Contribution ID: **80** Type: **not specified**

Double Higgs boson production at NLO

Wednesday, 2 October 2019 14:15 (12 minutes)

We consider the next-to-leading order QCD corrections to Higgs boson pair production, using our recent calculation of the form factors in the high-energy limit. We compute the virtual corrections to the partonic cross section, applying Padé approximations to extend the range of validity of the high-energy expansion. This enables us to compare to the exact numerical calculation in a significant part of the phase space and allows us to extend the virtual matrix element grid, based on the exact numerical calculation, to larger values of the (partonic) transverse momentum of the Higgs boson, which is important for boosted Higgs studies. Improved predictions for hadron colliders with centre-of-mass energies of 14 TeV and 100 TeV are presented. The updated grid is made publicly available.

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Session Classification: Parallel