LCLS2 Data Diagnostic Tools

Set LCLS2 environment

- Set production and development environment

Data diagnostic commands

Commands below can be run in lcls2 environment on psana nodes having access to experimental data under /cds/data/psdm/<INSTRUMENT>/<EXPERIMENT>/xtc/*.

> ⚠ Command examples are valid for code release ps-4.5.5, default version on 2021-10-25. They may evolve in other releases. Use "-h" option to find latest option of each command.

datinfo

```
USAGE:
  datinfo -d <detector> -e <experiment> -r <run-number(s)> [kwargs]
COMMAND EXAMPLES:
  datinfo -d epixquad -e ueddaq02 -r 27 -td -L DEBUG
  datinfo -d epixquad -e ueddaq02 -r 30-82 <--- DOES NOT WORK - missconfigured
  datinfo -d epixquad -e ueddaq02 -r 83 <--- dark
  datinfo -d epixquad -e ueddaq02 -r 84 <--- PARTLY WORKS charge injection
  datinfo -d epixquad -f /cds/data/psdm/ued/ueddaq02/xtc/ueddaq02-r0065-s001-c000.xtc2
  datinfo -d epixquad -f /cds/data/psdm/ued/ueddaq02/xtc/ueddaq02-r0086-s001-c000.xtc2
  datinfo -d tmoopal -e tmoc00118 -r 123 -td
HELP: datinfo -h
```

epix10ka_raw_calib_image

```
USAGE:
  epix10ka_raw_calib_image [test-name] [optional-arguments]
  where test-name:
    raw   - test_raw W/O GRAPHICS
    calib - test_calib W/O GRAPHICS
    [image] - test_image WITH GRAPHICS - optional default
    mask, peds, rms, status, gain, z/y/xcoords - test_single_image WITH GRAPHICS
COMMAND EXAMPLES:
    epix10ka_raw_calib_image raw -e ueddaq02 -d epixquad -r66 # raw
    epix10ka_raw_calib_image calib -e ueddaq02 -d epixquad -r66 # calib
    epix10ka_raw_calib_image mask  -e ueddaq02 -d epixquad -r66 # mask
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r66 -N1000 # image
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r108 -N1 -S grind
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r140 -N100 -M2 -S calibcm8
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r140 -N100 -M2 -S calibcm8 -o img-ueddaq02-epixquad-r140-
ev0002-cm8-7-100-10.png -N3
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r211 -N1 -M0 -Speds -g0 # - plot pedestals for gain group
0/FH
    epix10ka_raw_calib_image -e ueddaq02 -d epixquad -r211 -N100 -Sraw-peds -M2 -g2 # - plot calib[step=2] -
pedestals[gain group 2]
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -r118 --gramin 1 --gramax 32000 -Sraw
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -r118 --gramin 1 --gramax 32000 -Speds -g0
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -r118 --gramin -100 --gramax 100 -Sraw-peds -g0
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -r119 -Scalib
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -r119 -Sones
    epix10ka_raw_calib_image -e rixx45619 -d epixhr -N10000 -J200 --gramin 0 --gramax 10 -Sgrind
    epix10ka_raw_calib_image mask -e rixx45619 -d epixhr -r119
    epix10ka_raw_calib_image peds -e rixx45619 -d epixhr -r119 -g1
    epix10ka_raw_calib_image gains -e rixx45619 -d epixhr -r119 -g1
    epix10ka_raw_calib_image xcoords -e rixx45619 -d epixhr -r119 --cframe=1
HELP: epix10ka_raw_calib_image -h
```

epix10ka_calib_components

```
USAGE:
    epix10ka_calib_components -r554 -t1
    epix10ka_calib_components -e ueddaq02 -d epixquad -r554 -t1
    -t, --tname - test number:
      1 - segment numeration
      2 - gain range index
      3 - gain, ADU/keV
      4 - pedestals
      5 - rms
      6 - raw
      7 - raw-peds
      8 - (raw-peds)/gain, keV
      9 - calib, keV
     10 - status
     11 - gain factor = 1/gain, keV/ADU
     ----
     21 - run 401 two-threshold selection issue
     22 - (raw-peds)/gain, keV hot - specific isuue test
     23 - (raw-peds)/gain, keV cold - specific isuue test

epix10ka_calib_components - test per-event components of the det.raw.calib method

HELP: epix10ka_calib_components -h
```

References

- EPIX10KA2M References
- Set production and development environment
- github: psana/app