



Contribution ID: 166

Type: Parallel Talk

QCD and SMEFT analysis of double-differential inclusive jet cross sections at 13 TeV (CMS)

Thursday, 7 July 2022 17:15 (15 minutes)

A measurement of the inclusive jet production in proton-proton collisions at the LHC at $\sqrt{s} = 13$ TeV is presented. The double-differential cross sections are measured as a function of the jet transverse momentum p_t and the absolute jet rapidity $|y|$. The anti- k_t clustering algorithm is used with distance parameter of 0.4 (0.7) in a phase space region with jet p_t from 97 GeV up to 3.1 TeV and $|y| < 2.0$. Data collected with the CMS detector are used, corresponding to an integrated luminosity of 36.3 /fb (33.5 /fb). The measurement is used in a comprehensive QCD analysis at next-to-next-to-leading order, which results in significant improvement in the accuracy of the parton distributions in the proton. Simultaneously, the value of the strong coupling constant at the Z boson mass is extracted as $\alpha_Z = 0.1170 \pm 0.0019$. For the first time, these data are used in a standard model effective field theory analysis at next-to-leading order, where parton distributions and the QCD parameters are extracted simultaneously with imposed constraints on the Wilson coefficient c_1 of 4-quark contact interactions.

In-person participation

No

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