11. Accelerator Systems WebEx Conference
26 September 2008, 13:00 GMT

Minutes (v1.0)

Attending: A. Brachmann, T. Himel, F. Lehner (minutes), K. Oide, T. Omori, E. Paterson, M. Ross, A. Seryi, T. Shidara, N. Solyak, N. Toge, J. Urakawa, N. Walker, A. Wolski, A. Yamamoto

All slides are available on the indico site
http://ilcagenda.linearcollider.org/categoryDisplay.py?categId=161

1. General Announcements
Nick welcomed the attendees. The agenda was concluded. There were no announcements.

2. Short status report by TAGLs

2.1 Electron Source – Axel Brachmann (slides available)
Axel presented a few slides on the status of the electron source. JLAB is developing a 200kV gun for CEBAF. There are good synergies with ILC. An inverted ceramic insulator as used in guns for medical X-ray applications is being developed. Axel presented deliverables according to the EDR planning with a 200kV load locked gun in 2009 and in 2010 the 350kV gun design.
Recent results from photocathode tests were shown and planning for the ILC'08 workshop was reported.
A question on the SLAC laser system specification was raised. Axel promised to circulate information offline.

2.2. Positron Source – Nick on behalf of Jim Clarke (slides available)
Nick showed slides prepared by Jim. The ILC positron source collaboration meeting will take place on 29-31 October 2008 at the Cockcroft Institute to discuss progress with R&D and integration studies. Special consideration will be also given to further design needs in view of the proposed minimum machine concept. Some drawings of an undulator module string and of the positron transport line form the target area were shown indicating that engineering integration work mainly done by Norbert Collomb/Daresbury is progressing.

2.3 Damping Ring – A. Wolski
Progress is continuing with development of an engineering model for one arc cell in the damping rings. Although the focus in the vacuum system, the model includes 'placeholders' for the magnets (dipoles, quadrupoles, sextupoles, skew quadrupoles, orbit correctors) and their supports, and

the bpms. The model was developed initially under the simplifying assumption that both beams would travel in the same direction around the ring; this minimizes the amount of design work since both arc cells are essentially identical, and makes efficient use of space in the tunnel. Work is now progressing on reversing one of the beamlines, to provide a configuration that has greater flexibility in terms of the overall machine layout. The dipole positions in the upper and lower beamlines will be matched, to ensure that both rings have the same geometry. Indications are that with counter-rotating beams, the damping rings tunnel will be less cluttered than initially feared, and it is hoped that this configuration will, after all, prove practical.

Some thought has been given to plans for the technical design phase. Activities will, of course, remain focused on the test facilities, particularly CesrTA and the ATF/ATF2, and with development of fast injection/extraction kickers. Regarding design of the damping rings for ILC per se, and consideration of ('minimum') alternatives, the situation is less clear. The intention is to develop optics for the injection/extraction lines, to connect the rings with the rest of the machine, and to continue development of the engineering model. Both of these activities will provide necessary information for placing the cost estimate on a more secure basis; but overall, the available effort is very limited. Additional studies are needed for optics design, CF&S, magnets and power supplies, and a number of other subsystems. The issues will be discussed at ILC08.

A key issue regarding the minimum machine is the option of damping rings with circumference around 3 km. This is connected with the low-power parameter set for ILC, and provides the largest potential cost saving in the damping rings area system. However, it is still not clear how to address this option properly, or to what level of design the 3 km rings should or can be developed.

Monthly ILC damping rings WebEx meetings have re-commenced, with a meeting on September 17 addressing kicker R&D. Reports were presented from SLAC (Craig Burkhart and Anatoly Krasnykh), KEK(Naito-san) and INFN-LNF (Fabio Marcellini). It is encouraging that significant progress continues to be made with these critical components, despite the present, extremely difficult, funding situation. Slides from the meeting are posted at:

https://wiki.lepp.cornell.edu/ilc/bin/view/Public/DampingRings/TeleConference

The next meeting will be on October 22, and will focus on vacuum system issues. The monthly damping rings meetings are coordinated with CesrTA and CLIC damping rings meetings."

2.4 RTML – N. Solyak (slides available)
Nikolay presented simulation results of RF kicks due to asymmetric couplers and wakefields in ML and BC1, BC2 for “old”, “new” and “alternate” configurations. Coupler’s RF kick and wakefields kick do not seem to be a problem in BC1, BC2 and in ML in old configuration. Nikolay further reported on the progress of the single-stage compressor design. A conceptual design for return line vacuum system is done. Investigation of wakefields effects in vacuum chamber is in progress.

2.5 Beam Delivery Systems – A. Seryi
Andrei reported on beam dump design an on the optimization work on the water flow, inlet/outlet sizes, fittings etc. using FLUKA and hydrodynamic simulations. The intention is to write up a design study report on this.
As regards ATF2 preparation the hardware installation is still ongoing. Planned ATF2 start is on November 1 with work mainly devoted then to commissioning. Studies on the final focus system are foreseen for February 2009.
Several meetings of the BDS group are planned: one meeting on 1 October and then the ATF2 project meeting in December at KEK. Discussion will follow on low power option and on travelling focus.

3. Updates on Minimum Machine – Nick (slides attached)
Nick presented updates of the minimum machine concept. The minimum machine concept refers now to a set of identified options that need to be studied in 2009 to reduce the cost. A formal review and re-baseline will follow beginning 2010. Elements for the minimum machine to be studied with respect to cost are main linac specific (such as removal of support tunnel, klystron clustering, Marx modulator and process water), central injector specific (damping ring, positron source etc) as well as specific to low beam power parameters. In addition single stage compressor and cost-optimization of TeV upgrade option have to be addressed. Nick presented different classes of minimum machine studies that are expected to be carried out in 2009. These investigations will touch interference/integration, operation, commissioning and availability, as well as hardware R&D and beam dynamics aspects. Nick reported further on the first draft outline of the minimum machine report to be ready for discussion at ILC08.

4. ILC08 planning – Nick (slides attached)
Nick reported on the planning for the ILC08 conference. The attached document describes the charges and guidelines for the working groups. Top-level goals were already distributed on 18 August. A webex meeting in preparation of the workshop will be held on Tuesday, 28 October at 14:00 GMT.

5. PM report – Marc
Marc emphasized the importance of the minimum machine concept for the overall progress of the project. The minimum machine activities must have an

impact. The project management is pushing this technically and politically through FALC. Marc reported shortly on the new FALC chair, Pierre Coulombe from NRC Canada. Ewan, Marc and Barry will meet with him next week at the LINAC '08 conference in Vancouver.
Marc reported that the next FALC meeting is to be held in January 2009. The PMs want to continuously engage FALC presenting this committee their concrete ideas and plans how to put the project forward.

5. A.o.B.

The future scheduled AS-TAGL meetings are:

- Friday, 17 October 2008 13:00 GMT
  - Reports from AS TAG action items, iteration of existing sections
- Friday, 14 November 2008 13:00 GMT
  - Draft – ready for discussions at ILC08
- ILC08 – 17-21 November 2008
- Friday, 12 December 2008 13:00 GMT
  - Final complete draft – submission to EC

Attachments

1. **Slides Axel Brachmann - Electron Source (missing)**
2. **Slides Jim Clarke – Positron Source**
3. **Slides Nikolay Solyak - RMTL Report**
4. **Slides Nick Walker – Minimum Machine**
5. **Slides Nick Walker – ILC08 planning**

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