

News from SKA-France

BIMONTHLY BULLETIN



PROJECT

France expresses its wish to become a member of SKA Observatory

On February 4, 2021, the French Ministry of Higher Education, Research and Innovation (MESRI) has announced that [France is now engaged in the process of applying for membership in SKA Observatory \(SKAO\)](#).

An extremely exciting news for all Maison SKA-France partners in this historical moment for the SKA Observatory, with the first SKAO Council meeting that has marked the birth of this new Inter Governmental Organisation (see next Section).

As declared by [N. Chaillet](#) (Deputy Director General for Research and Innovation, Head of the Research and Innovation Strategy Directorate - MESRI) in occasion of the

WHAT'S INSIDE THIS ISSUE

PROJECT	
SKA in France and in the world	P. 1
SCIENCE	
Pathfinders and precursors results	P. 3
EVENTS	
Future meetings & conferences	P. 5
JOB ANNOUNCEMENTS	
SKA-related positions.	P. 6
PEOPLE	
Prizes and major achievements	P. 6

*Cover image: SKA Observatory Establishment and Delivery Plan, SKA Construction Proposal
(Credit: SKA Observatory)*



J. Shanmugalingam (DG for Industrial Strategy, Science & Innovation at BEIS) and C. Cesarsky (first Chair of SKAO Council) signing the SKAO Hosting Agreement on February 10, 2021

Credit:
SKA Observatory

first SKAO Council meeting: *"With a very active research community in the field of astronomy and astrophysics, France has been highly interested in the development of the Square Kilometre Array since its inception. SKA has been on the French roadmap for research infrastructures since 2018. The "Maison SKA-France", with the CNRS as lead partner, gathers seven public research institutions and seven industrial companies.*

The five-year report on the French strategy in astronomy and astrophysics conducted by the CNRS in 2019 confirmed the very high priority given by French astronomers to participate in SKA.

Currently an observer on the organisation Council, France is now engaged in the process of applying for membership in SKA Observatory, with the aim of submitting its membership application to the Council's vote in the coming months.

We are very enthusiastic to start this process, and congratulate the SKA teams and partners on the impressive work that has been achieved so far for a project that will produce revolutionary work in many fields."

The Director of Maison SKA-France and all her team warmly thank all partners of Maison SKA-France and collaborators for the hard work of the last years that lead to this major achievement.

The SKA Observatory is born

On February 3 and 4, 2021, the SKA project has lived a historical moment, with the first SKA Observatory Council which has marked the launching of the Intergovernmental Organisation and the beginning of a new era for radio astronomy at world-wide level

A summary of the Council is available at the [SKA Organisation](#) and [SKA Observatory](#) web pages. The sites allow to appreciate the inspiring statements by the appointed Chair of the Council (C. Cesarsky), the SKA Director General (P. Diamond), and the representatives of the Member and Observer Countries of the SKA Observatory.

The Maison SKA-France congratulates the SKAO Office and all the international partners of the project for this historic achievement and extends its warmest congratulations to Mrs. Cesarsky on her

appointment as first Chair of the SKA Observatory Council.

Follow up actions after this first historical Council include:

- the [signature on February 10, 2021, of the agreement to host SKAO and its global headquarters in the United Kingdom](#). This hosting agreement - signed on behalf of the UK government by J. Shanmugalingam (Director General for Industrial Strategy, Science & Innovation at the Department for Business, Energy and Industrial Strategy) and of SKAO by C. Cesarsky - translates the UK's commitment to hosting SKAO into law;
- the [publication on February 25, 2021, of the SKA Construction Proposal and Observatory Establishment and Delivery Plan](#), summarising and bringing together the major outputs from several hundreds of documents that have been produced during the years of detailed planning for the SKA.

SCIENCE

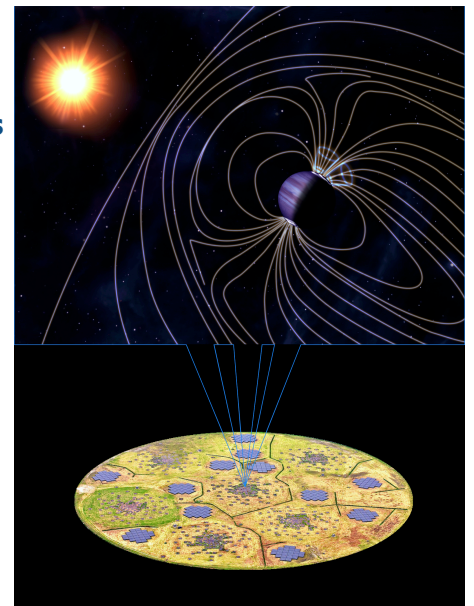
First radio emission from a planet beyond our solar system

Using the European radio telescope LOFAR in beamformed mode, [an international team including French researchers has detected radio waves emanating from the Boötes constellation, which could be the first radio emission from a planet beyond our solar system](#). J. Turner (Univ. Cornell), P. Zarka (Obs. Paris), J.-M. Grießmeier (Univ. Orléans) and their colleagues published their results in the [journal Astronomy & Astrophysics](#). The signal comes from the system τ Boötes which

contains a binary star and a gas giant exoplanet very close to its star (a "hot Jupiter").

The intensity and polarisation of the signal argue in favour of an emission from the planet τ Boötes b. The observation of other exoplanetary targets in the 55 Cancri and Upsilon Andromedae systems did not reveal a comparable emission. The detection of a radio emission makes it possible to probe the magnetic field, thus the interior of an exoplanet, as well as the physics of star-planet interactions. In the case of a less massive, terrestrial planet, the magnetic field, protecting the planet from the stellar wind, could favour habitability.

Artistic view of LOFAR observations of radio emission from a planet



Credit:
Obs. Paris /
U. Cornell

[Last year, the same authors observed Jupiter with LOFAR, and detected its radio signal after intentional attenuation by a large factor, put to the scale of an exoplanet located a few tens of light years away. The same method was used to search for radio emissions from exoplanets. The analysis of about 100 hours of observations revealed the signature expected in the data from \$\tau\$ Boötes. This signature is weak, and the](#)

planetary origin of the signal is still uncertain, so the need for follow-up observations is crucial. The authors have already started a new monitoring campaign of τ Boötes using several low-frequency radio telescopes, including LOFAR and NenuFAR.

Preliminary release of the LOFAR LBA Sky Survey

Among its different projects conducted in parallel, the LOFAR telescope is being used to survey the entire northern sky in the frequency range between 42 and 66 MHz (LOFAR LBA Sky Survey, LoLSS).

By observing the low-frequency radio sky at unprecedented sensitivity and angular resolution, the main aim of LoLSS is to allow astronomers to study the exoplanets whose magnetosphere is interacting with their host stars, to search for very distant sources, and to detect the oldest populations of high-speed electrons in galaxies and clusters of galaxies.

A [preliminary release of the LoLSS survey, covering about 2% of the whole sky that will be observed by the end of the project, has recently been accepted for publication in *Astronomy and Astrophysics*.](#)

Even if the survey has not yet reached its nominal sensitivity and resolution limits, the international team behind this result (lead by F. De Gasperin, Hamburg Uni., and including French researchers) has been able to put in place the pipeline for a successful data reduction and calibration strategy, producing the largest and clearest map of the sky at ultra-low radio frequencies. De Gasperin and collaborators have been revealing [more than 25,000 active supermassive black holes in distant galaxies](#).

MeerKAT: hunter of giant radio galaxies

Galaxies can be characterised by the presence of jetted and extended radio emission due to very fast charged particles interacting with strong magnetic fields near their central massive black hole. Among these sources, giant radio galaxies (GRGs) are extremely extended objects that can reach dimensions of several dozens times the size of the Milky Way. Up to now radio surveys have detected only about 800 GRGs, that makes them quite rare objects.

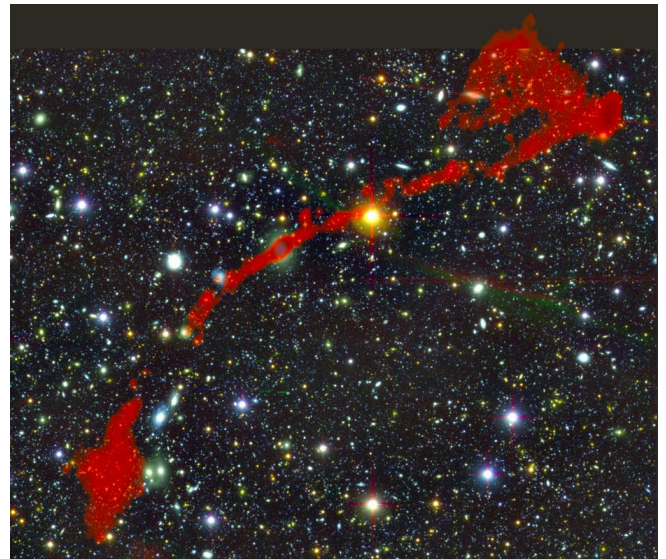


Image of the visible sky and, overlaid in red, of the giant radio galaxy observed by MeerKAT

Credit: I. Heywood, Oxford/Rhodes/SARAO

A paper based on MeerKAT observations and [recently published in *Monthly Notices of the Royal Astronomical Society*](#) by an international team (including French researchers) has detected [two GRGs in a relatively small region of the sky: based on current statistics, the probability to detect two sources in the sampled region is extremely small, only 0.0003%! This indicates that most likely GRGs are much](#)

less rare in the Universe than what we have been able to observe up to now. The excellent sensitivity of the MeerKAT telescope opens entirely new perspectives in the study of GRGs, providing, among others, the possibility to test the hypothesis that these sources represent the oldest radio galaxies, having had enough time to grow to their very large sizes.

EVENTS

SKA Workshop at LAM

10 March 2021 - Virtual Event

A workshop about the SKA and its pathfinders and precursors is organised at the [Laboratoire d'Astrophysique de Marseille \(LAM\)](#) on March 10, 2021. Three talks about the SKA (C. Ferrari, OCA), NenuFAR (P. Zarka, Observatoire de Paris-PSL) and LOFAR (C. Tasse, Observatoire de Paris-PSL) will be followed by a discussion with participants.

The workshop will be open to all interested people ([registration link](#)).

The 2021 Virtual SKA Science Conference

15 -19 March 2021 - Virtual Event

The registration for the 2021 SKA science meeting, entitled "A precursor view of the SKA sky" is open via the [conference website](#).

In the year that marks the establishment of the SKA Observatory, as well as the start of SKA construction activities, the organisers want to bring the focus to science with the new and exciting results that are being produced by the SKA

precursors and pathfinders and their implication for SKA.

The conference will include plenary sessions organised by the SOC, as well as splinter sessions organised independently by the Science Working Groups.

The registration fee will be £40 per person (£20 for students).

Important dates:

- Abstract submission opens: 18 Dec 2020
- Abstract submission closes: 20 Jan 2021
- Abstract selection complete: 15 Feb 2021
- Registration Opens: 19 Jan 2021

European Astronomical Society Annual Meeting

28 June - 2 July 2021 - Virtual Event



The [2021 European Astronomical Society Annual Meeting](#) (EAS 2021) should have been held physically in Leiden (NL). Due to the uncertain COVID-19 situation in Europe and the world, the meeting has been moved to a virtual meeting.

Important dates:

- Abstract submission opens: 18 Jan 2021
- Abstract submission closes: 2 March 2021
- Registration Opens: 18 Jan 2021

We list in the following sessions in which the SKA is explicitly mentioned in the scientific rationale:

- [Symposium S3](#) - Galaxy clusters and AGNs: advances in theoretical simulations and observations by next-generation surveys

- [Symposium S10](#) - The many faces of black hole accretion
- [Symposium S13](#) - The Transient Universe
- [Special Session SS1](#) - Apertif: Two years of survey operations
- [Special Session SS5](#) - Data-intensive radio astronomy: bringing astrophysics to the exabyte era
- [Special Session SS16](#) - Probing New Physics with Gravitational Cluster Lenses
- [Special Session SS25](#) - The route to coalescence of supermassive black hole binaries: a comprehensive view
- [Special Session SS26](#) - Towards a Complete Census of Star-Formation in the Early Universe
- [Special Session SS32](#) - Machine Learning and Visualisation in Data Intensive Era
- [Lunch Session LS4](#) - Massively multiplexed, large-aperture, spectroscopy: Science and synergies in the 2030s

JOB ANNOUNCEMENTS

SKAO Current Vacancies

The following SKAO positions are currently open:

- [Management Accountant](#) - Contract Type: Permanent (closing date: April 8, 2021)
- [Mechanical Engineer](#) - Contract Type: Permanent (closing date: March 26, 2021)
- [Operations Scientist /SAFE® Product Manager](#) - Contract Type: Permanent (closing date: April 8, 2021)

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](#).

PEOPLE

Françoise Combes: Laureate for Europe of the L'Oréal-UNESCO For Women in Science International Awards



F. Combes

Credit:
L'Oréal-UNESCO
For Women in
Science
International
Awards

After having been awarded the CNRS 2020 Gold Metal (see [SKA-France monthly bulletin of August / September 2020](#)), F. Combes is the Laureate for Europe of the L'Oréal-UNESCO For Women in Science International Awards.

As we can read at the [L'Oréal web page](#), F. Combes (who is nowadays co-chairing one of the SKA Science Working Groups) has been awarded *"for her groundbreaking contribution to astrophysics, and in particular, the critical role she has played in informing our understanding of how stars and galaxies form and evolve. Her pioneering discoveries in galactic dynamics range from identifying numerous molecules in interstellar space to decoding the precise stages of galactic evolution – all the way back to the Big Bang."*

Françoise: once more, the Maison SKA-France is delighted to present to you its warmest congratulations!