

# KIC 007282168

## Q1-17 DR25 TCE Parameters

| TCE          | Run Type | KOI?    | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | R <sub>★</sub> (R <sub>☉</sub> ) | T <sub>★</sub> (K) | R <sub>p</sub> (R <sub>⊕</sub> ) | S <sub>p</sub> (S <sub>⊕</sub> ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 007282168-01 | OBS      | 7831.01 | 0.566814      | 131.774962   | 25.2        | 1.921            | 8.1 | 6.5 | 0.71                             | 5481               | 0.42                             | 2665.43                          |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments               |
|--------------|----------|------|-------|---|---|---|---|------------------------|
| 007282168-01 | OBS      | FP   | 0.00  | 0 | 0 | 1 | 1 | HALO_GHOST—EPHEM_MATCH |

**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.

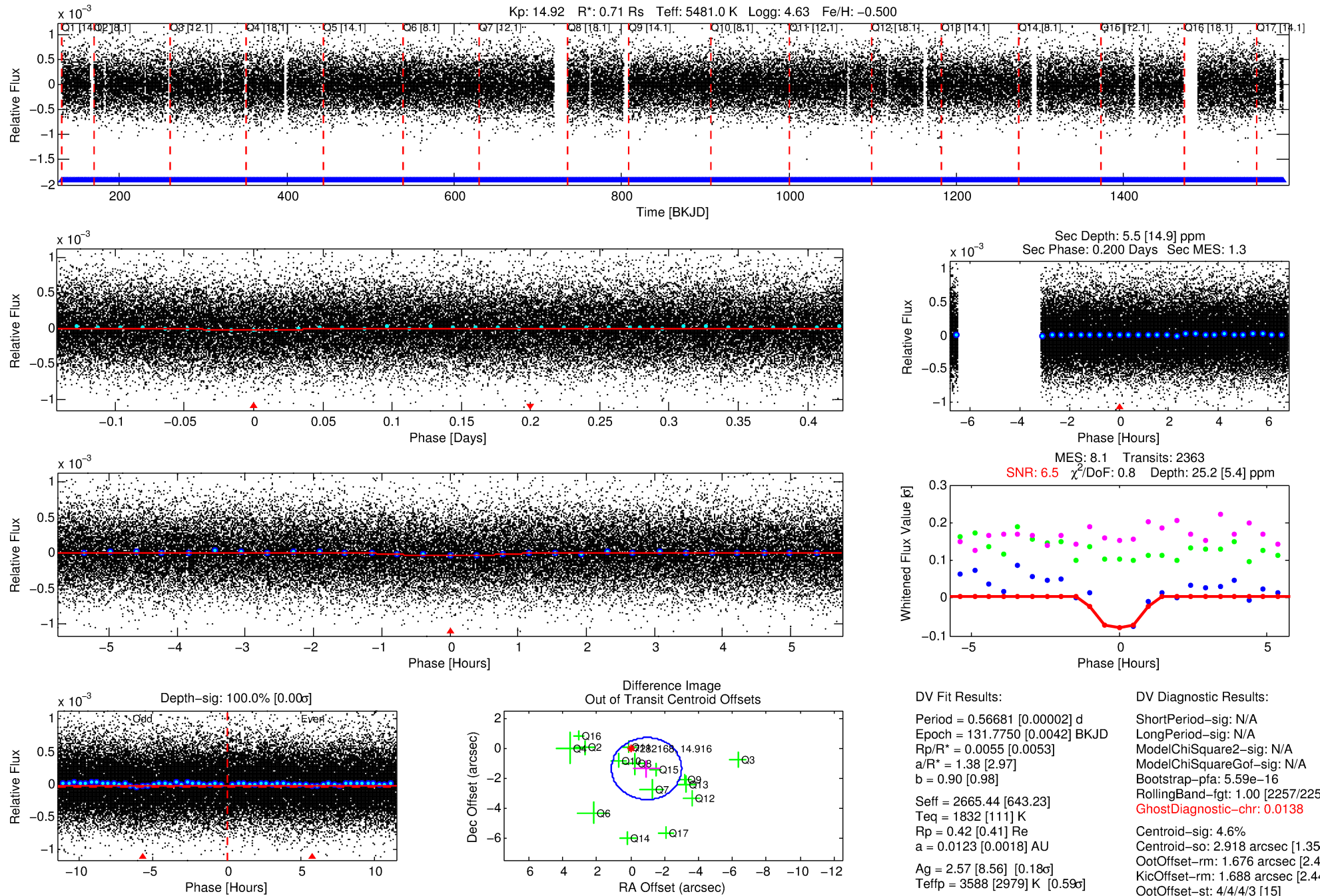
## Ephemeris Match Information For 007282168-01

| TCE (1)      | KIC     | Parent (2) | Parent KIC | P <sub>1</sub> :P <sub>2</sub> | Dist (″) | ΔRow | ΔCol | m <sub>2</sub> | m <sub>1</sub> | D <sub>2</sub> /D <sub>1</sub> | Mechanism  | Flag | σ <sub>P</sub> | σ <sub>T</sub> |
|--------------|---------|------------|------------|--------------------------------|----------|------|------|----------------|----------------|--------------------------------|------------|------|----------------|----------------|
| 007282168-01 | 7282168 | RR-Lyr-pri | 7198959    | 1:1                            | 1261.9   | 101  | 300  | 7.86           | 14.91          | 24932.00                       | Direct-PRF | 0    | 2.76           | 20.98          |

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7282168 Candidate: 1 of 1 Period: 0.567 d



## DV Fit Results:

Period = 0.56681 [0.00002] d  
Epoch = 131.7750 [0.0042] BKJD  
Rp/R\* = 0.0055 [0.0053]  
a/R\* = 1.38 [2.97]  
b = 0.90 [0.98]  
Seff = 2665.44 [643.23]  
Teq = 1832 [111] K  
Rp = 0.42 [0.41] Re  
a = 0.0123 [0.0018] AU  
Ag = 2.57 [8.56] [0.18 $\sigma$ ]  
Teffp = 3588 [2979] K [0.59 $\sigma$ ]

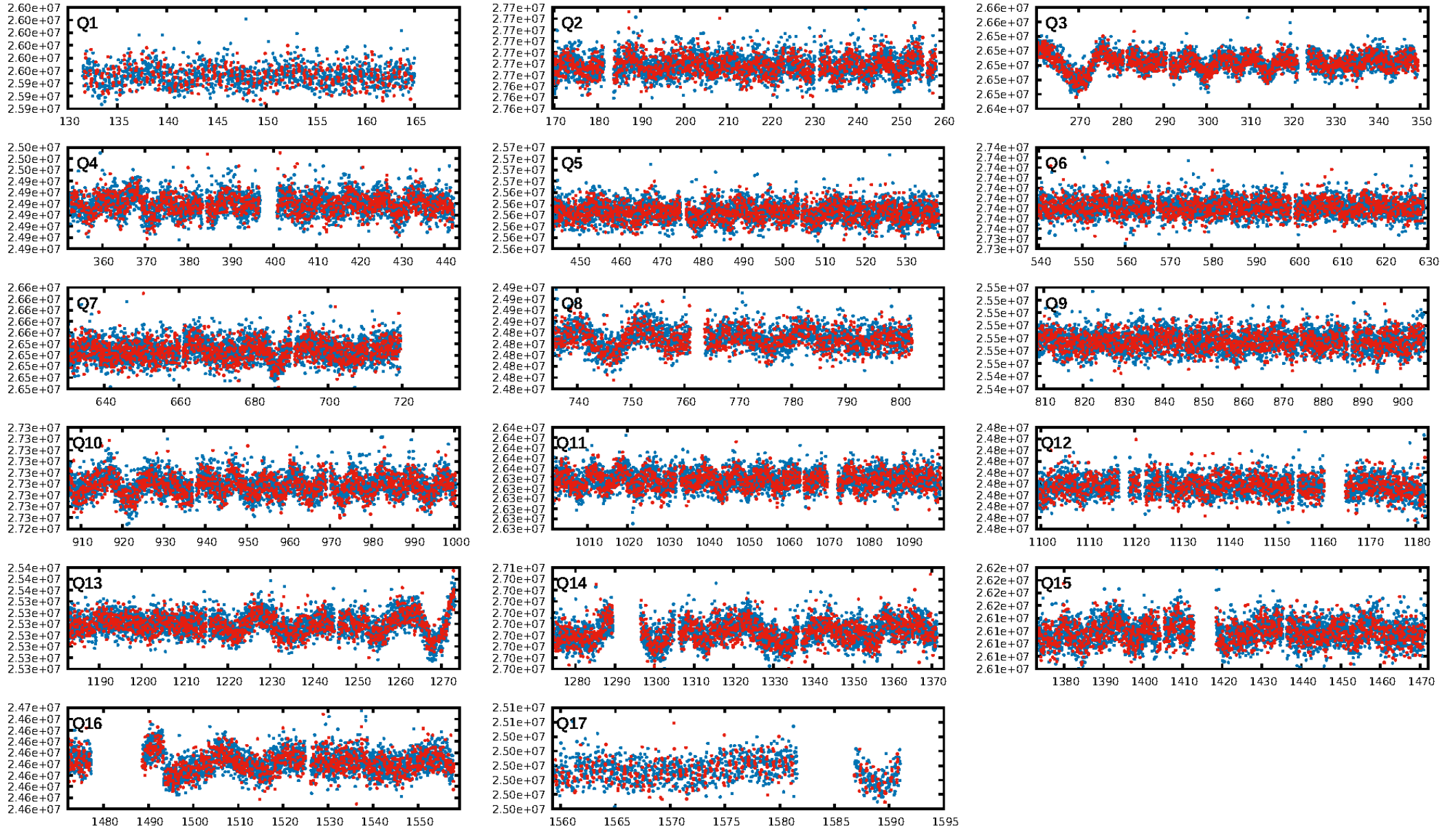
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.59e-16  
RollingBand-fgt: 1.00 [2257/2257]  
GhostDiagnostic-chr: 0.0138  
Centroid-sig: 4.6%  
Centroid-so: 2.918 arcsec [1.35 $\sigma$ ]  
OotOffset-rm: 1.676 arcsec [2.43 $\sigma$ ]  
KicOffset-rm: 1.688 arcsec [2.44 $\sigma$ ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.07 [1/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 10:19:23 Z

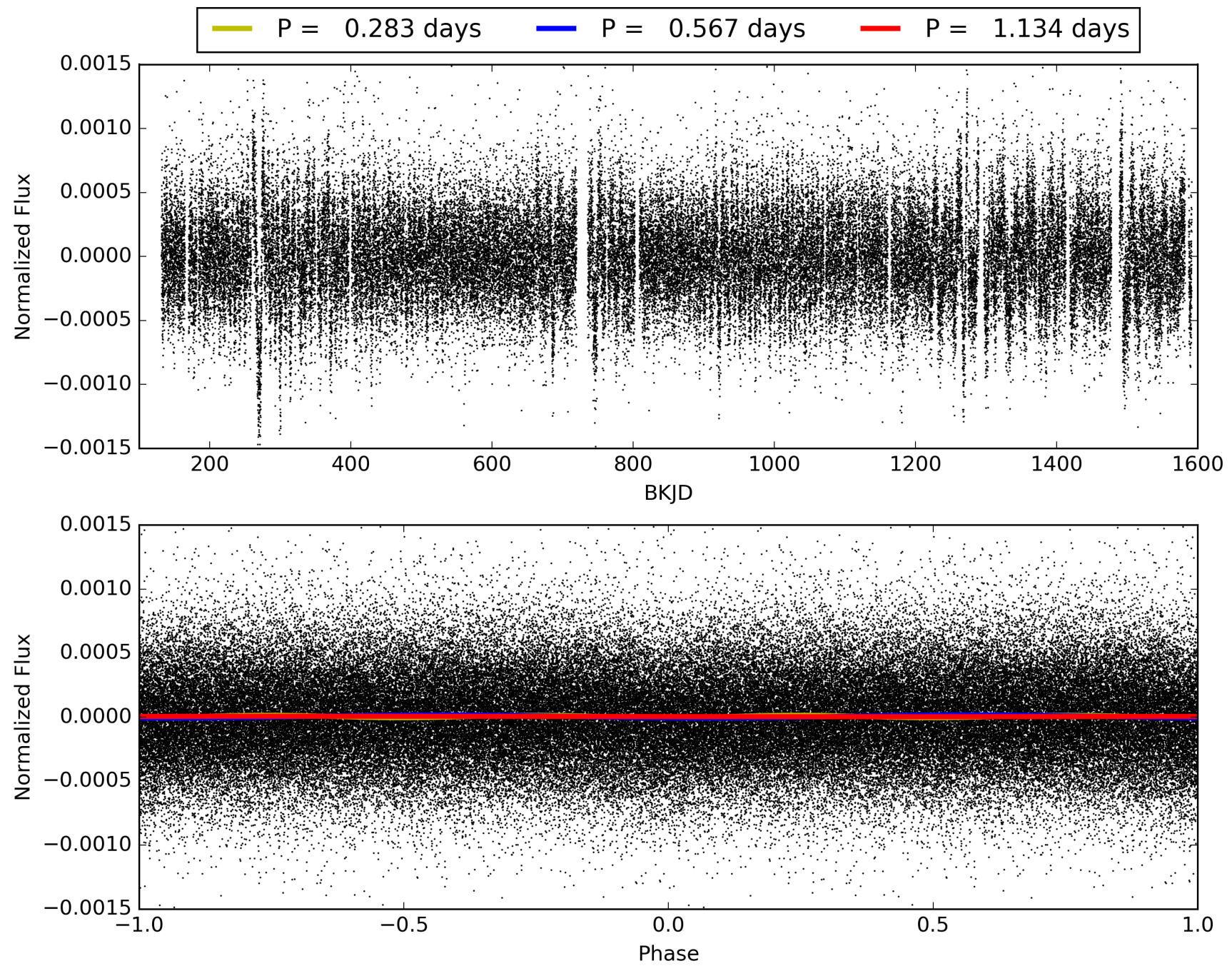
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007282168-01, PDC Light Curves



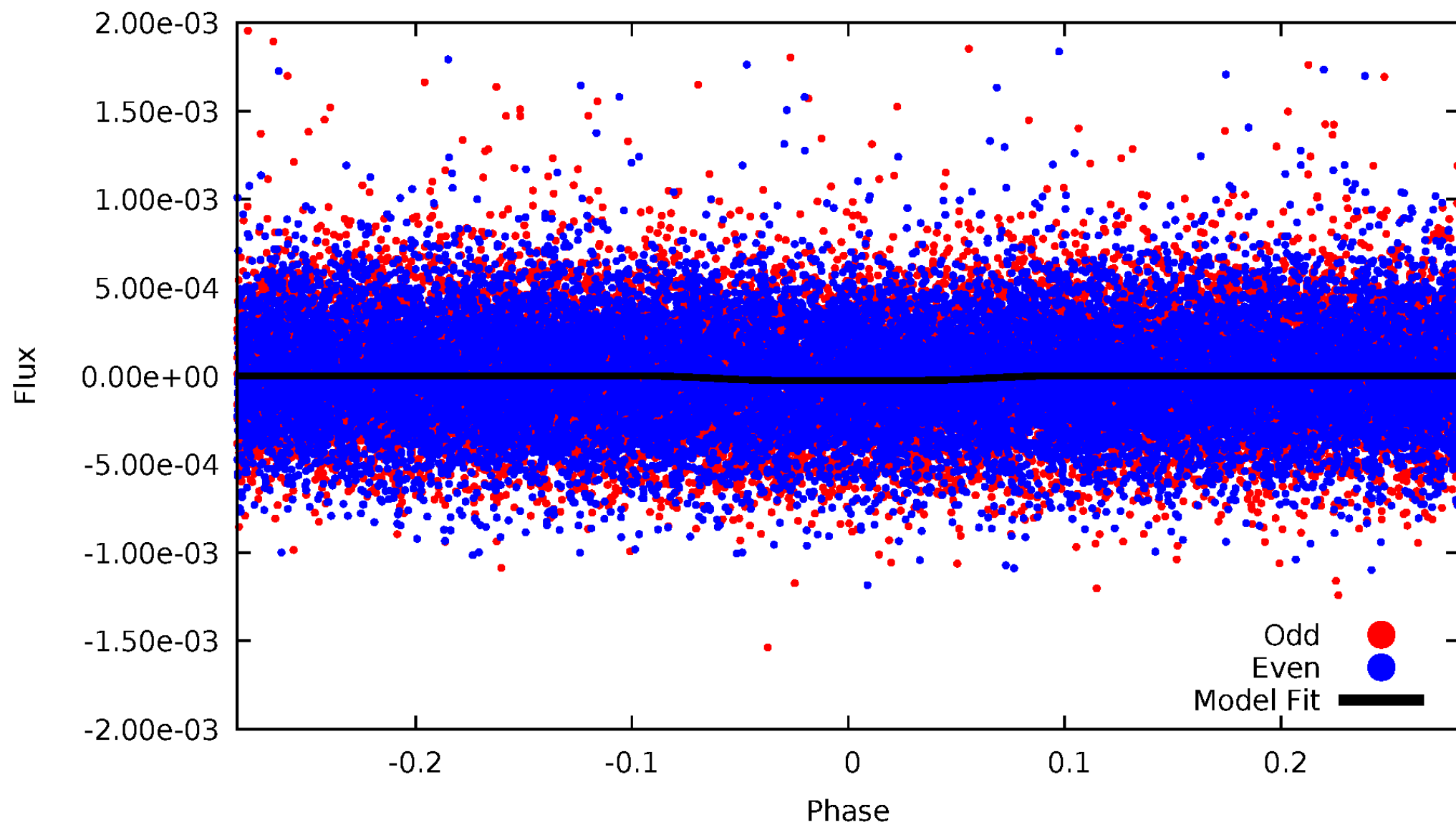


TCE 007282168-01



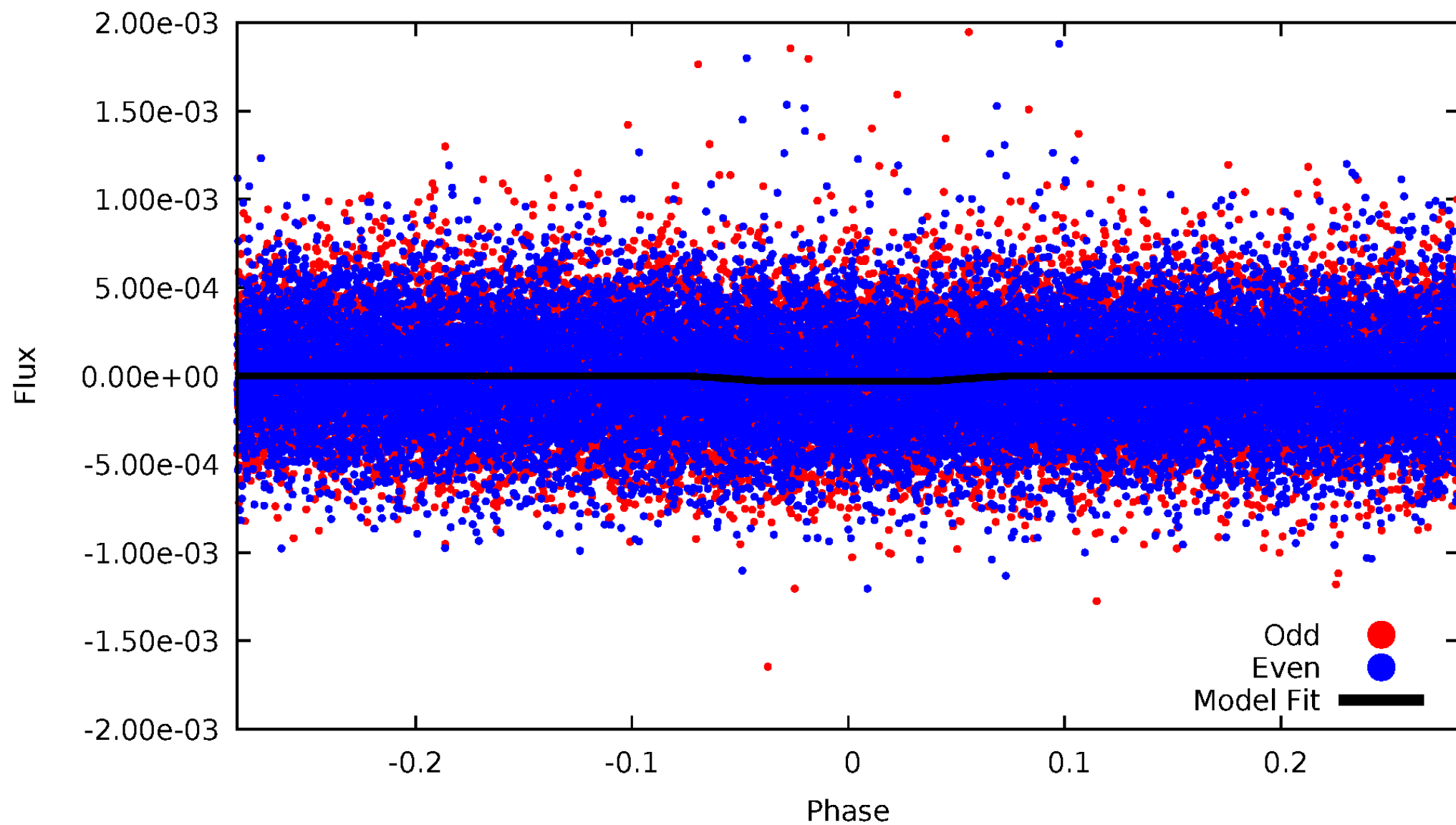
# DV Odd/Even

TCE 007282168-01



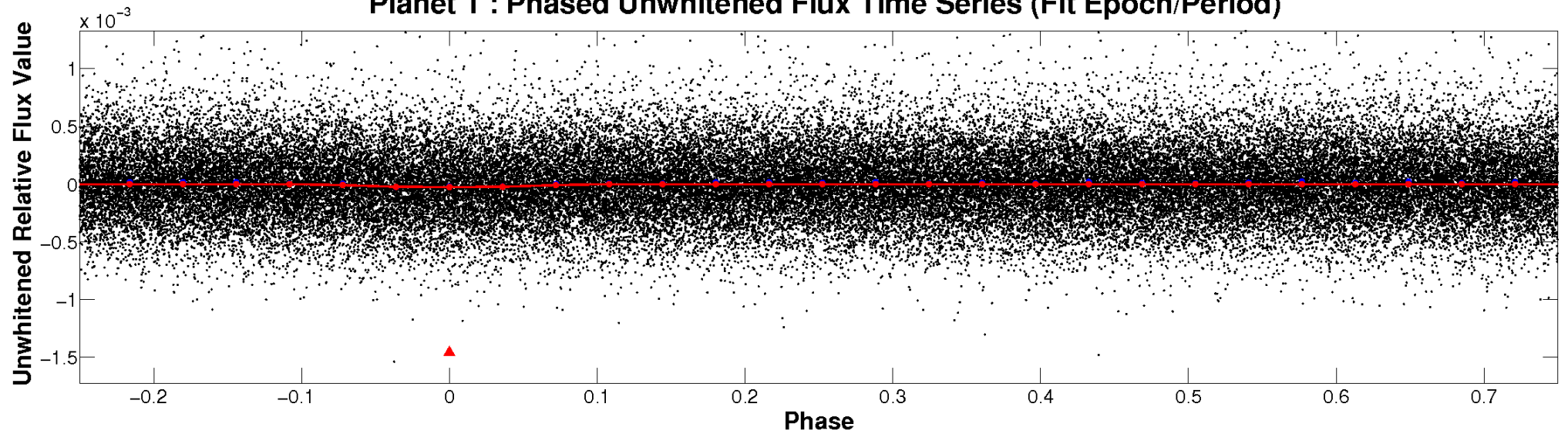
# ALT Odd/Even

TCE 007282168-01

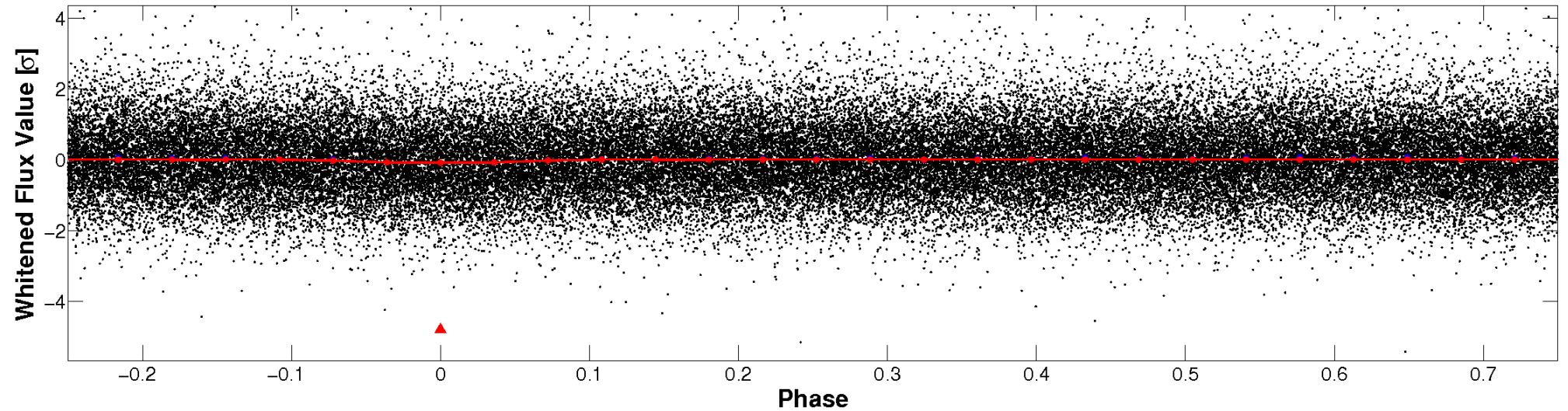


# Non-Whitened Vs. Whitened Light Curve

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



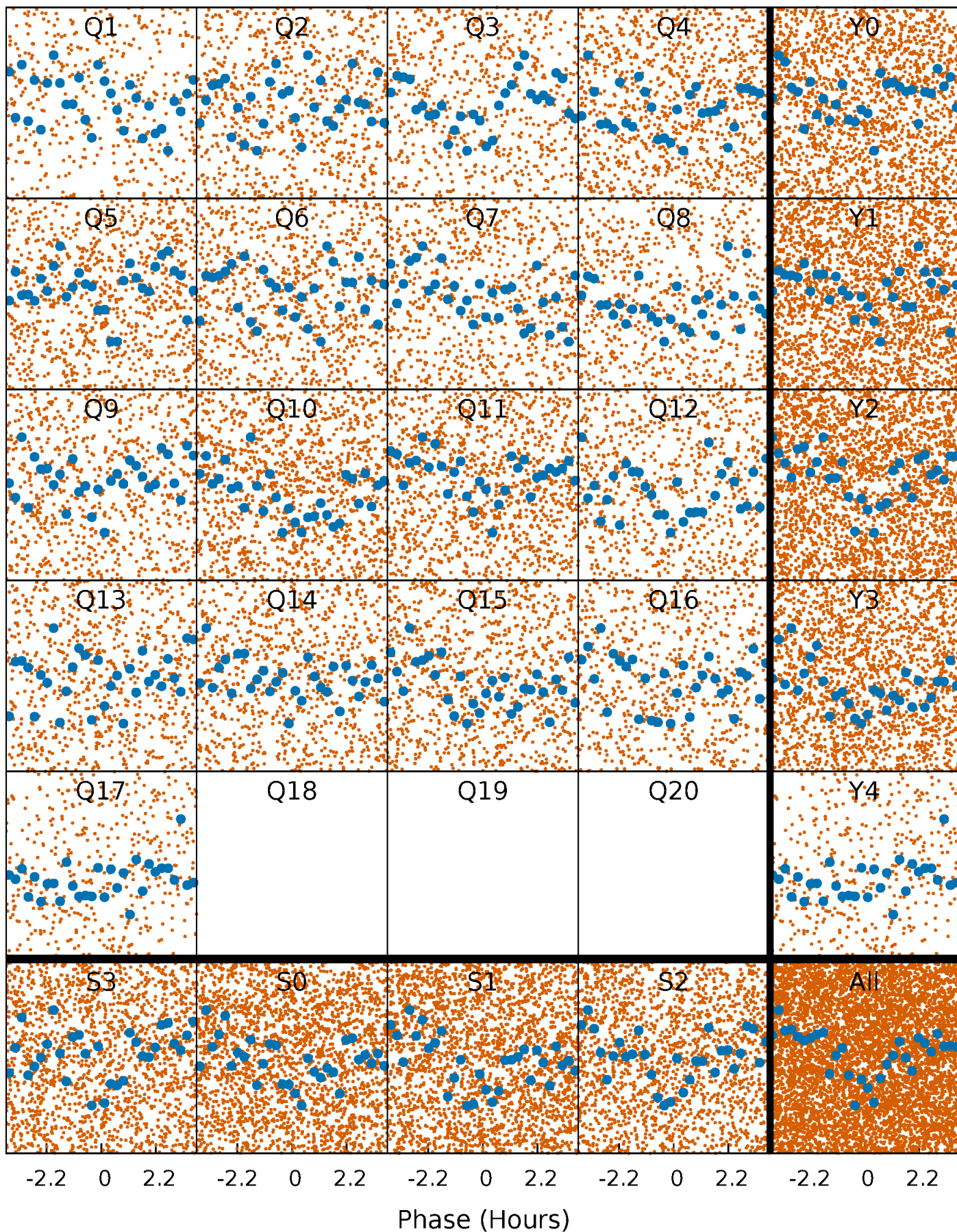
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

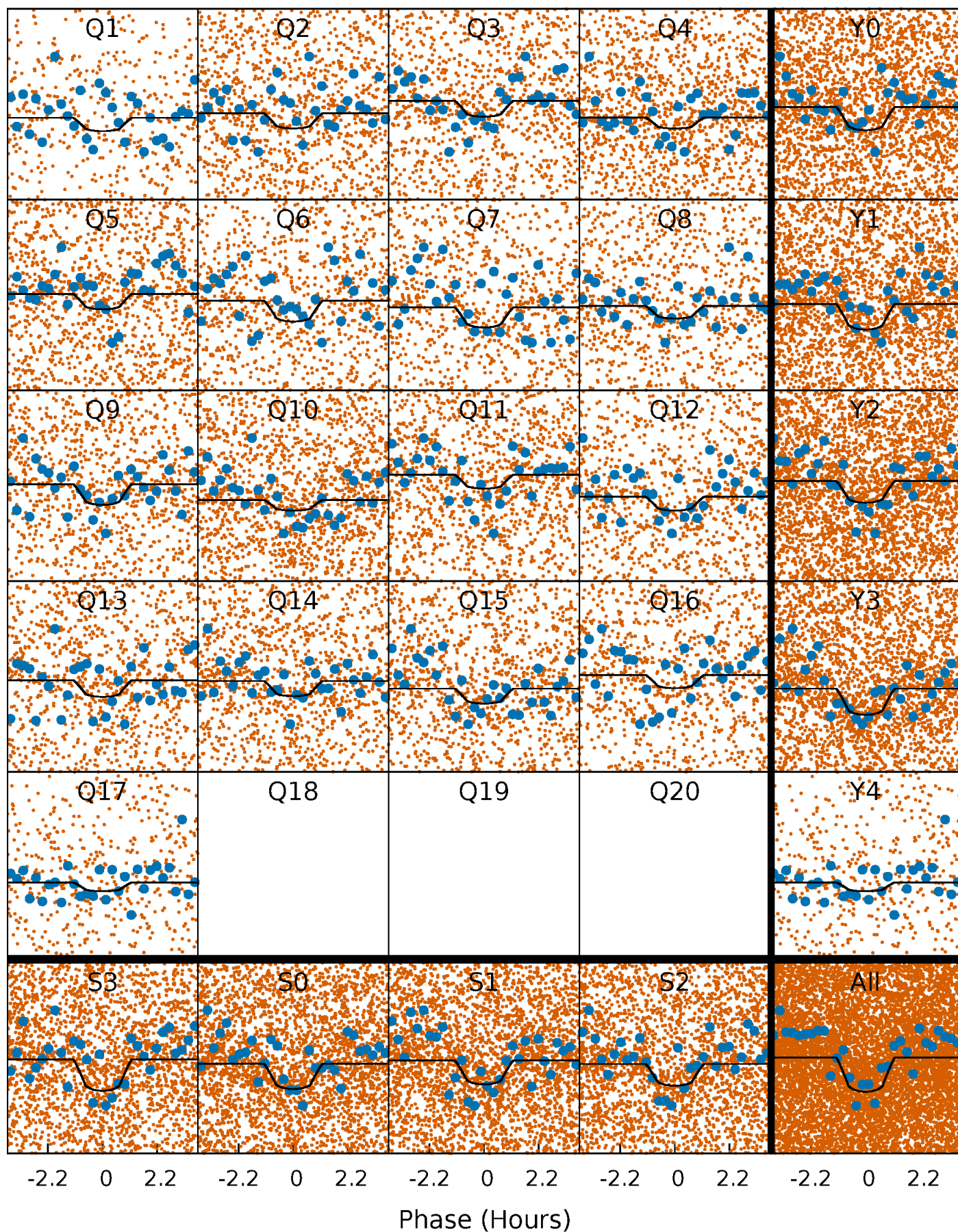
TCE 007282168-01 P= 0.566814 Days  $T_0=131.774962$  (BKJD)





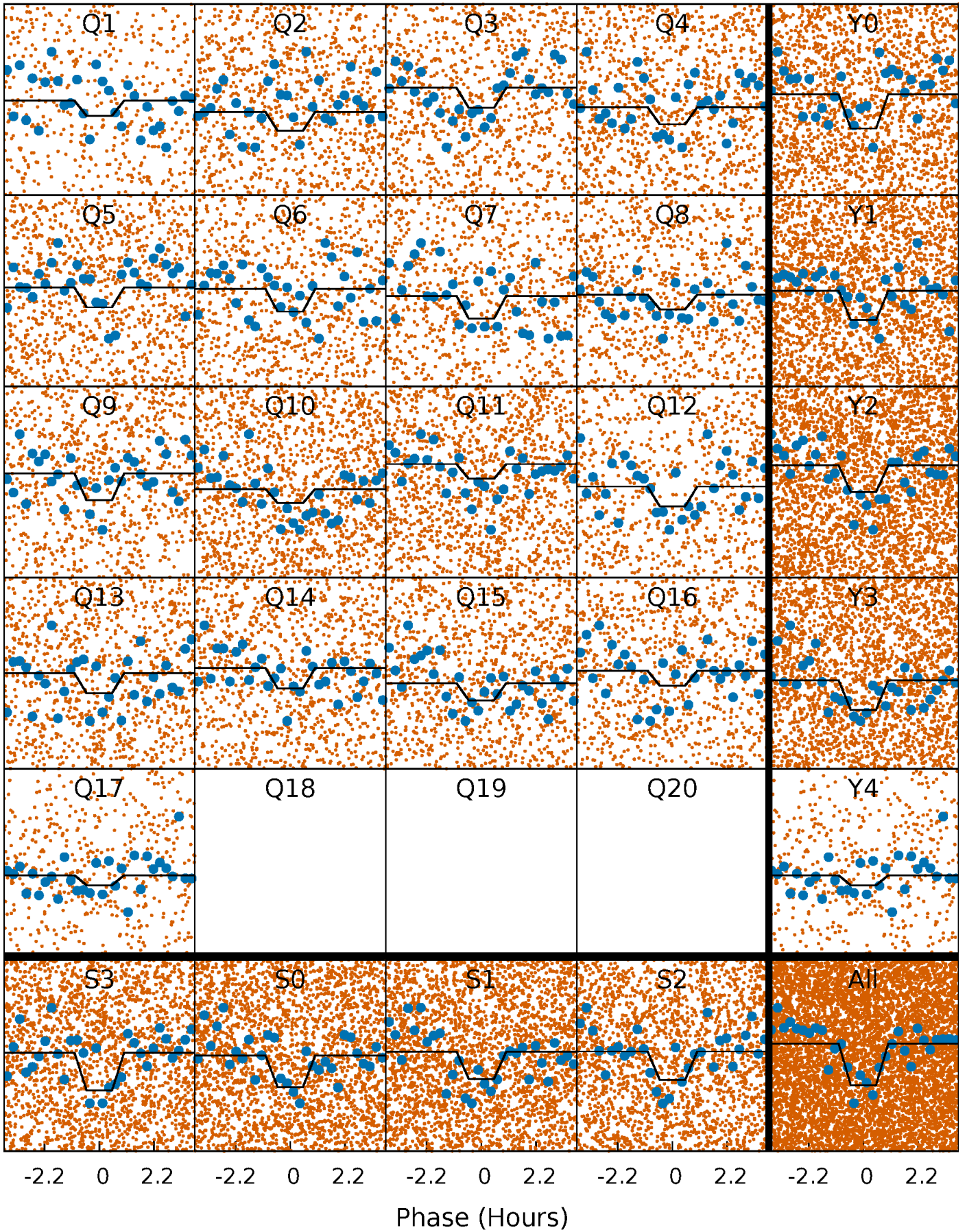
# DV Quarter-Phased Transit Curves

TCE 007282168-01 P= 0.566814 Days  $T_0=131.774962$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007282168-01 P= 0.566814 Days  $T_0=131.774962$  (BKJD)

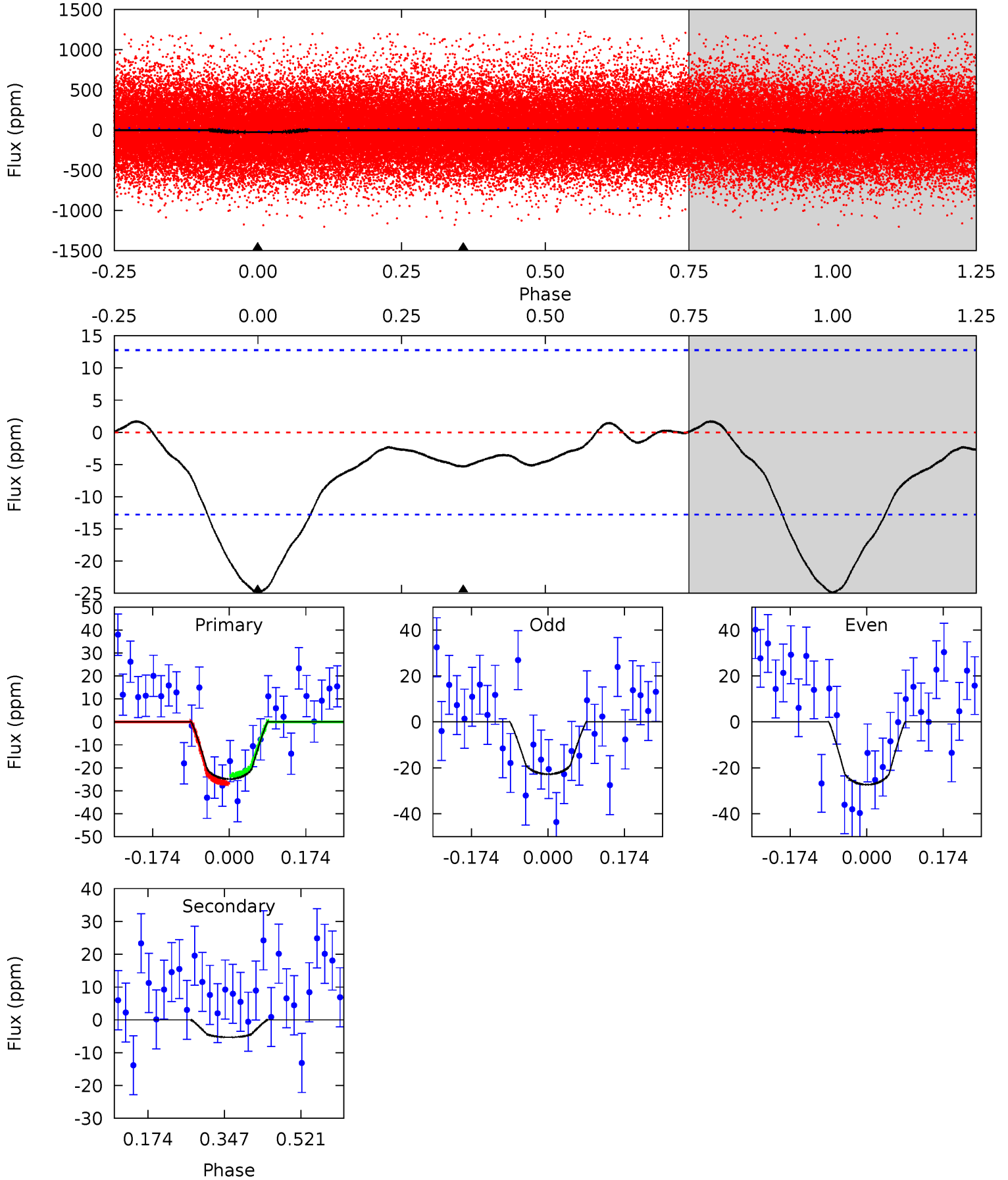




# DV Model-Shift Uniqueness Test

007282168-01, P = 0.566814 Days, E = 131.208148 Days

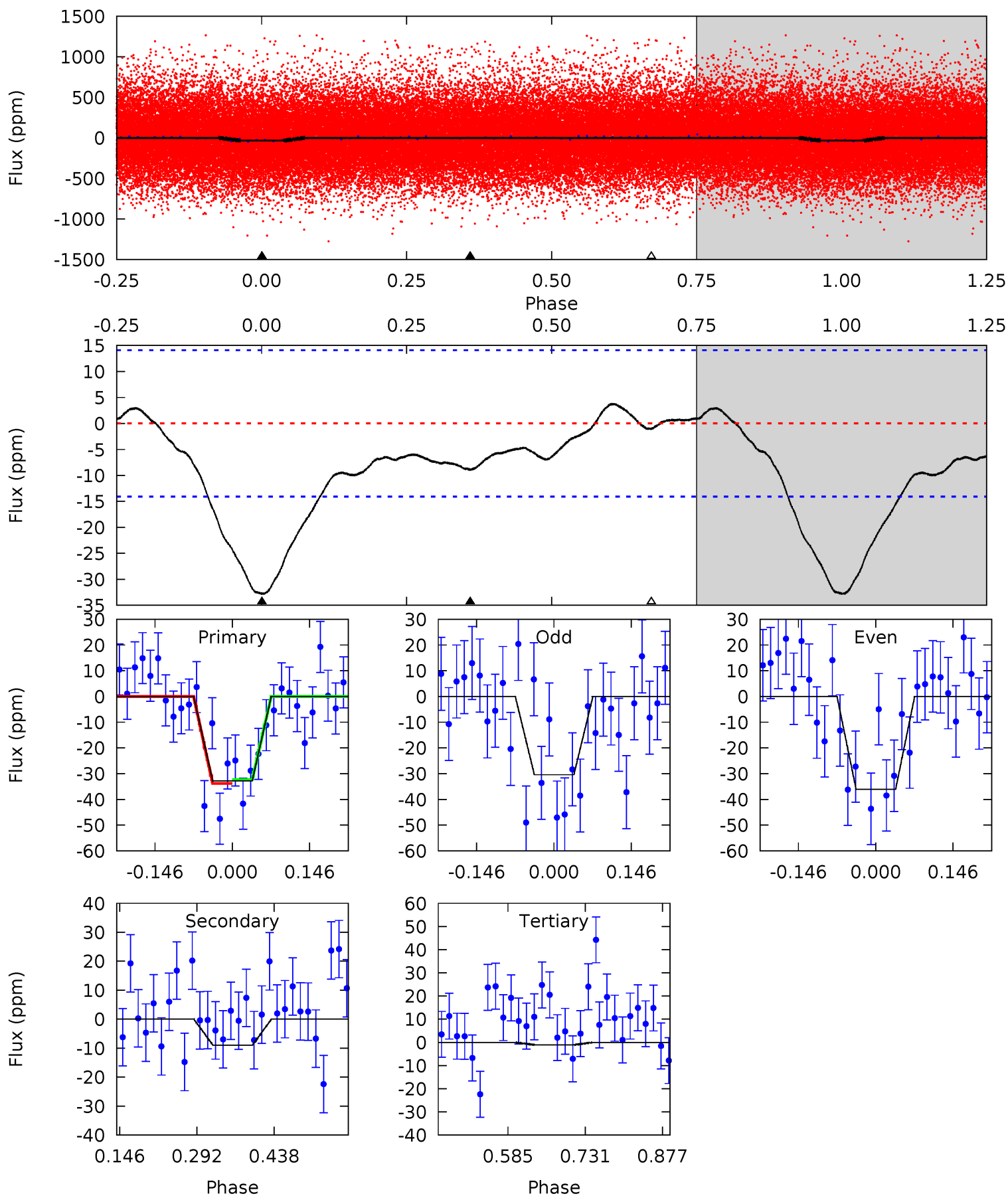
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.67 | 1.85 | 0   | 0   | 4.45            | 1.36            | 0.54             | 8.67    | 8.67    | 1.85    | 1.85    | 0.80    | 0.85 | 0.06  | 0.58 |



# Alt Model-Shift Uniqueness Test

007282168-01, P = 0.566814 Days, E = 131.208148 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  |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.4 | 2.85 | 0.35 | 0   | 4.48            | 1.45            | 1.22             | 10.1    | 10.4    | 2.50    | 2.85    | 0.90    | 0.83 | 0.10  | 0.24 |





### Stellar Parameters For KIC 007282168

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )       | $M$ ( $M_{\odot}$ )       | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5481^{+163}_{-146}$ | $4.629^{+0.035}_{-0.112}$ | $-0.500^{+0.300}_{-0.300}$ | $0.708^{+0.128}_{-0.046}$ | $0.806^{+0.073}_{-0.090}$ | $3.197^{+0.490}_{-1.111}$                     |
|        | +3%/-3%              | +1%/-2%                   | +60%/-60%                  | +18%/-6%                  | +9%/-11%                  | +15%/-35%                                     |
| 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 007282168-01 / KOI 7831.01

| Detrend | Depth (ppm) | $R_p$ ( $R_{\oplus}$ ) | $T_{max}$ (K)        | $T_{obs}$ (K)          | $A_{obs}$                  |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV      | $-5 \pm 3$  | $0.55^{+0.40}_{-0.33}$ | $2604^{+115}_{-101}$ | $3402^{+1659}_{-1390}$ | $1.254^{+8.049}_{-0.934}$  |
| Alt.    | $-9 \pm 3$  | $0.53^{+0.37}_{-0.31}$ | $2599^{+123}_{-94}$  | $3895^{+1824}_{-781}$  | $2.677^{+12.396}_{-1.810}$ |

$T_{max}$  = Theoretical Maximum Planetary Temperature

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

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

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

## DV Centroid Data

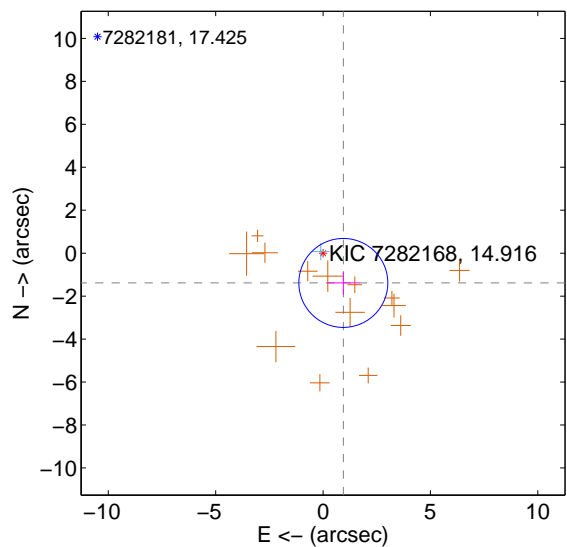
Supplemental centroid analysis for 007282168-01. Kepler magnitude: 14.92. Transit SNR 6.45

There are 1 quarters with good PRF difference image offsets

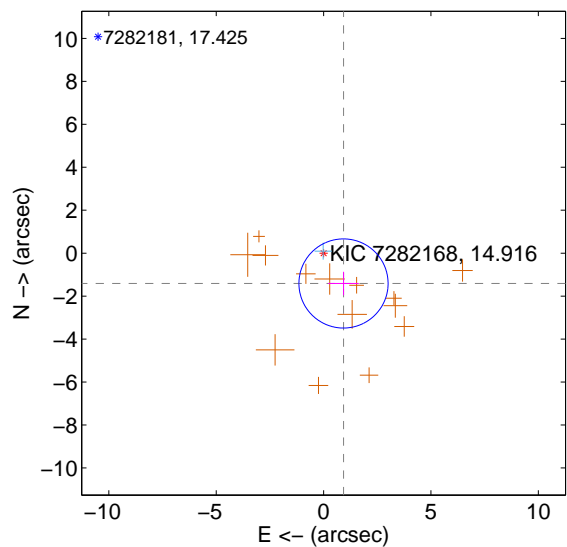
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $1.676 \pm 0.690$  | 2.43                | $-0.944 \pm 0.750$ | $-1.385 \pm 0.539$ |
| PRF-fit source offset from KIC position | $1.688 \pm 0.692$  | 2.44                | $-0.928 \pm 0.714$ | $-1.411 \pm 0.542$ |
| photometric centroid source offset      | $2.92 \pm 2.16$    | 1.35                | $-1.49 \pm 2.18$   | $-2.51 \pm 2.15$   |

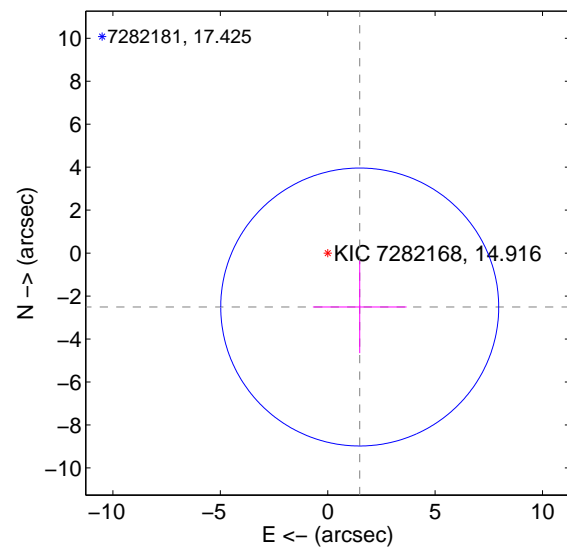
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

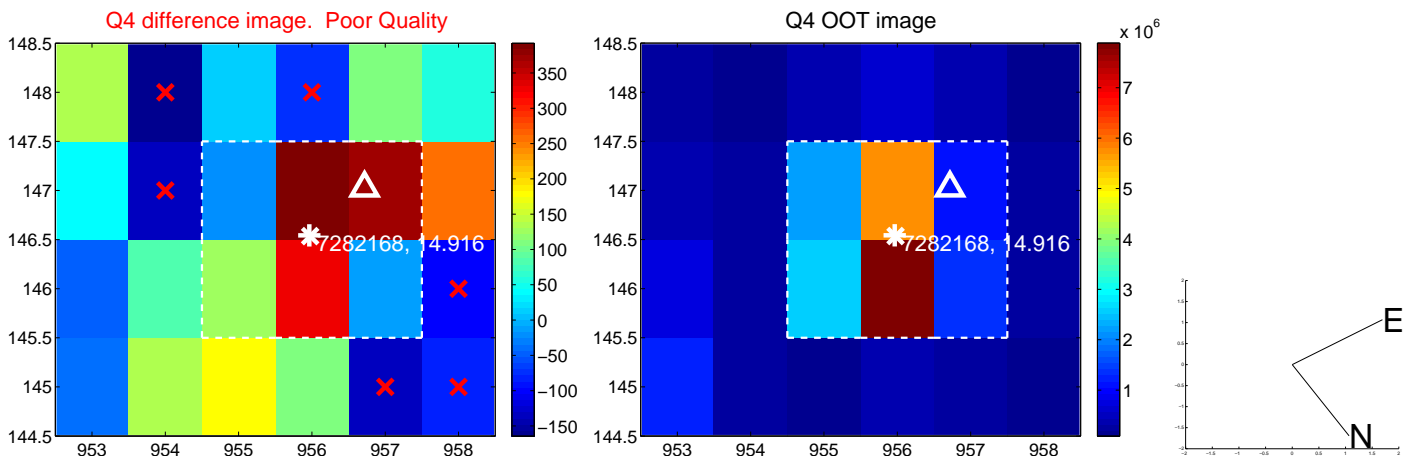
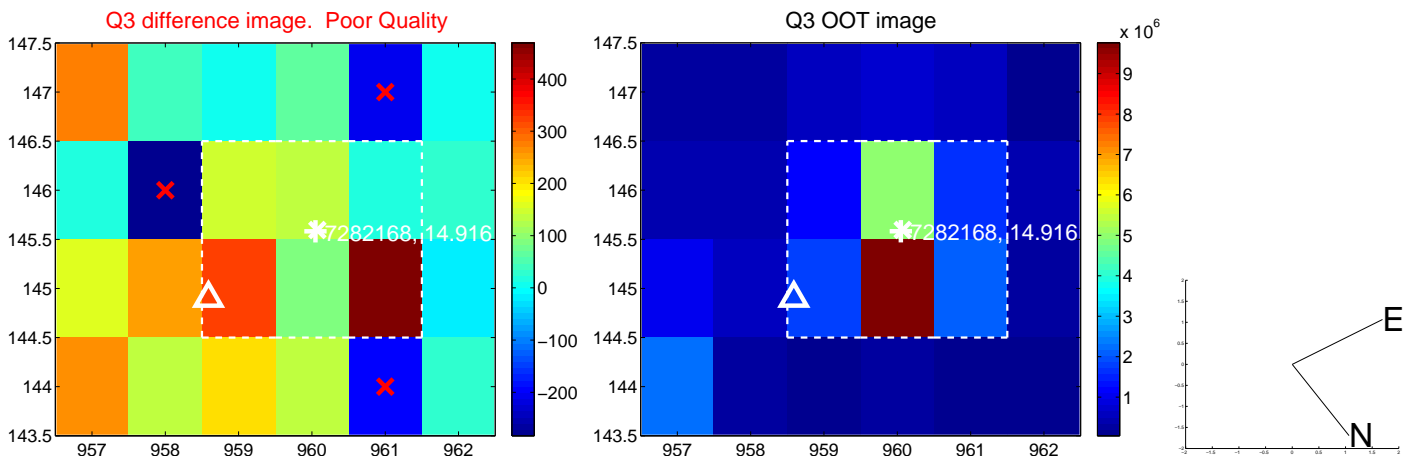
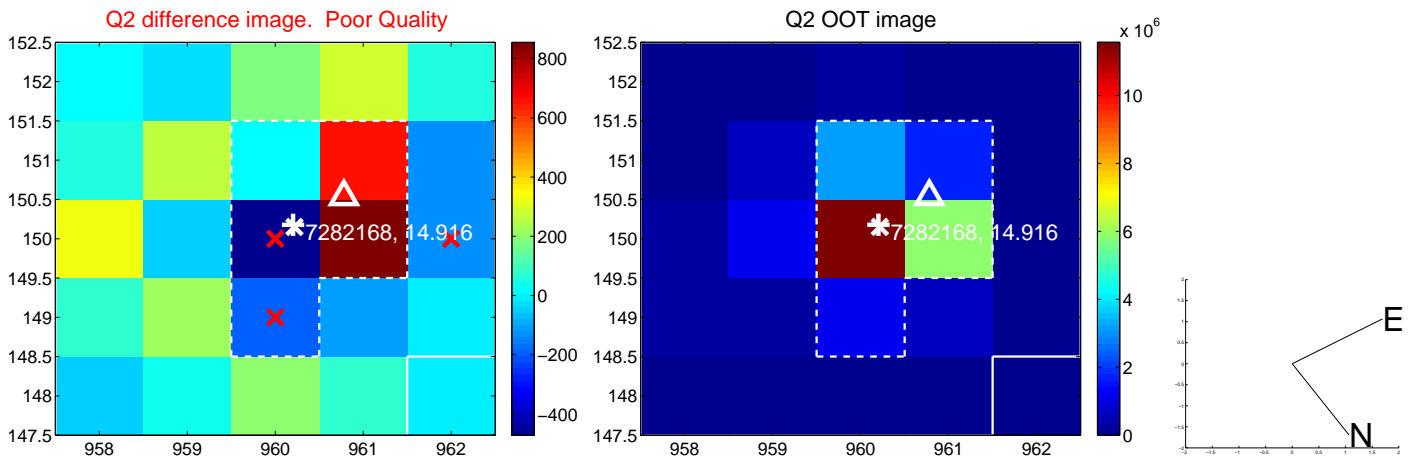
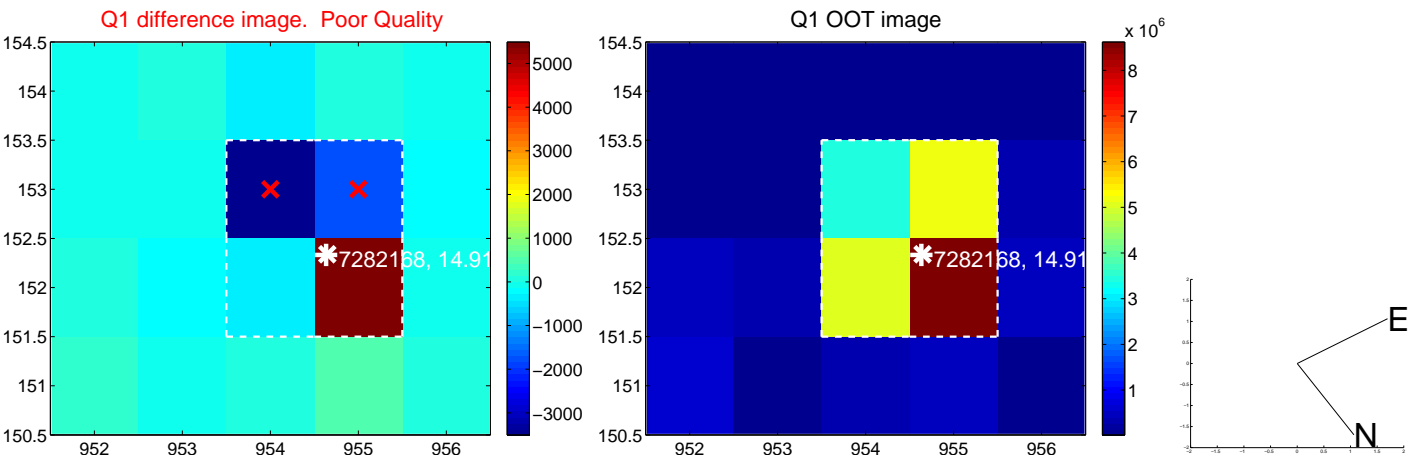


offset from photometric centroids

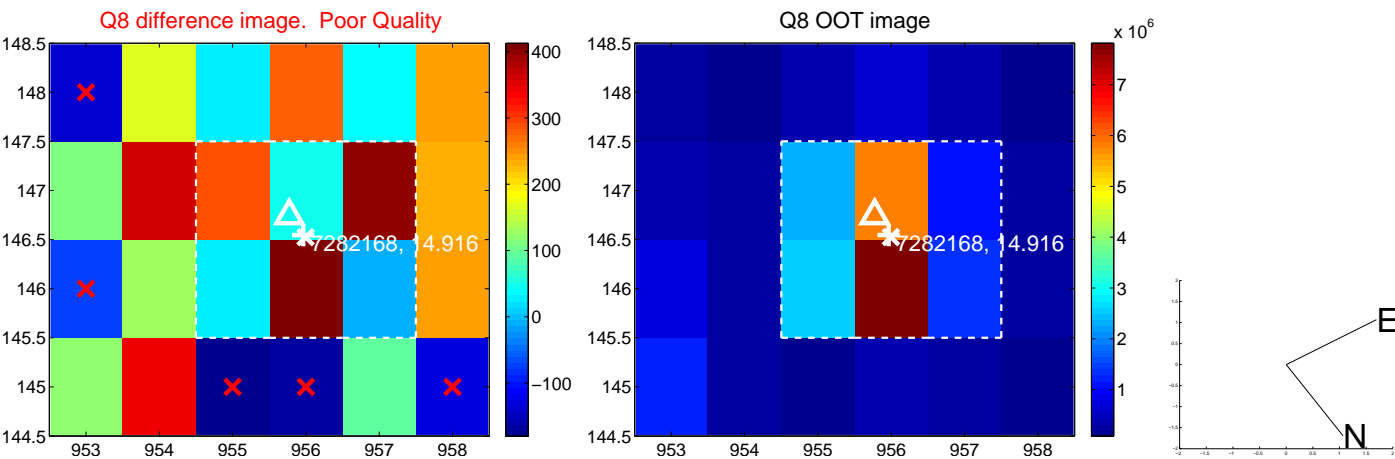
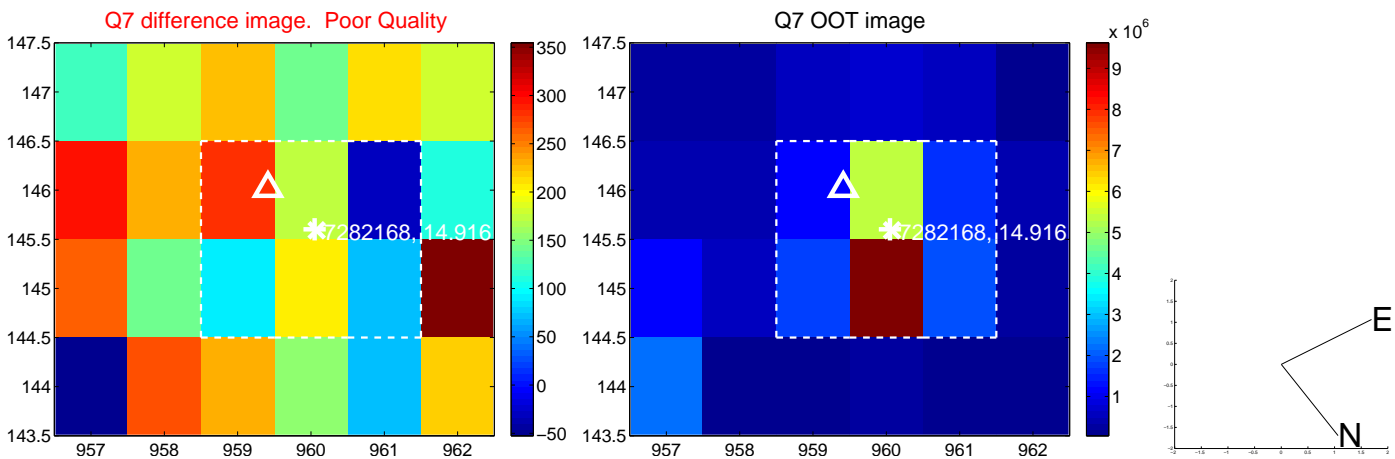
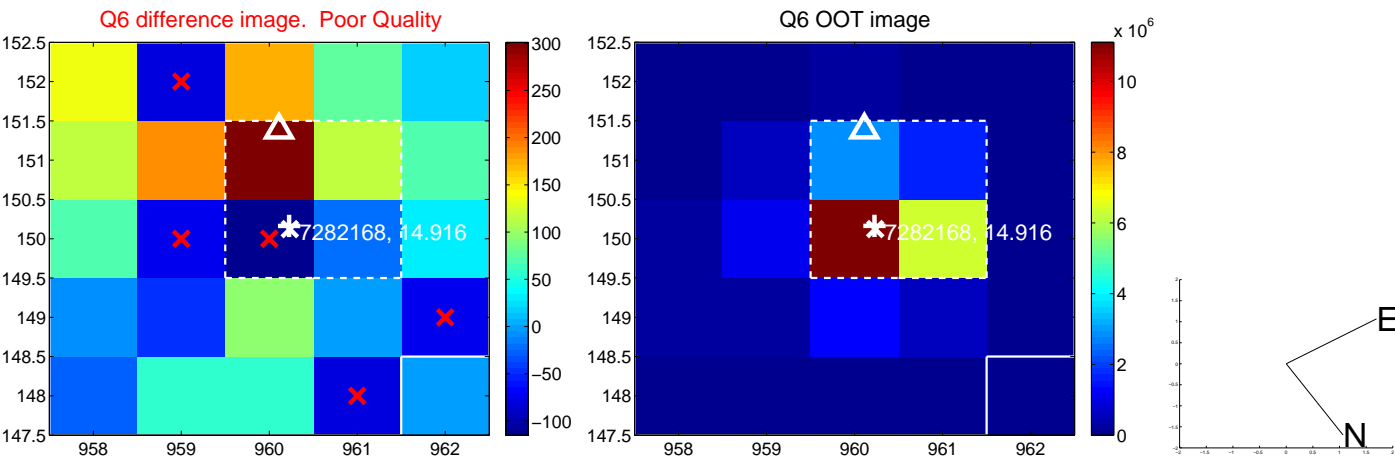
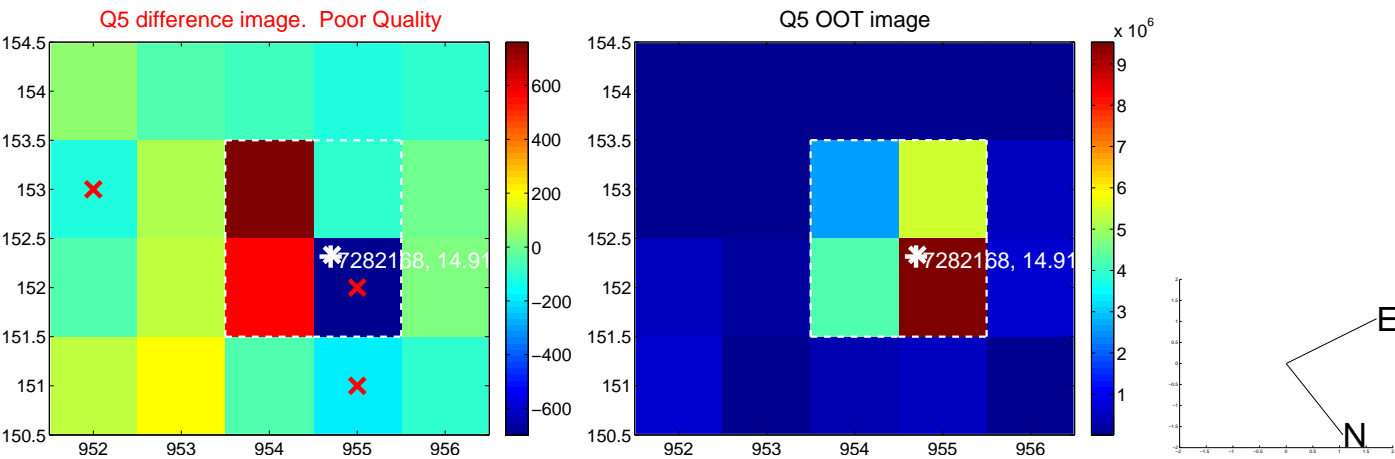


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

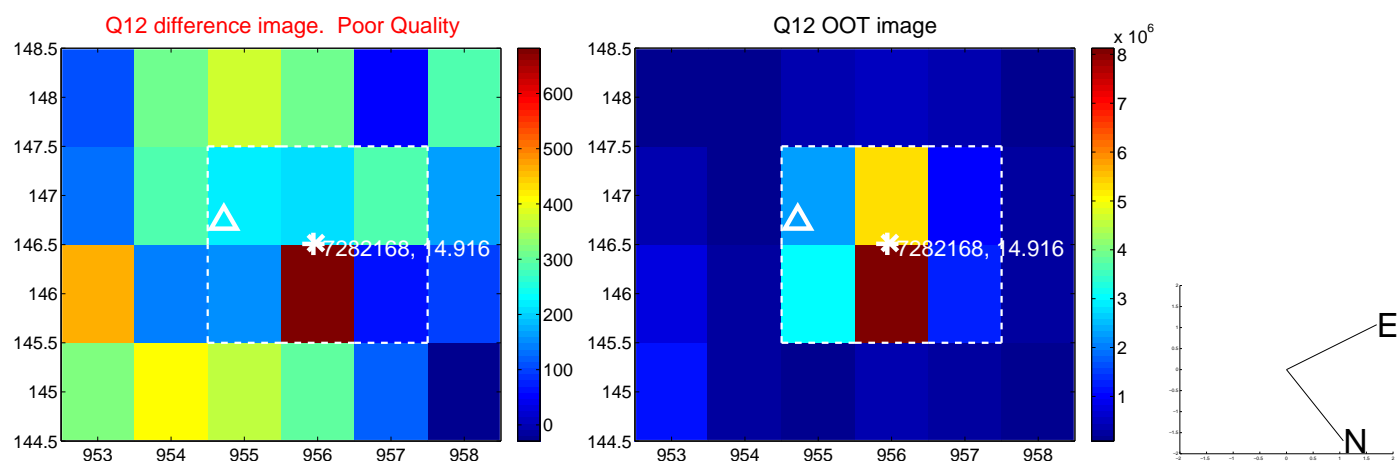
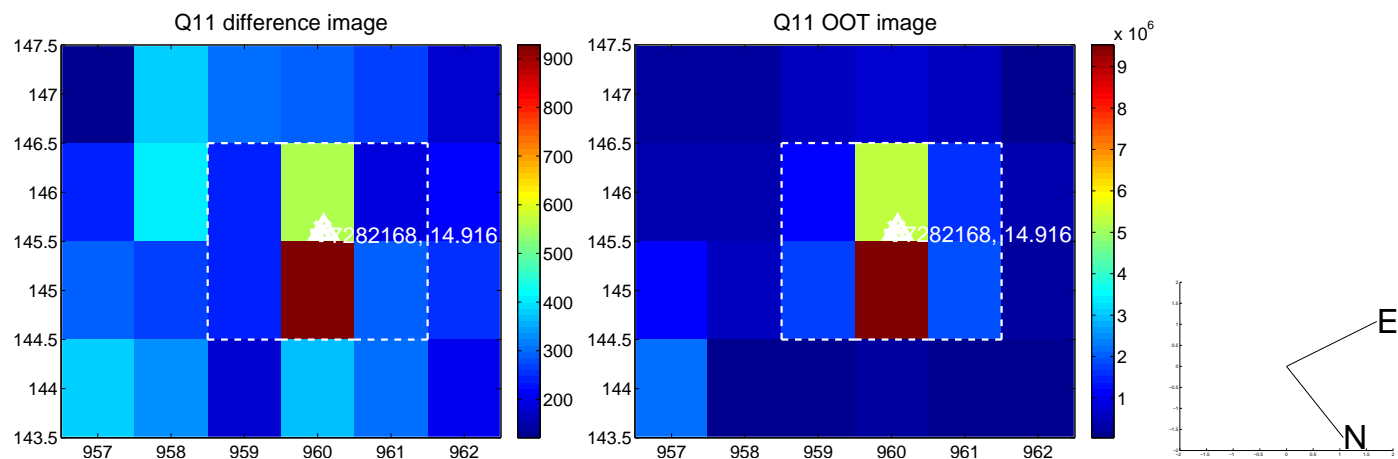
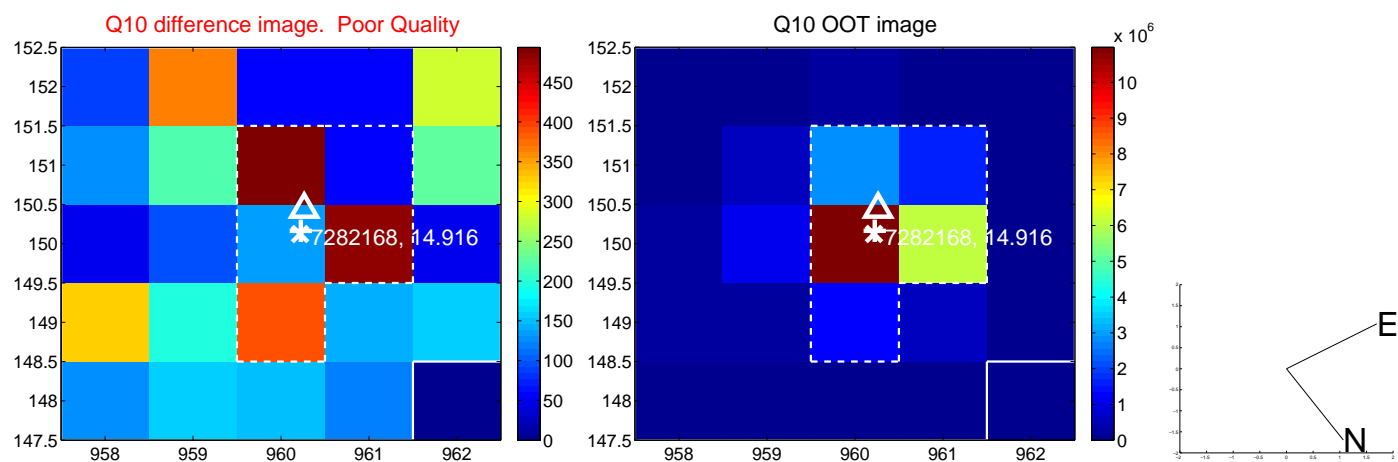
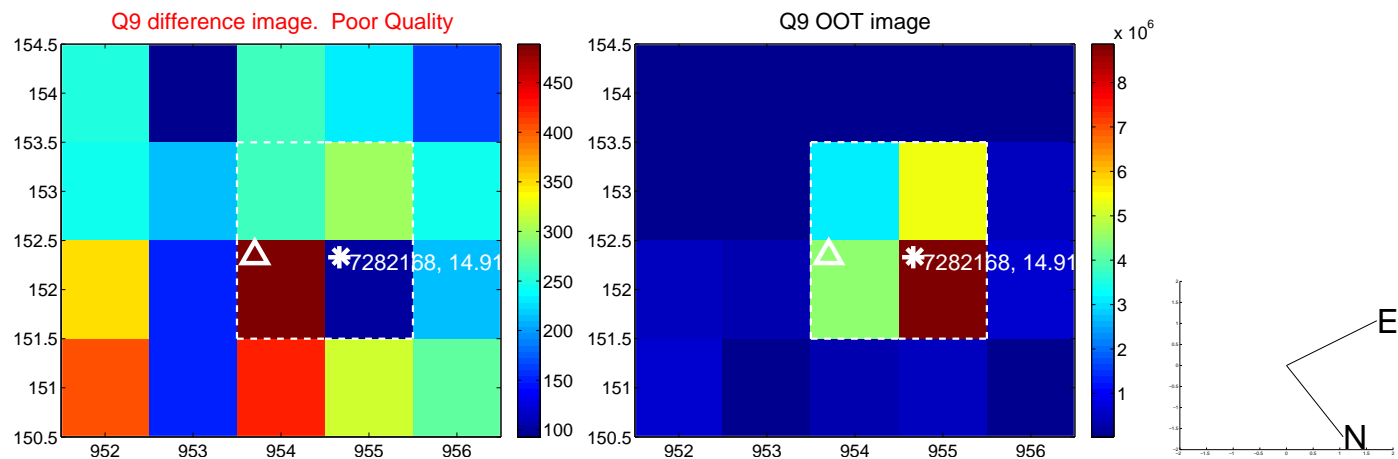


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

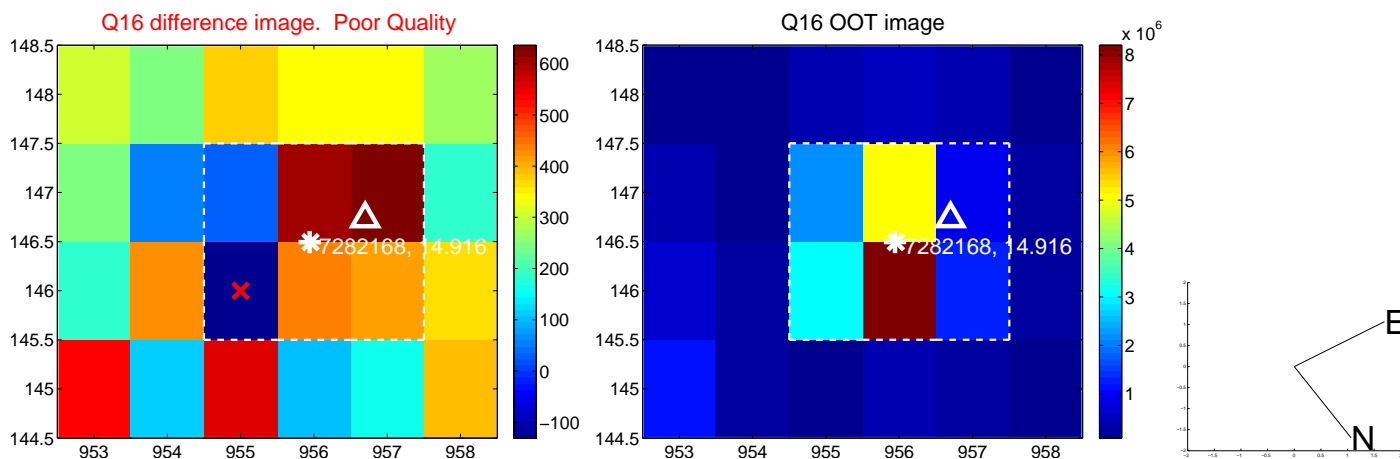
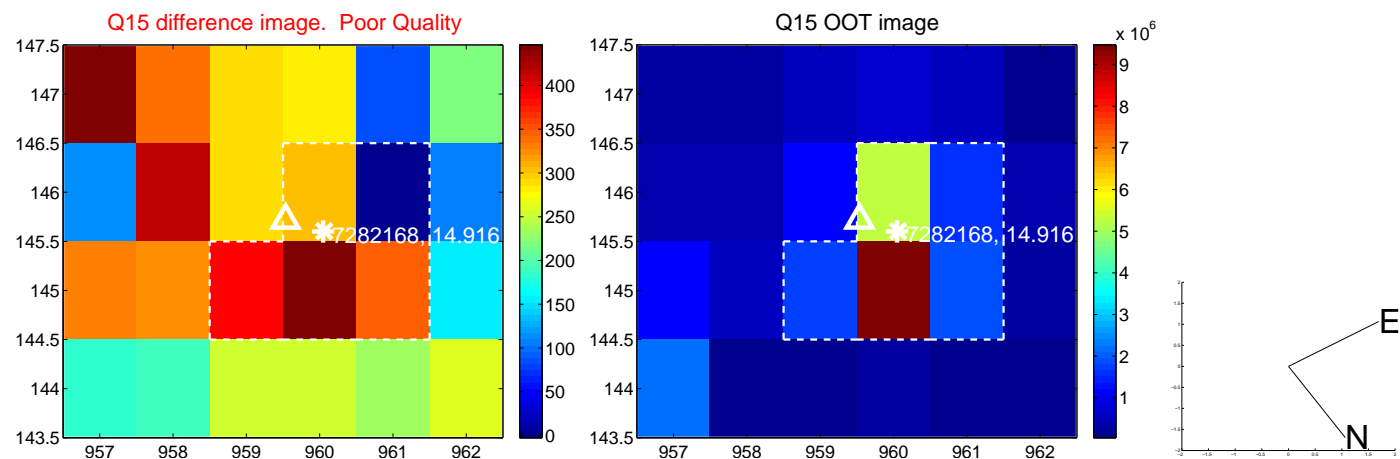
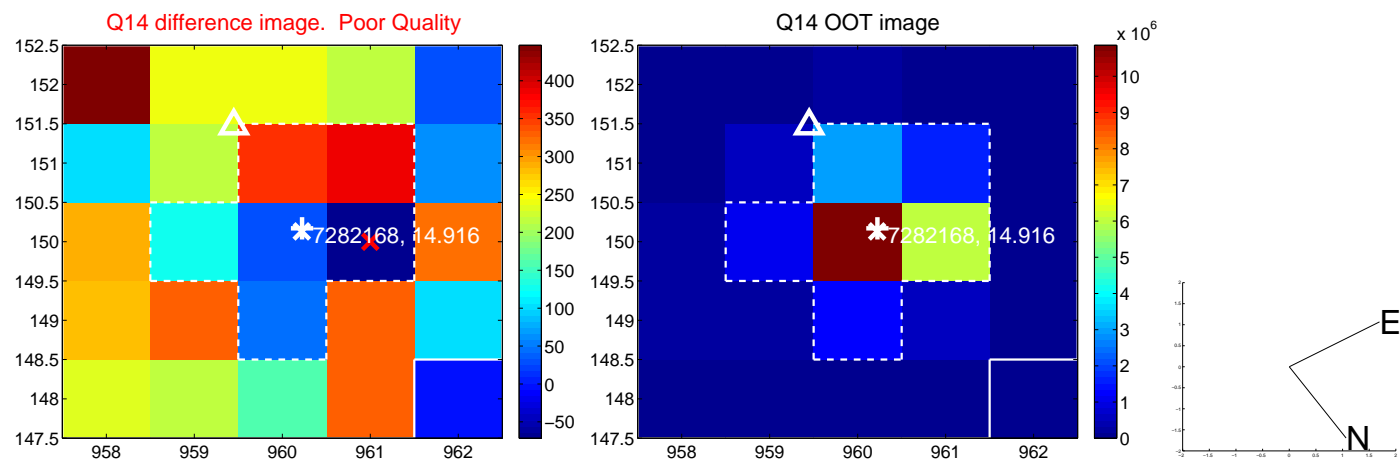
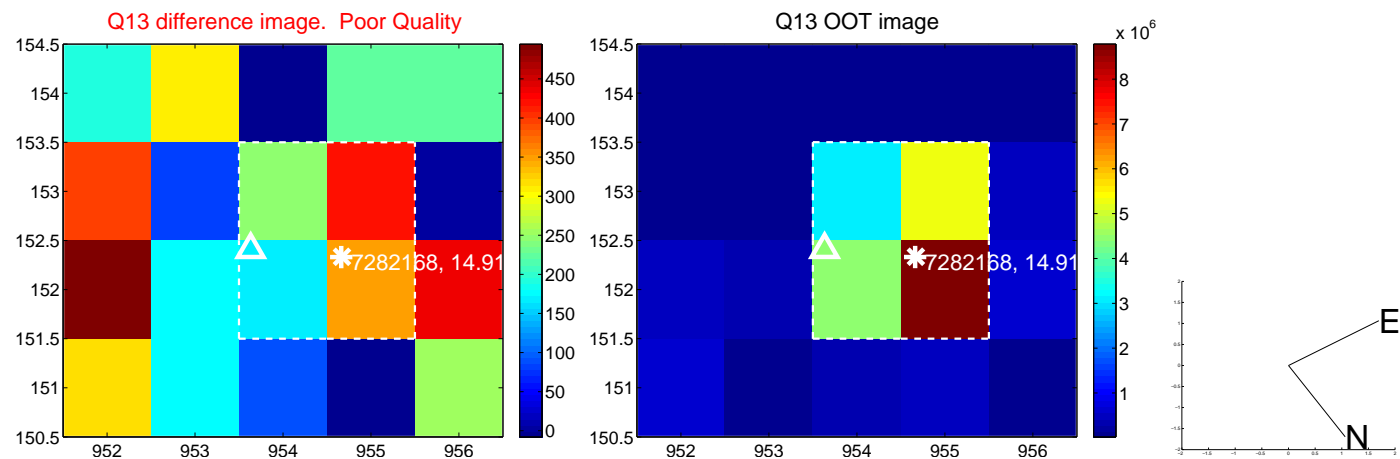




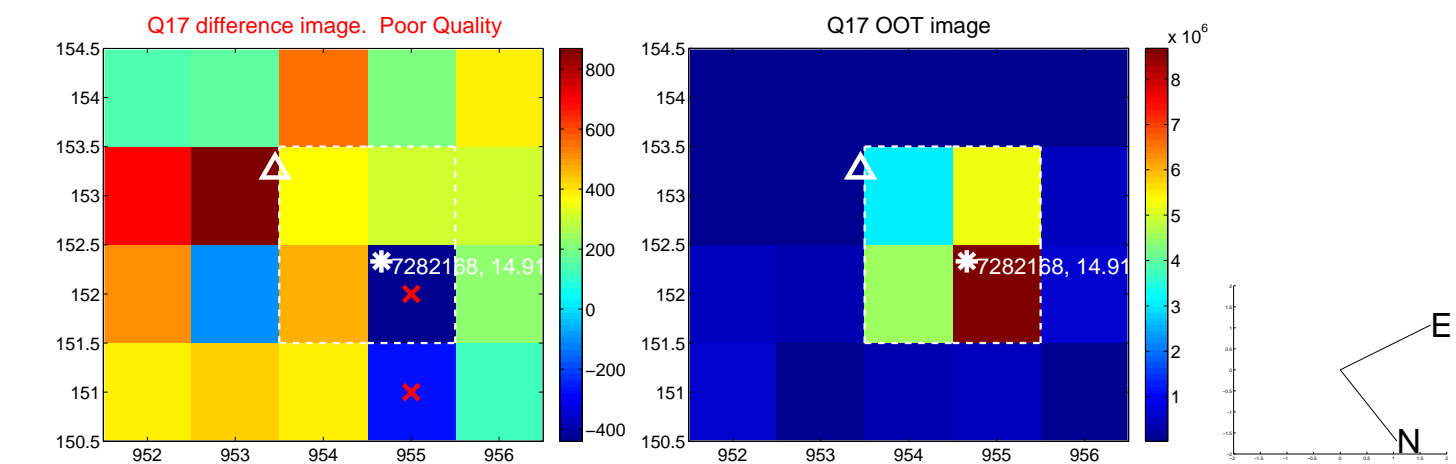
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



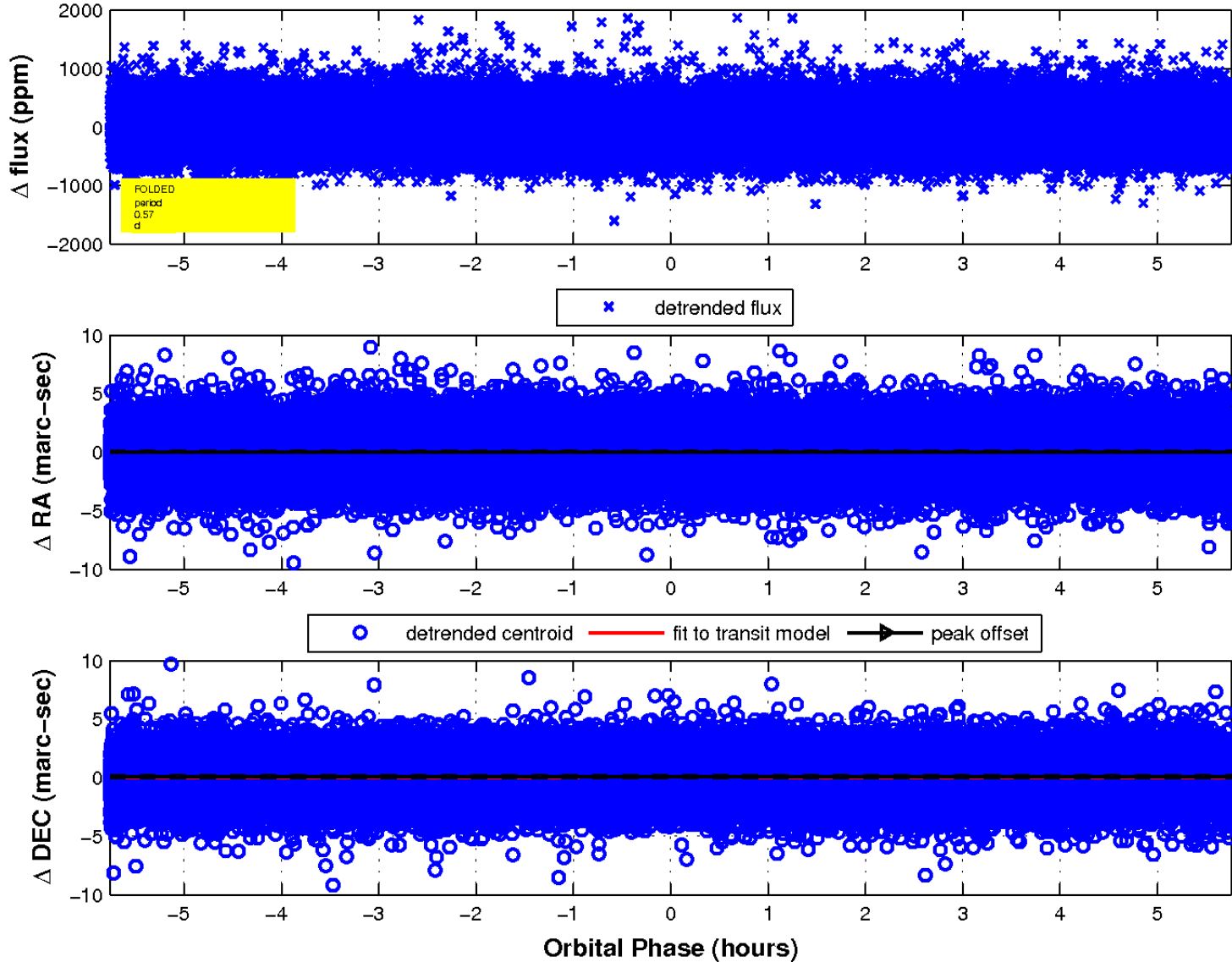
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

