The Parton Branching method for transverse momentum dependent parton densities

Francesco Hautmann,[1,2] Hannes Jung, [1,3] Aron Mees van Kampen, [1] Lissa Keersmaekers, [1] and Aleksandra Lelek, [1]

[1] University of Antwerp (UAntwerp)
[2] University of Oxford
[3] Deutsches Elektronen-Synchrotron (DESY)

Parton Distribution Functions (PDFs), the momentum distribution of quarks and gluons in a proton, are the basic ingredient to obtain predictions in collider physics. Typically the transverse momentum is neglected, but some observables require transverse momentum dependent PDFs (TMDs).
The Parton Branching method (PB) provides a set of iterative evolution equations for PDFs/TMDs and solves them with Monte Carlo techniques. I present the PB method, apply it to the Z boson pt spectrum and compare it with other methods to obtain TMDs.