

Xinyu Li

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NATIONALITY	Chinese	
RESEARCH INTERESTS	High Energy Astrophysics, Magnetars, Magnetohydrodynamics, Force-Free Electrodynamics, Plasma Astrophysics, Cosmology, Large Scale Structure, Dark Matter, Galaxy Formation	
EDUCATION	Columbia University , New York, NY, USA Ph.D., Physics, August 2019 <ul style="list-style-type: none">Thesis Topic: <i>Magnetodynamics Inside and Outside Magnetars</i>Advisor: Prof Andrei Beloborodov Perimeter Institute / University of Waterloo , Waterloo, ON, Canada M.Sc, Theoretical Physics, June 2013 <ul style="list-style-type: none">Thesis Topic: <i>Towards an Investigation of Turbulence in High Dimensions</i>Advisor: Prof Luis Lehner & Prof Robert Myers The University of Hong Kong , HKSAR, China B.Sc (First Class Honor), Physics and Mathematics (Double Major), June 2012 Tsinghua University , Beijing, China Physics and Mathematics, August 2008 - June 2009	
EXPERIENCES	<ul style="list-style-type: none">Assistant Professor Tsinghua UniversityPostdoctoral Fellow Canadian Institute for Theoretical AstrophysicsPostdoctoral Fellow Perimeter Institute	2023/11- 2019/9-2023/8 2019/9-2022/8
AWARDS	<ul style="list-style-type: none">Jeffrey L. Bishop Fellowship, CITAJoseph C. Pfister Fellowship, Columbia UniversityDean's Fellowship, GSAS, Columbia UniversityPerimeter Scholars International Scholarship, Perimeter InstituteLi Po Kwai Scholarship, The University of Hong KongHSBC Scholarship for Mainland Students, The University of Hong Kong	2021 2018 2013 2012 2011/12 2011
INVITED TALKS	<ul style="list-style-type: none">32nd Texas Symposium on Relativistic AstrophysicsGSI, EMMI+IReNA Workshop "Remnants of neutron-star mergers"23rd International Conference on General Relativity and GravitationINT, University of Washington, The r-process workshopColloquium, Department of Astronomy, Tsinghua UniversityColloquium, KIAA, Peking UniversityMax Planck Institute for Gravitational PhysicsNorth American Einstein Toolkit WorkshopMIAPP High-Energy Plasma Phenomena in AstrophysicsDepartment of Astronomy, Columbia UniversityPerimeter Institute	Nov 2023 Oct 2022 July 2022 May 2022 Jan 2022 Dec 2021 Sep 2021 July 2021 July 2021 March 2021 March 2021

- KIAS Workshop on Cosmology and Structure Formation Nov 2020
- KIAA, Peking University Oct 2020
- Department of Astronomy, Tsinghua University Sep 2020
- T.D.Lee Institute May 2020
- Department of Astronomy, Nanjing University Jan 2020
- Department of Astronomy, HUST Jan 2020
- Department of Astronomy, Shanghai Jiaotong University Sep 2020
- Perimeter Institute Nov 2018
- TAC, University of California, Berkeley Oct 2018
- KIPAC, Stanford University Oct 2018
- TAPIR, California Institute of Technology Oct 2018
- CCA, Flatiron Institute Oct 2018
- Department of Astrophysical Sciences, Princeton University Sep 2018
- Department of Physics, the University of Hong Kong Aug 2018

SERVICES

- CITA Visitor Committee
- CITA Cosmology Discussion

JOURNAL
REVIEWER

Physical Review Letters, The Astrophysical Journal Letters, The Astrophysical Journal, Journal of High Energy Physics, Journal of Cosmology and Astroparticle Physics, Astrophysics and Space Science, Physical Letter B, New Astronomy, Geophysical and Astrophysical Fluid Dynamics

NUMERICAL
CODES

Developer: ENZO, FFE-WENO, Einstein Toolkit
Experienced user: TRISTAN-MP, RAMSES

REFERENCES

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PUBLICATIONS

1. Jens F. Mahlmann, Miguel Á. Aloy, **Xinyu Li**, *Force-free wave interaction in magnetar magnetospheres: Computational modeling in axisymmetry*, arXiv:2405.12272
2. Sean M. Ressler, Luciano Combi, **Xinyu Li**, Bart Ripperda, Huan Yang, *Black Hole-Disk Interactions in Magnetically Arrested Active Galactic Nuclei: General Relativistic Magnetohydrodynamic Simulations Using A Time-Dependent, Binary Metric*, The Astrophysical Journal 967, 1, 70 (2024)
3. Axel Widmark, Tomer D. Yavetz and **Xinyu Li**, *Fuzzy dark matter dynamics in tidally perturbed dwarf spheroidal galaxy satellites*, Journal of Cosmology and Astroparticle Physics, 03, 052 (2024)
4. Jie-Shuang Wang, **Xinyu Li**, Zigao Dai and Xuefeng Wu, *An Intermediate-field Fast Radio Burst Model and the Quasi-periodic Oscillation*, Research in Astronomy and Astrophysics, 23, 3 (2023)
5. Alexander Y. Chen, Yajie Yuan, **Xinyu Li** and Jens F. Mahlmann, *Propagation of a Strong Fast Magnetosonic Wave in the Magnetosphere of a Neutron Star*, arXiv:2210.13506 (2022)
6. Mihir Kulkarni, Eli Visbal, Greg L. Bryan, and **Xinyu Li**, *If dark matter is fuzzy, the first stars form in massive pancakes*, The Astrophysical Journal Letters, 941, 1 (2022)
7. Alexander Laroche, Daniel Gilman, **Xinyu Li**, Jo Bovy and Xiaolong Du, *Quantum fluctuations masquerade as halos: Bounds on ultra-light dark matter from quadruply-imaged quasars*, Monthly Notices of the Royal Astronomical Society, 517, 2 (2022)
8. Lile Wang, **Xinyu Li**, *Dynamical Effects of Colliding Outflows in Binary Systems*, The Astrophysical Journal, 932, 108 (2022)
9. Alexander Y. Chen, Yajie Yuan, Andrei M. Beloborodov and **Xinyu Li**, *Relativistic Alfvén Waves Entering Charge Starvation in the Magnetospheres of Neutron Stars*, The Astrophysical Journal, 929, 1, 31
10. Tomer D. Yavetz, **Xinyu Li**, Lam Hui, *Construction of Wave Dark Matter Halos: Numerical Algorithm and Analytical Constraints*, Physical Review D, 105, 023512 (2022)
11. **Xinyu Li**, Andrei M. Beloborodov, Lorenzo Sironi, *Fast dissipation of Colliding Alfvén Waves in a Magnetically Dominated Plasma*, The Astrophysical Journal, 915, 101 (2021)
12. **Xinyu Li** and Daniel Siegel, *Neutrino Fast Flavor Conversions in Neutron-star Post-Merger Accretion Disks*, Physical Review Letters, 126, 25, 251101 (2021)
13. Neal Dalal, Jo Bovy, Lam Hui, **Xinyu Li** *Don't cross the streams: caustics from Fuzzy Dark Matter*, Journal of Cosmology and Astroparticle Physics, 03, 076 (2021)
14. **Xinyu Li**, Lam Hui, Tomer D. Yavetz, *Oscillations and Random Walk of the Soliton Core in a Fuzzy Dark Matter Halo*, Physical Review D, 103, 023508 (2021)
15. Lam Hui, Austin Joyce, Michael J. Landry, **Xinyu Li** (alphabetical order), *Vortices and waves in light dark matter*, Journal of Cosmology and Astroparticle Physics, 01, 011 (2021).
16. Brummel-Smith, C., Bryan, G., Butsky, I., et al. *ENZO: An Adaptive Mesh Refinement Code for Astrophysics*, Journal of Open Source Software, 4, 1636.

17. **Xinyu Li** , Philip Chang, Yuri Levin, Christopher D. Matzner, Philip J. Armitage, *Simulation of a Compact Object with Outflows Moving Through a Gaseous Background*, Monthly Notices of the Royal Astronomical Society, 494, 2 (2020)
18. F.Y. Wang, **Xinyu Li** , D. O. Chernyshov, C.Y. Hui, G.Q. Zhang and K.S. Cheng, *Consequences of Energetic Magnetar-like Outbursts of Nearby Neutron Stars: ^{14}C Events and the Cosmic Electron Spectrum*, The Astrophysical Journal, 887, 2, (2019)
19. Lam Hui, Daniel Kabat, **Xinyu Li** , Luca Santoni and Sam S. C. Wong (alphabetical order), *Black hole hair from scalar dark matter*, Journal of Cosmology and Astroparticle Physics, 06, 038 (2019)
20. **Xinyu Li** , Jonathan Zrake and Andrei Beloborodov, *Dissipation of Alfvén Waves in Relativistic Magnetospheres of Magnetars*, The Astrophysical Journal, 881, 1, (2019)
21. **Xinyu Li** , Lam Hui and Greg Bryan, *Numerical and Perturbative Computations of the Fuzzy Dark Matter Model*, Physical Review D, 99, 63509, (2019)
22. **Xinyu Li** , Yuri Levin and Andrei Beloborodov, *Magnetar Outbursts from Avalanches of Hall Waves and Crustal Failures*, The Astrophysical Journal, 189, 12, (2016)
23. Andrei Beloborodov and **Xinyu Li** , *Magnetar Heating*, The Astrophysical Journal, 261, 20, (2016)
24. **Xinyu Li** and Andrei Beloborodov, *Plastic Damping of Alfvén Waves in Magnetar Flares and Delayed Afterglow Emission*, The Astrophysical Journal, 815, 25, (2015)
25. **Xinyu Li** , Fayin Wang and K.S. Cheng, *Gravitational Effects of Condensate Dark Matter on Compact Stellar Objects*, Journal of Cosmology and Astroparticle Physics, 10, 031, (2012)
26. **Xinyu Li** , T. Harko and K.S.Cheng, *Condensate Dark Matter Stars*, Journal of Cosmology and Astroparticle Physics, 06, 001, (2012)