Update

Silicon Detector Developments

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(with Agenda for meeting of 29 April 1992.)

Silicon Detector News

Letters were sent out to manufacturers at the beginning of March. There have been a number of follow-up discussions since then. The present state is:

- Q-Par Angus

  Order placed. Two prototype 50×50 mm surface barrier detectors to the Japanese design due for delivery in the next couple of weeks. One device will have "low" sheet resistance (1kΩ per square) and one "high" resistance (15kΩ per square) to allow us to check the trade off between good resolution (high resistance) and short collection times (low resolution).

- Micron

  Quotation received for prototype 50×50 mm ion implanted detector to the Japanese design. No order placed as yet.

  An alternative design detector has been given on loan for tests. This is a flight test device made to a NASA specification. It is essentially a double sided strip detector with the stips on each side connected via discrete interstrip resistors laid down on the PCB mount. Position information obtained from standard resistance division and energy from summing the signals on each side. Strip pitch is 500 microns with 125 strips on each side (60×60 mm). Thickness 140 μm.

- Canberra

  Response received from Paul Burger at the factory with some questions and these discussed with the UK sales engineer (Sally Davies). Awaiting response to these. Also discussed with Sally Davies the possibility of obtaining devices such as the Micron/NASA design from them. They do double sided strip detectors already (called PAD detectors in their vocabulary) and may be able to put the interstrip resistors in place. Awaiting a response on this. In any case, they would appear to be a suitable source for PSSSD's and DSSSD's in future.

- Hamamatsu

  Order placed for 60×60 mm ion implanted detector to the Japanese design (it is in fact the device made for RIKEN but without the inter connector resistive strips). Due for delivery in May. This will allow us to check their "quality" and also see the effect of distortion without the inter connector strips.

- Intertechnique

  Discussion with their sales engineer (Mary Laport). She has promised to send us a sample detector of the design they have made for the Italian group for testing (50×50 mm ion implanted but without the inter contact resistive strips). Also discussed the strip detector idea with her and they will get back on this.

It looks like we will have a number of devices to test within the next month or so. I have mentioned to Garry Tungate that we could use any "spare" beamtime for this if there are gaps in the schedule. [I will also put in a request to the next Programme Panel meeting for detector test time]. The main decision looks likely to be whether we go for the interconnected strip detector design or the resistive charge division. Some discussion on this would be welcome. If we do go for the resistive charge division then we will also have to decide on a suitable resistance value - a choice linked to the tests on charge collection times and the decision on whether to go for gated integration in the electronics.

Brian Fulton