15. Accelerator Systems WebEx Conference
04 February 2009, 13:00 GMT

Minutes (v1.0)

Attending: W. Bialowons, P. Garbincius, K. Kubo, M. Kuriki, F. Lehner (minutes), T. Omori, M. Palmer, E. Paterson, M. Ross, A. Seryi, T. Shidara, N. Solyak, N. Toge, J. Urakawa, K. Yokoya, N. Walker

All slides are available on the indico site
http://ilcagenda.linearcollider.org/conferenceDisplay.py?confId=3350

1. General Announcements (Nick)

Nick welcomed the attendees and reported on the on-going the face to face Executive Committee meeting at Pasadena. The EC will meet with CERN DG and CLIC steeting group later in the day (by videoconference) to talk about increasing CERN/CLIC involvement. Nick further announced that Andy Wolski is stepping down as technical area group leader for DRs due to many other obligations. However, he still will be involved in technical work. Susanna Guiducci/LNF is taking over at the time of the Tsukuba TILC '09 meeting.

2. Short status report by TAGLs

2.1 Damping Ring – M. Palmer on CesrTA (slides available)

Mark Palmer gave an update on the status of the CesrTA program. The slides are available at the aforementioned website. The current experimental run was completed by 02/02/09 with major focus on low emittance correction in baseline optics, X-ray BSM commissioning and electron cloud measurements. The participation in the measurement program was good with about 13 external visitors. They are now moving towards the second upgrade with installing PEP-II experimental hardware and other equipment. Mark reported further on first measurements of the beam emittance using Touschek lifetime parameters. They achieved after the successful tune-up a vertical emittance of 32-38pm, (compared to the final goal of 20pm), which for a first attempt is considered very good. Cross checks with X-ray BSM were done and are in agreement with data from the Touschek lifetime measurements. Measurements on electron cloud densities (RFA and TE wave measurements) were carried out and compared

with simulation. These studies are still ongoing. The next generation of testing chambers to be installed soon will allow tests with new EC mitigation techniques. A much more in-depth discussion on the experimental details will take place next Tuesday at the CesrTA Collaboration webex meeting.

2.2 RTML – N. Solyak (slides available)

Nikolai gave a RTML update report. Progress is made on the single-stage bunch compressor design and related performance studies. He is also working on the redesign of the extraction line for the beam assuming a 4% energy spread after the single-stage bunch compressor. A design for a symmetric high-power RF coupler for the SC cavity in bunch compressor is almost finished (as a possible mitigation for the strong RF coupler kicks). New hardware has been received for the magnetic stray field measurements (important due to tight tolerances <2nT for time-varying fields), and the software upgrade and calibration tests are in progress. Measurements nearby a klystron are planned for mid February. In addition Nikolay mentioned possible first studies on cavity amplitude and phase stability for RTML bunch compressor at FLASH during a 9mA run in September 2009. A proposal is currently being discussed.

Nick asked where the claimed 4% energy spread is coming from. A clarification of this number will be given offline.

2.3 BDS – A. Seryi

For the past month, the BDS efforts continued on several fronts. The ATF2 commissioning, with studies focused on fast kicker in January, resumed in February, aiming for commissioning of the laser wire mode of the Shintake beam size monitor and tuning of the beamline. A lot of effort is put into the organization of the commissioning team, for proper scheduling of task, shifts, as well as for training of younger colleagues. The IR Integration leaders, in connection with MDI-D group, are working on finalization of the IR Interface document, aiming to finish it in the beginning of February. Also, the magnetic design of SC FD for the ATF2 upgrade is being finalized and transferred for further detailed 3d cad design.
The Accelerator design & integration team discussed plans to produce a slightly shorter beam delivery system, with increased synchrotron radiation emittance growth at 1TeV. The conflict between polarimeter and MPS functions have been resolved by placing a dedicated polarimeter chicane just upstream of the tune-up extraction line.
Within the Accelerator design & integration, a vacuum science task force has started, which, in close connection to IR Integration and MDI-D teams, will focus on investigation of vacuum system requirements and configuration for the IR area.

Together with ILCSC commissioned physics study group, BDS experts have contributed to the evaluation of the first-stage low-energy photon collider, first proposed by Sugawara-san. A report is ready for submission to ILCSC.
Within the Accelerator design & integration work package, the Energy-saving magnets & Power Supplies sub-work package leaders have started discussions on the planned work, which would include developing concepts of PS-Magnet package to minimize the overall cost, as well as to study other ideas that will allow energy saving, like high-T SC magnets.

2.4 Simulations – K. Kubo (slide available)

Kiyoshi reported that little progress has been reported since the Chicago LCWS meeting (little manpower is available). The group is making a reliable list of the tolerances (hardware specs), but there was a little progress on magnet strength accuracy. An ILC-CLIC beam dynamics workshop is tentatively planned for the summer. Kiyoshi emphasized that more work is needed on the low emittance preservation in RTML and on known specific problems, e.g. the scale error of BPM in ML and the coupler wake in bunch compressors. He is trying to find people to be responsible. Nikolay Solyak is looking to provide resources for these RTML-based studies.

3. AAP review update (Marc)

Marc gave news on the planned AAP review. The so-called AAP context document listing questions we should address during this review was mailed a few days ago. He emphasized that we should use it to begin collecting and collating material which will be submitted to the AAP. All group leaders should now prepare material according to these regulations.
Moreover, a charge will be prepared very soon by the AAP as well as draft agenda on the indico website.

4. Low energy electron driven positron source (Masao Kuriki) – slides available

M. Kuriki presented an overview of his idea for a low energy electron driven positron source that was proposed by him at ILC08. Later studies included damping ring acceptance calculations and further critical investigations were done by ANL group. Masao compared positron yields from two studies which were consistent with each other at a 20% level.
The ANL study concludes also a capturing enhancement by ~40% using liquid lithium lens instead of AMD. However, increasing the RMS spot size will lower this enhancement factor. Heat transfer simulations show that for such energy depositions boiling of the liquid lead target has to be considered as a serious problem. Larger spot sizes and increased liquid lead flow speed can mitigate it but would require significant R&D. Masao reported on his studies to optimize positron yield and deposited energy using finally a 2.2 GeV and 4.0nC drive

beam. He concludes that a liquid lead flow of 30 m/s is required to avoid the boiling point.

Junji Urakawa reported on the planned target/window R&D programme at KEK in collaboration with BINP. Nick requested information concerning the parameters and detailed scope of the tests, and how they relate to the current ILC requirements.

5. Possible Minimum Machine Studies of Central Region (Ewan) – slides available

Ewan presented the general schedule for the 2009 studies with the goal to propose a new baseline for evaluation in 2010. The schedule and goals are written up in the ILC Minimum Machine Study Proposal v1 as of January 2009. The plan mainly addresses source and BDS integration (Central Region). Main Linac studies include low power option, single stage bunch compressor, TeV upgrade and value engineering, which will continue through the first three quarters of 2009 independently but will have to be ready for inclusion in the 4th quarter of 2009. Ewan summarized the ideal goals:

- In quarter 1 have 3d layout of some difficult ILC facilities using the current RDR lattice descriptions.
- In quarter 3 and 4 have a feasible 3d example layout of consolidated central region.
- Have then in quarter 3 and 4 enough information to produce a rough estimate of cost differences, impact in installation and operation including personnel safety

6. A.o.B.

The next AS-TAGL meeting is scheduled for:

- Wednesday, 04.03.2009 at 14:00 GMT

Attachments

1. **Slides M. Palmer on CesrTA updates**
2. **N. Solyak on RTML**
3. **A. Seryi on BDS**
4. **K. Kubo on simulations**
5. **M. Kuriki on low energy electron driven positron source**
6. **E. Paterson on schedule for minimum machine studies**