Research Director's Report

20 August 2009


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Planning for the next steps

Soon the International Detector Advisory Group (IDAG) will give me their recommendations on the validation of the three submitted Letters of Intent (LOI) after completing their very intensive and detailed examinations on them. It is time for us to prepare for the next step, namely to consider what the validated detector groups need to accomplish through the following period, till 2012. The goal is clear: they must produce detailed baseline detector designs, which will be included in the ILC project proposal to demonstrate that the facility is capable of the intended physics research and to make the project convincing. Each LOI outlined the plan of the detector group to reach this end. In the new stage after validation, more precise as well as coordinated planning will be necessary for the validated groups to make coherent progress. There are issues which require close cooperation with the accelerator team and within the detector groups, in particular for the design of the interaction region.

The activities during the post-validation period will also be further examined by IDAG, which will provide advice on the detector and physics activities. A well organised program will be examined better and advices from IDAG will become more helpful.

In the Physics and Experiment Board we have been discussing for some months what are necessary items to be addressed in this more detailed planning. Now they are listed up. These are not necessarily new but were noted commonly by all the members. However, having summarised them and getting consensus on what each item indicates was relevant.

They include:

1. Demonstrate proof of principle on critical components.
   When there are options, at least one option for each subsystem will reach a?level of maturity which verifies feasibility.
2. Define a feasible baseline design.
   While a baseline will be specified, options may also be considered.
3. Complete basic mechanical integration of the baseline design accounting for insensitive zones such as the beam holes, support structure, cables, gaps or inner detector material.
4. Develop a realistic simulation model of the baseline design, including the identified faults and limitations.
5. Develop a push-pull mechanism, working out the movement procedure, time scale, alignment and calibration schemes in cooperation with relevant groups.
6. Develop a realistic concept of integration with the accelerator including the IR design.
7. Simulate and analyse updated benchmark reactions with the realistic detector model. Include the impact of detector dead zones and updated background conditions.
8. Simulate and study some reactions at 1 TeV, including realistic higher-energy backgrounds, demonstrating the detector performance.
9. Develop an improved cost estimate.

For the items 7 and 8, specific physics channels will be investigated and defined by the Physics Common Task Group and supported by the Software Common Task Group. Included in the item 9 is the identification of cost drivers and specification of main uncertainties. Communication between the groups will continue to obtain better understanding of each method of costing.

I hope the validated groups develop work plans for these items with milestones placed at certain time points. There are several checkpoints, like various LC workshops, where progress will be reported to the community. The plans will result in a long list of work items on detector R&D and physics studies as an updated of the existing one.

In order to successfully achieve the goals of these work plans, it is absolutely necessary to obtain a solid level of resources. Every institution engaged in this work will be seeking support from their respective funding agency. The global effort requires global support. I will be working with institutions, when requested, to secure the funding agency support needed for the next phase of our work.

-- *Sakue Yamada*