Contribution ID: **3** Type: **not specified**

Tensor Backreaction in Chromo-Natural Inflation Systems: Evolution and Signatures

Friday 24 October 2025 17:00 (20 minutes)

In the context of axion inflation coupled with SU(2) gauge fields, commonly called chromo-natural inflation, the gauge fields' interaction with the axion acts as an extra friction term. Aside from making inflation last more e-folds of evolution, this friction also sources the scalar and tensor sectors for the perturbations, generating a particular gravitational wave signal along with curvature perturbations. On the chromo-natural evolution, this axion-gauge interaction generates a strong backreaction from the gauge tensor sector to the background evolution. This build-up to a strong backreaction regime which is independent of the potential and almost unavoidable (unless there is severe fine-tuning of the system's parameters). The effect of this backreaction leads to a particular evolution of the gauge VEV, which passes through a period of large curvature perturbations generation to reach a recently described, well-defined, new attractor evolution. In this work, we studied the most general scenarios, which show compatibility between the CMB constraints and the evolution from a weak to a strong backreaction regime. Additionally, we consider a pure natural potential for our numerical solver of the system. We also examine the gravitational wave signal (both direct and scalar-induced) and the PBH production generated due to this particular inflationary evolution.

Authors: Dr DIMASTROGIOVANNI, Ema; Dr FASIELLO, Matteo; Dr PAPAGEORGIOU, Alexandros; ZENTENO GATICA, Cristóbal (IFT UAM/CSIC)

Presenter: ZENTENO GATICA, Cristóbal (IFT UAM/CSIC)

Session Classification: Contributed talks