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Higgs Boson Differential Distributions from Effective Field Theory

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Theoretical knowledge of the low transverse momentum (pT) distribution of the Higgs boson, plays an important role in search strategies for the Higgs. In the region of low pT, much smaller than the Higgs mass, large logarithms spoil the perturbative expansion and must be resummed. We apply effective field theory techniques and derive a new factorization and resummation formula for the pT-spectrum which is free of Landau poles. The factorization theorem is in terms of Impact-parameter Beam Functions (iBFs).
In the non-perturbative pT region, the iBFs correspond to fully unintegrated PDFs and can be interesting nucleon-structure objects in their own right. We also apply this formalism to the Drell-Yan process and give a comparison of our result to Tevatron data.

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