

# Qianhang CHEN

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## EDUCATIONAL BACKGROUND

University of Shanghai for Science and Technology

09/2019 – 06/2023

Bachelor's Degree in Applied Physics

**Average Score:** 80.54/100

Graduation Project (Dissertation) (94)

Solid State Physics (93)

Quantum Mechanics (88)

Thermodynamics and Statistical Physics (86)

Electrodynamics (*Bilingual*) (80)

### Awards:

Outstanding Undergraduate Thesis: "Calculation of Geodesics in the Schwarzschild Black Hole"

Studies Excellence Scholarship for 2019-2020 Academic Year

Studies Excellence Scholarship for 2021-2022 Academic Year

## RESEARCH EXPERIENCE

Calculation of Geodesics for Schwarzschild Black Holes (Dissertation)

12/2022 – 06/2023

### Independent researcher

- Aim to solve differential equation to construct Schwarzschild black hole model and compare it with the existing models and investigate the space-time structure properties around Schwarzschild black holes
- Under different mass conditions, study the geodesics of Schwarzschild black holes for physical particles and the geodesics of Schwarzschild black holes for photons
- Manage to calculate the structure forms of geodesics given different masses
- Gradually improve Python programming techniques and Origin drawing skills
- **Received recognition as an Outstanding Undergraduate Thesis and achieved a score of 94/100.**

China Space Station Telescope (CSST) Summer School of Galaxy Science, Peking University

### Summer School Student

07/2022

- Communicated with 24 well-known experts from China and overseas, learned basic knowledge about CSST data, galaxy and active galactic nucleus photometry and image processing, spectral analysis and seamless spectrum
- Learnt about equilibrium line analysis of galaxies and **used python to do my own iso illumination line analysis of UCG9476 with reference to the example of iso illumination line analysis of NGC628**
- Learned a method for decomposing quasar images based on galight, and fitted CID 216, making a fit map as well as calculating the resulting light percentage of the host galaxy
- Learned galaxy disc core decomposition and used astropy.modeling to fit i-band images of galaxy HSCs, **the results included single and two-component fits, and calculated B/T and D/T (the ratio of fluxes of the nucleus sphere to the entire galaxy) for the two-component fits**
- Installed BayeSED V3.0, and a sample of CSST simulations was used as an example for the **estimation of photometric redshift and star family parameters and their errors, and graphs were drawn to show the posterior probability distributions of the parameters and to understand the parsimony of the parameters**

Observation of Active Galactic Nucleus Based on HST and CSST

07/2022 – 10/2022

### Research Group Member

- Used the archival data of HST to study the physical properties of galaxies and active galactic nuclei
- Became more familiar with the data format of space telescope and the use of related software
- Increased my experience in conducting case studies and statistical studies on special galaxy/active galactic nuclei
- **Produced corresponding special source and statistical research reports, designed the future CSST observation scheme, and wrote the research report**
- **Studied the data processing methods for the first image returned by JWST and independently practiced JWST data processing**

## First-Principle of Superconducting Materials Calculations

### Research Group Member

04/2021 – 05/2022

- Studied the First-Principle of superconductivity, conducted relevant studies through theories and experiments
- With different variables, obtained corresponding results through different special points of the reaction band structure, dispersion relations, magnetic susceptibility and dielectric
- Mastered the ability to retrieve and read literature, learned to summarize literature content and write literature reviews, had basic understanding and skills of physics scientific research

## INTERNSHIP EXPERIENCE

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### Yunan Observatories, Chinese Academy of Sciences

07/2022

#### *Intern*

- Received solar physics course training, understood the open program of MHD equation
- **Simple programming on a supercomputer as a team member; learned frontier knowledge of solar physics, such as CME, Magnetic Reconnection and Solar Approach Detection, and got in touch with related scientific research of solar physics in advance**

## ADDITIONAL SKILLS

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- Language: Chinese (native speaker), English (advanced user)[IELTS:6.5(6.0)]

Computer:

Office Software (proficient)

C/C++ programming (learner)

Python programming(proficient)

Mathematica (learner)

Matlab (proficient)

Origin(leaner)