

Abstract Submitted  
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**Search for Pair Production of Scalar Top Quarks Each Decaying to a  $\tau$  Lepton and a  $b$  Quark in 1.96-TeV  $p\bar{p}$  Collisions** VADIM KHOTILOVICH, Texas A&M University, CDF COLLABORATION — We present the results of a search for pair production of scalar top quarks ( $\tilde{t}_1$ ) in an  $R$ -parity violating supersymmetry scenario, in  $322 \text{ pb}^{-1}$  of  $p\bar{p}$  collisions at  $\sqrt{s} = 1.96 \text{ TeV}$ , collected by the Collider Detector at Fermilab (CDF). We assume each stop quark always decays into a  $\tau$  lepton and a  $b$  quark, and that the final state is either an electron or a muon from the leptonic  $\tau$  decay, a hadronically decaying  $\tau$  lepton, and two or more jets. Two candidate events pass our final selection criteria, consistent with the expectation from standard model sources. We set a 95% confidence level limit  $m(\tilde{t}_1) > 151 \text{ GeV}$  comparing with the next-to-leading order cross section. This limit is also fully applicable to the case of the third generation scalar leptoquark ( $LQ_3$ ) assuming a 100% branching ratio for the  $LQ_3 \rightarrow \tau b$  decay mode.

Song Ming Wang  
Academia Sinica

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