Gamma-ray Large Area Space Telescope

GLAST Large Area Telescope:

LAT System Engineering

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Topics

- **Meeting goals**
  - **Review action items**
  - **Gain a common understanding of "calibration"**
  - **Review LAT "Turn-on" Test**
- **Team Goals**
  - **Define test requirements necessary through December**
    - **Tracker and Cal post delivery tests**
    - **Cal tests post integration with TEM and TEM/PS**
    - **Tower integration tests**
    - **Multi tower tests (without 'final' flight software)**
    - **Third layer boxes tests as necessary**
  - **Testing with next delivery of flight software, all third layer boxes and ACD will be defined in the next phases**
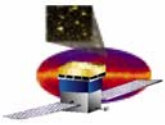
LAT Non-Science Tests

- **The following tests will be included in the LPT and CPT to demonstrate LAT functionality as we go through the integration and environmental test sequence**
  - **Verify signals on every wire**
  - **Verify every command path**
  - **Verify every telemetry path**
  - **Verify power consumption**
- **These tests are likely covered by the FSW or DAQ test sequences, but we may have to augment those tests**
- **Implies repeat of tests (or subset) in various redundancy configurations**
  - **The challenge is to come up with the minimum redundancy combinations that covers all paths**
- **The next charts defines a "turn-on" test and a power consumption test as examples**

LAT Turn-on Test

- Test Definition
    - Turn on the LAT in a sequence that simulates the on-orbit turn on sequence. Verify that the telemetry from each component shows expected voltages and currents based on subsystem test. Verify all associated status telemetry. Repeat with alternate redundancy configurations sufficient to check all active components.
        - Potentially related to two other tests, DAQ test "Power Distribution Unit voltage sequencing test" and FSW test "FSW and LAT Initialization"

- Additional definition required
    - LAT turn on sequence
    - Others?

- Discussion of implementation
    - Implies baseline voltages and currents are taken from subsystem data packages and folded into procedures or scripts
    - Plots are an effective way to present this information - what capabilities are planned?
    - Expect that problem resolution may require
        - replay (or replot) of telemetry
        - Correlate command log to telemetry and LAT current consumption
    - Is there a high voltage command lockout?
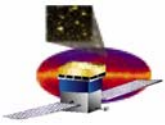
LAT Power Consumption Test

- Test Definition
  - Measure power consumption of subsystems by turning each subsystem on and observing the delta in external power supply current. Confirm that LAT telemetry is consistent with the external measurements.
    - May be related to DAQ tests
- Additional definition required
  - How many modes of the subsystems are to be tested
  - Others?
- Discussion of implementation
  - Implies ability to observe LAT current consumption with sufficient precision to observe the lowest power consuming component