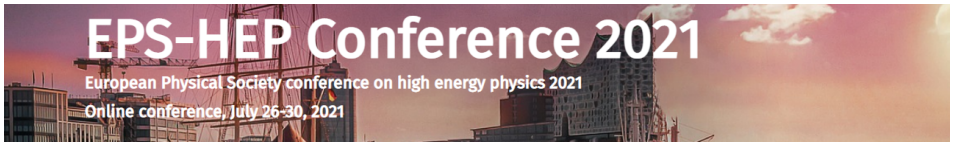

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Constraining Lorentz-violating gravity with gravitational wave observations

Wednesday 28 July 2021 09:50 (20 minutes)

Models of Lorentz-violating gravity can provide a solution to the puzzle of quantum gravity. By abandoning boost invariance, we can formulate theories which are renormalizable and even asymptotically free in certain cases. At low energies, certain amount of Lorentz violation persists and can percolate onto physical observables, such as the emission rate of gravitational waves from a bounded system.

I will discuss how to constraint the parameter space of Einstein-Aether gravity and Hořava gravity with binary pulsar observations. This singles out a region of the parameter space which points towards a minimal model where only a single parameter remains non-vanishing. I will discuss how the theory then becomes indistinguishable from GR at many levels. Cosmological observables remain as the only possible source of deviations and the only hope to further constraining the theory.

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