THE UNIVERSITY
of NORTH CAROLINA
at CHAPEL HILL

UNC PDE Mini-school
"Geometric singular analysis and black holes"

Sunday, March 26, 2023
9:00am –10:00am
PH 332

The linear stability of weakly charged and slowly rotating Kerr-Newman family of charged black holes

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Abstract. I will discuss the linear stability of weakly charged and slowly rotating Kerr-Newman black holes under coupled gravitational and electromagnetic perturbations. We show that the solutions to the linearized Einstein-Maxwell equations decay at an inverse polynomial rate to a linearized Kerr-Newman solution plus a pure gauge term. The proof involves the analysis of the resolvent of the Fourier transformed linearized Einstein-Maxwell operator on asymptotically flat spaces, which relies on recent advances in microlocal analysis and non-elliptic Fredholm theory. The most delicate part of the proof is the description of the resolvent at low frequencies