

## Patrick M. Treuthardt, Ph.D.

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| CONTACT INFORMATION   | North Carolina Museum of Natural Sciences<br>11 West Jones Street<br>Raleigh, NC 27601, U.S.A.                                    | <i>Phone:</i> (+1) 919 707 9278<br><i>E-mail:</i> <a href="mailto:patrick.treuthardt@naturalsciences.org">patrick.treuthardt@naturalsciences.org</a><br><i>Website:</i> <a href="http://treuthardt.github.io">treuthardt.github.io</a> |
| EDUCATION             | 2007  | <b>Ph.D., Physics with Astronomy specialization</b><br>Supervised by Professor Ronald J. Buta<br>University of Alabama, Tuscaloosa, Alabama  |
|                       | 2000  | <b>M.S., Physics with Astronomy specialization</b><br>University of Alabama, Tuscaloosa, Alabama   |
|                       | 1998  | <b>B.S., Physics with an option in Astrophysics</b> , awarded with Honors<br>New Mexico Institute of Mining and Technology, Socorro, New Mexico  |
|                       | 1996  | <b>A.G.S.</b> , awarded Magna Cum Laude<br>Macomb Community College, Clinton Township, Michigan  |
| SUMMARIZED EXPERIENCE | <hr/>   |  |
|                       | North Carolina Museum of Natural Sciences, Raleigh, North Carolina<br>Present – 2013  | <b>Assistant Head, Astronomy &amp; Astrophysics Research Lab</b>   |
|                       | Atlas Ocean Voyages, Fort Lauderdale, Florida<br>2021   | <b>Guest Lecturer</b>  |
|                       | Appalachian State University, Boone, North Carolina<br>2021, 2020, 2013   | <b>Guest Lecturer</b>  |
|                       | Osher Lifelong Learning Institute – NCSU, Raleigh, North Carolina<br>2019 – 2015  | <b>Instructor</b>  |
|                       | University of Arkansas at Little Rock, Little Rock, Arkansas<br>2015 – 2010<br>2013 – 2010<br>2013 – 2012<br>2012 – 2009          | <b>Part-time Lecturer</b><br><b>Affiliate Graduate Faculty</b><br><b>Visiting Research Associate</b><br><b>Postdoctoral Research Fellow</b>  |
|                       | Secondary Affiliation: Arkansas Center for Space and Planetary Sciences,<br>University of Arkansas at Fayetteville<br>2012 – 2009 | <b>Graduate Student Mentor</b>   |
|                       | North Carolina State University, Raleigh, North Carolina<br>2014  | <b>Temporary Instructor</b>  |
|                       | University of Oulu, Oulu, Finland<br>2008<br>2007, 2003, 2002   | <b>Visiting Researcher</b><br><b>Visiting Student</b>  |
|                       | University of Alabama, Tuscaloosa, Alabama<br>2008<br>2007 – 1999<br>2005 – 1998  | <b>Intern</b><br><b>Graduate Research Assistant</b><br><b>Graduate Teaching Assistant</b>  |
|                       | Kitt Peak National Observatory, Tucson, Arizona<br>2006, 2004   | <b>Visiting Observer</b>   |
|                       | Observatoire de Haute-Provence, St. Michel l'Observatoire, France<br>2004   | <b>Visiting Observer</b>   |

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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., Kenefick, D., Kenefick, 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., Kenefick, D., Kenefick, 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.

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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.

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SOFTWARE

Present – 2019

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

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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>.

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CONFERENCE  
PRESENTATIONS

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., Kennefick, D., Kennefick, 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., Kennefick, D., Kennefick, 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., Kennefick, D., Kennefick, 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., Kennefick, D., Kennefick, 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.
- Ahdualla Akhlite Al-Baidhany, I., Seigar, M. S., **Treuthardt, P.**, Kennefick, D., Kennefick, 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., Kennefick, D., Kennefick, 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., Kennefick, D., Kennefick, 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

Present – 2013

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

2021

- NCMNS Teen Science Cafe - Mysteries of the Milky Way **Speaker**  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina
- *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* podcast  
SciStarter.org, Tempe, Arizona **Interview**
- *Spiral Graph*  
Marin Academy Research Collaborative, San Rafael, California **Speaker**
- *Skype-a-Scientist*  
Centralia Middle School, Centralia, Washington **Speaker**
- *Make It Count Monday*  
North Carolina State University, Raleigh, North Carolina **Interview**
- *The Moon Q&A*  
Horton Middle School, Pittsboro, North Carolina **Speaker**
- *Citizen Scientists Help Find Rare Black Holes*  
Supercluster.com, New York, New York **Speaker**
- *Skype-a-Scientist*  
Bel Air High School, Bel Air, Maryland **Speaker**

2020

- *CBS 17 News*  
Raleigh, North Carolina **Interview**
- *Skype-a-Scientist*  
Pacific Crest Middle School, Bend, Oregon **Speaker**
- *Spiral Graph: A Citizen Science Project with a Twist*  
Grand Strand Amateur Astronomy Club, Myrtle Beach, South Carolina **Speaker**
- *SkySimplified* podcast  
SkySimplified.com, Raleigh, North Carolina **Interview**
- *Updates from Spiral Graph,  
the Astronomy Citizen Science project with a Twist*  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina **Speaker**
- *Into the Zooniverse, Volume 2*  
Adler Planetarium, Chicago, Illinois **Interview**
- *From Science Fiction to Science Fact*  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina **Speaker**
- *World Science Academy Citizen Science Summer 2020*  
World Science Festival, New York, New York **Speaker**
- *Celebrating the Hubble Space Telescope's 30th Anniversary*  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina **Speaker**
- *Citizen Science while Stargazing with Astronomy Mag and SciStarter*  
SciStarter.org, Tempe, Arizona **Speaker**
- *Can You Help Us Study Spiral Galaxies?*  
Supercluster.com, New York, New York **Interview**
- *Spiral Graph: A Citizen Science Project with a Twist*  
The Triad Starfest, Jamestown, North Carolina **Speaker**
- *Shedding Some Light on Black Holes*  
Rotary Club of Raleigh, Raleigh, North Carolina **Speaker**
- *Solar observing (2020 – 2013)*  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina **Host**
- *Searching for Intermediate Mass Black Holes in Spiral Galaxies  
with the Help of Citizen Scientists*  
North Carolina Museum of Natural Sciences, Raleigh, North Carolina **Speaker**

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 Byron 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

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

## 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- $\alpha$  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

2021, 2020, 2013

#### Guest Lecturer

Appalachian State University, Boone, North Carolina

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

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

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

1998 – 1996

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

## SERVICE

|   |  |  |
|---|--|--|
| Ongoing   |  |  |
| • <i>Astronomy and Astrophysics</i>   |  | Manuscript Referee                                     |
| • <i>Astronomy and Computing</i>  |  | Manuscript Referee                                     |
| • <i>Monthly Notices of Royal Astronomical Society</i>  |  | Manuscript Referee                                     |
| • <i>National High School Journal of Science</i>  |  | Manuscript Referee                                     |
| • Various undergraduate students  |  | Mentor   |
| • Various Astronomy & Astrophysics Research Lab volunteers/interns                            |  | Supervisor   |
| 2021  |  |  |
| • NASA Teams Engaging Affiliated Museums and Informal Institutions                            |  | Proposal Reviewer                                      |
| 2020  |  |  |
| • NC Space Grant Graduate Research Fellowship Program   |  | Proposal Reviewer                                      |
| 2019  |  |  |
| • NC Space Grant Graduate Research Fellowship Program   |  | Proposal Reviewer                                      |
| 2018  |  |  |
| • NASA Postdoctoral Program   |  | Review Panelist  |
| • Western Governors University  |  | Astronomy Exam Beta Tester                             |
| 2017  |  |  |
| • NASA Postdoctoral Program   |  | Review Panelist  |
| • Western Governors University  |  | Astronomy Exam Beta Tester                             |
| 2014  |  |  |
| • NASA Astrophysical Data Analysis Program  |  | Proposal Reviewer                                      |
| • Department of Physics & Astronomy<br>University of Arkansas at Little Rock                  |  | Dissertation Committee Member<br>(Amber Sierra)        |
| • Department of Physics & Astronomy<br>University of Arkansas at Little Rock                  |  | Dissertation Committee Member<br>(Ismaeel Al-Baidhany) |
| 2013  |  |  |
| • <i>Structure and Dynamics of Disk Galaxies</i><br>Petit Jean Mountain, Arkansas             |  | Sci. Organizing Committee Member                       |
| • <i>Structure and Dynamics of Disk Galaxies</i><br>Petit Jean Mountain, Arkansas             |  | Session Chair  |
| 2012  |  |  |
| • <i>Galaxy Evolution Through Secular Processes</i> session 10<br>IAU XXVIII General Assembly |  | IAU SpS3 Chair   |
| • <i>20th Annual Arkansas Space Grant Consortium Symposium</i><br>Morrilton, Arkansas         |  | Session Chair  |
| 2010  |  |  |
| • <i>94th Annual Meeting of The Arkansas Academy of Science</i><br>Little Rock, Arkansas      |  | Session Chair  |
| • <i>94th Annual Meeting of The Arkansas Academy of Science</i><br>Little Rock, Arkansas      |  | Presentation Judge                                     |



## SPECIAL SKILLS

### Proficient

- Atom
- Emacs
- German language
- Git/GitHub
- HTML
- IDL
- IRAF
- Keynote
- LaTeX
- Linux OS
- Mac OS
- Microsoft Office Suite
- OpenOffice Suite
- Public speaking
- Python
- Teaching
- 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