## Effective field theory dualities from the classical equations of motion

Thursday 19 June 2025 11:30 (30 minutes)

The modern amplitude program has not only introduced computationally efficient methods for particle scattering but also revealed surprisingly close relationships between seemingly disparate theories, such as Yang-Mills theory and general relativity. In this talk, I will present a novel type of duality that connects known effective field theories for massless scalars. This duality relates the physics of pions to Yang-Mills theory coupled to a specific scalar sector. Additionally, pions interacting with a gravitational field will be shown to be equivalent to two exceptional effective theories relevant for cosmology: the Dirac-Born-Infeld theory and the special Galileon theory. These duality maps enable the connection of both perturbative scattering amplitudes and exact classical solutions across different theories.

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