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High Energy Physics - Theory

Spinflation with Angular Potentials

Ruth Gregory, Dariush Kaviani

(Submitted on 27 Jul 2011 (v1), last revised 29 May 2012 (this version, v2))

We investigate in detail the cosmological consequences of realistic angular dependent potentials in the brane inflation scenario. Embedding a warped throat into a compact Calabi-Yau space with all moduli stabilized breaks the no-scale structure and induces angular dependence in the potential of the probe D3-brane. We solve the equations of motion from the DBI action in the warped deformed conifold including linearized perturbations around the imaginary self-dual solution. Our numerical solutions show that angular dependence is a next to leading order correction to the dominant radial motion of the brane, however, just as angular motion typically increases the amount of inflation (spinflation), having additional angular dependence also increases the amount of inflation. We also derive an analytic approximation for the number of e-foldings along the DBI trajectory in terms of the compactification parameters.

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