Database - What are those variables?

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1 Overview

The information in the database is arranged into a series of tables, which group the data into based on where the data came from. For a list of tables currently available go to http://titus.physics.wisc.edu/cgi-bin/db.pl. Currently, there are 10 tables, 6 of these describe the tape information for each of our 6 data streams (crab, grb, mrk, save rec and smo[sun and moon]). The output from the monitor program is stored in the monitor table. The online status/error information is stored in the status table - this is basically the information you see when you click on the main daq page. This table can tell you the start and stop time of each subrun, and error and statistics information. Finally, the ems information is stored in tables separated by year, i.e. ems1999 holds the ems data from 1999 etc. If you have gone to the database webpage above you will notice that you can click on a table name and get to a list of the variables stored in that table. This is not particularly helpful, as the variable names can be somewhat obscure, and there is no explanation of what they are. The purpose of this memo is to describe the variables in each table of the database.

2 ems

Each piece of ems data is recorded at intervals of about 1-5 minutes where the interval between reads depends on the data being read. A database entry is made every 2.5 minutes, the value for each variable is the last one read before the 2.5 minute timestamp. This means that the entry in the database for a given variable may have been read as much as 2.5 minutes before the time given in the database. The advantage of doing this is that it makes the database much easier to maintain and use. We could put in an time offset variable if anyone feels than greater accuracy is necessary. These tables give a list of the variables available with a short description.

variable name	description (ems table)
wxit	Interior temperature (from weather station) (deg F)
wxot	Outside temperature (deg F)
wxws	Wind speed (mph)
wxrn	Rain (inches)
wxhm	Humidity (pcnt)
wxpb	Air pressure (inches Hg)

variable name	description (ems table)
pdepth	water depth in pond (cm)
pt4temp	pond temp. grid 25-15 (deg F)
pt2temp	pond temp. (deg F)
pbtemp	pub temp (deg F)
pt3temp	grid 24-15 (deg F)
chtemp	Counting house temp. (deg F)
da1temp	AS-1 digital temp. (deg F)
dmutemp	Muon Digital temp (deg F)
amutemp	Muon analogue temp. (deg F)
aa2temp	AS-2 analogue (deg F)
fbtemp	fastbus boards temp. (deg F)
da2temp	AS-2 digital temp (deg F)
aa1temp	AS-1 analogue temp (deg F)
lstemp	Laser shack temp. (deg F)
rateht	High threshold scaler rates (AS) (MHz)
ratehtm	High threshold scaler rates (MUON) (MHz)
ratelt	Low threshold scaler rates (AS) (MHz)
rateltm	Low threshold scaler rates (MUON) (MHz)
rawtr	Raw trigger rate (Hz)
gatedtr	Gated trigger rate (Hz)
deadtime	Deadtime (pcnt)
nrdead	Number of live but recently dead tubes
rdead	list of live but recently dead tubes
ndeadkn	Number of dead tubes - reason known
deadkn	List of dead tubes - reason known
ndeadukn	Number of dead tubes - reason unknown
deadukn	List of dead tubes - reason unknown
nrhot	Number of tubes recently hot, now ok
rhot	List of tubes recently hot, now ok
nhot200khz	Number of tubes with rate >200 Khz
hot200khz	List of tubes with rate >200 khz
nhot1mhz	Number of tubes with rate >1Mhz
hot1mhz	List of tubes with rate >1Mhz
powph1	Line Voltage (phase 1) (V)
powph2	Line Voltage (phase 2) (V)
powph3	Line Voltage (phase 3)(V)
lowva1	Not used
lowvb1	Not used
lowvc1	Not used
lowva2	Low Voltage Power Rack2 (AS-1) -5.2 V
lowvb2	Low Voltage Power Rack2 (AS-1) +5.0 V
lowvc2	Low Voltage Power Rack2 (AS-1) -5.0 V
lowva3	Low Voltage Power Rack3 (AS-2) -5.2 V
lowvb3	Low Voltage Power Rack3 (AS-2) +5.0 V
lowvc3	Low Voltage Power Rack3 (AS-2) -5.0 V

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variable name	description (ems table)
v00-v2f	High Voltage
i00-i2f	High Voltage current

3 Monitor

This table contains the output of the monitor program. The monitor program is automatically run once per hour.

variable name	description (monitor table)
utdate	UT date (yyyy-mm-dd hh:mm:ss)
fracSum	Average pmt occupancy (AS)
fracRMS	rms of pmt occupancy (AS)
twoEdgeSum	Average number of two edge hits (AS)
twoEdgeRMS	rms of number of two edge hits (AS)
fourEdgeSum	Average number of four edge hits (AS)
fourEdgeRMS	rms of number of four edge hits (AS)
fracSumMu	Average pmt occupancy (MU)
fracRMSMu	rms of pmt occupancy (MU)
2EdgeSumMu	Average number of two edge hits (MU)
2EdgeRMSMu	rms of number of two edge hits (MU)
4EdgeSumMu	Average number of four edge hits (MU)
4EdgeRMSMu	rms of number of four edge hits(MU)
nDead	Number dead, but not marked as dead (reason unknown)
dead	List of dead tubes (reason unknown)
nHiOcc	Number of tubes with high occupancy
hiOcc	List of tubes with high occupancy
fracHithiOcc	List of high occupancy values
nLoOcc	Number of tubes with low occupancy
loOcc	List of tubes with low occupancy
fracHitloOcc	List of low occupancy values
nFast2	Number of tubes with high 2-edge occupancy
fast2	List of tubes with high 2-edge occupancy
2EdgeHitsfast	List of high 2-edge occupancy values
nSlow2	Number of tubes with low 2-edge occupancy
slow	List of tubes with low 2-edge occupancy
2EdgeHitsslow	list of low 2-edge occupancy values
nFast4	Number of tubes with high 4-edge occupancy
fast4	List of tubes with high 4-edge occupancy
4EdgeHitsfast	List of high 4-edge occupancy values
nSlow4	Number of tubes with low 4-edge occupancy
slow4	List of tubes with low 4-edge occupancy
4EdgeHitsslow	list of low 4-edge occupancy values

variable name	description (monitor table)
nDead4	Number of tubes with 2-edge hits but NO 4-edge hits
dead4	List of tubes with 2-edge hits but no 4-edge hits
nBadEdge	number of tubes with too many edges per event
badEdge	list of tubes with too many edges per event
fracedge	List of average number of edges per event per tube
nNoCal	Number of tubes hit but not calibrated
NoCal	List of tubes hit but not calibrated
nBadChi	Number of tubes with bad mean TCHI
badChi	List of tubes with bad mean TCHI
tchiAve	List of values of bad mean TCHI per tube
nBadRMS	Number of tubes with large RMS on TCHI distribution
badRMS	List of tubes with large rms on TCHI distribution
tchibadRMS	List of values of large rms on TCHI per tube
fracfit	Fraction of events fit
deleo	Deleo (deg) - only deleo/2¡5 degrees included
rawstarttop	Mean start time (in TDC counts)of top layer pmts
rawstartbot	Mean start time (in TDC counts)of bottom layer pmts

4 Status

An entry is written to this table from the online for each subrun. It gives information such as the start and stop time, the number and type of errors and some statistics about the subrun(size, fracfit etc).

variable name	description (status table)
runNum	Run number
subRunNum	Subrun number
utdate	UT start time (yyyy-mm-dd hh:mm:ss)
utstop	UT stop time (yyyy-mm-dd hh:mm:ss)
cmpFlag	Compression flag?
recFlag	Reconstruction on?
dmaTransferRate	DMA transfer rate (Mbytes/s)
numEvents	Number of events
badEvt	Number of bad events
buffSynchErr	Number of buffer sync errors
buffSkipErr	Number of buffer skip errors
fbHeaderErr	Number of Fastbus header errors
wcError	Number of FSCC/DC-2 word count errors

variable name	description (status table)
gpsBCDErr	GPS BCD errors
gpsSeqErr	GPS sequencing errors
gpsMinErr	GPS/System clock errors (min)
gpsHourErr	GPS/System clock errors (hour)
gpsDayErr	GPS/System clock errors (day)
sockErr	Number of socket errors
arrayBounds	Array Bounds errors
Mbytes	Size of subrun (Mbytes)
fsccReset	Number of FSCC resets
badClock	Number of Clock errors
fracfit	number of events fit
deleo	Mean deleo (for events with deleo/2<5 only)

5 Tapes/Archiving

These tables can tell youone which tape you will find a specified run or subrun. It can also tell you what data exist for a specified run or subrun (just in case you wish to know whether or not data exist for a GRB or Mrk421 at a specified time).

variable name	description (tapes table)
runnum	Run number
subrunnum	Subrun number
tapenum	Tape number
mbytes	Size of file
i	position of file on tape