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Limits on Gravitational Waves from Individual Supermassive Black Hole Binaries from the NANOGrav 9-year and 11-year Data Sets[1] SARAH VIGELAND, Univ of Wisconsin, Milwaukee, NORTH AMERICAN NANOHERTZ OBSERVATORY FOR GRAVITATIONAL WAVES (NANOGRAV) COLLABORATION — Pulsar timing arrays (PTAs) are sensitive to gravitational waves with frequencies between about 1 - 100 nHz. Sources in this regime include supermassive black hole binaries, which are believed to form as a result of galaxy mergers. We have searched the 9-year and 11-year data sets from the North American Nanohertz Observatory for Gravitational Wave Observatory (NANOGrav) for gravitational waves from individual supermassive black hole binaries. We present upper limits on the strain amplitude from individual supermassive black hole binaries, as well as lower limits on the luminosity distance to individual sources. We also show how our sensitivity varies with sky location due to the distribution of pulsars in our array.

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