Roundtable at the 13th Pisa Meeting on Advanced Detectors
May 26, 2015, Yasuhiro Okada (Executive Director, KEK)
Inter-University Research Institute Organization

- KEK is Inter-University Research Institute Organization, first established in 1971 as National Laboratory for High Energy Physics
- An International Center of Accelerator Science
- Cover wide range of scientific fields

KEK Roadmap 2013

1. Preamble
2. Long-Term Prospects and KEK’s Role for Each Research Area
   3.1 J-PARC  Joint Project with JAEA (Neutrino, Hadron, Neutron, and Muon)
   3.2 SuperKEKB/Belle II  Commissioning starts early 2016
   3.3 LHC/ATLAS  Preparation for the upgrade
   3.4 ILC  Proposed to the Japanese Gov. to host the ILC in Japan
   3.5 Photon Science (Synchrotron Radiation Research)
   3.6 New Development of Accelerator and Detector Technologies
4. Summary
   Cooperation in related scientific fields. (CMB, KAGRA,...)
   Industrial and medical application. (BNCT, Digital accelerator, ...)
   Advanced accelerator technologies. (Laser-driven accelerator,...)
Broad area of accelerator based science covered by KEK

Particle and Nuclear Physics

Material Structure and Life Sciences

Accelerator Development

ATLAS (CERN)

COMET (J-PARC)

Belle-II (KEKB)

SKS (J-PARC)

KISS (RIKEN)

Hadron hall (J-PARC)

T2K (J-PARC)

KOTO (J-PARC)

UCN (RCNP)

QUIET (Atacama)

STF

ATF

PF: Light source

Material and life science facility at J-PARC

KEK covers broad accelerator based sciences

PF: Light source

Compact Energy Recovery Linac (cERL)
KEKB/Belle => Super KEKB/Belle II

- Low emittance lattice
- $e^-(2.6A)$
- Damping ring for low emittance positron injection
- LER beampipe to suppress photoelectron instability
- IR with $\beta_* = 0.3$mm
- SC final focus system
- $e^+(3.6A)$
- Add RF systems for higher beam current
- Positron capture section

Target: $L = 8 \times 10^{35} / \text{cm}^2 / \text{s}$

Belle => Belle II

$\sim 600$ collaborators from 100 institutions in 23 countries/regions

Luminosity projection

80 times luminosity scale

Goal of Belle II/SuperKEKB
- The next generation e+e- collider (500GeV, upgradable to 1TeV)
- Design work and accelerator R&D have been carried out in a global framework. The ILC TDR was completed by GDE in 2013, and ICFA set up LCC for the engineering design phase
- Hosting ILC has been proposed to Japanese government. Special Committee on ILC set up by MEXT in May 2104 investigates critical issues required to judge hosting ILC or not by 2016.
- KEK will continue accelerator R&D program at ATF, STF and CFF facilities collaborating with the international team, provide the ILC committees with appropriate information to help their timely conclusion, and develop a KEK’s evolution plan to prepare for green light given by MEXT.
ICRR (Univ Tokyo) and IPNS (KEK) signed MoU of the cooperation in the Hyper-Kamiokande project in January 2015 to help the collaboration to prepare the proposal.
Accelerator facilities are open for users worldwide.

KEK hosts international collaboration experiments like Belle II, T2K, KOTO, and COMET.

KEK intends to take leadership in realizing a global project, ILC.

Lab to lab, and nation to nation cooperation
CERN-KEK (LHC, HL-LHC, CLIC, ILC, etc.)
US-Japan Cooperation in HEP (1979-)
FJPPL/TYL by IN2P3-IRFU-KEK (2006-)
Partner in EU programs (Horizon 2020), etc.

KEK helps education of young students and researchers and developments of research cooperation especially in the Asia and Oceanian regions.

Asian-European-Pacific School of High-Energy Physics
AFAD 2015 (Asian Forum for Detectors and Accelerators)

KEK and CERN established mutual offices in November 2014

Oct 2012
Fukuoka

Jan. 2015
Taiwan