

## Transient and variable AGN from the ASKAP VAST Survey

ASKAP, the Australian Square Kilometre Array (SKA) Pathfinder, has now started science operations. VAST, an ASKAP survey for variables and ‘slow’ transients (Murphy et al. 2013, PASA, 30, e006), will offer new insights into the dynamic radio sky at mid frequencies (about 1 GHz). This will be possible because ASKAP has a very competitive combination of a wide field of view and exquisite sensitivity.

In this project, you will conduct some of the first ASKAP searches for variable and transient flaring activity – hallmarks of extreme physics (e.g. Pietka et al. 2015, MNRAS, 446, 3687) – from the active galactic nuclei (AGN) at the hearts of massive elliptical galaxies, as well as Seyfert galaxies. In particular, you will shed further light on the physical mechanisms responsible for

(i) intrinsic variability in the central engines of powerful radio sources, and (ii) extrinsic variability due to interstellar scintillation in our Galaxy. You will also investigate whether there are correlations between the variability statistics and other radio / multi-wavelength properties.

The end goal is to conduct a thorough census of the variability properties of many hundreds of AGN within the areas of sky that VAST is currently surveying. This in turn will enhance our knowledge on the duty cycles of activity and quiescence, the link between black hole accretion and jet formation, and how the jets influence the ambient environment (e.g. see review by Bignall et al. 2015, PoS(AASKA14)058).

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### Research Field

Radio Astronomy

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### Project Suitability

Masters

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Honours

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### Project Supervisor

Dr Jess Broderick

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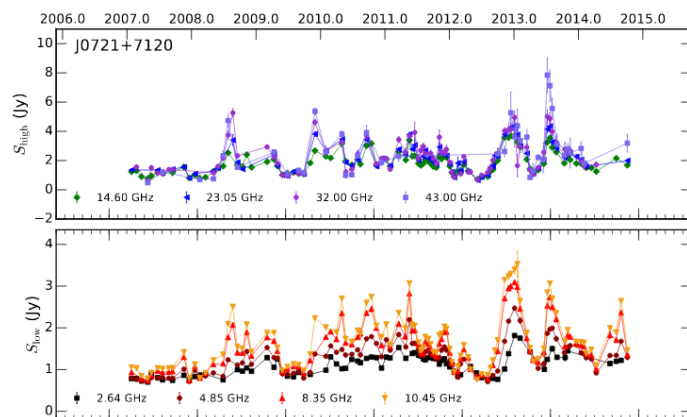
[jess.broderick@curtin.edu.au](mailto:jess.broderick@curtin.edu.au)

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### Co-Supervisors

Dr Nick Seymour

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*Left:* A view of the ASKAP telescope, located at the Murchison Radio-astronomy Observatory in Western Australia. Image credit: CSIRO; <https://www.scienceimage.csiro.au>. *Right:* Multi-year radio light curve monitoring of the blazar J0721+7120. These data were obtained with the Effelsberg Radio Telescope in Germany. Figure from Angelakis et al. 2019 (A&A, 626, A60).

