



Contribution ID: 209

Type: not specified

## Baryogenesis from Primordial Helical Hypermagnetic Fields

*Tuesday, 22 October 2019 17:10 (20 minutes)*

Recent observations of TeV blazars by Fermi identified deficits of secondary GeV cascade photons. These observations can be explained by intergalactic magnetic fields, which may have a primordial origin. If the magnetic fields are helical and generated in the early Universe such as before the electroweak symmetry breaking, nontrivial interaction between (hyper)magnetic fields and other particles can cause some interesting and non negligible phenomena in the early Universe.

In this talk, I will show that the baryon asymmetry can be generated by the chiral anomaly, and baryon asymmetry is not completely washed out by the electroweak sphalerons.

Thus, this mechanism can be responsible for the present baryon asymmetry of the Universe.

If this mechanism is responsible for the present Universe, the BSM physics is needed for the generation of (hyper)magnetic fields but not for the baryogenesis. I will also shortly discuss possible mechanism to generate

such helical hypermagnetic fields suitable for the baryogenesis scenario.

**Presenter:** KAMADA, Kohei (Research Center for the Early Universe, University of Tokyo)

**Session Classification:** Baryogenesis