

Removing spurious degrees of freedom from EFT of gravity

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Effects of ultraviolet completions of gravity can be captured in low-energy regimes by local higher curvature corrections. Such description, however, is limited to yield strictly perturbative corrections, due to unphysical Ostrogradsky instabilities induced by higher derivatives in the correction terms. I will present a procedure for expunging spurious degrees of freedom from effective theories of gravity, and casting them as lower-derivative theories that capture all the information about the corrections, but propagates only the massless spin-2 graviton degree of freedom. Resulting reduced theories fall under the category of Minimally modified gravity theories, that preserve spatial diffeomorphisms, but modify temporal diffeomorphisms in a way that preserves the constraint structure. Such theories are free from Ostrogradsky instabilities, and can be used to study the ultraviolet effects self-consistently.

Primary author: GLAVAN, Dražen (CEICO, Prague, Czech Republic)

Presenter: GLAVAN, Dražen (CEICO, Prague, Czech Republic)