



Contribution ID: 66

Type: **not specified**

## Hill crossing after hilltop inflation

*Tuesday 8 September 2015 12:51 (1 minute)*

In ‘hilltop inflation’, inflation takes place when the inflaton field slowly rolls from close to a maximum of its potential (i.e. the ‘hilltop’) towards its minimum. When the inflaton potential is associated with a phase transition, possible topological defects produced during this phase transition, such as domain walls, are efficiently diluted during inflation. It is typically assumed that they also do not reform after inflation, i.e. that the inflaton field stays on its side of the ‘hill’, finally performing damped oscillations around the minimum of the potential. In this paper we study the linear and the non-linear phases of preheating after hilltop inflation. We find that the fluctuations of the inflaton field during the tachyonic oscillation phase grow strong enough to allow the inflaton field to form regions in position space where it crosses ‘over the top of the hill’ towards the ‘wrong vacuum’. We investigate the formation and behaviour of these overshooting regions using lattice simulations: Rather than durable domain walls, these regions form oscillon-like structures (i.e. localized bubbles that oscillate between the two vacua) which should be included in a careful study of preheating in hilltop inflation.

**Presenter:** ORANI, Stefano (University of Basel, Switzerland)

**Session Classification:** Poster Session