Fiona McCluskey

fmccluskey@ucdavis.edu | (617) 947-5234 | 1 Shields Ave, Davis, CA 95616

Education

University of California, Davis — Davis, CA
PhD in Physics — September 2019 – Present

Bryn Mawr College — Bryn Mawr, PA
BA in Physics — September 2015 – May 2019
Magna Cum Laude

Research experience

Graduate Research
Advisor: Andrew Wetzel (UC Davis) — Fall 2019 – Present
I use hydrodynamic zoom-in simulations to model the cosmological formation of the disks of Milky Way-mass galaxies, including the roles of disk settling and dynamical heating over cosmic time.

Undergraduate Reserach
Advisor: Kate Daniel (Bryn Mawr College) — Summer 2017 – Spring 2019
I used analytical simulations to contrain the process of radial migration/cold-torquing in galactic disks and investigated the dynamical response of stars to overlapping resonances.

Publications

Stellar Velocity Dispersion versus Age: Consistency across Observations and Simulations, with the Milky Way as an Outlier
McCluskey F., Wetzel A., Loebman S. R., Moreno J. *2025, OJAp, submitted. arXiv:2506.11840*

Disc settling and dynamical heating: histories of Milky Way-mass stellar discs across cosmic time in the FIRE simulations
McCluskey F., Wetzel A., Loebman S. R., Moreno J., Faucher-Giguere C.-A., Hopkins P. F., *2024, MNRAS, 527, 6926*

Radial redistribution and angular momentum change of stellar orbits in FIRE simulations of Milky Way-mass galaxies
Bellardini, A., Wetzel, A., **McCluskey, F.**, Loebman, S.R., *In Prep.*

Understanding the Origin and Dynamical Evolution of the Unique Open Star Cluster Berkeley 20 using FIRE Simulations
Wiggins A. I., Quinn J. R., Oeur M., Loebman S. R., Frinchaboy P. M., Daniel K. J., **McCluskey F.**, Otto J. M., Woodward H. R., D'Onghia E., Wetzel A., Parul H., Bhattarai B., Cozzi M., *2025, ApJL, submitted*

Spiral Structure Properties, Dynamics, and Evolution in MW-mass Galaxy Simulations
Quinn, J. R., Loebman, S. R., Daniel, K. J., Beraldo e Silva, L., Wetzel, A., Debattista, V. P., Arora, A., Ansar, S., **McCluskey F.**, Masoumi, D., Bailin, J., *2025, ApJ, submitted. arXiv:2507.22793*

The proto-galaxy of Milky Way-mass haloes in the FIRE simulations
Horta D., Cunningham E.C., Sanderson R., Johnston K.V., Deason A., Wetzel A., **McCluskey F.**, Garavito-Camargo N., Necib L., Faucher-Giguère C.A., Arora A., Gandhi P.J., *2024, MNRAS, 527, 981*

When Cold Radial Migration is Hot: Constraints from Resonant Overlap
Daniel K. J., Schaffner D. A., **McCluskey F.**, Fiedler Kawaguchi C., Loebman S., *2019, ApJ, 882, 111*

Teaching experience

Lead Teaching assistant, University of California, Davis

Undergraduate Astronomy Lab	Fall 2021, Spring 2023
Undergraduate Introductory Galactic Astronomy	Spring 2024

Teaching assistant, UC Davis

General Physics 1	Fall 2019
General Physics 2	Fall 2020, Spring 2021
General Physics 3	Spring 2020

Teaching assistant, Bryn Mawr

Calculus II	Fall 2016
Calculus III	Spring 2017
Introductory Physics Lab	Spring 2018, Fall 2018
Advanced Physics Lab	Spring 2019

Grants

NASA FINESST (totalling $100,000) — September 2024-2026

Talks

Santa Cruz Galaxy Workshop – Santa Cruz CA	Summer 2024
Surveying the Milky Way: The Universe in Our Own Backyard – Pasadena CA	Fall 2023
GalFRESCA – Riverside CA	Fall 2023
Santa Cruz Galaxy Workshop – Santa Cruz CA	Summer 2023
Wide-Field Spectroscopy vs Galaxy Formation Theory Workshop - Tucson AZ	March 2023
Disk Formation Workshop - Irvine CA	September 2022

Related Experience

Journal Club: Hosting and facilitating discussions of recently submitted research papers for the physics and astronomy department at UC Davis. — June 2023 -