QCD@LHC2022
28 November 2022 to 2 December 2022
IJCLab Orsay, France

Contribution ID: **183** Type: **not specified**

Parton distributions with scale uncertainties: a MonteCarlo sampling approach

Monday 28 November 2022 14:40 (15 minutes)

We present the MCscales approach for incorporating scale uncertainties in parton distribution functions. The method builds on the Monte Carlo sampling method for propagating experimental uncertainties to PDFs that underlies the NNPDF approach, by extending it to the space of factorisation and renomalisation scales for the processes entering a PDF fit . Our approach allows one to exactly match the scale variations in the PDFs with those in the partonic cross section, thus accounting for the full correlations between the two. We illustrate the opportunities for phenomenological exploration made possible by our methodology, by studying the correlations between scale variations in PDFs and those in the partonic cross sections for a variety of LHC observables. Sets of PDFs enriched with scale information are provided, along with a set of tools to use them.

Change of Speaker

Declaration

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Session Classification: Parallel C - WG7: 1

Track Classification: WG7: Parton tomography from 1D to 5D