

SPEAKER:

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TITLE:

Wave behavior in the vanishing cosmological constant limit

ABSTRACT:

Black hole stability is a central topic in mathematical relativity that has seen numerous advancements in recent years. Both the Kerr-de Sitter and the Kerr black hole spacetimes have been proven to be stable in the slowly-rotating regime. However, the methods used have been markedly different, as well as the decay rates proven. Perturbations of Kerr-de Sitter converge exponentially back to a nearby Kerr-de Sitter black hole, while perturbations of Kerr only converge polynomially back to the family. In this talk, I will speak about wave behavior that is uniform in the cosmological constant by considering solutions to the model Regge-Wheeler equations in Kerr(-de Sitter). The main point is a careful handling of the relevant estimates on the region of the spacetime far from the black hole. This provides a first step into understanding the uniform (in the cosmological constant) stability of black hole spacetimes. This is joint work with Jeremie Szeftel and Arthur Touati.