

Anmeldung zur Frühjahrstagung der  
Deutschen Physikalischen Gesellschaft  
vom 04.03. bis 09.03.2005  
in berlinhkt

**Measurement of the double helicity asymmetry in  $\pi^0$  production  
in polarized  $p+p$  collisions at  $\sqrt{s} = 200$  GeV.** — •OLIVER ZAUDTKE  
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Polarized deep-inelastic lepton scattering experiments have indicated that only 20-30% of the nucleon spin is carried by quarks and antiquarks in the nucleon. Gluons may contribute a significant part to the nucleon spin. Gluon polarization can not be directly measured in low energy polarized deep inelastic scattering fixed target experiments, since virtual photons do not couple to gluons directly. However, in polarized  $p + p$  collisions at high energies the gluons participate directly and hence the gluon polarization can be probed. One promising method is the measurement of the double helicity asymmetry ( $A_{LL}$ ) in high  $p_T \pi^0$  production.

The Relativistic Heavy Ion Collider (RHIC) is the first accelerator to collide polarized protons at high energies. We will present first measurements of  $\pi^0 A_{LL}$  with the PHENIX detector at  $\sqrt{s} = 200$  GeV.

Ort: berlinhkt  
Datum: 04.03.—09.03.2005  
Fachverband: Physik der Hadronen und Kerne  
Themenkreis: Elektromagnetische und hadronische Proben  
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Mitgliedsstatus: Bei der DPG registrierte Gesellschaft: DPG