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Detecting Gravitational Wave Bursts Using Pulsars[1]

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At the time of this talk, pulsar timing for gravitational wave detection will be in the midst of becoming an internationally coordinated effort. The North American collaboration is called NANOGrav. I will review the idea of using pulsars to detect a very low-frequency stochastic background of gravitational waves, and discuss current limits that pulsar timing places on the energy density of gravitational waves and what those limits correspond to in terms of cosmological models, most notably the merger rate of super-massive black holes in the early universe. I have become interested in the possibility of taking these ideas farther and using pulsar timing to detect bursts of gravitational radiation from a number of different possible sources, which I will describe.

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