

Sivers function of sea quarks in the light-cone model

We calculate the Sivers function of \bar{u} and \bar{d} quarks using the overlap representation within the light cone formalism. The light-cone wave functions of the proton are obtained in terms of the $|q\bar{q}B\rangle$ Fock states motivated by the meson-baryon fluctuation model. We consider the final-state interaction at the level of one gluon exchange. In a simplified scenario, the Sivers function of \bar{u} and \bar{d} can be expressed as the convolution of the Sivers function of the pion inside the proton and the unpolarized distribution of \bar{q} inside the pion. The model parameters are fixed by fitting the unpolarized sea quark distributions to the known parameterizations. We present the numerical results for $f_{1T}^{\bar{u}/P}(x, \boldsymbol{k}_T^2)$ and $f_{1T}^{\bar{d}/P}(x, \boldsymbol{k}_T^2)$. The first transverse moment of the sea quark Sivers functions in our model are found to be negative and the magnitude is about 0.004 at most.

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