Contribution submission to the conference Karlsruhe 2024

Simulation of on- and off-shell $t\bar{t}$ production with the MC generator `bb4l` at CMS — Simone Amoroso[1], Alexander Grohsjean[2], •Laurids Jeppe[1], and Christian Schwanenberger[1,2] — [1]Deutsches Elektronen-Synchrotron DESY, Hamburg, Germany — [2]Universität Hamburg, Hamburg, Germany

Top quark pair production processes at the LHC are important for precision measurements of observables such as the top quark mass or top quark pair spin correlations and as a background for BSM searches. As such, it is crucial that MC simulation of this process is available for experimental analyses at the highest level of precision possible.

Here, we show an investigation of the NLO MC generator `bb4l` interfaced to Pythia 8 for parton showering. This program not only models top quark pair production, but also single top quark production in association with a W boson, as well as their interference, and correctly takes into account effects from the finite top width. We compare it to simulations using the `hvq` and `ST_wtch` generators for different interference handling schemes, as well as the `ttb_NLO_dec` generator, with possible implications for future top mass measurements.

Part: T
Type: Vortrag;Talk
Topic: 2.06 Top-Quarks: Produktion (Exp.); 2.06 Top Quarks: Production (Exp.)
Keywords: Top; Monte Carlo; bb4l
Email: laurids.jeppe@desy.de