Contribution ID: **65**   Type: **Talk**

Neural networks and machine learning tools for global PDF analyses

Thursday 2 August 2018 15:30 (30 minutes)

The precision determination of the parton distribution functions (PDFs) of the proton is a central component for the precision phenomenology program at the Large Hadron Collider (LHC). Pinning down the quark and gluon structure of the proton strengthens a number of LHC cornerstone measurements such as the characterisation of the Higgs sector and searches for high-mass bSM resonances. In this talk I present recent methodological developments in the NNPDF approach to PDF determination, basic of artificial neural networks and related machine learning tools. I discuss progress towards improved training algorithms, studies of the dependence on the network architecture, and the implementation of external theoretical constraints. I conclude by briefly discussing some possible future directions, such as the applications of Generative Adversarial Networks or the Riemann-Theta Boltzmann Machine for PDF fits.

Author: ROJO, Juan (VU Amsterdam and Nikhef)

Presenter: ROJO, Juan (VU Amsterdam and Nikhef)

Session Classification: Statistical Methods for Physics Analysis in the XXI Century

Track Classification: H. Statistical Methods for Physics Analysis in the XXI Century