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Generalized Detection Algorithm for a SGWB with non-standard Polarizations

In this talk, we present a generalized algorithm for the detection of a stationary, isotropic and Gaussian SGWB with non-standard polarizations, as predicted by many alternative theories of gravity and cosmological models. We follow a frequentist approach that is suitable when no prior knowledge is available about alternative theories and hitherto unclear production mechanisms. We compute the statistical estimators needed to investigate the presence of the non-standard modes of polarization within this background. Also, we describe a generalized algorithm that allows the reconstruction of the detailed frequency dependence of the SGWB spectral density, improving upon the standard cross-correlation algorithm, which assumes power-law spectral densities. We will provide upper limits on the sensitivity to this background. Moreover, considering the predicted strain sensitivities form the scheduled Advanced detectors upgrades, we will present estimations on the SGWB sensitivities achievable in the near future, and we will compare the results with the predictions of some theoretical models of production.

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