NATHAN WALTER

Current Address: 120 Talbot Laboratory, 104 S. Wright St. ◇ Urbana, Illinois 61801
(847) · 849 · 7896 ◇ walter9-(at)-illinois-(.)-edu

EDUCATION

University of Illinois at Champaign-Urbana (UIUC) 08.2013 – present
PhD Candidate in Nuclear, Plasma, and Radiological Engineering (NPRE) Expected: 08.2018
Master of Science in Nuclear, Plasma, and Radiological Engineering (NPRE) 08.2018
Graduate Minor in Computational Science and Engineering
Advisor: Yang Zhang

- Master's Thesis Topic: Direct Energy Landscape Sampling of the Homogeneous Nucleation and Crystal Growth of a Model Liquid

University of Illinois at Champaign-Urbana (UIUC) 08.2010 – 12.2014
Bachelor of Science in Nuclear, Plasma, and Radiological Engineering (NPRE)
Minor in Mathematics Overall GPA: 3.84/4.00

AWARDS, HONORS, CLUBS, AND CERTIFICATES

American Physical Society, GSOFT Travel Award 03.2017
Graduate Specialization in Computational Science and Engineering 08.2016
Los Alamos National Lab Computational Summer Workshop 06.2014 – 08.2014
U.S. Department of Energy, Naval Reactors (NR), *Rickover Fellowship Program* Honorable Mention 00.2014
Nuclear Regulatory Commission Undergraduate Scholarship 12.2011 – 06.2013
University of Illinois at Champaign-Urbana Dean's List Recipient 06.2011 – 0.62013
The Hacker Within, An organization for computational scientists. Member: 08.2015 – present
Treasure: 08.2016 – present

SELECT PRESENTATIONS AND PUBLICATIONS

Talk, American Physical Society March Meeting, *"Protein Folding and Unfolding Dynamics from Direct Energy Landscape Sampling Simulations"* 03.2017

Talk, University of Illinois Urbana-Champaign Nuclear Engineering Undergraduate Seminar, *"Homogeneous Nucleation and Crystal Growth in a Model Liquid from Direct Energy Landscape Sampling Simulations"* 04.2016

Tim P. MoneyPenny II, **Nathan Walter**, Zhikun Cai, Y. Miao, D. Gray, J. Hinman, S. Lee, Yang Zhang, Jeff Moore, *"Impact of shape persistence on the porosity of molecular cages"* J. Am. Chem. Soc (2017).

Nathan Walter, Paul Friedrichsen, Scott Runnels, *"Extending a Strain Space Formulation for Plasticity to Rate-Hardening Materials and Finite Rotations"*, LA-UR-15-23329, Los Alamos Unlimited Release (2015).

TECHNICAL STRENGTHS

Computer Programming Languages C, C++, Matlab, Python, Fortran, Java, LaTeX, Swift (novice), AJAX, R, OpenMP, MPI, HTML, CSS, Julia (novice), Make

Software GROMACS, LAMMPS, VASP, SRIM/TRIM, FLAG, VMD, IGOR Pro, Dave, gnuplot, Adobe Suite, SPSS

SELECT RESEARCH PROJECTS

- Implemented a metadynamics method for directly sampling the energy landscape into the molecular dynamics package GROMACS, studied the activation barrier statistics of amorphous and ordered systems
- Developed an open-source package, *LiquidLib*, to analyze molecular dynamics trajectories to study the structure and dynamics of liquids and compare the results to neutron scattering experiments
- Performed *ab initio* molecular dynamic simulations to study the vibrational modes in D_2O, the effects of hydrogen impurities on liquid lithium transport properties, and shape persistence in molecular cages
- Created a high dimensional molecular dynamics package to study the dimensionality of various quantities