

Dynamic imaging with MeerKAT: is the time axis the final frontier?

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With the increased sensitivity and field of view of SKA pathfinders, dynamic imaging (that is, imaging the time axis) is becoming a burgeoning field yielding rich new discoveries of transients and variable sources. MeerKAT is capable of reaching sub-150 μ Jy image rms in an 8s integration, which opens up studies of variability on much shorter timescales than was possible with previous instruments. At the same time, imaging at such short timescales introduces its own substantial challenges. Instrumental effects that tend to average out in a traditional long synthesis observation can become limiting for dynamic imaging if not addressed correctly.

I will discuss these challenges, and present MeerKAT dynamic imaging of Jupiter's radiation belts, which have led to the serendipitous discovery of a pulsar/RRAT-class object. I will also present our plans for an imaging pipeline that will be capable of yielding light curves and dynamic spectra for thousands of field sources en masse, potentially turning any MeerKAT continuum survey into a "variability machine".

keywords

imaging, calibration, transients, variables

In-person or online?

in-person

Career level

Mid-Senior

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