

Yu-Hsuan Teng (Eltha)

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Education

Ph.D. in Physics (Expected) , <i>University of California San Diego</i>	Sep 2019–Present
M.S. in Physics , <i>National Taiwan University</i>	Sep 2017–Jun 2019
B.S. in Electrical Engineering , <i>National Taiwan University</i>	Sep 2013–Jun 2017

Research Experience

CO-to-H₂ Conversion Factors in Nearby Galaxy Centers using ALMA 🌌 Jan 2020–Present
Advisor: Prof. Karin Sandstrom (UCSD)

- 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-H₂ conversion factor in the center of NGC 3351 and studied responsible physical conditions and mechanisms

AGN Outflows from Low-redshift Quasars Jun–Dec 2020
Advisor: Prof. Alison Coil (UCSD)

- 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
Advisor: Dr. Naomi Hirano (ASIAA)

- 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
Advisor: Prof. Jean-Fu Kiang (NTU)

- Developed codes for simulating the instantaneous visibility data observed with SKA
- Proposed a novel reconstruction model associating compressed sensing with Stockwell transform
- Implemented other state-of-the-art algorithms to compare with the proposed methods

Gravitational Wave Theories and Simulations 🌌 Feb 2016–Jun 2017
Advisor: Prof. Jean-Fu Kiang (NTU)

- Studied general relativity, spacetime perturbation theories and gravitational waves
- Implemented Runge-kutta method to solve the light trajectories near a Schwarzschild/Kerr geometry
- Simulated the gravitational waves from a binary black hole merger based on far-field theories

Publication

- [1] **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. 

Honors and Awards

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

Observing Experience

Submillimeter Array (SMA) Operation Jul 2017–Jul 2019



- Second-shift remote operation from Taipei, Taiwan
- On-site operation at the Mauna Kea summit in Hawaii (five nights)

Submillimeter Telescope (SMT) Remote Observation Nov 2018

Kenting Observatory Program, *organized by Prof. Wei-Hsin Sun* Jul 2012, Jan 2014

- Operated 14- and 16-inch optical telescopes and conducted data reduction and analysis
- Analyzed HR diagrams of observed star clusters and magnitude variations in observed variable stars

Observing Proposals

- [1] "Studying the Properties and Kinematics in the Nearest Massive Hub-Filament Region," accepted by the Submillimeter Telescope of the Arizona Radio Observatory (2018B) 
- [2] "Star Formation of a Lyman-break Galaxy Candidate at $z = 8.3$ ", submitted to ALMA 

Academic Talks

- "ALMA Observations and Multi-line Modeling of the Galaxy Center of NGC 3351," *237th Meeting of the American Astronomical Society*, Jan. 2021.
- "Properties and Kinematics in OMC1 with N_2H^+ Observations," *ASIAA Lunch Talk*, Sep. 2018.
- "Non-LTE Analysis and Filamentary Structure in OMC1 with N_2H^+ Observations," *ASIAA Star Formation Meeting*, Aug. 2018.
- "Filamentary Structure and Star Formation in OMC1," *Annual Meeting of the Astronomical Society of the Republic of China*, May 2018.

Teaching Experience

Teaching Assistant , <i>PHYS 163 (Galaxies), UCSD</i>	Spring 2020, Winter 2021
Teaching Assistant , <i>PHYS 2A (Mechanics), UCSD</i>	Spring 2020
Teaching Assistant , <i>PHYS 1B (E&M) Lab, UCSD</i>	Winter 2020
Teaching Assistant , <i>PHYS 1A (Mechanics) Lab, UCSD</i>	Fall 2019

Training

SOKENDAI Asia Winter School , <i>National Astronomical Observatory of Japan</i>	Feb–Mar 2019
○ Special topics on "Star and Planet Formation: Key Questions and Challenges"	

NCTS Summer School, *National Center for Theoretical Science*

Sep 2018

- Special topics on "Accretion and Emission of Accreting Black Hole"

TIARA Summer Schools, *Theoretical Institute for Advanced Research in Astrophysics*

- Special topics on "Origins of the Solar System" (Jul 2018), "Astrostatistics & Big Data" (Sep 2017), and "Radio Astronomy" (Aug 2016)

Skills

Languages.....

- Mandarin (native)
- English (TOEFL iBT—*Total:112, R:30, L:30, S:23, W:29*)

Programming.....

Proficient in Python; familiar with MATLAB, IDL, shell script

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