

Induced-Gravity Inflation in View of the Bicep2 Results

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Abstract : Induced-Gravity inflation is a model of chaotic inflation where the inflaton is identified with a Higgs-like modulus whose the vacuum expectation value controls the gravitational strength. Thanks to a strong enough coupling between the inflaton and the Ricci scalar curvature, inflation is attained even for subplanckian values of the inflaton with the corresponding effective theory being valid up to the Planck scale. In its simplest realization, induced-gravity inflation is based on a quartic potential and a quadratic non-minimal coupling and the inflationary observables turn out to be in agreement with the Planck data. Its supersymmetrization can be formulated within no-scale Supergravity employing two gauge singlet chiral superfields and applying a continuous $U(1)$ and a discrete Z_n symmetry to the proposed superpotential and Kahler potential. Modifying slightly the non-minimal coupling to Gravity, the model can account for the recent results of BICEP2. These modifications can be also accommodated beyond the no-scale SUGRA considering the fourth order term of the Kahler potential which mixes the inflaton with the accompanying non-inflaton field and small deviations from the prefactor $\frac{1}{3}$ encountered in the adopted Kahler potential.

Keywords : cosmology, supersymmetric models, supergravity, modified gravity

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