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Pulsar timing arrays: closing in on low- frequency gravitational waves.

LAURA SAMPSON, Northwestern University

Just like electromagnetic radiation, gravitational waves come in a wide spectrum of frequencies. Different frequencies give us access to different physical information about our universe. By taking advantage of the phenomenal stability of the spin rate of millisecond pulsars, pulsar timing arrays will allow us to detect gravitational waves in the nanohertz band. The most likely source in this band is supermassive black hole binaries, formed when galaxies merge, and so the detection of these gravitational waves gives us a new tool to learn about the merger history of galaxies and the environment in galactic cores. I will discuss the exciting astrophysics we can learn using pulsar timing arrays, as well as the prospects and expected timeline for gravitational wave detection in this new frequency regime.