JIA-MING ZHU-GE

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University of Science and Technology of China, No. 96 Jinzhai Road, Hefei, Anhui, 230026, P.R.China

EDUCATION

University of Science and Technology of China (USTC) **Anhui, China**
Wang Shouguan Talent Program in Astronomy, School of Physical Science
Bachelor of Science in Astronomy (expected) Sep. 2019 - Jul. 2023
- Overall GPA: **3.8** / 4.3 Rank: **3rd** / 30

HONORS

- Outstanding Student Scholarship Awarded by USTC 2022, 2021, 2020
- Second Prize in China Undergraduate Physics Tournament in Anhui Province 2021
- First Prize in Anhui College Students' Mathematics Competition 2020

RESEARCH INTERESTS

Machine learning, Fast Radio Bursts, Multi-messenger Astronomy, High-energy Astrophysics

PAPERS

- **Machine learning classification of CHIME fast radio bursts: II. Unsupervised Methods**

Jia-Ming Zhu-Ge, Jia-Wei Luo, Bing Zhang,
Submitted to MNRAS 2022. Aug. 2022

- **Machine learning classification of CHIME fast radio bursts: I. Supervised Methods**

Jia-Wei Luo, **Jia-Ming Zhu-Ge,** Bing Zhang,
Accepted by MNRAS 2022. Nov. 2022

RESEARCH EXPERIENCE

Identifying the Physical Origin of Gamma-Ray Bursts with Machine Learning Methods Las Vegas, America
Advisors: **Prof.** **Bing Zhang** (Nevada Center for Astrophysics, University of Nevada) Aug. 2022 - Now
- Assisted to select the features of GRBs and gave advice about feature importance in a supervised way
- Revealed the physical origin of GRBs with unsupervised machine learning
- Paper in preparation: Identifying the physical origin of Gamma-Ray Burst with supervised machine learning methods (third author)

Undergraduate Training Program for Innovation: **Assessing the Detection Capability of the Extreme Ultraviolet Radiation of Active Galactic Nuclei by the China Space Station Telescope (CSST)** Hefei, China
Advisors: **Prof.** **Zhenyi Cai** (CAS Key Laboratory for Research in Galaxies and Cosmology, USTC) Jun. 2022 - Now
- Derived k correction and cosmological quantities
- Simulated the observed capability of CSST for the QSOs in different redshifts, according to the luminosity function and transmission curve
- Planned to consider more corrections
- Paper in preparation

Machine Learning Classification of Fast Radio Bursts Las Vegas, America
Advisors: **Prof.** **Bing Zhang** (Nevada Center for Astrophysics, University of Nevada) Apr. 2022 - Aug. 2022
- Undertook the unsupervised machine learning way
  Independently derived and calculated the physical features, tested and selected machine learning models
- Participated in the supervised machine learning way
  Tested the models and checked features, overlapped the result with unsupervised one
- Successfully classified FRBs and concluded the number of types in FRBs
  Presented the list of repeaters candidates and reported it in the FAST group meeting
- Papers: 2210.02471(arxiv.org) (**Submitted, 1st author**); 2210.02463 (arxiv.org) (**Accepted, 2nd author)**

Period Search of Fast Radio Bursts in Milliseconds Scale Hefei, China
Advisors: **Prof.** **Zigao Dai**, **Dr.** **Shuqing Zhong** (Department of Astronomy, USTC) Feb. 2022 - Apr. 2022
- Utilized three different algorithms to search periods in FRB121102, FRB190520B, FRB20201124A
- Crossing checked and modified the code to be available on the millisecond scale
- Found different periods in those FRBs, but no milliseconds periods

ACADEMIC PROJECTS

***Electromagnetism A:* Conditions and errors of electric multipole expansion** Hefei, China

Advisors: **Prof. Chunkai Xu** (Department of Modern Physics, USTC) Feb.2021 - Aug.2021

- Derived the electric multipole expansion to high order
- Programmed and visualize the expansion approximation in Matlab
- Derived the expression of the error in different orders and visualized them
- Academic achievement: Electromagnetism A (95)

***Freshman Seminar:* Recognize handwriting numbers by Neural Network** Hefei, China

Advisors: Prof. **Rui Yan** (Department of Modern Mechanics, USTC) Nov. 2019 - May 2020

- Read related books and papers to learn the neural network
- Programmed the neural network in C language, including initialization, training and testing, based on the MNIST database
- Achieved an accuracy of 97%.
- Academic achievement: Freshman Seminar (A+)

TEACHING ASSISTANT

Introduction to Astronomy (Fall 2022) Sep. 2022 - Jan. 2023

- Instructor: Prof. **Yongquan Xue** (Department of Astronomy, USTC)
- Credit 2; Class: 112 juniors; Course Website: staff.ustc.edu.cn/~xuey/IAC/

Electromagnetism A (Spring 2022) Feb. 2022 - Aug. 2022

- Instructor: Prof. **Chunkai Xu** (Department of Modern Physics, USTC)
- Credit 4; Class: 122 juniors

SELECTED COURSES

Computer Programming A (90)	Theoretical Mechanics A (94)	Quantum Mechanics (90)
Function of Complex Variable A (90)	Electromagnetism A (95)	Electrodynamics (91)
Equations of Mathematical Physics A (90)	Introduction to Astronomy (98)	*Observational Astrophysics (91)
*The Theory of General Relativity (89)	*Galactic Astronomy (89)	*The Physics of Compact Objects (In progress)

** Represent graduate course*

EXTRACURRICULAR ACTIVITIES & INTERESTS

- Volunteer in the "Daily Up" program to take care of children with intellectual disabilities Jan. 2021 - Jun. 2021
- Taking sign language lessons given by the Volunteer Association (also as a member) Jan. 2021 - Jun. 2021
- Volunteer in welcoming activities for the new students Sep. 2020
- Member of the Student Union in the School of Engineer Science Sep. 2019 - Jun. 2020

SKILLS & TESTS

Programming: C, Python, LATEX, MATLAB, Markdown

TOEFL: 98 (R: 29; L: 26 (highest: 28); S: 22 (highest: 23); W: 21(highest: 22))

GRE: 320+3 (VR: 150, QR: 170, AW: 3)