

Walking-Dilaton Hybrid Inflation in a Model with Dynamical Scalegenesis

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We propose a hybrid inflationary scenario based on eight-flavor hidden QCD with the hidden colored fermions being in part gauged under B–L gauge symmetry. This hidden QCD is almost scale-invariant, so-called walking, and predicts the light scalar meson (the walking dilaton) associated with the spontaneous scale breaking, which develops the Coleman-Weinberg (CW) type potential as the consequence of the nonperturbative scale anomaly, hence plays the role of an inflaton of the small-field inflation. The B–L Higgs is coupled to the walking dilaton inflaton, which is dynamically induced from the so-called bosonic seesaw mechanism. We explore the hybrid inflation system involving the walking dilaton inflaton and the B–L Higgs as a waterfall field. We find that observed inflation parameters tightly constrain the B–L breaking scale as well as the walking dynamical scale to be around 10^9GeV and 10^{14}GeV , respectively, so as to make the waterfall mechanism worked. The lightest walking pion mass is then predicted to be around 500GeV .

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