

BRIANNA N. ISOLA

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EDUCATION

University of New Hampshire, Durham, NH Aug. 2020–present
Ph.D. Physics

Stony Brook University, Stony Brook, NY Aug. 2016–May 2020
B.S. Physics, Astronomy

Highlighted Coursework: *High-Performance Computing, MHD of the Heliosphere, Data Mining & Predictive Analytics, Plasma Physics*

EXPERIENCE

University of New Hampshire, Graduate Research Assistant, Durham, NH May. 2021–present

- Dr. Mathew Argall's research group.
- Developing the Machine learning Empirical Electric Potential (MEEP) Model: A neural network-driven model of the inner magnetospheric electric field trained with NASA mission data.
- Characterizing particle dynamics by implementing particle tracing into global electric and magnetic field models for select geomagnetically quiet and active periods.

Los Alamos National Laboratory, Summer Research Fellow, Los Alamos, NM Jun. 2023–Aug. 2023

- Applied system science techniques to magnetohydrodynamic simulation: Canonical correlation analysis used to compare GAMERA MHD model with OMNI solar wind data.

Northwest Research Associates, Research Intern, Boulder, CO Aug. 2020–Dec. 2020

- Continuation of REU Research: Modeled the coronal magnetic field to quantify released energy during solar reconnection event.

Boulder Solar Alliance REU, Research Intern, Boulder, CO May 2019–Aug. 2019

- Modeled the coronal magnetic field using the CFITS non-linear force-free extrapolation code and identified individual current systems by looking at photospheric concentrations of current within the extrapolation volume to determine energy that might be released in a single reconnection event.
- Methodology included use of IDL and Fortran.

Center for Computational Astrophysics, Summer Intern, New York, NY Jun. 2018–Aug. 2018

- Estimated the probability of detection of two coalescing supermassive black holes in eccentric orbit using Python.
- Attended weekly journal club at the American Museum of Natural History.

HONORS, AWARDS & FELLOWSHIPS

- **Vela Fellowship** (2023), *Los Alamos National Laboratory*.
- **NASA Space Grant Fellowship** (2021–2022), *NASA, New Hampshire Space Grant Consortium*.
- **Fall Meeting General Student Travel Grant** (2019), *American Geophysical Union, Sponsor: Lockheed Martin*.

- **NSF Travel Grant** (2019), *National Science Foundation, Boulder Solar Alliance REU*.
- **WISE (Women in Science and Engineering) Honor Society & Scholarship** (2016–2020), *Stony Brook University*.
- **Presidential Scholarship** (2016–2020), *Stony Brook University*.

SKILLS

Programming	Python (Pandas, SunPy), C/C++ (Boost, OpenMP), IDL, FORTRAN
Technical	Regression analysis, PCA, Machine Learning (PyTorch, Tensorflow)
Software & Tools	ds9, IRAF, Adobe Suite (Photoshop, Illustrator, InDesign)

ACADEMIC SERVICE & DEVELOPMENT

Teaching

PHYS 407: General Physics I Lab – University of New Hampshire, Spring 2021

PHYS 407: General Physics I Lab – University of New Hampshire, Fall 2020

Workshops & Summer Schools

Los Alamos National Lab Space Weather Summer School (June–July 2023), *Los Alamos, New Mexico*.

Python in Heliophysics Summer School (May 30th 2022–June 3rd 2022), *Madrid, Spain* (attended remotely).

Professional

University of New Hampshire Graduate Council (2023–Present)

Selected Student Volunteer, SIGGRAPH Conference (2023)

Graduate Student Senate Executive Committee, Community Coordinator (2023–Present)

PRESENTATIONS & PUBLICATIONS

- [10] (★ *Invited*) **Isola, Brianna** et al. *Characterizing Particle Dynamics from a Data-Driven Model of the Inner Magnetospheric Electric Field*. Oral Talk. American Geophysical Union Fall Meeting. San Francisco, CA., Dec. 2023.
- [9] **Isola, Brianna** et al. *Particle dynamics derived from a data-driven model of the inner magnetospheric electric field*. Poster. Geospace Environment Modeling Workshop. San Diego, CA, June 2023.
- [8] (★ *Invited*) **Isola, Brianna** et al. *System Science Tools for MHD Simulations*. Oral Talk. UNH EOS Space Science Seminar Series. Durham, NH., Oct. 2023.
- [7] Izzak Boucher, Matthew R. Argall, and **Isola, Brianna**. *Global model of the electric potential using regularized linear regression and neural networks*. Oral presentation. Geospace Environment Modeling Workshop. Honolulu, HI, June 2022.
- [6] **Isola, Brianna** et al. *A dynamic, 3D model of the inner magnetospheric electric field*. Poster. Geospace Environment Modeling Workshop. Honolulu, HI, June 2022.
- [5] **Isola, Brianna** et al. *Characterizing particle dynamics from a data-driven model of the inner magnetospheric electric field*. Poster. American Geophysical Union Fall Meeting. Chicago, IL., Dec. 2022.
- [4] Vincent E. Ledvina et al. “How open data and interdisciplinary collaboration improve our understanding of space weather: A risk and resiliency perspective”. In: *Frontiers in Astronomy and Space Sciences* 9 (Dec. 2022). ISSN: 2296-987X.
- [3] Izzak Boucher, Matthew R. Argall, and **Isola, Brianna**. *New Inner Magnetospheric Electric Field Model Maps Electric Potential using MMS data*. Oral presentation. MMS Community Workshop. Waterville Valley, NH, Oct. 2021.
- [2] **Isola, Brianna** et al. *A neural network-driven approach to inner magnetospheric electric field modelling*. Poster. American Geophysical Union Fall Meeting. New Orleans. LA, Dec. 2021.
- [1] **Isola, Brianna** et al. *The How and Why of Big Solar Flares*. Poster. American Geophysical Union Fall Meeting. San Francisco, CA., Dec. 2019.