Contribution ID: **13** Type: **not specified**

Baryogenesis from axion inflation

Tuesday 24 March 2020 16:10 (25 minutes)

The coupling of an axion-like particle driving inflation to the Standard Model (SM) particle content through a Chern-Simons term generally sources a dual production of massless helical gauge fields and chiral fermions. We demonstrate that the interplay of these two components results in a highly predictive baryogenesis model, which requires no further ingredients beyond the Standard Model. If the helicity of the hyper magnetic field and the effective chemical potential of SM particles are large enough to avoid magnetic diffusion from the thermal plasma but small enough to delay the chiral plasma instability, then the non-vanishing helicity survives until the electroweak phase transition and sources a net baryon asymmetry which is in excellent agreement with the observed value. If any of these two conditions is violated, the final baryon asymmetry vanishes. The observed baryon asymmetry can be reproduced if the energy scale of inflation is around $H_{\rm inf} \sim 10^{10}$-10^{12} GeV with moderate dependence on inflation model parameters.

Presenter: MUKAIDA, Kyohei (DESY)

Session Classification: Short talks