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## Equivalence theorems for KK gravitons in warped five-dimensional theories

Thursday 16 May 2024 14:30 (15 minutes)

In this talk, I will discuss how the residual five-dimensional diffeomorphism symmetries of compactified gravitational theories with a warped extra dimension imply Equivalence theorems which ensure that the scattering amplitudes of helicity-0 and helicity-1 spin-2 Kaluza-Klein states equal (to leading order in scattering energy) those of the corresponding Goldstone bosons present in the 't-Hooft-Feynman gauge. We derive a set of Ward identities that lead to a transparent power-counting of the scattering amplitudes involving spin-2 Kaluza-Klein states. Power-counting for the Goldstone boson interactions establishes that the scattering amplitudes grow no faster than  $\mathcal{O}(s)$ , explaining the origin of the behavior previously shown to arise from intricate cancellations between different contributions to these scattering amplitudes in unitary gauge. Enabled by the Ward identities, I will also describe a robust method for computing the scattering amplitudes without large cancellations among the different diagrammatic contributions. I will also discuss how our results apply to more general warped geometries, including models with a stabilized extra dimension.

## Mini Symposia (Invited Talks Only)

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