The 16th International Workshop on Tau Lepton Physics (TAU2021) (Virtual Edition)

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Dark matter and flavor anomalies with vector-like fermions and scalar leptoquark

Friday 1 October 2021 10:50 (2 hours)

We investigate vector-like fermionic dark matter and flavor anomalies in a simple extension of standard model, with doublet vector-like fermions of quark and lepton type and also a $S_1(\bar{\mathbf{3}}, \mathbf{1}, 1/3)$ scalar leptoquark. An additional vector-like lepton singlet is included, whose admixture with vector-like lepton doublet plays the role of dark matter and is examined in relic density and direct detection perspective. We utilize the bounds from electroweak precision observables and also constrain the new couplings from the branching ratio and angular observables associated with $b \rightarrow sll(\nu_l \bar{\nu}_l)$, $b \rightarrow s\gamma$ decays. We estimate the branching ratios of the rare lepton flavor violating τ decays such as $\tau \rightarrow \mu(\gamma, \phi, \eta, \eta')$.

What is your topic?

Physics beyond the Standard Model

Authors: MOHANTA, Rukmani (University of Hyderabad); SINGIRALA, Shivaramakrishna (School of physics, University of Hyderabad, Hyderabad 500046); SAHOO, Suchismita (University of Hyderabad)

Presenter: SINGIRALA, Shivaramakrishna (School of physics, University of Hyderabad, Hyderabad 500046)

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