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Double parton distributions of the proton from basis light-front quantization

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Within the basis light-front quantization framework, we systematically investigate the unpolarized and longitudinally polarized double parton distributions (DPDs) of quarks inside the proton. We utilize the light-front wave functions of the proton derived in the valence sector from a Hamiltonian quantized on the light-front. Our current analysis yields significant correlations of the quarks' longitudinal momenta with their transverse separation. We also demonstrate that our calculations do not support the commonly used $x - \vec{k}_\perp$ factorization of the DPDs in x and k_\perp .

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