

Emma Kleiner

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Current Simons Foundation Fellow at the CCA and 1st year Astrophysics Masters student at the CUNY Graduate Center. Passionate about the link between star formation and galaxy evolution as well as the protection and preservation of astronomy and space.

Education

The City Universities of New York, Graduate Center | 1st Year Astrophysics Masters Student

M.S. Astrophysics

Expected 2026

University of Maryland, College Park

B.S. Astronomy

May 2022

B.S. Physics

Minor Public Leadership

Astrophysics Research Experience

SB or Not: Assessing Ground-Based Starbursts | Post-Baccalaureate Researcher

Guide: Dr. Andrew Ptak | Johns Hopkins University / NASA Goddard Space Flight Center

Nov. 2023 - Present

- Assessed merger fraction of SB galaxies at $z \sim 2$ with morphological measures using 4 NIRC2 Imaging mosaics of COSMOS-Web latest results.
- Selected sample of SBs using both rest-frame UV-NIR SED & FIR/sub-mm data.
- Identified examples of "SBs" that were chance on-sky pairs and are spatially blended main-sequence galaxies in the lower-resolution ground-based and FIR imaging data.
- Orchestrated citizen-science project through Zooniverse to better classify the sample.

The Nature of High Ionization Emission Line Galaxies | Post-Baccalaureate Researcher

Guide: Dr. Antara Basu-Zych | UMBC / NASA Goddard Space Flight Center

Feb. 2023 - Sept. 2023

- Investigated young star forming and low-metallicity regions at $z > 2$ for 30 highly ionized SDSS HeII galaxies along with the parent sample of 200 HeII galaxies.
- Emission line diagnostics and custom photoionization models ruled out ionization by fast shocks as the source of the extreme line emission.
- Will result in a co-authoring a paper and serving as co-investigator on an XMM-Newton proposal.

Measuring Activity in Interacting Galaxies Near and Far | Intern/Undergraduate Researcher

Guide: Dr. Antara Basu-Zych | HEASARC, CRESST UMBC / NASA Goddard Space Flight Center

2018 - 2022

- 2020 NASA GSFC CRESST: X-ray Galaxies Near and Far Summer Intern under Dr. Ann Hornschemeier.
- Analyzed Swift XRT and Chandra data for 30 interacting galaxies to detect sources from X-ray binaries to active galactic nuclei (AGN) and potential for triggering or quenching star formation.
- Learned fundamentals of X-ray data analysis: XSPEC, Swift XRT pipeline, Python, Linux, and SQL.

Star Formation and Molecular Composition of Nearby Galaxies | Researcher

Guide: Dr. Alberto Bolatto and Dr. Laura Lenkic | University of Maryland, College Park

May 2021 - Nov. 2021

- Researched the relationship between star formation and molecular properties in nearby DYNAMO galaxies using ALMA and HST data.
- Assisted Dr. Lenkic on her research by helping check over the analysis process using CASA.
- DYNAMO galaxies were analyzed as analogs of distant galaxies.

Physical Properties of the Orion Molecular Cloud | Researcher

Guide: Dr. Cara Battersby | Harvard Center for Astrophysics | University of Albany

2015 - 2018

- Three-year science research program where the physical properties of the Orion Molecular Cloud were researched and compared to Galaxy M51 using the Faulkes Telescope in Haleakala, Hawaii.
- Regions of the molecular cloud were analyzed through RGB imaging with DS9.
- Received college credit through University of Albany.

Publications & Proceedings

Uncovering a Massive $z \sim 7.65$ Galaxy Hosting a Heavily Obscured Radio-Loud QSO Candidate in COSMOS-Web
submitted to ApJL; arXiv:2308.12823

E. Lambrides, M. Chiaberge, A. Long, D. Liu, H. B. Akins, A. F. Ptak, I. Taufik Andika, A. Capetti,
C. M. Casey, J. B. Champagne, and 35 colleagues including **Emma T. Kleiner**
— added as co-author during referee stage for contributions to publication

*SB or Not: Assessing the Purity of Ground-Based Starburst Samples via High-Resolution JWST
Imaging in COSMOS-Web*

submitted to AAS; **Emma T. Kleiner**
— Upcoming

Accomplishments and Scholarships

Herreid Undergraduate Student Support Fund in Physics Scholarship Recipient

NASA Goddard Space Flight Center

June 2022 - Aug. 2022

La Serena School For Data Science (full scholarship)

AURA Observatory, Chile

Aug. 2022

Dean's List

University of Maryland, College Park

May 2021

Dudley Observatory Award

Greater Capitol Region Science and Engineering Fair (GCRSEF)

Mar. 2018

Presentations and Invited Talks

(Invited) Flash Talk and Career Panel: Post-Baccalaureate Work at NASA GSFC

Conference for Undergraduate Underrepresented Minorities in Physics, University of Maryland, College Park

Apr. 2024

(Invited) SB or Not: Assessing the Purity of Ground-Based Starburst Samples with JWST

Code 600 Director's Seminar, NASA Goddard Space Flight Center

Apr. 2024

(iPoster) SB or Not: Assessing the Purity of Ground-Based Starburst Samples with JWST

American Astronomical Society, 243rd Meeting

Jan. 2024

(Invited) UN Panel Speaker: Space Technology in Our Daily Lives

United Nations 78th General Assembly Science Summit

Sept. 2023

(Invited) Research Presentation to X-ray Division Lab Chief and Team

NASA Goddard Space Flight Center

Aug. 2023

Moderator for PhysCon Graduate Student Panel

University of Maryland, College Park

Oct. 2022

(Invited) Guest Speaker for AstroTerps

University of Maryland, College Park

May 2021

Moderator of AstroTerps Diversity Panel

University of Maryland, College Park

Nov. 2020

CRESST II Intern Presentation

NASA Goddard Space Flight Center

Aug. 2020

(Invited) UMD Astronomy Observatory Open House

University of Maryland, College Park Observatory

Dec. 2019

(Invited) TerpTalk Showcase

University of Maryland, College Park

Apr. 2019

(Master of Ceremony) University of Albany Science Research Symposium

Nyack, New York

June 2018

Other Research Experience

— **SPACE LAW**

United Nations Research on The Impact of Satellite Technology on 17 SDGs | *Research Fellow*

Guide: Dr. Marlène Losier | Losier & González, PLLC

Sept. 2023

- Researched how the implementation of satellite technology can aid in accomplishing the UN's 17 Sustainable Development Goals.
- Researched how satellites can aid countries and their citizens.

ACES Worldwide Executive Board | *Global Outreach Coordinator*

Guide: Dr. Joseph N. Pelton | ACES Worldwide

Oct. 2021 - Feb. 2022

- Managed social media accounts and outreach in order to grow ACES (Alliance for Collaboration in the Exploration of Space) Worldwide's platform.
- Encouraged young professionals to get involved in international space policy.

For All Moonkind Heritage Council | *Volunteer Researcher*

Guide: Dr. Marlène Losier | For All Moonkind, Inc.

2019 - Present

- Researched the scientific history of Apollo 11 to help develop the concept of human heritage in outer space and on other celestial bodies, as well as developing an international convention to protect it.
- Research focused on the ancient achievements of physics and astronomy from all over the world.
- I was a U.S. Delegate with For All Moonkind at the 16th United Nations Office of Outer Space Affairs Legal Subcommittee Meeting in Vienna of Aug. 2022.

Advancements in Maritime Law | *Researcher*

Guide: Dr. Marlène Losier | Delegation for the Republic of Italy to UNESCO

2016 - 2019

- Researched how the advancement of technologies and exploration both in deep ocean waters and space affects ethical and established international law principles.

Planetary Defense Service

NASA Yearly Opportunities for Research in Planetary Defense (YORPD) Review Panel | *Executive Secretary*

Guide: NASA Planetary Defense Officer

- Was invited to be executive secretary by NASA's Planetary Defense Officer.
- Took notes on panel's conversation and comments to aid in review write-up for NASA.

Pan-STARRS Asteroid Search Campaign

Haleakala Observatory, Hawaii

May 2016

- Independently analyzed Pan-STARRS observational data in order to help find unidentified asteroids.
- Recognized for contributions to observations of near-earth objects and main belt asteroid discoveries.

Membership and Affiliation

DarkSky International Advocate (Washington DC)

Nov. 2023 - Present

COSMOS Collaboration | Junior Member

May. 2023 - Present

UMD Physics and Astronomy Equity Constellation (UMD)

2020 - 2022

Astronomy Peer Mentor Program (UMD)

2020 - 2022

Equity, Diversity, and Inclusion at Maryland Astronomy (UMD)

2020 - 2022

Treasurer of AstroTerps (UMD)

2020 - 2021

Skills

- | | | | |
|----------|-----------------|-----------------|-------------------|
| - Python | - SQL | - Cloudy Models | |
| - MatLab | - Deep Learning | - Mathematica | - Public Speaking |
| - Linux | - XSpec | - DS9 | - Advocacy |
| - LaTeX | - 3MdB Models | - CASA | - Ambitious |

Relevant Coursework

- Introductory Astrophysics: Solar System and Exoplanet Systems
- Introductory Astrophysics: Stars and Galaxies
- Introductory Physics: Mechanics and Relativity
- Introductory Physics: Fields
- Introductory Physics: Waves
- Observational Astronomy
- Calculus: I, II, III
- Mathematical Methods I, II
- Computational Astrophysics
- Modern Physics
- Quantum Physics I, II
- Statistics and Thermodynamics
- Theoretical Astrophysics
- High Energy Astrophysics
- Classical Mechanics
- Particle Physics
- Intermediate Electricity and Magnetism
- Advanced Experiments
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- Public Leadership: Active Citizens
- Women In Leadership
- Latin American Studies II: Social Movements
- Innovation and Social Change
- Women's Leadership
- Diversity, Equity & Inclusion in Physics

References

Dr. Antara Basu-Zych

CRESST UMBC/NASA GSFC

- antara.r.basu-zych@nasa.gov
- 301.286.1155

Research Scientist

Lindley Johnson

NASA HQ

- lindley.johnson@nasa.gov

NASA Planetary Defense Officer

Dr. M. Coleman Miller

Department of Astronomy, University of Maryland, College Park

- mcmiller@umd.edu
- 301.405.1037

Professor and Graduate Advisor