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Nonlinear evolution of black holes in Quadratic Gravity

Friday, 29 July 2022 10:45 (15 minutes)

I present the first numerical-relativity simulations for black holes in Quadratic Gravity, i.e., including the leading-order (quadratic) curvature corrections to General Relativity. I review the nonlinear degrees of freedom and discuss a well-posed initial value formulation for Quadratic Gravity, both in spherical symmetry and in (3+1) dimensions. In spherical symmetry, self-convergence tests and decaying constraint violations confirm numerically stable evolution of perturbations on Minkowski as well as Schwarzschild spacetime. For the first time, I will also present full (3+1) simulations of black-hole initial data, which enable ongoing work to simulate black-hole binary systems in Quadratic Gravity.

Presenter: Dr HELD, Aaron (Jena University and The Princeton Gravity Initiative)

Session Classification: Short talks