

GLAST LAT Project Weekly Report for the week ending March 22, 2001

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*** CALORIMETER (N. Johnson)

CALORIMETER SUBSYSTEM (Paolo A. Carosso)

4. 1. 5. 1 CAL Management (Johnson, Carosso, Acker)

Reviewed action items and set up action item database and reports for CAL subsystem

Hosted EEE Parts meeting with Patty Huber and Parts Branch from GSFC.

Supported Requirements Reviews for ACD and TKR subsystems.

Telecons with French and Swedish Partners on:

- PIN diode procurement
- Crystal procurements, testing, delivery

Continued definition of CAL schedule and WBS

A functional-level summary of CAL failure modes and their effects has been distributed throughout the CAL group. (Grove)

Working on I&T committee issues (Phlips)

France:

Preparation and meeting with the French institution CNES (Isabelle, Didier, Arache, Gilles) .

Work on the WBS in progress (Yves A. , Didier, +)

4. 1. 5. 3 Performance Assurance (Virmani)

Prepared and released GLAST LAT Parts Plan Document #LAT-MD-00099

Discussed and responded to GSFC LAT parts program during GSFC audit on March 21, 2001 at NRL.

Supported Photo pin diode specification review.

Supported crystal specification review and incorporated quality assurance clauses.

Supported SLAC on issues related to:

- High Voltage Chip Capacitor
- Detector Specification
- ASIC Specification

Preparing for video presentation on March 27, 2001.

Preparing part list and stress analysis databases for design engineers.

4. 1. 5. 4 CAL Design

PEM (Bogaert)

Started updating engineering drawings of VM2 mechanical structure to fit with new dimensions of crystals

Modification of design to fit inside grid: larger chamfers

Evaluate thermal expansion problems on tooling in order to control final dimensions of carbon composite structure for VM2

Start checking tooling engineering drawing to optimize design and add mechanical tolerances.

4. 1. 5. 5. 2 CAL CsI Scintillation Crystal

CsI Crystal Test Stations: (Phlips, Grove)

Test station assembly continues. ADC interface PCB have been received and are being assembled. LabView acquisition and control software is well under way.

Sweden Status - Kalmar (Leif)

Four people in team: Staffan Carius, Leif Nilsson, Georg Johansson and Paul Ingelbrand.

New room dedicated for GLAST.

Start moving all equipment to the room.

New mail address for Leif sm7mcd@hik.se

Parts for mechanical test bench ordered.

Telephone for the GLAST-room +46 480 446287, Georg will probably answer.

Computers for optical and mechanical test bench delivered.

Crystal performance:

The new hodoscope of the Cosmic Bench works properly. That will shorten the measures on the crystals. Tests have been done with an AmBe source and the system works properly (Philippe Bourgeois, Yves Piret)

Finished mechanical construction of crystal test box and electronics board

Thermal cycling of epoxy with real crystal and diodes to measure light yield effects

Writing on crystal test box documentation (Phlips)

4. 1. 5. 5. 3 PIN Photodiode

Working different price options with Hamamatsu for EM PIN-diodes (Phlips)

PIN Bonding

CETIM has been asked to study the feasibility of gluing CsI and diodes; developing the gluing process and test plan.

Serma was contacted to define independently the aging process corresponding to mission profile.

Crismastec was also contacted and could be interested to gluing study and fab. (Gilles, Yves, Didier Chapron Claude Imbault).

4. 1. 5. 6 CAL Pre Electronics Module (Mechanical Engineering group Ecole Polytechnique)

Facilities

Start evaluating options for facilities at Ecole Polytechnique for PEM integration.

Acceptance GSE

Draft for performance specification of optical bench for PEM has been written.

Specifications and plans are in progress. Construction of simulation of test bench starts (Gilles, Benoit)

Studies are in progress for the PEM test bench plastic hodoscope (P. Bourgeois).

4. 1. 5. 7 CAL Analog Front End Electronics (Ampe)

Commercial low power Analog to Digital Converter (ADC) chips were tested at the ion beam facility at Brookhaven National Lab on March 14. The ADCs were being run while in the beam, converting a fixed midrange analog value. We were mainly looking for latches, device drawing excess current, but also upsets, digitized values outside of nominal. Latches were detected quickly to protect the

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device and power was cycled to clear the fault. Three ion beams with high Linear Energy Transfer (LET) were used:
Gold, LET ~80 MeV cm²/mg in silicon
Iodine, LET ~60 MeV cm²/mg in silicon
Bromine, LET ~40 MeV cm²/mg in silicon

The observational results below show that we have latchup qualified two devices, MAX1241 and MAX145.

Mfg.	Device	Latchup Results	Upset Results
Maxim	MAX124	No latchups	Single value upsets
Maxim	MAX145	No Latchups	Single value upsets
Maxim	MAX189	Latchups in Gold, few in Iodine	Upset number in tens.
Maxim	MAX194	Few latchups in Gold & Iodine	Knocked silly, numerous upsets.
Burr-Brown	ADS7816	Many latchups in all ions	Upsets were the latchups.

4. 1. E. 3 CAL Balloon Flight (Johnson)

Pat Nolan (and probably others at Stanford and/or SLAC) collected electronic calibration data ("intlin" data) from the CAL BFEM with the Rev. D TEM. At first inspection the data files look good (in sync, sensible results, etc). We'll do a more thorough analysis in the coming days. (Grove)

4. 1. 5. 4. 5 CAL Software/Design Verification (Grove, Chekhtman)

Chekhtman searched the glastsim, CalRecon (the Gaudi energy reconstruction), and TBEvent code for labeling "errors", i.e. labeling/numbering schemes that differ from the project's standards described in the document by S. Ritz. In principle we feel strongly that such errors from earlier code should not be propagated into current and future code, but we'll try not to break things as we fix them.

Work on the new CAL geometry description consistent with the carbon-cell mechanical design is still in progress.

The debugging of CalRecon (the Gaudi reconstruction of simulated events) from the IRF file is finished (Chekhtman)

Simulations to study a CAL-HI trigger configuration have begun (Grove).

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