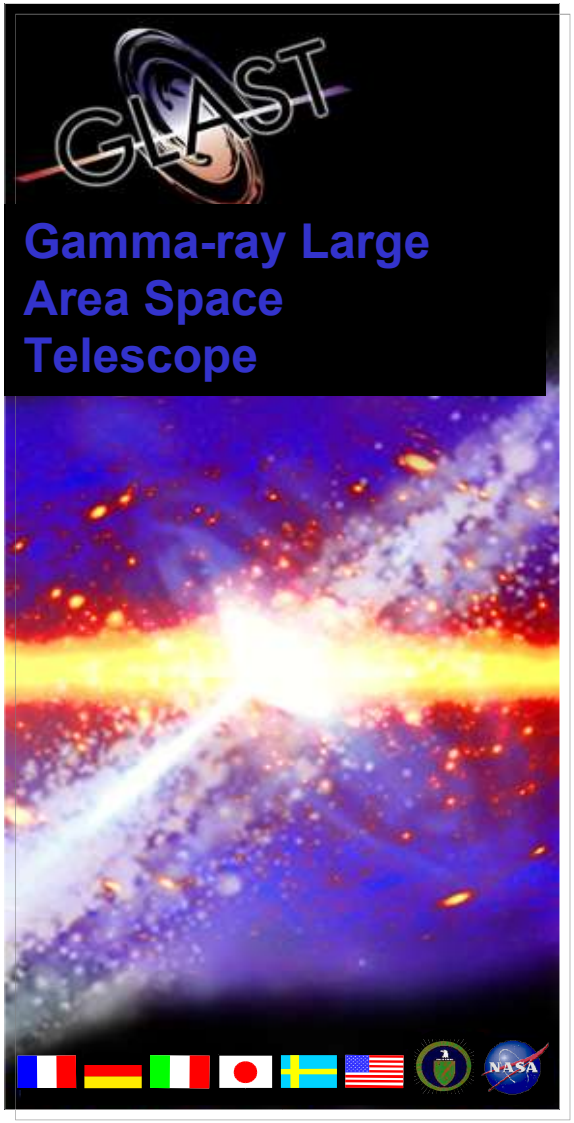

Summary of Current Understanding of CAL Retriggering

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What we know about CAL retriggering?

Previous presentations available on line:

- http://www-glast.slac.stanford.edu/IntegrationTest/SVAC/Instrument_Analysis/ /06242005/CAL_retrigger_study_with_SLAC_data.pdf
- http://www-glast.slac.stanford.edu/IntegrationTest/SVAC/Instrument_Analysis/ /06102005/CAL_retrigger_study.pdf
- http://www.slac.stanford.edu/exp/glast/trigger/meetings /050615/sasha/Run_135001500_CAL_ReTrg.pdf

Summary

- What is CAL "retriggering"?
  - A false trigger (i.e. no genuine energy deposition in CAL) occurring within 150μs after previous trigger
- Under what conditions?
  - FLE or FHE must be set very low
    - FLE below ~10 MeV, FHE below ??
  - Retriggering has never been seen with flight trigger thresholds
    - FLE = 100 MeV, FHE = 1 GeV
- Cause:
  - Crosstalk from event data transmission between TEM and GASU into the GCFEs in CAL
    - Signature: histograms of gemDeltaEventTime show strong, narrow peaks at multiples of 132 ticks (6.6 μs), which is the time for transmission of 1 data cell from TEM to GASU
  - Retriggering rate is correlated with number of bits set to 1 in the event ID
    - Causes significant periodic variations of event rate (by factor of ~5) at long time scales (~ 10 minutes in few-tower muon data)