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Vector mesons production off nuclei at the new planned QCD facility at CERN

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The production of light vector mesons $V = \rho, \omega, \varphi, K^*$ off nuclei targets with pion, kaon and muon beams at the new planned QCD facility at the M2 beam line of the CERN SPS will be presented. Whereas in the charge exchange reaction $\pi^- + p \rightarrow V + n$ vector mesons are produced mainly longitudinally polarized (helicity $\lambda = 0$) the investigation of their production off nuclei $\pi^- + A \rightarrow V + A'$ allows to extract the total cross section of the longitudinally polarized vector meson interaction with nucleon $\sigma_L(VN)$, a value of which has not yet been measured. The vector mesons production by muons off nuclei using capabilities of COMPASS-like detector would allow to separate the effect of virtual photon shrinking (color transparency) from the effect caused by different absorption of transverse (helicity $\lambda = \pm 1$) and longitudinal (helicity $\lambda = 0$) vector mesons in nuclei. Such measurements are of a current interest as they are complement to investigations of vector mesons photoproduction off nuclei the experimental realization of which is recently proposed at JLAB.

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