SRS
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Linear Stability of the Schwarzschild-anti de Sitter spacetime

Tuesday 4 June 2024 16:30 (1 hour)

I will talk about joint work with Olivier Graf (Grenoble) establishing linear stability of Schwarzschild-anti de Sitter (AdS) black holes to gravitational perturbations. This is the statement that solutions to the linearisation of the Einstein equations $\mathrm{Ric} = -\frac{3}{\ell^2} g$ around a Schwarzschild-AdS metric arising from regular initial data and with standard Dirichlet boundary conditions imposed at the conformal boundary (inherited from fixing the conformal class of the non-linear metric) remain globally uniformly bounded on the black hole exterior and in fact decay inverse logarithmically to a linearised Kerr-AdS metric. The proof exploits a hierarchical structure of the equations of linearised gravity in double null gauge and relies on boundedness and logarithmic decay results for the Teukolsky system, which are obtained independently.

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