

Search for supersymmetry in hadronic final states using M_{T2} in 7 TeV pp collisions at the LHC

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Abstract

A search for supersymmetry or similar new physics was carried out using a $\sqrt{s} = 7$ TeV pp collisions data sample corresponding to 1.1 fb^{-1} of integrated luminosity collected by the CMS experiment at the LHC. Fully hadronic final states were selected based on the stransverse mass variable M_{T2} . Two complementary analyses were performed. A first one targets the region of parameter space with medium to high squark and gluino masses, in which the signal can be separated from the Standard Model backgrounds by a strong cut on M_{T2} . A second analysis has been optimized to look for events with a light gluino but heavy squarks. In this case, the M_{T2} cut was relaxed, but a higher jet multiplicity and an additional b -tag were required. The dominant backgrounds in both analyses are different. They were estimated using both simulation and data-driven methods. As no excess of events over the expected background was observed, exclusion limits were derived.