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Next-to-leading order QCD corrections to s-channel single top quark production and decay at the LHC SARAH HEIM, Department of Physics & Astronomy, Michigan State University, QING-HONG CAO, High Energy Physics Division, Argonne National Laboratory & Enrico Fermi Institute, University of Chicago, REINHARD SCHWIENHORST, C.-P. YUAN, Department of Physics & Astronomy, Michigan State University — We present a study of electroweak production of top and antitop quarks in the s-channel mode at the LHC, including next-to-leading order (NLO) quantum chromodynamics (QCD) corrections to the production and decay of the single (anti)top quark. The spin is preserved in production and decay by using the narrow width approximation for the (anti)top quark. We show the effect of different $O(\alpha_s)$ contributions on the inclusive cross section and various kinematic distributions at parton level after imposing relevant kinematic cuts to select s-channel single top quark events. We also discuss several possibilities for measuring the top quark polarization.

Sarah Heim
Department of Physics & Astronomy, Michigan State University

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