



Contribution ID: 156

Type: **Talk**

## Spin Density Matrix Elements in Exclusive Vector Meson Muoproduction at COMPASS

*Monday, 30 August 2021 18:15 (25 minutes)*

We will present results on Spin Density Matrix Elements (SDMEs) measured in hard exclusive muoproduction of  $\rho^0$  and  $\omega$  mesons on the proton at COMPASS using 160 GeV/c polarised  $\mu^+$  and  $\mu^-$  beams scattering off a liquid hydrogen target. The measurements cover the range  $5 \text{ GeV}/c^2 < W < 17 \text{ GeV}/c^2$ ,  $1.0 \text{ (GeV}/c)^2 < Q^2 < 10.0 \text{ (GeV}/c)^2$  and  $0.01 \text{ (GeV}/c)^2 < p_T^2 < 0.5 \text{ (GeV}/c)^2$ . Here,  $Q^2$  denotes the virtuality of the exchanged photon,  $W$  the mass of the final hadronic system and  $p_T$  the transverse momentum of the vector meson with respect to the virtual-photon direction. The measured non-zero SDME values for transitions of transversely polarised virtual photons to longitudinally polarised vector mesons ( $\gamma_T \rightarrow V_L$ ) indicate a violation of  $s$ -channel helicity conservation. Additionally, for  $\rho^0$  production we observe a dominant contribution of natural-parity-exchange transitions and a small contribution of unnatural-parity-exchange transitions. On the contrary, the contribution of unnatural-parity-exchange for  $\omega$  production is significant and it decreases with increasing  $W$ , being still non-negligible at the largest  $W$  values accessible at COMPASS.

The results provide an important input for modelling Generalised Parton Distributions (GPDs). In particular, they may allow to evaluate in a model-dependent way the role of parton-helicity flip GPDs ("transversity GPDs") in exclusive vector meson production.

### Is this abstract from experiment?

Yes

### Name of experiment and experimental site

COMPASS

### Is the speaker for that presentation defined?

Yes

### Details

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### Internet talk

No

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