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Spin and kinematic correlations between partons inside the proton

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In processes where two quarks are extracted from the proton to enter two separate hard scatterings (double parton scattering), the interparton correlations can have an impact on the size of the cross section and significantly alter the distributions of particles in the final state.
In this work, we employ different models for the double parton distributions (DPDs) to study the quantum correlation between the spin of two quarks and the kinematic correlation between their longitudinal momentum fractions. We focus on the production of a pair of W bosons with the same electric charge and identify observables particularly promising for the experimental measurement of correlations at the LHC.

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