

# Polarized vector meson production in semi-inclusive DIS

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We make a calculation for polarized vector meson production SIDIS by considering the general case of neutral current electroweak interactions. We present a kinematic analysis for the process and show that the cross section is expressed by 81 structure functions. We further make a QCD parton model calculation at the leading twist and present the structure functions results in terms of the TMD parton distribution functions and fragmentation functions. The results show that 27 structure functions are nonzero at this level, among which 15 are related to the tensor polarization of the vector meson. Thirteen structure functions are generated by parity-violating effects. We also carry out a rough numerical estimate for the spin alignment of the  $K^{*0}$  vector meson.

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