



**ISSUE 15-07-2024**

**13<sup>TH</sup> INTERNATIONAL SPACE SAFETY CONFERENCE**

***BUILDING A SAFE,  
SECURE AND  
SUSTAINABLE SPACE***

08 -10 OCTOBER

PRAGUE

CZECH REPUBLIC

**Program**



# 13<sup>TH</sup> IAASS CONFERENCE – BUILDING A SAFE, SECURE AND SUSTAINABLE SPACE

Tuesday, 08 October 2024

8:30am - 10:30am

## P1: Plenary Session 1

### General Info & Introduction of Speakers

Paul Kirkpatrick  
*Conference Organizing Committee*

### Conference Chairs Welcome Address

Paul Wilde  
*IAASS President*

Robert Greinacher  
*EUSPA Head of PM Office and Quality*

### Keynote Speakers

**Rodrigo da Costa**  
*EUSPA Executive Director*

**Kelvin B. Coleman**  
*FAA Associate Administrator  
Commercial Space Transportation*

**Russ DeLoach**  
*NASA Chief of Safety and Mission Assurance*

**Hiroki Kohata**  
*JAXA Associated Director General  
Senior Chief Officer of Mission Assurance*

10:30am - 11:00am

*Coffee Break*

11:00am - 12:30pm

## S-01: Re-entry Safety I

ID: 151

**Real-Time Air-Traffic Warning During Satellite Re-Entries: Challenges and Developments.**  
**Silvia Sanvido<sup>1</sup>, Benjamin Bastida Virgili<sup>2</sup>, Stijn Lemmens<sup>2</sup>, Hans de Haan<sup>3</sup>, Jérémy Cassier<sup>4</sup>, Anthony Caron<sup>4</sup>, Tobias Rabus<sup>5</sup>, Aubry De Longcamp<sup>4</sup>**

<sup>1</sup>IMS Space Consultancy GmbH; <sup>2</sup>European Space Agency (ESA); <sup>3</sup>Think Beyond Tomorrow Research;

<sup>4</sup>Aldoria; <sup>5</sup>Deutsches Zentrum für Luft- und Raumfahrt (DLR)

ID: 164

**Comparison of Re-entry Safety Analysis Tool LS-DARC and ORSAT-J for Model Update**

**Keiichiro Fujimoto<sup>1</sup>, Hideyo Negishi<sup>1</sup>, Kenichi Sato<sup>1</sup>, Tsutomu Matsumoto<sup>1</sup>, Takayuki Itoh<sup>2</sup>, Shohei Kawahara<sup>3</sup>**

<sup>1</sup>Japan Aerospace Exploration Agency, Japan; <sup>2</sup>East Japan Institute of Technology Co., Ltd, Japan;

<sup>3</sup>Japan Manned Space Systems Corporation, Japan

ID: 156

**BFS « Back From Space », an atmospheric reentry kit for Newspace application**

**Stephane Heinrich**

*e.NOVA Aerospace, France*


**11:00am - 12:30pm S-02: Human Performance I**

ID: 217

**Supporting Decision-Making During Challenging Space Operations****Misha Pavel, Yorgos Stratis, Holly Jimison, Karen Quigley, Deniz Erdogan***Northeastern University, United States of America*

ID: 178

**The Human Research Program for Civilians in Spaceflight and Space Habitation: Implementing HRP-C****Mary Cull, George Nield, Michael Marge, Michael Schmidt, Mark Shelhamer***HRP-C, United States of America*

ID: 216

**Urolithiasis As A Potential Consequence Of Long-Term Exposure To Microgravity****Nikolay Osetskiy***Institute for Biomedical Problems of the Russian Academy of Sciences (IBMP RAS), Russian Federation*

ID: 123

**Transference of Emerging Aerospace Functional Assessments to Commercial Space Operations****Thomas Anthony Van Dillen, Robert Kane, Thomas Parsons, Hunter Klevgard, Chanda Sanders, Tammy Ho, Alfretia Scarborough, Sarah Ligda***Federal Aviation Administration (FAA), United States of America*
**11:00am - 12:30pm S-03: Safety Critical Software & Cybersecurity**

ID: 222

**The use of Software Level Allocation (as per ED-12C) in EGNOS****Alexandru Adrian Prodan***EUSPA, France*

ID: 131

**Early Validation of Safety Critical Software in Automated Docking Technology Demonstration on HTV-X through Model-based Independent Verification and Validation Activity****Yuki Tomita<sup>1</sup>, Ryo Mikoshiba<sup>2</sup>, Hiroshi Kozawa<sup>3</sup>, Ryosuke Fujimura<sup>3</sup>, Yuri Hachiya<sup>1</sup>, Hiroki Umeda<sup>4</sup>, Tsutomu Kobayashi<sup>4</sup>, Daisuke Tsujita<sup>2</sup>, Takashi Uchiyama<sup>1</sup>***<sup>1</sup>Human Spaceflight Technology Directorate, Japan Aerospace Exploration Agency; <sup>2</sup>Space System Division, Mitsubishi Heavy Industries, Ltd.; <sup>3</sup>Software Development Department, MHI Aerospace Systems Corp.; <sup>4</sup>Research and Development Directorate, Japan Aerospace Exploration Agency*

ID: 146

**Guarding the Galactic Gateway: Building a Secure Defensible Architecture to Safeguard the Vast Frontiers of Space.****Pak Ho Chan***An Independent Cybersecurity Reseacher, Australia*
**11:00am - 12:30pm S-04: Panel Session:**
**BUILDING AN INTERNATIONAL CIVIL STM/SSA**Chairs: **Joao Alves** (EUSPA), **Mark Glissman** (USAF)
**12:30pm - 2:00pm Lunch Break**

2:00pm - 3:30pm

**S-05: Space Debris I**

ID: 137

**Environmental Estimation Method to Follow Sudden Changes due to Satellite Fragmentation**  
**Takuto Nobuhara, Yasuhiro Yoshimura, Toshiya Hanada**

*Kyushu University, Japan*

ID: 192

**Space Debris Optical Perception in Near-Earth Orbits**  
**Md Arif Billah, Imraan Faruque**

*Oklahoma State University, United States of America*

ID: 177

**Bayesian-based Model Predictive Control Based Approach Towards Space Debris Capture And Removal From LEO**

**Vatasta KouI**

*Kyushu University, Japan*

ID: 166

**Investigation of Acoustic Influence on Liquid Residues Discharge from the Closed Vessel**  
**Valeriy Ivanovich Trushlyakov, Vladislav Aleksandrovich Urbansky**

*Omsk State Technical University, Russian Federation*

2:00pm - 3:30pm

**S-06: Launch Safety I**

ID: 126

**The Risks to Aircraft from the Starship IFT-2 Mishap**  
**Paul David Wilde**

*Federal Aviation Administration, United States of America*

ID: 141

**Recommendations for Flight Safety Systems through STPA application**

**Antonio Vinicius Diniz Merladet<sup>1,2</sup>, Carlos Henrique Netto Lahoz<sup>3</sup>, Chiara Manfletti<sup>1</sup>, Diogo Silva Castilho<sup>2</sup>, Rodrigo Melo Silveira<sup>1,2</sup>**

*<sup>1</sup>Technical University of Munich, Germany; <sup>2</sup>Brazilian Air Force, Brazil; <sup>3</sup>Aeronautics Institute of Technology, Brazil*

ID: 127

**Multifactor Experiments on the Relative Penetrability of Aircraft Aluminum and Composite Plates at Various Strain Rates**

**George Lloyd<sup>1</sup>, Ryan Schnalzer<sup>1</sup>, Paul Wilde<sup>2</sup>**

*<sup>1</sup>ARCTOS, United States of America; <sup>2</sup>Federal Aviation Administration, United States of America*

ID: 122

**Autonomous Flight Termination System: A Proposal for an International Regulatory Frame and Set of Requirements**

**Federico Pasciuti, Giuliano Acampa, Marco Cinque, Wenting Dai, Gistin Thomas Kuthukallumkal, Alessandro Scolaro, Riccardo Armellini**

*Avio Spa, Italy*

2:00pm - 3:30pm

**S-07: Designing Safety I**

ID: 211

**Automation Creativity and Resilience: Leveraging Human Expertise**  
**Bettina L Beard**

*NASA (ret.), United States of America*

ID: 134

**Research and Analysis on Safety Design of AI Technology Applied to Space System**  
**Liming Ren, Shengxin Jiang, Hongwei Lu, Jinchao Zhang, Rui Zhang, Wei Zhu**

*China Astronautics Standards Institute, China, People's Republic of*



**ID: 202**  
**Getting the Preliminary Hazard Analysis Right**  
**Tommaso Sgobba**  
*IAASS, Netherlands, The*

**ID: 173**  
**System Modelling and Analysis for the Realization of a Private-Sector-Led Commercial Human Space Transportation System in Japan for Low Cost and High Reliability**  
**Kazuaki Hirakawa, Tadayoshi Shoyama**  
*Innovative Space Carrier Co, Ltd., Japan*

2:00pm - 3:30pm	<b>S-08: Panel Session:</b> <b>INTERNATIONAL SPACE SEARCH &amp; RESCUE</b> <b>Chairs: <u>Wang Wei</u> (CNSA), <u>Rick Button</u> (USCG) (TBC)</b>
3:30pm - 4:00pm	<i>Coffee Break</i>
4:00pm - 6:00pm	<b>S-09: Risk Assessment &amp; Management</b>

**ID: 143**  
**Exhaustive Probabilistic Risk Assessment For Space Applications Including Common Causes**  
**Emilien Genet, Marco Giugliarelli**  
*Thales Alenia Space*

**ID: 165**  
**Development of Quantitative Crew Safety Assessment Method based on Multi-physics Simulation Code LS-LUCA**  
**Keiichiro Fujimoto**  
*Japan Aerospace Exploration Agency, Japan*

**ID: 147**  
**Why Safety Is Instrumental To Operating A Test Site Within The Paradigm Of New Space Era?**  
**Nicolas Tranchant**  
*LATITUDE, France*

**ID: 220**  
**Analysis and Risk Assessment, Systems Design and Systems Architecture for the Mexican Moon Base Habitat**  
**Omar Ariosto Niño Prieto, Vicente Guevara Ayala, Eduardo Ulises Sánchez Sánchez, Carlos Omar Ramírez Moreno, José Areli Carrera Román, Cuauhtémoc Covarrubias Carranza, Erik Yahir Zaldívar Cano**  
*OneSide Tech, Mexico*

**ID: 212**  
**Evaluation Of System Safety Based On ISS Experiences**  
**Ryoji Kobayashi**  
*Human Space Safety and Mission Assurance Office, JAXA, Japan*

4:00pm - 6:00pm	<b>S-10: Suborbital &amp; High Altitude Systems Safety</b>
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**ID: 161**  
**Y-Fuselage Configuration to Enhance Suborbital Aircraft Payload Capacity, Seaworthiness Safety and Aerodynamics**  
**Norul Ridzuan Zakaria<sup>1</sup>, Anas Md Yusof<sup>1</sup>, Mohamad Rafi Shahzada<sup>2</sup>, Manar Abd Latif<sup>3</sup>, Norul Rafidi Zakaria<sup>3</sup>, Saharudin Zakaria<sup>3</sup>, Sutan Amzari Abas<sup>3</sup>, Muhamad Ferdous Mohdshariff<sup>3</sup>, Norul Muhammad Norulridzuan<sup>4</sup>, Norul Aini Norulridzuan<sup>5</sup>**

<sup>1</sup>University Sultan Azlan Shah (USAS), Malaysia; <sup>2</sup>MARA Corporation, Malaysia; <sup>3</sup>Spaceport Malaysia;  
<sup>4</sup>University Kuala Lumpur Malaysian Institute of Marine Engineering Technology (UniKL-MIMET);  
<sup>5</sup>University College MAIWP International (UCMI), Malaysia

ID: 208

**Risk Assessment For a Suborbital Flight Operation**

**Manuel Lombardi<sup>1</sup>, Lorenzo Lumaca<sup>1</sup>, Giovanni Di Antonio<sup>2</sup>, Guido De Matteis<sup>1</sup>, Riccardo Patriarca<sup>1</sup>**

<sup>1</sup>La Sapienza, University of Rome, Italy; <sup>2</sup>Ente Nazionale per l'Aviazione Civile (ENAC), (Rome,Italy)

ID: 205

**The Concept of Antipodal Equatorial Spaceports and Antipodal Equatorial Spaceplane**

**Norul Ridzuan Zakaria<sup>1</sup>, Anas Md Yusof<sup>1</sup>, Mohamad Rafi Shahzada<sup>2</sup>, Manar Abd Latif<sup>3</sup>, Norul Rafidi Zakaria<sup>3</sup>, Saharudin Zakaria<sup>3</sup>, Sutan Amzari Abas<sup>3</sup>, Muhamad Ferdous Mohdshariff<sup>3</sup>, Norul Muhammad Norulridzuan<sup>4</sup>, Norul Aini Norulridzuan<sup>5</sup>**

<sup>1</sup>University Sultan Azlan Shah (USAS), Malaysia; <sup>2</sup>MARA Corporation, Malaysia; <sup>3</sup>Spaceport Malaysia;  
<sup>4</sup>University Kuala Lumpur Malaysian Institute of Marine Engineering Technology (UniKL-MIMET);  
<sup>5</sup>University College MAIWP International (UCMI), Malaysia

4:00pm - 6:00pm

**S-11: Human Performance II**

ID: 186

**Audible Noise Strategies for Habitable Spacecraft Environments**

**Holly Smith-Dalenberg<sup>1</sup>, Christopher Allen<sup>2</sup>**

<sup>1</sup>Aegis Aerospace, Inc., United States of America; <sup>2</sup>National Aeronautics and Space Administration (NASA)

ID: 154

**Research Management And Organization Of The Human Cardiorespiratory System Investigation During The Year-Long Overwintering At Vostok Station In Central Antarctica**

**Nikolay Osetskiy, Olga Manko, Oleg Orlov**

*Institute for Biomedical Problems of the Russian Academy of Sciences (IBMP RAS), Russian Federation*

ID: 180

**Ensuring Safe Decision-Making on the Moon and Mars: Cognitive Performance Assessment for Exploration Class Mission EVA**

**Steven R. Anderson<sup>1</sup>, Mercedes N. Jorge<sup>2</sup>, Suzanne T. Bell<sup>3</sup>**

<sup>1</sup>KBR/NASA Johnson Space Center, United States of America; <sup>2</sup>JES Tech/NASA Johnson Space Center, United States of America; <sup>3</sup>NASA Johnson Space Center, United States of America

ID: 163

**Exploration Atmosphere: Moving Towards Sustainability**

**Marlei Ebert Walton<sup>1</sup>, Jason Norcross<sup>2</sup>**

<sup>1</sup>NASA USA; <sup>2</sup>KBR, 2400 E NASA Pkwy, Houston, TX 77058 USA

ID: 115

**Designing Safety into Extra-terrestrial Habitats: Lessons from Space Mission Anomalies and Accident Mitigation**

**Rashi Jain, Karen Marais**

*Purdue University, United States of America*

4:00pm - 6:00pm

**S-12: Panel Session:**

**AUTONOMOUS FLIGHT TERMINATION SYSTEMS:  
TECHNICAL & LEGAL CHALLENGES**

**Chairs: Isabelle Rongier (Ariane Group), Ronen Ingbir (Rafael)**



## Wednesday, 09 October 2024

8:00am - 10:00am

### S-13: Human Performance III

ID: 120

**Human Factors Analysis Using NASAHFACS Red-Light / Green-Light To Build Safe, Secure, And Sustainable Space Operations**

**Isabel Hernandez, Denise Zona, Samuel Serafini, Andre Karpowich, Tracy Dillinger**

*NASA, United States of America*

ID: 117

**NASA's Agency-Level Space Flight Human System Standards**

**David Francisco<sup>1</sup>, Sarah Childress<sup>2</sup>**

*<sup>1</sup>NASA, United States of America; <sup>2</sup>KBR Wyle Services*

ID: 190

**Finite Element Modeling of Extravehicular Mobility Units for Use with Human Body Models – Motivation, Major Challenges, Use Cases and Preliminary Work**

**Aaron Michael Drake, Keegan Mitchell Yates, Nathaniel James Newby**

*KBR, Houston, TX, United States of America*

D: 121

**Crisman Modified Hierarchy of Needs Methodology for Space Systems Architecture within Human-Centered Design**

**Keith Crisman, Travis Nelson**

*University of North Dakota, United States of America*

**ID: 225: Humans to Mars, but how many? Using Training Qualifications Modeling to Inform Number of Crew**

**Donna Dempsey**

*NASA, United States*

8:00am - 10:00am

### S-14: Regulations & Standards I

ID: 213

**Implementation of Modernised Australian Space Activities Regulatory Framework: Ensuring Risk-based Safety Assessments, Adaptable for a Burgeoning Space Launch Environment**

**Shena Howell<sup>1</sup>, Shaun Wilson<sup>1</sup>, Justin Hill<sup>2</sup>, Chris De Luis<sup>2</sup>, Adam Clash<sup>2</sup>, Jeremy Margrie<sup>1</sup>, John Wharington<sup>1</sup>, Sam Randell<sup>1</sup>**

*<sup>1</sup>Shoal Group Pty Ltd ('Shoal'), Australia; <sup>2</sup>Australian Space Agency*

ID: 196

**WRC-23 Outcomes: ITU Role and Latest Activities in Space Innovation and Sustainability**

**Audrey Lynn Allison**

*The Aerospace Corporation, United States of America*

ID: 219

**Multilateral Initiatives To Promote Space Security**

**Peter Martinez**

*Secure World Foundation, United States of America*

ID: 172

**International Space Resource Exploration: Challenges and Prospects of Alternative Governance Instruments**

**Teja Dobnik<sup>1</sup>, Valeria Pinna<sup>2</sup>**

*<sup>1</sup>N/A, Germany; <sup>2</sup>N/A, Czech Republic*

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8:00am - 10:00am

**S-15: Designing Safety II**

ID: 130

**Development of Probabilistic Risk Analysis Model for Launch and Flight Abort Dynamic Events toward Human Space Flight – 1st Report**

**Shohei Kawahara<sup>1</sup>, Yuki Tomita<sup>2</sup>, Keiichiro Fujimoto<sup>3</sup>, Kaname Kawatsu<sup>3</sup>, Eiichi Mizuta<sup>3</sup>, Kyotaro Ida<sup>3</sup>, Shota Iino<sup>1</sup>, Masami Miki<sup>1</sup>, Takashi Uchiyama<sup>2</sup>**

<sup>1</sup>Japan Manned Space System Corporation, Japan; <sup>2</sup>Human Spaceflight Technology Directorate, Japan Aerospace Exploration Agency; <sup>3</sup>Research and Development Directorate, Japan Aerospace Exploration Agency

ID: 145

**Trends in Human Spaceflight: Analysis of Observed Propulsion Failure Modes Following NASA's Artemis I Mission**

**Darcy Lynne DeAngelis, Klara Peixian Carbone, Carrie Lynn Green**

*NASA Glenn Research Center, United States of America*

ID: 215

**Composite Overwrapped Pressure Vessels (COPV): Incorporating New Technologies and Lessons Learned into Industry Standards**

**Michael Tevriz Kezirian**

*University of Southern California, United States of America*

ID: 167

**Safety design and operational control of KIBO experiment facility (ELF: Electro-static Levitation Furnace) on ISS**

**Hirohisa Oda**

*JAXA, Japan*

ID: 105

**Benefits of Using Functional Safety in Commercial Space Applications**

**Florian Lumpe<sup>1</sup>, Michael Seidl<sup>2</sup>**

<sup>1</sup>DLR; <sup>2</sup>Texas Instruments

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8:00am - 10:00am

**S-16: Commercial Human Spaceflight SAR**

ID: 142

**Research on Safety Assurance and Related Standards for Manned Space Exploration Mission**

**Shanshan Zhang, Liming Ren, Xiaopeng Li, Kanglun Liu**

*China Astronautics Standards Institute, China, People's Republic of China*

**Lecture**

**Development of Commercial Human Spaceflight in the United States**

**Rick Button**

*US Coast Guard, United States*

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10:00am - 10:30am

*Coffee Break*

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10:30am - 12:30pm

**S-17: Safety Culture**

ID: 152

**Navigating the Complexities of Safety and Mission Assurance Across NASA's Partnership Landscape**

**Johnny Trung Nguyen<sup>1</sup>, Frances Heinlein<sup>2</sup>, Nicholas Bell<sup>2</sup>**

<sup>1</sup>NASA, United States of America; <sup>2</sup>Aerospace Corporation, United States of America

ID: 200

**Results of the Space Safety Institute and IAASS Working Group on Space Safety Lexicon**





**Mark Skinner, Catrina Melograna**  
*The Aerospace Corp., United States of America*

**ID: 150**  
**An Overview of NASA's Space Sustainability Strategy**  
**Matthew John Forsbacka, Marissa S. Herron**  
*NASA, United States of America*

**10:30am - 12:30pm S-18: Launch Safety II**

**ID: 204**  
**Simplified Far-Field Blast Risk Analysis**  
**Simon Titulaer**  
*SpaceX, United States of America*

**ID: 170**  
**Tailored Flight Safety Systems**  
**Ronen Ingbir<sup>1</sup>, Vladislav Komarnitski<sup>2</sup>, Asaf Schuldenfrei<sup>1</sup>**  
<sup>1</sup>Rafael, ADS, Israel; <sup>2</sup>IAF

**ID: 218**  
**Predictive Intervention Strategies for Reducing Casualty Risk in Launch Vehicle Operations**  
**Rodrigo Avila de Luis<sup>1</sup>, Pierre Spizzi<sup>2</sup>, Massimiliano Costantini<sup>3</sup>**  
<sup>1</sup>CNES, French Guiana; <sup>2</sup>CNES, French Guiana; <sup>3</sup>CNES, French Guiana

**ID: 176**  
**Simulating Scaled Launch Vehicle Accident Scenarios For Explosive Yields**  
**Reema Reveles, Mike Bangham, Ben Lambert**  
*Bangham Engineering Inc., United States of America*

**ID: 169**  
**TRSAT - Analytic Risk Assessment Module**  
**Ronen Ingbir, Asaf Schuldenfrei, Mark {Moty} Harmats, Leonid Elkind**  
*Rafael, ADS, Israel*

**10:30am - 12:30pm S-19: Space Sustainability**

**ID: 182**  
**Debris Shield Designs for Mass-efficient Orbital Debris Protection, Breakdown, and Collection: Analysis and Simulation**  
**Md. Saiful Islam, Sandra Vinnikova, Imraan Faruque**  
*Oklahoma State University, United States of America*

**ID: 119**  
**The Inclusion of a Probability of Collision Threshold on Orbital Capacity**  
**Nathan Lee Pullicino, Massimiliano Vasile**  
*University of Strathclyde, United Kingdom*

**ID: 118**  
**Environmental Impact of Large LEO Constellations**  
**Mark Alan Sturza**  
*Viasat, Inc., United States of America*

**ID: 175**  
**Space Safety and Sustainability Best Practices, Standards and Guidelines: Where the Gaps, Consistencies and Inconsistencies Exist Across Six Key Publications**  
**Jodie Howlett, Matt Bull**  
*UK Space Agency, United Kingdom*

**10:30am - 12:30pm S-20: Panel Session:**

**AI and SPACE SAFETY**  
Chairs: Stéphane Beaudry, Liming Ren (TBC)

12:30pm - 2:00pm *Lunch Break*

2:00pm - 3:30pm **P2: Plenary Session - Keynote Speakers**

**Diane Howard**  
*Director of Commercial Space Policy  
U.S. National Space Council  
The White House*

**Bernard Chemoul**  
*CNES Inspector General (TBC)*

**Maj. Gen. Sean Choquette**  
*USAF/USSF Chief of Safety & Commander Air Force Safety Center*

**Holger Krag**  
*ESA Head Space Safety Program*

**Hervé GILIBERT**  
*Ariane Group Chief Technical Officer (TBC)*

3:30pm - 4:00pm *Coffee Break*

4:00pm - 5:30pm **S-21: Launch Safety III**

ID: 203  
**New Launch Vehicle Probability of Failure Analysis**  
Simon Titulaer  
*SpaceX, United States of America*

ID: 198  
**Influence Of Air And Sea Launch Characteristics On The Risk To Third Parties For North Sea Launches**  
Tobias Rabus  
*Institut für Flugführung, DLR, Germany*

ID: 194  
**Evolution Of Launch And Reentry Range Operations**  
Jillian Yuricich, Frank Messina  
*SpaceX, United States of America*

ID: 139  
**Assessment of Integrity of Localization Systems for Micro-Launchers with Analytic Techniques**  
Marta Fernández Campo, Isabel Bachiller Martínez  
*GMV, Spain*

4:00pm - 5:30pm **S-22: Panel Session:**

**ASSISTING DECISION MAKING ON LONG DURATION MISSIONS**  
Chairs: Tina Beard (IAASS), (TBD)

4:00pm - 5:30pm **S-23: Designing Safety III**



ID: 135

**Accounting For Point Estimate Uncertainty in Space Systems Reliability & Risk Analysis****Paul Jason Collier, Bruce Reistle***NASA, United States of America*

ID: 108

**Safety Considerations for Nuclear Space Power Systems****Egemen Demirer***Yalova University, Turkiye*

ID: 109

**Global Perspectives on the Safety of Nuclear Space Power Systems****Egemen Demirer***Yalova University, Turkiye*

ID: 158

**A Reliability-Driven Design and Test (ReDDT) Methodology for Space Nuclear Power and Propulsion Systems****Lawrence Dale Thomas, Samantha Rawlins, Shreyas Lakshmipuram Raghu, Alexander Aueron***University of Alabama in Huntsville, United States of America*

4:00pm - 5:30pm

**S-24: Space Traffic Management I**

ID: 214

**Realized Collision Risk****Mark A. Sturza, John J. Janka**

ID: 179

**Collision Avoidance Maneuvers Optimization Using Evolutionary Algorithms****Guilherme Marcos Neves<sup>1,2</sup>, Luis Fellipe Alves<sup>1</sup>, Denilson Paulo Souza dos Santos<sup>3</sup>, Antônio Fernando Bertachini de Almeida Prado<sup>2</sup>***<sup>1</sup>Safe on Orbit; <sup>2</sup>National Institute for Space Research, INPE; <sup>3</sup>São Paulo State University, UNESP*

ID: 199

**Collision Risks In Orbit And At Launch****Arnaud Ruiz, Max Cerf***ArianeGroup*

ID: 140

**EUSPA role in EU SST: Service Provision, User Uptake and Security****Pascal Claudel, João Alves***EUSPA, EU Agency for the Space Programme*

5:40pm - 6:00pm

**Buses Depart to Conference and Awards Gala Dinner at Zofin Palace****Thursday, 10 October 2024**

9:00am - 10:30am

**S-25: Regulations & Standards II**

ID: 191

**Are ESA and NASA working within International Law? International Space Governance.****Marta Benitez Solaz***EUSPA, Czech Republic*

ID: 138

**Universal Safety Technical Standards as a Foundation of National and European Space Laws. Revisiting 'space Law Building Blocks' in Search of Preventive Role of Space Law.**

**Katarzyna Malinowska**

*Kozminski University, Poland*

ID: 162

**Independent Safety Investigation For Commercial Space Accidents? A Research On Relevant International Laws And Their Implications**

**Chao-Ting Cheng**

*Institute of Air and Space Law, McGill University, Québec, Canada*

ID: 155

**Integration of Air and Space Traffic Management: Establishing Criteria for Mitigating Space and Launch Debris Hazards**

**Michael Kezirian<sup>1</sup>, George Lloyd<sup>2</sup>**

*<sup>1</sup>University of Southern California (USC) Viterbi School of Engineering; <sup>2</sup>ARCTOS, United States of America*

9:00am - 10:30am

**S-26: Launch Safety IV**

ID: 197

**Development of a LOX/Methane Intact Impact Yield Curve for a New Launch Vehicle**

**Andrew Michael Berkowitz, Simon Titulaer**

*Space Exploration Technologies, Corp., United States of America*

ID: 171

**Launch Window Execution Probability**

**Ronen Ingbir<sup>1</sup>, Moria Jakubovitch<sup>2</sup>, Vladislav Komarnitski<sup>2</sup>, Eyal Abchitz<sup>2</sup>, Tal Rothman<sup>2</sup>**

*<sup>1</sup>Rafael, ADS, Israel; <sup>2</sup>IAF*

ID: 193

**Development Of Highly-Reliable Deorbit Capabilities For An Orbital Launch Vehicle**

**Jillian Yuricich, Garrett McMillan**

*SpaceX, United States of America*

ID: 153

**Fallacy Of Critical Mass Limit In Liquid Propellant Rocket Explosions**

**Reema Reveles<sup>1</sup>, Mike Bangham<sup>1</sup>, Jim Blackmon<sup>2</sup>**

*<sup>1</sup>Bangham Engineering Inc., United States of America; <sup>2</sup>University of Alabama, United States of America*

ID: 149

**Launch and Re-Entry Vehicle Probability-of-Failure Analysis Methodology for Evaluation of Public Risk in Commercial Human Spaceflight**

**Sergio Guarro<sup>1</sup>, Paul Wilde<sup>2</sup>**

*<sup>1</sup>The Aerospace Corporation, United States of America; <sup>2</sup>Federal Aviation Administration*

9:00am - 10:30am

**S-27: Space Hazards**

ID: 221

**Space Weather Monitoring and On-board Radiation Evaluation with Timepix-family Detectors**

**Katerina Sykorova<sup>1</sup>, Carlos Granja<sup>1</sup>, David Hladik<sup>1</sup>, Jan Jakubek<sup>1</sup>, Lukas Marek<sup>1</sup>, Tomas Baca<sup>2</sup>, Adolf Inneman<sup>3</sup>, Zdenek Matej<sup>3</sup>**

*<sup>1</sup>Advacam, Czech Republic; <sup>2</sup>Czech Technical University in Prague, Faculty of Electrical Engineering, Czech Republic; <sup>3</sup>Rigaku Innovative Technologies Europe s.r.o., Dolni Brezany, Czech Republic*

ID: 188

**Continuous In-Situ and Remote Sun Observation for Space Weather Monitoring and Mitigation of Infrastructure Threats through an Optimized Heliocentric Satellite Constellation**

**Leonidas Askianakis**

Technical University of Munich, Germany

ID: 116

**Application of Re-entry Survivability Analysis Tool to Mars Planetary Protection**

**Kenichi Sato<sup>1</sup>, Tsutomu Matsumoto<sup>1</sup>, Takashi Ozawa<sup>1</sup>, Toru Yoshihara<sup>1</sup>, Kazuko Hagiwara<sup>2</sup>, Satoshi Kobayashi<sup>2</sup>**

<sup>1</sup>Japan Aerospace Exploration Agency; <sup>2</sup>Mitsubishi Electric Software Corporation

ID: 106

**System Safety for Rendezvous and Proximity Operations (RPO)**

**Lois Yu, Drake Mailes**

*Aerospace Corporation, United States of America*

9:00am - 10:30am

**S-28: Space Traffic Management II**

ID: 206

**Data Sharing: Risk vs Reward for Space Sustainability**

**Alex Cacioni, Lorenzo Arona**

*Space Data Association, United Kingdom*

ID: 187

**Multi-Objective Sensor Tasking Of Optical Telescopes Using Monte Carlo Tree Search**

**Puong Linh Ngo, Steve Gehly, Marco Langbroek, Pieter Visser**

*Delft University of Technology, Netherlands, The*

ID: 183

**Orbital Debris Collisions and Satellite Trajectories: Analysis of Delta-V and Altitude Deviations**

**Ishriak Ahmed, Imraan Faruque**

*Oklahoma State University, United States of America*

ID: 168

**Japan's SSA Policy: Objectives and Challenges for the Public SSA System**

**Yui Nakama<sup>1</sup>, Suzuko Uchida<sup>2</sup>, Kazuto Suzuki<sup>3</sup>, Kota Umeda<sup>4</sup>, Koichi Kikuchi<sup>3</sup>, Ikuko Kuriyama<sup>3</sup>**

<sup>1</sup>George Washington University; <sup>2</sup>Johns Hopkins University; <sup>3</sup>The University of Tokyo; <sup>4</sup>Institute of Geoeconomics

10:30am - 11:00am

*Coffee Break*

11:00am - 1:00pm

**S-29: Regulations and Standards III**

ID: 207

**The Need For A Strict Interpretation Of Legal Instruments To Ensure Effective International Cooperation**

**Quentin Gueho**

*Université Paris-Saclay, France*

ID: 110

**International Cooperation: Cornerstone for Safe and Sustainable Space Exploration**

**Egemen Demirer**

*Yalova University, Turkiye*

ID: 129

**Earth System Boundaries and Due Diligence in Outer Space: towards Environmental Impact Assessment and Lifecycle approaches"**

**Elena Cirkovic<sup>1</sup>, Vitali Braun<sup>2</sup>**

<sup>1</sup>Aarhus University; <sup>2</sup>European Space Agency

ID: 132

**International Cooperation on Space Safety Standards (ICSSS)**

**Tommaso Sgobba**

*IAASS, Netherlands, The*

ID: 124

**International Space Governance And Solutions For Galloping Commercial Space Traffic Management Including Issues Of Re-Entry, Space Debris and Other Aspects of Safety**

**Sanat Kaul**

*IFFAAD, India*

11:00am - 1:00pm

**S-30: Space Traffic Management III**

ID: 104

**A Framework for Compatible-By-Design Orbit Coordination in LEO**

**Miles Thelonious Keylor Lifson**

*The Aerospace Corporation, United States of America*

ID: 144

**Brazil's strategy in Space Situational Awareness: analysis of a Space Debris Monitoring Center**

**Luis Fellipe Alves de Oliveira<sup>1</sup>, William Silva<sup>1</sup>, Guilherme Neves<sup>2</sup>**

*<sup>1</sup>University of Brasilia, Brazil; <sup>2</sup>National Institute for Space Research (INPE), Brazil*

ID: 136

**Orbital Tolerances of Existing Large Low Earth Orbit Constellations**

**Carson Coursey, Miles Lifson, Mark Skinner**

*The Aerospace Corporation, United States of America*

11:00am - 1:00pm

**S-31: Re-entry Safety II**

ID: 133

**Impacts of Spacecraft Reentry on the Stratosphere**

**Daniel Murphy<sup>1</sup>, Maya Abou-Ghanem<sup>1</sup>, Daniel Cziczo<sup>2</sup>, Karl Froyd<sup>1</sup>, Justin Jacquot<sup>2</sup>, Michael Lawler<sup>1</sup>, Christopher Maloney<sup>1</sup>, John Plane<sup>3</sup>, Marty Ross<sup>4</sup>, Gregory Schill<sup>1</sup>, Xiaoli Shen<sup>2</sup>**

*<sup>1</sup>NOAA, United States of America; <sup>2</sup>Purdue University; <sup>3</sup>University of Leeds; <sup>4</sup>Aerospace Corporation*

ID: 128

**Orbital Re-entries of Human-made Space Objects: Drawbacks for the Upper Atmosphere and the Safety of People**

**Carmen Pardini<sup>1</sup>, Luciano Anselmo<sup>2</sup>**

*<sup>1</sup>ISTI-CNR, Italy; <sup>2</sup>ISTI-CNR, Italy*

ID: 160

**Debris Risk Assessment on Air & Sea Traffic of Space Operations**

**Stephane Heinrich**

*e.NOVA Aerospace, France*

ID: 125

**Improvements Of Embedded Operational Solutions For Studying Launch And Reentry Impacts On Air Traffic**

**Leonard Buchailot**

*CNES, French Guiana*

11:00am - 1:00pm

**S-32: Lunar and Extraterrestrial Safety**

ID: 111

**Full Lunar Surface Visualization and Simulation Platform**

**Thomas Edward Diegelman**

*NASA / JSC, United States of America*

ID: 148

**Study on Requirements for International Lunar Search and Rescue Interoperability Standards**

**Ningkang Zhang, Liming Ren, Haofang Quan, Xiaolong Li**



China astronautics standards institute, China, People's Republic of

ID: 189

**Safety And Sustainability Benefits For The CisLunar Environment by M.A.C.E.D.O.N.A.S. Landing System**

**Charalampos {Charis} Kosmas**

*LUNAR CARGO P.C., Greece*

1:00pm - 2:30pm	<i>Lunch Break</i>
2:30pm - 3:00pm	<b>P3: Plenary Closing Session Part I</b>  Keynote <b>Aircraft Safety and Space Vehicle Hazards:            How Safe from Space Debris Hazards Will Your Future Flights Be?</b> <b><u>Paul D. Wilde</u></b> <i>FAA/AST, United States</i>
3:00pm - 3:30pm	<b>P4: Plenary Closing Session Part II</b>  Keynote <b>A Framework for Compatible-By-Design Orbit Coordination in LEO</b> <b><u>Miles T. Lifson</u></b> <i>The Aerospace Corp., United States</i>
3:30pm - 4:45pm	<b>P5: Plenary Closing Session Part III – Panel Session</b>  <b>ORGANIZING GLOBAL SPACE SAFETY GOVERNANCE</b> Chairs: <u>Liu Hao</u> (BIT), <u>Andrea Harrington</u> (McGill University – IASL)
4:45pm - 5:00pm	<b>P6: Conference Wrap-Up &amp; Announcements</b>

## E-POSTERS

ID: 209

**Innovative Drug Selection, Storage, and Shelf-Life Strategies for Exploration Spaceflight**

**Vernie R. Daniels<sup>1</sup>, Edward S. Williams<sup>2</sup>**

<sup>1</sup>KBR / NASA Johnson Space Center, 2400 NASA Parkway, Houston, TX 77058, USA; <sup>2</sup>NASA Johnson Space Center, 2101 NASA Parkway, Houston, TX 77058, USA

ID: 195

**Analysis of Orbital Clearance Schemes from Large-size Debris**

**Sergei Onishchuk**

*Omsk State Technical University, Russian Federation*

ID: 113

**Design Consideration and Evaluation of a Human-Machine Interface for Real-Time Mission Monitoring of a Launch and Re-Entry Coordination Systems "Building a Safe and Secure Sustainable Space"**

**Jens Hampe**

*Deutsches Zentrum für Luft- und Raumfahrt e.V. DLR, German Aerospace Center, Germany*

ID: 102

**Advanced Architectures, Security Protocols, and IV&V Practices in Safety-Critical Software Systems Design**

**Dharshun Sridharan**

*Piston Labs, Australia*

ID: 184

**Crew Safety for Space Nuclear Power Systems**

**Alexander Quentin Gilbert**

*Colorado School of Mines, United States of America*

ID: 112

**"A Proposal for a New System for Air Traffic to Accommodate Spacecraft Launches"**

**Mathew Jackson Lewallen**

*Mathew Lewallen, United States of America*

ID: 107

**Space Traffic Management**

**Katrina Moon<sup>1</sup>, Mark Glissman<sup>2</sup>, Allison Dempsey<sup>3</sup>**

*<sup>1</sup>United States Air Force, United States of America; <sup>2</sup>Department of the Air Force, United States of America; <sup>3</sup>United States Space Force, United States of America*

ID: 101

**Sustainable Space Through Risk**

**Dharshun Sridharan**

*Piston Labs, Australia*

ID: 103

**Modeling of Relative Permittivity of Dielectric Based Nanocomposite**

**Sayavur Bakhtiyarov, Mostafa Hassanalian, Ayten Bakhtiyarova**

*New Mexico Institute of Mining and Technology, United States of America*

D: 181

**Health and Performance Research on Axiom's Private Astronaut Missions to the LEO**

**Rahul Goel, Lucie Low**

*Axiom Space, United States of America*





**Tuesday 8 October**

<b>8:30am - 10:30am</b>	<b>P1: Plenary Opening Session</b> <i>Chairs:</i> <i>Paul Wilde, Robert Greinacher</i>  <b>Room: Chamber Hall</b>			
<b>11:00am - 12:30pm</b>	<b>S-01: Re-entry Safety I</b> <i>Chairs:</i> <i>Carmen Pardini</i> <i>Laurent</i> <i>Francillout</i>  Room: Chamber Hall	<b>S-02: Human Performance I</b> <i>Chairs:</i> <i>Tina Beard</i> <i>Richard Chase</i>  Room: South Hall A	<b>S-03: Safety Critical Software &amp; Cybersecurity</b> <i>Chairs:</i> <i>Robert Greinacher</i> <i>Fabrizio Festa</i>  Room: South Hall B	<b>S-04: Panel Session</b> <i>Chairs:</i> <i>Joao Alves</i> <i>Mark Glissman</i>  Room: South Hall C
<b>2:00pm - 3:30pm</b>	<b>S-05: Space Debris I</b> <i>Chairs:</i> <i>Mark Glissman</i> <i>Toru Yoshihara</i>  Room: Chamber Hall	<b>S-06: Launch Safety I</b> <i>Chairs:</i> <i>Paul Wilde</i> <i>Ronen Ingbir</i>  Room: South Hall A	<b>S-07: Designing Safety I</b> <i>Chairs:</i> <i>Zheng Liu</i> <i>George Gafka</i>  Room: South Hall B	<b>S-08: Panel Session</b> <i>Chairs:</i> <i>Wang Wei</i> <i>Rick Button</i>  Room: South Hall C
<b>4:00pm - 6:00pm</b>	<b>S-09: Risk Assessment &amp; Management</b> <i>Chairs:</i> <i>Zheng Liu</i> <i>Michael Kezirian</i>  Room: Chamber Hall	<b>S-10: Suborbital &amp; High Altitude Systems Safety</b> <i>Chairs:</i> <i>Taro Kuusiholma</i> <i>Tommaso Sgobba</i>  Room: South Hall A	<b>S-11: Human Performance II</b> <i>Chairs:</i> <i>Tina Beard</i> <i>Richard Chase</i>  Room: South Hall B	<b>S-12: Panel Session</b> <i>Chairs:</i> <i>Isabelle Rongier</i> <i>Ronen Ingbir</i>  Room: South Hall C

**Wednesday 9 October**

<b>8:00am - 10:00am</b>	<b>S-13: Human Performance III</b> <i>Chairs:</i> <i>Tina Beard</i> <i>Richard Chase</i>  Room: Chamber Hall	<b>S-14: Regulations &amp; Standards I</b> <i>Chairs:</i> <i>Liu Hao</i> <i>Andrea Harrington</i>  Room: South Hall A	<b>S-15: Designing Safety II</b> <i>Chairs:</i> <i>Zheng Liu</i> <i>George Gafka</i>  Room: South Hall B	<b>S-16: Commercial Human Spaceflight SAR</b> <i>Chairs:</i> <i>Liming Ren</i> <i>Tommaso Sgobba</i>  Room: South Hall C
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10:30am - 12:30pm	<b>S-17: Safety Culture</b> <i>Chairs:</i> Mark Glissman Hiroki Kohata  Room: Chamber Hall	<b>S-18: Launch Safety II</b> <i>Chairs:</i> Ronen Ingbir Isabelle Rongier  Room: South Hall A	<b>S-19: Space Sustainability</b> <i>Chairs:</i> Robert Greinacher Paul Wilde  Room: South Hall B	<b>S-20: Panel Session</b> <i>Chairs:</i> Stephane Baudry Liming Ren  Room: South Hall C
2:00pm - 3:30pm	<b>P2: Plenary Session - Keynote Speakers</b> <i>Chairs:</i> Paul Wilde, Robert Greinacher  Room: Chamber Hall			
4:00pm - 5:30pm	<b>S-21: Launch Safety III</b> <i>Chairs:</i> Ronen Ingbir Bernard Chemoul  Room: South Hall A	<b>S-22: Panel Session</b> <i>Chairs:</i> Tina Beard  Room: South Hall C	<b>S-23: Designing Safety III</b> <i>Chairs:</i> Zheng Liu George Gafka  Room: South Hall B	<b>S-24: Space Traffic Management I</b> <i>Chairs:</i> Mark Skinner Dan Oltrogge  Room: Chamber Hall
05:40pm - 06:00pm	<b>Departure to the Conference &amp; Awards Gala dinner</b>			
<b>Thursday 10 October</b>				
9:00am - 10:30am	<b>S-25: Regulations &amp; Standards II</b> <i>Chairs:</i> Liu Hao Andrea Harrington  Room: Chamber Hall	<b>S-26: Launch Safety IV</b> <i>Chairs:</i> Bernard Chemoul Toru Yoshihara  Room: South Hall B	<b>S-27: Space Hazards</b> <i>Chairs:</i> Richard Chase Zheng Liu  Room: South Hall C	<b>S-28: Space Traffic Management II</b> <i>Chairs:</i> Mark Skinner Dan Oltrogge  Room: South Hall A
11:00am - 1:00pm	<b>S-29: Regulations and Standards III</b> <i>Chairs:</i> Liu Hao Andrea Harrington  Room: Chamber Hall	<b>S-30: Space Traffic Management III</b> <i>Chairs:</i> Mark Skinner Dan Oltrogge  Room: South Hall A	<b>S-31: Re-entry Safety II</b> <i>Chairs:</i> Tobias Rabus Paul Wilde  Room: South Hall B	<b>S-32: Lunar and Extraterrestrial Safety</b> <i>Chairs:</i> Paul Kirkpatrick Taro Kuusiholma  Room: South Hall C
2:30pm - 3:00pm	<b>P3: Plenary Closing Session Part I</b> <i>Chairs:</i> Paul Kirkpatrick, Hiroki Kohata			
3:00pm - 3:30pm	<b>P4: Plenary Closing Session Part II</b> <i>Chairs:</i> Mark Skinner, Bernard Chemoul			
3:30pm - 4:45pm	<b>P5: Plenary Closing Session Part III – Panel Session</b> <i>Chairs:</i> Liu Hao, Andrea Harrington			
4:45pm - 5:00pm	<b>P6: Conference Wrap-Up &amp; Announcements</b> <i>Chairs:</i> Robert Greinacher, Paul Wilde			