

I-Da Chiang

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RESEARCH INTERESTS

Dust Life Cycle & Interstellar Medium

I am interested in studying the evolution of interstellar dust with multiwavelength observations. One of my main projects is measuring the spatially resolved dust-to-metals ratio in the nearby galaxies, and interpreting the results with dust chemical evolution models, simulations and ancillary data.

Molecular gas & Star formation

Tracing molecular gas mass and kinematics is important to studying star formation. With high-sensitivity observations from modern instruments, our understanding in the CO-to-H₂ conversion factor has become the limiting factor of our ability on quantifying star formation efficiency. I measure kpc-scale CO-to-H₂ conversion factor in 41 galaxies, and propose a stellar-mass-based prescription.

HI 21 cm Line & Radio Astronomy

The distribution of neutral gas is a key element in dust sciences and full kinematics analysis in the extended disk. I reduce new HI 21cm line data observed with VLA in mainly two projects: (1) EveryTHINGS, a C+D survey of ~ 30 nearby galaxies; (2) PHANGS-JWST-HI, a B+C+D observation matching PHANGS-JWST targets.

EMPLOYMENT

Institute of Astronomy and Astrophysics, Academia Sinica Postdoc Fellow	<i>2021 - Current</i>
University of California San Diego Graduate Research Assistant Teaching Assistant (TA) and Lab TA Coordinator, PHYS 1-ABC Lab	<i>2014 - 2021</i>
National Taiwan University Graduate Research Assistant	<i>2012 - 2014</i>
Taiwan (R.O.C.) Armed Forces Second Lieutenant (Company second-in-command)	<i>2011 - 2012</i>

EDUCATION

University of California San Diego Ph.D. (Physics and Astronomy) Thesis: "Observations of Spatially Resolved Dust Evolution in Nearby Galaxies" Adviser: Prof. Karin M. Sandstrom	<i>2014 - 2021</i>
National Taiwan University M.S. (Physics) Thesis: "Plasmonic Enhanced Optical Disk Reactor for Wastewater Treatment" Adviser: Prof. Din Ping Tsai	<i>2012 - 2014</i>
National Taiwan University B.S. (Physics)	<i>2007 - 2011</i>

REFEREED PUBLICATIONS (AS FIRST OR SECOND AUTHOR)

- 8) **I-Da Chiang** et al., “Resolved Maps of the CO-to-H₂ Conversion Factor in 41 Nearby Galaxies”, 2023, submitted to ApJ, arXiv:2311.00407.
- 7) Yu-Hsuan Teng, **I-Da Chiang** et al., “Star Formation Efficiency in Nearby Galaxies Revealed with a New CO-to-H₂ Conversion Factor Prescription”, 2023, submitted to ApJ, arXiv:2310.16037.
- 6) **I-Da Chiang** et al., “Kpc-scale properties of dust temperature in terms of dust mass and star formation activity”, 2023, MNRAS, 520, 5506.
- 5) Hiroyuki Hirashita & **I-Da Chiang**, “Analytic models of dust temperature in high-redshift galaxies”, 2022, MNRAS, 516, 1612.
- 4) **I-Da Chiang** et al., “Resolving the Dust-to-Metals Ratio and CO-to-H₂ Conversion Factor in the Nearby Universe”, 2021, ApJ, 907, 29.
- 3) Eric W. Koch, **I-Da Chiang** et al., “Spatial power spectra of dust across the Local Group: No constraint on disc scale height”, 2020, MNRAS, 492, 2663.
- 2) Dyas Utomo, **I-Da Chiang** et al., “The Resolved Distributions of Dust Mass and Temperature in Local Group Galaxies”, 2019, ApJ, 874, 141.
- 1) **I-Da Chiang** et al., “The Spatially Resolved Dust-to-metals Ratio in M101”, 2018, ApJ, 865, 117.

A full list of my publications in astronomy at ADS Public Library is available [here](#).

OBSERVING TIME AWARDED AS P.I.

The Very Large Array (2022B), “Connecting Gas and Dust: Mapping HI in 7 Herschel Galaxies”, 28 hours 2022

RESEARCH PRESENTATIONS

- Contributed talk, “Tracing the kpc-scale CO-to-H₂ Conversion Factor with Dust in Galaxy Center”, Illuminating the Dusty Universe: A Tribute to the Work of Bruce Draine, Florence, Italy 2023
- Contributed talk, “Kpc-scale properties of dust temperature in terms of dust mass and star formation activity”, The 13th meeting on Cosmic Dust, Kitakyushu, Japan 2023
- Poster, ASROC 2023, Kaohsiung, Taiwan 2023
- Invited talk**, “Quantifying the decrease of CO-to-H₂ conversion factor in galaxy centers”, Taiwanese Theoretical Astrophysics Workshop II, Taipei, Taiwan 2022
- Lunch talk, “Quantifying the decrease of CO-to-H₂ conversion factor in galaxy centers”, ASIAA, Taipei, Taiwan 2022
- Poster, ASAROC 2022, Chiayi, Taiwan 2022
- Colloquium**, “Multiwavelength observations of dust, gas, and metals in the $z \sim 0$ universe”, NCU, Taoyuan, Taiwan 2022
- Contributed talk, “Dust, gas, and metals: Observing Dust Evolution in Nearby Galaxies”, Galaxy Evolution Workshop 2021, Tokyo, Japan 2021
- Colloquium**, “Observations of Spatially Resolved Dust Evolution in Nearby Galaxies”, ASIAA, Taipei, Taiwan 2021
- Contributed talk, “Dust, gas and metals: Resolving the Dust Life Cycle in the Nearby Universe”, The AAS 235th Meeting, Honolulu, USA 2020

Special seminar, "Dust-to-Metals Relation in Nearby Galaxies", ASIAA, Taipei, Taiwan	2019
Poster, ASROC2019, Taichung, Taiwan	2019
Contributed talk, "The Variation of the Dust-to-Metals Ratio in Resolved Nearby Galaxies", Dusting the Universe, Tucson, USA	2019
Lunch talk, UCSD, San Diego, USA	2019
Tea time talk, UCSD, San Diego, USA	2018
Poster, CPHDUST, Copenhagen, Denmark	2018
Poster, ASROC2018, Kinmen, Taiwan	2018
Lunch talk, UCSD, San Diego, USA	2018

SERVICES

Colloquium committee @ ASIAA	2022 -
Journal club organizer @ ASIAA	2021 -
Postdoc representatives @ ASIAA	2021 -

OUTREACH EXPERIENCE

Student seminar @ ASIAA – lecturer	2021
Research in physics workshop for community college students @ UCSD – lecturer	2021
Python workshop for physics undergrads @ UCSD – presenter	2019
Life as a scientist @ Jianguo High School – lecturer	2019
STEM in Your Backyard: City Heights @ San Diego, USA – presenter	2018
Tech Trek @ UCSD – presenter	2017
Physics GRE bootcamp @ UCSD – teaching assistant	2016

AWARDS

Dean's Award, College of Science, National Taiwan University	2014
Dean's Award, College of Science, National Taiwan University	2011
Presidential Award, National Taiwan University	2011