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Measurement of the differential ZZ+jets production cross sections in pp collisions at $\sqrt{s} = 13$ TeV with CMS full Run 2 data

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Diboson production in association with jets is studied in the fully leptonic final states, $pp \rightarrow (Z/\gamma^*)(Z/\gamma^*) \rightarrow 2\ell 2\ell'$, ($\ell, \ell' = e$ or μ), in proton-proton collisions at a center-of-mass energy of 13 TeV. The data sample corresponds to an integrated luminosity of 138 fb^{-1} collected with the CMS detector at the LHC. Differential distributions and normalized differential cross sections are measured as a function of jet multiplicity, transverse momentum p_T , pseudorapidity η , invariant mass and $\Delta\eta$ of the highest- p_T and second-highest- p_T jets, and as a function of invariant mass of the four-lepton system for events with various jet multiplicities. These differential cross sections are compared with theoretical predictions that mostly agree with the experimental data. However, in a few regions we observe discrepancies between the predicted and measured values. These measurements demonstrate the necessity for better Monte Carlo modeling in events with complex multiboson final states and extra jets. Further improvement of the predictions is required to describe the ZZ+jets production in the whole phase space.

Mini Symposia (Invited Talks Only)

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