

Accelerator Systems WebEx Conference

10 December 2008, 13:00 GMT

Minutes (v2 – final -)

Attending: N. Walker, A. Yamamoto, M. Ross, A. Seryi, A. Wolski, J. M. Paterson, J. Clarke, J. Cawardine, P. Garbincius, T. Shidara, T. Himel, N. Toge

Excused: A. Brachmann, N. Solyak, K. Kubo

Announcements and PM report (Nick Walker)

TILC09

Meeting will be held in downtown Tsukuba on April 17-21, 2009. The primary focus of this meeting will be on an interim review by AAP. The focus will be on the primary TD Phase R&D Plan themes: Global SCRF R&D and infrastructure; Beam Test Facilities (CesrTA, ATF/ATF2, FLASH/TTF *etc.*); CFS (including value engineering). Sub-themes will include other technical R&D activities not covered in the above (for example e+ systems R&D), accelerator design and project management aspects.

All TAG leaders (there are fourteen of them) are expected to make presentations for AAP. Prior to this TILC09 AAP review, the AAP is setting up a special website where we (the GDE) will post key documentation documents to support the review. TAGLs should send PMs a list of proposed documents to upload for this purpose by early January, so that they can be posted before January 31. The AAP is planning to generate a list of questions to guide which we will be expected to address during the presentations. The total time expected for AAP review in April is approximately 15 hours (not including time for executive sessions), and nearly half of it is expected to be spent on Q/As, so a good preparation is critical.

The workshop organisers are planning for ~100 GDE members, of which we expect approximately half will participate in the AAP review at any one time. We are encouraged to develop a parallel set of Working Groups to make best use of the meeting time. It is expected that (at least) SCRF ML Tech will run parallel sessions. Possible additional meetings are ATF and ATF2 (proximity to KEK) and MDI issues (joint with the physics and detector groups). A general accelerator physics and design group is also be considered. The PMs request proposals from the TAG leaders for parallel meetings as soon as possible. It was noted, however, that the entire EC, PM and AAP members will be stuck in the AAP review, so that parallel sessions need to be run separately from that. The TAGL who happens to give an AAP presentation is not going to be available for additional parallel sessions at that moment; care must be taken in scheduling the parallel sessions so as not to interfere with the review (which has priority).

Q: Nature of the support documents to upload in January?

A: Documents that deepens the AAP's understanding of the rationale behind the ongoing/planned R&D. Internal memos, EPAC/PAC papers, and other presentations are acceptable. If there are critical issues that should be brought to the attention of the AAP but that are not (in the opinion of the TAG leader) adequately documented, then that should be flagged to the PMs.

Q: AAP is supposed to help us, i.e. on our side, so is it OK to ask advise on what TAGLs happen to feel technically uncomfortable about, etc.

A: Generally it is considered OK to raise issues within the review that we would like feedback and advise on from the Panel. However, issues of this nature should first be raised to the PMs.

GDE WebEx Meetings

PMs are putting together a list of all TAG related regular meetings and intending to circulate their summaries, likely through Maxine, for improved communication among all who are involved. TAGLs support for this effort is greatly appreciated. The same goes for the monthly report.

Minimum Design and R&D Plan documents

Request for the text to go into the Section 3 of the Minimum Design document has been circulated. The deadline is Dec. 17. Formal publication of the MM document is planned early 2009. An updated version of the R&D planning document has to go to FALC in early January. Those of TAGLs who have not submitted inputs for this have to do so now.

TAG Status Reports

Positron Source (J. Clarke)

At the end of ILC 08 Kuriki-san proposed that a conventional positron source be included in the minimum machine studies. In order to generate the correct number of positrons the source included the use of a liquid lead target followed by a liquid lithium lens. He further suggested the use of a relatively low energy electron beam (700MeV) presumably for cost reasons. One of the key reasons put forward for pursuing this proposal was for the justification of BN window tests on KEKB that are useful for all positron sources, including the baseline undulator system. Although the exact parameters used by Kuriki-san have not yet been forthcoming an attempt has been made to duplicate his results. These have been partially successful and have highlighted the key concerns of window and target survivability. It is intended to hold a webex meeting in early January to discuss this all in detail. Kuriki-san will be invited to make a summary presentation to this meeting on the 4th February.

Q: Is the issue on the yield and the electron energy sorted out for the conventional source?

A: This is part of the on-going study and will be discussed in full in the proposed January meeting.

Damping Rings (A. Wolski)

CesrTA

- Most significant results from recent (successful) commissioning run were reported at ILC08, Chicago.
- Results (including RFA data) from the commissioning run are still being analyzed, in preparation for running in January.
- Preparing for down-time in February, in particular, for the chicane from PEP-II.
- Looking ahead to the next generation of test chambers:
 - preparing a chamber to go to CERN for carbon coating;
 - work is starting on a wiggler chamber with grooves and electrodes.
- Working hard to increase effort on the simulation studies:
 - aiming for an additional 1.5 FTE at Cornell;
 - hoping for more involvement from ANL (Kathy Harkay), LBNL (Miguel Furman), and SLAC.
- More information:
https://wiki.lepp.cornell.edu/ilc/bin/view/Public/CesrTA/CollabMeetings#December_8_2008_Collaboration_Me

ATF Collaboration Meeting

- ATF collaboration meeting (SGC/TB) is scheduled for next week, Dec. 18, 2008.
- The current agenda can be found at <http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3003>
- Particularly notes was the talk by Naito-san on fast kicker development.

Lattice work (6km ring)

- On the ring design: Modifications are needed to put injection and extraction systems in the same straight sections so as to simplify the central injector layout. This work by Maxim Korostelev is nearly complete.

Minimum Machine (input for MM document section 3)

- Identified critical issues
 - Low power parameter set allows half the circumference with same current and bunch spacing (half train length).
 - Reduced circumference reduces impact of some collective effects, notably space charge. May allow reduction in energy.
 - Beam dynamics and costing will be based on specific lattice designs.
- Proposed relevant studies
 - Select one (from two available) 3 km lattices for further studies.
 - Develop lattice designs for injection/extraction lines (INFN-LNF).
 - Continue development of CAD and cost model (CI).
 - Continue development of impedance model (CI/INFN-LNF).
- Resource requirements
 - 2 FTE at CI (1 FTE design engineer; 1 FTE beam dynamics/accelerator physicist);
 - 1 FTE at INFN-LNF (beam dynamics/accelerator physics).

Q: What is the electron-cloud simulation effort in Europe and Asia (specifically in conjunction with CsrTA)?

A: Limited number of personnel from KEK and INFN are still being engaged.

RTML (N. Solyak)

Most significant results of recent studies were reported at ILC08, Chicago.

- Studies effect of RF kick and wakefields from SC cavity couplers on emittance growth in bunch compressors (both two-stage and single stage BC)
- Lattice Design and preliminary studies of two performances of two types of a single-stage bunch compressors: one with wiggler magnetic system, second one – ultra-sort design with chicane. (A.Latina/FNAL and S-U Kim/Korea)
- Design and studies of performances all three extraction beam lines for beam abort and tune-up.
- Results of stray magnetic field measurements (frequency spectrum) in the vicinity of 5MW x 1.3 GHz klystron and in the tunnel separated from the klystron of ~15m.
- New design and studies of the vacuum system in return line to provide required low vacuum (~10 nTorr)

Fermilab group is upgraded equipment for precise measurements of stray magnetic field and planning to continue measurements at the end of December 2008 after calibrations and software upgrade

Re-design of matching section from single-stage bunch compressor to main linac (at 5GeV) for minimum machine design.

Implementation of Coupler RF- kick and wakes to Lucretia and Placet for cross-checking results for bunch compressor.

One Fermilab meeting to discuss experimental studies of amplitude and phase stability, required for bunch compressor. Need more meetings with all participants of 9mA experiment to discuss plans and schedules. (January, 2009)

Beam Delivery (A. Seryi)

ATF2

The primary focus of beam delivery group is on ATF2 facility. The beam commissioning of ATF2 beamline has started in December. Details of the commissioning progress, milestones, and schedule for 2008-2010 will be discussed at 7th ATF2 Project meeting to be held on December 15-18 of 2008. The milestones for commissioning will be based on both 37 nm design beam size and also on intermediate 75 nm beam size, which corresponds to ILC IP beam size, scaled to ATF2 beam energy. The schedule will assume a gradual approach to the design beam size.

MDI

Considerable progress was made at LCWS08 in terms of development of the IR Interface Document. An updated version was produced, which focuses strongly on the functional requirements, with expectations that detector concepts would proceed with developing optimal technical solutions, in active machine-detector and detector-detector interaction.

Minimum Machine

Following Chicago LCWS08 meeting, the Beam Delivery group proceeded with discussions of plans for the minimal machine studies. This would include detailed evaluation of the new low-power parameter set and of the ways to create the travelling focus conditions, on which these parameters are relying upon. We also discussed plans for optics studies to allow larger synchrotron induced emittance growth and possible modification of the optics to reduce constraints for upstream polarimeters.

Gamma-Gamma Option

We also discussed the gamma-gamma option, and first steps needed for making progress for its design, (as per the TD Phase R&D plan). We also considered the recent suggestion of the low energy gamma-gamma option and discussed questions relevant for the BDS group. The necessary first step for the design and evaluation of the proposal is to define the IP parameters. Such parameter tables have been constructed for 180 and 500 GeV CM for the gamma-gamma option. The tentative parameters for the laser and FEL photon drivers are also being considered. The possible layouts of beam delivery for these cases were also discussed.

Q: P. Garbincius requested a rough cost-estimate for the gamma-gamma laser from A. Seryi.

AOB

China visit (M. Ross)

Yamamoto and Ross visited China this week and discussed with the leaders there on their continued and increased participation in the TAG activities.

Next Accelerator Systems TAGL meeting: 07.01.2009 at 14:00 GMT.

-NKT/NW