AHMED SHABAN

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EDUCATION

- **Ph.D in Physics** *Aug. 2018 - August 2024 (Expected)*
  North Carolina State University
  Advisor: Dr. Rongmon Bordoloi
- **Master of Science in Physics** *Aug. 2018 - Dec. 2020*
  North Carolina State University
- **Bachelor of Science** *Sept. 2014 - June 2018*
  Major: Physics of the Earth and Universe. **Concentration**: Astrophysics
  University of Science and Technology at Zewail City of Science and Technology, Egypt.
  Honors: Cum Laude.

PROFESSIONAL EXPERIENCE

- **Research Assistant, Department of Physics, NC State University** *May 2019 - Present*
  I am currently doing my PhD in observational astrophysics. I use physics, astrophysics, statistics, and data science to study the galaxies at the early universe using the phenomenon of gravitational lensing and the technology of integral field spectroscopy. I analyze 1D, 2D, and 3D data products from observations taken from world class ground-based telescopes (e.g.: the Keck Telescope in Hawaii, USA and the Very Large Telescope in Chile) and space-based telescopes (e.g.: Hubble Space Telescope).

TEACHING

Department of Physics, NC State University

- Teaching Assistant & guest lecturer for PY124 (Solar system Astronomy; 110 Students). *Fall 2022*
- Training students on how to use Telescopes in PY452 (Senior Physics Lab). *Fall 2021& 2022*
- Teaching Assistant for PY101 curriculum development. *Summer 2022*
- Teaching Assistant for PY543 (Graduate Astrophysics) *Spring 2022*
- Instructor for PY 209 (E&M Lab; total: 152 Students). *Spring 2019 & Fall 2021*
- Tutor at the Physics Tutorial Center (PTC). *Spring 2019*
- Online tutor for PY208 (E&M for Engineers and Scientists). *Fall 2018*

Zewail City of Science & Technology, Egypt

- Teaching Assistant for PEU 331 (Stellar Structure & Evolution) *Spring 2018*

OBSERVING

- **Keck Cosmic Web Imager (*KCWI*), Keck Telescope:** 6 nights
- **Echellette Spectrograph & Imager (ESI), Keck Telescope:** 0.5 night

OBSERVING PROPOSALS CO-INVESTIGATOR

- "*Spatially Resolved CGM metallicity maps at z>2*", PI: R. Bordoloi, ID: 25/2024A_N110, Total Time: 2 nights

MENTORING

- Ayesha Darekar: Undergraduate student. *Jan. 2021 - Present*
  I am co-advising Ayesha with Dr. Rongmon Bordoloi for her undergraduate research project. She studies the absorbing system in the foreground of a gravitationally lensed quasar systems using KCWI.

AWARDS/SCHOLARSHIPS

- **Graduate School Summer Fellowship**: NC State University, 2500$. *June 2022*
- **Merit-Based Scholarship** for my undergraduate studies at University of Science and Technology at Zewail City, Egypt. *Sept. 2014 - June 2018*

SERVICE AND PUBLIC OUTREACH

- Co-organizer of the weekly Astrophysics journal club, NC State University. *2019- present*
- Volunteer at the astronomy days event at NC Museum of Natural Sciences. *Jan. 2023*
- Organizing a star gazing event in Oak island with the Egyptian students at NC State. *Sept. 2022*
- Organizing an event to observe the 2019 Transit of Mercury at NC State Unviersity. *Nov. 2019*

TECHNICAL SKILLS

- **Programming:** Python, Matlab, R, and SQL.
- **Symbolic Programming:** Mathematica.
- **Operating Systems:** Linux and Windows.
- **Astrophysics Softwares:** DS9, QFitsView, and Astropy.

INVITED TALKS

- *"Dissecting a 30 kpc Galactic Outflow"*, Invited Talk at the Astrocoffee Journal Club at the Johns Hopkins University, Baltimore, Maryland, on October 30, 2023.
- *"Spatially Resolving Galactic Outflows and the CGM using Gravitational Lensing"*, Invited Talk at the Low Density Universe Subgroup at the Space Telescope Science Institute (STScI), Baltimore, Maryland, on October 30, 2023.
- *"Cosmic Lens on Galactic Winds"*, Invited Talk at the Galaxies and AGN Journal Club at the Space Telescope Science Institute (STScI), Baltimore, Maryland, on October 31, 2023.

CONFERENCE TALKS & POSTERS

- **Shaban, A.** 2023, "**Spatially Resolved Galactic Outflow at z ∼ 2 Using Gravitational Lensing**". Talk+Poster. In *'Oases in the Cosmic Desert: Understanding the Circumgalactic Medium'* conference, Arizona State University.

- **Shaban, A.**, Bordoloi, R. and O'Meara, J., 2023, January. "**Small Scale Variation of Circumgalactic Medium Using Gravitational Lensing Tomography**". American Astronomical Society Meeting #241, id. 327.01. Bulletin of the American Astronomical Society, Vol. 55, No. 2 e-id 2023n2i327p01
- **Shaban, A.** and Bordoloi, R., 2020, June. "**A Spatially Resolved Study of Galactic Outflows in a Gravitationally Lensed Galaxy**". In *American Astronomical Society Meeting Abstracts# 236* (Vol. 236, pp. 307-01).

LIST OF PUBLICATIONS

First Author Publications:

1. **Ahmed Shaban**, Rongmon Bordoloi, John M. O'Meara, et al., **Small Scale Variation of the Circumgalactic Medium using Gravitational Lensing Tomography**, *in preparation*.
2. **Ahmed Shaban**, Rongmon Bordoloi, John Chisholm, et al., **Dissecting a 30 kpc Galactic Outflow at z ∼ 1.7**, *Monthly Notices of the Royal Astronomical Society (MNRAS)*, (2023), 526 (4), 6297.
3. **Ahmed Shaban**, Rongmon Bordoloi, John Chisholm, et al., **A 30 kpc Spatially Extended Clumpy and Asymmetric Galactic Outflow at z ∼ 1.7**, *The Astrophysical Journal*, (2022): 936 (1), 77.

Co-Author Publications:

1. Ayesha Darekar, **Ahmed Shaban**, Rongmon Bordoloi, John M. O'Meara, et al., **Probing the Circumgalactic Medium using Quadruply Lensed Background Quasar**, *in preparation*.
2. Naomi Giertych, **Ahmed Shaban**, Pragya Haravu, & Jonathan P Williams, **A Statistical Primer on Classical Period-Finding Techniques in Astronomy**, Submitted to *Reports on Progress in Physics*.
3. Rongmon Bordoloi, John M. O'Meara, Keren Sharon, Jane R. Rigby, Jeff Cooke, **Ahmed Shaban**, et al., **Resolving the H I in damped Lyman α systems that power star formation**, *Nature*, (2022): 606, pages 59-63 .