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Generalized conservation law near spinning black holes

Abstract

Conservation of energy and angular-momentum fluxes is a well-known property of the evolution of any matter field in any axisymmetric stationary metric. However, there is another flux corresponding to the „hidden symmetry" of the Kerr space-time undergoing well-defined evolution which can be understood as a generalized conservation law. In this talk I derive the flux and its properties and discuss applications to simulations of accretion onto black holes.