Abstract Submitted
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Evolution of the NANOGrav 11yr dataset and limits on the Gravitational Wave Stochastic Background[1] JEFFREY HAZBOUN, University of Washington Bothell, NORTH AMERICAN NANOHERTZ OBSERVATORY FOR GRAVITATIONAL WAVES COLLABORATION — The North American Nanohertz Observatory for Gravitational Waves is a collaboration of scientists that monitor an array of millisecond pulsars as a galactic scale gravitational wave observatory. The timing precision of these pulsars is such (100 ns) that one can measure the Hellings and Down correlations between pulsars to look for the signature of ultra-low frequency gravitational waves. Since the maximum power of the stochastic background of gravitational waves from super- massive black hole binaries is thought to be in frequencies smaller than 1/yr, our signal is expected to grow slowly as we are able to observe lower frequencies in the power spectrum and as we add more pulsars to our array. With the most recent data release, we have undertaken an investigation into the evolution of our signal by slicing the dataset in time and running our statistical analyses on its subsets. We will demonstrate how this technique can be used to assess various characteristics of our pulsar timing array, including the effects of the interstellar medium, how removal of our best timed pulsar effects our limits and expectations about the evolution of our signal in the future. The investigation into unexpected features of the evolution will also be discussed.

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