

Elle Buser

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EDUCATION

Emory University, Laney Graduate School, Atlanta, GA

PhD. Computational Mathematics

August '22 - Present

Awards: Women In Natural Science Fellowship

University of Wyoming, Laramie, WY

B.S. Mathematics, Minor in Physics

May '22

Awards: Rocky Mountain Scholar, Wyoming Research Scholar

RESEARCH

Researcher, Emory University NSF REU/RET Computational Mathematics for Data Science Summer '21

Mentor: Dr. Lars Ruthotto

Project: Image Based Diagnosis of Chiari Malformation

- Worked alongside two undergraduates and an elementary STEM teacher creating models with atlas-based and neural-network-based image segmentation to automate the process of identifying the brainstem and cerebellum in the DENSE MRIs of potential Chiari patients
- Gained programming skills and a strengthened understanding of computational methods and concepts in machine learning, image registration, and mathematical writing

Research Assistant, University of Wyoming

Spring '19 - Spring '20

Mentor: Dr. Henry 'Chip' Kobulnicky

Project: Close Binary Stars and Stellar Mergers

- Worked on a team of graduate and undergraduate students writing Python codes which produced and predicted light curves of a binary system and, with software, modeled flux and radial velocity of candidate bow shock nebula supporting binary stars
- Strengthened skills in data analysis, data collection, and programming

TEACHING EXPERIENCE

Graduate Teaching Assistant, Emory University

- Linear Algebra: Fall '23
- Linear Algebra: Spring '24

Grader, Emory University

- Partial Differential Equations: Fall '22 - Spring '23

Tutor, University of Wyoming

- Calculus II: Spring '21 – Spring '22
- Calculus I: Spring '21 – Spring '22
- Engineering Physics I: Spring '21 – Spring '22

Supplemental Instructor, University of Wyoming

- Calculus II: Fall '20 - Spring '21

PUBLICATIONS (JOURNAL ARTICLES)

Buser E, Hart E, Huenemann B

[Comparison of atlas-based and neural-network-based semantic segmentation for DENSE MRI images.](#)

SIAM Undergraduate Research Online (SIURO), 15, 2022

Chick W. T. et al.

The Wind beneath My Wings. I. Spectral Types and Multiplicity of the Central Stars Supporting Stellar Bow Shock Nebulae.

The Astrophysical Journal Supplement Series, 251(2), 2020

LIGHTENING TALKS

Georgia Scientific Computing Symposium, Atlanta, GA, "Comparison of atlas-based and neural-network-based semantic segmentation for DENSE MRI images," February, 2022

PROGRAMMING LANGUAGES

MATLAB, Python, L^AT_EX

OUTREACH/EXTRACURRICULAR

Assistant Instructor, *Emory University Math Circle*

- Middle School A/B & C: Fall '23