



Contribution ID: 1248

Type: Parallel Talk

Hard exclusive π^0 muoproduction at COMPASS

Friday, 8 July 2022 12:25 (15 minutes)

Hard Exclusive Meson Production and Deeply Virtual Compton Scattering (DVCS) are widely used reactions to study Generalised Parton Distributions (GPDs). Investigation of GPDs represents one of the main goals of the COMPASS-II program. Measurements of the exclusive processes were performed at COMPASS in 2016 and 2017 at the M2 beamline of the CERN SPS using the 160 GeV/c muon beam scattering off a 2.5m long liquid hydrogen target surrounded by a barrel-shaped time-of-flight system to detect the recoiling target proton. The scattered muons and the produced real photons were detected by the COMPASS spectrometer, supplemented by an additional electromagnetic calorimeter for the detection of large-angle photons.

Exclusive π^0 production is the main source of background for DVCS process, while it provides complementary information for parametrisation of GPDs. We will report on preliminary results on exclusive π^0 production cross-section and its dependence on the squared four-momentum transfer $|t|$ and on the azimuthal angle ϕ between the scattering plane and the π^0 production plane. The results will provide a further input to phenomenological models for constraining GPDs, in particular chiral-odd (“transversity”) GPDs.

In-person participation

Yes

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Session Classification: Strong interactions and Hadron Physics

Track Classification: Strong interactions and Hadron Physics