

# KIC 010584140

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010584140-01 | OBS      | 4833.01 | 4.317266      | 133.420270   | 54.8        | 4.234            | 8.8 | 9.6 | 1.31                        | 5992            | 1.14                   | 745.45                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|------------|
| 010584140-01 | OBS      | PC   | 1.00  | 0 | 0 | 0 | 0 | NO_COMMENT |

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

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

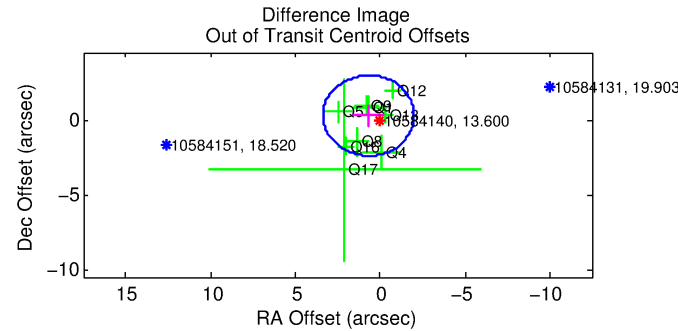
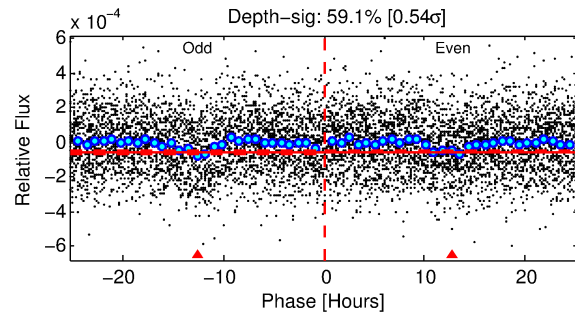
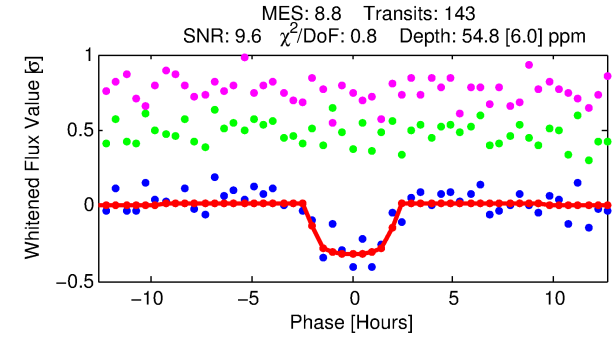
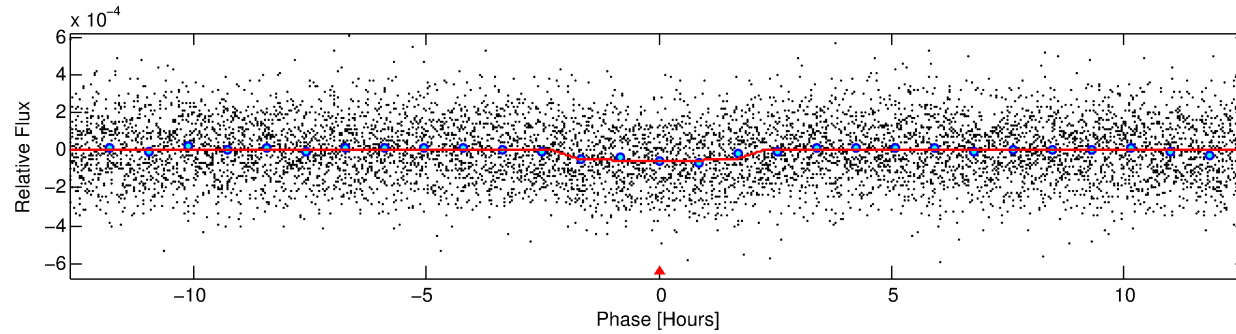
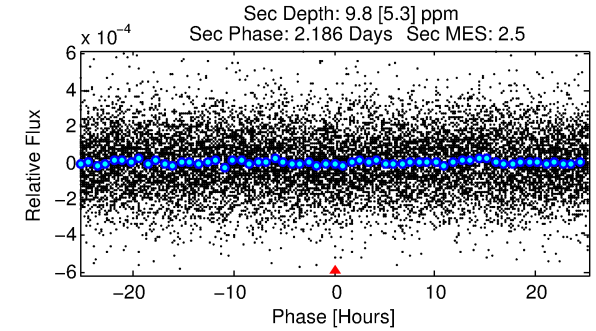
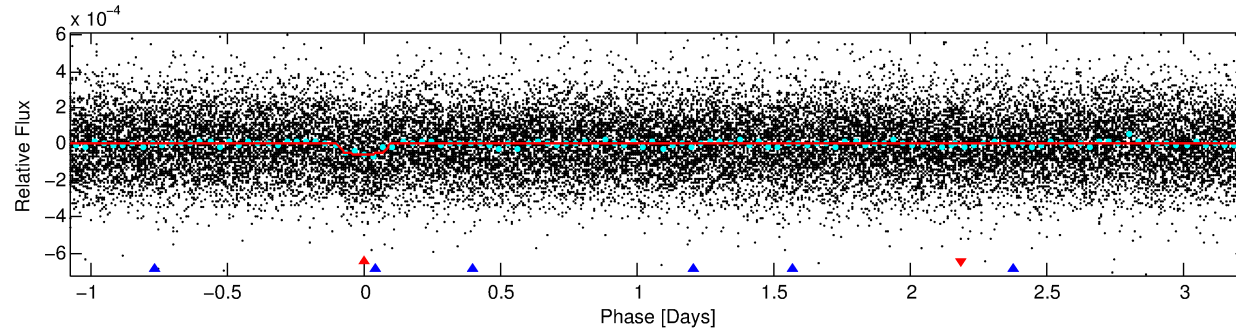
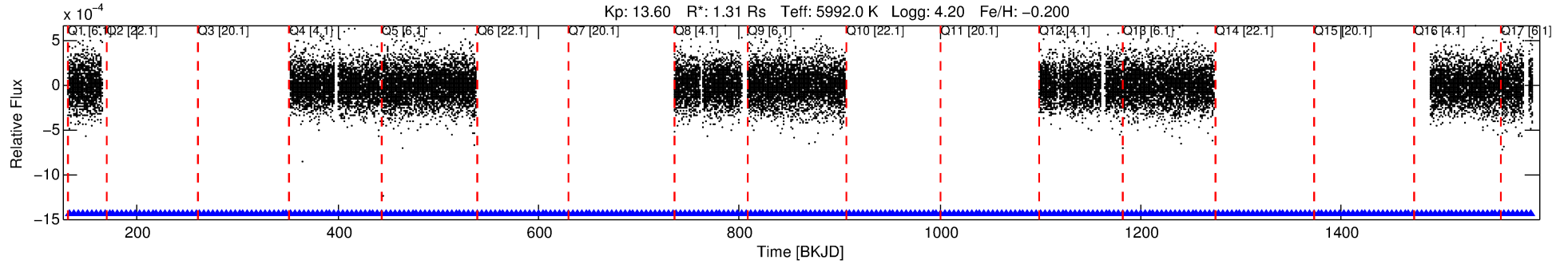
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010584140-01

No Significant Match Found

# DV One-Page Summary

KIC: 10584140 Candidate: 1 of 2 Period: 4.317 d  
KOI: K04833.01 Corr: 0.967



## DV Fit Results:

Period = 4.31727 [0.00004] d  
Epoch = 133.4203 [0.0067] BKJD  
Rp/R\* = 0.0080 [0.0040]  
a/R\* = 3.67 [8.89]  
b = 0.90 [0.56]  
Seff = 745.45 [343.20]  
Teff = 1332 [153] K  
Rp = 1.14 [0.66] Re  
a = 0.0516 [0.0141] AU  
Ag = 11.02 [13.42] [0.75σ]  
Teffp = 3753 [1074] K [2.23σ]

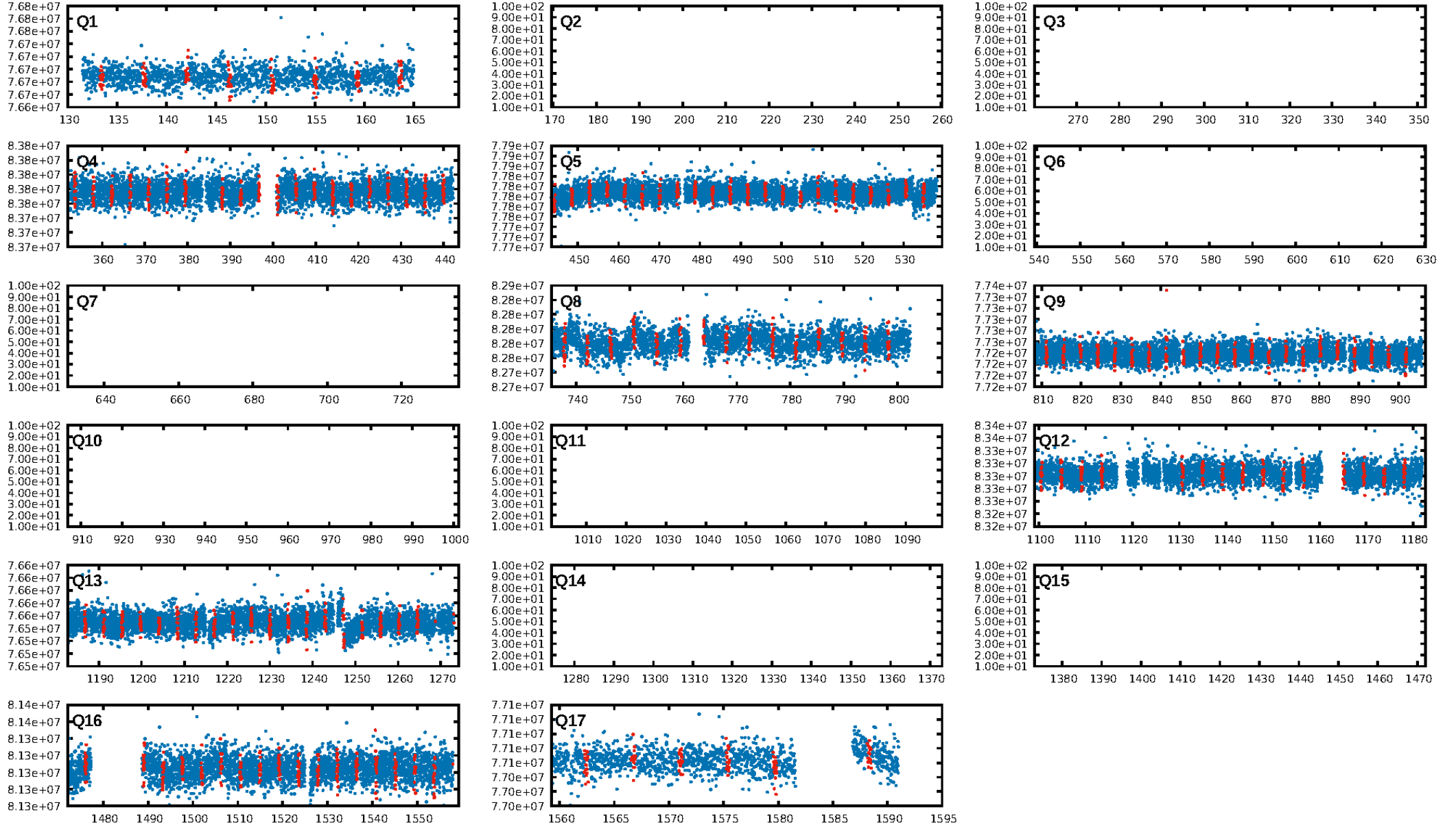
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [711.25σ]  
ModelChiSquare2-sig: 97.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.61e-18  
RollingBand-fgt: 1.00 [129/129]  
GhostDiagnostic-chr: -1.672  
Centroid-sig: 1.2%  
Centroid-so: 3.254 arcsec [2.58σ]  
OotOffset-rm: 0.734 arcsec [0.82σ]  
OotOffset-st: 0/0/4/5 [9]  
KicOffset-rm: 0.743 arcsec [0.91σ]  
KicOffset-st: 0/0/4/5 [9]  
DiffImageQuality-fgm: 0.89 [8/9]  
DiffImageOverlap-fno: 1.00 [9/9]

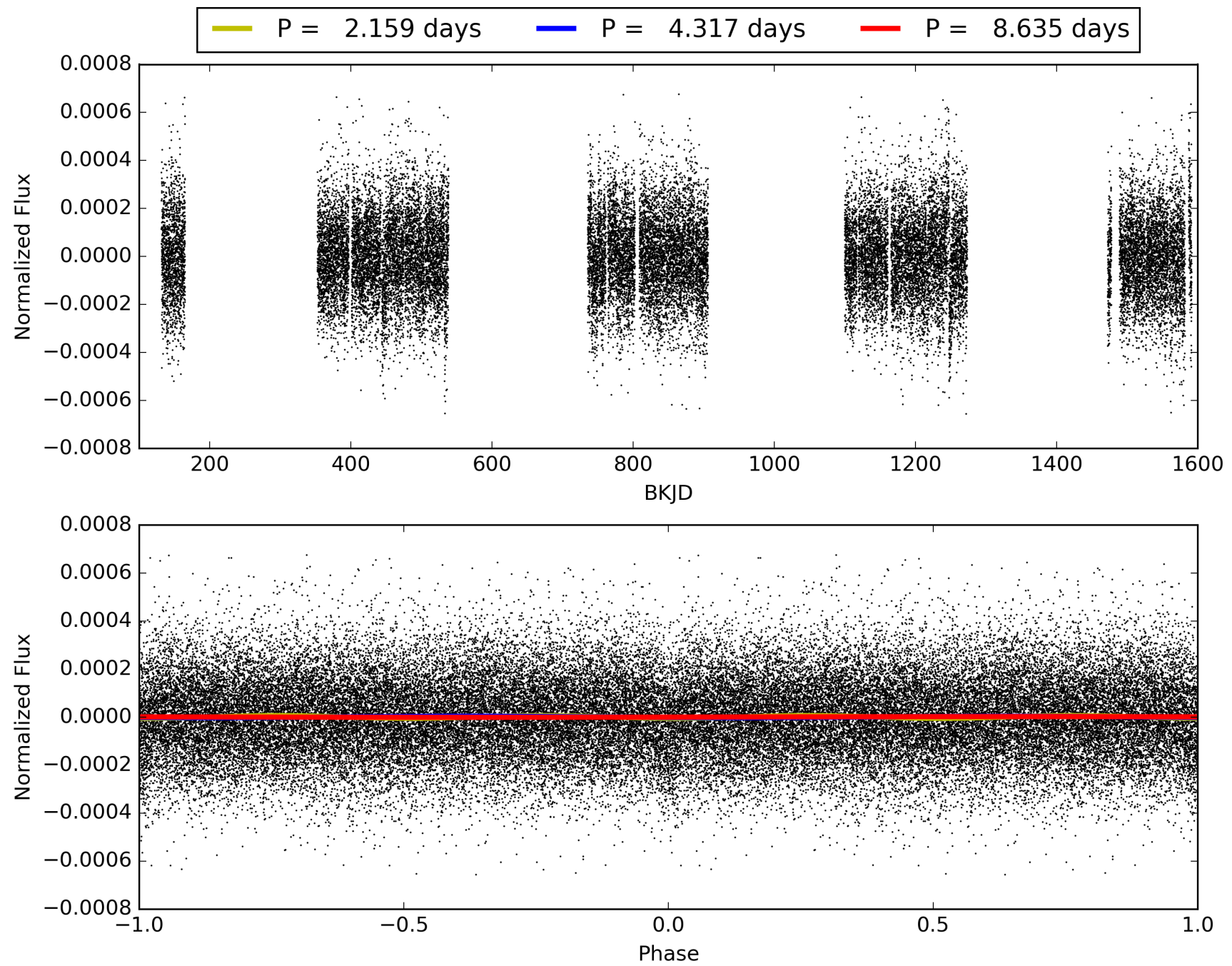
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:20:05 Z

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

# TCE 010584140-01, PDC Light Curves

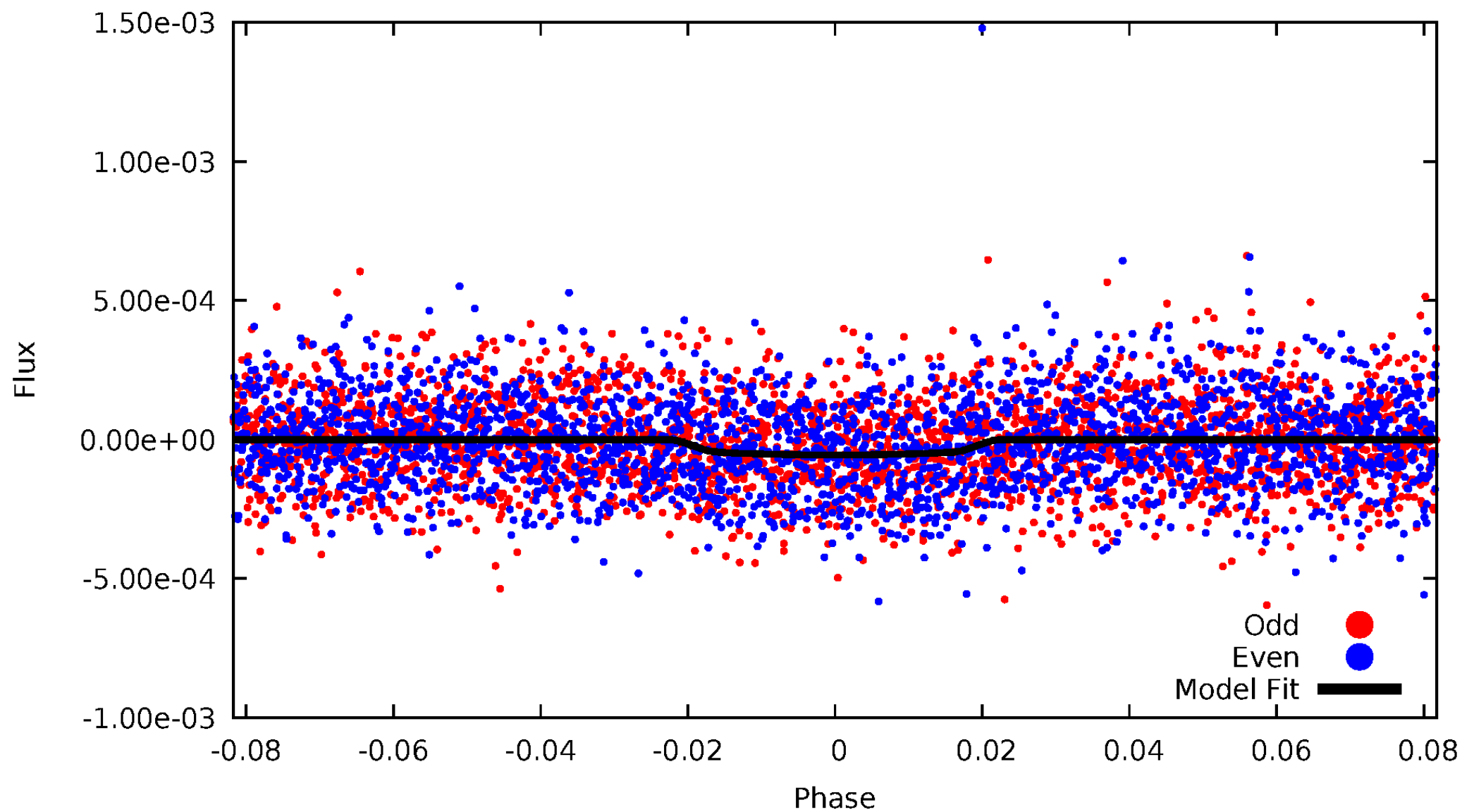


TCE 010584140-01



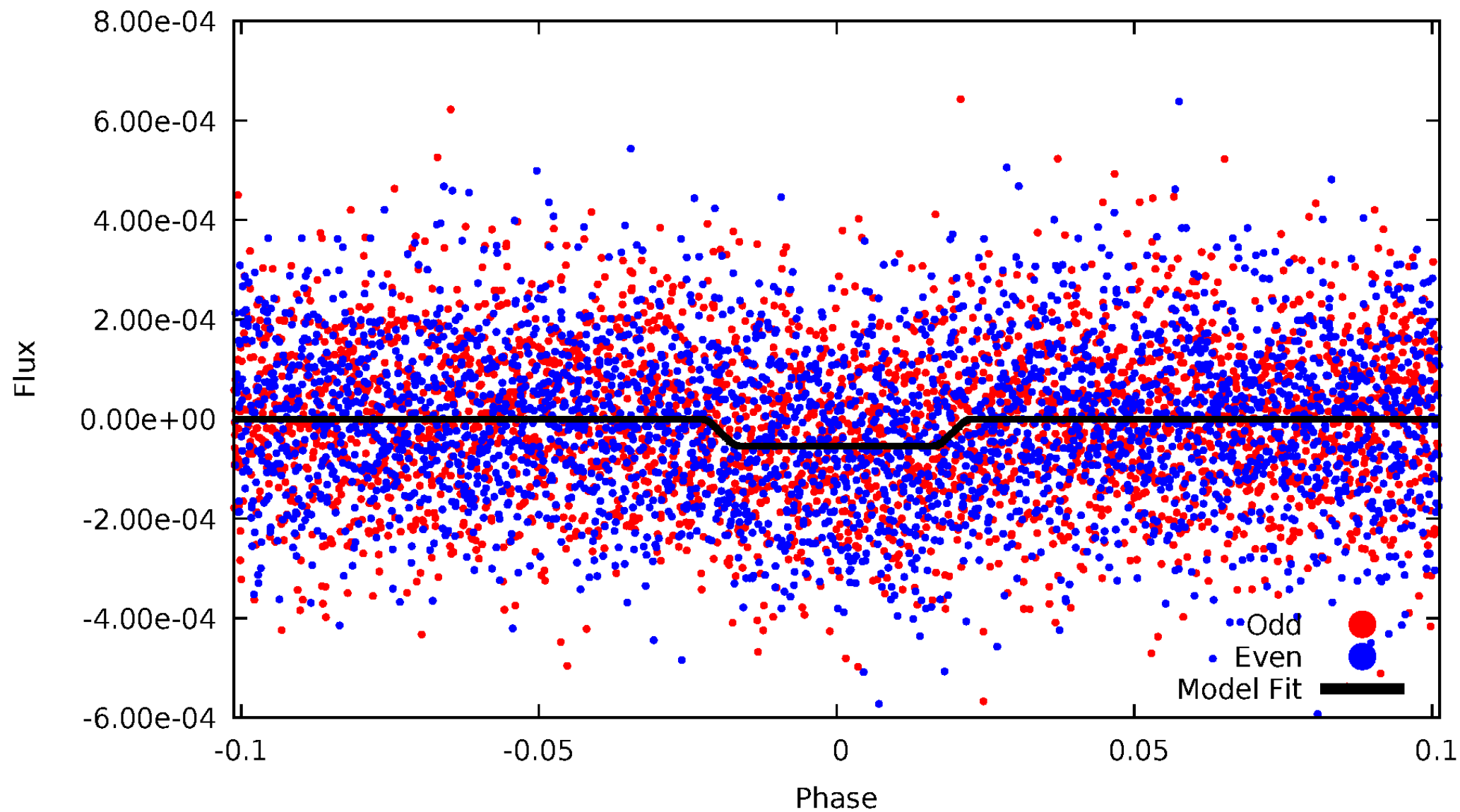
# DV Odd/Even

TCE 010584140-01



# ALT Odd/Even

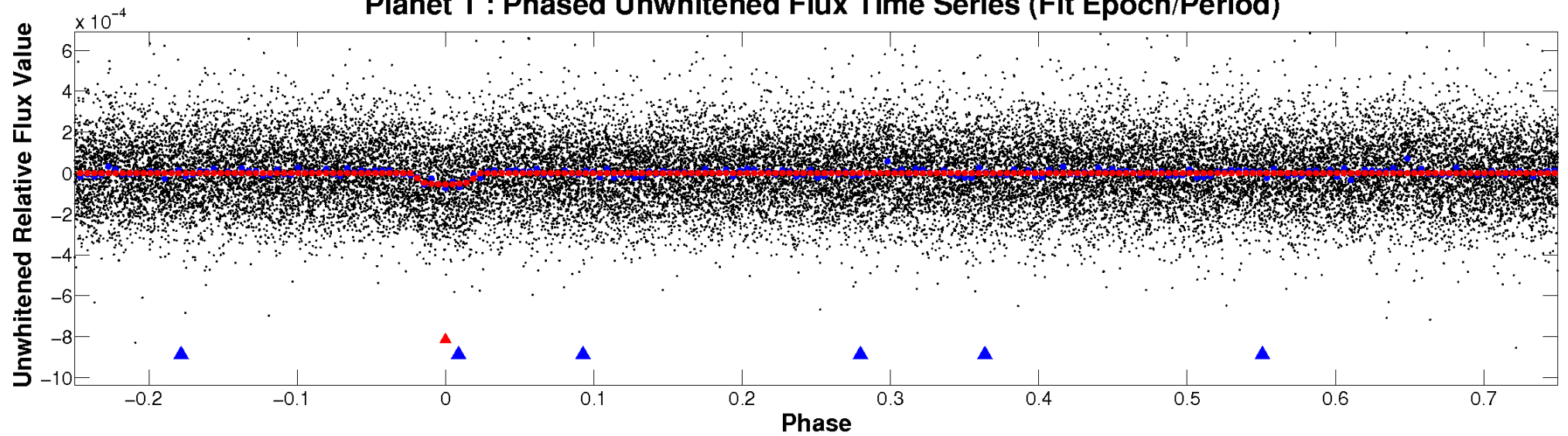
TCE 010584140-01



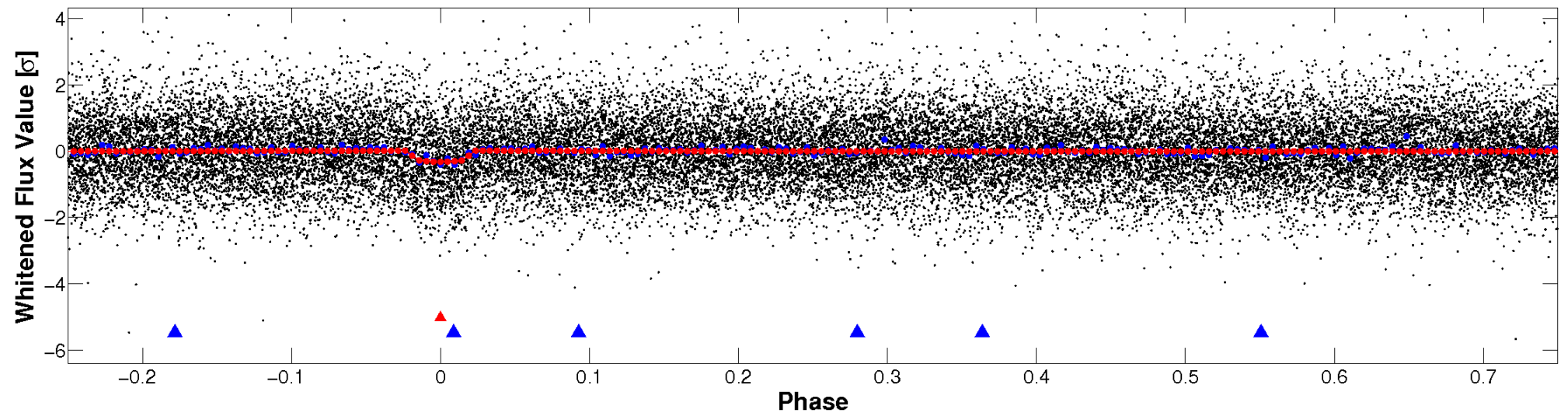


# Non-Whitened Vs. Whitened Light Curve

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

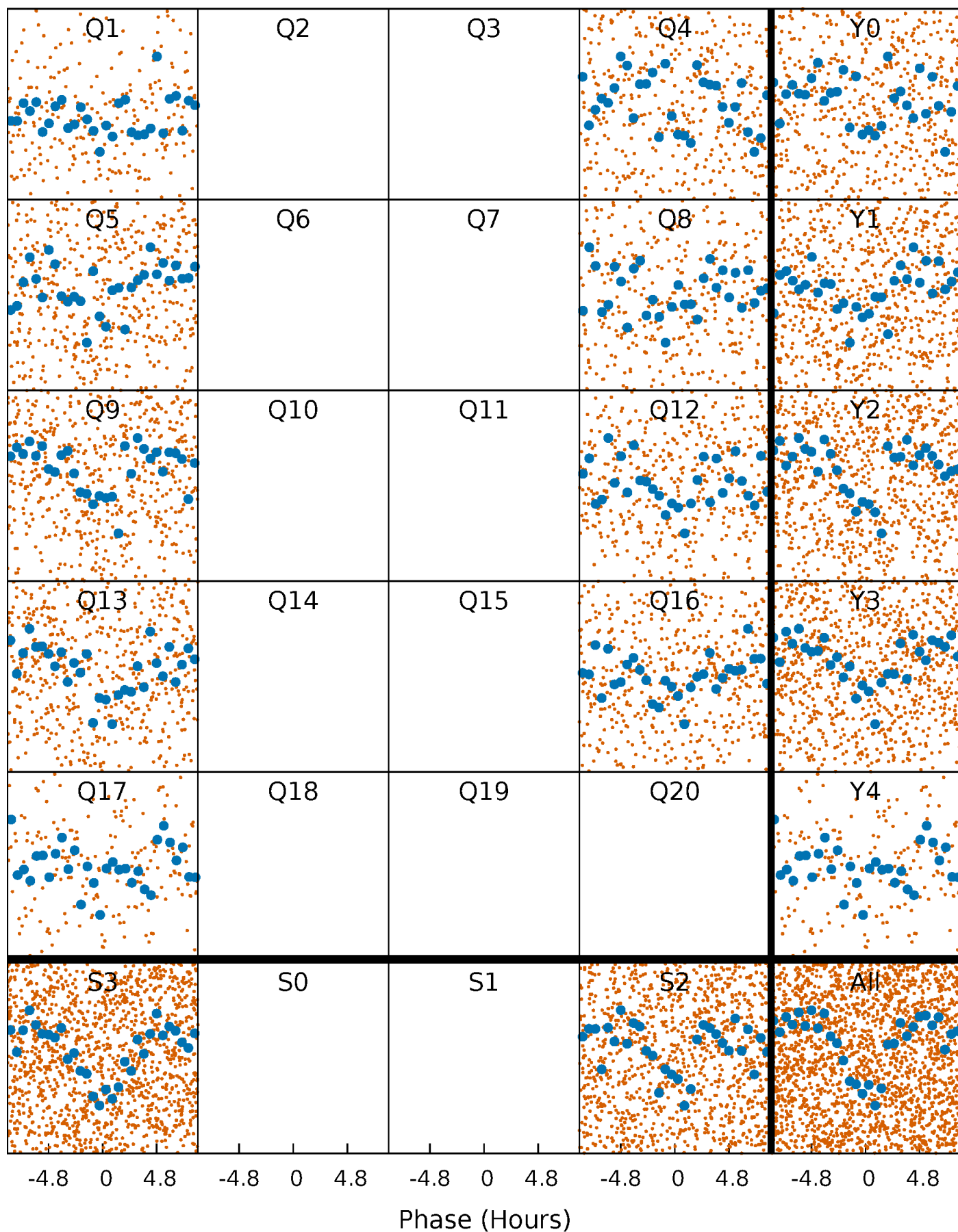


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

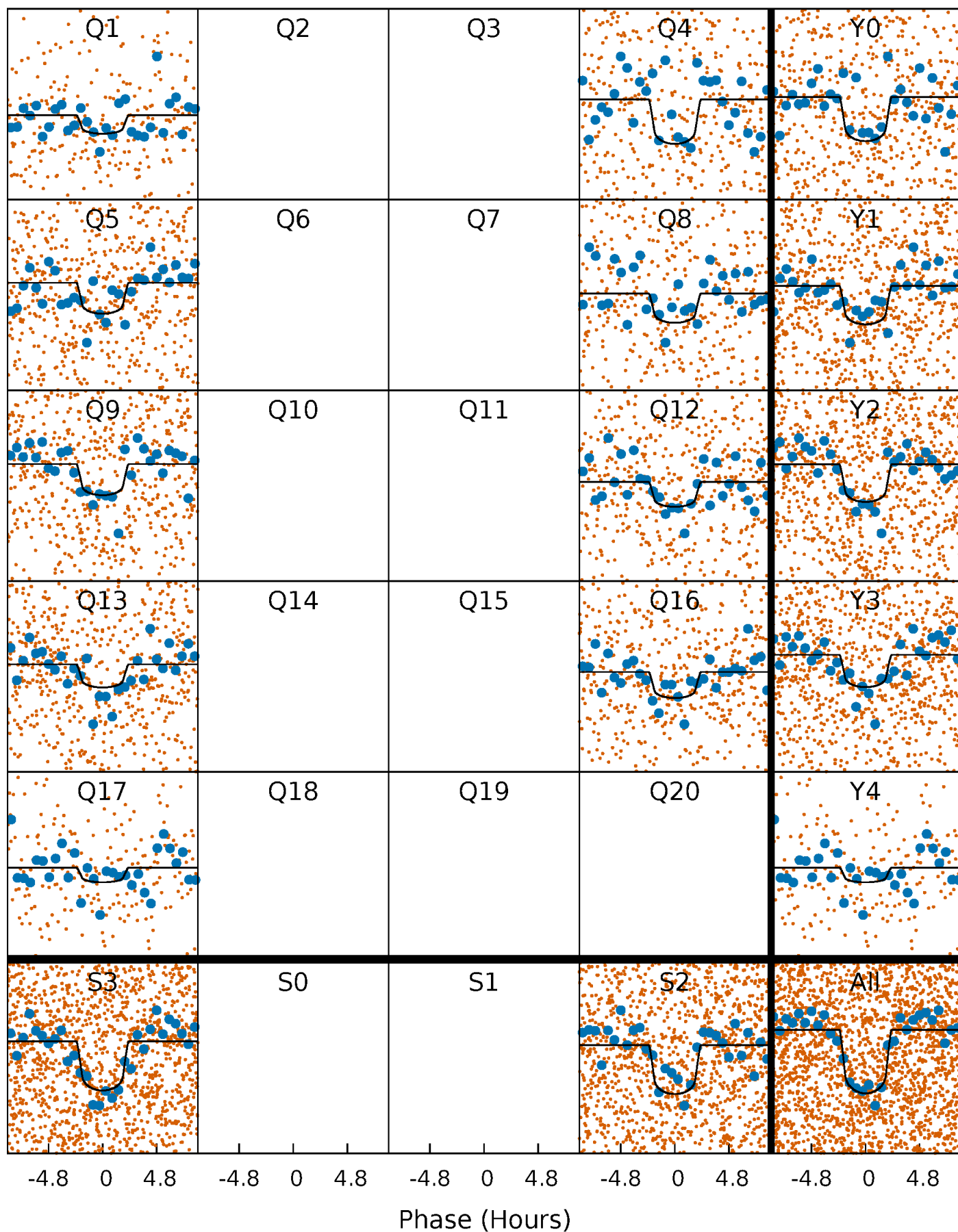
TCE 010584140-01 P= 4.317266 Days  $T_0=133.420270$  (BKJD)





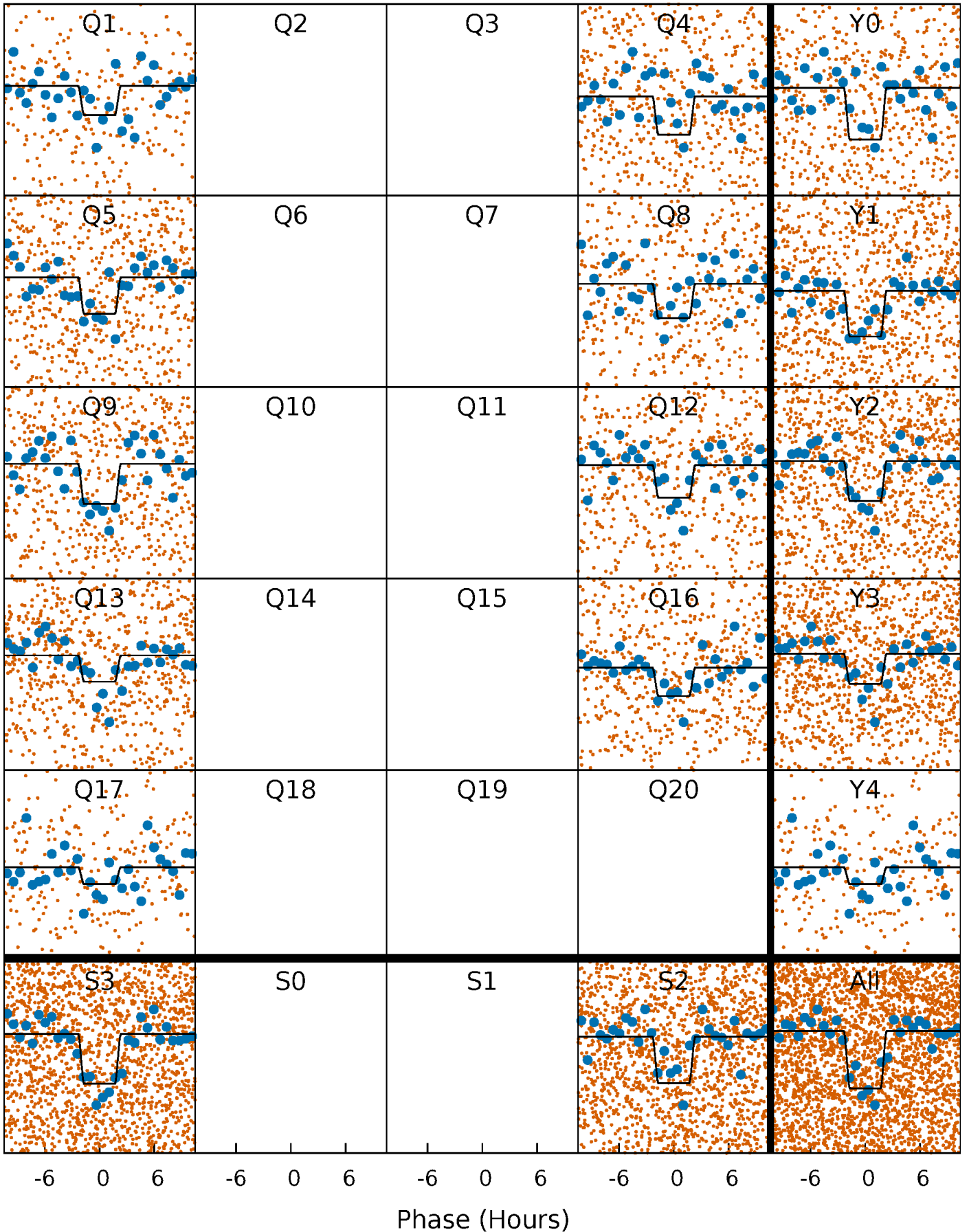
# DV Quarter-Phased Transit Curves

TCE 010584140-01 P= 4.317266 Days  $T_0=133.420270$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

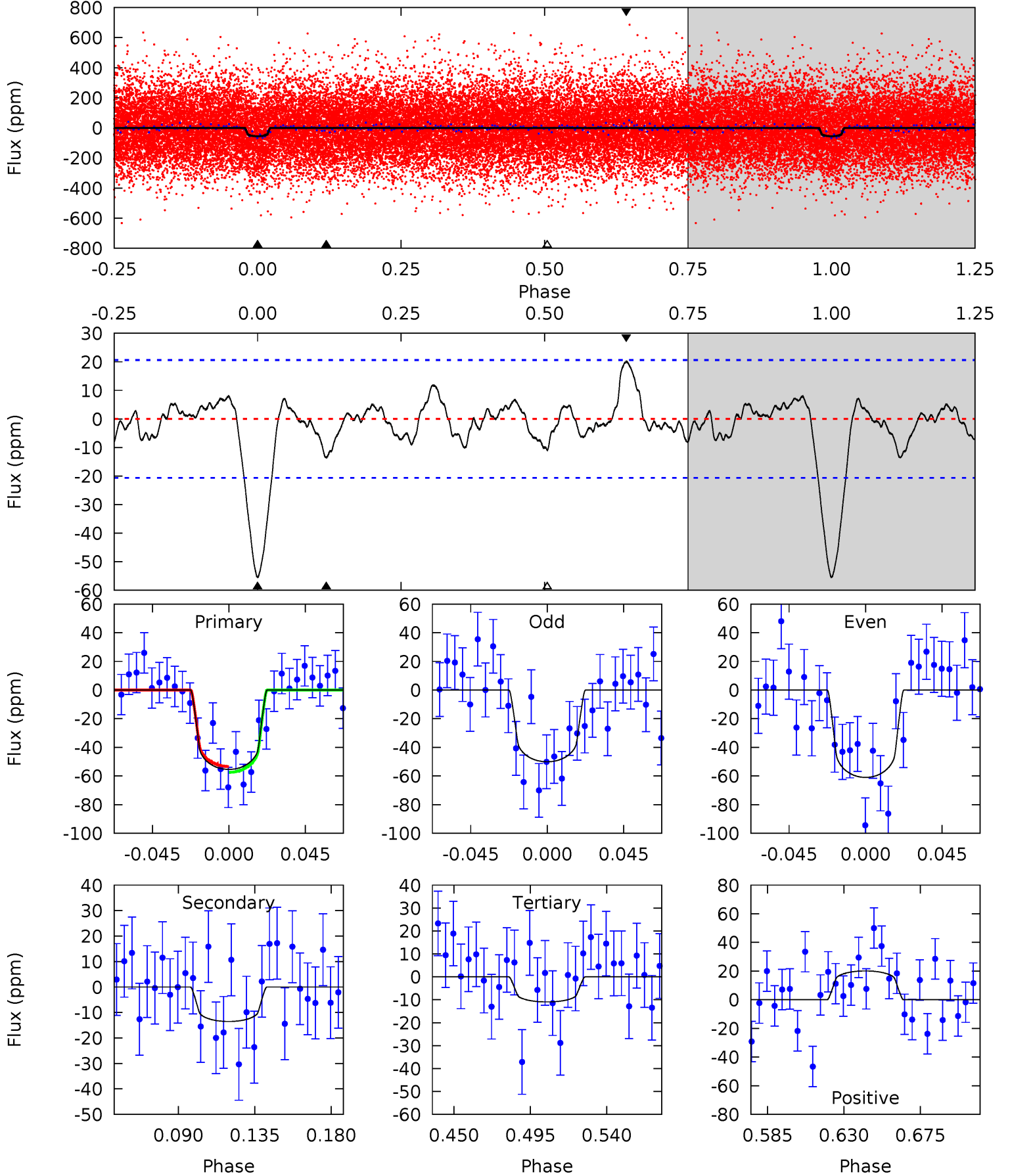
TCE 010584140-01 P= 4.317242 Days  $T_0=133.421382$  (BKJD)



# DV Model-Shift Uniqueness Test

010584140-01, P = 4.317266 Days, E = 129.103004 Days

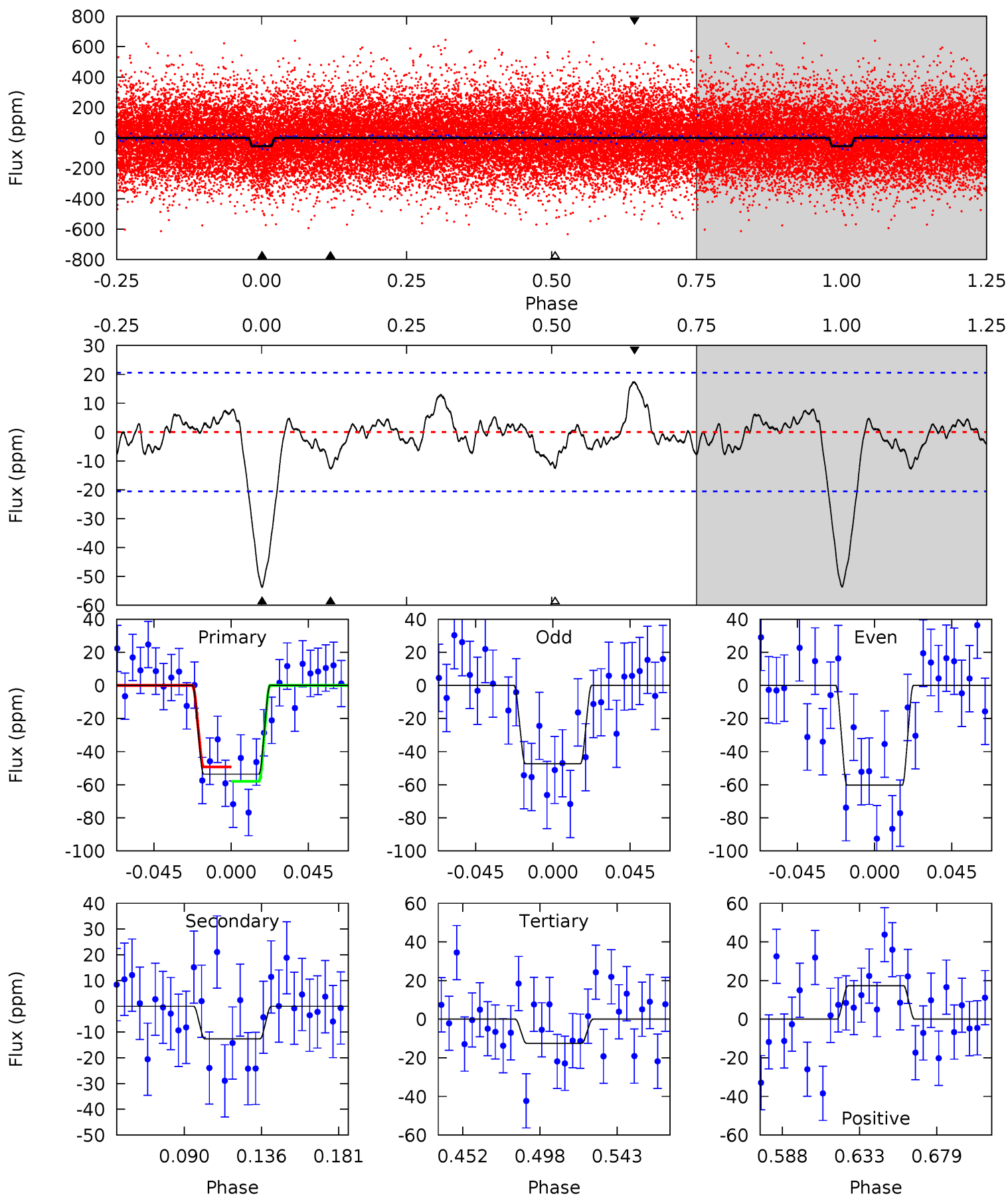
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.7 | 3.10 | 2.51 | 4.61 | 4.73            | 2.00            | 1.31             | 10.2    | 8.09    | 0.59    | -1.51   | 1.25    | 1.08 | 0.27  | 0.47 |



# Alt Model-Shift Uniqueness Test

010584140-01, P = 4.317242 Days, E = 129.104140 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.4 | 2.91 | 2.87 | 4.00 | 4.73            | 2.00            | 1.21             | 9.48    | 8.35    | 0.03    | -1.09   | 1.50    | 1.11 | 0.24  | 1.01 |



### Stellar Parameters For KIC 010584140

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5992^{+188}_{-209}$ | $4.195^{+0.258}_{-0.172}$ | $-0.200^{+0.300}_{-0.300}$ | $1.310^{+0.371}_{-0.371}$ | $0.979^{+0.155}_{-0.127}$ | $0.614^{+0.866}_{-0.295}$                 |
|        | +3%/-3%              | +6%/-4%                   | +150%/-150%                | +28%/-28%                 | +16%/-13%                 | +141%/-48%                                |
| Source | KIC0                 | 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 010584140-01 / KOI 4833.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$  | $A_{\text{obs}}$ |
|---------|-------------|------------------------|----------------------|-----------------------|------------------|
| DV      | $-14 \pm 4$ | $1.16^{+0.59}_{-0.58}$ | $1849^{+142}_{-158}$ | $4213^{+1261}_{-610}$ | $15^{+41}_{-9}$  |
| Alt.    | $-13 \pm 4$ | $1.01^{+0.59}_{-0.52}$ | $1853^{+146}_{-156}$ | $4392^{+1720}_{-729}$ | $18^{+64}_{-11}$ |

$T_{\text{max}}$  = 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

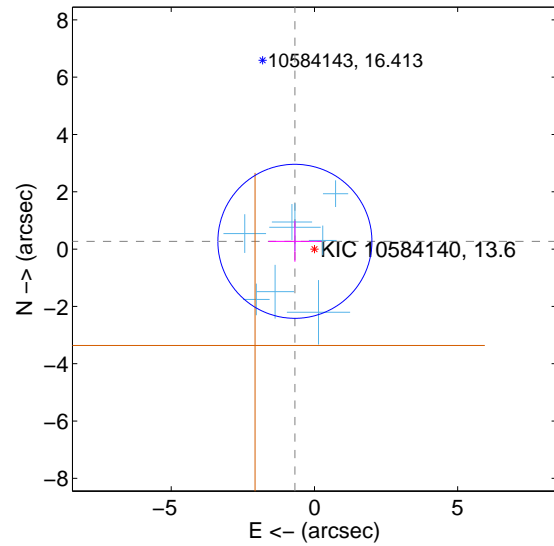
Supplemental centroid analysis for 010584140-01. Kepler magnitude: 13.60. Transit SNR 9.55

There are 8 quarters with good PRF difference image offsets

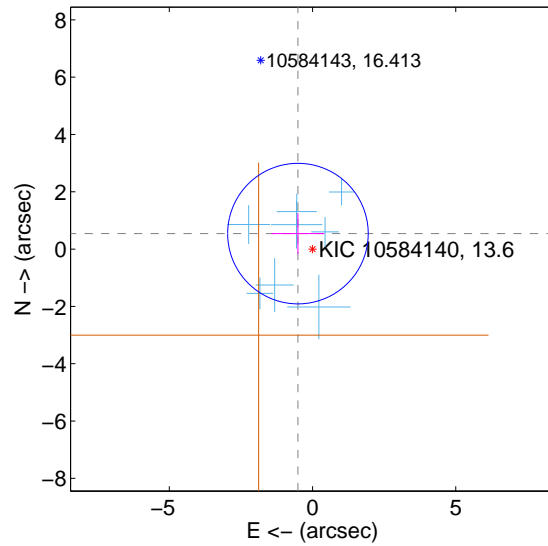
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $0.734 \pm 0.896$  | 0.82                | $0.682 \pm 0.922$ | $0.272 \pm 0.713$ |
| PRF-fit source offset from KIC position | $0.743 \pm 0.817$  | 0.91                | $0.509 \pm 0.922$ | $0.541 \pm 0.713$ |
| photometric centroid source offset      | $3.25 \pm 1.26$    | 2.58                | $-3.25 \pm 1.26$  | $0.03 \pm 1.23$   |

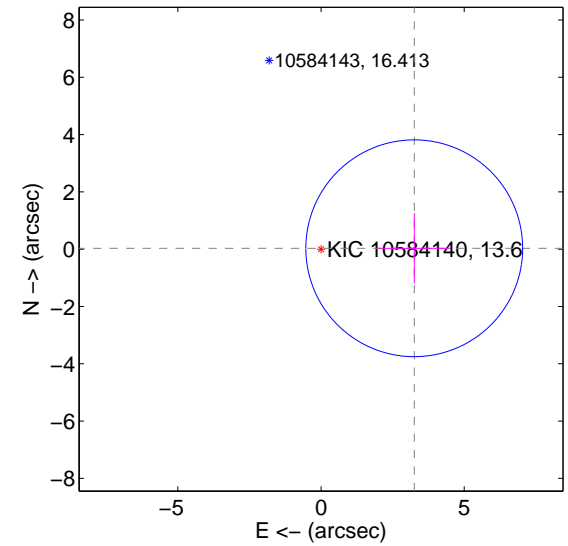
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

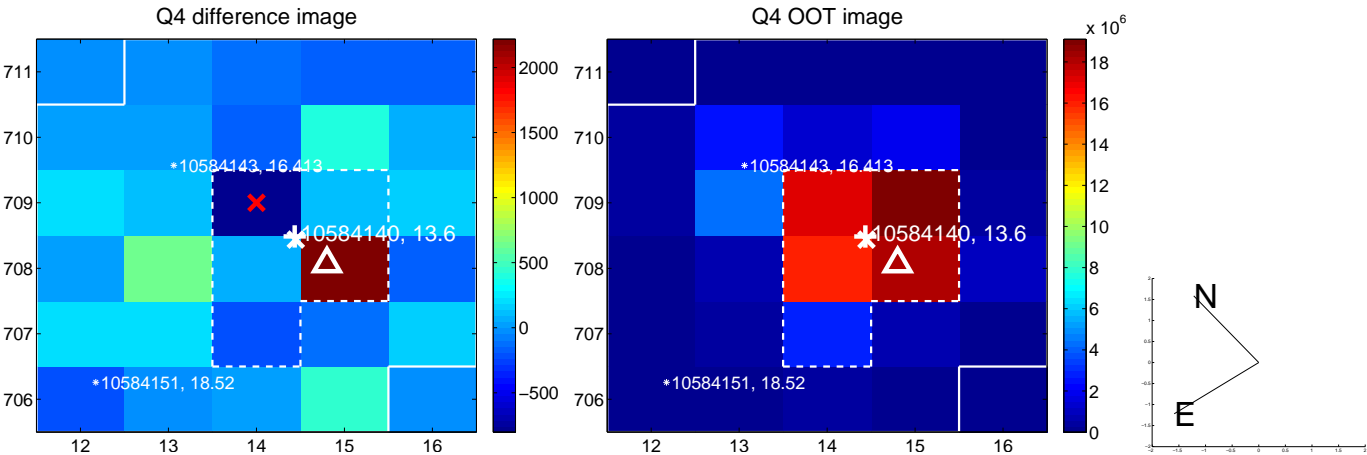
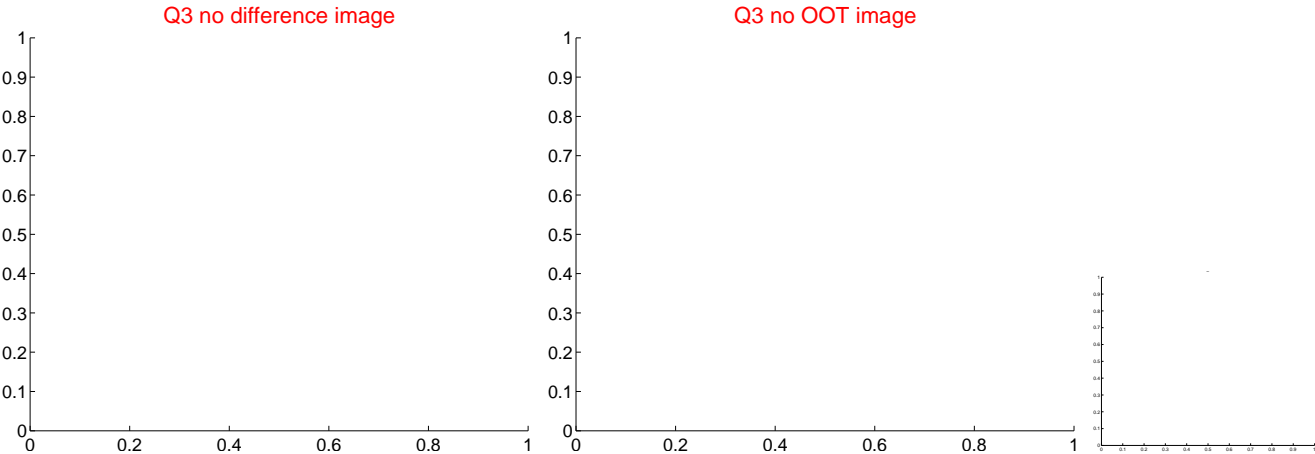
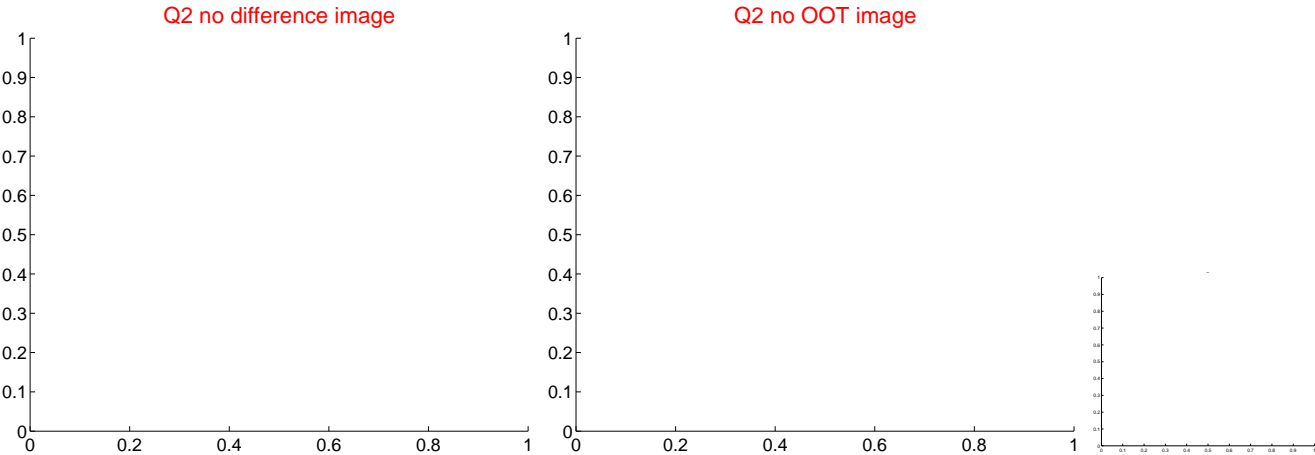
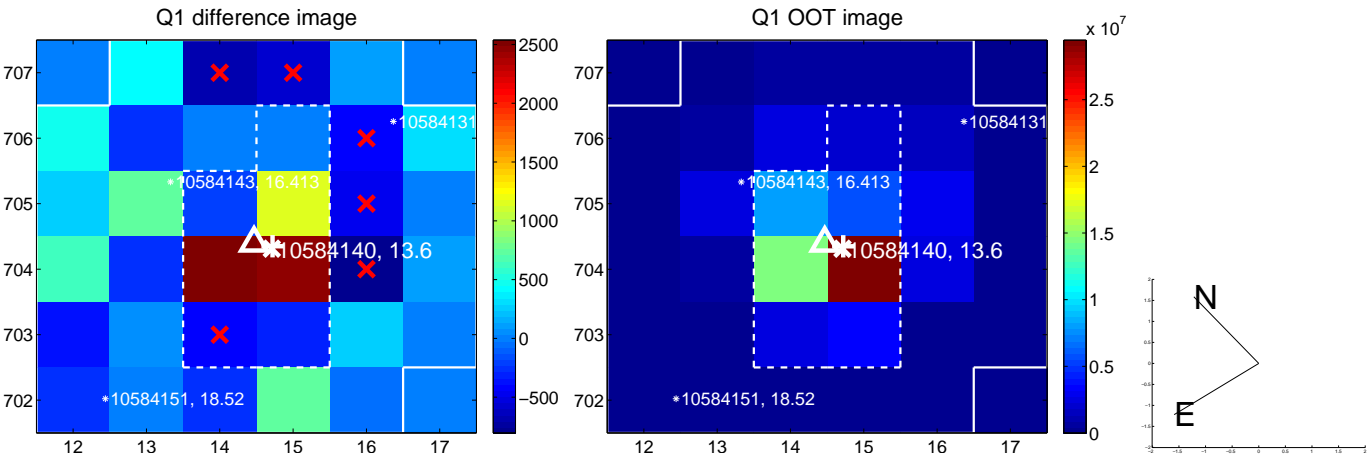


offset from photometric centroids

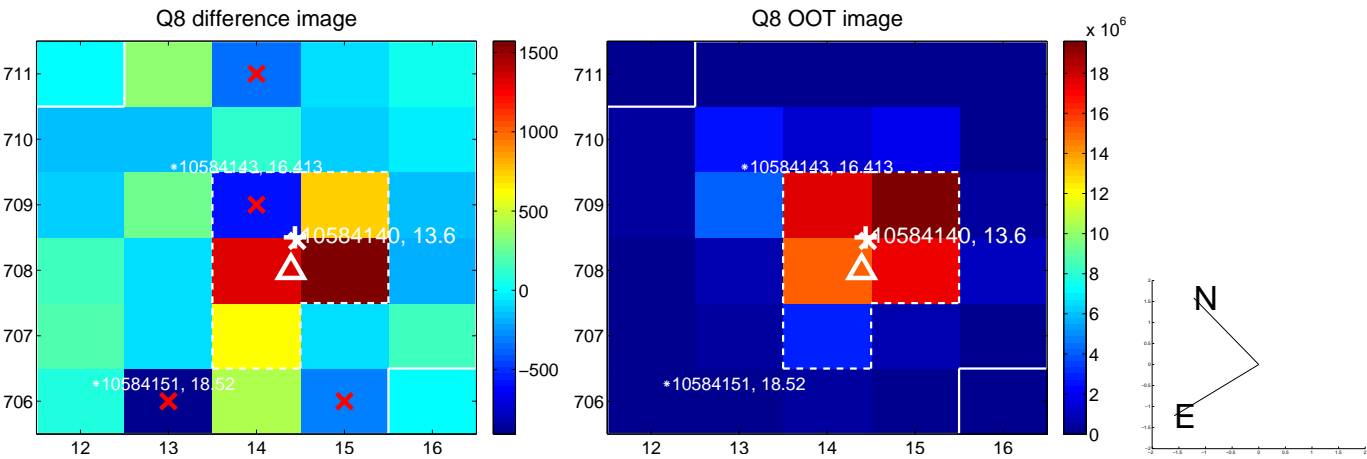
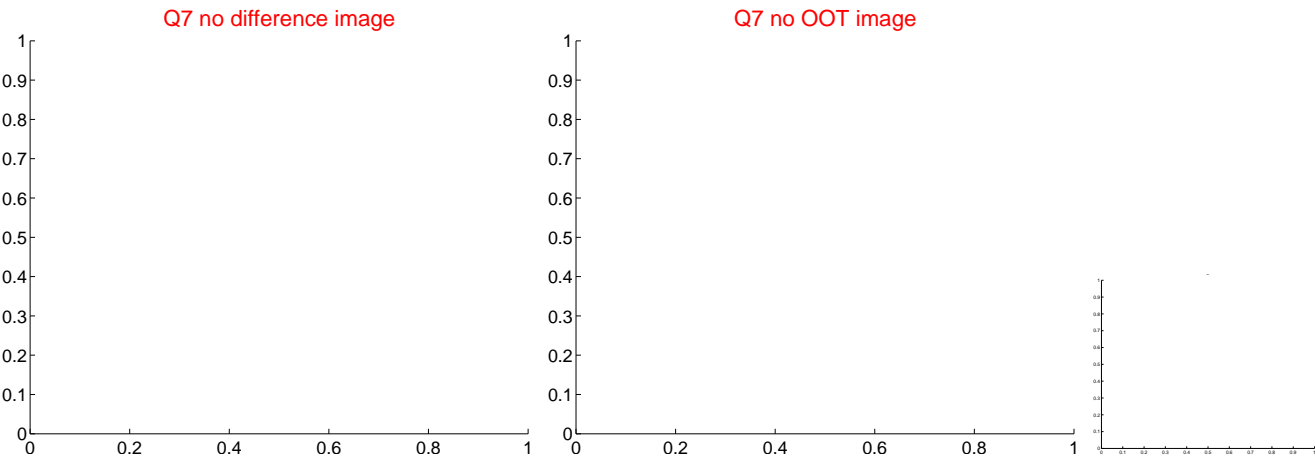
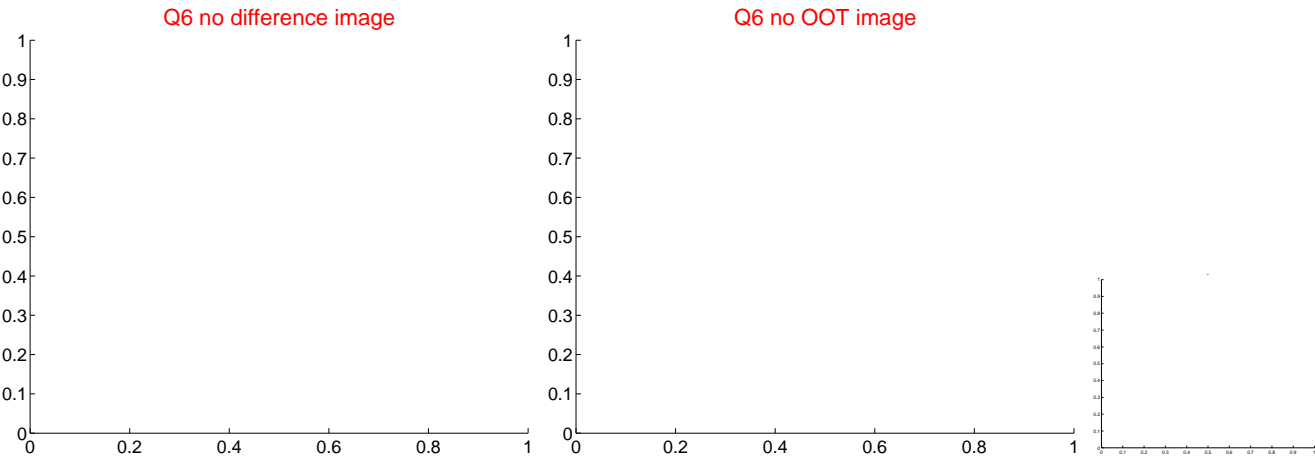
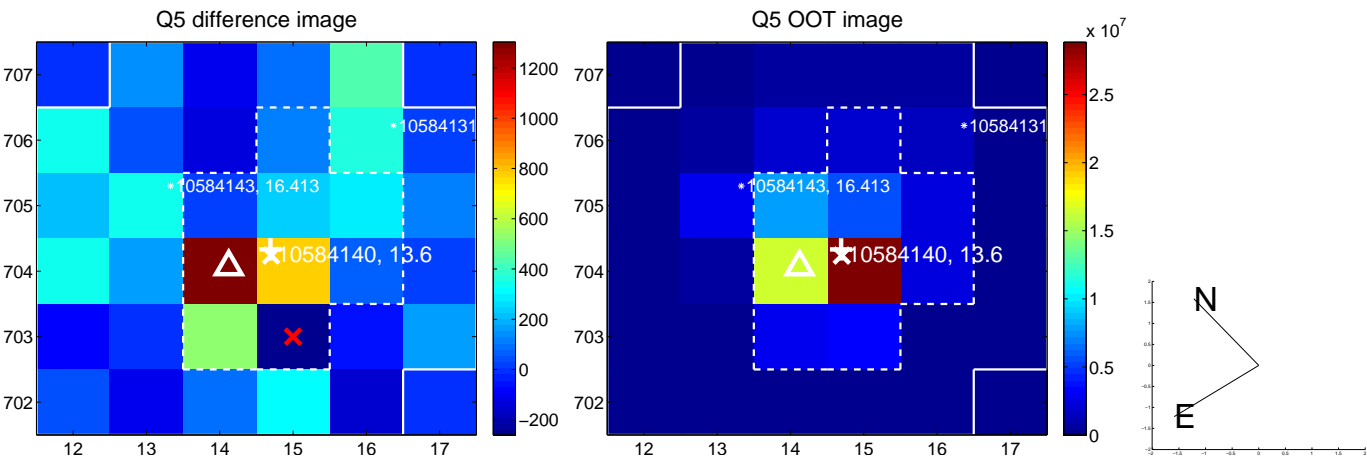


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

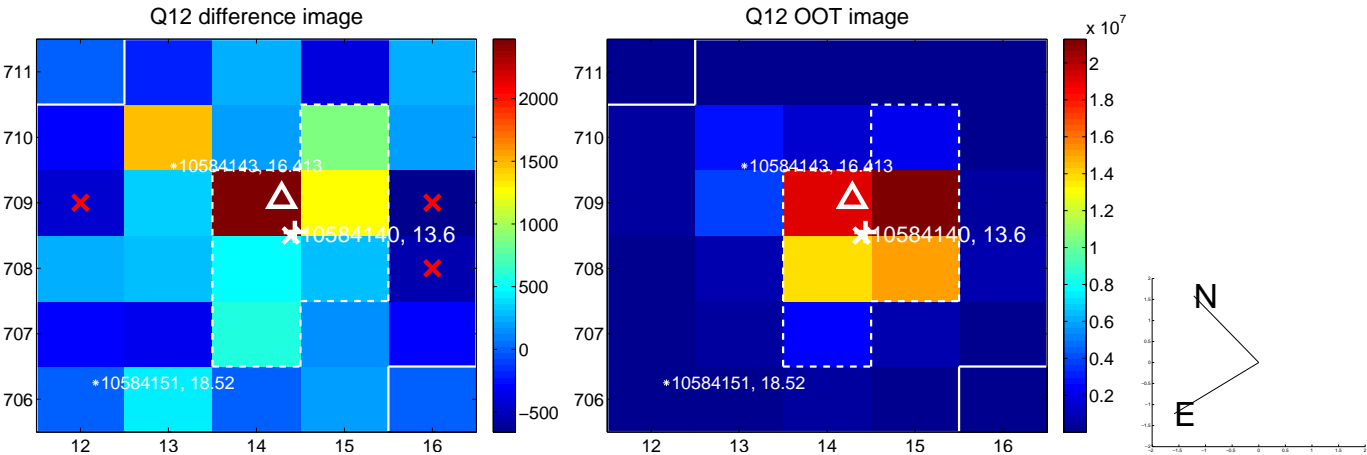
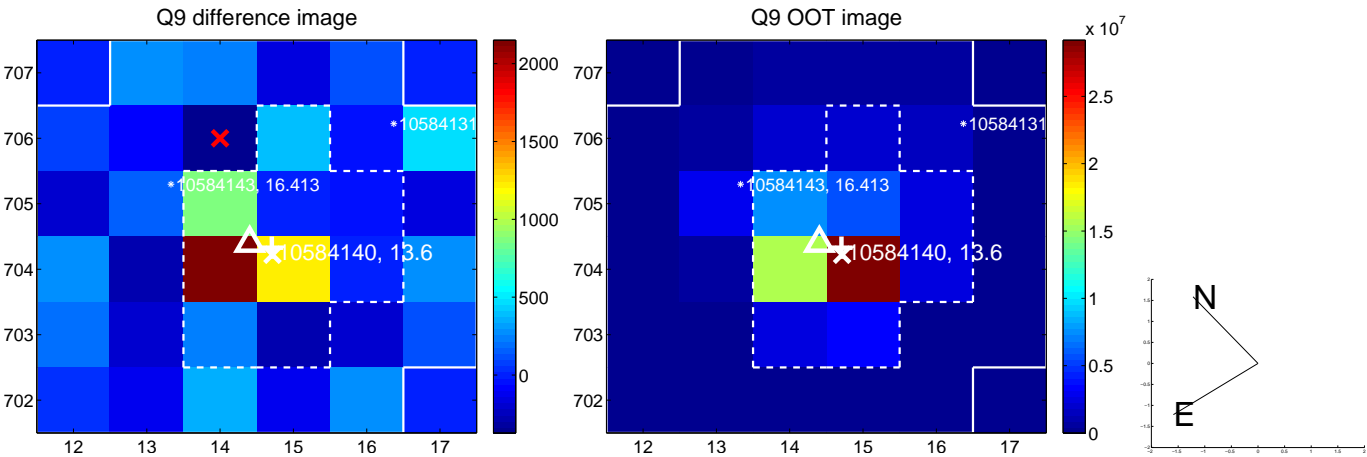
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



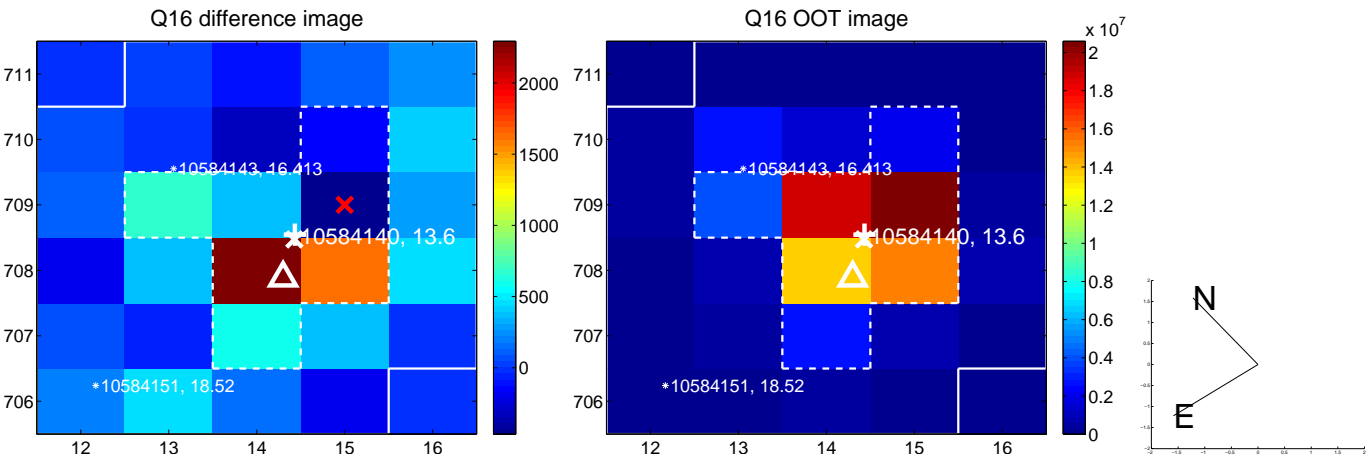
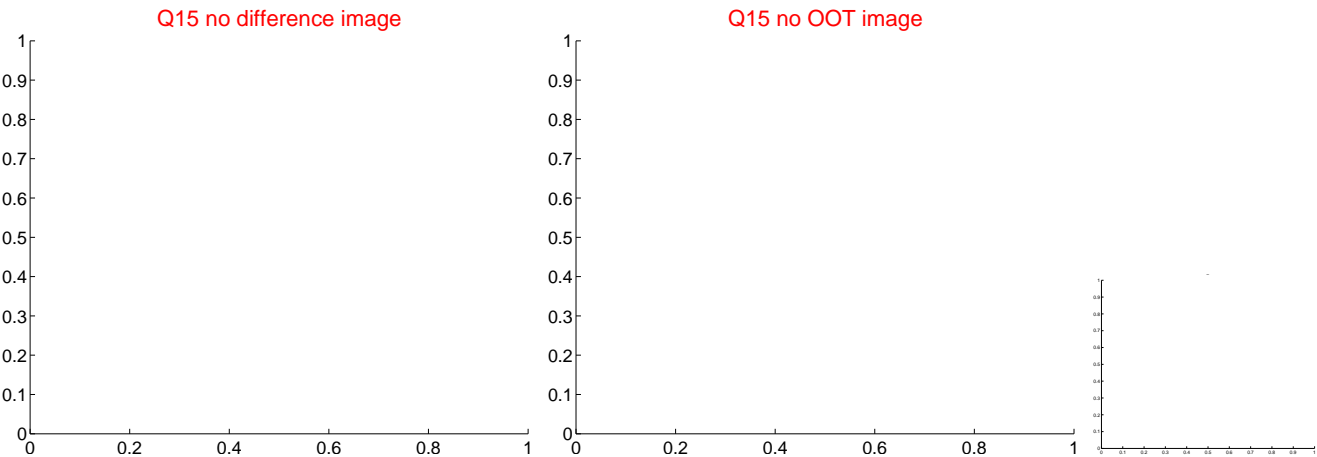
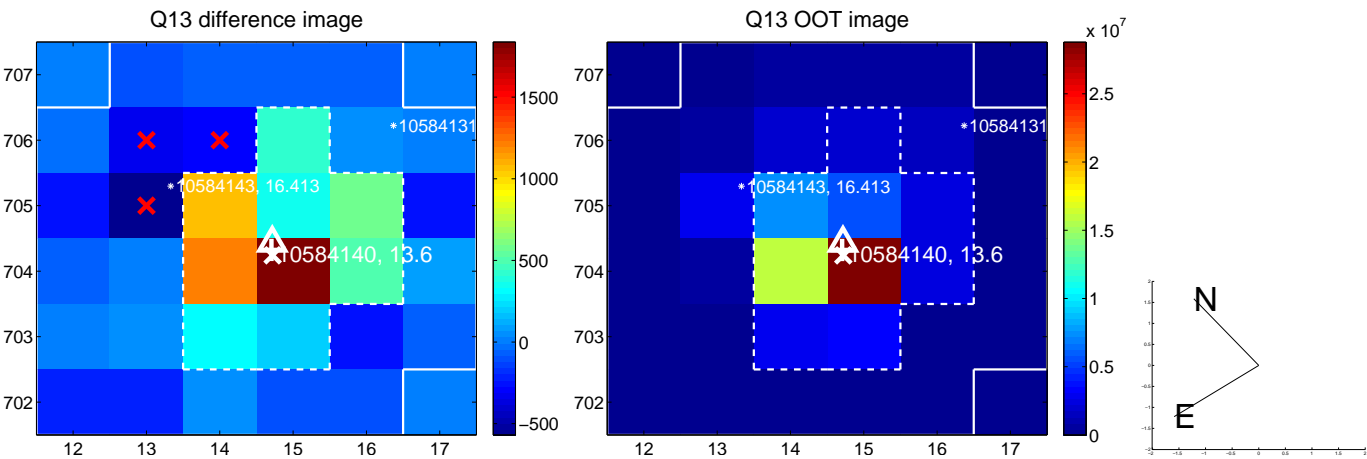
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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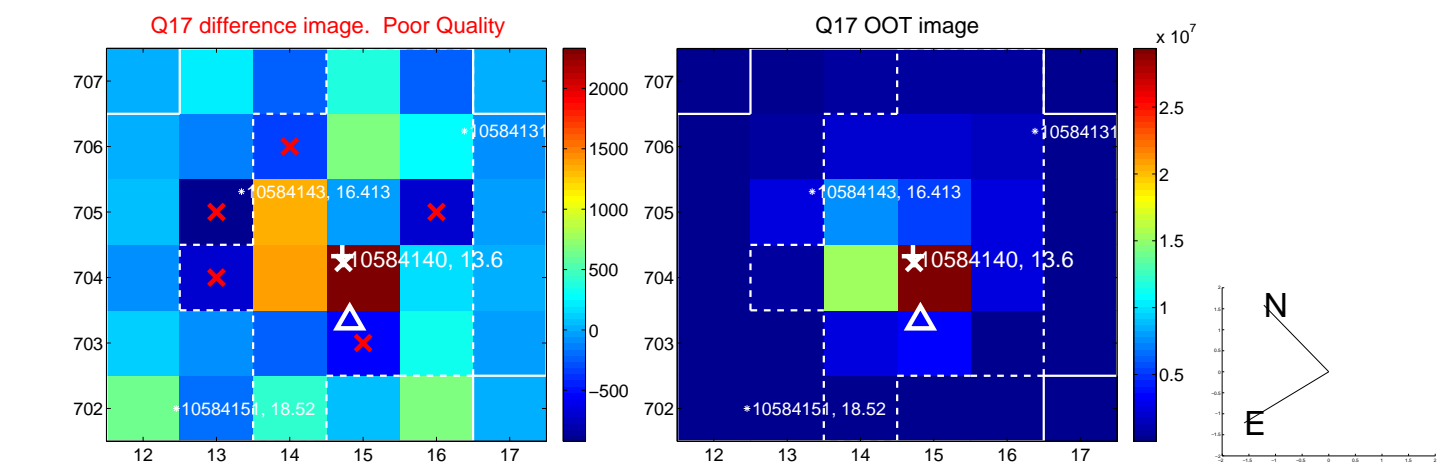


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

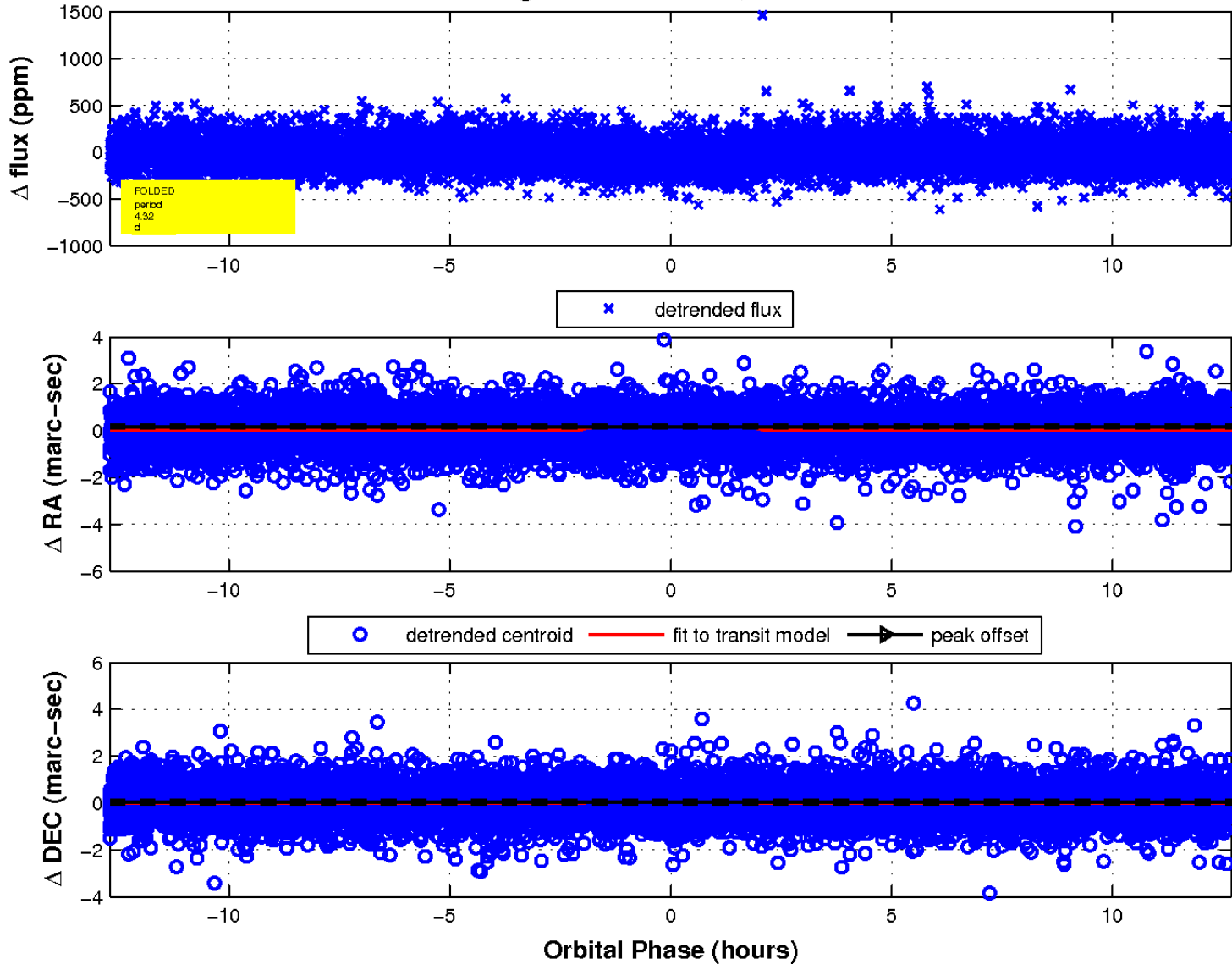




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination

