

12th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



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PHENIX cold QCD and spin physics results

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The strong interaction, QCD, has been very successful in describing perturbative processes between high-energetic quarks and gluons, but nonperturbative quantities such as the (spin) structure of the nucleon and nuclei are generally not accessible from first principles. Parton distribution functions, PDFs, have to be obtained from experiment and in part from lattice simulations. The PDFs of the nucleon and nuclei form the cold QCD baseline needed for heavy ion collisions. When adding the spin structure of nuclear matter, even less is understood in terms of the spin decomposition of quark and gluon spins, and their orbital angular momenta. In recent years, particularly, transverse spin asymmetry measurements have also been performed on polarized proton-nucleus interactions. These measurements show a strong connection to low- x physics, as well as spin dependent modifications even in unpolarized nuclei via intrinsically transverse momentum dependent PDFs.

The recent cold QCD and spin related measurements by PHENIX, with emphasis on those that relate to nuclei will be presented.

Category

Experiment

Collaboration

PHENIX

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