

Joint Kavli IPMU - ICEPP Workshop on New Directions for LHC: Run 2 and Beyond

Satoshi Shirai

Kavli IPMU Assistant Professor

On June 18, 2018, we held the joint workshop of the Kavli IPMU and the International Center for Elementary Particle Physics (ICEPP) “New Directions for LHC: Run 2 and Beyond” at Kavli IPMU. Kavli IPMU and ICEPP had never hosted such a workshop together and this is the first joint workshop.

The Large Hadron Collider (LHC) is now the most important experiment for elementary particle physics. So far, the LHC has discovered the Higgs particles and is now studying its mass and property in detail. On the other hand, signatures of new physics beyond the standard model are yet to be found. In this workshop, the latest results of the LHC were reported and we discussed the future direction of particle physics in light of the LHC results.

First, Karl Jakobs, a spokesperson of the ATLAS experiment, gave a review on the latest LHC results on the Higgs particle measurements and search for new physics. He also discussed the prospects of the future high luminosity LHC. Subsequent speakers and the contents of their talks were as follows. S. Shirai gave a talk on the status of the supersymmetric models after the discovery of the Higgs particle, and emphasized the importance of searching for long-lived particles at the LHC. Mihoko Nojiri reported her recent research on the

precise estimation of mono jet signals with colored particle productions, which play important roles for searching new physics. Takahiro Terada talked about a semi-analytic method to estimate the primordial gravitational wave spectrum in cosmology. Michihisa Takeuchi discussed the signatures of the Higgs pair production and dark matter in the supersymmetric models at the future LHC. Finally, Junping Tian gave a nice review on the prospect of precise measurement of the Higgs particle at the proposed International Linear Collider (ILC).

In the panel discussion, we discussed the future direction of the high luminosity LHC and synergy with other experiments such as ILC, SuperKEKB, and Hyper-Kamiokande. Especially, we intensively discussed precise measurements of the Higgs particle and top quark in the future experiments.

Unfortunately, a strong earthquake hit Osaka that morning and talks by Shinya Kanemura and Yuji Omura were canceled.

This workshop has brought together theoretical and experimental physicists. We enjoyed a stimulating discussion among participants. I hope the second Kavli IPMU-ICEPP joint workshop will be held in the near future.

