

# Benjamin Nussbaum

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## Education

### University of Rochester

Rochester, NY

*B.S. Optics, B.A. Physics & Astronomy; Minors in Computer Science and Math* 2017 - 2021 (Expected)

GPA: 3.91—Dean's List, all eligible semesters

### Awards and Recognitions:

- ★ Dean's Citation for Broadening Participation in Research
- ★ Xerox Award for Innovation and Technology

**Highlighted Courses:** Modern Statistics & Large Data Sets (Graduate Level) · Artificial Intelligence  
Quantum/Nano Optics Lab. (Graduate level) · Lens Design (Graduate Level) · Thermo/Stat. Mech

## Research Experience

### Research Assistant

*The Institute of Optics, University of Rochester*

Rochester, NY

Advisor: Dr. Nick Vamivakas

Summer 2019-Present

- Design and build custom optical system, align the system and laser
- Apply Fourier analysis in MATLAB on image data to demonstrate control of spatial coherence
- Manuscript submitted to *Optics Letters* for review

## Leadership

### President

*University of Rochester*

Rochester, NY

*Optical Society (OSA) Student Chapter*

2019-2020

- Engage students in professional development workshops, outreach opportunities, and social events
- Manage club, lead meetings, interface with advisors, provide vision: more cross-year interaction

### Project Manager

*University of Rochester*

Rochester, NY

*Website Development*

Spring 2020

- Lead a small team to design and build a website for Dr. Scott Carney's Engineering Design course
- Manage and communicate requirements, meetings, and deliverables with the development team

### Workshop Leader

*The Institute of Optics, University of Rochester*

Rochester, NY

*Geometrical Optics, Dr. Julie Bentley*

Fall 2019

- Lead weekly workshops of a small group of students
- Facilitate work on solving problems extending important class topics and ideas

## Teaching

**Lab Teaching Assistant**      *The Institute of Optics, University of Rochester*      Rochester, NY  
*Geometrical Optics, Physical Optics; Profs. Berger, Brown, Carney, Eastman, & Zavislan*      2019-2020

- Facilitate teaching lab experiments for students, grade and answer questions about labs and reports.
- Lead small groups during pre-lab sessions for students to gain familiarity with lab equipment.

**“L<sup>A</sup>T<sub>E</sub>Xpert”**      *OSA and SPS Student Chapters, University of Rochester*      Rochester, NY  
*Offer experienced guidance and solutions to L<sup>A</sup>T<sub>E</sub>X formatting questions.*      *Spring 2020*

- Next-level lab reports
- Elegant equations
- Forget finicky figure placement
- Streamlined citations
- Professional presentations and posters
- Righteous résumé templates

**Teaching Assistant**      *The Institute of Optics, University of Rochester*      Rochester, NY  
*Optical Layout/Analysis, Dr. John Bowen*      *Spring 2020*

- Review and answer questions about assignments, making use of Zemax optical design software
- Coordinate course organization and direction with Dr. Bowen

**Photon Camp Counselor**      *The Institute of Optics, University of Rochester*      Rochester, NY  
*Photon Camp*      *Summer 2019*

- Guide high school students through various labs/experiments and teach them about optics
- Advise a small team in the completion of a capstone project and poster presentation

## Campus Activities

**Professional Development Committee**      *University of Rochester*      Rochester, NY  
*Society of Physics Students*      *Summer 2019*

- Coordinate with committee to plan and run Physics/Astronomy professional development events:
- Research panels, technology workshops, REU/summer program info sessions, Ask Seniors Anything

**Undergraduate Philosophy Council**      *University of Rochester*      Rochester, NY  
*Casual philosophical discussion group*      *Summer 2019*

- Participate in weekly meetings to casually discuss topics of philosophical merit:
- Theory of Consciousness, Determinism, Existentialism, Automation, Genetic Engineering...

## Skills

### Optical Design Software

- CODE V
- Zemax

### Statistics & Data Analysis

- Python
- MATLAB

### Algorithmic Thinking

- Java
- vim
- L<sup>A</sup>T<sub>E</sub>X

### Optical Laboratory Hardware

- Optical system alignment
- Laser focusing and filtering
- Nano-scale single photon fluorescence spectroscopy

### General Interpersonal Skills

- Fast learner, problem solver
- Collaborative and independent efficiency
- Not afraid to ask questions

### Web App. Development

- HTML/CSS
- JavaScript
- Git