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Measurement of mass dependence of the transverse momentum of Drell Yan lepton pairs in proton-proton collisions at 13TeV

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The double differential cross sections of the Drell-Yan lepton pair (l^+l^- , dielectron or dimuon) production, as functions the invariant mass m_{ll} , transverse momentum p_T , and ϕ^* , are measured. The ϕ^* observable is highly correlated with p_T and is used to probe the low- p_T region in a complementary way. Dilepton masses up to 1 TeV are investigated. Additionally, a measurement is performed requiring at least one jet in the final state. To benefit from partial cancellation of the systematic uncertainty, the ratios of the differential cross sections in p_T and ϕ^* for different m_{ll} ranges over the ones in the Υ Z mass peak interval are presented. The collected data correspond to an integrated luminosity of $36.3 fb^{-1}$ of proton-proton collisions recorded with the CMS detector at the LHC at a center-of-mass energy of 13 TeV in 2016. Measurements are compared to state-of-the-art predictions based on perturbative quantum chromodynamics, including soft-gluon resummation.

Primary author: MIJUSKOVIC, Jelena (University of Montenegro)

Co-author: CMS COLLABORATION

Presenters: MIJUSKOVIC, Jelena (University of Montenegro); CMS COLLABORATION

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