

Dr. Logan J. Prust
Center for Computational Astrophysics
Flatiron Institute
New York, NY 10010
lprust@flatironinstitute.org
<https://ljprust.github.io/>

Employment

2025–	Center for Computational Astrophysics (CCA) <i>Flatiron Research Fellow</i> Supervisor: Matteo Cantiello	New York, NY, USA
2022–2025	Kavli Institute for Theoretical Physics (KITP) <i>Postdoctoral Scholar</i> Supervisor: Lars Bildsten	Santa Barbara, CA, USA

Education

2017–2022	University of Wisconsin-Milwaukee (UWM) <i>Ph.D. Physics</i> Adviser: Philip Chang Thesis: <i>Simulating the Common Envelope Phase Using Moving-Mesh Hydrodynamics</i>	Milwaukee, WI, USA
2011–2016	Iowa State University (ISU) <i>B.S. Aerospace Engineering</i> <i>B.S. Physics</i> <i>B.S. Mathematics</i> <i>Minor in Astronomy</i> <i>Magna cum laude</i>	Ames, IA, USA

Teaching Experience

Adjunct Assistant Professor (City University of New York)

2026	Phys 85200/Astro 77700: Star & Planet Formation
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Graduate Teaching Assistant (UWM)

2020	Phys 720: Electrodynamics I
2019	Phys 441: Introduction to Quantum Mechanics
2019	Physics Tutor
2019	Astron 103: Survey of Astronomy

2017–2018 Phys 122: General Physics II, Non-Calculus Treatment
2018 Phys 120: General Physics I, Non-Calculus Treatment

Undergraduate Teaching Assistant (ISU)

2015–2016 Aer E 351: Astrodynamics I
2013 Aer E 192: Aerospace Seminar

Grader (ISU)

2016 EM 324: Mechanics of Materials
2016 EM 274: Engineering Statics
2016 EM 345: Engineering Dynamics
2015 Aer E 310: Aerodynamics I

Student Mentoring

- **Joseph Farah** (Grad Student, Las Cumbres Observatory)
Co-authored multiple papers.
- **Gabriel Kumar** (Undergrad, UCSB)
Co-authored a paper on radiation hydrodynamics of SN ejecta.
- **Samuel Boos** (Grad Student, Alabama)
Co-authored a paper on remnants of double white dwarf detonations.
- **Kathlynn Simotas** (Grad Student, UCSB)
Co-authored a paper on nebular emission lines in supernovae.
- **Hila Glanz** (Grad Student, Technion)
Co-authored a paper on Bondi-Hoyle accretion.
- **Sarah Villanova-Borges** (Grad Student, UWM)
Co-authored a paper on long-term evolution of common envelope ejecta.
- **Vinaya Valsan** (Grad Student, UWM)
Co-authored a paper and jointly developed data analysis package.
- **Sunny Wong** (Grad Student, UCSB)
Collaborate on double-degenerate type Ia supernovae.
- **Ronan Humphrey** (Grad Student, UWM)
Provide guidance on development of MANGA simulation code.
- **Alexandra Spaulding** (Grad Student, UWM)
Provided guidance on setting up MANGA to model tidal disruption events.

Awards & Grants

2025–	Flatiron Research Fellowship
2025	Director’s Fellowship, Los Alamos National Laboratory (Declined)
2024, 2025	NSF Advanced Cyberinfrastructure Coordination Ecosystem: Services & Support (ACCESS) Discover Allocations
2021–2022	UWM R1 Distinguished Dissertation Fellowship
2021	Papastamatiou Scholarship for an outstanding graduate student in theoretical physics from the UWM Dept. of Physics
2020–2021	UWM Distinguished Dissertation Fellowship
2019, 2020, 2021	Wisconsin Space Grant Consortium Graduate Research Fellowships

Academic Service

2024–	Referee for <i>The Astrophysical Journal</i> and <i>Astronomy & Astrophysics</i>
2025	Subject-matter expert reviewer in a NASA peer review
2024, 2025	Postdoc Mentor for KITP Graduate Fellows
2023	Code of Conduct Committee, N-Body Shop Collaboration

Software

- *Scientific Software*: Experience with **MANGA** (moving-mesh hydrodynamics), **Athena++** (radiation hydrodynamics), **Sprout** (expanding-grid hydrodynamics), **Arepo** (moving-mesh hydrodynamics), **MESA** (stellar evolution), **RT1D** (1-D hydro with fluid instabilities), **TARDIS** (synthetic light curves), **Star-CCM+** (aerodynamics), **ANSYS** (structural analysis)
- *Programming*: Proficient in C++, Python, Fortran, MATLAB, Mathematica, Bash
- *High-Performance Computing Resources*: Experience with Expanse (SDSC), Comet (SDSC), Stampede2 (TACC), Bridges (PSC), Rusty (Flatiron Institute), Pleiades (NAS), Electra (NAS), Pod (CNSI), Knot (CNSI), Mortimer (UWM)

Publications

Journal Articles

- J1. Kumar, G., **Prust, Logan J.** & Bildsten, L. The First Day of a Type Ia Supernova from a Double-degenerate Binary. *ApJ* **992**, 2. arXiv: [2507.19722 \[astro-ph.HE\]](#) (Oct. 2025).
- J2. Farah, J. R., **Prust, Logan J.**, Howell, D. A., Ni, Y. Q., McCully, C., Andrews, M., Kumar, H., Hiramatsu, D., Wynn, S. G. K., Filippenko, A. V., Bostroem, K. A., Berger, E. & Blanchard, P. Lense-Thirring precessing magnetar engine drives a superluminous supernova. *arXiv e-prints*, arXiv:2509.08051. arXiv: [2509.08051 \[astro-ph.HE\]](#) (Sept. 2025).
- J3. Farah, J. R., **Prust, Logan J.**, Terreran, G., Howell, D. A., Bietenholz, M., Bartel, N., McCully, C. & Johnson, M. D. The First 4 Years of SN 1993J Revisited: Geometric *m*-ring Modeling of the Radio Shell with Closure Quantities Only. *arXiv e-prints*, arXiv:2509.20601. arXiv: [2509.20601 \[astro-ph.HE\]](#) (Sept. 2025).

- J4. Simotas, K., Bildsten, L. & **Prust, Logan J.** Wakes from Companion Interactions in Type Ia Supernovae Nebular Emission Line Profiles. *arXiv e-prints*, arXiv:2507.06412. arXiv: [2507.06412 \[astro-ph.HE\]](#) (July 2025).
- J5. **Prust, Logan J.**, Kumar, G. & Bildsten, L. Ejecta Wakes from Companion Interaction in Type Ia Supernova Remnants. *ApJ* **982**, 60. arXiv: [2412.18226 \[astro-ph.HE\]](#) (Mar. 2025).
- J6. **Prust, Logan J.**, Glanz, H., Bildsten, L., Perets, H. B. & Röpke, F. K. Morphology and Mach Number Dependence of Subsonic Bondi–Hoyle Accretion. *ApJ* **966**, 103. arXiv: [2402.10341 \[astro-ph.HE\]](#) (May 2024).
- J7. **Prust, Logan J.** & Bildsten, L. Flow morphology of a supersonic gravitating sphere. *MNRAS* **527**, 2869–2886. arXiv: [2310.20315 \[astro-ph.SR\]](#) (Jan. 2024).
- J8. Valsan, V., Borges, S. V., **Prust, Logan** & Chang, P. Envelope ejection and the transition to homologous expansion in common-envelope events. *MNRAS* **526**, 5365–5373. arXiv: [2309.15921 \[astro-ph.SR\]](#) (Dec. 2023).
- J9. **Prust, Logan J.** Moving and reactive boundary conditions in moving-mesh hydrodynamics. *MNRAS* **494**, 4616–4626. arXiv: [2002.04287 \[physics.comp-ph\]](#) (June 2020).
- J10. **Prust, Logan J.** & Chang, P. Common envelope evolution on a moving mesh. *MNRAS* **486**, 5809–5818. arXiv: [1904.09256 \[astro-ph.SR\]](#) (July 2019).

Working Papers

- W1. **Prust, Logan**, Bildsten, L. & Boos, S. *Aspherical Remnants of Triple and Quadruple Detonations in Binary White Dwarfs*. In review at *The Astrophysical Journal*.

Conference Proceedings

- C1. **Prust, Logan.** *Moving Boundary Conditions in Common Envelope Evolution* in *Proceedings of the Wisconsin Space Conference* (2022). <https://dione.carthage.edu/ojs/index.php/wsc/article/view/327>.
- C2. **Prust, Logan.** *The Role of Radiation in Common Envelope Evolution* in *Proceedings of the Wisconsin Space Conference* (2022). <https://dione.carthage.edu/ojs/index.php/wsc/article/view/346>.
- C3. **Prust, Logan.** *Common Envelope Evolution on a Moving Mesh* in *Proceedings of the Wisconsin Space Conference* (2020). <https://dione.carthage.edu/ojs/index.php/wsc/article/view/306>.

Presentations

Talks

- T1. *Aspherical Remnants of Triple and Quadruple Detonations in Binary White Dwarfs*. Session talk, AAS Winter Meeting. Phoenix, AZ, USA. Jan. 2026.
- T2. *Frame-Dragging Reveals Central Engine of Superluminous Supernova*. Invited talk, CGCA Seminar. Milwaukee, WI, USA. Dec. 2025.

- T3. *Remnants of Triple and Quadruple Detonations in Binary White Dwarfs*. Seminar talk, CCA Coffee Talks. New York, NY, USA. Oct. 2025.
- T4. *Lense-Thirring Precessing Magnetar Engine Drives a Superluminous Supernova*. Blackboard talk, KITP Locals Lunch. Santa Barbara, CA, USA. July 2025.
- T5. *Remnants of Double and Quadruple Detonations in Binary White Dwarfs*. Seminar talk, UCSB Astro Lunch. Santa Barbara, CA, USA. July 2025.
- T6. *Remnants of Quadruple Detonations in Binary White Dwarfs*. Seminar talk, Graduate Simulation Seminar Series (GS³). Santa Barbara, CA, USA. July 2025.
- T7. *Remnants of Double and Quadruple Detonations in Binary White Dwarfs*. Invited talk, TAPIR Seminar. Pasadena, CA, USA. May 2025.
- T8. *Remnants of Double-Degenerate Type Ia Supernovae*. Invited talk, CGCA Seminar. Milwaukee, WI, USA. Feb. 2025.
- T9. *A Birdwatcher's Guide to D6 Supernova Remnants*. Contributed talk, ZTF Theory Network Meeting. Santa Margarita, CA, USA. Sept. 2024.
- T10. *Shock Waves in Asymmetrical Supernova Remnants*. Seminar talk, Graduate Simulation Seminar Series (GS³). Santa Barbara, CA, USA. July 2024.
- T11. *Reverse Shocks in D6 Supernovae*. Contributed talk, ZTF Theory Network Meeting: WD Detonations. Cambria, CA, USA. June 2024.
- T12. *Shock Trajectories in Asymmetrical Supernova Remnants*. Blackboard talk, KITP Locals Lunch. Santa Barbara, CA, USA. May 2024.
- T13. *Black Hole Accretion as a Nozzle Flow*. Blackboard talk, KITP Locals Lunch. Santa Barbara, CA, USA. Oct. 2023.
- T14. *Morphology and Entropy Dependence of Subsonic Bondi-Hoyle Accretion*. Seminar talk, UCSB Astrophysics Theory Seminar. Santa Barbara, CA, USA. Oct. 2023.
- T15. *Flow Morphology in Planetary Engulfment Events*. Contributed talk, ZTF Theory Network Meeting. Santa Margarita, CA, USA. Sept. 2023.
- T16. *Hydrodynamical Simulation Techniques in Astrophysics*. Seminar talk, Graduate Simulation Seminar Series (GS³). Santa Barbara, CA, USA. Aug. 2023.
- T17. *Managing Friction in Planet-Star Relationships*. Seminar talk, UCSB Astrophysics Theory Seminar. Santa Barbara, CA, USA. May 2023.
- T18. *Planetary Engulfment in Athena++*. Session talk, Flatiron Athena++ Workshop. New York, NY, USA. May 2023.
- T19. *Flow Morphology in Post-Main Sequence Planetary Engulfment*. Seminar talk, UCSB Astro Lunch. Santa Barbara, CA, USA. Apr. 2023.
- T20. *Flow Morphology of a Supersonic Gravitating Sphere*. Blackboard talk, KITP Locals Lunch. Santa Barbara, CA, USA. Apr. 2023.
- T21. *Long-Term Evolution in Simulations of the Common Envelope Phase*. Contributed talk, ZTF Theory Network Meeting. Santa Margarita, CA, USA. Sept. 2022.
- T22. *Modeling Common Envelopes on a Moving Mesh*. Blackboard talk, KITP Locals Lunch. Santa Barbara, CA, USA. Sept. 2022.
- T23. *Simulating the Common Envelope Phase on a Moving Mesh*. Session talk, Flatiron N-Body Workshop. New York, NY, USA. June 2022.

- T24. *New Physics in Simulations of the Common Envelope Phase*. Session talk, Midwest Relativity Meeting. Champaign, IL, USA. Nov. 2021.
- T25. *Moving Boundary Conditions in Common Envelope Evolution*. Contributed talk, Common Envelope Physics and Outcomes. Virtual. Aug. 2021.
- T26. *Simulating Common Envelope Evolution on a Moving Mesh*. Session talk, Wisconsin Space Conference. Milwaukee, WI, USA. Aug. 2021.
- T27. *Moving and Reactive Boundary Conditions on a Moving Mesh*. Contributed talk, N-Body Shop Excellence Conference. Virtual. Jan. 2021.
- T28. *Moving Boundary Conditions in Common Envelope Evolution*. Session talk, Midwest Relativity Meeting. Notre Dame, IN, USA. Oct. 2020.
- T29. *Simulating the CE Phase Using Moving-Mesh Hydrodynamics*. Contributed talk, EAS Annual Meeting. Leiden, Netherlands. July 2020.
- T30. *Moving-Mesh Hydrodynamics Using MANGA*. Seminar talk, CGCA Seminar. Milwaukee, WI, USA. Dec. 2019.
- T31. *Simulating the Common Envelope Phase in Binary Stars*. Session talk, Wisconsin Space Conference. Platteville, WI, USA. Aug. 2019.
- T32. *CEE on a Moving Mesh with MANGA*. Contributed talk, Flatiron CEE Workshop. New York, NY, USA. May 2019.
- T33. *Common Envelope Evolution on a Moving Mesh*. Session talk, Midwest Relativity Meeting. Milwaukee, WI, USA. Oct. 2018.

Posters

- P1. **Prust, Logan**, Kumar, G. & Bildsten, L. *Ejecta Wakes from Companion Interaction in Type Ia Supernova Remnants*. EAS Annual Meeting (Cork, Ireland). [[Download ePoster](#)]. June 2025.
- P2. **Prust, Logan**, Kumar, G. & Bildsten, L. *Ejecta Wakes from Companion Interaction in Type Ia Supernova Remnants*. AAS Winter Meeting (Oxon Hill, MD, USA). [[Download ePoster](#)]. Jan. 2025.
- P3. **Prust, Logan**, Kumar, G. & Bildsten, L. *Evolution of Ejecta Wakes in Supernova Remnants*. Rise Time 2024 (West Lafayette, IN, USA). [[Download ePoster](#)]. Aug. 2024.
- P4. **Prust, Logan** & Bildsten, L. *Flow Morphology in Planetary Engulfment Events*. EAS Annual Meeting (Krakow, Poland). [[Download ePoster](#)]. July 2023.

Other Workshops Attended

2025	TARDIS Summer School (East Lansing, MI, USA)
2025	KITP Infant Supernovae Meeting (Santa Barbara, CA, USA)
2023	Stellar Interactions and the Transients They Cause (Aspen, CO, USA)
2022–2025	Various KITP Programs (Santa Barbara, CA, USA)
2022	Physics and Astrophysics of Common Envelopes (Los Alamos, NM, USA)
2019	MESA Summer School (Santa Barbara, CA, USA)

Last updated: October 20, 2025