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Seminar

Primordial magnetic fields and their roles in particle physics and cosmology (in English)

SPEAKER : Prof. Kohei Kamada (RESCEU, The University of Tokyo)

DATE : Feb. 14th (Thu.) 15:30-

PLACE : Kenkyu Honkan 1F, Meeting Room 3

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 depending on the detail of electroweak cross over, 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 discuss possible mechanism to generate such helical hypermagnetic fields suitable for the baryogenesis scenario.

ページトップへ

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