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Leptoquark and vector-like quark extended models as the explanation of the muon $g - 2$ anomaly

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The $(g - 2)_\mu$ anomaly is a longstanding problem in particle physics and many models are proposed to explain it. Leptoquark (LQ) models can be the solution to this anomaly because of the chiral enhancements. In this talk, we consider the models extended by the LQ and vector-like quark (VLQ) simultaneously. In the minimal LQ models, only the R_2 and S_1 representations can lead to the chiral enhancements. Here, we find one new S_3 solution to the anomaly in the presence of $(X, T, B)_{L,R}$ triplet. We also consider the one LQ and two VLQ extended models. Then, we propose new LQ search channels under the constraints of $(g - 2)_\mu$. Besides the traditional $t\mu$ decay channel, the LQ can also decay into $T\mu$ final states, which will lead to the characteristic multi-top and multi-muon signals at hadron colliders.

In-person participation

No

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