SAM EDWARD CUTLER

CONTACT INFORMATION

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EDUCATION

B.S. in Physics & Mathematics, University of Connecticut (May 2019)
GPA: 3.967 / 4.0
Physics GPA: 4.0 / 4.0
Minor: Astrophysics
Honors Program, Thesis: "Examining High Redshift Rotation Curves and Dark Matter Profiles Outside the Local Universe"

POSITIONS

Graduate Research Assistant, Univ. of Massachusetts, Amherst 2019–Present
Undergraduate Research Assistant, Univ. of Connecticut 2016–2019
Undergraduate Grader, Univ. of Connecticut–Math Dept. 2017-2018
SURF Intern, Univ. of Copenhagen–Niels Bohr Institute Summer 2017
CTO Intern, Connecticut Center for Advanced Technology Summer 2016

HONORS & AWARDS

Best Undergraduate Poster, Univ. of Connecticut 2018
CT Space Grant Undergrad. Research Fellowship, NASA/CTSGC 2018
Michael Cantara Undergrad. Research Award, Univ. of Connecticut 2017
New England Scholar, Univ. of Connecticut 2017
Babbidge Scholar, Univ. of Connecticut 2016

MEMBERSHIPS

Sigma Pi Sigma Physics Honors Society, Univ. of Connecticut Chapter
American Astronomical Society, Junior Member
Phi Beta Kappa Honors Society, Univ. of Connecticut Chapter

PRESENTATIONS AND TALKS

Seminar,"Centers of Main Sequence Galaxies", Amherst MA (9/2020)
Poster Session, AAS, 237th Meeting, Virtual (1/2018)
Seminar,"Diagnosing DASH", Amherst MA (9/2020)
Poster Session, Storrs CT (4/2019)
Public Talk,"Dark Matter: Seeing the Unseeable", Keene NH (3/2018)
Poster Session, AAS, 231st Meeting, National Harbor MD (1/2018)
Seminar, "Dark Matter Outside the Local Universe", Storrs CT (10/2017)

RESEARCH

Resolved Star Formation Histories with Prospector: 2020–present

- Ran Prospector on 60 unobscured star-forming galaxies at $z \sim 2.3$ with MOSDEF metallicities and spectroscopic redshift, and GOODS-N CANDELS/SHARDS photometry
- Obtained non-parametric star formation histories for the central and outer components of each galaxy, as well as the total galaxy

- Determined central parts of these galaxies formed in a burst of star formation 100 Myr prior to observation
- Tested whether star formation bursts are due to increased accretion of star forming clumps or a compaction event

Analyzing the Morphological Properties of COSMOS-DASH: 2019–present

- Used GALFIT pipeline to fit morphologies of galaxies in COSMOS-DASH survey
- Determined morphological parameter errors and created COSMOS-DASH morphological catalog
- Examined parameter space where DASH morphologies are robust
- Explored the dependence of the flattening of the quiescent size-mass relation at low masses with environment

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Analyzing Rotation Curves and Dark Matter at High z: 2017–2019

- Targeted high redshift (z≈1.8), lensed, dusty, star forming galaxy: *CL2244-1*
- Analyzed Hα spectroscopy from VLT/XSHOOTER to obtain rotation curve
- Used Keck/MOSFIRE photometry to obtain SED/stellar mass profile
- Fit two types of dark matter profiles (core and cusp) to data and determined which fit is better

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Determining Dust Distribution in a High z Lensed Galaxy: Summer 2017

- Targeted high redshift (z≈1.7), lensed, dusty, galaxy: *SDSSJ0851-A*
- Verified spectroscopic redshift from grism data using GRIZLI
- Modeled the lensed galaxy using Galfit to estimate global photometry in order to obtain an SED fit

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Finding Residual Star Formation Using X-Ray Stacking: 2016–2017

- Selected galaxies that meet the condition for quiescence in Whitaker et al. (2012) from various fields
- Used CSTACK to obtain X-Ray stacks from each field

OUTREACH

UMass Astronomy CORE: *Helped create the UMass Astronomy Committee on Outreach and Research Engagement with other graduate students, with the goal of centralizing current programs and creating new programs designed to address the "leaky pipeline" and encourage interest in astronomy.*

SPARK Camp: *Held stargazing sessions and promoted STEM careers for SPARK, a youth camp for girls interested in STEM majors, in Summer 2018 and 2019.*

RELEVANT SKILLS

Python: 5.5 years of experience using Python and astronomy related packages to analyze astronomical images and data tables

LaTeX: 5.5 years of experience using LaTeX to typeset scientific papers

SELECT PUBLICATIONS

1) **Cutler, S. E.**, et al., "Diagnosing DASH: A Catalog of Structural Properties for the COSMOS-DASH Survey", 2021, *Astrophysical Journal*, accepted.