MONDAY 20 MAY 2024 // DAY 1: CONFERENCE OPENING & PLENARIES

08:30	WELCOME COFFEE	EXHIBITION
ROOM	PLENARY SESSION	
10:30	**WELCOME ADRESSES** **Michel ASSOULINE, 3AF CEO - Cllr Jacqueline McLAREN, Lord Provost of the City of Glasgow**	
10:45	**CONFERENCE INTRODUCTION** **Jamila MANSOURI & Jean-François GUERY, Conference co-chairs**	
11:00	**Round Table #1 : AGENCIES ROUND TABLE** **MID AND LONG TERM POLICIES IMPACTING FUTURE PROPULSION** **Moderator: Chiara MANFLETTI, TUM** **Paul BATE, UKSA - Toni TOLKER NIELSEN, ESA - Claus LIPPERT, DLR - Hitoshi KUNINAKA, JAXA - Jean-Marc BAHU, CNES**	
12:30	LUNCH	
14:00	**Round Table #2.1 : INDUSTRIES ROUND TABLE** **How to speed up innovative propulsion release to market ?** **Moderator: Jamila MANSOURI, ESA** **Giulio RANZO, AVIO - Martin SION, ArianeGroup - Lahib BALIKA, Thales Alenia Space- Rob SELBY, NAMMO SPACE - SKYRORA (TBD)**	
15:00	**Round Table #2.2 : INDUSTRIES ROUND TABLE** **How to speed up innovative propulsion release to market ?** **Moderator: Jamila MANSOURI, ESA** **Chiara PERTOSA, SITAEL - Dean McBRIDE, AIRBUS Defence and Space - Patrick VAN PUT, Bradford Space Europe - Emmanuel POULEAU, Safran Espace - Eric KRUCH, SES Satellite**	
16:00	COFFEE BREAK	
16:30	**KEYNOTE SPEECH #1: Flying Artemis 1 with the European Service Module's Propulsion System** **Tobias Langener (ESA) , Stephen Barsi (NASA)**	
17:00	**Round Table #3 : SPACE PROPULSION AMBITIONS FOR FUTURE CARGO & CREW SERVICE VEHICLES TO LEO AND BEYOND** **Introduction : Samantha Cristoforetti, ESA** **Tobias Langener, ESA - Stephen Barsi, NASA - Jan-Hendrik MEISS, Airbus Defence and Space - Hélène HUBY, The Exploration Company - Stephan BRIESCHENK, Rocket Factory Augsburg**	
18:00	END OF DAY 1	
19:30	TRADITIONAL DINNER	

TUESDAY 21 MAY 2024 // DAY 2

08:30 — **KEYNOTE SPEECH #2**
RELIANCE, the innovative main engine supporting interplanetary exploration - Elliott Worsley and Rob Westcott, NAMMO

		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9
		SESSION 01 Maturation Programs overview 1	**SESSION 02** Solid Rocket Motors 1	**SESSION 03** Thrust Chamber Design & Development	**SESSION 04** Air Breathing Orbital Propulsion I	**SESSION 05** Numerical Methods for Chemical Propulsion	**SESSION 06** Green Propellant Systems: Program Overviews	**SESSION 07** Resistojets	**SESSION 08** Electric Propulsion for Deep Space Exploration	**SESSION 09** Test Facilities
Chair		Stefano MATTEINI - ESA	Jérôme ANTHOINE - ONERA	Victor FERNANDEZ VILLACE - ESA	Davar FEILI - ESA	Csaba JEGER - ESA	Ulrich GOTZIG - ArianeGroup	David PERIGO - ESA	Joe CASSADY - Aerojet Rocketdyne	Juliusz SARYCEW - ESA
09:20	**1**	181 - NASA's Developments in Cryogenic Fluid Management Technology Lauren AMEEN - NASA Glenn Research Center - United States	260 - Use of a new ballistic catalyst and its consequences on Solid Rocket Motor and at System levels Fabrice MARTIN - ArianeGroup - France	435 - Regenerative Cooling of 3.5kN Bi-propellant Thrust Chamber: Improvements in Material Selection and Cooling Design Oliver DEW The University of Sheffield - United Kingdom	024 - Design and numerical investigation on the air-intake device of atmosphere-breathing electric propulsion system Yu ZHANG - National University of Defense Technology - China	122 - Direct Numerical Simulation of a Supercritical planar Jet Leandro MAGALHÃES - Instituto Superior Técnico - Portugal	239 - Green Propulsion Status, Testing, Risks, and Infusion Henry MULKEY - NASA GSFC - United States	036 - On the Development of a Variable Propellant Resistojet with Integrated Heating Elements Laura SMITH - Benchmark Space Systems - United States	063 - Exploration of the Neptune vicinity using electric propulsion Konstantinos KATSONIS - DEDALOS Ltd - Greece	045 - Hot Plume Testing Facility Cologne (HPTF): Demonstration, Qualification and Exploration Tests with the Water-cooled PennState-like Burner HOC2 Dominik SAILE - DLR - Germany
09:40	**2**	456 - CRYSALIS – A European Cryogenic Storage and Refuelling In-orbit Demonstration Kathleen BLYTH - Absolut System - France	579 - Aluminum particles role in SRM thrust oscillations - Challenges for P120C SRM evolutions Severine LARRIEU - ArianeGroup - France	286 - Design, Development and Testing of the Injector for a 3D-Printed Throttleable and Reusable LOX/Methane Rocket Engine Alexander BEE - German Aerospace Center (DLR) - Germany	064 - Modeling and diagnosing the electric thruster plasma in case of fueling by CO2 collected from the Mars atmosphere Chloe BERENGUER - DEDALOS Ltd - Greece	136 - Implementation of a molecular flow model and its transition from the continuous regime within ESPSS/EcosimPro Alejandro SEVILLANO GONZALEZ - EMPRESARIOS AGRUPADOS INTERNACIONAL - Spain	380 - Recent Progress on Green Hypergolic Bipropellant Research in JAXA Keigo HATAI - Japan Aerospace Exploration Agency - Japan	124 - Development of an Additively Manufactured Resistojet with Novel Heat Exchanger for CubeSats Daniel TURNER - Curtin University - Australia	114 - Enabling high-power propulsion systems for large scale transportation, from Earth orbits and the cis-lunar region to Mars and beyond Julia GRILL - Institute of Space Systems, University of Stuttgart - Germany	293 - Overview of rocket testing at the Westcott test facility (2022/2023) Iain WAUGH - Airborne Engineering - United Kingdom
10:00	**3**	406 - Next Stage to Space: a roadmap to future launcher technologies Antonio ACCETTURA - AZO - Space of Innovation - Germany	102 - Effects of Process Variables on Mechanical Properties of Composite Propellant. P SUNITHA - NIT - India	351 - Research Roadmap for Injectors of Future Throttleable Liquid-Oxygen/Liquid-Methane Rocket Engines Alexander POLIDAR - Technische Universität München - Germany	078 - Atmosphere-Breathing Planetary Orbital Navigator John SLOUGH - MSNW LLC - United States	288 - Liquid Film Cooling: Advanced Modeling and Efforts Towards Validation Federico GIAMBELLI - Politecnico di Milano - Italy	387 - DESIGN STUDIES OF GREEN PROPELLANT BASED THRUSTERS FOR SPACECRAFT PROPULSION Soumyadeep MONDAL - INDIAN SPACE RESEARCH ORGANISATION - India	254 - Qualification of freezing-resistive propellant for water-based resistojet Clément PROFIT - Bradford Space - Luxembourg	171 - Propulsion architecture enabling an interstellar medium exploration mission to 200 astronomical units in 25 years Elisa CLIQUET MORENO - CNES - France	389 - Development of testing facilities for electric propulsion in United Arab Emirates Anton IVANOV - Technology Innovation Institute - United Arab Emirates
10:20	**4**	400 - Technology Roadmap for the development of a European Staged Combustion Rocket Engine for Reusable Launch Vehicles Vasileios PASTRIKAKIS - SoftInWay UK Ltd - United Kingdom	306 - Green disposal solutions for SRMs dismantling and energetic materials production wastes Sébastien KIEFFERT - ArianeGroup - France	498 - Design and placing into operation a 25 kN regeneratively cooled LOX/LNG thrust chamber for the LUMEN-Project Dmitry SUSLOV - Institute of Space Propulsion, German Aerospace Center - Germany	377 - Overview of ABEP System Development Advances at the Institute of Space Systems Elizabeth GUTIÉRREZ - Institute of Space Systems (IRS) - Germany	446 - CFD MODELING AND ANALYSIS OF PINTLE INJECTOR FOR DEEP THROTTLING ENGINE DESIGN Mithun JYOTHI Indian Space Research Organisation, Liquid	494 - Lessons learned from the development and testing of the novel green hypergolic propellant HIP_11 Felix LAUCK - DLR Institute of Space Propulsion - Germany	499 - Design and Testing of a small Water Resistojet Thruster in micro-gravity environment. Fabiano PERINI - CNRS - France	327 - Deep Space Cubesat Propulsion Systems: a General Overview of the Main Features, Challenges and Solutions Giorgio SAITA & Giovanni FUMO - Argotec - Italy	509 - Development and operations of green space propulsion test facilities complex for vacuum and atmospheric conditions at Łukasiewicz Research Network – Institute of Aviation. Tobiasz MAYER - Institute of Aviation -
10:40		**COFFEE BREAK**								
		SESSION 10 Maturation Programs overview 2	**SESSION 11** Solid & Hybrid Propulsion Programs	**SESSION 12** Thrust Chamber - Modeling 1	**SESSION 13** Air Breathing Orbital Propulsion II	**SESSION 14** Monopropellant Thrusters	**SESSION 15** Program Overviews	**SESSION 16** Power Processing for Electric Propulsion	**SESSION 17** Electric Propulsion Qualification & Flight Programs	**SESSION 18** Manufacturing Techniques I
Chair		Didier BOURY - ArianeGroup	Fabrice MARTIN - ArianeGroup	Dirk SCHNEIDER - ESA	Davar FEILI - ESA	Ulrich GOTZIG - ArianeGroup	Davina DI CARA - ESA	Simone CIARALLI - ESA	Olivier DUCHEMIN - Safran	Gerard ORDONNEAU - ONERA
11:00	**1**	558 - Recent Research Activities on HYPROB OX/CH4 Demonstrators Line Daniele RICCI - CIRA - Italian Aerospace Research Center - Italy	084 - Ariane 5 Solid Rocket Motor (MPS): success story of a robust design Nicolas RUMEAU - ArianeGroup - France	057 - Modelling of heat transfer in very rough cooling channels Jan ÖSTLUND - GKN Aerospace Engine Systems Sweden - Sweden	466 - Lessons learnt through theoretical and experimental studies on Radio Frequency Air Breathing Ion Thruster development. Maria SMIRNOVA - TransMIT GmbH - Germany	126 - Results of ESA-GreenRAIM Test Activities Part 1: Experimental Investigation of a 1 Newton Hydrogen Peroxide Monopropellant Research Thruster Florian MERZ - German Aerospace Center (DLR) - Germany	037 - Propulsion Systems Trends in Italian Space Agency ALCOR Program Giuseppe LECCESE - Italian Space Agency (ASI) - Italy	029 - Airbus DS - Space Electronics, Power Processing Units last developments and technologies status Eric TREHET - Airbus Defense & Space - France	232 - MUSIC HALL EFFECT THRUSTER AND ARM RESISTOJETS AS A MULTI-MODAL ELECTRIC PROPULSION ENGINE (MEPE): SYSTEM ARCHITECTURE, QUALIFICATION, AND IN-ORBIT DEPLOYMENT Khoo Kai SHENG - Aliena Pte Ltd - Singapore	004 - Cold Spray Additive Manufacturing (CSAM) – an economical manufacturing method to shorten the time to market for large space propulsion components Markus BROTSACK - Impact Innovations GmbH - Germany
11:20	**2**	541 - CNES/JAXA Cooperation: Experimental Studies on Hydrodynamic Face Seals in LOX and LH2 for Rocket Engine Turbopumps Dynamic Seals Package Giuseppe FIORE - CNES - France	599 - DEVELOPMENT STATUS AND FUTURE OBJECTIVES OF P160C, COMMON SOLID ROCKET MOTOR FOR ARIANE 6 BLOCK 2 AND VEGA-C/VEGA-E LAUNCHERS Maria Luisa FREZZOTTI - EUROPROPULSION - France	138 - Conjugate Heat Transfer Numerical Simulations of a Methane-Oxygen Liquid Rocket Engine Mario Tindaro MIGLIORINO - Sapienza University of Rome - Italy	502 - Investigation into the influence of microstructural facets on Atmosphere Breathing Electric propulsion intakes Kate SMITH - University of Manchester - United Kingdom	040 - Results of ESA-GreenRAIM Test Activities Part 2: Experimental Investigation of a 1 Newton Nitrous Oxide Monopropellant Research Thruster Till HÖRGER - Deutsches Zentrum für Luft- und Raumfahrt - Germany	065 - European Space Agency Activities on Electric Propulsion Davina DI CARA - European Space Agency - The Netherlands	070 - PPU Developments at Thales Alenia Space in Belgium Eric BOURGUIGNON - Thales Alenia Space in Belgium - Belgium	303 - Flight Qualification of the Orbion Aurora Electric Propulsion System Scott HALL - Orbion Space Technology - United States	081 - Cryogenic Spray Characteristics of a Metal Additive Manufactured Gas-Liquid Pintle Injector for Throttleable Rocket Engines Subeom HEO - Seoul National University - South Korea
11:40	**3**	402 - Free-Flight Testing and Future Work on the Gyroc VTVL Platform Edward MOORE - Airborne Engineering - United Kingdom	487 - From ground to space: an overview of the propulsion systems development at HyImpulse Jérôme MESSINEO - HyImpulse Technologies - Germany	216 - Experimental and Numerical Investigation of Frictional Behaviour and Heat Transfer in 3D Printed Rocket Engine Cooling Channels Tiziano SANTESE - Technical University of Munich - Germany	572 - Attitude and Orbital Stability of Very Low Altitude Nanosatellites equipped with Air-breathing Electric Propulsion Ferrato EUGENIO - Sant'Anna School of Advanced Studies - Italy	113 - Development of Low-cost Monopropellant 20N Thruster for the Launch Vehicle RCS Masahiro TAKAHASHI IHI Aerospace Co., Ltd. - Japan	550 - High-Power Electric Propulsion Systems at Sitael Alena KITAEVA - SITAEL S.p.A. - Italy	226 - Development and Qualification of Propulsion Control Electronics Marcos PEREZ - LMO - United Kingdom	344 - The RIT 2X product development and qualification program Jan-Patrick PORST - ArianeGroup GmbH - Germany	130 - ICME framework for functionally graded materials design for additive manufacturing of space components John ARISTEIDAKIS - QuesTek Europe AB - Sweden
12:00	**4**	567 - Project Bifrost Technical Report 2023 Propulse NTNU Simen Flåtter FLO - Propulse NTNU - Norway	528 - Results and Achievements of the ENVOL Project Gianluca LIGGIERI - Nammo Raufoss AS - Norway	443 - Modeling postcritical two-phase heat transfer in EcosimPro/ESPSS environment Matteo FIORE - SAPIENZA UNIVERSITY OF ROME - Italy	573 - Development of a novel CubeSat-scale air-breathing electric propulsion system. Vittorio GIANNETTI - Scuola superiore Sant'Anna - Italy	055 - Development of a 250N Class Monopropellant Thruster Ulrich GOTZIG - ArianeGroup GmbH - Germany	616 - Electric propulsion activities at ONERA Victor DÉSANGLES - ONERA - France	231 - POWER PROCESSING AND ELECTRONIC CONTROL UNITS FOR SUB-100 W HALL EFFECT THRUSTERS: DESIGN AND IN FLIGHT DATA Nunki PONTIANUS - Aliena Pte Ltd - Singapore	465 - 20 years of electric propulsion in-flight experience on Airbus satellites Carine PONT - Airbus Defense & Space - France	271 - A novel multifunctional additive manufactured lattice structure design for thermal and mechanical improvement of liquid rocket engine injector face plates Matteo CRACHI - Politecnico di Torino - Italy
12:20	**5**	574 - ITALIAN SPACE TRANSPORTATION PROGRAMS AND ROADMAPS Marta ALBANO - Agenzia Spaziale Italiana - Italy	607 - Development of the Solid Propulsion System for deorbitation manoeuvres with a dedicated Thrust Vector Control Pawel NOWAKOWSKI - Institute of Aviation Poland	228 - Influences of Hydrocarbon Impurities on Heat Transfer Deterioration for Supercritical LNG Flowing in Cooling Channel Ibraheem NASSER - Technical University of Munich - Germany	595 - The BREATHE Laboratory: a novel Verification Approach for Air-breathing Electric Propulsion. Tommaso ANDREUSSI - Sant'Anna School of Advanced Studies - Italy	135 - Catalyst Chamber Resonance Dynamics in sub-Newton Chemical Propulsion Systems Francesco GARRONE - Pangea Aerospace - Spain	180 - Propulsion as a gateway to a new space economy - Innovations in Propulsion within ESA'S Future Launcher Preparatory Programme (FLPP) Kate UNDERHILL - ESA - France	332 - Power processing and control system PPU-500 of the electric propulsion system SPS-40M Olexandr PETRENKO - Space Electric Thruster Systems - Ukraine	504 - TETRA PROPULSION SYSTEM STATUS Jaime PEREZ LUNA - Thales Alenia Space UK - United Kingdom	326 - Introduction of the felt mat for space application. Gopika MUKUNDAN - Cranfield University - United Kingdom
12:40		**LUNCH**								

EXHIBITION

14:00		**ROUND TABLE #4 : Panorama of UK space propulsion and opportunities for international collaboration** **Moderator : Thomas Clayson, Magdrive** **Sam Wilson, AIRBUS - Adam WATTS, NAMMO - Andrew RATCLIFFE, UKSA - Adam BAKER, Cranfield - James MARLOW, Skyrora**									EXHIBITION
		SESSION 19 Engines & stages developpement & tests 1	**SESSION 20** Solid Rocket Motors 2	**SESSION 21** Thrust Chamber design 1	**SESSION 22** Injection & Combustion in Biprop Systems	**SESSION 23** Storage & Distribution of Green Propellants	**SESSION 24** Combustion	**SESSION 25** Water propulsion systems	**SESSION 26** Magneto Plasma Dynamic Thrusters	**SESSION 27** Experimental Techniques	
Chair		Gilles VIGIER - 3AF	Jérôme ANTHOINE - ONERA	Rogier SCHONENBORG - ESA	Ulrich GOTZIG - ArianeGroup	Olga MOTSYK - ESA	Yohann TORRES - ESA	Stephen GOODBURN - AIRBUS	Joe CASSADY - Aerojet Rocketdyne	Victor FERNANDEZ VILLACE - ESA	
15:10	**1**	548 - Status of the development of a liquid cryogenic rocket engine called STAR Francois MAROQUENE-FROISSART - SIRIUS SPACE SERVICES - France	640 - A European Low Energy Exploding Foil Initiator (LEEFI) for next generation launch vehicles Martin OLDE - TNO (Netherlands Organization for Applied Scientific Research) - The Netherlands		112 - Preliminary Test of Kerosene Nitrous Oxide Catalytic Decomposition Bipropellant Thruster Seungho LEE - Korea Advanced Institute of Science and Technology (KAIST) - South Korea	252 - Advances in microencapsulated hydrocarbon fuels in combination with hydrogen peroxide for the production of new monopropellants Robin SCHOLL - German Aerospace Center (DLR) - Germany	204 - Spray Combustion Visualization of Sheet-impinging Injector for Hypergolic Fuel and H2O2 Hyeonjun IM - Korea Advenced Institute of Science and Technology - South Korea	051 - Water Propulsion: Developments for an In-Orbit Demonstration Malte WURDAK ArianeGroup GmbH - Germany	385 - Downscaling the 100kW SX3 AF-MPD to the 5kW SUPREME Thruster Michael WINTER - Neutron Star Systems - Germany	018 - Verification of Dynamic Pressure Response Measurement Using Multiplexed Fiber Bragg Gratings in MMX System Firing Test Kohji TOMINAGA - JAXA - Japan	ESPSS Workshop Johan STEELANT ESA
15:30	**2**	316 - LUMEN, the test bed for rocket engine components: Results of the acceptance tests and overview on the engine test preparation Tobias TRAUDT - German Aerospace Centre (DLR) - Germany	123 - The basec design of laser initiated detonator and investigation results of the ignition characteristics Yoshiki MATSUURA - IHI Aerospace - Japan	395 - Comparison of Sodium Borohydride with Additives Abilities to Hypergolic Ignition of Fuel-Hydrogen Peroxide Green Bipropellants Célia SOUDARIN - ISAE ENSMA - France	346 - Run-in Tests on a Cooling Channel Test Section for Investigations on the Applicability of High-Test Peroxide as Coolant in regeneratively cooled Space Propulsion Systems Julian SCHOLL - German Aerospace Center (DLR) - Germany	515 - Material Compatibility of Hydrogen Peroxide for Propulsion Engineers Laura SMITH - Benchmark Space Systems - United States	223 - Ignition and flame stabilization in liquid bipropellant combustion using hydrogen peroxyde catalytically decomposed hot gases Camille COTTENOT - PPrime - France	439 - Overview of water propulsion developments at Airbus Defence & Space Sam WILSON - Airbus Defense & Space - United Kingdom	422 - A “plug & play” thruster system combining VAT and MPDT technologies Julien SCHEINER Comat - France	062 - Demonstration of data collection and processing for technology building with propulsion system failure diagnosis utilized the MMX propulsion firing test Kaname KAWATSU - JAXA - Japan	
15:50	**3**	397 - TOWARDS A NEW CLASS OF ENGINE FOR FUTURE HEAVY LIFT LAUNCH VEHICLES – A STEPWISE APPROACH Amaya ESPINOSA RAMOS - CNES - France	467 - Effect of basket configuration on performance dispersion in pyrotechnic igniters employing BKNO3 pellets Giulia PELLA - Avio - Italy	294 - Research Combustor ‘N’: Combustion Chamber With Large Optical Access for Injection and Combustion Characterization at Sub- And Supercritical Pressure Conditions Jan MARTIN - German Aerospace Center	354 - Development and Test of a Methalox Engine Injector with Distributed Micro-Injection Christian BAUER - Technische Universität München - Germany	523 - Hydrogen Peroxide Storability and Compatibility Verification Dagmara REGLIŃSKA - Jakusz-Spacetech sp. z o.o. - Poland	248 - Evaluation of DFI Flight Data to Reproduce Engine Combustion Chamber Dynamics Pedro Jose HERRAIZ ALIJAS - ESA - The Netherlands	454 - Sustainable Water Propulsion: A Green Horizon for Satellite Propulsion Systems Nuno FERNANDES - Omnidea-RTG - Germany	520 - Metal Plasma Thruster (MPT): from garage to orbit in 4 years Laura SMITH - Benchmark Space Systems - United States	318 - Verification of a Novel Collector-Thrust Measurement using a Low-Power Hall-Effect Thruster Oliver NEUNZIG - Technische Universität Dresden - Germany	
16:10	**4**	424 - System Aspects of European Reusable Staged-Combustion Rocket Engine SLME Martin SIPPEL - DLR-SART - Germany	282 - Ignition model improvement through iterative Bayesian inference in the frame of Small Scale Firing Tests Olivier ORLANDI - ArianeGroup - France	375 - Design Methodology for a Regenerative Liquid Rocket Engine manufactured by LPBF Antoine MARCHAND - EPFL ROCKET TEAM - Switzerland	553 - Measurement and real-time safety analysis of the combustion chamber temperature of green bipropellant LRE during experimental testing Adrian MORAWIEC - Institute of Aviation - Poland	566 - Feasibility analysis of a novel green propulsion system based on self-pressurized propellants Alberto SARRITZU - University of Pisa - Italy	530 - MODELLING OF HYDRAZINE DROPLET EVAPORATION AND COMBUSTION IN SMALL ROCKET THRUSTERS Tobias ECKER - DLR - Germany	611 - Technology Consolidation and Preliminary Design of a Superheated Water RCS Giulio CORAL - ThrustMe - France	543 - A Resistive magnetohydrodynamic model for an applied-field magnetoplasmadynamic thruster Jakub GLOWACKI - Victoria University of Wellington - New Zealand	630 - Disruptive Experimental Electric Propulsion Laboratory (DEEP Lab) Thomas CLAYSON - Magdrive Ltd - United Kingdom	
16:30		**COFFEE BREAK**									
		SESSION 28 Engines & stages developpement & tests 2	**SESSION 29** Solid Rocket Motors 3	**SESSION 30** Thrust Chamber - Modeling 2	**SESSION 31** Development & Qual of Components for Biprop Systems	**SESSION 32** Decomposition of Green Propellants	**SESSION 33** Nuclear Power Systems	**SESSION 34** Water electrolysis propulsion	**SESSION 35** Ion Engines	**SESSION 36** Manufacturing Techniques II	
Chair		Lilian PREVOST - CNES	Didier BOURY - ArianeGroup	Jérôme ANTHOINE - ONERA	Markus PEUKERT - OHB	Ferran VALENCIA BEL - ESA	Jorge Ruiz TORRALBA - ESA	James SADLER - URA Thrusters	Davar FEILI - ESA	Gerard ORDONNEAU - ONERA	
16:50	**1**	154 - The ASTRIS KickStage Propulsion System – Development Status & Outlook – Step 2 Dietmar WELBERG - ArianeGroup - Germany	270 - Computer-aided evaluation of the combustion behavior of ADN/GAP solid rocket propellants Philip PIETREK - Fraunhofer-Institut für Chemische Technologie (ICT) - Germany	247 - LOx/CH4 Coaxial injector non linear flame transfer function and 2D parametric axysimmetric LES simulations Maxime BOUTON - ONERA - France	050 - Development of the High Performance, 25lbf LEROS ACE-25 Engine Robert WESTCOTT - Nammo UK Ltd - United Kingdom	479 - Modelling and validation of catalytic green propellant thrusters Jorge RUIZ TORRALBA - ESA - The Netherlands	025 - Conceptual design of a bimodal space reactor for power generation and propulsion Weijian AN - China Institute of Atomic Energy - China	015 - Plasma properties characterization of oxygen-fuelled Hall Effect Thrusters for Water Electrolysis propulsion Jesús Manuel MUÑOZ TEJEDA - Imperial College London - United Kingdom	197 - GIESEPP-MP (Gridded Ion Engine Standardized Electric Propulsion Platforms – Medium Power) Status, Results and Outlook Christoph MONTAG - ArianeGroup - Germany	022 - LASER generated Ultrasound technique for in-situ evaluation of electron beam welds in spacecraft propellant tanks made of Titanium alloy Ramprasad B - INDIAN SPACE RESEARCH ORGANISATION - India	
17:10	**2**	549 - Multifunctional Upper Stage Express Propulsion System Concepts and Technologies Christian HESSEL - ArianeGroup GmbH - Germany	151 - Coupled-Level-Set-and-Volume-of-Fluid (CLSVOF)-Model for the Simulation of heterogenous Solid Rocket Motors Michael MOROFF - Fraunhofer Institute for Chemical Technology - Germany	263 - Large-Eddy Simulation of LOx-CH4 supercritical flames Louis DUHEM DUVILLA - CORIA - CNRS, Normandie Université, INSA de Rouen Normandie - France	107 - Achieving Thermal Equilibrium in Nitrous Oxide Based, Bi-Propellant Thrusters Romain GARBY - Dawn Aerospace - New Zealand	532 - Thermal decomposition of hydrogen peroxide as green propellant: evaluation of catalysts and activation energy estimation Imane REMISSA - Chouaib Doukkali University - Morocco	115 - Preliminary European reckon on nuclear electric propulsion for space applications (RocketRoll) Sevecek JAKUB - OHB Czechspace - Czech Republic	163 - Conceptual design of a water electrolysis propulsion for micro lunar orbiter Kyun Ho LEE - Sejong University - South Korea	250 - Quantification of molybdenum caused by grid erosion inside the plasma of a radio-frequency ion thruster Felix BECKER Justus-Liebig-University Giessen - Germany	028 - Setting Weld Quality Control Criteria for Space Propulsion Hardware David GILLIS - Airbus - United Kingdom	
17:30	**3**	536 - CNES support on LOX/Methane Prométheus development Lilian PREVOST - CNES - France	340 - A method for estimating the erosion amount of EPDM based heat insulation inside the case of a solid rocket motor Rustu Gorkem YILMAZ - Roketsan Missiles Inc - Turkey	279 - LARGE EDDY SIMULATION OF A SUPERSONIC KEROSENE FLAME Florian KISSEL - CORIA - CNRS, Normandie Université, INSA de Rouen Normandie 76000 Rouen, France - France	373 - Development Status and Demonstration Test Results of the S25 Bi-Propellant Thruster Joel DECK - ArianeGroup GmbH - Germany	596 - Influence of Catalytic Bed Configuration on the Unsteady Behavior of 500 mN HTP Thruster Angelo PASINI - University of Pisa - Italy	116 - Development of a transient Nuclear Space Reactor model for Nuclear Thermal Propulsion and Nuclear Electric Propulsion within EcosimPro/ESPSS. Shankara COELLO ESCOBAR - Empresarios Agrupados Internacional - Spain	179 - Development and Characterization of Novel Static Water Fed Electrolyser for a Satellite Water Propulsion System Alexandros VIKAS - Institute of Space Systems - University of Stuttgart - Germany	277 - Validation of Global Models for Plasma Impedance Calculations in Gridded-Ion-Thrusters Edwin BELLER - Technische Hochschule Mittelhessen - Germany	510 - Testing of Additively Manufactured Thruster Injectors involving Self-Pressurized Propellants Davide ZUIN - Politecnico di Milano - Italy	
17:50	**4**	162 - First Rocket Powered Flights of the Mk II Aurora Spaceplane Using a 2.5 kN HTP-Kerosene Rocket Engine Ralph HUIJSMAN - Dawn Aerospace - The Netherlands	089 - An overview of thermal and ablation testing for high performance composite materials used as thermal protection systems for space propulsion applications Mathilde RIDARD - ArianeGroup - France	361 - NUMERICAL SIMULATION OF IGNITION AND FLAME KERNEL GROWTH WITHIN AN ANNULAR AEROSPIKE ENGINE Adheena Gana JOSEPH - Technische Universität Dresden - Germany	475 - Design Study and Sub-Scale Demonstrator Development for a 25-30 kN LOX / METHANE Aerospike Engine for Lunar Lander Application Florian DITSCHE - TUD Dresden University of Technology - Germany	014 - Pre-qualification of a Catalyst Bed for 420 N Green Bipropellant Engine Pawel SURMACZ - Lukasiewicz Research Network - Institute of Aviation - Poland	336 - Towards interplanetary journeys: Modelling of a NEP system with EcosimPro Enrico BRAGALLI - OHB System AG - Germany	434 - Evaluation of Transpiration Cooling for Hydrogen/Oxygen Thrusters in Water Electrolysis Propulsion Systems Sascha DENGLER Technical University of Munich - Germany	363 - Holistic modelling of erosion processes in radio-frequency ion thrusters Konstantin KEIL - Justus Liebig University Gießen - Germany	458 - Development of Chemical Milling Process for Stainless Steel alloy sheets Vidhya KARTHIKEYAN - Liquid Propulsion Systems Centre/ ISRO - India	
18:10	**5**	529 - Design, Manufacturing and Testing of a 6kN Green Throttleable Development Engine Bastien HÄMMERLI - Nammo Raufoss AS - Norway	034 - Tetrazene-based binding polymers as energetic ingredients for solid propulsion Chaza DARWICH - Université Claude Bernard Lyon1/LHCEP - France	429 - Multi-scale analysis of textural atomization in LOx-CH4 rocket engine subcritical flames Leonardo GEIGER - ONERA - France	264 - Design considerations for the development of two Bi-propellant Chemical Propulsion systems for the Mars Sample Return - Earth Return Orbiter James RICHARDSON - Airbus - United Kingdom	516 - A Focus on the Chemistry of Non-Toxic Hypergolic Fuels Laura SMITH - Benchmark Space Systems - United States	462 - Status, challenges, and requirements for European thermonuclear propulsion system for space exploration Borja POZO - Tekniker - Spain	624 - Characterisation of a Cathode Vapour Feed Electrolyser in Vacuum Operation Juliusz SARYCZEW - European Space Agency - The Netherlands	617 - Ion optics lifetime assessment of a 30 cm Ring-Cusp discharge chamber operated with xenon and krypton Oscar CASE - Mars Space Ltd - United Kingdom	471 - Additive Manufacturing in Electric Propulsion: Status and Perspectives with a Focus on Hall Thrusters Francesco MARCONCINI - University of Pisa - Italy	
18:30		**END OF DAY 2**									

WEDNESDAY 22 MAY 2022 // DAY 3

08:30 — **KEYNOTE SPEECH #3: From 1N to 30kN thrust, a journey into Storable Space Propulsion**
Jan Alting, ArianeGroup GmbH, Germany

		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9
		SESSION 37 Air Breathing Propulsion	**SESSION 38** Hybrid Propulsion 1	**SESSION 39** Thrust Chamber design 2	**SESSION 40** Propellant Management for Chemical Propulsion I	**SESSION 41** Chemical Propulsion Systems & Components I	**SESSION 42** Advanced Propulsion Concepts I	**SESSION 43** Hall Thrusters Development & Qualification	**SESSION 44** Micropropulsion I : development, qualification, in flight results	**SESSION 45** Fluid Hammer in Flow Systems
Chair		Didier BOURY - ArianeGroup	Yann TALAMONI - EUROPROPULSION	Lilian PREVOST - CNES	Christopher HUNTER - ESA	Jordan MURRAY - URA Thrusters	Armin HERBERTZ - ESA	Davina DI CARA - ESA	Alberto GARBAYO - AVS	Johan STEELANT - ESA
09:20	**1**	110 - Progress of sub-scale flight tests plan with ATRIUM engine Yuki SAKAMOTO - ISAS/JAXA - Japan	041 - Advanced Hybrid Rocket Fuels Niklas WINGBORG - Swedish Defence Research Agency, FOI - Sweden	323 - Application of Thermal Barrier Coating on a Low-Pressure, Capacitively-Cooled GCH4/GOX Combustion Chamber Rahand DALSHAD - Technische Universität München - Germany	106 - Utilizing Neutral Buoyancy for Ground Based Validation of Propellant Management Devices of Liquid Oxygen Tanks Emilio GORDON - Southwest Research Institute - United States	227 - Effect of annular gas on the process of conical liquid sheet breakup and atomization Pengjin CAO - National University of Defense and Technology - China	016 - Full Wave Impulse Drive Steven HAMPTON - Centrifugal Dynamics Company - United States	017 - PPS®X00 HET - On the final path towards the qualification of a subkilowatt-class thruster Claude-Martin BRITO - Safran Spacecraft Propulsion - France	048 - Development of a 1U module for Microsatellite-Friendly Multi-Purpose Propulsion System Hiroyoshi YASUHIRA - Tokyo Metropolitan university - Japan	190 - Fluid Hammer Phenomena in a Nitromethane-based Green Propellant in Hot Gas Test Runs Sebastian KLEIN - German Aerospace Center - Germany
09:40	**2**	497 - Enhancing the performance of solid-fuel dual scramjet through innovative design and numerical investigation Laurine HILLION - Hybrid Propulsion For Space - France	167 - Understanding Pressure Time Oscillations for CO2 Based Combustion in Hybrid Rockets Ozan KARA - Technology Innovation Institute United Arab Emirates	362 - Introduction of Topology Optimisation in Regenerative Cooling Channel Design within Liquid-Rocket Engines Jack TUFFT - University of Glasgow - United Kingdom	137 - Development of a Carbon Dioxide Cool Gas Generator for the pressurization of a blow down liquid propulsion system Berry SANDERS - HDES Service and Engineering B.V. - The Netherlands	259 - Surge Pressure Testing of Flight-Like Propulsion Components Wanyi NG - NASA - United States	094 - The Fusion Driven Rocket John SLOUGH - MSNW LLC - United States	103 - Summary of NASA Progress on the Development and Qualification of a 12-kW Hall-Effect, Solar Electric Propulsion Thruster Joel ROBINSON - NASA - United States	076 - Flight heritage and status of the ENPULSION propulsion systems: NANO, NANO R3/AR3 and MICRO David KREJCI - Enpulsion - Austria	386 - MODELLING OF FLUID HAMMER IN SPACECRAFT PROPULSION SYSTEM Korlam VAMSI KRISHNA - INDIAN SPACE RESEARCH ORGANISATION - India
10:00	**3**	534 - Development of a Compact Lightweight Micro-Channel Heat Exchanger (MCHX) for Reusable Launch Systems James REDMAN - TWI Ltd - United Kingdom	289 - Combustion in a Non-conventional Hybrid Rocket Engine: Lab-scale Testing of a Vortex Flow Pancake Valerio SANTOLINI - Politecnico di Milano - Italy	384 - Experimental Validation of Heat Damage Prevention of a Two-Row Pintle Injector Dokeun HWANG - Korea Aerospace Research Institute - South Korea	272 - Throttling Valve Design for Providing Control and Linear Adjustment of Thrust Level in Liquid Propellant Rocket Engines Kamil Yekta US - Roketsan Missiles Inc. - Turkey	366 - Characterisation of a Modular Acoustic Ignitor for Small In-Space Thrusters Jack COGHEN-BREWSTER - Protolaunch - United Kingdom	194 - Theoretical Fundamentals of Electromagnetic Inertia Manipulation Propulsion Hector BRITO - AIT - Argentina	160 - Development Testing on an Engineering Model of a 5 kW class Hall Effect Thruster Shekhar PANUGANTI - LPSC/ ISRO - India	093 - MicroThruster endurance test for LISA: preliminary results of a challenging trial on the thruster valve Francesco MANCINI - Leonardo SpA - Italy	437 - Analysis of Water Hammer Phenomenon using Method of Characteristics Mukul TIWARI - Indian Space Research Organisation - India
10:20	**4**	585 - Research Progress of a Deeply - Precooled Airbreathing Rocket Engine for Single Stage to Orbit Reusable Launch Vehicles Anna-Maria Theodora ANDREESCU - Romanian Research&Development Institute	325 - Advancements on Regenerative Cooling of Graphite Nozzle for Erosion Suppression Yuta MIYAHARA Hokkaido University - Japan	401 - Design and combustion characteristics of a single-row pintle injector in liquid rocket engine conditions Donghyuk KANG - KOREA AEROSPACE RESEARCH INSTITUTE - South Korea	453 - Space qualified Manual Ball Valve for on-ground operations Elisabeth FIRCHAU - Omnidea-RTG - Germany	447 - Preliminary experimental characterization results of a freely expanding 10 N bi-propellant thruster plume Leonie BUNTROCK - German Aerospace Center - Germany	420 - Experimental Tests of Propellant-less Thrust from Quantised Inertia Mike MCCULLOCH - University of Plymouth - United Kingdom	583 - Extended Throttling Range Characterization of the PPS®5000 Life Test Hall Thruster Olivier DUCHEMIN - Safran Spacecraft Propulsion - France	559 - MicroHETSat Electric Propulsion: In-Orbit Data Analysis Lucio TORRE - SITAEL - Italy	
10:40		**COFFEE BREAK**								
		SESSION 46 LRE Control	**SESSION 47** Hybrid Propulsion 2	**SESSION 48** Thrust Chamber - Modeling 3	**SESSION 49** Propellant Management for Chemical Propulsion II	**SESSION 50** Chemical Propulsion Systems & Components II	**SESSION 51** Advanced Propulsion Concepts II	**SESSION 52** Hall Thruster Research & Development I	**SESSION 53** Micropropulsion II	**SESSION 54** Fluid Systems & Propellant Gauging
Chair		Gilles VIGIER - 3AF	Jérôme ANTHOINE - ONERA	Dirk SCHNEIDER - ESA	Stephen GOODBURN - AIRBUS	Jorge Ruiz TORRALBA - ESA	David PERIGO - ESA	Danylo SHCHERBAK - URA Thrusters	David KREJCI - ENPULSION	Markus PEUKERT - OHB
11:00	**1**	297 - Overview of Future Rocket Engine Control Systems Kai DRESIA - German Aerospace Center - Germany	284 - Numerical Modeling of Swirl Injection in Hybrid Rocket Engines Alessio SERENO - Sapienza University of Rome - Italy	320 - Numerical Simulation of the DLR LUMEN Thrust Chamber: Impact of Small Injection Asymmetry Clara MORRIS - DLR - Germany	478 - Designing the Orion-ESM propulsion feedline system: challenges in fluid transient modeling Cristiano BOMBARDIERI - Airbus Defense & Space GmbH - Germany	008 - Design, Test and Validation of Cavitating Venturi Element Using in LPRE Mehmet Can KÖSE - ROKETSAN Inc. - Turkey	066 - Power Supplies Design and Characterization for the Spherical Tokamak Thruster: A Novel High-Power Plasma Propulsion System Hamda AL-ALI - Imperial College London - United Kingdom	170 - Examining Hall Effect Thruster with Different Powers Ilksen BURAT - TUBITAK UZAY - Turkey	120 - Emission Characterization of Externally Wetted Electrospray Thrusters Using Computed Tomography David VILLEGAS-PRADOS - IENAI SPACE / UC3M - Spain	007 - Test and Validation of Pressure Fed Rocket Engine Test Stands Feedline Systems Ufuk KAYABASI - Roketsan Inc. - Turkey
11:20	**2**	315 - Stabilizing control design for liquid propelled rocket engines Jules GIBART - ONERA - France	408 - Experimental Investigation of Paraffin Combustion in a Small-Scale Hybrid Rocket Engine Riccardo GELAIN Université libre de Bruxelles - Belgium	338 - Deep convolutional autoencoders for data-driven models of rocket engine injectors Jose Felix ZAPATA USANDIVARAS - ISAE-SUPAERO - France	496 - Characterization of Throttle Flow Control Valve for 800N engine of Chandrayaan-3 mission Chinmoy MONDAL - INDIAN SPACE RESEARCH ORGANIZATION - India	009 - Development Of A Hydrazine Cavitating Flow Control Valve For Space Propulsion Application Francesco CIVERRA - Thales Alenia Space Italy - Italy	484 - A magnetic reconnection based thruster for high specific impulses space missions Giulia BECATTI - University of Stuttgart - Germany	229 - JAXA 1-kW Class Long-Life Hall Thruster System v800 Employing a Novel Ignition Mechanism Shinatora CHO - Japan Aerospace Exploration Agency - Japan	134 - Experimental Validation of Electrospray Thrusters Current Balancing for Spacecraft Charging Mitigation Francisco José BLÁZQUEZ-PLAZA - UNIVERSIDAD CARLOS III DE MADRID - Spain	072 - SMARTTS – An innovative propellant gauging technology using Electrical Capacitance Tomography Laurene DELSUPEXHE - European Space Agency - The Netherlands
11:40	**3**	419 - From the first engine control evaluations to the Vinci application, the first European Engine numerically controlled in Flight Serge LE GONIDEC - ArianeGroup - France	469 - Numerical activities on the paraffin-based fuel MTM in the framework of the PHAEDRA project Daniele CARDILLO - CIRA (Centro Italiano Ricerche Aerospaziali) - Italy	452 - Advanced combustion modelling for liquid rocket engine applications Alessio GIZZI - AVIO S.p.A - Italy	500 - Self-Pressurization Technology and Satellite Criticalities Simone LA LUNA - Politecnico di Milano - Italy	043 - Simulation of bi-propellant reaction control thrusters based on nitrous oxide and hydrocarbons Stefan FECHTER - German Aerospace Center - Germany	490 - Plasma brake for deorbiting telecommunication satellites Pyry PEITSO - Aurora Propulsion Technologies - Finland	592 - Miniaturization of Electric Propulsion Subsystems based on Hall-Effect Thruster Technology Norbert PILZ - BERLIN SPACE - Germany	251 - Cathode spots dynamics in a high-current Vacuum Arc Thruster Etienne MICHAUX - CNRS - France	105 - Development of a Fluid System and Simulator for Simultaneous High and Low Flowrates to Supply a Hollow Cathode and Cold Gas System for an Electrodynamic Tether Mission Rico NERGER
12:00	**4**	622 - Mathematical modelling of active mode of onboard pressurisation system of propellant tank of cryogenic stage S MURUGAN - LIQUID PROPULSION SYSTEMS CENTRE, ISRO - India	598 - Alternative method to calculate regression rate in hybrid rocket propulsion systems by analysis of Helmholtz frequency Antonio Vinicius DINIZ MERLADET - Technical University of Munich - Germany	210 - Advanced Flamelet Modeling Approach for Transcritical Combustion in Liquid Rocket Engine Thrust Chambers Marvin POMMERENING - Technical University of Munich / ArianeGroup GmbH - Germany		054 - Propulsion System Concepts and Components to support Clean Space Ulrich GOTZIG - ArianeGroup GmbH - Germany	628 - Magdrive: next generation electric propulsion, to address the rapidly changing space environment and market Thomas CLAYSON - Magdrive Ltd - United Kingdom	606 - A 20 kW Magnetically Shielded Nested Hall Thruster: Status and Perspectives of the TANDEM project Francesco MARCONCINI - University of Pisa - Italy	394 - Design and micro 3D printing of electrospray emitters with an integrated modular extraction electrode Fynn KUNZE - Justus-Liebig-University Gießen - Germany	546 - Development of Standard for Absolute Mass Flow Measurement to be Used with Any Type of Common Gas Ahmed HASHAD - AST Advanced Space Technologies GmbH - Germany
12:20		**LUNCH**								

EXHIBITION

13:50		**STARTUP CONTEST**								
		SESSION 55 Plume & Aerodynamic effects evaluation	**SESSION 56** Propellant behavior - Modeling 1	**SESSION 57** Thrust Chamber design 3	**SESSION 58** Mission Scenarios for Exploration & Orbit Transfer Services I	**SESSION 59** Chemical Propulsion Systems & Components III	**SESSION 60** Iodine Thrusters I	**SESSION 61** Hall Thruster Research & Development II	**SESSION 62** Micropropulsion III	**SESSION 63** Flow Systems for Electric Propulsion
Chair		Csaba JEGER - ESA	Emilio R GORDON - SWRI	Lilian PREVOST - CNES	Yann TALAMONI - EUROPROPULSION	Pedro HERRAIZ ALIJAS - ESA	Davina DI CARA - ESA	Danylo SHCHERBAK - URA Thrusters	David KREJCI - ENPULSION	Neil WALLACE - ESA
15:10	1	310 - Investigating the Plume-Surface-Interaction on the Lunar Surface Using a Coupled CFD-DSMC Approach Jannis PETERSEN - TUD Dresden University of Technology - Germany	096 - Addressing CFM Modeling Gaps for Application into NASA'S Future Cutting Edge Missions Wesley JOHNSON - NASA Glenn Research Center - United States	312 - Influence of Flow Regimes on Nozzle Throat Heat Transfer in a Capacitively Cooled Thrust Chamber Tobias STELZER - Technical University Braunschweig - Germany	172 - Reference Missions, Mission Level Needs and Evaluation of Candidate Technologies for High Power Electric Propulsion Nadim MARAQTEN - University of Stuttgart - Germany	391 - Influence of Catalyst Composition on the Performance of a Throttled Bipropellant Thruster Vincent Mario Pierre UGOLINI - Korea Advanced Institute of Science & Technology - South Korea	031 - Development of low-power iodine-fed Hall thruster propulsion system Alfio Emanuele VINCI - ThrustMe - France	020 - Utilisation of a Reconfigurable High-Temperature Superconducting Magnet to Improve the Operational Efficiency and Throttlability of a Central-Cathode Electrostatic Thruster Christopher ACHESON - Victoria University of Wellington - New Zealand	267 - Feasibility and Optimization Study of a Miniaturized Resonance Igniter for CubeSats Application Yonghun LEE - TU Darmstadt - Germany	097 - DEVELOPMENT OF A COMPACT XENON PROPELLANT MANAGEMENT ASSEMBLY FOR LOW-POWER HALL EFFECT THRUSTERS: DESIGN AND IN-FLIGHT DATA Matteo LATERZA - Aliena Pte Ltd - Singapore
15:30	2	565 - Aerothermal analysis of the RETPRO flight configuration Mariasole LAURETI - DLR - Germany	334 - Liquid Propellant Dynamics in Microgravity Induced by Vertical Impact of Landings on Martian Moon Yusei YAHATA - Graduate School of Engineering, The University of Tokyo - Japan	423 - Investigation of Liquid Jet Into Crossflow for rectangular injection orifices in green Liquid Rocket Engine application Michal RANACHOWSKI - Lukasiewicz Research Network - Institute of Aviation - Poland	183 - Optimal In-Space Manoeuvres Using Propulsion with Variable Specific Impulse Tianshu WANG - Applied Atomics Ltd. - United Kingdom	403 - Liquid propulsion system simulation validated by the MMX system firing tests Yu DAIMON - Japan Aerospace Exploration Agency - Japan	032 - Performance Mapping of the NPT30-I2 Iodine-Propelled Thruster Antoine BORÉ - ThrustMe - France	092 - A 2D Direct implicit particle-in-cell method on non-orthogonal grids in Hall thrusters Zhaoyu WANG - harbin institute of technology - China	337 - Design and test of thermal vacuum chambers for testing of electric propulsion systems integrated in CubeSat Carsten SCHARLEMANN - FHWN - Austria	211 - High Pressure Flow Control Units for Electric Propulsion Modules Thomas BRUS - AST Advanced Space Technologies GmbH - Germany
15:50	3	376 - A shock cell deformation due to a perpendicular jet-jet interaction at a low-pressure atmospheric condition Ryo TAKIOKA Osaka Institute of Technology - Japan	390 - Sloshing modelling using OpenFOAM David VON RÜDEN - OHB System AG - Germany	486 - Numerical Analysis and Optimization of an Additively Manufactured CuCrZr Combustion Chamber Using a Novel Cooling Channel Geometry to achieve high Cooling Performance Lukas OPP - German Aerospace Center DLR -	222 - Adapting Elements of the Lunar Gateway Program for use as a Solar Electric Propulsion Mars Transit Vehicle David MANZELLA - NASA - United States	470 - Cold flow investigations of the Impingement of a Liquid Jet on a Combustion Chamber Wall for H2O2 film cooling Konstantin MANASSIS - DLR e.V. - Germany	038 - Lifetime testing campaign of the iodine-fed electric propulsion system Dmytro RAFALSKYI - ThrustMe - France	562 - Experimental investigation of the discharge current oscillations in Hall thrusters Olexandr PETRENKO - Space Electric Thruster Systems - Ukraine	427 - Design, developement and evaluation of a Resistojet propulsion system for 6U cubesat Djamal DARFILAL - Khalifa University - United Arab Emirates	305 - AIRBUS DEFENCE AND SPACE ELECTRICAL PROPULSION FLUIDIC CHAINS TRANSFORMATION ACHIEVEMENTS AND NEEDS Pablo LOPEZ - Airbus Defense & Space - France
16:10	4	440 - CFD simulations of design and off-design stage separation in a space launcher through overset grids approach Alessia ASSONITIS University La Sapienza - Italy	485 - Numerical Investigation of Anti-Sloshing Baffle Design for the CALLISTO Reusable Launch Vehicle Demonstrator Lukas OPP - German Aerospace Center DLR - Germany	544 - Enhancing the combustion performance of a nanofluid fuel with AlH3 particles Wen AO - Northwestern Polytechnical University - China	491 - Roadmap to In-Space Transportation Infrastructure to enable On-orbit servicing, Manufacturing and Assembly - OHB's vision Markus PEUKERT - OHB System AG - Germany	476 - Helium Solubility Predictions based on ESM1 flight data: A Reverse Engineering Approach Jorge RUIZ TORRALBA - ESA - The Netherlands	184 - iFACT-MP: Multi-kilowatt iodine electric propulsion development Max VAUPEL - Airbus - Germany	069 - RAPID PROTOTYPING OF LOW-CURENT THERMIONIC HOLLOW CATHODES USING SEMI-EMPIRICAL SCALLING LAWS George-Cristian POTRIVITU - Aliena Pte Ltd - Singapore	205 - DEVELOPMENT OF A 3D-PRINTED COLD GAS PROPULSION SYSTEM FOR CUBESATS Nathan Oscar ROSIMO - Philippine Space Agency - Philippines	578 - Electric Propulsion Gas Systems Victor TEISSEDRE - Air Liquide - France
16:30		**COFFEE BREAK**								
16:50		**KEYNOTE SPEECH #4: Overview of Breakthrough Propulsion Activities at TU Dresden - Exploring Possible EM-Gravity Interactions** **Prof. Martin TAJMAR, Technische Universität Dresden, Germany**								
		SESSION 64 LRE modeling	**SESSION 65** Propellant behavior - Modeling 2	**SESSION 66** Thrust Chamber - Modeling 4	**SESSION 67** Mission Scenarios for Exploration & Orbit Transfer Services II	**SESSION 68** Chemical Propulsion Systems & Components IV	**SESSION 69** Iodine & alternative Propellant Thrusters	**SESSION 70** Hollow Cathodes	**SESSION 71** Micropropulsion IV	**SESSION 72** Development & Qual of Green Bipropellant Thrusters
Chair		Fabrice MARTIN - ArianeGroup	Emilio R GORDON - SWRI	Dirk SCHNEIDER - ESA	Helmut CIEZKI - DLR	Stephen GOODBURN - AIRBUS	Davina DI CARA - ESA	Simone CIARALLI - OHB	Alberto GARBAYO - AVS	Jordan MURRAY - URA Thrusters
17:30	1	436 - Toolkit for Liquid Rocket Propulsion System Design Nijat ABDULLA - National Aviation Academy - Azerbaijan	261 - Numerical Analysis on Flow Boiling in Microgravity with Subgrid-Scale Wall Boiling Model Yuki MIYARA - The University of Tokyo - Japan	237 - Overview of CFD modelling activities on DLR BKN combustion chamber Jan VAN SCHYNDEL - German Aerospace Center (DLR) - Germany	371 - CubeSat missions – reloaded Carsten SCHARLEMANN - FHWN - Austria	203 - Development of the Propulsion System for the COPERNICUS missions CRISTAL and LSTM Michael BIEHLER - ArianeGroup GmbH - Germany	206 - Development of NPT30 iodine ion thruster from conception to mass production. Elena ZORZOLI ROSSI ThrustMe - France	068 - DEVELOPMENT OF HOLLOW CATHODES FOR HALL EFFECT THRUSTERS AT ALIENA: DESIGN, GROUND TESTING AND IN-FLIGHT PERFORMANCE George-Cristian POTRIVITU - Aliena Pte Ltd - Singapore	577 - Development of the Engineering Model for a Modular HTP-based CubeSat Propulsion System Alberto SARRITZU - University of Pisa - Italy	365 - Development of a 20N GOX/GH2 Thruster for IOSM Applications Jack COGHEN-BREWSTER - Protolaunch - United Kingdom
17:50	2	444 - Updating the pump and injector plate components of the ESPSS library in view of transient analysis of LOx/Methane engines Beatrice LATINI - Sapienza University of Rome - Italy	317 - Bubble cavitation in a cryogenic tank in micro-gravity conditions Annafederica URBANO - ISAE - Institut Supérieur de l'Aéronautique et de l'Espace - France	314 - Turbulence Modelling for Supercritical Methane Flows in Liquid Rocket Cooling Channels Stefan KOEGLMEIER - ArianeGroup - Germany	308 - openPlumeCP modelling: to the moon and beyond Bayrem ZITOUNI - OHB - Germany	355 - The Propulsion Subsystem of the Starlab Commercial Space Station – Building up on Experience from Orion-ESM Development and Qualification Markus JÄGER - Airbus Defense & Space - Germany	309 - Iodine-compatible Neutraliser Development for Electric Propulsion Philipp BECKE - Airbus Defense & Space - Germany	347 - Improving C12A7:2e- for the application in electric propulsion cathodes Nicolas Maria BAUER - Justus Liebig Universität - Germany	589 - Miniaturised Electric Propulsion System for CubeSats Stephen CLARK - Mars Space Limited - United Kingdom	409 - The qualification of ISPTech's 1N and 22N green bipropellant thrusters with N2O/C2H6 for an in-orbit demonstration Felix LAUCK - DLR Institute of Space Propulsion - Germany
18:10	3	473 - Comparison of EcosimPro/ESPSS based Combustion Modeling Approaches for Gas Generators Jeannine SCHMACKA - German Aerospace Center (DLR) - Germany	457 - DEVELOPMENT TESTING AND ANALYSIS OF THE INTEGRATED GATEWAY-ESPRIT BIPROPELLANT REFUELLING SYSTEM Andrew HUGHES - Thales Alenia Space - United Kingdom	581 - Efficient multiphysics simulations of LRE combustion chambers using tabulated chemistry Davide SCHINTU - "La Sapienza" University of Rome - Italy	522 - A Comprehensive Extension of Rocket Equation Analyses for Separately Powered Space Propulsion under Constant Exhaust Velocity Roland Antonius GABRIELLI - Universität Stuttgart - Germany	410 - Verification / Test Activities and in-flight performance of the Jupiter Icy Moons Explorer (JUICE) Chemical Propulsion Subsystem Markus WOLF - ArianeGroup - Germany	539 - Building Blocks for Iodine Thrusters: Perspective and Targets of the Project BOOST Fabrizio PONTI - University of Bologna - Italy	441 - Hollow cathode operation using different orifice geometries: effects of alternative propellants Igor GOLOSNOY - University of Southampton - United Kingdom	619 - Experimental Characterisation of a Low Current Dry Neutraliser Klevis GASA - UniversIty of Southampton - United Kingdom	518 - Qualification Testing of a High-Performance 22N Green Bipropellant Rocket Engine Using High-Test Peroxide and Octane Laura SMITH - Benchmark Space Systems - United States
18:30	4	415 - Numerical Analysis and Experimental validation of a Liquid Pressure Regulator for Cryogenic Engine Chinmoy MONDAL - INDIAN SPACE RESEARCH ORGANIZATION - India	481 - Non-Isothermal CFD Analysis of the Liquid Hydrogen Tank for a High-Energy Trajectory of the CALLISTO Mission Adrian KRIEGER - DLR - Germany	280 - H2O2 Reaction Control Thrusters: Full-scale Testing and Novel Transient CFD Simulations of Multiphase Flow With Catalytic Decomposition Åsmund ERVIK - SINTEF Energy Research - Norway	590 - Regolith Contamination by Thrusters for Sample Return Missions David EVANS - Fluid Gravity Engineering Ltd - United Kingdom	463 - NASA Marshall Space Flight Center In-Space Cryogenic Propulsion Capabilities and Applications to Human Exploration Thomas BROWN - NASA Marshall Space Flight Center - United States	634 - Characterisation of a Small Ring-Cusp Gridded Ion Engine using Alternative Propellants Nazareno FAZIO - Mars Space Ltd - United Kingdom	605 - Development of a High-Current Cathode for the CHEOPS VH-BB Project. Carla GUIDI - University of Pisa - Italy	620 - Flight of the pulsed plasma thruster PETRUS 1J on the CubeSat SONATE-2 Felix SCHÄFER - University of Stuttgart - Germany	612 - In-Orbit Demonstration of a Chemical Bipropellant Thruster based on 'Green' and Self-Pressurized Propellants Davide ZUIN - Politecnico di Milano - Italy
18:50		**END OF DAY 3**								
19:30		**GALA DINNER** **Awards Ceremony**								

EXHIBITION

THURSDAY 23 MAY 2024 // DAY 4

08:30 — **KEYNOTE SPEECH #5: Prof KASAHARA (Nagaya University) presentation on rotating detonation engine - followed by ESA announcement on IP-CCI**

		ROOM 1	ROOM 2	ROOM 3	ROOM 4	ROOM 5	ROOM 6	ROOM 7	ROOM 8	ROOM 9
		SESSION 73 Turbo pumps 1	**SESSION 74** Propellant feed system & tanks	**SESSION 75** LRE Ignition Systems & Effect	**SESSION 76** Chemical Propulsion for Cargo & Exploration Missions	**SESSION 77** Propellant Tanks	**SESSION 78** Novel Technological Solutions for Propulsion Systems I	**SESSION 79** Plasma Modelling I	**SESSION 80** Development & Qual of Green Monopropellant Thrusters I	**SESSION 81** Innovative Propulsion for sustainable access to Space and in-Space transportation 1
Chair		Marc VALES - DASSAULT AVIATION	Emilio R GORDON - SWRI	Gilles VIGIER - 3AF	Stephen GOODBURN - AIRBUS	Christopher HUNTER - ESA	Cristina DE PERSIS - ESA	Bayrem ZITOUNI - OHB	Wilhelm DINGERTZ - ECAPS	Nathalie GIRARD - CNES
09:20	1	635 - Concept of an ultracompact LCH4/LOX turbopump for a 30KN upper stage Alexandru-Claudiu CANCESCU - National Research and Development Institute for Gas Turbines COMOTI - Romania	367 - Spray Heat Transfer Experiments for Cryogenic Tank Cooling in a Zero-Boil-Off System Felix SCHILY - DeltaOrbit GmbH - Germany	140 - PROMETHEUS LOW-COST METHANE TORCH IGNITION SYSTEM DEVELOPMENT STATUS AND TEST RESULTS Rudi MATTHIJSSEN - Aerospace Propulsion Products (A.P.P.) B.V. - The Netherlands	554 - Development and future of HTV-X Propulsion System Ayano IIDA - JAXA - Japan	148 - QUALIFICATION OF DEMISABLE PROPELLANT TANK DT-180 Mohamad EL ATRACH - ArianeGroup GmbH - Germany	370 - Simulation of Orbital Maneuvers with a Passive Zero-Boil-Off System Felix SCHILY - DeltaOrbit GmbH - Germany	108 - Numerical simulation of the plasma acceleration process of applied-field MPD thrusters Zhaoning ZHANG - Harbin Institute of Technology - China	021 - 20N class thrusters with HNP safe green monopropellant for small satellite propulsion systems Shinji IGARASHI IHI Aerospace Co., Ltd., - Japan	047 - Propulsion solutions for long term sustainability of Space operations Christophe BONNAL - CNES - France
09:40	2	568 - Design of a Methane Turbopump Impeller Christopher GROLL - Deutsches Zentrum für Luft- und Raumfahrt - Germany	560 - Model-based analysis of heat and mass transfer in cryogenic storage measurements Pedro Afonso MARQUES - von Karman Institute for Fluid Dynamics - Belgium	245 - Plasma Breakdown Laser Ignition Applied to a 100 kN LOX/Methane Gas Generator Sebastian SOLLER ArianeGroup - Germany	159 - Propulsion System Solutions for Lunar Landers and Spacecrafts Timo KRONE - ArianeGroup GmbH - Germany	157 - Propellant Tank Developments and Trends of ArianeGroup Orbital Propulsion – The past 10 Years Timo KRONE - ArianeGroup GmbH - Germany	010 - EPFB: Electric Pump fed supply for GEO satellite bi-propellant chemical propulsion systems Marta Pia TANGARO TAS-I - Italy	139 - Self-consistent Coupling of Fluid and PIC Codes Willem VAN LYNDEN - Bologna University - Italy	067 - Design optimization of green monopropellant thruster for chugging instability reduction using reduced-order models Sukmin CHOI - Korea Advanced Institute of Science and Technology - South Korea	291 - Ice2Thrust: An end-to-end demonstration of the in-situ resource utilization of water for in-space propulsion Sören HEIZMANN - Technical University of Munich - Germany
10:00	3	449 - Commissioning of DLR's Modular Turbopump Test Bench Christopher GROLL - Deutsches Zentrum für Luft- und Raumfahrt - Germany	584 - Thermal and functional technologies for the next generation reusable launchers LOX/LCH4 cryogenic tanks Sébastien BIANCHI - Air Liquide Advanced Technologies - France	339 - Design and experimental investigation of an optical fibre based ignition system for space propulsion systems Michael BÖRNER - DLR - Germany	099 - System Firing Test for the Propulsion System for the MMX Program Takuma KATO - IHI Aerospace - Japan	225 - Overview of LMO Propellant Tank Product Range Marcos PEREZ - LMO - United Kingdom	121 - Benefits and suitability of a pump-fed hydrazine propulsion system for space applications Andrea BINCI - Thales Alenia Space - Italy	175 - A self-consistent gradient-drift instability model of anomalous electron transport in the magnetic nozzle Shaun ANDREWS - Univeristy of Bologna - United Kingdom	342 - Design and Performance Evaluation of a 5 N ADN-based Green Monopropellant Thruster with Low-Temperature Hydrazine Catalyst Burak Onur EKICI - ROKETSAN Inc. - Turkey	631 - ISRU hydrogen engine for sustainable planetary exploration Baker ADAM - Rocket Engineering Ltd - United Kingdom
10:20	4	213 - Tests on Active Axial Thrust Balancing System of a Pump for a Liquid Rocket Engine Soonsam HONG - Korea Aerospace Research Institute - South Korea	360 - BRAIDED BELLOW STIFFNESS MODELLING Pierre-Loup SCHAEFER - ArianeGroup - France	117 - Thermal and Acoustic Experimental Characterization of Launch Pads During Launcher Ignition and Elevation Nicolas PELLETIER - ONERA - France	075 - Use of the Nammo LEROS 2b Apogee Engine for the Mars Sample Return Mission Robert WESTCOTT - Nammo UK Ltd - United Kingdom	569 - Towards environmentally benign propellant tank manufacturing Samruddha KOKARE - NOVA University Lisbon - Portugal	269 - Applicability of an Electric Pump-fed Cycle Engine for Satellite Thruster Junghun SON - Chungnam National University - South Korea	265 - Optimizing Global Plasma Models: Incorporating Electron Energy Density Function for Enhanced Thruster Development Efficiency Philip PETERS - Technische Hochschule Mittelhessen - Germany	407 - Development and Testing of a 1N Additively Manufactured Green Monopropellant Micro-Thruster Suood ALNAQBI - Khalifa University - United Arab Emirates	192 - Use of the Earth Atmosphere Remnants as Electric Thruster Propellant in ISRU Technology Konstantinos KATSONIS DEDALOS Ltd - Greece
10:40		**COFFEE BREAK**								
		SESSION 82 Turbo pumps 2	**SESSION 83** Aerospike design and tests	**SESSION 84** Tests Facilities & Platforms	**SESSION 85** Artemis I - Orion Propulsion	**SESSION 86** Propellant Tanks & Storability	**SESSION 87** Novel Technological Solutions for Propulsion Systems II	**SESSION 88** Microwave & RF Thrusters	**SESSION 89** Development & Qual of Green Monopropellant Thrusters II	**SESSION 90** Innovative Propulsion for sustainable access to Space and in-Space transportation 2
Chair		Lilian PREVOST - CNES	Didier BOURY - ArianeGroup	Yann TALAMONI - EUROPROPULSION	Pedro HERRAIZ ALIJAS - ESA	Christopher HUNTER - ESA	Victor FERNANDEZ VILLACE - ESA	Olivier DUCHEMIN - Safran	Helmut CIEZKI - DLR	Nathalie GIRARD - CNES
11:00	1	030 - Virtual Sensing for Fault Detection within the LUMEN Fuel Turbopump Test Campaign Eldin KURUDZIJA - German Aerospace Center (DLR) - Germany	378 - Simulation of an Aerospike Nozzle Performance under an Altitude Chamber Operating Conditions Juan Sebastian SERRATO ORTIZ - RMIT University - Australia	364 - Spectral Mass Gauging experiment aboard a suborbital rocket Sara Cecilia ABECIA-HERNANZ - UPC-BarcelonaTech - Spain	142 - The Orion-ESM propulsion system: About Artemis I performance and future evolutions Jan-Hendrik MEISS - Airbus Defense & Space GmbH - Germany	238 - Fracture Mechanics Testing of Titanium 6Al-4V in LMP-103S Propellant Henry MULKEY - NASA GSFC - United States	090 - Design, Manufacture and Characterisation of an Electric Propulsion Thruster for Space, Low Earth Orbit, Very Low Earth Orbit, and Terrestrial Applications. Guy PETERS - Quanta Engineering Ltd - United Kingdom	027 - Investigation of the correlation between microwave coupling and thrust on the example of two thruster concepts Clara SCHAEFER - German Aerospace Center - Germany	413 - Development of ILT-1 up to TRL7: 1N Monopropellant Thruster Using 98% Hydrogen Peroxide Adrian PARZYBUT - Lukasiewicz Research Network - Institute of Aviation - Poland	133 - Development and Roadmap of the Ouroboros Programme Hybrid Autophage Propulsion System for Rapid Low-Earth Orbit Access Krzysztof BZDYK - University of Glasgow - United Kingdom
11:20	2	300 - LUMEN: Validation of a Thermal Model for the LUMEN Oxygen Turbopump Max Axel MÜLLER - German Aerospace Centre (DLR) - Germany	533 - Interactions Between Shock Waves and a Secondary Jet on a Truncated Aerospike with Varying Truncation Radii Andrew WILSON - University of Glasgow - United Kingdom	275 - Commissioning of a 30kN scale rocket test facility for LOX/LCH4/GCH4 propellants Iain WAUGH - Airborne Engineering - United Kingdom	382 - Artemis I Orion ESM Propulsion System Engine Performance Stephen BARSI - NASA - United States	104 - Challenges in reusage of refurbished Propellant tank in Chandrayaan-2: Lander propulsion system Rajesh KR - INDIAN SPACE RESEARCH ORGANISATION - India	191 - TETRA propulsion module coupling test Stanislav TOLOK - Thales Alenia Space UK - United Kingdom	235 - Characterization of an RF-neutralizer for air-breathing electric propulsion Jana ZORN - Justus-Liebig-University - Germany	451 - Topology Optimization for ECAPS HPGP Thrusters Olle WAHLQUIST - ECAPS AB - Sweden	255 - Towards the development of Ambre: the first hybrid autophage engine Martin GROS - ALPHA IMPULSION - France
11:40	3	450 - Influence of the structural damping on the stability of a labyrinth gas seal Yvon BRIEND - ArianeGroup - France	540 - Aerospike Performance Evaluation at Different Ambient Pressures Fabrizio PONTI - University of Bologna - Italy	398 - Test and Maintenance Technologies of the Facility for LE-9 engine Firing Test Masaya IDO JAXA - Japan	381 - Overview and Assessment of the ESM Pressure Control Performance on Artemis I Stephen BARSI - NASA - United States	178 - Innovative Propellant tank development for Chandrayaan-2: Lander spacecraft propulsion system Rajesh KR - INDIAN SPACE RESEARCH ORGANISATION - India	046 - Digital twins for a 21st-century transformation of Electric Propulsion sector: Vision 2030 Farbod FARAJI - Imperial College London - United Kingdom	244 - Searching for ExB Plasma Instabilities inside the Capacitively Coupled Magnetic Nozzle CSTAR Luca HENRICH - University of Applied Sciences - Germany	563 - ECAPS – 1 N and 5 N HPGP thruster development and testing. Wilhelm DINGERTZ - ECAPS AB - Sweden	421 - Towards Greener Propulsion: A Roadmap for Environmental Categorization of Liquid In-Space Propulsion Systems via Life Cycle Analysis Lily BLONDEL-CANEPARI - Università di Pisa - Italy
12:00	4	625 - Stator-Rotor Performance Optimization Methodology For Full Impulse Partial Admission Supersonic Turbine Design Robson HAHN - German Aerospace Center - Germany	570 - Module performance and heat transfer analysis of a clustered annular aerospike nozzle Vincenzo BARBATO - University La Sapienza - Italy	483 - FIRST Acoustic Results of A6 UPPER stage tests at P5.2 Gerhard KRÜHSEL - German aerospace center - Germany	146 - ArianeGroup Contribution to the ARTEMIS / ORION European Service Module Propulsion System Michael BIEHLER - ArianeGroup GmbH - Germany	493 - State of the art of long-term storability of high concentrated hydrogen peroxide for satellite propulsion systems Emmeric VITZTUM - FOTEC Forschungs- und Technologietransfer GmbH - Austria	061 - Technical advancements at Imperial Plasma Propulsion Laboratory on the building blocks of digital twin technology for Electric Propulsion Farbod FARAJI - Imperial College London - United Kingdom	290 - Development of RF Plasma Thruster for Space Enabling Technologies at DLR Yung-An CHAN - German Aerospace Center (DLR) - Germany	292 - Preliminary Results of an Ignition and Combustion Test Series with a Nitromethane-based Green Monopropellant Maxim KURILOV - DLR Deutsches Zentrum für Luft- und Raumfahrt - Germany	383 - Electromagnetic Soliton Generator Propulsion Capability Estimates David HAWKINS - Smokey Hawk - United States
12:20	5	035 - Machine Learning Applied to Turbine Inlet Manifold Instrumentation Sarah KRAMER - ArianeGroup GmbH - Germany	610 - HOT-FIRE TEST RESULTS OF A 6KN H2O2/KEROSENE ANNULAR AEROSPIKE THRUST CHAMBER DEMONSTRATOR Martin PROPST - Technische Universität Dresden - Germany	511 - Computational Analysis of High-Altitude Test Facilities Alessandro MONTANARI - Sapienza Università di Roma - Italy	302 - Serial Propellant Tank Pressure Behavior in Artemis I Orion-ESM Propulsion System Michael COOPER - National Aeronautics and Space Administration - United States	517 - Ultra-Storable Hydrogen Peroxide for Long Duration Space Missions Laura SMITH - Benchmark Space Systems - United States	283 - Review of Common Fault Types of Space Propulsion Systems and their Modelling in EcosimPro Lukas BISCHOF - German Aerospace Center - Germany	153 - Numerical simulation of a low-pressure electrodeless ion source intended for air-breathing electric propulsion Marek STASTNÝ - PlasmaSolve s.r.o. - Czech Republic	604 - Nitrous oxide monopropellant thrusters, Reloaded. Baker ADAM - Rocket Engineering Ltd - United Kingdom	545 - Design-for-Demise of a Smart Tank Concept for Upper Stages of Small Launchers Ahmed E. S. NOSSEIR - University of Trento / Scuola Superiore Sant'Anna di Pisa - Italy
12:40		**LUNCH**								

EXHIBITION

14:00		**PLENARY ROUND TABLE #5 : Green advanced propellants – How can they get quicker into service?** **Moderator : Helmut CIEZKI - DLR, Institute of Space Propulsion** **Patrick VAN PUT, Bradford Space - Ulrich GOTZIG, ArianeGroup - Ferran VALENCIA BEL, ESA-ESTEC - Christian PARAVAN, Politecnico di Milano - Adam OKNINSKI, Łukasiewicz Institute of Aviation**								EXHIBITION
		SESSION 91 Propulsion Systems with Electrical pumps	**SESSION 92** Nozzle	**SESSION 93** Thrust Chamber - Tests 1	**SESSION 94** Refueling & Lunar Lander Propulsion Systems	**SESSION 95** Propellant Sloshing	**SESSION 96** Alternative green propellants	**SESSION 97** Plasma Modelling II	**SESSION 98** Testing of Chemical Thrusters with Green Propellants	**SESSION 99** Detonation Engines 1
Chair		Gilles VIGIER - 3AF	Lilian PREVOST - CNES	Bertrand KLEIN - ESA	Markus PEUKERT - OHB	Stefan GREGUCCI - SITAEL	Wilhelm DINGERTZ - ECAPS	Bayrem ZITOUNI - OHB	Jordan MURRAY - URA Thrusters	Gerard ORDONNEAU - ONERA
15:10	1	331 - E-PUMP CONCEPT FOR DIVERSE MEDIA AND ITS APPLICABILITY IN ORBITAL REFILLING SYSTEM Lorenz PAK - deltaVision GmbH - Germany	196 - Experimental Study on the Effect of Chevrons on Flow Separation in Rocket Nozzles Ralf STARK German Aerospace Center - Germany	219 - Experimental study on the combustion performance of liquid oxygen/methane thrust chamber for pintle injector Ziguang LI - National University of Defense Technology - China	056 - Cooperation with ispace on the HAKUTO-R Lunar Lander Propulsion System Timo KRONE - ArianeGroup GmbH - Germany	417 - Numerical and experimental evaluation of the effect of propellant acquisition system in the propellant tanks on its slosh behaviour for control stability studies for a Lunar lander mission Sarath Chandran NAIR S - INDIAN SPACE	145 - HYDRAZINE-BASED GREEN MONOPROPELLANT BLENDS Robert MASSE L3Harris - Aerojet Rocketdyne - United States	445 - Two-Dimensional Cylindrical Electrostatic Particle-in-Cell Simulation of a Halo Thruster Junjie LIU - Imperial College London - United Kingdom	341 - Performance testing of 1N hydrogen peroxide thruster at fotec propulsion test facilities Varun Reddy NANDYALA - FOTEC GmbH - Austria	039 - Exploring the Sustainability of Pulsed Detonation in Hydrogen-Air and Hydrogen-Oxygen Mixtures Andrei COJOCEA - NRDI - COMOTI - Romania
15:30	2	368 - Design and development of pumps for an electrical-pump fed engine Leonard BONGIOVANNI - EPFL Rocket Team - Switzerland	328 - Expansion-Deflection Nozzle Design and Performance Optimization for Upper-Stage Applications Felix WEBER - Sapienza University of Rome - Italy	613 - Water Flow Testing a Pintle Injector for 6kN Lunar Descent Engine Preetham MADDALI VENKATA LAKSHMI - Nammo Raufoss AS - Norway	073 - Development and Operation Results of SLIM (Smart Lander for Investigating Moon) Propulsion System Keisuke MICHIGAMI - JAXA - Japan	582 - Non-Isothermal Sloshing for Space Applications: Experimental Characterisation under Reduced Gravity Conditions Francisco MONTEIRO - von Karman Institute for fluid dynamics - Portugal	369 - Industry update on the fastest growing propellant for In-Space Propulsion – Nitrous Oxide. Stefan POWELL - Dawn Aerospace - New Zealand	506 - EP Plasma Plume in Orbit: Analysis and Experimental Correlation Zoe ANGELOW - OHB System AG - Germany	348 - HIM_30: Hot-Firing Tests and Characterization of a Green Hypergolic Propellant based on Ionic Liquids and Hydrogen Peroxide Sophie RICKER - German Aerospace Center (DLR) - Germany	214 - Design and Testing of a hydrogen-oxygen Predetonator for Rotating Detonation Engines Wolfgang ARMBRUSTER - German Aerospace Center (DLR), Institute of Space Propulsion - Germany
15:50	3	537 - The Development of E-pump Prototypes for Next-Generation Space Turbomachinery Dario Alessandro BRUNA - DBSpace S.r.l. - Italy	349 - Investigations on the influence of shock structure on shear layer unsteadiness in a contoured dual throat nozzle system Abhilash NARAYAN - Liquid Propulsion Systems Centre - India	455 - Hot gas tests of a Laser Powder Bed Fusion manufactured 25 kN LOX/LNG regeneratively cooled thrust chamber produced from CuCrZr- copper alloy Dmitry SUSLOV - Institute of Space Propulsion, German Aerospace Center -	186 - Fluidic Testing of an In-Orbit Monopropellant Refuelling System Isheeta RANADE - Thales Alenia Space - United Kingdom	638 - Using Finite Element Techniques to Rapidly Create Slosh Analog Models for Arbitrary Geometries Nathan ANDREWS - Southwest Research Institute - United States	374 - Investigation of Alternative Green Fuels for Chemical Bipropellant Propulsion Systems Ahmet Nihat KARCI - University of Southampton - United Kingdom	636 - DSMC modelling of the neutral flow through a hollow cathode Stephen GABRIEL - University of Southampton - United Kingdom	474 - Testing challenges & mitigation plan for ADN based monopropellant thrusters Yaswanth Ram G - Indian Space Research Organization - India	488 - A State-of-the-Art Analysis of Rotating Detonation Combustion (RDC) for Rocket Engine Applications Florian DITSCHE - TUD Dresden University of Technology - Germany
16:10	4	600 - Design, development, and tests of the E Pumps for the RELIANCE engine Jiri KOZAK - Inpraise systems - Czech Republic	576 - Numerical Analysis of Methane-Oxygen Liquid Rocket Engine Nozzle Performance with Finite-Rate Chemical Kinetics Marco GROSSI - Sapienza, University of Rome - Italy	392 - Outflow measurements on sintered porous injector elements Markus SELZER - German Aerospace Center - Germany	626 - Orbit Fab Refuelling Interface Development Activities in Europe Sebastian HILL - Orbit Fab Ltd - United Kingdom		461 - A review of green hydrazine development Eric CARDIFF - NASA - United States	176 - Modelling cathode-less thruster based atmosphere-breathing electric propulsion systems Nabil SOUHAIR - Alma Mater Studiorum - Università di Bologna - Italy	489 - Test results of a film cooled 200 N hypergolic green propellant thruster using hydrogen peroxide as coolant Philipp TEUFFEL - German Aerospace Center e.V. (DLR) / Institute of Space Propulsion - Germany	285 - Experimental study and data analysis methods of a subscale Rotating Detonation Engine fed with gaseous H2-O2 Ewen BARD - ONERA - The French Aerospace Lab - France
16:30		**COFFEE BREAK**								
		SESSION 100 Operations	**SESSION 101** LRE Components Manufacturing	**SESSION 102** Thrust Chamber - Tests 2	**SESSION 103** Propulsion in the Spacecraft Design Process	**SESSION 104** Pressure Regulators	**SESSION 105** Green Propellant Chemical Propulsion Systems	**SESSION 106** Solid & Hybrid Propulsion Systems	**SESSION 107** Cold Gas Thrusters	**SESSION 108** Detonation Engines 2
Chair		Marc VALES - DASSAULT AVIATION	Yohann TORRES - ESA	Bertrand KLEIN - ESA	Stefan GREGUCCI - SITAEL	Davina DI CARA - ESA	Simone ALFANO - CNES	Rogier SCHONENBORG - ESA	Matthew SMITH - ESA	Gerard ORDONNEAU - ONERA
16:50	1	230 - Mobile Hydrogen Peroxide Transport and Storage Container for Worldwide Rocket Launches Christopher GLASER - DLR - Germany	274 - Green-laser additive manufacture of a GRCop-42 LOX/LCH4 combustion chamber with compliant firewall Iain WAUGH - Airborne Engineering - United Kingdom	141 - Experimental Investigation of Film Cooling in Subscale Rocket Combustion Chambers Georg KÜHLWEIN - German Aerospace Center - Germany	514 - Cost-Related Aspects of Spacecraft Propulsion: An In-Depth Exploration Gourav MOHANAN - Dayananda Sagar University - India	085 - High pressure reductor and regulator based on piezo technology: status-of-the-art, qualification results and future applications Francesco MANCINI - Leonardo SpA - Italy	224 - Qualification Results of a Green Chemical Propulsion Subsystem for 12U Cubesat Missions Marcos PEREZ - LMO - United Kingdom	215 - UK Race to Space – a national student propulsion competition for bi-prop and hybrid rocket engines Alistair JOHN - University of Sheffield - United Kingdom	200 - Achievements of a High-Pressure Coldgas Thruster Development Jan-René HAFERKAMP - AST Advanced Space Technologies GmbH - Germany	246 - Research on Regenerative Cooling System of the Rocket Rotating Detonation Engine Michal KAWALEC - Lukasiewicz - Institute of Aviation - Poland
17:10	2	459 - Cryogenic Stages Maintenance Operations Approach for Future Reusable Launchers Francois MAROQUENE-FROISSART - SIRIUS SPACE SERVICES - France	480 - Additive manufacturing process of a rocket engine thrust chamber assembly Horacio MOREIRA - Omnidea - Portugal	198 - Experimental characterization of heat transfer and flow boiling in a rectangular minichannel Maria Teresa SCELZO - von Karman Institute for Fluid Dynamics - Belgium	527 - Satellite Prime optimized Propulsion responsibility and workshare distribution Timo KRONE - ArianeGroup GmbH - Germany	185 - European-Made Mechanical Pressure Regulator for In-Space Use Marcus SJÖBERG - OHB Sweden AB - Sweden	521 - Development of a 2 Newton High Performance, Dual Mode Hydrogen Peroxide and Octane Rocket Engine for Small Satellites Laura SMITH - Benchmark Space Systems - United States	218 - Manufacturing processes, additives, and their influence on Lithium-Perchlorate & Polyvinyl-Alcohol-based electric solid propellants Hertel JONATHAN - TU Dresden - Germany	201 - ED (expansion-deflection) nozzles for cold-gas application Manuel FREY - ArianeGroup - Germany	268 - Experimental Study of a Hollow Small-Scale Rotating Detonation Combustor at TU Darmstadt Henrike JAKOB - Technische Universität Darmstadt - Germany
17:30	3	416 - Feature Selection and Virtual Sensing Based Mixture Ratio Estimation for Liquid Propellant Rocket Engine Control Systems Andrea URGOLO - Silicon Austria Labs - Austria	538 - Mitigation of excessive profile deviation and bend lines noticed during rolling of mechanically milled cylindrical shell panels of a propellant tank. Jayesh P - ISRO - India	304 - Experimental Analysis of a Capacitively Cooled, Low-Pressure GCH4/GOX Combustion Chamber Rahand DALSHAD - Technische Universität München - Germany	587 - Defining the Propulsion System Design Process in the Customer-Subcontractor Relationship Alex KONIETZKE - Dawn Aerospace - The Netherlands	258 - Pressure Regulator Model for Space Applications - Validation Test Results Keith BRODEK - Marotta Controls - United States	556 - On-orbit Demonstration of "Decontamination" of cold-fired ECAPS Thruster Wilhelm DINGERTZ - ECAPS AB - Sweden	353 - A Review of the Experimental and Numerical Activities on a Hydrogen Peroxide-based Hybrid Rocket for Small Satellites Sergio CASSESE - UNIVERSITY OF NAPLES "FEDERICO II" - Italy	571 - High Pressure Cold Gas Thruster Technology Richard MEINHOLD - Moog Inc - United States	603 - A numerical inestigation of the Richtmyer-Meshkov instability in a planar and convergent geometry Christopher SCHOLES - University of Glasgow - United Kingdom
17:50	4	019 - Cryogenic temperature sensors for extreme environments in the space. Amar KARKI - Scientific Instruments - United States	095 - The Design, Manufacture, and Testing of a Compact Additively Manufactured Turbomachinery unit Theodore MACKLIN - Imperial College London - United Kingdom	428 - Experimental study of chamber pressurization or depressurization with LN2: flow visualization, pressure and temperature measurements Maria Teresa SCELZO - von Karman Institute for Fluid Dynamics - Belgium	464 - Accommodation of auxiliary power supply kits onto launcher upper propulsive stages to improve satellite propulsion and extend their operational life Cristina COLAIANNI - ARIANESPACE - France	405 - Qualification testing of Pressure regulator for Lunar Lander applications Nithya BHARATHI - Liquid Propulsion Systems Centre/ ISRO - India	627 - Vertue, an innovative propulsion module based on green technologies for orbital applications Giorgio GUBERNARI - Finis Terrae S.R.L. - Italy	372 - Novel Student Developed Re-ignitable ABS-Nitrous Hybrid Rocket Engine Development Moana Nomi LENGKEEK - TU Delft - The Netherlands	207 - MATHEMATICAL MODELING, EXPERIMENTAL VALIDATION & DEVELOPMENT OF 100N CLASS GN2 GAS ROLL CONTROL THRUSTER FOR LAUNCH VEHICLE APPLICATION Gaurav SHARMA - ISRO - India	477 - Unwrapped CFD Simulations of a Small-Scale Rotating Detonation Engine Leonard SCHRAVEN - European Space Agency - The Netherlands
18:10		**KEYNOTE SPEECH #6: Closing Keynote** **Alberto GARBAYO, Helmut CIEZKI**								
18:30		**END OF DAY 4**								

FRIDAY 24 MAY 2024 // DAY 5

09:30	**TECHNICAL VISITS** *Pre-registration online is mandatory*
12:30	

END OF SP2024 CONFERENCE