

Sijie Yu

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EDUCATION

UNIVERSITY OF CALIFORNIA, IRVINE

Irvine, CA

- *Ph.D., Physics and Astronomy, Advisor: James S. Bullock*

Sept 2016 – June 2022

NANJING UNIVERSITY

Nanjing, China

- *Bachelor, Astronomy, GPA: 4.39/5.0*

Sept 2012 – July 2016

RELEVANT COURSEWORK: *The C Programming Language, Programming in Java, IDL-Matlab-Python for Astronomy, Data Reduction, Introduction to Computational Thinking, Machine Learning and Statistics for Physicists.*

SKILLS

- **Programming Languages:** Python, SQL, C, C++, Java
- **Tools:** scikit-learn, Jupyter notebook, LaTeX, MySQL, TensorFlow, Spark, Git, Matlab, IDL, IRAF, Eclipse

ACADEMIC EXPERIENCE

UNIVERSITY OF CALIFORNIA, IRVINE

Irvine, CA

Graduate Student Researcher

May 2017 – June 2021

Lead author of 2 papers with 3 co-authorships. Presenter at >20 conferences and seminars (domestic and international).

Stars made in outflows may populate the stellar halo of the Milky Way

- Ran & analyzed cosmological simulations with ultra-high resolution of more than 10^8 particles to test galaxy formation theory (using Python w/ NumPy, Matplotlib, Pandas, etc. in Unix).
- Utilized HPC (High Performance Computing) clusters (e.g., Stampede2) to run parallel (Python + C w/ OpenMP) image/movie-making routines to visualize simulation outputs.
- Designed the key metric to identify the outflowing stars. Found $\sim 10\%$ of stellar halo to be born in outflows.
- Predicted about chemical abundances and kinematic properties. Provided guidance for observational searches.

The origin of the Milky Way thick disc

- Developed data reduction and analysis pipelines (using Python w/ NumPy, Pandas, Matplotlib).
- Conducted deep-dive analysis to understand the star formation at every key stage of galaxy evolution. Defined a key metric to quantify the fluctuation and identified 2 different modes (bursty & steady).
- Created models using supervised & unsupervised learning to classify stars. Traced the evolution and quantified the influence of internal and external processes (e.g., kinematic heating and mergers) over time.
- Proposed a new framework to explain the formation of different structures (spatial & dynamical) in the Galaxy.

UNIVERSITY OF WISCONSIN-MADISON

Madison, WI

Undergraduate Student Researcher

May 2015 - Aug 2015

- Developed data reduction routine for a brand-new IFU (integral field unit) instrument (using IRAF + IDL).
- Observed the connection between AGN (active galactic nucleus) outflows and the truncation of star formation.

PROFESSIONAL EXPERIENCE

UNIVERSITY OF CALIFORNIA, IRVINE

Irvine, CA

Graduate Teaching Assistant

Sept 2016 – April 2019

- Assisted with 8 different courses, including both intro level and advanced level physics.
- Led weekly discussion sessions and office hours. Served in the tutoring center.

LEADERSHIP AND HONORS

GALFRESCA CONFERENCE CO-ORGANIZER, University of California, Irvine

Aug 2019

- Coordinated the annual conference on galaxy formation-related research, with >50 attendees and >30 presenters.

ASTRONOMY OUTREACH PROGRAM INSTRUCTOR, University of California, Irvine

June 2017 – June 2018

- Displayed and explained demos, crafts, and telescopes for science education at local schools.

Chancellor's Fellowship, University of California, Irvine

Sept 2016 – July 2018