

Ahmed Shaban

Curriculum vitae

Postdoctoral Fellow, University of South Carolina

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ACADEMIC APPOINTMENTS

2025–present	Postdoctoral Fellow , University of South Carolina. Advisor: Prof. Varsha Kulkarni.
2025	Postdoctoral Research Scholar , North Carolina State University. Advisor: Prof. Rongmon Bordoloi.
2019–2024	Graduate Research Assistant , North Carolina State University.
2018–2022	Graduate Teaching Assistant , North Carolina State University.
2018	Teaching Assistant , Zewail City of Science and Technology, Egypt.

EDUCATION

2018–2024	Ph.D. in Physics , North Carolina State University. Thesis: <i>Spatially Resolved Galactic Outflows in Gravitationally Lensed Galaxies</i> . Advisor: Prof. Rongmon Bordoloi. Completed December 2024; degree conferred May 3, 2025.
2018–2020	M.S. in Physics , North Carolina State University.
2014–2018	B.Sc. in Physics , Zewail City of Science and Technology, Egypt. Concentration: Astrophysics.

OBSERVING PROGRAMS AND EXPERIENCE

2026B	PI, Gemini North / GNIRS — 20.4 hours awarded (Band 2). <i>Unveiling the Nature of Damped Lyα Host Galaxies: NIR Spectroscopy of Nebular Emission at $z \sim 2$.</i> Program GN-2026B-Q-222.
2024A	Co-investigator, NASA–Keck / KCWI — 2 nights awarded. <i>Spatially Resolved CGM Metallicity Maps at $z > 2$.</i> Program 25/2024A_N110. PI: Rongmon Bordoloi.
11 nights	W. M. Keck Observatory : KCWI, 10 nights; ESI, 1 night.

AWARDS AND FELLOWSHIPS

June 2022	Graduate School Summer Fellowship , North Carolina State University (\$2,500).
2014–2018	Merit-Based Undergraduate Scholarship , University of Science and Technology at Zewail City of Science and Technology, Egypt.

Refereed journal articles

- [J1] **A. Shaban**, R. Bordoloi, J. M. O'Meara, K. Sharon, N. Tejos, S. Lopez, C. Ledoux, L. F. Barrientos, and J. R. Rigby (2025). Spatially Resolved Circumgalactic Medium around a Star-forming Galaxy Driving a Galactic Outflow at $z \simeq 0.8$. *ApJ* 986, 190. DOI: [10.3847/1538-4357/add0b9](https://doi.org/10.3847/1538-4357/add0b9). arXiv: [2501.17940](https://arxiv.org/abs/2501.17940) [astro-ph.GA].
- [J2] N. Giertych, **A. Shaban**, P. Haravu, and J. P Williams (2024). A statistical primer on classical period-finding techniques in astronomy. *Reports on Progress in Physics* 87, 078401. DOI: [10.1088/1361-6633/ad4586](https://doi.org/10.1088/1361-6633/ad4586). arXiv: [2205.10417](https://arxiv.org/abs/2205.10417) [astro-ph.EP].
- [J3] **A. Shaban**, R. Bordoloi, J. Chisholm, J. R. Rigby, S. Sharma, K. Sharon, N. Tejos, M. B. Bayliss, L. F. Barrientos, S. Lopez, C. Ledoux, M. G. Gladders, and M. K. Florian (2023). Dissecting a 30 kpc galactic outflow at z 1.7. *MNRAS* 526, 6297–6320. DOI: [10.1093/mnras/stad3004](https://doi.org/10.1093/mnras/stad3004). arXiv: [2306.07328](https://arxiv.org/abs/2306.07328) [astro-ph.GA].
- [J4] **A. Shaban**, R. Bordoloi, J. Chisholm, S. Sharma, K. Sharon, J. R. Rigby, M. G. Gladders, M. B. Bayliss, L. F. Barrientos, S. Lopez, N. Tejos, C. Ledoux, and M. K. Florian (2022). A 30 kpc Spatially Extended Clumpy and Asymmetric Galactic Outflow at z 1.7. *ApJ* 936, 77. DOI: [10.3847/1538-4357/ac7c65](https://doi.org/10.3847/1538-4357/ac7c65). arXiv: [2109.13264](https://arxiv.org/abs/2109.13264) [astro-ph.GA].
- [J5] R. Bordoloi, J. M. O'Meara, K. Sharon, J. R. Rigby, J. Cooke, **A. Shaban**, M. Matuszewski, L. Rizzi, G. Doppmann, D. C. Martin, A. M. Moore, P. Morrissey, and J. D. Neill (2022). Resolving the H I in damped Lyman α systems that power star formation. *Nature* 606, 59–63. DOI: [10.1038/s41586-022-04616-1](https://doi.org/10.1038/s41586-022-04616-1). arXiv: [2205.08554](https://arxiv.org/abs/2205.08554) [astro-ph.GA].

Preprints and submitted manuscripts

- [P1] D. Flores, R. Bordoloi, J. Tumlinson, J. C. Howk, N. Lehner, M. Rickel, B. Oppenheimer, J. Burchett, **A. Shaban**, J. O'Meara, A. Fox, J. X. Prochaska, S. Xinlin Wu, J. Higginson, and R. A. Simcoe (2026). The GOLIATH Survey: OVI Absorption Reveals CGM Evolution through the Starburst-to-Quiescent Transition in Massive Galaxies. submitted to *ApJ*, arXiv: [2607.19473](https://arxiv.org/abs/2607.19473) (astro-ph.GA).

Conference abstracts and presentations

- [C1] **A. Shaban** (2026-09). KCWI Search for Ly-alpha Emission from Galaxies associated with DLAs at $z \sim 2-3$. *2026 Keck Science Meeting*.
- [C2] **A. Shaban** (2026). Probing Galactic Outflows and Damped Lyman-alpha Absorbers Host Galaxies using IFU Spectroscopy. *2026 Meeting of Astronomers of South Carolina*.
- [C3] **A. Shaban** (2025). Spatially Resolved Galactic Outflows and Circumgalactic Gas in Gravitationally Lensed Galaxies. *American Astronomical Society Meeting Abstracts* **246**, 314.04D.
- [C4] **A. Shaban** (2023). Spatially Resolved Galactic Outflow at $z \sim 2$ Using Gravitational Lensing. *Oases in the Cosmic Desert: Understanding the Structure of the Circumgalactic Medium*. Arizona State University.
- [C5] **A. Shaban**, R. Bordoloi, and J. O'Meara (2023). Small Scale Variation of Circumgalactic Medium Using Gravitational Lensing Tomography. *American Astronomical Society Meeting Abstracts* **241**, 327.01.
- [C6] A. Darekar, **A. Shaban**, R. Bordoloi, and J. O'Meara (2022). Probing the Circumgalactic Medium Using a Quadruply Lensed Quasar System. *American Astronomical Society Meeting Abstracts* **54**, 141.08.
- [C7] **A. Shaban** and R. Bordoloi (2020). A Spatially Resolved Study of Galactic Outflows in a Gravitationally Lensed Galaxy. *American Astronomical Society Meeting Abstracts* **236**, 307.01.

INVITED TALKS

- Feb. 2024 *Studying Galactic Winds via Gravitational Lensing.*
North Carolina State University, for visiting undergraduates from UNC–Pembroke; Raleigh, NC.
- Oct. 2023 *Cosmic Lens on Galactic Winds.*
Galaxies and AGN Journal Club, Space Telescope Science Institute; Baltimore, MD.
Dissecting a 30 kpc Galactic Outflow.
Astro-coffee Journal Club, Johns Hopkins University; Baltimore, MD.

Spatially Resolving Galactic Outflows and the CGM using Gravitational Lensing.

Low-Density Universe subgroup, Space Telescope Science Institute; Baltimore, MD.

Apr. 2023 *Spatially Resolving Galactic Outflow at High- z .*

Dr. Fabian Heitsch's group retreat, UNC-Chapel Hill; Durham, NC.

TEACHING EXPERIENCE

North Carolina State University

Fall 2022 Teaching assistant and guest lecturer, Solar System Astronomy (110 students).

Fall 2021, 2022 Telescope training, Senior Physics Laboratory.

Summer 2022 Teaching assistant, introductory physics curriculum development.

Spring 2022 Teaching assistant, graduate Astrophysics.

2019, 2021 Instructor, Electricity and Magnetism Laboratory (152 students total; Spring 2019 and Fall 2021).

Spring 2019 Tutor, Physics Tutorial Center.

Fall 2018 Online tutor, Electricity and Magnetism for Engineers and Scientists.

Zewail City of Science and Technology

Spring 2018 Teaching assistant, PEU 331: Stellar Structure and Evolution.

MENTORING

2025–2026 **Laila Ahmed**, undergraduate thesis project, University of Science and Technology at Zewail City of Science and Technology, Egypt.

2021–2024 **Ayesha Darekar**, undergraduate research project, North Carolina State University. Co-advised with Prof. Rongmon Bordoloi.

ACADEMIC SERVICE

2025–present Referee, *Monthly Notices of the Royal Astronomical Society*.

2019–2024 Co-organizer, weekly Astrophysics Journal Club, North Carolina State University.

PUBLIC OUTREACH

Oct. 2024 Co-organizer, stargazing event, North Carolina State University.

Feb. 2024 Juror, U.S. Invitational Young Physicists Tournament; Raleigh, NC.

Jan. 2023 Volunteer, Astronomy Days, North Carolina Museum of Natural Sciences.

Sept. 2022 Organizer, stargazing event in Oak Island with Egyptian students from North Carolina State University.

Nov. 2019 Organizer, Mercury transit observing event, North Carolina State University.

TECHNICAL SKILLS

Astronomy DS9, QFitsView, Astropy.

Programming Python (Astropy, Matplotlib, NumPy, SciPy, pandas, scikit-learn, TensorFlow, Keras); Mathematica, MATLAB, R, Java, Julia, SQL.

Systems Linux, macOS, Windows.

REFERENCES

Available upon request.