

# Fundamental physics in the cosmos: The early, the large and the dark Universe



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## Parton distributions from high-precision collider data

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The latest update in the NNPDF series of PDF determinations, NNPDF3.1, includes a great deal of new experimental information on proton structure determined by collaborations at the LHC and Tevatron. Several of these new datasets provide particular challenges to PDF fitters due to their high-precision nature. We shall discuss the impact upon PDF fits of these new measurements, including W and Z production and asymmetry data, new inclusive jet data and top-quark pair differential measurements. In addition to the expanded dataset, we now extend our analysis to fitting the charm PDF alongside the light quark and gluon distributions. We shall discuss the impact this change has upon LHC phenomenology alongside the differences due to the updated dataset.

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