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The angular power spectrum of gravitational-wave transient sources as a probe of the large-scale structure

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We present a new, simulation-based inference method to compute the angular power spectrum of the distribution of foreground gravitational-wave transient events. As a first application of this method, we use the binary black hole mergers observed during the LIGO, Virgo, and KAGRA third observation run to test the spatial distribution of these sources. We find no evidence for anisotropy in their angular distribution. We discuss further applications of this method to investigate other gravitational-wave source populations and their correlations to the cosmological large-scale structure.

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