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Constraints on Lorentz and parity violations with gravitational waves

Tuesday 26 August 2025 14:00 (20 minutes)

Gravitational wave (GW) observations offer a powerful tool for testing the fundamental Lorentz and parity symmetries of gravity. Any violation of these symmetries could manifest as deviations in GW propagation. In this talk, I will explore how current and future GW detections can constrain Lorentz- and parity-violating effects in gravity. I will introduce a systematic parameterization framework to describe potential deviations in GW propagation from general relativity in a cosmological background. Using this framework, we can construct modified GW waveforms, incorporating the effects of Lorentz and parity violations as predicted by various alternative gravity theories. Finally, I will present the latest results from our analysis of these modified waveforms using current GW data and discuss the prospects for placing even stronger constraints from future GW detections.

Collaboration you are representing

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