

# JEFFERY THOMAS MITCHELL

*Updated on 8/6/07.*

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## **CURRENT POSITION :**

Physicist, Brookhaven National Laboratory

February 1995 - present

## **EDUCATION**

- 1986-1992
  - Yale University, New Haven, CT  
Ph.D. December 1992
    - Dissertation titled "Forward Baryon Distributions in Relativistic Heavy Ion Collisions." My thesis advisor was B. Shiva Kumar.
  - M.S. May, 1988.
  - M. Phil. May, 1988.
- 1982-1986
  - Louisiana State University in Shreveport, Shreveport, LA.  
B.S.: May, 1986.

## **PREVIOUS WORK EXPERIENCE**

June, 1992 - Jan, 1995

- Postdoctoral Fellow  
Lawrence Berkeley Laboratory  
Projects: NA35 hadron data analysis, STAR TPC R&D, Microstrip Gas Chamber R&D, STAR event reconstruction software development.

Summer, 1985

- Summer Research Participant Oak Ridge Associated Universities  
Oak Ridge National Laboratory  
Advisor: Karl A. Erb  
Project: Redesign of the acceleration tubes in the Oak Ridge 25URC tandem accelerator.

## RESEARCH GOALS AND ACHIEVEMENTS

My primary research interest is in the field of Relativistic Heavy Ion Physics. Within that field, my research has focused upon the physics of Quark-Gluon Plasma formation, the physics of hot and dense nuclear matter, and the formation of exotic particles.

Most recently, my research efforts have been concentrated upon the analysis of the wealth of data taken by the PHENIX experiment at the Relativistic Heavy Ion Collider (RHIC). I have been the primary author on two PHENIX publications describing measurements of event-by-event fluctuations in the average transverse momentum and transverse energy in ultra-relativistic Au+Au collisions. The motivation for these studies was to search for evidence of critical behavior due to a phase transition from normal hadronic matter to a Quark-Gluon Plasma. My recent analyses of fluctuations in charged particle multiplicity and average transverse momentum reveal that a universal power law scaling behavior is observed as a function of the number of participating nucleons in the collision. This behavior may be an indication that the system has undergone a phase transition.

My current analysis projects include a comprehensive survey of the fluctuations of charged particle multiplicity and average transverse momentum. These studies are geared towards the study of critical behavior in RHIC collisions and will measure the correlation lengths and critical exponents of the collision systems. I am also analyzing charged particle correlations at low transverse momentum in order to study the evolution of jet production, HBT correlations, and medium-induced “volcano” effects from low to high transverse momentum. Comparisons of the low-pT correlations between A+A, d+A, and p+p collisions have shown dramatic differences between nuclear collisions and the baseline systems. Also, my studies show that the “Mach cone” effect persists at the lowest transverse momenta, which suggests that the effect is a property of the bulk medium.

I have conducted research at two other major relativistic heavy ion accelerator facilities: the BNL Alternating Gradient Synchrotron (AGS), and the CERN Super Proton Synchrotron (SPS). At the AGS on Experiment E814, I analyzed the extent of stopping and a search for pion-neutron bound states, or “pineuts”. I am currently analyzing data from AGS Experiment E896 in a search for the H particle in heavy ion collisions. At the SPS on Experiment NA35, I analyzed the extent of stopping at the higher collision energies and studied the evolution of baryon distributions in rapidity as a function of impact parameter.

Apart from the research interests listed above, I have interest in other technical topics. I apply these techniques to my analyses whenever possible. I am interested in the application of artificial intelligence techniques and pattern recognition techniques both in high energy physics and in practical applications. I am also interested in scientific visualization using Java applets with an eye towards public outreach and education of complicated topics. This interest has motivated me to develop several educational animations and interactive web pages for the BNL/BSA Online Classroom project. I have also developed an online event display for the PHENIX experiment.

## **TEACHING EXPERIENCE**

Yale University Undergraduate Courses ( Graduate Student Teaching Assistant )

- Spring 1992: Graduate Physics Laboratory - Nuclear Physics
- Fall 1991: Mathematical Physics
- Spring 1991: General Physics Graduate Courses
- Spring 1990: Graduate Physics Laboratory - Solid State Physics
- Fall 1989: Electrodynamics
- Spring 1989: Advanced Physics Laboratory
- Fall 1988: Computational Physics
- Fall 1986, 1987: General Physics Laboratory
- Spring 1988: Quantum Mechanics
- Spring 1987: General Physics Laboratory
- Spring 1986: Undergraduate Physics Tutor

I have given many presentations to high school students and the general public about heavy ion physics, the RHIC collider, and the PHENIX as a representative of the BNL Physics Department and PHENIX from 1997 to the present. I have been a lecturer for the BNL Summer Student Program for the past four years and have participated in many RHIC open houses to the public. I am a contributor to the BNL Online Classroom Project. I have created several educational RHIC animations and images that have appeared in many major newspapers and newscasts. I have always given education a high priority.

Mentored R. Armanderiz – PHENIX Graduate Student – August 2004 to August 2006

Supervised S. Burke – SUNY Stony Brook Summer Student Program – Summer 2001

Mentored D. Silvermyr - PHENIX Graduate Student - October, 1999 to October, 2000

Supervised M. Hoffman - BNL Summer Student Program - Summer 1996

Supervised W. Howe - ICSEE program - Summer 1994

## PROFESSIONAL MEMBERSHIP

- American Physical Society
- APS Division of Nuclear Physics

## Committee Membership

- December 2003 – July 2004: ISMD “Multiparticle Dynamics” Conference Local Organizing Committee.
- May 2003 – January 2007: BNL Association of Students and Post-docs Advisory Board
- May 2002 – May 2003: BNL Quality-of-Life Committee
- March 2002 – July 2004: PHENIX Global Physics Working Group Convenor
- January 2000 – October 2002: RHIC/AGS User's Executive Committee
- October 1999 - September 2000, October 2003 – September 2004: Chairman of the BNL Nuclear Physics Seminar Committee
- January 2000 – January 2001: Quark Matter 2001 Conference Local Organizing Committee and Program Committee

## Awards

- Recipient of the 2001 Brookhaven National Laboratory Sambamurti Award.

## LIST OF SCIENTIFIC PUBLICATIONS

### *Publications in refereed journals:*

Correlated production of p and pbar in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Lett. B649 (2007) 359.

System Size and Energy Dependence of Jet-Induced Hadron Pair Correlation Shapes in Cu+Cu and Au+Au at  $\sqrt{s_{NN}} = 200$  and 62.4 GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 232302.

J/Psi Production versus Transverse Momentum and Rapidity in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 232301.

J/Psi Production versus Transverse Momentum and Rapidity in p+p Collisions at  $\sqrt{s} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 232002.

Production of omega mesons at large transverse momenta in p+p and d+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV,

PHENIX Collaboration,  
Phys. Rev. C75 (2007) 051902(R).

Centrality Dependence of pi0 and eta Production at Large Transverse Momentum in  $\sqrt{s_{NN}} = 200$  GeV d+Au Collisions ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 172302.

Energy Loss and Flow of Heavy Quarks in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 172301.

Scaling Properties of Azimuthal Anisotropy in Au+Au and Cu+Cu Collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 162301.

Evidence for a Long-Range Component in the Pion Emission Source in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 132301.

High transverse momentum eta meson production in p+p, d+Au, and Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. C 75 (2007) 024909.

Measurement of Direct Photon Production in p+p Collisions at  $\sqrt{s} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 98 (2007) 012002.

Measurement of High-pT Single Electrons from Heavy-Flavor Decays in p+p Collisions at  $\sqrt{s} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 97 (2006) 252002.

Jet properties from dihadron correlations in p+p collisions at  $\sqrt{s} = 200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. D 74 (2006) 072002.

Nuclear effects on hadron production in d+Au collisions at  $\sqrt{s_{NN}}=200$  GeV revealed by comparison with p+p data ,

PHENIX Collaboration,  
Phys. Rev. C 74 (2006) 024904.

Dense-Medium Modifications to Jet-Induced Hadron Pair Distributions in Au+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 97 (2006) 052301.

Azimuthal Angle Correlations for Rapidity Separated Hadron Pairs in d+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 222301.

Common Suppression Pattern of Eta and Pi0 Mesons at High Transverse Momentum in Au+Au ,

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 202301.

Improved measurement of double helicity asymmetry in inclusive midrapidity pi0 production for polarized p+p collisions at  $\sqrt{s}=200$  GeV ,

PHENIX Collaboration,  
Phys. Rev. D 73 (2006) 091102(R).

Jet structure from dihadron correlations in d+Au collisions at  $\sqrt{s_{NN}}=200$  GeV Au+Au ,

PHENIX Collaboration,  
Phys. Rev. C 73 (2006) 054903.

Measurement of Identified Pi-0 and Inclusive Photon Second-Harmonic Parameter  $v_2$  and Implications for Direct Photon Production in  $\sqrt{s_{NN}}=200$  GeV Au+Au

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 032302.

Nuclear Modification of Electron Spectra and Implications for Heavy Quark Energy Loss in Au+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 032301.

Single Electrons and Heavy-Flavor Decays in p+p Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 032001.

J/Psi Production and Nuclear Effects for d+Au and p+p Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 96 (2006) 012304.

Measurement of Transverse Single-Spin Asymmetries for Midrapidity Production of Neutral Pions and Charged Hadrons in Polarized p+p Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 95 (2005) 202001.

Measurement of single electron event anisotropy in Au+Au collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. C72 (2005) 024901.

Production of Phi mesons at midrapidity in  $\sqrt{s_{NN}}=200$  GeV Au+Au collisions at relativistic energies

PHENIX Collaboration,  
Phys. Rev. C72 (2005) 014903.

Formation of dense partonic matter in relativistic nucleus-nucleus collisions at RHIC: Experimental evaluation by the PHENIX Collaboration

PHENIX Collaboration,  
Nucl. Phys. A757 (2005) 184.

Saturation of Azimuthal Anisotropy in Au+Au Collisions at  $\sqrt{s_{NN}}=62-200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 232302.

Centrality Dependence of Direct Photon Production in  $\sqrt{s_{NN}}=200$  GeV Au+Au Collisions

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 232301.

Jet structure of baryon excess in Au+Au collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 122302.

S. Adler, et al., Phys. Rev. C71 (2005) 051902(R).

Midrapidity direct-photon production in p+p collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. D71 (2005) 071102(R).

Deuteron and Antideuteron Production in Au+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 122302.

Systematic studies of the centrality and  $\sqrt{s_{NN}}$  dependence of the  $dE_t/d\eta$  and  $dN_{ch}/d\eta$  in heavy ion collisions at midrapidity

PHENIX Collaboration,  
Phys. Rev. C 71 (2005) 034908.

Nuclear Modification Factors for Hadrons at Forward and Backward Rapidities in Deuteron-Gold Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 082302.

Centrality Dependence of Charm Production from a Measurement of Single Electrons in Au+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 94 (2005) 082301.

Double Helicity Asymmetry in Inclusive Midrapidity  $\pi^0$  Production for Polarized p+p Collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 93 (2004) 202002.

Measurement of Nonrandom Event-by-Event Fluctuations of Average Transverse Momentum in  $\sqrt{s_{NN}} = 200$  GeV Au+Au and p+p

PHENIX Collaboration,  
Phys. Rev. Lett. 93 (2004) 092301.

Bose-Einstein Correlations of Charged Pion Pairs in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 93 (2004) 152302.

High-pT charged hadron suppression in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. C69 (2004) 034910.

Identified charged particle spectra and yields in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. C69 (2004) 034909.

Single identified hadron spectra from  $\sqrt{s_{NN}} = 130$  GeV Au+Au collisions

PHENIX Collaboration,  
Phys. Rev. C69 (2004) 024904.

J/Psi production in Au-Au collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. C69 (2004) 014901.

Midrapidity Neutral-Pion Production in Proton-Proton Collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 91 (2003) 241803.

Elliptic Flow of Identified Hadrons in Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 91 (2003) 182301.

Scaling Properties of Proton and Antiproton Production in  $\sqrt{s_{NN}} = 200$  GeV Au+Au Collisions

PHENIX Collaboration,  
Phys. Rev. Lett. 91 (2003) 172301.

PHENIX On-Line and Off-Line Computing

PHENIX Collaboration,  
Nucl. Instrum. Meth. A499 (2003) 593.

PHENIX Central Arm Tracking Detectors

PHENIX Collaboration,  
Nucl. Instrum. Meth. A499 (2003) 489.

PHENIX Detector Overview

PHENIX Collaboration,  
Nucl. Instrum. Meth. A499 (2003) 469.

Absence of Suppression in Particle Production at Large Transverse Momentum in  $\sqrt{s_{NN}} = 200$  GeV d+Au Collisions

PHENIX Collaboration,  
Phys. Rev. Lett. 91 (2003) 072303.

Suppressed  $\pi^0$  Production at Large Transverse Momentum in Central Au+Au Collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 91 (2003) 072301.

Centrality dependence of the high  $p_T$  charged hadron suppression in Au+Au collisions at  $\sqrt{s_{NN}} = 200$  GeV

PHENIX Collaboration,  
Phys. Lett. B561 (2003) 82.

Construction and Performance of the PHENIX Pad Chambers

PHENIX Collaboration,  
Nucl. Instrum. Meth. A497 (2003) 263.

Event-by-event fluctuations in mean  $p_T$  and mean  $e_T$  in  $\sqrt{s_{NN}} = 130$  GeV Au+Au collisions

PHENIX Collaboration, Primary Author  
Phys. Rev. C66 (2002) 024901.

Flow Measurements via Two-Particle Azimuthal Correlations in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 89 (2002) 212301.

Measurement of Lambda and Anti-lambda Particles in Au+Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV

PHENIX Collaboration,  
Phys. Rev. Lett. 89 (2002) 092302.

Event reconstruction in the PHENIX central arm spectrometers

J. T. Mitchell, et al., Primary Author  
Nucl. Instrum. Meth. A482 (2002) 491.

Net Charge Fluctuations in Au+Au Interactions at  $\sqrt{s_{NN}} = 130$  GeV

The PHENIX Collaboration  
Phys. Rev. Lett. 89 (2002) 082301.

Centrality Dependence of  $\pi^{+/-}$ ,  $K^{+/-}$ , p, and pbar Production from  $\sqrt{s_{NN}} = 130$  GeV Au+Au Collisions at RHIC

The PHENIX Collaboration  
Phys. Rev. Lett. 88 (2002) 242301.

Transverse-Mass Dependence of Two-Pion Correlations in Au + Au Collisions at  $\sqrt{s_{NN}} =$

130 GeV

The PHENIX Collaboration  
Phys. Rev. Lett. 88 (2002) 192302.

Light nuclei production in heavy-ion collisions at relativistic energies

The E896 Collaboration  
Phys. Rev. C65 (2002) 034907.

Lambda Spectra in 11.6A GeV/c Au-Au Collisions

The E896 Collaboration  
Phys. Rev. Lett. 88 (2002) 062301.

Distributed drift chamber design for rare particle detection in relativistic heavy ion collisions

The E896 Collaboration  
Nucl. Instrum. Meth. A485 (2002) 371.

Measurement of Single Electrons and Implications for Charm Production in Au + Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV

The PHENIX Collaboration  
Phys. Rev. Lett. 88 (2002) 192303.

Suppression of Hadrons with Large Transverse Momentum in Central Au + Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV

The PHENIX Collaboration  
Phys. Rev. Lett. 88 (2002) 022301.

Measurement of the Midrapidity Transverse Energy Distribution from  $\sqrt{s_{NN}} = 130$  GeV Au+Au Collisions at RHIC.

The PHENIX Collaboration  
Phys. Rev. Lett. 87 (2001) 052301.

Centrality Dependence of Charged Particle Multiplicity in Au-Au Collisions at  $\sqrt{s_{NN}} = 130$  GeV.

The PHENIX Collaboration  
Phys. Rev. Lett. 86 (2001) 3500.

Charged Particle Production in Proton-, Deuteron-, Oxygen-, and Sulphur-Nucleus Collisions at 200 GeV per Nucleon.

The NA35 Collaboration, Primary Author  
Eur. Phys. J., C2, 643 (1998).

Drift Chambers for the PHENIX Central Tracking System

V. G. Riabov and the PHENIX Drift Chamber Collaboration  
Nucl. Inst. and Meth. A419, 363 (1998).

A New Coulomb Correction Method for Bose-Einstein Correlations, Based on the Pi+Pi-  
Correlation Measurements.

The NA35 Collaboration  
Z. Phys. C73, 443 (1997).

Backward Yields of Pions, Protons, and Deuterons in Relativistic  $^{28}\text{Si}+\text{Pb}$  Collisions at 14.6 A  
GeV/c.

The E814 Collaboration  
Nucl. Phys. A622, 391 (1997).

Antibaryon Production in Sulphur-Nucleus Collisions at 200 GeV per Nucleon.

The NA35 Collaboration  
Phys. Lett. B366, 56 (1996).

Search for Pion-Neutron Bound States in 14.6A GeV Si+Nucleus Collisions.

The E814 Collaboration, Primary Author  
Phys. Rev. C52, 2679 (1995).

Transverse Energy and Charged Particle Multiplicity in p-Nucleus Collisions at 14.6 GeV/c.

The E814 Collaboration  
Phys. Rev. C52, 2028 (1995).

Production of Neutron-Rich Isotopes from the Fragmentation of  $^{28}\text{Si}$  Projectiles at  $P_{\text{lab}}=14.6$   
GeV/c per Nucleon.

The E814 Collaboration  
Phys. Rev. C52, 956 (1995).

Transverse Momentum Dependence of Bose-Einstein Correlations in 200A GeV/c S+A  
Collisions.

The NA35 Collaboration  
Phys. Rev. Lett. 74, 1303 (1995).

Two-Pion Bose-Einstein Correlations in Nuclear Collisions at 200 GeV per Nucleon.

The NA35 Collaboration  
Z. Phys. C66, 77 (1995).

Measurement of Pion Enhancement at Low Transverse Momentum and of the Delta Resonance  
Abundance in Si-Nucleus Collisions at AGS Energy.

The E814 Collaboration

Phys. Lett. B351, 93 (1995).

Electromagnetic Dissociation of Relativistic  $^{28}\text{Si}$ .

The E814 Collaboration  
Phys. Rev. C51, 865 (1995).

Strange Particle Production in Nuclear Collisions at 200 GeV per Nucleon.

The NA35 Collaboration.  
Z. Phys. C64, 195 (1994).

Centrality Dependence of Longitudinal and Transverse Baryon Distributions in Ultra-Relativistic Nuclear Collisions.

The E814 Collaboration.  
Phys. Rev. C50, 3047 (1994).

Estimates of Antiproton Production and Annihilation in Relativistic Nucleus- Nucleus Collisions.

B. S. Kumar, S. V. Greene, and J. T. Mitchell.  
Phys. Rev. C50, 2152 (1994).

Microstrip Gas Chambers on Glass and Ceramic Substrates.

W.G. Gong, H. Wieman, J.W. Harris, J.T. Mitchell, W.S. Hong, and V. Perez- Mendez.  
IEEE Transactions on Nuclear Science 41, 890 (1994).

Production of Light Nuclei in Relativistic Heavy-Ion Collisions.

The E814 Collaboration  
Phys. Rev. C50, 1077 (1994).

An Investigation of Intermittency in Proton-Gold, Oxygen-Gold, Sulphur-Gold, and Sulfur-Sulfur Interactions at 200 GeV per Nucleon.

The NA35 Collaboration.  
Z. Phys. C61, 551 (1994).

Two Charged Particle and Transverse Energy Correlations in Si+Pb Collisions at 14.6 A GeV/c.

The E814 Collaboration.  
Phys. Rev. C49 , 1669 (1994).

Baryon Distributions in Ultrarelativistic Nucleus-Nucleus Collisions.

The E814 Collaboration.  
Z. Phys. C59, 211 (1993).

Measurement of Transverse Energy Production with Si and Au Beams at Relativistic Energy: Towards Hot and Dense Hadronic Matter.

The E814/E877 Collaboration.  
Phys. Rev. Lett. 70, 2996 (1993).

A Transition Radiation Detector which Features Accurate Tracking and  $dE/dx$  Particle Identification.

E. O'Brien, M. Bennett, V. Cherniatin, C. Y. Chi, A. Chikanian, B. Dolgoshein, S. Kumar, D. Lissauer, S. McCorkle, J. T. Mitchell, S. Nagamiya, V. Polychronakos, K. Pope, W. Sippach, H. Takai, M. Toy, D. Wang, Y. F. Wang, C. Wiggins, and W. Willis.  
IEEE Transactions on Nuclear Science 40, 153 (1993).

Antiproton Production in Relativistic Si-Nucleus Collisions.

The E814 Collaboration.  
Phys. Rev. Lett. 70, 1763 (1993).

Electromagnetic Dissociation of Relativistic  $^{28}\text{Si}$  into  $p+^{27}\text{Al}$ .

The E814 Collaboration.  
Phys. Rev. C46, 2427 (1992).

Forward Baryons in Relativistic Nucleus-Nucleus Collisions.

The E814 Collaboration. Primary Author  
Phys. Rev. C45, 819 (1992).

Charged Particle Multiplicity in  $^{28}\text{Si} + \text{Al}$ ,  $\text{Cu}$ , and  $\text{Pb}$  Reactions at  $E_{\text{lab}} = 14.6 \text{ GeV/nucleon}$ .

The E814 Collaboration.  
Phys. Rev. C46, 312 (1992).

Spin Alignment and Density Matrix Measurement in  $^{28}\text{Si} + ^{12}\text{C}$  Orbiting Reactions.

A. Ray, D. Shapira, M. L. Halbert, J. Gomez del Campo, H. J. Kim, J. P. Sullivan, B. Shivakumar, and J. T. Mitchell.  
Phys. Rev. C43, 1789 (1991).

A Study of Wire Chambers with Highly Segmented Cathode Pad Readout for High Multiplicity Charged Particle Detection.

R. Debbe, J. Fischer, D. Lissauer, T. W. Ludlam, D. Makowiecki, E. O'Brien, V. Radeka, S. Rescia, L. Rogers, G. C. Smith, D. Stephani, B. Yu, S. V. Greene, T. K. Hemmick, J. T. Mitchell, and B. Shivakumar.  
IEEE Transactions on Nuclear Science, 37, 88 (1990).

A Many Particle Tracking Detector with Drift Planes and Segmented Cathode Readout.

J. Fischer, D. Lissauer, T. W. Ludlam, E. O'Brien, V. Radeka, L. Rogers, G. Smith, D. Stephani, B. Yu, S. V. Greene, T. K. Hemmick, J. T. Mitchell, and B. Shivakumar.  
IEEE Transactions on Nuclear Science, 37, 82 (1990).

Search for Strange Quark Matter in High Energy Heavy Ion Collisions.

The E814 Collaboration.  
Phys. Lett. B252, 4, 550 (1990).

Electromagnetic Dissociation of  $^{28}\text{Si}$  at  $E_{\text{lab}}/A=14.6$  GeV by Nucleon Emission.

The E814 Collaboration.  
Phys. Rev. C41, 1512 (1990).

Energy Flow and Stopping in Relativistic Heavy Ion Collisions.

The E814 Collaboration.  
Phys. Rev. Lett. 64, 1220 (1990).

Tests of Compressed Geometry Acceleration in Tubes in the Oak Ridge 24URC Tandem Accelerator.

C.M. Jones, K.A. Erb, D.L. Haynes, J. T. Mitchell, N. F. Ziegler, J. E. Raatz, R. D. Rathnell.  
Nucl. Inst. and Meth., A268 (1988).

***Publications in preparation:***

Scaling Properties of Multiplicity Fluctuations in Cu+Cu and Au+Au Collisions at  $\sqrt{s_{\text{NN}}} = 22.5, 62.4, 200$  GeV. Scheduled for submission to Phys. Rev. C.

Multiplicity Fluctuations and Correlation Lengths in  $\sqrt{s_{\text{NN}}}=200$  GeV Au+Au Collisions. Scheduled for submission to Phys. Rev. C.

PHENIX Event Visualization using Freeware, J.T. Mitchell, et al. Scheduled for submission to Comp. Phys. Comm.

**Conference Contribution Publications in journals:**

Scaling properties of fluctuation and correlation results from PHENIX ,  
**J.T. Mitchell** and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S911.

Scaling properties of fluctuation results from PHENIX ,  
**J.T. Mitchell** and the PHENIX Collaboration,  
Eur. Phys. J. A31 (2007) 836.

PHENIX highlights I: propagation of partons in a coloured medium ,  
J. Lajoie and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S191.

- Studying the medium modification of jets via high-pT hadron angular correlations ,  
C. Zhang and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S671.
- Identified particle jet correlations from PHENIX ,  
A. Sickles and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S685.
- PHENIX results for J/Psi transverse momentum and rapidity dependence in Au+Au and Cu+Cu collisions ,  
A. Glenn and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S737.
- Centrality dependence of J/Psi production in Au+Au and Cu+Cu collisions by the PHENIX experiment at RHIC ,  
T. Gunji and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S749.
- Elliptic flow of electrons from heavy flavour decay by PHENIX ,  
S. Sakai and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S753.
- Heavy quark measurements by single electrons in the PHENIX experiment ,  
F. Kajihara and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S763.
- Heavy quarkonia production in p+p collisions from the PHENIX experiment ,  
A. Bickley and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S779.
- PHENIX measurements of reaction plane dependence of high-pT photons and pions ,  
V. Pantuev and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S805.
- PHENIX measurement of high-pT hadron-hadron and photon-hadron azimuthal correlations ,  
J. Jin and the PHENIX Collaboration,  
Journal of Physics G34 (2007) S813.
- Direct photons at low pT measured in PHENIX ,  
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Global Variables and Forward Baryons in 14.6 GeV/nucleon Si-Nucleus Collisions.

The E814 Collaboration.  
J. Stachel, et al. Proc. Int. Symposium on High Energy Nuclear Collisions and Quark-Gluon Plasma, Kyoto, Japan. T. Kunihiro, ed. World Scientific 1992, p. 167.

Search for Strange Quark Matter in Relativistic Heavy Ion Collisions.

The E814 Collaboration.  
F. Rotondo, et al. Conference on Strange Quark Matter, Aarhus, Denmark, May, 1991.

Recent Results from Experiment 814.

The E814 Collaboration.  
T.K. Hemmick, et al. Proc. XXI Winter Workshop on Nuclear Dynamics, Jackson Hole, WY, Feb. 1992.

Two-Particle Correlations in Si+A Collisions at 14.6 A GeV/c.

The E814 Collaboration.  
S. Voloshin, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 406.

Transverse Energy Production in Collisions with 11.4 A GeV/c Au Beam.

The E814 Collaboration.  
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The E814 Collaboration.  
T.K. Hemmick, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 204.

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The E814 Collaboration.

J. Dee, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 47.

Distribution of Global Variables in Si+A and Au+Au Collisions.

The E814 Collaboration.

C. Pruneau, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 12.

Two-Particle Correlations from Si+Pb Collisions at 14.6 A GeV/c.

The E814 Collaboration.

N. Xu, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 362.

Antiproton Production in Si+A Collisions at 14.6 A GeV/c.

The E814 Collaboration.

S. Kumar, et al. HIPAGS 3 Symposium, Boston, MA, Jan. 1993. MITLNS-2158, p. 144.

Hadron Production at Low Pt and First Results from Au+Au Collisions in E814/E877.

The E814 Collaboration.

T.K. Hemmick, et al. Proc. 9th Winter Workshop on Nuclear Dynamics, Advances in Nuclear Dynamics, ed. B. Back, W. Bauer, and J. Harris, World Scientific (93).

Time Projection Chambers in NA35 and NA49.

The NA35 Collaboration.

P. Jacobs, et al. Proc. 9th Winter Workshop on Nuclear Dynamics, Advances in Nuclear Dynamics, ed. B. Back, W. Bauer, and J. Harris, World Scientific (93).

Pion Interferometry in E814 - Toward Equilibrium at the AGS.

The E814 Collaboration.

N. Xu, et al. Proc. 10th Winter Workshop on Nuclear Dynamics, Advances in Nuclear Dynamics, ed. J. Harris, A. Mignerey, and W. Bauer, World Scientific (94).

The STAR Experiment at RHIC.

The STAR Collaboration.

J. N. Marx, et al. Proc. 10th Winter Workshop on Nuclear Dynamics, Advances in Nuclear Dynamics, ed. J. Harris, A. Mignerey, and W. Bauer, World Scientific (94).

Hadron Production in S+Nucleus Collisions at 200 GeV/Nucleon.

The NA35 Collaboration.

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## **PHENIX NOTES**

1. PHENIX Analysis Note #556: A Survey of Azimuthal Correlation Functions at Low

Transverse Momentum, J.T. Mitchell, 11/16/06.

2. PHENIX Analysis Note #555: Multiplicity Fluctuations in 22 GeV Cu+Cu Collisions, J.T. Mitchell, 11/16/06.
3. PHENIX Analysis Note #554: A Survey of Event-by-Event Fluctuations in Mean Transverse Momentum, J.T. Mitchell, 11/16/06.
4. PHENIX Analysis Note #497: Multiplicity Fluctuations, Correlation Lengths, and Critical Exponents, J.T. Mitchell, 5/11/06.
5. PHENIX Analysis Note #474: Fluctuations in Kaon-to-Proton and Proton-to-Pion Ratios in Au+Au Collisions at  $\sqrt{s_{NN}}=200$  GeV, E. Haslum et al., 12/8/05.
6. PHENIX Analysis Note #439: Multiplicity Fluctuations in 200 and 62 GeV Cu+Cu Collisions, J.T. Mitchell, 8/1/05.
7. PHENIX Analysis Note #431: The Evolution of Correlation Functions from Low to High  $p_T$ : HBT to Jets, and More, 7/29/05.
8. PHENIX Analysis Note #372: A Survey of Multiplicity Fluctuations, J. T. Mitchell, 4/14/05.
9. PHENIX Analysis Note #359: Correlation Functions from Low to High  $p_T$  in 200 GeV p+p and d+Au Collisions: From HBT to Jets, J. T. Mitchell, 3/8/05.
10. PHENIX Analysis Note #215: Jet and Elliptic Flow Contributions to the Run-2 Event-by-event Average  $p_T$  Fluctuation Signal, J. T. Mitchell, 7/9/03.
11. PHENIX Analysis Note #204: Observation of Excess Event-by-Event Average  $P_t$  Fluctuations in the Run-2 Au+Au and p+p Data, J. T. Mitchell, 5/20/03.
12. PHENIX Analysis Note #123: Preliminary Event-by-event Fluctuations in Average  $P_t$  in  $\sqrt{s_{NN}} = 200$  GeV Au+Au Collisions, J. T. Mitchell, 7/11/02.
13. PHENIX Analysis Note #105: PHENIX Sensitivity to Event-by-event Fluctuations in Mean  $P_t$  and  $E_t$  in  $\sqrt{s_{NN}} = 130$  GeV Au+Au Collisions, J. T. Mitchell and M. J. Tannenbaum, 3/4/02.
14. PHENIX Analysis Note #86: Update on Event-by-event Fluctuations in Mean  $P_t$  and  $E_t$  in  $\sqrt{s_{NN}} = 130$  GeV Au+Au Collisions, J. T. Mitchell and M. J. Tannenbaum, 10/10/01.
15. PHENIX Technical Note #390: Birdseye: An Interactive Event Visualization for PHENIX, J.T. Mitchell and P. Nilsson, 9/27/01.
16. PHENIX Analysis Note #79: Analysis of Event-by-Event Distributions in PHENIX, M. Tannenbaum and J. T. Mitchell, 8/23/01.
17. PHENIX Technical Note #389: P.O.V.: PHENIX Offline Visualization, J. T. Mitchell and J. Lauret, 5/31/01.
18. PHENIX Analysis Note #55: Preliminary Results on Event-by-Event Fluctuations in the

Mean  $P_t$  and  $E_t$  of  $\Gamma=70$  Au+Au Collisions in PHENIX, J. T. Mitchell, 4/13/01.

19. PHENIX Technical Note #384: Evaluation of the Performance of Drift Chamber to Pad Chamber Hit Association, J. T. Mitchell, 1/9/01.
20. PHENIX Technical Note #383: PHENIX Track Models and Object-Oriented Hit Association, J. T. Mitchell, 12/21/00.
21. PHENIX Analysis Note #34: Event-by-Event Mean  $p_t$  Fluctuations in PHENIX, J. T. Mitchell, 11/27/00.

## STAR NOTES

1. STAR Note #103. W. Gong, et al. Temperature Dependence of Gas Gain for an MWPC Readout, 4/25/94.
2. STAR Note #129. J. T. Mitchell. The TPC According to GARF, 6/29/94.
3. STAR Note #185. J. T. Mitchell and K. Chan. Energy Loss Simulations for the STAR TPC, 11/8/94.
4. STAR Note #190. J. T. Mitchell and I. Sakrejda. Tracking for the STAR TPC: Documentation and User's Guide, 1/25/95.

## SEMINARS

### Scaling Properties of Azimuthal Correlation and Fluctuation Results from PHENIX

BNL-Riken Theory Lunch Seminar  
Upton, NY  
May 24, 2007.  
*Invited*

### Scaling Properties of Fluctuation and Correlation Results from PHENIX

Quark Matter 2006  
Shanghai, China  
November 18, 2006.  
*Invited*

### PHENIX Capabilities for Low Energy Running

Workshop on Future Prospects in QCD at High Energy  
Upton, NY  
July 21, 2006.  
*Invited*

## New Fluctuation and Low- $p_T$ Correlation Results from PHENIX

2<sup>nd</sup> International Workshop on Correlations and Fluctuations in Relativistic Nuclear Collisions.

Florence, Italy

July 8, 2006.

*Invited*

## The PHENIX Potential in the Search for the QCD Critical Point

3<sup>rd</sup> International Workshop on The Critical Point and the Onset of Deconfinement

Florence, Italy

July 4, 2006.

*Invited*

## Fluctuation Results from PHENIX

4<sup>th</sup> International Conference on Quarks and Nuclear Physics

Madrid, Spain

June 7, 2006.

*Invited*

## Fluctuation Results from PHENIX

Correlations and Fluctuations in Relativistic Nuclear Collisions Workshop

Boston, MA

April 22, 2005.

*Invited*

## An Overview of Fluctuations in Relativistic Heavy Ion Collisions

Quark Matter 2004

Oakland, CA

January 15, 2004.

*Invited*

## Global and Hadronic Observables in the PHENIX Experiment at RHIC

8<sup>th</sup> Wigner Symposium

Manhattan, NY

May 28, 2003.

*Invited*

## RHIC and the Pursuit of the Plasma

2001 Sambamurti Prize Lecture

Brookhaven National Laboratory

July 25, 2001.

*Invited*

Event-by-Event Mean Pt and Et Fluctuations in Au+Au Collisions at RHIC

RHIC/INT Winter Workshop  
Seattle, WA  
January 5, 2002.  
*Invited*

ACS National Meeting  
Chicago, IL  
August 30, 2001.  
*Invited*

PHENIX's First Flight: Continuing the Search for the Quark-Gluon Plasma.

357th Brookhaven Lecture  
Brookhaven National Laboratory  
October 18, 2000.  
*Invited*

Object-Oriented Tracking in PHENIX.

APS Division of Nuclear Physics Annual Meeting  
Williamsburg, Virginia  
October 7, 2000.  
*Contributed*

The Capabilities of PHENIX in the Strangeness Sector.

Workshop on Flow and Strangeness Production in Heavy Ion Collisions.  
Obernai, France  
September 27, 1999.  
*Invited*

An Overview of the PHENIX Experiment at RHIC.

Particles and Nuclei 1996.  
William and Mary University, Williamsburg, VA  
May 28, 1996.  
*Invited*

Observing the Effects of Chiral Symmetry Restoration in Relativistic Heavy Ion Collisions with Electron Pairs.

Nuclear Physics Seminar.  
Brookhaven National Laboratory.  
April 9, 1996.  
*Invited*

Stopping and Two-Pion Bose-Einstein Correlation Results from CERN Experiment NA35.

APS Division of Particles and Fields 1994.  
University of New Mexico, Albuquerque, NM.  
August 2, 1994.  
*Contributed*

Baryon Stopping in 200 GeV/A S+Au Collisions.

Intersections of Particle and Nuclear Physics.  
St. Petersburg, FL.  
June 5, 1994.  
*Contributed*

Stopping in Relativistic Heavy Ion Collisions.

University of California - Davis  
Nuclear Physics Symposium  
November 12, 1993.  
*Invited*

Hadron Distributions in 200 GeV/A S+Au Collisions: A Look at Stopping.

Yale University  
Wright Nuclear Structure Laboratory Seminar  
July 22, 1993.  
*Invited*

Hadron Distributions in 200 GeV/A S+Au Collisions: A Look at Stopping.

Quark Matter 1993.  
Borlänge, Sweden.  
June 21, 1993.  
*Contributed*

An Overview of Microstrip Gas Chambers.

Lawrence Berkeley Laboratory  
Relativistic Nuclear Collisions Group Seminar  
December 16, 1992.  
*Contributed*

Charged Particle Distributions in 14.6 GeV/A Nuclear Collisions.

Massachusetts Institute of Technology  
Nuclear Physics Seminar  
March 10, 1992.  
*Invited*

Charged Particle Distributions in 14.6 GeV/A Nuclear Collisions.

Oak Ridge National Laboratory

HHIRF Nuclear Physics Seminar  
March 3, 1992.  
*Invited*

Charged Particle Distributions in 14.6 GeV/A Nuclear Collisions.

Lawrence Berkeley Laboratory  
Relativistic Nuclear Collisions Group Seminar  
February 26, 1992.  
*Invited*

Charged Particle Distributions in 14.6 GeV/A Nuclear Collisions.

Brookhaven National Laboratory  
Nuclear Physics Seminar  
February 25, 1992.  
*Invited*

Charged Particle Distributions in 14.6 GeV/A Nuclear Collisions.

State University of New York in Stony Brook  
Nuclear Physics Department Seminar  
February 19, 1992.  
*Invited*