RESEARCH TRAINING GROUP
Models of Gravity

Dennis Stock (ZARM, University of Bremen)

Asymptotic safety scenario of QG and quantum improved BH spacetimes

Abstract

The asymptotically safe scenario of quantum gravity describes gravity as predictive, effective field theory valid on all energy scales.

After an introduction to the scenario as a whole, I will focus on its effect on black hole spacetimes, the Schwarzschild-(A)dS and Kerr-(A)dS geometries serving as an example.

Depending on parameters such as the mass and angular momentum of the black hole, the quantum-improved black holes can display a different number of horizons to their counterparts in general relativity. Further results addressed include the Penrose diagrams, the investigation of the central curvature singularity via the Kretschmann scalar, and the Hawking temperatures, together with the implications for the endpoint of the black hole evaporation process.