


# Sean E. Li

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## EDUCATION

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### 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

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### 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

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

## AWARDS AND FELLOWSHIPS

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### 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

*National AP Scholar*

*Science Achievement Award*

*Mathematics Achievement Award*

Hamilton, MA

July 2019

May 2019

May 2019

### National Endowment for the Humanities

*National Endowment for the Humanities Scholar*

Washington, D.C.

June 2018

## TEACHING AND MENTORING

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### 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.  
Focused on developing critical thinking and general problem-solving skills.

*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

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### **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.  
Emphasizing conceptual understanding and approach above numerical results.

*Physics Communication Assistant*

September 2022–present

Writing articles for the physics department website, including interviews of students.  
Using a content management system (CMS) to design, update, and publish webpages.

*Faculty Search Student Interviewer*

November–December 2021

One of three physics students who interviewed three final candidates for a tenure-track astrophysics professorship.  
Completed a workshop on implicit bias and diversity, equity, and inclusion in the hiring process.  
Collaborated to prepare an interview script and criteria for evaluation and conducted one-hour interviews.

## PROGRAMMING EXPERIENCE

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### **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  $4\pi$  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

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### **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 led the team's electrical engineering division.

*Massachusetts Mathematics League (MML) Team Captain*

September 2017–June 2019

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

## TECHNICAL SKILLS

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Mathematica, Python, Java, Kotlin, L<sup>A</sup>T<sub>E</sub>X