

Jacob Stinnett

Home Address

2403 W. Springfield Ave, Apt Y6
Champaign, IL
61821

Contact

e-mail: stinnettjacob@gmail.com
website: stinnett.github.io
(405)509.4584

Education

Ph.D. in Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign. **Oct 2016**

- “Automated Isotope Identification Algorithms for Low-Resolution Gamma Spectrometers.”
- Advisor: Professor Clair J. Sullivan

M.S. in Nuclear, Plasma, and Radiological Engineering, University of Illinois at Urbana-Champaign **2014**

B.S. in Physics and B.A. in Mathematics, University of Oklahoma **2012**

Experience

Research Fellow, UIUC, Urbana, IL **May 2013-Present**

- Developed Bayesian classifier algorithms for automated isotope identification
- Developed algorithm to create isotope libraries for low-resolution detectors that are customized for arbitrary feature extraction methods
- Built gamma spectra simulation software in Python using MCNP-generated detector response functions
- Wrote neural network training algorithm and performed proof of concept of using neural networks for low-resolution spectra classification

Guest Scientist, Los Alamos National Laboratory, Los Alamos, NM **Summer 2015**

- MCNP6 neutron simulations in A-2 division
- Gamma spectroscopy measurements at Nevada National Security Site

Teaching Assistant, UIUC, Urbana, IL **Aug 2012- May 2013**

- Nuclear Radiations Laboratory (NPPE 451)
- Interaction of Radiation with Matter (NPPE 446)

Various Research Experiences, University of Oklahoma, Norman, OK **2009-2012**

- Undergraduate Research Assistant to Dr. Shafer-Ray: performed calculations and simulations of an NO-He van der Waals complex to explain experimental observation of a linear Stark effect
- NSF Research Experience for Undergraduates: assisted in diatomic molecular spectroscopy experiments, built electronics, and set up laser systems
- Undergraduate research: nonlinear dynamics theory and simulations

Publications

J. Stinnett , M.M. Watson, C.J. Sullivan, and H. Xiong. “Feature Extraction and Isotope Identification on NaI Gamma-Ray Spectra.” *IEEE Transactions on Nuclear Science*. In review. **2016**

M. Kamuda, J. Stinnett, and C.J. Sullivan . Automated Isotope Identification Algorithm Using Artificial Neural Networks. *IEEE Transactions on Nuclear Science*. In review. **2016**

J. Mattingly, J. Hutchinson, C. Sullivan, J. Stinnett , M. Kamuda, M. Alamaniotis, B. Simms, J. Mueller, J. Newby, J. Linkous, S. Pozzi, K. Polack, M. Hamel, Z. He, D. Goodman, and M. Streicher. ”CNEC and CVT Subcritical Experiments with Category I Special Nuclear Material at the Nevada National Security Site Device Assembly Facility.” *Institute of Nuclear Materials Management Conference Record*. In review. **2016**

J. Stinnett and C.J. Sullivan. “Performance of an Automated Isotope Identification Algorithm for Handheld NaI Detectors.” *IEEE Nuclear Science Symposium Conference Record* **2015**

	C.J. Sullivan and J. Stinnett. "Validation of a Bayesian-Based Isotope Identification Algorithm." <i>Nuclear Instruments and Methods in Physics Research A</i> . 2014
	J. Stinnett. "Bayesian Algorithms for Automated Isotope Identification". <i>MS Thesis</i> . University of Illinois at Urbana-Champaign. 2014
	J. Stinnett, C.J. Sullivan, "An Automated Isotope Identification Algorithm Using Bayesian Statistics," IEEE Nuclear Science Symposium Conference Record. 2013
Conference Presentations	J. Stinnett , M.M. Watson, C.J. Sullivan, and H. Xiong. "Feature Extraction and Isotope Identification on NaI Gamma-Ray Spectra." <i>IEEE Nuclear NSS/MIC</i> . San Diego, CA. 2015
	J. Stinnett and C.J. Sullivan. "Automated Isotope Identification of Single-Source and Mixed-Sources." <i>IEEE Nuclear NSS/MIC</i> . San Diego, CA. 2015
	J. Stinnett and C.J. Sullivan. "Automated Isotope Identification of Single-Source and Mixed-Sources." <i>IEEE Nuclear NSS/MIC</i> . Seattle, WA. 2014
	J. Stinnett and C.J. Sullivan. "Validation of a Bayesian-Based Isotope Identification Algorithm." <i>SORMA</i> . Ann Arbor, MI. 2014
	J. Stinnett and C.J. Sullivan. "An Automated Isotope Identification Algorithm using Bayesian Statistics." <i>IEEE Nuclear NSS/MIC</i> . Seoul, South Korea. 2013
	J. Stinnett, E. Abraham, N. Shafer-Ray. "Investigation of the Use of NO-He Diatomic Van der Waals Complexes as a Probe of Time-Reversal Violation". <i>66th Ohio State University International Symposium on Molecular Spectroscopy</i> , Columbus, OH. 2011
Academic Honors	NRC/UIUC Nuclear Engineering Fellow 2014
	National Merit Scholar 2008-2012
	Duane E. Roller Award for Outstanding Scholarship in Physics and Astronomy 2011
Programming	Python, MATLAB, Mathematica, MCNP, LaTeX