International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN13)

Masashi Yokoyama
Associate Professor of Graduate School of Science, The University of Tokyo
and Kavli IPMU Scientist

Neutrino oscillation, discovered by the Super-Kamiokande collaboration in 1998, is the first evidence of the physics beyond the standard model of particle physics. Over more than a decade since then, the studies of neutrino oscillations have grown to be one of the central topics in particle physics. As yet, we have not reached full understanding of what neutrinos are telling us.

During 2011 - 2012, the discoveries of the electron neutrino appearance by the T2K experiment, to which the Kavli IPMU participates, and anti-neutrino disappearance by the three reactor experiments opened the door to the next stage. The determination of the last mixing angle θ_{13} with those experiments made it possible to approach the major goals of neutrino physics, search for CP asymmetry in neutrino sector, and determination of the mass hierarchy, in the near future.

Because of the tiny interaction probability, the instruments to detect and study neutrinos tend to be huge, like the Super-Kamiokande detector that uses 50,000 tons of pure water. In order to further advance the study of neutrino properties, next generation detectors with larger target mass and better performance have been intensively studied all over the world. In Japan, the Hyper-Kamiokande, a 1 megaton water Cherenkov detector, is proposed as the successor of Super-Kamiokande. Such detectors, if realized, will also have sensitivity to nucleon decays that are predicted in the Grand Unified Theories. In addition, they will give opportunities for research in broader field of science such as neutrino astrophysics and geophysics.

The workshop series, "International Workshop on Next Generation Nucleon Decay and Neutrino Detectors (NNN)," started back in 1999, has been providing a forum for researchers to discuss next generation nucleon decay and neutrino detectors towards their realization. The 14th NNN was held from November 11 to 13, 2013 at the Kavli IPMU with about 120 participants from 14 countries. There were 35 oral and more than 30 poster presentations covering all aspects of related research, from theoretical development to the results and prospects with current and future experiments, and R&D on detector technology, accelerator, and neutrino beams. Through intense and exciting discussion during three days of workshop, neutrino physicists exchanged ideas to develop the new generation of experiments.

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