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Title:	Low-frequency wideband timing of InPTA pulsars observed with the uGMRT
Authors:	Bathula, Adarsh (/jspui/browse?type=author&value=Bathula%2C+Adarsh)
Keywords:	Low-frequency InPTA pulsars observed
Issue Date:	2022
Publisher:	Oxford Academic
Citation:	Monthly Notices of the Royal Astronomical Society, 512(1), 1234-1243.
Abstract:	High-precision measurements of the pulsar dispersion measure (DM) are possible using telescopes with low-frequency wideband receivers. We present an initial study of the application of the wideband timing technique, which can simultaneously measure the pulsar times of arrivals (ToAs) and DMs, for a set of five pulsars observed with the upgraded Giant Metrewave Radio Telescope (uGMRT) as part of the Indian Pulsar Timing Array (InPTA) campaign. We have used the observations with the 300–500 MHz band of the uGMRT for this purpose. We obtain high precision in DM measurements with precisions of the order 10–6 cm–3 pc. The ToAs obtained have sub- $\mu$ s precision and the rms of the post-fit ToA residuals are in the sub- $\mu$ s range. We find that the uncertainties in the DMs and ToAs obtained with this wideband technique, applied to low-frequency data, are consistent with the results obtained with traditional pulsar timing techniques and comparable to high-frequency results from other PTAs. This work opens up an interesting possibility of using low-frequency wideband observations for precision pulsar timing and gravitational wave detection with similar precision as high-frequency observations used conventionally.
Description:	Only IISER Mohali authors are available in the record.
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