

CHRISTINE A. AIDALA

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High-energy experimental nuclear physics; nucleon structure; QCD dynamics in hadrons and hadronization.

EDUCATION:

Columbia University Ph.D. program, Physics, 2002-05. M.A. 2004. M.Phil. 2005. Ph.D. 2005.
University of Chicago Ph.D. program, Physics, 1999-2000. Medical leave starting March 2000.
Yale University 1995-99. B.S. in Physics, B.S. in Music 1999.

RESEARCH POSITIONS HELD:

September 2012-present. **Assistant Professor of Physics, University of Michigan.**

January-July 2012. **Scientist 2, Los Alamos National Laboratory. PHENIX** Experiment at the Relativistic Heavy Ion Collider (RHIC), Brookhaven National Laboratory, and **E906**, Fermi National Accelerator Laboratory.

January 2009-December 2011. **Frederick Reines Distinguished Postdoctoral Fellow, LANL, PHENIX and E906.**

January 2006-December 2008. **Postdoctoral Research Associate, UMass Amherst, PHENIX.**

September 2002-December 2005. **Graduate Research Assistant, Columbia University, PHENIX.** Thesis advisor: B.A. Cole.

September 2001-August 2002. **Physics Associate, BNL, PHENIX.**

June 1999-January 2000. **Graduate researcher, U. of Chicago, OPAL Experiment at CERN.** J. Pilcher.

1998-99. **Senior thesis, Yale U., polarized proton studies for the HERA $e+p$ collider.** V.W. Hughes.

Summer 1998. **CERN Summer Student Program, data acquisition in a silicon lab.** P. Weilhammer.

Summer 1997. **BNL Summer Student Program, STAR Experiment at RHIC.** T.J. Hallman.

Summer 1996. **Wright Nuclear Structure Laboratory, Yale University, low-energy nuclear structure.** R.F. Casten.

RESEARCH EXPERIENCE (since 2001):

Data analysis:

- Transverse single-spin asymmetry in forward eta meson production in high-energy polarized proton-proton collisions, probing quark and gluon spin-momentum correlations within transversely polarized protons and in the hadronization of quarks to eta mesons.
- Transverse single-spin asymmetry in midrapidity neutral pion production in high-energy polarized proton-proton collisions, probing gluon spin-momentum correlations within transversely polarized protons.
- Double-helicity asymmetry in midrapidity charged hadron production in high-energy polarized proton collisions, sensitive to the gluon spin contribution to the spin of the proton.
- Cross section for midrapidity charged hadron production in moderate-energy proton-proton collisions, to test the energy range of the applicability of different techniques in perturbative QCD calculations.

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- Spin transfer to antilambda baryons in high-energy polarized proton collisions, to study spin-momentum correlations in the hadronization into antilambda particles of quarks scattered from polarized protons.

Phenomenology:

- Parameterization of transverse-momentum-dependent parton distribution functions from world Drell-Yan as well as Z and W boson data
- Parameterization of world data on the hadronization of quarks and gluons into eta mesons

Simulations:

- GEANT 3 implementation of three upgrade/proposed detectors for PHENIX
- Extensive experience working with the PYTHIA event generator for proton-proton collisions
- Experience working with RAPGAP event generator for diffractive and deep-inelastic scattering events in electron-proton collisions

Hardware, electronics, and experimental operations:

- Assembly and testing of PHENIX Forward Silicon Vertex Detector
- Preparation and testing of E906 Station 4 proportional tubes
- Maintenance and operations support for PHENIX Muon Trackers
- Studies for development of electronics-level trigger for high- p_T charged pions in $p+p$ collisions.
- Period Coordinator for operations, PHENIX 2007, 2008, and 2011 runs
- Deputy online data production manager, PHENIX 2006 run
- Software trigger design for high- p_T charged particles in low-multiplicity environment, PHENIX 2003 run
- Commissioning and support for electronics-level trigger for photons and electrons, PHENIX 2002 run

Work with graduate students

- Sponsor for R. Belmont, Vanderbilt U., as a Visiting Scholar at U. of Michigan to complete thesis, 2012
- Supervision of A. Datta, UMass Amherst, throughout thesis analyses, September 2007-present
- Supervision of R. Han, Peking U., in completion of thesis analysis, May-December 2007
- Close work with D. Kleinjan, UC Riverside, on thesis analysis, May 2009-present
- Close work with A. Morreale, UC Riverside, on one analysis included in thesis, March 2006-August 2007
- Thesis committee, T. Engelmores, Columbia U., May 2011

AWARDS AND RECOGNITION:

Distinguished Women Physicists Lecture Series colloquium speaker, University of Connecticut, 2012.

Invited Fellow, 50th anniversary celebration of the International School on Subnuclear Physics, Erice, Italy, June – July 2011. Organized by G. 't Hooft and A. Zichichi.

Sambamurti Memorial Lectureship, BNL, 2008. *“For her contributions to the RHIC Spin Program, notably her leadership in the measurement of the transverse spin structure of the proton using pions.”*

Vernon Hughes Travel Fellowship, 2004.

Luise Meyer-Schutzmeister Award, Association for Women in Science, 2004.

GAANN Fellowship, U.S. Department of Education, through University of Chicago, 1999.

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Scholarship Recipient, Long Island Chapter of the **American Nuclear Society**, 1999.

Nominee for Barry M. Goldwater Scholarship, Yale University, 1998.

CONFERENCE, WORKSHOP, AND SCHOOL ORGANIZATION:

Chair, Workshop on Opportunities for Polarized Physics at Fermilab, Fermilab, May 20-22, 2013.

Member, International Organizing Committee, 3rd Workshop on the QCD Structure of the Nucleon (QCD-N'12), Bilbao, Spain, October 22-26, 2012.

Member, Program Committee, 19th Particles and Nuclei International Conference (PANIC 2011) and Co-organizer for session on Quarks and Gluons in Hadrons, MIT, July 24-29, 2011.

Co-organizer, Workshop on Transverse-Momentum-Dependent Distributions, ECT*, Trento, Italy, June 21-25, 2010.

Principal organizer, Symposium on Educational and Public Outreach, sponsored by the RHIC-AGS Users' Executive Committee and the National User Facility Organization, BNL, June 9, 2010.

Co-convenor, Spin Physics Working Group, 18th International Workshop on Deep-Inelastic Scattering and Related Subjects (DIS 2010), Florence, Italy, April 17-23, 2010.

Co-organizer, Workshop on Transverse Spin Physics, RHIC-AGS Users' Meeting, BNL, June 2009.

Principal Organizer, 4th PHENIX Spinfest School on QCD Physics, BNL, August 2008.

Co-organizer, 2nd PHENIX Spinfest School on QCD Physics, BNL, August 2006.

Principal Organizer, Workshop on the Helicity Structure of the Nucleon, RHIC-AGS Users' Meeting, BNL, June 2006.

Co-organizer, Workshop on Proton Spin Physics, RHIC-AGS Users' Meeting, BNL, June 2005.

OTHER SERVICE AND EXPERIENCE:

Member, PHENIX Task Force on Electron-Proton and Electron-Ion Physics, November 2011-present.

Elected member, National User Facility Organization (NUFO) Steering Committee, June 2011-present (term ends June 2014).

Elected member, PHENIX Executive Council, March 2011-present (term ends March 2014). The EC is responsible for establishing scientific priorities for the experiment, with members selected for their "scientific judgment, technical expertise, and commitment to the experiment."

Member, BNL Work-Life Balance Committee, April 2010-present.

Elected member, RHIC-AGS Users' Executive Committee, June 2009-June 2012.

Moderator, Panel discussion: The Future of RHIC Upgrades, RHIC Users Open Forum Meeting, Meeting of the APS Division of Nuclear Physics, October 2011.

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Member, RHIC Thesis Award Committee, April – June 2011.

Member, PHENIX Decadal Plan Writing Committee, March-September 2010.

Member, PHENIX Speakers Bureau, April 2009-February 2010.

Lecturer, European Graduate School on Complex Systems of Hadrons and Nuclei (HANUC), “The Structure of the Nucleon.” Turin, Italy, March 2009.

Member, PHENIX Forward Calorimeter Upgrade Internal Review Committee, Jan-Feb 2009.

Co-convenor, PHENIX Spin Physics Working Group, January 2007-April 2009. Oversaw and coordinated all analysis activities within Working Group; approved scientific results for public release by the collaboration.

Member, PHENIX Spokesperson Selection Task Force, May-July 2006.

Elected Student/Postdoc Representative, RHIC-AGS Users’ Executive Committee, 2004-05.

INVITED CONFERENCE AND WORKSHOP PRESENTATIONS:

Seminars and colloquia listed separately below.

For a complete listing of all presentations, please see <http://www.phenix.bnl.gov/~caidala>.

APS Division of Nuclear Physics Fall Meeting, Newport Beach, CA, October 2012. *Entering the Electronic Age at RHIC: eRHIC*.

APS Division of Nuclear Physics Fall Meeting, East Lansing, MI, October 2011. *The Electron-Ion Collider: Tackling QCD from the Inside (of Nucleons and Nuclei) Out*.

Quarks, Hadrons, and LHC, Mumbai, India, August 2011. *Transverse-Momentum-Dependent Distributions and Transverse Spin Phenomena at RHIC*.

Gluons and the Quark Sea at High Energies: Workshop to develop the physics case of a high-energy Electron-Ion Collider, INT, U. of Washington, September-November 2010. *Probing QCD in Hadrons Through Transverse-Momentum-Dependent Distributions at RHIC—Or—Why Use Messy p+p Collisions to Study What’s Happening Inside the Nucleon?*

Electromagnetic Interactions with Nucleons and Nuclei (EINN 2009) Workshop on Partonic Transverse Momentum Distributions, Milos, Greece, September-October 2009. *Single-Spin Asymmetries and Transverse-Momentum-Dependent Distributions at RHIC*.

18th International Symposium on Spin Physics (SPIN2008), Charlottesville, VA, October 2008. *Spin in Hadron Reactions*. (Plenary)

Gordon Conference on Photonuclear Reactions, Tilton, NH, August 2008. *Transverse Spin Physics at RHIC*.

2nd International Workshop on Transverse Polarization Phenomena in Hard Processes (Transversity 2008), Ferrara, Italy, May 2008. *Transversity and Transverse-Momentum-Dependent Distribution Measurements from PHENIX and BRAHMS*.

24th Winter Workshop on Nuclear Dynamics, South Padre Island, TX, April 2008. *Peering into Hadronic Matter: The Electron-Ion Collider*.

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International Workshop on Structure and Spectroscopy, Freiburg, Germany, March 2007. *Recent Spin Physics Results from RHIC*.

Spin Structure of the Nucleon Workshop, Nashville, TN, October 2006. *Recent Spin Physics Results from PHENIX*.

International Workshop on Transversity: New Developments in Nucleon Spin Structure, ECT*, Trento, Italy, June 2004. *Single Transverse Spin Asymmetries at RHIC*.

SEMINARS AND COLLOQUIA:

Seminar: "University of D0," Fermilab, March 2013. *Investigating Proton Structure at the Relativistic Heavy Ion Collider*.

Seminar: Wayne State U., January 2013. *Investigating Proton Structure at the Relativistic Heavy Ion Collider*.

Colloquium: Triangle Nuclear Theory series, Duke U., February 2012. *The Electron-Ion Collider: Tackling QCD from the Inside (of Nucleons and Nuclei) Out*.

Colloquium: UConn, January 2012. *From Quarks and Gluons to the World Around Us: Understanding Quantum Chromodynamics by Exploring Nucleon Structure*.

Seminars: LANL, Rutgers U., September - October 2011. *The PHENIX Decadal Plan: Crafting the Future of the Relativistic Heavy Ion Collider*.

Seminar: Stony Brook U., February 2011. *From Quarks and Gluons to the World Around Us: Advancing into the Era of Quantitative QCD via Investigation of Nucleon Structure*.

Seminars: DESY-Hamburg, DESY-Zeuthen, October 2010. *Investigating the Spin Structure of the Proton at the Relativistic Heavy Ion Collider*.

Seminar: INFN Ferrara, June 2010. *Investigating the Spin Structure of the Proton at RHIC: Recent Results*.

Colloquium, Catholic U. of America, December 2009. *Getting Protons to Study Themselves: Investigating Proton Structure at the Relativistic Heavy Ion Collider*

Seminar: LANL, October 2009. *The Electron-Ion Collider: Tackling QCD from the Inside (of Nucleons and Nuclei) Out*.

Seminar: JLab, May 2009. *Investigating the Spin Structure of the Proton at RHIC*.

Seminars: LANL, Columbia U., 2009. *Frontiers in Nucleon Structure*.

Seminars: Michigan State U., U. of Kentucky, Kent State U., 2008. *The Emerging QCD Frontier: The Electron-Ion Collider*.

Seminar: INFN Torino, June 2008. *Recent Spin Physics Results from RHIC*.

Seminar: INFN Pavia, June 2008. *Recent Results from the PHENIX Experiment at RHIC*.

Colloquium: Old Dominion U., September 2007. *A Novel Shakedown of the Proton Spin Breakdown: How the Field Has Become Wider with a Polarized Proton Collider*.

Seminars: UMass Amherst, INFN Cagliari, 2006. *Recent Spin Physics Results from PHENIX*.

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Seminar: Mt. Holyoke College, 2006. *The Whole Story Behind a Half: The Quest to Understand the Proton's Spin.*

Seminars: IUCF, LANL, LBL, 2005. *Studying the Transverse Spin Structure of the Proton at PHENIX.*

Seminars: CERN, Laboratori Nazionali di Frascati, INFN Torino, INFN Ferrara, 2004. *Recent Spin Results from PHENIX.*

Outreach seminars promoting physics graduate study: **Bryn Mawr, Mt. Holyoke, Smith, Vassar, Barnard, Wellesley,** and **Amherst Colleges**, 2003-04. Sponsored by Columbia University.

Colloquium: Vassar College, December 2003. *Flying High with PHENIX: Surveying the Landscape for Quark-Gluon Plasma and the Secrets of the Proton's Spin.*