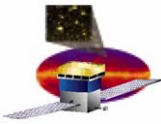**Gamma-ray Large Area Space Telescope**

Monthly Mission Review

LAT System Commissioning

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LAT Commissioning

LAT performance

❑ **LAT performance monitoring program during environmental test**
- **Receiving CPT, Vibe LPTs, EMI LPTs**
- **pre-TVAC CPT, Hot & Cold Perf CPTs, Hot & Cold LPTs**
  - **Subsystem and SE data reviews complete**

- **Detector and DAQ performance is stable**
  - **ACD**
    - **Pedestals, gains, veto rates and thresholds**
  - **CAL**
    - **Pedestals, gains, linearity, threshold rates**
      - » **Monitoring one noisy GCFE**
  - **TKR**
    - **Bad channel list, noise occupancy**
      - » **Monitoring bad channel count**
      - » **Monitoring register reads of one GTFE ("LATC Verify")**
  - **T&DF**
    - **Data integrity, transport errors, etc**
      - » **Monitoring EPU0 CPU junction temperature**

- **Calibration**
  - **Hot Perf, and Cold Perf calibrations have been acquired**
    - **Data are being analyzed**
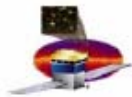 - **Pre-TVAC calibration constants are in use for ACD and CAL**
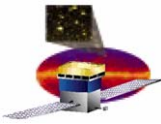
Script and test status

- ❑ **Liens against LAT CPT at PER**
  - – **LAT-23x (GRB Handling)**
    - • **No change.**
      - – **Tests existing FSW. Awaiting post-TVAC FSW delivery.**

- ❑ **Other script news and liens**
  - – **LAT-12x (Science Modes)**
    - • **Content**
      - – **Transition between Physics, TOO, ARR, SAA**
      - – **Test FSW safing of ACD HV**
    - • **Status**
      - – **First table-top held**

  - – **LAT-20x (Science Diagnostics)**
    - • **Content**
      - – **Select "Minimum Ionizing" and "Heavy Ion" on-board filters**
    - • **Status**
      - – **Test case is implemented**
      - – **Awaiting post-TVAC FSW delivery**
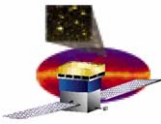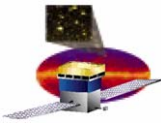
TVAC test operations

Test timeline

LAT Thermal-Vacuum Test Timeline

**Instrument Functional Tests**

4
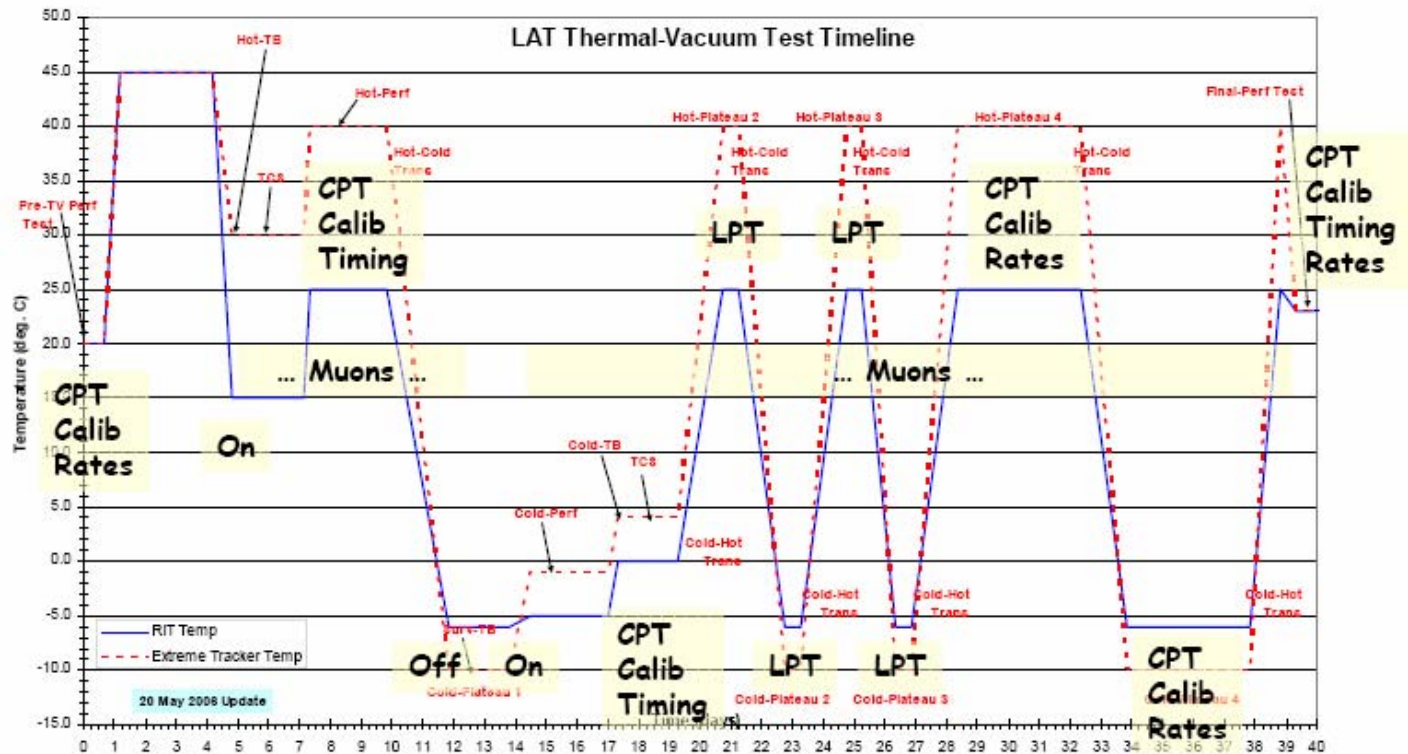
Saving time in TVAC

❑ **Calibration at Hot Plateau #4 can be safely skipped**
- **How much time would this save?**
  - **~15 hours, based on Cycle 1 run times**
- **Why is this ok?**
  - Detector temperatures at Hot are similar to room temp
    - So calibration constants are similar to room temp
  - We *will* calibrate at Cold Plateau #4
  - We *will* calibrate after TVAC at room temp when door is open

❑ **Move High-Rate tests (LAT8xx) from Hot and Cold #4 to #3**
- **How much time would this save?**
  - **~6 hours (3 hrs at each temp), based on pre-TVAC baseline**
- **Why is this ok?**
  - Purpose of test is design verification at temperature
  - Plateau soak times are 6 hrs of LPT + 6 hrs of muons
  - Replaces muon run with muon + pulser run
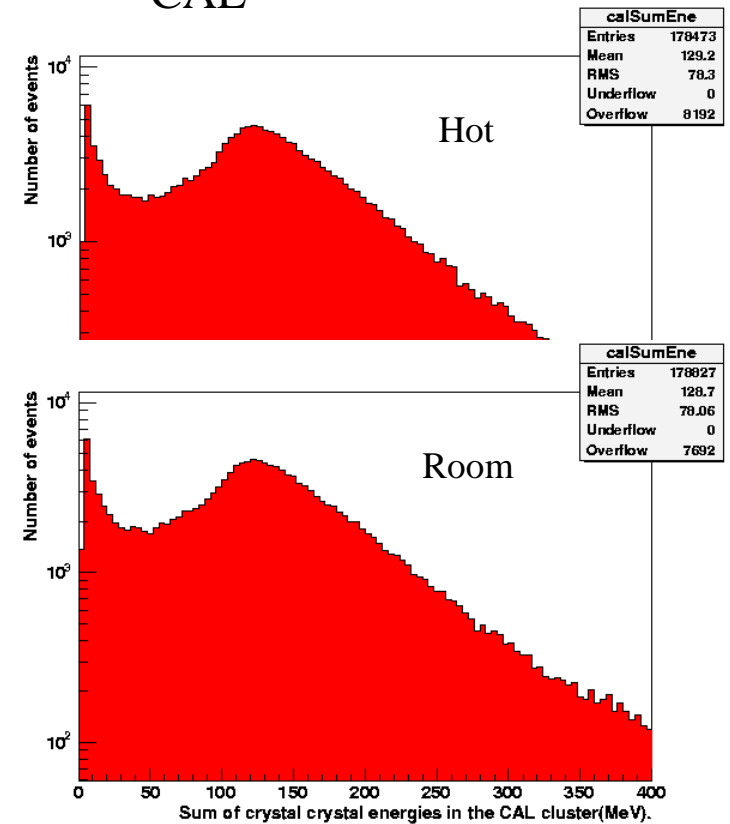   - No loss of information
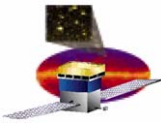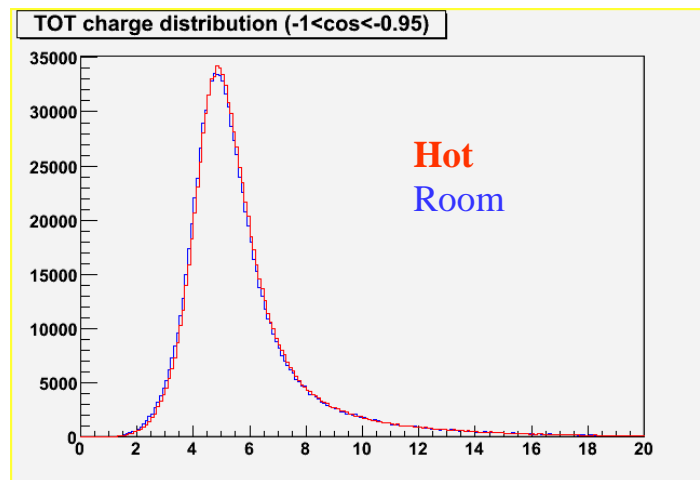
Comparing hot and room calibrations
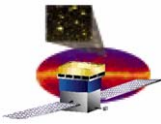
❑ **Muon peak is stable against this small ΔT**

CAL

ACD
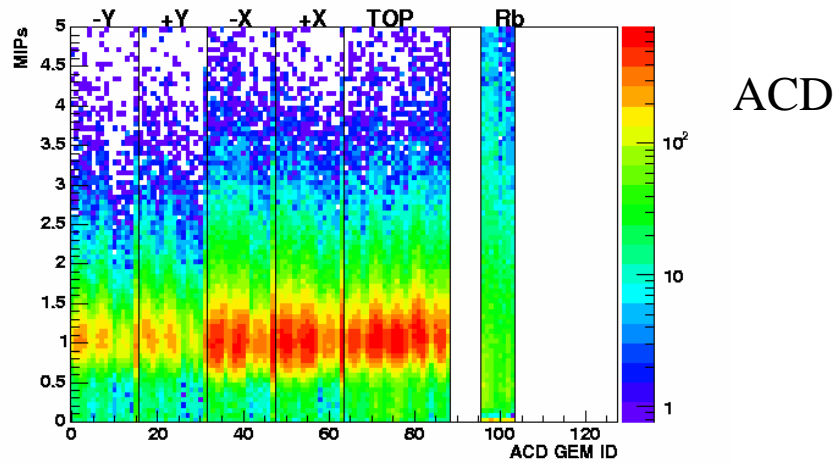
TKR

TVAC as LEO demo

❑ **Using TVAC as Launch and Early Ops demo**

– **LEO settings are based on pre-launch calibrations**

– **ACD and CAL have significant variation of pedestals & thresholds with temperature**

• **With wrong thresholds, trigger rate and data volume can run away**

– **TVAC settings have ACD and CAL thresholds safely above trends**

• **ACD zero supp ~ 3 × flight setting, but still ~0.1 MIP**
• **CAL zero supp ~ 2 × flight setting, but still ~0.3 MIP**

– **LAT data at Hot and Cold clearly demonstrate that LAT can be operated perceptively on orbit at first power-up with "safe" thresholds.**