CLAS12 calibration database

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First CLAS12 Experiment Workshop
Feb 23

1. Clas12 calibration framework (ccdb)
2. Analogy with clasdb
3. Policies for clas12
   - storing/retrieving constants
   - database safe operation
4. Summary

calibration constants

- Definition of the sets of calibration constants for all detectors in the ccdb
- Library of programs (API) to read the calibration constants
- Unique source of calibration constants used by simulation, reconstruction and calibration software
- Software (scripts) to write new sets to the ccdb
- Monitoring integrity of constant sets
- Well defined policies of who can write what and where.

From caldb to ccdb

caldb (CLAS calibration database) based on mysql set of tables of calibration constants with c,perl, java, web interface

ccdb (Hall-D/CLAS12 calibration constants database) based on mysql set of tables designed as a next generation of caldb (M.Ito, D. Romanov) calibration constants with c++,python, java,web interface

https://github.com/JeffersonLab/ccdb/tree/master/doc/latex
https://clasweb.jlab.org/wiki/index.php/CLAS12_Constants_Database

Basic Information about the CLAS12 Constants Database

mysql server host: clasdb.jlab.org

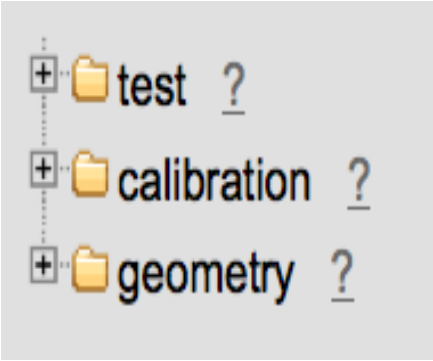
ccdb (calibration constants database)

user: clas12reader

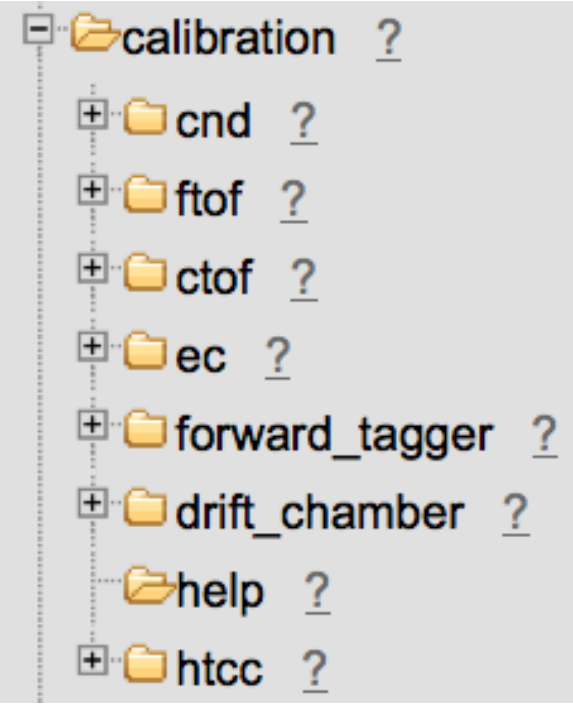
database: clas12

web viewer: https://clasweb.jlab.org/ccdb

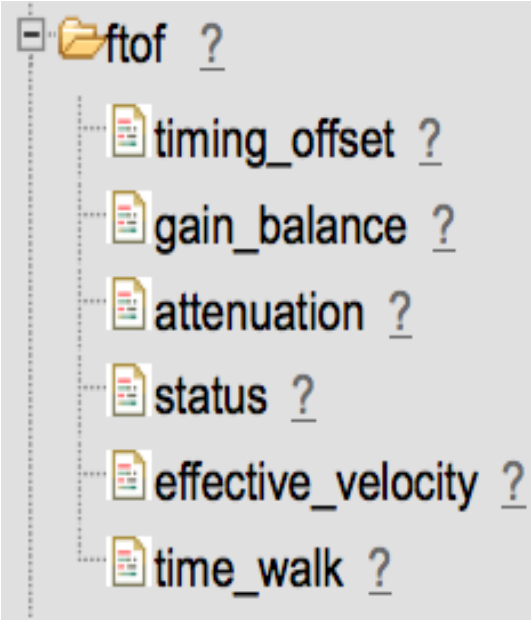
Directory structure (level 0)



structure (level 1)



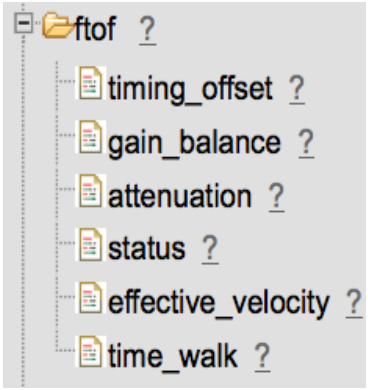
structure (level 2)



https://clasweb.jlab.org/wiki/index.php/CLAS12_Constants_Database

CLAS12 ccdb constants: FTOF

structure (level 2)



constant set:
/calibration/ftof/time_walk

Table	[/calibration/ftof/time_walk]
Variation	default
Created	2016-02-09 11:59:40
Run range	0 - inf.
Author	lcsmith
Exact id	/calibration/ftof/time_walk:0:default:2016-02-09_11-59-40

[Download text data]

Comment:

Data:

Show 10 entries Search:

sector	layer	component	tw0	tw1	tw2	tw3	tw4	tw5
1	1	1	50.00	0.85	0.00	0.00	0.00	0.00
1	1	2	50.00	0.85	0.00	0.00	0.00	0.00
1	1	3	50.00	0.85	0.00	0.00	0.00	0.00
1	1	4	50.00	0.85	0.00	0.00	0.00	0.00
1	1	5	50.00	0.85	0.00	0.00	0.00	0.00
1	1	6	50.00	0.85	0.00	0.00	0.00	0.00
1	1	7	50.00	0.85	0.00	0.00	0.00	0.00
1	1	8	50.00	0.85	0.00	0.00	0.00	0.00
1	1	9	50.00	0.85	0.00	0.00	0.00	0.00
1	1	10	50.00	0.85	0.00	0.00	0.00	0.00

Showing 1 to 10 of 540 entries First Previous 1 2 3 4 5 Next Last

Table input:

sec/layer/component tw0 tw1 tw2 tw3 tw4 tw5
1 1 1 50.00 0.85 0.00 0.00 0.00 0.00
1 1 2 50.00 0.85 0.00 0.00 0.00 0.00
1 1 3 50.00 0.85 0.00 0.00 0.00 0.00
1 1 4 50.00 0.85 0.00 0.00 0.00 0.00
1 1 5 50.00 0.85 0.00 0.00 0.00 0.00
1 1 6 50.00 0.85 0.00 0.00 0.00 0.00
1 1 7 50.00 0.85 0.00 0.00 0.00 0.00
1 1 8 50.00 0.85 0.00 0.00 0.00 0.00
1 1 9 50.00 0.85 0.00 0.00 0.00 0.00
1 1 10 50.00 0.85 0.00 0.00 0.00 0.00
1 1 11 50.00 0.85 0.00 0.00 0.00 0.00
1 1 12 50.00 0.85 0.00 0.00 0.00 0.00
1 1 13 50.00 0.85 0.00 0.00 0.00 0.00
1 1 14 50.00 0.85 0.00 0.00 0.00 0.00
1 1 15 50.00 0.85 0.00 0.00 0.00 0.00
1 1 16 50.00 0.85 0.00 0.00 0.00 0.00
1 1 17 50.00 0.85 0.00 0.00 0.00 0.00
1 1 18 50.00 0.85 0.00 0.00 0.00 0.00

Accessing sets from different sources

New feature: Calibration dbase may be accessed from a stand alone copy (sqlite)

2.8 Connection strings

CCDB uses so called "connection strings" to specify a data source. The generic format is:

```
<protocol>://<datasource specified string>
```

SQLite connection string:

```
sqlite://<path to sqlite db file>
```

MySQL connection string:

```
mysql://<username>:<password>@<server_address>:<port>/<database>
```

Sqlite (standalone copy of constants) provides new possibilities for debugging.

Dbase structure

CLAS6 (clasdb)

CLAS12(ccdb)

request constants for a given run# (time/variation), system/subsystem/item

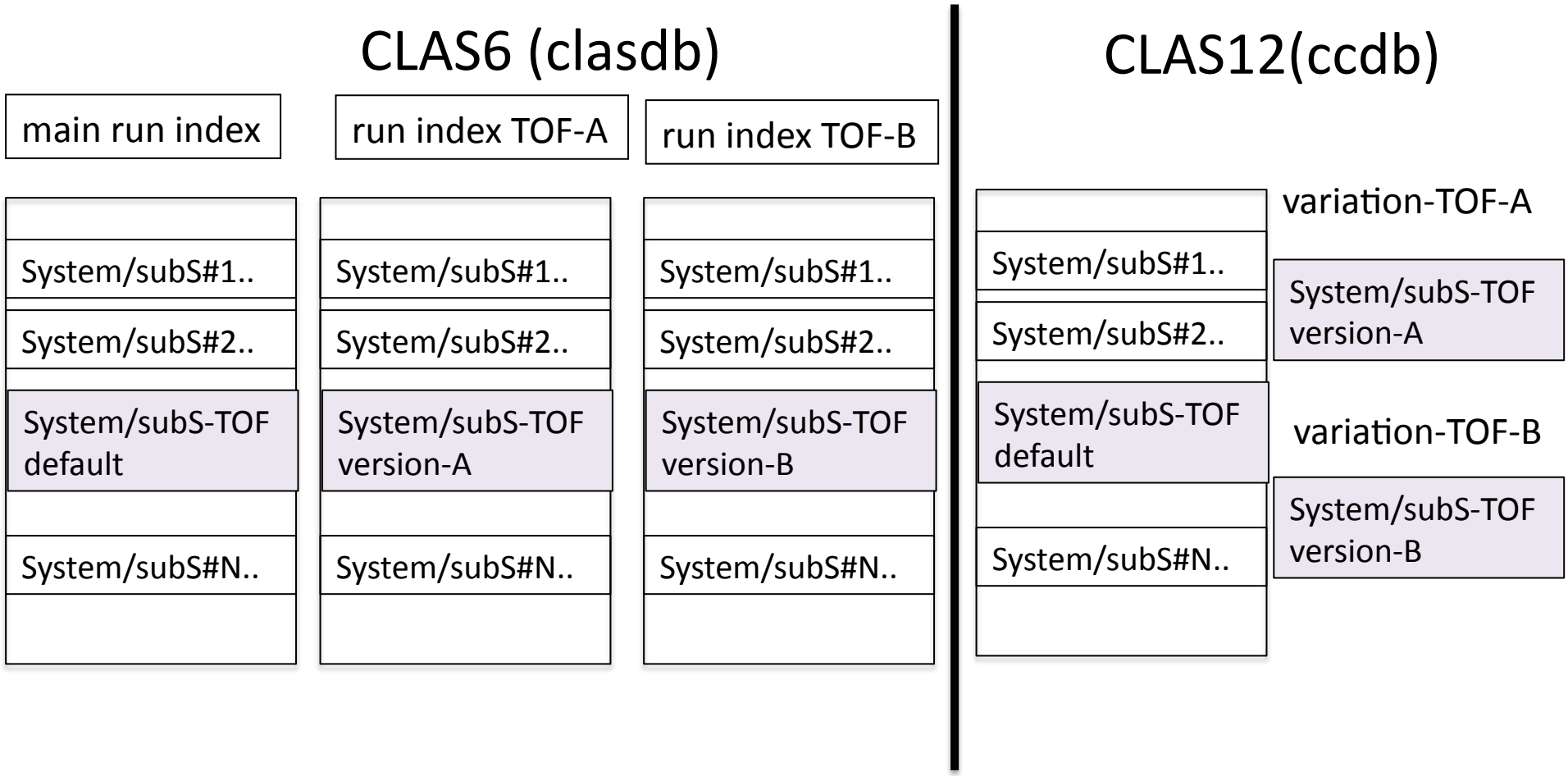
```
mysql> describe RunIndex;
+-------------+-------------+-
| Field       | Type        |
+-------------+-------------+-
| RunIndexId  | int(11)     |
| minRun      | int(11)     |
| maxRun      | int(11)     |
| itemId      | int(11)     |
| itemValueId | int(11)     |
| officer     | varchar(31) |
| time        | timestamp   |
| comment     | text        |
+-------------+-------------+-
```

```
mysql> describe assignments ;
+---------------+------------------+-
| Field         | Type             |
+---------------+------------------+-
| id            | int(10) unsigned |
| created       | timestamp        |
| modified      | timestamp        |
| variationId   | int(11)          |
| runRangeId    | int(11)          |
| eventRangeId  | int(11)          |
| constantSetId | int(11)          |
| authorId      | int(11)          |
| comment       | text             |
+---------------+------------------+-
```

```
mysql> describe EC_CALIB_EC_ATTEN_InnerU;
+-------------+------------+------+-----+
| Field       | Type       | Null | Key |
+-------------+------------+------+-----+
| itemValueId | int(11)    | NO   | PRI |
| author      | varchar(31) | YES |     |
| time        | timestamp  | NO   |     |
| minRunSource | int(11)   | YES  |     |
| maxRunSource | int(11)   | YES  |     |
| comment     | text       | YES  |     |
| v_0001      | float      | YES  |     |
| v_0002      | float      | YES  |     |
| v_0215      | float      | YES  |
| v_0216      | float      | YES  |
+-------------+------------+------+-
```

```
mysql> describe constantSets ;
+---------------+-----------+-
| Field         | Type      |
+---------------+-----------+-
| id            | int(11)   |
| created       | timestamp |
| modified      | timestamp |
| vault         | longtext  |
| constantTypeId | int(11)  |
+---------------+-----------+-
```

Dbase structure



More efficient organization: run indexes vs variations

ccdb commands

Calibration Constants Data Base (CCDB) command line tools.
Type "ccdb -i" to start in interactive mode
Usage:

ccdb <general arguments> command <command arguments>

Available commands:

(command)	(name)	(description):
info	Info	Prints extended information about an object
vers	Versions	Show versions of data for the specified table
run	CurrentRun	Gets or sets current working run
dump	Dump	Dumps data table to a file
show	Show	Shows type table data
mkdir	MakeDirectory	Create directory
pwd	PrintWorkDir	Prints working directory
cd	ChangeDir	Change current directory
add	AddData	Add data constants
mktbl	MakeTable	Create constants type table
cat	Cat	Show assignment data by ID
ls	List	List objects in a given directory

ex. in the directory test create a system “rich” with a table “tiles” with 5 colums: int, string and 3 reals

connection string ccdb-command argument

ccdb -c mysql://clas12writer:passwd@clasdb/clas12 ***mkdir*** test/rich

ccdb -c mysql://clas12writer:passwd@clasdb/clas12 ***mktbl*** test/rich0/tiles -r 3 id=int name=string 3r

ccdb:webview

https://clasweb.jlab.org/cgi-bin/ccdb/versions?table=/test/rich0/tiles0

connection string — variation — ccdb-command — argument

```
ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 -v mc add test/rich0/tiles  teles1.txt
```

Request: /test/rich0/tiles0:0:mc:2015-11-04_17-54-15

Constants information:

Table	[/test/rich0/tiles0]
Variation	mc
Created	2015-11-04 17:54:15
Run range	0 - inf.
Author	avakian
Exact id	/test/rich0/tiles0:0:mc:2015-11-04_17-54-15

[Download text data]

Comment:

Data:

```
#meta full request: /test/rich0/tiles0:0:mc:
2015-11-04_17-54-15
#meta variation: mc
#meta created: 2015-11-04 17:54:15
#meta run range: 0 - inf.
#meta author: avakian

#& id name r0 r1 r2
1 t1 1.1 2.1 3.1
2 t2 4.1 5.1 6.1
3 t3 7.1 8.1 9.1
```

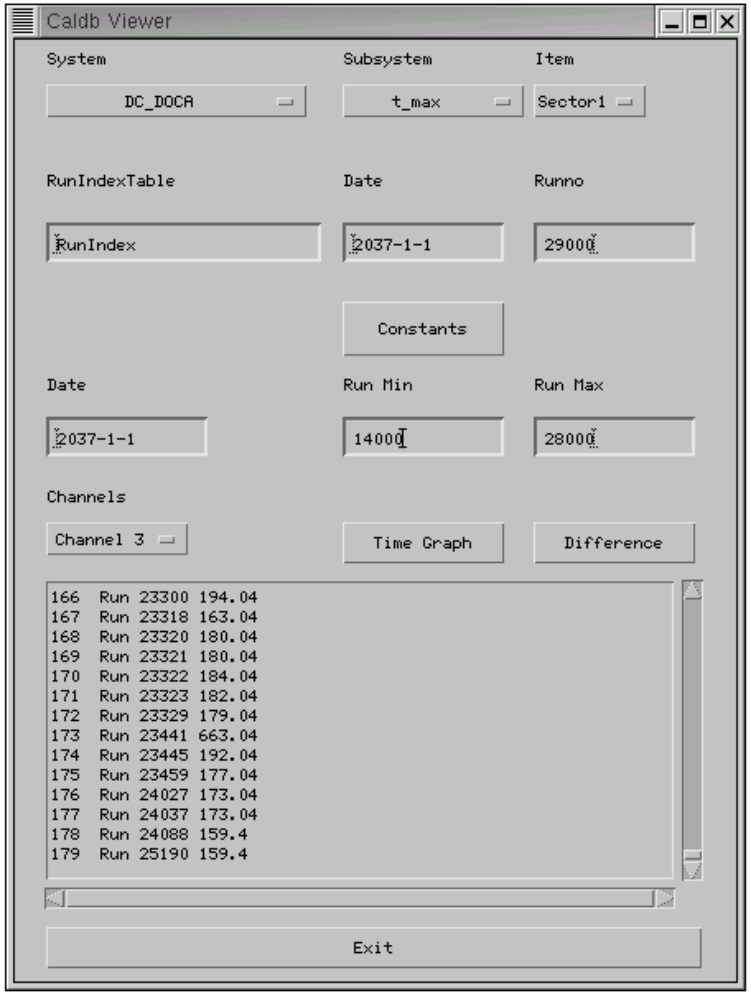
Show 10 entries Search:

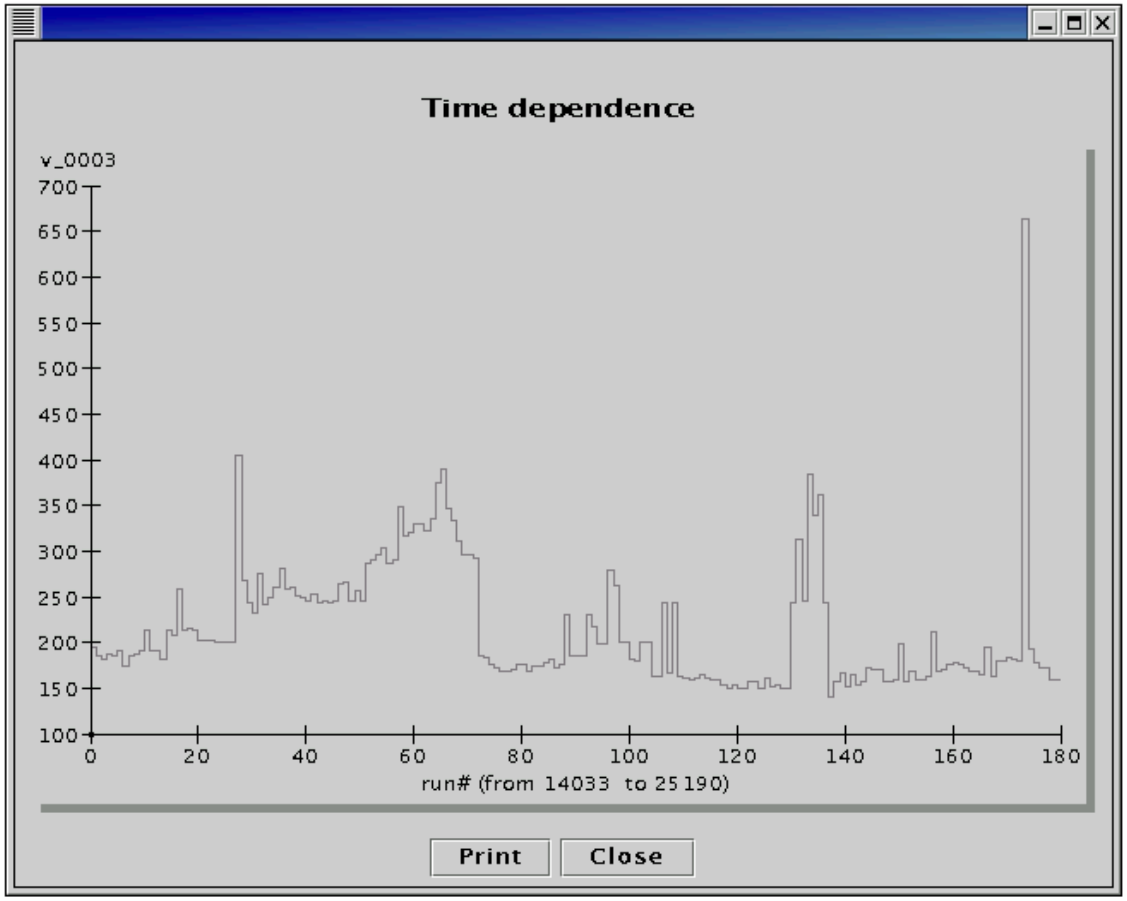
id	name	r0	r1	r2
1	t1	1.1	2.1	3.1
2	t2	4.1	5.1	6.1
3	t3	7.1	8.1	9.1

Showing 1 to 3 of 3 entries First Previous 1 Next Last

ccdb: wish list

- **Java - API for CLAS12 Calibration database**
- ex. from clas6:monitoring tools





Writing/cooking policies

a given system structure

x | y | z

calibration data input

1 | 0 | 0

1 | 1 | 0

1 | 1 | 1

assignments

run range: 100-200
variation default

run range: 100-200
variation TOF-A

run range: 100-200
variation TOF-B

run range: 100-200
variation TOF-B

run range: 100-200
variation RunGroup-A

locked variations created in ccdb

Make official cooks only from dedicated database (ex. RunGroup-A) with official version

summary

To finalize the clas12 ccdb input/output

- need ASAP to finalize the high level JAVA-API
- develop clas12 high level C++ API
- implement reading of constants in analysis chain for all detectors(gemc->reconstruction)
- define writing policies
- provide writing scripts with safety checks (following policies)
- develop constant set integrity monitoring scripts

- support slides

ccdb commands: filling tables

Calibration Constants Data Base (CCDB) command line tools.

Available commands:

(command)	(name)	(description):
add	add data	

ex. fill numbers in the table test/rich0/tiles from a text file tiles.txt

```
1  t1 1.0 2.0 3.0
2  t2 4.0 5.0 6.0
3  t3 7.0 8.0 9.0
```

```
ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 add test/rich0/tiles tiles.txt
```

Filling numbers with new numbers for a mc “variation”

```
ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 -v mc add test/rich0/tiles  teles1.txt
```

```
ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 -v mc cat test/rich0/tiles
```

```
ifarm1102:t>ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 -v mc cat test/rich0/tiles0
+-----------------------------------------------------------------+
| id          | name        | r0          | r1          | r2          |
| int         | string      | double      | double      | double      |
+-----------------------------------------------------------------+
| 1           | t1          | 1.1         | 2.1         | 3.1         |
| 2           | t2          | 4.1         | 5.1         | 6.1         |
| 3           | t3          | 7.1         | 8.1         | 9.1         |
+-----------------------------------------------------------------+
```

Directory structure

```
avakian@ifarm1401> mysql -h clasdb -u clas12reader clas12 -e "show tables"
+---------------------+
| Tables_in_clas12    |
+---------------------+
| assignments         |
| columns             |
| constantSets        |
| directories         |
| eventRanges         |
| logs                |
| runRanges           |
| schemaVersions      |
| tags                |
| typeTables          |
| users               |
| variations          |
| variations_has_tags |
```

what goes where

Info on tables stored in mySQL table typeTables

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from typeTables where directoryId=42"
+-----+---------------------+---------------------+-------------+--------+-------+----------+--------------+----------+---------+
| id  | created             | modified            | directoryId | name   | nRows | nColumns | nAssignments | authorId | comment |
+-----+---------------------+---------------------+-------------+--------+-------+----------+--------------+----------+---------+
| 108 | 2015-11-04 17:05:05 | 2015-11-04 17:05:05 |          42 | tiles  |   400 |        5 |            0 |        3 |         |
| 109 | 2015-11-04 17:45:52 | 2015-11-04 17:45:52 |          42 | tiles0 |     3 |        5 |            0 |        3 |         |
+-----+---------------------+---------------------+-------------+--------+-------+----------+--------------+----------+---------+
```

Corresponding info on columns for table stored in mySQL table colums

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from columns where typeId=109"
+-----+---------------------+---------------------+------+--------+------------+-------+---------+
| id  | created             | modified            | name | typeId | columnType | order | comment |
+-----+---------------------+---------------------+------+--------+------------+-------+---------+
| 640 | 2015-11-04 17:45:53 | 2015-11-04 17:45:53 | id   |    109 | int        |     0 | NULL    |
| 641 | 2015-11-04 17:45:53 | 2015-11-04 17:45:53 | name |    109 | string     |     1 | NULL    |
| 642 | 2015-11-04 17:45:53 | 2015-11-04 17:45:53 | r0   |    109 | double     |     2 | NULL    |
| 643 | 2015-11-04 17:45:53 | 2015-11-04 17:45:53 | r1   |    109 | double     |     3 | NULL    |
| 644 | 2015-11-04 17:45:53 | 2015-11-04 17:45:53 | r2   |    109 | double     |     4 | NULL    |
+-----+---------------------+---------------------+------+--------+------------+-------+---------+
```

constants for a given table stored in mySQL table constantSets

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from constantSets where constantTypeId=109"
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
| id  | created             | modified            | vault                                               | constantTypeId |
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
| 121 | 2015-11-04 17:47:54 | 2015-11-04 17:47:54 | 1|t1|1.0|2.0|3.0|2|t2|4.0|5.0|6.0|3|t3|7.0|8.0|9.0 |            109 |
| 122 | 2015-11-04 17:54:15 | 2015-11-04 17:54:15 | 1|t1|1.1|2.1|3.1|2|t2|4.1|5.1|6.1|3|t3|7.1|8.1|9.1 |            109 |
| 123 | 2015-11-04 17:56:29 | 2015-11-04 17:56:29 | 1|t1|1.2|2.2|3.2|2|t2|4.2|5.2|6.2|3|t3|7.2|8.2|9.2 |            109 |
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
```

what goes where

constants for a given table stored in mySQL table constantSets

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from constantSets where constantTypeId=109"
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
| id  | created             | modified            | vault                                               | constantTypeId |
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
| 121 | 2015-11-04 17:47:54 | 2015-11-04 17:47:54 | 1|t1|1.0|2.0|3.0|2|t2|4.0|5.0|6.0|3|t3|7.0|8.0|9.0 |            109 |
| 122 | 2015-11-04 17:54:15 | 2015-11-04 17:54:15 | 1|t1|1.1|2.1|3.1|2|t2|4.1|5.1|6.1|3|t3|7.1|8.1|9.1 |            109 |
| 123 | 2015-11-04 17:56:29 | 2015-11-04 17:56:29 | 1|t1|1.2|2.2|3.2|2|t2|4.2|5.2|6.2|3|t3|7.2|8.2|9.2 |            109 |
+-----+---------------------+---------------------+-----------------------------------------------------+----------------+
```

constants for a given table stored in mySQL table assignments

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from assignments where constantSetId>120"
+-----+---------------------+---------------------+-------------+------------+--------------+---------------+----------+---------+
| id  | created             | modified            | variationId | runRangeId | eventRangeId | constantSetId | authorId | comment |
+-----+---------------------+---------------------+-------------+------------+--------------+---------------+----------+---------+
| 121 | 2015-11-04 17:47:54 | 2015-11-04 17:47:54 |           1 |          1 |         NULL |           121 |        3 |         |
| 122 | 2015-11-04 17:54:15 | 2015-11-04 17:54:15 |           2 |          1 |         NULL |           122 |        3 |         |
| 123 | 2015-11-04 17:56:29 | 2015-11-04 17:56:29 |           1 |          1 |         NULL |           123 |        3 |         |
+-----+---------------------+---------------------+-------------+------------+--------------+---------------+----------+---------+
```

variation ID points to record in mySQL table variations

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from variations"
+----+---------------------+---------------------+----------+-------------------------------+----------+-----------------------------------------------------------------+----------+
| id | created             | modified            | name     | description                   | authorId | comment                                                         | parentId |
+----+---------------------+---------------------+----------+-------------------------------+----------+-----------------------------------------------------------------+----------+
|  1 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | default  | Default variation             |        2 | Default variation                                               |        0 |
|  2 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | mc       | Mone-Carlo variations         |        2 | Monte-Carlo specific variation                                  |        1 |
|  3 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | test     | Test variation                |        2 | Variation for software test                                     |        1 |
|  4 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | subtest  | Test variation of second level |        2 | Variation for software test which has test variation as parent |        3 |
|  5 | 2015-03-13 11:51:24 | 2015-03-13 11:51:24 | bst_var1 | NULL                          |        1 | module 1 aligned with x.                                        |        1 |
+----+---------------------+---------------------+----------+-------------------------------+----------+-----------------------------------------------------------------+----------+
```

```
mysql> select id,created,modified,constantTypeId from constantSets;
+-----+---------------------+---------------------+----------------+
| id  | created             | modified            | constantTypeId |
+-----+---------------------+---------------------+----------------+
|   1 | 2012-07-30 23:48:42 | 2012-07-30 23:48:42 |              1 |
|   2 | 2012-08-30 23:48:42 | 2012-08-30 23:48:42 |              1 |
|   3 | 2012-09-30 23:48:42 | 2012-09-30 23:48:42 |              2 |
|   4 | 2012-10-30 23:48:42 | 2012-10-30 23:48:42 |              1 |
|   5 | 2012-11-30 23:48:43 | 2012-11-30 23:48:43 |              1 |
|   6 | 2013-03-29 10:22:07 | 2013-03-29 10:22:07 |              3 |
|   7 | 2013-03-29 10:22:08 | 2013-03-29 10:22:08 |              4 |
|   8 | 2013-03-29 10:22:10 | 2013-03-29 10:22:10 |              5 |
|   9 | 2013-03-29 10:22:12 | 2013-03-29 10:22:12 |              6 |
|  10 | 2013-03-29 10:22:14 | 2013-03-29 10:22:14 |              7 |
|  11 | 2013-03-29 10:22:15 | 2013-03-29 10:22:15 |              8 |
|  12 | 2013-03-29 10:22:17 | 2013-03-29 10:22:17 |              9 |
|  38 | 2013-08-12 15:08:25 | 2013-08-12 15:08:25 |             38 |
|  68 | 2014-04-11 16:08:20 | 2014-04-11 16:08:20 |             61 |
|  39 | 2013-08-12 15:09:47 | 2013-08-12 15:09:47 |             39 |
|  30 | 2013-06-26 10:48:48 | 2013-06-26 10:48:48 |              7 |
|  61 | 2014-03-04 10:59:01 | 2014-03-04 10:59:01 |             48 |
|  62 | 2014-03-12 12:12:37 | 2014-03-12 12:12:37 |             50 |
|  37 | 2013-08-12 15:07:12 | 2013-08-12 15:07:12 |             37 |
|  70 | 2014-04-11 16:08:24 | 2014-04-11 16:08:24 |             63 |
|  60 | 2014-03-04 10:33:11 | 2014-03-04 10:33:11 |              1 |
|  71 | 2014-04-15 13:59:55 | 2014-04-15 13:59:55 |             64 |
|  72 | 2014-04-15 15:07:54 | 2014-04-15 15:07:54 |             61 |
|  73 | 2014-04-16 13:43:59 | 2014-04-16 13:43:59 |             63 |
|  52 | 2013-08-27 11:39:45 | 2013-08-27 11:39:45 |              7 |
|  53 | 2013-08-29 11:18:44 | 2013-08-29 11:18:44 |              8 |
|  84 | 2014-06-09 11:51:53 | 2014-06-09 11:51:53 |             78 |
|  85 | 2014-06-09 11:52:02 | 2014-06-09 11:52:02 |             77 |
|  86 | 2014-06-09 11:52:11 | 2014-06-09 11:52:11 |             79 |
|  87 | 2014-06-17 14:24:36 | 2014-06-17 14:24:36 |             84 |
|  83 | 2014-06-09 11:44:57 | 2014-06-09 11:44:57 |             74 |
|  88 | 2014-06-17 14:25:24 | 2014-06-17 14:25:24 |             80 |
|  89 | 2014-06-17 14:25:37 | 2014-06-17 14:25:37 |             82 |
|  90 | 2014-06-17 14:25:48 | 2014-06-17 14:25:48 |             83 |
|  91 | 2014-06-17 14:26:04 | 2014-06-17 14:26:04 |             85 |
|  92 | 2014-06-17 15:35:10 | 2014-06-17 15:35:10 |             86 |
|  93 | 2014-06-17 15:35:15 | 2014-06-17 15:35:15 |             87 |
|  94 | 2014-06-17 15:35:21 | 2014-06-17 15:35:21 |             88 |
|  95 | 2014-07-08 10:43:55 | 2014-07-08 10:43:55 |             89 |
|  96 | 2014-07-08 10:52:00 | 2014-07-08 10:52:00 |             90 |
|  97 | 2014-07-08 10:57:17 | 2014-07-08 10:57:17 |             91 |
|  98 | 2014-07-08 10:57:27 | 2014-07-08 10:57:27 |             92 |
|  99 | 2014-07-25 14:45:48 | 2014-07-25 14:45:48 |             94 |
| 100 | 2014-07-28 11:46:07 | 2014-07-28 11:46:07 |             96 |
| 101 | 2014-07-28 11:53:19 | 2014-07-28 11:53:19 |             97 |
| 102 | 2014-10-16 16:23:29 | 2014-10-16 16:23:29 |             99 |
| 103 | 2014-10-28 11:09:58 | 2014-10-28 11:09:58 |            101 |
| 104 | 2014-10-28 11:14:47 | 2014-10-28 11:14:47 |            103 |
| 105 | 2014-10-29 10:48:53 | 2014-10-29 10:48:53 |            103 |
+-----+---------------------+---------------------+----------------+
```

```
mysql> select id,variationId,runRangeId,constantSetId,authorId from assignments;
+-----+-------------+------------+---------------+----------+
| id  | variationId | runRangeId | constantSetId | authorId |
+-----+-------------+------------+---------------+----------+
|   1 |           1 |          1 |             1 |        2 |
|   2 |           3 |          2 |             2 |        2 |
|   3 |           3 |          1 |             3 |        2 |
|   4 |           1 |          1 |             4 |        2 |
|   5 |           4 |          1 |             5 |        2 |
|   6 |           1 |          1 |             6 |        1 |
|   7 |           1 |          1 |             7 |        1 |
|   8 |           1 |          1 |             8 |        1 |
|   9 |           1 |          1 |             9 |        1 |
|  10 |           1 |          1 |            10 |        1 |
|  11 |           1 |          1 |            11 |        1 |
|  12 |           1 |          1 |            12 |        1 |
|  68 |           1 |          1 |            68 |        1 |
|  39 |           1 |          1 |            39 |        1 |
|  38 |           1 |          1 |            38 |        1 |
|  86 |           1 |          1 |            86 |        1 |
|  71 |           1 |          1 |            71 |        1 |
|  60 |           4 |          1 |            60 |        1 |
|  30 |           5 |          1 |            30 |        1 |
|  62 |           1 |          1 |            62 |        1 |
|  37 |           1 |          1 |            37 |        1 |
|  70 |           1 |          1 |            70 |        1 |
|  72 |           1 |          1 |            72 |        1 |
|  73 |           1 |          1 |            73 |        1 |
|  52 |           1 |          1 |            52 |        1 |
|  53 |           1 |          1 |            53 |        1 |
|  83 |           1 |          1 |            83 |        1 |
|  87 |           1 |          1 |            87 |        1 |
|  84 |           1 |          1 |            84 |        1 |
|  85 |           1 |          1 |            85 |        1 |
|  61 |           1 |          1 |            61 |        1 |
|  88 |           1 |          1 |            88 |        1 |
|  89 |           1 |          1 |            89 |        1 |
|  90 |           1 |          1 |            90 |        1 |
|  91 |           1 |          1 |            91 |        1 |
|  92 |           1 |          1 |            92 |        1 |
|  93 |           1 |          1 |            93 |        1 |
|  94 |           1 |          1 |            94 |        1 |
|  95 |           1 |          1 |            95 |        1 |
|  96 |           1 |          1 |            96 |        1 |
|  97 |           1 |          1 |            97 |        1 |
|  98 |           1 |          1 |            98 |        1 |
|  99 |           1 |          1 |            99 |        1 |
| 100 |           1 |          1 |           100 |        1 |
| 101 |           1 |          1 |           101 |        1 |
| 102 |           1 |          1 |           102 |        1 |
| 103 |           1 |          1 |           103 |        1 |
| 104 |           1 |          1 |           104 |        1 |
| 105 |           1 |          1 |           105 |        1 |
+-----+-------------+------------+---------------+----------+
49 rows in set (0.00 sec)
```

```
mysql> select id,name,authorId,parentId from variations;
+----+---------+---------+---------+
| id | name    | authorId | parentId |
+----+---------+---------+---------+
| 1 | default |       2 |       0 |
| 2 | mc      |       2 |       1 |
| 3 | test    |       2 |       1 |
| 4 | subtest |       2 |       3 |
| 5 | bst_var1 |       1 |       0 |
+----+---------+---------+---------+
5 rows in set (0.00 sec)
```

```
mysql> select * from runRanges;
+----+---------------------+---------------------+------+--------+------------+-
| id | created             | modified            | name | runMin | runMax     |
+----+---------------------+---------------------+------+--------+------------+-
|  1 | 2013-03-29 10:22:04 | 2013-03-29 10:22:04 | all  |      0 | 2147483647 |
|  2 | 2013-03-29 10:22:04 | 2013-03-29 10:22:04 | test |    500 |       3000 |
|  3 | 2013-03-29 10:22:04 | 2013-03-29 10:22:04 |      |      0 |       2000 |
+----+---------------------+---------------------+------+--------+------------+-
```

```
mysql> select id,directoryId,name,nRows,nColumns,nAssignments from typeTables;
```

id	directoryId	name	nRows	nColumns	nAssignments
1	3	test_table	2	3	2
2	3	test_table2	1	3	1
3	5	dc	1	2	0
4	5	region	3	9	0
5	5	superlayer	6	8	0
6	5	layer	1	2	0
7	6	region	4	8	0
8	6	sector	1	12	0
9	6	bst	1	3	0
39	11	paddles	5	4	0
38	10	paddles	62	4	0
37	9	paddles	23	4	0
50	8	ftof	1	3	0
64	10	panel	1	8	0
63	11	panel	1	7	0
61	9	panel	1	7	0
78	12	Uview	1	2	0
77	12	Vview	1	2	0
48	1	table2	3	3	0
74	12	pcal	1	15	0
79	12	Wview	1	2	0
80	16	attenuation	540	8	0
82	16	effective_velocity	540	7	0
83	16	gain_balance	540	11	0
84	16	status	540	5	0
85	16	timing_offset	540	5	0
86	17	panel1a	897	8	0
87	17	panel1b	2077	8	0
88	17	panel2	396	8	0
89	20	ec	1	16	0
90	20	uview	1	4	0
91	20	vview	1	3	0
92	20	wview	1	3	0
94	23	ftcal	1	8	0
96	21	cnd	1	5	0
97	21	layer	3	5	0
98	1	cchv	200	2	0
99	25	hvcc_table	48	2	0
100	30	ltcchv	216	4	0
101	29	htcchv	48	4	0
102	33	ltcchv	216	4	0
103	32	htcchv	48	4	0

42 rows in set (0.00 sec)

```
mysql> select id,name,typeId,columnType from columns;
```

id	name	typeId	columnType
1	x	1	double
2	y	1	double
3	z	1	double
4	c1	2	int
5	c2	2	int
6	c3	2	int
7	nsectors	3	NULL
8	nregions	3	NULL
9	region	4	NULL
10	nsuperlayers	4	NULL
11	dist2tgt	4	NULL
12	frontgap	4	NULL
13	midgap	4	NULL
14	backgap	4	NULL
15	thopen	4	NULL
16	thtilt	4	NULL
17	xdist	4	NULL
18	superlayer	5	NULL
19	nsenselayers	5	NULL
20	nguardlayers	5	NULL
21	nfieldlayers	5	NULL
22	thster	5	NULL

```
mysql> select * from directories;
```

id	created	modified	name	parentId	authorId
1	2013-03-29 10:22:04	2013-03-29 10:22:04	test	0	2
2	2013-03-29 10:22:04	2013-03-29 10:22:04	subtest	1	2
3	2013-03-29 10:22:04	2013-03-29 10:22:04	test_vars	1	2
4	2013-03-29 10:22:05	2013-03-29 10:22:05	geometry	0	1
5	2013-03-29 10:22:06	2013-03-29 10:22:06	dc	4	1
6	2013-03-29 10:22:12	2013-03-29 10:22:12	bst	4	1
8	2013-05-17 14:12:47	2013-05-17 14:12:47	ftof	4	1
9	2013-05-17 14:13:03	2013-05-17 14:13:03	panel1a	8	1
10	2013-05-17 14:13:08	2013-05-17 14:13:08	panel1b	8	1
11	2013-05-17 14:13:13	2013-05-17 14:13:13	panel2	8	1
12	2013-10-23 07:40:06	2013-10-23 07:40:06	pcal	4	1
13	2013-12-05 14:12:06	2013-12-05 14:12:06	calibration	0	1
14	2013-12-05 14:12:24	2013-12-05 14:12:24	dc	13	1
15	2014-06-09 10:03:07	2014-06-09 10:03:07	alignment	12	1
16	2014-06-17 10:34:23	2014-06-17 10:34:23	ftof	13	1
17	2014-06-17 13:36:05	2014-06-17 13:36:05	time_walk	16	1
20	2014-07-08 10:43:08	2014-07-08 10:43:08	ec	4	1
21	2014-07-24 16:01:40	2014-07-24 16:01:40	cnd	4	1
23	2014-07-25 14:32:31	2014-07-25 14:32:31	ft	4	1
24	2014-10-16 15:47:05	2014-10-16 15:47:05	cc	1	1
25	2014-10-16 16:00:16	2014-10-16 16:00:16	cchv_markov	1	1
26	2014-10-27 16:54:01	2014-10-27 16:54:01	aaa	25	1
27	2014-10-27 17:04:14	2014-10-27 17:04:14	bbb	25	1
28	2014-10-27 17:45:52	2014-10-27 17:45:52	cc_calib	25	1
29	2014-10-27 17:45:54	2014-10-27 17:45:54	htcc	28	1
30	2014-10-27 17:45:56	2014-10-27 17:45:56	ltcc	28	1
31	2014-10-27 17:48:31	2014-10-27 17:48:31	cc_calib	1	1
32	2014-10-27 17:48:33	2014-10-27 17:48:33	htcc	31	1
33	2014-10-27 17:48:35	2014-10-27 17:48:35	ltcc	31	1

29 rows in set (0.00 sec)

id	created	lastActionTime	name
1	2015-03-13 11:51:15	2015-08-13 09:27:00	anonymous
2	2012-07-15 15:16:30	2012-09-20 08:11:12	test_user
3	2015-05-15 15:45:21	2015-11-04 17:56:29	avakian
4	2015-05-15 15:45:21	2015-05-15 15:45:21	weygand
5	2015-05-15 15:45:21	2015-05-15 15:45:21	shabalin
6	2015-05-15 15:45:21	2015-05-15 15:45:21	azp
7	2015-05-15 15:45:21	2015-05-15 15:45:21	kurbatov
8	2015-05-15 15:45:21	2015-05-15 15:45:21	ungaro
9	2015-05-15 15:45:21	2015-05-15 15:45:21	ziegler
10	2015-05-15 15:45:21	2015-05-15 15:45:21	daria
11	2015-05-15 15:45:21	2015-05-15 15:45:21	lcsmith
12	2015-05-15 15:45:21	2015-05-15 15:45:21	hicks
13	2015-05-15 15:45:21	2015-05-15 15:45:21	stepanya
14	2015-05-15 15:45:21	2015-05-15 15:45:21	gavalian
15	2015-05-15 15:45:21	2015-05-15 15:45:21	gurjyan
16	2015-05-15 15:45:21	2015-05-15 15:45:21	procureu
17	2015-05-15 15:45:21	2015-05-15 15:45:21	puckett
18	2015-05-15 15:45:21	2015-05-15 15:45:21	spaul
19	2015-05-15 15:45:21	2015-05-15 15:45:21	smancill
20	2015-05-15 15:45:21	2015-05-15 15:45:21	goetz
21	2015-05-15 15:45:21	2015-05-15 15:45:21	fatiha
22	2015-05-15 15:45:21	2015-05-15 15:45:21	witchger
23	2015-05-15 15:45:21	2015-05-15 15:45:21	vpk
24	2015-05-15 15:45:21	2015-05-15 15:45:21	rmontgom
25	2015-05-15 15:45:21	2015-05-15 15:45:21	anefalos
26	2015-05-15 15:45:21	2015-05-15 15:45:21	mirazita
27	2015-05-15 15:45:21	2015-05-15 15:45:21	mcontalb
28	2015-05-15 15:45:21	2015-05-15 15:45:21	asryan
29	2015-05-15 15:45:21	2015-05-15 15:45:21	devita
30	2015-05-15 15:45:21	2015-05-15 15:45:21	jruger
31	2015-05-15 15:45:21	2015-05-15 15:45:21	pisanos
32	2015-05-15 15:45:21	2015-05-15 15:45:21	jpond
33	2015-05-15 15:45:21	2015-05-15 15:45:21	acolvill
34	2015-05-15 15:45:21	2015-05-15 15:45:21	skab
35	2015-05-15 15:45:21	2015-05-15 15:45:21	clarausr
36	2015-05-15 15:45:21	2015-05-15 15:45:21	hlu
37	2015-05-15 15:45:21	2015-05-15 15:45:21	heddle
38	2015-05-15 15:45:21	2015-05-15 15:45:21	dpuente
39	2015-05-15 15:45:21	2015-05-15 15:45:21	zana
40	2015-05-15 15:45:21	2015-05-15 15:45:21	wphelps
41	2015-05-15 15:45:21	2015-05-15 15:45:21	gotra
42	2015-05-15 15:45:21	2015-05-15 15:45:21	biselli
43	2015-05-15 15:45:21	2015-05-15 15:45:21	markov
44	2015-05-15 15:45:21	2015-05-15 15:45:21	mboer
45	2015-05-15 15:45:21	2015-05-15 15:45:21	omcortes

list of items

Handling of run ranges (linking set with run range)
ccdb -c mysql://clas12writer:geom3try@clasdb/clas12 -r 9900 add test/rich0/tiles0 teles.dump

```
ifarm1401:t>mysql -h clasdb -u clas12reader clas12 -e "select * from runRanges"
+----+---------------------+---------------------+------+--------+------------+-----------------------------------------------------+
| id | created             | modified            | name | runMin | runMax     | comment                                                 |
+----+---------------------+---------------------+------+--------+------------+-----------------------------------------------------+
|  1 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | all  |      0 | 2147483647 | Default runrange that covers all runs                   |
|  2 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 | test |    500 |       3000 | Test runrange for software tests                        |
|  3 | 2015-03-13 11:51:15 | 2015-03-13 11:51:15 |      |      0 |       2000 | Test runrange. Secont test runrange for software test |
+----+---------------------+---------------------+------+--------+------------+-----------------------------------------------------+
```

TODO list

- develop the high level Java-API
- develop the high level C++ API
- finalize database writing policies
- define the variation “lock” procedure
- develop the scripts for ccdb input
- ……..

CLAS12 Calibration Constants

Unique storage of CLAS12 calibration constants is the mysql database ccdb (calibration constants database)

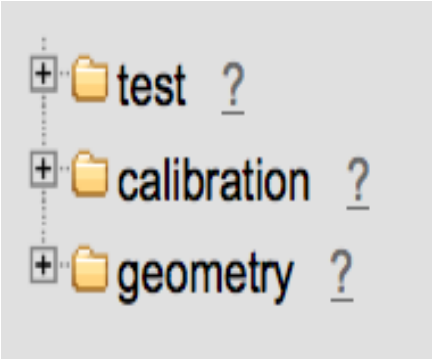
https://clasweb.jlab.org/wiki/index.php/CLAS12_Constants_Database

Policy:
- use the same set of constants in GEANT simulation (gemc) reconstruction (coatjava), calibration software
- *lock* the constant set during the "production"

Basic Information about the CLAS12 Constants Database

mysql server host:	clasdb.jlab.org
user:	clas12reader
database:	clas12
web viewer:	https://clasweb.jlab.org/ccdb

Structure of clas12 db:

calibration constants ←

geometry parameters ←