

Sean E. Li

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EDUCATION

Bowdoin College

B.A. Physics; Minor: Mathematics

Brunswick, ME

May 2023

- *Relevant Courses:* Methods of Theoretical Physics (3000), Astrophysics (2510), Nuclear and Particle Physics (2260), Methods of Computational Physics (3020), General Relativity (3500), Quantum Mechanics (3140), and Fields, Particles, and Symmetries (3200)
- *Honors Project:* Properties of certain gauge conditions for black holes that carry charge

Hamilton-Wenham Regional High School

Valedictorian of the Class of 2019

Hamilton, MA

June 2019

- *Relevant Courses:* AP Physics C: Mechanics and AP Physics C: Electricity and Magnetism

RESEARCH EXPERIENCE

Bowdoin College Department of Physics and Astronomy

Summer Research, PI: Thomas W. Baumgarte

Brunswick, ME

June–August 2022

- Analyzed the properties of a set of gauge choices, known as Bona-Massó slices, for Reissner-Nordström spacetimes
- Used Mathematica to assist with analytical calculations and Python for numerical integration and plotting

Honors Project, Mentor: Thomas W. Baumgarte

September–December 2022

- Investigated late-time oscillations of the central lapse observed for a gauge-shock-avoiding slicing condition
- Used a radial perturbation approach to recover harmonic oscillation of the location of the black-hole puncture

PUBLICATIONS

S. E. Li, T. W. Baumgarte, H. P. de Oliveira, and K. A. Dennison, **Bona-Massó slices of Reissner-Nordström spacetimes**, Phys. Rev. D **106**, 104049 (2022).

AWARDS AND FELLOWSHIPS

Bowdoin College

Student Faculty Research Grant Fellowship

Sarah and James Bowdoin Scholar Book Award

Bowdoin Faculty Scholarship

Brunswick, ME

May 2022

October 2020

April 2019

Hamilton-Wenham Regional High School

Science Achievement Award

Mathematics Achievement Award

Hamilton, MA

May 2019

May 2019

National Endowment for the Humanities

National Endowment for the Humanities Scholar

Washington, D.C.

June 2018

TEACHING AND MENTORING

Baldwin Center for Learning and Teaching — Bowdoin College

Learning Assistant for Introductory Physics II

Brunswick, ME

September–December 2022

- Hosted weekly one-hour practice-problem and review sessions for nine students

Learning Assistant for Introductory Physics II

February–May 2022

- Tutored an individual student in weekly one-hour meetings

McKeen Center for the Common Good — Bowdoin College

Brunswick High School Mentoring

Brunswick, ME

October 2019–present

- Mentoring a student at Brunswick High School in weekly one-hour after-school meetings

PROFESSIONAL EXPERIENCE

Bowdoin College Department of Physics and Astronomy

Grader for Introductory Physics II

Brunswick, ME

September 2022–present

- Grading problem sets and writing feedback on student solutions

Physics Communication Assistant

September 2022–present

- Writing articles for the physics department website, including interviews of students

Faculty Search Student Interviewer

November–December 2021

- Served as one of three physics students charged with interviewing the top three candidates for a tenure-track astrophysics professorship; collaborated to write questions and criteria for evaluation and interviewed the candidates

PROGRAMMING EXPERIENCE

Riverside Research Institute

Systems Engineering Intern

Lexington, MA

June–August 2021

- Developed a software framework for accessing a custom computational electromagnetics simulation tool and an interactive visualization of simulated radar cross section in 4π steradian space using Python and shell scripting

Software Engineering Intern

June–August 2020

- Created a graphic user interface and backend logic for data entry and nonlinear curve fitting with Kotlin, to be integrated with a program for radar systems maintenance and analysis

Software Engineering Intern

June–August 2019

- Worked on automated metadata extraction from technical documents using heuristic image processing algorithms and convolutional neural networks with Python `OpenCV` and `tensorflow`

OUTREACH AND LEADERSHIP

Bowdoin College Society of Physics Students (SPS)

Member and Liason for the Physics Department Coordinator

Brunswick, ME

January 2021–present

- Organizing and helping execute physics department events and facilitating weekly one-hour SPS meetings

Hamilton-Wenham Regional High School Robotics Team

Co-Founder and Co-Captain

Hamilton, MA

September 2018–June 2019

- Helped establish and lead the school's FRC (First Robotics Competition) team
- Wrote grant applications and worked on the electrical engineering for the robot

Massachusetts Mathematics League (MML) Team Captain

September 2017–June 2019

- Facilitated weekly one-hour practices and attended monthly MML competitions

TECHNICAL SKILLS

Mathematica, Python, Java, Kotlin, \LaTeX