

James J. Napolitano

Professor of Physics
Temple University

BIOGRAPHICAL SKETCH AND PROFESSIONAL ACTIVITIES

Updated February 21, 2024

I. Introduction and Education History

Born May 12, 1955 in New York City (Citizenship: USA)

Name: James J. Napolitano Department: Physics
Current Rank: Professor College: Science & Technology

Appointed January 2014 Professor of Physics
Appointed July 2014 Vice Chair, Department of Physics
Appointed May 2015 Acting Chair, Department of Physics
Appointed July 2016 Chair, Department of Physics
Returned July 2021 Full time Physics faculty

Educational Preparation

Ph.D. Physics Stanford University April 1982
Thesis: "A Search for Free Fractional Charge"
M.S. Physics Rensselaer Polytechnic Institute August 1977
B.S. Physics Rensselaer Polytechnic Institute May 1977

II. Prior Professional Experience

1982 - 1983 Postdoctoral Research Associate Argonne National Laboratory
1983 - 1988 Staff Scientist Argonne National Laboratory
1988 - 1992 CEBAF Asst Prof of Physics College of William and Mary
1988 - 1992 Staff Scientist Continuous Electron Beam Accel Facility (CEBAF)
1992 - 1996 Assistant Professor Rensselaer Polytechnic Institute (RPI)
1996 - 1999 Associate Professor with Tenure
1998 - 1999 Associate Chair, Department of Physics
1999 - 2013 Professor
1999 - 2001 Interim Vice Provost for Information Technology
2012 - 2013 Joint Faculty with Nuclear Engineering

III. Teaching

A. Courses

Note: Only “regular” registered courses are listed. Readings, independent study, and seminar courses are not included.

Courses taught at Rensselaer Polytechnic Institute

Term	Course	Name	Students	Credits	Eval*
Fall 1992	78.235	Experimental Physics	36	4	3.08
Spring 1993	78.116	Physics I (Recitation)	46	4	3.55
Fall 1993	78.235	Experimental Physics	24	4	3.88
Fall 1994	78.235	Experimental Physics	33	4	3.63
Spring 1995	79.202	Astronomy II	21	3	3.60
Fall 1995	78.235	Experimental Physics	19	4	3.58
Spring 1996	78.462	Particles and Nuclei	28	3	3.84
	79.696	General Relativity	31	1	3.92
Fall 1996	79.205	Astronomy	63	4	3.56
Spring 1997	78.196	Physical Princ. of Design	47	4	3.62
Fall 1997	79.205	Astronomy	27	4	3.53
	78.196	A Passion for Physics	25	1	
Spring 1998	78.235	Experimental Physics	19	4	3.56
Fall 1998	PHYS2100	Intro Meth. Theo. Physics	40	4	3.52

* Based on standard RPI form, “Overall Effectiveness of Lecturer”, 4.0 maximum.

Term	Course	Name	Students	Credits	Eval [†]
Spring 1999	ASTR2050	Intro to Astronomy & Astrophysics	30	4	4.7
Fall 1999	PHYS2100	Intro to Methods of Theoretical Physics	21	4	4.6
Spring 2000	PHYS2350	Experimental Physics	14	4	3.4
Fall 2001	PHYS6510	Quantum Mechanics I	22	3	4.6
Spring 2002	PHYS6520	Quantum Mechanics II	22	3	4.9
Fall 2002	PHYS6510	Quantum Mechanics I	15	3	4.9
Spring 2003	PHYS6520	Quantum Mechanics II	12	3	4.4
Fall 2004	PHYS6530	Quantum Mechanics III	7	3	5.0
Spring 2005	ASTR2050	Intro Astron & Astrophysics	30	4	4.5
Fall 2005	PHYS6530	Quantum Mechanics III	12	3	5.0
	PHYS1010	A Passion for Physics	35	1	
Spring 2006	PHYS4100	Intro Quantum Mechanics	49	4	4.8
Fall 2006	PHYS1100	Physics I “Majors”	23	4	4.9
Spring 2007	PHYS4100	Intro Quantum Mechanics	40	4	4.8
Fall 2007	PHYS1961	Honors Physics I	51	4	4.8
Spring 2008	PHYS4100	Intro Quantum Mechanics	27	4	4.6
Fall 2008	PHYS1150	Physics I Honors	52	4	4.8
Spring 2009	PHYS4210	Electromagnetic Theory	58	4	4.9
Fall 2009	PHYS2330	Intermediate Mechanics	62	4	4.9
Spring 2010	PHYS4210	Electromagnetic Theory	48	4	4.8
Fall 2010	PHYS2330	Intermediate Mechanics	52	4	4.7
	PHYS2960	Matlab/Maple/Mathematica	45	1	4.7
Spring 2011	PHYS4210	Electromagnetic Theory	52	4	4.8
Fall 2011	PHYS4330	Theoretical Mechanics	53	4	4.9
Fall 2012	PHYS6510	Quantum Mechanics I	21	4	4.9
Spring 2013	PHYS6520	Quantum Mechanics II	12	4	5.0

[†] Based on IDEA form, “Overall Excellence of Teacher”, raw value, 5.0 maximum.

Courses taught at Temple University

Term	Course	Name	Students	Credits	Eval*
Spring 2015	PHYS2976	Intro to Modern Physics	20	4	4.8
Fall 2015	PHYS4702	Intro to Atomic, Nucl, Part Physics	8	4	5.0
Spring 2017	PHYS4000	Introduction to Astrophysics	10	3	5.0
Fall 2017	PHYS2063	Wave Physics	19	3	4.4
Spring 2018	PHYS5701	Quantum Mechanics I	14	3	5.0
Fall 2018	PHYS5702	Quantum Mechanics II	15	3	5.0
Spring 2019	PHYS3701	Introduction to Quantum Mechanics	15	3	5.0
Fall 2019	SCTC 2100	Physics with Mathematica	5	1	5.0
	SCTC 5100		7		5.0
Fall 2020	PHYS 5701	Quantum Mechanics I	8	3	5.0
Spring 2021	PHYS 3701	Intro Quantum Mechanics I	14	3	4.5
Fall 2021	PHYS 4101	Thermal Physics	16	3	4.9
Spring 2022	PHYS 2502	Mathematical Physics	18	4	4.8
Fall 2022	PHYS 2063	Wave Physics	3	3	–
Spring 2023	PHYS 2502	Mathematical Physics	15	4	4.7
Fall 2023	PHYS 3301	Analytical Mechanics	7	3	5.0
Spring 2024	PHYS 3701	Intro Quantum Mechanics I	7	3	

* Based on standard Temple SFF form, which changed in Summer 2020.
 For semesters prior to Fall 2020, I use “The instructor taught this course well.”
 For subsequent semesters, I use “Overall, I learned a great deal from this course.”
 Both questions have a maximum of 5.0.

B. Student Thesis and Project Supervision

1. Undergraduate Projects

I have supervised a number of undergraduate students on research projects and undergraduate laboratory development. Most of these projects were done for course credit, and a few for pay under URP or as work study. *This is an abbreviated list*, and only includes particularly notable projects.

Student	Term	Project Title
Shahin Sadighian	F92,S93	Aerogel Cerenkov development
Michael Klusman	S93	Johnson Noise
Jeffrey Fedison	S93,F93	Johnson Noise
Jason Margiotta	S93,F93,S94	Ferromagnetic polarized foils
Karl Walter	S93	Compton scattering apparatus
Matthew Woodard	S93,S94	Compton scattering data acquisition
Shahin Sadighian	F93	Photomultiplier test apparatus
Steven English	S94	Recoil electron detection
Kevin Ware	S94	Atomic Spectroscopy scanner
Marc Crudele	S95	Atomic Spectroscopy scanner
Ed Barnat	F95	Sonoluminescence experiment
Rick Hullinger	S96	Monte Carlo Simulations
Kelly Knowles	S96	Pair Spectrometer Design
Michael Pierce	S96	Introduction to Cosmology
Jeff Wereszynski	F00	Gamma ray detection experiments
Jeff Wereszynski	S01	Diode VI curves experiment
Melissa Cravey	S02	Neutrino Oscillations
Bryce Remesch	F02	Cosmic ray apparatus
Jackson DeBuhr	F04,S05	Lund Area Law and CLEO data
Brian Amadio	F05	Lund Area Law and CLEO data
Phoenix Dai	F06, S07	Photomultipliers for Daya Bay
Jennifer Turner	S07,F07	Water system prototype for Daya Bay
Nathan Blackwell	F07	Photomultiplier measurements for Daya Bay
Jane Sprigg	F07	Photomultiplier measurements for Daya Bay
Nicholas Saylor	F07	Water system prototype for Daya Bay
Eric Dzienkowski	F07	Software development for Daya Bay
Kevin Pedro	F08	Water transparency measurements for Daya Bay
Joseph Paki	F09	Contamination of ultrapure water
Katherine DeBlasio	F09	Photomultipliers in water under pressure
Konosuke Iwamoto	F10	The C-Star Transmissometer in high purity water
Erin Hansen	F11	Properties of potential contaminants of high purity water
Adam Lamson	F11	Data analysis software development for Daya Bay
Joseph Horne	F12	Monitoring the Daya Bay Water Purification System
Ted Berger	F12	Analysis of cosmic ray muons in the Daya Bay experiment

2. Thesis Completed

a. Bachelors

b. Masters

Eric M. Candell, August 1995 (Project)

Rebecca C. DiBari, August 1997 (Project)

c. Doctoral

Ann M. Wright, December 1996

“Multipion decay of baryons excited in Kp Scattering”

Mina Nozar, December 2000

“Measurement of the D/S Decay Amplitude Ratio in $b_1(1235)$ Decay”

Michael Klusman, September 2001

“Partial Wave Analysis of $\gamma p \rightarrow p\pi^+\pi^-$ for $E_\gamma \leq 1.0$ GeV”

Matthew Bellis, December 2003

“A Search for Missing Baryon States”

Melissa Cravey, Spring 2007

“The $K_S\pi^+\pi^-$ Decay of Neutral D Mesons”

John Goett, Spring 2010

“A Prolegomena to Precision Measurements of Reactor Neutrino Flux”

Neill Raper, Spring 2016

“Measurement of the High Energy Neutrino Spectrum from Nuclear Reactors”

William Henry, Spring 2019

“Precision Møller Polarimetry and Applications at Jefferson Laboratory”

Danielle Berisch, Fall 2019

“Search for Sterile Neutrinos from HFIR at ORNL”

Adam Hansell, Summer 2020

“Neutron Multiplicity in Spontaneous Fission of ^{252}Cf ”

B. Student Thesis and Project Supervision, Continued

4. Ph.D. Committee Member

<u>Student</u>	<u>Year</u>	
David Tedeschi	1993	Physics
Victor Pantojas	1993	Physics
Li-Sheng Zhang	1993	Physics
Ralph Adame	1994	Physics
Douglas Caldwell	1994	Physics
Peter Deelman	1994	Physics
Lida He	1994	Physics
Jun Liu	1994	Physics
Luc Murphy	1994	Physics
Cynthia Landberg	1995	Physics
Joo-Heon Lee	1995	Physics
Steven Soss	1995	Physics
Kevin Stokes	1995	Physics
Walter Kaechele	1995	Physics
Kristen Larson	1996	Physics
Nilmani Mathur	1996	Physics
Perry Gerakines	1996	Physics
Dave Messinger	1998	Physics
Julian de Marchi	1998	Mech Eng
Nicolle Zellner	2001	Multi Sci
Ji Li	2003	Physics
Maurizio Ungaro	2003	Physics
Timothy Andersen	2007	Math
Catherine Romano	2007	Nuclear Engineering
Daowen Hu	2009	Physics
Jason Thompson	2009	Nuclear Engineering
Brian Moziak	2010	Physics
Nicholas Saylor	2011	Physics
Baptiste Guegan	2011	Physics
Bin Han	2011	Nuclear Engineering
David Williams	2011	Nuclear Engineering
Rian Bahran	2012	Nuclear Engineering
Matthew Newby	2012	Physics

5. Post Doctoral Researchers and Visiting Scientists Supervised

Post Doctoral Scientist	Years
Bogdan Wojtsekhowski	1992-1994
Michael Witkowski	1993-1997
Alexander Vlassov	1994
John Price	1994-1997
John Cummings	1997-2001
Anton Empl	1998-2000
Joachim Kuhn	2000-2002
Istvan Danko	2003-2007
D. Eric King	2022-

Research Professor	Years
John Cummings	2001-2008
Donald Jones	2015-2021

Research Engineer	Years
James Wilhelmi (RPI '10)	2011-2013

C. Course and Curriculum Development

Matlab, Maple, and Mathematica for Physics (Fall 2010 and Fall 2011). In response to students' desire to have some instruction in standard computer programs useful for physics problems, I created an ad-hoc course to guide them through about a dozen examples and exercises. The response was very positive, and we will consider making this a regular course offering.

Physics I Honors (Fall 2007, 2008). This course built on the success of the “majors” section of Physics I, taught in Fall 2006. A separate laboratory section was added for a total of six contact hours. Enrollment doubled to ≈ 50 students in each of the two years.

Physics I “Majors” (Fall 2006). One of our department's greatest strengths is the large number and high quality of our undergraduate majors. Unfortunately, however, our majors' curriculum no longer contains dedicated courses until the sophomore year. As our general introductory physics sequence has become less reliant on calculus and less forward looking in terms of contemporary physics, it has served our majors less and less well as their introduction to the field.

Working to reverse this trend, I developed a “Physics I” course dedicated to majors during the Fall 2006 semester. (My colleague, Peter Persans, is similarly developing “Physics II” in Spring 2007.) Mathematics was kept at a high level, and more contemporary topics were covered. Experiments were introduced and an emphasis on laboratory technique and measurement uncertainty was maintained. Some advanced topics, such as Lorentz transformations, coupled oscillations, thermodynamics, and the Principle of Least Action were introduced. Homework problems stressed general principles and formula derivation, and examinations were extensive. Nevertheless, students rose to the challenges and did well in general. I believe they came out of the course with a good sense of “how physicists think” when solving problems of nature.

Quantum Mechanics III (Fall 2004). It had been a number of years since our department taught the graduate course in Quantum Field Theory. I volunteered to take this course over, partly because of a new textbook “Quantum Field Theory in a Nutshell” by Anthony Zee which was just published in 2004 and which covered the subject from a point of view not restricted to relativistic particle physics. It was a good opportunity not only to bring our students, from all fields, up to speed in the modern methods of theoretical physics, but also for my own edification.

Advanced Undergraduate Physics Laboratory (Ongoing). This is an outgrowth of course PHYS2350 Experimental Physics. Laboratory equipment has been upgraded, new experiments have been added, existing setups have been improved and modernized, and documentation continues to be developed.

This work has culminated in a new textbook on Experiments in Modern Physics. See Section IV.A.1. Laboratory development is closely tied to my teaching effort. All new setups are constructed and tested by undergraduate students, generally for course credit. See Section

III.B.1. Specific examples of new equipment include the addition and incorporation of digital oscilloscopes and lock-in amplifier, modern data acquisition and analysis techniques, nuclear electronics, and particle detectors. New experiments include Compton Scattering, Johnson Noise, and VI curves of diodes. Modernized experiments include Atomic Spectroscopy, Nuclear Magnetic Resonance, Faraday Effect, and Radioactivity.

Modernization of this laboratory is an ongoing effort. I last taught this course in Spring, 2000, and continued to incorporate new experiments and techniques, including a standard data analysis format using MATLAB. This methodology has been adopted by the present course instructor.

Introduction to Methods of Theoretical Physics (Fall, 1998). Along with other curricula in the School of Science, the Physics BS degree also went to a two semester (Physics I/II) introductory sequence. After some debate, our department decided to offer a new course in the third semester, Introduction to Methods of Theoretical Physics, which was meant to apply students' mathematical background to physical problems, and to extend their physics backgrounds by introducing them to special relativity as well as various other concepts.

I took over this course in the third year that it was taught, after it had been taught by two other faculty the previous two years. My approach has been to emphasize classical mechanics, in particular oscillations and waves, in the first part of the course, using more advanced mathematics. I then introduced students to vector calculus using fluids, and then applied this to Maxwell's Equations and to electromagnetic radiation. We then did Special Relativity and finally Schrodinger Equation wave mechanics, using the machinery and mathematics that we had developed to that point. My colleague took the course over from me, and has continued this philosophy.

So far, this seems to be a success. Students had a difficult time at first, but now appear to be used to the level and the pace. I have become convinced that it is worth the effort to combine their introductory Physics and Calculus instruction in the Freshman year.

Introductory Astronomy (Spring 1999, with prior development in Fall 1996 and Fall 1997). Modern research in astrophysics was incorporated into the course Astronomy II in Spring 1995. Then, with conversion to "4x4", we instituted a new four-credit course, beginning in Fall 1996. I used a "half studio" format to incorporate the new credit, having two lecture hours each week, followed by a two-hour studio "laboratory" on Fridays. The format proved to be quite successful. The course notes and various astronomical images were available on the World Wide Web.

In Fall 1997, I converted to a full studio format, with two two-hour classes each week. I used commercial astrophysics simulation programs, as well as the CLEA exercises from Gettysburg college. The course also used the World Wide Web for all materials and course notes and images were posted. A high school student took course over the web for credit.

For Spring 1998, I returned to a "half lecture/half studio" format. I find that students are quite stimulated by an open discussion of astronomical images and their interpretation, and

this does a good job setting the stage for the in-class activities. A number of good activities are now identified, based on previous versions of the course, and I look forward to teaching this popular elective.

Physical Principles of Design (Spring 1997). I was approached by the School of Architecture to create a new course in response to their adoption of the 4×4 model. This was to be an introductory physics level course aimed at preparing students for their more ambitious design courses further in the curriculum. As much as possible, physics was used to explain common features of building design. Students were particularly interested in design “failures” (including the Hyatt-Regency walkway collapse in Kansas City and the loss of windows in the Hancock Tower in Boston) and I believe this could be the focus of the course in future versions.

A Passion for Physics (Fall 1997). This course is a seminar-based course, led each week by a different faculty member, and open to all undergraduates, but mainly geared at our freshman. I took a special interest in the entering Physics freshman class in Fall 1997. I had spent much time recruiting them, and their retention was an important concern. This course allowed our faculty to tell these students what they were working on and why it excited them. It also served as a regular meeting time for them, helping them to create a sense of community. We have made this a formal course, and recommend it to our incoming students.

Particles and Nuclei (Spring 1996). In Spring 1996 I taught, for the first time, our senior level course in Particle and Nuclear Physics. This was an excellent opportunity to bring my research field to an excellent class of undergraduates. The course is now used to reach undergraduates as well as graduate students interested in a greater breadth, beyond their research field.

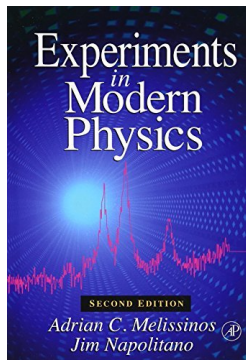
Nucleosynthesis in Stars and in the Early Universe (Spring terms, 1994-1998). As part of the department initiative in the “Origins of Life”, I researched and prepared course material on the creation of the elements in both stars and in the early universe. Since beginning this, Rensselaer has received a large research grant in this area, and the course has become quite popular. I now maintain this material on a web page for my colleague’s course, and update it regularly.

General Relativity (Spring 1996). In response to our graduate education priorities, I agreed to teach a one-credit graduate level course in General Relativity in Spring 1996. This was a pilot attempt to make a wider variety of topics available to our graduate students using a one-credit course format. The course was probably the most satisfying teaching experience of my life. It was exhilarating to learn General Relativity and associated phenomena, and to convey the material as well as my excitement about the subject to students. It also resulted in a publication in American Journal of Physics (November, 1997), in answer to a “Question” about pictorial representations of vectors and covectors.

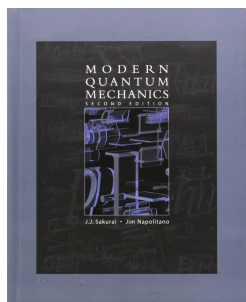
IV. Publications

A. Books, Monographs

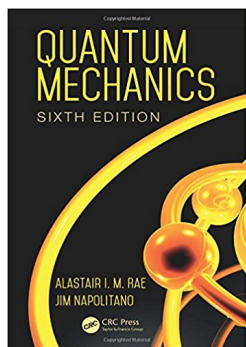
1. Manuscripts



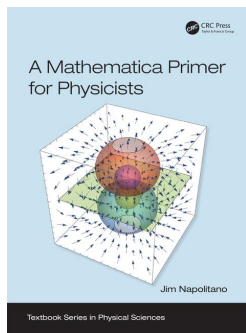
Based on my curriculum development in the Advanced Undergraduate Physics Laboratory (See Sec. IIIC) and on class notes for the course Experimental Physics, I assembled manuscript used as a text for this course. This led to an agreement with Academic Press to collaborate with Adrian Melissinos to update his (still popular) 1967 textbook, “Experiments in Modern Physics.” This revision is was published in February, 2003.



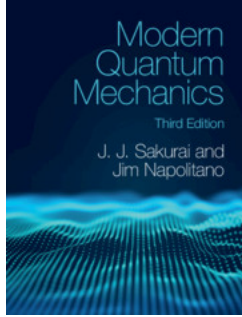
In 2004 I responded to a call from Addison Wesley for an author to revise the popular graduate text “Modern Quantum Mechanics” by Sakurai. My proposal was reviewed and accepted, and the book was published in June 2010, by Pearson, as shown here. This edition was republished by Cambridge University Press in 2017.



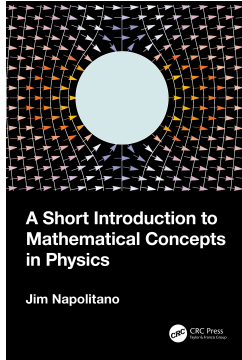
In 2013, I was approached by an editor for CRC Press, in the UK, to be a co-author on the sixth edition of a popular textbook in Europe on Quantum Mechanics. I would work with the original author, Alastair Rae, and try to revise the book so that it might be more attractive to US instructors. I added three introductory chapters on prerequisite math and physics, and collaborated with Alastair on special “Application” sections. The book was published in December 2015.



I created an taught a course at Rensselaer for several years, ending in 2013, on how to use MATHEMATICA to solve typical physics problems. It was a popular course, and some time after arriving at Temple University, a US editor for CRC Press contacted me, suggesting I turn the course into a “primer for physicists” for learning the basics of this powerful program. The book appeared in print in April 2018 as a Taylor & Francis imprint.



Modern Quantum Mechanics continued to be a success after Cambridge took over the Second Edition, so they asked me to write the next. I added new material on the relativistic scalar field, density functional theory, and spontaneous emission, and many other smaller components, and the third edition, shown here, was published in 2020.



I taught the course “Mathematical Physics” in Spring 2022, and ended up preparing my own notes instead of using a published textbook. Taylor & Francis contacted me and they asked me to prepare these notes for publication. The manuscript was submitted in Summer 2023 after I taught the course for a second time. It appeared in print in January 2024.

2. Contributing author (Conference Proceedings)

1. S. J. Freedman and J. Napolitano, “Limits On Fractionally Charged Particle Production From Cosmic Rays And Accelerators: How Near Zero?,” in **Near Zero: A Festschrift for William Fairbank**, J. Fairbank, editor, W.H. Freeman, 1986, pg.500
2. R. W. Harper *et al.*, “Search For Neutrino Oscillations At LAMPF,” LBL-21320, in **Proceedings of the 1986 Moriond Workshop: Neutrinos**, pg.287
3. J. Napolitano, “A Search For $(\bar{\nu}_\mu, \bar{\nu}_e)$ Oscillations At LAMPF,” CONF-870279-10 *Invited talk on Feb. 6, 1987, Lake Louise Winter Inst., Lake Louise, Canada*, in **Selected Topics in Weak Interactions**, J.M. Cameron, et.al., editors, World Scientific, 1987, pg.376
4. J. Napolitano *et al.*, “Measurement Of Two Body Deuteron Photodisintegration At High Photon Energies And $\theta_{C.M.} = 90^\circ$,” *Prepared for 3rd Conference on the Intersections between Particle and Nuclear Physics, Rockport, ME, 14-19 May 1988*, in **Intersections between Particle and Nuclear Physics**, G.M. Bunce editor, American Institute of Physics, 1988, pg.480
5. L. S. Durkin *et al.*, “A Search For Neutrino Oscillations At LAMPF,” *Prepared for 3rd Conference on the Intersections between Particle and Nuclear Physics, Rockport, ME, 14-19 May 1988*, in **Intersections between Particle and Nuclear Physics**, G.M. Bunce, editor, American Institute of Physics, 1988, pg.953
6. D. H. Beck *et al.*, “Measurement Of The Deep Inelastic Spin Dependent Structure Functions Of The Proton And Neutron At Hera,” *Prepared for 3rd Conference on the*

- Intersections between Particle and Nuclear Physics, Rockport, ME, 14-19 May 1988*, in **Intersections between Particle and Nuclear Physics**, G.M. Bunce, editor, American Institute of Physics, 1988, pg.1134
7. R. J. Holt *et al.*, “Two Body Photodisintegration Of The Deuteron Above 1-GeV,” in **Nuclear Chromodynamics**, J. Qiu and D. Sivers, editors, World Scientific, 1988, pg.16
 8. G. B. Yodh *et al.*, “Ultrahigh-Energy Radiation From Hercules X-1: New Physics Above 100 TeV?,” in **Cosmic Gamma Rays, Neutrinos, and Related Astrophysics**, Erice, 1988, pg.215
 9. S. I. Mishnev *et al.*, “Polarized Deuteron Target In An Electron Storage Ring: Measurements And Perspectives,” CONF-880983-33, in **Proceedings of the Minneapolis Spin Conference**, American Institute of Physics, 1988, pg.1286
 10. J. R. Holt *et al.*, “Tests Of A Polarized Source Of Hydrogen And Deuterium Based On Spin Exchange Optical Pumping And A Storage Cell For Polarized Deuterium,” CONF-880983-32 *Prepared for 8th International Symposium on High-energy Spin Physics, Minneapolis, MN, 12-17 Sep 1988*, in **Proceedings of the Minneapolis Spin Conference**, American Institute of Physics, 1988, pg.1535
 11. E. R. Kinney *et al.*, “Internal Polarized Targets,” CONF-8910121-5 *Invited talk at the IUCF Workshop on Physics with Polarized Beams on Polarized Targets, McCormick’s Creek State Park, Indiana October 16-18, 1989*, in **IUCF Workshop on Physics with Polarized Beams on Polarized Targets**, Spencer Polarized Beams Conf., 1989, pg.349
 12. L. Young *et al.*, “Development Of A Polarized Deuterium Target To Measure T_{20} In Electron Storage Rings,” in **Electronuclear Physics with Internal Targets**, Stanford 1989, pg.125
 13. J. Napolitano *et al.* [SLAC-NE8 Collaboration], “High-Energy Deuteron Photodisintegration,” *Nucl. Phys. A* **508**, 455 (1990).
 14. J. Napolitano, “Plans And Prospects For Electron Scattering Parity Violation Measurements At CEBAF,” in *Parity Violation in Electron Scattering*, E.J. Beise and R.D. McKeown ed., World Scientific, 1990, pg.90
 15. J. Napolitano, “Measuring Electron Beam Polarization,” *Given at CEBAF 1992 Summer Workshop, Newport News, VA, 15-19 Jun 1992* in **The CEBAF 1992 Summer Workshop**, F. Gross and R. Holt editors, American Institute of Physics, 1992, pg.369
 16. J. Napolitano, “Aerogel Cerenkov Detector Design And The CEBAF Short Orbit Spectrometer,” *Given at CEBAF 1992 Summer Workshop, Newport News, VA, 15-19 Jun 1992* in **The CEBAF 1992 Summer Workshop**, F. Gross and R. Holt editors, American Institute of Physics, 1992, pg.535

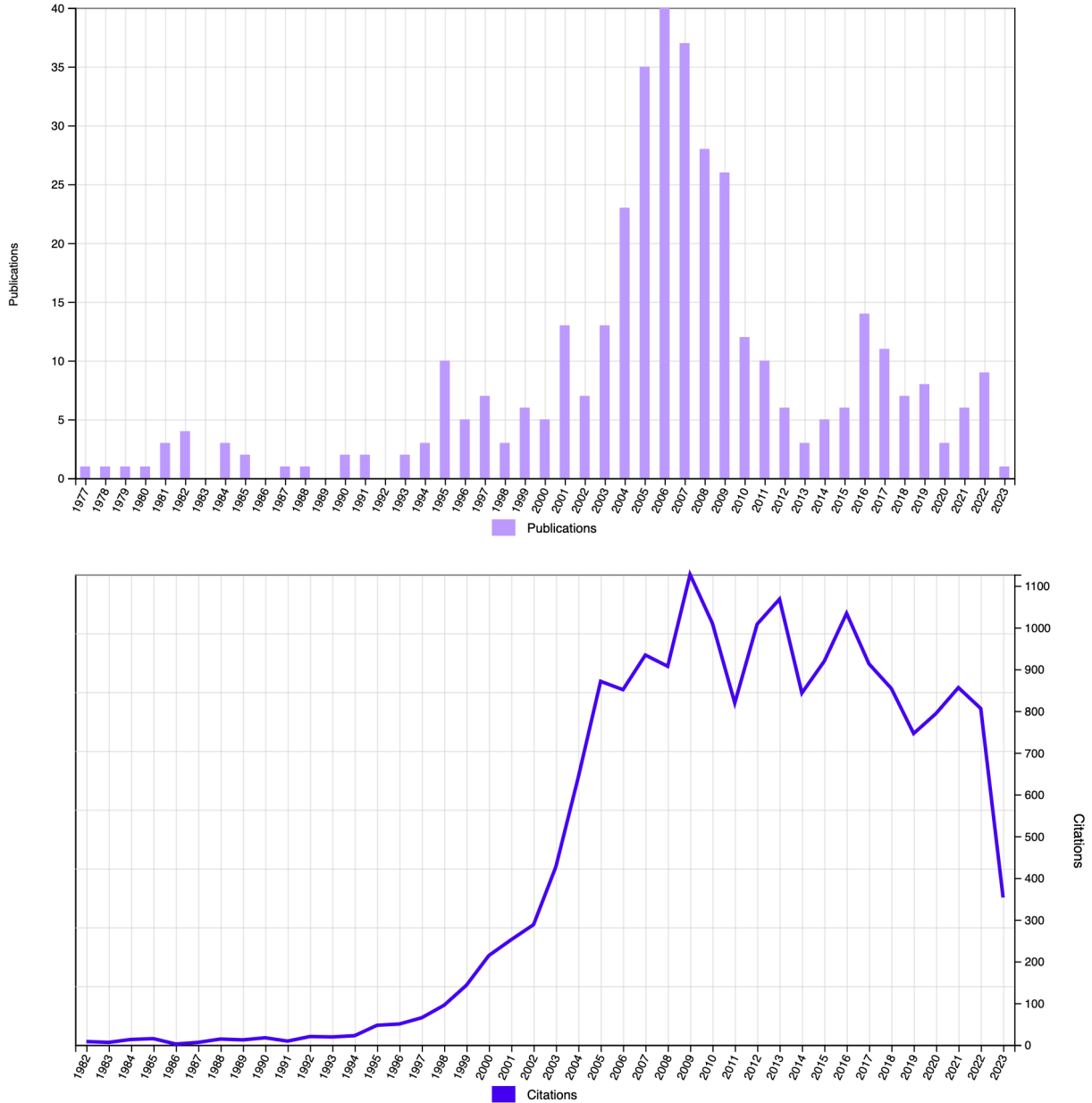
17. J. Napolitano *et al.*, “Deuteron photodisintegration: Data and plans,” SLAC-REPRINT-1993-016 *Prepared for International Workshop on Exclusive Reactions at High Momentum Transfer (Precedes the PANIC Conference, Perugia, Italy, 29 Jun - 3 Jul 1993), Elba, Italy, 24-26 Jun 1993* in *Exclusive Reactions at High Momentum Transfer*, C. Carlson, et.al., editors, World Scientific, 1993. pg.214
18. T. Barnes and J. Napolitano, “CEBAF at higher energies: Working group report on hadron spectroscopy and production,” Oak Ridge National Laboratory Report ORNL/CCIP/94-15 (1994), arXiv:hep-ph/9407297.
19. J. Napolitano [E852 Collaboration], “BNL AGS experiment E852: A search for mesons with unusual quantum numbers,” *Prepared for 31st Rencontres de Moriond: QCD and High-Energy Hadronic Interactions, Les Arcs, France, 23-30 Mar 1996*, in **Rencontres de Moriond 96: QCD and High Energy Hadronic Interactions**, J. Tran Thanh Van, editor, Editions Frontiers (1996) pg. 567
20. J. Napolitano and A. Schwarz, “Hadron Spectroscopy Summary,” *Given at 6th Conference on the Intersections of Particle and Nuclear Physics (CIPANP 97), Big Sky, MT, 27 May - 2 Jun 1997*, in **Proceedings of the 6th Conference on Intersections between Particle and Nuclear Physics**, T.W. Donnelly, editor, American Institute of Physics (1997), AIP #412 pg. 530
21. J. Napolitano, J. Cummings and M. Witkowski, “Baryon Excitation In $K^\pm p$ Reactions,” πN Newsletter **13**, 276 (1997).
22. C. E. Lane *et al.* [BOREX Collaboration], “The Borex Solar Neutrino Experiment,” *Prepared for 9th Moriond Workshop: Tests of Fundamental Laws (Particle Physics, Astrophysics, Atomic Physics), Les Arcs, France, 21-28 Jan 1989*
23. D. A. Whitehouse *et al.*, “LSND: A New Experiment To Search For Neutrino Oscillations At LAMPF,” *Given at Lake Louise Winter Institute: The Standard Model and Beyond (3 day School & 3 day Topical Workshop), Lake Louise, Canada, 18-24 Feb 1990*
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41. J. Napolitano [Daya Bay and PROSPECT Collaborations], “Neutrino experiments at nuclear reactors,” *PoS FPCP* **2016**, 037 (2017). doi:10.22323/1.280.0037

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B. Journal Articles

Most work in this field involves many collaborators with no universal rules regarding order in the author list, so the first author on a paper is not necessarily the primary contributor. My publication history and citation record, as of 18 July 2023, are displayed here:



These graphs, taken from Web of Science, show the publications (top) and citations (bottom) as a function of year, and cover the past 30 years of my career. The large increase in publications starting in 2004 is from the CLEO-c collaboration, which disbanded in 2012. Publications from the bulk of the analysis effort from Daya Bay began in 2013.

My h-index (as of July 2023) is 73. I am particularly proud of my work with the Daya Bay

collaboration, resulting in several notable publications including our discovery announcement, my most cited paper (1692 citations); my twelfth most cited paper (208 citations), a review of hadron spectroscopy with S. Godfrey published in *Reviews of Modern Physics*; and my eighteenth most cited paper (181) on the neutrino spectrum from ^8B decay. Other notable papers based largely on my own work or that of my students include a *Physical Review Letter* on high energy deuteron photodisintegration (66); a search for a light scalar boson in nuclear decay (34); and a study of the decay amplitudes of the $b_1(1235)$ meson (17).

1. Articles published in refereed journals

a. Major Articles

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2. Articles published in non-refereed journals

a. Major Articles

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V. Research Grants and Contracts

A. Proposals approved and funded

NOTE: Accelerator and other National Laboratory resources constitute implied support in this field. This list does not include beam time resources from Jefferson Laboratory, Brookhaven National Laboratory, or other such facilities.

1. "Electromagnetic Nuclear Physics at Intermediate Energies" (PI with K. Min, P. Stoler and P. Yergin), July 1, 1992 - June 30, 1993, \$390,000, NSF.
2. "SOS Aerogel Detector System", Sept 1992 - Dec 1, 1992, \$25,000, CEBAF.
3. "SOS Aerogel System Completion", Dec 1, 1992 - Dec 31, 1993, \$11,890, CEBAF.
4. "CLAS Gas Cerenkov Detector System", March 1993 - April 1994, \$240,000, CEBAF (with P. Stoler and G. Adams).
5. "Research Experience for Undergraduates", June - August 1993, \$8,000, NSF (with P. Stoler and G. Adams).
6. "Photomultiplier Tube Testing", Oct 1993, \$15,250, CEBAF (w/ P. Stoler and G. Adams).
7. "Electromagnetic Nuclear Physics at Intermediate Energies", July 1, 1993 - June 30, 1994, \$390,000, NSF (PI with P. Stoler)
8. "CLAS Gas Cerenkov Detector System", April 1994 - March 1995, \$271,529, CEBAF (with P. Stoler and G. Adams).
9. "Electromagnetic nuclear Physics at Intermediate Energies", July 1, 1994 - June 30, 1995, \$390,000, NSF (PI with P. Stoler)
10. "Detector construction for E852: A Search for Mesons with Unusual Quantum Numbers", Jan 1, 1995 - April 1, 1996, \$81,364 (with G. Adams)
11. "Graduate Research and Education in Physics", Department of Education, \$418,128, December, 1994, (PI with J. Haus, G.-C. Wang, and D. Whittet).
12. "CLAS Gas Cerenkov Detector System", April 1995 - October 1995, \$86,506, CEBAF (with P. Stoler and G. Adams).
13. "Electromagnetic Nuclear Physics at Intermediate Energies", July 1, 1995 - June 30, 1998, \$1,08M NSF (PI with P. Stoler)
14. "Electromagnetic Nuclear Physics at Intermediate Energies", July 1, 1998 - March 31, 2001, \$990,000 NSF (PI with P. Stoler)
15. "Electromagnetic Nuclear Physics at Intermediate Energies", April 1, 2001 - March 31, 2004, \$1.35M NSF (PI with P. Stoler and G. Adams)

16. Sabbatical support, September 2003 - May 2004, \$50K Cornell University and the Laboratory for Elementary Particle Physics.
17. "The Structure of Hadrons with Electromagnetic Probes", April 1, 2004 - March 31, 2007, \$1.35M NSF (PI with P. Stoler and G. Adams)
18. "Electric Motors to Build and Take Home", November 2006, \$200 NYSS-APS (with J. Cummings and teachers at Berne-Knox-Westerlo Central Schools)
19. "Electric Motors to Build and Take Home: Phase II", November 2006, \$775 NYSS-APS (with J. Cummings and teachers at Berne-Knox-Westerlo Central Schools)
20. "Experiments in Particle and Nuclear Physics", May 1, 2007 - April 30, 2008, NSF \$150K (Sole PI)
21. "The Daya Bay Neutrino Oscillation Experiment", Sept 1, 2008 - August 31, 2011, DoE/HEP \$486K (Sole PI)
22. "A Multi-Hundred Kiloton Water Cerenkov Underground Detector for Long Baseline Neutrino Physics at DUSEL", NSF DUSEL S4 program, submitted through University of California at Davis (Collaboration at Rensselaer includes Prof. D. Kaminski, MANE and Prof. S. Salon, ECSE) \$236K
23. "Experimental Neutrino Physics at Daya Bay and LBNE", Sept 1, 2011 - August 31, 2014, DoE/HEP \$545K (Sole PI)
24. "Experiments in Parity Violating Electron Scattering", July 1, 2012 - June 30, 2013, NSF/NP \$100K (with P. Stoler)
25. "Cold QCD Town Meeting", Sept 1, 2014, Jefferson Science Associates \$10K
26. "Hot QCD Town Meeting", Sept 1, 2014, Brookhaven National Laboratory, \$12K
27. "Precision Moller Polarimetry For Electroweak Scattering Experiments in Hall A At Jefferson Lab", Aug 1, 2015 - July 31, 2018, NSF/NP \$225K
28. "Fundamental Physics Experiments with Reactor Neutrinos", May 1, 2015 - May 31, 2016, DOE/HEP, \$95K
29. "Fundamental Physics Experiments with Reactor Neutrinos", June 1, 2016 - March 31, 2019, DOE/HEP, \$450K
30. "Fundamental Physics Experiments with Reactor Neutrinos", April 1, 2019 - May 30, 2020, DOE/HEP, \$90K
31. "Parity Violating Electron Scattering Experiments At Jefferson Lab", September 1, 2019 - August 31, 2022, \$500K
32. "Parity Violating Electron Scattering Experiments At Jefferson Lab", September 1, 2022 - August 31, 2025, \$678K

B. Proposals submitted and not funded with current status

C. Current research interests

Most recently, my research has been moving towards experiments in parity violating electron scattering, again with a strong emphasis on fundamental physics. In the near term, my focus is on a measurement (“PREX-II”) of the the “neutron skin” in the ^{208}Pb nucleus, with implications for models of nuclear matter and neutron star structure. I am also contributing to R&D for the MOLLER experiment, a search for physics beyond the Standard Model in parity violating e^-e^- scattering. My group’s technical contribution to these efforts is mainly in the area of precision electron beam polarimetry using Møller scattering.

The Daya Bay Reactor Neutrino Oscillation Experiment has been a great success, and continues to take data. This international effort uses the 17GW nuclear reactor facility at Daya Bay, China, to search for $\bar{\nu}_e$ disappearance with unprecedented sensitivity. We carried out the definitive discovery of a nonzero mixing angle θ_{13} , using both the integrated rate and spectrum shape, as a function of distance. My graduate student Johnny Goett graduated with his PhD in Spring 2010, with a project on measuring properties of liquid scintillators. My current student, Neill Raper, is on track to graduate in Spring 2014, with a measurement of the high energy neutrino spectrum as a constraint on models of the neutrino flux.

Prior to shifting back to neutrino physics, my work focussed on experiments with the CLEO-III detector facility at Cornell University’s Laboratory for Elementary Particle Physics. Our group joined this collaboration, with an eye towards the extension of this facility to study “charm” physics as the CLEO-*c* project. My graduate student Melissa Cravey, carried out a thesis studying neutral D meson decay. In particular, she studied the three body decay $K_S\pi^+\pi^-$ of CP eigenstates of the neutral D ’s, and the various hadronic substates thereby populated. This work makes use of quantum mechanical correlations between the D mesons, which are produced in pairs in a state with definite quantum numbers, a sort of “matter-antimatter interferometer.”

We are also preparing for the next phase of neutrino experiments, a high mass detector in the Homestake Gold Mine in South Dakota. This long baseline experiment would search for ν_e appearance, including CP violation, with a new intense beam from FermiLab. We contributed to the initial (water Čerenkov detector) design phase, including thermal modeling of the water volume (with Prof. D. Kaminski in MANE). The current design is a cryogenic LAr tracking calorimeter, and we are considering different ways to contribute to the project.

For most of my first ten years at RPI, I worked in the general field of experimental hadron spectroscopy. The aim of this research was to identify degrees of freedom beyond constituent quarks in the structure of strongly interacting particles. Some high points of this work for me include my review paper with Steve Godfrey, “Light meson spectroscopy,” *Rev. Mod. Phys.* **71**, 1411 (1999); invited talks and parallel session organization at the last three International Conference on the Intersections of Particle and Nuclear Physics, including the next meeting in May, 2003; a precision measurement of the D and S decay amplitude ratio for $b_1(1235) \rightarrow \omega\pi$ in M. Nozar *et al.*, *Phys. Lett. B* **541**, 35 (2002); and identification of exotic meson candidates as part of the BNL E852 collaboration.

VI. Editorship of Journals, Reviews of Manuscripts, Books, and Research Proposals

Journal Article Reviews:

Year	Phys. Rev. Letters	Phys.Rev.	Phys.Lett.	Other
1987	2		1	
1988	2	1		
1991	1			
1992	3			
1993	1			
1994	1		1	
1995	2		2	
1996	1			1
1997	1			
1998				1
1999		1		1
2000				2
2002				1
2003				2
2004		2		2
2005	1	1		4
2006		1		
2007			1	2
2008		1		1
2009	1			1
2010	3			1
2011	3	2		3
2012	4			

I stopped tabulating journal reviews after this date, but I generally provide two or three reviews each year for various journals.

Funding Proposal Reviews:

Year	DoE	NSF	NSERC	OTHER
1990	1			
1991		2		
1992				
1993	1			
1994	1	1		
1995	1	2		
1996	2	1		
1997		3	1	
1998	2	2	1	
1999				1
2000	2		1	
2001		2		
2002		3		
2003	1	1		
2004	1	4		
2005	5	3		
2006				
2007	1	1		
2008	1			
2009	2	3		
2010	1			
2011			1	
2012		1	1	

I stopped tabulating proposal reviews after this date, but I generally provide three to five reviews each year for various agencies, including DOE-NP/SBIR and the Early Career Program for DoE/NP and DoE/HEP.

Funding Review Panels

I stopped itemizing the review panels on which I served after 2012, but I continue to provide this service to the community. For example, I have chaired a yearly review panel for the Nuclear Physics, Astrophysics, and Cosmology (NPAC) Initiative at Pacific Northwest National Laboratory (PNNL) since 2015; served on several proposal review panels for the National Science Foundation and the Department of Energy Office of High Energy Physics; and contributed in January 2019 to the Sector-30 Beam Line Extraction proposal at SLAC. Following is an itemized list for years up to 2012:

- DoE High Energy Physics Intensity Frontier Panel, Nov 5-6, 2012
- NSF Physics Frontier Center Reverse Site Visits, June 5-7, 2011
- NSF Nuclear Physics Panel, Jan 19-21, 2011
- NSF Physics Frontier Center Preproposals, Nov 19-20, 2010
- NSF TUES Physics July 29-30, 2010
- DoE Nuclear Physics Committee of Visitors, Jan 12-14, 2010
- DoE Nuclear Physics Topical Collaborations, Nov 9-10, 2009
- NSF Site Visit, chair, KICP PFC, University of Chicago, May 18-19, 2009
- NSF EPSCoR, panelist, March 9-11, 2009
- NSF Reverse site visit, Physics Frontier Centers, panelist, May 5-7, 2008
- NSF pre-proposal panel for Physics Frontier Centers, panelist, Nov.19-20, 2007
- NSF Site Visit, chair, COSM PFC, Hampton University, March 19-20, 2007
- NSF panel for Physics at the Information Frontier, panelist, March 6-7, 2006
- NSF PHY Committee of Visitors, panelist, January 25-27, 2006
- NSF Special Emphasis Review, chair, Jan 27-29, 2000
- NSF Special Emphasis Review, panelist, Feb 1-5, 1999
- DoE/EPSCoR-KY Site Review panelist, Oct 4-6, 1998
- Site Visit panel, Jefferson Lab Theory Review, Jan 29-30, 1998
- DoE/EPSCoR-KY Site Review panelist, Oct 15-17, 1997

Editorship: Associate Editor, Applied Physics Letters, 1988

Book Reviews:

- Physics, 4th Ed., Resnick, Halliday, Krane, for John Wiley & Sons (publisher) 1995
- Outline for Fundamental of Physics, 6th Ed., Resnick, Halliday, Walker, for John Wiley & Sons (publisher) 1998
- Introductory Nuclear Physics, Second Ed., by S. M. Wong, in Am.J.Phys. 67(1999)841
- Bigger, Smarter, and Faster, by John M. Henshaw, Johns Hopkins University Press (2005)
- Relativistic Quantum Physics, by Tommy Ohlsson, Cambridge University Press (2009)

Graduate Record Examination:

- Write and review questions for GRE Physics Subject and Major Field Tests, 1996-2008
- Physics GRE Committee of Examiners, 2008-2016

VII. Service

A. Service to University

1. University, school, and departmental committees

1993	Member	Yergin/Resnick Retirement Celebration Committee
1993	Member	Institute Radiation Safety Committee
1996-97	Member	Rensselaer Scholar Fellowship Committee
1996	Member	Admissions Banner Project Process Team
1997-98	Member	Commission on Electronic Citizenship
1998-	Associate Chair	Department of Physics, Applied Physics, and Astronomy
1995-96	Chair	Physics Graduate Program Committee
1996-98	Chair	Physics Undergraduate Program Committee, in charge of undergraduate recruiting
1992-94	Member	Graduate Admissions Committee
1994-96	Member	Physics Undergraduate Program Committee
1994-97	Member	Executive Committee (Recording secretary)
1999	Member	Curriculum Subcommittee, Laptop Computer Implementation Team
2002-03	Chair	Physics Undergraduate Program Committee, in charge of undergraduate recruiting
2003	Advocate	Tenure appeal, Prof. Kathleen Ruiz (Arts)
2004-05	Member	Undergraduate recruiting committee
2004-05	Member	Ad-hoc committee for external graduate program review
2004-05	Advocate	Tenure appeal, Prof. Michael Fortun (STS)
2005-06	Vice President	Rensselaer Faculty Senate
2006-07	President	Rensselaer Faculty Senate
2007	Faculty Chair	Rensselaer Faculty Senate
2011-12	Member	Promotion Committee for Prof. G. Korniss
2011-12	Member	Promotion & Tenure Committee for Prof. K. Lewis
2009-13	Chair	Physics Undergraduate Program Committee
2012-13	Chair	Physics Colloquium Program
2012-13	Chair	Promotion & Tenure Committee for Prof. J. Giedt

2. Other service and administration activities

I contribute much of my time to various university and departmental services. Specific information upon request.

3. Undergraduate Advising

Year	Number
1993	6
1994	5
1995	4
2002/2003	Five Physics 70 Information Technology
2005	6 Undecided Science
2007	25 Physics majors
2008	23 Physics majors
2009	22 Physics majors
2010	21 Physics majors
2011	38 Physics majors
2012	36 Physics majors

4. Graduate Advising

Year	Number
1992	1
1993	4
1994	4
1995	3
2002/2003	Two PhD Candidate Students
2004-2011	One PhD Candidate Student
2012	Two PhD Candidate Students

5. High School Mentoring

July - Aug. 1994	Matt Frederick (Gloversville High School)
June - Aug. 1996	Elizabeth Waterhouse (Shaker High School)
Aug. 1996	Jason Castro (Shaker High School)
Jan. 1997 -	Muhammed Ayar (Troy High School)
Sep. 1997 -	Bilal Dinc (Troy High School)
Jan. 1997 -	Cullen Blake (Bethlehem High School)
Dec. 2005 -	Jared Kenyon (Schuylerville High School)
Sep. 2009 -	Karmela Padavic (The Emma Willard School)

Used outreach grants (\$200 and \$775) from the New York State Section of the American Physical Society, to bring an exercise called “Electric Motors to Build and Take Home” with fourth grade students at Berne-Knox-Westerlo Central Schools. For classes of about 20 students each were covered on two successive mornings. It was a big success.

B. Professional Societies

American Physical Society	1976-
American Association of Physics Teachers	1995-
Project Kaleidoscope Faculty for the 21st Century	1997-2001
Hampton University Graduate Study, Organizing Committee	1989-1991
CEBAF Summer Workshop, Organizing Committee	1989-1992
CEBAF Users Group Board of Directors	1990-1992
Higher Energies at CEBAF, organizer	1992-1993
CEBAF CLAS Scheduling Committee	1994-1995
New York State Section, APS Executive Committee	1999-2002

C. Community and Public Service

Career Day Volunteer: Science Panel Columbia and Greene County High Schools Columbia-Greene Community College Dates:

March 14, 1994
January 5, 1995
January 4, 1996
March 10, 1997
January 8, 1998
January 5, 1999
January 6, 2000
January 4, 2002
January 7, 2003

Danielwood IRA Community Board: 1996-

Playground Construction Project Built "Imagination Station" at Shaker Road Elementary School with community volunteers June 2-6, 1993

Science Demonstrations at Shaker Road Elementary School

November 18, 1994
February 1, 1996
December 19, 1996
April 15, 1997
April 6, 1998

First and Second Grade Soccer Coach Colonie Youth Soccer League Spring, Fall 1995 Spring, Summer 1996

Volunteer for Phil Steck for Congress, 2008

VIII. Professional and Public Lectures

A. Invited Talks

1. Major Conferences and Workshops

1. “Beta and Neutrino Spectra in the Decay of ^8B ”, Conference on Weak and Electromagnetic Interactions in Nuclei, Heidelberg, Germany, July 1-5, 1986.
2. “A Search for $(\bar{\nu}_e, \bar{\nu}_\mu)$ Oscillations at LAMPF”, Second Lake Louise Winter Institute on Selected Topics in Electroweak Interactions, February 15-21, 1987.
3. “Measurement of Two Body Deuteron Photodisintegration at High Photon Energies and $\theta_{CM} = 90^\circ$ ”, Conference on the Intersections between Particle and Nuclear Physics, Rockport, ME, May 14-19, 1988.
4. “High Energy Deuteron Photodisintegration”, Twelfth International Conference on Few Body Problems in Physics, Vancouver, BC, Canada, July 2-8, 1989.
5. “Plans and Prospects for Electron Scattering Parity-Violation Measurements at CEBAF”, CalTech workshop on Parity Violation in Electron Scattering, Feb 23-24, 1990.
6. “The CEBAF High Momentum Spectrometer”, The PILAC Optics Workshop, Los Alamos, NM August 12-13, 1991.
7. “Deuteron Photodisintegration: Data and Plans”, International Workshop on Exclusive Reactions at High Momentum Transfer, Elba Conference Center, June 25, 1993.
8. “Physics with High Energy Tagged Photons”, CEBAF Users Group Retreat, May 23, 1993
9. “Hadron Spectroscopy”, NSAC Long Range Plan Town Meeting for Electromagnetic Nuclear Physics, Argonne National Lab, January 27- 28, 1995.
10. “Meson Spectroscopy in Experiment E852”, Rencontres de Moriond: QCD, Les Arcs, France, March 29, 1996
11. “Hadron Spectroscopy Summary”, 6th International Conference on the Intersections between Particle and Nuclear Physics, Big Sky, MT, May 31, 1997
12. “Photoproduction of a Broad Meson: The $\rho(770)$ ”, Jefferson Laboratory Users Workshop, June 12, 1997
13. “Experimental Searches for Flux Tube Exotic Mesons”, Indiana University/Jefferson Laboratory Workshop on Physics with 8+ GeV photons, July 14, 1997
14. “Nucleon Excitation in Kp Scattering”, 6th International Conference on Mesons and Nucleon Structure, University of British Columbia, Vancouver, Canada, July 31, 1997

15. "Experimental Status of Exotic Meson Spectroscopy", North Carolina State University/ Jefferson Laboratory Workshop on Physics with 8+ GeV photons, Nov. 13, 1997
16. "Energy Upgrade Plans and Scenarios at CEBAF", Carnegie-Mellon Workshop on Physics with 8+ GeV Photons, Carnegie-Mellon University, Pittsburgh, PA March 13, 1998
17. "Photo- and Electroproduction of Meson and Baryon Resonances", Hampton University Graduate Study (HUGS), Five Lectures, May 27-29, 1998
18. "Status and Plans of Experimental Investigations of Light Hadron Spectroscopy at Jefferson Laboratory", International Workshop on e^+e^- Collisions from ϕ to J/ψ , Budker Institute of Nuclear Physics, Novosibirsk, Russia, March 1-5, 1999
19. "Glueballs, Hybrids, and Missing States", at Gordon Research Conference on Dynamics of Simple Systems in Chemistry and Physics, July 11-16, 1999
20. "Exotic Hadrons", Invited plenary talk at the Seventh International Conference on the Intersections of Particle and Nuclear Physics, Quebec City, Canada, 22-28 May, 2000
21. "Experimental Studies of the Hadron Spectrum", invited contribution at the Workshop on Lepton Scattering, Hadrons, and QCD, Adelaide, Australia, 25 March - 6 Apr, 2001
22. "Grid Computing", invited talk at the CLAS Collaboration Meeting, Jefferson Lab, 29-31 May, 2002
23. "QCD Spectroscopy, Structure, and Dynamics", Summary Talk, at the Eighth International Conference on the Intersections of Particle and Nuclear Physics, New York City, 19-24 May, 2003
24. "CLEO-c J/ψ Physics: Goals and Reach", invited talk at the CLEO-c inaugural symposium, Cornell University, 19 June 2003.
25. "CLEO-c plans", invited talk at Quarkonium Working Group II meeting, Fermi National Accelerator Laboratory, September 2003.
26. "Glueballs", invited talk at CLEO-c/BESIII workshop, Beijing, January 2004.
27. "Charm at CLEO and CLEO-c", invited talk at Rencontres de Moriond on QCD and High Energy Hadron Physics, LaThuile (Italy), March 2004
28. "Charm at CLEO" at PHENO 2004, University of Wisconsin, Madison, April 2004.
29. "Hadronic Physics from CLEO", invited talk at Confinement 2004, Cagliari, Sardinia, Italy, September 2004.
30. "New results from CLEO III and CLEO-c," XXVII Annual Montreal-Rochester-Syracuse-Toronto (MRST) Conference, SUNY-IT, Utica, NY, 16-18 May 2005

31. “CLEO-c Confronts High Precision Lattice QCD” at the XXIII International Symposium on Lattice Field Theory, Trinity College, Dublin, July 2005
32. “The Physics of Charm: Recent Experimental Results” at the XXVI Conference on Physics in Collision, Buzios, Brazil, July 2006
33. “The Physics of Charm: Recent Experimental Results” at the 2006 Conference on Particle Physics, Astronomy, and Cosmology (PASCOS 2006), The Ohio State University, September 2006
34. “Spectroscopy at CLEO”, at The Structure and Dynamics of Hadrons, International Workshop XXXV on Gross Properties of Nuclei and Nuclear Excitations Hirschegg, Kleinwalsertal, Austria, January, 2007
35. “Rare and CP Correlated Charm Meson Decays”, at the Joint BES-Belle-CLEO-Babar workshop, Institute for High Energy Physics, Beijing, November, 2007
36. “ θ_{13} : The Key to CP (?)”, at the 2010 Aspen Particle Physics Conference, Aspen Center for Physics, January 2010
37. “Reactor Neutrinos”, at the 24th Indian-Summer School *Understanding Neutrinos* (Nu12), to be held September 3-7, 2012, in Prague, Czech Republic
38. “Precision Results on θ_{13} : Measurements and Implications”, at the 2012 Fall Meeting of the APS Division of Nuclear Physics, October 24-27, 2012; Newport Beach, California
39. “Recent Results on Neutrino Oscillations (and Reactor Neutrino Spectra) from Daya Bay”, at the XIIth International Conference on Heavy Quarks & Leptons 2014, 25-29 August 2014, Mainz, Germany
40. “Neutrino experiments at nuclear reactors”, at the Conference on Flavor Physics and CP Violation, 6-9 June 2016, Caltech
41. “Physics with CEBAF at 12 GeV and Future Opportunities”, at the 2022 JLUO Annual Meeting, 15 June 2022, Newport News, VA
42. “The Jefferson Lab 12 GeV Program: Program Successes and Future Run Plan”, at the Nuclear Physics QCD Long Range Plan Town Meeting, 23-25 September 2022, MIT
43. “Cold QCD Summary”, at the Nuclear Physics Long Range Plan Resolution Meeting, Virginia Beach, 10 July 2023

2. Colloquia and Seminars at Universities and National Laboratories

1. “Measuring Strangeness in the Proton”, Nuclear and Particle Physics Seminar, University of Virginia, March 17, 1992.
2. “Photoproduction of Exotic Hadrons”, Group B Seminar, Stanford Linear Accelerator Center, Oct. 6, 1992
3. “Deuteron Photodisintegration at High Energy”, Nuclear Physics Seminar, University of Rochester, February 11, 1993.
4. “Deuteron Photodisintegration at High Energy”, University of Mass., February 11, 1993.
5. “Symmetry, Glue, and Not-So-Elementary Particles”, Colloquium, University at Albany Physics Department, January 28, 1994.
6. “Explorations of the Baryon Spectrum: New Twists on an Old Subject”, Triangle Nuclear Theory Colloquium at North Carolina State University, March 1, 1994.
7. “The Missing Baryons: Why We Care and How to Find Them”, Nuclear Physics Seminar, Argonne National Laboratory, March 7, 1994.
8. “Symmetry, Glue, and Not-So Elementary Particles”, Union College Physics Colloquium, April 8, 1994.
9. “Search for Missing Baryon States: Why We Care and How to Find Them”, Nuclear Physics Seminar, University of Notre Dame, November 7, 1994.
10. “Is the 0^+ Nonet Respectable”, Seminar at University of Pittsburgh, March 23, 1995.
11. “Can You Make a Proton Breathe?”, Colloquium, Physics Department, Union College, September 28, 1995
12. “Missing Baryons and Breathing Protons: Excitations of the Nucleus with $A=1$ ”, Colloquium, Physics Department, University of Rochester, November 15, 1995
13. “Can You Make a Proton Breathe?”, Nuclear Physics Seminar, Physics Department, University of Maryland, March 11, 1996
14. “Big and Small: Connections Between Particle Physics and Astronomy”, Colloquium, Physics Department, United States Military Academy, West Point. April 18, 1996
15. “A Search for Mesons with Unusual Quantum Numbers”, Nuclear Physics Seminar, CalTech, Feb. 13, 1996
16. “Evidence for Exotic Mesons”, Nuclear & Particle Physics Seminar, Univ of Massachusetts, Sept. 12, 1997
17. “Adventures in Light Quark Spectroscopy”, Particle Physics Journal Club Seminar, Cornell University, October 3, 1997

18. “Photoproduction of Unusual Mesons: The Hall D Project at Jefferson Lab”, Kellogg Laboratory seminar, California Institute of Technology, April 30, 1999.
19. “Physics on the Grid: New Models for Scientific Computation”, Computer Science Seminar, Rensselaer@Hartford, November 15, 2002.
20. “Glueballs”, CLEO lunch talk, Cornell University, June 2003
21. “Missing Baryons: Status Report”, Jefferson Laboratory, June 2003
22. “Partial Wave Analysis”, CLEO lunch talk, Cornell University, September 2003
23. “Supersymmetry and String Theory”, CLEO lunch talk, Cornell University, November 2003
24. “Exotic Hadrons”, Colloquium at Kent State University, February 2004
25. “Light Quark Mesons: An Update”, Seminar at Carlton University, October 2005
26. “The Daya Bay Experiment”, Particle Physics Seminar at the University of Massachusetts at Amherst, April 2007
27. “The Daya Bay Experiment”, High Energy and Astrophysics Seminar at Indiana University, Bloomington, November 2007
28. “Modern Measurements of Neutrino Oscillations”, Colloquium at University at Albany, October 9, 2009.
29. “The Daya Bay Experiment”, High Energy Physics Seminar at University of Chicago, February 15, 2010.
30. “The Daya Bay Experiment”, Physics Division Seminar at Argonne National Laboratory, February 16, 2010.
31. “Neutrinos, CP, and the Origin of the Universe”, Colloquium at Virginia Tech, February 11, 2011.
32. “Neutrinos, CP, and the Origin of the Universe”, Brown Bag Seminar at Siena College, April 15, 2011.
33. “Some Adventures in ‘Modern’ Quantum Mechanics”, Colloquium at Virginia Tech, September 19, 2011.
34. “Discovery of Reactor Antineutrino Disappearance at Daya Bay”, Cornell University High Energy Physics Journal Club seminar, April 20, 2012
35. “Reactor Renaissance: Neutrino Physics at Nuclear Power Plants”, Physics Colloquium at Indiana University, September 12, 2012
36. “Discovery of Reactor Antineutrino Disappearance at Daya Bay”, Carnegie Mellon University Medium Energy Physics seminar, September 27, 2012

3. Local Invitations (excluding Rensselaer seminars)

1. “The Future of Nuclear and High Energy Physics”, New York State section of the AAPT, April 1, 1995
2. “The Future of Nuclear and High Energy Physics”, Dinner talk, Society of Physics Students, April 13, 1995
3. “The Solar Neutrino Problem”, Astronomical Society of NY, Rensselaer, Oct. 26, 1996
4. “Nuclear Processes in Stars”, American Nuclear Society, General Electric Corporate R&D Center, April 28, 1997
5. “Keynote Address”, Troy High School Science Research Symposium, May 13, 1997
6. “Neutrinos, Symmetry, and the Origin of the Universe,” Albany Torch Club lecture, November 2, 2009

4. Media Appearances

- “Origin of the Biogenic Elements”, WAMC radio, Feb.8, 1999.
- Periodic appearances on “Vox Pop Science Forum” call-in talk show, WAMC radio.
- Appearance on IMPACT, WMHT-TV, Oct.31, 2011; <http://youtu.be/BlwPzu6lgQQ>

B. Contributed Papers (including Rensselaer Seminars)

1. "Pion and Kaon Photoproduction of Exotic Hadrons", Subatomic Physics Seminar, Rensselaer, September 22, 1992.
2. "Missing States in the Baryon Spectrum", Subatomic Physics Seminar, Rensselaer, September 28, 1993.
3. "Photoproduction of Kaons from Protons", CEBAF PAC6 Meeting, CEBAF, Newport News, Virginia, June 12-16, 1993.
4. "The Search for Missing Baryons", CEBAF PAC6 Meeting, CEBAF, Newport News, Virginia, June 12-16, 1993.
5. "Missing Mass Resolution and Target Multiple Scattering in CLAS", CEBAF Hall B CLAS Collaboration Meeting, February 24-26, 1994.
6. "The D(1232) Electromagnetic Form Factor at High Momentum Transfer", CEBAF PAC8 Meeting, CEBAF, Newport News, Virginia, June 15, 1994.
7. "Is the 0^+ Nonet Respectable?", Nuclear Physics Seminar, Rensselaer, September 27, 1994.
8. "Partial wave analysis", Florida State University, March 24-25, 1995.
9. "Can you make a Proton Breathe?", Nuclear Physics Seminar, Rensselaer, September 19, 1994.
10. "Do Neutrinos Oscillate or Don't They?", Subatomic Physics Seminar, Rensselaer, February 6, 1996
11. "Nucleon Resonances at low $-t$ ", Division of Nuclear Physics, American Physical Society, MIT, Oct.4, 1996 12
12. "The Solar Neutrino Problem", Subatomic Physics Seminar, Rensselaer, Jan 21, 1997
13. "A Tale of Two Glueballs", Subatomic Physics Seminar, Rensselaer, Sept.29. 1998
14. "The Discovery (?) of Neutrino Oscillations", Physics Colloquium, Rensselaer, Oct. 7, 1998
15. "The Origin of the Biogenic Elements", Origins of Life seminar, Feb.8, 1999
16. "Physics on the Grid: New Models for Scientific Computation", Joint Physics and Computer Science Colloquium, Rensselaer, September 24, 2002.
17. "Neutrinos: Faster than Light... and Otherwise", lecture at Rensselaer, Dec 8, 2011

IX. Honors and Awards (including chaired sessions at conferences)

Chaired session on “Exotic Hadronic Matter”, Gordon Research Conference, July 29, 1993.

Chaired a session on “Hadron Spectroscopy and Production” at the Workshop on CEBAF at Higher Energies, April 14-16, 1994.

Chaired Radiative Decay Collaboration Meeting, September 16, 1994.

Chair, CEBAF User’s Group Nominating Committee, Spring 1996

Co-Organizer, “Hadron Spectroscopy”, 6th International Conference on the Intersections between Particle and Nuclear Physics, May 27-June 2, 1997

Chair, Closing Session, Workshop on High Energy Photoproduction of Exotic and Hybrid Mesons, North Carolina State University, Nov.1997

Organizer, Sessions on “Photoproduction” and ”Hall D”, Jefferson Laboratory User’s Workshop on Physics with High Energy Beams”, June 15-18, 1998

Organizer, Sessions on “Particle Identification”, for Florida State University/Jefferson Lab workshop on high energy photoproduction, October 22-24, 1998

Organizer, Workshop on “A New Facility for High Energy Photoproduction at Jefferson Lab”, Rensselaer, March 11-13, 1999

Elected, NY State American Physical Society Executive Committee, 1999.

2010 David M. Darrin Counseling Award. Selection by Phalanx, the student honor society, for “faculty members who have made unusual contributions to the personal counseling of undergraduate students, have generously shared time and talents with undergraduate students, and have demonstrated special concern for the welfare of undergraduate students in and out of the classroom.”

Elected Fellow of the American Physical Society, Division of Nuclear Physics, “For contributions to fundamental problems of nature through experiments in nuclear physics.”, 2011

X. Sabbatical leaves, off-campus study programs, foreign professional travel

June 1 - July 31, 1995 at Brookhaven National Laboratory, Summer visitor performing Data Analysis for Experiment E852

August 2003 - May 2004 at Cornell University and Newman Laboratory for Elementary Particle Physics

XI. Other Activities

A. Travel

This is an incomplete list of professional travel while at Rensselaer. Only particularly notable trips are included.

Workshop on the Upper Division Undergraduate Laboratory, California State University Hayward, November 4-7, 1993.

Flying Phi Workshop at Indiana University, March 9-10, 1994.

Meeting with the Dean of Science and Rensselaer Alumni at Liberty Science Center, Liberty Park, New Jersey, May 3, 1994.

XXXI Rencontres de Moriond, Les Arcs, France, March 22-31, 1996

Sixth International Conference on Intersections between Particle and Nuclear Physics, Big Sky, Montana, May 27-June 2, 1997

Sixth International Conference on Mesons and Nucleon Structure, University of British Columbia, Vancouver, Canada, July 31, 1997

North Carolina State University/ Jefferson Laboratory Workshop on Physics with 8+ GeV photons, Nov. 13, 1997

Executive planning meetings for Hall D at Jefferson Laboratory, Apr 10, 1998 and June 4, 1998

Numerous trips in 2003-2006 representing the CLEO collaboration (See list of invited talks.)

Numerous trips in 2006-2012 to Beijing, Hong Kong, and other points in China for the Daya Bay Reactor Neutrino Experiment collaboration.

B. Hosting Visitors

This is an incomplete list of visitors.

Prof. C.E. Carlson, College of William and Mary, Nuclear/Particle Physics Seminar, February 23, 1993.

Prof. F.L.H. Wolfs, University of Rochester, Physics Colloquium, November 19, 1993.

Dr. Jack Lightbody, National Science Foundation Nuclear Physics, Funding discussions, August 31, 1994.

Prof. Melissa Franklin, Harvard University, Colloquium, November 2, 1994.

Dr. Tom Ludlam, Brookhaven National Laboratory, Physics Colloquium, Oct 11, 1995

Prof. David Malin, Anglo-Australian Observatory, Siding Spring, Australia, Vollmer Fries lecture, Jan. 26, 1998

Prof. Rocky Kolb, Department of Astronomy and Astrophysics, University of Chicago, Resnick Lecture, March 25, 1998

Prof. John Risley, North Carolina State Univ, April 12, 1998 Discussions on use and implementation of WebAssign at Rensselaer

Prof. Jim Alexander, Cornell University, August 29, 2012, Physics Colloquium

Prof. Amir Fariborz, SUNY-IT (Utica), November 10, 2012, Discussions regarding introductory Physics syllabi for Engineering, and Particle Physics Seminar

XII. In addition to the above information include, if pertinent, concrete evidence of teaching ability and any unusual contributions to university affairs, such as curriculum advising or development, continuing education participation, etc.

Undergraduate Physics Curriculum Reform. I assumed responsibility for coordinating the various changes made to our Physics major's curricula during 1996–1997. There were in fact two revised curricula, the second superceding the first, which were approved by the Institute curriculum committee, leading to some confusion among students and advisors. I kept record of all the changes and served as a reference for student advising. Recently I compiled all the course changes needed to implement these curricula, and submitted the paperwork to the School of Science Curriculum committee.

World Wide Web for the Physics Department. I wrote the initial layout of the Physics Department's World Wide Web page, with beginning pages for all research groups. This web page has proven quite valuable as a recruiting and information tool for prospective graduate students. I summarized our department's and our group's use of the World Wide Web at a workshop organized by Prof. Robert O'Keefe, on December 20, 1995.