

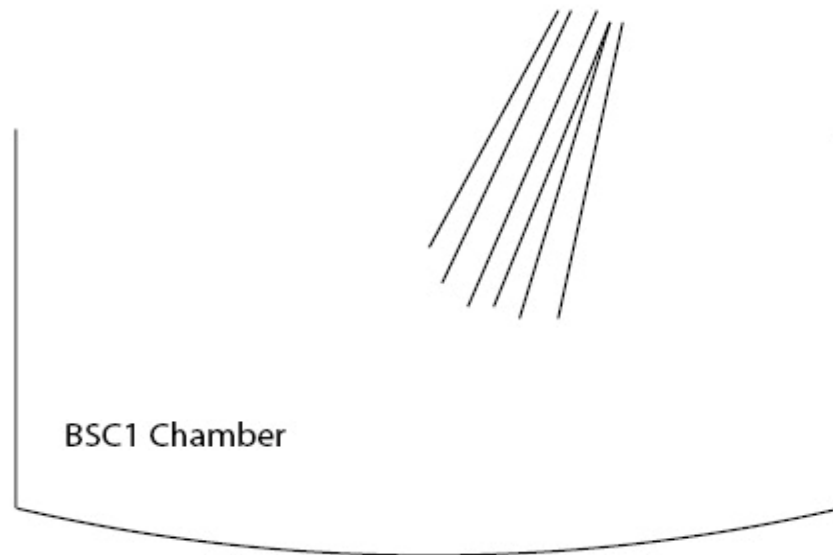
LHO Cosmic Rays in S5 - update

Ray. Frey, U Oregon

- Detector/readout description (brief)
- Data availability

Goal:

- Determine if any association between cosmic rays and GW channel
- Characterize (or constrain for AdL)
- Possible mechanisms:
 - Direct momentum transfer to TM - expected negligible for LIGO I
 - TM modes excitation (heat) - expected negligible for LIGO I
 - Perturbation of the electrostatic charge distribution on TM - ??
 - Rai Weiss, LIGO-T960137
 - V. Braginski, LIGO-G050457



S1, S2 : 31"x31"x1" plastic scintillator

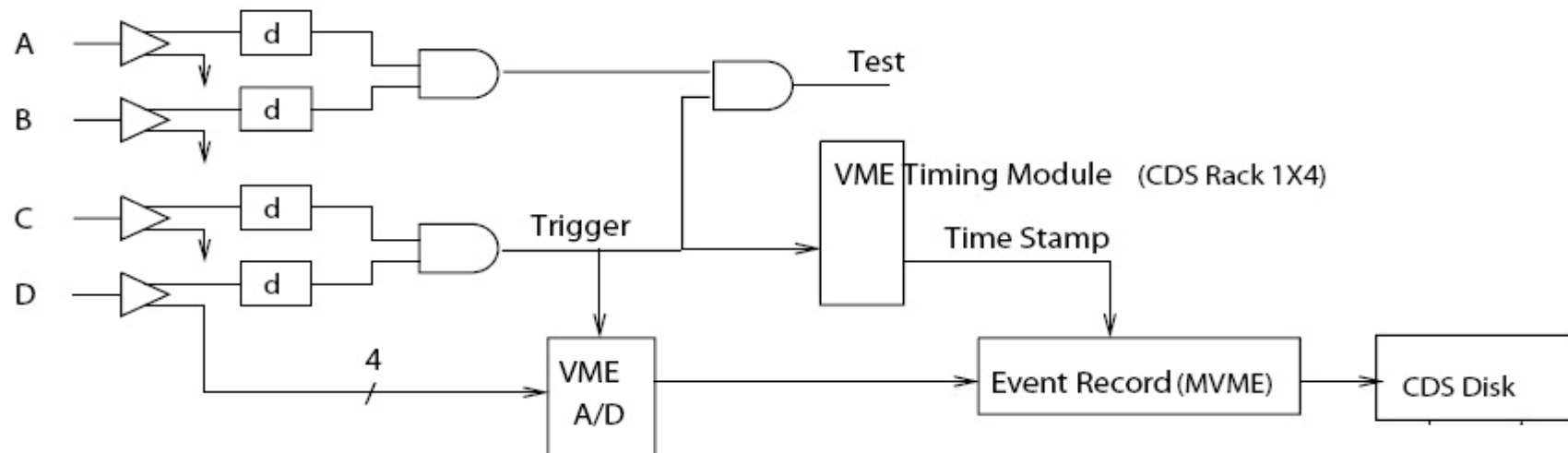
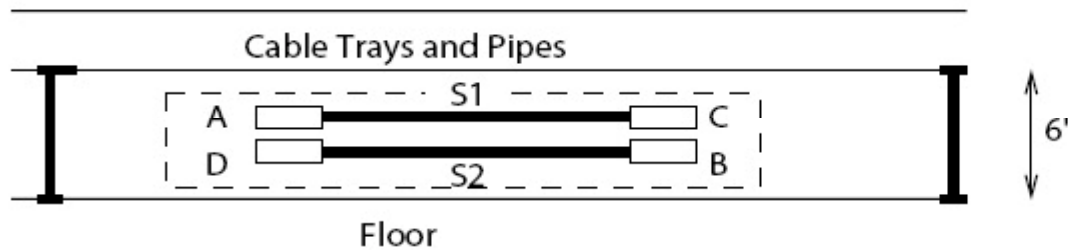
A, B : 10stage PMT (low gain)

C, D : 11stage PMT (high gain)

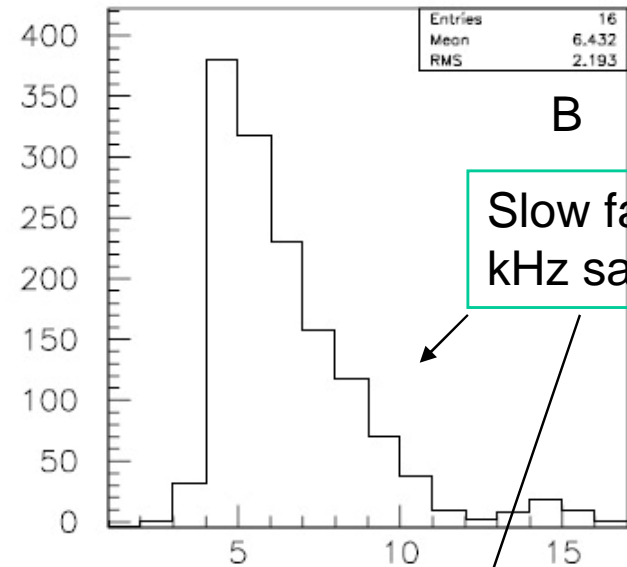
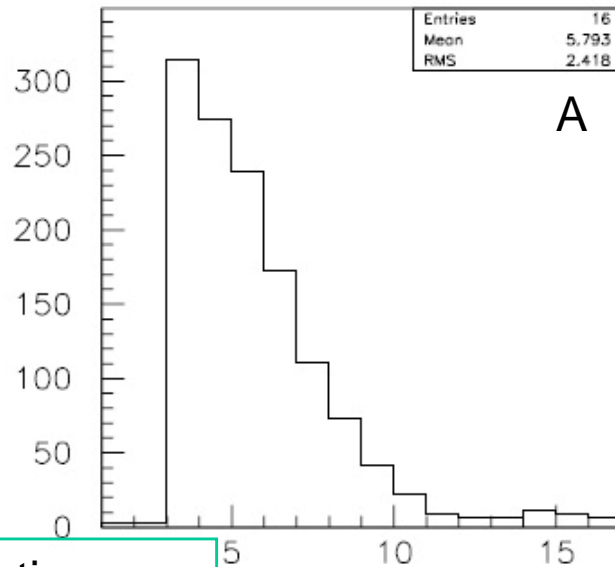
d : Discriminator/comparator

A/D : 3123 voltage sampling (80 kHz)

follows Q/V amp with ~10 us shaping

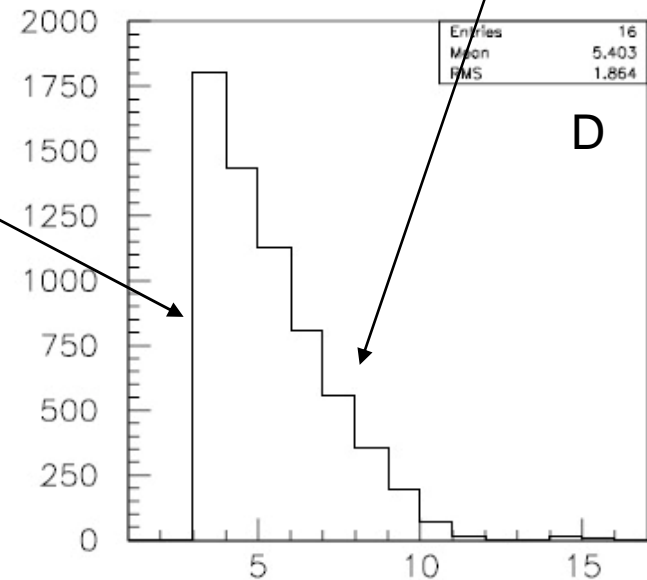
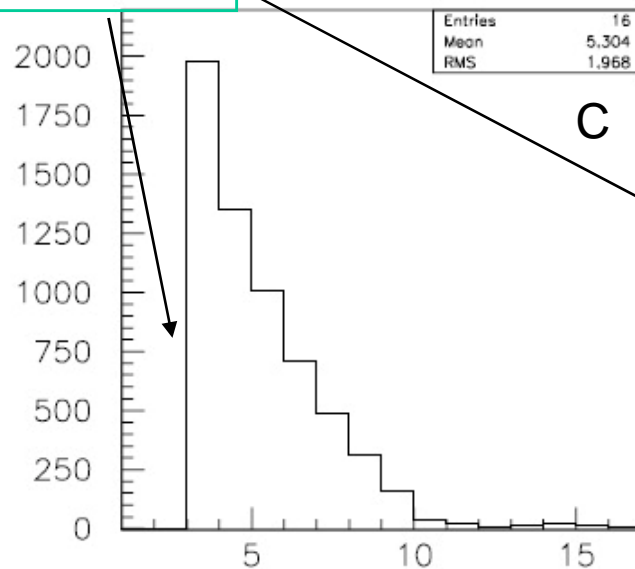


A typical CR event – pulse height vs time(sample)



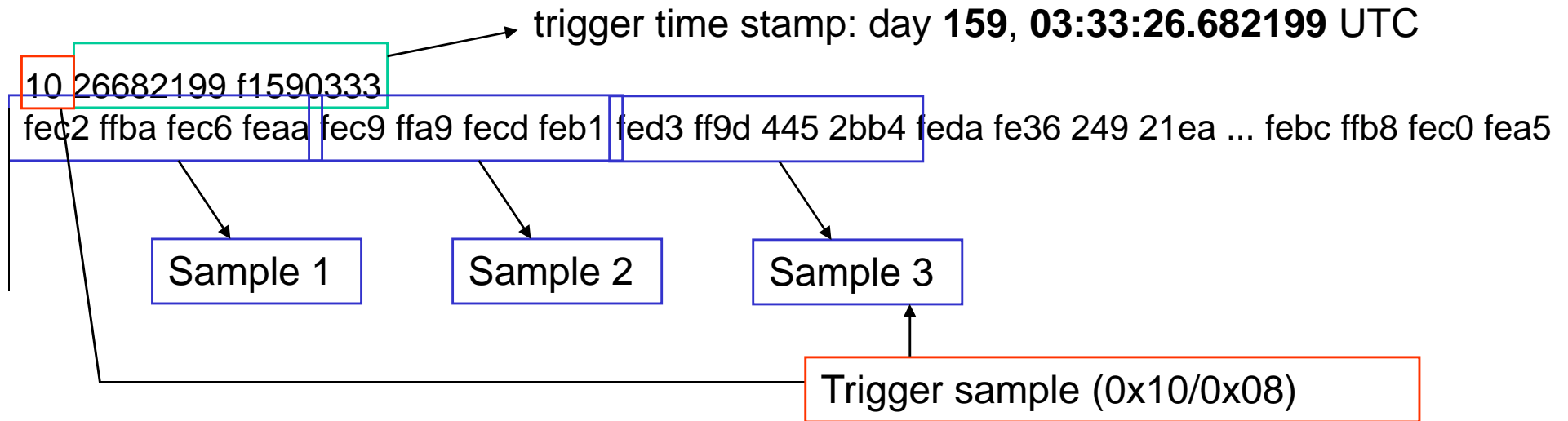
Fast rise \Rightarrow GPS time stamp (≈ 10 ns resolution)

Slow falloff (80 kHz sampling)

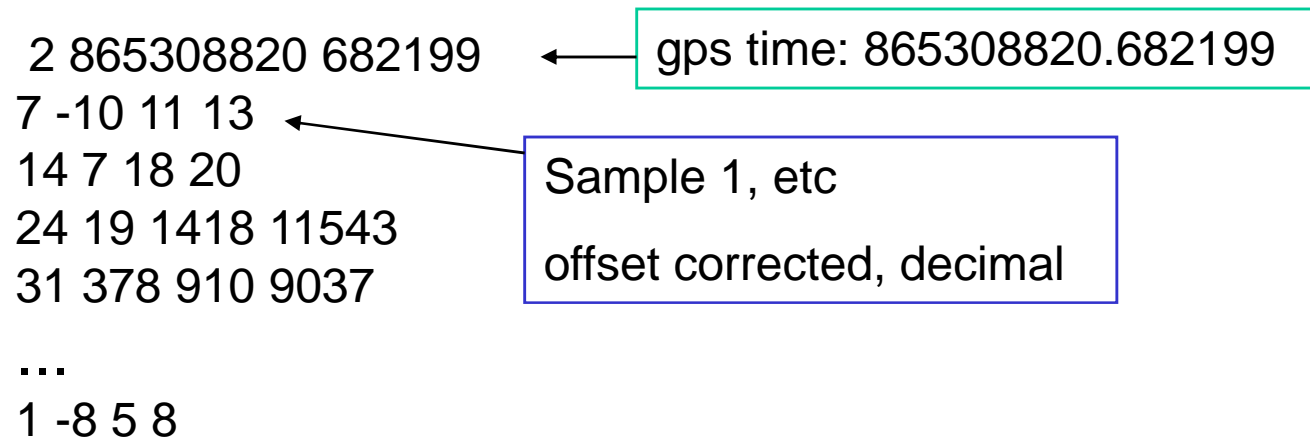


CR event data format

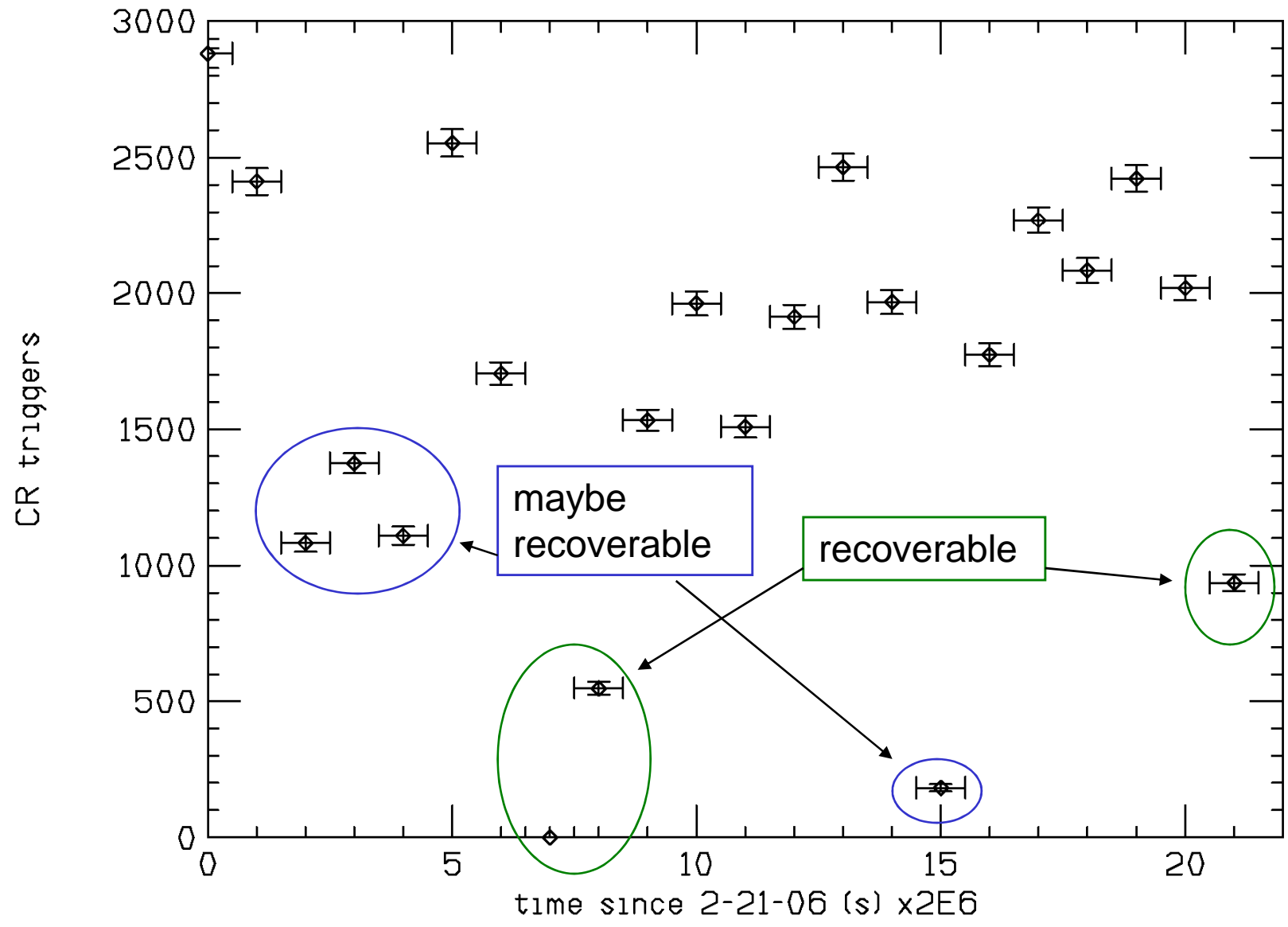
a raw event record:



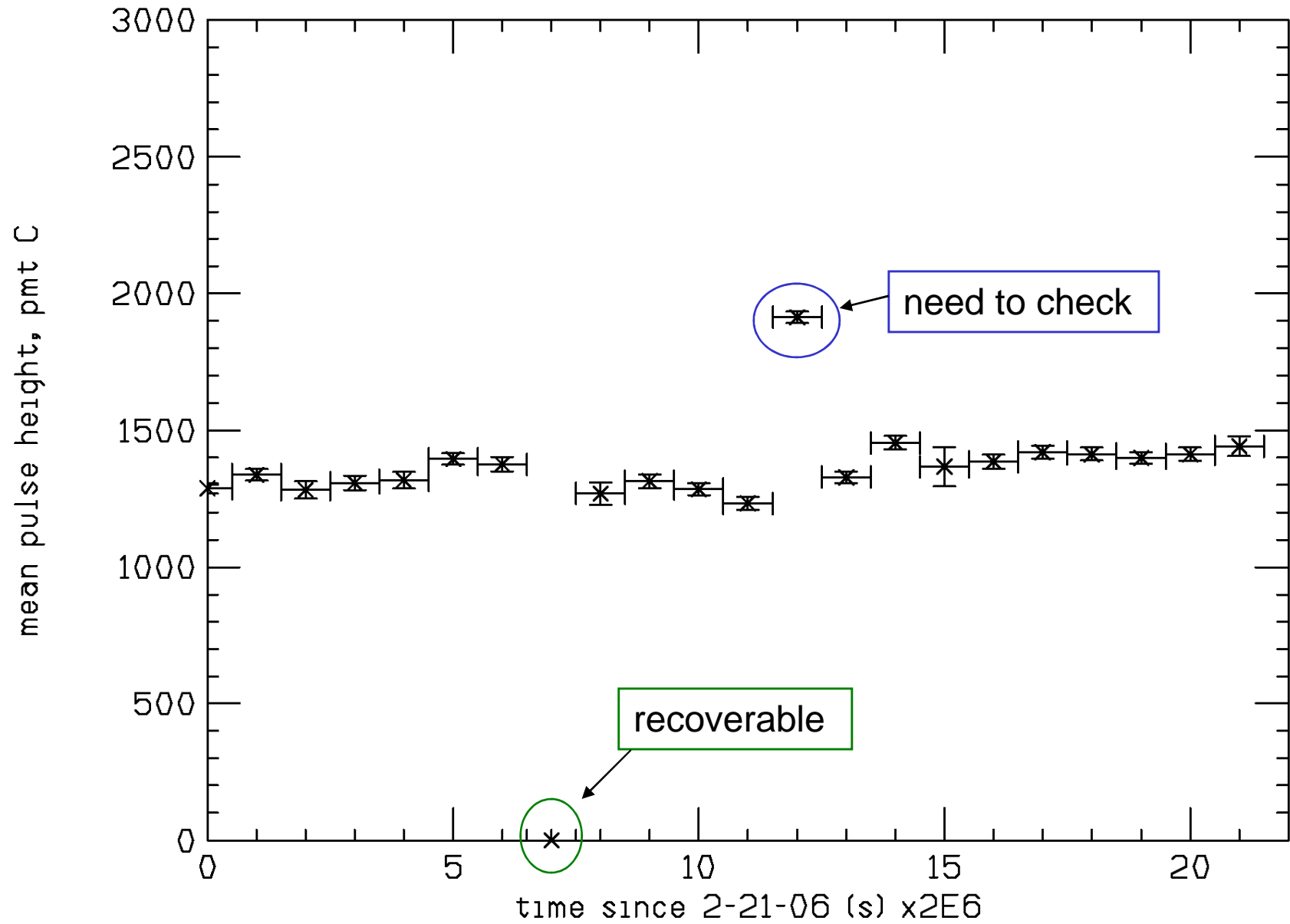
a pre-processed record:



Rate vs time: 2/06 – 6/07



average pulse height vs time (PMT C)



Data description and access

A web page includes a description of data and detector, and data access:

http://physics.uoregon.edu/~rayfrey/LIGO/cosmic/S5_data/CR_S5.html

an excerpt:

Data access/uploads

Most users will want to use the preprocessed data (for all the data) or the summary data.

period	preprocessed data	summary data	raw data
Feb 21, 2006 - July 25, 2006	CR2006A-p (3.1Mb)	2006A (1kb)	CR2006A (4.2Mb)
July 25, 2006 - Sep 12, 2006	(not yet available)		(not yet available)
Sep 12, 2006 - Dec 31, 2006	CR2006D-p (2.1Mb)	2006D (1kb)	CR2006D (3.0Mb)
Jan 1, 2007 - Jul 2, 2007	CR2007A-p (3.4Mb)	2007A (2kb)	CR2007A (4.7Mb)
Jul 2, 2007 -	(not yet available)		(not yet available)

↑
~100 most energetic events
→ DQ category 4 ?