Research Director's Report

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Detector activities in the new stage

The physics and detector activity for the ILC entered into a new stage after the validation of the Letters of Intent (LOIs) and following discussions during the American Linear Collider Physics Group (ALCPG) workshop in Albuquerque, US. Close to the turn of the year, I wish to survey what has been going on since then.


TPC experts during the ALCPG workshop looking at New Mexican art in Albuquerque that is somewhat similar to an end–cap of their detector.

Both validated groups, ILD and SiD, made their plans with respect to the items listed in the general planning guideline to produce the detailed baseline designs to be completed in 2012. The entire items of the guideline were described in my report last August. Each group did not find it easy to set up precise plans due to the uncertainty of the future resources or necessity of discussions with various R&D collaborations. Nevertheless the groups made their best effort to produce the first version of their plans by the end of October. These can be called 'desirable' or 'hopeful' plans and the detector groups are working to refine them. More precise and realistic plans will be produced early next year.

Some items of the guideline required contribution of the common task groups. Among them was the identification of physics cases to be studied by the detector groups in the new phase. The physics common task group promptly reacted and produced a report, Benchmarks for the ILC Physics Studies 2009–10, with a list of recommended physics channels. Although these reactions are also called benchmarks, they are selected for a different purpose from those benchmark reactions, which were used at the time of LOI preparation. While the LOI benchmarks had the intention to see the difference between the proposed detectors, the new reactions are more to demonstrate the advantage and capability of ILC and the two validated detectors. They include detailed investigations of a possible light Higgs particle and some reactions at 1 TeV. The software group will also contribute by producing common tools or data sets to study them so that the detector groups can efficiently conduct their simulations.

At Albuquerque, the Global Design Effort (GDE) presented the new accelerator configuration called Strawman Baseline (SB) 2009, which we were asked to study and respond to. In order for us to proceed in a systematic way and promptly, a small working group was formed right after the workshop. I asked Jim Brau to convene the group, which includes representation from each detector group and relevant common task groups. For the first step, the group compiled questions about the beam conditions of SB2009 so that the detector groups have enough information to make simulations. The questions were sent to the GDE. In the meantime, this group is being strengthened with additional members from the detector groups and will organise itself so that simulations can be made as quickly as possible. The work will start very soon as the GDE has given most of the answers last weekend, and I hope some result can be shared with accelerator people early next year.

The ILC Project Advisory Committee (PAC) met last November in Pohang, Korea. It was a good occasion for us to report the advancement in the last half-year and the on-going activities in the new phase. Michel Davier, chair of the International Detector Advisory Group (IDAG), precisely presented the evaluation process and their recommendation. PAC appreciated their swift and intensive effort. I described what had been done after the validation. One topic was the planning of each group in the new phase as mentioned above. In this report, I had

to stress a serious concern that it depends heavily on the future resources whether the groups can complete these plans. The PAC understood the difficulty and recommended that lab directors and the International Linear Collider Steering Committee (ILCSC) support detector R&D activities. PAC was pleased to hear about the newly formed working group on SB2009 and encouraged to make close communication with the GDE.

Like the previous PAC meeting in Vancouver, most of the common task groups made presentations on the current activities and accomplishment. Karsten Buesser reported the progress of the machine detector interface studies after the validation from the detector side. Related to the planning of the detector groups was the status report of the R&D common task group, convened by Marcel Demarteau, which has been studying intensively the critical items of detector R&D work in order to complete detailed detector designs in 2012. The physics common task group convener Michael Peskin reported on the ongoing study of the physics cases to be investigated in view of possible outputs from Large Hadron Collider at CERN. Akiya Miyamoto, convener of the software common task group, reported on what the group is preparing to meet requirements of the detector groups in the new phase. Francois Richard made a status report on the cooperation with the Compact Linear Collider (CLIC) Study detector activity. PAC commended all these activities, giving us much encouragement to go on in the new phase.

--Sakue Yamada