

## Perturbative QCD in 10 Minutes

*Tuesday, 11 June 2019 09:15 (15 minutes)*

A brief overview of perturbative QCD and its role in precision measurements at the LHC. There will be a focus on efforts that are being done here at Fermilab. Here at Fermilab, the QCD group focuses on three distinct topics. Therefore, the talk will focus on the importance of improving precision for measurements at the LHC, through the use of higher order corrections, analytic resummation, and parton showers. Additionally, there will be some brief overview of parton distribution functions.

The talk will show the current comparison between theory and data at the LHC, and the work that is required to help drive the theoretical uncertainty down in order to improve the systematic uncertainties of the LHC. This comparison will include comparison to total cross sections and differential distributions. In addition, I will address the difficulties and importance of the  $W$  mass measurement and the top mass measurement.

Finally, I will discuss the importance of improving our understanding of perturbative QCD in order to reduce the background uncertainty in BSM physics searches at the LHC.

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