

# SEAN E. O'BRIEN

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## EDUCATION

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- North Carolina State University** 2016  
*PhD in Nuclear Engineering*  
*Minor in Mathematics*  
GPA: 3.718
- North Carolina State University** 2012  
*MS in Nuclear Engineering*  
*Minor in Mathematics*  
GPA: 3.697
- James Madison University** 2009  
*BS in Physics*  
*Minor in Mathematics*  
GPA: 3.576

## EXPERIENCE

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- Sandia National Laboratories** July 2016 - Present  
*R&D S&E, Nuclear Engineering* *Albuquerque, NM*
- Gamma Detector Response and Analysis (GADRAS) full stack software developer
  - LDRD(PI): Characterizing SNM using Neutron Induced Gamma Multiplicity Counting
  - Radiation portal monitor pass by simulations
  - Gamma and neutron detector characterization measurements
  - Directional sensors: Compton Cameras, Coded Aperture, and Time Encoded Imager
  - Warhead Measurement Campaign: Measurement Team
  - OSANTC multiplicity software tool: Device Assembly Facility measurements evaluator
  - Advanced GADRAS capabilities instructor: classroom, recorded audio/video, and at UK Atomic Weapons Establishment
  - Security Clearance: Active DOE Q Clearance
- Los Alamos National Laboratory** Summer 2015  
*Graduate Research Assistant* *Los Alamos, NM*
- Sensitivity Analysis of Neutron Multiplicity Counting Statistics
  - Utilized high performance computing clusters
  - Mentor: Dr. Jeff Favorite XCP-3
- Los Alamos National Laboratory** Summer 2010  
*Graduate Research Assistant* *Los Alamos, NM*
- Developed an a posteriori error estimator for adaptive mesh refinement in LANL's Time-Dependent Parallel Neutral Particle Transport Code (PARTISN)
  - Familiarization with large FORTRAN production code
  - Mentor: Dr. Randy Baker CCS-2

**North Carolina State University**  
*Graduate Research Assistant*

Fall 2009 – Spring 2016  
*Raleigh, NC*

- 'Sensitivity Analysis and Uncertainty Quantification of Neutron Multiplicity Statistics'
- Adviser: Dr. John Mattingly
- 'A Posteriori Error Estimators for the Discrete Ordinates Approximation of the One-Speed Neutron Transport Equation'
- Adviser: Dr. Yousry Azmy

**James Madison University**  
*Undergraduate Research Assistant*

Summer 2009  
*Harrisonburg, VA*

- Pre-Shower Calorimeter (PCAL) collaboration at Jefferson Lab Hall B
- Designed and maintained PMT database and performed PMT characterization measurements
- Adviser: Dr. Kevin Giovanetti

**James Madison University**  
*Undergraduate Research Assistant*

Spring 2006-Spring 2009  
*Harrisonburg, VA*

- Photo-Nuclear research group collaboration with Duke University's High Intensity Gamma Ray Source (HIGS) group
- Performed optimization and characterization measurements of large NaI spectrometers
- Familiarization with strong radiation sources, shielding construction, and NIM instrumentation
- Adviser: Dr. Steve Whisnant

## **PUBLICATIONS & PRESENTATIONS**

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### **October 2019**

*Characterizing SNM using Neutron Induced Gamma Multiplicity Counting*

Seminar for Sandia California Org. 8647 Radiation and Nuclear Detection Systems

### **February 2017**

*Sensitivity Analysis of Neutron Multiplicity Counting Statistics Using First-Order Perturbation Theory and Application to a Subcritical Plutonium Metal Benchmark*

Nuclear Science and Engineering

### **September 2015**

*Physics Department Alumnus Seminar*

James Madison University

### **July 2015**

*Sensitivity Analysis of Neutron Multiplicity Counting Statistics using First Order Perturbation Theory for Subcritical Plutonium Benchmark*

Institute of Nuclear Materials Management conference

### **May 2015**

*Sensitivity Analysis and Uncertainty Quantification of Neutron Multiplicity Statistics using Perturbation Theory*

International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering

**July 2014**

*Sensitivity Analysis and Uncertainty Quantification of Neutron Multiplicity Statistics using Perturbation Theory*

Institute of Nuclear Materials Management conference

**May 2013**

*A Posteriori Error Estimators for the Discrete Ordinates Approximation of the One-Speed Neutron Transport Equation*

International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering

**April 2008**

*Optimization of a Large NaI Spectrometer for Compton Scattering with Polarized Beams and Targets*

National Conference of Undergraduate Research (NCUR) hosted by Salisbury University of Maryland

**April 2007**

*Calculation of the Solid Angle of a Nuclear Detector using the Monte Carlo Method*

NCUR 2007 hosted by Dominican University of California

**TECHNICAL STRENGTHS**

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| <b>Languages</b> | C#, C++, FORTRAN, BASH, Python, MatLab             |
| <b>Codes</b>     | GADRAS, PARTISN, MCNP, Neutron Generator, Momentum |
| <b>Tools</b>     | SVN, Jenkins, Visual Studio, Linux                 |

**AWARDS & SCHOLARSHIPS**

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2019 Secretary of Energy Honor Award: for work on the Warhead Measurement Campaign Team

2015 INMM J.D. Williams Student Paper Award: 2nd place

2012 Department nominee for NCSU Preparing the Professoriate

2009 Nominated for Dean's Fellowship at NC State University

2008 Dr. Raymond A. & Elizabeth Serway Physics Scholarship

2008 Inducted Pi Sigma Pi: Physics Honors Society

2007 Madison Department Achievement Scholarship: Physics