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Helical Phase Inflation ZHIJIN LI, Texas A&M University, TIANJUN LI, Institute of Theoretical Physics, Chinese Academy of Sciences, DIMITRI NANOPOULOS, Texas A&M University — We show that quadratic inflation can be realized by the phase of a complex field with helicoid potential. Remarkably, this helicoid potential can be simply realized in minimal supergravity. The global $U(1)$ symmetry of the Kähler potential introduces a flat direction in the F-term potential and evades the ? problem automatically. So such inflation is technically natural. During inflation the norm of the complex field is strongly stabilized and the phase evolves along a flat helix trajectory. The phase excursion is super-Planckian as required by the Lyth bound, while the norm of the complex field can be suppressed in the sub-Planckian region. This model resolves the contradiction between the strict flat condition for inflation and the dangerous corrections from quantum gravity effects.

Zhijin Li
Texas A&M University

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