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Diboson production including NLO QCD and electroweak corrections

Tuesday 7 December 2021 16:00 (25 minutes)

Summary of the research done as an MCnetITN3 PhD student.

Di-boson production processes play an important role in many Standard Model studies, including Higgs-boson and electroweak precision measurements. They also form an important background in searches for phenomena beyond the Standard Model. In this talk I will present a recent study on the inclusion of electroweak corrections to $pp \to e^+e^-\mu^+\mu^-$ and $pp \to e^+e^-\mu^+\mu^- j$, both at exact NLO and using two approximations: the EW virtual and EW Sudakov approach. We also consider for the first time the all-order NLL Sudakov corrections to the fixed-order prediction. Finally, I am going to present prediction for $pp \to e^+e^-\mu^+\mu^-$+jets production based on merged NLO QCD matrix-element plus parton-shower simulations in the framework of the Sherpa event generator including electroweak corrections through the aforementioned approximations.

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Session Classification: Student talks / Discussion topic