

Juan Cruz Martinez – HEP seminar April 7, 2026
(University of Seville)

Title: The methodological landscape of PDF determinations

Abstract: Parton Distribution Functions or PDFs model the internal structure of the proton in hadron collisions and are a critical ingredient for precision particle physics. PDFs are extracted from experimental data through complex global fits involving various theoretical and methodological frameworks. There are multiple collaborations that provide PDFs for particle physics phenomenology under different assumptions. Thanks to the precision achieved through our deep understanding of perturbative QCD and the abundant data available we can now resolve the differences in the PDFs introduced by these choices. In this talk I will focus on how the NNPDF collaboration mitigates the effect of these assumptions in Neural Network based fits and I will introduce a new tool that enables comparisons of PDF extractions using exactly the same theory, dataset and underlying libraries but wildly different methodologies.