# First Last

*Curriculum Vitae*

## Education

**2017–2022** **Doctoral Candidate in Operations Research**, *Massachusetts Institute of Technology Operations Research Center*, Advised by Colin Fogarty.

**MIT Grade Point Average**, *5.00 out of 5.00.*

**2013–2017** **BA in Mathematics, Phi Beta Kappa, Magna Cum Laude**, *Bowdoin College*, Brunswick, Maine.

**Bowdoin Mathematics Grade Point Average**, *3.97 out of 4.00.*

**Total Bowdoin Grade Point Average**, *3.93 out of 4.00.*

## Professional Experience

**2017–Present** **Graduate Research Assistant**, *Massachusetts Institute of Technology*, Cambridge, Massachusetts.
Under the direction of Professor Fogarty. Research in causal inference for observational studies. Focused on sensitivity analysis and developed test statistics that exhibit optimal - or near optimal - robustness to latent variables in multiple-outcome studies.

**Spring of 2018** **Teaching Assistant**, *Massachusetts Institute of Technology*, Cambridge, Massachusetts.
**15.075 Statistical Thinking and Data Analysis** Teaching assistant for an undergraduate course which aims to provide students with a theoretical understanding of fundamental techniques in data science, including linear regression and hypothesis testing, as well as a toolkit for practical implementation of statistical techniques. Duties: Assisting students, leading recitations, holding office hours, grading midterm and final exams.

**Summer of 2016** **Researcher**, *S.M.A.L.L. NSF REU Williams College*, Williamstown, Massachusetts.
Under the direction of Professor Miller through the Williams College SMALL REU. Explored topics in random matrix theory, connections of random matrix theory to $L$-functions, and perfect and near perfect numbers.

**Summer of 2015** **Researcher**, *Center for Discrete Mathematics and Theoretical Computer Science & Rutgers Univ. NSF REU*, Piscataway, New Jersey.
Under the direction of Professor Kontorovich through the **Rutgers Mathematics/DIMACS REU**. Explored local-global phenomena in a range of number theoretic settings including Zaremba's Conjecture and Integral Apollonian Circle Packings. Particular emphasis was placed on developing heuristics similar to the Hardy-Littlewood method and computationally evaluating the accuracy of these heuristics via simulation.

**Summer of 2014** **Coles Research Fellow**, *Bowdoin College*, Brunswick, Maine.
Under the direction of Professor Eustis. Focused on theoretical development of chromophore excitation modeling. Designed and implemented computational tools for *in silico* modeling of pollutant-light interactions and decomposition of experimental results into Gaussian mixture models.

**Summer of 2012** **Programmer**, *Lewis-Sigler Institute for Integrative Genomics at Princeton Univ.*, Princeton, New Jersey.
Under the direction of Professor Singh. Designed a user interface that quantitatively predicts the characteristics of ligand binding sites on a protein.

## Teaching

Spring 2018    **Graduate Teaching Assistant**, *Massachusetts Institute of Technology*, Cambridge, MA.
Teaching assistant for MIT's *15.075: Statistical Thinking and Data Analysis*, an undergraduate statistics course. Held office hours, taught recitations, prepared materials, and graded exams.

## Publications

- **P. Cohen**, M. Olson, C. Fogarty. "Multivariate one-sided testing in matched observational studies as an adversarial game" *Submitted to Biometrika*
- **P. Cohen**, K. Cordwell, A. Epstein, C.H. Kwan, A. Lott, S.J. Miller. "On Within-Perfectness and Near-Perfectness" *In Progress*, `https://arxiv.org/abs/1610.04253`
- P. Burkhardt, **P. Cohen**, J. Dewitt, M. Hlavacek, S. J. Miller, C. Sprunger, Y. N. Truong Vu, R. Van Peski, K. Yang. "Random Matrix Ensembles with Split Limiting Behavior." *Random Matrices: Theory and Applications*, 2018, p. 1850006., doi:10.1142/s2010326318500065.
- Peter Cohen, An analytic heuristic for multiplicity computation for Zaremba's Conjecture, In Journal of Number Theory, Volume 184, 2018, Pages 179-191, ISSN 0022-314X,`https://doi.org/10.1016/j.jnt.2017.08.016`.
- K. Trerayapiwat, N. Ricke, **P. Cohen**, A. Poblete, H. Rudel, S. N. Eustis. "Sticking to (First) Principles: Quantum Molecular Dynamics and Bayesian Probabilistic Methods to Simulate Aquatic Pollutant Absorption Spectra" *Environ. Science: Processes and Impacts*, The Royal Society of Chemistry, 2016, DOI: 10.1039/C6EM00233A, `http://dx.doi.org/10.1039/C6EM00233A`.
- A. Costin, N. Costin, **P. Cohen**, C. Eisenach, and F. Marchlinski. "Effect of Exercise on Heart-rate Response to Mental Stress in Teenagers." *European Journal of Preventive Cardiology* 20.4 (2013): 593-96. Web.

## Presentations and Conferences

- **P. Cohen**, C. Fogarty. "Prepivoting for Exact and Asymptotically Robust Testing", Atlantic Causal Inference Conference 2019, Montreal, Canada.
- **P. Cohen**, S.J. Miller, N. Truong, R. Van Peski, "Deviations from Large Eigenvalues of a Special Matrix Ensemble." *ICTIMCAMS 2016*, Banaras Hindu University, December 16th, 2016
- **P. Cohen** and R. Van Peski, "Extending Agreement in the Katz-Sarnak Density Conjecture." *The Quebéc-Maine Number Theory Conference*, Université Laval, October 8th, 2016
- **P. Cohen**, "Deviations from Large Eigenvalues of a Special Matrix Ensemble." *AMS Fall Eastern Sectional Meeting*, Bowdoin College, September 25th, 2016
- **P. Cohen** and C. Sprunger, "Extending Agreement in the Katz-Sarnak Density Conjecture." *The Young Mathematician's Conference*, Ohio State University, August 20th, 2016
- **P. Cohen** and C. Sprunger, "Deviations from Large Eigenvalues of a Special Matrix Ensemble." *The Young Mathematician's Conference*, Ohio State University, August 19th, 2016
- K. Trerayapiwat, **P. Cohen**, A. Poblete, H. Rudel, and S. Eustis, "Molecular Absorption Spectra: Simulation and Analysis for Quantitative Descriptions of Pollutant Phototransformation and Fate in the Environment." *American Chemical Society Spring Meeting* 2016: Oral Presentation

## Computer Skills

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|---|---|
| R | Python |
| MATLAB | Mathematica |
| C++ | LaTeX |
| Microsoft Office Suite | |

## Relevant Coursework

**Theoretical Statistics**, *Statistical Learning Theory, Inference and Information Theory, Probability Theory, Mathematical Statistics*.

**Applied Statistics**, *Multivariate Statistical Analysis, Computational Optimal Transport*.

**Optimization**, *Linear Optimization*.

## Awards

**2018 - Present**   **Graduate Fellowship**, *National Physical Science Consortium*.
National graduate fellowship to support doctoral studies.

**2017**   **Edward Sanford Hammond Mathematics Prize:**, *Bowdoin College*.
Award given to a graduating senior who is completing a major in mathematics with distinction.

**2017**   **Phi Beta Kappa**, *Alpha Chapter of Maine*, Bowdoin College.

**2016**   **Grua/O'Connell Research Award** , *Bowdoin College*.
Grant to fund travel to Banaras Hindu Univ. to present "Deviations from Large Eigenvalues of a Special Matrix Ensemble."

**2016**   **Roberts Fund Research Grant**, *Bowdoin College*.
Grant to fund research in number theory.

**2015-2016**   **Bowdoin Book Award**, *Bowdoin College*.
Academic award to undergraduates for a 4.0 GPA over the course of the year.

**2016**   **The Barry Goldwater Scholarship and Excellence in Education Program: Honorable Mention**.

**2015 - 2017**   **Smyth Mathematical Prize**, *Bowdoin College*.
Award for the sophomore student who obtains the highest grades in mathematics courses during the first two years at Bowdoin College. Both the number of mathematics courses taken and the level of difficulty of those courses are considered in determining the recipient.

**2014**   **Coles Research Fellowship**, *Bowdoin College*.
Fellowship to pursue research in quantum chemistry.

**2013–2016**   **Sarah and James Bowdoin Scholar**, *Bowdoin College*.
Academic award to undergraduates who have distinguished themselves in scholarship. The award is given to the twenty percent of students with the highest grade point average.