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Searching for Nanohertz Gravitational Waves with Pulsar Timing Arrays

Friday, 12 July 2024 11:30 (30 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, describe recent results from the NANOGrav collaboration and the International Pulsar Timing Array (IPTA) collaboration, and discuss future prospects for finding nanohertz gravitational waves from a variety of sources.

Presenter: VIGELAND, Sarah

Session Classification: Friday plenary session