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Type: **Gong Show Talk (5 mins)**

Phenomenological Predictions for Four Top Production at the LHC

Thursday, December 14, 2023 2:25 PM (5 minutes)

A more accurate measurement of the cross section of the production of four top quarks in proton-proton collisions is now possible, thanks to the increased centre-of-mass energy and luminosity of the Large Hadron Collider (LHC). This motivates a corresponding improved accuracy for the theoretical predictions. I will begin the talk by explaining the reproduction of previously known results for differential cross section distributions for the production of four top quarks at LO and NLO. I will discuss the results of our new predictions at LO and NLO that are made with varied values of the mass of the top quark and with different Parton Distribution Function (PDF) sets, at varied renormalisation and factorisation scales. The implications of the results and their utility in determining the mass of the top quark with increased precision and constraining PDF sets will be highlighted.

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Session Classification: Gong Show Talks