Madeline Lucey

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The University of Texas at Austin, Dept. of Astronomy
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RESEARCH INTERESTS

Galactic archaeology, near-field cosmology, population II stars, the Galactic bulge, carbon-enhanced metal-poor stars, red clump stars, stellar evolution, stellar spectroscopy, data mining and machine learning

EDUCATION

The University of Texas at Austin   *August 2018 - Present*
Ph.D. Astronomy
Thesis: Uncovering Galactic Fossils from the Early Universe
Advisor: Keith Hawkins

The University of Texas at Austin   *August 2020*
M.A. Astronomy

Colorado College   *May 2018*
B.A. Physics: Astrophysics Emphasis, Magna Cum Laude

FIRST AUTHOR PUBLICATIONS

4. **M. Lucey**, K. Hawkins, M. Ness, T. Nelson, V.P. Debattista, A. Luna, T. Bensby, K.C. Freeman, C. Kobayashi, *The COMBS Survey - III. The Chemodynamical Origins of Metal-Poor Bulge Stars*, 2022, MNRAS, 509, 122

3. **M. Lucey**, K. Hawkins, M. Ness, V.P. Debattista, A. Luna, M. Asplund, T. Bensby, L. Casagrande, S. Feltzing, K.C. Freeman, C. Kobayashi, A.F. Marino, *The COMBS Survey - II. Distinguishing the Metal-Poor Bulge from the Halo Interlopers*, 2021, MNRAS, 501, 5981

2. **M. Lucey**, Y.-S. Ting, N. Ramachandra, K. Hawkins, *From the Inner to Outer Milky Way: A Photometric Sample of 2.6 Million Red Clump Stars*, 2020, MNRAS, 495, 3087

1. **M. Lucey**, K. Hawkins, M. Ness, M. Asplund, T. Bensby, L. Casagrande, S. Feltzing, K.C. Freeman, C. Kobayashi, A.F. Marino, *The COMBS survey - I. The Chemical Origins of Metal-Poor Stars in the Galactic Bulge*, 2019, MNRAS, 488, 2283

CO-AUTHOR PUBLICATIONS

3. K. Hawkins, **M. Lucey**, J. Curtis, *The Chemical Nature of the Young 120-Myr-old Nearby Pisces-Eridanus Stellar Stream Flowing through the Galactic Disk*, 2020, MNRAS, 496, 2422

2. K. Hawkins, **M. Lucey**, Y.-S. Ting, A. Ji, D. Katzberg, M. Thompson, K. El-Badry, J. Teske, T. Nelson , A. Carrillo, *Identical or fraternal twins? : The chemical homogeneity of wide binaries from Gaia DR2*, 2020, MNRAS, 492, 1164

1. B. Pope, G. Davies, K. Hawkins, T. White, A. Stokholm, A. Bieryla, D. Latham, **M. Lucey**, C. Aerts, S. Aigrain, V. Antoci, T. Bedding, D. Bowman, A. Chontos, G. Esquerdo, D. Huber, P. Jofré, S. Murphy, T. van Reeth, V. Aguirre, J. Yu, *The Kepler Smear Campaign I: An Asteroseismic Catalogue of Bright Red Giants*, 2019, ApJ, 244, 18

GRANTS, AWARDS AND FELLOWSHIPS

NSF Graduate Research Fellow	2020-Present
Frank N. Edmonds, Jr. Memorial Fellowship in Astronomy	2019
Kavli Summer Program in Astrophysics Fellow	2019
University of Texas at Austin Graduate School Fellowship	2018
David and Karen Smith Cowperthwaite Award for Excellence in Physics	2018
Keller Venture Grant ($1,200)	2016
Nominated for Euclid Scholarship	2016

AWARDED TELESCOPE TIME

PI: McDonald Obs. 2.7m, 5 nights	2021
→*Chemically Characterizing Blue Lurkers in M67*	
PI: McDonald Obs. 2.7m, 6 nights	2019
→*Chemically Characterizing a Newly Discovered Stellar Stream*	
Co-I: McDonald Obs. 2.7m, 6 nights (PI:Andreia Carrillo)	2019
→*Detailed chemical abundances of Gaia-Enceladus stars*	
Co-I: McDonald Obs. 2.7m, 5 nights (PI:Keith Hawkins)	2018
→*The Chemical Homogeneity of Wide Binaries in Gaia DR2*	
Co-I: WIYN 3.5m, 4 nights (PI:Natalie Gosnell)	2018
→*Clusters with K2: systematics from membership and binarity*	

OBSERVING EXPERIENCE

McDonald Obs, VIRUS-W - 4 nights	2020
McDonald Obs, Tull spectrograph - 17 nights	2018, 2019
WIYN, Hydra Multi-Fiber Spectrograph 1 night	2018

TEACHING EXPERIENCE

Teaching Assistant	
Introductory Astronomy	Fall & Spring 2019
Learning Assistant	
Introductory Physics I & II	2015−2018
Tutoring	
Math and Physics Department	2015−2018

NOTABLE PRESENTATIONS

Invited Talks
Board of Visitors Meeting, University of Texas at Austin, *Uncovering Galactic Fossils from the Early Universe*, 2020

Colorado College Across the Country: Change-makers Who are Defining the CC Experience, *Astronomy in Thailand: Inspiring Young Scientists*, 2018

Colorado College Venture Grant Forum, *Astronomy in Thailand: Inspiring Young Scientists*, 2017

Poster Presentations
American Astronomical Society Meeting Abstracts, 237, *The COMBS Survey - II. Distinguishing the Metal-Poor Bulge from the Halo Interlopers*, 2021

Frank N. Bash Symposium *Selecting a Pristine Sample of 5 Million Red Clump Stars*, 2019

American Astronomical Society Meeting Abstracts, 231, *Cataloging the Praesepe Cluster: Identifying Interlopers and Binary Systems*, 2018

Colorado College Summer Collaborative Research Experience Symposium, *Cataloging the Praesepe Cluster: Identifying Interlopers and Binary Systems*, 2017

<u>Seminars</u>
University of Texas at Austin, *The COMBS Survey*, 2021
Big Apple Dynamics School, *The Interplay of Potentials and Orbits in the Milky Way Bar*, 2021
University of Texas at Austin, *The COMBS Survey*, 2020
Kavli 2019 Alumni Event, *The COMBS Survey*, 2020
University of Texas at Austin, *Galaxy Formation with the Milky Way*, 2020
Kavli Summer Program in Astrophysics, *Declumping the Red Clump*, 2019
University of Texas at Austin, *The COMBS Survey*, 2019
Senior Thesis Presentation, *Cataloging the Praesepe Cluster*, 2018

<u>Public Talks</u>
Astronomy on Tap ATX, *Why Stars are Better than Everything Else*, 2020
Frank N. Bash Visitor's Center at McDonald Observatory, *Uncovering Galactic Fossils from the Early Universe*, 2019

STUDENT MENTORSHIP

Nariman Al Kharusi, undergraduate, UT Austin	2021-Present
Alice Luna, undergraduate, now PhD student at U. Chicago	2020-2021

DEPARTMENTAL SERVICE

Leader of Equity and Inclusion Book Club, University of Texas at Austin	2021
Graduate Recruitment, University of Texas at Austin	2020 & 2021
Task Force to Reform the Graduate Program, University of Texas at Austin	August 2020−May 2021

COMMUNITY ENGAGEMENT

GUMMY, Graduate Mentor	Jan 2018−2020
Astronomy on Tap ATX, Social Media Coordinator	May 2018−Present
Girl Day, Organizer, University of Texas at Austin	February 2019−Present
AWARE, University of Texas at Austin	Sept 2018−Present
Women in STEM, Colorado College	Jan 2017−May 2018
Astronomy in Thailand: Inspiring Young Scientists,	Oct 2016−Jan 2017

COMPUTING SKILLS

Languages: Python, IDL, SQL/ADQL, LaTex, bash/shell, git
Packages: TensorFlow, Pytorch, Scikit learn, Pandas
Software: BACCHUS, IRAF, TOPCAT, iSpec, SME