General Relativity and Quantum Cosmology

Late-time Kerr tails: generic and non-generic initial data sets, "up" modes, and superposition

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Three interrelated questions concerning Kerr spacetime late-time tails are considered, specifically the evolutions of generic and non-generic initial data sets, the excitation of "up" modes, and the resolution of an apparent paradox related to the superposition principle. We propose to generalize the Barack-Ori formula for the decay rate of any tail multipole given a generic initial data set, to the contribution of any initial multipole mode. We also show explicitly that the angular symmetry group of a multipole does not determine its late-time decay rate.

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