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Limits on the amplitude of the nanohertz gravitational wave Universe from the European Pulsar Timing Array

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The European Pulsar Timing Array (EPTA) was established in 2006 as a collaboration between European research institutes and radio observatories. The key mission of the EPTA is the direct detection of nanohertz gravitational waves (GWs) using the high-precision timing of an ensemble of millisecond pulsars. The primary source of GWs in the nanohertz band is expected to be merging supermassive black hole binaries (SMBHBs). We will present recent results from the EPTA that set limits on the amplitude of an isotropic, or anisotropic gravitational wave background, formed from the super position of signals from a large population of these SMBHBs, as well as limits on the amplitude of GWs from individual sources. Finally we will discuss recently introduced methods of improving the sensitivity of timing arrays to GWs by performing the analysis using profile data.

Collaboration

European Pulsar Timing Array

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