

## Flavor anomalies from a split dark sector

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We investigate solutions to the flavor anomalies in B decays and the anomalous magnetic moment of the muon based on loop diagrams of a “split” dark sector. This is characterized by the simultaneous presence of heavy particles at the TeV scale and light particles around and below the B-meson mass scale. We show that viable parameter space exists for solutions based on penguin diagrams with a vector mediator, while minimal constructions relying on box diagrams are in strong tension with the constraints from the LHC and LEP. We highlight a regime where the mediator lies close to the B-meson mass, naturally realising a resonance structure and a  $q^2$ -dependent effective coupling. We perform a full fit to the relevant flavor observables and analyze the constraints from intensity frontier experiments. We find that decays of the B meson, Bs-mixing, missing energy searches at Belle-II, and LHC searches for top/bottom partners can robustly test these scenarios in the near future.

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