

Correlations functions of primordial perturbations from symmetries

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In this work we use the correspondence between a field theory in de Sitter space in 4-dimensions and the dual conformal field theory in an euclidean space in 3-dimensions to constraint the form of correlation functions of primordial perturbations. To this end, we use an inflationary model, in which the inflaton field is interacting with a vector field through the term $f_1(\phi)F_\nu F^\nu + f_2(\phi)\tilde{F}_\nu F^\nu$. The first step of this method consists in solving the equations of motion for the fields in de Sitter 4D space-time, then evaluate these solutions in super-Hubble scales and compute the conformal weight of the projection of these fields in the 3D space. In a second stage, we propose a general form for the correlators, which involves scalar, vector and tensor perturbations and, using the result of the first step, find its momentum dependence by imposing that those are invariant under dilatations and special conformal transformation (SCT).

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