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PULSAR TIMING ARRAYS AND THE DETECTION OF ULTRA LONG PERIOD GWs

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The rotational stability of a subset of the "recycled"pulsars not only paves the way to high precision tests of the gravity theories, but allows us to use them as components of a galactic scale gravitational wave detector, dubbed Pulsar Timing Array (PTA). That provides the possibility to search for gravitational waves (GWs) in the ultra-long period range, between a few months to few decades, thus complementing the capabilities of other current or future GW detectors. The most recent results from the various PTA experiments are very promising, manifesting the first evidence for a detection, yet to be supported by additional results. The talk will describe the underlying ideas, the status, and the perspectives of these experiments, with a particular attention devoted to the European contribution, emerging from two decades long efforts of the European Pulsar Timing Array (EPTA) team.

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