Scott L. Nutter
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Research Interests

Experimental cosmic ray particle astrophysics; instrument design, fabrication, and testing; and computer analysis and simulation of cosmic ray experiment data.

Education

Ph.D. Physics, Astronomy minor, Indiana University, May 1991. "The isotopic composition of cosmic ray helium from 500 to 1100 MeV per nucleon" Dr. Richard Heinz, advisor.

M.S. Physics, Indiana University, August 1987.

B.S. Mathematics, minors in Physics and Philosophy, University of Georgia, with Honors, Cum Laude, June 1985. Phi Beta Kappa, Phi Kappa Phi.

Employment History

8/01-present **Regents Professor of Physics (5/2020)/Professor of Physics (8/2009)/Associate Professor of Physics, Northern Kentucky University**
Conducting research in particle astrophysics on the CREAM and HEAT experiments, teaching 9 contact hours. Strong service record to University and local community.

7/13 – 6/14 **Interim Chair, Department of Physics & Geology, Northern Kentucky University**
Oversight of Physics, Geology, and Engineering Technology programs: 5 staff, 13 TT faculty, 6 full time lecturers, 17 part time faculty (Fall 2013)

7/00 – 8/01 **Visiting Associate Professor of Physics, Pennsylvania State University**
One-year position (while on leave from ENMU) to further research activities on cosmic ray astrophysics. Teaching one class per semester.

8/94 to 7/00 **Associate/Assistant Professor of Physics, Eastern New Mexico University**.
Tenured 1999, promoted 2000. Six years of teaching (12 credit hours/semester) at upper and lower levels. Participation in teacher education programs. Active research program with undergraduate involvement with grants and other support. Strong service record to University and local communities.

Summer 1995, '96, '97, '98, '99 **Visiting Assistant Professor of Physics, Penn State University**.
Fabricated prototype time of flight paddles for CREAM experiment. Designed, constructed, and tested time-of-flight detector for HEAT antiproton experiment. Built HEAT antiproton experiment primary gondola support frame. Participated in flight of HEAT positron/electron

instrument.

8/92 to 7/94 **Postdoctoral Fellow, University of Michigan.** Dr. G. Tarle, APS Fellow, faculty mentor. Tested radiation hardened flash ADC for GEM (Superconducting SuperCollider) experiment. Participated in integration of HEAT positron/electron instrument.

5/91 to 7/92 **Postdoctoral Fellow, Istituto Nazionale di Fisica Nucleare (INFN)/Indiana University.** Competitively-awarded fellowship with joint appointment located on-site in Italy. Furthered construction of large underground detector (MACRO).

9/85 to 4/91 **Research Associate, Graduate Assistant, Associate Instructor, Indiana University**. Taught introductory undergraduate labs for scientists and non-scientists and performed research leading to Ph.D. in astrophysics.

9/84-6/86 **Undergraduate Instructor, Math Lab, University of Georgia.** Open lab for assisting other undergraduates with their math homework.

Awards

Regents Professor, Northern Kentucky University. May, 2020.
Excellence in Research/Scholarship/Creative Activity. 2018 NKU Faculty Honors and Awards.
NKU Student Affairs Award – Faculty Having a Positive Impact on Student's Personal/Academic Development, 2006, 2007, 2011, 2013, 2015, 2017.
NKU Presidential Ambassadors Lamplighters "Spark" Award, 2011.
NASA Group Achievement Award to CREAM Science and Mission Support Team, 2006.
NASA Certificate of Recognition for being selected to receive a NASA Minority University Education and Research Partnership in Space Science Award, 2001.
Istituto Nazionale di Fisica Nucleare (INFN) Postdoctoral Fellowship 1991-1992.
National Research Council Fellowship (turned down) 1991.
William Koss Memorial Award for Outstanding Researcher and Teacher, Indiana University Physics Department 1989.
Outstanding Associate Instructor, Indiana University Physics Department April 1987.

Professional Collaborations

- HELIX (High Energy Light Isotope eXperiment) collaboration member, 2015 – present.
- ISS-CREAM Data Analysis (ICDA) collaboration principal investigator (PI), 2019-present.
- ISS-CREAM (CREAM on the International Space Station) collaboration member, 2011-2019.
- BACCUS (Boron And Carbon Composition in the Upper Stratosphere) 2012-2019.
- CREAM (Cosmic Ray Energetics And Mass) collaboration member, 1999-2019.
- CREST (Cosmic Ray Electron Synchrotron Telescope) collaboration member, 2003-2015.
- Kentucky Academy of Science (KAS), 2002-present.
- Kentucky Association of Physics Teachers, member 2002-2006.
- Sigma Xi Scientific Research Society, member, 2002-2007.
- American Physical Society, 1991 – 2013.
- HEAT (High Energy Antimatter Telescope) experiment collaboration member 1993 - 2006.
- New Mexico Collaborative for Excellence in Teacher Preparation (CETP) member, 1999-2000.

- New Mexico Science Teachers Association member, 1999-2000.
- GEM (Gamma, Electron, Muon) Collaboration (Superconducting SuperCollider) 1992-94.
- MACRO (Monopole, Astrophysics and Cosmic Ray Observatory) collaboration 1991-93.
- SMILI (Superconducting Magnet Instrument for Light Isotopes) collaboration 1987-1999.
- NA47 (CERN) collaboration 1986.

Grant History (funded only)

1. *ISS-CREAM: Cosmic Ray Energetics And Mass Launch and Operation, NKU Co-I.* 2016 – 2021. NASA (PI: $271,614).
2. *HELIX: The High Energy Light Isotope Experiment at NKU.* 2015-2020. NASA (PI: $228,856)
3. *ISS-CREAM Data Analysis Manager (DM). 2018-2019. NASA GSFC (PI: $66,967.56).*
4. *Analysis of 2012 CREST flight data.* 2013-14. NASA (PI:$15,000)
5. *Approaching the Cosmic Ray Knee with CREAM Balloon-Borne Experiment at NKU.* 2010-2016. NASA (PI:$250,001)
6. *CREST: Cosmic Ray Electron Synchrotron Telescope.* 2007-14. Penn State University/NASA subcontract (PI: $122,823)
7. *CREAM: Cosmic Ray Energetics And Mass III.* 2007-10. Penn State University/NASA subcontract (PI: $150,000)
8. *Cosmic Ray Electron Synchrotron Telescope (CREST) Veto Counters.* 2004-2007. Penn State University/NASA subcontract (PI: $ 58,582)
9. *Cosmic Ray Energetics And Mass: CREAM-II.* 2005-07. Penn State University/NASA subcontract (PI: $143,940)
10. American Physical Society World Year of Physics "Physics on the Road" grant: *Norse Physics Tour de Force* 2005 (Co-I: $10,000).
11. *Seeing Science: A Physics Demonstration for Elementary School Students and Teachers.* 2005 CINSAM Outreach (Northern Kentucky University) (Co-I: $5821)
12. *Monte-Carlo simulation of atmospheric background radiation due to cosmic ray atmospheric showers.* 2005 CINSAM (Northern Kentucky University) Research Grant (PI: $11,929)
13. *CREAM Timing Charge Detector Fabrication and Testing.* 2002-2004. Penn State University/NASA subcontract (PI: $69,500)
14. *A measurement of the cosmic ray antiproton flux from the HEATpbar instrument data.* 2003-2004. Kentucky Space Grant Consortium (PI: $10,000)
15. *Explorations into NKU involvement in the AUGER project.* 2002. CINSAM (Northern Kentucky University) (PI: $14,888)
16. *NASA Educational Materials and Opportunities Workshop.* 2002. CINSAM (Northern Kentucky University) (PI: $9748)
17. *New Mexico Connections: Connecting Teachers, Research, and Resources.* 2001-03. NASA 00-OSS-02 (Minority Initiative) (Principal Investigator; $365,000. Forfeited 2001 after move to NKU.)
18. HEAT-e+e- and HEAT-Pbar. 1995-99. Penn State University (informal funding for summer salary, travel, student hire; estimated $46,900)
19. *A measurement of cosmic ray antiprotons.* 1999-2000. Internal Research Grant (Eastern New Mexico University). (PI: $3499)
20. *An ENMU Campus Observatory.* 1999-2000. Instructional Equipment Fund Grant (Eastern New Mexico University). (PI: $18,000)
21. *Optical Mark Readers for Instruction.* 1999-2000. New Mexico Center for Teaching Excellence Effective University Instruction Research Grant. (PI: $2111)
22. *Time-of-Flight Detector for the HEAT-PBAR Instrument: A Continuation.* 1997-1998. Internal Research Grant (Eastern New Mexico University). (PI: $1405)

23. *Time of Flight Detector for the HEAT-PBAR Instrument.* 1996-1997. Internal Research Grant (Eastern New Mexico University). (PI: $2099)
24. *Extension of the Physics Visualization Laboratory*. 1995-96. Instructional Equipment Fund Grant (Eastern New Mexico University). (PI: $6128)
25. *Physics Visualization Laboratory.* 1994-95. Teaching Technology Initiative (ENMU). (PI: $2500)
26. *Measurement of the charged particle spectrum in cosmic ray showers as a function of altitude in the atmosphere.* 1994-95. Internal Research Grant for New Faculty (ENMU). (PI: $2617)
27. *A Cerenkov detector to measure cosmic ray Helium isotopes.* 1989-1991. Graduate Student Researchers Program (NASA). (PI: $52,340).

Major Research Accomplishments

- ISS-CREAM experiment analysis collaboration Principal Investigator (PI), 2019 – present.
- Appointed Recovery Team Leader for HELIX experiment, 2020-21 Antarctic expedition.
- Data Manager for ISS-CREAM experiment, 2018-2019.
- HELIX bore paddle design and fabrication, 2017 – present.*
- Characterization through beam tests of microsecond time scale late light emitted in plastic scintillators (BSD: Boronated Scintillator Detector) for ISS-CREAM, 2012 – 2017.*
- Successful launch of ISS-CREAM instrument to International Space Station, August 2017.
- ISS-CREAM GEANT4-based instrument simulation code, NKU, 2014 – present.*
- BACCUS simulation code, NKU, 2015 – 2017.*
- CREST Recovery document and toolkit, NKU, 2010-2011.*
- CREST Launch Team, Antarctica campaign, NKU, 2011.
- Created CAMAC-based acquisition system for use in testing ISS-CREAM Boronated Scintillator Detector prototype at Goddard Space Flight Center and CERN, NKU, 2011-2012.*
- CREAM-I through CREAM-6 GEANT4 simulation code, NKU, 2004-2015.*
- CREAM-3 Recovery Team Leader, Antarctica campaign, NKU, 2008.
- Designed, fabricated, and integrated CREST veto system fiber optic light guides into veto system, NKU, 2007-2010.*
- Successfully championed idea of using boronated scintillator to reject protons in favor of electrons to ISS-CREAM group, NKU, 2010.
- Identified bremsstrahlung background to CREST instrument methodology, NKU, 2006-2008.
- Designed, fabricated, tested, characterized, and integrated veto paddles for CREST prototype instrument (flew 2006), NKU, 2005.*
- CREST instrument GEANT4 simulation code, NKU, 2005-2015.*
- Designed basic CREST veto system, NKU, 2004. Updated 2007.
- Very High Energy electron atmospheric synchrotron & bremsstrahlung GEANT4 simulation code, NKU, 2004-2008.*
- Designed, fabricated, tested, characterized, and integrated, then refabricated CREAM-I through CREAM-7 Timing Charge Detectors, PSU/NKU, 2000-2010.*
- Analysis of data and publication of results from HEAT-pbar flight, PSU/NKU, 2000-2001.
- Designed, fabricated, tested, characterized, and integrated Time of Flight detectors for HEAT-pbar, ENMU, 1996-1998.*

* Included student participation.

Student Research

Usually two or three students per semester working in research lab; occasionally in summer as well.

Student grants:

1. NKU Greaves Summer Fellowship *Developing and Testing a Tracking Algorithm for the ISS-CREAM Calorimeter* (to benefit student Tyler LaBree) 2018 ($4000).
2. Kentucky Space Grant Consortium. *Fiber optic light guides for the CREST experiment.* Written for a tuition fellowship for Sean Bodine. 2009 ($5000).
3. NKU Greaves Summer Fellowship *C.R.E.S.T. Cosmic Ray Electron Synchrotron Telescope* (to benefit student Sean Bodine) 2009 ($4000).
4. Kentucky Space Grant Consortium Summer Fellowship, *Analysis of CREST 2005 prototype flight data.* Written to benefit student Alex Lubbers Summer 2006 ($6100).
5. Student Publication/Presentation Travel Grant, NKU Research Foundation. Written to benefit student Justin Bench. Spring 2006 ($400).
6. Greaves Summer Fellowship (NKU). Written to benefit student Jared Weatherford. Summer 2005 ($3000).

Student Presentations:

1. Tyler LaBree – Tracking Study. ISS-CREAM Data Analysis Collaboration Meeting January 19-20, 2020.
2. Emily Frame – Energy Reconstruction. ISS-CREAM Data Analysis Collaboration Meeting January 19-20, 2020.
3. Tyler LaBree – Energy Determination in the ISS-CREAM Instrument Using Simulations. Kentucky Academy of Sciences Meeting, 3 November 2018, Bowling Green, KY.
4. Carter Kring - Matching Simulation to Calibration Data for the Silicon Charge Detector used in the ISS-CREAM Instrument. Kentucky Academy of Sciences Meeting, 4 November 2017, Murray, KY.
5. Tyler LaBree - ISS-CREAM Calorimeter: Matching Beam Test to Simulation Data. Kentucky Academy of Sciences Meeting, 4 November 2017, Murray, KY.
6. Carter Kring - ISS-CREAM Geometry Status in Geant4. ISS-CREAM Collaboration Meeting, 10 Feb 2017, University of Maryland.
7. Carter Kring - ISS-CREAM Geant4 Simulation Status. ISS-CREAM Collaboration Meeting, 5 Feb 2016, University of Maryland.
8. Mark Henderson – ISS-CREAM Simulation Studies. Computer Science Student Research Presentation, Fall 2011.
9. Sean Bodine- CREST veto system status. Kentucky Academy of Sciences Fall Meeting, 2009.
10. Sean Bodine- CREST Veto Counter Design and Fabrication. Kentucky Academy of Sciences Fall Meeting, 2008. Presentation placed 3rd in Physics Category.
11. Mitchell Cahill – Computer Simulations for the CREST Data Analysis. Kentucky Academy of Sciences Fall Meeting, 2008.
12. Justin Bench– Simulation of Atmospheric Cosmic Ray Showers. Kentucky Academy of Sciences Fall Meeting, 2005.
13. Kelly Chastain – Use of ROOT Data Analysis Software to Better Understand Local Sources of High-Energy Cosmic Rays. Kentucky Academy of Sciences Fall Meeting, 2005. Presentation placed 1st in Physics Category.
14. Justin Bench- Using GEANT4 to model the photonic component of cosmic ray air showers. American Physical Society April Meeting, Dallas TX 2006.

15. Justin Bench– Using GEANT4 to model the photonic component of cosmic ray air showers. NKU Board of Regents Meeting focused on Student Research, Spring 2006.

Student Poster Presentations (selected):

1. Tobel Atnafu and Brent Schleper – C++ and Python Object Oriented Programs to Perform Data Extraction and Correlation for ISS-CREAM Project. NKU Celebration of Research, Spring 2019.
2. Tyler LaBree – Energy Determination in the ISS-CREAM Instrument Using Simulations. NKU Celebration of Research, Spring 2019.
3. Tyler LaBree – Calorimeter-Based Track Reconstruction Algorithms for the ISS-CREAM Detector. Heather Bullen Summer Research Celebration, Fall 2018.
4. Carter Kring, Tyler Straight – Determination of Relative Gains in the Boronated Scintillator Detector. Celebration of Research, Spring 2018.
5. Carter Kring – Matching Simulation Data to Calibration Data for the Silicon Charge Detector used in the ISS-CREAM Instrument. Heather Bullen Summer Research Celebration, Fall 2017.
6. Tyler LaBree – Further Calibration of the ISS-CREAM Calorimeter with GEANT4 simulations. Heather Bullen Summer Research Celebration, Fall 2017.
7. Stacy Brueneman – NKU Astrophysics Round Table. (Co-mentor with Dr. N. DeLee) Celebration of Research, Spring 2017.
8. Carter Kring – Modeling and Verifying the ISS-CREAM Detector Geometry in GEANT4. Celebration of Research, Spring 2017.
9. Brian Butler – The Analysis of Silicon Counting Detector (SCD) Tests at CERN. Celebration of Research, Spring 2017.
10. Tyler Straight – Fitting Response Non-Linearities in the ISS-CREAM Silicon Charge Detector Test Beam Data. Celebration of Research, Spring 2017.
11. Tyler LaBree – Calibration of the ISS-CREAM Calorimeter with GEANT4 simulations. Celebration of Research, Spring 2017.
12. Carter Kring – Matching CREAM Calorimeter Detector Simulation Data to CERN Beam Test Data. Celebration of Research, Spring 2016.
13. Greg Burson - Extracting Maximum Detectable Rigidity (MDR) from Particle Tracking Data. NKU Celebration of Research, Spring 2016.
14. Jessica Kerby - New Atmospheric Model for CREST. NKU Celebration of Research, Spring 2013.
15. Kirk Wallace - CREAM and ISS-CREAM Simulations. NKU Celebration of Research, Spring 2013.
16. Adam Barrett – Comparison of Bremsstrahlung and Synchrotron Radiation in CREST. NKU Celebration of Research, Spring 2011.
17. Kirk Wallace – Fabrication and Integration of the Veto System on the CREST Detector. NKU Celebration of Research, Spring 2011.
18. Elizabeth Hall – The NKU Foucault Pendulum. NKU Celebration of Research, Spring 2011.
19. Nicholas Vander Ende – Computer Simulation of CREAM Validation by Calorimeter Data Matching. NKU Celebration of Research, Spring 2011.
20. Kirk Wallace – Fabrication and Integration of Veto System for the CREST Detector. KAS (Western Kentucky University, Bowling Green KY) Fall 2010.
21. Nicholas Vander Ende – Computer simulation of detector geometry and particle interactions in CREST. KAS (Western Kentucky University, Bowling Green KY) Fall 2010.
22. Sean Bodine – The CREST Veto System. NKU Celebration of Research, Spring 2010.
23. Mitchell Cahill- Computer Simulations Aid CREST Research. NKU Celebration of Research, April 2009.
24. Jared Weatherford - Measuring electron drift velocity in gases at high electric fields. NKU Celebration of Research, Spring 2005.
25. Justin Bench- Simulation of Atmospheric Cosmic Ray Showers. NKU Celebration of Research, Spring 2005.

26. Ryan McLaughlin - Veto Counter for Cosmic Ray Electron Synchrotron Telescope (CREST). NKU Celebration of Research, 2005.
27. Amanda Day – Simulation of Atmospheric X-ray Background at Very High Altitudes. NKU Celebration of Research, Spring 2004.

Undergraduate Teaching Experience

Teaching undergraduate classes since 1994, all years except one with multiple course load. Experienced in laboratory and course design.

Courses taught (NKU)

Course number (credit hrs/contact hrs)	*Course title*	*Number of times taught*
110L	Introduction to Physics (Laboratory)	2
211/213 and labs (5/6)	General Physics (algebra-based) sequence	4/2
220/222 and labs (4/6)	Calculus based introductory sequence	12/12
460 (3)	Quantum Mechanics	6
410 (4)	Electromagnetic Theory	5
315 (3)	Astrophysics	4
305 (3)	Statics	6
396 (3)	Teaching Assistant Supervision	3
397 (2)	Special Projects	1
399 (2)	Readings	5
292/392/492 (varies)	Student Research	38
494 (1)	Seminar	2
Penn State Courses		
211H (3)	Honors section of Physics I (Calculus-based)	1
406 (3)	Subatomic Physics	1
ENMU Courses		
113/113L (3/1)	Survey of Physics and Laboratory	12
201/202 (4/4) 201L/202L (1/1)	Physics I and II (Calculus-based) and Laboratory	6 two-semester sequences
141/141L (3/1)	Astronomy and Laboratory	5/4
303 (3)	Classical Mechanics I	1
305L (2)	Advanced Laboratory	2
421 (3)	Electricity and Magnetism	3
435 (3)	Quantum Physics	1
439/539 (1)	Teaching in Physics	2
465 (2)	Senior Research Project and Report	6 students
493 (3)	Topics: Perspectives in Physics*	1
293 (3)	Topics: Meteorology	1

* My course conception and design, using Thomas Kuhn, **The Structure of Scientific Revolutions**, as primary text.

Outreach and Public Engagement

- "Our Rich History: One small step for NASA, one regional leap for discovery — the local connections." Article in Northern Kentucky Tribune featuring regional NASA ties and mentioning my connections and all the NKU students that have worked on the ISS-CREAM project. Published Aug 12, 2019.
- "Rocket Man." Article about ISS-CREAM project launch to Space Station published in NKU Magazine Fall/Winter 17-18, p. 24-29. https://inside.nku.edu/nkumagazine/2018/january/scottnutter.html
- "Gravity Hill - Does this Northern Kentucky hill really defy gravity? We put it to the test." Interview for WCPO Channel 9 News, broadcast November 30, 2017. https://www.wcpo.com/news/local-news/kenton-county/covington/does-this-northern-kentucky-hill-really-defy-gravity-we-put-it-to-the-test Youtube: https://www.youtube.com/watch?v=W755NrdtBk0
- "NKU in space: Local college is a big part of international research project." Interview about ISS-CREAM project and launch to Space Station for WCPO Channel 12 News. Broadcast September 7, 2017. http://local12.com/news/local/nku-in-space-local-college-is-a-big-part-of-international-research-project. Youtube: https://www.youtube.com/watch?v=TIOju2XTT9g
- "NKU Project Goes Astronomical." NKU Northerner article about ISS-CREAM project and student involvement. Published September 4, 2017.
- "NKU 'rocket scientist's' creation sent to space." Cincinnati Enquirer article about ISS-CREAM experiment launch to Space Station. September 13, 2017.
- "A Cosmic Ray Primer" presentation to University of Cincinnati Astronomy Club, October 11, 2016.
- "Sabbatical summary" given to Northern Kentucky University Board of Regents, January, 2009; again January 2016.
- Antarctic blog, http://antarctic-scott.blogspot.com, 2005, 2008; http://astroantarctica.blogspot.com, 2011.
- "Antarctica and the Cosmos." Feature article about 2008 trip to Antarctica for CREAM launch in NKU *Discover* magazine. 2009.
- Public lectures/classes at Cincinnati Observatory, Mt Lookout, Cincinnati, OH. Invited by Friends of the Observatory (FOTO).
    - *"The Art of Scientific Ballooning."* 16 December 2009.
    - "*Cosmic rays: An introductory class in one evening*" October 15, 2008. A "class" on cosmic rays which included doing relativistic calculations.
    - *"Astrophysics in Antarctica: Cosmic rays and the art of scientific ballooning on the Ice."* October 5, 2006.
    - *"Cosmic Rays: An Alternative Eye on the Sky."* January, 2004.
- *"Sabbatical Brew: Planes, Balloons, Penguins, and Cosmic Rays."* Faculty Brown Bag presentation at NKU. September 10, 2008.
- Norse Physics Force (traveling physics demo show) participant, demo designer 2005-06.
- Multiple articles about 2005 Antarctica trip, including in KY Enquirer, NKU student paper, and NKU A&S Vista, 2006.
- CINSAM CSI Forensics Camps, activity co-leader in automobile accident reconstruction, summers 2003-04. Appeared on Channel 12 11PM news spot on the camp.
- Direct outreach to elementary/middle school children through class visits, CINSAM activities, Physics Alliance activities at NKU 2001-2005. Elementary Science Day Activity Leader, May 2002.
- Design, implementation, and frequent delivery of "NASA Educational Materials and Opportunities Workshop" (K-12 teacher professional development workshop) with grant funding, spanning 1995-2002.

- Regional Science Fair judge, Spring 1997 - present. International Science Fair judge (Louisville), Spring 2002.
- Lead class/workshop activities to assist in teacher preparation utilizing New Mexico space science facilities and NASA educational materials as part of NASA Minority Initiative grant, 2001.
- Organized and conducted frequent public astronomy viewings with telescopes at ENMU, 1994-1999.
- Director, ISEF Southeastern New Mexico Science and Engineering Fair, 1994-1996.

Service

- Co-Chair, Search Committee for Chair, Department of Physics, Geology, and Engineering Technology, 2017-18.
- Reviewer, NASA Astrophysics Research and Analysis Program. June 6-8, 2018, and again June 3-5 2019. Washington DC.
- Physics & Astronomy Club Advisor, 2018 – present.
- Institute of Student Research and Creative Activity (ISRCA) Advisory Board, 2018 – present.
- Evaluation Committee for College of Arts & Sciences Professional Development Awards, 2016 – 2020.
- Committee on Undergraduate Research 2016 – 2017. Ad hoc committee charged with defining the Institute of Student Research and Creative Activity (ISRCA) 2017.
- Murdock Charitable Trust proposal reviewer, 2016.
- Committee on Signature and Emerging Research Areas at NKU 2016, 2017
- NKU Teaching Effectiveness and Enhancement Committee Research Literacy workshop panelist (Nov 5, 2013).
- Distinguished Professor Implementation Committee, Fall 2013.
- Chair, Post-Professor Development Opportunities Committee, Fall, 2012. Faculty Senate ad-hoc committee to explore appropriate opportunities to pursue for professional development of faculty at the rank of professor. Successfully passed new rank through the Faculty Senate.
- Faculty Benefits Committee:
    - Chair, 2011-2013. As Chair, created Health Advisory Committee to provide input to Director of Benefits; updated Bylaws (hadn't been updated since 1987).
    - Member, 2001-2013.
    - Chair, Sabbatical Review Committee 2011, 2005.
    - Faculty Dependent Scholarship sub-committee member, 2006, Chair 2007.
    - Faculty Fellowship sub-committee, Chair, 2007.
    - Co-created current evaluation scheme 2010.
- Faculty Senate Executive Committee, 2011-2013.
- Faculty Senate Restructuring Committee, 2012-2013.
- ITAC (Instructional Technology Advisory Committee) member and hardware subcommittee member, 2010-2012. University-wide committee consisting of faculty, staff, and administrators that advises and guides technology policies. Successfully advocated getting science research lab computers on the teaching replacement cycle.
- Faculty Senate Arts & Sciences At-Large member, 2008-10; 2012-2014.
- Regents Professor Selection Committee, Fall 2011.
- SEFNK (Science and Engineering Fair of Northern Kentucky) Scientific Review Board, 2009-present.
- Promotion & Tenure committees:
    - Physics & Geology Department RPT committee, 2005-10.
    - Physics & Geology Full Professor RPT Committee, 2016.
    - Chair, Department of Physics & Geology Full Professor RPT Committee, 2009, 2012, 2015.

    - Chair, Department of Chemistry Full Professor RPT Committee, 2016.
    - Department of Biology Professor Promotion Committee 2011.
- Department Faculty Search Committee member – so many times I lost track
- General Education Program Committee (University-wide ad hoc) member, 2009.
- General Education Refinement Committee (University-wide ad hoc) member, 2009.
- General Education Exploration Committee (University-wide ad hoc) member, 2008-09.
- CREAM Instrument Recovery Team Head in Antarctica, Spring 2008.
- Kentucky Academy of Science (KAS).
    - Member, 2002-present.
    - Physical Science representative on Governing Board, 2004-2008.
    - Superlative Awards sub-committee, 2004-2008.
    - Local Organizing Committee for Annual Fall Meeting, 2008.
- Physics program assessment document author, 2006.
- Kentucky Association of Physics Teachers, member 2002-2006; University representative, 2004-2006.
- NSF CCLI proposal review meeting panelist, July 28-31, 2004.
- Built muon time of flight and muon lifetime experiments for Advanced Lab through Special Projects course with two students. 2003.
- "Conversations, Connections, and Collaborations: Enhancing P-12 Education, with an Emphasis on Math and Science Education." NKU/XU/UC President's Initiative. Member, Organizing Committee and Panelist. October 28, 2004.
- Hosted various speakers, including Michael Schubnell (University of Michigan) for joint Sigma Xi/Physics talk Spring 2002; Stephen Minnick (Kent State) 2005, Thomas Panuti (Morehead) 2010.
- Web technology: managed PGA listserv (physics and geology informative email list) 2001-2005, assisted other faculty with web page issues, redesigned physics web pages, including 2008 NKU-wide effort. 2001-2009.
- Contribute to departmental and discipline discussions, subcommittees (e.g. Search Committees, text review, equipment identification and organization), and activities, 2001-present.
- Physics student advising, 1994-present.
- Member, CINSAM Outreach Steering Committee, 2001-2004.
- "NASA Educational Materials and Opportunities Workshop" for area teachers 2002, 2003, as part of CINCSAM grant.
- Buildup of the Eastern New Mexico University (ENMU) Society of Physics Students club through activities, such as visiting the VLA near Socorro and the Trinity site, participation in zone meetings, social events, and sponsorship of lectures and night sky viewings, 1994-2000.
- Organized remodeling of the Astroshed facility (telescope facility associated with Eastern New Mexico University), obtaining funds to build a new observatory from the Instructional Equipment Fund in 1999, and the instigation of public night sky viewing nights.
- Chaired the campus Teaching and Learning Technology Roundtable, a faculty think-tank to assist the administration in the implementation of teaching technology 1999-2000.
- Founding member, Four Corners Section of the American Physical Society. Service on ByLaws Committee 4/97-8/97; Organizing Committee for Spring 1998 meeting.
- Held ENMU College of Languages, Arts, and Sciences position as *Technology Coordinator*, assisting faculty with technology needs, 1996-1998.
- Designed, found funding for, and oversaw renovation of a teaching technology enhancement of an existing large classroom (107 seats) 1996-1998.