- Proton spin 1/2 fermion made with 3 quarks: uud.
- According to "Ellis-Jaffe" sum rule : quarks contributes about 60% of the total spin of the proton, but EMC found about that the 20% of the total spin of the proton is contributed by the quarks.
- According to "Jaffe-Manohar" spin decomposition, 25% of the proton spin comes from intrinsic spin of the quarks, about 50% comes from the angular momentum of the quarks, g contributes to the about 30% of the total angular momentum of the proton.
- TMDs : distributions of the hadron's quark or gluon momenta that are perpendicular to the momentum transfer between the beam and the hadron.
- Provide information on the confined motion of quarks and gluons inside the hadron and complement the information on the hadron structure.
- Depending on the polarization of the quark/nucleon polarization, we have 6 TMDs. Polarized nucleon and un-polarized quark - Sivers function. Un-polarized nucleon and polarized quarks - Boer-Mulders function.

- BMF : Describes the net polarization of quarks inside an unpolarized proton.
- $h_1^{\perp} \rightarrow$ quark distribution that quantifies a particular spin-orbit correlation.
- Useful for probing the internal structure of the proton.
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