Contribution ID: **63** Type: **Talk**

LoTSS-HR: The high-resolution post-processing of the LOFAR Two-Metre Sky Survey

Thursday, 9 May 2024 13:55 (25 minutes)

The LOw Frequency ARray (LOFAR) is one of the world's leading observatories at low radio frequencies. With its pan-European baselines reaching up to 2000 km in length, it is capable of achieving sub-arcsecond angular resolution at frequencies below 200 MHz. However, the use of its international baselines has been hindered for most of the current lifetime of the observatory, due to technical and logistical challenges: its phased-array design, the ionosphere, lack of known suitable calibrator sources, and lacking software tools. For this reason, many projects, including the LOFAR Two-Metre Sky Survey (LoTSS), have relied only on the Dutch part of the array, using baselines up to 120 km. Thanks to the Long Baseline Working Group, a strategy has been developed to enable the calibration of the international stations. This has unlocked the highest resolutions (~0.3 arcseconds) attainable with LOFAR, enabling a large variety of research for the first time. Equipped with the newly developed LOFAR-VLBI pipeline, we have started working on post-processing all previous LoTSS observations to provide high-resolution (0.3") and intermediate-resolution (1.2") images of all bright sources covered by these LoTSS observations to the public. In this talk, I will give an overview of the LoTSS-HR project, including the details of the calibration strategy, the current status of the project and the future outlook.

keywords

survey overview, imaging, calibration, VLBI

In-person or online?

in-person

Career level

ECR

Primary author: TIMMERMAN, Roland (Durham University)

Co-authors: MORABITO, Leah (Durham); JACKSON, Neal (University of Manchester); HARDCASTLE, Martin (University of Hertfordshire); Mr PETLEY, James (Durham University); SHIMWELL, Timothy (Leiden University)

Presenter: TIMMERMAN, Roland (Durham University)

Session Classification: VLBI