

## Xinyu Li

---

CONTACT INFORMATION	CITA, 60 St George Street Toronto, ON, M5R 2M8, Canada	Homepage: <a href="http://xinyuli.netlify.app">http://xinyuli.netlify.app</a> Email: <a href="mailto:xli@cita.utoronto.ca">xli@cita.utoronto.ca</a>
NATIONALITY	Chinese	
RESEARCH INTERESTS	High Energy Astrophysics, Magnetars, Magnetohydrodynamics, Force-Free Electrodynamics, Plasma Astrophysics, Cosmology, Large Scale Structure, Dark Matter, Galaxy Formation	
EDUCATION	<b>Columbia University</b> , New York, NY, USA  Ph.D., Physics, August 2019 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Magnetodynamics Inside and Outside Magnetars</i></li><li>• Advisor: Prof Andrei Beloborodov</li></ul> <b>Perimeter Institute / University of Waterloo</b> , Waterloo, ON, Canada  M.Sc, Theoretical Physics, June 2013 <ul style="list-style-type: none"><li>• Thesis Topic: <i>Towards an Investigation of Turbulence in High Dimensions</i></li><li>• Advisor: Prof Luis Lehner &amp; Prof Robert Myers</li></ul> <b>The University of Hong Kong</b> , HKSAR, China  B.Sc, Physics and Mathematics (Double Major), June 2012 <ul style="list-style-type: none"><li>• First Class Honor</li></ul> <b>Tsinghua University</b> , Beijing, China  Physics and Mathematics, August 2008 - June 2009	
EXPERIENCES	<ul style="list-style-type: none"><li>• Postdoctoral Fellow Canadian Institute for Theoretical Astrophysics &amp; Perimeter Institute</li></ul>	2019/9-
AWARDS	<ul style="list-style-type: none"><li>• Jeffrey L. Bishop Fellowship, CITA</li><li>• Joseph C. Pfister Fellowship, Columbia University</li><li>• Dean's Fellowship, GSAS, Columbia University</li><li>• Perimeter Scholars International Scholarship, Perimeter Institute</li><li>• Li Po Kwai Scholarship, The University of Hong Kong</li><li>• HSBC Scholarship for Mainland Students, The University of Hong Kong</li></ul>	2021 2018 2013 2012 2011/12 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	<ul style="list-style-type: none"><li>• Max Planck Institute for Gravitational Physics</li><li>• North American Einstein Toolkit Workshop</li><li>• MIAPP High-Energy Plasma Phenomena in Astrophysics</li><li>• Department of Astronomy, Columbia University</li><li>• Perimeter Institute</li><li>• KIAS Workshop on Cosmology and Structure Formation</li><li>• KIAA, Peking University</li><li>• Department of Astronomy, Tsinghua University</li><li>• T.D.Lee Institute</li><li>• Department of Astronomy, Nanjing University</li><li>• Department of Astronomy, HUST</li></ul>	Sep 2021 July 2021 July 2021 March 2021 March 2021 Nov 2020 Oct 2020 Sep 2020 May 2020 Jan 2020 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 DEVELOPER: **ENZO**, **FFE-WENO**, **Einstein Toolkit**  
CODES EXPERIENCED USER: **TRISTAN-MP**, **RAMSES**

## REFERENCES

### **Andrei M. Beloborodov**

Department of Physics E-mail: amb2046@columbia.edu  
Columbia University  
538 West 120th Street, New York, New York, USA, 10027

### **Lam Hui**

Department of Physics E-mail: lh399@columbia.edu  
Columbia University  
538 West 120th Street, New York, New York, USA, 10027

### **Yuri Levin**

Center for Computational Astrophysics E-mail: ylevin@flatironinstitute.org  
Flatiron Institute  
162 Fifth Avenue, New York, New York, USA, 10010

### **Chris Thompson**

CITA E-mail: thompson@cita.utoronto.ca  
University of Toronto  
60 St George St, Toronto, Ontario, Canada, M5R 2M8

### **Daniel Siegel**

Perimeter Institute E-mail: dsiegel@perimeterinstitute.ca  
31 Caroline Street North, Waterloo, Ontario, Canada, N2L 2Y5

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:  $^{14}\text{C}$  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)