

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 (Honors), Creative Writing Minor
Japanese (4+ years study, High-Intermediate)

personal information

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fellowships and awards

- ◆ Fay and Walter Selove Prize (2018) · Stipend for research with University of Chicago professor: awarded by the physics department
- ◆ University of Chicago Student Marshal (2018) · Highest honor conferred to undergraduate students at the University of Chicago: for exceptional academic and community standing
- ◆ Phi Beta Kappa, Junior Year (2018) · Membership in the Beta Chapter of Illinois (Junior-year selection criteria more rigorous)
- ◆ FUTI Award (2017) · 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) · Stipend for research with University of Chicago professor: sponsored by the University of Chicago 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 scheduling of autonomously error correcting circuits using sparse matrix techniques
- ◆ Presented weekly informal results to group members, and more occasional formal reports to other members of EPiQC multi-institution consortium under lead PI, Professor F. 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 at ASPLOS, January 2019*)

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

- *curriculum vitae continued below* -

leadership and involvement

<i>Lectures</i>	(2015-2018) Authored and lectured presentations for the societies of mathematics and physics students at the University of Chicago on general topics & personal research.
<i>Reading Program</i>	(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.
<i>Writers' Workshop</i>	(2017-2018) President and lead facilitator of the University of Chicago's Writers' Workshop, offering weekly student-led fiction and poetry workshops.
<i>Orchestra</i>	(2016-2018) Oboe player (alternately first and second position) in the University of Chicago Symphony Orchestra. Classical and modern repertoire.

relevant coursework

<i>Mathematics</i>	Real Analysis · Complex Analysis · Differential Equations · Honors Abstract Algebra · Computability Theory (Reading Group) · Mathematical Logic
<i>Physics</i>	Quantum Mechanics · Honors Mechanics, Electrodynamics · Experimental Physics · Graduate General Relativity · Graduate Quantum Information · Quantum Field Theory
<i>Computer Science</i>	Artificial Intelligence · Algorithms · Computational Linguistics

additional skills

<i>Development</i>	Java · Python · Mathematica · HTML/CSS/Javascript/Django · UNIX · Haskell · Tensorflow
<i>Miscellaneous</i>	InDesign · \LaTeX · GIMP
<i>Language</i>	Japanese (4+ years of study · high-intermediate)