

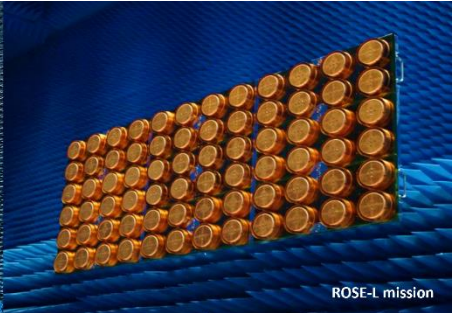
42nd ESA Antenna Workshop

11 – 15 November 2024 | ESA-ESTEC | The Netherlands

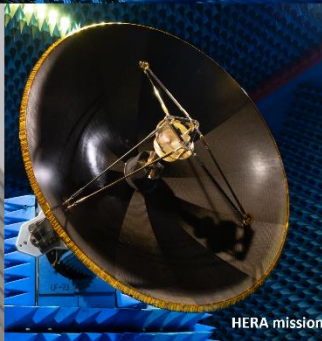
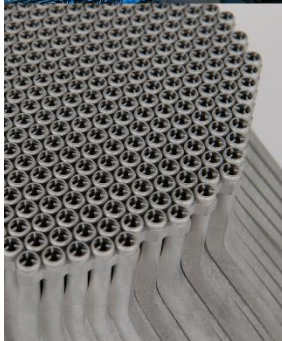
Antenna Technologies for Future Space Missions



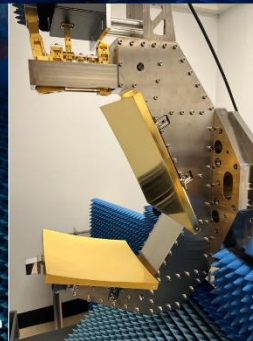
Biomass mission



ROSE-L mission



HERA mission



Organised by the European Space Agency (ESA) Antenna and Sub-millimetre Waves Section



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Programme

 Monday 11 November11

 Tuesday 12 November17

 Wednesday 13 November22

 Thursday 14 November 30

 Friday 15 November 35

WORD OF WELCOME

Dear colleagues, dear friends,

On behalf of the organizing committee, we are honoured and pleased to welcome you to the 42nd ESA Antenna Workshop taking place at ESTEC, the technical heart of the European Space Agency, in Noordwijk, the Netherlands.

The technical program of the workshop is very rich and diverse. It covers a wide variety of space applications such as Telecommunications, Earth Observation and Science. Furthermore, it provides a good overview of the current state-of-the-art, highlighting the latest developments and innovations in different fields, in Europe and all around the world.

As part of the organizing committee, we know that the success of a workshop is a subtle alchemy of several factors, but ultimately, it depends on the people who have worked with us in planning and organizing both the technical program and supporting social arrangements. We sincerely thank the Technical Committee for their meticulous and timely reviewing of the abstracts. Last but not least, we wish to express our gratitude to the ESA Conference Bureau who helped us with the organization and planning of this workshop.

Now, it is time to learn, exchange ideas and enjoy.
Have fun during these 5 days of workshop!

Erio Gandini, Hoda Nematollahi and Alexandra Mavropoulou

INTRODUCTION

INTRODUCTION

The Antenna and Sub-Millimetre Waves Section of the Radio Frequency Payloads and Technology Division of the Directorate of Technology, Engineering and Quality (D/TEC) of the European Space Agency announces the 42nd ESA Antenna Workshop.

The Workshop will be held from the 11th to the 15th of November 2024 at the European Space Research and Technology Centre (ESTEC) in Noordwijk, the Netherlands.

The workshop will include sessions focused on technologies, techniques and applications with the intent to foster the exchange of knowledge and ideas between experts. A dedicated area will be available for poster presentations. A visit to the ESTEC Antenna Test Facilities will be organised*.

OBJECTIVES OF THE WORKSHOP

The 42nd ESA Antenna workshop will focus on innovative antenna systems for future space missions, targeting applications such as satellite communications, navigation, Earth observation, science missions, space exploration, launchers and other relevant domains. Sessions will be focused on technologies, techniques, and applications with the intent to foster the exchange of knowledge and ideas between experts.

COMMITTEES

CHAIR

Erio Gandini (ESA-ESTEC, The Netherlands)

ORGANIZING COMMITTEE

Hoda Nematollahi (ESA-ESTEC, The Netherlands)

Alexandra Mavropoulou (ESA-ESTEC and TU Delft, The Netherlands)

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Mauro Ettore (Michigan State Univ., USA)

Giorgio Giordanengo (Links foundation, Italy)

Giuseppe Vecchi (Polit. Torino, Italy)

Enrica Martini (Univ. Siena, Italy)

Cristian Della Giovampaola (Waveup, Italy)

Francesco Caminita (Waveup, Italy)

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Giancarlo Bellaveglia (Airbus, Italy)
Paolo Campana (Thales, Italy)
Simona Bruni (IMST, Germany)
João M. Felício (Instituto de Telecomunicações, Portugal)
Etienne Boulais (CSA, Canada)
Karim Glatre (MDA, Canada)
Remi Fragnier (CNES, France)
Carlos Leal (SENER, Spain)
Alberto Bravo (SENER, Spain)
Rafael García (SENER, Spain)
Peter Huggard (STFC RAL, UK)
Esteban Menargues (Swissto12, Switzerland)
Marta Arias Campo (IMST, Germany)
Paolo Focardi (JPL, USA)
Heinz Wilhelm Hubers (DLR, Germany)
Quiterio Garcia (Airbus, Spain)
Pierluigi Cecchini (Thales, Italy)
Alexander Ihle (ESA, Netherlands)

SPONSORS

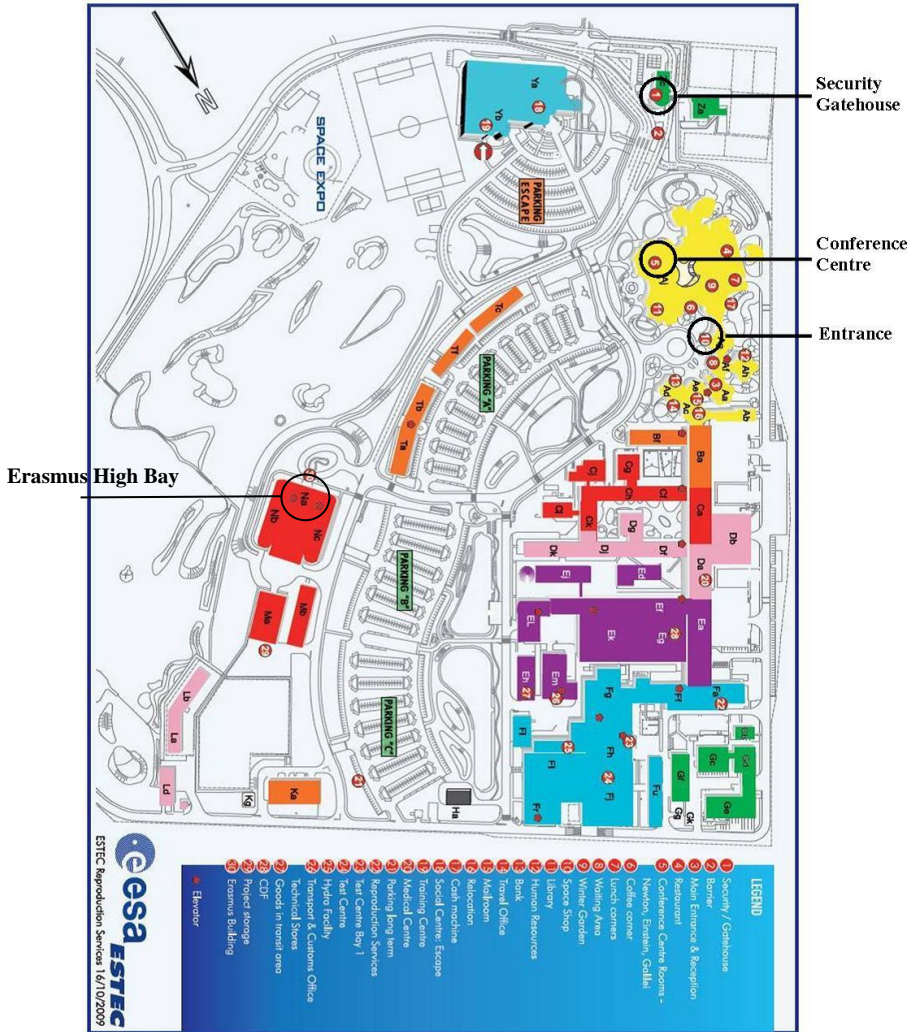


EXHIBITORS

- Anyfields
- Comtest
- EuRAAP
- Glenair
- MVG
- Swissto12
- TICRA
- Thomas Keating
- Virginia Diodes

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MAP OF ESTEC



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PROGRAMME AT A GLANCE

Monday 11/11	Tuesday 12/11	Wednesday 13/11	Thursday 14/11	Friday 15/11
Registration 08:00 – 09:00				
Opening session: Introduction and Invited talk 1 09:00 – 09:50	Invited talk 2 09:00 – 09:30 Antenna testing, material characterization and manufacturing 1 09:30 – 10:50	Invited talk 3 09:00 – 09:30 Reflectarrays and Transmitarrays 09:30 – 10:50	Invited talk 4 09:00 – 09:30 Antennas for science missions 09:30 – 10:50	Deployable antennas 09:00 – 11:00
Antennas for lunar missions 09:50 – 10:50	Coffee break 10:50 - 11:20	Coffee break 10:50 - 11:20	Coffee break 10:50 - 11:20	
Coffee break 10:50 - 11:20	Antennas for earth observation missions 11:20 – 13:00	Antennas for telecom payloads 11:20 – 13:00	User terminal antennas for SATCOM and navigation 2 11:20 – 13:00	Coffee break 11:00 - 11:20
Mm-wave, sub mm-wave, THz antennas 11:20 - 13:00	Lunch break 13:00 – 14:00	Lunch break 13:00 – 14:00	Lunch break 13:00 – 14:00	Antenna testing, material characterization and manufacturing 2 11:20 – 12:40
Lunch break 13:00 – 14:00	EurAPP convened session: Dome and lens antennas for space and aerospace applications 14:00 - 16:00	Poster Session 14:00 - 15:30	Convened session: Antennas for small satellites 14:00 - 16:00	Closing ceremony 12:40 – 13:00
Convened session: Reflect- and transmitarrays for future satellite systems and communications 14:00 - 16:00	Coffee break 16:00 – 16:20	Coffee break 15:30 – 16:00	Coffee break 16:00 – 16:20	Visit to ESTEC antenna measurement facilities* 14:30 – 16:30
Coffee break 16:00 - 16:30	Antenna analysis, design and modelling 16:20 - 18:00	Convened session: Progress on Additive Manufacturing for Aerospace antennas and antenna components 16:00 - 18:00	Array antennas 16:20 - 18:00	
User terminal antennas for SATCOM and navigation 1 16:30 – 18:10		Bus departure for dinner 18:15		
Welcome reception 18:10 – 20:00		Workshop dinner 18:30 – 22:30		

*Security screening might be required. Registration for the event will be onsite on first come first served base.

PROGRAMME

Monday 11 November

08:00 – 09:00 Registration

09:00 – 09:40 Opening Session
Chairs: E. Gandini, H. Nematollahi, A. Mavropoulou

09:00	Introduction and Welcome
09:20	LEO-PNT a vision over the future of space based PNT services <u>Pietro Giordano</u> ¹ ¹ <i>European Space Agency (ESA)</i>

09:50 – 10:50 Antennas for lunar missions
Chairs: H. Nematollahi, M. A. Gonzalez

09:50	The Dark-ages EXplorer (DEX): The Frontier in Low Frequency Radio Astronomy from the Far Side of the Moon <u>Ms. Sonia Ghosh</u> ¹ , Prof. dr. Léon V.E. Koopmans ¹ , Dr. Christiaan Brinkerink ² , Dr. Marc Klein Wolt ² , Dr. Albert Jan Boonstra ³ ¹ <i>Kapteyn Astronomical Institute, University of Groningen, Groningen, The Netherlands</i> , ² <i>Radboud University, Nijmegen, The Netherlands</i> , ³ <i>Netherlands Institute for Radio Astronomy (ASTRON), Dwingeloo, The Netherlands</i>
10:10	Multifunctional Antennas for future lunar missions <u>Mrs. Maria Angeles Gonzalez</u> ¹ , Mr Javier Sanchez, Mr Rafael García, Mr Victor Sanchez, Mr Carlos Leal ¹ <i>Sener Aerospace & Defence, Madrid, Spain</i>

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10:30	<p>Antenna development for Lunar Robotic Exploration</p> <p>Dr. German Leon¹, Mr Daniel Valcazar³, Dr. Luis F. Herrán¹, Dr. Miguel Fernández-García¹, Dr. Alejandro M. Gómez - Sanjuan², Mr. Manuel Díaz-Fiz², Dr Fermín Navarro², Mr. Aitor Martínez³, Dr Erio Gandini⁴, Mr Leonardo Turchi⁴</p> <p>¹University of Oviedo, Spain, ²University of Vigo, , Spain, ³EOS Ingeniería SL, , Spain, ⁴European Space Agency (ESA)</p>
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10:50 – 11:20 Coffee break

11:20 – 13:00 Mm-wave, sub mm-wave, THz antennas

Chairs: E. Saenz, D. González-Ovejero

11:20	<p>A Novel Series-Fed Continuous Transverse Stub Array with Enhanced Multibeam Operation Enabled by a Reflective Luneburg Lens</p> <p>Mr. Christos Bilitos¹, Prof. Ronan Sauleau¹, Prof. Stefano Maci², Dr. David González-Ovejero¹</p> <p>¹Institut d'Électronique et des Technologies du numérique (IETR - UMR CNRS 6164) - University of Rennes, Rennes, France, ²Department of Information Engineering and Mathematics, University of Siena, Siena, Italy</p>
11:40	<p>High frequency modelling of quasi-optical characterization bench</p> <p>Mr. Gregory Gaudin¹, Dr Alain Peden¹, Dr Clément Henry¹, Dr Daniel Bourreau¹</p> <p>¹Lab-STICC, UMR 6285 CNRS, IMT Atlantique, 29280, France</p>
12:00	<p>Design of low loss quasi-optical feed for WIVERN</p> <p>George Wylde, Richard Wylde¹, Benjamin Monteillet², Eric Caubet², Thierry Chapman¹</p> <p>¹Thomas Keating Ltd, Billingshurst, RH14 9SH, UK, ²Thales Alenia Space, Toulouse, Cedex 1, France</p>
12:20	<p>Beam synthesis techniques used in the design of wideband and compact corrugated horn antennas for radar, radiometry and metrology</p>

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	<p>Dr Daniel Sung¹, Mr Joseph Meney³, Dr Johannes McKay³, Ms Nina Thomsen³, Dr Stuart Macpherson³, Dr Richard Wylde², Dr George Wylde², Dr Samiur Rahman³, Dr Robert Hunter¹, Dr David MacFarlane¹, Dr Duncan Robertson¹, Prof. Graham Smith¹</p> <p><i>¹University of St Andrews, St Andrews, United Kingdom, ²Thomas Keating Ltd., Billingshurst, United Kingdom, ³formerly University of St Andrews, St Andrews, United Kingdom</i></p>
12:40	<p>PIC Quantum Entanglement Generator with integrated antenna for Cubesat missions</p> <p>Prof. Luis Enrique García Muñoz¹</p> <p><i>¹UNIVERSIDAD CARLOS III DE MADRID, Leganes, Spain</i></p>

13:00 – 14:00 Lunch break

14:00 – 16:00 Convened session: Reflect- and transmitarrays for future satellite systems and communications

Chairs: A. Clemente, S. Matos

14:00	<p>Wide-Angle Beam Scanning Transmit-array using Conformal Surface for SATCom</p> <p>Dr. Álvaro F. Vaquero¹, Prof. Sérgio Matos^{2,3}, Prof. Manuel Arrebola¹, Prof. Joao Felício^{2,4}, Prof. Jorge R. Costa^{2,3}, Prof. Carlos A. Fernandes², Dr. Nelson J. G. Fonseca⁵</p> <p><i>¹Universidad de Oviedo, Department of Electrical Engineering, Gijon, Spain, ²Instituto de Telecomunicações, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal, ³Instituto Universitário de Lisboa (Iscte-IUL), Departamento de Ciências e Tecnologias da Informação, Lisbon, Portugal, ⁴Centro de Investigação Naval (CINAV), Escola Naval, Instituto Universitário Militar (IUM), Almada, Portugal, ⁵AnyWaves, Toulouse, France</i></p>
14:20	<p>Programmable transmitarray antennas for SOTM applications at K/Ka-band</p> <p>Dr. Orestis Koutsos¹, Dr. Francesco Foglia Manzillo¹, Dr. Maciej</p>

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	Smierchalski ¹ , Dr. Antonio Clemente ¹ <i>¹Cea Leti, Grenoble, France</i>
14:40	Design and Optimization of Low Profile Mechanical Steerable Antenna for User Terminals Dr. Pasquale Giuseppe Nicolaci ¹ , Dr Min Zhou ¹ , Dr Giovanni Toso ² <i>¹TICRA, Copenhagen, Denmark, ²ESA ESTEC, Noordwijk, Netherlands</i>
15:00	Mechanical wide-angle beam scanning at K/Ka-band with dual-band transmit-arrays Dr. Sérgio Matos , Dr. Juan Corcoles ² , Dr. João Felício ³ , Dr. Jorge Costa ¹ , Dr Nelson Fonseca ⁴ <i>¹Instituto de Telecomunicacoes, Instituto Universitário de Lisboa, Lisbon, Portugal, ²Universidad Politécnica de Madrid, Madrid, Spain, ³Instituto de Telecomunicações, Lisbon University, Lisbon, Portugal, ⁴Anywaves, Toulouse, France</i>
15:20	Low-Profile TX/RX SATCOM Terminal Based on Rotating Metascreens with Dual Switchable Polarization in Ka-band Dr. Francesco Caminita ¹ , Dr. Cristian Della Giovampaola ¹ , Dr. Massimo Nannetti ¹ , Dr. Gabriele Minatti ¹ , Dr. Nicola Bartolomei ¹ , Prof. Enrica Martini ² , Dr. Benedikt Byrne ³ , Dr. Giovanni Toso ³ , Prof. Stefano Maci ² <i>¹Wave Up S.r.l., Siena, Italy, ²University of Siena, Siena, Italy, ³European Space Agency, Noordwijk, The Netherlands</i>
15:40	Curved reflectarrays for high-gain antenna solutions with improved folding capability Dr. Daniel Martinez-de-Rioja ¹ , Yolanda Rodriguez-Vaqueiro ² , Antonio Pino ² , Eduardo Martinez-de-Rioja ³ , Jose A. Encinar ¹ , Manuel Arrebola ⁴ , Giovanni Toso ⁵ <i>¹Universidad Politécnica de Madrid, Madrid, Spain, ²Universidade de Vigo, Vigo, Spain, ³Universidad Rey Juan Carlos, Madrid, Spain, ⁴Universidad de Oviedo, Gijón, Spain, ⁵European Space Agency ESTEC, Noordwijk, The Netherlands</i>

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16:00 – 16:30 Coffee break	
16:30 – 18:10 User terminal antennas for SATCOM and navigation 1 <i>Chairs: P. de Maagt, S. Monni</i>	
16:30	JANUS Airborne Satellite Antennas Mr. Giancarlo Bellaveglia ¹ , Mr Alfredo Ferrarotti ¹ , Mr Caterina Iannicelli ¹ , Mr Luca Marcellini ¹ , Mr Mario Albertini ¹ , Mr Fabio Maggio ² , Mr Domenico Mignolo ³ , Mr Giovanni Toso ³ <i>¹Airbus Italia, Rome, Italy, ²former Airbus Italia, Rome, Italy, ³ESTEC, Noordwijk, Netherlands</i>
16:50	A Wideband Antenna Array for Real-Time Pointing Angle Measurement for Next Generation On-The-Move Terminals Dr. Benjamin Falkner ¹ , Mr. Dan Harman ¹ , Mr. David Warwick ¹ , Dr. Evangelos Mellios ¹ , Mr. Harvinder Nagi ¹ <i>¹Satellite Applications Catapult, Harwell, United Kingdom</i>
17:10	Development of a Circularly Polarized Ka-band Phased Array for Wide-Angle Beamsteering and Satcom Applications Dr. Benoit Lesur ¹ , Pr. Cyrille Menuhier ² , Dr. Marc Thévenot ² , Mr. Fabien Péleau ¹ , Mr. Paul Klein ¹ , Ms. Anne-Laure Himpan ¹ <i>¹Safran Data Systems, La Teste De Buch, France, ²XLIM Research Institute, Limoges, France</i>
17:30	Over the Air Tests of Phased Array Terminal Antenna for Satellite-Based IOT Networks Eng. Hans Adel ¹ , Eng Christian Steinmetz ¹ , Eng Frank Mayer ¹ , Eng Jonas Mrazek ¹ <i>¹Fraunhofer IIS, Erlangen, Germany</i>
17:50	Dual-Linearly Polarized Offset Dual-Reflector Antenna in Parallel-Plate Waveguide at W-band Miss Thi Kim Ngan Nguyen ¹ , Mr. Jérôme Taillieu ^{1,2} , Dr. David González-

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	<p>Ovejero¹, Prof. Ronan Sauleau¹ <i>¹Univ Rennes, CNRS, Institut d'Électronique et des Technologies du numéRique (IETR)-UMR 6164, Rennes, France, ²Univ Rennes, CNRS, Institut FOTON-UMR 6082, Rennes, France</i></p>
<p>18:10 – 20:00 Welcome reception at Winter Garden</p>	

Tuesday 12 November

<p>09:00 – 09:30 Invited Talk 2 <i>Chair: E. Gandini</i></p> <p>Operation of a High-Gain Lens-Array Antenna with Hybrid Optical-Electronic Beamforming <u>Jeremy Turpin</u>¹ ¹<i>All.Space, Reading, UK</i></p>	
<p>09:30 – 10:50 Antenna testing, material characterization and manufacturing 1 <i>Chairs: L. Rolo, L. Ciorba</i></p>	
09:30	<p>“Wire-FEM” Pre-processor to Model Knitted Metal Meshes <u>Prof. Pietro Salvini</u>¹, PhD Christian Iandiorio¹, PhD Emanuele Marotta¹ ¹<i>Univ. Rome Tor Vergata, Rome, Italy</i></p>
09:50	<p>Free-Space Resonator Calibration for Reflector Loss Measurements of Next Generation Topography Missions <u>Mr. Lorenzo Ciorba</u>¹, Ing. Tobias Plüss¹, Dr. Axel Murk¹ ¹<i>University Of Bern, Bern, Switzerland</i></p>
10:10	<p>Preliminary RF assessment of the mechanical design of the compact antenna test range for HERTZ 2.0 <u>Dr. Cecilia Cappellin</u>¹, Pasquale G. Nicolaci¹, Giuseppe Valsecchi², Mauro Maggioni², Claudio Franchini², Luis Rolo³, Antonio Riccardi³ ¹<i>Ticra, Copenhagen, Denmark</i>, ²<i>MediaLario srl, Lecco, Italy</i>, ³<i>ESTEC, Noordwijk, The Netherlands</i></p>
10:30	<p>CIMR’s Large Deployable Reflector Subsystem MGSEs - Ground Deployment Test Challenges. <u>Eng. Ricardo Lopes</u>¹, Eng. Ricardo Costa¹, Eng. Philippe Pereira¹, Eng. Ana Pereira¹, Eng. Stephan Endler², Eng. Fabian Schill², Eng. Martin Lösch², Eng. Nikoloz Maghaldadze³, Eng. Marta Bello³, Eng. Christoph Zauner, Eng. Leri</p>

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	<p>Datashvili³ ¹INEGI, Porto, Portugal, ²HPS GmbH, Munich, Germany, ³LSS GmbH, Munich, Germany</p>
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10:50 - 11:20 Coffee Break

11:20 – 13:00 Antennas for earth observation missions

Chairs: D. Trenta, P. Focardi

11:20	<p>TriHex Antenna Design: First measurement results <u>Dr. Quiterio Garcia-Garcia</u>¹, <u>Dr Ana Lopez-Yela</u>¹, Mrs Ana Olea¹, Dr Albert Zurita¹, Dr Erio Gandini², Dr Manuel Martin-Neira², Dr Martin Suess² ¹Airbus Defence and Space, Getafe, Madrid, Spain, ²European Space Agency, Keplerlaan, Netherlands</p>
11:40	<p>Single and Dual Polarization Lightweight Slotted Waveguide Array Technology for X and C Band SAR Antennas <u>Eng. Paolo Campana</u>¹, Eng. Michele Mazzanti¹, Eng. Danilo Fortini¹, Eng. Davide Maiarelli¹, Eng. Stefania Gemma¹, Eng. Diana Sciulli¹, Eng. Aniello Tagliatalata¹, Eng. Mauro Sperandio¹ ¹Thales Alenia Space Italy, Rome, Italy</p>
12:00	<p>Waveguide Leaky-Wave Antenna Array Technology Supporting Dual-Beam Along-Track Interferometry for Ocean Current Estimation <u>Mr. Michael Barenscheer</u>¹, Mr. Simone Gabrielli¹, Mr. Jan Kunath¹ ¹OHB System AG, Bremen, Germany</p>
12:20	<p>Antenna Concept for SEASTAR Mr Fernando Estevez-Llaveria¹, Mr Luis Ordoñez-Peña¹, <u>Dr. Quiterio Garcia-Garcia</u>¹, Mr Javier del Castillo Mena¹, Mrs Raquel Alvarez², Dr Petronilo Martin-Iglesias², Dr Benedikt Byrne², Dr Erio Gandini² ¹Airbus Defence and Space, Getafe, Madrid, Spain, ²European Space Agency, Noordwijk, The Netherlands</p>

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12:40	<p>Feed Assembly Design for INCUS</p> <p><u>Dr. Paolo Focardi</u>¹</p> <p><i>¹Jet Propulsion Laboratory, California Institute of Technology, Pasadena, United States</i></p>
13:00 – 14:00 Lunch Break	

<p>14:00 – 16:00 EurAPP convened session: Dome and lens antennas for space and aerospace applications</p> <p><i>Chairs: O. Quevedo-Teruel, A. Mazzinghi</i></p>	
14:00	<p>Wide angle quasi-optical beamformer enabled by PCB technology</p> <p><u>Mr. Léonin Lassauce</u>¹, Dr. Jean-Philippe Fraysse³, Mr. Romain Contreres², Dr. Mauro Ettorre⁴</p> <p><i>¹IETR – UMR CNRS 6164, Rennes, France, ²CNES, Toulouse, France, ³Thales Alenia Space, Toulouse, France, ⁴Michigan State University, East Lansing, United-States</i></p>
14:20	<p>The Virtual Image Lens and its Application to Multiple Beam Antennas</p> <p><u>Dr. Nelson Fonseca</u>¹, Oskar Zetterstrom², Prof. Tomas Tyc³</p> <p><i>¹Anywaves, Toulouse, France, ²KTH Royal Institute of Technology, Stockholm, Sweden, ³Masaryk University, Chzecia</i></p>
14:40	<p>Innovations in Additive Manufacturing for Antenna Design: Integrating Metallic and Dielectric Components</p> <p><u>Mr. José Rico-Fernández</u>¹, Mr. Omar Orgeira¹</p> <p><i>¹Northern Waves AB, Stockholm, Sweden</i></p>
15:00	<p>Design of Low-profile Mechanical Beam Steering Transmit-array antennas for SatCom</p> <p><u>Dr. Sérgio Matos</u>^{1,2}, MS Margarida Fernandes², Dr. Nelson Fonseca³, Dr. João Felício^{2,4}, Dr. Jorge Costa^{1,2}, Dr. Carlos Fernandes^{2,4}</p> <p><i>¹Instituto Universitário de Lisboa, Lisbon, Portugal, ²Instituto de Telecomunicacoes, Lisbon, Portugal, ³Anywaves, Toulouse, France, ⁴Lisbon University, Lisbon, Portugal</i></p>

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15:20	<p>Method of Moments for the Accurate Simulation of Fully Metallic Curved Polarizers for Space Applications</p> <p>Dr. Agnese Mazzinghi¹, Prof. Angelo Freni¹, Prof. Oscar Quevedo-Teruel⁴, Prof Francisco Mesa³, Dr. José Rico-Fernández²</p> <p>¹University of Florence, FIRENZE, Italy, ²Northern Waves AB, Stockholm, Sweden, ³University of Seville, Seville, Spain, ⁴KTH, Stockholm, Sweden</p>
15:40	<p>Annular Focusing Quasi-Optical System Based on Planar Lens Solutions</p> <p>Miss Alexandra Mavropoulou¹, Dr. Erio Gandini¹</p> <p>¹European Space Agency (ESA-ESTEC), Noordwijk, Netherlands</p>

16:00 – 16:20 Coffee Break

16:20 – 18:00 Antenna analysis, design and modelling

Chairs: E. Gandini, E. Jørgensen

16:20	<p>Out-Of-Focus Holography Analysis of the Sardinia Deep Space Antenna Beam Wave Guide Optics</p> <p>Dr. Giampaolo Serra¹</p> <p>¹Italian Space Agency, Cagliari, Italy</p>
16:40	<p>Uncertainty Quantification of the Square Kilometre Array Log Periodic Antenna</p> <p>Dr. Mark Whale¹, Dr. Edoardo Baldazzi¹, Dr. Pasquale Giuseppe Nicolaci¹, Dr. Pietro Bolli², Mr. Antonio Sganzerla³, Mr. Lorenzo Mezzadrelli³</p> <p>¹Ticra, Copenhagen, Denmark, ²Arcetri Astrophysical, INAF, Florence, Italy, ³Sirio Antenne, Volta Mantovana, Italy</p>
17:00	<p>Fast full-wave analysis methods for Analysis and Design of Phased Array Antennas</p> <p>Dr. Min Zhou¹, Dr Erik Jørgensen¹, Mr Martin H. Gæde¹, Dr Magnus Brandt-Møller¹, Dr Asger Limkilde¹, Mr Søren Hartmann¹, Dr Pasquale G. Nicolaci¹,</p>

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	Dr Nafsika Memeletzoglou ¹ , Dr Giovanni Toso ² <i>¹TICRA, Copenhagen, Denmark, ²ESA/ESTEC, Noordwijk, The Netherlands</i>
17:20	Fast, Robust and Global Optimisation for Antenna Design using Meta Modelling Dr. Lasse Hjuler Christiansen ¹ , Dr Anders Eltved ¹ , Mr. Søren Hartmann ¹ , Ms. Sabine Hansen ¹ , Dr. Stig Busk Sørensen ¹ , Ms. Nafsika Memeletzoglou ¹ , Mr. Edoardo Baldazzi ¹ , Dr. Min Zhou ¹ , Dr. Oscar Borries ¹ , Dr. Erio Gandini ² <i>¹Ticra, Copenhagen, Denmark, ²ESA-ESTEC, Noordwijk, The Netherlands</i>
17:40	Conversion of Payload PIM specification to a radiated PIM scenario Dr. Davide Smacchia ¹ , Dr. Pablo Soto Pacheco ² , Dr. Vicente Boria Esbert ^{1,2} <i>¹Vsc Val Space Consortium, Valencia, Spain, ²Universitat Politecnica de Valencia, Valencia, España</i>

Wednesday 13 November

<p>09:00 – 09:30 Invited Talk 3 <i>Chair: C. Tienda-Herrero</i></p> <p>ROSE-L SAR Antenna Radiator - The Way from Ground to Space Hendrik Bayer¹ ¹<i>Airbus Defence and Space</i></p>	
<p>09:30 – 10:50 Reflectarrays and Transmitarrays <i>Chairs: C. Tienda Herrero, A. Mavropoulou</i></p>	
09:30	<p>Deployable Folded-Panel Reflectarray Antenna for a 16U CubeSat Mr. Iliya Shofman¹, Andrea Guarriello², Herve Legay², Prof. Sean Victor Hum¹ ¹<i>University Of Toronto, Toronto, Canada</i>, ²<i>Thales Alenia Space, Toulouse, France</i></p>
09:50	<p>Metal-Only 3D Unit Cell for Reflectarrays with Independent Frequency Band Behavior Mr. Andrés Biedma¹ ¹<i>University Of Granada, Granada, Spain</i></p>
10:10	<p>RF analysis of a wireless controlled reconfigurable reflectarray antenna Mr. Bruno Correia¹, Mr. Sérgio Cunha¹, Mr. William Yatman², Mr. Benedikt Byrne³, Mr. Petronilo Martin-Iglesias³ ¹<i>Faculty of Engineering of University of Porto, Porto, Portugal</i>, ²<i>TICRA, Copenhagen, Denmark</i>, ³<i>ESA - ESTEC, Noordwijk, The Netherlands</i></p>
10:30	<p>Folded Transmitarray in Quartz for Compact Radiometers Exceeding 39 dBi of Gain at 310 GHz Mr. Tomas Thuroczy¹, Olivier de Sagazan¹, Xavier Morvan¹, Laurent Le Coq¹, Ronan Sauleau¹, David González-Ovejero¹ ¹<i>IETR - University of Rennes, Rennes, France</i></p>

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10:50 – 11:20 Coffee Break

11:20 – 13:00 Antennas for telecom payloads
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Chairs: P. Campana, G. Toso

11:20	<p>Modelling of a multiple beams transmitter experiencing antennas crosstalk and load-pull effect Eng. Aymeric Cailleux¹, Ph.D. Jean-Philippe Fraysse², Ph.D. Herve Legay², Prof. George Goussetis¹ ¹Heriot-watt University, Edinburgh, United Kingdom, ²Thales Alenia Space, Toulouse, France</p>
11:40	<p>Optimizing Communication Capabilities in Non-Terrestrial Networks: A Comparative Analysis of Continuous and Distributed Aperture Solutions Mr. Giulio Orlando¹, Ms. Margaux Pellet^{1,3}, Prof. George Goussetis³, Dr.-Ing. Thomas Delamotte², Dr. Hervé Legay¹ ¹Thales Alenia Space, Toulouse, France, ²University of the Bundeswehr Munich, Munich, Germany, ³Heriot-Watt University, Edinburgh, United Kingdom</p>
12:00	<p>ACTA-UHTS project – Overview and breadboard models of enabler concepts for very large DRA of telecom satellites in Ka band Etienne Girard¹, Dr. Jean-Philippe Fraysse¹, Hervé Legay¹, Ashley Roach², Benedicte-Marie Folio², Giovanni Toso² ¹Thales Alenia Space, Toulouse, France, ²European Space Agency, Noordwijk, Netherlands</p>
12:20	<p>Design Considerations on Array-Fed Reflectors for Communication Satellites Mr. Francesco Lisi¹, Dr. Julien Maurin², Dr. Hervé Legay², Dr. Piero Angeletti³, Dr. Giovanni Toso³, Dr. George Goussetis¹ ¹Heriot-watt University, Edinburgh, United Kingdom, ²Thales Alenia Space, Toulouse, France, ³European Space Agency, Noordwijk, Netherlands</p>

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12:40	<p>A Quadruple-Band (K/Ka/Q/V) Antenna-Feed System for HTS Applications Dr. Oscar Antonio Peverini¹, Dr. Giuseppe Addamo¹, Dr. Mauro Lumia¹, Dr. Giuseppe Virone¹, Dr. Paolo Campana², Dr. Rodolfo Ravanelli², Dr. Domenico Patricelli², Dr. Davide Maiarelli², Dr. Roberto Mizzoni² ¹Consiglio Nazionale delle Ricerche, Torino, Italy, ²Thales Alenia Space, Roma, Italy</p>
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13:00 – 14:00 Lunch Break

14:00 – 15:30 Poster Session

Chairs: V. Iza, A. Riccardi

1	<p>Engineering aspects of the ROT-54/2.6 radio telescope revitalizing Dr. Arevik Sargsyan¹, Mr. Narek Hambardzumyan¹ ¹National Polytechnic University of Armenia, Yerevan, Armenia</p>
2	<p>The Comparative Study Between I and L Dipole Antenna Topologies for Space Application Dr. Saiah Bekkar Djelloul Saiah¹, Dr. Wahiba BELGACEM¹, Dr. Boualem NASRI¹, ING Amine BAB¹, ING Djamel eddine BABA HAMED¹ ¹Satellite development center/Algerian Space Agency, BP 4065 IBN ROCHD USTO, Algeria</p>
3	<p>Dynamic Analysis and Optimization of Intersatellite Links Antenna Specifications in Federated and Fractionated Satellite Systems Mr. Alex Evrard¹, Dr. Hervé Legay², Pr. George Goussetis³, Dr. Mauro Ettorre¹, Pr. Ronan Sauleau¹ ¹Univ Rennes, CNRS, IETR – UMR 6164, Rennes, France, ²Thales Alenia Space, Toulouse, France, ³Heriot Watt University, Edinburgh, United Kingdom</p>
4	<p>Structural Morphing Metasurfaces for Electromagnetic Beam Manipulation Dr. Aakash Bansal¹, Prof William Whittow¹</p>

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	¹ <i>Loughborough University, Loughborough, United Kingdom</i>
5	Quantifying Parasitic Friction in MGSE Pulley Systems Eng. Ricardo Costa ¹ , Eng. Ricardo Lopes ¹ , Eng. Pedro Lopes ¹ , Eng. Stephan Endler ² ¹ <i>INEGI, Porto, Portugal, </i> ² <i>HPS GmbH, Munich, Germany</i>
6	NAVISP-EL1-083: DEPLOYABLE SATELLITE NAVIGATION ANTENNA Mr. Juho Veteläinen ¹ , Mr. Antti Renko ¹ , Mr. Harri Haukka ¹ ¹ <i>Huld, Oulu, Finland</i>
7	Satellite Signal Coverage Analysis for Terrestrial Receivers in Different Environments Dr. Zeina El-Ahdab ¹ , Dr. Christoph Maeurer ² ¹ <i>Altair Engineering, Toulouse, France, </i> ² <i>Altair Engineering, GmbH, Boeblingen, Germany</i>
8	Filters in CLAF-SIW technology for Space Applications Mr. Cleofás Segura-gómez ¹ , Mr. Andrés Biedma-Pérez ¹ , Dr. David Santiago ² , Dr. Ángel Palomares-Caballero ³ , Dr. Iván Arregui ² , Dr. Miguel A. G. Laso ² , Dr. Pablo Padilla ¹ ¹ <i>Dept. of Signal Theory, Telematics and Communications, Research Centre for Information and Communication Technologies (CITIC-UGR), University of Granada, Granada, Spain, </i> ² <i>Smart Cities Institute (ISC), Department of Electrical, Electronic and Communication Engineering, 31006 Pamplona, Spain, </i> ³ <i>Institut d'Electronique et des Technologies du numérique (IETR), National Institute of Applied Sciences (INSA) Rennes, UMR CNRS 6164, Rennes, 35708, France</i>
9	Morphogenetic Metasurface Antennas for Satellite Communication Mrs. Chidinma Nnekwu Uche ¹ , Prof. Cyril Decroze ¹ , Engr. Nasibeh Parsaei ² , Dr Thomas Fromenteze ¹ ¹ <i>University of Limoges, CNRS, Xlim, Umr 7252, F-87000 Limoges, France, Limoges, France, </i> ² <i>Centre d'Ingénierie des Systèmes en Télécommunications en ElectroMagnétisme et Electronique (CISTEME), F-87000, Limoges, France</i>

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10	<p>The SDSA: enhancing capabilities for future lunar and Deep Space communication</p> <p>Dr. Giuseppe Valente¹, Dr Noemi Iacolina¹, Dr Andrea Saba¹, Dr Giampaolo Serra¹, Dr Enrico Urru¹, Dr Giuseppe Addamo², Dr Salvatore Viviano³, Dr Francesca Esposito⁴, Dr Immacolata Donnarumma³, Dr Ugo Cortesi⁵, Dr Fabio D'Amico⁶, Dr Alessandro Turchi³, Dr Marco Gai⁵, Dr Andrea Argan⁶</p> <p>¹ASI-Italian Space Agency, Selargius (Cagliari), Italy, ²CNR-IEIT, Institute Of Electronics Computer And Telecommunication Engineering, Italian National Research Council, Torino, Italy, ³ASI-Italian Space Agency, Roma, Italy, ⁴INAF-National Institute for Astrophysics, Astronomical Observatory of Capodimonte, Napoli, Italy, ⁵IFAC-CNR, Institute of Applied Physics 'N. Carrara', Italian National Research Council, Sesto Fiorentino (Firenze), Italy, ⁶INAF-National Institute for Astrophysics, Roma, Italy</p>
11	<p>Ka Band Parabolic Reflectarray Using Selective Metallisation on 3D Printed Surface</p> <p>Dr. Chao Gu¹, Dr. Dmitry Zelenchuk¹, Dr. Gerard O'Connor², Dr. Noel Harrison², Dr Darren Molloy², Dr. Ayesha Sharif², Dr. Ghabazi Pouyan²</p> <p>¹ECIT Institute, Queen's University Belfast, Belfast, United Kingdom, ²National Centre for Laser Applications, National University of Ireland Galway, Galway, Ireland</p>
12	<p>A Scalable Dual Linearly Polarized Dielectric Lens Antenna for mm-Wave SATCOM Applications</p> <p>Dr. Hossein Sarbandi Farahani¹, Dr. Stefan Pratschner¹, Dipl.-Ing. Thomas Ragg¹, Dr. Christoph Kienmayer¹</p> <p>¹Pidso Propagation Ideas & Solutions Gmbh, Vienna, Austria</p>
13	<p>Development of a Patch Array Antenna for the ROMEO Small Satellite Mission</p> <p>Mrs. Lena Bötsch-Zavre¹, Prof.Dr.-Ing. Sabine Klinkner¹, Dr.-Ing. Michael Lengowski¹, Cedric Holeczek¹, Dalia Konieczny¹, Thorben Löffler¹, Robin Schweigert¹</p> <p>¹University Of Stuttgart Institute of Space Systems, Stuttgart, Deutschland</p>

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14	<p>Modelling of carrier-to-interference ratio in four-color frequency reuse scheme for space segment phased array antenna</p> <p>Dr. Piotr Kurgan¹</p> <p><i>¹Thorium Space SA, Wroclaw, Poland</i></p>
15	<p>Mechanical phase shifter with continuous beam scanning across broadside for SOTM applications</p> <p>Eng. Miguel Angel Fuentes-pascual¹, Dr. Jose Ignacio Herranz-Herruzo¹, Dr. Miguel Ferrando-Rocher¹, Prof. Alejandro Valero-Nogueira¹, Prof. Mariano Baquero-Escudero¹</p> <p><i>¹Apl/upv, Valencia, Spain</i></p>

15:30 – 16:00 Coffee Break

16:00 – 18:00 Convened session: Progress on Additive Manufacturing for Areospace antennas and antenna components

Chairs: E. Menargues, M. García-Vigueras

16:00	<p>Fully Metallic 3D-printed Vivaldi-antenna Array at 100 GHz</p> <p>Mr. Jan Bergman¹, Dr. Juha Ala-Laurinaho¹, Mr. Jani Kallankari², Prof. Ville Viikari¹</p> <p><i>¹Aalto University, Espoo, Finland, ²Verkotan Oy, Oulu, Finland</i></p>
16:20	<p>An Additively Manufactured K/Ka-band Antenna-Feed System with Integrated RF, Thermal and Mechanical Functionalities</p> <p>Dr. Oscar Antonio Peverini¹, Dr. Giuseppe Addamo¹, Dr. Mauro Lumia¹, Dr. Giuseppe Virone¹, Dr. Flaviana Calignano², Dr. Reno Mandolesi^{3,6}, Dr. Matteo Biggi³, Dr. Giovanni Matticari³, Dr. Andrea Ferrara⁴, Dr. Nelson J. G. Fonseca⁵</p> <p><i>¹Consiglio Nazionale delle Ricerche, Torino, Italy, ²Politecnico di Torino, Torino, Italy, ³Pasquali Microwave Systems, Firenze, Italy, ⁴Argotec, Italy, ⁵Anywaves, France, ⁶Università di Ferrara, Ferrara, Italy</i></p>
16:40	<p>Leveraging Hybrid Extrusion Based Additive Manufacturing for Integrated</p>

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	<p>Antenna Applications Mr. Simon Hehenberger¹, Dr. Stefano Caizzone¹, Prof. Dr Alexander Yarovoy² ¹<i>Institute for Communication and Navigation, Weßling, Germany,</i> ²<i>Microwave Sensing, Signals and Systems, Delft, The Netherlands</i></p>
17:00	<p>Novel 3D Printed Electronics Technology Assessment for RF Applications Eng. Paola Andrea Escobari Vargas¹, Dr. Jeroen Sol², Dr Francesca Chiappini³, Dr Stefania Monni⁴, Dr Ad Reniers¹, Dr Elmine Meyer¹ ¹<i>Eindhoven University of Technology, Eindhoven, Netherlands,</i> ²<i>TNO at Holst Centre, Eindhoven, Netherlands,</i> ³<i>Chip Integration Technology Centre (CITC), Nijmegen, Netherlands,</i> ⁴<i>TNO Radar technologies, The Hague, Netherlands</i></p>
17:20	<p>Antenna Focused Additive Manufacturing Developments at ESA Dr. M. Van der Vorst¹ ¹<i>European Space Agency, Noordwijk, Netherlands</i></p>
17:40	<p>Progress on metal Additive Manufacturing for Space RF and antenna applications by SWISSto12 Esteban Menargues¹, Santiago Capdevila¹, Alfredo Catalani¹, María García-Viguera² ¹<i>SWISSto12,</i> ²<i>INSA Rennes</i></p>

18:15 Bus departure for workshop dinner

18:30 – 22:30 Workshop dinner

Thursday 14 November

<p>09:00 – 09:30 Invited Talk 4 <i>Chair: G. Toso</i></p> <p>Active Antennas Based on Discrete Lenses Gianfranco Ruggerini¹ ¹<i>Space Technologies for Innovation s.r.l.</i></p>	
<p>09:30 – 10:50 Antennas for science missions <i>Chairs: M. van der Vorst, S. Oddin Dabironezare</i></p>	
09:30	<p>A focal plane array of dual-polarized leaky lens antennas for wideband spectro-polarimetric observations of the Cosmic Microwave Background Dr. Shahab Oddin Dabironezare^{1,2}, Mr. Leon Olde Scholtenhuis¹, Mr. Louis Hendrik Marting^{1,2}, Dr. Alejandro Pascual Laguna^{1,2,3}, Dr. Jochem Baselmans^{1,2}, Dr. Kenichi Karatsu² ¹<i>Delft University of Technology (TUD), Delft, Netherlands</i>, ²<i>Netherlands Institute for Space Research (SRON), Leiden, Netherlands</i>, ³<i>Centro de Astrobiología (CAB), INTA-CSIC, Torrejón de Ardoz, Spain</i></p>
09:50	<p>Design, Development and Testing of the ESA's Hera High Gain Antenna Mr. Fulvio Triberti¹, Dr. Stefan Hofer¹, Mr. Maurizio Lori¹, Mr. Olaf Stolz¹, Mr. Paolo Proietti Zolla¹, Ms. Victoria Iza² ¹<i>HPS GmbH, Munich, Germany</i>, ²<i>ESA European Space Agency, Noordwijk, Netherlands</i></p>
10:10	<p>Synthetic Aperture Radar Imaging with a Shared 6m Large Deployable Reflector to Map Subsurface Ice on Mars Dr. Etienne Boulais¹, Dr. Marilena Amoroso², Dr. Massimiliano Marcozzi³, Mr. Christopher Servant¹, Mr. Patrick Plourde¹, Dr. Timothy Haltigin¹ ¹<i>Canadian Space Agency, St-Hubert, Canada</i>, ²<i>Italian Space Agency, Rome, Italy</i>, ³<i>Thales Alenia Space Italy, Rome, Italy</i></p>

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10:30	<p>A sequential Geometrical Optics technique combined with a field matching analysis in reception mode for optimizing wide band wide scanning multi-lens focal plane arrays</p> <p>Dr. Shahab Oddin Dabironezare^{1,2}, Miss Alexandra Mavropoulou³, Dr. Akira Endo¹, Dr. Jochem Baselmans^{1,2}, Dr. Nuria Lombart¹, Dr. Giorgio Carluccio⁴</p> <p>¹<i>Delft University Of Technology, Delft, Netherlands</i>, ²<i>Netherlands Institute for Space Research (SRON), Leiden, Netherlands</i>, ³<i>European Space Agency (ESA-ESTEC), Noordwijk, Netherlands</i>, ⁴<i>NXP, Eindhoven, Netherlands</i></p>
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10:50 – 11:20 Coffee Break

11:20 – 13:00 User terminal antennas for SATCOM and navigation 2

Chairs: R. Di Bari, J. Turpin

11:20	<p>A Ka Band Antenna Array for Satellite Communication Enabled by a Novel Dual-Band RF Integrated Circuit Beamformer</p> <p>Dr. Benjamin Falkner¹, Professor Amit Mehta², Mr. Alan Wong³, Mr. David Garrood⁴, Mr Harvinder Nagi¹, Mr Max Rigby¹</p> <p>¹<i>Satellite Applications Catapult, Harwell, United Kingdom</i>, ²<i>Swansea University, Swansea, United Kingdom</i>, ³<i>Ensilica, United Kingdom</i>, ⁴<i>Celestia UK, United Kingdom</i></p>
11:40	<p>Real-time Antenna Array Synthesis using Machine Learning</p> <p>Dr. Lasse Hjuler Christiansen¹, Mr. Niels Skovgaard Jensen¹, Mr. Frederik Faye¹, Dr. Mark Whale¹, Dr. Pasquale Giuseppe Nicolaci¹, Dr. Min Zhou¹, Dr. Oscar Borries¹, Dr. Erio Gandini²</p> <p>¹<i>Ticra, Copenhagen, Denmark</i>, ²<i>ESA-ESTEC, Noordwijk, The Netherlands</i></p>
12:00	<p>Metamaterial-based antenna for GPS interference cancelation</p> <p>Dr. Amir Jafargholi¹, Prof. Romain Fleury¹</p> <p>¹<i>EPFL, Lausanne, Switzerland</i></p>
12:20	<p>Q-V-Ka Band Antenna for Aeronautical Applications</p>

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	<p>Mr. Giancarlo Bellaveglia¹, Mr Mario Albertini¹, Mr Nicola Gatti¹, Mr Carlo Cornacchini², Mr Giovanni Toso³ ¹<i>Airbus Italia, Rome, Italy</i>, ²<i>former Airbus Italia, Rome, Italy</i>, ³<i>ESTEC, Noordwijk, Netherlands</i></p>
12:40	<p>Electronically-Reconfigurable Metasurface Antenna for SatCom Next Generation Non-GEO Satellite Terminal PhD Francesco Caminita², PhD Cristian Della Giovampaola², PhD Nicola Bartolomei², PhD Gabriele Minatti², PhD Antonino Tobia¹, Eng. Mario Albertini¹, Eng Giancarlo Bellaveglia¹, PhD Pasquale Giovanni Nicolaci¹, Eng. Massimiliano Simeoni³ ¹<i>Airbus Italia S.p.a., Rome, Italy</i>, ²<i>Wave Up s.r.l., Siena, Italy</i>, ³<i>European Space Agency, Noordwijk, Netherlands</i></p>

13:00 – 14:00 Lunch Break

14:00 – 16:00 Convened session: Antennas for small satellites

Chairs: B. Byrne, N. Fonseca

14:00	<p>Revolutionizing Small Satellite Communications with Advanced Deployable Technology. PROSIX deployable reflectors research, evolution, scalation and current portfolio. Mr. Marco Blanco¹, Dr. Carlos Montesano¹ ¹<i>Prosix Engineering, San Sebastian, España</i></p>
14:20	<p>Broadband Reflector Antenna with Cavity-Backed Spiral Feed for New Space Applications Dr. Ralf Knott¹, Dr. Ioannis Petropoulos¹, Mr. Paolo Zolla¹, Mr. Christopher Tapp¹, Dr. Stefan Hofer¹, Dr. Stefan Bedrich¹ ¹<i>HPS GmbH, Munich, Germany</i></p>
14:40	<p>Deployable L-band Quadrifilar Helix Antenna for PNT Applications in LEO Mathias Nicolle¹, Dr. Antoine Simon¹, Florian Barault¹, Allan Manent¹, Dr.</p>

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	Nelson Fonseca ¹ , Dr Maxime Romier ¹ <i>¹Anywaves, Toulouse, France</i>
15:00	UDAN: Deployable-10-dBi-class-gain UHF Antenna for Nanosatellites Dr. Carlos J. García-Mora ¹ , Mr. Germar Puttich ¹ , Mr. Maurizio Lori ¹ , Mr. Didier Andrade ¹ , Dr. Ioannis Petropoulos ¹ , Ms. Xenia López-Corrales ¹ , Mr. Paolo Zolla ¹ , Mr. Robert Zancu ² , Mr. Ashley Cook ³ <i>¹HPS GmbH, Munich, Germany, ²HPS S.R.L., Bucharest, Romania, ³ESA, Noordwijk, The Netherlands</i>
15:20	Deployable Reflectors and Booms for Small Satellites Mr. Nikoloz Maghaldadze ¹ , Mr. Tao Luo ¹ , Ms. Marta Bello ¹ , Mr. George Datashvili ¹ , Dr. Christoph Zauner ¹ , Dr. Leri Datashvili ¹ <i>¹Large Space Structures GmbH, Garching b. München, Germany</i>
15:40	Antennas for CubeSat: An Overview of ESA ongoing activities and Future Needs Dr. Benedikt Byrne ¹ <i>¹Esa, Noordwijk, Netherlands</i>

16:00 – 16:20 Coffee Break

16:20 – 18:00 Array antennas

Chairs: R. Fennis, P. Rocca

16:20	Modular Scanning Array Design for 3D Printed Antenna Manufacturing Dr. Nicola Anselmi ¹ , Prof. María García-Vigueras ² , Dr. Esteban Menargues ³ , Dr. Giovanni Toso ⁴ , Prof. Paolo Rocca ^{1,5} , Prof. Andrea Massa ^{1,6,7,8} <i>¹ELEDIA Research Center (ELEDIA@UniTN - University of Trento) DICAM - Department of Civil, Environmental, and Mechanical Engineering, Via Mesiano 77, 38123 Trento, Italy, ²Institut National Des Sciences Appliquées de Rennes, Institut d'Electronique et des Technologies du numérique, 20 Av. des Buttes de Coesmes, 35700 Rennes, France, ³SWISSto12, Avenue des</i>
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	<p><i>Baumettes 19 CH-1020 Renens, Switzerland, ⁴European Space Agency, Radio Frequency Payloads and Technology Division, Noordwijk, The Netherlands, ⁵ELEDIA Research Center (ELEDIA@XIDIAN - Xidian University), P.O. Box 191, No.2 South Tabai Road, 710071 Xi'an, Shaanxi Province, China, ⁶ELEDIA Research Center (ELEDIA@UESTC - UESTC) School of Electronic Science and Engineering University of Electronic Science and Technology of China, Chengdu 611731, China, ⁷ELEDIA Research Center (ELEDIA@TSINGHUA - Tsinghua University), 30 Shuangqing Rd, 100084 Haidian, Beijing, China, ⁸School of Electrical Engineering, Tel Aviv University, Tel Aviv 69978, Israel</i></p>
16:40	<p>Flat Array Antennas for Broadband SatCom Applications at E-band Dr. Adrian Gomez Torrent¹, Ms. Nuria del Castillo Iniesta¹, Dr. Bernhard Beuerle¹, Dr. James Campion¹ ¹TERASi AB, Stockholm, Sweden</p>
17:00	<p>Optical Multibeam Beamformer Based on Xbar Architecture Dr. Ronis Maximidis^{1,2}, Mr. Stefanos Kovaos^{1,2}, Mr. Ioannis Roumpos^{1,3}, Dr. Apostolos Tsakyridis^{1,2}, Dr. George Giamougiannis^{1,2}, Dr. Miltiadis Moralis-Pegios^{1,2}, Dr. Dimitra Ketzaki^{1,2}, Professor Nikos Pleros^{1,2} ¹School of Informatics, Aristotle University of Thessaloniki, Thessaloniki, Greece, ²Center of Interdisciplinary Research & Innovation, Thessaloniki, Greece, ³Department of Physics Thessaloniki, Aristotle University of Thessaloniki, Thessaloniki, Greece</p>
17:20	<p>Low Side-lobe Slotted Waveguide Array Antenna for Satellite RADAR Proximity Sensor Systems Operating at Ka-band Engineer Michele Mazzanti¹, Engineer Pierluigi Cecchini¹, Head of RF Antenna Engineering Davide Maiarelli¹ ¹Thales Alenia Space Italy, Rome, Italy</p>
17:40	<p>Phased Array Antenna Designs for Multi-Mission Applications in Satellite Constellations Mr. Dominik Starzmann¹, Mr. Felix Kern¹, Dr. Christian Arnold¹, Dr. Philipp Wertz¹, Prof. Dr. Sabine Klinkner²</p>

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	<i>¹Tesat-Spacecom GmbH & Co. KG, Backnang, Germany, ²University of Stuttgart, Stuttgart, Germany</i>
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Friday 15 November

<p>09:10 – 10:50 Deployable antennas <i>Chairs: P. Moseley, C. Cappellin</i></p>	
09:10	<p>Membrane Reflectarray for MicroSAT Applications Chrysovalantis Stefopoulos¹, Dr. Alessandro Garufo¹, Roland Bolt¹, Dr. Christian Trampuz¹, Dr. Stefania Monni¹ ¹TNO, The Hague, Netherlands</p>
09:30	<p>A feasibility study on the in-orbit surface reconstruction of the CIMR reflector antenna Dr. Cecilia Cappellin¹, Stig B. Sørensen¹, William H. Yatman¹, Vincenzo Lubrano², Pasquale Martinelli², Roberto Mizzoni⁴, Benedetta Fiorelli³ ¹TICRA, Copenhagen, Denmark, ²Thales Alenia Space Italy, Rome, Italy, ³ESTEC, Noordwijk, The Netherlands, ⁴Independent Consultant for TASI on CIMR, Rome, Italy</p>
09:50	<p>Theoretical studies, testing, and analysis of a new type of offset deployable reflector Prof. Serhii Khoroshylov¹, Prof Elguja Medzmariashvili², Dr Serhii Martyniuk¹, Prof Shota Tserodze², Malhaz Nikoladze², Serhii Boholiubov¹ ¹EOS Ukraine, Dnipro, Ukraine, ²Transformable Structures. Georgia T.S. Georgia LLC, Tbilisi</p>
10:10	<p>Robust Deployable Reflectors for Antennas on Cubesats Dr. Andrew Austin¹, Dr Timothy Pelham, Dr Geoffrey Hilton, Professor Mark Beach ¹University Of Bristol, Bristol, United Kingdom</p>
10:30	<p>Scalable space deployable helical antenna, from VHF to S-band, from high-gain to isoflux applications Mr. Vincent Fraux¹, Ms. Manisha Kushwaha¹, Mr. Joseph Baynes¹, Ms. Hannah Frost¹, Mr. Thomas Norton¹, Mr. Thomas Hale¹, Ms. Angelika Skrzyńska¹, Mr. Ethin George¹, Mr. Beyit Barakali¹</p>

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	¹ <i>Oxford Space Systems, Harwell, United Kingdom</i>
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10:50 – 11:20 Coffee Break

11:20 – 12:40 Antenna testing, material characterization and manufacturing 2

Chairs: I. Barbary, L.J. Foged

11:20	<p>Antenna Hats for Earth Observation Satellite Testing Eng. Giulia Cerfeda¹ ¹<i>Argotec S.r.l., San Mauro Torinese, Italy</i></p>
11:40	<p>Advantages of Plane Wave Generator Systems for Antenna Measurements at VHF/UHF Frequencies V. Schirosi¹, F. Saccardi¹, A. Giacomini¹, N. Gross², S. Anwar², E. Kaverine², L.J. Foged¹ ¹<i>MVG Italy, Via Castelli Romani 59, Pomezia, ITALY</i>, ²<i>MVG Industries, 13 Rue du Zéphyr, 91140 Villejust, FRANCE</i></p>
12:00	<p>Progress of “Wire-FEM” for Finite Element Mechanical Computation of Knitted Metal Meshes Prof. Pietro Salvini¹, PhD Christian Iandiorio¹, PhD Emanuele Marotta¹ ¹<i>Univ. Rome Tor Vergata, Rome, Italy</i></p>
12:20	<p>Selective Surface Metallization via Direct Deposition of Conducting Inks and Plasma Powder Deposition Dr. Laszlo Sajti¹, Pier Paolo Curti, Dr. Frédéric Veron, Dr. Hervé Legay, Dr. Andrea Guarriello, Ségolène Tubau, Dr. Maarten van der Vorst, Dr. Erich Neubauer ¹<i>RHP-Technology GmbH, Wiener Neustadt, Austria</i></p>

12:40 – 13:00 Closing ceremony

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13:00 – 14:00 Lunch Break

14:30 – 16:30 Visit to ESTEC antenna measurement facilities*

*Security screening might be required. Registration for the event will be onsite on first come first served base.