

Abstract Submitted  
for the APR13 Meeting of  
The American Physical Society

**Branching of the quasinormal mode spectrum in nearly extremal Kerr spacetimes** AARON ZIMMERMAN, HUAN YANG, FAN ZHANG, Caltech, DAVID NICHOLS, Cornell University, EMANUELE BERTI, The University of Mississippi, YANBEI CHEN, Caltech — The characteristic, decaying oscillation modes of perturbed black holes, their quasinormal modes, play a role in a variety of theoretical and astrophysical situations. For example, they are of interest in determining the ringdown waveform of black hole mergers, and in the context of models of quantum gravity. In this talk I will discuss newly discovered features of the quasinormal mode spectrum of black holes with nearly extreme spins. At lower spins and for fixed angular indices, the modes form a single set of frequencies indexed by an overtone number. At very high spins, and for a certain range of fixed angular indices, this single set breaks into two branches. All the modes of one branch approach zero decay in the extreme spin limit, while the modes in the other branch retain finite decay rates. I will present a physical picture for this splitting behavior and discuss some of its implications for the study of perturbed black holes.

Aaron Zimmerman  
Caltech

Date submitted: 10 Jan 2013

Electronic form version 1.4