

# V&V Reference Report

## L2 ASCDS Version : 7.6.9

Observation 1599 - L2 Version 001  
Chandra X-Ray Center

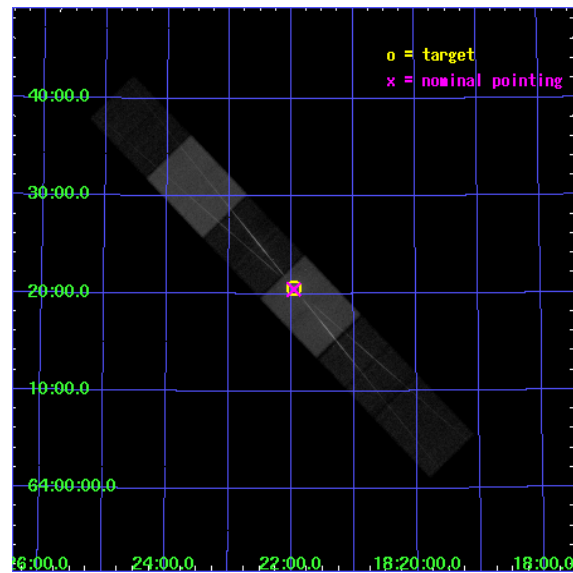
L2 Processing Date : Nov 7 2006

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# 1 Front

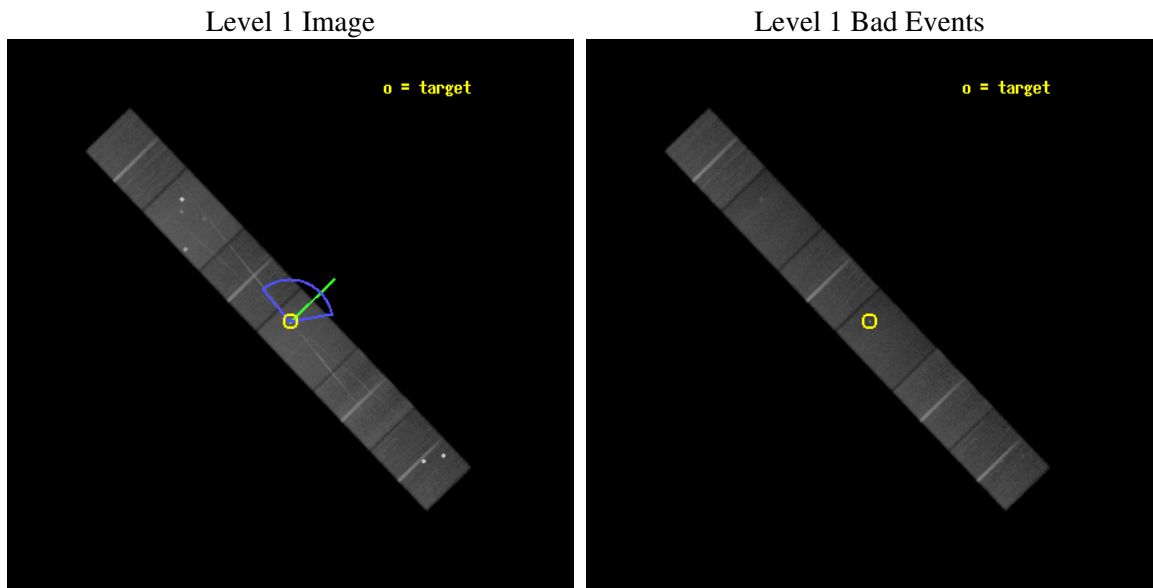
|          |  |
|----------|--|
| seq_num  | 700215   |
| obs_id   | 1599   |
| title    | HETG OBSERVATIONS OF SEYFERT GALAXIES AND A QUASAR |
| observer | Prof. Claude Canizares                             |
| object   | H 1821+643   |
| dtcycle  | 0  |
| cycle    | P  |
| ra_targ  | 275.48875  |
| dec_targ | 64.343444  |
| ra_nom   | 275.48948665018                                    |
| dec_nom  | 64.341275502607                                    |
| roll_nom | 46.086974684859                                    |
| revision | 2  |
| ontime   | 101252.5   |
| livetime | 99617.18430249                                     |
| ontime4  | 101252.5   |
| ontime5  | 101252.5   |
| ontime6  | 101249.95898992                                    |
| ontime7  | 101252.5   |
| ontime8  | 101249.95900986                                    |
| ontime9  | 101249.95900984                                    |
| l2events | 790144   |



## 2 OBI

### 2.1 OBI

#### 2.1.1 Images

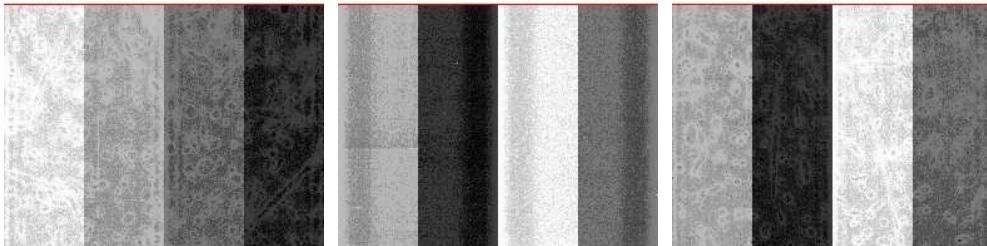


#### 2.1.2 Bias

Chip 4

Chip 5

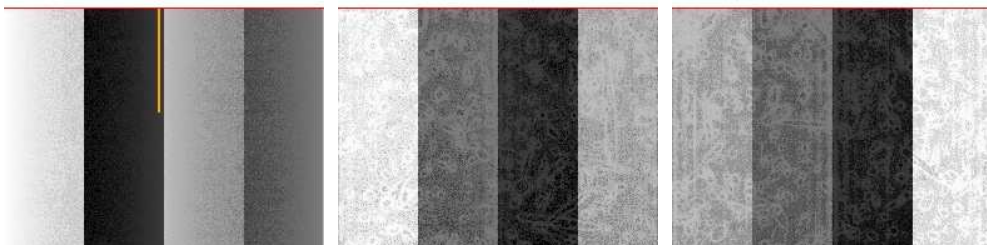
Chip 6



Chip 7

Chip 8

Chip 9



### 2.1.3 Parameters

|          |                     |
|----------|---------------------|
| obi_num  | 0                   |
| ascdsver | 7.6.9               |
| caldsver | 3.2.3               |
| date     | 2006-11-06T18:44:54 |
| revision | 2                   |

|                |                 |
|----------------|-----------------|
| sched_exp_time | 101130.000000   |
| ontime         | 101256.55889033 |
| ontime4        | 101256.55887042 |
| ontime5        | 101256.55889033 |
| ontime6        | 101254.01786034 |
| ontime7        | 101256.55889033 |
| ontime8        | 101254.01788028 |
| ontime9        | 101254.01788026 |
| l1events       | 3594647         |

### 2.1.4 Events

|                 | ccd 4  | ccd 5  | ccd 6  | ccd 7  | ccd 8  | ccd 9  |
|-----------------|--------|--------|--------|--------|--------|--------|
| level 1 events  | 539885 | 701780 | 513842 | 658860 | 618387 | 561893 |
| rejected events | 481777 | 366204 | 435833 | 368166 | 487671 | 426864 |
| rejected %      | 89%    | 52%    | 84%    | 55%    | 78%    | 75%    |

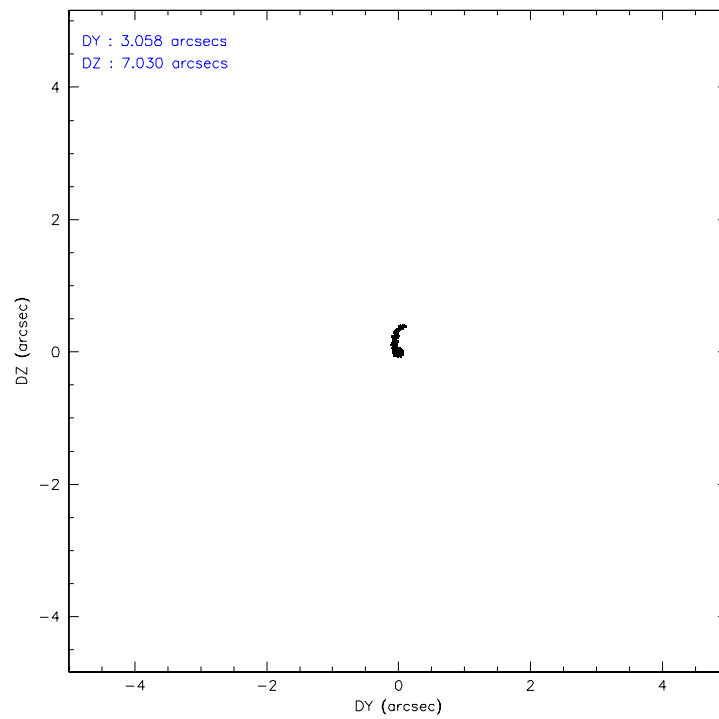
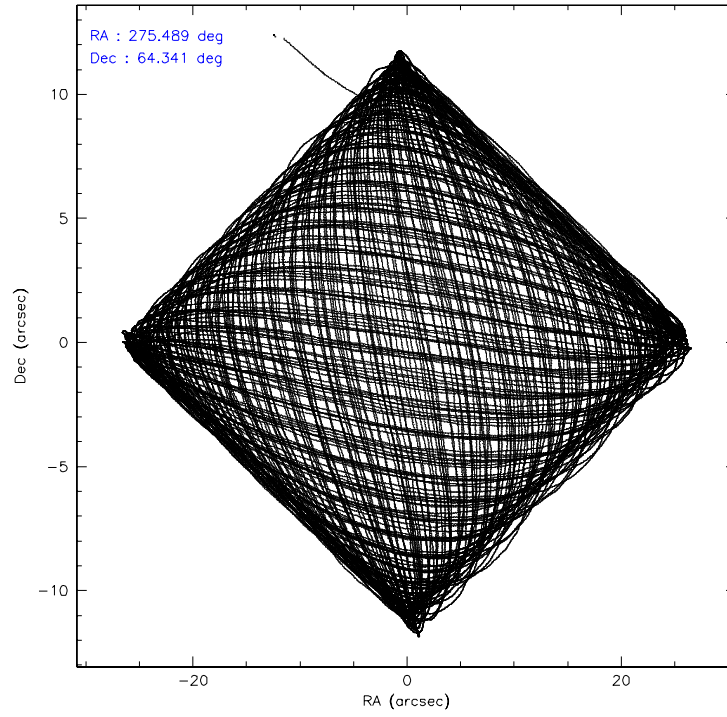
|                | ccd 4  | ccd 5  | ccd 6  | ccd 7  | ccd 8  | ccd 9  |
|----------------|--------|--------|--------|--------|--------|--------|
| grade 0 events | 23708  | 41678  | 39982  | 26346  | 46357  | 62267  |
|                | 4%     | 5%     | 7%     | 3%     | 7%     | 11%    |
| grade 1 events | 205    | 1194   | 221    | 609    | 315    | 283    |
|                | 0%     | 0%     | 0%     | 0%     | 0%     | 0%     |
| grade 2 events | 13273  | 113605 | 13349  | 71230  | 26694  | 49846  |
|                | 2%     | 16%    | 2%     | 10%    | 4%     | 8%     |
| grade 3 events | 5828   | 8542   | 6806   | 20782  | 13314  | 5981   |
|                | 1%     | 1%     | 1%     | 3%     | 2%     | 1%     |
| grade 4 events | 5457   | 8027   | 6540   | 20018  | 12389  | 6013   |
|                | 1%     | 1%     | 1%     | 3%     | 2%     | 1%     |
| grade 5 events | 16561  | 33244  | 19695  | 45364  | 24846  | 20452  |
|                | 3%     | 4%     | 3%     | 6%     | 4%     | 3%     |
| grade 6 events | 9845   | 163739 | 11333  | 152329 | 31969  | 10931  |
|                | 1%     | 23%    | 2%     | 23%    | 5%     | 1%     |
| grade 7 events | 465008 | 331751 | 415916 | 322182 | 462503 | 406120 |
|                | 86%    | 47%    | 80%    | 48%    | 74%    | 72%    |

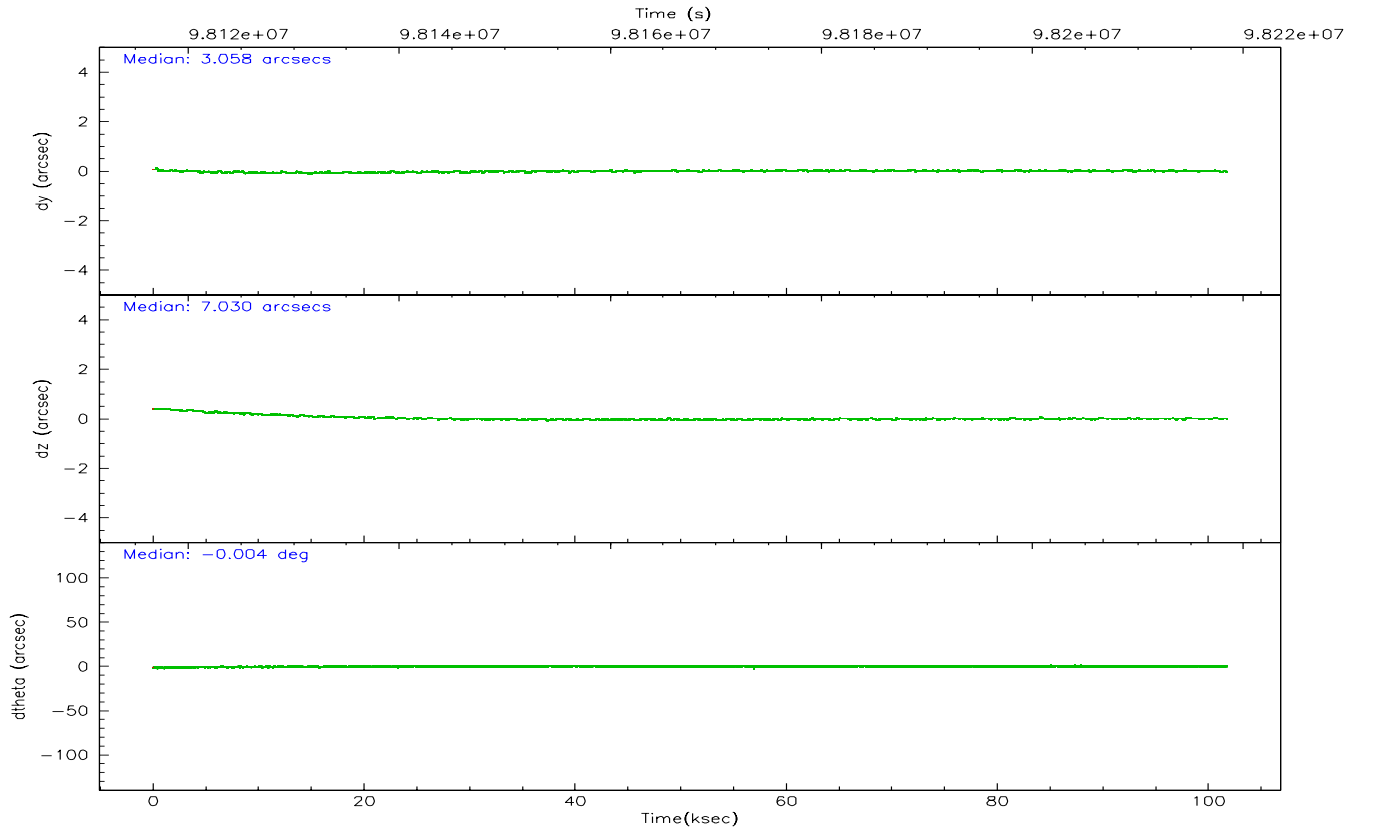
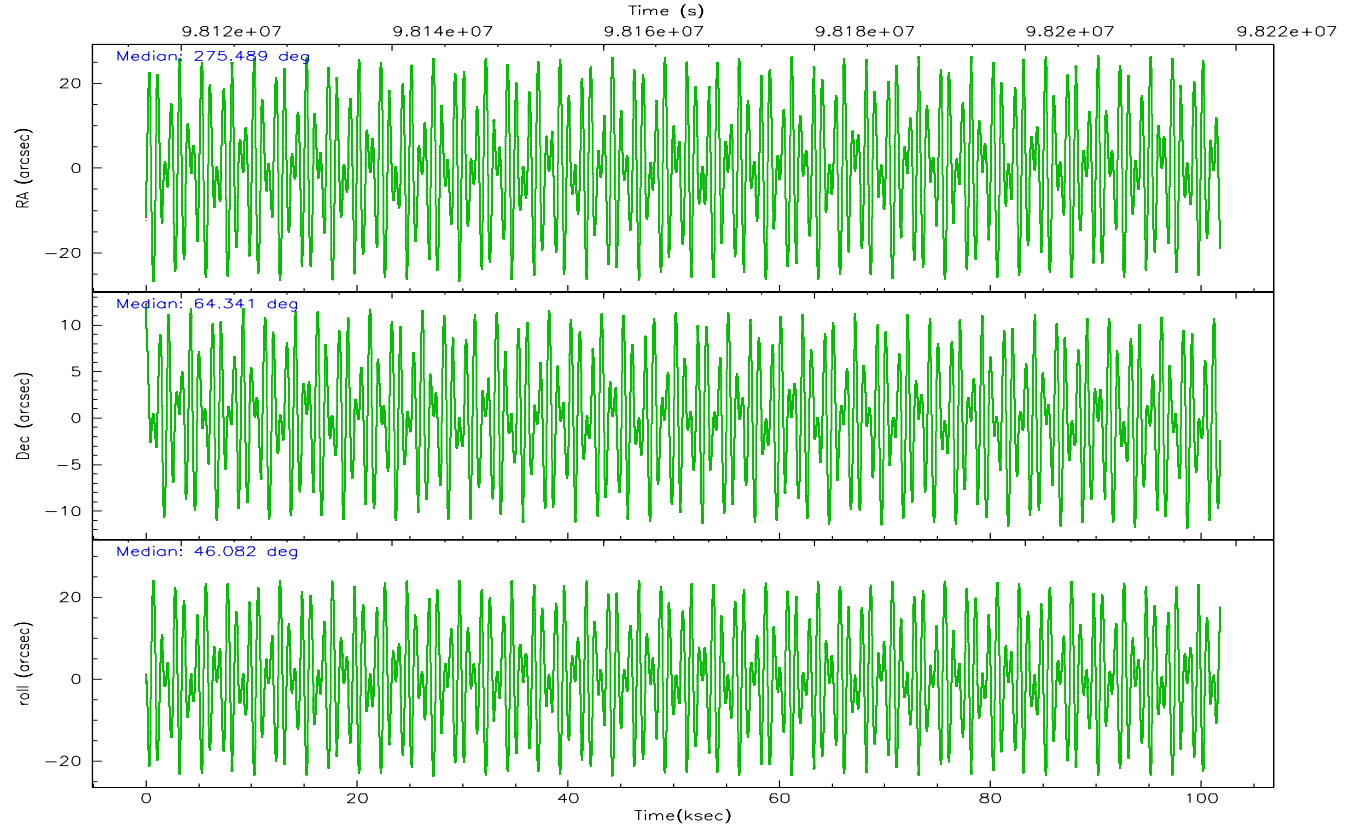


## 2.2 Compared Parameters

| Parameter                            | Planned             | Actual               | Parameter                             | Planned   | Actual  |
|--------------------------------------|---------------------|----------------------|---------------------------------------|-----------|---------|
| Instrument                           | ACIS                | ACIS                 | Obspar format version number          | 6         | 6       |
| Detector                             | ACIS-456789         | ACIS-456789          | Obspar file type                      | PREDICTED | ACTUAL  |
| Grating                              | HETG                | HETG                 | Obspar update status                  | NONE      | UPDATED |
| Data mode                            | FAINT               | FAINT                | Number of optional ACIS chips dropped | 0         | 0       |
| Observation mode                     | POINTING            | POINTING             | On-chip summing requested             | N         | N       |
| Pointing RA                          | 275.474852          | 275.4894866501786    | Subarray requested                    | CUSTOM    | CUSTOM  |
| Pointing Dec                         | 64.314700           | 64.34127550260713    | Subarray start row                    | 1         | 1       |
| Pointing Roll                        | 45.943541           | 46.08697468485891    | Subarray row count                    | 774       | 774     |
| Roll angle                           | 20.000000           | 20.000000            | Alternating exposures requested       | N         | N       |
| Roll tolerance                       | 60.000000           | 60.000000            | Primary exposure time                 | 0.000000  | 2.5     |
| Roll constraint allows 180D rotation | N                   | N                    |                                       |           |         |
| SIM focus pos (mm)                   | -0.684267           | -0.6828225247311905  |                                       |           |         |
| SIM defocus (mm)                     | 0                   | 0.001444936568705701 |                                       |           |         |
| SIM translation stage pos (mm)       | -187.132523         | -187.1254020033014   |                                       |           |         |
| SIM translation stage offset (mm)    | -3                  | -3.007120579706367   |                                       |           |         |
| Observation start time               | 98117327.184000     | 98116135.29528999    |                                       |           |         |
| Observation start date               | 2001-02-09T14:47:43 | 2001-02-09T14:28:55  |                                       |           |         |
| Observation end time                 | 98218457.184000     | 98219549.08677401    |                                       |           |         |
| Observation end date                 | 2001-02-10T18:53:13 | 2001-02-10T19:12:29  |                                       |           |         |
| Read mode                            | TIMED               | TIMED                |                                       |           |         |

## 2.3 Aspect



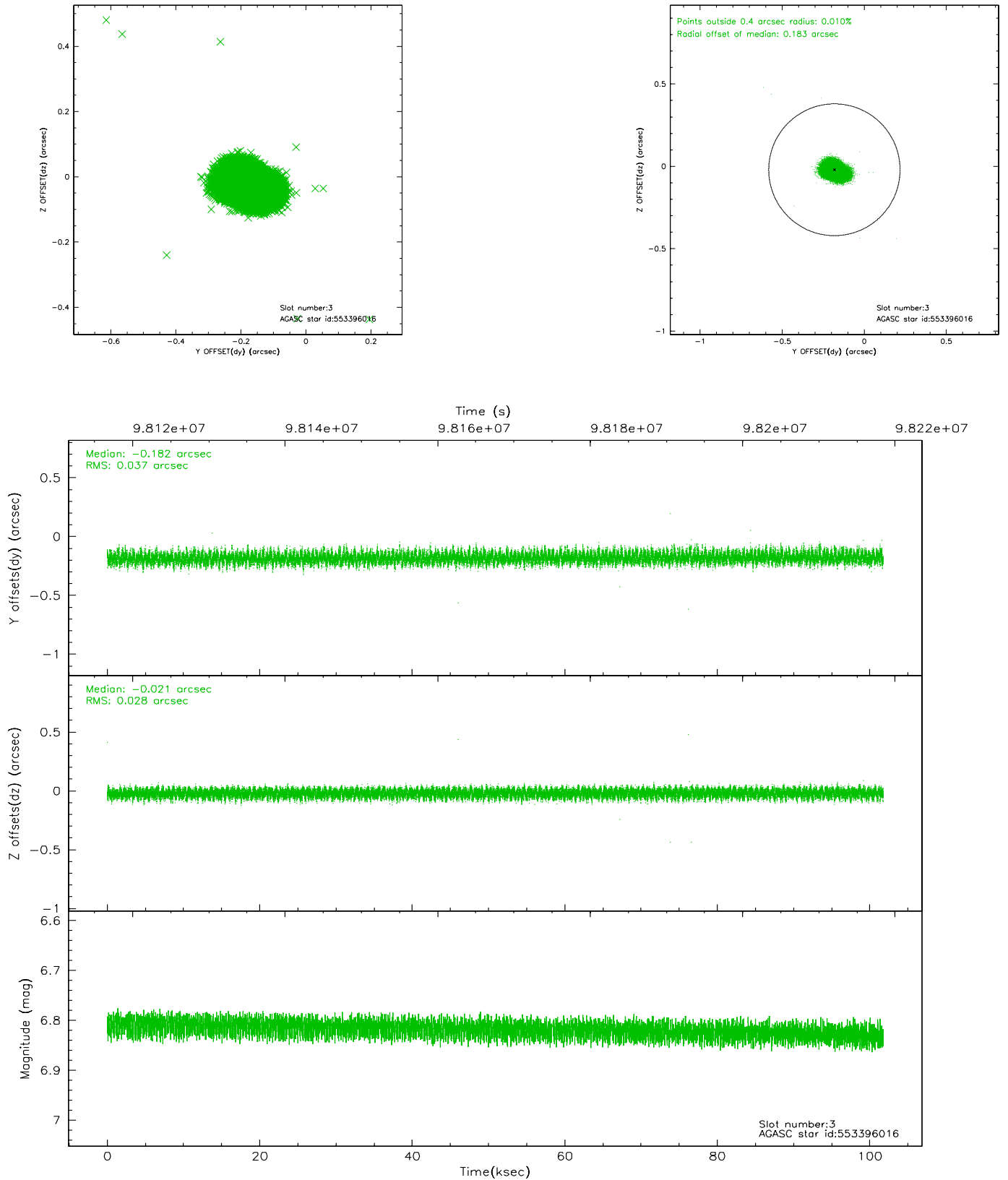


### Slot Statistics

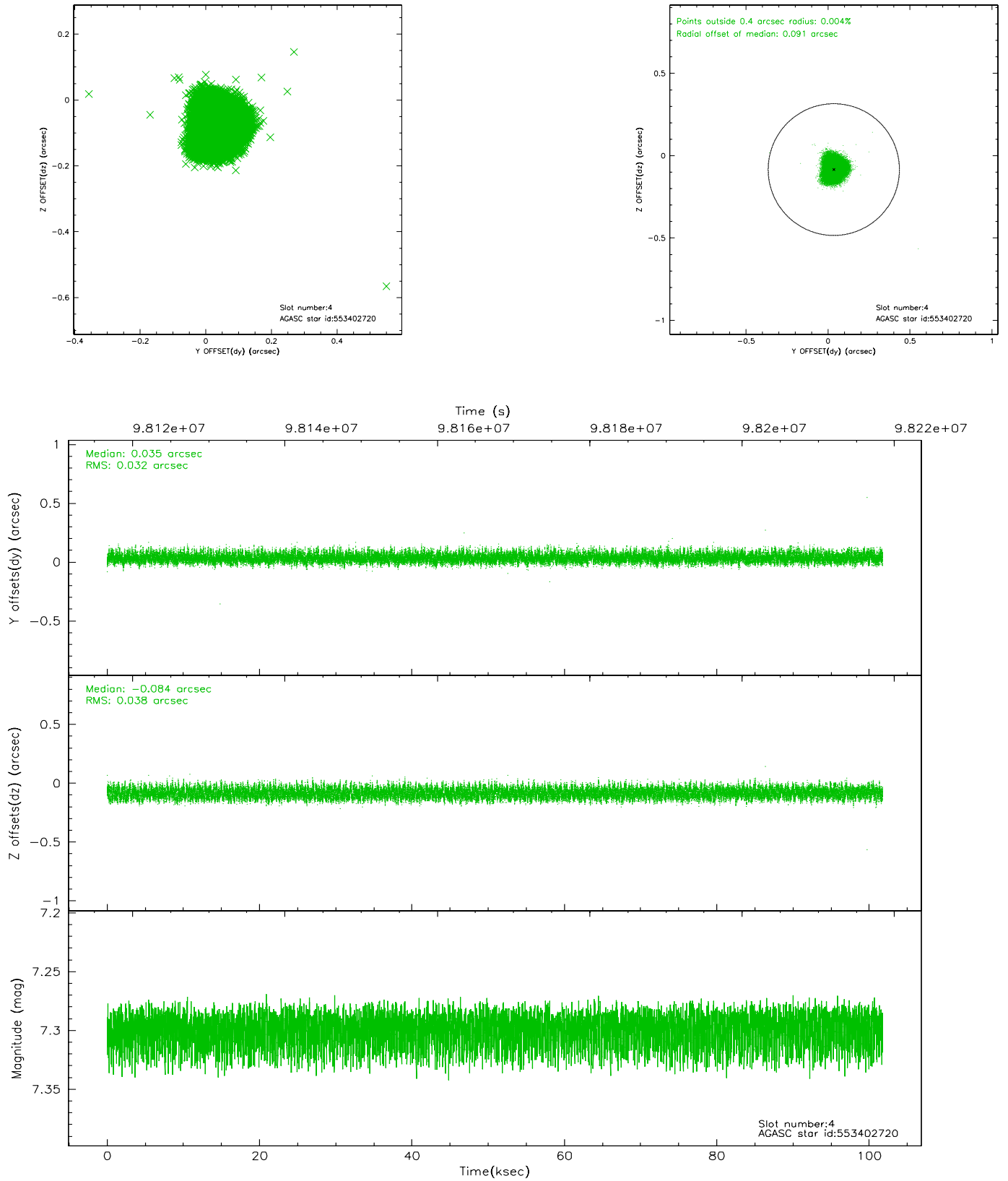
| slot | status | id        | mag  | n_pts | med_dy | med_dz | dr1   | dr2   | ra         | dec       | mean_y   | mean_z   |
|------|--------|-----------|------|-------|--------|--------|-------|-------|------------|-----------|----------|----------|
| 0    | FID    | ACIS-S-2  | 7.10 | 24826 | -0.025 | -0.014 | 0.007 | 0.012 | 0.000000   | 0.000000  | -755.51  | -1790.33 |
| 1    | FID    | ACIS-S-4  | 7.19 | 24825 | -0.056 | 0.016  | 0.005 | 0.009 | 0.000000   | 0.000000  | 2157.77  | 118.27   |
| 2    | FID    | ACIS-S-5  | 7.23 | 24827 | 0.050  | 0.007  | 0.007 | 0.014 | 0.000000   | 0.000000  | -1808.39 | 111.82   |
| 3    | GUIDE  | 553396016 | 6.82 | 49648 | -0.182 | -0.021 | 0.049 | 0.079 | 276.292154 | 64.838422 | 2230.80  | 417.65   |
| 4    | GUIDE  | 553402720 | 7.30 | 49644 | 0.035  | -0.084 | 0.054 | 0.084 | 275.081751 | 64.202988 | -715.46  | 163.86   |
| 5    | GUIDE  | 551697064 | 8.04 | 49639 | 0.049  | -0.084 | 0.057 | 0.092 | 274.138245 | 64.538359 | -843.90  | 2061.13  |
| 6    | GUIDE  | 551695040 | 8.47 | 49572 | 0.080  | 0.026  | 0.061 | 0.096 | 273.859972 | 64.159739 | -2139.37 | 1454.93  |
| 7    | GUIDE  | 553404184 | 8.64 | 49633 | 0.015  | 0.162  | 0.067 | 0.106 | 276.556964 | 64.060570 | 538.33   | -1850.65 |

## 2.4 Star Slots

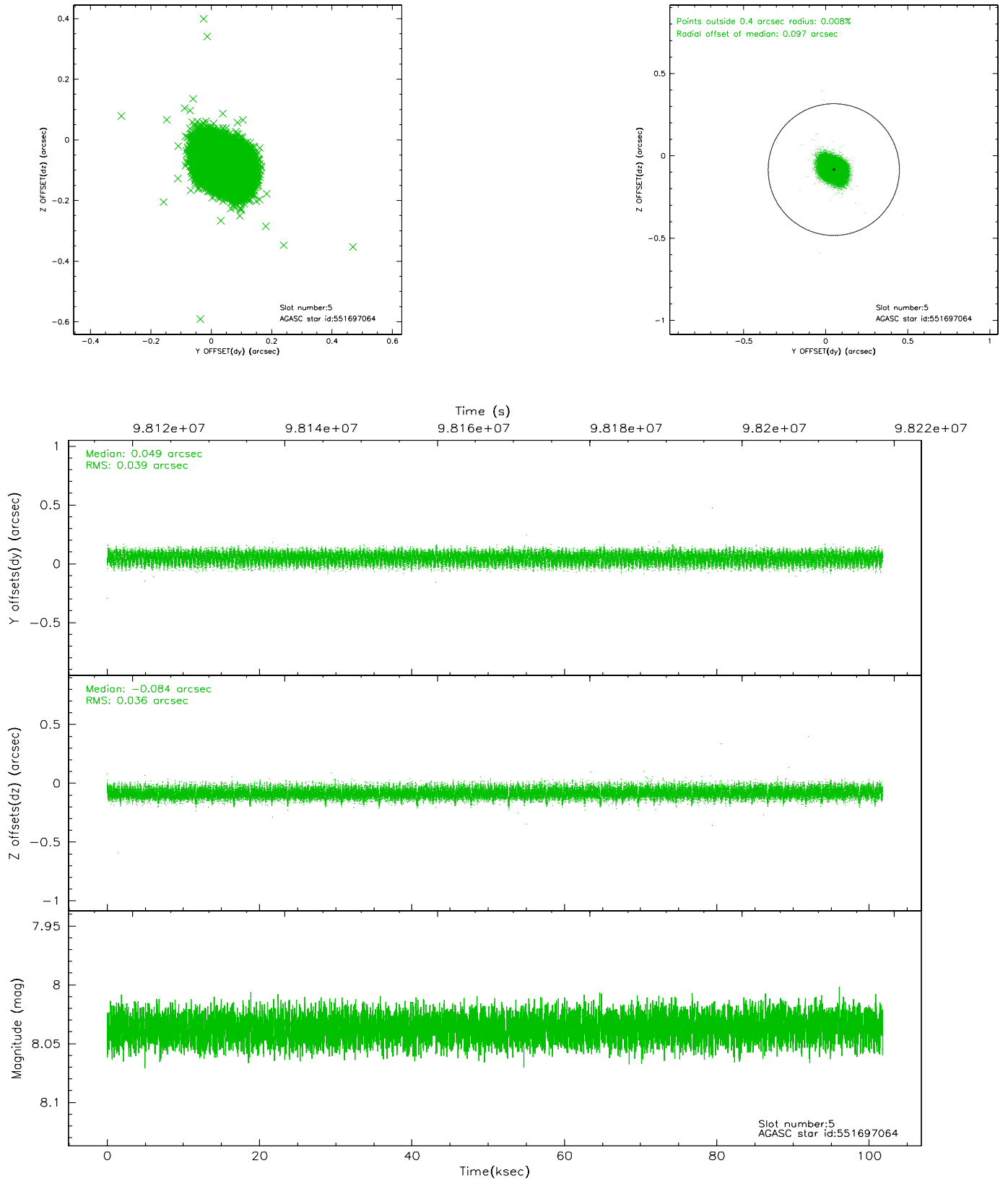
### 2.4.1 Slot 3



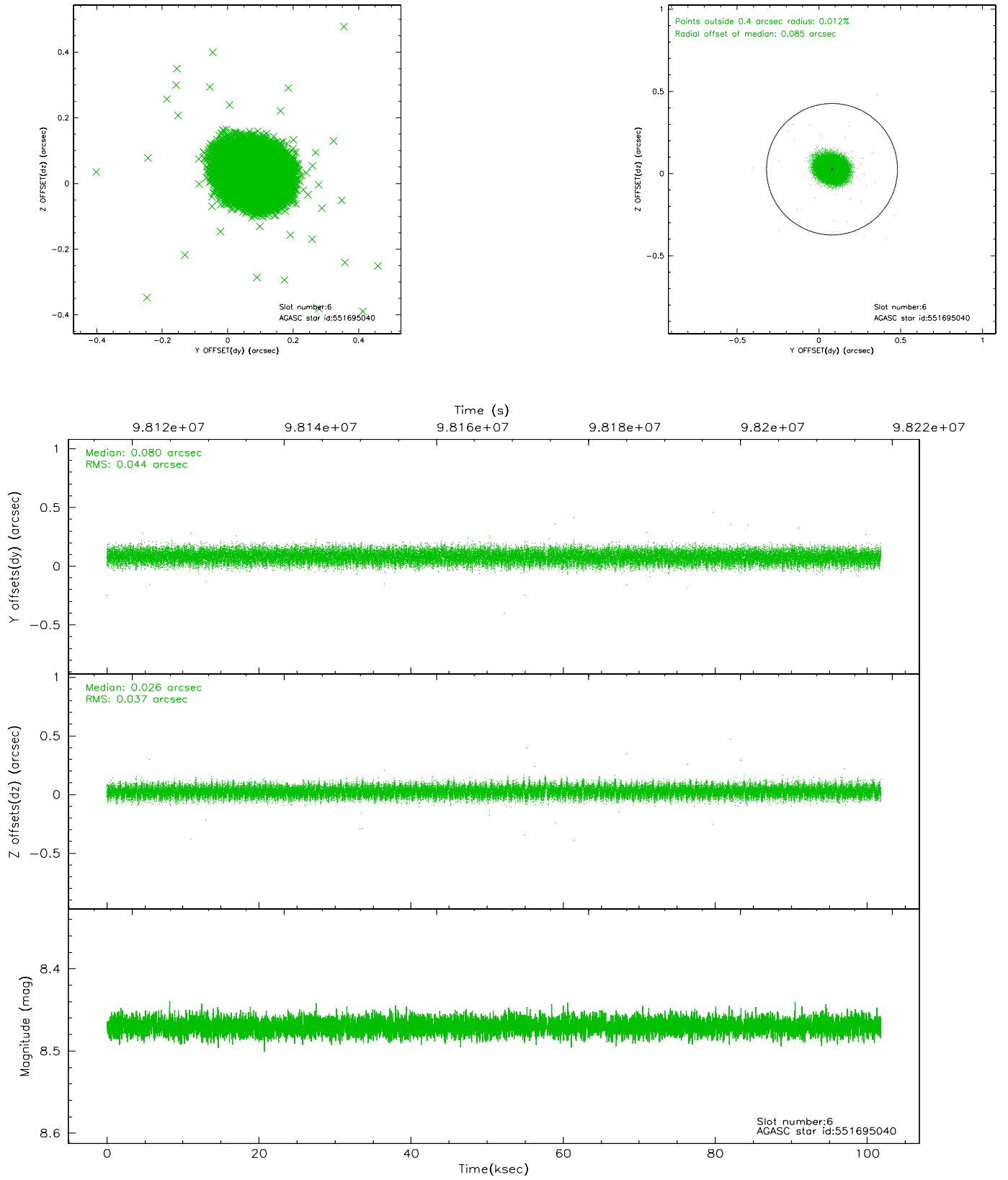
## 2.4.2 Slot 4



### 2.4.3 Slot 5

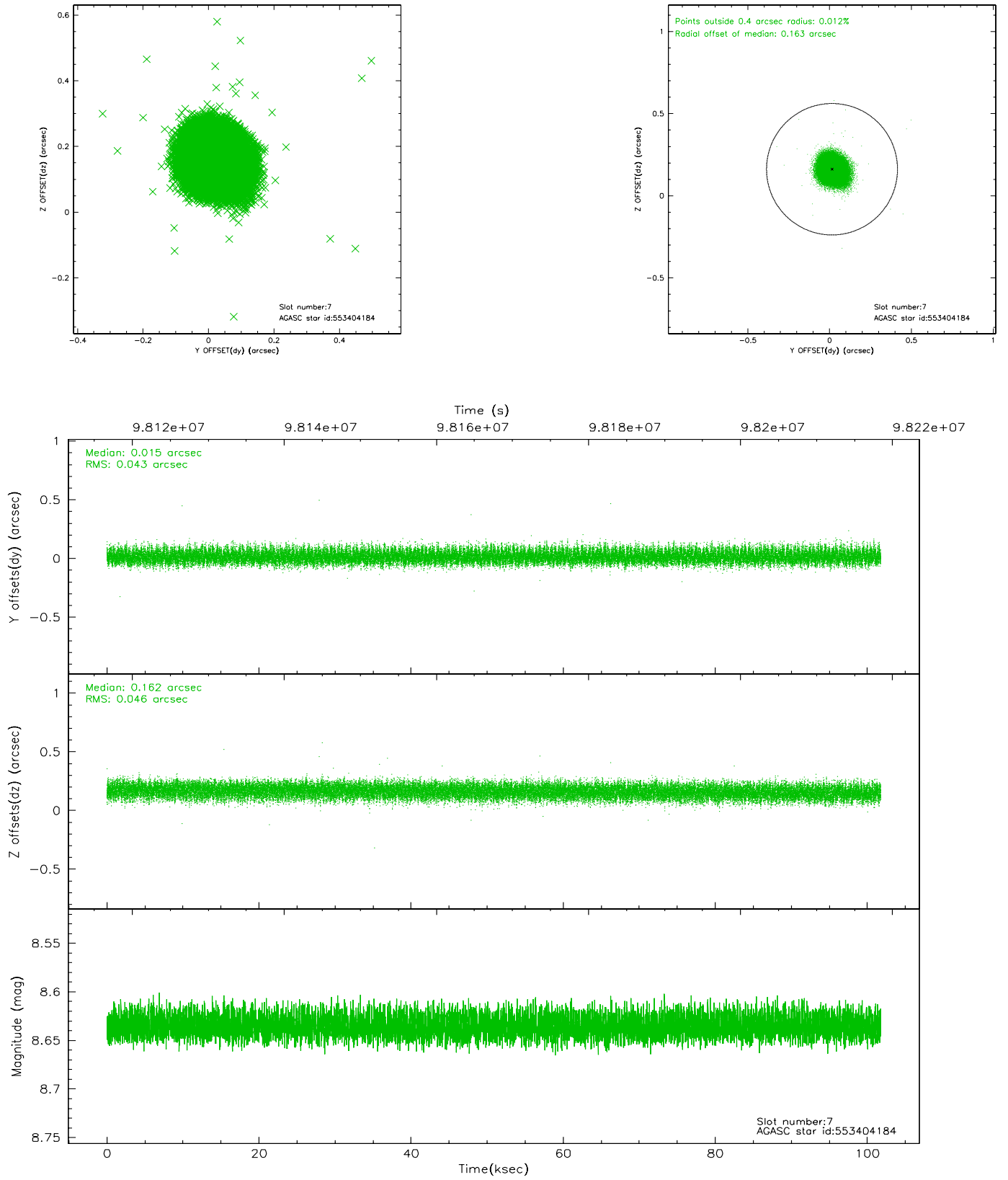


## 2.4.4 Slot 6



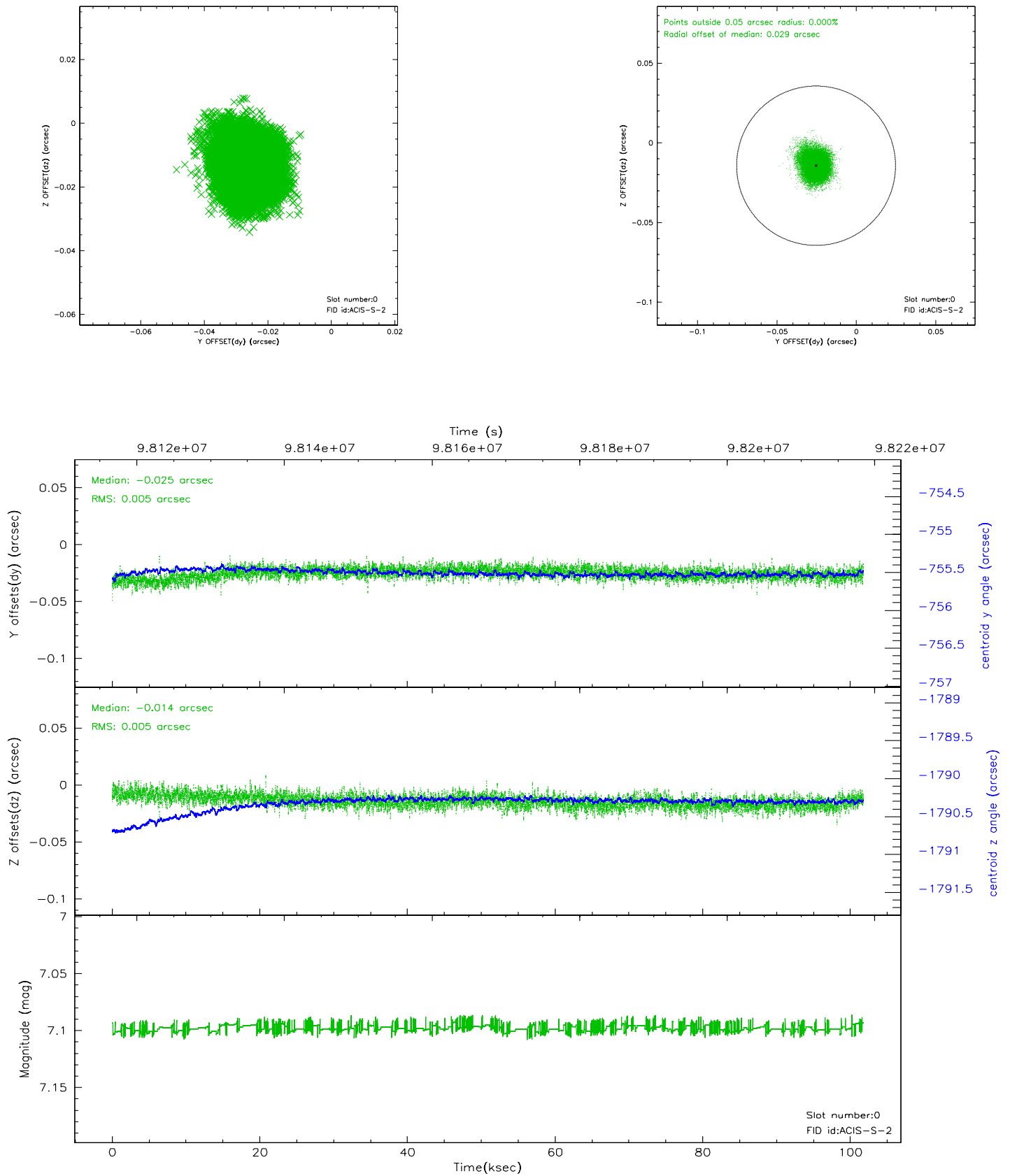


## 2.4.5 Slot 7

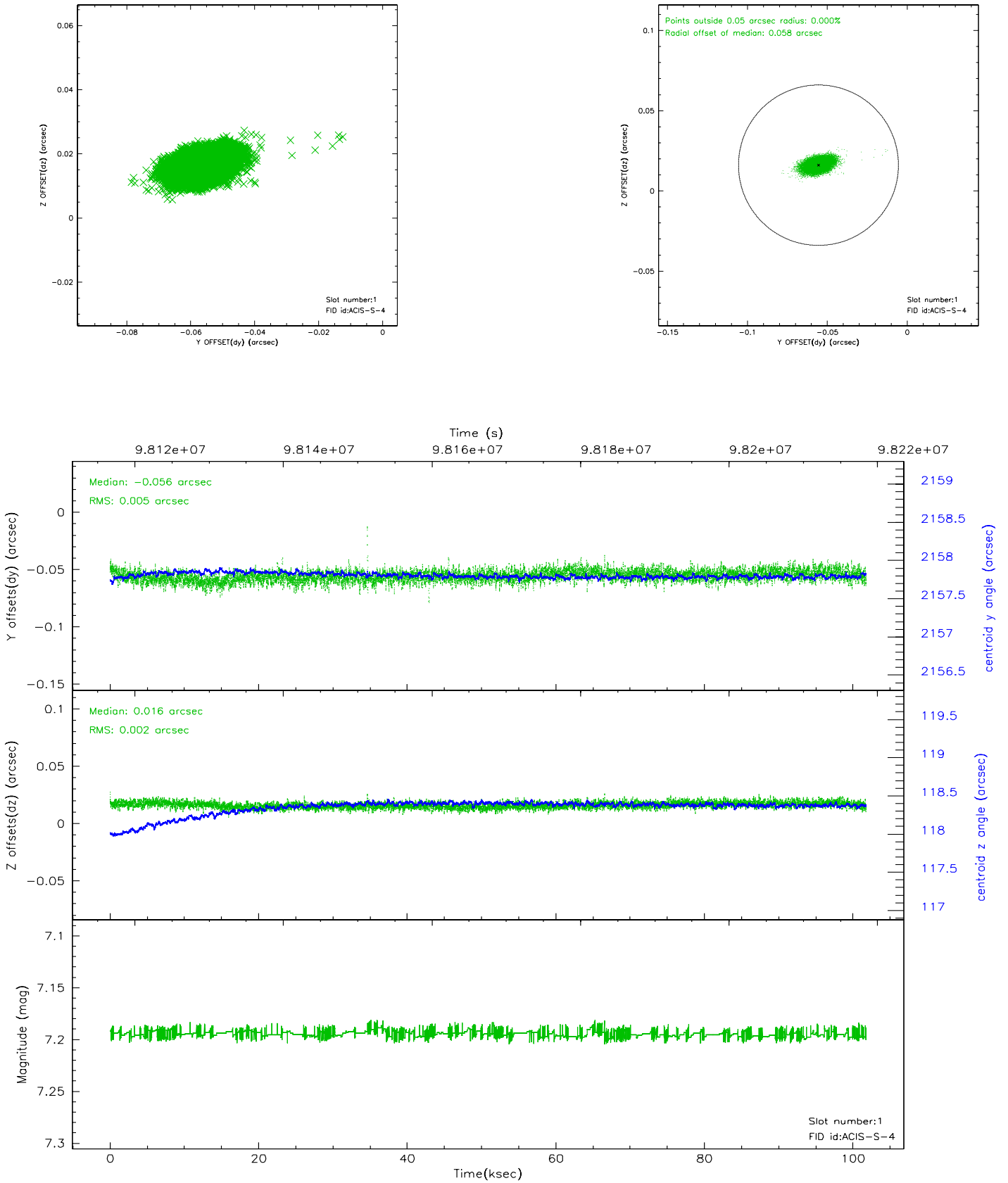


## 2.5 FID Slots

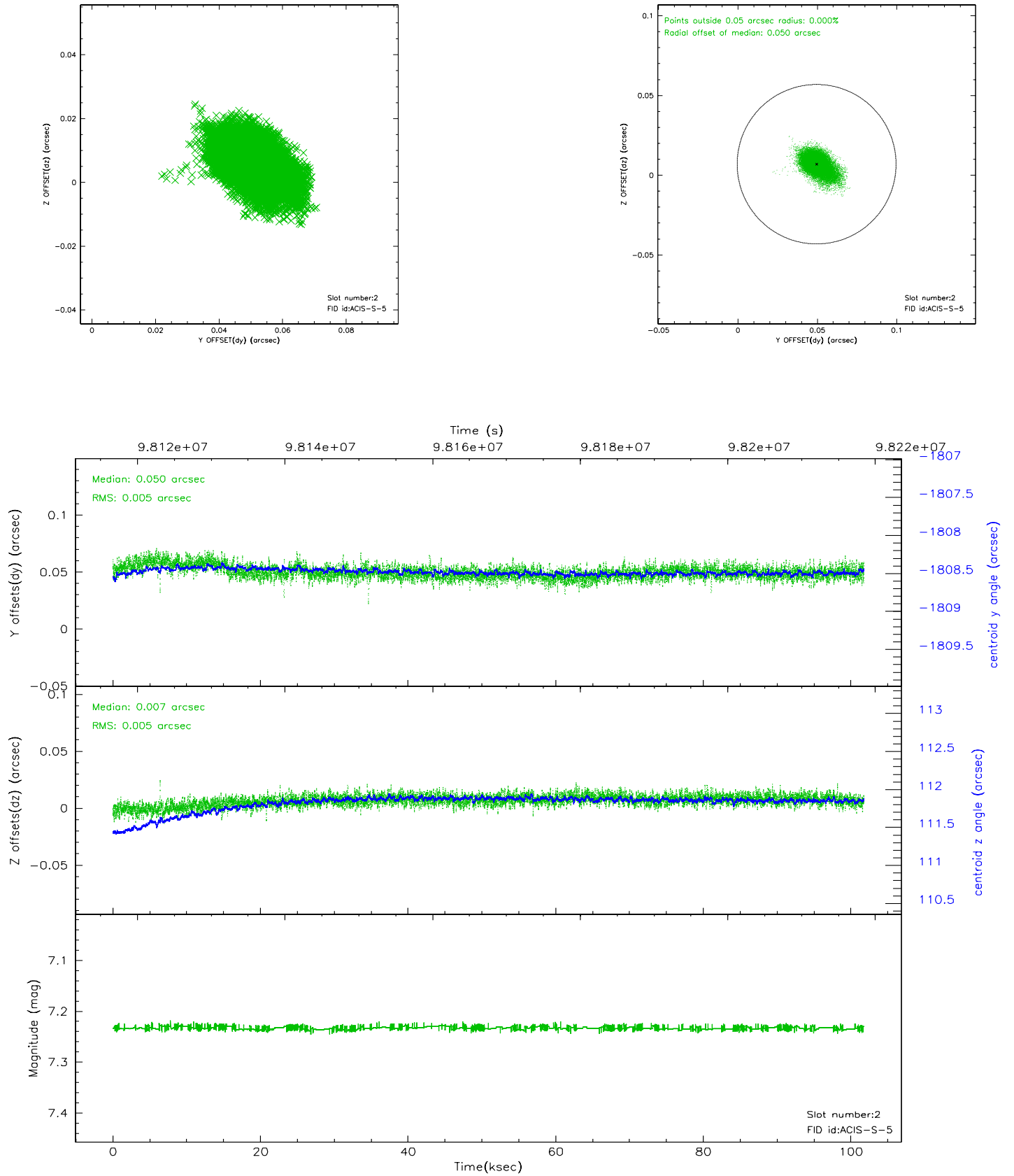
### 2.5.1 Slot 0



## 2.5.2 Slot 1

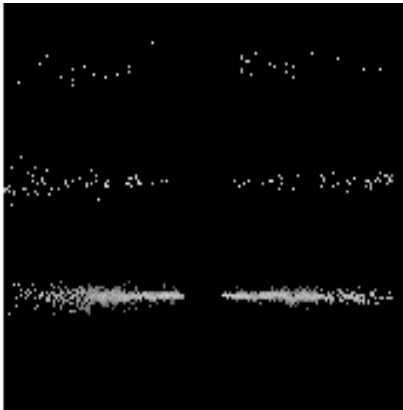


### 2.5.3 Slot 2

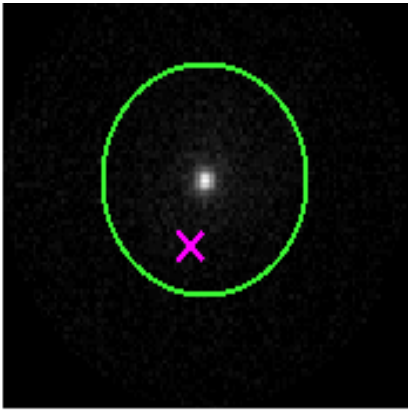


# 3 Gratings

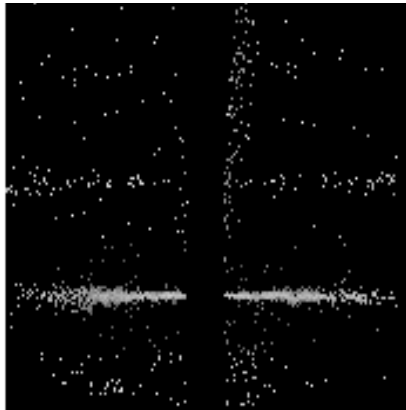
## 3.1 HEG Arm



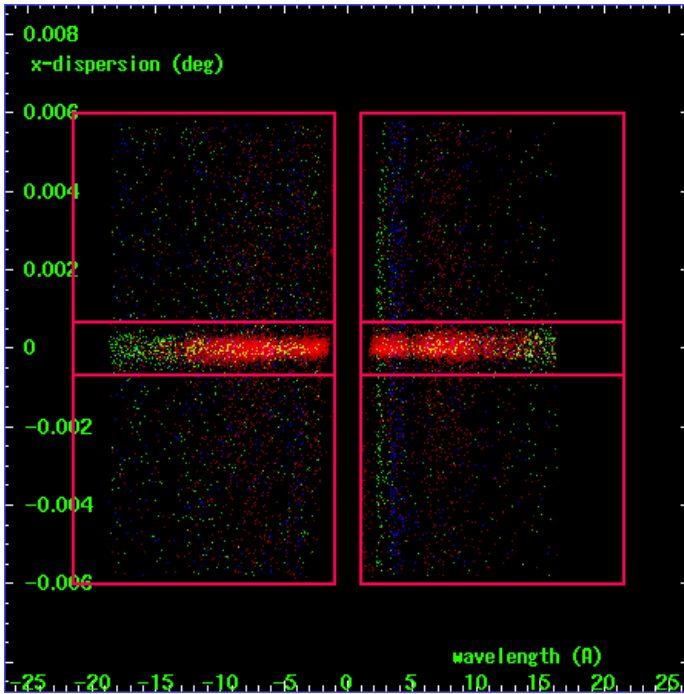
HEG Order Sort 123



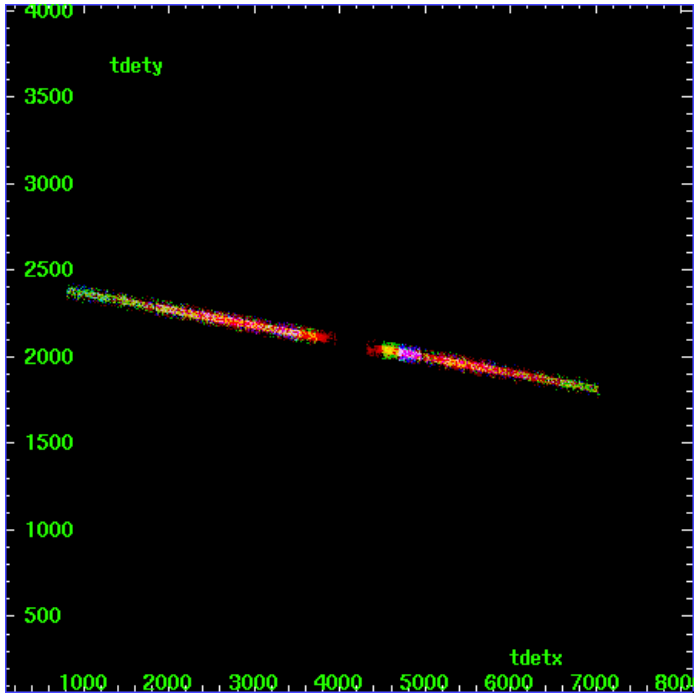
HEG Zero Order



HEG Order Sort ALL

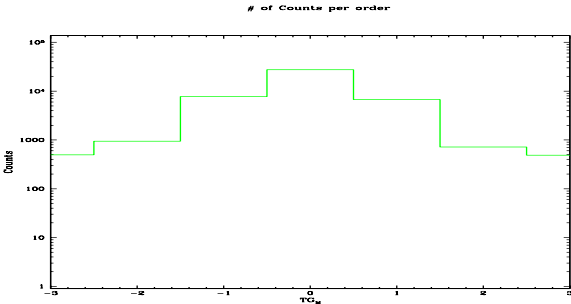


Spot Image HEG

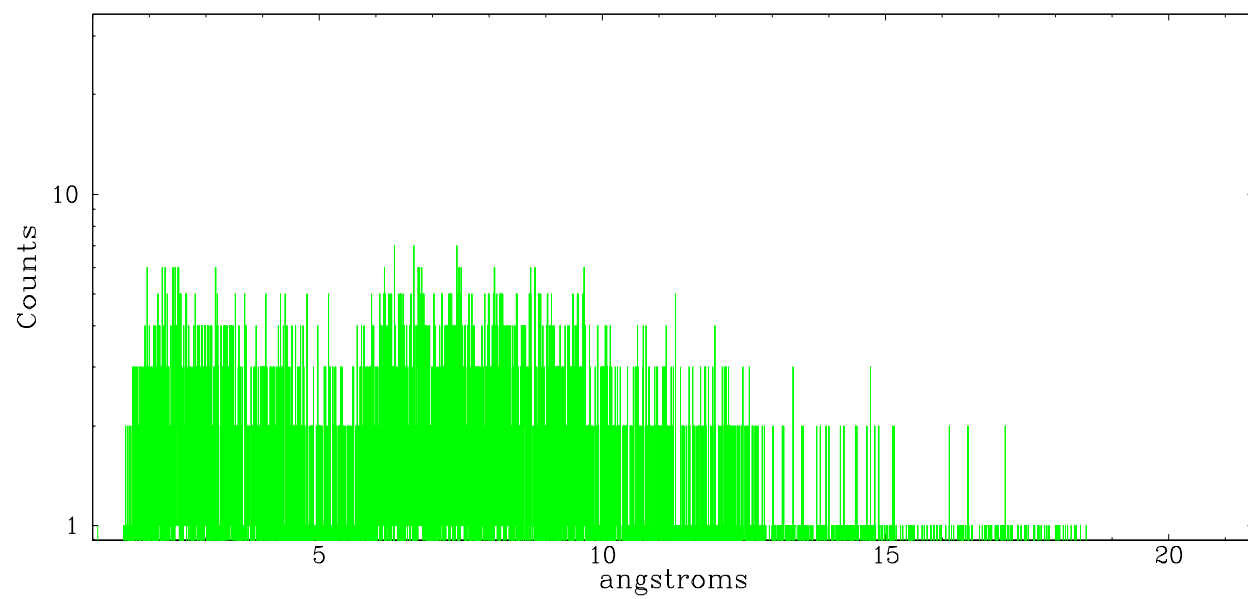


Full Detector HEG

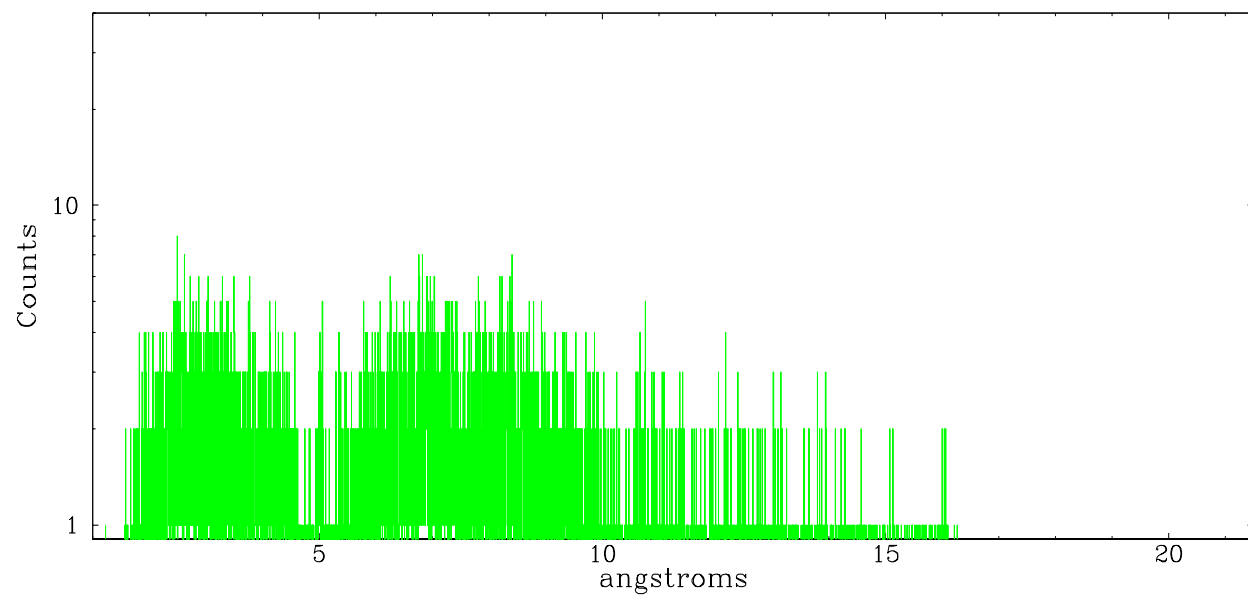
|        | order<br>-3 | order<br>-2 | order<br>-1 | order<br>0 | order<br>1 | order<br>2 | order<br>3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 495         | 939         | 7742        | 27426      | 6698       | 715        | 486        |



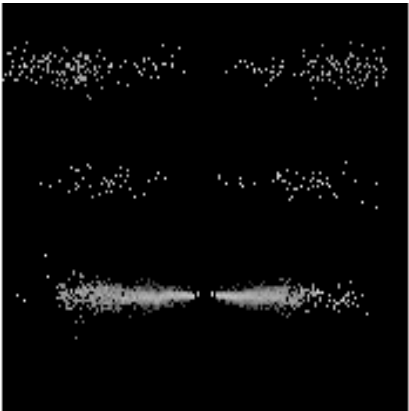
heg order -1



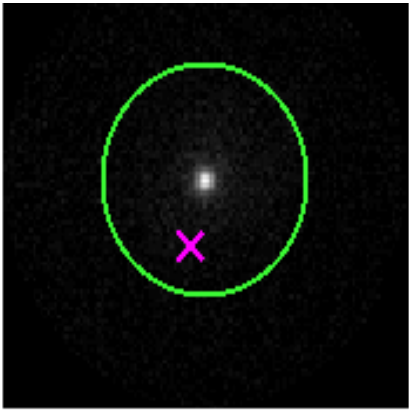
heg order +1



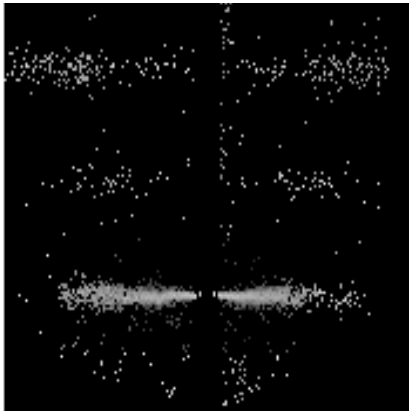
3.2 MEG Arm



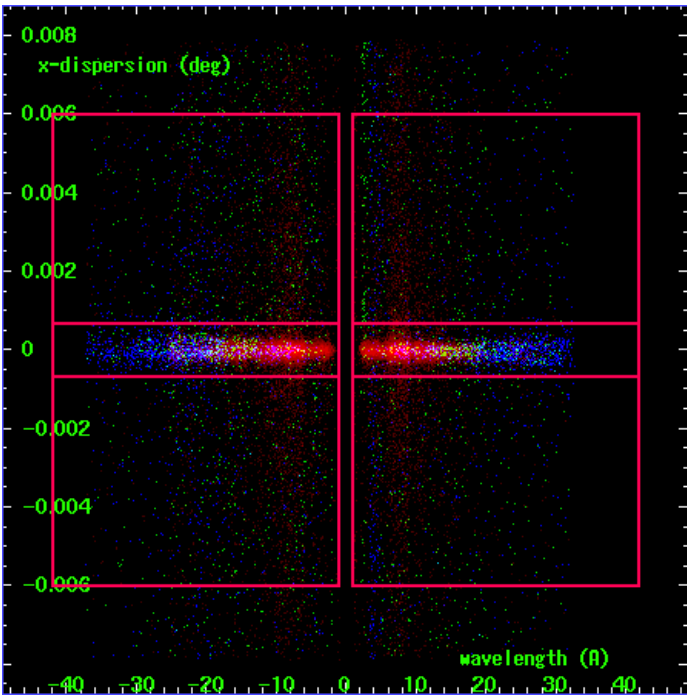
MEG Order Sort 123



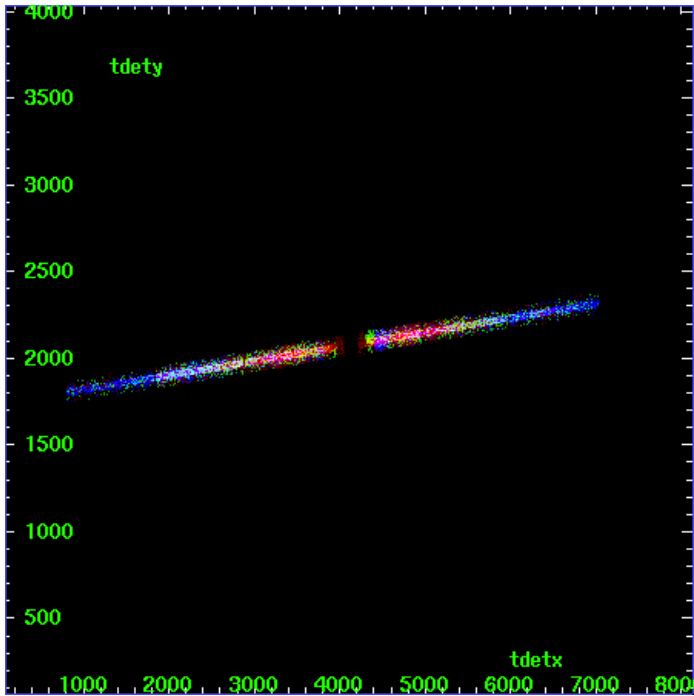
MEG Zero Order



MEG Order Sort ALL

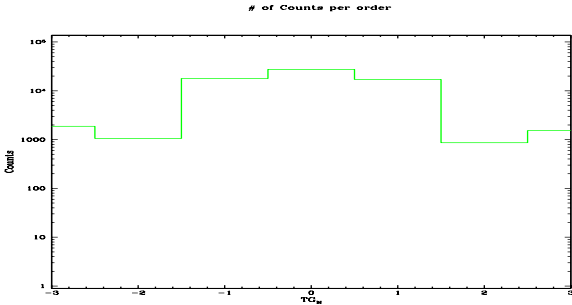


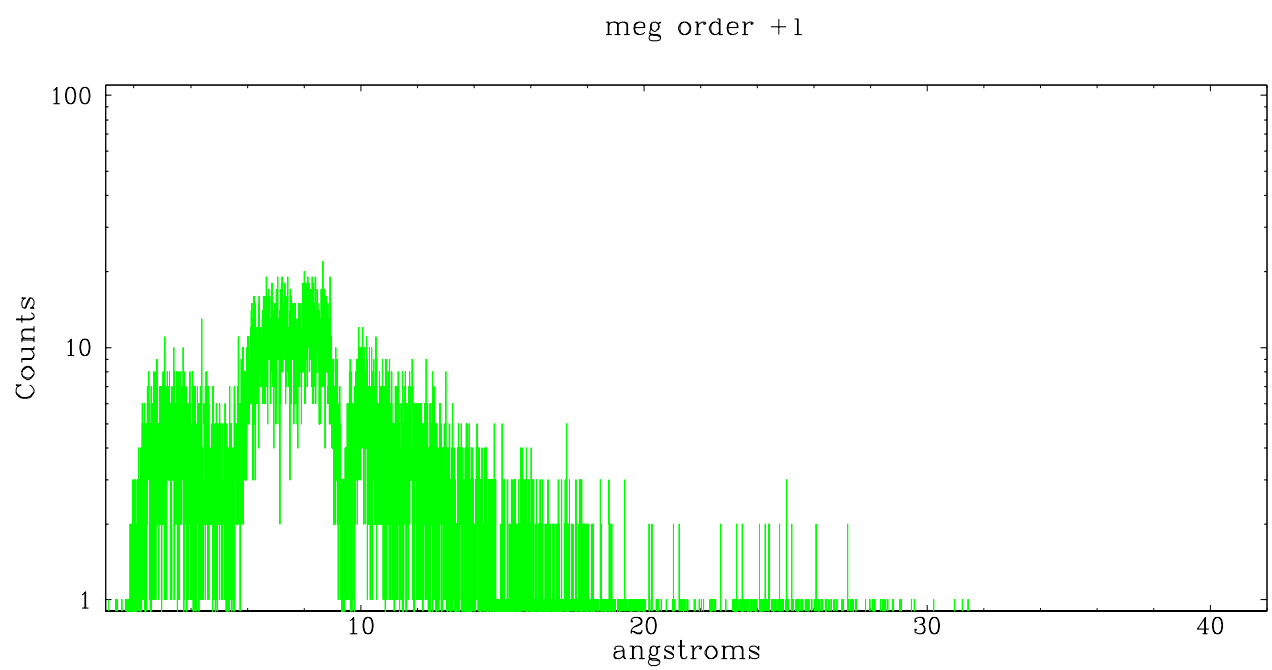
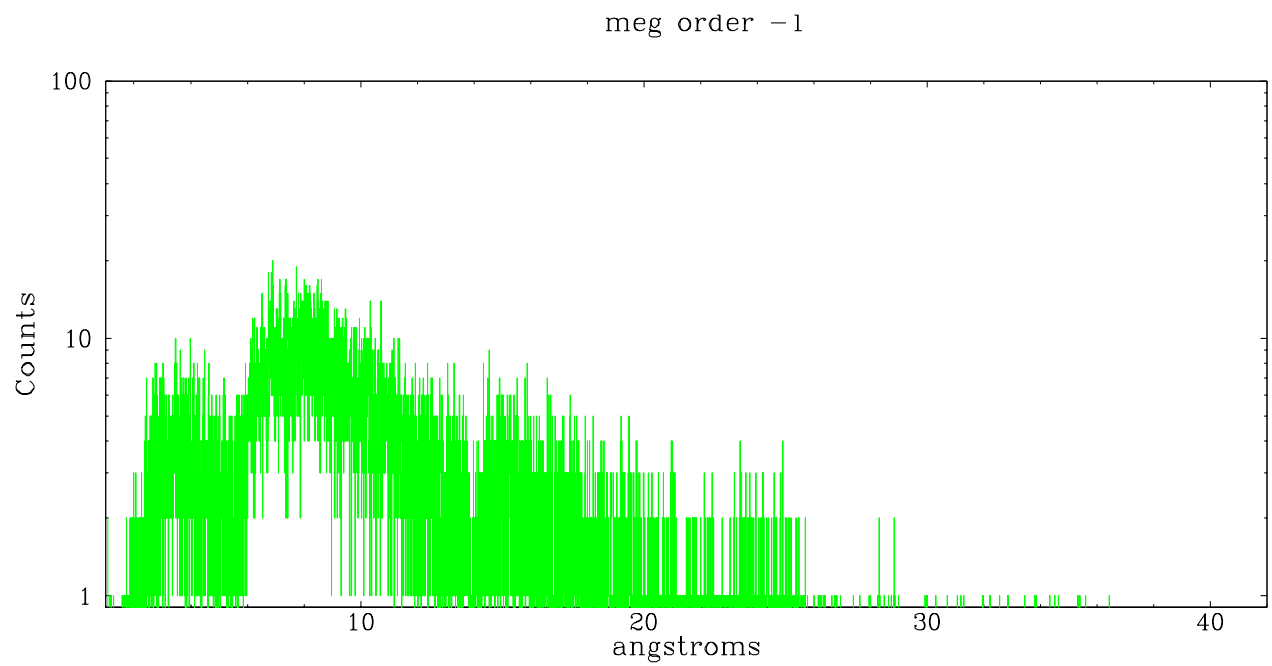
Spot Image MEG



Full Detector MEG

|        | order<br>-3 | order<br>-2 | order<br>-1 | order<br>0 | order<br>1 | order<br>2 | order<br>3 |
|--------|-------------|-------------|-------------|------------|------------|------------|------------|
| Events | 1868        | 1061        | 17846       | 27426      | 17054      | 861        | 1533       |







## A Summary

### A.1 Status

|                            |               |
|----------------------------|---------------|
| V&V Scientist              | Beth Sundheim |
| V&V Date (YYYY-MM-DD)      | 2006.11.07    |
| V&V Edition                | 1             |
| V&V Disposition and Status | OK            |
| V&V Charge Time            | 101.255       |

### A.2 Comments

Roll constraint OK.