



# Non-metric chaotic inflation

Kari Enqvist, Tomi Koivisto, Gerasimos Rigopoulos

(Submitted on 19 Jul 2011)

We consider inflation within the context of what is arguably the simplest non-metric extension of Einstein gravity. There non-metricity is described by a single graviscalar field with a non-minimal kinetic coupling to the inflaton field  $\Psi$ , parameterized by a single parameter  $\gamma$ . We discuss the implications of non-metricity for chaotic inflation and find that it significantly alters the inflaton dynamics for field values  $\Psi \gtrsim M_P/\gamma$ , dramatically changing the qualitative behaviour in this regime. For potentials with a positive slope non-metricity imposes an upper bound on the possible number of e-folds. For chaotic inflation with a monomial potential, the spectral index and the tensor-to-scalar ratio receive small corrections dependent on the non-metricity parameter. We also argue that significant post-inflationary non-metricity may be generated.

Comments: 7 pages, 1 figure

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**; General Relativity and Quantum Cosmology (gr-qc)

Report number: HIP-2011-20/TH, ITP-UU-11/28, SPIN-11/21, TTK-11-25

Cite as: [arXiv:1107.3739](#) [astro-ph.CO]

(or [arXiv:1107.3739v1](#) [astro-ph.CO] for this version)

## Submission history

From: Gerasimos Rigopoulos [[view email](#)]

[v1] Tue, 19 Jul 2011 15:23:11 GMT (119kb)

[Which authors of this paper are endorsers?](#)

Link back to: [arXiv](#), [form interface](#), [contact](#).

## Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

astro-ph.CO

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1107](#)

Change to browse by:

[astro-ph](#)

[gr-qc](#)

## References & Citations

- [INSPIRE HEP](#)  
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

