Recommendations for more precise and robust assessment of experimental and systematic QCD uncertainties

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(Dated: 31 August 2020)

THIS IS A PLACEHOLDER FOR A LETTER OF INTEREST

A key aspect in comparing or combining experimental results is the detailed underrtanding of the systematic uncertainties and how they were defined. It is important to establish recommendations on observables and systemaic uncertainties in preparation for the formation of collaborations at future colliders. This partially mitigates previous difficulties in comparing results between experiments such as CDF & DZero, ATLAS & CMS, etc.

This paper proposes to establish a uniform set of recommendations that should be regularly revisited in future workshops. This includes, but is not limited to:

- impact and methodology to extract uncertaintes on parton shower modeling (e.g., Herwig vs Pythia);

- impact of Monte Carlo generators and tunes on calibrations and underlying systematic uncertainties;

- systematic uncertainties for missing higher-order matrix-element calculations used within an experimental analysis;

- impact of parton density function uncertainties on analyses;

- matching matrix-element and parton shower calculations;

- corrections and uncertainties associated with multi-parton interactions; and

- corrections for non-perturbative physics.