Ezra Sukay

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EDUCATION

The University of Chicago, Chicago, IL

BS in Astrophysics with Honors June 2021

Advisor: Prof. Michael Gladders

Thesis: Characterizing the Size and Star Formation History of a Bright Strongly Lensed ETG at z=1.02

RESEARCH EXPERIENCE

Lawrence Berkeley National Lab, Berkeley, CA

Science Undergraduate Laboratory Internship

Advisors: Professor Xiaosheng Huang & Dr. David Schlegel August 2021 - Present

Building strong lens models with Lenstronomy for Hubble Space Telescope and Dark Energy Camera Legacy Survey data to characterize lens galaxies and their dark matter substructure.

The University of Chicago, Chicago, IL

COOL-LAMPS- ChicagO Optically-selected strong Lenses - Located At the Margins of Public Surveys

Advisor: Professor Michael Gladders Jan. 2020 - Present

Searching through public surveys for strong gravitational lenses and following up discoveries with the Magellan Telescopes, Gemini North, and the Nordic Optical Telescope. Spectrophotometrically characterizing cluster and lensed galaxies to determine their star formation history and reconstructing their source plan morphology to study galaxy evolution.

HAWC+: Far Infrared Polarization in M17

Advisor: Professor Doyal Harper April 2018 - Jan. 2021

Studying the interstellar medium (ISM) in star forming HII regions with infrared data from the High-resolution Airborne Wideband Camera (HAWC+) on the Stratospheric Observatory for Infrared Astronomy (SOFIA). Programing a tool to create line integral convolution images, a more intuitive way of visualizing the directions of polarization vectors in complex sources. Processing data from HAWC+ by running a pipeline in Unix.

PUBLICATIONS

E. Sukay, M.D. Gladders, G. Khullar, et al., *COOL-LAMPS II. Characterizing the Size and Star Formation History of a Bright Strongly Lensed Early-Type Galaxy at Redshift 1.02*, In Preparation.

G. Khullar, K. Gozman, [...], **E. Sukay**, et al., *COOL-LAMPS I. An Extraordinarily Bright Lensed Galaxy at Redshift 5.04*, ApJ 906, 107 (2021).

J. Michail, P. Ashton, [...], **E. Sukay**, et al., *Far Infrared Polarization of the OMC-1 Star Forming Region,* ApJ 907, 46 (2021).

M. Martienz, M.D. Gladders, [...], **E. Sukay**, et al., *COOL-LAMPS III. Discovery of a 26''.0 Wide-Separation Lensed Quasar COOL J0542-2125*, In Preparation.

POSTERS

E. Sukay, M.D. Gladders, G. Khullar, et al. *COOL-LAMPS: Characterizing the Size and Star Formation History of a Strongly Lensed Early-Type z=1 Galaxy*. 2021, AAS 237.

E. Sukay, A. Gui, X. Huang, et al. *Strong Gravitational Lens Modeling as an Exploration of Parameter Covariance*. LBNL Science Undergraduate Laboratory Internship Fall 2021 Poster Session.

AWARDS & HONORS

Chambliss Astronomy Achievement Student Award (AAS Poster Award) Jan. 2021

The Jane Morton and Henry C. Murphy Award May 2020

For exceptional and unique contributions to the University community.

The Maroon Key Society (University of Chicago undergraduate honor society) 2019 - 2021

PRESENTATIONS

COOL-LAMPS Collaboration Meeting: *CJ1323 - An Early-type Lensed Galaxy at z=1* June 2021
UChicago Astrophysics Honors Thesis Presentation June 2021
University of Chicago Astronomy Chalk Talk: *Research from the COOL-LAMPS Collab.* Jan. 2021
Yerkes Intern Presentations: *Modeling HAWC+'s PSF* July 2018

OBSERVING EXPERIENCE AND PROPOSALS

McDonald Observatory (VIRUS-P):
Discovery & Confirmation of Galaxy & Cluster Scale Lenses (3 nights) April 2021
Magellan Telescopes (LDSS3/PISCO/IMACS):
Discovery & Confirmation of Galaxy & Cluster Scale Lenses (4 nights) 2020 - 2021

Co-I, JWST Proposal 2566, "Characterizing Stellar Mass Assembly and Physical Properties in the Brightest Galaxy in the Redshift>5 Universe" (19.4 hours)
Co-I, HST-GO Proposal 16444, "A bright arc behind an extreme cluster lens at z=1.5" (3 orbits)

Data reduction: Gemini North (GNIRS), SOFIA (HAWC+)

TEACHING EXPERIENCE

The University of Chicago, Chicago, IL
Teaching Assistant, The Physics of Stars July 2020
Graded homework and coding projects, helped write coding projects, wrote homework solutions, led students through remote observations, and held office hours for 24 high school students.
Teaching Assistant, Observational Techniques in Astrophysics April 2020 – June 2020
Guided 30 undergraduate students through projects and remote observations.
Learning Assistant, Waves, Optics, & Heat April 2019 – June 2019
Assisted a TA in guiding two sections of 20 undergraduate students through introductory physics labs and improved lab content.

LEADERSHIP & OUTREACH

The University of Chicago, Chicago, IL
Out in STEM (oSTEM)
President April 2019 - June 2021
Created monthly Hot Cocoa Chats with Professors to connect students to mentors and research opportunities and hosted weekly board game nights.
Acquiring funding for and organizing travel to the annual national conference.
Event Planner June 2018 - April 2019
Hosted weekly social teas, planned and organized events, such as movie nights and dinners, for undergraduate and graduate students.
Ryerson Astronomical Society
President June 2019 - Jan 2021
Planning and hosting weekly talks and public observing.
Planning quarterly dark sky camping trips and an annual trip to Yerkes Observatory.
Outreach Officer June 2018 - June 2019
Publicizing club events and assisting the president in their duties. .

Yerkes Observatory, Williams Bay, WI
Intern June 2018 - Aug. 2018
Designed, set up, and ran diffraction experiments for 20 high schoolers on the "Great Refractor."
Ran stations at weekly star parties to introduce star gazing and astronomy to the public.

COMMITTEE INVOLVEMENT

The University of Chicago Astronomy & Astrophysics Department, Chicago, IL
Equality & Inclusion Council, Undergrad Rep — Oct. 2019 – May 2020

TECHNICAL SKILLS

Languages Proficient: Python
Familiar: IRAF, SQL

Software Proficient: GALFIT, Prospector, Lenstronomy, SAOImageDS9, Unix, Git, LaTeX
Familiar: LENSTOOL, PyLenstool