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## A Collider Signature of the Supersymmetric Golden Region

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Null results of experimental searches for the Higgs boson and the superpartners imply a certain amount of fine-tuning in the electroweak sector of the Minimal Supersymmetric Standard Model (MSSM). The “golden region” in the MSSM parameter space is the region where the experimental constraints are satisfied and the amount of fine-tuning is minimized. In this region, the stop trilinear soft term is large, leading to a significant mass splitting between the two stop mass eigenstates. As a result, the decay of the heavier stop into the lighter stop and a Z boson is kinematically allowed throughout the golden region. We propose that the experiments at the Large Hadron Collider (LHC) can search for this decay through an inclusive signature,  $Z+2j+b+\text{missing } E_T+X$ . We evaluate the Standard Model backgrounds for this channel, and identify a set of cuts that would allow detection of the supersymmetric contribution at the LHC for the MSSM parameters typical of the golden region. We also discuss other possible interpretations of a signal for new physics in the  $Z+2j+b+\text{missing } E_T+X$  channel, and suggest further measurements that could be used to distinguish among these interpretations.

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