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Parton Distributions in the Higgs Boson Era

With the recent discovery of the Higgs boson at the LHC,
particle physics has entered a new era, where it is of utmost importance to
provide accurate theoretical predictions for all relevant high energy
processes for signal, bacground and New Physics production. Crucial
ingredients of these predictions are the Parton Distribution Functions,
which encode the non-perturbative dynamics determining how the proton's
energy is split among its constituents, quarks and gluons. To bypass the
drawbacks of traditional analyses, a novel approach to PDF determination has
recently been proposed, based on artificial neural networks, machine
learning techniques and genetic algorithms.
In this talk we motivate their relevant of PDFs for LHC phenomenology and
describe the latest developements of PDFs with LHC data.

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