Jiadong LI

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I'm a PhD student in astrophysics at the National Astronomical Observatories, Chinese Academy of Sciences (NAOC). My research interests are fundamental Astronomy questions such as star formation, Galactic evolution, and the history of the Milky Way and nearby galaxies in light of large data sets. My works use machine learning, statistical inferences, and forward model for dealing with data from ongoing and, most important, future large-scale surveys, e.g., SDSS-V, Gaia, LAMOST, APOGEE, and CSST. **I care about the properties of stellar populations, such as stellar initial mass function, vertical motion history, and chemical evolution of the Galaxy.** Before that, I make use of novel machine-learning methods to measure stellar parameters of spectroscopic surveys.

Current Position

- **New York University** — **New York, NY**
  Visiting scholar. Mentor: Prof. David W. Hogg — *2022–now*
- **CCA, Flatiron Institute – Simons Foundation** — **New York, NY**
  Guest Researcher — *2022–now*

Education

- **National Astronomical Observatories of China (NAOC), CAS** — **Beijing, China**
  Ph.D candidate in Astrophysics. Mentor: Prof. Chao Liu — *2018–2023*
  Thesis: Research of low-mass stars in the Milky Way
- **University of Chinese Academy of Sciences** — **Beijing, China**
  Minor in Computer Science — *2019*
- **Beijing Normal University** — **Beijing, China**
  B.Sc. in Astronomy. Mentor: Prof. Jianning Fu — *2014–2018*
  Thesis: Time-domain study of eclipsing binary system: QW And.

Awards & Honours

- 2016, 2017, 2018: **Jingshi Scholarship** (Beijing Normal Univerisity)
- 2017: **Excellent Prize of Peking University Undergraduate** Astronomy Symposium:
- 2019: **Excellent Student Prize** of the University of Chinese Academy of Sciences
- 2020: **Excellent Prize of Huawei Ascend** AI Elite Training Camp
- 2021: **Studying Abroad Scholarship** of the University of Chinese Academy of Sciences
- 2022: **Early Career Travel Funds** of SDSS-V
- 2022: **National Scholarship of China** for Graduate Students

Selected Talks and Colloquia

- **The Milky Way: LAMOST and other Leading Surveys** — **Yichang, China**
  "M-dwarf Stars in LAMOST" — *2019*
- **The 13th Zhang Heng Symposium of the Chinese Astronomical Society** — **Dali, China**
  "Stellar parametrization of cool-dwarf stars by SLAM" — *2020*
- **LAMOST hacking workshop** — **Kunming, China**
  "Stellar Initial Mass Function Variation revealed by LAMOST and Gaia" — *2021*
- **Workshop on the Application of Machine Learning in Astronomy** — **Yichang, China**
  "Retina-CSST: Object detection and classification of CSST by deep learning method" — *2021*
- **CSST Image Processing Workshop** — **Chongqing, China**
  "Retina-CSST: Fast processing of multicolor photometric data in CSST" — *2021*
- **The 240th AAS Meeting** — **Pasadena, CA**
  "Stellar Initial Mass Function Varies with Metallicity and Time" — *2021*
- **The Gaia selection function and how to use the GaiaUnlimited tools** — **Heidelberg, Germany**
  GaiaUnlimited Community Workshop — *2022*
- **SDSS-V Science Festival** — **Toronto, Canada**
  2022

Publications

Refereed publications

- **Li, J.D.**, Liu, C., Zhang, B., Tian, H., Qiu, D. and Tian, H., 2021. Stellar Parameterization of LAMOST M Dwarf Stars. ApJs, 253(2), p.45.
- **Li, J.D.**, Liu C., Zhang, Z.Y., Tian, H., Fu, X. and Li, J., 2022. Stellar Initial Mass Function Varies with Metallicities and Time. **Nature**, in press (2022).
- Li, C.Q., Shi, J.R., Yan, H.L., Fu, J.N., **Li, J.D.** and Hou, Y.H., 2021. Double-and triple-line spectroscopic candidates in the LAMOST medium-resolution spectroscopic survey. ApJs, 256(2), p.31.
- Xiong, J., Liu, C., Li, J., **Li, J.D.**, Zhang, B., Chen, X., Luo, C., Cao, Z. and Zhao, Y., 2022. The Eclipsing Binaries from the LAMOST Medium-resolution Survey. III. A High-precision Empirical Stellar Mass Library, AJ, accepted (2022).

Publications submitted or in preparation

- **Li, J.D.**, et al., Retina-CSST: Objection Detection and Classification of CSST by Deep learning, in prep.
- **Li, J.D,**, et al., Stellar and Brown Dwarf Initial Mass Function in the Solar Neighborhood, in prep.
- **Li, J.D,**, et al., Spec2Spec: Analysis of Gaia BP/RP Spectra using transformer, in prep.
- Tian, H., et al. incl. **Li, J.D.** Mapping the Milky Way with LAMOST - IV. Exploring the edge of the disk with M giant stars, submmited to MNRAS
- Li, Jiao, et al. incl. **Li, J.D.** TYC 3340-2437-1: The First Massive Quadruple System from LAMOST, submmited to ApJL
- Dan, Qiu, et al. incl. **Li, J.D.** Calibration of Metallicity of LAMOST M Dwarfs from FGK+M Wide Binaries, submmited to MNRAS

Experience

- **Visit in Tourlan Observatory, University of Turku, Finland (2016)** *'X-ray data pipeline'*
- **Undergraduate project (2017-2018):** *'Time-domain observation and investigation of Eclipsed Binary QW AND.'*
- **Visit in NAOC (2018):** *'Measuring the spin of the Black Hole Sgr A*'*
- **Object detection and classification pipeline for CSST (2021)** *'Deep learning application for CSST'*

Technical and Personal skills

- **Programming Languages:**
  Proficient in: Python, Shell, TeX
  Also basic ability with: MATLAB, SQL, Julia.
- **Operations Engineer (2018-2021)**
  Part-time operation engineer of general computing servers and GPU servers of Chinese Survey Space Telescope (CSST) science data group.