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Anomalous and axial Z' contributions to $g-2$

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We will study the effects of an anomalous Z' boson on the anomalous magnetic moment of the muon ($g-2$), and especially the impact of its axial coupling. We mainly evaluate the negative contribution to $(g-2)$ of such couplings at one-loop and look at the anomalous couplings generated at two loops. We find areas of the parameter space, where the anomalous contribution becomes comparable and even dominant compared to the one-loop contribution. We show that in such cases, the cutoff of the theory is sufficiently low, so that new charged fermions can be found in the next round of collider experiments.

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