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Baryogenesis from axion inflation

Thursday 1 September 2022 12:00 (20 minutes)

In inflation models driven by an axion-like particle the inflaton may have a Chern-Simons coupling to the Standard Model (SM) $U(1)_Y$. In this talk we show that this setup is a highly predictive baryogenesis model without further ingredients other than the SM and the inflaton (and the origin of neutrino mass). During inflation this Chern-Simons coupling sources a dual production of the SM chiral fermions and maximally helical $U(1)_Y$ gauge fields associated with the SM chiral anomaly equation ala Schwinger effect. We will discuss the possibility where the anomalous transport of these primordial chiral asymmetries and the helical $U(1)_Y$ gauge fields after inflation gives rise to the present baryon asymmetry.

Primary author: MUKAIDA, Kyohei (DESY)

Presenter: MUKAIDA, Kyohei (DESY)

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