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Spin-spin correlations between quark and a spin- $\frac{1}{2}$ composite system

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We study the correlation between the fermion composite system and quark spins by using the light-cone quark-diquark model. We do the calculations for u -quark and d -quark in the fermion system by considering different polarization configurations of both. The contribution from scalar and axial-vector diquarks is taken into account. The overlap representation of light-front wavefunctions is used for the calculations. The spin-spin correlations for u and d quarks are presented in transverse impact-parameter plane and transverse momentum plane as well.

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