

United Nations/China 2nd Global Partnership Workshop on Space Exploration and Innovation

Session 4: Prospects and challenges in space science

23 Nov. 2022

Hainan, China

Sponsored by United Nations Office for Outer Space Affairs (UNOOSA)
and China National Space Administration (CNSA)

Organized by National Space Science Center (NSSC), Chinese Academy of
Sciences

Contents

1: About the session	3
2 Agenda.....	4
3 List of invited speakers.....	5
4 Introduction of invited speakers.....	6

1 About the session

The session entitled Prospects and challenges in space science is an integral part of United Nations/China 2nd Global Partnership Workshop on Space Exploration and Innovation.

The session invites speakers from prestigious international organizations, major space agencies and space science institutions, such as Committee on Space Research (COSPAR), European Space Agency (ESA), Space Research Institute (IKI) of Russian Academy of Sciences (RAS), Brazilian National Institute for Space Research (INPE), Asia-Pacific Space Cooperation Organization (APSCO), Italian National Institute for Nuclear Physics (INFN), National Space Science Center (NSSC) of Chinese Academy of Sciences (CAS) and China Academy of Space Technology (CAST).

Prof. Chi WANG, Director General of NSSC, is the convener and chair of this session.

The session will be held in hybrid manner. It is a largely in-person meeting for the Chinese participants while the international attendees will participate in the meeting via Zoom.

The program can be found at the UN website:

<https://www.unoosa.org/oosa/en/ourwork/psa/schedule/2022/un-china-workshop-programme.html>

Date and time: Nov. 23, 2022 at 19:30-22:00

Meeting venue for onsite participants:

Great Banquet Hall of Haikou Marriott Hotel

Zoom connection for remote participants:

<https://us06web.zoom.us/j/87382010580?pwd=L1BNTG9JY0c2Sk41U3ZZVzAwY3Y5dz09>

Meeting ID: 873 8201 0580

Passcode: 722160

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2 Agenda

<i>19:30 – 22:00</i>	Technical Session 4: Prospects and Challenges in Space Science <i>Chair: Chi WANG, Director General, National Space Science Center of Chinese Academy of Sciences (NSSC-CAS)</i>
19:30-19:35	Opening remarks, Dr. Chi WANG
19:35-19:50	Astro particle experiments to improve the biological risk assessment of exposure to ionizing radiation in the exploratory space missions: a research topic initiative, Dr. Alessandro BARTOLONI , Italian Institute for Nuclear Physics (INFN)
19:50-20:05	High energy multi-band spectral and polarimetric imaging observatory (HEMSPIO): a new space astronomy mission and opportunities for international cooperation, Mr. Hui DU , China Academy of Space Technology (CAST)
20:05-20:20	International Cooperation of COSPAR, Dr. Pascale EHRENFREUND , Committee on Space Research (COSPAR)
20:20-20:35	The ESA science programme, Dr. Günther HASINGER , European Space Agency (ESA)
20:35-20:50	Space science project and planning in Brazil, Dr. Clezio de NARDIN , Instituto Nacional de Pesquisas Espaciais (INPE)
20:50-21:05	Space science cooperation - an ESA perspective, Dr. Fabio FAVATA , European Space Agency (ESA)
21:05-21:20	APSCO's insight on multilateral cooperation in space, Dr. Ferhat Fikri OZEREN , Asia-Pacific Space Cooperation Organization (APSCO)
21:20-21:35	Space science programs in Russia, Dr. Anatoli PETRUKOVICH , Space Research Institute of the Russian Academy of Sciences (IKI-RAS)
21:35-21:50	Space science programs in China, Dr. Chi WANG , National Space Science Center of Chinese Academy of Sciences (NSSC-CAS)
21:50-22:00	Q&A
22:00	<i>Meeting Adjourn</i>

3 List of invited speakers

	Name	Title & Home institution
1	Alessandro ARTOLONI	National Institute for Nuclear Physics (INFN), Italy
2	Hui DU	China Academy of Space Technology (CAST)
3	Fabio FAVATA	Science Directorate, European Space Agency (ESA)
4	Pascale HRENFREUND	President, Committee on Space Research (COSPAR)
5	Günther HASINGER	Science Director, European Space Agency (ESA)
6	Clezio de NARDIN	Director, Brazilian National Institute for Space Research (INPE)
7	Ferhat Fikri OZEREN	Deputy Secretary General, Asia-Pacific Space Cooperation Organization (APSCO)
8	Anatoly PETRUKOVICH	Director, Space Research Institute (IKI), Russian Academy of Sciences (RAS)
9	Chi WANG	Director General, National Space Science Center (NSSC), Chinese Academy of Sciences (CAS)

4 Introduction of invited speakers

1 Alessandro BARTOLONI



After the MD in Electronics Engineering, he joined the Italian Institute of Nuclear Physics (INFN) in 1992, working in the Rome division on developing supercomputers for theoretical physics numerical simulations.

Later as a User Associate at the European Organization for Nuclear Research (CERN), he took part in the construction of the Compact Muon Solenoid (CMS) detector at the Large Hadron Collider (LHC). In 2012 CMS was one of the experiments that observed a new particle consistent with the predicted Higgs boson.

For several years (1999-2011), he was a Lecturer at the Faculty of Engineering at the Sapienza University of Rome, responsible for courses on a computer science subject.

Since 2000 he has been in the Alpha Magnetic Spectrometer collaboration (AMS) (<http://ams02.space>). AMS02 is a state-of-the-art particle physics detector operating on the International Space Station.

His actual principal fields of interest are Cosmic Rays' Physics, Space Radiation Science, and Space Radiobiology.

2 Hui DU



Mr. Du got his Master's Degree of Engineering from Peking University in 2007. From 2007 to 2015, he worked in the China Academy of Space Technology (CAST) as a spacecraft system designer and was involved in more than 6 space missions and several advanced technology development programs.

From 2015 to 2017, he joined the China National Space Administration (CNSA) as a program officer in charge of multi-lateral projects and space policy. From 2017 to 2019, he worked as a senior expert on space applications in the United Nations Office for Space Affairs (UNOOSA). Since 2019, he works in CAST and leads research on projects where technology is closely related to international rules.

3 Dr. Pascale EHRENFREUND



Professor Ehrenfreund has a strong science background in astrophysics and biology. She has contributed to astro-space missions as Principal Investigator, Co-Investigator, Project Scientist, and Team Leader for ESA and NASA planetary and astronomy missions and has conducted experiments in low Earth orbit and on the International Space Station. She has served on the steering group for the US Space Studies Board Decadal Survey in Planetary Science and on the Committee on Human Spaceflight, the FP7 Space Advisory Group, and the Horizon2020 Space Advisory Group of the European Commission. She has been President of the Austrian Science Fund and between 2015-2020 she served as the Chair of the Executive Board of the German Aerospace Center. She is currently President of the International Space University in Strasbourg, France, and Research Professor of Space Policy and International Affairs at the Space Policy Institute/George Washington University in Washington DC. A longstanding active COSPAR Associate, she was also Chair of COSPAR's Panel on Exploration between 2010-2019.

4 Günther HASINGER

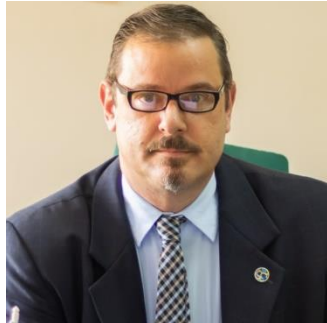


Prof. Günther Hasinger took up duty as the Director of Science (D/SCI), and Head of ESAC, near Madrid, Spain, on 1 February 2018. Günther Hasinger was born in Oberammergau, Germany, in 1954. He earned a PhD in astronomy from LMU for research done at the Max Planck Institute for Extraterrestrial Physics (MPE).

He served as director of the Astrophysical Institute Potsdam from 1994 to 2001. In 2001, he was appointed as a scientific member of the Max Planck Society, and as the director of the High Energy Group at MPE. In 2008 he became scientific director at the Max Planck Institute for Plasma Physics (IPP), the position he relinquished to become the Director of the IfA.

Günther Hasinger has received numerous awards for his research and scientific achievements, including the Leibniz Prize of the Deutsche Forschungsgemeinschaft, the most significant research prize in Germany, and the International Committee on Space Research (COSPAR) Award for his outstanding contributions to space science. He is a member of the Academia Europea, the Berlin-Brandenburg Academy of Sciences, and Leopoldina (the German National Academy of Sciences), and an external member of the Austrian Academy of Sciences.

5 Dr. Clezio Marcos De Nardin



Dr. Clezio Marcos De Nardin, referred to as C. M. DENARDINI, obtained the degree of electrical engineer in 1996 from the Federal University of Santa Maria (UFSM) and PhD in Space Geophysics in 2003 by the National Institute for Space Research (INPE), where he advises doctoral, masters and scientific initiation projects. He published 85 articles in international indexed journals, 42 papers in conference proceeding, and presented 259 papers in scientific meetings, as well as 1 academic article and 13 lectures on scientific outreach. He has obtained 16 scientific awards as an author and work supervisor and is a reviewer and editor of international scientific journals. In the international scientific community, he was president of the Brazilian Society of Space Geophysics and Aeronomy (SBGEA) between 2013 and 2016, and the deputy director of the International Space Environment Service (ISES, an international space organization) between 2016 and 2019. He currently is the vice president of the Latin American Association of Space Geophysics (ALAGE), the Brazilian representative at the WMO Inter-Programme Team on Space Weather Information, Systems and Services (IPT-SWeISS), and he is a member of the Space Weather Expert Group of the UN Committee on the Peaceful Uses of Outer Space. At INPE, he was General Manager of the Embrace Program (the Brazilian Studies and Monitoring of Space Weather) between 2012 and 2018, General Coordinator for Space and Atmospheric Sciences between 2018 and 2020, General Coordinator for Infrastructure and Applied Research, throughout 2020 and he is currently the INPE's Director. In addition, he serves as the representative of the Ministry of Science, Technology and Innovations, in the Legal Amazon Protection Commission, linked to the Vice-Presidency of the Federative Republic of Brazil.

6 Fabio FAVATA



Prof. Fabio Favata is the coordinator of the Science Programme of the European Space Agency. In this role he is the key interface with the Programme's international partners. He has been working for the European Space Agency since 1989, and he is currently based in ESTEC, in the Netherlands. He is an astrophysicist who has studied high-energy phenomena in young stars, using a variety of X-ray facilities.

7 Dr. Ferhat Fikri ÖZEREN



Dr. Ferhat Fikri ÖZEREN, 57, born in Turkey, is a well-accomplished scientist in Astronomy and Space Sciences; he served at least 32 years as academic and administrative personnel at Ankara University and Erciyes University in Türkiye. Besides, he worked for the National Observatory of The Scientific and Technological Research Council of Turkey as an executive board member and researcher, and administrative person for many years. He worked for APSCO as the Deputy Director-General of the Department of Strategic Planning and Program Management between June 2019 and June 2021. He has been working for APSCO as Deputy Secretary-General since June 2021.

8 Anatoli Petrukovich



Dr. Anatoli Petrukovich is director of Space Research Institute (IKI) of Russian Academy of Sciences. The mission of the institute is to conduct a world level research and hardware development in the field of fundamental and applied space sciences and technology.

Dr. Anatoli Petrukovich was born in 1967 in Moscow. He received an honours degree in Physics and Applied Math from the Moscow Institute of Physics and Technology in 1990 (equivalent of Master degree). In 1990 he joined Space Research Institute as researcher and later worked at the positions of senior researcher, head of space weather lab and head of space plasma physics department. He received a COSPAR Zeldovich medal for young scientists in 2002. In 2018 he was elected as the new IKI director.

He received a Candidate of Sciences degree (equivalent of PhD) in 1994 and Doctor of Sciences degree in 2003. Since 2011 he is corresponding member of Russian Academy of Sciences. Dr Petrukovich scientific interests are related with dynamics of the Earth's magnetosphere and space weather. He is the author of over 200 publications with more than 3000 citations in Web of Science.

Dr Petrukovich is professor in Moscow Institute of Physics and Technology. He was an associate editor of «Journal Geophysical Research - Space Physics» (2012-2014) and is now an Editor-in-chief of Russian «Cosmic Research» journal. He is the head of magnetospheric section in Solar-terrestrial council (advisory board in Russian academy of sciences for solar terrestrial science), head of solar-terrestrial section in Space Council (advisory board in Russian academy of sciences for space science).

9 Chi WANG



Prof. Chi WANG is academician of the Chinese Academy of Sciences and Director General of National Space Science Center. Prof. WANG Chi received his PhD from Massachusetts Institute of Technology in 1998. He is in charge of the Strategic Priority Program on Space Science (Phase II) and is Co-PI of the Solar wind Magnetosphere Ionosphere Link Explorer (SMILE) mission. He is the Chief Commander of the Chinese Meridian Project (phase II). He is the Deputy Chief Engineer of Chang'e 4 mission of Chinese Lunar Exploration Program and is in charge of the payloads system of Chang'e 4 mission, Chang'e 5 mission and Tianwen-1 Mars mission.

Previously, he has served as the Chief Architect of Chinese Meridian Project (phase I) and Deputy Chief Commander of Dark Matter Particle Explorer (DAMPE) Mission. Professor Wang's research focuses on the large-scale solar wind structures and the interaction of the solar wind with the magnetosphere. He worked on the plasma experiments on Voyager 2 and developed a multi-fluid solar wind model. He has published more than 300 peer reviewed papers and articles in academic journals home and abroad.

For external positions, he is currently the member of the Steering Committee of the International Live with a Star (ILWS) Program and the International Space Weather Initiative (ISWI), and the national liaison of China for the Geospace Environment Modeling (GEM) program. He was elected as the IAA full member in 2022. He serves as the Bureau member of COSPAR since 2018.