Curricula Vitae Blair A. Winograd

PERSONAL DETAILS

Ann Arbor, MI, USA, 48201
E-Mail bawinogr@umich.edu
Website bawinogr.github.io

EDUCATION

Michigan Data Science Fellow 2020-Present
Michigan Institute for Data Science - University of Michigan
Research Area: Natural Language Processing, Data Science, Chemistry Education, STEM Education, Electronic Structure Theory

Ph.D. Chemistry 2014-Present
University of Michigan
Supervisor: Dominika Zgid
Thesis Title: Electronic Structure from a Green's Function within a Stochastic Implementation
Research Interest: Physical Chemistry - Electronic Structure Theory

Certificate in Computational Discovery and Engineering 2014-2019
University of Michigan

Bachelor of Arts 2009-2013
Washington University in St. Louis
Major: Chemistry
Minor: Drama

AWARDS AND GRANTS

Michigan Institute for Computational Discovery and Engineering Fellowship
Awarded, 2018

Girl Develop It: Databases Scholarship
Awarded, 2018

Rackham Conference Travel Grant
Awarded, 2017

Rackham Graduate Student Research Grant
Awarded, 2017

Midwest Theoretical Conference Poster Award
Awarded, 2017

Department of Education Graduate Assistance in Areas of National Need (GAANN) Fellow
Awarded, 2016

Transforming Learning for Third Century – Discovery/Quick Wins Grant
Awarded, 2015-2016

"Compute-to-Learn: Designing Interactive, Computer-Based Demonstrations of Physical Chemistry Concepts"
E. Geva, H. P. Hendrickson, M. Jafari, A. R. Welden, K. Williams, & **B. Winograd**

AAAS/Science Program for Excellence in Science
Awarded, 2015

PREVIOUS RESEARCH EXPERIENCE AND ACADEMIC ADVANCEMENT

Simons Collaboration on the Many Electron Problem Summer School 2018
Simons Center for Geometry and Physics
Summer School

Stochastic Approaches to Electronic Structure Calculations 2017
Telluride Science Research Center
Summer School

ComSciCon 2018
University of Michigan
Conference

Undergraduate Researcher 2013-2014
Washington University in St. Louis
Supervisor: Jacob Schaefer
Research Topic: Solid-State NMR Applications to Biological Molecules

Undergraduate Researcher 2011-2013
Washington University in St. Louis
Supervisor: Sophia E. Hayes
Research Topic: Solid-State NMR Applications to Characterization of Inorganic Nanostructures, Including Al and Ga Nanoclusters

CONFERENCES

Oral Presentations

American Chemical Society 2017
DC
"Electronic Structure from a Monte Carlo Green's Function"

Poster Sessions

Midwest Theoretical Conference 2018
University of Chicago
"Monte Carlo Self-Energy"
Graduate Research Symposium 2017
Wayne State
"'Electronic Structure from a Monte Carlo Self-Energy"
American Chemical Society 2017
DC
"A Stochastic Implementation of The Second-order Green's Function"
Midwest Theoretical Conference 2017
Michigan State University

"A Stochastic Implementation of The Second-order Green's Function"

Symposium on Chemical Physics 2016
University of Waterloo
"A Stochastic Implementation of The Second-order Green's Function"

Chemical Sciences at the Interface of Education — U. of Michigan Symposium 2016
University of Michigan
"Compute-To-Learn: Designing Interactive, Computer-Based Demonstrations of Physical Chemistry Concepts"

International Society of Theoretical Chemical Physics 2016
Grand Forks, North Dakota
"A Stochastic Implementation of The Second-order Green's Function"

Midwest Physical Chemistry Conference 2016
University of Pittsburgh
"A Stochastic Implementation of The Second-order Green's Function"

Chemical Sciences at the Interface of Education — U. of Michigan Symposium 2015
University of Michigan
"Compute-To-Learn: Designing Interactive, Computer-Based Demonstrations of Physical Chemistry Concepts"

Midwest Physical Chemistry Conference 2015
University of Michigan
"Towards accurate descriptions of periodic solids"

Karle Symposium 2015
University of Michigan
"Towards improved descriptions of periodic solids"

Workshop Developer

MIDAS Data Science Trends (DST) Series 2020
University of Michigan
"An Immersive Hands-on Seminar"

Exam Writing - 101 2019
University of Michigan
"Demystifying the Art of Preparing Exams"

Introduction to Scientific Computing 2018
University of Michigan
"Introducing incoming graduate students to theories and practices in high performance computing"

Compute-To-Learn: Designing Interactive, Computer-Based Demonstrations of Quantitative Concepts 2017
Spelman College
"Improving faculty's and student's technical and computing skills"

Chemical Sciences at the Interface of Education — U. of Michigan Symposium 2016
University of Michigan
"Compute-to-Learn: Designing Interactive, Computer-Based Demonstrations"

TEACHING

Graduate Student Mentor, University of Michigan

Physical Chemistry (CHEM230) 2016-2018
Physical Chemistry (CHEM260) 2015 Fall Semester

Future-Faculty Graduate Student Instructor, University of Michigan

Compute-To-Learn, Physical Chemistry (CHEM230/260H) 2015-2018

Graduate Student Instructor, University of Michigan

Computational Chemistry (CHEM462)	2018 Fall Semester
Macromolecular Structure and Dynamics (BIOPHYS454)	2017 Winter Semester
Biophysical Chemistry (CHEM453)	2016 Fall Semester
Physical Chemistry (CHEM260)	2016 Winter Semester
Physical Chemistry (CHEM260)	2015 Fall Semester
Physical Chemistry for Pre-Health (CHEM230)	2015 Winter Semester
Organic Chemistry Laboratory I (Chem211)	2014 Fall Semester

Teaching Assistant, Washington University in St. Louis

General Chemistry Laboratory I and II 2013-2014

CHEMISTRY PUBLICATIONS

1. B. Winograd, D. Zgid, E. Gull. "Stochastic self-Energy in self-consistent Green's function second-order perturbation theory (GF2) scheme." *Submitted*

CHEMISTRY EDUCATION PUBLICATIONS

1. M. Jafari, A. R. Welden, K. Williams, **B. Winograd**, H. Hendrickson, M. Lenard, A. Gottfried, E. Geva. Journal of Chemical Education. "Compute-to-Learn: Authentic Learning via Development of Interactive Computer Demonstrations within a Peer-Led Studio Environment." *DOI: 10.1021/acs.jchemed.7b00032*

TEACHING DEMONSTRATIONS

*Developed using Mathematica Software

http://demonstrations.wolfram.com/ReversibleAndIrreversibleIsothermalExpansionOfAnIdealGas/
http://demonstrations.wolfram.com/AdiabaticExpansionAndCompressionOfAnIdealGas/
http://demonstrations.wolfram.com/WorkDoneInReversibleAndIrreversibleCompressionOfAnIdealGas/
http://demonstrations.wolfram.com/IsobaricCompressionAndExpansionOfAnIdealGas/

CODING AND HIGH PERFORMANCE COMPUTING

Python
C++
Mathematica
Fortran
Parallel and GPU Programming
Bash
postgreSQL
Julia

CLUBS AND OUTREACH

Scientific Computing Club - Machine Learning Seminar Series 2017
University of Michigan

CALC|UM Organizing Committee 2017-2018
University of Michigan

CSIE|UM Science for the Public 2017
Ann Arbor Hands-On Museum

Science Olympiad Coach - iCompute 2017
Angell Elementary, Washtenaw County

Science for the Public 2017
Ann Arbor Hands-On Museum

Scientific Computing Club 2014-2017
University of Michigan

mirCORE - Computational Biology Camp Volunteer Summer 2016
University of Michigan

Science Olympiad Coach - iCompute 2016
Angell Elementary, Washtenaw County

MENTORSHIP

Co-teacher: A Short Introduction to C++ for Scientists Fall 2017

Graduate Student Recruitment Host Winter 2016
Kyle Foster Sunden

Michigan Chemistry Opportunities for Research and Education Winter 2015
Shannon Vandenvander

Graduate Student Recruitment Host Winter 2015
Brittany Hagler

High School Student Research Mentor Summer 2015
Rephael Berkooz

REFERENCES

Professor Dominika Zgid
University of Michigan, Department of Chemistry
zgid@umich.edu

Professor Eitan Geva
University of Michigan, Department of Chemistry
eitan@umich.edu

Professor H. V. Jagadish
University of Michigan, Michigan Institute for Data Science
jag@umich.edu