Kathryn D. Huff

Contact Information

Blue Waters Assistant Professor
University of Illinois, Urbana-Champaign
Nuclear, Plasma, and Radiological Engineering
Affiliate Faculty, National Center for Supercomputing Applications
Affiliate Faculty, Computational Science and Engineering

mobile: (281) 734-1342
e-mail: katyhuff@gmail.com
website: katyhuff.github.com

Research Interests

Advanced nuclear reactors and fuel cycles, multi-physics simulation, nuclear fuel cycle analysis, scientific computation.

PhD

University of Wisconsin - Madison, Nuclear Engineering **Aug 2008 – Aug 2013**

- An Integrated Used Fuel Disposition and Generic Repository Model for Fuel Cycle Analysis
- Advisor: Professor Paul P.H. Wilson

BA

University of Chicago, Physics **Aug 2004 – Jun 2008**

- Celestial Gain Calibrations of QUIET Telescope Polarimeters

Research Experience

University of Illinois at Urbana-Champaign, Urbana, IL
Assistant Professor, Nuclear Plasma and Radiological Engineering **Aug 2016 – Present**
Blue Waters Asst. Prof., National Center for Supercomputing Applications **Aug 2016 – Present**
Principal investigator, advanced reactors and fuel cycles group.

University of California - Berkeley, NE Dept., Berkeley, CA
Postdoctoral Scholar, Nuclear Science and Security Consortium **Sep 2013 – Jul 2016**
Data Science Fellow, Berkeley Institute for Data Science **Aug 2014 – Jul 2016**
Developing computational tools and multiphysics models for advanced reactor safety analysis.

Argonne National Laboratory, Argonne, IL **Jun 2011 – Aug 2013**
Laboratory Graduate Research Appointee, Used Fuel Disposition Campaign
Developed a used fuel disposition and generic repository computational model.

University of Wisconsin - Madison, NEEP Dept., Madison, WI **Jun 2008 – Aug 2013**
Graduate Research Assistant, Computational Nuclear Engineering Research Group
Developed and applied Cyclus, a nuclear fuel cycle systems analysis tool.

Idaho National Laboratory, Idaho Falls, ID **Jun – Aug 2010**
Graduate Research Assistant, Systems Analysis Campaign
Developed software functions and requirements for the Fuel Cycle Simulator concept.

Kavli Institute For Cosmological Physics, Chicago, IL **Jan 2005 – Jun 2008**
Research Assistant, Laboratory for Astrophysics and Space Research
Programmed & machined instrumentation. Planned protocol for QUIET polarimeter calibration.

Universidad de Chile, Physics Dept., Santiago, Chile **Jun – Sep 2006**
Research Assistant, Chicago-Chile Research Exchange Program
Constructed and operated a far-from-equilibrium granular materials experiment.

Los Alamos Neutron Science Center, Los Alamos, NM **Jun – Sep 2004**
Research Assistant, LANSCE-3 **May – Aug 2003**
Applied digital filtration algorithms and MCNPX models to experimental data.

Honors and Awards

American Nuclear Society, Oestmann Professional Women's Achievement Award	**2017**
AE3, Collins Scholars Program Graduate	**2017**
NPRE, Students Award for Excellence in Undergraduate Teaching	**2017**
UIUC, Teachers Ranked as Excellent	**Fall 2016**
American Nuclear Society, Young Member Excellence Award	**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

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 Investigator *Huff Allocation:* **N/A**

Dynamic Transition Analysis with TIMES *Period:* 2018–2019
Source: I^{2}CNER *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: NNSA Office of DNN R&D *Award Total:* $25,000,000
Role: UIUC PI, CVT Investigator *Huff Allocation:* **$347,000**

Consortium for Nonproliferation Enabling Capabilities *Period:* 2014–2019
Source: NNSA Office of DNN R&D *Award Total:* $25,000,000
Role: 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: PI *Huff Allocation:* **$13,000**

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

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

Books

[1] Scopatz, A., **Huff, K.**. "Effective Computation in Physics: Field Guide to Research in Python" O'Reilly Media. ISBN:978-1491901533, 2015.

Book Chapters

[2] **Huff, K.**. "Case Study: Cyclus Project," in The Practice of Reproducible Research, 1st ed., Justin Kitzes, Fatma Imamoglu, and Daniel Turek, Eds. University of California, Berkeley: University of California Press. ISBN:9780520294752, 2017.

[3] **Huff, K.**. "Lessons Learned," in The Practice of Reproducible Research, 1st ed., Justin Kitzes, Fatma Imamoglu, and Daniel Turek, Eds. University of California, Berkeley: University of California Press. ISBN:9780520294752, 2017.

[4] **Huff, K.**. "Economics of Advanced Reactors and Fuel Cycles," in Storage and Hybridization of Nuclear Energy, 1st ed., Hitesh Bindra, Ed. Elsevier S&T Books.*(in preparation)*.

Journal Publications

[5] Lindsay, A., Ridley, G., Rykhlevskii, A., **Huff, K.** "Introduction to Moltres: an Application for Simulation of Molten Salt Reactors", **Annals of Nuclear Energy**, https://doi.org/10.1016/j.anucene.2017.12.025, Apr. 2018.

[6] Smith, A.M., Niemeyer, K.E., Katz, D.S., Barba, L. A., Githinji, G., Gymrek, M., **Huff, K.** et al. 2018. "Journal Of Open Source Software (JOSS): Design and First-Year Review." **PeerJ Computer Science** 4: e147. https://doi.org/10.7717/peerj-cs.147. Feb. 2018.

[7] Lindsay, A., **Huff, K.** "Moltres: finite element based simulation of molten salt reactors", **The Journal of Open Source Software**, https://doi.org/10.21105/joss.00298, Jan. 2018.

[8] Allen, A., Aragon, C., Becker, C., Carver, J., Chis, A., Combemale, B., Croucher, M., Crowston, K., Garijo, D., Gehani, A., Goble, C., Haines, R., Hirschfeld, R., Howison, J., **Huff, K.**, Jay, C., Katz, D.S., Kirchner, C., Kuksenok, K., Lämmel, R., Nierstrasz, O., Turk, M., Nieuwpoort, R. van, Vaughn, M., Vinju, J.J., "Engineering Academic Software (Dagstuhl Perspectives Workshop 16252)." **Dagstuhl Manifestos** 6, 120. https://doi.org/10.4230/DagMan.6.1.1, 2017.

[9] **Huff, K.** "Rapid Methods for Radionuclide Contaminant Transport in Nuclear Fuel Cycle Simulation", **Advances in Engineering Software**, https://doi.org/10.1016/j.advengsoft.2017.07.006, Dec. 2017.

[10] Andreades, C., Cisneros, A.T., Choi, J.K., Chong, A.Y., Fratoni, M., Hong, S., Huddar, L.R., **Huff, K.**, Kendrick, J., Krumwiede, D.L., Laufer, M., Munk, M., Scarlat, R.O., Wang, X., Zwiebaum, N., Greenspan, E. and P. Peterson. "Design Summary of the Mark-I Pebble-Bed, Fluoride SaltCooled, High-Temperature Reactor Commercial Power Plant," **Nuclear Technology**, vol. 195, no. 3, pp. 222-238, https://doi.org/10.13182/NT16-2, Sep. 2016.

[11] **Huff, K.**, Gidden, M., Carlsen, R., Flanagan, R., McGarry, M., Opotowsky, A., Schneider, E., Scopatz, A., Wilson, P. "Fundamental Concepts in the Cyclus Nuclear Fuel Cycle Simulation Framework." **Advances in Engineering Software**, vol. 94, pp. 4659, https://doi.org/10.1016/j.advengsoft.2016.01.014, Apr. 2016.

[12] Aruliah, D.A., Brown, C.T., Chue Hong, N.P., Davis, M., Guy, R.T., Haddock, S.H.D., **Huff, K.**, Mitchell, I., Plumbley, M., Waugh, B., White, E.P., Wilson, G.V., and Wilson, P.P.H. "Best Practices For Scientific Computing." **PLOS Biology**, Vol 1, Issue 12, https://dx.doi.org/10.1371/journal.pbio.1001745, 2014.

[13] Clerc, M., Dunstan, J., **Huff, K.**, Mujica, N., Varas, G. "Liquid-Solid-Like Transition in Quasi-One-Dimensional Driven Granular Media ", **Nature Physics**, Vol 4, 249 - 254, https://doi.org/10.1038/nphys884, 2008.

Submitted

[14] Bae, J.W., Singer, C.E., **Huff, K.** "Synergistic Spent Nuclear Fuel Dynamics Within The European Union." Submitted to Progress in Nuclear Energy, April 2018.

Refereed Conference Proceedings

[15] Niemeyer, K., Smith, A., Barba, L., Githinji, G., Gymrek, M., **Huff, K.**, Katz, D., Madan, C., Cabunoc, A. "Introducing JOSS: The Journal of Open Source Software" **Scientific Computing with Python Conference (SciPy 2017)**, Austin, TX. July 2017.

[16] **Huff, K.**, Bae, J., Mummah, K., Flanagan, R., Scopatz, A. "Current Status of Predictive Transition Capability in Fuel Cycle Simulation" **GLOBAL 2017 International Nuclear Fuel Cycle Conference**, Seoul, South Korea. September 2017.

[17] Bae, J., Roy, W., **Huff, K.**. "Benefits of Siting a Borehole Repository on Non-Operating Nuclear Facility" Paper 19727. **International High-Level Radioactive Waste Management Conference (IHLRWM 2017)**, Charlotte, NC. April 2017.

[18] Wang, X., **Huff, K.**, Aufiero, M., Peterson, P., Fratoni, M. "Coupled reactor kinetics and heat transfer model for nuclear reactor transient analysis." Paper 60728. **24th International Conference on Nuclear Engineering (ICONE24)**, Charlotte, NC. June 2016.

[19] Wang, X., **Huff, K.**, Aufiero, M., Peterson, P., Fratoni, M. "A sensitivity study of a coupled kinetics and thermal-hydraulics model for Fluoride-salt-cooled, High-temperature Reactor (FHR) transient analysis." **The International Congress on Advances in Nuclear Power Plants (ICAPP)**, San Francisco, CA. April 2016.

[20] Greenberg, H., Fratoni, M., Djokic, D., **Huff, K.**, Nibbelink, R., Scopatz, A. "The Application of CYCLUS to Fuel Cycle Transition Modeling" Paper 5061. **Proceedings of Global**, Paris, France. September 2015.

[21] **Huff, K.**, "PyRK: Python for Reactor Kinetics." **Proceedings of the 14th Python in Science Conference**, Austin, TX. July 2015.

[22] Krumwiede, D.L., Andreades, C., Choi, J.K., Cisneros, A.T., Huddar, L., **Huff, K.**, Laufer, M.D., Munk, M., Scarlat, R.O., Seifried, J.E., Zweibaum, N., Greenspan, E., Peterson, P.F. "Design of the Mark-I Pebble-Bed, Fluoride-Salt-Cooled, High-Temperature Reactor Commercial Power Plant," Paper 14231. **Proceedings of ICAPP**, Charlotte, NC. April 2014.

[23] **Huff, K.** "Cyclus Fuel Cycle Simulation Capabilities with the Cyder Disposal System Model," Paper 7730. **Proceedings of Global**, Salt Lake City, UT. October 2013.

[24] Gidden, M., Wilson, P., **Huff, K.**, Carlsen, R. "An Agent-Based Framework for Fuel Cycle Simulation with Recycling," Paper 7737. **Proceedings of Global**, Salt Lake City, UT. October 2013.

[25] **Huff, K.**, Nutt, M. "Hydrologic Nuclide Transport Models in Cyder, a Geologic Disposal Software Library," Paper 13328. **Proceedings of the Waste Management Symposium**, Phoenix, AZ. February 2013.

[26] Oliver, K.M., Wilson, P.P.H., Reveillere, A., **Huff, K.** "Studying international fuel cycle robustness with the GENIUSv2 discrete facilities/materials fuel cycle systems analysis tool ", Paper 9166. **Proceedings of Global**, Paris, France. 2009.

[27] Rochman, D., Haight, R. C., Wender, S. A., O'Donnell, J. M., Michaudon, A., **Huff, K.**, Vieira, D. J., Bond, E., Rundberg, R.S., Kronenberg, A., Wilhelmy, J., Bredeweg, T. A., Schwantes, J., Ethvignot, T., Granier, T., Petit, M., Danon, Y. "First Measurements with a Lead Slowing-Down Spectrometer at LANSCE," **AIP Conference Proceedings, International Conference on Nuclear Data for Science and Technology.** Volume 769. 2005.

Refereed Conference Abstracts

[28] Rykhlevskii, A., **Huff, K.** "Computational Tools for Advanced Molten Salt Reactor Simulation", **Blue Waters Symposium**, Sun River, OR, June 2018.

[29] Bae, J. W., **Huff, K.**, Singer,C. "Synergistic Spent Nuclear Fuel Dynamics Within the European Union" **Transactions of the American Nuclear Society Winter Conference.** Washington, DC, November 2017.

[30] Rykhlevskii, A., Lindsay, A., **Huff, K.** "Full-core analysis of thorium-fueled Molten Salt Breeder Reactor using the SERPENT 2 Monte Carlo code" **Transactions of the American Nuclear Society Winter Conference.** Washington, DC, United States, November 2017.

[31] Rykhlevskii, A., Lindsay, A., **Huff, K.** "Online reprocessing simulation for thorium-fueled molten salt breeder reactor," **Transactions of the American Nuclear Society Winter Conference.** Washington, DC, United States, November 2017.

[32] Ridley, G., Lindsay, A., and **Huff, K.** "An Introduction To Moltres, an MSR Multiphysics Code." **Transactions of the American Nuclear Society Winter Conference**. Washington D.C., United States, November 2017.

[33] **Huff, K.**, Scopatz, A. "Modernizing Computational Nuclear Engineering Education – In the Open" **Transactions of the American Nuclear Society Winter Conference.** Washington, DC. November 2015.

[34] **Huff, K.**, Fratoni, M., Greenberg, H. "Extensions to the CYCLUS Ecosystem in Support of Market-Driven Transition Capability" **Transactions of the American Nuclear Society Winter Conference.** Anaheim, CA. November 2014.

[35] Bates, C., Biondo, E., **Huff, K.**, Kiesling, K., Scopatz, A. "PyNE Progress Report" **Transactions of the American Nuclear Society Winter Conference.** Anaheim, CA. November 2014.

[36] **Huff, K.**, Bara, A. "Dynamic Determination of Thermal Repository Capacity For Fuel Cycle Analysis." **Transactions of the American Nuclear Society Annual Conference.** Atlanta, GA. June 2013.

[37] **Huff, K.**, Nutt, M. "Key Processes and Parameters in a Generic Clay Disposal System Model." **Transactions of the American Nuclear Society Winter Conference.** San Diego, CA. November 2012.

[38] Scopatz, A.M., Romano, P.K., Wilson, P.P.H., **Huff, K.** "PyNE: Python For Nuclear Engineering." **Transactions of the American Nuclear Society Winter Conference.** San Diego, CA. November 2012.

[39] **Huff, K.**, Bauer, T. "Numerical Calibration of an Analytical Generic Nuclear Repository Heat Transfer Model." **Transactions of the American Nuclear Society Annual Conference.** Chicago, IL. June 2012.

[40] **Huff, K.**, Gidden, M., Wilson, P.P.H. "Open architecture and modular paradigm of Cyclus, a fuel cycle simulation code." **Transactions of the American Nuclear Society Annual Conference.** Hollywood, FL. June 2011.

[41] **Huff, K.**, Scopatz, A., Preston, N., Wilson, P.P.H. "Rapid Peer Education of a Computational Nuclear Engineering Skill Suite." **Transactions of the American Nuclear Society Annual Conference.** Hollywood, FL. June 2011.

[42] **Huff, K.** "Cyclus: An Open, Modular, Next Generation Fuel Cycle Simulator Platform. " (poster) **Waste Management Symposium.** Phoenix, AZ. March 2011.

[43] **Huff, K.**, "MOX Fuel Recipe Approximation Tests in GENIUSv2. " **Proceedings of the American Nuclear Society Student Conference.** Ypsilanti, MI. April 2010.

[44] **Huff, K.**, Oliver, K., Wilson, P.P.H. "GENIUSv2 Discrete Facilities/Materials Modeling of International Fuel Cycle Robustness. " **Transactions of the American Nuclear Society Winter Conference.** Washington D.C. November 2009.

[45] **Huff, K.**, Wilson, P.P.H., Oliver, K. "GENIUS Version 2: Modelling the Worldwide Nuclear Fuel Cycle." (poster) **eHub Conference.** University of Wisconsin - Madison. November 2009.

Technical Reports

[46] Lindsay, A., **Huff, K.**. "Coupled Multi-Physics of Advanced Molten Salt Nuclear Reactors." **National Center for Supercomputing Applications,** Blue Waters Annual Report, https://bluewaters.ncsa.illinois.edu/liferay-content/document-library/BW_AR_2017.pdf 2017.

[47] Chee, G.J., Bae, J.W., **Huff, K.**, "Numerical Experiments For Verifying Demand Driven Deployment Algorithms." **Advanced Reactors and Fuel Cycles Report Series**, Nuclear Plasma and Radiological Engineering, University of Illinois. Report UIUC-ARFC-2018-01, https://arfc.npre.illinois.edu/research/reports/uiuc-arfc-2018-01.pdf Apr.2018.

[48] Bae, J.W. **Huff, K.**, "Non-algorithmic Capability Gaps for Cyclus and Cycamore Transition Analyses," **Advanced Reactors and Fuel Cycles Report Series**, Nuclear Plasma and Radiological Engineering, University of Illinois. Report UIUC-ARFC-2017-02, https://arfc.npre.illinois.edu/research/reports/uiuc-arfc-2017-02.pdf Nov. 2017.

[49] Ridley, G., Lindsay, A., Turk, M., **Huff, K.**, "Multiphysics Analysis of Molten Salt Reactor Transients," **Advanced Reactors and Fuel Cycles Report Series**, Nuclear Plasma and Radiological Engineering, University of Illinois. Report UIUC-ARFC-2017-01, https://arfc.npre.illinois.edu/research/reports/uiuc-arfc-2017-01.pdf Aug. 2017.

[50] C. Andreades, A. T. Cisneros, J.K. Choi, A.Y.K. Chong, D. L. Krumwiede, L.R. Huddar, **K. Huff**, M. R. Laufer, M.O. Munk, R.O. Scarlat, J. Seifried, N. Zweibaum, E. Greenspan, and P. F. Peterson, "Technical Description of the Mark 1 Pebble-Bed Fluoride-Salt-Cooled High-Temperature Reactor (PB-FHR) Power Plant," **U.C. Berkeley Nuclear Engineering**, Report UCBTH-14-002, 2014.

[51] **Huff, K.**, Nutt, W.M. "FY12 Sensitivity Studies Using the UFD Clay Generic Disposal System Model." **Argonne National Laboratory**. July 2012.

[52] **Huff, K.**, Bauer, T.H. "Benchmarking a New Closed-Form Thermal Analysis Technique Against a Traditional Lumped Parameter, Finite-Difference Method" **Argonne National Laboratory**. (FCRD-UFD-2012-000142). July 2012.

[53] **Huff, K.**, Dixon, B., Braase, L. "Next Generation Fuel Cycle Simulator Functions and Requirements Document." **Idaho National Laboratory** (FCRD-SYSA-2010-000110). July 2010.

[54] **Huff, K.** "Digital Filtering Application to the Lead Slowing Down Spectrometer." Los Alamos Neutron Science Center. August 2004. (**awarded los alamos distinguished student award.**)

[55] **Huff, K.** "Excess Single Event Effects in the Second Chip of a Series." Los Alamos Neutron Science Center. August 2003.

Other Publications

[56] **Huff, K.** An Integrated Used Fuel Disposition and Generic Repository Model for Fuel Cycle Analysis. Ph.D. Dissertation–Nuclear Engineering and Engineering Physics. University of Wisconsin – Madison. August 2013.

[57] **Huff, K.** "Celestial Calibrations of the Quiet Telescope." Undergraduate Honors Thesis. University of Chicago. June 2008.

[58] Biris, O., Gracey, K., **Huff, K.**, Ng, W.K. "An Analysis of the Consolidated Fuel Treatment Center Nuclear Reprocessing Initiative." **Big Problems Energy Seminar. University of Chicago.** June 2008.

Software Products

[59] Carlsen, R., Flanagan, R., Gidden, M.,**Huff, K.,** Littell, J., McGarry, M., Mouginot, B., Opotowsky, A., Scopatz, A., Skutnik, S., and Wilson, P.. Cycamore v1.5.0. **figshare**, Nov 2016. https://dx.doi.org/10.6084/m9.figshare.4312661.v1.

[60] **Huff, K.**. "PyRK v0.1" **figshare.** http://dx.doi.org/10.6084/m9.figshare.1540727. September 2015.

[61] Carlsen, R., Flanagan, R., Gidden, M., **Huff, K.**, McGarry, M., Opotowsky, A., Scopatz, A., Wilson, P., and Xia, J.. Cyclus v1.3.0. **figshare**, July 2015. http://dx.doi.org/10.6084/m9.figshare.1427429.

[62] Bates, C., Biondo, E., Brachem, C., Carlsen, R., Cary, J., Davis, A., Dembia, C., Elfring, M., Flanagan, R., Gidden, M., Haines, T., Howland, J., Huff, B., **Huff, K.**, Jackson, S., Kiesling, K., Klebenow, M., Kuett, M., Manalo, K., M. McCormick, A. Opotowsky, C., Pavlovsky, R., Rabbani, M., Relson, E., Romano, P., Scopatz, A., Shriwise, P., Slaybaugh, R., Wilson, P., Xia, J., J. Zachman, C., and Zweig, M. "PyNE v0.5." **github**. github.com/pyne/pyne/releases/tag/0.5.0. April 2015.

[63] Carlsen, R., Gidden, M., **Huff, K.**, Opotowsky, A., Rakhimov, O., Scopatz, A., and Wilson, P.. Cycamore v1.1.0. **figshare**, September 2014. http://dx.doi.org/10.6084/m9.figshare.1174604.

[64] Carlsen, R., Gidden, M., **Huff, K.**, Rakhimov, O., and Scopatz, A.. Cyclus v1.1.0. **figshare**, September 2014. http://dx.doi.org/10.6084/m9.figshare.1174603.

[65] Carlsen, R., Gidden, M., **Huff, K.**, Arrielle C. Opotowsky, Rakhimov, O., Scopatz, A., Zach Welch, and Wilson, P.. Cyclus v1.0.0. **figshare**, June 2014. http://dx.doi.org/10.6084/m9.figshare.1041745.

[66] Carlsen, R., Gidden, M., **Huff, K.**, Arrielle C. Opotowsky, Rakhimov, O., Scopatz, A., and Wilson, P.. Cycamore v1.0.0. **figshare**, June 2014. http://dx.doi.org/10.6084/m9.figshare.1041829.

Invited Talks

SciFOO, Google X, *Invited Camper.*	**Jun 23, 2018**
U. Illinois, Hack Illinois, *Keynote.*	**Feb 24, 2018**
U. Michigan, Nuclear Engineering and Radiological Sciences *Seminar.*	**Feb 9, 2018**
PyData, Meetup, Ann Arbor, MI *Invited Tech. Talk.*	**Feb 8, 2018**
Olin College of Engineering, *Seminar.*	**Oct 31, 2017**
Argonne National Laboratory, NNSA Nuclear Nonproliferation, *Seminar.*	**Sep 21, 2017**
SciPy 2017, Scientific Python Conference, Austin, TX, *Keynote.*	**Jul 12, 2017**
ANS Annual, Young Members Group, Workforce Transition, *Panel.*	**Jun 13, 2017**
ANS Annual, Mathematics and Computation Division, Current Issues, *Panel.*	**Jun 12, 2017**
Oak Ridge National Laboratory, RPNSD, *Seminar.*	**Jun 29, 2017**
PyCon 2017, Portland, OR. *Keynote.*	**May 19, 2017**
U. California, Davis, Mechanical and Aerospace Engineering, *Seminar.*	**April 20, 2017**
U. Illinois, Computational Science and Engineering, *Seminar.*	**Feb 2, 2017**
U. Illinois, AE3 Lightning Symposium, *Lightning Talk.*	**Mar 2, 2017**
U. Illinois, Nuclear, Plasma, & Radiological Engineering, *Undergraduate Seminar.*	**Feb 14, 2017**
U. California, Berkeley, Berkeley Institute for Data Science, *Symposium.*	**Jan 27, 2017**
U. Illinois, Informatics, *Seminar.*	**Oct 13, 2016**
PyData 2016, Chicago, IL. *Keynote.*	**Aug 27, 2016**
Oak Ridge National Laboratory, RPNSD, *Seminar.*	**Mar 3, 2016**

U. Tennessee, Knoxville, Nuclear Engineering, *Seminar.* **Mar 2, 2016**
Michigan State, Computational, Mathematics, Science, and Engineering, *Seminar.* **Dec 15, 2015**
U. Illinois, Nuclear, Plasma, & Radiological Engineering, *Seminar.* **Dec 8, 2015**
SC15, Austin TX, Python in High Performance Computing workshop, *Keynote.* **Nov 15, 2015**
U. Illinois, National Center for Supercomputing Applications, *Colloquium.* **Nov 6, 2015**
North Carolina State University, Nuclear Engineering, *Colloquium.* **Oct 15, 2015**
Texas A&M University, Nuclear Engineering, *Colloquium.* **Sep 29, 2015**
Rensselaer Polytechnic Inst, Mechanical and Nuclear Engineering, *Colloquium.* **Sep 21, 2015**
U. Washington, What Can Academia Learn from Open Source?, *Panel.* **Feb 2, 2015**

Engineering Teaching

University of Illinois at Urbana-Champaign
Dept. of Nuclear, Plasma, and Radiological Engineering
NPRE 412, Nuclear Power Economics and Fuel Management **Fall 2016, Fall 2017**
NPRE 555, Reactor Theory I **Spring 2018**
NPRE 247, Modeling Nuclear Energy Systems **Fall 2018**

University of California, Berkeley, Dept. of Nuclear Engineering **Apr 1,3,22, 2015**
NE 155, Introduction to Numerical Simulations in Radiation Transport
Point Reactor Kinetics, Monte Carlo Methods

University of California, Berkeley, Dept. of Nuclear Engineering **Sep 11, 2014**
NE 255, Numerical Simulation in Radiation Transport
Best Practices in Computational Nuclear Engineering

University of Wisconsin - Madison, Dept. of Nuclear Engineering **Apr 1&3, 2013**
NE 571, Economic and Environmental Aspects of Nuclear Energy
Nuclear Waste Repository Technology, Policy, and History

University of Wisconsin - Madison, Dept. of Nuclear Engineering **Sep 9&11, 2009**
NE 406, Nuclear Reactor Analysis
UNIX Shell, Basic Scripting, Environment Variables, Permissions, Regular Expressions, Makefiles

University of Wisconsin - Madison, Dept. of Nuclear Engineering **Feb 10, 2010**
NE 506, Practicum in Monte Carlo Radiation Transport
UNIX Shell, Basic Scripting, Environment Variables, Permissions, Regular Expressions, Makefiles

Invited Scientific Computing Teaching

SciPy Conference, Austin, TX **Jul 6–7, 2015**
Introductory Python For Scientific Software

University of Split, Split, Croatia **Sep 8–13, 2014**
G-Node Advanced Scientific Programming in Python Summer School

SciPy Conference, Austin, TX **Jun 25, 2013**
Version Control and Unit Testing For Scientific Software

University of Chicago, Graduate School, Chicago, IL **Jan 12–13, 2013**
Computational Literacy Workshop

University of California, Berkeley, Berkeley, CA **Oct 20–21, 2012**
Department of Statistics Scientific Computing Workshop

Lawrence Berkeley National Laboratory, Berkeley, CA **Oct 17–18, 2012**
Software Carpentry Python Workshop

International Center for Theoretical Physics, Trieste, Italy **Feb 20–Mar 2, 2012**
UNESCO/IAEA Advanced School on Scientific Software Development

University of Toronto, Toronto, ON, Canada **Nov 7–8, 2011**
SciNet Consortium For High Performance Computing Software Carpentry Bootcamp

American Nuclear Society Winter Meeting, Washington, D.C. **Nov 1, 2011**
Young Professionals Congress Hacker Within Scientific Computing Tutorial

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

Name	Dates	Role
Alexander Lindsay	2016–2017	Advisor

Graduate Researchers

Name	Degree - Year	Role
Michael Cheng	MS - 2017	MS Second Reader
Mark Kamuda	MS - 2017	MS Second Reader
Mark Kamuda	PhD - (est. 2019)	PhD Advisor
Andrei Rykhlevskii	PhD - (est. 2021)	PhD Advisor
Jin Whan Bae	PhD - (est. 2022)	PhD Advisor
Sun Myung Park	PhD - (est. 2022)	PhD Advisor
Anshuman Chaube	PhD - (est. 2022)	PhD Advisor
Gwendolyn Chee	MS - (est. 2020)	MS Advisor
Gregory Westphal	MS - (est. 2020)	MS Advisor

Undergraduate Researchers

Name	Degree - Year	Scholarships
Jin Whan Bae	BS - 2017	NPRE 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
Louis Kissinger	BS - (est. 2019)	
Xin Wen	BS - (est. 2018)	Students Pushing Innovation
Daniel Chu	BS - (est. 2020)	
Tyler Kennelly	BS - (est. 2019)	
Bradley Ellis	BS - (est. 2019)	
Adam Pichman	BS - (est. 2019)	
Zoë Richter	BS - (est. 2018)	

Visiting Researchers

Name	Dates	Level - Institution
Gavin Ridey	2017	BS–University of Tennessee, Knoxville
Aditya Bhosale	2017	BS - IIT, Bombay
Snehal Chandan	2017	BS - IIT, Bombay

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, LaTeX, Mathematica, MatLab, MCNP, MOOSE

Editing and Reviewing

Editor

Journal of Open Source Software **2016 – present**
Journal of Open Source Education **2018 – present**
Proceedings of the SciPy Scientific Python Conference **2013, 2015, & 2017**

Manuscript Referee

Annals of Nuclear Energy
Journal of Nuclear Energy Science and Power Generation Technology
Nuclear Engineering and Design
Nuclear Science and Engineering
Nuclear Technology
Progress in Nuclear Energy

Grant Proposal Referee

Dept. of Energy Nuclear Energy University Programs
Dept. of Energy Technology Commercialization Fund
Blue Waters Fellows Program
Alfred P. Sloan Foundation

Book Proposal Referee

O'Reilly Media
Elsevier

Professional Service

Past Chair *(ex officio)*, 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

Graduate Committee, Qualifying Exam Sub-Committee	**Fall 2017**
Qualifying Exam Sub-Committee	**Fall 2017**
Admissions Sub-Committee	**Spring 2017**
Admissions Sub-Committee	**Fall 2016**
Advisory Committee,	**2017–2018**
Faculty Search Committee,	**2017–2018**
Faculty Advisor, UIUC ANS Student Section	**2016–2018**

	Faculty Advisor, UIUC WiN Student Section	**2017–2018**
College Service	**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 *Subject Matter Expert* Institute of Nuclear Power Operations (INPO) Academic Program Review	**2018**