

The DVCS physics program at COMPASS

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Content

A major part of the COMPASS-II program will be dedicated to the investigation of generalized parton distributions (GPDs) and transverse momentum dependent parton distributions (TMDs), which aim for the most complete description of the partonic structure of the nucleon.

GPDs are experimentally accessible via lepton-induced exclusive reactions, in particular the Deeply Virtual Compton Scattering (DVCS). At COMPASS, this process will be investigated using an high intensity muon beam of 160 GeV and a 2.5 m-long liquid hydrogen target. In order to optimize the selection of exclusive reactions at those energies, the target will be surrounded by a new barrel-shaped time-of-flight system to detect the recoiling particles.

COMPASS-II will cover the up to now unexplored x_{Bj} domain ranging from 0.01 to 0.15. The ability to change simultaneously the charge and polarization of the muon beam will allow to access the Compton form factor related to the dominant GPD H , and thus to provide new experimental constraints on the theoretical GPD models in the intermediate x_{Bj} regime. Moreover, the x_{Bj} -dependence of the nucleon transverse size will be investigated by measuring the sum of the DVCS cross-sections corresponding to positive and negative beam polarities.

Projections on the achievable accuracies and preliminary results of pilot measurements will be presented.

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