

Patrick M. Treuthardt, Ph.D.

CONTACT INFORMATION North Carolina Museum of Natural Sciences *E-mail:* patrick.treuthardt@naturalsciences.org
11 West Jones Street *Website:* treuthardt.github.io
Raleigh, NC 27601, U.S.A.

EDUCATION

2007	Ph.D., Physics with Astronomy specialization University of Alabama, Tuscaloosa, Alabama
2000	M.S., Physics with Astronomy specialization University of Alabama, Tuscaloosa, Alabama
1998	B.S., Physics with an option in Astrophysics , awarded with Honors New Mexico Institute of Mining and Technology, Socorro, New Mexico
1996	A.G.S. , awarded Magna Cum Laude Macomb Community College, Clinton Township, Michigan

SUMMARIZED EXPERIENCE

North Carolina Museum of Natural Sciences, Raleigh, North Carolina
Present – 2013 **Assistant Head, Astronomy & Astrophysics Research Lab**

Appalachian State University, Boone, North Carolina
2024, 2021, 2020, 2013 **Guest Lecturer**

Osher Lifelong Learning Institute – NCSU, Raleigh, North Carolina
2022, 2019 – 2015 **Lecturer**

Atlas Ocean Voyages, Fort Lauderdale, Florida
2021 **Guest Lecturer**

University of Arkansas at Little Rock, Little Rock, Arkansas
2015 – 2010 **Part-time Lecturer**
2013 – 2010 **Affiliate Graduate Faculty**
2013 – 2012 **Visiting Research Associate**
2012 – 2009 **Postdoctoral Research Fellow**
Secondary Affiliation: Arkansas Center for Space and Planetary Sciences,
University of Arkansas at Fayetteville
2012 – 2009 **Graduate Student Mentor**

North Carolina State University, Raleigh, North Carolina
2014 **Temporary Instructor**

University of Oulu, Oulu, Finland
2008 **Visiting Researcher**
2007, 2003, 2002 **Visiting Student**

University of Alabama, Tuscaloosa, Alabama
2008 **Intern**
2007 – 1999 **Graduate Research Assistant**
2005 – 1998 **Graduate Teaching Assistant**

Kitt Peak National Observatory, Tucson, Arizona
2006, 2004 **Visiting Observer**

Observatoire de Haute-Provence, St. Michel l'Observatoire, France
2004 **Visiting Observer**

Refer to the following pages for detailed experience.

2020

- Hewitt, I. B. & **Treuthardt, P.** *Comparison of Galaxy Spiral Arm Pitch Angle Measurements Using Manual and Automated Techniques*, Monthly Notices of the Royal Astronomical Society, 493, 3854-3865.
 - **In the top 5% of all research outputs ever tracked** by Altmetric.
 - Press coverage including: Breitbart, Discover Magazine, Heritage Daily, Science Daily, SciTechDaily, Space Daily, UPI, etc.

2018

- Seigar, M. S., Harrington, A., & **Treuthardt, P.** *Determination of resonance locations in NGC 613 from morphological arguments*, Monthly Notices of the Royal Astronomical Society, 481, 5394-5400.
- Mutlu Pakdil, B., Seigar, M., Hewitt, I., **Treuthardt, P.**, Berrier, J., & Koval, L. *The Illustris Simulation: Supermassive Black Hole – Galaxy Connection Beyond the Bulge*, Monthly Notices of the Royal Astronomical Society, 474, 2594-2606.

2017

- Mutlu Pakdil, B., Mangedarage, M., Seigar, M. S., & **Treuthardt, P.** *A photometric study of the peculiar and potentially double ringed, non-barred galaxy: PGC 1000714*, Monthly Notices of the Royal Astronomical Society, 466, 355-368.
 - **In the top 5% of all research outputs ever tracked** by Altmetric.
 - Press coverage including: Astronomy Magazine, CBC News, CNN, CTV News, Daily Mail, Engadget, Fox News, Gizmodo, IFLScience.com, The Independent, International Business Times, International Business Times UK, MPR News, Sci-News.com, Science Daily, SciWorks Radio, Tech Times, WFAE 90.7, Space.com, Wired UK, etc.

2015

- Sierra, A., Seigar, M. S., **Treuthardt, P.**, & Puerari, I., *Determination of Resonance Locations in Barred Spiral Galaxies Using Multiband Photometry*, Monthly Notices of the Royal Astronomical Society, 450, 1799-1811.

2014

- Al-Baidhany, I., Seigar, M., **Treuthardt, P.**, Sierra, A., Davis, B., Kennefick, D., Kennefick, J., Lacy, C., Toma, Z. A., & Jabbar, W. *A Study of the Relation between the Spiral Arm Pitch Angle and the Kinetic Energy of Random Motions of the Host Spiral Galaxies*, Journal of the Arkansas Academy of Science, Vol. 68, 25-36.

2012

- **Treuthardt, P.**, Seigar, M. S., Sierra, A. D., Al-Baidhany, I., Salo, H., Kennefick, D., Kennefick, J. & Lacy, C. H. S., *On the Link Between Central Black Holes, Bar Dynamics, and Dark Matter Halos in Spiral Galaxies*, Monthly Notices of the Royal Astronomical Society, 423, 3118-3133.

2009

- **Treuthardt, P.**, Salo, H., & Buta, R., *Dynamical Simulations of NGC 2523 and NGC 4245*, The Astronomical Journal, 137, 19-33.

2008

- **Treuthardt, P.**, Salo, H., Rautiainen, P., & Buta, R., *The Bar Pattern Speed of NGC 1433 Estimated Via Sticky-Particle Simulations*, The Astronomical Journal, 136, 300-311.

2007

- **Treuthardt, P.**, Buta, R., Salo, H., & Laurikainen, E., *The Kinematically Measured Pattern Speeds of NGC 2523 and NGC 4245*, The Astronomical Journal, 134, 1195-1205.

2004

- Keel, W. C., Holberg, J. B., & **Treuthardt, P.**, *Far-Ultraviolet Spectroscopy of Star-Forming Regions in Nearby Galaxies: Stellar Populations and Abundance Indicators*, The Astronomical Journal, 128, 211-223.

2000

- Buta, R., **Treuthardt, P. M.**, Byrd, G. G., & Crocker, D. A., *Circumnuclear Star Formation in the Early-Type Resonance Ring Barred Spiral Galaxy NGC 1326*, The Astronomical Journal, 120, 1289-1305.

BOOKS

2014

- *Structure and Dynamics of Disk Galaxies*. Proceedings of a Conference held 12-16 August 2013 at the Winthrop Rockefeller Institute, Petit Jean Mountain, Arkansas, USA. Edited by M. S. Seigar and **P. Treuthardt**. ASP Conference Proceedings, Vol. 480. San Francisco: Astronomical Society of the Pacific.

SOFTWARE

2019 – Present

- *P2DFFT*. Hewitt, I. B. & **Treuthardt, P.** <https://doi.org/10.5281/zenodo.3165700>.

CITIZEN SCIENCE
PROJECTS

2021 – 2019

- *Spiral Graph*. **Treuthardt, P.**, Hewitt, I. B., Scott, A., Dasanaik, N., Ehrlich, E., Lamb, E., & Wilkinson, T. <https://www.zooniverse.org/projects/astro-lab-ncmns/spiral-graph>.

CONFERENCE
PRESENTATIONS

2024

- **Treuthardt, P.**, Tezbasaran, A., & Hewitt, I. *A New Line Clustering Method and Its Application to Spiral Graph Citizen Science Data*, American Astronomical Society Meeting 243, #258.17.

2023

- **Treuthardt, P.** & Hewitt, I. *Spiral Graph: Pitch Angle Measurements of Spiral Galaxies from Data Collected by Citizen Scientists*, American Astronomical Society Meeting 241, #279.03.

2022

- **Treuthardt, P.** & Hewitt, I. *Spiral Graph: Pitch Angle Measurements of Spiral Galaxies from Data Collected by Citizen Scientists*, IAU General Assembly, Meeting #31.

2020

- **Treuthardt, P.**, Hewitt, I., & Scott, A. *Spiral Graph Citizen Science Data for Determining the Pitch Angles of Spiral Galaxies*, American Astronomical Society Meeting 235, #167.09.

2019

- **Treuthardt, P.**, Scott, A., & Hewitt, I. B. *Searching for Intermediate Mass Black Holes in Spiral Galaxies Using Pitch Angles Gathered by Citizen Scientists*, North Carolina Astronomers' Meeting 2019.
- **Treuthardt, P.**, Scott, A., & Hewitt, I. B. *Searching for Intermediate Mass Black Holes in Spiral Galaxies Using Pitch Angles Gathered by Citizen Scientists*, American Astronomical Society Meeting 234, #202.03.
- **Treuthardt, P.**, Scott, A., & Hewitt, I. *Searching for Intermediate Mass Black Holes in Spiral Galaxies Using Pitch Angles Gathered by Citizen Scientists*, Citizen Science Association Conference 2019.

2018

- Hewitt, I. & **Treuthardt, P.** *A Comparison of Galaxy Spiral Arm Pitch Angle Measurements Using Manual and Automated Techniques*, IAU General Assembly, Meeting #30.
- Hewitt, I. & **Treuthardt, P.** *A Comparison of Galaxy Spiral Arm Pitch Angle Measurements Using Manual and Automated Techniques*, American Astronomical Society Meeting 231, #248.04.

2017

- Seigar, M., Mutlu-Pakdil, B., Mangedarage, M., & **Treuthardt, P.** *The Nonbarred Double-Ringed Galaxy, PGC 1000714*, American Astronomical Society Meeting 229, #145.19.
- Mutlu-Pakdil, B., Seigar, M., Davis, B., **Treuthardt, P.**, & Berrier, J. *Testing SMBH scaling relations using cosmological simulations and optical/near-IR imaging data*, American Astronomical Society Meeting 229, #107.01.

2015

- **Treuthardt, P.**, & Grouchy, R. *A Further Examination of Manifold Theory*, IAU General Assembly, Meeting #29, id.2257756.

2014

- **Treuthardt, P.**, Beauchemin, R., & De Los Reyes, M. *The Dust Lane Curvature in a Sample of Galactic Bars*, American Astronomical Society Meeting 223, #453.12.
- Al-Baidhany, I., Seigar, M., **Treuthardt, P. M.**, Sierra, A., Davis, B. N., Kenefick, D., Kenefick, J. D., & Lacy, C. H. *A Study of Supermassive Black Holes and the Properties of Their Host Galaxies*, American Astronomical Society Meeting 223, #453.09.
- Sierra, A., Seigar, M., **Treuthardt, P. M.**, & Puerari, I. *Determination of Resonance Locations in Spiral Galaxies using Multi-band Photometry*, American Astronomical Society Meeting 223, #309.02.

2013

- **Treuthardt, P.**, Seigar, M. S., Salo, H., Kenefick, D., Kenefick, J., & Lacy, C. H. S. *NGC 3124: A Resonance Ring Disk Galaxy with a Skewed Bar*, Structure and Dynamics of Disk Galaxies.
- Sierra, A., Seigar, M. S., **Treuthardt, P.**, & Puerari, I. *Determination of Resonance Locations in NGC 4145 Using Multiband Photometry*, Structure and Dynamics of Disk Galaxies.

2012

- **Treuthardt, P. M.**, Seigar, M., Salo, H., Kenefick, D., Kenefick, J., & Lacy, C. H. S. *Dynamical Models Of NGC 3124: A Galaxy With An Apparent Counter-Winding Bar-Spiral Hybrid*, International Astronomical Union Special Session #3.
- **Treuthardt, P. M.**, Seigar, M., Salo, H., Kenefick, D., Kenefick, J., & Lacy, C. H. S. *Dynamical Models Of NGC 3124: A Galaxy With An Apparent Counter-Winding Bar-Spiral Hybrid*, American Astronomical Society Meeting 220, #433.02.
- Sierra, A., Seigar, M. S., **Treuthardt, P.**, Mears, T., & Puerari, I. *Determination of Resonance Locations in a Sample of Barred Spiral Galaxies*, American Astronomical Society Meeting 220, #433.04.
- Ahdulla Akhlite Al-Baidhany, I., Seigar, M. S., **Treuthardt, P.**, Kenefick, D., Kenefick, J., Lacy, C. H. S., & Davis, B. *A Comparison of Four Methods for Measuring Supermassive Black Hole Masses*, American Astronomical Society Meeting 220, #433.06.
- **Treuthardt, P.**, Seigar, M. S., Salo, H., Kenefick, D., Kenefick, J., & Lacy, C. H. S. *Dynamical Models of NGC 3124: A Galaxy with an Apparent Counter-Winding Bar-Spiral Hybrid*, Cyberinfrastructure Day at the University of Arkansas at Little Rock.
- **Treuthardt, P.**, Seigar, M. S., Salo, H., Kenefick, D., Kenefick, J., & Lacy, C. H. S. *Dynamical Models of NGC 3124: A Galaxy with an Apparent Counter-Winding Bar-Spiral Hybrid*, MidAmerican Regional Astrophysics Conference.

- Al-Baidhany, I., Seigar, M. S., **Treuthardt, P.**, Kennefick, D., Kennefick, J., Lacy, C. H. S., & Davis, B. *A Comparison of Methods for Measuring Supermassive Black Holes*, American Astronomical Society Meeting 219, #346.07.
- **Treuthardt, P.**, Seigar, M., Kennefick, D., Kennefick, J., & Lacy, C. H. S., *The Apparent Counter-Winding Bar-Spiral Hybrid of NGC 3124*, American Astronomical Society Meeting 219, #346.18.

2011

- **Treuthardt, P.**, Seigar, M., Sierra, A., Al-Baidhany, I., Salo, H., Kennefick, D., Kennefick, J., & Lacy, C. H. S., *On the Link Between Central Black Holes, Bar Dynamics, and Dark Matter Halos in Spiral Galaxies*, Galaxy Formation.
- **Treuthardt, P.**, Seigar, M. S., Sierra, A. D., & Al-Baidhany, I. *On the Link Between Central Black Holes, Bar Dynamics, and Dark Matter Halos in Spiral Galaxies*, MidAmerican Regional Astrophysics Conference.
- Sierra, A., Seigar, M. S., **Treuthardt, P.**, & Puerari, I. *Determination of Resonance Locations in Barred Spiral CGS Galaxies*, MidAmerican Regional Astrophysics Conference.
- Sierra, A., Seigar, M. S., **Treuthardt, P.**, & Puerari, I. *Determination of Resonance Locations in the Barred Spiral Galaxy, NGC 613*, American Astronomical Society Meeting 217, #246.15.
- Ahdulla Akhlite Al-Baidhany, I., Seigar, M. S., **Treuthardt, P.**, Davis, B., Kennefick, D., Kennefick, J., Lacy, C. H. S., & Bentz, M. *A Comparison of Two Independent Techniques for Measuring Supermassive Black Hole Masses*, American Astronomical Society Meeting 217, #246.09.

2010

- **Treuthardt, P.**, Seigar, M., & Salo, H. *Pattern Speed Estimates of Barred Galaxies from CINGS: A Connection Between Central Dark Halo Concentration and SMBH Mass?*, Dynamics and Evolution of Disc Galaxies.
- Seigar, M. S., Kennefick, D., Kennefick, J., Lacy, C. H. S., Berrier, J. C., **Treuthardt, P.**, Al-Baidhany, I. A., Barrows, R. S., Davis, B., Hughes, J. A., Schilling, A., Shields, D. W., & Sierra, A. D. *The Arkansas Galaxy Evolution Survey: Supermassive Black Holes in the Universe*, International Astronomical Union Symposium #267.

2008

- **Treuthardt, P.**, Buta, R., Salo, H., & Laurikainen, E., *The Kinematically Measured Pattern Speeds of NGC 2523 and NGC 4245*, A National Meeting of Finnish ESO Scientists and Students.

2007

- **Treuthardt, P. M.**, *The Kinematics and Dynamics of Three Resonance Ring Barred Spiral Galaxies*, American Astronomical Society Meeting 211, #69.05.

2006

- **Treuthardt, P.** & Buta, R., *The Kinematically Measured Pattern Speeds of NGC 2523 and NGC 4245*, International Astronomical Union Symposium #235.

2005

- **Treuthardt, P. M.**, Buta, R. J., & Salo, H., *A Dynamical Study of Resonances in Disk Galaxies*, American Astronomical Society Meeting 206, #13.04.

2001

- **Treuthardt, P.**, Keel, W. C., Holberg, J., & Steidel, C., *FUSE Spectra of Nearby Star-Forming Regions and Comparison to High-Redshift Galaxies*, American Astronomical Society Meeting 199, #55.03.

1999

- Buta, R., **Treuthardt, P.**, Crocker, D. A., & Byrd, G. G., *An HST Study of Star Formation in the Nuclear Ring of NGC 1326*, American Astronomical Society Meeting 195, #104.04.

POPULAR
PUBLICATIONS

2020

- **Treuthardt, P.**, Hewitt, I. B., & Sharma, P., *The Fundamentals of Galaxies*, Online Learning Modules.

2017

- **Treuthardt, P.**, *The Great American Eclipse*, North Carolina Naturalist, Vol. 25, Num. 3, 9.
- **Treuthardt, P.**, *Introducing a New and Extremely Rare Galaxy*, North Carolina Naturalist, Vol. 25, Num. 1, 6.

2016

- **Treuthardt, P.**, *Topic of upcoming event: Searching for life beyond Earth*, The News & Observer, SciTech, (17 Jan).

2015

- **Treuthardt, P.**, *Inside NC Science: Ancient supernova shrouded in mystery*, The News & Observer, SciTech, (3 May).

2014

- **Treuthardt, P.**, *Black holes continue to fascinate masses*, The Charlotte Observer, SciTech, (14 Dec).

2013

- **Treuthardt, P.**, *A Spiral Galaxy with a Twist*, NatureSearch Newsletter, Issue 3.

SCIENCE
COMMUNICATION
ACTIVITIES

Present – 2013

- *Astronomy Days* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

2024

- *Lifelong Adventure: Solar Eclipse and the Wildlife of Texas* **Trip Co-Leader**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Skype-a-Scientist* **Speaker**
James River High School, Midlothian, Virginia

2023

- *Skype-a-Scientist* **Speaker**
Drakes Creek Middle School, Bowling Green, Kentucky
- *Skype-a-Scientist* **Speaker**
Central Bucks High School West, Doylestown, Pennsylvania
- *Teen Science Cafe: Our Neighbor, the Moon* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- Career Day **Speaker**
Guy B. Philips Middle School, Chapel Hill, North Carolina

2022

- *Our Neighbor, the Moon* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Skype-a-Scientist* **Speaker**
Midview High School, Grafton, Ohio
- *The Milky Way, Our Home Galaxy* **Speaker**
Grand Strand Amateur Astronomy Club, Myrtle Beach, South Carolina
- *The Milky Way, Our Home Galaxy* **Speaker**
Raleigh Astronomy Club, Raleigh, North Carolina
- *Biotech Summer Camp - Astronomy* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Skype-a-Scientist* **Speaker**
St. James Middle School, Myrtle Beach, South Carolina
- *Virtual Trivia Tuesday* **Co-Host**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *NCMNS Teen Science Cafe - Mysteries of the Milky Way* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

2021

- *Skype-a-Scientist* **Speaker**
Toms River High School, Toms River, New Jersey
- *Black Holes and Astronomy Q&A* **Speaker**
Horton Middle School, Pittsboro, North Carolina
- *Atlas Ocean Voyages' December 4 Total Solar Eclipse Expedition* **Guest Lecturer**
World Navigator ship, Southern Ocean
- *Coding in the Natural World* **Interview**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Skype-a-Scientist* **Speaker**
Ledyard Middle School, Gales Ferry, Connecticut
- *Carolina Association of Planetarium Educators meeting* **Speaker**
North Carolina Museum of Natural Sciences, Greenville, North Carolina
- *Coding in the Natural World* **Interview**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Teen Science Cafe* **Speaker**
North Carolina Museum of Natural Sciences, Greenville, North Carolina
- *NASA Night Sky Network Webinar* **Speaker**
nightsky.jpl.nasa.gov, U.S.A.
- *Professional Previews* **Interview**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *The Milky Way* **Speaker**
Charlotte Amateur Astronomers Club, Charlotte, North Carolina
- *Skype-a-Scientist* **Speaker**
Sneed Middle School, Florence, South Carolina
- *Citizen Science: Stories of Science We Can All Do Together* **Interview**
SciStarter.org, Tempe, Arizona
- *Spiral Graph* **Speaker**
Marin Academy Research Collaborative, San Rafael, California
- *Skype-a-Scientist* **Speaker**
Centralia Middle School, Centralia, Washington

- *Make It Count Monday* Interview
North Carolina State University, Raleigh, North Carolina
 - The Moon Q&A Speaker
Horton Middle School, Pittsboro, North Carolina
 - *Citizen Scientists Help Find Rare Black Holes* Speaker
Supercluster.com, New York, New York
 - *Skype-a-Scientist* Speaker
Bel Air High School, Bel Air, Maryland
- 2020
- CBS 17 News Interview
Raleigh, North Carolina
 - *Skype-a-Scientist* Speaker
Pacific Crest Middle School, Bend, Oregon
 - *Spiral Graph: A Citizen Science Project with a Twist* Speaker
Grand Strand Amateur Astronomy Club, Myrtle Beach, South Carolina
 - *SkySimplified* podcast Interview
SkySimplified.com, Raleigh, North Carolina
 - *Updates from Spiral Graph, the Astronomy Citizen Science project with a Twist* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *Into the Zooniverse, Volume 2* Interview
Adler Planetarium, Chicago, Illinois
 - *From Science Fiction to Science Fact* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *World Science Academy Citizen Science Summer 2020* Speaker
World Science Festival, New York, New York
 - *Celebrating the Hubble Space Telescope's 30th Anniversary* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *Citizen Science while Stargazing with Astronomy Mag and SciStarter* Speaker
SciStarter.org, Tempe, Arizona
 - *Can You Help Us Study Spiral Galaxies?* Interview
Supercluster.com, New York, New York
 - *Spiral Graph: A Citizen Science Project with a Twist* Speaker
The Triad Starfest, Jamestown, North Carolina
 - *Shedding Some Light on Black Holes* Speaker
Rotary Club of Raleigh, Raleigh, North Carolina
 - Solar observing (2020 – 2013) Host
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *Searching for Intermediate Mass Black Holes in Spiral Galaxies with the Help of Citizen Scientists* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- 2019
- *Teen Science Cafe: Ask an Astronomer* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *Finally Friday: Mars Attacks!* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - *Press Briefing: Searching for Intermediate Mass Black Holes in Spiral Galaxies with Citizen Scientists* Speaker
American Astronomical Society Meeting 234, St. Louis, Missouri

- *Astronomers Need a (Steady) Hand Tracing Spiral Galaxies to Find Black Holes* Interview
Space.com, New York, New York
- *Scientists ask the public to help search for a rare breed of black hole* Interview
Astronomy.com, Waukesha, Wisconsin
- *Scientists ask the public to help search for a rare breed of black hole* Interview
InsideScience.org, College Park, Maryland
- *Searching for Intermediate Mass Black Holes in Spiral Galaxies with the Help of Citizen Scientists* Speaker
Raleigh Astronomy Club, Raleigh, North Carolina
- *Black Holes* Speaker
Rotary Club of the Capital City, Raleigh, North Carolina
- *Live From the International Space Station Viewing Party* Panel Member
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Solar Observing: Transit of Mercury* Host
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Finally Friday: Bill & Ted's Excellent Adventure* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Astronomical photobombs and the trouble with SpaceX's Starlink* Interview
NewAtlas.com
- *Searching for Intermediate Mass Black Holes in Spiral Galaxies with Citizen Scientists* Speaker
North Carolina Astronomers' Meeting, Jamestown, North Carolina

2018

- *Finally Friday: Star Trek II: The Wrath of Khan* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *The Milky Way - Our Home Galaxy* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *The Milky Way* Speaker
North Carolina State University – iMOM, Raleigh, North Carolina
- *SciChat: Galaxies* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

2017

- *Teen Science Cafe: Getting Serious about the Sun* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Galaxy Presentation* Speaker
Holly Springs High School, Holly Springs, North Carolina
- *Wrap-Up: The Great American Eclipse* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Lifelong Adventure: Solar Eclipse Adventure* Trip Co-Leader
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Eclipse Presentation* Speaker
Atria Southpoint Walk, Durham, North Carolina
- *Careers in Astronomy* Speaker
Clayton Middle School, Clayton, North Carolina
- *Astronomy on Tap Triangle* Speaker
Fullsteam Brewery, Durham, North Carolina
- *International Sun-Day (2017 – 2013)* Speaker
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

- Facebook Live: TRAPPIST-1 Discussion **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *Discovering a New Galaxy* **Interview**
UNC-TV, Research Triangle Park, North Carolina
- Discovery of PGC 1000714 **Speaker**
Univ. of Denver - Ricks Center for Gifted Children, Denver, Colorado
- *Burcin's Galaxy, The Universe And Sort-Of Time Travel* **Interview**
SciWorks Radio, Winston-Salem, North Carolina
- *NC Astrophysicist Helps Find New Type of Galaxy* **Interview**
WFAE, Charlotte, North Carolina
- *Ultra-rare galaxy could be 'one of a kind'* **Interview**
CNN, Atlanta, Georgia
- *The Arlene Bynon Show* **Interview**
SiriusXM's *Canada Talks*, Toronto, Canada
- *PGC 1000714: The rare galaxy 'nobody has ever seen before'* **Interview**
CTV's *Your Morning*, Toronto, Canada
- *Explained by the Author: Burcin's Galaxy* **Presenter**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

2016

- *Science Cafe: Star Trek: The Golden Anniversary* **Panelist**
The Daily Planet Cafe, Raleigh, North Carolina
- *Raleigh event will celebrate 50th anniversary of Star Trek* **Interview**
The News & Observer, Raleigh, North Carolina
- *Ask a Scientist: How do black holes make ripples in space?* **Interview**
The News & Observer, Raleigh, North Carolina
- *Science Cafe: The Sun: Common and Uncommon Events* **Speaker**
The Daily Planet Cafe, Raleigh, North Carolina
- *Careers in Astronomy* **Panelist**
Cary Academy, Cary, North Carolina
- *Science in the Movies: Space on the Silver Screen* **Panelist**
North Carolina State University
- *Life in the Universe* **Speaker**
Rotary Club of the Capital City, Raleigh, North Carolina
- *The Science of The Martian* **Panelist**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina

2015

- *Neutrino Day* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- WRAL-TV **Interview**
Raleigh, North Carolina
- Astronomy Club **Speaker**
Raleigh Charter High School, Raleigh, North Carolina
- Science Seminar **Speaker**
Durham Technical Community College, Durham, North Carolina

- 2014
- *Science Cafe* **Speaker**
The Daily Planet Cafe, Raleigh, North Carolina
 - *Mystery Roach* (radio program) **Guest**
WKNC, Raleigh, North Carolina
 - *Bring Your Child to Work Day* **Speaker**
Siemens, Cary, North Carolina
 - *STEM Expo* **Presenter**
Appalachian State University, Boone, North Carolina
- 2013
- *Astronomy* **Speaker**
Fred A. Olds Elementary School, Raleigh, North Carolina
 - *International Observe the Moon Night* **Speaker**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
 - Colloquium for Astronomy Department **Speaker**
North Carolina State University, Raleigh, North Carolina
 - Colloquium for Astronomy Department **Speaker**
University of North Carolina, Chapel Hill, North Carolina
 - Non-Traditional Career Paths for Physics Graduate Students **Speaker**
University of North Carolina, Chapel Hill, North Carolina
- 2012
- *Young Adult Summer Program* **Speaker**
Roosevelt Thompson Library, Little Rock, Arkansas
 - *Central Arkansas Regional Science and Engineering Fair* **Judge**
University of Arkansas at Little Rock, Little Rock, Arkansas
- 2010
- Society of Physics Students **Speaker**
University of Arkansas at Little Rock, Little Rock, Arkansas
- 2008
- Colloquium for Astronomy Division, Dept. of Physical Sciences **Speaker**
University of Oulu, Oulu, Finland
 - Colloquium for Astronomy Department **Speaker**
University of Alabama, Tuscaloosa, Alabama
- 2005
- *Astronomy* **Speaker**
Rock Quarry Elementary School, Tuscaloosa, Alabama

RESEARCH
EXPERIENCE

-
- Present – 2013 **Assistant Head, Astronomy & Astrophysics Research Lab**
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- Conduct ongoing research into the morphology and dynamics of disk galaxies.
 - Led the development of *Spiral Graph*, an online citizen science project dedicated to measuring the pitch angle of spiral arms in galaxies.
- 2013 – 2012 **Visiting Research Associate**
University of Arkansas at Little Rock, Little Rock, Arkansas

- Investigated the skewness of galaxy bars through simulation modeling in conjunction with photometric and kinematic data.

2012 – 2009

Postdoctoral Research Fellow

Supervised by Associate Dean, Marc S. Seigar

University of Arkansas at Little Rock, Little Rock, Arkansas

Secondary Affiliation: Arkansas Center for Space and Planetary Sciences

University of Arkansas, Fayetteville, Arkansas

- Developed detailed numerical models of the gaseous and stellar components of an unusual barred spiral galaxy.
- Developed numerical models of the gaseous component of 40 barred spiral galaxies in order to compare observational and theoretical parameters.
- Collaborated in the development of a pipeline script to process and analyze digital multi-waveband images of galaxies.

2008

Visiting Researcher

Supervised by Professor Heikki Salo

University of Oulu, Oulu, Finland

- Collaborated in the development of numerical models of the gaseous and stellar components of 23 barred spiral galaxies in order to compare observational and theoretical parameters.

2007 – 1999

Graduate Research Assistant

University of Alabama, Tuscaloosa, Alabama

- Processed and analyzed digital 1D stellar spectra.
- Processed and analyzed digital near-infrared images of galaxies.
- Used digital images and 2D spectra of galaxies, in conjunction with a sophisticated numerical simulation code, to compare observational and theoretical parameters.
- Developed IDL software for analysis of images, spectra, and simulation models.
- Analyzed digital images and spectra of nearby starburst galaxies to determine the source of escaping Lyman- α radiation.
- Processed and analyzed digital images of galaxies to derive structural parameters for a statistical study.

2007, 2003, 2002

Visiting Student

University of Oulu, Oulu, Finland

- Collaborated in the development of numerical models of the gaseous and stellar components of two ringed barred spiral galaxies in order to compare observational and theoretical parameters.
- Collaborated in the development of custom IDL software for analysis of galaxy simulation results and comparison with observed morphology and kinematics.
- Trained in the use of a proprietary Fortran numerical simulation program to model the gaseous and stellar components of spiral galaxies in order to compare observational and theoretical parameters.

2006, 2004

Visiting Observer

Kitt Peak National Observatory, Tucson, Arizona

- 2006: Granted 2 nights of observing time by NOAO and obtained long slit spectra of 2 galaxies using the Ritchey-Chretien Focus Spectrograph on the 4 meter telescope.
- 2004: Granted 3 nights of observing time by NOAO and obtained near-infrared images of

9 galaxies using the FLAMINGOS instrument on the 2.1 meter telescope.

2004 **Visiting Observer**
Observatoire de Haute-Provence, St. Michel l'Observatoire, France

- Granted 4 nights of observing time by the Institut National des Sciences de l'Univers and obtained 2D spectra of 6 galaxies using a Fabry-Perot interferometer on the 1.93 meter telescope.

TEACHING
EXPERIENCE

2024, 2021, 2020, 2013 **Guest Lecturer**
Appalachian State University, Boone, North Carolina

- Developed and presented lectures for an undergraduate level astrobiology classes.

2022, 2019 – 2015 **Instructor**
Osher Lifelong Learning Institute – NCSU, Raleigh, North Carolina

- Developed lectures and taught adult education classes on various topics in astronomy.

2015 – 2010 **Part-Time Lecturer**
University of Arkansas at Little Rock, Little Rock, Arkansas

- Instructor for a classroom-based and online *Introduction to Astronomy* lecture.
- Instructor for an online *Introduction to Astronomy* laboratory

2014 **Temporary Instructor**
North Carolina State University, Raleigh, North Carolina

- Developed and administered an upper level undergraduate astrophysics course titled *Stars and Galaxies*.

2013 – 2010 **Affiliate Graduate Faculty**
University of Arkansas at Little Rock, Little Rock, Arkansas

- Member of Dissertation Examination Committees for two Astronomy graduate students.
- Substitute instructor for the graduate/senior-undergraduate level *Classical Mechanics* course.

2012 – 2009 **Graduate Student Mentor**
University of Arkansas at Little Rock, Little Rock, Arkansas

- Assisted with instructing, overseeing, and directing the dissertation research of two Astronomy graduate students.

2008 **Intern**
University of Alabama, Tuscaloosa, Alabama

- Responsible for grading assignments and exams for the graduate/senior-undergraduate level *Theoretical Astrophysics* course.
- Responsible for grading assignment for the undergraduate level *Astronomy Beyond the Solar System* course.

2005 – 1998 **Graduate Teaching Assistant**
University of Alabama, Tuscaloosa, Alabama

- Instructor for a classroom-based *Introduction to Astronomy* laboratory.

GRANTS AND
AWARDS

2022
• *International Travel Grant*
American Astronomical Society

2019

- *FAMOUS* Travel Grant
American Astronomical Society

2018

- *State of North Carolina Internship Program* funding
NC Council for Women & Youth Involvement
- *International Travel Grant*
American Astronomical Society

2015

- *International Travel Grant*
American Astronomical Society

2013

- *State of North Carolina Internship Program* funding
NC Council for Women & Youth Involvement

2012

- *International Travel Grant*
American Astronomical Society

2011

- *International Travel Grant*
American Astronomical Society

2006

- 2 nights, RC Spectrograph, 4-meter telescope
Kitt Peak National Observatory

2005

- *Outstanding Teaching by a Graduate Student*
University of Alabama

2004

- 3 nights, FLAMINGOS, 2.1-meter telescope
Kitt Peak National Observatory
- 4 nights, Fabry-Perot interferometer, 1.9-m telescope
Observatoire de Haute-Provence
- *Conference and Research Fund*
University of Alabama

2003

- *Conference and Research Fund*
University of Alabama

1996 – 1998

- *Competitive Scholarship*
New Mexico Institute of Mining and Technology
-

SERVICE

Ongoing	<ul style="list-style-type: none"> • <i>Astronomy and Astrophysics</i> • <i>Astronomy and Computing</i> • <i>Monthly Notices of Royal Astronomical Society</i> • Various undergraduate students • Various Astronomy & Astrophysics Research Lab volunteers/interns 	<p>Manuscript Referee</p> <p>Manuscript Referee</p> <p>Manuscript Referee</p> <p>Mentor</p> <p>Supervisor</p>
2021	<ul style="list-style-type: none"> • NASA Teams Engaging Affiliated Museums and Informal Institutions 	<p>Proposal Reviewer</p>
2020	<ul style="list-style-type: none"> • <i>National High School Journal of Science</i> • NC Space Grant Graduate Research Fellowship Program 	<p>Manuscript Referee</p> <p>Proposal Reviewer</p>
2019	<ul style="list-style-type: none"> • NC Space Grant Graduate Research Fellowship Program 	<p>Proposal Reviewer</p>
2018	<ul style="list-style-type: none"> • NASA Postdoctoral Program • Western Governors University 	<p>Review Panelist</p> <p>Astronomy Exam Beta Tester</p>
2017	<ul style="list-style-type: none"> • NASA Postdoctoral Program • Western Governors University 	<p>Review Panelist</p> <p>Astronomy Exam Beta Tester</p>
2014	<ul style="list-style-type: none"> • NASA Astrophysical Data Analysis Program • Department of Physics & Astronomy University of Arkansas at Little Rock • Department of Physics & Astronomy University of Arkansas at Little Rock 	<p>Proposal Reviewer</p> <p>Dissertation Committee Member (Amber Sierra)</p> <p>Dissertation Committee Member (Ismaeel Al-Baidhany)</p>
2013	<ul style="list-style-type: none"> • <i>Structure and Dynamics of Disk Galaxies</i> Petit Jean Mountain, Arkansas • <i>Structure and Dynamics of Disk Galaxies</i> Petit Jean Mountain, Arkansas 	<p>Sci. Organizing Committee Member</p> <p>Session Chair</p>
2012	<ul style="list-style-type: none"> • <i>Galaxy Evolution Through Secular Processes</i> session 10 IAU XXVIII General Assembly • <i>20th Annual Arkansas Space Grant Consortium Symposium</i> Morrilton, Arkansas 	<p>IAU SpS3 Chair</p> <p>Session Chair</p>
2010	<ul style="list-style-type: none"> • <i>94th Annual Meeting of The Arkansas Academy of Science</i> Little Rock, Arkansas • <i>94th Annual Meeting of The Arkansas Academy of Science</i> Little Rock, Arkansas 	<p>Session Chair</p> <p>Presentation Judge</p>

SPECIAL SKILLS Proficient

- Emacs
- German language
- Git/GitHub
- HTML
- IDL
- IRAF
- Keynote
- LaTeX
- Linux OS
- Mac OS
- Microsoft Office Suite
- OpenOffice Suite
- Public speaking
- Python (Pandas, Matplotlib)
- Teaching
- Visual Studio Code
- Windows OS

Experienced

- C/C++
- LabVIEW
- Pascal
- Unix shell scripting
- Use of large telescopes and supporting software for near-IR imaging and both 1D and 2D spectroscopy
- Writing competitive proposals for telescope observing time