

Matthew J. Gidden

CONTACT INFORMATION	Department of Nuclear Engineering University of Wisconsin - Madison 1500 Engineering Dr., Rm. 434 Madison, WI 53706 USA	<i>Mobile:</i> +1-225-892-3192 <i>Fax:</i> +1-608-263-7451 <i>E-mail:</i> gidden@wisc.edu <i>Website:</i> mattgidden.com
CITIZENSHIP	USA	
RESEARCH INTERESTS	Nuclear fuel cycle simulation and analysis, agent-based modeling, linear/non-linear optimization techniques, simulation execution leveraging high throughput computing, energy policy, nuclear non-proliferation, reactor physics simulations for fuel cycles, advanced nuclear fuel cycles	
EDUCATION	PH.D., Nuclear Engineering, University of Wisconsin - Madison March 2015 <ul style="list-style-type: none"> An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle Advisor: Professor Paul P.H. Wilson MASTERS, Nuclear Engineering, University of Wisconsin - Madison December 2011 B.S., Nuclear Engineering, Texas A&M University May 2009 <ul style="list-style-type: none"> <i>Summa cum Laude</i>, With Honors in Engineering Minor in Mathematics 	
HONORS & AWARDS	2 nd Place in Energy Policy, Innovations in Fuel Cycle Research 2014 Winner, The Why Files Cool Science Image Contest 2014 Nuclear Energy University Program Graduate Research Fellowship 2010 – 2013 American Nuclear Society Graduate Scholarship 2013 Nuclear Regulatory Commission Undergraduate Scholarship 2008 – 2009 President's Endowed Scholarship, Texas A&M University 2005 – 2009 Stinson Scholarship, Texas A&M University 2005 – 2009	
RESEARCH EXPERIENCE	University of Wisconsin, NE Dept., Madison, WI April 2015 – Present <i>Postdoctoral Research Assistant</i> Investigated novel methods for modeling recycle fuel fabrication in NFC simulations. University of Wisconsin, NE Dept., Madison, WI Aug 2010 – March 2015 <i>Graduate Research Assistant</i> Aug 2009 – Jan 2010 Developed and extended the Cyclus NFC simulator to model generic nuclear fuel cycles. AREVA, Paris, FRANCE Feb – Jul 2010 <i>Research Intern (Stagiaire), Core Design Group</i> Simulated and analyzed a boron dilution accident in multiple reactor configurations using MCNP. Pacific Northwest National Lab, Richland, WA Jun – Aug 2009 <i>Research Assistant</i> Analyzed a design of an automated verification unit for canisters of enriched UF ₆ using MCNP. TN International (AREVA), Montigny-le-Bretonneux FRANCE Jun – Aug 2008 <i>Research Intern, Materials Group</i> Analyzed material suitability for nuclear cask shock absorber via dynamic compression testing. Oak Ridge National Lab, Oak Ridge, TN Jun – Aug 2007 <i>Research Assistant</i> Jun – Aug 2006 Tested the collimation of radiation portal monitors for use with the U.S. Megaports Initiative.	

PROFESSIONAL ORGANIZATIONS & SERVICE	American Nuclear Society , Member	2006 – Present
	Communications Committee, Member	2013 – Present
	Public Policy Committee, Member	2013 – Present
	Student Sections Committee, Member	2010 – Present
	Local Sections Committee, Member	2010 – 2012
	Nuclear Nonproliferation Special Committee, Member	2010 – 2012
	ANS Student Conference, Co-Chair	2008
	Institute of Nuclear Materials Management , Member	2008 – Present
	Alpha Nu Sigma , Member	2009 – Present
	Nuclear Engineering Student Delegation , Delegate	2011 – 2013
	Chair	2013
JOURNAL PUBLICATIONS	Vice Chair	2012
	American Nuclear Society, Texas A&M Chapter , Member	2005 – 2009
	Vice President	2006 – 2007
	[1] Pearce, T. M. Williams, J. J. Kruzel, S. P. Gidden, M. J. Williams, J. C., “Dynamic control of extracellular environment in in vitro neural recording systems,” <i>Neural Systems and Rehabilitation Engineering, IEEE Transactions on</i> , vol. 13, no. 2, pp. 207–212, 2005	
	[2] Huff, K. D. Gidden, M. J. Carlsen, R. W. Flanagan, R. R. McGarry, M. B. Opatowsky, A. C. Schneider, E. A. Scopatz, A. M. Wilson, P. P. H., “Fundamental concepts in the cyclus fuel cycle simulator framework and modeling ecosystem,” <i>Nuclear Technology</i> , 2015	
	[3] Scopatz, A. M. Gidden, M. J. Carlsen, R. W. Flanagan, R. R. Huff, K. D. McGarry, M. B. Opatowsky, A. C. Rakhimov, O. Welch, Z. Wilson, P. P. H., “Cyclus Archetypes,” <i>Nuclear Technology</i> , 2015	
	[4] Gidden, M. Wilson, P., “Dynamic Resource Exchange with CoinOR-CBC in Cyclus, a Nuclear Fuel Cycle Simulator,” in <i>Operations Research and Computing: Algorithms and Software for Analytics</i> , Richland, VA, United States, Jan. 2015	
	[5] Gidden, M. Carlsen, R. Opatowsky, A. Rakhimov, O. Scopatz, A. Wilson, P., “Agent-based dynamic resource exchange in cyclus,” in <i>Proceedings of PHYSOR</i> , Kyoto, Japan, Sep. 2014	
	[6] Gidden, M. Wilson, P., “An agent-based framework for fuel cycle simulation with recycling,” in <i>Proceedings of GLOBAL</i> , Salt Lake City, UT, United States, Sep. 2013	
	[7] Gidden, M. Wilson, P., “Dynamic Resource Exchange Performance in Cyclus,” in <i>Transactions of the American Nuclear Society</i> , San Antonio, TX, United States, Jun. 2015	
	[8] Carlsen, R. W. Gidden, M. J. Wilson, P. P., “Deployment Optimization with the CYCLUS Fuel Cycle Simulator,” in <i>Transactions of the American Nuclear Society</i> , DOI link for code, methods, etc: http://dx.doi.org/10.6084/m9.figshare.1086284 , vol. 111, Anaheim, CA, Nov. 2014, pp. 241–244	
ACCEPTED MANUSCRIPTS	[9] Biondo, E. Scopatz, A. Gidden, M. Slaybaugh, R. Bates, C. Wilson, P. P., “Quality Assurance within the PyNE Open Source Toolkit,” in <i>Transactions of the American Nuclear Society</i> , vol. 111, Anaheim, CA, Nov. 2014. [Online]. Available: https://github.com/pyne/ans-winter-2014-vnv	
	[10] Gidden, M. Wilson, P. Scopatz, A., “Developing standardized, open benchmarks and a corresponding specification language for the simulation of dynamic fuel cycles,” in <i>Proceedings of the 2013 ANS Summer Conference</i> , Atlanta, GA, United States, Jun. 2013	
SUBMITTED MANUSCRIPTS		
REFEREED PROCEEDINGS		
CONFERENCE PUBLICATIONS		

	<p>[11] Gidden, M. Wilson, P. Huff, K. Carlsen, R., “Once-through benchmarks with cyclus, a modular, open-source fuel cycle simulator,” in <i>Proceedings of the 2012 ANS Winter Conference</i>, San Diego, CA, Nov. 2012</p> <p>[12] Gidden, M. Wilson, P. Huff, K., “Once-Through Benchmarks with Cyclus,” in <i>ANS Student Conference</i>, Las Vegas, NV, 2011</p> <p>[13] Huff, K. D. Wilson, P. P. Gidden, M. J., “Open Architecture and Modular Paradigm of Cyclus, a Fuel Cycle Simulation Code,” in <i>Transactions of the American Nuclear Society</i>, vol. 104, 2011, p. 183</p> <p>[14] Huff, K. Wilson, P. Gidden, M. Elmore, R., <i>Cyclus : An Open, Modular, Next Generation Fuel Cycle Simulator Platform</i>, Poster, Mar. 2011</p> <p>[15] Gidden, M. Livesay, J. York, R. Blessinger, C., “Collimation of Radiation Portal Monitors to Reduce the Innocent Alarm Rate (Poster),” in <i>Transactions of the American Nuclear Society</i>, Washington, DC, Nov. 2007</p>														
OTHER PUBLICATIONS	<p>[16] Gidden, M. J., “An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle,” Thesis, University of Wisconsin, Madison, WI, United States, Mar. 2015</p> <p>[17] Gidden, M., “An agent-based modeling framework and application for the generic nuclear fuel cycle,” Prelim, University of Wisconsin, Madison, Sep. 2013. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1132596</p>														
TALKS	<p>[18] Gidden, M., <i>Exploring Nuclear Fuel Cycle Simulation using HTCondor</i>, HTCondor Week, May 2015</p>														
SOFTWARE	<p>[19] Carlsen, R. W. Gidden, M. Huff, K. Opotowsky, A. C. Rakhimov, O. Scopatz, A. M. Welch, Z. Wilson, P., <i>Cyclus v1.0.0</i>, Jun. 2014. [Online]. Available: http://figshare.com/articles/Cyclus_v1_0_0/1041745</p> <p>[20] Carlsen, R. W. Gidden, M. Huff, K. Opotowsky, A. C. Rakhimov, O. Scopatz, A. M. Wilson, P., <i>Cycamore v1.0.0</i>, Jun. 2014. [Online]. Available: http://figshare.com/articles/Cycamore_v1_0_0/1041829</p> <p>[21] Gidden, M., <i>Cyclopts</i>, http://mattgidden.com/cyclopts/, Dec. 2014. [Online]. Available: http://mattgidden.com/cyclopts/</p> <p>[22] Scopatz, A. Gidden, M. Welch, Z., “Polyphemus v0.1,” Jun. 2014. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1066058</p> <p>[23] Scopatz, A. Bates, C. R. Biondo, E. Huff, K. Kiesling, K. Carlsen, R. Davis, A. Gidden, M. Haines, T. Howland, J. Huff, B. Manalo, K. Opotowsky, A. Slaybaugh, R. Relson, E. Romano, P. Shriwise, P. Xia, J. D. Wilson, P. Zachman, J., “PyNE Progress Report,” Nov. 2014. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1250143</p>														
COMPUTATIONAL SKILLS	<p>I have deep and broad software development skills and experience. I help maintain and manage a number of open source scientific software packages including Cyclus and PyNE.</p> <p>EXPERT (5+ YEARS EXPERIENCE)</p> <table> <tr> <td>Languages</td><td>C++/C, Python</td></tr> <tr> <td>Build Systems</td><td>CMake, Make, Autoconf/Automake</td></tr> <tr> <td>Version Control</td><td>Git</td></tr> <tr> <td>Tools</td><td>L^AT_EX, Doxygen, Sphinx, XML</td></tr> <tr> <td>Database Formats</td><td>SQL, HDF5</td></tr> <tr> <td>Test Frameworks</td><td>GoogleTest, Nose</td></tr> <tr> <td>NE Applications</td><td>MCNP, Origen</td></tr> </table>	Languages	C++/C, Python	Build Systems	CMake, Make, Autoconf/Automake	Version Control	Git	Tools	L ^A T _E X, Doxygen, Sphinx, XML	Database Formats	SQL, HDF5	Test Frameworks	GoogleTest, Nose	NE Applications	MCNP, Origen
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FAMILIAR

Languages

Version Control

Tools

NE Applications

Other Applications

FORTTRAN, Java, Visual Basic, Perl

Mercurial, Subversion

Jekyll, JSON

DRAGON, TransLAT

IPython/IPython Notebooks, Matlab, Mathcad, Mathematica, Maple