LI, YUAN

yuanli207@ucsb.edu

EDUCATION EXPERIENCES

Texas A&M University ***08/2024 - Present***
Ph.D. student of Astronomy *College Station, TX*

University of California, Santa Barbara ***09/2019 – 06/2023***
Bachelor of Science with Honors, Physics, College of Creative Studies *Santa Barbara, CA*

· Major GPA: 3.98; Research Excellence **Link to Portfolio**

RESEARCH EXPERIENCES

Galaxy Kinematics with KCWI and VerEmisFitting 09/2023 - 12/2023
Advisor: Zixuan Peng *UC Santa Barbara*

Propagation of Star Formation History in J1033+0353 09/2023 - 12/2023
Advisor: Prof. Crystal L. Martin, Zixuan Peng *UC Santa Barbara*

· Investigated the out-side-in starformation history in J1044+0353, comparing the situation with the case of 30 Dor recollapse scenario.

Solving the Feedback Puzzle in J1044+0353 Through Spatially Resolved HST Images 04/2022 – 10/2023
Adviser: Prof. Crystal L. Martin, Zixuan Peng *UC Santa Barbara*

· Studied a local analog of high-z galaxies J1044+0353 ($z = 0.013$, $m = 10^{6.8} M_{\odot}$) that shows a feedback age puzzle with HST multiband image.

· Independently reduced HST WFC3/ACS data with the DrizzlePac package, e.g., astrodrizzle and tweakreg.

· Independently ran BEAGLE in mock and fitting mode and tweaking parameters to test systematic errors.

· Independently ran Photutils to segment the galaxy into physically reliable regions.

The Kinematics of Circumgalactic Medium: Clues to the Feeding and Evolution of Galactic Disks 06/2021 – 12/2021
Adviser: Dr. Stephanie H. Ho, Prof. Crystal L. Martin

· Probed CGM properties (bulk velocity, thermal motion, turbulence, and phase) by fitting Voigt profiles for absorption lines in quasar spectra of galaxy-quasar pairs in the HST COS-Halo survey. Dealt with foreground galaxy contamination, low spectral resolution, and low S/N ratio.

· Fitted 25 lines for 13 ions at 6 sightlines (OVI, CII, CIII, SiII, SiIII, SiIV, NII, NIII, NV, FeII, FeIII, OI, and SIII) and found that CGM in both cool and warm-hot phases co-rotates with the disk at a smaller velocity than circular velocity.

· Concluded that, on our limited sample size of six galaxies, both the cool and warm-hot phases of the CGM co-rotate with, and spiral into, the galaxy, adding into our understanding of the CGM's role in galaxy disk nourishment.

SELECTED FELLOWSHIPS AND AWARDS

Worster Summer Research Fellowship Summer 2022
Physics Department *UC Santa Barbara*

Summer Undergraduate Research Fellowship (SURF) Summer 2021
Dean's Fellow *College of Creative Studies, UC Santa Barbara*

The 12th Asian-Pacific Astronomy Olympiad (APAO) 11/2016
Gold Medal/First Place *Goheung, South Korea*

PUBLICATIONS

13. 2026, A. Ali, (incl. **Y. Li**), "Tracing Lyα escape in the CRISTAL-02 galaxy at z$\sim$5.3"

12. 2026, W. Wang, (incl. **Y. Li**), "The ALPINE-CRISTAL-JWST Survey: Chemical Abundance Comparison Between the ISM and CGM of Main-Sequence Galaxies at z=4–6"

11. 2026, A. Faisst, (incl. **Y. Li**), "The ALPINE-CRISTAL-JWST Survey: JWST/IFU Optical Observations for 18 Main-Sequence Galaxies at z=4–6"

10. (Submitted to A&A) R. Herrera-Camus, (incl. **Y. Li**), "The ALMA-CRISTAL survey: Cold gas outflows from giant star-forming clumps"

9. Z. Peng, (incl. **Y. Li**), "When Stars Mimic Monsters: Luminous Blue Variables in SBS 0335−052 E"

8. 2025, S. Fujimoto, (incl. **Y. Li**), "The ALPINE-CRISTAL-JWST Survey: NIRSpec IFU Data Processing and Spatially-resolved Views of Chemical Enrichment in Normal Galaxies at z=4–6"

7. 2025, A. Faisst, (incl. **Y. Li**), "The ALPINE-CRISTAL-JWST Survey: The Fast Metal Enrichment of Massive Galaxies at z$\sim$5"

6. 2025, C. Accard, (incl. **Y. Li**), "The ALPINE-CRISTAL-JWST survey: Spatially resolved star formation relations at z $\sim$ 5"

5. Z. Peng, (incl. **Y. Li**), 2025, "Physical Origins of Outflowing Cold Clouds in Local Star-forming Dwarf Galaxies"

4. R. Herrera-Camus, (incl. **Y. Li**), 2025, "The ALMA-CRISTAL survey: Gas, dust, and stars in star-forming galaxies when the Universe was $\sim$1 Gyr old: I. Survey overview and case studies"

3. J. Birkin, (incl. **Y. Li**), 2025, "The ALMA-CRISTAL Survey: Weak Evidence for Star-formation-driven Outflows in z $\sim$ 5 Main-sequence Galaxies"

2. C. Martin, Z. Peng, **Y. Li**, 2024, "Resolving the Mechanical and Radiative Feedback in J1044+0353 with Keck Cosmic Web Imager Spectral Mapping"

1. Z. Peng, (incl. **Y. Li**), 2023, "Using KCWI to Explore the Chemical Inhomogeneities and Evolution of J1044+0353"

PROPOSALS

1. R. Herrera-Camus, (incl. **Y. Li**), "Clump-Scale Feedback and Star Formation in a z=5 Typical Galaxy: A High-Resolution ALMA+JWST Study" (ALMA Project 2025.1.00988.S)

SELECTED TALKS

3. (Nov. 2023) "Spatially Resolved Star-Formation History of J1044+0353: A Local Analog Galaxy of Epoch of Reionization" the Seventh Annual CCS Research and Creative Activities Conference (RACA-CON), College of Creative Studies, UCSB —- Link to **Recording**

2. (Oct. 2022) "Solving the Feedback Puzzle in Young Galaxies, One Cluster at a Time" 2022-23 Worster Symposium, Physics Department, UCSB —- Link to **Symposium Recording**

1. (Nov. 2021) "The Kinematics of Circumgalactic Medium: Clues to the Feeding and Evolution of Galactic Disks," the Fifth Annual CCS Research and Creative Activities Conference (RACA-CON), College of Creative Studies, UC Santa Barbara —- Links to **Poster**

TECHNICAL SKILLS

Programming Languages

Python, Mathematica, Linux/Mac Command Lines

Scientific Softwares/Packages

SED Fitting: BEAGLE (BayEsian Analysis of GaLaxy sEds), StarBurst 99, BPASS, Bagpipses, piXedfit

Python and Others: DrizzlePac, Petrofit, AstroPy, AstroConda, Photutils, VoigtFit, Synphot, StSynphot, Pandas, Numpy, Matplotlib, ZAP (the Zurich Atmosphere Purge)

Instruments

HST ACS/WFC3/WFPC2 (full data reduction process), HST COS, VLT MUSE, Keck KCWI/ESI

OBSERVING EXPERIENCES

CTIO Blanco 4m, Dark Energy Camera

5 nights, with Dr. Weida Hu and Prof. Crystal Martin 11/2022

Keck II 10m Echellette Spectrograph and Imager (ESI)

1 full-night and 1 half-night with Zixuan Peng and Prof. Crystal Martin 01 & 04/2023

Keck II 10m Keck Cosmic Web Imager (KCWI) with the Red Channel (KCRM)

1 half-night with Zixuan Peng and Prof. Crystal Martin 09/2023

SELECTED COURSES

Graduate Courses:

Galactic Dynamics (237, Prof. Peng Oh), *High Energy Astronomy* (234, Prof. Peng Oh), *General Relativity* (231A/B, Prof. Gary Horowitz), *Interstellar Medium* (Audited, 233, Prof. Joseph Hennawi), *Cosmology* (Audited, 236, Prof. Joseph Hennawi)

Undergraduate Courses:

Cosmology and Galaxies (133, Prof. Crystal Martin), *Stellar Evolution* (132, Prof. Timothy Brandt), *General Relativity* (131, Prof. Omer Blaes), *CCS Honors Cores* (31/32/33/34/35/36, Dr. Tengiz Bibilashvili), *CCS Honors Labs* (15A/B/C, Prof. David Patterson, Prof. Andrew Jayich)