Logan J. Prust

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Research Interests

- Astrophysical fluids
- Computational physics
- Magnetohydrodynamics
- Stellar interactions

Employment

Kavli Institute for Theoretical Physics (KITP) ..... **Santa Barbara, CA**
Postdoctoral Scholar Sept 2022 – Present
Supervisor: Lars Bildsten

Education

University of Wisconsin-Milwaukee (UWM) ..... **Milwaukee, WI**
Ph.D. Physics Aug 2017 – May 2022
Adviser: Philip Chang
Thesis: Simulating the Common Envelope Phase Using Moving-Mesh Hydrodynamics

Iowa State University (ISU) ..... **Ames, IA**
B.S. Aerospace Engineering Aug 2011 – Dec 2016
B.S. Physics
B.S. Mathematics
Minor in Astronomy
Magna cum laude

Research Experience

Graduate Research Assistant **(UWM Dept. of Physics)** ..... **Milwaukee, WI**
- **Adviser:** Philip Chang May 2018 – May 2022

Undergraduate Research Assistant **(ISU)** ..... **Ames, IA**
- **Adviser:** Amanda Weinstein May – Sept 2016
- **Adviser:** Marzia Rosati May – Aug 2014

Teaching Experience

Graduate Teaching Assistant **(UWM Dept. of Physics)** ..... **Milwaukee, WI**

- Phys 720: Electrodynamics I (Grader) (Spring 2020)
- Phys 441: Introduction to Quantum Mechanics (Fall 2019)
- Physics Tutor (Fall 2019)
- Astron 103: Survey of Astronomy (Spring 2019)
- Phys 122: General Physics II, Non-Calculus Treatment (Fall 2017; Fall 2018)
- Phys 120: General Physics I, Non-Calculus Treatment (Spring 2018)

Undergraduate Teaching Assistant **(ISU)** ..... **Ames, IA**

- Aer E 351: Astrodynamics I (Fall 2015; Spring 2016; Fall 2016)
- Aer E 192: Aerospace Seminar (Spring 2013)

Grader **(ISU)** ..... **Ames, IA**

- Various courses, including Aer E 310: Aerodynamics I, EM 274: Engineering Statics, EM 324: Mechanics of Materials, and EM 345: Engineering Dynamics.

Awards and Distinctions

- Recipient of a UWM R1 Distinguished Dissertation Fellowship (2021-2022).
- Recipient of the Papastamatiou Scholarship for an outstanding graduate student in theoretical physics from the UWM Dept. of Physics (2021).
- Recipient of a UWM Distinguished Dissertation Fellowship (2020-2021).
- Recipient of a Wisconsin Space Grant Consortium Graduate & Professional Research Fellowship: Summer 2019; Summer 2020; Summer 2021.
- Recipient of a UWM Chancellor's Graduate Student Award: Fall 2017; Spring 2018; Fall 2018; Spring 2019; Fall 2019; Spring 2020; Fall 2020.
- Recipient of a Research Excellence Award, from the UWM Dept. of Physics: Fall 2017; Spring 2018; Fall 2018; Spring 2021.
- Induction into the Phi Beta Kappa National Honor Society (2015) at ISU.
- Recipient of the Jun Ye & Huiqing Wang Award for outstanding academic performance from the ISU Physics Dept. in both 2014 and 2015.

Presentations and Seminars

Flow Morphology in Planetary Engulfment Events July 2023

- ePoster, EAS Annual Meeting 2023 (Krakow, Poland)

Planetary Engulfment in Athena++ May 2023

- Session talk, Flatiron Athena++ Workshop (New York, NY)

Flow Morphology of a Supersonic Gravitating Sphere Apr 2023

- Blackboard talk, KITP Locals Event (Santa Barbara, CA)

Flow Morphology in Post-Main Sequence Planetary Engulfment Apr 2023

- Seminar talk, UCSB Astro Lunch (Santa Barbara, CA)

Long-Term Evolution in Simulations of the Common Envelope Phase Sept 2022

- Session talk, ZTF Theory Network Meeting (Santa Margarita, CA)

Modeling Common Envelopes on a Moving Mesh Sept 2022

- Blackboard talk, KITP Local's Event (Santa Barbara, CA)

Simulating the Common Envelope Phase on a Moving Mesh Jun 2022

- Session talk, Flatiron N-Body Workshop (New York, NY)

New Physics in Simulations of the Common Envelope Phase Nov 2021

- Session talk, 2021 Midwest Relativity Meeting (Champaign, IL)

Moving Boundary Conditions in Common Envelope Evolution Aug 2021

- Contributed talk, Common Envelope Physics and Outcomes (Virtual)

Simulating Common Envelope Evolution on a Moving Mesh Aug 2021

- Session talk, Wisconsin Space Conference 2021 (Milwaukee, WI)

Moving and Reactive Boundary Conditions on a Moving Mesh Jan 2021

- Contributed talk, N-Body Shop Excellence Conference (Virtual)

Moving Boundary Conditions in Common Envelope Evolution Oct 2020

- Session talk, 2020 Midwest Relativity Meeting (Notre Dame, IN)

Simulating the CE Phase Using Moving-Mesh Hydrodynamics Jul 2020

- Contributed talk, EAS Annual Meeting 2020 (Leiden, Netherlands)

Moving-Mesh Hydrodynamics Using MANGA Dec 2019

- Seminar talk, CGCA Seminar Series (Milwaukee, WI)

Simulating the Common Envelope Phase in Binary Stars Aug 2019

- Session talk, Wisconsin Space Conference 2019 (Platteville, WI)

CEE on a Moving Mesh with MANGA May 2019

- Contributed talk, Flatiron CEE Workshop (New York, NY)

Common Envelope Evolution on a Moving Mesh Oct 2018

- Session talk, 2018 Midwest Relativity Meeting (Milwaukee, WI)

Refereed Publications

1. Flow Morphology of a Supersonic Gravitating Sphere
   Logan Prust, Lars Bildsten
   In preparation

2. Envelope Ejection and the Transition to Homologous Expansion in Common-Envelope Events
   Vinaya Valsan, Sarah Villanova-Borges, **Logan Prust**, Philip Chang
   Submitted to *Monthly Notices of the Royal Astronomical Society*

3. The Effect of Hydrodynamic Forces on Common Envelope Evolution
   Logan Prust
   Submitted to *Monthly Notices of the Royal Astronomical Society*

4. The Role of Radiation in Common Envelope Evolution
   Logan Prust
   2022, *Proceedings of the Wisconsin Space Conference,* doi: 10.17307/wsc.v1i1.346

5. Moving Boundary Conditions in Common Envelope Evolution
   Logan Prust
   2022, *Proceedings of the Wisconsin Space Conference,* doi: 10.17307/wsc.v1i1.327

6. Moving and Reactive Boundary Conditions in Moving-Mesh Hydrodynamics
   Logan Prust
   2020, *Monthly Notices of the Royal Astronomical Society,* 494, 4616-4626

7. Common Envelope Evolution on a Moving Mesh
   Logan Prust
   2020, *Proceedings of the Wisconsin Space Conference,* doi: 10.17307/wsc.v1i1.306

8. Common Envelope Evolution on a Moving Mesh
   Logan Prust & Philip Chang
   2019, *Monthly Notices of the Royal Astronomical Society,* 486, 5809-5818