Poster Session #F
Gravitational Wave detectors and other sources

F01

Search for R-Modes Gravitational Signals from PSR J0537-6910

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PSR J0537-6910 is known for its rather significant glitching activity, hinting to the possible presence of r-modes excitations. These are likely to be a promising source of detectable continuous GWs. I would like to present a search methodology developed to detect this kind of signals that has been recently applied to gravitational data produced in the LIGO O3 run. The underlying idea in this search is to use a semi-coherent procedure due to the presence of glitches during the studied data timespan: a coherent search has been performed on each intra-glitch period, while results are later incoherently combined. On one hand, the coherent part of the analysis is slightly adapted from the already tried-and-tested narrow-band 5-vector procedure. However, this search requires to study a broad range of frequencies (approx. 13Hz, compared to the usual fractions of Hz for this type of searches). Thus, interesting physical considerations have been outlined, in order to explore the parameters space in an efficient way. On the other hand, the incoherent combination procedure has been developed from scratch, exploiting techniques used in continuous targeted searches. The implementations developed for this search might be useful for future r-modes searches and for other investigations in which glitches play a key role.