

CURRICULUM VITAE

Joseph Andrew Hauger

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EDUCATION

- Ph.D., Physics, Purdue University, 1995. Thesis: “*Excitation Energy, Temperature and Pre-equilibrium Separation in the Multifragmentation of Gold Nuclei*”.
- M.S., Physics, Purdue University, 1992.
- B.S., Physics, University of Wisconsin - Milwaukee, 1986.

PROFESSIONAL EXPERIENCE

AUGUSTA STATE UNIVERSITY • Dept. of Chemistry and Physics • Augusta, GA
Chair and Professor of Physics, 2006 - Present.

- Lead administrator for the Department of Chemistry and Physics. Responsibilities include advising, budgetary oversight, faculty development and assessment.

VANDERBILT UNIVERSITY • Department of Radiation Oncology • Nashville, TN
Medical Physicist and Instructor, 2005 - 2006.

- Comprehensive training in and application of radiation oncology physics including the areas of clinical dosimetry, treatment planning, brachytherapy, machine calibration and quality assurance.
- Taught radiation dosimetry to radiation therapy technology students.

AUGUSTA STATE UNIVERSITY • University Honors Program • Augusta, GA
Director, 2004 - 2005.

- Program and curriculum development, student recruitment and advising, budgetary development and oversight, public relations, assessment.

AUGUSTA STATE UNIVERSITY • Dept. of Chemistry and Physics • Augusta, GA
Associate Professor of Physics, 1996 – 2005 and 2006 – Present.

- Teach a variety of general physics courses to students majoring in the sciences, education, and the allied health fields.
- Teach advanced courses in electronics, modern physics, quantum mechanics, thermal physics and mathematical physics.
- Research in high energy multifragmentation collisions. Compared reaction dynamics in the reactions of $Au + C$, $La + C$ and $Kr + C$.

DEPAUW UNIVERSITY • Dept. of Physics and Astronomy • Greencastle, IN
Visiting Assistant Professor of Physics, 1996.

- Taught introductory (calculus based) physics course for science majors.
- Taught quantum mechanics course for physics majors.

PURDUE UNIVERSITY • Dept. of Physics • West Lafayette, IN
Graduate Research Assistant, 1992 - 1995.

- Thesis research supervised by Professor R.P. Scharenberg. The research studied the breakup of large nuclei subjected to excitation energies comparable to the total nuclear binding energy. The resulting breakup process is known as nuclear multifragmentation.
- Led a research and development project characterizing the response of silicon avalanche diodes to minimum ionizing particles.

Graduate Teaching Assistant, 1990 - 1992.

- Taught a variety of laboratory and recitation courses at the introductory level. This includes a microcomputer based mechanics course and the modern physics laboratory for science majors.

UNITED STATES NAVY • Naval Nuclear Power School • Orlando, FL
Director, Physics Division, 1989 - 1990.

- Supervised twenty instructors teaching college level physics to several thousand future reactor plant operators each year. Administered all aspects of the division including scheduling, exams and curriculum.
- Trained five new instructors and completed a complete revision of the physics course curriculum.

Instructor, Physics Division, 1986 - 1990.

- Taught college level course emphasizing concepts necessary to understand nuclear power plant operation including mechanics, electricity and magnetism, radioactivity and low energy nuclear reactions.
- Taught radiation protection/health physics and presented radiation protection seminars.

AWARDS AND FUNDING

- ASU Student Ambassador Board Most Valuable Professor, 1998, 2000, 2003, 2004, 2005, 2007, 2008 and 2009.
- ASU Student Research Funding, \$350, Augusta State University, 2008
- ASU Student Research Funding, \$800, Augusta State University, 2002.
- *Digital Electronics Software*, \$1500, Georgia Equipment, Technology and Construction Fund, 2001.
- *Interactive Physics Software*, \$1690, Georgia Equipment, Technology and Construction Fund, 2001.
- Augusta State University Faculty Research and Development funding, 1998, \$558.
- *Best Physics Talk*, awarded to student S. Parsons at the Georgia Academy of Sciences Meeting, Savannah State University, April 1998.
- *Pasco Dynamics Tracks for the Introductory Physics Laboratory*, \$2,000, Georgia Equipment, Technology and Construction Fund, 1998.

- *Computerize the Electronics Laboratory*, \$3,200, Georgia Equipment, Technology and Construction Fund, 1998.
- *Calculator Based Laboratory for Introductory Physics*, \$7,000, Georgia Equipment, Technology and Construction Fund, 1997
- *Computer Data Acquisition for the Modern Physics Laboratory*, \$6,000, Georgia Equipment, Technology and Construction Fund, 1997
- DePauw University Mortar Board Teaching Excellence Award, 1996
- Purdue University Research Foundation Fellowship (1992 - 1994)
- Navy Achievement Medal, United States Navy, 1990
- Instructor of the Year, United States Naval Nuclear Power School, 1989

PROFESSIONAL ACTIVITIES

SOCIETY MEMBERSHIPS

- National Collegiate Honors Council
- Georgia Collegiate Honors Council
- American Physical Society
- American Association of Physics Teachers
- American Association on Physicists in Medicine
- Honor Society of Phi Kappa Phi

PRESENTATIONS AND WORKSHOPS

- "*An Experimental Study of the Lengthening Pendulum*" was presented by student S. Clark at the Georgia Academy of Science Annual Meeting, April 2009.
- "*Optimized Field Gradient Directions in Diffusion Tensor Imaging*" was presented by student Chris Wright at the Augusta State University Phi Kappa Phi Conference, March 2009.
- "*An Experimental Study of the Lengthening Pendulum*" poster presented by student S. Clark at the Augusta State University Phi Kappa Phi Conference, March 2009.
- "*A Computational and Experimental Study of the Vacuum Cannon*" was presented by student R. Sawyer at the Augusta State University Phi Kappa Phi Conference, March 2008.
- "*A Computational and Experimental Study of the Vacuum Cannon*" was presented by student R. Sawyer at the Georgia Academy of Science Annual Meeting, March 2008.
- "*A Phase Transition in the Minority Game*" was presented by student R. Sawyer at the Augusta State University Phi Kappa Phi Conference, March 2007.
- "*A Numerical Study of the Vacuum Cannon*" was presented by student D. Rodriguez at the Augusta State University Phi Kappa Phi Conference, March 2007.
- "*A Numerical Analysis of a Water Rocket*" was presented by students A. Reagan and A. Davis at the Augusta State University Phi Kappa Phi Conference, March 2007.
- "*Computational Model of the Leaky Pendulum*" was presented by student T. Mikulas at the Augusta State University Phi Kappa Phi Conference, March 2007.
- "*IMRT Quality Assurance: Dosimetric Assessment of Three Current Methods*", American Association of Physicists in Medicine Annual Meeting, July 2006.
- "*Intensity Modulated Radiation Therapy Quality Assurance Using the Wellhofer MatriXX Detector*", Vanderbilt University Department of Radiation Oncology Seminar, January 2006.
- "*Vacuum Cannon Physics*" was presented by student C. Fontimayor (Biology) and M. Howard (Physics) at the Augusta State University Phi Kappa Phi Conference, March 2005.

- “*Ballistic Bowling Balls: The Physics of a Backyard Trebuchet*” was presented by student S. Brown at the Augusta State University Phi Kappa Phi Conference and at the Southern Regional Honors Council Annual Convention, Atlanta, GA, March 2002.
- Attended Teaching of Science: New Approaches Conference at Kennesaw State University, April 2001.
- “*Updating Our Electronics Courses*”, presented at the Annual SACS-AAPT Meeting, University of South Carolina - Beaufort, March 2001.
- “*Tibiofemoral Joint Assessment Using a Novel Electromechanical Device*” presented by L. Keegan at the Georgia Academy of Sciences Meeting, Valdosta State University, March 2000.
- “*The Impact of Voltage and Temperature on the Capacitance of an Ultrahigh (1Farad) Capacitor*” presented by T. Clift at the Georgia Academy of Sciences Meeting, Valdosta State University, March 2000.
- “*A Low Cost Projectile Motion Demonstrator*” presented by S. Merwin at the Southern Atlantic Coastal Section of the American Association of Physics Teachers Meeting at Gainesville College, March 1999.
- “*Measurement of the Solution Catalyst Concentration During the Course of the Mercury-catalyzed Aluminum-dissolution Oscillating Reaction*” presented by C. East at the Georgia Academy of Sciences Meeting, Georgia Perimeter College, March 1999.
- “*A Comparison of the Projectile Fragmentation Dynamics for the Reactions of 1AGeV Gold, Lanthanum and Krypton with Carbon*” presented at the American Physical Society Division of Nuclear Physics Meeting, Santa Fe, NM, October 1998.
- “*Measurements of the Voltage Dependence of the Capacitance of an Ultrahigh (1 Farad) Capacitor*” presented by S. Parsons at the Georgia Academy of Sciences Meeting, Savannah State University, April 1998.
- Presented Workshop on the Use of Calculator Based Laboratories at the Annual SACS-AAPT Meeting, Coastal Georgia Community College, March 1998.
- Attended Physics Faculty Development Workshop: Computers in Physics Instruction and Mossbauer Spectroscopy, State University of West Georgia, April 1997.
- “*Teaching Special Relativity Using Rapidity*” presented at the Annual SACS-AAPT Meeting, University of South Carolina - Aiken, March 1997.
- “*Excitation Energy, Temperature and Density in the Multifragmentation of Gold Nuclei*” at First Catania Relativistic Ion Studies Conference, Catania, May 1996.
- “*The Determination of Fragment Masses in 1AGeV Au + C Collisions*” presented at American Physical Society Meeting, Indianapolis, IN, May 1996.
- “*Hula Hoops and Solenoids*” at Indiana/Illinois Section meeting of the AAPT, University of Illinois - Urbana - Champaign, April 1996.
- “*Characterizing the Two Stage Reaction Dynamics in 1AGeV Projectile Fragmentation of Gold Nuclei*” presented at American Physical Society Division of Nuclear Physics Meeting, Indiana University, October 1995.
- “*Multifragmentation in High Energy Nuclear Collisions*”, Physics Colloquium, DePauw University, April 1995.
- “*Sub 100ps Time Resolution Using Silicon Avalanche Diodes*” presented at American Physical Society Division of Nuclear Physics Meeting, Asilomar, CA, October 1993.

PUBLICATIONS

- J. B. Elliott, J. A. Hauger et al., “Constructing the phase diagram of finite neutral nuclear matter”, Phys. Rev. C **67**, 024609 (2003).
- B. K. Srivastava, J. A. Hauger et al., “Multifragmentation and the phase transition: A systematic study of the multifragmentation of 1A GeV Au, La, and Kr”, Phys. Rev. C **65**, 054617 (2002).
- R. P. Scharenberg, J. A. Hauger et al., “Comparison of 1A GeV $^{197}\text{Au}+\text{C}$ data with thermodynamics: The nature of the phase transition in nuclear multifragmentation”, Phys. Rev. C **64**, 054602 (2001).
- B. K. Srivastava, J. A. Hauger et al., “Thermal Phase Transition in Nuclear Multifragmentation: The Role of Coulomb Energy and Finite Size”, Phys. Rev. C **64**, 041605 (2001).
- J. B. Elliott, et al. (EOS Collaboration), “Nuclear multifragmentation, percolation and the Fisher Droplet Model: common features of reducibility and thermal scaling”, Phys. Rev. Lett. **85**, 1194 (2000).
- J. B. Elliott, et al., (EOS Collaboration), “Statistical signatures of critical behavior in small systems”, Phys. Rev. C **62** 064603-1-33 (2000).
- J. A. Hauger et al., “The Two-stage Multifragmentation of 1AGeV Kr, La and Au”, Phys. Rev. C. **62**, 024616 (2000).
- J. A. Hauger, “Resistance of Wheels Rolling Over Obstacles”, The Physics Teacher **38**, 183 (2000).
- J. A. Hauger et al., “Multifragmentation of the Remnant Produced in the Reaction of 1AGeV Gold Nuclei”, Phys. Rev. C **57**, 764 (1998).
- J. A. Hauger et al., “Dynamics of the Multifragmentation of 1AGeV Gold on Carbon”, Phys. Rev. Lett. **77**, 235 (1996).
- J. A. Hauger et al., “Excitation Energy, Temperature and Density in the Multifragmentation of Gold Nuclei”, Proceedings of the 1996 Catania Relativistic Ion Studies Conference, S. Costa et al., eds., World Scientific, Singapore, (1996).
- M. A. Lisa, J. A. Hauger et al., “Radial Flow in Au + Au Collisions at $E = (0.25 - 1.15)$ AGeV”, Phys. Rev. Lett. **75**, 2662 (1995).
- M. L. Gilkes, J. A. Hauger et al., “The Determination of Critical Exponents from the Multifragmentation of Gold Nuclei”, Phys. Rev. Lett. **73**, 1590 (1994).
- J. B. Elliott, J. A. Hauger et al., “Extraction of Critical Exponents from Very Small Percolation Lattices”, Phys. Rev. C **49**, 3185 (1994).
- J. A. Hauger et al., “A Time of Flight Detector Based on Silicon Avalanche Diodes” Nuclear Instruments and Methods, **A337**, 362 (1994).

COMMUNITY SERVICE

- Presented “Jello Optics” at Stevens Creek Elementary School, Martinez, GA (March 2007).
- Presented “Egg in a Bottle” at Riverside Elementary School, Evans, GA (March 2004).
- Presented three sessions on “Personal Finance Principles” to ASU Catholic Student Outreach students (September 2004).
- Presented “Light Emission from the Hydrogen Atom” at North Augusta High School, N. Augusta, SC (December 2003).
- Partners in Education Physics Workshop - presented “Electric Circuits, Calorimetry and Thin Lenses” (Oct. 2001)
- Partners in Education Physics Workshop - presented “Vectors and Projectiles” (Sep. 2001)

- Science Olympiad Teachers Workshop – presented “*Battery Buggy Hints and Simple Machine Basics*” (Sep. 2001)
- ASU Science Olympiad Event Coordinator, 1999 – 2008.
- Served as mentor for local high school science teacher (K. Gambill, North Augusta High School) seeking accreditation through the National Board of Professional Teaching Standards.
- Presented a physics education session for Richmond County Board of Education Faculty Development Workshop at ASU. (Fall 2000)
- Presented “*Wave Demonstrations?*” at North Augusta High School, N. Augusta, SC. (February, 2001).
- Presented “*Standing Waves and the Flaming Tube?*” demonstrations at North Augusta High School, 1999.
- Presented “*Light Bulbs and Circuits?*” demonstrations at North Augusta High School, 1999.
- Presented “*Wave Physics?*” demonstrations at North Augusta High School, 1998. Also discussed science fair projects with students.
- Judged CSRA RESA Science Fair, 1997 and 1998.
- Presented “*Space Travel Physics?*” at Langford Middle School, 1997.
- Assisted with “*Flaming Tube?*” demonstration for National Science Center, Fort Discovery, Augusta, GA, 1997.
- Organized and presented ASU Physics Club demonstrations for visiting students, 1996 and 1997.
- Presented physics demonstrations to Camp Future students, 1997.
- Involved with Indiana High School Academic Super Bowl, 1993 -1996.

COMMITTEE WORK

- Arts and Sciences Council, 2006 – Present.
- Honors Program Committee, 2006 – Present.
- Chair, Honors Program Committee, 2004 – 2005.
- Secretary, Employee Benefits Committee, 2003 – 2004.
- Chair, Faculty Policies Committee, 2002 - 2003.
- University Council, 2002 – 2003.
- Chair, Student Fee Review Committee, 2002.
- Parking Advisory Committee, 2002 - 2003.
- Faculty Policies Committee, 2001 – 2003.
- Partners in Education Committee, 2001 – 2002.
- Committee on Committees, 2001 and 2002.
- Honors Program Committee, 2000 - 2005.
- Chair, Holsten Award Committee, 2001.
- Chair, Student Honors and Awards Committee, 2000 - 2001.
- Student Honors and Awards Committee, 1999 - 2001.
- Information Technology Committee, 1998 - 2000.
- Cullum Committee, 1997 - 1999.

COURSES TAUGHT

- ASTR 1000; Survey of Astronomy
- PHSC 1011; Physical Science
- PHYS 1111; Introductory Physics I
- PHYS 1111; Introductory Physics I (Honors)
- PHYS 1112; Introductory Physics II
- PHYS 1112; Introductory Physics II (Honors)
- PHYS 2211; Principles of Physics I (w/calculus)
- PHYS 2212; Principles of Physics II (w/calculus)
- PHYS 3011; Electronics I
- PHYS 3012; Electronics II
- PHYS 4310; Thermal Physics
- PHYS 4350; Analytical Methods of Physics
- PHYS 4511; Modern Physics
- PHYS 4512; Quantum Physics
- PHYS 4950; Microcontrollers
- HONR 4000; Honors Thesis (student Laura Keegan, Biology, 2000).
- HONR 4000; Honors Thesis (student Cathy Wyatt, Biology, 2003).
- HONR 4500; Honors Capstone