

Abstract Submitted
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Modeling Gravitational Waves to Test GR Dispersion and Polarization RHONDALE TSO, YANBEI CHEN, MAXIMILLIANO ISI, Caltech — Given continued observation runs from the Laser Interferometer Gravitational-Wave Observatory Scientific Collaboration, further gravitational wave (GW) events will provide added constraints on beyond-general relativity (b-GR) theories. One approach, independent of the GW generation mechanism at the source, is to look at modification to the GW dispersion and propagation, which can accumulate over vast distances. Generic modification of GW propagation can also, in certain b-GR theories, impact the polarization content of GWs. To this end, a comprehensive approach to testing the dispersion and polarization content is developed by modeling anisotropic deformations to the waveforms phase, along with birefringence effects and corollary consequences for b-GR polarizations, i.e., breathing, vector, and longitudinal modes. Such an approach can be mapped to specific theories like Lorentz violation, amplitude birefringence in Chern-Simons, and provide hints at additional theories to be included. An overview of data analysis routines to be implemented will also be discussed.

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