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Explaining the anomalies with dark loops

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Several anomalies are currently hinting at the presence of new physics effects in the lepton sector of the Standard Model. First of all, neutrino oscillation experiments have clearly established that neutrinos are massive, while on the cosmological side, the existence of dark matter (DM) is robustly settled. Interestingly, other anomalies have recently shown up, mainly involving the muon: the hints observed in $b \to s$ transitions and the muon anomalous magnetic moment. In this talk we introduce an economical yet powerful model that provides an explanation to all these new physics indications. This is achieved thanks to the addition of a dark sector composed of two singlets and two doublets charged under a Z_2 symmetry. These ingredients are enough to induce neutrino masses, accommodate the $b \to s\ell\ell$ and muon $g-2$ anomalies, and provide a viable DM candidate, while being compatible with all the relevant experimental constraints. Therefore, this economic scenario takes into account all the unresolved issues in the lepton sector simultaneously and, as a by-product, also addresses the long-standing DM problem.

Summary

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