Megan L. Barry

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Education

Ph.D. Candidate, Physics, University of California - Davis (UCD), third-year graduate student
- Research Advisor: Dr. Andrew Wetzel

Physics, M. S. with Honors, California State University - Long Beach (CSULB) 2020
- Computational Physics track
- Thesis Title: "Identifying the Quark-Hadron Phase Transition in Neutron Stars with g-modes"
- Research Advisor: Dr. Prashanth Jaikumar

Physics, B. S., University of California - Santa Barbara (UCSB) 2013

Publications

The dark side of FIRE: predicting the population of dark matter subhaloes around Milky Way-mass galaxies in prep
- Megan Barry, Andrew Wetzel, Sierra Chapman, Jenna Samuel, Robyn Sanderson

Lifting the Veil on Quark Matter in Compact Stars with g-mode Oscillations December 2020
- Wei W., Salinas M., Klähn T., Jaikumar P, Barry M. Dec 3, 2020. ApJ 904 187

Skills & Abilities

Physics Research Experience
- Galaxy simulations: working with & analyzing data from the FIRE (Feedback In Realistic Environments) simulations of Milky Way-mass galaxies
- Stellar structure: building stellar models, working with equations of state, stellar pulsations, compact objects
- Quantum statistics: Fermi-Dirac statistics, extreme astrophysical environments
- Quantum phase transitions: Ising model, Heisenberg model

Coding & Computational Methods
- Proficient Languages: Python, Fortran, Mathematica, G (LabVIEW), C, IDL
- Experience with numerical integration, large matrix manipulation, working with large data files, differential equation solving

Teaching & Tutoring
- Extensive experience in explaining physics concepts to non-majors and the general public
- Emphasizes depth of understanding and teaching students how to learn independently

Employment

Graduate Student Researcher, UC Davis July 2020–
- Researcher in Dr. Andrew Wetzel's group. Performs analysis of cosmological zoom-in simulations of Milky Way-like galaxies. Current research includes predictions of dark matter subhalo populations.

Teaching Associate, UC Davis September 2020–
- Discussion lab instructor for PHY 7 (General Physics)

Graduate Research Assistant, CSULB July 2019–August 2020
- Researcher in Dr. Prashanth Jaikumar's group. Participates in astrophysics research, including programming and numerical analysis

Museum Guide, Griffith Observatory August 2012–March 2020
- Gives presentations about exhibits and answers questions from guests at the historic Griffith Observatory in Los Angeles

Graduate Assistant & Teaching Associate, CSULB August 2017–June 2019
- Telescope operator for weekly "Nights at the Observatory" outreach program
- Instructor for PHYS100BL (General Physics Lab) and PHSC112 (Intro to Physical Science Lab)

Awards & Scholarships

Kennedy Reed Award, American Physical Society Far West Section — November 1-2, 2019
- Best Theoretical Research by a Graduate Student - First Place

Summer Research Assistantship, CSULB Dept. of Physics and Astronomy — Summer 2019
- Summer research support awarded to 2 students annually

Talks & Presentations

Astronomy on Tap, Davis — September 29, 2022
- "The Milky Way's Invisible Neighbors" (Public Talk)

GalFRESCA (Galaxy Formation and Evolution in Southern California) — September 6-7, 2022
- "Predicting Dark Matter Subhalo Populations Around Milky Way-Mass Galaxies" (Oral Presentation)

APS Far West Section Meeting — November 1-2, 2019
- "Identifying the Quark-Hadron Phase Transition in Neutron Stars with g-modes" (Oral Presentation)
- Recipient of Kennedy Reed Award for Best Theoretical Research by a Graduate Student

CSULB Student Research Symposium — September 20, 2019
- "Impact of the Tsallis Distribution on the Thermodynamics of Fermions" (Poster)

CSULB Student Research Competition — February 22, 2019
- "g-mode Oscillations in Neutron Stars" (Oral Presentation)

APS Far West Section Meeting — October 18-20, 2018
- "g-mode Oscillations in Neutron Stars" (Oral Presentation)