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Low frequency transient searches –a LOFAR perspective

Wednesday, 8 May 2024 11:30 (15 minutes)

In this talk, I will discuss our efforts to explore the dynamic radio sky with LOFAR, the Low Frequency Array. Using automated transient pipelines, we have performed blind transient searches on various fields. I will specifically focus on the searches for transient sources on timescales of seconds to hours. In this regime, the main challenge is to image the data, and I will discuss various techniques we have developed to speed up the imaging step in the context of transient searches. Additionally, I will describe some of the efficient filtering techniques that we have developed. Despite these efforts, only 2% of the LOFAR data has thus far been processed on these second to minute timescales. However, in this small dataset, we have discovered an interesting transient source, which shows a few minute duration flares throughout five 8 hour observations. I will give an update on the most recent follow-up observations of this transient source. The discovery of this source in a small data set shows the incredible potential of exploring the low frequency radio sky on a second to minute cadence. Finally, with LOFAR2.0 we plan to run a fully automated version of the transient pipeline on all LOFAR interferometric observations, which I will detail in short in this talk.

keywords

imaging, transients

In-person or online?

online

Career level

Student

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