

Dongzi Li

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Appointments

2020-now Sherman Fairchild Postdoctoral Scholar Research Associate
California Institute of Technology

Education

2016-2021 PhD. Physics (Supervisor: Ue-Li Pen)
University of Toronto/ Canadian Institute for Theoretical Astrophysics, Canada

2015-2016 MSc. Physics (Perimeter Scholar International)
University of Waterloo/ Perimeter Institute for Theoretical Physics, Canada

2011-2015 BSc. Astronomy
Nanjing University, China

Major collaboration

2019-now CHIME/FRB collaboration

2020-now GMRT/FRB collaboration

2021-now FAST FRB key project

Selected Presentations

2022 Purdue University Astro Seminar (invited)

2022 Green Bank Observatory community webinars (invited)
"The magneto-active environment near FRBs and pulsars"

2022 UChicago KICP seminar, Chicago, US (invited)
"The mystery of fast radio burst, the potential and the limit"

2021 FRB 2021, virtual
"Emission Properties of Periodic Fast Radio Bursts from the Motion of Magnetars"

2021 16th Marcel Grossman Meeting, virtual (invited)
"long-term periodicities in FRB burst times"

2021 Colloquium in ASTRON, Amsterdam, Netherlands (invited)
"High-resolution study with interstellar lenses"

2020 FRB 2020, Virtual Conference
"Periodic Activity from a Fast Radio Burst Source"

2019 Meterwave Sky II, Pune, India
"Plasma lensing birefringence: a magnetic zoo"

2018 The International Pulsar Timing Array Science meeting, Albuquerque, United States
"Under-standing radio pulse propagation and delay"

2017 Scintillometry Workshop, Toronto, Canada
"Constraining magnetic fields with a birefringent lens"

Allocations

Effelsberg 2022: 24h

High-frequency polarimetry of repeating FRBs in magneto-active environments

FAST 2021: A (8h) B(12h) C(30h)

Targeted Observations of Local Universe Fast Radio Bursts

VLBA DDT 2021:6h

VLBA milliarcsecond localization of FRB 20201124A

GMRT Cycle 40 (2021): 24h

Constraining models of the Repeating FRB 180916.J0158+65 with Polarization

Parkes 2019 OCT: 8h

Testing models of interstellar scintillation with the Vela pulsar

GMRT Cycle 33 (2017): 6h

Probing Differential Faraday Rotation of Vela

Co-I of 10 GMRT proposals and 1 Arecibo proposal.

- **Instrumental:** 2016-2020 Visit Algonquin radio telescope three times a year, debugging/installing feeds.

Referee Invitation

Journal

Nature Astronomy, ApJL, Apj, MNRAS

Telescope proposal

FAST, GMRT

Supervising Experience

- 2020-2022 Suryarao Bethapudi(grad) *GMRT FRB polarization study*
Co-supervised with Laura Spitler
- 2018-2021 Akanksha Bij (Research Assistant) *Abnormal behaviors from Crab Giant Pulse*
Co-supervised with Dr. Hsiu-hsien Lin and Prof. Marten van Kerkwijk
- 2019-2020 Hengrui Zhu (Undergrad) *VLBI Study of Vela Pulsar*
- 2018-2018 Kayenta Schmidt (Undergrad) *Searching De-polarization from Crab Giant Pulse*
- 2017-2018 Steven Ufkes (Master) *Optimizing Toeplitz Matrix De-convolution Algorithm*
Co-supervised with prof. Ue-Li Pen
- 2016-2017 Visal Sok (Undergrad) *Optimizing Toeplitz Matrix De-convolution Algorithm*

Teaching/Outreach

2022	Public talk: Youtube/Weibo	Fast radio bursts
2020	Guest in Podcast	Pythagorean Astronomy: Mass Gaps and Radio Bursts
2020	Guest lecture: 30 students	Application of Radio Propagation Effects
2019	Public talk: 50 audiences	Sensing hidden signals with pulsars
2019	Tutorial: 50 students	Electricity and Magnetism
2018	Online tutorial: 40 students	Physics of Music
2016-2017	Lab demonstrator: 30 students	Introduction to physics

Publications

- [1] T. Cassanelli et al. **2022**. Localizing FRBs through VLBI with the Algonquin Radio Observatory 10 m Telescope. *Astron. J.* **163**, 65.
- [2] B. C. Chime/Frb Collaboration et al. **2022**. Sub-second periodicity in a fast radio burst. *Nature* **607**, 256–259.
- [3] F. Kirsten et al. **2022**. A repeating fast radio burst source in a globular cluster. *Nature* **602**, 585–589.
- [4] **D. Z. Li**, A. Bilous, S. Ransom, R. Main & Y.-P. Yang. **2022**. A Highly Variable Magnetized Environment in a Pulsar Binary resembling Fast Radio Bursts. *arXiv e-prints*, arXiv:2205.07917.
- [5] F. X. Lin, R. Main, **D. Z. Li**, U.-L. Pen & M. H. van Kerkwijk. **2022**. Plasma lensing near the eclipses of the Black Widow pulsar B1957+20. *arXiv e-prints*, arXiv:2208.13868.
- [6] R. A. Main et al. **2022**. Scintillation time-scale measurement of the highly active FRB20201124A. *Mon. Not. R. Astron. Soc.* **509**, 3172–3180.
- [7] V. R. Marthi et al. **2022**. Burst properties of the highly active FRB20201124A using uGMRT. *Mon. Not. R. Astron. Soc.* **509**, 2209–2219.
- [8] R. Mckinven et al. **2022**. A Large Scale Magneto-ionic Fluctuation in the Local Environment of Periodic Fast Radio Burst Source, FRB 20180916B. *arXiv e-prints*, arXiv:2205.09221.
- [9] V. Ravi et al. **2022**. The host galaxy and persistent radio counterpart of FRB 20201124A. *Mon. Not. R. Astron. Soc.* **513**, 982–990.
- [10] A. Bij et al. **2021**. Kinematics of Crab Giant Pulses. *Astrophys. J.* **920**, 38.
- [11] CHIME/FRB Collaboration et al. **2021**. The First CHIME/FRB Fast Radio Burst Catalog. *Astrophys. J. Suppl.* **257**, 59.
- [12] L. Connor et al. **2021**. Galactic Radio Explorer: An All-sky Monitor for Bright Radio Bursts. *Publ. Astron. Soc. Pac.* **133**, 075001.
- [13] G. H. Hilmarsson, L. G. Spitler, R. A. Main & **D. Z. Li**. **2021**. Polarization properties of FRB 20201124A from detections with the Effelsberg 100-m radio telescope. *Mon. Not. R. Astron. Soc.* **508**, 5354–5361.
- [14] K. Kremer, A. L. Piro & **D. Z. Li**. **2021**. Dynamical Formation Channels for Fast Radio Bursts in Globular Clusters. *Astrophys. J. Letters* **917**, L11.
- [15] **D. Z. Li** & J. J. Zanazzi. **2021**. Emission Properties of Periodic Fast Radio Bursts from the Motion of Magnetars: Testing Dynamical Models. *Astrophys. J. Letters* **909**, L25.
- [16] R. Mckinven et al. **2021**. Polarization Pipeline for Fast Radio Bursts Detected by CHIME/FRB. *Astrophys. J.* **920**, 138.
- [17] K. Nimmo et al. **2021**. Highly polarized microstructure from the repeating FRB 20180916B. *Nature Astronomy* **5**, 594–603.
- [18] Z. Pleunis et al. **2021**. LOFAR Detection of 110-188 MHz Emission and Frequency-dependent Activity from FRB 20180916B. *Astrophys. J. Letters* **911**, L3.
- [19] M. Rafiei-Ravandi et al. **2021**. CHIME/FRB Catalog 1 Results: Statistical Cross-correlations with Large-scale Structure. *Astrophys. J.* **922**, 42.
- [20] H. Xu et al. **2021**. A fast radio burst source at a complex magnetised site in a barred galaxy. *arXiv e-prints*, arXiv:2111.11764.
- [21] P. Chawla et al. **2020**. Detection of Repeating FRB 180916.J0158+65 Down to Frequencies of 300 MHz. *Astrophys. J. Letters* **896**, L41.
- [22] CHIME/FRB Collaboration et al. **2020**. A bright millisecond-duration radio burst from a Galactic magnetar. *Nature* **587**, 54–58.
- [23] (**D. Z. Li** as corresponding author). Chime/Frb Collaboration et al. **2020**. Periodic activity from a fast radio burst source. *Nature* **582**, 351–355.
- [24] E. Fonseca et al. **2020**. Nine New Repeating Fast Radio Burst Sources from CHIME/FRB. *Astrophys. J. Letters* **891**, L6.
- [25] B. Marcote et al. **2020**. A repeating fast radio burst source localized to a nearby spiral galaxy. *Nature* **577**, 190–194.

- [26] V. R. Marthi et al. **2020**. Detection of 15 bursts from the fast radio burst 180916.J0158+65 with the up-graded Giant Metrewave Radio Telescope. *Mon. Not. R. Astron. Soc.* **499**, L16–L20.
- [27] CHIME/FRB Collaboration et al. **2019**. CHIME/FRB Discovery of Eight New Repeating Fast Radio Burst Sources. *Astrophys. J. Letters* **885**, L24.
- [28] **D. Z. Li**, A. Yalinewich & P. C. Breysse. **2019**. Statistical inference of the distance to ASKAP FRBs. *arXiv e-prints*, arXiv:1902.10120.
- [29] **D. Z. Li**, H.-M. Zhu & U.-L. Pen. **2019**. Cross-correlation of the kinematic Sunyaev-Zel'dovich effect and 21 cm intensity mapping with tidal reconstruction. *Phys. Rev. D* **100**, 023517.
- [30] **D. Z. Li** et al. **2019**. Constraining magnetic fields through plasma lensing: application to the Black Widow pulsar. *Mon. Not. R. Astron. Soc.* **484**, 5723–5733.
- [31] R. Main et al. **2018**. Pulsar emission amplified and resolved by plasma lensing in an eclipsing binary. *Nature* **557**, 522–525.