

Abstract Submitted
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The spin of the proton at small-x: Emergent axion dynamics and spin diffusion ANDREY TARASOV, Ohio State Univ - Columbus, RAJU VENGOPALAN, Brookhaven National Laboratory — The worldline representation of quantum field theory is a powerful framework for the computation of perturbative multi-leg Feynman amplitudes. In particular, in gauge theories, it provides an efficient way, via point particle Grassmann functional integrals, to compute spinor and color traces in these amplitudes. We show how it can be applied to the problem of computation of the polarized deeply inelastic structure function g_1 . In particular, we discuss a relation between g_1 and the physics of the axial (or chiral) anomaly responsible for the explicit breaking of the $U_A(1)$ symmetry of QCD.

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