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The Gravitational Double EFT Expansion

Tuesday 8 July 2025 13:30 (17 minutes)

In this talk, we will explore the structure of EFTs within the context of Quantum Gravity, using string theory as a laboratory. Using an amplitudes-based approach, we argue that any EFT describing Quantum Gravity should exhibit a double expansion for higher-curvature operators, which includes terms supressed with respect to the Einstein-Hilbert term by either the mass of the lightest tower of states or by the Quantum Gravity cutoff, which we identify as the species scale. We furthermore characterize the kind of breaking of the gravitational EFTs associated to each of these two scales. Then, we will briefly discuss some implications of this framework for the asymptotic behaviour of Wilson coefficients of higher-dimensional gravitational operators, revealing interesting connections with recent S-matrix bootstrap results.

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