Report on the Asian School on Superconductivity and Cryogenics for Accelerators (ASSCA2017)

H. Nakai, Y. Hayashi, E. Kako, Y. Makida, T. Shidara, J. Urakawa (KEK) and T. S. Datta (IUAC)
Overview (1)

- Date: December 10-17, 2017
- Venue: High Energy Accelerator Organization (KEK), Tsukuba, Japan
- Registration fee: none (cv and recommendation required)
- Number of attendees: limited to 40 for effective hands-on training
- Contact:
  E-mail: assca-office@ml.post.kek.jp
  URL: http://www-conf.kek.jp/assca/
Overview (2)

• Objectives:
  • To educate next generation who has possibility to contribute to future accelerators
  • To provide not only knowledge on superconductivity and cryogenics for accelerators but also experience on them through training

• Program
  • Lectures and training on superconducting cavities, superconducting magnets and Cryogenics
## School Time Table (as of Nov. 13, 2017)

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### Arrival Day

- **8:30 - 8:40**
  - **Welcome**
  - **Information / Announcement**

- **8:40 - 10:10**
  - **Introduction 1** (SC & Cryogenics)
  - SC Magnet (Theory 1)
  - SC Magnet (Eng. 2)
  - SC Cavity (Theory 2)
  - Special Talk 2 (SC Cavity)
  - Cryogenics (Eng. 1)

- **10:10 - 10:30**
  - **Coffee Break**

- **10:30 - 12:00**
  - **Introduction 2** (Accelerator 1)
  - SC Magnet (Theory 2)
  - Special Talk 1 (SC Magnet)
  - SC Cavity (Eng. 1)
  - Cryogenics (Theory 1)
  - Cryogenics (Eng. 2)

- **12:00 - 13:10**
  - **Lunch**

- **13:10 - 14:40**
  - **Introduction 3** (Accelerator 2)
  - SC Magnet (Eng. 1)
  - SC Cavity (Theory 1)
  - SC Cavity (Eng. 2)
  - Cryogenics (Theory 2)
  - Special Talk 3 (SC & Cryogenics)

- **14:40 - 15:00**
  - **Coffee Break**

- **15:00 - 16:00**
  - **Training A Introduction**
  - **Training A**
  - **Training B Introduction**
  - **Training B**
  - **Training C Introduction**
  - **Training C**

- **16:00 - 18:30**
  - **Training A**
  - **Training B**
  - **Training C**

### Departure Day

- **18:30 -**
  - **Welcome Party**
  - **Dinner**
  - **Banquet**
  - **Dinner**

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**Excursion**

- **Departure Day**

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*20180129/AFAD2018/ASSCA/NAKAI Hirotaka*
1. Funds from KEK
2. Foundation for High Energy Accelerator Science (FAS)
3. Balance brought forward from previous accelerator school
4. “Sakura Exchange Program in Science” of Japan Agency for Science and Technology (JST)
5. Contributions from companies in Japan and China
Contributing Companies

- Air Liquide Japan Ltd.
- Mayekawa Manufacturing Company
- Mitsubishi Heavy Industries Machinery Systems, Ltd.
- Nippon Advanced Technology Co., Ltd.
- Nomura Plating Co., Ltd.
- Okazaki Manufacturing Company
- Taiyo Nippon Sanso Corporation
- Tokyo Denkai Co., Ltd.
- Toshiba Electron Tube & Devices Co., Ltd.
- Vacree Technologies Co., Ltd.
• Introductory lectures (2 lectures)

• Lectures on theoretical and engineering aspects on superconducting cavities, superconducting magnets and cryogenics (10 lectures)

• Special topics on superconducting cavities, superconducting magnets and cryogenics (6 lectures)
Hands-on Trainings (1)

Superconducting Cavities

- RRR measurement of niobium
- Resonant frequency measurement of copper and niobium cavities at room temperature
- Q-factor measurement of copper and niobium cavities at room temperature
Hands-on Trainings (2)

Superconducting Magnets

• Laboratory tour (superconducting magnet facilities)

• Making of high Tc superconducting maglev toy
Hands-on Trainings (3)

Cryogenics

- Scientific toys
  - Oxygen liquefaction with liquid nitrogen
  - High Tc superconducting coaster
  - Eddy current experience with various metals at different temperatures
- Production of superfluid helium
- Thermometry at low temperature
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Banquet (optional)
Excursion (optional)
Asian School on Superconductivity and Cryogenics for Accelerators (ASSCA) was successfully accomplished

42 attendees and 15 lecturers from 9 countries, including SOKENDAI students and staffs of KEK

18 lectures and 3 hands-on trainings offered on superconducting cavities, superconducting magnets and cryogenics

More revenues than expenditures even without registration fee
Thank you for your attention