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Tensor interactions of dark bosons with Standard model leptons

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A phenomenological lagrangian is proposed to include dark sector mesons interacting through tensor currents with Standard Model leptons. For certain values of the interaction constant, the model has the potential of providing an explanation for the discrepancy between theory and experiment, regarding the anomalous magnetic moment of the muon, the Be-8 anomaly, and others, manifesting lepton universality violation. In addition, the new terms lead to a contribution to the total decay width of $\pi^0 \rightarrow \gamma e^+ e^-$, where the electron-positron pair is produced through a decay of a dark meson. The implication of the presented model on the present and future searches for new dark particles is also discussed.

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