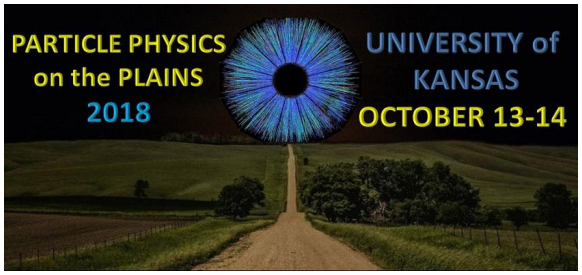


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# Hunting for Maverick Top Partners

*Saturday 13 October 2018 16:10 (20 minutes)*

Most searches for vector-like top partners (T) are concerned with the pair and single productions, strictly focusing on three conventional T decays (i.e. t Z, t h and Wb). As bounds become increasingly stringent, however, the LHC energy will be saturated and the utility of these channels greatly diminish.

This takes forward our task to scrutinize every corner of a parameter space, including the region where a mixing angle between T and the SM top quark is negligibly small. It opens a new avenue to search for T of which the decay pattern can be significantly altered with new decay modes. In a model where the SM is extended by an SU(2) singlet T and a gauge singlet scalar (S), it is possible that S can mediate not only loop-induced single T productions in association with a top quark (i.e. T + top), but also new decays of T (i.e. top + gluon, top + photon, and top + S).

We also present dedicated collider analysis for the HL-LHC, and estimate a sensitivity reach of this new channel using a jet-substructure method.

Reference: arXiv:1803.06351

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