

# JIACHEN BAI

Undergraduate student major in Astronomy

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## SUMMARY

I'm an undergraduate student at Beijing Normal University majoring in Astronomy. My interests are cosmology (modified gravity, dark energy, large-scale structure...), extra-dimension theories, and AI for astronomy.

## SKILLS

**Languages:** Python, FORTRAN, Wolfram.

**Techniques:** Parameter constraints with MCMC.  
Astronomical data/image processing.  
Machine learning with Python.

## RESEARCH

MG   LSS   ML	<b>Power spectrum emulator for modified gravity (2023-)</b> In this work, we developed an emulator to predict non-linear matter power spectra for the Hu-Sawicki $f(R)$ gravity model with ANN.	In preparation
MG	<b>Test modified DGP model with cosmological data (2023-2024)</b> In this work, we tested the modified DGP model with extra dark energy or extra scalar fields, making it consistent with observations.	In preparation
LSS   ML	<b>Accelerate cosmological N-body simulations with deep learning (2024-)</b> In this work, we applied the deep learning method to cosmological N-body simulations to accelerate the simulation process.	In preparation

## EDUCATION

9/2021 - 6/2025	<b>B.S. in Astronomy</b> GPA: 3.8/4.0 (10% in class)	Beijing Normal University
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## EXPERIENCE

9/2023 - 10/2023	<b>Internship</b> <ul style="list-style-type: none"><li>Properly arrange observatory telescope observation plans to observe clusters and variable stars.</li><li>Conduct detailed analysis and processing of observation data to draw light curves and HR diagrams.</li><li>Analyze the observation results and study the physical properties of clusters and variable stars.</li></ul>	Observatorio Astrofísico de Javalambre, CEFA, Spain
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## AWARDS

2022	<b>The BNU First Prize Scholarship</b>	Beijing Normal University
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## LANGUAGES

English - CET6: 575, Chinese - native