

2015-06-08 Quad1 MEC Alignment

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Optical measurements

E-mail from Gabriel:



Attached, the new metrology file for the (refurbished) MEC quad delivered today. It should be applied to all experiments from today (June 8th, 2015) to the next time the camera will be disassembled.
As always, please use only Mikhail's curated geometry and not the raw geometry attached to this message.

...

Gabriel

- [2015-06-08-Quad1-MEC-Metrology.xlsx](#) - file with optical measurements from Gabriel
- [2015-06-08-Quad1-MEC-Metrology.txt](#) - text version of the same file

Quality check

Quality check in X-Y plane

2015-06-09 10:11:54 (info) CalibManager.GUIMetrology: Quality check in X-Y plane:													
segm:	S1		S2	dS1	dS2	L1	L2	dL1	dL2	angle(deg)	D1	D2	dD
(dS)	d(dL)												d
Quad	0												
segm: 0	-20911	-20909	-92	-90	43543	43578	-49	-14	-0.11969	48330	48308		
22	-2	-35											
segm: 1	-20910	-20910	-45	-45	43549	43552	-22	-19	-0.05920	48311	48309		
2	0	-3											
segm: 2	-20909	-20905	-23	-19	-43541	-43568	7	-20	-0.02763	48327	48297		
30	-4	27											
segm: 3	-20905	-20908	29	26	-43540	-43545	-15	-20	0.03619	48305	48297		
8	3	5											
segm: 4	20946	20946	146	146	-43579	-43579	37	37	-0.19195	48381	48321		
60	0	0											
segm: 5	20909	20910	-163	-162	-43545	-43547	-77	-79	0.21381	48306	48306		
0	-1	2											
segm: 6	-20924	-20900	-13	11	-43547	-43585	17	-21	-0.00132	48327	48322		
5	-24	38											
segm: 7	-20914	-20901	63	76	-43540	-43546	-37	-43	0.09145	48308	48296		
12	-13	6											

Quality check in Z

```

2015-06-09 10:11:54 (info) CalibManager.GUIMetrology: Quality check in Z:
segm:      SA      LA  XSize  YSize   dZS1  dZS2  dZL1  dZL2   dZSA  dZLA  ddZS  ddZL   dZX  dZY
angXZ(deg) angYZ(deg) dz3(um)
Quad  0
segm: 0  -20910   43560   43560   20910   -107   14   -81   40    -46   -20  -121  -121   -20  -46
-0.02631  -0.12605   120.956
segm: 1  -20910   43550   43550   20910    126   62    63   -1     94   31   64   64    31   94
0.04078   0.25757   -63.999
segm: 2  -20907  -43554   20907   43554     2    17   35   50     9   42  -15  -15     9   42
0.02466   0.05525  -14.972
segm: 3  -20906  -43542   20906   43542    -17   -8   43   52    -12   47   -9   -9    -12   47
-0.03289   0.06185    -8.995
segm: 4   20946  -43579   43579   20946    -28  -14  -37  -23    -21  -30  -14  -14    -30  -21
-0.03944  -0.05744   14.000
segm: 5   20909  -43546   43546   20909    -37  -38  -28  -29    -37  -28   1    1    -28  -37
-0.03684  -0.10139   -0.997
segm: 6  -20912  -43566   20912   43566     -4   26   11   41     11   26  -30  -30    11   26
0.03014   0.03419  -29.994
segm: 7  -20907  -43543   20907   43543    -83  -77   29   35    -80   32   -6   -6    -80   32
-0.21924   0.04211   -5.947

```

Corrections

- No correction applied.

Constants

center

194.53	193.87	303.83	91.27	621.30	621.00	706.17	493.30
194.53	193.87	303.83	91.27	621.30	621.00	706.17	493.30
194.53	193.87	303.83	91.27	621.30	621.00	706.17	493.30
194.53	193.87	303.83	91.27	621.30	621.00	706.17	493.30
305.06	93.15	623.16	623.98	512.12	724.83	197.79	197.57
305.06	93.15	623.16	623.98	512.12	724.83	197.79	197.57
305.06	93.15	623.16	623.98	512.12	724.83	197.79	197.57
305.06	93.15	623.16	623.98	512.12	724.83	197.79	197.57
0.39	0.11	0.03	-0.03	0.15	0.11	0.44	-0.50
0.39	0.11	0.03	-0.03	0.15	0.11	0.44	-0.50
0.39	0.11	0.03	-0.03	0.15	0.11	0.44	-0.50
0.39	0.11	0.03	-0.03	0.15	0.11	0.44	-0.50

tilt (degree)

-0.11969	-0.05920	-0.02763	0.03619	-0.19195	0.21381	-0.00132	0.09145
-0.11969	-0.05920	-0.02763	0.03619	-0.19195	0.21381	-0.00132	0.09145
-0.11969	-0.05920	-0.02763	0.03619	-0.19195	0.21381	-0.00132	0.09145
-0.11969	-0.05920	-0.02763	0.03619	-0.19195	0.21381	-0.00132	0.09145

geometry

```

# TITLE      Geometry parameters of CSPAD
# DATE_TIME  2015-06-09 10:11:54 PDT
# METROLOGY  /reg/g/psdm/detector/alignment/cspad/calib-mec-2015-06-08/work/2015-06-08-Quad1-MEC-Metrology.txt
# AUTHOR     dubrovin
# EXPERIMENT MEC
# DETECTOR   CSPAD
# CALIB_TYPE geometry
# COMMENT:01 Table contains the list of geometry parameters for alignment of 2x1 sensors, quads, CSPAD, etc
# COMMENT:02 All translation and rotation pars of the object are defined w.r.t. parent object Cartesian frame
# PARAM:01 PARENT      - name and version of the parent object
# PARAM:02 PARENT_IND  - index of the parent object
# PARAM:03 OBJECT      - name and version of the object
# PARAM:04 OBJECT_IND  - index of the new object
# PARAM:05 X0          - x-coordinate [um] of the object origin in the parent frame
# PARAM:06 Y0          - y-coordinate [um] of the object origin in the parent frame
# PARAM:07 Z0          - z-coordinate [um] of the object origin in the parent frame
# PARAM:08 ROT_Z       - object design rotation angle [deg] around Z axis of the parent frame
# PARAM:09 ROT_Y       - object design rotation angle [deg] around Y axis of the parent frame
# PARAM:10 ROT_X       - object design rotation angle [deg] around X axis of the parent frame
# PARAM:11 TILT_Z      - object tilt angle [deg] around Z axis of the parent frame
# PARAM:12 TILT_Y      - object tilt angle [deg] around Y axis of the parent frame
# PARAM:13 TILT_X      - object tilt angle [deg] around X axis of the parent frame
# HDR PARENT IND      OBJECT IND      X0[um]  Y0[um]  Z0[um]  ROT-Z ROT-Y ROT-X      TILT-Z  TILT-Y  TILT-X

QUAD:V1      0  SENS2X1:V1      0      21382  33532      43      0      0      0  -0.11969 -0.02631
-0.12605
QUAD:V1      0  SENS2X1:V1      1      21310  10238      12      0      0      0  -0.05920 0.04078
0.25757
QUAD:V1      0  SENS2X1:V1      2      33397  68498      3      270     0      0  -0.02763 0.02466
0.05525
QUAD:V1      0  SENS2X1:V1      3      10032  68588      -3     270     0      0   0.03619 -0.03289
0.06185
QUAD:V1      0  SENS2X1:V1      4      68293  56292      16     180     0      0  -0.19195 -0.03944
-0.05744
QUAD:V1      0  SENS2X1:V1      5      68260  79673      12     180     0      0   0.21381 -0.03684
-0.10139
QUAD:V1      0  SENS2X1:V1      6      77622  21741      48     270     0      0  -0.00132 0.03014
0.03419
QUAD:V1      0  SENS2X1:V1      7      54223  21717     -55     270     0      0   0.09145 -0.21924
0.04211
...
CSPAD:V1     0  QUAD:V1      0      -4500  -4500      0      90      0      0   0.00000 0.00000
0.00000
CSPAD:V1     0  QUAD:V1      1      -4500   4500      0      0      0      0   0.00000 0.00000
0.00000
CSPAD:V1     0  QUAD:V1      2       4500   4500      0     270     0      0   0.00000 0.00000
0.00000
CSPAD:V1     0  QUAD:V1      3       4500  -4500      0     180     0      0   0.00000 0.00000
0.00000

#RAIL        0  CSPAD:V1      0          0          0 1000000      0      0      0   0.00000 0.00000
0.00000
#IP          0  RAIL        0          0          0          0      0      0      0   0.00000 0.00000
0.00000

```

Alignment check with rings

TBD

Deployment

Parameters for geometry (and old style center and tilt) are available in

Archive: /reg/g/psdm/detector/alignment/cspad/calib-mec-2015-06-08/calib/CsPad::CalibV1/MecTargetChamber.0:Cspad.0/geometry/0-end.data

- 0-end.data - non-corrected

Deployment: for all experiments from 2015-06-08 to 2015-...

Summary

All optic measurements are within 3 of precision. No correction applied.

References

- [CSPAD Alignment](#)
- [CSPAD Geometry and Alignment](#)
- [CSPAD Geometry Software](#)
- [CSPAD2x2 Alignment](#)