

Contributed Talk

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Title: Search for long-duration transient gravitational waves from glitching pulsars during LIGO-Virgo third observing run

Abstract: Pulsars are spinning neutron stars which emit an electromagnetic beam. We expect pulsars to slowly decrease their rotational frequency. However, sudden increases of the rotational frequency have been observed from different pulsars. These events are called glitches, and they are followed by a relaxation phase with timescales from days to months. Gravitational waves (GWs) emission may follow these peculiar events. We give an overview of an analysis of GW data from the Advanced LIGO and Virgo third observing run (O3) searching for transient GW signals lasting hours to months after glitches in known pulsars during the 2019-2020 run period. The search method consists of placing a template grid in frequency-spindown space with fixed grid spacings. Then, for each point we compute the transient F-statistic which is maximized over a set of transient parameters like the duration and start time of the potential signals. A threshold on the detection statistic is then set, and we search for peaks over the parameter space for each candidate.