

Summary of the Meeting on Beam Energy Measurements at DESY (Zeuthen) from 06.06. to 08.06.2007

Present :

V. Duginov, S. Kostromin, T. Mamedov, N. Morozov (DLNP JINR Dubna)

R. Makarov (MSU, Moscow)

N. Muchnoi (BINP, Novosibirsk)

F. Gounaris (University College London)

S. Boogert (Royal Holloway, University London)

K. Hiller, H.J. Schreiber, M. Viti (DESY)

A. Ghalumyan, R. Melikian, V. Nikoghossian (Yerevan)

M. Woods (SLAC)

E. Torrence (University of Oregon) via broadcast

The meeting covered the following topics:

- Physics requirements for the beam energy precision
- Dubna as a site for the ILC
- Present and future End Station A (ESA) activities at SLAC
- Synchrotron radiation for beam energy measurement
- Compton backscattering for beam energy measurement
- Laser light resonance absorption for beam energy measurement

The meeting started with a talk from F. Gounaris on precision top quark threshold measurements at the ILC. He concluded to achieve a top mass uncertainty of 50 MeV, the beam energy has to be known with a precision of $3 \cdot 10^{-4}$ or better.

The topic on **End Station A** activities at SLAC started with an overview talk of M. Woods, supplemented by some details on the next test run in July and requested test runs in 2008. Prospects on long term test beam activities at SLAC were also discussed by Mike. A summary on the present status of the BPM-based spectrometer experiment, the experiment T474, was given by S. Boogert. E. Torrence followed with a progress report on the extraction-line energy spectrometer, called T475. S. Kostromin discussed detailed measurements of the four magnets of the energy spectrometer in ESA at the SLAC test bench and in situ. Within the context of magnet activities within the collaboration N. Morozov reported on the commissioning of the test bench in Dubna and on R&D progress for precise B-field measurements, while V. Duginov reported on long term magnet temperature measurements.

The **synchrotron radiation** topic started with a summary from R. Makarov on the status of detector developments for precise SR edge measurements and on his GEANT4 simulation of a possible experiment. K. Hiller reported on recent GEANT3 simulations accounting for the design of the present ILC BPM-based spectrometer within the BDS. It was agreed that further

simulation studies should rely on the actual design of the spectrometer and its position within the BDS, and should include detector aspects in more details. Options for possible detector test beam activities were emphasized, but this needs further studies before decisions.

The basic idea of the **Compton backscattering** (CBS) and its application for the ILC was presented by N. Muchnoi. Nikolai also shortly discussed the possibility to perform a test experiment at Novosibirsk. M. Viti reported on his Compton backscattering update studies, in particular on some error estimations on E_{beam} and on possible locations for a CBS spectrometer within the BDS. He also summarized the status on position measurements of the backscattered laser light, an important input to determine the beam energy with the precision needed.

R. Melikian talked about the feasibility of the measurement of the beam energy by the method of **resonance absorption** of laser light in a static magnetic field. Afterwards, A. Ghalumyan considered laser and detector realization possibilities to perform a 'proof of principle experiment'.

The last talk of the meeting was given by V. Duginov on the proposal for a site of the ILC at Dubna.

In discussions of more general character the following items were considered:

- draft on BPM commissioning in T474;
- draft on magnet commissioning in T474;
- the need also to consider energy spread and E_{beam} -z correlations at the ILC;
- the activities on beam energy measurement discussed should be part of a corresponding workpackage, and its results should enter the EDR;
- we agreed that the baseline method for upstream beam energy measurement is the BPM-based energy chicane, while the corresponding method in the extraction-line relies on SR detection;
- the feasibility of the Compton backscattering method will be outlined in a paper ready at about end of September and, if feasible, the resonance absorption method at the end of 2007. An update of the upstream SR study (LC-DET-2006-005) is expected in spring of 2008;
- we discussed to use centralized ilc management tools for mailing list/forum, document server and agenda server. We should use ilcdoc for the document server, <http://ilcdoc.cern.ch>., and indico for managing meetings, <http://ilcagenda.cern.ch/index.py>, and should evaluate the forum <http://forum.linearcollider.org> for mailing list.

The University College London invites the collaboration to the next meeting in London for the second half of November. The invitation was accepted, but further details have to be discussed, in particular possible support for PhD's and postdocs.

The presentations of the meeting and the summary are accessible on the web-page

<http://www-zeuthen.desy.de/main/html/aktuelles/workshops.html>