Personal Information
Address: 1599A 39th Street
Los Alamos, NM 87544
Phone: +1 (920) 858-8783
Email: casey.alan.anderson@gmail.com

Casey A. Anderson

https://www.linkedin.com/in/caseyalananderson

Work Information
Address: P.O. Box 1663
Los Alamos, NM 87545
Phone: +1 (505) 667-5968
Email: casey_a@lanl.gov

Professional Experience

Los Alamos National Laboratory — Los Alamos, New Mexico

Graduate Research Assistant	*NEN-5, Systems Design & Analysis*[1]	May 2016 - *Present*
Graduate Research Assistant	*ISR-1, Space Science & Applications*[2]	Dec. 2016 - *Present*
Post Master's Research Assistant	*W-13, Advanced Engineering Analysis*[3]	May 2011 - Jul. 2012
Summer Intern	*XCP-3, Monte Carlo Codes*[4]	2010

- Implemented new features in MCNP6 through writing code, developing benchmarks, publishing reports, and presenting the new features at various conferences [Pubs: 5,6,8,9,10][1]
- Gained significant knowledge and experience in the design, modeling, simulation, and analysis of a variety of radiation detectors for the **Nuclear Detection Figure of Merit (NDFOM)** project[2]
- Transitioned NDFOM from version 2.0 to 3.0 by modularizing and refactoring the backend Python code and through developing a cleaner, more intuiative HTML user interface for the customer[2]
- Managed the deployed server of NDFOM, including SQL database[2]
- Assisted in the development, testing, validation, and verification of the combined radiation transport and finite-element analysis multi-physics capability for the **Engineering Campaign-7 Nuclear Survivability** project[3]
- Developed unstructured mesh human phantoms for health physics applications with MCNP6 [Pub: 14][3]
- Acquired DOE Q-level security clearance and Sigmas 1-10,11,12,13,15 and performed analysis on the W-88 system[3]
- Utilized the high performance computing (HPC) systems and utilities for advanced physics simulations and analysis[1,2,3,4]
- Created a software visualization package for finite element geometries in MCNP simulations[4]

Medical College of Wisconsin — Milwaukee, Wisconsin

Graduate Research Assistant	*Department of Biophysics*	2012-2016[1]
Biophysics Representative, IT Liason	*Graduate Student Council*	2014-2016[2]

- Funded my graduate studies through conducting the background research, providing the preliminary results, and co-authoring a successful **R21** National Institute of Health (NIH) grant[1]
- Patented a segmented reconstruction technique for artifact reduction in Magnetic Resonance Imaging [Pat: i.][1]
- Collaborated with a diverse group of professionals, including medical doctors and imaging technologists, to perform clinical research, meet deliverables, and submit the findings to various international conferences [Pubs: 11,12,13][1]
- Interacted with clinical patients and subjects to collect patient data for clinical studies
- Facilitated communication between students and staff with the university's Information Technology group[2]

University of Wisconsin - Madison — Madison, Wisconsin

Student Research Assistant	*Department of Medical Physics*	2008-2011
Chapter President	*American Nuclear Society (ANS)*	2010-2011

- Researched methods for non-invasive quality assurance assessment of radioactive brachytherapy seeds
- Managed the American Nuclear Society organizational duties, including activities such as recruiting guest speakers to present at meetings, organizing conference travel, and arranging public outreach events
- Mentored an taught a variety of students through volunteering at various events, such as Science Olympiad, middle and high school science fairs, and teaching local Boy Scout chapters to achieve their merit badges
- *WE CAN STILL ADD ONE MORE HOPEFULLY, so BE SURE TO DO IT!!!*

Areas of Expertise

Physics/Engineering
- ● Nuclear Engineering
- ● Fourier Analysis
- ● Computational Physics
- ● Monte Carlo Methods
- ● Magnetic Resonance Imaging
- ● Modeling and Simulation
- ◓ Statistical Analysis
- ◓ High Performance Computing
- ◓ Signal/Image Processing
- ◓ Regularization Methods
- ◓ Radiation Detectors
- ◓ Multi-physics coupling
- ◓ Radioactive Material Handling
- ○ Computer Aided Engineering
- ○ LaGrangian Methods
- ○ Finite Element Analysis

Software
- ● MCNP
- ● Abaqus/CAE
- ● Linux
- ● Matplotlib
- ● Microsoft Office
- ● Google Docs
- ● Matlab
- ● MacOS
- ◓ Eclipse IDE
- ◓ Django Webframework
- ◓ PostgreSQL
- ◓ Windows
- ○ GADRAS
- ○ VisIt
- ○ RELAP

Programming
- ● Python
- ● Bash
- ● LaTeX
- ● Unit Testing
- ● Object Oriented
- ● Matlab
- ● Mercurial
- ● Git
- ◓ C/C++
- ◓ Fortran
- ◓ Debugging
- ○ HTML
- ○ Javascript
- ○ Java
- ○ Android

Other Skills
- ● Mentoring/Leadership
- ● Technical Writing
- ● Presentations
- ● Version Control
- ● File Input/Output
- ● Scripting
- ◓ Data Analytics
- ◓ Data Visualization
- ◓ Validation & Verification
- ◓ SQL Databases
- ◓ XML/JSON File Format
- ◓ Working with Patients
- ◓ DICOM Image Analysis
- ○ Server Management
- ○ Animal Handling

Key (*Skill Level*)
● **Expert** ◓ **Intermediate** ○ **Beginner**

Awards & Honors

SPOT Award	*Los Alamos National Laboratory*	August, 2017
Magna Cum Laude	*ISMRM Proceeding*	May, 2016
Silver Medal: Student Poster	*ISMRM Conference*	2014
Exelon Scholarship	*University of Wisconsin - Madison*	2009, 2010

Afilliations

American Nuclear Society (ANS)	2008-2012, 2016-*Present*
American Association of Physicists in Medicine (AAPM)	2009-2011, 2013-2016
International Society of Magnetic Resonance in Medicine (ISMRM)	2012-2016

Education

Primary Education

M. Sc, Biophysics	*Medical College of Wisconsin*	April, 2016
M. Sc, Nuclear Engineering & Engineering Physics	*University of Wisconsin - Madison*	May, 2011
B. Sc, Nuclear Engineering	*University of Wisconsin - Madison*	May, 2011

Thesis: "Quantitative Susceptibility Mapping: Exploratory Development and Initiation of Processing Pipelines"

Additional Classes & Trainings

MCNP6 Intermediate Workshop	*Los Alamos New Mexico*	May, 2016
CPR Certification Training	*Milwaukee, Wisconsin*	May, 2015
General Electric MR Programming Workshop	*Madison, Wisconsin*	Oct, 2014
Dale Carnegie Training	*Los Alamos, New Mexico*	August, 2011
Introduction to Abaqus	*Minneapolis, Minnesota*	June, 2011
Introduction to Python Programming	*Los Alamos, New Mexico*	July, 2010
MCNP5 Beginner Workshop	*Los Alamos, New Mexico*	May, 2010

References

A list of professional, academic, and personal references can be at here

Publications & Presentations

1. "MCNP6.2 User's Manual". In: *LANL report: TBD* (2017)
2. *Useful prompt radiation applications and capabilities with MCNP6 (LA-CP-12-00490)*. Nuclear Weapons Effects User Group. 2012
3. Nuclear Explosives Design Physics Conference. "MCNP6 Efforts for EMP, atmospheric disperal, and unstructured mesh tracking (LA-CP-01705)". In: *Proceedings of the Nuclear Explovies Design Physics Conference 2011*. (Los Alamos National Laboratory, Los Alamos, New Mexico). Oct. 2017
4. Casey Anderson, Karen Kelley, and Tim Goorley. "Unstructured mesh human phantoms with MCNP". in: *Transactions of the American Nuclear Society* 106 (2012), pp. 50–51
5. Casey Anderson and Gregg McKinney. "MCNP6 Built-in High Level Detector Responses". In: *2017 IEEE Nuclear Science Symposium and Medical Imaging Conference*. (Atlanta, Georgia). Oct. 2017,
6. ‡ Casey Anderson et al. "Neutron and Gamma Correlations using CGM in MCNP 6.2.0 (LA-UR-20353)". In: *Proceedings of the 27th American Nuclear Society Summer Meeting*. (San Fransisco, California). 2017, Link
7. § James Tutt and Gregg McKinney. "Speed and Memory Improvements to MCNP6 Delayed-Gamma Line Treatment (LA-UR-21050)". In: *Proceedings of the 27th American Nuclear Society Summer Meeting*. (San Fransisco, California). 2017
8. ‡ Casey Anderson et al. "Delta-ray production in MCNP6.2.0 (LA-UR-16-25402)". In: *24th Conference on Applications of Accelerators in Research and Industry*. (Forth Worth, Texas). Nov. 2016, Link
9. ‡ James Tutt, Casey Anderson, and Gregg McKinney. "Background-Source Cosmic-Photon Elevation Scaling and Cosmic-Neutron/Photon Date Scaling in MCNP6 (LA-UR-16-24928)". In: *24th Conference on Applications of Accelerators in Research and Industry*. (Forth Worth, Texas). Nov. 2016, Link
10. James Tutt, Casey Anderson, and Gregg McKinney. "Delayed-Gamma Energy Biasing with Exact Energy Sampling in MCNP6.2.0 (LA-UR-16-24057)". In: *Proceedings of the 26th American Nuclear Society Winter Meeting*. (Las Vegas, Nevada). Oct. 2016, Link
11. || Casey Anderson et al. "Volume-Paracellated Quantitative Susceptibility Mapping". In: *Proceedings of the International Society of Magnetic Resonance in Medicine 24th Conference*. (Singapore, Singapore). May 2016, Link
12. † Casey Anderson and Kevin Koch. "Volume-parcellated Quantitative Susceptibility Mapping of the Human Brain at 7T". in: *2015 Minnesota Workshop on High and Ultra-High Field Imaging*. (Minneapolis, Minnesota). Oct. 2015, Link
13. Casey Anderson, Kimberley Pechman, and Kathleen Schmainda. "Quantitative Susceptibility Mapping to Assess Iron Levels in Rat Brain Tumors". In: *Proceedings of the International Society of Magnetic Resonance in Medicine 22nd Conference*. (Milan, Italy). May 2014, Link
14. ‡ Casey Anderson, Tim Goorley, and Karen Kelley. "Mesh Human Phantoms with MCNP (LA-UR-12-01307)". In: *2012 3DS Simulia Community Conferece Proceedings*. (Providence, Rhode Island). May 2012, pp. 556–568, Link

‡Presentation Included; §Presentation Only; ||*Magna Cum Laude*

Patents

i. Kevin Koch and Casey Anderson. *System and method for localized processing of quantitative susceptibility maps in magnetic resonance imaging*. WO Patent App. PCT/US2016/038,723. Dec. 2016. URL: https://www.google.com/patents/WO2016209930A1?cl=en, Link