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*

2017 - *Present*	**Theoretical Design Scientist**	*XTD-PRI, Primary Physics*
2016 - 2017	**Graduate Research Assistant**	*NEN-5, Systems Design & Analysis* | *ISR-1, Space Science & Applications*
2011 - 2012	**Post Master's Research Assistant**	*W-13, Advanced Engineering Analysis*
2010	**Summer Intern**	*XCP-3, Monte Carlo Codes*

Development, design, testing, and validation of computational physics codes

- Software development in Python, C/C++, C#, Fortran, Matlab, Javascript, and HTML
- Developer of MCNP^{TM}, the Common Modeling Framework (CMF), and the Nuclear Detection Figure of Merit (NDFOM) project, implementing features such as:
  - δ-ray production, correlated secondary particles, detector response functions, and multi-physics coupling to MCNP6
  - Full software testing (regression, unit, integration, validation) packages for the Continuous Integration of CMF
  - Automated analysis of detector systems, sources, configurations, and scenarios for NDFOM
- User of the radiation transport code MCNP, Lagrangian code FLAG, and the finite-element meshing software Abaqus/CAE
- Performing physics and engineering analysis of systems on the high performance computing systems at LANL
- Developing software using tools such as Git and BitBucket for version control and Jenkins-CI for software testing
- Mentoring students at the undergraduate and high-school level
- Presenting at conferences and publishing articles in their proceedings [Pubs: 2, 3, 4, 5, 6, 7, 11, 12, 13, 14]

Medical College of Wisconsin *Milwaukee, Wisconsin*

2012 - 2016 | **Graduate Research Assistant** *Department of Biophysics*

Research in translational medicine and Magnetic Resonance Imaging

- Funded my graduate research by contributing to a successful R21 National Institute of Health research grant
- Patented a segmented reconstruction technique for artifact reduction in Magnetic Resonance Imaging (MRI) [Pat: i.]
- Performed data analytics on large imaging datasets seeking clinical applications and trends in our imaging technique
- Interacted with patients, researched on animals, acquired hands-on laboratory experience, and collaborated with medical doctors while conducting clinical and pre-clinical research
- Writing publications and presenting findings at various international conferences [Pubs: 8, 9, 10]

University of Wisconsin - Madison *Madison, Wisconsin*

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

Medical physics research and organizational management

- Researched methods for non-invasive Quality Assurance assessment of radioactive brachytherapy seeds
- Managed our student chapter of the American Nuclear Society (ANS) as chapter president

Technical & Professional Skills

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

Software
- ● MCNP
- ● Linux / MacOS
- ● LaTeX
- ● Django
- ● Matplotlib
- ● Microsoft Office
- ◓ Apache
- ◓ Sphinx
- ◓ Abaqus/CAE
- ◓ Jenkins-CI
- ◓ PostgreSQL
- ○ FLAG / RAGE
- ○ SWORD

Programming
- ● Python
- ● Git / Mercurial
- ● Version Control
- ● Continuous Integration
- ● Unit Testing
- ● Bash
- ◓ Parallel Programming
- ◓ Matlab
- ◓ C/C++/C#
- ◓ Fortran
- ◓ SQL
- ○ HTML/Javascript
- ○ Java

Other Skills
- ● Technical Writing
- ● Presentations
- ● High Performance Computing
- ● Group Collaboration
- ● Independent Work
- ● File Input/Output
- ◓ Student Mentoring
- ◓ Data Collection
- ◓ Data Analytics
- ◓ Data Visualization
- ◓ Validation & Verification
- ◓ Relational Databases
- ○ Linux Servers

Key (*Experience Level*)
● **Expert** ◓ **Intermediate** ○ **Novice**

Awards & Honors

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

Education

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

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

Classes & Trainings

May, 2018	**Introduction to FLAG**	*Los Alamos New Mexico*
May, 2016	**MCNP6 Intermediate Workshop**	*Los Alamos New Mexico*
May, 2015	**CPR Certification Training**	*Milwaukee, Wisconsin*
August, 2011	**Dale Carnegie Training**	*Los Alamos, New Mexico*
June 2011	**Introduction to Abaqus**	*Minneapolis, Minnesota*
July, 2011	**Introduction to Python Programming**	*Los Alamos, New Mexico*
May, 2010	**MCNP5 Beginner Workshop**	*Los Alamos, New Mexico*

References

Managers / Advisors

Leslie Wesler	lwesler@lanl.gov	505-665-3651
Rendell Carver	rc@lanl.gov	505-667-0121
Brent Budden	bbudden@lanl.gov	505-695-6236
Matt Griffin	griffin@lanl.gov	505-500-7010
Kevin Koch	kmkoch@mcw.edu	414-955-4034
Karen Kelley	corzine@lanl.gov	505-667-8843
Steve McCready	mccready@lanl.gov	505-665-6991
Tim Goorley	jgoorley@lanl.gov	505-665-8417

Co-workers

Lori Pritchett-Sheets	lpritch@lanl.gov	505-665-6675
Mike Berry	mrberry@lanl.gov	505-667-7718
Hailey Suitts	hsuitts@lanl.gov	505-665-5278
James Tutt	jtutt@lanl.gov	214-207-0841
Garret McMath	gem@lanl.gov	505-690-0854
Pete LaViolette	plaviole@mcw.edu	414-456-7490
Alex Cohen	acohen@mcw.edu	414-955-4923
Ali Ersoz	ersozali@gmail.com	949-413-9760

Publications & Presentations

1. Christopher Werner, Casey Anderson, and et. al. *MCNP User's Manual Code Version 6.2 (LA-UR-17-29981)*. Oct. 2017
2. 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,
3. [‡] 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
4. [§] 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
5. [‡] 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
6. [‡] 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
7. 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
8. [||] 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
9. [‡] 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
10. 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
11. Tim Goorley, Casey Anderson, and et. al. *Useful prompt radiation applications and capabilities with MCNP6 (LA-CP-12-00490)*. Nuclear Weapons Effects User Group. 2012
12. Tim Goorley, Jeff Bull, and et. al. "MCNP6 Efforts for EMP, atmospheric dispersal, and unstructured mesh tracking (LA-CP-01705)". In: *Proceedings of the Nuclear Explosives Design Physics Conference 2011* (Los Alamos National Laboratory, Los Alamos, New Mexico). Oct. 2012
13. 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
14. [‡] Casey Anderson, Tim Goorley, and Karen Kelley. "Mesh Human Phantoms with MCNP (LA-UR-12-01307)". In: *2012 3DS Simulia Community Conference Proceedings* (Providence, Rhode Island). May 2012, pp. 556–568

[‡]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