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Systematic Extraction of Pion Parton Distributions Using Threshold Resummation PATRICK BARRY, Jefferson Lab, CHUENG-RYONG JI, North Carolina State University, NOBUO SATO, WALLY MELNITCHOUK, Jefferson Lab — Following our recent Monte Carlo determination of the pions 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 of the DY partonic cross section 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 with cosine, expansion, and double Mellin methods. We report the Monte Carlo 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. We present the wide ranges of valence distributions at large x and the effective behavior of the valence distribution as x approaches 1.

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