

Haowen Zhong | Curriculum Vitae

HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY – SCHOOL OF PHYSICS

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Education Background

Huazhong University of Science and Technology
School of Physics, Bachelor of Science in Physics Candidate
GPA 90.52/100 (3.93/4.00) | Rank: 7.6%

Hubei, China
September 2017-present

Professional Experience

Internship | Shanghai Astronomical Observatory, Chinese Academy of Sciences

Shanghai, China
June 2020-August 2020

- Used **Effective-one-body(EOB) formalism** to simulate the orbit of **Black Hole Binary** with **Fortran**
 - Successfully simulated **3-dimensional circular and eccentric orbits** of two black holes using EOB formalism considering the effect of spin
 - Previous model was limited to 2-dimensional analysis with circular orbit, here I successfully generalized the model from 2D to 3D by considering the influence of eccentricity ratio(e) and orbit inclination(ι).

Summer Session at California University of Berkeley

California, US
July 2019-August 2019

- Course: Introduction to General Astronomy GPA:95.27(A)
 - Learned the **general knowledge** about planets, stars, galaxies and the evolution process of the universe etc.
 - Completed three course projects independently **E.g.** construct pretty pictures of nebula using **Image J**
- Course: Introduction to Scientific Programming GPA:88.16(B+)
 - Learned using **Python** to do **scientific programming** and learned algorithms like **Monte Carlo**, **PCA** etc.
 - Finished the Final project using **MCMC** to estimate the parameters of Mercury using data released by NASA

Researcher | School of Physics, Huazhong University of Science and Technology

Hubei, China

- Researcher | Research group of Biping Gong *October 2019-February 2020*
 - Explored the new method to detect gravitational waves using an **Atom Interferometer** rather than a traditional **Laser Interferometer** to decrease the size of whole system without decreasing detecting precision
 - Found the limitation of **Atom Interferometers**: the configuration of a kilometer-level atom interferometer must be vertical, so we can not build a 3D atom interferometer system like what we can do for a laser interferometer to improve its ability to locate the gravitational wave source
- Researcher | Research group of Biping Gong *May 2019-September 2019*
 - Investigated the application of **Mössbauer Effect** in astrophysics to measure gravitational red shift
 - Focused on the details of experiments and figured out the constraints of experimental environments
 - Concluded that it was nearly impossible to use **Mössbauer Effect** to detect gravitational waves because of the precision was not high enough(10^{-16} v.s. 10^{-21})
- Team Leader | Research group of Shiyong Liu *April 2018-April 2019*
 - Used **Support Vector Machine(SVM)** to predict if a certain protein is a **RNA binding protein(RBP)** or not by analyzing the protein sequence
 - Added a new function to predict the class of RBP on basis of a RBP prediction software **RBPPred**
 - Learned knowledge of Linux System and basic syntax of Bash

Extracurricular

- o Member of the arts department of students union of School of Life Science
- o Organized fun sports meeting in School of Life Science

September 2017-January 2018
December 2017

Honors & Award

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| o National Scholarship (2 out of 170) | 2020 |
| o Merit Student Scholarship (10 out of 170) | 2020 |
| o National Astronomical Observatory Scholarship (2 out of 340) | 2020 |
| o National Astronomical Observatory Scholarship (2 out of 317) | 2019 |
| o Scholarship of Academic Excellence (17 out of 170) | 2019 |
| o Scholarship of Academic Excellence in school of physics (8 out of 170) | 2019 |
| o S prize of Interdisciplinary Contest In Modeling | 2019 |
| o Scholarship of Academic Excellence for freshman(11 out of 155) | 2018 |
| o Scholarship of Self-Improvement for freshman (2 out of 22) | 2018 |
| o Top ten singers in school of Physics and society | 2018 |

Languages and Computer skills

Mandarin Chinese(Native) **English(Fluent)**
Python **Julia** **Fortran** **C++** **LaTeX** **Mathematica**

Future Research Interest

Gravitational wave, Numerical Relativity, Cosmology, Dark matter, Dark energy, Machine Learning in Astro-physics