

## CURRICULUM VITAE

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### Education

Ph.D. Physics; University of Colorado at Boulder, 2000.

B.A. Physics, Mathematics; Saint Olaf College, 1993.

### Societies and Honors

University Fellowship from the Graduate School at the University of Colorado

Barry Goldwater Scholarship

American Physical Society

Phi Beta Kappa

### Employment

2003-present; Postdoctoral Research Associate; The Pennsylvania State University.

2000-2003; Postdoctoral Research Associate; Indiana University Cyclotron Facility, Indiana University.

1994-2000; Graduate Research Assistant; Nuclear Physics Laboratory, University of Colorado at Boulder.

1993-1994; Recitation Instructor; University of Colorado at Boulder.

1992; Undergraduate Research Assistant; Saint Olaf College.

### Experience

Worked on the STAR experiment from 2000-present, focusing primarily on forward  $\pi^0$  production from polarized proton collisions. Wrote proposal to augment STAR with electromagnetic calorimetry at large pseudorapidity. Prepared, installed and commissioned the detectors for data collection during the first years of RHIC spin, where the first collisions ever of polarized protons in a collider environment were observed. Played lead role in data analysis. Primary author on Phys. Rev. Lett. **92** (2004) 171801, which reports measurements of the inclusive cross section and analyzing power of forward  $\pi^0$  production. This work has resulted in the first significant spin asymmetry seen from

polarized proton collisions at  $\sqrt{s} = 200$  GeV. In addition, the data indicate that fixed-order perturbative QCD is able to describe  $\pi^0$  production at  $\eta = 4$ , in contrast to lower  $\sqrt{s}$  data at comparable angles and  $p_T$ . As at RHIC, it will be important at the LHC to quantitatively establish how well  $p+p$  collisions can be understood within the framework of pQCD.

Work is currently focused on extending the inclusive analysis to include correlations of the forward rapidity  $\pi^0$  with charged particles at midrapidity in  $p+p$  and  $d+Au$  collisions. Preliminary results comparing  $p+p$  data with predictions from PYTHIA bolster the notion that forward particle production at  $\sqrt{s} = 200$  GeV comes from partonic scattering. Preliminary results of the correlations in  $p+p$  compared with  $d+Au$  indicate that the character of the correlations is different in a nuclear system enriched with gluons. The ramifications of such a result are not yet understood, and will require comparison with quantitative theoretical calculations. Work is underway to publish these results.

Worked on the HERMES experiment from 1995-2000. Thesis work was the measurement of the complete set of matrix elements in diffractive exclusive  $\phi$  electroproduction from  $e+A$  collisions from the analysis of the production and decay angular distributions. Hardware experience at HERMES included the installation, commissioning, operation, and calibration of planar drift chambers for charged particle tracking.

## Conference Presentations

“Summary of Workshop R1b; Spin Physics at RHIC: First Results and Status of the First Polarized Proton Collider,” plenary talk at the RHIC/AGS Users Meeting, Brookhaven National Laboratory, Upton, New York, May 2004.

“Forward Physics at STAR,” Workshop on Forward Physics at RHIC, RHIC/AGS Users Meeting, Brookhaven National Laboratory, Upton, New York, May 2004.

“Transverse Spin Asymmetries at STAR,” invited talk at the XI International Workshop on Deep-Inelastic Scattering (DIS2003) 2003.

“Analyzing Powers for Forward  $p_{\uparrow} + p \rightarrow \pi^0 + X$  at STAR“, 15th International Spin Physics Symposium (SPIN2002) 2002.

“Forward  $p + p \rightarrow \pi^0 + X$  Cross Sections at STAR,” poster session at the 16th International Conference on Ultra-Relativistic Nucleus-Nucleus Collisions (Quark Matter) 2002.

“STAR Readiness for  $\vec{p} - \vec{p}$  Running,” RHIC Spin Collaboration Meeting (2001).

“STAR Spin Plans in Year-1,” RIKEN-BNL workshop on Spin Physics at RHIC at Year-1 and Beyond (2001).

“Proposal to Measure a Forward  $\pi^0$  Asymmetry at RHIC,” RHIC Spin Collaboration Meeting (2001).

“Vector Meson Decay Angular Distributions at HERMES,” poster session at the XVth Particles and Nuclei International Conference (PANIC) 1999.

“A Measurement of Tensor Polarization Observables in  $A(\vec{e}, e'\phi)$  at HERMES,” American Physical Society Division of Nuclear Physics Meeting, Bull. Am. Phys. Soc. 43 (1998) 1566.

“Vector Meson Production at HERMES,” Gordon Research Conference on Photonuclear Physics (1998).

### Colloquia/Seminars

“Forward Physics at STAR,” Brookhaven National Laboratory, Upton, New York, March 2004.

“Studying Spin with Polarized Protons at RHIC: First Results and a Fresh Outlook,” The Pennsylvania State University, University Park, Pennsylvania, December 2003.

“First Results from Polarized Proton Collisions at STAR,” University of Wisconsin, Madison, Wisconsin, November 2002.

“Helicity Transfer in Diffractive  $\phi$  Electroproduction,” Indiana University Cyclotron Facility, Bloomington, Indiana, June 2000.

“Spin Polarization Transfer in Exclusive  $\phi$  Electroproduction,” New Mexico State University, Las Cruces, New Mexico, May 2000.

“Various Measurements with Vector Mesons at HERMES,” Max-Planck-Institut für Kernphysik, Heidelberg, Germany, September 1997.

### Technical Internal Reports

H. M. Spinka, *et al.*, “Proposal to Install a Forward  $\pi^0$  Detector in STAR,” 2001.

G. Rakness, “Study of Front Drift Chamber Resolution and Efficiency,” 1998.

### Publications

J. Adams, *et al.*, “Centrality and pseudorapidity dependence of charged hadron production at intermediate  $p_T$  in Au+Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0404020, submitted to Phys. Rev. C.

J. Adams, *et al.*, “Production of  $e^+e^-$  Pairs Accompanied by Nuclear Dissociation in Ultra-Peripheral Heavy Ion Collisions,” nucl-ex/0404012.

J. Adams, *et al.*, “Photon and neutral pion production in Au+Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0401008, submitted to Phys. Rev. C.

J. Adams, *et al.*, “Azimuthally sensitive HBT in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0312009, accepted by Phys. Rev. Lett., in press.

J. Adams, *et al.*, “Production of Charged Pions and Hadrons in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0311017, submitted to Phys. Rev. C.

- J. Adams, *et al.*, “Azimuthal anisotropy at the Relativistic Heavy Ion Collider: the first and fourth harmonics,” nucl-ex/0310029, Phys. Rev. Lett. **92** (2004) 062301.
- J. Adams, *et al.*, “Cross Sections and Transverse Single-Spin Asymmetries in Forward Neutral Pion Production from Proton Collisions at  $\sqrt{s} = 200$  GeV,” hep-ex/0310058, Phys. Rev. Lett. **92** (2004) 171801.
- J. Adams, *et al.*, “Pion, kaon, proton and anti-proton transverse momentum distributions from p+p and d+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0309012.
- J. Adams, *et al.*, “Event-by-Event ( $p_T$ ) fluctuations in Au-Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0308033, submitted to Phys. Rev. Lett.
- J. Adams, *et al.*, “Identified particle distributions in pp and Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0310004, Phys. Rev. Lett. **92** (2004) 112301.
- J. Adams, *et al.*, “Multi-strange baryon production in Au-Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0307024, Phys. Rev. Lett. **92** (2004) 182301.
- J. Adams, *et al.*, “Pion-Kaon Correlations in Central Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0307025, Phys. Rev. Lett. **91** (2003) 262302.
- J. Adams, *et al.*, “ $\rho^0$  Production and Possible Modification in Au+Au and p+p Collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0307023, Phys. Rev. Lett. **92** (2004) 092301.
- J. Adams, *et al.*, “Net charge fluctuations in Au+Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0307007, Phys. Rev. C **68** (2003) 044905.
- J. Adams, *et al.*, “Three-Pion Hanbury Brown-Twiss Correlations in Relativistic Heavy-Ion Collisions from the STAR Experiment,” nucl-ex/0306028, Phys. Rev. Lett. **91** (2003) 262301.
- J. Adams, *et al.*, “Evidence from d+Au measurements for final-state suppression of high  $p_T$  hadrons in Au+Au collisions at RHIC,” nucl-ex/0306024, Phys. Rev. Lett. **91** (2003) 072304.
- J. Adams, *et al.*, “Particle-type dependence of azimuthal anisotropy and nuclear modification of particle production in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0306007, Phys. Rev. Lett. **92** (2004) 052302.
- J. Adams, *et al.*, “Transverse momentum and collision energy dependence of high  $p_T$  hadron suppression in Au+Au collisions at ultrarelativistic energies,” nucl-ex/0305015, Phys. Rev. Lett. **91** (2003) 172302.
- J. Adams, *et al.*, “Erratum: Midrapidity Antiproton-to-Proton Ratio from Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV [Phys. Rev. Lett. **86** (2001) 4778.],” Phys. Rev. Lett. **90** (2003) 119903(E).

- J. Adams, *et al.*, “Narrowing of the Balance Function with Centrality in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0301014, Phys. Rev. Lett. **90** (2003) 172301.
- J. Adams, *et al.*, “Strange anti-particle to particle ratios at mid-rapidity in  $\sqrt{s_{NN}} = 130$  GeV Au+Au collisions,” nucl-ex/0211024, Phys. Lett. B **567** (2003) 167.
- C. Adler, *et al.*, “Kaon Production and Kaon to Pion Ratio in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0206008, submitted to Phys. Lett. B.
- C.E. Allgower, *et al.*, “The STAR Endcap Electromagnetic Calorimeter,” Nucl. Instrum. Meth. **A499** (2003) 740.
- C. Adler, *et al.*, “Disappearance of back-to-back high  $p_T$  hadron correlations in central Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,” nucl-ex/0210033, Phys. Rev. Lett. **90** (2003) 082302.
- C. Adler, *et al.*, “Azimuthal Anisotropy and Correlations in the Hard Scattering Regime at RHIC,” nucl-ex/0206006, Phys. Rev. Lett. **90** (2003) 032301.
- G. Rakness for the STAR Collaboration, “Analyzing Powers for Forward  $p_{\uparrow} + p \rightarrow \pi^0 + X$  at STAR,” hep-ex/0211068, proceedings of the 15th International Spin Physics Symposium (SPIN2002), AIP Conf. Proc. **675** (2003) 400.
- C. Adler, *et al.*, “Centrality Dependence of High  $p_T$  Hadron Suppression in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0206011, Phys. Rev. Lett. **89** (2002) 202301.
- C. Adler, *et al.*, “Coherent  $\rho^0$  Production in Ultra-Peripheral Heavy Ion Collisions,” nucl-ex/0206004, Phys. Rev. Lett. **89** (2002) 272303.
- C. Adler, *et al.*, “Elliptic flow from two- and four-particle correlations in Au+Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0206001, Phys. Rev. C **66** (2002) 034904.
- C. Adler, *et al.*, “ $K^*(892)^0$  Production in Relativistic Heavy Ion Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0205015, Phys. Rev. C **66** (2002) 061901(R).
- C. Adler, *et al.*, “Azimuthal anisotropy of  $K_S^0$  and  $\Lambda + \bar{\Lambda}$  production at mid-rapidity from Au+Au collisions at  $\sqrt{s_{NN}} = 130$  GeV,” hep-ex/0205072, Phys. Rev. Lett. **89** (2002) 132301.
- C. Adler, *et al.*, “Midrapidity  $\Lambda$  and  $\bar{\Lambda}$  Production in Au-Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV,” nucl-ex/0203016, Phys. Rev. Lett. **89** (2002) 092301.
- A. Airapetian *et al.*, “Single-spin Azimuthal Asymmetries in Electroproduction of Exclusive  $\pi^+$ ,” hep-ex/0112022, Phys. Lett. B **535** (2002) 85.
- A. Airapetian *et al.*, “Measurement of the Beam-Spin Azimuthal Asymmetry associated with Deeply-Virtual Compton Scattering,” hep-ex/0106068, Phys. Rev. Lett. **87** (2001) 182001.

- J. T. Brack, *et al.*, “The HERMES Forward Tracking Chambers: Construction, Operation, and Aging Effects,” Nucl. Instrum. Meth. **A469** (2001) 47.
- A. Airapetian *et al.*, “Single Spin Azimuthal Asymmetry in Electroproduction of Neutral Pions in Semi-inclusive Deep Inelastic Scattering,” hep-ex/0104005, Phys. Rev. D **64** (2001) 097101.
- A. Airapetian *et al.*, “Double-Spin Asymmetry in the Cross Section for Exclusive  $\rho^0$  Production in Lepton-Nucleon Scattering,” hep-ex/0102037, Phys. Lett. B **513** (2001) 301.
- A. Airapetian, *et al.*, “Hadron Formation in Deep-Inelastic Positron Scattering from  $^{14}\text{N}$  and  $^2\text{H}$ ,” hep-ex/0012049, Eur. Phys. J. C **20** (2001) 479.
- A. Airapetian, *et al.*, “Multiplicity of Charged and Neutral Pions in Deep-Inelastic Scattering of 27.5 GeV Positrons on Hydrogen,” hep-ex/0104004, Eur. Phys. J. C **21** (2001) 599.
- A. Airapetian, *et al.*, “The  $Q^2$  Dependence of the Generalised Gerasimov-Drell-Hearn Integral for the Proton,” hep-ex/0008037, Phys. Lett. B **494** (2000) 1.
- A. Airapetian, *et al.*, “Exclusive Leptoproduction of  $\rho^0$  Mesons from Hydrogen at Intermediate Virtual Photon Energies,” hep-ex/0004023, Eur. Phys. J. C **17** (2000) 389.
- K. Ackerstaff, *et al.*, “Measurement of Angular Distributions and  $R = \sigma_L/\sigma_T$  in Diffractive Electroproduction of  $\rho^0$  Mesons,” hep-ex/0002016, Eur. Phys. J. C **18** (2000) 303.
- A. Airapetian, *et al.*, “Measurement of Longitudinal Spin Transfer to Lambda Hyperons in Deep Inelastic Lepton Scattering,” hep-ex/9911017, Phys. Rev. D **64** (2001) 112005.
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- A. Airapetian, *et al.*, “Measurement of the Spin Asymmetry in Photoproduction of Pairs of High- $p_t$  Hadrons at HERMES,” hep-ex/9907020, Phys. Rev. Lett. **84** (2000) 2584.
- K. Ackerstaff, *et al.*, “Flavor Decomposition of the Polarized Quark Distributions in the Nucleon from Inclusive and Semi-Inclusive Deep-Inelastic Scattering,” hep-ex/9906035, Phys. Lett. B **464** (1999) 123.

- K. Ackerstaff, *et al.*, “Observation of a Coherence Length Effect in Exclusive  $\rho^0$  Electroproduction,” hep-ex/9811011, Phys. Rev. Lett. **82** (1999) 3025.
- K. Ackerstaff, *et al.*, “Beam Induced Nuclear Depolarisation in a Gaseous Polarised Hydrogen Target,” hep-ex/9806006, Phys. Rev. Lett. **82** (1999) 1164.
- J. Cederberg, *et al.*, “Nuclear Electric Quadrupole Moment of  ${}^6\text{Li}$ ,” Phys. Rev. A **57** (1998) 2539.
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- A. Airapetian, *et al.*, “Measurement of the Proton Spin Structure Function  $g_1^p$  with a Pure Hydrogen Target,” hep-ex/9807015, Phys. Lett. B **442** (1998) 484.
- K. Ackerstaff, *et al.*, “The Flavor Asymmetry of the Light Quark Sea from Semi-Inclusive Deep-Inelastic Scattering,” hep-ex/9807013, Phys. Rev. Lett. **81** (1998) 5519.
- K. Ackerstaff, *et al.*, “The HERMES Spectrometer,” hep-ex/9806008, Nucl. Instr. and Meth. **A417** (1998) 230.
- K. Ackerstaff, *et al.*, “Measurement of the Neutron Spin Structure Function  $g_1^n$  with a Polarized  ${}^3\text{He}$  Target,” hep-ex/9703005, Phys. Lett. B **404** (1997) 383.

## References

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