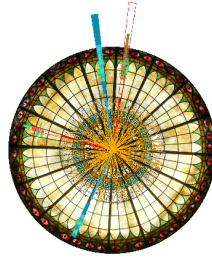


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## Exclusive meson production at COMPASS

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Hard exclusive lepton production of mesons on nucleons has played an important role in studies of the hadron structure and recently gained a renewed interest as it allows an access to generalised parton distributions (GPDs). The GPDs provide a novel and comprehensive description of the nucleon partonic structure and contain a wealth of new information. In particular, the GPDs give a description of the nucleon as an extended object, referred to as the three-dimensional nucleon tomography, and give an access to the orbital angular momentum of quarks. The exclusive meson production is sensitive to various types of the GPDs for different flavours depending on a quark content and quantum numbers of the meson ( $\rho^0$ ,  $\omega$ ,  $\pi^0$ , ...).

In this talk we will summarise recent measurements of the exclusive vector meson production performed by the COMPASS Collaboration. In particular, recent results on single-spin and double-spin asymmetries for the exclusive  $\rho^0$  and  $\omega$  production measured on a transversely polarised proton target will be presented. Some of these asymmetries are sensitive to the GPDs  $E$ , which are related to the orbital angular momentum of quarks. Other asymmetries are sensitive to the chiral-odd GPDs  $H_T$ , which are related to the transversity PDF distributions. Note, that our results for the  $\rho^0$  mesons provide the first experimental evidence from the hard exclusive vector meson production for the existence of non-vanishing GPDs  $H_T$ . In addition, the results for the  $\omega$  mesons, that will be shown for the first time at this conference, are sensitive to the pion pole contribution to the production mechanism. The future measurements of the hard exclusive meson production at COMPASS will be also discussed.

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