

# Projected gravitational wave constraints on primordial black hole abundance for extended mass distributions

We investigate the projected minimum constraints set by next-generation gravitational wave detectors Einstein Telescope and LISA on the abundance of primordial black holes relative to dark matter for extended primordial black hole mass distributions. We use the IMRPhenomXAS waveform package to simulate binary sources up to mass ratios  $q = 1000$  and redshifts  $z = 300$ . We consider positive and negative slope power law profiles for our extended mass distributions. Our results suggest that positively sloped distributions tend to raise the minimum constraint relative to the monochromatic cases by at least an order of magnitude, although this is less pronounced at high redshifts.

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