

Lei Li

Ph.D., The Chinese University of Hong Kong, Shenzhen

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Education

Ph.D., Computer and Information Engineering <i>The Chinese University of Hong Kong, Shenzhen (CUHK-Shenzhen)</i>	2020 – 2024 GPA: 3.85/4.0
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Ph.D. Student, Electrical Engineering <i>Virginia Tech (VT), Blacksburg, VA, USA</i>	2018 – 2019 GPA: 3.88/4.0
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M.S., Information and Communication Engineering <i>Beijing Institute of Technology (BIT), Beijing</i>	2014 – 2017 GPA: 86.4/100
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B.E., Communication Engineering (Siyuan Honor Program) <i>Beijing Jiaotong University (BJTU), Beijing</i>	2010 – 2014 GPA: 88.5/100
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Research Experiences

Channel state information (CSI) sensing and recovery in massive MIMO systems

Develop efficient CSI sensing algorithms for 5G and next-G systems to achieve low-overhead CSI recovery.

- L. Li, X. Zeng, Y.-F. Liu, Y. Xu, and T.-H. Chang, "CSI sensing from heterogeneous user feedbacks: a constrained phase retrieval approach," *IEEE Trans. Wireless Commun.*, 2023
 - L. Li, M. Zhu, S. Xia and T.-H. Chang, "Downlink CSI recovery in massive MIMO systems by proactive sensing," *IEEE Wireless Commun. Lett.*, 2023
 - L. Li, Q. Chen, X. Zeng and T.-H. Chang, "Downlink CSI sensing from heterogeneous user feedbacks: a constrained phase retrieval approach," in *IEEE SPAWC 2022*
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Integrated sensing and communication (ISAC)

Modeling and low-complexity algorithm design for ISAC systems, with a focus on sensing-assisted communication applications.

- L. Li, T. Cai, and T.-H. Chang, "ISAC beamforming optimization for robust transmission in dynamic mmWave MIMO networks," accepted by *IEEE ICASSP, 2024*
- T. Cai, L. Li, and T.-H. Chang, "Sensing-assisted distributed user scheduling and beamforming in multi-cell mmWave networks," accepted by *IEEE ICASSP, 2024*
- M. Zhu, L. Li, S. Xia and T.-H. Chang, "Information and sensing beamforming optimization for multi-user multi-target MIMO ISAC systems," *EURASIP J. Adv. Signal Process.*, 2023
- M. Zhu, L. Li, S. Xia and T.-H. Chang, "Information and sensing beamforming optimization for multi-user multi-target MIMO ISAC systems," in *IEEE ICASSP, 2023 (Top 3% Paper Recognition)*

Manuscripts in Progress:

- L. Li, and T.-H. Chang, "Low-complexity ISAC beamforming optimization for robust transmission in dynamic mmWave MIMO networks," submitted to *IEEE JSAC*.
 - K. Zhang, L. Li, and T.-H. Chang, "Fronthaul compression and power allocation optimization for networked integrated sensing and communication," to be submitted to *IEEE TVT*.
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Unmanned aerial vehicle (UAV) communication

Develop positioning and power control algorithms for UAV-enabled networking.

- L. Li, T.-H. Chang and S. Cai, "UAV positioning and power control for wireless two-way relaying," *IEEE Trans.*

Wireless Commun., 2020

- L. Li, T.-H. Chang and S. Cai, "UAV positioning and power control for wireless two-way relaying," in *IEEE SPAWC*, 2019

Others: DoA estimation, multi-user beamforming, secure communication, SCMA, and visual light communication (VLC)

- S. Li, L. Li, B. Liu, Y. Song, M. Li, J. Ren, and W. Jiang, "High precision fast direction-of-arrival estimation method for planar array," in *Space: Science & Technology (2022)*
- L. Li, J. Chen, C. Li, B. Li, N. Wang and Z. Fei, "Balancing energy efficiency and user rate fairness in multicell networks," in *IEEE WPMC 2016*
- Ni. Wang, L. Li, J. Chen, Z. Fei and J. Kuang, "The ADMM-based beamforming design with per-antenna power constraints," in *IEEE WPMC 2016*
- B. Li, L. Li, D. He, J. Chen and W. Kong, "Energy efficient secure transmission in massive MIMO systems with pilot attack," in *IEEE WCSP 2016*
- C. Sun, L. Li, J. Chen *et al.*, "System-level performance estimation of SCMA," in *IEEE ICCS 2016*
- M. Feng, Y. Zeng, K. Zhou *et al.*, "Adaptive screen modulation schemes for mobile device employing optical camera communication," in *IEEE ICUFN 2014*.

Skills

- Experienced knowledge in wireless communication, signal processing, 4G-LTE, and 5G-NR.
- Familiar with air interface performance analysis, modeling and optimization.
- Academic Language: C/C++, Python, Matlab, CUDA, and \LaTeX .

Honors and Awards

- Graduate Research Conference Poster Award, Second Place, CUHK-Shenzhen 2022
- National Endeavor Scholarship 2012 & 2013
- University Scholarship of BIT 2014 & 2015
- University Scholarship of BJTU 2012 & 2013
- Merit Student of BJTU 2013
- Second Prize in Electronic Design Contest at BJTU 2013
- Outstanding Award in the 4th Innovational Work Election on Electronics and Information Design for College Students, Chinese Institute of Electronics 2013

Extracurricular Activities

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| Graduate Teaching Assistant at CUHK-Shenzhen | May. 2020–Dec. 2023 |
| Graduate Teaching Assistant at VT | Aug. 2017–May 2018 |
| Graduate Teaching Assistant at BIT | May 2015 |
| President of Class Committee, Class Siyuan 1001 (Siyuan Honor Program), BJTU | Sept. 2013–June 2014 |
| Class Committee Member in Charge of Studies, Class Siyuan 1001, BJTU | Sept. 2012–June 2013 |

Language

Mandarin: Native

English: Professional working proficiency (TOEFL IBT: 104, GRE: 332.5)

References

- Dr. Tsung-Hui Chang, Associate Professor of SSE, CUHK-Shenzhen, changtsunghui@cuhk.edu.cn
Dr. Zesong Fei, Professor of SIE, BIT, feizesong@bit.edu.cn