Meng-Jen (Vince) Wang, Ph.D.

Phone: 540-998-0330 **Email: vince.wang@utah.edu**

Summary

- Received Ph.D. degree in Nuclear Engineering from Virginia Polytechnic Institute and State University
- Proficient in nuclear reactor physics and radiation transport methods/analysis; nuclear reactor kinetics; nuclear fuel cycles for conventional and advanced nuclear energy systems; TRIGA reactor operation
- Former **senior reactor operator** at the University Utah TRIGA Reactor (UUTR)
- Experienced in research group management
- Nuclear Industry experience

Research and Working Experience

FROM AUGUST 2025 TO PRESENT

Assistant Professor / University of Utah, Salt Lake City, UT

Utah Nuclear Engineering Program (UNEP), Civil and Environmental Engineering Department

- Principle Investigator of the CRiTCEL Group
- Licensed Senior Reactor Operator (SRO) – U.S. NRC License Number: SOP-504703

FROM APRIL 2024 TO JULY 2025

Senior Nuclear Engineer / Subcritical Systems Inc, Austin, TX

- Responsible Engineer for lead cooled subcritical system depletion and decay analysis

FROM AUGUST 2024 TO APRIL 2025

Senior Nuclear Engineer / Radiant Nuclear Inc., Los Angeles, CA

- Responsible Engineer for Kaleidos micro-reactor neutron startup source, fueling plan, initial criticality, and kinetic parameter measurement.

FROM JULY 2023 TO JULY 2024

Assistant Professor / University of Nevada, Las Vegas, NV

Mechanical Engineering Department (Nuclear Engineering Focus)

- Leading a research group of 1 M.S. student and 4 undergraduate students

- Contribute approximately 7.6% of proposal funding submission in college of engineering in fiscal year of 2023 Fall – 2024 Spring
- Teaching Nuclear Engineering Classes
- Initiate the high performance computational capability in College of Engineering Office of Information Technology (OIT)
- Joint Appointment with Idaho National Laboratory

FROM APRIL 2022 TO DECEMBER 2023

Senior Reactor Operator / University of Utah, Salt Lake City, UT

University of Utah Training Reactor (UUTR), Utah Nuclear Engineering Facility (UNEF)

- Responsible for assisting management, maintenance, and daily operation of the 100 kW Utah TRIGA Reactor at the Utah Nuclear Engineering Facility (UNEF)
- **Licensed Senior Reactor Operator (SRO)** – **U.S. NRC License Number: SOP-504703**
- In charge of the UUTR Neutron Radiography System Design and Installation
- Provide TRIGA reactor operator training lessons
- Proficient in 10 CFR related regulatory activities
- Assisting management and execution of nuclear reactor system upgrade projects:
    1. "University of Utah TRIGA Reactor Control Console Upgrade", funded by the Department of Energy from October 2020 to October 2021
    2. "University of Utah TRIGA Reactor Cooling System Installation", funded by the Department of Energy from May 2021 to May 2022

FROM OCTOBER 2020 TO JULY 2023

Research Scientist / University of Utah, Salt Lake City, UT

Utah Nuclear Engineering Program (UNEP), Civil and Environmental Engineering Department

- Proposal writing for supporting existing research activities
- Teaching Utah Nuclear Engineering Program (UNEP) Classes
    1. Radiochemistry
    2. Health Physics
    3. Nuclear Principles
- Mentoring graduate students and serving as committee members
- Leading and supporting research projects:
    1. "Design and Installation of the University of Utah TRIGA Reactor Neutron Radiography System", funded by the University of Utah Nuclear Engineering Program from January 2020 to 2023 – **Role: Co-PI**
    2. Development of BSOLVE – a Runge-Kutta Feldberg method based nuclear reactor depletion calculation code
    3. Development of OJOYU – An S_N code cross-section generation utility code for NJOY21
    4. Nuclear Data Processing using NJOY21 for MCNP and S_N deterministic codes
    5. ^{135}Xe calibration source production and lifetime extension using TRIGA reactor for Comprehensive Test Ban Treaty (CTBT)
    6. Light Water Reactor and TRIGA Reactor core depletion analysis using SERPENT, MCNP, SCALE, and PENTRAN/BSOLVE
    7. Neutron, neutron-induced gamma, and prompt fission gamma material dose calculation in TRIGA reactor irradiation experiments

FROM OCTOBER 2019 TO SEPTEMBER 2020

Postdoctoral Researcher / University of Utah, Salt Lake City, UT

Utah Nuclear Engineering Program (UNEP), Civil and Environmental Engineering Department

- Proposal writing for supporting existing research activities
- Teaching Utah Nuclear Engineering Program (UNEP) Classes
    1. Health Physics
- Mentoring graduate students and serving as a committee member
- Perform independent research and technical support in Utah Nuclear Engineering Facility (UNEF)
    1. HPGe detector characterization using computation and experiment
    2. University of Utah TRIGA Reactor (UUTR) core flux characterization using MCNP, SCALE, and PENTRAN
    3. Recovery of the UNEF 2 Ci PuBe source and 1.8 Ci AmBe source – dose rate calculation for radiation safety

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Entrepreneurial Experience

FROM JULY 2025 TO PRESENT

President and Principle Engineer / MW Nuclear LLC, Salt Lake City, UT

A Nuclear Engineering Consultant based company

- Provide neutronics, shielding, depletion, and reactor safety related consultant activities

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Education

DECEMBER 2019

Ph.D. / Virginia Tech, Falls Church, VA

- Ph.D. in Nuclear Engineering
- Dissertation: Development of a Novel Detector Response Formulation and Algorithm in RAPID and its Benchmarking
- Advisor: Alireza Haghighat, Ph.D.

JULY 2011

M.S. / National Tsing-Hua University, Hsinchu, Taiwan

- M.S. in Nuclear Engineering
- Thesis: Computer simulation and burnup characteristics analysis of the HTR-10 high temperature gas-cooled reactor
- Advisor: Jenq-Horng Liang, Ph.D.

JUNE 2009

B.S. / Fu-Jen Catholic University, New Taipei City, Taiwan

- B.S. in Physics

Management Experience

- Responsible Engineer in multiple cross-discipline projects at Radiant Nuclear Industries
- Principal Investigator of the Vegas Transport Theory Group (VTTG) at University of Nevada Las Vegas, July 2023 to July 2024,
- Assist management of University of Utah TRIGA Reactor, Jan. 2020 to July 2023,
- Manager of CRiTCEL research group (University of Utah), PI: Dr. Glenn E. Sjoden, Oct. 2019 to July 2023,
- Manager of Ion implantation Laboratory (National Tsing Hua University), PI: Dr. Jenq-Horng Liang, Aug. 2010 to Feb. 2013.

Research Proposal Awarded

- "Cable-Driven Parallel Robots for Radiological Decommissioning Surveys", funded by U.S. NRC from 2025 to 2028 – **Role: Co- Principal Investigator** (Amount: 500,000)
- "Nexus of Neutronics-Thermal Fluid Analysis for Optimizing Centrifugal Nuclear Thermal Propulsion", funded by NASA, from August 2024 to May 2025 – **Role: Principal Investigator** (Amount: 50,000)
- "^{133m}Xe Calibration Source Production Campaign Phase II", funded by Idaho National Laboratory/Battelle Energy Alliance, LLC (BEA) from July 2024 to December 2024 – **Role: Principal Investigator** (Amount: 16,010)
- "^{133m}Xe Calibration Source Production Campaign", funded by Idaho National Laboratory/Battelle Energy Alliance, LLC (BEA) from July 2023 to December 2023 – **Role: Principal Investigator** (Amount: $20,161)
- "BAD REACTOR", funded by Department of Energy Small Business Innovation Research (SBIR) program from October 2023 to June 2024 – **Role: Principal Investigator**, in collaboration with Charles River Laboratory and the University of Utah. (Amount: $8,000)
- "^{135}Xe Calibration Source Production Optimization Using Washington State University Reactor", funded by Idaho National Laboratory/Battelle Energy Alliance, LLC (BEA) with PI: Glenn Sjoden (UU) from May 2022 to February 2023 – Role: Key Personnel
- "^{135}Xe Calibration Source Production Optimization", funded by Idaho National Laboratory/Battelle Energy Alliance, LLC (BEA) with PI: Glenn Sjoden (UU) from May 2020 to August 2021 – Role: Key Personnel

Publications

Journal Articles

- J. Johnson, G. Sjoden, T. Kimball, **M.-J. Wang**, "Use of Different Reactor Physics Models and CADIS Accelerated MCNP to Yield a 1 MeV Equivalent Flux for Neutron Damage", IEEE Nuclear Science (2025) – Submitted
- T. Kimball, G. Sjoden, **M.-J. Wang**, "Direct Multigroup Cross Sections for Deterministic Homogenized TRISO Fuel Calculations", Nuclear Science and Engineering (2025)
- C. K. Holiski, L. Hoekstra, N. Becker, H. Hennkens, M. Embree, **M.-J. Wang**, G. Sjoden, T. Mastren, "Exploration of Synergic Solvent Extraction and Extraction Chromatographic Materials for the Separation of ^{161}Tb from Enriched ^{160}Gd Targets", Journal of Chromatography A (2025)

- C. Holiski, A. Bender, P. Monte, H. Hennkens, **M.-J. Wang**, G. Sjoden, and T, Mastren, "The Production and Separation of ^{161}Tb with High Specific Activity at the University of Utah", Applied Radiation and Isotopes (2024)
- C. K. Holiski, R. Payne, **M.-J. Wang**, G. E. Sjoden, T. Mastren, "Adsorption of Terbium (III) on DGA and LN Resins: Thermodynamics, Isotherms, and Kinetics", Journal of Chromatography A (2024)
- T. Kimball, G. E. Sjoden, **M.-J. Wang**, and M. Watrous, "Computational Optimization of ^{133m}Xe Production in a TRIGA Reactor", Nuclear Technology (2024)
- C. Holiski, T. Mastren, G. Sjoden, and **M.-J. Wang**, "TRIGA Reactor Production and Synergistic Separation of ^{161}Tb from Enriched ^{160}Gd Targets Using Novel Extraction Chromatographic Resins," Nuclear Medicine and Biology 126, 108413 (2023)
- C. Olson, J. Snow, **M.-J. Wang**, G. Sjoden, E. Cazalas, "An Experimental Validation of Spectrally Matched Neutron Detection Systems using ^{3}He and BF_3", Nuclear Technology (2023)
- T. W. Hall, **M.-J. Wang**, G. Sjoden, C. Hines, and M. Watrous, "Computationally Optimized Irradiation Chamber Design for the Production of ^{135}Xe in Washington State University TRIGA Reactor", Nuclear Science and Engineering (2023)
- T. W. Hall, **M.-J. Wang**, G. Sjoden, and M. Watrous, "Computational and Experimental Optimization of ^{135}Xe Production in Calibration Sources", Journal of Environmental Radioactivity, Vol. 244-245, 106814 (2022)
- M. Hartos, **M.-J. Wang**, and G. Sjoden, "Design of an Ultra-Compact Imaging Chamber and Radiation Beamstop for a Neutron Radiography System Employing Particle Transport", Vol. 386, 111570, Nuclear Engineering and Design. (2022)
- M. Hartos, **M.-J. Wang**, G. E. Sjoden, "Computational Design and Optimization of a Neutron Imaging Beamline Using Monte Carlo and Deterministic S_N Radiation Transport for the Utah TRIGA Reactor", Vol. 382, 111374, Nuclear Engineering and Design. (2021)
- **M.-J. Wang**, G.E. Sjoden, A. Foley, S. Mohanty, "3D S_N and Monte Carlo Calculations of the Utah TRIGA Reactor Core using PENTRAN and MCNP6", Vol. 155, Annals of Nuclear Energy. (2021)
- **M.-J. Wang**, G.E. Sjoden, "Experimental and Computational Dose Rate Evaluation using S_N and Monte Carlo Method for a Packaged ^{241}AmBe Neutron Source", Nuclear Science and Engineering. (2021)
- **M.-J. Wang**, R.-J. Sheu, J.-J. Peir, J.-H. Liang, "Criticality calculations of the HTR-10 pebble-bed reactor with SCALE6/CSAS6 and MCNP5," Technical Note, Annals of Nuclear Energy, Volume 64, Pages 1-7 (2014).
- **M.-J. Wang**, J.-J. Peir, R.-J. Sheu, J.-H. Liang, "Effects of Geometry Homogenization on the HTR-10 Criticality Calculations," Nuclear Engineering and Design. (Transaction from HTR-2012)
- **M.-J. Wang**, J.-J. Peir, D.-S. Chao, J.-H. Liang, "Effects of Homogeneous Geometry Models in Simulating the Fuel Balls in HTR-10," Journal of Power and Energy Systems, Volume 6, Issue 3, (2012). (Transaction from ICONE-19)
- **M.-J. Wang**, J.-J. Peir, C.-W. Chi, J.-H. Liang, "A Parametric Study of Fuel Lattice Design for HTR-10," Technical Note, Journal of Engineering for Gas Turbines and Power-Transactions of the ASME, Volume 133, Issue 8, (2011). (Transaction from ICONE-18)

Conference Papers

- T. Kimball, G. E. Sjoden, and **M.-J. Wang**, "Direct Multi-group Cross-sections via NJOY/ETEN For TRISO Fuel Compacts," American Nuclear Society Annual Meeting 2024, Las Vegas, NV (2024)
- **M.-J. Wang**, G. E. Sjoden, C. Hines, "3D Full Core Depletion Analysis Using BSOLVE+MCNP6 Analysis of the Washington State University Reactor", International Conference on Physics of Reactors (PHYSOR 2024), San Francisco, CA (2024).
- **M.-J. Wang**, M. Simpson, and G. E. Sjoden, "Direct Multi-group Cross-sections via NJOY+OJOYU for PWR and FLiBe-MSR Reactor Systems," American Nuclear Society Annual Meeting 2023, Indianapolis, IN (2023)

- C. Holiski, T. Mastren, G. Sjoden, **M.-J. Wang**, "TRIGA Reactor Production and Synergistic Separation of ^{161}Tb from Enriched ^{160}Gd Targets Using Novel Extraction Chromatographic Resins," the 25th iSRS meeting, Honolulu, Hawaii (2023)
- T. Hall, **M.-J. Wang,** G. E. Sjoden, "Adjoint-Informed Synthesis of Steady State Source Analogs in Deterministic Transport Models," The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2023), Niagara Falls, Ontario, Canada (2023).
- **M.-J. Wang,** T. Hall, G. E. Sjoden, et. al, "Experimental Benchmark of BSOLVE using the WSU TRIGA Reactor," The International Conference on Mathematics and Computational Methods Applied to Nuclear Science and Engineering (M&C 2023), Niagara Falls, Ontario, Canada (2023).
- T. Hall, **M.-J. Wang**, G. E. Sjoden, "Automated Physics-Based Nuclide Selection with "burnAMP" for Fuel Burnup and Depletion", INMM 63rd Annual Meeting (2022).
- **M.-J. Wang**, G. E. Sjoden, T. W. Hall, "Importance of 3-D S_N Depletion in Non-proliferation using BSOLVE", PHYSOR 2022: Making Virtual a Reality - Advancements in Reactor Physics to Leap Forward Reactor Operation and Deployment, Pittsburg, Pennsylvania (2022).
- G. E. Sjoden, **M.-J. Wang**, Nick Kurtyka, "BSOLVE: Energy Dependent Depletion with Algorithm-adapted Error Control for 3-D Transport", 2021 ANS Annual Winter Meeting, Washington DC, U.S.A. (2021)
- M. Hartos, **M.-J. Wang**, G. E. Sjoden, "3-D Monte Carlo vs S_N Deterministic Radiation Transport Methods Supporting an Optimized Neutron Imaging Source at the Utah TRIGA Reactor", International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering, Rayleigh, North Carolina, U.S.A. (2021).
- **M.-J. Wang**, G. E. Sjoden, et. al, "Assessment of an HPGe Detector using S_N and Monte Carlo Transport with Experiments", ICRS 14/RPSD-2021, 14th International Conference on Radiation Shielding and, 21st Topical Meeting of the Radiation Protection and Shielding Division, Seattle, Washington, U.S.A. (2021)
- K. Powell, M. Lund, **M.-J. Wang**, Y. Qian, D. Magginetti, M. Reese, E. Cazalas, G. Sjoden, H. Yoon, "Photovoltaic Response of CdS/CdTe Thin-film Solar Cells under Controlled Neutron Radiation in a TRIGA Reactor", 62nd Electronic Materials Conference, Columbus, Ohio, U.S.A. (2020)
- **M.-J. Wang**, G. E. Sjoden, "UUTR Unit Cell Calculations with PENTRAN (S_N) and MCNP6 for Activation Foil Validation Studies", 2020 ANS Annual Meeting, Phoenix, Arizona, U.S.A. (2020)
- **M.-J. Wang**, A. Haghighat, "Experimental Benchmark for the DRF Methodology using the VENUS-3 Problem", 2019 ANS Winter Meeting and Nuclear Technology Expo, Washington DC, U.S.A. (2019)
- **M.-J. Wang**, A. Haghighat, "DRF Methodology for Reactor Pressure Vessel Dosimetry and its Uncertainties", International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering, Portland, Oregon, U.S.A. (2019).
- V. Mascolino, A. Haghighat, N. Polys, **M.-J. Wang**, and S. Rajamoham, "A Collaborative Virtual Reality System (VRS) with X3D Visualization for RAPID", International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering, Portland, Oregon, U.S.A. (2019).
- **M.-J. Wang**, A. Haghighat, "A Novel Detector Response Formulation for RAPID", PHYSOR 2018: Reactors Physics paving the way towards more efficient systems Cancun, Mexico (2018).
- A. Haghighat, W. Walters, N. Roskoff, V. Mascolino, **M.-J. Wang**, "RAPID Code System", ANS RPSD 2018 – 20th Topical Meeting of the Radiation Protection & Shielding Division of ANS, Sante Fe, New Mexico, USA (2018) - Poster.
- A. Haghighat, N. Roskoff, V. Mascolino, **M.-J. Wang**, W. Walters, "RAPID Code Formulation, Benchmarking, and Its VRS", PHYTRA4 – The Fourth International Conference on Physics and Technology of Reactors and Applications. Marrakech, Morocco, September 17-19, 2018, on CD-ROM, GMTR, Rabat, Morocco (2018).
- J. R. Mansell, J. Berry, J. Quint, **M.-J. Wang**, "Optimizing MMRTG Fueling and Testing for Future Campaigns", Nuclear and Emerging Technology for Space (NETS), Las Vegas, Nevada, USA (2018).
- **M.-J. Wang**, V. Mascolino, A. Haghighat, N. Roskoff, "Real-Time SNF Cask External Dose Calculation Using RAPID", International Conference on Mathematics & Computational Methods Applied to Nuclear Science & Engineering, Jeju, Korea (2017)

- K. Benensky, **M.-J. Wang**, J. Nieminen, M. Eades, S. Howe, “Preliminary Analysis of Low Enriched Uranium (LEU) Ultra High Temperature Nuclear Thermal Rockets Capable of 1100s Specific Impulse,” Nuclear and Emerging Technologies for Space (NETS), Huntsville, Alabama, U.S.A. (2016).
- S.-C. Wu, **M.-J. Wang**, J.-J. Peir, M.-H. Li, J.-H. Liang, "An Investigation of Neutron Spectra in HTR-10," The 18th Pacific Basin Nuclear Conference (PBNC 2012), BEXCO, Busan, Korea, (2012).
- C.-W. Chi, Y.-M. Ferng, B.-S. Pei, **M.-J. Wang**, J.-H. Liang, "Investigating Air Ingress Accident in HTR-Core by CFD," 2011 ANS Annual Meeting, Hollywood, Florida, U.S.A. (2011).

Invited Articles and Other Publications

- **M.-J. Wang**, G. E. Sjoden, “An Essential Need for HPC in Nuclear Engineering Applications”, University of Utah Center for High Performance Computing Spring 2022 Newsletter. (2022).

Services, Synergistic Activities, and Membership

- Session Chair, ANS Summer 2024
- Reviewer, DOE SBIR Program Proposals
- Reviewer, Annals of Nuclear Energy, MDPI Electronics, IEEE Transaction on Nuclear Science
- Reviewer/Session Chair, PHYSOR 2022 Conference
- Panel Member for Scope Expansion, Nuclear Science and Engineering Journal (2022)
- Committee Member of ANS Standard (2021 – 2023)
- American Nuclear Society Member (2014 – present)
- University of Utah TRIGA Reactor Safety Committee non-voting Attendee (2020 – 2023)
- Speaker of 50th Anniversary of Virginia Tech NCR Campus – Introducing the University President (https://video.vt.edu/media/50th+Anniversary+of+Graduate+Education+in+the+NCR/0_od1byeny)
- Graduate Student Committee served or currently serving: Michael Hartos (Ph.D., University of Utah), Joseph Johnson (Ph.D., University of Utah), Taylor Kimball (Ph.D., University of Utah), Codey Olson (Ph.D. University of Utah), Haven Searcy (M.S., UNLV), Syed Ahemd (M.S., UNLV)
- University of Utah Nuclear Engineering Program Ph.D. qualifier exam problems writer

Teaching

- University of Nevada Las Vegas
  - Undergraduate Level Fundamental Nuclear Engineering – Mechanical Engineering Department, 2024 Spring.
  - Graduate Level Reactor Physics – Mechanical Engineering Department, 2024 Spring.
  - Graduate Level Reactor Physics – Mechanical Engineering Department, 2023 Falls.
- University of Utah
  - Undergraduate Level Radiochemistry – Nuclear Engineering Program, 2025 Falls.
  - Undergraduate Nuclear Principles – Nuclear Engineering Program, 2023 Spring.
  - Undergraduate Level Radiochemistry – Nuclear Engineering Program, 2022 Falls.
  - Undergraduate Level Radiochemistry – Nuclear Engineering Program, 2022 Spring.
  - Graduate Level Health Physics – Nuclear Engineering Program, 2021 Falls.
  - Graduate Level Health Physics – Nuclear Engineering Program, 2020 Falls.

Invited Talk

- University of Nevada Reno Mechanical Engineering Department, October 20th, 2023.