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 auxiliary 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.

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)

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-H_2 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)

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)

4) **I-D. Chiang**, K.M. Sandstrom, J. Chastenet, E. Koch, K. Kreckel, A.K. Leroy, A. Schruba, D. Utomo, T. Williams, "Resolving the Dust-to-Metals Ratio and CO-to-H_2 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.

RESEARCH PRESENTATIONS

Contributed talk, "Dust, gas, and metals: Observing Dust Evolution in Nearby Galaxies", Galaxy Evolution Workshop 2021, NAOJ, 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*