

Numerical Inversion for Correcting the Response as a Function of p_T

SUPPORTING NOTE: ATL-COM-PHYS-2009-076



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David López Mateos (with A. Schwartzman and E. Hughes), June 23, 2009

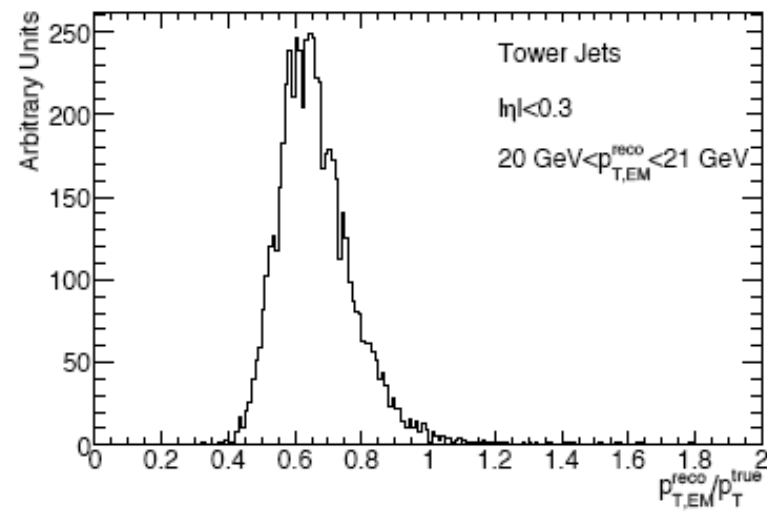
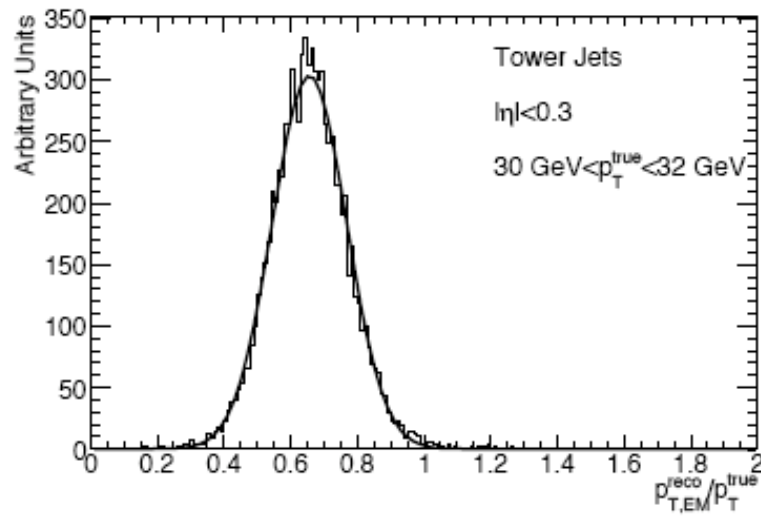
Introduction

Method Description

Results

Introduction

- We want to derive a Monte Carlo based simple scale correction (for very first studies with data)
- We need to derive then a correction as a function of p_T^{reco}
- However, in the Monte Carlo, if we bin as a function of p_T^{reco} , response distributions are not gaussian
- Only binning as a function of p_T^{true} we can get gaussian response distributions from which to derive a response correction

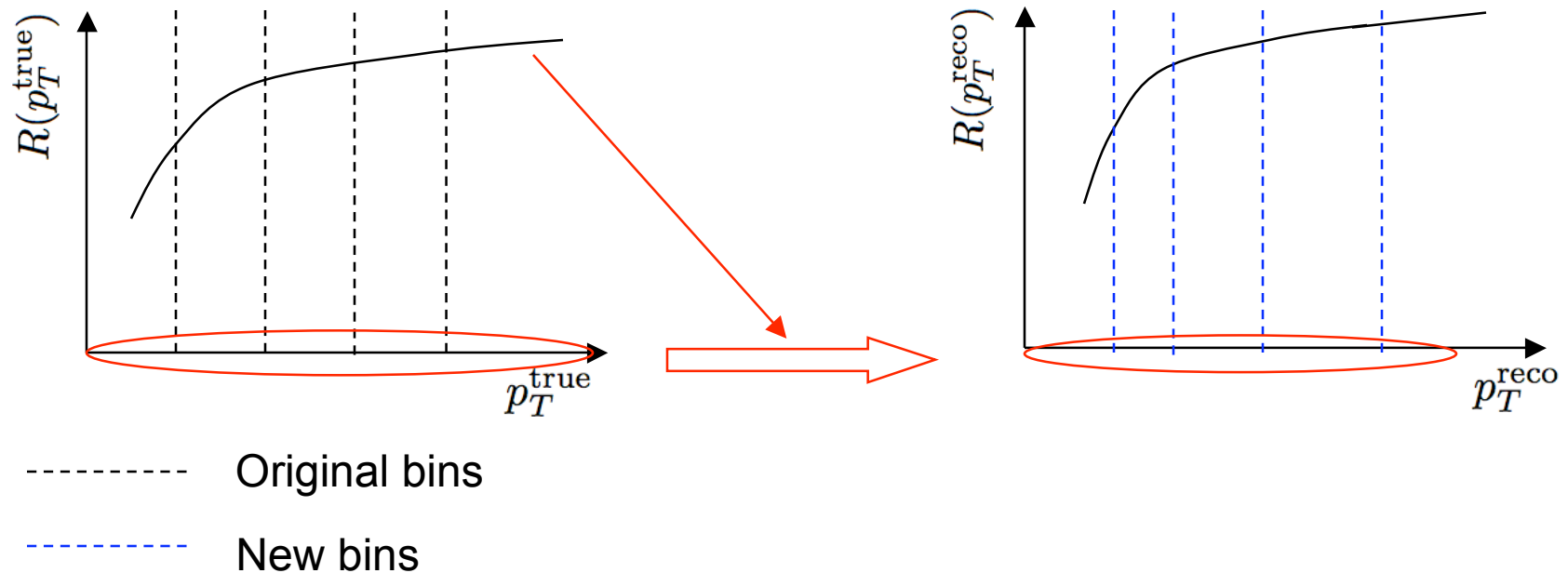


How do we derive a simple MC-based correction as a function of p_T^{reco} ?

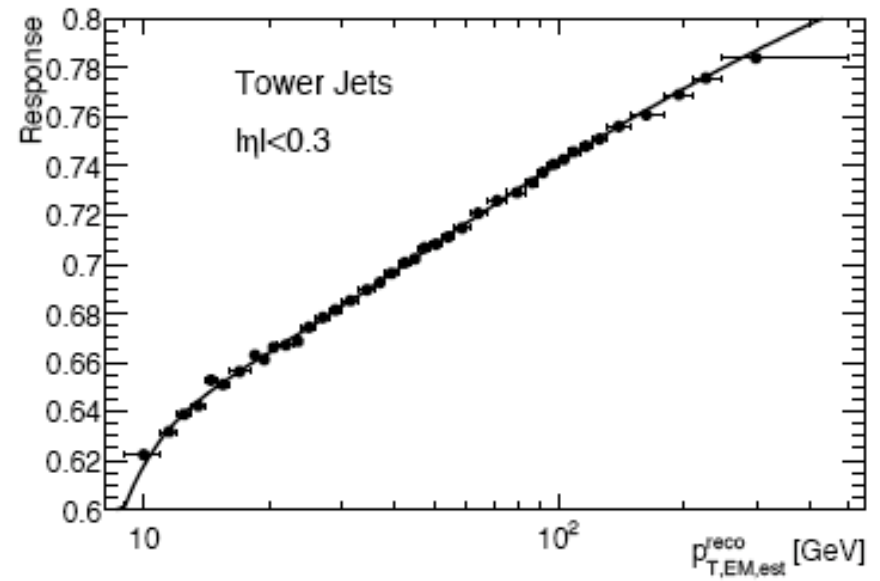
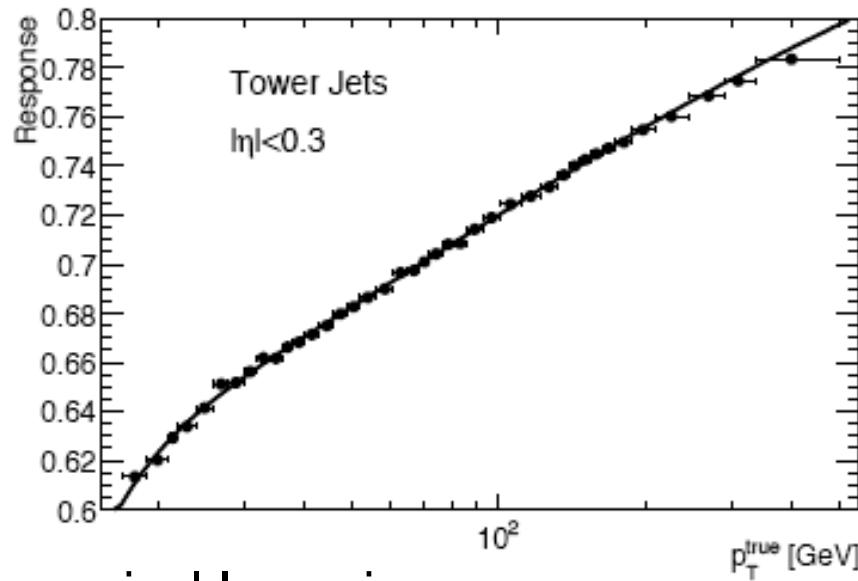
Method Description

Method to apply simple Monte Carlo response correction as a function to data as a function of p_T^{reco}

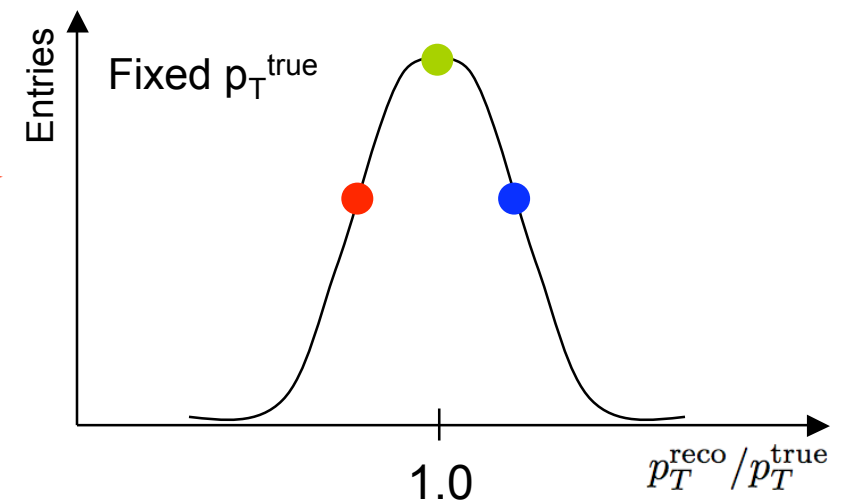
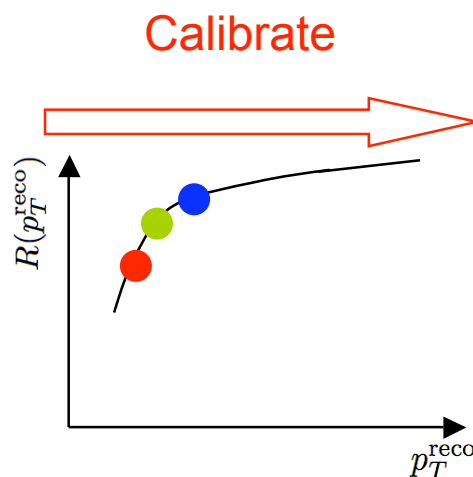
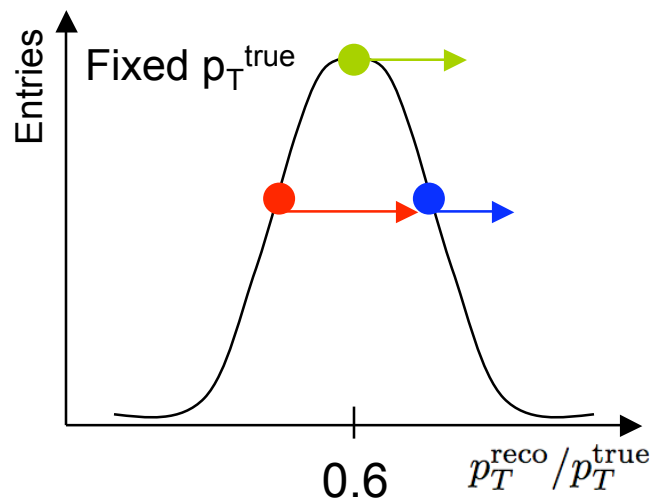
1. Calculate $R(p_T^{\text{true}})$ from the Monte Carlo
2. Use $R(p_T^{\text{true}})$ to transform p_T^{true} to p_T^{reco} (no jet changes bin)
3. Use new response function as a function of p_T^{reco} to derive a response correction



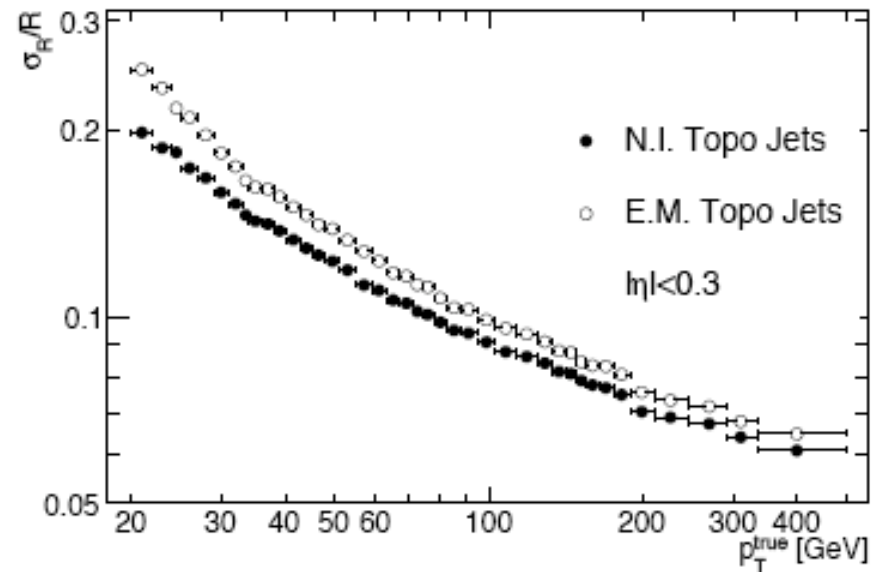
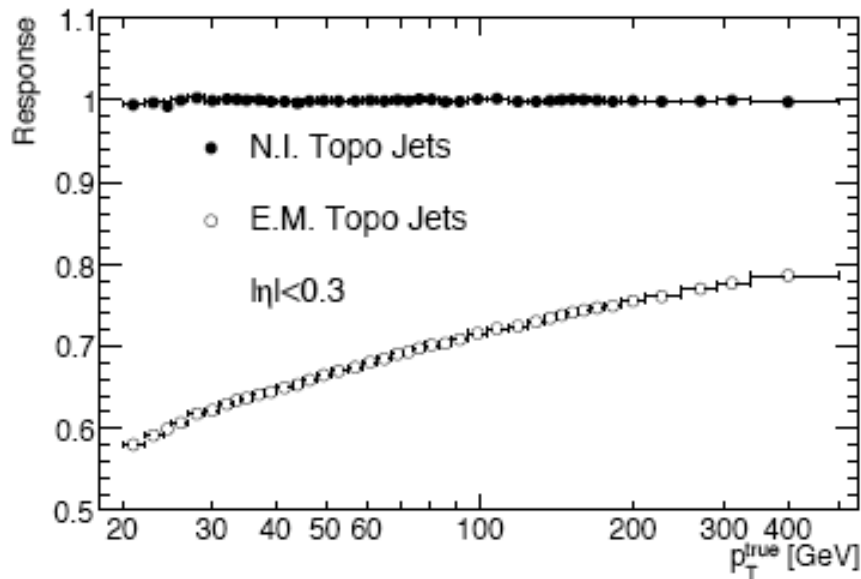
Method and Improvement in Resolution



Numerical Inversion



Performance ($|\eta| < 0.3$)



Sebastian Eckweiler calculated numerical inversion corrections for all jet collections in the DPDs used for this workshop, so you should see a lot more performance plots using numerical inversion