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W-13 Weapons Systems Analysis
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With research experience in modeling complex geometries and developing software for radiation transport simulation and analysis, I believe I am well-suited for the R&D Engineer 2 position in W-13 at Los Alamos National Laboratory. For your consideration, I have submitted a full résumé, brief summary of my thesis research, and the following list of skills and experience relevant to this position.

- Bachelor's degree in Chemical Engineering, Master's degree and future Ph.D. in Nuclear Engineering
- U.S. citizen with active DOE Q-level security clearance
- Over seven years of experience with MCNP analysis of mesh-based geometries of complex nuclear systems including the ARIES-ACT2 fusion energy device [Pub. 4], computational human phantoms [Pub. 2], weapons systems, and material testing experiments in the Annular Core Research Reactor [Pub. 7]
- Performed a majority of the radiation transport simulations in massively parallel, high performance computing environments at both LANL (Turing, Redtail, Yellowtail) and the University of Wisconsin
- Involved in the introduction of the unstructured mesh capability of MCNP6 as an undergraduate student in the Monte Carlo Methods, Codes, and Applications Group (XCP-3) creating benchmark-type problems for validation and verification [Pub. 10] and as a Post-Bachelor's student in the Advanced Engineering Analysis Group (W-13) testing new features and creating training material [Pub. 7]
- Ph.D. thesis work involves the development of an automated variance reduction technique for coupled multi-physics processes occurring in systems that undergo geometry movement [Pub. 1]. Quantifying the efficiency of this technique will require statistical analysis of the error in the transport calculations.
- Experience with radiation transport in PARTISN, specifically for generation of the adjoint flux used in adjoint-driven variance reduction techniques
- Use Trelis (Cubit) and Abaqus/CAE to generate solid and mesh models for radiation transport with DAGMC and MCNP6
- Spent several months working alongside a researcher at LANL's Ion Beam Materials Laboratory on beamline validation experiments [Pubs. 8, 9] as well as visiting ACRR to interface with engineers performing materials testing to inform the MCNP simulations supporting this experimental work
- Involved in several analysis projects [Pubs. 3, 4] that require the hand calculation of material compositions and geometric quantities to support complex Monte Carlo radiation transport simulations
- Experienced in writing scripts to parse MCNP output and plot results as well as developing tools to prepare mesh geometries for use with DAGMC radiation transport simulations
- Effective member of research teams at LANL and UW that have included external customers (ITER and NASA) and a variety of engineers, physicists, and CAD-specialists, working together to brainstorm approaches to problems, and then independently ensuring timely execution of deliverables such as mesh-models that have been prepared for radiation transport and simulation results
- Take pride in preparing engaging oral presentations and effectively explaining methods and results in formal reports. Have been complimented on concise, clear style of writing by advisor and peers.
- Use conferences and meetings as a means to lead discussions with current and potential customers about the software that my team and I have developed and look forward to the opportunity to travel to more of these events to network with other scientists and expand my knowledge

After completing my doctoral program, it would be a pleasure to continue my career working on complex nuclear systems for national security applications at LANL. I appreciate your consideration and look forward to hearing from you.

Sincerely,
Chelsea D'Angelo