

High Energy Physics - Phenomenology

NNLL resummation for s-channel single top quark production

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I present the next-to-next-to-leading-logarithm (NNLL) resummation of soft and collinear gluon corrections to single top quark production in the s channel. Attaining NNLL accuracy involves the calculation of the two-loop soft anomalous dimension for the partonic subprocesses. Finite-order expansions of the resummed cross section are calculated through next-to-next-to-leading order (NNLO). Numerical results are presented for s-channel single top quark production at the Tevatron and the LHC, including the dependence of the cross sections on the top quark mass and the uncertainties in the theoretical prediction. The higher-order corrections are significant for energies at both colliders and they decrease the theoretical uncertainty.

Comments: 17 pages, 12 figures; added figures and discussion

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