

Vanishing nonlinear black hole Love numbers in GR

Friday, 31 October 2025 17:00 (30 minutes)

Black hole Love numbers measure how a black hole deforms under external tidal fields, providing a window into the structure of spacetime, the dynamics of black holes, and the physics of gravitational waves. While linear analyses already suggest their vanishing, the role of non-linear effects has remained an open question. In this talk, I will explore the non-linear regime, presenting recent results that establish the vanishing of infinitely many non-linear Love numbers in the parity-even sector of general relativity, valid to all orders in perturbation theory. This striking result also unveils a hidden symmetry underlying black hole perturbations, offering new insights into the nature of black holes in general relativity.

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Session Classification: Session 3