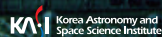


# Mirinae

미리내 The Milky Way



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# Hosting a hybrid General Assembly in the midst of COVID-19 pandemic

**Hyesung Kang**, Chair of the National Organizing Committee



## **Winning the Bid for the 31<sup>st</sup> GA**

It was January 2014 when I first agreed to lead the team to host the 31st General Assembly on behalf of the Korean Astronomical Society (KAS). When our team won the bid at the GA2015 in Hawaii, I did not fully comprehend the fact that I would spend the next seven years of my life preparing and organizing the GA2021. Early 2020 the COVID-19 pandemic hit the globe unexpectedly, so the National Organizing Committee (NOC) confronted many uncertainties since then. Until the end of 2020, the IAU officers and the NOC explored several options to implement various virtual elements to the upcoming GA. To my great relief, in April 2020, the Korea Astronomy and Space Science (KASI) joined the effort as a co-host institution.

## **Postponement due to COVID-19 Pandemic**

Early December 2020, we finally decided to postpone the GA for one year and began to plan for the GA2022 as a hybrid meeting, which would allow both in-person and remote participation. For the first time in the IAU history, new virtual elements, such as virtual registration, remote talks, e-posters, e-talks and online chatting programs were introduced, which injected unprecedented complexities and confusions into the GA logistics. Consequently, the GA secretariat has received thousands of email inquiries regarding the registration and abstract submission. Furthermore, as of June 2022, we are busy assisting the issuance of visas, and providing guidance on the COVID-19 health regulations, which are being updated continuously as the pandemic situation is evolving.

## **“Astronomy for All” in a Hybrid GA**

Initially, the NOC proposed “Astronomy for all” as the main theme, in a hope to make the Busan GA as inclusive as possible. The KAS grant was designed to support the participation of young students and early career astronomers. All along, the NOC was determined to host the GA as an offline meeting, at least partially. After more than two years of online meetings, we believe astronomers are eager to meet our colleagues face-to-face. The NOC is thrilled that it will finally happen this August, although it is somewhat uncertain how many participants will actually attend the GA in person despite high costs and risks of international travels. We remain hopeful as the pandemic situation is improving and travel restrictions are being lifted.

## **Many Thanks to Dedicated Colleagues**

Along the treacherous paths up to this point, many colleagues from various sectors contributed to the preparation of the GA2022: the NOC members, local sponsors, the past and present officers of the IAU, and the professional team of our PCO, Mecj International. Without their perseverance and devotion, we would not have made it this far. As the Chair of NOC, I would like to express my deepest gratitude for their service and sacrifice.



# What a beautiful venue, Busan, we have been in last two weeks



Members of the GA2022 NOC (BEXCO, November 2021)





# It's Time for Africa! An Invitation by the National Organising Committee IAU GA 2024

**Vanessa McBride**, Chair of the National Organizing Committee of IAUGA 2024 (South Africa)



XXXII IAU GENERAL ASSEMBLY

CAPE TOWN, SOUTH AFRICA, 2024

As the IAU GA 2022 draws to a close, and we are left with fond memories of Korean culture and beautiful Busan, Africa prepares to take centre stage as host for the next IAU General Assembly in 2024. Affectionately known to locals as the 'Mother City', Cape Town, in the Republic of South Africa, will welcome global astronomers from the 5th to the 16th of August 2024. Known for its natural beauty, vibrant and friendly culture, and numerous international tourism accolades, the city is well-prepared to welcome guests from around the world. The city and surroundings also play host to a variety of world-class astronomy facilities and organisations, including the South African Astronomical Observatory, the South African Radio Astronomy Observatory, the Inter-university Institute for Data Intensive Astronomy, the African Astronomical Society, the IAU Office of Astronomy for Development and the Iziko Planetarium, as well as multiple universities with strong astronomy programmes. The GA 2024 will be hosted by South Africa's National Research Foundation, and is receiving strong support from the South African Department of Science and Innovation, which is championing the development and growth of the multiwavelength astronomy community both in South Africa and across Africa.



As the first IAU General Assembly to take place on the African continent, the community's excitement is palpable! GA 2024 is more than just a meeting - it encompasses the aspirations of the African astronomy community, and is an opportunity to change the way the world sees Africa. These audacious ambitions have been captured in our Vision2024, available to explore on our conference website: [www.astronomy2024.org](http://www.astronomy2024.org).

For many, this will be a first opportunity to visit Africa. Whether you're coming for the astronomy and staying for the splendour, or whether you're coming for the experience and staying for the science, our side programmes in development, education and sightseeing will leave an impression on visitors and locals alike. Our organising committee is already planning initiatives that are sustainable, inclusive and have a lasting impact. We look forward to the legacy that the General Assembly in 2024 will leave in its wake.

So, on behalf of the National Organising Committee of the XXXII General Assembly of the International Astronomical Union, and on behalf of the astronomy community in Africa, we invite you to make history with us on our African shores in 2024 and share in the African spirit of Ubuntu: We are all One!

Ke nako!! It's time for Africa!

Sally Macfarlane & Vanessa McBride, on behalf of the GA2024 Local Organising Committee

Please visit our website, [astronomy2024.org](http://astronomy2024.org) to find out more, follow us on Facebook (@Astronomy2024CapeTown), or Twitter (@astronomy2024).



Sally Macfarlane is a post-doctoral fellow at the South African Astronomical Observatory and is a member of the GA2024 Communications, Education and Outreach committee.



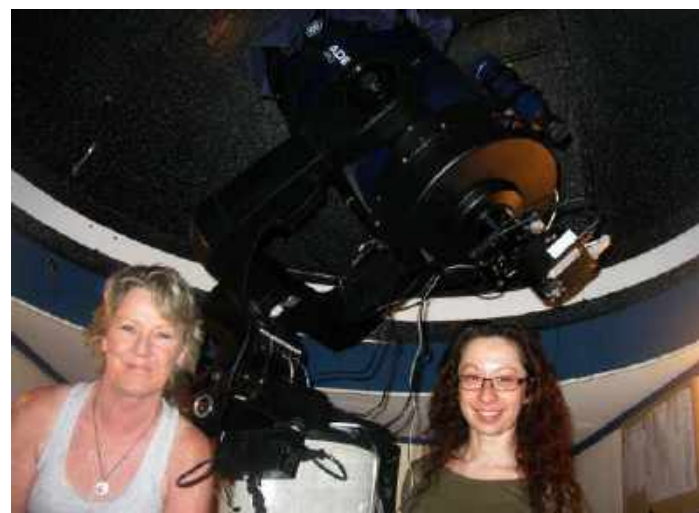
Vanessa McBride is deputy director of the Office of Astronomy for Development and co-chair of the GA2024 National Organising Committee.



# EC Working group for Professional-Amateur Relations in Astronomy

The IAU working group for professional-amateur relations in astronomy (for short, the pro-am WG) was formed in April 2021 as a WG under the Executive Committee. The IAU Strategic Plan 2020-30 stated that connecting professional and amateur astronomers was one of its goals for the decade. This is also an integral mission of the IAU Office for Astronomy Outreach, with which the WG works closely.

For the first century of its existence, the IAU has had very few formal contacts with the much larger body of amateurs around the world. This changed in 2019 with a successful one-day workshop for amateurs in Brussels, followed by the formation of the new Working Group in April 2021 for professional-amateur relations in astronomy.



Jennie McCormick (left) is one of New Zealand's leading amateur astronomers. She has contributed many observations of galactic microlensing events to detect and characterise extrasolar planets, as well as CCD photometry of variable stars. In 2009, she discovered a 19th mag asteroid, now officially named New Zealand. She is seen here with former AAVSO director, Stella Kafka (right) who was also a member of the Pro-am WG Organizing Committee and with Jennie McCormick's Meade 14-in telescope at her private Farm Cove Observatory in Auckland, New Zealand.

## IAU Executive Committee Working Group Meeting: Professional-Amateur Relations in Astronomy

START DATE	Thursday, 11 August
END DATE	Thursday, 11 August
ORAL SESSIONS	Room 108, Convention Hall, 1 <sup>st</sup> Floor
POSTERS	e-Poster Zone, Convention Hall, 3 <sup>rd</sup> Floor

*For details on presenters, topics, and times see the online program on the GA website*

At the present time, no-one has a clear idea of how many amateurs there are in the world, but it is likely to be of the order of a million individuals, some two orders of magnitude greater than the number of active professionals in the IAU. The new pro-am WG wants to reach out to the amateur community, with the aim of promoting research collaborations with some of the most active amateurs. Further workshops are also envisaged, following on from Brussels 2019, and the OAO program 'Meet the IAU Astronomers!', in which professionals give talks to amateur societies, will be further promoted.

The relatively new WG has great hopes of making a fundamental change in how the IAU interacts with the amateur community and success should greatly benefit and enrich both communities.

As a first step, the pro-am WG conducted a survey of amateur astronomers to find out what they want from the IAU and whether this includes closer research collaborations and workshops. The survey was carried out between December 2021 and February 2022. The survey had several thousand responses and the results showed an overwhelmingly strong support for promoting pro-am research collaborations and for having a biennial hybrid pro-am workshop. The survey results will be reported by Tim Spuck (USA) at the Pro-am WG session of the GA on August 11.

The survey also allowed a database of hundreds of the principal amateur societies and associations to be compiled, which will be used for future contacts with amateur astronomers world-wide.

One result of the survey was also to establish a WG membership at large from IAU members who wish to join the WG and stay informed of our activities. Those interested to join should contact the Pro-Am WG secretary, Yuko Kakazu (USA/Japan) or co-chair Aniket Sule (India) at respectively kakazu naoj.org and aniket.sule@gmail.com.

An initial Organizing Committee (OC) for the WG was established as follows: John Hearnshaw (New Zealand, co-chair), Lina Canas (Japan and Portugal), Beatriz Garcia (Argentina), Stella Kafka (USA), Yuko Kakazu (USA and Japan, secretary), Moein Mosleh (Iran), Mirjana Povic (Ethiopia), Kazuhiro Sekiguchi (Japan), Boonrucksar Soonthornthum (Thailand), Aniket Sule (India, co-chair), Timothy Spuck (USA), Ilya Usoskin (Finland, EC liaison), Antonia Varela (Spain). At the end of 2021, Povic and Kafka both resigned from the WG. They were replaced by Mayra Lebron (Puerto Rico) and Clementina Sasso (Italy). The very wide geographical distribution of the OC members and good gender balance are noted.

We have high hopes of making waves in the amazing community of amateur astronomers around the world, and are proud of our progress so far. Please come to the Pro-am WG session at 15:15 on Friday August 11 if you wish to join us in our work.



John Hearnshaw is Emeritus Professor of Astronomy at the University of Canterbury, Christchurch, New Zealand. He was Division C president 2015-18 and IAU vice-president 2018-21. He helped found the Pro-am Working Group while serving on the IAU Executive Committee.

# All the answers can be found in the Universe.

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Center for Computational Astrophysics (CICA)



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Office of International Relations  
<http://naoj-global.mtk.nao.ac.jp/en/>





# Institutional Meeting of the Office of Astronomy for Development: Flagships and Interdisciplinary Imperatives



The IAU Office of Astronomy for Development (OAD) is driven by the concept of “astronomy for a better world” and understands the value that science has in the development of the people and the communities we live in. Everything is interconnected and that makes it only natural that the various disciplines, in the natural and social sciences, share their knowledge and expertise and collaborate their efforts towards sustainable development. It is this concept of interconnectedness that makes the interdisciplinary approach that much more important, foregrounding the need for us to strive for more meaningful collaborations with all actors in society.

The OAD held a session on Wednesday 3 August, with the theme “OAD Flagship Projects and Interdisciplinary imperatives: Synergies between natural and social sciences for the UN Sustainable Development Goals”. Presentations in the session were based on three flagship themes which are being implemented globally. They are “Astronomy to stimulate economies”, “Astronomy for Diplomacy” and “Knowledge and skills from

astronomy”. The flagships allow the OAD to scale the impact of astronomy for development over a substantial part of the world. The projects within the flagship themes include: Astrostays – a community led astro-tourism project that uses astronomy as a tool to create sustainable livelihoods and community development, under the “Astronomy to stimulate economies” flagship theme. The DARA Big Data Hackathons project was presented, based on the flagship theme of “Knowledge and Skills from astronomy” and focuses on the use of data science and machine learning skills that are broadly used in astronomy, but are applied in this context to tackle developmental challenges. Lastly, the Astronomy for Mental Health project, which sparked a lot of interest from the delegates, was presented under the flagship theme “Astronomy for Diplomacy”.

These flagship projects and themes are central to issues of development, directly address the United Nations’ Sustainable Development Goals and also highlight the many ways that astronomy can be used as a tool for impactful and sustainable development. The OAD fosters opportunities for collaborations, especially in cases where there are overlaps and this, in turn, strengthens the projects and increases their impact.

The session was very informative, engaging, quite inspiring and certainly motivated people and organisations to be more innovative in their efforts and contributions towards sustainable development.



Duduzile Kubheka is the BRICS Astronomy Project Coordinator based at the South African Astronomical Observatory(SAAO) and is running the BRICS Astronomy Flagship Project called the BRICS Intelligent Telescope and Data Network. She also works with the Office of Astronomy for Development (OAD) as well as the African Astronomical Society (AfAS). She is passionate about people empowerment, education, outreach, social justice and development and is striving to use her position and impact to inspire positive, meaningful and sustainable change in society.



# New Insights into Satellite Constellation Effects on Astronomy



This image shows the double star Albireo in Cygnus and was taken on 26 December 2019. Two out of ten 2.5-minute exposures recorded Starlink satellites moving across the field. Credit: Rafael Schmall

On Monday evening we raised a glass to toast the new Center for the Protection of the Dark and Quiet Sky from Satellite Constellation Interference (CPS). We started operating in April, and we have wasted no time in pursuing our mission. A new website has just been launched for CPS.

While light and radio pollution has long been an issue, the new satellite constellations are a whole new level of threat to astronomy. With 3388 already in the sky, we are facing potential future numbers of more than 400,000 in orbit, planned by 13 operators so far (as of today 9 August 2022). These numbers of planned satellites are monitored by Jonathan McDowell (Harvard-Smithsonian Center for Astrophysics) and displayed on the frontpage of the new website.

Our first goals as a center are to develop software that predicts when and where the satellites will pass overhead, and to build a data repository for images. We have had people observing for us for two years, but this operation has really started to get much more organised in the last few months.

We are also looking at creating masking software, to remove the effects of satellites from the images as much as possible. While such software would be a valuable tool, it would have limitations; there is no replacement for a pristine sky. So it is still key to work on mitigating the effects of satellites at the source.

and amateur astronomers, space lawyers and institutions. Crucially, the space industry is also actively engaging with us. SpaceX removed the reflective visors from the satellites they launched in December, and they are now developing a new coating, to reduce the amount of light getting directed towards Earth. Just last month they published a new report on brightness mitigation best practices.

To this end, we already have more than 150 people signed up to work with us, including professional

Of course, these mitigation efforts require validation and feedback from astronomers, as highlighted by Jeremy Tregloan-Reed in Focus Meeting 2 here at the General Assembly. Other results presented here for the first time included the increasingly sophisticated simulations to predict what the satellite beams would look like passing over a radio observatory; and new observations, mostly of OneWeb, showing that the effects seem to depend on wavelength.

Also new to astronomers at this meeting was the IAU CPS work to include the impact on astronomy as one of the modules of the new Space Sustainability Rating. The Space Sustainability Rating is a new project to provide a rating system for the sustainability of space missions, seeking to encourage space actors to cooperate on the long-term sustainability of the space environment. This project has been developed by EPFL, MIT and ESA, the World Economic Forum and a joint team led by Space Enabled at MIT, with collaboration from BryceTech and the University of Texas at Austin.

If you are interested in our work at the CPS and would like to contribute, please check out our website at <https://cps.iau.org/> and consider becoming a member. We are always looking out for people who share our goal of protecting dark and quiet skies.



Connie Walker is Co-director of IAU CPS at NSF's NOIRLab, IAU Inter-Division B-C Commission Protection of Existing and Potential Observatory Sites and Chair of Executive Committee WG Dark and Quiet Sky Protection.



Laura Hiscott is IAU Deputy Press Officer.



## Highlights of Public Star Party (August 9th)

The Public Star party at the IAUGA was held in the BEXCO square on Tuesday, 9, August. The Star Party was organized as one of the hands-on programs for IAUGA2022, in keeping with the IAUGA's motto, "Astronomy for all", to give a fantastic opportunity to promote IAUGA to the public and to demonstrate the solar system celestial bodies through telescopes, such as the Sun, the Moon, and Saturn.

The event drew over 400 astronomers and members of the general public. Despite the fact that the day was cloudy, a number of telescopes began operating at 3:00 p.m. to observe the Sun. As volunteers, amateur astronomers from the Busan area brought their own telescopes to this event. People were able to observe the Sun with various types of solar filters whenever light shines through solar cloud cover.

In addition to observation, a variety of booths provided science kit creation and experimentation. Making science kits, such as Kepler Telescopes, assisted children in understanding the science behind the telescopes. Children could also learn about the principles of stars and planets by playing games like becoming planets themselves.

As the star party took place at night in the cool air and among walkers, each telescope was crowded with people. The opportunity to see the moon through clouds and marvel at its majesty while also seeing Saturn's rings and satellites makes a fantastic public Star Party event.



Sung-Ju Kang has a Ph.D. in Astrophysics and he is currently a Research Officer in Gwacheon National Science Museum. He is also a science communicator and runs a YouTube channel 'Unrealscience', attempting to make scientists' accomplishments understandable to the public.

# Training Courses for School Teachers



Training courses for school teachers ran for 4 days from 5th August to 8th August 2022 with the Network for Astronomy School Education (NASE) in part of Commission C1 Astronomy Education and Development of IAU. It was held in the Korea Science Academy of KAIST and BEXCO. A total of 10 teachers from elementary schools and high schools attended.



# A Group Photo of IAUGA 2022



# Welcome to the Closing Ceremony and Flag Handover Ceremony



Dae-Chwi-Ta



The official IAU flag



Dance of Cranes under Spring Moon

## Program

1. Memories of GA2022: video
2. Closing Remarks & announcement of GA2027 host : Debra Elmegreen, President
3. Closing Remarks: Jose Miguel Rodriguez Espinosa, General Secretary
4. Closing Remarks: Willy Benz, President Elect
5. Closing Remarks: Diana Worrall, Assistant General Secretary
6. Closing Remarks: Park, Young-deuk, President of KASI
7. Closing Remarks & Thanks: Kang, Hyesung. GA2022 NOC chair
8. Flag Handover from Busan to Cape Town
9. Welcome Remark: Takalani Nemaungani, Department of Science & Innovation
10. Welcome Invitation: Vanessa McBride, GA2024 NOC chair
11. Closing Performance: Korean Traditional Dance
12. Group photo



# A team for the IAUGA e-Newspaper

**Sang-Sung Lee**, Editor in Chief

I am very much pleased to introduce an amazing team for the IAUGA e-Newspaper consisting of a 6-member Editorial Board, an advisory group, and a designing person. The e-Newspaper Editorial Board was firstly formed with four members: Woojin Kwon, Ji-hoon Kim, Dohyeong Kim, and me. Later the Board was completed by inviting Sascha Trippe and Myoungwon Jeon.

**Woojin Kwon** is a professor in the Department of Earth Science Education of Seoul National University, who has extensively communicated with all plenary speakers, prize winners, and public lecturers for inviting valuable stories of the speakers. **Ji-hoon Kim** is a professor in the Department of Physics and Astronomy of Seoul National University, who has sedulously contacted with all SOC chairs of IAU Symposia, Focus Meetings, WGs, Divisions, and IAU Offices, for hosting shiny highlights of all meetings in the e-Newspaper. **Dohyeong Kim** is a professor in the Department of Earth Science Education of Pusan National University, who had to ask for welcoming messages from important guests and has played an important role in determining the header picture of the e-Newspaper. **Sascha Trippe** is a professor in the Astronomy Program of the Department of Physics and Astronomy of Seoul National University, who has jointly advised the Board. **Myoungwon Jeon** is a professor in the School of Space Research of Kyung Hee University, who contributed to writing articles about the highlights of two lunch meetings. I am a principal researcher in the Korea Astronomy and Space Science Institute, playing the role of Editor-in-Chief. I would like to note that the team for the IAUGA 2022 e-Newspaper is mostly from the Korean Astronomical Society.

I would like to note that the e-Newspaper would not be completed without excellent proof-readings by an advisory group of the Chair and vice-Chair of the National Organizing Committee: **Hyesung Kang** and **Byeong-Gon Park**, and wonderful designing works by Juneui Lee from our partner company, MECI. Finally, my last thanks should go to **Myeong-Gu Park**, President of the Korean Astronomical Society, who had successfully led the initial discussion for the e-Newspaper of IAUGA 2022.



The team for the IAUGA e-Newspaper (sitting, left to right): Byeong-Gon Park, Hyesung Kang, Sang-Sung Lee, and Myeong-Gu Park; (standing, left to right): Juneui Lee, Woojin Kwon, and Dohyeong Kim.





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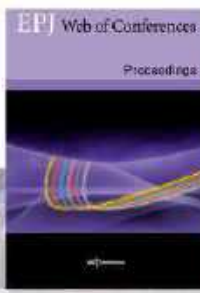
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