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## Measurement and QCD analysis of double-differential inclusive jet cross sections at 13 TeV

*Tuesday 17 May 2022 19:00 (1 hour)*

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  $36.3 \text{ fb}^{-1}$  ( $33.5 \text{ fb}^{-1}$ ). 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  $\alpha_S(m_Z) = 0.1170 \pm 0.0019$ . 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.

**Authors:** LIPKA, Katerina (Deutsches Elektronen-Synchrotron (DE)); MAKELA, Toni (Deutsches Elektronen-Synchrotron (DE))

**Presenter:** MAKELA, Toni (Deutsches Elektronen-Synchrotron (DE))

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