

esmats 2023



20th European Space Mechanism and Tribology Symposium

September 20-22, 2023 • Warsaw, Poland

Programme

DAY-1: Wednesday 20th September, 2023

Time	Paper Title / Event	Author / Session Chair	Affiliation	Country
8h00	Registration			
-				
18h00				
8h00	Presenters' breakfast (including authors' preparation)			
-				
8h45				

Welcome and Introduction

9h00	Welcome, general info, Programme	Lionel Gaillard	ESA/ESTEC	
		Marta Tokarz	Astronika	
9h20	Direction Space - Bold decisions. Precise solutions. Excellence in implementation	Marta Kolibabska	Ministry of Economic Development and Technology Head of Space Policy Unit	
9h35	Space Technologies in Poland - 50 years of flight hardware experience and new opportunities	Adam Okninski	Lukasiewicz Research Network - Institute of Aviation Director of Space Technologies Center Vice president of Committee on Space Research of the Polish Academy of Sciences	

	Session 1: Satellite Docking, Capturing and Connecting Mechanisms	Beata Wiertel	SENER	POL
10h00	Mathematic modelling, simulation, test and correlation of a capture before contact Docking Mechanism	Alejandro Lazaro	SENER ESP	ESP
10h20	Lessons Learned from Design and Qualification of the Structural, Power, and Data Port (SPDP)	Jordan Schlater	Sierra Space	USA
10h40	Concept, Development and Breadboard Testing of Innovative Launch Adapter Ring Modular Gripper (LAR-MG) for Satellite Robotic Capture	Jacek Musial	Lukasiewicz Research Network - Institute of Aviation	POL
11h00	Design and development of a robotic gripper for capturing prepared and unprepared satellites	Lukasz Kozlowski	PIAP Space	POL
11h20	30 min Coffee Break			
	Session 2:Tribology & Materials 1	Robert Paul	OHB	GER
11h50	Guidelines for Qualification and Space Application of New Fluid Lubricants	Anthony Kent	ESTL	GBR
12h10	Tribological Performance of Gelled Oils for Space Mechanisms Lubrication	Mathieu Lambert	InS	FRA
12h30	Tribological and Bearing Performance of a New Variant of Cronidur X30 Steel with Improved Resistance to SCC	Andreas Merstallinger	AAC	AUT
12h50	Cold Welding and Friction in Vacuum of Bulk Metallic Glass (BMG) Made by Powder Based Processes for Use in Space	Andreas Merstallinger	AAC	AUT
13h10	60 min Lunch Break			
	Session 3: Deployables 1	Jonathan Wood	Lockheed MArtin	USA
14h10	RWI Tubular Boom Antennas - Lessons Learned from the Development of a Flight Model for the ESA Juice Mission	Lukasz Wisniewski	Astronika	POL
14h30	Development of PROBA-3 Solar Array Deployment and Hold-Down & Release Mechanisms and Lessons Learnt	Katarzyna Okulska-Gawlik	SENER PL	POL
14h50	Design Improvements of a 2-DoF Translational Flexible Joint for Flexible Compact Arrays (FCA)	Gerwin Lapoutre	AIRBUS NL	NLD
15h10	Novel Concepts for On-Ground Deployment Testing of Large Antenna Structures	Christian Freier	AIRBUS DE	DEU

15h30 30 min Coffee Break

Session 4 : Components 1 / Poster Pitches	Bartosz Kedziora	ASTRONIKA	POL
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16h00 Slipring made by additive manufacturing: from redesign to validation test results	Lionel Kiener	CSEM	CHE
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16h20 Integrated Flex Pivot Position Sensor	Peter Spanoudakis	CSEM	CHE
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16h40 Development of Non-Pyrotechnic Hold Down and Release Mechanisms for the James Webb Space Telescope	Phil Venti	Ensign Bickford Aerospace & Defense	USA
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17h00 Poster Pitches #1 (45 mins)

18:00 Invited Speech - JUICE RIME Boom Deployment anomaly recovery	1. Ronan Le Letty 2. Bernhard Doll	1. ESA/ESTEC 2. SpaceTech	NLD DEU
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19h00 Cocktail Reception - downstairs from
- Conference & Exhibition Area
21h00

DAY-2: Thursday 21st September, 2023

Time	Paper Title / Event	Author / Session Chair	Affiliation	Country
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8h00 Registration

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18h00

8h00 Presenters' breakfast (including authors' preparation)
-
8h45

Session 5: Tribology & Materials 2		Peter Spanoudakis	CSEM	CHE
9h00	Novel testing of fluid lubricants for Space applications at low temperatures	Anthony Kent	ESTL	GBR
9h20	Inspection of Separable Surfaces - Lessons Learned	Sebastian Schwarz	AIRBUS DE/n	DEU
9h40	MoS2(Ti, W) Coatings as Surface Modification of Friction Pairs Operating in Vacuum and Dusty Lunar Atmosphere	Marcin Makówka	Lodz University of Technology	POL
10h00	Pennzane(TM) Lubricant Compositions: The Pros and Cons of "Heritage" Technology	Amanda Stubbs	Nye Lubricants	USA
10h20	Extending Gearbox Life in Cryogenic Vacuum Environment by Applying Powder Lubrication to Strain Wave Gearing	Shogo Kusabe	JAXA	JPN
10h40	Fretting Wear Anomaly of Final CubeSat Ejection Tests: expertise, solution testing, and lessons learned	Guillaume Colas	FEMTO-ST	FRA
11h00	40 min Coffee Break			
Session 6: Components 2		Alessandro Bursi	OHB	ITA
11h40	Reed: The Manual	Mathieu Robroek	AIRBUS NL	NLD
12h00	Development and manufacture of a proof-of-concept magnetically-gearred actuator for use in extremely cold lunar environments	Justin Scheidler	NASA	USA
12h20	Reaction Wheel Actuator Development: Jumping from Hundreds to Thousands	Adam Wade	Rocket Lab	NZL
12h40	Applying Industrial Standard Development Techniques to Modified COTS Motors for use in Space - an Example Based on the Ingenuity Swashplate Motors	Robin Phillips	Maxon	CHE
13h00	60 min Lunch Break			
Session 7: Pointing Mechanisms		Dorota Budzyn	ATG for ESA	NLD
14h00	The HySICS Pointing System: a Two-Axis Gimbal Mounted to the ISS	1. Rick Rainy 2. Pat Brown 3. Ryan Lewis	Laboratory for Atmospheric and Space Physics, UC Boulder	USA

14h20	Development of a Flight Demonstration Coarse Pointing Mechanism for GEO-Ground Optical Communication Terminal	Damien Blattes	AIRBUS FR	FRA
14h40	ETHM (Electrical Thruster Mechanism) Development	Matthias Favrel	TAS-F	FRA
15h00	Flex-Capsules for the Roman Space Telescope High Gain Antenna Gimbal	Kenneth Blumenstock	NASA	USA

15h20 30 min Coffee Break

Session 8 : Positioning & Stabilization Mechanisms / Poster Pitches #2

Beat Zahnd

BEYOND GRAVITY

CHE

15h50	Active balancing system for the Copernicus Imaging Microwave Radiometer (CIMR) instrument: system design and breadboarding results	Tharek Mohtar	OHB IT	ITA
16h10	Hexapod Linear Actuator development for the ATHENA spacecraft	1. Tomasz Kucinski 2. Beata Kunicka	1. Astronika 2. AIRBUS DE	POL DEU
16h30	Optimal Design of a Semi-active Isolation Hexapod Platform	Guglielmo Aglietti	Te Punaha \u0100tea - Space Institute The University of Auckland	NZL

16h50 Poster Pitches #2 (30 mins)

18h20 Optional Tour of the Royal Castle (limited places) - 40 mins

19h00 Arrival drinks

19h30 Gala dinner at Arkady Kubickiego

DAY-3: Friday 22nd September, 2023

Time	Paper Title / Event	Author / Session Chair	Affiliation	Country
8h00	Registration			
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14h30				
8h00	Presenters' breakfast (including authors' preparation)			
-				
8h45				

Session 9 : Various Mechanisms		Sebastian Schwarz	AIRBUS DEFENCE AND SPACE DE	DEU
9h00	Tape Deployment Mechanism for Spacecraft Deorbiting	Asier Ortega	SENER ESP	ESP
9h20	The Importance of Low Level Random for Resonance Search in Space Mechanisms	Sarah Battige	Beyond Gravity	CHE
9h40	Lessons Learned from Evaluation and Mitigation of Space Charging Threat Due to Use of Isolated (Hybrid) Bearings on the PACE Ocean Color Instrument	1. Konrad Bergandy 2. Claef Hakun	NASA	USA
10h00	Development and Qualification of the Eurostar Neo Solar Array Drive Mechanism	Joshua Lurie	AIRBUS UK	GBR
10h20	Multiple Hold Down Separation Device for Dispensers (MSD)	1. Jose Luis Mora Plaza 2. Alvaro Mediero Toledano	Airbus ESP	ESP
10h40	EE9 FORUM Interferometer Mechanism Assembly: design and testing of a flight-like engineering model	Roberta Alò	OHB System AG	DEU
11h00	30 min Coffee Break			
Session 10 : Deployables 2		Frederic Courtade	CNES	FRA
11h30	Mechanical Design and Technology Demonstration of an Offset reflector Antenna	Angelika Skrzynska	Oxford Space Systems	GBR
11h50	Miniature Motorized Antenna for Low-Frequency Radar of the Hera-Juventas Mission	Dominik Nolbert	Astronika	POL
12h10	Modelling of Solar Array Wing Deployment Using a Hybrid Matlab/Simulink Approach and correlation with Measured Wing Performances	1. Héloïse Boross 2. Philipp Schmidheiny	Beyond Gravity	CHE
12h30	MaD: A Lightweight & Cost-effective Telescopic Mast for Next Generations of Deployable Appendages	Adrien Moraine	AIRBUS FR	FRA
Closing remarks, symposium summary				
12h50	Closing remarks, symposium summary			
	AMS 2024 + ESMATS 2025 Announcements			
	Best Paper Award Presentation			

13h15 60 min Lunch Break

14h30 Buses leave for Astronika visit
(tour ends ~16:30, visitor transported back to
Chopin Airport or Conference Venue)