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Kaoru Kurosawa (Ed.)

Information Theoretic Security

4th International Conference, ICITS 2009
Shizuoka, Japan, December 3-6, 2009
Revised Selected Papers

Volume Editor

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Preface

ICITS 2009 was held at the Shizuoka Convention and Arts Center “GRANSHIP” in Japan during December 3–6, 2009. This was the 4th International Conference on Information Theoretic Security.

Over the last few decades, we have seen several research topics studied requiring information theoretical security, also called unconditional security, where there is no unproven computational assumption on the adversary. (This is the framework proposed by Claude Shannon in his seminal paper.) Also, coding as well as other aspects of information theory have been used in the design of cryptographic schemes. Examples are authentication, secure communication, key exchange, multi-party computation and information hiding to name a few. A related area is quantum cryptography that predominantly uses information theory for modeling and evaluation of security. Needless to say, information theoretically secure cryptosystems are secure even if the factoring assumption or the discrete log assumption is broken. Seeing the multitude of topics in modern cryptography requiring information theoretical security or using information theory, it is time to have a regular conference on this topic. This was the fourth conference of this series, aiming to bring together the leading researchers in the area of information and/or quantum theoretic security.

There were 50 submissions of which 13 papers were accepted. Each paper was reviewed by at least three members of the Program Committee, while submissions co-authored by the Program Committee member were reviewed by at least five members. In addition to the accepted papers, the conference also included six invited speakers. These proceedings contain the accepted papers and the contribution by invited speakers. The invited speakers were: Yevgeniy Dodis “Leakage-Resilience and The Bounded Retrieval Model,” Masato Koashi “Security of Key Distribution and Complementarity in Quantum Mechanics,” Kazukuni Kobara “Code-Based Public-Key Cryptosystems and Their Applications,” Prakash Narayan “Multiterminal Secrecy Generation and Tree Packing,” Adi Shamir “Random Graphs in Security and Privacy” and Adam Smith “What Can Cryptography Do for Coding Theory?”

The conference received financial support from the Support Center for Advance Telecommunications Technology Research, Kayamori Foundation of Informational Science Advancement, and Research Center for Information Security (RCIS) of the National Institute of Advanced Industrial Science Technologies (AIST). We also received local support from the Shizuoka Convention and Visitors Bureau.

There are many people who contributed to the success of ICITS 2009. I would like to thank many authors from around the world for submitting their papers. I am deeply grateful to the Program Committee for their hard work to ensure that each paper received a thorough and fair review. I gratefully acknowledge

the external reviewers listed on the following pages. I would like to thank Shai Halevi for developing and maintaining his very nice Web Submission and Review System. Finally, I would like to thank the general chair, Akira Otsuka, and the local organizer, Yukiko Ito, for organizing the conference. In particular, the unrelenting effort of Yukiko ensured the smooth running of the conference.

January 2010

Kaoru Kurosawa

ICITS 2009

The 4th International Conference on Information Theoretic Security

December 3–6, 2009, Shizuoka, Japan

In cooperation with

*International Association for Cryptologic Research (IACR) and
Technical Group on Information Security (ISEC) of IEICE, Japan*

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