

Steffani Grondin

POSTDOCTORAL FELLOW – UC SAN DIEGO

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Research Interests

Topics: Stars and stellar populations, common envelope evolution, white dwarfs, observational astronomy, star cluster dynamics simulations, machine learning for rare population discoveries in large datasets

Employment

University of California, San Diego

POSTDOCTORAL FELLOW

Appointments: NSERC Postdoctoral Fellow, IAU NA-ROAD Women & Girls in Astronomy Program Fellow

La Jolla, CA, USA

Oct. 2025-

Education

University of Toronto

PHD IN ASTRONOMY & ASTROPHYSICS

Advisors: Prof. Maria Drout and Prof. Jeremy Webb

Title: One (or Two) in a Million: Extra-Tidal Stars and Post-Common Envelope Binaries of Milky Way Star Clusters

Toronto, ON, Canada

2020-2025

University of British Columbia

BSc IN PHYSICS & ASTRONOMY (W/ DISTINCTION)

Advisor: Prof. Harvey Richer

Title: White Dwarf Natal Kicks in Open Star Clusters

Vancouver, BC, Canada

2015-2020

Selected Grants, Fellowships & Awards

FELLOWSHIPS/SCHOLARSHIPS (TOTAL FUNDING: \$288,050 CAD).....

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| Postdoc | NSERC Postdoctoral Fellowship (PDF) , \$140,000 CAD | 2025-2027 |
| PhD | NSERC Postgraduate Scholarship - Doctoral (PGS-D) , \$101,000 CAD | 2023-2025 |
| PhD | Walter C. Sumner Memorial Fellowship , \$14,050 CAD | 2023-2025 |
| PhD | Ontario Graduate Scholarship (OGS) , \$15,000 CAD | 2022-2023 |
| BSc | Dunlap Institute Summer Undergraduate Research Program Fellowship , \$9,500 CAD | 2019 |
| BSc | NSERC Undergraduate Student Research Award (USRA) , \$8,500 CAD | 2018 |

GRANTS (TOTAL FUNDING: \$280,363 USD).....

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| Co-I | NSF Astronomy & Astrophysics Research Grant (AAG) , \$253,363 USD <i>Brief But Spectacular: New Windows into Common Envelope Evolution</i> (PIs: P. Muirhead & J. Nordhaus; Co-Is: M. Drout & S. Grondin) | 2025-2028 |
| Co-I | UC San Diego Strategic Convene and Influence Award , \$25,000 USD <i>SMASH: Accelerating Cosmic Breakthroughs Through AI at UCSD</i> (PI: F. Broekgaarden; Co-Is: S. Arani, S. Grondin, A. Li, M. Quinnan, M. Ristić & P. Van-Lane) | 2025-2026 |
| PI | IAU NA-ROAD Women & Girls in Astronomy Project Grant , \$2,000 USD <i>Under Northern Skies: Expanding Access to Astronomy for Girls in Rural Canada</i> (Co-PI: E. Meyer) | 2025-2026 |

RESEARCH/LEADERSHIP AWARDS.....

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| PhD | 2025 Jui Lin (Allen) Yen Award , UofT Dept. of Astronomy & Astrophysics, \$1,000 CAD For Grondin et al. 2024b. <i>This award honours exceptional achievement in research by a graduate student in our department.</i> | 2025 |
| BSc | Frontiers of Science Award , International Congress of Basic Science, \$25,000 USD For Kramer et al (incl. Grondin). 2021. | 2025 |
| PhD | 2024 “You Lead, We Follow” Leadership Award , UofT Dept. of Astronomy & Astrophysics For contributions to the graduate student community and department as GASA co-president. | 2024 |
| BSc | Top 10 Finalist , UBC Undergraduate 3 Minute Thesis | 2020 |
| BSc | Top Research Poster , UofT SURP Research Poster Symposium | 2019 |

Publication List

Summary: 3 papers as first author, 2 as second/third author and 3 as contributing author.

FIRST AUTHOR (3).....

1. **Grondin, S.**, Drout, M.R., Nordhaus, J., Muirhead, P., Speagle, J.S. & Chornock, R., “The first catalog of candidate white dwarf + main sequence binaries in open clusters: A new window into common envelope evolution”, 2024, *ApJ*, 976, 1.
Press Release/Media: **University of Toronto, Universe Today**
2. **Grondin, S.**, Webb, J.J., Lane, J.M.M., Speagle, J.S. & Leigh, N., “A catalogue of Galactic GEMS: Globular cluster Extra-tidal Mock Stars”, 2024, *MNRAS*, 528, 3.
3. **Grondin, S.**, Webb, J.J., Leigh, N., Speagle, J.S. & Khalifeh, R., “Searching for the extra-tidal stars of globular clusters with high-dimensional analysis and a core particle-spray code”, 2023, *MNRAS*, 518, 3.

SECOND/THIRD AUTHOR (2).....

1. Evans, F., **Grondin, S.**, Ye, C., Webb, J.J., Laroche, A. & Bovy, J., “The ejection and detectability of high- and hyper-velocity stars by compact object binaries in globular clusters”, 2025, in review at *ApJ*.
2. Leigh, N., Ye, C., **Grondin, S.**, Fragione, G., Webb, J.J. & Heinke, C., “The dominant mechanism(s) for populating the outskirts of star clusters with neutron star binaries”, 2023, *MNRAS*, 527, 3.

CONTRIBUTING AUTHOR (3).....

1. Herrera-Urquieta, A. et al. (12 co-authors including **Grondin, S.**), “A systematic method to identify runaways from star clusters produced from single-binary interactions: A case study of M67”, 2025, *A&A*, 697, A183.
2. Kramer, M. et al. (29 co-authors including **Grondin, S.**), “Strong Field Gravity Tests with the Double Pulsar”, 2021, *Physical Review X*, 11, 4.
Press Release/Media: **University of British Columbia, American Physical Society, Universe Today**
3. Richer, H. et al. (8 co-authors including **Grondin, S.**), “Massive White Dwarfs in Young Star Clusters”, 2021, *ApJ*, 912, 165.

Observing Programs

Facilities/Surveys: 2MASS, APOGEE, Gaia, Kepler/K2, Pan-STARRS1, TESS, Zwicky Transient Facility

SUCCESSFUL OBSERVING TIME.....

| | | |
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| PI | Hubble Space Telescope , 4 orbits (Cycle 33) <i>UV spectroscopy of a new post-common envelope binary in the Alessi 12 open cluster</i> | 2025 |
| PI | Lick Observatory (Shane Telescope) , 3 nights <i>Spectroscopy of white dwarf-M dwarf binary candidates in star clusters (Gaia XP systems)</i> | 2025 |
| PI+Co-I | Gemini Observatories , 101 hours (PI) + 14 hours (Co-I), <i>Spectroscopy of white dwarf-M dwarf binary candidates in star clusters</i> | 2021-2025 |
| PI | Neil Gehrels Swift Observatory , 2000 seconds <i>UV photometry of a new post-common envelope binary in the Alessi 12 open cluster</i> | 2024 |

OBSERVING EXPERIENCE.....

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| Observer | Las Campanas Observatory , 10 nights (in-person and remote observations) | 2021-2025 |
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Selected Academic Presentations

INVITED TALKS/SEMINARS (9).....

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| San Diego, US | Department Colloquium , UC San Diego/San Diego State University | Oct. 2025 |
| South Bend, US | Department Colloquium , University of Notre Dame | Apr. 2025 |
| San Diego, US | STRAND (Simulations TheoRy AND more) Seminar , UC San Diego | March 2025 |
| Waterloo, CA | Department Colloquium , Waterloo Centre for Astrophysics | Feb. 2025 |
| Pasadena, US | Caltech Tea Talk , California Institute of Technology | Dec. 2024 |
| Amsterdam, NL | Multi-Star Group Meeting , University of Amsterdam | July 2024 |
| Vienna, AT | Institute Seminar , Institute of Science and Technology Austria | July 2024 |
| Paris, FR | Joint Galaxies and Cosmology Seminar , L’Observatoire de Paris [virtual] | Dec. 2023 |
| Toronto, CA | Department Lunch Seminar , University of Toronto | Nov. 2022 |

INSTRUCTED TUTORIALS AND WORKSHOPS (2).....

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| Garching, DE | 'Machine Learning Techniques for Star Cluster Science' , 75+ participants | Sept. 2023 |
| Ann Arbor, US | 'Dimensionality Reduction: Applications to Star Clusters' , 50+ participants | Aug. 2023 |

CONTRIBUTED TALKS (14).....

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| Seoul, KR | IAUS 398/MODEST-25: Compact Objects and Binaries in Dense Stellar Systems , IAU | June 2025 |
| Anchorage, US | AAS 246th Meeting , AAS | June 2025 |
| Pasadena, US | Carnegie Tea , Carnegie Observatories | Dec. 2024 |
| Paraty, BR | IAUS 395: Stellar Populations in the Milky Way and Beyond , IAU | Nov. 2024 |
| Warsaw, PL | MODEST-24: Exploring Dense Stellar Systems Across Cosmic Time , CAMK | Aug. 2024 |
| Barcelona, ES | EuroWD24 , Universitat Politècnica de Catalunya | July 2024 |
| Toronto, CA | CASCA 2024 , University of Toronto | June 2024 |
| Toronto, CA | Globular Clusters and Their Tidal Tails , University of Toronto | May 2024 |
| Garching, DE | The Interplay Between Binaries and Star Clusters , ESO Garching | Sept. 2023 |
| Evanston, US | MODEST-23: Star Clusters in the Post-Pandemic Era , Northwestern University | Aug. 2023 |
| Ann Arbor, US | Great Lakes Star Clusters & Streams , University of Michigan | Aug. 2023 |
| Hamilton, CA | Star Clusters at McMaster , McMaster University | Aug. 2022 |
| Busan, KR | IAU General Assembly XXXI (Machine Learning in Astronomy Session) , IAU | Aug. 2022 |
| Toronto, CA | CASCA 2022 , York University [virtual] | May 2022 |

Advising Experience _____

5 undergraduate students supervised with: Jeremy Webb (*), Joshua Speagle (†) and Alison Sills (°)

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| BSc | Max Zabrodski ^{†,°} , Literature review: Multiple stellar populations in globular clusters | 2023-2024 |
| BSc | Rosalind Liang ^{*,†} , Project: Optimizing chemical abundances for extra-tidal star searches | 2022-2023 |
| BSc | Khemaka Oo ^{*,†} , Project: Comparing performances of dimensionality reduction algorithms | 2022-2023 |
| BSc | Ryan Wang ^{*,†} , Project: Automating a search for extra-tidal stars of globular clusters | 2022-2023 |
| BSc | Eric Connena ^{*,†} , Project: A high-order dimensional analysis of APOGEE DR16 using UMAP | 2021-2022 |

Teaching Experience _____

I have **instructed 2500+ undergraduate students in 16 university classes** as a teaching assistant from 2018- 2024. From 2021-2024, I was the **Head Teaching Assistant for the two largest undergraduate courses in Canada** (AST 101/201). In this role, I led a team of 20 graduate instructors and developed weekly tutorial curricula for thousands of non-science students.

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| UofT | AST 201: Stars and Galaxies , Head Tutorial TA (x3), Graduate TA (x2) | 2021-2025 |
| UofT | AST 101: The Sun and Its Neighbours , Head Tutorial TA (x3), Graduate TA (x5) | 2020-2024 |
| UBC | PHYS 109: Enriched Experimental Physics Lab , Undergraduate TA | 2020 |
| UBC | PHYS 101: Energy and Waves Lab , Undergraduate TA | 2019 |
| UBC | PHYS 119: Experimental Physics Lab , Undergraduate TA | 2018 |

Service and Academic Leadership _____

LEADERSHIP POSITIONS/COMMITTEES.....

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| Time Allocation Committee LICK OBSERVATORY (APF) | Nov. 2025- UCO |
| Colloquium & Journal Club Committee; SMASH (Collaboration in AI) Committee UCSD DEPT. OF ASTRONOMY & ASTROPHYSICS | Oct. 2025- UCSD |
| Co-President UOFT GRADUATE ASTRONOMY STUDENT ASSOCIATION (GASA) | 2023-2024 UofT |
| Education & Public Outreach Committee; Grad Student Representative CANADIAN ASTRONOMICAL SOCIETY (CASCA) | 2021-2023 UofT |
| Secretary UBC PHYSICS SOCIETY | 2018-2019 UBC |
| Co-President UBC ASTRONOMY CLUB | 2017-2018 UBC |

CONFERENCE ORGANIZATION.....

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| Co-Organizer | <i>June 2024</i> |
| CASCA 2024: HARVEY RICHER MEMORIAL SESSION | <i>Toronto, CA</i> |
| LOC Co-Chair | <i>May 2024</i> |
| GLOBULAR CLUSTERS AND THEIR TIDAL TAILS | <i>Toronto, CA</i> |

Outreach and Science Communication _____

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| Women & Girls in Astronomy Program Organizer | <i>2025-2026</i> |
| BRITISH COLUMBIA SCHOOL DISTRICT NO. 20 | <i>Castlegar, CA</i> |
| <ul style="list-style-type: none"> Organizing the first-ever astronomy workshop in Canada’s rural West Kootenay region. This event will connect girls and gender-diverse youth with hands-on activities, career talks and stargazing with local Indigenous perspectives. | |

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| Astronomy/STEM Educator | <i>2021-2024</i> |
| BRITISH COLUMBIA SCHOOL DISTRICT NO. 27 & NO. 36 | <i>Williams Lake/Surrey, CA</i> |
| <ul style="list-style-type: none"> Visited primary and secondary schools to run astronomy and women in STEM lessons. | |

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| Volunteer & Roaming Astronomer | <i>2023</i> |
| ASTRONOMY ON TAP T.O. | <i>UofT</i> |
| <ul style="list-style-type: none"> Assisted in event organization and answered public questions at Toronto’s largest astronomy event. | |

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| Speaker & Volunteer Coordinator | <i>2022-2023</i> |
| UOFT ASTROTOURS | <i>UofT</i> |
| <ul style="list-style-type: none"> Coordinated 20+ monthly volunteers and gave talks for a 100+ person astronomy public talk series. | |

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| Science Writer | <i>2021</i> |
| UP AND ATOM YOUTUBE CHANNEL | <i>YouTube</i> |
| <ul style="list-style-type: none"> Created popular-science video scripts that explain astronomy concepts for a YouTube channel with 350K+ subscribers. | |

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| Science Communications Assistant | <i>2018</i> |
| TRIUMF (CANADA’S PARTICLE ACCELERATOR CENTRE) | <i>Vancouver, CA</i> |
| <ul style="list-style-type: none"> Synthesized complex science into engaging communications pieces (e.g. web articles, public tours and social media). | |

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| STEM Instructor | <i>2017</i> |
| UBC GEERING UP ENGINEERING OUTREACH | <i>Vancouver, CA</i> |
| <ul style="list-style-type: none"> Educated 1000+ K-12 aged children across British Columbia about STEM in both a classroom and summer camp environment. | |