

Primordial black hole merger rates from a toy model mass distribution: the case for two monochromatic distributions

The merger rate for primordial black holes is well-modeled for monochromatic and narrow-width mass distributions. However, it may be more realistic to consider primordial black hole binaries which sample from an extended mass distribution. In this paper, we set the groundwork by computing for the merger rate arising from a toy model distribution consisting of two monochromatic distributions. Ignoring suppression, we find that the overall merger rate reaches a minimum at binary mass ratios $q \approx 58$ for distributions highly biased towards the larger mass. The non-monotonic behaviour of the merger rate with respect to the binary mass ratio may have an appreciable impact on gravitational wave constraints.

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