Contribution ID: **22**   Type: **Long talk (20 mins)**

A dynamical formulation of ghost-free massive gravity

Friday, 16 December 2022 15:00 (30 minutes)

The ghost-free massive gravity theory of de Rham, Gabadadze and Tolley (dRGT) has attracted a lot of attention since its formulation over a decade ago. Many studies have looked at its consequences for cosmology, and explored various limits in which the theory simplifies. However, until now few attempts have been made at numerically simulating its full non-linear equations, as an explicit dynamical formulation, analogous to the ADM formulation of GR, was not known.

In this talk, based on work with de Rham, Tolley and Wiseman, I will briefly introduce the history and nuances of the formulation of massive gravity. I will then outline a dynamical formulation for the minimal and next-to-minimal dRGT models with a flat reference metric, explicitly identifying the phase-space variables, their associated momenta, as well as the evolution and constraint equations. I will go over the construction of initial data, which, like in GR, must still obey the Hamiltonian and momentum constraints. Finally, the techniques developed will be applied to perform numerical spherically symmetric gravitational collapse of scalar field matter for the minimal model, finding generically that this model breaks down before any large curvatures can appear.

Type of presentation

20 minute talk

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