s104021230@tamu.edu
noctildon.github.io
huang
linkedin
github
inspireHEP

# Wei-Chih Huang

## Education

Aug. 2019 – Dec. 2025 *PhD in Physics*
**Texas A&M University, US**

Aug. 2015 – Jun. 2019 *BS in Physics*
**National Tsing Hua University, Taiwan**

## Fields of Interest

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

## Professional Experience

Jun. 2025 – Aug. 2025 **Data Science Internship**
*Capital One*

- Built PyTorch machine learning models (GBM, NN, LSTM) to optimize loss mitigation strategies for auto loans
- Designed customized time series model, training loop and loss function to better aling with business needs
- Developed predictive models for future payments and chargeoff probability with 99% accuracy
- Fetched 10 TB of data from SnowFlake and did statistical data analysis on AWS
- Collaborated with product managers to translate model outputs into action-based decisions

Aug. 2019 – present **Graudate Research Assistant**
*Physics & Astronomy department, Texas A&M University, US*

- Design and calculate the structure of various kinds of nuclei by FORTRAN, MPI/OpenMP, Python, and Mathematica
- Construct models for dark matter and axion and the interaction with nuclei
- Programmed Python to do data analysis and statistical analysis

Nov. 2017 – Jun. 2019 **Inflation and Late-time Acceleration in $f(R)$ Gravity Theory**
*Physics department, National Tsing Hua University, Taiwan*

- Formalized the evolution of the universe by $f(R)$ modified gravity
- Programmed Mathematica and Python to stimulate the evolution of the universe

Jul. 2018 – Aug. 2018 **Dark Matter in Merging Galaxies**
*The University Consortium of ALMA–Taiwan*

- Did data analysis and data visualization on dark matter around Galactic center
- Used CASA to clean, analyze and visualize the data imaging from extragalactic database, and infer the dark matter distribution

- Automated the entire analysis process by Python

## 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

## 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

## Teaching Experience

2022 – 2023 **TAMU Physics Department**
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

## 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 (2% acceptance rate)**
2015 - 2018 Tuition wavier, including housing and textbooks

## Programming Skills

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

Bash, Git, GitHub, Docker, Mathematica, Javascript, LaTeX