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NNLO QCD Predictions of W and Z Bosons in proton-proton collisions at 7, 8, 13, 14 and 100 TeV Center of Mass Energies

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Large Hadron Collider has run at 7, 8, 13 TeV but it is expected and planned to collect data at 14 TeV center of mass energy in 2019. Meanwhile, a 100 TeV hadron collider, called Future Circular Collider (FCC), is proposed to be built as a post-LHC particle accelerator. Therefore, we estimated W and Z boson cross sections and their uncertainties at LO, NLO and NNLO QCD using different most modern PDF models to understand the effect of the energy increase from 7 to 100 TeV. The predictions are computed using publicly available parton level Monte Carlo program DYnnlo1.5 and FEWZ 3.1. PDF, strong coupling constant, scale, model and parameterization uncertainties are considered and their size changes by energy increase are investigated.

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