SKA-France

Monthly bulletin

April 2020

News from Maison SKA-France

Status of the SKA project

Given the situation associated to COVID-19, on **April 28, 2020**, a **public statement on the status of the SKA project** has been published at the SKA Organisation webpage, and circulated to the SKA scientific community and stakeholders. The statement, signed by P. Diamond (SKA DG), is copied below.

Dear friends and colleagues,

I hope that all of you and your families are safe and healthy in this crisis that has gripped the world. It is heartening to see the way that our fellow citizens across the globe have risen to the challenges imposed by the pandemic, especially the way in which the world's health professionals have stepped up, often at risk to themselves. I salute them all.

It is now nearly six weeks since the SKA HQ building was shut down as a response to the coronavirus pandemic. It is my expectation that the shutdown will continue for some weeks yet. Within the senior leadership of the SKA Organisation we are planning the eventual return to the office but will be following the advice of the UK government in making any decisions. Any and all decisions on a physical return will be taken ensuring the health and well-being of our staff and their families above all else.

Thanks to some careful planning, an efficient IT team, robust technology and a digitally-savvy workforce, SKA staff have managed to rapidly settle into the new working environments and establish new working practices. As I am sure is the case all over the world, this has not come without issues, as our colleagues cope with families at home and isolation for those who live alone. We have had, for many years, a flexible work culture and this has come to the fore during the past few weeks. Our Human Resources team have been in contact with all lone workers to ensure they are managing, and we have set up systems whereby they can meet and socialise with their colleagues via videoconferencing.

EPFL joins SKAO

Following an unanimous decision by the SKA Board of Directors, April 20 saw the announcement that École Polytechnique Fédérale de Lausanne (EPFL) has become the 14th member of the SKA Organisation (SKAO), after Switzerland having held observer status within SKAO since 2016.

This decision follows important SKA-related activities in Switzerland, such as the organisation of annual Swiss SKA days and the publication of the Swiss SKA White Paper. EPFL is the lead institution coordinating involvement in the SKA on behalf of the Swiss academic community, with J.P. Kneib (EPFL) leading the consortium of Swiss scientists interested in the SKA. On April 20, 2020, it was also announced that Switzerland's Federal Council recently triggered the first political debate in parliament regarding the possible participation of Switzerland as a member state of the SKA Observatory in the future.

Image courtesy: EPFL

Some of our staff returned to their home countries prior to the shutdown to be with their families; they continue to work remotely, and we will work with them to plan their eventual return to SKA HQ.

In the weeks since the lockdown commenced, we have had 7 new starters at SKAO. All have been inducted remotely and are fully incorporated in all SKA activities within their new teams. We look forward to the time when we can meet them in person and welcome them with a NAMASTE, the replacement for a handshake.

On the project side, we continue to progress well. We have had ***several positive milestones over the last four weeks and have been maintaining the strong momentum that was evident across all aspects of the project before the pandemic hit****. Those key milestones are:*

- *The System Critical Design Review, the meeting for which took place in December last year, was completed in early April, with all actions closed off except those few which, with the full agreement of the panel, require continued technical investigation of prototype systems. This has been a huge effort by all involved, both within the office and across our global partnership.*
- *The external review of the SKA Operations Plan took place by video on 23-25 March; the panel's very positive report was received shortly thereafter. We have accepted and are implementing all of their recommendations. There are no major issues, but some wise advice was provided in areas of budgetary contingency, lean staff levels in one or two areas, the complexity of managing an operation across three continents and the relationships with the proposed SKA Regional Centres.*
- *The Cost Audit of the SKA1 construction plans was completed a week or so ago. This was conducted by Arup, a global engineering company. Again, the report was very positive with a range of extremely useful recommendations. These mainly focused on issues of detailed process and did not turn up any major concerns with regard to the cost estimates or the contingency estimation process.*
- *On Monday 20th April, EPFL (the École Polytechnique Fédérale de Lausanne) joined the SKA Organisation, representing Switzerland; they are SKA's 14th Our Swiss colleagues have, over the past 4 years, become increasingly engaged in SKA activities and we welcome them into the project.*
- *On 21st April, we were pleased to hear that the legislation to progress the UK's ratification of the SKA Observatory Convention was laid before the UK Parliament; this will now progress through the UK processes over the coming weeks.*

In addition to supporting these milestones, the SKAO staff are focusing on several areas, namely: developing the ***draft Construction Proposal****, which will be ready for internal review shortly; further development of the* ***procurement strategy****; updating the* ***Operations Plan*** *and developing the broader* ***10-year plan for the Establishment and Delivery of the Observatory****; engaging in the newly-established* ***SRC working groups****; drafting the* ***business plan for 2021****; preparing for the* ***review of business-enabling functions****; working on several different aspects related to the* ***transition from the SKA Organisation to the SKA Observatory****; working on the* ***second Data Challenge****; drafting the* ***next version of Contact****, developing the thinking around the* ***future SKA Observatory brand*** *and much more.*

I also would like to say that I am impressed at how the SKA community around the world has stepped up to assist during the Covid-19 crisis; from our colleagues in South Africa taking the lead on provision of ventilators at their government's request; to work on contact tracing apps in Australia; supporting super-computing work on the virus and vaccines in many partners; and the provision of online educational resources by colleagues in India, Italy, the UK and elsewhere. I'm sure there are many more examples. These actions demonstrate the skillsets and experience such teams can bring to the table to assist at these critical times.

As we look to the future, we are, with the full support of the Board and the SKA Observatory Council Preparatory Task Force (CPTF), the body preparing for the new governance structure under the treaty, planning for the establishment of the Observatory later this year and for the commencement of SKA1 construction activities as early in 2021 as possible. As is natural, we are undertaking planning for a range of possible scenarios with the intent of being able to respond appropriately and rapidly as the world emerges from this crisis. None of us can predict what the coming months will bring but, as one of the world's major scientific endeavours, we hope to push forwards bringing employment, innovation and scientific exploration to benefit our partner countries.

Philip Diamond

SKA Director-General

Activities

Computing developments within SKA-France

On **April 24, 2020**, the Maison SKA-France (MSF) organised a videoconference with several MSF partners (CNRS/INSU, ATOS-Bull, Inria, OBSPM, OCA) and collaborators (CentraleSupelec, IETR, GENCI) interested in the **co-design of software and hardware to fulfil future SKA data handling and processing needs**. The main aim of the discussion was to develop further the analysis of the output documents of the Science Data Processor (SDP) consortium and report about the organisation of benchmark activities, in particular in the framework of the "Platform Team" lead by SKAO within the Bridging Phase (see also the February 2020 issue of the SKA-France monthly bulletin).

A follow-up videoconference was organised by MSF on **April 24, 2020**, to discuss and organise the **French participation of academic collaborators to the international Working Groups** that are currently set in place by the **SKA Regional Center Steering Committee** (SRCSC), which is in charge of defining and creating a long-term operational partnership for the SKA Observatory and an ensemble of independently-resourced SKA Regional Centres.

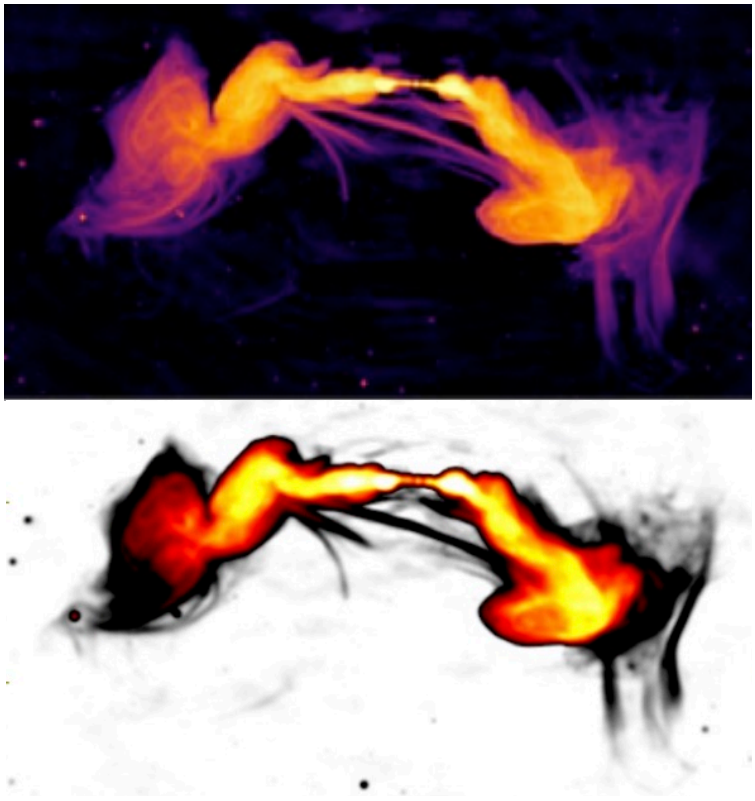
Announcements

News from SKA precursors and pathfinders

On **April 8, 2020**, the **discovery of unknown radio features from one of the brightest radio-galaxy of the Southern hemisphere** (named ESO 137-006) was announced.

An international team of astronomers lead by M. Ramatsoku (Research Fellow at Rhodes University, RSA) have conducted **MeerKAT observations** of this bright radio source that is known to be hosted by a galaxy cluster, a huge concentration of hundreds of galaxies bound together by gravity.

In addition to extended jets and lobes whose radio emission is associated to the presence of magnetic fields and acceleration of particles by a massive black hole at the center of the galaxy, these new observations have allowed to point out the existence of extremely collimated threads of radio emission connecting the lobes of the galaxy. In the bottom panel of the figure on the right, red and yellow colours indicate emission that had already been detected through previous radio observations, while grey-scale colours show those intriguing features discovered thanks to the higher sensitivity and resolution of the 64 dishes of the MeerKAT radio telescope.



Images showing the radio emission detected from the source ESO 137-006 by MeerKAT - Image credits: Rhodes University/INAF/SARAO & Ramatsoku, M. et al., 2020, A&A, 636, L1-L5

This result opens interesting questions, which concern first of all the physical origin of such filamentary structures (most likely associated to interactions between magnetic fields and plasma surrounding the galaxy), but also their frequency of existence.

In both cases, an increase in sensitivity and resolution of radio observations, covering a wide range of the electromagnetic spectrum in the radio domain, will be key. Another good reason to look forward for the beginning of the SKA1-LOW and SKA1-MID observations!

The interested reader can refer to the article based on this study, recently published by the Astronomy and Astrophysics journel.

SKAO Current Vacancies

The following SKAO positions are currently open:

* RFI & EMC Engineer - **Contract Type:** Permanent (closing date: May 15, 2020)
* IT Network & Security Engineer - **Contract Type:** Permanent (closing date: May 13, 2020)

Interested readers can register to automatically receive an e-mail as soon as a relevant job is published. More information can be found at the SKAO webpage.

South African Radio Astronomy Observatory mandated to manage the production of respiratory ventilators in South Africa

On **April 9, 2020**, it was announced that the **South African Radio Astronomy Observatory** (SARAO) has been tasked by the **South African Department of Trade, Industry and Competition** for managing the national effort required for the local design, development, production and procurement of **respiratory ventilators to support the government's response to combat the COVID-19 (coronavirus) pandemic**.

This crucial role has been mandated to SARAO based on the experience it gained in the development of complex systems for the MeerKAT radio telescope, one of the most active SKA precursors. More information at the SKAO webpage and in the official media release from SARAO.

SKA-France congratulates the South African colleagues for this major contribution in facing the critical COVID-19 situation: a beautiful exemple of the importance and social impact of fundamental research associated to technical developments and high-level R&D.

Chiara Ferrari
for the **Maison SKA-France**