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Fragmentation of off-shell partons

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According to recent measurements, the mass of jets created in LHC energy pp collisions has broad fluctuation. Typically, the mean mass of a jet with transverse momentum 200-600 GeV/c is around 40-100 GeV/cˆ2, so the ratio (jet mass)/(jet energy) is of order 0.2. As this value is not negligibly small, as required for factorisation to be applicable, the virtualitis of partons created in the hard process (most probably) should not be neglected. Besides, the fragmentation of these off-shell partons has to be handled.
Based on recent works [1-4], I present a simple statistical fragmentation model, which is suitable for the treatment of the hadronisation of virtual partons as well as the inclusion of jet mass fluctuations. I present fits to fragmentation functions measured in ep and pp collisions and give prediction for the jet mass dependence of hadron multiplicity distributions inside jets.

[1] arXiv:1606.03208
[2] PoS DIS2016 (2016) 054, arXiv:1605.06876
[3] Phys. Lett. B, 718 (2012) 125-129, arXiv:1204.1508
[4] Phys. Lett. B, 701 (2011) 111-116, arXiv:1101.3023

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