



# **The African Astronomical Society**

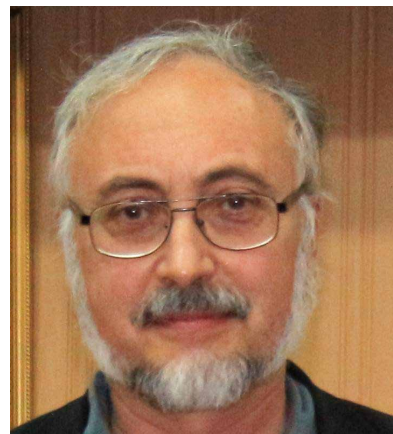
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[www.africanastronomicalsociety.org](http://www.africanastronomicalsociety.org)



# THE AFRICAN ASTRONOMICAL SOCIETY

Launched in 2019, the [African Astronomical Society](#) (AfAS) is a diverse and inclusive Pan-African society of professional and amateur astronomers, which aims to create a globally competitive astronomy community in Africa. The mission of AfAS is to be the voice of astronomy on the continent and to address the challenges faced by Africa through the promotion and advancement of astronomy. In this exclusive interview, we speak with the Society's president, **Dr Jamal Mimouni**, who discusses astronomical achievements in Africa and how AfAS supports and advances astronomy research and education across the entire continent.



**Please start by sharing some inspiring examples of recent astronomical achievements in Africa.**

Very good. Let me dwell on three examples. The first one will lead us to Senegal where a team of some 30 young Senegalese, some with physics backgrounds and others from the amateur community, are undertaking regular occultation campaigns with help from NASA. One project they are working on is the Arrokoth campaign to find a suitable Kuiper belt object for the New Horizons spacecraft to fly by.

On the night of September 23, 2020, they were able to successfully observe the occultation of the Polymel asteroid of an 11th magnitude star, which lasted less than two seconds. This should help the LUCY probe mission to the Trojan asteroids, which will be flown over six of them, including Polymel, in 2027.

This is a success story in the sense that it helps train young science students, paving the way for professional careers in astronomy or space science, as well as producing science of direct use.

My second example will bring us to Morocco in North Africa, where the Oukaimeden Observatory is situated near Marrakech. In synergy with researchers at the Department of

Astronomy at Cadi Ayyad University, this observatory is producing great science as well as training local students to become professional astronomers. There is a dynamic and ambitious program of installing optical facilities enticing various international partners thanks to the pure sky of the High Atlas Mountains where this high-perched observatory is situated.

The Oukaimeden Observatory distinguished itself by participating in the discovery of the 'seven sisters' planetary system of the TRAPPIST-1 star in 2016 – seven rocky planets resembling our Earth and situated a stone's throw away (well, 40 light years, which is a trifle of a distance compared to the huge expanse of space), and offering a glimpse to the stupendous variety of planetary systems that probably fill our Galaxy.

Finally, I shouldn't leave the list of examples without mentioning South Africa, which is a heavyweight actor on the astronomical world scene. There lies a superb optical facility on the Sutherland plateau dominated by SALT, the largest optical telescope in the world, and the future Square Kilometer Array (SKA) – a multi-billion-dollar international project which South Africa was selected to be home



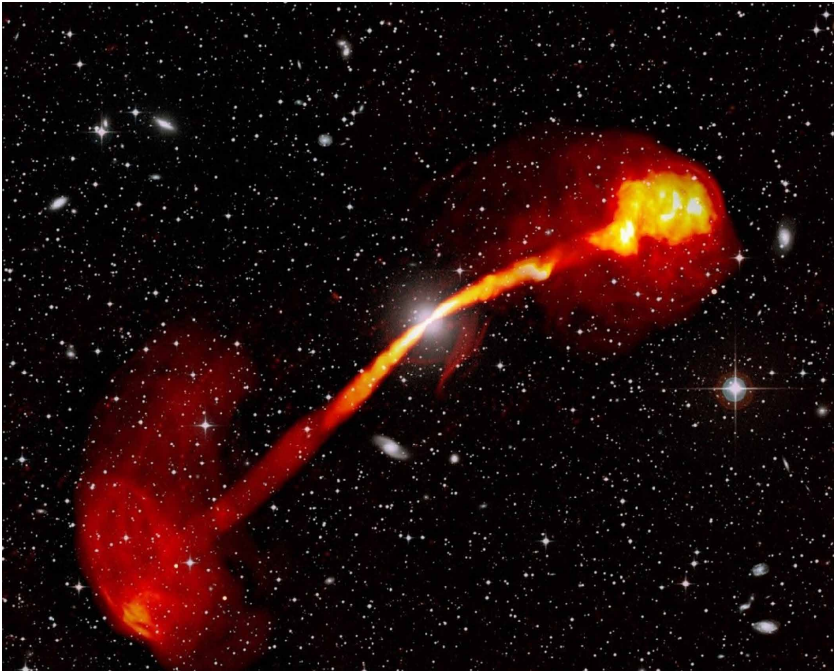
*Thirty young Senegalese were trained in manipulating telescopes and doing observations in preparation of the campaign.*



*The Oukaimeden Observatory near Marrakech.*

for. In the meantime, the MeerKAT telescope array in the Karoo desert and a precursor of the SKA, is delivering world-class science. One can admire from a recently released picture of unmatched resolution, the intricate details of powerful radio emissions from an enormous rotating black hole in the elliptical galaxy IC 4296. It displays a combination of cosmic features never

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*Jets from the black hole in IC4296 jets as seen from the MeerKAT radiotelescope in South Africa.*

seen before, providing a window into the inner mechanisms within giant radio galaxies.

**What is your own area of expertise, and why did you pursue a career in this field?**

Well, it all started from a real passion for the sky, and in particular the science of the stars. I have been fascinated from a tender age by those little dots in the sky even before I knew how to write any equation. But the physics of stars, the burning nuclear phases going on within them, and their prodigious diversity, which can be related to their colour and spectrum, captivated me.

Later, I started as a student in theoretical physics in Algeria, graduating with a BSc in 1977 from Algiers University. I then focused on particle physics when doing my PhD at the University of Pennsylvania, and finally turned to astroparticle physics and cosmology in my professional life.

For the past two decades, I have also been very involved in setting up the basis of astrophysics in my country, as the head of Astrophysics Studies in the physics department of my university – the first and only such program in Algeria. I am also involved with the National Aurès Observatory project, which will be the first such astronomy facility in Algeria since the independence of my country.

But I have also devoted an increasing amount of effort and time to the connection of science and society, and in particular the cultural dimension of scientific debate in the Arab-Muslim world. I have developed a keen interest in the philosophy of contemporary science, as well as spreading scientific culture in the developing world. As such, I have been involved in public debates and have lectured to various audiences all over the world.

On the ‘ground’, I have acted for decades as an adviser and resource person to amateur astronomy

associations in Algeria, as I am also the founder and head of the well-known Sirius Astronomy Association. My peregrinations throughout Africa for lecturing and outreach made me well-known enough that the African astronomical community has thought of electing me as the first President of AfAS in March 2019.

**Congratulations on being elected as the first President of AfAS. Please explain how this wonderful Society facilitates collaboration between astronomy professionals both within Africa and beyond.**

The key objective of AfAS is to cultivate and encourage collaboration among countries in Africa as well as collaborations between Africa and the rest of the world in scientific, educational, and outreach astronomical activities. AfAS is also dedicated to making every attempt to support collaboration, rather than competition, with other relevant initiatives on the continent by bringing together complementary resources, networks, and expertise.

AfAS itself also has agreements with other organisations, such as the International Astronomical Union Office for Astronomy for Development with which we have recently signed a Memorandum of Understanding, which is aimed primarily at strengthening development through astronomy throughout the African continent. We are also working towards various flagship projects that aim to create networks for optical and radio astronomy, outreach and education, as well as High-Performance Computing.

Our annual conference attracts hundreds of participants from across Africa and different parts of the world and promotes discussions on collaboration so that the community can be better organised for astronomy research, education, outreach, and development on the continent. AfAS also organises various workshops, webinars, and special sessions at other





*A group picture of delegates from all over Africa and the diaspora, at the launch of AfAS in Cape Town in 2019.*

meetings and conferences throughout the year to develop relationships with our community and strategic partners from relevant organisations.

#### **In what other ways does AfAS aim to advance astronomy research?**

AfAS has developed a Science Strategy that aims to create an interlinked and world-class African astronomy community that contributes to the advancement of human knowledge. Through this, we hope to advance astronomy through the development of strategies, facilitation of interdisciplinary collaborations, encouragement of cross-border engagements, and stimulation of human capital development.

We have recently embarked on a project to create a science portal to develop and disseminate open-source resources that will benefit astronomy. This will also involve databases of astronomy expertise, active research areas, infrastructures across Africa and African diaspora. We are also conducting a survey of astronomy on the continent to help us identify 'focus areas' of research groups in Africa and resources available (and required) in different locations. This will play a role in encouraging African countries to have appropriately aligned strategies.

AfAS is committed to increasing the number of African astronomers, as well as the number of astronomers working in Africa. Therefore, we aim to advance astronomy research and secure its future by investing in early-career research through our Seed Research Grant, which supports research projects in astronomy (including Astrophysics and Space Science) conducted by postgraduate students and early-career researchers based in Africa.

Our future goal is to be further involved in infrastructure support, such as the development of intelligent telescope networks, High-Performance Computing for astronomy and interdisciplinary research, site testing of optical telescopes,

radio astronomy and dish conversion, the African Very Large Baseline Interferometer Network, the African Millimetre Telescope and the Event Horizon Telescope.

#### **How does the Society plan to improve STEM education in schools across the continent?**

AfAS has established Outreach and Education committees with a philosophy to be at the service of the astronomy community in Africa and to encourage the appreciation of the significance of astronomy for society, with a particular focus on the future generation.

We want to use astronomy to inspire young people to pursue STEM studies and careers. We are already doing this by setting up programs and undertaking well-targeted actions in this area. Our goal is to increase science and astronomy literacy across Africa and enhance the presence of astronomy by creating and curating reliable and accessible resource material on astronomy for the general public, school students, and teachers.

We will also work to facilitate partnerships with national institutions to help establish astronomy research programmes in more tertiary institutions in Africa and develop materials for schools and the public, which use astronomy to promote careers in STEM.

#### **Tell us about some of your other public outreach efforts.**

The Outreach Committee is the key element in the actions undertaken by AfAS to promote astronomy and spread astronomical knowledge, even though it is primarily a professional astronomy association.

Such outreach enables the public to see the inner-workings of scientific research and the grandiose cosmic picture it brings, while also challenging irrational thinking, which is an impediment to social development. We are working to



**‘We want to use astronomy to inspire young people to pursue STEM studies and careers.’**



establish and coordinate a network of astronomy outreach professionals across Africa, building on what is already in place. We already have a number of working groups that focus on various key areas of interest. Each of these groups has a definite focus, with members with expertise as well as passion in those areas. These groups will provide valuable service to the community and will be expanded as needed.

For example, the Affordable Mobile Planetaria group is tasked with developing, testing and authenticating various prototypes for affordable mobile planetaria that are suitable for amateur astronomy associations, schools and colleges, and science organisations at a fraction of the cost of what is available on the shelf from commercial companies.

The Amateur Radio Telescopes group aims to develop a suite of radio telescope designs appropriate for amateur astronomers, schools and universities, facilitate a network of interested partners, and develop a program for construction and usage of these telescopes. This work is motivated by the presence of the Square Kilometre Array (SKA) megaproject in Africa.

Currently, we are also looking at more emphasised promotion of astronomy in countries where its presence is minimal. We also support the continuing and exemplary work of amateur astronomy associations, and assist the formation new associations, with an emphasis again on regions where astronomy is not yet well developed.

**Finally, tell us a bit about the African Network of Women in Astronomy (AfNWA), and its role in increasing female participation in the astronomy community.**

AfNWA is a bold initiative aimed at connecting women working in astronomy and related fields in Africa. It was established in September 2020 as one of the committees under AfAS. Its aim is to empower women in sciences, especially in astronomy-related research areas.

Indeed, according to the latest report of the UNESCO, the number of female researchers in astronomy is on average less than 30%. With AfNWA we would like to guarantee future participation of girls and women at all levels in astronomy and science developments in Africa. Our main objectives are improving the status of women in science in Africa, and using astronomy to inspire more girls to pursue STEM careers.

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