Anna O'Grady

Postdoctoral Fellow – Carnegie Mellon University

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Research Skills and Interests

Topics: Observational Stellar Astronomy, Binary Massive Star Evolution, Resolved Stellar Populations, Variable Stars, Core Collapse Supernovae Progenitors, UVOIR Spectroscopy, Population Synthesis Modeling
Telescopes: *Hubble Space Telescope*, *Chandra X-ray Observatory*, Magellan Telescopes (LCO), Gemini, South African Large Telescope
Software: COSMIC, DRAGONS, IRAF, AstroPy, Python, Git

Research Positions

Postdoctoral Fellow — *Carnegie Mellon University*
McWilliams Center Postdoctoral Fellowship — *Sept. 2023 - Present*

PhD Student — *University of Toronto*
Advisors: Prof. Maria Drout, Prof. Bryan Gaensler, and Prof Renée Hlôzek — *Sept. 2016 - Aug. 2023*

Undergraduate Thesis, MUN & NSERC Research Award — *Memorial University of NL*
Advisors: Prof. Ivan Booth and Prof. Hari Kunduri — *May. 2015 - August 2016*

Dorrit Hoffleit Undergraduate Summer Research Award — *Yale University*
Advisor: Prof. Louise Edwards — *May 2014 - July 2014*

Education

University of Toronto — *Toronto, ON, Canada*
PhD in Astronomy & Astrophysics — *2016-2023*
Advisors: Prof. Maria Drout and Prof. Bryan Gaensler
Title: Identification of super-AGB stars and Yellow Supergiant Binaries in the Magellanic Clouds

Memorial University of Newfoundland and Labrador — *St. John's, NL, Canada*
BSc Honours in Physics & Applied Mathematics — *2012-2016*
Advisors: Prof. Ivan Booth and Prof. Hari Kunduri
Title: Perturbations of black hole horizons

Advising Experience

3 students supervised. (◇) indicates co-supervision.

PhD	**Shannon Bowes**◇, PhD Thesis: Variability of Yellow Supergiant Binaries	*2025-Present*
BSc	**Mark Martinez**◇, Project: SNe Progenitors of Binary Neutron Star Mergers in COSMIC	*2024-Present*
High Sch.	**Esme Offner**, Science Fair: Radial Velocities of Nearby Stars	*2024-2025*

Awards & Grants

Scholarships & Fellowships

PhD	**GM Women in Science and Mathematics Award**, $5000 CAD	*2022*
PhD	**Lachlan Gilchrist Fellowship**, $12000 over 3 years	*2018-2021*
PhD	**Walter C. Sumner Memorial Fellowship**, $16000 CAD over 2 years	*2018-2020*
PhD	**OGS-QEII Graduate Scholarship** , $60000 CAD over 4 years	*2016-2020*
Undergrad	**NSERC USRA & MUNL Internship Award**, $12000 CAD for 2 summers	*2015-2016*
Undergrad	**Dr. S.W. Brekon Scholarship in Physics**, $1000 CAD	*2015*
Undergrad	**Dorrit Hoffleit Summer Undergraduate Research Award**, $3000 USD	*2014*

Academic, Research, & Leadership Awards

PhD	**Jiu Lin Allen Yen Award for *O'Grady et al. 2020***, $1000 CAD	*2021*
PhD	**"You Lead, We Follow" Leadership Award**, UofT Dept. of Astronomy and Astrophysics	*2021*
Undergrad	**Memorial University Lou Visentin Award**, Achieved Dean's List in all years	*2016*
Undergrad	**Dr. Hugh J. Anderson Leadership Award**, Memorial University of NL	*2013-2015*

Grants

Postdoc	**NSF Proposal - Near Field Population Synthesis**, Collaborator	*2025*
Postdoc	**McWilliams Seed Grant - Write Together Program**, Yearly funding for new dept. professional development initiative	*2023-2025*

Observing Programs

Successful Observing Proposals

[PI, Director's Discretionary Time] X-ray detection of the low-mass companion responsible for Betelgeuse's long secondary period — *Chandra X-Ray Observatory*
Co-Is: O'Connor, B; Goldberg, J.; Joyce, M.; Molnar, L.; Johnson, C.; Hare, J.; Breivik, K.; Drout, M. (Awarded: 45 ks) — *2024B, Cycle 26 DDT*

[Co-I, Director's Discretionary Time] Far-UV detection of the low-mass companion responsible for Betelgeuse's long secondary period — *Hubble Space Telescope*
PI: Joyce, M. (Awarded: 4 orbits) — *2024B, Cycle 31 DDT*

[PI] Confirming YSG Binaries in the Magellanic Clouds: Towards a Population of Partially Stripped Supernovae Progenitors — *SALT*
Co-Is: Drout, M., (Awarded: 6.3 hours) — *2024B*

[PI] Confirming YSG Binaries in the Magellanic Clouds: Towards a Population of Partially Stripped Supernovae Progenitors — *Gemini-S*
Co-Is: Drout, M.; Breivik, K.; Gotberg, Y.; Ludwig, B., (Awarded: 22 hours) — *2024B*

[PI] Confirmation of YSG Binaries in the Magellanic Clouds: Towards a Population of Supernova Progenitor Analogs — *Gemini-S*
Co-Is: Drout, M.; Breivik, K.; Gotberg, Y.; Ludwig, B., (Awarded: 18 hours) — *2022B*

[Co-I] The Nature of a New Class of Luminous Highly Variable Stars — *Magellan/Baade 6.5m*
PI: Drout, M. (Awarded: 1 night) — *2020A*

[Co-I] An APOGEE-2S Survey of Evolved Massive Stars in the Magellanic Clouds — *du Pont 2.5m*
PI: Drout, M. (Awarded: 4 nights) — *2019*

[Co-I] Yellow Supergiants as Probes of Stellar Evolution and Mass Loss — *Magellan/Clay 6.5m*
PI: Drout, M. (Awarded: 12 nights) — *2017B*

Observing Experience

Optical Echelle Spectrographs (MIKE, MagE) *Magellan 6.5m, LCO*

25 nights

Optical Long-Slit Spectroscopy and Photometry (IMACS, LDSS) *Magellan 6.5m, LCO*

4 nights

Optical Multi-Object Spectroscopy and Photometry (WFCCD) *du Pont 2.5m, LCO*

3 nights

Academic & Public Presentations

Colloquia & Seminars (10)

Hamilton, CA	**McMaster University**, Seminar	*Oct. 2025*
St. John's, CA	**Memorial University of Newfoundland and Labrador**, Colloquium	*Oct. 2025*
London, CA	**University of Western Ontario**, Colloquium	*Sep. 2025*
Montreal, CA	**McGill University, Trottier Space Institute**, TSI Seminar Series	*Sep. 2025*
St. John's, CA	**Memorial University of Newfoundland and Labrador**, Colloquium	*Mar. 2024*
Cambridge, US	**Harvard Center for Astrophysics**, Seminar	*Nov. 2022*
Toronto, CA	**University of Toronto**, Seminar	*Oct. 2022*
Virtual	**California Polytechnic State University**, Colloquium	*Apr. 2021*
Virtual	**Univ. of Arizona, Univ. of Hawaii, Ohio State Univ.**, Paper discussion (3)	*Oct. 2020*
St. John's, CA	**Memorial University of Newfoundland and Labrador**, Colloquium	*Apr. 2019*

Conferences & Workshops (3 invited talks, 7 contributed talks, 6 posters)

Halifax, CA	**CASCA AGM**, Contributed Talk, St. Mary's University	*Jun. 2025*
NYC, US	**Stable Mass Transfer 2.0**, ***Invited*** Workshop, Center for Computational Astrophysics	*May 2025*
Virtual	**XMC II: Clouds over Yellowstone**, Contributed Poster, NOIRLab	*May 2025*
Virtual	**Transients From Space**, Contributed Poster, Space Telescope Science Institute	*Apr. 2025*
Virtual	**Stripped Star Workshop**, Contributed Talk, Lorentz Center	*July 2024*
Sacramento, US	**APS April Meeting**, ***Invited*** Talk, Special Session on Thorne-Zytkow Objects	*Apr. 2024*
Leuven, BE	**Massive Triples, Binaries, and Mergers**, Contributed Talk, KU Leuven	*July 2023*
Seattle, US	**AAS 241**, Dissertation Talk, AAS Winter Meeting	*Jan. 2023*
Toronto, CA	**Spoken-WERRD symposium**, Contributed Talk	*Nov. 2022*
Ballyconnel,IR	**Massive Stars Near and Far**, Contributed Poster, IAU Symposium 361	*May 2022*
Virtual	**AAS 238**, ***Invited*** Talk, Special Session on Thorne-Zytkow Objects	*June 2021*
Virtual	**Unsolved Problems in Giants & Red Supergiants**, Contributed Talk, IAU Symposium, **LINK**	*June 2021*
Virtual	**CASCA AGM**, Contributed Talk	*June 2021*
Virtual	**CASCA AGM**, Contributed Poster	*May 2020*
Toronto, CA	**RASC and AAVSO Joint AGM**, Contributed Poster, York University	*June 2019*
Baltimore, US	**Deaths and Afterlives of Stars**, Contributed Poster, Space Telescope Science Institute	*Apr. 2019*

Public Talks, Panels, & Education Work (20)

St. John's, CA	**Undergraduate Career Talk**, Memorial University of Newfoundland	*Oct. 2025*
London, CA	**Undergraduate Career Talk**, University of Western Ontario	*Sept. 2025*
Pittsburgh, US	**Public Science Talk (2)**, Allegheny Observatory	*Jul. 24, Apr. 25*
St. John's, CA	**Public Science Talk (9)**, Royal Astronomical Society of Canada, St. John's Chapter	*Dec. 2017-25*
St. John's, CA	**Elizabeth R. Laird Lecture**, Johnson GeoCentre	*Apr. 2024*
Mt. Pearl, CA	**Career Talk**, Mount Pearl Girl Guides Association	*Apr. 2024*
Virtual	**Public Science Talk**, Amateur Observer's Society of New York	*June 2022*
Toronto, CA	**AstroTours Public Science Talk (2)**, University of Toronto	*Jul. 19,Jun. 22*
St. John's, CA	**Career Presentation to Grade 5 and 6 Students**, St. Mary's Elementary School	*Apr. 2022*
Virtual	**Career Presentation to Grade 7-12 Students**, Crescent Collegiate, NL	*Feb. 2021*

Service, Outreach, and Academic Leadership

Conference Organization

Atlantic Universities Physics and Astronomy Conference *Aug. 2015 - Feb. 2016*
Co-Chair of LOC (with Tyler Downey) *St. John's, CA*

- Co-chair of LOC for regional conference of 100+ undergraduate students across Atlantic Canada
- Responsible for assembling the rest of the LOC and volunteering groups, overseeing conference design and budget, acquiring meeting space and catering, choosing invited speakers, soliciting donations, hosting Women in Science panel, and ensuring the conference ran smoothly.

Leadership Positions, Committees, and Service

Scholarships and Fellowship Review Panel, Physics & Astronomy *2024-2027*
National Science and Engineering Research Council of Canada *Canada*

- Panel member for evaluating graduate scholarship and postdoctoral fellowship applications. 3 year appointment.

McWilliams Fellowship Search Committee *2024-2025*
McWilliams Center for Cosmology and Astrophysics *CMU*

- Committee member for evaluating postdoctoral fellowship applications.

'Write Together Friends' Co-organizer *2024-Present*
McWilliams Center for Cosmology and Astrophysics *CMU*

- Co-creator and co-organizer of weekly department event to encourage interaction and co-working within the department.

Jamboree Committee Member *2023 & 2024*
McWilliams Center for Cosmology and Astrophysics *CMU*

- Committee member, responsible for organizing the yearly jamboree of flash talks for the department and securing venue for evening event; created standard procedure guide for future committees.

Regular Member, Committee Member *2016-2023*
Graduate Astronomy Student Association *UofT*

- Course & Qualifier Satisfaction Survey Committee (Chair) - Surveying student opinion on courses and qualifier exams and presenting results to faculty
- PRISM (LGBTQ+) Committee - Event organization
- Social Committee - Event organization

Regular Member, President (2015-2016) *2013-2016*
Physics & Physical Oceanography Undergraduate Society *MUNL*

- Led the undergraduate society to organize monthly social events, survey students for opinions on course material and program design, and created a scholarship.

Outreach and Science Communication

Scientific Fact Checker *2024*
Book – Cosmic Collisions: Supergiant vs. Neutron Star | ISBN-13: 978-1536242256

Media Speaker & Volunteer *2023*
2023 Total Solar Eclipse Event, Memorial University of NL *MUNL*

Volunteer *2017*
2017 Partial Solar Eclipse Event & Canada 150 Star Party, RASC & Dunlap Institute *UofT*

Volunteer *2017*
Math Department Girls in STEM Event *UofT*

Volunteer *2016-2020*
AstroTours & Astro On Tap *UofT*

Media, Interviews, & Press

Press Rel.	**X-Ray Study Reveals New Details About Betelgeuse's Elusive Companion Star**, Amy Pavlak Laird, CMU Mellon College of Science	*Oct. 2025*
Interview	**Anna O'Grady | McWilliams Postdoctoral Fellow**, Gale Force Wins Podcast, Ep 225	*Feb. 2025*
Interview	**Holiday Question Show**, Quirks and Quarks, CBC	*Dec. 2023*
Video	**Stellar Struggles: Frank Kameny's fight for LGBTQ+ equality**, Cosmos From Your Couch	*June 2023*
Docu.	**Astronomer Searches for the Universe's Largest Stars**, Imagine This	*June 2023*
Article	**NL PhD student makes explosive discovery amongst the stars**, Peter Jackson, Saltwire	*June 2021*
Article	**Stellar alumna: Astronomy scholar discovers new type of star**, Kelly Foss, MUN Gazette	*June 2021*
Article	**On the Cusp of a New Understanding of the Stars**, Emily Deibert, Research2Reality	*Apr. 2021*
Press Rel.	**UofT Student Discovers Rare Star Population**, Meaghan MacSween, Dunlap Institute	*Mar. 2021*

Collaborations and Professional Organizations

BLOeM *2024-Present*
Binarity at Low Metallicty Collaboration

YSE *2021-2023*
Young Supernova Experiment Collaboration

IAU *2024-Present*
International Astronomy Union

CASCA *2019-Present*
Canadian Astronomical Society | Société Canadienne D'Astronomie

AAS *2022-Present*
American Astronomical Society

Teaching Experience

As a postdoc, I have instructed 50+ undergraduate students as a **guest lecturer** for 4 lectures, one of which I **designed myself.** As a graduate student, I have been a teaching assistant (TA) for **16 courses**. From 2018-2023, I was the **Head Marker** for two of the **largest** undergraduate courses in Canada ($\sim$ **1500 students** per semester). In this role I was responsible for organizing the duties of a team of 20+ TAs and overseeing the grading of all students. I also **designed and delivered** a lecture to summer research students. Finally, TA for a graduate course in 2022 and a undergraduate lab course during my senior undergraduate year.

CMU	**PHYS 33120: Science and Science Fiction**, Guest Lecturer (4 Lectures)	*2025*
UofT	**Summer Undergraduate Research Program**, Guest Lecturer (1 lecture)	*2022*
UofT	**AST 301: Observational Astronomy**, Graduate TA (x4)	*2019-2022*
UofT	**AST 1410: Stars (Graduate Course)**, Senior Graduate TA, Half semester appointment	*2021*
UofT	**AST 101/201: The Sun & Its Neighbours/Stars & Galaxies**, Head Marker (x5.5), Grad. TA (x6)	*2016-2023*
MUNL	**PHYS 1020: Introductory Physics I**, Undergraduate TA	*2015*

Publication List

15 total publications; 4 first-author, 1 invited review. 50+ citations from significant contribution articles; over 300 citations total. Underlined authors indicate student supervision.

Invited Reviews (1)

1. **O'Grady, A.J.G.;**, Moriya, T.J.; Renzo, M.; Vigna-Gomez, A.;, "Thorne-Zytkow Objects", 2024, *Reference Module in Materials Science and Materials Engineering, Elsevier*, published as a chapter in Elsiver's *Encyclopedia of Astrophysics* (2026), edited by I. Mandel, 17pp

Significant Contribution (5)

5. **O'Grady, A.J.G**, O'Connor, B.; Goldberg, J.; et al., "Betelgeuse's Buddy: X-Ray Constraints on the Nature of α Ori B ", 2025, *ApJ*, 992, 107, 12pp
   Press Release/Media: Carnegie Mellon University

4. Goldberg, J.; **O'Grady, A.J.G.**; et al., "Betelgeuse, Betelgeuse, Betelgeuse, Betel-buddy? Constraints on the dynamical companion to α Orionis from HST", 2025, *ApJ* in press, arXiv:2505.18375, 15 pp

3. **O'Grady, A.J.G.;**, Drout, M.R.; Neugent, K.F.; et al., "Binary Yellow Supergiants in the Magellanic Clouds. I: Photometric Candidate Identification", 2024, *ApJ*, 975, 29, 21pp

2. **O'Grady, A.J.G.;**, Drout, M.R.; Gaensler, B.M.; et al., "Cool, Luminous, and Highly Variable Stars in the Magellanic Clouds. II: Spectroscopic and Environmental Analysis of Thorne-Zytkow Object and super-AGB Star Candidates", 2023, *ApJ*, 943, 18, 26pp

1. **O'Grady, A.J.G.;**, Drout, M.R.; Shappee, B.J.; et al., "Cool, Luminous, and Highly Variable Stars in the Magellanic Clouds from ASAS-SN: Implications for Thorne-Zytkow Objects and super-Asymptotic Giant Branch Stars", 2020, *ApJ*, 901, 2, 32pp

Other Contributions (9)

9. Dorn-Wallenstein, T.Z.; et al. (7 co-authors, including **O'Grady, A.J.G.**), "A Spectroscopic Hunt for Post-Red Supergiants in the Large Magellanic Cloud II: Turbulent Line Broadening in the Spectra of LMC Yellow Supergiants", 2025,*ApJ*, 991, 173

8. Patrick, L.R.; et al. (39 co-authors including **O'Grady, A.J.G.**), "Binarity at LOw Metallicity (BLOeM): The multiplicity properties and evolution of BAF-type supergiants", 2025, accepted for publication in *A&A*.

7. Shenar, T.; et al. (77 co-authors including **O'Grady, A.J.G.**), "Binarity at LOw Metallicity (BLOeM): A spectroscopic VLT monitoring survey of massive stars in the SMC", 2024, *A&A*, 690, A289

6. Drout, M.R.; et al. (7 co-authors including **O'Grady A.J.G.**), "An observed population of intermediate-mass helium stars that have been stripped in binaries ", 2023, *Science*, 382, 6676
   Press Release/Media: University of Toronto, Carnegie Observatories

5. Kilpatrick, C.D.; et al. (25 co-authors including **O'Grady, A.J.G.**), "Type II-P supernova progenitor star initial masses and SN 2020jfo: direct detection, light-curve properties, nebular spectroscopy, and local environment ", 2023, *MNRAS*, 524, 2

4. Aleo, P.D.; et al. (87 co-authors including **O'Grady, A.J.G.**), "The Young Supernova Experiment Data Release 1 (YSE DR1): Light Curves and Photometric Classification of 1975 Supernovae ", 2023, *ApJS*, 226, 1

3. Chan, H-S.; et al. (6 co-authors including **O'Grady, A.J.G.**), "Searching for Anomalies in the ZTF Catalog of Periodic Variable Stars ", 2022, *ApJ*, 932, 2

2. Kessler, T.; et al. (30 co-authors including **O'Grady, A.J.G.**), " Models and Simulations for the Photometric LSST Astronomical Time Series Classification Challenge (PLAsTiCC) ", 2019, *PASP*, 131, 1003

1. Booth, I.; Kunduri, H.K.; **O'Grady, A.J.G.**, "Unstable marginally outer trapped surfaces in static spherically symmetric spacetimes ", 2017, *Physical Review D*, 96, 2