

Curriculum Vitae
REX TAYLOE

Indiana University
812-855-9525

email: rtayloe@indiana.edu
<http://neutrino.indiana.edu/rtayloe>

Department of Physics
Swain West 336
727 E. Third Street
Bloomington, Indiana 47405

Center for Exploration of Energy and Matter, CEEM
MES Hall Room 113B
2401 Milo B. Sampson Lane
Bloomington, Indiana 47408

EDUCATION

Ph.D. Physics, 1995 University of Illinois, Urbana-Champaign
B.S. Physics, 1986 Purdue University, W. Lafayette

APPOINTMENTS

2014–present Professor, Indiana University
2008–2014 Associate Professor, Indiana University
2000–2008 Assistant Professor, Indiana University
2000 Visiting Scientist, Fermi National Accelerator Laboratory
1998–2000 Technical Staff Member, Los Alamos National Laboratory
1995–1998 Postdoctoral Research Associate, Los Alamos National Laboratory

RESEARCH

COHERENT Experiment, 2015–present

Search for coherent neutrino scattering at the ORNL Spallation Neutron Source. • Liquid Argon detector leader.

MB-DM Experiment, 2014–present

Extension of the MiniBooNE experiment to search for accelerator-produced dark matter.

• Co-spokesperson.

MiniBooNE+ Experiment, 2012–2014

Proposed extension of the MiniBooNE experiment to investigate further the MiniBooNE evidence for sterile neutrinos.

• Spokesperson.

SciBath project, 2002–present

Research & development project to create a device for precision tracking of neutrinos and neutrons in large volume detectors.

• Project Leader.

SciNOvA Experiment, 2009–2015

Proposed Fermilab experiment to enhance ongoing NOvA project and to investigate neutrino interaction physics.

• Project co-leader, 2009–present

LBNE (Long Baseline Neutrino Experiment), 2009–2011

Planned Fermilab experiment to investigate neutrino oscillations.

• Neutrino Detectors Deputy for the LBNE Near Detector, 2009–2011

RESEARCH (cont.)

SciBooNE Experiment, 2006–2012

Fermilab experiment to measure neutrino reactions for neutrino oscillation experiments to investigate the structure of the nucleus and the nucleon.

Lorentz Violation, 2005–2012

Investigation of Lorentz violation signatures in the LSND and MiniBooNE experiments. Co-authored a global model of neutrino oscillations in the context of Lorentz violation.

MiniBooNE Experiment, 1997–2013

Fermilab experiment to search for neutrino oscillations as indicated by the LSND experiment. Study and modeling of neutrino interactions on the carbon nucleus.

- Convener, 2007–present, Quasi-Elastic Scattering analysis group
- Leader, 2000–present, detector data acquisition and trigger software group
- Project Manager, 1998–2002, detector design and installation

FINeSSE Experiment, 2002–2008

Proposed experiment at Fermilab and Brookhaven to measure G_A^s , the strange-quark, axial form-factor of the proton via neutral-current neutrino-scattering.

- Co-spokesperson, 2002–2008

LSND Experiment, 1995–2005

Los Alamos National Laboratory experiment to search for neutrino oscillations.

PS185 Experiment, 1988–1995

CERN experiment to investigate strange hyperon production in proton-antiproton collisions. Subject of doctoral thesis work.

JETSET Experiment, 1988–1992

CERN experiment to study possible production of gluon hybrid particles in proton-antiproton collisions.

PROFESSIONAL AFFILIATIONS

- American Physical Society; Division of Particles and Fields, Division of Nuclear Physics
- American Association of Physics Teachers

TEACHING

Teaching awards:

- IU Physics Department Konopinski Excellence in Teaching Award, 2003.
- Indiana University Trustees' Outstanding Teaching Award, 2003.

Classes taught at Indiana University:

- Spring 2009-10, 2014-19: P460, Modern Optics, for science majors.
- Fall 2014-15, 19: P310/510, Environmental Physics, for science majors
- Fall 2012-13, 2016-17: P110/120, Energy and Technology, for non-science majors.
- Spring 2013, Spring 2012, Fall 2009, Spring 2008, Fall 2007, Spring 2001: P221, Calculus-based introductory physics (sem I), for science majors.
- Spring 2011, Spring 2007, Spring 2006: P332, Electricity and Magnetism II, for science majors.
- Fall 2010, Fall 2006, Fall 2005: P331, Electricity and Magnetism I, for science majors.
- Fall 2008 P222, Calculus-based introductory physics (sem II), for science majors.
- Spring 2005: P301, Physics III, for science majors.
- Fall 2004, Spring 2002: P201, Algebra-based introductory physics, for science majors.
- Spring 2004, Fall 2003, Spring 2003: P451/551, Experiments in modern physics, for physics majors and graduate students.

- Fall 2001: P202, Algebra-based introductory physics, for science majors.
- P802/G901 Graduate Research
- S406 Undergraduate Research

Dissertation and thesis committees served:

- chair: D. Cox (Ph.D. 2008), L. Garrison (Ph.D. 2014), T. Katori (Ph.D. 2008), R. Thornton (Ph.D. 2017) , M. Heath (Ph.D. 2019)
- member: C. Beltran (Ph.D. 2003), T. Whitaker (Ph.D. 2004) , X. Huang (Ph.D. 2005), D. Huang (Ph.D. 2006), Y. Jing (Ph.D. 2011), T. Johnson (Ph.D. 2015), P. Karns (M.S. 2015), N. Mayer (Ph.D. 2012), E. Niner (Ph.D. 2015), (B. Shaefer (Ph.D. 2012), E. Smith (Ph.D. 2016), E. Lindbert (M.S. 2004), D. Nicklaus (M.S. 2004), S. Daleya (M.S. 2005), N. Peters (M.S. 2006), S. Vanderet (M.S. 2011), L. Lawvere, (M.S. 2012).

MENTORING

Postdoctoral Associates supervised:

- J. Albert (Levatas Inc.), J. Andrew Green (former, now Technical Staff Member, Los Alamos National Lab), Robert Cooper (former, now faculty at New Mexico State), Chris Polly (IUCF Lawrence Langer Postdoctoral Fellow, now Wilson Fellow, Fermilab), I. Tolstukhin (Argonne National Lab).

Students supervised:

- Graduate students in physics: D. Cox (Ph.D 2008), L. Garrison (Ph.D. 2014), T. Katori (Ph.D. 2008), M. Donofrio (current), M. Heath (Ph.D. 2019) , B. Suh (current) , R. Thornton (Ph.D. 2017), J. Zettlemoyer (current) A. Duru, A. Hanson, J. Horton, M. Novak, L. Rebenitsch,
- Other graduate students: M. Chivukula (comp. sci. MS), B. Sapp (comp. sci. MS)
- Undergraduate: S. Breitzmann, B. Bruggert, M. Coello (Cox Fellow), K. Colletti (CEEM REU student), A. Ferguson (STARS program student) J. Griffith (IUCF REU student), M. Hannau, W. Hargis, J. Horton (IUCF REU student), K. Kaericher, J. Kessler (IUCF REU student), R. Macheel, S. McKenney, T. Mikev, P. Ockerse, D Passmore (IUCF REU student), B. Rand (CEEM REU student), E. Steele, R. Thornton, J. Ullman, N. Walbridge.
- High School: D. Duemler (internship), A. Ferguson (COAS summer research for high-school students), M. Jarman (internship).

Student Awards:

- U.S. Department of Energy (DOE) Office of Science Graduate Student Research (SCGSR) award, J. Zettlemoyer, 2017.
- IU Physics Department, William Koss Memorial for Outstanding Graduate Student Work, T. Katori, 2008.
- IU Physics Department, Outstanding Graduate Student in Experimental Research, D. Cox, 2006.
- Fermilab George Michail Memorial Poster Award, D. Cox, 2002.

SERVICE

IU Center for Exploration of Energy and Matter (CEEM), IU Cyclotron Facility:

- Experimental Nuclear Physics Electronics group manager, 2011–present
- Postdoc Applicants Committee, 2002–2003, 2003–2004. 2010–present (chair)
- Nuclear Physics Seminar Committee, Chair 2001–2008
- Graduate Students Recruiting/Advising Committee, 2002–2003
- Computer Committee, 2001–2002

Physics Department:

- Director of Graduate Studies, 2018–present
- APS Bridge Program at IU, deputy director, 2015–present
- Graduate Admissions and Financial Support (GAFS), 2012–present, Chair: 2012–2017
- Graduate Advising, 2009–present
- Leader of Research Experience for Undergraduate (REU) student tours of Fermilab, 2003–present
- Executive Committee, 2008–2012, 2016–2018.
- Graduate Recruiting Committee, 2003–2004, 2008–2012, Chair: 2004–2007
- Advanced College Placement Physics P221, Faculty Liason, 2003–2006
- Physics and Astronomy club, 2003–2004, Faculty advisor: 2004–2005
- Open House Committee, 2004–2006
- Experimental Nuclear Physics Faculty Search Committee, 2003–2004, 2007–2009
- Computer Committee, 2001–2003
- Undergraduate Curriculum Committee, 2001–2003
- Undergraduate Recruiting Committee, 2001–2003, 2008–2009

University:

- College Task Force on Graduate Education, 2018–2019
- Radiation Safety Committee, 2004–2011, Chair: 2009–2010

SERVICE (cont.)

Professional:

- Basic Research Needs Workshop on Dark Matter Small Projects New Initiatives, working group member, 2018.
- Award committee for URA Tollestrup Fellow for Outstanding Postdoctoral Research, Fermilab, member, 2013–present.
- Snowmass Community Summer Study 2013, Intensity Frontier, Neutrino Interactions group, co-convenor, 2013.
- Organizing committee for Institute for Nuclear Theory Workshop, "Neutrino Interactions-Nucleus Interaction for Current and Next Generation Neutrino Oscillation Experiments", U. of Washington, Seattle, December 3-13, 2013.
- APS Division of Nuclear Physics, chair of Invited session on neutrino physics, Oct 2011, chair contributed session, Oct 2012.
- Fermilab Project X Physics Study, Neutrino Detectors, Co-convenor, 2012.
- IUCSS Workshop on Exploring Lorentz Symmetry with Neutrinos, March 10-11, 2012, Indiana University, Bloomington, Session Chair, March 2012.
- Neutrino Detectors Deputy for the LBNE Near Detector, 2009–2012
- Scientific organizing committee, NuInt09, Sixth International Workshop on Neutrino-Nucleus Interactions in the Few-GeV Region, Sitges, Spain, May 18-22 2009.
- Neutrino Scattering Working group for the Fermilab Proton Driver Physics Study, Co-convenor, 2004
- Local Organizing Committee for Quarks and Nuclear Physics 2004, Bloomington, Indiana, May 23-28, 2004.
- Member Fermilab Brighter Booster Working Group, 2001
- Review of proposals for the US Department of Energy and the National Science Foundation
- Referee for Physical Review