Kelly A. Douglass, PhD

Department of Physics & Astronomy
Bausch & Lomb Hall Room 425
University of Rochester, Rochester, NY, USA

+1 585 275-5549
kellyadouglass@rochester.edu
www.pas.rochester.edu/∼kdouglass

Education

Ph.D., Physics — Drexel University July 2017
Thesis: Observational evidence of the large-scale environmental influence on dwarf galaxy evolution
Advisor: Dr. Michael Vogeley

M.S., Physics — Drexel University June 2013

B.A., Physics — Cornell University May 2011
Minor: Astronomy

Appointments

University of Rochester – Department of Physics & Astronomy

Associate Professor of Physics & Astronomy (Instructional) 2024–present
Assistant Professor of Physics & Astronomy (Instructional) 2022–24
Director of the C.E.K. Mees Observatory 2021–present
Visiting Assistant Professor of Physics & Astronomy 2017–22

Drexel University – Department of Physics

Assistant Research Professor Summer 2022–24

Research Experience

DESI Collaboration 2017–present
Remote observing, Visual inspection, Design of secondary targeting program

Drexel University Astrophysics Group 2011–17
Graduate Research Fellow — P.I.: Prof. Michael Vogeley

Cornell University Submillimeter Astrophysics Group 2010–11
Undergraduate Research Assistant — P.I.: Prof. Gordon Stacey

Teaching Experience

Professor

Astronomy 142: Honors Elementary Astrophysics Spring 2018–21, 2023–25
University of Rochester

Astronomy 102: Black Holes and Time Warps Spring 2018–20, 2022, Fall 2023–24
University of Rochester

Astronomy 465: Galactic Structure Fall 2020, 2022, 2024
University of Rochester

Astronomy 244/444: Advanced Astrophysics Laboratory Spring 2021–24
University of Rochester

Astronomy 111: The Origin of the Solar System Fall 2017–21
University of Rochester

Astronomy 106: The Cosmic Origins of Life Fall 2017–19
University of Rochester

Teaching Assistant

Physics 135: How Things Work Summer 2015
Professor: Paul Kaczmarczik (Drexel University Department of Physics)

Physics 201: Fundamentals of Physics III Summer 2014
Professor: Eric Scheidly (Drexel University Department of Physics)

Physics 115: Contemporary Physics III Spring 2013–15
Professor: Dr. Michael Vogeley (2014–15), Dr. Stephen McMillan (2013) (Drexel University Department of Physics)

Physics 114: Contemporary Physics II Winter 2013–14
Professor: Dr. Gordon Richards (2014), Dr. Luis Cruz Cruz (2013) (Drexel University Department of Physics)

Physics 113: Contemporary Physics I Fall 2012–13
Professor: Dr. David Goldberg (Drexel University Department of Physics)

Education T580: TA Orientation and Preparation Fall 2012–15
Professor: Dr. Alexis Finger (Drexel University Department of English & Philosophy)

Physics 102: Fundamentals of Physics II Fall 2011 – Spring 2012, Summer 2013
Professor: Dr. Somdev Tyagi (Summer 2013), Dr. Alexey Aprelev (Spring 2012), Jerry Steinberg (Winter 2012), Dr. Luis Cruz Cruz (Fall 2011) (Drexel University Department of Physics)

CS 1112: Introduction to MATLAB Spring 2011
Professor: Dr. K.-Y. Daisy Fan (Cornell University Department of Computer Science)

Grader

Honors 301: Special Theory of Relativity Winter 2015
Professor: Dr. Michael Vogeley (Drexel University Department of Physics)

Physics 428: Quantum Mechanics III Fall 2014
Professor: Dr. Michael Vogeley (Drexel University Department of Physics)

Consultant

CS 1112: Introduction to MATLAB Spring 2009 – Fall 2010
Professor: Dr. K.-Y. Daisy Fan (Cornell University Department of Computer Science)

Mentoring

Graduate students

University of Rochester — 7 students (co-advisor for 4 PhD theses)

Sara Moore	2024–present	Rayleigh Parker	Fall 2019
Nitya Ravi	2022–present	Dahlia Veyrat	2018–23
Hernan Rincon	2022–present		
Nesli Erez	2019–21	Gregory Zengilowski	2017–18

Undergraduate students

University of Rochester — 35 students (9 senior theses, 12 NSF REU)

JJ Pimentel (Cal Lutheran)	REU 2024	Grace Ciodo (Villanova)	REU 2021
Ziqi Mu — *Senior thesis*	Spring 2024 – present	Jordan Coney (Morehouse)	REU 2021
Sunny Woo	Spring 2024	Juan Garcia Vega (SSU)	CAMPARE 2021
Julia Largett	Fall 2023 – present	Nathaniel Brunacini — *Senior thesis*	2021–22
Lara Stroud — *Senior thesis*	2023–24	Joshua Ratajczak — *Senior thesis*	2021–22
Grace Barner (Duquesne)	REU 2023	Yinglei Peng	Spring 2021
Sara Moore (Butler)	REU 2023	Debra Dunham (CSB)	REU 2020
MJ Keller — *Senior thesis*	2023, Spring 2025	Uzair Tahamid Siam	2020–21
Amii Matamoros Delgado	2023	Yifan Zhang — *Senior thesis*	2020–22
Joseph Siciliano	2023	Cynthia Perez (CSU Chico)	CAMPARE 2019
Rianna Ehrenreich	Fall 2022	Kaelyn Dauer (CSU Fresno)	CAMPARE 2019
Lorenzo Mendoza	Fall 2022	Joshua Lemberg	2019–20
Lewis Drakeley	2022–23	Fatima Zaidouni — *Senior thesis*	2018–21
Taryn Lovan	2022–23	Michaela Guzzetti (Smith College)	REU 2018
Casey Ann Horvath (Ohio U.)	REU 2022	Leilani Gamboa — *Senior thesis*	2018–2020
Hayley Nofi (Villanova)	REU 2022	Jacob Smith	2018–2019
Yinqi Fang	Spring 2022	Andrew Klug	Spring 2018
Navya Uberoi — *Senior thesis*	2021–22		

Drexel University — 4 students (2 senior theses)

Daniele Schneider — *Senior thesis*	2016–17	Salvatore Zerbo	Summer 2015
Jinfu Dai — *Senior thesis*	2015–16	Brean Prefontaine	Summer 2014

High school students

University of Rochester — 2 students

Genesis Oquendo (White Plains High School)	2022–24
Sujay Champati (The Quarry Lane School)	2021–22

Accepted Proposals

PI, *REU Site in Physics, Astrophysics, and Optics at Rochester*
NSF & DOD — $415,240 2025–28

PI, *Constraining the Dark Matter Content of Galaxies*
Feinberg Research Award, University of Rochester — $36,000 2023–24

PI, Co-investigator, *REU Site in Physics, Astrophysics, and Optics at Rochester*
NSF — $378,038 2022–25

Co-investigator, *Observing the first spectroscopically discovered Tidal Disruption Events with DESI*
SOAR & LCO — 4 nights 2021

Co-investigator, *What Stretches the Fabric of the Cosmos? Probes of Fundamental Physics in Cosmic Voids Using Artificial Intelligence*
John Templeton Foundation — $234,263 2021–24

Co-investigator, *Observing the first spectroscopically discovered Tidal Disruption Events with DESI*
SOAR & LCO — 4 nights 2020

Publications

22 refereed papers: 8 first-author publications; 7 publications with supervised students (4 student-led; supervised students shown in ***bold italics***); 3 second- or third-author publications.

Aradhey, A., Constantin, A., Vogeley, M., & **Douglass, K.A.** (2025). Quantifying the Active Galactic Nuclei Fraction in Cosmic Voids via Mid-Infrared Variability. *Submitted to ApJ.* (arXiv:)

Wright, M., et al. (2025). Cosmic Pathways Conference: Exposure to Career Paths, Networking, and Physics Community for Early Stage STEM Students. *Submitted to The Physics Teacher.* (arXiv:)

Kumagai, S., Vogeley, M., Aragon-Calvo, M., **Douglass, K.A.**, BenZvi, S., & Neyrinck, M. (2025). DeepVoid: A Deep Learning Void Detector. *Submitted to ApJ.* (arXiv: 2504.21134)

Rincon, H., BenZvi, S., **Douglass, K.A.**, ***Veyrat, D.*** et al. (2025). DESIVAST: A Catalog of Low-Redshift Voids Using Data From the DESI DR1 Bright Galaxy Survey. *ApJ*, 982 (1): 38. (arXiv: 2411.00148)

Said, K., et al. (2024). DESI Peculiar Velocity Survey — Fundamental Plane. *Accepted for publication in MNRAS.* (arXiv: 2408.13842)

Soumagnac, M.T., et al. (2024). The MOST Hosts Survey: Spectroscopic observation of the host galaxies of ∼40,000 transients using DESI. *ApJS*, 275 (2): 22. (arXiv: 2405.03857)

Zaidouni, F., ***Veyrat, D.***, **Douglass, K.A.**, & BenZvi, S. (2024). The impact of void-finding algorithms on galaxy classification. *ApJ*, 978 (1): 3. (arXiv: 2403.20008)

DESI Collaboration (2024). The Early Data Release of the Dark Energy Spectroscopic Instrument. *AJ*, 168 (2): 58. (arXiv: 2306.06308)

Ravi, N., **Douglass, K.A.**, & Demina, R. (2024). A Full Accounting of the Visible Mass in SDSS MaNGA Disk Galaxies. *ApJ*, 967 (2): 135. (arXiv: 2310.11422)

DESI Collaboration (2023). Validation of the Scientific Program for the Dark Energy Spectroscopic Instrument. *AJ*, 167 (2): 62. (arXiv: 2306.06307)

Veyrat, D., **Douglass, K.A.**, & BenZvi, S. (2023). A Comparison of Void-finding Algorithms Using Crossing Numbers. *ApJ*, 958 (1): 59. (arXiv: 2302.05469)

Saulder, C., Howlett, C., **Douglass, K.A.**, et al. (2023). Target Selection for the DESI Peculiar Velocity Survey. *MNRAS*, 525 (1): 1106–1125. (arXiv: 2302.13760)

Douglass, K.A., ***Veyrat, D.*** & BenZvi, S. (2023). Updated Void Catalogs of the SDSS DR7 Main Sample. *ApJS*, 265 (1): 7–18. (arXiv: 2202.01226)

Lan, T.-W., et al. (2023). The DESI Survey Validation: Results from Visual Inspection of Bright Galaxies, Luminous Red Galaxies, and Emission Line Galaxies. *ApJ*, 943 (1): 68–86. (arXiv: 2208.08516)

Abareshi, B., et al. (2022). Overview of the Instrumentation for the Dark Energy Spectroscopic Instrument. *AJ*, 164 (5): 207–269. (arXiv: 2205.10939)

Douglass, K.A., ***Veyrat, D.***, O'Neill Jr., S.W., BenZvi, S., ***Zaidouni, F.*** & ***Guzzetti, M.*** (2022). VAST: the Void Analysis Software Toolkit. *Journal of Open Source Software (JOSS)*, 7 (77): 4033.

Douglass, K.A. & Demina, R. (2022). Dependence of the Ratio of Total to Visible Mass on Observable Properties of SDSS MaNGA Galaxies. *ApJ*, 925 (2): 127–141. (arXiv: 2009.10083)

Douglass, K.A., ***Smith, J.A.***, and Demina, R. (2019). Influence of the Void Environment on the Ratio of Dark Matter Halo Mass to Stellar Mass in SDSS MaNGA Galaxies. *ApJ*, 886 (2): 153–161. (arXiv: 1906.08327)

Douglass, K.A., Vogeley, M.S. and Cen, R. (2019). Influence of the Void Environment on Chemical Abundances in Dwarf Galaxies and Implications for Connecting Star Formation and Halo Mass. *Proceedings of the International Astronomical Union*, 14: 369–372.

Douglass, K.A., Vogeley, M.S. and Cen, R. (2018). Influence of the Void Environment on Chemical Abundances in Dwarf Galaxies and Implications for Connecting Star Formation and Halo Mass. *ApJ*, 864 (2): 144–160. (arXiv: 1706.07099)

Douglass, K.A. and Vogeley, M.S. (2017b). Large-Scale Environmental Dependence of the Abundance Ratio of Nitrogen to Oxygen in Blue, Star-Forming Galaxies Fainter than L_*. *ApJ*, 837 (1): 42–55. (arXiv: 1612.04908)

Douglass, K.A. and Vogeley, M.S. (2017a). Determining the Large-Scale Environmental Dependence of Gas-Phase Metallicity in Dwarf Galaxies. *ApJ*, 834 (2): 186–198. (arXiv: 1604.08599)

White Papers and Unpublished Articles

Veyrat, D., BenZvi, S., **Douglass, K.A.**, ***Zaidouni, F.*** (2020). Voronoi Voids (V^2). *DESI technical note: DESI-doc-5464-v1.*

Ferraro, S., Wilson, M.J., et al. (2019). Inflation and Dark Energy from Spectroscopy at $z > 2$. *Bulletin of the AAS*, 51 (3): 72–85. (arXiv: 1903.09208)

Kim, A., et al. (2019). Testing Gravity Using Type Ia Supernovae Discovered by Next-Generation Wide-Field Imaging Surveys. *Bulletin of the AAS*, 51 (3): 140–151. (arXiv: 1903.07652)

Sehgal, N., et al. (2019). Science from an Ultra-Deep, High-Resolution Millimeter-Wave Survey. *Bulletin of the AAS*, 51 (3): 43–59. (arXiv: 1903.03263)

Honors and Awards

Excellence in Undergraduate Teaching — 2022–23
University of Rochester Department of Physics & Astronomy Class of 2022
University of Rochester Department of Physics & Astronomy Class of 2023

Outstanding Dissertation Award — 2017
Drexel University College of Arts and Sciences

Chambliss Astronomy Achievement Student Award — 2014
American Astronomical Society

Continuing Teaching Excellence Award — 2014
Drexel University

Teaching Excellence Award — 2013
Drexel University

Teaching Excellence Award — Highly Commended — 2012
Drexel University

First Year Graduate Student Award — 2012
Drexel University Department of Physics

Drexel College of Arts and Sciences Dean's Scholarship — 2011–13
Drexel University College of Arts and Sciences

Service

National Service

NSF proposal panelist	2022–23

University Service, University of Rochester

2024 Solar Eclipse activities (co-lead)	2023–24
First-Gen Networking Night panelist	2023
Messersmith & Goodman Fellowships Committee (Chair)	2023
Schwartz Discover Grant referee	2022–present

Departmental Service, University of Rochester

Director of Undergraduate Studies (Physics)	2022–present
Workplace Environment Committee	2022–23
Awards Committee	2022–23
Undergraduate Advising & Curriculum Committee	2021–present
Undergraduate Curriculum Assessment Committee (Chair)	2021–present
Thesis Defense Committee Member	
Spencer Griswold	2025
Dahlia Veyrat	2023
Qualifying Exam Committee Member	
Hernan Rincon	2024
Nitya Ravi	2024
Spencer Griswold	2022
Dahlia Veyrat	2020

Workshops and Conferences

245th Annual Meeting of the American Astronomical Society	January 2025
Session chair, Chambliss Award judge	National Harbor, MD
243rd Annual Meeting of the American Astronomical Society	January 2024
Session chair, Chambliss Award judge	New Orleans, LO
241st Annual Meeting of the American Astronomical Society	January 2023
Chambliss Award judge	Seattle, WA
240th Annual Meeting of the American Astronomical Society	June 2022
Chambliss Award judge	Pasadena, CA
237th Annual Meeting of the American Astronomical Society	January 2021
Session chair, Chambliss Award judge	virtual
12th Great Lakes Cosmology Workshop	August 2019
Local Organizing Committee member	Rochester, NY

Journal Referee

Monthly Notices of the Royal Astronomical Society	2018–present

DESI Collaboration

Remote observing shifts	2021–present
Secondary target selection of large galaxies	2020–present
Visual inspection of spectra during survey validation	2020–21

University of Rochester Cosmology Group

Analysis of galaxy kinematics with DESI	2021–present
Development of the Void Analysis Software Toolkit (VAST)	2018–present
Analysis of galaxy kinematics with SDSS MaNGA	2018–present

Drexel University Astrophysics Group

Approximation for singly-ionized oxygen abundance in Direct T_e method	2015–17
Calculation of SDSS dwarf galaxy gas-phase chemical abundances with Direct T_e method	2012–17

Cornell University Submillimeter Astrophysics Group

Development of ZEUS-2 superconducting magnet controller and cycle box software interface	2011
Design and construction of cold stage housekeeping PC Boards for ZEUS-2	2010–11
Design and construction of ZEUS-2 cycle box	2010–11

Professional Memberships

American Astronomical Society	2014–present

American Physical Society 2023

Outreach

The Art of Presenting 2021–present
University of Rochester NSF REU Workshop *virtual*

Supernova Foundation 2020–present
Mentor *virtual*

DESI High 2020–present
DESI Scientist *virtual*

The Highlands at Pittsford 2018–2019
Guest lecturer *Pittsford, NY*

Professor Bob's Hands-On Science 2015–16
Instructor *Valley Forge, PA*

Presentations

Colloquia & Invited Talks

The Year 1 DESI Peculiar Velocity Survey
245th Annual Meeting of the American Astronomical Society January 14, 2025
Gaylord National Resort & Convention Center National Harbor, MD

The DESI Peculiar Velocity Survey
APS 2023 April Meeting April 18, 2023
Hilton Minneapolis Minneapolis, MN

Exploiting galaxy kinematics with DESI Septebmer 19, 2022
University of Rochester Rochester, NY

The DESI Peculiar Velocity Survey January 2022
CosmoPalooza 2022 virtual

Chemical abundances, dark matter, and the cosmos September 8, 2017
University of Pittsburgh Pittsburgh, PA

Chemical abundances, dark matter, and the cosmos May 16, 2017
University of Rochester Rochester, NY

Chemical abundances, dark matter, and the cosmos May 4, 2017
Franklin & Marshall College Lancaster, PA

Outreach & Public Lectures

Galaxies & the Universe 7 April 2024
ROC the Eclipse Festival Rochester, NY

Podcast interview on Voids 15 March 2024
University of North Carolina virtual

Radio interview on the Great North American Eclipse of 2024 13 March 2024
WBSU 89.1 the Point virtual

The Great North American Eclipse of 2024 8 February 2024
United Way of Greater Rochester Rochester, NY

Measuring distances in the Universe 27 September 2023
Astronomy Section Rochester Academy of Science virtual

Progress on DESI 4 February 2022
Astronomy Section Rochester Academy of Science Rochester, NY

Planetary atmospheres: The winds of change in our Solar System 26 January 2021
Rochester Science Cafe virtual

Mapping the Universe with DESI 4 December 2020
Astronomy Section Rochester Academy of Science virtual

Taking advantage of large galaxies in DESI 30 September 2020
Lawrence Berkeley National Labs DESI Lunch series virtual

Black holes, galaxies, and the nature of the universe 12 February 2020
University of Rochester Astronomy Club Rochester, NY

Radio interview — Conversation with a professor 13 November 2018
WRUR Rochester, NY

Internal Lectures

The Great North American Eclipse of 2024 5 April 2024
University of Rochester SWAP Rochester, NY

My journey to studying the stars 30 November 2021
University of Rochester SWAP Rochester, NY

Studying the stars 2019, 2021–24
University of Rochester NSF REU Program Rochester, NY

My journey to studying the stars 2018–19
University of Rochester PREP Rochester, NY

Chemical abundances, dark matter, and the cosmos 2 March 2018
University of Rochester SWAP Rochester, NY

Conferences

DESI EDR: Calibrating the Tully-Fisher Relationship with the DESI Peculiar Velocity Survey
243rd Annual Meeting of the American Astronomical Society (iPoster) January 2024
New Orleans Convention Center New Orleans, LO

Void-finding systematics using crossing numbers
241st Annual Meeting of the American Astronomical Society (iPoster) January 2023
Seattle Convention Center Seattle, WA

Voids in SDSS DR7: Updated catalogs and their impact on galaxy classification
240th Annual Meeting of the American Astronomical Society (iPoster) June 2022
Pasadena Convention Center Pasadena, CA

Dependence of $M_{\mathbf{tot}}/M_*$ on properties of SDSS MaNGA galaxies January 2021
237th Annual Meeting of the American Astronomical Society virtual

The influence of the void environment on M_{DM}/M_*
12th Great Lakes Cosmology Workshop August 2019
Rochester Institute of Technology Rochester, NY

Influence of the void environment on chemical abundances in dwarf galaxies and implications for connecting star formation and halo mass
30th General Assembly of the International Astronomical Union (poster) August 2018
Austria Center Vienna Vienna, Austria

Large-scale environmental dependence of chemical abundances in dwarf galaxies and implications for connecting star formation history and halo mass
229th Annual Meeting of the American Astronomical Society January 2017
Gaylord Texan Resort & Convention Center Grapevine, TX

Large-scale environmental dependence of gas-phase metallicity in dwarf galaxies
227th Annual Meeting of the American Astronomical Society (poster) January 2016
Gaylord Palms Resort & Convention Center Kissimmee, FL

Large-scale environmental dependence of gas-phase metallicity in dwarf galaxies
Astrophilly 2015 August 2015
The Franklin Institute Philadelphia, PA

Gas-phase metallicity of void dwarf galaxies
224th Annual Meeting of the American Astronomical Society (poster) June 2014
Westin Copley Place Boston, MA