

# Observational consequences of the Standard Model Higgs inflation variants

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(Submitted on 18 Jul 2011 (v1), last revised 8 Aug 2011 (this version, v2))

We consider the possibility to observationally differentiate the Standard Model (SM) Higgs driven inflation with non-minimal coupling to gravity from other variants of SM Higgs inflation based on the scalar field theories with non-canonical kinetic term such as Galileon-like kinetic term and kinetic term with non-minimal derivative coupling to the Einstein tensor. In order to ensure consistent results, we study the SM Higgs inflation variants by using the same method, computing the full dynamics of the background and perturbations of the Higgs field during inflation at quantum level. Assuming that all the SM Higgs inflation variants are consistent theories, we use the MCMC technique to derive constraints on the inflationary parameters and the Higgs boson mass from their fit to WMAP7+SN+BAO data set. We conclude that a combination of a Higgs mass measurement by the LHC and accurate determination by the PLANCK satellite of the spectral index of curvature perturbations and tensor-to-scalar ratio will enable to distinguish among these models. We also show that the consistency relations of the SM Higgs inflation variants are distinct enough to differentiate the models.

Comments: 22 pages, 4 figures

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**; High Energy Physics - Phenomenology (hep-ph)

Journal reference: JCAP10(2011)025

Cite as: [arXiv:1107.3436](https://arxiv.org/abs/1107.3436) [astro-ph.CO]

(or [arXiv:1107.3436v2](https://arxiv.org/abs/1107.3436v2) [astro-ph.CO] for this version)

## Submission history

From: Lucia Popa [[view email](mailto:lucia.popa@iss.ac.ro)]

[v1] Mon, 18 Jul 2011 13:42:19 GMT (62kb)

[v2] Mon, 8 Aug 2011 12:58:51 GMT (41kb)

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