

The Cosmological CPT Theorem (online)

Monday 28 October 2024 11:30 (20 minutes)

In the original CPT theorem, one is restricted to flat space and is unable to make converse statements. In this talk, I will show how we can reformulate the CPT theorem using a symmetry argument to make converse statements and generalise it to beyond flat space. This in turn allows us to make a non-perturbative statement of unitarity in cosmology. I will show that this applies to the wavefunction studied in the cosmology literature and how we can also express our constraints in a perturbative way at each loop order. Finally, I will comment on how these powerfully constrain properties of cosmological correlators, including determining the exact phase of the wavefunction to any loop order, as well as constraints for quantum gravity.

Work in collaboration with Harry Goodhew and Aron Wall.

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