

# Geometry History

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## CXI

### Notes

Below are tables that can be updated with time-ordered publicly-released geometry files (**most recent at top of table**).

All geometry formats used by LCLS ([crystfel-hdf5](#), [crystfel-cxldb](#), [cctbx](#), [psana](#)) can be placed here.

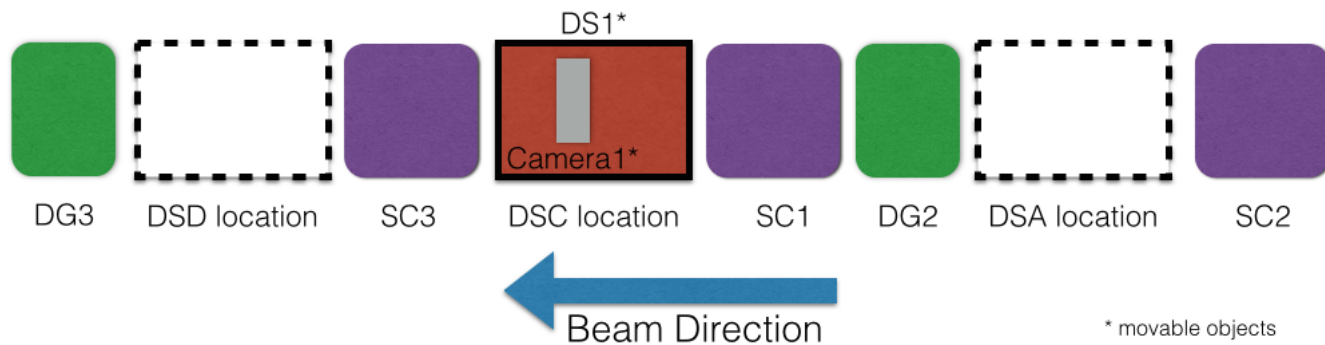
Information about methods to convert geometry files between different formats can be found [here](#).

Optical measurements can be found [HERE](#). Corrected [optical metrology](#) in text format can be found under the page [CSPAD Alignment](#).

### Diagram

Note the DS1 and DS2 chambers can move to different locations. Also, Camera1 and Camera2 can move between DS1 and DS2 chambers. Sample chambers, SC1-SC3 are fixed.

Valid from 15/May/16



### Geometries

| Date       | Who uploaded | Experiment | Geometry File Name                                                                                                                                                                    | File Type       | DAQ "Source" Name (Ds1/Ds2)       | Front /Back | Camera                               | Comment                                                                                                                                                                                                                                                                       |
|------------|--------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------|-------------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2020-08-25 | yoona        | cxic00318  | <a href="#">123-end.data cxic00318.geom</a>                                                                                                                                           | psana /crystfel | CxiDs1.0: Jungfrau.0   jungfrau4M | Front       | Jungfrau                             | Indexed lysozyme run123 with CrystFEL                                                                                                                                                                                                                                         |
| 2019-08-08 | cpo          |            | <a href="#">geometry-2019-05-06.txt</a>                                                                                                                                               | psana           |                                   |             | Epix10ka2M                           | Currently the only Epix10ka2M that we have. Details about geometry can be found <a href="#">here</a> .                                                                                                                                                                        |
| 2017-06-29 | yoona        | cxil0416   | <a href="#">cxil0416.geom</a>                                                                                                                                                         | crystfel        | CxiDs1.0: Cspad.0                 | Front       |                                      | Based on dubrovin's psana geometry, tweaked x,y,z detector position with psocake to optimize indexing results.<br><br>Prediction refine / geoptimization was NOT performed.                                                                                                   |
| 2017-06-07 | dubrovin     | cxil0416   | /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera1-2014-09-24/calib/CsPad::CalibV1/CxiDs1.0: Cspad.0/geometry/geometry-camera1-in-ds1-cxil0416-r0028.data                         | psana           | CxiDs1.0: Cspad.0                 | Front       | Camera1_V16_20140924?                | Tuning with geo using cxil0416-r0028 NOTE: x and y tilt angles were applied                                                                                                                                                                                                   |
| 2016-12-19 | yoona        | cxil04216  | <a href="#">53-end.data</a>                                                                                                                                                           | psana           | CxiDs1.0: Cspad.0                 | Front       |                                      | CrystFEL predefine geometry converted to psana format using psgeom                                                                                                                                                                                                            |
| 2016-09-29 | yoona        | cxic0315   | <a href="#">cxic0315.geom</a>                                                                                                                                                         | crystfel        | CxiDs2.0: Cspad.0                 | Back        |                                      | Valid from 21/Sep/16                                                                                                                                                                                                                                                          |
| 2016-09-29 | yoona        | cxil11716  | <a href="#">cxil11716.geom</a>                                                                                                                                                        | crystfel        | CxiDs1.0: Cspad.0                 | Front       |                                      | Optimized using detector-shift                                                                                                                                                                                                                                                |
| 2016-05-25 | dubrovin     | from 05/25 | /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera2-2016-05-25/calib/CsPad::CalibV1/CxiDs2.0: Cspad.0/geometry/0-end.data                                                          | psana           | CxiDs2.0: Cspad.0                 |             | Camera2_V16_20160525?                | New optical measurements from 2016-05-25. Quad positions age not aligned                                                                                                                                                                                                      |
| 2016-05-25 | yoona        | cxil06216  | <a href="#">cxil9415_v5.geom</a> (crystfel) <a href="#">22-end.data</a> (psana)                                                                                                       | crystfel /psana | CxiDs1.0: Cspad.0                 | Front       | Camera1_V16?                         | Geometry file optimized using lysozyme by O. Yefanov using intor.                                                                                                                                                                                                             |
| 2016-04-26 | cpo          | cxil8416   | <a href="#">cxil8416_v2.geom</a> (crystfel) <a href="#">cxil8416_v3.dat</a> (psana)                                                                                                   | crystfel /psana | CxiDs2.0: Cspad.0                 | Front       | Camera2_V16_20160205                 | psana translated from crystfel and moved -200um in x and -100um in y using geo to center lysozyme rings from runs 153,154,155                                                                                                                                                 |
| 2016-04-12 | yoona        | cxil06416  | <a href="#">0-end.data</a>                                                                                                                                                            | psana           | CxiDg2.0: Cspad2x2.0              | Back        |                                      | Geometry file optimized using diffraction from a sphere.                                                                                                                                                                                                                      |
| 2016-02-27 | yoona        | cxil02416  | <a href="#">cxil02416_400.geom</a>                                                                                                                                                    | crystfel-cxldb  | CxiDs2.0: Cspad.0                 | Front       | Camera2_V16_20160205                 | Geometry file optimized using lysozyme.<br><br>The xxx in cxil02416_xxx.geom represents the camera length.<br><br>The detector was translated in x & y w.r.t powder ring and detector_shift script was used to correct for offset.                                            |
| 2016-01-09 | yoona        | cxic0915   | <a href="#">cxic0915_100.geom</a><br><a href="#">cxic0915_200.geom</a><br><a href="#">cxic0915_300.geom</a><br><a href="#">cxic0915_400.geom</a><br><a href="#">cxic0915_480.geom</a> | crystfel-cxldb  | CxiDs1.0: Cspad.0                 | Front       | <a href="#">Camera1_V16_20140924</a> | The refined geometry file for detector calibration by Chuck Yoon.<br><br>The xxx in cxic0915_xxx.geom represents the camera length.<br><br>The detector was translated in x & y w.r.t powder ring at different detector distances.                                            |
| 2015-12-22 | valerio      | cxil9415   | <a href="#">cxil9415.geom</a>                                                                                                                                                         | crystfel-cxldb  | CxiDs1.0: Cspad.0                 | Front       | <a href="#">Camera1_V16_20140924</a> | The refined geometry file for LJ94 from Nadia Zatsepin. PI: Dominik Oberthuer<br><br>Thanks to Yun-Xing Wang for the data used for the refinement                                                                                                                             |
| 2015-12-07 | yoona        | cxic0915   | <a href="#">cxic0915-v4.geom</a>                                                                                                                                                      | crystfel-cxldb  | CxiDs1.0: Cspad.0                 | Front       | <a href="#">Camera1_V16_20140924</a> | The refined geometry file for detector calibration by Chuck Yoon.<br><br>We thank Petra Fromme's team for the phycocynin sample.                                                                                                                                              |
| 2015-11-12 | yoona        | cxil4915   | <a href="#">cxil4915-v12.geom</a>                                                                                                                                                     | crystfel-cxldb  | CxiDs1.0: Cspad.0                 | Front       | <a href="#">Camera2_V16_20150120</a> | The refined geometry file for L049 using Intor from Nadia Zatsepin. PI: Petra Fromme<br><br>Please acknowledge Petra's team for the use of this geometry file in your research if you use any part of this geometry file. Do not remove the history section of the geom file. |
| 2015-07-14 | valerio      | cxih9615   | /reg/g/psdm/detector/alignment/cspad/openGeom /crystfel/<br><a href="#">cxih9615_gv_v1.geom</a>                                                                                       | crystfel-cxldb  | CxiDs2.0: Cspad.0                 |             | <a href="#">Camera1_V16_20140924</a> | File from 2015-06-27 further refined using more data                                                                                                                                                                                                                          |

|            |                  |          |                                                                                                                                                                                 |               |                   |  |                                      |                                                                                                                                                                                   |
|------------|------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------|--|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2015-06-27 | valerio          | cxih9615 | /reg/g/psdm/detector/alignment/cspad/openGeom/crystfel/<br><a href="#">2015-06-27-cxih9615.geom</a>                                                                             | crystfel-cxib | CxiDs2.0: Cspad.0 |  | <a href="#">Camera1_V16_20140924</a> | The refined geometry file for LH96 (Obertheuer beamtime)                                                                                                                          |
| 2015-06-02 | dubrovin         | cxih8015 | /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera1-2014-09-24/calib/CsPad::CalibV1/CxiDs1.0: Cspad.0/geometry/geometry-camera1-in-ds2-cxih8015-r176.data                    | psana         | CxiDs2.0: Cspad.0 |  | <a href="#">Camera1_V16_20140924</a> | Generated from /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera1-2014-09-24/2014-09-24-CSPAD-CXI-Camera1-Metrology-corr.txt<br><br>Geometry file is deployed for cxi86715    |
| 2015-04-01 | valerio          | cxii6315 | /reg/g/psdm/detector/alignment/cspad/openGeom/crystfel/<br><a href="#">2015-04-01-cxii6315-ds1.geom</a>                                                                         | crystfel-cxib | CxiDs1.0: Cspad.0 |  | <a href="#">Camera2_V16_20150120</a> | The refined geometry file for LI63 (Zatsepin beamtime)<br><br>Misabeled in openGeom folder<br><br>Caution: geoptimiser v0.6.0 has a bug which could have effected this geom file. |
| 2015-03-26 | cpo              |          | /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera1-2014-09-24/calib/CsPad::CalibV1/CxiDs1.0: Cspad.0/geometry/0-end.data                                                    | psana         | CxiDs1.0: Cspad.0 |  | <a href="#">Camera1_V16_20140924</a> | Generated from 2014-09-24-CSPAD-CXI-Camera1-Metrology.xlsx. No quad alignment.                                                                                                    |
| 2015-03-26 | cpo              |          | /reg/g/psdm/detector/alignment/cspad/calib-cxi-camera2-2015-01-20/calib/CsPad::CalibV1/CxiDs2.0: Cspad.0/geometry/0-end.data                                                    | psana         | CxiDs2.0: Cspad.0 |  | <a href="#">Camera2_V16_20150120</a> | Generated from 2015-01-20-CSPAD-CXI-Camera2-Metrology.xlsx. No quad alignment.                                                                                                    |
| 2015-03-25 | blaj<br>dubrovin |          | <a href="#">2014-09-24-CSPAD-CXI-Camera1-Metrology.xlsx</a><br><br>/reg/g/psdm/detector/alignment/cspad/calib-cxi-camera1-2014-09-24/2014-09-24-CSPAD-CXI-Camera1-Metrology.txt | xlsx<br>txt   |                   |  | <a href="#">Camera1_V16_20140924</a> | optical metrology<br><br>converted using <a href="#">calibman</a>                                                                                                                 |
| 2015-03-25 | blaj<br>dubrovin |          | <a href="#">2015-01-20-CSPAD-CXI-Camera2-Metrology.xlsx</a><br><br>/reg/g/psdm/detector/alignment/cspad/calib-cxi-camera2-2015-01-20/2015-01-20-CSPAD-CXI-Camera2-Metrology.txt | xlsx<br>txt   |                   |  | <a href="#">Camera2_V16_20150120</a> | optical metrology<br><br>converted using <a href="#">calibman</a>                                                                                                                 |
| 2015-03-21 | valerio          | cxig0915 | /reg/g/psdm/detector/alignment/cspad/openGeom/crystfel/<br><a href="#">2015-03-21-cxig0915-ds1.geom</a>                                                                         | crystfel-cxib | CxiDs1.0: Cspad.0 |  | <a href="#">Camera2_V16_20150120</a> | The final refined geometry file for LG09 (Schmidt beamtime) for CXIB data format.<br><br>Misabeled in openGeom folder                                                             |
| 2014-12-17 | koglin           |          | /reg/g/psdm/detector/alignment/cspad/Dg4Cspad_ami_20141217_geo.1e000a00.dat                                                                                                     | ami           |                   |  | <a href="#">Camera3_V16_20131009</a> | Need to copy over (permissions?)<br><br>cp /reg/g/peds/pds/cspadcalib/geo.1e000a00.dat /reg/g/psdm/detector/alignment/cspad/Dg4Cspad_ami_20141217_geo.1e000a00.dat                |

## Camera History

### Camera1\_V16\_20140924

- Optical Metrology file:
  - 2014-09-24-CXI-Camera1-Metrology.xlsx
  - <<https://confluence.slac.stanford.edu/download/attachments/107749188/2014-09-24-CXI-DS1-Metrology.xlsx?version=1&modificationDate=1414457576000&api=v2>>
- 2014-09-24 -- fixed and moved to DS2 chamber
  - mixed quadrants:
    - 3 old A boards (Q0, Q1, Q2), 4/40
    - 1 new board (Q3), 3/19
- 2014-11-19 -- DS1 @ DSD
  - moved back to DS1 chamber in DSD location
  - Used for PCS, IH and cxig3616
- 2015-01-10 -- DS1 @ DSC location
  - Used for cxig1515
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = DscCsPad
    - Relative detector Z position:
      - alias = 'DscCsPad\_z'
      - pv = 'CXI:DS1:MMS:06.RBV'
- 2015-03-17 -- DS2 @ DSD location
  - Camera 1 was moved to DS2 chamber at DSD location.
    - The previously broken D50 Concentrator was replaced with older concentrator.
      - Quadrants 2 and 0 were swapped.
    - Back detector (generally not used) for SC1 experiments from 2015-03-18 to 2015-05-04
      - src = 'DetInfo(CxiDs2.0:Cspad.0)'
      - alias = DsdCsPad

- Relative detector Z position:
    - alias = 'DsdCsPad\_z'
    - pv = 'CXI:DS2:MMS:06.RBV'
- 2015-05-04 -- DS2 @ DSD
  - Cables for Camera 1 in DS2 corrected and collimator pipe removed from front DS1
  - Back detector for SC1 experiments from 2015-05-04 to 2015-05-17
    - src = 'DetInfo(CxiDs2.0:Cspad.0)'
    - alias = DsdCsPad
    - Relative detector Z position:
      - alias = 'DsdCsPad\_z'
      - pv = 'CXI:DS2:MMS:06.RBV'
- 2015-12-07 -- DS1 @ DSC
  - Camera1 was moved from DS2 (at DSD) to DS1 (at DSC) because Camera2 in DS1 was damaged.
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = DscCsPad
    - Relative detector Z position:
      - alias = 'DscCsPad\_z'
      - pv = 'CXI:DS1:MMS:06.RBV'

## Camera2\_V16\_20150120

- 2015-02-02 -- DS2 chamber with refurbished Camera2 moved to DSA location
  - Non-standard configuration given D50 CsPad rack concentrator, which is normally used with DS2 chamber, was broken.
  - Used D51 CsPad rack for concentrator and motors February 2015 experiments in the SC2 (a.k.a. SC01, 100nm focus chamber).
    - cxig0715, cxie7015, cxie7515 and cxif5315
    - src = 'DetInfo(CxiDs2.0:Cspad.0)'
    - alias = DsaCsPad
    - Relative detector Z position:
      - alias = 'DsaCsPad\_z'
      - pv = 'CXI:DS1:MMS:06.RBV'
    - Similarly, other relevant epicsStore aliases begin with DsaCsPad.
    - The mapping of the D50 concentrator is rotated by 90 relative to the D51 concentrator.
- 2015-03-03 -- Moved DS2 chamber with Camera2 to DSD location
  - Used for SPI experiment cxi86415
    - src = 'DetInfo(CxiDs2.0:Cspad.0)'
    - alias = DsdCsPad
    - Relative detector Z position:
      - alias = 'DsdCsPad\_z'
      - pv = 'CXI:DS2:MMS:06.RBV'
  - Note pipe in front DS1 chamber detector during this experiment was removed, but the holder for it was still in providing circular aperture for back DS2 detector
- 2015-03-17 -- Added shield and pipe and moved Camera2 to DS1 chamber
  - Used for SC1 experiments starting at the end of Run10:
    - cxig0915, cxii6315, cxih0115, cxih0815, April PCS, cxih9515, cxii2415, ...
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = DscCsPad
    - Relative detector Z position:
      - alias = 'DscCsPad\_z'
      - pv = 'CXI:DS1:MMS:06.RBV'
  - Detector Attenuation from shields and coatings (pipe and additional shielding required for laser experiments):
    - CsPad Pipe Al Shield Transmission:
      - 8 um thick polyimide
      - 1 um thick Al on upstream side
      - 1.75 um thick Al on downstream side
    - The detectors have 0.25 um thick Al coating.
    - > 3 um total Al
- 2015-05-04 -- Removed shield and pipe from Camera2 in DS1 chamber
  - Used for SC1 experiments starting with cxih8015:
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = DscCsPad
    - Relative detector Z position:
      - alias = 'DscCsPad\_z'
      - pv = 'CXI:DS1:MMS:06.RBV'

## Camera2\_V16\_20140827

- 2014-08-27 -- Refurbished Camera2 installed in DS1 chamber
  - Metrology:
    - [2014-08-27-CXI-DS2-Metrology.xlsx](#)
  - Quad 1 (zero based counting) reworked; metrology updated, the other 3 quads (Q0, Q2, Q3) are unchanged (as in the previous metrology: May 14, 2014).
  - Used for Run 10 experiments from 2014-10-16 until it was damaged in November 2014 (cxig2614, cxif7214, cxie7914, Nov PCS)
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = Ds1CsPad
    - Relative detector Z position:
      - no alias defined
      - pv = 'CXI:DS1:MMS:06.RBV'

## Camera1\_V16\_20140319

- 2014-03-19 -- Camera1 rebuilt
  - Metrology:
    - [2014-03-19-CSPAD-CXI-DS1-Metrology.xlsx](#)
    - Quad 1 (zero based counting) reworked; metrology updated, the other 3 quads (Q0, Q2, Q3) are unchanged (as in the previous metrology: May 14, 2014).
  - Used as:
    - Front detector at DSC for SC1 experiment IH Milathianaki cxii0114 (damaged asic with laser) and cxid8114
    - Moved to DSA location for SC2 chamber experiments for cxic9714 and cxid5514
    - cxid2714 (moved to back detector after Z motor issues during cxid2714)
  - Info:
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = Ds1CsPad
    - Relative detector Z position:
      - no alias defined
      - pv = 'CXI:DS1:MMS:06.RBV'

## Camera1\_V16\_20131220

- 2013-12-20 -- Camera1 upgraded to V16
  - Metrology:
    - [2013-12-20-CSPAD-CXI-DS1-Metrology.xlsx](#)
  - Front detector for SC1 experiments starting in January 2014 including January PCS, cxia2514, cxii0214, cxib3214, cxib6714.
    - src = 'DetInfo(CxiDs1.0:Cspad.0)'
    - alias = Ds1CsPad
    - Relative detector Z position:
      - no alias defined
      - pv = 'CXI:DS1:MMS:06.RBV'

## Camera2\_V16\_20131212

- 2013-12-12 -- Camera2 upgraded to V16
  - Metrology:
    - [2013-12-12-CSPAD-CXI-DSD-Metrology.xlsx](#)
  - Used for experiments???.
    - src = 'DetInfo(CxiDsd.0:Cspad.0)'
    - Relative detector Z position:
      - pv = 'CXI:DS2:MMS:06.RBV'
- 2014-06-02 -- Ds2 chamber moved to DSC location
  - Changed name from CxiDsd (36) to CxiDs2 (33) in both the cxi.cnf file and the configdb CsPad02 definition.
  - Used as front detector for cxid6214, cxid9114, cxic4414, cxid5714, cxid6014, July 2014 PCS, cxic8214
    - src = 'DetInfo(CxiDs2.0:Cspad.0)'
    - Relative detector Z position:
      - pv = 'CXI:DS2:MMS:06.RBV'
  - Detector upside down?

## Camera3\_V16\_20131009

- Metrology file:
  - [2013-10-09-CSPAD-XPP-Metrology.xlsx](#)
- Out of vacuum camera typically used in XPP and XCS.
- 2014-12-17 -- Used in CXI at DG4 location in December 2014.
  - XCS concentrator
  - D50 MPOD power
  - Detector quads rotated 90 deg
  - src = 'DetInfo(CxiDg4.0:Cspad.0)'
  - Relative detector Z position:
    - alias = 'Dg4CsPad\_z'
    - pv = 'CXI:DG4:MMS:16.RBV'

## References

### Documentation on data formats

- [cxi db](#) - web documentation
- [crystfel](#) - page of T. A. White at DESY
- [cctbx](#) - sourceforge
- [psana](#) - confluence

### Relevant documents, publications

- [cheetah](#) - github, Anton Barty
- [dxtbx-the diffraction experiment toolbox](#), Aaron Brewster
- [XFEL Detectors and ImageCIF](#)
- [Diffraction Geometry](#), D.J.Thomas
- [Calibration Management Tool](#) (calibman)
- [CSPAD Alignment](#) - alignment summary
- [psgeom](#) - T.J. Lane converter between geometry formats in github

## MEC

**NOTE:** When a new geometry is available it is important for the MEC people to update the appropriate mecana file which has a list of "current" geometries. An example filename with this information is `/reg/g/pcds/package/mecana/mecana-0.0.8/mecana/cspaddata.py`

## Geometries

| Date       | Who uploaded | Experiment               | Geometry File Name                                                                                                                                             | File Type | DAQ "Source" Name (Ds1/Ds2) | Front /Back | Camera | Comment                                                                           |
|------------|--------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------|-------------|--------|-----------------------------------------------------------------------------------|
| 2017-10-20 | dubrovin     | valid after 2017 /10/20  | /reg/g/psdm/detector/alignment/cspad/calib-mec-2017-10-20/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/0-end.data                                  | psana     | MecTargetChamber.0:Cspad.0  |             |        | Gabriel replaced two 2x2s in Q1 and all four in Q2. See <a href="#">details</a> . |
| 2017-04-22 | dubrovin     | valid after 04/22 /217   | /reg/g/psdm/detector/alignment/cspad/calib-mec-2017-04-22/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/1-end.data-2017-04-22-CSPAD-MEC-After       | psana     | MecTargetChamber.0:Cspad.0  |             |        | New metrology for quads from Gabriel Blaj                                         |
| 2017-04-22 | dubrovin     | valid before 04 /19/2017 | /reg/g/psdm/detector/alignment/cspad/calib-mec-2017-04-22/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/0-end.data-2017-04-19-CSPAD-MEC-Before-corr | psana     | MecTargetChamber.0:Cspad.0  |             |        | New metrology for quads from Gabriel Blaj                                         |
| 2016-04-21 | dubrovin     | from 04/21 2016          | /reg/g/psdm/detector/alignment/cspad/calib-mec-2016-04-21/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/0-end.data                                  | psana     | MecTargetChamber.0:Cspad.0  |             |        |                                                                                   |
| 2016-02-16 | dubrovin     | from 02/16 to 04/21 2016 | /reg/g/psdm/detector/alignment/cspad/calib-mec-2016-02-16/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/0-end.data                                  | psana     | MecTargetChamber.0:Cspad.0  |             |        |                                                                                   |
| 2015-12-14 |              |                          | /reg/g/psdm/detector/alignment/cspad/calib-mec-2016-02-04/geo-2015-12-14.data                                                                                  | psana     |                             |             |        |                                                                                   |

## XPP

## Geometries

| Date       | Who uploaded | Experiment | Geometry File Name                                                                                                                                                                                                                                               | File Type        | DAQ "Source" Name         | Front /Back | Camera   | Comment                                                                                                                                                                                        |
|------------|--------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|-------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2017-11-03 | dubrovin     |            | /reg/g/psdm/detector/alignment/cspad/calib-xpp-2017-11-03-camera3/calib/CsPad::CalibV1/XppGon.0:Cspad.0/geometry/0-end.data<br><br><a href="#">2017-11-03-CSPAD-XPP-Camera3-Metrology.xlsx</a><br><br><a href="#">2017-11-03-CSPAD-XPP-Camera3-Metrology.txt</a> | psana            | XppGon.0:Cspad.0          |             | Camera 3 | camera repaired,<br><br><a href="#">2017-11-03 XPP CSPAD Camera3 Alignment</a>                                                                                                                 |
| 2017-03-24 | cpo/dubrovin |            | /reg/g/psdm/detector/alignment/cspad/calib-xpp-2016-08-22-camera3/calib/CsPad::CalibV1/XppGon.0:Cspad.0/geometry/0-end-corr-2017-03-24.data                                                                                                                      | psana            | XppGon.0:Cspad.0          |             | Cspad    | this corrected an error in the optical metrology measurements where the quads were measured in the wrong order, requiring a 90 degree rotation. This camera also moved to XCS and MFX in 2017. |
| 2016-11-22 | yoona        | xppn3816   | <a href="#">xppn3816.geom</a> , <a href="#">21-end.data</a>                                                                                                                                                                                                      | crystfel / psana | XppEndstation.0:Rayonix.0 |             | Rayonix  |                                                                                                                                                                                                |

|            |                  |  |                                                                                                                             |           |                  |  |          |                                                        |
|------------|------------------|--|-----------------------------------------------------------------------------------------------------------------------------|-----------|------------------|--|----------|--------------------------------------------------------|
| 2016-08-22 | dubrovin         |  | /reg/g/psdm/detector/alignment/cspad/calib-xpp-2016-08-22-camera3/calib/CsPad::CalibV1/XppGon.0:Cspad.0/geometry/0-end.data | psana     | XppGon.0:Cspad.0 |  |          |                                                        |
| 2016-08-22 | blaj<br>dubrovin |  | <a href="#">2016-08-22-CSPAD-XPP-Camera3-Metrology.xlsx</a><br><a href="#">2016-08-22-CSPAD-XPP-Camera3-Metrology.txt</a>   | metrology | XppGon.0:Cspad.0 |  | Camera 3 | applied to all experiments taken after August 19, 2016 |
| 2013-10-09 | dubrovin         |  | /reg/g/psdm/detector/alignment/cspad/calib-xpp-2013-10-09/calib/CsPad::CalibV1/XppGon.0:Cspad.0/geometry/0-end.data         | psana     | XppGon.0:Cspad.0 |  |          |                                                        |
| 2013-10-09 | blaj<br>dubrovin |  | <a href="#">2013-10-09-CSPAD-XPP-Metrology.xlsx</a><br><a href="#">2013-10-09-CSPAD-XPP-Metrology.txt</a>                   | metrology | XppGon.0:Cspad.0 |  | Camera 3 |                                                        |

## MFx

### Geometries

| Date                        | Who uploaded | Experiment | Geometry File Name                                            | File Type        | DAQ "Source" Name                         | Front /Back | Camera     | Comment                                                                                     |
|-----------------------------|--------------|------------|---------------------------------------------------------------|------------------|-------------------------------------------|-------------|------------|---------------------------------------------------------------------------------------------|
| 2020-09-17                  | yoona        | mfx00118   | <a href="#">214-end.data</a><br><a href="#">mfx00118.geom</a> | psana / crystfel | MfxEndstation.0: Epix10ka2M.0   epix10k2M |             | Epix10ka2M | Geometry based on lysozyme (indexing rate: 11%) and silver behenate                         |
| See 2017-03-24 entry in XPP |              |            |                                                               |                  |                                           |             |            |                                                                                             |
| 2016-11-22                  | yoona        |            | <a href="#">mfx.geom</a><br><a href="#">1-end.data</a>        | crystfel / psana | MfxEndstation.0:Rayonix.0                 |             | Rayonix    | Psana detector centred in x,y,z using psocake. Converted to crystfel geometry using psgeom. |
| 2017-02-21                  | yoona        | mfxn1116   | <a href="#">mfxn1116_v5a.geom</a>                             | crystfel         | MfxEndstation.0:Cspad.0                   |             | Cspad      | Geoptimized geometry courtesy of Oleksandr Yefanov. This was a Cspad borrowed from XPP.     |
| 2020-08-25                  | yoona        | mfx00318   | <a href="#">1-end.data</a>                                    | psana            | MfxEndstation.0: Epix10ka2M.0   epix10k2M |             | Epix10ka2M | Recentered on lysozyme rings using Psocake                                                  |
| 2021-05-17                  | cpo/brewster | mfxlv4318  | <a href="#">epix_run23.expt</a>                               | dials            | epix10k2M                                 |             |            | From /reg/d/psdm/mfx/mfxlv4318/results/common /geom/epix_run23.expt                         |

## AMO

### Geometries

| Date       | Who uploaded | Experiment | Geometry File Name                  | File Type | DAQ "Source" Name | Front/Back | Camera | Comment               |
|------------|--------------|------------|-------------------------------------|-----------|-------------------|------------|--------|-----------------------|
| 2017-06-16 | yoona        |            | <a href="#">pnccd-jun16-v1.geom</a> | crystfel  |                   |            | pnCCD  | Optimized with hdfsee |

## References

- Some slides on SPI [pnCCD geometry](#)
- [CSPAD Alignment](#)
- [CSPAD Geometry and Alignment](#)
- [Detector Geometry](#)
- [CSPad metrology and calibration files, links](#)
- [Calibration Management Tool](#)