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Renormalization of the primordial inflationary power spectra

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It has been suggested that the effects of renormalization significantly reduce the amplitude of the inflationary spectra at scales measurable in the cosmic microwave background. Via a gauge-invariant analysis, we compute the renormalized scalar and tensor power spectra and follow their evolution in an inflating universe that undergoes a transition to an FRW phase with a growing horizon. For perturbations originating from Minkowski vacuum fluctuations, we show that the standard prediction for the spectra on superhorizon scales is a late-time attractor, while they are UV finite at all times. Our result is independent of the equation of state after inflation, showing that the standard prediction is fully robust.

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