

Prospective experiments to explore TMDs from exotic polarized nuclear targets with Fermilab's ACE plan

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The extension of the upcoming SpinQuest (E1039) experiment aims to extract gluon transversity distributions from the Deuteron target (ND_3). The prospective advancements of the Fermilab's Accelerator Complex Evolution (ACE) plan, enable not only the extraction of gluon transversity distributions with greater statistical accuracy with a deuteron target but also with a range of tensor-polarized nuclear targets with spin ≥ 1 to explore the nuclear dependences. Also, this approach opens up the opportunity to measure ten additional leading twist quark transverse-momentum-dependent distributions (TMDs) for tensor-polarized targets, which have not been previously investigated well. The investigation will primarily focus on studying these TMDs through the Drell-Yan process, providing valuable insights into the nuclear EMC effect.

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