

Abstract Submitted
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Late time Kerr tails GAURAV KHANNA, University of Massachusetts Dartmouth, LIOR M. BURKO, University of Alabama in Huntsville — We revisit the question of the decay rate of the late time tails of Kerr black holes. We focus on three interrelated phenomena: (a) Excited “up” modes (i.e., the decay rate of modes of a higher multipole moment than the initial mode), (b) the apparent breakdown of linear superposition, and (c) the differences in the evolutions of pure mode initial data sets and those of generic initial data sets. Specifically, letting ℓ being the multipole moment of the initial data, and ℓ' being the moment of an excited mode (so that $\ell' > \ell$), we find for the case of scalar field perturbations that the late time decay rate behaves like t^{-n} , where $n = \ell + \ell' + 3$. This result has been verified numerically for $\ell' - \ell = 2, 4$. Pure- and generic-mode evolutions are found to be different because the former involve non-generic, specially fine-tuned evolutions.

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