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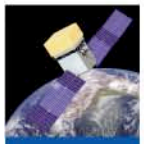

GLAST Gamma-ray Large Area Space Telescope

Gamma-ray Large Area Space Telescope (GLAST)

Kevin Grady, Project Manager
Steven Ritz, Project Scientist

23 November 2004

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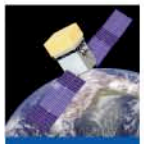
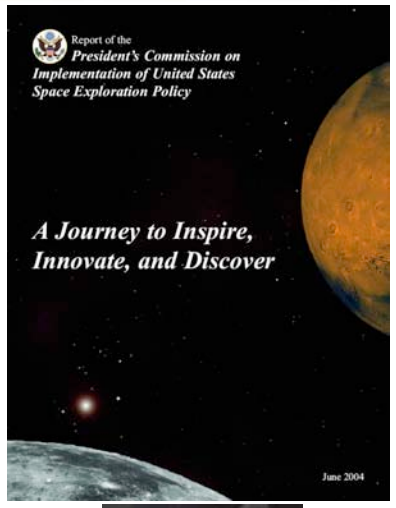
GLAST in the Vision for Exploration

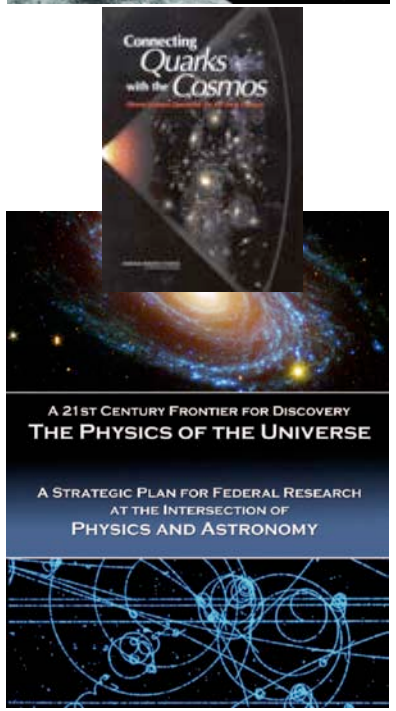


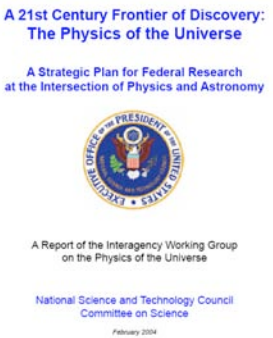
GLAST Gamma-ray Large Area Space Telescope

- Aldridge report science
  - what is the Dark Matter?
    - potential gamma-ray smoking gun signal
  - how do processes from sub-nuclear to galactic scales influence and produce large scale structure?
    - gamma rays provide a direct view into Nature's largest accelerators (supermassive black holes)
    - gamma rays probe cosmological distances
- Huge leap in key capabilities, including a largely **unexplored energy range;** great potential for *Discovery.*
- Also featured in NAS Quarks with the Cosmos and the Physics of the Universe 2004 Strategic plan:

"…GLAST will focus on the most energetic objects and phenomena in the universe…it will also search for Dark Matter candidate particles."







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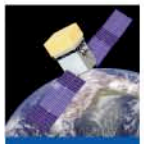
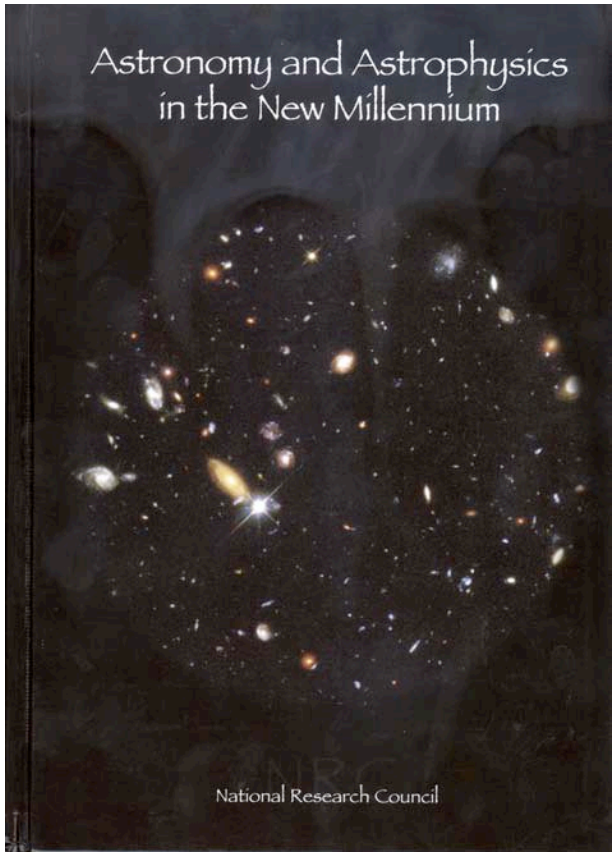
Science Community Involvement



GLAST Gamma-ray Large Area Space Telescope

- GLAST is the **top-ranked** mission in its category in the National Academy of Sciences 2000 Decadal Survey.
- GLAST draws together the High Energy Particle Physics and High Energy Astrophysics Communities.
  - a better mission: combining talent, experience, and imagination for innovation.
  - DOE is a partner on the main instrument



- Strong and active community involvement in all levels of the mission: Science Working Group, Users Committee, Conferences

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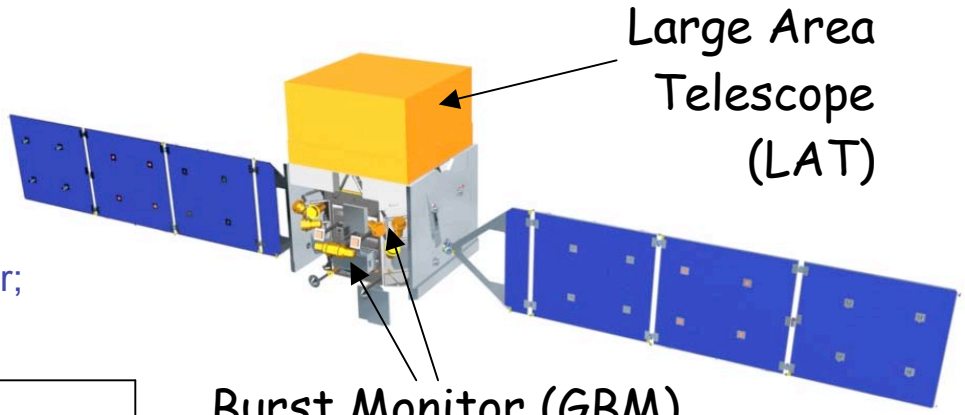
Project Overview

GLAST Gamma-ray Large Area Space Telescope

Science Exploration of:

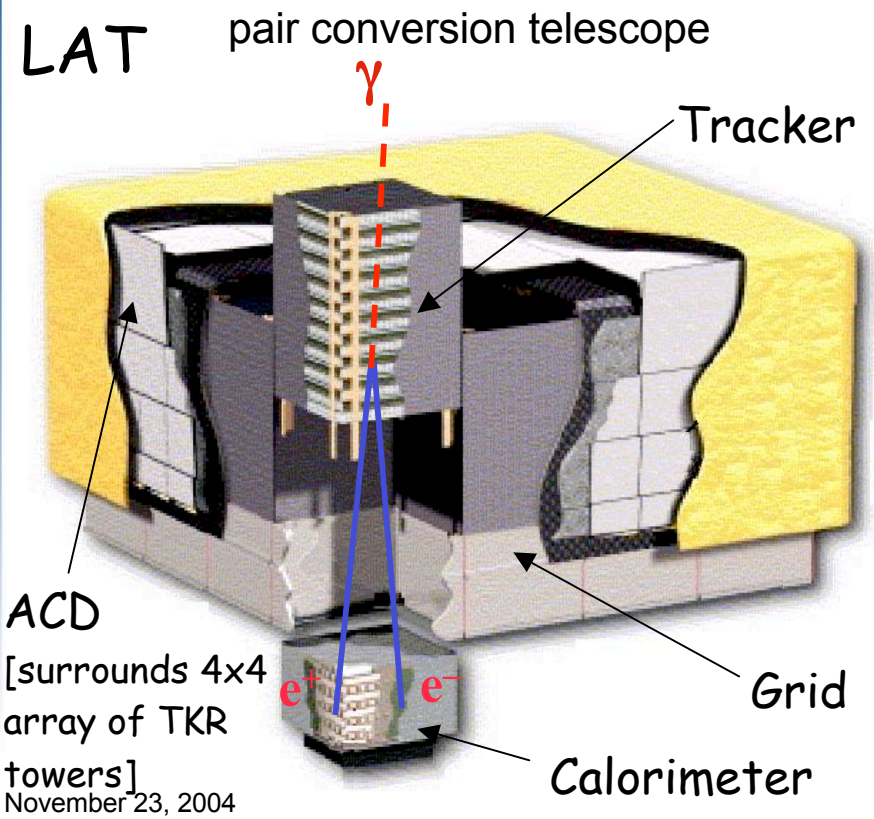
- Immense Black Hole particle power engines
- Starlight emission history of the Universe
- Highest-energy gamma-ray bursts
- Our Sun as a particle accelerator
- The new energy window: Particle Dark Matter; other Big Bang relics? New physics?



Two GLAST instruments:

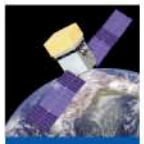
LAT: 20 MeV – >300 GeV

GBM: 10 keV – 25 MeV



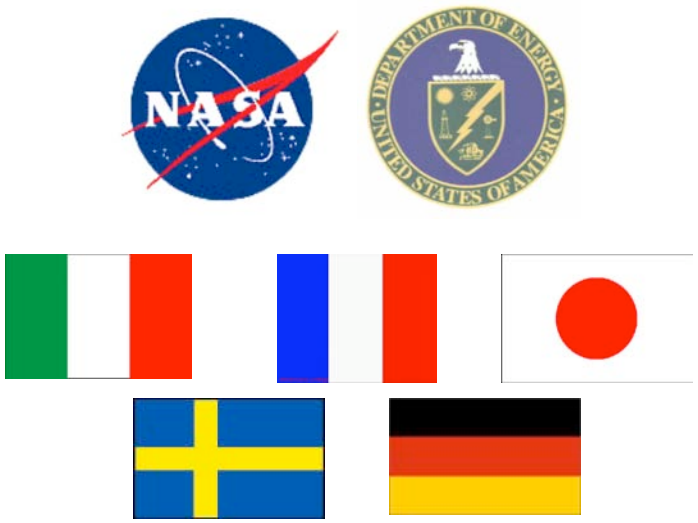
- Mission Duration: 5 yrs (10 yr goal, budgeted)
- Orbit: 565 km Circ
- Launch Vehicle: Delta 7920H-10
- Launch Site: CCAS
- Telemetry: TDRSS S-Band, Ku-Band
- Launch Date: May 2007 LRD

Implementation Status, Mission Elements



GLAST Gamma-ray Large Area Space Telescope

- In hardware implementation phase. MCDR was completed the 3rd quarter CY04.
- All development phase contractors have been selected and awarded.



- Large Area Telescope PI: Prof. Peter Michelson (Stanford); managed at Stanford Linear Accelerator Center (SLAC)
- Burst Monitor PI: PI: Dr. Charles Meegan (MSFC); Co-PI: Dr. Giselher Lichti (MPE)
- Spacecraft developer: General Dynamics/Space Astro Space Systems
- Science Support Center: GSFC

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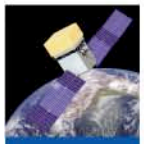
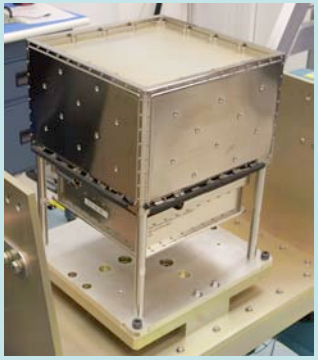
GLAST Technical Status

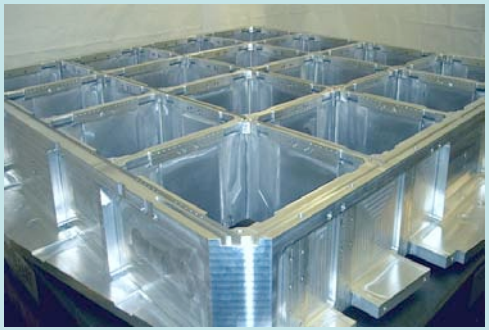


GLAST Gamma-ray Large Area Space Telescope

Large Area Telescope

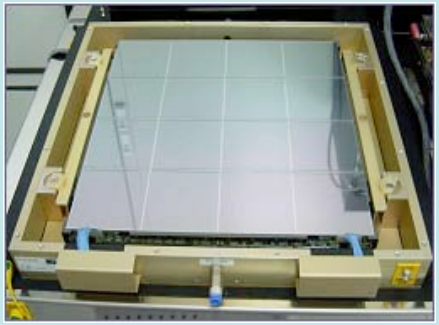


Calorimeter first module ready to ship, others in production.



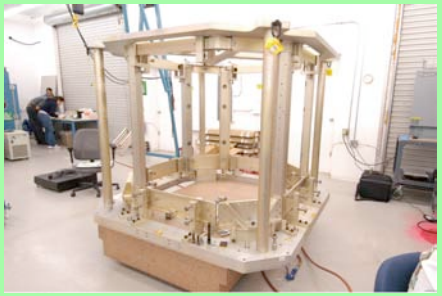
LAT structure delivered.

ACD flight structure with flight tiles being integrated.



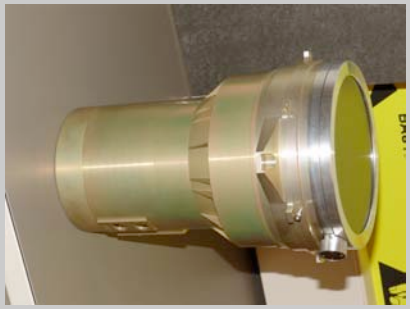
Tracker in production. ~80m^2 of silicon detectors in hand.

Spacecraft

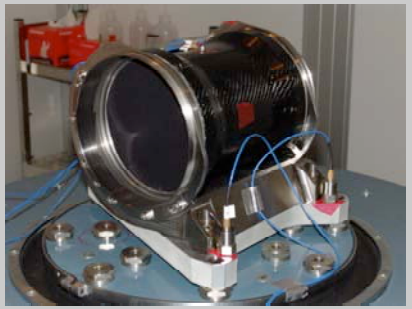


Primary structure during assembly at GD.

GLAST Burst Monitor



NaI qualification detector.



BGO qualification detector.

GLAST flight hardware is in fabrication.

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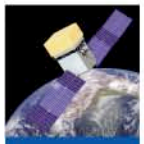
THE LOOK AHEAD



GLAST Gamma-ray Large Area Space Telescope

- The GLAST mission is well into the fabrication phase.
- LAT, GBM, and spacecraft assembly complete by the end of CY05.
- Launch vehicle ATP 1st quarter CY05.
- Delivery of the LAT and GBM instruments for observatory integration, spring of 2006.
- Observatory integration spring 2006 through 1st quarter CY07.
- Major scientific conference, the First GLAST Symposium, being planned for 2006.
- Launch in May 2007… Science Operations begin within 60 days … the high-energy gamma-ray universe opened up dramatically for exploration.