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## EDUCATION

**Ph.D.** Physics, dissertation in underwater acoustics, University of Mississippi, December 1984.

**M.S.** Physics, University of Mississippi, May 1982.

**B.Sc.** Physics, University of Wales, July 1978. (Now Cardiff University)

## EXPERIENCE

### HIGHER EDUCATION

**University of Central Arkansas** (Carnegie Classification Master's I)

Chair, Department of Physics and Astronomy, July 2002-present.

Interim Director, Arkansas Center for Mathematics and Science Education, July 2006-June 2008.

Associate Dean, College of Natural Sciences and Mathematics, July 2000-June 2003

Interim Chair, Department of Computer Science, Academic year 2001-2002.

Assistant Dean, College of Natural Sciences and Mathematics, January 1995 - February 1998, July 99-June 2000.

Interim Dean, College of Natural Sciences and Mathematics, February 1998 - June 1999.

Interim Chair, Department of Physics, Academic year 1993 - 1994.

Professor of Physics, 2003-present.

Associate Professor of Physics, 1990-2003.

Assistant Professor of Physics 1986-1990.

Instructor of Physics, 1984-1986.

**University of Arkansas** (Carnegie Classification Doctoral I)

Adjunct Research Instructor, Graduate Institute of Technology, Summer 1985. (This division is now part of the University of Arkansas at Little Rock.)

## ADMINISTRATIVE POSITIONS

**Chair**, Department of Physics and Astronomy, University of Central Arkansas:  
Responsible for faculty recruitment and development; faculty evaluations, including promotion, tenure, and salary recommendations; budget administration, scheduling; and overseeing the curriculum.

**Interim Director**, Arkansas Center for Mathematics and Science Education, University of Central Arkansas:  
Responsible for staff recruitment and development; personnel evaluations, including salary recommendations, budget administration, grant writing, grant management and maintaining and developing relationships with teachers, school districts, and other stakeholders in P-16 education.

**Associate Dean**, College of Natural Sciences and Mathematics, University of Central Arkansas:  
Responsible for summer budget, problem resolution in departmental budgets, student academic problems, research and grants, facilities development and planning, advisor to dean in personnel and salary issues. The College consists of departments of Biology, Chemistry, Computer Science, Mathematics, and Physics and Astronomy.

**Assistant Dean**, College of Natural Sciences and Mathematics, University of Central Arkansas:  
Responsible for summer budget, problem resolution in departmental budgets, student academic problems, research and grants, facilities development and planning, advisor to dean in personnel and salary issues.

**Interim Dean**, College of Natural Sciences and Mathematics, University of Central Arkansas:  
Responsible for budget, curriculum, faculty recruitment and development, recommendations for promotion, tenure, and salary increases, and long-range planning for the College. The College consists of departments of Biology, Chemistry, Computer Science, Mathematics, and Physics and Astronomy.

**Interim Chair**, Department of Computer Science, University of Central Arkansas:  
Responsible for faculty recruitment and development; faculty evaluations, including promotion, tenure, and salary recommendations; budget administration; scheduling; and overseeing the curriculum.

**Interim Chair**, Department of Physics, University of Central Arkansas:  
Responsible for faculty recruitment and development; faculty evaluations, including promotion, tenure, and salary recommendations; budget administration, scheduling; and overseeing the curriculum.

**Planning Committee**, Arkansas Space Grant Consortium:  
Served 1991-2008. Was one of the founders, participated in the development of original

and continuing proposals, aided in the development of programs, served on the budget oversight committee, organized annual conferences, reviewed submitted proposals, awarded grants, responsible for operations at the University of Central Arkansas.

**National Council Member**, Society of Physics Students:

Zone Councilor for Zone 10, 1991-1994. Responsible for operations in Arkansas, Louisiana, Mississippi, and West Tennessee. Participated in national policy decisions, organized zone conferences, selected outstanding chapters.

**Planetarium Director**, Department of Physics and Astronomy, University of Central Arkansas:

Served from 1987 - 1994. Participated in design and selection. Assured continued operation. Scheduled maintenance. Scheduled internal and external users. Developed audio-visual collections.

# TEACHING

## COURSES TAUGHT

Physical Science For General Education	Descriptive Astronomy
College Physics 1	College Physics 2
University Physics 1	University Physics 2
Science and Engineering Physics I	Science and Engineering Physics II
Observational Astronomy	Instrumentation in Astronomy
Astrophysics	Energy
Thermal Physics	Heat and Thermodynamics
Electromagnetism 1	Electromagnetism 2
Optics	Acoustics
Mechanics	Geology
Topics in Theoretical Physics (gr)	Mathematical Methods in Physics
Fluid Mechanics	Introduction to Solid State Physics
Junior Laboratory 1	Junior Laboratory 2
Senior Laboratory	Advanced Laboratory
Computational Physics	Demonstration Experiments in Physics (gr)
Quantum Theory I	Quantum Theory 2
Research Topics in Computer Science	Statics
Physics for Secondary Teachers	Concepts of Physical Science 1 (gr)

## SUPERVISION OF STUDENT RESEARCH

Many students have been mentored, including students in Special Problems in Physics and Special Problems in Astronomy, Oxford Tutorials, Departmental Honors, Honors College Honors, and Student Fellows of the Arkansas Space Grant Consortium.

### Honors Theses Mentored

Erik Young, Quasicrystals, 1991 (Departmental)  
David Arnhart, Science: Evolution or Revolution, 1991 (Honors)  
Christopher Sheesley, The Life and times of Albert Einstein, 1993-94 (Honors)  
Brian Lemon, Quantum Interpretations, 2000-2001 (Honors)  
Matt Helmus, Chaotic Thought in the Founders of Social Theory, 2000-2001 (Honors)  
David James, Stepping on TOEs: Why a Theory of Everything Can Never be Scientific, 2001-2002 (Honors)  
Luke Walker, Identity and Distinguishability, 2001-2002 (Departmental)

Luke Walker, Identity and Distinguishability: Paradoxes and Resolutions, 2001-2002 (Honors)

Josh Hight, Automated Surveillance: A survey of concepts and social implications, 2001-2003 (Honors)

Angela Roper, Isaac Newton and the Evolution of the Theory of Universal Gravitation, 2004-2005 (Honors)

Katie Reynolds, Chaos: Finding the needle in the Haystack, 2006-2007 (Honors)

## RESEARCH AND SCHOLARLY ACTIVITY

### PUBLICATIONS

Publications include refereed papers, a laboratory manual, contributions to books, and technical reports. A detailed list is provided.

### AREAS OF SCHOLARLY EXPERTISE

#### Experimental

Underwater Acoustics, physical properties of arrays of spheres and physical properties of ocean sediments, sound absorption in fluids and fluid-solid mixtures.

#### Theoretical

Thermodynamics and Statistical Mechanics, Systems Theory and Signal Processing, Inference, Wave propagation, fluid mechanics, Biot Model of porous media, charged particle transport, physics of aerosols, mathematical physics, numerical analysis.

### GRANTS RECEIVED

Arkansas Highway and Transportation Department, *Acceptance tests for coarse and fine aggregates*, 1990-91, \$26,467.

National Aeronautics and Space Administration, *Arkansas Space Grant Consortium*, 1991-present. Consortium proposal under leadership of University of Arkansas at Little Rock, one of seven authors. Funds include \$150,000 to \$225,000 per annum from NASA and a \$75,000 per annum state match. Approximately one-tenth of these funds are spent at the University of Central Arkansas.

National Science Foundation, *Renovation of the Lewis Science Center's Research Facilities*, 1995-1998, \$351,280 from NSF, matched by UCA.

UCA Student Research Fund, *Elastic Wave Velocities in Rods and Plates*, 1995, \$2000.

Arkansas Department of Higher Education Promotional Grant, University *Undergraduate Research Scholarship and Performance*, 1998, \$20,700.

University of Central Arkansas Faculty Development Grant. *Enhancing the Understanding of Thermal, Statistical, and Probabilistic Concepts in the Physics Curriculum*, 2000, \$520

University of Central Arkansas Faculty Development Grant, *Project Kaleidoscope F21: Taking Responsibility for Leadership*, (with J. Draves, P. Draves, C. Frederickson, S. Runge, C. Stanitski), 2000, \$3,294.

University of Central Arkansas Research Council, *Encoding and decrypting signals using pseudorandom noise*, 2004-05, \$7,940.

National Institutes of Health/National Center for Research Resources Biomedical Research Infrastructure Networks. *Enhancement of IT Network Capacity*, (with Paul Hamilton and Jacquie Rainey), 2005, \$49,411.

Arkansas Department of Higher Education, Elementary Science Specialist Program. 2006-2007, \$48,055.

Department of Education/Arkansas Department of Education, MSP Program, Developing Mathematics/Science Coaches/Teacher Leaders in Arkansas Schools, 2007-2008, \$173,880.

Department of Education/Arkansas Department of Education, MSP Program, Developing Math Coaches/Teacher leaders in Arkansas, 2008-2009, \$152,604.

Department of Education/Arkansas Department of Education, MSP Program, Developing Math Coaches/Teacher leaders in Arkansas, 2009-2010, \$157,262.

## **PROFESSIONAL SERVICE**

### **SOCIETY MEMBERSHIPS AND OFFICES HELD**

Acoustical Society of America

American Association of Physics Teachers

American Association of Physics Teachers - AOK Section, Past President, 2008-2009

American Association of Physics Teachers - AOK Section, President, 2007-2008

American Association of Physics Teachers - AOK Section, Vice-President, 2006-2007

American Association of Physics Teachers - AOK Section, Secretary 2005-2006

IEEE

IEEE Signal Processing Society

IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society

Society of Physics Students, National Council Member, 1991-1994  
Sigma Pi Sigma  
Sigma Xi

## **PEER REVIEW**

### **Journal Referee**

Up to 5 reviews per year for the Journal of the Acoustical Society of America, the American Journal of Physics, and the Proceedings of the Arkansas Academy of Science.

### **Book Referee**

Average 2 reviews per year. Addison Wesley, Allyn and Bacon, Wm. C. Brown, Elsevier, D. C. Heath, Prentice-Hall, and Saunders.

### **Grant Reviewer**

Average 50 reviews per year. Organizations have included the Arkansas Space Grant Consortium, the Arkansas EPSCoR sub-committee for NASA, the Arkansas Science and Technology Authority, Arkansas SURF, and the Louisiana Board of Regents.

## **INSTITUTIONAL SERVICE AT THE UNIVERSITY OF CENTRAL ARKANSAS**

Search Committee, Assistant Provost for Sponsored Programs, 2008.

Provost's Budget Committee, 2007.

Concurrent Enrollment Committee, 2006-2007.

Undergraduate Council, 2005-2006.

Search Committee, Dean of Natural Sciences and Mathematics, 2005-2006.

Search Committee, Assistant Provost for Sponsored Programs, 2005-2006.

Search Committee, Chemistry Department Chair, Chair, 2004-2005.

UCA/NLSD P-16 Education Partnership on Improving Teacher and Principal Quality:

No Child Left Behind, Partnership Planning Response Team, 2004-2006.

Search Committee, Mathematics Department Chair, Chair, 2003-2004.

Title III Advisory Board, 2003-2007.

Search Committee, Director of Purchasing, 2001-2002.

Search Committee, Science Education, Chair, 2000-2002.

Search Committee, Director of Physical Plant, 1999-2000.

North Central Self Study, General Education, Chair, 1998-1999.

Council of Deans, February 1998- June 1999.

UCA Distinguished Alumnus Selection Committee, 1997-1999.

Jeff and Patsy Farris Scholarship Selection Committee, 1997-1999.

ADHE Self-Study, General and Physical Science, Chair, 1996-1997.

Search Committee for Director of Writing Programs, Chair, 1996.

College of Natural Sciences and Mathematics, Council of Chairs, 1995-present.

Writing Task Force, 1995-1996.

Barry M. Goldwater Scholarship, University Faculty Representative, 1995-present.

General Education Task Force, 1995-1999.

General Education Committee, Chair, 1994-1995.

College of Natural Sciences and Mathematics, Research Committee, 1994-1995.



College of Arts and Sciences, Dean Search Committee, 1993-1994.  
Physics Department, Chair Search and Screening Committee, Chair, 1992-1993.  
University, Radiation Safety Committee, 1992-present  
University, Professional Educational Council, 1991-1994.  
Physics Department, Tenure Committee, 1991-1992, 1994-1995, 1999-2000.  
Committee to Establish a Science and Mathematics Center at UCA, 1991.  
A.P. & L. Scholarship Committee, 1991.  
University, Computer Advisory Committee, 1988-1991.  
College of Sciences and Humanities, Curriculum Committee, 1988-1990.  
Physics Department Library Representative 1987-1997, 1999-present.  
Physics Department ADHE Self Study, Co-Chair, 1987-1988.  
Physics Department Internal Review, Chair, 1987-88.  
Physics Department Promotion Committee, 1988, 1992, 1993.  
Physics Department Search and Screening Committee, 1986-1995, Chair 1991.

## **STATE AND NATIONAL COMMITTEES**

Arkansas EPSCoR Committee, 2009-present.  
Arkansas Department of Higher Education, Statewide Transfer System Faculty Team - Physics, 2006.  
Arkansas Department of Higher Education, Student Undergraduate Research Fellowship Awards Committee, 2005, 2006, 2008  
Advisory Committee, 3<sup>rd</sup> Gordon Conference on Physics Research and Education: Classical Mechanics, 2002-2004.  
Advisory Committee, 2<sup>nd</sup> Gordon Conference on Physics Research and Education: Quantum Mechanics, 2000-2002.  
Arkansas Science Information Liaison Office Undergraduate Research Fellowship Awards Committee, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, and 2004.  
Marsh White Awards Committee, Society of Physics Students, 1993-1994.  
Arkansas Space Grant Consortium, Planning Committee, 1991-2008, Alternate 2008-present.  
Organizing Committee, Statewide Mathematics and Science Leadership Conference, 1991 and 1992.  
National Council, Society of Physics Students, Zone Councilor, 1991-1994.

## **PUBLICATIONS, PAPERS READ, AND SEMINARS**

### **PUBLICATIONS**

Study of Sound Attenuation in Sediments, Ph.D. dissertation. (1984)

Measurement of the drag on spheres falling through the air. J. G. Ross, S. R. Addison and N. O. Gaiser, Proceedings of the Arkansas Academy of Science, 42, 112-113. (1988)

The Sun's effect on the Earth's Ozone Layer, *Magill's Survey of Science: Space Exploration Series*, 1, 348-354. (1989)

Galaxies beyond the Milky Way. *Magill's Survey of Science: Space Exploration Series*, 2, 474-480. (1989)

The Jovian System. *Magill's Survey of Science: Space Exploration Series*, 2, 677-682. (1989)

The History of the Solar System. *Magill's Survey of Science: Space Exploration Series*, 4, 1367-1373. (1989)

Lord Rayleigh in *The Nobel Prize Winners: Physics*, 1, 80-86. (1989)

Lev Davidovich Landau in *The Nobel Prize Winners: Physics*, 2, 810-817. (1989)

Lev Davidovich Landau, in *Great Lives from History: Twentieth Century*. 3, 1280-1284. (1990)

Pluto and Charon. *Magill's Survey of Science: Earth Science Series*, 4, 2094-2100. (1990)

Electron Microscopy. *Magill's Survey of Science: Life Science*, 2, 744-750. (1991)

The Greenhouse Effect. *Magill's Survey of Science: Life Science*, 3, 1225-1231. (1991)

Electrodynamic Focusing of Charged Aerosol Particles. D. K. Hutchins, J. Holm, and S. R. Addison. *Aerosol Science and Technology*. 14, 389-405. (1991)

*Physical Science Laboratory Manual*, McGraw Hill. (1991)

Homogeneous functions in thermodynamics. *Proceedings of the Arkansas Academy of Science*, 45, 114-117. (1991)

Acoustics. *Magill's Survey of Science: Applied Science*, 1, 17-23. (1993)

Nonlinear Acoustics. *Magill's Survey of Science: Applied Science*, 4, 1809-1815. (1993)

Is Extensivity a Fundamental Property of Entropy? Stephen R. Addison and John E. Gray. *Journal of Physics A*, 34, 7733-7737. (2001)

Characteristic Functions in Radar and Sonar. John E. Gray and Stephen R. Addison. In *Proceedings of the 34<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 31-35. (2002)

Book Review: *Classical Mechanics*, 3<sup>rd</sup> Ed., Herbert Goldstein, Charles Poole, and John Safko. *American Journal of Physics* 70, 782-783. (2002)

The effect of nonuniform motion on the Doppler spectrum of scattered continuous-wave waveforms. John E. Gray and Stephen R. Addison. In *Proceedings of the SPIE, Volume 5102: Independent Component Analyses, Wavelets, and Neural Networks*, edited by Anthony J. Bell, Mladen V. Wickerhauser, and Harold H. Szu, 226-239. (2003)

Effect of nonuniform target motion on radar backscattered waveforms. J.E. Gray and S.R. Addison. *IEE Proceedings Radar, Sonar, and Navigation* 150, No. 4, 262-270. (2003)

General Solution to Dispersive Wave Equation and Its Application to Propagation. John E. Gray and Stephen R. Addison. In *Proceedings of the 36<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 497-501. (2004)

Establishing a state-of-the-art college computing environment. Ronald Toll, Stephen R. Addison, Qiang Duan, Carol Hambuchen, and Chenyi Hu. In *Proceedings of the Second Annual Mid-South College Computing Conference*, edited by Charlotte Owens and George Benjamin, 74-77. (2004)

The Morphology of Steve. Scott, Eugenie C., . . . , Stephen Addison et al. *Annals of Improbable Research*, July / August, 10, Is. 4, 24-29. (2004)

A methodology for characterizing phase noise in modulated radar waveforms: an alternative 'terrain' characterization method. John E. Gray and Stephen R. Addison. In *Proceedings of the SPIE, Volume 5410: Radar Sensor Technology VIII and Passive Millimeter-Wave Imaging Technology VII*, edited by Robert Trebits, James L. Kurtz, Roger Appleby, Neil A. Salmon, and David A. Wikner, 74-84. (2004)

Chaotic Encryption and Decryption: Involving Undergraduates in Authentic Research. Stephen R. Addison, Katharina Ochterbeck, Katie M. Reynolds, and John E. Gray. In *Proceedings of the 37<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 244-248. (2005)

The Notion of Random Fourier Series: An Approach Based on Phase Noise. John E. Gray and Stephen R. Addison. In *Proceedings of the 37<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 419-423. (2005)

A generalization of Huygen's principle and some applications. John E. Gray and Stephen R. Addison. In *Proceedings of the SPIE, Vol. 5788: Radar Sensor Technology IX*, edited by Robert N. Trebits, and James L. Kurtz, 97-107. (2005)

Chaos and encryption: problems and potential. Stephen R. Addison and John E. Gray. In *Proceedings of the 38<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 275-279. (2006)

Precision measurements of chaotic electric circuits. Travis Hoggard, Katharina Ochterbeck, Katie M. Reynolds, Stephen R. Addison, and John E. Gray. In *Proceedings of the 38<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 285-288. (2006)

Computing the characteristic function for sums of the sinusoidal random variables. John E. Gray and Stephen R. Addison. In *Proceedings of the 38<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 338-343. (2006)

Symbolic Noise and Chaos. John E. Gray and Stephen R. Addison. In *Proceedings of the 38<sup>th</sup> Southeastern Symposium on System Theory*, IEEE, 417-421. (2006)

Enhancing the Undergraduate Experience: Atomic and Nuclear Physics Experiments at an Accelerator Facility. R. Mehta, S. R. Addison, and J. L. Duggan. In *Application of Accelerators in Research and Industry: Twentieth International Conference*, CAARI 2008. AIP Conference Proceedings 1099, 234-239. (2009)

## **TECHNICAL REPORTS**

Study of Attenuation of Sound in Sediments. University of Mississippi Physical Acoustics Research Group. Technical Report 81-2. (1982)

Study of Sound Attenuation in Sediments. University of Mississippi Physical Acoustics Research Group. S. R. Addison and Henry E. Bass. Technical Report 84-03. This report was also my Ph.D. dissertation. (1984)

Acceptance Tests for Coarse and Fine Aggregates. University of Central Arkansas, Technical Report SRA 91-01, (1991). Also published as FHWA/AR - 93/002. (1993)

## **PAPERS READ AND POSTER PRESENTATIONS**

Preliminary report on the Use of a Computerized Physical Science Tutorial at UCA, Stephen R. Addison, Maurice Ayers, Ralva Bass, Denver L. Prince and Hudson B. Eldridge. Seventieth meeting of the Arkansas Academy of Science. (1986)

On the Applicability of Stokes Law. Seventy-second meeting of the Arkansas Academy of Science. (1988)

Measurements of Drag on Spheres Falling Through the Air., J. G. Ross, N. O. Gaiser and Stephen R. Addison. Seventy-second meeting of the Arkansas Academy of Science. (1988)

Electrodynamic Funnel for Confinement and Transport of Charged Aerosol Particles. D. K. Hutchins, J. Holm and S. R. Addison. Symposium of the American Association for Aerosol Research. (1988)

Acceptance tests for coarse and fine aggregates. 52nd Transportation Research meeting of the Arkansas Highway and Transportation Department. (1991)

Homogeneous Functions in Thermodynamics. Seventy-fifth meeting of the Arkansas Academy of Science. (1991)

On the use of a telescope simulator to teach Astrophysics and Instrumentation in Astronomy. Seventy-sixth meeting of the Arkansas Academy of Science. (1992)

Computed graphical representations of the Gregorian calendar. Stephen R. Addison and Lee Ann Criswell. Seventy-sixth meeting of the Arkansas Academy of Science. (1992)

Activities for SPS Chapters and the selection process for designation as an outstanding SPS Chapter. Society of Physics Students session at the winter meeting of the American Association of Physics Teachers, New Orleans, Louisiana (1993)

Modeling planetary magnetospheres. First Annual Arkansas Space Grant Symposium. (1993)

The construction and use of a charged coupled device (CCD). Second Annual Arkansas Space Grant Symposium. (1994)

A method to illustrate the extensive and intensive properties of thermodynamic variables. First Gordon Conference on Physics Research and Education, Plymouth State College, Plymouth, New Hampshire. (Poster) (2000)

Characteristic Functions in Radar and Sonar. John E. Gray and Stephen R. Addison. Invited Paper, 34<sup>th</sup> Southeastern Symposium on System Theory (SSST 2002), University of Alabama in Huntsville, Huntsville, Alabama. (2002)

Undergraduate Research in Quantum Mechanics at the University of Central Arkansas. Second Gordon Conference on Physics Research and Education, Mt. Holyoke, South Hadley, Massachusetts. (Poster) (2002)

Symmetry Analysis of the reduced Maxwell Bloch Equations with a permanent dipole. Chad Fendt, Danny Arrigo and Steve Addison. Joint Mathematics Meetings: 109<sup>th</sup> Meeting of the American Mathematical Society, 86<sup>th</sup> Meeting of the Mathematical Association of America, Baltimore, Maryland. Abstract 983-78-1024, Abstracts of Papers Presented to the American Mathematical Society, 24, 159. (2003)

Symmetry Analysis of Reduced Maxwell Bloch Equations with a permanent dipole, William A. Fendt, Stephen R. Addison, and Daniel J. Arrigo. 65<sup>th</sup> Meeting of the Oklahoma-Arkansas section of the Mathematical Association of America, Tulsa, Oklahoma. (2003)

Applications of Characteristic Functions to Some Problems in Radar. John E. Gray and Stephen R. Addison. Sixth ONR/GTRI Workshop on Target Tracking and Sensor Fusion. San Diego, California. (2003)

General Solution to Dispersive Wave Equation and Its Application to Propagation. John E. Gray and Stephen R. Addison. 36<sup>th</sup> Southeastern Symposium on System Theory (SSST 2004) Georgia Institute of Technology, Atlanta, Georgia. (2004)

Panel Discussion: Establishing a state-of-the-art college computing environment. Ronald Toll, Stephen R. Addison, Qiang Duan, Carol Hambuchen, and Chenyi Hu. Second Annual Mid-South College Computing Conference, UALR, Little Rock, Arkansas. (2004)

A methodology for characterizing phase noise in modulated radar waveforms: an alternative 'Terrain' characterization. J.E. Gray and S.R. Addison. SPIE Defense and Security Symposium, Orlando, Florida. [5410-10] (2004)

DyKnow: A tool for collaborative learning. Arkansas-Oklahoma-Kansas Section Meeting of the American Association of Physics Teachers, UALR, Little Rock, Arkansas. (2004)

Chaotic Encryption and Decryption: Involving Undergraduates in Authentic Research. Stephen R. Addison, Katharina Ochterbeck, Katie M. Reynolds, and John E. Gray. 37<sup>th</sup> Southeastern Symposium on System Theory, Tuskegee, Alabama. (2005)

The Notion of Random Fourier Series: An Approach Based on Phase Noise. John E. Gray and Stephen R. Addison. 37<sup>th</sup> Southeastern Symposium on System Theory, Tuskegee, Alabama. (2005)

A generalization of Huygen's principle and some applications. J. E. Gray and S. R. Addison. SPIE Defense and Security Symposium, Radar Sensor Technology IX, Orlando, Florida. [5788-12] (2005)

Chaos and encryption: problems and potential. S. R. Addison and J.E. Gray. Scheduled for presentation at the 38<sup>th</sup> Southeastern Symposium on System Theory, Tennessee Technological University, Cookeville, TN. (2006)

Precision measurements of chaotic electric circuits. T. Hoggard, K. Ochterbeck, K. M. Reynolds, S. R. Addison, and J. E. Gray. Scheduled for presentation at the 38<sup>th</sup> Southeastern Symposium on System Theory, Tennessee Technological University, Cookeville, TN. (2006)

Symbolic Noise and Chaos. J. E. Gray and S.R. Addison. Scheduled for presentation at the 38<sup>th</sup> Southeastern Symposium on System Theory, Tennessee Technological University, Cookeville, TN. (2006)

A method computing the characteristic function (CF) for sums of the sinusoidal random variables J. E. Gray and S.R. Addison. Scheduled for presentation at the 38<sup>th</sup> Southeastern Symposium on System Theory, Tennessee Technological University, Cookeville, TN. (2006)

Research-based reform in Science and Mathematics Education, Keynote Address, Arkansas-Oklahoma-Kansas Section Meeting of American Association of Physics Teachers, UCA, Conway, AR. (2007)

Enhancing the Undergraduate Experience: Atomic and Nuclear Physics Experiments at an Accelerator Facility. R. Mehta, S. R. Addison, and J. L. Duggan. Application of Accelerators in Research and Industry: Twentieth International Conference, CAARI 2008, Fort Worth, TX. (2008)

Research with Undergraduates and Preparing Undergraduates to Participate In Authentic Research. Invited presentation. Arkansas INBRE 2008, Fayetteville, AR. (2008)

## **SEMINARS AND GENERAL PRESENTATIONS SINCE 1990**

The surface on which a particle executes simple harmonic motion, UCA Physics Department Senior Seminar, Spring 1990.

Quantum Electrodynamics and Quantum Chromodynamics, Arkansas Governor's School, July 1990.

Particle Shape Measurement, Arkansas Highway and Transportation Department, November 1990.

Arkansas Space Grant Consortium, UCA Science Faculty Seminar Series, November 1990.

Cosmology, Arkansas Governor's School, July 1991.

Astronomy and Light (workshop), Arkansas Statewide Science and Mathematics Leadership Conference, July 1991.

What Newton hath joined together let no man put asunder (with Steve Butcher), Arkansas Statewide Science and Mathematics Leadership Conference, July 1992.

Particle Drag Forces, Graduate Institute of Technology, University of Arkansas at Little Rock, October 1993.

Fluid Dynamic Drag Forces on Spheres, UCA Physics Department, March 15, 1994.

Cosmology, Arkansas Governor's School, July 9, 1994.

High Tech In Arkansas, Conway Morning Rotary Club, March 28, 1995.

Acoustics Laboratory (Demonstrations and Presentations on Musical Acoustics applied to dulcimers), Ozark Folk Center Dulcimer Jamboree, April 22, 1995.

Cosmology: *An Introduction to its Methods and Current Limitations*, Arkansas Governor's School, July 8, 1995.

Discovery Based Education in Science, UCA Physics and Astronomy Seminar Series, November 1996.

Discovery Based Education in Science, UCA Biology Department Seminar, January 1997.

SILO Undergraduate Research Fellowships Through the Eyes of a Reviewer, UCA Sponsored Programs Workshop, April and May 1997, May 1998.

SILO Undergraduate Research Fellowship Proposal Workshop, UCA Sponsored Programs Workshop, September 10, 1998.

Scientific Inference, UCA Physics and Astronomy Seminar Series, October 19, 1998.

Science and Scientists in the Baroque era, First Annual Baroque Festival, University of Central Arkansas, Department of Music, January 28, 1999.

Uncertainty in Physics, UCA Physics and Astronomy Seminar Series, September 27, 1999.

The place of probability in physics curricula, UCA Physics and Astronomy Seminar Series, April 3, 2000.

Report from the Gordon Conference on Physics Research and Education: Visualization tools, models, and other tools that can be used to aid the understanding of thermal concepts. UCA Physics and Astronomy Seminar Series, September 18, 2000.

Proposal Reviewers Panel, IDC Workshop, October 26, 2000.

Visualization Tools in the classroom and on the web, IDC Workshop, University of Central Arkansas, February 13, 2001.

Using TeX/LaTeX to Enhance Science Courses, Techfest, University of Central Arkansas, April 17, 2001.

Preparing SURF proposals, University of Central Arkansas, Sponsored Programs Workshop, October 1, 2001.

Student Research Proposals, University of Central Arkansas, Honors College, September 23, 2002.

Research Proposals for Students, University of Central Arkansas, Honors College, September 22, 2003.



Elements of a Successful SURF Proposal, University of Central Arkansas, Sponsored Programs Workshop, September 2, 2004.

The Arkansas Department of Higher Education SURF Program, University of Central Arkansas, Sponsored Programs Workshop, September 8, 2005.

Last Best Chance, Screening and Panel Discussion. Panel: Congressman Vic Snyder, Stephen Addison, Gloria Cabe, Mark Mullenbach, Adam Silverman, University of Central Arkansas, March 13, 2006.

Bayesian Probability, Physics Department, Harding University, September 4, 2006.

Signal Processing: Areas of Research, Student Contributions, and Careers, Chemistry Department, Harding University, September 4, 2006.

The ADHE SURF Grant Program, University of Central Arkansas, Sponsored Programs Workshop, September 5, 2006.

SURF Workshop, Panel Discussion. Panel J.D. Swanson, Amanda Allen, Allicia Kellogg, Stephen R. Addison, University of Central Arkansas, September 6, 2007.

The Arkansas Department of Higher Education SURF Program, University of Central Arkansas, October 1, 2008.

The Arkansas Department of Higher Education SURF Program: Science Students, University of Central Arkansas, September 9, 2009.

The Arkansas Department of Higher Education SURF Program: Arts, Social Sciences, Honors College and other students, University of Central Arkansas, September 10 1, 2009.