

Likelihood Ratio Analysis Using Jets Plus Missing Energy Events for Model Discrimination at the LHC

ABSTRACT

With so many models competing to describe physics beyond standard model it's fundamental to distinguish between all the candidates. An analysis based on angular distributions of the decaying hard jets in a multivariate likelihood approach is capable to unravel the most promising candidate to new physics model at the 14 TeV LHC. We consider the two competing models: R-parity conserving supersymmetry [1] and an one universal extra dimension model [2]. But many other models can be compared with this analysis. And we are working on this right now. Our aim is to test the limits of the LHC for fixed luminosity, we will show how much significance of likelihood hypothesis test could be reached when we vary the mass of squarks and gluinos, starting from a spectrum not excluded for recent results.

The analysis present here will consider 8 different angular observables to construct our statistics, gluon jet tagging technique and a few systematics uncertainties. We present here for the LHC 14 TeV with 20 fb⁻¹.