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The MeerKAT Pulsar Timing Array

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The MeerKAT telescope owned and operated by SARAO in the Karoo in South Africa is a new radio telescope with outstanding properties for precision pulsar timing. The telescope comprises of 64x13.6m dishes with offset Gregorian feeds, enabling it to achieve a system equivalent flux density of less than 7 Jy over an octave of bandwidth from 856-1712 MHz. Unlike single dishes, interferometers can achieve remarkable polarisation purity that aids in precision timing. The small dishes have high slew rates and MeerKAT can typically achieve sub-microsecond timing on 85 millisecond pulsars (MSPs) in just a 12h session. Time transfer to UTC(NIST) enables systematic timing errors of order 5 nanoseconds. The large number of pulsars in the array, their accurate dispersion measures, high cadence (fortnightly) and 4+ year timing baseline makes the array very competitive in pulsar timing array science. The MeerTime Large Survey Project has measured 160,000 arrival times from 85 MSPs and probes a unique part of PTA phase space. The interesting noise analysis and search results will be presented.

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