Kristen Dage

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Curtin Institute for Radio Astronomy – Bentley, Western Australia

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Appointments

2024-	**Lecturer** Curtin Institute for Radio Astronomy Bentley, Western Australia
2023-2024	**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 Period, 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 **Australian Telescope Compact Array**, "A Radio Survey of Ultra-Compact X-ray Binaries", 90 hours, **PIs: K. Dage & T. Panurach**

2023 **LSST Discovery Alliance** Inclusive Collaboration, "Discovering Astronomy with LSST: Resources to Promote Research Alliances with Under-Resourced Institutions", $20,000 USD, **PIs: K. Dage & T. Panurach**

2023 **Australian Telescope Compact Array**: "Known Neutron Star Ultra-Luminous X-ray Sources in Radio", 12 hours, **PI: K. Dage**

2023 **Gemini South 2023B**: "High Resolution Spectroscopy of NGC 1399's Extensive Globular Cluster System", 26.8 hr, **PI: K. Dage**

2023 **Gemini South Fast Turnaround**: "Variability of RZ2109's [OIII] emission line", 5.5 hours, **PI: K. Dage**

2022 **NICER Cycle 5**: Monitoring SMC X-1's Warped Accretion Disc Out of Excursion, 30ks, **PI: K. Dage**

2022 **Karl G. Jansky Very Large Array**: Massive black holes in young star clusters, 10 hours (A configuration) **PI: K. Dage**

2022 **Australian Telescope Compact Array**: Radio Constraints on Massive Black Hole Candidates in Nuclear Star Clusters, 72 hours **PI: K. Dage**

2022 ***Chandra* Cycle 24**: Characterizing the Nature of Globular Cluster ULX Sources in NGC 1399, 40ks+1 NOAO night, $23,440 USD **PI: K. Dage**

2021 **Gemini South Fast Turnaround**: Confirming the Decline of [NII] Emission in Globular Cluster Ultraluminous X-ray Source GCU7, 5.5 hours **PI: K. Dage**

2021 ***Chandra* Cycle 23**: The Hunt for a new ultra-compact X-ray binary in M87's globular cluster system, 40ks, $21,520 USD **PI: K. Dage**

2021 ***NICER* Cycle 3**: Monitoring SMC X-1's reprocessed emission during an epoch of superorbital period excursion, 120ks, **PI: K. Dage**

2020 **Gemini South 2021A**: Searching for evidence of outflows in globular cluster X-ray binary M87-GCULX1, 7.2 hours, **PI: K. Dage**

2020 ***NuSTAR* Cycle 6**: Complete spectral characterisation of a newly discovered ULX, 40ks and $20,000 USD, **PI: K. Dage**

2019 **Niels Gehrels Swift Observatory** Target of Opportunity, 24ks, **PI: K. Dage**

Teaching Experience

2021 **Guest Lecturer**
Graduate High Energy Astrophysics & Undergraduate Modern Physics and Relativity
McGill University, Québec, Canada

2018 **Certificate in Inclusive Inquiry STEM Education**
Institute for Scientist & Engineer Educators Professional Development
University of Santa Cruz, California, USA

2018 **Astronomy Instructor**
Gifted and Talented Education program
Michigan State University, Michigan, USA

2015 - 2018 **Teaching Assistant**
Visions of the Universe Laboratory
Michigan State University, Michigan, USA

2011 - 2014 **German, Math, Physical Sciences Tutor**
Academic Support Center
Oakland Community College, Michigan, USA

2011 **Teaching Assistant**
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 Yifan Sun, B.Sc. (Honours), McGill University, Canada
2021 - 2022 Jeff Huang, B.Sc (Honours), McGill University, Canada
2020 - 2022 Sneha Nair, B.Sc. (Honours), McGill University, Canada
2020 - 2022 Emma Barbisan, B.Sc., McGill University, Canada
2020 - 2021 Jade Ducharme, B.Sc., McGill University, Canada
2020 - 2022 Wasundara Athukoralalage, B.Sc., Michigan State University, USA
2019 - 2021 Erica Thygesen (w/ Zepf), M.Sc., Michigan State University, USA
2019 Noah Vowell, B.Sc., University of Michigan-Dearborn, USA
2018 Omid Noroozi, 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+ horus), 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

– 18 talks since 2014.

2024 June	First LSST Latin American Meeting (LSST@LATAM): Catalyzing Research Collaborations, Coquimbo, Chile
2023 May	The 10th Microquasar Workshop: the various facets of extreme gravity, Heraklion, Crete
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