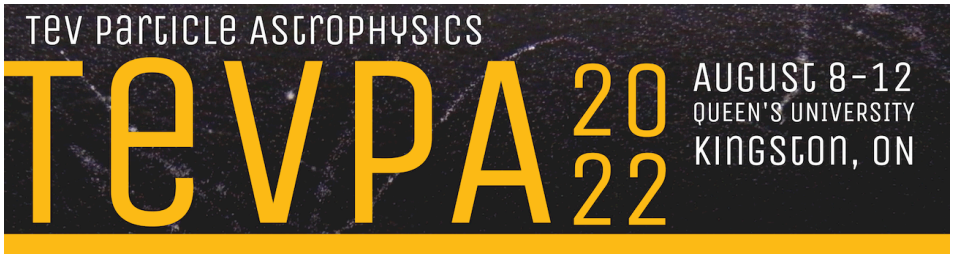

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Flavor and CP Violation from a QCD-like Hidden Sector

Thursday 11 August 2022 16:30 (20 minutes)

Confining hidden sectors at the GeV scale are well motivated by asymmetric dark matter and naturalness considerations and can also give interesting collider signatures. Here we study such sectors connected to the Standard Model by a TeV scale mediator charged under both QCD and the dark force. Such a mediator admits a Yukawa coupling between quarks and dark quarks which is generically flavour and CP violating. We show that in contrast to expectation, electric dipole moments do not place a strong constraint on this scenario even with O(1) CP-violating phases. We also quantitatively explore constraints from $\Delta F = 1, 2$ processes as a function of the number of dark quark flavours. Finally, we describe the reach of upcoming measurements at Belle-II and KOTO, and we propose new CP-odd observables in rare meson decays that may be sensitive to the CP-violating nature of the dark sector

Collaboration name

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