Yu-Hsuan Teng (Eltha)

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Education

University of California San Diego Sep 2019–*present*
Ph.D. in Physics (in progress) Advisor: Prof. Karin Sandstrom

National Taiwan University Sep 2017–Jun 2019
M.S. in Physics Advisors: Dr. Naomi Hirano and Prof. You-Hua Chu
Thesis: "Physical Conditions and Kinematics of the Filamentary Structure in Orion Molecular Cloud 1"

Academia Sinica Institute of Astronomy and Astrophysics Jul 2016–Jun 2019
Student Advisor: Dr. Naomi Hirano

National Taiwan University Sep 2013–Jun 2017
B.S. in Electrical Engineering Research advisor: Prof. Jean-Fu Kiang

Research Experience

CO-to-H_2 Conversion Factors in Nearby Galaxy Centers using ALMA Jan 2020–*present*
- Conducted multi-line modeling and a Bayesian likelihood analysis to constrain multiple environmental parameters in the galaxy center of NGC 3351
- Derived the spatial distribution of the CO-to-H_2 conversion factor in the center of NGC 3351 and studied responsible physical conditions and mechanisms

AGN Outflows from Low-redshift Quasars (Advisor: Prof. Alison Coil) Jun–Dec 2020
- Reduced Keck Cosmic Web Imager (KCWI) data of 11 low-redshift active galactic nuclei (AGNs) and analyzed structure and kinematics in [OII], [OIII], [NeIII], [NeV], and Balmer lines

Physical Conditions and Gas Kinematics in OMC1 Jul 2016–Jul 2019
- Conducted hyperfine spectral fitting, filament identification, and LTE/non-LTE analysis to derive the physical conditions in Orion Molecular Cloud 1 (OMC1)
- Analyzed the gas motion inside the filaments and compared with filament/core formation models
- Proposed an observation to examine the existence of a spatially extended feature in OMC1

Image Reconstruction in Radio Interferometry Oct 2017–May 2018
- Developed codes for simulating the instantaneous visibility data observed with SKA
- Proposed a novel reconstruction model associating compressed sensing with Stockwell transform

Gravitational Wave Theories and Simulations Feb 2016–Jun 2017
- Implemented Runge-Kutta method to solve light trajectories near a Schwarzschild/Kerr geometry
- Simulated the gravitational waves from a binary black hole merger based on far-field theories

Publications

- **Yu-Hsuan Teng**, Karin Sandstrom, Jiayi Sun, Adam Leroy, Eva Schinnerer, John-David Smith, Alberto Bolatto *et al.*, "ALMA Observations and Multi-line Modeling of the Galaxy Center of NGC 3351", 2021, *American Astronomical Society (**AAS**) Meeting Abstracts*, 237, #126.08.
- **Yu-Hsuan Teng** and Naomi Hirano, "Physical Conditions and Kinematics of the Filamentary Structure in Orion Molecular Cloud 1", 2020, *Submillimeter Array Newsletter*, 30.
- **Yu-Hsuan Teng** and Naomi Hirano, "Physical Conditions and Kinematics of the Filamentary Structure in Orion Molecular Cloud 1", 2020, *The Astrophysical Journal (**ApJ**)*, 893, 63.

Academic Awards

Chambliss Astronomy Achievement Award, *American Astronomical Society* Feb 2021
Chien-Shiung Wu Fellowship, *The Physical Society of Taiwan* Feb 2020
Physics Excellence Award, *Department of Physics, UC San Diego* Oct 2019–Jun 2020
Dean's Award, *College of Science, National Taiwan University* Jun 2019
Best Oral Presentation Award, *Astronomical Society of the Republic of China* May 2018

Observing Experience

Second-shift remote operation, *Submillimeter Array (SMA), Taipei, Taiwan* Jul 2017–Jul 2019
On-site operation, *Submillimeter Array (SMA), Mauna Kea, HI, USA* Jun 2018
Remote observation, *Submillimeter Telescope (SMT)* Nov 2018
Kenting Observatory Program, *Kenting Observatory, Pingtung, Taiwan* Jul 2012, Jan 2014

Observing Proposals

- **Yu-Hsuan Teng** and Naomi Hirano, "Studying the Properties and Kinematics in the Nearest Massive Hub-Filament Region", accepted by the Submillimeter Telescope (SMT) (2018B).
- **Yu-Hsuan Teng** and Li-Hsin Chen, "Star Formation of a Lyman-break Galaxy Candidate at $z = 8.3$", submitted to Atacama Large Millimiter/submillimeter Array (ALMA).

Academic Talks

- "Molecular Gas and CO-to-H_2 Conversion Factors in the Center of NGC 3351", *CASS Journal Club talk at UC San Diego*, La Jolla, CA, May 2021.
- "ALMA Observations and Multi-line Modeling of the Galaxy Center of NGC 3351", *contributed talk at 237th Meeting of the American Astronomical Society (**AAS**)*, Virtual, Jan. 2021.
- "Properties and Kinematics in OMC1 with N_2H^+ Observations", *lunch talk at ASIAA*, Taipei, Taiwan, Sep. 2018.
- "Non-LTE Analysis and Filamentary Structure in OMC1 with N_2H^+ Observations", *invited talk at ASIAA Star Formation Meeting*, Taipei, Taiwan, Aug. 2018.
- "Filamentary Structure and Star Formation in OMC1", *contributed talk at Annual Meeting of the Astronomical Society of the Republic of China*, Kinmen, Taiwan, May 2018.

Training

SOKENDAI Asia Winter School, *Special topics on "Star and Planet Formation: Key Questions and Challenges", National Astronomical Observatory of Japan (NAOJ)* Feb–Mar 2019

NCTS Summer School, *Special topics on "Accretion and Emission of Accreting Black Hole", National Center for Theoretical Science (NCTS)* Sep 2018

TIARA Summer School, *Special topics on "Origins of the Solar System", Theoretical Institute for Advanced Research in Astrophysics (TIARA)* Jul 2018

TIARA Summer School, *Special topics on "Astrostatistics & Big Data", TIARA* Sep 2017
TIARA Summer School, *Special topics on "Radio Astronomy", TIARA* Aug 2016

Programming Skills

Programming languages—Python, C++, MATLAB, IDL, C shell
Scientific libraries—Astropy, RADEX, MIRIAD, CLASS, CASA

Teaching Experience

Teaching Assistant, *PHYS 162 (Cosmology), UC San Diego* Spring 2021

Teaching Assistant, *PHYS 163 (Galaxies and Quasars), UC San Diego* Spring 2020, Winter 2021

Teaching Assistant, *PHYS 2A (Mechanics), UC San Diego* Spring 2020

Teaching Assistant, *PHYS 1B (Electromagnetism) Lab, UC San Diego* Winter 2020

Teaching Assistant, *PHYS 1A (Mechanics) Lab, UC San Diego* Fall 2019

For more information, welcome to my page: https://elthateng.github.io