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   **Power spectrum emulator for modified gravity (2023-)**   **Submitted**
In this work, we developed an emulator to predict non-linear matter power spectra for the Hu-Sawicki $f(R)$ gravity model with ANN.

MG   **Test modified DGP model with cosmological data (2023-2024)**   **In preparation**
In this work, we tested the modified DGP model with extra dark energy or extra scalar fields, making it consistent with observations.

LSS | ML   **Accelerate cosmological N-body simulations with deep learning (2024-)**   **In preparation**
In this work, we applied the deep learning method to cosmological N-body simulations to accelerate the simulation process.

EDUCATION

9/2021 - 6/2025   **B.S. in Astronomy**   **Beijing Normal University**
GPA: 3.8/4.0 (10% in class)

EXPERIENCE

9/2023 – 10/2023   **Internship**   **Observatorio Astrofísico de Javalambre, CEFCA, Spain**
· Properly arrange observatory telescope observation plans to observe clusters and variable stars.
· Conduct detailed analysis and processing of observation data to draw light curves and HR diagrams.
· Analyze the observation results and study the physical properties of clusters and variable stars.

AWARDS

2022   **The BNU First Prize Scholarship**   **Beijing Normal University**

2023   **The BNU First Prize Scholarship**   **Beijing Normal University**

LANGUAGES

English - CET6: 575, **Chiniese** - native