

The unexplored landscape of top-partner decays

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We discuss the LHC sensitivity to top partner production in a model where the Standard Model (SM) is extended by an SU(2) singlet top partner and a SM gauge singlet scalar.

Unlike most searches for top partners which are concerned with three conventional decay modes, Wb , tZ and tH , the decay pattern of the top partner in this model can be significantly altered with new decay modes, gluon + top, photon + top and singlet scalar + top.

We present a new approach to search for a pair-produced top partner that decays to a top quark and a gluon (photon). We give an overview of the various production and decay channels of the top partner and project the sensitivity of the high luminosity LHC.

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