

Higher Spin Mode Stability for STU Black Hole Backgrounds

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We report results from a recent work in which mode stability of a STU black hole with four pairwise equal $U(1)$ charges has been investigated in four spacetime dimensions. Such black hole solutions arise naturally in the settings of superstrings and supergravity. These solutions are defined by six parameters: the four aforementioned charges, mass, and angular momentum. We investigate bosonic perturbations in this metric for probe fields with different values of spin through implementation of Whiting's transformations to a conjectured "Teukolsky-like" equation. Then, we use connection relations inspired by the work of Duztas (2016) to prove the absence of unstable modes solving the torsion-modified Dirac equation appropriate for this background, thus verifying mode stability for spin half fermions.