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Using Classification Based Neural Networks to Improve Missing Transverse Momentum Reconstruction from 13 TeV Proton-Proton Collisions

Missing transverse momentum is a difficult variable to reconstruct from 13 TeV proton-proton collisions. Regression based neural networks can be used to reconstruct missing transverse momentum , however, these neural networks display a bias: they have difficulty distinguishing between events with relatively small true missing transverse momentum over events with zero true missing transverse momentum. I will detail progress towards a method to remove this bias involving construction and training of a classification based neural network to distinguish between events that have true missing transverse momentum and events that have no true missing transverse momentum, and only passing events that have missing transverse momentum to the regression based neural network for missing transverse momentum reconstruction.

Apply to be
 considered for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

N/A

Primary author: Mr DAVIS, Christopher (University of Cape Town)

Co-authors: Mr LEIGH, Matthew (University of Cape Town); Dr YACOOB, Sahal (University of Cape Town)

Presenter: Mr DAVIS, Christopher (University of Cape Town)

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