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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*

Performing tasks related to the development, design, implementation, testing, and validation of multiple computational physics codes and projects

- Writing software in Python, Fortran, C/C++, C#, Matlab, Bash, HTML, and Javascript

- Developing unit tests and building framework for software Continuous Integration

- Adding features such as δ-ray production, correlated secondary particles, and detector response functions to MCNP6

- Creating tools for the automated analysis of a variety of detector systems, sources, and configurations for the Nuclear Detection Figure of Merit (NDFOM) project

- Multi-physics coupling of radiation transport in MCNP6 and finite-element analysis in Abaqus/CAE

- Developing computational human phantoms for health and medical physics applications with MCNP6

- Utilizing high performance computing systems for running advanced physics simulations and analysis

- Presenting at conferences and publishing articles in their proceedings [Pubs: 2, 3, 4, 5, 6, 7, 11, 12, 13, 14]

- Performing additional software development tasks such as version control using Git & Mercurial, configuring and securing websites through Apache, database management using SQL, and maintaining Linux servers

Medical College of Wisconsin *Milwaukee, Wisconsin*

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

Conducted research in translational medicine and Magnetic Resonance Imaging while pursuing a Master's Degree in Biophysics

- Contributing to a successful R21 National Institute of Health research grant that funded my research

- Patenting a segmented reconstruction technique for artifact reduction in Magnetic Resonance Imaging (MRI) [Pat: i.]

- Acquiring hands-on laboratory experience such as assembling MRI equipment and handling research animals

- Interacting with patients, working with technicians, and collaborating with medical doctors to conduct clinical research

- Analyzing and processing large imaging datasets seeking clinical applications of our imaging technique

- 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*

Assisted in medical physics research, ran the student chapter of American Nuclear Society, and volunteered at public outreach events

- Researching methods for non-invasive Quality Assurance assessment of radioactive brachytherapy seeds

- Serving as the student chapter president of American Nuclear Society (ANS) and managing organizational duties

- Mentoring and teaching undergraduates, K-12 students, and others through a variety of ANS outreach events

Physics/Engineering
- Computational Physics
- Nuclear Engineering
- Magnetic Resonance Imaging
- Medical Physics
- Monte Carlo Methods
- Modeling and Simulation
- Signal and Image Processing
- Fourier Analysis
- Statistical Analysis
- Hand Calculations
- Radiation Detectors
- Multi-physics coupling
- Radioactive Material Handling
- Regularization Methods
- LaGrangian & Eularian Methods
- Computer Aided Engineering
- Computer Aided Design
- Finite Element Analysis

Software
- MCNP
- Abaqus/CAE
- Linux
- Matplotlib
- Microsoft Office
- Matlab
- MacOS
- Eclipse IDE
- Django
- PostgreSQL
- Windows
- Gnuplot
- Cmake
- GADRAS
- RELAP
- R

Programming
- Python
- Bash
- LaTeX
- Git
- Mercurial
- Version Control
- Unit Testing
- Scripting
- Object Oriented
- C/C++
- Fortran
- Debugging
- HTML
- Javascript
- Java
- Android

Other Skills
- Technical Writing
- Presentations
- Group Collaboration
- Independent Work
- File Input/Output
- High Performance Computing
- Mentoring
- Data Collection
- Data Analytics
- Data Visualization
- Validation & Verification
- SQL Databases
- XML/JSON File Format
- Working with Patients
- DICOM Image Analysis
- Server Management
- Animal Experimentation

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"

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

References

Managers / Advisors				Co-workers			
Brent Budden	*ISR-1, LANL*	bbudden@lanl.gov	505-695-6236	James Tutt	*NEN-5, LANL*	jtutt@lanl.gov	214-207-0841
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