

## Work History

### ADMINISTRATIVE APPOINTMENTS

- **University of South Carolina, Columbia, South Carolina**  
*Program Director and Co-PI SC STEPs to STEM (Part-Time)* 06.2010 – Present  
*Assistant Director, The Center for Science Education* 06.2010 – 08.2011
  - Direct outreach programs for university; teach undergraduate and graduate classes; oversee activities of staff (PhD and students); prepare budgets and social events for program support and fund raising.
- **University of South Carolina, Columbia, South Carolina**  
*Managing Director, McCausland Center for Brain Imaging*  
*Research Assistant Professor of Psychology and Physics (Adjunct)* 12.2006 – 10.2008
  - Manage all aspects of daily operation of Siemens Trio MRI system to include booking, billing and coordination with hospital staff; teach multi-disciplinary classes and mentor students.

### TEACHING APPOINTMENTS

- **Roberts Wesleyan College, Rochester, New York**  
*Visiting Assistant Professor of Physics* 08.2011 – Present
  - Advanced undergraduate physics instruction (quantum mechanics) and curriculum development; applied computational neuroscience research; grant management and writing.
- **Rochester Institute of Technology, Rochester, New York**  
*Lecturer of Physics* 12.2008 – 05.2010
  - Undergraduate physics instruction (Workshop Physics) and curriculum development; applied computational neuroscience research; Physics education research (PER).
- **Francis Marion University, Florence, South Carolina**  
*Assistant Professor of Physics* 08.1998 – 12.2003
  - Led departmental initiative to establish Computational Physics curriculum and served as administrator of computing the facility; served as a Faculty Senator and as Chairman for IT Subcommittee where I helped develop internal grant guidelines and oversaw dispersal of funds; served as research advisor for nine students.

### RESEARCH APPOINTMENTS

- **University of South Carolina, Columbia, South Carolina**  
*Research Assistant Professor of Psychology* 01.2004 – 12.2006
  - Design and test software for the analysis of neuro-physiological data; instrumental in the design of experiments using Scalp Voltage and fMRI measures; policy implications for technology.

## Educational Background

- **University of Arkansas, Fayetteville, Arkansas**  
*Ph.D. Physics* 05.1999
  - Developed a mathematical model for the description of low-energy atomic collisions and scattering cross-sections; where necessary, native code was developed to simulate relevant processes.
- **University of Arkansas, Fayetteville, Arkansas**  
*M.A. Physics* 05.1995
  - Contributed to the design and testing of a ring-laser system for the study of near-threshold photon statistics; participated in grant writing and hardware acquisition.
- **State University of New York, Brockport, New York**  
*B.S. Physics and Mathematics* 05.1992
  - Conducted advanced research in Photo-Chemistry and in Nuclear Physics; served as a teaching assistant in Physics and as a tutor for Mathematics and Economics.

## **Computing Experience**

### **LANGUAGES**

- Proficient in: C++, FORTRAN, Java, VB 6 and VB.Net

### **SOFTWARE**

- Database: MySQL Server, Navicat, Microsoft Access
- Platforms: Linux Redhat/BSD, Microsoft Windows® 2000/XP
- Packages: Matlab, MAPLE, SAS, Microsoft Excel

### **WEB DEVELOPMENT**

- Admin: PHP, Apache
- UI/Client: HTML, CSS, PHP, JavaScript

## **Professional Memberships and Affiliations**

- American Physical Society
  - Member American Physical Society's Forum on Education (FEd)
  - Member Division of Atomic Molecular and Optical Physics (APS)
  - Member Southeast Section of the American Physical Society (SESAPS)
- Member Cognitive Neuroscience Society (CNS)

## **Honors, Awards and Activities**

- Member STEM research advisory committee (formerly known as MBRS/RISE Advisory committee) for the NIH sponsored program at Benedict College, a local HBCU in Columbia, SC. (Current)
- Board Member Science and Religion Initiative (SRI) at the University of South Carolina. (Current)
- Faculty Senator Francis Marion University (Elected position: 2001-2003).
- Sigma Pi Sigma Undergraduate Research Award in Chemistry. (SUNY Brockport 1991)
- Ronald E. McNair Scholarship Recipient. (NSF 1991-1992 Academic year and summer research support.)

## **External Grants and Matching Funds**

- 2009 - 2012: Co-PI and Project Director NSF Grant # 0653164 (PI Timothy Mousseau, University of South Carolina) - SC STEPs to STEM. **\$2,000,000**
- 2010 - 2012: Co-PI and Project Director NSF Grant # 0850208 (PI Timothy A Mousseau, University of South Carolina) - SC Graduate Steps to STEM. **\$600,000**
- 2007 - 2009: Co-PI USAMRAA (PI Jennifer Vendemia) - Continuation Brain Imaging Research. **\$1,250,000**
- 2005 – 2008: Co-PI USAMRAA (PI Jennifer Vendemia) - Brain Imaging Research. **\$3,660,000**
- 2003 – 2004: PI Francis Marion University (competitive) internal and State Lottery matching funds awarded to establish a Computational Physics Laboratory. **\$11,000**

**Published Papers and Published Conference Proceedings\***

\*denotes a peer reviewed publication.

1. Katz, J., Wandersman, A., Robert Goodman, **\*Schillaci, M.J.**, Griffin, S., Wilson- King, D., Updating FORECAST: Contributions to Formative Evaluation Theory and Practice. Evaluation and Program Planning. (Submitted for Publication)
2. **Schillaci, M.J.**, Teaching Temperature with Technology, Bulletin of the American Physical Society, Volume 55, Number 10, 2010.
3. **\*Schillaci, M.J.**, Total Tomography, Computing in Science and Engineering, vol. 11, no. 2, pp. 12-13, March/April, Jun, 2009.
4. Vendemia, J.M., **\*Schillaci, M.J.**, Buzan, R. F., Green, E. P., & Meek, S. W., Chapter 13: Alternate Technologies for the Detection of Deception. In, Daniel Wilcox (Editor), The Use of the Polygraph in Assessing, Treating and Supervising Sex Offenders: Practitioner's Guide. Wiley Series in Psychology of Crime, Policing and Law, 2009.
5. **\*Schillaci, M.J.**, Computationally Complete, Computing in Science and Engineering, vol. 9, no. 3, pp. 3-6, May/June, 2007.
6. **Schillaci, M.J.**, Top-Down and Free, Bulletin of the American Physical Society, 74th Annual Meeting of the Southeastern Section, 2007.
7. **Schillaci, M.J.**, Vendemia, J.M., Buzan, R.F., Green, E. P., & Meek, S. W., A Two-State Analysis of ERP Activity Measures and fMRI Activations Relevant to the Detection of Deception. Bulletin of the American Physical Society, Volume 52, Number 1, 2007.
8. **Schillaci, M.J.**, Top-Down Physics. Bulletin of the American Physical Society, APS March Meeting, 2006.
9. **Schillaci, M.J.**, Vendemia, J.M., A Quantum Analysis of Scalp Potential Data for Repeated Mock Interrogation Trials. Proceedings of the Cognitive Neurosciences Society, Methodological Issues: Electrophysiology, 2006.
10. **Schillaci, M.J.**, A two-state quantum level and power analysis of event-related scalp potential data relevant to the detection of deception and to the discrimination of correlates of high-order cognitive functioning. Bulletin of the American Physical Society, 2006.
11. Vendemia, J.M., Buzan, R.F., Green, E.P., & **\*Schillaci, M.J.**, Effects of Preparedness to Deceive on ERP Waveforms in a Two-Stimulus Paradigm, Journal of Neurotherapy, Volume 9, Issue 3, 2006.
12. **Schillaci, M.J.**, Local Momenta and Weak Quantum Measurements in Massive Three-Body Coulomb Systems. Bulletin of the American Physical Society, 37th Meeting of the Division of Atomic, Molecular and Optical Physics, 2006.
13. **Schillaci, M.J.**, Computational Physics in a Nutshell. Bulletin of the American Physical Society, 2002.
14. **Schillaci, M.J.**, Local Momenta and a Three-Body Gauge. Bulletin of the American Physical Society, Vol. 46, No. 3, 2001.

15. **Schillaci, M.J.**, Simulated Thin-Film Growth and Imaging. Bulletin of the American Physical Society, Vol. 46, Part F, 2001.
16. **Schillaci, M.J.**, Kinematic coupling in continuum atomic scattering. University of Arkansas Press (PhD Thesis), Dec 1999.

### **Book Chapters and Review Articles**

- Schillaci, M. J. "Total Tomography," *Computing in Science and Engineering*. vol. 11, no. 2, pp. 12-13, March/April, 2009.
- Schillaci, M. J. "Computationally Complete," *Computing in Science and Engineering*, vol. 9, no. 3, pp. 3-6, May/Jun, 2007.
- Vendemia, J.M., Schillaci, M.J., Buzan, R. F., Green, E. P., & Meek, S. W., Chapter 13: Alternate Technologies for the Detection of Deception. In, Daniel Wilcox (Editor), *The Use of the Polygraph in Assessing, Treating and Supervising Sex Offenders: Practitioner's Guide*. Wiley Series in Psychology of Crime, Policing and Law, 2009.

### **Online Publications, Self-Published Textbooks and Manuals**

- *Top-Down Physics: The Nature of the Physical World*. Copyright © 2001-2010, Michael Jay Schillaci. The manuscript is nearly completed and portions may be viewed online at: <http://www.evsis.org/download.html>.
- Schillaci, M. J. *An Introduction to MAPLE*. Copyright. The manual may be downloaded at: <http://www.evsis.org/docs/m5intro.pdf>
- Schillaci, M. J. (2000). Local Momentum and a Three-Body Gauge. Thesis-related material, publication available online at <http://xxx.lanl.gov/abs/physics/0009024>.

### **Invited Speaker and/or Sponsored Participation**

- Analysis of Electric Scalp Potential and Functional Magnetic Resonance Imaging Data Relevant to the Detection of Deception. Invited Speaker, Fourth Conference on Mathematical Methods in Counterterrorism (CMMC). Rochester Institute of Technology, Rochester, NY, September 20-22, 2007.
- Contemplative Experience and Cognitive Psychology. Senior researcher, Mind & Life Research Institute, Garrison, NY, July 2004.
- Top-Down Physics. Invited participant, Davidson Summer Workshop on Open Source Physics, Davidson, NC, July, 2003.
- NSF-supported workshop for physics faculty. Sponsored participant, Lawrence University, Appleton, WI, July, 21-28, 2002.

- Mind or Brain? Science and Spirit. Guest lecturer, Anthropology, Department of Anthropology, University of South Carolina, April 2006.
- Problem Solving as A Cognitive Task: Guest lecturer, Cognitive Psychology, Department of Psychology, University of South Carolina, September 2002.
- Thin Films; Uses, Models, Images: Invited speaker, Coastal Carolina University, Conway, SC. February, 2000.

## **Classes Taught**

### *Undergraduate*

- Physical Science (for Non-Majors)
- Introductory Physics (Algebra and Calculus Based)
- Workshop Physics I and II (Calculus Based; Integrated Lecture and Laboratory)
- Introductory Physics Laboratory (Traditional)
- Modern Physics Laboratory
- Classical Mechanics
- Electricity and Magnetism
- Introduction to Computational Physics
- Advanced Computational Methods
- Quantum Mechanics

### *Graduate*

- Introduction to MRI Physics and Analysis (Physics)
- Neuroimaging of Cognition (Psychology)

## **Research Collaborations and Project Participation (Sample)**

- Grant Management (Timothy Mousseau, University of South Carolina) Program Director for \$2M National Science Foundation (NSF) program; oversee activities of data procurement (PHP/MySQL) and analysis (SAS, EXCEL) team.
- 55<sup>th</sup> Annual Central South Carolina Region II Science Fair (Oscar Lopez, Center for Science Education, University of South Carolina) Lead team to developed database driven (PHP/MySQL), online booking system for regional science fair serving 700+ students; plan and oversee renovation/rebuild of multiple websites.
- Information-Theoretic Analyses (Svetlana Shinkareva, Department of Psychology, University of South Carolina) Implementation of original Matlab and C++ code to use an information-theoretic approach to classify BOLD fMRI levels for different (tool/dwelling) categories.
- Corporate Liaison Managed magnetic resonance imaging (MRI) system in coordination with local hospital system; coordinated IP transfers and served as corporate liaison for Siemens Medical Systems.
- Software Development (Jennifer Vendemia, Department of Psychology, University of South Carolina) Designed, developed and tested software (VB6/.NET) for the analysis of very large physiological EEG) data sets; design/test/analyze EEG and MRI experiments; program review/assessment; review of interrogation techniques.

- Image Analysis and Reconstruction Review of computerized tomography (CT) and signal analysis (reduction of SNR); image reconstruction/subtraction algorithms; region of interest (ROI) based analysis.
- Nonlinear Optics and Laser Systems (Surendra Singh, Department of Physics, University of Arkansas) Operation (tuning/alignment) of Ti-Sapphire system; design and testing of YAG ring laser for parametric down conversion and modeling of near threshold statistics.

### ***Professional Presentations (partial list)***

- Schillaci, M. J. A Two-State Analysis of ERP Activity Measures and fMRI Activations Relevant to the Detection of Deception. APS 2007, Denver, Colorado, November, 6 2007. (Poster K1.00032)
- Schillaci, M. J. Top-Down Physics: SESAPS 2006, Williamsburg, Virginia, November 11, 2006.
- Schillaci, M. J. ., Vendemia, J. M. C., Buzan, R. F., Green, E. P., & Meek, S. W. Practice Effects on ERP-Components Related to Deceptive Responses: SESAPS 2006, Williamsburg, Virginia, November 11, 2006. (Poster G004)
- From Brains to Branes: University of South Carolina, Invited Speaker, Departmental Colloquium Series, Thursday, September 21, 2006.
- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., & Meek, S. W. (March, 2006). The Future of Alternative Technologies for the Detection of Deception: Implications, Improbabilities, and Impossibilities. Paper presented at the Annual Meeting of the Maryland Polygraph Association. Annapolis Junction, MD.
- Vendemia, J.M.C., Meek, S. W., Schillaci, M. J. (July, 2006). Neuroscientific Techniques of Studying Human Deception. Paper presented at the Annual Meeting of the American Polygraph Association. Las Vegas, NV.
- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., Green, E. P., & Meek, S. W. ERP and fMRI Research in the Detection of Deception. Talk presented at the U.S. Army Research Laboratory Seminar on the Deception of Deception. Aberdeen, MD. (April, 2006)
- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., Green, E. P., & Meek, S. W. Lie Detection Using EEG and ERP. Talk presented during Reading Minds: Lie Detection, Neuroscience, Law, and Society Conference hosted by The Stanford School of Law, Stanford, CA.. (May, 2006)
- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., Green, E. P., & Meek, S. W. Examining the Underlying Assumptions of Neuroscientific Tests of Deception. Talk presented at the Judicial Seminar on Emerging Issues in Neuroscience hosted by the Association for the Advancement of Science. Washington, D. C. (June, 2006).
- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., Green, E. P. Practice Effects on ERP-Components Related to Deceptive Responses: 12<sup>th</sup> annual Cognitive Neuroscience Society meeting in New York, NY, April, 2005.

- Vendemia, J. M. C., Schillaci, M. J., Buzan, R. F., Green, E. P. A Two-Level Quantum Analysis of ERP Data for Mock-Interrogation Trials: 12<sup>th</sup> annual Cognitive Neuroscience Society meeting in New York, NY, April, 2005.
- Schillaci, M. J., Vendemia, J. M. C., Buzan, R. F., Green, E. P., Modeling Deception as a Quantum Two-State System: DecDet Annual Meeting, Georgetown University, November, 5-6, 2004.
- Schillaci, M. J. Deception and Truth as a Two-Level Construct: University of South Carolina, Research Showcase, Department of Psychology, August 2004.
- Schillaci, M. J. Computational Physics in a Nutshell: SESAPS 01, Charlottesville, VA, November 5, 2001.
- Schillaci, M. J. Local Momenta and a Three-Body Gauge: SESAPS 99, Chapel Hill, North Carolina, November 9, 1999. (LE.07)
- Schillaci, M. J. Computational Physics on a Shoestring Budget: SESAPS 99, Chapel Hill, North Carolina, November 9, 1999. (Poster JF.24)
- Three Particles... What's the Problem?: Francis Marion University, Florence, SC. Thursday, September 23, 1999.
- Schillaci, M. J. A New Three-Body Wavefunction for Continuum Atomic scattering: DAMOP 98, Sante Fe, New Mexico, May 27, 1998. (Poster DP.94.)
- Schillaci, M. J. Electron-Paramagnetic Resonance Spectra of Organic Free Radicals Absorbed on Porous Silica: Sigma Xi Undergraduate Research, Geneva, New York. (1992)