

Hybrid inflation and waterfall field in string theory from D7-branes

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We present an explicit string realisation of the hybrid inflation scenario within the framework of type IIB flux compactifications in the presence of three magnetised D7-brane stacks. The inflaton is identified with the total internal volume modulus and inflation takes place around a metastable de Sitter vacuum, obtained at the very shallow local minimum of the volume modulus scalar potential. Inflation ends due to the presence of “waterfall” fields, realized by open string states, that drive the evolution of the Universe from a nearby saddle point towards a global minimum. The vacuum energy can be tuned so as to describe the present state of our Universe.

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