Joshua S. Rehak

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Objective Seeking research and practical opportunities in nuclear engineering and scientific computation.

PhD **University of California, Berkeley**, Nuclear Engineering **Expected Spring 2020**
Using Tools for the Analysis and Assessment of Accelerating Solves of the Transport Equation
Advisor: Professor Rachel N. Slaybaugh

MS **University of California, Berkeley**, Nuclear Engineering **Spring 2017**
Implementation of Weighted Delta-tracking with scattering in Serpent 2

MEM **Old Dominion University – Norfolk VA**, Engineering Management **Fall 2015**

BS **University of Maryland, College Park**, Physics, Astronomy **Spring 2007**

Work & Research Experience

University of California, Berkeley, Berkeley, CA
Graduate Student Researcher **Fall 2015 – Present**
Advisor: Professor Rachel N. Slaybaugh – rnslaybaugh@berkeley.edu
Developing a novel finite-element-based code for the implementation and assessment of acceleration methods for deterministic solves of the transport equation. Implementing and analyzing novel methods in Monte Carlo codes.

The Idaho National Laboratory, Idaho Falls, ID
Student Intern - Reactor physics group **Summer 2016**
Advisor: Dr. Mark DeHart – mark.dehart@inl.gov
Implemented a novel Monte Carlo algorithm for Nuclear Engineering applications.

United States Navy
Submarine Officer – Honorably discharged as a Lieutenant (O-3) **2008 – Fall 2015**

- Coordinated international submarine operations for the Rim of the Pacific 2014 naval exercise.
- Qualified Officer of the Deck on Los Angeles class submarines.
- Certified for assignment as Engineer Officer in charge of a Naval Nuclear Propulsion Plant.
- Led divisions responsible for the maintenance and operation of reactor plant instrumentation, radiological controls, and water chemical analysis.

Publications & Proceedings

Rehak, J.S., Slaybaugh, R.N. "Assessing the Effectiveness of Acceleration Methods for Deterministic Neutron Transport Solvers" **Transactions of the American Nuclear Society** Volume 122. https://doi.org/10.13182/T122-32383 June 2020.

Rehak, J.S., Kerby, L.M., DeHart, M.D., Slaybaugh, R.N. "Weighted delta-tracking in scattering media" **Nuclear Engineering and Design** Volume 342. https://doi.org/10.1016/j.nucengdes.2018.12.006. December 2018.

Rehak, J.S., Kerby, L.M., DeHart, M.D., Slaybaugh, R.N., Leppänen, J. "Implementation of Weighted Delta-Tracking with Scattering in the Serpent 2 Monte Carlo Code" **Transactions of the American Nuclear Society** Volume 116. https://escholarship.org/uc/item/6bg1s71k June 2017.

Honors and Awards

Department of Nuclear Engineering Graduate Fellowship **2015 – 2018**
Navy and Marine Corps Commendation Medal **August 2015**
For exceptional service as Submarine Force Exercise Officer and Submarine Watch Officer at Commander Submarine Forces Pacific

Navy and Marine Corps Achievement Medal **August 2015**
For coordination and execution of submarine operations for the Rim of the Pacific 2014 exercise

Navy and Marine Corps Achievement Medal **June 2013**

For service as a division officer on USS JACKSONVILLE (SSN-699) and successful completion of two six-month deployments and an extended dry-dock maintenance period.

Navy and Marine Corps Achievement Medal **April 2013**

For service as Chemistry/Radiological Assistant during an eight month dry-dock period.

Navy and Marine Corps Achievement Medal **January 2011**

For service as Reactor Control Assistant during a six-month deployment and Operational Reactor Safeguards Exam

Scientific Computing Skills

Languages	C++, bash, python
Build Systems	make, CMake
Testing	GoogleTest, GoogleMock, continuous integration, code coverage
Version Control	git
Other	Doxygen, LaTeX, MatLab, Protocol Buffers