# KURT HAMBLIN

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## RESEARCH POSITIONS

**NASA FINNEST Fellow** August 2022 - Present
*University of Kansas* *Lawrence, KS*

- Developed `AGNBoost`, a novel method for AGN identification and redshift estimation with probabilistic machine learning.
- Analyze MIRI EGS Galaxy and AGN (MEGA) data to quantify the fraction of the universe's total star formation activity that occurs within AGN host galaxies: *Are star formation and black hole growth truly coeval?*

**Graduate Research Assistant** August 2019 - August 2022
*University of Kansas* *Lawrence, KS*

- Characterized the gas conditions in the vicinity of AGN using ALMA observations of nearby AGN.
- Used `PSFGAN` on HST/WFC3 images of AGN in the CANDELS EGS field, to remove the AGN point source and determine the primary location of dust obscuration in the galaxy.

**Undergraduate Physics REU** Summer 2018
*University of Hawaii Institute for Astronomy* *Honolulu, HI*

- Created Spectral Energy Distributions for luminous AGN in the Stripe 82X survey.
- Found that the luminous sources were well split into high and low luminosity bins, with strong mid-IR emissions from a dusty torus present in the majority of the sample.

**Undergraduate Physics REU** Summer 2017
*Yale Department of Astronomy* *New Haven, CT*

- Identified a sample of dusty quasars in the Stripe 82X survey.
- Constructed Spectral Energy Distributions and developed fits using `AGNfitter`, a Bayesian Markov chain Monte Carlo SED-fitting tool.

## EDUCATION

**PhD Physics Student**, University of Kansas August 2019 - Expected Spring 2026
**B.S. Physics**, University of Maryland, Baltimore County June 2019

## AWARDS AND RECOGNITIONS

- Student Presentation Prize award *(APS Prairie Section)* December 2023
- **NASA FINNEST**, *How Do Undetected AGN Affect Galaxy Evolution?* 2022
- University Graduate Fellowship *(University of Kansas)* 2019

## CONFERENCES AND WORKSHOPS ORGANIZED

- Introduction to Machine Learning Workshop *(Lawrence, KS)* Summer 2023 - 2025

## CONFERENCE TALKS AND POSTERS

### Conference Talks

- Santa Cruz Galaxy Workshop *(Santa Cruz, CA)* August 2025
  *MEGA Uncovers Faint AGN with Machine Learning*
- 246$^{\text{th}}$ American Astronomical Society Summer Session *(Anchorage, AK)* June 2025
  *AGNBoost: A Machine Learning Approach to AGN Identification with JWST/MIRI Colors and Photometry*
- Mid-American Regional Astrophysics Conference *(Lawrence, KS)* December 2024
  *AGNBoost: Leveraging Machine Learning and JWST for AGN Detection*
- CEERS Team Meeting *(San Lorenzo de El Escorial, Spain)* May 2024
  *AGN Identification and Photometric Redshift Estimation with Machine Learning*
- American Physical Society Prairie Section *(Columbia, MO)* December 2023
  *Identification of AGN in JWST with Machine Learning*
- Mid-American Regional Astrophysics Conference *(Atchison, KS)* November 2023
  *Utilizing Probabilistic Forecasting to Identify AGN in JWST*
- Mid-American Regional Astrophysics Conference *(Fayetteville, AR)* October 2022
  *How Much do AGN Host Galaxies Contribute to Cosmic Star Formation?*
- KU Astrophysics Seminar *(Lawrence, KS)* April 2022
  *How Much do AGN Host Galaxies Contribute to Cosmic Star Formation?*
- KU Astrophysics Seminar *(Lawrence, KS)* November 2021
  *Ensemble-Based Neural Networks*
- Physics and Astronomy Locally Organized Assembly *(Lawrence, KS)* February 2021
  *Black Hole Identification in James Webb Data with Ensemble Based Novelty Detection*
- KU Astrophysics Seminar *(Lawrence, KS)* November 2020
  *AGN Identification for JWST Data with Machine Learning*
- NASA Eyes, Kansas Minds *(Lawrence, KS)* November 2019
  *Luminous X-ray Selected AGN in Stripe 82X*

### Conference Posters

- 241st American Astronomical Society Winter Session *(Seattle, WA)* January 2023
  *Identification of AGN in JWST/MIRI with Machine Learning*
- 223rd American Astronomical Society Winter Session *(Seattle, WA)* January 2019
  *Luminous X-ray Selected AGN in Stripe 82X*

## PUBLICATIONS

1. **Hamblin, K.**; Kirkpatrick, A.; Backhaus, B. E.; et al. 2025, *AGNBoost: A Machine Learning Approach to AGN Identification with JWST/NIRCam+MIRI Colors and Photometry*, ApJ, under review
2. Backhaus, B. E.; Kirkpatrick, A.; Yang, G.; et al. *incl.* **Hamblin, K.** 2025, *MEGA Mass Assembly with JWST: The MIRI EGS Galaxy and AGN Survey*, arXiv: 2503.19078
3. Finkelstein, S. L.; and the CEERS collaboration, *incl.* **Hamblin, K.** 2022, *A Long Time Ago in a Galaxy Far, Far Away: A Candidate $z \sim 12$ Galaxy in Early JWST CEERS Imaging*, ApJ, 940, 55

## ACCEPTED PROPOSALS (CO-I)

1. Kirkpatrick, A.; Alberts, S.; Backhaus, B. E.; et al. *incl.* **Hamblin, K.** 2025, *MEGA Spectra: Black Hole Growth and ISM Conditions at Cosmic Noon*, JWST Proposal: Cycle 4, ID. #7957.
2. Kirkpatrick, A.; **Hamblin, K.**; Kartaltepe, J.; Kocevski D. D.; Trump, J. R. 2020,*Obscured CANDELS: Disentangling Obscuration around Supermassive Black Holes in the Distant Universe*, HST Proposal: Cycle 28, ID. #16137

## ADDITIONAL PROJECTS

**Stellar Cluster Project for ASTR 591** Fall 2019

Developed a library of code for students to use in their analysis of provided open clusters and globular clusters. Made use of object oriented programming to create an expandable code that can be easily adapted to future analyses if desired. Available on Github.