

Curriculum Vitae

Andrew John Norman

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Degrees

College of William and Mary
Ph.D. in Physics, 2004
Dissertation Title: Measurement of the Branching Fraction for $K_L^0 \rightarrow \mu^+ \mu^- e^+ e^-$

College of William and Mary
M.S. in Physics May 1998

College of William and Mary
B.S. in Physics and Mathematics, 1995
Honors Thesis Title: A Measurement of the Mass of the Muon Type Neutrino

Positions

Research Scientist (2008-Present) University of Virginia, High Energy Physics Group
Post Doctoral Research Associate (2004-2007) University of Virginia, High Energy Physics Group
Graduate Research Assistant (1997-2003) College of William and Mary, High Energy Physics Group

Experimental Work and Experience

Fermi National Accelerator Laboratory, Mu2E (2007-Present)
Simulations and modeling, background estimates, experiment R&D, software infrastructure planning.

Fermi National Accelerator Laboratory, NOvA (2006-Present)
Level 3 Manager for Detector Controls and Monitoring Systems (DCS). DAQ and online software planning and R&D. DCS planning, design and prototype implementation. Power distribution system R&D, electronic prototype designs, implementation, testing and evaluation. Systems readouts and integration planning.

Fermi National Accelerator Laboratory, DØ Experiment (2006-Present)
Data analysis and student supervision on rare decay modes of B-mesons ($B_s \rightarrow X\mu e$ and $B_s \rightarrow X\mu\mu$)

Fermi National Accelerator Laboratory, Experiment E907 - MIPP (2004-2006)
Data Acquisition Trigger System Design, Implementation and Operations, Large Aperture Drift Chambers operations and calibrations, Hadron Calorimeter operations and calibrations, Scint. Fiber Cross-hair Detector design and fabrications, High Voltage Control Systems interface development, High speed calibration data acquisition system design and implementation for differential Čerenkov tagging system Main Injector Particle Production Experiment (MIPP) designed to measure hadronic fragmentation scaling, particle production cross sections and proton nucleus cross sections for proton radiography.

Brookhaven National Laboratory, AGS Experiment E935 (1997-2003)

Data Acquisition Trigger design modifications (for R^0 search), Lead Glass Array operations, Threshold Čerenkov Counter calibrations and operations, Muon Range Finder operations, Monte Carlo simulations, Data Analysis: Search for $R^0 \rightarrow \eta\tilde{\gamma}$ A search for evidence of the R^0 hadron, a gluon-gluino ($g\tilde{g}$) bound state in the low mass regime.

Brookhaven National Laboratory, AGS Experiment E871 (1994-1999)

Threshold Čerenkov commissioning, Muon Range Finder commissioning, Monte Carlo simulations, Analysis B($K_L^0 \rightarrow \mu^+\mu^-e^+e^-$) [Thesis] A search for and measurement of rare K_L^0 decays including $K_L^0 \rightarrow \mu^+\mu^-$, $K_L^0 \rightarrow e^+e^-$, $K_L^0 \rightarrow \mu^+\mu^-e^+e^-$, $K_L^0 \rightarrow \mu^\pm e^\mp$

Tri Universities Nuclear Lab, N-D breakup (1996) Neutron-Deuteron breakup in the star configuration

Thomas Jefferson National Accelerator Facility, Hall A (1996)

Dipole field mapping and Zip-track studies

Thomas Jefferson National Accelerator Facility, Hall B CLAS (1992-1993)

E&M Calorimeter fiber optic light guide design, testing and fabrication.

Computing Skills

Programing C/C++, Fortran, Perl

General Monte Carlo modeling and computational methods

Detector simulation and modeling with CERNLIB/GEANT

Computational methods for distributed and parallel algorithms

UNIX system programing

UNIX system administration and networking

Experimental Skills

Experience with high speed trigger design and implimentation

Experience with design, construction, calibration, and operation of differential and threshold Čerenkov counters

Experience with calibration and operation of finger and wide bar scintillator hodoscopes

Experience with deisgn and construction of scintillating fiber hodoscopes

Experience with calibration of lead glass calorimeters

Expereince with calibration and operation of lead/scintillating fiber calorimeters

Experience with calibration, operation and hit reconstruction in stereo and hexagonal drift chambers

Experience with calibration, operation and track reconstruction with multiwire proportional chambers

Experience with straw drift tubes

Teaching Appointments

Laboratory Instructor – Introductory Physics (Mechanics), College of William and Mary 2000

Discussion Session Instructor – Introductory Physics (E&M), College of William and Mary 1998

Discussion Session Instructor – Introductory Physics for Life Sciences (Mechanics), College of William and Mary 1998

Laboratory Instructor – Introductory Astronomy Laboratory, College of William and Mary 1998

Graduate Teaching Assistant – Modern Atomic Physics Laboratory, College of William and Mary 1997

Graduate Teaching Assistant – Introductory Astronomy, College of William and Mary 1996

Graduate Teaching Assistant – Introductory Physics for Engineers (Mechanics) Duke Univ. 1996

Laboratory Instructor – Introductory Physics for Life Sciences (Mechanics) Duke Univ. 1995

Conferences, Workshops and Seminars

- NOVA: NuMI Offaxis ν_e Appearance, Probing the Properties of Neutrinos
Poster Session, Fermilab Users Meeting 2008
- NOVA: NuMI Offaxis ν_e Appearance, For the Project X Era
Poster Session, Project-X Workshop, Fermilab 2007
- NOVA the NuMI Offaxis ν_e Appearance Experiment
NuFact07, Okayama Japan 2007
- NOVA: NuMI Offaxis ν_e Appearance, Technical Design and Developments
Poster Session, Fermilab Users Meeting 2007
- Hadronic Particle Production and the Future of Neutrino Physics
College of William and Mary HEP Seminar 2005
- International Committee on Future Accelerators Instrumentation School
Istanbul Technical University 2005
- Measurement of the Branching Fraction for $K_L^0 \rightarrow \mu^+ \mu^- e^+ e^-$
University of Virginia HEP Seminar 2003

Honors

- High Honors in physics for Senior honors thesis “Measurement of the Mass of the Muon Type Neutrino” 1995
- Society of the Alumni Award (for outstanding achievement in the study of physics) – W&M 1995
- Golden Key National Honor Society, W&M 1994
- $\Sigma\Pi\Sigma$ National Honor Society (Physics), W&M 1994
- Alpha Lambda Delta and Phi Eta Sigma National Honor Societies, W&M 1992

Publications

- Search for CP Violation in Xi and Lambda Decays
C.Materniak et al. (HyperCP Collaboration) (To be submitted to Phys. Rev. Lett.).
- The Fermilab MIPP Experiment (FNAL-E907)
R. J. Abrams et al. (MIPP Collaboration) (to be submitted to Nucl. Instrum. Meth.).
- Electromagnetic and hadron calorimeters in the MIPP experiment
T.S.Nigmanov et al. Nucl. Instrum. Meth. **A598**:394-399 (2009).
- Proposal to search for $\mu^- N \rightarrow e^- N$ with a single event sensitivity below 10^{-16} .
R.M.Carey et al. FERMILAB-PROPOSAL-0973, (2008).
- The NuMI off-axis electron neutrino appearance experiment (NOVA)
A.Norman, AIP Conf.Proc. **981**:225-227 (2008).
- The NOVA Technical Design Report.
D.S.Ayres et al. FERMILAB-DESIGN-2007-01, (2007).
- Letter of Intent: A Muon to Electron Conversion Experiment at Fermilab. E.J.Prebys et al. FERMILAB-TM-2396-AD-E-TD, FERMILAB-APC, (2007).
- Expression of Interest: A Muon to Electron Conversion Experiment at Fermilab. E.J.Prebys et al. FERMILAB-TM-2389-AD-E, FERMILAB-APC, (2007).
- Proposal to upgrade the MIPP experiment.
D.Isenhower et al. FERMILAB-PROPOSAL-0960, (2006).

The FINESSSE detector

Brice et al. Nucl. Phys. Suppl. **139**:317-322 (2005).

Measurement of the branching ratio for $K_L^0 \rightarrow \mu^+ \mu^- e^+ e^-$.

A.Norman, PhD. Thesis, College of William and Mary. UMI-31-40209, (2004).

Graduate Advisors

John R. Kane

College of William and Mary

Morton Eckhause

College of William and Mary

Robert Welsh

College of William and Mary