Modeling black hole ringdown: overtones or mirror modes?
ARNAB DHANI, BANGALORE SATHYAPRAKASH, Pennsylvania University — The post-merger signal in a binary black hole merger, described by linear perturbation theory, is, historically, modeled using the dominant positive-frequency (corotating) fundamental mode. Recently, there has been efforts to model the post-merger signal using higher positive-frequency overtones in an attempt to achieve greater accuracy in describing the signal at earlier times. In general, negative-frequency (counterrotating) modes are also excited in a binary black hole merger. In this study, we model the post-merger signal using an overtone model and a mirror (counterrotating) mode model for a set of numerical relativity simulations across mass ratios and (aligned/anti-aligned) spins to identify the sections of the parameter space where an overtone and/or a mirror mode is more important.

Arnab Dhani
Pennsylvania State University

Date submitted: 02 Nov 2020   Electronic form version 1.4