

Signatures of Cosmic Reionization on the 21cm 3-Point Correlation

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Constraints on reionization models from future 21cm observations will rely on the statistical characterization of the spatial fluctuations in the observed 21cm brightness temperature. So far studies have focused almost exclusively on second-order statistics, such as 2-point correlations, to characterize these fluctuations, neglecting a significant amount of information, which is encoded in the higher-order statistics. I will present a study of the 21cm 3-point correlation in configuration space, as predicted by a semi-numerical simulation. The results show a strong dependence of the 3-point correlation on the triangle shape, as we probe the morphology of large-scale fluctuations in the 21cm signal. This behavior changes strongly for different reionization scenarios and can hence be used to tighten observational constraints from the 2-point correlation on the latter. I will further discuss a physical interpretation of 21cm correlations during reionization in terms of the local quadratic bias model as well a simple approach for generating fast predictions for 21cm observations using random walks.

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