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Search for spacetime symmetry breaking during gravitational waves propagation

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It has been postulated that a unified theory of physics may break local Lorentz invariance and CPT symmetry. A general effective field theory predicts that such violation lead to anisotropic, polarization-dependent dispersion the gravitational waves during their propagation. Using a Bayesian inference analysis, we constrain the coefficients responsible of spacetime symmetry breaking with the second catalog of gravitational waves detected by LIGO and Virgo. We compare them with the expected design sensitivity of advanced LIGO and Virgo and discuss the degeneracies with the source parameters.

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