

The method for targeted search for long-duration transients from glitching pulsars

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Abstract

We propose a method for identifying continuous waves (CWs) from spinning neutron stars. We focus on glitching pulsars with abrupt spin-ups and long term spin-down, which imprint in CWs as long-duration transients from weeks to months.

The main principle of the method is the combination of a coherent detection statistics over time intervals of different duration. We characterize the method by determining the false alarm and false dismissal probabilities for different signal strengths, and appropriate choices of the relative detection thresholds. We compare the sensitivity of this method with previously proposed methods for transient search, for instance [1].

References

- [1] R. Prix, S. Giampanis, and C. Messenger, “Search method for long-duration gravitational-wave transients from neutron stars,” *Phys. Rev.*, vol. D84, p. 023007, 2011.