

Personal Information

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CASEY A. ANDERSON

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Work Information

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PROFESSIONAL EXPERIENCE

Los Alamos National Laboratory *Los Alamos, New Mexico*

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

DEVELOPMENT, DESIGN, TESTING, AND VALIDATION OF COMPUTATIONAL PHYSICS CODES

- Software development in Python, C/C++, C#, Fortran, Matlab, Javascript, and HTML
- Developer of MCNPTM, 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
 - Unit-Testing tools and software for Continuous Integration in 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 Integration 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 & Eulerian Methods
- Computer Aided Engineering
- Finite Element Analysis

Software

- MCNP
- Linux / MacOS
- L^AT_EX
- 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	<i>Los Alamos National Laboratory</i>
May, 2016	Magna Cum Laude	<i>Abstract, ISMRM Proceedings</i>
May, 2014	Silver Medal	<i>Student Poster Presentation, ISMRM Conference</i>
2009, 2010	Exelon Scholarship	<i>University of Wisconsin - Madison</i>

EDUCATION

April, 2016	M. Sc, Biophysics[†]	<i>Medical College of Wisconsin</i>
May, 2011	M. Sc, Nuclear Engineering & Engineering Physics	<i>University of Wisconsin - Madison</i>
May, 2011	B. Sc, Nuclear Engineering	<i>University of Wisconsin - Madison</i>

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

CLASSES & TRAININGS

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

REFERENCES

Managers / Advisors			Co-workers		
Leslie Wesler	lwesler@lanl.gov	505-665-3651	Lori Pritchett-Sheets	lpritch@lanl.gov	505-665-6675
Rendell Carver	rc@lanl.gov	505-667-0121	Mike Berry	mrberry@lanl.gov	505-667-7718
Brent Budden	bbudden@lanl.gov	505-695-6236	Hailey Suits	hsuits@lanl.gov	505-665-5278
Matt Griffin	griffin@lanl.gov	505-500-7010	James Tutt	jtutt@lanl.gov	214-207-0841
Kevin Koch	kmkoch@mcw.edu	414-955-4034	Garret McMath	gem@lanl.gov	505-690-0854
Karen Kelley	corzine@lanl.gov	505-667-8843	Pete LaViolette	plaviole@mcw.edu	414-456-7490
Steve McCready	mccready@lanl.gov	505-665-6991	Alex Cohen	acohen@mcw.edu	414-955-4923
Tim Goorley	jgoorley@lanl.gov	505-665-8417	Ali Ersoz	ersoza@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>