Sabancı Üniversitesi

FACULTY OF ENGINEERING AND NATURAL SCIENCES

enCRYPTON

6th International Workshop on LIGHTWEIGHT CRYPTOGRAPHY FOR SECURITY & PRIVACY LightSEC 2025

SEPTEMBER 01-03 2025 | İSTANBUL, TÜRKİYE

LightSEC 2025 promotes and initiates novel research on security, privacy, and trust issues related to applications that fall under the umbrella of lightweight security. The term "lightweight" refers not only to conventional constraints on metrics such as computational and communication complexity, execution time (both throughput and latency), power, energy, area, memory capacity, and bandwidth, but also to constraints concerning the sizes of ciphertexts, public and private keys, and the compactness of proofs in zero-knowledge protocols.

LightSEC 2025 enthusiastically welcomes papers on algorithms, protocols, techniques, and their secure and efficient implementations for applications utilizing advanced cryptographic algorithms such as homomorphic encryption, zero-knowledge proofs, secure multi-party computation, cryptographic consensus protocols in blockchain applications, threshold cryptography, and post-quantum cryptography.

The conference proceedings will be published in **Springer-Verlag's LNCS series.**

IMPORTANT DATES

Paper submission deadline
April 18, 2025

Author notification:
May 29, 2025

Camera ready for pre-conference proceedings:
August 1, 2025

Camera ready for post-conference proceedings:
September 15, 2025

Workshop date:
September 1-3, 2025

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TOPICS OF INTEREST *(but not limited to)**

- Design, analysis and implementation of lightweight, fast, low power or compact cryptographic schemes and protocols
- Cryptographic hardware development for constrained domains
- Side channel and fault analysis and countermeasures on constrained devices
- Efficient and secure post-quantum cryptographic algorithms with special emphasis on side-channel and fault attacks; analysis and countermeasures.
- Security and privacy solutions for 5G/6G networks and beyond
- Security and privacy solutions for IoT.
- Fast, efficient and secure acceleration solutions for cryptographic algorithms and schemes
- Cryptographic solutions for RISC-V ecosystem
- Lightweight solutions for privacy-preserving machine learning on edge devices
- Efficient cryptographic solutions for blockchain applications and its ecosystem
- Formal methods for analysis of lightweight cryptographic protocols
- AI for cryptography
- Security and privacy implications of AI

Session on Lattice-Based and Advanced Cryptographic Algorithms:

We will have a special session on the following subjects, which are supported by enCRYPTON project (https://www.encrypt-on.com/), funded by European Union through the Twinning Project 101079319.

- Secure and efficient implementation of lattice-based crypto and homomorphic encryption
- Secure and efficient implementation of post-quantum cryptographic algorithms and schemes
- Acceleration of homomorphic encryption schemes and zero-knowledge protocols via ASIC, FPGA and GPU solutions
- Fast, efficient and compact of new generation zero-knowledge algorithms

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Erkay Savaş (Sabancı University)
Cihangir Tezcan (Middle East Technical University)
Orhun Kara (İzmir Institute of Technology)

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Erkay Savaş (Sabancı University)
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- Kurt Rohloff (Duality Technologies)
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