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Constraining the SMBHB population with the nanohertz GWB JOSEPH SIMON, University of Colorado Boulder, LUKE KELLEY, Northwestern University, SIYUAN CHEN, University D'Orleans, NIHAN POL, STEPHEN TAY-LOR, Vanderbilt University, SARAH VIGELAND, University of Wisconsin Milwaukee, NANOGRAV PHYSICS FRONTIERS CENTER COLLABORATION — The NANOGrav Collaboration has found strong evidence for a common-spectrum process in its most recent pulsar timing dataset, however, lacking evidence for a quadrupolar correlation signature, the result remains ambiguous with respect to the presence of a gravitational wave background (GWB). Assuming that this is indeed the first hints of an astrophysical GWB and that it is built up from the cosmic population of supermassive black hole binaries (SMBHBs), it is important to understand what we can expect to learn about the SMBHB population in the coming years. To that end, we have emulated and extended the NANOGrav dataset, injecting a wide range of GWB signals from simulated populations of SMBHBs, which we recover using NANOGrav's detection pipeline. In this talk, I will discuss our results to three main questions: (i) how constraining is the initial parameter estimation derived from the GWB, (ii) how robust is that parameter estimation across different model assumptions, and (iii) how do initial constraints improve over time?

> Joseph Simon University of Colorado Boulder

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