UMnyele weZulu

EDITION 5: 12 AUGUST 2024 XXXII IAU GENERAL ASSEMBLY CAPE TOWN, SOUTH AFRICA

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A spiral galaxy in stars and dust. Image courtesy of NASA, ESA and the Hubble Heritage Team (STScI/AURA).

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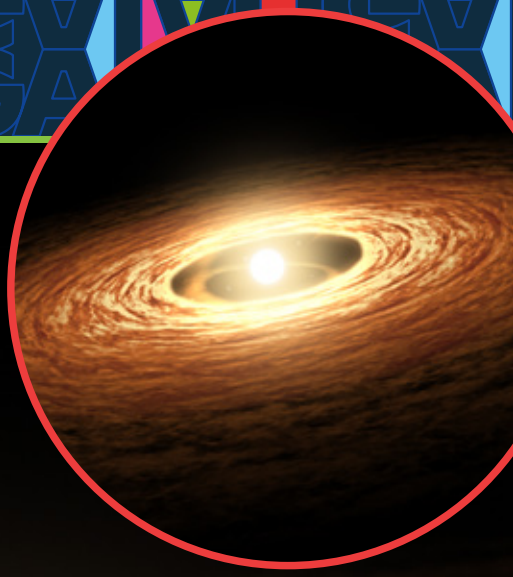

It's the second week of the XXXIIIrd IAU GA and the fifth issue of "Umnyele wezulu," which, in case you didn't know, translates to "the backbone of the heavens," in IsiXhosa and is a a poetic name for the Milky Way. Women's Day may have come and gone, but the work of women in astronomy will continue, check out our Women's Day lunch article and pics. Friday was also a great day for children, many of whom enjoyed the interactive displays and science shows.

Upcoming Events

IAU Gala Dinner
12 Aug

Executive WG on Dark and Quiet Sky Protection
12 & 15 Aug

Cosmic Echoes art exhibition
06 to 15 Aug

Invited Discourse: Prof Natalie Batalha
13 Aug

IAUS 392 Neutral hydrogen in and around galaxies in the SKA era
13 Aug

Live observing with Murriyang, CSIRO's Parkes radio telescope
12 & 13 Aug

Voting sessions for General Assembly Resolutions
14 Aug

The Cosmic Savannah
14 Aug

(Top & background) Webb Finds Plethora of Carbon Molecules Around Young Star (Artist Concept). Image Illustration: NASA-JPL

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XXXII IAU GENERAL ASSEMBLY

CAPE TOWN, SOUTH AFRICA, 2024

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Towards Equity in Astronomy

Marcelina Kinyumu &
Christina Thöne

Women in Astronomy Lunch at the General Assembly

Women at the International Astronomical Union (IAU) commemorated South African National Women's Day on August 9 with a momentous luncheon. While not new to the women in the astronomy community, this event was unique—a moment to reflect on the various challenges that women have faced and continue to face in their careers. It underscored the importance of advancing science through a diverse and inclusive community, where the full participation of everyone is essential.

IAU President, Debra Elmegreen, addressed the gathering, emphasizing the need to increase awareness of the issues faced by women in astronomy and STEM fields. She highlighted the importance of developing and implementing solutions at institutional, national, and international levels. It was inspiring to hear about the significant strides made in improving gender equity within IAU leadership, with hopes that these advances will soon be reflected in the general IAU membership. President Elmegreen stated that the Women in Astronomy Working Group will continue to play a crucial role in the ongoing pursuit of gender equity.

In recent years, the IAU Executive Committee and the Women in Astronomy Working Group have taken meaningful steps to improve the situation within the astronomical community. These efforts include raising awareness of unconscious bias, instituting dual anonymous peer review for research and observing proposals, enabling self-nominations for prizes, and striving for gender equity among speakers at conferences. Mamta Pommier (Chair) and Priya Shah (co-Chair) of the WIA each took turns to welcome the delegates to the lunch and encouraged them to participate in the scheduled activities for the group, happening on the 13th and 14th.

Mentorship and role models for women and girls are crucial in making everyone feel welcome in astronomy and STEM careers. The lunch aimed to bring together mentors and early-career women astronomers for networking and discussions on topics of interest, such as career options, professional development, balancing family and career, harassment, bullying, discrimination, and funding ethics.

In line with the mentorship efforts, Mirjana Pović and Pricilla Muheki, executive members of the African Network of Women in Astronomy (AfNWA), introduced the delegates to the network's activities and initiatives. These include organised training sessions, outreach activities, inspirational videos from members, and awards. As part of their recent projects, AfNWA will be selling e-books that compile inspirational stories from women in astronomy across Africa during the General Assembly.

The eventy took place in the CTICC's Ballroom East with lovely flower decorations and food trays on each table - "The most beautiful women in astronomy lunch ever", as Debra Elmegreen remarked. On each table there were two mentors (and not only women!) and several early career researchers to exchange experiences and challenges facing in women's careers.

Debra Elmegreen concluded her talk by saying that that the numbers confirm that, despite decades of effort, such actions are still needed today.

The attendees were already enjoying lunch during these greetings and informative speeches. Lively discussions followed regarding career obstacles, the two-body problem, and the still-present inequality issues, not only for women but also other underrepresented groups in their respective countries. Personal experiences and pure statistics reminded everyone that there is still quite some work to do, even in 2024.

A Sky Full of Stories

Auke Slotegraaf

Celestial bodies make their appearances over Cape Town with a history all their own

For the duration of the GA, the evening sky over Cape Town is blessed by the appearance of Venus, the Evening Star, visible each evening (around 19:00) low in the west soon after sunset.

In Xhosa tradition, one of the traditional names for the Evening Star is Madingeni. In isiXhosa, “idinga” means “an appointment,” which seems quite fitting for this first-time-in-Africa gathering of the GA!

However, there’s more to this story. “Madingeni” was probably said, in the olden days, with a little wink: it was code for “the dating star”. In those times, it wasn’t proper for boys and girls to date in public. So they would arrange a secret meeting, usually at the place where the girls fetched water, when “the kissing star” became visible.

Look to the southwest (at about 50° altitude) for Crux, the famous Southern Cross, the brightest constellation in the heavens. Above Crux lies two bright stars pointing towards it. Known colloquially as the Pointers, we know them as alpha and beta Centauri. To the /Xam people, who were a part of the broader San (Bushman) community of southern Africa, the Pointers were two male lions and the stars of Crux were lionesses. In Sotho, Tswana and Venda traditions, these stars were giraffes: the Pointers were female, the brighter stars of Crux were male, while <<delta>> and <<epsilon>> were baby giraffes.

In the early morning sky before daybreak (around 06:30), look in the north-east to see Orion, doing a hand-stand as it rises. Sirius is prominent to its right. Brightest of all, to the left of Orion, is Jupiter. And nearby lies reddish Mars. The two planets move closer each morning; on August 14 and 15 they will be less than half a degree apart: almost as if they’re coming together to say “goodbye” to our GA 2024 visitors!

(Above) Orion constellation showing the surrounding nebulas of the Orion Molecular Cloud complex. Image: Rogelio Bernal Andreo, Wikipedia

IAU General Assembly Session WG6:

Executive WG on Dark & Quiet Sky Protection

12 & 15 August 2024

Session:
12 August (10:00 – 17:00)
Commission B7 Business Meeting:
15 August (13:00 – 15:00)
(South Africa Standard Time = GMT + 2h)

Cape Town International Convention Centre
in Cape Town, South Africa
In-person and online

noirlab.edu/science/events/websites/iauga24wg6

slack
#wg6-dark-quiet-skies for the WG6 session

Division A: Fundamental Astronomy

By Daniel Hestroffer

Detecting black holes with Gaia, the Rubin Observatory's Future Survey, and more

Division A, Fundamental Astronomy/Astronomie Fondamentale, will have its second Division Day at the XXXII General Assembly on Monday 12 August. The purpose of this meeting is to provide a summary of recent and relevant results for our Division, including the PhD prizes and key speakers, and present the activities of its different scientific bodies.

As an opening, we will have a wonderful opportunity to listen to the most recent winners of the PhD Prizes and those who received honourable mentions awarded by the Division. For this 2024 session Irene De Blasi, from Italy, and Hao Ding from China, will present their thesis work and recent results on the dynamics and galactic billiards, and astrometry of neutron stars, respectively.

Eminent key speakers at our meeting include Pasquale Panuzzo (of the Paris Observatory, France), who will speak about the black hole Gaia BH3, detected thanks to the Gaia mission on astrometry, and Željko Ivezić (of the University of Washington, USA), who will discuss the future Rubin Observatory's LSST as an astrometric and photometric survey. Additional contributions will cover a range of topics relevant to our division, in particular celestial mechanics, the rotation of the Earth, surveys, astrometry, stars, and the Milky Way.

Our Commissions and Working groups (mostly functional) will present their triennal reports, highlights, and recommendations. This will be an opportunity to announce and present the forthcoming IAU Symposium 401 "Advancing Reference Systems, Ephemeris, and Standards," scheduled to take place from 4-9 August 2025, and to present a new inter-division Working Group preparing a Resolution for revising the galactic coordinate system.

Session A-4 on Monday afternoon will be dedicated to Lunar standards for time and reference systems, presenting and discussing the Resolutions to be voted on during the GA.

"Awé"

Artist's impression of the black hole Gaia BH3. Image: ESO/L. Calçada/Space Engine (spaceengine.org)

Announcement of IAU General Assembly 2030 at the Closing Ceremony

We already know that the IAU GA will take place in Rome, Italy, 9-19 August 2027 at the prestigious Auditorium Parco della Musica. in 2027.

But this week we will find out where the IAU General Assembly 2030 will take place. The Executive Committee received a certain number of nominations some time ago. Four applications were subsequently reviewed more closely, so that this week the Executive Committee has the basis for the final discussion and ultimately will vote.

The result will be announced during the **Closing Ceremony and Handover on Thursday 15 August at 5:30pm at CTICC, Auditorium 1**. Be there to find out!

Rising Stars
PhD Prize Winners at the GA

Piyush Sharda PhD

PhD Prize 2022 recipient, Division H
Interstellar Matter and Local Universe

Winning the IAU Divison H PhD thesis prize in 2022 was an incredible honour for me. This prestigious award has provided a platform to share my findings with the global astronomical community, and has been a significant milestone in my academic journey. I am very grateful to the PhD thesis prize selection committee for their hard work, and to the IAU for establishing this prize. I am also deeply indebted to my PhD advisors and collaborators for their constant support and mentoring that made it possible for me to bridge parsec and kilo-parsec scale ISM physics to study the first galaxies, which is the core of my PhD.

Attending the General Assembly in South Africa adds a special dimension to this achievement. The opportunity to engage with leading astronomers from around the world in such a vibrant and culturally rich city is truly inspiring. This is my first time visiting Africa, and Cape Town, with its breathtaking landscapes and rich history, has made my trip even more extraordinary and unforgettable. I am very very excited to engage in scientific discourses, hear from world leading scientists, and immerse myself in the South African nature and culture.

The IAU PhD Prizes are awarded annually to recognise the outstanding work being done by doctoral students in astrophysics around the world. Every year, each IAU Division has the opportunity to award one of these prizes to the candidate it feels has conducted the most remarkable research in the previous year. Additionally, the Divisions can also jointly award one PhD Prize-at-large.

Recipients of these prizes receive registration to attend the GA following their award, where certificates are presented during Division Days.

INVITED DISCOURSE

Prof Natalie Batalha gives us front row seat to exoplanet discovery with performances by Kepler, TESS, and JWST

Tuesday 13 August
17:15-18:15
CTICC Audi 1

Division G: Stars and Stellar Physics

Andrej Prsa

The lifetimes of stars through evolution to explosion

Division G is tasked with fostering research, education, and the exchange of ideas and expertise in the field of stars and stellar physics. This covers a broad range of topics, including the determination of observable stellar properties, their time variability, investigations of internal and atmospheric structures, and theoretical modelling of stellar formation, structure and evolution, among others. The division is also focused on the many observational techniques, mathematical and statistical analysis tools, and data interpretation efforts that are aligned with its main scientific topics.

During the Division G Days, taking place on Friday 9 and Monday 12 August, we will recognise two doctoral dissertations that were awarded the IAU PhD prize through Division G (Dr Naira Azatyan and Dr Antoine Bedard). We will also host 36 oral contributions that span a wide range of topics from pre-main-sequence evolution of stars to their explosive finale, exploring their lifetimes at both the low- and high-mass ends, and we will showcase the latest research results on 84 accepted posters.

Additionally, the Division Days will include a business part of the meeting, during which the outgoing and incoming Division officers will introduce their vision for the next triennium and solicit feedback from the audience on prioritising Division G tasks.

Please join us to witness the exceptional line-up of speakers, both established and rising experts in their fields, to create an inclusive and friendly environment for an exchange of ideas, and to celebrate the successes of the members of Division G!

Andrej Prsa is President of the IAU Division G Stars and Stellar Physics.

(Below) Stellar evolution. Image: ESO/S. Steinhöfel

Immersive experience at the SKAO pavilion

Reflecting the SKAO's efforts to build some of the world's largest radio telescopes

SKAO Pavilion
CTICC I, Area B4-B9

Occupying significant floor space, the SKA Observatory's pavilion aims to offer a broad, new immersive visitor experience - reflecting the vast scope of the SKAO's international effort to build some of the world's largest radio telescopes.

Virtual reality & gaming

Drive an SKAO pick-up truck around the SKA-Mid and SKA-Low sites in an interactive game developed by our Swiss partners SKACH, alighting to admire dishes stretching 22 metres high in the Karoo sunset. Or, head to Western Australia for a 360 degree view of SKA-Low's thousands of antennas. For the ultimate immersive experience, put our VR headset on for the unique opportunity to visit the SKA-Low site in this short version of the award-winning documentary Beyond the Milky Way.

Hardware

You'll also be able to come close to real hardware being deployed on site. Each of SKA-Mid's 15 m diameter dishes are made from 66 individual triangular panels, one of which is on display at the pavilion. Other than lending an impression of the dishes sheer scale, the panel will form a unique guestbook for participants to sign! You'll also spot an SKA-Low antenna. 256 such antennas form a single station, with 512 circular base stations planned in total, emanating from a central 1 km wide core on three spiral arms. Affectionately nicknamed 'Christmas trees' due to their unique design, display versions are usually decorated in the various SKAO offices around the world!

Merchandise

A selection of all-new merchandise will be available to purchase from our gift shop area. Featuring local artisan-made items including beadwork SKA-Mid dish models, all sales proceeds will go to support and local community outreach initiatives.

A giant screen and interactive touchscreen will complete the stand and allow visitors to learn more about the observatory's recent milestones, meet some of the people behind the project, and learn more about the science goals the SKA telescopes will aim to address.

(Images) The SKAO pavilion at CTICC I, area B4-B9 is packed full of interactive exhibits and actual SKAO telescope hardware

CSIRO Australia Telescope National Facility

Live observing with Murriyang, CSIRO's Parkes radio telescope

This is your chance to control the 64m-dish radio telescope live and remotely. Observe pulsars and learn about our **PULSE@Parkes** education program.

Monday 12 and Tuesday 13 August
3 PM to 5 PM

IAU GALA DINNER

Monday Aug 12
18:00 - 22:30
CTICC Ballroom East

Bring your glitz and glam, and put on your dancing shoes. Besides the festivities and networking, we hope it will also be a cultural experience.

IAUS 392

08:30-10:00
Tuesday, 13 August
CTICC Audi 1

The importance of amateur astronomy to professional astronomy

Mayra E. Lebrón Santos &
Clementina Sasso

Amateur astronomers are an essential part of astronomy

Historically, amateur astronomers have made significant discoveries and contributions to the field of professional astronomy. Many of them are observers who use optical telescopes to acquire images of the night sky or make radio measurements, designing and building their own instruments. Some others collect astrometric and photometric data of asteroids and comets and report them to the Minor Planet Center, while others are engaged in measuring the precise timing of stellar occultations by other bodies in our Solar System. There is also a big number of amateurs involved in the observation of variable stars, reporting their data to the American Association of Variable Star Observers (AAVSO). In some fields, such as the last one mentioned or in the discovery of new small objects that populate our solar system, the help of amateur astronomers is essential to be able to keep up with the enormous number of possible observations.

In the first century of its existence, the IAU had very little formal contact with the much larger body of amateur astronomers around the world (estimated at around one million individuals). 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. At the present time, the working group has already carried out various initiatives including a survey of amateur astronomers, amateur astronomy associations, and IAU Astronomers to explore their experience and interest in professional-amateur astronomy research collaboration. The survey revealed great interest in collaboration between professional and amateur astronomers and thanks to it, a database of many of the principal amateur astronomical societies, associations and groups around the world has been established.

Following the survey results, the working group established two initiatives to promote collaboration between amateurs and professionals. The first is a website where professional astronomers interested in collaborations with amateurs can promote research projects where they would like to establish collaboration. All IAU members were invited to submit projects and the fan community to participate. At the moment 10 projects are active and accepting new collaborations. The second initiative is a three-day workshop primarily aimed at Amateur Astronomers, to build relations among their communities and promote collaboration between them and professional astronomers. This workshop is expected to be organized every two years. In 2023, the first 3-day workshop was organized at Indian Institute of Technology (IITB) in Mumbai, India. The next workshop is planned to be in 2025.

Dr. Mayra E. Lebrón Santos (top) is an astronomer and professor at the Río Piedras Campus of the University of Puerto Rico. Dr. Clementina Sasso (above) is a researcher in Solar Physics at the National Institute for Astrophysics - Osservatorio Astronomico di Capodimonte in Italy.

Astronomers Got Talent

Laura Hiscott

Stellar performances at the talent show

The Astronomers Got Talent show lit up Friday night in a spactacular, and often surprising, way. The audience were hyped up by the MC with an upbeat and apt rendition of "This Little Light of Mine, I'm Gonna Let it Shine", enthusiastically joining in while colourful light shows set the stage for an evening of people doing just that – letting their lights shine.

Luyanda Mazwi from South Africa started the show with an interactive vocal performance, transforming the audience into a choir. After teaching the audience the backing vocals of two South African songs, he then sang the main part, harmonising with a whole room of clapping, singing astronomers.

The rest of the night showcased a wide range of other astronomer talents, including poetry, singing and dancing – both traditional and contemporary – and musical instrument skills, including guitar and violin.

Anna Voelker recited an original poem they had written, which started by asking everyone to take a deep breath and then highlighting the incredible fact that each individual had just breathed in more molecules than there are stars in the known Universe. After riffing on our relationship with the stars, including the awe-inspiring fact that the elements our bodies are made of were forged in supernovae, the spine-tingling poem ended by describing the fleetingness of our lives on a cosmic timescale, and imploring the audience not to "miss the bliss of human curiosity, for this is surely our greatest work of art."

The audience was also treated to several lively group dances by troupes including Uptown Cosmic Funk and Mponeng. Victoria Samboco and Yara Simango performed a traditional style of dance from the south of Mozambique, while another dancer braved performing solo with a quick-footed traditional dance from India.

Another group dance by Venu Prayag even included props, with the dancers waving lights as their pop music medley transitioned into "A Sky Full of Stars" by Coldplay, and finished with "Waka Waka (This Time for Africa)," which got the audience out of their chairs and dancing along.

Any of the talented performers could have deservedly won the competition, not only for excelling in so many other skills alongside their academic careers, but also for having the courage to get up on stage. However, after an online vote by the audience, **the winner was revealed to be Steve Sottie** (pictured above in red, singing his heart out).

Rounding off the first week of this General Assembly, the talent show created a wonderfully celebratory atmosphere to carry us into the weekend.

Our Dynamic Milky Way

Prof Gerry Gilmore

The past and future of our dynamic galactic home

2024 marks 100 years since Edwin Hubble discovered the decisive evidence that there are other galaxies beyond the Milky Way, and that the Milky Way is not, therefore, the whole Universe. The centenary of this major turning point in cosmology offers good timing for the first public talk of the General Assembly – a presentation by Professor Gerry Gilmore called "Our Dynamic Milky Way," which explored how our understanding of our galaxy has evolved, as well as what we know about its past and future.

Professor Gilmore began with a brief history of humans' attempts to understand the Milky Way. Appropriately for Women's Day, he highlighted the invaluable contributions made by many women in these investigations, including Henrietta Leavitt, Cecilia Payne and Margaret Burbridge.

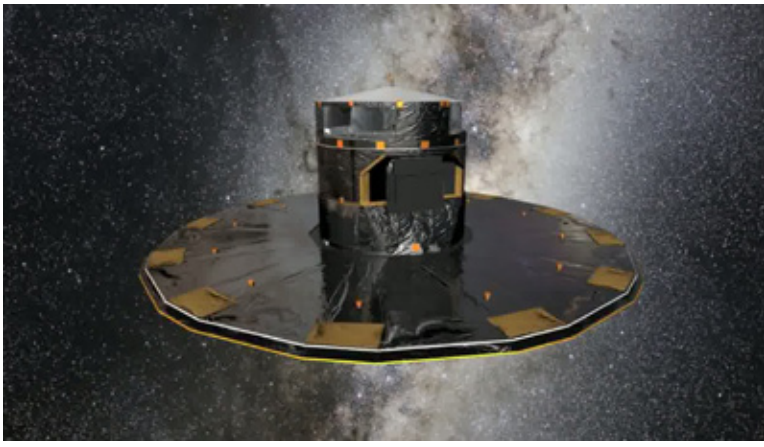
He then moved on to more recent discoveries about our galactic home, and the enormous strides being made by the European Space Agency's (ESA) Gaia mission, whose UK contributions he has led. Gaia is a spacecraft harbouring two telescopes that uses parallax to measure the absolute distances of up to 2 billion stars in the Milky Way.

Fascinatingly, only decades ago, the idea that galaxies were still evolving in interesting ways (besides through major collisions) was still controversial. Discoveries by Professor Gilmore, including streaks of torn-apart matter from the Sagittarius Dwarf Galaxy on the outskirts of the Milky Way provided evidence that the galaxy was indeed still dynamic, helping to motivate the Gaia mission, which was launched in 2013.

Professor Gilmore highlighted the remarkable resolution of Gaia – equivalent to someone in Cape Town being able to see the thickness of someone's fingernail in the North Pole. And Gaia can measure a lot more than just the locations of stars, also capturing data on their velocities, chemical compositions, ages, and other stellar properties. By measuring the motion of one particular star, Gaia has even detected the presence of the binary system Gaia BH3, containing an impressive ~33-stellar-mass black hole, announced earlier this year.

The velocity data captured by Gaia is also enabling astronomers to run the evolution of our galaxy both backwards, to reconstruct its formation, and forwards. Professor Gilmore mentioned our future collision with Andromeda, on course to happen in around 5 billion years. He impressed upon the audience that, perhaps uncommon in scientific statements about the future, this collision is not a prediction but a calculation – we know it is going to happen.

Gaia has been an extraordinarily productive observatory, generating around 2 000 peer-reviewed papers annually. In six months' time the mission will end, but the remaining data will continue to be processed and analysed until 2030. Who knows what secrets hidden in its staggering quantity of information will be uncovered in the coming years?



Artist's impreesion of Gaia spacecraft. Image: ESA–D. Ducros, 2013

The Universe in a Computer

Prof Joop Schaye

How is it possible to study the Universe with its immense distances and timescale?

As well as being the oldest science, astronomy may also be the most difficult to obtain data for, especially when it comes to the biggest questions about how the Universe began and how it is evolving. To learn about the ancient cosmos, we must develop technologies to peer across incomprehensible distances, and many processes unfold on cosmic timescales that are simply too long for humans to have a hope of witnessing them.

Enter cosmological hydrodynamical simulations, which attempt to run the cosmos in super-fast forward. This was the subject of Friday's invited discourse given by Joop Schaye, a Professor at Leiden University who focuses on galaxy formation and the intergalactic medium.

Beginning his talk, Professor Schaye defined the aim of such simulations as being to put the whole Universe in a computer – a lofty goal, but one that astronomers have made substantial progress on. Indeed, simulations are already sufficiently true to observations to be a useful tool in several tasks. These include testing different values of parameters to see which one yields results that most closely match observations, and designing observation campaigns by predicting what they might find, and thus how best to distinguish between competing theories.

Professor Schaye presented work on galaxy formation simulation through various feedback processes including from supernovae and AGN, and discussed the challenges of calibrating the models. He introduced a new simulation developed by the international Virgo Consortium called FLAMINGO – an acronym for Full-hydro Large-scale structure simulations with All-sky Mapping for the Interpretation of Next Generation Observations. Perhaps the most novel of the many advancements incorporated into this new tool is the use of machine learning to calibrate simulations.

Of course, simulation technology does have its limitations, several of which Professor Schaye discussed. He highlighted that, while CPU time and disk space often act as a bottleneck, even if they did not, we would still be limited by gaps in our current understanding of certain physical processes. Counter-intuitively, Professor Schaye pointed out that incorporating more detailed physics into the simulations can sometimes lead to simulations that diverge more from the observed Universe, because those additional aspects may be less well understood.

Nevertheless, cosmological simulation technology has already come a long way. Through further iterations and refinements, it will become ever-more valuable in filling in our picture of the Universe.

IAUS 391: The first chapters of our cosmic history with JWST

Dr Nancy Levenson &
Prof Richard Ellis

The James Webb Space Telescope advances the frontiers of astronomy

The plenary showcased the latest exciting highlights of results from the James Webb Space Telescope, launched on Dec 25, 2021. Over 20 000 people have worked on JWST to make it ready for launch and many astronomers have already profited from it: Cycle 3 of proposals had 6 000 unique investigators from 57 countries, making this a truly global space telescope, and 500 papers have already been published. Double anonymous peer review has now also enabled gender parity among principal investigators.

Nancy Levenson from STScI had only time to briefly highlight the many advances that JWST has brought us, including the discovery of very high redshift galaxies, the current record stands at a redshift of 14.32. Supermassive black holes have already existed back then and now we have to figure out how they got to be there that early in the Universe. The "little red dots" have become a famous new class of galaxies, possibly AGNs, in galaxies with a very strange spectral energy distribution.

Closer to us, JWST can resolve the structure of star-formation in nearby galaxies and bubbles blown into the interstellar medium by supernovae, complementing the images we get from HST of the warm gas. But even seemingly young dwarf galaxies had some early star-formation in the epoch of reionization, followed by a long pause before a new, recent burst. JWST has found conclusive evidence for the presence of a neutron star in the remnant of SN 1987A, the still closest and best studied supernova in modern times.

We can also now study interstellar ice in detail and resolve organic molecules in protoplanetary disks and protostars (we have found ethanol for quite a lot of drinks there!), combining JWST with ALMA observations. Very exciting are also the results from studying exoplanet atmospheres, from cool Super-Jupiters to molten lava worlds such as 55Cancri E.

Richard Ellis, from University College London, went into more details of these very high redshift galaxies detected by JWST. Galaxies at redshift larger than 10 should not exist in such high numbers as we observe, assuming similar star-formation efficiency than at low redshifts. These over-luminous high-redshift galaxies are very different: compact with only a few 100pc in diameter, but with star-formation rates of 20-25 solar masses per year, and they are redder.

JWST has discovered AGNs in the era of reionization, a complete surprise. Even more astonishing is their SMBH assembly rate: in those galaxies, 30% of the mass is in the BH alone, meaning it grows much faster than stars can assemble. We might even have the case of an X-ray detected AGN at redshift 10.

JWST also gives promising outlooks for tracing the chemical evolution of the Universe out to very high redshifts. Maybe we have even detected the first population III stars already. "Astronomers always deliver more than promised!"

(Top) Two interacting galaxies known as Arp 142. Image: Credit: NASA, ESA, CSA, STScI
Above left) Dr Nancy Levenson
(Above right) Prof Richard Ellis

Fun times at IAU-GA2024

OPEN TO THE PUBLIC

The Cosmic Savannah podcast showcases Afro-centric astronomy to the public. It is produced and hosted by myself, Dr Tshiamiso Makwela, from IAU OAE/MPIA/UCT, and Dr Daniel Cunnama, the Science Engagement Astronomer at the South African Astronomical Observatory.

This coming Wednesday 14th Aug we are having a live show at the CTICC at 7pm, as part of the IAU GA. We will be interviewing two special guests:

- Prof Brian Schmidt, winner of the 2011 Nobel Prize in Physics and former vice-Chancellor of the Australian National University.
- Dr Nicole Thomas, a Cape Town-born early-career astronomer and graduate of the South African National Astronomy and Space Science Program.

CLICK HERE
for more information
and to
book your tickets

PROGRAMME WEEK 2

	MON - Aug 12th	TUE - Aug 13th	WED - Aug 14th	THU - Aug 15th
08:30 – 10:00 Morning plenary	Offices plenary	IAUS 392 plenary	IAUS 393 plenary	IAUS 394 plenary
10:00 – 10:30 Morning e-poster & coffee break	Division e-poster	IAUS 392, 393, 394 FM4, FM8, FM9, FM10, WG1, WG2	IAUS 392, 393, 394 FM4, FM8, FM11, FM12, WG3	IAUS 392, 393, 394 FM9, FM10, FM11, FM12, WG6, WG4
10:30 – 12:00 Morning oral session	Parallel Division Oral Sessions	S 392-1 S 393-1 S 394-1 WG1-1 WG2-1 / FM4-1 FM8-1 FM9-1 FM10-1	S 392-4 S 393-4 S 394-4 WG1-4 WG3-2 / FM4-4 FM8-4 FM11-1 FM12-1	S 392-7 S 393-7 S 394-7 WG6-1 WG4-1 / FM9-4 FM10-4 FM11-4 FM12-4
12:00 – 13:30 Lunch		Kavli Prize Talk by David Charbonneau	Young Astronomers	
13:30 – 15:00 Afternoon oral session 1	Parallel Division Oral Sessions	S 392-2 S 393-2 S 394-2 WG1-2 WG2-2 / FM4-2 FM8-2 FM9-2 FM10-2	S 392-5 S 393-5 S 394-5 WG2-3 WG3-3 / FM4-5 FM8-5 FM11-2 FM12-2	S 392-8 S 393-8 S 394-8 WG6-2 WG4-2 / FM9-5 FM10-5 FM11-5 FM12-5
15:00 – 15:30 Afternoon e-poster & coffee break	Division e-poster	IAUS 392, 393, 394 FM4, FM8, FM9, FM10, WG1, WG2	IAUS 392, 393, 394 FM4, FM8, FM11, FM12, WG3	IAUS 392, 393, 394 FM9, FM10, FM11, FM12, WG6, WG4
15:30 – 17:00 Afternoon oral session 2	9 Parallel Division Oral Sessions	S 392-3 S 393-3 S 394-3 WG1-3 WG3-1 / FM4-3 FM8-3 FM9-3 FM10-3	S 392-6 S 393-6 S 394-6 WG2-4 WG3-4 / FM4-6 FM8-6 FM11-3 FM12-3	S 392-9 S 393-9 S 394-9 WG6-3 WG4-3 / FM9-6 FM10-6 FM11-6 FM12-6
17:15 – 18:30 Afternoon plenary	Gala Dinner	Invited Discourse: Prof Natalie Batalha	Business 2	Closing Ceremony Handover
18:30 - 21:30 Various		Public Talk: Prof George Ellis 18:15 - 19:15		
		Cultural Evening 19:30 - 21:30	The Cosmic Savannah Guest: Nobel Prize winner Prof Brian Schmidt 19:30 - 21:30	

Background: The Milky Way above the ATCA. Image courtesy of E. Lenc.

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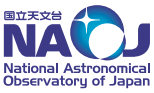
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07/08 Journey into Space with Astronaut Dr. Sian Proctor

08/08 Evening With NASA

09/08 Women in Space Science & Astronomy
The Milky Way with Prof Gerry Gilmore
Astronomers Got Talent!

10/08 Stargazing at V & A Waterfront

13/08 Nature of the Universe with Prof George Ellis

13/08 #AfricaLookUp Cultural Exchange Evening

14/08 The Cosmic Savannah Live Show with Nobel Prize Winner Prof Brian Schmidt

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XXXII IAU GENERAL ASSEMBLY

CAPE TOWN, SOUTH AFRICA, 2024

The team behind the design, layout, content writing and editing of the XXXII[nd] IAU GA newsletter includes Patrick Saunders; Guido Schwarz; Laura Hiscott; Maria Stone; Christina Thöne; Shirley Aoko; Gwen Sanderson; Marcelina Kinyumu; Daniel Cunnama; Susan Caras

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XXXII IAU GENERAL ASSEMBLY

6 - 15 AUGUST 2004

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