Weitian LI

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🎓 Ph.D. in Physics 　🏛 Shanghai Jiao Tong University (SJTU)
📍 Shanghai 　🏠 Shaoyang, Hunan 　🎂 September 26, 1991

Highly-motivated Ph.D. in Physics (radio astronomy) with good foundations of math and statistics. Proficient in data modeling and analysis, and enthusiastic about computer and network technologies. With 10 years experience in Linux and BSD, familiar with various command line tools and skilled in Shell, Python, and C programming. Passionate about open source and shared multiple projects on my GitHub. Meanwhile a DragonFly BSD operating system developer and involved in several other open source projects.

🔧 Competences & Languages

Operating Systems	🐧 Linux (10 years), 🍎 BSD (DragonFly BSD, FreeBSD; 7 years)
Programming	Python, C, Shell, R, Tcl/Tk
Tools	Regular expression, SSH, Git, Make (GNU/BSD), Ansible
Web Development	Flask, Django; JavaScript, jQuery, Bootstrap
Data Analysis	R, Pandas; Matplotlib, ggplot2; Keras, Scikit-learn
🔤 **Languages**	**English** — reading & writing (good); listening & speaking (conversant)

🎓 Education

present September 2013	School of Physics and Astronomy, **Shanghai Jiao Tong University** Ph.D. (candidate; to graduate in the first half of 2019) in Physics (Radio Astronomy)
June 2013 September 2009	Department of Physics and Astronomy, **Shanghai Jiao Tong University** Bachelor's Degree in Applied Physics

⚛ Research Achievements

- Participated in research projects: "Simulation of Low-Frequency Radio Sky and Separation of Weak Astronomical Signals" (Key Program), and "The X-ray Study of Galaxies and Clusters of Galaxies, and the Research of Cosmic Low-Frequency Radio Radiation" (Fund for Distinguished Young Scholars).
- Developed the low-frequency radio sky image simulation software: `FG21sim` (Python).
- Developed a suite of utilities to semi-automate the *Chandra* X-ray data analysis: `chandra-acis-analysis` (Python, Shell, Tcl).
- Separated the faint cosmological EoR signal along the frequency dimension using a Convolutional Denoising Autoencoder (CDAE).
- Classified the radio galaxies in the FIRST survey according to morphologies using a Convolutional Neutral Network (CNN).
- Significantly improved the modeling of radio halos, and integrated the instrumental effects of radio interferometers into the simulation pipeline.
- Analyzed the data of over 200 galaxy clusters observed by the *Chandra* X-ray Observatory; improved the modeling of spectral background components and achieved more accurate and robust fitting results.
- Published 2 first-author SCI papers and 8 co-authored SCI papers.

</> Computer Skills

- DragonFly BSD operating system developer: focused on the kernel network module and userland utilities, fix problems and make improvements.
- Used Ansible to manage a VPS running DragonFly BSD that serves personal email, authoritative DNS, website, Git, IRC, etc.
- Built and administrated the workstations, a 4-node computer cluster, and network facilities for the team.

- ❯ Participated in building and testing the SKA high-performance cluster prototype (1 login node + 1 data node + 4 computing nodes) in Shanghai Astronomical Observatory.
- ❯ Designed and developed the whole website (Django, Bootstrap, jQuery) for "The 1st China–New Zealand Joint SKA Summer School" in 2014.

💼 Internships

August 2018 April 2018	**Data engineer @ Leadvisor Technology Inc. (startup company)** ❯ Search and scrape product and advertising data from Amazon web (Python, Requests, BeautifulSoup). ❯ Deployed the Airflow server and database to periodically retrieve product sales and advertising data from Amazon. ❯ Developed the website (Flask, jQuery) to help customers to optimize their advertising campaigns on Amazon.
September 2013 July 2013	**Web developer @ 97 Suifang (startup company)** ❯ Developed the back-end (Django) to support user registration, data storage and search. ❯ Developed the front-end (jQuery, AJAX) to visualize the temporal variations of patient's examination indicators.

📄 Publications

- ❯ **Li, W.**, Xu, H., Ma, Z., Zhu, R., Hu, D., Zhu, Z., Shan, C., Zhu, J. & Wu, X.-P., *"Separating the EoR Signal with a Convolutional Denoising Autoencoder: a Deep-learning-based Method,"* 2018, Monthly Notices of the Royal Astronomical Society Letters (under review; SCI; IF=4.96)
- ❯ **Li, W.**, Xu, H., Ma, Z., Hu, D., Zhu, Z., Shan, C., Wang, J., Gu, J., Lian, X., Zheng, Q., Zhu, J. & Wu, X.-P., *"Contribution of Radio Halos to the Foreground for SKA EoR Experiments,"* 2018, The Astrophysical Journal (under review; SCI; IF=5.53)
- ❯ Ma, Z., Xu, H., Zhu, J., Hu, D., **Li, W.**, Shan, C., Zhu, Z., Lian, X., Gu, L., Liu, C. & Wu, X.-P., *"A Machine Learning Based Morphological Classification of 14,251 Radio AGNs Selected from the Best–Heckman Sample,"* 2018, The Astrophysical Journal Supplement Series (in revision; SCI; IF=8.96)
- ❯ Hu, D., Xu, H., Kang, X., **Li, W.**, Zhu, Z., Ma, Z., Shan, C., Zhang, Z., Gu, L., Liu, C. & Wu, X.-P., *"A Study of the Merger History of the Galaxy Group HCG 62 Based on X-ray Observations and SPH Simulations,"* 2017, The Astrophysical Journal (in revision; SCI; IF=5.53)
- ❯ Zheng, Q., Johnston-Hollitt, M., Duchesne, S. & **Li, W.**, *"Detection of a Double Relic in the Torpedo Cluster: SPT-Cl J0245-5302,"* 2018, Monthly Notices of the Royal Astronomical Society, 479, 730 (SCI; IF=4.96)
- ❯ Ma, Z., Zhu, J., **Li, W.** & Xu, H., *"An Approach to Detect Cavities in X-ray Astronomical Images Using Granular Convolutional Neural Networks,"* 2017, IEICE Transactions on Information and System, 100(10), 2578 (SCI; IF=0.41)
- ❯ Zhang, C., Xu, H., Zhu, Z., **Li, W.**, Hu, D., Wang, J., Gu, J., Gu, L., Zhang, Z., Liu, C., Zhu, J. & Wu, X.-P., *"A Chandra Study of the Image Power Spectra of 41 Cool Core and Non-cool Core Galaxy Clusters,"* 2016, The Astrophysical Journal, 823, 116 (SCI; IF=5.53)
- ❯ (and 3 more co-authored SCI papers)

🏆 Awards & Certificates

September 2016	Participation Award, The 13th China Post-Graduate Mathematical Contest in Modeling
July 2014	Outstanding Teaching Assistant, College Physics
November 2013	Outstanding Ph.D. Student Entrance Scholarship of Shanghai Jiao Tong University
December 2011	National Astronomical Observatory Scholarship
September 2011	Network Engineer (Level 4), National Computer Rank Examination