Request for Information (RFI)
10/29/98
GLAST Silicon Detector Procurement

I Background

The Gamma-ray Large Area Space Telescope (GLAST) is planned as a NASA mission with launch in early 2005. GLAST will map the gamma-ray sky with a pair conversion telescope with large area and large field of view for energies from 20MeV to up to a TeV. The baseline instrument will employ silicon microstrip detectors on an unprecedented large scale, covering an area of close to 100 m^2.
The GLAST instrument is being designed by an international collaboration of astrophysics and particle physics groups supported by the US National Aerospace and Space Agency (NASA), the US Department of Energy (DoE), the US Department of Defense (DoD), the US National Science Foundation (NSF), the Japan Ministry for Education, Science and Culture (Monbusyou), the French National Research Agencies (CNES and CEA), the Italian Space Agency (ISA) and National Institute for Nuclear Physics (INFN), and the UK Research Council. There is a wealth of information about GLAST on the GLAST web site: http://www-glast.stanford.edu.

The information gathered in this RFI will be used to develop the procurement process and the production schedule for the silicon strip detectors. Based on the information supplied in response to this RFI, a Request for Quotes (RfQ) will be sent out in early 1999 to companies having

a) expressed interest to participate in the GLAST Si detector procurement, and
b) demonstrated the ability to contribute a significant fraction of the GLAST detectors on the GLAST schedule outlined below.

In the following, a few details of the GLAST detector needs and expected schedule are given.

1) GLAST Si detector needs:

Owing to the large-scale application in space, GLAST will put a premium on high-quality detectors of maximum area. A preliminary specification exists and is included as Appendix A. In short, we require single-sided AC-couple p-on-n detectors of 400micron thickness. The pitch is 195micron and the biasing method is polysilicon resistors with a resistance of at least 20MOhm.
In order to minimize interconnects, we will baseline the detectors in 6" wafer technology. We will accept information and quotes for 5" and 4" technology, because the modular structure of GLAST permits in principle the use of detectors of either wafer size, but we will give priority to detectors from 6" wafer production lines.

The GLAST Instrument will require

18,400 detectors approx. 6.4cmx6.4cm from 4" wafers or
8,200 detectors approx. 9.5cm x 9.5cm from 6" wafers.
In addition, we will need 15% spares.

2) GLAST detector procurement schedule:

The following shows the time line for the procurement of the GLAST Si detectors, as derived from the preliminary GLAST mission schedule:

Establish Cost and Schedule	Fall 1998
Qualify vendors	Summer 1999
Pre-production	Summer 2000
Production start	Spring 2001
Start of tracker assembly	June 2001
Finish of tracker assembly	June 2003
Instrument ready	June 2004
Launch	2005

3) Criteria for acceptance of bids in the procurement process:

The following criteria will be applied in the procurement of the GLAST Si detectors:

Cost
Reliability of 6" technology
Quality of detectors indicated by
leakage currents, # of bad strips, uniformity of parameters
Proof that manufacturing capabilities can meet GLAST schedule

II Request for Information

Below, a preliminary procurement plan for GLAST detectors is outlined. We will solicit separate responses from manufacturers for 4", 5" and 6" wafer production, respectively. As mentioned above, 6" wafer production will be preferred. The procurement will be done in three stages (see Table 1), and we expect that the procurement even in stage 1 will be restricted to suppliers which can demonstrate the ability to contribute a significant part of the Si detector production in stage 3 (at least 10% of the total). The RFQ will cover all three stages, and send to manufacturers replying to this RFI.

Table 1: Preliminary Procurement Plan for GLAST Si Microstrip Detectors

Stage	Fabrication Run	# of Vendors	# of Detectors/Vendor	Delivery Date
1	Qualifying	3-4	100	Fall 1999
2	Pre-production[1]	2-3	500	June 2000
3	Production[2]	2-3	Min 10%	Spring 2001- Spring 2003

[1] sufficient detectors to build the first few production towers

[2] ~ 1000 minimum run, need quotes for 1,000/ 2,000 / 5,000 / 10,000 / 20,000 wafers

We ask manufacturers to supply the following information by Dec 1, 1998:

a) Expression of interest to participate in the GLAST Si detector procurement and information about existing or planned fabrication capacity.

b) Production schedule for the required numbers of detectors after order is placed for each of the three different runs. In particular, the time span required between placement of the order and start of delivery of the first production batch in stage 3 should be clearly spelled out.

c) Delivery schedule of production size wafer lots (Stage 3). A minimum order of 10% (2,000 in 4" wafers, 1,000 in 6"wafers) would be placed, with increments of 10% of the total. Thus the delivery schedule should clearly identify the number of wafers delivered at which date, assuming an order placement by January 1, 2001.

d) Comments on the preliminary specifications. Of special value is the identification of cost, yield and schedule drivers.

e) Replies to this RFI should be send to

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Companies needing more information about GLAST and technical details of the Si detectors can contact the following persons involved in the GLAST detector development:

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