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The measurement of the gluon Sivers asymmetries in COMPASS at CERN

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In the context of the nucleon spin structure the Sivers effect, which describes the correlation between the nucleon spin and the orbital motion of partons, may give information on the gluon orbital angular momentum, one of the missing elements in the nucleon spin sum rule. The gluon Sivers function can be accessed via the photon-gluon fusion process. To enhance the fraction of photon-gluon fusion events in the sample containing also the quark photo-absorption and QCD Compton scattering, SIDIS events with high transverse momentum hadron pair are selected. A method to extract the asymmetries simultaneously for all the three processes involved is presented. A Neural Network, trained with Monte Carlo data, is used in the analysis to assign probabilities for the three processes. Finally the gluon Sivers asymmetries measured from proton and deuteron data are given.

Presenter: SILVA, Luis (LIP Laboratorio de Instrumentacao e Fisica Experimental de Part)

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