Xin Wang

Personal Information

Current Status:	Graduate Student at University of California, Los Angeles
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Education

Sept. 2015–Present — Department of Physics and Astronomy, UCLA | **Towards Ph.D. in Astrophysics (Jun. 2019)**
Field of Interest: Spatially Resolved Spectroscopy, Chemical Evolution of Galaxies, Extragalactic Nebular Emission, Strong Gravitational Lensing.
`Advisors: Profs. Tucker A. Jones, Gabriel B. Brammer, Tommaso Treu, Keren Sharon`

Sept. 2013–Sept. 2015 — Physics Department, University of California, Santa Barbara | **M.A. in Physics (Jun. 2015)**
Graduate Course Cumulative GPA: 3.96

Sept. 2010–May 2013 — School of Astronomy and Space Sciences, Nanjing University | **M.Sc. in Astrophysics (Jun. 2013)**
Field of Interest: Precision Cosmology, Galaxy Clusters, Gamma-ray Bursts.
`Advisors: Profs. Yong Feng Huang, Charling Tao, Gong-Bo Zhao`

Sept. 2006–Jun. 2010 — Department of Astronomy, Nanjing University | **B.Sc. in Astronomy (Jun. 2010)**
Weighted Average Score: 84.64/100 (overall), 87.68/100 (major); Ranking: 2^{nd}/26

Research Experience

Sept. 2013–Present

Title: The Grism Lens-Amplified Survey from Space (GLASS) program

GLASS is a cycle-21 HST Large Program allocated 140 orbits of Grism spectroscopy assisted with HST optical/infrared imaging. We survey the core and infall regions of 10 massive galaxy clusters, including 8 targeted by CLASH and 6 Frontier Fields. We will address three scientific questions: 1) What's the role that galaxies play in the process of reionization? 2) Why and how is galaxy evolution environmental dependent? 3) How do metals cycle in and out of galaxies and what's the interplay between cycling of metals and SF activities?

Project in progress and scientific product: Wang et al. (2018), Wang et al. (2017), Wang et al. (2015), Jones et al. (2015)

Sept. 2011–Jun. 2013

Title: Constraints on Cosmic Neutrinos and Dark Energy Revisited

Using various cosmological observations, i.e., CMB, weak lensing (WL), BAO, observational Hubble parameter data (OHD), type Ia supernovae (SNIa), we impose constraints on the sum of neutrino masses (Σm_ν), the effective number of neutrino species ($N_{\rm eff}$) and dark energy equation of state (w). We find that a tight upper limit on Σm_ν can be extracted if $N_{\rm eff}$ and w are fixed, however it will be severely weakened if $N_{\rm eff}$ and w are allowed to vary. This result raises questions on the robustness of previous strict upper bounds on Σm_ν, reported in the literature. The different constraining abilities of current WL, OHD and SNIa samples are assessed and compared.

Scientific Product: Wang et al. (2012), Wang et al. (2013)

Sept. 2008–Jun. 2010

Title: Investigation on the Emission from the Receding Jet of Gamma-Ray Bursts

We studied the dynamical evolution of double-sided jets launched by the central engine of GRBs and calculated the afterglow emission from both jet components. For the first time, we present a detailed numerical study on the afterglow contributed from the jet component receding from the observer, with the effects of synchrotron self-absorption and equal arrival time surface taken into account. It is found that the receding jet emission is generally very weak and only manifests as a plateau in the late time radio afterglow light curves. However the emission from the receding jet can be significantly enhanced and possibly detectable, if the circum-burst medium density is high.

Scientific Product: Wang et al. (2009), Wang et al. (2010)

Publications

1st/2nd Author Papers in Refereed Academic Journals

8 **Wang, X.** et al. Discovery of Strongly inverted metallicity gradients in Dwarf Galaxies at $z\sim2$. 2018, *Astrophys. J.* submitted (arXiv:1808.08800)

7 **Wang, X.** et al. The Grism Lens-Amplified Survey from Space (GLASS) X. Sub-kiloparsec resolution gas-phase metallicity maps at cosmic noon behind the Hubble Frontier Fields cluster MACS1149.6+2223. 2017, *Astrophys. J.*, 837, 89 (arXiv:1610.07558)

6 **Wang, X.** et al. The Grism Lens-Amplified Survey from Space (GLASS) IV. Mass reconstruction of the lensing cluster Abell 2744 from frontier field imaging and GLASS spectroscopy. 2015, *Astrophys. J.*, 811, 29 (arXiv:1504.02405)

5 Jones, T., **Wang, X.** et al. The Grism Lens-Amplified Survey from Space (GLASS) II. Gas-Phase Metallicity and Radial Gradients in an Interacting System At z∼2. 2015, *Astron. J.*, 149, 107 (arXiv:1410.0967)

4 **Wang, X.**, Meng, X.-L., & Huang, Y. F., Testing X-ray Measurements of Galaxy Cluster Gas Mass Fraction Using the Cosmic Distance-Duality Relation and Type Ia Supernovae. 2013, RAA, 13, 1013 (arXiv:1305.2077)

3 **Wang, X.**, Meng, X.-L. et al. Observational Constraints on Cosmic Neutrinos and Dark Energy Revisited. 2012, *J. Cosmol. Astropart. Phys.*, 11, 018 (arXiv:1210.2136)

2 **Wang, X.**, Huang, Y. F., & Kong, S. W. Constraint on the Counter-jet Emission in GRB Afterglows from GRB 980703. 2010, *Sci. China-Phys. Mech. Astron.*, 53 (Suppl.1), 259

1 **Wang, X.**, Huang, Y. F., & Kong, S. W. On the Afterglow from the Receding Jet of Gamma-Ray Bursts. 2009, *Astron. Astrophys.*, 505, 1213 (arXiv:0903.3119)

Contributing Author Papers in Refereed Academic Journals (Selected)

6 Morishita, T., Abramson, L. E., Treu, T., **Wang, X.** et al. Metal Deficiency in Two Massive Dead Galaxies at z∼2. 2018, *Astrophys. J. Letters*, 856L, 4 (arXiv:1803.01852)

5 Kelly, P. L., ..., **Wang, X.** et al. An individual star at redshift 1.5 extremely magnified by a galaxy-cluster lens. 2018, *Nature Astronomy*, in press (arXiv:1706.10279)

4 Morishita, T., Abramson, L. E., Treu, T., Schmidt, K. B., Vulcani, B., **Wang, X.** Characterizing Intracluster Light in the Hubble Frontier Fields. 2017, *Astrophys. J.*, 846, 139 (arXiv:1610.08503)

3 Treu, T., Schmidt, K. B., Brammer, G. B., Vulcani, B., **Wang, X.** et al. The Grism Lens-Amplified Survey from Space (GLASS). I. Survey Overview and First Data Release. 2015, *Astrophys. J.*, 812, 114 (arXiv:1509.00475)

2 Schmidt, K. B., Treu, T., Brammer, G. B., Bradac, M., **Wang, X.** et al. Through the Looking GLASS: HST Spectroscopy of Faint Galaxies Lensed by the Frontier Fields Cluster MACSJ0717.5+3745. 2014, *Astrophys. J. Letters*, 782L, 36 (arXiv:1401.0532)

1 Meng, X.-L., Zhang, T.-J., Zhan, H., & **Wang, X.** Morphology of Galaxy Clusters: A Cosmological Model-Independent Test of the Cosmic Distance-Duality Relation. 2012, *Astrophys. J.*, 745, 98 (arXiv:1104.2833)

Talks and Colloquia (selected)

Apr. 2009	**Contributed talk**, @ Frontiers of Space Astrophysics: Neutron Stars & Gamma Ray Bursts — Recent Developments & Future Directions, Cairo & Alexandria, Egypt
Jun. 2010	**Contributed talk**, @ A mini-workshop on "Gamma-ray Sky from Fermi: Neutron Stars and their Environment", University of Hong Kong, Hong Kong
Aug. 2015	**Contributed talk**, @ Focus Meeting 22 at the XXIXth IAU General Assembly, Honolulu, HI
Jun. 2016	**Invited talk**, @ Nanjing University, Nanjing
Jun. 2016	**Invited talk**, @ Purple Mountain Observatory, Nanjing
Jun. 2016	**Invited talk**, @ National Astronomical Observatories of China, Beijing
Aug. 2016	**Colloquium talk**, @ Department of Astronomy, University of Michigan, Ann Arbor, MI
Jan. 2017	**Colloquium talk**, @ Steward Observatory, University of Arizona, Tucson, AZ
Jun. 2017	**Contributed talk**, @ Special Session 11 at European Week of Astronomy and Space Science, Prague, Czech Republic
Aug. 2017	**Contributed talk**, @ Shedding Light on the Dark Universe with Extremely Large Telescopes, Lanzhou, China
Sept. 2017	**Invited talk**, @ Shanghai Jiao Tong University, Shanghai

Sept. 2017	**Invited talk**, @ Nanjing University, Nanjing
Sept. 2017	**Invited talk**, @ Tsinghua University, Beijing
Jan. 2018	**Colloquium talk**, @ Carnegie Observatories, Pasadena, CA
Feb. 2018	**Colloquium talk**, @ IPAC, Caltech, Pasadena, CA
May 2018	**Invited talk**, @ 2018 Nanjing University Youth Forum, Nanjing, China
Jun. 2018	**Contributed talk with conference fellowship**, @ KIAA Forum on Gas in Galaxies, Beijing, China
Jul. 2018	**Invited talk**, @ University of Science and Technology of China, Hefei
Aug. 2018	**Contributed talk**, @ Focus Meeting 7 at the XXXth IAU General Assembly, Vienna, Austria

Awards and Honors (selected)

Jun. 2018	UCLA Dissertation Year Fellowship ($37k: stipend+tuition)
May 2018	Rudnick-Abelmann Fellowship, UCLA ($2k)
Apr. 2018	IAU grant for participating the XXXth General Assembly (€0.75k)
Apr. 2018	AAS International Travel Grant ($2k)
Apr. 2015	AAS International Travel Grant ($1k)
Jun. 2014	1st Prize for Excellent M.Sc. Thesis amongst all Universities and Colleges in Jiangsu Province
Sept. 2013	Broida Fellowship, UCSB ($3k)
Dec. 2012	National Scholarship for Graduates (∼$4k) *This is the highest honorific scholarship in China conferred annually on excellent graduate students.*
Aug. 2010	1st Prize for Excellent B.Sc. Thesis amongst all Universities and Colleges in Jiangsu Province
Oct. 2009	Scholarship of National Astronomical Observatories, Chinese Academy of Sciences

Computer Skills

Python, MATLAB, FORTRAN, C, LaTeX, vim, Github, Mathmatica

Professional Service

- Referee for *Astrophysical Journal*, *Astrophysical Journal Supplement Series*

2014–2015	Organizer of Treu Group Meetings, UCSB & UCLA
Dec. 2010–Dec. 2011	Organizer of Graduate Journal Club in School of Astronomy and Space Sciences, NJU In total, I arranged 17 meetings, and invited 34 speakers. The topics are related to the major field of interest of the speakers, who will also share with participants some academic experience in doing scientific research. This activity is financially supported by our school.

Observing Experience

A LOT

Approved Proposals (CoI)

1 JWST-ERS-1324, PI Treu: Through the Looking GLASS: A JWST Exploration of Galaxy Formation and Evolution from Cosmic Dawn to Present Day

2 HST-14922, PI Kelly: Probing the Nature of Dark Matter with Individual Stars Highly Magnified by a Galaxy Cluster

3 HST-14280, PI Bradac: Breaking Cosmic Dawn: Observing the z>7 Universe Through Cosmic Telescopes

4 VLT-0101.B-0418(A), PI Sanchez-Janssen: Chemodynamics of lensed dwarf galaxies at $1 \lesssim z \lesssim 2$

n Keck OSIRIS proposals spanning several seasons

Teaching Experience

Sept.–Dec. 2010	Teaching assistant of *Theoretical Astrophysics* (upper division undergraduate course), NJU
Sept.–Dec. 2013	Teaching assistant of *Physics 6 Lab*, UCSB
Mar.–Jun. 2014	Teaching assistant of *Physics 3: Basic Physics*, UCSB

Working Experience and Outreach Activities

2010–2012	President of Graduate Student Union in School of Astronomy and Space Sciences, NJU
2015–2017	Volunteer in the annual Exploring Your Universe! events, UCLA
2015–2017	Demonstrator of Astronomy experiments to local K12 schools in Los Angeles