

Spacetime-symmetry breaking and the early Universe

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Spacetime-symmetry breaking has been put forth as a candidate signal of quantum gravity, and is an expected or allowed property of several theoretical proposals. This has spawned an extensive theoretical and experimental research effort in the last decades; using a generic effective-field theory approach to the symmetry breaking, strong constraints have been put on deviations from standard physics. In the gravitational sector, most results have been obtained in the linearised limit with probes such as solar-system tests, gravitational waves, and pulsars.

In this talk I will present a brief overview of the theory and phenomenology of an effective-field theory used for many precision tests of the spacetime symmetries in General Relativity and the Standard Model. Following this I will show some results obtained for strong gravity and cosmology. Finally, I will show some recent early-Universe results on the imprints of spacetime-symmetry breaking on primordial gravitational waves.

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