

DESY CMS - Impact of the resolution of missing transverse energy in searches for Dark Matter with dileptonic final states:

Impact of the resolution of missing transverse energy in searches for Dark Matter with dileptonic final states: Dark Matter is a great mystery in science today. The main signature in searches for Dark Matter at the Large Hadron Collider is the presence of missing transverse energy in the final state, given the invisible nature of these particles and thus the impossibility of identifying them when traversing the detectors. The success of finding the dark particles relies then on a good and precise measurement of the missing momentum along the transverse component. In this project, a study to assess the impact of the resolution of this quantity in the separation between the Standard Model background and the Dark Matter signal in final states with two leptons produced from decays from two top quarks will be carried out. The study targets the so-called S-transverse mass variable, which presents a characteristic high value in process involving invisible decays and that could potentially be affected by the resolution of the missing transverse energy. The project aims to evaluate the quality of the limits imposed on the cross-section for the associated production of Dark Matter with top quarks using advanced computing techniques and modern statistical analysis.

Group

FH - CMS

Project Category

B1. Physics Data Analysis and Performance (software-oriented)

Special Qualifications

Primary authors: PEREZ ADAN, Danyer (CMS (CMS Fachgruppe TOP)); STAFFORD, Dominic (FH (Forschung Hochenergiephysik))