

JAKOB M. HELTON

jakobhelton@arizona.edu ◇ +1 (304) 360 0337

github.com/jakobhelton/ ◇ [jakobhelton.github.io](https://github.com/jakobhelton) ◇ [linkedin.com/in/jakobhelton/](https://www.linkedin.com/in/jakobhelton/)

CURRENT POSITION

A second-year graduate student at the University of Arizona pursuing a Ph.D. in astronomy, with research focused on understanding the formation and evolution of galaxies and galaxy clusters in the early Universe. Member of the James Webb Space Telescope (JWST) Advanced Deep Extragalactic Survey (JADES) and the Near-Infrared Camera (NIRCam) Science Team.

EDUCATION

University of Arizona

Degree: M.S. and Ph.D.

August 2021 - Present

Concentration: Astronomy

Princeton University

Degree: B.A.

September 2017 - May 2021

Concentration: Astrophysical Sciences

PUBLICATIONS

3. **J. M. Helton**, A. I. Zabludoff, K. D. French, et al., *The spatially resolved star formation histories of post-starburst galaxies in SDSS-IV MaNGA*, in preparation.
 - Selected anomalous sources within a large sample of galaxies using integral field spectroscopy.
 - Applied stellar population synthesis models to fit the star-formation histories of anomalous sources and estimated their physical parameters using Markov Chain Monte Carlo.
 - Discovered significant correlations of physical parameters for anomalous sources using non-linear least squares minimization, Spearman correlation analysis, and linear regression.
2. **J. M. Helton**, A. L. Strom, J. E. Greene, et al., *The nebular properties of star-forming galaxies at intermediate redshift from the Large Early Galaxy Astrophysics Census*, ApJ, in review.
 - Observed and reduced new spectroscopic data for galaxies with extensive ancillary data.
 - Utilized data augmentation and manipulation to create samples of galaxies with consistent physical conditions to properly compare these samples without worry of observational biases.
 - Determined significant temporal trends of physical parameters for galaxies using non-linear least squares minimization and Spearman correlation analysis.
1. **J. M. Helton**, S. D. Johnson, J. E. Greene, et al., *Discovery and origins of giant optical nebulae surrounding quasar PKS0454–22*, 2021, MNRAS, 505, 4.
 - Developed a tool for removing the visual artifacts produced by bright point sources within integral field spectroscopic data using non-negative matrix factorization.
 - Identified and characterized galaxies and nebulae surrounding a quasar using integral field spectroscopy, non-linear least squares minimization, and detailed photoionization modeling.
 - Implemented a Gaussian mixture model to estimate the peculiar velocities of sources.

TECHNICAL SKILLS

Operating Systems

MacOS, Windows, Linux

Programming Languages

Python, Java, HTML, Javascript

Other Software and Tools

L^AT_EX, GitHub, MySQL, Pandas, TensorFlow, Microsoft Excel