

Scalars 2015

Contribution ID : 44

Muon $g-2$ in MSSM and B-L-SSM

Content :

The Higgs boson discovery in the ATLAS and CMS experiments has led to strict constraints for the supersymmetric models. The experimental analyses have approved that the Standard Model predictions are highly consistent with the experimental results. The highest discrepancy between the experiment and the Standard Model happens in the measurements of the muon anomalous magnetic moment (muon $g-2$). The calculations within the Standard Model have been achieved in a high sensitivity, and hence the new physics beyond the Standard Model can solve or ameliorate the discrepancy in muon $g-2$ measurements. If supersymmetry is a solution to muon $g-2$ problem, the smuons and weak gauginos need not to be heavier than a few hundred GeV. However, the Higgs boson of mass about 125 GeV requires rather a heavy sparticle mass spectrum, and so it leads to a tension in resolution of the muon $g-2$ problem. In this talk, the status of muon $g-2$ results in supersymmetry will be discussed and some supersymmetric models such as flavour symmetry-based minimal supersymmetric standard model, non-universal gauginos and MSSM extended by $U(1)_{B-L}$ will be discussed. The work represented is supported in part by Technological Research Council of Turkey (TUBITAK) Grant no. MFAG-114F461 and grant H2020-MSCA-RISE-2014 no. 645722 (NonMinimalHiggs).

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Session classification : --not yet classified--

Track classification : --not yet classified--

Type : --not specified--