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## Has vector meson polarization the impact on its interaction with matter?

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Light vector mesons  $V = \rho, \omega, \varphi, K^*$  etc. can be transversely (helicity  $\lambda = \pm 1$ ) or longitudinally ( $\lambda = 0$ ) polarized.

Has their polarization impact on their interaction with nucleons and nuclei? $\$ 

The unstable meson total cross section with nucleon can be extracted by measuring the absorption of mesons in the production off nuclei as

the nuclear absorption depends on the meson-nucleon total cross section and consequently on the vector meson polarization. $\$ 

Whereas the meson coherent photoproduction off nuclei allows to determine the transverse total cross section  $\sigma_T(VN)$  the incoherent production can be a good tool

to extract the information on the value of the total cross section of longitudinally polarized vector meson with nucleon  $\sigma_L(VN)$ . In the talk we discuss the importance of a knowledge

of this cross sections and possibility to determine these quantities from  $\omega$  mesons photoproduction at JLAB and charge exchange reaction on a set of nuclei  $\pi^-A \rightarrow VA'$  using the COMPASS++/AMBER facility at SPS,CERN.

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