

Parameter estimation with higher modes and precession

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Measuring the distribution of black hole (BH) masses and spins from coalescing binary black holes allows us to test astrophysical models of compact binary formation and evolution. Critical to this is are estimates of the source parameters from gravitational wave observations that are free from observational and systematic bias. The imprint on the signal due to BH spin is very weak and informative inference requires systems with large inclination angles and/or spins as these systems have a richer gravitational wave morphology.

In this talk I will present a model of the gravitational wave signal for the inspiral, merger and ringdown phases of precessing binary black holes that also includes the effect of higher multipoles and discuss the expected parameter accuracy for BH masses and spins in the advanced detector era.