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Consistent massive graviton on an arbitrary background

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The only consistent linear theory for a massive spin-2 field on a flat space-time has been known for a long time as being the Fierz-Pauli theory. Its promotion to a non-linear theory, although essential, has long been thought impossible because of the appearance of the Boulware-Deser (BD) ghost. Recently, de Rham, Gabadadze and Tolley (dRGT) proposed a family of massive gravity theories, free of the BD ghost. In this talk, I will present how to obtain, for the dRGT theories, the linearized equations of motion for a massive graviton. More specifically I will focus on a particular subset of these theories, for which it is possible to remove the need for a second reference metric, hence obtaining the equations of motion of a massive graviton moving in a single and arbitrary background metric. For this specific model I will derive the five covariant constraints necessary to remove five degrees of freedom out of ten, among which the scalar constraint removes the BD ghost. Then I will generalize the covariant constraint analysis to the whole dRGT theories.

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