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Vector leptoquark scenarios in light of muon anomalies

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Various observables in the muon sector have shown persistent deviations from the Standard Model (SM) predictions. The muon's anomalous magnetic dipole moment measured by Fermilab has shown a deviation of 4.2σ. Significant anomalies in data have also been observed in the semileptonic B-meson decay observable called $R_{K^{(*)}}$. These anomalies might not be independent ones and could be manifestations of the same Beyond the SM theory. Models with TeV-range leptoquarks (LQ) are suitable candidates for explaining these anomalies. In this talk, we look at various minimal coupling scenarios of different vector LQs motivated by these anomalies. Among many possibilities, we find that only a few scenarios can explain these anomalies. We also discuss the bounds on the parameter space from the LHC and compare them with the constraints from muon anomalies.

Session

Beyond the Standard Model

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