

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 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.

HI 21 cm Line & Radio Astronomy

The distribution of neutral gas is a key element in dust sciences and cold gas dynamics. The HI 21 cm line traces neutral hydrogen atoms in the ISM. I reduced new HI 21cm line data of ~ 30 galaxies observed by VLA with CASA. These new data allows us to construct a new dust-to-metals ratio survey in the nearby galaxies.

EMPLOYMENT

Institute of Astronomy and Astrophysics, Academia Sinica

2021 - Current

Postdoc Fellow

University of California San Diego

2014 - 2021

Graduate Research Assistant

- Built a python-based toolkit for dust SED fitting and multi-wavelength data analysis.
- Analyzed the dust-to-gas and dust-to-metal ratios in the spiral galaxy M101.
- Analyzed the dust-to-metal ratio and CO-to-H₂ conversion factor in detail in ~ 50 nearby galaxies.
- Examined the empirical radiation distribution law and the turbulent power spectrum in the local group galaxies with the dust SED fitting tools.
- Reduced HI 21cm line data of ~ 30 galaxies observed by VLA with the Common Astronomy Software Applications package (CASA).

University of California San Diego

2014 - 2016

Teaching Assistant (TA) and Lab TA Coordinator

- Familiarized new teaching assistants with lab setups and teaching skills.
- Led discussion sessions, which helped ~ 40 students each week.
- Led introductory level physics lab, with 24 students per session.
- Improved course materials from feedback from teaching assistants and students.

National Taiwan University

2012 - 2014

Graduate Research Assistant

- Improved the photo-degradation reactor for wastewater treatment with plasmonic nano-particles.
- Built the protocol for maintaining/using the sputter machine and clean room.

Taiwan (R.O.C.) Armed Forces

2011 - 2012

Second Lieutenant (Company second-in-command)

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	2014 - 2021
National Taiwan University M.S. (Physics) Thesis: "Plasmonic Enhanced Optical Disk Reactor for Wastewater Treatment" Adviser: Prof. Din Ping Tsai	2012 - 2014
National Taiwan University B.S. (Physics)	2007 - 2011

TEACHING EXPERIENCE

Lab TA Coordinator, PHYS 1-ABC Lab – UCSD	2015 - 2016
Teaching Assistant, PHYS 1-A Lab – UCSD	2014 - 2015

REFEREED PUBLICATIONS (AS FIRST OR SECOND AUTHOR)

- 6) **I-D. Chiang**, H. Hirashita, J. Chastenet, E.W. Koch, A.K. Leroy, E.W. Rosolowsky, K.M. Sandstrom, A. Sardone, J. Sun, T.G. Williams, "Kpc-scale properties of dust temperature in terms of dust mass and star formation activity", 2023, accepted by MNRAS, arXiv:2302.00262.
- 5) H. Hirashita, **I-D. Chiang**, "Analytic models of dust temperature in high-redshift galaxies", 2022, MNRAS, 516, 1612.
- 4) **I-D. Chiang**, K.M. Sandstrom, J. Chastenet, E. Koch, K. Kreckel, A.K. Leroy, A. Schrubba, D. Utomo, T. Williams, "Resolving the Dust-to-Metals Ratio and CO-to-H₂ Conversion Factor in the Nearby Universe", 2021, ApJ, 907, 29.
- 3) E.W. Koch, **I-D. Chiang**, D. Utomo, J. Chastenet, A.K. Leroy, E.W. Rosolowsky, K.M. Sandstrom, "Spatial power spectra of dust across the Local Group: No constraint on disc scale height", 2020, MNRAS, 492, 2663.
- 2) D. Utomo, **I-D. Chiang**, A.K. Leroy, K.M. Sandstrom, J. Chastenet, "The Resolved Distributions of Dust Mass and Temperature in Local Group Galaxies", 2019, ApJ, 874, 141.
- 1) **I-D. Chiang**, K.M. Sandstrom, J. Chastenet, L.C. Johnson, A.K. Leroy, D. Utomo, "The Spatially Resolved Dust-to-metals Ratio in M101", 2018, ApJ, 865, 117.

A full list of refereed publications 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
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RESEARCH PRESENTATIONS

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

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