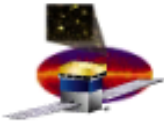


GLAST Large Area Telescope: Status Report

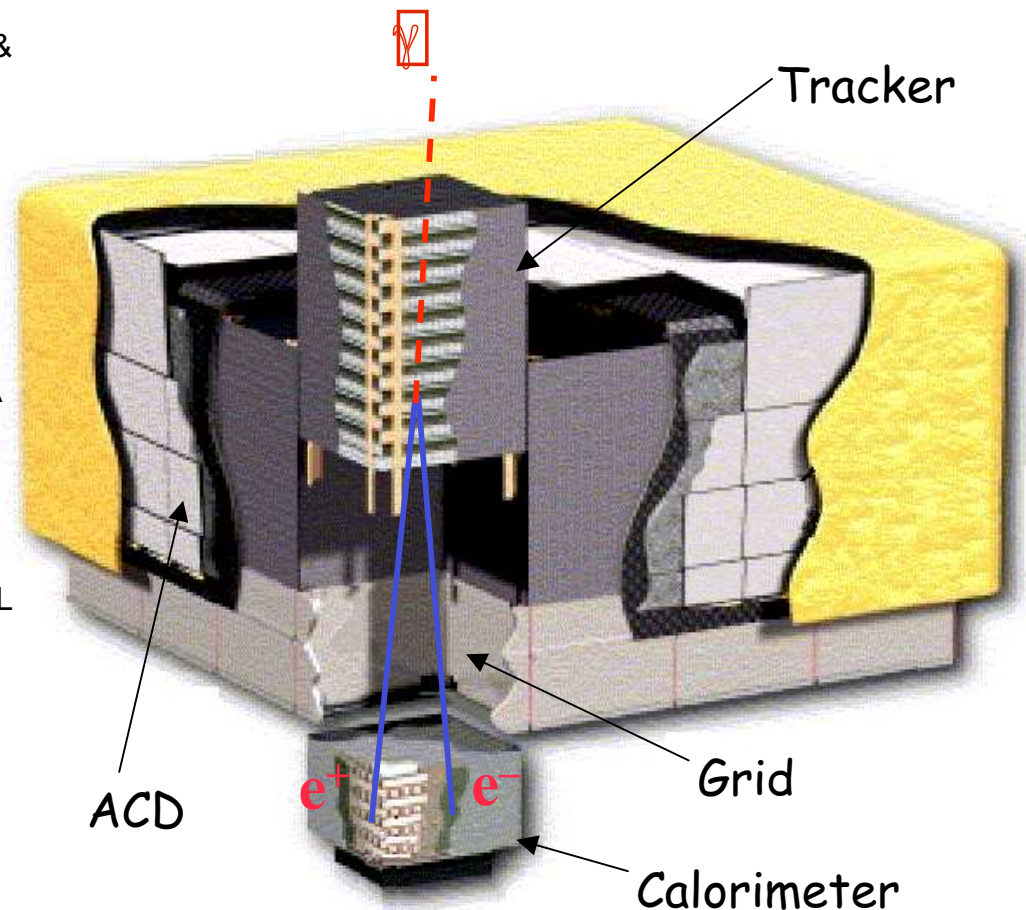
P. F. Michelson
Stanford University

GLAST LAT Collaboration Meeting
Rome, Italy
September 15, 2003

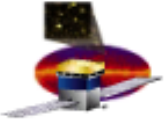


Partner Contributions to LAT

- Precision Si-strip Tracker (TKR)
 - Italy (ASI/INFN): provide Si-strip detectors & test all detectors, assemble & test detector trays, assemble & test TKR modules
 - Japan: provide Si-strip detectors & oversee detector production
 - SU-SLAC & UCSC (USA): provide Si-strip detectors, front-end electronics, cable plant
- Hodoscopic CsI Calorimeter (CAL)
 - IN2P3 (France): mechanical structure; CEA (France): engineering model prototypes of CDEs & test equipment;
 - Sweden: CsI xtals & acceptance testing;
 - NRL (USA): front-end electronics, provide photodiodes, assemble & test CDEs and CAL modules
- Segmented Anticoincidence Detector (ACD) including micrometeoroid shield / thermal blanket
 - GSFC (USA)
- Electronics System
 - SU-SLAC & NRL (USA): global electronics and DAQ equipment; flight software
- Mechanical Thermal System
 - SU-SLAC (USA): provide LAT Grid, thermal radiators, heat pipes & ancillaries

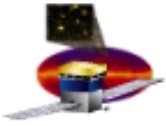


- LAT I&T
 - SU-SLAC (USA): assembly & test of LAT; provide particle/photon test beams
 - NRL (USA): instrument-level environmental tests

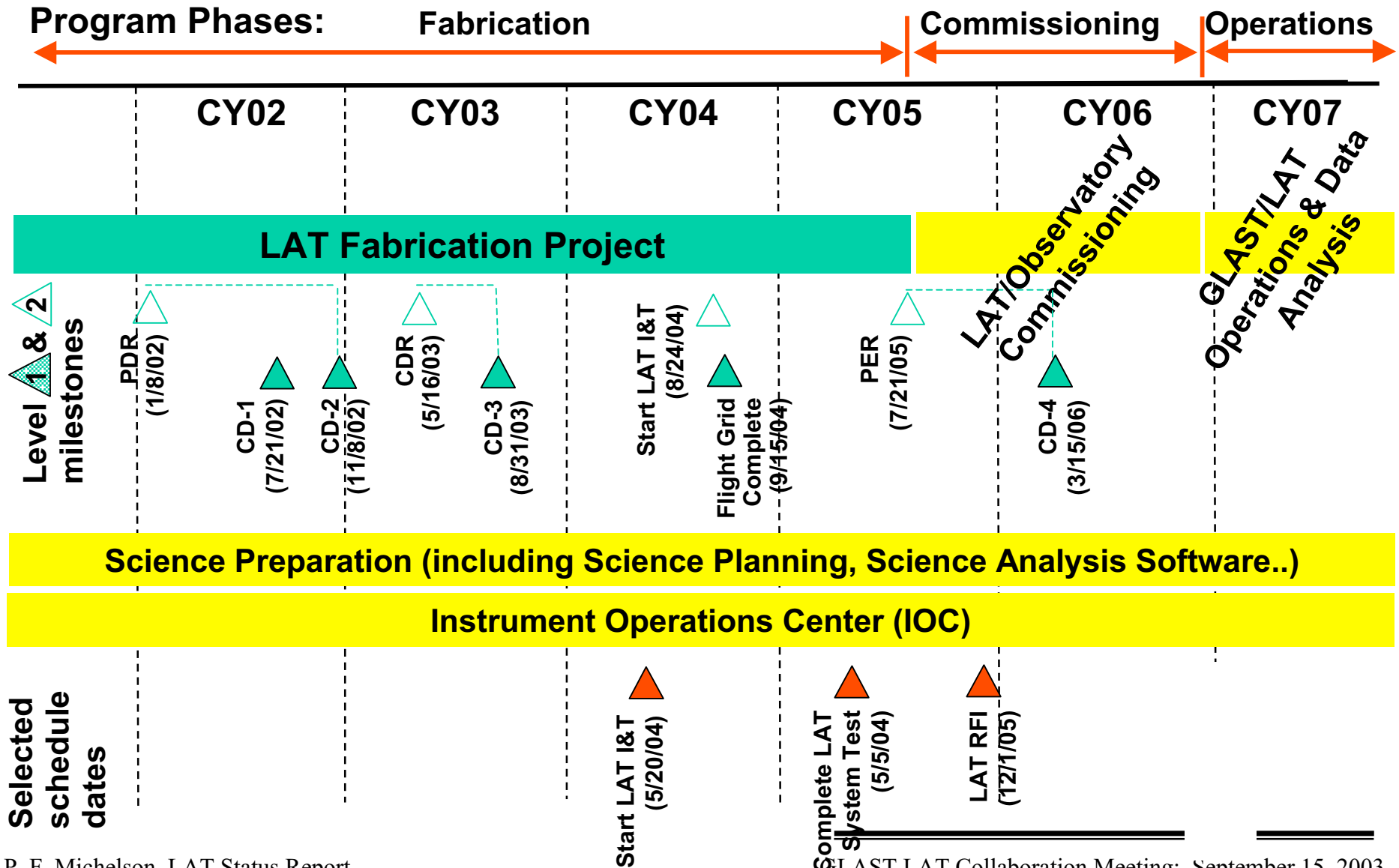


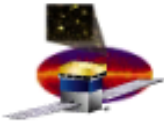
GLAST LAT Status Overview

- Following CNES withdrawal, LAT Project carried out re-planning:
 - LAT Project presented proposed cost & schedule changes and management changes at DOE-NASA LAT Rebaseline Review held July 31, 2003
- Project is supporting preparations for NASA Mission Confirmation Review, currently planned for November, 2003
 - important to finalize all international agreements soon
- face-to-face Collaboration Senior Scientist Advisory Committee meeting held at NASA-GSFC, June 16-18, 2003
- Now: Collaboration meeting in Rome, Italy (@ Accademia di Lincei): September 15-17, 2003
 - day 1 & 2: LAT development status; planning for operations phase; kickoff of Data Challenge
 - day 3: Joint LAT Collaboration – GLAST SWG Science Symposium on Sources of Diffuse High-Energy Radiation
 - (followed by GLAST Mission SWG meeting on September 18)



Elements of GLAST LAT Program





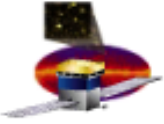
Summary of LAT Cost & Schedule Changes

▪ **Schedule**

- *LAT ready-for-integration to observatory:*
 - *Baseline: September 22, 2005*
 - *Proposed change: December 1, 2005*
- *CD-4 approval remains March 15, 2006*
- *proposed new CD-4 definition: shipment of LAT from SLAC (to environmental testing and observatory integration)*

▪ **Cost**

- *Proposed increase in cost (NASA&DOE): \$17.2M*
 - *LAT Fabrication Project increase: \$11.7M*
 - *Commissioning Phase/Operating cost increase: \$ 5.5M*



Descope Options to Preserve Schedule

LAT and Mission designs are highly optimized. All identified descopes that are effective are also painful. Most options address potential schedule slips.

- **Previously moved beam test from before I&T to Comm. Phase**

○ Tier 1

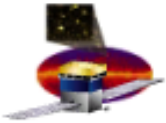
- **Reprogram I&T prep and assembly of first towers**
- **Reprogram calibration modules for beam testing to be last modules fabricated – add 2 weeks float**

○ Tier 2

- **Build 16 modules, Fly 14 (Baseline -- Build 18 modules, Fly 16)**
- **Science impact: degradation of A_{eff} and FOV**

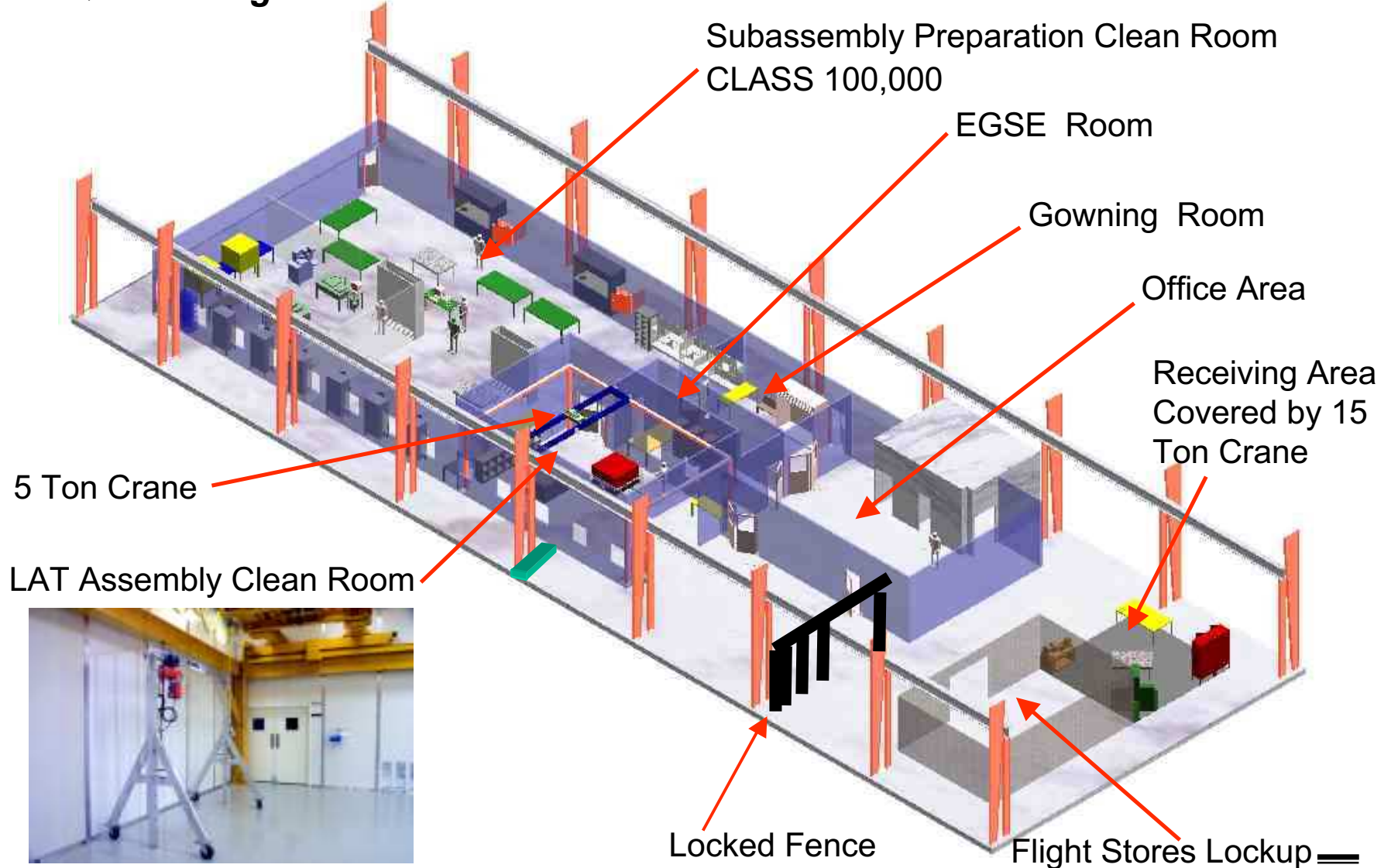
○ Tier 3

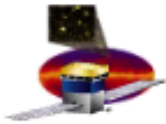
- **Build 14 modules, Fly 12**
- **Science impact: Significant degradation of A_{eff} and FOV (below level-1 requirements)**



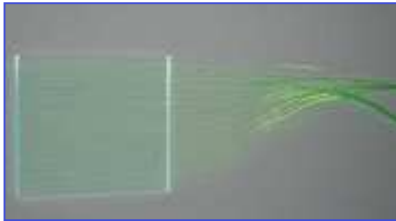
LAT Integration & Test Facility

► Building 33 at SLAC

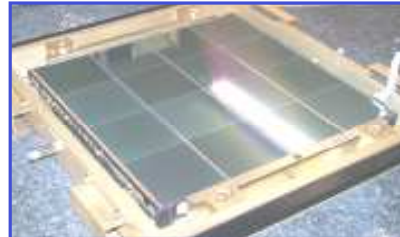
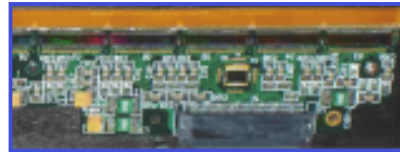




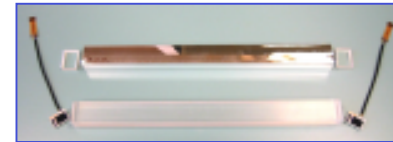
LAT Engineering Model Examples



ACD Tile Detector Assembly

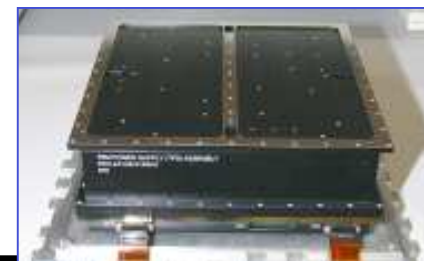


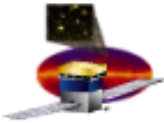
Tracker mini-tower



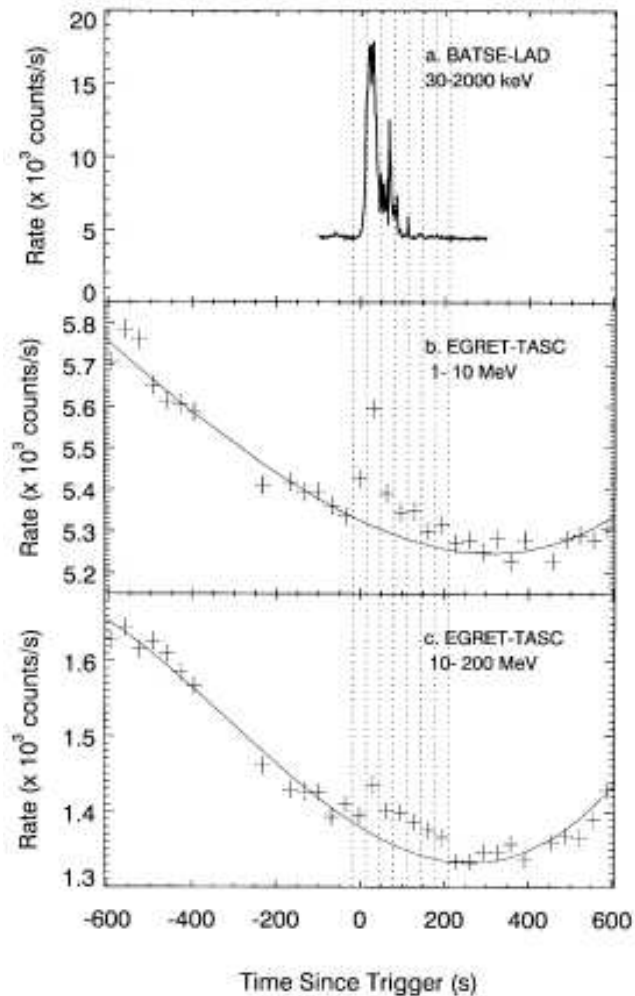
Calorimeter module

Tower Electronics Module (TEM)



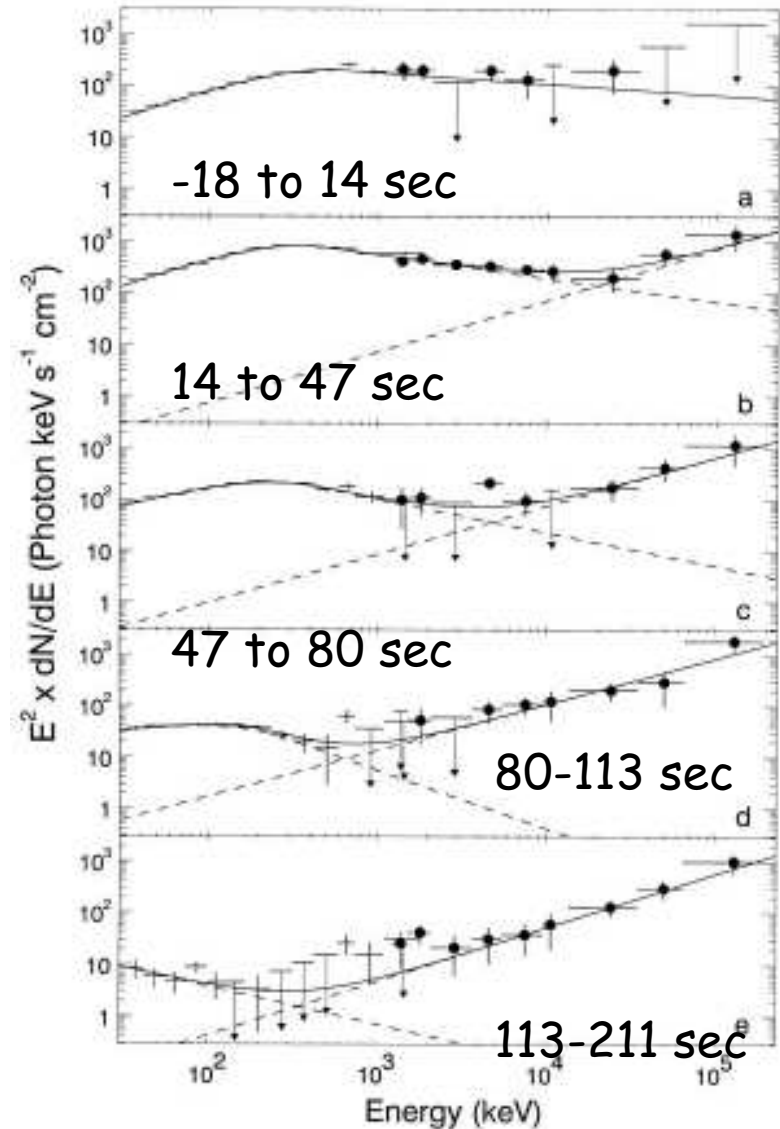


Recent Analysis of GRB941017 by Gonzalez, et al.

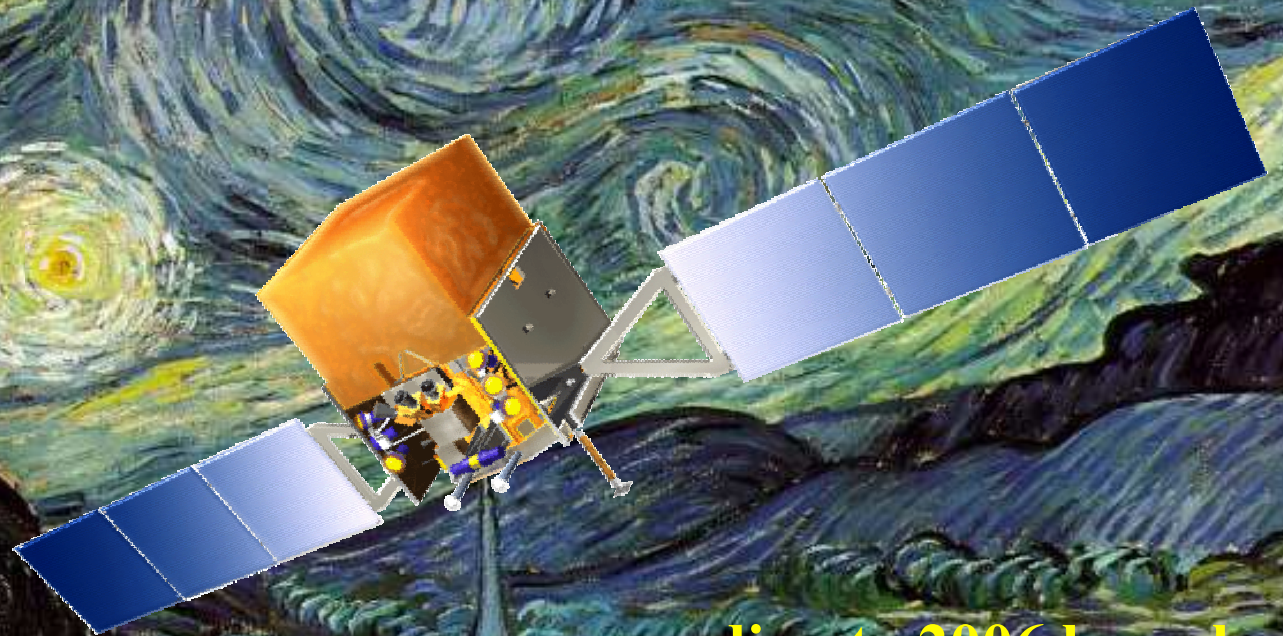


Compare data from EGRET and BATSE: Distinct high-energy component has different time behavior!

What is the high-energy break and total luminosity?



GLAST: Exploring Nature's Highest Energy Processes



proceeding to 2006 launch