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HIGHLIGHTS

ERIS met Yepun

After the shipping to Cerro Paranal in Chile, the **ERIS** (Enhanced Resolution Imager and Spectrograph) instrument for the Cassegrain focus of the Yepun Telescope (UT4) at the VLT, was reassembled and verified in the Integration Hall of the Observatory by the team that developed it in Europe. On **January 8th** the instrument moved to its final destination: the VLT telescope named Yepun. The travel from the Integration Hall was relatively short, less than 4 km, but it took more than one hour to assure a safe trip of the accurately aligned components in the instrument body. ERIS finally met Yepun and it is now sitting on the floor of its dome waiting for the final integration with the telescope in the coming months. The first sky test, which will kick off the commissioning phase, will be in April to start the most exciting part of ERIS and Yepun's life together.

ERIS has been designed for a wide range of astronomical observations including, among the others, extrasolar planets, measuring the effects of the black hole at the center of our galaxy and studying the evolution of high redshift galaxies. The Adaptive Optics is able to provide corrected images of the sky to the two on-board science instruments: SPIFFIER, an Integral Field Spectrograph operating between 1 and 2.5 μm, and NIX, a 1-5μm imaging camera with coronagraphy capabilities.

Team INAF-OAA (responsible for the ERIS Adaptive Optics system): Co-PI: Simone Esposito; AO System Engineer: Armando Riccardi; Software and Assembly, Integration and Verification: Alfio Puglisi, Paolo Grani; Assembly, Integration and Verification: Runa Briguglio, Marco Bonaglia, Luca Carbonaro; Data analysis: Guido Agapito; Science Committee: Filippo Mannucci, Giovanni Cresci. INAF is part of the ERIS International Consortium together with the Max Planck Institute (MPE, PI of the project), UK-ATC, ETH-Zurich, NOVA-Leiden and ESO.

Credits: Max-Planck-Institut, extraterrestrische Physik

EDITOR: Rossella Spiga INAF-OAA
ufficio-comunicazione.oaa@inaf.it | rossella.spiga@inaf.it

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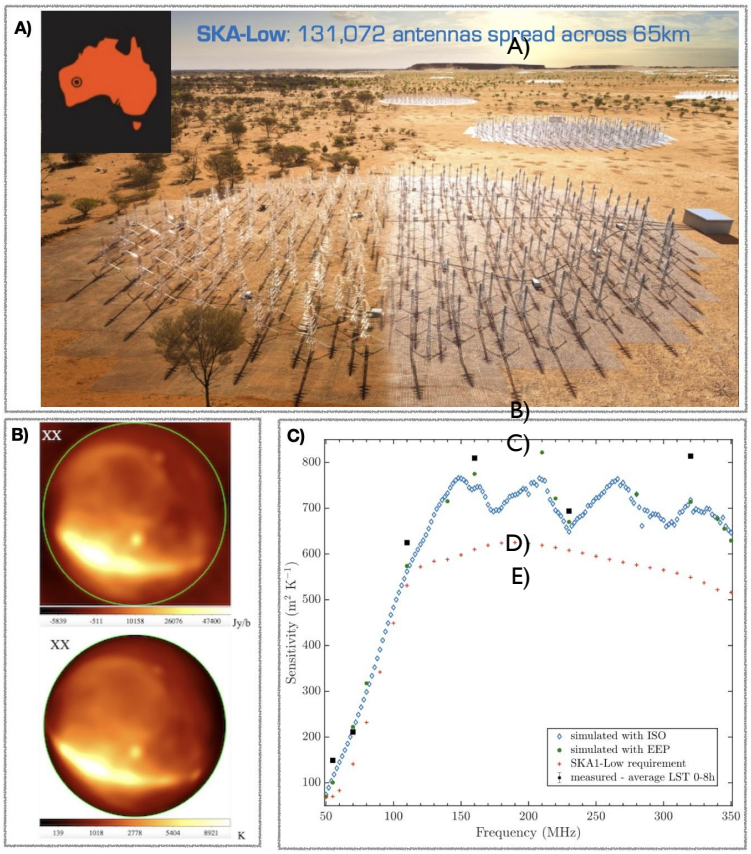
TECHNOLOGICAL MILESTONES

SKA-Low prototype station performance are initially validated

The the radio astronomy group at INAF-OAA is actively contributing to the observational characterization of the last full-size engineering prototype station of SKA-Low deployed at MRO site, named Aperture Array Verification System 2 (AAVS2).
Using AAVS2 interferometric astronomical observations collected in the first year of its commissioning phase, the group has developed procedures to process and analyse a large amount of data. Thanks to this effort, SKA-Low crucial performance such as sensitivity, imaging quality, calibratability and system stability have been initially validated at six different frequencies (55, 70, 110, 160, 230, and 320 MHz) sampling the SKA-Low bandwidth. Work is ongoing to characterise the station polarisation performance (see publication link below).
An assembly of six stations like AAVS2, to be built in the next three years, will form the first production prototype of the SKA-Low telescope.
The results from these activities thus represent an important step towards the coming SKA-Low construction and science.

Team INAF-OAA involved in these activities: **Pietro Bolli, Paola Di Ninni, Georgios Kyriakou** (EM analysis)**, Giovanni Comoretto, Simone Chiarucci, Carolina Belli, Carlo Baffa** (station beamforming)**, Giulia Macario** (astronomical observations).

Link to publication: http://dx.doi.org/10.1117/1.JATIS.8.1.011014



A) Credits SKAO - Aerial view of the upcoming SKA-Low array: some stations are represented on top of a real picture of the site. The left side of the front station is the real AAVS2 prototype, with SKALA4.1 antennas.

B) Comparison between AAVS2 observed (top) and simulated (bottom) all sky images at 70 MHz (*Macario et al. 2022*)

C) SKA1-Low sensitivity across the bandwidth derived from AAVS2 observations (black squares) and simulations (blue and green symbols). The red crosses are SKA1-Low the requirements. (*Macario et al. 2022*)

EDITOR: Rossella Spiga INAF-OAA
ufficio-comunicazione.oaa@inaf.it | rossella.spiga@inaf.it