

## Lattice QCD Calculations of TMDs and GPDs Through LaMET

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Understanding the internal structure of hadrons requires a detailed study of parton distributions. In particular, distributions in the transverse directions—Transverse Momentum Dependent distributions (TMDs) and Generalized Parton Distributions (GPDs)—provide essential insights. Lattice QCD and Large Momentum Effective Theory (LaMET) offer ab initio calculations of TMDs and GPDs. In our research, we have carried out a comprehensive study of key TMD ingredients, including Collins–Soper kernel and the soft function. As a continuation and extension of existing work on GPDs, we present the first structured results for skewness-dependent GPDs based on Lattice QCD and LaMET. In this talk, I will highlight both the key results and novel contributions of our research on TMDs and GPDs, and provide an introductory overview of the Lattice QCD and LaMET methodologies.

**Author:** CHU, Min-Huan (Adam Mickiewicz University, Poznań)

**Presenter:** CHU, Min-Huan (Adam Mickiewicz University, Poznań)

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