Xinyu Li

Contact Information	CITA, 60 St George Street Toronto, ON, M5R 2M8, Canada	Homepage: http://xinyuli.netlify.app Email: xli@cita.utoronto.ca
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

- Thesis Topic: *Magnetodynamics Inside and Outside Magnetars*
- Advisor: Prof Andrei Beloborodov

Perimeter Institute / University of Waterloo, Waterloo, ON, Canada

M.Sc, Theoretical Physics, June 2013

- Thesis Topic: *Towards an Investigation of Turbulence in High Dimensions*
- Advisor: Prof Luis Lehner & Prof Robert Myers

The University of Hong Kong, HKSAR, China

B.Sc, Physics and Mathematics (Double Major), June 2012

- First Class Honor

Tsinghua University, Beijing, China

Physics and Mathematics, August 2008 - June 2009

Experiences

- Postdoctoral Fellow
  Canadian Institute for Theoretical Astrophysics & Perimeter Institute 2019/9-

Awards

- Jeffrey L. Bishop Fellowship, CITA 2021
- Joseph C. Pfister Fellowship, Columbia University 2018
- Dean's Fellowship, GSAS, Columbia University 2013
- Perimeter Scholars International Scholarship, Perimeter Institute 2012
- Li Po Kwai Scholarship, The University of Hong Kong 2011/12
- HSBC Scholarship for Mainland Students, The University of Hong Kong 2011

Journal Reviewer	The Astrophysical Journal Letters, The Astrophysical Journal, Journal of High Energy Physics, Astrophysics and Space Science, Physical Letter B, New Astronomy

Presentations

- Max Planck Institute for Gravitational Physics Sep 2021
- North American Einstein Toolkit Workshop July 2021
- MIAPP High-Energy Plasna Phenomena in Astrophysics July 2021
- Department of Astronomy, Columbia University March 2021
- Perimeter Institute 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

Numerical Codes

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

References

Andrei M. Beloborodov
Department of Physics — E-mail: amb2046@columbia.edu
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Center for Computational Astrophysics — E-mail: ylevin@flatironinstitute.org
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Daniel Siegel
Perimeter Institute — E-mail: dsiegel@perimeterinstitute.ca
31 Caroline Street North, Waterloo, Ontario, Canada, N2L 2Y5

Publications

1. Tomer D. Yavetz,**Xinyu Li**, Lam Hui, *Construction of Wave Dark Matter Halos: Numerical Algorithm and Analytical Constraints*, arXiv: 2109.06125
2. **Xinyu Li**, Andrei M. Beloborodov, Lorenzo Sironi, *Fast dissipation of Colliding Alfvén Waves in a Magnetically Dominated Plasma*, The Astrophysical Journal, 915, 101 (2021)
3. **Xinyu Li** and Daniel Siegel, *Neutrino Fast Flavor Conversions in Neutron-star Post-Merger Accretion Disks*, Physical Review Letters, 126, 25, 251101 (2021)
4. 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)
5. **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)
6. Alexander Y. Chen, Yajie Yuan, Andrei M. Beloborodov and **Xinyu Li**, *Relativistic Alfvén Waves Entering Charge Starvation in the Magnetospheres of Neutron Stars*, arXiv:2010.15619
7. 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).
8. Brummel-Smith, C., Bryan, G., Butsky, I., et al. *ENZO: An Adaptive Mesh Refinement Code for Astrophysics*, Journal of Open Source Software, 4, 1636.
9. **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)
10. 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)
11. 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)
12. **Xinyu Li** , Jonathan Zrake and Andrei Beloborodov, *Dissipation of Alfvén Waves in Relativistic Magnetospheres of Magnetars*, The Astrophysical Journal, 881, 1, (2019)
13. **Xinyu Li** , Lam Hui and Greg Bryan, *Numerical and Perturbative Computations of the Fuzzy Dark Matter Model*, Physical Review D, 99, 63509, (2019)
14. **Xinyu Li** , Yuri Levin and Andrei Beloborodov, *Magnetar Outbursts from Avalanches of Hall Waves and Crustal Failures*, The Astrophysical Journal, 189, 12, (2016)
15. Andrei Beloborodov and **Xinyu Li** , *Magnetar Heating*, The Astrophysical Journal, 261, 20, (2016)
16. **Xinyu Li** and Andrei Beloborodov, *Plastic Damping of Alfvén Waves in Magnetar Flares and Delayed Afterglow Emission*, The Astrophysical Journal, 815, 25, (2015)
17. **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)
18. **Xinyu Li** , T. Harko and K.S.Cheng, *Condensate Dark Matter Stars*, Journal of Cosmology and Astroparticle Physics, 06, 001, (2012)