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Gravitational waves from preheating in α -attractors

In multi-field inflationary models, couplings between fields are not limited to the potential of the model, but can also be present in kinetic terms. In such a case, they can be interpreted as a non-trivial structure of the space of fields. Non-vanishing curvature of this space can lead, if negative, to a new phenomenon called geometrical destabilization.

 α -attractors are a very promising class of inflationary models. Their

predictions for small values of α parameter are in remarkably good agreement with the CMB data obtained by the Planck satellite. Since α -attractor models are by construction multi-field models, dynamics of the additional spectator field can play a role in the (p)reheating.

When investigating the two-field α -attractor T-model, we have found that geometrical destabilization during preheating leads to efficient fragmentation of the spectator field. As a result, the transition from the inflationary era to the radiation domination era is practically instantaneous and much faster than previously found in the effective theory including only the inflaton field. Recently, due to development of numerical software, we were able to overcome deficiencies of our primary analysis and got deeper insight into parametric dependence of the problem. Moreover, we estimated the spectrum of gravitational waves emitted during preheating in this model.

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