Poster Session #F
Gravitational Wave detectors and other sources

F04

All-sky search in early O3 LIGO data for continuous gravitational-wave signals from unknown neutron stars in binary systems

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Rapidly spinning neutron stars are promising sources of persistent, continuous gravitational waves. Detecting such a signal would allow probing of the physical properties of matter under extreme conditions. A significant fraction of the known pulsar population belongs to binary systems. Searching for unknown neutron stars in binary systems requires specialized algorithms to address unknown orbital frequency modulations. We present a search for continuous gravitational waves emitted by neutron stars in binary systems in early data from the third observing run of the Advanced LIGO and Advanced Virgo detectors using the semicoherent, GPU-accelerated, BinarySkyHough pipeline. The search analyzes the most sensitive frequency band of the LIGO detectors, 50 - 300 Hz. Binary orbital parameters are split into four regions, comprising orbital periods of 3 - 45 days and projected semimajor axes of 2 - 40 light-seconds. No detections are reported. We estimate the sensitivity of the search using simulated continuous wave signals, achieving the most sensitive results to date across the analyzed parameter space. (This contribution is given on behalf of the LIGO Scientific Collaboration and the Virgo Collaboration),