

## Matthew J. Gidden

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CONTACT INFORMATION	Department of Nuclear Engineering University of Wisconsin - Madison 1500 Engineering Dr., Rm. 437 Madison, WI 53706 USA	Mobile: +1-225-892-3192 E-mail: <a href="mailto:mattthew.gidden@gmail.com">mattthew.gidden@gmail.com</a> Website: <a href="http://mattgidden.com">mattgidden.com</a>
CITIZENSHIP	USA	
RESEARCH INTERESTS	Nuclear fuel cycle analysis, energy policy, nuclear non-proliferation, agent-based modeling, advanced nuclear reactors, alternative energy systems, scientific computation	
EDUCATION	<p>PH.D., <i>Nuclear Engineering</i>, <b>University of Wisconsin - Madison</b> <b>March 2015</b></p> <ul style="list-style-type: none"> <li>• An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle</li> <li>• Advisor: Professor Paul P.H. Wilson</li> </ul> <p>MASTERS, <i>Nuclear Engineering</i>, <b>University of Wisconsin - Madison</b> <b>December 2011</b></p> <p>B.S., <i>Nuclear Engineering</i>, <b>Texas A&amp;M University</b> <b>May 2009</b></p> <ul style="list-style-type: none"> <li>• <i>Summa cum Laude</i>, With Honors in Engineering</li> <li>• Minor in Mathematics</li> </ul>	
RESEARCH EXPERIENCE	<p><b>University of Wisconsin, NE Dept.</b>, Madison, WI <b>April 2015 – Present</b></p> <p><i>Postdoctoral Research Assistant</i></p> <p>Investigated novel methods for modeling recycle fuel fabrication in NFC simulations.</p> <p><b>University of Wisconsin, NE Dept.</b>, Madison, WI <b>Aug 2010 – March 2015</b></p> <p><i>Graduate Research Assistant</i> <b>Aug 2009 – Jan 2010</b></p> <p>Developed and extended the Cyclus NFC simulator to model generic nuclear fuel cycles.</p> <p><b>AREVA</b>, Paris, FRANCE <b>Feb – Jul 2010</b></p> <p><i>Research Intern (Stagiaire), Core Design Group</i></p> <p>Simulated and analyzed a boron dilution accident in multiple reactor configurations using MCNP.</p> <p><b>Pacific Northwest National Lab</b>, Richland, WA <b>Jun – Aug 2009</b></p> <p><i>Research Assistant</i></p> <p>Analyzed a design of an automated verification unit for canisters of enriched UF<sub>6</sub> using MCNP.</p> <p><b>TN International (AREVA)</b>, Montigny-le-Bretonneux FRANCE <b>Jun – Aug 2008</b></p> <p><i>Research Intern, Materials Group</i></p> <p>Analyzed material suitability for nuclear cask shock absorber via dynamic compression testing.</p> <p><b>Oak Ridge National Lab</b>, Oak Ridge, TN <b>Jun – Aug 2007</b></p> <p><i>Research Assistant</i> <b>Jun – Aug 2006</b></p> <p>Tested the collimation of radiation portal monitors for use with the U.S. Megaports Initiative.</p>	
HONORS & AWARDS	<p>2<sup>nd</sup> Place in Energy Policy, Innovations in Fuel Cycle Research <b>2014</b></p> <p>Winner, The Why Files Cool Science Image Contest <b>2014</b></p> <p>Nuclear Energy University Program Graduate Research Fellowship <b>2010 – 2013</b></p> <p>American Nuclear Society Graduate Scholarship <b>2013</b></p> <p>Nuclear Regulatory Commission Undergraduate Scholarship <b>2008 – 2009</b></p> <p>President's Endowed Scholarship, Texas A&amp;M University <b>2005 – 2009</b></p> <p>Stinson Scholarship, Texas A&amp;M University <b>2005 – 2009</b></p>	

JOURNAL  
PUBLICATIONS

- [1] Pearce, T. M. Williams, J. J. Kruzel, S. P. **Giddens, M. J.** Williams, J. C., “Dynamic control of extracellular environment in in vitro neural recording systems,” *Neural Systems and Rehabilitation Engineering, IEEE Transactions on*, vol. 13, no. 2, pp. 207–212, 2005

ACCEPTED  
MANUSCRIPTS

- [2] Huff, K. D. **Giddens, 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,” *Nuclear Technology*, 2015

SUBMITTED  
MANUSCRIPTS

- [3] Scopatz, A. M. **Giddens, 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,” *Nuclear Technology*, 2015

REFEREED  
PROCEEDINGS

- [4] **Giddens, M.** Wilson, P., “Dynamic Resource Exchange with CoinOR-CBC in Cyclus, a Nuclear Fuel Cycle Simulator,” in *Operations Research and Computing: Algorithms and Software for Analytics*, Richland, VA, United States, Jan. 2015
- [5] **Giddens, M.** Carlsen, R. Opatowsky, A. Rakhimov, O. Scopatz, A. Wilson, P., “Agent-based dynamic resource exchange in Cyclus,” in *Proceedings of PHYSOR*, Kyoto, Japan, Sep. 2014

CONFERENCE  
PUBLICATIONS

- [6] **Giddens, M.** Wilson, P., “An Agent-Based Framework for Fuel Cycle Simulation with Recycling,” in *Proceedings of GLOBAL*, Salt Lake City, UT, United States, Sep. 2013
- [7] **Giddens, M.** Wilson, P., “Dynamic Resource Exchange Performance in Cyclus,” in *Transactions of the American Nuclear Society*, San Antonio, TX, United States, Jun. 2015
- [8] Carlsen, R. W. **Giddens, M. J.** Wilson, P. P., “Deployment Optimization with the CYCLUS Fuel Cycle Simulator,” in *Transactions of the American Nuclear Society*, DOI link for code, methods, etc: <http://dx.doi.org/10.6084/m9.figshare.1086284>, vol. 111, Anaheim, CA, Nov. 2014, pp. 241–244
- [9] Biondo, E. Scopatz, A. **Giddens, M.** Slaybaugh, R. Bates, C. Wilson, P. P., “Quality Assurance within the PyNE Open Source Toolkit,” in *Transactions of the American Nuclear Society*, vol. 111, Anaheim, CA, Nov. 2014. [Online]. Available: <https://github.com/pyne/ans-winter-2014-vnv>
- [10] **Giddens, M.** Wilson, P. Scopatz, A., “Developing standardized, open benchmarks and a corresponding specification language for the simulation of dynamic fuel cycles,” in *Transactions of the American Nuclear Society*, Atlanta, GA, United States, Jun. 2013
- [11] **Giddens, M.** Wilson, P. Huff, K. Carlsen, R., “Once-through benchmarks with cyclus, a modular, open-source fuel cycle simulator,” in *Transactions of the American Nuclear Society*, San Diego, CA, Nov. 2012
- [12] **Giddens, M.** Wilson, P. Huff, K., “Once-Through Benchmarks with Cyclus,” in *ANS Student Conference*, Las Vegas, NV, 2011
- [13] Huff, K. D. Wilson, P. P. **Giddens, M. J.**, “Open Architecture and Modular Paradigm of Cyclus, a Fuel Cycle Simulation Code,” in *Transactions of the American Nuclear Society*, vol. 104, 2011, p. 183
- [14] Huff, K. Wilson, P. **Giddens, M.** Elmore, R., *Cyclus : An Open, Modular, Next Generation Fuel Cycle Simulator Platform*, Poster, Mar. 2011
- [15] **Giddens, M.** Livesay, J. York, R. Blessinger, C., “Collimation of Radiation Portal Monitors to Reduce the Innocent Alarm Rate (Poster),” in *Transactions of the American Nuclear Society*, Washington, DC, Nov. 2007

## OTHER PUBLICATIONS

- [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
- [17] **Gidden, M. J.**, “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>

## SOFTWARE

- [18] Carlsen, R. W. **Gidden, M.** Huff, K. Opotowsky, A. C. Rakhimov, O. Scopatz, A. M. Welch, Z. Wilson, P., *Cyclus v1.0.0*, Jun. 2014. [Online]. Available: [http://figshare.com/articles/Cyclus\\_v1\\_0\\_0/1041745](http://figshare.com/articles/Cyclus_v1_0_0/1041745)
- [19] Carlsen, R. W. **Gidden, M.** Huff, K. Opotowsky, A. C. Rakhimov, O. Scopatz, A. M. Wilson, P., *Cycamore v1.0.0*, Jun. 2014. [Online]. Available: [http://figshare.com/articles/Cycamore\\_v1\\_0\\_0/1041829](http://figshare.com/articles/Cycamore_v1_0_0/1041829)
- [20] **Gidden, M.**, *Cyclopts*, Dec. 2014. [Online]. Available: <http://figshare.com/articles/cyclopts/1288959>
- [21] Scopatz, A. **Gidden, M.** Welch, Z., “Polyphemus v0.1,” Jun. 2014. [Online]. Available: <http://dx.doi.org/10.6084/m9.figshare.1066058>

## TEACHING EXPERIENCE

University of Wisconsin Advanced Computing Initiative, Madison, WI    Jan 13 – 16, 2015  
Version Control

University of Wisconsin Advanced Computing Initiative, Madison, WI Aug 25 – 26, 2014  
Version Control and Unit Testing

**University of Wisconsin Advanced Computing Initiative, Madison, WI   Aug 28 – 29, 2013**  
Version Control

University of Wisconsin Advanced Computing Initiative, Madison, WI    **Apr 29 – 30, 2013**  
Version Control and Unit Testing

## PROFESSIONAL ORGANIZATIONS

<b>American Nuclear Society, Member</b>	<b>2006 – Present</b>
Communications Committee, Member	<b>2013 – Present</b>
Public Policy Committee, Member	<b>2013 – Present</b>
Student Sections Committee, Member	<b>2010 – Present</b>
Local Sections Committee, Member	<b>2010 – 2012</b>
Nuclear Nonproliferation Special Committee, Member	<b>2010 – 2012</b>
ANS Student Conference, Co-Chair	<b>2008</b>
<b>Institute of Nuclear Materials Management, Member</b>	<b>2008 – Present</b>
<b>Alpha Nu Sigma, Member</b>	<b>2009 – Present</b>
<b>Nuclear Engineering Student Delegation, Delegate</b>	<b>2011 – 2013</b>
Chair	<b>2013</b>
Vice Chair	<b>2012</b>
<b>American Nuclear Society, Texas A&amp;M Chapter, Member</b>	<b>2005 – 2009</b>
Vice President	<b>2006 – 2007</b>

## COMPUTATIONAL SKILLS

Languages	C++/C, Python, FORTRAN, Visual Basic, Perl
Build Systems	CMake, make, autoconf/automake
Database Formats	SQL, HDF5
Test Frameworks	GoogleTest, nose
Tools	L <sup>A</sup> T <sub>E</sub> X, Doxygen, Sphinx, Jekyll, XML, JSON

NE Applications	MCNP, Origen, DRAGON, TransLAT
Other Applications	IPython/IPython Notebooks, Matlab, Mathcad, Mathematica, Maple

REFERENCES	Available upon request
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