20th European Space Mechanism and Tribology Symposium

September 20-22, 2023 • Warsaw, Poland

Preliminary Programme

16:00 – 18:00	Pre-registration available on 19-09-2023

Day 1 Wednesday, 20-09-2023

8:00	Registration begins

9:00 – 10:00 Welcome and Introductions

Welcome, general info, agenda

Opening Addresses by:

Lionel Gaillard, ESA

Marta Tokarz, Astronika

Keynote speech by Paul Blythe, ESA

Invited speech by TBD

10:00 – 11:20 Session 1 : Satellite Docking, Capturing and Connecting Mechanisms

Session Chair: Beata Wiertel, SENER PL

10:00 – 10:20	Compact Docking/Berthing Mechanism for In-Orbit Servicing Development
10:20 – 10:40	Lessons Learned from Design and Qualification of the Structural, Power, and Data Port (SPDP)
10:40 – 11:00	Concept, Development and Breadboard Testing of Innovative Launch Adapter Ring Modular Gripper (LAR-MG) for Satellite Robotic Capture
11:00 – 11:20	Design and development of a robotic gripper for capturing prepared and unprepared satellites
11:20 – 11:50	Coffee Break (30 min)

11:50 – 13:10 Session 2 : Tribology & Materials 1

Session Chair: Robert Paul, OHB DE

11:50 – 12:10	Guidelines for Qualification and Space Application of New Fluid Lubricants
12:10 – 12:30	Tribological Performance of Gelled Oils for Space Mechanisms Lubrication
12:30 – 12:50	Tribological and Bearing Performance of a New Variant of Cronidur 30 Steel with Improved Resistance to SCC
12:50 – 13:10	Cold Welding and Friction in Vacuum of Bulk Metallic Glasses (BMGs) Made by Powder Based Processes for Use in Space

13:10 – 14:10	Lunch (60 min)
14:10 – 15:30	**Session 3 : Deployables 1** Session Chair: Joseph Schepis, NASA
14:10 – 14:30	RWI Tubular Boom Antennas - Lessons Learned from the Development of a Flight Model for ESA Juice Mission
14:30 – 14:50	Development of PROBA-3 Solar Array Deployment and Hold-Down & Release Mechanisms and Lessons Learnt
14:50 – 15:10	Design Improvements of a 2-DoF Translational Flexible Joint for Flexible Compact Arrays (FCA)
15:10 – 15:30	Novel Concepts for On-Ground Deployment Testing of Large Antenna Structures
15:30 – 16:00	Coffee Break (30 min)
16:00 – 17:30	**Session 4 : Components 1 / Poster Pitches** Session Chair: Bartosz Kędziora, ASTRONIKA
16:00 – 16:20	Slipring made by additive manufacturing: from redesign to validation test results
16:20 – 16:40	Integrated Flex Pivot Position Sensor
16:40 – 17:00	Development of Non-Pyrotechnic Hold Down and Release Mechanisms for the James Webb Space Telescope
17:00 – 17:30	Poster Pitches #1
17:40	Invited Speech – JUICE RIME Boom Deployment anomaly recovery
18:45	Cocktail Reception – downstairs from Conference & Exhibition Area

Day 2 Thursday, 21-09-2023

9:00 – 11:00	**Session 5 : Pointing Mechanisms** Session chair: Dorota Budzyń, ATG for ESA
9:00 – 9:20	Development and Qualification of an Electrical Thruster Two Axis Pointing Mechanism
9:20 – 9:40	Development and Qualification of an Extreme Mechanical Life Antenna Pointing Mechanism, part of the Inter Satellite Link of an ESA Mission Spacecraft
9:40 – 10:00	The HySICS Pointing System: a Two-Axis Gimbal Mounted to the ISS
10:00 – 10:20	Development of a Flight Demonstration Coarse Pointing Mechanism for GEOGround Optical Communication Terminal
10:20 – 10:40	ETHM (Electrical Thruster Mechanism) Development Lessons Learned
10:40 – 11:00	Flex-Capsules for the Roman Space Telescope High Gain Antenna Gimbal
11:00 – 11:40	Coffee Break + Poster visit (40 min)
11:40 – 13:00	**Session 6 : Components 2** Session chair: Alessandro Bursi, OHB IT
11:40 – 12:00	Reed: The Manual
12:00 – 12:20	Development, Manufacture, and Ambient Environment Testing of a Proof-of-concept Magnetically-geared Actuator for use in Extremely Cold Lunar Environments
12:20 – 12:40	Reaction Wheel Actuator Development: Jumping from Hundreds to Thousands
12:40 – 13:00	Applying Industrial Standard Development Techniques to Modified COTS Motors for use in Space - an Example Based on the Ingenuity Swashplate Motors
13:00 – 14:00	Lunch (60 min)
14:00 – 15:20	**Session 7 : Tribology & Materials 2** Session chair: TBA
14:00 – 14:20	Novel Testing of Fluid Lubricants for Space Applications at Low Temperatures Using the VMTM
14:20 – 14:40	Inspection of Separable Surfaces - Lessons Learned
14:40 – 15:00	MoS2(Ti, W) Coatings as Surface Modification of Friction Pairs Operating in Vacuum and Dusty Lunar Environment
15:00 – 15:20	PennzaneTM Lubricant Compositions: The Pros and Cons of “Heritage” Technology
15:20 – 15:50	Coffee break (30 min)
15:50 – 17:20	**Session 8 : Positioning & Stabilization Mechanisms / Poster Pitches** Session chair: Beat Zahnd, BEYOND GRAVITY
15:50 – 16:10	3-axis Stabilization System for Stereo Cameras of Future Exploration Rovers
16:10 – 16:30	Hexapod Linear Actuator development for the ATHENA spacecraft
16:30 – 16:50	Optimal Design of a Semi-active Isolation Hexapod Platform
16:50 – 17:20	Poster Pitches #2
19:20 – 20:00	Optional Tour of the Royal Castle (limited places)
20:00	Gala dinner at Arkady Kubickiego

Day 3 Friday, 22-09-2023

9:00 – 11:00	**Session 9 : Various Mechanisms** Session chair: Harald Langenbach, AIRBUS DEFENCE AND SPACE DE
9:00 – 9:20	Tape Deployment Mechanism for Spacecraft Deorbiting
9:20 – 9:40	The Importance of Low Level Random for Resonance Search in Space Mechanisms
9:40 – 10:00	Lessons Learned from Evaluation and Mitigation of Space Charging Threat Due to Use of Isolated (Hybrid) Bearings on the PACE Ocean Color Instrument
10:00 – 10:20	Development and Qualification of the Eurostar Neo Solar Array Drive Mechanism
10:20 – 10:40	Multiple Separation Device for Dispensers (MSD)
10:40 – 11:00	EE9 FORUM Interferometer Mechanism Assembly: design and testing of a flight-like engineering model
11:00 – 11:30	Coffee break (30 min)
11:30 – 12:50	**Session 10 : Deployables 2** Session chair: TBA
11:30 – 11:50	Mechanical Design and Technology Demonstration of an Offset reflector Antenna
11:50 – 12:10	Miniature Motorized Antenna for Low-Frequency Radar of the Hera-Juventas Mission
12:10 – 12:30	Modelling of Solar Array Wing Deployment Using a Hybrid Matlab/Simulink Approach and correlation with Measured Wing Performances
12:30 – 12:50	MaD: A Lightweight & Cost-effective Telescopic Mast for Next Generations of Deployable Appendages
13:05 – 13:30	**Closing**
	Closing remarks, symposium summary AMS 2024 + ESMATS 2025 Announcements Best Paper Award Presenation
13:30 – 14:30	Lunch (60 min)
14:40	Buses leave for Astronika visit (tour ends ~16:30, visitor transported back to Chopin Airport or Conference Venue)