

Inflation and Preheating in Supergravity with MSSM Flat Directions

A.Kamińska, P.Pacholek, under supervision of S.Pokorski, Institute for Theoretical Physics, Faculty of Physics, University of Warsaw

Motivation

- The challenge of constructing a consistent model of inflation and particle production in a supersymmetric framework
- Impact of flat direction high VEVs on the process of particle production – blocking of preheating?

Classical evolution during inflation

- Large flat direction VEV without spoiling inflation

Example of evolution of the flat direction VEV during inflation

Preheating

- Light mass matrix eigenvalues evolving non-adiabatically

Example of $\frac{\dot{\omega}_0}{\omega_0^2}$ during inflaton oscillations

Conclusions

Preheating both from the inflaton and the flat direction induced by

- Supergravity corrections
- non-renormalizable terms
- non-zero VEVs of decay products

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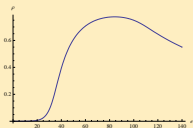
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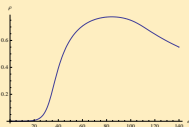
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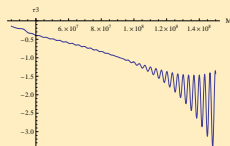
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Example of $\frac{m^2}{M_{pl}^2}$ during inflaton oscillations

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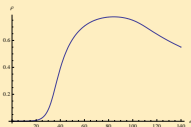
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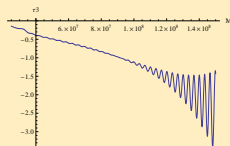
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