

MATTHEW BELLARDINI
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Department of Physics
University of California, Davis
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EDUCATION

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| University of California, Davis Ph.D. in Physics Advisor: Andrew Wetzel | September 2017 - Present |
| University of California, Davis M.S. in Physics | September 2017 - September 2018 |
| Ithaca College B.S. in Physics Minor in Mathematics | August 2013 - May 2017 Summa Cum Laude |

RESEARCH

Graduate Research

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| · University of California, Davis Advisor: Andrew Wetzel Exploring the evolution of the thin and thick disks of Milky Way-like galaxies in the FIRE2 Latte simulations. Using Python to explore elemental abundances and to track stellar redistribution, in position and phase space, over time. | September 2018 - Present |
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Undergraduate Research

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| · Ithaca College Advisor: Luke Keller Wrote programs in IDL to perform wavelength calibrations and create spectral maps to analyze infrared data of the Jovian troposphere. Examined stellar formation in the Orion nebula using infrared emissions of polycyclic aromatic hydrocarbons as tracers of ultraviolet radiation. Used Python and IDL to reduce, compare, and analyze photometric and spectroscopic data. | January 2014 - May 2017 |
| · University of California, Davis Advisor: Stefano Valenti NSF funded summer research program. Used Python to write a data reduction pipeline for spectroscopic data of active galactic nuclei. | June 2016 - August 2016 |
| · Ithaca College Advisor: Bruce Thompson Fabricated external housing unit and temperature regulator for an extended cavity laser used in a magneto-optical trap. | January 2015 - December 2015 |

HONORS

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| Sigma Pi Sigma Inductee | Spring 2016 |
| Phi Kappa Phi Presidential Scholar Nominee | Fall 2015 |
| Phi Kappa Phi Inductee | Spring 2015 |
| Ithaca College Oracle Honor Society Inductee | Fall 2014 |

OBSERVING

UCO Graduate Observational Astronomy Workshop
Lick Observatory

October 2018

PUBLICATIONS

M. A. Bellardini, A. Wetzel, S. R. Loebman, C.-A. Faucher-Giguère, and J. Bailin, “3D elemental abundances of stars at formation across the histories of Milky Way-mass galaxies in the FIRE simulations”, MNRAS, vol. 514, no. 3, pp. 4270–4289, Aug. 2022

A. Carrillo, M. Ness, K. Hawkins, R. Sanderson, K. Wang, A. Wetzel, and **M. A. Bellardini**, “The relationship between age, metallicity, and abundances for disk stars in a simulated Milky Way galaxy”, ApJ, submitted

M. A. Bellardini, A. Wetzel, S. R. Loebman, C.-A. Faucher-Giguère, X. Ma, and R. Feldmann, “3-D gas-phase elemental abundances across the formation histories of Milky Way-mass galaxies in the FIRE simulations: initial conditions for chemical tagging”, MNRAS, vol. 505, no. 3, pp. 4586–4607, Aug. 2021

S. M. Benincasa, S. R. Loebman, A. Wetzel, P. H. Hopkins, N. Murray, **M. A. Bellardini**, C.-A. Faucher-Giguère, D. Guszejnov, and M. Orr, “Live fast, die young: GMC lifetimes in the FIRE cosmological simulations of Milky Way mass galaxies”, MNRAS, vol. 497, no. 3, pp. 3993–3999, Jul. 2020

PRESENTATIONS

Constraining Chemical Tagging Using Cosmological Simulations February 2022
UC Merced - Loebman Lab invited talk

Constraining Chemical Tagging Using Simulated Galaxies March 2021
Australian National University RSAA Seminar

Chemical Tagging in Milky Way-like Galaxies September 2019
UC Davis Cosmology and Astrophysics Symposium

Mapping Ultraviolet Radiation in a Star Forming Region April 2017
APS New York State Section - Spring Meeting

Mapping Ultraviolet Radiation in a Star Forming Region April 2017
Ithaca College - Whalen Symposium

Examining the Radiation in a Star Forming Region March 2017
APS - March Meeting, Outstanding Undergraduate Presentation Award Recipient

Reverberation Mapping of Active Galactic Nuclei August 2016
University of California, Davis - REU Presentations

Molecular Feature Analysis of the Orion Bar October 2015
Ithaca College - Summer Scholars Program

A Spectroscopic View of the Orion Bar September 2015
Ithaca College - Physics Department Colloquium

Extraction of Spectra from the Orion Bar April 2015
Ithaca College - Whalen Symposium

A Summer of SOFIA April 2015
Ithaca College - Physics Department Colloquium

TEACHING EXPERIENCE

Teaching Assistant September 2017 - Present
University of California, Davis

Lab TA for introductory physics discussion and lab sections. Grader for introductory and graduate astronomy courses. Responsibilities included grading (homework, lab reports, quizzes, and exams), holding weekly office hours, and facilitating quarterly review sessions.

Math and Physics Tutor

September 2017 - December 2019

University of California, Davis

Designed individualized weekly tutoring sessions for individuals in math classes ranging from high school algebra to introductory calculus and introductory high school and college physics classes.

Teaching Assistant

September 2014 - May 2017

Ithaca College

Course TA for introductory physics classes, introductory astronomy classes, and upper division electromagnetism. Held weekly office hours and organized final review sessions.