Shiyuan Wang

PERSONAL DATA

Gender: Female
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EDUCATION

Beijing Normal University **Beijing, CHN**
MSc in Astronomy *September 2022 - June 2025 (expected)*

– GPA: 3.8/4.0
– Core Courses: Relativistic Astrophysics, Dark Energy Theory and Related Cosmological Experiments, Observational Cosmology, radiative processes in astrophysics, Computational Astronomy

Qingdao University **Qingdao, CHN**
BSc in Applied Physics *September 2018 - June 2022*

– GPA: 3.57/5.0
– Core Courses: Mathematical methods for Physicists, Theoretical Mechanics, Thermodynamics and Statistical Physics, Computational physics, Probability Statistics and Linear Algebra

AWARDS & HONORS

- **Excellent TA**, Beijing Normal University, 2024
- **The First Price Scholarship**, Beijing Normal University, 2023
- **Postgraduate entrance examination star of Qingdao University**, Qingdao University, 2022

RESEARCH EXPERIENCE

Study the growth of cosmic structure with galaxy survey and fast radio bursts *2023-present*

- Familiar with the theories of redshift-space distortions **(RSD)** effect, kinetic Sunyaev-Zeldovich **(kSZ)** effect, cosmological models, growth of cosmic structure, cross correlation, and dispersion measure (DM) of fast radio bursts (FRBs).
- Analyzed the methodology of using **fast radio bursts (FRBs)** to measure small-scale electron-galaxy power spectrum, which can compensate shortcomings of the RSD and kSZ methods. Succeeded in getting the growth rate with higher accuracy.
- Used Markov chain Monte Carlo (MCMC) and Fisher forecast to constrain different cosmological models, which is expected to explain the Hubble tension and S_8 tension, and to research the dark energy.

Study fundamental physics with fast radio bursts *2024*

- Familiar with the theories of using FRBs to research the time-evolution of **fine-structure constant**.

Process fast radio burst data with precision localization *2023*

- Analyzed the data from **CHIME/FRB's first catalog** preliminarily with Python code.

PUBLICATIONS

- Constraints on Evolutions of Fundamental Constants from Clustering of Fast Radio Bursts Dispersion Measure

Shiyuan Wang, Junqing Xia* (**Accepted by ApJ**)

- Measuring the cosmic growth rate with CSST spectroscopic survey and Fast Radio Bursts
  Shiyuan Wang, Junqing Xia*. The European Physical Journal C **(under review)**

RESEARCH INTEREST

Large-scale structure

- Analyze the **real data** from survey such as Euclid to study the structure and the evolution history of the universe, including **late Universe** and **reionization epoch**.
- The cosmological application and power spectrum of **SZ effect** with CMB experiments and galaxy surveys.
- Focus on **non-standard cosmological model**, especially the skew spectrum in redshift space.

The cosmological application of FRB

- Study Late universe, reionization epoch and probe gravity with FRBs.

SKILLS

Programming	Python, LaTex, Linux, CosmoMC, Matlab
English Proficiency	IELTS 6.5 (Listening:6; Reading: 7.5; Writing: 6; Speaking: 5.5)