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Parametric resonance after hilltop inflation caused by an inhomogeneous inflaton field

Saturday 5 December 2015 16:55 (20 minutes)

I will first give a short overview of preheating after hilltop inflation. In the main part of the talk I will discuss how the dynamics can change
when the inflaton couples to another scalar field, e.g. a right-handed sneutrino, which provides a mechanism for generating the correct initial conditions for inflation and also a decay channel for the inflaton that allows for non-thermal leptogenesis. I will particularly discuss how the known phases of preheating during which the inflaton field becomes fully inhomogeneous, can be followed by a subsequent preheating phase where the fluctuations of the secondary field gets resonantly enhanced, from initially tiny amplitudes up to amplitudes of the same order (and even larger) as the ones of the inflaton field. This resonant enhancement differs from the usual parametric resonance as the inflaton field is highly inhomogenous at the time the enhancement takes place.

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