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Where is the proton missing spin?

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Summary

It has been over 20 years for the proton spin "crisis",i.e., the puzzle of where is the proton missing spin. Here I make a review on the explanation that the proton missing spin is due to the relativistic effect of quark transversal motions.
More generally, the transversal motions of quarks play a significant role in various physical quantities related to the proton spin structure, such as the helicity and transversity distributions, and the transverse-momentum-dependent (TMD) or three-dimensional parton distributions (3dPDFs). It is shown that the relativistic effect due to quark transversal motions plays a crucial role to understand the proton spin puzzle.

Primary author: Prof. MA, Bo-Qiang (Peking University)

Presenter: Prof. MA, Bo-Qiang (Peking University)

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