Contribution ID: **101** Type: **Parallel talk**

Modeling Fake Missing Transverse Energy with Bayesian Neural Networks

Tuesday, 6 September 2011 17:00 (25 minutes)

Neural networks (NN) are universal approximators. Therefore, in principle, it should be possible to use them to model any reasonably smooth probability density such as the probability density of fake missing transverse energy (MET). The modeling of fake MET is an important experimental issue in events such as $Z \to l^+l^-$+jets, which is an important background in high-mass Higgs searches at the Large Hadron Collider. We describe how Bayesian neural networks (BNN) can be used to model the MET in γ+jets events and how, in turn, the resulting BNN function can be used to model the missing transverse energy distribution in samples other than γ+jets in which the MET is largely due to instrumental effects.

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Session Classification: Tuesday 06th - Data Analysis –Algorithms and Tools

Track Classification: Track 2 : Data Analysis - Algorithms and Tools