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Truncated Moment Analysis of Nucleon Structure Functions
ALES PSAKER, apsaker@physics.odu.edu, ERIC CHRISTY, CYNTHIA KEPPEL, Hampton University, WALLY MELNITCHOUK, Jefferson Lab — The understanding of quark-hadron duality in nucleon structure functions (namely, the similarity between the scaling and resonance averaged functions) within QCD is currently incomplete. While moments of structure functions can be analyzed within the operator product expansion in terms of leading and higher twist contributions, the description of duality as a function of Bjorken x requires phenomenological models. We employ a novel new approach using "truncated" moments, or integrals of structure functions over restricted regions of x, to study the degree to which individual resonance regions are dominated by leading twists. Because truncated moments obey the same Q^2 evolution equations as the leading twist parton distributions, our approach makes possible for the first time a description of resonance region data and the phenomenon of quark-hadron duality directly from pQCD.

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