李 维天

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🏛 上海交通大学 　 🎓 物理学 • 博士

📍 上海 　 🏠 湖南 • 邵阳 　 🎂 1991-09-26

　　物理学专业(射电天文方向)直博研究生, 有扎实的物理、数学与统计学基础, 擅长数据建模与分析, 热衷计算机和网络技术, 有 10 年的 Linux 和 BSD 使用经验, 熟悉常用的命令行工具, 熟练掌握 Shell、Python 和 C 语言编程。积极实践自由开源精神, 在 GitHub 上分享多个项目, 是 DragonFly BSD 操作系统的开发者, 并积极参与其他多个开源项目。

🔧 技能和语言

操作系统	🐧 Linux (10 年); 🍎 BSD (DragonFly BSD 和 FreeBSD, 7 年)
编程	Python, C, Shell, R, Tcl/Tk
工具	SSH, Git, Make, Tmux, Vi, Ansible
数据分析	R, Pandas; Matplotlib, ggplot2; Keras, Scikit-learn
网站开发	Flask, JavaScript, jQuery, Bootstrap
🔤 **语言**	**英语** — 读写(优良), 听说(日常交流)

🎓 教育背景

现在	**上海交通大学** • 物理与天文学院
2013.09	物理学(射电天文方向)• 博士(直博研究生, 在读, 预计 2019 年上半年毕业)
2013.06	**上海交通大学** • 物理与天文系
2009.09	应用物理学 • 学士

⚛ 科研成果

- 参与研究课题:"低频射电天空的高精度仿真与微弱天体辐射信号的识别"(重点项目)、"星系和星系团的 X 射线研究、宇宙低频射电辐射研究"(杰出青年基金)
- 开发低频射电天空图像模拟软件:`FG21sim` (Python)
- 开发程序帮助半自动化分析 *Chandra* X 射线卫星观测数据:`chandra-acis-analysis` (Python, Shell, Tcl)
- 利用卷积去噪自动编码器(CDAE)在观测频率维度有效分离微弱的宇宙再电离(EoR)信号
- 利用卷积神经网络(CNN)对 FIRST 巡天的射电星系图像根据形态特征进行分类
- 显著改进星系团射电晕的建模, 并考虑低频干涉阵列的复杂仪器效应
- 分析 200 多个星系团的 *Chandra* 观测数据, 改进光谱拟合中各背景成分的建模, 获到更准确可靠的拟合结果
- 发表 2 篇第一作者以及 8 篇合作者 SCI 论文

</> 计算机技能

- DragonFly BSD 操作系统开发者:200+ 代码提交; 在邮件列表和 IRC 频道帮助新用户
- 使用 Ansible 配置和管理 VPS, 部署个人域名邮箱、权威 DNS、网站、Git、IRC 等服务
- 搭建并管理课题组的工作站、计算集群(4 节点)和网络设备
- 参与配置和测试上海天文台的 SKA 高性能计算集群原型机(1 管理节点 + 1 存储节点 + 4 计算节点)
- 为"2014 第一届中国–新西兰联合 SKA 暑期学校" 设计并开发网站(Django, Bootstrap, jQuery)

💼 实习经历

2018.08 2018.04	数据工程师 @ 上海领脉网络科技（初创公司） ❯ 从 Amazon 网页搜索并挖取商品与广告信息（Python, Requests, BeautifulSoup） ❯ 配置 Airflow 服务器和数据库等基础设施, 定期从 Amazon 获取产品销售与广告投放等数据 ❯ 开发网站（Flask, jQuery）, 帮助客户优化 Amazon 广告投放
2013.09 2013.07	网站开发 @ 97 随访（初创公司） ❯ 后端开发（Django）, 完成用户注册、数据存储和搜索等功能 ❯ 前端开发（jQuery, AJAX）, 对患者各项指标随时间的变化进行可视化

📄 发表论文

- **Li, W.**, Xu, H., Ma, Z., Zhu, R., Hu, D., Zhu, Z., Gu, J., 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 (in revision; 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 (in revision; 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 (accepted; 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 (accepted; 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)
- （另有 3 篇合作 SCI 论文）

🏅 获奖及证书

2016.09	第十三届全国研究生数学建模竞赛 • 成功参与奖
2014.07	大学物理优秀助教
2013.11	上海交通大学优秀博士新生奖学金
2011.12	国家天文台奖学金
2011.09	全国计算机等级考试 • 四级网络工程师

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	SSH, Git, Make, Tmux, Vi, Ansible
Data Analysis	R, Pandas; Matplotlib, ggplot2; Keras, Scikit-learn
Web Development	Flask, JavaScript, jQuery, Bootstrap
🔤 **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 and 8 co-authored SCI papers.

</> Computer Skills

- DragonFly BSD operating system developer: 200+ code commits; help users in mailing lists and the IRC channel.
- 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., Gu, J., 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 (in revision; SCI; IF=4.96)

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> 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 (accepted; SCI; IF=8.96)

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> (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