Isa Cox

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Education

2026 (expected)	Ph.D. Astrophysical Sciences and Technology (Rochester Institute of Technology; RIT)
2022	M.S. Astrophysical Sciences and Technology (RIT)
2020	B.S. Physics (Astronomy Minor, Honors program; RIT)

Research Projects

2023 - Ongoing | **Public CEERS Photometric Catalogue**

Research Mentor(s): Dr. Jeyhan Kartaltepe

- Leading the production of the official photometric catalogue for the CEERS collaberation (JWST ERS-1345). CEERS is a Cycle 1 GO JWST program observing 100 sq. arcmin. of EGS (a legacy CANDELS field).
- Constructing the catalogue which includes $>$ 80,000 galaxies, down to a 5σ catalogue depth of $\mathrm{mag_{AB}} = 28.5$.
- Measuring photometric redshifts for the sources in the catalogue.

Source Extractor | Python | IDL | GALFIT | LePhare | PSFEx

2021 - Ongoing | **Analysis of mass maps constructed with JWST data**

Research Mentor(s): Dr. Jeyhan Kartaltepe

- Building maps of the spatially resolved stellar mass using pixel-by-pixel spectral energy distribution (SED) fitting, for galaxies in JWST imaging from Cycle 1 JWST programs CEERS (PID: ERS-1345), NGDEEP (PID: GO-2079), and PRIMER (PID: GO-1837).
- Utilizing these mass maps for my dissertation work, which involes studying the mass assembly of a population of intermediate redshift galaxies, including quantifying the evolution of the size-mass relation.

Python | LePhare | High Performance Computing

2016 - 2022 | **Pipeline Development for Spectroscopic Data Reduction and Analysis**

Research Mentor(s): Dr. Jeyhan Kartaltepe

- Developed a pipeline to reduce spectroscopic data from the GMOS instrument on the two Gemini telescopes that were incompatible with existing reduction tools.
- Analyzed emission lines from these spectra for my Master's thesis in Summer 2022.
- Contributed redshifts from this project to a large legaxy spectroscopic archive for the COSMOS extragalactic field.
- *Some of this research was part of an NSF Research Experience for Undergraduates (REU) Summer 2018.*

Python | IRAF | MAGPHYS

Summer 2019 | **Comparing Scaling Relations between Simulations**

Research Mentor(s): Drs. Kate Whitaker, Kristian Finlator, Nina Bonaventura (DAWN Institute)

- Awarded an NSF REU to work with scientists at the DAWN Institute in Copenhagen, to compare the scaling relations of simulated high redshift galaxies from three cosmological simulations (IllustrisTNG, EAGLE, FirstLight).
- Presented this work at the 235th meeting of the American Astronomical Society.

Python | IllustrisTNG

2014 - 2016 | **Multi-wavelength Analysis of Brightest Cluster Galaxies**

Research Mentor(s): Drs. Stefi Baum, Chris O'Dea, Kevin Cooke (RIT)

- Analyzed spectroscopic and photometric data to compute star formation rates for a sample of Brightest Cluster Galaxies.

Python | IDL | IRAF | Fortran

Computing Experience

Programming Languages	Python (advanced proficiency), IDL, Fortran, C++ (limited), IRAF
Astroinformatics	Attendee of 2022 Penn State Summer School for Astroinformatics
Software Carpentry	Attendee of 2022 Code/Astro and served as a teaching assistant for 2024; experienced with Git
Computer Vision	Completed advanced projects for a graduate level CS Computer Vision course
High Performance Computing	Familiarity with HPC, including SLURM Job Scheduler

Honors

- Steven Wear Endowed Fund Recipient - $4,570 (RIT) 2025
- Queer Excellence in Science Student Award (RIT) 2023
- Steven Wear Endowed Fund Recipient - $5,000 (RIT) 2022
- Andy Langner Endowed Fund Recipient - $1,000 (RIT) 2020
- College of Science Research Scholar (RIT) 2020
- National Goldwater Nominee 2019
- Physics Achievement Award (RIT) 2018
- Computational Medal (RIT) 2015

Service and Outreach

- **Committee Member** (*AAS Sexual-Orientation and Gender Minorities Astronomers (SGMA)*): I was appointed to a three year term as a committee member for SGMA [July 2025 - present]
- **Crisis Responder and Training Facilitator** (*THRIVE Lifeline*): I am trained crisis responder and suicide interventionalist for a non-carceral crisis line started by marginalized indviduals in STEM. [Feb. 2023 - present]
- **Science pen pal** (*Letters for a Pre-Scientist*): I connect with a middle school pen pal around science and their future goals [Aug. 2023 - present].
- **Member of AAS Working Group for Astronomers with Disabilities** [2020 - present].
- **Presenter for featured exhibit** at Imagine RIT festival [Spring 2021].
- **Panelist on REU Bootcamp** presentation hosted by Women in Science at RIT [November 2018].
- **Member of Local Organizing Committee** for RIT Hosted Conference for Undergraduate Women In Physics (CUWiP) [Aug. 2017 - Jan. 2018].

Interests Beyond Research

- Science communication and outreach (particularly to under-represented communities)
- Accessibility and disability justice
- DEI Efforts
- LGBTQ+ inclusion in STEM
- Supporting and advocating for marginalized scientists

Presentations

- **Disability Justice and Accessibility in Astrophysics.** New Data that Challenge Underlying Assumptions in Early Galaxy Evolution (ChOIR collaboration) (Maine; July 2025).
- **Stellar Property Maps at Cosmic Noon using CEERS JWST Imaging.** 241th American Astronomical Meeting in Seattle, WA (Virtual presentation; January 2023).
- **Comparing the SFR- and Halo-Stellar Mass Relations of Three Cosmological Simulations at $z > 6$.** 235th American Astronomical Meeting in Honolulu, HI (January 2020).
- **Reduction and Analysis of GMOS Spectroscopy for Herschel Sources in CANDELS.** 233rd American Astronomical Meeting in Seattle, WA (January 2019).
- **Reduction and Analysis of GMOS Spectroscopy for Herschel Sources in CANDELS.** The Universe by the Light of CANDELS: Past

and Future at UMASS Amherst (October 2018).

- **Reduction and Analysis of GMOS Spectroscopy.** RIT Undergraduate Research Symposium (August 2018).
- **Brightest Cluster Galaxies Identified as Possibly Undergoing Star Formation.** RIT Undergraduate Research Symposium (August 2014).

Publications

First-author papers

- **CEERS Photometry Catalog.** Cox, I. G., et al. *In Prep.*
- **Using GMOS Spectroscopy to Study Star Formation and AGN in the CANDELS COSMOS and UDS Fields.** Cox, I. G., et al. *In Prep.*

Contributed-Author Papers

- **Clumpiness of galaxies revealed in the near-infrared with COSMOS-Web** Mercier, W., Kalita, S. B., Shuntov, M., et al., 2025, Submitted to A&A. https://arxiv.org/abs/2506.13881
- **CEERS Key Paper III: The Diversity of Galaxy Structure and Morphology at z=3-9 with JWST** Kartaltepe, J. S., Rose, C., Vanderhoof, B. N., et al., 2023, ApJL. https://arxiv.org/abs/2210.14713
- **COSMOS-Web: An Overview of the JWST Cosmic Origins Survey** Casey, C. M., Kartaltepe, J. S., Drakos, N. E., et al., 2022, ApJ. https://arxiv.org/abs/2211.07865
- **Investigating the Effect of Galaxy Interactions on Star Formation at 0.5<z<3.0.** Shah, E. A., Kartaltepe, J. S., Magagnoli, C. T., **Cox, I. G.**, et. al. 2022, ApJ. https://arxiv.org/abs/2209.15587
- **Investigating the Effect of Galaxy Interactions on AGN Enhancement at $0.5 < z < 3.0$.** Shah, E. A., Kartaltepe, J. S., Magagnoli, C. T., **Cox, I. G.**, et. al. 2020, ApJ. https://arxiv.org/abs/2010.02710
- **Star Formation in Intermediate Redshift $0.2 < z < 0.7$ Brightest Cluster Galaxies.** Cooke, K. C., O'Dea, C. P., Baum, S. A., Tremblay, G. R., **Cox, I. G.**, Gladders, M. D., 2016, ApJ. https://arxiv.org/abs/1610.05310

Co-Author Papers

- **COSMOS Spectroscopic Redshift Compilation (First Data Release): 165k Redshifts Encompassing Two Decades of Spectroscopy** Khostovan A., Kartaltepe J., Salvato M., et al., 2025, Submitted to arXiV. https://arxiv.org/abs/2503.00120
- **The Cosmic Evolution Early Release Science Survey (CEERS)** Finkelstein S., Bagley M., Arrabal Haro P., et al., 2025, Submitted to arXiV. https://arxiv.org/abs/2501.04085
- **The Next Generation Deep Extragalactic Exploratory Public Near-Infrared Slitless Survey Epoch 1 (NGDEEP-NISS1): Extra-Galactic Star-formation and Active Galactic Nuclei at $0.5 < z < 3.6$** Pirzkal, N., Rothberg B., Papovich C., et al., 2024, ApJ. https://arxiv.org/abs/2312.09972
- **A CEERS Discovery of an Accreting Supermassive Black Hole 570 Myr after the Big Bang: Identifying a Progenitor of Massive $z > 6$ Quasars** Larson, Rebecca L., Finkelstein, Steven F., Kocevski, Dale D., et al., 2023, ApJL. https://arxiv.org/abs/2303.08918
- **The Next Generation Deep Extragalactic Exploratory Public Near-Infrared Slitless Survey Epoch 1 (NGDEEP-NISS1): Extra-Galactic Star-formation and Active Galactic Nuclei at $0.5 < z < 3.6$** Pirzcal Nor, Rothberg, Barry, Papovich, Casey, et al., 2023, Submitted to arXiV. https://arxiv.org/abs/2312.09972
- **The Next Generation Deep Extragalactic Exploratory Public (NGDEEP) Survey** Bagley, Micaela B., Pirzkal, Nor, Finkelstein, Steven F., et al., 2023, ApJL. https://arxiv.org/abs/2302.05466
- **A Dusty Starburst Masquerading as an Ultra-High Redshift Galaxy in JWST CEERS Observations** Zavala, J. A., Buat, V., Casey, C. M., et al., 2022, ApJL. https://arxiv.org/abs/2207.12474
- **A Long Time Ago in a Galaxy Far, Far Away: A Candidate $z \sim 12$ Galaxy in Early JWST CEERS Imaging** Finklestein, S. L., Bagley, M. B., Haro, P. A., et al., 2022, ApJL. https://arxiv.org/abs/2207.12474