Notes on e^+e^- panel meeting of 12/2/2001

Present

Grahame Blair, Phil Burrows, Nicolo de Groot (via telephone from Bristol), Tim Greenshaw and Susan Smith.

Opening Remarks

There was some discussion both of rumours about recent comments by Ian Halliday (the UK is “too late” to get involved in TESLA) and on the “target audience” for the document we are to prepare for March. Following the meeting, Grahame circulated the following explanatory e-mail:

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Subject: Update and next meeting

Hi All,

After our meeting yesterday (minutes in preparation - thanks Tim!)
there are a couple of points (please do not circulate outside
our group!).

1) Date of next meeting - I would like to fix on the afternoon
of Wednesday 14th March at UCL.    (Nobody has complained yet!).

2) The draft is coming together, but slowly.  At our next meeting
we need to be at the very final finishing stage of our March report
to the PPC.  This means that the first 'reasonable' draft has
to be ready within two weeks. Please raise this task in your priorities
now and send me text as soon as possible.

3) I had a phone conversation with John Garvey today, who was aware
of the various emails and rumours circulating.  He re-iterated
his original brief, with the following points:
a) Our initial task is primarily to brief the PPC and help them
   with their task of funding accelerator activity through initially
   the Technology Fund and longer term through the SR.
b) They are pushing very hard for there to be a line on
   accelerator and detector R&D in the Technology Fund.
c) The rumours about "too late" etc are in connection with a perception
   about the time and pace of the TESLA project.  These perceptions
   are too narrow (and are not correct - and must be rectified!) and
   should not deflect us from our role of producing a balanced report
   pointing to a leading UK involement across the range of possible
   Linear Collider projects.
d) Detector involvement (LCFI etc) are definitely part of our brief.

So the brief hasn't changed since Birmingham (good!).

Cheers,
Grahame.
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CLRC: Current Activity and Plans

Susan gave a report on CLRC accelerator activities. See attached transparencies for details. Interesting projects include:

1. The design of a small synchrotron for lithography, which was constructed by Oxford Instruments. It was pointed out that the Oxford Instruments accelerator group has now folded. They were a little ahead of their time; developments in conventional lithography allowed smaller feature sizes to be realised without the necessity of using synchrotron radiation.

2. The design and construction of ISIS with its high-intensity proton target and design work for the target of the European Spallation source.

3. Research for the MoD on the production of tritium using an intense proton linac.

4. The design construction of the Daresbury SRS, a second generation synchrotron radiation light source.

5. The design and construction of the mirrors for the Trieste storage ring FEL.

6. The (ongoing) design of the DIAMOND third generation SR light source, which closely resembles in some aspects the damping rings necessary for a LC. Susan pointed out that one notable difference between light sources and damping rings is that in the former the beams circulate for many hours, whereas in the latter they typically undergo only a few turns.

7. Studies of the effects of ground motion on both synchrotron light sources and linear colliders.

8. Damping ring design for a 3 TeV CLIC machine.

Susan also mentioned a recently circulated internal CLRC proposal for a Centre for Accelerator Science and Technology (CAST).

Asked by Phil if CLRC could cope with all the proposed projects (DIAMOND, CASIM, CAST…) Susan answered it was all a matter of careful scheduling and she believed that the answer was yes. She pointed out that there are plans to hire about 20 people to work on the DIAMOND project.

CASIM

Tim gave a report on the Centre for Accelerator Science Imaging and Medicine. The history of this project is roughly as follows (I have to write something as I hadn't any transparencies to show!):

Following the decision to site DIAMOND at RAL rather than Daresbury, there was considerable political pressure to provide support for science in the NW; about 100 MPs went to see Tony Blair. This resulted in the establishment of the North West Science

Review, chaired by Bruce Smith so also called the Smith panel, with about 20M to spend, and the North West Science and Daresbury Development group, with up to 200M to spend. I proposed that we put in a bid to the Smith panel and hence to the NWSDD group to establish the Centre for Accelerator Science Imaging and Medicine (CASIM), the idea being to provide a focus for research on the use of accelerators for medical imaging (Synchrotron Radiation and isotope production for PET), for treatment (proton therapy for cancer), for nuclear physics (radioactive beams to study nuclei a long way off the stability line, *c.f.* SIRIUS) and for three Free Electron Lasers. These latter would enable "pump-probe" experiments to be performed. The leadership of the project was taken over by Prof. Peter Weightman, and much hard work by many people resulted in the proposal that can be found at the URL http://hep.ph.liv.ac.uk/~green/casim.

The initial cost estimate was 180M, so the project was obviously outside the scope of the Smith panel. We thus requested they recommend the project to the NWSDD. The Smith panel did as asked (and also funded some of the medical imaging proposed in the CASIM document directly). Rumour (published in the FT) now has it that the proposal is sitting on Byers' desk with the strong recommendation that it be funded. More detailed costings put the price of CASIM at 140M, to come from the EPSRC and MRC, so this would represent significant additional funding for accelerator development and accelerator related projects from outside PPARC.

As far as High Energy Physics goes, part of the initial motivation for CASIM was to find a way of keeping the Daresbury accelerator group together, as they are essential to the UK's participation in the Linear Collider project. (Following the DIAMOND announcement, 3 of 7 experienced accelerator physicists left Daresbury, one to work in the States, at Berkeley. Six of the 21 staff in the instrumentation group also left, and a further 2 are now "long-term sick".)

LCFI Status

Nicolo de Groot described the status of the Linear Collider Flavour Identification collaboration's experimental programme, the goal of which is the construction of a CCD based vertex detector for the Linear Collider and the study of all aspects of flavour identification. More detail is given in the attached transparencies.

USA developments

Phil picked out some salient points from the recently published white paper explaining options for HEP in the USA. This is an update of the 1998 Gilman Report and part of the procedure for determining the course of HEP in the States for the next decade. Further steps include the setting up of an HEPAP sub-panel, and a Snowmass meeting in July. Phil promised to circulate the white paper (only paper copy available) and picked out some interesting sentences…

"…demand an energy frontier facility at home…"

"…expect at most one of each type [neutrino source/muon collider, very large hadron collider, linear collider] will be constructed worldwide…"

The outcome of this process will be known in 2003 or 2004, though the white paper points out that a decision on participation in a linear collider project may be needed before then. The times foreseen for decisions are: ν source, $\mu\mu$ collider, 2020; VLHC, 2010 – 20; "most pressing issue", the next LC.

March Document

A framework exists. The status of the various sections is as follows:

Executive Summary

Some material available from Jon.

Introduction

Some material available from Grahame.

Physics

Nothing yet but Mike says "work has already been done in TESLA TDR and other similar documents".

Detector

Nothing yet, but Nicolo and Jordan can take vertex detector material from LCFI documents and Renato Turchetta's CMOS pixel detector proposal. No progress on finding people interested in the topics suggested by Rolf Heuer, namely radiation hard very forward luminosity calorimeter, silicon tungsten electromagnetic calorimeter, alternative technology for hadronic calorimeter and muon chambers.

Machine Overview

Some material available from Susan.

Beam Delivery System

Some material available from Phil.

Damping Rings

Material available from Susan.

Generic Technologies

Nothing yet, but high power RF documentation available courtesy of the Faraday Initiative.

Further Discussions and Planning

The date of the next meeting was set to be 14th March at UCL. Note that we have to submit our first report on 16th March, as a word document, so this must be essentially complete by the date of that meeting.

Tim