ZANE ROSSI

education

The University of Chicago — Chicago, IL
 Expected B.S. Mathematics, B.A. Physics · June, 2019
 GPA: 3.92 · (Major GPA: 4.00) · Mathematics and
 Physics Major, Creative Writing Minor
 Japanese (4+ years study, High-Intermediate)

personal information

5717 1/2, S. Kimbark Ave.
Chicago, IL, 60637
(M) +1 (925) 330 0920
zmr@uchicago.edu

fellowships and awards

◆ Fay and Walter Selove Prize (2018) · Awarded supplementary stipend for research with University of Chicago professor: awarded by the Physics department
◆ University of Chicago Student Marshal (2018) · Awarded highest honor conferred to undergraduate students at the University of Chicago: for exceptional academic and community standing in the student's third year
◆ Phi Beta Kappa, Junior Year (2018) · Awarded membership in the Beta Chapter of Illinois (Junior-year selection criteria more rigorous)
◆ FUTI Award (2017) · Awarded stipend for summer research with Katsura group of the University of Tokyo, courtesy of Friends of UTokyo Inc., for use during the University of Tokyo Research Internship Program (UTRIP)
◆ James Franck Institute Summer Fellowship (2016) · Awarded stipend for research with University of Chicago professor: sponsored by the James Franck Institute

work experience

Computer-Science Research Assistant

Chong Lab · Chicago, IL   Dec 2017–Present
◆ Investigated algorithmic complexity of optimal control codes, and authored proof-of-concept models toward an eventual quantum compilation engine capable of efficient creation of simple evolution schemes from finite sets of constituent gates using sparse matrix techniques
◆ Gave weekly informal presentations to group members, and more occasional formal presentations to other members of EPiQC multi-institution consortium, under lead PI, Professor Frederic Chong

Mathematical Physics Research Assistant

Katsura Lab · Tokyo, JPN   Jun–Dec 2017
◆ Derived novel entanglement metrics for MBL quantum spin systems exhibiting time-translation symmetry breaking using DMRG principles and a distinctly information theoretic approach
◆ Designed and implemented algorithms based in Vidal's TEBD theory, exponentially reducing time for classical simulation of MBL systems. Drafted and presented weekly lectures to graduate and undergraduate students at the University of Tokyo Hongo campus, and final program report

Computational Physics Research Assistant

Guyot-Sionnest Lab · Chicago, IL   Jun–Dec 2016
◆ Designed, wrote, and tested algorithms to both electromagnetically model behavior of thin-film photovoltaic devices and optimize physical dimensions via metaheuristic search algorithms
◆ Wrote documentation for designed code, formatted theoretical data to be compared with experiment performed by University of Chicago Guyot-Sionnest Lab, and presented results to colleagues

publications

Optimized Compilation of Aggregated Instructions for Realistic Quantum Computers · Under Professor F. Chong · (*forthcoming in ASPLOS, November 2018*)

Analytic and Computational Investigations of Spontaneous TTSB in High Spin Systems · Under Professor H. Katsura · (*internal report*)

leadership and involvement

Mathematics Lecturer
(2015-2018) Authored and lectured presentations for the societies of mathematics and physics students at the University of Chicago on general topics & personal research.

Reading Program
(2017-2018) Directed reading under the graduate students and principle investigators of both the Schuster and Chong Labs of the University of Chicago, comprising weekly meeting and perusal of papers in optimal control theory and machine-learning assisted quantum error correction.

Writers' Workshop
(2017-2018) President and lead facilitator of the University of Chicago's Writers' Workshop, offering weekly student-led fiction and poetry workshops.

University Orchestra
(2016-2018) Oboe player (alternately first and second position) in the University of Chicago Symphony Orchestra. Classical and modern repertoire.

relevant coursework

Mathematics
Real Analysis · Complex Analysis · Differential Equations · Honors Abstract Algebra · Computability Theory (Reading Group) · Mathematical Logic

Physics
Quantum Mechanics · Honors Mechanics, Electrodynamics · Experimental Physics · Graduate General Relativity · Graduate Quantum Information · Quantum Field Theory

Computer Science
Artificial Intelligence · Algorithms · Computational Linguistics

additional skills

Development
Java · Python · Mathematica · HTML/CSS/Javascript/Django · UNIX · Haskell · Tensorflow

Miscellaneous
InDesign · LaTeX · GIMP

Language
Japanese (4+ years of study · high-intermediate)