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Search for gravitational waves from r-mode oscillations in PSR J0537-6910

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PSR J0537-6910 is a young neutron star that regularly experiences pulsar glitches, and shows a rather high braking rate between them. Observed spin-down of the pulsar could be due to the r-mode oscillations, which in turn may generate gravitational waves in the sensitivity range of the LIGO and Virgo detectors.
Based on the analysis of the LIGO-Virgo-KAGRA observing run O3, and taking into account the NICER telescope pulsar timing, this search placed interesting constraints on theoretical models for the r-modes oscillations and on the J0537 neutron star parameters.

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