

New conservation laws for matter near spinning black holes

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ABSTRACT

The axisymmetric and stationary Kerr space-time, which represents the gravitational field of a spinning black hole, possesses an additional “hidden” symmetry expressed in the existence of a Killing-(Yano) tensor. In this talk, we show that this symmetry is connected to non-trivial conservation laws for the evolution of test matter in Kerr space-time and use them to test the validity of numerical simulations of relativistic hydrodynamics on the Kerr background.