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Electroweak Corrections to Vector Boson Pair Production

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Vector-boson pair production plays an important role for present and future LHC experiments. Such processes allow for a solid validation of the weak sector of the SM and, moreover, provide the opportunity to search for effects of anomalous couplings predicted by various New-Physics models. To improve on the corresponding theory predictions, we present the computation of the NLO electroweak corrections to vector-boson pair production at hadron colliders. Consistently including all mass effects, our predictions are valid in all kinematic regions accessible at the LHC. The corresponding corrections are moderate at low energies, but reach several tens of percent going to higher transverse momenta or invariant masses, respectively, leading to significant distortions of transverse-momentum and rapidity distributions. To allow for a realistic event definition we include leptonic decays of the vector bosons, where spin correlations are properly taken care of. We also propose a simple and straight-forward Monte Carlo implementation of our results within the HERWIG++ setup which could be applied to further processes in the future.

Primary author: KASPRZIK, Tobias (KIT, Karlsruhe)

Presenter: KASPRZIK, Tobias (KIT, Karlsruhe)

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