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Collinear Factorization in Wide-Angle Hadron Pair Production in e^+e^- Annihilation ERIC MOFFAT, Old Dominion University, TED ROGERS, Old Dominion University/Jefferson Lab, ANDREA SIGNORI, Argonne National Lab, NOBUO SATO, Old Dominion University/Jefferson Lab — We compute the inclusive unpolarized dihadron production cross section in the far from back-to-back region of e^+e^- annihilation within leading order pQCD and using standard collinear factorization. We compare with event generator predictions from PYTHIA, and examine how the degree of agreement varies with the center-of-mass energy. While we find reasonable agreement at large center-of-mass energies, at moderate energies ($\sim$ 12 GeV) we find order-of-magnitude or larger disagreement reminiscent of discrepancies between theoretical calculation and experimental measurements of large transverse momentum recently observed in semi-inclusive deep inelastic and Drell-Yan scattering. In combination with these previously observed disagreements, we argue that our results support a conclusion of general tension between cross sections computed in the large transverse momentum limit and measurements with moderate hard scales, and motivate further phenomenological studies of the application of collinear factorization at moderate hard scales.

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