

Gravity beyond General Relativity: Quantum Fluctuations and Nonlinear Dynamics

Monday, 28 August 2023 15:00 (1 hour)

I review the status of the asymptotic safety program which posits a nonperturbative ultraviolet completion of gravitational quantum field theory. In particular, I put emphasis (i) on systematic extensions of approximation schemes, (ii) on the role of field redefinitions, and (iii) on observable consequences.

The latter naturally connects the asymptotic safety program to an effective field theory approach for a joint theory of gravity and matter. Herein, I focus on the classical gravitational sector where I summarize recent progress on formulating a well-posed initial data evolution of the nonlinear dynamics.

The interplay between both parts of my talk provides a potential link between current astrophysical observations of black holes and our fundamental assumptions about quantized gravity.

Primary author: HELD, Aaron (Jena University)

Presenter: HELD, Aaron (Jena University)

Session Classification: Afternoon session 1