Lu Li

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Shanghai Astronomical Observatory, Chinese Academy of Sciences
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Professional Experience

- Shanghai Astronomical Observatory, Shanghai, China — 2015 – 2022
  Research assistant
- Shanghai Astronomical Observatory, Shanghai, China — 2015 – 2022
  Ph.D. in Astrophysics
- The Hebrew University of Jerusalem, Israel — 2021 – 2022
  Visitor
- Oxford University, UK — 2019.03 – 2019.04
  Visitor

Research Projects

My research mainly focuses on modeling stellar populations in the Color-Magnitude Diagram (CMD).

- Isochrone fitting of open clusters.
- Binary properties and the evidence of dynamical interaction in open clusters.
- The evolution of stellar mass function of open clusters.

Professional Skills

- Modeling stellar populations in the CMD
- Analysis of survey catalogs: Gaia, 2MASS (and other photometric and astrometric data)
- Bayesian analysis: Hierarchical Bayes, sampling, Gaussian process
- Data mining: clustering method

Awards & Scholarships

- Chinese Academy of Sciences Excellent Research Assistant Program, 120,000$ — 2022
- Chinese Academy of Sciences Presidential Scholarship (Special Prize) — 2022
- The finalist of the American Statistical Association (ASA/AIG) Best Student Paper Award 2021 — 2021
- National Scholarship (2%), China — 2021
- Selected by *AAS Journal Author Series* — 2020
- First Prize Student Scholarship, University of Chinese Academy of Sciences — 2019
- Travel Grant: XXXth General Assembly (GA) of the IAU, Vienna — 2018
- Favorite Poster Prize, Conference, *Life & Times of the Milky Way*, Shanghai — 2018

Telescope Time

- Co-PI: Canada-France-Hawaii Telescope, 2020B, 4 nights — 2020
  Relationship between the bifurcated main-sequence and stellar rotation
- PI: Lijiang 2.40m Telescope, 2019B, 3 nights — 2019
  Relationship between the bifurcated main-sequence and stellar rotation
- Co-PI: Lulin 1m Telescope, 3 nights — 2015
  Photometric observation of three open clusters

Invited Talks

- Tsung-Dao Lee Institute, Shanghai, China 2020.11
  Measuring the Binary Fraction & Stellar Mass Function of Open Clusters in the CMD
- South-Western Institute for Astronomy Research, Yunnan University, China 2020.08
  Dynamical interaction in stellar cluster — Evidence from binaries of NGC 3532
- Kavli Institute for Astronomy and Astrophysics, Peking University, China 2020.05
  Dynamical interaction in stellar cluster — Evidence from binaries of NGC 3532

Presentations in Conferences

Oral presentation

- 53rd Annual Meeting of the Division on Dynamical Astronomy, New York, US, Online 2022.04
  Modeling open clusters in the CMD: binaries, mass function, and dynamical evolution
- Joint Statistical Meetings, Seatle, US, Online 2021.08
  Modeling unresolved binaries of open clusters in the color-magnitude diagram
- Annual Assembly of the Chinese Astronomical Society, Online 2020.10
  Dynamical interaction in stellar cluster — Evidence from binaries of NGC 3532
- 4th Cross-Strait Meeting on Open Clusters, Urumqi 2018.07
  Measuring the Binary Fraction & Stellar Mass Function of Open Clusters in the CMD
- 11th Zhang Heng Meeting of the Chinese Astronomical Society, Guiyang 2017.07
  Measuring basic properties Open Clusters with Photometric Survey Data

Poster presentation

- European Astronomical Society Annual Meeting, 2022, Valencia, Spain 2022.07
  Modeling open clusters in the CMD: binaries, mass function, and dynamical evolution
- European Astronomical Society Annual Meeting, 2021, online 2021.07
  Dynamical interaction in stellar cluster — Evidence from binaries of NGC 3532
- ESO Workshop: A revolution in stellar physics with Gaia and large surveys, Warsaw 2018.09
  Measuring the Binary Fraction and Mass Ratio of Open Clusters in the CMD
- XXXth General Assembly (GA) of the IAU, Vienna 2018.08
  Measuring the Binary Fraction and Mass Ratio of Open Clusters in the CMD

Outreach

- Counselor for high school students in an official scientific practice project for youth 2016 – 2020
- Popular science courses *Explore the Astronomy – Moon* 2018
- Popular Science talk, *The planets in the solar system*, Shanghai Natural History Museum 2016
- Volunteer guide at the Shanghai Natural History Museum 2016
- Popular Science talk, *The Moon*, Shanghai Science & Technology Museum 2016
- Popular science courses for Huishi Primary School, 20 hours 2015 – 2017
- Popular science courses for Xuhui Middle School, 10 hours 2015 – 2017

References

Prof. Zhengyi Shao, zyshao@shao.ac.cn (Shanghai Astronomical Observatory)
Prof. Chao Liu, liuchao@nao.cas.cn (National Astronomical Observatories)
Prof. Daisuke Kawata, d.kawata@ucl.ac.uk (University College London)

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Publication List

Summary: 12 papers [ADS link]

1. MiMO: Mixture Model for Open Clusters in Color Magnitude Diagram
   Li, L. ; Shao, Z., ApJ, 930 (1), 44

2. Modeling Unresolved Binaries of Open Clusters in the Color-Magnitude Diagram. I. Method and Application of NGC 3532
   Li, L., Shao, Z., Li, Z.-Z., Yu, J., Zhong, J., and Chen, L., 2020, ApJ, 901, 49

3. Dynamical interaction in the stellar cluster – Evidence from binaries of NGC3532
   Li, L. ; Shao, Z., Li, Z.-Z., JSM proceedings, 2021. 317202

4. Modeling open clusters in the CMD: binaries, mass function, and dynamical evolution
   Li, L. AAS/Division of Dynamical Astronomy Meeting 54 (4), 101.01

5. Robust Gaussian process regression based on iterative trimming
   Li, Z.-Z., **Li, L.**, and Shao, Z., 2021, Astronomy and Computing, 36, 100483

6. Gaia parallax of Milky Way globular clusters - A solution of mixture model
   Shao, Z. and **Li, L.**, 2019, MNRAS, 489, 3093

7. The Role of Binarity and Stellar Rotation in the Split Main Sequence of NGC 2422
   He, C., Sun, W., Li, C., **Li, L.**..., The Astrophysical Journal 938 (1), 42

8. LAMOST meets Gaia: The Galactic Open Clusters
   Fu, XT., Bragaglia, A., Liu, C., Zhang,H., Xu, Y., Wang,K., Zhang, ZY., Zhong, J., Chang,J., **Li, L.**, Chen, L., Chen, Y., Wang, F., Gjergo, E., Wang, C., Yue, N., Zhang, X. arXiv:2207.09121

9. Unveiling the Hierarchical Structure of Open Star Clusters: The Perseus Double Cluster
   Yu, H., Shao, Z., Diaferio, A., and **Li, L.**, 2020, ApJ, 899, 144

10. Exploring open cluster properties with Gaia and LAMOST
    Zhong, J., Chen, L., Wu, D., **Li, L.**, Bai, L., and Hou, J., 2020, A&A, 640, A127

11. Revealing the Complicated Story of the Cetus Stream with StarGO
    Yuan, Z., Smith, M.C., Xue, X.-X., Li, J., Liu, C., Wang, Y., **Li, L.**, and Chang, J., 2019, ApJ, 881, 164

12. Substructure and halo population of Double Cluster h and χ Persei
    Zhong, J., Chen, L., Kouwenhoven, M.B.N., **Li, L.**, Shao, Z., and Hou, J., 2019, A&A, 624, A34