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Abstract:

We propose to time a group of millisecond pulsars (MSPs), which were not included in the international pulsar timing array (IPTA) or Chinese pulsar timing array (CPTA) list in order to accelerate the detection of nano-Hertz Gravitational Waves by CPTA by increasing number and sky coverage of MSPs. The current proposal is driven by the fact that some of the MSPs show better timing stability with FAST than the current IPTA pulsars. MSPs with low flux were not included in IPTA list, since the timing precision was limited by the signal-to-noise ratio for 100-meter level telescopes. However with FAST, our previous observations show that the high sensitivity of FAST significantly reduce the error in pulsar timing; and some of those low-flux pulsars show better stability than pulsars included in IPTA list. Thanks to FAST sensitivity, those weaker MSPs will helps CPTA to gain special privilege in the gravitational wave detection, which is not possible for other PTAs using smaller diameter telescopes.