

V&V Reference Report

L2 ASCDS Version : 10.6.3

Observation 21113 - L2 Version 1
Chandra X-Ray Center

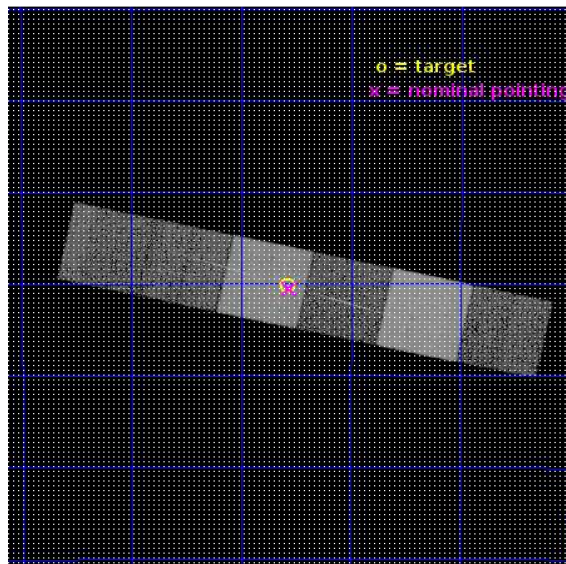
L2 Processing Date : Jul 2 2018

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1 Front

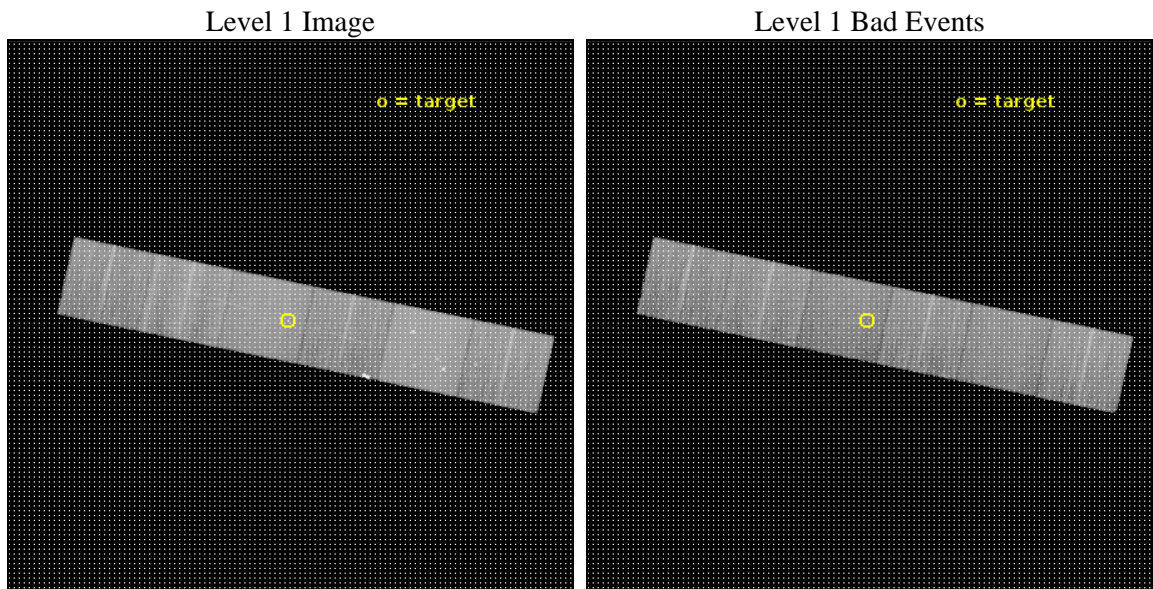
| | | |
|----------|---|---|
| seq_num | 201176 | Sequence number |
| obs_id | 21113 | Observation id |
| title | Legacy HETG Spectrum of a Massive Star: zeta Pup | Proposal title |
| observer | Wayne Waldron | Principal investigator |
| object | zeta Pup | Source name |
| dtcycle | 0 | |
| cycle | P | events from which exps? Prim/Second/Both |
| ra_targ | 120.895833 | Observer's specified target RA [deg] |
| dec_targ | -40.003139 | Observer's specified target Dec [deg] |
| ra_nom | 120.89028298791 | Nominal RA [deg] |
| dec_nom | -40.009374143749 | Nominal Dec [deg] |
| roll_nom | 192.15303320489 | Nominal Roll [deg] |
| revision | 1 | Processing version of data |
| ontime | 17951.297330976 | Sum of GTIs [s] |
| livetime | 17723.987195197 | Livetime [s] |
| ontime4 | 17951.338370919 | Sum of GTIs [s] |
| ontime5 | 17951.256290913 | Sum of GTIs [s] |
| ontime6 | 17947.974280715 | Sum of GTIs [s] |
| ontime7 | 17951.297330976 | Sum of GTIs [s] |
| ontime8 | 17951.174210906 | Sum of GTIs [s] |
| ontime9 | 17951.133170962 | Sum of GTIs [s] |
| l2events | 230658 | Number of level 2 events |



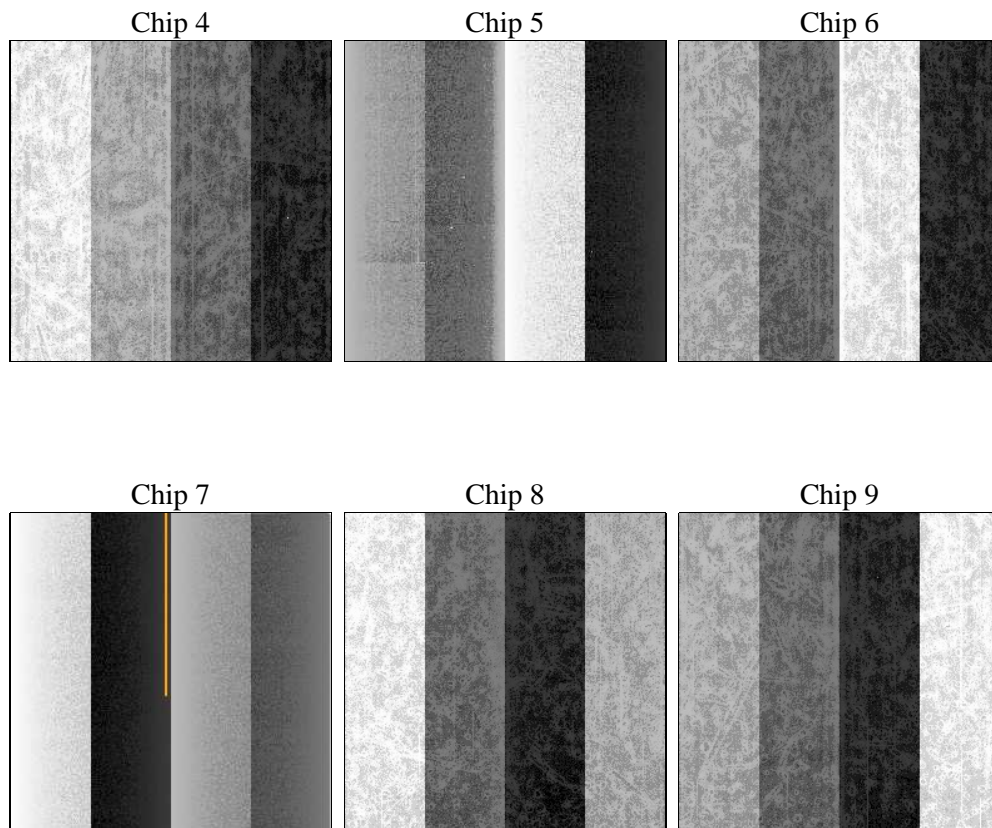
2 OBI

2.1 OBI

2.1.1 Images



2.1.2 Bias



2.1.3 Parameters

| | | | | | |
|----------|---------------------|--------------------------------|----------------|--------------------|---|
| obi_num | 0 | Obi number | sched_exp_time | 18000.000000 | [s] Scheduled observation exposure time |
| ascdsver | 10.6.3 | Processing system revision | ontime | 17951.297330976 | Sum of GTIs [s] |
| caldsver | 4.7.8 | | ontime4 | 17951.338370919 | Sum of GTIs [s] |
| date | 2018-07-02T17:16:56 | Date and time of file creation | ontime5 | 17951.256290913 | Sum of GTIs [s] |
| revision | 1 | Processing version of data | ontime6 | 17947.974280715 | Sum of GTIs [s] |
| | | | ontime7 | 17951.297330976 | Sum of GTIs [s] |
| | | | ontime8 | 17951.174210906 | Sum of GTIs [s] |
| | | | ontime9 | 17951.133170962 | Sum of GTIs [s] |
| | | | l1events | 991285 | Number of level 1 events |
| | | | tgmethod | TGDETECT | Method used to create src1a file |
| | | | ra_pos | (4065.67, 4143.12) | src1a sky pixel position |

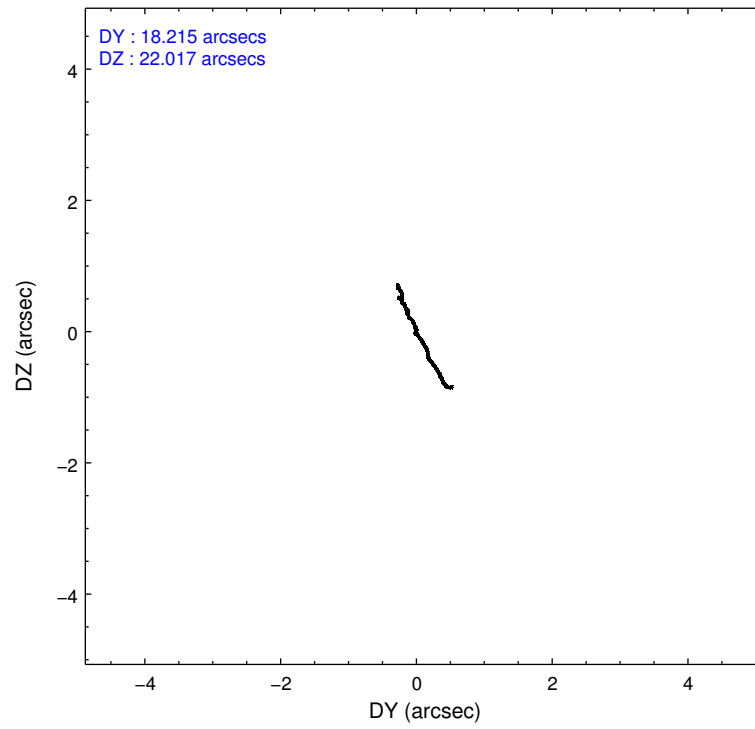
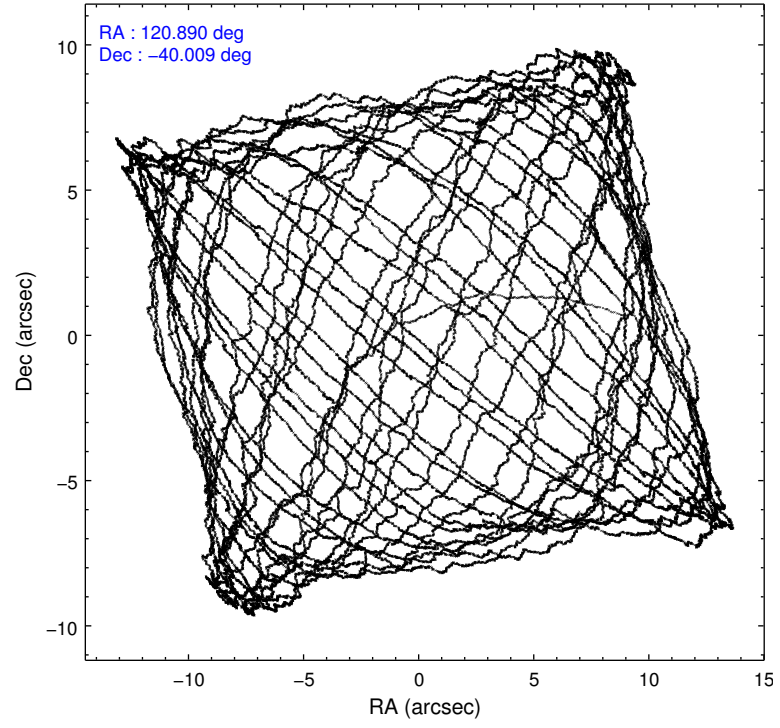
2.1.4 Events

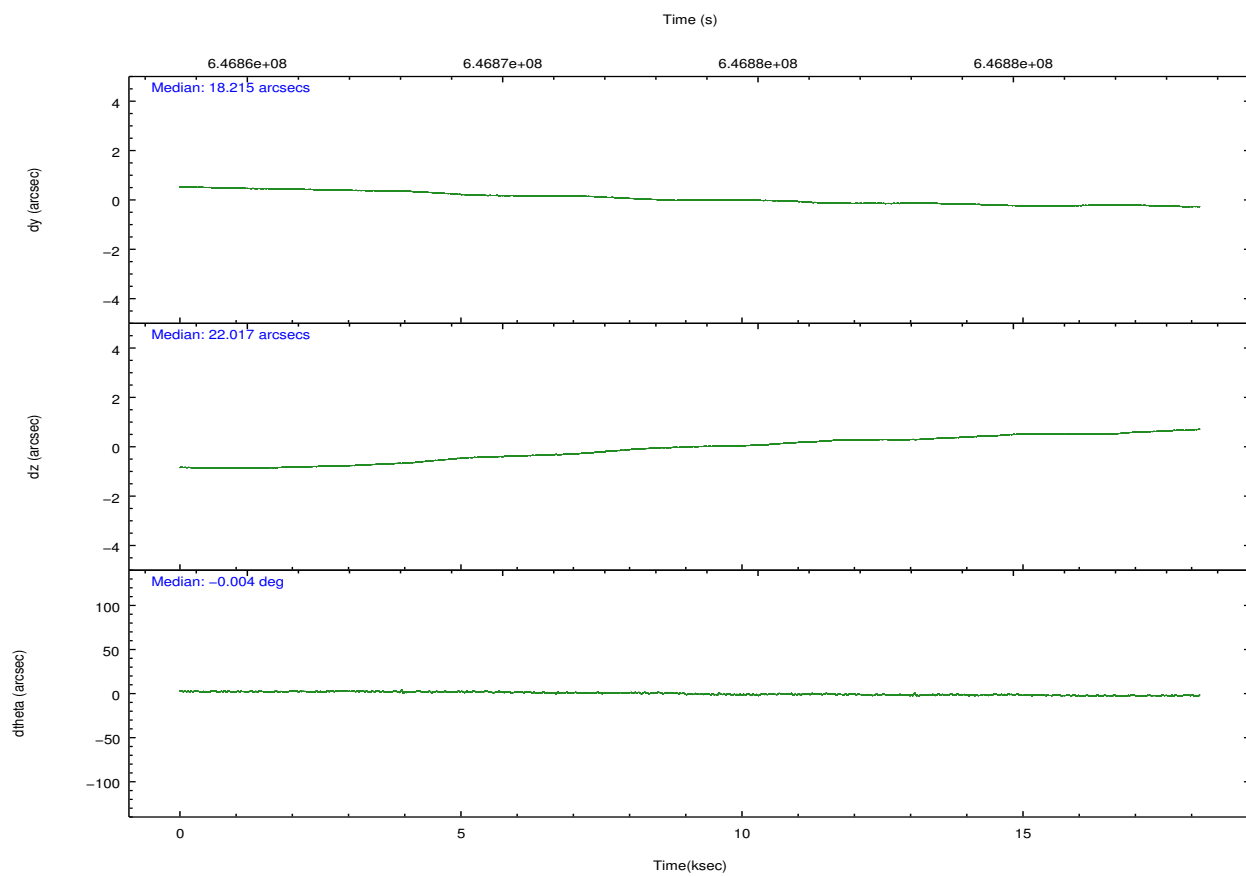
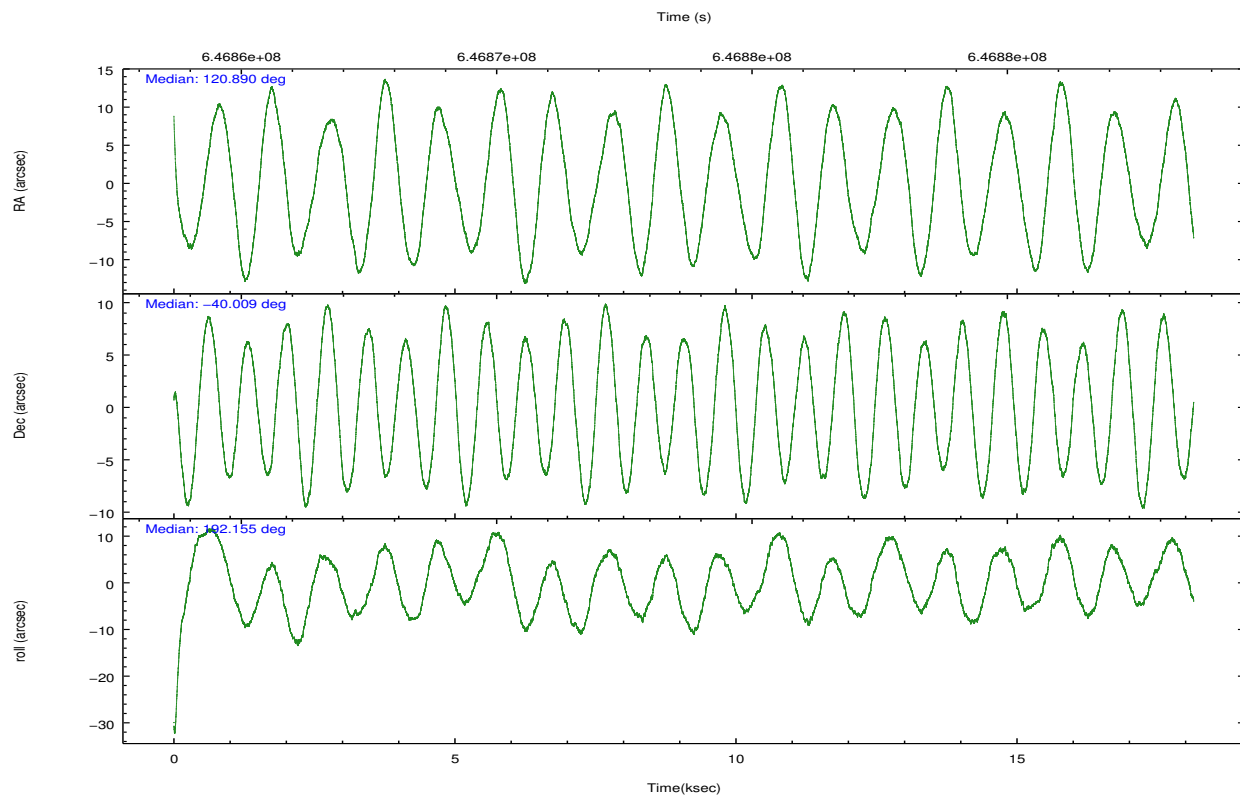
| | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 | | ccd 4 | ccd 5 | ccd 6 | ccd 7 | ccd 8 | ccd 9 |
|-----------------|--------|--------|--------|--------|--------|--------|----------------|--------|-------|--------|-------|--------|--------|
| level 1 events | 153015 | 214736 | 144430 | 173770 | 174505 | 130829 | grade 0 events | 6727 | 11324 | 11408 | 7065 | 14699 | 5864 |
| rejected events | 135882 | 108647 | 117443 | 96218 | 126114 | 114354 | | 4% | 5% | 7% | 4% | 8% | 4% |
| rejected % | 88% | 50% | 81% | 55% | 72% | 87% | grade 1 events | 145 | 682 | 94 | 250 | 150 | 88 |
| | | | | | | | | 0% | 0% | 0% | 0% | 0% | 0% |
| | | | | | | | grade 2 events | 4174 | 32496 | 8961 | 16885 | 11622 | 3717 |
| | | | | | | | | 2% | 15% | 6% | 9% | 6% | 2% |
| | | | | | | | grade 3 events | 1779 | 3421 | 1555 | 6253 | 4882 | 1662 |
| | | | | | | | | 1% | 1% | 1% | 3% | 2% | 1% |
| | | | | | | | grade 4 events | 1651 | 3291 | 1484 | 6328 | 4610 | 1613 |
| | | | | | | | | 1% | 1% | 1% | 3% | 2% | 1% |
| | | | | | | | grade 5 events | 6677 | 15431 | 6329 | 17793 | 9560 | 7223 |
| | | | | | | | | 4% | 7% | 4% | 10% | 5% | 5% |
| | | | | | | | grade 6 events | 2803 | 55576 | 3581 | 41038 | 12588 | 3628 |
| | | | | | | | | 1% | 25% | 2% | 23% | 7% | 2% |
| | | | | | | | grade 7 events | 129059 | 92515 | 111018 | 78158 | 116394 | 107034 |
| | | | | | | | | 84% | 43% | 76% | 44% | 66% | 81% |

2.2 Compared Parameters

| Parameter | Planned | Actual | Parameter | Planned | Actual |
|-----------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument | ACIS | ACIS | Obspar format version number | 7 | 7 |
| Detector | ACIS-456789 | ACIS-456789 | Obspar file type | PREDICTED | ACTUAL |
| Grating | HETG | HETG | Obspar update status | NONE | UPDATED |
| Data mode | FAINT | FAINT | CCD I0 on | N | N |
| Observation mode | POINTING | POINTING | CCD I1 on | N | N |
| [deg] Pointing RA | 120.916520 | 120.8902829879071 | CCD I2 on | N | N |
| [deg] Pointing Dec | -39.990666 | -40.00937414374949 | CCD I3 on | N | N |
| [deg] Pointing Roll | 192.013299 | 192.1530332048864 | CCD S0 on | O2 | Y |
| [mm] SIM focus pos | -0.684267 | -0.6828225247311905 | CCD S1 on | Y | Y |
| [mm] SIM defocus | 0 | 0.001444936568705701 | CCD S2 on | Y | Y |
| [mm] SIM translation stage pos | -190.132523 | -190.1400660498719 | CCD S3 on | Y | Y |
| [mm] SIM translation stage offset | 0 | 0.00754346686406393 | CCD S4 on | Y | Y |
| [s] Observation start time (MET) | 646864718.184000 | 646863529.77914 | CCD S5 on | O1 | Y |
| Observation start date | 2018-07-01T20:37:29 | 2018-07-01T20:18:49 | Number of optional ACIS chips dropped | 0 | 0 |
| [s] Observation end time (MET) | 646882718.184000 | 646883396.33032 | On-chip summing requested | N | N |
| Observation end date | 2018-07-02T01:37:29 | 2018-07-02T01:49:56 | Subarray requested | NONE | NONE |
| Read mode | TIMED | TIMED | Alternating exposures requested | N | N |
| | | | [s] Primary exposure time | 0.000000 | 3.2 |

2.3 Aspect



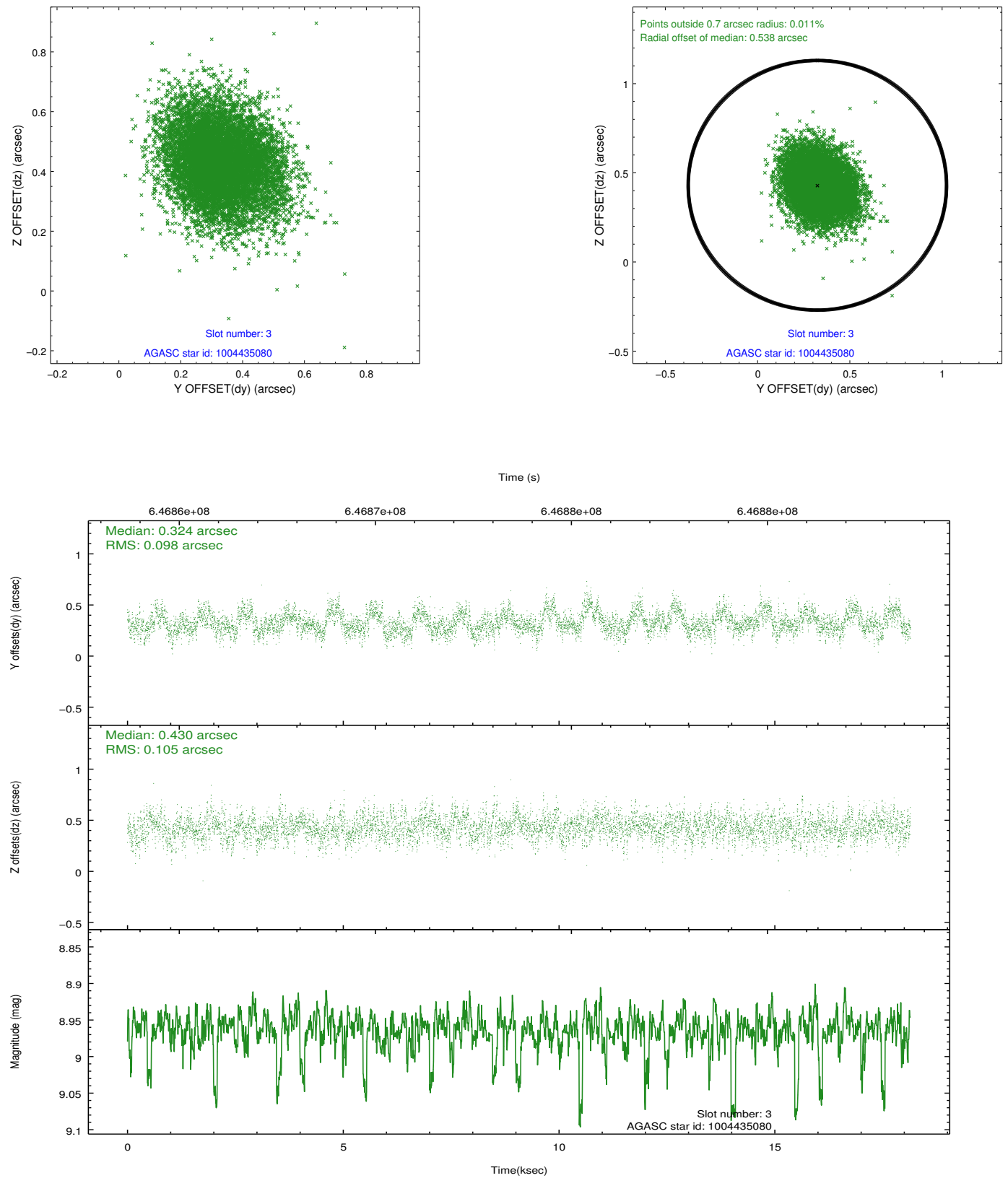


Slot Statistics

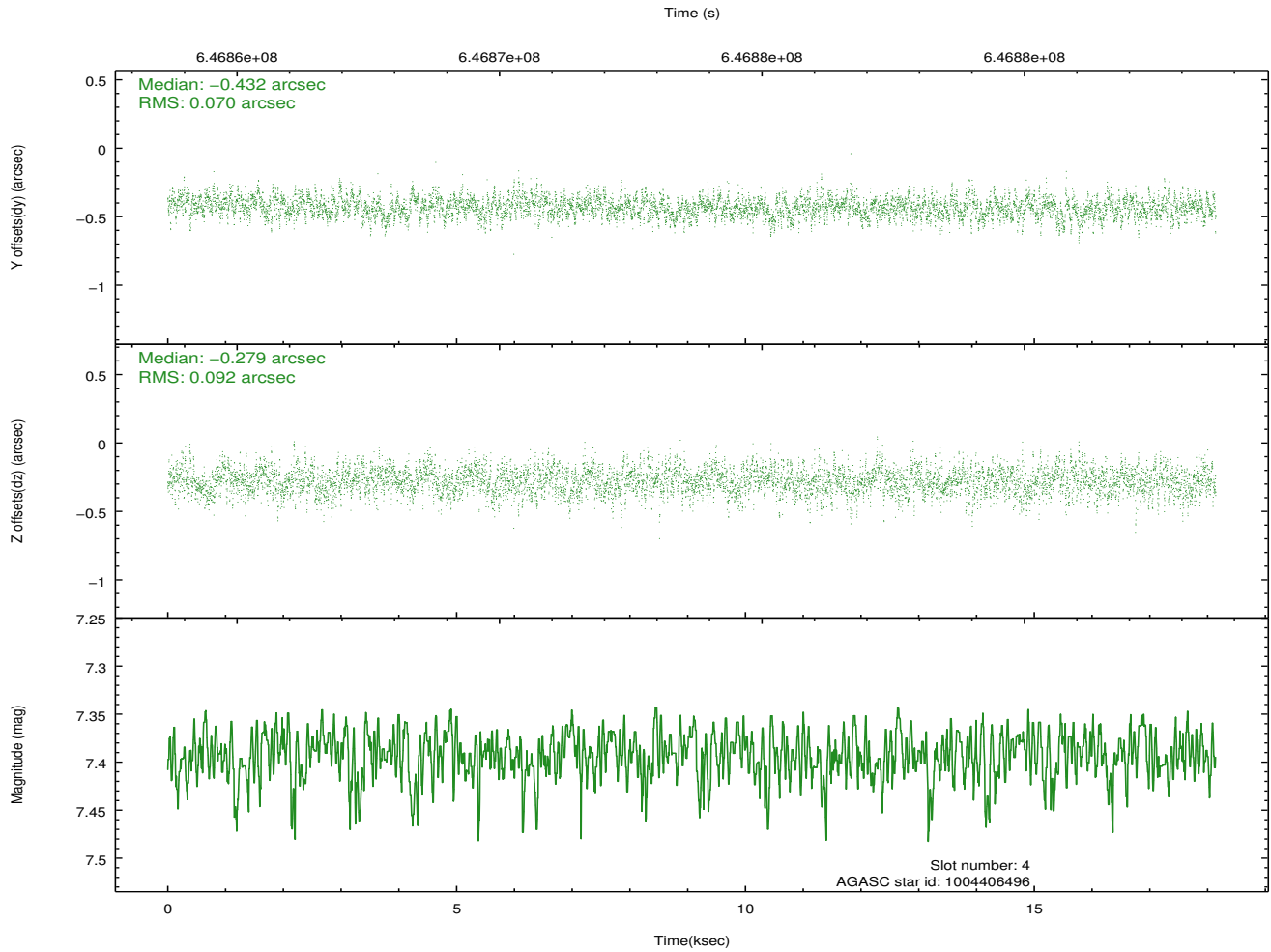
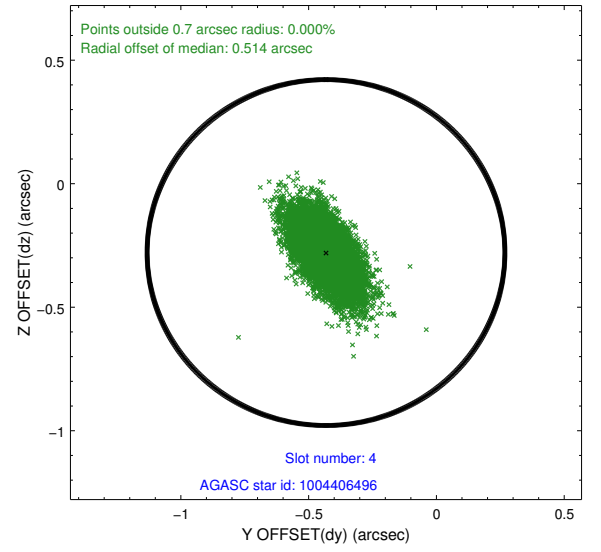
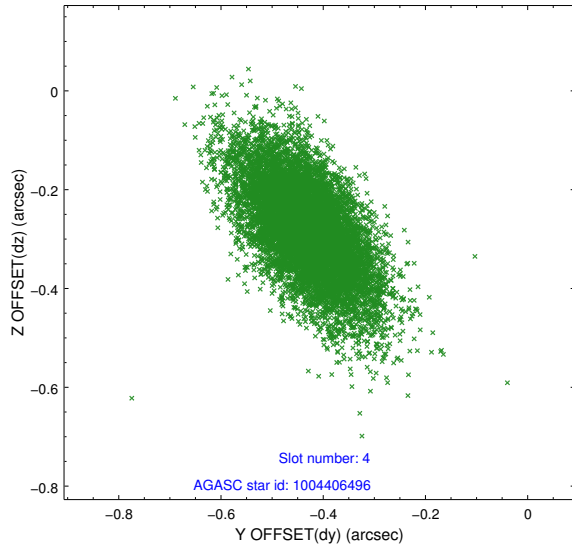
| pt | status | used | id | mag | n_pts | frac_pts | med_dy | med_dz | dr1 | dr2 | ra | dec | mean_y | mea |
|----|--------|------|------------|------|-------|----------|--------|--------|-------|-------|------------|------------|----------|-------|
| 0 | FID | | ACIS-S-1 | 7.03 | 4426 | 1.000 | 0.206 | 0.040 | 0.032 | 0.042 | 0.000000 | 0.000000 | 924.85 | -1739 |
| 1 | FID | | ACIS-S-2 | 6.96 | 4426 | 1.000 | -0.278 | -0.117 | 0.008 | 0.014 | 0.000000 | 0.000000 | -771.41 | -1744 |
| 2 | FID | | ACIS-S-6 | 7.20 | 4426 | 1.000 | 0.053 | 0.081 | 0.028 | 0.038 | 0.000000 | 0.000000 | 390.33 | 802 |
| 3 | GUIDE | used | 1004435080 | 8.96 | 8844 | 1.000 | 0.324 | 0.430 | 0.152 | 0.247 | 121.357562 | -39.510372 | -1556.94 | -1432 |
| 4 | GUIDE | used | 1004406496 | 7.39 | 8851 | 1.000 | -0.432 | -0.279 | 0.117 | 0.212 | 120.210035 | -40.527356 | 2294.25 | 1495 |
| 5 | GUIDE | used | 1004413080 | 8.79 | 8846 | 1.000 | -0.290 | -0.289 | 0.126 | 0.221 | 120.242432 | -40.499402 | 2187.79 | 1414 |
| 6 | GUIDE | used | 1004405288 | 7.63 | 8847 | 1.000 | 0.245 | 0.347 | 0.123 | 0.216 | 121.091785 | -39.410922 | -910.51 | -1938 |
| 7 | GUIDE | used | 1004425112 | 8.83 | 8847 | 1.000 | 0.146 | -0.202 | 0.147 | 0.240 | 121.364029 | -39.923076 | -1258.21 | 22 |

2.4 Star Slots

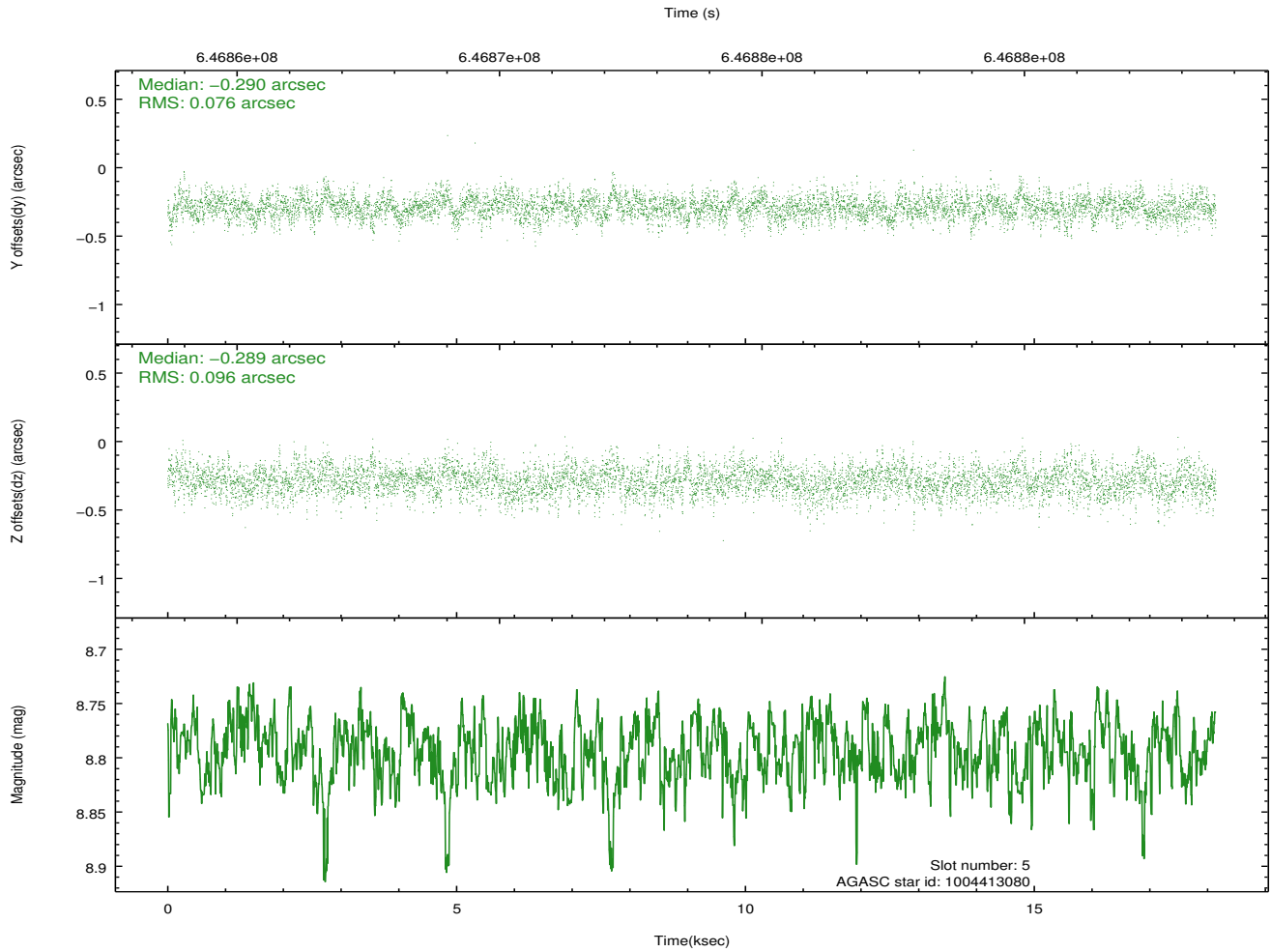
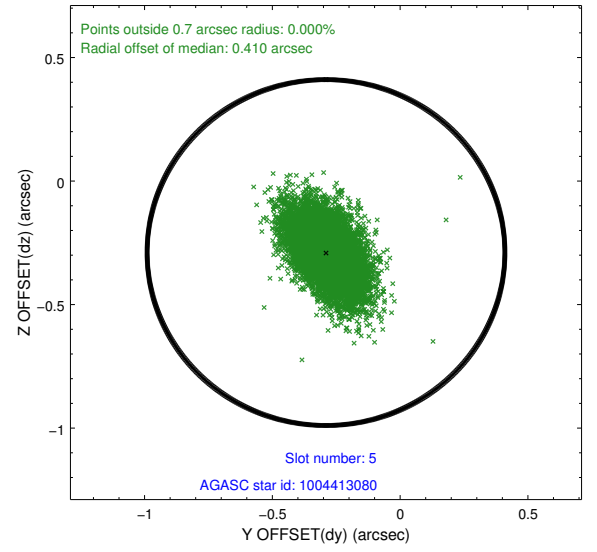
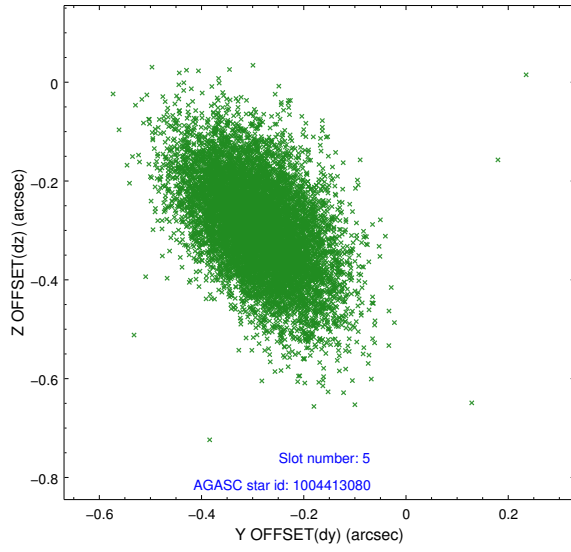
2.4.1 Slot 3



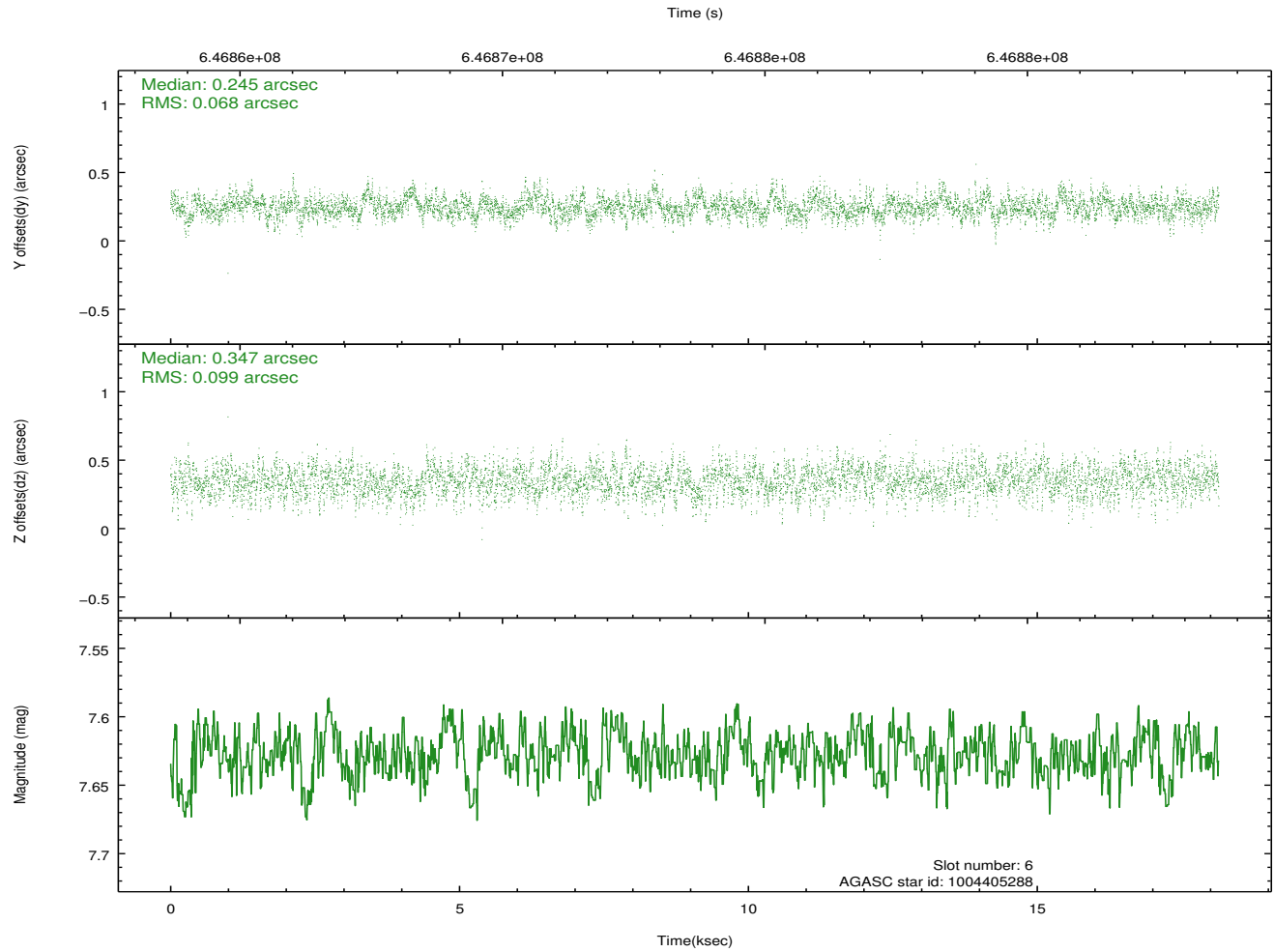
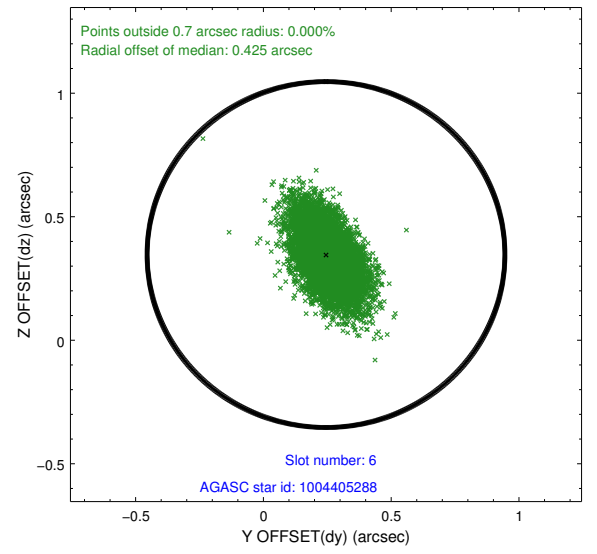
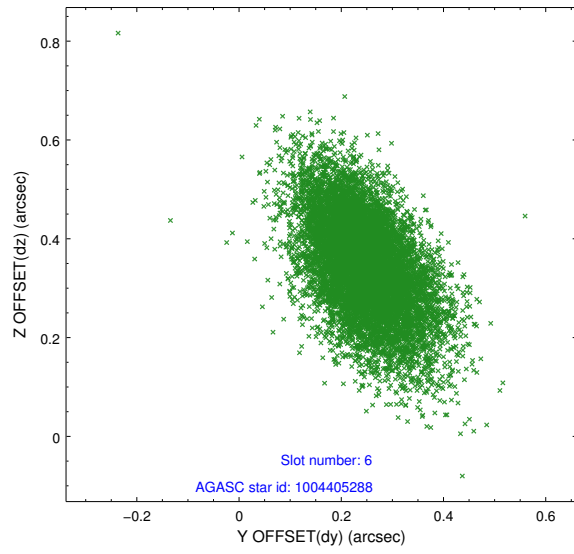
2.4.2 Slot 4



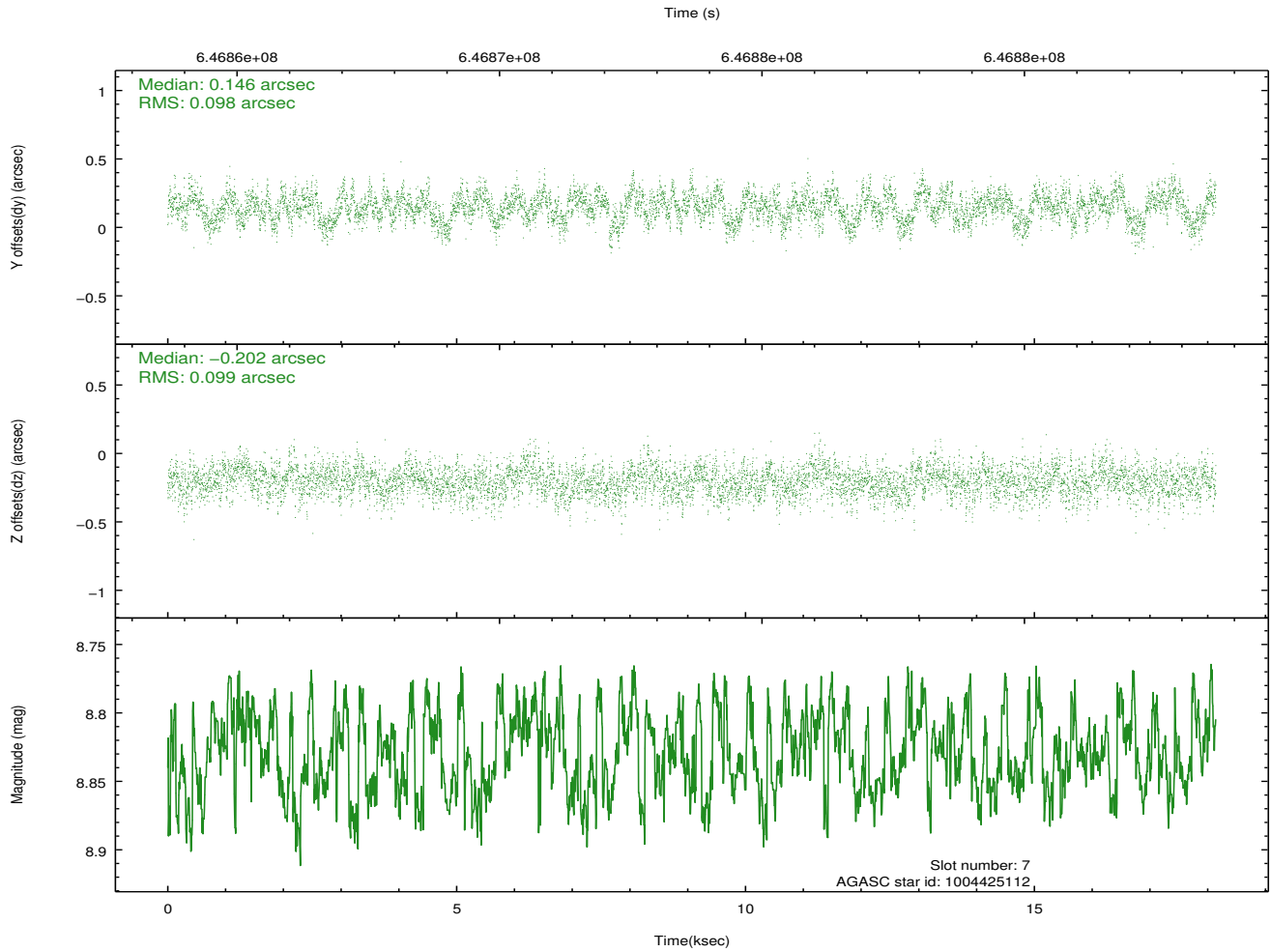
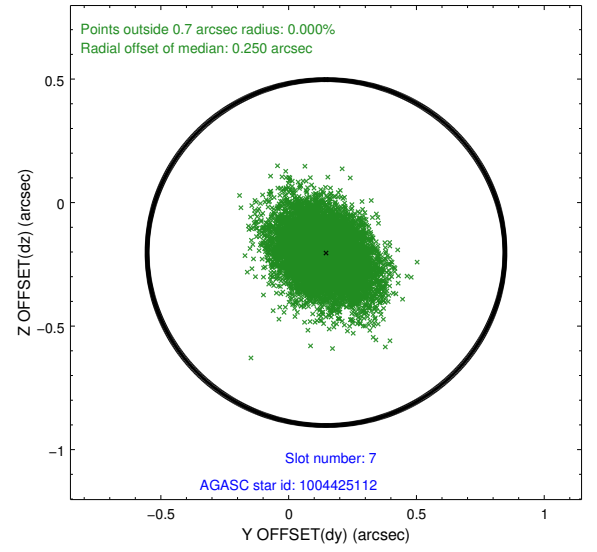
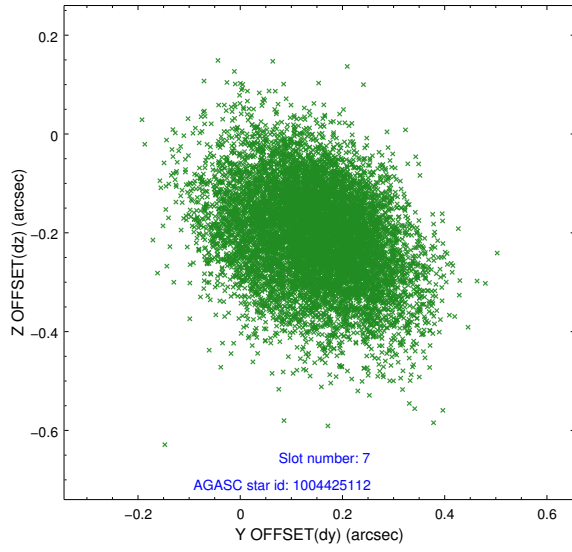
2.4.3 Slot 5



2.4.4 Slot 6

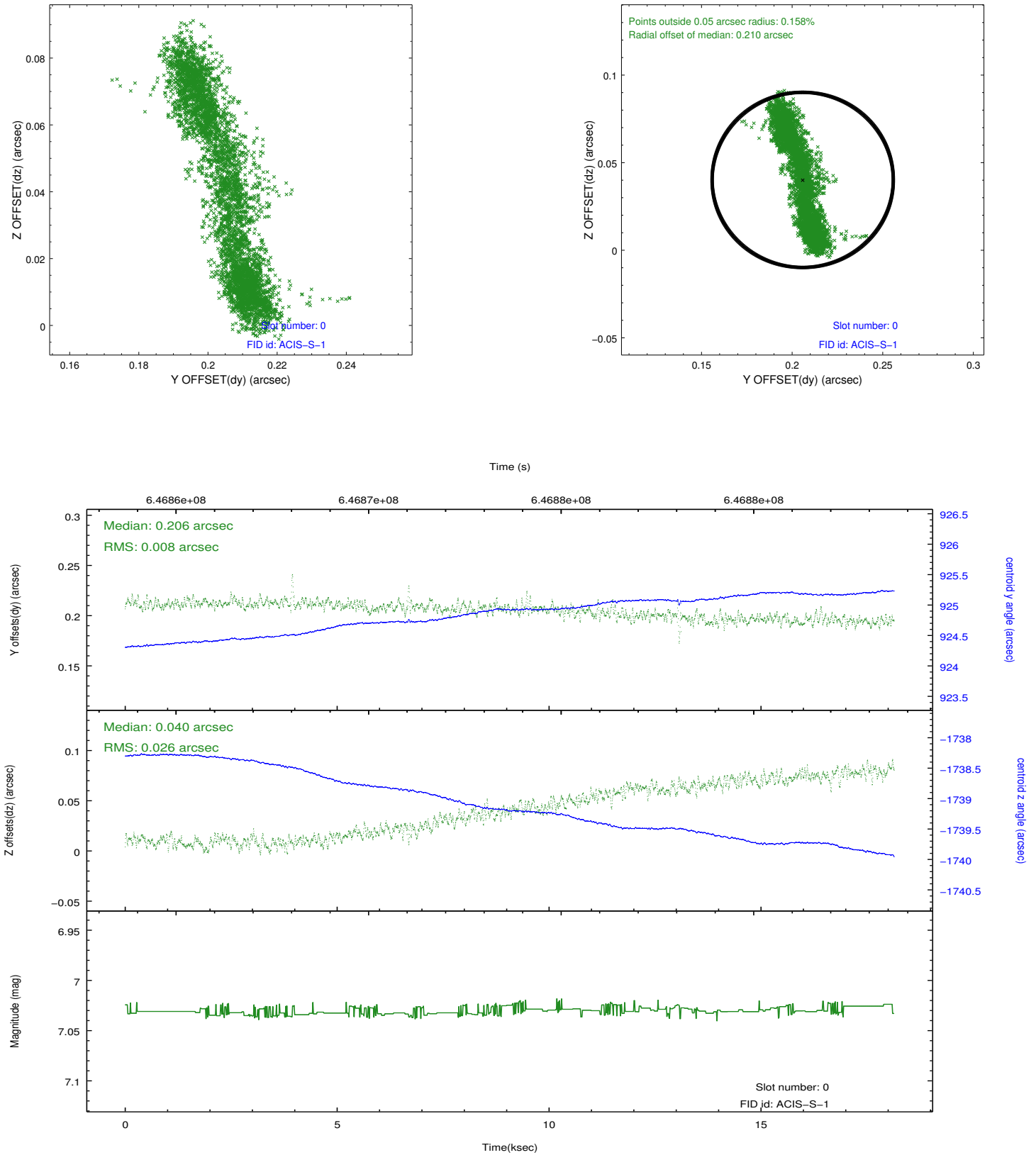


2.4.5 Slot 7

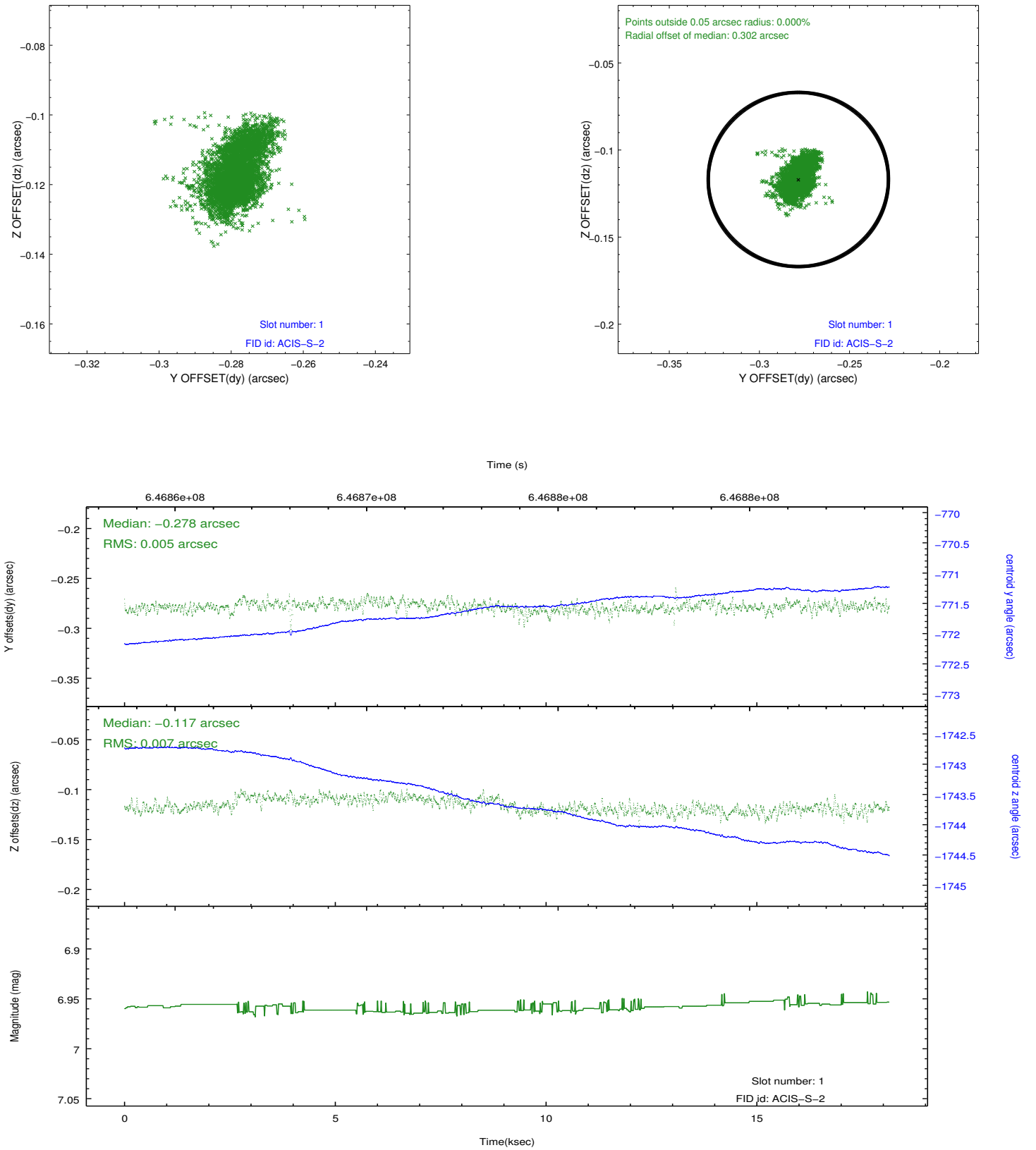


2.5 FID Slots

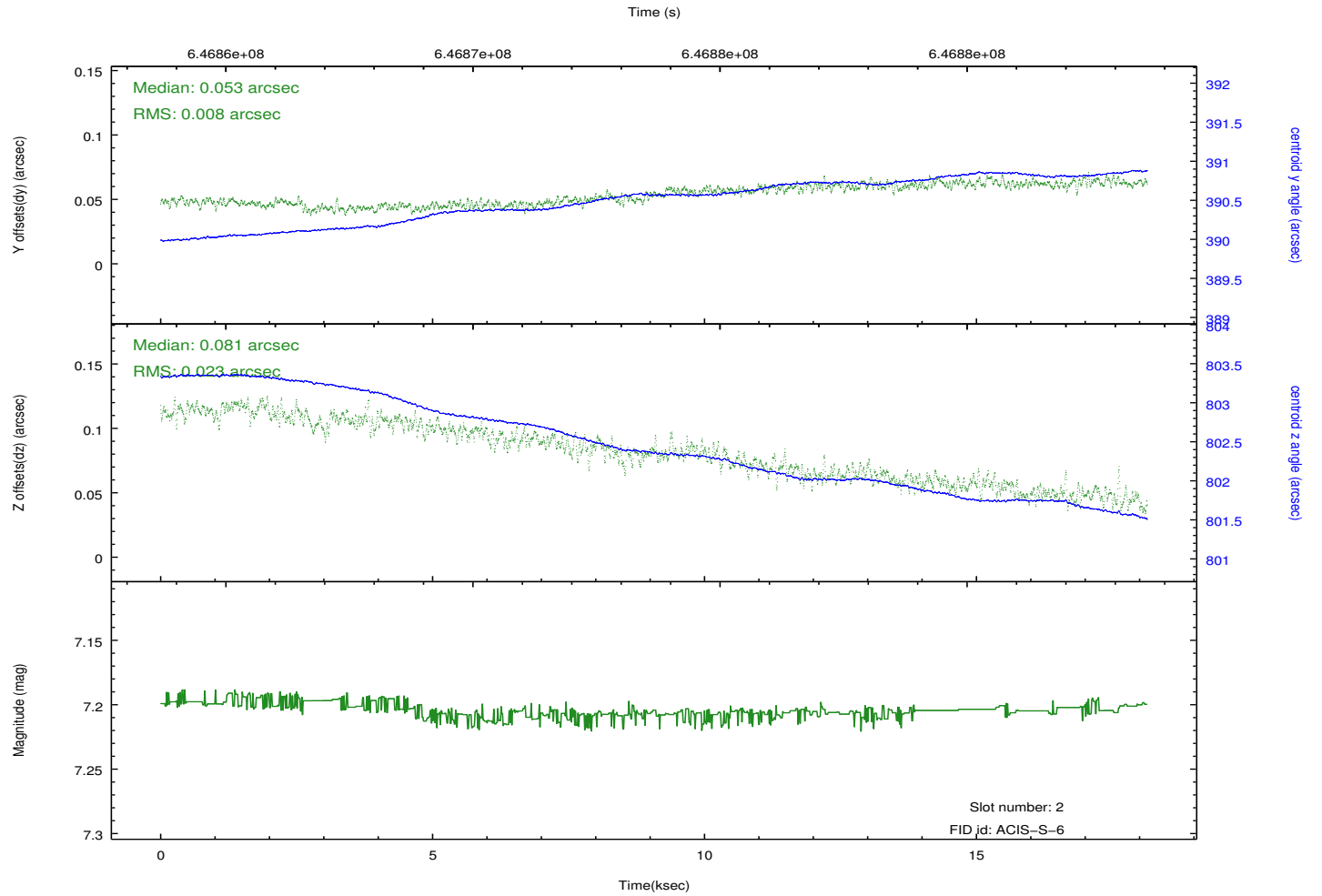
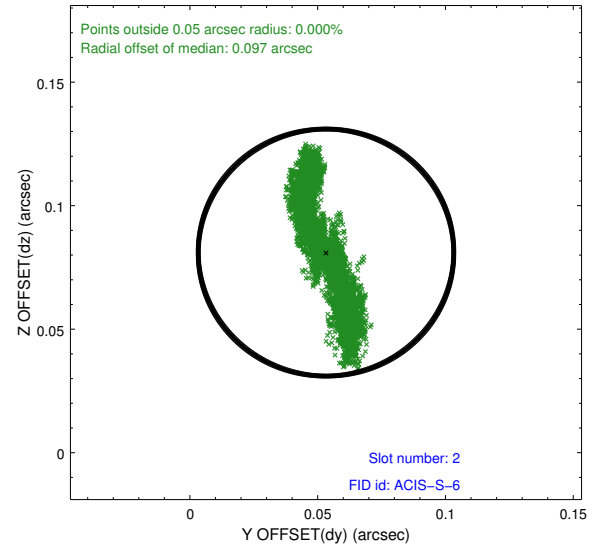
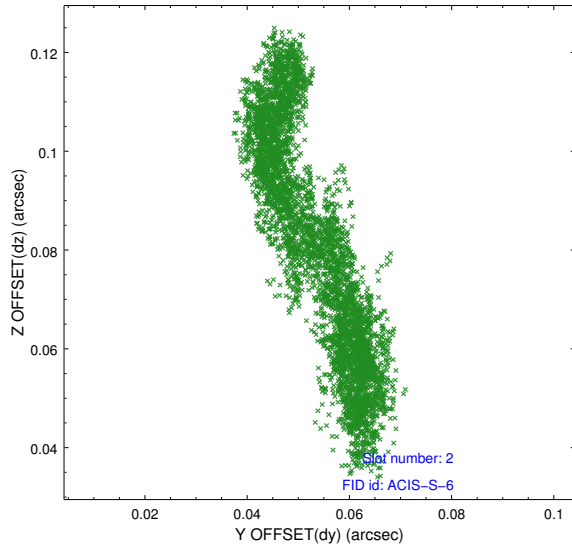
2.5.1 Slot 0



2.5.2 Slot 1

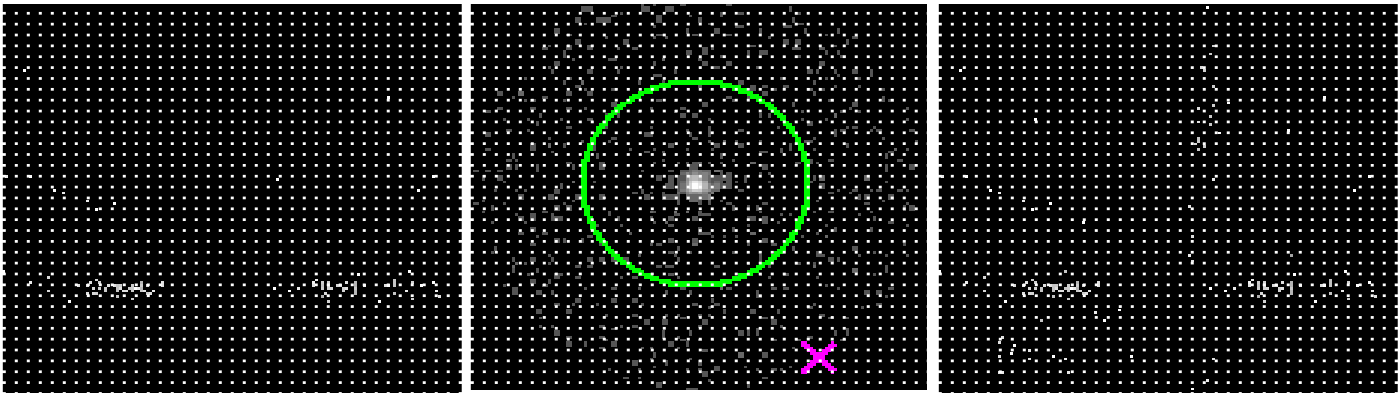


2.5.3 Slot 2



3 Gratings

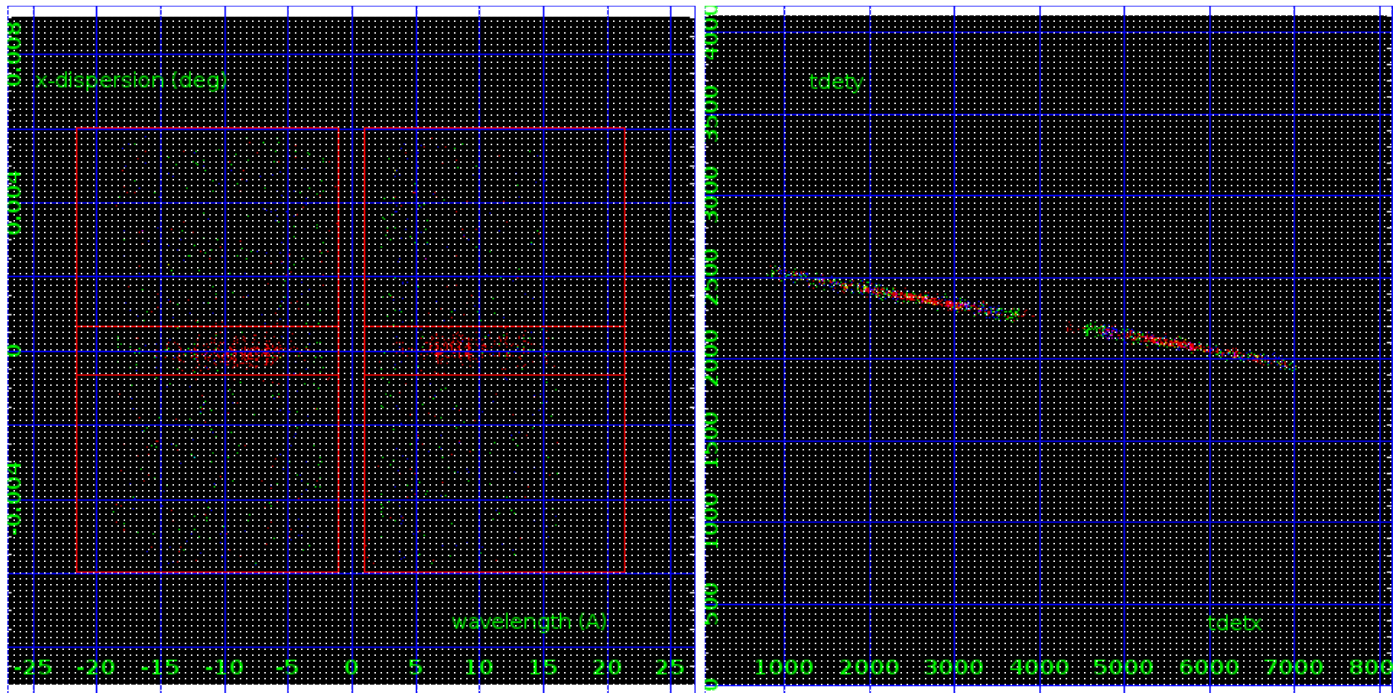
3.1 HEG Arm



HEG Order Sort 123

HEG Zero Order

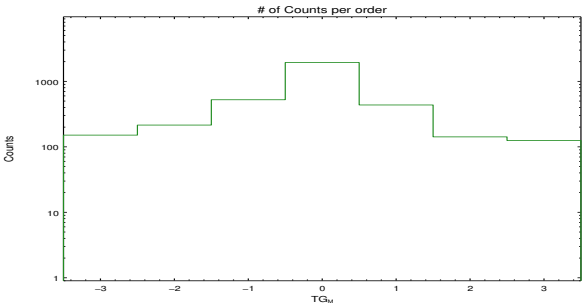
HEG Order Sort ALL

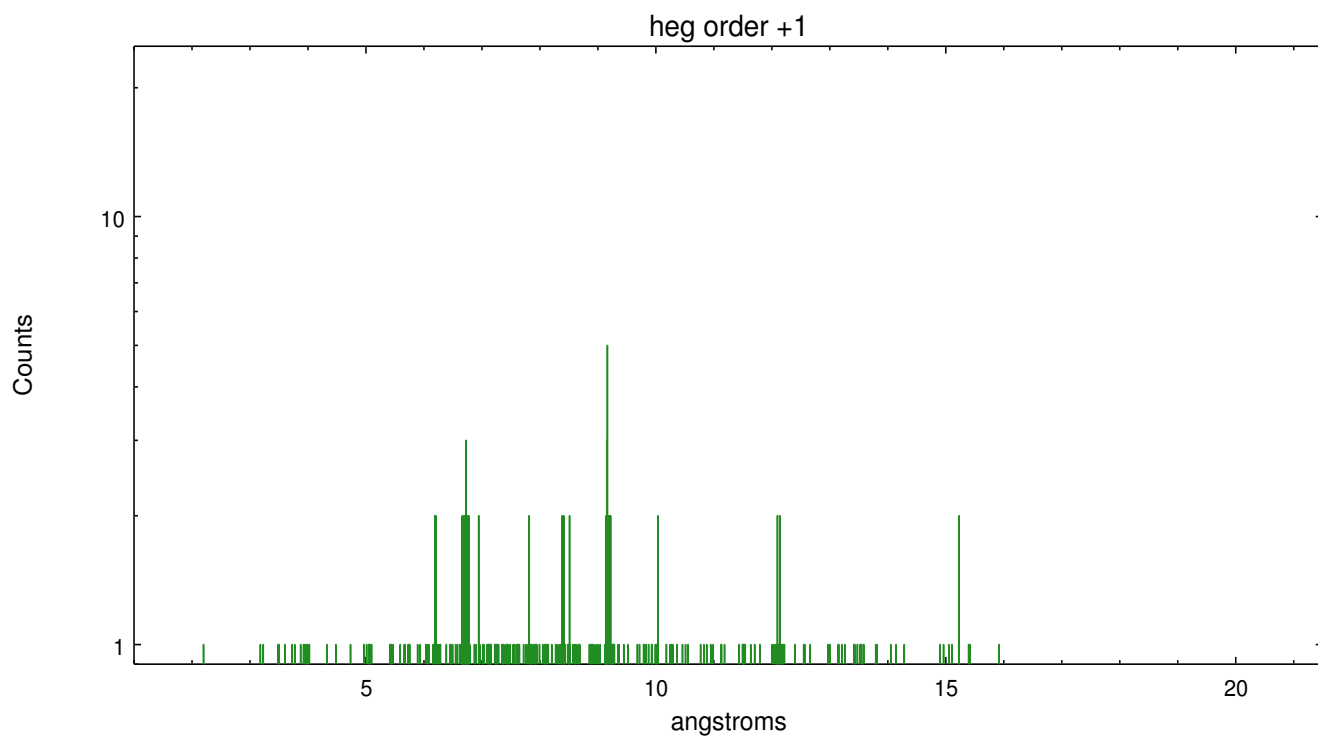
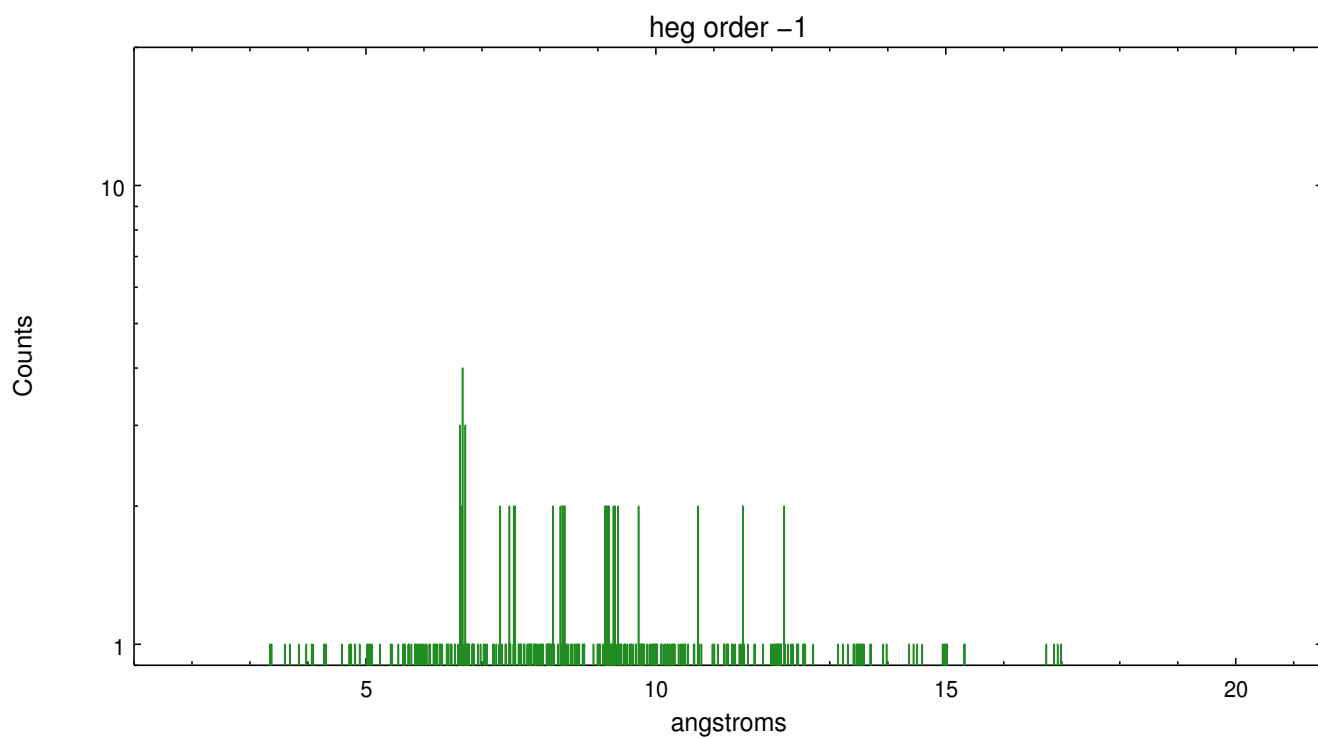


Spot Image HEG

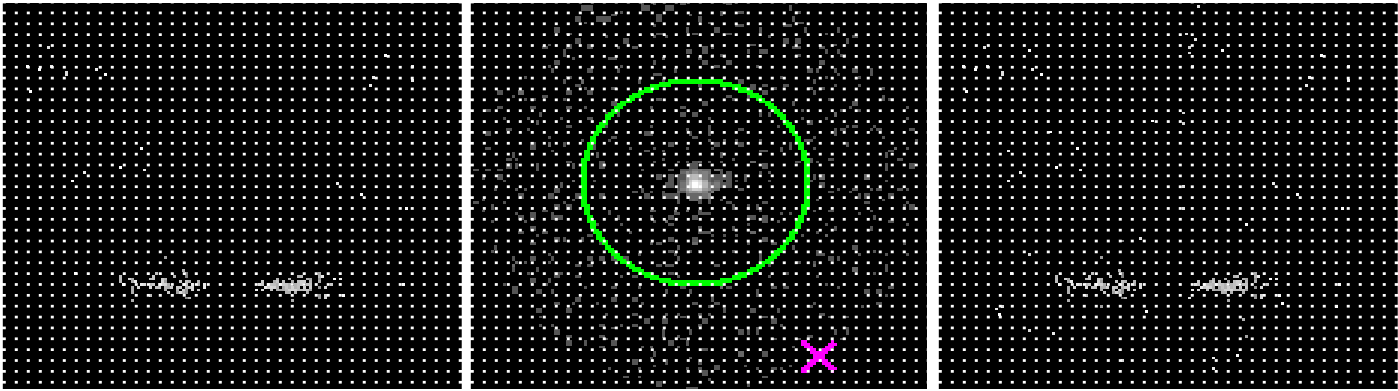
Full Detector HEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 151 | 215 | 524 | 1938 | 436 | 142 | 125 |





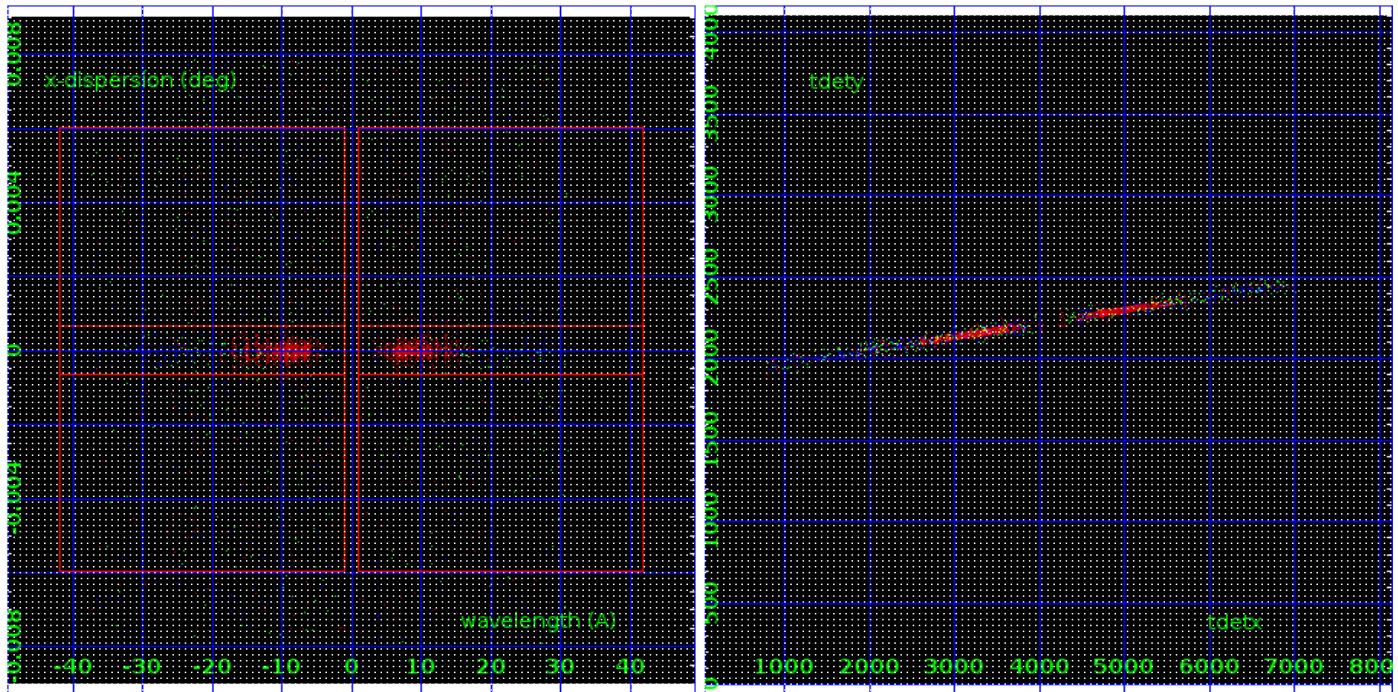
3.2 MEG Arm



MEG Order Sort 123

MEG Zero Order

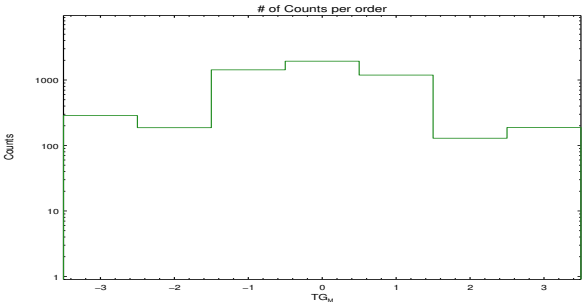
MEG Order Sort ALL

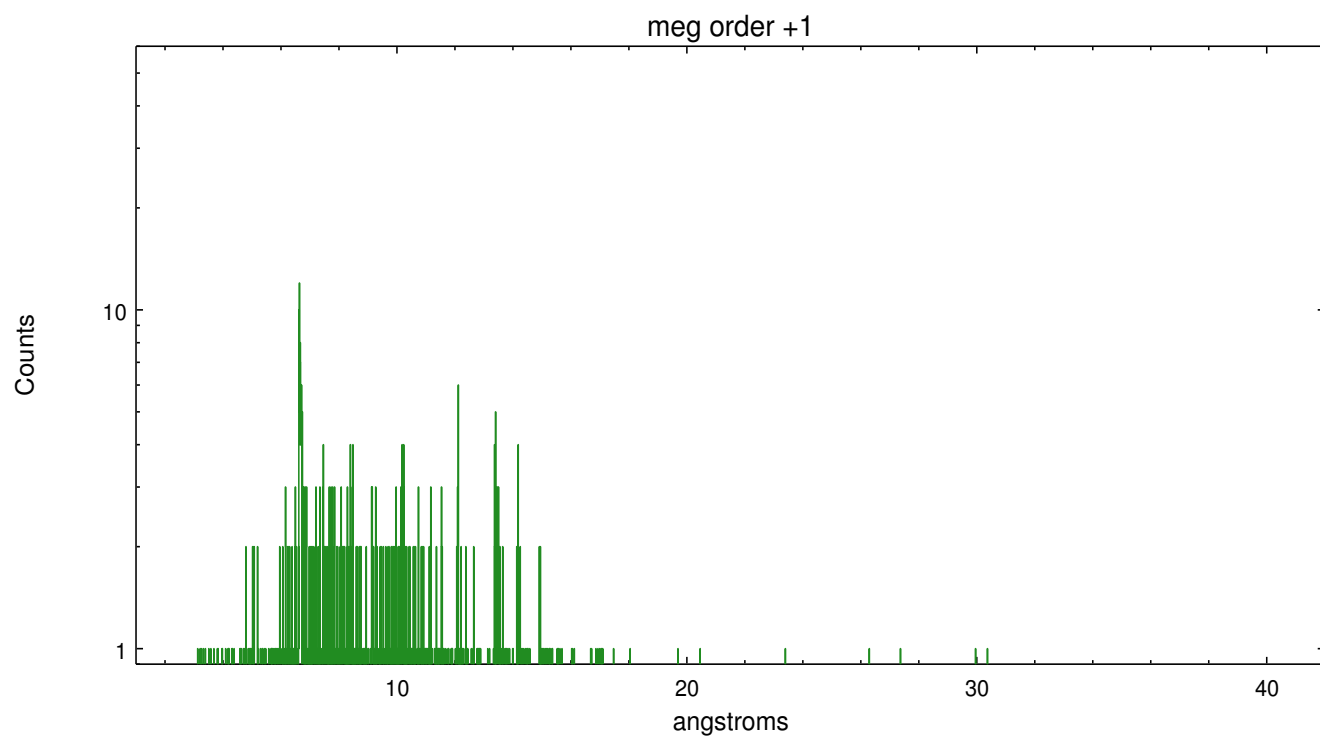
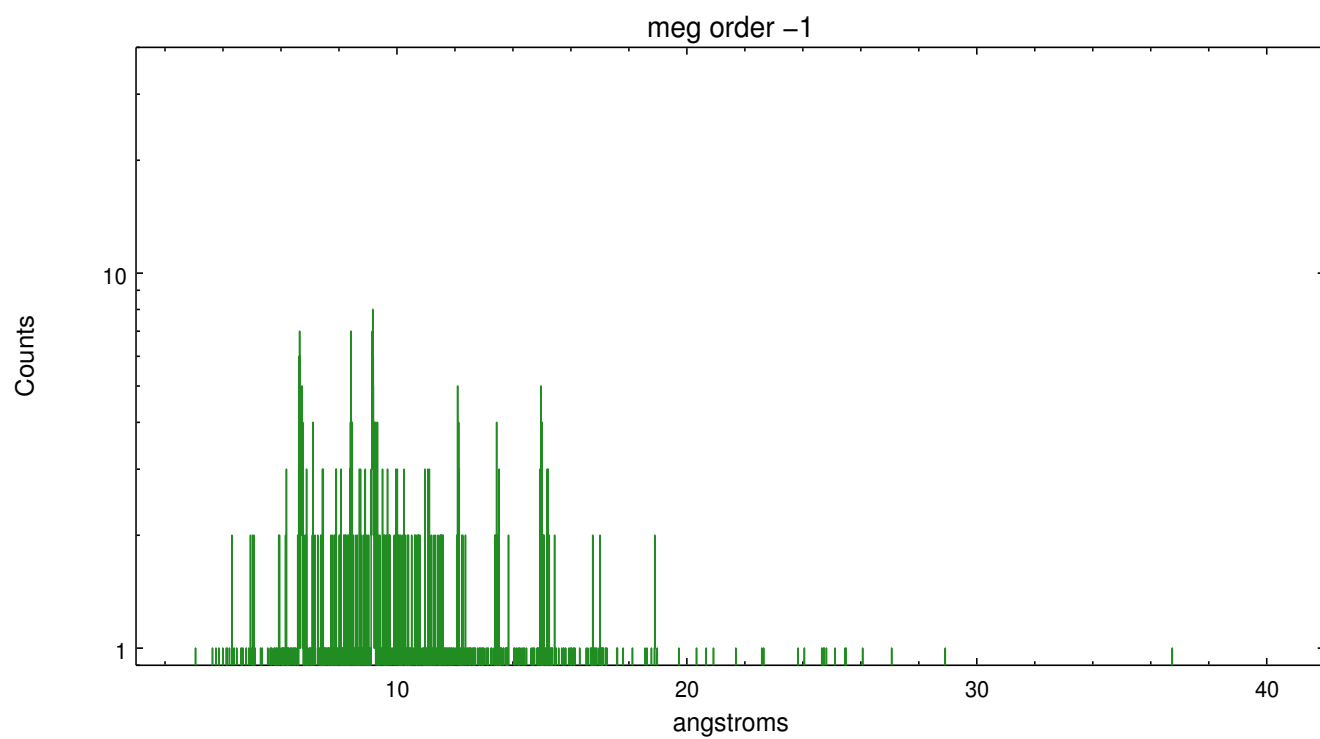


Spot Image MEG

Full Detector MEG

| | order -3 | order -2 | order -1 | order 0 | order 1 | order 2 | order 3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 286 | 187 | 1430 | 1938 | 1189 | 129 | 188 |





A Summary

A.1 Status

| | |
|----------------------------|-----------------|
| V&V Scientist | Joy Nichols |
| V&V Date (YYYY-MM-DD) | 2018.07.02 |
| V&V Edition | 1 |
| V&V Disposition and Status | OK |
| V&V Charge Time | 17.951297330976 |

A.2 Comments