

Seek for Stage/CDI/CIFRES in 5G/6G Wireless Communications

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Chinese

English

French

Native Speaker

TOEFL 107

B1

Education

2024-on	<b>Ingénieur in Computer Science</b> , Télécom Paris, Île-de-France, France. GPA: 3.93/4.0
2022-2025	<b>M.Eng in Computer Science</b> , Tongji University, Shanghai, China. GPA: 4.83/5.0 Ranking: 1/48 <i>Summa Cum Laude</i> Research Area: Internet of Things
2018-2022	<b>B.Eng in Information Security</b> , Hangzhou Dianzi University, Zhejiang, China. GPA: 4.72/5.0 Ranking: 1/116 <i>Summa Cum Laude</i>

Projects & Grants

2022-on	<b>Resonant Beam System</b> Employing intra-cavity laser resonance to achieve wireless power transfer, communication, and positioning. Providing interpretable model and simulation program based on Fourier optics for system design and performance evaluation. Analyzing the channel characteristics and transmission performance. Exploring the possibility of system extension with mmWave and RIS/IRS. <b>Major Skills:</b> Python, MATLAB, Wave and Optical Engineering, Communication Engineering. <b>Related publications</b> (Reference Google Scholar: <a href="#">Shuaifan Xia</a> ): 6 (Co-)Authored Journal Papers (IEEE Trans. Wireless Comm., IEEE IoT. J.). 2 Patents (China) under examination as to substance.	Project member, researcher, and simulation program developer.
2019-2022	<b>Insight Security</b> Developed a comprehensive security framework for industrial and IoT networks integrating firewalls, intrusion detection systems (IDS), and vulnerability assessment modules. Implemented a cloud-edge-terminal collaborative architecture enabling coordinated threat detection and adaptive response across distributed environments. Designed a real-time visualization and control platform to monitor network status, intrusion alerts, and system performance. <b>Major Skills:</b> Distributed software dev. in Java and C/C++, ELK, Network Security. <b>Related awards and grants:</b> 2021 China College Computer Competition (C4) 2020 National Innovation Project Grants for College Students 2019 National Innovation Project Grants for College Students 2 Patents (China) Granted.	Role: Project leader, system architect, and developer.
2021-2021	<b>Interdisciplinary Contest in Modeling (ICM).</b> Topic: Exploration of the Impact Factors for Music Trending - A Graph-based Approach. Honorable Mention, USA.	Role: Team leader, modeller, and paper writer.

Honors & Awards

2024	<b>France Excellence EIFFEL Scholarship.</b>	Campus France, France.
2024	<b>National Scholarship for Master Students.</b>	Ministry of Education, China.
2023	<b>National Scholarship for Master Students.</b>	Ministry of Education, China.
2021	<b>Zhejiang Provincial Scholarship.</b>	Department of Education, Zhejiang, China.
2020	<b>National Scholarship for Undergraduate Students.</b>	Ministry of Education, China.
2019	<b>Zhejiang Provincial Scholarship.</b>	Department of Education, Zhejiang, China.

## Publication Highlights

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### 2025 Frequency Division Duplexing Resonant Beam Communication.

S. Xia, Q. Liu, Q. Jiang, W. Fang, M. Liu.

IEEE Transactions on Wireless Communications.

Accepted for publication.

- Proposed a self-aligned millimeter-wave resonant beam system leveraging retro-directive antenna arrays to achieve adaptive resonance without beam scanning or steering.
- Introduced a dual-frequency FDD design to eliminate interference, enabling microsecond-scale resonance establishment and achieving 4.8 bps/Hz spectral efficiency with low bit error rates in indoor scenarios.

### 2025 Mobile Self-Protection Resonant Beam SWIPT with Adaptive Phase Control.

X. Wang, S. Xia, W. Fang, M. Liu, M. Xiong, Q. Liu, Z. Pan.

IEEE Internet of Things Journal.

doi:[10.1109/JIOT.2025.3595641](https://doi.org/10.1109/JIOT.2025.3595641)

- Proposed a self-adaptive resonant beam-based SWIPT system with enhanced safety and mobility using a Pockels-effect phase adjuster and optical phase-locked loop for automatic phase correction.
- Demonstrated stable performance with 13.77 bps/Hz data rate and 4.63 W power transfer over 6 m while maintaining intrinsic human safety within a 5° field of view.

### 2024 Millimeter-wave Resonant Beam SWIPT.

S. Xia, Q. Jiang, W. Fang, Q. Liu, S. Zhou, M. Liu, M. Xiong.

IEEE Internet of Things Journal.


doi:[10.1109/JIOT.2024.3452121](https://doi.org/10.1109/JIOT.2024.3452121) Open science:  [Collin911/RF-RBSWIPT](https://collin911.github.io/RF-RBSWIPT)

- Proposed a millimeter-wave resonant beam-based SWIPT system that achieves automatic beam alignment and efficient bidirectional transmission using retro-directive antenna arrays and a dual-frequency design.
- Demonstrated through analysis that the system can deliver watt-level wireless power and achieve 4.8 bps/Hz spectral efficiency in indoor environments.

### 2023 Auto-Protection for Resonant Beam SWIPT in Portable Applications.

S. Xia, Q. Liu, M. Liu, W. Fang, M. Xiong, Y. Bai, X. Li.

IEEE Internet of Things Journal.

doi:[10.1109/JIOT.2023.3298521](https://doi.org/10.1109/JIOT.2023.3298521) Open science:  [Collin911/Resonant-Beam-AutoPro](https://collin911.github.io/Resonant-Beam-AutoPro)

- Developed a portable auto-protection scheme for resonant beam-based SWIPT systems to ensure intrinsic human safety without sacrificing performance.
- Proposed a phase compensation and analytical modeling approach enabling automatic beam cutoff upon obstruction, while achieving 13.55 bps/Hz data rate and 5.42 W power transfer over a 6 m range.

### 2023 NLOS Transmission Analysis for Mobile SLIPT Using Resonant Beam.

M. Liu, S. Xia, M. Xiong, M. Xu, Q. Liu, H. Deng.

IEEE Transactions on Wireless Communications.

doi:[10.1109/TWC.2023.3277593](https://doi.org/10.1109/TWC.2023.3277593)

- Developed analytical models and efficient simulation tools for reflector-assisted non-line-of-sight (NLOS) transmission in resonant beam systems, enabling accurate modeling of mobile transmission channels.
- Demonstrated that RB-SLIPT can simultaneously achieve 4 W wireless charging power and 12 bit/s/Hz data rate over 2 m NLOS transmission.

### 2022 Integrated Communication and Positioning With Resonant Beam.

M. Liu, S. Xia, M. Xiong, M. Xu, W. Fang, Q. Liu.

IEEE Transactions on Wireless Communications.

doi:[10.1109/TWC.2022.3173929](https://doi.org/10.1109/TWC.2022.3173929)

- Proposed a monocular resonant beam-based integrated communication and positioning (RB-ICP) system that achieves both centimeter-level localization accuracy and high-rate data transmission.
- Demonstrated the system attains <1 cm positioning error and 16 bit/s/Hz spectral efficiency over a 2 m range within a 15° field of view, enabling precise and high-speed AR/VR applications.