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Chelsea D'Angelo

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Work Information
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Executive Summary

Nuclear Engineer with seven years of research experience involving Monte Carlo radiation transport, computational modeling, engineering analysis, and software development in support of various projects investigating complex nuclear systems.

Education

expected Feb 2019	**Ph.D., Nuclear Engineering & Engineering Physics**, *University of Wisconsin-Madison*
Dec 2014	**M.S., Nuclear Engineering & Engineering Physics**, *University of Wisconsin-Madison, GPA: 3.85*
May 2011	**B.S., Chemical Engineering**, *University of Pittsburgh, Major GPA: 3.67, Cumulative GPA: 3.21*

Work & Research Experience

University of Wisconsin - Madison, 1500 Engineering Dr., Madison, Wisconsin, 53705

Aug 2012 - Present — **Graduate Research Assistant:** *Computational Nuclear Engineering Research Group*

- Thesis topic: Development of an automated Monte Carlo variance reduction technique for multi-physics analysis of moving systems. The specific use case is the optimization of the neutron transport step of shutdown dose rate analysis of fusion energy systems that undergo geometry movement after shutdown. [Pub. 1]
- Integrating the GT-CADIS variance reduction method into a user-friendly workflow in the Python for Nuclear Engineering (PyNE) toolkit
- Developed topology restoration tool to prepare polygon surface mesh computational phantoms for radiation transport simulations [Pub. 3]
- Collaborated with NASA to perform Fluka simulations of radiation environment on Mars
- Performed 3D neutronics analysis of the ARIES-ACT2 experimental fusion energy device [Pub. 5]
- Compared unstructured mesh capabilities of MCNP6 and DAGMCNP [Pub. 6]

Los Alamos National Laboratory, P.O. Box 1663, Los Alamos, New Mexico, 87545

May 2011 - July 2012 — **Post-Bachelor's/Graduate Research Assistant:** *W-13: Advanced Engineering Analysis*

- Tested new features of the unstructured mesh capability of MCNP6 [Pub. 8]
- Created training material for generating unstructured mesh models with Abaqus/CAE
- Performed radiation transport analysis on unstructured mesh models of weapons systems
- Assisted with experiment setup and maintenance and performed MCNP6 calculations in support of experiments in the Ion Beam Materials Lab [Pub. 9 and 10]
- Obtained Department of Energy Q-level security clearance

May 2010 - Aug 2010 — **Undergraduate Intern:** *XCP-3: Monte Carlo Codes*

- Created benchmark-type problems for verification and validation of the use of Abaqus/CAE unstructured mesh geometries with MCNP6 [Pub. 11]

Computer Skills

Programming Languages	Physics Codes	Software Toolkits	Mesh Generation & Visualization	Version Control & Publishing
C++	MCNP	DAGMC	Abaqus/CAE	Git
Bash	Fluka	PyNE	Cubit/Trelis	Latex
Python	Partisn	MOAB	VisIt	Microsoft Office
Matlab	ALARA		Paraview	
Fortran				

Publications

1. Chelsea A. D'Angelo and Paul P. H. Wilson. "Generating Variance Reduction Parameters for Shutdown Dose Rate Analysis of Moving Systems". In: *Transactions of the American Nuclear Society*. (Submitted)

2. Chelsea A. D'Angelo et al. "One Phantom, Three Codes: The Use of a Polygon Mesh Phantom in MCNP6, FLUKA, and Geant4". In: *6th International Workshop on Computational Human Phantoms*. (Annapolis, MD). Aug. 2017

3. Chelsea A. D'Angelo, Andrew Davis, and Paul P. H. Wilson. "Recovering Topology of Nested Volumes Represented by Single Closed Surfaces". In: *Transactions of the American Nuclear Society*. (San Francisco, California). June 2017

4. Eric M. Nelson et al. "Radiation Environment Test Problems". In: *JOWOG 6 Plenary Meeting*. (Aldermaston, UK). Dec. 2016

5. L. El-Guebaly et al. "Design and Evaluation of Nuclear System for ARIES-ACT2 Power Plant with DCLL Blanket". In: *Fusion Science and Technology* 72.1 (2017), pp. 17–40

6. Chelsea A. D'Angelo, Paul P. H. Wilson, and Andrew Davis. "Comparison Between Unstructured Mesh Capabilities of DAGMCNP and MCNP6". In: *Transactions of the American Nuclear Society*. (Washington, D.C.). Nov. 2013

7. "LANL Enhanced Surveillance FY12 Annual Report". In: LA-CP-13-284 (Mar. 2013)

8. Chelsea D'Angelo, Steven S. McCready, and Karen Kelley. "Modeling Radiation Transport Using MCNP6 and Abaqus/CAE (LA-UR-12-01321)". In: *2012 3DS Simulia Community Conference Proceedings*. (Providence, Rhode Island). LA-UR-01321. May 2012

9. Carol Haertling et al. "Accelerator Driven Photon Sources for Material Irradiation Studies". In: *22nd International Conference on the Application of Accelerators in Research and Industry*. (Dallas, Texas). LA-UR-12-21103. Aug. 2012

10. Carol Haertling et al. "Outgassing Studies of Irradiated Lithium Hydride". In: *22nd International Conference on the Application of Accelerators in Research and Industry*. (Dallas, Texas). LA-UR-12-21412. Aug. 2012

11. Chelsea A. D'Angelo, Roger L. Martz, and Karen C. Kelley. "MCNP6 V&V of some unstructured mesh models: summer student slides". In: LA-UR-10-05816 (Aug. 2010)

References

Name	Dates	Location	Email	Phone
		Advisors		
Paul Wilson	Sept. 2012 - Present	UW-Madison	wilsonp@engr.wisc.edu	608-263-0807
Steve McCready	May 2011 - Present	LANL	mccready@lanl.gov	505-665-6991
Karen C. Kelley	May 2011 - Present	LANL	corzine@lanl.gov	505-667-8843
		Co-workers		
Andrew Davis	Sept. 2012 - Sept. 2017	UW-Madison	andrew.davis@ukaea.uk	
Kalin Kiesling	Jan. 2014 - Present	UW-Madison	kkiesling@wisc.edu	
Casey Anderson	May 2010 - July 2012	LANL	casey_a@lanl.gov	
Matthew Gonzalez	May 2010 - Aug. 2010	LANL	gonzo1912@gmail.com	