

Summary of Inner Tracker Meeting

Heidelberg, July 16, 2002

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This summary is meant to highlight a number of decisions taken during the meeting. It is not meant to reproduce the full content of the presentations.

Please consult (<http://documents.cern.ch/age?a02968>) for the transparencies of each presentation.

1 Hybrid for Beetle 1.2

In response to the question, raised by Christian (see his transparency), of the technology to be used for the new Beetle 1.2 hybrid, the preference was expressed to stay with the multi-layer kapton hybrid, mainly because this allows to integrate interconnects to the patch panel into the hybrid (“tails”).

Christian will search for a new manufacturer for the Beetle 1.2 hybrid, as the previous supplier is not willing to run a mass production.

The target date for having the new hybrids delivered and debugged is November. At that time, the TDR for the ST stations should be completed and ladder tests using the Beetle 1.2 should start (see below).

2 Hybrid and Pitch Adaptor

We agreed to adopt Tam’s scenario “2” (see his transparency) for the design and assembly of the pitch adaptor: the pitch adaptor will not be integrated in the hybrid but will be a separate piece, produced in thin-film technique on a thin substrate. Furthermore, the pitch adaptor will be glued to the carbon support frame, not to the hybrid substrate.

The relative alignment of Beetle chips and pitch adaptor will be done when hybrid and carbon support frame are mounted onto the cooling balcony. The Beetle chips will be bonded to the pitch adaptor when the ladder is fully assembled (i.e. at the same time when the sensors are bonded together and to the pitch adaptor).

The hybrids (excluding the pitch adaptor) will be assembled, bonded and tested in Heidelberg, before being delivered to the production sites.

3 Data Transmission

The clock jitter problem described by Achim (see his transparencies) being common for all LHC experiments that use the GOL chip, we expect that in the long term a common solution will be worked out. However, a short-term solution is needed in order to be able to proceed with prototype tests. Achim is working hard on this and is in contact with other concerned groups. We do not see what more could be done.

Radiation tolerance of the optical transmitters and other components in the “service box” is a point of concern. Achim will contact Jorgen Christiansen to discuss radiation levels at possible locations of the service box, and ensuing requirements from the LHC policy on radiation tolerance.

4 Ladder Tests for TT

Ueli and Olaf volunteered to prepare a list of ladders that should be assembled for the next round of tests. The following proposal was prepared after the meeting:

1. one two-sensor ladder from Inner Tracker sensors
2. one three-sensor ladder (33cm) from Inner Tracker sensors (320 μm thick)
3. one four-sensor ladder (35.8cm) from GLAST sensors (400 μm thick)
4. one three-sensor ladder (28.35cm) from CMS sensors (500 μm thick)
(prepare this ladder to allow for an extension to four sensors = 37.8 cm?)
5. one one-sensor ladder from CMS sensor with 55 cm long interconnect

All ladders should be equipped with Beetle 1.2 chips.

5 Production Centers

The proposed concept (see Ueli’s transparency) of having two production centers, one for ST and one for TT, was generally accepted. The location of these production centers remains an open question. The general feeling was that Ueli’s option “1” should for the time being be regarded as the baseline scenario, although important details, especially concerning the available manpower, remain to be clarified.

Valery’s detailed proposal of a full TT production in Kiev (presented by Ueli, see his transparencies) was noted. We were especially impressed by the manpower that he seems to be able to dedicate to the production. There was a general concern, however, that the overall integration into the Inner Tracker project could be problematic. The different options have to be clarified in more detail.

6 August 2002 Testbeam

It was decided not to use the allocated testbeam period of August 22-28. The VELO group has expressed interest in taking over this beam time.