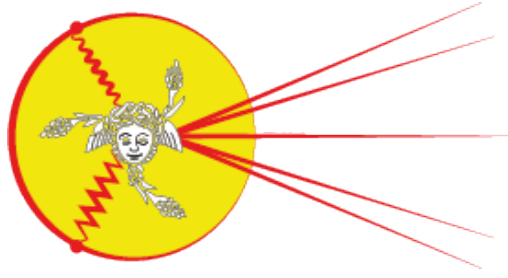Contribution ID: **158**   Type: **not specified**

xFitter

Saturday, 3 September 2016 12:50 (20 minutes)

An accurate knowledge of the Parton Distribution Functions (PDF) plays a critical role for the precision tests of the Standard Model (SM) and impact substantially the theory predictions of Beyond SM high mass production. We present the xFitter project (former HERAFitter) which provides a unique open-source software framework for the determination of the proton's PDFs and for the interpretation of the physics analyses in the context of Quantum Chromodynamics.

We highlight the new xFitter software release which includes many new features and additions, e.g. the possibility of the inclusion of photon PDF updated variable and fixed-flavour schemes for heavy quarks, interface to the APFEL library and n-space evolution program MELA, updates to the latest theory calculations, fast grid tools and many more.

We will also give examples of physics studies which have used xFitter and report on the latest xFitter results on the new determination of the mass of the charm quark extracted by analysing the statistical quality of fits to inclusive and exclusive charm deep-inelastic scattering data from the HERA collider. We employ the running mass definition in the MSbar scheme, which improves the perturbative stability as compared to the pole-mass definition, in the framework of the FONLL general-mass scheme.

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