



Contribution ID: 73

Type: **not specified**

U(1) gauge field and charged particles in axion inflation

Tuesday 26 July 2022 16:00 (18 minutes)

The axionic inflaton with the Chern–Simons coupling may generate U(1) gauge fields and charged particles simultaneously. In order to incorporate the backreaction from the charged particles on the gauge fields, we develop a procedure to obtain an equilibrium solution for the gauge fields by treating the induced current as effective electric and magnetic conductivities. Introducing mean field approximation, and numerically solving self-consistency equations, we find that the gauge field amplitudes are drastically suppressed. Interestingly, as the production becomes more efficient, the charged particles gain a larger part of the transferred energy from the inflaton and eventually dominate it. Our formalism offers a basis to connect this class of inflationary models to a rich phenomenology such as baryogenesis and magnetogenesis.

Author: FUJITA, Tomohiro (Waseda University)

Presenter: FUJITA, Tomohiro (Waseda University)

Session Classification: Parallel Session D

Track Classification: Particle Physics