

RESUME

DEPARTMENT OF PHYSICS AND ASTRONOMY IOWA STATE UNIVERSITY

FALL 2002

JOHN LAJOIE

JUNE 13, 1967
GREAT FALLS, MONTANA

Assistant Professor, Iowa State University

GRAD. FACULTY

PERSONAL HISTORY

1997-present Assistant Professor, Iowa State University

1996-1997 Associate Research Scientist, Yale University

1996 Ph.D., Yale University

1991 M.S., Yale University

1989 B.S., Iowa State University

MEMBERSHIPS AND HONORS

American Physical Society

American Association for the Advancement of Science

Sigma Xi

IEEE/Nuclear and Plasma Physics Society

JOHN LAJOIE

TEACHING RESPONSIBILITIES AND STUDENT EVALUATIONS

	Teaching Assignments	Approx. Number of Students	Student Evaluation	All-Dept. Average (Rec)	Course Average (Rec)	Lecturer Average	Advanced Course Average
1997-98	GRADUATE ADMISSIONS COMMITTEE						
F 97	221-W		4.7	3.9	3.9		
	221 (Lab)		4.9	3.9	3.9		
S 98	222 Lab		4.7	4.0	3.9		
	222 Rec		4.7	4.0	4.0		
1998-99	GRADUATE ADMISSIONS COMMITTEE						
F 98	221Z		4.9	4.0	3.7		
	221		5.0	3.8	3.7		
S 99	524	6	4.0				4.3
1999-2000	FIRST-YEAR GRADUATE ADVISOR GRADUATE STATUS COMMITTEE (CHAIR)						
S 00	524	15	4.3				4.2
2000-2001	FIRST-YEAR GRADUATE ADVISOR GRADUATE STATUS COMMITTEE (CHAIR)						
F 00	531	7	4.0				4.5
S 01	524	7	4.0				4.5
2001-2002	FIRST-YEAR GRADUATE ADVISOR GRADUATE STATUS COMMITTEE (CHAIR)						
F 01	531	6	4.5				4.4
2002-2003	FIRST-YEAR GRADUATE ADVISOR GRADUATE STATUS COMMITTEE (CHAIR)						
F 02	531						

PH.D. STUDENTS

Paul Constantin (4th year student)
Heather Henneke (2nd year student)

M.S. STUDENTS

Steve Skutnik (1st year student)

UNDERGRADUATE RESEARCH DIRECTED

Tom Plagge (Honors Student), BS Spring 20002
Steve Skutnik (David C. Collins Scholarship), BS Spring 2002
Ryan Gavin (Honors Student)
Jared Ladbury (Honors Student)
Brian Lindquist (Honors Student)
Tom Kelley

GRADUATE STUDENT COMMITTEE MEMBERSHIP (Non-Chairman)

Brett Fadem Ph.D. (Physics)
Xiyue Miao M.S. (Physics)
Jongik Park Ph.D. (Physics)

TEACHING AWARDS:

LAS Teaching Award for “Outstanding Teaching at the Introductory Level” – Spring 2000

SERVICE**DEPARTMENTAL**

1997-99 Graduate Recruitment & Admissions Committee
1999-present First-Year Graduate Student Advisor
Graduate Status Committee (Chairman)
2000-present Classical Qualifying Exam Committee

COLLEGE

None

UNIVERSITY

1998 (Fall) LEAD program, faculty advisor for Physics 222

COMMUNITY

August 1998 PHENIX online TAC review committee member
1999 External Reader for Ph.D. Thesis, Zhangbu Xu, Yale University
April 1999- present PHENIX Detector council member for LV1 trigger
2000 Member of PHENIX Tracking Task Force
2000-present Member of PHENIX Trigger Working Group
2001 Member of PHENIX IRC003 paper review committee
2002 Chair of PHENIX IRC004 paper review committee

In addition, I have also been asked to review DOE grant proposals (1-2 per year).

Creating Novel Forms of Hadronic Matter at the Alternating Gradient Synchrotron (AGS) And Relativistic Heavy Ion Collider (RHIC)

John Lajoie
Fall 2002

The field of relativistic heavy ion physics seeks to better understand non-perturbative Quantum Chromodynamics (QCD) through the study of hadronic matter under extreme conditions. The goal of this new field of nuclear physics is to observe and study the transition of hadronic matter to a deconfined phase – the Quark Gluon Plasma (QGP) – where quarks are no longer bound in color singlet hadrons. I have been involved in the study of heavy ion and nucleon-nucleus collisions both at the AGS (in Experiments E864 and E941) and RHIC (as a member of the PHENIX collaboration).

Experiment E864 was designed to study heavy ion collisions by searching for rare objects that may be created Au+Pb collisions, from nuggets of strange quark matter (“strangelets”) to antimatter clusters such as the antideuteron. These highly sensitive searches were made possible by a mass-based trigger designed and built at Iowa State. Results from E864 have set the best strangelet limits available at AGS energies, measured light nucleus production by coalescence out to ${}^6\text{He}$, and provided new insight into antimatter production in these baryon rich collisions. Our studies of antiprotons seem to indicate that antihyperons are preferentially produced over non-strange antibaryons in these collisions, a surprising and unanticipated result. This work has culminated in key publications on antimatter production¹, on which I was the primary author. In Experiment E941 we have studied antiproton and leading neutral particle production in p+A collisions as a complement to the heavy ion work. These new measurements of antiproton production have allowed us to better interpret the Au+Pb results from E864 by measuring the in-medium annihilation cross section for antiprotons, while leading neutral particle studies are directly applicable to predictions for baryon stopping in higher energy nucleus-nucleus collisions at RHIC.

As part of the PHENIX collaboration, we are now studying collisions of heavy nuclei in an energy regime where we have strong theoretical evidence that a QGP will be created. Detecting the presence of the QGP will require the correlation of many observables, since there is no one unambiguous signal for QGP formation. PHENIX is well suited for the study of processes that probe the QGP as directly as possible, via a combination of leptonic, electromagnetic and hadronic probes. Over the past several years I have been heavily involved in the design and construction on the Level-1 trigger for PHENIX, which has been essential for the experiment to make an online selection of interesting events for further study and allow PHENIX to collect high statistics samples of very rare processes. The culmination of this work has been the development of the Muon Identifier Local Level-1 (MuID LL1) trigger system. The requirements for this trigger system are extreme – it must be able to process data from the detector at a rate of $\sim 74\text{Gbit/s}$ while limiting the overall Level-1 accept rate to 12.5 kHz. These requirements dictated that we embrace cutting-edge technology throughout the design. Over the past two years I have developed the conceptual and engineering designs and prototyped the hardware for the MuID LL1 system, and the MuID

¹ Phys. Rev. Lett. 79, 3351 and Phys. Rev. C 59, 2699

LL1 system will be a key component of the PHENIX physics program for the upcoming RHIC Run-3.

My physics interests at RHIC energies center around the study of hard scattering and jet formation in these collisions. At RHIC energies in hadron-hadron collisions events are observed corresponding to large momentum transfer scattering between partons (quarks or gluons) in the incident hadrons. These scattered partons are forced to “dress” themselves into color singlet hadrons by QCD confinement and what we observe is a highly collimated “jet” of particles in the final state. Estimates for RHIC suggest that a substantial fraction of the energy transfer in the collision could be due to hard scattering in the early stage of the collision. However, in a nucleus-nucleus collision a scattered parton must traverse a dense region of nuclear matter before it can be observed as a jet or a high- p_T hadron in the experiment. Predictions for energy loss of a leading parton in confined and deconfined environments suggest that the number of jet events at RHIC may be reduced substantially for a QGP, since the parton will lose energy rapidly in traversing a plasma. Therefore, a systematic study of high- p_T particle production in nucleus-nucleus collisions at RHIC over a variety of target and energy combinations may allow us to identify the transition to a deconfined state (by a dramatic decrease in the jet production cross section) as well as indirectly measure the density of nuclear matter in both the confined and deconfined states.

Preliminary studies using data from the first year of RHIC running do seem to indicate that there is a suppression of hadrons with large transverse momenta in central (“head-on”) collisions of Au nuclei at a center of mass energy of 130 GeV /nucleon², and I was a member of the PHENIX Internal Review Committee for this important paper. This suppression is apparent both in the comparison with data from nucleon-nucleon collisions scaled by the number of expected binary collisions in Au+Au, as well as in the comparison of central to peripheral Au+Au collisions. This new data is very suggestive of exactly the effect we are looking for, but there are several known nuclear effects in the production of high transverse momentum particles (nuclear shadowing of the parton distribution functions and the Cronin effect) that are not well understood. In order to extract quantitative information from the Au+Au data, additional data from p+p and light-ion collisions are required.

Correlations between particles have been used to study heavy ion collisions in the hope that they can be used to distinguish between the anisotropic distribution in momentum space of particles produced in the exploding “fireball” and anisotropies at high momentum due to the production of particles in jets. First results from PHENIX on the measured anisotropies suggest that at high momentum the anisotropy in central collisions does not scale with the initial overlap of the two nuclei³. (I served as chairman of the PHENIX Internal Review Committee for this paper.)

During the RHIC Year-2 physics run the collider operated at full energy of 200 GeV/nucleon and the luminosity of the machine was significantly higher than during the previous year. The PHENIX collaboration collected high-statistics samples of Au+Au and p+p collisions, providing a complete set of data that can be used to further our understanding of the interesting effects seen in the first year’s data. I contributed to this effort through the

² Phys Rev. Lett. 88, 22301 (2002)

³ nucl-ex/0204005, submitted to Phys. Rev. Lett.

development of both hardware (Level-1) and software (Level-2) triggers for the PHENIX experiment that will enable to collection of high statistics samples of rare events (high- p_T hadrons, J/Ψ decays, etc.) In particular, I started the effort to develop a high- p_T charged particle Level-2 trigger that developed into a collaborative effort with my student, Paul Constantin, as well as Tom Hemmick and Jiangyong Jia of Stony Brook. This Level-2 trigger allowed the experiment to collect high- p_T charged particles out to ~ 15 GeV/c in transverse momentum, greatly expanding the momentum range that can be used for studying jet suppression in Year-2 data.

I have been also involved in data reconstruction and continue to work on development of an integrated momentum reconstruction package. This software uses detector hit information and knowledge of the inhomogeneous magnetic field in the PHENIX spectrometer to determine the momenta of particles detected in PHENIX using a Kalman filter method. Currently, the momentum of charged tracks in the PHENIX apparatus is determined using only the particle track in the central drift chamber. I have shown that by combining all detectors hits in a rigorous way, and using the full magnetic field map, the momentum resolution of the apparatus can be improved by a factor of three at a momentum of 20 GeV/c. In addition, improved determination of the track residuals and a statistically proper χ^2 for the tracks are also provided by this process. This method will enhance the ability of PHENIX to measure charged particles at high p_T and I am working to incorporate the software into the PHENIX reconstruction chain.

At the present time I am preparing for the third run of the RHIC collider, during which time the PHENIX experiment will collect data on d+A collisions. These important baseline measurements will be critical to interpreting the heavy-ion data that we have already collected, as well as future measurement. With a wealth of exciting data coming from RHIC over the next several years, this promises to be a very exciting time in experimental heavy ion physics. New data will permit us to explore the high temperature, low density phase of QCD in ways that were never before been possible and in a regime where connections can be made to theoretical predictions. This will allow substantial progress in our understanding of fundamental QCD over the next decade.

PROFESSIONAL ACTIVITIES

SUMMARY OF PAPERS AND PUBLICATIONS

(See attached lists.)

Date	Refereed Pubs. in Print	Books/ Chapters	Invited Papers/Talks	Contributed Papers	Other
to 31 Dec 97	4		22	28	1
1998	4		6	7	
1999	3		9	19	
2000	2		6	8	1
2001	3		5	5	3
2002 (as of 8/02)	11 + 1 submitted + 5 in prep.		5 + 1 in prep.	1 + 2 in prep.	3

CITATIONS

(Citations are taken from the Spire database)

1998	4 citations + 1 self-citations + 4 e-print citation
1999	13 citations + 18 self-citations + 13 e-print citations
2000	15 citations + 9 self-citations + 2 e-print citations
2001	26 citations + 14 self-citations + 39 e-print citations
2002 (as of 8/02)	83 citations + 49 self-citations + 120 e-print citations

GRANTS

1997-1999	Iowa State University Startup, \$120,000.
1997-2000	Investigator on DOE grant DE-FG02-92ER40692 (P.I. Dr. John Hill), "Relativistic Heavy Ion Collisions," \$981,000.
2000-2002	Co-P.I. on DOE grant DE-FG02-92ER40692 (P.I. Dr. John Hill), "Relativistic Heavy Ion Collisions," \$905,000.
2002	ISU Foreign Travel Grant, \$849.

EXTERNAL FUNDING

1999	Riken GL1-1P Trigger Board (Hill, Wohn, Lajoie), Riken-BNL - \$45,000
2000	MuID LL1 Trigger Prototype (Lajoie, Hill), PHENIX/BNL - \$110,000
2001	NTC/T0/ZDC Trigger Design (Lajoie, Hill), PHENIX/BNL - \$20,000
2002	Engineering Design of MuID LL1 Firmware (Lajoie, Hill), PHENIX/BNL - \$20,000
2002	MuID LL1 Logic Development and Implementation of GL1, GL1-1P Logic Revisions (Lajoie, Hill), PHENIX/BNL - \$20,000

INVITED TALKS

1. "Creating New Forms of Matter at RHIC," Gustavus Adolphus College, Saint Peter, Minnesota, November 2002
2. "Recent Results from PHENIX," XVI International Conference on Particles and Nuclei (PaNic), Osaka, Japan, October 2002
3. "Hard Scattering at RHIC: Where We've Been, Where We're Going," XXXII International Symposium on Multiparticle Dynamics, Alushta, Ukraine, September 2002
4. "First Results from PHENIX, Part II", Conference on Accelerator Applications in Research and Industry, Denton, November 2000.
5. "First results from PHENIX," Strangeness 2000 Conference, Berkeley, July 2000
6. "Strangeness @ RHIC: The PHENIX Perspective," Strangeness 2000 Conference, Berkeley, July 2000
7. "A Review of Physics Results from the AGS," Intersections Between Particle and Nuclear Physics, Quebec City, May 2000
8. "Antiproton Production in p+A and A+A collisions", Berkeley pA workshop, LBNL, February 2000.
9. "Exploring the Nature of Matter at RHIC," St. Olaf's College, Northfield, Minnesota, November 1999
10. "The PHENIX Level-1 Trigger System," IEEE Real Time '99, New Mexico, June 1999.
11. "The PHENIX Level-1 Trigger," IEEE Nuclear Science Symposium (NSS), Toronto, Canada, November 1998.
12. "Heavy Ion Studies with BNL-E864", Wayne State University, Detroit, MI, April 1998
13. "Baby Pictures of the Universe: Exploring the Nature of Matter at RHIC," Grinnell College, Grinnell, IA, March 1998
14. "Non-Strange and Strange Anti-Baryons in Au+Pb Collisions at 11.5 A GeV/c," CIPANP97, Big Sky, MT, May 1997.
15. "Non-Strange and Strange Anti-Baryons in Au+Pb Collisions at 11.5 A GeV/c," Iowa State University, Ames, IA, March 1997
16. "Antiproton Production in 11.5 A GeV/c Au+Pb Nucleus Collisions," HIPAGS 96, Wayne State Univ., Detroit, August 1996.

17. "Cross Sections for K- and Antiproton Production in 11.6 GeV/c per Nucleon Au+Pb Collisions," Strangeness 96, Budapest, Hungary, May 1996.

INVITED TALKS PUBLISHED IN CONFERENCE PROCEEDINGS:

1. S. Mioduzewski for the PHENIX Collaboration, "High P_T Measurements from PHENIX", Quark Matter 2002, Nantes, France, July 2002
2. J. Nagle for the PHENIX Collaboration, "Electromagnetic Probes of Ultra-Relativistic Heavy-Ion Collisions", Quark Matter 2002, Nantes, France, July 2002
3. T. Chujo for the PHENIX Collaboration, "Results of Particle Yields from the PHENIX Experiment at RHIC", Quark Matter 2002, Nantes, France, July 2002
4. Bill Zajc for the PHENIX Collaboration, "Results from PHENIX", Quark Matter 2001, Stony Brook, NY, January 2001
5. J. Velkovska for the PHENIX Collaboration, " P_T Spectra of Identified Hadrons Measured With the PHENIX Experiment at RHIC", Quark Matter 2001, Stony Brook, NY, January 2001
6. F. Messer for the PHENIX Collaboration, "Spectra and Angular Correlation of High Momentum Charged Particles in PHENIX", Quark Matter 2001, Stony Brook, NY, January 2001
7. Y. Akiba for the PHENIX Collaboration, "Electron Measurements at RHIC", Quark Matter 2001, Stony Brook, NY, January 2001
8. A Tai et al., "Leading Baryon and Antiproton Measurements in p+A Collisions at AGS Energies," Quark Matter 2001, Stony Brook, NY, January 2001
9. Achim Franz for the PHENIX collaboration, "First Results from PHENIX, Part I", Conference on Accelerator Applications in Research and Industry, Denton, November 2000
10. N. K. George et al., "Light Nuclei Measurements from E864," 15th Winter Workshop on Nuclear Dynamics, Park City, UT, February 1999.
11. S.V. Greene et al., "Day-1 Physics with PHENIX: The RHIC Era Begins," APS Centennial Meeting Heavy-Ion Mini-Symposium, Atlanta, April 1999.
12. J. L. Nagle et al., "Measurement of Exotic and Novel Composite Particle and Antiparticle States in E864 at BNL-AGS," Quark Matter 99, Torino, Italy, May 1999.
13. Ken Read, for the PHENIX Collaboration, "The PHENIX Experiment", Proceedings of Fifteenth Winter Workshop on Nuclear Dynamics, Park City, Utah, January 9-16, 1999,

Kluwer Academic Press, New York, 1999

14. J. C. Hill et al., "Search for Strange Quark Matter," Hadron 99, Beijing, China, August 1999.
15. C. A. Pruneau et al., "New Results from E864, Rare Objects Production at the AGS," RHIC-AGS User's Meeting, Upton, NY, July 1999.
16. Z. Xu et al., "Light (Anti-) Nuclei Production in E864," International Symposium on Multiparticle Dynamics, Providence, August 1999.
17. H. Huang et al., "Searches for Strange Quark Matter in Nucleus-Nucleus Collisions," International Nuclear Physics Conference (INPC98), Paris, France, August 1998.
18. G. Van Buren et al., "Negatively-Charged Strangelet Search Using the E864 Spectrometer at the AGS," Strangeness in Quark Matter, Padova, Italy, July 1998.
19. D.P. Morrison et al., "The PHENIX Experiment at RHIC," Quark Matter '97, Tsukuba, Japan, December 1997
20. N. Saito et al., "Spin Physics with the PHENIX Detector System," Quark Matter '97, Tsukuba, Japan, December 1997
21. C.A. Pruneau et al., "Recent Results from Experiment 864," Quark Matter 97, Tsukuba, Japan, December 1997.
22. K.N. Barish et al., "Strangelet Searches in High Energy Heavy Ion Collisions," Hyperon 97, Upton, NY, October 1997.
23. C.A. Pruneau et al., "Search for Strange Quark Matter with AGS E864," Hadron 97, Upton, NY, August 1997.
24. H. Huang et al., "Searches for Strangelets at the BNL-AGS with the E864 Spectrometer," International Conference on Physics Since Parity Symmetry Breaking, Nanjing, China, August 1997.
25. J.C. Hill et al., "Search for Strange Quark Matter with AGS E864," CIPANP97, Big Sky, MT, May 1997.
26. K.N. Barish et al., "Search for Strange Quark Matter with the BNL-E864 Spectrometer," Strangeness 97, Santorini, Greece, March 1997.
27. J.L. Nagle et al., "Antiproton Production and Antideuteron Limits from Experiment E864," Strangeness 97, Santorini, Greece, March 1997.
28. H. Huang et al., "Recent Results on Strangelet Searches from the E864 Spectrometer at the BNL-AGS," BAPS 41, 1251 (1996). (Cambridge)

29. S.V. Greene et al., "A Search for Strange Quark Matter and Coalescence Studies from Brookhaven Experiment 864," 212th ACS National Meeting, Orlando, August 1996.
30. J.K. Pope et al., "Production of Light Isotopes in Central Au+Pb Collisions," HIPAGS 96, Wayne State Univ., Detroit, August 1996.
31. K.N. Barish et al., "Search for Charged Strange Quark Matter with the BNL-E864 Detector," HIPAGS 96, Wayne State Univ., Detroit, August 1996.
32. J.D. Reid et al., "Status of the E864 Search for Strangelets and Novel Forms of Matter," HIPAGS 96, Wayne State Univ., Detroit, August 1996.
33. C.A. Pruneau et al., "The E864 Lead-Scintillating Fiber Hadronic Calorimeter," VI International Conference on Calorimetry in High-Energy Physics, Frascati, Italy, June 1996.
34. F.S. Rotondo et al., "Strangelets, Antimatter, and Coalescence: First Results from BNL AGS E864," Quark Matter 96, Heidelberg, Germany, June 1996.
35. K.N. Barish et al., "First Search for Charged Strangelets with the E864 Spectrometer," Strangeness 96, Budapest, Hungary, May 1996.
36. C.A. Pruneau et al., "Neutral Particle Measurements and Searches with the E864 Spectrometer," 12th Winter Workshop on Nuclear Dynamics, Snowbird, Utah, February 1996.

CONTRIBUTED PAPERS

1. J. Lajoie, "The PHENIX Muon Identifier Local Level-1 Trigger System," IEEE Nuclear Science Symposium, November 2002
2. J. Lajoie, "Application of the Kalman Fit to Charged Particle Tracking in PHENIX", to be presented at the fall meeting of the Nuclear Physics Division of the APS, East Lansing, Michigan, October 2002
3. J. Lajoie, "PHENIX Level-1 Triggers for Run-3", presented at the Spring meeting of the Nuclear Physics Division of the APS, Albuquerque, New Mexico, April 2002
4. J. Lajoie et. al., "The PHENIX High Transverse Momentum Charged Particle Level-2 Trigger", Joint Meeting of the Nuclear Physics Divisions of the APS and JPS, Wailea, Maui, Hawaii, October 2001
5. J. Lajoie et. al., "The PHENIX Muon Identifier Local Level-1 Trigger System", Quark Matter 2001, Stony Brook, NY, January 2001
6. Athanasios Petridis, Fred Wohn, John Lajoie, John Hill, Lynn Wood, "Centrality Trigger Algorithms for the PHENIX Detector", DNP99, October 20-23, 1999, Pacific Grove, CA

7. J.G. Lajoie et al., "Strange (and Non-Strange) Antibaryons in a Baryon World," Quark Matter 97, Tsukuba, Japan, December 1997.
8. J.G. Lajoie et al., "Measurements of Antiproton and Negative Kaon Production in Central 11.6 GeV/c Au+Pb Collisions," Quark Matter 96, Heidelberg, Germany, June 1996.
9. K.N. Barish et al., "The E864 High Rate Data Acquisition System," BAPS 40, 920 (1995). (Washington)
10. J.G. Lajoie, "The BNL E864 Data Acquisition System, A High Speed, Parallel DA System for Particle Physics Experiments," IEEE RT-95, East Lansing (1995)
11. R. Bellweid et al., "GEANT Simulation of a Lead/Scintillating Fiber Calorimeter: A Comparison of the GEANT Hadronic Packages with Data", III International Conference on Calorimetry in High Energy Physics, September 1992

CONTRIBUTED PAPERS BY COLLABORATIONS

1. N. Ajittanand for the PHENIX Collaboration, "Measurements of Charged Particle Azimuthal Correlations at High p_T in PHENIX," Quark Matter 2002, Nantes, France, July 2002
2. R. Averbeck for the PHENIX Collaboration, "Single Inclusive Leptons from Heavy Flavor Decays at RHIC," Quark Matter 2002, Nantes, France, July 2002
3. S. Basilevsky for the PHENIX Collaboration, "Charged Particle Multiplicity and Transverse Energy Measurements in Au+Au Collisions in PHENIX at RHIC," Quark Matter 2002, Nantes, France, July 2002
4. J. Burward-Hoy for the PHENIX Collaboration, "Source Parameters from Identified Hadron Spectra and HBT Radii for Au+Au Collisions at $\sqrt{s_{NN}} = 200$ GeV in PHENIX," Quark Matter 2002, Nantes, France, July 2002
5. M. Chiu for the PHENIX Collaboration, "Measuring Jets at RHIC," Quark Matter 2002, Nantes, France, July 2002
6. Akitomo Enokizono for the PHENIX Collaboration, "Two-Particle Correlations Measured by PHENIX at $\sqrt{s_{NN}} = 200$ GeV in Au+Au Collisions," Quark Matter 2002, Nantes, France, July 2002
7. D. d'Enterria for the PHENIX Collaboration, "High p_T Neutral Pion Suppression in Au+Au Collisions," Quark Matter 2002, Nantes, France, July 2002
8. ShinIchi Esumi for the PHENIX Collaboration, "Identified Kaon and Proton Azimuthal Anisotropy with PHENIX TOF and EMCal," Quark Matter 2002, Nantes, France, July 2002

9. T. Frawley for the PHENIX Collaboration, “ $J/\Psi \rightarrow e^+e^-$ and $J/\Psi \rightarrow \mu^+\mu^-$ Measurements in Au+Au and p+p Collisions at $\sqrt{s_{NN}}=200$ GeV,” Quark Matter 2002, Nantes, France, July 2002
10. J. Jia for the PHENIX Collaboration, “High Momentum Charged Particle Production in Au+Au Collisions at RHIC,” Quark Matter 2002, Nantes, France, July 2002
11. D. Mukhopadhyay for the PHENIX Collaboration, “Phi Meson Production in Au+Au Collisions at $\sqrt{s_{NN}}=200$ GeV,” Quark Matter 2002, Nantes, France, July 2002
12. J. Nystrand for the PHENIX Collaboration, “Charge Fluctuations at Mid-Rapidity in Au+Au Collisions at RHIC,” Quark Matter 2002, Nantes, France, July 2002
13. K. Reygers for the PHENIX Collaboration, “Results on Photon Production in Au+Au Collisions at RHIC,” Quark Matter 2002, Nantes, France, July 2002
14. H. Torii for the PHENIX Collaboration, “Measurement of the Neutral Pion Cross Section in Proton-Proton Collisions at $\sqrt{s_{NN}}=200$ GeV with PHENIX,” Quark Matter 2002, Nantes, France, July 2002
15. M. Chiu for the PHENIX Collaboration, “The PHENIX Data Acquisition System”, Quark Matter 2001, Stony Brook, NY, January 2001
16. Y. Mao for the PHENIX Collaboration, “The PHENIX Muon Identifier Subsystem”, Quark Matter 2001, Stony Brook, NY, January 2001
17. M. Purshke for the PHENIX Collaboration, “The PHENIX Trigger and Data Acquisition System”, Quark Matter 2001, Stony Brook, NY, January 2001
18. B. Fadem for the E941 Collaboration, “Antiproton Production Using 12 and 18 GeV/c Protons on Targets of Pb and Be at the BNL-AGS,” BAPS 45, 47 (2000), (Long Beach).
19. Rose for the E941 Collaboration, “Leading Neutron Production in p+A Collisions at the Brookhaven AGS,” BAPS 45, 119 (2000), (Long Beach).
20. Rose for the E941 Collaboration, “Leading Particle Production in p+A Interactions at 12 and 18 GeV/c,” BAPS 45, 60 (2000), (Williamsburg).
21. A. Tai for the E941 Collaboration, “A Study of Leading Baryon Production in 18 GeV/c p+A Collisions at the AGS,” BAPS 45, 60 (2000), (Williamsburg).
22. Fadem for the E941 Collaboration, “Antiproton Yields in p+A Collisions at the BNL-AGS,” BAPS 45, 60 (2000), (Williamsburg).
23. T. Miller for the E864 Collaboration, “Progress on Lambda and Sigma Minus Hyperon Production at AGS E864,” BAPS 45, 61 (2000), (Williamsburg).

24. Fadem for the E941 Collaboration, "Antiproton Yields in p+A Collisions at the BNL-AGS," Quark Matter 2001, Stony Brook, NY, January 2001.
25. A Rose for the E941 Collaboration, "Leading Baryons in p+A Interactions at 12 and 18 GeV/c," Quark Matter 2001, Stony Brook, NY, January 2001
26. S. Batsouli for the E864 Collaboration, "Study of Hypernuclei Production in 11.5 A GeV/c Heavy Ion Collisions," BAPS 44, 53 (1999), (Asilomar).
27. B. Fadem for the E941 Collaboration, "Antiproton Production Using a 12 GeV/c Proton Beam at the BNL-AGS," BAPS 44, 53 (1999), (Asimolar).
28. A. Rose for the E941 Collaboration, "Kaon Production in Brookhaven Experiment E941," BAPS 44, 73 (1999), (Asilomar).
29. H. Jaradat for the E864 Collaboration, "Search for the Neutral Strangelets at the BNL-AGS Using 11.5 A GeV/c Au+Pt Collisions," BAPS 44, 75 (1999), (Asilomar).
30. G. Van Buren for the E864 Collaboration, "Antideuteron Yield and Coalescence Implications at the AGS," Quark Matter 99, Torino, Italy, May 1999.
31. E. Finch for the E864 Collaboration, "Production of Stable and Unstable Light Nuclei and Hyperfragments in 11.5 A GeV/c Au-Pb Collisions," Quark Matter 99, Torino, Italy, May 1999.
32. B. Fadem for the E864 Collaboration, "Antiproton Production in p+A Collisions from E941 at BNL-AGS," Quark Matter 99, Torino, Italy, May 1999.
33. P. Fachni for the E864 Collaboration, "Search for Desoriented Chiral Condensates in 11.6 A GeV Au+Pb Collisions," BAPS 44, 498 (1999), (Atlanta).
34. A. Rose for the E864 Collaboration, "Systematic Comparisons of RQMD to p+A Data," BAPS 44, 265 (1999), (Atlanta).
35. A. Tai for the E941 Collaboration, "Study of Neutral Leading Particles in p+A Collisions at the AGS," BAPS 44, 264 (1999) (Atlanta).
36. E. Finch for the E864 Collaboration, "Neutron Multiplicities in 11.5 GeV/c Au+Pb Collisions," BAPS 44, 1639 (1999), (Atlanta).
37. S. Batsouli for the E864 Collaboration, "Study of Hypernuclei Production in 11.6A GeV/c Au-Pt Heavy Ion Collisions," BAPS 44, 1639 (1999), (Atlanta).
38. N. George for the E864 Collaboration, "Light Nuclei Production in 11.5 A GeV/c Au+Pb Collisions," BAPS 44, 1639 (1999), (Atlanta).

39. Z. Xu for the E864 Collaboration, "Search for Strange Quark Matter with E864 at the AGS," BAPS 44, 1418 (1999), (Atlanta).
40. T. Miller for the E864 Collaboration, "A Search for the H-Dibaryon at BNL AGS E864," BAPS 44, 1418 (1999), (Atlanta).
41. R. Majka for the E864 Collaboration, "Measurement of the Production of the Strong Unstable Nuclei He-5 and Li-5 in Central 11.6 A GeV/c Au-Pt Heavy Ion Collisions," BAPS 44, 1418 (1999), (Atlanta).
42. B. Fadem for the E941 Collaboration, "Antiproton Production in pA Collisions from E941 at the AGS," BAPS 44, 1309 (1999) (Atlanta).
43. G. Van Buren for the E864 Collaboration, "Antideuteron Yield in 11.5 A GeV/c Au+Pt Collisions," BAPS 44, 1309 (1999), (Atlanta).
44. R. Hoversten for the E864 Collaboration, "Negative Strangelet Search with E864 at the AGS," BAPS 43, 1565 (1998).
45. M. Munhoz for the E864 Collaboration, "Search for Neutral Strangelets in Relativistic Heavy Ion Collisions with E864," Strangeness in Quark Matter, Padova, Italy, July 1998.
46. G. Van Buren for the E864 Collaboration, "Negatively-charged Strangelet Search Using the E864 Spectrometer at the AGS," Strangeness in Quark Matter, Padova, Italy, July 1998.
47. Z. Xu for the E864 Collaboration, "New Results in Search for Strangelets with E864," Strangeness in Quark Matter, Padova, Italy, July 1998.
48. N. K. George for the E864 Collaboration, "Centrality Dependence of Light Nuclei Production in 11.6 A GeV/c Au + Pb Collisions," APS Columbus Meeting, April 1998.
49. E. Finch for the E864 Collaboration, "Neutron Production in Relativistic Heavy-Ion Collisions," APS Columbus Meeting, April 1998.
50. Z. Xu for the E864 Collaboration, "New Results in Search for Strangelets with E864," APS Columbus Meeting, April 1998.
51. J.L. Nagle for the E864 Collaboration, "Search for Strange Quark Matter in Experiment E864," Quark Matter 97, Tsukuba, Japan, December 1997.
52. J.K. Pope for the E864 Collaboration, "Proton and A<6 Light-Nucleus Production in Au+Pb Collisions, Results and Model Comparisons," Quark Matter 97, Tsukuba, Japan, December 1997.
53. M. Munhoz for the E864 Collaboration, "Search for Neutral Strangelets at the E864 Experiment," BAPS 42, 1645 (1997). (Whistler)

54. T. Miller for the E864 Collaboration, "Study of Superevent Correlations at AGS Experiment E864," BAPS 42, 1645 (1997). (Whistler)
55. P. Fachini for the E864 Collaboration, "The Study of Particle Production Fluctations in Relativistic Au+Pb Collisions," BAPS 42, 1644 (1997). (Whistler)
56. N.K. George for the E864 Collaboration, "Light Nuclei Production in 11.6 A GeV/c Central Au+Pb Collisions," BAPS 42, 1644 (1997). (Whistler)
57. E. Finch for the E864 Collaboration, "Neutron Production in Relativistic Heavy-Ion Collisions," BAPS 42, 1644 (1997), (Whistler)
58. M. Munhoz for the E864 Collaboration, "Performance of the E864 Calorimeter," BAPS 41, 1228 (1996). (Cambridge)
59. P. Fachini for the E864 Collaboration, "Study of the Electromagnetic Energy Production in Relativistic Au+Pb Collisions," BAPS 41, 1273 (1996). (Cambridge)
60. R. Davies for the E864 Collaboration, "A Search for Neutral Strangelets in Au+Pb Collisions with BNL AGS Experiment E864," BAPS 41, 1273 (1996). (Cambridge)
61. N.K. George for the E864 Collaboration, "Kaon Production in 11.6 A GeV/c Central Au+Pb Collisions," BAPS 41, 1273 (1996). (Cambridge)
62. J.D. Reid for the E864 Collaboration, "Antiproton Production in Collisions of Au at 11.6 GeV/c per Nucleon with a Pb Target at Brookhaven Experiment 864," BAPS 41, 1273 (1996). (Cambridge)
63. S.D. Coe for the E864 Collaboration, "Search for Positively Charged Strangelets in Relativistic Au+Pb Collisions," BAPS 41, 1273 (1996). (Cambridge)
64. S.J. Bennett for the E864 Collaboration, "Composite Particle Production in 11.6 GeV/c Au-Pb Collisions," Quark Matter 96, Heidelberg, Germany, June 1996.
65. K.N. Barish for the E864 Collaboration., "Search for Strangelets in Central 11.6 GeV/c Au-Pb Collisions," Quark Matter 96, Heidelberg, Germany, June 1996.
66. R. Davies for the E864 Collaboration, "A Search for the Quark Alpha with the E864 Detector," BAPS 41, 938 (1996). (Indianapolis)
67. K. Zhao for the E864 Collaboration, "A Preliminary Search for Neutral Strangelets," BAPS 41, 923 (1996). (Indianapolis)
68. J.K. Pope for the E864 Collaboration, "Production of Light Nuclei in Central Au+Pb Collisions," BAPS 41, 868 (1996). (Indianapolis)

69. W.S. Toothacker for the E864 Collaboration, "AGS Experiment E864, A Search for Strangelets and Rare Composite Objects in Heavy Ion Collisions," BAPS 40, 1610 (1995). (Bloomington)
70. C.A. Pruneau for the E864 Collaboration, "Study of Neutron Spectra from Au+Au at 11A GeV/c with the E864 Calorimeter," BAPS 40, 921 (1995). (Washington)
71. Rimai for the E864 Collaboration, "A Late Energy Trigger for E864 at the BNL-AGS," BAPS 40, 920 (1995). (Washington)
72. W.S. Toothacker for the E864 Collaboration, "Charged Particle Tracking with Straw Tube Chambers in the E864 Spectrometer," BAPS 40, 920 (1995). (Washington)
73. P. Haridas for the E864 Collaboration, "A 10 MHz Beam and Multiplicity Counter System for Experiment E864," BAPS 40, 920 (1995). (Washington)

WEB REPORTS

1. J. Lajoie, "Kalman Filter for PHENIX Tracks,"
https://www.phenix.bnl.gov:8080/phenix/WWW/p/draft/lajoie/analysis_mtg/Aug_09_02/Kalman_Analysis_Aug9.pdf, June 2002
2. J. Lajoie, "Use of the Kalman Filter in PHENIX Charged Particle Tracking",
https://www.phenix.bnl.gov:8080/phenix/WWW/p/draft/lajoie/analysis_mtg/Jun_04_02/Kalman-4Jun02.pdf, June 2002
3. J. Lajoie, "PHENIX Level-1 Trigger Run-3 Preparation Review,"
https://www.phenix.bnl.gov:8080/phenix/WWW/p/draft/lajoie/LL1_Review_17May02/LL1RevMay02.pdf, May 2002
4. J. Lajoie et. al., "MuID LL1 Design Review,"
https://www.phenix.bnl.gov:8080/phenix/WWW/p/draft/lajoie/Level-1_Trigger_Review_Dec_01.pdf, December 2001
5. J. Lajoie and Paul Constantin, "The PHENIX PC/TEC-Based Charged High-Pt Level-2 Trigger," https://www.phenix.bnl.gov:8080/phenix/WWW/p/draft/lajoie/Level-2_PC_highpt_Note/level-2_ana.pdf, July 2001
6. J. Lajoie, "GL1-1P Design Review",
https://www.phenix.bnl.gov/phenix/WWW/p/draft/lajoie/GL1-1P_Design_Review_files, March 2001
7. J. Lajoie et al., "Design Specifications for the PHENIX Muon Identifier Local Level-1 Trigger,"
https://www.phenix.bnl.gov/phenix/WWW/p/draft/lajoie/muidLL1/muid_design_spec.pdf, October 2000

PH.D. THESIS

J. Lajoie, "Antiproton Production in Relativistic Au+Pb Collisions," Yale University, 211 pp (1996)

REFEREED PUBLICATIONS

1. T. A. Armstrong et al., "Production of ${}^3_{\Lambda}H$ and ${}^4_{\Lambda}H$ in Central 11.5 A GeV/c Au+Pt Heavy-Ion Collisions", manuscript in preparation, to be submitted to Phys. Rev. C
2. K. Barish et. al., "Antiproton Production in p+A Collisions", manuscript in preparation, to be submitted to Phys. Rev. C
3. K. Barish et. al., "Measurement of Leading Proton, Neutron, Λ and Δ^{++} in p+Pb collisions at 19 GeV/c", manuscript in preparation, to be submitted to Phys. Rev. Lett.
4. K. Adcox et al., "Systematics of Identified Charged Hadron Ratios in $\sqrt{s_{NN}} = 130$ GeV Au+Au Collisions," manuscript in preparation
5. K. Adcox et al., "Single Inclusive Hadron Spectra from $\sqrt{s_{NN}} = 130$ GeV Au+Au Collisions at RHIC," manuscript in preparation
6. K. Adcox et al., "Centrality Dependence of the High p_T Charged Hadron Suppression in Au+Au Collisions at $\sqrt{s_{NN}} = 130$ GeV," submitted to Phys. Lett. B
7. K. Adcox et al., "Flow Measurement via Two-Particle Azimuthal Correlations in Au+Au Collisions at $\sqrt{s_{NN}} = 130$ GeV," Phys Rev. Lett. 89, 212301 (2002)
8. K. Adcox et al., "Net Charge Fluctuations in Au+Au Interactions at $\sqrt{s_{NN}} = 130$ GeV," Phys. Rev. Lett. 89, 082301 (2002)
9. K. Adcox et al., "Measurement of the Λ and $\bar{\Lambda}$ particles in Au+Au Collisions at $\sqrt{s_{NN}} = 130$ GeV," Phys. Rev. Lett. 89, 092302 (2002).
10. K. Adcox et al., "Event-by event fluctuations in Mean p_T and mean E_T in $\sqrt{s_{NN}} = 130$ GeV Au+Au Collisions", Phys. Rev. C66, 024901 (2002)
11. K. Adcox et al., "Measurement of Single Electrons and Implications for Charm Production in Au+Au Collisions at $\sqrt{s_{NN}} = 130$ GeV," Phys. Rev. Lett. 88, 192303 (2002)
12. J. T. Mitchell et al., "Event Reconstruction in the PHENIX Central Arm Spectrometers," Nucl. Instr. And Methods A 482 (2002) 491
13. K. Adcox et al., "Transverse-Mass Dependence of the Two-Pion Correlation for Au-Au Collisions at $\sqrt{s_{NN}} = 130$ GeV," Phys. Rev. Lett. 88, 192302 (2002)

14. K. Adcox et al., "Centrality Dependence of $\pi^{+/-}$, $K^{+/-}$, p and \bar{p} Production from $\sqrt{s}=130$ GeV Au+Au Collisions at RHIC," Phys. Rev. Lett. 88, 242301 (2002)
15. K. Adcox et al., "Suppression of Hadrons with Large Transverse Momentum in Central Au+Au collisions at $\sqrt{s_{NN}} = 130$ GeV," Phys Rev. Lett. 88 022301 (2002)
16. K. Barish et al., "A Study of Leading Baryon Production in p+A Collisions at Relativistic Energies," Phys. Rev. C65, 014904 (2002)
17. T. A. Armstrong et al., "Production of Particle Unstable Light Nuclei in 11.5A GeV/c Au+Pt Heavy-Ion Collisions," Phys. Rev. C65, 014906 (2002)
18. K. Adcox et al., "Measurements of the mid-rapidity Transverse Energy Distribution from $\sqrt{s_{NN}}=130$ GeV Au + Au Collisions at RHIC," Phys. Rev. Lett. 87, 052301 (2001)
19. K. Adcox et al., "Centrality Dependence of Charged Particle Multiplicity in Au+Au Collisions at $\sqrt{s_{NN}}=130$ GeV," Phys Rev. Lett. 86, 3500 (2001)
20. T. A. Armstrong et al., "Search for Strange Quark Matter Produced in Relativistic Heavy Ion Reactions," Phys. Rev. C 6305 (2001)
21. T. A. Armstrong et al., "Antideuteron Yields at the AGS and Coalescence Implications," Phys. Rev. Lett. 85, 2685 (2000).
22. T. A. Armstrong et al., "Measurements of Light Nuclei Production in 11.5A GeV/c Au+Pb Heavy-Ion Collisions," Phys. Rev. C 4908 (2000).
23. T. A. Armstrong et al., "Measurements of Neutrons in 11.5A GeV/c Au+Pb Heavy-Ion Collisions," Phys. Rev. C 60, 4903 (1999).
24. T. A. Armstrong et al., "Mass Dependence of Light-Nucleus Production in Ultra-relativistic Heavy-Ion Collisions," Phys. Rev. Lett. 83, 5431 (1999).
25. T. A. Armstrong et al., "A Spectrometer for Study of High Mass Objects in Relativistic Heavy Ion Reactions," Nucl. Instr. and Meth. A437, 222 (1999).
26. T. A. Armstrong et al., "Antiproton Production and Antideuteron Limits In Relativistic Heavy Ion Collisions," Phys. Rev. C59, 2699 (1999)
27. T. A. Armstrong et al., "Search for Neutral Strange Quark Matter in High Energy Heavy Ion Collisions," Phys. Rev. C59, R1829 (1999)
28. J. C. Hill et al., "A High Mass Trigger for the E864 Experiment at the AGS Accelerator," Nucl. Instr. Meth. A421, 431 (1999)

29. T. A. Armstrong et al., "The E864 Lead-Scintillating Fiber Hadronic Calorimeter," Nucl. Instr. Meth. A406, 227 (1998)
30. T. A. Armstrong et al., "Search for Charged Strange Quark Matter Produced in 11.5A GeV/c Au+Pb Collisions," Phys. Rev. Lett. 79, 3612 (1997)
31. T. A. Armstrong et al., "Antiproton Production in 11.5A GeV/c Au+Pb Collisions," Phys. Rev. Lett. 79, 3351 (1997)
32. T. A. Armstrong et al., "Search for Strange Quark Matter in High Energy Nuclear Reactions," Nucl. Phys. A625, 494 (1997)
33. T. A. Armstrong et al., "Strangelets, Antimatter and Coalescence: First Results from BNL E864," Nucl. Phys. A610, 297c (1996)