

Kathryn D. Huff

CONTACT INFORMATION	Blue Waters Assistant Professor <i>University of Illinois, Urbana-Champaign</i> <i>Nuclear, Plasma, and Radiological Engineering</i> <i>Affiliate Faculty, National Center for Supercomputing Applications</i> <i>Affiliate Faculty, Computational Science and Engineering</i>	mobile: (281) 734-1342 e-mail: katyhuff@gmail.com website: arfc.github.io
RESEARCH INTERESTS	Advanced nuclear reactors and fuel cycles, multi-physics simulation, nuclear fuel cycle analysis, scientific computation.	
PHD	University of Wisconsin - Madison, NUCLEAR ENGINEERING • An Integrated Used Fuel Disposition and Generic Repository Model for Fuel Cycle Analysis • Advisor: Professor Paul P.H. Wilson	Aug 2008 – Aug 2013
BA	University of Chicago, PHYSICS • Celestial Gain Calibrations of QUIET Telescope Polarimeters	Aug 2004 – Jun 2008
RESEARCH EXPERIENCE	University of Illinois at Urbana-Champaign, Urbana, IL <i>Assistant Professor, Nuclear Plasma and Radiological Engineering</i> <i>Blue Waters Asst. Prof., National Center for Supercomputing Applications</i> Principal investigator, advanced reactors and fuel cycles group.	Aug 2016 – Present Aug 2016 – Present
	University of California - Berkeley, NE Dept., Berkeley, CA <i>Postdoctoral Scholar, Nuclear Science and Security Consortium</i> <i>Data Science Fellow, Berkeley Institute for Data Science</i> Developing computational tools and multiphysics models for advanced reactor safety analysis.	Sep 2013 – Jul 2016 Aug 2014 – Jul 2016
	Argonne National Laboratory, Argonne, IL <i>Laboratory Graduate Research Appointee, Used Fuel Disposition Campaign</i> Developed a used fuel disposition and generic repository computational model.	Jun 2011 – Aug 2013
	University of Wisconsin - Madison, NEEP Dept., Madison, WI <i>Graduate Research Assistant, Computational Nuclear Engineering Research Group</i> Developed and applied CYCLUS, a nuclear fuel cycle systems analysis tool.	Jun 2008 – Aug 2013
	Idaho National Laboratory, Idaho Falls, ID <i>Graduate Research Assistant, Systems Analysis Campaign</i> Developed software functions and requirements for the Fuel Cycle Simulator concept.	Jun – Aug 2010
	Kavli Institute For Cosmological Physics, Chicago, IL <i>Research Assistant, Laboratory for Astrophysics and Space Research</i> Programmed & machined instrumentation. Planned protocol for QUIET polarimeter calibration.	Jan 2005 – Jun 2008
	Universidad de Chile, Physics Dept., Santiago, Chile <i>Research Assistant, Chicago-Chile Research Exchange Program</i> Constructed and operated a far-from-equilibrium granular materials experiment.	Jun – Sep 2006
	Los Alamos Neutron Science Center, Los Alamos, NM <i>Research Assistant, LANSCE-3</i> Applied digital filtration algorithms and MCNPX models to experimental data.	Jun – Sep 2004 May – Aug 2003
HONORS AND AWARDS	Stanley H. Pierce Award, UIUC Engineering Council American Nuclear Society, Oestmann Professional Women's Achievement Award AE3, Collins Scholars Program Graduate NPRE, Students Award for Excellence in Undergraduate Teaching UIUC, Teachers Ranked as Excellent American Nuclear Society, Young Member Excellence Award	2019 2017 2017 2017 F 2016, S 2020 2016

National Energy Research Scientific Computing Allocation, Senior Investigator	2015–2016
Data Science Fellowship, Berkeley Institute for Data Science, UC Berkeley	2014–2016
Nuclear Science and Security Consortium Postdoctoral Fellowship, UC Berkeley	2013–2016
DOE Office of Science Laboratory Graduate Appointment, Argonne National Lab	2011–2013
Roy G Post Foundation Nuclear Waste Management Graduate Scholarship	2011
John Randall Memorial Scholarship, American Nuclear Society FCWMD	2009
J.A McDeavitt Scholarship, University of Chicago, Chicago, IL	2007–2008
University Scholar Award, University of Chicago, Chicago, IL	2004–2008
Los Alamos Distinguished Student Performance Award, Los Alamos National Lab	2004

GRANTS
AWARDED

Nuclear Science and Security Consortium *Period:* 2021–2026
Source: DOE-NNSA Office of DNN R&D *Award Total:* \$25,000,000
Role: Consortium Co-PI, UIUC PI, Thrust Area Lead *Huff Allocation:* **\$625,000**

Evaluation of micro-reactor requirements and performance in an existing well-characterized micro-grid *Period:* 2020–2022
Source: DOE-NEUP *Award Total:* \$800,000
Role: Co-PI *Huff Allocation:* **\$265,000**

Enabling Load Following Capability in the Transatomic Power MSR *Period:* 2018–2021
Source: ARPA - E - MEITNER *Award Total:* **\$999,694**
Role: **Principal Investigator** *Huff Allocation:* \$205,000

US Research Software Sustainability Institute (URSSI) *Period:* 2017–2018
Source: NSF - OAC - SI2 - S2I2 Conceptualization *Award Total:* \$499,999
Role: Senior Personnel *Huff Allocation:* N/A

Dynamic Transition Analysis with TIMES *Period:* 2018–2019
Source: I²CNER *Award Total:* \$76,359
Role: Co-PI *Huff Allocation:* **\$76,359**

Investigation of Agricultural Uses of Nuclear Waste Heat *Period:* 2017–2018
Source: Exelon *Award Total:* \$151,257
Role: Co-PI *Huff Allocation:* **\$11,678**

Consortium for Verification Technology *Period:* 2015–2020
Source: DOE-NNSA Office of DNN R&D *Award Total:* \$25,000,000
Role: Consortium Co-PI, UIUC PI, CVT Investigator *Huff Allocation:* **\$347,000**

Consortium for Nonproliferation Enabling Capabilities *Period:* 2014–2019
Source: DOE-NNSA Office of DNN R&D *Award Total:* \$25,000,000
Role: Consortium Co-PI, UIUC PI, Thrust Area Lead *Huff Allocation:* **\$648,000**

Collaborative, Open-Source Curriculum Development *Period:* 2017–2018
Source: UIUC Strategic Instructional Innovations Program *Award Total:* \$19,347
Role: **Principal Investigator** *Huff Allocation:* **\$13,000**

REU Site: INCLUSION at U. Illinois *Period:* 2017–2020
Source: NSF - ACI *Award Total:* \$380,036
Role: Senior Personnel *Huff Allocation:* N/A

Demand-Driven Cynamore Archetypes *Period:* 2016–2019
Source: DOE, NEUP R&D *Award Total:* \$800,000
Role: Co-PI *Huff Allocation:* **\$395,066**

BOOKS

[1] A. M. Scopatz and **K. D. Huff**. *Effective computation in physics: Field guide to research with python*. O'Reilly Media, Sebastopol, CA, 1 edition, May 2015. URL: <http://shop.oreilly.com/product/0636920033424.do>

BOOK
CHAPTERS

[2] **K. Huff**. Chapter One - Economics of Advanced Reactors and Fuel Cycles. In H. Bindra, editor, *Storage and Hybridization of Nuclear Energy*, volume 1, pages 1–20. Science & Technology Books Elsevier, Inc., Cambridge, MA, United States, 1 edition, Jan. 2019. URL: <http://>

- [3] **K. Huff**. Case Study: Cyclus Project. In J. Kitzes, F. Imamoglu, and D. Turek, editors, *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*, volume 1. University of California Press, University of California, Berkeley, 1 edition, 2017. URL: <https://www.ucpress.edu/book.php?isbn=9780520294752>
- [4] **K. Huff**. Lessons Learned. In J. Kitzes, F. Imamoglu, and D. Turek, editors, *The Practice of Reproducible Research: Case Studies and Lessons from the Data-Intensive Sciences*, volume 1. University of California Press, University of California, Berkeley, 1 edition, 2017. URL: <https://www.ucpress.edu/book.php?isbn=9780520294752>
- [5] O. Ashraf, A. Rykhlevskii, G. V. Tikhomirov, and **K. D. Huff**. Preliminary design of control rods in the single-fluid double-zone thorium molten salt reactor (SD-TMSR). *Annals of Nuclear Energy*, 152:108035, Mar. 2021. URL: <http://www.sciencedirect.com/science/article/pii/S0306454920307313>, doi:10.1016/j.anucene.2020.108035
- [6] O. Ashraf, A. Rykhlevskii, G. V. Tikhomirov, and **K. D. Huff**. Strategies for thorium fuel cycle transition in the SD-TMSR. *Annals of Nuclear Energy*, 148:107656, Dec. 2020. URL: <http://www.sciencedirect.com/science/article/pii/S0306454920303546>, doi:10.1016/j.anucene.2020.107656
- [7] E. A. Miernicki, A. L. Heald, **K. D. Huff**, C. S. Brooks, and A. J. Margenot. Nuclear waste heat use in agriculture: History and opportunities in the United States. *Journal of Cleaner Production*, 267:121918, Sept. 2020. URL: <http://www.sciencedirect.com/science/article/pii/S095965262031965X>, doi:10.1016/j.jclepro.2020.121918
- [8] G. J. Chee, R. E. F. Agosta, J. W. Bae, R. R. Flanagan, A. M. Scopatz, and **K. D. Huff**. Demand-Driven Deployment Capabilities in Cyclus, a Fuel Cycle Simulator. *Nuclear Technology*, 0(0):1–22, July 2020. doi:10.1080/00295450.2020.1753444
- [9] A. Chaube, A. Chapman, Y. Shigetomi, **K. Huff**, and J. Stubbins. The Role of Hydrogen in Achieving Long Term Japanese Energy System Goals. *Energies*, 13(17):4539, Sept. 2020. Number: 17 Publisher: Multidisciplinary Digital Publishing Institute. URL: <https://www.mdpi.com/1996-1073/13/17/4539>, doi:10.3390/en13174539
- [10] J. W. Bae, A. Rykhlevskii, G. Chee, and **K. D. Huff**. Deep learning approach to nuclear fuel transmutation in a fuel cycle simulator. *Annals of Nuclear Energy*, 139:107230, May 2020. URL: <http://www.sciencedirect.com/science/article/pii/S0306454919307406>, doi:10.1016/j.anucene.2019.107230
- [11] O. Ashraf, A. Rykhlevskii, G. Tikhomirov, and **K. D. Huff**. Whole core analysis of the single-fluid double-zone thorium molten salt reactor (SD-TMSR). *Annals of Nuclear Energy*, 137:107–115, Mar. 2020. URL: <http://www.sciencedirect.com/science/article/pii/S0306454919306255>, doi: <https://doi.org/10.1016/j.anucene.2019.107115>
- [12] M. Kamuda, J. Zhao, and **K. Huff**. A comparison of machine learning methods for automated gamma-ray spectroscopy. *Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 954:161385, Feb. 2020. URL: <http://www.sciencedirect.com/science/article/pii/S0168900218313779>, doi:10.1016/j.nima.2018.10.063
- [13] J. W. Bae, C. E. Singer, and **K. D. Huff**. Synergistic spent nuclear fuel dynamics within the European Union. *Progress in Nuclear Energy*, 114:1–12, July 2019. URL: <http://www.sciencedirect.com/science/article/pii/S014919701930037X>, doi:10.1016/j.pnucene.2019.02.001
- [14] J. W. Bae, J. L. Peterson-Droogh, and **K. D. Huff**. Standardized verification of the Cyclus fuel cycle simulator. *Annals of Nuclear Energy*, 128:288–291, June 2019. URL: <http://www.sciencedirect.com/science/article/pii/S0306454919300179>, doi:10.1016/j.anucene.2019.01.014
- [15] A. Rykhlevskii, J. W. Bae, and **K. D. Huff**. Modeling and simulation of online reprocessing in the thorium-fueled molten salt breeder reactor. *Annals of Nuclear Energy*, 128:366–379, June 2019. URL: <http://www.sciencedirect.com/science/article/pii/S0306454919300350>, doi:10.1016/j.anucene.2019.01.030

- [16] A. Lindsay, G. Ridley, A. Rykhlevskii, and **K. Huff**. Introduction to Moltres: An application for simulation of Molten Salt Reactors. *Annals of Nuclear Energy*, 114:530–540, Apr. 2018. URL: <https://linkinghub.elsevier.com/retrieve/pii/S0306454917304760>, doi:10.1016/j.anucene.2017.12.025
- [17] A. M. Smith, K. E. Niemeyer, D. S. Katz, L. A. Barba, G. Githinji, M. Gymrek, **K. D. Huff**, C. R. Madan, A. C. Mayes, K. M. Moerman, P. Prins, K. Ram, A. Rokem, T. K. Teal, R. V. Guimera, and J. T. Vanderplas. Journal of Open Source Software (JOSS): design and first-year review. *PeerJ Computer Science*, 4:e147, Feb. 2018. URL: <https://peerj.com/articles/cs-147>, doi:10.7717/peerj-cs.147
- [18] A. Lindsay and **K. Huff**. Moltres: finite element based simulation of molten salt reactors. *The Journal of Open Source Software*, 3(21):1–2, Jan. 2018. doi:10.21105/joss.00298
- [19] A. Allen, C. Aragon, C. Becker, J. Carver, A. Chis, B. Combemale, M. Croucher, K. Crowston, D. Garijo, A. Gehani, C. Goble, R. Haines, R. Hirschfeld, J. Howison, **K. Huff**, C. Jay, D. S. Katz, C. Kirchner, K. Kuksenok, R. Lämmel, O. Nierstrasz, M. Turk, R. v. Nieuwpoort, M. Vaughn, and J. J. Vinju. Engineering Academic Software (Dagstuhl Perspectives Workshop 16252). *Dagstuhl Manifestos*, 6(1):1–20, 2017. URL: <http://drops.dagstuhl.de/opus/volltexte/2017/7146>, doi:10.4230/DagMan.6.1.1
- [20] **K. Huff**. Rapid methods for radionuclide contaminant transport in nuclear fuel cycle simulation. *Advances in Engineering Software*, 114:268–281, Dec. 2017. doi:10.1016/j.advengsoft.2017.07.006
- [21] C. Andreades, A. T. Cisneros, J. K. Choi, A. Y. Chong, M. Fratoni, S. Hong, L. R. Huddar, **K. D. Huff**, J. Kendrick, D. L. Krumwiede, M. Laufer, M. Munk, R. O. Scarlat, X. Wang, N. Zwiebaum, E. Greenspan, and P. Peterson. Design Summary of the Mark-I Pebble-Bed, Fluoride Salt-Cooled, High-Temperature Reactor Commercial Power Plant. *Nuclear Technology*, 195(3):222–238, Sept. 2016. URL: <http://www.ans.org/pubs/journals/nt/a.38935>, doi:10.13182/NT16-2
- [22] **K. D. Huff**, M. J. Gidden, R. W. Carlsen, R. R. Flanagan, M. B. McGarry, A. C. Opotowsky, E. A. Schneider, A. M. Scopatz, and P. P. H. Wilson. Fundamental concepts in the Cyclus nuclear fuel cycle simulation framework. *Advances in Engineering Software*, 94:46–59, Apr. 2016. arXiv: 1509.03604. URL: <http://www.sciencedirect.com/science/article/pii/S0965997816300229>, doi:10.1016/j.advengsoft.2016.01.014
- [23] G. V. Wilson, D. A. Aruliah, C. T. Brown, N. P. Chue Hong, M. Davis, R. T. Guy, S. H. D. Haddock, **K. D. Huff**, I. M. Mitchell, M. D. Plumbley, B. Waugh, E. P. White, and P. Wilson. Best Practices for Scientific Computing. *PLoS Biol*, 12(1):e1001745, Jan. 2014. URL: <http://dx.doi.org/10.1371/journal.pbio.1001745>, doi:10.1371/journal.pbio.1001745
- [24] M. G. Clerc, P. Cordero, J. Dunstan, **K. D. Huff**, N. Mujica, D. Risso, and G. Varas. Liquid-solid-like transition in quasi-one-dimensional driven granular media. *Nature Physics*, 4(3):249–254, Mar. 2008. URL: <http://dx.doi.org.ezproxy.library.wisc.edu/10.1038/nphys884>, doi:10.1038/nphys884
- REFEREED
CONFERENCE
PROCEEDINGS [25] B. R. Betzler, A. Rykhlevskii, A. Worrall, and **K. D. Huff**. Impacts of Fast-Spectrum Molten Salt Reactor Characteristics on Fuel Cycle Performance. In *Proceedings of GLOBAL International Fuel Cycle Conference*, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=46968>
- [26] G. Chee, J. W. Bae, **K. D. Huff**, R. R. Flanagan, and R. Fairhurst. Demonstration of Demand-Driven Deployment Capabilities in Cyclus. In *Proceedings of Global/Top Fuel 2019*, pages 394–401, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=46949>
- [27] R. R. Flanagan, J. W. Bae, **K. D. Huff**, G. J. Chee, and R. Fairhurst. Methods for Automated Fuel Cycle Facility Deployment. In *Proceedings of Global/Top Fuel 2019*, pages 402–427, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=46950>
- [28] S. M. Park, A. Rykhlevskii, and **K. Huff**. Safety Analysis of the Molten Salt Fast Reactor Fuel Composition using Moltres. In *Proceedings of GLOBAL International Fuel Cycle Conference*, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=47030>, doi:10.31224/osf.io/7ce89

- [29] A. Rykhlevskii, B. R. Betzler, A. Worrall, and **K. D. Huff**. Fuel Cycle Performance of Fast Spectrum Molten Salt Reactor Designs. In *Proceedings of Mathematics and Computation 2019*, pages 342–353, Portland, OR, Aug. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=46618>
- [30] G. Westphal and **K. Huff**. PyRe: A Cyclus Pyroprocessing Facility Archetype. In *Proceedings of the 2018 Advances in Nuclear Nonproliferation Technology and Policy Conference*, pages 73–76, Orlando, FL, Nov. 2018. American Nuclear Society. URL: <http://epubs.ans.org/?a=44666>
- [31] A. Smith, L. A. Barba, G. Githinji, M. Gymrek, **K. Huff**, D. S. Katz, C. Madan, A. C. Mayes, K. M. Moerman, K. Niemeyer, P. Prins, K. Ram, A. Rokem, T. Teal, R. Valls Guimera, and J. T. Vanderplas. Introducing JOSS: The Journal of Open Source Software. In *Proceedings of SciPy*, Austin, TX, United States, July 2017. SciPy. 10.6084/m9.figshare.5208151.v1. doi:10.6084/m9.figshare.5208151.v1
- [32] A. Smith, L. A. Barba, G. Githinji, M. Gymrek, **K. Huff**, D. S. Katz, C. Madan, A. C. Mayes, K. M. Moerman, K. Niemeyer, P. Prins, K. Ram, A. Rokem, T. Teal, and J. Vanderplas. The Journal of Open Source Software. In *Poster*, volume Computational Science and Engineering, Atlanta, GA, Feb. 2017. Society for Industrial and Applied Mathematics. URL: https://figshare.com/articles/The_Journal_of_Open_Source_Software/4688911, doi:10.6084/m9.figshare.4688911.v1
- [33] **K. D. Huff**, J. W. Bae, K. A. Mummah, R. R. Flanagan, and A. M. Scopatz. Current Status of Predictive Transition Capability in Fuel Cycle Simulation. In *Proceedings of Global 2017*, Seoul, South Korea, Sept. 2017. American Nuclear Society. URL: <https://books.google.com/books/about/GLOBAL.2017.html?id=1UjsuQEACAAJ>
- [34] J. W. Bae, W. Roy, and **K. D. Huff**. Benefits of Siting a Borehole Repository at a Non-operating Nuclear Facility. In *Proceedings of the International High Level Radioactive Waste Management Conference*, pages 876–883, Charlotte, North Carolina, Apr. 2017. American Nuclear Society. URL: <http://epubs.ans.org/?a=43329>
- [35] X. Wang, **K. D. Huff**, M. Aufiero, P. F. Peterson, and M. Fratoni. Coupled Reactor Kinetics and Heat Transfer Model for Fluoride Salt-Cooled High-Temperature Reactor Transient Analysis. In *Proceedings of ICONE 2016*, Charlotte, North Carolina, June 2016. JC0003. URL: <http://dx.doi.org/10.1115/ICONE24-60728>, doi:10.1115/ICONE24-60728
- [36] X. Wang, **K. D. Huff**, M. Aufiero, P. F. Peterson, and M. Fratoni. A Sensitivity Study of a Coupled Kinetics and Thermal-Hydraulics Model for Fluoride-Salt-Cooled, High-Temperature Reactor (FHR) Transient Analysis. In *Proceedings of ICAPP 2016*, page Paper 16555, San Francisco, CA, Apr. 2016. International Congress on Advances in Nuclear Power Plants. URL: icapp.ans.org
- [37] D. Djokic, A. M. Scopatz, H. R. Greenberg, **K. D. Huff**, R. P. Nibbelink, and M. Fratoni. The Application of CYCLUS to Fuel Cycle Transition Analysis. In *Proceedings of Global 2015*, LLNL-CONF-669315, page 5061, Paris, France, Sept. 2015. URL: <https://www.osti.gov/biblio/1241931-application-cyclus-fuel-cycle-transition-analysis>
- [38] **K. Huff**. PyRK: A Python Package For Nuclear Reactor Kinetics. In *Proceedings of the 14th Python in Science Conference*, pages 87–93, Austin, TX, United States, 2015. SciPy. URL: http://conference.scipy.org/proceedings/scipy2015/kathryn_huff.html, doi:10.25080/Majora-7b98e3ed-00d
- [39] D. L. Krumwiede, C. Andreades, J. Choi, A. Cisneros, L. Huddar, **K. D. Huff**, M. Laufer, M. Munk, R. O. Scarlat, J. E. Seifried, N. Zwiebaum, E. Greenspan, and P. F. Peterson. Design of the Mark-1 Pebble-Bed, Fluoride-Salt-Cooled, High-Temperature Reactor Commercial Power Plant. In *Proceedings of ICAPP*, volume 1, Charlotte, North Carolina, 2014. American Nuclear Society. URL: <https://api.semanticscholar.org/CorpusID:30717062>
- [40] **K. D. Huff**. Cyclus Fuel Cycle Simulation Capabilities with the Cyder Disposal System Model. In *Proceedings of GLOBAL 2013: International Nuclear Fuel Cycle Conference-Nuclear Energy at a Crossroads*, volume 45 of *Nuclear Fuel Cycle and Fuel Materials*, Salt Lake City, UT, United States, Oct. 2013. URL: https://inis.iaea.org/search/search.aspx?orig_q=RN:45085412
- [41] M. Gidden, P. Wilson, **K. D. Huff**, and R. W. Carlsen. An Agent-Based Framework for Fuel Cycle Simulation with Recycling. In *Proceedings of GLOBAL*, volume 45 of *Nuclear Fuel Cycle and Fuel Materials*, Salt Lake City, UT, United States, Sept. 2013. URL: https://inis.iaea.org/search/search.aspx?orig_q=RN:45085433

- [42] **K. D. Huff**. Hydrologic Nuclide Transport Models in Cyder, a Geologic Disposal Software Library. In *WM2013*, Phoenix, AZ, Feb. 2013. Waste Management Symposium. URL: https://inis.iaea.org/search/search.aspx?orig_q=RN:45042278
- [43] **K. D. Huff**. Cyclus: An Open, Modular, Next Generation Fuel Cycle Simulator Platform (poster). In *Proceedings of the Waste Management Symposium*, Phoenix, AZ, Mar. 2011
- [44] K. M. Oliver, P. P. Wilson, A. Reveillere, T. W. Ahn, K. Dunn, **K. D. Huff**, and R. A. Elmore. Studying international fuel cycle robustness with the GENIUSv2 discrete facilities/materials fuel cycle systems analysis tool. In *Proceedings of GLOBAL 2009*, GLOBAL 2009: Advanced Nuclear Fuel Cycles and Systems, Paris, France, Sept. 2009. URL: <https://sfen.fr/GLOBAL-2009>
- [45] N. Mujica, M. Clerc, P. Cordero, J. Dunstan, **K. D. Huff**, L. Oyarte, R. Soto, G. Varas, and D. Risso. Solid-liquid-like transition in vibrated granular monolayers. In *APS Division of Fluid Dynamics Meeting Abstracts*, Nov. 2008. URL: <http://adsabs.harvard.edu/abs/2008APS..DFD.HM008M>
- [46] D. Rochman, R. C. Haight, S. A. Wender, J. M. O'Donnell, A. Michaudon, **K. D. Huff**, D. J. Vieira, E. Bond, R. S. Rundberg, A. Kronenberg, J. Wilhelmy, T. A. Bredeweg, J. Schwantes, T. Ethvignot, T. Granier, M. Petit, and Y. Danon. First Measurements with a Lead Slowing-Down Spectrometer at LANSCE. In *Proceedings of the International Conference on Nuclear Data for Science and Technology*, volume 769, pages 736–739, May 2005. URL: <http://adsabs.harvard.edu/abs/2005AIPC..769..736R>, doi:10.1063/1.1945112
- REFEREED [47] R. Fairhurst Agosta, S. Dotson, and **K. Huff**. Hydrogen Economy in Champaign-Urbana, IL. In *Transactions of the American Nuclear Society Annual Meeting*, volume 122 of *General Topics in Decommissioning*, Phoenix, AZ, June 2020. American Nuclear Society. URL: <http://epubs.ans.org/?a=48167>
- CONFERENCE [48] S. G. Dotson and **K. D. Huff**. Echo State Networks for Renewable Energy Forecasting. In *Proceedings of the 2020 ANS Virtual Winter Meeting*, Operations and Power Division Hybrid and Integrated Energy Systems, Virtual Meeting, Nov. 2020. American Nuclear Society. URL: <https://www.ans.org/meetings/wm2020/session/view-235/>
- ABSTRACTS [49] M. Turkmen and **K. D. Huff**. Single Channel Design Based on Artificial Intelligence for Molten Salt Reactors. In *Transactions of the American Nuclear Society*, volume 122 of *Virtual Conference*, pages 712–713, Virtual Meeting, June 2020. American Nuclear Society. URL: <http://epubs.ans.org/?a=48340>
- [50] S. G. Dotson and **K. D. Huff**. Optimal Sizing of a Micro-Reactor for Embedded Grid Systems. In *Transactions of the American Nuclear Society Student Conference*, Raleigh, N.C., Mar. 2020. American Nuclear Society
- [51] R. Fairhurst Agosta, S. Dotson, and **K. Huff**. Hydrogen Economy in Champaign-Urbana, IL. In *Transactions of the American Nuclear Society Student Conference*, Raleigh, NC, Mar. 2020. American Nuclear Society
- [52] A. Rykhlevskii, D. O'Grady, T. Kozlowski, and **K. D. Huff**. The Impact of Xenon-135 on Load Following Transatomic Power Molten Salt Reactor. In *Transactions of the American Nuclear Society*, volume 121, pages 1441–1444, Washington, DC, United States, Nov. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=47853>
- [53] S. M. Park, A. Rykhlevskii, and **K. Huff**. Safety Analysis of the Molten Salt Fast Reactor Fuel Composition using Moltres. In *Proceedings of GLOBAL International Fuel Cycle Conference*, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=47030>, doi:10.31224/osf.io/7ce89
- [54] E. J. Hague, M. Kamuda, W. P. Ford, E. T. Moore, and J. Turk. A comparison of adaptive and template matching techniques for radio-isotope identification. In *Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXV*, volume 10986, page 1098608. International Society for Optics and Photonics, May 2019. URL: <https://www.spiedigitallibrary.org/conference-proceedings-of-spie/10986/1098608/A-comparison-of-adaptive-and-template-matching-techniques-for-radio/10.1117/12.2519062.short>, doi:10.1117/12.2519062

- [55] G. J. Chee and **K. D. Huff**. Simulation of Spent Nuclear Fuel loading into a Final Waste Repository. In *WM Symposia 2019 Proceedings*, Phoenix, AZ, Apr. 2019. Roy G. Post Foundation
- [56] G. Chee, J. W. Bae, **K. D. Huff**, R. R. Flanagan, and R. Fairhurst. Demonstration of Demand-Driven Deployment Capabilities in Cyclus. In *Proceedings of Global/Top Fuel 2019*, pages 394–401, Seattle, WA, United States, Sept. 2019. American Nuclear Society. URL: <http://epubs.ans.org/?a=46949>
- [57] A. Chaube, J. Stubbins, and **K. D. Huff**. Dynamic Transition Analysis with TIMES. In *I2CNER Annual Symposium*, Fukuoka, Japan, Feb. 2019. Kyushu University. (Presentation)
- [58] G. Westphal and **K. D. Huff**. Signatures and Observables in the Nuclear Fuel Cycle. In *CNEC Annual Workshop*, Raleigh, N.C., Feb. 2018. North Carolina State University. (Poster)
- [59] L. Kissinger. Simulating the Spent Fuel Recipe of a Sodium-Cooled Fast Reactor. In *Proceedings of the American Nuclear Society 2018 National Student Conference*, Gainesville, FL, United States, Apr. 2018. American Nuclear Society
- [60] M. Kamuda. A Comparison of Machine Learning Methods for Automated Gamma-Ray Spectroscopy, June 2018. URL: <http://arfc.github.io/pres/2018-06-13-SORMA.pdf>
- [61] G. Chee, G. Park, and **K. D. Huff**. Validation of Spent Nuclear Fuel Output by Cyclus, a Fuel Cycle Simulator Code. In *Proceedings of the American Nuclear Society Winter Meeting 2018*, volume 119, pages 219–222, Orlando, FL, Nov. 2018. American Nuclear Society. URL: <http://epubs.ans.org/?a=44198>
- [62] G. Chee, J. W. Bae, and **K. D. Huff**. Numerical Experiments for testing Demand-Driven Deployment Algorithms. In *Proceedings of the American Nuclear Society 2018 National Student Conference*, Gainesville, FL, United States, Apr. 2018. American Nuclear Society
- [63] A. Chaube, J. Stubbins, and **K. D. Huff**. Dynamic Transition Analysis with TIMES. In *I2CNER Annual Symposium*, Fukuoka, Japan, Jan. 2018. Kyushu University. (Poster)
- [64] J. W. Bae. Impact of Composition Approximation on Simulated Nuclear Fuel Cycle Metrics, Nov. 2018. URL: <http://arfc.npre.illinois.edu/pres/2018-11-13-bae-answinter2018.pdf>
- [65] A. Rykhlevskii, A. Lindsay, and **K. D. Huff**. Online reprocessing simulation for thorium-fueled molten salt breeder reactor. In *Transactions of the American Nuclear Society*, volume 117 of *Molten Salt Processing-Online Processing Redox*, pages 239–242, Washington, DC, United States, Nov. 2017. American Nuclear Society. URL: <http://epubs.ans.org/?a=41258>
- [66] A. Rykhlevskii, A. Lindsay, and **K. D. Huff**. Full-core analysis of thorium-fueled Molten Salt Breeder Reactor using the SERPENT 2 Monte Carlo code. In *Transactions of the American Nuclear Society*, volume 117 of *Reactor Physics*, pages 1343–1346, Washington, DC, United States, Nov. 2017. American Nuclear Society. URL: <http://epubs.ans.org/?a=41596>
- [67] G. Ridley, A. Lindsay, and **K. Huff**. An Introduction to Moltres, an MSR Multiphysics Code. In *Transactions of the American Nuclear Society*, Washington D.C., Oct. 2017. American Nuclear Society. URL: <http://arfc.github.io/pres/2017-10-31-moltres.pdf>
- [68] J. W. Bae, **K. Huff**, and C. Singer. Synergistic Spent Nuclear Fuel Dynamics Within the European Union. In *Transactions of the American Nuclear Society Winter Conference*, volume 117 of *Fuel Cycle and Waste Management*, pages 261–265, Washington, D.C., Oct. 2017. American Nuclear Society. URL: <http://epubs.ans.org/?a=41265>
- [69] A. M. Scopatz and **K. D. Huff**. Modernizing Computational Nuclear Engineering Education in the Open. In *Transactions of the American Nuclear Society*, volume 113 of *Education and Training: General—II*, pages 111–114, Washington, D.C., Nov. 2015. URL: <http://epubs.ans.org/?a=37748>
- [70] **K. D. Huff**, M. Fratoni, and H. Greenberg. Extensions to the Cyclus Ecosystem In Support of Market-Driven Transition Capability. In *Transactions of the American Nuclear Society*, Fuel Cycle Options Analysis – III, pages 245–248, Anaheim, CA, United States, Nov. 2014. American Nuclear Society. LLNL-PROC-656426. URL: <http://epubs.ans.org/?a=36345>

- [71] C. Bates, E. D. Biondo, **K. D. Huff**, K. Kiesling, and A. M. Scopatz. PyNE Progress Report. In *Transactions of the American Nuclear Society*, volume 111, pages 1165–1168, Anaheim, CA, United States, Nov. 2014. American Nuclear Society. tex.ids: bates_pyne.2014. URL: <http://epubs.ans.org/?a=36617>
- [72] **K. D. Huff** and A. T. Bara. Dynamic Determination of Thermal Repository Capacity For Fuel Cycle Analysis. In *Transactions of the American Nuclear Society*, volume 108, pages 123–126, Atlanta, GA, United States, June 2013. American Nuclear Society. URL: <http://epubs.ans.org/?a=16524>
- [73] A. Scopatz, P. K. Romano, P. P. H. Wilson, and **K. D. Huff**. PyNE: Python for Nuclear Engineering. In *Transactions of the American Nuclear Society*, volume 107 of *Reactor Physics: General—I*, pages 985–987, San Diego, CA, USA, Nov. 2012. American Nuclear Society. URL: <http://epubs.ans.org/?a=14978>
- [74] **K. Huff** and T. H. Bauer. Numerical Calibration of an Analytical Generic Nuclear Repository Heat Transfer Model. In *Transactions of the American Nuclear Society*, volume 106 of *Modeling and Simulation in the Fuel Cycle*, pages 260–263, Chicago, IL, United States, June 2012. American Nuclear Society, La Grange Park, IL 60526, United States. URL: <http://epubs.ans.org/?a=13699>
- [75] **K. D. Huff** and W. M. Nutt. Key Processes and Parameters in a Generic Clay Disposal System Model. In *Transactions of the American Nuclear Society*, volume 107 of *Environmental Sciences – General*, pages 208–211, San Diego, CA, Nov. 2012. American Nuclear Society. URL: <http://epubs.ans.org/?a=14711>
- [76] M. J. Gidden, P. P. Wilson, **K. D. Huff**, and R. W. Carlsen. Once-Through Benchmarks with CYCLUS, a Modular, Open-Source Fuel Cycle Simulator. In *Transactions of the American Nuclear Society*, volume 107 of *Nuclear Fuel Cycle Resources, Sustainability, Reuse, and Recycle*, pages 264–266, San Diego, CA, Nov. 2012. American Nuclear Society, La Grange Park, IL 60526, United States. URL: <http://epubs.ans.org/?a=14732>
- [77] **K. D. Huff**, A. Scopatz, N. Preston, and P. Wilson. Rapid Peer Education of a Computational Nuclear Engineering Skill Suite. In *Transactions of the American Nuclear Society*, volume 104 of *Training, Human Performance, and Work Force Development*, pages 103–104, Hollywood, FL, United States, June 2011. American Nuclear Society, La Grange Park, IL 60526, United States. URL: <http://epubs.ans.org/?a=11811>
- [78] **K. D. Huff**, P. P. Wilson, and M. J. Gidden. Open Architecture and Modular Paradigm of Cyclus, a Fuel Cycle Simulation Code. In *Transactions of the American Nuclear Society*, volume 104 of *Modeling and Simulation in Fuel Cycle Separations and Waste Form Development—II*, page 183, Hollywood, Florida, June 2011. American Nuclear Society. URL: <http://epubs.ans.org/?a=11853>
- [79] **K. D. Huff**. Cyclus: An Open, Modular, Next Generation Fuel Cycle Simulator Platform (poster). In *Proceedings of the Waste Management Symposium*, Phoenix, AZ, Mar. 2011
- [80] **K. D. Huff**, R. A. Elmore, K. M. Oliver, and P. P. Wilson. MOX Fuel Recipe Approximation Tests in GENIUSv2. In *Transactions of the American Nuclear Society Student Meeting*, Ypsilanti, MI, Apr. 2010
- [81] **K. D. Huff**, K. M. Oliver, P. P. Wilson, T. W. Ahn, K. Dunn, and R. Elmore. GENIUSv2 Discrete Facilities/Materials Modeling of International Fuel Cycle Robustness. In *Transactions of the American Nuclear Society*, volume 101 of *Nuclear Fuel Cycle Codes and Applications*, pages 239–240, Washington D.C., United States, Nov. 2009. American Nuclear Society. URL: <http://epubs.ans.org/?a=9912>
- [82] **K. D. Huff**, P. P. Wilson, and K. M. Oliver. GENIUS Version 2: Modeling the Worldwide Nuclear Fuel Cycle (poster). In *Proceedings of the eHub Conference*, University of Wisconsin, Madison, Nov. 2009
- [83] R. A. Elmore, K. M. Oliver, P. P. Wilson, T. W. Ahn, K. L. Dunn, and **K. D. Huff**. GENIUSv2 Recipe Approximation Methodology for Mixed-Oxide Fuel. In *Transactions of the American Nuclear Society*, volume 101 of *Nuclear Fuel Cycle Codes and Applications*, pages 241–242, Washington D.C., United States, Nov. 2009. URL: <http://epubs.ans.org/?a=9913>

- [84] A. J. Lee, T. Kozlowksi, and **K. Huff**. Milestone 3.2 Report: Thermal-Hydraulics Analysis of Core LoadFollowing Operation. Milestone Report UIUC-ARTS-2020-08, University of Illinois at Urbana-Champaign, Urbana, IL, Aug. 2020
- [85] P. Sabharwall, N. Anderson, P. Marotta, and R. Christensen. MicroNuclear Battery Thermal and Fluid Analysis and Multiphysics Modeling Challenges. INL Limited Distribution INL/LTD-19-52963, Idaho National Laboratory, Idaho Falls, ID, Feb. 2019
- [86] A. Chaube, J. Stubbins, and **K. D. Huff**. Dynamic Transition Analysis with TIMES. In *I2CNER Annual Symposium*, Fukuoka, Japan, Feb. 2019. Kyushu University. (Presentation)
- [87] **K. D. Huff**. Identifying MSR Multiphysics Modeling Challenges. Technical Report UIUC-ARFC-2019-01, University of Illinois at Urbana-Champaign, Urbana, IL, Feb. 2019. URL: <https://zenodo.org/record/335456>, doi:10.5281/zenodo.3354563
- [88] G. Chee, R. Fairhurst, and **K. Huff**. Transition Scenario Demonstrations of CYCAMORE Demand Driven Deployment Capabilities. Technical Report UIUC-ARFC-2019-03, University of Illinois at Urbana-Champaign, Urbana, IL, June 2019. <https://zenodo.org/record/3354507>. URL: <https://zenodo.org/record/3354507>
- [89] **K. D. Huff**. Demand Driven Cycamore Archetypes FY16 NEUP Award Summary. In *Presentations in the DOE-NE Systems Analysis and Integration (SA&I) Campaign*, Argonne, IL, United States, Sept. 2019
- [90] A. Rykhlevskii and **K. Huff**. Milestone 2.1 Report: Demonstration of SaltProc. Milestone Report UIUC-ARFC-2019-04 DOI: 10.5281/zenodo.3355649, University of Illinois at Urbana-Champaign, Urbana, IL, June 2019. doi:10.5281/zenodo.3355649
- [91] J. W. Bae, G. Chee, and **K. Huff**. Numerical Experiments for Verifying Demand Driven Deployment Algorithms. Graduate Report UIUC-ARFC-2018-01, University of Illinois at Urbana-Champaign, Urbana, IL, Apr. 2018. URL: https://github.com/arfc/ddca_numerical_exp
- [92] A. L. Heald, E. Miernicki, R. E. Fairhurst, A. J. Margenot, **K. D. Huff**, and C. S. Brooks. Investigation of Agricultural Uses of Nuclear Waste Heat. UIUC Technical Report. October, 2018. UIUC Technical Report, University of Illinois at Urbana-Champaign, Urbana, IL, Oct. 2018
- [93] J. W. Bae and **K. D. Huff**. Non-algorithmic Capability Gaps for Cyclus and Cycamore transition analyses. Graduate Report UIUC-ARFC-2017-02, University of Illinois at Urbana-Champaign, Urbana, IL, Nov. 2017. URL: <https://github.com/arfc/transition-scenarios>, doi:10.5281/zenodo.1145439
- [94] **K. Huff** and A. Lindsay. Coupled Multi-Physics of Advanced Molten Salt Nuclear Reactors. Blue Waters Annual Report, National Center for Supercomputing Applications, 2017. URL: https://bluewaters.ncsa.illinois.edu/apps/docs/BW_AR.2017.linked.pdf
- [95] G. Ridley, A. Lindsay, M. Turk, and **K. Huff**. Multiphysics Analysis of Molten Salt Reactor Transients. Undergraduate Report UIUC-ARFC-2017-01, University of Illinois at Urbana-Champaign, Urbana, IL, Aug. 2017. DOI 10.5281/zenodo.1145437. URL: <https://github.com/arfc/publications/tree/2017-ridley-msrTransients>
- [96] A. Lindsay, A. Rykhlevskii, and **K. Huff**. Advanced Reactor Fuel Cycles Molten Salt Reactor Design. Technical Report, University of Illinois at Urbana-Champaign, Urbana, IL, Aug. 2016. URL: <https://github.com/arfc/MSR-design>
- [97] D. Djokic, A. M. Scopatz, H. R. Greenberg, **K. D. Huff**, R. P. Nibbelink, and M. Fratoni. The Application of CYCLUS to Fuel Cycle Transition Analysis. In *Proceedings of Global 2015*, LLNL-CONF-669315, page 5061, Paris, France, Sept. 2015. URL: <https://www.osti.gov/biblio/1241931-application-cyclus-fuel-cycle-transition-analysis>
- [98] C. Andreades, A. Cisneros, J. Choi, A. Chong, D. L. Krumwiede, L. Huddar, **K. D. Huff**, M. Laufer, M. Munk, R. O. Scarlat, J. E. Seifried, N. Zwiebaum, E. Greenspan, and P. F. Peterson. Technical Description of the ‘Mark 1’ Pebble-Bed, Fluoride-Salt-Cooled, High-Temperature Reactor Power Plant. Thermal Hydraulics Group UCBTH-14-002, University of California, Berkeley, Department of Nuclear Engineering, Berkeley, CA, Sept. 2014

- [99] **K. D. Huff** and T. H. Bauer. Benchmarking a New Closed-Form Thermal Analysis Technique Against a Traditional Lumped Parameter, Finite-Difference Method. Technical Report FCRD-UFD-000142, Argonne National Laboratory, Argonne, IL, United States, July 2012
- [100] **K. D. Huff** and W. M. Nutt. FY12 Sensitivity Studies Using the UFD Clay Generic Disposal System Model. Technical Report FCRD-USED-2012-000141, Argonne National Laboratory (ANL), Argonne, IL, United States, July 2012
- [101] **K. Huff** and B. Dixon. Next Generation Fuel Cycle Simulator Functions and Requirements Document. Technical Report fcrd-sysa-2010-000110, Idaho National Laboratory, July 2010
- [102] O. Biris, K. Gracey, **K. D. Huff**, and W. K. Ng. An Analysis of the Consolidated Fuel Treatment Center Nuclear Reprocessing Initiative. capstone report BP-EP-2008-07, University of Chicago, Chicago, IL, United States, June 2008. URL: <http://humanities.uchicago.edu/orgs/institute/bigproblems/Energy/BP-Energy-Reprocessing.doc>
- [103] **K. D. Huff**. Digital filtering applications to the lead slowing-down spectrometer. Technical Report 0, Los Alamos National Laboratory Report LA-UR-04-8757, 2004, Los Alamos, NM, United States, 2004
- [104] **K. D. Huff**. Excess Single Event Effects in the Second Chip of a Series. Technical Report 0, Los Alamos National Laboratory Report, Los Alamos, NM, United States, Aug. 2003
- OTHER PUBLICATIONS [105] **K. D. Huff**. *An Integrated Used Fuel Disposition and Generic Repository Model for Fuel Cycle Analysis*. PhD Dissertation, The University of Wisconsin - Madison, Oct. 2013. URL: <http://gradworks.umi.com/35/92/3592735.html>
- [106] **K. D. Huff**. *QUIET Celestial Gain Calibrations*. Undergraduate, University of Chicago, Chicago, IL, United States, May 2008. URL: kathyhuff.github.io/papers/CalibrationsThesis.pdf
- [107] O. Biris, K. Gracey, **K. D. Huff**, and W. K. Ng. An Analysis of the Consolidated Fuel Treatment Center Nuclear Reprocessing Initiative. capstone report BP-EP-2008-07, University of Chicago, Chicago, IL, United States, June 2008. URL: <http://humanities.uchicago.edu/orgs/institute/bigproblems/Energy/BP-Energy-Reprocessing.doc>
- SOFTWARE PRODUCTS [108] R. W. Carlsen, M. Gidden, **K. Huff**, A. C. Opotowsky, O. Rakhimov, A. M. Scopatz, and P. Wilson. Cycamore v1.0.0. *Figshare*, June 2014. http://figshare.com/articles/Cycamore_v1.0.0/1041829. URL: http://figshare.com/articles/Cycamore_v1.0.0/1041829, doi:http://figshare.com/articles/Cycamore_v1.0.0/1041829
- [109] R. W. Carlsen, M. Gidden, **K. Huff**, A. C. Opotowsky, O. Rakhimov, A. M. Scopatz, Z. Welch, and P. Wilson. Cycus v1.0.0. *Figshare*, June 2014. doi:[10.6084/m9.figshare.1041745](https://doi.org/10.6084/m9.figshare.1041745)
- [110] A. Lindsay, **K. Huff**, and A. Rykhlevskii. arfc/moltres: Initial Moltres release. *Zenodo*, June 2017. doi:[10.5281/zenodo.801823](https://doi.org/10.5281/zenodo.801823)
- [111] J. W. Bae, G. Park, G. Chee, **K. Huff**, T. Kennelly, P. Speaks, P. Wilson, and A. Scopatz. arfc/transition-scenarios: Standardized Verification of the Cycus Fuel Cycle Simulator. *Zenodo*, GitHub, Sept. 2018. doi:[10.5281/zenodo.1419110](https://doi.org/10.5281/zenodo.1419110)
- [112] J. W. Bae, G. T. Park, **K. Huff**, and G. Chee. arfc/transition-scenarios: Synergistic Spent Nuclear Fuel Dynamics Within the European Union v2.0.0. *Zenodo*, Mar. 2018. doi:[10.5281/zenodo.1210302](https://doi.org/10.5281/zenodo.1210302)
- [113] A. Chaube and **K. Huff**. i2cner: Holds software, notes, documentation, and publications related to the ARFC I2CNER project on dynamic energy systems analysis, Jan. 2018. original-date: 2017-11-22T19:29:40Z. URL: <https://github.com/arfc/i2cner>
- [114] A. Rykhlevskii, J. W. Bae, and **K. Huff**. arfc/saltproc: Code for online reprocessing simulation of molten salt reactor with external depletion solver SERPENT. *Zenodo*, July 2018. doi:[10.5281/zenodo.1306628](https://doi.org/10.5281/zenodo.1306628)
- [115] A. Chaube, D. O'Grady, A. Rykhlevskii, and **K. D. Huff**. TAP MSR model for Serpent 2. *Zenodo*, 2019. doi:[10.5281/zenodo.1450733](https://doi.org/10.5281/zenodo.1450733)

MEDIA
COVERAGE

- [116] G. J. Chee, J. W. Bae, R. Fairhurst, R. R. Flanagan, and A. M. Scopatz. arfc/d3ploy: A collection of Cyclus manager archetypes for demand driven deployment, Sept. 2019. 10.5281/zenodo.3464123. URL: <https://github.com/arfc/d3ploy>
- [117] G. Chee, G. Westphal, and **K. Huff**. arfc/dcwrapper : Gwen's MS Thesis Release, 2019. doi: [10.5281/zenodo.3530964](https://doi.org/10.5281/zenodo.3530964)
- [118] C. Delbert. Tiny Nuclear Reactors Can Save American Energy. *Popular Mechanics*, 2021(January/February), Jan. 2021. Section: Energy. URL: <https://www.popularmechanics.com/science/energy/a34976294/tiny-nuclear-reactors/>
- [119] E. White and C. White. 331: Friendly Tea Kettle, May 2020. media. URL: <https://embedded.fm/episodes/331>
- [120] ANS. A Day in the Life of the Nuclear Community. *Nuclear News*, 63(12):23–37, Nov. 2020. media. URL: <https://www.ans.org/pubs/magazines/download/article-1221/>
- [121] H. Robinson. University awaits approval for on-campus micro-nuclear reactor. *The Daily Illini - The Independent Student Newspaper at the University of Illinois*, Sept. 2020. media. URL: <https://dailyillini.com/news/2020/09/14/university-awaits-approval-for-micronuclear-reactor/>
- [122] L. Bushak. University Of Illinois Proposes Micronuclear Reactor To Cut Carbon Emissions -, Sept. 2020. media. URL: <https://illinoisnewsroom.org/university-of-illinois-proposes-micronuclear-reactor-to-cut-carbon-emissions/>
- [123] D. Anghel. Krannert exhibit raises awareness of nuclear industry. *The Daily Illini - The Independent Student Newspaper at the University of Illinois*, Oct. 2019. media. URL: <https://dailyillini.com/news/2019/10/24/krannert-nuclear-industry/>
- [124] J. C. Hu. Someday the U.S. Will Have to Actually Deal With Its Nuclear Waste Problem. *Slate Magazine*, Technology, June 2019. media. URL: <https://slate.com/technology/2019/06/department-of-energy-nuclear-waste-reclassification-yucca.html>
- [125] B. Kugelmass. Katy Huff, University of Illinois on Apple Podcasts, Apr. 2019. media. URL: <https://www.titansofnuclear.com/katyhuff>
- [126] R. Letzter. When Chernobyl Blew, They Dumped Boron and Sand into the Breach. What Would We Do Today? *Live Science*, May 2019. media. URL: <https://www.livescience.com/65515-chernobyl-in-modern-times-nuclear-emergency.html>
- [127] H. Bowne-Anderson. Data Science, Nuclear Engineering and the Open Source (with Katy Huff), Mar. 2018. media. URL: <https://www.datacamp.com/community/podcast/data-science-nuclear-engineering>
- [128] A. Silver. Microsoft's purchase of GitHub leaves some scientists uneasy. *Nature*, 558:353, June 2018. media. URL: <http://www.nature.com/articles/d41586-018-05426-0>, doi:doi:10.1038/d41586-018-05426-0
- [129] M. Timmins. Power Source: Nuclear engineer Katy Huff on teaching with IPython, reactor theory and the future of energy. *University of Illinois Alumni Magazine*, [InClass] Engineering(Summer 2018):13, Aug. 2018. media. URL: <https://illinoisalumni.org/2018/08/01/in-class-power-source/>
- [130] S. Hawksworth. Nuclear Engineering Programs with Dr. Kathryn Huff, Feb. 2018. media. URL: <https://yescollege.com/episode/kathryn-huff/>
- [131] **K. Huff**. Creating a Carbon Free Future, Alumni Spotlight: Kathryn Huff, Ph.D., Aug. 2018. media. URL: <http://tams.unt.edu/alumni/spotlights/kathryn-huff-phd>
- [132] H. Larsen. California Faculty Field Day. *Sandia National Laboratory LabNews*, page 8, July 2018. media. URL: http://www.sandia.gov/news/publications/labnews/_assets/documents/issues/2018/labnews07-06-18.pdf
- [133] S. Mumm. NPRE researchers to investigate load-following capabilities for molten salt reactors | NPRE Illinois, June 2018. media. URL: <https://npre.illinois.edu/news/npre-researchers-investigate-load-following-capabilities-molten-salt-reactors>

- [134] S. Mumm. Professor Kathryn Huff on the Possibilities in NPRES, Mar. 2018. media. URL: <https://www.youtube.com/watch?v=w9d.QMW1hA4>
- [135] K. Schuler. ANS Annual Meeting: Education, Training, and Workforce Development: Transitioning to the workforce. *Nuclear News*, 60(9):127–128, Aug. 2017. media. URL: <http://epubs.ans.org/download/?i=2141>
- [136] J. Bohannon. Female engineers publish in better journals, but receive fewer citations. *Science | AAAS, Scientific Community*(doi:10.1126/science.aae0191), Jan. 2016. media. URL: <https://www.sciencemag.org/news/2016/01/female-engineers-publish-better-journals-receive-fewer-citations>
- [137] J. Perkel. Democratic databases: science on GitHub. *Nature News*, 538(7623):127, Oct. 2016. media. URL: <http://www.nature.com/news/democratic-databases-science-on-github-1.20719>, doi: 10.1038/538127a
- [138] J. Lowery. Women in Data Science: Kathryn Huff, Sept. 2015. media. URL: <https://cds.nyu.edu/women-data-science-kathryn-huff/>
- [139] S. Tippmann. My digital toolbox: Nuclear engineer Katy Huff on version-control systems. *Nature News*, Sept. 2014. media. URL: <http://www.nature.com/news/my-digital-toolbox-nuclear-engineer-katy-huff-on-version-control-systems-1.16014>, doi: 10.1038/nature.2014.16014

INVITED
TALKS

American Nuclear Society , NPT at 50 Years Webinar <i>Invited Panelist</i> .	Feb 15, 2021
U.C. Berkeley , Nuclear Engineering <i>Colloquium</i> .	Jan 22, 2021
GAIN-EPRI-NEI , Microreactor Program Virtual Workshop, <i>Invited Panelist</i> .	Aug 19, 2020
Society of Women Engineers , Graduate Community Virtual <i>Seminar</i> .	May 20, 2020
SIAM CSE 2019 , Spokane, WA, <i>Invited Minisymposium Speaker</i>	Feb 25, 2019
SciFOO , Google X, <i>Invited Camper</i> .	Jun 23, 2018
U. Illinois , Hack Illinois, <i>Keynote</i> .	Feb 24, 2018
U. Michigan , Nuclear Engineering and Radiological Sciences <i>Seminar</i> .	Feb 9, 2018
PyData , Meetup, Ann Arbor, MI <i>Invited Tech. Talk</i> .	Feb 8, 2018
Olin College of Engineering , <i>Seminar</i> .	Oct 31, 2017
Argonne National Laboratory , NNSA Nuclear Nonproliferation, <i>Seminar</i> .	Sep 21, 2017
SciPy 2017 , Scientific Python Conference, Austin, TX, <i>Keynote</i> .	Jul 12, 2017
ANS Annual , Young Members Group, Workforce Transition, <i>Panel</i> .	Jun 13, 2017
ANS Annual , Mathematics and Computation Division, Current Issues, <i>Panel</i> .	Jun 12, 2017
Oak Ridge National Laboratory , RPNDS, <i>Seminar</i> .	Jun 29, 2017
PyCon 2017 , Portland, OR. <i>Keynote</i> .	May 19, 2017
U. California, Davis , Mechanical and Aerospace Engineering, <i>Seminar</i> .	April 20, 2017
U. Illinois , Computational Science and Engineering, <i>Seminar</i> .	Feb 2, 2017
U. Illinois , AE3 Lightning Symposium, <i>Lightning Talk</i> .	Mar 2, 2017
U. Illinois , Nuclear, Plasma, & Radiological Engineering, <i>Undergraduate Seminar</i> .	Feb 14, 2017
U. California, Berkeley , Berkeley Institute for Data Science, <i>Symposium</i> .	Jan 27, 2017
U. Illinois , Informatics, <i>Seminar</i> .	Oct 13, 2016
PyData 2016 , Chicago, IL. <i>Keynote</i> .	Aug 27, 2016
Oak Ridge National Laboratory , RPNDS, <i>Seminar</i> .	Mar 3, 2016
U. Tennessee, Knoxville , Nuclear Engineering, <i>Seminar</i> .	Mar 2, 2016
Michigan State , Computational, Mathematics, Science, and Engineering, <i>Seminar</i> .	Dec 15, 2015
U. Illinois , Nuclear, Plasma, & Radiological Engineering, <i>Seminar</i> .	Dec 8, 2015
SC15, Austin TX , Python in High Performance Computing workshop, <i>Keynote</i> .	Nov 15, 2015
U. Illinois , National Center for Supercomputing Applications, <i>Colloquium</i> .	Nov 6, 2015
North Carolina State University , Nuclear Engineering, <i>Colloquium</i> .	Oct 15, 2015
Texas A&M University , Nuclear Engineering, <i>Colloquium</i> .	Sep 29, 2015
Rensselaer Polytechnic Inst , Mechanical and Nuclear Engineering, <i>Colloquium</i> .	Sep 21, 2015
U. Washington , What Can Academia Learn from Open Source?, <i>Panel</i> .	Feb 2, 2015

ENGINEERING
TEACHING

University of Illinois at Urbana-Champaign DEPT. OF NUCLEAR, PLASMA, AND RADIOLOGICAL ENGINEERING <i>NPRES 247, Modeling Nuclear Energy Systems</i>	Fall 2018
<i>NPRES 412, Nuclear Power Economics and Fuel Management</i>	Fall 2016

		Fall 2017 Spring 2020 Spring 2021
	<i>NPRE 446, Radiation Interactions with Matter I</i>	Fall 2019
	<i>NPRE 555, Reactor Theory I</i>	Spring 2018 Fall 2020
	<i>NPRE 560, Reactor Kinetics and Dynamics</i>	Spring 2019
GUEST LECTURES	University of California, Berkeley , DEPT. OF NUCLEAR ENGINEERING <i>NE 100, Introduction to Nuclear Engineering</i> Nuclear Fuel Cycle, Advanced Reactors	Nov 10, 2020
	University of California, Berkeley , DEPT. OF NUCLEAR ENGINEERING <i>NE 155, Introduction to Numerical Simulations in Radiation Transport</i> Point Reactor Kinetics, Monte Carlo Methods	Apr 1,3,22, 2015
	University of California, Berkeley , DEPT. OF NUCLEAR ENGINEERING <i>NE 255, Numerical Simulation in Radiation Transport</i> Best Practices in Computational Nuclear Engineering	Sep 11, 2014
	University of Wisconsin - Madison , DEPT. OF NUCLEAR ENGINEERING <i>NE 571, Economic and Environmental Aspects of Nuclear Energy</i> Nuclear Waste Repository Technology, Policy, and History	Apr 1&3, 2013
	University of Wisconsin - Madison , DEPT. OF NUCLEAR ENGINEERING <i>NE 406, Nuclear Reactor Analysis</i> UNIX Shell, Basic Scripting, Environment Variables, Permissions, Regular Expressions, Makefiles	Sep 9&11, 2009
	University of Wisconsin - Madison , DEPT. OF NUCLEAR ENGINEERING <i>NE 506, Practicum in Monte Carlo Radiation Transport</i> UNIX Shell, Basic Scripting, Environment Variables, Permissions, Regular Expressions, Makefiles	Feb 10, 2010
INVITED SCIENTIFIC COMPUTING TEACHING	SciPy Conference , Austin, TX Introductory Python For Scientific Software	Jul 6–7, 2015
	University of Split , Split, Croatia G-Node Advanced Scientific Programming in Python Summer School	Sep 8–13, 2014
	SciPy Conference , Austin, TX Version Control and Unit Testing For Scientific Software	Jun 25, 2013
	University of Chicago, Graduate School , Chicago, IL Computational Literacy Workshop	Jan 12–13, 2013
	University of California, Berkeley , Berkeley, CA Department of Statistics Scientific Computing Workshop	Oct 20–21, 2012
	Lawrence Berkeley National Laboratory , Berkeley, CA Software Carpentry Python Workshop	Oct 17–18, 2012
	International Center for Theoretical Physics , Trieste, Italy UNESCO/IAEA Advanced School on Scientific Software Development	Feb 20–Mar 2, 2012
	University of Toronto , Toronto, ON, Canada SciNet Consortium For High Performance Computing Software Carpentry Bootcamp	Nov 7–8, 2011
	American Nuclear Society Winter Meeting , Washington, D.C. Young Professionals Congress Hacker Within Scientific Computing Tutorial	Nov 1, 2011
	Michigan State University , East Lansing, MI	Jun 4–5, 2011

Institute for Cyber Enabled Research (iCER) and BEACON Center THW Bootcamp

SCIENTIFIC COMPUTING TEACHING	Berkeley Institute for Data Science , Berkeley, CA	Jan 14–15, 2015
	Managing Databases in SQL	
	Berkeley Institute for Data Science , Berkeley, CA	Jun 4–5, 2015
	Testing for Scientific Software	
	Lawrence Berkeley National Laboratory , Berkeley, CA	Apr 14–15, 2014
	Women in Science and Engineering Bootcamp	
	The University of Chicago , Chicago, IL	Apr 2–3, 2012
	Software Carpentry Scientific Computing Workshop	
The University of Wisconsin , Madison, WI	Jan 12–14, 2011	
The Hacker Within Software Carpentry Bootcamp		
The University of Wisconsin , Madison, WI	Jan 12–14, 2010	
The Hacker Within Python Bootcamp		
The University of Wisconsin , Madison, WI	Mar 24–31, 2009	
The Hacker Within C++ Bootcamp		
The University of Wisconsin , Madison, WI	Jan 12–15, 2009	
University of Wisconsin, Hacker Within UNIX Bootcamp		

POSTDOCTORAL RESEARCHERS	<u>NAME</u>	<u>DATES</u>	<u>ROLE</u>
	Mehmet Turkmen	2019–2020	Advisor
	Alexander Lindsay	2016–2017	Advisor

GRADUATE RESEARCHERS	<u>NAME</u>	<u>DEGREE - YEAR</u>	<u>ROLE</u>
	Michael Cheng	MS - 2017	MS Second Reader
	Mark Kamuda	MS - 2017	MS Second Reader
	Mark Kamuda	PhD - 2019	PhD Advisor
	Gregory Westphal	MS - 2019	MS Advisor
	Erik Medhurst	MS - 2020	MS Advisor
	Andrei Rykhlevskii	PhD - 2020	PhD Advisor
	Jin Whan Bae	MS - 2019	MS Advisor
	Katherine C. Hepler	PhD - 2020	Dissertation Committee Chair
	Alvin Lee	MS - 2020	MS Second Reader
	Sun Myung Park	PhD - (est. 2022)	PhD Advisor
	Anshuman Chaube	PhD - (est. 2022)	PhD Advisor
	Gwendolyn Chee	PhD - (est. 2022)	PhD Advisor
	Roberto Fairhurst-Agosta	PhD - (est. 2023)	PhD Advisor
	Zoë Richter	PhD - (est. 2023)	PhD Advisor
	Samuel Dotson	PhD - (est. 2024)	PhD Advisor
	Amanda Bachmann	PhD - (est. 2024)	PhD Advisor
	Luke Seifert	PhD - (est. 2025)	PhD Advisor
Lu Kissinger	PhD - (est. 2025)	PhD Advisor	
Oleksandr Yardas	PhD - (est. 2025)	PhD Advisor	

UNDERGRADUATE RESEARCHERS	<u>NAME</u>	<u>DEGREE - YEAR</u>	<u>SCHOLARSHIPS</u>
	Jin Whan Bae	BS - 2017	NPPE Outstanding Undergrad Research ANS Best Student Fuel Cycle Presentation
	Kathryn Mummah	BS - 2017	Roy G. Post Foundation Scholarship ANS FCWMD Randall Scholar
	Eric Riewski	BS - 2017	
	GyuTae Park	BS - (est. 2018)	
	Yukun Tan	BS - (est. 2018)	Students Pushing Innovation

Lu Kissinger	BS - 2019	
Xin Wen	BS - 2018	Students Pushing Innovation
Daniel Chu	BS - 2020	
Tyler Kennelly	BS - 2019	
Bradley Ellis	BS - 2019	
Adam Pichman	BS - 2019	
Zoë Richter	BS - 2018	
Gavin Davis	BS - (est. 2021)	
Kip Kleimenhagen	BS - (est. 2021)	
David Atwater	BS - (est. 2021)	
Nathan Ryan	BS - (est. 2022)	
Anna Balla	BS - (est. 2021)	
Nataly Panczyk	BS - (est. 2024)	

VISITING RESEARCHERS	<u>NAME</u>	<u>DATES</u>	<u>LEVEL - INSTITUTION</u>
	Gavin Ridey	2017	BS–University of Tennessee, Knoxville
	Aditya Bhosale	2017	BS - IIT, Bombay
	Snehal Chandan	2017	BS - IIT, Bombay
	Eleonora Skrzypek	2019	PhD - Warsaw University of Technology, Poland

SCIENTIFIC COMPUTING SKILLS		
	Languages	bash/csh, C++, FORTRAN, Perl, Python, XML
	Build Systems	make, CMake, automake
	Databases	HDF5, SQL
	Test Frameworks	CTest, GoogleTest, nose
	Version Control	cvs, git, hg, svn
	Other Tools	Doxygen, Sphinx, GoldSim, L ^A T _E X, Mathematica, MatLab, MCNP, MOOSE

EDITING AND REVIEWING		
	Editorial Board	<i>Journal of Open Source Software</i> 2016 – present <i>Journal of Open Source Education</i> 2018 – present <i>Nuclear Technology</i> 2018 – present <i>Nuclear Engineering and Design</i> 2020 – present <i>Papers in Physics</i> 2020 – 2023 <i>Proceedings of the SciPy Scientific Python Conference</i> 2013, 2015, & 2017
	Manuscript Referee	<i>Annals of Nuclear Energy</i> <i>Journal of Nuclear Energy Science and Power Generation Technology</i> <i>Nuclear Engineering and Design</i> <i>Nuclear Science and Engineering</i> <i>Nuclear Technology</i> <i>Progress in Nuclear Energy</i>
	Grant Proposal Referee	<i>Dept. of Energy Nuclear Energy University Programs</i> <i>Dept. of Energy Technology Commercialization Fund</i> <i>Blue Waters Fellows Program</i> <i>Alfred P. Sloan Foundation</i>
	Book Proposal Referee	<i>O'Reilly Media</i> <i>Elsevier</i>

PROFESSIONAL SERVICE		
	Advisory Committee , Digital Information Technology, Sloan Foundation	2019–2021
	Chair , Nonproliferation and Policy Division, ANS	2020–2021
	Executive Committee , Mathematics and Computation Division, ANS	2020–2021
	Vice Chair , Nonproliferation and Policy Division, ANS	2019–2020

	Chair & Host , Technical Workshop on Fuel Cycle Simulation	2019
	Past Chair (<i>ex officio</i>), Fuel Cycle & Waste Management Division, ANS	2016–2017
	Co-Organizer , Technical Workshop on Fuel Cycle Simulation	2017
	Technical Program Committee , IHLRWM Conference	2017
	Chair , Fuel Cycle & Waste Management Division, ANS	2016–2017
	Vice Chair , Fuel Cycle & Waste Management Division, ANS	2015–2016
	Chair , Steering Committee, Software Carpentry Foundation	2014–2015
	Secretary–Treasurer , Fuel Cycle & Waste Management Division, ANS	2013–2015
	Secretary , Young Members Group, ANS	2013–2014
	Technical Program Co-Chair , SciPy, Scientific Python Conference	2013–2014
	Member , Next Generation Leadership Committee, Waste Management Symposium	2013–2014
	Moderator, Organizer, Panelist , inSCIght Scientific Computing Podcast	2011–2013
	Co-Founder , Nuclear Pride, LGBTQA Organization	2011–2013
	Co-Founder, Treasurer, President , Hacker Within Scientific Computing Group	2008–2011
	Governor, Treasurer , University of Wisconsin ANS student section	2008–2010
DEPARTMENTAL SERVICE	Faculty Advisor , UIUC ANS Student Section	2016–present
	Undergraduate Committee	2019–present
	Graduate Committee , Qualifying Exam Sub-Committee	2017-2019
	Admissions Sub-Committee	Spring 2017
	Admissions Sub-Committee	Fall 2016
	Advisory Committee ,	2017–2018
	Faculty Search Committee ,	2017–2018
	Faculty Advisor , UIUC WiN Student Section	2017–2018
COLLEGE SERVICE	Member , Instructional Facility Working Group,	2017-2018
	Selection Committee , Clare Boothe Luce (CBL) Research Scholars,	2020-2021
	Member , Engineering IT Governance Education Working Group,	2020-2021
	Faculty Mentor , ARISE program	2019-2020
	Member , ENG/TE Liaison Committee	2020-present
	Member , Instructional Facility Working Group	2017–2018
	Faculty Advisor , UIUC CSE The Hacker Within Scientific Computing Group	2016–2017
CAMPUS SERVICE	Steering Committee Member , Illinois Data Science Initiative	2018
	Hack Mentor , Hack Illinois	2017
CONSULTING	Thomas Edison State University Trenton, NJ	2018-2019
	<i>Subject Matter Expert</i>	
	Institute of Nuclear Power Operations (INPO) Academic Program Review	