

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Nuclear Engineering and Radiological Sciences

Brian C. Kiedrowski, assistant professor of nuclear engineering and radiological sciences, Department of Nuclear Engineering and Radiological Sciences, College of Engineering, is recommended for promotion to associate professor of nuclear engineering and radiological sciences, with tenure, Department of Nuclear Engineering and Radiological Sciences, College of Engineering.

Academic Degrees

- Ph.D. 2009 University of Wisconsin-Madison, Nuclear Engineering and Engineering Physics, Madison, WI
M.S. 2007 University of Wisconsin-Madison, Nuclear Engineering and Engineering Physics, Madison, WI
B.S. 2005 University of Wisconsin-Madison, Nuclear Engineering, Madison, WI

Professional Record

- 2014 – present Assistant Professor, Department of Nuclear Engineering and Radiological Sciences, University of Michigan
2013 – present Scientist, X-Computational Physics Group, Los Alamos National Laboratory, Los Alamos, NM

Summary of Evaluation

Teaching: Professor Kiedrowski has taught a variety of different courses at both graduate and undergraduate levels. His course evaluations are very good and the letters from the students in his courses all point to his diligence and commitment in teaching. He introduced a new graduate course (NERS 590), on the Design of Monte Carlo Radiation Transport Software, receiving Q1/Q2 scores of 4.63/4.9. The quality of his teaching is evidenced by his 2018 Department of Nuclear Engineering and Radiological Sciences Faculty Teaching Award (student voted). He has graduated three Ph.D. students (two as co-chair) and currently advises another two. He has also advised several M.S. students. Professor Kiedrowski has made specific efforts to recruit a diverse set of students to his research group.

Research: Professor Kiedrowski's research area is the development of methods for solving the Boltzmann neutron transport equation. He has specialized in Monte Carlo methods development starting with his Ph.D. thesis and later branched into deterministic transport methods. He has a strong record of scholarly publications since arriving at Michigan. He has nearly 30 peer-reviewed publications. The impact of his research is strong and it has led to his being recognized as a leader in the field of computational methods for neutron transport and sensitivity/uncertainty analysis for reactor systems. Professor Kiedrowski has been successful in attracting support for his research from several different external sponsors.

Recent and Significant Publications:

- Brody R. Bassett, Brian C. Kiedrowski, “Meshless Local Petrov-Galerkin Solution of the Neutron Transport Equation with Streamline-Upwind Petrov-Galerkin Stabilization,” *Journal of Computational Physics*, 377, 1-59 (2019).
- Benjamin R. Betzler, Brian C. Kiedrowski, William R. Martin, Forrest B. Brown, “Calculating Alpha Eigenvalues and Eigenfunctions with Markov Transition Rate Matrix Monte Carlo Method,” *Nuclear Science and Engineering*, 192, 115-152 (2018).
- Timothy P. Burke, Brian C. Kiedrowski, “Monte Carlo Perturbation Theory Estimates of Sensitivities to System Dimensions,” *Nuclear Science and Engineering*, 189, 199-223 (2018).
- Timothy P. Burke, Brian C. Kiedrowski, William R. Martin, “Kernel Density Estimation of Reaction Rates in Neutron Transport Simulations of Nuclear Reactors,” *Nuclear Science and Engineering*, 188, 109-139 (2017).
- Brian C. Kiedrowski, Forrest B. Brown, Paul P.H. Wilson, “Adjoint-Weighted Tallies for k-Eigenvalue Calculations with Continuous-Energy Monte Carlo,” *Nuclear Science and Engineering*, 168, 226-241 (2011).

Service: Professor Kiedrowski’s record of service demonstrates a strong commitment to the department, college, and profession. He has served on several department committees and the NERS chair search committee for the college. He has been very active in supporting the American Nuclear Society, with numerous roles with the national chapter, the local chapter, and the student chapter. He recently took over as the NERS ABET coordinator and has drafted an excellent five-year plan to be ready for the next evaluation.

As part of the NERS Department Chair Search Committee, he was involved in the initial screening interviews tasked with leading the discussion on the importance of diversity in academic departments. He serves as the UM point of contact for supporting the American Nuclear Society Diversity Social. The event is held twice annually at the national ANS meetings. His role is to facilitate financial support from NERS and to advertise and encourage attendance at the event by students and faculty. Additionally, he attended a one-day workshop on the “Strategies to Support Inclusive Climates and Student Success in STEM Departments” sponsored by the National Center for Institutional Diversity in May 2019.

External Reviewers:

Reviewer A. “I can also give a definitive positive answer to the question that Brian would qualify for a senior scientist position at . . . , and I fully support his promotion to Associate Professor in the College of Engineering at University of Michigan.”

Reviewer B. “To my knowledge, Brian’s record compares most favorably to any assistant professor in the US and to many associate and full professors, such as myself.”

Reviewer C. “Brian has become a leader in the field of computational radiation transport early in his career. I view him as one of the premier researchers in this area, and should he ever decide to leave the University of Michigan, I would hire him without hesitation at”

Reviewer D. “In particular, his work on adjoint-weighting methods for continuous-energy Monte Carlo simulations can be considered pioneering, with very high impact on the research community.”

Reviewer E. “I have twice served on the College of Engineering P&T Committee, so I am familiar with the requirements for promotion to Associate Professor with Tenure at my institution, and I am confident that Dr. Kiedrowski would receive tenure and promotion here.”

Summary of Recommendation: Professor Kiedrowski has established himself as a strong early career leader and innovator, a leading voice in the application of advanced computational methods in the understanding and design of nuclear systems. His teaching and student mentoring are exemplary. His service contributions span department, college, university and national committees. It is with the support of the College of Engineering Executive Committee that I recommend Brian C. Kiedrowski for promotion to associate professor of nuclear engineering and radiological sciences, with tenure, Department of Nuclear Engineering and Radiological Sciences, College of Engineering.



Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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