

Final Program

9th European Conference on Synthetic Aperture Radar



- 23 - 26 April 2012
- CCN Ost, Nürnberg, Germany

Organized by

ITG/VDE



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9th European Conference on Synthetic Aperture Radar

April 23 - 26, 2012, Nürnberg, Germany

EUSAR is jointly organised by:

ITG (VDE)	Information Technology Society of VDE
CASSIDIAN	an EADS Company
Fraunhofer FHR	Fraunhofer Institute for High Frequency Physics and Radar Techniques
Astrium	an EADS Company
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Welcome Message from the General Chairman

It is a great pleasure for me to welcome you to the EUSAR 2012 conference in Nürnberg (Nuremberg) in southern Germany. This year's EUSAR 2012, the European Conference on Synthetic Aperture Radar, is the 9th conference in a two-year series since the beginning in 1996. Over the years, the EUSAR has been growing to a symposium with currently almost 500 participants and is recognized as the world's leading international conference dedicated to SAR techniques, technology, and applications.

Not only did the number of proposed EUSAR papers and posters increase in the years, but also the number of participating nations. We expect to welcome representatives from more than 30 nations to EUSAR 2012. It is the open spirit of this conference that supports the worldwide discussion of experts on scientific, ecological, commercial, and security related topics. This is important, since the heart of our interest is in remote sensing with Radar which, in many cases, is of common interest around the globe.

Nürnberg is well known from the medieval ages as one of the most important German towns and the home of great artists, like the famous painter Albrecht Dürer.

You should not miss a walk through the heart of this charming town, where you can meet history at every corner.

However, Nürnberg is also a metropolis with high tech industry in the vicinity and a modern fair and conference centre with excellent public infrastructure, where this year's EUSAR is taking place.

I am looking forward to meeting you in Nürnberg during EUSAR 2012.

Rudolf Zahn

EUSAR 2012 General Chairman
CASSIDIAN, DE



Message from the Technical Chairman

On behalf of the program board I would like to welcome you to the 9th European Conference on Synthetic Aperture Radar (EUSAR 2012) conference!

The overwhelming response to our call-for-papers indicates the popularity of this conference and confirms that EUSAR has become the world-wide forum for all aspects of science and technology in the field of SAR related topics. The enthusiasm has certainly increased due to the successful launches of the latest SAR Missions and the excellent status of future programs. For EUSAR 2012, we have received contributions from more than 30 countries all over the world. After the review process, nearly 200 papers were selected for oral presentation and 90 papers will be displayed for interactive poster presentations. Thanks to this response, all important fields of SAR techniques, technology and exploitation are covered by the contributions. To our pleasure several invited sessions has been organised and there will be for the second time two special sessions on “Comparison of SAR, SAS, Sonography”, which opens the mind of the researchers beyond one’s own field by looking into complementary fields.

Prior to the EUSAR conference there is a tutorial day with four parallel courses. The conference itself starts with the plenary session on Tuesday, where keynote speeches will be given by distinguished experts. Throughout the remaining three conference days four parallel oral sessions will be held in separate halls. We have arranged the parallel sessions in a manner that overlap of related research areas is kept to a minimum. As it is a traditional the first conference day will be closed by a piano recital and a reception in the “Bratwurst Röslein” (downtown of Nürnberg). Posters will be displayed throughout the three conference days. Special attention should be given to the interactive poster presentation on Wednesday evening.

A Best Paper Award, a Best Poster Award and three Student Best Paper Awards will be awarded at the closing session on the last day of the conference. Finally, I would like to invite you to join the technical tour to SIEMENS Healthcare Sector, Erlangen

and Forchheim on Friday, which provides you with a close-up view of world-class research in the areas of image generation and processing in the health sector, for instance.

I would like to express my thanks to all authors for their outstanding contributions and in particular the members of the program board for their competent evaluation of the large number of submissions. Likewise I would also like to express my appreciation to the program and awards committee, as well as to the invited chairs for their careful preparation of the invited sessions.

I am looking forward to seeing you in Nürnberg.

Matthias Weiß

Technical Chair & EUSAR-Executive
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Conference Topics

(A) SAR/ISAR Systems and Sensors

- A1 Airborne SAR-Systems and Missions
- A2 Space-borne SAR Systems and Missions
(TerraSAR-X, RADARSAT 2, COSMO-SkyMed, TanDEM-X, TecSAR, ALOS ...)
- A3 Inverse SAR (ISAR)
- A4 SAR System Simulation and Modelling
- A5 Advanced SAR Concepts and Modes (ScanSAR, TOPS, Spotlight, Squint, Bi-/multistatic, Passive)
- A6 Very Low Frequency and Millimeter Wave SAR Systems
- A7 Ultra Wide Bandwidth and High Resolution SAR
- A8 SAR System Modeling and Simulation

(B) SAR/ISAR Technology

- B1 SAR Antennas, T/R Modules, Phased Arrays, Digital Beam Forming and Real-Time SAR Processing
- B2 SAR Technology (Waveform Generators, High Speed AD-Converters, ...)
- B3 SAR/ISAR Calibration and Verification (Radiometric, Polarimetric and Interferometric)
- B4 Terrestrial SAR Tools, Artificial Targets and Transponders
- B5 Waveform Design

(C) SAR/ISAR Signal Processing

- C1 SAR Image Generation, Motion Compensation and Geocoding
- C2 Signal Processing for Advanced SAR Modes (Spotlight, Squint, Bistatic, Sliding)
- C3 ISAR Signal Processing
- C4 Along and Across-Track Interferometry
- C5 Multiple Pass, Differential Interferometry and SAR Tomography
- C6 Polarimetry and Polarimetric Interferometry
- C7 SAR/MTI, GMTI, STAP, Change Detection
- C8 Three Dimensional Imaging

(D) SAR/ISAR Data Evaluation and Handling

- D1 Post-Processing Techniques
- D2 SAR Surveillance Urban Areas
- D3 Image Filtering, Correction and Enhancement
- D4 Feature Extraction and Analysis, Image Classification
- D5 Data Fusion, Data Mining, and Value-Adding
- D6 Data Compression
- D7 Archiving, Data Formats and Distribution
- D8 Data Fusion
- D9 Product Validation, DEM Verification

(E) Innovative SAR Concepts and Applications

- E1 Next Generation SAR Systems, Innovative SAR Concepts
- E2 Multimode and Reconfigurable SAR Systems
- E3 Multi-Satellite and Small Satellite SAR Systems
- E4 Three Dimensional SAR Techniques
- E5 MIMO-SAR
- E6 Urban, Land Remote Sensing, Geographical Mapping
- E7 Other Synthetic Aperture Applications

(F) Other SAR Related Subjects

Conference Schedule

Monday, April 23, 2012

08:00 - 18:00	Registration
09:00 - 17:30	Tutorials
10:30 - 11:00	Coffee Break
12:30 - 14:00	Lunch Break
15:30 - 16:00	Coffee Break

Tuesday, April 24, 2012

08:00 - 18:00	Registration
09:30 - 18:00	Exhibition
09:00 - 10:10	Welcome and Keynotes
10:10 - 10:40	Coffee Break
10:40 - 12:20	Oral Sessions
12:20 - 13:30	Lunch Break
13:30 - 15:10	Oral Sessions
15:10 - 15:40	Coffee Break
15:40 - 17:00	Oral Sessions
17:15 - 18:00	Social Program (Piano Recital by the BONUM Piano Duet)
18:45 - 22:00	Get together (Bratwurst Röslein)

Wednesday, April 25, 2012

08:00 - 18:00	Registration
08:30 - 18:00	Exhibition
08:30 - 10:10	Oral Sessions
10:10 - 10:40	Coffee Break
10:40 - 12:20	Oral Sessions
12:20 - 13:40	Lunch Break
13:40 - 15:20	Oral Sessions
15:20 - 15:50	Coffee Break
15:50 - 18:00	Oral Sessions
18:00 - 19:00	Poster Session (Exhibition Area)
19:00 - 22:00	Poster Session (music happening and drinks + snacks)

Thursday, April 26, 2012

08:00 - 16:00	Registration
08:30 - 16:00	Exhibition
08:30 - 10:10	Oral Sessions
10:10 - 10:40	Coffee Break
10:40 - 12:20	Oral Sessions
12:20 - 13:40	Lunch Break
13:40 - 15:20	Oral Sessions
15:20 - 16:00	Awards Presentation and Closing Remarks

EUSAR 2012 Program Overview

Monday, April 23, 2012		Tuesday, April 24, 2012		Wednesday, April 25, 2012		Thursday, April 26, 2012	
Time	Krakau	Prag	Budapest	Riga			
	T1: Advanced multidimensional SAR and MTI techniques	T2: Bi-/multistatic SAR	T3: Polarimetry / Pol-InSAR Advanced Image Exploitation	T4: SAR Exploitation in an operational environment			
09:00	Introduction into SAR interferometry and Tomography	Introduction into distributed SAR/ISAR	SAR polarimetry	Professional SAR Data Processing			
10:30	Coffee Break (will be served in the Foyer St. Petersburg)						
11:00	Multidimensional SAR imaging	Image formation algorithms	Application of Pol and Pol-InSAR	Operational Monitoring and SAR Applications with TerraSAR-X			
12:30	Lunch Break (will be served in the Foyer St. Petersburg)						
14:00	Airborne multi-channel SAR/MTI	Experimental aspects of bistatic SAR/ISAR	SAR image exploitation	Rapid Mapping and operational monitoring exploiting the capabilities of the COSMO Skymed Constellation			
15:30	Coffee Break (will be served in the Foyer St. Petersburg)						
16:00	Space-based SAR/MTI techniques	Multistatic ISAR	Advanced image interpretation	Forest Mapping using SAR and SAR Processing in GIS workflows			
17:30	Discussion / End of Tutorial						

Tuesday, April 24, 2012					
Time	St. Petersburg	Shanghai	Seoul	Istanbul	Kiev
09:00	Welcome				
09:10	Keynotes				
10:00	Introduction to EUSAR 2012				
10:10	Coffee Break (will be served in the exhibition area)				
10:40		Session A.1: Digital Beamforming SAR (invited)	Session B.1: Urban Remote Sensing I (invited)	Session C.1: SAR/SAS/Sonography I (invited)	Session D.1: Calibration and Modelling
12:20	Lunch Break (will be served in the exhibition area)				
13:30		Session A.2: SAR Technology	Session B.2: Urban Remote Sensing II (invited)	Session C.2: SAR/SAS/Sonography II (invited)	Session D.2: Calibration and Verification
15:10	Coffee Break (will be served in the exhibition area)				
15:40		Session A.3: Next Generation SAR and Future Missions	Session B.3: Urban Remote Sensing III	Session C.3: Innovative Wave Forms, non-Classicals	Session D.3: Inverse and Circular SAR
17:15	Piano Recital by the BONUM Piano Duet				
18:45-22:00	Get Together (Bratwurst Röslein)				

Wednesday, April 25, 2012				
Time	Shanghai	Seoul	Istanbul	Kiev
08:30	Session A.4: TanDEM-X Mission Status (invited)	Session B.4: Multidimensional SAR Imaging Techniques (invited)	Session C.4: Implementation of Multi-modal SAR Technology in Agriculture, Forestry & Aqua- culture plus Natural Disaster Assessment in South, East & Pacific Asia	Session D.4: Target Detection via Image Analysis
10:10	Coffee Break (will be served in the exhibition area)			
10:40	Session A.5: TanDEM-X	Session B.5: SAR Tomography (invited)	Session C.5: Feature Extraction	Session D.5: Maritime, Sea Clutter
12:20	Lunch Break (will be served in the exhibition area)			
13:40	Session A.6: Sentinel-1 ESA's New European Radar Observatory (invited)	Session B.6: Interferometry, Repeatpath SAR, SAR Tomography I	Session C.6: Classification	Session D.6: STAP, SAR-MTI
15:20	Coffee Break (will be served in the exhibition area)			
15:50	Session A.7: Airborne and UAV-SAR	Session B.7: Interferometry, Repeatpath SAR, SAR Tomography II	Session C.7: Near Field SAR for Security and Non-Destructive Testing (invited)	Session D.7: SAR-MTI
18:00-22:00	Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks) (Foyer/level 2 and exhibition area)			

Thursday, April 26, 2012		Shanghai	Seoul	Istanbul	Kiev
Time	08:30	Session A.8: Compressive Sensing and Sparse Signal Reconstruction in Radar I (invited)	Session B.8: D-InSAR, Persistent Scatterers	Session C.8: Bi-/Multistatic SAR / ISAR (invited)	Session D.8: Subsurface Radar (invited)
	10:10	Coffee Break (will be served in the exhibition area)			
	10:40	Session A.9: Compressive Sensing and Sparse Signal Reconstruction in Radar II (invited)	Session B.9: Polarimetric SAR I	Session C.9: Passive Radar Imaging (invited)	Session D.9: Remote Sensing and Application
	12:20	Lunch Break (will be served in the exhibition area)			
	13:40	Session A.10: SAR Processing	Session B.10: Polarimetric SAR II	Session C.10: Bistatic and Multistatic SAR	Session D.10: Image Processing
	15:20	Awards Presentation and Closing Remarks			

Tutorials

Room: Krakau

Level 2

Tutorial 1:

Advanced multidimensional SAR and MTI techniques

Introduction into SAR Interferometry and Tomography:

SAR interferometry has become a universal tool for many earth observation applications like DEM generation, deformation and subsidence measurements, and assessment of volcanic and tectonic activities.

This tutorial gives an introduction to the classical InSAR technique for DEM generation as well as to more advanced new developments, like PSI and SAR tomography. These new methods enable exciting measurements of building shapes and their deformation or subsidence with accuracies down to 1mm/year.

Multidimensional SAR Imaging:

Due to the capability to provide direct physical measurements, interferometry is the technique that has most pushed the applications of SAR to a wide range of scientific areas and has provided returns for our society in terms of support to risk monitoring and security. Repeat pass differential interferometry and its evolution to Persistent Scatterers Interferometry (PSI), which allows accurate localization of ground targets and the monitoring of possible displacements to a mm/yr order, has been the breakthrough for the application of SAR in the risk monitoring. The result of this successful story is an increasing number of spaceborne SAR systems with interferometric capabilities which are made available by several space agencies.

Multipass/multiview SAR data are today accessible for most of the Earth by means of acquisitions carried out over repeated orbits. Such data call for the development of new processing techniques that improves the existing technology in terms of accuracy and objectiveness of the measurements: the extension of the interferometric concept to the multidimensional imaging, i.e., 3D and 4D (space-velocity) imaging, is an example along this line.

Airborne multi-channel SAR/MTI:

Classical airborne synthetic aperture radar fails to recognize moving targets in the basic mode. The lecture starts with the analysis of the effect on a SAR image due to target motions. Effective MTI can only be obtained by multi-channel SAR (MSAR) systems or MIMO configurations. The tutorial will address first classical techniques as Along-track interferometry (ATI) or displaced-phase-center antenna (DPCA) techniques which are using two subapertures arranged in flight direction. It is shown

that these methods have a relatively good performance for the detection of moving targets, but only poor behaviour concerning the positioning.

By employing a multi-channel SAR with at least three phase centers allows to apply array processing techniques like space-time-adaptive processing (STAP) for ground moving target indication (GMTI) or electronic counter-counter-measures (ECCM) and interferometric SAR (IfSAR). STAP will be explained in the context of moving target indication for a SAR system. A comparison of the Cramèr Rao Lower bound with one- and two-channel sensors shows the superiority of STAP applied to at least three channels.

Space-based SAR/MTI techniques:

The tutorial presents techniques for optimal moving target detection (MTI, Moving Target Indication) from a multi-aperture space-based SAR (SBR). It describes the geometry and signal model of moving targets and clutter as measured from a multi-aperture SBR and discusses the challenges and advantages unique to an SBR when compared with an airborne system. Several multi-channel signal processing methods are introduced to reduce the clutter and to maximize the moving target signal. This will be followed by a discussion on methods to estimate the target along- and across-track velocities using various methods including Along-Track Interferometry (ATI) and maximum likelihood estimation. An introduction to Constant False Alarm Rate (CFAR) detection is then presented. The CFAR material will cover statistical models for homogeneous and heterogeneous clutter and various types of moving targets. Given time, the tutorial will introduce performance prediction metrics including the probability of detection and the Cramèr-Rao lower bound on estimation.

Schedule Tutorial 1:

09:00 Introduction into SAR Interferometry and Tomography

Richard Bamler (DLR, DE)

10:30 Coffee Break

11:00 Multidimensional SAR imaging

Gianfranco Fornaro (IREA, IT)

12:30 Lunch

14:00 Airborne multi-channel SAR/MTI

Joachim Ender (Fraunhofer-FHR, Wachtberg, DE)

15:30 Coffee Break

16:00 Space-based SAR/MTI techniques

Delphine Cerutti-Maori (Fraunhofer-FHR, Wachtberg, DE)
Ishuwa Sikaneta (DRDC, Ottawa, CA)

17:30 Discussion / End of Tutorial

Room: Prag

Level 2

Tutorial 2:

Bi-/multistatic SAR

Introduction into distributed SAR/ISAR:

Distributed SAR and ISAR techniques are emerging as the new frontier of the radar imaging, with multiple benefits:

- boost the potentialities to investigate the characteristics of the imaged scenes, exploiting the multiple observation angles,
- allow exploiting already available signals of opportunity, by means of passive SAR and ISAR, able to provide radar images in covert operational mode (without transmitting e.m. radiations) and with possibly compact, lightweight platform only required to host a receiving sensor.
- provide an increase of the imaging capability in terms of geometric characteristics (resolution, swath, ...) using multiple receiving platforms (single input multiple output –SIMO) or jointly multiple transmit and multiple receive platforms (multiple input multiple output MIMO) configurations,
- allow designing reconfigurable constellations of platforms able to provide different imaging quality characteristics, as a function of the specific requirements, or provide interferometric capability, as well as moving target detection capability.

This tutorial gives an introduction to the distributed SAR and inverse SAR systems and get insight into the above benefits, showing advantages, required configurations and parameters, and examples of application with reference to different case studies with both simulated and real data sets.

Image formation algorithms:

This tutorial provides an analysis of the information base in a bistatic SAR system, and its manipulation for imaging. The role of the coherent bistatic radar amplitude pattern of a target in its bistatic SAR signature is discussed. Three classes of bistatic SAR imaging algorithms for a platform that moves with an arbitrary constant velocity in the three-dimensional spatial domain are examined. One is based on motion compensation of the bistatic SAR data to the scene center, and spatial frequency assignment of the resultant; this is known as bistatic polar format processing (PFP). The second class of imaging methods relies on a slow-time Fourier (Doppler) analysis of the bistatic SAR data via decomposition of propagating waves; this class is referred to as the bistatic wavefront reconstruction. The third imaging algorithm utilizes the two-dimensional correlation processing of the bistatic SAR data in the fast-time and slow-time domains; this is known as the backprojection method. A discussion on the relative merits of these methods is provided.

Experimental Aspects of Bistatic SAR:

The spatial separation of the transmitter and the receiver in bistatic synthetic aperture radar (SAR) enables a variety of data acquisition geometries to achieve benefits like the increased information content of bistatic SAR data. A growing interest in bistatic SAR can be observed in the last decade, which leads to a number of innovative bistatic SAR experiments with remarkable outcomes.

The main objective of this tutorial is to give a comprehensive, up-to-date overview of bistatic SAR experiments which were conducted in the last decade by institutes from all over the world. After an introduction and a historical overview, different SAR configurations (e. g. airborne transmitter in combination with an airborne receiver; stationary transmitter or receiver which might be operated on a tower combined with a space- or airborne system; airborne receiver utilizing a satellite illuminator, etc.) and the specific challenges of bistatic SAR are discussed. The last decade's bistatic SAR experiments are then considered in detail.

Multistatic SAR:

This tutorial will aim at providing basics of bistatic and multistatic ISAR imaging. A brief introduction will discuss ISAR and Non-Cooperative Target Imaging (NCTI) with the aim of introducing basic ISAR concepts and notation. Motivations to use bistatic and multistatic rather than monostatic ISAR systems will be then discussed. Signal modeling for bistatic and multistatic ISAR imaging will be introduced together with the concept of Bistatically Equivalent Monostatic (BEM) configuration.

The BEM processor will be defined and its limitations when applied to bistatic ISAR configurations will be highlighted, also in the presence of dynamically changing bistatic angles and phase synchronization errors.

Multistatic configurations will be then defined and both SIMO and MIMO ISAR will be specifically considered as possible implementations.

Coherent and incoherent multistatic ISAR will also be defined and pros and cons discussed. The problem of optimal sensor positioning in monostatic and bistatic cases will also be addressed and solved. Finally, the Emulated Multistatic ISAR concept will be presented and results based on the use of real data will be shown that demonstrate its validity.

Schedule Tutorial 2:**09:00 Introduction into distributed SAR/ISAR**

*Pierfrancesco Lombardo (University of Roma, IT),
Debora Pastina (University of Roma, IT)*

10:30 Coffee Break

11:00 Image formation algorithms

Mehrdad Soumekh (University of New York, USA)

12:30 Lunch

14:00 Experimental aspects of bistatic SAR

*Ingo Walterscheid (Fraunhofer-FHR, Wachtberg, DE)
Thomas Espeter, ZESS (University of Siegen, DE)*

15:30 Coffee Break

16:00 Multistatic ISAR

Marco Martorella (University of Pisa, IT)

Room: Budapest

Level 2

Tutorial 3:

Polarimetry / Pol-InSAR Advanced Image Exploitation

SAR polarimetry:

Radar scattering is inherently a vector process. Polarimetric synthetic aperture radar systems measure the full vector nature of the scattered waves, capturing all the possible information in the scattering process. This additional information can be used to quantitatively understand the scattering processes that produced the observed return. While originally demonstrated in the 1980s and 1990s with airborne systems and on two missions on the Space Shuttle in 1994, the launch of modern polarimetric SAR systems such as PALSAR and TerraSAR-X has led to renewed interest in the analysis of polarimetric SAR data.

This tutorial examines the use of polarimetric SAR data in earth observations. It starts with a basic introduction to polarimetric SAR measurements, including acquisition modes (full and compact polarimetry) and calibration. It then examines the power of polarimetric SAR data analysis through advanced polarimetric concepts such as polarization signatures, eigenvalue decompositions, alpha angles and entropy. It builds on these concepts to discuss in detail polarimetric scattering decompositions to learn more about the observed scattering. Finally, we discuss the measurement of soil moisture for both bare and vegetated surfaces. All concepts are discussed and illustrated with actual polarimetric SAR data.

Polarimetric SAR Interferometry:

Polarimetric SAR Interferometry (Pol-InSAR) is new SAR remote sensing discipline with unique and powerful applications related to the vertical structure of natural and man-made volume scatterers. The coherent combination of single- or multi-baseline interferograms acquired at different polarisations provides sensitivity to the vertical distribution of scattering processes and allows their characterisation by using the associated (volume) interferometric coherences. Pol-InSAR is today a well established technique that promises a break-through in solving essential radar remote sensing problems. Indeed, structural parameters of volume scatterers in the biosphere and cryosphere such as vegetation height, structure, biomass, snow depth, and ice layering are today critical inputs for ecological process modeling and enable monitoring and understanding of eco-system change.

The tutorial offers an introduction to the basic concepts and ideas building the theoretical framework of introducing and exploring polarization diversity in interferometric measurements.

Physical interpretation, 3d modeling approaches, signal processing techniques and inversion models are introduced and discussed. The application of the introduced concepts is demonstrated and discussed by means of experimental results obtained in the frame of dedicated Pol-InSAR airborne campaigns. Emphasis is given on performance aspects arising from different temporal and geometrical acquisition implementations. The role and choice of spatial and temporal baselines, and system frequency with respect to scattering and terrain characteristics is investigated. Critical system and geometry parameters affecting the performance of Pol-InSAR configurations are established and discussed. Finally, the role and implementation of Pol-InSAR techniques in the frame of actual and future spaceborne SAR missions is reviewed, the potential and limitations arising are discussed.

SAR image exploitation:

New synthetic aperture radar (SAR) sensors on satellites like TerraSAR-X allow flexible mapping with a large coverage or a high resolution of about one meter. Leading-edge airborne SAR sensors provide spatial resolutions on the order of a decimetre. In such data, many features of urban objects can be identified, which were beyond the scope of radar remote sensing before. But, SAR images are often really difficult to be interpreted: the presence of speckle as well as of some distortion effects, like shadowing and layover, makes the analysis of this kind of image complex. The impact of high resolution SAR data on the analysis of urban scenes and typical SAR effects are discussed. Examples for the appearance of buildings and other man-made objects are given. The benefit of SAR-simulation is addressed and examples are shown. Finally, typical problems in SAR simulation are discussed.

Advanced image interpretation:

Synthetic aperture radar (SAR) has become a key remote sensing technique in the last decades because it works under nearly all weather conditions and is independent from natural illumination. These capabilities are excellent for the exploitation of time series. Incoherent and coherent change detection techniques can be applied because of the fact that SAR is a coherent measurement system allowing to detect changes in the order of the fraction of the wavelength (mm scale). One focus of the tutorial is on methods for object based change detection and change categorization. The exciting possibilities to use SAR data for an advances image interpretation are demonstrated and discussed. On the other hand SAR images are difficult to interpret for image analysts because of its imaging geometry, the long wavelength and the coherent imaging principle. A methods for a simple

feature extraction useful for an intuitive image interpretation based on physical properties of the data is introduced (CovAm-Coh-Analysis) and discussed. Seasonal changes of these features over nearly a year are discussed to get a deeper understanding of the nature of SAR images.

Schedule Tutorial 3:

09:00 SAR polarimetry

Jakob van Zyl (JPL/NASA, USA)

10:30 Coffee Break

11:00 Polarimetric SAR Interferometry

Kostas Papathanassiou (DLR, DE)

12:30 Lunch

14:00 SAR image exploitation

Uwe Stilla (TU Munich, DE)

15:30 Coffee Break

16:00 Advanced image interpretation

Karsten Schulz (Fraunhofer-ISOB, DE)

17:30 Discussion / End of Tutorial

Room: Riga

Level 2

Tutorial 4:

SAR Exploitation in an operational environment

Professional SAR Data Processing:

The use of Synthetic Aperture Radar (SAR) data has become increasingly popular in recent years, offering professionals in a wide array of industries a measurable, analytical approach to getting information about an area or object of interest. State-of-the-art methodology, applied to data acquired from recent SAR sensors, generate accurate and detailed products.

This tutorial gives an overview on the professional generation of SAR products from airborne and spaceborne SAR data. The following topics will be discussed:

- SAR basics, applications and the efficient generation of SAR data products
- Processing of SAR amplitude imagery from data import to classifications
- Generation of elevation models with Interferometry (InSAR)
- Displacement mapping with Differential Interferometry (DInSAR)
- Deduction of mm scale deformation velocities with Persistent Scatterers (PS)
- Monitoring of small deformations with Small Baseline Subset (SPAS) techniques

Operational Monitoring and SAR Applications with TerraSAR-X

Monitoring surface change in a qualitative and quantitative way plays an important role for many applications, such as the monitoring of critical infrastructure or for assessing damages and impacts following after natural disasters. With the radar satellite TerraSAR-X, high resolution images can be acquired reliably and independently of weather conditions and illumination for any area of interest on the globe. The repeat-pass images with nearly identical acquisition parameters allow for a direct comparison of the image as well as the exploitation of interferometric information. The latter is useful to derive a more complex and quantitative picture of surface changes and activities.

The tutorial presents typical applications of TerraSAR-X imagery with emphasis on Change Detection and interferometric Surface Movement Monitoring. Both services represent established operational activities which are applied synergistically to ground-based measurements and to the evaluation of optical remote sensing data.

Two types of change detection using repeat-pass SAR data can be distinguished:

- Amplitude change detection (ACD)
- Coherent change detection (CCD)

Amplitude Change Detection analyses the backscatter of two images, while the second method – Coherent Change Detection – makes use of the interferometric phase change which acts as a change indicator.

TerraSAR-X enables high resolution determination of surface movements, e.g. induced by engineering activities, mining or oil- and gas production. In order to achieve quantitative surface movement information with millimetre accuracy, we apply radar-interferometric evaluation of TerraSAR-X data stacks. In particular, we show examples which were produced with following techniques:

- Persistent Scatterer Interferometry (PSI)
- Small Baseline Interferometry (SBAS)

Rapid Mapping and operational monitoring exploiting the capabilities of the COSMO Skymed Constellation:

With the increased availability of operational satellite systems the mapping of the dynamic phenomena on the earth's surface getting increasingly in the focus of the application domain. Modern SAR Systems provide very high resolution data and exact positioning in an operational environment. Using the four satellite capacity of the Cosmo Skymed Constellation one gains a high repetition rate which allows on the one hand area extensive and dense mapping and on the other hand an interferometric monitoring potential with variable temporal baselines.

The COSMO-SkyMed Constellation is an Italian dual use program, financed mainly by the Italian Space Agency, the Ministry of Defence and the Ministry of Education. It consists of four satellites operated on variable orbit configurations to improve interferometric or imaging/mapping capabilities. Temporal baselines, essential for differential-interferometric applications, vary between 1 and 16 days while the unmatched revisit time, essential for monitoring and large area mapping, allows to acquire more than 4 images per day globally.

Each satellite is equipped with an X-Band SAR operating in standard Spotlight, Stripmap or ScanSAR modes and steerable over an incidence angle range of 20° to 59°. Positioning utilises on-board GPS-receivers that allow a precise localisation.

Given this setting the system is especially suitable for mapping and monitoring of:

- emergencies (floods, fires, earthquakes, volcanic eruptions and deformations, etc.),

- surface deformation and terrain displacement (DInSAR, PSInSAR, PSPInSAR, etc.),
- maritime- and coastal regions,
- agricultural- and forest resources.

The tutorial introduces the system and relevant data plus the appropriate processing approach. An overview of mapping and monitoring applications will illustrate the operational capabilities of recent SAR-systems. These capabilities will be discussed with actual results and realized services.

Forest Mapping using SAR and SAR Processing in GIS Workflows:

This tutorial examines the use of SAR data in Forest Mapping. It compares different sensor systems and it shows the results that can be achieved by using X-Band data for Forest Mapping using. The second tutorial shows how the SAR data can be easily used inside a GIS system to improve results of a workflow. This tutorial has the aim to demonstrate how the SAR data in particular workflows can be used and processed even from a user not expert in SAR data.

Schedule Tutorial 4:

9:00 Professional SAR Data Processing

Thomas Bahr (EXELIS Visual Information Solutions, DE)

10:30 Coffee Break

11:00 Operational Monitoring and SAR Applications with TerraSAR-X

Jan Anderssohn (Astrium GEO Information Services, DE)

12:30 Lunch

14:00 Rapid Mapping and operational monitoring exploiting the capabilities of the COSMO Skymed Constellation

Robert Siegmund (GAF, DE)

15:30 Coffee Break

16:00 Forest Mapping using SAR and SAR Processing in GIS workflows.

Alberto Meroni (EXELIS Visual Information Solutions, IT)

Room: St. Petersburg**Level 2****09:00 - Welcome**
09:10*Rudolf Zahn (CASSIDIAN, DE)***Room: St. Petersburg****Level 2****Keynotes****09:10 Overview of the KOMPSAT-5; the 1st SAR Satellite in Korea**

Sang-Ryool LEE
Korea Aerospace Research Institute (KARI), Executive Director of Satellite R&D Head Office

Abstract:

Korea Aerospace Research Institute (KARI) is developing the KOMPSAT-5 (the 5th KOREA Multi-Purpose SATellite) system and its primary payload will be the first Korea's spaceborne Synthetic Aperture Radar (SAR). The main mission objectives of the KOMPSAT-5 system are to provide the following applications (GOLDEN mission); Geographic Information System (GIS), Ocean management, Land management, Disaster monitoring, ENVIRONMENT monitoring. The KOMPSAT-5 satellite will be delivered to low Earth orbit for all-weather day-night monitoring of Korean peninsula. In this talk, the program overview, mission and system characteristics of the KOMPSAT-5 will be explained.

In addition, next SAR satellite plan in Korea will be presented with key requirements. Korean satellite development roadmap will also be included.

Room: St. Petersburg**Level 2****Keynotes****09:35 SAR Activities in Germany and Europe**

Roland Neppig
Technical Center for Information Technology and Electronics (WTD81)
Head of Section Sensors, Radar, IFF

Abstract:

After introducing the organization of the armaments' branch of the German MoD, an overview of SAR Research and Technology activities in Germany and Europe, especially with respect to military applications, will be given.

Firstly, some German national R&T programmes in the field of SAR will be presented, focusing on topics like high resolution, interferometry, on board processing, mmW radars, scalable multipurpose architecture, change detection, etc. Some selected results of these research activities will be shown.

Thereafter, the European Defence Agency will be introduced, describing its organisation and mission. Finally, some selected SAR R&T programmes running under the guidance of the EDA will be presented.

Room: St. Petersburg**Level 2****10:00 - Introduction to EUSAR 2012**
10:10*Matthias Weiß (Fraunhofer FHR, DE)***10:10 - 10:40 Coffee Break**

Room: Shanghai

Level 3

Session A.1: Digital Beamforming SAR (invited)

Chairs: Christian Fischer (EADS Astrium GmbH, DE),
Michael Ludwig (ESA/ESTEC, NL)

- 10:40 First results from an airborne Ka-band SAR using SweepSAR and digital beamforming**
Gregory Sadowy (Jet Propulsion Laboratory, USA);
Hirad Ghaemi (Jet Propulsion Laboratory, USA);
Scott Hensley (Jet Propulsion Laboratory, USA)
- 11:00 Interferometric Ka-band SAR with DBF capability**
Christoph H. Schaefer (EADS Astrium, DE); Paco
López-Dekker (German Aerospace Center (DLR), DE)
- 11:20 Digital Beamforming and MIMO SAR: Review and New Concepts**
Gerhard Krieger (DLR, DE); Marwan Younis (German
Aerospace Center (DLR), DE); Sigurd Huber (DLR, DE);
Federica Bordoni (German Aerospace Center (DLR),
DE); Anton Patyuchenko (German Aerospace Center
(DLR), DE); Junghyo Kim (German Aerospace Center
(DLR) & Karlsruhe Institute of Technology, DE); Piotr
Laskowski (DLR, DE); Michelangelo Villano (German
Aerospace Center (DLR), DE); Tobias Rommel (DLR,
DE); Paco López-Dekker (German Aerospace Center
(DLR), DE); Alberto Moreira (German Aerospace Center
- DLR, DE)
- 11:40 X-Band HRWS Demonstrator: Digital Beamforming Test Results**
Christian Fischer (EADS Astrium GmbH, DE); Christoph
Heer (Astrium GmbH, DE); Rolf Werninghaus (German
Aerospace Center (DLR), DE)
- 12:00 Application of Hybrid Active Array Fed Mirror Antenna for Multimode Spaceborne S-waveband SAR**
Leon B. Neronskiy (Joint-stock Company "Radio Engineering Corporation "VEGA", RU); Vladimir Verba (Joint-stock Company "Radio Engineering Corporation "VEGA", RU); Valentin Andrianov (JSC Radio Engineering Corporation VEGA, RU); Evgeny Babkov (Moscow Institute of Physics and Technology, RU); Victor Kurenkov (JSC Radio Engineering Corporation VEGA, RU); Vladimir Turuk (JSC Radio Engineering Corporation VEGA, RU)

12:20 - 13:30 Lunch

Room: Seoul

Level 3

Session B.1: Urban Remote Sensing I (invited)

Chairs: Uwe Stilla (Technische Universitaet Muenchen, DE),
Fabio Dell'Acqua (University of Pavia, IT)

- 10:40 The Urban Footprint Processor - Concept and Implementation of a Processing Chain within the TanDEM-X Mission**
Andreas Felbier (German Aerospace Center (DLR), DE);
Thomas Esch (DLR, DE); Achim Roth (DLR, DE); Wieke
Heldens (DLR, DE); Hannes Taubenböck (DLR, DE);
Maximilian Schwinger (DLR, DE); Martin Huber (German
Aerospace Center (DLR), DE); Andreas Müller (DLR,
DE); Stefan Dech (DLR, DE)
- 11:00 GIS-driven Iterative Filtering Approach for Building Height Estimation from InSAR Data**
Antje Thiele (Fraunhofer IOSB & Karlsruhe Institute of
Technology (KIT), DE); Clémence Dubois (Karlsruhe In-
stitute of Technology (KIT), DE); Erich Cadario (Fraun-
hofer IOSB, DE); Stefan Hinz (Karlsruhe Institute of
Technology, DE)
- 11:20 The Potential of Commercial Satellite SAR Images for Revealing Pattern of Life**
Dan Johan Weydahl (Norwegian Defence Research
Establishment (FFI), NO)
- 11:40 Statistics on High Resolution urban polarimetric images: application to segmentation and classification**
Nicolas Trouvé (ONERA, FR); Maxime Sangnier
(ONERA, FR); Elise Colin Koeniguer (ONERA, FR)
- 12:00 Layover Separation in Airborne Single Pass Multi-baseline InSAR Data Based on Compressive Sensing**
Michael Schmitt (Technische Universitaet Muenchen
(TUM), DE); Uwe Stilla (Technische Universitaet
Muenchen, DE)

12:20 - 13:30 Lunch

Room: Istanbul**Level 2****Session C.1: SAR/SAS/Sonography I (invited)**

Chairs: Joergen Arendt Jensen (Technical University of Denmark, DK), Matthias Weiß (Fraunhofer FHR, DE)

10:40 Synthetic Aperture Sequential Beamformation applied to medical imaging

Martin Christian Hemmsen (Technical University of Denmark, DK); Jens Munk Hansen (Technical University of Denmark, DK); Joergen Arendt Jensen (Technical University of Denmark, DK)

11:00 High Frequency Ultrasonic Imaging based on a combination of synthetic aperture focusing and limited angle compounding: small animals imaging results

Joern Opretzka (Ruhr-University Bochum, DE); Michael Vogt (Ruhr-University Bochum & High Frequency Engineering Research Group, DE); Simone Maschauer (University Hospital Erlangen, DE); Olaf Prante (University Hospital Erlangen, DE); Dr Helmut Ermert (Ruhr-University Bochum, DE)

11:20 Imaging blood's velocity using synthetic aperture ultrasound

Joergen Arendt Jensen (Technical University of Denmark, DK); Ye Li (Technical University of Denmark, DK)

11:40 Iterative Reconstruction in Computed Tomography

Thomas Flohr (Siemens, DE)

12:00 Synthetic aperture composite focusing for high framerate medical ultrasound imaging

Andreas Austeng (University of Oslo, NO); Sverre Holm (University of Oslo, NO)

12:20 - 13:30 Lunch

Room: Kiev**Level 2****Session D.1: Calibration and Modelling**

Chairs: Marco Martorella (University of Pisa, IT), Jens Fischer (German Aerospace Center (DLR), DE)

10:40 Linking Reference Target Properties to Its Perceived RCS in SAR Images

Björn J. Döring (German Aerospace Center (DLR), DE); Philipp Looser (German Aerospace Center (DLR), DE); Matthias Jirousek (DLR German Aerospace Center, DE); Marco Schwerdt (German Aerospace Center (DLR), DE)

11:00 A new approach for Atmospheric Phase Screen Compensation in Ground-Based SAR over areas with steep topography

Xavier Fabregas (Universitat Politècnica de Catalunya (Technical University of Catalonia), ES); Rubén Iglesias (Universitat Politècnica de Catalunya, ES); Albert Aguiasca (Universitat Politècnica de Catalunya (UPC), ES)

11:20 Recovering Time and Space Varying Phase Screens through SAR Multi-Squint Differential Interferometry

Stefano Tebaldini (Politecnico di Milano, IT); Andrea Monti Guarnieri (Politecnico di Milano, IT); Fabio Rocca (Politecnico di Milano, IT)

11:40 Accurate Consideration of Sensor Parameters in the Calibration and Focusing of F-SAR Data

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

12:00 SAR Raw Radar Simulator combining optical geometry and full-wave electromagnetic approaches

Krzysztof S. Kulpa (Warsaw University of Technology, PL); Piotr Samczynski (Warsaw University of Technology, PL); Mateusz Malanowski (Warsaw University of Technology, PL); Wojciech Gwarek (Warsaw University of Technology, PL); Bartłomiej Salski (QWED Sp. z o. o., PL); Grzegorz Tański (MindBerries, PL)

12:20 - 13:30 Lunch

Room: Shanghai

Level 3

Session A.2: SAR Technology

Chairs: Martin Suess (ESA/ESTEC, NL), Stefan V. Baumgartner (German Aerospace Center (DLR), DE)

- 13:30 A flexible hardware architecture for real-time airborne Wavenumber Domain SAR processing**
 Martin Pfitzner (Leibniz University Hannover, DE); Fabian Cholewa (Leibniz University Hannover, DE); Peter Pirsch (Leibniz University Hannover, DE); Holger Blume (Leibniz University Hannover, DE)
- 13:50 Verification of the GMES Sentinel-1 Antenna Model**
 Alexander Hees (EADS Astrium GmbH, DE); Bernhard Grafmueller (EADS Astrium GmbH, DE); Peter Koch (EADS Astrium GmbH, DE); Markus Huchler (EADS Astrium, DE); Renato Croci (Thales Alenia Space Italia, IT); Allan Østergaard (European Space Agency, NL)
- 14:10 New Technologies for CoReH2O Mission**
 Florence Hélière (European Space Agency ESTEC, NL); Chung-Chi Lin (European Space Agency/ESTEC, NL); Franco Fois (ESA/ESTEC, NL); Nicolas Gebert (European Space Agency & ESTEC, NL); Arnaud Lécuyot (ESA, NL); Kees Van't Klooster (European Space Agency, NL); Marinella Aloisio (European Space Agency (ESTEC), NL); Michael Kern (ESA, NL); Dirk Schüttemeyer (ESA/ESTEC, NL); Bjorn Rommen (Estec & European Space Agency, NL); Malcolm Davidson (ESA/ESTEC, NL)
- 14:30 Hardware Realization of a 2m x 1m Fully Electronic Real-Time mm-Wave Imaging System**
 Andreas Schiessl (Rohde & Schwarz, DE); Andreas Genghammer (Rohde & Schwarz, DE); Sherif Sayed Ahmed (Rohde & Schwarz GmbH & Co. KG, DE); Lorenz-Peter Schmidt (University of Erlangen-Nuremberg, DE)
- 14:50 Design of a Compact, Modular, Multi-Frequency Band, Multi-Mode, Multi-Channel Synthetic Aperture Radar**
 Matthew Edwards (ARTEMIS, Inc., USA); Evan C. Zaugg (ARTEMIS, Inc., USA)

15:10 - 15:40 Coffee Break

Room: Seoul

Level 3

Session B.2: Urban Remote Sensing II (invited)

Chairs: Fabio Dell'Acqua (University of Pavia, IT), Uwe Stilla (Technische Universität München, DE)

- 13:30 Urban seismic damage assessment from post-event only SAR: preliminary tests on Envisat ASAR data**
 Roberto Cossu (European Space Agency, ?); Fabio Dell'Acqua (University of Pavia, IT); Diego Aldo Polli (University of Pavia, IT); Giovanni Rogolino (University of Pavia, IT)
- 13:50 A new phase unwrapping processing chain for 3D reconstruction of urban areas**
 Aymen Shabou (Telecom ParisTech, FR); Florence Tupin (Télécom Paris, FR); Giampaolo Ferraioli (University of Naples Parthenope, IT); Fabio Baselice (Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), IT)
- 14:10 SAR Interferometry for Atmospheric Modeling and Risk Assessment in Urban Environment**
 Andreas Tack (Finnish Meteorological Institute, FI); Jaan Praks (Aalto University, FI); Pauli Sievinen (Aalto University, FI); Antti Hellsten (Finnish Meteorological Institute, FI)
- 14:30 Geometry-Based SAR Curvilinear Feature Selection for Damage Detection**
 Peter TB Brett (University of Surrey, UK); Raffaella Guida (University of Surrey, UK)
- 14:50 A new approach for three-dimensional building extraction in high-resolution monoscopic SAR imagery**
 Edouard Barthelet (Telecom Bretagne & Thales Communications & Security, FR); Grégoire Mercier (TELECOM Bretagne, FR); Léonard Denise (Thales Communications & Security, FR); Sébastien Reynaud (Thales Communications & Security, FR)

15:10 - 15:40 Coffee Break

Room: Istanbul

Level 2

Session C.2: SAR/SAS/Sonography II (invited)

Chairs: Roy E Hansen (Norwegian Defence Research Establishment (FFI) & Centre for Imaging, University of Oslo, NO), Matthias Weiß (Fraunhofer FHR, DE)

- 13:30 A correlation-based autofocus algorithm for coherent circular synthetic aperture sonar**
Timothy Marston (Naval Surface Warfare Center - Panama City Division, USA)
- 13:50 Wideband Interferometry in Synthetic Aperture Sonar**
Torstein O Sæbø (Norwegian Defence Research Establishment (FFI), NO); Stig Synnes (Norwegian Defence Research Establishment (FFI), NO); Roy E Hansen (Norwegian Defence Research Establishment (FFI) & Centre for Imaging, University of Oslo, NO)
- 14:10 Synthetic aperture sonar array gain measured at sea**
Johannes Groen (NATO Undersea Research Centre, IT); Michel Couillard (NATO Undersea Research Centre, IT); Warren Fox (NURC, USA)
- 14:30 Motion estimation for Synthetic Aperture Sonars**
Holger Schmaljohann (WTD 71, DE); Johannes Groen (NATO Undersea Research Centre, IT)
- 14:50 Interferometric Synthetic Aperture Sonar with an Autonomous Vehicle for 3D imaging of the seafloor**
Benoit Quesson (TNO, NL); Johannes Groen (NATO Undersea Research Centre, IT)

15:10 - 15:40 Coffee Break

Room: Kiev

Level 2

Session D.2: Calibration and Verification

Chairs: Wolfgang Holpp (Cassidian, DE), Marco Schwerdt (German Aerospace Center (DLR), DE)

- 13:30 An Approach to High-Resolution SAR-GMTI Processing and Performance Analysis**
Zhang Yun (Harbin Institute of Technology, CN)
- 13:50 Calibration of the TerraSAR-X and the TanDEM-X Satellite for the TerraSAR-X Mission**
Marco Schwerdt (German Aerospace Center (DLR), DE); Dirk Schrank (German Aerospace Center, DE); Markus Bachmann (German Aerospace Center (DLR), DE); Jaime Hueso Gonzalez (DLR - German Aerospace Center, DE); Björn J. Döring (German Aerospace Center (DLR), DE); Nuria Tous-Ramon (German Aerospace Center (DLR), DE); John Walter Antony (German Aerospace Center (DLR), DE)
- 14:10 Compensation of Analog Imperfections In a Ka-Band FMCW SAR**
Emilie Avignon-Meseldzija (Supélec, FR); Wei Xian Liu (Nanyang Technological University, Singapore); Hongchuan Feng (Temasek Laboratories, Nanyang Technological University, Singapore); Sylvain Azarian (Supélec, FR); Marc Lesturgie (Supélec, FR); Yilong Lu (Nanyang Technological University, Singapore)
- 14:30 Ionosphere Scintillation Effects on Synthetic Aperture Radars**
Yannick Béniguel (IEEEA, FR)
- 14:50 Linearity Measurements of an Accurate Transponder for Calibrating Future Spaceborne SAR Systems**
Matthias Jirousek (DLR German Aerospace Center, DE); Björn J. Döring (German Aerospace Center (DLR), DE); Philipp Looser (German Aerospace Center (DLR), DE); Marco Schwerdt (German Aerospace Center (DLR), DE)

15:10 - 15:40 Coffee Break

Room: Shanghai

Level 3

Session A.3: Next Generation SAR and Future Missions

Chairs: Pierfrancesco Lombardo (University Roma La Sapienza, IT), Diane Evans (JPL, USA)

- 15:40 Optimized SAR Satellite Concepts for the Future Space Infrastructure of GMES**
Reinhard Schröder (OHB System AG, DE); Gerd Hofschuster (OHB System AG & Security Satellite Systems - Head Security, DE); Michele Bonerba (OHB-System, DE)
- 16:00 Validation of S-band data performance for future spaceborne SAR missions**
Antonio Natale (Università di Napoli Federico II, IT); Raffaella Guida (University of Surrey, UK); Rachel Bird (SSTL, UK); Philip Whittaker (SSTL, UK); David Hall (EADS Astrium, UK); Martin Cohen (EADS Astrium, UK)
- 16:20 Atmospheric Phase Screen Retrieval from GEOSAR Long Term Acquisition**
Josep Ruiz Rodon (Universitat Politècnica de Catalunya, ES); Antoni Broquetas (Universitat Politècnica de Catalunya, ES); Andrea Monti Guarnieri (Politecnico di Milano, IT); Fabio Rocca (Politecnico di Milano, IT)
- 16:40 Characterization and Correction of Residual RFI Signatures in Operationally Processed ALOS PALSAR Imagery**
Franz J Meyer (University of Alaska Fairbanks, USA); Jeremy Nicoll (Alaska Satellite Facility, USA); Anthony P. Doulgeris (University of Tromsø, NO)

17:15 - 18:00 Piano Recital by the BONUM Piano Duet
(Room: St. Petersburg)

18:45 - 22:00 Get Together (Bratwurst Röslein)

Room: Seoul

Level 3

Session B.3: Urban Remote Sensing III

Chairs: Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, CN), Achim Roth (DLR, DE)

- 15:40 Urban Change Detection for High-Resolution Fully Polarimetric SAR Using a Modified Heterogeneous Clutter Model**
Meng Liu (Centre for Earth Observation and Digital Earth, Chinese Academy of Sciences & Graduate University of the Chinese Academy of Sciences, CN); Hong Zhang (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, CN); Chao Wang (CEODE, Chinese Academy of Sciences, CN); Zili Shan (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, CN)
- 16:00 SAR Simulation for Urban Scene Analysis**
Horst Hammer (Fraunhofer, DE); Karsten Schulz (FGAN-FOM, DE)
- 16:20 Detecting changes between a DSM and a high resolution SAR image with the support of simulation based separation of urban scenes**
Junyi Tao (German Aerospace Center (DLR), DE); Stefan Auer (Technische Universität München, DE); Peter Reinartz (German Aerospace Center (DLR), DE)
- 16:40 Determination of mechanisms that can occur in NLOS urban canyon**
Mokadem Azza (Sondra & Supelec, FR); Laetitia Thirion (SONDRA, FR); Elise Colin Koeniguer (ONERA, FR); Florence Tupin (Télécom Paris, FR)

17:15 - 18:00 Piano Recital by the BONUM Piano Duet
(Room: St. Petersburg)

18:45 - 22:00 Get Together (Bratwurst Röslein)

Room: Istanbul**Level 2****Session C.3: Innovative Wave Forms, non-Classicals**

Chairs: Werner Wiesbeck (Karlsruhe Institute of Technology, DE), Christoph Heer (Astrium GmbH, DE)

- 15:40 Orthogonal Waveform Experiments with a Highly Digitized Radar**
Gabriel Castellanos Alfonso (German Aerospace Center (DLR), DE); Matthias Jirousek (DLR German Aerospace Center, DE); Markus Peichl (German Aerospace Center (DLR), DE)
- 16:00 SAR Imagery Improvement Using Hybrid Waveforms**
Omar El-Tayeby (Alexandria University, EG); Hassan El Kamchouchi (Alexandria University, EG)
- 16:20 Noise Waveform SAR for 2D and 3D Imaging**
Konstantin Alexandrovich Lukin (IRE NASU National Academy of Sciences of Ukraine, UA); Pavlo Vyplavin (IRE NASU National Academy of Sciences of Ukraine, UA); Volodymyr Kudriashov (IRE NASU National Academy of Sciences of Ukraine, UA); Vladymir Palamarchuk (IRE NASU National Academy of Sciences of Ukraine, UA); Sergey Yarovoy (IRE NASU National Academy of Sciences of Ukraine, UA)
- 16:40 Range Ambiguity Suppression in an OFDM SAR Configuration**
Vishal Riché (University of Rennes 1 & Institut d'Electronique et de Télécommunication de Rennes, FR); Stéphane Méric (Institut of Electronic and Telecommunications of Rennes, FR); Eric Pottier (University of Rennes, FR)

17:15 - 18:00 Piano Recital by the BONUM Piano Duet (Room: St. Petersburg)

18:45 - 22:00 Get Together (Bratwurst Röslein)

Room: Kiev**Level 2****Session D.3: Inverse and Circular SAR**

Chairs: Hubert M.J. Cantalloube (ONERA, FR), Jens Rosebrock (Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, DE)

- 15:40 ISAR Imaging of Ground Moving Vehicles Using Large Instantaneous Bandwidth**
Patrick Berens (Fraunhofer FHR, DE); Ulrich Gebhardt (Fraunhofer FHR, DE)
- 16:00 A Method of 3-D Image Reconstruction of Target Based on ISAR Image Sequences**
Fulin Su (Harbin Institute of Technology, CN); Jing Lu (Harbin Institute of Technology, CN); Yuan Su (Harbin Institute of Technology, CN)
- 16:20 Non-Cooperative Maritime Target Imaging with an FMCW SAR System**
Marco Martorella (University of Pisa, IT); Elisa Giusti (University of Pisa, IT); Alessio Bacci (University of Pisa, IT); Adriano Meta (MetaSensing, NL); Fabrizio Berizzi (University of Pisa, IT)
- 16:40 Centerline slope-based approach for rotational motion estimation of ship targets for ISAR**
Anna Fontana (Fraunhofer Institut- FHR/ARB, DE); Patrick Berens (Fraunhofer FHR, DE)

17:15 - 18:00 Piano Recital by the BONUM Piano Duet (Room: St. Petersburg)

18:45 - 22:00 Get Together (Bratwurst Röslein)

Room: Shanghai

Level 3

Session A.4: TanDEM-X Mission Status (invited)

Chairs: Manfred Zink (DLR, DE); Birgit Schättler (German Aerospace Center (DLR), DE)

08:30 TanDEM-X Mission Status

Manfred Zink (DLR, DE); Michael Bartusch (German Aerospace Center (DLR), DE); Dieter Ulrich (Astrium GmbH, DE)

08:50 Interferometric Performance of TanDEM-X Global DEM Acquisitions

Benjamin Bräutigam (German Aerospace Center (DLR), DE); Michele Martone (German Aerospace Center - Microwave and Radar Institute, DE); Paola Rizzoli (German Aerospace Center (DLR), DE); Markus Bachmann (German Aerospace Center (DLR), DE); Gerhard Krieger (DLR, DE)

09:10 Bistatic and Interferometric Processing of TanDEM-X Data

Helko Breit (DLR, DE); Marie Lachaise (DLR - German Aerospace Center, DE); Ulrich Bals (German Aerospace Center (DLR) & Technical University Munich, DE); Cristian Rossi (DLR, DE); Thomas Fritz (DLR, DE); Andreas Niedermeier (German Aerospace Center, DE)

09:30 Calibration of the Bistatic TanDEM-X Interferometer

Markus Bachmann (German Aerospace Center (DLR), DE); Jaime Hueso Gonzalez (DLR - German Aerospace Center, DE); Gerhard Krieger (DLR, DE); Marco Schwerdt (German Aerospace Center (DLR), DE); John Walter Antony (German Aerospace Center (DLR), DE); Francesco De Zan (German Aerospace Center (DLR), DE)

09:50 Quality assessment of first TanDEM-X DEMs for different terrain types

Astrid Gruber (German Aerospace Center (DLR), DE); Birgit Wessel (German Aerospace Center (DLR), DE); Martin Huber (German Aerospace Center (DLR), DE); Markus Breunig (German Aerospace Center (DLR), DE); Susanne Wagenbrenner (German Aerospace Center (DLR), DE); Achim Roth (DLR, DE)

10:10 - 10:40 Coffee Break

Room: Seoul

Level 3

Session B.4:

Multidimensional SAR Imaging Techniques (invited)

Chairs: Fabrizio Lombardini (University of Pisa, IT), Andreas Reigber (German Aerospace Center (DLR), DE)

08:30 Comparison of different polarimetric tomographic estimation techniques with respect to LiDAR measurements for the 3-D characterization of buildings using intermediate resolution L-band SAR data sets

Yue Huang (University of Rennes, FR); Laurent Ferro-Famil (University of Rennes 1, FR)

08:50 Multi-Baseline UAVSAR Repeat Pass Data of the Harvard Forest

Scott Hensley (Jet Propulsion Laboratory, USA); Fabrizio Lombardini (University of Pisa, IT); Thierry Michel (JPL, USA); Maxim Neumann (Jet Propulsion Laboratory, USA); Marco Lavelle (Jet Propulsion Laboratory, California Institute of Technology, USA); Razi Ahmed (University of Massachusetts, USA); Ronald Muellerschoen (Jet Propulsion Laboratory, USA); Bruce Chapman (Jet Propulsion Laboratory, USA); Shadi Oveisgharan (Jet Propulsion Laboratory, USA); Cathleen Jones (JPL, USA); Paul Siqueira (University of Massachusetts, USA)

09:10 Multibaseline 3-D Circular SAR Imaging at L-Band

Octavio Ponce (German Aerospace Center (DLR), DE); Pau Prats (German Aerospace Center (DLR), DE); Rolf Scheiber (German Aerospace Center (DLR), DE); Andreas Reigber (German Aerospace Center (DLR), DE); Alberto Moreira (German Aerospace Center - DLR, DE)

09:30 Persistent Scatterers Detection by Multipass SAR Interferometric Data

Alessandra Budillon (University of Naples Parthenope, IT); Vito Pascazio (Università di Napoli Parthenope, IT); Gilda Schirinzi (Università di Napoli Parthenope, IT); Manlio Tesauro (Università della Basilicata, IT)

09:50 Forest Diff-Tomo Functionalities: Tests of Robust Tomography and Separation of Dynamic Processes

Fabrizio Lombardini (University of Pisa, IT); Francesco Cai (University of Pisa, IT)

10:10 - 10:40 Coffee Break

Room: Istanbul

Level 2

Session C.4:

Implementation of Multi-modal SAR Technology in Agriculture, Forestry & Aquaculture plus Natural Disaster Assessment in South, East & Pacific Asia

Chairs: Wolfgang Boerner (UIC Chicago, USA), Josaphat Tetuko Sri Sumantyo (Center for Environmental Remote Sensing, Chiba University, JP)

- 08:30 Polarimetric SAR Analysis of Tsunami Damage Following the March 11th East Japan Earthquake**
Motoyuki Sato (Tohoku University, JP); Si-Wei Chen (Tohoku University, JP)
- 08:50 Implementation of FULL-POL-SAR in Agriculture, forestry and aquaculture as well as for the detection of natural hazards and natural disaster assessment from air and space for South, East and Pacific Asia**
Wolfgang Boerner (UIC Chicago, USA)
- 09:10 Development of a Miniaturized C-band UAVSAR**
Voon Chet Koo (Multimedia University, MY); Josaphat Tetuko Sri Sumantyo (Center for Environmental Remote Sensing, Chiba University, JP)
- 09:30 A Critical Evaluation of Adaptive Polarimetric Scattering Decomposition Algorithms**
Jakob van Zyl (Jet Propulsion Laboratory, USA); Moto-fumi Arii (MELCO, JP)
- 09:50 Development of Circularly Polarized Synthetic Aperture Radar onboard UAV for Earth Diagnosis**
Josaphat Tetuko Sri Sumantyo (Center for Environmental Remote Sensing, Chiba University, JP); Voon Chet Koo (Multimedia University, MY)

10:10 - 10:40 Coffee Break

Room: Kiev

Level 2

Session D.4: Target Detection via Image Analysis

Chairs: Ishuwa C. Sikaneta (DRDC Ottawa, CA), Karsten Schulz (Fraunhofer IOSB, DE)

- 08:30 Mining Very High Resolution Complex-valued SAR images using The Fractional Fourier Transform**
Jagmal Singh (German Aerospace Center, DE); Mihai Datcu (German Aerospace Center, DE)
- 08:50 An Experimental Study on Oil Spill Characterization by Multi-Polarization SAR**
Stine Skrunes (University of Tromsø, NO); Camilla Brekke (University of Tromsø, NO); Torbjørn Eltoft (University of Tromsø, NO)
- 09:10 Analysis of parked vehicles on very high resolution interferometric images**
Helene Oriot (ONERA, FR); Colette Coulombeix (ONERA, FR); Olivier Ruault du Plessis (ONERA, FR)
- 09:30 Representation of stationary vehicles in ultra-high resolution SAR and turntable ISAR images**
Andreas R. Brenner (Fraunhofer FHR, DE); Helmut Essen (Fraunhofer FHR, DE); Uwe Stilla (Technische Universitaet Muenchen, DE)
- 09:50 Feature Preserving SAR Despeckling and its Parallel Implementation with Application to Railway Detection**
Osman Erman Okman (SDT Space and Defence Technologies Inc., TR); Fatih Nar (SDT Space and Defence Technologies Inc., TR); Can Demirkesen (SDT Space and Defence Technologies Inc., TR); Müjdat Çetin (Sabanci University, TR)

10:10 - 10:40 Coffee Break

Room: Shanghai

Level 3

Session A.5: TanDEM-X

Chairs: Dirk Geudtner (European Space Agency, NL), Michael Eineder (German Aerospace Center (DLR), DE)

10:40 Non-nominal Experimental Bistatic SAR Acquisitions with TanDEM-X

Marc Rodriguez-Cassola (DLR, DE); Pau Prats (German Aerospace Center (DLR), DE); Daniel Schulze (German Aerospace Center (DLR) & High Frequency and Radar Institute, DE); Ulrich Steinbrecher (DLR, DE); Nuria Tous-Ramon (German Aerospace Center (DLR), DE); Marwan Younis (German Aerospace Center (DLR), DE); Paco López-Dekker (German Aerospace Center (DLR), DE); Manfred Zink (DLR, DE); Andreas Reigber (German Aerospace Center (DLR), DE); Alberto Moreira (German Aerospace Center - DLR, DE); Gerhard Krieger (DLR, DE)

11:00 TanDEM-X Experiments in Pursuit Monostatic Configuration

Pau Prats (German Aerospace Center (DLR), DE); Rolf Scheiber (German Aerospace Center (DLR), DE); Josef Hermann Martin Mittermayer (German Aerospace Center (DLR), DE)

11:20 Long Term System Monitoring Status of the TerraSAR-X and the TanDEM-X Satellites

Nuria Tous-Ramon (German Aerospace Center (DLR), DE); Dirk Schrank (German Aerospace Center, DE); Markus Bachmann (German Aerospace Center (DLR), DE); Gabriel Castellanos Alfonzo (German Aerospace Center (DLR), DE); Donata Polimeni (DLR, DE); Johannes Böer (DLR, DE); Marco Schwerdt (German Aerospace Center (DLR), DE)

11:40 First Evaluation Results of the Water Indication Mask as a By-product of the TanDEM-X DEM

Anna Wendleder (German Aerospace Center (DLR), DE); Markus Breunig (German Aerospace Center (DLR), DE); Birgit Wessel (German Aerospace Center (DLR), DE); Astrid Gruber (German Aerospace Center (DLR), DE); Achim Roth (DLR, DE)

12:00 System Commanding and Performance of TanDEM-X Scientific Modes

Jose Luis Bueso Bello (German Aerospace Center, DE); Christo Grigorov (Microwaves and Radar Institute & German Aerospace Center, DE); Ulrich Steinbrecher (DLR, DE); Thomas Kraus (German Aerospace Center (DLR), DE); Carolina González (German Aerospace Center (DLR), DE); Daniel Schulze (German Aerospace Center (DLR) & High Frequency and Radar Institute, DE); Benjamin Bräutigam (German Aerospace Center (DLR), DE)

12:20 - 13:40 Lunch

Room: Seoul

Level 3

Session B.5: SAR Tomography (invited)

Chairs: Richard Bamler (German Aerospace Center (DLR), DE), Gianfranco Fornaro (CNR-IREA, IT)

10:40 Development and Application of SAR Tomography for X-Band systems

Gianfranco Fornaro (CNR-IREA, IT); Antonio Pauciuolo (IREA, CNR, IT); Diego Reale (CNR-IREA, IT); Simona Verde (Università degli Studi di Napoli Parthenope, IT)

11:00 Assessing the performance of Tomographic measurements from a P-Band spaceborne SAR

Stefano Tebaldini (Politecnico di Milano, IT); Lorenzo Iannini (Politecnico di Milano, IT)

11:20 Multi-baseline building edge detection using X-band SAR complex data

Fabio Baselice (Consorzio Nazionale Interuniversitario per le Telecomunicazioni (CNIT), IT); Giampaolo Ferraioli (University of Naples Parthenope, IT); Alessandro Grassia (Università di Napoli Parthenope, IT); Vito Pascazio (Università di Napoli Parthenope, IT)

11:40 Integration of Tomographic SAR Inversion and PSI for Operational Use

Xiao Xiang Zhu (German Aerospace Center (DLR), DE); Yuanyuan Wang (Technische Universität München, DE); Richard Bamler (German Aerospace Center (DLR), DE)

12:00 Tomo and Diff-Tomo Superresolution Degarbling Improvements and First Results with COSMO-Sky-Med Urban Data

Fabrizio Lombardini (University of Pisa, IT); Davide Pasculli (University of Pisa, IT); Federico Viviani (CNIT-RaSS Nat. Lab, IT); Francesco Cai (University of Pisa, IT)

12:20 - 13:40 Lunch

Room: Istanbul

Level 2

Session C.5: Feature Extraction

Chairs: Tom G Farr (Jet Propulsion Laboratory, USA), Yoshio Yamaguchi (Niigata University, JP)

- 10:40 Retrieving convoy parameters from Doppler**
Richard Klemm (Fraunhofer-FHR, DE)
- 11:00 A Complexity-Adaptive Segmentation Method for Polarimetric SAR Images**
Hao Hu (Shanghai Jiao Tong University, CN); Bin Liu (Shanghai Jiao Tong University, CN); Qiuze Yu (Shanghai Jiao Tong University, CN); Xingzhao Liu (Shanghai Jiao Tong University, CN); Wenxian Yu (Shanghai Jiao Tong University, CN)
- 11:20 Automatic PolSAR Segmentation with the U-distribution and Markov Random Fields**
Anthony P Doulgeris (University of Tromsø, NO); Vahid Akbari (University of Tromsø, NO); Torbjørn Eltoft (University of Tromsø, NO)
- 11:40 SAR Imagery from the Perspective of Multiscale Chirplet Transform**
Anamaria Radoi (EPFL & DLR, CH); Mihai Datcu (German Aerospace Center, DE)
- 12:00 Vibrating Micro-Doppler signature extraction from SAR data using Singular Value Decomposition**
Carmine Clemente (University of Strathclyde, UK); John J Soraghan (University of Strathclyde, UK)

12:20 - 13:40 Lunch

Room: Kiev

Level 2

Session D.5: Maritime, Sea Clutter

Chairs: Pascale Dubois-Fernandez (ONERA, FR), Luke Rosenberg (DSTO, Australia)

- 10:40 Multi-Channel Analysis of Sea Clutter for STAP Applications**
Valeria Gracheva (Fraunhofer FHR, DE); Delphine Cerutti-Maori (Fraunhofer FHR, DE)
- 11:00 Change Detection Based G LR-GKIT On SAR Amplitude Image**
Hu-Qing Wang (Southwest Jiaotong University, CN); Heng-Chao Li (Southwest Jiaotong University, CN); Pingping Huang (Inner Mongolia University of Technology, CN)
- 11:20 Persistent Sea-spike Detection in Medium Grazing Angle X-band Sea-Clutter**
Luke Rosenberg (DSTO, Australia)
- 11:40 Simulation of SAR Ocean Turbulence Signatures using Direct Numerical Simulation and Radar/Hydrodynamic Modelling**
Simon G George (University of Southampton, UK); Adrian Tatnall (University of Southampton, UK)
- 12:00 Estimation of Disturbed Sea Surface Reflectivity in S-band Using Almaz-1 SAR Archive Data**
Leon B. Neronskiy (Joint-stock Company "Radio Engineering Corporation "VEGA", RU); Vladimir Verba (Joint-stock Company "Radio Engineering Corporation "VEGA", RU); George Beluga (JSC Radio Engineering Corporation VEGA, RU); Victor Kurenkov (JSC Radio Engineering Corporation VEGA, RU); Sergey Pushchinskiy (JSC Radio Engineering Corporation Vega, RU); Andrei Yu. Ivanov (P.P.Shirshov Institute of Oceanology, RUn Academy of Sciences, RU)

12:20 - 13:40 Lunch

Room: Shanghai

Level 3

Session A.6:

Sentinel-1 ESA's New European Radar Observatory (invited)

Chairs: Ramon Torres (European Space Agency & ESTEC, NL), Manfred Zink (DLR, DE)

13:40 Overview of the GMES Sentinel-1 Mission

Dirk Geudtner (European Space Agency, NL)

14:00 GMES Sentinel-1: Mission and Satellite System Overview

Aniceto Panetti (Thales Alenia Space Italia, IT); Ramon Torres (European Space Agency & ESTEC, NL); Svein Lokas (European Space Agency, NL); Claudio Bruno (Thales Alenia Space Italia, IT); Renato Croci (Thales Alenia Space Italia, IT); Michelangelo L'Abbate (Thales Alenia Space - Italy, IT); Massimiliano Marozzi (Thales Alenia Space Italia, IT); Andrea Pietropaolo (THALES ALENIA SPACE ITALIA S.p.A., IT); Paolo Venditti (Thales Alenia Space - Italy, IT)

14:20 The Sentinel-1 C-SAR Instrument

Friedhelm Rostan (EADS Astrium Friedrichshafen, DE); Sebastian Riegger (EADS Astrium, DE); Markus Huchler (EADS Astrium, DE); Ramon Torres (European Space Agency & ESTEC, NL); Renato Croci (Thales Alenia Space Italia, IT)

14:40 The Sentinel-1 Radar Electronics Subsystem Development

Michael Hutchinson (Astrium Ltd, UK); Les Griffiths (Astrium Ltd, UK); Adrian Smith (Astrium Ltd, UK); Sam Doody (EADS Astrium, UK)

15:00 Sentinel-1 Ground Segment

Bethlem Rosich (European Space Agency (ESA/ESRIN), IT); Nuno Miranda (European Space Agency & ESRIN, IT); Dirk Geudtner (European Space Agency, NL)

15:20 - 15:50 Coffee Break

Room: Seoul

Level 3

Session B.6:

Interferometry, Repeatpath SAR, SAR Tomography I

Chairs: Fabio Rocca (Politecnico di Milano, IT), Andreas Reigber (German Aerospace Center (DLR), DE)

13:40 Tweaking baseline constellations for airborne SAR tomography and InSAR: an experimental study at L- and P-bands

Othmar Frey (ETH Zurich, Gamma Remote Sensing & Gamma Remote Sensing, CH); Erich H. Meier (University Zurich, CH); Irena Hajsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

14:00 Analysis of Atmospheric Effects in Spaceborne InSAR - Towards Water Vapour Mapping Based on Multiple Sensors

Fadwa Alshawaf (Karlsruhe Institute of Technology, DE); Thomas Fuhrmann (Karlsruhe Institute of Technology, DE); Bernhard Heck (Karlsruhe Institute of Technology, DE); Stefan Hinz (Karlsruhe Institute of Technology, DE); Andreas Knoepfler (Karlsruhe Institute of Technology, DE); Xiaoguang Luo (Karlsruhe Institute of Technology, DE); Michael Mayer (Karlsruhe Institute of Technology, DE); Andreas Schenk (Karlsruhe Institute of Technology, DE); Antje Thiele (Fraunhofer IOSB & Karlsruhe Institute of Technology (KIT), DE); Malte Westerhaus (Karlsruhe Institute of Technology, DE)

14:20 3 Years Gap Temporal Interferometric Coherence at P Band

Xavier Dupuis (ONERA, FR); Pascale Dubois-Fernandez (ONERA, FR); Lars Ulander (Swedish Defence Research Agency, SE); Anders Gustavsson (FOI, SE)

14:40 Interferometric SAR Phase Unwrapping Based on Markov Random Fields

Runpu Chen (Institute of Electronics, Chinese Academy of Sciences, CN); Yu Weidong (Institute of Electronics, Chinese Academy of Sciences, CN); Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, CN); Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, CN); Yue Liu (Institute of Electronics, Chinese Academy of Sciences, CN); Yunfeng Shao (Institute of Electronics, Chinese Academy of Sciences, CN)

15:00 Model Free Polarimetric SAR Tomography of a Tropical Forest

Mauro Mariotti d'Alessandro (Politecnico di Milano, IT); Stefano Tebaldini (Politecnico di Milano, IT)

15:20 - 15:50 Coffee Break

Room: Istanbul

Level 2

Session C.6: Classification

Chairs: Karsten Schulz (Fraunhofer IOSB, DE), Mihai Datcu (German Aerospace Center, DE)

- 13:40 Combining polarimetric and coherence SAR images for forest type discrimination**
Dan Johan Weydahl (Norwegian Defence Research Establishment (FFI), NO); Knut Eldhuset (FFI, NO); Svein Solberg (Norwegian Forest and Landscape Institute, NO)
- 14:00 Shoreline classification using dual-polarized TerraSAR-X images**
Andreas Schmitt (German Aerospace Center, DE); Anna Hogg (German Aerospace Center (DLR), DE); Achim Roth (DLR, DE); Jason Duffe (Environment Canada, CA)
- 14:20 Selection of relevant features and TerraSAR-X products for classification of high resolution SAR images**
Corneliu Octavian Dumitru (German Aerospace Center (DLR), DE); Jagmal Singh (German Aerospace Center, DE); Mihai Datcu (German Aerospace Center, DE)
- 14:40 High Resolution SAR Classification using Rényi Entropy Constrained Spectrum Estimates**
Anca A Popescu (University Politehnica Bucharest, RO); Mihai Datcu (German Aerospace Center, DE)
- 15:00 Investigation of Polarimetric Scattering Characteristics For Accurate Classification of Oblique Wetland Boundary**
Ryoichi Sato (Niigata University, JP); Yoshio Yamaguchi (Niigata University, JP); Hiroyoshi Yamada (Niigata University, JP)

15:20 - 15:50 Coffee Break

Room: Kiev

Level 2

Session D.6: STAP, SAR-MTI

Chairs: Peter Hoogeboom (TNO, NL), Luke Rosenberg (DSTO, Australia)

- 13:40 Comparison of Harmonic, Geometric and Arithmetic Means for Change Detection in SAR Time Series**
Guillaume Quin (CEA & Telecom ParisTech, FR); Béatrice Pinel-Puysségur (CEA, FR); Jean-Marie Nicolas (Telecom Paris, FR)
- 14:00 Analysis of two-step nulling of RF interference and ground clutter with PAMIR**
Mario Witter (Fraunhofer FHR, DE)
- 14:20 Demonstrations of HRWS and GMTI with RADAR-SAT-2**
Ishuwa C. Sikaneta (DRDC Ottawa, CA); Delphine Cerrutti-Maori (Fraunhofer FHR, DE)
- 14:40 Ground Moving Target Tracking with Amplitude Derived Direction of Arrival Estimation Accuracy Information**
Robert Kohlleppe (Fraunhofer FHR, DE)
- 15:00 Target DOA Estimation Based on Robust Deterministic STAP**
Diego Cristallini (Fraunhofer FHR, DE)

15:20 - 15:50 Coffee Break

Room: Shanghai

Level 3

Session A.7: Airborne and UAV-SAR

Chairs: Hans M Braun (INS University of Stuttgart & RST Radar Systemtechnik GmbH, DE), Helmut Wilden (Fraunhofer FHR, DE)

15:50 The SmartRadar Pod System

Martin Kirscht (EADS Deutschland GmbH, DE, DE); Klaus Hoffmann (CASSIDIAN, DE); Joachim Boukamp (Cassidian, DE); Kosmas Weidmann (EADS Deutschland GmbH, DE, DE); Rudolf Zahn (Cassidian, DE)

16:10 Multichannel FMCW SAR

Wim Lambertus van Rossum (TNO Defence, Security and Safety, NL); Matern Otten (TNO, NL); Philip van Dorp (TNO, NL)

16:30 The Ground Segment of PAZ Mission

Maria Jose Gonzalez (INTA, ES); Eva Vega (Spanish National Aerospace Institute, ES); Beatriz Gomez (INTA, ES); Juan Manuel Cuerda Munoz (INTA, ES)

16:50 Performance of the L- and P-band Subsystems of the F-SAR Airborne SAR Instrument

Andreas Reigber (German Aerospace Center (DLR), DE); Marc Jäger (German Aerospace Center (DLR), DE); Jens Fischer (German Aerospace Center (DLR), DE); Ralf Horn (German Aerospace Center (DLR), DE); Rolf Scheiber (German Aerospace Center (DLR), DE); Pau Prats (German Aerospace Center (DLR), DE); Anton Nottensteiner (DLR, DE)

17:10 Synthetic Aperture Radar for All Weather Penetrating UAV Application (SARAPE) - project presentation

Michael Caris (Fraunhofer FHR, DE); Stephan Stanko (Fraunhofer FHR, DE); Helmut Essen (Fraunhofer FHR, DE); Arnulf Leuther (Fraunhofer Institute for Applied Solid State Physics, DE); Axel Tessmann (Fraunhofer IAF, DE); Rainer Weber (Fraunhofer IAF, DE); Mateusz Malanowski (Warsaw University of Technology, PL); Piotr Samczynski (Warsaw University of Technology, PL); Krzysztof S. Kulpa (Warsaw University of Technology, PL); György Mészöly (Pro Patria Electronics, HU); Andreas C. Papanastasiou (University of Cyprus, Cyprus); Christopher Topping (University of Cyprus, Cyprus); George Georgiou (University of Cyprus, Cyprus); Roland Guraly (Slot Consulting, HU); Zoltan Bilacz (Slot Consulting, HU)

17:30 CARMSAR – a Compact and Reconfigurable Miniature SAR system for High Resolution Remote Sensing

Yue Liu (Institute of Electronics, Chinese Academy of Sciences, CN); Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, CN)

18:00 - 22:00 Poster Session

Room: Seoul

Level 3

Session B.7:

Interferometry, Repeatpath SAR, SAR Tomography II

Chairs: Paul A. Rosen (Jet Propulsion Laboratory, USA), Fabrizio Lombardini (University of Pisa, IT)

15:50 Advances in SqueeSAR Analysis

Alessandro Ferretti (Tele-Rilevamento Europa - T.R.E., IT); Alfio Fumagalli (Tele-Rilevamento Europa - TRE, IT); Fabrizio Novali (Tele-Rilevamento Europa, IT); Claudio Prati (Politecnico di Milano, IT); Fabio Rocca (Politecnico di Milano, IT); Alessio Rucci (TRE-TeleRilevamento Europa, IT)

16:10 Airborne MMW InSAR Interferometry with cross-track three-baseline antennas

Dao-jing Li (Institute of Electronics, Chinese Academy of Sciences, CN); Bo Liu (Institute of Electronics, Chinese Academy of Sciences, CN); Zhou-hao Pan (The Institute of Electronics, Chinese Academy of Sciences, CN); Yong-fei Mao (Institute of Electronics, Chinese Academy of Sciences, CN); Ming Qiao (Institute of Electronics, Chinese Academy of Sciences, CN); Xiu-min Teng (Institute of Electronics, Chinese Academy of Sciences, CN); Liechen Li (IECAS, CN)

16:30 The GPRI Multi-mode Differential Interferometric Radar for Ground-based Observations

Charles Werner (GAMMA Remote Sensing Research and Consulting AG, CH); Andreas Wiesmann (Gamma Remote Sensing AG, CH); Tazio Strozzi (Gamma Remote Sensing AG, CH); Andrew Kos (Terrarsense Switzerland AG, CH); Rafael Caduff (Gamma Remote Sensing AG, CH); Urs Wegmüller (GAMMA Remote Sensing AG, CH)

16:50 Bi-directional SAR and Interferometric SAR Short-Term Time Series

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

17:10 Wavemill Proof-of-Concept Campaign. Processing Algorithms and Results

Nestor Yague-Martinez (Starlab, ES); José Márquez (Starlab Barcelona SL, ES); Martin Cohen (EADS Astrium, UK); Dave Lancashire (EADS Astrium Ltd., UK); Christopher Hereward Buck (European Space Agency, NL)

18:00 - 22:00 Poster Session

Room: Istanbul**Level 2****Session C.7: Near Field SAR for Security and Non-Destructive Testing (invited)**

Chairs: Markus Peichl (German Aerospace Center (DLR), DE), Lorenz-Peter Schmidt (University of Erlangen-Nuremberg, DE)

- 15:50 A Novel Active Real-Time Digital-Beamforming Imager for Personnel Screening**
Sherif Sayed Ahmed (Rohde & Schwarz GmbH & Co. KG, DE); Andreas Schiessl (Rohde & Schwarz, DE); Lorenz-Peter Schmidt (University of Erlangen-Nuremberg, DE)
- 16:10 Passive and active imaging using a novel radiometric imaging technique**
Markus Peichl (German Aerospace Center (DLR), DE); Eric Schreiber (German Aerospace Center (DLR), DE)
- 16:30 Automatic Target Recognition in Ultra-Wideband 3-D images for Concealed Weapon Detection**
Xiaodong Zhuge (Delft University of Technology, NL); Alexander Yarovoy (Delft University of Technology, NL)
- 16:50 Ultra High Resolution SAR Imaging using an 80 GHz FMCW-Radar with 25 GHz Bandwidth**
Nils Pohl (Ruhr-Universität Bochum, DE); Timo Jaeschke (Ruhr-University Bochum, DE); Michael Vogt (Ruhr-University Bochum & High Frequency Engineering Research Group, DE)
- 17:10 Optical 3D assisted CSAR for security screening at a constant passenger flow**
Stefan Lang (Fraunhofer FHR, DE); Manfred Haegelen (Fraunhofer FHR, DE); Joachim H. G. Ender (Fraunhofer FHR, DE); Sebastian Hantscher (Fraunhofer-FHR, DE); Helmut Essen (Fraunhofer FHR, DE)
- 17:30 Automated Threat Detection and Characterization with a Polarimetric Multistatic Imaging System**
Amir Cenanovic (University of Erlangen Nuremberg, DE); Frank Gumbmann (University of Erlangen-Nuremberg, DE); Lorenz-Peter Schmidt (University of Erlangen-Nuremberg, DE)

Room: Kiev**Level 2****Session D.7: SAR-MTI**

Chairs: Paulo A Marques (Instituto de Telecomunicações - Instituto Superior de Engenharia de Lisboa, PT), Diego Cristallini (Fraunhofer FHR, DE)

- 15:50 Automatic Generation of Networks for SAR Simulation of Moving Targets**
Reynald Dumont (OPEN, FR); Christophe Guédas (OPEN, FR); Jérémy Dupuis (OPEN, FR)
- 16:10 A Study on the Radial Velocity Information obtained from SAR Subapertures**
Andrea Radius (EDISOFT, PT); Paulo A Marques (Instituto de Telecomunicações - Instituto Superior de Engenharia de Lisboa, PT)
- 16:30 Synthetic Aperture Radar Imaging of Moving Targets using Ultra-Narrowband Continuous Waveforms**
Ling Wang (Nanjing University of Aeronautics and Astronautics, CN); Birsen Yazıcı (Rensselaer Polytechnic Institute, USA)
- 16:50 Change detection for traffic measurement in multi-temporal TerraSAR-X SpotLight images**
Michael Baessler (German Aerospace Center (DLR), DE); Hartmut Runge (German Aerospace Center (DLR), DE); Steffen Suchandt (German Aerospace Center (DLR), DE); Yun Zhang (German Aerospace Center (DLR), DE)
- 17:10 moving target tracking using circular SAR imagery**
Jean-Baptiste Poisson (ONERA, FR); Helene Oriot (ONERA, FR); Florence Tupin (Télécom Paris, FR)
- 17:30 SmartRadar Pod System GMTI Flight Trials and Results**
Alexander Dallinger (Cassidian, DE); Jörg H. Hippler (Cassidian, DE)

Room: Exhibition Area

Poster Session

P01 SAR Technology

P01.01 On-board Payload Data Processor (OPDP) and its application in advanced multi-mode, multi-spectral and interferometric satellite SAR instruments

Laurens Bierens (SSBV Space & Ground Systems, The Netherlands); Bert-Johan Vollmuller (National Aerospace Laboratory NLR, The Netherlands)

P01.02 Design and Implementation of Fast SAR Echo Simulation Based on FPGA

Qi Peng (University of Electronic Science and Technology of China & Research Institute of Electronic Science and Technology, P.R. China)

P01.03 Tri-Mode Horn Antenna for Directive 3D-Imaging

Hanno Rabe (Leibniz Universität Hannover, Germany); Aline Friedrich (Leibniz Universität Hannover, Germany); Ilona Rolfes (Ruhr-Universität Bochum, Germany)

P01.04 FHR Contribution to the European Space Situational Awareness (SSA) Radar Demonstrator Programme

Helmut Wilden (Fraunhofer FHR, Germany); Claus Kirchner (Fraunhofer FHR, Germany); Andreas R. Brenner (Fraunhofer FHR, Germany); Joachim H. G. Ender (Fraunhofer FHR, Germany)

P02 SAR Processing

P02.01 Optimizing the Factorisation Parameters in the Fast Factorized Backprojection Algorithm

Angel Ribalta (Fraunhofer FHR, Germany)

P02.02 High Precision Automatic SAR Geocoding Method Using GSHHS for Coastal Ship Monitoring

Jung Soo Jung (Korea Aerospace University, Korea); Jung H Song (Korea Aerospace University, Korea); Kwag K Young (Korea Aerospace University, Korea)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P02.03 Impact of Trajectory Deviation in Squint Airborne SAR Processing

Jia Xiaoxue (Institute of Electronics, China Academy of Sciences, P.R. China); 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); Gao Yang (Institute of Electronics, China Academy of Sciences, P.R. China)

P02.04 Estimation of the Circular Error Probability for a Doppler-Beam-Sharpener-Radar-Mode

Volker Winkler (CASSIDIAN, Germany); Bernhard Bickert (CASSIDIAN, Germany)

P02.05 Estimation of Doppler Centroid in DBS Processing and its Application in Real-Time SW on Forward-Looking Airborne Radar

Bernhard Bickert (CASSIDIAN, Germany)

P03 STAP, SAR-MTI and MTD

P03.01 Evaluation of State-of-the-Art GMTI techniques for Future Spaceborne SAR Systems -Simulation Validation-

Eduardo Makhoul (Universitat Politècnica de Catalunya, Spain); Antoni Broquetas (Universitat Politècnica de Catalunya, Spain); Oriol Gonzalez (Universitat Politècnica de Catalunya, Spain)

P03.02 Dealing With Target Nulling and Clutter Inhomogeneities in STAP

Wolfram Bürger (Fraunhofer FHR, Germany)

P03.03 Correlation based joint CFAR ship detector in SAR images(EUSAR 2012).doc

Jiaqiu Ai (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Xiangyang Qi (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

P03.04 A Clustering Approach for Change Detection in SAR Images

Fang Luo (Wuhan University & Signal Processing Lab, P.R. China); Wen Yang (Wuhan University, P.R. China); Qiong Wu (Wuhan University, P.R. China); Wei Yan (Wuhan University, P.R. China)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P03.05 Along-Track Interferometry Using TanDEM-X: First Results from Marine and Land Applications
Steffen Suchandt (German Aerospace Center (DLR), Germany); Hartmut Runge (German Aerospace Center (DLR), Germany)

P03.06 A Novel Method to Extract Moving Targets in the Wide-Area Surveillance Airborne SAR/GMTI System
Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, P.R. China); He Yan (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)

P03.07 Ship Detection with Spaceborne Multi-channel SAR/GMTI Radars
Delphine Cerutti-Maori (Fraunhofer FHR, Germany); Ishuwa C. Sikaneta (DRDC Ottawa, Canada); Christoph H. Gierull (DRDC Ottawa, Canada)

P03.08 Potential Marine Moving Target Indication (MMTI) Performance of the RADARSAT Constellation Mission (RCM)
Christoph H. Gierull (DRDC Ottawa, Canada); Ishuwa C. Sikaneta (DRDC Ottawa, Canada)

P04 Airborne, Space-Borne, and UAV SAR

P04.01 Volcanic Monitoring by the airborne SAR (Pi-SAR2)
Tatsuharu Kobayashi (National Institute of Information and Communications Technology, Japan); Toshihiko Umehara (National Institute of Information and Communications Technology, Japan); Jyunpei Uemoto (National Institute of Information and Communications Technology, Japan); Makoto Satake (National Institute of Information and Communications Technology, Japan); Shoichiro Kojima (National Institute of Information and Communications Technology, Japan); Takeshi Matsuoka (National Institute of Information and Communications Technology, Japan); Akitsugu Nadai (National Institute of Information and Communications Technology, Japan); Seiho Uratsuka (National Institute for Communication Technology, Japan)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P04.02 The airborne mobile four-band Compact SAR. Application experience
Roman Ermakov (Research Institute of Precise Instruments, Russia); Mikhail Dostovalov (Scientific Research Institute of Precise Instruments, Russia)

P04.03 A selection of MetaSensing airborne SAR campaigns at L-, X- and Ku-band
Adriano Meta (MetaSensing, The Netherlands); Ernesto Imbembo (MetaSensing, The Netherlands); Christian Trampuz (MetaSensing, The Netherlands); Alex Coccia (MetaSensing, The Netherlands); Giulio De Luca (MetaSensing, The Netherlands)

P04.04 TanDEM-X Acquisition Planner
Carlos Ortega-Miguez (German Aerospace Center (DLR), Germany); Daniel Schulze (German Aerospace Center (DLR) & High Frequency and Radar Institute, Germany); Donata Polimeni (DLR, Germany); Johannes Böer (DLR, Germany); Paola Rizzoli (German Aerospace Center (DLR), Germany); Marko Bachmann (German Aerospace Center (DLR), Germany)

P04.05 Wide-Swath Spaceborne SAR System Severyanin-M For Remote Sensing: First Results
Alexander Kovalenko (Scientific and Research Institute of Precise Instruments, Russia)

P04.06 Ultrahigh Resolution X-Band SAR Images with SmartRadar
Jörg H. Hippler (Cassidian, Germany)

P04.07 Architecture and Performance of the Spaceborne Multi-Aperture High-Resolution SAR System Based On Analog-Digital Active Array
Alexander Kovalenko (Scientific and Research Institute of Precise Instruments, Russia)

P04.08 PAZ Mission: CALVAL Centre Activities
Beatriz Gomez (INTA, Spain); Maria Jose Gonzalez (INTA, Spain); Benjamin Bräutigam (German Aerospace Center (DLR), Germany); Eva Vega (Spanish National Aerospace Institute, Spain); Nuria Casal (INTA, Spain)

P04.09 SUMATRA - A UAV based miniaturized SAR System
Stephan Stanko (Fraunhofer FHR, Germany); Winfried Johannes (FGAN-FHR, Germany); Rainer Sommer (Fraunhofer-FHR, Germany); Alfred Wahlen (FGAN-FHR, Germany); Martin Schroeder (Fraunhofer FHR, Germany); Michael Caris (Fraunhofer FHR, Germany)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P04.10 SARape - Synthetic Aperture Radar for all weather penetrating UAV application

Michael Caris (Fraunhofer FHR, Germany); Anika Maresch (Fraunhofer FHR, Germany)

P05 SAR System Simulation and Modelling**P05.01 Range Profile Analysis of the Buried 3-D Dielectric Object Based on the EM Numerical Simulation**

Lei Zhuang (Shanghai Institute of Satellite Engineering, P.R. China); Zhang Ju (Xi'an Research Institute of Surveying and Mapping, P.R. China); Xingbin Ye (Shanghai Institute of Satellite Engineering, P.R. China); Chao Ma (Shanghai Academy of Spaceflight Technology, P.R. China); Yan Jiang (Shanghai Institute of Satellite Engineering, P.R. China)

P05.02 SAR Performance Enhancements using Radar Backscatter Map of TerraSAR-X

Carolina González (German Aerospace Center (DLR), Germany); Benjamin Bräutigam (German Aerospace Center (DLR), Germany); Paola Rizzoli (German Aerospace Center (DLR), Germany)

P05.03 Digital Beam Forming MPC-MAB Synthetic Aperture Radar imaging with Adaptive Down/Up Chirp

Xin Jia (Academy of Equipment Command & Technology, P.R. China); Canbin Yin (Academy of Equipment Command & Technology, P.R. China); Yuntao Li (Academy of Equipment Command & Technology, P.R. China); Yanhong Wu (Academy of Equipment Command & Technology, P.R. China); Weigang Zhu (Academy of Equipment Command & Technology, P.R. China)

P05.04: HRWS Synthetic Aperture Radar Ambiguity Reduction with Widened Null Steering Digital Beam Forming

Canbin Yin (Academy of Equipment Command & Technology, P.R. China); Xin Jia (Academy of Equipment Command & Technology, P.R. China); Yuntao Li (Academy of Equipment Command & Technology, P.R. China)

P05.05 Image Formation from Raw Data via New SAR Processor

Sedef Kent (Istanbul Technical University, Turkey); Mesut Kartal (Istanbul Technical University, Turkey); Samir Deliormanli (Koc Holding, Turkey)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P05.06 FMCW SAR Raw Signal Simulator for Extended Scenes

Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Yue Liu (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); Jia Xiaoxue (Institute of Electronics, China Academy of Sciences, P.R. China)

P05.07 SAR Signal Simulation in Time Domain for Velocity Bunching by Ocean Wave

Takero Yoshida (The University of Tokyo, Japan); Chang-Kyu Rheem (The University of Tokyo, Japan)

P05.08 A Rapid SAR Simulator and Its Applications for Three-Dimension Forest Canopies

Hanwei Sun (Beijing Institute of Technology, P.R. China); Tao Zeng (BeiJing institute of Technology, P.R. China); Cheng Hu (Beijing Institute of Technology, P.R. China)

P06 Interferometry, 3-Dimensional SAR**P06.01 Analysis of AT-InSAR Capacity of Measurement of Ocean Currents**

Mikhail Kanevsky (Institute of Applied Physics, Russia)

P06.02 Stable Scatterers Detection and Tracking in Heterogeneous Clutter by Repeat-Pass SAR Interferometry

Andrei Anghel (GIPSA-lab, Romania); Gabriel Vasile (French National Council for Scientific Research (CNRS) & Grenoble-Image-sPeach-Signal-Automatics Lab, France); Jean-Philippe Ovarlez (ONERA, France); Guy D'Urso (Electricité de France, France); Didier Boldo (EDF, Romania)

P06.03 Interferometric Three-Dimensional Displacement Measurement Using Geosynchronous Circular SAR

LeiLei Kou (Nanjing University of Information Science and Technology, P.R. China); Minhui Zhu (Chinese Academy of Sciences & Institute of Electronics, P.R. China); Xiaoqing Wang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Maosheng Xiang (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

- P06.04 A new approach to DInSAR Pixel Selection with a combined multi resolution selection method**
Giuseppe Centolanza (*Universitat Politècnica de Catalunya, Italy*); Rubén Iglesias (*Universitat Politècnica de Catalunya, Spain*); Daniel Monells (*Universitat Politècnica de Catalunya, Spain*); Jordi J. Mallorquí (*Universitat Politècnica de Catalunya (UPC), Spain*)
- P06.05 Linear and Circular Polarization P band SAR tomography for Tropical Forest Biomass study**
Ho Tong Minh Dinh (*Politecnico di Milano, Italy*); Fabio Rocca (*Politecnico di Milano, Italy*); Stefano Tebaldini (*Politecnico di Milano, Italy*); Mauro Mariotti d'Alessandro (*Politecnico di Milano, Italy*); Thuy Le Toan (*CES-BIO, France*)
- P06.06 High-Resolution 3D SAR Imaging applied to Non-Destructive Testing of Multi-Layered Materials**
Edison Cristofani (*Royal Military Academy, Belgium*); Marijke Vandewal (*Royal Military Academy, Belgium*)
- P06.07 A same spectrum simultaneous transmit mode for spaceborne interferometric and bistatic SAR system**
Li Wei (*Shanghai Institute of Satellite Engineering, P.R. China*); Lou Liangsheng (*Xi'an Research Institute of Surveying and Mapping, P.R. China*); Hou Yusheng (*Shanghai Institute of Satellite Engineering, P.R. China*); Ni Tao (*Shanghai Institute of Satellite Engineering, P.R. China*)
- P06.08 Global Performance Monitoring from TanDEM-X Quicklook Data**
Paola Rizzoli (*German Aerospace Center (DLR), Germany*); Markus Bachmann (*German Aerospace Center (DLR), Germany*); Benjamin Bräutigam (*German Aerospace Center (DLR), Germany*)

P07 Polarimetric SAR

- P07.01 Information Extraction of Quad-polarization SAR Data Using Polarization Decompositions and Polarimetric Parameters**
Xiaolin Bian (*Institute of Remote Sensing Applications, Chinese Academy of Sciences, P.R. China*); Yun Shao (*Institute of Remote Sensing Application, Chinese Academy of Sciences, P.R. China*); Fengli Zhang (*Institute of Remote Sensing Applications, CAS, P.R. China*)
- P07.02 Perturbation Analysis for Maritime Applications**
Armando Marino (*ETH University Zürich, Switzerland*); Nicholas P Walker (*eOsphere Ltd, United Kingdom*); Irena Hajsek (*ETH Zurich, DLR Oberpfaffenhofen, Germany*)
- P07.03 Advanced polarimetric optimization for DInSAR applications with Ground-Based SAR**
Rubén Iglesias (*Universitat Politècnica de Catalunya, Spain*); Xavier Fabregas (*Universitat Politècnica de Catalunya (Technical University of Catalonia), Spain*); Albert Aguasca (*Universitat Politècnica de Catalunya (UPC), Spain*); Carlos López-Martínez (*Universitat Politècnica de Catalunya (UPC), Spain*); Alberto Alonso-González (*Universitat Politècnica de Catalunya (UPC), Spain*)
- P07.04 Investigation on Unsupervised Classification of Compact PolIn-SAR Data**
Lulu Tan (*No. 38 Research Institute, Chinese Electronics Technology Group Corporation, P.R. China*); Pingping Huang (*Inner Mongolia University of Technology, P.R. China*); Ai-jun Liu (*The Academy of Forestry, Beijing Forestry University, P.R. China*); Dahai Dai (*National University of Defense Technology, P.R. China*)
- P07.05 New Four Component Scattering Power Decomposition Method**
Gulab Singh (*Niigata University, Japan*); Yoshio Yamaguchi (*Niigata University, Japan*); Sang-Eun Park (*Niigata University, Japan*); Yi Cui (*Niigata University, Japan*); Ryoichi Sato (*Niigata University, Japan*)
- P07.06 The New Form of G Distribution for Single-look PolSAR Data**
Salman Khan (*University of Surrey, United Kingdom*); Raffaella Guida (*University of Surrey, United Kingdom*)

P07.07 A Symmetric PDF for Model-Based Decomposition Using Quad-POL Data

Jiehong Chen (Center for Earth Observation and Digital Earth, CAS, P.R. China); Hong Zhang (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Chao Wang (CEODE, Chinese Academy of Sciences, P.R. China); Zili Shan (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China)

P08 SAR Calibration and Verification**P08.01 Improvement of Polarimetric SAR Calibration based on the Ainsworth Algorithm**

Hong Zhang (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Chao Wang (CEODE, Chinese Academy of Sciences, P.R. China); Peifeng Ma (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Wuping Lu (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Zili Shan (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Jiehong Chen (Center for Earth Observation and Digital Earth, CAS, P.R. China)

P08.02 Variations of the Transponder's RCS Due to Environmental Impacts on the Antennas

Philipp Looser (German Aerospace Center (DLR), Germany); Björn J. Döring (German Aerospace Center (DLR), Germany); Matthias Jirousek (DLR German Aerospace Center, Germany); Marco Schwerdt (German Aerospace Center (DLR), Germany)

P08.03 Radiometric calibration by natural targets: methods and performance evaluation

Pietro Guccione (Politecnico di Bari, Italy); Andrea Monti Guarnieri (Politecnico di Milano, Italy); Andrea Recchia (Politecnico di Milano, Italy); Stefano Tebaldini (Politecnico di Milano, Italy)

P08.04 Analysis and Modeling of Baseline Errors of Airborne ATI-SAR

Xin Wang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Jun Hong (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Jiwei Hu (Institute of Electronics, P.R. China); Feng Ming (Chinese Academy of Sciences, P.R. China)

P09 Feature Extraction**P09.01 Moving Targets and Multipath in SAR Images of Harbour Scenes**

Atle Onar Knapskog (Norwegian Defence Research Establishment (FFI), Norway)

P09.02 Foliage Attenuation Measurements Using Multi-Frequency Air-borne SAR

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

P09.03 High-Order Neural network-based ship detection algorithms applied to SAR imagery

Jaime Martín de Nicolás-Presa (University of Alcalá, Spain); David Mata-Moya (University of Alcalá, Spain); Maria-Pilar Jarabo-Amores (Alcala university, Spain); Jose Luis Bárcena-Humanes (University of Alcalá, Spain); Angel Palma-Vazquez (University of Alcalá, Spain)

P09.04 An Enhancing Normalized Radon Transform Method for Ship Wake Detection in SAR Imagery

Xiangwei Xing (National University of Defense Technology, P.R. China); Kefeng Ji (NUDT, P.R. China); Huanxin Zou (NUDT, P.R. China); Jixiang Sun (NUDT, P.R. China); Shilin Zhou (NUDT, P.R. China); Zhiyong Li (NUDT, P.R. China)

P09.05 Analysis of Seasonal Changes in High Resolution Repeat Pass SAR Image Pairs by the CoVAmCoh Method

Karsten Schulz (Fraunhofer IOSB, Germany); Markus Boldt (Fraunhofer IOSB, Germany)

P10 Bi- and Multistatic SAR, MIMO-SAR**P10.01 Research on the Ground Resolution of Bistatic Forward-looking SAR with Geostationary Illuminator and UAV Receiver**

Jingen Wang (New Star Research Institute of Applied Technology, P.R. China); Yanfei Wang (New Star Research Institute of Applied Technology, P.R. China); Renyuan Chen (East China Research Institute of Electronic Engineering, P.R. China); Jialong Ge (East China Research Institute of Electronic Engineering, P.R. China)

P10.02 Ambiguous Scattering Point Detection of Bistatic Downward-looking SAR with Geostationary Illuminator and LEO Receiver

Jingen Wang (New Star Research Institute of Applied Technology, P.R. China); Yanfei Wang (New Star Research Institute of Applied Technology, P.R. China); Jialong Ge (East China Research Institute of Electronic Engineering, P.R. China); Jianming Zhang (East China Research Institute of Electronic Engineering, P.R. China); Yanyu Wang (East China Research Institute of Electronic Engineering, P.R. China)

P10.03 Investigation of CDTD-MIMO-SAR for ECCM

Liu Xiaogang (The Academy of Equipment Command & Technology, P.R. China); Yuntao Li (Academy of Equipment Command & Technology, P.R. China); Yanhong Wu (Academy of Equipment Command & Technology, P.R. China)

P10.04 The Waveform Analysis and Signal Processing for Space-borne MIMO-SAR

Pingping Huang (Inner Mongolia University of Technology, P.R. China); Heng-Chao Li (Southwest Jiaotong University, P.R. China); Fan Feng (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Mo Huang (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

P10.05 Bistatic ISAR Imaging Analysis of High Speed Space Target with Linear Frequency Modulated Signal

Bo Xiao (University of Electronic Science and Technology of China & Research Institution of Electronic Science and Technology, P.R. China); ShunSheng Zhang (University of Electronic Science and Technology of China, P.R. China)

P11 Image Processing

P11.01 Ratio-based Adaptive Windowing algorithm for Speckle Filtering of SAR Images

Guozhong Chen (Shanghai Institute of Satellite Engineering, P.R. China); Peili Xi (Shanghai Institute of Satellite Engineering, P.R. China); Chen Chonghua (Shanghai Institute of Satellite Engineering, P.R. China); Wang Haitao (Shanghai Institute of Satellite Engineering, P.R. China); Huang Haifeng (National University, P.R. China)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P11.02 Improved Scattering-Model-Based Speckle Filter of Polarimetric SAR Data

Zili Shan (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Hong Zhang (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China); Chao Wang (CEODE, Chinese Academy of Sciences, P.R. China); Jiehong Chen (Center for Earth Observation and Digital Earth, CAS, P.R. China); Peifeng Ma (Center for Earth Observation and Digital Earth, Chinese Academy of Sciences, P.R. China)

P11.03 An Adaptive Signal-Model-Based SAR Imaging Algorithm

Yesheng Gao (Shanghai Jiao Tong University, P.R. China); Kaizhi Wang (Shanghai Jiaotong University, P.R. China); Xingzhao Liu (Shanghai Jiao Tong University, P.R. China)

P11.04 Polynomial Phase Adjustment by Contrast Enhancement Algorithm for SAR

Jungang Yang (University of Edinburgh, United Kingdom); Huang Xiaotao (School of Electronic Science and Engineering, National University of Defense Technology, P.R. China); Tian Jin (National University of Defense Technology, P.R. China); Zhimin Zhou (National University of Defense Technology, P.R. China); Xiangyang Li (National University of Defense Technology, P.R. China)

P12 Very Low Frequency SAR

P12.01 Some aspects on the Interpretation of Radar Images of Pine Forest at P and VHF bands

Anatoliy Kalinkevich (Institute of Radio Engineering and Electronics, Russia); Boris Georgievich Kutuza (Russian Academy of Sciences, Russia); Leo P. Ligthart (IRCTR-Delft University, The Netherlands)

18:00 - 22:00 Poster Session and music happening by H. Braun & R. Klemm (incl. drinks and snacks)

P13 Next Generation SAR Systems, Innovative SAR Concepts

P13.01 Accurate System Parameter Calculation and Coverage Analysis in GEO SAR

Gao Yangte (Beijing Institute of Technology, P.R. China); Cheng Hu (Beijing Institute of Technology, P.R. China); Xichao Dong (Beijing Institute of Technology, P.R. China); Teng Long (Beijing Institute of Technology, P.R. China)

P13.02 Ambiguities in High Squint Mode SAR

Xichao Dong (Beijing Institute of Technology, P.R. China); Zegang Ding (Beijing Institute of Technology, P.R. China); Jianping Wang (Beijing Institute of Technology, P.R. China)

P13.03 Accurate Fourth-Order Doppler Parameter Estimation Approach for Geosynchronous SAR

Bingji Zhao (Electronics Institute of Chinese Academy of Sciences, P.R. China); Xiangyang Qi (Master Tutor, P.R. China); 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); Hongjun Song (the Space-borne Radar System Chinese Academy of Sciences, P.R. China)

P13.04 A Novel Two Dimensional Imaging Algorithm Based on Compressed Sensing for Multi-Channel SAR

Jing Li (University of Electronic Science and Technology of China, P.R. China); ShunSheng Zhang (University of Electronic Science and Technology of China, P.R. China); Junfei Chang (University of Electronic Science and Technology, P.R. China)

P13.05 The Development of Lightweight SAR Sensor for Small Satellite

Takashi Fujimura (NEC Corporation, Japan); Kiyonobu Ono (NEC Corporation, Japan); Isamu Oihara (NEC Corporation, Japan); Tsunekazu Kimura (NEC Corporation, Japan); Tatsuji Moriguchi (NEC Corporation, Japan); Katsunori Hirayama (NEC TOSHIBA Space Systems, Ltd., Japan); Tsutomu Matsui (NEC Engineering, Ltd., Japan)

P13.06 Waveform Agile SAR Sensor

Kaizhi Wang (Shanghai Jiaotong University, P.R. China); Xingzhao Liu (Shanghai Jiao Tong University, P.R. China); Bin Tang (Shanghai Jiao Tong University, P.R. China)

P14 Other SAR Related Subjects

P14.01 Refocusing Through the Unknown Building Wall with a Filtered Backprojection Algorithm

Fang Li (Institute of Electronics, CAS, P.R. China); Li Lianlin (Peking University, P.R. China)

P14.02 The Near Region Range Profile Analysis of the Buried Object based on the EM Simulation

Lei Zhuang (Shanghai Institute of Satellite Engineering, P.R. China); Weimin Yu (Shanghai Academy of Spaceflight Technology, P.R. China); Ruifeng Zhao (Shanghai Institute of Satellite Engineering, P.R. China); Shujun Hou (Shanghai Academy of Spaceflight Technology, P.R. China); Lei Cui (Shanghai Institute of Satellite Engineering, P.R. China)

P14.03 Cross-Correlation Sensor System Signal Processing LabVIEW simulation

Nickolai Zhelev Kolev (Naval Academy, Bulgaria)

P14.04 GNSS-Reflectometry from ground-based, airborne and satellite platforms: Observations and simulation studies

Jamila Beckheinrich (GFZ German Research Centre for Geoscience, Germany); Maximilian Semmling (GFZ German Research Centre for Geoscience, Germany); Georg Beyerle (GFZ German Research Centre for Geosciences, Germany); Jens Wickert (GFZ German Research Centre for Geoscience, Germany); Heiko Apel (GFZ German Research Center for Geosciences, Germany); Ralf Stosius (Enviscope, Germany)

P15 Urban Remote Sensing / Ultra High Bandwidth

- P15.01 Using Multiple View Angles to Improve the Accuracy of UAVSAR Land Cover Classification**
Moritz Wurth (Karlsruhe Institute of Technology, Germany); Don Atwood (University of Alaska Fairbanks, USA)
- P15.02 Archaeological Study on Qiemo Ancient City Using SAR Remote Sensing Data**
Zhihong Gao (Institute of Remote Sensing Applications of Chinese Academy of Sciences, P.R. China); Yun Shao (Institute of Remote Sensing Application, Chinese Academy of Sciences, P.R. China); Huaze Gong (Institute of Remote Sensing Applications of Chinese Academy of Sciences, P.R. China); Long Liu (Institute of Remote Sensing Applications of Chinese Academy of Sciences, P.R. China); Xiaolin Bian (Institute of Remote Sensing Applications, Chinese Academy of Sciences, P.R. China); Minghuan Yuan (Institute of Remote Sensing Applications of Chinese Academy of Sciences, P.R. China)
- P15.03 Assessment of Ocean Wind Retrieval from Dual-Polarized X-band SAR data**
Faozi Said (University of Tromso, Norway); Harad Johnsen (Norut & University of Tromsø, Norway)
- P15.04 Validation of Ship Monitoring Techniques by present generation SAR Systems**
Alfredo Renga (University of Naples Federico II, Italy); Maria Graziano (Second University of Naples, Italy); Marco D'Errico (Università di Napoli, Italy); Antonio Moccia (Università di Napoli Federico II, Italy); Andrea Cecchini (University of Naples Federico II, Italy)

Room: Shanghai

Level 3

Session A.8: Compressive Sensing and Sparse Signal Reconstruction in Radar I (invited)

- Chairs: Joachim H. G. Ender (Fraunhofer FHR, DE), Xiao Xiang Zhu (German Aerospace Center (DLR), DE)*
- 08:30 GMTI from Multichannel SAR Images using Compressed Sensing**
Ludger Prünte (Fraunhofer-Institut für Hochfrequenzphysik und Radartechnik FHR, DE)
- 08:50 Autofocusing ISAR Images via Sparse Representation**
Joachim H. G. Ender (Fraunhofer FHR, DE)
- 09:10 Handling Phase in Sparse Reconstruction for SAR: Imaging, Autofocusing, and Moving Targets**
Müjdat Çetin (Sabanci University, TR); Özben Önhon (Sabanci University, TR); Sadegh Samadi (Shiraz University of Technology, Iran)
- 09:30 Performance assessment of SAR Compressive Sampling Tomography**
Alessandra Budiillon (University of Naples Parthenope, IT); Massimo Ciaramello (Università di Cassino, IT); Gilda Schirinzi (Università di Napoli Parthenope, IT)
- 09:50 Super-resolution of Sparse Reconstruction for Tomographic SAR Imaging – Demonstration with Real Data**
Xiao Xiang Zhu (German Aerospace Center (DLR), DE); Richard Bamler (German Aerospace Center (DLR), DE)

Room: Seoul

Level 3

Session B.8: D-InSAR, Persistent Scatterers

Chairs: Scott Hensley (Jet Propulsion Laboratory, USA), Jordi J. Mallorquí (Universitat Politècnica de Catalunya (UPC), ES)

- 08:30 A new approach to DInSAR Pixel Selection with Spectral Correlation along Time between Sublooks**
Rubén Iglesias (Universitat Politècnica de Catalunya, ES); Daniel Monells (Universitat Politècnica de Catalunya, ES); Giuseppe Centolanza (Universitat Politècnica de Catalunya, IT); Jordi J. Mallorquí (Universitat Politècnica de Catalunya (UPC), ES); Paco López-Dekker (German Aerospace Center (DLR), DE)
- 08:50 Application of High Resolution Spotlight TerraSAR-X data to landslide monitoring**
Rubén Iglesias (Universitat Politècnica de Catalunya, ES); Daniel Monells (Universitat Politècnica de Catalunya, ES); Giuseppe Centolanza (Universitat Politècnica de Catalunya, IT); Jordi J. Mallorquí (Universitat Politècnica de Catalunya (UPC), ES); Xavier Fabregas (Universitat Politècnica de Catalunya (Technical University of Catalonia), ES); Albert Aguasca (Universitat Politècnica de Catalunya (UPC), ES)
- 09:10 Point Density Reduction in Persistent Scatterer Interferometry**
Urs Wegmüller (GAMMA Remote Sensing AG, CH); Othmar Frey (ETH Zurich, Gamma Remote Sensing & Gamma Remote Sensing, CH); Charles Werner (GAMMA Remote Sensing Research and Consulting AG, CH)
- 09:30 Differential SAR Interferometry with TerraSAR-X TOPS Data: Mexico City Subsidence Results**
Luca Marotti (German Aerospace Center (DLR), DE); Pau Prats (German Aerospace Center (DLR), DE); Rolf Scheiber (German Aerospace Center (DLR), DE); Stefan Wollstadt (German Aerospace Center (DLR), DE); Andreas Reigber (German Aerospace Center (DLR), DE)
- 09:50 Volcano Deformation Measurement Using Persistent Scatterer Interferometry With Atmospheric Delay Corrections**
Xiaoying Cong (Technische Universität München, DE); Michael Eineder (German Aerospace Center (DLR), DE)

10:10 - 10:40 Coffee Break

Room: Istanbul

Level 2

Session C.8: Bi-/Multistatic SAR / ISAR (invited)

Chairs: Ingo Walterscheid (Fraunhofer FHR, DE), Gerhard Krieger (DLR, DE)

- 08:30 Application of Optimal Sensor Positioning to Bistatic ISAR**
Marco Martorella (University of Pisa, IT); Elisa Giusti (University of Pisa, IT); Fabrizio Berizzi (University of Pisa, IT); Brett Haywood (DSTO, Australia); James E Palmer (Defence Science and Technology Organisation, Australia); Bevan D Bates (Defence Science and Technology Organisation, Australia); Willie Nel (Council for Scientific and Industrial Research, South Africa); Yunus Gaffar (Council for Scientific and Industrial Research, South Africa)
- 08:50 2D-MIMO SAR/ISAR imaging of moving targets with reconfigurable formation of platforms**
Debora Pastina (University of Rome "La Sapienza", IT); Fabrizio Santi (University of Rome "La Sapienza", IT); Marta Bucciarelli (University of Rome, "La Sapienza", IT); Pierfrancesco Lombardo (University Roma La Sapienza, IT)
- 09:10 Bistatic radar imaging of an airfield in forward direction**
Ingo Walterscheid (Fraunhofer FHR, DE); Andreas R. Brenner (Fraunhofer FHR, DE); Jens Klare (Fraunhofer FHR, DE)
- 09:30 Relativistic Effects in Bistatic SAR Processing and System Synchronization**
Gerhard Krieger (DLR, DE); Francesco De Zan (German Aerospace Center (DLR), DE)
- 09:50 A noise based transmitter system for the HITCHHIKER project**
Simon Reuter (University of Siegen & Center for Sensorsystems (ZESS), DE); Florian Behner (University of Siegen, DE); Holger Nies (University of Siegen & Center for Sensorsystems (ZESS), DE); Otmar Loffeld (Center for Sensorsystems (ZESS), University of Siegen, DE)

10:10 - 10:40 Coffee Break

Room: Kiew**Level 2****Session D.8: Subsurface Radar (invited)**

Chairs: Prasad Gogineni (Center For Remote Sensing Of Ice Sheets, USA), Florence Hélière (European Space Agency ESTEC, NL)

08:30 Sounding and Imaging of Fast Flowing Glaciers and Ice-Sheet Margins

Prasad Gogineni (Center For Remote Sensing Of Ice Sheets, USA); Jilu Li (Center For Remote Sensing Of Ice Sheets, USA); John Paden (University of Kansas, USA); Reid Crowe (Center for Remote Sensing of Ice Sheets, USA); Anthony Hoch (University of Kansas, USA); Cameron Lewis (Center for Remote Sensing of Ice Sheets, USA); Emily Arnold (Center for Remote Sensing of Ice Sheets, USA); Fernando Rodriguez-Morales (University of Kansas, USA); Carl Leuschen (Center for Remote Sensing of Ice Sheets, USA); Rick Hale (Center for Remote Sensing of Ice Sheets, USA); A. r. Harish (Indian Institute of Technology Kanpur, India); David Braaten (Center for Remote Sensing of Ice Sheets, USA)

08:50 Coherent and Incoherent Clutter Reduction Techniques to Sound Ice from High Altitudes

Jilu Li (Center For Remote Sensing Of Ice Sheets, USA); Prasad Gogineni (Center For Remote Sensing Of Ice Sheets, USA); John Paden (University of Kansas, USA); Carl Leuschen (Center for Remote Sensing of Ice Sheets, USA); Fernando Rodriguez-Morales (University of Kansas, USA); Reid Crowe (Center for Remote Sensing of Ice Sheets, USA); Daniel Gomez (Center for Remote Sensing of Ice Sheets, USA); Rick Hale (Center for Remote Sensing of Ice Sheets, USA)

09:10 Coherent Surface Clutter Suppression Techniques with Topography Estimation for Multi-Phase-Center Radar Ice Sounding

Ulrik Nielsen (Technical University of Denmark, DK); Jorgen Dall (Technical University of Denmark, DK); Steen Savstrup Kristensen (Technical University of Denmark, DK); Anders Kusk (Technical University of Denmark, DK)

10:10 - 10:40 Coffee Break**09:30 Surface Clutter Suppression Techniques for P-band Multi-channel Synthetic Aperture Radar Ice Sounding**

David Bekaert (European Space Agency, NL); Nicolas Gebert (European Space Agency & ESTEC, NL); Chung-Chi Lin (European Space Agency/ESTEC, NL); Florence Hélière (European Space Agency ESTEC, NL); Jorgen Dall (Technical University of Denmark, DK); Anders Kusk (Technical University of Denmark, DK); Steen Savstrup Kristensen (Technical University of Denmark, DK)

09:50 Shallow subsurface sounding from a rover with a polarimetric GPR

Valerie Ciarletti (LATMOS/IPSL & UVSQ CNRS/INSU, FR); Dirk Plettemeier (Dresden University of Technology, DE); Wolf-Stefan Benedix (Technische Universität Dresden, DE); Andre-Jean Vieau (LATMOS/IPSL, FR); Rafik Hassen-Khodja (LATMOS/IPSL, FR); Benjamin Lustrement (LATMOS/IPSL, FR); Christoph Statz (Dresden University of Technology, FR); Philippe Cais (Observatoire de Bordeaux, FR); Olivier Humeau (LATMOS/IPSL, FR)

10:10 - 10:40 Coffee Break

Room: Shanghai

Level 3

Session A.9: Compressive Sensing and Sparse Signal Reconstruction in Radar II (invited)

Chairs: Xiao Xiang Zhu (German Aerospace Center (DLR), DE), Joachim H. G. Ender (Fraunhofer FHR, DE)

- 10:40 Wavelet-Based Compressed Sensing for SAR Tomography of Forested Areas**
Esteban Aguilera (DLR, DE); Matteo Nannini (German Aerospace Center (DLR), DE); Andreas Reigber (German Aerospace Center (DLR), DE)
- 11:00 CS Radar Imaging via Adaptive CAMP**
Laura Anitori (TNO, NL); Arian Maleki (Rice University, USA); Matern Otten (TNO, NL); Richard Baraniuk (Rice University, USA); Peter Hoogeboom (TNO, NL)
- 11:20 Coherent processing for ISAR imaging with sparse apertures**
Lei Zhang (Xidian University, CN); Jialian Sheng (Xidian University, CN); Mengdao Xing (Xidian University, CN); Jinshan Ding (University of Siegen, DE); Zheng Bao (Xidian University, CN)
- 11:40 Waveform Design for L_q Regularization Based Radar Imaging and An Approach to Radar Imaging with Non-moving Platform**
Zhe Zhang (Institute of Electronics, Chinese Academy of Sciences, CN); Bingchen Zhang (Institute of Electronics, Chinese Academy of Science, CN); Wen Hong (National Key Laboratory of Microwave imaging Technology & Institute of Electronics, Chinese Academy of Sciences, CN); YiRong Wu (National Key Laboratory of Microwave Imaging Technology, CN)
- 12:00 SNR Analysis For SAR Imaging From Raw Data Via Compressed Sensing**
ChengLong Jiang (Institute of Electronics, Chinese Academy of Sciences, CN); Hai Jiang (Institute of Electronics, Chinese Academy of Science, CN); Bingchen Zhang (Institute of Electronics, Chinese Academy of Science, CN); Wen Hong (National Key Laboratory of Microwave imaging Technology & Institute of Electronics, Chinese Academy of Sciences, CN); YiRong Wu (National Key Laboratory of Microwave Imaging Technology, CN)

12:20 -13:40 Lunch

Room: Seoul

Level 3

Session B.9: Polarimetric SAR I

Chairs: Ryoichi Sato (Niigata University, JP), Carlos López-Martínez (Universitat Politècnica de Catalunya, ES)

- 10:40 Influence of the nature of a priori knowledge on the precision of vegetation height estimation in polarimetric SAR interferometry**
Aurélien Arnaubec (Onera, FR); Antoine Roueff (Fresnel Institute & Ecole Centrale de Marseille, FR); Pascale Dubois-Fernandez (ONERA, FR); Philippe Réfrégier (Fresnel Institute, FR)
- 11:00 Analysis and Validity of the PolInSAR Line Model on Forested Areas**
Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), ES); Xavier Fabregas (Universitat Politècnica de Catalunya (Technical University of Catalonia), ES); Alberto Alonso-González (Universitat Politècnica de Catalunya (UPC), ES)
- 11:20 An initial assessment of RADARSAT-2 and Terra-SAR-X pol- InSAR acquisitions over Ottawa**
Karim E. Mattar (Defence R&D Canada - Ottawa, CA)
- 11:40 Space-Time PolSAR data temporal series processing based on Binary Partition Trees**
Alberto Alonso-González (Universitat Politècnica de Catalunya (UPC), ES); Carlos López-Martínez (Universitat Politècnica de Catalunya (UPC), ES)
- 12:00 Soil Moisture Retrieval under Forest Using Polarimetric Decomposition Techniques at P-Band**
Thomas Jagdhuber (German Aerospace Center (DLR), DE); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE); Stefan Sauer (German Aerospace Center (DLR), DE); Konstantinos P. Papathanassiou (German Aerospace Center, DE); Axel Bronstert (University of Potsdam, DE)

12:20 -13:40 Lunch

Room: Istanbul

Level 2

Session C.9: Passive Radar Imaging (invited)

Chairs: Fabrizio Berizzi (University of Pisa, IT), Krzysztof Kulpa (Warsaw Technical University, PL)

10:40 Passive radar imaging with GNSS transmitters and a fixed receiver: Latest Results
 Michail Antoniou (University of Birmingham, UK);
 Zhangfan Zeng (University of Birmingham, UK); Feifeng Liu (Beijing Institute of Technology, UK); Mikhail Cheriakov (University of Birmingham, UK)

11:00 Passive SAR imaging using the ASAR instrument of ENVISAT as transmitter of opportunity
 Virginie Kubica (Royal Military Academy, BE); Xavier Neyt (Royal Military Academy, BE)

11:20 WiFi-based passive ISAR for high resolution cross-range profiling of moving targets
 Paolo Falcone (University of Rome "La Sapienza", IT);
 Fabiola Colone (University of Rome "La Sapienza", IT);
 Pierfrancesco Lombardo (University Roma La Sapienza, IT);
 Debora Pastina (University of Rome "La Sapienza", IT)

11:40 Towards a MIMO Radar based on Commensal use of FM Broad-cast Transmitters
 Craig Tong (University of Cape Town, South Africa);
 Michael R Inggs (University Cape Town & Centre for High Performance Computing, South Africa);
 Amit Kumar Mishra (University of Cape Town, South Africa)

12:00 Passive ISAR with DVB-T signals
 Domenico Olivadese (University of Pisa, IT); Marco Martorella (University of Pisa, IT);
 Elisa Giusti (University of Pisa, IT); Dario Petri (University of Pisa, IT);
 Fabrizio Berizzi (University of Pisa, IT)

12:20 -13:40 Lunch

Room: Kiev

Level 2

Session D.9: Remote Sensing and Application

Chairs: Paul A. Rosen (Jet Propulsion Laboratory, USA), Alberto Moreira (German Aerospace Center - DLR, DE)

10:40 Automatic Detection and Characterization of Subsurface Linear Features in Radar Sounder Data Acquired on Icy Areas
 Adamo Ferro (University of Trento, IT); Lorenzo Bruzzone (University of Trento, IT)

11:00 Radar Remote Sensing of the Sahara Landscape
 Tom G Farr (Jet Propulsion Laboratory, USA); Philippe Paillou (Observatoire Astronomique de Bordeaux, FR)

11:20 SubSAR - A Scheme for the Discrimination Between Surface and Sub-Surface Features at Large Stand-Off Distances
 Keith Morrison (Cranfield University, UK); John Bennett (University of Sheffield, UK);
 Matt Nolan (University Alaska at Fairbanks, USA)

11:40 Crop Data Collection with an UWB-SAR System
 Iole Pisciotano (Fraunhofer Institute for High Frequency Physics and Radar Techniques (FHR), DE);
 Udo Uschkerat (Fraunhofer Institute for High Frequency Physics and Radar Techniques (FHR), DE)

12:00 Time Series Analysis of Multi-Polarisation Synthetic Aperture Radar Images with a Textural-Contextual Model
 Vahid Akbari (University of Tromsø, NO); Anthony P. Doulgeris (University of Tromsø, NO);
 Torbjørn Eltoft (University of Tromsø, NO)

12:20 -13:40 Lunch

Room: Shanghai

Level 3

Session A.10: SAR Processing

Chairs: Andrea Monti Guarnieri (Politecnico di Milano, IT), Rolf Scheiber (German Aerospace Center (DLR), DE)

- 13:40 The InSAR Scientific Computing Environment**
Paul A. Rosen (Jet Propulsion Laboratory, USA); Eric Gurrola (Jet Propulsion Laboratory, USA); Gian Franco Sacco (Jet Propulsion Laboratory, USA); Howard Zebker (Stanford University, USA)
- 14:00 Real-time Airborne SAR Imaging. Motion compensation and Autofocus issues**
Hubert M.J. Cantalloube (ONERA, FR); Carole Nahum (Direction Générale de l'Armement, FR)
- 14:20 Refined Motion Compensation for Highly Squinted Spotlight Synthetic Aperture Radar**
Minh Phuong Nguyen (Leibniz Universität Hannover, DE)
- 14:40 Reconstruction methods of missing SAR data: analysis in the frame of TanDEM-X synchronization link**
Muriel Pinheiro (German Aerospace Center, DE); Marc Rodriguez-Cassola (DLR, DE)
- 15:00 Rugged SAR Optronic SAR Processing through Wavefront Compensation and its Digital Analogy**
Alain Bergeron (INO, CA); Linda Marchese (INO, CA); Michel Doucet (INO, CA); Martin Suess (ESA/ESTEC, NL); Bernd Harnisch (ESA, NL)

Room: Seoul

Level 3

Session B.10: Polarimetric SAR II

Chairs: Matteo Pardini (German Aerospace Center (DLR), DE), Sang-Eun Park (Niigata University, JP)

- 13:40 A Polarimetric Change detector identifying power modifications of scattering mechanisms**
Armando Marino (ETH University Zürich, CH); Juan Manuel Lopez-Sanchez (University of Alicante, ES); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)
- 14:00 Fundamental Study on Semi-blind Scattering Component Decomposition for POLSAR data using ICA**
Hiroyoshi Yamada (Niigata University, JP); Yoshio Yamaguchi (Niigata University, JP); Ryoichi Sato (Niigata University, JP)
- 14:20 The Problem of Partial Coherence and Partial Polarization in Polarimetric SAR Interferometry**
Jose Luis Alvarez-Perez (University of Alcalá, ES)
- 14:40 A Flexible and Computationally Efficient Density Model for the Multilook Polarimetric Covariance Matrix**
Paul Kersten (No Affiliation, NO); Stian Normann Anfinssen (University of Tromsø, NO)
- 15:00 Accounting for depolarization effects in the test for Equi-Scattering Mechanisms based on the partial target detector**
Armando Marino (ETH University Zürich, CH); Juan Manuel Lopez-Sanchez (University of Alicante, ES); Irena Hajnsek (ETH Zurich, DLR Oberpfaffenhofen, DE)

Room: Istanbul

Level 2

Session C.10: Bistatic and Multistatic SAR

Chairs: Otmar Loffeld (Center for Sensorsystems (ZESS), University of Siegen, DE), Jens Klare (Fraunhofer FHR, DE)

- 13:40 Trial results on passive SAR measurement using the Envisat-1 satellite as an illuminator of opportunity**
Piotr Samczynski (Warsaw University of Technology, PL); Krzysztof S. Kulpa (Warsaw University of Technology, PL); Mateusz Malanowski (Warsaw University of Technology, PL); Piotr Krysiak (Warsaw University of Technology, PL); Łukasz Małkowski (Warsaw University of Technology, PL)
- 14:00 Terahertz Imaging Using a Bistatic Fast Factorized Backprojection Algorithm**
Jochen Moll (Goethe University Frankfurt am Main, DE); Philipp Schöps (Goethe University Frankfurt am Main, DE); Viktor Krozer (Goethe University of Frankfurt am Main, DE); Andreas Keil (SynView GmbH, DE); Torsten Loeffler (SynView GmbH, DE); Peter de Maagt (European Space Agency, NL)
- 14:20 Focusing Bistatic SAR Data in Double Sliding Spotlight Mode with TerraSAR-X and PAMIR Based on Azimuth Chirp Filtering**
Robert Wang (Institute of Electronics, Chinese Academy of Sciences & University of Siegen, CN); Yunkai Deng (Institute of Electronics, Chinese Academy of Sciences, CN); Otmar Loffeld (Center for Sensorsystems (ZESS), University of Siegen, DE); Holger Nies (University of Siegen & Center for Sensorsystems (ZESS), DE); Ingo Walterscheid (Fraunhofer FHR, DE); Thomas Espeiter (Fraunhofer FHR, DE); Jens Klare (Fraunhofer FHR, DE); Joachim H. G. Ender (Fraunhofer FHR, DE)
- 14:40 Bistatic Quasi-Mirror Radar of the Sea Surface from Space: Properties and Prospects**
Sergey Pereslegin (P.P.Shirshov Institute of Oceanology of the Russian Academy of Sciences (IO RAS), RU); Zaur Khalikov (P. P. Shirshov Institute of Oceanology of the Russian Academy of Sciences (IO RAS), RU); Alexander Kovalenko (Scientific and Research Institute of Precise Instruments, RU)
- 15:00 Chirp Scaling Algorithm for Processing Bistatic SAR Data Based on Loffeld's Bistatic Formula**
Ali Zare (Shiraz University, Iran); Mohammad Ali Masnadi-Shirazi (Shiraz University, Iran); Sadegh Samadi (Shiraz University of Technology, Iran)

15:20 - 15:45 Awards Presentation and Closing Remarks

Room: Kiev

Level 2

Session D.10: Image Processing

Chairs: Minhui Zhu (Chinese Academy of Sciences & Institute of Electronics, CN), Joachim Boukamp (Cassidian, DE)

- 13:40 A comparison of regularization-based methods for despeckling of SLC SAR Images**
Dušan Gleich (University of Maribor, Slovenia); Matej Kseneman (FERI, Slovenia)
- 14:00 Supervised Evolutionary Optimization of Bayesian Nonlocal Means Filter with Sigma Preselection for Despeckling SAR Images**
Luis Gomez (University of Las Palmas G. C., ES); Cristian Munteanu (University of Las Palmas G.C., ES); Maria E. Buemi (University of Buenos Aires, Argentina); Julio Berles (University of Buenos Aires, Argentina); Marta E. Mejail (University of Buenos Aires, Argentina)
- 14:20 Near Real-Time Enhancement of Fractional SAR Imagery Via Adaptive Maximum Entropy Neural Network Computing**
Yuriy V. Shkvarko (Cinvestav Jalisco, Mexico); Stewart R Santos (Research Center and Advanced Studies of the National Polytechnic Institute & CINVESTAV, Mexico); Jose Tuxpan (CINVESTAV, Mexico)
- 14:40 SAR Despeckling by Sparse Reconstruction on Affinity Nets (SRAN)**
Fatih Porikli (Mitsubishi Electric Research Laboratories, USA); Rajagopalan Sundaresan (University of Arizona, USA); Kei Suwa (Mitsubishi Electric Corporation, JP)
- 15:00 Robust Speckle Reducing Anisotropic Diffusion**
Rohit Chatterjee (Birla Institute of Technology, Mesra, India); Avijit Kar (Jadavpur University, India)

Room: Shanghai

Level 3

Awards Presentation and Closing Remarks

The EUSAR 2012 Awards Committee will recognize outstanding research works presented during the conference in three different categories:

- Best Paper Award
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15:20 - 15:45 Awards Presentation and Closing Remarks

Agilent

Booth Nr. 8 + 9



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Booth Nr. 1



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Booth Nr. 10



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Booth Nr. 3 + 4



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Booth Nr. 6



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- Ground Penetrating Radar (GPR)
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 - Hardware implementation / Prototyping
 - Data Processing
 - Measurement Service

During realization of the SAR-Lupe system, RST was responsible for system design, image quality verification (on-ground and in-orbit), SAR processing and calibration.

RST GmbH
Bahnhofst. 108
88682 Salem
Germany
www.rst-group.biz

Exelis-ITT Visual Information Solutions GmbH

Booth Nr. 5



Visual Information Solutions

EXELIS Visual Information Solutions is empowering more than 250,000 people worldwide to easily extract useful information from complex data in the pursuit of discovery. Our leading software products ENVI and SARscape help geoscientists and GIS professionals access, process, visualize and analyze SAR data and imagery. Visit us at EUSAR booth #5.

Exelis - ITT Visual Information Solutions GmbH
Visual Information Solutions
A subsidiary of Exelis Inc.
Talhofstr. 32a
82205 Gilching
Germany
www.exelisvis.com

GENERAL INFORMATION

EUSAR 2012 CONFERENCE SECRETARIAT

For detailed information please contact:

VDE-Conference Services
 Ms Hatice Altintas
 Stresemannallee 15
 60596 Frankfurt
 Germany
 Phone: +49-(0)69-63 08- 477
 Fax: +49-(0)69-96 31-5213
 E-mail: hatice.altintas@vde.com
 Internet: www.vde.com

EUSAR 2012 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, April 23, 2012 08:00 - 18:00
 Tuesday, April 24, 2012 08:00 - 18:00
 Wednesday, April 25, 2012 08:00 - 18:00
 Thursday, April 26, 2012 08:00 - 16:00

REGISTRATION FEES

On-Site Registration

Presenting Author*	680,- EUR
Member (VDE, EUREL, IEEE)**	745,- EUR
Corporate VDE-member	775,- EUR
Non-Member	850,- EUR
Member of Universities (VDE, EUREL, IEEE)**	420,- EUR
Student (Undergraduates only! excl. conference dinner)**	60,- EUR
Tutorial (each) No 1, No 2, No 3	280,- EUR
Tutorial No. 4	free of charge
Additional dinner ticket	60,- EUR
Siemens technical tour on 27.04.2012 (limited places)	25,- 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, April 23, 2012.

- 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 and Student Registration

- Member and non member registration includes admission to all plenary and technical sessions and to the daily luncheons, the conference dinner at Restaurant Bratwurst Röslein in the Old Nürnberg City, one copy of the electronic proceedings

PROCEEDINGS

All papers accepted for presentation at the conference will be published in the proceedings incl. the CD-ROM. 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 mandatory.
- Cash payment on-site in EURO (€)

CANCELLATION

In case of cancellation, provided that written notice is received at the VDE-Conference Services before Feb. 24, 2012 (except authors registration), the registration fee will be fully refunded less a handling fee of EURO 60,00. After Feb. 24, 2012 no refund will be made. Proceedings will then be sent to the registrant after the conference.

HOTEL RESERVATION

A wide variety of hotel rooms in various categories has been reserved. The Congress- und Tourismus-Zentrale Nürnberg agency will be in charge of handling the room reservations.

You can make your hotel reservation either by Fax or Online via www.tourismus.nuernberg.de.

For further information about the hotels please contact:

Congress- und Tourismus-Zentrale Nürnberg
Frauentorgraben 3
90443 Nürnberg
Tel.: +49 911 2336-120
Fax: +49 911 2336-167
www.tourismus.nuernberg.de

VENUE

Congress Center Nuremberg OST (East- Wing)
NürnbergMesse GmbH
Messezentrum
90471 Nuremberg
Tel.: +49 (0) 9 11.86 06-83 11
Fax: +49 (0) 9 11.86 06-83 71
www.congressing.de

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.

Phone: +49-(0)911 8606-3001
E-mail: vde-conferences@vde.com

PARKING LOT

A parking garage is available at the Congress Center Nuremberg OST at 8,00 EUR per day.

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 Poster session will take place in the Foyer of the CCN Ost in level 2.

AWARDS INFORMATION

The EUSAR 2012 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 2012 proceedings will be considered by the Awards Committee for the Best Paper / Best Poster Award.

SOCIAL PROGRAM

- Piano recital by the BONUM Piano Duet on Tuesday, April 24, 17:15-18:00
- Get Together in the Restaurant Bratwurst Röslein, Tuesday, April 24, 18:45-22:00.
- Poster Session and Get Together on Wednesday, April 25, 18:00 - 22:00

The attendance to these events is included in the full conference fee. Additional tickets for accompanying persons may be ordered with the registration form within the given deadline and upon availability.

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.

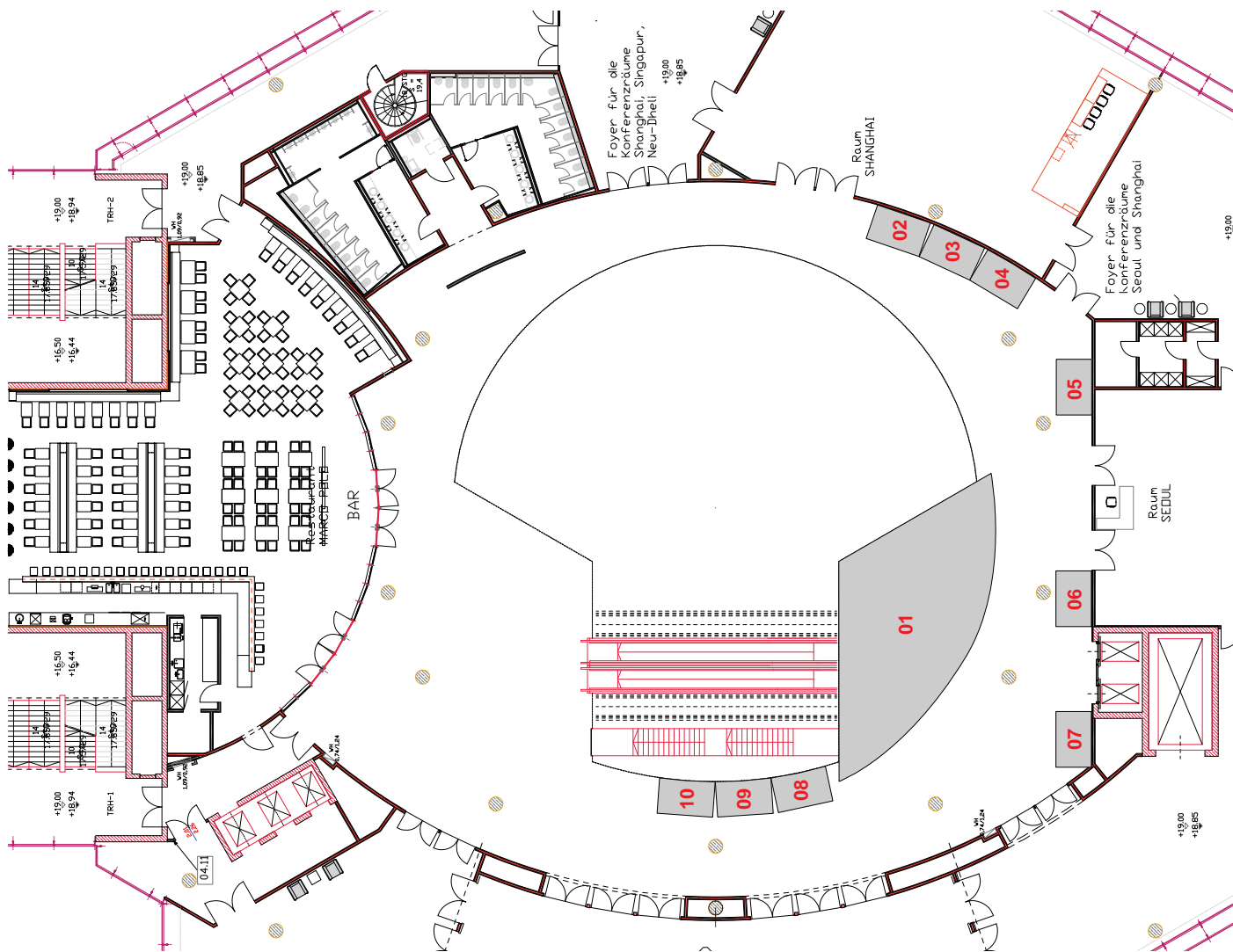
EMERGENCY CALLS

Fire/Ambulance 112

Police 110

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

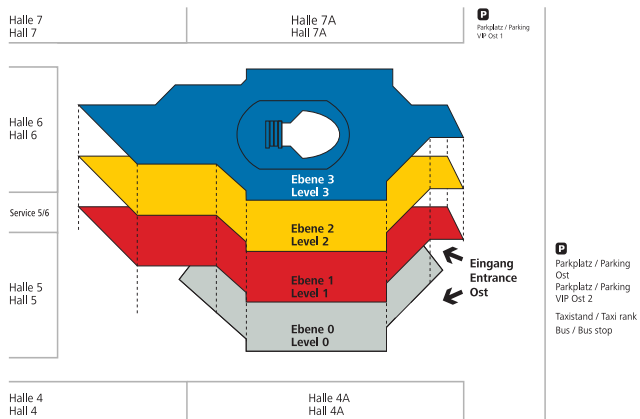
Exhibitors



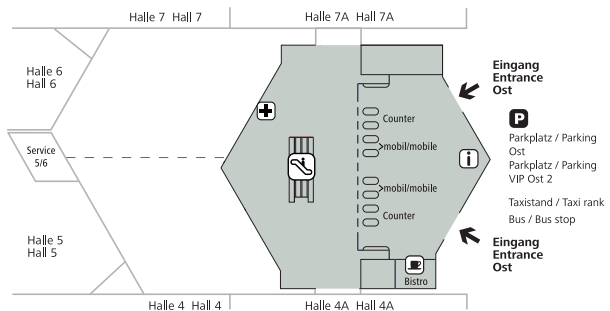
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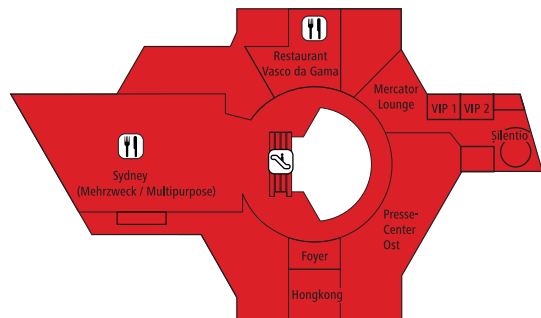
CongressCenter Nürnberg - CCN Ost



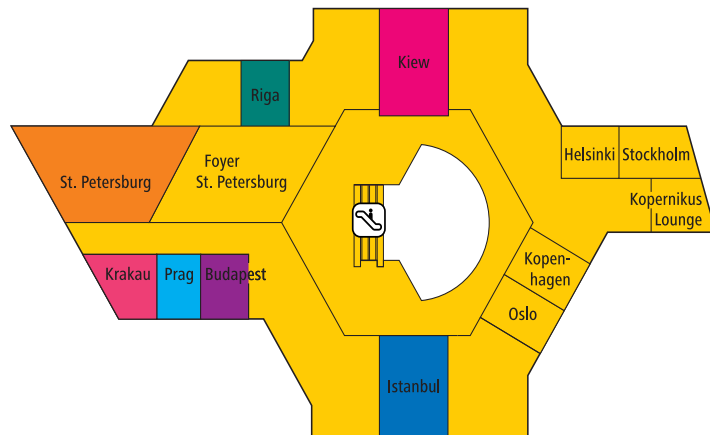
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