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Radiative corrections in polarized SIDIS

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The important sources of the systematical uncertainties in polarized SIDIS experiments are the QED radiative corrections (RC). Here the model-independent RC that include the effects of real photon radiation and loop diagrams (leptonic vertex correction, and vacuum polarization) are presented. The effects were analytically computed within the Bardin-Shumeiko approach resulting in explicit equations in leading and next-to-leading orders. The numeric estimation of the correction due to the real photon radiation requires the integration over wide kinematical region of the unobservable real photon emission from the lepton leg withing SIDIS and exclusive final state and therefore requires knowledge of all 5 spin-averaged and 13 spin-dependent structure functions (SFs) in these region. In our illustrations for JLAB kinematics we used the WW-SIDIS model and a simple approach for exclusive SFs. The ways to address limitations of our calculations due to limited knowledge of all exclusive SFs are discussed.

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