

Minutes of the EUROTTeV Phone Meeting

Javier.Resta.Lopez@cern.ch

7th April, 2005

Participants: *Ph. Bambade, D. Angal Kalinin, H. Burkhardt, O. Dadoun, A. Faus-Golfe, M. Pedrozzi, J. Resta López, C. Rimbault, D. Schulte, N. Walker, V. Ziemann.*

General

- In view of the next ELAN-EUROTTeV-ILC meeting on June 20th-23rd in London, it is convenient to send the drafts of the task workplans to Daniel before the end of May.
- The communication in each task will be supported by means of tasks reports. The mailing list with the members of every task will be helpful to identify and contact people from different tasks and institutes. Task reports and mailing list could be sent to Daniel for organization.
- For submission of memos it has been pointed out that the document should be sent to Karsten Büsser at DESY (karsten.buesser@desy.de).

Task progress

BBSIM. *Ph. Bambade:*

A tentative draft plan of the BBSIM tasks was sent to Daniel. It is attached below in this document:

1. Benchmarking of pair production in **Guinea-Pig**, including characterization of uncertainties (e.g. beam-size effects) and comparisons with **BDK** (for the LL process) and **CAIN**, particularly in the large angle large Pt region.
2. Implementation of beam-beam space-charge induced deflections in Bhabha processes and evaluation of corresponding systematics in luminosity determination (is the beam-size effect relevant here?). *Period in months:* 3-6(9). *People at Orsay:* CR, PB, KM, FT, GL.

3. Extention of phase-space of hadronic mini-jet production down to the $\pi\pi$ threshold and interface to relevant recent version of **Phytia** and to existing (partly parametrized) treatments of the low-mass resonance region. (Maybe benchmark with **CAIN**?). *Period in months: 6-12. People at Orsay: CR, PB.*
4. Web-based **Guinea-Pig** documentation, including handling of program versions, better explanations and support for all functionalities provided, ... *Period in months: 0-6. People at Orsay: FT, GL, CR.*
5. Study and characterization of algorithm-related uncertainties, e.g. with respect to the integration methods, number of time-steps and grid sizes used, correlations, definitions of reference input default conditions for different cases. *Period in months: 6-12. People at Orsay: FT, GL, PB, CR.*
6. Upgrades of program structure (to be defined) including improved graphics output files, e.g. in the form of ntuples. *Period in months: 12-21. People at Orsay: FT, GL, CR.*
7. Implementation of depolarization effects in **Guinea-Pig** characterization. Comparisons with **CAIN**. *Period in months: 12-21. People at Orsay: CR, PB, KM, FT, GL.*
8. Final report and publications. *Period in months: 21-24. People at Orsay: all.*

PB=Philip Bambade; CR=Cecile Rimbault; FT=Francois Touze; GL=Guy Le Meur; KM=Klaus Moening.

The work on item 1 is going on. It has been checked using BDK that the factor 1.5, mentioned in the Ph.D. thesis of Daniel, between the equivalent photon method applied to the LL process and an exact 4 fermion matrix element based generator is correct also in the large angle which is relevant for direct hits in the VD. So the collinear approximation for the quasi-real photon emission seems correct, as for such low Pt electrons the large angles are generated entirely within the $gg \rightarrow ee$ hard process, and not because the spectator electrons receive a Pt. Large Pt can also occur for the spectator electron, but not at the level of microbarns which we have here (rather in the picobarn region). What remains to be done is including a comparison with **CAIN** and also understanding better this beam-size effect which is included by default in **Guinea-Pig**. An ELAN note is being prepared on this study.

On the other hand, item 4 has been started in the form of an internal documentation of the routines and program structure for **Guinea-Pig**. At this point the discussion and collaboration with *Daniel* is important.

BCDS. *M. Pedrozzi:*

Marco informed of the following news:

1. A postdoc has been hired: *Frank Stulle*, now at DESY. He made for his Ph.D. the design of the TTF chicane for the VUV FEL at DESY which is presently in the commissioning phase. *Frank* will start at PSI in June or July.
2. *Andreas Adelmann* from PSI beam dynamics group and *Rene Bakker* spent quite a lot of time with *Frank* discussing simulations issues. They installed the last versions of **Elegant** and **CSRtrack** (parallel version for 2D and 3D) on the PSI linux cluster, and tried some benchmark case. Both codes are working and giving comparable results.
3. *Marco* calculated some beam parameters at the input and output of the chicanes compatible with the TeV linear collider, and they will be discussed within our meetings.

The strategy will be:

- First design starting from a linear energy chirp and a gaussian longitudinal distribution.
 - CSR and microbunching analysis, first optimization.
 - Modify the input phase space according to Start and End simulations (probably not anymore a Gaussian).
4. No web site activity yet.

PCDL. *V. Ziemann:*

Concerning the multi-TeV post collision line, *Volker* has maintained discussions with *Frank Zimmermann*, concluding that low energy particles are the main contribution to losses.

Working with the codes **BDSIM** and **Geant4**.

No benchmark activity yet.

Philippe commented the activity on the review design for a 2 mrad extraction line (at present 20 mrad is being used). *Robert Appleby* and people at SLAC are working on this line. It was pointed out that *Olivier Dadoun* is working to set up **BDSIM** for 2 mrad extraction line. A comparison between the codes **DIMAD** and **BDSIM** will be done.

FMSIM. *N. Walker:*

Nick gave a presentation with the main issues on the failure modes studies and their control: categories, damage potential, mitigation (MPS philosophy). Slides for this presentation and a detailed plan of the task can be found at

<https://ilcsupport.desy.de/cdsagenda/fullAgenda.php?ida=a0512>.

HTGEN. *H. Burkhardt:*

The candidate for the fellow position is in process of selection.

Helmut started with the implementation of a synchrotron radiation generator for MAD-X based on integrals of Chebyshev polynomials. Web site with information available at

<http://hbu.home.cern.ch/hbu/HTGEN.html>.