

Noise Rejection Method Using Spherical Harmonic Decomposition

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Abstract

The rapid analysis of gravitational-wave detectors data to detect burst-like sources is not trivial for many reasons such as the non-Gaussian non-stationary nature of the detectors noise and the poor knowledge of the signal waveform. One active research area is based on the use of X-SphRad (X-Pipeline Spherical Radiometer), a software package designed for performing autonomous searches for un-modelled gravitational-wave bursts. X-SphRad has an approach based on spherical radiometry, that transforms time series data streams into the spherical harmonic domain. We will describe the harmonic coefficients potential in discriminating gravitational wave candidates from background noise, and overview a noise rejection method. Results are presented on public O2 data provided by the LIGO Scientific Collaboration and the Virgo Collaboration.

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