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Fantastic higher-curvature gravities and where to find them

Thursday 23 May 2024 17:30 (15 minutes)

In this talk I will present some classification results of higher-curvature gravities (in generic spacetime dimensions) satisfying a quite remarkable property: the differential order of their equations of motion gets reduced when considered on certain specific backgrounds. First, I will consider those higher-order gravities whose equations of motion become second-order (or less) on top of static and spherically symmetric backgrounds. This class of theories has been previously studied in the literature and were shown to form a perturbative basis of the space of effective gravitational theories. Secondly, I will focus on those theories whose equations of motion are second-order in derivatives for FLRW configurations. Finally, I will consider the intersection of the previous two classes and discuss some interesting properties of the corresponding four-dimensional theories. The talk would be mainly based on Phys.Rev.D 108 (2023) 4, 044016 and arXiv:2311.12104 [gr-qc].

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