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The Muon Anomalous Magnetic Moment Puzzle

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The anomalous magnetic moment of the muon is one of the most sensitive probes of physics at the weak scale. Its current measurement presents a 4.2 sigma deviations from the Standard Model prediction, what is an exciting hint of physics beyond the Standard Model. However, such a prediction is subject to theoretical and experimental uncertainties, coming mainly from the hadronic vacuum polarization contributions. I will discuss the current status of this anomaly, the possibility of explaining it within low energy Supersymmetry, as well as an attempt to reconcile the hadronic vacuum polarization contributions obtained from dispersion relations of the hadronic cross section as well as their first principle lattice determination.

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