

Key Aspects in Exploring Road to Unification (KAERU Conference)

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The International Conference “Key Aspects in Exploring Road to Unification (KAERU Conference)” was held at the Kavli IPMU from 25 March 2015 for two days. It was a pure scientific conference for high energy physics on the occasion of the retirement from KEK at the end of March 2015 of Kaoru Hagiwara, who has achieved great contributions to particle physics for a long time from the era of the experimental establishment of the standard model up to the present day, the era of exploring the new physics beyond the standard model. The conference was planned by a group of Kaoru’s former students and collaborators such as Hitoshi Murayama, Yukinari Sumino, and Gi-Chol Cho, and was realized with the cooperation of the Kavli IPMU. Reflecting the wide research areas in high energy physics to which Kaoru has contributed and also his wide circle of friends all around the world, more than 110 researchers including about 40 from abroad participated in KAERU Conference, so that the conference was a fruitful one, covering a wide range of the fields in high energy physics.

On the first day, following the opening address by Murayama (Chair of the conference) and Sumino (Co-Chair) and greetings by Hagiwara,

Roberto Peccei gave a talk on the physics of axion and its relation to cosmology. Zoltan Fodor then spoke about the recent development of lattice calculations for hadron masses. Light higgsino scenarios solving the naturalness problem have been discussed by Xerxes Tata and Howard Baer. Keisuke Fujii presented the physics at the International Linear Collider. In the afternoon, after Thomas Teubner and Naohito Saito gave talks on theoretical and experimental developments on muon $g-2$, recent results by Hagiwara on T-odd Asymmetry etc. were given by his collaborators Toshifumi Yamada, Hiroshi Yokoya and Kentarou Mawatari etc. Kingman Chiang then gave a talk about the model independent analyses of the Higgs boson pair production.

On the second day, Dieter Zeppenfeld discussed the QCD correction to vector boson fusion processes at hadron colliders, Manuel Drees spoke on the topic of naturalness, and Tilman Plehn stressed the importance of study of jets at LHC. Then Junichi Kanzaki, Rohini Godbole and Fabio Maltoni gave talks on LHC phenomenology. In the



afternoon, Tao Han discussed the potential of a 100 TeV hadron collider, and Nobuchika Okada discussed the prospects of SUSY phenomenology. There were then several talks on neutrino physics such as T2KK, CP violation in the lepton sector, and testability of Majorana neutrinos. Finally, after Murayama discussed a new model for SUSY breaking and dark matter, Cho closed the conference.

Therefore, at the conference, a variety of interesting topics in particle phenomenology were discussed, in particular, in collider physics, QCD physics, models beyond the standard model, Higgs physics, flavor physics and particle cosmology. The conference was greatly successful, providing a nice opportunity to overview the history, current status and future prospects of particle physics.