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Pion Parton Distributions Using Threshold Resummation

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Following our recent Monte Carlo determination of the pion's PDFs from Drell-Yan (DY) and leading neutron electroproduction data, we extend the analysis by including effects from threshold resummation. At higher orders in the strong coupling, α_S, large logarithmic corrections due to soft gluon emissions become important in the $q\bar{q}$ channel near threshold, which can be summed over all orders of α_S. However, different prescriptions exist for how the threshold resummation is implemented, for instance, using varying levels of approximation in the Minimal Prescription and Borel Summation. We report the results of the first simultaneous fit to the valence, sea, and gluon distributions in the pion taking into account the ambiguities in the resummation calculations.

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