

# Bottom-Up Cross-Cutting Workshop “JENAS Initiative: Gravitational Wave Probes of Fundamental Physics”

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## Searching for Nanohertz Gravitational Waves with Pulsar Timing Arrays

*Wednesday, 14 February 2024 09:00 (45 minutes)*

Pulsar timing arrays are sensitive to low-frequency gravitational waves with periods of months to decades. They do so by precisely timing a collection of millisecond pulsars, whose extremely stable rotation makes them ideal for measuring perturbations in spacetime. Gravitational waves induce correlations in the pulse arrival times that follows a characteristic pattern known as the Hellings-Downs curve. Recently, pulsar timing array experiments around the world published the first evidence of nanohertz gravitational waves in the form of a gravitational wave background. In this talk, I will discuss how pulsar timing arrays detect gravitational waves, how we construct pulsar timing arrays, and describe recent results from the NANOGrav collaboration and the International Pulsar Timing Array (IPTA) collaboration.

**Presenter:** VIGELAND, Sarah