

Amir A. Bahadori

Curriculum Vitae

Education

2010–2012

PhD Biomedical Engineering (Medical Physics Program),

J. Crayton Pruitt Family Department of Biomedical Engineering – University of Florida, Gainesville, FL, US.

2008–2010

MS Nuclear Engineering Sciences (Medical Physics Program),

Department of Nuclear and Radiological Engineering – University of Florida, Gainesville, FL, US.

2003–2008

BS Mechanical Engineering with Nuclear Engineering Option,

Alan Levin Department of Mechanical and Nuclear Engineering – Kansas State University, Manhattan, KS, US.

Summa Cum Laude, with Honors

2003–2008

BS Mathematics, Department of Mathematics – Kansas State University,

Manhattan, KS, US.

Summa Cum Laude

Experience

2021

Associate Professor, Alan Levin Department of Mechanical and Nuclear Engineering – Kansas State University, Manhattan, KS, US.

2024–Present, Nuclear Engineering Program Director

2023–Present, Hal and Mary Siegele Professorship in Engineering

2021–Present, Steve Hsu Keystone Research Faculty Scholar

2021–Present, Senior Reactor Operator, KSU TRIGA Mark II Nuclear Reactor Facility

Director, Radiological Engineering Analysis Laboratory

Affiliate Faculty, KSU Biomedical Engineering Program

Faculty Scientist, KSU Johnson Cancer Research Center

2015–2021

Assistant Professor, Alan Levin Department of Mechanical and Nuclear Engineering – Kansas State University, Manhattan, KS, US.

June–December 2017, KSU TRIGA Mark II Nuclear Reactor Facility Manager (Interim)

2013–2015

Physical Scientist, Space Radiation Analysis Group (SRAG) – NASA Lyndon B. Johnson Space Center, Houston, TX, US.

Principal Scientist, NASA Advanced Exploration Systems (AES) RadWorks Radiation Environment Monitor (REM) Project

2010–2013

Radiation Scientist, University of Houston System, Houston, TX, US.

Contractor for Radiation Health Officer Group - NASA Lyndon B. Johnson Space Center

2008–2012

Graduate Assistant, *Advanced Laboratory for Radiation Dosimetry Studies – University of Florida, Gainesville, FL, US.*

Funding

Current Extramural

2024

Co-Investigator, Enhancement of Miniature In-Core Fission Chamber Technology for Advanced Reactor Applications, *US Nuclear Regulatory Commission*, \$499,647.

22 March 2024 - 21 March 2027

2023

Principal Investigator, Analytical and Computational Support for Evaluation of Neurological, Cognitive, and Behavioral Disorders in Nuclear Submariners Exposed to Multiple Stressors, *National Aeronautics and Space Administration/National Council on Radiation Protection and Measurements*, \$689,931, Subaward from NASA Award No. 80NSSC23M0129.

1 September 2023 - 31 August 2028

2022

Principal Investigator (Replacement), Investigating Heat Transfer in Horizontally Oriented HTGR Under Normal and PCC Conditions, *US Department of Energy*, \$649,763.

1 October 2021 - 30 September 2025

Assumed PI role from H. Bindra on 30 September 2022

2021

Principal Investigator, Analytical and Computational Support for Evaluation of Dementia and Neurocognitive Tests among Workers Exposed to Low-LET Radiation, *National Aeronautics and Space Administration/National Council on Radiation Protection and Measurements*, \$438,730, Subaward from NASA Award No. 80NSSC19M0161.

16 September 2021 - 15 September 2026

2021

Co-Investigator, Nuclear Energy University Programs - Fellowship and Scholarship Support, *US Department of Energy*, \$57,500.

1 August 2021 - 31 August 2033

Three DOE University Nuclear Leadership Program (UNLP) Undergraduate Scholarships

2021

Principal Investigator, Kansas State University Nuclear Engineering Fellowship Program, *US Nuclear Regulatory Commission*, \$452,696.

7 April 2021 - 6 April 2025

Completed Extramural

'22-'24

Principal Investigator (Replacement), Experimental Thermofluidic Validation of TCR Fuel Elements using Distributed Temperature and Flow Sensing, *US Department of Energy*, \$748,250.

1 October 2021 - 30 September 2024

Assumed PI role from H. Bindra on 30 September 2022

'22-'24

Principal Investigator (Replacement), Direct Heating of Chemical Catalysts for Hydrogen and Fertilizer Production using Microreactors, *US Department of Energy*, \$799,202.

1 October 2021 - 30 September 2024

Assumed PI role from H. Bindra on 18 October 2022

'22-'24

Science Principal Investigator, Appendix C: Radiation-Induced Carcinogenesis Biomarker Identification with Hydrogel-Based Organ-on-a-Chip System, *National Aeronautics and Space Administration/Wichita State University*, \$141,169, NASA EPSCoR Program Award No. 80NSSC22M0263.

1 October 2022 - 30 September 2024

'22-'24

Principal Investigator (Replacement), Statistical Learning Based Multiscale Safety Analysis Framework for Advanced Reactors, *US Nuclear Regulatory Commission*, \$499,768.

27 September 2021 - 26 September 2024

Assumed PI role from H. Bindra on 23 January 2023

2017-2023

Principal Investigator, Radiation Transport Simulations in Support of Active Shielding Measurement Campaign, *National Aeronautics and Space Administration/KBR*, \$682,422.

13 October 2017 - 30 September 2023

2020-'23

Principal Investigator, Radiation Detection with Novel High Voltage Switch Structure, *US Department of Energy/Honeywell FM&T*, \$398,859.

5 November 2020 - 31 August 2023

2020-'22

Principal Investigator, X-DSMSND: A Dual-Sided Microstructured Semiconductor Neutron Detector with Integrated Pixel Read-Out, *US Department of Energy/Radiation Detection Technologies, Inc.*, \$494,953, STTR Phase II.

6 April 2020 - 5 October 2022

2017-2022

Co-Investigator, Kansas State University Nuclear Research Fellowship Program, *US Nuclear Regulatory Commission*, \$393,820.

30 June 2017 - 29 June 2022

2017-2020

Principal Investigator, Electronics X-Ray Inspection Shielding and Prediction Simulation, *US Department of Energy/Honeywell FM&T*, \$514,544.

12 December 2017 - 30 September 2020

2018-2020

Co-Investigator, Proposal for a Consortium for Nonproliferation-Enabling Capabilities, *US Department of Energy/North Carolina State University*, \$1,465,878.

31 July 2014 - 30 July 2020

Assumed Co-I role on 31 July 2018

2019-2020

Principal Investigator, X-DSMSND: A Dual-Sided Microstructured Semiconductor Neutron Detector with Integrated Pixel Read-Out, *US Department of Energy/Radiation Detection Technologies, Inc.*, \$62,892, STTR Phase I.

19 February 2019 - 18 February 2020

2018-2019

Principal Investigator, A Dedicated Laboratory for Radioactive Sample Handling, *US Department of Energy*, \$167,493.

1 October 2018 - 30 September 2019

2018-2019

Principal Investigator, Solid State Dual Neutron/X-Ray Imager, *US Department of Energy/Honeywell FM&T*, \$308,303.

4 January 2018 - 30 September 2019

2018–2019

Co-Investigator, High-Resolution Scanning of Sub-Surface Lunar Water with Mobile Neutron Energy Spectrometer, *National Aeronautics and Space Administration/Radiation Detection Technologies, Inc.*, \$8,415.
27 July 2018 - 25 January 2019

2018

Co-Investigator, Neutron Interrogation Imaging, *US Department of Energy/Honeywell FM&T*, \$90,620.
5 January 2018 - 30 September 2018

2018

Co-Investigator, Enhanced Gamma-Ray Diagnostics and Imaging, *US Department of Energy/Honeywell FM&T*, \$56,137.
5 January 2018 - 30 September 2018

2017–2018

Principal Investigator (Replacement), Control Panel Modernization at the KSU TRIGA Reactor Facility, *US Department of Energy*, \$1,495,945.
10 September 2015 - 9 September 2018
Assumed PI role from J. Geuther on 1 June 2017
Transferred PI role to A. Cebula on 12 January 2018

2009–2010

Student Investigator, NASA Astronaut Dosimetry: Implementation of Scalable Human Phantoms and Benchmark Comparisons of Deterministic versus Monte Carlo Radiation Transport, *National Aeronautics and Space Administration/Graduate Student Researchers Program*, \$30,000, NNX09AK14H.
15 August 2009 - 14 August 2010
Year 2 (2010–2011) renewal awarded
Hired as NASA contractor prior to Years 2 and 3 of program

Completed Intramural

2021–'23

Co-Investigator, A Novel Multi-Disciplinary Approach to Improve Cancer Therapeutics (Cancer Research Collaboration of Excellence), *KSU Johnson Cancer Research Center Cancer*, \$100,000.
1 May 2021 - 31 December 2023

'22–'23

Fellow, Big 12 Faculty Fellowship, *KSU Office of the Provost and Executive Vice President*, \$2,411.
24 May 2022 - 1 September 2023

2020–'21

Co-Investigator, Exercise and Nutritional Interventions on the Prevention of Cancer and Improving the Efficacy of Anti-Cancer Treatments (Center of Excellence Planning Grant), *KSU Johnson Cancer Research Center Cancer*, \$6,000.
1 June 2020 - 31 May 2021

2018

Mentor, KSU Johnson Cancer Research Center Cancer Research Award, *Student: Prerona Kundu*, \$1,000.

2017–2018

Principal Investigator, Miniaturized Neutron Spectrometer for Characterizing Cancer Risk, *KSU Johnson Cancer Research Center*, \$20,000.
21 December 2017 - 20 December 2018

2018

Mentor, KSU Johnson Cancer Research Center Graduate Student Travel Award, *Student: Rohan Amare*, \$1,200.

2018

Mentor, KSU Johnson Cancer Research Center Graduate Student Travel Award, *Student: Rajarshi Pal Chowdhury*, \$900.

Mentor, KSU Johnson Cancer Research Center Graduate Student Travel Award, Student: Rohan Amare, \$985.

Mentor, KSU Johnson Cancer Research Center Cancer Research Award, Student: Elshaddai Abamegal, \$1,000.

Publications

Peer-Reviewed Journal Articles

- [1] **A. A. Bahadori.** Space radiation protection in the modern era: New approaches to familiar challenges. *Radiation Physics and Chemistry*, 221:111764, 2024.
- [2] M. P. Pfeifer*, N. Simerl*, J. Porter, W. McNeil, and **A. A. Bahadori.** Optimized viewing techniques to minimize radiation damage from x-ray imaging systems. *Journal of Nondestructive Evaluation*, 43:50, 2024.
- [3] S. P. George, R. Gaza, D. Matthiae, D. Laramore*, J. Lehti, T. Campbell-Ricketts, M. Kroupa, N. Stoffle, K. Marsalek, B. Przybyla, M. Abdelmenek, J. Aeckerlein, **A. A. Bahadori**, J. Barzilla, M. Dieckmann, M. Ecord, R. Egeland, T. Eronen, D. Fry, B. H. Jonnes, C. E. Hellweg, J. Hourri, R. Hirsh, M. Hirvonen, S. Hovland, H. Hussein, A. S. Johnson, M. Kasemann, K. Lee, M. Leitgab, C. McLeod, O. Milstein, L. Pinsky, P. Quinn, E. Riihonen, M. Rohde, S. Rozhdestvensky, J. Saari, A. Schram, U. Straube, D. Turecek, P. Virtanen, G. Waterman, S. Wheeler, K. Whitman, M. Wirtz, M. Vandewalle, C. Zeitlin, E. Semones, and T. Berger. Space Radiation Measurements During the Artemis I Lunar Mission. *Nature*, 634(8032):48–52, 2024.
- [4] L. T. Dauer, M. T. Mumma, J. C. Lima, S. S. Cohen, D. Andresen, **A. A. Bahadori**, M. Bellamy, D. Bierman, S. Blattnig, B. French, E. Giunta*¹, K. Held, N. Hertel, L. Keohane, R. Leggett, L. Lipworth, K. B. Miller, R. Norman, C. Samuels, K. S. Thomas, S. Tolmachev, L. Walsh, and J. D. Boice Jr. A Million Person Study Innovation: Evaluating Cognitive Impairment and other Morbidity Outcomes from Chronic Radiation Exposure Through Linkages with the Centers for Medicaid and Medicare Services Assessment and Claims Data. *Radiation Research*, 202(6):847–861, 2024.
- [5] L. Stegeman*, D. Fry, and **A. A. Bahadori.** Development and benchmarking of charged particle propagation methods in G4-ASPP. *Journal of Computational and Theoretical Transport*, 52(4):269–313, 2023.
- [6] M. P. Pfeifer*, N. Simerl*, J. Porter, W. McNeil, and **A. A. Bahadori.** X-ray inspection model validation with physical dosimetry. *Journal of Nondestructive Evaluation*, 42(3):66, 2023.
- [7] R. Pal Chowdhury*, L. A. Stegeman*, M. Lund, S. Madzunkov, D. Fry, and **A. A. Bahadori.** Hybrid methods of radiation shielding against deep-space radiation. *Life Sciences in Space Research*, 38:67–78, 2023.
- [8] T. Campbell-Ricketts, M. Kroupa, S. George, **A. A. Bahadori**, and L. Pinsky. Particle showers detected on ISS in Timepix pixel detectors. *Life Sciences in Space Research*, 39:52–58, 2023.

¹Students advised noted with asterisk

- [9] N. Simerl*, J. Beavers, **A. A. Bahadori**, and W. J. McNeil. Aerial and collimated sensor radiological mapping following dispersal of activated potassium bromide. *Health Physics*, 123(4):267–277, 2022.
- [10] S. Sharma*, T. Ochs, D. S. McGregor, S. L. Bellinger, W. J. McNeil, and **A. A. Bahadori**. Charge carrier motion and effect of fixed oxide charge in a microstructured silicon radiation detector. *Journal of Applied Physics*, 132:164501, 2022.
- [11] S. Sharma*, D. Laramore*, T. Ochs, D. S. McGregor, S. L. Bellinger, W. J. McNeil, and **A. A. Bahadori**. Preliminary benchmarks and analysis of boundary conditions in a trenched microstructured silicon radiation detector. *Journal of Applied Physics*, 131:134503, 2022.
- [12] M. P. Pfeifer*, N. Simerl*, R. Strahler, J. T. Casburn*, J. Porter, W. J. McNeil, and **A. A. Bahadori**. Methods for estimating x-ray machine output through measurement and simulation. *Applied Radiation and Isotopes*, 183:110125, 2022.
- [13] D. Laramore*, S. Sharma*, S. L. Bellinger, L. C. Henson, T. R. Ochs, D. S. McGregor, L. Pinsky, **A. A. Bahadori**, and W. J. McNeil. Advancements in modeling conformally doped X-MSND radiation imagers. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 1038:166799, 2022.
- [14] B. Kim, D. Nikolić, S. Madzunkov, J. Simcic, A. Belousov, D. Fry, E. Giunta*, R. Santillana Padilla*, L. Stegeman*, R. Pal Chowdhury*, **A.A. Bahadori**, and M. Lund. Systematic modeling of electrostatic radiation shields for deep space flight. *Radiation Physics and Chemistry*, 193:110007, 2022.
- [15] R. Amare*, E. Hodneland, J. A. Roberts, **A. A. Bahadori**, and S. Eckels. Modeling a 3-D multiscale blood-flow and heat-transfer framework for realistic vascular systems. *Scientific Reports*, 12:14610, 2022.
- [16] L. Stegeman*, R. Pal Chowdhury*, D. Fry, M. L. Lund, S. Madzunkov, A. Belousov, and **A. A. Bahadori**. Experimental validation of the active shielding particle pusher code. *Journal of Applied Physics*, 129(2):024902, 2021.
- [17] L. Stegeman*, T. Hieber, D. Sarkar, S. W. Oxandale, S. L. Bellinger, Z. C. Leseman, and **A. A. Bahadori**. Planar miniaturized fast neutron detector spectroscopy evaluation. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 1020:165865, 2021.
- [18] N. Simerl*, J. Beavers, J. Milburn, M. Dodson, R. Strahler, R. Kroeger, I. Ulloa-Garcia, B. Moosman, T. Sin, J. Kagan, K. Nelson, N. Paradis, **A. A. Bahadori**, and W. McNeil. Contamination measurements from simultaneous activated potassium bromide radiological dispersal devices with a collimated vehicular sensor. *Health Physics*, 120(6):618–627, 2021.
- [19] S. Sharma*, L. Vo., M. P. Pfeifer*, W. L. Dunn, W. J. McNeil, and **A. A. Bahadori**. Bulk material interrogation experimental results and validation with Geant4 for replacement

of dangerous radiological sources in oil-well logging industries. *Applied Radiation and Isotopes*, 170:109602, 2021.

- [20] R. Pal Chowdhury*, L. Stegeman*, R. F. Santillana Padilla*, M. L. Lund, S. Madzunkov, D. Fry, and **A. A. Bahadori**. Space radiation electrostatic shielding scaling laws: Beam-like and isotropic angular distributions. *Journal of Applied Physics*, 130(3):034903, 2021.
- [21] J. Wilson, C. Werneth, T. Slaba, F. Badavi, B. Reddell, and **A. A. Bahadori**. Effects of the Serber first step in 3DHZETRN-v2.1. *Life Sciences in Space Research*, 26:10 – 27, 2020.
- [22] R. Pal Chowdhury*, N. N. Stoffle, R. R. Rios, L. A. Stegeman*, and **A. A. Bahadori**. A novel, population-based approach to astronaut radiation risk assessment. *Radiation Physics and Chemistry*, 172:108736, 2020.
- [23] D. Laramore*, S. Sharma*, K. C. Smallfoot*, S. L. Bellinger, L. C. Henson, T. R. Ochs, D. S. McGregor, **A. A. Bahadori**, and W. J. McNeil. Simulation of charge drift in surface doped, pixelated Micro-structured Semiconductor Neutron Detectors. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 978:164351, 2020.
- [24] R. Amare*, **A. A. Bahadori**, and S. Eckels. A structured cleaving mesh for bioheat transfer application. *IEEE Open Journal of Engineering in Medicine and Biology*, 1:174 – 186, 2020.
- [25] G. Wilson*, **A. A. Bahadori**, and H. Bindra. Radioactively driven colloids: A special case of anomalous diffusion. *Journal of Applied Physics*, 126:124308, 2019.
- [26] **A. A. Bahadori**, R. Pal Chowdhury*, M. Kroupa, T. Campbell-Ricketts, A. Firan, D. J. Fry, R. Gaza, S. P. George, L. S. Pinsky, N. N. Stoffle, R. R. Rios, and C. J. Zeitlin. Slowing-down and stopped charged particles cause angular dependence for absorbed dose measurements. *Radiation Physics and Chemistry*, 155:89–96, 2019.
- [27] M. Kroupa, T. Campbell-Ricketts, **A. A. Bahadori**, R. Pal Chowdhury*, A. Empl, S. George, and T. O'Brien. Extravehicular electron measurement based on an intravehicular pixel detector. *Journal of Geophysical Research: Space Physics*, 124:8271–8279, 2019.
- [28] M. Kroupa, **A. A. Bahadori**, T. Campbell-Ricketts, S. P. George, N. Stoffle, and C. Zeitlin. Light ion isotope identification in space using a pixel detector based single layer telescope. *Applied Physics Letters*, 113(17):174101, 2018.
- [29] M. Kroupa, **A. A. Bahadori**, T. Campbell-Ricketts, S. George, and C. Zeitlin. Kinetic energy reconstruction with a single layer particle telescope. *Applied Physics Letters*, 112(13):134103, 2018.
- [30] T. C. Slaba, **A. A. Bahadori**, B. D. Reddell, R. C. Singleterry, M. S. Cloudsley, and S. R. Blattmig. Optimal shielding thickness for galactic cosmic ray environments. *Life Sciences in Space Research*, 12:1 – 15, 2017.

- [31] M. M. Sands, D. Borrego, M. R. Maynard, **A. A. Bahadori**, and W. E. Bolch. Comparison of methods for individualized astronaut organ dosimetry: Morphometry-based phantom library versus body contour autoscaling of a reference phantom. *Life Sciences in Space Research*, 15:23 – 31, 2017.
- [32] M. Kroupa, T. Campbell-Ricketts, **A. Bahadori**, and A. Empl. Techniques for precise energy calibration of particle pixel detectors. *Review of Scientific Instruments*, 88(3):033301, 2017.
- [33] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Solar proton exposure of an ICRU sphere within a complex structure part I: Combinatorial geometry. *Life Sciences in Space Research*, 9:69–76, 2016.
- [34] T. C. Slaba, J. W. Wilson, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Solar proton exposure of an ICRU sphere within a complex structure part II: Ray-trace geometry. *Life Sciences in Space Research*, 9:77–83, 2016.
- [35] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. 3DHZETRN: Shielded ICRU spherical phantom. *Life Sciences in Space Research*, 4:46–61, 2015.
- [36] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. 3DHZETRN: Neutron leakage in finite objects. *Life Sciences in Space Research*, 7:27–38, 2015.
- [37] **A. Bahadori**, D. Miglioretti, R. Kruger, M. Flynn, S. Weinmann, R. Smith-Bindman, and C. Lee. Calculation of organ doses for a large number of patients undergoing CT examinations. *American Journal of Roentgenology*, 205(4):827–833, 2015.
- [38] N. Stoffle, L. Pinsky, M. Kroupa, S. Hoang, J. Idarraga, C. Amberboy, R. Rios, J. Hauss, J. Keller, **A. Bahadori**, et al. Timepix-based radiation environment monitor measurements aboard the International Space Station. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 782:143–148, 2015.
- [39] M. Kroupa, **A. Bahadori**, T. Campbell-Ricketts, A. Empl, S. M. Hoang, J. Idarraga-Munoz, R. Rios, E. Semones, N. Stoffle, L. Tlustos, et al. A semiconductor radiation imaging pixel detector for space radiation dosimetry. *Life Sciences in Space Research*, 6:69–78, 2015.
- [40] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Advances in NASA radiation transport research: 3DHZETRN. *Life Sciences in Space Research*, 2:6–22, 2014.
- [41] **A. A. Bahadori**, T. Sato, T. C. Slaba, M. R. Shavers, E. J. Semones, M. Van Baalen, and W. E. Bolch. A comparative study of space radiation organ doses and associated cancer risks using PHITS and HZETRN. *Physics in Medicine and Biology*, 58(20):7183–7207, 2013.

- [42] T. C. Slaba, S. R. Blattnig, B. Reddell, **A. Bahadori**, R. B. Norman, and F. F. Badavi. Pion and electromagnetic contribution to dose: Comparisons of HZETRN to Monte Carlo results and ISS data. *Advances in Space Research*, 52(1):62–78, 2013.
- [43] **A. A. Bahadori**, M. Van Baalen, M. R. Shavers, E. J. Semones, and W. E. Bolch. Dosimetric impacts of microgravity: an analysis of 5th, 50th and 95th percentile male and female astronauts. *Physics in Medicine and Biology*, 57(4):1047, 2012.
- [44] **A. A. Bahadori**, M. Van Baalen, M. R. Shavers, C. Dodge, E. J. Semones, and W. E. Bolch. The effect of anatomical modeling on space radiation dose estimates: a comparison of doses for NASA phantoms and the 5th, 50th, and 95th percentile male and female astronauts. *Physics in Medicine and Biology*, 56(6):1671, 2011.
- [45] **A. A. Bahadori**, P. Johnson, D. W. Jokisch, K. F. Eckerman, and W. E. Bolch. Response functions for computing absorbed dose to skeletal tissues from neutron irradiation. *Physics in Medicine and Biology*, 56(21):6873, 2011.
- [46] D. Jokisch, D. Rajon, **A. A. Bahadori**, and W. Bolch. An image-based skeletal model for the ICRP reference adult male—specific absorbed fractions for neutron-generated recoil protons. *Physics in Medicine and Biology*, 56(21):6857, 2011.
- [47] P. B. Johnson, **A. A. Bahadori**, K. F. Eckerman, C. Lee, and W. E. Bolch. Response functions for computing absorbed dose to skeletal tissues from photon irradiation—an update. *Physics in Medicine and Biology*, 56(8):2347, 2011.

Peer-Reviewed Conference Proceedings

- [1] I. Ahmad*, S. Eckels, and **A. A. Bahadori**. A Monte Carlo-Based Path Tracing Framework for Voxelizeed Domains. In *22nd Topical Meeting of the Radiation Protection and Shielding Division*, Accepted, 2024.
- [2] B. Crouch*, S. Tompkins*, K.-L. Ho, S.-K. Fan, and **A. A. Bahadori**. Simulated neutron dose for two cell culture configurations. *Radiation Physics and Chemistry*, 227:112177, 2025.
- [3] W. L. Dunn and **A. A. Bahadori**. Reflections on use of Monte Carlo methods. *Radiation Physics and Chemistry*, 218:111634, 2024.
- [4] L. Jackson, B. Sieh, W. Dunn, **A. Bahadori**, and H. Bindra. Radiological Safety Lessons from the History of the Army Nuclear Power Program. *Transactions of the American Nuclear Society*, 129(1):778–780, 2023.
- [5] M. Culbertson*, E. A. Giunta*, and **A. A. Bahadori**. Microgravity simulations combined with radiation effects to model space radiation exposure. *Transactions of the American Nuclear Society*, 128:876–879, 2023.
- [6] R. Amare*, **A. A. Bahadori**, and S. Eckels. Analysis of Sphere of Influence (Sol) and Pressure Drop Parameter in VoM-PhyS Framework. In *8th Thermal and Fluids Engineering Conference (TFEC)*, 81–88, 2023.

- [7] E. Giunta*, M. Pfeifer*, B. Davidson*, S. Sharma*, K. Huddleston, N. Simerl*, D. S. McGregor, W. McNeil, and **A. A. Bahadori**. Optimization of a GaN microstructured thermal neutron detector geometry using MCNP. In *14th International Conference on Radiation Shielding and 21st Topical Meeting of the Radiation Protection and Shielding Division*, 83–86, 2022.
- [8] E. Giunta*, A. Cebula, and **A. A. Bahadori**. Modeling dynamic voxelized biological sample irradiation with non-uniform neutron beam. In *14th International Conference on Radiation Shielding and 21st Topical Meeting of the Radiation Protection and Shielding Division*, 282–285, 2022.
- [9] L. Stegeman*, S. M. Madzunkov, D. Fry, and **A. A. Bahadori**. Outlook on Adjoint Radiation Transport Tool for Active-Passive Shielding Analysis. *Transactions of the American Nuclear Society*, 125(1):1088–1092, 2021.
- [10] S. Sharma*, D. Laramore*, W. L. Dunn, W. J. McNeil, and **A. A. Bahadori**. Investigation of a Portable Active Neutron Interrogation System using MCNP. *Transactions of the American Nuclear Society*, 125(1):1102–1105, 2021.
- [11] S. M. Madzunkov, D. Nikolić, A. Belousov, D. Fry, J. Barzilla, **A. Bahadori**, R. Pal Chowdhury*, L. Stegeman*, and M. Lund. Development of an active shielding concept using electrostatic fields. In *50th International Conference on Environmental Systems, ICES–2021–121*, 2021.
- [12] E. Giunta*, R. Elzohery, A. Gearhardt, J. C. Boyington, A. T. Cebula, J. Roberts, and **A. A. Bahadori**. KSU TRIGA Mark II Nuclear Reactor MCNP6 Model Improvements for Cell Irradiation Facility Design. *Transactions of the American Nuclear Society*, 124(1):686–689, 2021.
- [13] L. K. Vo, S. Sharma*, M. Pinilla, W. L. Dunn, **A. A. Bahadori**, and W. J. McNeil. Time dependent signatures: Moisture content interpretation in well logging applications with a D-T neutron generator. *Nuclear Instruments and Methods in Physics Research Section B: Beam Interactions with Materials and Atoms*, 466:37 – 41, 2020.
- [14] L. Stegeman*, R. Pal Chowdhury*, M. L. Lund, D. J. Fry, S. M. Madzunkov, and **A. A. Bahadori**. Assessment of electrostatic radiation shielding efficacy via void area calculation. *Transactions of the American Nuclear Society*, 122:584–587, 2020.
- [15] M. Pinilla, A. Hellinger, L. Vo, W. Dunn, W. McNeil, and **A. Bahadori**. Design studies using MCNP6® for an oil well logging prototype tool and a test facility. *Radiation Physics and Chemistry*, 167:108393, 2020.
- [16] M. P. Pfeifer*, N. Simerl*, R. J. Strahler, J. T. Casburn*, M. L. Dodson, J. Porter, W. J. McNeil, and **A. A. Bahadori**. Validation of radiation transport methods for ball grid array inspection systems. *Transactions of the American Nuclear Society*, 122:621–624, 2020.
- [17] L. Vo, A. Hellinger, M. Pinilla, W. Dunn, **A. Bahadori**, and W. McNeil. Development of test facilities for studies relevant to replacing dangerous radiological sources. *AIP Conference Proceedings*, 2160:050001, 2019.

- [18] **A. A. Bahadori**, M. P. Pfeifer*, and J. K. Shultis. Fluence on the surface of an absorbing sphere. *Transactions of the American Nuclear Society*, 121(1):1271–1273, 2019.
- [19] L. A. Stegeman*, Q. Pease*, T. J. Hieber, D. Sarkar, S. W. Oxandale, S. L. Bellinger, Z. C. Leseman, and **A. A. Bahadori**. Neutron spectrum unfolding with a planar miniaturized fast-neutron detector. *Transactions of the American Nuclear Society*, 120:740–743, 2019.
- [20] S. Sharma*, D. Laramore*, S. Bellinger, W. J. McNeil, and **A. A. Bahadori**. Simulation of signal formation and imaging in a dual-sided micro-structured semiconductor neutron detector. In *2019 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC)*, 1–3, 2019.
- [21] M. P. Pfeifer*, N. Simerl*, J. Porter, W. J. McNeil, and **A. A. Bahadori**. Comparison of MCCAD and DAGMC for predictive capability with BGA inspection systems. *Transactions of the American Nuclear Society*, 120:767–770, 2019.
- [22] R. Pal Chowdhury*, L. A. Stegeman*, J. E. Barzilla, D. J. Fry, A. Goel, M. L. Lund, S. M. Madzunkov, and **A. A. Bahadori**. Three-dimensional charge distribution for electrostatic space radiation shielding. *Transactions of the American Nuclear Society*, 120:744–747, 2019.
- [23] S. W. Oxandale, L. A. Stegeman*, T. J. Hieber, D. Sarkar, S. L. Bellinger, **A. A. Bahadori**, and Z. C. Leseman. Fabrication, modeling, and testing of a miniaturized fast neutron detector. ASME International Mechanical Engineering Congress and Exposition, Volume 10, 2019, <https://asmedigitalcollection.asme.org/IMECE/proceedings-pdf/IMECE2019/59476/V010T12A002/6474876/v010t12a002-imece2019-11534.pdf>. V010T12A002.
- [24] D. Laramore*, S. Sharma*, S. L. Bellinger, **A. A. Bahadori**, and W. J. McNeil. Simulation of charge carrier transport in pixelated micro-structured semiconductor neutron detectors. In *2019 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC)*, 1–3, 2019.
- [25] D. Laramore*, W. J. McNeil, and **A. A. Bahadori**. Design of a micro-nuclear-mechanical system for strain measurement. *Radiation Physics and Chemistry*, 155:209–212, 2019.
- [26] R. Pal Chowdhury*, L. A. Stegeman*, and **A. A. Bahadori**. Evaluation of Russian Roulette and particle splitting Monte Carlo methods for space radiation transport. *Transactions of the American Nuclear Society*, 118(1):805–808, 2018.
- [27] R. Amare*, **A. A. Bahadori**, and S. Eckels. Modeling heat regulation with a structured mesh, finite volume approach in a voxelized domain. In *ASME 2018 International Mechanical Engineering Congress and Exposition*, V003T04A057–V003T04A057. American Society of Mechanical Engineers, 2018.
- [28] **A. Bahadori**, E. Semones, M. Ewert, J. Broyan, and S. Walker. Measuring space radiation shielding effectiveness. *EPJ Web Conf.*, 153:04001, 2017.

- [29] **A. A. Bahadori**, J. A. Roberts, M. Kroupa, and D. J. Fry. Reconstructing solar particle event spectra from absorbed dose measurements. *Transactions of the American Nuclear Society*, 116(1):909–912, 2017.
- [30] R. B. Norman, M. Cloudsley, T. Slaba, L. Heilbronn, C. Zeitlin, S. Kenny, L. Crespo, D. Giesy, J. Warner, N. McGirl, L. Castellanos, A. Srikrishna, M. Beach, **A. Bahadori**, B. Reddell, and R. Singleterry. Early results from the advanced radiation protection thick GCR shielding project. In *Applied Space Environments Conference (ASEC) 2017*, NF1676L–27179, 2017.
- [31] L. S. Pinsky, J. Idarraga-Munoz, M. Kroupa, H. Son, N. Stoffle, E. Semones, **A. A. Bahadori**, D. Turecek, S. Pospíšil, J. Jakubek, Z. Vykydal, H. Kitamura, and Y. Uchihori. Medipix in space on-board the ISS. *Journal of Radiation Research*, 55(S1):i62–i63, 2014.
- [32] L. Pinsky, S. M. Hoang, J. Idarraga-Munoz, M. Kroupa, N. Stoffle, **A. Bahadori**, E. Semones, H. Kitamura, S. Kodaira, J. Jakubek, et al. Summary of the first year of Medipix-based space radiation monitors on the ISS. In *2014 IEEE Aerospace Conference*, 1–8. IEEE, 2014.
- [33] L. Pinsky, S. Hoang, J. Idarraga, M. Kroupa, N. Stoffle, E. Semones, **A. Bahadori**, S. Pospíšil, J. Jakubek, Z. Vykydal, and D. Turecek. Summary of the experience with the first use of Medipix-based radiation measurements on the ISS. In *Proceedings of the International Astronautical Congress, IAC*, 1, 106–110. IAC, 2013.
- [34] L. Pinsky, C. Amberboy, **A. Bahadori**, A. Burian, A. Empl, J. Hauss, J. Jakubek, H. Kitamura, K. Lee, S. Pospisil, E. Semones, N. Stoffle, D. Turecek, Y. Uchihori, Z. Vykydal, N. Yasuda, and N. Zapp. Preparing for active personal dosimetry on the International Space Station. In *Proceedings of the International Astronautical Congress, IAC*, 1, 193–199. IAC, 2011.
- [35] A. Cebula, D. Gilland, L.-M. Su, D. Wagenaar, and **A. Bahadori**. A novel SPECT camera for molecular imaging of the prostate. In *SPIE Proceedings*, 8143. SPIE, 2011.

Technical Papers

- [1] J. W. Wilson, T. C. Slaba, C. M. Werneth, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Neutron Diffusion Correction in 3DHZETRN-V2: ENDF/B. NASA/TP–20210020403, NASA Langley Research Center, Hampton, VA, 2021.
- [2] D. Fry, M. Lund, **A. A. Bahadori**, R. Pal Chowdhury*, L. Stegeman*, and S. Madzunkov. Active Shielding Particle Pusher (ASPP): Charged-Particle Tracking Through Electromagnetic Fields. NASA/TP–2020–5002408, NASA Johnson Space Center, Houston, TX, 2020.
- [3] J. W. Wilson, C. M. Werneth, T. C. Slaba, F. F. Badavi, B. Reddell, **A. A. Bahadori**, C. A. Sandridge, S. R. Blattinig, and R. B. Norman. Effects of the Serber First Step in 3DHZETRN-v2.1. NASA/TP–2019–220401, NASA Langley Research Center, Hampton, VA, 2019.

- [4] J. W. Wilson, C. M. Werneth, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Neutron Angular Scatter Effects in 3DZHETRAN: Quasi-Elastic. NASA/TP-2017-219597, NASA Langley Research Center, Hampton, VA, 2017.
- [5] J. W. Wilson, T. C. Slaba, C. M. Werneth, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Advances in NASA Radiation Transport: 3DZHETRAN-v2. NASA/TP-2017-219665, NASA Langley Research Center, Hampton, VA, 2017.
- [6] N. Stoffle, H. Nounu, K. Lee, and **A. Bahadori**. Comparison of Passive and Active Exploration Flight Test 1 Radiation Detector Measurements with Trapped Proton and Vehicle Shielding Model Calculations. NASA/TP-2016-218599, NASA Johnson Space Center, Houston, TX, 2016.
- [7] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Solar Proton Transport within an ICRU Sphere Surrounded by a Complex Shield: Combinatorial Geometry. NASA/TP-2015-218980, NASA Langley Research Center, Hampton, VA, 2015.
- [8] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. A Study of Neutron Leakage in Finite Objects. NASA/TP-2015-218692, NASA Langley Research Center, Hampton, VA, 2015.
- [9] **A. A. Bahadori**, E. J. Semones, R. Gaza, M. Kroupa, R. R. Rios, N. N. Stoffle, T. Campbell-Ricketts, L. S. Pinsky, and D. Turecek. Battery-operated Independent Radiation Detector Data Report from Exploration Flight Test 1. NASA/TP-2015-218575, NASA Johnson Space Center, Houston, TX, 2015.
- [10] T. C. Slaba, J. W. Wilson, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. Solar Proton Transport within an ICRU Sphere Surrounded by a Complex Shield: Ray-Trace Geometry. NASA/TP-2015-218994, NASA Langley Research Center, Hampton, VA, 2015.
- [11] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. A 3DZHETRAN Code in a Spherical Uniform Sphere with Monte Carlo Verification. NASA/TP-2014-218271, NASA Langley Research Center, Hampton, VA, 2014.
- [12] J. W. Wilson, T. C. Slaba, F. F. Badavi, B. D. Reddell, and **A. A. Bahadori**. 3D Space Radiation Transport in a Shielded ICRU Tissue Sphere. NASA/TP-2014-218530, NASA Langley Research Center, Hampton, VA, 2014.

Letters to the Editor

- [1] **A. A. Bahadori** and L. H. Heilbronn. Comments on Conca. *Nuclear News*, 66(7):8–9, 2023.
- [2] **A. A. Bahadori**. Responses to (1) Gale and Hoffman and (2) Cardarelli. *Health Physics*, 124(6):484–485, 2023.

Non-Peer Reviewed Publications

- [1] J. K. Shultis and **A. A. Bahadori**. An MCNP6 Primer. Version 1.0, Kansas State University, Manhattan, KS, 2024.
- [2] **A. A. Bahadori**. ANS Grand Challenge: Low-dose radiation (Spotlight Article). *Nuclear News*, 65(8):12–15, 2022.
- [3] P. Locke, **A. Bahadori**, A. Brooks, S. Dewji, M. L. Dunzik-Gouger, M. Kray, and A. Waltar. Harnessing the promise of radiation: The art of reasonableness. *Nuclear News*, 63(10):38–46, 2020.

Manuscripts in Review

- [1] R. Amare*, **A. A. Bahadori**, and S. Eckels. Representing unsegmented vessels using available vascular data for bioheat transfer simulation. *Frontiers in Thermal Engineering*, 2025, Resubmission Under Review.

Patents and Invention Disclosures

2020

Dosimetry system for monitoring electronics radiation exposure, Inventors: J. Porter, **A. A. Bahadori**, W. J. McNeil, M. P. Pfeifer*, N. Simerl*, KSURF Disc. No.: 2021-006.

US National Stage Application Serial Number 18/508,816 filed 14 November 2023
US Patent Application Publication No. US2024/0159918 published 16 May 2024

2018

NEUTRON EMITTING DEVICES, Inventors: W. J. McNeil, **A. A. Bahadori**, D. Laramore*, US Patent No. 11,600,399.

KSURF Disc. No.: 2018-085; Attorney Docket No. 51452-PRO
Provisional Patent Application Serial Number 62/722,030 filed 23 August 2018
PCT Patent Application No. PCT/US19/47925 filed 23 August 2019
US National Stage Application Serial Number 17/270,537 filed 23 February 2021
US Patent Application Publication No. US2021/0193343 published 24 June 2021
USPTO Allowed on 28 November 2022

USPTO Granted on 7 March 2023

2018

MINIATURIZED FAST NEUTRON SPECTROMETER, Inventors: **A. A. Bahadori**, Z. Leseman, US Patent No. 12,092,778.

KSURF Disc. No.: 2018-090; Attorney Docket No. 51260-PCT
Provisional Patent Application Serial Number 62/721,239 filed 22 August 2018
PCT Patent Application No. PCT/US2019/047441 filed 21 August 2019
US National Stage Application Serial Number 17/270,101 filed 22 February 2021
US Patent Application Publication No. US2021/0239865 published on 5 August 2021

USPTO Granted on 17 September 2024

Thesis/Dissertation

PhD Dissertation

TITLE NASA Astronaut Dosimetry: Implementation of Scalable Human Phantoms and Benchmark Comparisons of Deterministic versus Monte Carlo Radiation Transport

ADVISOR Professor Wesley E. Bolch

FUNDING US National Aeronautics and Space Administration

MS Thesis

TITLE Skeletal Neutron Dose Response Functions: A New Protocol for Evaluating Dose to Active Marrow and Bone Endosteum

ADVISOR Professor Wesley E. Bolch

FUNDING University of Florida, National Cancer Institute, and the US Department of Energy

Invited Talks and Panels

Extramural

2024

U.S. Million Person Study of Low-Level and Low-Dose-Rate Health Effects: Importance, Information, and Innovation (Keynote), *Nuclear Energy Institute Radiation Protection Forum*, On behalf of L. T. Dauer, Kansas City, MO, US.

6 August 2024

2024

Leaving Academia and the Journey Back, *The University of Chicago myCHOICE Seminar*, Virtual.

29 April 2024

2024

Human Spaceflight-Driven Innovations in Radiation Protection, *University of Florida Department of Materials Science & Engineering Nuclear Engineering Program Seminar*, Gainesville, FL, US.

18 January 2024

2023

Space Radiation Protection in the Modern Era: New Approaches to Familiar Challenges, *4th International Conference on Dosimetry and its Applications (ICDA-4)*, Valencia, ES.

20 October 2023

2023

Areas of the System of Radiological Protection That Can Be Simplified, *ICRP Workshop*, World Nuclear Association, Bristol, UK.

28 September 2023

2023

Focus on Media and Communications (Executive Session), *2023 American Nuclear Society Annual Meeting*, Panelist, Indianapolis, IN, US.

13 June 2023

2022

New Frontiers in Characterizing and Managing Space Radiation Exposure, *Ginny's Chips Rad Cafe*, The Greater New York Chapter of the Health Physics Society (GNYCHPS), Virtual.

15 November 2022

2022

High Expectations for the Future of Low-Dose Radiation Research, *American Nuclear Society Expert Panel*, Panelist, Virtual.

15 July 2022

2022

President's Special Session – The Nuclear Grand Challenges: Moving the Needle, *2022 American Nuclear Society Annual Meeting*, Panelist, Anaheim, CA, US.

14 June 2022

2022

Computational and Experimental Approaches for Understanding Space Radiation Effects, *NASA-CCNY Center for Advanced Batteries for Space Research Integration Meeting*, Virtual.

13 May 2022

2022

Neutrons as Secondary Particles: Technical Overview, *Workshop for Applied Nuclear Data Activities (WANDA) 2022*, DOE Conference ID: 11979, Virtual.

2 March 2022

2021

Human Effects of Low Dose Ionizing Radiation Exposure, *University of Florida American Nuclear Society Student Section*, Panelist, Virtual.

14 October 2021

2021

NASA Active Shielding: A New Approach, *Nuclear & Radiological Engineering/Medical Physics Programs Seminar*, Georgia Institute of Technology, Virtual.

15 April 2021

2021

Talking About Low-Dose Radiation Risk, *American Nuclear Society Expert Panel*, Panelist, Virtual.

21 January 2021

2020

President's Special Session – Risky Business: Low-Dose Radiation and Public Perception, *2020 American Nuclear Society Virtual Winter Meeting*, Panelist, Virtual due to Covid-19 Pandemic.

18 November 2020

2020

Young Radiological Protection Expert Panel, *NEA Workshop on Optimisation: Rethinking the Art of Reasonable*, Panelist and Moderator, Lisbon, PT.

15 January 2020

2019

Collaborating with Industry on Radiological Engineering Research, *Nuclear Engineering Colloquium*, The University of Tennessee, Knoxville, TN, US.

17 April 2019

2017

NASA Timepix-based Radiation Monitoring: Past and Current Projects, *Physics Talk*, Wichita State University, Wichita, KS, US.

29 March 2017

2016

Bahadori Research Summary, *Rensselaer Radiation Measurement & Dosimetry Group*, Rensselaer Polytechnic Institute, Troy, NY, US.

5 February 2016

2015

Space Radiation Protection: An Evolving Field, *Alan Levin Department of Mechanical and Nuclear Engineering*, Kansas State University, Manhattan, KS, US.

23 January 2015

2011

Mathematics in Space Radiation Protection, *KSU Undergraduate Mathematics Seminar*, Kansas State University, Manhattan, KS, US.

31 October 2011

2009

Skeletal Neutron Absorbed Dose Response Functions, *Committee 2 Task Group on Dose Calculations*, International Commission on Radiological Protection (ICRP), Ottawa, ON, CA.

20 April 2009

Intramural

2024

BS in Nuclear Engineering Degree and Nuclear Engineering Electives, *Student Chapter of the American Nuclear Society*, Kansas State University, Manhattan, KS, US.
4 November 2024

2022

Engineering Pathways at K-State (Panelist), *KSU Bridges to the Future Program*, Kansas State University, Manhattan, KS, US.
2 June 2022

2021

“Meet the Professors” Series: Dr. Amir Bahadori, *Student Chapter of the American Nuclear Society*, Kansas State University, Manhattan, KS, US.
16 November 2021

2018

Monte Carlo Methods: Mathematical Foundation and Applications, *KSU Undergraduate Mathematics Seminar*, Kansas State University, Manhattan, KS, US.
3 December 2018

2018

KSU Nuclear Engineering Option, *ME 101: Introduction to Mechanical Engineering*, Kansas State University, Manhattan, KS, US.
6 November 2018

2016

Nuclear Engineering at Kansas State University, *ME 101: Introduction to Mechanical Engineering*, Kansas State University, Manhattan, KS, US.
29 November 2016

2016

Bahadori Research Summary, *Student Chapter of the American Society of Mechanical Engineers*, Kansas State University, Manhattan, KS, US.
27 April 2016

2016

Bahadori Research Summary, *Student Chapter of the American Nuclear Society*, Kansas State University, Manhattan, KS, US.
11 February 2016

Contributed Talks

2024

A Monte Carlo-Based Path Tracing Framework for Voxelized Domains, *Radiation Protection and Shielding Division 2024 (RPSD 2024)*, Orlando, FL, US.
17–21 November 2024

2024

Chronic Radiation Health Effects in the Million Person Study: Incidence and Mortality, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Orlando, FL, US.
7–12 July 2024

2024

Colossus: Software for Radiation Epidemiologic Studies with Big Data, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Presented by E. Giunta*, Graduate Research Assistant, Orlando, FL, US.
7–12 July 2024

2023

Charge Distribution Effects in Active Radiation Shielding, *4th International Conference on Dosimetry and its Applications (ICDA-4)*, Presented by B. Crouch*, Graduate Research Assistant, Valencia, ES.
16–20 October 2023

2023

Simulated Neutron Dose on Multiple Cell Culture Configurations, *4th International Conference on Dosimetry and its Applications (ICDA-4)*, Presented by B. Crouch*, Graduate Research Assistant, Valencia, ES.
16–20 October 2023

2023

Progress on a Modeling Framework for GaN FinFET Time-Dependent Responses after Radiation Damage, *2023 IEEE Nuclear and Space Radiation Effects Conference (NSREC)*, Presented by B. Davidson*, Graduate Research Assistant, Kansas City, MO, US.
24–28 July 2023

2023

Microgravity Simulations Combined with Radiation Effects to Model Space Radiation Exposure, *2023 American Nuclear Society Annual Meeting*, Presented by M. Culbertson*, Undergraduate Researcher, Indianapolis, IN, US.
11–14 June 2023

2023

Analysis of Sphere of Influence (Sol) and Pressure Drop Parameter in VoM-Phys Framework, *8th Thermal and Fluids Engineering Conference (Hybrid)*, Presented by R. Amare*, Graduate Research Assistant, College Park, MD, US.
26–29 March 2023

2022

Modeling Dynamic Voxelized Biological Sample Irradiation with Non-Uniform Neutron Beam, *14th International Conference on Radiation Shielding – Radiation Protection & Shielding Division Topical Meeting 2022 of American Nuclear Society*, Presented by E. Giunta*, Graduate Research Assistant, Seattle, WA, US.
25–29 September 2022

2022

Optimization of a GaN Microstructured Thermal Neutron Detector Geometry Using MCNP, *14th International Conference on Radiation Shielding – Radiation Protection & Shielding Division Topical Meeting 2022 of American Nuclear Society*, Presented by E. Giunta*, Graduate Research Assistant, Seattle, WA, US.
25–29 September 2022

2021

Outlook on Adjoint Radiation Transport Tool for Active-Passive Shielding Analysis, *2021 American Nuclear Society Winter Meeting & Nuclear Technology Expo*, Presented by L. Stegeman*, Graduate Research Assistant, Washington, DC, US.
30 November–3 December 2021

2021

Investigation of a Portable Active Neutron Interrogation System using MCNP, *2021 American Nuclear Society Winter Meeting & Nuclear Technology Expo*, Presented by S. Sharma*, Graduate Research Assistant, Washington, DC, US.
30 November–3 December 2021

2021

Simulation of Signal Formation and Imaging in a Dual-Sided Micro-Structured Semiconductor Neutron Detector, *2nd AllPix² User Workshop*, Presented by S. Sharma*, Graduate Research Assistant, Virtual.
18 August 2021

2021

KSU TRIGA Mark II Nuclear Reactor MCNP Model Improvements for Cell Irradiation Facility Design, *2021 American Nuclear Society Annual Meeting*, Presented by E. Giunta*, Graduate Research Assistant, Virtual.
14–16 June 2021

2021

NASA Active Shielding Simulation Strategy, *43rd COSPAR Scientific Assembly*, Virtual due to Covid-19 Pandemic.

28 January–4 February 2021

2020

Assessment of Electrostatic Radiation Shielding Efficacy via Void Area Calculation, *2020 American Nuclear Society Annual Meeting*, Presented by L. Stegeman*, Graduate Research Assistant, Virtual due to Covid-19 Pandemic.

8–11 June 2020

Best Presentation Award, Radiation Protection and Shielding: General

2020

Validation of Radiation Transport Methods for Ball Grid Array Inspection Systems, *2020 American Nuclear Society Annual Meeting*, Presented by M. Pfeifer*, Graduate Research Assistant, Virtual due to Covid-19 Pandemic.

8–11 June 2020

2019

Fluence on the Surface of an Absorbing Sphere, *2019 American Nuclear Society Winter Meeting & Nuclear Technology Expo*, Washington, DC, US.

17–21 November 2019

2019

Simulation of Signal Formation and Imaging in a Dual-Sided Micro-Structured Semiconductor Neutron Detector, *2019 IEEE Nuclear Science Symposium & Medical Imaging Conference*, Presented by S. Sharma*, Graduate Research Assistant, Manchester, UK.

26 October–2 November 2019

2019

Dual-Modality Imaging with Pixelated Microstructured Semiconductor Neutron Detector, *Medipix Open Meeting*, Geneva, CH.

17 September 2019

2019

Three-dimensional charge distribution for electrostatic space radiation shielding, *2019 American Nuclear Society Annual Meeting*, Presented by R. Pal Chowdhury*, Graduate Research Assistant, Minneapolis, MN, US.

9–13 June 2019

2019

Comparison of MCCAD and DAGMC for predictive capability with BGA inspection systems, *2019 American Nuclear Society Annual Meeting*, Presented by M. Pfeifer*, Graduate Research Assistant, Minneapolis, MN, US.

9–13 June 2019

Best Presentation Award, Computational Tools for Radiation Protection and Shielding–1

2019

Neutron spectrum unfolding with a planar miniaturized fast-neutron detector, *2019 American Nuclear Society Annual Meeting*, Presented by L. Stegeman*, Graduate Research Assistant, Minneapolis, MN, US.

9–13 June 2019

Best Presentation Award, Radiation Protection and Shielding: General

2019

A Novel, Population-based Approach to Astronaut Radiation Risk, *3rd International Conference on Dosimetry and its Applications (ICDA-3)*, Lisbon, PT.

27–31 May 2019

2019

Low Energy Gamma-ray Response and Time Dependent MCNP Simulation of the KSU Benchmarking Facility, *Consortium for Nonproliferation Enabling Capabilities Workshop 2019*, Presented by S. Sharma*, Graduate Teaching Assistant, Raleigh, NC, US.

6 February 2019

2018

Radioactively Driven Colloids, *71st Annual Meeting of the American Physical Society's (APS) Division of Fluid Dynamics (DFD)*, Presented by G. Wilson*, Graduate Research Assistant, Atlanta, GA, US.

18–20 November 2018

2018

Modelling Heat Regulation with a Structured Mesh, Finite Volume Approach in a Voxelized Domain, *2018 American Society of Mechanical Engineers (ASME) International Mechanical Engineering Congress and Exposition (IMECE)*, Presented by R. Amare*, Graduate Research Assistant, Pittsburgh, PA, US.

9–15 November 2018

2018

Radiation Dose Measurement on Printed Circuit Boards, *47th WANTO/JOWOG 39*, Kansas City, MO, US.

6–9 November 2018

2018

PHITS Simulation of Galactic Cosmic Rays on Mars: Code and Model Description, *2nd MSL RAD Mars Space Radiation Modeling Workshop*, Presented by M. Pfeifer*, Graduate Research Assistant, Boulder, CO, US.

16–18 October 2018

2018

PHITS Simulation of Galactic Cosmic Rays on Mars: Results, *2nd MSL RAD Mars Space Radiation Modeling Workshop*, Presented by M. Pfeifer*, Graduate Research Assistant, Boulder, CO, US.

16–18 October 2018

2018

Photon Production in Hydrogenous Space Radiation Shields, *Health Physics Society 63rd Annual Meeting*, Cleveland, OH, US.

15–19 July 2018

2018

Ethics in Space Radiation Protection, *Health Physics Society 63rd Annual Meeting*, Cleveland, OH, US.

15–19 July 2018

2018

Evaluation of Russian Roulette and Particle Splitting Monte Carlo Methods for Space Radiation Transport, *2018 American Nuclear Society Annual Meeting*, Presented by R. Pal Chowdhury*, Graduate Research Assistant, Philadelphia, PA, US.

17–21 June 2018

2018

PHITS Modeling to Estimate Dose on Mars Due to Solar Events, *American Nuclear Society Student Conference 2018*, Presented by M. Pfeifer*, Graduate Research Assistant, Gainesville, FL, US.

5–7 April 2018

2018

The Effects of Worn Detector Location on Neutron Detector Measurement, *American Nuclear Society Student Conference 2018*, Presented by L. Stegeman*, Undergraduate Researcher, Gainesville, FL, US.

5–7 April 2018

2017

Slowing and Stopping Charged Particles Cause Angular Dependence for Absorbed Dose Measurements, *10th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications (IRRMA X)*, Chicago, IL, US.
9–13 July 2017

2017

Reconstructing Solar Particle Event Spectra from Absorbed Dose Measurements, *2017 American Nuclear Society Annual Meeting*, San Francisco, CA, US.
11–15 June 2017

2017

Validation of Voxel Based Ray Tracer Code with 3D-HZETRN, *American Nuclear Society Student Conference 2017*, Presented by R. Pal Chowdhury*, Graduate Teaching Assistant, Pittsburgh, PA, US.
6–9 April 2017

2016

Measuring Space Radiation Shielding Effectiveness, *13th International Conference on Radiation Shielding – Radiation Protection & Shielding Division Topical Meeting 2016 of American Nuclear Society*, Paris, FR.
3–6 October 2016

2016

Penetrating Heavy Charged Particle Dose Measurements are Invariant with Angle of Incidence, *Health Physics Society 61st Annual Meeting*, Spokane, WA, US.
17–21 July 2016

2014

Development of the Battery-operated Independent Radiation Detector, *The 19th Annual Workshop on Radiation Monitoring for the International Space Station*, Krakow, PL.
9–11 September 2014

2012

NASA Medipix Space Dosimetry, *Medipix2 Open Meeting*, Geneva, CH.
19 September 2012

2012

Medipix-Based Space Dosimetry at NASA: An Overview of Current Projects, *The 17th Annual Workshop on Radiation Monitoring for the International Space Station*, Austin, TX, US.
4–6 September 2012

2011

Improvements to the Ionizing Radiation Risk Assessment Program for NASA Astronauts, *Space Forum 2011*, Moscow, RU.
18–21 October 2011

2011

Automation of PCXMC and ImPACT for NASA Astronaut Medical Imaging Dose and Risk Tracking, *2011 Joint AAPM/COMP Meeting*, Vancouver, BC, CA.
31 July–4 August 2011

2011

Comparison of Organ Dosimetry for Astronaut Phantoms: Earth-Based vs. Microgravity-Based Anthropometry and Body Positioning, *2011 Joint AAPM/COMP Meeting*, Vancouver, BC, CA.
31 July–4 August 2011

2010

Effect of Anatomical Modeling on Space Radiation Dose Estimates: A Comparison of Doses for NASA Dosimetry Phantoms and University of Florida Hybrid Phantoms, *Health Physics Society 55th Annual Meeting*, Salt Lake City, UT, US.
27 June–1 July 2010

2009

Skeletal Neutron Dose Response Function Development for Hydrogen, 2009
American Nuclear Society Student Conference, Best presentation in Medical Physics Therapy Section, Gainesville, FL, US.
2–5 April 2009

Poster Presentations

2024

A Comparative Study of Simulated Organ Doses Using Voxel and Mesh Computational Phantoms, *OECD/NEA Global Forum Rising Stars Workshop 2024*, Presented by A. Mauler*, Undergraduate Researcher (Accelerated MS NE Student), Karlsruhe, DE.
25–26 November 2024

2024

NUCLEAR SUBMARINER COHORT: AN INNOVATIVE EPIDEMIOLOGIC HEALTH STUDY OF MULTIPLE STRESSORS AND LOW-LEVEL RADIATION, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Presented by L. Lipworth, Vanderbilt University Medical Center, Orlando, FL, US.
7–12 July 2024

2024

Simulation of Combined Microgravity and Radiation Exposures at the KSU TRIGA Mark II Nuclear Reactor, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Presented by M. Culbertson*, Undergraduate Researcher, Orlando, FL, US.
7–12 July 2024

2024

Computational Dosimetry for a Nuclear Reactor-Based, Mixed Field Space Radiation Simulator, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Presented by B. Crouch*, Graduate Research Assistant, Orlando, FL, US.
7–12 July 2024

2024

Current Status Of Time-Dependent Covariate Analysis In Radiation Epidemiology, *16th Congress of the International Radiation Protection Association (IRPA-16) and the Health Physics Society 69th Annual Meeting*, Presented by D. Eckerberg*, Graduate Research Assistant, Orlando, FL, US.
7-12 July 2024

2023

Non-Linear Cancer Survival Analysis with Big Data: Colossus Software Development and Testing for Radiation Epidemiological Studies, *17th International Congress for Radiation Research*, Presented by E. Giunta*, Graduate Research Assistant, Montreal, QC, CA.
27–30 August 2023

2023

Radiation Carcinogenesis Biomarker Analysis with a Hydrogel-based Organ-on-a-Chip System, *2023 NASA Human Research Program Investigators' Workshop*, Co-authored by B. Crouch*, Graduate Research Assistant, Galveston, TX, US.
7–9 February 2023

2022

Development of a Random Position Machine for Combined Microgravity and Radiation Exposures, *KSU Carl R. Ice College of Engineering Undergraduate Research and Creative Inquiry Showcase*, Presented by M. Culbertson*, Undergraduate Researcher, Manhattan, KS, US.

18–27 April 2022, Virtual; 28 April 2022, In Person

Tied for Third Place

2020

Hybrid Shielding Configuration for Sensitive Space Electronics Subjected to Extreme Space Weather, *IEEE Nuclear & Space Radiation Effects Conference 2020*, Presented by R. Pal Chowdhury*, PhD Graduate (Submitted abstract as a Graduate Research Assistant), Virtual due to Covid-19 Pandemic.

1–8 December 2020

2019

Exposure Rate Mapping of an Activated KBr Dirty-Bomb with Aerial and Ground-Based Methods, *2019 American Nuclear Society Winter Meeting & Nuclear Technology Expo*, Presented by N. Simerl*, Graduate Research Assistant, Washington, DC, US.

17–21 November 2019

Second Place, 2019 ANS Winter Meeting & Nuclear Technology Expo Alpha Nu Sigma Graduate Student Poster Competition

2019

Simulation of Charge Carrier Transport in Pixelated Micro-Structured Semiconductor Neutron Detectors, *2019 IEEE Nuclear Science Symposium & Medical Imaging Conference*, Presented by D. Laramore*, Graduate Research Assistant, Manchester, UK.

26 October–2 November 2019

2019

Charge Drift Modeling and Fabrication of Pixelated Semiconductor Neutron Detectors, *Consortium for Nonproliferation Enabling Capabilities Workshop 2019*, Presented by D. Laramore*, Graduate Research Assistant, Raleigh, NC, US.

6 February 2019

2019

Real-Time Determination of Dose to Printed Circuit Board Electronics Impacted by X-ray Inspection Machine Sources, *Consortium for Nonproliferation Enabling Capabilities Workshop 2019*, Created by M. Pfeifer*, Graduate Research Assistant; presented by W. McNeil, Raleigh, NC, US.

6 February 2019

2018

Statistical Analysis of Solar Energetic Particle Events and PHITS Modeling to Estimate Dose on Mars, *Kansas State University College of Engineering Undergraduate Research Poster Forum*, Presented by F. Alghamdi*, Undergraduate Researcher, Manhattan, KS, US.

26 April 2018

2017

Modelling Thermoregulatory Blood Flow in a Voxelized Human Phantom, *1st IEEE EMBS International Summer School on Computer Modeling in Medicine*, Presented by R. Amare*, Graduate Research Assistant, Charleston, SC, US.

11–17 June 2017

2017

Predicting Organ Morphometry from External Measurements: A Pilot Study, *Kansas State University College of Engineering Undergraduate Research Poster Forum*, Presented by E. Stallbaumer*, Undergraduate Researcher, Manhattan, KS, US.

27 April 2017

2017

Probability Modeling for Total Event Integrated Fluence of Solar Proton Events: SEPEM Server Data Adjustments, *Kansas State University College of Engineering Undergraduate Research Poster Forum*, Presented by B. Bombardier*, Undergraduate Researcher, Manhattan, KS, US.

27 April 2017

2017

Investigating Secondary Cancer Risk Using a Water Phantom Simulation, *Kansas State University Developing Scholars Program Research Poster Symposium*, Presented by E. Abamegal*, Undergraduate Researcher, Manhattan, KS, US.

9 April 2017

2017

Variance reduction using HZETRN2015 for solar particle event transport: Response function comparison, *2017 NASA Human Research Program Investigators' Workshop*, Co-authored by M. Pfeifer*, Graduate Research Assistant, Galveston, TX, US.

23–26 January 2017

2009

Skeletal Neutron Dose Response Function Development for Use in Proton Therapy, *American Association of Physicists in Medicine 51st Annual Meeting*, Anaheim, CA, US.

26–30 July 2009

Other Conference and Workshop Participation

2024

Indoor Environments Association/AARST 2024 Radon and Vapor Intrusion Symposium, Orlando, FL, US.

15–18 September 2024

2024

2024 American Nuclear Society Annual Conference, *Began representation of KSU NE program at Nuclear Engineering Department Head Organization (NEDHO)*, Las Vegas, NV, US.

16–19 June 2024

2024

60th Annual NCRP Meeting - Advanced and Small Modular Nuclear Power Reactors, *Recognized as an elected Council Member*, Bethesda, MD, US.

25–26 March 2024

2023

American Nuclear Society Media Training Workshop, *Conducted by Potentiary and American Nuclear Society in conjunction with the 2023 American Nuclear Society Annual Meeting*, Indianapolis, IN, US.

11 June 2023

2023

A Deep-dive into the NIH Specific Aims Page, *Sponsored by the KSU Cognitive and Neurobiological Approaches to Plasticity (CNAP) Center*, Manhattan, KS, US.

5 May 2023

2022

Radiation Research Society Annual Meeting, Waikoloa Village, HI, US.

16–20 October 2022

2021

1st PHITS Online Advanced Tutorial, Virtual.

19–22 July 2021

-
- 2021
57th Annual NCRP Meeting - Radiation & Flight: A Down-to-Earth Look at Risks, Virtual.
19–20 April 2021
-
- 2018
42nd Committee on Space Research (COSPAR) Scientific Assembly, Pasadena, CA, US.
14–22 July 2018
-
- 2018
KSU College of Veterinary Medicine Translational and Comparative Oncology Research Symposium, Manhattan, KS, US.
17 March 2018
-
- 2017
Test, Research, and Training Reactors (TRTR) 2017, San Diego, CA, US.
17–21 September 2017
-
- 2017
Solar Heliospheric and INterplanetary Environment (SHINE) Conference 2017, Saint-Sauveur, QC, CA.
24–28 July 2017
-
- 2017
Solar Energetic Particles (SEP), Solar Modulation and Space Radiation: New Opportunities in the AMS-02 Era #2, Washington, DC, US.
24–26 April 2017
-
- 2016
2016 Marshall Space Flight Center NASA EPSCoR Technical Interchange Meeting, Huntsville, AL, US.
9 September 2016
-
- 2016
1st MSL RAD Mars Space Radiation Modeling Workshop, Boulder, CO, US.
28–30 June 2016
-
- 2015
2015 NASA Human Research Program Investigators' Workshop, Galveston, TX, US.
13–15 January 2015
-
- 2014
2014 NASA Human Research Program Investigators' Workshop, Galveston, TX, US.
12–13 February 2014
-
- 2013
2013 NASA Human Research Program Investigators' Workshop, Galveston, TX, US.
12–14 February 2013
-
- 2012
23rd Annual NASA Space Radiation Investigators' Workshop, Durham, NC, US.
8–11 July 2012
-
- 2012
12th FLUKA Course, *Thomas Jefferson National Accelerator Facility,* Newport News, VA, US.
30 April–4 May 2012
-
- 2011
47th Annual NCRP Meeting - Scientific And Policy Challenges Of Particle Radiations In Medical Therapy And Space Missions, Bethesda, MD, US.
7–8 March 2011

Media Appearances

2023

Nuclear worker data examined in new low-dose radiation health effects study, *Nuclear News*, October 2023, Also available online here.

Quoted in article

2023

In the Wake of Fukushima's Waste Water Release, Public Perception on Nuclear Power Could Face a Roadblock, *MarketScale*, 8 September 2023, Available online here.

Video interview and quoted in article

2022

Meltdown: Three Mile Island – Drama disguised as a documentary, *Nuclear News*, August 2022, Also available online here.

Quoted in article

Research Advisees

PhD Graduates

2016–2023

Rohan Amare, *PhD in Mechanical Engineering (Co-Major Professor: S. Eckels)*.

Dissertation: Developing a Modeling and Simulation Framework for Human Thermoregulation for Voxalized Domains

Current Position: Postdoctoral Fellow, MD Anderson Cancer Center, Houston, TX, US

IMECE2018 Track 4 Student Paper Competition Finalist

2017, 2018 KSU Johnson Cancer Research Center Graduate Student Travel Award

September 2022 KSU MNE Graduate Student of the Month

2023 ASTFE Travel Award

2018–2022

Sanchit Sharma, *PhD in Nuclear Engineering (Co-Major Professor: W. McNeil)*.

Dissertation: An Advanced Microstructured Semiconductor Radiation Detector for Neutron Imaging and Oil Well Logging

Current Position: Engineer, RefleXion Medical, Inc., Hayward, CA, US

2017–2022

Nathanael Simerl, *PhD in Nuclear Engineering (Co-Major Professor: W. McNeil)*.

Dissertation: Utilization of Aerial Sensor Platforms for Characterization of Land-Based, Distributed Radiological Sources for Radiological Event Response

Current Position: Systems Engineer II, Radiation Detection at Naval Information Warfare Systems Center Pacific, San Diego, CA, US

2019 ANS Winter Meeting & Nuclear Technology Expo Alpha Nu Sigma Graduate Student Poster Competition - Second Place

2016–2020

Rajarshi Pal Chowdhury, *PhD in Nuclear Engineering*.

Dissertation: Hybrid Methods of Space Radiation Shielding for Astronauts against Deep-space Radiation

Current Position: Post-doctoral Research Associate, Facility for Rare Isotope Beams (FRIB), Michigan State University, East Lansing, MI, US

2018 KSU Johnson Cancer Research Center Graduate Student Travel Award

2016–2020

Diego Laramore, *PhD in Nuclear Engineering (Co-Major Professor: W. McNeil)*.

Dissertation: Simulation and Validation of Charge Carrier Drift in Pixelated Microstructured Semiconductor Neutron Detectors

Current Position: Research Scientist (Radiation Subject Matter Expert) at Leidos Innovations Corporation (contractor for NASA JSC SRAG), Houston, TX, US

January 2020–May 2020, Internship with NASA JSC SRAG

MS Graduates

'22-'24

Bradley Crouch, *MS in Nuclear Engineering*.

Thesis: Simulation and Utilization of Irradiation Facilities

Current Position: Nuclear Engineering Safety Senior Associate, Consolidated Nuclear Security, LLC at Y-12 National Security Complex, Oak Ridge, TN, US

'22-'24

Sarah Porter, *MS in Nuclear Engineering*.

Coursework Option

'21-'24

Jonathan Conde, *MS in Nuclear Engineering (Distance)*.

Thesis: Characterization of the Energy and Angular Dependence of Optically Stimulated Dosimeter Responses in Broad Beam Neutron Radiation Fields

Current Position: PhD Student in Nuclear Engineering, Kansas State University (Distance)

'21-'23

Bryce Davidson, *MS in Nuclear Engineering*.

Thesis: Simulation of Gallium Nitride Vertical Fin-Shaped Field Effect Transistor for Use as Thermal Neutron Detector

Current Position: Radiological Health Physicist, Nebraska Department of Health and Human Services, Lincoln, NE, US

2020-'22

Eric Giunta, *MS in Nuclear Engineering*.

Thesis: Computational Techniques for Simulation and Design of a Biological Sample Irradiation Chamber

Current Position: PhD Candidate in Nuclear Engineering, Kansas State University, Manhattan, KS, US

2019-'22

Luke Stegeman, *MS in Nuclear Engineering*.

Thesis: Computational Development of the Planar Miniaturized Fast Neutron Detector

Current Position: PhD Candidate in Nuclear Engineering, Kansas State University, Manhattan, KS, US

2016-2019

Michael Pfeifer, *MS in Nuclear Engineering*.

Thesis: Modeling Radiation on Mars for Solar Particle Events and Galactic Cosmic Rays

Current Position: PhD Candidate in Nuclear Engineering, Kansas State University, Manhattan, KS, US

2018-2019

Graham Wilson, *MS in Mechanical Engineering (Co-Major Professor: H. Bindra)*.

Thesis: Anomalous Diffusion and Self-Propulsion of Radioactive Colloidal Particles

Current Position: Thermal Hydraulic Analyst (Nuclear Engineer) at Bettis Atomic Power Laboratory, Pittsburgh, PA, US

Current Graduate Students

2024

Jonathan Conde, *PhD Student – Expected Graduation: May 2029*, Graduate Advisee (Distance).

2024

Daniel Eckerberg, *MS Student (Accelerated BS ME/MS NE) – Expected Graduation: May 2025*, Graduate Research Assistant, Investigating Impacts of Person-Year Grouping on Radiation-Associated Cancer Risks.

2024 Health Physics Society Travel Grant

2023

Istiak Ahmed, *MS Student (Co-Major Professor: S. Eckels) – Expected Graduation: May 2025*, Graduate Research Assistant, Human Thermal Modeling.

2023

Derek Buckley, *MS Student – Expected Graduation: May 2026*, Graduate Advisee (Distance, Coursework Option).

2022

Eric Giunta, *PhD Candidate – Expected Graduation: May 2025*, Graduate Research Assistant, Parallelizing Radiation Epidemiology Analyses for the Million Person Study.
2020–2024, US Nuclear Regulatory Commission Graduate Fellowship
2023 ICRR Meeting Scholars and Trainees Travel Award
January 2024 KSU MNE Graduate Student of the Month

2022

Luke Stegeman, *PhD Candidate – Expected Graduation: May 2025*, Graduate Research Assistant, NASA Active Radiation Shielding Simulation.
2019 ANS Annual Meeting Best Presentation Award, Rad. Protection and Shielding: General
2020 ANS Annual Meeting Best Presentation Award, Rad. Protection and Shielding: General
January 2023 KSU MNE Graduate Student of the Month
2023 KSU MNE Graduate Research Assistant of the Year

2019

Michael Pfeifer, *PhD Candidate – Expected Graduation: May 2025*, Graduate Research Assistant, Honeywell Electronics X-Ray Simulation and Validation.
2017–2019, 2021, US Nuclear Regulatory Commission Graduate Fellowship
2019 ANS Annual Meeting Best Presentation Award, Computational Tools in Radiation Protection and Shielding–1

Undergraduate Researchers

2024

Ashleigh Mauler, Thermoluminescent Dosimetry.
KSU MNE Accelerated BS ME/MS NE Student
DOE UNLP Undergraduate Scholarship (AY 2024-2025)
2024 OECD/NEA Rising Stars Workshop Participant

2023

Nicholas Hare, Visualizing Radiation Fields in Real-Time with the Microsoft HoloLens 2 Augmented Reality Headset, Thermoluminescent Dosimetry.

2023

Anthony Carmona, Random Position Machine Upgrades.
2023–2024 KSU Developing Scholars Program Participant

2023

Dawson Stutzman, Verification and Validation of the NASA/NCRP COLOSSUS Software Package for Big Data Radiation Epidemiology.

2021

Matthew Culbertson, NASA Active Radiation Shielding Simulation; Semiconductor Physics Simulation; Random Position Machine Development.
2022 KSU Carl R. Ice College of Engineering Undergraduate Research and Creative Inquiry Showcase, Tied for Third Place
2023 Barry Goldwater Scholarship
2024 ANS William R. & Mila Kimel Nuclear Engineering Scholarship

'23-'24

Lily Galimba, Microreactor Shielding.

'23-'24

Daniel Eckerberg, Artificial Intelligence Approaches to Characterizing Radiation Effects from Combined Exposures.

KSU MNE Accelerated BS ME/MS NE Student
Spring 2024 Alan Levin Dept. of Mechanical and Nuclear Engineering Outstanding Senior

2022

Taylor Howell, Verification and Validation of the NASA/NCRP COLOSSUS Software Package for Big Data Radiation Epidemiology.

2022

Joseph Forbes, NASA Active Radiation Shielding Simulation.

- 2022
Bradley Crouch, NASA Active Radiation Shielding Simulation.
 Jet Propulsion Laboratory internship in Summer 2022
 Began graduate studies with REAL in Fall 2022
- '21-'22
Lanie Mannebach, Random Position Machine Development.
- 2020-'22
Esther Adeniji, NASA Active Radiation Shielding Simulation.
 Non-KSU Undergraduate Researcher
- 2021
Bryce Teaford, Random Position Machine Development.
- 2021
Samuel Tompkins, X-DS-MSND Design and Simulation.
- 2020-'21
Rene Santillana Padilla, NASA Active Radiation Shielding Simulation.
- 2019-'20
Kaitlyn Smallfoot, Testing of Miniaturized Fast Neutron Spectrometer; X-MSND Testing and Data Acquisition.
- 2020
Hanavan Kuhn, GUI Development for Honeywell X-Ray and NASA Active Shielding.
- 2020
Mason Phelps, CAD Modeling for Honeywell X-Ray.
- 2019
Jack Casburn, Ancillary Data Acquisition in Support of Electronics X-Ray Shielding and Prediction Project; Testing of Handheld Surface Scanner.
- 2019
Emily Domann, Geant4 Evaluation of Mouse Exposures at the NASA Space Radiation Laboratory.
- 2018-2019
Eric Giunta, MSND-Timepix Modeling with PHITS, MCNP, and AllPix².
 Began graduate studies with REAL in Spring 2020
- 2018-2019
Prerona Kundu, Modeling Output of Photon Radiotherapy Machines; Biophysical Modeling of Radiation Effects.
 2018 KSU Johnson Cancer Research Center Cancer Research Award
 2018 Roy G. Post Foundation Undergraduate Scholarship
 2019 Udall Undergraduate Scholarship Honorable Mention
- 2018-2019
Zachary Plymesser, MSND-Timepix Modeling with COMSOL Multiphysics.
- 2017-2019
Luke Stegeman, Human Body Shielding of Neutron Detectors; Neutron Beam Chopper Simulation; Simulation of a Novel, Miniaturized Fast Neutron Spectrometer; NASA Active Radiation Shielding Simulation.
 2017 NUSIK Program Participant (US Nuclear Regulatory Commission)
 Spring 2019 Alan Levin Dept. of Mechanical and Nuclear Engineering Outstanding Senior
 Began graduate studies with REAL in Summer 2019
- 2018
Austin Mackey, Honeywell Electronics X-Ray Measurements.
- 2018
Margaret Jones, Honeywell Electronics X-Ray Measurements.
- 2017-2018
Quentin Pease, Simulation and Construction of a Novel, Miniaturized Fast Neutron Spectrometer.
- 2017-2018
Faisal Alghamdi, Exploring Relationships Among Energy Channels in Solar Particle Events.

2017

Lucas Wodrich, Space Nuclear Reactor Perturbation from Solar Activity.
2017 NUSIK Program Participant (US Nuclear Regulatory Commission)

2016–2017

Elshaddai Abamegal, Application of NASA Quality Factor to Charged Particle Radiotherapy.

2016 KSU Johnson Cancer Research Center Cancer Research Award

2016–2017 KSU Developing Scholars Program Participant

2016–2017

Blake Bombardier, Probability Modeling for Total Event Integrated Fluence of Solar Proton Events: SEPEM Data Server Adjustments.

2016–2017

Emily Stallbaumer, Predicting Organ Morphometry from External Measurements: A Pilot Study.

2016–2017 KSU Women in Engineering Laboratory Experience Participant

High School

'22-'23

David Wen, Space Nuclear Propulsion and Nuclear Desalination, Blue Valley Northwest High School (KS).

DOE UNLP Undergraduate Scholarship (AY 2023-2024, 2024-2025)

Majoring in Nuclear Engineering at University of Michigan starting Fall 2023

2020-'23

Elijah Amos, Space Radiation Shielding Studies, Hampton Bays High School (NY).

Hampton Bays Science Research Program Participant

Majoring in History at Georgetown University starting Fall 2023

Teaching Experience

2025

NE 737, Intermediate Radiation Measurement Applications, *Instructor of Record*, KSU Alan Levin Department of Mechanical and Nuclear Engineering (MNE).
Spring 2025

2017–2024

NE 690, Radiation Protection and Shielding, *Instructor of Record*, KSU MNE.
Fall Semesters 2017–2024

2024

NE 691/891, Principles of/Advanced Radiation and Human Health, *Instructor of Record*, KSU MNE.
Spring 2024

2023

NE 737, Intermediate Radiation Measurement Applications, *Instructor of Record*, KSU MNE.
Spring 2023

2022

NE 891, Advanced Radiation and Human Health, *Instructor of Record*, KSU MNE.
Spring 2022 (first offering as a uniquely-numbered course)

2020-'22

ME 574, Interdisciplinary Industrial Design Projects 1, *Instructor of Record (Ethics Component)*, KSU MNE.
Fall 2020 (new course component), Spring 2021, Fall 2021, Spring 2022

2021

NE 495, Elements of Nuclear Engineering, *Instructor of Record*, KSU MNE.
Spring 2021

2019-'20

NE 620/860, Radiation and Human Health, *Instructor of Record*, KSU MNE.
Spring 2019 (new course), Spring 2020

2019	NE 495, Elements of Nuclear Engineering , <i>Instructor of Record</i> , KSU MNE. Fall 2019
2016–2018	NE 648, Nuclear Reactor Laboratory , <i>Instructor of Record</i> , KSU MNE. Spring Semesters 2016–2018
2017	ME 575, Interdisciplinary Industrial Design Projects 2 , <i>Instructor of Record</i> , KSU MNE. Spring 2017
2016	NE 495, Elements of Nuclear Engineering , <i>Guest Lecturer</i> , KSU MNE. Fall 2016
2016	ME 574, Interdisciplinary Industrial Design Projects 1 , <i>Instructor of Record</i> , KSU MNE. Fall 2016
2007	NE 250, Reactor Operations Laboratory , <i>Undergraduate Laboratory Instructor</i> , KSU MNE. Spring 2007, Fall 2007

Honors and Awards

2022	Big 12 Faculty Fellow , <i>Kansas State University</i> , 2022–2023 Academic Year. Guest of the Saha Lab of Radiation Biology at The University of Kansas Medical Center 12-21 July 2022
2022	American Nuclear Society Presidential Citation , <i>2022 ANS Annual Meeting</i> . For effective leadership addressing radiation issues for ANS, including the revision of Position Statement 41 “Health Effects of Low-Level Radiation.”
2021	Outstanding Division Service Award , <i>American Nuclear Society Radiation Protection & Shielding Division</i> .
2020	“CHP in the Spotlight” for October 2020 , <i>American Academy of Health Physics</i> .
2020	2019 Most Valued Reviewer , <i>Life Sciences in Space Research</i> . One of 10 selected by journal editors
2019	NASA Group Achievement Award , <i>Advanced Radiation Protection Thick Target GCR Shielding</i> .
2018	Zeldovich Medal for Scientific Commission F, Life Sciences as Related to Space , <i>Jointly awarded by Russian Academy of Sciences and Committee on Space Research of the International Council for Science (COSPAR)</i> .
2017	Highly Regarded Nuclear Engineering Professor , <i>Recognized by OnlineEngineeringPrograms.com</i> .
2017	Kansas State University College of Engineering Research Proposal Teamwork Award .
2015	NASA Group Achievement Award , <i>Advanced Exploration Systems RadWorks Project</i> .
2012	NASA Group Achievement Award , <i>Advanced Exploration Systems Deep Space Habitat Project</i> .

2008–2012	University of Florida Alumni Graduate Award.
2009–2010	NASA Graduate Student Researchers Program Fellowship. 2010–2011, Selected for funding; declined to accept full-time position as NASA JSC contractor
2008–2010	American Nuclear Society Graduate Scholarship. 2008–2009 Walter Meyer Scholarship 2009–2010 Vern R. Dapp Memorial Scholarship
2008	Honorable Mention, National Science Foundation Graduate Fellowship.
2008	Outstanding Senior, Kansas State University Department of Mechanical and Nuclear Engineering.
2008	Outstanding Senior, Kansas State University Department of Mathematics.
2006–2008	American Nuclear Society Undergraduate Scholarship. 2006–2007 Angelo F. Bisesti Memorial Scholarship 2007–2008 Joseph R. Dietrich Memorial Scholarship
2006–2008	Department of Energy Nuclear Engineering/Health Physics Scholarship.
2006–2008	National Academy for Nuclear Training Scholarship.
2003–2007	Kansas State University Putnam Scholarship.

Professional Service

Extramural

2024	Program Committee Member, 2025 National Council on Radiation Protection and Measurements (NCRP) Annual Meeting.
2024	Council Member, National Council on Radiation Protection and Measurements (NCRP).
2024	Reviewer, DOE Nuclear Energy University Program (NEUP) Consolidated Innovative Nuclear Research (CINR). FY2025, Research and Development, 2 Pre-Applications
2023	Member, Scientific Committee (SC) 2: Radiological Protection, International Organization for Standardization (ISO) Technical Committee (TC) 85: Nuclear Energy, Nuclear Technologies, and Radiological Protection.
2023	Member, Program Area Committee (PAC) 6: Radiation Measurements and Dosimetry, National Council on Radiation Protection and Measurements (NCRP).
2022	Treasurer, International Radiation Physics Society.
2021	Full Member, Environmental and Siting Consensus Committee, American Nuclear Society.
2021	Executive Committee Member, Radiation Protection and Shielding Division, American Nuclear Society. 2024–Present, Chair, Bylaws and Rules Subcommittee
2021	Rapid Response Taskforce Member, American Nuclear Society.
2020	Review Editor, Frontiers in Energy Research - Nuclear Energy.

2019

Associate Member, ANS-2.22 Working Group, Environmental Radiological Monitoring at Operating Nuclear Facilities, American Nuclear Society.

2017

Reviewer, Various peer-reviewed journals, including: Progress in Nuclear Energy, Nuclear Technology, Space Weather, Applied Radiation & Isotopes, Icarus, Life Sciences in Space Research, Advances in Space Research, Frontiers in Physics, Journal of Radiation Protection, Radiation & Environmental Biophysics, IEEE Transactions on Radiation and Plasma Medical Sciences, IEEE Transactions on Pattern Analysis and Machine Intelligence, Transactions of the American Nuclear Society, Journal of Radiation Research, Acta Astronautica, Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment, npj Microgravity, Instruments, and Nuclear Science and Technology Open Research.

2016

Associate Member, ANS-6.4.2 Working Group, Specification for Radiation Shielding Material, American Nuclear Society.

2016–2024

Graduate Fellowship Application Reviewer, NASA.

2016, NASA Space Technology Research Fellowship Program

2019, NASA Future Investigators in Earth and Space Science Technology (FINESST) Heliophysics Program

2021, 2023 & 2024, NASA Space Technology Graduate Research Opportunities (NSTGRO) Program

2024

Reviewer and Panelist, US Nuclear Regulatory Commission Distinguished Faculty Advancement Grant Program.

2023

Session Co-Chair, Dosimetry in Space Applications, 4th International Conference on Dosimetry and its Applications.

2023

Reviewer, Bankhead-Coley Cancer Research Program FY23-24 Funding Cycle, Florida Department of Health.

2023

Invited Reviewer, Recommendations on Postclosure Aspects of Generic Standards for the Permanent Disposal of Spent Nuclear Fuel and High-Level and Transuranic Radioactive Wastes in the United States, American Nuclear Society Special Committee on Generic Standards for Disposal of High-Level Radioactive Waste.

2023

Reviewer, NASA Space Technology Graduate Research Opportunities (NSTGRO).

2022

Session Co-Chair, Second Day Plenary, 14th International Conference on Radiation Shielding – Radiation Protection & Shielding Division Topical Meeting 2022 of American Nuclear Society.

2022

Invited Reviewer, Leveraging Advances in Modern Science to Revitalize Low-Dose Radiation Research in the United States, A Consensus Study Report of The National Academies of Sciences, Engineering, and Medicine (NASEM).

2020-'22

Technical Program Chair, Radiation Protection and Shielding Division, American Nuclear Society.

2020–2021, Chair-in-Training

2021–2022, Chair

2021

Reviewer, DOE Office of Science (Biological & Environmental Research) SBIR/STTR Program.

2017–2021

Vice Treasurer, *International Radiation Physics Society*.

2019–'21

Working Group on Revision to Position Statement 41 on Health Effects of Low Level Ionizing Radiation Exposure, *American Nuclear Society*.

2019–2020, Co-Chair

2020–2021, Chair

2019–'21

Secretary, Radiation Protection and Shielding Division, *American Nuclear Society*.

2020

Session Chair, Radiation Protection and Shielding: General-II, *2020 American Nuclear Society Virtual Winter Meeting*.

2020

Poster Judge, Alpha Nu Sigma Graduate Student Poster Competition, *2020 American Nuclear Society Virtual Winter Meeting*.

2020

Reviewer and Panelist, *US Nuclear Regulatory Commission Scholarship Program*.

2020

Session Chair, Computational Methods for Radiation Protection and Shielding, *2020 American Nuclear Society Annual Meeting*.

2019

Poster Judge, Alpha Nu Sigma Graduate Student Poster Competition, *2019 American Nuclear Society Winter Meeting & Nuclear Technology Expo*.

2019

Session Chair, Dosimetry in Space Applications, *3rd International Conference on Dosimetry and its Applications (ICDA-3)*.

2019

Reviewer, *41st Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*.

2018–2019

Member, Government Relations Committee, *Health Physics Society*.

2018

Panelist, *NASA Astrophysics Science SmallSat Studies (AS³)*.

2018

Session Chair, Contemporary Topics, *Health Physics Society 63rd Annual Meeting*.

2017

Session Chair, Dosimetry and Detector Applications II, *10th International Topical Meeting on Industrial Radiation and Radioisotope Measurement Applications (IR-RMA X)*.

2017

Session Judge, Radiation Protection and Shielding, Biology and Medicine, Accelerator Applications, *American Nuclear Society Student Conference 2017*.

2017

Reviewer, *NASA Experimental Program to Stimulate Competitive Research (EPSCoR)*.

Intramural

2023

Senator, *KSU Faculty Senate*, Representing Carl R. Ice College of Engineering.

2023–Present, Faculty Affairs Committee

2023

Department Representative, *Undergraduate Research Activities Committee*, Carl R. Ice College of Engineering.

2022

Member, *KSU Reactor Safeguards Committee*.

2018

Member, *KSU Situational Awareness Working Group*.

- 2024
Member, *KSU MNE Department Document Revision Committee.*
- 2024
Member, *KSU MNE Nuclear Engineering Faculty (Assistant/Associate) Search Committee.*
- 2018–2024
Member, *KSU MNE Undergraduate Program & ABET Assessment Committee.*
- 2023
Reviewer, *GRIPex: AI in the Disciplines Program*, KSU Game-changing Research Initiative Program.
- 2017–2023
Faculty Advisor, *KSU Alpha Nu Sigma.*
- 2016–2023
Faculty Advisor, *KSU American Nuclear Society Student Chapter.*
- 2021
Senior Design Sponsor, *KSU MNE*, Development of a Random Position Machine for Combined Exposure Studies.
- 2018
Member, *KSU TRIGA Mark II Nuclear Reactor Facility Supervisor Search Committee.*
- 2018
Senior Design Poster Evaluator, *KSU MNE.*
- 2017
Senior Design Sponsor, *KSU MNE*, X-Ray and Neutron Radiography with a DSLR Camera System.
- 2017
Ex Officio Member, *KSU Reactor Safeguards Committee.*
- 2017
Chair, *KSU TRIGA Mark II Nuclear Reactor Facility Manager and Supervisor Search Committees.*
- 2016
Judge, *KSU Research and the State Graduate Poster Forum.*
- 2016
Judge, *KSU College of Engineering Undergraduate Research Poster Forum.*
- 2007
Student Mentor, *KSU MNE*, ME 101, Introduction to Mechanical Engineering.

Affiliations

- 2022
Member, *Radiation Research Society.*
- 2020
Member, *IEEE Engineering in Medicine and Biology Society (EMBS).*
- 2018
Associate, *Committee on Space Research of the International Council for Science (COSPAR).*
- 2017
Member, *International Radiation Physics Society.*
2017–2021, Vice Treasurer
2022–Present, Treasurer

2016

Member, American Nuclear Society.

2005–2011, Student Member

2019–2021, Secretary of Radiation Protection and Shielding Division (RPSD)

2020–2021, RPSD Technical Program Chair-in-Training

2021–2022, RPSD Technical Program Chair

2016–Present, ANS-6.4.2 Standard Working Group Associate Member

2019–Present, ANS-2.22 Standard Working Group Associate Member

2021–Present, RPSD Executive Committee Member

2021–Present, Rapid Response Taskforce Member

2021–Present, Environmental and Siting Consensus Committee Full Member

2015

Member, American Academy of Health Physics.

2011

Life Member, K-State Alumni Association.

2009

Member, Health Physics Society.

2016–2024, Mid-America Chapter of the Health Physics Society Member (chapter inactive)

2018–2019, Government Relations Committee Member

2007

Member, Alpha Nu Sigma, Nuclear Engineering Honor Society.

2004

Member, Tau Beta Pi, Engineering Honor Society.

2008–2014

Member, American Association of Physicists in Medicine.

2008–2011

Member, University of Florida Society of Health and Medical Physics Students.

2010–2011, Treasurer

Professional Development and Other Activities

2021

Licensed Senior Reactor Operator, USNRC License No. SOP-504570, KSU TRIGA Mark II Nuclear Reactor Facility, Manhattan, KS, US.

2018

Security Clearance at TOP SECRET Level.

Security Clearance at SECRET Level held from 2013–2018

2017

KSU TRIGA Mark II Nuclear Reactor Facility Unescorted Access.

Previously held from 2005–2008

2015

Diplomate of the American Board of Health Physics.

Certified in the comprehensive practice of Health Physics

Recertified through December 31, 2027

2010

Passed American Board of Radiology Part I Examination in Radiologic Physics.

2010

Medical Physics Rotation, Mayo School of Health Sciences, Jacksonville, FL, US.

2005–2008

Licensed Reactor Operator, USNRC License No. OP-70465, KSU TRIGA Mark II Nuclear Reactor Facility, Manhattan, KS, US.

2007

Passed Fundamentals of Engineering (FE) Examination.