Matthew J. Gidden

CONTACT INFORMATION

Department of Nuclear Engineering
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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

University of Wisconsin - Madison, Madison, WI USA

Ph.D., Nuclear Engineering, March 2015

- An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle
- Advisor: Professor Paul Wilson
- GPA: 3.7/4.0

University of Wisconsin - Madison, Madison, WI USA

M.S., Nuclear Engineering, December 2011

- GPA: 3.7/4.0

Texas A&M University, College Station, TX USA

B.S., Nuclear Engineering, May 2009

- *Summa cum Laude*, With Honors in Engineering
- Minor in Mathematics
- GPA: 3.97/4.0

AWARDS

Innovations in Fuel Cycle Research
- Energy Policy, 2nd Place, 2014

Nuclear Energy University Program
- Graduate Research Fellowship, 2010–2013

American Nuclear Society
- Graduate Scholarship, 2013

Nuclear Regulatory Commision
- Undergraduate Scholarship, 2008–2009

Texas A&M University
- President's Endowed Scholarship, 2005–2009
- Stinson Scholarship, 2005–2009

PROFESSIONAL EXPERIENCE

AREVA, Paris FRANCE

Research Intern in the Core Design Group **February 2010 to July 2010**

- Simulated and analyzed a boron dilution accident for various full-core configurations of France's fleet of nuclear reactors using MCNP.
- Mentored by Christian ROYERE.

Pacific Northwest National Lab, Richland, Washington USA

Research Intern **Summer 2009**

- Analyzed a proof-of-concept design of an automated verification unit for canisters of enriched Uranium Hexa-Flouride using MCNP.
- Mentored by Eric Smith.

TN International (AREVA), Montigny-le-Bretonneux FRANCE

Research Intern in the Materials Group **Summer 2008**

- Performed dynamic compression testing on a variety of materials in order to determine property changes under dynamic rather than static loads. Analysis of results was performed using Microsoft Excel.
- Mentored by Herve ISSARD.

Oak Ridge National Lab, Oak Ridge, Tennessee USA

Research Intern **Summers 2006 & 2007**

- Tested and analyzed a collimated radiation portal monitor designed to increase efficiency at port facilities under the U.S. Megaports Initiative.
- Mentored by Chris Blessinger.

PROFESSIONAL ORGANIZATIONS

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)
- 2008 ANS Student Conference co-chair

American Nuclear Society, Texas A&M Chapter
- Member (2005 - 2009)
- Vice President of Internal Affairs (2006 - 2007)

Alpha Nu Sigma
- Member (2009 - present)

Institute of Nuclear Materials Management
- Member (2008 - present)

Nuclear Engineering Student Delegation
- Chair (2013)
- Vice Chair (2012)
- Delegate (2011)

Software Carpentry
- Workshop Instructor (Jan. 2015, Aug. 2014, Aug. 2013, Apr. 2013)

PUBLICATIONS

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*, Neural Systems and Rehabilitation Engineering, 13, 2, pp. 207-212 (2005).

SUBMITTED

Huff, K., Gidden, M., Carlsen, R., Flanagan, R., McGarry, M., Opotowsky, A., Rakhimov, O., Welch, Z., Schneider, E., Scopatz, A., Wilson, P., *Fundamental Concepts in the Cyclus Fuel Cycle Simulator Framework and Modeling Ecosystem* Nuclear Technology, 2015. (submitted)

Scopatz, A., Gidden, M., Carlsen, R., Flanagan, R., Huff, K., McGarry, M., Opotowsky, A., Rakhimov, O., Welch, Z., Wilson, P. *Cyclus Archetypes* Nuclear Technology, 2015. (submitted)

Refereed Conference Proceedings

Gidden, M.; Carlsen, R.; Opotowsky, A.; Rakhimov, O.; Scopatz, A.; Wilson, P., *Agent-Based Dynamic Resource Exchange in Cyclus*, PHYSOR Conference, Kyoto, Japan (2014).

Gidden, M.; Wilson, P., *Agent-Based Framework for Fuel Cycle Simulation with Recycling*, GLOBAL Conference, Salt Lake City, UT, USA (2013).

Conference Publications

Gidden, M.; Wilson, P., *Dynamic Resource Exchange Performance in Cyclus*, ANS Summer Conference (2015, *Accepted*).

Gidden, M.; Wilson, P., *Dynamic Resource Exchange with CoinOR-CBC in Cyclus, a Nuclear Fuel Cycle Simulator*, 14th INFORMS Computing Society Conference (2015).

Gidden, M.; Scopatz, A.; Wilson, P., *Developing Standardized, Open Benchmarks and a Corresponding Specification Language for the Simulation of Dynamic Fuel Cycles*, ANS Summer Conference (2013).

Gidden, M.; Wilson, P., Huff, K.; Carlsen, R., *Cyclus Once-Through Fuel Cycle Capabilities: An INPRO Benchmark & VISION Comparisons*, ANS Winter Conference (2012).

Gidden, M.; Wilson, P; Huff, K., *Cyclus Once-Through Fuel Cycle Benchmarks*, ANS Student Conference (2011).

Gidden, M.; Blessinger, C.; Livesay, J.; York, R., *Collimation of Radiation Portal Monitors to Reduce the Innocent Alarm Rate*, Poster, ANS Winter Conference (2007).

Software

Carlsen, R.; Gidden, M.; Huff, K.; Opotowsky, A.; Rakhimov, O.; Scopatz, A.; Wilson, P., *Cyclus v1.0.0*, http://dx.doi.org/10.6084/m9.figshare.1174603 (2014).

Carlsen, R.; Gidden, M.; Huff, K.; Opotowsky, A.; Rakhimov, O.; Scopatz, A.; Wilson, P., *Cycamore v1.0.0*, http://dx.doi.org/10.6084/m9.figshare.1041829 (2014).

Gidden, M.; *Cyclopts v0.10.0*, http://dx.doi.org/10.6084/m9.figshare.1288959 (2015).

Scopatz, A.; Gidden, M.; Welch, Z.; *Polyphemus v0.1*, http://dx.doi.org/10.6084/m9.figshare.1066058 (2015).

Programming Skill Set

Languages

- C/C++
- Python
- FORTRAN (95)
- Visual Basic
- Perl

Applications

- IPython/IPython Notebooks
- MCNP
- MATLAB
- Origen
- Mathcad
- Maple
- DRAGON
- TransLAT