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The large transverse momentum limit in e^+e^- annihilation into two hadrons

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I will discuss the cross section for the production of two unpolarized hadrons in the large transverse momentum configuration from e^+e^- annihilation, which is based on collinear fragmentation functions (FFs). Comparing with standard transverse-momentum-dependent (TMD) FF-based predictions intended for the small transverse momentum region, when the center of mass energy is not very large we find significant tension in the intermediate transverse momentum region, where the collinear factorization-based and TMD factorization-based calculations should instead roughly coincide. Measurements based on e^+e^- annihilation are ideal to explore the large-to-small transverse momentum transition, given the typically larger hard scales (>10 GeV) of the process, as compared with similar scenarios that arise in semi-inclusive deep inelastic scattering and fixed-target Drell-Yan measurements.

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