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Muon g-2 and new physics

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Summary

The 3σ deviation of the muon magnetic moment between the experimental measurement and the theoretical expectation can be explained with various new physics models.
In my presentation we focus on three scenarios: the MSSM, the 2HDM, and the radiative mass generation scenario.
These models illustrate and realize completely different qualitative parameter ranges of new particle masses which can explain the deviation.
In the 2HDM the deviation will be explained with light new Higgs bosons, whereas the MSSM requires sparticle masses above the EW scale. The radiative muon mass generation model is
realized as a limit of the MSSM with TeV scale masses.

The most recent results of the MSSM and 2HDM will be presented including two-loop corrections. As the anomalous magnetic moment of muon is one of the most precise physical
measurement, two-loop corrections are demanded to improve the accuracy.

The two-loop prediction is also implemented in the program GM2Calc.

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