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The science of EPTA (European Pulsar Timing Array)

Monday, 8 July 2024 09:00 (30 minutes)

A Pulsar Timing Array (PTA) exploits the remarkable rotational stability of a sample of the rapidly spinning "recycled" pulsars in order to provide the possibility to search for gravitational waves (GWs) in the ultra-long period range, between few months to few decades. Therefore, by acting as galactic-scale GW detectors, the PTAs can explore a portion of the GW spectrum which is not charted by other already operating or planned instruments. The most recent results of the efforts of the various PTA teams are very intriguing, showing the first evidence for a detection, still to be corroborated by additional results. The talk will report on the foundations, the status, and the perspectives of these experiments, with particular focus on the case of the European Pulsar Timing Array (EPTA) contributions, resulting from more than two decades of available pulsar observations, as well as parallel theoretical and analysis developments

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