

# Kristen Dage

[kcdage.github.io](https://kcdage.github.io) ◇ [kcdage@msu.edu](mailto:kcdage@msu.edu)  
Wayne State University, 666 W. Hancock St  
Detroit, MI 48201, USA

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## APPOINTMENTS

- 2023 **NASA Einstein Fellow**  
Wayne State University  
Detroit, Michigan, USA
- 2020 - 2023 **Postdoctoral Fellow**  
McGill University  
Montréal, Québec, Canada
- 2020 **Postdoctoral Research Associate**  
Michigan State University  
East Lansing, Michigan, USA

## EDUCATION

- 2015 - 2020 **Michigan State University**, East Lansing, Michigan, USA  
Ph.D. Astronomy & Astrophysics
- 2015 - 2017 **Michigan State University**, East Lansing, Michigan, USA  
M.Sc. Astronomy & Astrophysics
- 2012 - 2014 **University of Michigan-Dearborn**, Dearborn, Michigan, USA  
B.Sc. Physics

## AWARDS, HONOURS AND GRANTS

- 2023 **Einstein Fellowship**, NASA Hubble Fellowship Program
- 2022 **Mentorship Award**, Association of Postdoctoral Fellows, McGill University
- 2022 **Bourses de recherche postdoctorale**, “Sources de rayons X ultralumineuses dans les amas d’étoiles extragalactiques: contraintes des binaires de rayons X ultra-compacts, des trous noirs et des amas d’étoiles qui les hébergent”, Fonds de recherche du Québec – Nature et technologies (FRQNT)
- 2022 **Durand Travel Fund**, Aspen Center for Physics
- 2020 **Sherwood K. Haynes Graduate Physics Award for Outstanding Graduate Student**, Dept. Physics & Astronomy - Michigan State
- 2020 **Postdoctoral Fellowship Prize**, McGill University
- 2019 **Dissertation Completion Fellowship**, College of Natural Science - Michigan State
- 2019 **AAS International Travel Grant**, National Sciences Foundation
- 2014 **Outstanding Physics Student**, Dept. Natural Sciences, University of Michigan-Dearborn
- 2014 **Outstanding Math Tutor**, Academic Support Center, Oakland Community College

## ACCEPTED TELESCOPE & FUNDING PROPOSALS

- 2024 **Karl G. Jansky Very Large Array**: Radio Monitoring of Her X-1 During its Superorbital Perio, 12 hours (A-config) PI: T. Panurach
- 2024 **Michigan Space Grant Consortium**, Hands-On NASA-oriented Experiences for Student groups, \$5000 USD: E. Cackett, **K. Dage** & T. Panurach

2023	<b>Australian Telescope Compact Array</b> , “A Radio Survey of Ultra-Compact X-ray Binaries”, 90 hours, <b>PIs: K. Dage &amp; T. Panurach</b>
2023	<b>LSST Discovery Alliance</b> Inclusive Collaboration, “Discovering Astronomy with LSST: Resources to Promote Research Alliances with Under-Resourced Institutions”, \$20,000 USD, <b>PIs: K. Dage &amp; T. Panurach</b>
2023	<b>Australian Telescope Compact Array</b> : “Known Neutron Star Ultra-Luminous X-ray Sources in Radio”, 12 hours, <b>PI: K. Dage</b>
2023	<b>Gemini South 2023B</b> : “High Resolution Spectroscopy of NGC 1399’s Extensive Globular Cluster System”, 26.8 hr, <b>PI: K. Dage</b>
2023	<b>Gemini South Fast Turnaround</b> : “Variability of RZ2109’s [OIII] emission line”, 5.5 hours, <b>PI: K. Dage</b>
2022	<b>NICER Cycle 5</b> : Monitoring SMC X-1’s Warped Accretion Disc Out of Excursion, 30ks, <b>PI: K. Dage</b>
2022	<b>Karl G. Jansky Very Large Array</b> : Massive black holes in young star clusters, 10 hours (A configuration) <b>PI: K. Dage</b>
2022	<b>Australian Telescope Compact Array</b> : Radio Constraints on Massive Black Hole Candidates in Nuclear Star Clusters, 72 hours <b>PI: K. Dage</b>
2022	<b>Chandra Cycle 24</b> : Characterizing the Nature of Globular Cluster ULX Sources in NGC 1399, 40ks+1 NOAO night, \$23,440 USD <b>PI: K. Dage</b>
2021	<b>Gemini South Fast Turnaround</b> : Confirming the Decline of [NII] Emission in Globular Cluster Ultraluminous X-ray Source GCU7, 5.5 hours <b>PI: K. Dage</b>
2021	<b>Chandra Cycle 23</b> : The Hunt for a new ultra-compact X-ray binary in M87’s globular cluster system, 40ks, \$21,520 USD <b>PI: K. Dage</b>
2021	<b>NICER Cycle 3</b> : Monitoring SMC X-1’s reprocessed emission during an epoch of superorbital period excursion, 120ks, <b>PI: K. Dage</b>
2020	<b>Gemini South 2021A</b> : Searching for evidence of outflows in globular cluster X-ray binary M87-GCULX1, 7.2 hours, <b>PI: K. Dage</b>
2020	<b>NuSTAR Cycle 6</b> : Complete spectral characterisation of a newly discovered ULX, 40ks and \$20,000 USD, <b>PI: K. Dage</b>
2019	<b>Niels Gehrels Swift Observatory</b> Target of Opportunity, 24ks, <b>PI: K. Dage</b>

## TEACHING EXPERIENCE

2021	<b>Guest Lecturer</b> Graduate High Energy Astrophysics & Undergraduate Modern Physics and Relativity McGill University, Québec, Canada
2018	<b>Certificate in Inclusive Inquiry STEM Education</b> Institute for Scientist & Engineer Educators Professional Development University of Santa Cruz, California, USA
2018	<b>Astronomy Instructor</b> Gifted and Talented Education program Michigan State University, Michigan, USA
2015 - 2018	<b>Teaching Assistant</b> Visions of the Universe Laboratory Michigan State University, Michigan, USA
2011 - 2014	<b>German, Math, Physical Sciences Tutor</b> Academic Support Center Oakland Community College, Michigan, USA
2011	<b>Teaching Assistant</b> Physical Science Oakland Community College, Michigan, USA

## INTERNATIONAL COLLABORATIONS AND PROFESSIONAL SOCIETIES

2022 - present	Evolutionary Map of the Universe (EMU) Radio Survey
2022 - present	International Astronomical Union
2021 - present	The Legacy Survey of Space & Time - Stars, Milky Way and Local Volume - Transient and Variable Stars Working Groups
2021 - present	Astrostatistics Interest Group of the American Statistical Association
2021 - 2023	Canadian Astronomical Society/Société Canadienne d'Astronomie
2020 - present	LISA Consortium, ESA L3 Approved Mission
2016 - 2023	American Astronomical Society

## STUDENT RESEARCH SUPERVISION

2024 -	Rhianna Taub, Wayne State University, USA
2022 - 2023	Rawan Karam, B.Sc. (Honours), McGill University, Canada
2021 - 2022	<a href="#">Yifan Sun</a> , B.Sc. (Honours), McGill University, Canada
2021 - 2022	<a href="#">Jeff Huang</a> , B.Sc (Honours), McGill University, Canada
2020 - 2022	<a href="#">Sneha Nair</a> , B.Sc. (Honours), McGill University, Canada
2020 - 2022	<a href="#">Emma Barbisan</a> , B.Sc., McGill University, Canada
2020 - 2021	Jade Ducharme, B.Sc., McGill University, Canada
2020 - 2022	<a href="#">Wasundara Athukoralalage</a> , B.Sc., Michigan State University, USA
2019 - 2021	<a href="#">Erica Thygesen</a> (w/ Zepf), M.Sc., Michigan State University, USA
2019	<a href="#">Noah Vowell</a> , B.Sc., University of Michigan-Dearborn, USA
2018	<a href="#">Omid Noroozi</a> , B.Sc. (Honours), Michigan State University, USA

## ANALYSIS, SOFTWARE AND SKILLS

- X-ray spectroscopy, imaging and timing analysis (*Chandra*, *MAXI*, *NICER*, *NuSTAR*, *RXTE*, *Swift*, *XMM*)
- Optical spectroscopy (*SOAR/GHTS*, *Gemini/GMOS*, *VLT/FORS2*)
- Ultraviolet imaging and photometry (*Swift/UVOT*, *GALEX*, *HST/ACS*)
- Infrared imaging (*Spitzer/IRAC*)
- Radio continuum imaging (*Australian Telescope Compact Array*)
- Gamma-ray binned likelihood analysis (*Fermi/LAT*)
- Conducting optical observations: *SOAR* observatory (300+ hours), ATCA (100+ hours)
- Programming: Python (astropy, numpy, scipy, scikit-learn, matplotlib, Keras), Mathematica
- Major astronomical packages: AstroPy, CIAO, HEASoft (XSpec, FTools), IRAF, CASA, Fermitools, DrizzlePAC

## ACADEMIC SERVICE

2024	co-chair, Stars, Milky Way and Local Volume Science Collaboration for Rubin Observatory
2023	Smithsonian Secretary's Research Prizes Reviewer
2023	EMU Survey Data Validator
2022	Rubin Observatory Data Preview 2 Delegate
2022-2024	NICER User's Group
2022-	co-Chair, Star Clusters Science Subgroup for Rubin Observatory
2021-	Publication referee: Monthly Notices of the Royal Astronomical Society, The Astrophysical Journal, Chinese Journal of Physics
2021-	Time/Funding Allocation Committees: NASA ADAP, NSF AAG, NRAO, Chandra, NICER (deputy chair), NuSTAR (deputy chair), Swift, XRISM GS

2021- External Reviewer: Canadian Time Allocation Committee (CanTAC), Indian Space Research Organisation (ISRO), Hubble Space Telescope, James Webb Space Telescope

## MENTORING

2023- [The Dead Star Society](#) – advancing the next generation of scientists at under resourced institutions through data intensive astrophysics research

2022-2023 Laser Interferometer Space Antenna – Early Career Scientist Mentor

2021-2022 Physics and Astronomy Research Experiences for Drew Scholars, Michigan State University, Michigan, USA

2021-2022 Mentoring for Women in Physics, Supernova Foundation

2020 Undergraduate Professional Development Seminars, Michigan State University and University of Michigan-Dearborn, Michigan, USA

2019-2020 Co-founder, Stellar Mentoring Program, Michigan State University, Michigan, USA

## PRESS RELEASES

- [Today@Wayne: Accelerating Mobility - NASA Hubble Fellow inspires students to pursue astronomy-related careers](#)
- [Henry Ford College: Bringing graduate-level astrophysics research opportunities to students at a community college](#)

## SELECTED SEMINAR TALKS

– 20 invited seminar talks in 6 countries since 2017.

2024 Mar Topics in Star Cluster Dynamics and Evolution, Warsaw, Poland

2023 Dec NRC Herzberg Astronomy and Astrophysics Research Centre, BC, Canada

2023 Nov National Radio Astronomy Observatory, New Mexico, USA

2023 Nov + DEI talk, University of Michigan, Ann Arbor, USA

2023 Jul Rubin Observatory Transient and Variable Stars Colloquium

2023 May Liverpool John Moores University, United Kingdom

2023 Mar University of Waterloo, Ontario, Canada

2023 Feb Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil

2022 Sept University of Texas Rio Grande Valley, Texas, USA

2021 Mar American Museum of Natural History, New York, USA

2021 Jan Institute of Astrophysics-FORTH, Heraklion, Crete

2017 Feb Gemini South Observatory, Coquimbo, Chile

## SELECTED CONFERENCE TALKS

– 17 talks since 2014.

2023 May The 10th Microquasar Workshop: the various facets of extreme gravity, Heraklion, Crete

2022 Aug Star Clusters at McMaster University, Ontario, Canada

2022 May Intermediate Mass Black Holes: New Science From Stellar Evolution to Cosmology, San Juan, Puerto Rico

2021 Aug Rubin Observatory Project & Community Workshop, Seattle, WA, USA

2021 Apr LISA Canada Workshop, British Columbia, Canada

2020 Jan 235th American Astronomical Society Meeting, Hawaii, USA

2019 Mar 17th High Energy Astrophysics Division Meeting, California, USA

2014 Apr Compact Objects in Michigan 2, Michigan, USA

## SELECTED PUBLIC TALKS

– 12 public talks since 2017.

- 2021 STEM Week, Vanier College, Québec, Canada
- 2021 Abrams Planetarium Night Sky Chat, Michigan, USA
- 2020 Quiet Adventures Symposium, Michigan, USA
- 2017 Astronomy on Tap, Michigan, USA

## SELECTED OUTREACH AND VOLUNTEER ACTIVITIES

– Involved in 19 different outreach events since 2014.

- 2022 Carbondale Radio Physics, KDNK, Colorado, USA
- 2020 Science Briefing, NASA Universe of Learning, Maryland, USA
- 2019 Event Supervisor, Science Olympiad State Level Astronomy division, Michigan, USA
- 2018 Primary Astronomy Organizer, MSU Science Festival Expo Days, Michigan, USA

## PUBLICATIONS

† indicates students under my supervision

### Refereed

- 34. T. Panurach, **K. Dage**, et al., “Do Neutron Star Ultra-Luminous X-Ray Sources Masquerade as Intermediate Mass Black Holes in Radio and X-Ray?”, 2024, The Astrophysical Journal (submitted)
- 33. **K. Dage** & K. Kovlakas, “Ultraluminous X-Ray Binaries”, 2024, invited chapter for the Encyclopedia of Astrophysics (edited by I. Mandel, section editor J. Andrews) to be published by Elsevier as a Reference Module
- 32. **K. Dage** et al., “An extreme ultra-compact X-ray binary in a globular cluster: multiwavelength observations of RZ 2109 explored in a triple system framework”, 2024, Monthly Notices of the Royal Astronomical Society
- 31. AXIS Time-Domain Multi-Messenger Science Working Group (including **K. Dage**) “Prospects for Time-Domain and Multi-Messenger Science with AXIS”, 2024, Universe (submitted)
- 30. Pelisoli et al., (including **K. Dage**), “ A survey for radio emission from white dwarfs in the VLA Sky Survey”, 2024, Monthly Notices of the Royal Astronomical Society
- 29. **K. Dage** et al., “Is the M81 Fast Radio Burst Host Globular Cluster Special?”, 2023, The Astrophysical Journal Letters
- 28. M. Brumback et al., (including **K. Dage**), “Constraining the evolution of the unstable accretion disk in SMC X-1 with NICER”, 2023, The Astrophysical Journal
- 27. Amaro-Seoane et al., (including **K. Dage**), “Astrophysics with the Laser Interferometer Space Antenna”, 2023, Living Reviews In Relativity
- 26. C. Usher, **K. Dage**, et al., “Rubin Observatory LSST Stars Milky Way and Local Volume Star Clusters Roadmap”, 2023, Publications of the Astronomical Society of the Pacific
- 25. C.-P. Hu et al., (including **K. Dage**), “Monitoring observations of SMC X-1’s excursions (MOOSE)-II: A new excursion accompanies spin-up acceleration”, 2023, Monthly Notices of the Royal Astronomical Society
- 24. S. Nair† et al., (including **K. Dage**), “The X-ray Point Source Population Hosted by Globular Clusters in the Elliptical Galaxy NGC 4261”, 2023, Monthly Notices of the Royal Astronomical Society
- 23. Hambleton et al., (including **K. Dage**), “Rubin Observatory LSST Transients and Variable Stars Roadmap”, 2023, Publications of the Astronomical Society of the Pacific
- 22. **K. Dage**, Y. Sun†, A. Kundu, S. Zepf, D. Haggard, “Far Ultra-Violet Insights Into NGC 1399’s Globular Cluster Population”, 2022, Monthly Notices of the Royal Astronomical Society

21. Wasundara Ranhari Athukoralalage† et al (including **K. Dage**) et al, “Optical and X-ray Follow-Up to a Globular Cluster Ultraluminous X-ray Source in NGC 4472”, 2022, Monthly Notices of the Royal Astronomical Society
20. E. Thygesen†, Y. Sun†, J. Huang†, et al (including **K. Dage**), “Globular Cluster Ultraluminous X-ray Sources in the Furthest Early-Type Galaxies”, 2022, Monthly Notices of the Royal Astronomical Society
19. **K. Dage**, M. Brumback, J. Neilsen, C.-P. Hu, D. Altamirano, A. Bahramian, P. A. Charles, W. I. Clarkson, D. Haggard, R. C. Hickox, J. Kennea, “Monitoring Observations of SMC X-1’s Excursions (MOOSE) I: Programme Description and Initial High-State Spectral Results”, 2022, Monthly Notices of the Royal Astronomical Society
18. E. Barbisan†, J. Huang† et al (including **K. Dage**), “Using Machine Learning to Identify Extragalactic Globular Cluster Candidates from Ground-Based Photometric Surveys of M87”, 2022, Monthly Notices of the Royal Astronomical Society
17. S. J. Swihart, et al (including **K. Dage**), “4FGL J1120.0-2204: A Unique Gamma-ray Bright Neutron Star Binary with an Extremely Low Mass Proto-White Dwarf”, 2022, The Astrophysical Journal
16. D. L. Tucker et al (including **K. Dage**), “SOAR/Goodman Spectroscopic Assessment of Candidate Counterparts of the LIGO–Virgo Event GW190814”, 2022, The Astrophysical Journal
15. C. Kilpatrick et al (including **K. Dage**), “The Gravity Collective: A Search for the Electromagnetic Counterpart to the Neutron Star-Black Hole Merger GW190814”, 2021, The Astrophysical Journal
14. **K. Dage**, N. Vowell†, E. Thygesen†, A. Bahramian, D. Haggard, K. Kovlakas, A. Kundu, T. J. Maccarone, J. Strader, R. Urquhart, S. E. Zepf, “Ultraluminous X-ray Sources in Seven Edge-On Spiral Galaxies”, 2021, Monthly Notices of the Royal Astronomical Society
13. T. Jayasinghe et al (including **K. Dage**), “The Loudest Stellar Heartbeat: Characterizing the Most Extreme Amplitude Heartbeat Star System”, 2021, Monthly Notices of the Royal Astronomical Society
12. **K. Dage**, A. Kundu, E. Thygesen†, A. Bahramian, J.A. Irwin, D. Haggard, T.J. Maccarone, S. Nair†, M.B. Peacock, J. Strader, S.E. Zepf, “Three Ultraluminous X-ray Sources in NGC 1316”, 2021, Monthly Notices of the Royal Astronomical Society
11. S. Swihart et al (including **K. Dage**), “Discovery of a New Redback Millisecond Pulsar Candidate: 4FGL J0940.3-7610”, 2021, The Astrophysical Journal
10. J. M. Miller (including **K. Dage**), “A New Candidate Transitional Millisecond Pulsar in the Sub-luminous Disk State: 4FGL J0407.7–5702”, 2020, The Astrophysical Journal
9. S. Swihart et al (including **K. Dage**), “A New Likely Redback Millisecond Pulsar Binary with a Massive Neutron Star: 4FGL J2333.1-5527”, 2020, The Astrophysical Journal
8. **K. Dage**, S.E. Zepf, E. Thygesen†, A. Bahramian, A. Kundu, M.B. Peacock, T. J. Maccarone, J. Strader, “X-Ray Spectroscopy of Newly Identified ULXs Associated With M87’s Globular Cluster Population”, 2020, Monthly Notices of the Royal Astronomical Society
7. **K. Dage**, S.E. Zepf, A. Bahramian, J. Strader, Thomas J. Maccarone, M.B. Peacock, A. Kundu, M. Steele, C. Britt, “Slow Decline and Rise of the Broad [OIII] Emission Line in Globular Cluster Black Hole Candidate RZ2109”, 2019, Monthly Notices of the Royal Astronomical Society
6. E. Aydi, et al (including **K. Dage**), “Flaring, Dust Formation, And Shocks In The Very Slow Nova ASASSN-17pf (LMCN 2017-11a)”, 2019, The Astrophysical Journal
5. **K. Dage**, S.E. Zepf, M.B. Peacock, A. Bahramian, O. Noroozi†, A. Kundu, T.J. Maccarone, “X-Ray Spectral Variability of Ultraluminous X-Ray Sources in Extragalactic Globular Clusters”, 2019, Monthly Notices of the Royal Astronomical Society.
4. Strader, J., et al (including **K. Dage**), “Optical spectroscopy and demographics of redback millisecond pulsar binaries”, 2018, The Astrophysical Journal
3. M. A. Tucker, et al (including **K. Dage**), “ASASSN-18ey: The Rise of a New Black-Hole X-ray Binary” 2018, The Astrophysical Journal



2. **K. Dage**, W.I. Clarkson, P.A. Charles, S. Laycock, I-C. Shih “*A Search for Spin-Superorbital Period Correlation in SMC X-1*”, 2018, Monthly Notices of the Royal Astronomical Society.
1. **K. Dage**, S. E. Zepf, A. Bahramian, A. Kundu, T. J. Maccarone, M. B. Peacock, “X-Ray Variability from the Ultraluminous Black Hole Candidate X-ray Binary in the Globular Cluster RZ 2109”, 2018, The Astrophysical Journal

## Unrefereed

11. Smeaton et al (including **K. Dage**), “ASKAP-EMU Discovery of New Galactic SNR Candidate: Unicycle (G312.65+2.87)”, 2024, RNAAS Volume 8, Issue 6, id.158
10. Aydi et al (including **K. Dage**), “SOAR spectroscopic classification of ASASSN-24ck (AT 2024fjh) as a nova in the LMC”, The Astronomer’s Telegram, No. 16583
9. **K. Dage** et al., “Extragalactic Star Cluster Science with the Nancy Grace Roman Space Telescope’s High Latitude Wide Area Survey and the Vera C. Rubin Observatory”, 2023, Roman CCS White Paper
8. J. Huang†, Y. Sun†, **K. Dage**, D. Haggard, “Probing M87 Globular Clusters for Flaring Ultraluminous X-Ray Sources”, 2021, RNAAS, 5, 136
7. D. Tucker et al (including **K. Dage**), “LIGO/Virgo S190814bv: SOAR spectroscopy of DECam candidates AT2019npw and AT2019num”, 2019, GCN 25484
6. E. Aydi et al (including **K. Dage**), “SOAR classification of ASASSN-19qv as a classical nova in the SMC”, The Astronomer’s Telegram, No. 12907
5. J. Strader, L. Chomiuk, **K. Dage**; J.L. Prieto, K. Z. Stanek, “ Spectroscopic classification of ASASSN-19kz as a young Type II supernova in NGC 2207”, The Astronomer’s Telegram, No. 12706
4. K.V. Sokolovsky et al (including **K. Dage**), “ASAS-SN Discovery of a Bright Candidate Microlensing Event ASASSN-19cq”, 2019, The Astronomer’s Telegram, No. 12495
3. S.K. Sarbadhicary, et al (including **K. Dage**), “SOAR optical spectroscopy of the Wolf-Rayet star WR96 during the dimming event”, The Astronomer’s Telegram, No. 12511
2. **K. Dage**, et al, “Spectroscopic Classification of SN 2018agk with SOAR/Goodman”, 2018, The Astronomer’s Telegram, No. 11433
1. A. Bahramian, J. Strader, **K. Dage**, “SOAR/Goodman optical spectroscopy of MAXI J1820+070”, 2018, The Astronomer’s Telegram, No. 11424