Special Issue

Applications of Codes and Lattices in Cryptography and Wireless Communications

Message from the Guest Editors

Modern digital communication is widely used today in all kinds of online e-communications, including secure WWW communications, credit-card and EFTPOS transactions, Internet banking, smartphone and wireless networking, satellite communication, and many others. Random and structured codes and lattices form effective building blocks for various cryptographic and wireless communications designs and analyses. For example, Euclidean lattice reduction techniques, such as the celebrated LLL and BKZ algorithms, have been used to evaluate the best known attacks on lattice-based cryptographic primitives and set concrete parameters for such constructions. The abovementioned lattice reduction tools have also been used to design, analyze, and efficiently implement transmitting and receiving communication schemes in multiple-input multiple-output (MIMO) channels and physical layer network coding.

- Euclidean lattice-based cryptography
- code-based cryptography
- algebraic codes
- lattice reduction algorithms
- NIST
- multiple-input multiple-output (MIMO) channels
- physical layer communication

Guest Editors

Dr. Amin Sakzad

Faculty of Information Technology, Monash University, Clayton, VIC 3800, Australia

Dr. Khoa Nguyen

School of Physical and Mathematical Sciences, Nanyang Technological University, Singapore 639798, Singapore

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Entropy
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
entropy@mdpi.com

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Editor-in-Chief

Prof. Dr. Kevin H. Knuth
Department of Physics, University at Albany, 1400 Washington Avenue, Albany, NY 12222, USA

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