

# I-DA CHIANG

[idchiang@ucsd.edu](mailto:idchiang@ucsd.edu) | (858) 999-1807 | LinkedIn: [idchiang](#)

## RESEARCH INTERESTS

---

### Dust life cycle and the interstellar medium

I am interested in the evolution of dust grains in the interstellar medium. One of my project 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 and radio data reduction

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

## EXPERIENCE

---

### University of California - San Diego, La Jolla, CA

*Sep. 2014 - Est. Jun. 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<sub>2</sub> conversion factor in detail in 5 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  $\sim 30$  galaxies observed by VLA with the Common Astronomy Software Applications package (CASA).

### University of California - San Diego, La Jolla, CA

*Sep. 2014 - Jun. 2016*

Teaching Assistant (TA) and Lab TA Coordinator

- Familiarized new teaching assistants with lab setups and teaching skills.
- Led discussion sessions, which helped  $\sim 40$  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, Taipei City, Taiwan

*Sep. 2012 - Jun. 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, Hsinchu County, Taiwan

*Aug. 2011 - Jul. 2012*

Second Lieutenant (Company second-in-command)

## EDUCATION

---

**University of California - San Diego**  
**Ph.D. (Physics and Astronomy)**  
Adviser: Prof. Karin M. Sandstrom

*Sep. 2014 - Est. Jun. 2021*

**National Taiwan University**  
**M.S. (Physics)**

*Aug. 2012 - Jul. 2014*

Thesis: “Plasmonic Enhanced Optical Disk Reactor for Wastewater Treatment”  
Adviser: Prof. Din Ping Tsai

**National Taiwan University**  
**B.S. (Physics)**

*Sep. 2007 - Jun. 2011*

## REFEREED PUBLICATIONS AS FIRST OR SECOND AUTHOR

---

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-H<sub>2</sub> Conversion Factor in the Nearby Universe”, 2020, arXiv:2011.10561, *accepted by ApJ*.

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 publication list at ADS Public Library is available [here](#).

## REFEREED PUBLICATIONS AS OTHER COAUTHOR

---

4) J. Chastenet, K. Sandstrom, **I-D. Chiang**, B.S. Hensley, B.T. Draine, K.D. Gordon, E.W. Koch, A.K. Leroy, D. Utomo, T.G. Williams, “Benchmarking Dust Emission Models in M101”, 2020, *submitted to ApJ*.

3) J. Sun, A.K. Leroy, E.C. Ostriker, A. Hughes, E. Rosolowsky, A. Schrubba, E. Schinnerer, G.A. Blanc, C. Faesi, J.M.D. Kruijssen, S. Meidt, D. Utomo, F. Bigiel, A.D. Bolatto, M. Chevance, **I-D. Chiang**, D. Dale, E. Emsellem, S.C.O. Glover, K. Grasha, J. Henshaw, C.N. Herrera, M.J. Jimenez-Donaire, J.C. Lee, J. Pety, M. Querejeta, T. Saito, K. Sandstrom, A. Usero, “Dynamical Equilibrium in the Molecular ISM in 28 Nearby Star-Forming Galaxies”, 2020, ApJ, 892, 148.

2) A.K. Leroy, K.M. Sandstrom, D. Lang, A. Lewis, E.A. Behrens, J. Chastenet, **I-D. Chiang**, M.J. Gallagher, D. Utomo, “A  $z = 0$  Multi-wavelength Galaxy Synthesis I: A WISE and GALEX Atlas of Local Galaxies”, 2019, ApJS, 244, 24.

1) J. Chastenet, K.M. Sandstrom, **I-D. Chiang**, A.K. Leroy, D. Utomo, C. Bot, K.D. Gordon, B.T. Draine, Y. Fukui, T. Onishi, K. Tsuge, “Polycyclic Aromatic Hydrocarbon Fraction at  $\sim 10$  pc scale in the Magellanic Clouds”, 2019, ApJ, 876, 62.

## RESEARCH PRESENTATIONS

---

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 | <i>2019</i> |
| Lunch talk, University of California, San Diego, USA   | <i>2019</i> |
| Tea time talk, University of California, San Diego, USA  | <i>2018</i> |
| Poster, CPHDUST, Copenhagen, Denmark   | <i>2018</i> |
| Poster, ASROC2018, Kinmen, Taiwan  | <i>2018</i> |
| Lunch talk, University of California, San Diego, USA   | <i>2018</i> |

## **TEACHING EXPERIENCE**

---

|  |                    |
|--|--------------------|
| Lab TA Coordinator, PHYS 1-ABC Lab – University of California, San Diego | <i>2015 - 2016</i> |
| Teaching Assistant, PHYS 1-A Lab – University of California, San Diego   | <i>2014 - 2015</i> |

## **OUTREACH EXPERIENCE**

---

|  |             |
|--|-------------|
| Python workshop for physics undergrads – presenter         | <i>2019</i> |
| STEM in Your Backyard: City Heights – presenter            | <i>2018</i> |
| Tech Trek: University of California, San Diego – presenter | <i>2017</i> |
| Physics GRE bootcamp at UCSD – teaching assistant          | <i>2016</i> |

## **AWARDS**

---

|  |             |
|--|-------------|
| Dean’s Award, College of Science, National Taiwan University | <i>2014</i> |
| Dean’s Award, College of Science, National Taiwan University | <i>2011</i> |
| Presidential Award, National Taiwan University               | <i>2011</i> |