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Nonminimally Assisted Inflation: A General Analysis

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The effects of a scalar field, known as the "assistant field," which nonminimally couples to gravity, on single-field inflationary models are studied. The analysis provides analytical expressions for inflationary observables such as the spectral index (202), the tensor-to-scalar ratio (2), and the local-type nonlinearity parameter (2020(202020)). The presence of the assistant field leads to a lowering of 202 and 20 in most of the parameter space, compared to the original predictions. In some cases, ns may increase due to the assistant field. This revives compatibility between ruled-out single-field models and the latest observations by Planck-BICEP/Keck. The results are demonstrated using three example models: loop inflation, power-law inflation, and hybrid inflation.

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