

# Pulsars and Fast Transients (PFT)

The Voltage Capture System (VCS; [Tremblay et al. 2015](#)) provides access to high time and frequency resolution voltage data from the MWA. The data recorded are the critically sampled voltages streaming from the fine-PFB stage of the standard MWA signal chain (i.e. before the correlator), thus the data have 100 s time resolution and 10 kHz frequency resolution.

The primary science driver for the VCS is pulsars, exploring a frequency range in which the vast majority of pulsars have very little or no published information. The science cases are numerous, but include:

- pulsar emission mechanism, i.e. studying phenomena such as giant pulses, sub-pulse drifting, and emission intermittency,
- survey and monitoring science, i.e. characterising known pulsars, detection of new pulsars, and regular monitoring of targets of interest, and
- propagation effects induced by the interstellar medium, i.e. pulse broadening/scattering, scintillation and dispersion measure variations (in time and frequency).

There are also opportunities in terms of [Solar science](#) (e.g. solar bursts, interplanetary scintillation) and other [fast-transient science](#) cases where high time resolution is desirable (e.g. triggering on GRBs, FRBs).

Fundamentally, VCS data is much larger than normal MWA observations, providing ~28 TB/hr of data. This also limits the duration of any single observing run to ~1.5 hours.

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