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TMDs and Quasi PDFs in Parton Model Approach

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The parton model is a well-known intuitive framework for first, exploratory studies of hadronic high energy reactions. The parton model can also be used to study nonperturbative properties of hadrons like structure functions and PDFs. The Wandzura-Wilczek relation is an example for that. The parton model approach has been (under the name "covariant parton model") extended to describe TMDs and recently also quasi PDFs and some of the gravitational form factors of the proton. We review the recent progress with focus on the field theoretical foundations and the pure-spin vs mixed-spin state versions of the model. We also discuss the theoretical consistency of the approach, and demonstrate the validity of sum rules for quasi PDFs in this approach.

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