

Minutes of the Physics and Experiment Board

Tuesday, Dec 9, 2008 (GMT 6:00 to 7:30)

Akiya Miyamoto, Catherine Clerc, Francois Richard, GP Yee, Harry Weerts, Hitoshi Yamamoto, Jim Brau, John Hauptmann, John Jaros, Karsten Buesser, Marcel Demarteau, Michael Peskin, Sakue Yamada, Ties Behnke, Yasuhiro Sugimoto

General Report (Sakue)

On Low P parameter studies for LOI

LOI should perform the performance for low P parameters.

- Following the discussion during the last Executive Board how much simulation be needed for LOI regarding the low P parameter set, IDAG chair was contacted to clarify. There was an agreement that it is not necessary to repeat simulations for all the bench mark reactions but relevant remarks are expected how the performance changes for the low P parameters which are included in RDR.
- show on one or two channels the low P parameters performance. If the same channels are picked, it may be useful for IDAG.
- may have to re-define the beampipe to handle the increased backgrounds and to get reasonable numbers
- Buesser: Re-defining of the beampipe is needed to have realistic background condition and it will not be too big a work although not very simple either.
- John: do tracking/ B-tagging efficiency in the presence of backgrounds
- Impact is on Luminosity spectrum as well as it is on background rates and on forward performance.

Understanding:

- Low P parameter set as defined in RDR will be used
- LOI groups should demonstrate the impact of the low P parameter set quantitatively. It will not be required, however, to re-do all benchmarks with the new parameter set.
- No particular channel was selected to be examined in common.
- The investigation is made at 500 GeV.
- A general consensus was not to put too much effort considering that the RDR low P parameter set will not be used in the future.

Report from the common Task groups

MDI working group (Karsten Buesser)

Progress is being made jointly with the machine colleagues. Minimal requirement document was discussed in Chicago and is being drafted new by Tom and Phil. The next draft will be available before the end of the year. It will be finalized by MDI group and then be sent to LOI groups.

Minimum requirement will be submitted to PAC; abstract till today and full paper sometime next year.

Understanding: One missing member of the 4th group in MDI will be refilled.

Engineering Tools (Catherine Clerc)

The group needs contact in GDE. Contacts were established with BDS and MDI.

EDMS like tool is needed to exchange information between GDE and LOI groups.

Understanding:

Sakue should establish contacts with GDE.

Detector R&D (Marcel Demarteau)

Marcel presented some slides on the last meeting in Chicago. Main point was a discussion of the charge of the group. The group is working on defining a more specific charge. (Details in the slide)

Main point is to nurture the R&D in and across the different concept groups.

Use the R&D efforts in the LOI's as a starting point.

The board is not very keen to do a survey of R&D worldwide at this moment.

They will do this piece by piece, not in one go, due to resources.

Additional info on Monolithic active pixel detectors: activities have started; contacts are being defined (so far only one in Europe has been named).

Understanding: After some discussions the stance of the groups on the R&D worldwide survey was accepted.

In order to keep the presented slides, Ties will create an indico meeting series.

Software (Akiya Miyamoto)

The entire group met in Chicago.

Issues discussed:

- generator samples for benchmark are nearly the same, but not exactly the same, between the different concept groups.
- Use of pre-mixed samples by SiD, while ILD is using samples without pre-mix
- 4th is using the same method as ILD
- Benchmark document has an unclear statement allowing different interpretation, e.g. H->mumu is not studied in ILD, will be done, due to a mis-understanding. Tau-tau channel is not studied in SiD, but it will be possibly done
- Luminosity for SUSY samples are approached differently. Following points are unclear: left handed beams? How much luminosity for each polarization, at which energy?
- Background studies? Extend of the background studies?

Sakue: If the benchmark document does not say all backgrounds, it would be desirable for LOI to include as much BG sources as possible since the situation approaches the real life.

Physics Panel (Michael Peskin)

Meeting in Chicago: about 50% attendance was reached including some by phone. Currently no experimental knowledge of scales larger than 200/ 300 GeV is available. How does one react to new knowledge from the LHC, once results are there.

What is the physics case for the ILC?

The group wants to study how the case for the ILC can be made after about one year worth of LHC data.

Proposal by Peskin:

- forget about all difficult LHC channels, and scenarios, where the LHC would take a long time to make statements.
- Study scenarios which promise to deliver something within one year of the turn-on of the LHC
- Write briefing papers on each based on literature
 - o Light SUSY, (Georg Weiglein)
 - o Gauge Mediated SUSU Boson scenarios, quasi stable staus, easy to see (Keisuke Fujii)
 - o Z' at 2TeV seen in mu pairs (Gao?)
 - o 1 TeV resonance decaying into 2 tops (Michael Peskin)
 - o 200 GeV Higgs seen in $H \rightarrow ZZ$ (no name yet)
 - o black holes with 3TeV mass, of 100 microbarn cross section (Jae Ju)

Papers will be due in spring.

Hope this will clarify the situation a bit.

Interaction of workshop LHC with future colliders

- is going on parallel
- 2nd is a row of workshops.
- It is concentrated on the long range program
- But it is too much focused on the high energy regime, too long range

Both activities will happen, there is some disagreement on the way to proceed. It was felt that cooperation between the groups is important.

Akiya: What is the energy to study them ?

Ans: Look into what has already be studied but also look what is the right initial energy, e.g. scenario #4 might start at 350 GeV.

Hitoshi: How is this related to the minimum machine considered by GDE?

Ans: Each scenario informs desired initial energy.

Question of gamma/ gamma collider proposed by Sugawara ?

It received a lot of attention from ILCSC. It asked GDE and Physics panel to investigate technology/cost and physics.

A small group was formed by GDE (AAP) and Physics Panel (Michael Peskin) in Chicago.

A small group of experts will be invited to study the physics and detector case.

Facts need to be checked. In particular the questions of the laser power needed and how this can be realized. Tim Barklow, Jeff Grunber and Michael will prepare a document which will be reviewed by Physics Panel in January next year.

On machine side Andrei Seryi is taking lead in providing parameter sets.

A combined single report will be presented to ILCSC.

AOB

Date of the next meeting: In January around 13 or 20, to be decided.