

Search for supersymmetry in top final states at CMS

Abstract

The discovery of the SUPERSYMMETRY is one the main goals of the Large Hadron Collider being built at CERN. Supersymmetry imposes a new symmetry between the fermionic and bosonic degrees of freedom. Here we consider a very constrained scenario where gravity is responsible for SUSY breaking. This model is called mSUGRA. A two – constraint kinematic fit is utilized to extract the top quark, for both states that can recognize b-jet and can not recognize it. The capability of CMS to find low mass SUSY in events with a top quark in the final state was studied by full simulation. It is shown that for point LM1, for analysis that can recognize b-jet, with an integrated luminosity of 30 pb^{-1} and for analysis that can not recognize b-jet, with an integrated luminosity of 9.6 pb^{-1} , a 5σ discovery is achievable provided the uncertainty is statistics dominated. The final signal over background ratio, for both states, is 12.0.