

**Population statistics of gravitational-wave pulsars**

Milivoje Lukic

*Mentors: Teviet Creighton and Rejean Dupuis*

Gravitational waves emitted by spinning neutron stars provide a direct probe of their internal structure and mass distribution. Searches for gravitational waves from pulsars using LIGO data have already set upper limits on GW emission from several individual pulsars. We use those observations to study the distribution of quadrupole moments of the pulsar population. A Bayesian methodology is developed to use aggregate data from all observed pulsars to determine properties of the entire population, such as the average and maximum quadrupole moment. We estimate the sensitivity of the method on simulated noise for varying signal-to-noise ratios and number of pulsars in our sample. The sensitivity is also predicted for the set of currently known pulsars with the design sensitivity of Advanced LIGO. The method is applied to current results for individual pulsars obtained from the LIGO science runs.