

# KIC 007515670

## Q1-17 DR25 TCE Parameters

| TCE          | Run Type | KOI?    | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES  | SNR  | $R_{\star}$ ( $R_{\odot}$ ) | $T_{\star}$ (K) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007515670-01 | OBS      | 2360.01 | 1.151810      | 132.632020   | 92.8        | 2.922            | 19.2 | 18.5 | 0.86                        | 6191            | 0.98                   | 2188.30                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments             |
|--------------|----------|------|-------|---|---|---|---|----------------------|
| 007515670-01 | OBS      | FP   | 0.01  | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET |

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

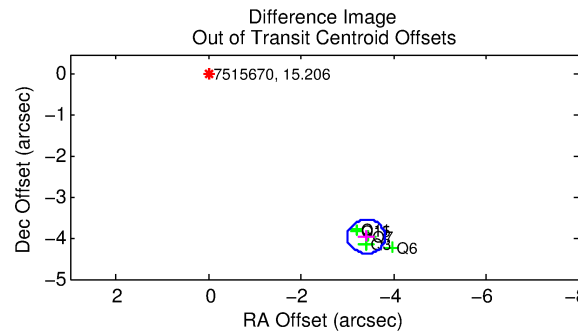
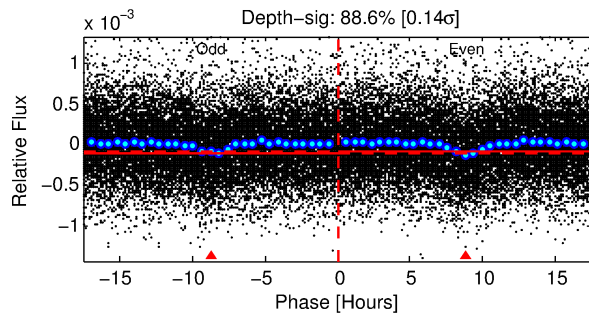
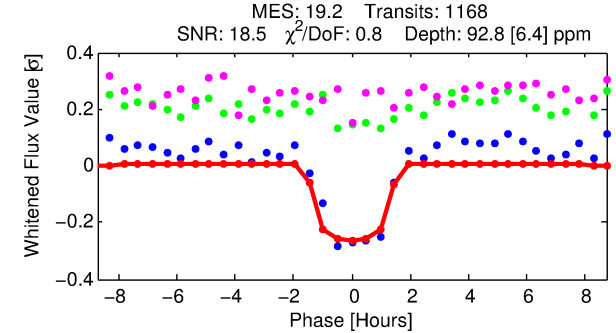
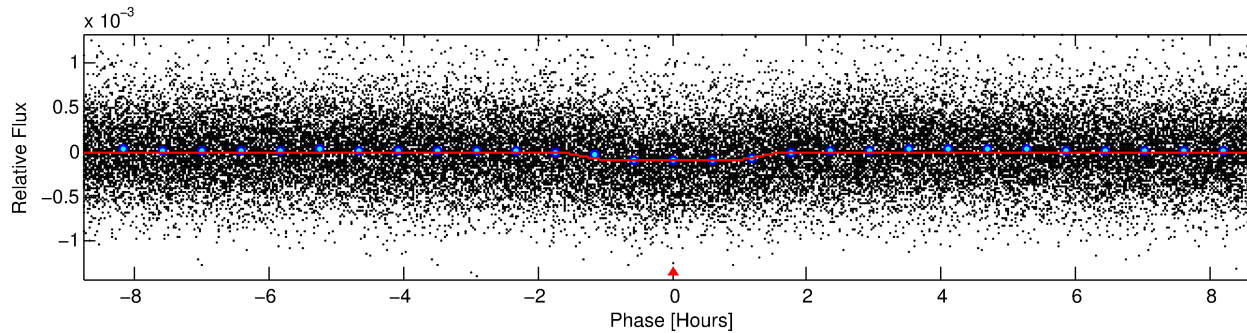
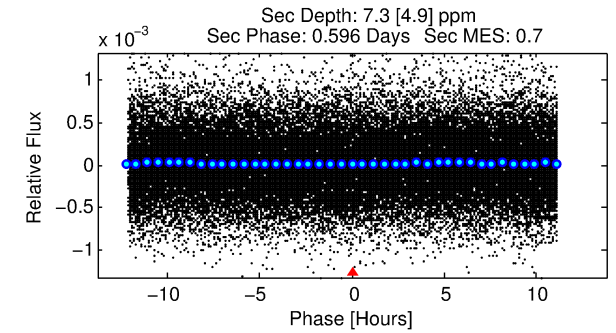
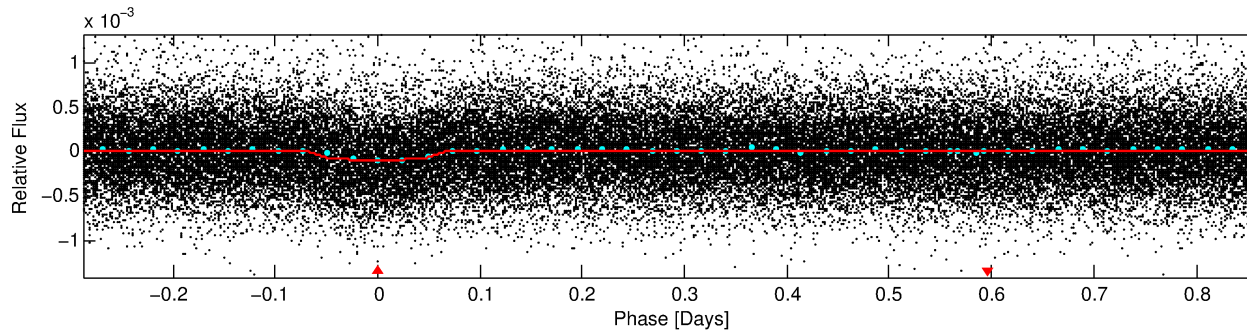
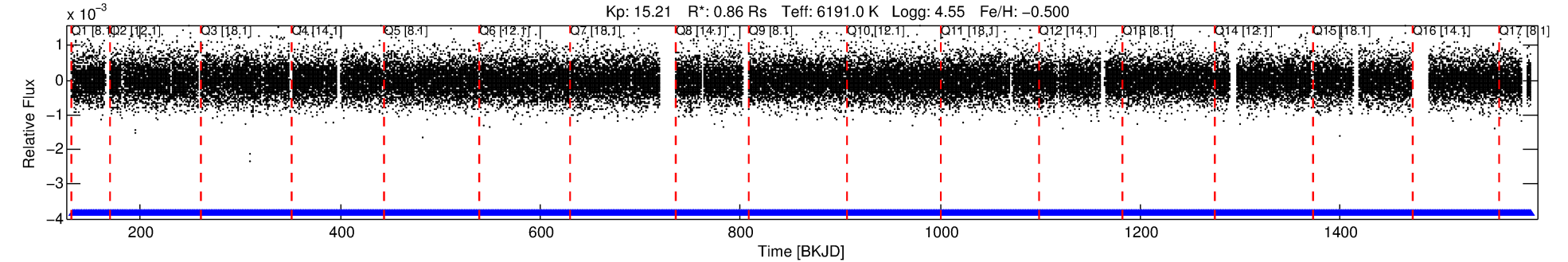
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007515670-01

No Significant Match Found

# DV One-Page Summary

KIC: 7515670 Candidate: 1 of 1 Period: 1.152 d  
KOI: K02360.02 Corr: 0.892



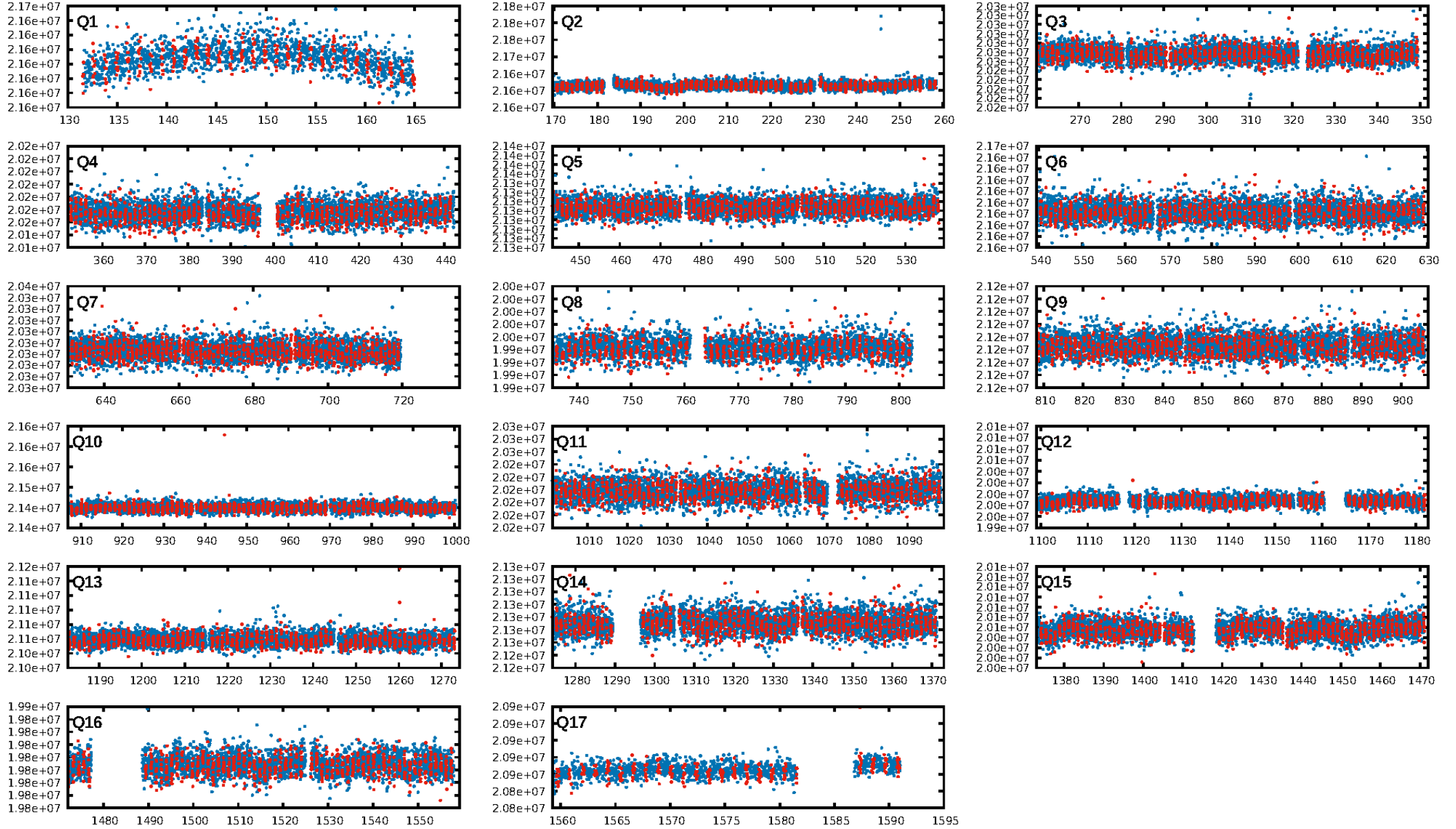
## DV Fit Results:

Period = 1.15181 [0.00001] d  
Epoch = 132.6320 [0.0021] BKJD  
Rp/R\* = 0.0104 [0.0035]  
a/R\* = 1.66 [2.00]  
b = 0.90 [0.39]  
Seff = 2188.30 [823.09]  
Teq = 1744 [164] K  
Rp = 0.98 [0.43] Re  
a = 0.0212 [0.0051] AU  
Ag = 1.88 [1.92] [0.46σ]  
Teffp = 3159 [762] K [1.82σ]

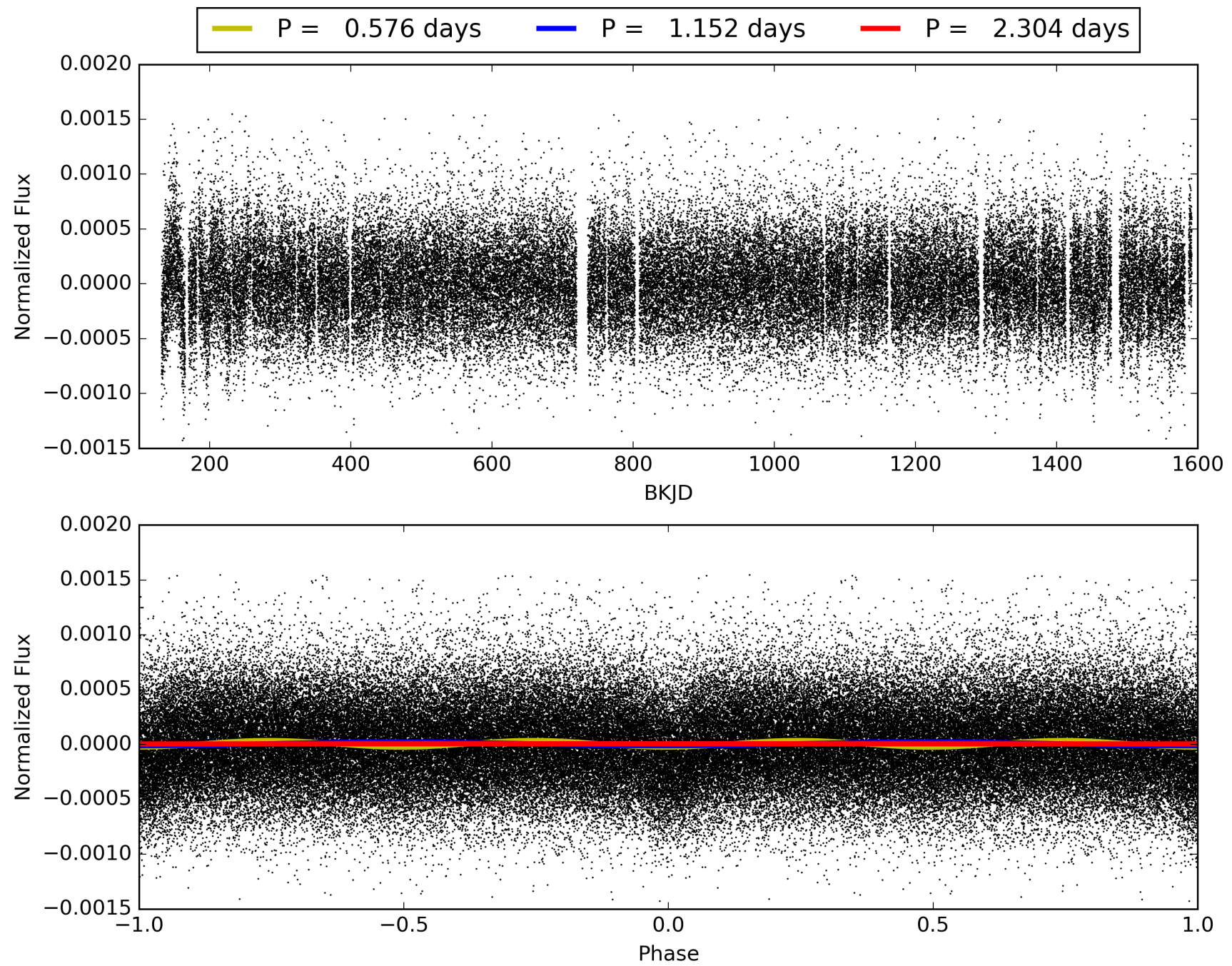
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.06e-78  
RollingBand-fgt: 1.00 [1114/1114]  
GhostDiagnostic-chr: -0.4924  
Centroid-sig: 0.0%  
Centroid-so: 20.122 arcsec [23.55σ]  
OotOffset-rm: 5.225 arcsec [37.90σ]  
KicOffset-rm: 5.298 arcsec [33.35σ]  
OotOffset-st: 1/4/0/0 [5]  
KicOffset-st: 1/4/0/0 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007515670-01, PDC Light Curves



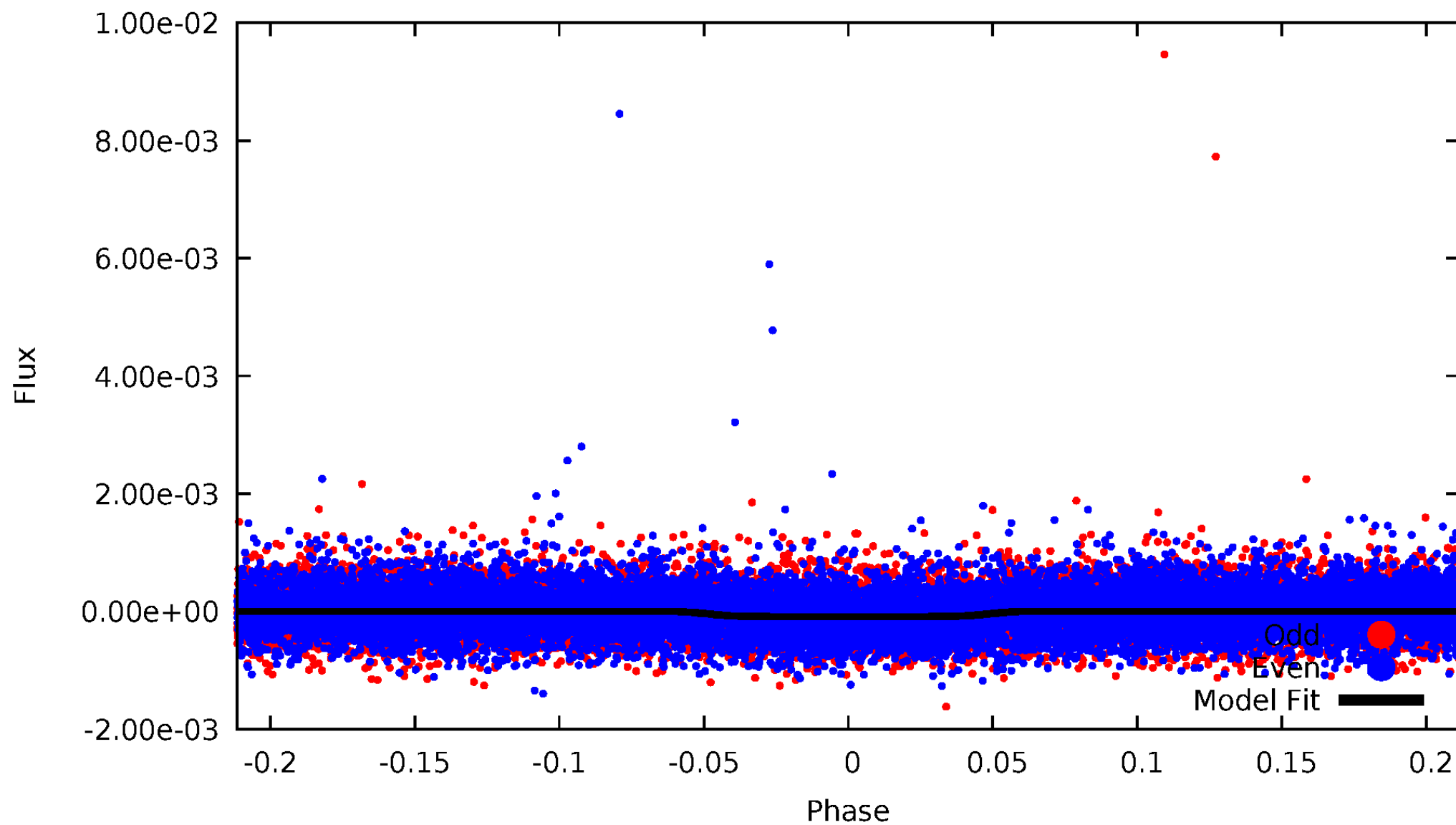
TCE 007515670-01





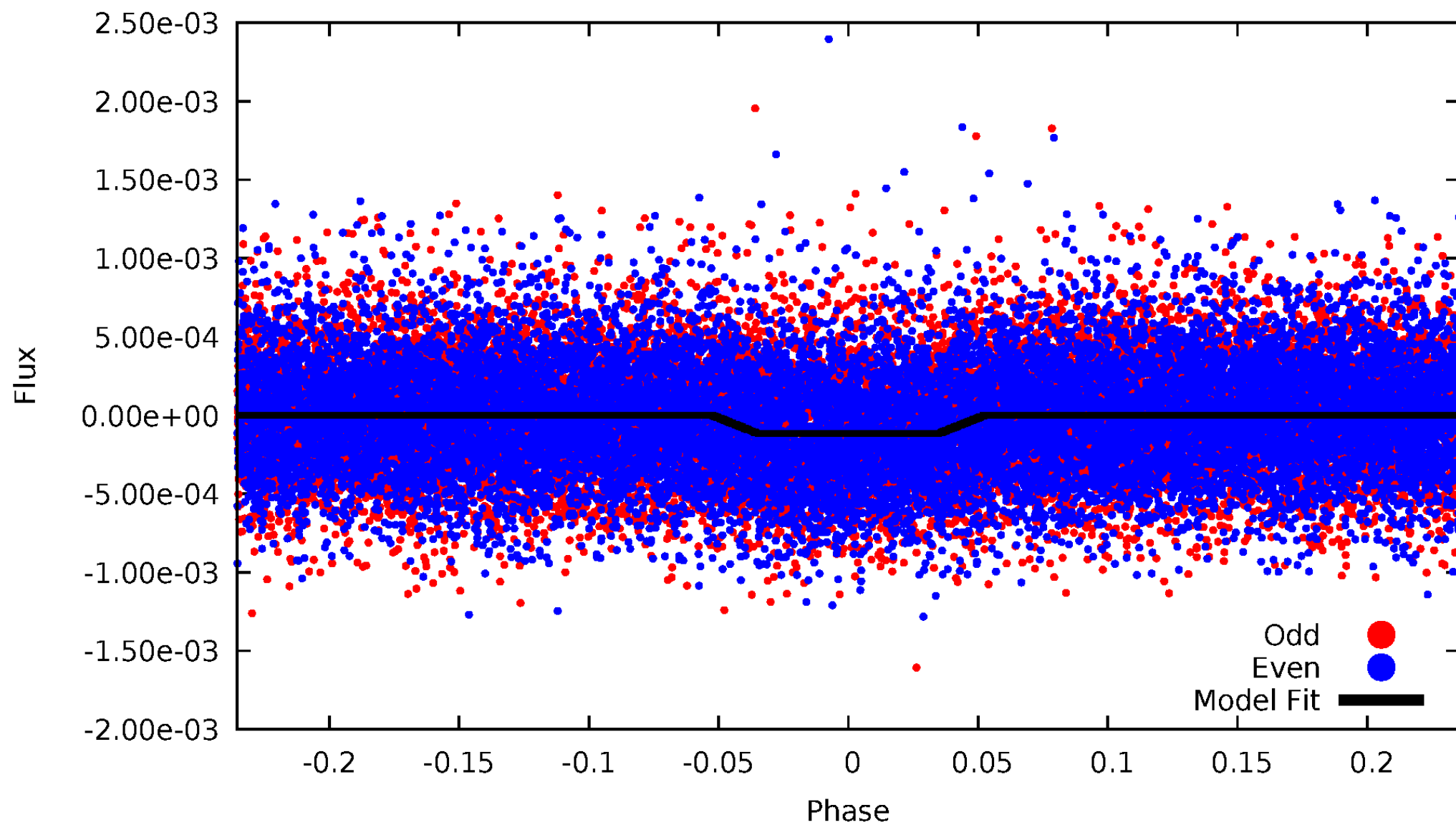
# DV Odd/Even

TCE 007515670-01



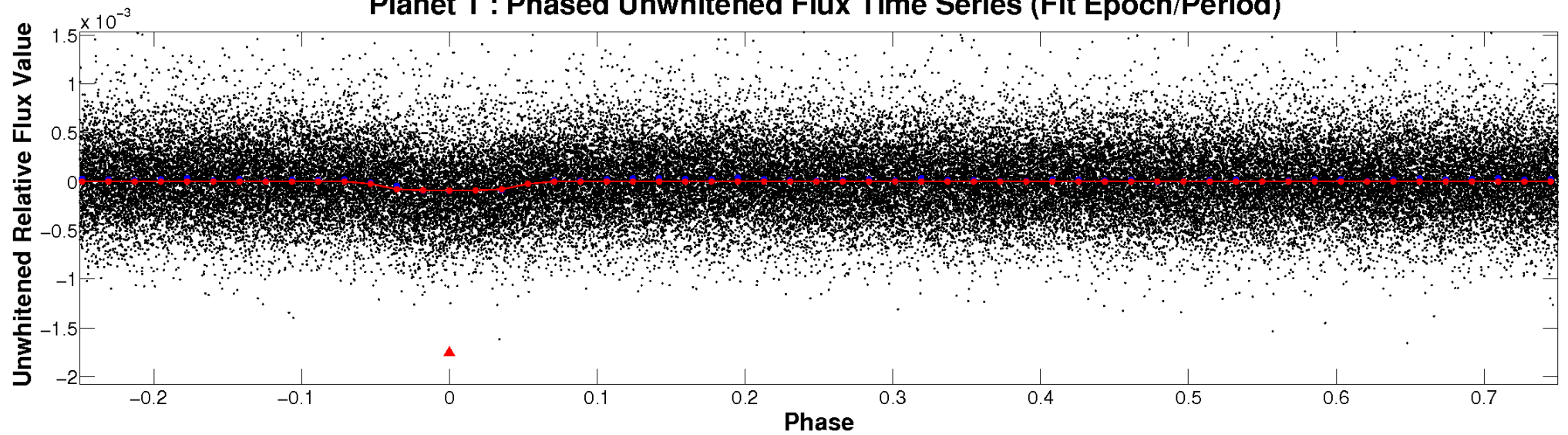
# ALT Odd/Even

TCE 007515670-01

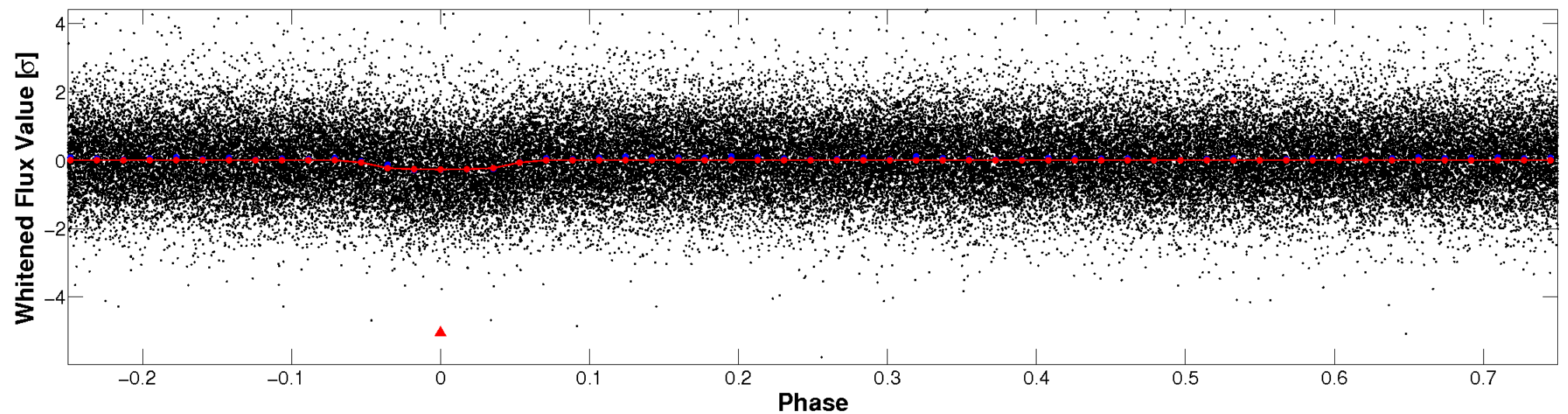


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

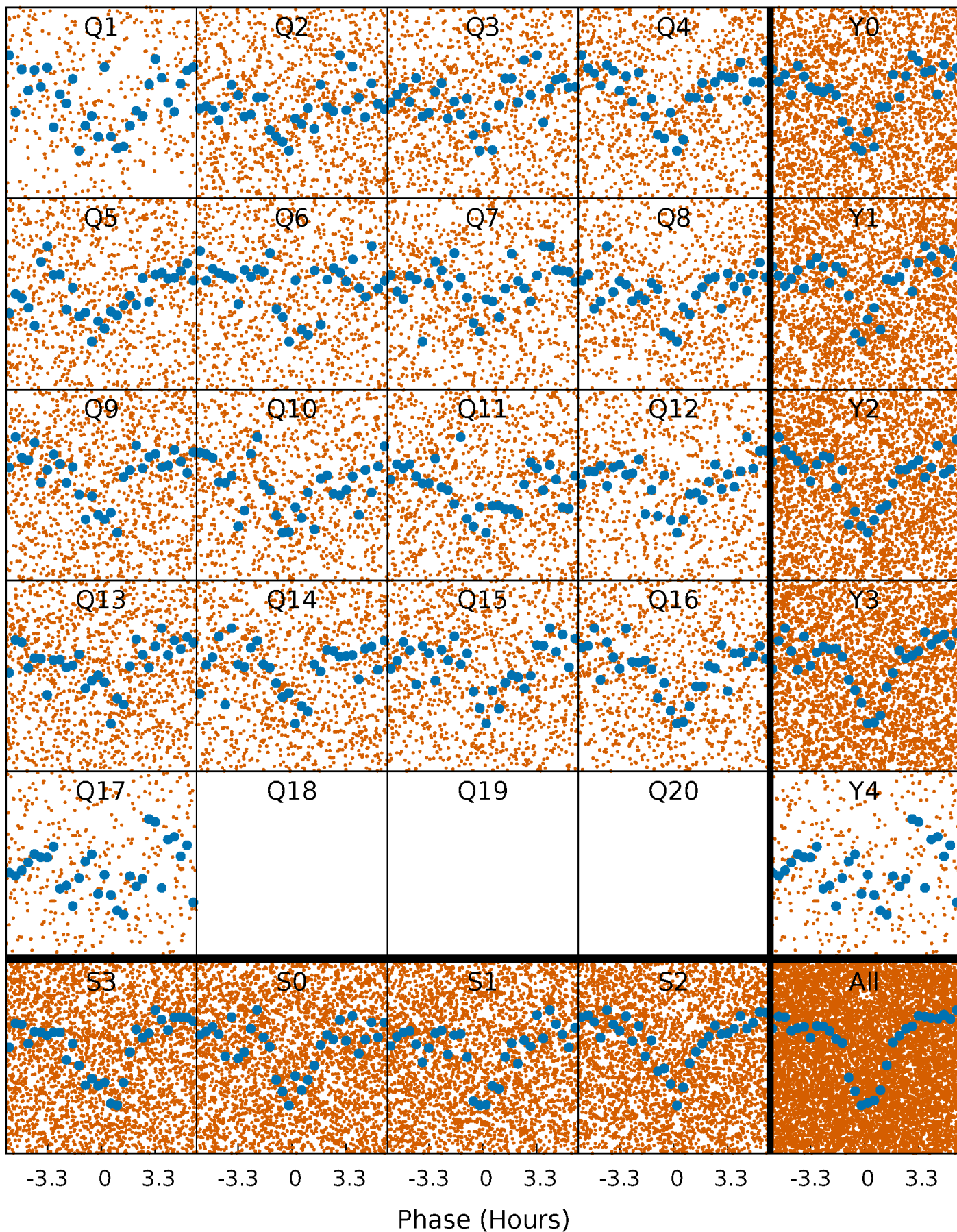


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

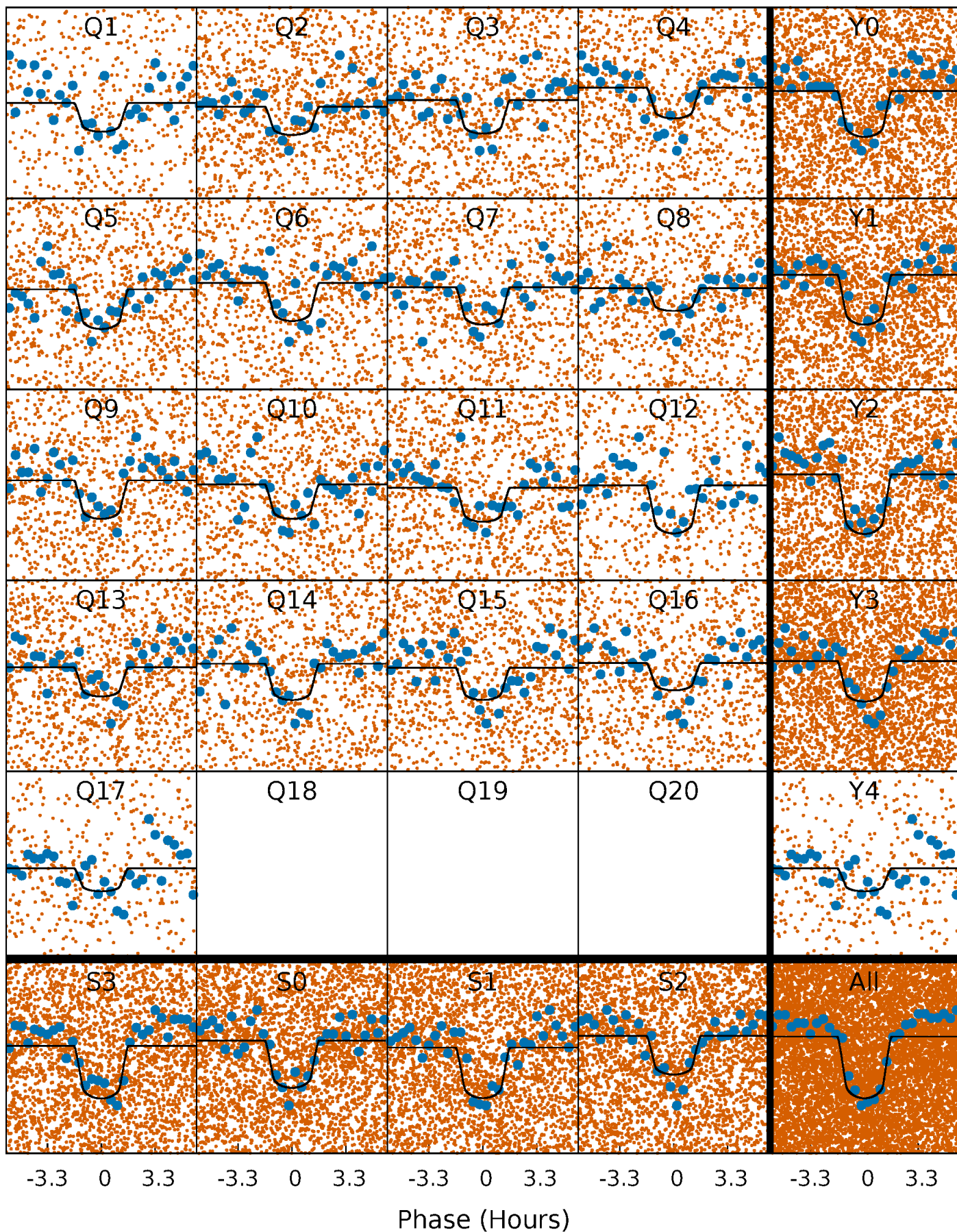
TCE 007515670-01 P= 1.151810 Days  $T_0=132.632020$  (BKJD)





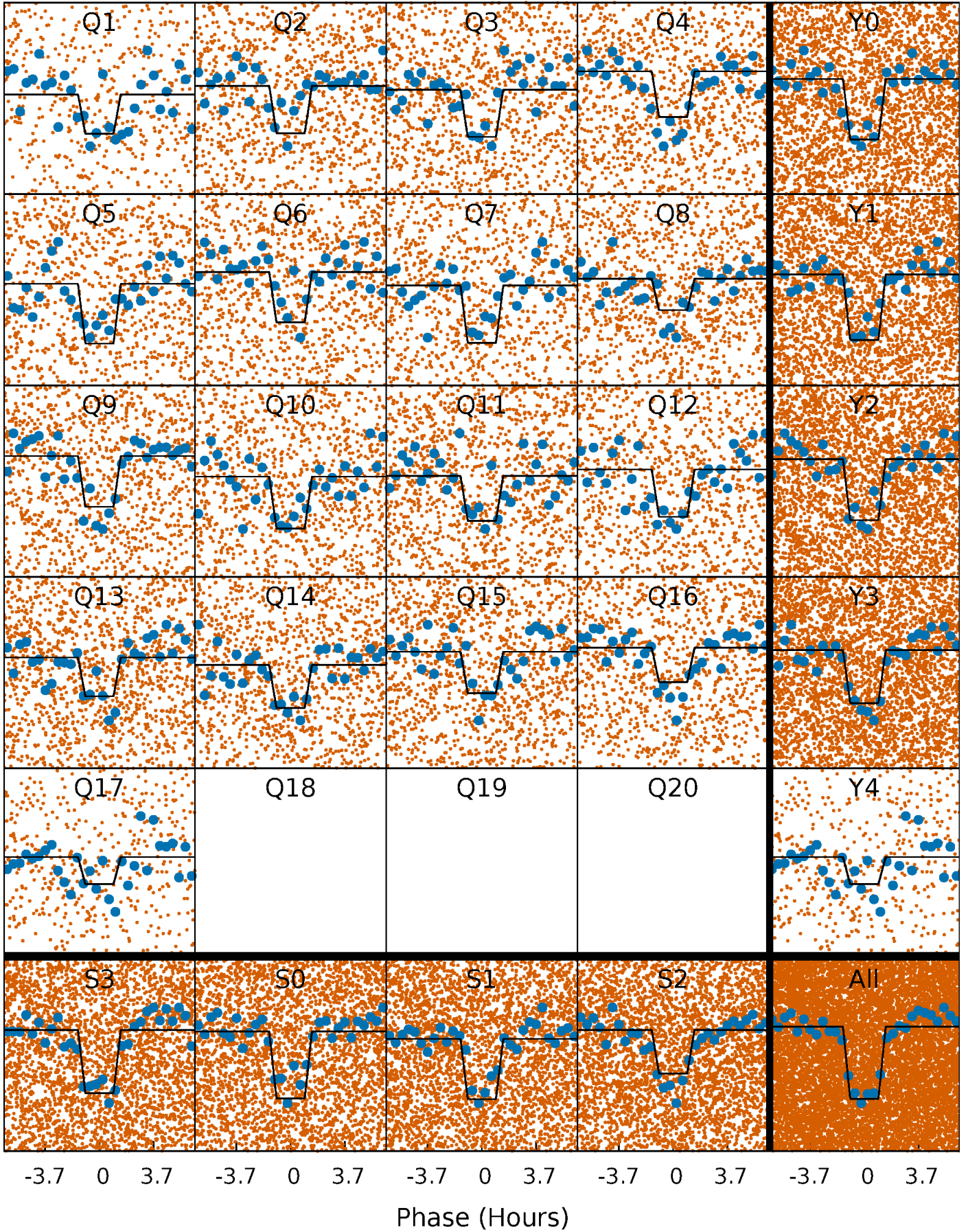
# DV Quarter-Phased Transit Curves

TCE 007515670-01 P= 1.151810 Days  $T_0=132.632020$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007515670-01 P= 1.151819 Days  $T_0=132.631083$  (BKJD)

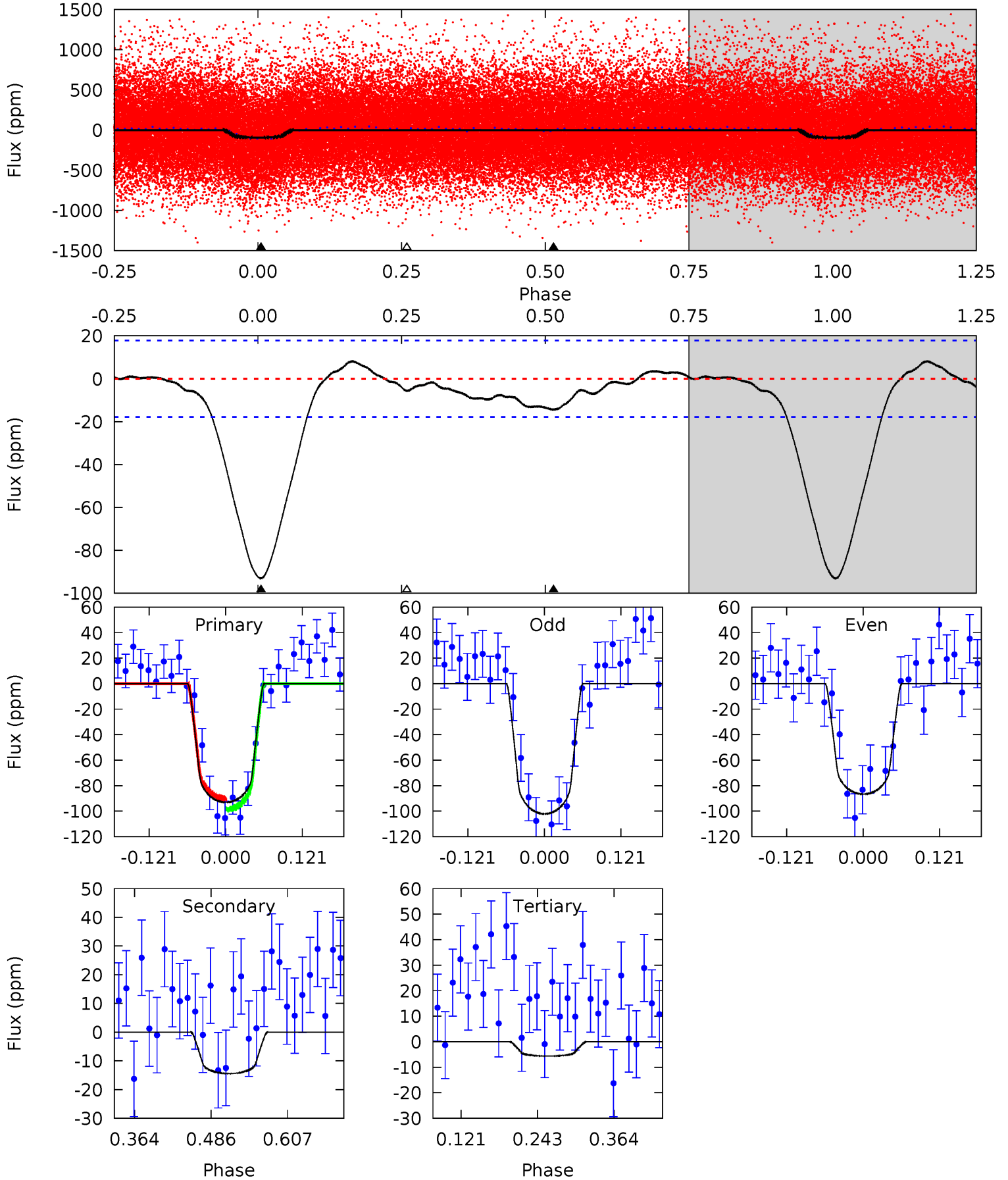




# DV Model-Shift Uniqueness Test

007515670-01, P = 1.151810 Days, E = 131.480210 Days

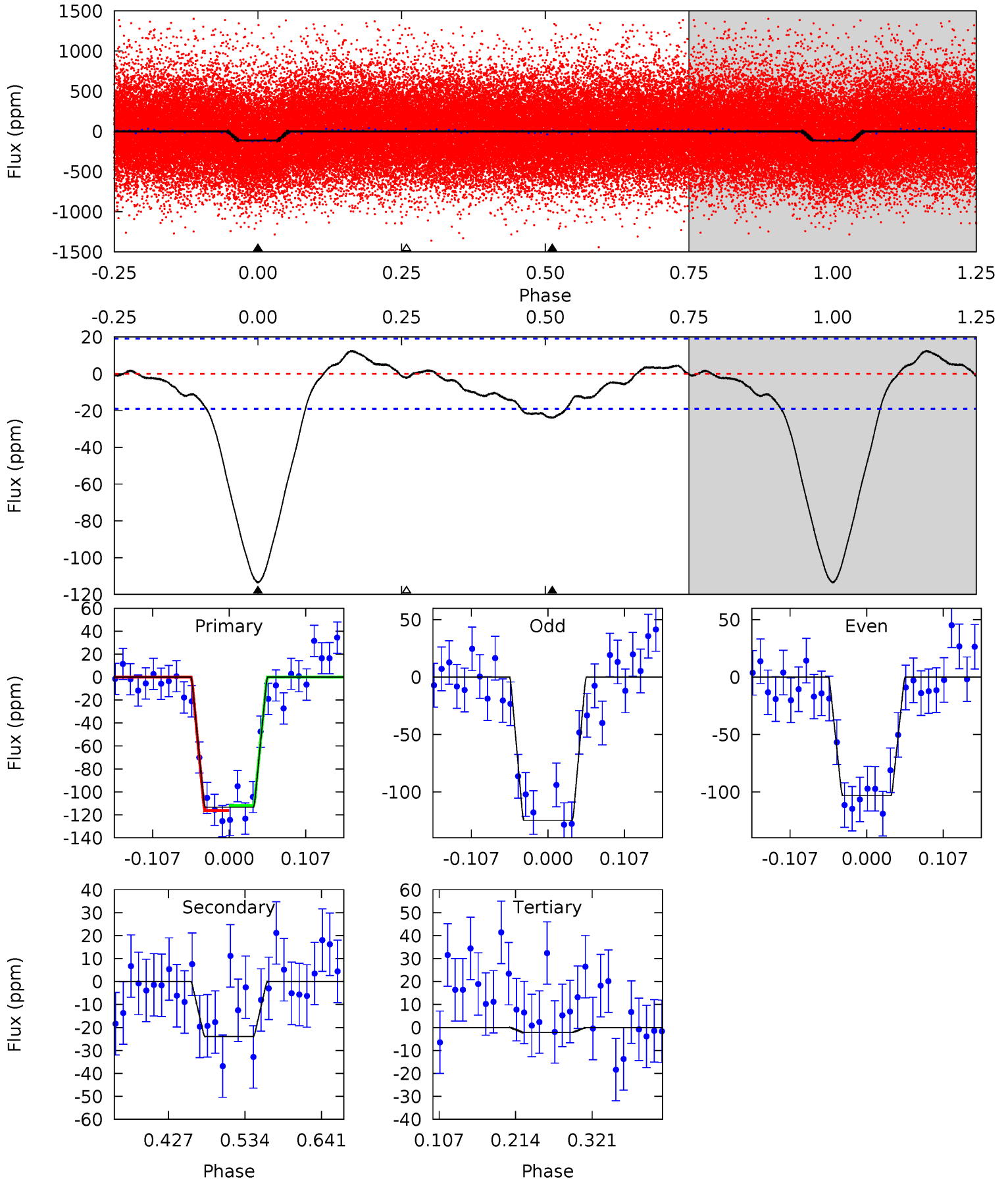
| Pri  | Sec  | Ter  | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.6 | 3.65 | 1.43 | 0   | 4.52            | 1.55            | 1.04             | 22.2    | 23.6    | 2.22    | 3.65    | 1.96    | 1.00 | 0.08  | 1.11 |



# Alt Model-Shift Uniqueness Test

007515670-01, P = 1.151819 Days, E = 131.479264 Days

| Pri  | Sec  | Ter  | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 27.1 | 5.72 | 0.52 | 0   | 4.55            | 1.61            | 1.42             | 26.5    | 27.1    | 5.19    | 5.72    | 2.57    | 1.02 | 0.10  | 0.52 |





### Stellar Parameters For KIC 007515670

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6191^{+167}_{-204}$ | $4.546^{+0.034}_{-0.195}$ | $-0.500^{+0.350}_{-0.300}$ | $0.865^{+0.241}_{-0.064}$ | $0.961^{+0.115}_{-0.115}$ | $2.088^{+0.390}_{-1.038}$                 |
|        | +3%/-3%              | +1%/-4%                   | +70%/-60%                  | +28%/-7%                  | +12%/-12%                 | +19%/-50%                                 |
| Source | PHO1                 | KIC0                      | KIC0                       | DSEP                      |                           |   |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 007515670-01 / KOI 2360.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$          |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-14 \pm 4$ | $1.01^{+0.38}_{-0.34}$ | $2488^{+158}_{-118}$ | $3994^{+739}_{-501}$ | $3.453^{+4.638}_{-1.781}$ |
| Alt.    | $-24 \pm 4$ | $1.09^{+0.37}_{-0.36}$ | $2492^{+169}_{-118}$ | $4294^{+754}_{-484}$ | $4.995^{+5.627}_{-2.383}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

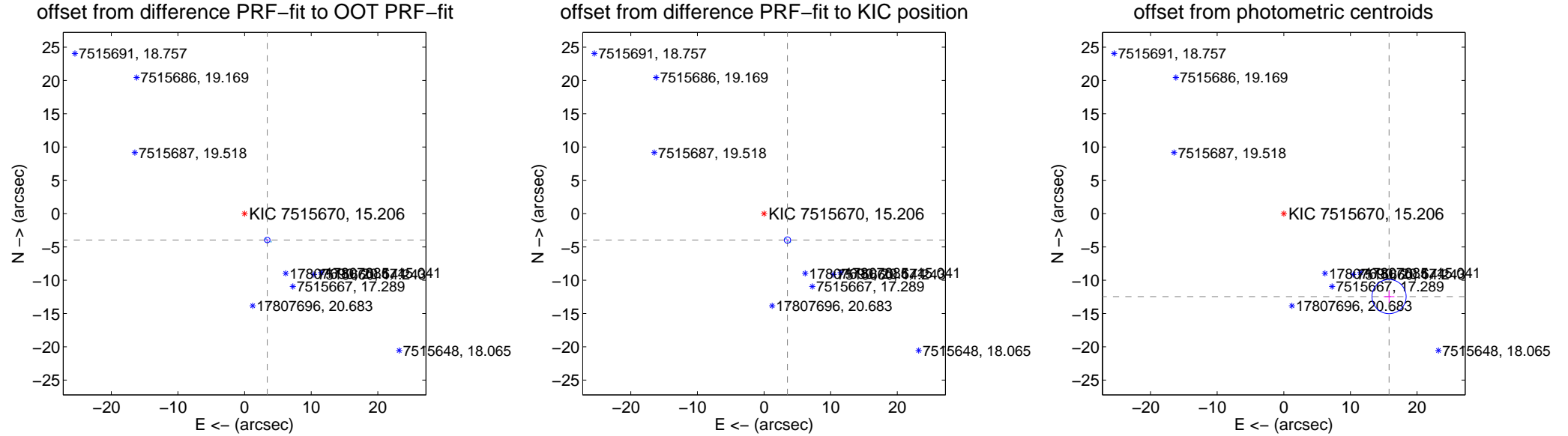
## DV Centroid Data

Supplemental centroid analysis for 007515670-01. Kepler magnitude: 15.21. Transit SNR 18.52

There are 5 quarters with good PRF difference image offsets

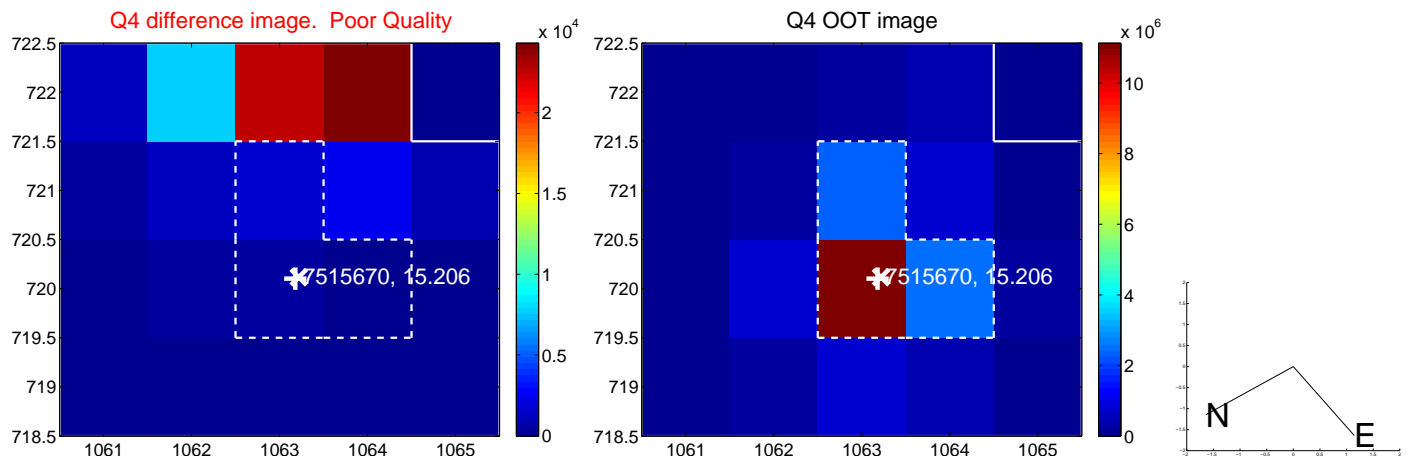
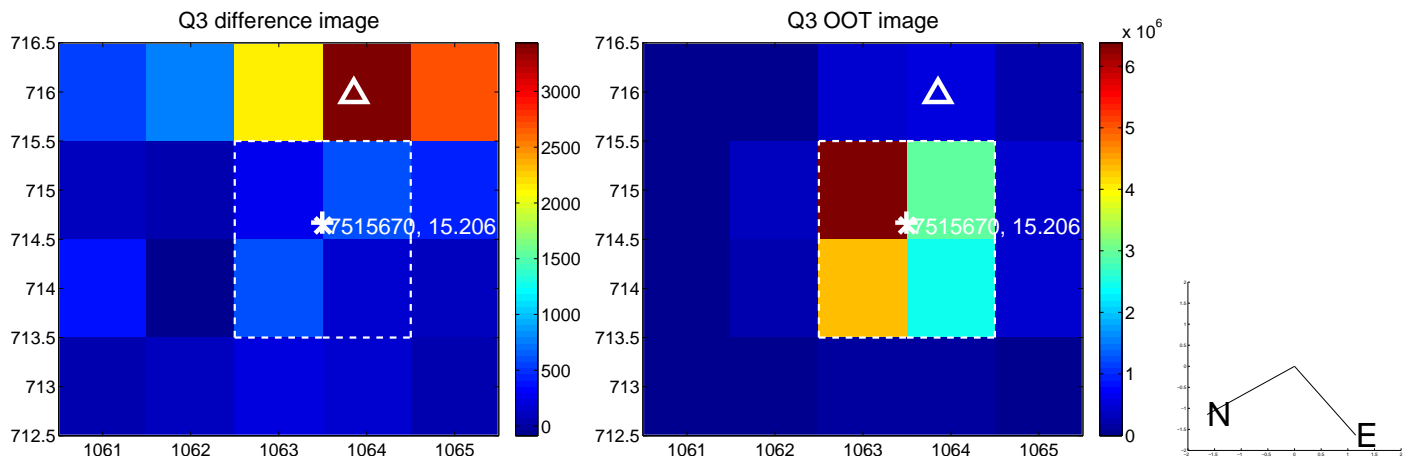
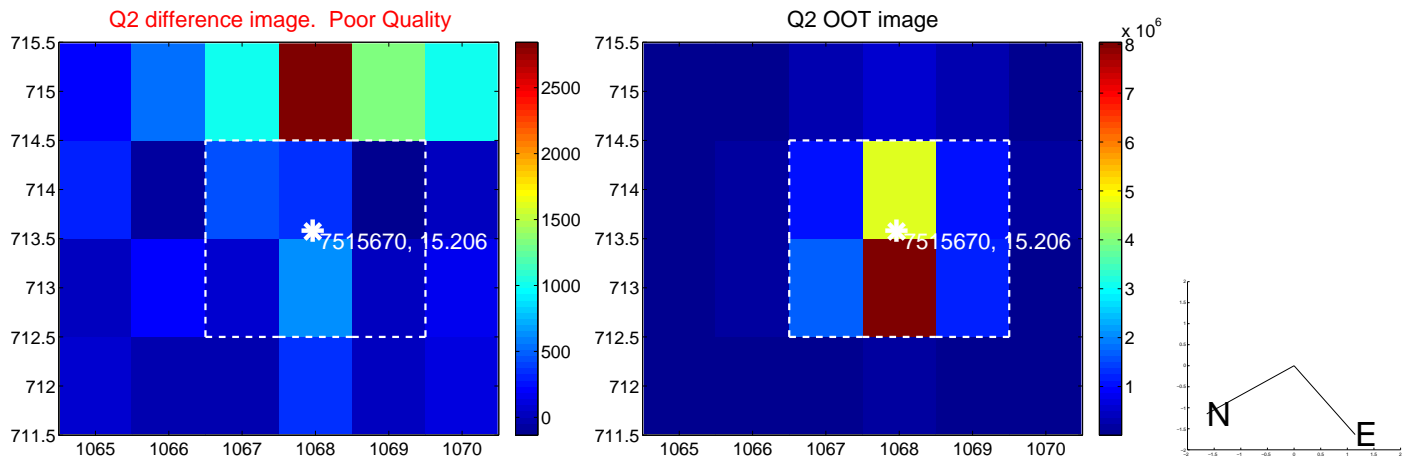
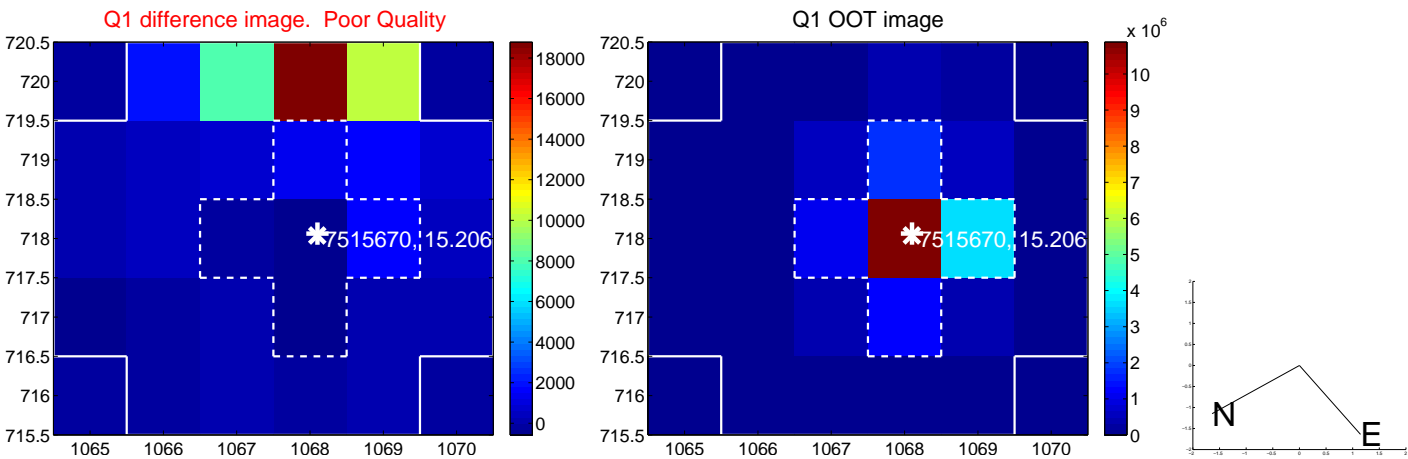
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

|   | Distance in arcsec                  | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|-------------------------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | <b>5.225 <math>\pm</math> 0.138</b> | <b>37.90</b>        | -3.409 $\pm$ 0.164 | -3.959 $\pm$ 0.115 |
| PRF-fit source offset from KIC position | <b>5.298 <math>\pm</math> 0.159</b> | <b>33.35</b>        | -3.511 $\pm$ 0.143 | -3.967 $\pm$ 0.110 |
| photometric centroid source offset      | <b>20.12 <math>\pm</math> 0.85</b>  | <b>23.55</b>        | -15.80 $\pm$ 0.81  | -12.46 $\pm$ 0.93  |

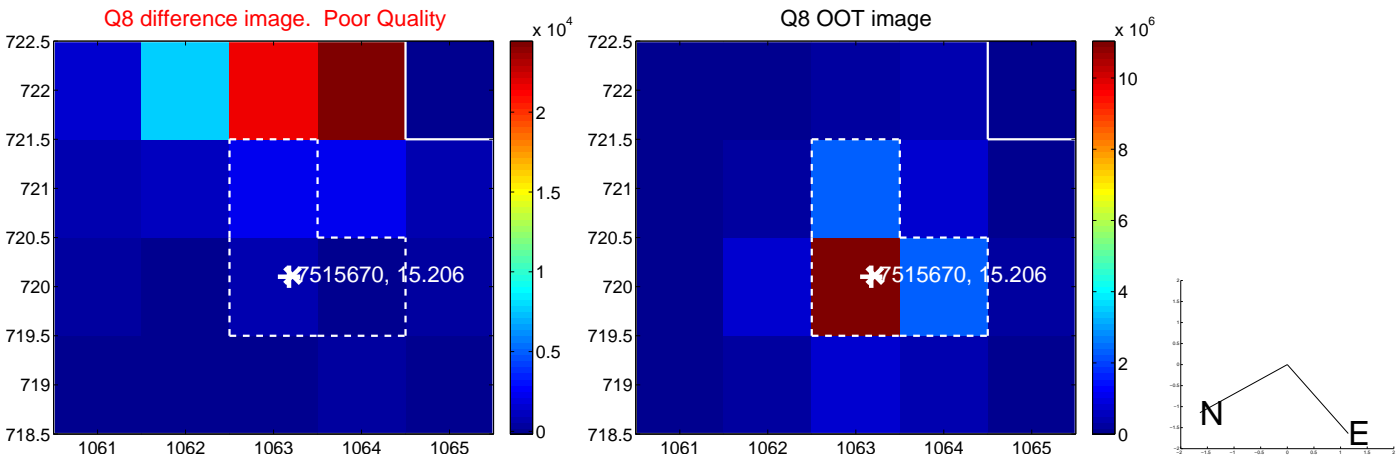
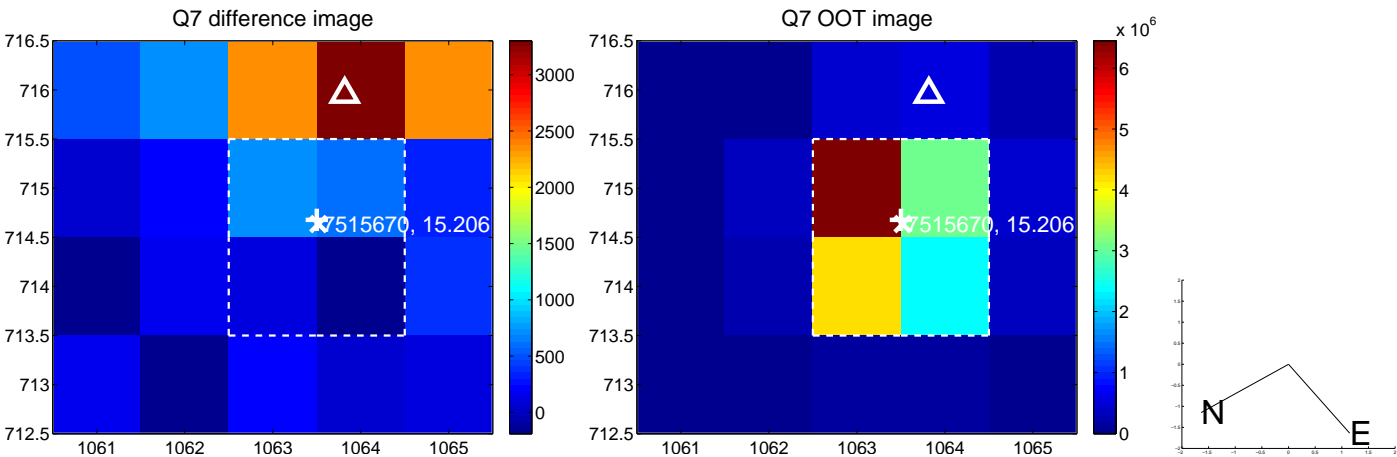
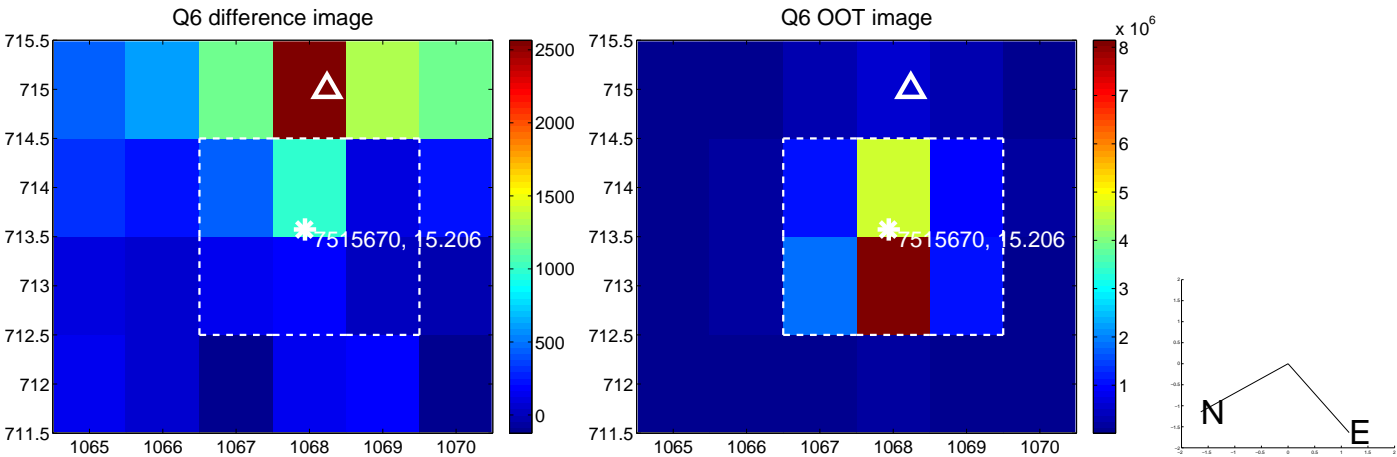
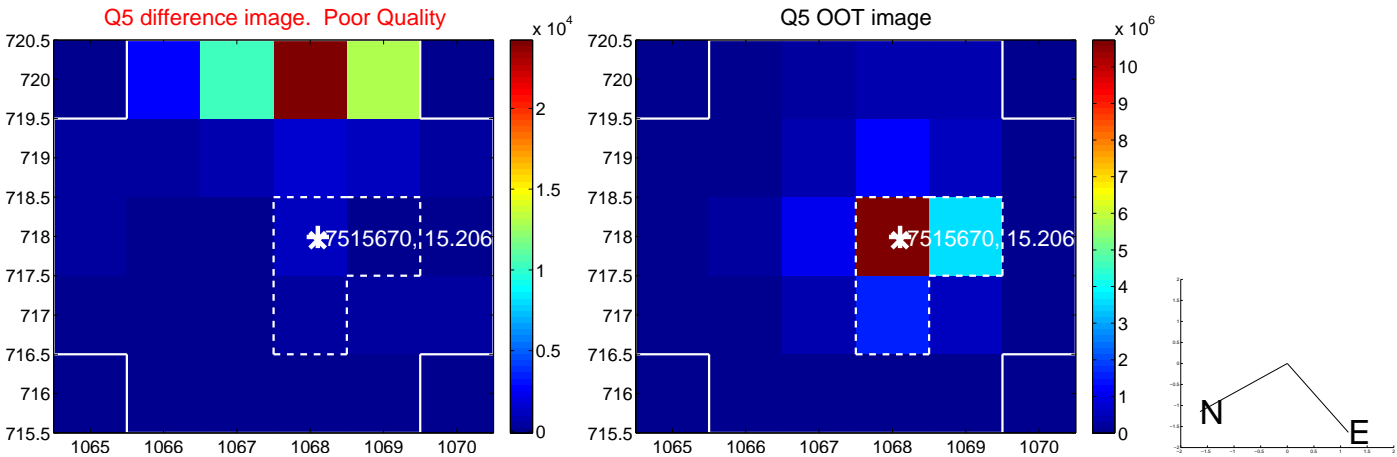


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

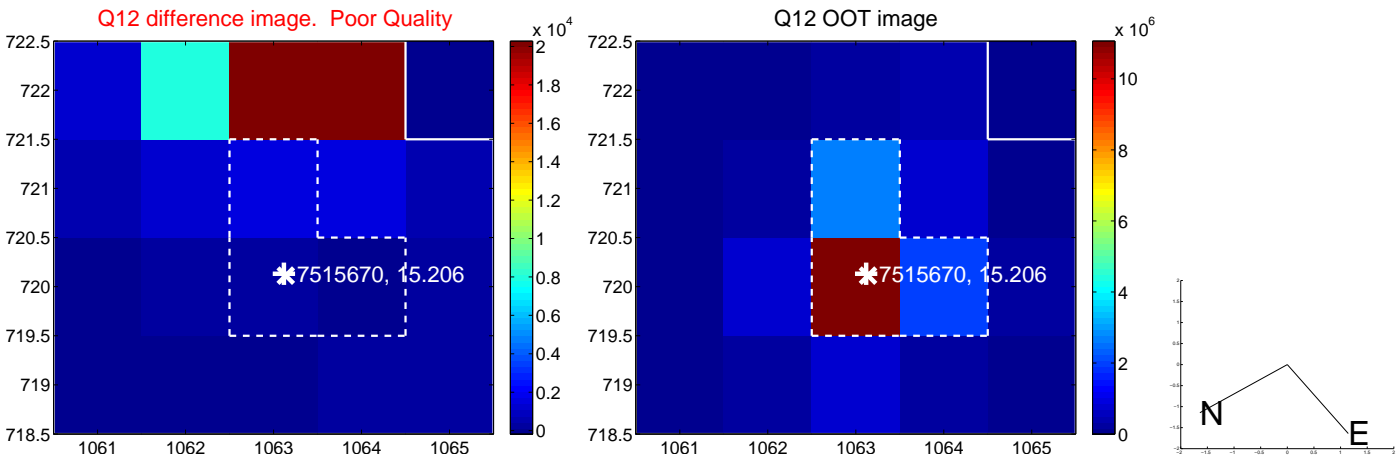
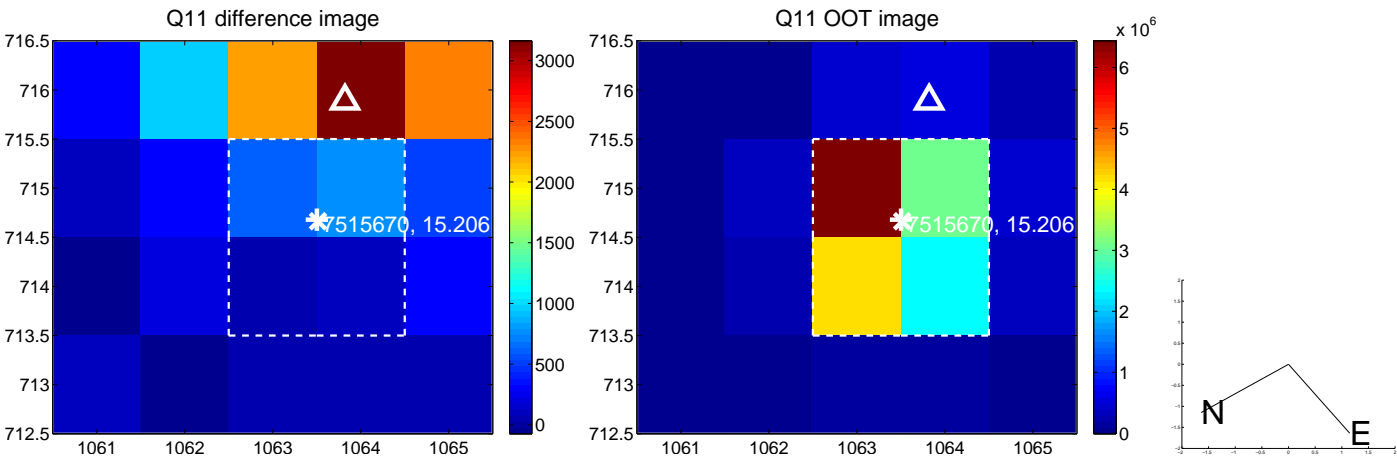
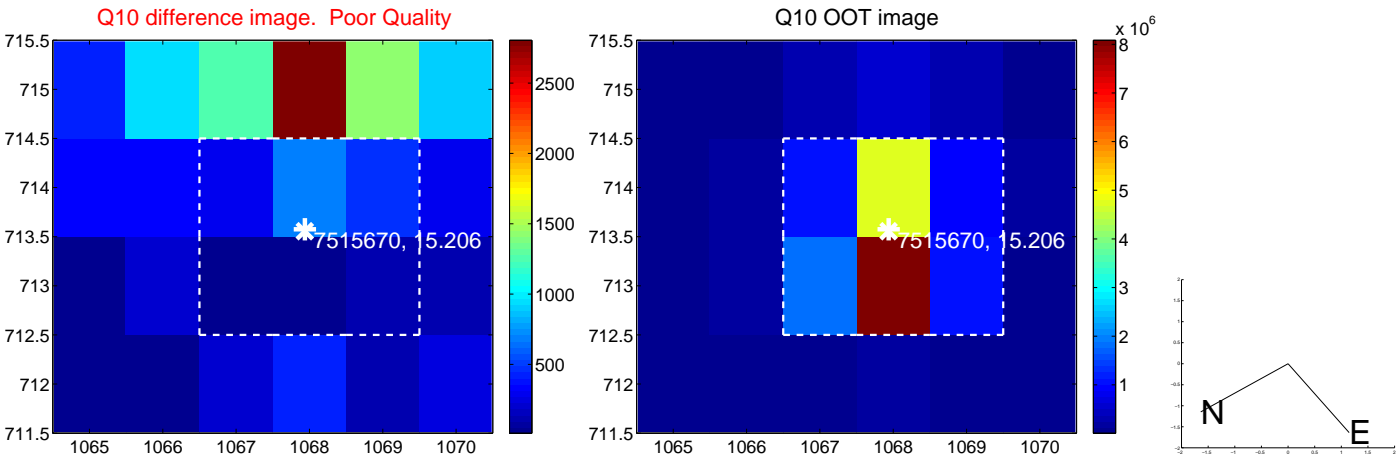
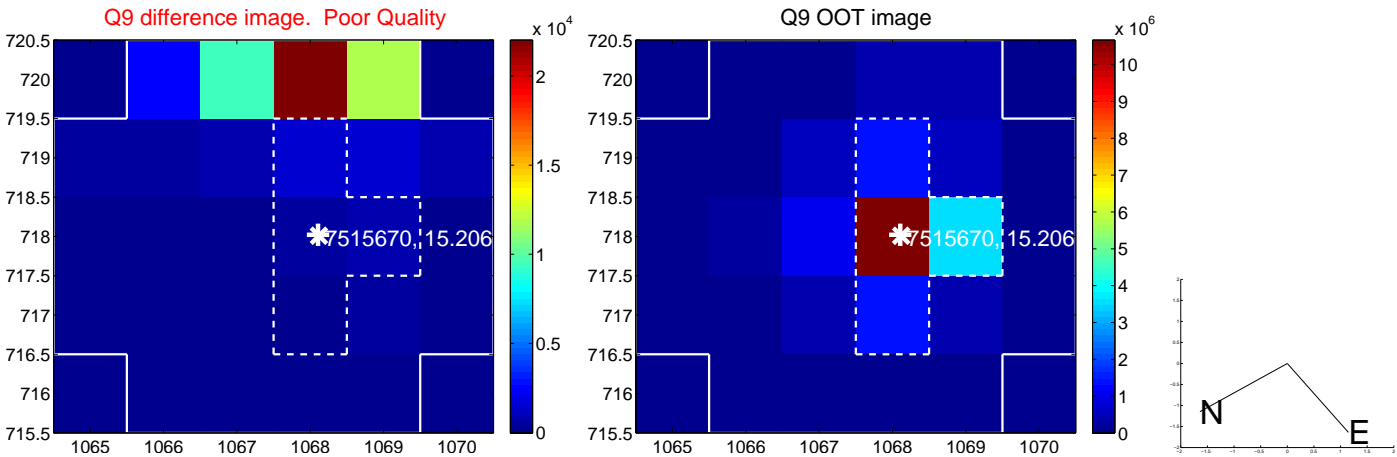


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

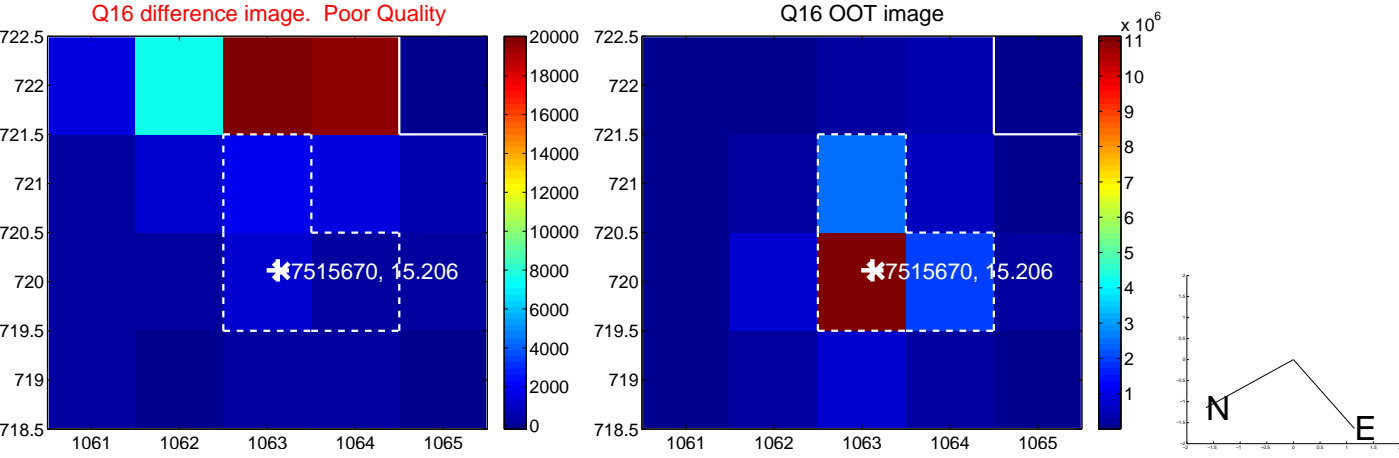
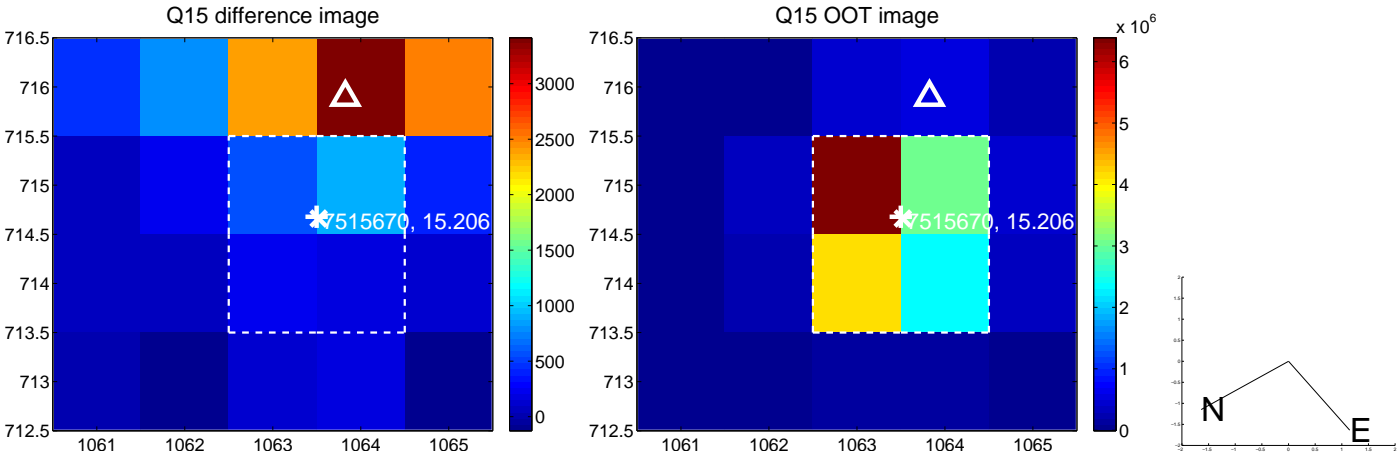
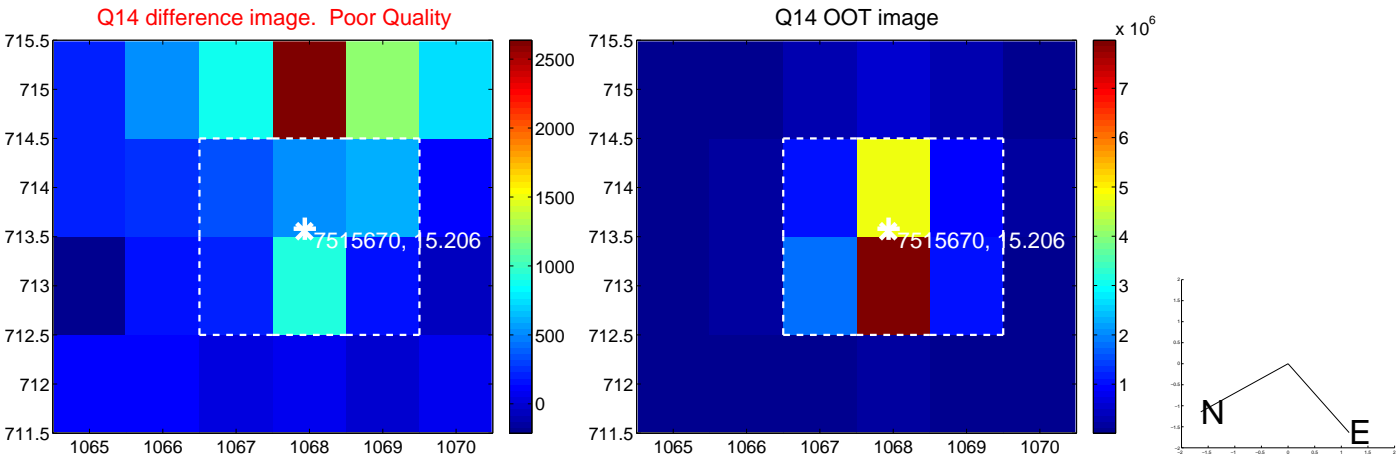
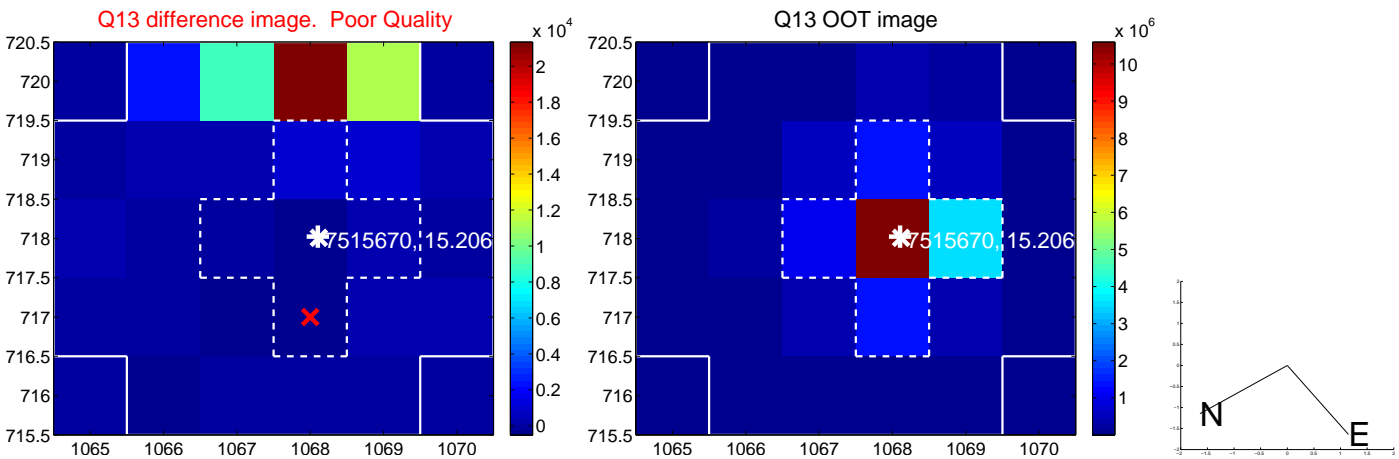




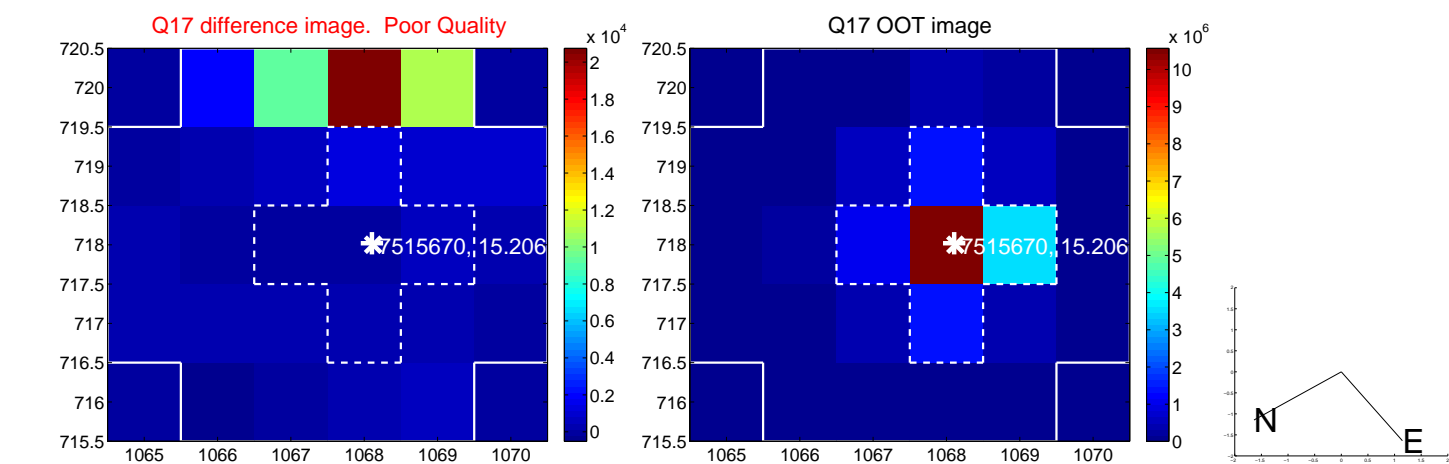
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1

