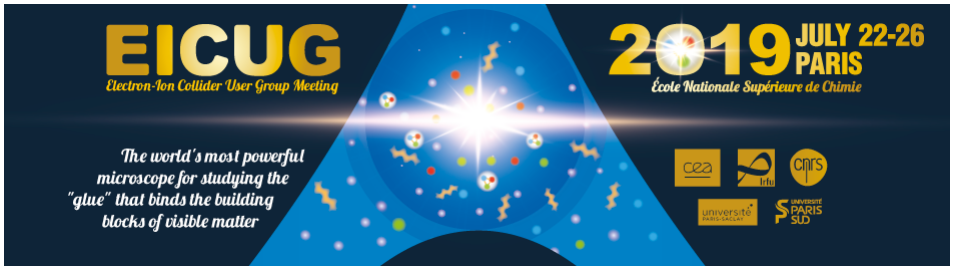

ID de Contribution: **36** Type: **Oral presentation**

nNNPDF1.0: Nuclear Parton distributions from Lepton-Nucleus Scattering and the Impact of and Electron-Ion Collider

jeudi 25 juillet 2019 11:54 (15 minutes)

We present a first determination of the nuclear parton distribution functions (nPDF) based on the NNPDF methodology: nNNPDF1.0.
This analysis is based on neutral-current deep-inelastic structure function data and is performed up to NNLO in QCD calculations with heavy quark mass effects.
For the first time in the NNPDF fits, the χ^2 minimization is achieved using stochastic gradient descent with reverse-mode automatic differentiation (backpropagation).
We validate the robustness of the fitting methodology through closure tests, assess the perturbative stability of the resulting nPDFs, and compare them with other recent analyses.
The nNNPDF1.0 distributions satisfy the boundary condition whereby the NNPDF3.1 proton PDF central values and uncertainties are reproduced at $A = 1$, which introduces important constraints particularly for low-A nuclei.
We also investigate the information that would be provided by an Electron-Ion Collider (EIC), finding that EIC measurements would significantly constrain the nPDFs down to $x \simeq 5 \times 10^{-4}$.
Our results represent the first-ever nPDF determination obtained using a Monte Carlo methodology consistent with that of state-of-the-art proton PDF fits, and provide the foundation for a subsequent global nPDF analyses including also proton-nucleus data.

Auteurs principaux: Dr ROJO, Juan (Vrije Universiteit Amsterdam); ETHIER, Jacob (Vrije Universiteit Amsterdam); ABDUL KHALEK, Rabah (Vrije Universiteit Amsterdam and Nikhef)

Orateur: ABDUL KHALEK, Rabah (Vrije Universiteit Amsterdam and Nikhef)

Classification de Session: Parallel session B

Classification de thématique: Physics