

Event Report: ISNTT2019 at NTT Basic Research Laboratories

Norio Kumada

Abstract

The International School and Symposium on Nanoscale Transport and phoTonics (ISNTT) is held by NTT Basic Research Laboratories once every two years to cover subjects related to electronic and photonic properties in nanostructures. The 2019 event was held at the NTT Atsugi R&D Center from November 18 to 22.

Keywords: NTT Basic Research Laboratories, BRL School, international symposium

1. ISNTT overview and purpose

With the mission of creating new principles and concepts for breaking through the barriers of network technology and developing basic technology for future innovation, NTT Basic Research Laboratories engages in a wide range of joint research activities with universities around the world as well as organizations within the NTT Group, playing the role of a “laboratory open to the world.” Since 1998, we have been holding international symposia that focus on the quantum properties of semiconductors and superconductivity with the objectives of disseminating our results to prominent researchers and students from around the world and deepening discussion of these research fields. Since 2009, the symposium has been held every other year under the name the International School and Symposium on Nanoscale Transport and phoTonics (ISNTT). Since ISNTT 2017, the topic of optical properties has been included. In addition, Basic Research Laboratories School (BRL School) has been held as part of the event. The BRL School offers lectures and laboratory tours for Ph.D. students to broaden their knowledge of NTT Basic Research Laboratories and provide growth opportunity for young researchers.

2. ISNTT 2019

2.1 BRL School

About 80 people, mostly Ph.D. students, participated in the lectures and laboratory tours of the BRL School for the day and a half on November 18 and 19 (**Photo 1**). They attended two-hour lectures on “Hybrid Quantum Systems” by Professor Göran Johansson and Professor Per Delsing of the Chalmers University of Technology and by Professor Kouichi Semba of the National Institute of Information and Communications Technology. The students actively participated in the question sessions. The laboratory tours also introduced the students to the research facilities of NTT Basic Research Laboratories. The student participants went on to attend the symposium in the afternoon of the 19th.

2.2 International symposium

The international symposium on electronic and optical properties in nanostructures was held over three and a half days from the afternoon of the 19th to the 22nd. It was attended by 231 people from 15 countries (**Photo 2**). The keynote speech on “Nanoscale Transport and our New International System of Units” by Nobel Laureate in Physics Klaus von Klitzing of Max Planck Institute was followed by 48 oral presentations and 87 poster sessions, including



Photo 1. Participants of BRL School.



Photo 2. Participants of ISNTT.

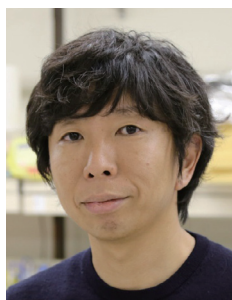
19 invited lectures by prominent researchers. The event concluded with a keynote speech on “Superconducting Circuits for Quantum Technologies” by Professor Yasunobu Nakamura of the University of

Tokyo and RIKEN. The topics of the symposium were related to the research areas of NTT Basic Research Laboratories such as superconductivity, quantum phenomena in semiconductor nanostructures,

nanomechanics, quantum optics, and their hybrid systems. Discussion sessions on the research were lively. Discussions continued and friendships were deepened during a social reception held on the evening of the 21st. The award for best student poster was presented and five students were awarded diplomas and souvenirs at the reception.

3. After ISNTT 2019

The fine weather and beautiful autumn colors at NTT Atsugi R&D Center created a relaxed atmosphere for pleasant discussions. I was personally inspired by the presentations on the most recent research results and the inquisitive attitude of students, who were very active in asking questions during all the sessions. I hope that this school and symposium will stimulate even greater interest in the topics and in collaborative research, not only for researchers at NTT but for all participants.



Norio Kumada

Distinguished Scientist, Quantum Solid-State Physics Research Group, Physical Science Laboratory, NTT Basic Research Laboratories.

He received a B.S., M.S., and Ph.D. in physics from Tohoku University, Miyagi, in 1998, 2000, and 2003. He joined NTT Basic Research Laboratories in 2003. He has since been engaged in the study of highly correlated electronic states formed in semiconductor heterostructures. He was a visiting researcher at CEA Saclay from 2013 to 2014. He was appointed as a distinguished scientist of NTT in 2010. He received the Young Scientist Award of the Physical Society of Japan in 2008 and the Young Scientists' Prize from the Minister of Education, Culture, Sports, Science and Technology in 2012. He is a member of the Physical Society of Japan.
