

# **12<sup>th</sup> URSI Commission-F Triennial Open Symposium**

**on**

## **Radio Wave Propagation and Remote Sensing**

8<sup>th</sup> – 11<sup>th</sup> March 2011

**and**

## **URSI-F Training Workshops**

7<sup>th</sup> March 2011

in Garmisch-Partenkirchen,

Alpine-Bavaria, Germany

Draft Conference Programme



# 12<sup>th</sup> URSI Commission-F Triennial Open Symposium on Radio Wave Propagation and Remote Sensing

Venue	<p>Dorint Sport-Hotel, Mittenwalder Straße 59</p> <p>82467 Garmisch-Partenkirchen, Germany</p> <p>(<a href="http://www.dorint.com/de/dorint-hotels-resorts">www.dorint.com/de/dorint-hotels-resorts</a>),</p>
Dates	<p>7<sup>th</sup> March 2011, Training Workshops</p> <p>8<sup>th</sup> – 11<sup>th</sup> March 2011, Conference</p>
Conference Contacts	<p>Prof. Dr. rer. nat. Madhukar Chandra</p> <p>Dr. Andreas Danklmayer</p> <p>Conference Assistants</p> <p>Mr. Johannes Reindl</p> <p>Mr. Narathep Phruksahiran</p> <p>Professur für Hochfrequenztechnik und Theoretische Elektrotechnik</p> <p>Fakultät für Elektrotechnik und Informationstechnik</p> <p>TU Chemnitz</p> <p>Reichenhainer Str. 70</p> <p>09126 Chemnitz</p> <p>Germany</p> <p>Email: <a href="mailto:madhu.chandra@etit.tu-chemnitz.de">madhu.chandra@etit.tu-chemnitz.de</a></p> <p>Email: <a href="mailto:ursi-2011-a@infotech.tu-chemnitz.de">ursi-2011-a@infotech.tu-chemnitz.de</a></p> <p>Tel.: +49 (0)371 - 531 33168/38727</p> <p>Fax: +49 (0)371 - 531 833168</p> <p>See Website : <a href="http://www.tu-chemnitz.de/etit/hf/ursi/index.htm">http://www.tu-chemnitz.de/etit/hf/ursi/index.htm</a></p>

# Preface

To be provided

# Conference Board

## General Chairman

- Prof. Dr. rer. nat. Wolfgang Keydel  
(Ex Director of the Institute for Radiofrequency Technology, DLR, Oberpfaffenhofen, Germany)

## Chairmen of the Organisation and Technical Committee

- Prof. Dr. rer. nat. Madhukar Chandra (TU Chemnitz)
- Dr. Manfred Zink (DLR, Oberpfaffenhofen)

## Technical Committee

All national representatives of URSI Commission-F:

- Dr. D.A. GAGLIARDINI (Argentina)
- Dr. D.A. NOON (Australia)
- Prof. W. RIEDLER (Austria)
- Prof. P. SOBIESKI (Belgium)
- Prof M.S. ASSIS (Brazil)
- Dr. E. ALTIMIRSKI (Bulgaria)
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- Mr. R. AGUILERA (Chile)
- Mr. Q-S DONG (China, CIE)
- Prof. K-S CHEN (China, SRS)
- Dr. S. ZVANOVEC (Czech Republic)
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- Dr. M. F. SARANGO (Peru)
- Dr. W. PAWLOWSKI (Poland)
- Prof. J.C. da Silva NEVES (Portugal)
- Dr. A.A. CHUKHLANTSEV (Russia)
- Prof. I. BALAZ (Slovakia)
- Prof. M.R. INGGS (South Africa)
- Prof. J. MARGINEDA PUIGPELAT (Spain)
- Prof. G. ELGERED (Sweden)
- Mr. D. VERGERES (Switzerland)
- Prof. O. ARIKAN (Turkey)
- Prof. G.P. KULEMIN (Ukraine)
- Dr. R.J. WATSON (United Kingdom)
- Prof. Dr. R.H. LANG (USA)
- Dr. A. GASIEWSKI (USA)

## Local Organisation Committee

All members of the German URSI Commission-F, and all members of VDE-ITG Section 7.5 "Wave Propagation".

# Programme Matrix

<b>Monday, 7th March 2011:</b>	
Pre Conference Training Workshops Day	

<b>Day 1: Tuesday, 8<sup>th</sup> March 2011</b>	
08:00 - 09:30	Get-together and Registration (Conference Desk)
09:30 - 10:00	Opening Ceremony
10:00 – 11:00	<b>Inaugural Session: Keynote Speech 1</b>
11:00 - 11:30	Coffee Break
11:30 – 12:30	<b>Inaugural Session: Keynote Speech 2</b>
12:30 – 13:45	Lunch Break
13:45 – 15:50	<b>Session 1A: Young Scientists Presentations - 1</b>
15:50 – 16:20	Coffee Break
16:20 – 18:25	<b>Session 2A: Young Scientists Presentations - 2</b>
19:00	<b>Get Together</b>

<b>Day 2: Wednesday, 9<sup>th</sup> March 2011</b>	
08:30 – 10:30	<b>Session 3A: Topical Issues in Propagation : Review Talks</b>
10:30 – 11:10	Coffee Break
11:10 – 12:50	<b>Session 4A: SAR and related Aspects - 1</b> <b>Session 4B: Weather Radar-1</b>
12:50 – 14:00	Lunch Break
14:00 – 15:30	<b>Session 5A : SAR and related Aspects - 2</b>
15:30 – 16:00	Coffee Break
16:00 – 17:15	<b>Session 6A: Trees : Propagation and Scattering</b> <b>Session 6B: Antenna Engineering and Radar Systems</b>
18:45	<b>Conference Dinner</b>

<b>Day 3: Thursday, 10<sup>th</sup> March 2011</b>		
08:30 – 10:30	<b>Session 7A: Topical Issues in Weather Radar Applications</b>	
10:30 – 11:00	Coffee Break	
11:00 – 13:05	<b>Session 8A: Satellite Propagation and Propagation Models</b>	<b>Session 8B: Propagation Effects and Measurement in Mobile, fixed, rural, and GNSS Scenarios</b>
13:05 – 14:15	Lunch Break	
14:15 – 16:15	<b>Session 9A: Review and invited Presentations on Channel Characterisation, Space Applications, MM-Wave Radiometry and Frequency Allocation</b>	
16:15 – 16:45	Coffee Break	
16:45 – 18:25	<b>Session 10A: Radiometry</b>	<b>Session 10B: Engineering and System Aspects of Aerospace Systems</b>

<b>Day 4: Friday, 11<sup>st</sup> March 2011</b>		
08:30 – 10:10	<b>Session 11A: Satellite SAR-1</b>	<b>Session 11B: Weather Radar-2: Modeling, Systems, Applications</b>
10:10 – 10:40	Coffee Break	
10:40 – 12:45	<b>Session 12A: Satellite SAR-2</b>	<b>Session 12B: Propagation Effects in Remote Sensing and Communications</b>
12:45 – 13:55	Lunch Break	
13:55 – 15:00	Discussion and Closing Ceremony	

## Programme Overview

<b>Pre Conference Training Workshops Day : Monday, 7<sup>th</sup> March 2011</b>	
08:00 - 08:20	Registration
08:20 – 08:30	Welcome
<b>Workshop 1 :</b>	
<b>Title: Modern Radar-Concepts for Remote Sensing: Engineering Aspects, Multi-Parameter Measurements and their Interpretation.</b>	
08:30 - 09:00	Prof. Dr. M. Chandra : Modern Principles of Radars, A Wave-Form Approach
09:00 – 09:50	Prof. Dr. W. Keydel : Principles of Modern SAR and SAR Applications
09:50 - 10:20	Coffee Break
10:20 – 11:00	Prof. Dr. V. Chandrasekar : Modern Aspects of Weather Radars
11:00 – 11:30	Dr. M. Hagen : Polarimetric Weather Radar Measurements
11:30 – 12:00	Dr. F. Gekat : Commercial Weather Radars Today
12:00 – 12:30	Mr. T. Otto : Principles and Applications of FMCW Radars
12:30 – 13:40	Lunch Break
<b>Topics common to Workshops 1 and 2</b>	
13:40 – 14:10	Prof. Dr. M. Chandra : Fundamentals of Microwave Propagation for Radars and Communication Links (with special reference to satellite links)
14:10 – 14:40	Prof. Dr. C. Simmer : Atmospheric Remote Sensing
14:40 – 15:00	Prof. Dr. T. Kürner : Millimeter Wave Propagation
15:00 – 15:30	Coffee Break
<b>Workshop 2 :</b>	
<b>Title: Modern Concepts of Propagation for Communications, Remote Sensing, and Space Applications</b>	
15:30 – 16:05	Prof. Dr. O. Fišer : Budget Planning for Microwave Links
16:05 – 16:30	Dr. A. Danklmayer : Propagation Effects for Satellite-Mounted Radars
16:30 – 17:00	Dr. A. Hornbostel : Propagation Aspects of GNSS Applications
17:00 – 17:25	Prof. Dr. Gerd Wanielik: Multi-Sensor Automotive Applications
17:25 – 18:55	Agilent Technologies : Demonstration of Microwave Measuring Equipment

Day 1: Tuesday, 8 <sup>th</sup> March 2011	
08:00 - 09:30	Get-together and Registration (Conference Desk)
09:30 - 10:00	Opening Ceremony: Prof. Dr. Wolfgang Keydel (General Chairman) Prof. Dr. Madhu Chandra (Chairman, URSI Commission-F) Prof. Dr. Roger Lang (Vice Chairman, URSI Commission-F) Dr. Manfred Zink (Co-Chairman)
	<b>Inaugural Session: Keynote Speech 1</b> <b>Session Chairs:</b> Prof. Dr. Wolfgang Keydel and Prof. Dr. Roger Lang
10:00 – 11:00	<b>The TanDEM-X Mission: Challenges and Innovation</b> <i>Dr. Manfred Zink</i> DLR, Oberpfaffenhofen, Germany
11:00 - 11:30	Coffee Break
	<b>Inaugural Session: Keynote Speech 2</b> <b>Session Chairs:</b> Prof. Dr. Fernando Perez Fontan and Prof. Dr. Roger Lang
11:30 – 12:30	<b>Propagation Aspects for Millimeter and Sub-Millimeter Short-Range Communication</b> <i>Prof. Dr. T. Kürner</i> Institut für Nachrichtentechnik, TU Braunschweig, Braunschweig, Germany
12:30 – 13:45	Lunch Break
	<b>Session 1A: Young Scientists Presentations - 1</b> <b>Session Chairs:</b> Dr. Andreas Reigber and Dr. Andreas Danklmayer
13:45 – 14:10	<b>Scatterer Characterisation based on the Polarimetric Behaviour for Circular Synthetic Aperture Radar</b> <i>Octavio Ponce(1), Andreas Reigber(1), Pau Prats(1), and Muriel Pinheiro(2)</i> (1) DLR, Microwave and Radar Institute, Wessling, Germany, (2) Instituto Tecnológico de Aeronáutica (ITA), Sao José dos Campos, Brazil
14:10 – 14:35	<b>Compressed Sensing for Polarimetric SAR Tomography</b> <i>E. Aguilera, M. Nannini, and A. Reigber</i> DLR, Microwaves and Radar Institute, Wessling, Germany

14:35 – 15:00	<p><b>Model Based Scattering Mechanism Decompositions of Polarimetric SAR Data for Global Forest Mapping at L-Band</b></p> <p><i>Oleg Antropov(1,2), Yrjö Rauste(1), Jaan Praks(2), Tuomas Häme(1), and Martti Hallikainen(2)</i></p> <p>(1) VTT Technical Research Centre of Finland, Finland, (2) Aalto University, Finland</p>
15:00 – 15:25	<p><b>Parameter based SAR simulator improvement with accurate antenna beam pattern</b></p> <p><i>Narathep Phruksahiran</i></p> <p>Chemnitz University of Technology, Professur Professur für Hochfrequenztechnik und Theoretische Elektrotechnik, Chemnitz, Germany</p>
15:25 – 15:50	<p><b>Flood Monitoring in Sundarban Delta by Using Multi-Frequency AMSR-E Signatures</b></p> <p><i>R. Chakraborty, R. Rahmoune, P. Ferrazzoli</i></p> <p>Department of Computer Science, Systems and Industrial Engineering, University of Rome, Roma, Italy</p>
15:50 – 16:20	Coffee Break
	<p><b>Session 2A: Young Scientists Presentations - 2</b></p> <p><b>Session Chairs:</b> Dr. Frank Gekat and Prof. Dr. Ondrej Fiser</p>
16:20 – 16:45	<p><b>Effect of Rain Type on Rain Attenuation Modeling at a Tropical Location</b></p> <p><i>Marzuki(1,4), Walter L. Randeu(1), T. Kozu(2), T. Shimomai(2) and H. Hashiguchi(3)</i></p> <p>(1) Institute of Broadband Communications, Graz University of Technology, Graz, Austria  (2) Interdisciplinary Faculty of Science and Engineering, Shimane University, Japan  (3) Research Institute for Sustainable Humanosphere (RISH), Kyoto University, Japan  (4) Department of Physics, Andalas University, Padang, Indonesia</p>
16:45 – 17:10	<p><b>Trends in Antenna Technology for the Space-borne Microwave Radiometers</b></p> <p><i>Dhaval Pujara(1), and S. B. Sharma(2)</i></p> <p>(1) Department of Electronics &amp; Communication Engineering, Institute of Technology, Nirma University, Ahmedabad, Gujarat, India  (2) Indus Institute of Technology &amp; Engineering, Ahmedabad, Gujarat, India</p>
17:10 – 17:35	<p><b>Angular and RMS Delay Spread Modeling in View of THz Indoor Communication Systems</b></p> <p><i>S. Priebe, M. Jacob, and T. Kürner</i></p> <p>Institute for Communications Technology (IfN), TU Braunschweig, Braunschweig, Germany</p>



17:35 – 18:00	<p><b>On Multi-Polarisation Calibration of Weather Radar Systems</b></p> <p><i>Jens Reimann, Martin Hagen</i></p> <p>DLR, Institute of Atmospheric Physics, Wessling, Germany</p>
18:00 – 18:25	<p><b>Dependence of Doppler Moments on polarimetric signals</b></p> <p><i>Ondrej Suchy</i></p> <p>Chemnitz University of Technology, Professur für Hochfrequenztechnik und Theoretische Elektrotechnik, Chemnitz, Germany</p>

Day 2: Wednesday, 9 <sup>th</sup> March 2011	
	<p><b>Session 3A: Topical Issues in Propagation : Review Talks</b></p> <p><b>Session Chairs:</b> Prof. Dr. Carlo Capsoni and Prof. Dr. Madhu Chandra</p>
08:30 – 09:00	<p>Distinguished Speaker Presentation:</p> <p><b>Free-Space Optical Links: Tutorial on Developments in the Area of Free-Space Optical Links</b></p> <p><i>Erich Leitgeb</i></p> <p>Institute of Broadband Communications, Graz University of Technology, Graz, Austria</p>
09:00 - 09:30	<p>Distinguished Speaker Presentation:</p> <p><b>Sensor Data Fusion in Automotive Applications</b></p> <p><i>Gerd Wanielik</i></p> <p>Chemnitz University of Technology, Professorship of Communications Engineering, Chemnitz, Germany</p>
09:30 - 10:00	<p>Distinguished Speaker Presentation:</p> <p><b>Propagation Effects in Navigation Systems</b></p> <p><i>Achim Hornbostel</i></p> <p>DLR, Institute of Communications and Navigation, Oberpfaffenhofen, Germany</p>
10:00 - 10:30	<p>Distinguished Speaker Presentation:</p> <p><b>Microwave Radiometry For Obtaining Atmospheric Parameters</b></p> <p><i>Simmer C(1), Crewell S(2), and Löhnert U(2)</i></p> <p>(1) Meteorological Institute, University of Bonn, Bonn, Germany  (2) Institute for Geophysics and Meteorology, University of Cologne, Cologne, Germany</p>
10:30 – 11:10	Coffee Break
	<p><b>Session 4A: SAR and related Aspects - 1</b></p> <p><b>Session Chairs:</b> Dr. Andreas Reigber and Prof. Dr. Wolfgang Keydel</p>
11:10 – 11:35	<p><b>The Sentinel-1 Mission Concept and Status</b></p> <p><i>Paul Snoeij, Ramon Torres, and Malcolm Davidson</i></p> <p>European Space Agency, ESTEC, Noordwijk, The Netherlands</p>
11:35 – 12:00	<p><b>Propagation Aspects In Thru The Wall Vital Signs Detection And Ranging</b></p> <p><i>Anatol Wiesner</i></p> <p>Wiesner Associates, Berlin, Germany</p>

12:00 – 12:25	<p><b>An investigation of Cosmo-SkyMed potential in detecting hydrological features</b></p> <p><i>S.Paloscia, P.Pampaloni, G.Fontanelli, S.Pettinato, and E.Santi</i></p> <p>CNR-IFAC, Firenze, Italy</p>
12:25 – 12:50	<p><b>A Hysteresis Technique for SAR Change Detection Based on the Generalized Minimum-Error Thresholding Algorithm</b></p> <p><i>Quang Huy Nguyen(1), Ian McLoughlin(1), and Timo Bretschneider(2)</i></p> <p>(1) Nanyang Technological University, Singapore (2) EADS Innovation Works, Singapore</p>
	<p><b>Session 4B: Weather Radar-1</b></p> <p><b>Session Chairs:</b> Dr. Frank Gekat and Prof. Dr. Herman Russchenberg</p>
11:10 – 11:35	<p><b>On Clutter Classification for the Hazardous Weather Detection and Display Capability (HWDDC)</b></p> <p><i>Nathan Fuhrer, Amalia Barrios</i></p> <p>SPAWAR Systems Center (SSC) Pacific, San Diego, CA, USA</p>
11:35 – 12:00	<p><b>Weather radar: a tool for the remote sensing of birds</b></p> <p><i>Carlo Capsoni(1), Roberto Nebuloni(2), Dario Baccellieri(1)</i></p> <p>(1) Politecnico di Milano, Milano, Italy (2) IEIIT-CNR, Milano, Italy</p>
12:00 – 12:25	<p><b>Processing of X-band weather radar data with an extended Kalman filter framework</b></p> <p><i>Marc Schneebeli and Alexis Berne</i></p> <p>Environmental Remote Sensing Laboratory, École Polytechnique Fédérale de Lausanne, Switzerland</p>
12:25 – 12:50	<p><b>Drop Size Measurement Applied to Weather Radars and Microwave Link Design– First Results from Czech Republic</b></p> <p><i>Ondrej Fiser</i></p> <p>Institute of Atmospheric Physics Prague, Prague, Czech Republic</p>
12:50 – 14:00	Lunch Break
	<p><b>Session 5A: SAR and related Aspects - 2</b></p> <p><b>Session Chair:</b> Dr. Manfred Zink</p>
14:00 – 14:30	<p>Distinguished Speaker Presentation:</p> <p><b>Principles of Modern SAR and SAR Applications</b></p> <p><i>Wolfgang Keydel</i></p> <p>DLR Microwaves and Radar Institute , Hechendorf, Germany</p>

14:30 – 15:00	<p>Distinguished Speaker Presentation:</p> <p><b>State-of-the-Art Review on “Future perspectives of Radar Polarimetry with applications to Multiparameter POLSAR Remote Sensing”</b></p> <p><i>Wolfgang-Martin Boerner Professor Emeritus</i></p> <p>University of Illinois, Chicago, USA</p>
15:00 – 15:30	<p>Distinguished Speaker Presentation:</p> <p><b>High-resolution multi-frequency polarimetric SAR imaging with DLR’s new airborne sensor F-SAR</b></p> <p>A. Reigber, R. Horn, R. Scheiber, P. Prats, A. Nottensteiner, J. Fischer and M. Jäger</p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
15:30 – 16:00	Coffee Break
	<p><b>Session 6A: Trees : Propagation and Scattering</b></p> <p><b>Session Chairs:</b> Prof. Dr. Roger Lang and Dr. Saúl A. Torrico</p>
16:00 – 16:25	<p><b>Specific Attenuation Through a Tree Canopy: 3-D Vector Radiative Transport Approach</b></p> <p><i>Saúl A. Torrico(1) and Roger H. Lang(2)</i></p> <p>(1) Comsearch, Ashburn, Virginia 20147</p> <p>(2) Department of Electrical and Computer Engineering, The George Washington University, Washington, DC, USA</p>
16:25 – 16:50	<p><b>Wideband tree shadowing and scattering modeling in slant paths</b></p> <p><i>M.Cheffena(1) and F.Perez-Fontan(2)</i></p> <p>(1) Gjøvik University College, Gjøvik, Norway</p> <p>(2) University of Vigo, Vigo, Spain</p>
16:50 – 17:15	<p><b>Modelling of Tree Scattering in Rural Residential Areas at 3.5 GHz</b></p> <p><i>Kin Lien Chee(1), Ferran Catalán(1), Saúl A. Torrico(2) and Thomas Kürner(1)</i></p> <p>(1) Institut für Nachrichtentechnik, Technische Universität Braunschweig, Braunschweig, Germany</p> <p>(2) Comsearch, Ashburn, VA, USA</p>

	<p><b>Session 6B: Antenna Engineering and Radar Systems</b></p> <p><b>Session Chair:</b> Prof. Dr. Lorenz-Peter Schmidt</p>
16:00 – 16:25	<p><b>Fast Multistatic Measurement System for Short-Range Imaging Radar Development</b></p> <p><i>Andreas Schiessl(1), Sherif Sayed Ahmed(1), Andreas Genghammer(1) and Lorenz-Peter Schmidt(2)</i></p> <p>(1) Rohde &amp; Schwarz, Munich, Germany</p> <p>(2) Chair for Microwave Engineering and High Frequency Technology (LHFT), University of Erlangen-Nuremberg, Erlangen, Germany</p>
16:25 – 16:50	<p><b>Development of a Planar Interweaved Antenna with a High Gain and a High Angle Unambiguity for Automotive Applications Based on 24 GHz</b></p> <p><i>Matthias Reinlein</i></p> <p>InnoSenT GmbH, Donnersdorf, Germany</p>
16:50 – 17:15	<p><b>Application of Printed Antenna Technology</b></p> <p><i>Ralf Zichner(1) and Reinhard R. Baumann(1,2)</i></p> <p>(1) Fraunhofer Institute for Electronic Nano Systems ENAS, Department Printed Functionalities, Chemnitz, Germany</p> <p>(2) Chemnitz University of Technology, Institute for Print and Media Technology, Chemnitz, Germany</p>

Day 3: Thursday, 10 <sup>th</sup> March 2011	
	<b>Session 7A: Topical Issues in Weather Radar Applications</b> <b>Session Chairs:</b> Prof. Dr. Clemens Simmer and Dr. Uwe Siart
08:30 - 09:00	Distinguished Speaker Presentation: <b>State of the art weather radar</b> <i>V. Chandrasekar</i> Colorado State University, USA; University of Helsinki, Finland
09:00 - 09:30	Distinguished Speaker Presentation: <b>Atmospheric FM-CW radar for climate studies</b> <i>Herman Russchenberg</i> Delft University of Technology, Delft, The Netherlands
09:30 - 10:00	<b>State-Of-The-Art of Modern Polarimetric Weather Radars</b> <i>Frank Gekat</i> Selex Systems Integration GmbH, Neuss, Germany
10:00 – 10:30	<b>Polarimetric Doppler Weather Radar – Where will we stand in 10-20 Years?</b> <i>Martin Hagen</i> DLR, Institut für Physik der Atmosphäre, Weßling, Germany
10:30 – 11:00	Coffee Break
	<b>Session 8A: Satellite Propagation and Propagation Models</b> <b>Session Chairs:</b> Dr. L. A. R. S. Mello and Prof. Dr. Thomas Kürner
11:00 – 11:25	<b>Adaptive Distribution of the Radiated Power in Ka Telecommunications Satellite Systems</b> <i>A. Paraboni(1), L. Resteghini(1), R. Nebuloni(2)</i> (1) Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milano, Italy (2) IEIIT-CNR, Milano, Italy
11:25 – 11:50	<b>Propagation analysis for Quasi Zenith Satellite Systems at high elevation angles</b> <i>Isao Nakazawa, Kazuhiro Kimura, Yoshiyuki Fujino, and Shin'ichi Hama</i> National Institute of Information and Communications Technology, Tokyo, Japan

11:50 – 12:15	<p><b>A new method to predict the XPD-related characteristics in Q/V band satellite links</b></p> <p><i>Aldo Paraboni(1), Carlo Riva(1), Antonio, Martellucci(2), Mario Cossu(3)</i></p> <p>(1) Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milano, Italy  (2) ESA/ESTEC, Noordwijk, The Netherlands  (3) Thales Alenia Space, Roma, Italy</p>
12:15 – 12:40	<p><b>Preliminary development of a new model for propagation-oriented synthesis of rain rate time series</b></p> <p><i>Lorenzo Luini, Carlo Capsoni</i></p> <p>Dipartimento di Elettronica e Informazione, Politecnico di Milano, Milano, Italy</p>
12:40 – 13:05	
	<p><b>Session 8B: Propagation Effects and Measurement in Mobile, fixed, rural, and GNSS Scenarios</b></p> <p><b>Session Chairs:</b> Prof. Dr. Sana Salous and Prof. Dr. Gerd Wanielik</p>
11:00 – 11:25	<p><b>Modelling the Influence of Body Dynamics on the Radiation Pattern of Wearable Antennas in Off-Body Radio Channels</b></p> <p><i>Michal Mackowiak and Luis M. Correia</i></p> <p>Instituto Superior Tecnico, Technical University of Lisbon, Portugal</p>
11:25 – 11:50	<p><b>Some Results of 10-Year Hydrometeor Attenuation Measurement at 58 GHz on an 850 m Terrestrial Path</b></p> <p><i>Vaclav Kvicera(1), Martin Grabner(1), and Ondrej Fiser(2)</i></p> <p>(1) Czech Metrology Institute, Praha, Czech Republic  (2) Institute of Atmospheric Physics AS CR, Praha, Czech Republic</p>
11:50 – 12:15	<p><b>Experimental verification of selected propagation models in terms of designing mobile radio networks in container terminal environment</b></p> <p><i>Slawomir J. Ambroziak, Ryszard J. Katulski</i></p> <p>Gdansk University of Technology, Gdansk, Poland</p>
12:15 – 12:40	<p><b>Multi-hop Relaying for Broadband Wireless Access Systems at 800 MHz and 3500 MHz in Rural Residential Areas</b></p> <p><i>Kin Lien Chee, Wei Feng, and Thomas Kürner</i></p> <p>Institut für Nachrichtentechnik, Technische Universität Braunschweig, Braunschweig, Germany</p>

12:40 – 13:05	<p><b>Towards A Channel Model for Joint GNSS and Mobile Radio Based Positioning</b></p> <p><i>Wei Wang(1), Thomas Jost(1), Andreas Lehner(1), Fernando Perez Diaz (2), Uwe-Carsten Fiebig(1)</i></p> <p>DLR, Institute of Communications and Navigation, Wessling, Germany</p>
13:05 – 14:15	Lunch Break
	<p><b>Session 9A: Review and invited Presentations on Channel Characterisation, Space Applications, MM-Wave Radiometry and Frequency Allocation</b></p> <p><b>Session Chair:</b> Dr. Markus Peichl</p>
14:15 – 14:45	<p>Distinguished Speaker Presentation:</p> <p><b>Channel Sounding-State of the Art Issues</b></p> <p><i>Sana Salous</i></p> <p>Centre for Communication Systems, School of Engineering and Computing Sciences, Durham University, Durham, UK</p>
14:45 – 15:15	<p>Distinguished Speaker Presentation:</p> <p><b>Space-Related Applications and Developments</b></p> <p><i>Bertram Arbesser-Rastburg</i></p> <p>European Space Agency, Noordwijk, The Netherlands</p>
15:15 – 15:50	<p>Distinguished Speaker Presentation:</p> <p><b>Development of Low-Mass, Low-Power, Internally-Calibrated Millimeter-Wave Radiometers to Enable Coastal Wet-Tropospheric Correction for the SWOT Mission</b></p> <p><i>Steven C. Reising(1), Darrin Albers(1), Alexander Lee(1), Pekka Kangaslahti(2), Shannon T. Brown(2), Douglas E. Dawson(2), Todd C. Gaier(2), Oliver Montes(2), Daniel J. Hoppe(2), Behrouz Khayatian(2), Alan B. Tanner(2) and Sharmila Padmanabhan(2)</i></p> <p>(1) Microwave Systems Laboratory, Colorado State University, Fort Collins, CO, USA (2) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA</p>
15:50 – 16:15	<p>Distinguished Speaker Presentation:</p> <p><b>Distributive justice vs. Pareto optimization in international spectrum allocation for broadcasting</b></p> <p><i>Johannes Philipp</i></p> <p>Südwestrundfunk, Stuttgart, Germany</p>
16:15 – 16:45	Coffee Break



	<p><b>Session 10A: Radiometry</b></p> <p><b>Session Chairs:</b> Prof. Dr. Steven C. Reising and Prof. Dr. Paolo Pampaloni</p>
16:45 – 17:10	<p>Distinguished Speaker Presentation:</p> <p><b>Radiometric remote sensing – present capabilities and limitations</b></p> <p><i>Markus Peichl, Helmut Süß, Stephan Dill, Matthias Jirousek, Eric Schreiber, and Daniel Rudolf</i></p> <p>DLR, Microwaves and Radar Institute, Weßling, Germany</p>
17:10 – 17:35	<p><b>The Interaction Between the Tropical Cyclogenesis and Seismic Activity as Derived from Spacecraft and Ground-Based Measuring Systems</b></p> <p><i>Golovachev Sergey, Dubrov Mstislav</i></p> <p>Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences Fryazino, Moscow Region, Russian Federation</p>
17:35 – 18:00	<p><b>The Ocean-Atmosphere System Instability Model for Hurricane Prognosis as Subcase of Technology for the Search of Anomalies in the Environment</b></p> <p><i>Sergey Golovachev, Vladimir Soldatov</i></p> <p>Kotel'nikov Institute of Radioengineering and Electronics, Russian Academy of Sciences, Fryazino, Moscow Region, Russian Federation</p>
18:00 – 18:25	<p><b>Assessing Forest Change area in the North of Iran Using Landsat Satellite Imagery Data</b></p> <p><i>Jafar Oladi(1), Delavar Bozorgnia(2)</i></p> <p>(1) Faculty of Natural Resources, Department of Forestry, University of agricultural science and natural resources, Sari, Iran</p> <p>(2) Tourism expert, Iran cultural heritage, handicrafts and tourism organization, Tehran, Iran</p>

	<p><b>Session 10B: Engineering and System Aspects of Aerospace Systems</b></p> <p><b>Session Chair:</b> Dr. Paul Snoeij</p>
16:45 – 17:10	<p><b>The PAZ Satellite Ground Segment</b></p> <p><i>María José González, Eva Vega, Beatriz Gómez, Marcos García, Juan Manuel Cuerda, Nuria Alfaro</i></p> <p>National Institute for Aerospace Technology, INTA., Madrid, Spain</p>
17:10 – 17:35	<p><b>Digital Beam Forming in Azimuth with Space Borne Reflector SAR Systems</b></p> <p><i>Sigurd Huber, Marwan Younis, Anton Patyuchenko, and Gerhard Krieger</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
17:35 – 18:00	<p><b>Thermal Design of a Precise Transponder for Calibrating Future Spaceborne SAR Systems</b></p> <p><i>Philipp R. Looser, Björn J. Döring, Matthias Jirousek, Marco Schwerdt</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>

Day 4: Friday, 11 <sup>st</sup> March 2011	
	<p><b>Session 11A: Satellite SAR-1</b></p> <p><b>Session Chairs:</b> Dr. Manfred Zink and Prof. Dr. Wolfgang Keydel</p>
08:30 - 08:55	<p><b>First GMTI Results With The TerraSAR-X/TanDEM-X Constellation</b></p> <p><i>Stefan V. Baumgartner, Gerhard Krieger</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
08:55 - 09:20	<p><b>PAZ Mission: CALVAL Centre</b></p> <p><i>Beatriz Gómez(1), María J. González(1), Benjamin Braeutigam(2), Eva Vega(1), Marcos García(1), Nuria Casal(1), Javier del Castillo(1), Juan M. Cuerda(1), Nuria Alfaro(1), Victorina Álvarez(1)</i></p> <p>(1) Instituto Nacional de Técnica Aeroespacial (INTA), Madrid, Spain (2) DLR, Microwaves and Radar Institute, Wessling, Germany</p>
09:20 - 09:45	<p><b>First Results of Baseline Calibration for the TanDEM-X Mission</b></p> <p><i>John Walter Antony, Jaime Hueso González, Björn Döring, Markus Bachmann, Marco Schwerdt</i></p> <p>DLR, Weßling, Germany</p>
09:45 – 10:10	<p><b>Multi-Positional VHF-Band SAR System for Earth Observation on the Basis of Microsatellites</b></p> <p><i>Ravil Akhmetov(1), Oleg Goriachkin(2), Eugenie Ivashenko(1), Alexander Kovalenko(3), Viktor Riemann(3), Nikolay Stratilatov(1), Sergey Tkachenko(1)</i></p> <p>1) Rocket Space Center "TsSKB-Progress", Russia 2) Volga State University of Telecommunication and Informatics, Russia 3) Research Institute of Precision Instruments, Russia</p>

	<p><b>Session 11B: Weather Radar-2: Modeling, Systems, Applications</b></p> <p><b>Session Chair:</b> Dr. Martin Hagen</p>
08:30 - 08:55	<p><b>Doppler Noise Modeling for Rain-Rate Observation by Ground-Based Transmission Measurement</b></p> <p><i>Susanne Hipp(1), Uwe Siart(1), Christian Chwala(2), Thomas Eibert(1) and Harald Kunstmann(2)</i></p> <p>(1) Institute for High-Frequency Engineering , Technische Universität München, München, Germany (2) Institute for Meteorology and Climate Research IMK-IFU, Karlsruhe Institute of Technology, Garmisch-Partenkirchen, Germany</p>

08:55 - 09:20	<p><b>Receiver over Elevation (ROEL) weather radar system design and its advantages</b></p> <p><i>Dennis Vollbracht, Frank Gekat, Daniel Ridene</i></p> <p>Selex Systems Integration GmbH, Gematronik Weather Radar Systems, Neuss, Germany</p>
09:20 - 09:45	<p><b>A novel method to estimate the attenuations and the differential phases for X-band polarimetric weather radar data</b></p> <p><i>T. Otto and Herman W. J. Russchenberg</i></p> <p>Remote Sensing of the Environment, TU Delft, Delft, The Netherlands</p>
09:45 – 10:10	<p><b>Determination of the Refractive Index in the Maritime Boundary Layer by Sea Clutter Measurements</b></p> <p><i>Helmut Essen(1), Gregor Biegel(1), Jörg Förster(2), Mario Behn(2), Yvonnik Hurtaud(3), Vincent Fabbro(4), Laurent Castanet(4) and Remi Douvenot(4)</i></p> <p>(1) Fraunhofer-FHR, Wachtberg, Germany  (2) Technical Center for Ships and Naval Weapons, Eckernförde, Germany  (3) DGA / MI, Bruz, France  (4) Departement Electromagnetique et Radar, ONERA, Toulouse, France</p>
10:10 – 10:40	Coffee Break
	<p><b>Session 12A: Satellite SAR-2</b></p> <p><b>Session Chair:</b> Dr. Bertram Arbesser-Rastburg</p>
10:40 – 11:05	<p><b>In-Orbit SAR Performance of TerraSAR-X and TanDEM-X Satellites</b></p> <p><i>Thomas Kraus, Dirk Schrank, Paola Rizzoli, Benjamin Bräutigam</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
11:05 – 11:30	<p><b>First Interferometric Performance Results of TanDEM-X Commissioning Phase</b></p> <p><i>Michele Martone, Gerhard Krieger, Paola Rizzoli and Benjamin Bräutigam</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
11:30 – 11:55	<p><b>Monostatic Calibration of both TanDEM-X Satellites</b></p> <p><i>Marco Schwerdt, Markus Bachmann, Dirk Schrank, Jaime Hueso Gonzalez, Björn Döring, John Mohan Walter Antony, Nuria Ramon Torres</i></p> <p>DLR, Microwaves and Radar Institute, Wessling, Germany</p>
11:55 – 12:20	<p><b>TanDEM-X Bistatic Synchronization Performance</b></p> <p><i>U. Steinbrecher, M. Weigt, M. Younis, H. Breit and M. Rodriguez-Cassola</i></p> <p>DLR, Weßling, Germany</p>
12:20 – 12:45	

<b>Session 12B: Propagation Effects in Remote Sensing and Communications</b>	
<b>Session Chairs: Dr. Vaclav Kvicera and Prof. Dr. Madhu Chandra</b>	
10:40 – 11:05	<p><b>Using microwave transmission for line integrated precipitation and humidity observation</b></p> <p><i>Christian Chwala(1), Harald Kunstmann(1), Wei Qiu(1), Susanne Hipp(2), Uwe Siart(2), Jörg Seltmann(3), Martin Pohl(4), Alexander Bradt(5), Jürgen Fritz(5)</i></p> <p>(1) Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research (IMK-IFU), Garmisch-Partenkirchen, Germany</p> <p>(2) Technische Universität München, Institute for High Frequency Engineering, München</p> <p>(3) German Weather Service (DWD), Meteorologisches Observatorium Hohenpeissenberg, Hohenpeissenberg, Germany</p> <p>(4) University of Applied Sciences, Regensburg, Germany</p> <p>(5) Ericsson GmbH, Bruchsal, Germany</p>
11:05 – 11:30	<p><b>Propagation Effects for Satellite Mounted Radars and Remote Sensing by Active Microwave SAR Sensors for Frequencies of X-band up to Ka-band</b></p> <p><i>Andreas Danklmayer(1), Madhu Chandra(2)</i></p> <p>(1) DLR, Microwaves and Radar Institute, Weßling, Germany</p> <p>(2) Technische Universität Chemnitz, Professur für Hochfrequenztechnik und Theoretische Elektrotechnik Chemnitz, Germany</p>
11:30 – 11:55	<p>Distinguished Speaker Presentation:</p> <p><b>Radiative Transfer Theory for Layered Random Media</b></p> <p><i>Saba Mudaliar</i></p> <p>Air Force Research Laboratory, Hanscom AFB, MA, USA</p>
11:55 – 12:20	<p><b>Faraday rotation effects on SAR images</b></p> <p><i>M. M. Hoque and N. Jakowski</i></p> <p>DLR, Institute of Communications und Navigation, Neustrelitz, Germany</p>
12:20 – 12:45	<p><b>Rain Attenuation Time Series Synthesizer Using the Gamma Distribution</b></p> <p><i>F. J. A. Andrade and L. A. R. S. Mello</i></p> <p>Center for Telecommunication Studies, Catholic University of Rio de Janeiro Rio de Janeiro, Rio de Janeiro, Brazil</p>
12:45 – 13:55	Lunch Break
13:55 – 15:00	Discussion and Closing Ceremony