

Model-Agnostic Test on Gravitational-Wave Polarizations

Peter T. H. Pang,¹ Rico K. L. Lo,² Isaac C. F. Wong,³ Tjonnie G. F. Li,³ and Chris Van Den Broeck¹

¹*Nikhef, Science Park, 1098 XG Amsterdam, Netherlands*

²*LIGO, California Institute of Technology, Pasadena, California 91125, USA*

³*Department of Physics, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong*

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Recent detections of gravitational waves from binary black hole coalescences and binary neutron star coalescence give us opportunities to test general relativity in the strong field regime. Unlike compact binary coalescences, core-collapse supernova or other gravitational-wave bursts cannot be searched with waveform templates due to the complexity of the system. We present a Bayesian null stream analysis method which can be applied to any kind of gravitational-wave bursts without the usage of waveform templates. We quantify the performance of this method on searching gravitational-wave signal and differentiating it from noise and glitches. Furthermore, we demonstrated the feasibility and performance of testing gravitational-wave polarization with such method. We also quantify the potential benefits of testing gravitational-wave polarization with signals with electromagnetic counterparts with this method.