Successful New Workshop on Theory of Quantum Computation, Communication, and Cryptography (TQC 2006)

NTT Communication Science Laboratories (CSL) held a new workshop called TQC 2006 on the theoretical aspects of quantum information and computation at the NTT Atsugi R&D Center on February 22–23, 2006. The objectives were to provide an opportunity to exchange views of quantum information theory and share problems and recent discoveries. A further aim was to increase the visibility of the NTT CSL quantum research group.

1. Overview

TQC 2006 covered all major subjects in the realms of quantum computation, quantum communication, and quantum cryptography. Thirty-four researchers participated in the workshop (Photo 1), which featured eight invited talks (45 minutes) and eight contributed talks (30 minutes). There were many interesting talks related to both quantum computation and public key cryptography. These included:

- "Some Results on Quantum Interactive Proof Systems" by Keiji Matsumoto, Assistant Professor, National Institute of Informatics
- "Statistical Zero Knowledge and Quantum One-way Functions" by Elham Kashefi, Junior Research Fellow, Oxford University
- "Quantum Public Key Cryptosystem" by Takeshi Koshiba, Associate Professor, Saitama University
- "Orthogonality of Boolean Functions and Quantum Computation" by Akinori Kawachi, Associate Professor, Tokyo Institute of Technology.

New results about quantum key distribution (QKD) were also presented. For example:

- "Quantum Key Distribution Based on Private States" by Debbie Leung, Assistant Professor, University of Waterloo, examined QKD via noisy and untrusted private bits (pbits)
- "Quantum Random Access Coding and Its Applications" by Dr. Harumichi Nishimura, Kyoto

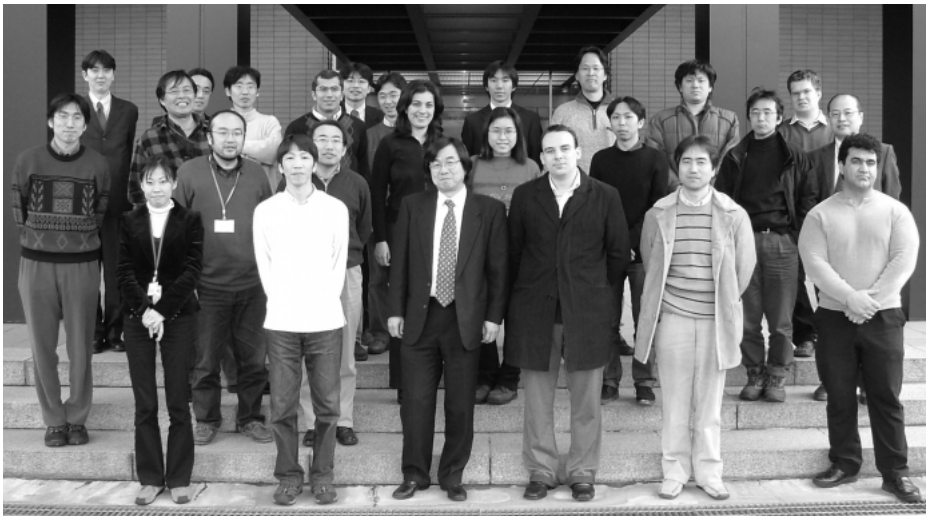

Photo 1. Photograph of participants.

Photo 2. Lecture by Professor Ozawa.

University, and "Bounds on Classical Capacity of LOCC Quantum Channels" by Damian Markham, Research Associate, the University of Tokyo, studied the capacity of quantum communication

- "Simultaneous Measurability and Uncertainty Principle" by Masanao Ozawa, Professor, Tohoku University, discussed the fundamental physics principles in detail (Photo 2).

2. Impressions

Most of the presenters were young researchers. The quality of the talks was very high, and the discussions were lively and informative. The great success of the workshop has encouraged us to start organizing the next TQC workshop, which will be held in February 2007. We hope that the workshop will grow steadily.

For further information, please contact:
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