



*International Academy of Astronautics*

*IAA Space Debris Committee*

*March 27<sup>th</sup>, 2024*



# *Agenda*

1. IAC – Administrative part
  - 1.1. IAA Space Debris Committee
  - 1.2. Lessons learned from Baku 2023
  - 1.3. Status of Space Debris Symposium for Milan 2024
  - 1.4. Preparation of Space Debris Symposium for Sidney 2025
  
2. Exchanges
  - 2.1. Past events: workshops, conferences, congresses, ...
  - 2.2. On the Agenda
  - 2.3. General information
  - 2.4. Round table – Open discussion
  
3. IAA Study Groups
  - 3.1 SG 5.17 IAA Situation Report on Space Debris
  - 3.2 New SG proposal



## 1.1 IAA Space Debris Committee

### General frame:

- Officially created within IAA in 2012
  - Independent Committee
  - Permanent Committee
  - Attachment to Commission V. Could be independent if it would present any interest
- Actions of the Committee:
  - Organization of the IAC A6 Space Debris Symposium
  - 10 Position Papers or similar so far, either directly from the Committee, or contribution to others <sup>1</sup>
    - Position Paper on Orbital Debris in 1993, updated in 2000
    - Position Paper SG 5.1 on Space Debris Mitigation in 2005
    - Position Paper SG 5.5 on Space Debris Remediation in 2013
    - Participation to SG 5.10 on Orbital Debris Removal: Policy, Legal, Political and Economic considerations
    - Participation to SG 4.23 on IAA Handbook for Post-Mission Disposal for Micro and Smaller Satellites: Concepts and Trade Studies
    - Situation Report Paper 2016 SG 5.14 finished and distributed <sup>2</sup> - Update 2019 SG 5.17 on hold
    - Contribution to SG5.10 Orbital Debris Removal: Policy, Political, Legal and Economic considerations, 2022
    - Joint study group IAF-IAA-IISL on Space Traffic Management IAF TC26 - Ongoing
  - Numerous presentations (UNCOPUOS, ...)

<sup>1</sup> *Dedicated presentation on IAA SDC Publications  
If interested, just ask me*

<sup>2</sup> *Freely downloadable from our web page*



# 1. IAA Space Debris Committee

## Membership:

No need to be member of IAA !

- Members of the IAA6 Symposium Program Committee (chairs & rapporteurs)
  - ⇒ Note that the IAC Program Committee is exclusively selected among the IAA SDC members
- Members of the Program Committee of other IAA sponsored conferences with Space Debris concerns
- Members of Space Debris related working groups (IADC, UNCOPUOS, COSPAR, ISO ...)
- Academics, Labs, Universities, Industrials... working on the topic

However, **it is requested to be “active”**:

- Participation to the meetings
- Debriefing of activities during the meetings
- Cross information with other members
- Contribution to studies and reports
- To see the work which is done, visit our web page

<https://iaaspace.org/about/permanent-committees/#SA-PERMCspacedebris>

Two meetings per year:

- One during IAC ⇒ Includes the status of the sessions, workshops, round tables... of the week
- One during IAC March Meeting ⇒ Includes the pre-selection of the abstracts for the following IAC
  - ⇒ **Decision to hold the next meeting on Sunday 13 October morning** (proximity of the IAASS congress)



# 1. IAA Space Debris Committee

## Current membership (as per website):

Agapov Vladimir	Finkleman David	Lemmens Stijn
Aglietti Guglielmo	Fitz-Coy Norman G.	Letizia Francesca
Agueda Alberto	Flohner Tim	Liou Jer-Chyi
Ailor William H	Forshaw Jason	Martinez Peter
Alary Didier	Francesconi Alessandro	Martinot Vincent
Alby Fernand	Francillout Laurent	Marzioli Paolo
Anilkumar A.K.	Gong Zizheng	Masson-Zwaan Tanja
Anselmo Luciano	Grishko Dmitriy	McKnight Darren S.
Anz-Meador Philip	Hanada Toshiya	Metz Manuel
Auburn John	Howard Diane	Nassisi Annamaria
Bastida-Virgili Benjamin	Hyde James	Oltrogge Daniel L.
Berend Nicolas	Jah Moriba K.	Opromolla Roberto
Bevilacqua Riccardo	Jankovic Marko	Pardini Carmen
Brachet Gerard	Kawamoto Satomi	Piergentili Fabrizio
Christiansen Eric L	Kelso T. S.	Plattard Serge
Colombo Camilla	Kerr Emma	Rossetini Luca L.
Cordelli Emiliano	Kibe Seishiro	Rossi Alessandro
Crowther Richard	Kim Hae-Dong	Sanchez-Ortiz Noelia
Dasgupta Upasana	Kitazawa Yukihiro	Santoni Fabio
Dolado Perez Juan-Carlos	Krag Holger	
Faucher Pascal	Le May Samantha	

Schaefer Frank
Schildknecht Thomas
Seitzer Pat
Shen Lin
Siminski Jan
Singh Balbir
Smith Lesley-Jane
Somma Gian Luigi
Sorge Marlon E.
Spencer David B.
Stokes Hedley
Usovik Igor
Wiedemann Carsten
Yasaka Tetsuo

**Synthesis:**  
85 members  
Including missing and new

## Chairs & Secretary:

Skinner Mark A.  
Bonnal Christophe  
Omaly Pierre

## Missing members?

Borja Del-Campo  
Nitta Kumi  
Klinkrad Heiner  
Kuriyama Ikuko

## To be removed?

Auburn John → Yes  
Le May Samantha → Yes  
Shen Lin → TBC by Lin  
Traineau Jean-Claude → Yes

## New members?

Rachit Bhatia → Presented  
Morgane Lecas → Presented  
Zemoura Mélissa → Presented  
Ysolde Preveraud → Presented  
Monham Andrew → Presented  
Cristian Bank → Presented  
Francisco Santoro → In Milan ?

**See appendix 1 for today's list of participants**

**It is reminded that Program Committee (Chairs + Rapporteurs) is selected among members only**



# 1.2 Feedback from Baku 2023

## 3.A Technical Programme



Abstracts in total: **3663**

Accepted/Total = 73%  
 Withdrawn/Total = 27%  
 Oral/Accepted = 72%  
 IP/Accepted = 28%  
 Presented/Accepted = 80%  
 Papers + IP published/Accepted = 84%  
 Papers/Accepted Oral = 91%  
 IP/Accepted IP = 61%

Abstracts accepted: **2689**  
 Oral Presentations: **1946**  
 Interactive Presentations: **743**

Withdrawn: **974**

Presentations confirmed by presenting authors: **2175**

Papers uploaded: **1769**

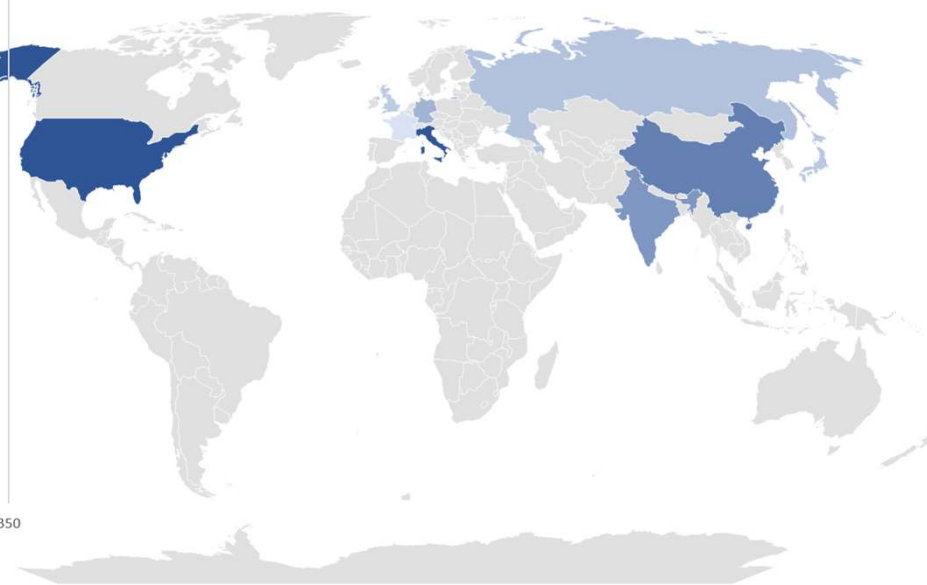
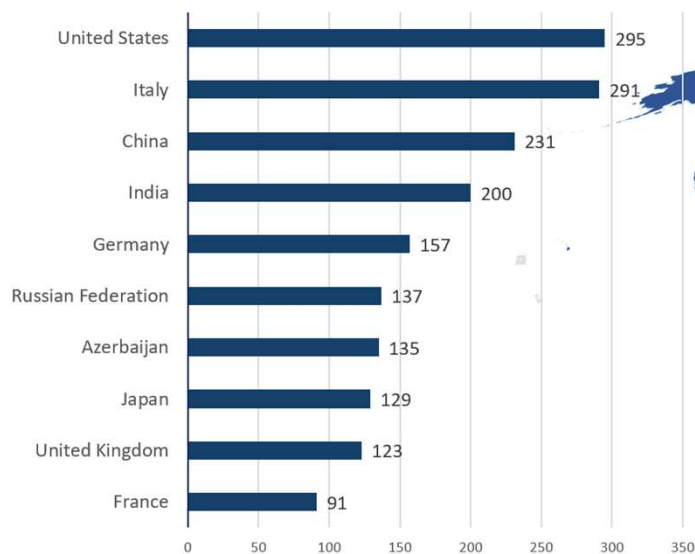
• Interactive Presentations published: **480**





## 1.2 Feedback from Baku 2023

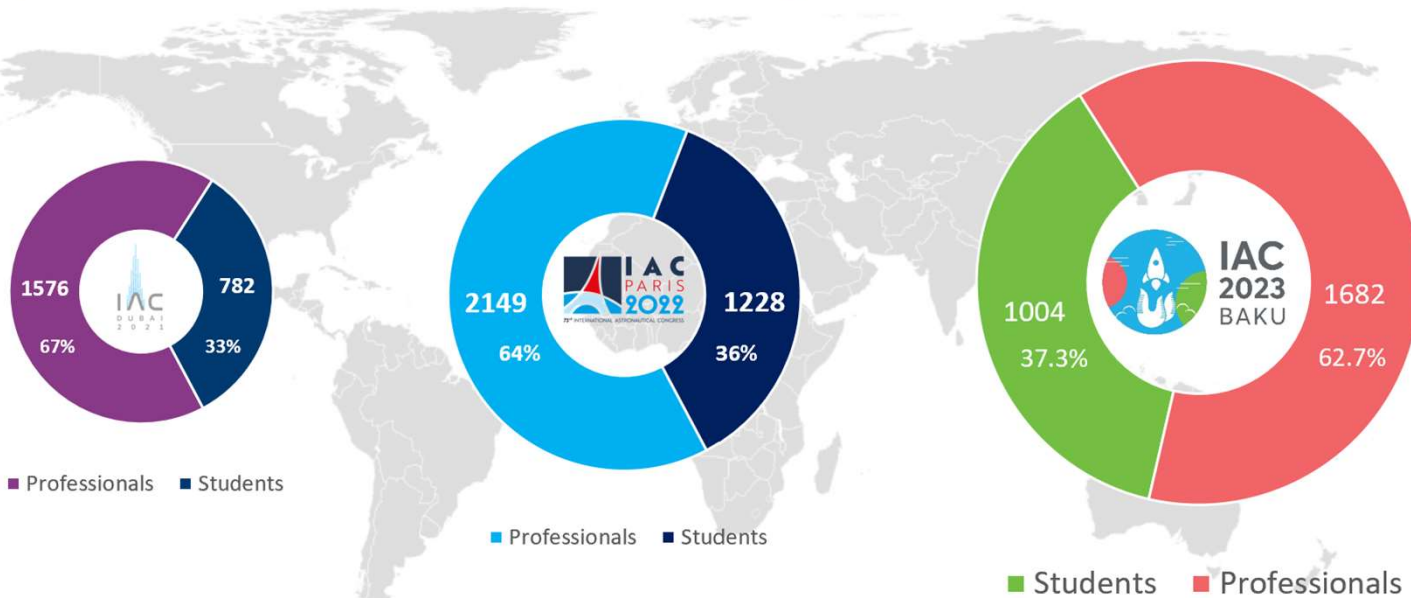
### 3.A Accepted abstracts (Top 10 Countries)





# 1.2 Feedback from Baku 2023

## 3.A Status Report (Professionals and Students)





# 1.2 Feedback from Baku 2023

## 3.A Technical Programme



Date	02/10/2023	03/10/2023	03/10/2023	04/10/2023	04/10/2023	05/10/2023	05/10/2023	06/10/2023	06/10/2023
Time / Room Number	15:15-17:45	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	13:45-16:15
BCC B3	A3.1	A3.2A	A3.2B	A3.3A	A3.3B	A3.4A	A3.5	A3.4B	A3.2C
BCC A3	D2.1	D2.3	D2.2	D2.4	D2.5	D2.6	D2.7	D2.8	D2.9/D6.2
BCC B4	C1.8	C1.9	C1.1	C1.2	C1.3	C1.4	C1.5	C1.6	C1.7
BCC A6	A6.7	A6.9	A6.4	A6.3	A6.2	A6.5	A6.6	A6.8/E9.1	A6.1
BCC A7	B3.1	B3.2	B3.3	B3.4/B6.4	B3.5	B3.6/A5.3	B3.7	B3.8	E10.2
BCC A2	B4.2	B4.1	B4.3	B4.4	B4.5	B4.6B	B4.7	B4.8	B4.6A
HAC Hall B	E7.1	E7.2	E7.3	E7.4	E7.5	E9.3	E10.1	E7.6/E3.5	E7.7
BCC A8	C4.1	C4.3	C4.5	C4.2	C4.6	C4.7	C4.8/B4.5A	C4.9	C4.10/C3.5
BCC A1	C2.1	C2.2	C2.3	C2.4	C2.5	C2.6	C2.7	C2.8	C2.9
BCC B6	A1.1	A1.2	A1.3	C4.4	A1.4	A1.5	A1.6	A1.7	A1.8
BCC B7	A2.1	A4.1	A4.2	A2.2	A2.3	A2.4	A2.5	A2.6	A2.7
HAC Hall A	D1.1	D1.2	D1.3	A5.1	A5.2	D1.4A	D1.4B	D1.5	D1.6
BCC B1	B1.1	C3.1	B1.2	B1.3	B1.4	B1.5	B1.6	C3.3	C3.4
BCC Auditorium Balcony	E9.2	E3.1	E3.2	E3.3	E3.4	A7.1	E3.6	A7.2	A7.3
BCC A4	E5.1	D5.1	E5.2	D5.2	E5.3	D5.3	E5.4	E5.5	E5.6
BCC B2	B5.1	B2.7	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6	E8.1
HAC Museum GA	E1.1	E1.2	E1.3	E1.4	E1.5	E1.6	E1.7	B1.7	E1.9
BCC Balcony C2	D4.1	D4.2	D4.3	D3.1	D3.2A	D4.4	D4.5	D3.2B	D3.3
BCC A5	E2.1	E2.2	E6.3	E2.4	B5.2	B5.3	B6.1	B6.2	B6.5
BCC B5	B2.8/GTS.3	D6.1	E2.3/GTS.4	D6.3	E6.5/GTS.1	C3.2	B4.9/GTS.5	D5.4	B3.9/GTS.2
HAC Balcony 2	A5.4	E6.4	E6.3	E6.2	E4.1	E4.2	E6.1	E4.3	
ISZ								E1.8	

Order of sessions can be discussed for Milan

189 Technical Sessions

BCC: Baku Congress Center  
HAC: Heydar Aliyev Center

Category A: Science & Exploration  
A1--> A7

Category C: Technology  
C1--> C4

Category E: Space & Society  
E1--> E10

Category B: Applications & Operations  
B1--> B6

Category D: Infrastructure  
D1--> D6



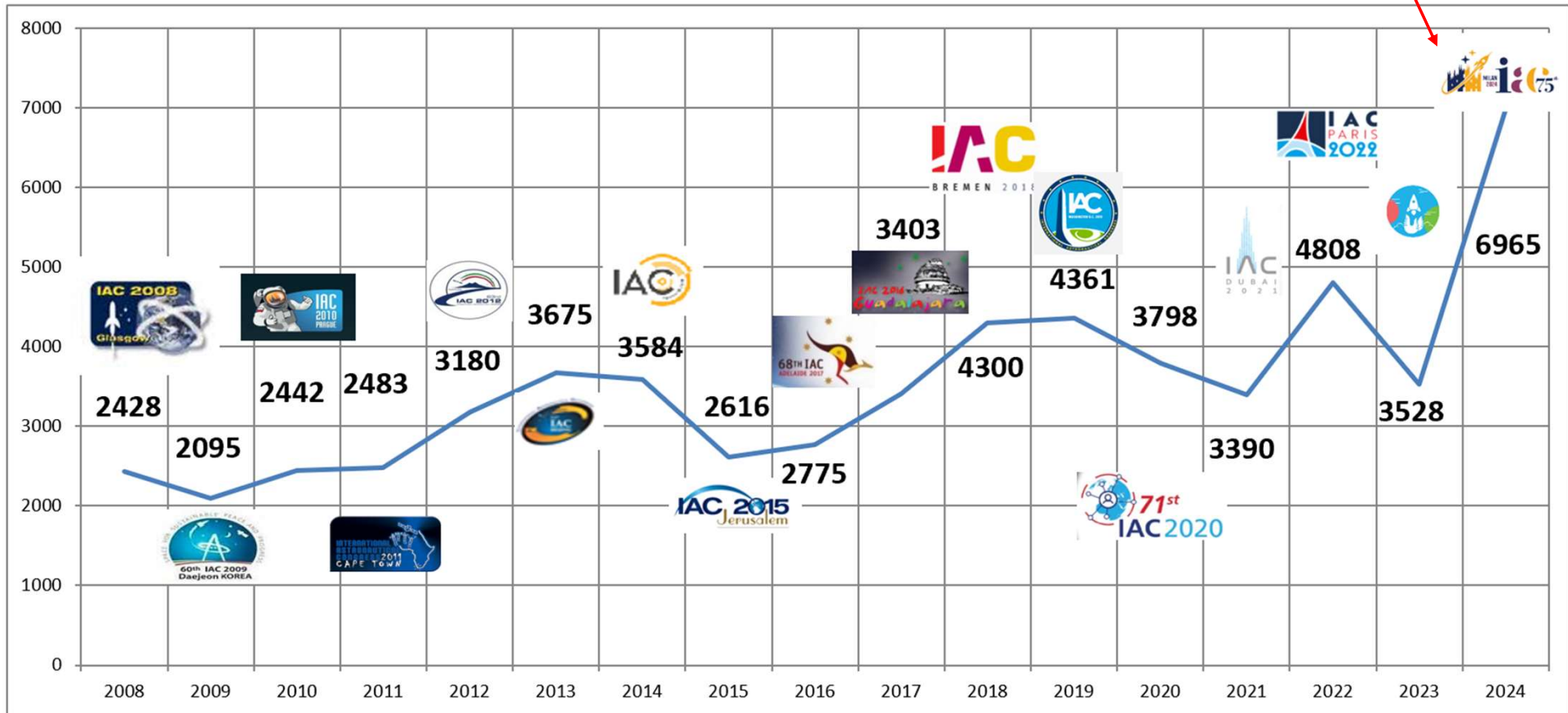


International  
Academy of  
Astronautics

## 1.3 Milan 2024

Number of IAC abstracts since 2008

Absolute record by far...  
Will raise numerous questions  
on nature of the congress





## 1.3 Milan 2024

### Highlights:

106 countries – 2295 organizations

6953 abstracts      Main countries:

Italy	985
USA	782
China	539
India	476
Azerbaijan	345...

*Congrats Darren, ranked #3/150 !*

3032 Students = 44% of the abstracts

Special Sessions:      150 submissions (10 “space debris related”) – 18 selected + 5 backups

Plenary Events:      50 submissions for 5 slots (+ 1 Space Agencies Heads + 1 imposed by Host)

High Light Lecture:      10 submissions for 2 slots (+ 1 for World Space Award)

GNF      60 to 90 to be decided in July

150 Exhibitors



# 1.3 Milan 2024

## Special sessions:

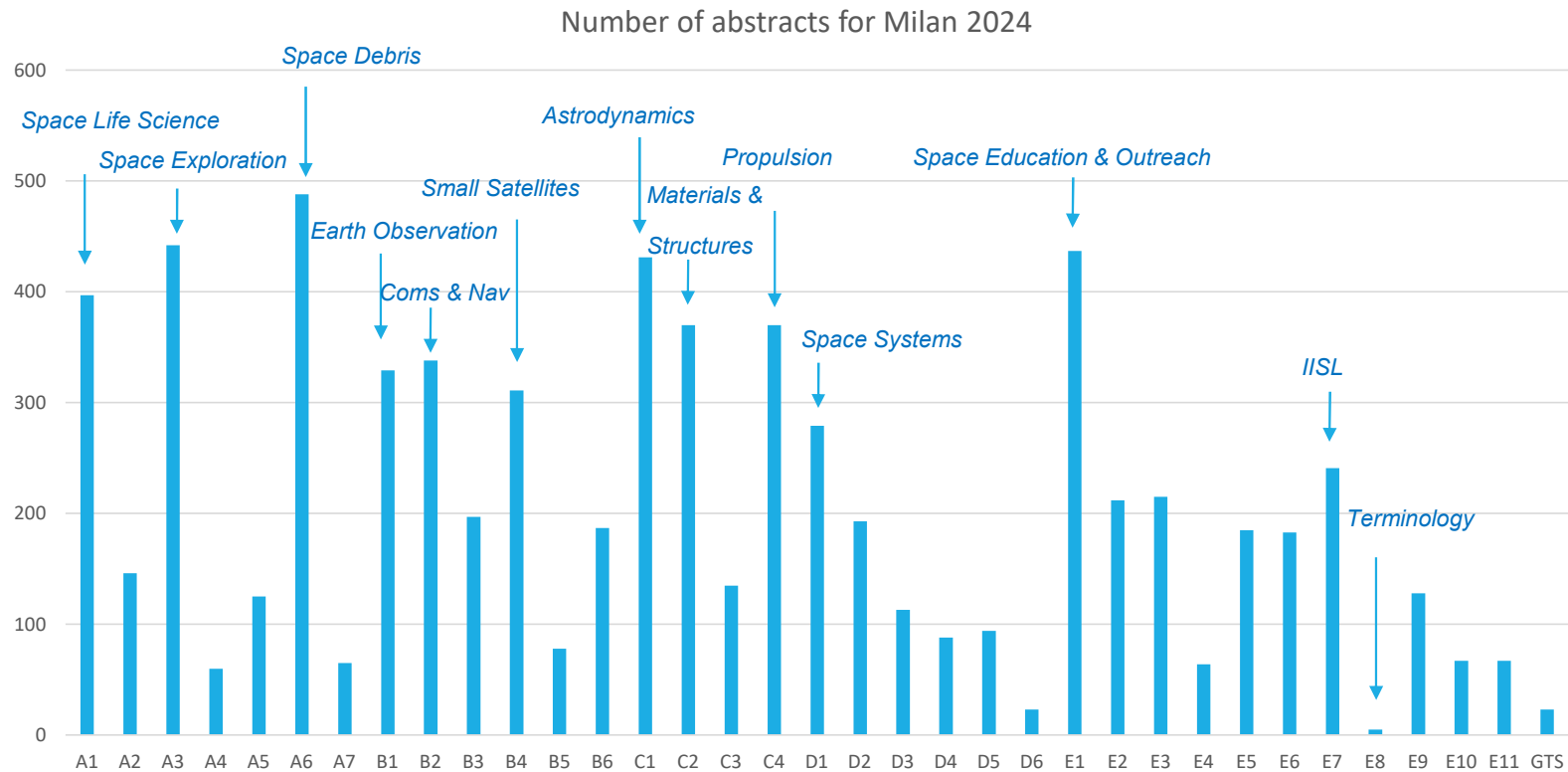
Session #	Speaker	Code	Topic
#1	Gaggero, Mauro	A1	Plant Cultivation in Space for Food Production and Resource Regeneration: Opportunities, Constraints, and Advances in Technology
#2	Governale, Giuseppe	E1	Empowering Tomorrow's Space Visionaries: Exploring Multidisciplinary Pathways to Space Exploration
#3	McKnight, Darren	A6	Orbital Debris Remediation – Accelerating Active Debris Removal (ADR)
#4	Sumini, Valentina	B3	AI-enabled Self-Reliant Design, Construction, and Operations of Adaptable Deep Space Habitats
#5	Norton, Charles	A3	The Next Technology Breakthrough to Drive Transformational Space Science Discovery
#6 to be merged	Wolf, Thomas	D4	In-Space Servicing Assembly & Manufacturing (ISAM) – Service Solutions for Safe, Secure and Sustainable Space
#7	Behar-Lafenetre, Stéphanie	D4	On-Orbit Servicing: shaping the Future Space Ecosystem?
#8	Brovelli, Maria Antonia	B1	Sustainable Cities and Communities: which role for Cubesats?
#9	Pinto Gomes, Vera	B5	Space Supporting a World of 8 Billion People
#10	Seguin, Guy	B1	Responsible and Sustainable Advances in SAR Mission and Technology
#11	Oqab, Haroon B.	C3	Future Solar Power Satellites: Space Sustainability for Clean and Secure Energy from Space for Earth
#12	Gramling, Cheryl	B2	Excuse Me, Can You Direct Me to Shackleton Crater? (Applying Novel Solutions to the Challenges of Lunar Position, Navigation, and Timing)
#13	Guliyeva, Sona	E1	Geoinformation Technologies for Sustainable Development (GIT4SD): Promoting Responsible Space Data Analysis in Emergency Response
#14	Crisp, Nicholas H.	D1	Very Low Earth Orbits (VLEO) – Development and Engagement of the Growing Community of Interest towards Sustainable Lower Altitude Operations
#15	Carrera, Erasmo	F	Space It Up! Collaborative Innovation in Space Science & Technology
#16	Nekola Novakova, Julie	E1	It's Full of Stars: Storytelling for Space Outreach
#17	Nayer, Mahhad	E9	Interactive Workshop on Space Sustainability: Defining Space Sustainability, Together
#18	Walter, Christian	A3	ESA Moonlight: Lunar Communication and Navigation Services for the Lunar Economy
#18	Zolea, Sirio	E3	A Hard Working Sol on Mars: a Governance Role-Play



# 1.3. Space Debris Symposium for Milan 2024

## Technical sessions:

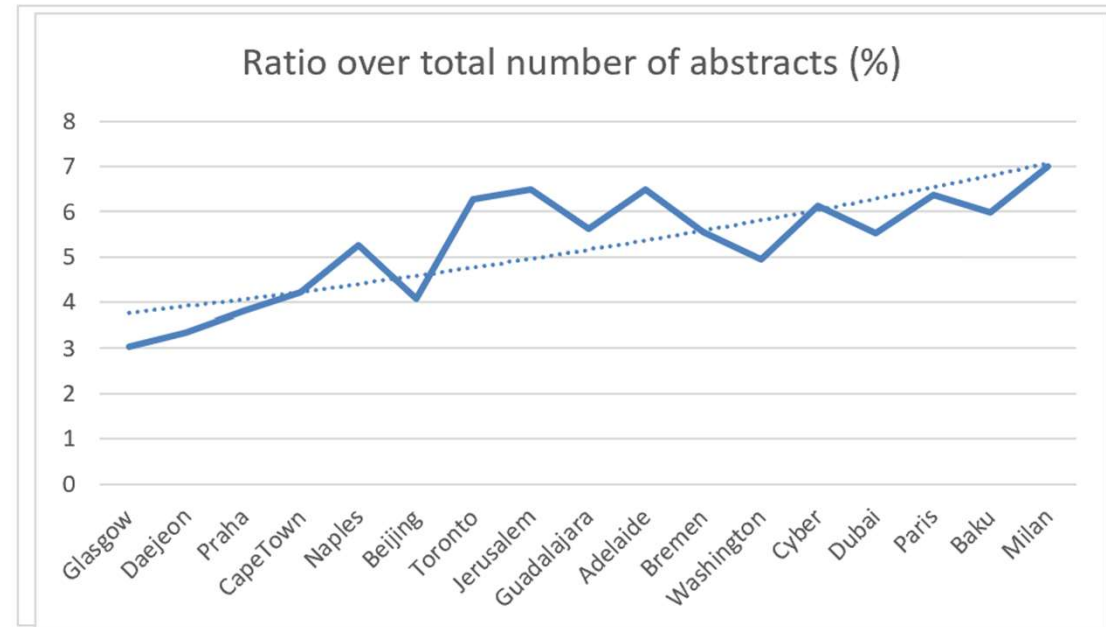
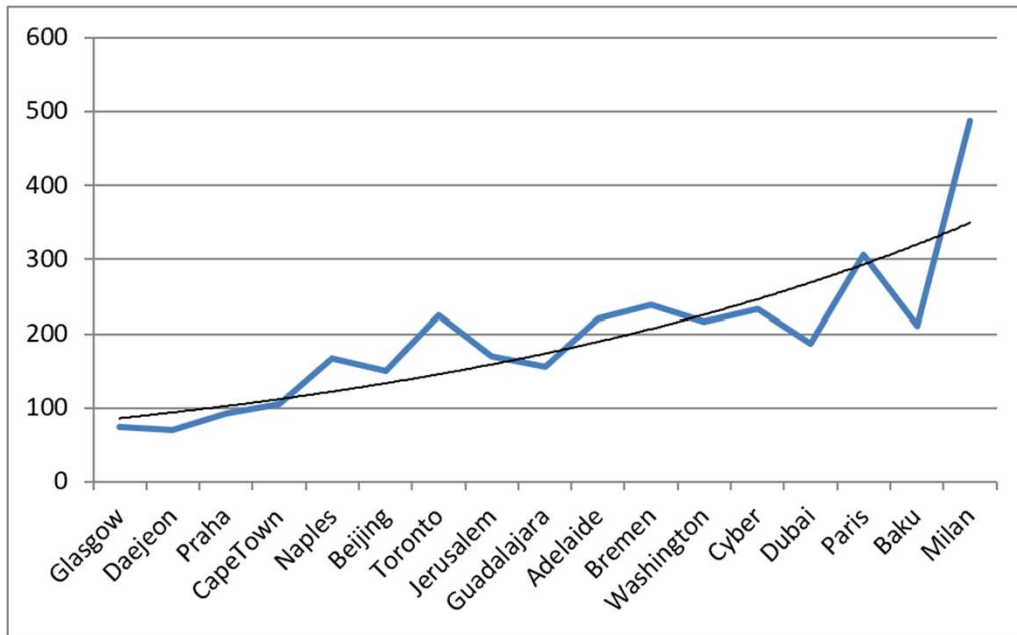
We are again number 1 this year 😊... (when including E9.1 and E9.4)





## 1.3. General information Milan 2024

**Number of abstracts,  
Space Debris Symposium,  
since 2008**





## 1.3. Space Debris Symposium for Milan 2024

### ***A6: Space Debris Symposium:*** Skinner – Bonnal – Omalý

The Symposium will address the complete spectrum of issues associated to space debris, including orbital sustainability and operations in debris dominated environment.

It will cover every aspect of Space Environment Management (SEM) including Mitigation and Remediation measures, Space Surveillance and Tracking (SST), Space Situational Awareness (SSA), Space Traffic Management (STM), including all aspects of measurements, modelling, risk assessment in space and on the ground, re-entry, hypervelocity impacts and protection, mitigation and standards, post-mission disposal, remediation, debris removal, Space Surveillance, collision avoidance as well as non-technical topics associated to space debris dominated environment.

### ***A6.1: Space Debris Detection, Tracking and Characterization - SST:*** Skinner – Piergentili – Schildknecht

This session will address every aspect of SST (Space Surveillance and Tracking), advanced ground and space-based measurement techniques, relating processing methods, and results of space debris characterization.

### ***A6.2: Modelling and Risk Analysis:*** Sorge – Oltrogge – Pardini

This session will address the characterization of the current and future debris population and methods for in-orbit and on-ground risk assessments. The in-orbit analysis will cover collision risk estimates based on statistical population models and deterministic catalogues, and active collision avoidance.

### ***A6.3: Impact-Induced Mission Effects and Risk Assessments:*** Gong – Kitazawa – Préveraud

This session addresses disruptions of spacecraft operations induced by hypervelocity impacts including spacecraft anomalies, perturbation of operations, component failures up to mission loss, and spacecraft fragmentations. It includes risk assessments for impact vulnerability studies and corresponding system tools. Further topics are spacecraft impact protection and shielding studies, laboratory impact experiments, numerical simulations, and on-board diagnostics to characterize impacts such as impact sensors, accelerometers, etc.

## 1.3. Space Debris Symposium for Milan 2024

### **A6.4: Mitigation - Tools, Techniques and Challenges - SEM:** Omaly – Kawamoto – Krag

This session will focus on the Mitigation part of the SEM (Space Environment Monitoring), implementation of debris prevention and reduction measures; vehicle passive protection at system level including end of life strategies and tools to verify the efficiency of the implemented measures. The session will also address practical experiences in the planning and verification of measures and issues and lessons learnt in the actual execution of mitigation actions.

### **A6.5: Post Mission Disposal and Space Debris Removal 1 - SEM:** Singh – Opromolla – Francillout

This session will focus on the Remediation part of the SEM, dealing with ADR (Active Debris Removal), JCA (Just in time Collision Avoidance), LDTM (Large Debris Traffic Management) among solutions. It will address post-mission disposal and active removal techniques “ground and space based”, review potential solutions and identify implementation difficulties.

### **A6.6: Post Mission Disposal and Space Debris Removal 2 - SEM:** Grishko – Forshaw – McKnight

This session will focus on the Remediation part of the SEM, dealing with ADR (Active Debris Removal), JCA (Just in time Collision Avoidance), LDTM (Large Debris Traffic Management) among solutions. It will address post-mission disposal and active removal techniques “ground and space based”, review potential solutions and identify implementation difficulties.

### **A6.7: Operations in Space Debris Environment, Situational Awareness - SSA:** Martinot – Sanchez-Ortiz – Monham

This session will address the multiple aspects associated to STM (Space Traffic Management) and SSA (Space Situational Awareness) including safe operations in space dealing with Space Debris, operational observations, orbit determination, catalogue build-up and maintenance, data aggregation from different sources, relevant data exchanges standards and conjunction analyses.

### **A6.8 / E9.1 (joint with Space Security Committee): Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and STM:** Spencer – Plattard – Masson-Zwaan – Capurso – Samson – Kerr

This session will address all non-technical aspects of debris mitigation, debris remediation and STM. Papers may focus on aspects of responsibility, liability and registration, on the role of bodies such as UNCOPUOS or IADC, as well as on insurance, financial incentives and funding. In addition, security-related aspects and the role of international cooperation in addressing these issues may be considered



## 1.3. Space Debris Symposium for Milan 2024

### ***A6.9: Orbit Determination and Propagation - SST***

Dolado-Perez – Marzioli – Bhatia

This session will address every aspect of orbit determination coming from the SST (Space Surveillance and Tracking), related to assessment of raw and derived data accuracy, optical measurements processing and modelling and risk analysis of space debris

### ***A6.10 / E9.4 (joint with Space Security Committee): Space carrying capacity assessment and allocation***

Colombo – Letizia – Martinez – Rossi

This session covers the theoretical approaches, computational tools, and techniques to measure space environment thresholds and overall carrying capacity of space. It will discuss proxies for monitoring boundaries for the maximum capacity, such as space debris metrics. The application of these metrics to space debris evolution scenarios and their role in the definition of debris mitigation guidelines will be discussed. This session will also address the legal and policy implications, including relevance to regulation and licensing, the needed steps to enforce the implementation of capacity thresholds evaluation, and correlation with space debris mitigation measures. Finally, economic incentives or payments systems for ensuring sustainable space activities will be discussed.

### ***A6.11: Space Debris Detection, Tracking and Characterization II***

Nitta – Del Campo – XXX

This session is a continuation of A6.1, Space Debris Detection, Tracking and Characterization, and will address aspects of Space Situational Awareness (SSA) and Space Surveillance and Tracking (SST), regarding advanced ground and space-based measurement techniques, relating processing methods, and results of space debris characterization.

### ***A6.IP: Interactive Presentations***, Kerr – Letizia – Marzioli – Opromolla – Zémoura – Bonnal



# 1.3. Space Debris Symposium for Milan 2024

Paris selection	Milan		Submitted	Oral	Backup	Rejected	IP
mark.a.skinner@aero.org	mark.a.skinner@aero.org	A6					
christophe.bonnal@maia-space.com	christophe.bonnal@maia-space.com						
pierre.omaly@cnes.fr	pierre.omaly@cnes.fr						
mark96732@gmail.com	mark96732@gmail.com	1	102	10	5	34	* See A6.11
agapov@anc.space	fabrizio.piergentili@uniroma1.it						
thomas.schildknecht@aiub.unibe.ch	thomas.schildknecht@aiub.unibe.ch						
Marlon.E.Sorge@aero.org	Marlon.E.Sorge@aero.org	2	44	10	6	2	
dan@comspoc.com	dan@comspoc.com						
carmen.pardini@isti.cnr.it	carmen.pardini@isti.cnr.it						
gongzz@263.net	gongzz@263.net	3	14	10	4	0	
kitazawa.yukihito@nihon-u.ac.jp	kitazawa.yukihito@nihon-u.ac.jp						
ysolde.prevereaud@onera.fr	ysolde.prevereaud@onera.fr						
pierre.omaly@cnes.fr	pierre.omaly@cnes.fr	4	36	10	5	7	
kawamoto.satomi@jaxa.jp	kawamoto.satomi@jaxa.jp						
Holger.Krag@esa.int	Holger.Krag@esa.int						
balbir.s@manipal.edu	balbir.s@manipal.edu	5	54	10	5	24	See A6.6
roberto.opromolla@unina.it	roberto.opromolla@unina.it						
laurent.francillout@cnes.fr	laurent.francillout@cnes.fr						
marko.m.jankovic@airbus.com	marko.m.jankovic@airbus.com	6	32	10	5	17	See A6.5
dim.gr@mail.ru	dim.gr@mail.ru						
darren@leolabs.space	darren@leolabs.space						
j.forshaw@astrocale.com	j.forshaw@astrocale.com						

- Present
- No answer
- Teams
- Absent



## 1.3. Space Debris Symposium for Milan 2024

Paris selection	Milan		Submitted	Oral	Backup	Rejected	IP	
<a href="mailto:vincent.martinot@thalesaleniaspace.com">vincent.martinot@thalesaleniaspace.com</a>	<a href="mailto:vincent.martinot@thalesaleniaspace.com">vincent.martinot@thalesaleniaspace.com</a>	7	59	10	4	34		
<a href="mailto:rachitbhatia31@gmail.com">rachitbhatia31@gmail.com</a>	<a href="mailto:andrew.monham@eumetsat.int">andrew.monham@eumetsat.int</a>							
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<a href="mailto:dbs9@psu.edu">dbs9@psu.edu</a>	<a href="mailto:dbs9@psu.edu">dbs9@psu.edu</a>	8	72	12	5	37		
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<a href="mailto:acapurso@luiss.it">acapurso@luiss.it</a>	<a href="mailto:acapurso@luiss.it">acapurso@luiss.it</a>							
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<a href="mailto:jan.siminski@esa.int">jan.siminski@esa.int</a>	<a href="mailto:rachitbhatia31@gmail.com">rachitbhatia31@gmail.com</a>	9	28	10	5	3		
<a href="mailto:jc.dolado@lookupspace.com">jc.dolado@lookupspace.com</a>	<a href="mailto:jc.dolado@lookupspace.com">jc.dolado@lookupspace.com</a>							
<a href="mailto:paolo.marzioli@uniroma1.it">paolo.marzioli@uniroma1.it</a>	<a href="mailto:paolo.marzioli@uniroma1.it">paolo.marzioli@uniroma1.it</a>							
<a href="mailto:camilla.colombo@polimi.it">camilla.colombo@polimi.it</a>	<a href="mailto:camilla.colombo@polimi.it">camilla.colombo@polimi.it</a>	10	28	10	5	1		
<a href="mailto:francesca.letizia@esa.int">francesca.letizia@esa.int</a>	<a href="mailto:francesca.letizia@esa.int">francesca.letizia@esa.int</a>							
<a href="mailto:pmartinez@swfound.org">pmartinez@swfound.org</a>	<a href="mailto:pmartinez@swfound.org">pmartinez@swfound.org</a>							
<a href="mailto:a.rossi@ifac.cnr.it">a.rossi@ifac.cnr.it</a>	<a href="mailto:a.rossi@ifac.cnr.it">a.rossi@ifac.cnr.it</a>							
	<a href="mailto:nitta.kumi@jaxa.jp">nitta.kumi@jaxa.jp</a>	11		10	5	0		
	<a href="mailto:borja.delcampo@deimos-space.com">borja.delcampo@deimos-space.com</a>							
<a href="mailto:francesca.letizia@esa.int">francesca.letizia@esa.int</a>	<a href="mailto:francesca.letizia@esa.int">francesca.letizia@esa.int</a>	IP	19			36	107	* Extra session From A6.1
<a href="mailto:paolo.marzioli@uniroma1.it">paolo.marzioli@uniroma1.it</a>	<a href="mailto:paolo.marzioli@uniroma1.it">paolo.marzioli@uniroma1.it</a>							
<a href="mailto:roberto.opromolla@unina.it">roberto.opromolla@unina.it</a>	<a href="mailto:roberto.opromolla@unina.it">roberto.opromolla@unina.it</a>							
<a href="mailto:marko.m.jankovic@airbus.com">marko.m.jankovic@airbus.com</a>	<a href="mailto:marko.m.jankovic@airbus.com">marko.m.jankovic@airbus.com</a>							
<a href="mailto:emelkerr@gmail.com">emelkerr@gmail.com</a>	<a href="mailto:emelkerr@gmail.com">emelkerr@gmail.com</a>							
<a href="mailto:melissa.zemoura@cnes.fr">melissa.zemoura@cnes.fr</a>	<a href="mailto:melissa.zemoura@cnes.fr">melissa.zemoura@cnes.fr</a>							
<a href="mailto:christophe.bonnal@maia-space.com">christophe.bonnal@maia-space.com</a>	<a href="mailto:christophe.bonnal@maia-space.com">christophe.bonnal@maia-space.com</a>							
	<b>Total</b>		469	112	54	159		325
	<b>Total inc. IP</b>		488				107	432



## 1.3. Space Debris Symposium for Milan 2024

### Selection of abstracts:

#### - **Technical Sessions 2.5 hours = 150 minutes**

- An oral presentation should not be below 15 minutes, Q&A and Transfer included
  - Requirement from IAF: 10 presentations, 10 minutes each
  - Do not go above 12 presentations, as we will get plenty of complaints (quite usual...)
- We **shall** select 5 Back-ups per Session
  - Automatically “promoted” in case of Withdrawn: very efficient!
  - Automatic transfer to IP for the non promoted (except if explicitly asking for Oral)
- We can have as many IPs as we want: up to 90 screens = 1700 IP: **Probable need for additional Chairs for A6.IP**
  - **An author asking explicitly for Oral can be selected as IP and vice versa** (change by IAF mentioned yesterday)
- When proposing a transfer from an Oral session to IP, please check quality:
  - The IP chairs do not want to redo the selection
  - If a paper is transferred to IP, it will be selected
- Please make sure to keep a good “IAF 3G” balance, but no strict rules of course
  - Generation: Select some student papers but not more than 30% typically
  - Geography: Usually too many Europeans and US
  - Gender



## 1.3. Space Debris Symposium for Milan 2024

### Selection process:

- One excel file per session
  - Coordinate among chairs & rapporteurs
  - For instance: rating from 0 to 5 (bad to excellent), then average
  - Stick to Excel sheets as long as the process is not over
  - Transfer: contact the others before proposing, except if transfer to A6-IP
  - Reject: must explain briefly why
  - Paper order for the session
  - Paper length = 150 minutes / Number
- IP: lets wait until everyone is finished**

### Formalization on the web site:

- Classical under "Responsibility areas"
- Same information requested:
  - Easy if well prepared in advance – I can do
- Beware: operation cannot be undone

Selected Technical Session	Abstract ID	Abstract Title	Author Last Name	Accepted Session	Paper Order	O=Oral I=Interactive R=Rejected T=Transferred B=Back-up	Oral Presentation length	Comments/Reasons for rejection
A6.9.	69035	Lunar observer efficacy for NRHO target tracking	Fedeler					
A6.9.	69305	SSA observation campaign of the ELSA-d mission	Harris					
A6.9.	69365	Applying Graph-based Clustering to Tracklet-Tracklet Correlation	Schmitz					
A6.9.	69481	Polynomial Algebra for Uncertainty Propagation in Equinoctial Orbital Elements	Hallgarten La Casta					
A6.9.	69683	A cython bound tracklet-tracklet correlation for resident space objects	Rack					

#### SELECTION OF PAPER 63400

**"ORBITAL FLIPS DUE TO SOLAR RADIATION PRESSURE FOR ORBITAL DEBRIS IN MEO AND GSO"**

**Main author**

Kuznetsov, Eduard

**Country**

Russian Federation

**Selected technical symposium/session**

A6/IP

**Transfer paper**

(a paper should be located in the most appropriate session)

**Review status**

accepted  rejected  work

**Paper order**

**Length of oral presentation**

 (default 10 minutes if empty)

**Comments or Reasons for rejection**

(not required)

The operation can not be undone, although the selection result can be changed again.



## 1.3. Space Debris Symposium for Milan 2024

*Initial order below. Revised order following page*

Date	14/10/2024	15/10/2024	15/10/2024	16/10/2024	16/10/2024	17/10/2024	17/10/2024	18/10/2024	18/10/2024
Time / Room Number	15:15-17:45	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	13:45-16:15
Room 1	A3.1	A3.2A	A3.2B	A3.3A	A3.3B	A3.4A	A3.5	A3.4B	A3.2C
Room 2	D2.1	D2.3	D2.2	D2.4	D2.5	D2.6	D2.7	D2.8	D2.9/D6.2
Room 3	C1.8	C1.9	C1.1	C1.2	C1.3	C1.4	C1.5	C1.6	C1.7
Room 4	A6.7	A6.9	A6.4	A6.3	A6.2	A6.5	A6.6	A6.8/E9.1	A6.1
Room 5	B3.1	B3.2	B3.3	B3.4/B6.4	B3.5	B3.7	B3.6/A5.3	B3.8	E10.2
Room 6	B4.2	B4.1	B4.3	B4.4	B4.5	B4.6B	B4.7	B4.8	B4.6A
Room 7	E7.1	E7.2	E7.3	E7.4	E7.5	E7.6/E3.5	E10.1	E7.7	
Room 8	C4.1	C4.3	C4.5	C4.2	C4.6	C4.7	C4.8/B4.5A	C4.9	C4.10/C3.5
Room 9	C2.1	C2.2	C2.3	C2.4	C2.5	C2.6	C2.7	C2.8	C2.9
Room 10	A1.1	A1.2	A1.3	C4.4	A1.4	A1.5	A1.6	A1.7	A1.8
Room 11	A2.1	A4.1	A4.2	A2.2	A2.3	A2.4	A2.5	A2.6	A2.7
Room 12	D1.1	D1.2	D1.3	A5.1	A5.2	D1.4	D1.5	D1.6	D1.7
Room 13	B1.1	C3.1	B1.2	B1.3	B1.4	B1.5	B1.6	C3.3	C3.4
Room 14	E9.2	E3.1	E3.2	E3.3	E3.4	A5.4	E3.6		
Room 15	E5.1	D5.1	E5.2	D5.2	E5.3	D5.3	E5.4	E5.5	E5.6
Room 16	C3.2	B2.7	B2.1	B2.2	B2.3	B2.4	B2.5	B2.6	E8.1
Room 17	E1.1	E1.2	E1.3	E1.4	E1.5	E1.6	E1.7	B1.7	E1.9
Room 18	D4.1	D4.2	D4.3	D3.1	D3.2A	D4.4	D4.5	D3.2B	D3.3
Room 19	E2.1	E2.2	B6.2	E2.4	B5.2	B5.3	B6.5	B6.1	B6.3
Room 20	B2.8/GTS.3	D6.1	E2.3/GTS.4	B5.1	E6.5/GTS.1	D6.3	B4.9/GTS.5	D5.4	B3.9/GTS.2
Room 21		E6.4	E6.3	E6.2	E4.1	E4.2	E6.1	E4.3	A6.10/E9.4
Room 22	A7.1	A7.2	A2.8	E11.1	A7.3	E9.3		E1.8	

## 1.3. Space Debris Symposium for Milan 2024

*Revised order following decision to swap sessions*

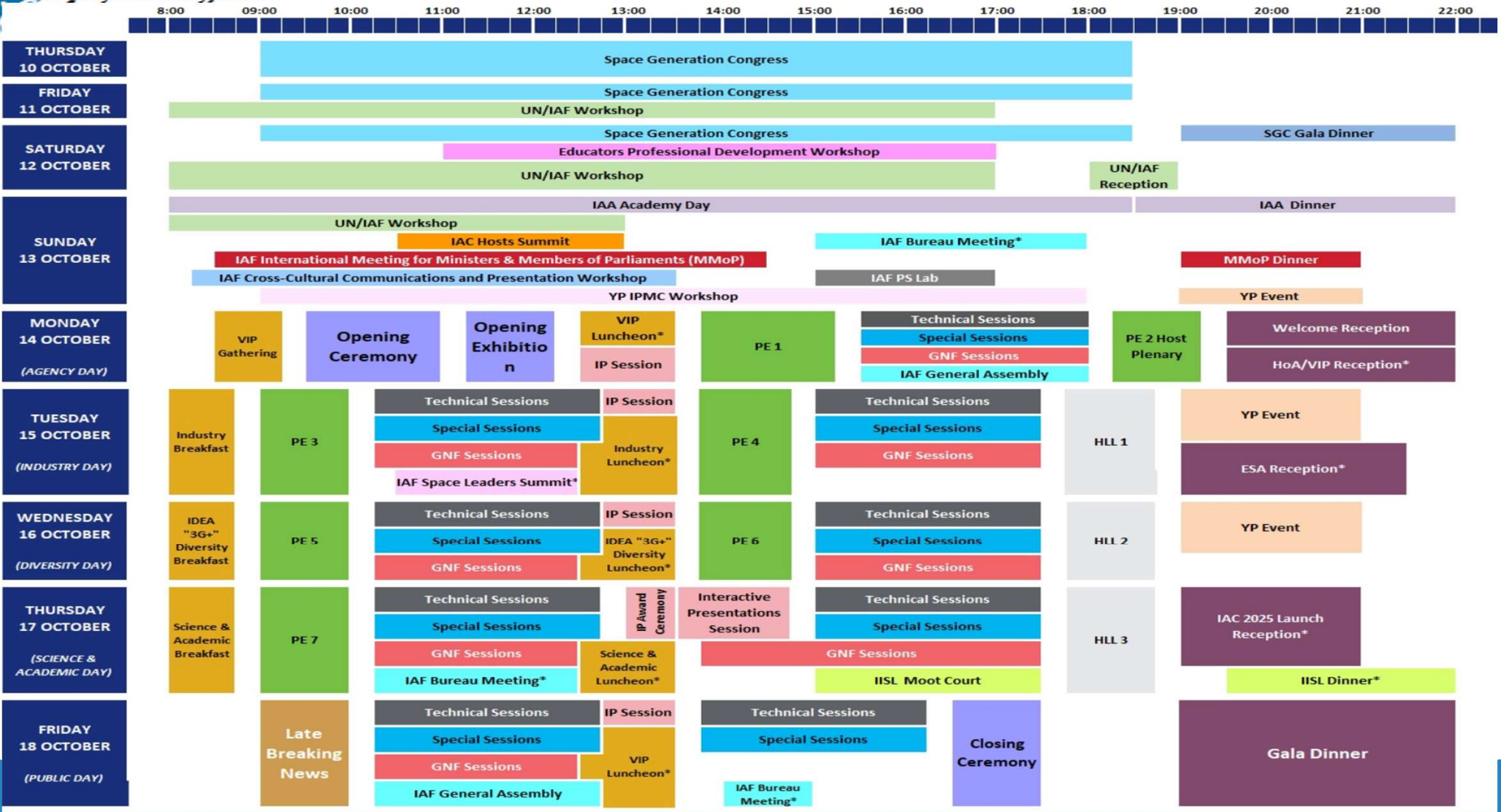
A6.1	A6.2	A6.3	A6.4	A6.5	A6.6	A6.7	A6.8-E9.1	A6.9	A6.10-E9.4	A6.11
15.10.24	17.10.24	17.10.24	16.10.24	18.10.24	18.10.24	15.10.24	14.10.24	16.10.24	18.10.24	14.10.24
10:15-12:45	15:00-17:30	10:15-12:45	15:00-17:30	10:15-12:45	13:45-16:15	15:00-17:30	15:15-17:45	10:15-12:45	13:45-16:15	15:15-17:45
Room 4	Room 4	Room 4	Room 4	Room 4	Room 4	Room 4	Room 4	Room 4	Room 21	Room 21

- Last minute decision following TAC (thank you Myriam): split of A6.1 in 2 sessions, A6.1 and A6.11



# International Academy of Space Law

## 1.3. Space Debris Symposium for Milan 2024





## 1.3. Space Debris Symposium for Milan 2024

**IMPORTANT INFORMATION!**

Due to an overwhelming number of submissions, the number of IP sessions has been doubled for Milan 2024 and shall be enabled by 7 April at the latest. There are no restrictions to the number of selected IPs in the symposia. Transfer to IP sessions enabled for all submitted abstracts.

**IAC 2024**  
d. Guidelines for IPC Online Abstract Selection

The IPC Members have been provided with detailed guidelines to fulfill the selection through the IAP Restricted Area (as it has been done in the last four editions)

Monday 60 minutes (12:30 – 13:30)  
Tuesday 40 minutes (12:50 – 13:30)  
Wednesday 40 minutes (12:50 – 13:30)  
Thursday IP Award Ceremony + 80 minutes (13:00 – 14:40)  
Friday 40 minutes (12:50 – 13:30)

ip

*Please one chair at least per IP session*

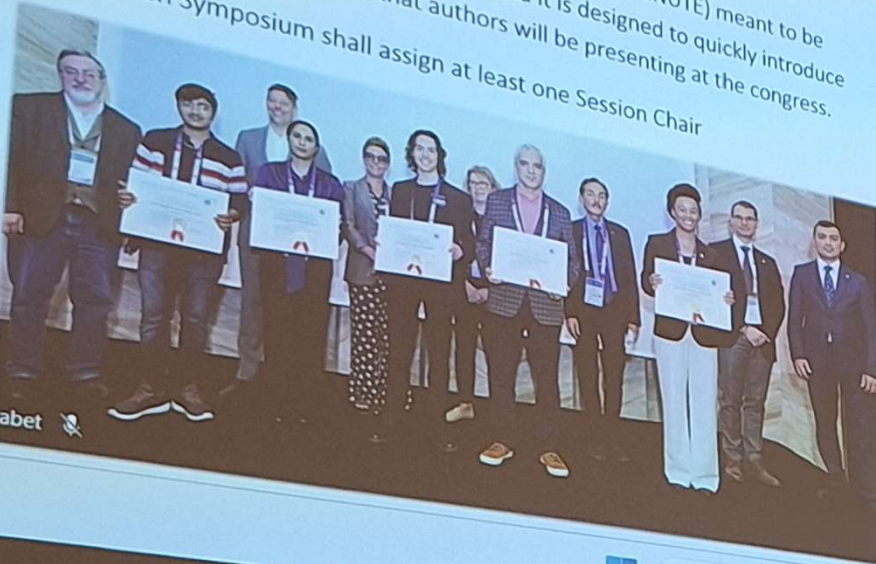
*Ideally one chair per screen per IP session (to be identified during IAA SDC meeting in Milan)*



## 1.3. Space Debris Symposium for Milan 2024

**3. IAC 2024**  
**f. Guidelines for IP Competition**

- IP Session Chairs to select 3 interactive presentations from each symposium to be retained for the competition
- All authors are also encouraged to submit a pre-recorded 1-min Lightning video in the Virtual technical Gallery to promote their presentation (applies for TS and IP)
- A **Lightning Talk** is a **VERY short presentation (1 MINUTE)** meant to be engaging and thought-provoking and it is designed to quickly introduce delegates to the topic that authors will be presenting at the congress.
- Each Symposium shall assign at least one Session Chair



**Deadlines**

- 17 September  
Interactive Presentation Submission
- 27 September  
IP Session Chairs selects 3 IP per Symposium
- 11 October  
Category Coordinators submit final selection

orabet

Rechercher

Connecting @ll Space People



## 1.4. Space Debris Symposium for Sidney 2025

### General planning for Sidney:

- 10 Sessions over 9 time slots  $\Rightarrow$  2 sessions on the same time slot, as usual
- IADC: Wednesday? Who manages ? A room shall be booked and the list of participants established
  - $\hookrightarrow$  Who is in charge of booking the date and room for IADC ?
- Strong proposal to have session A6.10/E9.4 **Space carrying capacity assessment and allocation** as permanent
  - **See appendix 2**
  - Keep it as Joint session with E9 in Sidney (if E9 is OK) ?
  - Gain a session elsewhere: merge A6.5-A6.6, merge A6.3 activities in A6.4, merge A6.9 with A6.2 ?
  - More general reshuffling of sessions ?
  - $\hookrightarrow$  **Decision (agreed by E9) to keep it as Joint with E9.1 in Sidney**
- Redefine the text of sessions
- Review the order of sessions
- Review the Program Committee (among the IAA SDC members...)
  - $\Rightarrow$  Normal rule (no constraint) is to change chairs after 2 terms of 3 years maximum...
- **Decision to have a small Working Group within A6 to identify possible changes in organization of the Symposium, session rotations, number of presentations, structure of the sessions...**
  - Dmitriy (chair), Darren, Emma, Camilla, Roberto, Paolo, Ysolde**
  - $\hookrightarrow$  Recommendations to be presented during our SDC meeting in Milan

IAC	Year	Location	Session 1	Session 2	Session 3	Session 4	Session 5	Session 6	Session 7	Session 8	Session 9	Session 10	Interactive Presentations
66th	2015	Jerusalem	F. DiPentino [C] T. Schildknecht [C] V. Agapov [R]	C. Pardini [C] M. Sorge [C] S. Flegel [R]	N. Fitz Coy [C] F. Schaefer [C] A. Francesconi [R]	H. Krag [C] C. Cazaux [C] A. Kato [R]	MYS. Prasad [C] F. Piergentili [C] F. Santoni [R]	N. Berend [C] S. Kibe [C] JC. Liou [R]	T.S. Kelso [C] J-C. Dolado-Perez [C] D. Finkleman [R]	<i>Et Biddington [C]</i> D. McKnight [C] <i>C. Mathieu [R]</i>	M. Jah [C] H. Klinkrad [C] H. Lewis [R]	C. Mathieu [C] <i>K. Stube [C]</i> C. Bonnal [R]	T. Yasaka D. McKnight C. Bonnal
67th	2016	Guadalajara	D. Oltrogge [C] T. Schildknecht [C] V. Agapov [R]	C. Pardini [C] M. Sorge [C] B. Bastida-Virgili [R]	N. Fitz Coy [C] F. Schaefer [C] A. Francesconi [R]	H. Krag [C] C. Cazaux [C]	S. Kibe [C] F. Piergentili [C] F. Santoni [R]	N. Berend [C] L. Innocenti [C] G. Haussmann [R]	T.S. Kelso [C] J-C. Dolado-Perez [C] C. Wiedemann [R]	<i>S. Plattard [C]</i> D. Finkleman [R]	M. Jah [C] H. Klinkrad [C]		T. Yasaka D. McKnight C. Bonnal
68th	2017	Adelaide	F. DiPentino [C] T. Schildknecht [C] V. Agapov [R]	C. Pardini [C] D. Oltrogge [C] M. Sorge [R]	F. Schaefer [C] N. Fitz Coy [C] A. Francesconi [R]	C. Cazaux [C] D. Finkleman [C] H. Krag [R]	B. Bastida-Virgili [C] F. Santoni [C] F. Piergentili [R]	N. Berend [C] L. Innocenti [C] B. Singh [R]	T.S. Kelso [C] J-C. Dolado-Perez [C] C. Wiedemann [R]	D. McKnight [C] <i>S. Plattard [C]</i> A. Soucek [R]	H. Klinkrad [C] M. Jah [C] H. Lewis [R]	D. Oltrogge [C] L. Rossettini [C] C. Cazaux [R]	T. Yasaka D. McKnight C. Bonnal
69th	2018	Bremen	F. DiPentino [C] T. Schildknecht [C] V. Agapov [R]	L. Anselmo [C] D. Oltrogge [C] M. Sorge [R]	N. Fitz Coy [C] F. Schaefer [C] D. McKnight [R]	H. Krag [C] P. Omalý [C] Y. Usovik [R]	F. Piergentili [C] B. Bastida-Virgili [C] F. Santoni [R]	N. Berend [C] B. Singh [C] L. Rossettini [R]	C. Wiedemann [C] T.S. Kelso [C] J-C. Dolado-Perez [R]	D. Spencer [C] S. Lemay [R]	S. Kibe [C] H. Lewis [C] H. Klinkrad [R]	M. Jah [C] Anilkumar [C] Kitazawa [R]	T. Yasaka D. McKnight C. Bonnal
70th	2019	Washington	M. Skinner [C] T. Schildknecht [C] V. Agapov [R]	M. Sorge [C] C. Pardini [C] D. Oltrogge [R]	JC Traineau [C] M. Jah [C] N. Fitz Coy [R]	H. Krag [C] S. Kawamoto [C] P. Omalý [R]	F. Santoni [C] A. Nassisi [C] L. Francillout [R]	L. Rossettini [C] E. Kerr [C] N. Berend [R]	C. Wiedemann [C] N. Sanchez-Ortiz [C] TS. Kelso [R]	D. Spencer [C] S. Lemay [R]	H. Klinkrad [C] J-C. Dolado-Perez [C] F. Piergentili [R]	U. Dasgupta [C] Y. Usovik [C]	T. Yasaka D. McKnight C. Bonnal
71st	2020	Cyber	T. Schildknecht [C] M. Skinner [C] V. Agapov [R]	C. Pardini [C] D. Oltrogge [C] M. Sorge [R]	Z. Gong [C] E. Kerre [C] JC Traineau [R]	S. Kawamoto [C] P. Omalý [C] H. Krag [R]	B. Singh [C] L. Francillout [C] R. Opromolla [R]	J. Auburn [C] N. Berend [C] C. Wiedemann [R]	T.S. Kelso [C] N. Sanchez-Ortiz [C] V. Martinot [R]	<i>S. Plattard [C]</i> S. Lemay [C] <i>A. Soucek [R]</i> D. Spencer [R]	H. Klinkrad [C] J-C. Dolado-Perez [C] F. Santoni [R]	D. McKnight [C] H. Tung [C] A. Anilkumar [R]	T. Yasaka D. McKnight M. Jankovic
72nd	2021	Dubai	M. Skinner [C] M. Jah [C] T. Schildknecht [R]	M. Sorge [C] D. Oltrogge [C] C. Pardini [R]	D. McKnight [C] Z. Gong [C] JC Traineau [R]	P. Omalý [C] S. Kawamoto [C] H. Krag [R]	B. Singh [C] R. Opromolla [C] L. Francillout [R]	M. Jankovic [C] C. Wiedemann [C] J. Auburn [R]	V. Martinot [C] T.S. Kelso [C] N. Sanchez-Ortiz [R]	D. Spencer [C] T. Masson-Zwaan [C] S. Lemay [R]	H. Klinkrad [C] F. Santoni [C] J-C. Dolado-Perez [R]	V. Agapov [C] H. Tung [C] A. Anilkumar [R]	E. Kerr S. Lemay F. Santoni R. Opromolla M. Jankovic
73rd	2022	Paris	M. Skinner [C] V. Agapov [C] T. Schildknecht [R]	M. Sorge [C] D. Oltrogge [C] C. Pardini [R]	D. McKnight [C] Z. Gong [C] JC Traineau [R]	P. Omalý [C] S. Kawamoto [C] H. Krag [R]	B. Singh [C] R. Opromolla [C] L. Francillout [R]	M. Jankovic [C] D. Grishko [C] J. Auburn [R]	V. Martinot [C] T.S. Kelso [C] N. Sanchez-Ortiz [R]	D. Spencer [C] T. Masson-Zwaan [C] E. Kerr [R]	J. Siminski [C] J-C. Dolado-Perez [R] P. Marzioli [R]	T. Schildknecht [C] D. McKnight [C] C. Colombo [R]	E. Kerr F. Letizia F. Santoni R. Opromolla M. Jankovic P. Marzioli
74th	2023	Baku	M. Skinner [C] F. Piergentili [C] T. Schildknecht [R]	M. Sorge [C] D. Oltrogge [C] C. Pardini [R]	D. McKnight [C] Z. Gong [C] JC Traineau [R]	P. Omalý [C] S. Kawamoto [C] C. Colombo [R]	M. Jankovic [C] R. Opromolla [C] L. Francillout [R]	M. Jankovic [C] D. Grishko [C] J. Auburn [R]	V. Martinot [C] T.S. Kelso [C] N. Sanchez-Ortiz [R]	D. Spencer [C] T. Masson-Zwaan [C] E. Kerr [R]	E. Cordelli [C] J-C. Dolado-Perez [R] P. Marzioli [R]		E. Kerr F. Letizia R. Opromolla M. Jankovic P. Marzioli
75th	2024	Milan	M. Skinner [C] V. Agapov [C] T. Schildknecht [R]	M. Sorge [C] D. Oltrogge [C] C. Pardini [R]	Y. Kitazawa [C] Z. Gong [C] Y. Prévèreaud [R]	P. Omalý [C] S. Kawamoto [C] H. Krag [R]	B. Singh [C] R. Opromolla [C] L. Francillout [R]	D. McKnight [C] D. Grishko [C] J. Forshaw [R]	V. Martinot [C] R. Bahtia [C] N. Sanchez-Ortiz [R]	D. Spencer [C] S. Plattard [C] T. Masson-Zwaan [C] A. Capurso [C] V. Samson [R] E. Kerr [R]	I. Siminski [C] J-C. Dolado-Perez [C] P. Marzioli [R]	C. Colombo [C] F. Letizia [C] P. Martinez [C] A. Rossi [R]	F. Letizia P. Marzioli R. Opromolla E. Kerr Ch. Bonnal



## 1.4. Space Debris Symposium for Sidney 2025

*Evolutions of the text – Evolutions of the Chairs & Rapporteurs Based on Milan 2024*

### **A6: Space Debris Symposium:** Skinner – Bonnal – Omalý

The Symposium will address the complete spectrum of issues associated to space debris, including orbital sustainability and operations in debris dominated environment.

It will cover every aspect of Space Environment Management (SEM) including Mitigation and Remediation measures, Space Surveillance and Tracking (SST), Space Situational Awareness (SSA), Space Traffic Management (STM), including all aspects of measurements, modelling, risk assessment in space and on the ground, re-entry, hypervelocity impacts and protection, mitigation and standards, post-mission disposal, remediation, debris removal, Space Surveillance, collision avoidance as well as non-technical topics associated to space debris dominated environment.

### **A6.1: Space Debris Detection, Tracking and Characterization - SST:** Skinner – Schilbach – Engel

This session will address every aspect of SST (Space Surveillance and Tracking), characterisation on ground and space-based measurement techniques, relating processing methods, and results of space debris characterisation.

### **A6.2: Modelling and Risk Analysis:** Sorge – Oltrogge – Pardini

This session will address the characterisation of the current and future debris population and methods for in-orbit and on-ground risk assessments. The in-orbit analysis includes collision risk estimates based on statistical population models and deterministic catalogues, and active collision avoidance.

### **A6.3: Impact-Induced Mission Effects and Risk Assessments:** Kitazawa – Prévereaud – Gong

This session addresses disruptions of spacecraft operations induced by hypervelocity impacts including spacecraft anomalies, perturbation of operations, component failures up to mission loss, and spacecraft fragmentations. It includes risk assessments for impact vulnerability studies and corresponding system tools. Further topics are spacecraft impact protection and shielding studies, laboratory impact experiments, numerical simulations, and on-board diagnostics to characterize impacts such as impact sensors, accelerometers, etc.

**To be updated**



## 1.4. Space Debris Symposium for Sidney 2025

*Evolutions of the text – Evolutions of the Chairs & Rapporteurs*

### **A6.4: Mitigation - Tools, Techniques and Challenges - SEM:** Omalý – Kawamoto – Krag

This session will focus on the Mitigation part of the SEM (Space Environment Monitoring), implementation of debris prevention and reduction measures; vehicle passive protection at system level including end of life strategies and tools to verify the efficiency of the implemented measures. The session will also address practical experiences in the planning and verification of measures and issues and lessons learnt in the actual execution of mitigation actions.

### **A6.5: Post Mission Disposal and Space Debris Removal 1 - SEM:** Singh – Oprea – Colla – Francini –

This session will focus on the Remediation part of the SEM, dealing with ADR (Active Debris Removal), JCA (Just in time Collision Avoidance), LDTM (Large Debris Traffic Management) among solutions. It will address post-mission disposal and active removal techniques “ground and space based”, review potential solutions and identify implementation difficulties.

### **A6.6: Post Mission Disposal and Space Debris Removal 2 - SEM:** Jankovic – Grishko – Forshaw – McKnight

This session will focus on the Remediation part of the SEM, dealing with ADR (Active Debris Removal), JCA (Just in time Collision Avoidance), LDTM (Large Debris Traffic Management) among solutions. It will address post-mission disposal and active removal techniques “ground and space based”, review potential solutions and identify implementation difficulties.

### **A6.7: Operations in Space Debris Environment, Situational Awareness - SSA:** Sanchez-Ortiz – Martinot – Bhatia

This session will address the multiple aspects associated to STM (Space Traffic Management) and SSA (Space Situational Awareness) including safe operations in space dealing with Space Debris, operational observations, orbit determination, catalogue build-up and maintenance, data aggregation from different sources, relevant data exchanges standards and conjunction analyses.

**To be updated**



## 1.4. Space Debris Symposium for Sidney 2025

*Evolutions of the text – Evolutions of the Chairs & Rapporteurs*

### **A6.8 / E9.1 (joint with Space Security Committee): Policy, Legal, Institutional, Economic and Security Aspects of Debris Mitigation, Debris Remediation and STM**

Spencer – Plattard – Masson-Zwaan – Capurso – Samson – Kerr

This session will address all non-technical aspects of debris mitigation, debris remediation and STM. Papers may focus on aspects of responsibility, liability and registration, on the role of bodies such as UNCOPUOS or IADC, as well as on insurance, financial incentives and funding. In addition, security-related aspects and the role of international cooperation in addressing these issues may be considered

### **A6.9: Orbit Determination and Propagation - SST**

Dolado-Perez – Marzioli – Siminski

This session will address every aspect of orbit determination coming from the SST (Space Surveillance and Tracking), related to assessment of raw and derived data accuracy, optical measurement processing and modelling and risk analysis of space debris

### **A6.10 / E9.4 (joint with Space Security Committee): Space carrying capacity assessment and allocation**

Colombo – Letizia – Martinez – Rossi

This session covers the theoretical approaches, computational tools, and techniques to measure space environment thresholds and overall carrying capacity of space. It will discuss tools for monitoring boundaries for the maximum capacity, such as space debris metrics. The application of these metrics to space debris evolution scenarios and their role in the definition of debris mitigation guidelines will be discussed. This session will also address the legal and policy implications, including relevance to regulation and licensing, the needed steps to ensure the implementation of capacity thresholds evaluation, and correlation with space debris mitigation measures. Finally, economic incentives or payments systems for ensuring sustainable space activities will be discussed.

### **A6.IP: Interactive Presentations**, Kerr – Letizia – Marzioli – Opromolla – Jankovic – Bonnal

**To be updated**

## *2. Exchanges*

### 2. Exchanges

- 2.1. Past events: workshops, conferences, congresses, ...
- 2.2. On the Agenda
- 2.3. General information
- 2.4. Round table – Open discussion

## 2. Exchanges

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### 2.1. Past events: workshops, conferences, congresses, ...

- 2<sup>nd</sup> NASA IODC  
Sugar Land, USA – Dec. 4-7, 2023
- Orbital debris remediation summit  
Queenstown, New Zealand – Feb. 2024  
Appendix 3



## 2. Exchanges

### 2. Exchanges

#### 2.2. On the Agenda

- 11<sup>th</sup> JAXA's Space Debris Workshop 2024 – Appendix 4
- Upcoming ESA events – Appendix 5
  - Zero Debris Workshop + side events – 25-28 June 2024, ESOC
  - 9<sup>th</sup> European Conference on Space Debris is planned for 1 - 4 April 2025, ESOC
- 7<sup>th</sup> Workshop on Debris Modeling & Remediation – CNES Toulouse – June 10 & 11, 2024 – Appendix 6
- COSPAR 2024 – 13-21 July 2024, Busan, Korea – Appendix 7



## *Agenda*

### **3.1 SG 5.17 IAA Situation Report on Space Debris – Update**

Study Group is cancelled by lack of convergence

Still, the interest for such a document is obvious,

So, if there is a volunteer interested in leading a new action in that sense, please tell me



## *Agenda*

### **3.2 New SG proposal – Atmospheric pollution associated to orbital objects return**

Relatively new topic with major potential impact

(not to be confused with LCA and launcher propulsion pollution during ascent)

Could change D4D recommendation (Design For Demise) into a D4nonD...

Significant number of articles on the topic, but no synthesis yet

Could this be of interest ?