

Christopher M. Carroll

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RESEARCH INTERESTS	Active galactic nuclei, supermassive black hole growth, large-scale structure, survey design, science education	
PROFESSIONAL APPOINTMENTS	Department of Physics and Astronomy, Washington State University LSST-DA Catalyst Fellow Postdoctoral Research Associate Supervisor: Vivienne Baldassare Supervisor: Vivienne Baldassare	2022–present 2021–22
EDUCATION	PhD in Physics and Astronomy Department of Physics and Astronomy, Dartmouth College Thesis: “Uncovering Hidden Monsters: Revealing the Full Population of Luminous Obscured Supermassive Black Holes” Advisor: Ryan Hickox	Sep 2021
	BS in Astrophysics Department of Physics and Astronomy, Rutgers University	May 2013
	AS in Physics Department of Physics, Camden County College	May 2011
AWARDS	Fellowships LSSTC Catalyst Fellowship Host Institution: Washington State University Dartmouth Fellowship National Science Foundation GK-12 Fellowship Frances C. Richmond Middle School, NH Partner Teacher: Greg Stott Department of Education GAANN Fellowship	2022–26 2015–18 2014–15 2013–14
	Grants AAS International Travel Grant 2019-1 AAS International Travel Grant 2018-2 AAS International Travel Grant 2018-1 Neukom Travel Grant \$1000, Dartmouth College GSC Conference Travel Grant \$250, Dartmouth College	Jun 2019 Dec 2018 Jul 2018 Jul 2016 Apr 2014
	Awards Guarini School of Graduate and Advanced Studies Teaching Award Dartmouth College Department of Physics and Astronomy Graduate Teaching Award Dartmouth College Graduate Studies Travel Award, Dartmouth College Excellence in Physics, Camden County College	Jun 2018 Jun 2018 Jun 2014 May 2011

FIRST-AUTHOR
PUBLICATIONS

Carroll, C. M., Ananna, T. T., Hickox, R. C., Masini, A., Assef, R. J., Stern, D., Chen, C.-T. J., Lanz, L., “A High Fraction of Heavily X-ray-obscured Active Galactic Nuclei”, *The Astrophysical Journal* (2023), 950, 127

Carroll, C. M., Hickox, R. C., Masini, A., Lanz, L., Assef, R. J., Stern, D., Chen, C.-T. J., Ananna, T. T., “A Large Population of Luminous Active Galactic Nuclei Lacking X-ray Detections: Evidence for Heavy Obscuration?”, *The Astrophysical Journal* (2021), 908, 185

Carroll, C. M., Gawiser, E., Kurczynski, P. L., Bailey, R. A., Biswas, R., Cinabro, D., Jha, S. W., Jones, R. L., Krughoff, K. S., Sonawalla, A., Wood-Vasey, W. M., “Improving the LSST Dithering Pattern and Cadence for Dark Energy Studies”, *Proceedings of SPIE 9149, Observatory Operations: Strategies, Processes, and Systems V* (2014), 91490C

CO-AUTHOR
PUBLICATIONS

Aleo, P. D., Malanchev, K., Sharief, S., Jones, D. O., Narayan, G., Foley, R. J., Villar, V. A., Angus, C. R., Baldassare, V. F., Bustamante-Rosell, M. J., Chatterjee, D., Cold, C., Coulter, D. A., Davis, K. W., Dhawan, S., Drout, M. R., Engel, A., French, K. D., Gagliano, A., Gall, C., Hjorth, J., Huber, M. E., Jacobson-Galán, W. V., Kilpatrick, C. D., Langeroodi, D., Macias, P., Mandel, K. S., Margutti, R., Matasić, F., McGill, P., Piel, J. D. R., Ramirez-Ruiz, E., Ransome, C. L., Rojas-Bravo, C., Siebert, M. R., Smith, K. W., de Soto, K. M., Stroh, M. C., Tinyanont, S., Taggart, K., Ward, S. M., Wojtak, R., Auchettl, K., Blanchard, P. K., de Boer, T. J. L., Boyd, B. M., **Carroll, C. M.**, Chambers, K. C., DeMarchi, L., Dimitriadis, G., Dodd, S. A., Earl, N., Farias, D., Gao, H., Gomez, S., Grayling, M., Grillo, C., Hayes, E. E., Hung, T., Izzo, L., Khetan, N., Kolborg, A. N., Law-Smith, J. A. P., LeBaron, N., Lin, C.-C., Luo, Y., Magnier, E. A., Matthews, D., Mockler, B., O’Grady, A. J. G., Pan, Y.-C., Politsch, C. A., Raimundo, S. I., Rest, A., Ridden-Harper, R., Sarangi, A., Schröder, S. L., Smartt, S. J., Terreran, G., Thorp, S., Vazquez, J., Wainscoat, R. J., Wang, Q., Wasserman, A. R., Yadavalli, S. K., Yarza, R., Zenati, Y., Young Supernova Experiment, “The Young Supernova Experiment Data Release 1 (YSE DR1): Light Curves and Photometric Classification of 1975 Supernovae”, *The Astrophysical Journal Supplement Series* (2023), 266, 9

Angus, C. R., Baldassare, V. F., Mockler, B., Foley, R. J., Ramirez-Ruiz, E., Raimundo, S. I., French, K. D., Auchettl, K., Pfister, H., Gall, C., Hjorth, J., Drout, M. R., Alexander, K. D., Dimitriadis, G., Hung, T., Jones, D. O., Rest, A., Siebert, M. R., Taggart, K., Terreran, G., Tinyanont, S., **Carroll, C. M.**, DeMarchi, L., Earl, N., Gagliano, A., Izzo, L., Villar, V. A., Zenati, Y., Arendse, N., Cold, C., de Boer, T. J. L., Chambers, K. C., Coulter, D. A., Khetan, N., Lin, C. C., Magnier, E. A., Rojas-Bravo, C., Wainscoat, R. J., Wojtak, R., “A fast-rising tidal disruption event from a candidate intermediate-mass black hole”, *Nature Astronomy* (2022), 6, 1452

Wasleske, E. J., Baldassare, V. F., **Carroll, C. M.**, “Variable Active Galactic Nuclei in the Galaxy Evolution Explorer Time Domain Survey”, *The Astrophysical Journal* (2022), 933, 37

Hatcher, C., Kirkpatrick, A., Fornasini, F., Civano, F., Lambrides, E., Kocesvski, D., **Carroll, C. M.**, Giavalisco, M., Hickox, R. C., Ji, Z., “Where Do Obscured AGN Fit in a Galaxy’s Timeline?”, *The Astronomical Journal* (2021), 162, 65

Jun, H. D., Assef, R. J., **Carroll, C. M.**, Hickox, R. C., Kim, Y., Lee, J., Ricci, C., Stern, D., “The Dust-to-gas Ratio and the Role of Radiation Pressure in Luminous, Obscured Quasars”, *The Astrophysical Journal* (2021), 906, 21

Masini, A.; Hickox, R. C.; **Carroll, C. M.**; Aird, J.; Alexander, D. M.; Assef, R. J.; Bower, R.; Brodwin, M.; Brown, M. J. I.; Chatterjee, S.; Chen, C.-T. J.; Dey, A.; DiPompeo, M. A.; Duncan, K. J.; Eisenhardt, P. R. M.; Forman, W. R.; Gonzalez, A. H.; Goulding, A. D.; Hainline, K. N.; Jannuzi, B. T.; Jones, C.; Kochanek, C. S.; Kraft, R.; Lee, K.-S.; Miller, E. D.; Mullaney, J.; Myers, A. D.; Ptak, A.; Stanford, A.; Stern, D.; Vikhlinin, A.; Wake, D. A.; Murray, S. S., “The Chandra Deep Wide-field Survey: A New Chandra Legacy Survey in the Boötes Field. I. X-Ray Point Source Catalog, Number Counts, and Multiwavelength Counterparts”, *The Astrophysical Journal Supplement Series* (2020), 251, 2

Yan, W., Hickox, R. C., Hainline, K. N., Stern, D., Lansbury, G., Alexander, D. M., Hviding, R. E., Assef, R. J., Ballantyne, D. R., Dipompeo, M. A., Lanz, L., **Carroll, C. M.**, Koss, M., Lamperti, I., Civano, F., Del Moro, A., Gandhi, P., Myers, A. D., “NuSTAR and Keck Observations of Heavily Obscured Quasars Selected by WISE”, *The Astrophysical Journal* (2019), 870, 33

Masini, A., Comastri, A., Civano, F., Hickox, R. C., **Carroll, C. M.**, Suh, H., Brandt, W. N., DiPompeo, M. A., Harrison, F. A., Stern, D., “The NuSTAR Extragalactic Surveys: Unveiling Rare, Buried AGNs and Detecting the Contributors to the Peak of the Cosmic X-Ray Background”, *The Astrophysical Journal* (2018), 867, 162

DiPompeo, M. A., Hickox, R. C., **Carroll, C. M.**, Runnoe, J. C., Mullaney, J. R., Fischer, T. C., “The [O III] Profiles of Infrared-selected Active Galactic Nuclei: More Powerful Outflows in the Obscured Population”, *The Astrophysical Journal* (2018), 856, 76

Hviding, R. E., Hickox, R. C., Hainline, K. N., **Carroll, C. M.**, DiPompeo, M. A., Yan, W. Jones, M. L., “Characterizing the WISE-selected heavily obscured quasar population with optical spectroscopy from the Southern African Large Telescope”, *Monthly Notices of the Royal Astronomical Society* (2017), 474, 1955

Baldassare, V. F., Reines, A. E., Gallo, E., Greene, J. E., Graur, O., Geha, M., Hainline, K. N., **Carroll, C. M.**, Hickox, R. C., “Multi-epoch Spectroscopy of Dwarf Galaxies with AGN Signatures: Identifying Sources with Persistent Broad H-alpha Emission”, *The Astrophysical Journal* (2016), 829, 57

Hainline, K. N., Hickox, R. C., Chen, C.-T. J., **Carroll, C. M.**, Jones, M. L., Zervos, A. S., Goulding, A. D., “A Tale of Two Narrow-line Regions: Ionization, Kinematics, and Spectral Energy Distributions for a Local Pair of Merging Obscured Active Galaxies”, *The Astrophysical Journal* (2016), 832, 42

Hainline, K. N., Hickox, R. C., **Carroll, C. M.**, Meyers, A. D., DiPompeo, M. A., Trouille, L., “A Spectroscopic Study of WISE-selected Obscured Quasars with the Southern African Large Telescope”, *The Astrophysical Journal* (2014), 795, 124

PROFESSIONAL
SERVICE

Peer Reviewer
MNRAS

2021–present

PRESENTATIONS

Invited Talks

First Friday Astronomy
Boise State University

Apr 2023

“Hidden Monsters: Uncovering a Population of the Most Obscured Supermassive Black Holes”

Physics and Astronomy Colloquium Mar 2022
 Washington State University
 “Hidden Monsters: Uncovering the Full Population of Obscured Supermassive Black Holes”

Contributed Talks

Supermassive Black Holes: Environment and Evolution Jun 2019
 Corfu, Greece

“An extreme population of heavily obscured AGN”

NERQUAM 2019 May 2019

Massachusetts Institute of Technology

“An extreme population of heavily buried AGN: Identification and host galaxy characteristics”

TORUS 2018: The many faces of AGN obscuration Dec 2018

Puerto Varas, Chile

“An extreme population of heavily buried AGN: Identification and host galaxy characteristics”

Elusive AGN in the Next Era Jun 2017

George Mason University

“Unveiling the Elusive AGNs in Millions of SDSS and *WISE* Galaxies”

NERQUAM 2015 Jun 2015

Dartmouth College

“Photometric Redshifts and SEDs of *WISE*-selected Obscured Quasars”

SPIE Astronomical Telescopes + Instrumentation 2014 Jun 2014

Montréal, QC, Canada

“Improving the LSST Dithering Pattern and Cadence for Dark Energy Studies”

Posters

Are AGN Special? Environment and Impact of AGN Activity Jul 2018

NERQUAM 2018 May 2018

Hidden Monsters: Obscured AGN in the Era of NuSTAR and WISE Aug 2016

Active Galactic Nuclei: What’s in a Name? Jun 2016

AGN vs. SF 2014 Jul 2014

AAS 223rd Meeting Jan 2014

TEACHING
EXPERIENCE

University

Instructor — Washington State University

Physics 189: Led an eight-week undergraduate research project. Spring 2022

Instructor — Dartmouth College

Astronomy 2: Lecture on galaxy formation and evolution. Fall 2019

Astronomy 3: Three lectures on the Sun and stellar properties. Summer 2018

Astronomy 1: Three lectures on the Moon and exoplanets. Spring 2018

Astronomy 15: Lecture on exoplanets and L^AT_EXworkshop. Spring 2014

Teaching Assistant — Dartmouth College 2013–21

Astronomy 1: Exploring the Solar System

Astronomy 2/3: Exploring the Universe

Astronomy 15: Stars and the Milky Way

Astronomy 117: Interstellar Astrophysics

Astronomy 118: Observational Cosmology

Public Observing

K-12

Teacher — Frances C. Richmond Middle School 2014–15
 Supplemental 8th grade science teacher.
 Designed a two-week astronomy curriculum.
 Over 300 hours of classroom experience.

**OBSERVING
EXPERIENCE****Principal Investigator**

Southern African Large Telescope, 10-m, 2019-1-SCI-030
 Awarded 185,976 seconds to observe candidate AGN lacking X-ray signatures.
 Southern African Large Telescope, 10-m, 2018-2-SCI-034
 Awarded 36,000 seconds to observe candidate AGN lacking X-ray signatures.
 Southern African Large Telescope, 10-m, 2018-1-SCI-032
 Awarded 86,760 seconds to observe candidate AGN lacking X-ray signatures.

Observer

MDM Observatory, Hiltner 2.4-m Telescope
 Long-slit spectroscopy and imaging with OSMOS (32 nights).

LEADERSHIP**Student Leadership**

Graduate Student Council of Dartmouth College
 Special Advisor 2018–19
 President 2017–18
 Vice President 2016–17
 Academic Chair 2014–16
 General Council 2013–14
 Phi Theta Kappa Honor Society, Alpha Nu Mu Chapter
 Chapter President 2010–11
 Service Officer 2009–10

**COMMUNITY
SERVICE**

Science on Ice 2021–22
 Field trips for students combining science lessons and ice skating.
 Letters to a Pre-Scientist 2019–20
 Pen-pal to middle school science student.
 New Hampshire Academy of Science Jul 2018
 Guest speaker on astronomy research and black holes.
 Sophomore Trips Jun 2018
 Private observing session for Dartmouth undergraduates.
 Dimensions of Dartmouth Apr 2018
 Hanover stargazing and presentation for potential undergraduate students.
 Samuel Morey Elementary School Apr 2017
 History of astronomy and the solar system—4th grade level; observing session.
 Montshire Museum of Science: Astronomy Day Jan 2016–20
 Guest astronomer; led astronomy activities for learners of all ages.
 Ledyard Charter School Jan 2016
 Facilitated discussion sessions on the possibility of extraterrestrial life.
 Dartmouth Graduate-Undergraduate Mentoring Program 2014–16
 Mentor Physics and Astronomy undergraduate students.

	Graduate Website Building Series Directed multiple workshops to establish professional websites.	2014–16
	International Graduate Mentoring Program Mentor incoming international graduate students.	2014–15
	Lyme School Science Fair Science fair judge for 6th and 7th grade students.	May 2014
	Graduate Women in Science and Engineering Science Day Physics demonstrations to excite children about the sciences.	Apr 2014–16
	West Orange “O Night” Public observing for the community of West Orange, NJ.	Oct 2011
PROFESSIONAL DEVELOPMENT	DP0 Virtual Summer School 2023 Vera C. Rubin Observatory	June 2023
	Re-thinking Mentoring: Inclusion, Support, and Accountability Washington State University	Apr 2023
	TEACHx WSU 2022 Washington State University	Oct 2022
	Code/Astro: Software Engineering Workshop for Astronomy California Institute of Technology	Jun 2021
	Mentoring Series Dartmouth College	Winter 2018
	Summer School in Statistics for Astronomers XIII Center for Astrostatistics, Penn State University	Jun 2017
	Syllabus Design Workshop Series Dartmouth Center for the Advancement of Learning, Dartmouth College	Spring 2017
	Creating a Mentoring Network Dartmouth College	Fall 2015
	La Serena School for Data Science 2015: Applied Tools for Astronomy AURA Campus, La Serena, Chile	Aug 2015
	Future Faculty Teaching Series Dartmouth Center for the Advancement of Learning, Dartmouth College	Summer 2014
	Instruction in Teaching for Graduate Students Dartmouth College	Fall 2014, Winter 2015
SOFTWARE	Computer Programming IDL, Python, R , MATLAB, L ^A T _E X, HTML	
	Data Analysis XSPEC	
REFERENCES	Vivienne Baldassare Assistant Professor Department of Physics and Astronomy Washington State University 1245 Webster Hall Pullman, WA 99164	vivienne.baldassare@wsu.edu +1 (509) 335-9179

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