Status of the North American Nanohertz Observatory for Gravitational Waves

Supermassive black hole binaries (SMBHBs), and possibly other sources, generate gravitational waves in the nanohertz part of the spectrum. For almost a decade and a half, the North American Nanohertz Observatory for Gravitational Waves (NANOGrav) has been using the 100-m Green Bank Telescope, the 305-m Arecibo Observatory, and, more recently, the 27 $\times$ 25-m Very Large Array to observe millisecond pulsars. Our goal is to directly detect nanohertz frequency gravitational waves, which cause small correlated changes to the times-of-arrival of radio pulses from millisecond pulsars. We currently monitor 76 millisecond pulsars with sub-microsecond precision and weekly to monthly cadences. A detection of the stochastic gravitational-wave background produced by the ensemble of all SMBHBs is close at hand. I will present an overview of the NANOGrav Physics Frontiers Center activities and will summarize the results from our most recent searches for gravitational waves.