



Contribution ID: 63

Type: **not specified**

Field range bound and consistency in generalized G-inflation

Tuesday 8 September 2015 12:49 (1 minute)

We systematically show that in potential driven generalized G-inflation models, quantum corrections coming from new physics at the strong coupling scale can be avoided, while producing observable tensor modes. The effective action can be approximated by the tree level action, and as a result, these models are internally consistent, despite the fact that we introduced new mass scales below the energy scale of inflation. Although observable tensor modes are produced with sub-strong coupling scale field excursions, this is not an evasion of the Lyth bound, since the models include higher-derivative non-canonical kinetic terms, and effective rescaling of the field would result in super-Planckian field excursions. We argue that the enhanced kinetic term of the inflaton screens the interactions with other fields, keeping the system weakly coupled during inflation.

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Session Classification: Poster Session