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CHELSEA D'ANGELO

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July 19, 2018

W-13 Weapons Systems Analysis
Los Alamos National Laboratory

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. 5], computational human phantoms [Pub. 2], weapons systems, and material testing experiments in the Annular Core Research Reactor [Pub. 8]
- Performed 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 a student in LANL's Monte Carlo Methods, Codes, and Applications Group (XCP-3) creating benchmark-type problems for validation and verification [Pub. 11] and in the Advanced Engineering Analysis Group (W-13) testing new features and presenting the capability at the Simulia Community Conference [Pub. 8]
- 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
- Worked alongside a researcher at LANL's Ion Beam Materials Laboratory on beamline validation experiments [Pubs. 9, 10] and visited ACRR to interface with engineers performing materials testing to inform the MCNP simulations supporting the experimental work
- Involved in several analysis projects [Pubs. 4, 5] 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 use VisIt and Abaqus/CAE for 3D visualization
- Developed algorithm and tools to prepare surface mesh geometries for DAGMC radiation transport simulations [Pub. 3]
- 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. Work together to brainstorm approaches to problems. Independently ensure timely execution of deliverables including mesh-models 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 as means to lead discussions with current and potential customers about software that my team and I have developed. Look forward to traveling 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