Sal Wanying Fu

Contact Information

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Research Interests

Near-field cosmology, satellite galaxies, Galactic dynamics, stellar streams, stellar halos, chemical evolution, large surveys

Education

Ph.D in Astrophysics, UC Berkeley, Berkeley, CA — August 2019–
NSF Graduate Research Fellow & Cranor Fellow

B.A. Physics, Pomona College, Claremont, CA — May 2019
GPA: 11.636/12

Coding Experience

Python, IDL, IRAF, Pyraf, R, Mathematica, MATLAB

Research Experience

Observatories of the Carnegie Institution for Science
Undergraduate Research Fellow — Jun 2016-Present
Advised by: Dr. Josh Simon, Dr. Gwen Rudie

The Origin and Classification of the Sgr II Satellite — Apr 2018-Present

Used optical spectroscopy from the Magellan/IMACS spectrograph to determine dark matter content and metallicity dispersion of Sgr II satellite. Used high-resolution optical spectroscopy from the Magellan/MIKE spectrograph to infer chemical abundance patterns of Sgr II members. Modeled orbit of satellite to infer possible origin. Manuscript currently in preparation. Work presented at AAS meeting in Jan 2019.

The Dynamical Histories of the Crater II and Hercules Dwarf Galaxies — May 2018-Present

Used optical spectroscopy from the Magellan/IMACS spectrograph to model chemodynamics of Cra II dwarf galaxy. Inferred dynamical histories of Cra II and Herc to test tidal disruption hypotheses surrounding the two dwarf galaxies. Work culminated in paper submitted to ApJ, currently under review, and AAS poster presentation.

The Origin of the 300 km/s Stream Near Segue 1 — Jun 2017-Aug 2018

Identified new members of the 300S stream in APOGEE-2 and SEGUE survey data. Used dynamical modeling techniques and chemical abundance analysis to infer the origin of the stellar stream. Work culminated in paper publication and AAS iPoster presentation.

Chemical Abundances of UMi dSph in APOGEE-2 — Jun 2016-Aug 2016

Identified systematic velocity variation in timeseries velocity data of faint stars from APOGEE-2 proto-DR14 dataset. Work culminated in AAS poster presentation.

Pomona College Department of Physics and Astronomy
Undergraduate Research Assistant — Jan 2016-May 2016
Advised by: Prof. Philip Choi

Searching for NEOs Using Synthetic Tracking — Jan 2016-May 2016

Assisted remote observing program using the 1-meter telescope at Table Mountain Observatory to search for faint, near-earth asteroids.

Publications

S. W. Fu, J. D. Simon, et al. *Dynamical Histories of the Crater II and Hercules Dwarf Galaxies*, accepted to ApJ. arXiv:1901.00594

S. W. Fu, J. D. Simon, et al. 2018. *The Origin of the 300 km s^{-1} Stream Near Segue 1*, ApJ, 866, 42

Presentations

S. W. Fu, J.D. Simon, and D. R. Weisz. 2019. *Dynamical History of the Crater II Dwarf Galaxy.* Contributed talk to the "Science in Our Own Backyard: Exploring the Galaxy and the Local Group with WFIRST" conference in Pasadena, CA.

S. W. Fu, J. D. Simon, et al. 2019. *Dynamical Histories of the Crater II and Hercules Dwarf Galaxies.* Poster presentation at 233rd AAS Meeting in Seattle, WA

J. D. Simon, **S. W. Fu**, et al. 2019. *The Nature of the Peculiar Milky Way Satellite Sagittarius II.* iPoster presentation at 233rd AAS Meeting in Seattle, WA

Sobeck J., ... **S. W. Fu**, et al. 2019. *An Examination of the APOGEE-2 Survey Data for the Draco Dwarf Spheroidal Galaxy.* Poster presentation at 233rd AAS Meeting in Seattle, WA

W. Fu, J. D. Simon, et al. *Characterizing the 300 km/s Stream Near Segue 1.* Poster presentation at 231st AAS Meeting in Washington, D.C.

W. Fu, J. D. Simon, et al. *A Study of Low-Metallicity Red Giant Stars in the Ursa Minor Dwarf Spheroidal Galaxy Using APOGEE Survey Data.* Poster Presentation at the 229th AAS Meeting in Grapevine, TX

Awards

NSF Graduate Research Fellowship, National Science Foundation	2019
Cranor Fellowship, UC Berkeley Astrophysics	2019
Barry M. Goldwater Scholar, Barry M. Goldwater Scholarship and Excellence in Education Foundation	2018
Tileston Junior Physics Prize Pomona College Department of Physics and Astronomy	Nov 2018
Inaugural FUTURE of Physics at Caltech Cohort	Nov 2018
Pomona College Scholar, Pomona College	Jun 2016-Present
Tileston Sophomore Physics Prize Pomona College Department of Physics and Astronomy	Jan 2018
Moncrief Astronomy Prize Pomona College Department of Physics and Astronomy	Sep 2016

Mentoring Experience

PHYS128: Electronics (with community partnership) — Mentor	Spring 2019
ASTR101: Observational Astronomy — Mentor & Lab TA	Fall 2018
ASTR51: Introductory Astronomy — Mentor	Spring 2018
ASTR101: Observational Astronomy — Mentor & Lab TA	Fall 2017
ASTR51: Introductory Astronomy — Mentor	Spring 2017
PHYS70: Spacetime, Quanta and Entropy — Mentor & Lab TA	Fall 2016
ASTR2: Galaxies and Cosmology — Lab TA	Spring 2016

Service

	Community Partnership With Fremont Academy Femineers	Jan 2019-Present
	Physics Department Liaison	Jan 2016-Present
	Physics Cohort Program Organizer	Jan 2016-Present
	Carnegie Summer Student Program Student Leader	Jun 2018-Aug 2018
	Community Partnership With Fremont Academy Femineers	Mar 2018-May 2018
	Carnegie Summer Student Program Student Leader	Jun 2017-Aug 2017
	Social Justice in STEM Reading Group Co-Organizer	Jan 2017-May 2017

Professional Society Memberships

American Astronomical Society, Junior Member	Sep 2016-Present
Sigma Xi Scientific Research Honor Society, Associate Member	Sep 2018-Present

Professional References

Dr. Joshua D. Simon
Staff Scientist, Carnegie Observatories
jsimon@carnegiescience.edu

Dr. Gwen C. Rudie
Staff Scientist, Carnegie Observatories
gwen@carnegiescience.edu

Prof. Jorge Moreno
Assistant Professor, Pomona College
jorge.moreno@pomona.edu

Prof. Philip Choi
Associate Professor, Pomona College
philip.choi@pomona.edu