

# Wei-Chih Huang

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## Education

Aug. 2019 – *PhD in Physics*

Dec. 2025 **Texas A&M University, US**

Dissertation: Probing Beyond Standard Model Particles with Inelastic Nuclear Scattering

Advisor: Bhaskar Dutta

Aug. 2015 – *BS in Physics*

Jun. 2019 **National Tsing Hua University, Taiwan**

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## Fields of Interest

Dark Matter, High Energy Physics (phenomenology), Nuclear Physics, Neutrino Physics

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## Professional Experience

Aug. 2019 – **Graudate Research Assistant**

present *Physics & Astronomy department, Texas A&M University, US*

- Computed the nuclear structure by FORTRAN, MPI/OpenMP, Python, C++ and Mathematica
- Construct nuclear scattering models for dark matter and axion
- Programmed Python/C++ to do data analysis and statistical analysis

Jun. 2025 – **Data Science PhD Internship**

Aug. 2025 *Capital One, US*

- Developed predictive models for future payments and default probability
- Built PyTorch machine learning models (GBM, NN, LSTM) to optimize loss mitigation strategies for auto loans
- Fetched data from Snowflake and did statistical data analysis on AWS
- Collaborated with product managers to translate model outputs into action-based decisions

Aug. 2022 – **Data Science Ambassador**

Aug. 2023 *Physics & Astronomy department, Texas A&M University, US*

- Provided training and consulting to the department and the students (webpage)
- Designed interactive workshops on topics including Python, Linux, statistics, data analysis, and machine learning

Nov. 2017 – **Undergraduate Research Assistant**

Jun. 2019 *Physics department, National Tsing Hua University, Taiwan*

- Formalized inflation and late-time acceleration (dark energy) by  $f(R)$  modified gravity
- Programmed Mathematica and Python to simulate the evolution of the universe

Jul. 2018 – **Undergraduate Summer Research**

Aug. 2018 *The University Consortium of ALMA–Taiwan*

- Studied dark matter in merging galaxies
- Used CASA to clean, analyze and visualize the data imaging from extragalactic database to infer the dark matter distribution

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## Publications

**Novel Approach to Investigate ATOMKI Anomaly Using Coherent CAPTAIN-Mills Detectors** inspireHEP

Oct. 2024 Bhaskar Dutta, Bai-Shan Hu, *Wei-Chih Huang*, Richard G. Van de Water

**Indirect detection of dark matter absorption in the Galactic Center** inspireHEP

Apr. 2024 Kimberly K. Boddy, Bhaskar Dutta, Addy J. Evans, *Wei-Chih Huang*, Stacie Moltner, Louis E. Strigari

**Prospects for Light Dark Matter Searches at Large-Volume Neutrino Detectors** inspireHEP

Feb. 2024 Bhaskar Dutta, *Wei-Chih Huang*, Doojin Kim, Jayden L. Newstead, Jong-Chul Park, Iman Shaukat Ali

**Short Baseline Neutrino Anomalies at Stopped Pion Experiments** inspireHEP

Oct. 2023 Iain A. Bisset, Bhaskar Dutta, *Wei-Chih Huang*, Louis E. Strigari

**Probing the dark sector with nuclear transition photons** inspireHEP

Feb. 2023 Bhaskar Dutta, *Wei-Chih Huang*, Jayden L. Newstead

**Inelastic nuclear scattering from neutrinos and dark matter** inspireHEP

Dec. 2022 Bhaskar Dutta, *Wei-Chih Huang*, Jayden L. Newstead, Vishvas Pandey

**Axion-Like Particle Production at Beam Dump Experiments with Distinct Nuclear Excitation Lines** inspireHEP

Aug. 2022 Loyd Waites, Adrian Thompson, Adriana Bungau, Janet M. Conrad, Bhaskar Dutta, *Wei-Chih Huang*, Doojin Kim, Michael Shaevitz, Joshua Spitz

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## Talks

Apr. 2023 **Interplay of Nuclear, Neutrino and BSM Physics at Low-Energies**  
Probing BSM particles using inelastic nuclear scattering

Oct. 2022 **Particle Physics on the Plains**  
Inelastic Dark Matter-Nucleus Scattering in Stopped-pion Experiments using Transition Photons

May. 2022 **2022 Phenomenology Symposium**  
Inelastic neutrino-nucleus and dark matter-nucleus scattering

Jul. 2021 **2021 Meeting of the Division of Particles and Fields of the American Physical Society (DPF21)**

The calculation of inelastic neutrino-nucleus scattering

Oct. 2021 **2021 Magnificent CEvNS Workshop**  
Inelastic neutrino-nucleus and dark matter-nucleus scattering

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## Teaching Experience

2022 – **TAMU Physics Department**

2023 Workshop Lecturer: Data Science in Physics (webpage)

Fall 2022 **TAMU Physics 207, Electricity and Magnetism for Engineering and Science**  
Teaching Assistant

Summer 2022 **TAMU Physics 207, Electricity and Magnetism for Engineering and Science**  
Teaching Assistant (Lab)

Spring 2022 **TAMU Physics 207, Electricity and Magnetism for Engineering and Science**  
Teaching Assistant

Fall 2021 **TAMU Physics 206, Newtonian Mechanics for Engineering and Science**  
Teaching Assistant

Spring 2021 **TAMU Physics 207, Electricity and Magnetism for Engineering and Science**  
Teaching Assistant

Fall 2020 **TAMU Physics 207, Electricity and Magnetism for Engineering and Science**  
Teaching Assistant

Spring 2020 **TAMU Physics 206, Newtonian Mechanics for Engineering and Science**  
Teaching Assistant

Fall 2019 **TAMU Physics 408, Thermodynamics and Statistical Mechanics**  
Teaching Assistant (grader)

Spring 2016 **Shu Guang Girls' Senior High school**  
Teaching Assistant (STEM subjects)

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## Honors and Awards

### Data Science Ambassador Scholarship

Fall 2022 Data Science Ambassador Scholarship Program at Texas A&M Institute of Data Science

### Undergraduate Research Scholarship

Fall 2018 Scholarship for the  $f(R)$  gravity project

### **Three Years Tsing Hua University Scholarship**

2015 - 2018 Tuition waiver, housing and textbooks

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### **Programming Skills**

Python, NumPy, Pandas, Matplotlib, SciPy, PyTorch, TensorFlow

C/C++, Bash, Git, GitHub, Docker, Mathematica, Javascript, LaTeX