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Validation of Extrapolation Techniques Applied to Leptonic Asymmetry Measurements

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Collider experiments use forward-backward asymmetry (AFB) measurements to learn more about weak properties of particles. Inclusive measurements have shown anomalously large values compared to SM NLO predictions, making this of significant interest to the community. In this study, we examine a simple technique to extrapolate the inclusive AFB from the restricted regime (where eta is the pseudo-rapidity of the lepton). The method we use is to take the asymmetry, as measured in the finite eta regime available to the detector, and use a constant multiplicative term to do the inclusive extrapolation. Indeed, a number of closed form solutions indicate that the extrapolation factor is almost exactly a constant value. However, recently a numerical study using Monte Carlo methods contra-indicated this result in the limit of very small asymmetry values. We follow up on this result using three different studies to examine whether a constant multiplicative factor can indeed be used, and ultimately find that it can but it requires much higher statistics than originally thought.

Is this an abstract for a New Perspectives presentation?

Yes

Is this an abstract for a Users Meeting Poster?

No

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