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Mathematics Colloquium

Linear stability of Schwarzschild black hole: the Cauchy problem of metric coefficients

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Abstract

The Schwarzschild solution of the vacuum Einstein equation in general relativity is the unique static solution that represents an isolated gravitating system of a single black hole. Studies, both theoretically and experimentally, of such a system are modeled on the Schwarzschild solution and its perturbation. The stability of the Schwarzschild solution is thus of utmost importance. I will address the linear stability of the Schwarzschild solution, which has a long history and rich literature involving the works of both physicists and mathematicians, and culminating in the recent breakthrough of Dafermos-Holzegel-Rodnianski. In joint work with Pei-Ken Hung and Jordan Keller, we provide a different and simpler proof that reveals the underlying geometric structure of the vacuum Einstein equation at a more elementary level.

Wednesday, 5 April 2017, 4pm

Smith Hall 204

Tea and refreshments will be served at 3:45pm.