

# Sally F. Hicks

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## Appointments

### Administrative and Leadership Appointments:

2021 – present	Advisory Committee, Previews of the Future in Low-Energy Experimental Nuclear Physics
2018 – 2020	Interim Dean of Constantin College, U. of Dallas (1/2018-6/2021)
2014 – 2018	Physics Department Chair, U. of Dallas
2014 – 2019	Director of the Clare Boothe Luce Scholars Program
2013 – 2018	Director of Dual-Degree EE/PHY Program
2012 – 2014	Director of the Office of Prestigious Scholarships and Fellowships
2010 – 2011	Chair of the Faculty Senate
2000 – 2002	Vice-Chair of the Faculty Senate
1998 – 2009	Coppell Community Garden Steering Committee (2000-2003); Donations and Service Hours Recorder (2005-2009)
1995 – 1996	Vice-Chair of the Faculty Senate

### Teaching and Research Appointments:

2020 – present	Adjunct Physics Faculty, U. of KY (analogous to affiliate at UD)
2014 – 2020	Visiting Scholar (Chemistry) University of Kentucky
2004 – present	Professor of Physics, University of Dallas
1995 - 2004	Associate Professor of Physics, University of Dallas
1989 - 1995	Assistant Professor of Physics, University of Dallas
1981 - 1988	Research and Teaching Assistant, University of Kentucky
1979 - 1981	Teaching Assistant, Eastern Kentucky University

### Professional Organization Leadership Appointments:

2020 – 2021	Past Chair Texas Section of the American Physical Society
2019 – 2020	Chair Texas Section of the American Physical Society
2018 – 2019	Chair Elect of the Texas Section of the American Physical Society
2017 – 2018	Vice Chair of the Texas Section of the American Physical Society

## Education

University of Kentucky, Lexington, KY  
**Ph.D** in Nuclear Physics, December 1988, *summa cum laude*

Thesis Advisor: Professor Marcus T. McEllistrem  
**M.S.** in Physics, December 1984

Eastern Kentucky University, Richmond, KY  
**B.S.** August, 1981, *summa cum laude*  
Double Major in Physics and Mathematics

National Nuclear Physics Summer School, Georgetown University, June, 1986  
Quality Matters Certification 2017

## **Fellowships and Awards**

**Minnie Stevens Piper Foundation: Piper Professor Award**—State of Texas award for superior teaching at the college level; 10 given each year from TX universities (2016)

**Clare Boothe Luce/HERS Scholarship**—Award to attend the HERS Leadership Institute for women in higher education from a grant to the institute by the Henry Luce Foundation (2016)

**King Fellow Award**—received the highest award given at UD to a senior faculty member for scholarship, teaching and service (2013); nominated by a colleague and voted on by the Faculty Development Committee

**Haggar Scholar**—received a summer research stipend (2009); competitive summer research money awarded each year by the Faculty Development Committee

**Haggar Award**—received the highest award given at UD to a junior faculty member for scholarship, teaching and service (1997); nominated by a colleague and voted on by the Faculty Development Committee

**University of Dallas Presidential Award**—received from the UD President for outstanding service to the University (1990, 1994, 2000); these awards have not been given since about 2000

**Sabbatical Leave** (1997, 2004, 2011)—received these awards to complete research in nuclear structure and neutron scattering without teaching responsibilities

**Graduate School Fellowship**—stipend to attend graduate school at the University of Kentucky, 1981

## **Grants**

### **Grants for University Projects:**

NEH: CARES: “Ensuring Excellence in Language at the University of Dallas: Writing Well in the Time of COVID-19” (\$299,068 with Debra Romanick Baldwin) Summer 2020

Lilly Fellows Mentoring Grant: “*Mentoring for Convivial Collegiality at the University of Dallas*” (\$12,000 with Carmen Newstreet) Spring 2020

Catholic Foundation: “Equipment for Science Laboratories” (\$85,000, with Fran Fisher, Ellen Steinmiller and William Cody) Spring 2020

Constantin Foundation: “The Constantin Scholars Program: Serving First-Generation College Students” (\$250,000 renewable to \$750,000, with Matt Spring, Taryn Anderson, Elizabeth Griffin Smith and Fran Fisher) (Spring 2020)

#### Grants for Student Scholarships and to Support Women in STEM Fields:

Keck Foundation Grant for a Scanning Electron Microscope (\$300,000, with Ellen Steinmiller and Deanna Soper)

American Association of University Women: Campus Action Grant to support Women in Stem, Award Amount: \$3200 for Spring 2018. (with PI Shannon Blatt and the Officers of the Women in Stem Club – Patti Hahn, Rebecca Kolbeck, Tessa Rosenberger, and Sophia Andaloro)

Clare Boothe Luce Grant: Undergraduate Scholarships for Female Physics, Engineering, Computer Science and Mathematics Majors. Award amount: \$290,000. October 22, 2014-2019 (with Dean C.W. Eaker)

Department of Energy, PI on FOA DE-FOA-0000807 NEUP Fellowship/Scholarship, Award number DE-NE0008226; full proposal submission resulting in \$5000 scholarship award to Aaron French and UD being named an NEUP University eligible for future NEUP awards (PI)

SURF Grants for Undergraduate Research: Nicholas Terranova (2017) and Mary Zischkau (2015). Awards made to UD for student summer research at NIST. (with Gaby Martin, OPCD)

#### Research Grants:

Department of Energy Nuclear Physics Award DE-SC0021243: “*Neutron Scattering Cross Sections:  $(n,n^{\prime})$ ,  $(n,n^{\prime}\gamma)$ , and  $(n,\gamma)$  Measurements*”, Award Amount: \$89,915, received September 2020 for three years.

National Nuclear Security Agency: “*Investigations leading to a greater accuracy in the knowledge of low energy cross sections of stable and unstable nuclei and corresponding reaction rates for neutron, gamma, and ion-induced reactions,*” Award amount: Total: \$690,000, UD: \$178,000; received March 2016 for three years (Co-PI on Consortium Grant with Steven W. Yates (U. KY, PI) and Jeffrey R. Vanhoy (USNA, Co-PI))

TRIUMP Lodging Grant – University of Guelph; Award amount \$400; summer 2013.

Department of Energy: Nuclear Energy University Program Research and Development Awards, *Advanced Elastic/Inelastic Nuclear Data Development Project*, received September 2012 for three years. Award amount: Total: \$880,000, UD: \$192,000, plus beam time at the University of Kentucky. (Co-PI on consortium Grant with Steven W. Yates PI (U. of KY, PI), Jeffrey R. Vanhoy (USNA, Co-PI) and Tony Hill (INL, Co-PI))

Department of Energy: Nuclear Energy University Program Research and Development Awards, *Advanced Elastic/Inelastic Nuclear Data Development Project*, Received September 2009 for three years. Award amount: Total: \$1,497,500, UD: \$110,000, plus beam time at the University of Kentucky. (Consortium Grant: Idaho State U., U. of Massachusetts, Lowell, Colorado School of Mines, Idaho National Lab, Los Alamos National Lab, U. of KY, U. of Utah, US Naval Academy: Harmon, Frank; Co-PIs: Chowdhury, Partha; Greife, Ewe; Fisher Hicks, Sally; Tsvetkov, Pavel; Vanhoy, Jeff; Hill, Tony; Kawano, Toshihiko; Slaughter, David)

National Science Foundation Grant for Research in Undergraduate Institutions, *Structural Characteristics of  $^{126,128, 130}\text{Te}$  through Inelastic Neutron Scattering*; Received May 1999. Award amount: \$106,570 plus beam time at the University of Kentucky (PI)

*Nuclear Structure Studies of  $^{126}\text{Te}$  via the  $^{124}\text{Sn}(\alpha,2n\gamma)^{126}\text{Te}$* , funded by the Paul Scherrer Institute (PSI), the Swiss National Science Foundation, and the US National Science Foundation. Award amount: 15 days of beam time at the PSI cyclotron for experiments in June 1999 and May 2000. (Co-PI with Prof. Jan Jolie and Nigel Warr (U. of Cologne, Co-PI,PI) and Jeff Vanhoy (USNA, Co-PI)

*Nuclear Structure Studies of  $^{120}\text{Te}$  via the  $^{118}\text{Sn}(\alpha,2n\gamma)^{120}\text{Te}$  Reaction and  $^{120}\text{I}$  Decay*, funded by the Paul Scherrer Institute, the Swiss National Science Foundation, and the US National Science Foundation. Award amount: 20 days of beam time at the PSI cyclotron for experiments in July and December of 1998. (Co-PI with Prof. Jan Jolie and Nigel Warr (U. of Cologne, Co-PI,PI) and Jeff Vanhoy (USNA, Co-PI)

National Science Foundation Grant for Research in Undergraduate Institutions, *Nuclear Structure Studies of the Tellurium Nuclei*; Received June, 1996. Award amount: \$108,749 plus beam time at the University of Kentucky. (PI)

National Science Foundation Grant for Research in Undergraduate Institutions, *Nuclear Structure Studies of Mixed-Symmetry States in the  $N=84$  and  $Z=52$  Vibrational Nuclei*; Received May 1993; Award amount: \$104,258 plus beam time at the University of Kentucky. (PI)

National Science Foundation Grant for Research in Undergraduate Institutions, *Collective Excitation and Spectroscopic Studies of the Nuclei  $^{140}\text{Ce}$ ,  $^{204,206}\text{Pb}$ , and  $^{127}\text{Xe}$* ; Received May, 1990; Award amount: \$86,535 plus beam time at the University of Kentucky. (PI)

Cottrell College Grant, *Collective Excitation and Spectroscopic Studies of  $^{140}\text{Ce}$* . Awarded \$30k

but returned because of simultaneous NSF award. (PI)

## **Professional Organizations**

Council of Colleges of Arts and Sciences, 2018-2020  
National Association of Fellowship Advisors, 2013-2015  
Association for Research at University Nuclear Accelerators (ARUNA), since 2011  
American Physical Society, since 1982  
American Chemical Society - Division of Nuclear Chemistry and Technology  
Sigma Xi, since 1990  
Kappa Mu Epsilon, Mathematics Honor Society  
Phi Kappa Phi, Academic Honor Society  
Sigma Pi Sigma, Physics Honor Society

## **University Committees and Service**

### Standing Committees:

Constantin Strategic Planning Committee: 2018-2020; Chair  
Rome Committee: 2018-2020 (*ex officio*)  
Council of Deans: 2018-2020 (*ex officio*)  
Provost's Council: 2018-2020 (*ex officio*)  
University Council: 2018-2020(*ex officio*)  
Rank and Tenure: 2016-2018, *ex officio* 2018-2020  
Undergraduate Council: 2014-present; Chair: 2018-2020 (*ex officio*)  
Council of Deans and Chairs: 2014-2020; 2018-2020 (*ex officio*)  
Joint Committee on Ministry Education 2018-2020 (*ex officio*)  
Constantin College Academic Discipline Committee 2018-2020 (*ex officio*)  
Intellectual Property and Copyright Committee: 2013-2014  
Faculty Development Committee: 2013-2014  
Committee for Counseling on Postgraduate Studies: 2012-2020  
University Council: 2010-2011  
Faculty Development Committee: 2010-2011  
Constantin Committee on Admissions and Financial Aid: 2008-2010  
Institutional Review Board Alternate 2009-present  
Student Discipline Committee: 2007-2008  
Curriculum Committee: 2005-2007  
Council of Deans and Chairs: Fall 2005  
Committee on Athletics, Sports and Recreation: 2002-2004  
University Council: 2000-2002  
Constantin Curriculum Committee: 2000-2002  
Student Discipline Committee: 2000-2001  
Library Rank & Retention Committee: 1999-2000  
Constantin Committee on Admissions and Financial Aid: 1998-2000  
Rank and Tenure Committee: 1996-1997

Curriculum Committee: 1994-1995

Faculty Senate:

- *Ex Officio* member 2018-2020
- Member: 1994–1997, 1999–2004, 2005–2007, 2010–2014, 2017-2018
- Election Committee: Spring 2013, Summer 2017
- Chair of Faculty Senate: 2010-2011: Core, SOM, UG Pastoral Ministry Degree
- Faculty Compensation Committee: *ex officio* member 2010-2011
- Sub-Committee on Academic Standards: 2005
- Sub-Committee on Student Success at Receiving Fellowships: Spring 2004
- Developed online Blackboard Class for University Faculty: Fall 2003
- Sub-Committee to establish better communication regarding finances. Fall 2003.
- Senate Officer's Faculty Retreat (helped organize and conduct): Spring 2002
- Sub-Committee to develop a Procedure to Establish Institutes.
- Sub-Committee to investigate grade inflation and an honor code.
- Nominations Committee Chair: 2001-2002
- Vice-Chair of Faculty Senate: 2001-2002
- Nominations Committee Chair: 2000-2001
- Acting Secretary of the Faculty Senate (2/3 of the meetings): 2000-2001
- Vice-Chair of Faculty Senate: 2000-2001
- Vice-Chair of Faculty Senate: 1995 – 1996
- Nominations Committee Chair: 1995-1996
- Nominations Committee: 1994-1996

Student Discipline Committee: 1993 - 1995

Student Life Committee: 1991 – 1992

Safety Committee: 1989 - 1992

#### Task Forces and Special University Committees:

Provost Search Committee 2017-2018

Piper Selection Committee 2016-2018

Biology Search Committees (two) 2016-2017

Learning Management System Advisory Committee 2016-present

Economics Search Committee (Co-Chair) 2016

Biology Search Committee 2015-2016

QEP Council 2014-2018

QEP Advisor 2014-2018

Tower Editorial Advisor Board: 2013-2015

Commission for Workplace Fairness, Equity and Respect: 2014-2015

History Search Committee: 2013-2014

SACSCOC QEP Committee: Spring 2013 – Summer 2015

SACSCOC Institutional Effectiveness Research Committee: Spring 2012-2013

Inauguration Committee: Summer-Fall 2010

Orientation Committee: Summer 2010

College of Business Focus Group: Fall 2009

Presidential Search Committee: Summer-Fall 2009

Residential Village Committee: 2007-2008

Clare Luce Booth Proposal Committee: 2008

Howard Hughes Proposal Committee: 2007  
Disciplines of the Western Tradition Committee: Summer 2006  
Alumni Panels Committee: Summer-Fall 2005  
Math Search Committee: Spring 2005  
Spanish Search Committee: Fall 2003-Spring 2004  
Committee to Evaluate the Computer Science Major: Fall 2003  
Students with Disabilities Committee: 2003  
Committee to Investigate Summer Study Abroad Programs: Spring 2003  
Committee on Accommodations for Students with Learning Disabilities: 2002-2003  
Math Department Search Committee: 2002-2003  
Cooperation between GSM, Braniff and Constantin Committee: 2001-2002  
Core-Review Committee: 2000-2001  
Football Committee: Fall 1998  
Book Store Task Force: Fall 1996  
Student Life Search Committee: Spring & Summer 1994  
Student Life Task Force: Spring 1994 - Spring 1995  
Sexual Harassment Committee: 1993 - 1994  
SACSCOC Review Physical Resources Committee: 1992 - 1993  
Convivium Committee: 1990 – 1993; Chair: 1992 - 1993  
Mathematics Faculty Search Committee: Spring 1990

Department Service:

Physics Department Search Committee (tenure-track), Chair: 2016-2017  
Physics Department Search Committee (tenure-track), Chair: 2014-2015  
Physics Department Search Committee (affiliate): 2012-2013  
EPA Audit Preparation: 2012  
Physics Webpages Design and Maintenance: 2001-2016  
Engineering Webpages Design and Maintenance: 2012-2016  
Acting Physics Chair: Fall 1998, 2005  
Hosted Physics Department Spring Picnic: 1989-present, except (1998, 2005, 2012)  
Hosted Physics Department Christmas Party 2015  
Physics Department Search Committee: 2001-2002  
Organized Physics Department Seminar Speakers  
Prepared and Graded Physics Comprehensive Examinations: Fall 2000-2002, 2005  
Physics Department Search Committee: 2000-2001  
Math-Science Colloquium: *Nuclear Structure From A Simple Perspective* (Spring 2000)  
Talks for Prospective Students and Parents:

- *Solar Burning* (1998)
- *Do We Know How the Sun Shines?* (Spring 2000, Fall 2001)
- *They Don't Make Things Like They Use To* (Spring 2003)

Physics Department Search Committee: Spring 1997  
Student Advisor: Fall 1990 – present  
Pre-Engineering Advisor: Fall 1990 - present  
Comprehensive Examination: 1994  
Physics TPSAR Coordinator: Spring 1990 - 1994  
Physics Faculty Search Committee: Spring 1990

Physics Department Bibliographer: 1989 – 1998

### University Service

*Across the Core: Galileo's Two World Systems*, 2017

Graduation Awards Committee: 2013-2017

Meet Us @ the Tower: *Physics and Engineering at UD*, 2013-2018

Marshall Faculty Representative: 2013-2015

Mitchell Faculty Representative: 2013-2017

Truman Faculty Representative: 2014-2016

Udall Faculty Representative: 2013-2015

Gilman Faculty Representative 2013-2015

SMART, NSF, NDSEG Faculty representative, ongoing

Goldwater Scholarship Faculty Representative: 1994 – 1997, 2012-2017

Focus Group Presentation – Orientation Weekend – Fall 2012, Fall 2013, Fall 2014, Fall 2015

Designed Curriculum for 3-2 Engineering with UTA 2010-2014

ACTC- Conference Attendee: Fall 2006; Recruited speakers 2004

Departmental Presentation for Odyssey Weekend – Several years

Conducted interviews for Odyssey Weekend & Physics Scholarship – Several years

Faculty Book Discussion Presenter: Spring 2002; Organizer Fall 2010

Participated in the Admissions Planning Retreat at the Ballpark in Arlington: Summer 2000

Education Department Comprehensive Examination Committee - Spring 1993, Fall 1996

Midnight Breakfast Server – Multiple years

Presidential Scholars Interviews: Spring 1990-1996

Dorm Patron – O'Connell Hall 1991-1992

Math Club Speaker: Spring 1991

### Community Service:

Career Day – Stikes Elementary – 2013, 2014

Coppell High School Band-various roles- 2006-2013

Coppell Community Garden – 1998-2009; Steering Committee – 2000-2003; Service Hours

Recorder – 2005-2009

Coppell 2030 – 2008

Grants Chair – Coppell School of Engineering 2007-2008

Career Day 2004 – Coppell Middle School West

Coppell United Methodist Church-Living the Faith (Summer 2003):

*Big Bang Theory – Is There Room for God Too?*

Science Demonstrations at Wilson Elementary: Spring 2003, Fall 2003

Astronomy Observing Session for Wilson Elementary Students: Spring 2001

Mentor – Wilson Elementary in Coppell and in Irving (multiple years)

### Complete List of College Courses Taught

General Physics I (Calc) (Core Class for Science/Math Majors)

General Physics I Laboratory (Calc) (Core Class for Science/Math Majors)

General Physics II - (Calc) (Core Class for Science/Math Majors)



General Physics II Laboratory (Calc) (Core Class for Science/Math Majors)  
Optics  
Optics Laboratory  
Electronics  
Electronics Laboratory  
Quantum Physics  
Quantum Physics Laboratory  
Independent Study - Nuclear Physics  
General Physics I (Trig) (Core Class for Pre-Health/Biology Majors)  
General Physics II (Trig) (Core Class for Pre-Health/Biology Majors)  
General Physics Laboratory I (Trig) (Core Class for Pre-Health/Biology Majors)  
General Physics Laboratory (Trig) (Core Class for Pre-Health/Biology Majors)  
FORTRAN Programming  
Statistical Physics  
Basic Ideas of Physics (Core Class for Humanities Majors)  
Basic Ideas of Physics Laboratory (Core Class for Humanities Majors)  
Nuclear & Particle Physics  
Electromagnetic Theory  
Nucleosynthesis (1/3 semester)  
Physics Research - Experimental  
Physics Seminar  
Theoretical Mechanics  
Scientific Investigations  
Recent World (Hum 5300) Quantum Theory and Special Relativity (one lecture)  
History of Scientific Revolutions: Quantization (one lecture; several times)  
Interdisciplinary Science Laboratory (Cross-disciplinary Biology, Chemistry, and Physics)

## **Professional Activities**

APS Workshop *Negotiation*, with Dr. Kelly Nash (UTSA) at the F2019 TSAPS Meeting  
APS Workshop on Negotiation August 6-7, 2019, American Center of Physics  
Physics Program Review, Texas Lutheran University, April 2019  
Physics Climate Review, Unnamed Tier 1 University, December 2019  
Keynote Address at Math, Science & U Conference for Girls at Midwestern State U, 2018  
CAARI Session Organizer and Chair, August 2018  
AAPT Workshop for Experienced Teacher 2016 (accepted to attend and funded)  
Region 10 Texas Regional Collaborative Workshop: Collision, Reflection, Interference;  
Organized, Developed Curriculum, and led 2-day event at UD, July 28-29, 2015.  
King Address – *My Sisyphian Boulder* Jan 21, 2014, King-Hagggar Faculty Awards  
Attended National Association of Fellowship Advisors Meeting, Atlanta, GA, July 2013  
SMART Panel for the Department of Defense, 2013  
NDSEG Fellowship Panel for the Department of Defense, 2013  
Nuclear Physics Seminar, Notre Dame University, 2012  
Project Lead Deliverable IV for the Advanced Nuclear Data Development Project, 2011-12  
Session Chair- *Fourteenth International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics*, University of Guelph, Guelph, Ontario, Aug. 28 – Sep. 2, 2011.

Invited Talk – *CAARI* Conference 2010

Nuclear Physics Research Supported by the Department of Energy 2010-2014

Texas Regional Collaborative Workshop for High School Teachers: July 6-13, 2009.

Invited Talk – Eastern Kentucky University: March 2009

ACTC Conference in Oakland, CA as the UD Science Representative: Fall 2006.

Invited Talk – *CAARI* Conference 2006

Session Chair – Frontiers in Nuclear Structure, ACS Meeting, Spring 2006

Nuclear Physics Research Supported by UK: 2004-2006

National Science Foundation Graduate Fellowship Panel: Spring 1998(?), 2001, 2002, 2004, 2009, 2011, 2015-2016

Nuclear Physics Colloquium, Texas A&M University: Fall 1999.

Nuclear Physics Research Funded by NSF: 1990 – 2003

Physics Colloquium, Baylor University: Spring 1990

American Physical Society-Nuclear Division Meetings (See abstracts)

## **Consulting and Reviews**

### **Nuclear Physics:**

Promotion Review, Unnamed Tier 1 University, July 2021  
Physics Department Review, Texas Lutheran University, 2019  
Climate Review for the American Physical Society, R1 University, 2018  
CAARI Session Organizer, Reviewer and Chair, 2018  
Proposal review DOE Nuclear Physics, NNSA, NEUP 2018-2021  
*Conference Experience for Undergraduates* – review committee the APS-DNP, 2017  
Manuscript reviews for *Nuclear Instruments and Methods*  
Manuscript reviews for *Science Asia*  
Manuscript reviews for Physics Procedia  
CAARI peer reviewer: Summer 2010, 2012, 2014, 2016, 2018  
Nuclear Physics and MRI Proposal Review – NSF: Fall 1995, 1999-2003, 2018-2020  
Research Experiences for Undergraduates - NSF Proposal Review Panel: Fall 1995

### **Textbook Chapters and Consulting:**

Physics Text Review for John Wiley & Sons: Spring 2009  
Physics Text Review of Serway for Brooks/Cole: January 2002  
Physics Text Review for Brooks/Cole Publishing: Spring 2001  
Physics Text Review for Holt, Rinehart & Winston: Spring 1997  
Spaeth Machine Shop – 1996

## **Scholarship**

### **Dissertation Title:**

*Neutron Scattering Studies of the Doubly Magic Ca Nuclei,  $^{40}\text{Ca}$  and  $^{48}\text{Ca}$ , in the Low-Energy Resonance Region*, mentored by Professor Marcus T. McEllistrem

### **Peer Reviewed Articles and Conference Proceedings since 2005:**

“Nuclear structure of  $^{130}\text{Te}$  from inelastic neutron scattering and shell model analysis”, S. F. Hicks, A. E. Stuchbery, T. H. Churchill, et al, Submitted to Physical Review C June 6, 2021.

“Templates of Expected Measurement Uncertainties”, D. Neudecker, ..., J.Vanhoy, ... S.F. Hicks, ... (50 total authors), submitted to Nuclear Data Sheets June 2021.

“Low-lying octupole isovector excitation in  $^{144}\text{Nd}$ ,” M. Thürauf, Ch. Stoyanov, M. Scheck, M. Jentschel, C. Bernards, A. Blanc, N. Cooper, G. De France, E. T. Gregor, C. Henrich, S. F. Hicks, J. Jolie, O. Kaleja, U. Köster, T. Kröll, R. Leguillon, P. Mutti, D. O’Donnell, C. M. Petrache, G. S. Simpson, J. F. Smith, T. Soldner, M. Tezgel, W. Urban, J. Vanhoy, M. Werner, V. Werner, K. O. Zell, and T. Zerrouki, Phys. Rev. C 99, 011304(R) (2019).

“Undergraduate Education at the University of Kentucky Accelerator Laboratory”, A.P.D. Ramirez, B. Alemayehu, J. Lowrie, S.F. Hicks, J.R. Vanhoy, M.T. McEllistrem, S. Mukhopadhyay, E.E. Peters, and S.W. Yates, Physics Procedia \_\_, \_\_ (2019). (submitted Oct 2018).

“ $^{54}\text{Fe}$  Neutron Elastic and Inelastic Scattering Differential Cross Sections from 2-6 MeV,” J.R. Vanhoy, S.H. Liu, S.F. Hicks, B.M. Combs, B.P. Crider, A.J. French, E.A. Garza, T. Harrison, S.L. Henderson, T.J. Howard, M.T. McEllistrem, S. Nigam, R.L. Pecha, E.E. Peters, F.M. Prados-Estévez, A.P.D. Ramirez, B.G. Rice, T.J. Ross, Z.C. Santonil, L.C. Sidwell, J.L. Steves, B.K. Thompson, and S.W. Yates, Nucl. Phys. A972, 107-120 (2018).

“Research at the University of Kentucky Accelerator Laboratory,” **S. F. Hicks** and M. A. Kovash, Conference on the Application of Accelerators in Research and Industry, CAARI 2016, 30 October – 4 November 2016, Ft. Worth, TX, USA. Physics Procedia for the Proceeding from the Conference on Applications of Accelerators in Research and Industry CAARI 2016, 30 October – 4 November 2016, Ft. Worth, TX USA. Accepted by journal Sep. 27, 2017.

“Opportunities for Undergraduate Research in Nuclear Physics”, **S. F. Hicks**, S. T. Block, S. T. Byrd, Thien An Nguyen, Daniel Jackson, J. R. Vanhoy, E. E. Peters, A. P. D. Ramirez, M. T. McEllistrem, S. Mukhopadhyay, and S. W. Yates, Physics Procedia for the Proceeding from the Conference on Applications of Accelerators in Research and Industry CAARI 2016, 30 October – 4 November 2016, Ft. Worth, TX USA. Accepted by journal Sep. 27, 2017.

“Inspection of  $^{56}\text{Fe}$   $\gamma$ -Ray Angular Distributions as a Function of Incident Neutron Energy Using Optical Model Approaches”, J.R. Vanhoy, J.R., A.P.D. Ramirez, D.K. Alcorn-Dominguez, S.F. Hicks, E.E. Peters M.T. McEllistrem, S. Mukhopadhyay, S.W. Yates, EPJ Web of Conferences 146, 11051 (2017). [DOI: 10.1051/epjconf/201714611051](https://doi.org/10.1051/epjconf/201714611051)

“Level lifetimes and the structure of  $^{134}\text{Xe}$  from inelastic neutron scattering,” E. E. Peters, A. Chakraborty, B. P. Crider, S. F. Ashley, E. Elhami, **S. F. Hicks**, A. Kumar, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, F. M. Prados-Estévez, and S. W. Yates, Phys. Rev. C 95, 064605 (2017).

“Neutron scattering cross section measurements for  $^{56}\text{Fe}$ ,” A. P. D. Ramirez, J. R. Vanhoy, **S. F. Hicks**, M. T. McEllistrem, E. E. Peters, S. Mukhopadhyay, T. D. Harrison, T. J. Howard, D. T. Jackson, P. D. Lenzen, T. D. Nguyen, R. L. Pecha, B. G. Rice, B. K. Thompson, and S. W. Yates, Phys. Rev. C 95, 064605 (2017).

“Lifetimes in  $^{124}\text{Te}$ : Examining Critical-Point Symmetry in the Te Nuclei”, **S. F. Hicks**, J. R. Vanhoy, P. G. Burkett, B. R. Champine, S.J. Etzkorn, P. E. Garrett, S. W. Yates, and Minfang Yeh, Phys. Rev. C 95, 034322 (2017).

“Collective quadrupole behavior in  $^{106}\text{Pd}$ ,” F. M. Prados-Estévez, E. E. Peters, A. Chakraborty, M. G. Mynk, D. Bandyopadhyay, N. Boukharouba, S. N. Choudry, B. P. Crider, P. E. Garrett, **S. F. Hicks**, A. Kumar, S. R. Leshner, C. J. McKay, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, and S. W. Yates, Phys. Rev. C 95, 034328 (2017).

“E0 transitions in  $^{106}\text{Pd}$ : Implications for shape coexistence,” E.E. Peters, F. M. Prados-Estévez, A. Chakraborty, M.G. Mynk, D. Bandyopadhyay, S.N. Choudry, B. P. Crider, P.E. Garrett, **S. F. Hicks**, A. Kumar, S. R. Leshner, C. J. McKay, M.T. McEllistrem, J.N. Orce, M. Scheck, J.R.

Vanhoy, J.L. Wood, and S.W. Yates, Eur. Phys. J. A (2016) 52: 96 DOI 10.1140/epja/i2016-16096-y (5 pgs)

“Neutron Scattering Differential Cross Sections for  $^{23}\text{Na}$  from 1.5 to 4.5 MeV,” J.R. Vanhoy, S.F. Hicks, A. Chakraborty, B.R. Champine, B. M. Combs, B.P. Crider, L. J. Kersting, A. Kumar, C. J. Lueck, S. H. Liu, P. J. McDonough, M.T. McEllistrem, E.E. Peters, F.M. Prados-Estévez, L.C. Sidwell, A. J. Sigillito, D.W. Watts, and S.W. Yates, Nuclear Physics A 939 (2015) 121–40. <http://www.sciencedirect.com/science/article/pii/S0375947415000706>

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“Undergraduate Measurements of Neutron Scattering Cross Sections,” S. F. Hicks, J. R. Vanhoy, S.W. Yates and M.T. McEllistrem, presented at the ARUNA Workshop at the University of Notre Dame for the white paper contribution for the NSAC Long-Range Plan on behalf of the ARUNA laboratories, June 12-13, 2014. [Association for Research at University Nuclear Accelerators (ARUNA)].

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“Mapping E2 strength and the Status of Vibrational Structure in  $^{106}\text{Pd}$ ,” A. Chakraborty, F. M. Prados-Estévez, E. E. Peters, M.G. Mynk, D. Bandyopadhyay, N. Boukharouba, S. N. Choudry, B. P. Crider, P.E. Garrett, S. F. Hicks, A. Kumar, S. R. Leshner, C. J. McKay, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, and S.W. Yates, to be presented at the International Symposium on Nuclear Physics, Dec. 2-6, 2013, Bhabha Atomic Research Centre, Mumbai-400 085, India.

“Neutron scattering studies of  $^{54,56}\text{Fe}$  with monoenergetic neutrons,” S.F. Hicks, B.M. Combs, S. L. Henderson, L. C. Sidwell, J.R. Vanhoy, E. Garza, J. Steves, A. Chakraborty, B.P. Crider,

F.M. Prados-Estévez, A. Kumar, M.T. McEllistrem, E.E. Peters, T. J. Ross, and S.W. Yates, presented at the APS Division of Nuclear Physics 2013 meeting in Newport News, VA, October 23-26, 2013.

“Collective quadrupole behavior in  $^{106}\text{Pd}$ : deficit of E2 strength in three-phonon levels,” F.M. Prados-Estévez, A. Chakraborty, E.E. Peters, M. G. Mynk, D. Bandyopadhyay, N. Boukharouba, S. N. Choudry, B. P. Crider, A. Kumar, S. R. Leshner, C. J. McKay, M. T. McEllistrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, S. W. Yates, P.E. Garrett, S. F. Hicks, J. R. Vanhoy, J. L. Wood, to be presented at the APS Division of Nuclear Physics 2013 meeting in Newport News, VA, October 23-26, 2013.

“Basic and Applied Science Using the Monoenergetic Pulsed Neutron Beams from the University of Kentucky Accelerator Laboratory”, J.R. Vanhoy, S.F. Hicks, H.E. Baber, M. T. McEllistrem, B.P. Crider, S.W. Yates, E.E. Peters, B.R. Champine, F.M. Prados-Estévez, to be presented at the Eleventh International Topical Meeting on Nuclear Applications of Accelerators, Aug. 5-8, 2013, Bruges, Belgium.

“Differential Cross Sections for Neutron Elastic and Inelastic Scattering on Sodium-23”, J.R. Vanhoy, S.F. Hicks, A. Chakraborty, B.R. Champine, B. Combs, B.P. Crider, L. J. Kersting, A. Kumar, C. J. Lueck, P.J. McDonough, M.T. McEllistrem, E.E. Peters, F.M. Prados-Estévez, L. Sidwell, A. Sigillito, D.W. Watts, and S.W. Yates, International Nuclear Physics Conference INPC2013: 2-7 June 2013, Firenze, Italy (Poster).

“Nuclear Structure Study of  $^{106}\text{Pd}$  and  $^{106}\text{Cd}$  with the  $(n, n'\gamma)$  Reaction”, F. M. Prados-Estévez, A. Chakraborty, E. E. Peters, M. G. Mynk, A. Linnemann, D. Bandyopadhyay, N. Boukharouba, S. N. Shoudry, B. P. Crider, P. E. Garrett, S. F. Hicks, J. Jolie, A. Kumar, S. R. Leshner, C. J. McKay, M. T. McEllestrem, S. Mukhopadhyay, J. N. Orce, M. Scheck, J. R. Vanhoy, J. L. Wood, and S. W. Yates, International Nuclear Physics Conference INPC2013: 2-7 June 2013, Firenze, Italy (Poster).

“Elastic and Inelastic Neutron Scattering on  $^{23}\text{Na}$ ”, Leslie Sidwell, Brett Combs, S. F. Hicks, A. Chakraborty, B. P. Crider, A. Kumar, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estevz, J. R. Vanhoy, and S. W. Yates, presented at the Texas Section of the American Physical Society Meeting at Tarleton State University, April 5-6, 2013.

“Neutron Scattering Cross Sections on  $^{23}\text{Na}$ ”, Brett Combs, S. F. Hicks, A. Chakraborty, B. P. Crider, A. Kumar, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, L. Sidwell, J. R. Vanhoy, and S. W. Yates, presented at SCUWiP 2013 - Undergraduate Women in Physics Conference at the University of Texas, Austin, Jan 18-20, 2013.

“Analysis of  $^{23}\text{Na}(n,n)$  Differential Cross Sections and  $^{23}\text{Na}(n,n'\gamma)$  Excitation Functions”, J.R. Vanhoy, D.W. Watts, S.F. Hicks, A. Sigillito, P.J. McDonough, L.J. Kersting, C.J. Luke, B. Combs, L. Sidwell, A.Kumar, M.T. McEllistrem, S.W. Yates, F.M. Prados-Estévez, A. Chakraborty, B.P. Crider, E.E. Peters, presented at the Workshop on Neutron Elastic and Inelastic Scattering 2012, Boston, MA, September 16-19, 2012.

“Elastic and Inelastic Neutron Scattering Cross Sections for Fission Reactor Applications,” S. F.

Hicks, A. Chakraborty, B. Combs, B. P. Crider, L. Downes, J. Girgis, L. J. Kersting, A. Kumar, C. J. Lueck, P. J. McDonough, M. T. McEllistrem, E. E. Peters, F. M. Prados-Estévez, J. Schniederjan, L. Sidwell, A. J. Sigillito, J. R. Vanhoy, D. Watts, and S. W. Yates, CAARI 2012, Ft. Worth, TX, August 5 – 10, 2012.

“Nuclear Structure Study of  $^{106}\text{Pd}$  from the Inelastic Neutron Scattering Reaction”, F.M. Prados-Estévez, A. Chakraborty, E.E. Peters, M.G. Mynk, D. Bandyopadhyay, N. Boukharouba, S.N.Choudry, B.P. Crider, P.E. Garrett, S. Hicks, A. Kumar, S. Leshner, C.J. McKay, M.T. McEllistrem, S. Mukhopadhyay, J.N. Orce, M. Scheck, J.R. Vanhoy, J. L. Wood, and S.W. Yates, Nuclear Structure 2012, Argonne National Laboratory, August 13-17, 2012.

“The Beauty of the  $(n,n'\gamma)$  Reaction for Investigating Collective Excitations Across the Te Isotopic Chain, S. F. Hicks, Nuclear Physics Seminar, University of Notre Dame, Feb. 20, 2012. (Invited Talk)

“Advanced Elastic/Inelastic Neutron Data Development Project”, AEINDDP Collaboration Meeting 2011, Irving, TX, Oct. 7, 2011.

“Measurement of the Absolute Elastic and Inelastic Differential Neutron Cross Sections for  $^{23}\text{Na}$  between 2 and 4 MeV”, Ajay Kumar, M.T. McEllistrem, S.W. Yates, F.M. Prados-Estévez, A. Chakraborty, B.P. Crider, E.E. Peters, S.F. Hicks, Anthony Sigillito, P.J. McDonough, L. Kersting, C. Lueck, and J.R. Vanhoy, presented at the 14<sup>th</sup> International Symposium on Capture Gamma-Ray Spectroscopy and Related Topics, Aug. 28- Sep. 3, 2011, U. of Quelph, Ontario.

### **Undergraduate Research Thesis and Project Mentoring:**

Supported by National Science Foundation Grants:

- Eric Meier - Research on  $^{140}\text{Ce}$  (B.S.)
- Chris Bennett - High Purity Germanium Detector Studies (B.S.)
- Susie Maska - Analysis of  $^{140}\text{Ce}$  data.
- Carl Lundstedt -  $^{127}\text{Xe}$  and  $^{142}\text{Ce}$  Spectroscopy (B.S.)
- Chris Davoren - Electromagnetic transition rates in  $^{144}\text{Nd}$
- William Faulkner - EM transition rates of low-energy excited states in the Te nuclei. (B.S.)
- Stephen Etzkorn - Search for Evidence of Intruder-band Excitations in  $^{124}\text{Te}$ . (B.S.)
- Peter Burkett - Nuclear Structure Studies of  $^{124}\text{Te}$
- Corey Collard - Gamma-Ray Decay Characteristics of  $^{122}\text{Te}$  Levels Below 3.3 MeV. (B.S.)
- Garrish Alexander - Investigations in the Decay Properties of Collective Excitations in the  $^{122}\text{Te}$  Nucleus. (B.S.)
- Beth Sklaney - EM Transition Rates and Multiphonon Excitations Observed in the  $^{140}\text{Ce}$  Nucleus. (B.S.)
- Meghan Walbran Low-Energy Excited Levels of  $^{122}\text{Te}$  Through Gamma-Ray Spectroscopy Following Inelastic Neutron Scattering. (B.S.)
- Christopher Aubin -  $^{122}\text{Te}$  Coincidence and Angular Distribution Studies – no thesis
- Matthew Burns - Multiphonon Excitations in  $^{122}\text{Te}$ . (B.S.)
- Patrick Roddy - Calibrations for  $^{126}\text{Te}$  Measurements – no thesis.
- J.C. Boehringer - Collective Excitations Observed in  $^{128}\text{Te}$  (B.S.)

- Jeff Ellis – Helped measure gamma-ray excitation functions on  $^{130}\text{Te}$ , no thesis.

(18 students total)

#### Undergraduate Research Students --- Supported by Department of Energy Grants

- Peter McDonough – Experimental Apparatus and Analysis for Neutron Scattering.
- Luke Kersting – Neutron Scattering Measurements on  $^{\text{nat}}\text{Fe}$  (B.S.)
- Collin Lueck – Computer program to fit two kinematic groups in neutron spectra, no thesis.
- Anthony Sigillito – Neutron scattering measurements on  $^{23}\text{Na}$
- Laura Downes – Neutron production cross sections observed in  $^{23}\text{Na}$ .
- Jeffrey Schniederjan - Neutron production cross sections observed in  $^{\text{nat}}\text{Fe}$ .
- Jessie Girgis – Neutron detector efficiencies
- Leslie Sidwell – Neutron scattering studies of  $^{23}\text{Na}$  at  $E_n= 3.40$  and  $3.19\text{MeV}$ .(B.S., 2 years)
- Brett Combs – Neutron scattering studies of  $^{23}\text{Na}$  at  $E_n= 3.19$  and  $3.57\text{ MeV}$ . (B.S.)
- Samuel Henderson – Neutron scattering studies of  $^{54}\text{Fe}$  at  $E_n= 3.19$  and  $3.57\text{ MeV}$ .(B.S.)
- Aaron French – Gamma-ray Spectroscopy Measurements on  $^{54}\text{Fe}$  (B.S.)
- Zack Santonil – Gamma-ray Spectroscopy Measurements on  $^{56}\text{Fe}$
- Luke Pecha – Determination of Decay Characteristics of  $^{54}\text{Fe}$  Excited Levels through Inelastic Neutron Scattering (2014-2015) (B.S.)
- Thaddeus Howard -  $^{56}\text{Fe}$  Inelastic Neutron Scattering Cross Sections Deduced from  $\gamma$ -Ray Production Cross Sections (2014-2015) (B.S.).
- ThienAn Nguyen – Simulations on the Effectiveness of the UKAL Scattering Pit and Vanadium Gamma-Ray Analysis" (2015) (B.S.)
- Daniel Jackson – MCNP Neutron "Simulations on the Effectiveness of the UKAL Scattering Pit and Vanadium Gamma-Ray Analysis" (2015) (B.S.)
- Stephen T. Byrd, "Neutron Scattering Differential Cross Sections for  $^{12}\text{C}$ " (2016). (B.S.)
- Steven Block, "Searching for scintillation detector drift through analysis of recoil spectra from neutrons scattered from  $^{12}\text{C}$  and  $\gamma$ -rays emitted from radioactive sources  $^{137}\text{Cs}$ ,  $^{60}\text{Co}$ , and  $^{241}\text{Am}$ " (2016). (B.S.)
- Matthew Nickel, "Neutron Scattering Differential Cross Sections for  $^{12}\text{C}$  from 5.58 to 6.04 MeV" (2016). (B.S.)
- Elizabeth Lyons, "Elastic and Inelastic Neutron Scattering for  $^{12}\text{C}$  at  $E_n=5.9, 6.1,$  and  $7.0\text{ MeV}$ " (2017). (B.S.)
- Elizabeth Derdeyn, "Elastic and Inelastic Neutron Scattering from Silicon," (2017).
- John Lowrie (2018) *in progress*
- Beemnet Alemayeh (2018) *in progress*

(23 students total)

#### Other Student Theses Supervised (Graduation Years):

- Tessa Rosenberger, REU College of Wooster, "One-way Aeromechanical Array" (2019)
- Peter Chang, REU University of Texas, "Critical Coupling in Polaritonic Metasurfaces," (2019).
- Sophia Andaloro, REU University of Arkansas, "Fraunhofer Diffraction of Laguerre-Gaussian Vortex Beams Carrying Equal and Opposite Angular Momentum," (2019).
- Francis Cavanna, REU Sante Fe Institute, "Theoretical and Computational Ising Model Studies: Work and Time Costs of Information Erasure," (2018).

- MacKenzie Warrens, REU UCLA, "Construction of an Ex Vacuo Ion Trap" (2017).
- Joe Archer, REU University of Notre Dame, "Mapping the Non-Equilibrium Vortex Lattice Dynamics of MgB<sub>2</sub>," (2017).
- Matthew Fournier, REU Baylor University, "Characterizing a Low Earth Orbit Dust Detector," (2017).
- Mary Zischkau, "Next Generation Manometer: Designing a Speed of Sound Apparatus for the NIST Oil Ultrasonic Interferometer Manometer," Research conducted at NIST (2016)
- Michael Hoff, "Charging and Interaction of Two-Particle System within a Glass Box Immersed in a Low-Vacuum Argon Plasma, " Research conducted through the REU program at Baylor University (2015).
- Jack Bredemann, "Using RPC Data to Assist CSC Data when Dealing with Pt Assignment," Research conducted through the REU program at the University of Florida (2014).
- Elizabeth Sizemore, "Methodologies for Analyzing Motion Data in Humans," Research with Dr. Stephen Slaughter University of Dallas (2014).
- Mary Catalano, "Identifying Inertial Modes in a Hide-Titman Flow" (2011).
- Zofia Kaminski, "Particle Tracking of Fluorescent Microspheres" (2011).
- Christen Racciato, "Crystallization of Germanium for Use in Solar Cells" (2011).
- Anthony Sigillito, "The Design and Fabrication of Bismuth Hall Effect Biosensors" (2011).
- Natalie Weisse, "Expression and Manipulation of AquaporinZ in vitro Using the Cell Free System" (2011).
- Peter McDonough, "Iridium Satellite Signal Exploitation" (2010).
- Monica Lacy, "Improvements in Positron Accumulation Technique at ATRAP" (2010).
- Annette Borchard, "East Antarctic Ice Sheets: Potential for Sub-Glacial Water Based on Temperature Modeling" (2009).
- Joseph Gilpin, "Influence of Magnetic Molecules on Electron Spin Scattering in InAs as Seen in Its Low Temperature Magnetoresistance" (2009).
- David E. Solis, "The Effect of a Nematic Liquid Crystal Environment on the Alignment of the Conductive Polymer MEH-PPV as a Function of Polymer Chain Length" (2008).
- Gregory Robert Knutsen, "The structure of the Metal Transporter Tp34 and its Affinity for Divalent Metal Ions" (2008).
- William Spearman, "Testing Edgeless Planar Detectors" (2008).
- Eric Pepin, "Interaural Coherence and Localization" (2007).
- Bridget McEwen, "Using Seismology to Map and Characterize the Glacial Bed in the Onset Region of Ice Stream D, West Antarctica" (2007).
- Kristi Michels, "The <sup>27</sup>Al(p,<sup>+</sup>)<sup>28</sup>Si Reaction(2006).
- Maria Bellon, Stabilizing the Frequency of an InGaAs/AlGaAs Laser Module (2005)
- Levente Borvak, Neutron/Gamma-ray Pulse Shape Discrimination Using a PSD Circuit (2004).
- Stephanie Wissel, Skymaps for GALPROP Simulations of VHE Gamma Rays (2004).
- Janessa Bechtel, "Losses in SRF Cavities" (2003).
- Genevieve Wing, "Diffusion in the Presence of Adsorption in Organic Aerogels" (2003).
- Claire Nerbun, "Two-Photon Fluorescence Microscopy and Deconvolution Analysis" (2002).
- Brenda Martin, Insertion Complexes with Methyl- $\beta$ -Cyclodextrin with Alkane Chains Confined in an Isolated Droplet of Water (2001).
- Shelly Wark, "Sensitive Laser Detection of Environmental Pollutants" (2001).

- Elizabeth A. Reisinger, "Investigation of the Fundamental and Higher Order Modes of the APS Storage Ring Single Cell Cavity", (1993).
  - Patricia Suzanne Maska, "Development of Elastic Surfaces for Optical Estimation of Cell Traction Forces", (1992).
  - John Bauer, "Preliminary Results from a Search for a Superdeformed State in 188-Hg", (1990).
- (37 students total)