

**INTERNATIONAL ACADEMY OF ASTRONAUTICS**  
**ANNUAL REPORT 2018**

**Peter Jankowitsch**

**President**

**September 30<sup>th</sup>, 2018**

**Bremen, Germany**

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

The International Academy of Astronautics (IAA) has truly lived up to the expectations of its founders. Sixty years of its existence has seen tremendous increase in its activities. Last year saw activities by the four IAA Standing Committees and Academicians on diverse subjects. The Academy is now a publishing house with about 70 studies including 7 IAA cosmic studies and 15 book series (<https://shop.iaaweb.org>). Acta Astronautica have made excellent progress with its new editorial board of 26 members credited from rank 8<sup>th</sup> in 2017 to rank 4<sup>th</sup> in 2018 among 31 journals in the world. The impact factor of Acta Astronautica for 2018 is 2.227 showing an increase of 45% with 0.691 in one year. The number of downloads of Acta Astronautica has doubled between 2010 and 2017 with 0.63 million. The number of page published as beginning of August 2018 in is close to 3200.

In 2017 more than 20 conferences and workshops were organized. Subjects ranged from small satellites to low cost planetary, missions space systems, planetary defense, space situational awareness, policy issues and planetary exploration. Since these events were conducted in different parts of the world it enabled participation of local experts, teachers and students from different countries. Recognition of talents is one of the goals of the Academy. This year more than 100 prominent personalities from different areas such as life science, space science, technology, legal and social activities, were elected. Today 1013 Members, 221 Corresponding Members and 16 Honorary Members are serving the organization in various capacities.

### **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 2018 is given to Anatoly Perminov, Member of the Social Sciences Section of the IAA. The citation read as follows: " In recognition for his lifetime dedication to promoting peaceful purposes of space exploration, his fruitful contribution to advancing space research and applications, his outstanding personal efforts in supporting global space cooperation, including many multinational endeavors such as Soyuz at the Guiana Space Center, Sea Launch and the Mars-500 project, his notable and creative leadership to Russian space policy through chairing the Federal Space Agency, Roscosmos, as well as his remarkable service to the International Academy of Astronautics particularly its scientific objectives".

The 2018 Section Awards and their recipients are:  
Basic Sciences Award to S. Alan Stern, USA and Wolfgang Baumjohann, Germany  
Engineering Sciences Award to Leon Alkalai, USA and Eberhard Gill, Germany

Life Sciences Award to Peter Graef, Germany and Dumitru-Dorin Prunariu, Romania

Social Sciences Award to Seidu Oneilo Mohammed, Nigeria and Xu Wen, China

The 2018 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 MARS-500 Team.

Mars-500 is an outstanding psychosocial isolation experiment conducted between 2007 and 2011 by Russia's Federal Space Agency Roscosmos and its Academy of Sciences' Institute of Biomedical Medical Problems, the European Space Agency, and the China Cosmonaut Training Center.

The International Academy of Astronautics recognizes MARS-500 as a preparatory step for future human flights to Mars that can provide a framework for future space missions as national authorities consider new approaches and new goals in human space exploration.

### **Book Awards**

The 2018 Basic Sciences Book Award is given to:

Claudio Maccone  
"Deep Space Flight and Communications –  
Exploiting the Sun as a Gravitational Lens"  
Springer, 2014 (Chinese version)

The 2018 Engineering Sciences Book Award is given to:

Christophe Bonnal  
"Pollution Spatiale – L'état d'urgence"  
Belin, 2016

V.G. Degtiar, V.A. Volkov  
"Rocket concept to protect the Earth against asteroidal hazard"  
Mashinostroenie, 2014

The 2018 Life Sciences Book Award is given to:

A. Chouker, O. Ullrich  
The Immune System in Space: Are we prepared  
Springer, 2016

A.E. Nicogossian, R.S. Williams, CL. Huntoon, C.R. Doarn, JD. Polk,  
V.S. Schneider  
Space Physiology and Medicine  
Springer, 2016

T. Sgobba, B. Kanki, J.F. Clervoy , G.M. Sandal  
Space Safety and Human Performance  
Elsevier, 2018

The 2018 Social Sciences Book Award is given to:

Virgiliu Pop  
 Who Owns the Moon? Extraterrestrial Aspects of Land and  
 Mineral Resources Ownership  
 Springer, 2008

## Membership

Dr. Mendieta-Jimenez Francisco, Mexico, has led our members' selection program in a successful year. The four Peer Review Committees under the direction of the section chairmen 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:

IAA 2018			
M1	198	Section 1	228
CM1	30		
M2	421	Section 2	530
CM2	109		
M3	153	Section 3	193
CM3	40		
M4	241	Section 4	283
CM4	42		

  

Ratio	
CM1/M1	0.15
CM2/M2	0.26
CM3/M3	0.26
CM4/M4	0.17
CM/M	0.22

  

Total M	1013
Total CM	221
Total M+CM	1234
Total HM	16
Total	1250

  

Inactive Pb Address	8
Inactive	5
Out 5-year Term	888
Resign	248
Deceased after 1960	645

  

Number Active <70	733
Number members >70	486
Average age	66
Nationalities	86

The following Academicians were appointed Honorary Members of the International Academy of Astronautics: Aldrin Buzz, USA ; Almar Ivan, Hungary ; Blamont Jacques, France; Casal Federico, Switzerland ; Chong Yean-Joo, Singapore; Jasentuliyana Nandasiri, Sri Lanka; Kasturirangan Krishnaswamy, India; Klein Karl E, Germany; Kuchma Leonid D., Ukraine; Leonov Alexei A., Russia; Ninomiya Keiken, Japan; Ortner Johannes, Austria; Payette Julie, Canada; Zaganescu Nikolae F, Romania.

Members deceased in 2018: Wang Dechen, China, M2, Elisabeth Back-Impallomeni, Italy, M4, Patricia M. Sterns, USA, M4, Karl E. Klein, Germany, HM.

Members deceased in 2017: Chen Huaijin, China, M2, Amnon Ginati, Germany, M2, Yash Pal, India, M4, U.R. Rao, India, M4, Zhu Yilin, China, M4, Burkhalter Bettye, USA, M4, Giovanni Bignami, Italy, M1, Georgi Grechko, Russia, M2, Ren Xinmin, China, M2

## **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, an e-newsletter 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. Liu Jiyuan (China) has been leading the IAA publication activities. *Acta Astronautica* have made excellent progress with its new editorial board of 26 members credited from rank 8th in 2017 to rank 4th in 2018 among 31 journals in the world. The impact factor of *Acta Astronautica* for 2018 is 2.227 showing an increase of 45% with 0.691 in one year. The number of downloads of *Acta Astronautica* has doubled between 2010 and 2017 with 0.63 million. The number of page published as beginning of August 2018 in is close to 3200. This improvement has been made thanks to the action of Dr. Rock Jeng-Shing Chern (China Taiwan) and the new enlarged team of co-editors: - Space Physical Sciences: Athena Coustenis (France), Elisabeth Piotelat (France), Radhika Ramachandran (India), Nickolay Smirnov (Russia), Antonio Viviani (Italy); - Space Life Sciences: Ruth Hemmersbach (Germany), Christos Papadelis (USA); - Space Technology & Systems Development: Riccardo Bevilacqua (USA), Christophe Bonnal (France), Filippo Graziani (Italy), Jiawen Qiu (China), Chen Jie (China), Krishna D. Kumar (Canada); - Space Systems Operations & Utilization: Vipparthi Adimurthy (India), Anna Guerman (Portugal), Lu Yu (China), Robert G. Melton (USA), V. Arun K. Misra (Canada), Maria-Antonietta Perino (Italy), Yury Razoumny (Russia); - Space Policy, Law & Economics: Haym Benaroya (USA), Corinne Jorgenson (USA); - Space and Society: Culture and Education: Eva Yi-Wei Chang (China Taiwan), Ingemar Skoog (Sweden); and Managing Editor Eva Yi-Wei Chang (China Taiwan). Members are encouraged to use the *Acta Astronautica* Journal as a vital scientific link to correspond with their peers by subscribing and publishing either regular articles (7-10 pages), short ones called "Transaction Notes" (2-3 pages), Review Articles or Invited Articles.

In addition to the publication of 8 IAA cosmic studies during the last two 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 10 books in two 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 2018 the number of IAA regional meetings and standalone conference amounted 30 as follows:

### 2018 IAA Standalone conferences

09-10 April, "IAA-Italy-Israel Workshop on Nanosatellite Technologies", Roma, Italy  
21-23 May, "4th IAA Conference on Dynamics and Control of Space Systems" (DyCoSS), Changsha, China  
27 May, "Space Mineral Resources Workshop" and "National Space Society International Space Development Conference", Los Angeles, USA  
28 May-1 June, "4S Symposium", Sorrento, Italy  
14 July, "IAA Academy Day", Pasadena, USA  
02-03 August, "7th IAA Conference on Space Systems as Critical infrastructure", Mamaia, Romania  
04-06 September, Scientific and Technological Experiments on Automatic Space Vehicles and Small Satellites (SPEXP), Samara, Russia  
24-27 September, 5th IAA Space Flight Safety Symposium, Saint-Petersburg, Russia  
30 September, "IAA Academy Day", Bremen, Germany  
01-05 October, "69th International Astronautical Congress" (IAC), Bremen, Germany  
15-17 November, "IAA SciTech Forum 2018", Moscow, Russia  
03-07 December, "3rd IAA Latin American CubeSat Workshop", Ubatuba, Brazil

### 69th IAC Bremen, Germany, 1-5 October 2018

1-6 October, 69th IAC, IAA-IAF Symposium on Space Life Sciences,  
1-6 October, 69th IAC, 47th IAA symposium on Search for Extraterrestrial Intelligence (SETI) Science and Technology,  
1-6 October, 69th IAC, 21st IAA Symposium on Human Exploration of Solar System,  
1-6 October, 69th IAC, 16th IAA Symposium on Space Debris,  
1-6 October, 69th IAC, 25th IAA Symposium on Small Satellite Missions,  
1-6 October, 69th IAC, 12th IAA Symposium on Strategies & Architectures as the Framework for Future Building Blocks in Space Exploration and Development,  
1-6 October, 69th IAC, 16th IAA Symposium on Visions and Strategies for the Future,  
1-6 October, 69th IAC, 51st IAA Symposium on Safety & Quality in Space Activities,  
1-6 October, 69th IAC, 29th IAA Symposium Space Policy, Regulations, Economics,  
1-6 October, 69th IAC, 52nd IAA Symposium on History of Astronautics,  
1-6 October, 69th IAC, 29th IAA Symposium on Space Activity and Society,  
1-6 October, 69th IAC, IAA Symposium on Multilingual Astronautical Terminology,  
1-6 October, 69th IAC, 18th IAA/UN Workshop on Small Satellite Programs at the Service of Developing Countries,  
1-6 October, 69th IAC, 33rd IAA/IISL Scientific-Legal Round Table on the Future of Regional Cooperation,

## Finance

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

	2017-2018	2016-2017
	Audited	Audited
Receipts	€ 361881	€ 399549
Expenses	€ 362777	€ 401320
Net	€ (896)	€ (1,770)

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. The small deficit is due to several organizations that have not yet made their annual supporting donor contribution. This should be corrected before the end of the year. 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 198 Members and 30 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 Mr. John Schumacher has 421 Members and 109 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. Chrysoula Kourtidou-Papadeli has 153 Members and 40 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 Prof. Marius-loan Piso has 241 Members and 42 Corresponding Members. It includes leaders in management, law, economics history and other societal disciplines related to astronautics.

## Conclusion

As your President, I am very pleased, to actively promote the search to recognize the best experts in the world and in the pursuit of knowledge in a number of areas. It is the endeavor of the Academy to bring together expertise in multiple disciplines of science, technology, policy and impact on human life and society. The numerous publications, conferences, and summits are the way to achieve those goals. I invite all Academicians to engage themselves in strongly and actively supporting the Academy.

Peter Jankowitsch  
President