

SKA-France

Monthly bulletin

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SKA statement on racism and discrimination

On June 16, 2020, the following SKA DG's statement, related to the recent huge visibility of the global Black Lives Matter movement, have been published at the [SKAO web-page](#) and circulated among SKA stakeholders:

The Square Kilometre Array (SKA) Organisation is a partnership that involves over a thousand people from more than 14 countries on five continents. It is a multi-cultural, global science collaboration that is by nature diverse, and where racism and discrimination have no place. Equality and diversity are enshrined in the SKA Convention, an international treaty that is currently being ratified by the governments of our member countries. We are proud that these values are written in the founding document of the future SKA Observatory, committing us to an organisation in which they are promoted and respected. However, just writing these principles down is not enough, meaningful action is required, by me as Director-General, by our team leaders and by all of SKA's staff.

I have instructed SKA's Equality, Diversity and Inclusion Working Group to look at practices and processes across the organisation and produce a plan on how we might enhance them to ensure that discrimination and bias in our workplace and recruitment processes are totally absent. I am also challenging SKA's staff, our community and the members of the Board to identify any issues of inequality to ensure we can seek and retain diverse talent from all parts of society. Both actions are critical as we enter a period of significant recruitment.

As a global science collaboration, the SKA Observatory will work tirelessly with members to root out discrimination in all its forms.

Prof. Philip Diamond, SKA Director-General



South Africa ratifies SKA Observatory Convention

June 2, 2020, saw the announcement of the third ratification of the SKA Observatory Convention: after the Netherlands and Italy, South Africa has completed the ratification process for the establishment of the intergovernmental organisation responsible for building and operating the SKA telescopes.

This is a very important step forward: the Convention will enter into force once five countries will have ratified the text, including the three hosts (Australia, South Africa and the UK). South Africa is therefore the first SKA host country to complete this process.

SKA-France congratulates the South African Radio Astronomy Observatory (SARAO), which leads South African participation to the SKA on behalf of the Department of Science and Innovation.

More information at the [SKA Organisation web-page](#).

Activities

SKA-France in international meetings

June 2020 has seen the participation of SKA-France representatives in several meetings of international committees, including:

- * the **African-European Radio Astronomy Platform (AERAP)**, stakeholder forum intended to define priorities for radio astronomy cooperation between Africa and Europe, whose monthly webinar was organised on **June 9, 2020**;
- * the **European SKA Forum (ESKAF)**, the recently created platform to promote joint European SKA-related initiatives in view of the beginning of the SKA Observatory construction. During the meeting of **June 11, 2020**, L. Fournier, SKA-France Business Manager (see [SKA-France bulletin of February 2019](#)), has been nominated ESKAF Executive Secretary;
- * the **SKA Regional Centre Steering Committee (SRCSC)**, which is progressing in his mission to define and create a long-term operational partnership between the SKA Observatory and an ensemble of independently-resourced SKA Regional Centre, met in **June 17, 2020**;
- * the **Council Preparatory Task Force (CPTF)**, tasked with bridging the SKA Observatory towards the first meeting of the SKA Council, met on **June 25, 2020**.

French participation to the program Increment Meeting #7

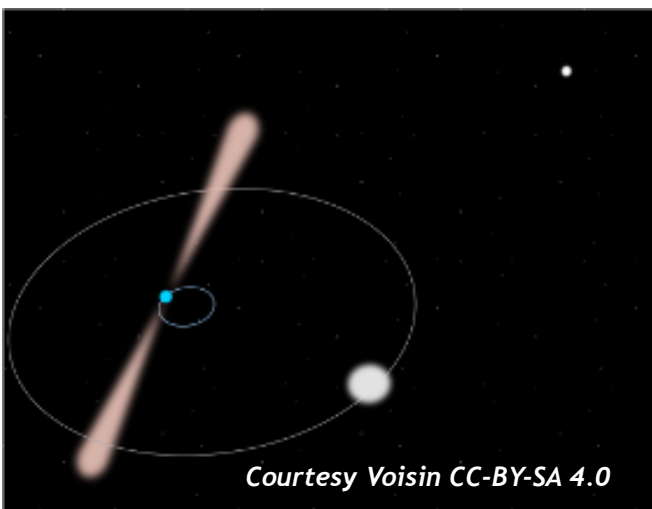
The **7th Program Increment (PI7)** planning for SKA software development took place from **June 1 to June 5, 2020**. This trimonthly event organised by SKAO aims at planning the work of all agile development teams until the end of August. It was the first SKA PI planning to take place entirely remotely, and, according to many participants, the organisation was a success.

France participated in PI7 planning with the presence of V. Lanore (Inria Research Engineer) who is a member of the "PLANET team". This newly created team results from the fusion of the Platform team (who works towards selecting computing hardware for SKA) and the Network team (who deals with network-related questions). In this context, V. Lanore has been working on benchmarks to estimate the scalability challenges with SDP software with the ultimate goal to contribute to SDP hardware sizing. Planned activities for PI7 include improving a pre-existing software that simulates data transfers during imaging.

The next PI planning (for PI8) will take place from September 1 to September 7 and will be organized remotely again.

Announcements

Pulsar timing with the Nançay Radio Telescope confirms the universality of free fall



Was Einstein right about gravity ? This is precisely what SKA plans to investigate in great details, providing strong-field tests of gravity using very massive objects such as neutron stars and black holes. A collaboration involving scientists from Paris Observatory - PSL, the French CNRS and LPC2E (Orléans, France), the University of Manchester and the Max Planck Institute for Radioastronomy, [published in June 2020](#) the most accurate confirmation to date of one of the corner stones of Einstein's theory of general relativity: the universality of free fall. The team analysed the signals from pulsar PSR J0337+1715 recorded by the Nançay Radio Telescope (NRT), located in the heart of Sologne (France). Pulsar PSR J0337+1715 is a neutron star orbiting with two white-dwarf stars which have a much weaker gravity field.

While spinning with a period of only 3ms, the pulsar emits a beam of radio waves which, such as a galactic beacon, sweeps across space. At each turn this creates a flash of radio light which is recorded with high accuracy at the telescope using a state-of-the-art timing instrumentation. As the pulsar moves on its orbit, the light arrival time at Earth is shifted. It is the accurate measurement and mathematical modelling (down to a nanosecond accuracy) of these times of arrival that allows scientists to infer with exquisite precision the motion of the star. Above all, it is the unique configuration of that system, with the presence of a second companion towards which the two other stars "fall" (orbit) that has allowed to perform a stellar version of Galileo's famous experiment from Pisa's tower: two bodies of different compositions fall with the same acceleration in the gravitational field of a third one (the Earth for Galileo, the second companion in the present case). Thus, thanks to the high quality timing data collected with the Nançay Radio Telescope, and to an appropriate bayesian model taking into account all systematics, the team has demonstrated that the extreme gravity field of the pulsar cannot differ by more than 1.8 part per million (with a confidence level of 95%) from the prediction of general relativity. This result is the most accurate confirmation that the universality of free fall is valid even in presence of an object which mass is largely due to its own gravity field, thus supporting further Einstein's theory of general relativity.

News from SKA precursors and pathfinders

The study of Fast Radio Bursts (FRBs) has progressed in June 2020. Many hypotheses have been (and are still) proposed to explain their physical origin.

Among those hypotheses, radio emission from "magnetars" (extremely magnetised and dense stars) is today considered as one the most promising candidate. In agreement with this hypothetical FRB-magnetars association, in June 2020 the observation of a first FRB candidate within our own Galaxy, associated with a burst of X-ray emission from a known source of Gamma-rays, has been claimed. Even if this result needs to be verified by the scientific community, the most likely hypothesis that would explain these multi-wavelength properties is that this FRB candidate is produced by a magnetar within our Galaxy.



*An artist's impression of a magnetar
Courtesy: ESO/L. Calçada*

On June 17, 2020, the CHIME/FRB collaboration reported on the journal Nature the first known case of periodicity in the arrival time of bursts from a repeating FRB. This object, namely FRB 180916.J0158+65, had already raised the attention of astronomers not only because it is one of the few known repeating FRB (most of which have been discovered thanks to CHIME), but also since they have precisely identified its position in the associated host galaxy (see January 2020 issue of the SKA-France monthly bulletin). From September 2018 to February 2020, CHIME observations of FRB 180916.J0158+65 have recorded a total of 38 bursts. Interestingly enough, they did not arrive totally randomly in time: through a detailed statistical analysis, scientists measured a 16.35-day periodicity in the arrival times, with all bursts arriving in about 5-day phase window, followed by a period of radio silence of slightly more than 11 days. One possible explanation for periodicity could be that the source of radio emission (possibly a magnetar) is in a binary system, the radio emission observed by CHIME being thus modulated either due to the relative orbital motion between the two objects, or to their mutual physical interaction. The hypothesis of a single object, with the periodicity of the signal associated to its rotation, seems less probable, but cannot be ruled out at this stage.

Call for observing proposals of the SKA precursor telescope MeerKAT

The South African Radio Astronomy Observatory (SARAO) invites users to apply for observing time on MeerKAT. The deadline for proposals is 12:00 UTC on Tuesday, 1 September 2020.

A minimum of 1000 hours of telescope time will be awarded through this opportunity, with all approved projects to be scheduled by no later than end 2021. The call is open for imaging projects only.

MeerKAT consists of 64 dishes with superb sensitivity on baselines of up to 8 km. This Call offers continuum and spectral line capabilities employing L-band receivers (900-1670 MHz). UHF receivers (580-1015 MHz) are also available for smaller shared-risk projects.

Instructions, documentation, and the tools required to prepare and submit proposals are available at the SARAO webpage.

SKAO Current Vacancies

The following SKAO positions are currently open:

- * [LOW AIV Lead Engineer](#) - **Contract Type:** Permanent (closing date: August 28, 2020)
- * [Project Manager MID Infrastructure](#) - **Contract Type:** Permanent (closing date: August 30, 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](#).

Fourth issue of the SKA magazine “Contact”

The fourth issue of “Contact”, the SKA magazine published in early March, June, September and December to “showcase the breadth of activities taking place across the SKA world”, is now available on-line at the [SKA Organisation webpage](#).

In addition to the version published via the electronic publishing platform Issuu, a [PDF version](#) and [print-ready version](#) are also available.

Enjoy the reading!



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