

Welcome to the latest issue of the **NASSP** newsletter. This publication aims to keep all our colleagues and collaborators abreast of NASSP developments as well as create a forum for commentary and discussion from individual nodes. Contributions, news, and suggestions are most welcome, please forward these to NASSP-UKZN.

*This newsletter is prepared by NASSP-UKZN.*

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### NASSP MISSION AND VISION

To empower South African and foreign African students **to embark upon Ph.D. studies in astrophysics and space science** by providing them with the necessary skills, knowledge, and inspiration. By harnessing national expertise and resources and taking advantage of the global network, **NASSP is committed to producing graduates whose qualifications are internationally competitive and locally applicable.** The programme will promote diversity and transformation while growing the next generation of graduate astronomers and space scientists who can enter and contribute to the South

African workforce, where mathematical skills and a command of research methods will be advantageous.

**To create human capacity in astronomy and space science**, particularly in under-represented communities, and to build a cohort of scientists at the core of an international network of African astronomers, space scientists, and citizens, who are bonded by the common experience of schooling, interlinked both professionally and personally and able to make a major contribution to the transformation of society.

#### News from NWU

**Former NASSP student becomes Research Director of the Centre for Space Research at the North-West University.**

Introducing a unique researcher who initially started as a NASSP student and is currently a Professor and Research Director at the North-West University (NWU). We would like to introduce Prof Amare Abebe Gidelew.



Prof Amare Abebe completed his BSc in physics in 2006 at Addis Ababa University and studied graduate-level courses there. In 2008, he joined the National Astrophysics and Space Science Program (NASSP) at

the University of Cape Town (UCT) and completed his Master's degree in 2009 under the supervision of Prof Peter Dunsby who was then a NASSP director. He then carried on with his Ph.D. studies and completed them in 2013, under Prof Dunsby's supervision. These formative years at UCT gave him ample opportunities to actively participate in seminars, schools, and conferences, both locally and internationally, and learn directly from leading experts in the fields of general relativity and cosmology.

Following his Ph.D. studies, he joined the Physics group of the NWU first as a postdoctoral research fellow hosted by Prof Thebe Medupe, and later as a permanent academic since 2015. He was promoted throughout his career at the NWU and is currently a full professor and director of the Centre for Space Research (CSR). His director duties include managing the research done by over 25 researchers and over 60 post-graduate students in the CSR.

Prof Amare started publishing in 2011. His publications have since expanded in scale and scope with about 60 peer-reviewed and conference proceedings publications on modified gravity theories and alternative solutions to the standard cosmological model. His principal research interest is in gravitation and cosmology. His current focus is on cosmological aspects of modified theories of gravitation and their observational constraints.

Prof Amare enjoys teaching physics at all levels and is working towards attracting postdocs and postgraduate students to do research in cosmology at the CSR. As part of this effort, he regularly supervises undergraduate, honours, Master's, and Ph.D. students from NWU and other institutions (including NASSP and AIMS) and postdocs from around the world.

His message to NASSP students: “The future of astronomy in South Africa (and Africa in general) is very bright given the huge and state-of-the-art astronomy and space science infrastructure being set up in the country, the continent, and elsewhere. NASSP students and alumni should seize this golden opportunity to be at the forefront of cutting-edge astronomy research and change the once-so-called “dark continent” narrative into one of the cradles of excellence in research and innovation. With hard work

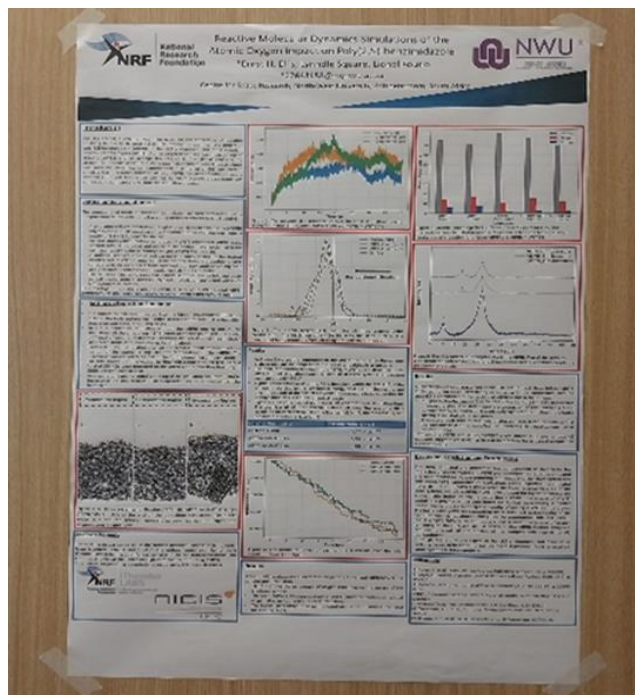
and perseverance, no sky is a limit.” So, for students interested in gravitation and cosmology, please be on the lookout for Prof Amare's projects on the NASSP project server.

### 3D-ICOMAS Conference held in Italy

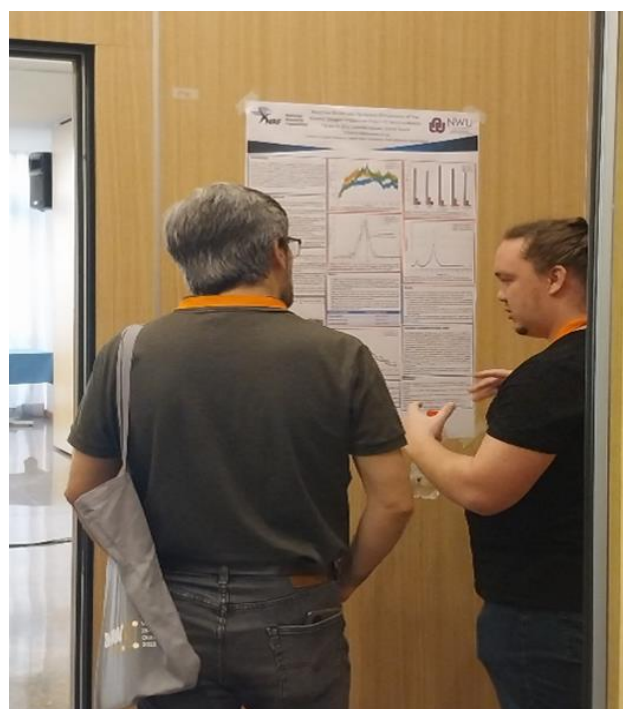
The North West University MSc NASSP student attended the 3D-ICOMAS Conference and presented a poster on space radiation and shielding.



The 3d-ICOMAS Conference is a 3-day International Conference on Materials Science that was held in Verona, Italy from 26 to 28 October 2022. The conference aimed to bring together scientists from different areas of materials science; chemist, physicist, and engineers, to discuss their research and the latest developments in the field of materials science.



The 3d-ICOMAS conference was packed with people from all over the globe researching various materials science topics.



**Ernst H. Ellis (currently performing Ph.D) has presented the research work entitled “Atomic Oxygen Effects on poly (2,5) benzimidazole, multiwalled carbon nanotube composite: An experimental and molecular dynamics study” . Ernst found that the whole experience was a great**

window into the field of materials science. It has widened his understanding of the subject including the different disciplines that work together in a multi-discipline field like materials science. It has increased his own determination to both add and better the field, besides Italy is one of a beautiful tourist place.

### News from UCT

#### UCT NASSP node hosts the UKZN NASSP node

On April 12th, 2023, the UCT NASSP Node was honoured to host the UKZN Node as part of its curriculum, organized by Professor Siva Venkataraman.



*Directors - UCT and UKZN Nodes.*

The directors of the UCT NASSP Node, Professors Patrick Woudt, and Saalih Allie, warmly welcomed the NASSP-UKZN students, and NASSP-UKZN presented NASSP-branded merchandise such as caps and notebooks as gifts. This event provided a platform for the students to share experiences and research studies from both nodes.



*NASSP Honours and MSc Students from both nodes*

As part of the UCT NASSP Node curriculum, BSc Hons and Master’s students are required to attend the weekly colloquium. This event provides a platform for the students to interact with various researchers within the field of astronomy. Recently, on April 26th, 2023, the NASSP colloquium was organized by Moses Mlangeni, an MSc student in the department. The colloquium was held at the IDIA Visualization Lab and featured a talk by Professor Tom Jarrett. Professor Jarrett further demonstrated to the students how virtual reality (VR) is being utilized in the field of astronomy.

### News from UKZN

#### Nobel in Africa Public Lectures - Nobel lecture held at UKZN Westville

UKZN was proud to host one of the Nobel in Africa Public Lectures. This initiative forms part of the 183<sup>rd</sup> Nobel Symposium in Physics Outreach Programme, which brought the world’s leading physicists to our shores. This was the first time the Nobel Symposium was held in Africa. The Public Lectures were held both in person and streamed virtually for those who wish to participate remotely. NASSP-UKZN node has contributed for welcome dinner to the delegates. Most of the NASSP students participated in the public lecture and school event.

UKZN opened its Physics labs to members of the public and offered guided tours in conjunction with this initiative. The programme was offered as follows:

- Monday 31 October 2022 = Neil Turok – “**Universe**”; and Armita Nourmohammed – “**Learning the shape of the protein universe**” (*online attendance only*).

NOBEL SYMPOSIA SERIES

**“Universe”**  
Neil Turok  
Higgs Chair of Theoretical Physics, University of Edinburgh  
Emeritus Director, Perimeter Institute for Theoretical Physics, Canada  
Founder and Board Chair, African Institute for Mathematical Sciences

**Learning the shape of the protein universe**  
Armita Nourmohammad  
Assistant Professor of Physics at the University of Washington  
Affiliate investigator, Fred Hutchinson Cancer Research Center, Seattle

NOBEL IN AFRICA  
A STIAS INITIATIVE

- Monday 31 October 2022 = 16h00-17h30: **Open Labs – UKZN School of Chemistry and Physics** (*in-person attendance only*).



- Monday 31 October 2022 = Erik Aurell – “**Fluctuation Relations**”; and Luca Gammaitoni – “**Why it is difficult to find something if you do not know what you are looking for**” (*in-person and online attendance available*).

NOBEL SYMPOSIA SERIES

**Fluctuation Relations**  
Professor Erik Aurell  
Professor of Theoretical Biological Physics at Royal Institute of Technology at Stockholm (KTH)

**Why it is difficult to find something if you do not know what you are looking for?**  
Professor Luca Gammaitoni  
Director of the Noise in Physical System Laboratory (NIPS Lab) at the Physics Department of the Università di Perugia, Italy.

NOBEL IN AFRICA  
A STIAS INITIATIVE

- Tuesday 1 November 2022 = Mogens Hogh Jensen – “**Complexity in Science**”; and Angelo Vulpiani – “**Predicting the future: an old problem from a modern perspective**” (*in-person and online attendance available*).

NOBEL SYMPOSIA SERIES

**Complexity in science**  
Mogens Hogh Jensen  
Professor of Complex Systems and Biophysics, Niels Bohr Institute, University of Copenhagen  
President of Royal Danish Academy of Science and Letters (until 2020)

**Predicting the future: An old problem from a modern perspective**  
Angelo Vulpiani  
Full Professor, University of Rome

NOBEL IN AFRICA  
A STIAS INITIATIVE

The Nobel in Africa Public Lecture Series was held at UKZN’s Westville Campus. These Public Lectures

offered a once-in-a-lifetime opportunity to interact with some of today's leading scientific minds.

### THE 183<sup>RD</sup> NOBEL SYMPOSIUM PHYSICS OUTREACH PROGRAMME 2022 18 October to 02 November Republic of South Africa

#### Presentation made by Dr. Alicreance

Dr. Alicreance visited the UKZN from SANSA to attend his graduation ceremony for his Ph.D. He is a former NASSP-UCT student, and the NASSP-UKZN node students were privileged to receive the talk/presentation from him about his Ph.D. work. The seminar was held on 23 September 2022, at the UKZN Westville campus, H-Block, Physics Seminar room.



The title of the presentation was: "**First Observations of E-Region Near Range Echoes Partially Modulated by F-Region Traveling Ionospheric Disturbances Observed by the Same SuperDARN HF Radar**".



#### NASSP students in the SALT workshop

On November 14 and 15, 2022, four NASSP-UKZN students were invited to attend a SALT workshop held at the South African Astronomical Observatory (SAAO) in Cape Town. There were three NASSP-UKZN master's students and one honours degree student attended. The voice from the students, benchmark the SALT which has known to be the biggest optical telescope in the southern hemisphere. It makes it possible to image, spectroscopically analyze and polarimetrically analyze the radiation coming from astronomical objects that are beyond the field of view of telescopes in the northern hemisphere. The researcher has also stated some of the discoveries, like spiral galaxies, that have been made.



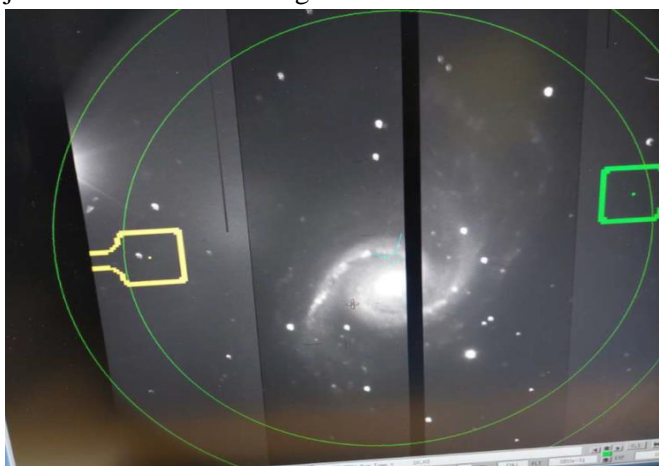
*SALT night observations: Photo obtained from Mr. Banele*

There was also a trip to visit Sutherland that was arranged for students on November 16, 2022. This was to allow the students to observe the Southern African Large Telescope after some background had been given about it during the workshop and also to look through other telescopes that are located in the same area as SALT. The students also took a quick tour of other telescopes, including MEERLICHT and robotic telescopes.



*The four UKZN students and one NWU student who attended the SALT workshop*

The students were extremely fortunate to have a visit when one of the astronomers was performing night-time observations of spiral galaxies, and that allowed them to join the observation and gather more information.



*SALT night observations: Photo obtained from Mr. Banele*

### NASSP students managing their studies during the COVID-19

The COVID-19 pandemic became a global health issue that had a major impact on many industries. The COVID-19 pandemic also impacted educational systems worldwide, and to combat the spread of

COVID-19, most governments decided to temporarily close educational institutions. Thus, students were forced to shift all their academic studies online, and the learning methods had to be delivered through distance or e-learning. Consequently, some of the NASSP-UKZN students have provided feedback on their experience with NASSP as we are now transitioning out of the COVID-19 pandemic and they are starting to attend the physical lectures.

Some of the responses from students were as follow:

- “My experience has been good. But, things were moving a bit fast, especially as a new student to the university and does not know what physical lectures are like”.
- “For me it felt sufficient, although some teachings suffered from the remote learning because the student’s needs felt a lot neglected. However, things turned out good in one way or the other”.
- “The experience has been good”.
- “It was amazing as they managed to help us cope well with our studies during the pandemic”.
- “It was so difficult”.
- “My experience was bad. I think many things were not conducted so well”.

The feedback provided by students shows a part of the emotions felt by the students and provides some insight that could help regulate some of the emotional effects related to COVID-19.

### General News

### Call for 2024 Applications to the National Astrophysics and Space Science Programme (NASSP)

NASSP is currently offered at three university nodes in conjunction with other partner universities: The University of KwaZulu-Natal (UKZN – Westville

Campus), the University of Cape Town (UCT), and North-West University (NWU).

### NASSP Bursaries

South African students with undergraduate degrees in Astronomy, Astrophysics, or Physics, with Mathematics or Applied Mathematics up to at least the second year are eligible for applying for bursaries at Honours and Masters levels to cover fees and a contribution to living expenses.

*Please note that due to budgetary constraints, preference for Masters bursaries will be given to current NASSP Honours students with limited availability for other applicants*

Application Procedure Eligible students are invited to apply for the NASSP Honours and Masters programmes in Astrophysics and Space Science. You will need to apply to both the University node of your choice and the NASSP programme. Detailed instructions can be found at: [www.star.ac.za](http://www.star.ac.za)

*Before filling out the NASSP bursary application form, make sure to apply for Honours/Master's at the university node you would prefer to attend. Then use the student number/application reference number they provide to fill out the NASSP online application form.*

Complete the application form at <https://www.star.ac.za/applicationprocedure>

In addition to completing the online application form, applicants must also submit these documents to: [applications@nassp.uct.ac.za](mailto:applications@nassp.uct.ac.za)

1. Full CV
2. Electronic copy of academic transcripts (official with university letterhead)
3. Copy of passport or SA ID document

Please address any queries and/or any problems you may experience in the application process to:

- [nassp-admin@nassp.uct.ac.za](mailto:nassp-admin@nassp.uct.ac.za) (UCT) or
- [nassp@ukzn.ac.za](mailto:nassp@ukzn.ac.za) (UKZN) or
- [nassp@nwu.ac.za](mailto:nassp@nwu.ac.za) (NWU).

**The deadline for applications is 31 August 2023.**

***PLEASE NOTE:*** You will be notified before the beginning of November 2023 if you have been selected for NASSP Honours. If unsuccessful you can then still apply for a general NRF scholarship (deadline mid-November 2023).



### Contact us!!!

We look forward to receive contributions and feedback from nodes and partners for our next newsletter.

### Please email:

[nassp@ukzn.ac.za](mailto:nassp@ukzn.ac.za) or [nassp.ukzn@gmail.com](mailto:nassp.ukzn@gmail.com)