Dongzi Li

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Appointments

2023-	Lyman Spitzer, Jr. Fellowship Princeton University
2020-2023	Sherman Fairchild Physics Prize Fellow Walter Burke Institute for Theoretical Physics, 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

2023	Astrophysics of Fast Radio Bursts II (invitation-only)
2023	Gravity and the Extreme Universe 2023 AGM(invited)
2023	Colloquium at ASIAA (invited)
2023	Columbia University physics colloquium (invited)
2022	Cornell FRB meeting (invitation-only)
2022	Purdue University Astro Seminar (invited)
2022	Green Bank Observatory community webinars, virtual (invited)
2022	UChicago KICP seminar, Chicago, US (invited)
2021	16th Marcel Grossman Meeting, virtual (invited)
2021	Colloquium in ASTRON, Amsterdam, Netherlands (invited)
2020	FRB 2020, Virtual Conference
2019	Gravity Meets Plasma Workshop, Kunming, China
2019	Meterwave Sky II, Pune, India
2018	Scintillometry Workshop, Shanghai, China
2018	The International Pulsar Timing Array Science meeting, Albuquerque, United States

Referee

Journals	Nature Astronomy, ApJL, ApJ, MNRAS
Telescope proposals	FAST, GMRT

Successful Proposals (PI: D. Z. Li):

MeerKat 2023: 60h Priority B1
Studying Extreme Lensing and Magneto-Active Environment in Pulsar Binaries

FAST (under FAST FRB Key Project): 2022: 6h, 2021: 6h
Searching globular cluster FRBs in M87

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

GMRT DDT 2021:12h
Multi-frequency study of the active Repeating FRB20201124A and associated persistent radio source

VLBA DDT 2021:6h
VLBA milliarcsecond localization of FRB 20201124A

GMRT 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 2017: 6h
Probing Differential Faraday Rotation of Vela

- **Co-I** on dozens of GMRT, GBT, Arecibo, Parkes, FAST proposals.
- **Instrumental**: 2016-2020 Visit Algonquin radio telescope three times a year, debugging/installing feeds.

Organizing Events

- 2023 TAPIR seminar
- 2021-2022 Caltech Theorist/Observer Pizza Lunch
- 2022 Caltech FRB reading group
- 2019 Scintillometry Workshop (SOC)
- 2018 CITA seminar committee
- 2017 Scintillometry Workshop (LOC)
- 2016 CITA-PI Day Workshop

Supervising Experience

- 2023 Nadja Aldarondo Quinones(University of Puerto Rico)
  Searching extreme polarized FRBs
- 2020-2022 Suryarao Bethapudi(MPIfR, grad) *GMRT FRB polarization study*
- 2018-2021 Akanksha Bij (U of T, post-bach) *Abnormal behaviors from Crab Giant Pulse*
  Co-supervised with Dr. Hsiu-hsien Lin and Prof. Marten van Kerkwijk
- 2019-2020 Hengrui Zhu (Oberlin College, undergrad) *VLBI Study of Vela Pulsar*
- 2018-2018 Kayenta Schmidt (U of T, undergrad) *Searching De-polarization from Crab Giant Pulse*
- 2017-2018 Steven Ufkes (U of T, master) *Optimizing Toeplitz Matrix De-convolution Algorithm*
  Co-supervised with prof. Ue-Li Pen
- 2016-2017 Visal Sok (U of T, undergrad) *Optimizing Toeplitz Matrix De-convolution Algorithm*

Teaching/Outreach

2022	Public talk: Youtube/Weibo	Fast radio bursts
2022	Host of Astronomy on Tap	Special Events Dedicated to JWST
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

Major contribution (including 2 Nature paper, in total 483 citations, excluding self-citations)

[1] K. Kremer, **D. Z. Li,** W. Lu, A. L. Piro & B. Zhang. **2023.** Prospects for Detecting Fast Radio Bursts in the Globular Clusters of Nearby Galaxies. *Astrophys. J.* **944,** 6.

[2] **D. Z. Li,** A. Bilous, S. Ransom, R. Main & Y.-P. Yang. **2023.** A highly magnetized environment in a pulsar binary system. ***Nature*** **618,** 484–488.

[3] **D. Z. Li** & U.-L. Pen. **2023.** FRBs from rapid spindown neutron stars. *arXiv e-prints,* arXiv:2309.06328.

[4] V. Ravi, C. J. Law, **D. Z. Li,** K. Aggarwal, M. Bhardwaj, et al. **2022.** The host galaxy and persistent radio counterpart of FRB 20201124A. *Mon. Not. R. Astron. Soc.* **513,** 982–990.

[5] A. Bij, H.-H. Lin, **D. Z. Li,** M. H. van Kerkwijk, U.-L. Pen, et al. **2021.** Kinematics of Crab Giant Pulses. *Astrophys. J.* **920,** 38.

[6] **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.

[7] M. Rafiei-Ravandi, K. M. Smith, **D. Z. Li,** K. W. Masui, A. Josephy, et al. **2021.** CHIME/FRB Catalog 1 Results: Statistical Cross-correlations with Large-scale Structure. *Astrophys. J.* **922,** 42.

[8] (**D. Z. Li** as the corresponding author). Chime/Frb Collaboration, M. Amiri, B. C. Andersen, K. M. Bandura, M. Bhardwaj, et al. **2020.** Periodic activity from a fast radio burst source. ***Nature*** **582,** 351–355.

[9] **D. Z. Li,** F. X. Lin, R. Main, U.-L. Pen, M. H. van Kerkwijk, et al. **2019.** Constraining magnetic fields through plasma lensing: application to the Black Widow pulsar. *Mon. Not. R. Astron. Soc.* **484,** 5723–5733.

[10] **D. Z. Li,** A. Yalinewich & P. C. Breysse. **2019.** Statistical inference of the distance to ASKAP FRBs. *arXiv e-prints,* arXiv:1902.10120.

[11] **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.

Contributed (including 6 Nature paper, in total 2437 citations)

[12] S. Bethapudi, L. G. Spitler, R. A. Main, D. Z. Li & R. S. Wharton. **2023.** High frequency study of FRB 20180916B using the 100-m Effelsberg radio telescope. *Mon. Not. R. Astron. Soc.* **524,** 3303–3313.

[13] X. Er, U.-L. Pen, X. Sun & **D. Z. Li**. **2023.** Plasma lensing with magnetic field and a small correction to the Faraday rotation measurement. *Mon. Not. R. Astron. Soc.* **522,** 3965–3971.

[14] F. X. Lin, R. A. Main, D. Jow, D. Z. Li, U. .-. Pen, et al. **2023.** Plasma lensing near the eclipses of the Black Widow pulsar B1957+20. *Mon. Not. R. Astron. Soc.* **519,** 121–135.

[15] H.-H. Lin, P. Scholz, C. Ng, U.-L. Pen, M. Bhardwaj, […], **D. Z. Li,** et al. **2023.** Do All Fast Radio Bursts Repeat? Constraints from CHIME/FRB Far Side-Lobe FRBs. *arXiv e-prints,* arXiv:2307.05261.

[16] H.-H. Lin, P. Scholz, C. Ng, U.-L. Pen, D. Z. Li, et al. **2023.** Constraints on the Intergalactic and Local Dispersion Measure of Fast Radio Bursts with the CHIME/FRB far side-lobe events. *arXiv e-prints,* arXiv:2307.05262.

[17] R. A. Main, S. Bethapudi, V. R. Marthi, M. L. Bause, D. Z. Li, et al. **2023.** Modelling annual scintillation velocity variations of FRB 20201124A. *Mon. Not. R. Astron. Soc.* **522,** L36–L41.

[18] R. Mckinven, B. M. Gaensler, D. Michilli, K. Masui, V. M. Kaspi, et al. **2023.** A Large-scale Magneto-ionic Fluctuation in the Local Environment of Periodic Fast Radio Burst Source FRB 20180916B. *Astrophys. J.* **950,** 12.

[19] R. Mckinven, B. M. Gaensler, D. Michilli, K. Masui, V. M. Kaspi, et al. **2023.** Revealing the Dynamic Magnetoionic Environments of Repeating Fast Radio Burst Sources through Multiyear Polarimetric Monitoring with CHIME/FRB. *Astrophys. J.* **951,** 82.

[20] C.-C. Miao, V. Blackmon, W.-W. Zhu, D.-Z. Li, M. Ge, et al. **2023.** Reciprocating Magnetic Fields in the Pulsar Wind Observed from the Black Widow Pulsar J1720-0534. *arXiv e-prints,* arXiv:2307.00731.

[21] M. Rafiei-Ravandi, K. M. Smith, D. Michilli, Z. Pleunis, M. Bhardwaj, […], **D. Z. Li,** et al. **2023.** Statistical association between the candidate repeating FRB 20200320A and a galaxy group. *arXiv e-prints,* arXiv:2308.09608.

[22] S. Q. Wang, J. B. Wang, D. Z. Li, J. M. Yao, R. N. Manchester, et al. **2023.** Change of Rotation Measure during the Eclipse of a Black Widow PSR J2051-0827. *Astrophys. J.* **955,** 36.

[23] Z.-W. Wu, R. A. Main, W.-W. Zhu, B. Zhang, P. Jiang, et al. **2023.** Scintillation Arc from FRB 20220912A. *arXiv e-prints,* arXiv:2304.14697.

[24] Y.-K. Zhang, D. Li, B. Zhang, S. Cao, Y. Feng, et al. **2023.** FAST Observations of FRB 20220912A: Burst Properties and Polarization Characteristics. *arXiv e-prints,* arXiv:2304.14665.

[25] T. Cassanelli, C. Leung, M. Rahman, K. Vanderlinde, J. Mena-Parra, […], **D. Z. Li,** et al. **2022.** Localizing FRBs through VLBI with the Algonquin Radio Observatory 10 m Telescope. *Astron. J.* **163,** 65.

[26] B. C. Chime/Frb Collaboration, K. Bandura, M. Bhardwaj, P. J. Boyle, C. Brar, et al. **2022.** Sub-second periodicity in a fast radio burst. ***Nature*** **607,** 256–259.

[27] J.-C. Jiang, W.-Y. Wang, H. Xu, J.-W. Xu, C.-F. Zhang, et al. **2022.** FAST Observations of an Extremely Active Episode of FRB 20201124A. III. Polarimetry. *Research in Astronomy and Astrophysics* **22,** 124003.

[28] F. Kirsten, B. Marcote, K. Nimmo, J. W. T. Hessels, M. Bhardwaj, et al. **2022.** A repeating fast radio burst source in a globular cluster. ***Nature*** **602,** 585–589.

[29] H.-H. Lin, R. Main, U.-L. Pen, R. Wharton, M. L. Bause, […], **D. Z. Li,** et al. **2022.** DM-power: an algorithm for high precision dispersion measure with application to fast radio bursts. *arXiv e-prints,* arXiv:2208.13677.

[30] R. A. Main, G. H. Hilmarsson, V. R. Marthi, L. G. Spitler, R. S. Wharton, et al. **2022.** Scintillation time-scale measurement of the highly active FRB20201124A. *Mon. Not. R. Astron. Soc.* **509,** 3172–3180.

[31] V. R. Marthi, S. Bethapudi, R. A. Main, H. .-. Lin, L. G. Spitler, et al. **2022.** Burst properties of the highly active FRB20201124A using uGMRT. *Mon. Not. R. Astron. Soc.* **509,** 2209–2219.

[32] J.-R. Niu, W.-W. Zhu, B. Zhang, M. Yuan, D.-J. Zhou, et al. **2022.** FAST Observations of an Extremely Active Episode of FRB 20201124A. IV. Spin Period Search. *Research in Astronomy and Astrophysics* **22,** 124004.

[33] H. Xu, J. R. Niu, P. Chen, K. J. Lee, W. W. Zhu, et al. **2022.** A fast radio burst source at a complex magnetized site in a barred galaxy. ***Nature*** **609,** 685–688.

[34] Y. Zhang, J. Niu, Y. Feng, W. Zhu, B. Zhang, […], **D. Z. Li,** et al. **2022.** FAST detection of high activity FRB 20220912A. *The Astronomer's Telegram* **15733,** 1.

[35] CHIME/FRB Collaboration, M. Amiri, B. C. Andersen, K. Bandura, S. Berger, […], **D. Z. Li,** et al. **2021.** The First CHIME/FRB Fast Radio Burst Catalog. *Astrophys. J. Suppl.* **257,** 59.

[36] L. Connor, K. A. Shila, S. R. Kulkarni, J. Flygare, G. Hallinan**D. Z. Li,** et al. **2021.** Galactic Radio Explorer: An All-sky Monitor for Bright Radio Bursts. *Publ. Astron. Soc. Pac.* **133,** 075001.

[37] 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.

[38] K. Kremer, A. L. Piro & **D. Z. Li**. **2021.** Dynamical Formation Channels for Fast Radio Bursts in Globular Clusters. *Astrophys. J. Letters* **917,** L11.

[39] R. Mckinven, D. Michilli, K. Masui, D. Cubranic, B. M. Gaensler, et al. **2021.** Polarization Pipeline for Fast Radio Bursts Detected by CHIME/FRB. *Astrophys. J.* **920,** 138.

[40] K. Nimmo, J. W. T. Hessels, A. Keimpema, A. M. Archibald, J. M. Cordes, et al. **2021.** Highly polarized microstructure from the repeating FRB 20180916B. *Nature Astronomy* **5,** 594–603.

[41] Z. Pleunis, D. Michilli, C. G. Bassa, J. W. T. Hessels, A. Naidu, et al. **2021.** LOFAR Detection of 110-188 MHz Emission and Frequency-dependent Activity from FRB 20180916B. *Astrophys. J. Letters* **911,** L3.

[42] R. Wharton, S. Bethapudi, T. Gautam, **D. Z. Li,** H.-H. Lin, et al. **2021.** uGMRT detection of a persistent radio source coincident with FRB20201124A. *The Astronomer's Telegram* **14529,** 1.

[43] R. Wharton, S. Bethapudi, V. Marthi, R. Main, **D. Z. Li,** et al. **2021.** uGMRT localization of FRB20201124A. *The Astronomer's Telegram* **14538,** 1.

[44] P. Chawla, B. C. Andersen, M. Bhardwaj, E. Fonseca, A. Josephy, et al. **2020.** Detection of Repeating FRB 180916.J0158+65 Down to Frequencies of 300 MHz. *Astrophys. J. Letters* **896,** L41.

[45] CHIME/FRB Collaboration, B. C. Andersen, K. M. Bandura, M. Bhardwaj, A. Bij, et al. **2020.** A bright millisecond-duration radio burst from a Galactic magnetar. ***Nature*** **587,** 54–58.

[46] E. Fonseca, B. C. Andersen, M. Bhardwaj, P. Chawla, D. C. Good, et al. **2020.** Nine New Repeating Fast Radio Burst Sources from CHIME/FRB. *Astrophys. J. Letters* **891,** L6.

[47] B. Marcote, K. Nimmo, J. W. T. Hessels, S. P. Tendulkar, C. G. Bassa, et al. **2020.** A repeating fast radio burst source localized to a nearby spiral galaxy. ***Nature*** **577,** 190–194.

[48] V. R. Marthi, T. Gautam, D. Z. Li, H. .-. Lin, R. A. Main, et al. **2020.** Detection of 15 bursts from the fast radio burst 180916.J0158+65 with the upgraded Giant Metrewave Radio Telescope. *Mon. Not. R. Astron. Soc.* **499,** L16–L20.

[49] CHIME/FRB Collaboration, B. C. Andersen, K. Bandura, M. Bhardwaj, P. Boubel, et al. **2019.** CHIME/FRB Discovery of Eight New Repeating Fast Radio Burst Sources. *Astrophys. J. Letters* **885,** L24.

[50] R. Main, I. .-. Yang, V. Chan, **D. Z. Li,** F. X. Lin, et al. **2018.** Pulsar emission amplified and resolved by plasma lensing in an eclipsing binary. ***Nature*** **557,** 522–525.