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Call for Papers

Special Issue on

Security and Safety in Physical Layer Systems

Guest Editors:

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- **Liang JIN**, National Digital Switching System Engineering and Technological R&D Center, China
- **Xiangyun ZHOU**, Australian National University, Australia
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Background

Physical Layer systems The emergence of new paradigms of B5G and 6G networks, triggers various research about the applications in three major scenarios: enhanced Mobile Broadband (eMBB), massive Machine Type Communication (mMTC) and Ultra Reliable Low Latency Communication (URLLC). However, new scenarios will pose different challenges for trust, security and privacy, compared to the previous ones. Unlike traditional security-guaranteeing techniques which rely on cryptographic approaches at the upper layers of the protocol stack, physical-layer security (PLS) solutions exploit the utmost of the characteristics of devices, wireless channels and noise to secure authentication or data transmission via signal design, signal processing and coding techniques. Furthermore, it's noteworthy that the emergence of new disruptive technologies such as reconfigurable intelligent surfaces (RIS), terahertz (THz), Non Orthogonal Multiple Access (NOMA), Massive MIMO and so on, presents new opportunities and challenges for PLS. The combination of PLS and these new techniques, which realizes the integrated development of transmission and security, promises lightweight, trustworthy and reliable secure communication.

Aims and Scope of the Special Issue

Considering the great significance of physical layer security to system security and safety and its great potential, *Security and Safety* (S&S) hereby calls for papers for this special issue on "*Security and Safety in Physical Layer Systems*", aiming to share the advancements in the PLS field and spreading the adoption in scenarios of B5G and 6G. In order to spark more ideas and future research, we will invite experts and scholars in relevant fields around the world to share their insights into the topics of security and safety in physical layer systems. Original and research articles are solicited in all aspects including theoretical studies, practical applications and related new techniques. This special issue welcome papers on topics that include but are not limited to:

- Secure methodologies and architectures of physical-layer security in B5G, 6G and next-generation WiFi networks
- Advances in physical layer authentication
- Advances in physical-layer secure transmission
- Advances in covert and stealth wireless communications
- Physical-layer security with emerging technologies in B5G, 6G and next-generation WiFi networks (*e.g.*, the intelligent reflecting surface, massive MIMO, mmWave, massive access, NOMA, THz)
- Prototype, testbed, and performance evaluation for physical-layer security
- Secure resource allocation (secure optimization, secure cross-layer optimization and game theory techniques)
- Methods for the use of artificial intelligence in physical-layer security
- Application of PLS in specific domain, *e.g.*, V2X, IoT, Smart grid, industry 4.0, *et al*.

Submissions

Authors should submit their manuscripts online directly at: https://sands.nestor-edp.org and choose, during submission, the special issue: **Security and Safety in Physical Layer Systems**. All relevant papers will be carefully considered and peer-reviewed by a distinguished team of international experts. The instructions for authors are detailed at: https://sands.edpsciences.org/author-information/instructions-for-authors.

Submission deadline – 30th April 2023

Article Processing Charges - S&S is an Open Access journal and no APCs in 2023.

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Guest Editors

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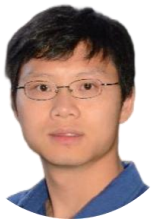
Guest Editor Biographies

Aiqun HU is currently a Professor in Southeast University, China, and primarily engaged in research works on communication security and wireless physical layer security. He has developed the wireless network detection system, mobile terminal security protection system, wireless protected access system, mobile intelligent terminal privacy leakage detection system, wireless physical layer secure communication prototype system, wireless target identification prototype system based on radio frequency fingerprint and many other systems, among which the "Research and Application of Key Technologies for Mobile Terminal Security Testing" has won the second prize of "Science and Technology Inspection Promotion" issued by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China, and the "Public Wireless LAN Security System and Its Industrialization" has won the third prize for "Scientific and Technological Progress" of Jiangsu Province. He has published more than 100 academic papers, including 19 papers indexed by SCI and more than 50 papers indexed by EI, and achieved more than 40 national invention patent authorization. He is currently an associate editor of *Security and Safety* (S&S) and an editor of *Journal of Cryptologic Research* and *Journal of Cyber Security*, and so on.

Liang JIN is currently the deputy director of National Digital Switching System Engineering and Technological R&D Center. He is the winner of China Youth Science and Technology Award, "Qiu Shi Award" of China Association for Science and Technology, and special government allowance. He is the candidate of “National Hundred, Thousand and Ten Thousand Talent Project”. He won the First Prize of National Science and Technology Progress Award and the First Prize of National Teaching Achievement Award. He is a famous scientist in the wireless endogenous security and mobile communication. He leads more than 10 research projects supported by National High Technology Research and Development Program of China (863 Program), National Key Research and Development Program, National Science and Technology Major Project, National Science Foundation of China and so on. He has published more than 150 papers and granted more than 20 invention patents.



Xiangyun ZHOU is an Associate Professor at School of Engineering, the Australian National University, Australia and an IEEE Fellow. His research interests are in the fields of communication theory and wireless networks, with over 180 publications to date. He has served as an Editor of IEEE Transactions on Wireless Communications and IEEE Wireless Communications Letters and as an Area Editor of IEEE Communications Letters. He has also served as symposium/track chairs for major IEEE conferences.

Feng SHU (Member, IEEE) received the B.S. degree from Fuyang Teaching University, Fuyang, China, in 1994, the M.S. degree from Xidian University, Xian, China, in 1997, and the Ph.D. degree from Southeast University, Nanjing, China, in 2002. Since Nov. 2020, he is with the school of information and communication engineering, Hainan University, where he is currently a Professor, and also a Supervisor of the Ph.D. and graduate students. He has co-authored two book chapters, and published about 400 articles, of which over 200 are in archival journals, including more than 120 articles in the IEEE journals and more than 170 SCI-indexed articles. His citations are more than 5010 times. He holds twenty Chinese patents. He has cochaired the Integrated positioning and communications Symposium for WCSP2021 and Communications Theory Symposium for IEEE ICC 2019 at Shanghai. Also, he serves as a TPC Member for several international conferences, including the IEEE VTC 2021, ICC 2019, the IEEE ICCS 2018/2016, ISAPE 2018, and WCSP 2017/2016/2014. Now, he is rewarded as the Plan of Leading talents of Hainan Province. Also, he was a Mingjiang Chair Professor and hundreds-of-talented plan in Fujian Province. He is or was Associate Editors for the journals, and IEEE Wireless Communications Letters (2020-now), IEEE Systems Journal (2019-2021), and IEEE Access (2016-2018). His research interests include wireless networks, wireless location, array signal processing, and machine learning for wireless communications and localization.

Xiangwei ZHOU is an Associate Professor at the Division of Electrical and Computer Engineering at Louisiana State University. His general research interests include wireless communications and statistical signal processing, with current emphasis on coexistence of wireless systems, Internet of Things, and machine learning for intelligent communications. He is the ECE Outstanding Teacher of Year 2014 at Southern Illinois University Carbondale, won the Best Paper Award at the 2014 International Conference on Wireless Communications and Signal Processing, and received 2021 Outstanding Service Award from IEEE Communications Society Signal Processing and Computing for Communications Technical Committee. He served as an editor for IEEE Transactions on Wireless Communications from 2013 to 2018.