ALEX HAGEN

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http://alexhagen.github.io

EDUCATION

2009-Current Purdue University

Doctorate of Philosophy in Nuclear Engineering, GPA 3.6, December 2017 (Projected)
Master of Science in Nuclear Engineering, GPA 3.7, August 2014
Concentration in Computational Science and Engineering
Bachelor of Science in Nuclear Engineering, GPA 3.5, May 2012

RESEARCH POSITIONS

2012-Current *Graduate Researcher - Metastable Fluid Research Laboratory*

Worked towards interdiction and detection of smuggled special nuclear material at borders. Improved efficacy of Tensioned Metastable Fluid Detectors for use in active interrogation schemes under DNDO grant, developed methodology for validating multiphysics simulation of Acoustically Tensioned Metastable Fluid Detector systems, and designed Centrifugally Tensioned Metastable Fluid Detector system with machine design, nuclear particle simulation, firmware and hardware development, and characterization for passive interrogation.

Su. 2011 *Undergraduate Laboratory Intern - Argonne National Laboratory Nuclear Engineering Division*

Supported team simulating and developing next generation fast fission reactors. Validated multiphysics fission reactor simulation against legacy neutronics codes and experimental data.

INDUSTRIAL EXPERIENCE

Jan. 2009-Jan. 2011 *Industrial Design Assistant - Steiner Enterprises*

Performed design, CAD, and prototyping duties as part of a design team of 5 as part of the educational products industry. Developed 6 products from concept to production - including rotational physics instructional kit, electrophoresis chambers, and a Van de Graaf generator. Also sourced, revised, or formalized the machine drawings and designs of over 30 other products. Some examples can be made available as part of a portfolio upon request.

SELECTED PUBLICATIONS

⇒ B. Archambault, **A. Hagen**, K. Masuda, N. Yamakawa, and R. P. Taleyarkhan. "Threshold Rejection Mode Active Interrogation of SNMs Using Continuous Beam DD Neutrons with Centrifugal and Acoustic Tensioned Metastable Fluid Detectors." In: *IEEE Transactions on Nuclear Science* (2016), pp. 1–1

⇒ **A. Hagen**, T. F. Grimes, B. C. Archambault, T. N. Harris, and R. P. Taleyarkhan. "Characterization and Optimization of a Tensioned Metastable Fluid Nuclear Particle Sensor Using Laser Based Profilometry." In: *Journal of Nuclear Engineering and Radiation Science* 1.4 (Sept. 2015), p. 041004

⇒ **A. Hagen**. "Multiphysics Modeling in Optimization of Acoustically Tensioned Metastable Fluid Neutron Detectors." Master of Science. Purdue University, 2014

⇒ R. Taleyarkhan, J. Lapinskas, B. Archambault, J. Webster, T. Grimes, **A. Hagen**, K. Fisher, S. McDeavitt, and W. Charlton. "Real time monitoring of actinides in chemical nuclear fuel reprocessing plants." In: *Chemical Engineering Research and Design* 91.4 (Apr. 2013), pp. 688–702

SELECTED CONFERENCE PUBLICATIONS AND PRESENTATIONS

⇒ **A. Hagen**, B. Archambault, and R. Taleyarkhan. "Detection of Special Nuclear Material in Cargo using Continuous Neutron Interrogation and Tension Metastable Fluid Detectors." In: *ANS Winter Meeting and Nuclear Technology Expo*. Las Vegas, NV: American Nuclear Society, 2016

⇒ B. C. Archambault, **A. Hagen**, K. Masuda, N. Yamakawa, and R. P. Taleyarkhan. "Threshold Rejection Mode Active Interrogation of SNMs Using Continuous Beam DD Neutrons with Centrifugal and Acoustic Tensioned Metastable Fluid Detectors." In: *Symposium on Radiation Measurements and Applications*. Berkeley, CA: IEEE, 2016

⇒ **A. Hagen**, T. F. Grimes, B. C. Archambault, T. N. Harris, and R. P. Taleyarkhan. "Characterization and Optimization of a Tensioned Metastable Fluid Nuclear Particle Sensor Using Laser Based Profilimetry." In: *Proceedings of the International Conference on Nuclear Engineering*. Prague, Czech Republic: ASME, July 2014, V005T17A036

HONORS AND AWARDS

May 2017 Department of Energy Innovation in Nuclear Technology R&D Award

November 2016 ANS Winter Meeting Best Paper Award

November 2016 ANS Young Member's Group Best Paper Award

October 2016 IEEE Sensors Conference Demonstration 1st Prize

April 2016 Purdue Engineering Outstanding Service Award

July 2014 Lead Author on paper recieving Best Poster Award and author on paper recieving Best Paper Award at ICONE 22

April 2007 National Merit Scholarship

April 2006, April 2007 Two Time Delegate to Intel International Science and Engineering Fair

LEADERSHIP ROLES

August 2012 - May 2017 President/Officer of NEGO (Nuclear Engineering Graduate Organization)

August 2014 - May 2016 Chair of Purdue Graduate Student Government Advancment Committee

August 2013 - May 2016 Senator representing Nuclear Engineering to PGSG

Nov 2013 International Patent Holder for Polylactic Acid Based Adhesives

SKILLS