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Black hole mergers in quadratic gravity[1] HELVI WITEK, University of Illinois at Urbana-Champaign — Observations and deeply theoretical considerationsindicatethat general relativity, our elegant standard model of gravity, requires modifications at high curvatures scales. Candidate theories of quantum gravity, in their low-energy limit, typically predict couplings to additional fields or involve higher curvature terms. At the same time, the breakthrough discovery of gravitational waves has provided a new channel to probe gravity in its most extreme, truly nonlinear regime. Modelling the expected gravitational radiation in extensions of GR enables us to search for – or place novel observational bounds on – deviations from our standard model. In this talk I will give an update onthe progress on simulating black-holebinary mergersin quadratic gravity and the understanding of new mathematical challenges such as the well-posedness of the underlying initial value formulation.

Helvi Witek
University of Illinois at Urbana-Champaign

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