

**INTERNATIONAL ACADEMY OF ASTRONAUTICS**  
**ANNUAL REPORT 2021**

**Peter Jankowitsch**

**President**

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Available on the IAA Web Site <http://www.iaaspace.org>

For the last six years I had the pleasure and the privilege to be the President of the International Academy of Astronautics, one of the oldest and most renowned international scientific organizations created more than 60 years ago to provide answers and solutions to the immense challenges that appeared as the world community entered into the unexplored domains of a new space age.

Building on the successful and creative work of many of my distinguished predecessors, my aim was to guide the Academy in its perennial effort to reach its aims by its force to attract and mobilize, year after year, the best talents from all fields of science and technology, to develop a wide array of activities, old and new ,to explore the unlimited possibilities of space to widen our knowledge of the universe ,at the same time using space to improve the quality of life for people all over the world. This effort was wholly successful as the Academy over the past years has continued to strengthen its membership base, adding prominent personalities from different areas, new countries and also achieving a better gender balance as earlier. In order to reward exceptional services to the Academy we have again offered a number of Honorary Memberships.

The last years have also seen a spectacular increase in the number of workshops, conferences and symposia organized by the Academy addressing a vast number of subjects of traditional interest to Academy, but also, many new ones with high relevance to current space affairs such as Space Situation Awareness or Space Traffic Management. Even in the face of the world-wide COVID pandemic and the stringent lockdown measures adopted by governments in many countries the Academy was able to maintain a constant rhythm of events using digital technologies, even as many events planned particularly in 2020 had to be cancelled. In this way the Academy was able to remain in the forefront of international scientific activities contributing to the peaceful uses of Outer Space.

Strong progress was also achieved in the publication activities of the Academy which is now a publishing house with more than 75 cosmic studies and four book series covering many subjects .A particular success is Acta Astronautica which is among the major journals, occupying rank 5 among 31 journals and rank 1 among space journals.

A major reason for the strong impact of the Academy in current space affairs is the prominent place it has acquired and maintained in international space events such as the International Astronautical Congress (IAC) whose success is built not least on the major scientific inputs offered by the Academy and its experts. Deepening and extending cooperation with other major space organizations such as COSPAR, the IISL and others, the Academy has strengthened its scientific base and its outreach to other actors.

Particular challenges to the work and to the role of the Academy arose strongly over the past years from a rapidly growing number of new activities and developments in space research and space uses, particularly those linked to New Space together with their effects to each and every aspect of life on earth. These activities opened new areas of space research and uses and brought many regions of the universe closer to human understanding. There was also a renewed interest in strengthening the human presence in space by new plans for early landings on the

Moon and later on Mars. There was not only an even stronger role of the private sector assuming tasks and missions formerly limited to state agencies, but also many more countries involved in space activities than only a few years ago. Against these developments the Academy was called upon to reflect them in its various work programs and conferences, to provide relevant answers and guidelines.

The Academy has reacted to these challenges also through stronger involvement in the activities of global international organizations, in particular the United Nations and its Committee for the Peaceful Uses of Outer Space (COPUOS). The Academy thus had a strong presence at UNISPACE+50, the first major universal space conference after UNISPACE99 that achieved major steps towards the building of a comprehensive Space 2030 Agenda for the contribution of space activities to the achievement of the UN's Sustainable Development Agenda. By holding a meeting of its Board of Trustees during UNISPACE+50 at the Vienna UN HQ the Academy signaled its full support for these efforts.

### **Cooperation with National Academies**

The International Academy of Astronautics continues the tradition of the great classical scientific academies of the 17th century in Rome, London and Paris, which fostered scientific inquiry and the exchange of ideas and new information in the earliest days of modern science. The IAA cooperates closely with national academies to foster a spirit of cooperation and progress that permeates national boundaries, cultures, and institutions.

### **Awards**

In order to promote excellence and recognize the achievements of our members, the Academy has an active program of awards. The von Karman Award for 2021 is given to Peter Jankowitsch.

The 2021 Laurels for Team Achievement recognizing extraordinary performance and achievement by a team of scientists, engineers, technicians, and managers in the field of Astronautics, are given to the Parker Solar Probe Team.

The 2021 Section Awards and their recipients are:

Basic Sciences Award to Susan McKenna-Lawlor, (Ireland)

Engineering Sciences Award to Johann-Dietrich Woerner, (Germany)

Life Sciences Award to Anna Kussmaul, (Russia)

Social Sciences Award to Rosa Ramirez de Arellano, (Mexico)

### **Book Awards**

The 2021 Basic Sciences Book Award is given to:

Space Physics and Aeronomy, Vol 1, Solar Physics and Solar Winds

Nour E. Raouafi and Angelos Vourlidis (Editors),

Yongliang Zhang and Larry J. Paxton (Editors-in-Chief)

Wiley, May 2021

The 2021 Engineering Sciences Book Award is given to:

Technology and the Growth of Civilization

Giancarlo Genta and Paolo Riberi

Springer International Publishing, 2018

The 2021 Life Sciences Book Award is given to:  
 Preparation of Space Experiments  
 Vladimir Pletser and 21 co-Authors  
 IntechOpen, London, UK, 2020

The 2021 Social Sciences Book Award is given to:  
 Making Space: Strategic Leadership for a Complex World  
 Wanda M Austin  
 CreateSpace Independent Publishing, July 2016

## Membership

Dr. Chrysoula Kourtidou-Papadelli, Greece, has led our members' selection program in a successful year. The four Peer Review Committees under the direction of the section chairs have continued to improve the quality of the candidates. We have a regular increase in nominations from the major space countries, and in addition, we have the effect of new conferences such as in Asia and Latin America that generated many nominations from newly represented countries. The statistics by Section are as follows:

| <b>IAA 2021</b> |     |           |     |
|-----------------|-----|-----------|-----|
| M1              | 187 | Section 1 | 219 |
| CM1             | 32  |           |     |
| M2              | 420 | Section 2 | 542 |
| CM2             | 122 |           |     |
| M3              | 143 | Section 3 | 174 |
| CM3             | 31  |           |     |
| M4              | 246 | Section 4 | 292 |
| CM4             | 46  |           |     |

  

|            |      |
|------------|------|
| Total M    | 996  |
| Total CM   | 231  |
| Total M+CM | 1227 |
| Total HM   | 13   |
| Total      | 1240 |

  

| Ratio  |      |
|--------|------|
| CM1/M1 | 0.17 |
| CM2/M2 | 0.29 |
| CM3/M3 | 0.21 |
| CM4/M4 | 0.19 |
| CM/M   | 0.23 |

  

|                     |     |
|---------------------|-----|
| Inactive Pb Address | 8   |
| Inactive            | 5   |
| Out                 | 992 |
| Resign              | 251 |
| Deceased after 1960 | 673 |

  

|                    |     |
|--------------------|-----|
| Number Active <70  | 720 |
| Number members >70 | 482 |
| Average age        | 66  |
| Nationalities      | 88  |

Members deceased in 2021: Zlatko Rendulic, Serbia, M2, Xue Huifeng, China, M4, Jean-Claude Husson, France, M2, Min Gui-Rong, China, M2, Ernst Fasan, Austria, M4, Hans Balsiger, Switzerland, M1.

Members deceased in 2020: Inesa Kozlovskaya, Russia, M3, Jerry Grey, USA, M2, Roman Baevsky, Russia, M3, Arnold D. Aldrich, USA, M2, Peter Bainum,

USA, M2, Jacques Blamont, France, HM, Jayme Boscov, Brazil, M2, Johannes Geiss, Switzerland, M1, Jean-Marie Luton, France, M2, Boris E. Paton, Ukraine, M2, Alexander Degtyarev, Ukraine, M2, Mikhail Panasyuk, Russia, M1, Peter B. Teets, USA, M2, Oscar Fernandez-Brital, Argentina, M4, Reimar Luest, Germany, M1, Oleksandr Novykov, Ukraine, M2, Berndt Feuerbacher, M1.

## **Publications**

The dissemination of current information on developments in astronautics and related science and technology has been a primary function of the IAA since its establishment. The Academy produces cosmic studies and position papers along with the proceedings of symposia, technical reports and press releases. The journal *Acta Astronautica* first appeared in 1955, and is published monthly under the auspices of the IAA Publications Committee, by Elsevier Sciences Ltd. The *Acta Astronautica* Journal covers developments in space science, engineering, life science and social science related to "peaceful scientific exploration of space and its exploitation for human welfare and progress."

Prof. Marius Piso (Romania) has been leading the IAA publication activities. The Academy is now a publishing house with more than 70 cosmic studies and four book series (<https://iaaspace.org>). *Acta Astronautica* IAA journal is now among the major journals among 34 journals and the first rank in the world for the space journals. The impact factor of *Acta Astronautica* for 2020 is 2.413. The number of downloads of *Acta Astronautica* has more than doubled between 2010 and 2018 with 0.75 million downloads. There is a thirty years old priority agreement to publish the best papers from the IAC and now from the 30 IAA stand alone conferences. The number of page published is about 3200. The success is reached with a large IAA editorial board composed of the Editor in Chief Professor Rock Jeng-Shing Chern (China Taiwan), and co-Editors Elisabeth Piotelat (France), Radhika Ramachandran (India), Nikolay N. Smirnov (Russia), Antonio Viviani (Italy), Olivier Contant (France), Christos Frantzidis (Greece), Antonios Kyparos (Greece), Christos Papadelis (Greece), Jan Stepanek (Switzerland), Oliver Ullrich (Switzerland), Riccardo Bevilacqua (M2, USA), Christophe Bonnal (France), Jie Chen (China), Filippo Graziani (Italy), Mauro Pontani (Italy), Jiawen Qiu (China), Krishna Dev Kumar (Canada), Vipparthi Adimurthy (India), Haym Benaroya (USA), Anna D. Guerman (Portugal), Yu Lu (China), Robert G. Melton (USA), Arun K. Misra (Canada), Maria Antonietta Perino (Italy), Yury N. Razoumny (Russia), Zheng-Hong (George) Zhu (Canada), Corinne M. Jorgenson (USA), Leslie I. Tennen (USA), Yi-Wei (Eva) Chang (China Taiwan), Ake Ingemar Skoog (Sweden), Moriba Jah (USA), Danielle Wood (USA), Jean-Michel Contant (France), Binfeng Pan (China) and Jean-Pierre Marec (France).

In addition to the publication of 10 IAA cosmic studies during the last three years, the Academy has published a new book series on History of Space in addition to the books series on small satellites, remote sensing and conference proceedings totaling 12 books in three years.

## **Scientific Activities**

Under the leadership of Anatoly Perminov, the IAA has continued significant acceleration in conference activity. The Academy traditionally generates one third of the sessions and papers presented at the International Astronautical Congress each year amounting 13 IAA Symposia, each one having multiple sessions. In addition, the Academy is now conducting each year more than 20 standalone conferences in all continents. In 2020 the number of IAA regional meetings and standalone conference amounted 30 as follows:

### **2020 IAA Standalone conferences**

14-16 January 2020, 2nd IAA Conference on Space Situational Awareness, Washington, USA  
22-24 January 2020, Human Spaceflight and Exploration, Bangalore, India  
28-31 January 2020, 5th IAA Conference on University Satellite Missions & Cubesat Workshop, Roma, Italy  
19-20 February 2020, 6th IAA Annual Space Traffic Management Conference, Austin, Texas, USA  
25th March 2020, IAA Symposium on Moon Farside Negotiations, Paris & Online conference (75 participants)  
03-06 August 2020, 4th IAA Latin America Cubesat Workshop, Brazilia, Brazil & Online conference (385 participants)  
18-19 November 2020, International Symposium on Peaceful Use of Space Technology (Health), Zhuhai, China  
27 November 2020, Academy Day, Beijing, China  
08-10 December 2020, 3rd IAA-AAS SciTech Forum, Moscow, Russia

### **2021 IAA Standalone conferences**

26-27 January 2021, 7th Space Traffic Management Conference, Austin TX, USA  
05-08 April 2021, 23rd IAA Humans in Space Symposium, Moscow, Russia  
20-23 April 2021, 8th European Conference on Space Debris, Darmstadt , Germany  
26-30 April 2021, 7th IAA Planetary Defense Conference, Vienna, Austria  
27-29 April 2021, 13th IAA Symposium on Small Satellites for Earth Observation, Berlin, Germany  
25-28 May 2021, 8th IAA Conference on Space Technologies: Present and Future, Dnepr, Ukraine  
01-04 June 2021, 8th IAA Symposium on Space Flight Safety, St Petersburg, Russia  
05-06 August 2021, 10th IAA Conference on Space Systems as Critical Infrastructure, Danube Delta, Romania  
22-24 September 2021, 14th Pico Nano-Satellite Workshop on Technologies for Small Satellite Research, Wurzburg, Germany  
13-16 October 2021, 9th CSA-IAA Conference on Advanced Space Technology - Space Technology Innovation and Space Commercialization, Shanghai, China  
24 October 2021, Academy Day Dubai, UAE  
29 Nov.-01st December 2021, 1st IAA African Symposium on Small Satellites, Stellenbosch, South Africa

### **72<sup>nd</sup> IAC Dubai, UAE 25-29 October 2021**

IAA-IAF Symposium on Space Life Sciences,  
50<sup>th</sup> IAA symposium on Search for Extraterrestrial Intelligence (SETI) Science and Technology,  
24<sup>rd</sup> IAA Symposium on Human Exploration of Solar System,  
19<sup>th</sup> IAA Symposium on Space Debris,

28<sup>th</sup> IAA Symposium on Small Satellite Missions,  
 15<sup>th</sup> IAA Symposium on Strategies & Architectures as the Framework for the Future  
 19<sup>th</sup> IAA Symposium on Visions and Strategies for the Future,  
 54<sup>rd</sup> IAA Symposium on Safety & Quality in Space Activities,  
 32<sup>nd</sup> IAA Symposium Space Policy, Regulations, Economics,  
 55<sup>th</sup> IAA Symposium on History of Astronautics,  
 32<sup>nd</sup> IAA Symposium on Space Activity and Society,  
 IAA Symposium on Multilingual Astronautical Terminology,  
 21<sup>st</sup> IAA/UN Workshop on Small Satellite Programs at the Service of Developing Countries

## Finance

Dr. John Schumacher, USA, Vice-President Finance, has led the finance activities with the contribution of Dr. Jean-Michel Contant, Secretary General, in order to maintain our treasury.

|          | 2020-2021 | 2019-2020 | 2018-2019 |
|----------|-----------|-----------|-----------|
|          | Audited   | Audited   | Audited   |
| Receipts | € 354,959 | € 413,413 | € 444,677 |
| Expenses | € 295,665 | € 405,580 | € 441,160 |
| Net      | € 59,294  | € 7,833   | € 3,517   |

Supporting Donor contributions are listed in three categories: Platinum+: Aerojet Rocketdyne, Lockheed Martin Corporation, Airbus, CASC, China HEAD Aerospace Co; Platinum: ESA, Japan Aerospace Exploration Agency (JAXA), DLR, CNES, Japan Manned Space System corporation (JAMSS), Boeing, CAST, CALT, ISRO, ChinaRs Geoinformatics, Russian Space Syst (Joint Stock Co); Gold: the Aerospace corp., University Luigi Vanvitelli (Italy), Makeyev Open Stock Co, Group of Astrodynamics for the Use of Space Systems (G.A.U.S.S. Srl), IHI Aerospace Co Ltd, Yuzhnoye, Ishikawajima-Harima Heavy Industries Co., Ltd. (IHI) Mitsubishi Heavy Industries and NEC Corporation. For a few years, the Academy devotes a small budget for supporting developing countries and help participating to IAA conferences in Africa and Latin America.

## Section Activities

All four sections have been assuming a proactive role in promoting interaction between, and participation of their members in the affairs of the Academy: Basic Sciences: this section under the leadership of Dr. Ralph McNutt has 187 Members and 32 Corresponding Members. It is the home of space scientists of international renown with all the scientific specialties represented. Engineering Sciences: this section under the leadership of Dr. Weimin Bao has 420 Members and 122 Corresponding Members. It has members from a broad range of engineering disciplines coming from industry, academia and government laboratories. Life Sciences: this section under the leadership of Dr. Dumitru-Dorin Prunariu, Romania has 143 Members and 31 Corresponding Members. It includes prestigious space medicine specialists and biologists as well as a large number of astronauts and cosmonauts. Social Sciences: this section under the leadership of Dr. Shigeki Kinai, Japan has 246 Members and 46 Corresponding Members. It includes leaders in management, law, economics history and other societal disciplines related to astronautics.

## **Conclusion**

It is my firm belief that our manifold and growing activities in many parts of the world over the past six years, activities that have drawn much public attention and increased the visibility of the Academy, have made it much stronger and more resilient. None of this would have been possible however without the idealism and commitment, without the constant voluntary efforts of our members in particular those serving with much creativity and devotion on our Board of Trustees, our Commissions, Committees and various working bodies. A particular tribute is due to our indefatigable and resourceful Secretary General who for so many years now has overseen and animated the activities of the Academy as well as to the Vice Presidents who have accompanied me during those years. My deep gratitude goes to all of them as they have loyally supported me in my work and made all our common successes and achievements possible.

Peter Jankowitsch  
President