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Applications of Codes and Lattices in Cryptography and Wireless Communications

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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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



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Prof. Dr. Kevin H. Knuth

Department of Physics, University
at Albany, 1400 Washington
Avenue, Albany, NY 12222, USA

Message from the Editor-in-Chief

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Entropy Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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