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Holographic non-Gaussianities in general single-field inflation

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We use holographic techniques to compute inflationary non-Gaussianities for general single-field inflation, including models with a non-trivial sound speed. In this holographic approach, the inflationary dynamics is captured by a relevant deformation of the dual conformal field theory (CFT) in the UV, while the inflationary correlators are computed by conformal perturbation theory. In this paper, we discuss the effects of higher derivative operators, such as $(\partial_\mu\varphi\partial^\mu\varphi)^m$, which are known to induce a non-trivial sound speed and source potentially large non-Gaussianities. We compute the full inflationary bispectra from the deformed CFT correlators. We also discuss the squeezed limit of the bispectra from the viewpoint of operator product expansions. As is generic in the holographic description of inflation, our power spectrum is blue tilted in the UV region. We extend our bispectrum computation to the IR region by resumming the conformal perturbations to all orders. We provide a self-consistent setup which reproduces a red tilted power spectrum, as well as all possible bispectrum shapes in the slow-roll regime.

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