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TMDPDFs extractions employing AI

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Transverse Momentum Dependent Parton Distribution Functions (TMDPDFs) can be extracted from deep processes such as Drell-Yan (DY), Semi Inclusive Deep Inelastic Scattering (SIDIS), and e^+ e^- annihilation. At the leading-twist, there are two time-reversal odd TMDPDFs, namely the Sivers function and the Boer-Mulders function have connections to the partons' orbital angular momenta contributing to the overall angular momentum of the parent hadron. Deep Neural Networks (DNNs) have emerged as a powerful tool for information extraction and modeling. DNN models can be built and trained with minimal bias to predict the TMDPDFs based on fits to data. This talk will present details of the first-ever application of DNNs in extracting TMDPDFs, focusing on the flavor-dependent extraction of the Sivers functions in $SU(3)_{flavor}$.

Authors: KELLER, Dustin (University of Virginia); FERNANDO, Ishara (University of Virginia)

Presenter: FERNANDO, Ishara (University of Virginia)

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