



PROGRAMME

"1ST INTERNATIONAL SYMPOSIUM ON VERY LOW EARTH ORBIT MISSIONS AND TECHNOLOGIES"

28 - 29 JUNE 2021

MANCHESTER, UK

LEAD SPONSOR – THE DISCOVERER PROJECT



MONDAY, 28 JUNE 2021

09.30 a.m. BST 10.30 a.m. CEST	Registration & Welcome Coffee
10.00 a.m. BST 11.00 a.m. CEST	Inaugural Talk Peter Roberts – University of Manchester & DISCOVERER Project lead
Session 1: Mission Designs and Concepts (Part I) Chair: Nicholas Crisp – The University of Manchester	
10.45 a.m. BST 11.45 a.m. CEST	In-Orbit-Demonstrator of the SkimSat VLEO Platform <i>15 min presentation + 5 min Q&A</i> Russell Hills et al. – Thales Alenia Space UK; Co-authors affiliations: QinetiQ Space N.V., ESA - European Space Agency
11.05 a.m. BST 12.05 p.m. CEST	Are Very Low Earth Orbit (VLEO) satellites a solution for tomorrow's telecoms needs? <i>15 min presentation + 5 min Q&A</i> Lucy Berthoud et al. – Thales Alenia Space UK; Co-authors affiliations: Thales Alenia Space France, Rheatech Ltd. for the European Space Agency
11.25 a.m. BST 12.25 p.m. CEST	CASPA-ADM – a mission concept for observing thermospheric mass density <i>15 min presentation + 5 min Q&A</i> Christian Siemes et al. – Delft University of Technology; Co-authors affiliations: Teledyne e2v, RHEA for ESA – European Space Agency, RAL Space, ESA – European Space Agency
11.45 a.m. BST 12.45 p.m. CEST	Mission Design of the Global Lidar Altimetry Mission (GLAMIS) <i>15 min presentation + 5 min Q&A</i> Ciara McGrath et al. – Department of Electronic and Electrical Engineering, University of Strathclyde; Co-authors affiliations: School of Geosciences, University of Edinburgh
12.05 p.m. BST 01.05 p.m. CEST	Development and analysis of novel mission scenarios based on Atmosphere-Breathing Electric Propulsion (ABEP) <i>15 min presentation + 5 min Q&A</i> Shreepali Sanjay Vaidya – University of Pisa and the DISCOVERER team
12.25 p.m. BST 01.25 p.m. CEST	LUNCH BREAK

Session 1: Mission Designs and Concepts (Part II)

Chair: Peter Roberts – The University of Manchester

01.15 p.m. BST 02.15 p.m. CEST	<p>Feasibility analysis for air-breathing electric propulsion spacecraft <i>15 min presentation + 5 min Q&A</i></p> <p>Mansur Tisaev et al. – Surrey Space Centre, University of Surrey; Co-authors affiliations: SITAEI S.p.A.</p>
01.35 p.m. BST 02.35 p.m. CEST	<p>Systems Modelling of Very Low Earth Orbit (VLEO) Platforms <i>15 min presentation + 5 min Q&A</i></p> <p>Nicholas Crisp – The University of Manchester and the DISCOVERER team</p>
01.55 p.m. BST 02.55 p.m. CEST	<p>In-situ measurements for the upper atmosphere of Neptune <i>15 min presentation + 5 min Q&A</i></p> <p>Orr Cohen et al. – European Space Agency (ESA); Co-authors affiliations: Institute of Space Systems (IRS), University of Stuttgart, Astos Solutions GmbH</p>

02.15 p.m. BST
03.15 p.m. CEST

COFFEE BREAK

Session 2: Orbital Aerodynamic Control and In-Situ Atmospheric Sensing

Chair: Dhiren Kataria – University College London

02.30 p.m. BST 03.30 p.m. CEST	<p>The Satellite for Orbital Aerodynamics Research (SOAR) <i>15 min presentation + 5 min Q&A</i></p> <p>Nicholas Crisp – The University of Manchester and the DISCOVERER team</p>
02.50 p.m. BST 03.50 p.m. CEST	<p>Active Aerodynamic Attitude Control in Very Low Earth Orbit <i>15 min presentation + 5 min Q&A</i></p> <p>Sabrina Livadiotti – The University of Manchester and the DISCOVERER team</p>
03.10 p.m. BST 04.10 p.m. CEST	<p>Propellant-less Attitude and Orbit Control of Low Earth Orbiting CubeSats Using the Drag Maneuvering Device <i>15 min presentation + 5 min Q&A</i></p> <p>Camilo Riano-Rios et al. – University of Florida</p>
03.30 p.m. BST 04.30 p.m. CEST	<p>CubeSat Charging in VLEO and the Impact on Thermospheric Science <i>15 min presentation + 5 min Q&A</i></p> <p>Sachin Alexander Reddy – Mullard Space Science Laboratory, UCL and the DISCOVERER team</p>
03.50 p.m. BST 04.50 p.m. CEST	<p>Ion and Neutral Mass Spectrometers for the Very Low Earth Orbit environment <i>15 min presentation + 5 min Q&A</i></p> <p>Dhiren Kataria – Mullard Space Science Laboratory, UCL and the DISCOVERER team</p>

04.10 p.m. BST
05.10 p.m. CEST

COFFEE BREAK

Poster Session

Chair: Peter Roberts – The University of Manchester

04.30 p.m. BST	<i>5-minute pitches followed by 5-minute Q&A per poster</i>
05.30 p.m. CEST	Taishi Kato, Kobe University Kosuke Shoda, Kobe University Sasuga Horimoto, Kobe University William Crofts, University of Warwick Claudio Rapisarda, The University of Manchester Brandon Holmes, The University of Manchester Konstantinos Katsonis & Chloe Berenguer, DEDALOS Ltd Zachary Burkhardt, Orbit Fab Anmol Taploo, The George Washington University
06.00 p.m. BST	End of symposium day 1
07.00 p.m. CEST	

TUESDAY, 29 JUNE 2021

08.30 a.m. BST 09.30 a.m. CEST	Registration & Welcome Coffee
09.00 a.m. BST 10.00 a.m. CEST	University of Manchester - lab tours (incl. virtual version)

Session 3: Materials and Ground Testing
Chairs: Peter Roberts, Stephen Edmondson – The University of Manchester

09.45 a.m. BST 10.45 a.m. CEST	Testing material's orbital aerodynamic properties: ground-based and on-orbit experiments <i>15 min presentation + 5 min Q&A</i> Vitor Oiko – The University of Manchester and the DISCOVERER team
10.05 a.m. BST 11.05 a.m. CEST	VLEO-related research activities at Kobe University <i>15 min presentation + 5 min Q&A</i> Masahito Tagawa et al. – Graduate school of Engineering, Kobe University
10.25 a.m. BST 11.25 a.m. CEST	Feasibility of DLR's STG-ET vacuum chamber for simulation of the VLEO environment <i>15 min presentation + 5 min Q&A</i> Jens Schmidt et al. – German Aerospace Center (DLR), Institute of Aerodynamics and Flow Technology, Department of Spacecraft
10.45 a.m. BST 11.45 a.m. CEST	2D material coatings for atomic oxygen resistance <i>15 min presentation + 5 min Q&A</i> Stephen Edmondson – The University of Manchester and the DISCOVERER team
11.05 a.m. BST 12.05 p.m. CEST	On the Utility of Coated POSS-Polyimides for VLEO Vehicles <i>15 min presentation + 5 min Q&A</i> Timothy K. Minton – Smead Department of Aerospace Engineering Sciences, University of Colorado; Co-authors affiliations: Department of Aerospace Engineering and Mechanics, University of Minnesota, Skeyeon, Inc.
11.25 a.m. BST 12.25 p.m. CEST	Ground investigation of AO effect in case of complex geometry <i>15 min presentation + 5 min Q&A</i> Sophie Duzellier – ONERA/DPHY, University of Toulouse; Co-authors affiliations: CNES, Airbus DS, Thales Alenia Space

11.45 a.m. BST
12.45 p.m. CEST LUNCH BREAK

Session 4: Propulsion (Part I)

Chair: Georg Herdrich – Institute of Space Systems (IRS), University of Stuttgart

01.00 p.m. BST 02.00 p.m. CEST	<p>FB-dot Probe Design for the RF Helicon-based plasma thruster (IPT) <i>15 min presentation + 5 min Q&A</i></p> <p>Francesco Romano – Institute of Space Systems (IRS), University of Stuttgart and the DISCOVERER team</p>
01.20 p.m. BST 02.20 p.m. CEST	<p>AETHER Air Breathing Electric THrustER: Towards Very Low Earth Orbit missions <i>15 min presentation + 5 min Q&A</i></p> <p>Tommaso Andreussi et al. – SITAEI S.p.A.</p>
01.40 p.m. BST 02.40 p.m. CEST	<p>The Electric Propulsion Diagnostic Package (EPDP) on the Heinrich-Hertz satellite <i>15 min presentation + 5 min Q&A</i></p> <p>Holger Kersten – University Kiel, IEAP</p>
02.00 p.m. BST 03.00 p.m. CEST	<p>Simulation-guided engineering of an air-breathing electric propulsion concept <i>15 min presentation + 5 min Q&A</i></p> <p>Adam Obrusnik et al. – PlasmaSolve s.r.o.; Co-authors affiliations: SpaceLab EU SE, VZLU a.s.</p>
02.20 p.m. BST 03.20 p.m. CEST	<p>Performance evaluation of a plasma generator and ion optics for Air Breathing Ion Engine <i>15 min presentation + 5 min Q&A</i></p> <p>Yukai Miya – The Graduate University for Advanced Studies, SOKENDAI; Co-authors affiliations: Japan Aerospace Exploration Agency (JAXA)</p>
02.40 p.m. BST 03.40 p.m. CEST	COFFEE BREAK

Session 5: Business Models and Roadmaps

Chairs: Silvia Rodriguez-Donaire – Universitat Politècnica de Catalunya

03.00 p.m. BST 04.00 p.m. CEST	<p>Introductory words about business models and roadmaps <i>15 min presentation + 5 min Q&A</i></p> <p>Daniel Garcia-Almiñana – Universitat Politècnica de Catalunya</p>
03.20 p.m. BST 04.20 p.m. CEST	<p>New promising Business Models Canvas for EO at VLEO using the Discoverer's Technologies <i>15 min presentation + 5 min Q&A</i></p> <p>Paulino Gil – Universitat Politècnica de Catalunya and the DISCOVERER team</p>
03.40 p.m. BST 04.40 p.m. CEST	<p>Similitudes between EO small-satellites and low-cost carriers airlines strategy value curve model <i>15 min presentation + 5 min Q&A</i></p> <p>Marina García Berenguer – Universitat Politècnica de Catalunya and the DISCOVERER team</p>

04.00 p.m. BST 05.00 p.m. CEST	Roadmaps Discussion Chairs: Daniel Garcia-Almiñana – Universitat Politecnica de Catalunya; Peter Roberts, Nicholas Crisp – The University of Manchester
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05.00 p.m. BST
06.00 p.m. CEST

Closing words & End of Symposium