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Higher-order corrections for $t\bar{t}W$ production

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We present higher-order QCD corrections for the associated production of a top-antitop quark pair and a W boson ($t\bar{t}W$ production). We calculate approximate NNLO (aNNLO) and approximate $N^3\text{LO}$ (aN³LO) cross sections, with second-order and third-order soft-gluon corrections added to the exact NLO QCD result, and we also include electroweak (EW) corrections through NLO. We compare our results to recent measurements from the LHC, and we find that the aN³LO QCD + NLO EW predictions provide improved agreement with the data. We also calculate differential distributions in top-quark transverse momentum and rapidity and find significant enhancements from the higher-order corrections.

Mini Symposia (Invited Talks Only)

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