



Contribution ID: 63

Type: not specified

Japan's Updated Strategy for Future Projects in Elementary Particle Physics

In September 2017, the Japanese high energy physics community, JAHEP (Japan Association of High Energy Physicists), updated the strategy for future particle physics by endorsing the Final Report of the Committee on Future Projects in High Energy Physics.

The Final Report summarizes Japan's future strategy as follows:

In 2012, not only was a Higgs boson with a mass of 125 GeV discovered at the LHC, but three-generation neutrino mixing was also established. Taking full advantage of the opportunities provided by these discoveries the committee makes the following recommendations concerning large-scale projects, which comprise the core of future high energy physics research in Japan.

- With the discovery of the 125 GeV Higgs boson at the LHC, **construction of the International Linear Collider (ILC) with a collision energy of 250 GeV should start in Japan immediately** without delay so as to guide the pursuit of particle physics beyond the Standard Model through detailed research of the Higgs particle. In parallel, continuing studies of new physics should be pursued using the LHC and its upgrades.
- Three-generation neutrino mixing has been established and has provided a path to study CP symmetry in the lepton sector. Therefore, **Japan should promote the early realization of Hyper-Kamiokande as an international project** due to its superior proton decay sensitivity, and should continue to search for CP violation with the T2K experiment and upgrades of the J-PARC neutrino beam. The High Energy Physics Committee should pursue all available options to achieve the early realization of these key, large-scale projects.

It is important to complete construction of SuperKEKB and start physics studies as scheduled. Some of the medium- and small-scale projects currently under consideration have implicit potential to develop into important research fields in the future, as happened with neutrino physics. They should be promoted in parallel in order to pursue new physics from various directions. Flavor physics experiments, such as muon experiments at J-PARC, searches for dark matter and neutrinoless double beta decay, observations of CMB B-mode polarization and dark energy, are considered to be projects that have such potential.

Furthermore, accelerator R&D should be continued to dramatically increase particle collision energies in preparation for future experimental efforts that may indicate the existence of new particles and new phenomena at higher energy scale.

Author: Prof. MORI, Toshinori (The University of Tokyo)

Track Classification: National road maps