

Research Experience

Rachel N. Slaybaugh

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Lawrence Berkeley National Laboratory

Division Director

Berkeley, CA

Jan. 2021 – present

- Managing the Cyclotron Road division, which facilitates the translation of hard science into positive societal impact
- Expanding the mission of Cyclotron Road to more broadly support deployment of innovation technologies

University of California, Berkeley

Assistant Professor of Nuclear Engineering

Berkeley, CA

Jan. 2014 – July 2017

Associate Professor

July 2017 – present

- Researching numerical methods for neutral particle transport with an emphasis on supercomputing and advanced architectures as well as data science
- Applications in reactor design, shielding, and nuclear security and nonproliferation
- Berkeley Institute for Data Science Faculty Affiliate
- Designated Emphasis in Energy Science and Technology (DEEST) Executive Committee member
- Design Emphasis in Computational Science and Engineering Affiliated Faculty member
- Applied Science & Technology Faculty member

Advanced Research Projects Agency – Energy

Special Gov Employee / Program Director / Senior Technical Advisor

Washington, DC

Jan. 2017 – Nov. 2020

- Program creation and management
- Director for MEITNER, the Nuclear OPEN+ cohort, LISE, and GEMINA Programs, supporting research for enabling technologies for advanced nuclear fission reactors
- Co-Director for TERRA and ROOTS Programs, supporting research for sensing and data analytics for above- and below-ground plant outcomes
- Director for FOCUS Program, supporting research for solar technologies that combine photovoltaic and concentrated solar power technologies

Bettis Laboratory

Senior Engineer in the Shield Design and Development group

West Mifflin, PA

Mar. 2012 – Aug. 2014

- Implemented the Forward-Weighted Consistent Adjoint Driven Importance Sampling (FW-CADIS) method for variance reduction in Monte Carlo; accredited method for use in shield design
- Developed new Resonance Factor variance reduction method for streaming through materials with space and energy self-shielding
- Built two software tools in support of using FW-CADIS for shield design
- Scientific Software Development Committee: leader in developing internal website for sharing software carpentry tools and resources

University of Wisconsin–Madison

Research Assistant / Rickover Fellow

Madison, WI

Sept. 2006 – Nov. 2011

- Researched “Acceleration Methods for Massively Parallel Deterministic Transport”: added parallelization in the energy domain, an advanced eigenvalue solver, and a new multigrid in energy preconditioner to Denovo, developed at Oak Ridge National Lab
- Developed two Monte Carlo source sampling methods for arbitrarily shaped plasma sources; the sources are generated directly from plasma physics data

Forschungszentrum Karlsruhe (KIT)

Visiting Researcher

Karlsruhe, Germany

May 2008 – Dec. 2008

- Learned about the Rigorous 2 Step method for Monte Carlo geometry conversion while working in the Reactor Safety group
- Helped group incorporate the Direct Accelerated Geometry Monte Carlo (DAGMC) library into MCNP workflow

Penn State Breazeale Reactor

Reactor Operator

University Park, PA

Aug. 2003 – Apr. 2006

- NRC licensed Reactor Operator for TRIGA Mark III reactor
- Analyzed core burn-up anomaly; calibrated gamma irradiation facilities