



Contribution ID: 31

Type: **not specified**

## Phenomenology of a Pseudo-Scalar Inflaton

*Tuesday 31 May 2011 16:30 (15 minutes)*

Many controlled realizations of inflation employ pseudo-scalar axions.

Pseudo-scalars  $\varphi$  are naturally coupled to gauge fields through  $c \varphi F \tilde{F}$ . In the presence of this coupling, gauge field quanta are copiously produced by the rolling inflaton. The produced gauge quanta, in turn, source inflaton fluctuations via inverse decay. These cosmological perturbations add incoherently with the “vacuum” perturbations, and are highly nongaussian. This provides a natural mechanism to generate large nongaussianity in single or multi field slow-roll inflation. The resulting phenomenological signatures are highly distinctive: large nongaussianity of (nearly) equilateral shape, in addition to detectably large values of both the scalar spectral tilt and tensor-to-scalar ratio. The WMAP bound on nongaussianity implies that the coupling  $c$  of the pseudo-scalar inflaton to any gauge field must be smaller than about  $10^2 / M_p$ .

**Author:** Prof. PELOSO, Marco (University of Minnesota)

**Co-authors:** Dr BARNABY, Neil (University of Minnesota); Mr NAMBA, Ryo (University of Minnesota)

**Presenter:** Prof. PELOSO, Marco (University of Minnesota)

**Session Classification:** P5 - COSMOLOGY