

Final Program

EUSAR 2016

11th European Conference
on Synthetic Aperture Radar

June 06 - 09, 2016

Hamburg



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11th European Conference on Synthetic Aperture Radar

June 06 - 09, 2016, Hamburg, Germany

EUSAR is jointly organized by:

ITG (VDE)	Information Technology Society in the VDE
Airbus Defence & Space	Airbus Group
DLR	German Aerospace Center
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Message from the General Chairman

It is my great pleasure to welcome you to the 11th European Conference on Synthetic Aperture Radar (EUSAR) 2016 in Hamburg.

Over the last years, EUSAR has become the leading international conference on SAR technologies and applications, attracting the brightest people in the field not only from Europe but from all over the world. It is this international atmosphere and the high standards that provide the right platform for discussions and information sharing which is so valuable to all participants and that will lead to great outcomes. Personally, I am very excited to see what we all will achieve this year.

As in previous years, the EUSAR 2016 conference program is multifaceted. The first generation of operational space borne SAR Missions have provided a huge amount of valuable data and paved the way for a broad scientific, governmental, and even commercial use of SAR products. The SAR community – we all – are intensively preparing for the next generation. What experience did we derive from the current missions? What are the trends in innovative sensor technology, data processing, new SAR and geo-information products, mission and service concepts for the user domains? The EUSAR 2016 conference will address these topics and will provide substantial answers to these questions. The conference starts with a prominently represented opening session, includes a program of dedicated sessions on various SAR subjects, and several interesting poster sessions. My extended thanks to everyone taking the effort to actively and substantially contribute to this conference, thus making it rich and valuable!

The EUSAR 2016 conference is taking place in the *Free and Hanseatic City of Hamburg* – my thanks to those who had this brilliant idea and made it happen!



Hamburg's long official name reflects its history as a member of the medieval Hanseatic League, it's standing as a free imperial city, representing a city state and one of the 16 States of Germany today. Hamburg is a logistics and transport hub, being the biggest German seaport. In recent years it has also become a media and industrial center, highly developed in the high-tech area with strong representation of the aeronautics, bio-scientific, consumer, information, and media industries. Hamburg is an extremely dynamic city which never sleeps. Hamburg is cosmopolitan, looks eagerly towards the future, offers a broad variety of cultural and profane activities, interesting architecture, parks to relax, and so much more. In short, Hamburg is as multifaceted as EUSAR's program and a great fit for our conference!

I am looking forward to seeing you very soon at EUSAR 2016, to listening to interesting and enthusiastically delivered presentations, to participating in passionate and vivid discussions and exchanges and to breathing the future-oriented, cosmopolitan and dynamic air of our venue, Hamburg.

Eckard Settelmeier

EUSAR 2016 General Chairman

Airbus DS GmbH, Germany

Message from the Technical Chairmen

On behalf of the EUSAR 2016 Organisation Committee we would like to welcome you to the Hanseatic city of Hamburg - the second largest city of Germany - worldwide known for its important industry as well as rich history and culture.

This year's edition of EUSAR enjoys a very good response from the academia, industry and institutions from all over the world. The submitted papers cover all important SAR related topics: from systems and missions to technology, processing to data evaluation and modeling, as well as advanced applications. A total number of over 300 papers divided into 15 invited sessions, 35 regular oral sessions and one poster session with nearly 70 posters will be presented. Over 30 countries are represented by the authors in total. The oral sessions are organized in 5 parallel sessions with minimal interference between the session topics. On Tuesday evening, after the traditional piano recital, you will have the possibility to discuss the poster presentations with the authors.

On Monday, prior to the opening of EUSAR 2016, a set of tutorials is given where the interested attendees can get a deep dive into selected technical or application aspects of SAR technology.

The higher level perspectives and future trends in SAR technology will be given by the Keynote Speakers during the opening plenary session on Tuesday. In addition, special invited guests will present on Tuesday afternoon in a Special Session on Space Programs and Roadmaps current activities and future trends in SAR

During the conference an Award Committee under the lead of Prof. Wiesbeck will review the EUSAR contributions and identify the winners of the contest. The awards will be given in three well-established categories: best paper, best poster and best student paper.



The conference dinner will take place on Wednesday evening in a restaurant with a beautiful view of the panorama of Hamburg. Before the dinner there is the opportunity to attend a guided bus tour through the city of Hamburg. The dinner location is also reachable by a 15 min walk from the conference venue.

After the conference, the EUSAR-authors will profit from the visibility of their contributions in ISI and SCOPUS databases, whereas the publications will be made accessible in the conference proceedings and in IEEEXplore.

We would like to express our thanks to the Program Board and to the Technical Program Committee for assuring the highest technical quality of the conference and for support in creation of a very interesting program. Furthermore, we thank the Invited Session organizers for their careful preparation of the invited sessions and the Session Chairs for leading the regular sessions. Last but not least we would like to thank all authors and participants for providing the whole content of this year's edition of EUSAR 2016. Have fruitful discussions and let the conference be once again a successful forum for creation of new ideas and networks.

See you in Hamburg!

Grzegorz Adamiuk / Thomas Fügen

EUSAR 2016 Technical Chairmen

Airbus DS GmbH, Germany

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Conference Topics

(A) SAR Systems and Sensors

- A1 Spaceborne SAR Systems and Missions
- A2 Airborne SAR Systems and Missions
- A3 Ground-Based SAR
- A4 Inverse SAR (ISAR)
- A5 SAR System Simulation and Modeling
- A6 Next Generation SAR Systems and Missions

(B) SAR Technology and Calibration

- B1 Antennas
- B2 Components and Subsystems
- B3 Technology Demonstrations
- B4 Advanced SAR Modes and Techniques
- B5 Calibration and Verification

(C) SAR Processing

- C1 SAR Image Generation, Motion Compensation, and Geocoding
- C2 ISAR Signal Processing
- C3 Image Filtering, Correction, and Enhancement
- C4 MTI, GMTI, and STAP
- C5 Interferometry (Cross-Track, Along-Track, Differential, PS, ...)
- C6 Tomography, Holography, and 4-D SAR
- C7 Advanced Processing Techniques (Compressive Sensing, Multi-Aperture, MIMO, ...)

(D) SAR Data Evaluation and Modeling

- D1 Electromagnetic Modeling and Wave Propagation
- D2 Polarimetry
- D3 Polarimetric Interferometry
- D4 Segmentation, Feature Extraction, and Analysis
- D5 Image Filtering, Correction and Enhancement
- D6 Classification
- D7 Product Validation, Data Fusion and Value Adding

(E) SAR Applications

- E1 Land Use and Land Cover
- E2 Urban Areas
- E3 Soil and Vegetation
- E4 Maritime and Ocean
- E5 Snow, Ice, and Glacier
- E6 Topography and Solid Earth
- E7 Surveillance, Security, and Disaster
- E8 Other Applications

(F) Other SAR Related Subjects

Conference Schedule

Monday, June 6, 2016

08:00 - 18:00	Registration
09:00 - 17:30	Tutorials
10:30 - 11:00	Coffee Break
12:30 - 13:45	Lunch Break
15:15 - 15:45	Coffee Break

Tuesday, June 7, 2016

08:00 - 18:00	Registration
09:30 - 22:00	Exhibition
09:00 - 10:50	Welcome and Keynotes
10:50 - 11:20	Coffee Break
11:20 - 13:00	Oral Sessions
13:00 - 14:00	Lunch Break
14:00 - 15:40	Oral Sessions
15:40 - 16:10	Coffee Break
16:10 - 17:50	Oral Sessions
18:15 - 19:15	Social Program (Piano Recital by Richard Klemm)
19:15 - 21:00	Wet Poster Session

Wednesday, June 8, 2016

08:00 - 18:00	Registration
08:30 - 18:00	Exhibition
09:00 - 10:40	Oral Sessions
10:40 - 11:10	Coffee Break
11:10 - 12:50	Oral Sessions
12:50 - 14:00	Lunch Break
14:00 - 15:40	Oral Sessions
15:40 - 16:10	Coffee Break
16:10 - 17:50	Oral Sessions
19:00 - 23:00	Conference Dinner

Thursday, June 9, 2016

08:00 - 16:00	Registration
08:30 - 16:00	Exhibition
09:00 - 10:40	Oral Sessions
10:40 - 11:10	Coffee Break
11:10 - 12:50	Oral Sessions
12:50 - 14:00	Lunch Break
14:00 - 15:40	Oral Sessions
15:40	Awards Presentation and Closing Remarks

Tutorials

Room B2.2

Tutorial 1: Multidimensional SAR & MTI Techniques

- 09:00-10:30 Introduction into SAR Interferometry and Persistent Scatterers**
Alessandro Ferretti (Tele-Rilevamento Europa, Italy)
- 10:30-11:00 Coffee Break**
- 11:00-12:30 SAR Tomography and Multi-Dimensional Imaging**
Gianfranco Fornaro (IREA-CNR, Italy)
- 12:30-13:45 Lunch**
- 13:45-15:15 Airborne SAR/MTI Techniques**
Joachim Ender (Fraunhofer-FHR, Germany)
- 15:15-15:45 Coffee Break**
- 15:45-17:15 Space-based SAR/MTI Techniques**
Delphine Cerutti-Maori (Fraunhofer-FHR, Germany - Ishuwa Sikaneta DRDC, Canada)

Room C4.3

Tutorial 2: Spatial Diversity Imaging Systems

- 09:00-10:30 Introduction into distributed SAR/ISAR**
Pierfrancesco Lombardo & Debora Pastina, (Uni. Roma, Italy)
- 10:30-11:30 Coffee Break**
- 11:00-12:30 Experimental Aspects of distributed SAR/ISAR Systems**
Ingo Walterscheid, Stefan Brisken (Fraunhofer FHR, Germany)
- 12:30-13:45 Lunch**
- 13:45-15:15 Circular SAR imagery and applications**
Hélène Oriot (ONERA, France)
- 15:15-15:45 Coffee Break**
- 15:45-17:15 Multi-pass Aperture Synthesis**
T. M. Marston (University of Washington, APL, USA)

17:30 Discussion / End of Tutorial

Room C2.1:

Tutorial 3: Polarimetry and Pol-In SAR

- 09:00-10:30 SAR Polarimetry**
Jakob van Zyl (JPL, USA)
- 10:30-11:30 Coffee Break**
- 11:00-12:30 Multimodal Polarmetric SAR**
Scott Hensley (JPL, USA)
- 12:30-13:45 Lunch**
- 13:45-15:15 Decomposition of fully Polarimetric SAR Data and its Application**
Yoshio Yamagushi (Niigata Uni., Japan)
- 15:15-15:45 Coffee Break**
- 15:45-17:15 L-Band SAR (PALSAR/PALSAR2/PI-SAR-L2) Polarimetric Calibration and Application**
Masanobu Shimada (JAXA, Japan)

Room C4.4

Tutorial 4: SAR Image Exploitation and Feature Extraction

- 09:00-10:30 SAR Image Exploitation -Urban area-**
Uwe Stilla (TU-München, Germany)
- 10:30-11:00 Coffee Break**
- 11:00-12:30 SAR Signature Analyses for Image Exploitation**
Karsten Schulz (Fraunhofer-IOSB, Germany)
- 12:30-13:45 Lunch**
- 13:45-15:15 Maritime, Ocean Application**
Susanne Lehner (DLR, Germany)
- 15:15-15:45 Coffee Break**
- 15:45-17:15 Surface Parameter Estimation (Soil, Vegetation, and Land Cover)**
Claudia Notarnicola (EURAC, Italy)

17:30 Discussion / End of Tutorial

Tutorials (continue)

Room B2.1

Industrial Tutorial 5: Operational Remote Sensing by Exploiting Space-Based SAR Data

- 09:00-09:30 Introduction of companies and presenters**
T. Bahr (Harris/Airbus Defence and Space/sarmap)
- 09:30-10:00 Time series analysis with Sentinel-1A and ENVISAT ASAR data/ Live demonstration of an operational SARscape workflow**
T. Bahr (Harris, Germany)
- 10:00-10:20 TerraSAR-X and ENVI: Some good reasons why getting them engaged! - Overview on TerraSAR-X applications**
O. Lang (Airbus Defence and Space, Germany)
- 10:20-10:50 Coffee break**
- 10:50-11:20 Stereo SAR/ 3D point clouds from stereo & InSAR**
P. Pasquali (sarmap, Switzerland)
- 11:20-12:00 Monitoring surface deformation from space with millimeter precision - Case study of an operational monitoring Project**
J. Andersson (Airbus Defence and Space, Germany)
- 12:00-12:30 Delivering SAR processing services through the cloud**
A. Meroni (Harris, Germany)
- 12:30-13:45 Lunch**
- 13:45-14:15 Monitoring the Earth with spaceborne SAR - Various case studies of on- and off-shore surveillance applications**
O. Lang (Airbus Defence and Space, Germany)
- 14:15-14:45 Operational image registration based on high-resolution SAR data - Live demonstration of the HyPARE registration engine in ENVI**
T. Bahr (Harris, Germany)
- 14:45-15:15 Wrap Up & Discussion**
- 15:15-17:15 Coffee Break**

17:30 Discussion / End of Tutorial

Room G1

09:00-09:10 Welcome

E. Settelmeier, General Chairman, Airbus DS

Room G1

Keynote

09:10-09:40 The Korean Spaceborne SAR Program



*Jin-Hee Kim, Ph.D.,
Korea Aerospace Research Institute (KARI)*

Abstract: Since 2013, Korea has its own satellite with spaceborne Synthetic Aperture Radar (SAR), KOMPSAT-5. As a follow-on program, Korea Aerospace Research Institute (KARI) has been developing KOMPSAT-6 since 2012. The mission objective of KOMPSAT-6 is to expedite provision of the space-borne SAR standard images with sub-meter resolution required for the national demand in GOLDEN; GIS (Geographical Information Systems), Ocean & Land management, Disaster monitoring, and Environment monitoring. In this talk, an introduction of KOMPSAT series satellites and the summary of KOMPSAT-5 program will be given. The program overview, mission and system characteristics of the KOMPSAT-6 will be followed. In addition, Korean satellite development roadmap will also be included.

Biography: He received his B.S., M.S., and Ph.D. degrees in Aerospace Engineering at the Seoul National University, Seoul, Korea, in 1990, 1992, and 1996 respectively. Since 1996, he has started working in Korea Aerospace Research Institute (KARI). He had been participating in the development for KOMPSAT series satellites. (KOMPSAT-1, -2, -3) From 2007, he joined KOMPSAT-5 Systems Engineering & Integration Team and became head of that team in 2009. Currently, since 2013, he is director of KOMPSAT-6 program office.

Room G1

Keynote

09:40-10:10 Sentinels at the Crossroads?



*Guido Levrini,
European Space Agency (ESA)*

Abstract: Europe has managed, first in the world, to open a new highway for the development of remote sensing from space with the Copernicus system.

How has such result being achieved?

Are we better than those who tried before us without succeeding?

How was it possible to conceive and build a system that develops new, sophisticated sensors while integrating existing and parallel efforts at national and private level?

What has worked ?

What's next? Has Copernicus already reached maturity?

Are we witnessing the final configuration of the system?

Are we the victims of our success?

What can happen next?

What shall happen?

How to achieve the next development step?

Can the lesson from the past guide our next steps towards a greater success?

Biography: Born in Rome, Italy in 1956, G. Levrini graduated in Electronic Engineering in 1983.

He spent his first 12 professional years working in industry on projects such as ERS-1, X-SAR, Rosetta, Artemis, Envisat.

He has also worked at the University of Rome "La Sapienza" and at the University of Perugia.

Since 1995 is with the European Space Agency, first in the Envisat project, responsible for the development of the microwave instruments and for the instruments ground processing chains.

He works in the Copernicus programme (formerly GMES) since its beginning, first as Sentinel-1 project manager, then as Copernicus space segment programme manager (current position). As such, he coordinates the development of all Sentinels at ESA.

Room G1

Keynote

10:10-10:40 The German X-Band SAR Roadmap



*Thomas Galinski, Ph.D.
German Aerospace Center (DLR)*

Abstract: The year 2016 stands for nearly 40 years of civil Radar Programs and development worldwide and in Germany. Several successful SAR missions in the last 20 years, mainly ENVISAT, Radarsat and TerraSAR-X/Tandem-X, stimulated new customers like the European Commission to invest into long term SAR programs. New institutional SAR programs in Argentina, USA/India and South Korea started in parallel with new commercial initiatives like Novasat, UrtheCast, XpressSAR and IceEye. In this competitive environment innovative concepts are necessary to enable new sustainable programs.

In order to benefit from the great success of TerraSAR-X and TanDEM-X and to satisfy the growing demand for SAR data by scientific users, governments and commercial customers also in the future, new programs are essential in Germany. Therefore the next major milestone in the German X-Band SAR roadmap is planned with the High Resolution Wide Swath (HRWS) Mission. HRWS will provide continuity and a considerable advancement in X-band data by provision of widely improved image sensitivity and resolution as well as doubled access range. Digital Beam Forming (DBF) technique and quad polarization implementation will allow new applications.

Biography: Thomas Galinski has been working in the space sector for more than 25 years. He studied astrophysics at the University of Bochum where he received a PhD in 1988. His career with DLR started in 1989 in the Technology department, which he headed from 1991 to 1993. Since 1993 Thomas Galinski took over management roles in the Navigation and Communications departments, before he became Head of the Space Science department in 2002. In October 2015 he was appointed as acting Project Director of the German Space Programme.

Room G1**10:40-10:50 Introduction to EUSAR 2016***T. Fügen, G. Adamciuk, Technical Chairs, Airbus DS***10:50-11:20 Coffee Break****Room G1****16:10-17:50 Special Invited Session on Space Programs and Roadmaps****16:10-16:35 The Role of Radar in NASA's Earth and Planetary Exploration Programs***S. Hensley (Jet Propulsion Laboratory, USA)***16:35-17:00 Polish Satellite Programs***M. Banaszkiewicz (Polish Space Agency, Poland)***17:00-17:25 From X-SAR to HRWS. Status and Evolution of Spaceborne Radar at Airbus DS Germany***S. Riegger (Airbus DS, Germany)***17:20-17:50 PAZ and TerraSAR-X constellation, innovation through international cooperation***F. Cerezo (Hisdesat, Spain)***10:50 - 11:20 Coffee Break****Room G1****Session (G1.1): Sentinel 1 Mission (invited)***Chairs: Ramon Torres (European Space Agency & ESTEC, The Netherlands), Betlem Rosich (European Space Agency (ESA/ESRIN), Italy)***11:20 Sentinel-1B Independent In-Orbit System Calibration – First Results –***Marco Schwerdt, Kersten Schmidt, Nuria Tous-Ramon, Gabriel Castellanos Alfonzo, Björn J. Döring, Manfred Zink (DLR, DE); Pau Prats (German Aerospace Center (DLR), DE)***11:40 Sentinel-1 Mission Status***Pierre Potin, Betlem Rosich, Patrick Grimont, Nuno Miranda (European Space Agency & ESRIN, Italy); Ian Shurmer, Alistair O'Connell (European Space Agency / ESOC, DE); Ramon Torres, Mike Krassenburg ((European Space Agency & ESTEC, The Netherlands)***12:00 Sentinel-1 SAR Interferometry Performance Verification***Dirk Geudtner (European Space Agency, The Netherlands); Pau Prats and Nestor Yague-Martinez (German Aerospace Center (DLR), DE); Ignacio Navas-Traver and Itziar Barat (European Space Agency, The Netherlands); Ramon Torres (European Space Agency & ESTEC, The Netherlands)***12:20 Sentinel-1B LEOP and Commissioning Results***Ramon Torres (European Space Agency & ESTEC, The Netherlands); Svein Lokas (European Space Agency, The Netherlands); David Bibby (European Space Agency, United Kingdom); Dirk Geudtner (European Space Agency, The Netherlands)***12:40 The Copernicus Sentinel-1 Constellation Product Quality and Preliminary Calibration Results***Nuno Miranda (European Space Agency & ESRIN, Italy); Peter Meadows, Alan Pilgrim (BAE Systems Advanced Technology Centre, United Kingdom); Guillaume Hajdуч (CLS, France); Riccardo Piantanida, Davide Giudici (Aresys srl, Italy); Andrea Recchia (Politecnico di Milano, Italy); David Small (University of Zurich, Switzerland); Adrian Schubert (Remote Sensing Laboratories, University of Zurich, Switzerland); Alexis Mouche (CLS, France); Harad Johnsen (Norut & University of Tromsø, Norway)***13:00 - 14:00 Lunch Break**

Room G2

Session (G2.1): MIMO Imaging (invited)

Chairs: Joachim H. G. Ender (Fraunhofer FHR & University Siegen, DE), Jens Klare (Fraunhofer FHR, DE)

11:20 MIMO concept for the imaging radar of the radar warning and information system RAWIS

Oliver Biallawons, Jens Klare, Robert Klenke, Reinhard Panhuber (Fraunhofer FHR, DE)

11:40 Concepts for 3D MIMO imaging of buildings

Joachim H. G. Ender (Uni Siegen); Fabio Giovanneschi, Lars Fuhrmann (University Siegen, DE)

12:00 Experimental demonstration of distributed MIMO imaging

Ingo Walterscheid (Fraunhofer FHR, DE); Graeme Smith (The Ohio State University, USA); Joachim H. G. Ender (Fraunhofer FHR & University Siegen, DE); Chris Baker (Aveillant, United Kingdom)

12:20 MIMO imaging for next generation passenger security systems

Reinhold Herschel, Stefan Lang, Nils Pohl (Fraunhofer FHR, DE)

12:40 MIMO-SAR Tomography

Gerhard Krieger, Tobias Rommel, Alberto Moreira (German Aerospace Center - DLR, DE)

13:00 - 14:00 Lunch Break

Room D

Session (D1): ISAR (I)

Chairs: Patrick Berens (Fraunhofer FHR, DE), Gianfranco Fornaro (CNR-IREA, Italy)

11:20 3D InISAR target reconstruction using airborne PAMIR data

Anna Fontana, Patrick Berens (Fraunhofer FHR, DE); Daniele Staglianò (University of Pisa & National Inter-University Consortium for Telecommunications (CNIT), Italy); Marco Martorella (University of Pisa, Italy)

11:40 3D InISAR Imaging by using Multi-temporal Data

Elisa Giusti (University of Pisa, Italy); Federica Salvetti (CNIT-RaSS & University of Pisa, Italy); Daniele Staglianò (University of Pisa & National Inter-University Consortium for Telecommunications (CNIT), Italy); Marco Martorella (University of Pisa, Italy)

12:00 A Multi Channel Antenna Setup for Trajectory Estimation of Moving Targets for ISAR Imaging Using Time Difference of Arrival with the HITCHHIKER Noise Radar

Simon Reuter (University of Siegen & Center for Sensorsystems (ZESS), DE); Florian Behner (University of Siegen, DE); Holger Nies, Othmar Löffeld (University of Siegen & Center for Sensorsystems (ZESS), DE)

12:20 Comparison of Fast and Accurate Parametric ISAR Motion Compensation Techniques

Carlo Noviello (IREA-CNR & University of Napoli Federico II, Italy); Gianfranco Fornaro (CNR-IREA, Italy); Marco Martorella (University of Pisa, Italy)

12:40 Sequential ISAR Imaging of Ground Moving Targets

Xiao Dong, Yunhua Zhang, Wenshuai Zhai (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China)

13:00 - 14:00 Lunch Break

Room E

Session (E1):**SAR Polarimetry: Techniques and Applications (invited)**

Chairs: Laurent Ferro-Famil (University of Rennes, France), Jakob van Zyl (Jet Propulsion Laboratory, USA)

11:20 Simple Method of Landslide Recognition Using Polarimetric Scattering Power Decomposition

Yoshio Yamaguchi, Takashi Shibayama, Hiroyoshi Yamada, Ryoichi Sato (Niigata University, Japan)

11:40 Crop Height Estimation of Rice Fields by X- and C-Band

Onur Yuzugullu (ETH Zurich, Switzerland); Esra Erten (Istanbul Technical University, Turkey); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

12:00 Assessment of L-Band SAR Polarimetry for Soil and Crop Monitoring

Matias Barber (Instituto de Astronomía y Física del Espacio, Argentina); Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), ES); Francisco Matias Grings (Instituto de Astronomía y Física del Espacio, Argentina)

12:20 An empirical optimisation strategy for Model-based Polarimetric Target Decomposition

Anthony P Doulgeris (UiT The Arctic University of Norway, Norway); Torbjørn Eltoft (UiT The Arctic University of Norway)

12:40 Decomposition of Polarimetric Scattering Based on Spectral Decomposition Techniques

Jakob van Zyl (Jet Propulsion Laboratory, USA)

13:00 - 14:00 Lunch Break

Room F

Session (F1): Airborne SAR Processing and Applications (I)

Chairs: Ernst Krogager (Danish Defence Acquisition and Logistics Organization (DALO) & LU-VV06, Denmark), Andrea Loinger (Airbus Defence and Space, DE)

11:20 3-D SAR Imaging of African Forests: Results from the AfriSAR Campaign at P- and L-Band

Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE); Matteo Pardini, Ralf Horn, Rolf Scheiber, Marc Jäger, Martin Keller, Daniel Geßwein, Konstantinos P. Papathanassiou, Andreas Reigber (German Aerospace Center (DLR), DE)

11:40 Forest Analysis by Single-Pass Millimeterwave SAR Tomography

Michael Schmitt (Technical University of Munich (TUM), DE); Xiao Xiang Zhu (German Aerospace Center (DLR), Remote Sensing Technology & Technical University of Munich (TUM), Signal Processing in Earth Observation, DE)

12:00 Preliminary results of the AfriSAR campaign

Pascale Dubois-Fernandez, Xavier Dupuis, Pierre Capdessus, Rémi Baque (ONERA, France)

12:20 Demonstration of Advanced SAR for Applications in the Arctic

Ernst Krogager, Stig von Platen Rosenmunthe, Jan Hartvigsen (Danish Defence Acquisition and Logistics Organization (DALO), Denmark);)

12:40 Tropical forest biomass retrieval using P-band Pol-TomSAR data

Bassam El Hajj Chehade, Laurent Ferro-Famil (University of Rennes, France); Ho Tong Minh Dinh and Thuy Le Toan (CESBIO, France); Stefano Tebaldini (Politecnico di Milano, Italy)

13:00 - 14:00 Lunch Break

Room G1

Session (G1.2): Kompsat 6 (invited)

Chairs: Jin Hee Kim, Seonho Lee (Korea Aerospace Research Institute, Korea)

14:00 KOMPSAT-6 Mission, Operation Concept, and System Design

Seonho Lee, Jae Cheol Yoon, Jin Hee Kim (Korea Aerospace Research Institute, Korea)

14:20 KOMPSAT-6 SAR Payload System Design

Yong-Chul Hwang (Korea Aerospace Research Institute, Korea)

14:40 Operation Concept of KOMPSAT-6 Ground Segment

Chiho Kang, Okchul Jung, Taebong Oh, Dochul Yang, Gabho Jeun (Korea Aerospace Research Institute, Korea)

15:00 SAR Processing by a modified CSA based algorithm with a delicate azimuth matched filter ETF4ZDT

Dong H Kim (Korea Aerospace Research Institute & Satellite Information Center, Korea); Byoung Gyun Lim, Dong-Han Lee, Jae Cheol Yoon, Dochul Yang, Horyung Jeong (Korea Aerospace Research Institute, Korea)

15:20 Kompsat-5/6 SAR Interferometry

Dochul Yang, Okchul Jung, Dong-Han Lee (Korea Aerospace Research Institute, Korea)

15:40 - 16:10 Coffee Break

Room G2

Session (G2.2): MIMO SAR

Chairs: Gerhard Krieger (DLR, DE), Junghyo Kim (Airbus DS GmbH, DE)

14:00 Detection of Multipath Propagation Effects in SAR-Tomography with MIMO Modes

Tobias Rommel, Gerhard Krieger (German Aerospace Centre (DLR), DE)

14:20 SIMO and MIMO System Architectures and Modes for High-Resolution Ultra-Wide-Swath SAR Imaging

Gerhard Krieger, Sigurd Huber, Michelangelo Villano (German Aerospace Center (DLR), DE); Felipe Queiroz de Almeida (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Marwan Younis, Paco López-Dekker, Pau Prats Marc Rodriguez-Cassola, Alberto Moreira (German Aerospace Center - DLR, DE)

14:40 MIMO-SAR Waveform Design Using Modified Costas Pulses

Mahdi Khosravi, Mohammad Hassan Bastani, Mohammad Mahdi Nayebi (Sharif University of Technology, Iran)

15:00 A Novel 3-D Imaging Algorithm for Downward-Looking MIMO Array SAR

Bin Liao, Dahai Dai, Shiqi Xing, Bo Pang and Xuesong Wang (National University of Defense Technology, P.R. China)

15:40 - 16:10 Coffee Break

Room D

Session (D2): ISAR (II)

Chairs: Michael Völker (Airbus DS GmbH, DE), Eric Schreiber (German Aerospace Center (DLR), DE)

14:00 A Fast 3-D Cylindrical Scanning Near-Field ISAR Imaging Approach With Extended Far-Field RCS Extraction Based On a Modified Focusing Operator
Thomas Vaupel (Fraunhofer FHR, DE)

14:20 MMW ISAR Concept for Detection of Impurities in Sugar Production
Tobias Albers, Markus Peichl, Stephan Dill, Timo Kempf (German Aerospace Center (DLR), DE)

14:40 A TOPSAR Processor based on the Omega-K Algorithm: Evaluation with Sentinel-1 Data
Murielle Kirkove, Anne Orban (University of Liege, Belgium); Dominique Derauw, Christian Barbier (Centre Spatial de Liège, Belgium)

15:00 IoSiS - A high-performance imaging radar for surveillance of objects in low earth orbit
Simon Anger (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Markus Peichl, Stephan Dill, Matthias Jirousek, Eric Schreiber (German Aerospace Center (DLR), DE)

15:20 Adaptive Compressed Sensing for High-Resolution ISAR Imaging
Shun-Sheng Zhang, Yong-Qiang Zhang (University of Electronic Science and Technology of China, P.R. China)

15:40 - 16:10 Coffee Break

Room E

Session (E2):

SAR Polarimetry: Techniques and Applications (invited)

Chairs: Laurent Ferro-Famil (University of Rennes, France), Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), ES)

14:00 Preliminary Calibration and Application Results of C- and P-band Airborne Polarimetric SAR Data in China
Xinwu Li, Huadong Guo, Lu Zhang, Lei Liang, Wenjin Wu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences, P.R. China)

14:20 The Use of the L2-Norm for the Analysis of Texture on PolSAR Data
Xinping Deng, Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), ES)

14:40 Change analysis and interpretation in polarimetric time series over agricultural fields at C-band
Alberto Alonso-González (German Aerospace Center (DLR), DE); Hannah Joerg (German Aerospace Center & ETH Zürich, DE); Konstantinos P. Papathanassiou (German Aerospace Center, DE); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

15:00 Study of the impact of Polarization for Distributed Targets Interferometry
Alessandro Parizzi, Fernando Rodriguez Gonzalez (German Aerospace Center (DLR), DE); Michael Eineder (German Aerospace Center (DLR) & Technische Universität München, DE)

15:40 - 16:10 Coffee Break

Room F

Session (F2): Airborne SAR Processing and Applications (II)

Chairs: Markus Limbach, Rolf Scheiber (German Aerospace Center (DLR), DE)

14:00 Multi-mode Real-Time SAR On-Board Processing
Russel Que, Octavio Ponce, Stefan V. Baumgartner, Rolf Scheiber (German Aerospace Center (DLR), DE)

14:20 Recent Results of High Resolution Ground Image Formation Using Miniaturized C-Band Synthetic Aperture Radar
Piotr Samczynski, Damian Gromek, Jędrzej Drozdowicz, Maciej Wielgo, Karol Klincewicz, Adam Grabowski, Marcin Baczyk, Krzysztof S Kulpa (Warsaw University of Technology, Poland)

14:40 Radio frequency interference detection and mitigation techniques using data from EcoSAR 2014 Flight Campaign
Batuhan Osmanoglu (USRA - NASA GSFC, USA); Rafael Rincon, SeungKuk Lee (NASA Goddard Space Flight Center, USA); Temilola Fatoyinbo (NASA, USA); Tobias Bollian (USRA - NASA GSFC, USA)

15:00 Characterization of Radar Targets - a Review of Polarimetric Descriptors Applied to Recent F-SAR Data
Ernst Krogager, Stig von Platen Rosenmunthe (Danish Defence Acquisition and Logistics Organization, Denmark); Andreas Reigber, Martin Keller, Marc Jäger (German Aerospace Center (DLR), DE); Wolfgang Boerner (UIC Chicago, USA)

15:20 DLR - F-SAR P-Band Antenna - Design, Measurements and Results
Markus Limbach (German Aerospace Center (DLR), DE)

15:40 - 16:10 Coffee Break

Room G1

**Session (G1.3):
Special Invited Session on Space Programs and Roadmaps**

Chairs: Grzegorz Adamiuk, Thomas Fuegen (Airbus DS GmbH, DE)

16:10 The Role of Radar in NASA's Earth and Planetary Exploration Programs
Scott Hensley (Jet Propulsion Laboratory, USA)

16:35 Polish Satellite Programs
Marek Banaszekiewicz (Polish Space Agency, Poland)

17:00 From X-SAR to HRWS. Status and Evolution of Spaceborne Radar at Airbus DS Germany
Sebastian Riegger (Airbus DS GmbH, DE)

17:25 PAZ and TerraSAR-X constellation, innovation through international cooperation
Fernando Cerezo Martínez (HISDESAT Servicios Estratégicos, ES)

18:15 - 19:15 Piano Recital

Room G1

19:15 - 21:00 Poster Session and Get Together

Room G2

Session (G2.3): Advanced SAR Modes and Techniques (I)

Chairs: Josef Hermann Martin Mittermayer, Michelangelo Villano (German Aerospace Center (DLR), DE)

16:10 Small Satellite Dispersed SAR - An Exemplary Configuration

Josef Hermann Martin Mittermayer, Paco López-Dekker, Thomas Kraus, Gerhard Krieger (German Aerospace Center (DLR), DE)

16:30 Characteristics of a SAR with 2D steering capability

David Hall, Mike Winser, Michael Bolt, Michael Notter, Pedro Lau Semedo, Phil Watson, Roy Wasdell, Geoff Burbidge, Samuel Doody (Airbus DS Ltd, United Kingdom)

16:50 Reconsideration of Ambiguities in Quad-Pol SAR

Michelangelo Villano, Gerhard Krieger, Alberto Moreira (German Aerospace Center - DLR, DE)

17:10 Calibration Concept for Weakly-Synchronised SAR Companion Missions: ESA's SAOCOM/CS case

Marc Rodriguez-Cassola, Pau Prats, Matteo Nannini, Paco López-Dekker, Alberto Moreira (German Aerospace Center - DLR, DE); Bernardo Carnicero Dominguez (ESA, The Netherlands)

17:30 Study On Scan-GMTI For Spaceborne SAR

Mingjie Zheng, Jili Sun, Weidong Yu and Lijuan Qi (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

18:15 - 19:15 Piano Recital

Room G1

19:15 - 21:00 Poster Session and Get Together

Room D

Session (D3): MTI and GMTI

Chairs: Stefan V. Baumgartner (German Aerospace Center (DLR), DE), Ludger Prünte (Fraunhofer-Institut für Hochfrequenzphysik und Radartechnik FHR, DE)

16:10 Compressed Sensing for Removing Moving Target Artifacts and Reducing Noise in SAR Images

Ludger Prünte (Fraunhofer-Institut für Hochfrequenzphysik und Radartechnik FHR, DE)

16:30 Experimental result for SAR GMTI using monostatic pursuit mode of TerraSAR-X and TanDEM-X on Staring Spotlight images

Thomas K Sjögren (Swedish Defence Research Agency, Sweden); Vu Viet Thuy and Mats Pettersson (Blekinge Institute of Technology, Sweden)

16:50 A Priori Knowledge-Based STAP for Traffic Monitoring Applications: First Results

Andre da Silva (German Aerospace Center (DLR) & German Academic Exchange Service (DAAD), DE); Stefan V. Baumgartner (German Aerospace Center (DLR), DE)

17:10 high resolution airborne SAR/GMTI using a 2 channel antenna

Helene Oriot, Hubert M.J. Cantalloube, Abigael Taylor, Laurent Savy (ONERA, France)

17:30 Knowledge Aided STAP/GMTI with Subarrayed AESA Radar

Wolfram Bürger, Ivana Perna (Fraunhofer FHR, DE)

18:15 - 19:15 Piano Recital

Room G1

19:15 - 21:00 Poster Session and Get Together

Room E

Session (E3): Polarimetry (I)

Chairs: Yoshio Yamaguchi (Niigata University, Japan), Michael Völker (Airbus DS GmbH, DE)

- 16:10 Numerical Study on Multi-baseline POLSAR Scattering Component Decomposition**
Hiroyoshi Yamada, Ryoichi Sato, Yoshio Yamaguchi (Niigata University, Japan)
- 16:30 Analysis of Polarimetric-Dependent InSAR Coherence Modulation Arising from Deep Electromagnetic Ground Penetration**
Kamalesh Sainath (Ohio State University & ElectroScience Laboratory, USA); Scott Hensley (Jet Propulsion Laboratory, USA)
- 16:50 Dual-Channel PolSAR Speckle Reduction Using Non-Local Means Filter**
Jingliang Hu, Andreas Schmitt, Xiao Xiang Zhu (German Aerospace Center (DLR), Remote Sensing Technology & Technical University of Munich (TUM), Signal Processing in Earth Observation, DE)
- 17:10 Quantitative Analysis of The General Polarimetric Model-based Decomposition Technique by Using Monte Carlo Simulations**
Qinghua Xie (Central South University & Institute for Computing Research (IUII), University of Alicante, ES); Josep David Ballester-Berman (Institute for Computing Research (IUII), University of Alicante, ES); Juan Manuel Lopez-Sanchez (University of Alicante, ES); Jianjun Zhu and Changcheng Wang (Central South University, P.R. China)
- 17:30 Bag-of-Visual-Words Model for Classification of Interferometric SAR Images**
Nazli Deniz Cagatay, Mihai Datcu (German Aerospace Center, DE)

Room F

Session (F3): Ocean Waves and Currents (invited)

Chairs: Roland Romeiser (University of Miami, USA), Paco López-Dekker (German Aerospace Center (DLR), DE)

- 16:10 Spectral interpretation of CoSAR imaging and its implications to the observation of ocean waves**
Paco López-Dekker (German Aerospace Center (DLR), DE); Gordon Farquharson (University of Washington, USA); Marc Rodriguez-Cassola (German Aerospace Center (DLR), DE)
- 16:30 Estimating Nearshore Ocean Currents from Airborne ATI-SAR**
Gordon Farquharson and Shadi Aslebagh (University of Washington, USA); Roland Romeiser (University of Miami, USA)
- 16:50 Reprocessing of TerraSAR-X Divided-Antenna Mode Data for Current Retrievals in Coastal Areas and Rivers**
Roland Romeiser (University of Miami, USA)
- 17:10 Ocean Imaging with the NRL Multichannel SAR System**
Robert W Jansen, Mark A Sletten, Jakov V. Toporkov (Naval Research Lab, USA); Steven Menk, Raghu Raj (Naval Research Laboratory, USA); Luke Rosenberg (DSTO & University of Adelaide, Australia)
- 17:30 Eigenvalue Analysis of Airborne Multichannel Sea Data for Ocean Monitoring**
Valeria Gracheva (Fraunhofer FHR, DE); Joachim H. G. Ender (Fraunhofer FHR & University Siegen, DE)

Room G2.2

Poster Session

A Posters

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus DS GmbH, DE)

PA.01 Moving Target Imaging Detection for Millimeter-wave InSAR

Dao-jing Li, Meng Ma, Jian-bo Du, Xuan Hu, Ming Qiao, Jian-wei Zhou (Institute of Electronics, Chinese Academy of Sciences)

PA.02 Backscatter Power Measurement of Canonical Targets under GB-SAR Environment

Narathep Phruksahiran (Chulachomklao Royal Military Academy, Thailand); Madhukar Chandra (TU-chemnitz, DE)

PA.03 Image Quality Measurement Result of KOMPSAT-5 Enhanced Mode

Horyung Jeong (Korea Aerospace Research Institute, Korea); Dong H Kim (Korea Aerospace Research Institute & Satellite Information Center, Korea); Dochul Yang and Dong-Han Lee (Korea Aerospace Research Institute, Korea)

PA.04 The DALO-ARCTIC campaign: Multi-spectral SAR Imaging of Ice Features in Greenland

Andreas Reigber (German Aerospace Center (DLR), DE); Ernst Krogager (Danish Defence Acquisition and Logistics Organization (DALO) & LU-VV06, Denmark); Martin Keller, Marc Jäger (German Aerospace Center (DLR), DE); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE); Ralf Horn (German Aerospace Center (DLR), DE)

PA.05 Perspective of utilization of the spaceborne P-band SAR together with L/S-band SAR

Boris Georgievich Kutuza (Russian Academy of Sciences, Russia); Anatoliy Kalinkevich (Institute of Radio Engineering and Electronics, Russia); Vladimir Stasevich (NPP ROBIS, 1, Russia); Yuri Smirnov (RSC ENERGY, Russia); Vladimir Turuk (JSC Radio Engineering Corporation VEGA, Russia); Alexander Zaharov (Kotel'nikov Institute of Radio Engineering and Electronics of RAS, Russia)

PA.06 Analysing Perturbation Effects on Inclined Geosynchronous SAR Focusing

Xichao Dong and Cheng Hu (Beijing Institute of Technology, P.R. China); Mingming Bian (Qian Xuesen Laboratory of Space Technology & China Academy of Space Technology, P.R. China); Zegang Ding, Tian Weiming, Di Yao (Beijing Institute of Technology, P.R. China)

PA.07 Radar Imaging and Tracking Using Geostationary Communication Satellite Systems

Holger Nies (University of Siegen & Center for Sensorsystems (ZESS), DE); Florian Behner (University of Siegen, DE); Simon Reuter, Simon Meckel, Otmar Löffeld (Center for Sensorsystems (ZESS), University of Siegen, DE)

PA.08 Resolution of CSAR imaging by Incoherent addition

Leping Chen, Daoxiang An, Xiaotao Huang (National University of Defense Technology, P.R. China)

B Posters

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus Defence and Space, DE)

PB.01 Polarimetric Calibration Error and System Key Parameters Analysis Based on Point Targets

Fan Wang, Aifang Liu, Dong Mu, Hui Xu (Nanjing Research Institute of Electronic Technology, P.R. China)

PB.02 Multi-channel modes implementation in spaceborne SAR with digital active electronically scanned array

Maxim Bulygin, Alexander Kovalenko, Victor Riman, Sergey Vnotchenko (Research Institute of Precision Instruments, Russia)

PB.03 Effects of Doppler Centroid Error on Azimuth Ambiguity in Along-track Multi-channel SAR Systems

Shiqi Ge, Aifang Liu, Dong Mu (Nanjing Research Institute of Electronics Technology (NRIET), P.R. China)

PB.04 A Study and Test on SAR-Communication Integrative System

Mingxing Shen, Bocai Wu, Long Sun, Kai Jiang, Hailong Yu, Shanxiang Hu (East-China Research Institute of Electronic Engineering, P.R. China)

PB.05 Real Test SAR System Experiment on the Ground for Demonstrating Non-Linear Frequency Modulation on Waveforms

Wei Wang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China)

PB.06 Study of Scattering Properties of Oil platforms in Caspian Sea as Stable Radar Scatterers according to PALSAR Data

Alexander I Zakharov, Ludmila Zakharova, Mark Sorochinsky (Institute of Radioengineering and Electronics, Russia)

PB.07 Reduction of Cross-polarization on a Single Offset Parabolic Reflector using Digital Beam Forming Techniques and Combination of Elements

Carolina Tienda, Marwan Younis, Gerhard Krieger (German Aerospace Center (DLR), DE)

PB.08 Analysis of an Improved Temperature Management Concept for SAR System Calibration Transponders

Sebastian Raab, Björn J. Döring, Daniel Rudolf, Jens Reimann, Marco Schwerdt (German Aerospace Center (DLR), DE)

PB.09 A Novel Application of Spotlight Bistatic Forward-looking SAR

Leping Chen (National University of Defense Technology, P.R. China)

PB.10 A Miniaturized High Resolution SAR Processor Using FPGA

Daiyin Zhu, Yong Li, Yong Ding and Jiangzhe Guo (Nanjing University of Aeronautics and Astronautics, P.R. China)

C Posters

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus Defence and Space, DE)

PC.01 SAR Imaging of Moving Target Using Knowledge-aided Two-dimensional Autofocus

Xinhua Mao, He Yan, Daiyin Zhu (Nanjing University of Aeronautics and Astronautics, P.R. China)

PC.02 2-D GMTI based on SAR Interferogram's Magnitude and Phase

Hongchao Zheng, Junfeng Wang, Xingzhao Liu, Yuezeng Su (Shanghai Jiao Tong University, P.R. China)

19:15 - 21:00 Poster Session and Get Together

PC.03 Clutter Suppression and Parameter Estimation Based on the Relax Algorithm in WAS-GMTI Mode

He Yan (Nanjing University of Aeronautics and Astronautics, P.R. China); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China); Jindong Zhang, Xinhua Mao, Di Wu and Daiyin Zhu, Yong Li, Yanshu Mao (Nanjing University of Aeronautics and Astronautics, P.R. China)

PC.04 Interferometric ISAR Imaging Using Compressed Sensing

Liechen Li (NRIET, P.R. China); Bo Liu (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Aifang Liu and Dong Mu (Nanjing Research Institute of Electronics Technology, P.R. China)

PC.05 A Data Block Partition based Fast Factorized BP Algorithm for Bistatic SAR

Da Ran, Can-bin Yin, Xin Jia (Equipment Academy, P.R. China)

PC.06 Enhanced Back Projection Algorithm for Linear Frequency Diverse Array Synthetic Aperture Radar Imaging

Can-bin Yin, Da Ran and Xin Jia (Equipment Academy, P.R. China)

PC.07 Real Data Aided Imaging Simulation for Frequency Hopping Inverse Synthetic Aperture Radar

Can-bin Yin, Da Ran, Xin Jia (Equipment Academy, P.R. China)

PC.08 Extraction of SAR Image at a Specific Height Using Multi-Baseline SAR Interferometric Phases

Yumiko Katayama, Noboru Oishi, Teruyuki Hara (Mitsubishi Electric Corporation, Japan)

PC.09 A Novel Signal Processing Algorithm for Staggered SAR with low oversampling factors

Xiangyu Wang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China)

PC.10 IAA- and SPICE-based Super-resolution wide area imaging methods

Lijuan Qi, Weidong Yu, Mingjie Zheng, Ning Li and Lili Hou (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

19:15 - 21:00 Poster Session and Get Together

PC.11 Signal Processing of InISAR with Long Orthogonal Baselines for Air Target Three-dimensional Localization

Meng Ma, Dao-jing Li, Jian-bo Du, Ming Qiao (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

PC.12 Accuracy Analysis for Ionospheric Scintillation Correction with Estimating Faraday Rotation in Spaceborne P-band SAR Data

Wei Guo, Jie Chen, Zhuo Li, Pengbo Wang, Sun Bing (School of Electronics and Information Engineering, Beihang University, P.R. China)

PC.13 A Nonlinear Chirp Scaling Algorithm for Squint Sliding Spotlight Mode SAR

Yu Zhu (Chinese Academy of Space Technology, P.R. China); Bin Xiong, Zegang Ding and Feng Xiao (Beijing Institute of Technology, P.R. China)

PC.14 Orthogonal Resolution Analysis for Squint SAR Image

Bing Sun (School of Electronic and Information Engineering, Beihang University, P.R. China); Hailun Xu (Beihang University, P.R. China); Wang Ye (School of Electronics and Information Engineering of BUAA, P.R. China)

PC.15 Synthetic SAR Image Generation using Sensor, Terrain and Target Models

Anders Kusk, Adili Abulaitjiang, Jørgen Dall (Technical University of Denmark, Denmark)

PC.16 Position-Aware Non-negative Matrix Factorization for Satellite Image Representation

Mohammadreza Babaei (Institute for Human-Machine Communication, DE); Gerhard Rigoll (Technische Universität München, DE); Mihai Datcu (German Aerospace Center, DE)

PC.17 Using Open-Source Software To Generate Interferometric COSMO-SkyMed Spotlight Dem

Rino Lorusso, Nunzia Lombardi (Italian Space Agency & University of Basilicata, Italy); Giovanni Milillo (Centro di Geodesia Spaziale - Matera, Italy)

PC.18 Range Focusing in Volumetric SAR: a Phase Recovery Approach

Mehrdad Yaghoobi (University of Edinburgh, United Kingdom); Shaun Kelly (Blackmagic Design, Australia); Mike Davies (University of Edinburgh, United Kingdom)

PC.19 Ground Moving Targets Refocusing Algorithm for Spotlight SAR Data

Ibrahim Papila, Selçuk Paker, Mesut Kartal, Sedef Kent (Istanbul Technical University, Turkey)

D Posters

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus Defence and Space, DE)

PD.01 Investigation on classification of compact PolSAR Data

Lulu Tan, (Chinese Electronics Technology Group Corporation, P.R. China); Lei Sheng (East China Research Institute of Electronic Engineering, P.R. China)

PD.02 A Novel Deorientation Method for PolSAR Data Processing

Feiya Zhu (National Space Science Center, Chinese Academy of Sciences); Yunhua Zhang (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China); Dong Li (National Space Science Center, Chinese Academy of Sciences, P.R. China)

PD.03 Synthetic Aperture Radar (SAR) Imaging of Complex Scenes Considering Near Field Scattering Characteristics

Osman Karabayir, Sedef Kent (Istanbul Technical University, Turkey); Ahmet F Coskun (The Scientific and Technological Research Council of Turkey, Turkey)

PD.04 Object-oriented Classification of Polarimetric SAR Imagery based on Kernel Fisher Discriminant Dimensionality Reduction

Han Cao, Hong Zhang, Chao Wang, Meng Liu, Fan Wu (Institute of Remote Sensing and Digital Earth, CAS, P.R. China)

PD.05 A New Operational Approach for Image Registration with High-Resolution SAR Data

Xiaoying Jin, Thomas Bahr (Harris Corporation, DE)

PD.06 Winter vs Summer Polarimetric Classification of Siberian Forests in X- and L-band

Ludmila Zakharova, Alexander I Zakharov (Institute of radioengineering and electronics, Russia)

PD.07 A Benchmark for Despeckling Filters

Luis Gomez, Luis Alvarez (University of Las Palmas G. C., ES); Rodrigo Pinheiro, Alejandro C Frery (Universidade Federal de Alagoas, Brazil)

PD.08 Some Practical Aspects of Using SAR Image Histogram Statistics

Mikhail Dostovalov, Roman Ermakov, Thomas Moussinants (Scientific Research Institute of Precise Instruments, Russia)

PD.09 Training Convolutional Neural Networks for Translational Invariance on SAR ATR

David Malmgren-Hansen (Technical University of Denmark & Terma A/S, Denmark); Rasmus Engholm, Morten Pedersen (Terma A/S, Denmark)

PD.10 Detection and Mitigation of Strong Azimuth Ambiguities in High Resolution SAR Images

Rolf Scheiber, Marc Jäger (German Aerospace Center (DLR), DE)

PD.11 High Resolution Range Profile Generation via Sparse Linear Prediction

Bahar Ozen, Işın Erer, Sedef Kent (Istanbul Technical University, Turkey)

PD.12 Moving Target Indication for Multichannel FMCW SAR via Iterative Adaptive Approach

Shengqiang Lou, Pu Cheng, Zhan Wang, Jianwei Wan, Ke Xu (National University of Defense Technology, P.R. China)

PD.13 Heterogeneous Images' Co-registration of Oil Tanks Based on Double-reflection Arcs in SAR Image

Sun Bing (School of Electronics and Information Engineering, Beihang University, P.R. China); XinLiang Zhang (BeiHang University, P.R. China)

E Posters

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus Defence and Space, DE)

PE.01 A Multi-Temporal Supervised Binary-Tree Classification Scheme for Polarimetric SAR with Maximum Difference of Polarization Signature

Xiaodong Huang, Jinfei Wang (University of Western Ontario, Canada); Jiali Shang (Agriculture and Agri-Food Canada, Canada)

PE.02 Damage assessment from VHR, spaceborne SAR imagery: including pre-event urban information

Daniele De Vecchi, Fabio Dell'Acqua (University of Pavia, Italy)

19:15 - 21:00 Poster Session and Get Together

PE.03 Multi-sensor wetland mapping over the Peace Athabasca Delta

Andreas Schmitt, Anna Wendleder (German Aerospace Center (DLR), DE); Kevin Murnaghan and Brian Brisco (Natural Resources Canada, Canada); Valentin Poncos (Kepler Space Inc.)

PE.04 Detecting Supraglacial Meltwater Drainage on the Devon Ice Cap using Kennaugh Decomposition of TerraSAR-X imagery

Luísa Fernandes (University of Alberta, Canada); Andreas Schmitt, Anna Wendleder Achim Roth, (German Aerospace Center (DLR), DE); Martin Sharp (University of Alberta, Canada)

PE.05 Ship-Iceberg Discrimination with Convolutional Neural Networks in High Resolution SAR Images

Carlos Bentes, Anja Frost, Domenico Velotto, Björn Tings (German Aerospace Center (DLR), DE)

PE.06 Micro-doppler Analysis on Short Waves modulated by the One-dimensional Variant Current

Lei Liu, Xiaoqing Wang and Jinsong Chong, Anwen Zhu (China Academy of Space Technology, P.R. China)

PE.07 A Feature-based Ship Detection Method for Compact Polarization SAR Image

Lu Xu, Hong Zhang, Chao Wang, Bo Zhang (Institute of Remote Sensing and Digital Earth Chinese Academy of Sciences, P.R. China)

PE.08 Wind field retrieval on various spatial scales based on Sentinel-1A SAR Images

Shangshang Bi, Xupu Geng (Xiamen University, P.R. China); Xiaohai Yan (University of Delaware, USA)

PE.09 A Contrast Enhancement Method using Complex Weight Vector for Polarimetric SAR based Ship Detection

Ziwei Wang, Chao Wang, Hong Zhang, Bo Zhang, Fan Wu (Institute of Remote Sensing and Digital Earth, CAS, P.R. China)

PE.10 Coal mine subsidence monitoring in Huainan city using a combination of time-series InSAR and offset-tracking methods

Zhengjia Zhang, Chao Wang, Yixian Tang, Hong Zhang (Institute of Remote Sensing and Digital Earth, CAS, P.R. China)

19:15 - 21:00 Poster Session and Get Together

PE.11 Estimation of Internal Wave from Sentinel-1A Images by the Combination of 2-D and 1-D Empirical Mode Decomposition

Xupu Geng, Tian Li and Xiangbai Wu (Xiamen University, P.R. China); Xiaohai Yan (University of Delaware, USA)

PE.12 The Italian COSMO-SkyMed constellation as a strategic asset to the CLOSEYE project

Patrizia Sacco (Italian Space Agency, Italy); Dino Quattrocchi, Maria Corvino (E-GEOS, Italy); Alessandro Coletta (ASI, Italy); Giorgia Parca, Giuseppe Codispoti (Italian Space Agency, Italy); Carolina Matarazzi (ASI, Italy)

PE.13 Investigation of Snow Avalanches with Ground Based Ku-band Radar

Célia Lucas (ETH Zurich, Switzerland); Irena Hajsek (ETH Zurich, DLR Oberpfaffenhofen, DE); Armando Marino (ETH University Zürich, Switzerland); Yves Bühler (WSL Institut for Snow and Avalanche Research SLF, Switzerland)

PE.14 Improved SAR Vessel Detection Based on Discrete Texture

Christoph H. Gierull, Ishuwa C. Sikaneta (DRDC Ottawa, Canada)

PE.15 Ionospheric Corrections on L-band SAR Offset Tracking Image for Precise Observation of Glacier Velocity

Sung-Ho Chae, Hyung-Sup Jung (University of Seoul & LARS, Korea)

PE.16 Vertical SAR imaging for high altitude altimetric navigation resetting

Hubert M.J. Cantalloube (ONERA, France)

Wet- Poster Session

Chairs: Christoph Heer (Airbus DS GmbH, DE), Martin Stangl (Airbus Defence and Space, DE)

Room G1

Session (G1.4): ALOS-2 (invited)

Chairs: Masato Ohki (Japan Aerospace Exploration Agency, Japan), Ryoichi Sato (Niigata University, Japan)

09:00 Investigation on polarization orientation angle shift for accurate urban area observation using ALOS-2/ PALSAR-2 data

Ryoichi Sato, Yuhei Ikarashi, Motoki Masaka, Yoshio Yamaguchi, Hiroyoshi Yamada (Niigata University, Japan)

09:20 ALOS-2 Quad. Pol. Images and ALOS Ones

Yoshio Yamaguchi, Ryoichi Sato, Hiroyoshi Yamada (Niigata University, Japan)

09:40 Flooded Area Extraction from Time-Series ALOS-2 Data

Motofumi Aii (Mitsubishi Electric Co., Ltd, Japan); Takeshi Nishimura (Mitsubishi Space Software Co., Ltd., Japan); Yu Okada (Mitsubishi Electric Corporation, Japan)

10:00 Disaster Affected Area Detection and Display Application for Non-SAR Specialists

Ryo Natsuaki (Japan Aerospace Exploration Agency, Japan); Manabu Watanabe (Tokyo Denki University, Japan); Masato Ohki and Shinichi Suzuki (Japan Aerospace Exploration Agency, Japan)

Room G2

Session (G2.4): Advanced SAR Modes and Techniques (II)

Chairs: Sebastian Riegger (Airbus DS GmbH, DE), Alberto Moreira (German Aerospace Center - DLR, DE)

09:00 Simulated Performances of ScanSAR Ground Moving Target Indication Based on RADARSAT-2's MODEX Modes

Louis-Philippe Rousseau, Jean-Yves Chouinard (Laval University, Canada); Christoph H. Gierull (DRDC Ottawa, Canada)

09:20 Wrapped Staring Spotlight SAR for TerraSAR-X

Josef Hermann Martin Mittermayer, Thomas Kraus, Paco López-Dekker, Pau Prats, Gerhard Krieger, Alberto Moreira (German Aerospace Center - DLR, DE)

09:40 Performance Evaluation of the TanDEM-X Quad Polarization Acquisitions in the Science Phase

Jose-Luis Bueso-Bello, Pau Prats, Michele Martone, Paola Rizzoli and Benjamin Bräutigam (German Aerospace Center (DLR), DE)

10:00 Flight Path Reconstruction from SAR Images and Spotlight SAR Data

Aron Sommer, Joern Ostermann (Leibniz Universitaet Hannover, DE)

10:20 Multistatic SAR Imaging: First Results of a Four Phase Center Experiment with TerraSAR-X and TanDEM-X

Thomas Kraus, Benjamin Bräutigam and Markus Bachmann; Gerhard Krieger (German Aerospace Center (DLR), DE)

10:40 - 11:10 Coffee Break

Room D

Session (D4): TerraSAR-X/TanDEM-X – Mission & DEM Generation Status (invited)

Chairs: Manfred Zink (DLR, DE), Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

09:00 TerraSAR-X and TanDEM-X Mission Status

Stefan Buckreuss, Manfred Zink (German Aerospace Center (DLR), DE)

09:20 The Future of TanDEM-X: Final DEM and Beyond

Daniela Borla Tridon, Markus Bachmann, Michele Martone (German Aerospace Center, DE); Daniel Schulze (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Manfred Zink (German Aerospace Center (DLR), DE)

09:40 Height Accuracy and Data Coverage Status of the Global TanDEM-X DEM

Christopher Wecklich, Carolina González, Benjamin Bräutigam, Paola Rizzoli (German Aerospace Center (DLR), DE)

10:00 Update of the Interferometric Processing Algorithms for the TanDEM-X High Resolution DEMs

Marie Lachaise, Thomas Fritz (German Aerospace Center (DLR), DE)

10:20 Concept and First Example of TanDEM-X High-resolution DEM

Birgit Wessel (German Aerospace Center (DLR) & DFD-LAX, DE); Markus Breunig, Markus Bachmann, Martin Huber, Michele Martone, Marie Lachaise, Thomas Fritz, Manfred Zink (German Aerospace Center (DLR), DE)

10:40 - 11:10 Coffee Break

Room E

Session (E4): Polarimetry (II)

Chairs: Matteo Pardini (German Aerospace Center (DLR), DE),
Andrea Loinger (Airbus Defence and Space, DE)

09:00 Fusion of LIDAR and POLINSAR images for forest vertical structure retrieval

Guillaume Brigot, Elise Colin Koeniguer (ONERA, France);
Marc Simard (Jet Propulsion Laboratory, USA); Xavier
Dupuis (ONERA, France)

09:20 Comparing performances of RVoG and OVoG crop height inversion schemes from multi-frequency SAR data

Manuele Pichierri (ETH Zurich, Switzerland); Irena Hajsek
(ETH Zurich, DLR Oberpfaffenhofen, DE)

09:40 Numerical Modeling of Subsurface Layer Resonance-Based Interferometric SAR (InSAR) Correlation Fluctuations

Kamalesh Sainath (Ohio State University & ElectroScience Laboratory, USA); Scott Hensley (Jet Propulsion Laboratory, USA)

10:00 Analysis of Orientation Effects of Crop Vegetation Volumes by Means of SAR Tomography at Different Frequencies

Hannah Joerg (German Aerospace Center & ETH Zürich, DE); Matteo Pardini, Konstantinos P. Papathanassiou (German Aerospace Center, DE); Irena Hajsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

10:20 A Visualization Tool for Polarimetric SAR Data Investigation

Si-Wei Chen, Yongzhen Li, Xuesong Wang (National University of Defense Technology, P.R. China)

10:40 - 11:10 Coffee Break

Room F

Session (F4): Feature Extraction (Oil, Ice, Groundwater)

Chairs: Tom G Farr (Jet Propulsion Laboratory, USA), Mihai Datcu
(German Aerospace Center, DE)

09:00 Investigations into the X and C band Quad-Pol features for sea ice classification

Rudolf Ressel, Suman Singha and Susanne Lehner (German Aerospace Center (DLR), DE)

09:20 InSAR measurements of subsidence in the Central Valley, California from 2007 - present

Tom G Farr (Jet Propulsion Laboratory, USA)

09:40 Investigations into the X and C band Quad-Pol features for oil slick characterization

Suman Singha, Rudolf Ressel, Susanne Lehner (German Aerospace Center (DLR), DE)

10:00 On the exploitation of polarimetric ratio for oil spill detection

Mariantonietta Zonno, Paco López-Dekker (German Aerospace Center (DLR), DE); Richard E. Danielson (Nansen Environmental and Remote Sensing Center (NERSC), Norway)

10:20 Towards the Categorization of Changes at Stuttgart Airport

Markus Boldt, Robin Falge (Fraunhofer IOSB, DE); Antje Thiele (Fraunhofer IOSB & Karlsruhe Institute of Technology (KIT), DE); Karsten Schulz (Fraunhofer IOSB, DE); Stefan Hinz (Karlsruhe Institute of Technology, DE)

10:40 - 11:10 Coffee Break

Room G1

Session (G1.5):**Innovative and Next Generation SAR Missions (invited)**

Chairs: Michael Ludwig (ESA/ESTEC, The Netherlands), Andrea Monti-Guarnieri (Politecnico di Milano, Italy)

11:10 Ka-band Imaging InSAR: Status, Technological Elements and Outlook

Michael Ludwig, Jean-Christophe Angevain, Malcolm Davidson, Bjorn Rommen, Daniele Petrolati (ESA ESTEC, European Space Agency, The Netherlands)

11:30 Application-level performance and trade-offs for the post-Sentinel HRWS SAR Systems

Paco López-Dekker, Maria J. Sanjuan-Ferrer, Marian-tonietta Zonno, Marwan Younis, Stefan V. Baumgartner (German Aerospace Center (DLR), DE); Antonio Gabriele (European Space Agency (ESA), The Netherlands)

11:50 Biomass P-band SAR

Florence Hélière (European Space Agency ESTEC, The Netherlands); Adriano Carbone (Rhea System B. V. & ESA/ESTEC, The Netherlands); Nelson Fonseca, Natanael Ayllon (ESA/ESTEC, The Netherlands); Andrew Barnes (European Space Agency, United Kingdom); Michael Fehringer (ESA/ESTEC, The Netherlands)

12:10 Geosynchronous and geostationary SAR: face to face comparison

Andrea Monti-Guarnieri (Politecnico di Milano, Italy); Cheng Hu (Beijing Institute of Technology, P.R. China)

12:30 SAR Instrument Pre-development Activities for SAOCOM-CS

Nicolas Gebert (ESA); Bernardo Carnicero Dominguez, Marina Diaz-Martin (ESA, The Netherlands); Francesca Temussi, Elia Di Salvo, Paolo Valerio Giove (Thales Alenia Space Italia S.p.A., Italy); Mike Gibbons, Percy Phelps (Airbus Defence and Space Ltd, United Kingdom); Les Griffiths (Astrium Ltd, United Kingdom)

Room G2

Session (G2.5): Ground Based Radar and Demonstrations (I)

Chairs: Othmar Frey (ETH Zurich & Gamma Remote Sensing, Switzerland), Keith Morrison (Cranfield University, United Kingdom)

11:10 Material Identification Using Extreme Wide-Band SAR Imaging 10-50GHz

Keith Morrison (Cranfield University, United Kingdom); Daniel Andre (Cranfield University & Defence Academy of the United Kingdom, United Kingdom); David Blacknell, Darren Muff, Matthew Nottingham, Claire Stevenson (DSTL, United Kingdom)

11:30 A time series of SAR tomographic profiles of a snowpack

Othmar Frey (ETH Zurich & Gamma Remote Sensing, Switzerland); Charles Werner, Rafael Caduff, Andreas Wiesmann (Gamma Remote Sensing AG, Switzerland)

11:50 Detection of UAVs using the MIMO radar MIRA-CLE Ka

Jens Klare, Oliver Biallawons, Delphine Cerutti-Maori (Fraunhofer FHR, DE)

12:10 System Characterization and Polarimetric Calibration of the Ku-Band Advanced Polarimetric Interferometer

Simone Baffelli (ETH Zurich, Switzerland); Othmar Frey (ETH Zurich & Gamma Remote Sensing, Switzerland); Charles Werner (GAMMA Remote Sensing Research and Consulting AG, Switzerland); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

12:30 High Resolution Bistatic Experiments using TerraSAR-X Staring Spotlight Mode and the Very High Resolution SAR Mode of the Fraunhofer FHR PAMIR System

Florian Behner (University of Siegen, DE); Simon Reuter and Holger Nies (University of Siegen & Center for Sensorsystems (ZESS), DE); Othmar Löffel (Center for Sensorsystems (ZESS), University of Siegen, DE)

Room D

Session (D5): TanDEM-X - Science Activities (invited)

Chairs: Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE),
Manfred Zink (DLR, DE)

11:10 TanDEM-X: Science Activities

Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE);
Thomas Busche (German Aerospace Center (DLR) e.V.,
DE)

11:30 Agricultural monitoring using pursuit monostatic TanDEM-X coherence in the Western Cape, South Africa

Jaco Kemp and James Burns (Stellenbosch University,
South Africa)

11:50 Mapping Topography and Forest Parameters in a Boreal Forest with Dual-Baseline TanDEM-X Data and the Two-Level Model

Maciej J. Soja and Lars Ulander (Chalmers University of
Technology, Sweden)

12:10 Exploiting TanDEM-X Pol-InSAR Data for Forest Structure Observation and Potential Synergies with NASA's Global Ecosystem Dynamics Investigation Lidar (GEDI) Mission

Matteo Pardini (German Aerospace Center (DLR), DE);
Wenlu Qi and Ralph Dubayah (University of Maryland,
USA); Konstantinos P. Papathanassiou (German Aero-
space Center, DE)

12:30 Sea Ice Type Classification in the Baltic Sea from TanDEM-X Imagery

Kaari Laanemäe (Marine Systems Institute at Tallinn
University of Technology, Estonia); Rivo Uiboupin (Tallinn
University of Technology, Estonia); Sander Rikka (Marine
Systems Institute at Tallinn University of Technology,
Estonia)

Room E

Session (E5): Tomography

Chairs: Friedhelm Rostan, Andreas Keller (Airbus DS GmbH, DE)

11:10 Understanding Spaceborne Missions for TomoSAR Imaging with Multi-Angular Acquisitions

Toni M. del Hoyo, Octavio Ponce (German Aerospace
Center (DLR), DE)

11:30 Novel Approach and Analysis to Determine Absolute Heights Using a Single Long Aperture SAR Acquisition

Sergi Duque, Alessandro Parizzi, Francesco De Zan,
Fernando Rodriguez Gonzalez (German Aerospace Cen-
ter (DLR), DE)

11:50 Diff-Tomo Stratified Analyses of Dynamic Forest Volumes

Fabrizio Lombardini (University of Pisa, Italy); Federico
Viviani (CNIT-RaSS Nat. Lab & University of Pisa, Italy)

12:10 SAR tomography as an add-on to PSI for improved deformation sampling in urban areas: A quality assessment

Muhammad Adnan Siddique (ETH Zürich, Switzerland);
Urs Wegmüller (GAMMA Remote Sensing AG, Switzer-
land); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen,
DE); Othmar Frey (ETH Zurich & Gamma Remote Sen-
sing, Switzerland)

12:30 MCA-SAR-Tomography

Filippo Biondi (University of L'Aquila & Italian Ministry of
Defence, Italy)

Room F

Session (F5): Classification and Feature Extraction

Chairs: Torbjørn Eltoft (University of Tromsø, Norway), Paola Rizzoli (German Aerospace Center (DLR), DE)

- 11:10 Non-Uniform Markov Random Fields for Classification of SAR Images**
Sylvain Lobry (Télécom ParisTech, France); Florence Tupin (Institut Telecom, France); Roger Fjørtoft (CNES, France)
- 11:30 Forest/Non-Forest Classification from TanDEM-X Interferometric data by means of Multiple c-Means Fuzzy Clustering**
Michele Martone, Paola Rizzoli and Benjamin Bräutigam, Gerhard Krieger (German Aerospace Center (DLR), DE)
- 11:50 Semi-Automated Semantic Annotation of Big Archives of High Resolution SAR Images**
Corneliu Octavian Dumitru, Gottfried Schwarz, Shiyong Cui, Daniela Espinoza-Molina, Mihai Datcu (German Aerospace Center, DE)
- 12:10 Registration of very high resolution SAR and optical images**
Carlos Villamil-Lopez (German Aerospace Center (DLR), DE); Lars Petersen (Airbus Defence and Space, DE); Rainer Speck and Dirk Frommholz (DLR, DE)
- 12:30 Scattering Preference Pyramid Classification of PolSAR Data Based on Canonical Huynen Dichotomy**
Dong Li (National Space Science Center, Chinese Academy of Sciences, P.R. China); Yunhua Zhang (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China)

12:50 - 14:00 Lunch Break

Room G1

Session (G1.6):**Future SAR Technology (DBF, HRWS, MIMO) (invited)**

Chairs: Bernhard Grafmueller (Airbus DS GmbH, DE), Marwan Younis (German Aerospace Center (DLR), DE)

- 14:00 Techniques and Modes for Multi-Channel SAR Instruments**
Marwan Younis, (German Aerospace Center (DLR), DE); Felipe Queiroz de Almeida (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Paco López-Dekker, Gerhard Krieger (German Aerospace Center (DLR), DE)
- 14:20 Recent Progress of Airborne X-band SAR with Two-Dimensional Digital Beamforming**
Robert Wang, Yunkai Deng and Pei Wang (Institute of Electronics, Chinese Academy of Sciences, P.R. China)
- 14:40 Wide Swath SAR observation and its system parameters for future L-band mission**
Yu Okada, Yuya Yokota, Kei Suwa and Akira Karasawa, Motofumi Arai (Mitsubishi Electric Co., Ltd, Japan)
- 15:00 DBF Technology Development for Next Generation of ESA C-Band SAR mission**
Grzegorz Adamiuk, Christoph Heer (Airbus DS GmbH, DE); Michael Ludwig (ESA/ESTEC, The Netherlands)
- 15:20 HRWS Technology for SAR Missions based on Reflector or Phased Array Antennas**
Thomas Fuegen, Bernhard Grafmueller, Grzegorz Adamiuk, Christian Fischer, Christoph Heer (Airbus DS GmbH, DE)

15:40 - 16:10 Coffee Break

Room G2

Session (G2.6): Ground Based Radar and Demonstrations (II)

Chairs: Hubert M.J. Cantalloube (ONERA, France), Markus Peichl (German Aerospace Center (DLR), DE)

14:00 Rail-borne SAR interferometry for Disaster Prevention

Hubert M.J. Cantalloube, Jean-Francois Nouvel, Anil Cheraly, Serge Roques, Helene Oriot (ONERA, France)

14:20 Challenges for operational use of ground-based high-resolution SAR for landmines and UXO detection

Eric Schreiber, Markus Peichl, Andreas Heinzel, Stephan Dill and Florian Bischeltsrieder (German Aerospace Center (DLR), DE); Simon Anger (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Timo Kempf, Matthias Jirousek (DLR German Aerospace Center, DE)

14:40 Experimental violation of the Start-Stop-Approximation using a Holistic Rail-based UWB FMCW-SAR System

Matthis Wielage, Fabian Cholewa, Peter Pirsch, Holger Blume (Leibniz Universität Hannover)

15:00 Focusing Methods for Ground Penetrating MIMO SAR Imaging within Half-Spaces of Different Permittivity

Andreas Heinzel, Markus Peichl, Eric Schreiber, Florian Bischeltsrieder, Stephan Dill (German Aerospace Center (DLR), DE); Simon Anger (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Timo Kempf, Matthias Jirousek (DLR German Aerospace Center, DE)

15:20 System Concept for the Imaging MIMO Radar of the Radar Warning and Information System RAWIS

Reinhard Panhuber, Robert Klenke, Oliver Biallawons, Jens Klare (Fraunhofer FHR, DE)

15:40 - 16:10 Coffee Break

Room D

Session (D6):**Comparison between SAR, SAS and Sonography I (invited)**

Chairs: Matthias Weiß (Fraunhofer FHR, DE), Torstein Olsmo Sæbø (Norwegian Defence Research Establishment (FFI), Norway)

14:00 Multipath and noise suppression by coherently processing images of an interferometric SAS system

Johannes Groen, Stefan Leier (Atlas Elektronik GmbH); Holger Schmaljohann (WTD 71, DE); Wolfgang Jans (WTD 71 - FWG, DE)

14:20 Concurrent Operation of Multiple SAS Systems

James Prater (Naval Surface Warfare Center Panama City Division, USA)

14:40 Near-Field Stripmap SAS Imaging with Equal Resolution

Ziliang Qiao (Technische Universität Darmstadt & IWSS in Hochschule Bremen, DE); Dieter Kraus (Hochschule Bremen, DE)

15:00 Detection of Internal Waves Using Multi-Aspect Processing in Synthetic Aperture Sonar

Roy E Hansen (Norwegian Defence Research Establishment (FFI) & Centre for Imaging, University of Oslo, Norway); Anthony Lyons (University of New Hampshire, USA); Dan Cook (Georgia Tech Research Institute); Torstein Olsmo Sæbø (Norwegian Defence Research Establishment (FFI), Norway)

15:20 Interferometry using Phase Slope Estimation

Stig A V Synnes (Norwegian Defence Research Establishment (FFI) & University of Oslo, Norway); Torstein Olsmo Sæbø (Norwegian Defence Research Establishment (FFI), Norway); Roy E Hansen (Norwegian Defence Research Establishment (FFI) & Centre for Imaging, University of Oslo, Norway)

15:40 - 16:10 Coffee Break

Room E

Session (E6): Topography and Tomography

Chairs: Scott Hensley (Jet Propulsion Laboratory, USA), Alessandra Budillon (University of Naples Parthenope, Italy)

14:00 Systematic Processing of High Resolution Topography of Venus from Magellan Radar Stereo Data and Science Applications

Scott Hensley, Karl Mitchell, Daniel Nunes, Scott Shaffer, (Jet Propulsion Laboratory, USA); Robert Deen (Jet Propulsion Laboratory & California Institute of Technology, USA); Carolyn Parcheta and Maria Rusert (JPL, USA)

14:20 A Multi-Frequency SAR Tomographic Characterization of Sub-Surface Ice Volumes

Matteo Pardini, Giuseppe Parrella, Georg Fischer, Konstantinos P. Papathanassiou (German Aerospace Center, (DLR), DE)

14:40 A Nullspace Based L1 Minimizing Kalman Filter Approach to Sparse CS Reconstruction

Otmar Loffeld (Center for Sensorsystems (ZESS), University of Siegen, DE); Alexander Seel (University of Siegen, DE); Miguel Heredia Conde (Center for Sensorsystems (ZESS), University of Siegen, DE); Ling Wang (Nanjing University of Aeronautics and Astronautics, P.R. China)

15:00 4-D SAR Support Based Tomographic Imaging

Alessandra Budillon, Angel Caroline Johnsy, Gilda Schirinzi (University of Naples Parthenope, Italy)

15:20 Resolution Enhanced SAR Tomography: From Match Filtering to Compressed Sensing Beam-forming Techniques

Gustavo Martín del Campo (CINVESTAV del IPN, Mexico); Andreas Reigber (German Aerospace Center (DLR), DE); Yuriy V. Shkvarko (Cinvestav Jalisco, Mexico)

15:40 - 16:10 Coffee Break

Room F

Session (F6): Snow, Ice and Glacier

Chairs: Marc Jäger (German Aerospace Center (DLR), DE), Rainer Wilhelm (Airbus DS GmbH, DE)

14:00 First Analysis of Sparse Signal Reconstruction for Radar Imaging of Ice Sheets

Anton Heister (Microwaves and Radar Institute, German Aerospace Center, DE); Rolf Scheiber (German Aerospace Center (DLR), DE)

14:20 Deriving Greenland Ice Sheet Properties from TanDEM-X Mission Data

Paola Rizzoli, Michele Martone, Benjamin Bräutigam (German Aerospace Center (DLR), DE); Helmut Rott (ENVEO IT GmbH & University of Innsbruck, Meteorology and Geophysics, Austria); Alberto Moreira (German Aerospace Center - DLR, DE)

14:40 Polarimetric SAR Change Detection in Multiple Frequency Bands for Environmental Monitoring and Surveillance in Arctic Regions

Marc Jäger (German Aerospace Center (DLR), DE); Ernst Krogager (Danish Defence Acquisition and Logistics Organization (DALO) & LU-VV06, Denmark); Andreas Reigber (German Aerospace Center (DLR), DE)

15:00 Monitoring the subsurface of an Alpine glacier using polarimetric SAR observations at L-band

Giuseppe Parrella (German Aerospace Center (DLR), DE); Daniel Farinotti (Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Switzerland); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE); Konstantinos P. Papathanassiou (German Aerospace Center, DE)

15:20 Interpretation of Pol-InSAR Signatures from Glaciers and Ice Sheets at Different Frequencies

Georg Fischer and Giuseppe Parrella, Konstantinos P. Papathanassiou, (German Aerospace Center, DE); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

15:40 - 16:10 Coffee Break

Room G1

Session (G1.7): COSMO-Sky-Med (invited)

Chairs: Andrea Torre, Diego Calabrese (Thales Alenia Space Italia, Italy)

16:10 CSK mission status and experimentation results

Valerio Grimani, Barbara Bussi, Pasquale Salemme, Andrea Perrera (Thales Alenia Space Italia, Italy); Giuseppe Francesco De Luca (Italian Space Agency, Italy); Alessandro Coletta (ASI, Italy); Pasquale Pepe (Thales Alenia Space Italia, Italy); Paolo Inversi, Pier Giorgio Esposito (Telespazio S. p. A., Italy); Axel Oddone (E-Geos S. p. A., Italy)

16:30 CSG System Performance and Mission

Flavia Carnevale, Diego Calabrese, Vanessa Mastroddi, Manuela Marabucci (Thales Alenia Space Italy, Italy); Giuseppe Francesco De Luca, Claudia Anita Maria Fiorentino (Italian Space Agency, Italy); Stefano Serva (Italian Ministry of Defence, Italy); Efer Miotti (Italian Defence, Italy)

16:50 CSG SAR instrument design and performance

Roberto Venturini, Francesco Spadoni, Chiara Germani, Matteo Soccorsi, Claudio Scarchilli, Aldo Torrini, Pasquale Capece, Antonio Delfino, Francesco Barletta (Thales Alenia Space Italia); Francesco Caltagirone (ASI, Italy); Marco Nardini (SG/DNA-IV (MoD), Italy)

17:10 CSG Ground Segment and ILS&OPS: evolution between two generations of systems

Anna Croce, Oreste Trematerra, Danilo Vicari, Marco Cutigni, Mario Profili (Thales Alenia Space Italia); Giovanni Valentini (Agenzia Spaziale Italiana, Italy); Mauro Cardone (Italian Space Agency, Italy); Efer Miotti (Italian Defence, Italy)

17:30 CSG image quality and calibration approach

Pasquale Salemme, Valerio Grimani, Alessandro Cricenti, Ignazio Rana, Stefano Federici, Davide Rizzato (Thales Alenia Space Italia); Manfredi Porfilio, Luca Fasano (Italian Space Agency, Italy); Stefano Serva (Italian Ministry of Defence (MoD- SGD IV), Italy)

Room G2

Session (G2.7): SAR Missions and Technology

Chairs: Martin Stangl (Airbus Defence and Space, DE), Martin Cohen (Airbus Defence & Space Ltd, United Kingdom)

16:10 RADARSAT Constellation Mission Status Update

Daniel De Lisle and Steve Iris (Canadian Space Agency, Canada)

16:30 Technology Challenges and Opportunities for Next Generation AESA Based Airborne Surveillance Radar

William Gautier, Wilhelm Gruener (Airbus DS and Border Security, DE); Martin Kirscht (Airbus Defence and Space, DE)

16:50 NovaSAR-S SAR Payload

Martin Cohen, David Hall, Pedro Lau Semedo (Airbus Defence & Space Ltd, United Kingdom)

17:10 NIA SAR Central Electronics Product

Martin Cohen, Andrew Larkins, Phil Watson (Airbus Defence & Space Ltd, United Kingdom)

17:30 Russian Spaceborne Synthetic Aperture Radar "Strizh" for Light Satellites of "Condor-E" type

Leon B. Neronskiy, Vladimir Verba, Vladimir Turuk, Marina Golovanova (JSC Radio Engineering Corporation Vega, Russia); Evgeny Tolstov (JSC Aerokon, Russia); Sergey Zaitsev (JSC MIC NPO Mashinostroyeniya, Russia)

Room D

Session (D7):**Comparison between SAR, SAS and Sonography II (invited)**

Chairs: Torstein Olsmo Sæbø (Norwegian Defence Research Establishment (FFI), Norway), Matthias Weiß (Fraunhofer FHR, DE)

16:10 Micro-steered multilooking in synthetic aperture sonar imaging

Andreas Austeng (University of Oslo, Norway); Roy E Hansen (Norwegian Defence Research Establishment (FFI) & Centre for Imaging, University of Oslo, Norway); Are C Jensen (University of Oslo, Norway)

16:30 Multiple scattering, layer penetration, and elastic contributions to SAS images using fast reversible processing methods

Philip Marston (Washington State University, USA); Daniel Plotnick (University of Washington & Applied Physics Lab, USA)

16:50 TomoSAS images of acoustically penetrable objects

Timothy Marston (University of Washington & The Applied Physics Laboratory, USA); Jermaine Kennedy (NSWC-PCD, USA)

17:10 TomoSAS in bathymetrically complex environments

Timothy Marston (University of Washington & The Applied Physics Laboratory, USA); Jermaine Kennedy (NSWC-PCD, USA)

Room E

Session (E7): Interferometry (I)

Chairs: Friedhelm Rostan (Airbus DS GmbH, DE), Marwan Younis (German Aerospace Center (DLR), DE)

16:10 Precise geolocation of water bodies in SWOT HR InSAR data

Damien Desroches, Roger Fjørtoft and Jean-Marc Gaudin (CNES, France); Christian Ruiz (CapGemini, France); Denis Blumstein (LEGOS, France)

16:30 A Study on Spatio-Temporal Filtering in the Spirit of SqueeSAR

Markus Even (Fraunhofer Research Institute for Optronics and Pattern Recognition, DE)

16:50 Sentinel-1 mission: results of the InSARap project

Matteo Nannini, Pau Prats, Rolf Scheiber, Nestor Yague-Martinez (German Aerospace Center (DLR), DE); Federico Minati, Francesco Vecchioli and Mario Costantini (E-GEOS - an Italian Space Agency and Telespazio Company, Italy); Sven Borgstrom, Prospero De Martino and Valeria Siniscalchi (National Institute of Geophysics and Volcanology (INGV), Vesuvius Observatory, Italy); Thomas Walter (German Research Centre for Geosciences (GFZ), DE); Michael Fomelis (RSAC c/o ESA-ESRIN, Italy); Yves-Louis Desnos (ESA/ESRIN, Italy)

17:10 Practical Demonstration of Robust InSAR Optimization for Multipass InSAR

Yuanyuan Wang (Technical University of Munich, DE); Xiao Xiang Zhu (German Aerospace Center (DLR), Remote Sensing Technology & Technical University of Munich (TUM), Signal Processing in Earth Observation, DE)

17:30 Coregistration of Interferometric Stacks of Sentinel-1A TOPS Data

Nestor Yague-Martinez, Pau Prats, Francesco De Zan (German Aerospace Center (DLR), DE)

Room F

Session (F7): SAR Processing and Correction

Chairs: Christoph H. Schaefer (Airbus Defence & Space, DE), Helko Breit (DLR, DE)

16:10 Finding vehicle boundaries in SAR images

Christopher Paul Moate, Thomas Leonard (QinetiQ, United Kingdom)

16:30 Effects of Radar Position Errors on Near Range Ultrawideband 3D-SAR Imaging

Siying Wang, Volker Nolden, Gunnar Briese, Stefan Lang, Nils Pohl (Fraunhofer FHR, DE)

16:50 SAR image formation by backprojection of range velocity segments

Patrick Berens (Fraunhofer FHR, DE)

17:10 Numerical SAR Processing Scheme for Generic Very-High Resolution Spotlight Acquisitions

Alejandro Linde Cerezo (Universidad de Alcala, Spain); Marc Rodriguez-Cassola (DLR, DE); Jose Luis Alvarez-Perez (University of Alcala, Spain); Pau Prats, Alberto Moreira (German Aerospace Center - DLR, DE)

17:30 A Robust Autofocus Scheme for Airborne SAR Data Processing

Ning Li (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China); Min Zhang, Yunkai Deng, Weidong Yu (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

Room G1

Session (G1.8): Next Generation SAR Missions (I)

Chairs: Andrea Torre (Thales AleniaSpace, Italy), Samuel Doody (Airbus DS Ltd, United Kingdom)

09:00 CSG satellite design and performance

Patrizio Pavia, Gerardo Spera, Roberto Venturini, Flaviano Bagaglini, Simone Lunardini (Thales Alenia Space Italia, Italy); Edmondo Scorzafava (Italian Space Agency (ASI), Italy); Efer Miotti (Italian Defence, Italy)

09:20 CoSAR: geometrical analysis and image formation assessment

Marc Rodriguez-Cassola, Paco López-Dekker, Pau Prats, Francesco De Zan, Gerhard Krieger, Alberto Moreira (German Aerospace Center - DLR, DE)

09:40 A mission for measuring ocean surface current vectors

Samuel Doody, Jose Marquez-Martinez, Ben Dobke (Airbus Defence and Space Ltd, United Kingdom); Christine Gommenginger, Adrien Martin (National Oceanography Centre, United Kingdom)

10:00 Potentials and Limitations of MEO SAR

Jalal Matar, Paco López-Dekker, Gerhard Krieger (German Aerospace Center (DLR), DE)

10:20 Aerospace technology and Dual Use: COSMO-Sky-Med mission status and future perspectives

Maria Libera Battagliere, Maria Girolamo Daraio, Patrizia Sacco, Maria Virelli (Italian Space Agency, Italy); Alessandro Coletta (ASI, Italy)

Room G2

Session (G2.8): Calibration and Technology (I)

Chairs: Dirk Geudtner (European Space Agency, The Netherlands), Björn J. Döring (German Aerospace Center (DLR), DE)

- 09:00 Statistical Analysis of Ambiguity to Signal Ratio Levels based on Global Backscattering Maps**
 Thomas Börner, Mariantonietta Zonno, Paco López-Dekker, Steffen Wollstadt, Sigurd Huber, Marwan Younis (German Aerospace Center (DLR), DE)
- 09:20 A New Measurement Principle for Determining the Polarization Direction of Calibration Transponder Antennas**
 Björn J. Döring, Marco Schwerdt (German Aerospace Center (DLR), DE)
- 09:40 Sentinel-1A Calibration Support during Routine Operation**
 Kersten Schmidt, Marco Schwerdt, Gabriel Castellanos Alfonzo, Nuria Tous-Ramon (German Aerospace Center (DLR), DE)
- 10:00 Radiometric Accuracy and Stability of TerraSAR-X and TanDEM-X**
 John Walter Antony, Kersten Schmidt, Marco Schwerdt, Donata Polimeni, Nuria Tous-Ramon, Markus Bachmann, Gabriel Castellanos Alfonzo (German Aerospace Center (DLR), DE)
- 10:20 Adaptive Optronic SAR Processor with the Adjust-and-See Capability**
 Yesheng Gao, Kaizhi Wang, Xingzhao Liu and Yuezeng Su (Shanghai Jiao Tong University, P.R. China)

10:40 - 11:10 Coffee Break

Room D

Session (D8): Advanced Processing Techniques (I)

Chairs: Christoph H. Schaefer (Airbus Defence & Space, DE), Rainer Wilhelm (Airbus DS GmbH, DE)

- 09:00 Lq Regularization Method for Spaceborne SCAN-SAR and TOPS SAR Imaging**
 Hui Bi, Bingchen Zhang (Institute of Electronics, Chinese Academy of Science, P.R. China); Xiao Xiang Zhu (German Aerospace Center (DLR), Remote Sensing Technology & Technical University of Munich (TUM), Signal Processing in Earth Observation, DE); Wen Hong (National Key Laboratory of Microwave Imaging Technology & Institute of Electronics, Chinese Academy of Sciences, P.R. China)
- 09:20 ISAR Imaging using A Greedy Kalman Filtering Method with Sparse Constraints**
 Ling Wang (Nanjing University of Aeronautics and Astronautics, P.R. China); Otmar Löffel (Center for Sensor-systems (ZESS), University of Siegen, DE); Yulei Qian (Nanjing University of Aeronautics and Astronautics, P.R. China)
- 09:40 3D Characterization of Underfoliage Targets Using L-band Tomographic SAR Data and A Wavelet-Based Approach**
 Yue Huang, Jacques Levy-vehel (INRIA, France); Laurent Ferro-Famil (University of Rennes, France); Andreas Reigber (German Aerospace Center (DLR), DE); Stefano Fortunati (University of Pisa, Italy)
- 10:00 A Novel Algorithm for HRWS SAR Imaging Based on Sparse Beamforming**
 Taoli Yang (University of Electronic Science and Technology of China); Yong Wang (East Carolina University, USA)
- 10:20 Compressive Sensing of SAR Signals via Fourier Coefficients**
 Kfir Aberman, Yonina C. Eldar (Technion-Israel Institute of Technology, Israel)

10:40 - 11:10 Coffee Break

Room E

Session (E8): Interferometry (II)

Chairs: Richard Bamler (German Aerospace Center (DLR), DE),
Bernhard Grafmüller (Airbus DS GmbH, DE)

09:00 Improvements in the Processing of DInSAR data-stacks with CAESAR

Gianfranco Fornaro, Antonio Paucillo, Diego Reale,
Simona Verde (CNR-IREA, Italy)

09:20 Demonstration of the Applicability of 2-Look Burst Modes in Non-Stationary Scenarios with TerraSAR-X

Pau Prats, Nestor Yague-Martinez, Steffen Wollstadt,
Thomas Kraus, Rolf Scheiber (German Aerospace Center (DLR), DE)

09:40 Micro-change detection on the ground surface by a high-precision repeat flight – A feasibility study toward a coherent change detection –

Shoichiro Kojima (National Institute of Information and
Communications Technology, Japan)

10:00 Improving TamDEM-X DEMs accuracy using large-baseline data from the science phase

Muriel Pinheiro, Andreas Reigber (German Aerospace
Center (DLR), DE)

10:20 Nonlocal InSAR Filtering for DEM generation and Addressing the Staircasing Effect

Gerald Baier (German Aerospace Center & Technical
University of Munich, DE); Xiao Xiang Zhu (German
Aerospace Center (DLR), Remote Sensing Technology &
Technical University of Munich (TUM), Signal Processing
in Earth Observation, DE); Marie Lachaise, Helko Breit,
Richard Bamler (German Aerospace Center (DLR), DE)

10:40 - 11:10 Coffee Break

Room F

Session (F8): Land Use and Urban Areas

Chairs: Michael Riedmann (Airbus Defence and Space, DE), Chao
Wang (Institute of Remote Sensing and Digital Earth, CAS, P.R.
China)

09:00 Potential of Monitoring Road Structures Using High-Resolution Satellite Radar Interferometry

Michael Riedmann (Airbus Defence and Space, DE);
Jan Anderssohn (Astrium Services, DE); Maik Bindrich
(Airbus Defence and Space, DE)

09:20 Resolution enhancement of polarimetric images using a high resolution mono-channel image

Flora Weissgerber (Telecom ParisTech)

09:40 Signature analysis of the Gateway Arch monument in St. Louis using TerraSAR-X staring spotlight mode data

Harald Anglberger (German Aerospace Centre (DLR),
DE); Simon Hennig (Airbus Defence and Space, DE)

10:00 Towards a Reliable Detection of Debris in High Resolution SAR Images of Urban Areas

Silvia Kuny (Fraunhofer IOSB, DE); Horst Hammer (Fraun-
hofer, DE); Karsten Schulz (Fraunhofer IOSB, DE); Stefan
Hinz (Karlsruhe Institute of Technology, DE)

10:20 Building Detection from Urban High-Resolution SAR Image Based on Facade Regularities

Jinxing Chen, Bo Zhang, Chao Wang, Hong Zhang and
Fan Wu (Institute of Remote Sensing and Digital Earth,
CAS, P.R. China)

10:40 - 11:10 Coffee Break

Room G1

Session (G1.9): Next Generation SAR Missions (II)

Chairs: Markus Bachmann, Matteo Pardini (German Aerospace Center (DLR), DE)

11:10 Next Generation Low Cost SAR Developments

Samuel Doody, Martin Cohen, Jose Marquez-Martinez (Airbus Defence & Space Ltd, United Kingdom)

11:30 Calibration Concepts for Future Low Frequency SAR Systems

Jens Reimann, Marco Schwerdt, Björn J. Döring, Manfred Zink (German Aerospace Center (DLR), DE)

11:50 Design of Passive Non-Cooperative Spaceborne SAR Payloads - Challenges and Strategies

Jose Marquez-Martinez, Karen Mak, Michael Notter (Airbus Defence & Space Ltd., United Kingdom); Les Griffiths (Astrium Ltd, United Kingdom); David Hall (Airbus DS Ltd, United Kingdom)

12:10 Product-Level Performance Models for the Tandem-L Mission: Forest Structure Case Study

Maria J. Sanjuan-Ferrer, Matteo Pardini, Daniela Borla Tridon, Paco López-Dekker, Konstantinos P. Papathanassiou, Markus Bachmann (German Aerospace Center (DLR), DE)

12:30 Tandem-L Observation Concept - An Acquisition Scenario for the Global Scientific Mapping Machine

Markus Bachmann, Daniela Borla Tridon, Francesco De Zan, Gerhard Krieger, Manfred Zink (German Aerospace Center (DLR), DE)

12:50 - 14:00 Lunch Break

Room G2

Session (G2.9): Calibration and Technology (II)

Chairs: Helene Oriot (ONERA, France), Marco Schwerdt (German Aerospace Center (DLR), DE)

11:10 Phase Calibration of Tomographic SAR data using volumetric natural targets

Stefano Tebaldini (Politecnico di Milano, Italy); Fabio Rocca (Politecnico di Milano & TeleRilevamento Europa, Italy); Mauro Mariotti d'Alessandro (Politecnico di Milano, Italy); Laurent Ferro-Famil (University of Rennes, France)

11:30 Verification of Sentinel-1B Internal Calibration - First Results

Nuria Tous-Ramon, Marco Schwerdt, Gabriel Castellanos Alfonso, Kersten Schmidt (German Aerospace Center (DLR), DE)

11:50 Improving SAR-MTI Detection Capacities by Adaptive Antennas Calibration

Abigael Taylor, Helene Oriot, Laurent Savy (ONERA, the French Aerospace Lab, France); Franck Daout (GEA universite Paris, France); Philippe Forster (Universite Paris Ouest Nanterre, France)

12:10 The Three-Transponder Method: A Novel Approach for Trace-able (E)RCS Calibration of SAR Transponders

Björn J. Döring, Jens Reimann, Sebastian Raab, Matthias Jirousek, Daniel Rudolf, Marco Schwerdt (German Aerospace Center (DLR), DE)

12:30 A Compact Antenna Rotation Concept for Precise Polarimetric SAR Calibration Transponders

Daniel Rudolf and Björn J. Döring, Matthias Jirousek, Jens Reimann, Marco Schwerdt (German Aerospace Center (DLR), DE)

12:50 - 14:00 Lunch Break

Room D

Session (D9): Advanced Processing Techniques (II)

Chairs: Andreas R. Brenner (Fraunhofer FHR, DE), Junghyo Kim (Airbus DS GmbH, DE)

11:10 Passive multi-perspective GNSS-based SAR using CLEAN technique: an experimental study

Fabrizio Santi (University of Rome „La Sapienza“, Italy); Marta Bucciarelli (SYMPAS S. r. l. & University of Rome, „La Sapienza“, Italy); Debora Pastina (University of Rome „La Sapienza“, Italy); Michail Antoniou and Mikhail Cherniakov (University of Birmingham, United Kingdom)

11:30 Multichannel Staggered SAR Azimuth Sample Regularization

Felipe Queiroz de Almeida (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Gerhard Krieger (DLR, DE)

11:50 Robustness of LRMR based Passive Radar Imaging to Phase Errors

Eric Mason and Birsen Yazıcı (Rensselaer Polytechnic Institute, USA)

12:10 DPCA Imaging from Nonuniform Sampling: an lq Regularization Based Approach

Xiangyin Quan, Bingchen Zhang (Institute of Electronics, Chinese Academy of Science, P.R. China); Xiao Xiang Zhu (German Aerospace Center (DLR), Remote Sensing Technology & Technical University of Munich (TUM), Signal Processing in Earth Observation, DE); Wen Hong (National Key Laboratory of Microwave imaging Technology & Institute of Electronics, Chinese Academy of Sciences, P.R. China); YiRong Wu (National Key Laboratory of Microwave Imaging Technology, P.R. China)

12:30 Three-dimensional High Resolution Imaging Method of Multi-pass Circular SAR Based on Joint Sparse Model

Shiheng Zhu (Shanghai Jiao Tong University & Shanghai Key Laboratory of Intelligent Sensing and Recognition, P.R. China); Zenghui Zhang, Bin Liu and Wenxian Yu (Shanghai Jiao Tong University, P.R. China)

12:50 - 14:00 Lunch Break

Room E

Session (E9): Image Filtering, Enhancement and Correction

Chairs: Jens Fischer, Andreas Reigber (German Aerospace Center (DLR), DE)

11:10 Geometric and Polarimetric Sharpening of SAR Images by Kennaugh- and Schmittlet-based Multi-frequency Data Fusion

Andreas Schmitt, Anna Wendleder (German Aerospace Center (DLR), DE)

11:30 Validation of Ionospheric Mapping by means of SAR through Ground Based Radar and GNSS Measurements

Jun Su Kim, Hiroatsu Sato, Konstantinos P. Papathanassiou (German Aerospace Center, DE)

11:50 Feature Enhanced Imaging with Compressed Fractional SAR Sensors: Inverse Problem Formalism and l2-l1 Structured Descriptive Regularization Framework

Yuriy V. Shkvarko (Cinvestav Jalisco, Mexico); Andreas Reigber (German Aerospace Center (DLR), DE); Guillermo García (Universidad de Guadalajara, Mexico)

12:10 Evaluation of a Bilateral Filtering Approach for Tomographic SAR Denoising

Olivier D'Hondt and Stéphane Guillaso (TU-Berlin, DE); Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), Spain); Olaf Hellwich (Berlin University of Technology, DE)

12:30 Fully PolSAR Image Classification Using A Diffusion-Reaction System Enhanced with Morphological Filtering

Luis Gomez (University of Las Palmas G. C., Spain); Luis Alvarez (Universidad de Las Palmas de Gran Canaria & Campus de Tafira, Spain); Luis Mazorra (Universidad de Las Palmas de Gran Canaria, Spain); Alejandro C Frery (Universidade Federal de Alagoas, Brazil)

12:50 - 14:00 Lunch Break

Room F

**Session (F9):
SAR Data for Land, Vegetation and Surveillance (I)**

Chairs: Jürgen Janoth (Airbus Defence and Space, DE), Seungbum Kim (JPL, USA)

- 11:10 Using machine learning and SAR data for the upscaling of large scale modelled soil moisture in the Alps**
Felix Greifeneder, Claudia Notarnicola (EURAC, Italy); Wolfgang Wagner (Vienna University of Technology, Austria)
- 11:30 Monitoring Forest Structure Dynamics by means of TomoSAR Techniques at L-band**
Victor Cazcarra-Bes, Marivi Tello, Konstantinos P. Papathanassiou (German Aerospace Center, DE); Michael Heym, Peter Biber (Technische Universität München (TUM), DE)
- 11:50 Global retrieval of surface soil moisture using L-band SMAP SAR data and its validation**
Seungbum Kim (JPL, USA); Joel T. Johnson (The Ohio State University, USA); Mahta Moghaddam (University of Southern California, USA); Leung Tsang (University of Washington, USA); Jakob van Zyl (Jet Propulsion Laboratory, USA); Andreas Colliander, Roy Dunbar (JPL, USA); Tom Jackson (USDA-ARS, USA); Sermsak Jaruwatanadilok, Richard West (JPL, USA); Aaron Berg (Univ Guelph, Canada); Todd Caldwell (Univ Texas, USA); Mike Cosh (USDA, USA); Ernesto Lopez Baeza (Valencia, Spain); Marc Thibeault (CONAE, Argentina); Jeff Walker (Monash University, Australia); Dara Entekhabi (MIT, USA); Simon Yueh (JPL-CalTech, USA)
- 12:10 VB-SAR For Remote Stand-off Subsurface Imaging: First Demonstration**
Alexander Edwards-Smith, Keith Morrison (Cranfield University, United Kingdom)
- 12:30 Comparison of P/L Band Digital Array SAR for the Foliage/Sands Subsurface Penetration Detection**
Ning Zhao, Jiaguo Lu, Ge Jia-long, Baidong Yao, Renyuan Chen (East China Research Institute of Electronic Engineering, P.R. China)

12:50 - 14:00 Lunch Break

Room G1

Session (G1.10): Next Generation SAR Missions (III)

Chairs: Christoph Heer (Airbus DS GmbH, DE), Federica Bordonì (German Aerospace Center (DLR), DE)

- 14:00 SAR Cross-Ambiguities in SAOCOM-CS Large Baseline Bistatic Configuration**
Federica Bordonì, Marc Rodriguez-Cassola, Gerhard Krieger (German Aerospace Center (DLR), DE)
- 14:20 Tandem-L: Design Concepts for a Next-Generation Spaceborne SAR System**
Sigurd Huber, Michelangelo Villano, Marwan Younis, Gerhard Krieger, Alberto Moreira (German Aerospace Center - DLR, DE); Bernhard Grafmueller (Airbus DS GmbH, DE); Reinhard Wolters (Airbus DS GmbH, DE)
- 14:40 A SAR Interferometer Experiment to Explore the Surface of Venus**
Roberto Seu (University of Rome „Sapienza“, Italy); Suzanne Smrekar and Scott Hensley (Jet Propulsion Laboratory, USA); Pierfrancesco Lombardo (University Roma La Sapienza, Italy)
- 15:00 Research on Bi-satellite Ka-band FMCW SAR Design and Imaging**
Hui Wang (Institute of Electronics, Chinese Academy of Sciences Beijing, P.R. China); Man Jiang (ShanDong HuYu Sapce Technology Company & ShanDong HuYu Sapce Technology Company, P.R. China); Shichao Zheng (Beihang University, P.R. China)

15:40 - 16:00 Awards Presentation and Closing Remarks
 Room G1

Room G2

Session (G2.10): Digital Beamforming

Chairs: Martin Suess (ESA/ESTEC, The Netherlands), Rafael Rincon (NASA/Goddard Space Flight Center, USA)

14:00 Development of NASA'S Next Generation L-Band Digital Beamforming Synthetic Aperture Radar (DBSAR-2)

Rafael Rincon (NASA/Goddard Space Flight Center, USA); Temilola Fatoyinbo (NASA, USA); Batuhan Osmanoglu (USRA - NASA GSFC, USA); SeungKuk Lee (NASA Goddard Space Flight Center, USA); K. Ranson (NASA, USA); Victor Marrero (NASA/GSFC, USA); Mark Yeary (University of Oklahoma, USA)

14:20 ECOSAR: P-Band Digital Beamforming Polarimetric and Single Pass Interferometric SAR: Instrument Performance

Rafael Rincon (NASA/Goddard Space Flight Center, USA); Temilola Fatoyinbo (NASA, USA); Batuhan Osmanoglu (USRA - NASA GSFC, USA); SeungKuk Lee (NASA Goddard Space Flight Center, USA); K. Ranson and Guoqing Sun (NASA, USA); Tobias Bollian (USRA - NASA GSFC, USA)

14:40 End-to-end simulation of reflector based DBF SAR Systems

Paco López-Dekker (German Aerospace Center (DLR), DE); Felipe Queiroz de Almeida (German Aerospace Center (DLR) & Microwaves and Radar Institute, DE); Marc Rodriguez-Cassola, Pau Prats, Octavio Ponce, Marwan Younis (German Aerospace Center (DLR), DE)

15:00 Experimental Verification of High-Resolution Wide-Swath Moving Target Indication

Stefan V. Baumgartner, Gerhard Krieger (German Aerospace Center (DLR), DE)

15:20 Matrix Pencil Method for Direction of Arrival Estimation in DBF-SAR

Tobias Rommel, Marwan Younis (German Aerospace Center (DLR), DE)

**15:40 - 16:00 Awards Presentation and Closing Remarks
Room G1**

Room D

Session (D10): Bistatic SAR

Chairs: Ingo Walterscheid (Fraunhofer FHR, DE), Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China)

14:00 Relative Height Accuracy Analysis of TanDEM-X DEM Products

Carolina González, Benjamin Bräutigam (German Aerospace Center (DLR), DE)

14:20 Investigations on Bistatic SAR Image Formation for the SAOCOM-CS Mission

Pau Prats, Marc Rodriguez-Cassola, Alberto Moreira (German Aerospace Center - DLR, DE)

14:40 Extended Space Doppler Adaptive Processing for Bistatic Multichannel ISAR imaging of targets masked by strong clutter

Samuele Gelli (University of Pisa & Radar and Surveillance Systems (RaSS) National Laboratory, Italy); Alessio Bacci (CNIT & University of Pisa, Italy); Marco Martorella and Fabrizio Berizzi (University of Pisa, Italy)

15:00 Improvement in Bistatic SAR coherence through spatially variant polarimetry

Daniel Andre (Cranfield University & Defence Academy of the United Kingdom, United Kingdom); Keith Morrison (Cranfield University, United Kingdom)

15:20 Very High-Resolution Bistatic SAR Imaging with TerraSAR-X as the Illuminator in ST Mode

Heng Zhang and Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, P.R. China)

**15:40 - 16:00 Awards Presentation and Closing Remarks
Room G1**

Room E

Session (E10): Wave Propagation

Chairs: Andreas Danklmayer (Fraunhofer FHR, DE), Boris Georgievich Kutuza (Russian Academy of Sciences, Russia)

14:00 Atmospheric Effects for Air-and Spaceborne SAR revisited

Andreas Danklmayer (Fraunhofer FHR, DE)

14:20 Ionospheric Phase Screen and Ionospheric Azimuth Shift Estimation Combining the Split-Spectrum and Multi-Squint Methods

Giorgio Gomba, Francesco De Zan, Alessandro Parizzi (German Aerospace Center (DLR), DE)

14:40 Combined method for estimation the angle of Faraday rotation when processing data from the on board P-band SAR

Boris Georgievich Kutuza, Alexander Moshkov, Victor Pozhidayev (Russian Academy of Sciences, Russia)

15:00 Analysis of Background Ionospheric Effects on Geosynchronous SAR Azimuth Imaging

Yifei Ji (National University of Defense and Technology, P.R. China); Qilei Zhang, Zhang YongSheng, Anxi Yu, Zhen Dong (NUDT, P.R. China)

**15:40 - 16:00 Awards Presentation and Closing Remarks
Room G1**

Room F

**Session (F10):
SAR Data for Land, Vegetation and Surveillance (II)**

Chairs: Parivash Lumsdon, Jürgen Janoth (Airbus Defence and Space, DE)

14:00 A review of SAR imagery exploitation methods in support of Defence and Security missions

Jean Philippe Robin, Marc Lafitte, Enrique Coiras (EU Satellite Centre, Spain)

14:20 Assessment of leaf wetness variation effect on differential interferometric observables

Virginia Brancato (ETH Zurich, Switzerland); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

14:40 Comparing Incoherent and Coherent techniques for the Detection of Scene changes from multi-temporal SAR imagery

Nertjana Ustalli, Debora Pastina, Federica Pieralice, Pierfrancesco Lombardo (University Roma La Sapienza, Italy); Franco Ciaramaglia, Antonio Graziano (SELEX - Sistemi Integrati, Italy)

15:00 Categorization based on sparse coding for SAR patch categorization

Dušan Gleich (University of Maribor, Slovenia)

15:20 Superpixel-Based Unsupervised Classification of PolSAR Imagery Using Wishart Mixture Models and Spectral Clustering

Xiangli Yang, Wen Yang, Hui Song (Wuhan University, P.R. China); Pingping Huang (Inner Mongolia University of Technology, P.R. China)

Awards

**The awards will be granted on
June 9, 2016 in Room G1 at 15:40 h.**

There will be awards for the

- **Best Paper**
- **Best Poster and**
- **three Best Students contributions**

**15:40 - 16:00 Awards Presentation and Closing Remarks
Room G1**

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Booth Nr 11



Reaching for the Stars is Our Daily Business

Whether we're peering into the infinite beyond or looking back at Planet Earth, mapping every star in our galaxy or counting trees in Amazonia, we've been helping to answer the big questions for over 50 years.

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Airbus DS Electronics and Border Security
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Airbus DS Electronics and Border Security

Airbus DS Electronics and Border Security (EBS) is a world leading provider of premium electronics in the areas of protection, surveillance and situational awareness.

As a separate organizational unit within Airbus Defence and Space, it is managed according to arms-length principles serving the defence and security markets. It is the global No. 1 in missile warning systems, a leading provider of border surveillance equipment and THE German sensor house with a major position in the radar, optronics and electronic warfare markets.

Customers benefit from the company's strong heritage capitalizing on renowned names such as Dasa, Siemens, Aerospatiale-Matra, Telefunken, Dornier and Zeiss. It employs today approx. 4,000 employees generating revenues of about €1 billion per year.

Electronics and Border Security is addressing the market via several legal entities closely cooperating with security authorities and armed forces as well as system providers worldwide. Areas of operation are air defence, airborne self-protection, vehicle and convoy protection, signal intelligence as well as night vision and optronic targeting. In the fields of security EBS' products are deployed to protect critical infrastructures and to provide security forces with realtime situational awareness. Its portfolio includes radar and identification systems (IFF), electronic warfare and situational awareness, optronic sensors and data links. Furthermore, the portfolio also comprises avionics equipment, such as avionics computers, digital map units and situational awareness systems for helicopters.

As a technology leader, EBS drives the development of radar technology, particularly in the area of next-generation active electronically scanning (AESA) radars for space, air, naval and ground applications. Transversally, multi-sensor integration and data fusion technology is particularly useful creating added value by combining radars with optronic sensors and thermal imagers from its extensive optronics portfolio. Therein, cameras, telescopes, thermal imaging devices and periscopes constitute indispensable elements of situational awareness for naval, airborne and ground-based platforms.

Among the most prominent air and space platforms equipped by the company's products are the F-16 and Eurofighter (radar, self-protection, avionics) combat aircraft, the Tandem-X satellites, the A400M transport aircraft (self-protection, avionics) as well as helicopters of various types. Furthermore, the company provides mission-critical equipment to the Puma and Leopard armoured vehicles, the US Navy Littoral Combat Ship and the German Navy F125 frigate.

www.detectandprotect.org

Fraunhofer FHR

Booth Nr 4



The Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR develops concepts, methods and systems for electromagnetic sensor technology, particularly radars, implementing modern methods of signal processing and innovative technologies, ranging from microwaves to the lower end of the terahertz band. With a budget of €32.5 million in 2015 and more than 300 employees, Fraunhofer FHR is one of the largest radar research institutes in Europe.

The most valued competencies of Fraunhofer FHR – numerical calculation of electromagnetic fields, high-frequency technology and sensor signal processing – enable the institute to design, develop and implement complex high-frequency systems, executing each step in-house. Fraunhofer FHR unites leading edge technology with sophisticated methods of signal processing to devise new types of system. This is accomplished by the interdisciplinary collaboration of physicists, engineers and mathematicians. The activities in the business units Defense, Space, Traffic, Environment, Security and Production constitute concrete examples of innovative applications that are being implemented in many areas of society.

www.fhr.fraunhofer.de

LOBES Elektronik GmbH & Co KG
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Booth Nr 3



LOBES Elektronik is a German based sales and distribution company in the field of high frequency, microwave and RF electronic technologies. The headquarters are located in Heilbronn (near Stuttgart) and sales offices are in Norderstedt (next to Hamburg) and Germering (close by München/Munich). The purpose of the company is to represent major foreign suppliers from the USA, Far East, Europe, and Israel to sell their RF, microwave, and electronic components as well as supercomponents, subsystems, systems and instruments into Germany, Austria and Switzerland, but also some other, mainly (East-) European, countries, it is set up to act as a representative, distributor and value added reseller. LOBES Elektronik was founded 1995. The partners and employees represent more than two hundred years of experience in that specialized field of high frequency, microwave and communication. This represents a very strong knowledge of the local markets and the customers. All have very deep product know-how and did successfully work for several well known suppliers for many years. References can be supplied on request. The sales engineers are used to work with the technologies of thin- and thickfilm, LTCC, GaAs, GaN, SiC, SMD surface mount, lumped element, MIC, MMIC, Stripline microstrip, airline, suspended substrates, coaxial, and waveguide as well as combinations thereof and any higher level of integration. Frequency ranges are between some MHz and beyond 100 GHz. The markets of commercial, medical, military and satellite applications can be supported with proven success and experience, being used to follow the special requirements and needs of each field, in addition to the daily business of selling standard products large OEM contracts, long term commercial and military programs can be handled as well as the distribution of RF and microwave components including buffer stock and logistics. This, combined with the strong expertise in commercial matters assures that the principals interests are kept in the best way. LOBES' target is to act as the principal's partner and extended arm of the manufacturer in the territory.

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EXELIS VIS GMBH/HARRIS CORPORATION Booth Nr 10



Harris provides desktop, cloud and mobile software solutions to help professionals across industries transforming geospatial imagery and complex data into actionable information. ENVI SARscape® allows you to easily read, process, analyse your SAR data, and generate products, while giving you the option to integrate that information with other geospatial data and tools. And, since ENVI SARscape is integrated with ENVI, the premier image processing and analysis solution, you get the added benefit of image analysis tools and SAR processing functionality in one package.

www.exelisvis

Keysight Technologies Deutschland GmbH Booth Nr 6



Keysight Technologies Inc. (NYSE: KEYS) is the world's leading electronic measurement company, transforming today's measurement experience through innovations in wireless, modular, and software solutions. With its HP and Agilent legacy, Keysight delivers solutions in wireless communications, aerospace and defense and semiconductor markets with world-class platforms, software and consistent measurement science.

As technology evolves so do the challenges in detection, avoidance, electronic warfare and countermeasures. In all cases, the testing of today's systems will benefit from high-performance test equipment – analog and vector signal generators, spectrum analyzers, vector signal analyzers, vector network analyzers and more. From simulations of an arriving wavefront with multiple emitters to testing of precision components in a receiver, our solutions are ready for the complexity of radar test and EW test applications.

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hf-welt@globes.de
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Metasensing BV**Booth Nr 2**

MetaSensing B.V is a high-tech company located in Netherlands, operating in the radar and SAR field. It is one of the unique companies in the world which offer airborne and ground-based radar sensors and services for mapping, monitoring and surveillance, both for commercial and scientific applications. Apart from airborne-based mapping, using readily available small aircrafts, MetaSensing includes among its products ground based systems such as the QX-60, which is used for accurate high-resolution estimates of precipitation and the FastGBSAR, which is used for monitoring instable natural elements (mountain sides, glaciers, etc.) and critical artificial structures (dikes, dams, bridges, etc.) with sub-millimeter resolution. All MetaSensing products are based on the combination of innovative radar technology developed in more than a decade of advanced research and Synthetic Aperture Radar (SAR) techniques.

www.metasensing.com



The Rohde & Schwarz electronics group offers innovative products and solutions that aim at providing multidimensional support for SAR. Among company's SAR-tailored product highlights are R&S@FSW Signal and Spectrum Analyzer and R&S@SMW200A Vector Signal Generator. The R&S@SMW200A is ideally fitting for digitally modulated signals required for the development of new wideband communications systems, the verification of 3G and 4G base stations or in the aerospace and defense sector. With coming release of a NEW 2 GHz internal modulation bandwidth option, this product is going to meet the most demanding client's expectations. Learn more about R&S@SMW200A, R&S@FSW and other products of Rohde & Schwarz at Booth #7.

www.rohde-schwarz.com

Times Microwave Systems
Silver Sponsor**Booth Nr 5**

Times Microwave Systems is a leader and pioneer in the development of high reliability coaxial cables and cable assemblies for demanding interconnect applications.

Products cover military-aerospace, shipboard and commercial wireless applications and include high-performance flexible, semi-flexible and rigid coaxial cable assemblies, PhaseTrack® phase stable cables and flexible 50 Ohm LMR® cables, connectors and assemblies.

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GENERAL INFORMATION

EUSAR 2016 CONFERENCE SECRETARIAT

For detailed information please contact:

VDE-Conference Services
Ms Hatice Altintas
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60596 Frankfurt, Germany
Phone: +49-(0)69-63 08-477
Fax: +49-(0)69-63 08-144
E-mail: hatice.altintas@vde.com
Internet: www.vde.com

EUSAR 2016 CONFERENCE WEB SITE

A homepage presenting the latest information related to the conference can be found at: www.eusar.de

REGISTRATION ON-SITE

The registration desk on site will be open at the following office hours:

Monday,	June 6, 2016	08:00 - 18:00
Tuesday,	June 7, 2016	08:00 - 18:00
Wednesday,	June 8, 2016	08:00 - 18:00
Thursday,	June 9, 2016	08:00 - 16:00

REGISTRATION FEES

On-Site Registration

Member (VDE, EUREL, IEEE)*	800,- EUR
Corporate VDE-Member	830,- EUR
Non-Member	910,- EUR
Member of Universities (VDE, EUREL, IEEE)*	540,- EUR
Student (Undergraduates only! excl. conference dinner)**	100,- EUR
Tutorials 1, 2, 3, 4 (each)	250,- EUR
Tutorial 5	
Tutorial fees for students (each)	70,- EUR
Additional dinner ticket	80,- EUR
AIRBUS Tour, June 9	30,- EUR

* Participants applying for the membership fee must include a copy of their membership card to the registration form.

** A copy of the student's certification card has to be endorsed by a supervisor or head of department and must be attached to the registration form.

*** The tutorial registration includes only the participation to the tutorial, the Tutorial Handouts, the lunch and coffee breaks on Monday, June 6, 2016.

- in order to get advantage of the reduced fees for members, you can apply for VDE Membership.
- Presenting authors, co-authors, committee members and session chairs are not exempt from paying registration fees.

Regular Conference Registration:

- Member, non member and authors' registration includes admission to all plenary and technical sessions and to the daily luncheons, the wet poster session, the conference dinner at the Panorama Deck, one copy of the electronic proceedings

Student Registration:

includes admission to all plenary and technical sessions and to the daily luncheons, the wet poster session and one copy of the electronic proceedings. For Participation at the conference dinner separate registration in necessary.

PROCEEDINGS

All papers accepted for presentation at the conference will be published in the electronic proceedings. The proceedings will be handed on-site to all delegates attending the event. Proceedings will be on sale during the conference (upon availability) at Euro 50,-.

BADGES

Delegates will receive badges for the Conference showing their name and company. All participants are kindly requested to wear their badge throughout the conference, even at social events. Lost badges will not be replaced.

A new registration will be mandatory.

PAYMENT

Payment for registration, hotel, tours and visits, including bank charges and processing fees, must be made in Euro. The conference fee has to be fully paid in advance. The Invoice for the registration will be sent after full payment has been received.

The following methods of payment are accepted:

- By credit card authorisation as per registration form. The 16 digit card number, expiry date, security No. (last 3 digits on rear side of credit card) and holder's name must be indicated on the registration form. Signature of the card holder is man

CANCELLATION

In case of cancellation, provided that written notice is received at the VDE-Conference Services before April 30, 2016 (except authors registration), the registration fee will be fully refunded less a handling fee of EURO 60,00. After April 30, 2016 no refund will be made. Proceedings will then be sent to the registrant after the conference.

VENUE

CCH Adress for navigation
CCH - Congress Center Hamburg
Am Stammtor / Marseiller Straße
20355 Hamburg
Germany

OFFICIAL LANGUAGE

All sessions will be held in English, only.

MESSAGES

Incoming mail, phone calls and e-mails for participants will be displayed on a message board near the registration desk.

During the conference, messages for delegates may be sent to the registration counter on-site.

E-mail: vde-conferences@vde.com

POSTER DISPLAY

The poster display will be open for hanging up posters on Tuesday starting at 8:00 a.m. The pin walls will be numbered according to the ID number given in the program. The standard poster size is DIN A0 format. The Wet Poster Session will take place Tuesday 7, 2016 at 19:15

AWARDS INFORMATION

The EUSAR 2016 Awards Committee will recognize outstanding research works presented during the conference in three different categories:

- Best Paper Award
- Best Poster Award
- Best Student Paper Award

Each author presenting a paper and/or a poster – with the corresponding publication in the EUSAR 2016 proceedings will be considered by the Awards Committee for the Best Paper / Best Poster Award.

SOCIAL PROGRAM

- Piano recital by Richard Klemm on Tuesday, June 7, 2016, 18:15 - 19:15
- Poster Session and Get Together on Tuesday, June 7, 2016, 19:15 - 22:00
- Conference Dinner on Wednesday, June 8, 2016, 19:00 - 23:00 in the „Panorama Deck“

The attendance to these events is included in the full conference fee. Additional tickets for accompanying persons may be ordered upon availability at the registration desk.

The recommended dress for all social events is business casual.

INSURANCE

The organizers may not be held responsible for any injury to participants or damage, theft and loss of personal belongings. Participants should therefore make their own insurance arrangements.

EMERGENCY CALLS

Fire/Ambulance 112

Police 110

From some phones an additional „0“ (0112 or 0110) might be required to place a call.

TIPPING

Tipping is at your own discretion. In Germany all taxes and tips are included in hotel and restaurant bills. A good service may be rounded up by 5 to 10%.

NOTES

NOTES

Room B2.2	Room C4.3	Room C2.1	Room C4.4	Room B2.1
T1: Multidimensional SAR & MTI Techniques	T2: Spatial Diversity Imaging Systems	T3: Polarimetry and Pol-In SAR	T4: SAR Image Exploitation and Feature Extraction	Industrial T5: Operational Remote Sensing by Exploiting Space-Based SAR Data
09:00 Introduction into SAR Interferometry and Persistent Scatterers	Introduction into distributed SAR/ISAR	SAR Polarimetry	SAR Image Exploitation -Urban area-	09:00 Introduction of companies and presenters
10:30 Coffee Break				09:30 Time series analysis with Sentinel-1A and ENVI-SAR ASAR data/ Live demonstration of an operational SARscape workflow
11:00 SAR Tomography and Multi-Dimensional Imaging	Experimental Aspects of distributed SAR/ISAR Systems	Multimodal Polarimetric SAR	SAR Signature Analyses for Image Exploitation	10:00 TerraSAR-X and ENVI: Some good reasons why getting them engaged! - Overview on TerraSAR-X applications
12:30 Lunch				10:20 Coffee Break
13:45 Airborne SAR/MTI Techniques	Circular SAR imagery and applications	Decomposition of fully Polarimetric SAR Data and its Application	Maritime, Ocean Application	10:50 Stereo SAR/ 3D point clouds from stereo & InSAR
15:15 Coffee Break				11:20 Monitoring surface deformation from space with millimeter precision - Case study of an operational monitoring Project
15:45 Space-based SAR/MTI Techniques	Multi-pass Aperture Synthesis	L-Band SAR (PALSAR/ PALSAR2/PI-SAR-L2) Polarimetric Calibration and Application	Surface Parameter Estimation (Soil, Vegetation, and Land Cover)	12:00 Delivering SAR processing services through the cloud
				12:30 Lunch
				13:45 Monitoring the Earth with spaceborne SAR - Various case studies of on- and off-shore surveillance applications
				14:15 Operational image registration based on high-resolution SAR data - Live demonstration of the HyPARE registration engine in ENVI
				14:45 Wrap Up & Discussion
				15:15 Coffee Break

Room G1	Room G2	Room D	Room E	Room F
09:00 Welcome, Keynote and Introduction to EUSAR 2016				
10:50 Coffee Break				
11:20 (G1.1): Sentinel 1 Mission (invited)	(G2.1): MIMO Imaging (invited)	(D1): ISAR (I)	(E1): SAR Polarimetry: Techniques and Applications (invited)	(F1): Airborne SAR Processing and Applications (I)
13:00 Lunch Break				
14:00 (G1.2): Kompsat 6 (invited)	(G2.2): MIMO SAR	(D2): ISAR (II)	(E2): SAR Polarimetry: Techniques and Applications (invited)	(F2): Airborne SAR Processing and Applications (II)
15:40 Coffee Break				
16:10 (G1.3): Special Invited Session on Space Programs and Roadmaps	(G2.3): Advanced SAR Modes and Techniques (I)	(D3): MTI and GMTI	(E3): Polarimetry (I)	(F3): Ocean Waves and Currents (invited)
18:15 Piano Recital				
Exhibition (9:30–21:30)				
A/B/C/D/E Posters, Wet - Poster Session (19:15–21:00)				

Exhibition (9:00 – 18:00)				
Room G1	Room G2	Room D	Room E	Room F
09:00 (G1.4): ALOS-2 (invited)	(G2.4): Advanced SAR Modes and Techniques (II)	(D4): TerraSAR-X/TanDEM-X – Mission & DEM Generation Status (invited)	(E4): Polarimetry (II)	(F4): Feature Extraction (Oil, Ice, Groundwater)
10:40 Coffee Break				
11:10 (G1.5): Innovative and Next Generation SAR Missions (invited)	(G2.5): Ground Based Radar and Demonstrations (I)	(D5): TanDEM-X – Science Activities (invited)	(E5): Tomography	(F5): Classification and Feature Extraction
12:50 Lunch Break				
14:00 (G1.6): Future SAR Technology (DBF, HRWS, MIMO) (invited)	(G2.6): Ground Based Radar and Demonstrations (II)	(D6): Comparison between SAR, SAS and Sonography I (invited)	(E6): Topography and Tomography	(F6): Snow, Ice and Glacier
15:40 Coffee Break				
16:10 (G1.7): COSMO-Sky-Med (invited)	(G2.7): SAR Missions and Technology	(D7): Comparison between SAR, SAS and Sonography II (invited)	(E7): Interferometry (I)	(F7): SAR Processing and Correction
19:00 Conference Dinner				

Exhibition (9:00 – 16:00)				
Room G1	Room G2	Room D	Room E	Room F
09:00 (G1.8): Next Generation SAR Missions (I)	(G2.8): Calibration and Technology (I)	(D8): Advanced Processing Techniques (I)	(E8): Interferometry (II)	(F8): Land Use and Urban Areas
10:40 Coffee Break				
11:10 (G1.9): Next Generation SAR Missions (II)	(G2.9): Calibration and Technology (II)	(D9): Advanced Processing Techniques (II)	(E9): Image Filtering, Enhancement and Correction	(F9): SAR Data for Land, Vegetation and Surveillance (I)
12:50 Lunch Break				
14:00 (G1.10): Next Generation SAR Missions (III)	(G2.10): Digital Beamforming	(D10): Bistatic SAR	(E10): Wave Propagation	(F10): SAR Data for Land, Vegetation and Surveillance (II)
15:40 Awards Presentation and Closing Remarks				

