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U(1)R inspired inflation model in no-scale supergravity

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We consider a cosmological inflation scenario based on a no-scale supergravity sector with U(1)R symmetry. It is shown that a tree level U(1)R symmetric superpotential alone does not lead to a slowly rolling scalar potential. A deformation of this tree level superpotential by including an explicit R symmetry breaking term beyond the renormalizable level is proposed. The resulting potential is found to be similar (but not exactly the same) to the one in the Starobinsky inflation model. We emphasize that for successful inflation, with the scalar spectral index ns~0.96and the tensor-to-scalar ratio r<0.08, a correlation between the mass parameters in the superpotential and the vacuum expectation value of the modulus field T in the Kähler potential must be adopted.

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