

Calorimeter

Calorimeter Wiki Web Space

CAL Data Monitoring

Crystal recon needs status bits to document failures, exceptional configurations, and exceptional status of the xtal energy and position reconstruction. This work began with the July 2010 channel failure, but it has continued for Pass 8. See [?Crystal Recon Design Description XtalRec](#) for details.

CAL Data Monitoring

- Recon needs to contain code to mitigate against electronic or optical failures in CAL.

See [CAL July 2010 channel failure](#) for a first example and its mitigation. ⓘ Note that this page is preserved for documentation only. The Pass 8 definition and functionality of failure mitigation is defined in the [?Crystal Recon Design Description XtalRec](#) page.

CAL Data Monitoring

- I (Grove) have sent around a number of email messages about [?CAL Data Monitoring](#). I've tried to collect them in confluence at [\[CAL Data Monitoring|CAL L:CAL Data Monitoring\]](#) so they're more readily accessible in the future.

CAL Integration and Test

- [Acceptance Test Data Package](#) of CAL flight modules

	Date		Name		Summary	
06/07/2004 (Instrument Analysis Workshop #1)	A. Chekhtman	[Calibration of energy and position measurement in CAL](#)				
09/27/2004 (Instrument Analysis Workshop #2)	M. Strickman	[How Does Calibration Flow Through the New Single CDE CalRecon and CalDigi?](#)				
09/27/2004 (Instrument Analysis Workshop #2)	E. Grove	[CAL Calibration Data Sources During Assembly, Integration and Test](#)				
09/27/2004 (Instrument Analysis Workshop #2)	A. Chekhtman	[CAL crosstalk issues and their Implications](#)				
09/27/2004 (Instrument Analysis Workshop #2)	B. Lott	[Imaging crystals with TKR](#)				
09/27/2004 (Instrument Analysis Workshop #2)	A. Makeev	[Light collection non-uniformity near the end of crystal](#)				
03/10/2005 (Instrument Analysis Workshop #3)	Z. Fewtrell	[CAL Calibration Software](#)				
03/10/2005 (Instrument Analysis Workshop #3)	D. Smith	[Recon at the Single Crystal Level](#)				
03/10/2005 (Instrument Analysis Workshop #3)	B. Lott	[A first glance at the Tkr + Cal data](#)				
07/14/2005 (Instrument Analysis Workshop #4)	D. Smith	[Stability of the CAL Calibrations](#)				
07/14/2005 (Instrument Analysis Workshop #4)	A. Chekhtman	[Shaped Digital Readout Noise in CAL](#)				
07/14/2005 (Instrument Analysis Workshop #4)	E. Nuss	[TKR tracks, CAL tracks and Crystal Maps](#)				
07/14/2005 (Instrument Analysis Workshop #4)	Z. Fewtrell	[GLAST Calorimeter Crystal Position Measurement](#)				
07/15/2005 (Instrument Analysis Workshop #4)	A. Chekhtman	[Summary of Current Understanding of CAL Retriggering](#)				
08/29/2005 (Instrument Analysis Workshop #5)	F. Piron / E. Nuss	[Comprehensive review of CAL calibrations](#)				
02/24/2006	F. Piron / E. Nuss	[24 Feb 06 Trending Report](#)				
02/27/2006 (Instrument Analysis Workshop #6)	D. Smith	[Testing some CAL Specs](#)				
02/27/2006 (Instrument Analysis Workshop #6)	F. Piron / E. Nuss	[Trending CAL performance and mapping crystals](#)				
02/27/2006 (Instrument Analysis Workshop #6)	A. Chekhtman	[CAL Features and Idiosyncrasies](#)				
02/28/2006 (Instrument Analysis Workshop #6)	J. Dai	[CAL LE trigger behavior for short and long track events](#)				
02/28/2006 (Instrument Analysis Workshop #6)	E. do Couto e Silva	[Testing CAL LE and CAL HE triggers with muons and photons](#)				
02/28/2006	B. Giebels	[Range selections in B30](#)				
03/29/2006	B. Giebels	[LAT701 Run](#)				

Papers:

- 207th AAS (Jan 2006): "Production, Calibration and Environmental testing of the GLAST/LAT CsI Calorimeter Flight Modules" ([poster](#))
- 1st GLAST Symposium (Feb 2007): "Performance of the Calorimeter of the GLAST Large Area Telescope" ([poster](#), [proceedings](#))

CAL in LAT Calibration Unit

- [Beam Test 2006](#) and [CAL calibrations](#)

	Date		Name		Summary	
11/14/2006 (Beam Test Workshop #4)	P. Bruel	[Update on calorimeter studies](#)				
11/14/2006 (Beam Test Workshop #4)	B. Lott	[Longitudinal profiles](#)				
11/14/2006 (Beam Test Workshop #4)	A. Chekhtman	[Status of CAL calibration](#)				
11/14/2006 (Beam Test Workshop #4)	B. Giebels	[Calibration with pions in SPS](#)				
11/15/2006 (Beam Test Workshop #4)	J. Conrad	[Update on CAL FHE study](#)				
03/27/2007 (LAT collaboration meeting - GSFC)	P. Bruel	[Beam tests and Energy measurement](#)				
03/27/2007 (LAT collaboration meeting - GSFC)	A. Chekhtman	[Lessons learned from CAL calibrations](#)				

CAL GCR Calibration

- [ISOC Calibration Sequence Page](#) || Date || Name || Summary ||

07/15/2005 (Instrument Analysis Workshop #4) | B. Lott | [News Flash from Darmstadt](#) |

10/17/2005 | M. Strickman | [17 Oct 05 GCR Meeting Notes](#) |

11/02/2005 | M. Strickman | [2 Nov 05 GCR Meeting Notes](#) |

11/16/2005 | M. Strickman | [16 Nov 05 GCR Meeting Notes](#) |

12/07/2005 | M. Strickman | [GCR Calibration Flow](#) |

12/07/2005 | M. Strickman | [7 Dec 05 GCR Meeting Notes](#) |

12/14/2005 | M. Strickman | [14 Dec 05 GCR Meeting Notes](#) |

01/20/2006 | C. Lavalley | [GCR Calibration s/w Specifications](#) |

01/10/2006 | M. Strickman | [10 Jan 06 GCR Meeting Notes](#) |

01/24/2006 | M. Strickman | [25 Jan 06 GCR Meeting Notes](#) |

02/01/2006 | M. Strickman | [01 Feb 06 GCR Meeting Notes](#) |

02/28/2006 (Instrument Analysis Workshop #6) | M. Strickman | [Calibrating the CAL in Flight: Galactic Cosmic Ray Calibration](#) |

03/01/2006 | M. Strickman | [Feb 06 IA Wrkshp-DC2 Kickoff GCR Calib Notes](#) |

03/09/2006 | M. Strickman | [Sasha Inflight Calibration Additions](#) |

03/29/2006 | M. Strickman | [29 Mar 06 GCR Meeting Notes](#) |

04/11/2006 | M. Strickman | [11 Apr 06 NRL-OSU GCR Filter Telecon](#) |

04/12/2006 | M. Strickman | [GLEAM Particle ID Notes](#) |

04/12/2006 | M. Strickman | [12 Apr 06 GCR Calib Meeting Notes](#) |

05/03/2006 | M. Strickman | [3 May 06 GCR Meeting Notes](#) |

05/17/2006 | M. Strickman | [17 May 06 GCR Meeting Notes](#) |

06/21/2006 | M. Strickman | [21 June 06 GCR Meeting Notes](#) |

09/21/2006 | M. Strickman | [21 Sept 06 GCR Meeting Notes](#) |

09/25/2006 (C&A meeting) | M. Strickman | [GCRCalib status](#) |

10/04/2006 (core s/w meeting) | C. Lavalley | [GCRCalib package status](#) |

10/10/2006 | F. Piron | [10 Oct 06 GCR Meeting Notes](#) |

10/24/2006 | F. Piron | [24 Oct 06 GCR Meeting Notes](#) |

11/07/2006 | F. Piron | [7 Nov 06 GCR Meeting Notes](#) |

11/21/2006 | F. Piron | [21 Nov 06 GCR Meeting Notes](#) |

01/31/2007 | F. Piron | [31 Jan 07 GCR Meeting Notes](#) |

03/28/2007 | F. Piron | [28 Mar 07 GCR F2F Meeting Notes](#) |

05/22/2007 | F. Piron | [22 May 07 GCR Meeting Notes](#) |

06/12/2007 | M. Strickman | [12 June 07 GCR Meeting Notes](#) |

06/26/2007 | M. Strickman | [26 June 07 GCR Meeting Notes](#) |

07/24/2007 | M. Strickman | [24 July 07 GCR Meeting Notes](#) |

08/03/2007 (LAT collaboration meeting - SLAC) | A. Chekhtman | [CAL thresholds calibration on orbit](#) |

08/03/2007 (LAT collaboration meeting - SLAC) | F. Piron | [CAL energy scale calibration \(using GCRCalib\)](#) |

08/28/2007 | F. Piron | [28 Aug 07 GCR Meeting Notes](#) |

09/25/2007 | M. Strickman | [25 Sept 07 GCR Meeting Notes](#) |

10/09/2007 | M. Strickman | [9 Oct 07 GCR Meeting Notes](#) |

10/23/2007 | M. Strickman | [23 Oct 07 GCR Meeting Notes](#) |

11/06/2007 | M. Strickman | [6 Nov 07 GCR Meeting Notes](#) |

12/04/2007 | M. Strickman | [4 Dec 07 GCR Meeting Notes](#) |

01/15/2008 | M. Strickman | [15 Jan 08 GCR Meeting Notes](#) |

01/29/2008 | M. Strickman | [29 Jan 08 GCR Meeting Notes](#) |

02/12/2008 | M. Strickman | [12 Feb 08 GCR Meeting Notes](#) |

02/19/2008 | M. Strickman | [19 Feb 08 GCR Programmer Meeting Notes](#) |

02/26/2008 | M. Strickman | [26 Feb 08 GCR Meeting Notes](#) |

03/04/2008 | [04 Mar 08 GCR Meeting Notes](#) |

03/09/2008 (Ops Sim 2) | F. Piron | [CAL GCR calibration](#) |

03/18/2008 | M. Strickman | [18 Mar 08 GCR Meeting Notes](#) |

03/25/2008 | [25 Mar 08 GCR Meeting Notes](#) |

04/01/2008 | [01 Apr 08 GCR Meeting Notes](#) |

04/08/2008 | [08 Apr 08 GCR Meeting Notes](#) |

04/15/2008 | [15 Apr 08 GCR Meeting Notes](#) |

04/22/2008 | [22 Apr 08 GCR Meeting Notes](#) |

04/29/2008 | [29 Apr 08 GCR Meeting Notes](#) |

05/06/2008 | [06 May 08 GCR Meeting Notes](#) |

05/20/2008 | M. Strickman | [20 May 08 GCR Meeting Notes](#) |

05/28/2008 | M. Strickman | [28 May 08 GCR Meeting Notes](#) |

06/10/2008

* Zach: Final stages of producing initial flight calibrations including crosstalk corrections, etc.

* Fred: Working on L&EO timeline for calibration. Redoing ion rate plots layer by layer

* Berrie: Berrie, David, Zach, Sasha working on adapting David's LAC calibration model for NomSciOps data - about done. Next is FLE

* Elliott: Yvonne needs to redo energy deposit study vs angle, energy with new MC (including LPM, etc)

06/17/2008

* Berrie points out that being able to "join" AFEE temps and other calibration information would be desirable. He will look into this @ SLAC

* Fred will submit sims to Zach's requirement to SLAC or Lyon pipeline

* Fred asks who is responsible for validating filter performance during L&EO? Fred will send a note to Richard Hughes and Eric Grove about this

06/24/2008

- * Simulations for proton/interrange testing
- * Status
- ** Zach
- *** knee deep in proton interranger calibration code
- **** currently building new app utilizing existing Muon & GCR calib code
- **** Took some work, but now we have appropriate simulation code - intend to run existing GCR calib code on the new sim.
- ** Sasha
- ** Fred
- ** Berrie
- ** Philippe <ftp://ftp-glast.slac.stanford.edu/glast.u33/bruel/mipcalibration/>
- ** Others

07/01/08

- * Summaries of analyses and plans for the next week

Calorimeter

- * [Protons and ions in calibOps data](#) (Fred)
- * [LAC and Pedestals, run 0236511638](#) , [New pedestals validation](#) - David S.
- ** first look at CAL charge injection run 236331283 - calibGen_flt [Sasha](#),
- * Zach
- ** initial analysis & delivery of FLE/FHE calibration for SciOps data
- ** calibration of ULD thresholds, yet to be delivered, looks ok so far
- ** calibGen (IntNonlin) analysis, ongoing
- * Berrie
- * Philippe
- * Elliott
- * Others

- * Proton/Interrange vs GCR

07/15/08

Status and Plans:

- * Sasha
- ** [CAL proton energy scale calibration \(LE diodes only\)](#)
- ** [CAL complete proton/interrange energy scale calibration](#)
- ** [pointing mode temperature pedestal drift](#)
- ** [CAL pedestals drift at stable AFEE temperature](#)
- ** [CAL thresholds calibration on orbit](#)
- ** [explanation of event excess at low GemDeltaEventTime](#)
- * Zach
- * [MIP proton peak in calibOps_eng10ps25 runs](#) (Fred)
- * [Monitoring the CAL with Data Quality Monitoring pages](#) (Veronique)
- * Philippe
- * Elliott, etc
- * Berrie, etc

07/22/08

Status and Plans:

- * Sasha
- * Zach
- * Fred
- * Berrie
- * Philippe
- * Others

07/29/08

Status and Plans:

- * Sasha
- * Zach
- * [Carbon events and ACD top tiles](#) (Fred)
- * [A closer look at the carbon peak](#) (Fred)
- * Berrie
- * Philippe
- * Others

08/05/08

- * Sasha - Update on position measurement
- * Zach
- ** currently working on calibGenCAL GCR, adding asymmetry calibration to GCR code
- ** still pushing TriggerAlg updates through GR CCB
- ** intNonlin analysis, nomSciOps trigger threshold fitting on back burner
- * Fred
- * Luca, etc - [CAL data monitoring discussion](#)
- * Berrie
- * Philippe
- * Others

08/12/08

- * Sasha
- ** [recommendations on CAL monitoring plots](#)
- * Zach
- * Fred
- * Luca, etc (CAL monitoring follow-up)
- * Berrie
- * Philippe
- * Others

08.26.08

- * Sasha
- ** Asymmetry calibration
- * Andrey
- ** Status of new GCR simulations with MC truth info
- * Berrie
- ** [LAC monitoring with DQM plots](#)
- * Fred
- * Others

09.02.08

- * Sasha
- * Zach
- * Andrey
- ** Status of new GCR simulations with MC truth info
- * Fred
- * Berrie,David

- * Others

09.30.08

- * Sasha
- * Andrey
- * Fred
- * Berrie,David
- ** [LAC,FLE,FHE monitoring](#)
- * Others
- * NOTES
- ** Berrie et. al. will do long term monitoring of threshold and LAC settings
- ** Fred et. al. will do energy calibration monitoring using GCR
- ** Suggestion that monitoring processes highlight new outliers
- ** In GCR monitoring, we need to determine correct tradeoff between peak width (i.e. more stringent cuts) and statistics (less stringent cuts)
- ** Sasha will be Zach's replacement as contact for threshold settings questions, deliveries, etc.

10.07.08

- * Sasha
- ** Status of discrepancy between on-board and off-line energy
- ** Status of implementation of on-orbit calibration in pipeline
- ** Possible collaboration with Russian groups for further beam calibrations
- * Andrey
- * Fred
- ** GCRCalib in GR system tests: [number of hits and path-length, pseudo Z](#)
- * Berrie,David [LACLAC_zoomFLE, FHE](#)
- * Others

10.21.08

- * Sasha
- * Andrey
- * Fred
- * Berrie,David
- * Others

11.04.08

- * Sasha
- * Andrey
- * Fred: introduction on [CAL calibration monitoring with GCRs](#)
- * Berrie,David [LAC,FLE,FHE and now PED monitoring](#)
- * Yvonne [ppt\^BeamTest Analysis Update 102308.ppt||\](#)
- * Others

11.18.08

- * Sasha
- * Andrey
- * Fred
- * Berrie,David
- * Yvonne [high_energy_electrons_ppt](#)
- * Others

12.02.08

- * Sasha
- * Andrey
- * Fred
- * Berrie,David
- * Yvonne, etc.
- * Others

01.27.09

- * Sasha
- * Andrey
- * Fred: new [text](#) and plots ([fig1](#), [fig2](#)) for the LAT on-orbit calibration paper
- * Berrie,David monitoring plots [update](#)
- * Yvonne, etc.
- * Others

02.10.09

- * Sasha
- * Andrey
- * Berrie,David, [ped deviation](#)
- * Yvonne, etc.
- * Others

02.24.09

- * Sasha
- * Andrey
- * Berrie,David
- * Yvonne, etc.
- * Others

03.10.09

- Sasha
- Andrey
- Berrie,David
- Yvonne, etc.
- Others

03.24.09

- Sasha and Eric
 - [CAL performance near nominal temperature](#)
 - [CAL trending plots for quarterly review](#)
 - [fitting of GCR peaks](#)
- Andrey
- Berrie,David [monitoring](#)
- Yvonne, etc.
- Others

04.21.09

- Sasha
 - [CAL trending](#)
- Andrey
- Berrie,David
- Yvonne, etc.
- Others

05.05.09

- Sasha
 - [Plan to improve CAL absolute energy scale calibration](#)
 - [Cal trending plots](#)
- Fred
- Andrey
- Berrie,David
- Yvonne, etc.
- Others

28 July 09

- Sasha
 - Status of LCI acquisition and analysis
 - Status of large-angle CR calibration analysis
- AOB?

17 November 09

- Sasha

- [Status high incident angle heavy ion analysis](#)
- AOB?

29 December 09

- Sasha
 - [Status high incident angle heavy ion analysis](#)
- AOB?

Papers:

- D. Bedereade et al., "Performance of the Csl(Tl) detector element of the GLAT calorimeter", NIM A 518, 15-18 (2004)
- O. Ferreira et al., "Environmental tests of the GLAST validation module calorimeter", [NIM A 530, 323-329 \(2004\)](#)
- B. Lott et al., for the GLAST collaboration, "Response of the GLAST LAT calorimeter to relativistic heavy ions", NIM A 560, 395 (2006) ([pdf](#))
- 1st GLAST Symposium (Feb 2007): "Heavy ion beam tests for the preparation of the LAT on-orbit calibration" ([poster](#))
- ICRC Conference (July 2007): "In-flight calibration of the GLAST Large Area Telescope calorimeter" (poster [pdf](#), [ppt](#), [proceedings](#))

L&EO Meetings

|| Date || Link ||

06.28.2008	EVO meeting
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CAL Energy Reconstruction Methods

|| Date || Name || Summary ||

03/25/2005	B. Giebels	Recon Algs extensions
10/17/2005 (note)	P. Bruel	Energy reconstruction at high energy with the LAT
02/09/2006 (note)	P. d'Avezac	A Maximum-Likelihood Energy Reconstruction Method

CAL Mip Finder

|| Date || Name || Summary ||

08/08/2005 (C&A meeting)	F. Piron	CAL Mip Finder (update)
06/29/2006 (Beam Test Workshop #3)	F. Piron	CAL Mip Finder and residual background rejection
11/15/2006 (Beam Test Workshop #4)	F. Piron	Validation of CAL Mip Finder algorithm with CERN / PS proton data
03/26/2007 (LAT collaboration meeting - GSFC)	S. Guiriec	Mip Finder: Performances and Proton Rejection

Useful Tips

|| Date || Name || Summary ||

03/06/2005	Z. Fewtrell	Operation of Ideal gains
03/09/2005	D. Chamont	How to try Fuzzy Clustering
04/11/2005	M. Strickman	CalRecon and Digi Ideal Calibration Mode
11/05/2007	Z.Fewtrell	CalTuple documentation

CalRecon Refactoring

|| Date || Name || Summary ||

07/19/2005	D. Chamont	Pre-DC2 Refactoring Proposal
07/19/2005	T. Usher	Cal Restructuring Action Items

05/04/2005	T. Usher	CalRecon Data
03/09/2005	D. Chamont	CalRecon Algorithms
04/13/2005	D. Chamont	CalRecon Validation Script

Calorimeter Action Items in jira

key	summary	assignee	status
 Unable to locate Jira server for this macro. It may be due to Application Link configuration.			