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C0549 TARGET CLASSIFICATION USING RENYI ENTROPY FEATURES OF CYCLIC BISPECTRUM

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C0470 MICRO-MOTION FEATURE EXTRACTION OF SPACE TARGETS BASED ON SINUSOIDAL FREQUENCY MODULATION FOURIER TRANSFORM

Jian Hu*, Ying Luo, Qun Zhang, Xiaowen Liu, Xiaoyu Qu
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C0463 A NOVEL STAR AND CONSTELLATION RECOGNITION ALGORITHM FOR TELESCOPE ON EARTH

Xinyu Zhang, Lin Sun, Cheng Jin*
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

D0655 A NOVEL MICRO-DOPPLER FEATURE EXTRACTION METHOD FOR VIBRATION TARGETS BASED ON THE SEGMENTAL INTRINSIC CHIRP COMPONENT DECOMPOSITION

Kang Wenwu[1,2,3*], Zhang Yunhua[1,2,3], Dong Xiao[1,2]
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[2]National Space Science Center, Chinese Academy of Sciences, Beijing, China
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C0940 **A RECOGNITION METHOD OF DENSE FALSE TARGETS JAMMING BASED ON TIME-FREQUENCY ATOMIC DECOMPOSITION**

Zhimei Hao*, Wen Yu, Wei Chen
School of Electronic Information Engineering, Beihang University, Beijing, China

C0705 **ROTATION ERROR ANALYSIS ON SLANT 45° DUAL POLARIZATION RADAR FEATURE EXTRACTION**

Liang Zhang[1, 2], Yanhua Wang[1, 2*], Yang Li[1, 2]
[1]Radar Research Lab, School of Information and Electronics, Beijing Institute of Technology, Beijing, China
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C0859 **THE MICRO MOTION FEATURE EXTRACTION OF NARROW-BAND RADAR TARGET BASED ON ROMP**

Shuai Chen[1], Cunqian Feng[2], Xuguang Xu[1]
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C0651 **VISUALIZATION AND INTERPRETATION OF POLSAR DATA BASED ON POLARIMETRIC COHERENCE**

Liting Liang[1,2*], Yunhua Zhang[1,2], Dong Li[1]
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D1011 **UNSUPERVISED SAR IMAGE SEGMENTATION BASED ON KERNEL TRIPLET MARKOV FIELDS WITH BELIEF PROPAGATION**

Lu Gan[1*], Xiaoming Liu[1], Ziwei Li[1]
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C0807 **MARITIME TARGETS CLASSIFICATION BASED ON CNN USING GAOFEN-3 SAR IMAGES**

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[2]Beijing Institute of Electronic System Engineering
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S5876 **AN IMPROVED SSD BASED TRANSMISSION TOWER DETECTION IN SAR IMAGES**

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Poster Session 6: Radar Modeling and Analysis

Time: 09: 50-10: 50, October 18, 2018
Place: Yangtze Grand Ballroom A
Chair: Dr. Cheng Jin, Beijing Institute of Technology, China

F0160 **DEFORMATION MONITORING OF SIMILAR MATERIAL MODEL BASED ON POINT CLOUD FEATURE EXTRACTION**

Baoxing Zhou[1], Yuhui Shan[2], Shoufeng Yao[3]
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[2]Shandong Transportation Engineering Consultation Company Limited, Jinan, China
[3]Shandong Provincial Communications Planning and Design Institute, Jinan, China

E0339 **FEATURES OF MULTIFRACTAL STRUCTURE OF HIGH-ALTITUDE LIGHTNING DISCHARGES IN THE IONOSPHERE: ELVES, JETS, SPRITES**

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[2]JNU-IREE Joint Laboratory of Fractal Method & Signal Processing, Department of Electronic Engineering, College of Information Science and Technology, JiNan University, Guangzhou, China

C0153 **A METHOD OF SCATTERING CENTER EXTRACTION BASED ON COMPONENT DECOMPOSITION**

Zhiming Xu[1], Xiaofeng Ai[1], Siyuan He[2*], Kai Huang[2], Shunping Xiao[1]
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A0064 **COMPLEX FORWARD SCATTERING COEFFICIENT FOR SIGNAL CHARACTERIZATION**

Jing Chen[1,2], Xiangrong Liu[3], Changjiang Liu[1*], Xichao Dong[1,2]
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S11929 **THE ANALYSIS OF POLARIZATION FEATURES OF TYPICAL TARGETS IN CHENGDU USING THE GF-3 FULLY POLARIMETRIC SYNTHETIC APERTURE RADAR DATA**

Xiaoxia Wang[1*], Wei Zhang[1], Qing Ding[1], Changli Zheng[1], Jinghui Luo[1]
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A0145 **MAP OF FARADAY ROTATION ANGLE IN ALOS-2 FULL POLARIMETRIC DATA**

Yifei Ji[1], Qilei Zhang[1], Yongsheng Zhang[1*], Jinhui Li[1], Zhen Dong[1], Baidong Yao[2]
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E0792 SIMULATION AND ANALYSIS SYSTEM OF SEA ECHO BASED ON MATLAB

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C1036 DESIGN AND IMPLEMENTATION OF MULTI-CHANNEL MOVING TARGET RADAR SIGNAL SIMULATOR

Yunneng Yuan[1], Yuquan Luo[1], Yuxi Zhang*, Zhenguo Zhu[1], Jun Wang[1]
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D0385 MOVING TARGET MODELING AND INDICATION IN MIMO GEO SAR

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D0216 MODELING OF CONTINUOUSLY DISTRIBUTED TARGET FOR BISTATIC SYNTHETIC APERTURE RADAR IMAGING

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D0288 THE SAR IMAGING MODEL OF THE LOW-FLYING AIRPLANE TARGET AT THE COMPLEX MARITIME SCENE

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D0585 SPACE-VARIANT ANALYSIS AND TARGET ECHO SIMULATION OF GEOSYNCHRONOUS SAR

Min Zhang[1], Peng Zhou[1*], Xi Zhang[2], Yongshou Dai[1], Weifeng Sun[1]
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D1010 EFFECT OF ATMOSPHERE ON GEOSAR FOCUSING PERFORMANCE

Zhuoqun Wang[1*], Yajun Li[1], Sheng Shao[1], Shuangshuang Li[1]
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E0521 SCATTERING CHARACTERISTICS OF POLYGON PLATE

Zhiming Xu[1], Xiaofeng Ai[1*], Qihua Wu[1], Feng Zhao[1], Shunping Xiao[1]
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E0703 TARGET CHARACTERISTICS ANALYSIS FOR SHIPBORNE HF SURFACE WAVE RADAR

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E1170 HIGH-PRECISION TARGET ECHO GENERATION TECHNOLOGY BASED ON ONE-DIMENSIONAL LINEAR ARRAY RADAR

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C0172 A SPREAD SEA CLUTTER SUPPRESSION METHOD FOR HF HYBRID SKY-SURFACE WAVE RADAR

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C0272 RESEARCH OF WIND TURBINE CLUTTER MITIGATION BASED ON OMP ALGORITHM

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C0450 SEA CLUTTER SUPPRESSION ALGORITHM BASED ON SIGNAL RESONANCE

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C0548 TOTAL LEAST SQUARE CLUTTER CANCELLATION IN PASSIVE RADAR

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D0817 CLUTTER SIMULATION AND CHARACTERIZATION OF SPACEBORNE GEO-LEO RADAR

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E0984 **SIMULATING MULTIFRACTAL SEA CLUTTER AND SURFACE BASED ON THE RANDOM MULTIPLICATIVE MODEL**

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E1164 **PARAMETER ESTIMATION OF G0 DISTRIBUTION BASED ON IMPROVED RECURSIVE EM METHOD FOR CLUTTER MODELING**

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E1109 **GROUND CLUTTER SIMULATION FOR AIRBORNE FORWARD-LOOKING MULTI-CHANNEL LFMCW RADAR**

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E0913 **CLUTTER MODELING AND SIMULATION FOR HYPERSONIC VEHICLE-BORNE RADAR**

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C1057 **2D SCATTERING CENTRE INTENSITY PRE-ESTIMATED METHOD BASED ON MATRIX PENCIL METHOD**

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D0286 **A FEATURE ENHANCED SAR IMAGING ALGORITHM BASED ON ATTRIBUTED SCATTTERING CENTER MODELS FOR MAN-MADE RADAR TARGETS**

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D0431 **BUILDING EXTRACTION FROM GF-3 IMAGES USING WISHART CLASSIFICATION ASSISTED BY EXTENDED VOLUME SCATTERING MODEL**

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D0397 MULTI-RADAR TARGET PARAMETER ESTIMATION AND FUSION BASED ON ATTRIBUTE SCATTERING CENTRE MODEL

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A0954 COMPUTING SECOND-ORDER SCATTERING OF OBTUSE DIHEDRAL FOR ANY INCIDENT ANGLE

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E0803 SCATTERING CHARACTERISTICS OF ICE CRYSTAL ENSEMBLE

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E0650 FAST AND ACCURATE RCS EVALUATION VIA HIGH-PERFORMANCE PARALLEL FDTD SIMULATION

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E1151 RESEARCH ON MODELLING AND CALCULATION METHOD OF RIVER ICE ELECTROMAGNETIC SCATTERING

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E0158 ELECTROMAGNETIC SCATTERING CHARACTERISTICS OF FLAPPING BIRD AND EXPERIMENTAL VALIDATION

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C0370 RESEARCH ON PULSE COMPRESSION RADAR ANGULAR GLINT MODELING AND SUPPRESSION

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E0271 A GENERAL SPACE-TIME CLUTTER MODEL FOR MULTI-CHANNEL AIRBORNE RADAR

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F0639 **STUDY ON PROPAGATION CHARACTERISTICS OF LASER IN TURBULENT RAYLEIGH-BÉNARD THERMAL CONVECTION**

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Poster Session 7: Radar Target Detection

Time: **15: 30-16: 30, October 18, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Dr. Xinliang Chen, Beijing Institute of Technology, China**

A0438 **HIGH SPEED TARGET DETECTION ALGORITHM BASED ON RADON-FOURIER TRANSFORM FOR SABBEWR**

Wantian Wang, Ziyue Tang, Junquan Yuan, Yichang Chen, Zhenbo Zhu, Yuanpeng Zhang
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A0309 **DYNAMIC HEARTBEAT DETECTION ALGORITHM BASED ON RBFNN**

Xiaoqing Cui, Zhifeng Ma*
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F0371 **MOVING TARGET DETECTION BASED ON VELOCITY COMPENSATION METHODS IN A COHERENT CW LIDAR**

Huixin Huang[1,2*], Chi Xu[1,2], Linghao Xia[1,2], Cheng Wu[1,2]
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F0401 **CYCLE-SLIP DETECTION AND CORRECTION OF GPS SINGLE FREQUENCY CARRIER PHASE BASED ON WAVELET TRANSFORM AND LS-SVM**

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F0067 **A ROBUST RAGGED CLOUD DETECTION ALGORITHM FOR REMOTE SENSING IMAGE**

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C0378 AN OBJECT-BASED METHOD FOR OPTICAL AND SAR IMAGES CHANGE DETECTION

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C0479 INSECT WING-BEAT FREQUENCY AUTOMATIC EXTRACTION AND EXPERIMENTAL VERIFICATION WITH A KU-BAND INSECT RADAR SYSTEM

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C0992 CORNER TARGET POSITIONING WITH UNKNOWN WALLS' POSITIONS

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C0324 ROBUST BOUNDARY EXTRACTION OF GREAT LAKES BY BLOCKING ACM USING CHINESE GF-3 SAR DATA: A CASE STUDY OF DANJIANGKOU RESERVOIR, CHINA

Shilin Niu[1], Ning Li[1], Zhengwei Guo[1], Robert Wang[2], Yuexiu Guo[1], Lin Wu[1], and Jianhui Zhao[1*]
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C0551 THE CORRELATION BETWEEN SAR SYSTEM RESOLUTION AND TARGET DETECTION

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C0691 SAR VILLAGE TARGETS EXTRACTION AND HETEROGONOUS IMAGE REGISTRATION

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C0768 VISUAL TIME-SENSITIVE SAR TARGET DETECTION TECHNOLOGY BASED ON HUMAN BRAIN MAPPING

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C0885 A NOVEL SHIP TARGET DETECTION AND SEGMENTATION METHOD BASED ON MULTIFRACTAL ANALYSIS

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C0950 SAR IMAGE TARGET DETECTION METHOD BASED ON TWO-STAGE CFAR DETECTOR WITH G^0 DISTRIBUTION

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D0115 VEHICLE DETECTION OVER URBAN AREAS IN AIRBORNE DECIMETER RESSOLUTION POLARIMETRIC SAR IMAGES

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D0246 GROUND MOVING TARGET DETECTION AND FOCUSING IMAGING UNDER STRONG NOISE BACKGROUND

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D0298 PERFORMANCE ANALYSIS OF MOVING SHIP TARGET SIGNAL INTEGRATION AND DETECTION IN GEOSYNCHRONOUS SAR

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D0492 SAR IMAGE DETECTION OF SEA TARGETS BASED ON TWO-STEP CFAR DETECTOR OF KK DISTRIBUTION

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D0800 **A THREE-STEP GROUND MOVING TARGET DETECTIOIN METHOD FOR BISTATIC FORWARD-LOOKING SAR**

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S2535 **AN IMPROVED CV MODEL-BASED SEA-LAND SEGMENTATION METHOD FOR SHIP DETECTION IN SAR IMAGE HARBOR REGION**

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D0765 **AN IMPROVED FAST CORNER DETECTION METHOD**

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C0036 **SENSOR SELECTION FOR TARGET TRACKING BASED ON SINGLE DIMENSION INFORMATION GAIN**

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C0078 **FUSION-BASED SPECTRAL MATCHING METHOD FOR HYPERSPECTRAL TARGET DETECTION**

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C0083 **POINT SPREAD CHARACTER BASED LOW SNR SINGLE PIXEL INFRARED TARGET DETECTION**

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C0146 **AN IMPROVED MULTI-TARGET TRACKING ALGORITHM BASED ON SMC-CBMEMBER FOR THE AIRBORNE DOPPLER RADAR**

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C0232 **WEIGHTED TARGET DETECTOR VIA ESTIMATED SNR IN MULTIPATH ENVIRONMENT**

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C0348 RADAR SMALL/MINI TARGET DETECTION TECHNOLOGY IN STRONG CLUTTER ENVIRONMENT

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C0459 AN EFFICIENT KNOWLEDGE-AIDED TARGET RELOCATION ALGORITHM FOR AIRBORNE RADAR

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C0528 RADAR TARGET DETECTION DURING TRACKING WITH RCS PREDICTION

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C0564 TARGET TRACKING WITH DYNAMIC AND ADAPTIVE SELECTION OF RADARS BASED ON ENTROPY

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C0610 A MODIFIED REFERENCE WINDOW FOR TWO-DIMENSIONAL CFAR IN RADAR TARGET DETECTION

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C0681 DIRECT POSITION DETERMINATION AND EFFECTIVE EXTRACTION OF MULTIPLE TRANSMITTERS

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C0812 AN ADAPTIVE MANEUVERING TARGET TRACKING ALGORITHM BASED ON ACCELERATION PRE-ESTIMATION MODEL

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C0826 NAUTICAL RADAR CLUTTER SUPPRESSION AND SMALL TARGET DETECTION BASED ON IMAGE SPECTRUM FILTERING AND HOUGH TRANSFORM

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C0949 MOVING TARGET DETECTION BASED ON OFDM RADAR

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C0956 A NOVEL PRIORI-KNOWLEDGE-FREE MANOEUVRING TARGET TRACKING METHOD

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C0814 MULTI-TARGET TRACKING OF BIRDS IN COMPLEX LOW-ALTITUDE AIRSPACE BASED ON GM_PHD FILTER

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C1025 A TRACK-BEFORE-DETECT ALGORITHM FOR AIRBORNE RADAR SYSTEM

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C1039 IMPROVED CONVERTED MEASUREMENT KALMAN FILTER FOR SATELLITE-BORNE MULTI-TARGET TRACKING

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S2402 A NEW METHOD FOR WEAK TARGET DETECTION IN SEA ENVIRONMENT

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C0299 NEW MATRIX CFAR DETECTORS FOR RADAR TARGET DETECTION

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C0340 GLRT DETECTOR FOR RANGE AND DOPPLER SPREAD TARGETS AGAINST NON-GAUSSIAN CLUTTER IN OFDM RADAR

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C0413 INVESTIGATION ON THE REASON OF THE RANGE PROFILE DISTORTION OF THE PLASMA SHEATH TARGET

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C0530 CS-MMPF BASED WEAK TARGET DETECTION AND TRACKING WITH RANGE AMBIGUITY

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C0613 COHERENT DETECTION METHOD FOR MANEUVERING TARGET WITH COMPLEX MOTIONS

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C0932 ADAPTIVE TARGET DETECTION AGAINST SPATIALLY CORRELATED COMPOUND-GAUSSIAN CLUTTER WITH MULTIVARIATE INVERSE GAUSSIAN TEXTURE

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C0711 A HIERARCHICAL DETECTION METHOD OF SPECIFIC ARTIFICIAL RIGION USING LOCAL STRUCTURAL CONSTRAINT IN REMOTE SENSING IMAGES

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C0822 AN OPTIMIZED MULTI-HYPOTHESIS TRACKING ALGORITHM BASED ON THE TWO-DIMENSIONAL CONSTRAINTS AND MANEUVER DETECTION

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C0959 AN IMPROVED MULTIPLE HYPOTHESIS TRACKING METHOD AIDED BY RADIAL VELOCITY

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C1108 LONG-TERM TRACKING WITH FAST SCALE ESTIMATION AND EFFICIENT RE-DETECTION

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C1158 HIGH SPEED MOVING TARGET DETECTION AND TRACKING METHOD BASED ON SPEED ESTIMATION

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S2448 SAR DECEPTIVE JAMMING TARGET DETECTION METHOD BASED ON MULTI-ANGLE SAR IMAGES

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C0063 CORRELATION TRACKING VIA ROBUST REGION PROPOSALS

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C0739 TRACKING FLUCTUATING TARGETS IN EXTREMELY HETEROGENEOUS CLUTTER USING AMPLITUDE INFORMATION

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C0454 ADAPTIVE DETECTORS WITH ENHANCED SELECTIVITY CAPABILITIES IN PARTIALLY HOMOGENEOUS ENVIRONMENTS

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S7689 INFORMATION DIVERGENCE-BASED LOW PROBABILITY OF INTERCEPT WAVEFORM DETECTION FOR MULTI-ANTENNA INTERCEPT RECEIVERS

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F1107 **AIRFIELD DETECTION BASED ON JPEG2000 COMPRESSED DOMAIN**

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C0110 **REAL-TIME SHIP TARGET TRACKING SYSTEM FOR UAV**

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[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing, China

C0297 **NEAR SPACE HYPERSONIC TARGET COHERENT INTEGRATION ALGORITHM BASED ON SEARCH COMPENSATION**

Lin Li[1*], Guohong Wang[1], Xiangyu Zhang[1], Tingting Xin[1]
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C0343 **PERSYMMETRIC SUBSPACE ADAPTIVE DETECTION AND PERFORMANCE ANALYSIS**

Yongchan Gao[1*], Hongbing Ji[1], Nan Zhang[1], Lei Zuo[1]
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C1097 **EFFICIENT MULTI-SENSOR PATH SCHEDULING FOR COOPERATIVE TARGET TRACKING**

Lingtong Meng, Wei Yi*, Tao Zhou
University of Electronic Science and Technology of China, Chengdu, P.R. China

C0708 **SMALL VEHICLES DETECTION BASED ON UAV**

Wu Chen[1,2], Zhao Baojun[1,2], Tang Linbo[1,2*], Zhao Boya[1,2]
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S2690 **REGIONAL ATTENTION BASED SINGLE SHOT DETECTOR FOR SAR SHIP DETECTION**

Chen Shiqi[1*], Zhan Ronghui[2], Zhang Jun[3]
[1,2,3]Automatic Target Recognition Laboratory, National University of Defence Technology, Changsha, China

D0588 **A CFAR DETECTION METHOD IN POLARIMETRIC SAR IMAGERY BASED ON WHITENING FILTER UNDER INVERSE BETA DISTRIBUTION**

Wang MingChun, Zhang JiaFeng, Liu Tao*
School of Electronic Engineering, Naval University of Engineering, Wuhan, Hubei, China, 430033

C0151 GENERALISED RAO TEST FOR POLARIMETRIC TARGET DETECTION

Lei Shen, Zhiwen Liu*, Yougen Xu
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

Poster Session 8: ECM/ECCM

Time: 15: 30-16: 30, October 18, 2018
Place: Yangtze Grand Ballroom A
Chair: Prof. Cheng Hu, Beijing Institute of Technology, China

C1134 PERFORMANCE ANALYSIS OF ONE-STEP PREDICTION-BASED COGNITIVE JAMMING IN JAMMER-RADAR COUNTERMEASURE MODEL

Lu Gao[1], Li Liu[2], Yang Cao[1], Shangyue Wang[1], Shixun You[3]*
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E0982 A NOVEL DECEPTIVE JAMMING AGAINST MULTI-CHANNEL SAR-GMTI

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E0199 NEW METHOD FOR FOUR-CHANNEL MONOPULSE RADAR TO RESIST DUAL-SOURCE ANGLE DECEPTION JAMMING

Wang Jianlu[1,2,*], Xu xiong[1], Dai Huanyao[2], Sun Danhui[2], Qiao huidong[2]
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E0280 A SUPPRESSION METHOD AGAINST RANGE DECEPTION JAMMING BASED ON HOMOLOGOUS LOCALIZATION TEST

Datong Huang[1*], Guolong Cui[1], Mengmeng Ge[1], Xianxiang Yu[1], Lingjiang Kong[1]
[1]School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, Sichuan, P.R. China

E0363 A DISCRIMINATION SCHEME FOR RANGE-VELOCITY JOINT DECEPTION JAMMING IN MULTI-STATIC RADAR SYSTEM

Datong Huang[1*], Guolong Cui[1], Xianxiang Yu[1], Mengmeng Ge[1], Lingjiang Kong[1]
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C0209 PULSE INTERFERENCE METHOD AGAINST PRI SORTING

Hao Nan*, Shirui Peng, Jiaao Yu, Xiaoyan Wang
First No.6 Department, Air Force Early Warning Academy, Wuhan, China

E0566 **JAMMING DECISION UNDER CONDITION OF INCOMPLETE JAMMING RULE LIBRARY**

Qiang Xing[1,2*], Weigang Zhu[2], Zhou Chi[3], Guangyong Zheng[1]
[1]State Key Laboratory of Complex Electromagnetic Environment Effects on Electronics and Information System, Luoyang, China
[2]Space Engineering University, Beijing, China
[3]Army Aviation Academy, Beijing, China

E0848 **AN ORTHOGONAL PHASE-FREQUENCY CODED SIGNAL IN A PULSE AGAINST INTERRUPTED SAMPLING REPEATER JAMMING**

Zhifeng Ren[1*], Miao Jiang[2], Lei Zhang[3]
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

E0233 **MULTIPATH EFFECT ANALYSIS AND PRE-DISTORTION PROCESSING FOR JAMMING ON WIDEBAND GROUND RADAR THROUGH ANTENNA SIDELOBE**

Rong Shi[*], Jiantao Xu
Science and Technology on Electronic Information Control Laboratory, Chengdu, China

E0612 **A NOVEL METHOD FOR AUTOMATICALLY IDENTIFYING PRI PATTERNS OF COMPLEX RADAR SIGNALS**

Yuwen Tang[1], Minghao He[1], Xiaojie Tang[1], Jun Han[1*], Xikun Fan[2]
[1]Air Force Early Warning Academy, Wuhan, China
[2]Air Force Engineering University, Xi'an, China

C0889 **DECEPTIVE MULTIPLE FALSE TARGETS JAMMING RECOGNITION FOR LFM RADARS**

Congju Du[1], Yuan Zhao, Lu Wang, Bin Tang[*], Ying Xiong
[1]School of Information and Communication Engineering, University of Electronic Science and Technology of China, Chengdu, China

E1098 **FAST TARGET DECEPTION JAMMING METHOD AGAINST SPACEBORNE SAR BASED ON EQUIVALENT BISTATIC SCATTERED FIELDS**

Qingyang Sun, Ting Shu[*], Kai-Bor Yu, and Wenxian Yu
Shanghai Key Laboratory of Intelligent Sensing and Recognition, Shanghai Jiao Tong University, Shanghai, 200240, P. R. China

C0215 **A SBL-BASED MAINLOBE JAMMING SUPPRESSION ALGORITHM**

Bilei Zhou[1], Keqing Duan[1], Hongchuan Hang[2], Rongfeng Li[3], Yongliang Wang[1]
[1]Air Force Early Warning Academy, Wuhan, China
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E0329 **RESEARCH ON INTERVAL PERIOD PHASE MODULATION IN PULSE COMPRESSION RADAR SIGNAL JAMMING**

Xu Peng[1*], Mao Huihuang[1], Wang Zhenhua[1], Fan Runlong[2], Yang Chuanwang[3]
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E0850 IMPACT ANALYSIS OF DRFM BASED ACTIVE JAMMING TO RADAR DETECTION EFFICIENCY

Wei Liu[1], Jin Meng[1], Liang Zhou[1]
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C1166 SMART NOISE JAMMING SUPPRESSION METHOD BASED ON FAST FRACTIONAL FILTERING

Bowen Han, Xiaopeng Yang*, Xuchen Wu, Shuai Li
Beijing Key Laboratory of Embedded Real-time Information Processing Technology, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China

C0368 MAIN-LOBE JAMMING CANCELLATION FOR MULTI-STATIC RADAR BY JOINT RANGE-DOPPLER PROCESSING

Meng Jinli, Wang Ning
Nanjing Research Institute of Electronics Technology, Nanjing, China

C0517 SIDE-LOBE JAMMING BASED ON DIGITAL CHANNELIZED JAMMER

Chengcheng Si[1], Bo Peng[1*], Shixian Gong[2], Xiang Li[1]
[1]National University of Defense Technology, Changsha, China
[2]Science and Technology Test Physics & Numerical Mathematic Laboratory, Beijing, China

C0326 THE SIMULATIONS OF THE OFDM SIGNAL FORM DISTINGUISHING THE AIRCRAFT FROM THE CHAFF JAMMING

Feng Qiu[1,2*], Dao-qing Wu[1,2], Wei Liu[1,2]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China
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C0717 A TWO DIMENSIONAL DECEPTIVE JAMMING MITIGATION ALGORITHM FOR SAR IMAGING USING FREQUENCY DIVERSE ARRAY

Chenchen Lin*, Puming Huang, Yu Li, Weiwei Wang
Xi'an Institute of Space Radio Technology, Xi'an, China

C1167 ANTI-JAMMING METHOD FOR STAP BASED ON BI-PHASE RANDOM CODED SIGNAL

Weijie Ye[1], Xiaopeng Yang[1*], Yuze Sun[2], Shuai Li[1]
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A0836 THE INTELLIGENT ECCM TECHNOLOGY VIA COGNITION AND AGILITY FOR AIRBORNE RADAR

Luo Meifang*, Hao Zhimei, Zhu Yimin
AVIC Leihua Electronic Technology Research Institute, Wuxi, China

C0918 **DYNAMIC MAINLOBE INTERFERENCE SUPPRESSION METHOD BASED ON MONOPULSE WITH GRAY MODEL KALMAN FILTER**

Li Feng[1,2] ZhangZhe[1,2*] YaoDi[1,2]
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[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology，Beijing 100081，China

E0623 **ANGLE INVERSION BASED ON ANTI-JAMMING AGAINST DECEPTIVE MULTIPLE FALSE TARGETS**

Kaiqiang Liu[1], Xiongjun Fu[2*], Junjie Liu[3], Hong Chen[4], Chong Xu[5]
[1,2,3]School of information and electronics, Beijing Institute of Technology, Beijing, China
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C0726 **APPLICATION OF PHASE-DISCRIMINATION CFAR IN ANTI-JAMMING AND ANALYSIS OF ITS DETECTION PERFORMANCE**

Ruiyun Pan[1], Guang Yang[1], Yang Cao[1], Peng Peng[1]
[1]Nanjing Marine Radar Institute, Nanjing, China

Poster Session 9: Radar Waveform Design and Optimization

Time: **15: 30-16: 30, October 18, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Dr. Feifeng Liu, Beijing Institute of Technology, China**

D0384 **SLIC SEGMENTATION METHOD FOR FULL-POLARIZED REMOTE SENSING IMAGE**

Zhanyang Zhang[1,2], Jiaqi Chen[1], Zhiwei Liu[2*]
[1]Department of Computer and Information, Hohai University, Nanjing, China
[2]Department of Communication Engineering, East China Jiaotong University, Nanchang, China

C0835 **RADAR AND COMMUNICATION INTEGRATION BASED ON COMPLETE COMPLEMENTARY CODES**

Linlin Qi[1*], Yuan Yao[2], Guangxin Wu[3]
Nanjing Research Institute of Electronic Technology, Nanjing, China

C0898 **A CP-BASED OFDM RADAR-COMMUNICATIONS SIGNAL USING INTERVAL LINEAR PHASE COMPRESSION MODULATION**

Yuanhang Wang, Tianxian Zhang*, Lingjiang Kong and Xiaobo Yang
School of Information and Communication Engineering, University of Electronic Science and Technology of China Chengdu, China

C0686 **DESIGN OF LOW SIDELOBE RANDOM RADAR SIGNAL BY FREQUENCY DOMAIN MODULATION METHOD**

Jiafang Liu[1, 2], Yunhua Zhang[1, 2], Xiao Dong[1]
[1]Key Laboratory of Microwave Remote Sensing, National Space Science Center, Chinese Academy of Sciences, Beijing, China
[2]University of Chinese Academy of Sciences, Beijing, China

F0861 **OPTIMAL WAVEFORM DESIGN AND CLUTTER PARAMETER ESTIMATION FOR RADAR DETECTION**

Bingqi Zhu*, Ke Song*, Zhuo Zhou*, Ke Du*, Manjun Lu*, Xiangzhen Yu*, and Wenming Tang*
*Shanghai Radio Equipment Research Institute, Shanghai, China

C0883 **TRANSMITTER AND RECEIVER POLARIZATION OPTIMIZATION DESIGN FOR A TARGET**

Kexiao Hu, Zhiwen Liu*, Shuli Shi, Yougen Xu
School of Information and Electronics, Beijing Institute of Technology, Beijing, China

C0680 **FAST DIGITAL BEAMFORMING FOR CONFORMAL ARRAYS BASED ON 2-D FOURIER DECOMPOSITION**

Yuan Yao and Guangxin Wu
The 14th Research Institute of China Electronics Technology Group Corporation, Nanjing, China

B0900 **A NOVEL POWER DIVIDER BASED ON VERTICAL ELLIPTICAL DIRECTIONAL COUPLERS WITH INCREASED ISOLATION AND BANDWIDTH**

Chenhao Wang, Jie Cui*, Shanhong Guo, Renli Zhang
School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing, China

C0100 **AN ADAPTIVE DIGITAL BEAMFORMER INTELLECTUAL PROPERTY BASED ON HIGH-LEVEL SYNTHESIS**

Shengxiang Zhu, Jinchang Zhang, Zhiyi He, Min He
Beijing Institute of Remote Sensing, Beijing, China

C0761 **ROBUST ADAPTIVE BEAMFORMING AGAINST CALIBRATION ERROR**

Ya Q. Liu[1*], Cheng C. Liu[1], Yong J. Zhao
[1]National Digital Switching System Engineering and Technological Research Center, Zhengzhou, China

C0877 **A NOVAL ROBUST ADAPTIVE BEAMFORMING METHOD FOR LARGE SCALE ARRAY WITH AUTOMATIC DIAGONAL LOADING AND STEERING VECTOR ESTIMATION**

Lei Yu, Yanqi Fan, Yinsheng Wei and Rongqing Xu
School of Electronics and Information Engineering, Harbin Institute of Technology, Harbin, China

C0917 **ROBUST ADAPTIVE BEAMFORMING WITH LOW SENSITIVITY FOR MUTUAL COUPLING BASED ON THE AUXILIARY ELEMENTS**

Tao Zhang[1,2*], Guanglei Zhang[1,2], Xiaoming Li[1,2]
[1]AVIC Leihua Electronic Technology Research Institute, WuXi, China
[2]Aviation Key Laboratory of Science and Technology on AISSS, WuXi, China

C1004 **APPLICATION OF SPHEROIDAL SEQUENCES TO SIDELOBE CONTROL IN BEAMPATTERN SYNTHESIS**

Chen Fengfeng[1*], Dong Ye[1], Shan Jiaolong[1]
[1]AVIC Leihua Electronic Technology Research Institute, Wuxi 214063, China

C0141 **BEAM-SHAPE LOSS FOR MULTIPLE-BEAM DIGITAL ARRAY RADARS**

Yuan Yao and Guangxin Wu
The 14th Research Institute of China Electronics Technology Group Corporation, Nanjing, China

C0760 **AN ANTENNA BEAM ANGLE CALIBRATION METHOD VIA SOLAR ELECTROMAGNETIC RADIATION SCAN**

Xiaoyang Qi[1], Junling Wang[1*], Lizhi Zhao[2], Jingming Ji[1]
[1]School of information and electronics, Beijing Institute of technology, Beijing, China
[2]School of information engineering, Minzu University of China, Beijing, China

C0804 **ROBUST ADAPTIVE BEAMFORMING METHOD BASED ON DESIRED SIGNAL STEERING VECTOR ESTIMATION AND INTERFERENCE-PLUS-NOISE COVARIANCE MATRIX RECONSTRUCTION**

Junsheng Huang, Hongtao Su[*], Yang Yang
National Laboratory of Radar Signal Processing, Xidian University, Xi'an, 710071, China

C0126 **DECOUPLING SELF-CORRECTING METHOD FOR NON-UNIFORM DUAL CIRCULAR ARRAY**

Jiajia Zhang[1*], Hui Chen[1], Weijian Liu[1]
[1]NO.1 department, Air Force Early Warning Academy, Wuhan, China

C0449 **RESEARCH ON LINEARIZATION OF POWER AMPLIFIER BASED ON DIGITAL PREDISTORTION**

Kai Fang[1], Da Liu[2], Yongqing Wang[1*]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Institute of Electronic System Engineering, Beijing, China

C0598 **DOT-SHAPED BEAMFORMING FOR THE SUBARRAY-BASED FREQUENCY DIVERSE ARRAY**

Bo Wang[1*], Junwei Xie[1], Ji Zhang[2], Xiaoyu Feng[1]
[1]Air and Missile Defense College, Air Force Engineering University, Xi'an 710051, China
[2]Shaanxi Vocational and Technical College of Transport, Xi'an 710018, China

C0895 **AN EFFICIENT 2D ADAPTIVE BEAMFORMING ALGORITHM BASED ON SPARSE ARRAY OPTIMIZATION**

Chaoyu Wang[1*], Can Zhu[1], Chunlin Chen[1], Hongtao Li[2]
[1]Nanjing Marine Radar Institute, China Ship Building Industry, Nanjing, China
[2]School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing, China

B0351 **A THREE-DIMENSIONAL SURFACE WAVE MEASUREMENT SYSTEM**

Gantao Peng[1], Shitao Zhu[1*], Jingsi Zhang[2], Hongyu Shi[1], Yangyang Zhang[1],Jianxing Li[1], Anxue Zhang[1*]
[1]School of Electronic and Information Engineering, Xi'an Jiaotong University, Xi'an, China
[2]Huawei Technologies Co. Ltd, Xi'an, China

C0480 GENERATION OF UNCONVENTIONAL OAM WAVES BY CIRCULAR ARRAY

Kang Liu*, Yongqiang Cheng, Hongqiang Wang, Yuliang Qin, Zhan Wang
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C0609 THE RELATIONSHIP OF DIFFERENT OPTIMAL CRITERIA IN RADAR WAVEFORM DESIGN

Xiaowen Zhang[1*], Yesheng Gao[2], Xingzhao Liu[3]
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C0624 IMPROVED ARITHMETIC FOR GENERATING COSTAS ARRAYS USING WELCH CONSTRUCTION METHOD

Shuaixun Wang[1], Guoman Liu[1*], Lin Han[2]
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[2]Research Center for Laser Physics and Technology, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China

C1012 SIDELOBE SUPPRESSION FOR PHASE CODED PULSE BY MAINLOBE WINDOWING

Jiacen Xu[1,2], Lixiang Ren[1,2*], Haofei Wang[3]
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[2]Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing, China
[3]Department of Electronic Engineering, Tsinghua University, Beijing, China

C0379 WAVEFORM DESIGN FOR COGNITIVE RADAR IN THE PRESENCE OF JAMMER USING STACKELBERG GAME

KangLi[1, 2*], BoJiu[1, 2], HongweiLiu[1, 2], SiyuanLiang[1, 2]
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F0482 NATURE-INSPIRED WAVEFORM OPTIMIZATION FOR RANGE SPREAD TARGET DETECTION IN COGNITIVE RADAR

Qing Wang[1], Meng Li[1], Lirong Gao[1*], Kaiming Li[2], Hua Chen[3]
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[2]Information and Navigation College, Air Force Engineering University, Xian, China
[3]Faculty of Information Science and Engineering, Ningbo University, Ningbo, China

C0184 DOPPLER COMPENSATION METHOD FOR THE COMPLEMENTARY PHASE CODED SIGNAL

Wenji Li[1], Lixiang Ren[1*], Erke Mao[1], Huayu Fan[2]
[1]Beijing Institute of Technology, Beijing, China
[2]Tsinghua University, Beijing, China

C0334 **AN INTEGRATED RADAR-COMMUNICATION WAVEFORM DESIGN BASED ON NLFM AND CPM**

Kang Long[1], Huaiying Tan[2], Yimin Liu[1], Tianyao Huang[1], Xiqin Wang[1]
[1]Department of Electronic Engineering, Tsinghua University, Beijing, 100084, P.R. China
[2]Radar Research Institute, Beijing, 100085, P.R. China

C0443 **RANGE SIDELOBE SUPPRESSION FOR OFDM INTEGRATED RADAR AND COMMUNICATION SIGNAL**

Jiajun Zuo[1], Ruijuan Yang, Shaohua Luo, Yugang Zhou
Air Force Early Warning Academy, Wuhan, China

C0550 **THE RESEARCH ON SYNCHRONIZATION FOR BURST AND INSTANTANEOUS COMMUNICATION IN INTEGRATED RADAR AND COMMUNICATION**

Xiaobai Li*, Jiajun Zuo, Ruijuan Yang, Xuchi Shen
Air Force Early-warning Academy, Wuhan, China

C0755 **RESEARCH ON REDUCING PAPR OF QAM-OFDM RADAR-COMMUNICATION INTEGRATION SHARING SIGNAL**

Yongjun Yang[1], Jinjie Mei[1], Dengpeng Hu[1], Yunlong Lei[1], Xiaoli Luo[2]
[1]Air Force Early Warning Academy, Wuhan 430019, China
[2]Central South University, Changsha, 410013, China

C0793 **COGNITIVE RADAR WAVEFORM OPTIMIZATION FOR MIMO RADAR-COMMUNICATION TRANSCEIVER**

Yu Yao[1*], Lenan Wu[2]
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[2]School of Information Science and Engineering Southeast University Nanjing 210096, China

Poster Session 10: SAR/InSAR

Time: **14: 50-15: 50, October 19, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Prof. Pingping Huang, Inner Mongolia University of Technology, China**

S11518 **ΩK ALGORITHM FOR MULTI-RECEIVER SYNTHETIC APERTURE SONAR BASED ON EXACT ANALYTICAL 2-DIMENSIONAL SPECTRUM**

Jinbo Wang*, Jinsong Tang, Zhen Tian
College of Electronic Engineering, Naval University of Engineering, Wuhan, China

D0163 **A FAST VELOCITY ESTIMATION METHOD FOR MOVING TARGETS BASED ON COMPLEX SAR IMAGE**

Na Pu1[1,2*], Chunsheng Li[1], Meng Lin[2]
[1]School of Electronics and Information Engineering, Beihang University, Beijing, China
[2]Beijing Institute of Remote Sensing Information, Beijing, China

D0951 A NEW METHOD FOR AIRBORNE SAR IMAGE POSITIONING

Ding Wang[1*], Aifang Liu[1], Xue Xia[1]
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D1103 MOVING SHIPS REFOCUSING FOR SPACEBORNE SAR BASED ON DOPPLER PARAMETERS ESTIMATION

Yunfei Zhu[1], Feng He[1], Zhen Dong[1*]
[1]Colledge of Electronic Science, National University of Defense Technology, Changsha, Hunan, P. R. China

E0811 MULTI-POLARIZED SAR IMAGING SIMULATION OF SHIP ON HEAVY SEA

Yanxi Chen[1], Kunyi Guo[1*], Biyi Wu[1], Xinqing Sheng[1]
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D0969 PARAMETER INVERSION ALGORITHM OF CSAR MOVING TARGET BASED ON PFA SUB-APERTURE IMAGES

Di Yao[1,2*], Zhou Wang[1,2], Wengu Yang[1,2] Feng Li[1,2]
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C0226 RANGE MIGRATION COMPENSATION FOR MOVING TARGETS IN CHIRP RADARS WITH STEPPED FREQUENCY

Wang Sen*, Bao Qinglong, Chen Zengping
Science and Technology on Automatic Target Recognition Laboratory, National University of Defense Technology, Changsha, China

C1157 A COHERENT INTEGRATION METHOD FOR RANDOM PRI RADAR BASED ON NONUNIFORM KEYSTONE TRANSFORM AND NUFFT

He Liu[1,2], Jing Tian[1]*, Chen Ning[1], Wei Cui[1], Jingjing Deng[3]
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[2]School of Physics and Optoelectronic Engineering, Xidian University, Xi'an, China
[3]Shanghai Engineering Center for Micro-satellite, Shanghai, China

D0621 OPTIMAL DATA ACQUISITION IN MULTI-PASS GEOSYNCHRONOUS SAR TOMOGRAPHY

Cheng Hu[1,2], Bin Zhang[1], Xichao Dong[1*], Yuanhao Li[1], Chang Cui[1]
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C1140 A METHOD FOR COMPENSATING BANDWIDTH ERROR OF SYNTHETIC WIDEBAND RADAR SIGNAL

Xiaoxin Han[1], Chao zhou[1], Quanhua Liu, Yuanyuan Song[1*]
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D0374 **AN IMPROVED RANGE MODEL BASED ON PARAMETER ESTIMATION FOR HIGH RESOLUTION AND HIGH SQUINT LEO SAR**

Tong Gu[1*], Gui sheng Liao[1], Zhi wei Yang[1], Yi fan Guo[1]
[1]National key laboratory of radar signal processing, xidian university, Xi'an, China

D0749 **A MODIFIED REAL-TIME SUBAPERTURE PROCESSING ALGORITHM FOR AIRBORNE HIGH-RESOLUTION SAR**

Jing Liu*, Hongmeng Chen, Hanwei Sun, Jiahao Lin, Congxin Li
Beijing Institute of Radio Measurement, Beijing 100854, China

C0315 **AN AUTOFOCUS METHOD FOR SAR IMAGE WITH MULTI-BLOCKS**

Wei Dong[1, 3], Hanwei Sun[1*], Ruixue Zhou[2, 3], Hongmeng Chen[1]
[1]Beijing Institute of Radio Measurement, Beijing 100039, China
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[3]The Graduate School of Second Academy of China Aerospace, Beijing 100854, China

A0857 **A SPACEBORNE SYNTHETIC APERTURE RADAR IMAGING MAPPING METHODOLOGY BASED ON FPGA-DSP HYBRID HETEROGENEOUS ARCHITECTURE**

Wenyue Yu[1], Yizhuang Xie[1*], Bingyi Li[1], He Chen[1], Xiaoning Liu[2]
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[2]DFH Satellite Co., Ltd, Beijing 100081, China

A1099 **BACK PROJECTION ALGORITHM BASED GEO SAR REAL-TIME QUICK LOOK IMAGING SYSTEM**

Qingjun Zhang[1], Tengfei Li[1*], Yu Zhu[1], Zhongjiang Yu[1], Zegang Ding[2], Xin Guo[2], Zheng Lv[1]
[1]Beijing Institute of Spacecraft System Engineering, Beijing, P. R. China
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A1125 **APPLICATION OF FEATURE MODELING METHOD BASED ON SAR IMAGE IN TARGET INTERPRETATION**

Caiping Li, Xiaoming Zhou*, Lei Chang
Beijing Institute of Remote Sensing Information, Beijing, China

C0081 **A NOVEL SAR IMAGE DENOISING METHOD BASED ON SPARSE REPRESENTATION**

Hao-tian Zhou[1,2], Liang Chen[1,2*], Bo Fu[3], Hao Shi[1,2]
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C0256 **PARALLEL PROCESSING OF SLIDING SPOTLIGHT MODE SAR IMAGING BASED ON GPU**

Zixin Gao[1,2], Chunpeng Wei[1,2], Chen Yang[1,2], Yizhuang Xie[1,2*], He Chen[1,2]
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C0323 A REGISTRATION METHOD FOR GIS VECTOR ROAD DATA AND SAR IMAGE

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C0388 SAR HIGH RESOLUTION IMAGING FROM MISSING RAW DATA USING StOMP

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C0432 CLASSIFICATION FOR POLSAR IMAGE BASED ON HO LDER DIVERGENCES

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C0489 AN EFFICIENCY BALANCED MATRIX TRANSPOSE METHOD FOR SLIDING SPOTLIGHT SAR IMAGING PROCESSING

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D0070 AN IMAGING ALGORITHM FOR MULTI-CHANNEL SCAN SAR WITH CHANNEL ERROR ESTIMATION AND COMPENSATION

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D0127 COLLABORATIVE FORWARD LOOKING IMAGING AND RECONNAISSANCE TECHNOLOGY FOR MANNED/UNMANNED AERIAL VEHICLES

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D0287 A SPARISITY DRIVEN BANDWIDTH FACTORIZATION AUTOFOCUS OF HIGH-RESOLUTION SQUINT SAR IMAGERY RECONSTRUCTED BY FFBP

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D0290 **HIGH PRECISION MOTION COMPENSATION FOR VERY-HIGH RESOLUTION SAR IMAGING**

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D0851 **A SIMPLIFIED AND APPROXIMATION AUTOFOCUS BACKPROJECTION ALGORITHM FOR SAR**

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D0970 **A CIRCULAR SAR IMAGING ALGORITHM BASED ON PFA FOR MOVING TARGET**

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D1149 **AIRBORNE LINEAR FREQUENCY MODULATION RANGE INTERRUPTED CONTINOUS-WAVE SAR FOR HIGH RESOLUTION IMAGING**

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C1005 **A FAULT-TOLERANT CORDIC PROCESSOR FOR SAR IMAGING**

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D1000 **POLAR FORMAT ALGORITHM OF SYNTHETIC APERTURE RADAR IMAGING ON SPIRAL TRAJECTORY**

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F0248 **A FAST HIGH-RESOLUTION IMAGING METHOD FOR WIDE-BAND ROTATING TARGETS**

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A0607 **AUTOFOCUS TECHNIQUE FOR RADAR COINCIDENCE IMAGING WITH MODEL ERROR VIA ITERATIVE MAP**

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A0833 **A NOVEL MONOPULSE FORWARD-LOOKING IMAGING ALGORITHM BASED ON LEVENBERG-MARQUARDT OPTIMIZATION**

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A0880 **A FAST DECONVOLUTION METHOD FOR ANGULAR SUPER-RESOLUTION IMAGING BASED ON SUBSPACE EMBEDDING**

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C0258 **HIGH RESOLUTION IMAGING FOR THE MULTIRECEIVER SAS**

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D0665 **A NEW IMAGING METHOD FOR AIRBORNE CIRCULAR TRACE STRIPMAP SAR**

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E0333 **EMD BASED ADAPTIVE STATIONARY HUMAN IMAGING FOR TD-MIMO THROUGH-WALL RADAR**

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A1154 **A MOTION COMPENSATION METHOD OF IMAGING RADAR BASED ON UNMANNED AUTOMOBILE**

Pingping Huang[1,2], Wenqiu Shan[1,2*], Wei Xu[1,2], Weixian Tan[1,2], Yifan Dong[1,2], Zhenhua Zhang[3]
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D0437 **MINING THE CHANGE PATTERNS IN TIME SERIES HIGH RESOLUTION SAR IMAGES**

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S6878 **A NOVEL METHOD FOR HIGH-RESOLUTION SAR IMAGING BASED ON INVERSE RADON TRANSFORM**

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D0125 **STUDY ON ISAR IMAGING FOR FORWARD-LOOKING MISSILE-BORNE MILLIMETER WAVE RADAR**

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D1152 **GROUND-BASED RADAR DATA PROCESSING BASED ON PSEUDO-POLAR COORDINATE SYSTEM**

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C0776 **RBM BASED JOINT DICTIONARY LEARNING FOR ISAR RESOLUTION ENHANCEMENT**

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D0231 **A ROBUST METHOD FOR SHIP RECOGNITION BASED ON ISAR IMAGING USING 3D MODEL**

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D0468 **AN IMPROVED ISAR RANGE ALIGNMENT METHOD BASED ON MAXIMUM CONTRAST**

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D0537 **JOINT AZIMUTH-RANGE JAMMING FOR ISAR BASED ON TIME DELAY**

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D0919 **FAST ISAR AUTOFOCUS ALGORITHM VIA SUB-APERTURE**

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F0620 **ISAR IMAGING RESOURCE SCHEDULING ALGORITHM IN NETWORK RADAR BASED ON INFORMATION FUSION**

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S6762 **A SPECTRAL-FACTORIZATION ROOT-MUSIC ALGORITHM FOR SUPER-RESOLUTION ISAR IMAGING**

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S6514 **INVERSE SYNTHETIC APERTURE LADAR IMAGING ALGORITHM FOR SPACE SPINNING TARGETS**

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D0542 **MULTI-RADAR FUSOIN TECHNIQUE FOR HIGH RESOLUTION ISAR IMAGING IN SEA-CLUTTERED ENVIRONMENT**

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D0023 **A NOVEL SA-ISAR IMAGING ALGORITHM BASED ON THE GRADIENT SIGNAL RECOVERY METHOD**

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D0361 **SPARSE APERTURE WIDE ANGLE ISAR IMAGING BASED ON COMPRESSIVE SENSING**

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D0541 **FULL POLARIZATION ISAR IMAGING BASED ON JOINT SPARSE BAYESIAN COMPRESSIVE SENSING**

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A1072 **ACCURACY ANALYSIS OF MULTI-BASE INSAR ALTIMETER IN OCEAN SURFACE RELATIVE ELEVATION MEASUREMENT**

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C0930 **AN IMPROVED BAQ ALGORITHM FOR TIANGONG-2 INTERFEROMETRIC IMAGING RADAR DATA COMPRESSION**

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D0111 **A GB-INSAR INTERFEROGRAM PROCESSING METHOD TO GENERATE DEM BASED ON PS TECHNOLOGY**

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D0433 **ACCURACY IMPROVEMENT ANALYSIS OF GAOFEN-3'S REPEAT-PASS INTERFEROMETRIC SAR BASED ON PRECISE ORBIT DATA**

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D0481 **SAND LAYER THICKNESS ESTIMATION USING SRTM-C DEM AND ICESAT ELEVATION DATA IN SAND-COVERED AREA**

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D0572 **AN IMPROVED WEIGHTED LEAST-SQUARES PHASE UNWRAPPING METHOD FOR INTERFEROMETRIC SAR PROCESSING**

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D1026 **FIRST DEMONSTRATION OF AIRBORNE MULTI-CHANNNEL INSAR PROCESSING BASED ON MEASURED DATA**

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D1068 **STUDY ON THE SIMULATION OF SIMULTANEOUS FULL POLARIMETRIC ALONG-TRACK INTERFEROMETRIC SYNTHETIC APERTURE RADAR**

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D1071 **A DISCONTINUITY PRESERVING PHASE UNWRAPPING ALGORITHM FOR SIMULATED INSAR BASED ON MRF MODEL USING LINE PROCESS**

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D0447 **AN IMPROVED BRANCH CUTS PHASE UNWRAPPING STRATEGY BASED ON DYNAMIC ADJACENT TABLE**

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B0767 **ON RF LOCALIZATION DECEPTION CAPABILITY OF FDA SIGNAL UNDER INTERFEROMETRY RECONNAISSANCE**

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D1162 **HEIGHT ESTIMATION IMPROVEMENT VIA MOTION COMPENSATION BASED ON SUB-APERTURE METHOD FOR INTERFEROMETRY SAR SYSTEM**

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Poster Session 11: Deep Learning for Radar

Time: **14: 50-15: 50, October 19, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Dr. Guangcai Sun, Xidian Univerisity, China**

S5840 **EFFICIENT DEEP CONVOLUTIONAL NEURAL NETWORKS USING CRELU FOR ATR WITH LIMITED SAR IMAGES**

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S51007 **FULL-POLARIMETRIC SCATTERING CHARACTERISTICS PREDICTION FROM SINGLE/DUAL-POLARIMETRIC SAR DATA USING CONVOLUTIONAL NEURAL NETWORKS**

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C0740 DEEP FOREST FOR RADAR HRRP RECOGNITION

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C0987 A DATA-DRIVEN XGBOOST-BASED FILTER FOR TARGET TRACKING

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C0415 CLASSIFYING AIRCRAFT BASED ON SPARSE RECOVERY AND DEEP-LEARNING

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C1161 HIGH-EFFICIENCY SCENE CLASSIFICATION BASED ON DEEP COMPRESSED-DOMAIN FEATURE

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C0529 SPARSE-BAYESIAN-LEARNING-BASED TRANSLATIONAL MOTION ESTIMATION OF ELECTROMAGNETIC VORTEX IMAGING

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C0219 TRAINING SAMPLE SELECTION FOR SPACE TIME ADAPTIVE PROCESSING BASED ON MULTI-FRAMES

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C0510 A KÄHLER MEDIAN APPROACH FOR TRAINING SAMPLE SELECTION IN SPACE-TIME ADAPTIVE PROCESSING

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C0631 RESEARCH ON APERTURE-LEVEL SIMULTANEOUS TRANSMIT AND RECEIVE

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C1124 A SUPERPIXEL SEGMENTATION AND MACHINE LEARNING CLASSIFICATION ALGORITHM FOR CLOUD DETECTION IN REMOTE SENSING IMAGES

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C0993 QUERY-BASED DEEP SEMANTIC HASHING FOR REMOTE SENSING IMAGES RETRIEVAL

Cheng Chen[1], Huanxin Zou[1*], Ningyuan Shao[1], Jiachi Sun[1], Xianxiang Qin[2],
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C0507 RECOGNITION OF RADAR ACTIVE-JAMMING THROUGH CONVOLUTIONAL NEURAL NETWORKS

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C0074 MULTI-SCALE OBJECT DETECTION BY BOTTOM-UP FEATURE PYRAMID NETWORK

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C0483 RADAR TRACK PREDICTION METHOD BASED ON BP NEURAL NETWORK

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C0704 OPEN SET HRRP RECOGNITION BASED ON CONVOLUTIONAL NEURAL NETWORK

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C0936 RADAR DATA SIMULATION USING DEEP GENREATIVE NETWORKS

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C0937 **DEEPACTIVITY: A MICRO-DOPPLER SPECTROGRAM BASED NET FOR HUMAN BEHAVIOR RECOGNITION IN BIO-RADAR**

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C1030 **MODULATION CLASSIFICATION BASED ON DENOISING AUTOENCODER AND CONVOLUTIONAL NEURAL NETWORK WITH GNU RADIO**

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C1172 **FAST AND ROBUST ADAPTIVE BEAMFORMING METHOD BASED ON COMPLEX-VALUED RBF NEURAL NETWORK**

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F0439 **SPECTRAL-SPATIAL CLASSIFICATION OF HYPERSPECTRAL REMOTE SENSING IMAGE BASED ON CAPSULE NETWORK**

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C0236 **SHIP CLASSIFICATION BASED ON CONVOLUTIONAL NERUAL NETWORKS**

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S5839 **SAR TARGET RECOGNITION OF INCOMPLETE TRAINING DATASETS VIA SIAMESE NETWORK**

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C0279 **MULTI-FEATURE RADAR SIGNAL MODULATION RECOGNITION BASED ON IMPROVED PSO ALGORITHM**

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A0574 **A GROUND CLUTTER SUPPRESSION METHOD BASED ON FNN FOR DUAL-POLARIZATION WEATHER RADAR**

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C0565 **CNN BASED SATELLITE IMAGE CLASSIFICATION METHOD PARALLEL OPTIMIZATION BASED ON ARM NEON TECHNOLOGY**

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C0185 **A SAR IMAGE CLASSIFICATION METHOD BASED ON GABOR FEATURE AND K-NN**

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C1137 **DEEP REPRESENTATION METHOD FOR RADAR EMITTER SIGNAL USING WAVELET PACKETS DECOMPOSITION**

Yang Cao[1], JinLiang Bai[1], Hongbo Li[2]*, Jian Zhao[2], Shuo Liu[2], Zhiyong Gao[1]
[1]National Key Laboratory of Science and Technology on Test Physics and Numerical Mathematics, Beijing, China
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Poster Session 12: Array Signal Processing

Time: **14: 50-15: 50, October 19, 2018**
Place: **Yangtze Grand Ballroom A**
Chair: **Dr. Yang Li, Beijing Institute of Technology, China**

B0723 **DIGITAL ARRAY RADAR CHANNEL ERROR ANALYSIS**

Bowen Gong[1*], Zhicheng Yao[1], Jian Yang[1*], Jian Lu[1]， Zhihui Wu[1],Zhi Geng[2]
[1]High-Tech Institute of Xi’an, Xi'an, PR China
[2]Logistics Information Center, Former Joint Logistics Department of Chengdu Command, Chengdu, PR China

C0506 **AN APPLICABLE STAP FOR MOVING FOD DETECTION**

Xiaoqi Yang[1], Kai Huo[2], Xinyu Zhang[2], Weidong Jiang[2*]
[1]College of Graduate, National University of Defence Technology, Changsha, China
[2]College of Electronic Sciences, National University of Defence Technology,Changsha, China

C1175 **A NOVEL METHOD FOR TDOA LOCALIZATION IN OVER-THE-HORIZON ENVIRONMENTS**

Jian-Xin Liu[1], Xing-Peng Mao[1*]
[1]School of Electronics and Information Engineering, Harbin Institute of Technology, 150001, Harbin, China

C0742 COMPRESSIVE SENSING-BASED SUPER-RESOLUTION DOA ESTIMATION FOR MECHANICAL SCANNING RADAR

Fanglei Cheng[1,2], Hongyu Wang[1,2*], Yang Li[1,2]
[1]School of Information and Electronics, Beijing Institute of Technology, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, Beijing Institute of Technology, Beijing, China

C0785 REAL-VALUED PROPAGATOR METHOD FOR FAST DOA ESTIMATION VIA POLYNOMIAL ROOTING

Xiangtian Meng, Jinghong Xue, Fenggang Yan*, Xuewei Yan
School of Information and Electrical Engineering，Harbin Institute of Technology, Weihai, China

C1169 ROBUST KNOWLEDGE AIDED SPARSE RECOVERY STAP METHOD FOR NON-HOMOGENEITY CLUTTER SUPPRESSION

Hao Peng[1], Yuze Sun[2], Xiaopeng Yang[3*], Jian Yang[2]
[1]National Innovation Institute of Defence Technology (NIIDT), Beijing, China
[2]Department of Electronic Engineering, Tsinghua University, Beijing, China
[3]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, School of Information and Electronic, Beijing Institute of Technology, Beijing, China

C1165 POLARIZATION-SPACE-TIME ADAPTIVE PROCESSING FOR HETEROGENEOUS CLUTTER SUPPRESSION OF AIRBORNE PHASED ARRAY RADAR

Yuze Sun[1], Jian Yang[1], Xiaopeng Yang[2*],
[1]Department of Electronic Engineering, Tsinghua University, Beijing, China
[2]Beijing Key Laboratory of Embedded Real-time Information Processing Technology, School of Information and Electronic, Beijing Institute of Technology, Beijing, China

C0478 A WIDEBAND SIGNAL DOA ESTIMATION METHOD BASED ON KEYSTONE TRANSFORM

Ning Wang[1,2], Ming Zhou[1,2], Bing Zhong[1,2], Siming Li[1,2], Yawei Chen[1,2]
[1]Key Laboratory of Intellisense Technology, CETC, Nanjing 210039, China
[2]Nanjing Research Institute of Electronics Technology, Nanjing 210039, China

C0735 ROBUST DIRECTION-OF-ARRIVAL ESTIMATION BASED ON SPARSE ASYMPTOTIC MINIMUM VARIANCE

Xiangyu Zhang[1], Jun Sun[2], Xingrong Cao[2*]
[1]Nanjing Research Institute of Electronic Technology, Nanjing, China
[2]The CETC key Laboratory of Intellisence Technology, Nanjing, China

C1173 A LOW COMPLEX DOA ESTIMATION METHOD BASED ON ADAPTIVE FILTERING ALGORITHM

Babur Jalal[1], Xiaopeng Yang[1]*, Denis Igambi[1], Tehseen Ul Hassan[2], Zeeshan Ahmad[3]
[1]Key Laboratory of Electronics and Information Technology in Satellite Navigation, School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
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School of Information and Electronics, Beijing Institute of Technology, Beijing 100081, China
[3]School of Electronic and Optical Engineering, Nanjing University of Science and Technology, Nanjing, China

C0724 LOCALIZATION DECEPTION APPROACH USING FREQUENCY DIVERSE ARRAY FOR FDOA-BASED RECONNAISSANCE

Haoliang Guan[1]*, Shunsheng Zhang[1], Wenqin Wang[2] (Senior Member, IEEE)
[1]Research Institute of Electronic Science and Technology,
University of Electronic Science and Technology of China, Chengdu, China
[2]School of Information and Communication Engineering,
University of Electronic Science and Technology of China, Chengdu, China

C1168 LOW COMPLEXITY DOA ESTIMATION METHOD FOR CO-PRIME LINEAR ARRAY

Xuchen Wu, Xiaopeng Yang*, Bowen Han, Feng Xu
School of Information and Electronics, Beijing Institute of Technology, and Key Laboratory of Electronic and Information Technology in Satellite Navigation (Beijing Institute of Technology), Ministry of Education, Beijing 100081, China.

C0511 WIND SPEED ESTIMATION OF LOW-ALTITUDE WIND-SHEAR BASED ON COMBINED SPACE-TIME MAIN CHANNEL ADAPTIVE PROCESSING

Hai Li[1]*, Jie Wang[1], Qing H Guo[2], Yi J Li[1]
[1]Tianjin Key Lab for Advanced Signal Processing, Civil Aviation University of China, Tianjin, China
[2]School of Electrical, Computer and Telecommunication Engineering, University of Wollongong, Wollongong, Australia

C0966 REDUCED-DIMENSION SPACE-TIME ADAPTIVE PROCESSING FOR AIRBORNE RADAR WITH COPRIME ARRAY

Xiaoye Wang, Zhaocheng Yang*, Jianjun Huang
College of Information Engineering, Shenzhen University, Shenzhen, China

C0731 A DIMENSION-REDUCED BI-ITERATIVE SPACE-TIME ADAPTIVE PROCESSING METHOD FOR AIRBORNE RADAR

Yuxiang Wang*, Xiaoming Li, Wei Gao
AVIC Leihua electronic technology research institute, Wuxi, China

C0696 NOVEL DOA ESTIMATION FOR DIFFERENT FREQUENCY WITH DIFFERENT ANGLES BASED ON WIDEBAND CO-PRIME ARRAY

Geng Wang[1], Minghao He[1], Yuwen Tang[1], Mingyue Feng[1], Jun Han[1]*,
Xikun Fan[2]
[1]Air Force Early Warning Academy, Wuhan, China
[2]Air Force Engineering University, Xi'an, China

C0105 A NOVEL DOA ESTIMATION METHOD FOR COHERENT SOURCES OF 2-DIMENSION SPARSE ARRAY

Yuanji Li[1]*, Xuena Di[1], Fuwei Wu[1]
[1]Key Laboratory of Intelli Sense Technology, CETC, Nanjing, China
Nanjing Research Institute of Electronics Technology, Nanjing, China

C0512 BI-LEVEL JOINT-OMP FOR DOA ESTIMATION IN COPRIME ARRAY WITH OFF-GRID TARGETS

Ying Jiang[1], Minghao He[1], Yuwen Tang[1], Jun Han[1]*, Xikun Fan[2]
[1]Air Force Early Warning Academy, Wuhan, China
[2]Air Force Engineering University, Xi'an, China

C0933 GRIDLESS SPARSITY-BASED DOA ESTIMATION FOR SPARSE LINEAR ARRAY

Yu Zhang[1], Gong Zhang[1*], Yingying Kong[1] and Fangqing Wen[2]
[1]The Key Laboratory of Radar Imaging and Microwave Photonics, Ministry of Education, Nanjing University of Aeronautics and Astronautics, Nanjing, China
[2]Electronic and Information School, Yangtze University, Jingzhou, China

C1067 ROBUST ESTIMATIONS OF DOA AND SOURCE NUMBER WITH STRONG AND WEAK SIGNALS COEXISTING SIMULTANEOUSLY BASED ON SPARSE UNIFORM ARRAY

QingYan Liu[1], Cao Zeng[1,2,3,4*], ShiDong Li[2,4], ZhiWei Yang[1,2,3,4], Guisheng Liao[1,2,3,4]
[1]National Labortaory of Radar Signal Processing, XiDian University, Xi'An 710071, China
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[4]San Francisco State University, San Francisco, CA, America

C0235 2D DOA ESTIMATOR FOR COHERENTLY DISTRIBUTED SOURCES USING ONE SNAPSHOT

Qingqing Lin, Meng Jing, Ping Shuai, Liangwei Huang
Qian Xuesen Laboratory of Space Technology, China Academy of Space Technology, Beijing, China

C0175 GRIDLESS DOA ESTIMATION BASED ON MULTIVARIATE FUNCTION GENETIC OPTIMIZATION

Meihong Pan, Gong Zhang*
School of electronic information and engineering, Nanjing University of Aeronautics & Astronautics, Nanjing, China

C0296 ENHANCED OFF-GRID DOA ESTIMATION BY CORRECTED POWER BAYESIAN INFERENCE USING DIFFERENCE COARRAY

Yanan Ma[1], Xianbin Cao[1]*
[1]School of Electronic and Information Engineering, Beihang University, XueYuan Road No.37, HaiDian District, Beijing, China

C0619 JOINT ESTIMATION OF DOA AND CHANNEL ERRORS WITH SPARSE RECOVERY FOR SKA LOW FREQUENCY ARRAY

Fuqiang Zhang[1], Zenghui Zhang[1*], Jin He[1], Wenxian Yu[1], Rui Cao[2]
[1]Shanghai Key Laboratory of Intelligent Sensing and Recognition, School of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240, China
[2]Key Lab. of Aperture Array and Space Application, No. 38 Research Institute of CETC, Hefei, 20038, China

C0114 3-DIMENSIONAL SPARSE RECOVERY SPACE-TIME ADAPTIVE PROCESSING FOR AIRBORNE RADAR

Keqing Duan[1], Hong Xu[2], Huadong Yuan[1*], Wenchong Xie[1], Yongliang Wang[1]
[1]Wuhan Early Warning Academy, Wuhan, China
[2]Department of Electrical Engineering, Naval University of Engineering, Wuhan, China

S7375 CRLB FOR JOINT ESTIMATION OF TDOA, PHASE, FDOA AND DOPPLER RATE

Dexiu Hu, Shiwen Chen*, Hang bai, Chuang Zhao, Liping Luo
National Digital Switching System Engineering and Technological Research Center, Zhengzhou, China

A0590 TARGET LOCALIZATION IN MULTISTATIC RADAR USING BR, TDOA AND AOA MEASUREMENTS

Jun Wang[1], Zhaotao Qin[1], Yanxian Bi[2], Shaoming Wei[1*], Feixiang Luo[1]
[1]School of Electronic and Information Engineering, Beihang University, Beijing, China
[2]China Academy of Electronics and Information Technology, China Electronic Technology Group Corporation, Beijing, China

C0161 AN ALGEBRAIC DISTRIBUTED SOURCE LOCALIZATION ALGORITHM USING TDOA AND AOA MEASUREMENTS

Zhixin Liu[1], Yongsheng Zhao[1], Ke Jin[1], Dexiu Hu[1*], Rui Wang[1], Yongjun Zhao[1]
[1]National Digital Switching System Engineering and Technological Research Center, Zhengzhou, China

A0242 SOURCE SEPARATION AND LOCALIZATION VIA TENSOR DECOMPOSITION FOR DISTRIBUTED ARRAYS

Yuanbing Cheng[1*], Yapeng He[2]
[1]Nanjing Research Institute of Electronics Technology, Nanjing, China
[2]China Academy of Space Technology, Xi'an Branch, Xi'an, China

A0707 MONOPULSE ANGLE MEASUREMENT WITH MAINLOBE INTERFERENCE BASED ON THE AUXILIARY ARRAY

Wei Liu[1,2], Honggang Zhang[3], Quanhua Liu[1,2*]
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[3]Department of Electronic Engineering, Tsinghua University, Beijing 100084, China

C0121 GRATING LOBE IN SPARSE ULTRA-WIDEBAND ARRAY

Zhi Li[1], Jun Hu[1,2*], Yongping Song[2], Tian Jin[2], Linjie Qian[1]
[1]Chongqing Communication College, Chongqing, China
[2]College of Electronic Science, National University of Defence Technology, Changsha, China

C0204 DBS/GMTI TECHNIQUES BASED ON STAP FOR AIRBORNE ACTIVE PHASED ARRAY FIRE-CONTROL RADAR

Xiaoming Li*, Wei Gao, Xiaodong Han
AVIC Leihua electronic technology research institute, Wuxi, China

Workshop

Date	Time	Content	Place
October 17	16:30-18:30	IET Journals: How to publish with the IET and introduction to IET Open	Yangtze Board Room
October 18	13:30-15:35	MMW-Radar Development in Automotive Applications (Part A1)	Yangtze Board Room
October 18	16:30-17:55	MMW-Radar Development in Automotive Applications (Part A2)	Yangtze Board Room
October 19	08:00-10:05	MMW-Radar Development in Automotive Applications (Part B1)	Yangtze Board Room
October 19	10:30-12:10	MMW-Radar Development in Automotive Applications (Part B2)	Yangtze Board Room

Workshop: IET Journals: How to publish with the IET and introduction to IET Open

Abstract: In this workshop, Professor Hugh D. Griffiths, the Editor-in-Chief of the IET Radar, Sonar and Navigation journal, will provide guidance and advice on how to successfully navigate publication process. Kruna Vukmirovic, Publisher for the IET's journal programme, will introduce IET Open - IET's rapidly expanding programme of Open Access journals and conference proceedings. The workshop is intended as an interactive platform for all participants and both presenters will provide practical advice based on real-life examples.

Time: **16: 30 - 18: 30, October 17, 2018**
Place: **Yangtze Board Room, 2nd Floor of Hotel (E)**

13: 30 **IET JOURNALS: HOW TO PUBLISH WITH THE IET AND INTRODUCTION TO IET OPEN**
Prof. Hugh D. Griffiths, University College London, UK
Ms. Kruna Vukmirovic, The Institution of Engineering and Technology, UK

Workshop: MMW-Radar Development in Automotive Applications

Abstract: The ADAS sensors is getting great attention for self-driving cars. Among all of the sensors, mmW Radar plays an important role since it promising performance against the weather and less unaffected by adverse weather conditions and pollution. The purpose of the special session is to build a platform for industry and research institute.

Part A1

Time: **13: 30 - 15: 35, October 18, 2018**
Place: **Yangtze Board Room, 2nd Floor of Hotel (E)**
Chair: **Dr. Ziqiang Tong, NXP Semiconductors, Germany**

13: 30 **CIRCUIT TECHNIQUES FOR CMOS MM-WAVE RADAR TRANSCEIVERS**
Prof. Baoyong Chi
Tsinghua University

13: 55 **FOR 77/79 GHZ SAFETY AND RELIABILITY APPLICATIONS MOST RELIABLE LAMINATES ARE USED**
Mr. Manfred Huschka
Taconic

14: 20 **FAN-OUT PACKAGED 77GHZ SIGE RADAR CHIPSET AND 77GHZ RADAR SYSTEM**
Dr. Sun Yaoming
Citta Microelectronics

14: 45 **NEW ANTENNA TECHNOLOGIES IN MMW RADAR**
Dr. Yutao Yue
Deep Perception Institute

15: 10 **CHARACTERIZATION OF THE DK AND DF VALUES IN THE MMW-RADAR BAND**
Prof. Xiaoming LIU
Anhui Normal University

Part A2

Time: 16: 30 - 17: 55, October 18, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)
Chair: Dr. Ziqiang Tong, NXP Semiconductors, Germany

16: 30 **KEY TECHNIQUES IN CMOS MMWAVE FREQUENCY SYNTHESIZER DESIGN**
Prof. Fujiang Lin
University of Science and Technology

16: 55 **SCALABLE RADAR SENSOR PLATFORM WITH MULTI-BAND TRANSCEIVERS IN SIGE BICMOS TECHNOLOGY**
Dr. Herman J. NG
Innovations for High Performance microelectronics (IHP)

17: 20 **CRITICAL PERFORMANCE REQUIREMENTS TO HIGH FREQUENCY MATERIAL LAMINATES IN 77-79 GHZ AUTOMOTIVE RADAR TO ENABLE NEXT GENERATION ADVANCED DRIVER ASSISTANCE SYSTEMS**
Mr. Evan Yuan
Rogers Corporation

Part B1

Time: 08: 00 - 10: 05, October 19, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)
Chair: Dr. Ziqiang Tong, NXP Semiconductors, Germany

08: 00 **OBJECT ORIENTED AND IMAGING ORIENTED AUTOMOTIVE RADAR**
Dr. Lianying Ji
Beijing Muniu Technology

08: 25 **RADAR TESTING INDOORS – A SYSTEM TO DEVELOP AUTONOMOUS VEHICLES**
Dr. Hirosuke Suzuki
KEYCOM Corporation

08: 50 **OPPORTUNITY AND CHALLENGES OF THE AUTOMOTIVE MMW RADAR**
Dr. Tianchun Wang
NXP

09: 15 **HIGH CONTRAST HIGH ANGULAR RESOLUTION IMAGING RADAR FOR AUTOMOTIVE APPLICATIONS**
Dr. Murtaza Ali
Uhnder

09: 40 **LEARN HOW TO ENHANCE AND INNOVATE YOUR NEXT ADAS RADAR SOLUTION USING ADVANCED VECTOR DSPS**
Mr. Vencatesh S
Cadence

Part B2

Time: 10: 30 - 12: 10, October 19, 2018
Place: Yangtze Board Room, 2nd Floor of Hotel (E)
Chair: Dr. Ziqiang Tong, NXP Semiconductors, Germany

10: 30 **CAR COLLISION WARNING SENSOR BASED ON 2D AND 3D IMAGING NOISE RADAR**
Prof. Konstantin Lukin
National Academy of Sciences of Ukraine

10: 55 **DIGITAL MODULATION FOR AUTOMOTIVE RADARS**
Dr. André Bourdoux
IMEC

11: 20 **77 GHZ VIRTUAL RADAR DRIVE – CHALLENGES AND POSSIBILITIES**
Dr. Mario Pauli
Karlsruher Institute of Technology

11: 45 **LIDAR IN ADAS AND AUTONOMOUS DRIVING APPLICATIONS**
Mr. Xiaobo Hu
LeiShen Intelligent System

About Nanjing

About Nanjing City

Nanjing is the capital of Jiangsu Province in East China, running through the city are lower reaches of the Yangtze River whose estuary is not far away. Nanjing enjoys a civilization of over 6000 years and the city itself was founded 2500 years ago.

Enclosed by mountains and rivers, and located in a strategic place, it boasts picturesque scenery that blends natural landscape with towering modern buildings, integrating traditional styles with modern civilization. Thus it was known as a unique historic and cultural city to the world.

As one of the Four Ancient Capitals, Nanjing is a vital cradle of Chinese civilization and over a long stretch of time, it has been the political and cultural pivot of South China, thus dubbed as the Capital of Ten Ancient Dynasties, rich in both cultural heritage and historical relics.

Among the landmarks of Nanjing there are the City Wall, the Ming Xiaoling Mausoleum, Dr. Sun Yat-sen Mausoleum, Presidential Palace and Confucius Temple. Over the thousands of years of its development, Nanjing has become a paradise for young entrepreneurs coming from different corners of the world with their aspirations.

About The Confucius Temple

The temple was constructed in order to worship a man named Confucius, one of ancient great minds of China's Spring and Autumn Period (771-476 B.C.) who is remembered and revered for his social philosophy Confucius personally espoused social virtues such as sincerity, righteousness, personal and governmental ethics, and the importance of social relationships. The impressive Confucius Temple in Nanjing is but one of the many shrines that have been constructed in East Asia in dedication to the ancient sage.

The Confucius Temple in Nanjing was initially built in the year 1034 A.D. during the middle of the Song Dynasty (960-1279). Experiencing various degrees of destruction through the ages, especially at the hands of Japanese soldiers during World War II, the temple has undergone a series of renovations in order to maintain its ancient structure. Its latest incarnation was constructed by the local government in 1984 when it grew to become a more expansive complex with an appearance resembling the architecture characterized by the Ming (1368-1644) and Qing (1644-1911) Dynasties. In the present day, the temple grounds include the Xue Gong (Imperial Academy) and Jiangnan Gongyuan (the original center where the imperial examination was administered) in addition to the actual Confucius Temple in which the entire complex is now named after.

About Qinhuai River Cruise

As one of the branch of Yangtze River,Qinhuai River is the biggest river in Nanjing. With a length of 110 kilometers (about 68 miles), the river is divided into two from the Tongji Gate. One that flows into the Nanjing City is called the inner river. The other that flows along the east, south and west side of the City Wall of Ming Dynasty is called the outer river and is regarded as the moat of Nanjing City. For thousands of years, Qinhuai River has nurtured the ancient city of Nanjing and honored by many poets. A lot of stories, romantic affairs and historic sites are related to the river, which adds to its charm greatly.

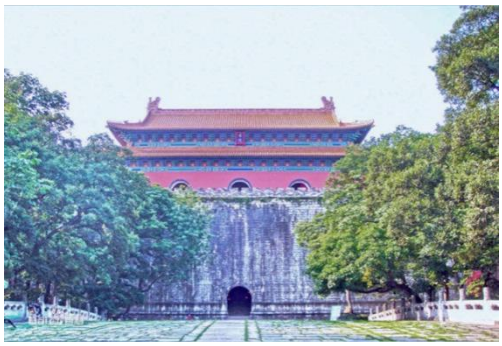
Since the Stone Age, people have always lived on the banks of the Qinhuai River. 50 to 60 original village sites have been found along the river. Among them are Hushu Cultural Site and Xunzishan Site as well as many others. However, due to various wars and battles fought within the area, ancient buildings along the river were destroyed. The River's time of prosperity ceased for a time. However, after a period of restoration in 1985, it became a famous scenic location in Nanjing again. Nowadays Qinhuai River and its beautiful scenery form a widely recognized tourist destination. With the Confucian Temple at its centre, this location offers a combination of historical sites, gardens, painted boats, streets and folk customs.

Scenery along the river includes the Bailu Zhou Garden, Confucius Temple, Zhanyuan Garden, Zhonghua Gate and characteristic boats on the Qinhuai River from the section of Taoyedu to Zhenhuai Bridge. Among them, the painted boat from which lanterns hang is the most charming and attractive that adds a festive feeling to the river in the evening. The Confucius Temple, which has become the representative of culture of South of the Yangtze River, is usually crowded with people in the evening. Wine shops, tea houses, snack stalls and handicraft works hawked along the street form the unique scenery of the Temple. Jiangnan Examination Office, which is not far from the Temple, offers visitors the chance to see the place where scholars took their examinations back in the days of feudal Chinese society.

About Xuanwu Lake

Situated at the foot of Mt. Zhongshan in Nanjing, Xuanwu Lake is a beautiful scenic spot protected by China. It is also one of the three most famous lakes in Nanjing. The history of Xuanwu Lake can be traced back to the Pre-Qin period (21century BC-221 BC). The name of the lake has changed several times during the long history. The lake gained the name Xuanwu because a black dragon was said to be in the lake. There are five isles in Xuanwu Lake.: Huan Isle, Ying Isle, Liang Isle, Cui Isle and Ling Isle. When you are on the Huan Isle, you can see that the leaves of willows wave gently with the wind and feel the mild wind from the lake that blows tenderly on your face. The Ying Isle is famous for its cherry blossoms. When the cherry blossoms bloom in the early spring, the isle seems to be an ocean of flowers. Liang Isle is the one that was developed earlier than the other four. Annually, the grand traditional exhibition of chrysanthemums is held there. On the Cui Isle, there are dark green pines, emerald green cypresses, tender willows, and light green bamboos. To the east of Ling Isle, you can see the beautiful clouds drifting across Zhong Mountain.Each island has wonderful scenery: Nuona Tower on Huan Isle is full of special serene ambience. Wumiao Zha on Ling Isle has long history and of a reasonable design. Other places like the Lotus Garden on Ying Isle and the Hushen Miao on Liang Isle are also worth visiting.

About Zhongshan Scenic Spot



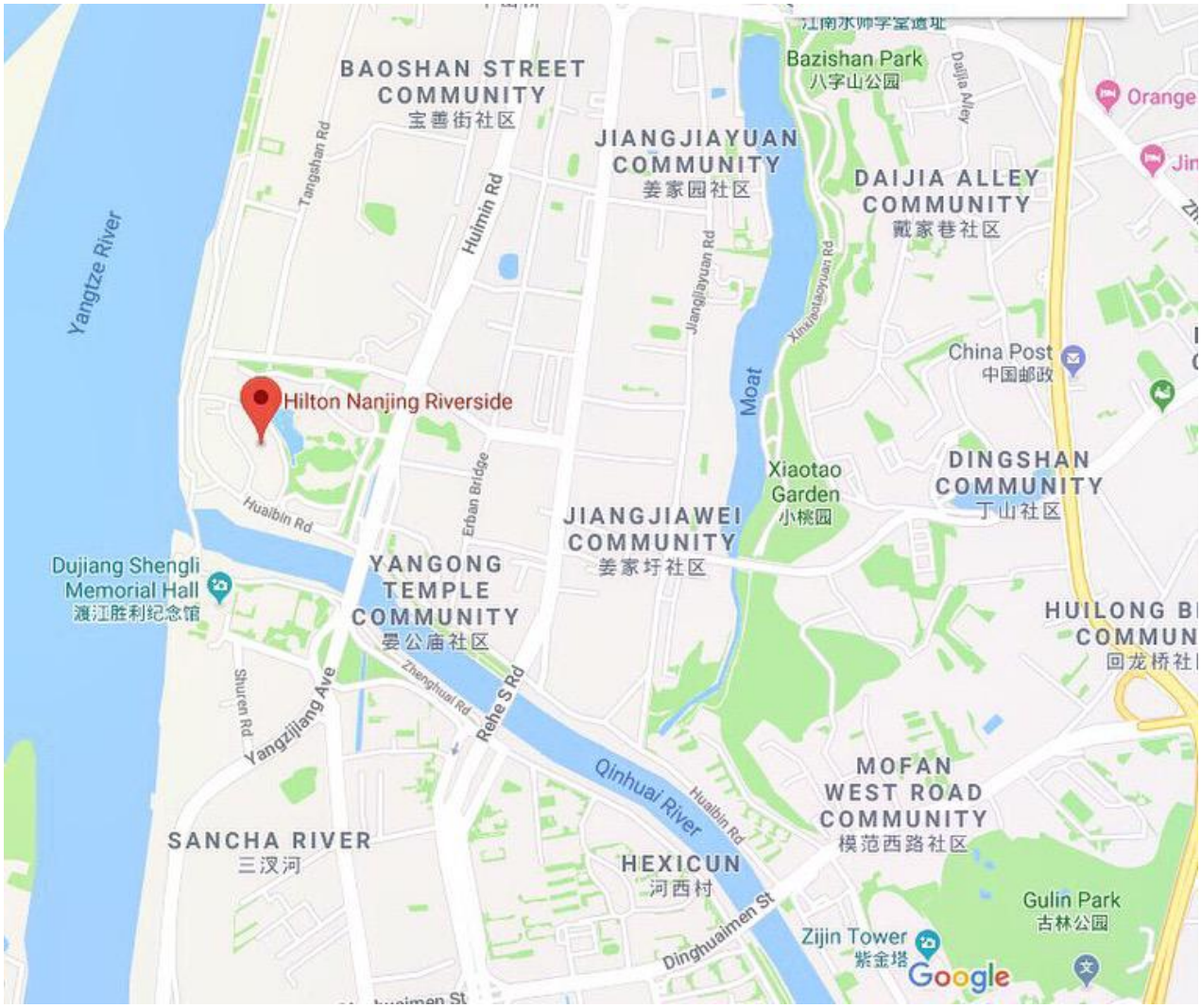
Zhongshan scenic spot, a National 5A Scenery Sites, is the model national place of ecological culture with the world culture heritage. It is located at a suburb northeast of Nanjing city, with the Sun Yat-sen Mausoleum as its center, including of Purple Mountain and Xuanwu Lake. It is about 45 square kilometers. Being honored as “great and charming place”, it has a very beautiful natural landscape and abundant historical sites and cultural objects. The scenic spot could be divided into two parts: Purple Mountain, Scenic Spot of Dr. Sun Yat-sen’s Mausoleum and the Scenic Spot of Linggu Temple and the Scenic Spot of the Ming Tomb. The great pioneer of Chinese democratic revolution-Dr. Sun Yat-sen, as well as other famous people in the Revolution of 1911’s mausoleums is located at here. In addition, there are many places of historic interest and scenic beauty, such as the Tomb of Sun Quan, the Scenic Spot of Linggu Temple and the Scenic Spot of the Ming Tomb, etc.

Purple Mountain has a vast sea of green pines and cypresses. With bird chirps resounding in the empty mountain, this picturesque and tranquil “urban forest” features its unique charm integrating “mountain, river, city and forest”. It constitutes a grand and tangible vein of history and culture, together with its over 200 places of interest. While admiring its picturesque sceneries and visiting its historical relics, you will derive ample surprise and pleasure from unique eco-leisure parks and interactive recreational facilities distributed throughout this scenic area.

About Dr. Sun Yat-sen's Mausoleum

Dr. Sun Yat-sen's Mausoleum is the burial site of Dr. Sun Yat-sen, the great pioneer of China's democratic revolution and "Father of the Republic of China". The mausoleum was constructed in three years from 1926 to 1929. It was listed as a key historical and cultural site under state protection in 1961 and a national AAAAA scenic spot in 2007. On the archway is engraved "Universal Love" which is handwritten by Dr. Sun Yat-sen. Behind the archway is a path which is more than 1575 feet (480 meters) and leads to the single-eave granite Mausoleum Gate. The gate is embellished with blue glazed tiles, with a length of 86 feet (27 meters), a width of 29 feet (8.8 meters) and a height of 54 feet (16.5 meters). It consists of three arched doors. On the door in the middle is carved the inscription "The Whole World as a Community" which is also written by Dr. Sun Yat-sen. Passing through a square Stele Pavilion, one will arrive at the Sacrificial Hall. The hall is made of white granite, concrete and steel, and decorated with blue glazed tiles. In the center of the hall stands a white marble sculpture of sitting Dr. Sun Yat-sen. Getting through the gate to the tomb, one will reach the coffin chamber. A white marble sculpture of lying Dr. Sun Yat-sen is located in the center. That is very solemn and respectful. Apart from the mausoleum, there are also plenty of memorial buildings, including the Open-Air Music Hall, the Xingjian Pavilion, the Guanghua Pavilion, the Liuhui Waterside Pavilion, and the Sutra Depository. All the buildings are harmonious in color and structure. The Dr. Sun Yat-sen's Mausoleum is not only splendid, but also exquisite. Thus, it is renowned as the "First Mausoleum in the Architectural History of Modern China".

Transportation



中国电子科技集团公司第十四研究所
THE 14TH RESEARCH INSTITUTE OF CHINA ELECTRONICS TECHNOLOGY GROUP CORPORATION

Introduction to the CETC NRIET

CETC NRIET is the place where Chinese radar industry originated. Many new-pattern and high-end radar equipment are born here, and NRIET acts as pioneer for the research and development of information equipment in China. This comprehensive electronic information engineering research institute has possessed international competition.

With 60 years development, NRIET has become a collectivize research institute. A development platform covering both military industry (the headquarters) and civilian industry (Glaraun Group Corporation) has been built. Its products have occupied domestic and oversea markets. For science and technology innovation, NRIET persists the philosophy of 'self-dependent innovation, breakthrough in critical fields, supporting development, leading the future'. As the backbone of national defense electronic information industry, it has undertaken key tasks in many national great projects, such as Atomic and Hydrogen Bombs as well as Man-made Satellite, Manned Space Flight, the Three Gorges Project, Olympic Security Safeguard, National Day Parade, and so on. Great honors and awards are given by CPC Central Committee, the State Council and Central Military Committee. Several honorary titles have been rewarded to NRIET, such as 'National Civilized Unit', 'National May 1st Labor medal', and so on. More than 60 national awards and 370 provincial-ministerial level awards were rewarded to NRIET. Among them, there is 1 'National Awards of the Top Ten Sci-tech Achievements', 18 'National Scientific Conference Award', 6 top prizes and 13 first-class prizes of 'National Scientific and Technological Progress', and 1 first-class prize of 'National Award for Technological Invention'.

A group of talents with spirits of dedication, endeavor, and innovation has been formed in NRIET. Among more than 8500 staffs (Glaraun included), there are 2 academicians of Chinese Academy of Engineering, over 150 national and provincial-ministerial level experts, and over 3000 researchers. Master degree in two disciplines can be granted by NRIET: communication and electronic system, electromagnetic field and microwave technology. Academician workstation and postdoctoral research station are also set here.

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智能感知技术重点实验室
Key Laboratory of IntelliSense Technology

Brief Introduction to Key Laboratory of IntelliSense Technology

Key Laboratory of IntelliSense Technology is one of the firstly established key laboratories of China Electronics Technology Group Corporation (CETC). It has been awarded 'Model Laboratory' by CETC. Research Areas and Goals. To face complex electromagnetic environment and new needs of systemization for technical development, research of the laboratory mainly focuses on basic technology and integrated detection research of intelligent sensing system and advanced sensing system. The laboratory aims to direct technology development, promote multi-discipline combination of detection technology and improve research level of national intelligent sensing system. Research Staff. At present, the laboratory has 86 scientists. Among them, there are 2 academicians of Chinese Academy of Engineering, 2 chief scientists along with 3 chief experts of CETC. More than 85% of them have master's degree or doctor's degree, and over 50% are senior engineers or professional-level senior engineers. A postdoctoral research station with independent recruitment qualification is also subordinated to the Laboratory. Key Laboratory of IntelliSense Technology sincerely appreciates lectures, communication and cooperation by counterparts both at home and abroad. Main Achievements.

Research fields of the laboratory include novel detection systems of system, detection system, detection technology. A number of cutting-edge technology researches have been performed, such as quantum detection, THz imaging, photonic technology, artificial intelligence, etc., and a series of breakthrough have been achieved.

Talent recruitment

Positions: regular researcher, post-doctor, and visiting professor;

Required specialties: information and communication engineering, electronic science and technology, computer science and technology, control science and engineering, instrument science and technology, atmospheric science, mathematics, physics, and so on.

Candidates: excellent graduates with doctoral or master degree from domestic and oversea prestigious universities; talents qualified for national postdoctoral recruitment standards; academic leaders and core members in related domestic and oversea research institutes.

Salary: salary and benefits are competitive in the industry.

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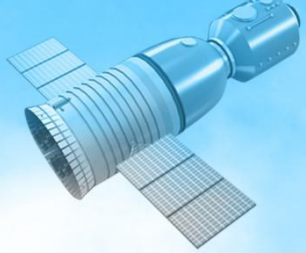
HENGDA MICROWAVE

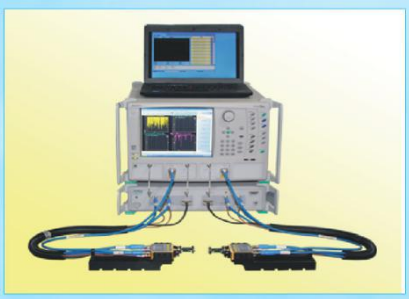


Group Profile

Founded in 1993, HengDa Microwave Group (HengDa Microwave hereinafter), is a leading microwave assemblies, antennas and systems provider with measurement capability up to 110GHz. Our R&D and manufacture sites are located in Xi'an (17,000 sq.m.) and JiangSu (10,000 sq.m.), China. We have complete production, test and measurement equipments, including microwave dark room, environmental laboratory, micro assembly workshop. HengDa Microwave's products are ISO9001:2008 certified and RoHS compliant, and widely used in SATCOM, defense, meteorology, aerospace, navigation, terahertz and 5G etc.

HD Products

- Waveguide Components
- Coaxial Components & Cable Assemblies & Active Microwave Device
- Antenna
- Antenna Turntable & Servo Control
- Sub-system Products
- Antenna Measurement & Microwave Measurement



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Beijing Racobit Electronic Information Technology Co.Ltd., established in 2009, is a wholly owned subsidiary of LeiKe Defense Technology Co., Ltd.（stock code:002413）. Our business mainly covers radar system, aerospace remote sensing, satellite navigation, digital system, and simulation system. We hold many national-level key projects, and own numerous independent intellectual property rights.

We have full complement of admittance qualification for military industry, and win “Zhong Guancun new prominent enterprises top 10”, “Zhong Guancun high-tech growing enterprises top 100” in 2013, 2015 and 2016, “Zhong Guancun high-tech growing enterprises top 100 achievement award”in 2017, etc. As a high-tech R&D company, in line with the national strategy of “military and civilian integration”, our aim is to gather talents to develop technologies and products with independent intellectual property rights, and make us a world-class high-tech company in sensing, navigation and digital systems. ›››

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