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Gravitational Wave Detector Sensitivity to Eccentric Black Hole Mergers

Abstract

Orbital eccentricity in compact binary mergers carries crucial information about the binary's formation and environment. There are emerging signs that some of the mergers detected by the LIGO and Virgo gravitational wave detectors could indeed be eccentric. Nevertheless, the identification of eccentricity via gravitational waves remains challenging. In this talk, I will discuss the sensitivity of LIGO to eccentric waveforms from the SXS and RIT numerical relativity catalogs and the TEOBResumS–Dali waveform model. In addition, I will discuss how our results enable the comparison of the waveforms to establish their compatibility and applicability for searches and parameter estimation.