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-sensitively observations from modern instruments, our understanding in the CO-to-H_2 conversion factor has become the limiting factor of our ability on quantifying star formation efficiency. I measure kpc-scale CO-to-H_2 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 *2021 - Current*
Postdoc Fellow

University of California San Diego *2014 - 2021*
Graduate Research Assistant
Teaching Assistant (TA) and Lab TA Coordinator, PHYS 1-ABC Lab

National Taiwan University *2012 - 2014*
Graduate Research Assistant

Taiwan (R.O.C.) Armed Forces *2011 - 2012*
Second Lieutenant (Company second-in-command)

EDUCATION

University of California San Diego *2014 - 2021*
Ph.D. (Physics and Astronomy)
Thesis: "Observations of Spatially Resolved Dust Evolution in Nearby Galaxies"
Adviser: Prof. Karin M. Sandstrom

National Taiwan University *2012 - 2014*
M.S. (Physics)
Thesis: "Plasmonic Enhanced Optical Disk Reactor for Wastewater Treatment"
Adviser: Prof. Din Ping Tsai

National Taiwan University *2007 - 2011*
B.S. (Physics)

PUBLICATIONS (AS FIRST OR SECOND AUTHOR)

8) **I-Da Chiang** et al., "Resolved Maps of the CO-to-H_2 Conversion Factor in 41 Nearby Galaxies", 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", ApJ in press, 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-H_2 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

(Planned) Contributed talk, "Resolved Maps of the CO-to-H_2 Conversion Factor in 41 Nearby Galaxies", East Asian Young Astronomers Meeting, Chiang Mai, Thailand *2024*

Contributed talk, "Tracing the kpc-scale CO-to-H_2 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-H_2 conversion factor in galaxy centers", Taiwanese Theoretical Astrophysics Workshop II, Taipei, Taiwan *2022*

Lunch talk, "Quantifying the decrease of CO-to-H_2 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 & Lunch talk committee @ ASIAA *2022 -*

"Galread" (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*