

# WEI-CHIH HUANG

## EDUCATION

[Email](#) ◇ [Linkedin](#) ◇ [Github](#) ◇ [Personal Website](#)

**PhD in Physics**, Texas A&M University, US  
**BS in Physics**, National Tsing Hua University, Taiwan

Aug 2019 - Aug 2025 (expected)  
Aug 2015 - Jun 2019

## PROJECTS

**Aggie Job Referral** - Django, SQLite, PostgreSQL, Heroku, Bootstrap

- Built a referral website to reduce the time of networking by 40%
- Deployed to Heroku with specially designed PostgreSQL database schema to save the disk space by 20%

**PyBigstick** - NumPy, Pandas, Matplotlib, Streamlit, Docker

[github](#)

- Saved 95% of time writing input scripts for [BIGSTICK](#) (Large Scale Nuclear Shell Model Code)
- Analyzed any nucleus and predict experimental outcomes with at least 60% accuracy
- Used Streamlit and Docker to create an interactive data dashboard on any platform

**Pro Cyclists Race Analysis** - NumPy, Pandas, SciPy, BeautifulSoup, scikit-learn, XGBoost, Pytorch

[github](#)

- Implemented high performance multi-threading web scraping script by BeautifulSoup (5 times faster)
- Preprocessed the data (clean, format, normalize) with NumPy, Pandas, SciPy, and scikit-learn
- Made the prediction with 20% better performance than a trivial model with scikit-learn, XGBoost, and Pytorch

**Curve Fitting GUI** - SciPy, NumPy, Matplotlib, PyQt

[github](#)

- User friendly graphical user interface tool for curve fitting

## RESEARCH EXPERIENCE

**Inelastic Neutrino/Dark Matter - Nucleus Scattering by BIGSTICK**

- Parallelized and compiled BIGSTICK with MPI/OpenMP in computer cluster
- Did the statistical analysis on the large multi-dimensional outputs by Python and Mathematica
- Published 3 papers and presented several successful talks at workshops

**Searching for Axions in High Energy Physics Experiments**

- Construct analytical models for axion (a theoretical particle) in the experiments and automated the statistical analysis

**Inflation and Late-time Acceleration in a New Gravity Theory**

- Created time-dependent partial differential equations to describe the features of the universe
- Programed Mathematica and Python to stimulate and visualize the evolution of the universe

**Dark Matter in Merging Galaxies**

- Automated the analysis process of dark matter near a galaxy with CASA (data processing software for radio telescopes arrays, written in IPython)
- Presented a talk [slides](#)

**Application of Deep Learning in AdS/CFT**

- Integrated deep learning with AdS/CFT (a well-known theory in high energy physics) [text](#)

**Coherent Elastic neutrino-nucleus Scattering ( $\text{CE}\nu\text{NS}$ ): Sterile Neutrino Search**

- Construct a statistics model for sterile neutrino

## PUBLICATION

- Probing the dark sector with nuclear transition photons  
*Bhaskar Dutta, **Wei-Chih Huang**, Jayden L. Newstead*

[arxiv](#)

- Inelastic nuclear scattering from neutrinos and dark matter [arxiv](#)  
*Bhaskar Dutta, **Wei-Chih Huang**, Jayden L. Newstead, Vishwas Pandey*
- Axion-Like Particle Production at Beam Dump Experiments with Distinct Nuclear Excitation Lines [arxiv](#)  
*Loyd Waites, Adrian Thompson, Adriana Bungau, Janet M. Conrad, Bhaskar Dutta, **Wei-Chih Huang**, Doojin Kim, Michael Shaevitz, Joshua Spitz*

## EXTRA-CURRICULAR ACTIVITIES

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- Project Manager at [Aggie Coding Club](#) Feb - Nov 2022
- Data Science Ambassador representing Physics Department at Texas A&M [webpage](#) 2022 - 2023

## HONORS AND AWARDS

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- **Three Years Tsing Hua University Scholarship (2% acceptance rate)** 2015 - 2018  
Tuition waiver plus accommodation and textbooks subsidy
- **Undergraduate Research Scholarship** Fall 2018  
The scholarship for the New Gravity Theory
- **Data Science Ambassador Scholarship** 2022 - 2023  
Data Science Ambassador Scholarship Program at Texas A&M Institute of Data Science

## TEACHING EXPERIENCE

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- **Lecturer** *Texas A&M Physics Department* Data Science in Physics 2022 - 2023
- **Teaching Assistant** *Texas A&M* Thermodynamics and Statistical Mechanics Fall 2019
- **Teaching Assistant** *Texas A&M* Electricity and Magnetism for Engineering and Science (Lab) Summer 2020
- **Teaching Assistant** *Texas A&M* Newtonian Mechanics for Engineering and Science 2020 - 2022
- **Teaching Assistant** *Texas A&M* Electricity and Magnetism for Engineering and Science 2020 - 2022