

Curriculum Vitae

Donna M. Pierce

Department of Physics and Astronomy

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Education

Ph.D. Astronomy, University of Maryland, College Park 2006
Dissertation: *Formation and Destruction of Carbon Monoxide in Cometary Comae*
Advisor: Michael F. A'Hearn (Deceased)

M.S. Astronomy, University of Maryland, College Park 2000

B.S. Physics, University of Kentucky 1997
Summa Cum Laude
Departmental Honors in Physics

Employment History

Professor	Department of Physics and Astronomy Mississippi State University	Aug. 2026 – Present
Associate Professor	Department of Physics and Astronomy Mississippi State University	Aug. 2013 – Aug. 2026
Assistant Professor	Department of Physics and Astronomy Mississippi State University	Jan. 2007 – Aug. 2013
Postdoctoral Fellow	Department of Astronomy University of Texas at Austin	May – Dec. 2006
Research Fellow	Department of Astronomy University of Texas at Austin	Oct. 2005 – April 2006
Graduate Research Assistant	Department of Astronomy University of Maryland, College Park	June 2000 – Sept. 2005
Astronomy Tutor	University of Maryland Academic Achievement Programs	Oct. – Dec. 2001
Graduate Teaching Assistant	Department of Astronomy University of Maryland, College Park	June 1999 – May 2000
Summer Intern	Laboratory for High Energy Astrophysics NASA's Goddard Space Flight Center	June – Aug. 1997 & 1998
Laboratory Assistant	Optics and Spectroscopy Laboratory Department of Physics and Astronomy University of Kentucky	Aug. – Dec. 1996

Last Update: 2026 July 22

REU Student	Department of Physics and Astronomy University of Nevada Las Vegas	June – Aug. 1996
REU Student	Department of Physics and Astronomy University of Alabama	June – Aug. 1995

Honors

Award of Appreciation Physics Graduate Student Association, Mississippi State University	2022
Faculty Appreciation Award Bagley College of Engineering Office of Diversity Programs, Mississippi State University	2012
Distinguished Teaching Assistant University of Maryland Center for Teaching Excellence	2000
Philip E. Angerhofer Outstanding Teaching Assistant Department of Astronomy, University of Maryland, College Park	2000
High Energy Astrophysics Fellowship NASA's Goddard Space Flight Center	1997 – 1999
Merry Lewis Pence Outstanding Senior Physics Major Department of Physics and Astronomy, University of Kentucky	1997
Phi Beta Kappa	1997
Golden Key International Honour Society	1996
Rudolph Schriels Outstanding Junior Physics Major Department of Physics and Astronomy, University of Kentucky	1995
Sigma Pi Sigma	1995
Physics and Astronomy Scholarship, University of Kentucky	1993 – 1997
Academic Excellence Scholarship, University of Kentucky	1993 – 1997

Sponsored Projects

Current Projects:

<u>Source / Award No.</u>	<u>Title</u>	<u>Role</u>	<u>Timeline</u>	<u>Total Budget</u>
NSF: Astronomy and Astrophysics Research Grants (AST-2407815)	<i>Gas-Phase Chemical and Spectral Modeling to Unlock the Diagnostic Potential of Cations in Small Body Atmospheres</i>	Co-PI	9/1/2024 – 8/31/2027	\$605,431 (MSU Subaward: \$145,495)
NSF: Robert Noyce Teacher Scholarship Program (DUE-2345001)	<i>Robert Noyce Teacher Scholarship Program Track 1 at Mississippi State University</i>	PI	6/15/2024 – 5/31/2029	\$1,196,750

Completed Projects:

<u>Source / Award No.</u>	<u>Title</u>	<u>Role</u>	<u>Timeline</u>	<u>Total Budget</u>
Southeastern Conference Academic Consortium: SEC Visiting Faculty Travel Grants	<i>Ion Chemistry of Comets</i>	PI	12/16/2019 — 12/20/2019	\$750
NSF: Scholarships in STEM Program (DUE-1458449)	<i>Breaking the Silo: Mathematics as a Common Language in Science</i>	Co-PI	7/1/2015 – 6/30/2021	\$623,903
NASA: Planetary Atmospheres (NNX14AH18G)	<i>Investigation of Comets with an Integral Field Spectrograph</i>	PI	4/11/2014 – 4/10/2018	\$239,000
Fund for Astrophysical Research, Inc.	<i>Comprehensive Studies with the Sangre Telescope at Rainwater Observatory</i>	Science PI	1/1/2014 – 12/31/2014	\$2870
Fund for Astrophysical Research, Inc.	<i>Spectroscopic Survey of Comets</i>	PI	1/1/2013 – 12/31/2013	\$2116
NSF: Graduate K-12 STEM Teaching Fellows (DGE-0947419)	<i>New GK-12: Initiating New Science Partnerships in Rural Education (INSPIRE)</i>	Co-PI	5/16/2010 – 4/30/2016	\$2,881,903

Invited Presentations (Non-Conference)

Seminars and Colloquia:

- *Physical and Chemical Properties of Comets: Observations and Challenges*, Department of Physics and Astronomy Colloquium, Mississippi State University, October 17, 2025
- *Dr. Pierce, or How I Learned to Stop Worrying and Love My Career Path*, Society of Physics Students Seminar, Mississippi State University, November 15, 2023
- *Fragment Species in the Comae of Comets: Observations and Challenges*, Department of Physics and Astronomy Colloquium, Mississippi State University, February 19, 2021
- *Fragment Species in the Comae of Comets: Observations and Challenges*, Department of Physics Colloquium, Auburn University, October 23, 2020
- *Fragment Species in the Comae of Comets: Observations and Challenges*, Physical Chemistry Seminar, Department of Chemistry and Biochemistry, Auburn University, October 20, 2020
- *Comet ISON*, Astronomy Club Seminar, Mississippi State University, November 22, 2013
- *Comets: Sentinels of the Outer Solar System*, Physics Graduate Student Association Seminar, Mississippi State University, September 22, 2011
- *Comets: Sentinels of the Outer Solar System*, Society of Physics Students Seminar, Mississippi State University, September 21, 2011
- *Initiating New Science Partnerships in Rural Education*, Mississippi Association of Physicists Meeting, March 27, 2010
- *Cosmic Time Capsules: Cometary Atmospheres and the Origin of the Solar System*, MSU Arts & Sciences 1st Annual Research Showcase, October 17, 2008
- *Understanding Cometary Atmospheres*, Physics and Astronomy Colloquium, University of Alabama (Tuscaloosa), March 12, 2008
- *Understanding Cometary Atmospheres*, Physics and Astronomy Colloquium, University of Alabama at Huntsville, March 11, 2008
- *Modeling the Chemical Properties of Cometary Atmospheres*, Physics and Astronomy Colloquium, Mississippi State University, August 28, 2006
- *Formation of Carbon Monoxide in the Near-Nucleus Coma of Comets*, Laboratory for Extraterrestrial Physics Seminar, NASA's Goddard Space Flight Center, October 9, 2003

Workshop Presentations:

- *Solar Disruptions to Satellite/GPS Systems*, MSU Seed & Ag Technology Short Course, Starkville, MS, August 5, 2025
- *Auroral Activity and Effects on Precision Applications*, Mississippi Vegetation Management Association Annual Meeting, Gulfport, MS, November 19, 2024
- *CVs and Cover Letters 101*, Physics Graduate Student Association Professional Development Seminar, December 12, 2013
- *GRAIL Launch at Cape Canaveral*, INSPIRE GK-12 Fall Workshop, Mississippi State University, October 22, 2011
- *A Comet's Tale*, NASA's Lunar Reconnaissance Orbiter Teacher Workshop, Hinds Community College, Utica, MS, June 29, 2011
- *INSPIRE: Initiating New Science Partnerships in Rural Education*, Lunar Reconnaissance Orbiter Teacher Workshop, Utica, MS, June 29, 2011

Public Lectures:

- *Understanding the Aurora*, Rotary Club of Winona, MS, August 15, 2024
- *Understanding the Aurora*, Oktibbeha County Agriculture Club, Starkville, MS, June 6, 2024
- *Chasing Shadows: Understanding the Great American Solar Eclipse of 2024*, Mississippi State University, Starkville, MS, April 3, 2024
- *Comets: Sentinels of the Outer Solar System*, Astronomy on Tap — Baton Rouge Virtual Presentation, October 8, 2020
- *Chasing Shadows: Understanding the Great American Solar Eclipse of 2017*, Mississippi State University, Starkville, MS, August 20, 2017
- *Rosetta: ESA's Great Comet Exploration Mission*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 18, 2015
- *Comets: Sentinels of the Outer Solar System*, Cafe Scientifique, Starkville, MS, March 31, 2015
- *The Year of the Comets: What We Learned in 2013*, Rainwater Observatory Public Open House, French Camp, MS, May 9, 2014
- *The Year of the Comets: What We Learned in 2013*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, March 29, 2014
- *Comet ISON This Way Comes!*, Rainwater Observatory Public Open House, French Camp, MS, November 8, 2013
- *Awaiting Comet ISON*, Von Braun Astronomical Society's Astronomy Day, Huntsville, AL, October 19, 2013
- *The Year of the Comets!*, Rainwater Observatory Public Open House, French Camp, MS, May 10, 2013
- *The Year of the Comets: What We Want to Learn in 2013*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 13, 2013
- *Insights from Comets Garradd and Lovejoy*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 21, 2012.
- *New Science with Old Friends: Visits to Comets Tempel 1 and Hartley 2*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 29, 2011
- *There and Back Again: Solar System Sample Return Missions*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 24, 2009
- *Deep Impact, Stardust, and the Future of Comet Exploration*, Mid-South Stargaze, Rainwater Observatory, French Camp, MS, April 11, 2007

Media Interactions

Print Interviews for Research:

- "MSU faculty's astronomy research shines on NEOWISE comet", *Research in the Headlines*, College of Arts & Sciences, Mississippi State University, August 19, 2020
- "Pierce part of SEC physics and chemistry collaboration on comet research", *Maroon Memo*, Office of Public Affairs, Mississippi State University, February 17, 2020
- "SEC Physics and Chemistry Faculty Collaborate on Comet Research", *COSAM News*, Auburn University, January 7, 2020

Photography:

- Photo of comet C/2020 F3 (NEOWISE) featured on weather segment with Chief Meteorologist Keith Gibson, WCBI (CBS Affiliate), Columbus, MS, July 13, 2020

Articles Written for the Public:

- Jupiter's Great Red Spot: A 300-year-old cyclone persists but is shrinking, *The Conversation*, March 19, 2019
<https://theconversation.com/jupiters-great-red-spot-a-300-year-old-cyclone-persists-but-is-shrinking-112934>

Television/Video Interviews for Service and Outreach:

- *Solar Eclipse of 2024*, WTVA (NBC Affiliate), Tupelo, MS, April 8, 2024
- *Solar Eclipse of 2024*, MSU Student Broadcast – “Take 30”, April 3, 2024
- *Solar Eclipse of 2024*, WCBI (CBS Affiliate), Columbus, MS, March 21, 2024
- *The Department of Physics and Astronomy*, MSU College of Arts & Sciences, November 9, 2017
- *Solar Eclipse of 2017*, WTVA (NBC Affiliate), Tupelo, MS, August 21, 2017
- *Solar Eclipse of 2017*, WCBI (CBS Affiliate), Columbus, MS, August 20, 2017
- *Solar Eclipse of 2017*, “Midmorning with Aundrea”, WCBI (CBS Affiliate), Columbus, MS, August 15, 2017
- *Solar Eclipse of 2017*, WCBI (CBS Affiliate), Columbus, MS, August 14, 2017
- *Solar Eclipse of 2017*, WTVA (NBC Affiliate), Tupelo, MS, August 10, 2017
- *Solar Eclipse of 2017*, MSU – “Arts & Sciences Vision Magazine”, July 21, 2017
- *Comet ISON*, WTVA (NBC Affiliate), Tupelo, MS, November 7, 2013
- *Close Approach of Asteroid 1998 QE₂*, WTVA (NBC Affiliate), Tupelo, MS, May 29, 2013
- *Comet PanSTARRS*, WTVA (NBC Affiliate), Tupelo, MS, March 13, 2013
- *Mars Science Laboratory Successful Landing*, WCBI (CBS Affiliate), Columbus, MS, August 7, 2012
- *The Changing Zodiac*, MSU Student Broadcast – “Take 30”, February 4, 2011

Print Interviews for Service and Outreach:

- “Starkville stargazer discovers first Mississippi-found asteroid”, *The Commercial Dispatch*, November 30, 2025
- “Eclipse Monday will cover 90% of sun in Golden Triangle”, *The Commercial Dispatch*, April 5, 2024
- “Solar eclipse 2024: Here are a few other things to see in the sky during totality”, *Jackson Clarion-Ledger*, April 5, 2024
- “There's a Devil Comet? Yes, and you'll be able to see it soon”, *Jackson Clarion-Ledger*, February 22, 2024
- “MSU, Starkville gear up for historic solar eclipse”, *Starkville Daily News*, August 15, 2017
- “Eyes to the Sky: Sun, moon to put on light show Aug. 21”, *Northeast Mississippi Daily Journal*, August 13, 2017
- “MSU astronomer discusses ‘Chasing Shadows’ prior to historic solar eclipse this month”, MSU Newsroom, August 11, 2017
- “Area residents have ‘rare’ chance to see eclipse”, *The Commercial Dispatch*, Columbus, MS, August 11, 2017
- “Spend Saturday under the stars”, *The Reflector* (MSU Student Newspaper), September 13, 2013
- “Stargazers gather at MSU to get look at rare comet”, *Starkville Daily News*, March 17, 2013
- “Celestial events will light up the sky in 2013; comets included”, *The Reflector* (MSU Student Newspaper), February 18, 2013

Radio Interviews:

- *Solar Eclipse of 2024*, WMSV (MSU Campus Radio), March 7, 2024
- *Solar Eclipse of 2017*, JT Show, SuperTalk Mississippi, August 18, 2017
- *Solar Eclipse of 2017*, WMSV (MSU Campus Radio), August 9, 2017
- *Launch of OSIRIS-REx*, WMSV (MSU Campus Radio) – “What's In the Sky at MSU”, September 9, 2016
- *New Horizons at Pluto*, WMSV (MSU Campus Radio) – “What's In the Sky at MSU”, July 1, 2015
- *Supermoon*, Mississippi Radio Network, May 5, 2012

New Faculty Mentorship for College of Arts & Sciences

- Assistant Professor Catherine Shi, Department of Mathematics and Statistics (2019 – 2020)
- Assistant Professor Bin Liu, Department of Biological Sciences (2018 – 2019)

Student Mentorship

Graduate Student Research:

- Amir Daghighi (Current Ph.D.): *TBD*
- Sara Paugh (Current Ph.D.): *TBD*
- Ahmad Sohani (M.S. Physics, with Thesis 2023; Ph.D. Physics 2024): *MS: Comet Nuclei Activity Simulation Using Percolation Theory on Comet 67P/Churyumov-Gerasimenko; Ph.D.: Role of Subsurface Dynamics on Comet Outbursts*
- Ien A. Harris (M.S. Physics, with Thesis 2022): *Analysis of Comet Rotation Through Modeling of Features in the Coma*
- Benjamin K. Lewis (M.S. Physics, with Thesis 2016): *Molecular Parentage of Radical Species in the Comae of Comets*
- Charles M. Vaughan (Ph.D. Applied Physics 2015): *Jet Morphology and Coma Analysis of Comet 103P/Hartley 2*
- Chandrasiri A. Ihalawela, (M.S. Physics, with Thesis 2009): *The Spatial Distribution of CN Radicals in the Coma of Comet Encke*

Undergraduate Student Research:

- Ronald J. Unz (B.S. Physics, 2009)
- Charles M. Vaughan (B.S. Physics, 2008)

Other Mentoring and Support:

- Currently supporting 2 post-Baccalaureate in-service teachers through the Robert Noyce Teacher Scholarship project (2024 — Present)
- David Heson (B.S. Physics/Computer Science, 2025): Nominator and letter writer for his successful Barry M. Goldwater and Astronaut Scholarships (2024); Also hired as intermittent worker for May - August 2025
- Supported 26 undergraduate students through the S-STEM scholarship project (2016 – 2021)
- Supported 52 graduate student NSF GK-12 Fellows and 7 GK-12 partner teachers (2010 – 2016)

Thesis/Dissertation Committee Member:

<u>Student</u>	<u>Degree</u>	<u>Title</u>	<u>Advisor</u>
Santanu Maity	Ph.D., TBD	<i>TBD</i>	Prabhakar Pradhan
Mohammad Alizadeh Poshtiri	Ph.D., TBD	<i>TBD</i>	Prabhakar Pradhan
Muhammad Asif Zubair	Ph.D., TBD	<i>TBD</i>	Jaspreet Randhawa
Dhruvil Solanki	Ph.D., TBD	<i>TBD</i>	Prabhakar Pradhan
Maruf Abubakar	Ph.D., TBD	<i>TBD</i>	Jaspreet Randhawa
Achini Ovitigala	Ph.D., TBD	<i>TBD</i>	Chuji Wang
Ishmael Apachigawo	Ph.D., TBD	<i>TBD</i>	Prabhakar Pradhan
Mousa Alrubayan	Ph.D., TBD	<i>TBD</i>	Prabhakar Pradhan
Pubuduni Ekanayaka	Ph.D., 2025	<i>Optical Trapping of Single Dust in Plasma - A Micro-Probe for In Situ Plasma Diagnostics</i>	Chuji Wang

Yukai Ai	Ph.D., 2025	<i>Optical Trapping for the Study of the Chemical and Physical Dynamics of Single Particles</i>	Chuji Wang
Claire Geneser	Ph.D., 2025	<i>Unraveling Exoplanetary Signatures from Stellar Activity: A Journey Beyond the Known in RV Mass Measurements of K Dwarfs</i>	Angelle Tanner
Haifa Alali	Ph.D., 2024	<i>Exploring Single Particles Through Optical Trapping and Advanced Laser Spectroscopy</i>	Chuji Wang
Bryan Semon	Ph.D., 2023	<i>Advancements in Time-Resolved Spectroscopy and Nonlinear Microscopy</i>	Gombojav Ariunbold
Fatemah Alharthi	Ph.D., 2023	<i>Optical Spectroscopic Microscopies Study of Nano-to-Submicron Scale Structural Alterations in Human Brain Cells/Tissues and Skin Fibroblasts due to Brain Diseases Using Mesoscopic Physics</i>	Prabhakar Pradhan
Rongrong (Wu) Cohen	Ph.D., 2022	<i>Molecular Insights Into the Redox of Atmospheric Mercury Through Laser Spectroscopy</i>	Chuji Wang
Farzaneh Zohrabi	M.S., 2020	<i>Investigating the Presence of Stellar Companions around Hot Jupiter Host Stars Using MagAO</i>	Angelle Tanner
Zhangjin Xu	Ph.D., 2020	<i>Near-Field Phenomena in Dipole Radiation</i>	Henk Arnoldus
Shane Clark	M.S., 2018	<i>Optical Characterization of an APPJ using OES and CRDS</i>	Chuji Wang
Che Fuh	Ph.D., 2018	<i>Microwave Plasma-Assisted Ignition and Combustion Diagnostics</i>	Chuji Wang
Maheshwar Ghimire	Ph.D., 2018	<i>Fiber Loop Ringdown for Physical and Chemical Sensors and Sensing</i>	Chuji Wang
Amy Ray	M.S., 2017	<i>A Survey of Nearby M-Dwarfs Using Robotic AO</i>	Angelle Tanner
Adam Powers	M.S., 2017	<i>Development of a Portable Laser-Induced Fluorescence Sensor</i>	Gombojav Ariunbold
Nava Subedi	Ph.D., 2016	<i>Characterization of Microparticles Using Digital Holography</i>	Matthew Berg
Cameron Clarke	B.S. 2015 (Honors)	<i>Determining the Photometric Capabilities of the CTIO 0.9m Telescope</i>	Angelle Tanner
Katja (Schäfer) Biswas	Ph.D., 2011	<i>Arbitrary Projections onto a Reduced Discrete Set of States with Applications to Mean First Passage Time Problems</i>	Mark Novotny
Xin Li	Ph.D., 2010	<i>Vortices in the Near Field of Optical Dipole Radiation</i>	Henk Arnoldus

Service Activities & Professional Organizations

Departmental and University Service Activities at MSU:

Current and Ongoing Activities:

- Phi Beta Kappa (Gamma of Mississippi Chapter):
 - Secretary, 2023 – Present
 - Committee on Members-in-Course, 2019 – Present
 - Charter and Resident Member, 2019 – Present

- Physics and Astronomy Ph.D. Advisory Committee:
 - Chair, 2023 – 2024
 - Member, 2022 – Present
- Physics and Astronomy Undergraduate Program Committee, 2024 – Present
 - Subcommittee on Pre-Medical Introductory Physics Course Sequence, 2024 – Present
- Physics and Astronomy Classical Mechanics Placement Exam Committee, 2023 – Present
- Physics and Astronomy Outreach Committee, 2014 – 2019, 2025 – Present
- Rainwater Observatory Partnership Committee, 2010 – Present
 - Chair, Spring 2021; Fall 2022 - Spring 2023

Previous and Fixed-Term Activities:

- Volunteer Student for Pilot Roll-Out of Online AI Course, 2026
- Judge, Graduate Research Symposium Oral Presentations, 2025
- Physics and Astronomy FRIB Bridge Faculty Search Committee, 2024
- Judge, Graduate Research Symposium Oral Presentations, 2022
- Physics and Astronomy Promotion and Tenure Committee, 2019 – 2025
- Physics and Astronomy Instructor Search Committee, 2019 – 2020
- President's and Provost's Scholars Candidate Interview Committee, 2020
- Physics and Astronomy Undergraduate Program Committee, 2018 – 2019
- Physics and Astronomy Colloquium Committee, 2018 – 2019
- College of Arts & Sciences New Faculty Mentor, 2018 – 2020
- Physics and Astronomy Quantum Mechanics Graduate Preliminary Exam Committee, 2017 – 2022
- Provost's Internal Review Committee for the Department of Mathematics and Statistics, 2017
- Physics and Astronomy Facility Resources Committee, 2016 – 2019
- College of Arts & Sciences Dean's Search Committee, 2016 – 2017
- Physics and Astronomy Visiting Faculty Search Committee, 2016
- Physics and Astronomy Business Manager Search Committee, 2016
- Judge, Undergraduate Research Symposium Poster Presentations, 2015
- Judge, Graduate Research Symposium Poster Presentations, 2015
- Provost's Scholar Awards Selection Committee, 2015
- Mathematical Physics Graduate Preliminary Exam Committee, 2015 – 2017
- College of Arts & Sciences Promotion and Tenure Committee, 2015 – 2018
- Physics and Astronomy Faculty Search Committee, 2014 – 2015
- Donald Zacharias Graduate Teaching Assistant of the Year Awards Selection Committee, 2014
- Physics and Astronomy Recruitment Committee, 2013 – 2025
 - Chair, Fall 2013 - Spring 2018, Spring 2021
- Faculty Advisor, Physics Graduate Student Association, 2013 – 2023
- Mathematical Physics Graduate Preliminary Exam Committee, 2012 – 2013
- Physics and Astronomy Benchmarking Survey Committee, 2013
- Physics and Astronomy Laboratory Operations Manager Search Committee, 2013
- Committee to Establish the Physics Ph.D. Program in the College of Arts & Sciences, 2013
- College of Arts & Sciences Faculty Senate, 2011 – 2012
- MSU Howell Observatory Committee, 2010 – 2025
- Director, MSU Howell Observatory, 2010 – 2011
- Chair, Physics and Astronomy Faculty Search Committee, 2010 – 2011
- Physics and Astronomy Graduate Program Committee, 2009 – 2014
- Faculty Advisor, MSU Astronomy Club, 2009 – 2010
- Society of Scholars Council of Advisors, 2007 – 2018
- Quantum Mechanics Graduate Preliminary Exam Committee, 2007 – 2010

Professional Service Activities and Consulting:

Recent and Recurring Activities:

- External Reviewer for promotion and/or tenure applications for four people
- Referee for *Astronomy & Astrophysics*, *Icarus*, *Monthly Notices of the Royal Astronomical Society*, and *The Planetary Science Journal*

- Panelist or External Reviewer for NASA Programs (Chair *): Discovery Data Analysis Program (DDAP), Lunar Advanced Science and Exploration Research (LASER), NASA's Postdoctoral Program (NPP), Planetary Astronomy (PAST), Rosetta Data Analysis Program (RDAP), Solar System Observations (SSO)*

Previous and Fixed-Term Activities:

- Panelist for NOIRLab Solar System TAC
- External Reviewer for Louisiana Board of Regents Physics and Astronomy Enhancements Awards, 2018
- External Reviewer of high-school physics questions for the NSF-Funded "Misconceptions Oriented Standards-based Assessment Resources for Teachers (MOSART)" project at Harvard University, 2018
- Panel Reviewer for Louisiana Board of Regents Physics and Astronomy Enhancements Awards, 2014
- Scientific and Technical Evaluator for NASA's Discovery Program, 2012
- Judge for AGU Outstanding Student Research Awards, AGU Fall Meeting, 2011
- External Reviewer for Arkansas Academy of Sciences Undergraduate Research Grants, 2010
- Reviewer for National Science Foundation's Astronomy and Astrophysics Research Grants
- Maintained lists of comet discoveries for the IAU Committee on Small Body Nomenclature and the Small Bodies Node of the Planetary Data System, 2000 – 2003

Outreach Activities:

Recurring Activities:

- Public Open Houses, MSU Howell Observatory
- Exhibitor, Mississippi Science Fest, Mississippi Children's Museum, 2017 – Present

Previous and Fixed-Term Activities:

- Solar Eclipse Public Viewing, Mississippi State University, April 8, 2024
- Guest speaker to 5th grade class, Overstreet Elementary School, Starkville, MS, March 27, 2024
- Guest speaker to 5th grade class, Heritage Academy, Columbus, MS, February 8, 2022
- Transit of Mercury Public Viewing, Mississippi State University, November 11, 2019
- Solar Eclipse Public Viewing, Mississippi State University, August 21, 2017
- Assembly guest speaker, Armstrong Middle School, August 17, 2017
- Assembly guest speaker, Henderson Ward Stewart Elementary School, August 17, 2017
- Guest speaker to Starkville Boys' and Girls' Club, January 30, 2015
- Assisted with Public Tour of the Very Large Array (VLA), Socorro, NM, July 19, 2014
- Guest speaker to 6th grade gifted and talented students from Bomar Elementary School (Vicksburg, MS), Rainwater Observatory, French Camp, MS, October 28, 2013
- Guest speaker to 4th grade classes, Louisville Elementary School, Louisville, MS, May 10, 2013
- Guest speaker to 2nd and 3rd grade classes, Louisville Elementary School, Louisville, MS, April 17, 2013
- Assisted with scheduling the visit of astronomer Neil deGrasse Tyson to MSU, February 2011
- Judge, Region V High School Science Fair, Mississippi State University, March 12, 2010
- Guest speaker to 1st grade classes, East Silver Spring Elementary School, Silver Spring, MD, 2003
- Guest speaker to career program for at-risk elementary school girls, University of Maryland, 1999
- Guest speaker to 1st grade classes, Adelphi Elementary School, Adelphi, MD, 1998

Departmental and University Service Activities Prior to MSU:

- Postdoc-Faculty Liaison, Astronomy Department, University of Texas, 2006
- Graduate Student Government, University of Maryland:
 - Chair, Elections Committee, 2003
 - Plan of Organization Overhaul Committee, 2003
 - Astronomy Department Representative, 1999 - 2003
- Departmental Representative for Graduate Student Recruitment Fair, University of Maryland, 2001
- Graduate-Faculty Liaison, Astronomy Department, University of Maryland, 2000
- Panelist for Graduate Student Orientation, University of Maryland, 2000
- President, Society of Physics Students, University of Kentucky, 1996 – 1997

Professional Society Memberships:

- American Astronomical Society (AAS)
 - Division for Planetary Sciences (DPS)
- American Chemical Society (ACS)
 - Computers in Chemistry Division
 - Physical Chemistry Division
 - Astrochemistry Subdivision
- American Geophysical Union (AGU)

Courses Taught at Mississippi State University

<u>Course Number/Title</u>	<u>Description</u>	<u>No. Semesters Taught</u>
MA1001 First Year Seminar	Problem-solving exploration of the integrated nature of mathematics with chemistry and physics (Required course for S-STEM scholarship recipients; team-taught with the project PI and Co-PIs)	4 assisting
PH1063 Descriptive Astronomy	Concept-based survey of modern astronomy for students of all majors Text: Using Openstax Text	15
PH1123 General Physics II	Waves, optics, and thermodynamics (Non-calculus physics sequence) Text: Physics, 7 th Edition by Giancoli	3
PH1133 General Physics III	Electricity, magnetism, quantum mechanics, and nuclear physics (Non-calculus physics sequence) Text: Physics, 7 th Edition by Giancoli	5
PH2213 Physics I	Classical Newtonian mechanics (Calculus-based physics sequence) Text: Physics for Scientists and Engineers (with Modern Physics), 5 th Edition, by Giancoli	12 standard 4 honors
PH3063 Astrophysics	Planetary dynamics, stellar evolution, radiative processes, galaxy evolution, and cosmology Text: Foundations of Astrophysics, 1 st Edition by Ryden and Peterson, plus extensive supplementals from other sources	4
PH3613 Modern Physics	Special relativity, quantum mechanics, atomic, nuclear, condensed matter physics Text: Modern Physics, 5 th Edition, by Tipler & Llewellyn	4
PH4000 Directed Individual Study	Supervised independent study	1
PH4513/6513 Optics (Undergraduate/graduate split-level class)	Wave motion, electromagnetic theory, geometrical optics, polarization, interference, and diffraction Text: Optics, 5 th Edition by Hecht, plus supplementals from other sources	5
GG/PH6990 Special Topics: Principles of Pedagogical Design with STEM Research Products	Course lesson planning, strengthening communication skills, and incorporating scientific research into classroom activities (Training course for INSPIRE GK-12 graduate fellows; team-taught with the project PI, a master teacher, and a technology specialist) Text: Understanding by Design, Expanded 2 nd Edition by Wiggins and McGighe, plus extensive supplementals from other sources	2 as lead; 3 assisting

PH4990/6990 Special Topics in Physics: Astrophysics (Undergraduate/graduate split-level class)	Celestial coordinate systems, planetary dynamics, spectroscopy, stellar evolution, radiative processes, galaxy evolution, and cosmology (More advanced treatment than PH3063) Texts: Fundamentals of Astrophysics, 1st edition, by Owocki; Radiative Processes in Astrophysics, by Rybicki and Lightman; Celestial Mechanics by Danby, plus extensive supplementals from other sources	1 PH4990; 2 PH6990
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Computer Programming Expertise

C++, Fortran, IDL, Python

Publications in Refereed Journals

ORCID: 0000-0002-3946-780X

Bromley, S. J., Firth, R. A., Fortenberry, R. C., **Pierce, D. M.**, and Bodewits, D. “Spectroscopy and Fluorescence Modeling of the Dinitrogen Cation N_2^+ in Cometary Comae”, *submitted to Planetary Science Journal*.

Herring, M. E., Elder, A., Oppenheimer, S., **Pierce, D. M.**, & Mlsna, D., 2024. “Mathematics as a Common Language in Science: A Scholarship Program for Students in Science, Technology, Engineering, and Mathematics at Mississippi State University”, *Journal of STEM Education*, 25, 47.

<https://www.jstem.org/jstem/index.php/JSTEM/issue/view/163>

Bromley, S. J., Noonan, J., Cochran, A., Statchova, B., Orsagh, J., Ivanova, O., **Pierce, D. M.**, Fortenberry, R., and Bodewits, D. 2024. “An Updated Fluorescence Emission Model of CO^+ for Cometary Science”, *Monthly Notices of the Royal Astronomical Society*, 528, 7358.

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Pierce, D. M. *Fragment Species in the Comae of Comets: Observations and Challenges*, Astrochemistry in the Southeast and Beyond, Southeastern Regional Meeting of the American Chemical Society, Savannah, GA, October 22, 2019

Pierce, D. M. *Rosetta: A Comet Exploration Mission*, 1st Annual MSU/Ole Miss Joint Physics Symposium, National Center for Physical Acoustics, Oxford, MS, February 27, 2016

Contributed Conference Presentations

Pierce, D. M., Bromley, S. J., Bodewits, D., Firth, R. A., and Fortenberry, R. C., “Gas-Phase Chemical and Spectral Modeling of O₂⁺ and CO₂⁺ in Cometary Atmospheres”, 58th Annual Division for Planetary Sciences Meeting, Spokane, WA, October 25 - 30, 2026.

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