Contribution ID: **205** Type: **not specified**

The 3D Structure of Nucleons

Tuesday, 4 September 2018 14:30 (40 minutes)

A complete three-dimensional picture of the partonic structure of nucleons requires to step beyond the standard collinear approximation in high-energy processes, with the introduction of Transverse-Momentum Dependent (TMD) parton distribution and fragmentation functions. TMDs reveal precious information about spin-momentum correlations in the non-perturbative regime of QCD and help answering the question of the origin of the spin of the nucleon.

In the past twenty years, pioneering studies have opened up a broad vision of this multidimensional landscape. Recently, however, we have gone from the preliminary phase of explorative investigations to the stage in which precision mappings of the partonic structure in momentum space can be drawn.

I will summarize the most significant aspects of the phenomenological study of TMD physics and underly the most recent advances in the field.

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Session Classification: Hadron structure, spectroscopy and dynamics