

ROBERT ANGELO BORRELLI

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NUCLEAR ENGINEERING AND INDUSTRIAL MANAGEMENT DEPARTMENT

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EDUCATION AND TRAINING

University of California-Berkeley • Doctor of Philosophy • Nuclear Engineering	2006
Worcester Polytechnic Institute • Master of Science • Civil/Environmental Engineering	1999
Worcester Polytechnic Institute • Bachelor of Science • Mechanical/Nuclear Engineering	1996

RESEARCH AND PROFESSIONAL EXPERIENCE**University of Idaho • Idaho Falls Center for Higher Education
Nuclear Engineering and Industrial Management Department**

Associate Professor	May 2021 -
Assistant Professor	July 2015 - May 2021
Coordinator - NPP Decommissioning and Used Fuel Management Certificate	August 2019 -
Affiliate - Boise State University Energy Policy Institute	August 2019 -
State of Idaho Professional Engineer, Faculty Restricted	October 2019 -

University of California-Berkeley • Department of Nuclear Engineering • Postdoctorate Researcher 2009-12

The University of Tokyo • Department of Nuclear Engineering/Management • Research Associate 2007-09

SELECTED AWARDED PROJECTS

- (1) Michael Haney (PI), R. A. Borrelli (co-PI), Dakota Roberson (co-PI), Constantinos Kolas (co-PI) - University of Idaho, Ben Lampe (co-PI), Sean McBride (co-PI) - Idaho State University. RADICL upgrade and expansion. Idaho Global Entrepreneurial Mission (IGEM) - Higher Education Research Council **\$693,000**. 2022.07.01 - 2023.06.30.
- (2) R. A. Borrelli (PI), Michael Haney (co-PI) - University of Idaho. Cyber-informed design, education, and training for cyberthreat resiliency with real-time nuclear reactor simulation. University of Idaho. Operation: Resubmission Support. **\$34,122**. 2022.04.30 - 2022.09.30.
- (3) Thomas A. Ulrich (PI) - Idaho National Laboratory, R. A. Borrelli (co-PI) - University of Idaho. User evaluation of the NuScale simulator at the Center for Advanced Energy Studies. CAES programmatic funding. **\$50,000**. 2022.03.01 - 2022.09.30.
- (4) R. A. Borrelli (PI), Jason Barnes (Senior Adviser) - University of Idaho. Experimental determination of interactions between the radiation fields of Dragonfly's MMRTG and Titan's environment. Idaho NASA EPSCoR Research Initiation Grant. 2021.05.01 - 2022.04.30 **\$82,962**.
- (5) Richard N. Christensen (PI), R. A. Borrelli, Michael G. McKellar, Michael Haney, David Arcilesi (co-PIs) - University of Idaho, Richard Jacobson (co-PI) Idaho State University. NuScale Simulator at the Center for Advanced Energy Studies. Department of Energy Scientific Infrastructure Support for Consolidated Innovative Nuclear Research. **\$321,525**. 2019.10.01 - 2022.09.30
- (6) R. A. Borrelli (PI) - University of Idaho, Dennis D. Keiser, Jr., (co-PI) - Idaho National Laboratory. Graduate Research Assistantship: Connecting U-Mo Fuel Processing, Microstructure, and Irradiation Performance. **\$160,690**. 2018.10.01-2022.01.31
- (7) R. A. Borrelli (PI), Richard N. Christensen (co-PI) - University of Idaho, Brian J. Jaques (co-PI) - Boise State University, Piyush Sabharwal (co-PI) - Idaho National Laboratory, Mark Delligatti (co-PI) - Table Rock, LLC, Sakae Casting USA, LLC (co-PI). Modeling and design of borated aluminium cask for used

fuel cooling. Idaho Global Entrepreneurial Mission (IGEM) - Idaho Commerce, **\$237,898**. 2018.01.01-2019.05.31

- (8) R. A. Borrelli (PI), Lee Ostrom (Senior Advisor) - University of Idaho, Stephen G. Johnson (Senior Advisor) - Idaho National Laboratory. Performance assessment of americium as fuel in radioisotope thermoelectric generators for deep space exploration. Idaho NASA EPSCoR Research Initiation Grant. **\$55,000**. 2017.08.01-2018.04.30

RELEVANT PUBLICATIONS

*STUDENTS

- (1) *Redfoot, Emma K., Verner, Kelley M., Borrelli, R. A., 2022. Applying analytic hierarchy process to industrial process design in a nuclear renewable hybrid energy system. *Progress in Nuclear Energy* 145, 104083.
- (2) *Mena, Pedro, Borrelli, R. A., Kerby, Leslie, 2022. Survey of markets for nuclear power in Western North America. *International Journal of Energy, Environment, and Economics* 29, 17.
- (3) *Mena, Pedro, Borrelli, R. A., Kerby, Leslie, 2022. Expanded Analysis of Machine Learning Models for Nuclear Transient Identification Using TPOT. *Nuclear Engineering and Design* 390, 111694.
- (4) *Redfoot, Emma K., McKellar, Michael G., Borrelli, R. A., 2022. Allocating heat and electricity in an integrated energy system coupled with a water purification system. *Nuclear Engineering and Design* 397, 111902.
- (5) *Widdicombe, Teyen, Borrelli, R. A., 2021. MCNP modelling of radiation effects of the Dragonfly mission's RTG on Titan II: Atmospheric ionization effects. *Acta Astronautica* 186, 517.
- (6) *Carter, John P., Borrelli, R. A., 2020. Neutron physics study of an integral molten salt reactor using Monte Carlo N-Particle code. *Nuclear Engineering and Design* 365, 10.1016/j.nucengdes.2020.110718.
- (7) *Peterson, John, Haney, Michael, Borrelli, R. A., 2019. An overview of methodologies for cyber security vulnerability assessments conducted in nuclear power plants. *Nuclear Engineering and Design* 346, 75.
- (8) *Lee, Jieun, Borrelli, R. A., 2019. Sensitivity analysis and application of advanced nuclear accounting methodologies on the high reliability safeguards model: Use of discrete event simulation for material throughput in fuel fabrication. *Nuclear Engineering and Design* 345, 183.

RELEVANT COURSES TAUGHT

University of Idaho - Idaho Falls Center for Higher Education - Nuclear Engineering Program

NE527: Nuclear material storage, transport, disposal

NE535: Nuclear Criticality Safety I & II

TM529: Risk Assessment

NE450: Principles of Nuclear Engineering

University of California-Berkeley - Department of Nuclear Engineering

E124: Ethics and the Impact of Technology on Society

The University of Tokyo - Department of Nuclear Engineering/Management

Technical English for Scientists

Diablo Valley Community College (CA) - Department of Architecture and Engineering

ENG110: Introduction to Engineering

SYNERGISTIC ACTIVITIES

- (1) American Nuclear Society University of Idaho Student Section - Faculty Advisor
- (2) American Nuclear Society National Program Committee and Screening Committee
- (3) Idaho Section of the American Nuclear Society Treasurer; Coordinator - Smoke Detector Donations