

# KIC 008432918

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 008432918-01 | OBS      | No   | 410.490165    | 373.786007   | 18.5        | 0.740            | 11.1 | 0.5 | 88.30                       | 3766            | 50.94                  | 877.64                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 008432918-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED |

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

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

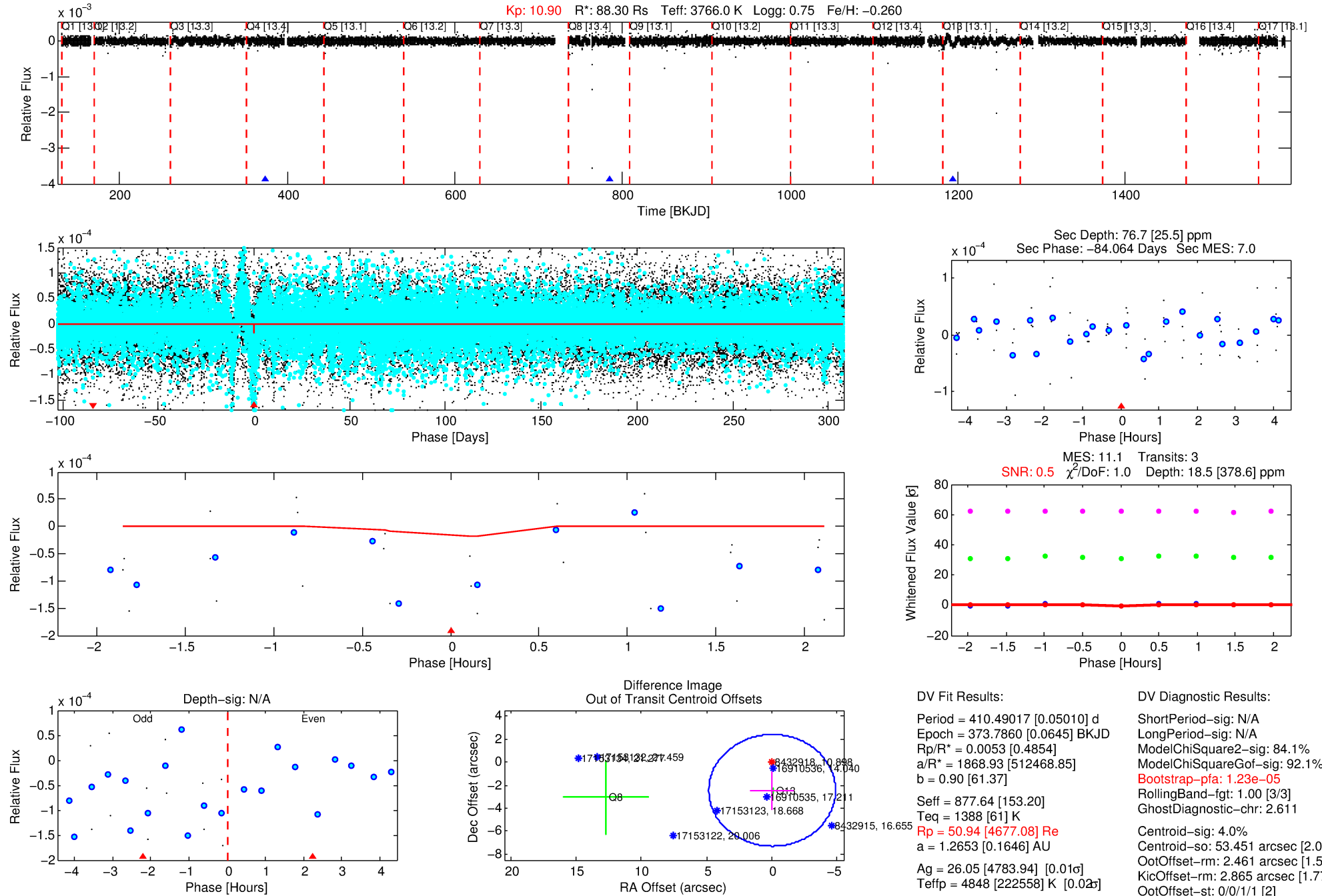
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008432918-01

No Significant Match Found

# DV One-Page Summary

KIC: 8432918 Candidate: 1 of 1 Period: 410.490 d



## DV Fit Results:

Period = 410.49017 [0.05010] d  
Epoch = 373.7860 [0.0645] BKJD  
 $R_p/R^* = 0.0053$  [0.4854]  
 $a/R^* = 1868.93$  [512468.85]  
 $b = 0.90$  [61.37]  
 $T_{\text{eff}} = 877.64$  [153.20]  
 $T_{\text{eq}} = 1388$  [61] K  
 $R_p = 50.94$  [4677.08] Re  
 $a = 1.2653$  [0.1646] AU  
 $A_g = 26.05$  [4783.94] [0.01σ]  
 $T_{\text{eff}} = 4848$  [222558] K [0.02σ]

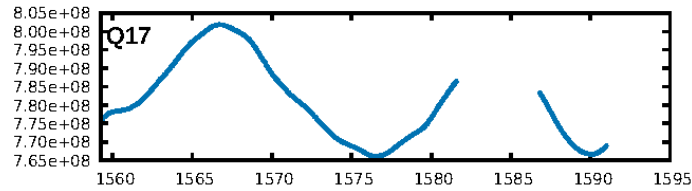
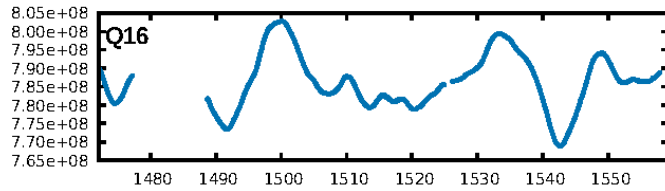
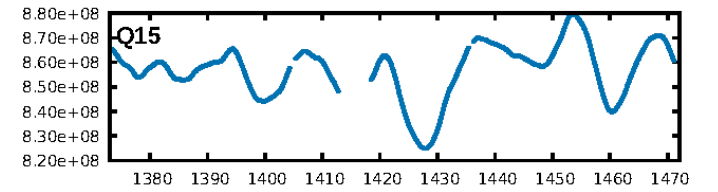
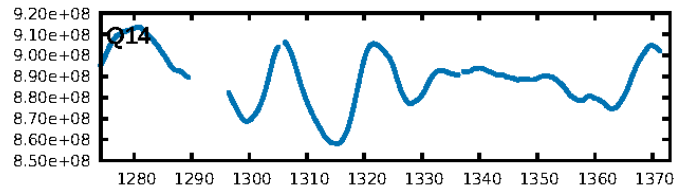
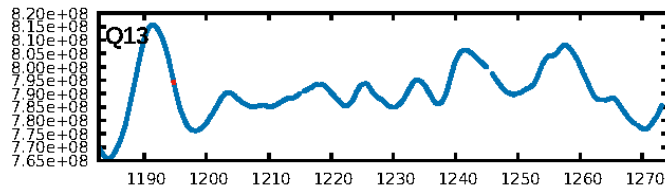
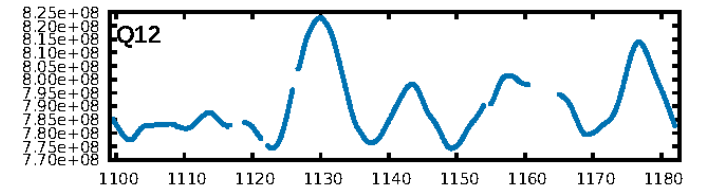
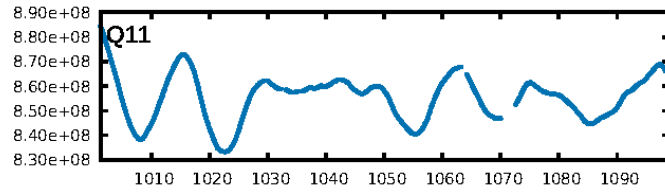
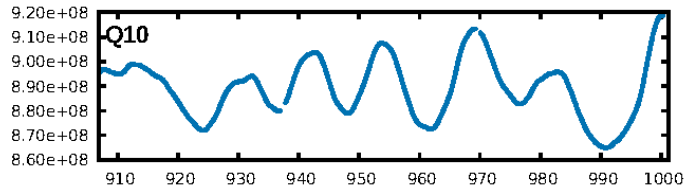
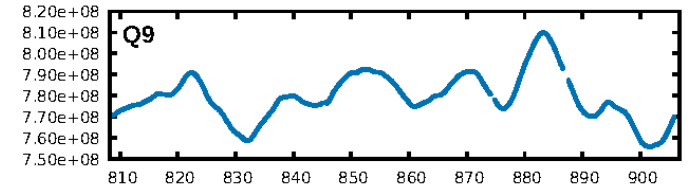
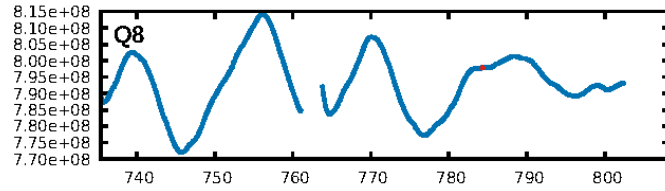
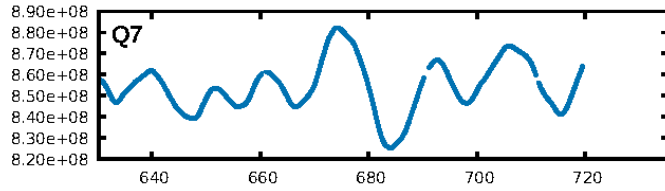
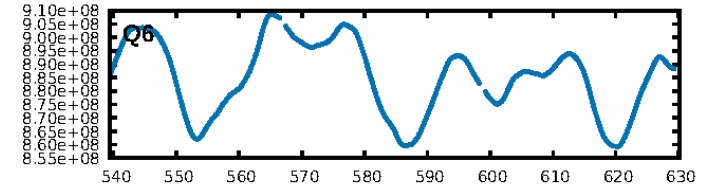
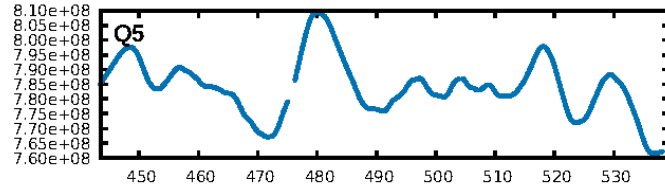
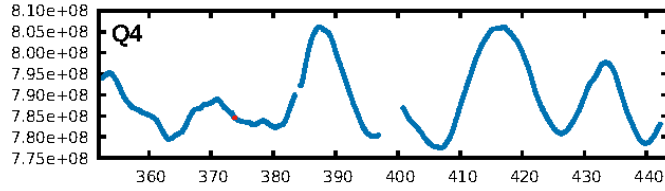
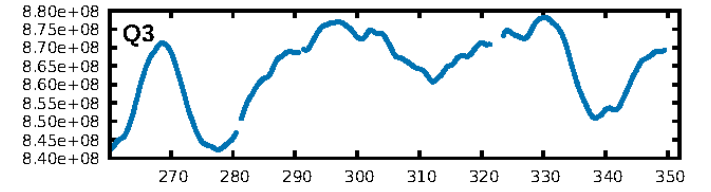
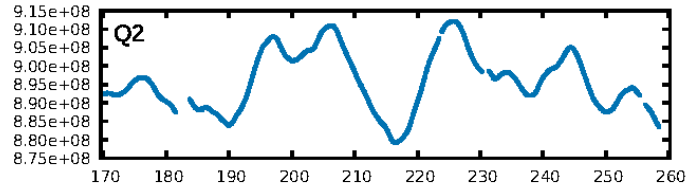
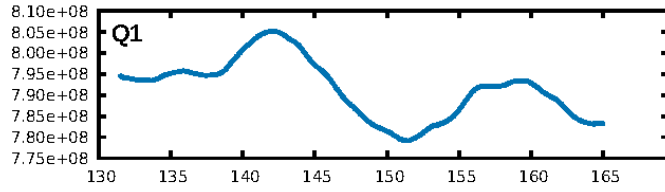
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 84.1%  
ModelChiSquareGof-sig: 92.1%  
**Bootstrap-pfa: 1.23e-05**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.611  
Centroid-sig: 4.0%  
Centroid-so: 53.451 arcsec [2.05σ]  
OotOffset-rm: 2.461 arcsec [1.52σ]  
KicOffset-rm: 2.865 arcsec [1.77σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

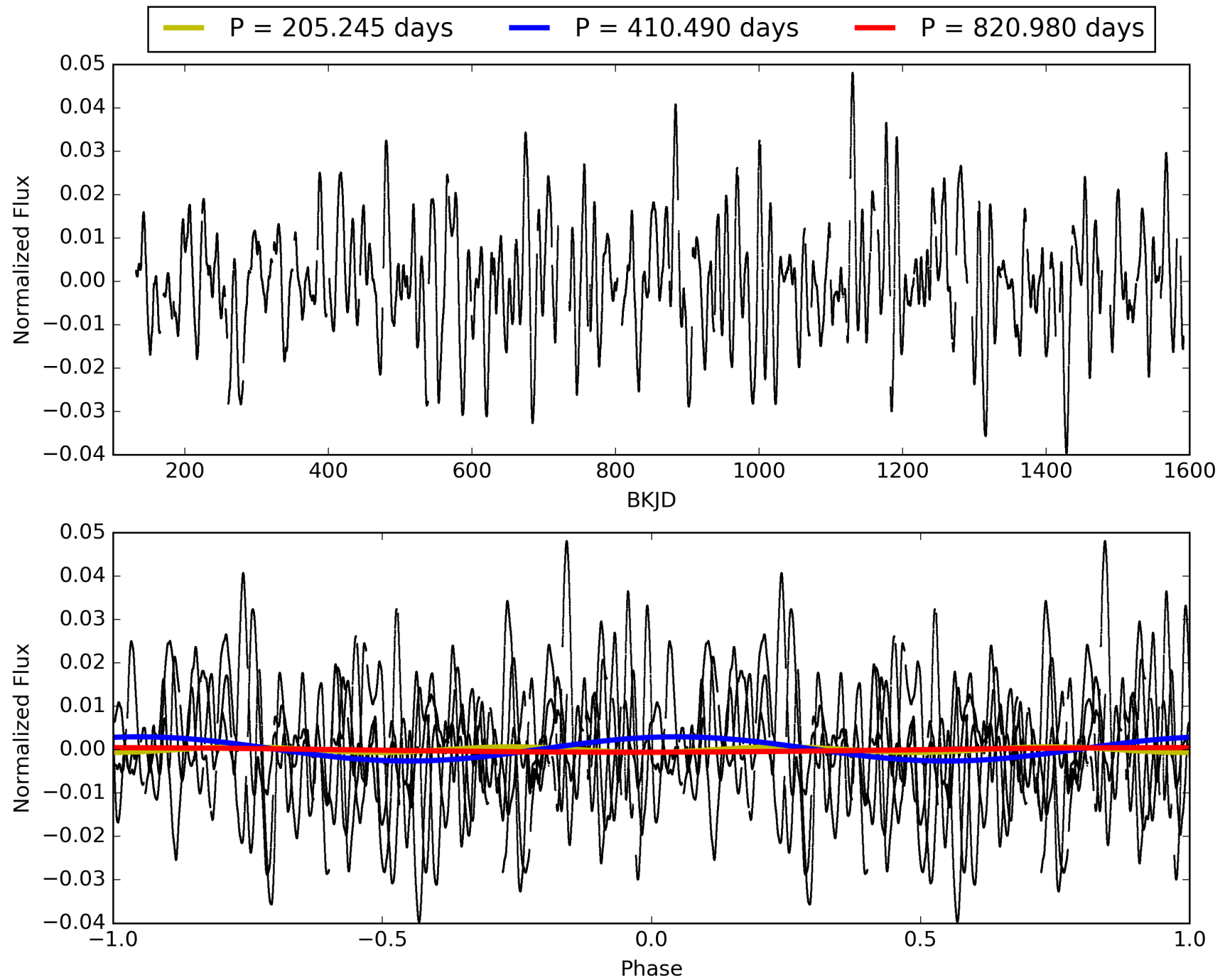
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:57:18 Z

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

# TCE 008432918-01, PDC Light Curves

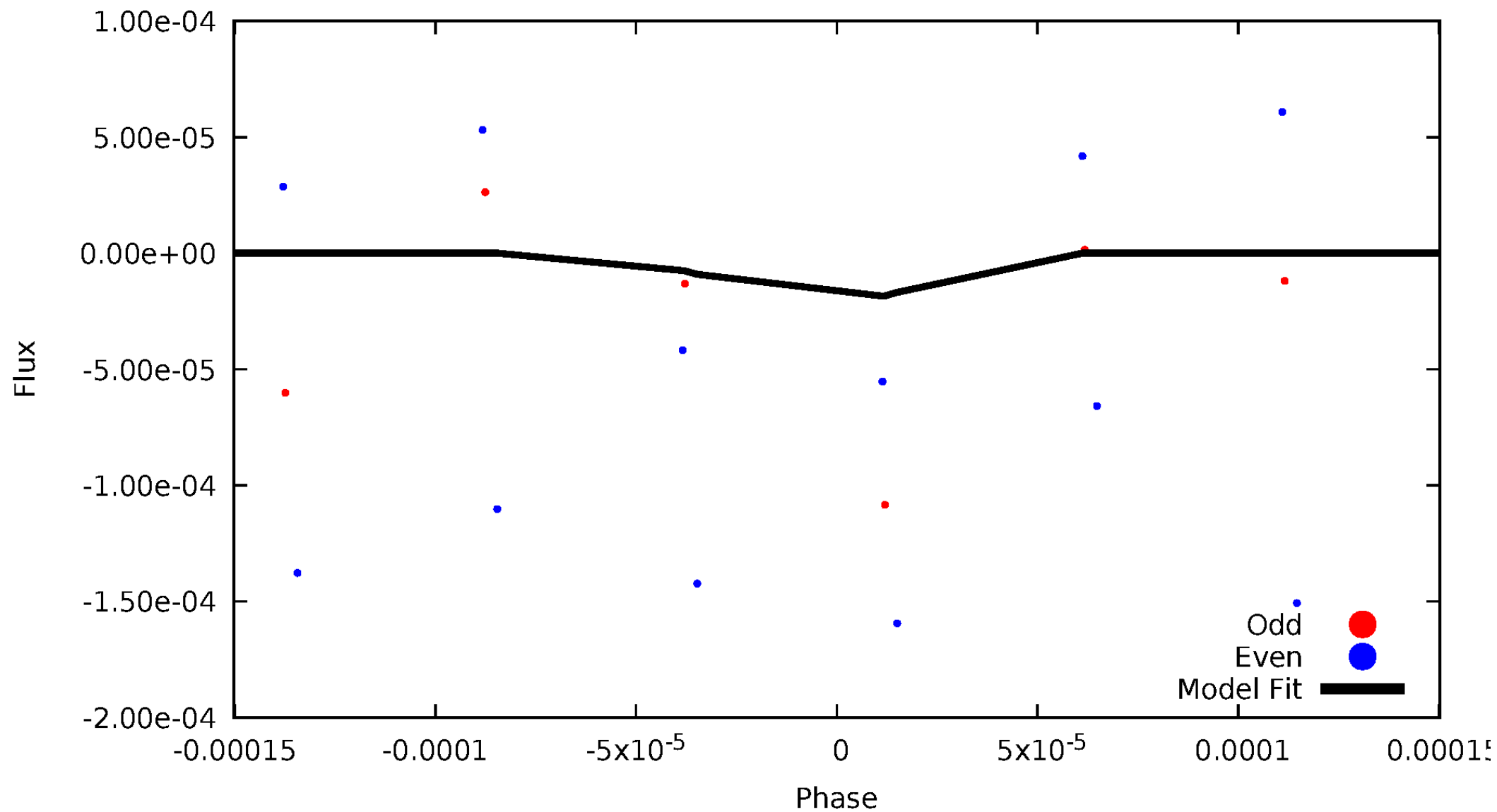


TCE 008432918-01



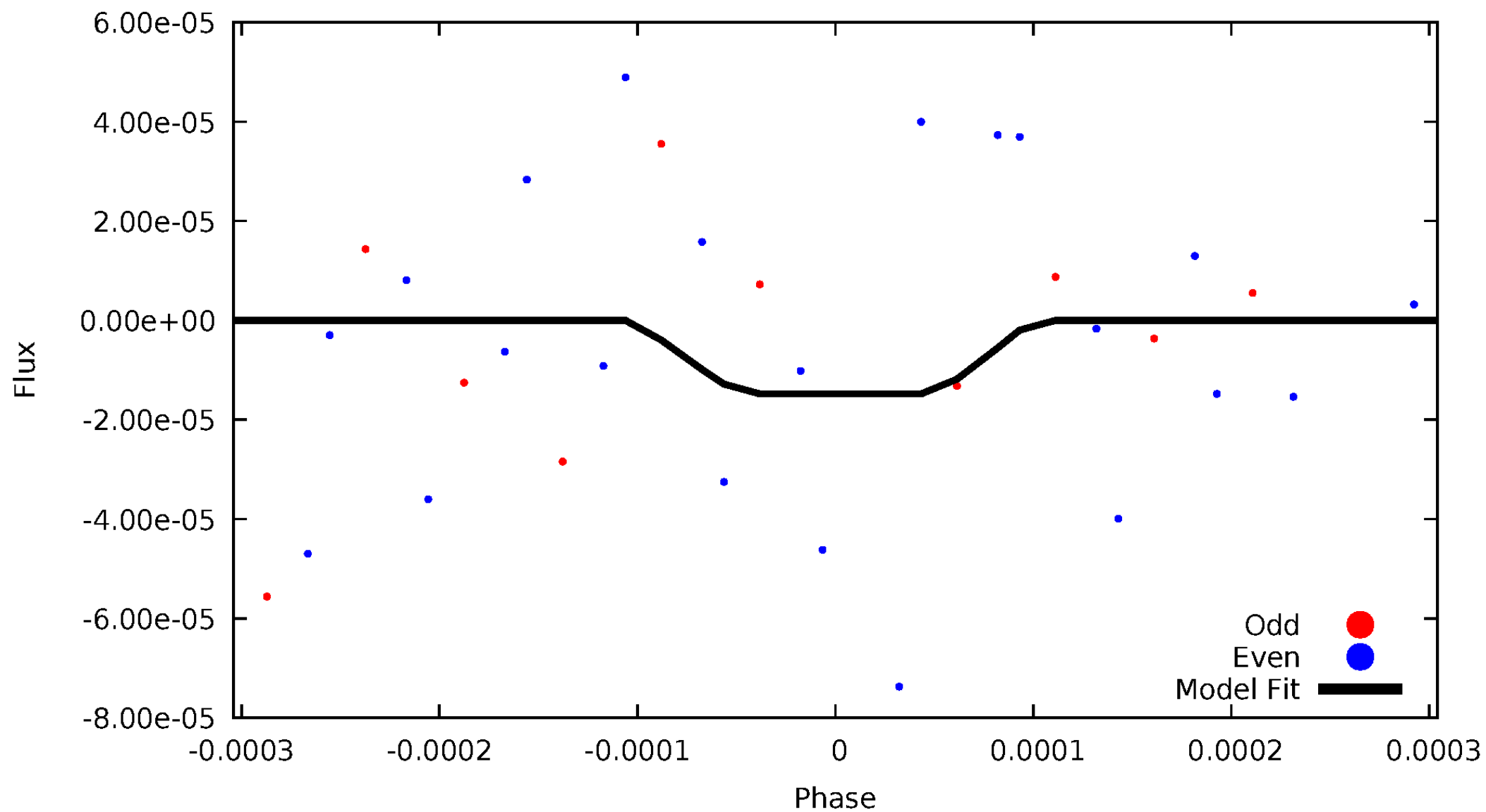
# DV Odd/Even

TCE 008432918-01



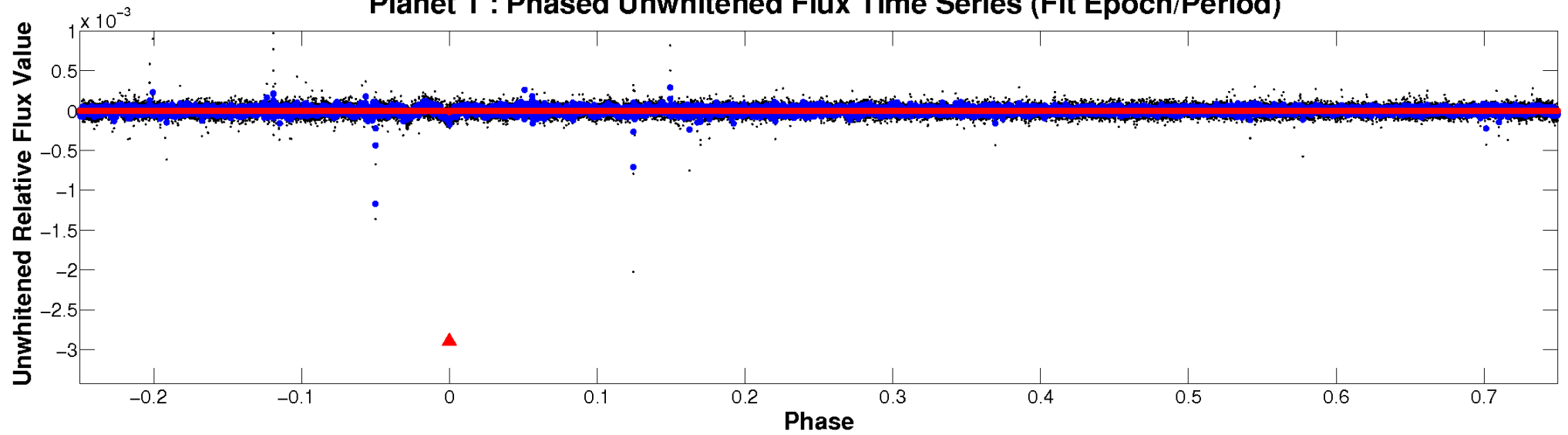
# ALT Odd/Even

TCE 008432918-01

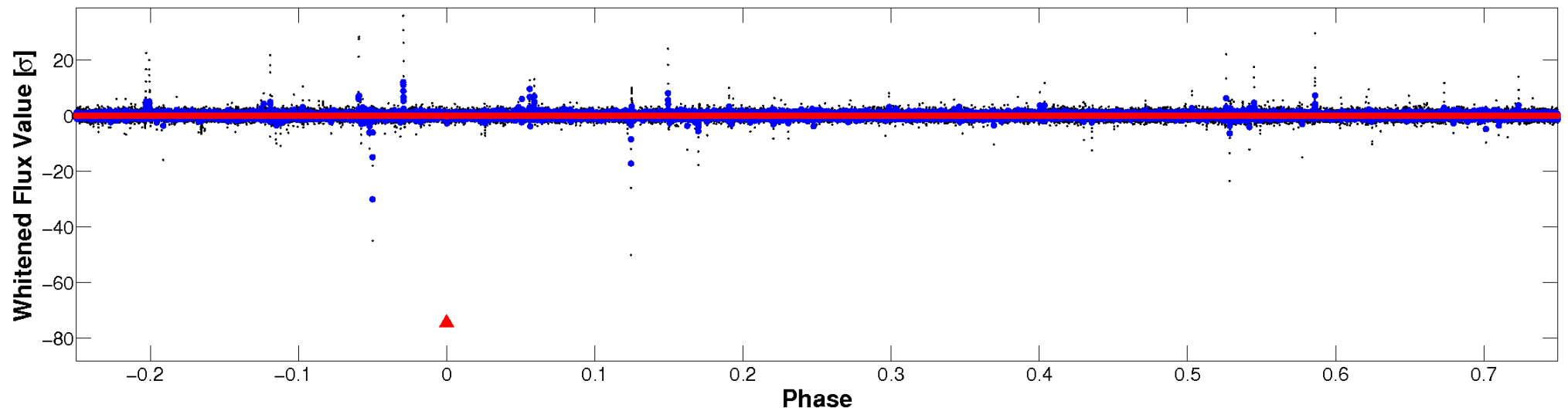


# Non-Whitened Vs. Whitened Light Curve

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

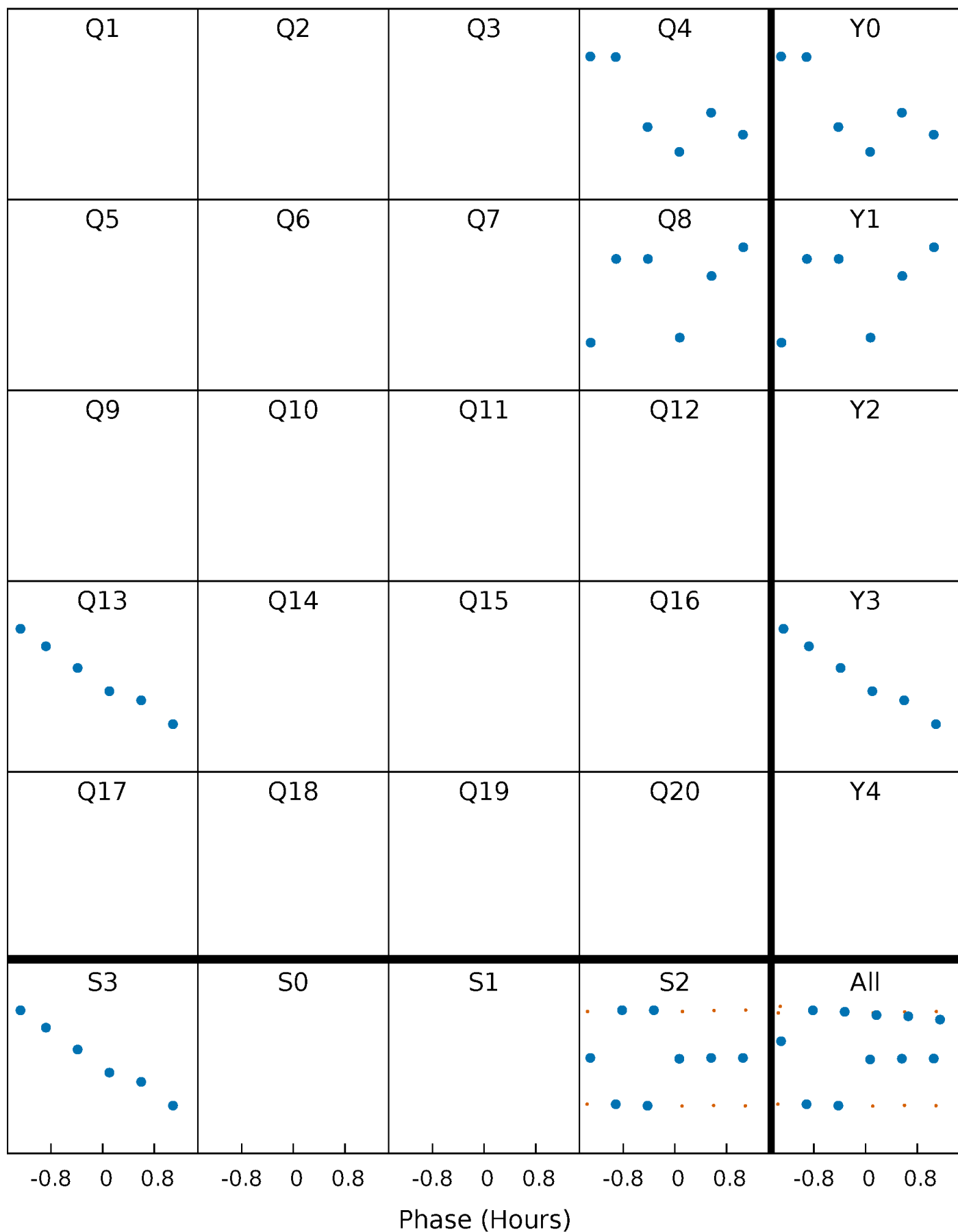


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

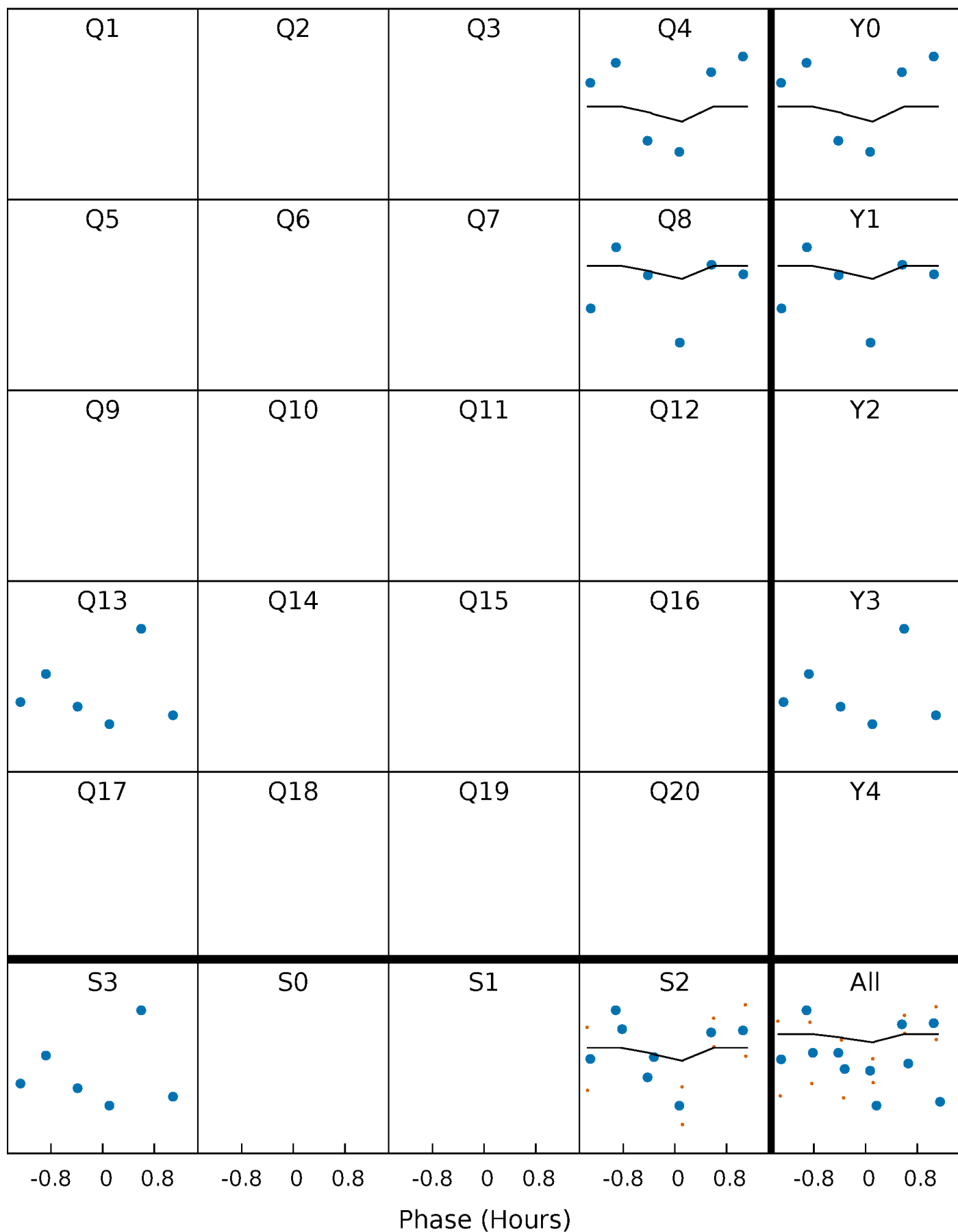
TCE 008432918-01 P=410.490165 Days  $T_0=373.786007$  (BKJD)





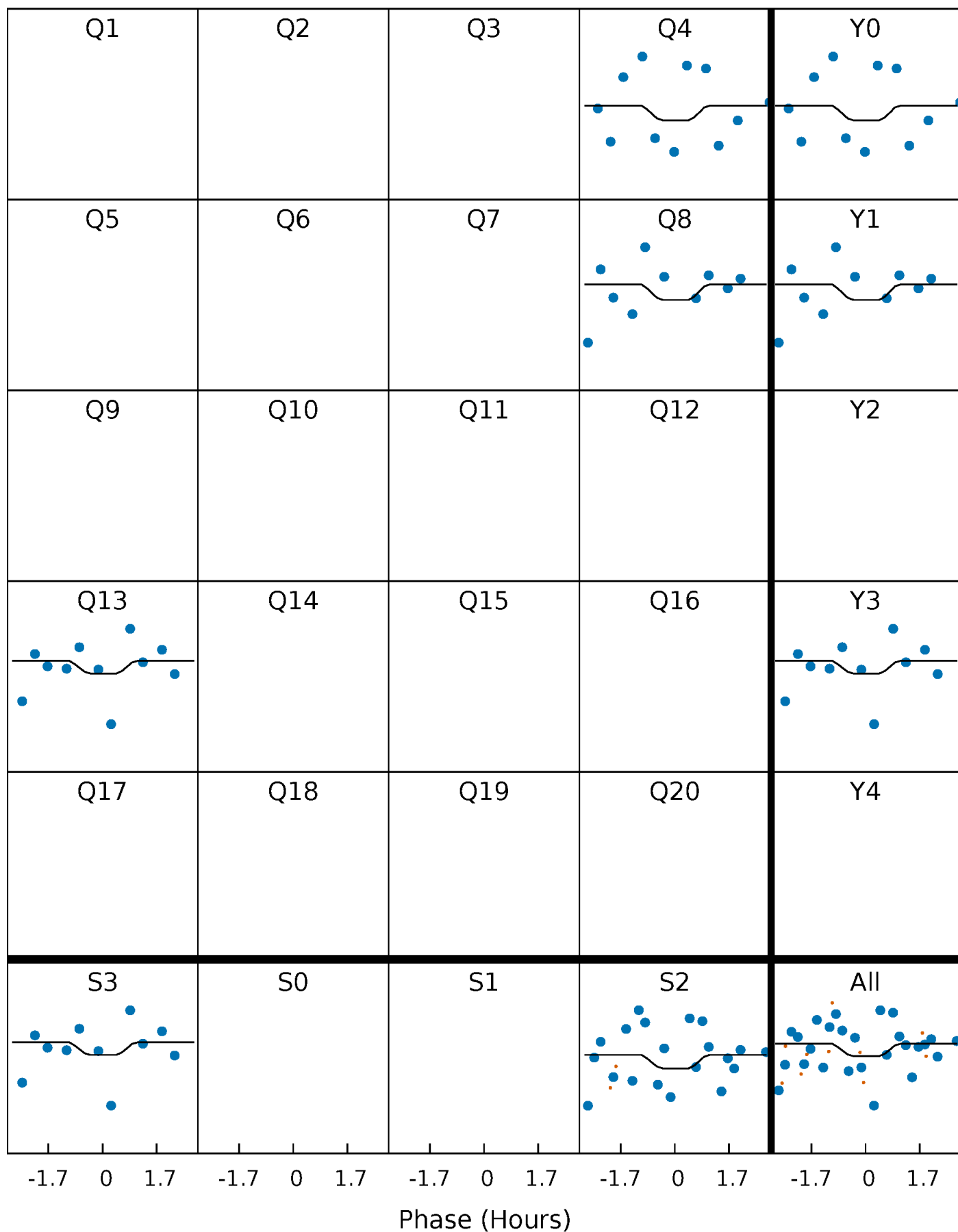
# DV Quarter-Phased Transit Curves

TCE 008432918-01 P=410.490165 Days  $T_0=373.786007$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

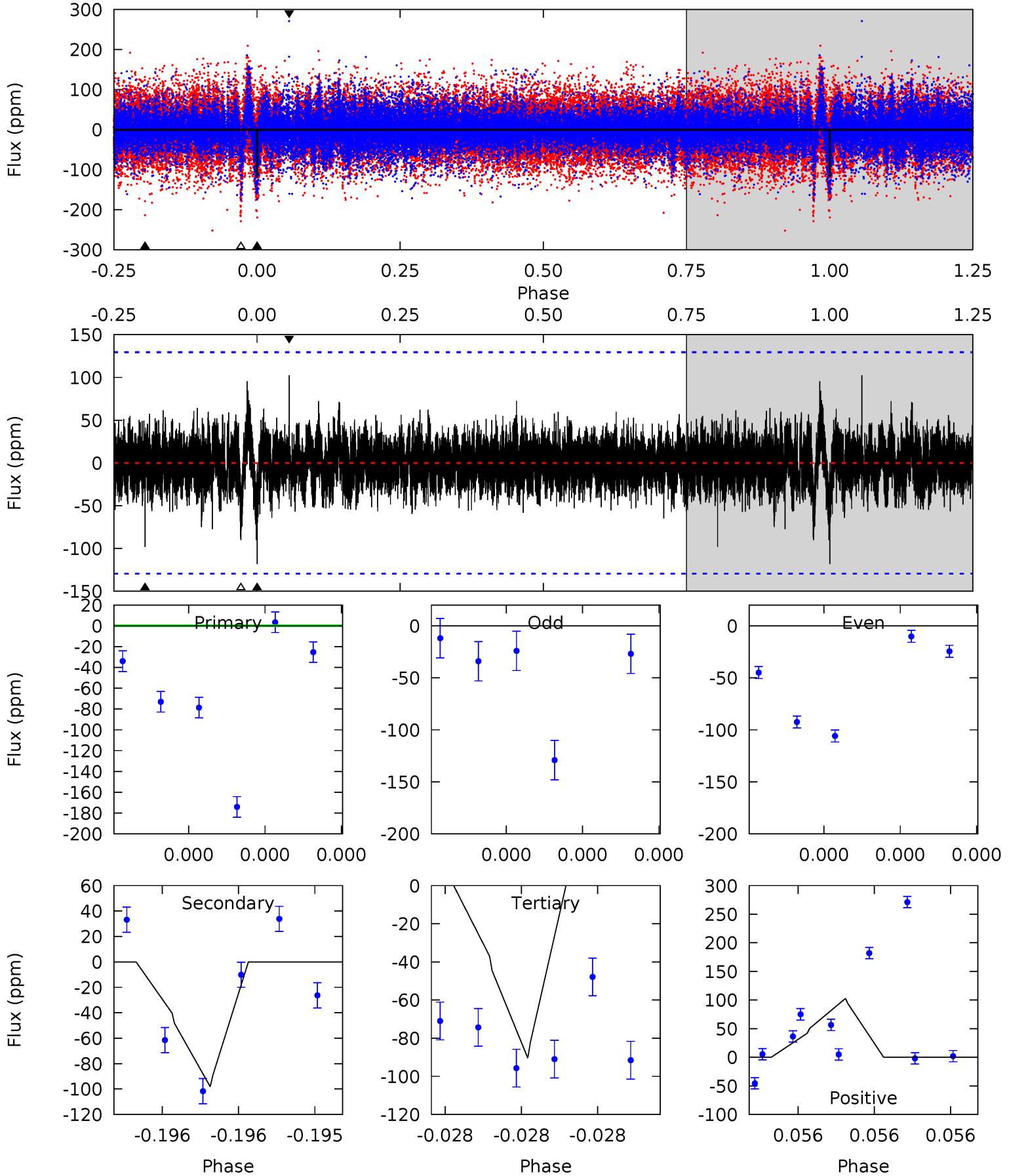
TCE 008432918-01 P=410.482976 Days  $T_0=373.793336$  (BKJD)



# DV Model-Shift Uniqueness Test

008432918-01, P = 410.490165 Days, E = 373.786007 Days

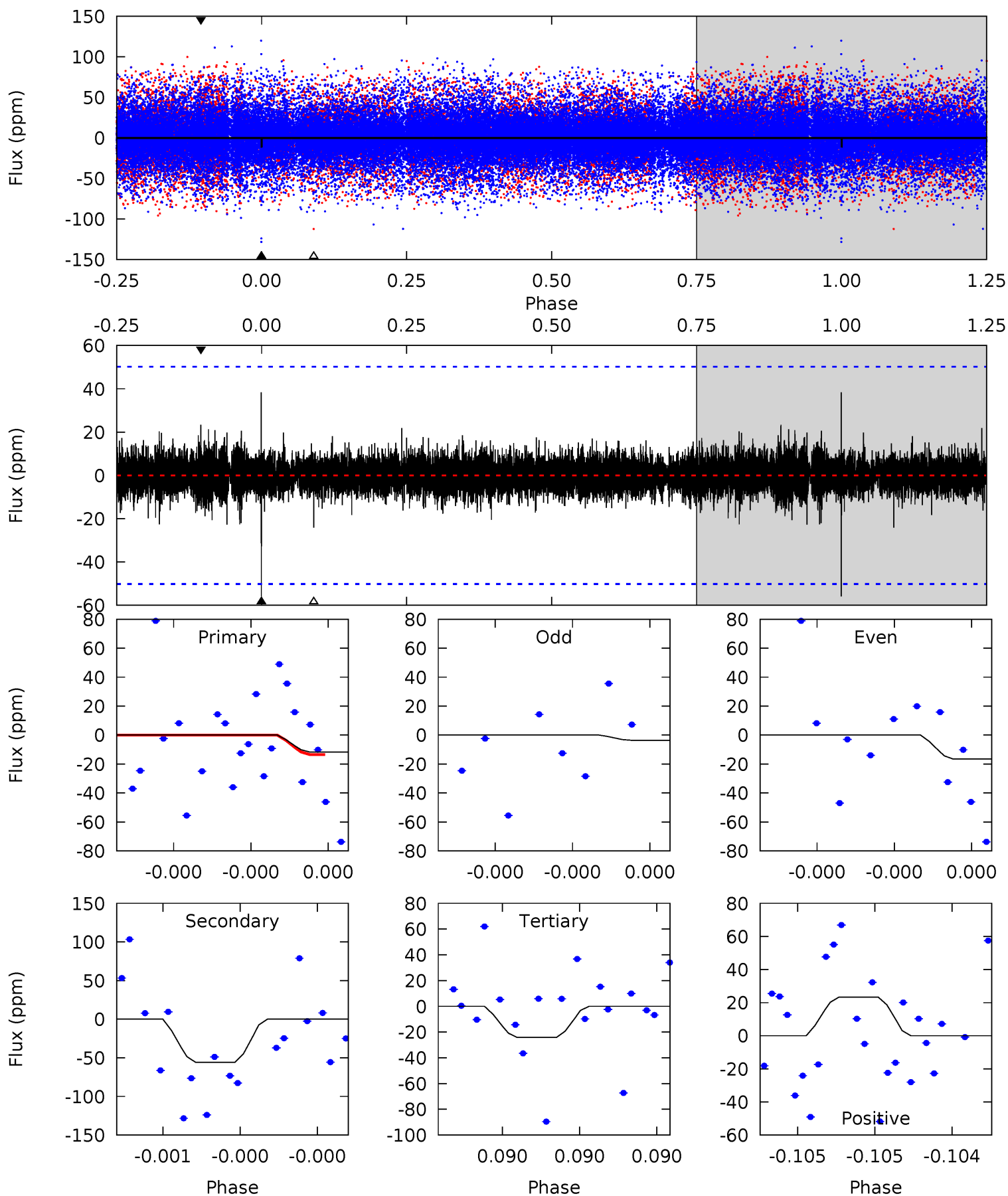
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 5.34 | 4.43 | 4.08 | 4.63 | 5.85            | 3.89            | 0.78             | 1.26    | 0.70    | 0.35    | -0.21   | 0.64    | 1.23 | 0.46  | 0.60 |



# Alt Model-Shift Uniqueness Test

008432918-01, P = 410.482976 Days, E = 373.793336 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1.35 | 6.43 | 2.78 | 2.69 | 5.77            | 3.77            | 0.53             | -1.43   | -1.34   | 3.65    | 3.74    | 0.73    | 0.94 | 0.41  | 0.73 |



### Stellar Parameters For KIC 008432918

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )         | $M(M_{\odot})$            | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|---------------------|---------------------------|----------------------------|-----------------------------|---------------------------|---|
|        | $3766^{+84}_{-103}$ | $0.751^{+0.030}_{-0.030}$ | $-0.260^{+0.200}_{-0.250}$ | $88.299^{+3.179}_{-16.953}$ | $1.603^{+0.058}_{-0.520}$ | $0.000^{+0.000}_{-0.000}$                     |
|        | +2%/-3%             | +4%/-4%                   | +77%/-96%                  | +4%/-19%                    | +4%/-32%                  | +27%/-8%                                      |
| Source | PHO54               | AST54                     | PHO54                      | DSEP                        |                           |   |

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

### Secondary Eclipse Parameters for KIC 008432918-01 / KOI

| Detrend | Depth (ppm)  | $R_p$ ( $R_{\oplus}$ )          | $T_{max}$ (K)      | $T_{obs}$ (K)       | $A_{obs}$                 |
|---------|--------------|---------------------------------|--------------------|---------------------|---------------------------|
| DV      | $-98 \pm 22$ | $3319.28^{+3312.54}_{-2242.17}$ | $1940^{+49}_{-60}$ | $-2312^{+81}_{-50}$ | $0.008^{+0.061}_{-0.006}$ |
| Alt.    | $-56 \pm 9$  | $3096.22^{+3470.42}_{-2202.41}$ | $1941^{+46}_{-58}$ | $-2315^{+78}_{-46}$ | $0.005^{+0.062}_{-0.004}$ |

$T_{max}$  = 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  $A_{obs} \gg 1.0$

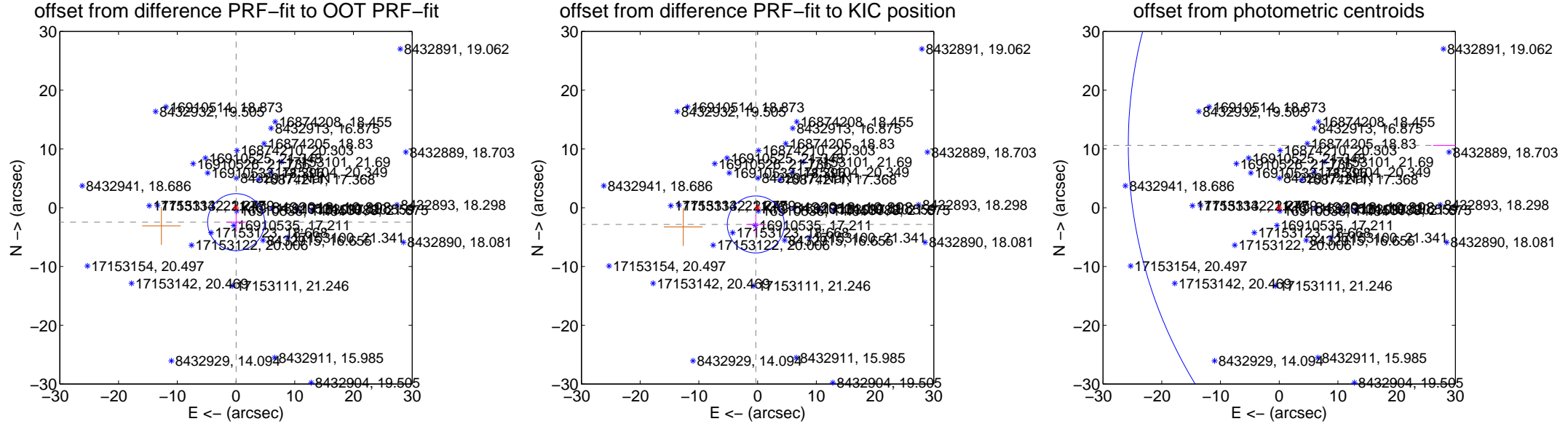
# DV Centroid Data

Supplemental centroid analysis for 008432918-01. **Kepler magnitude: 10.90.** Transit SNR 0.52

**There are 1 quarters with good PRF difference image offsets**

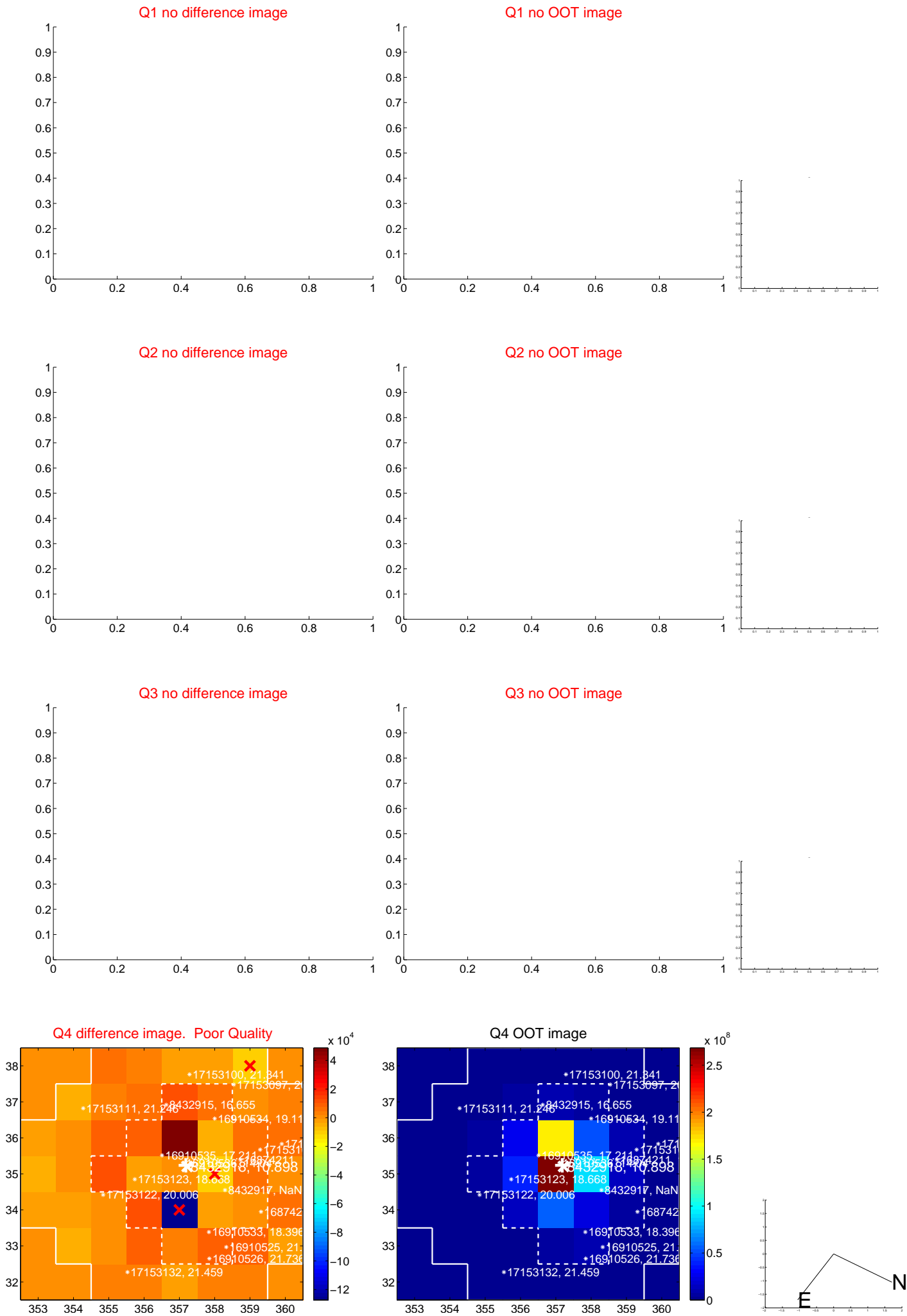
The direct PRF centroid is offset from the target star catalog position by about 0.51 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $2.461 \pm 1.616$  | 1.52                | $-0.024 \pm 1.650$ | $-2.461 \pm 1.616$ |
| PRF-fit source offset from KIC position | $2.865 \pm 1.617$  | 1.77                | $0.304 \pm 1.650$  | $-2.849 \pm 1.616$ |
| photometric centroid source offset      | $53.45 \pm 26.03$  | 2.05                | $-52.38 \pm 26.18$ | $10.61 \pm 21.91$  |

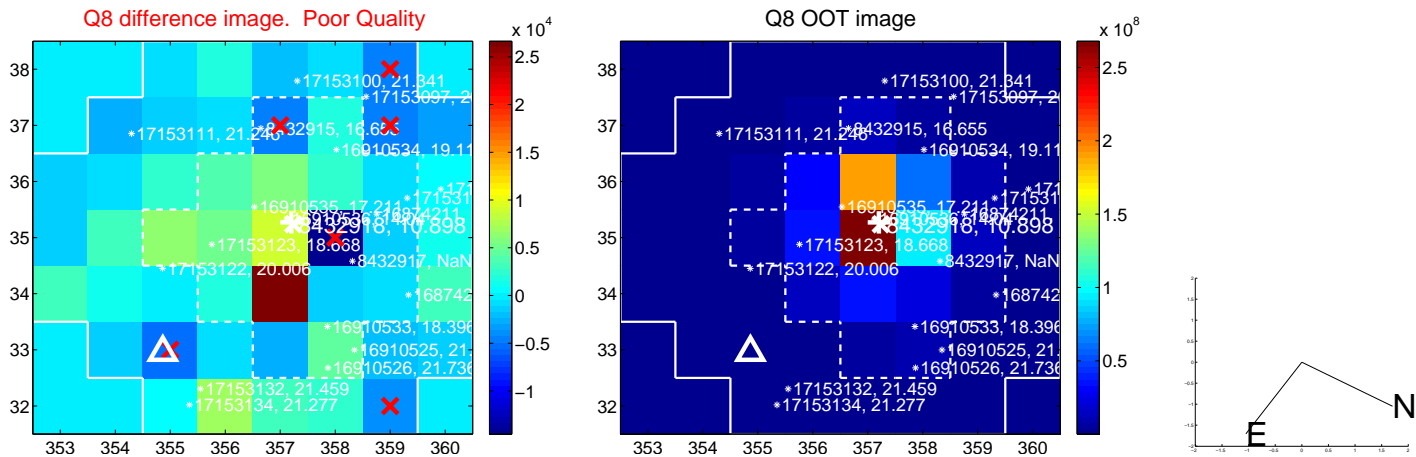
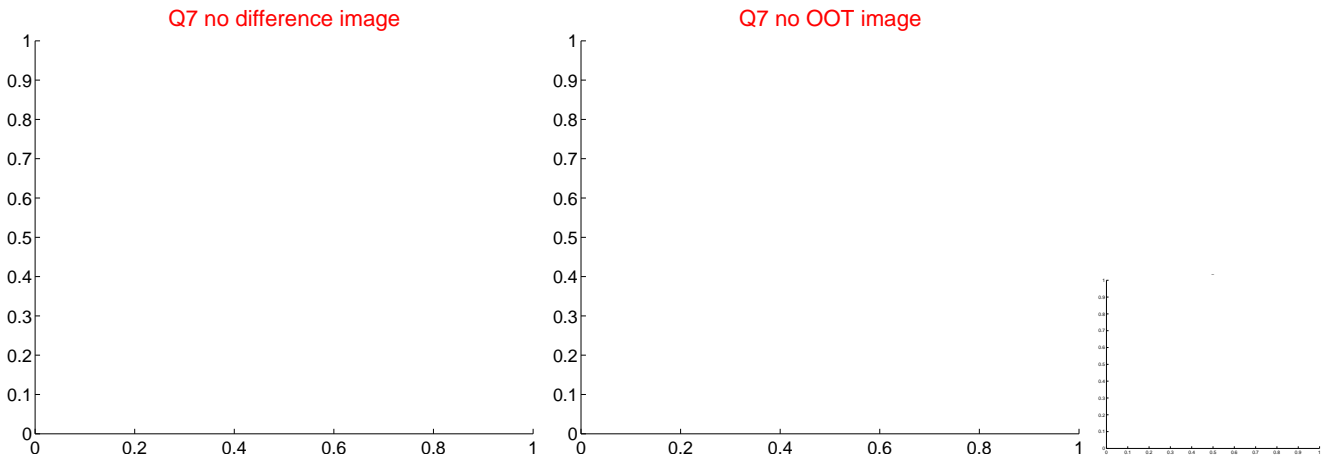
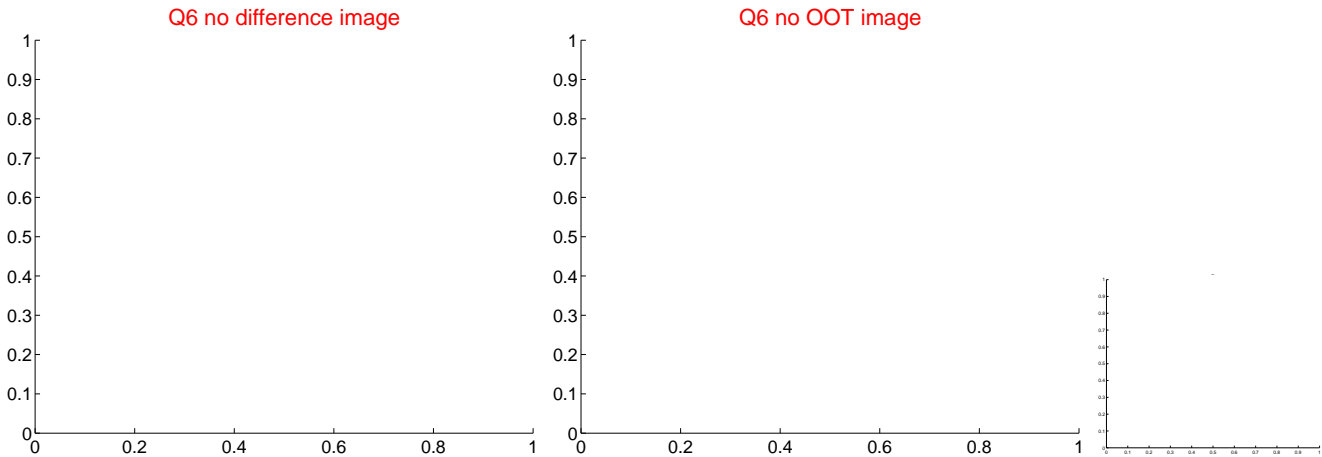
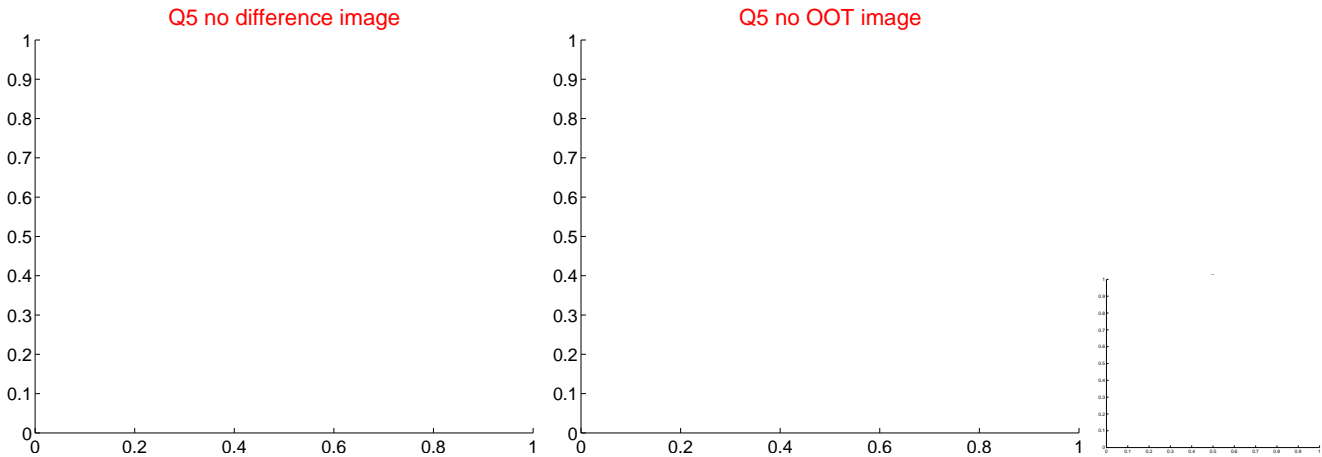


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



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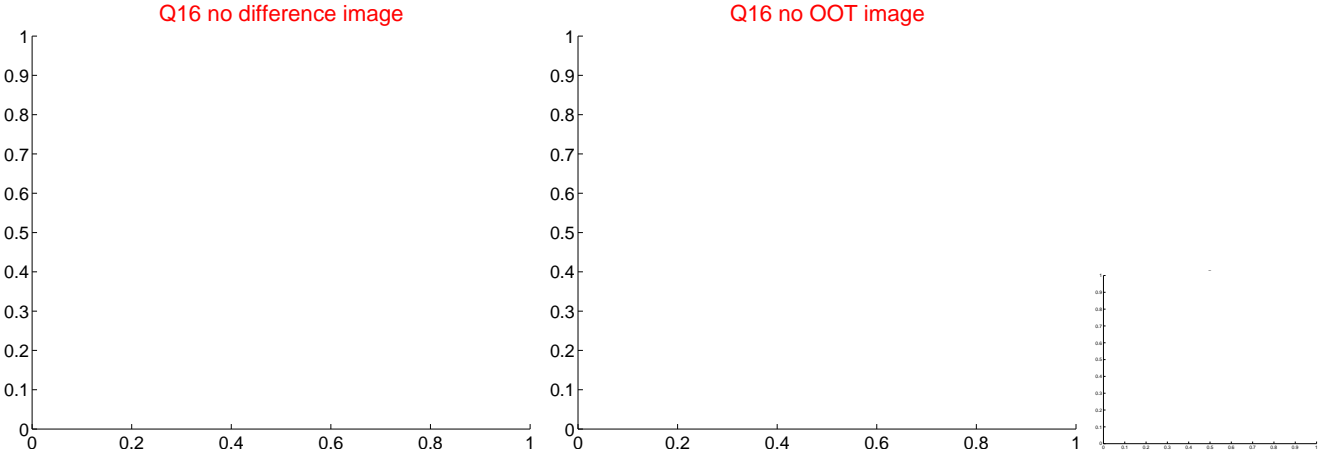
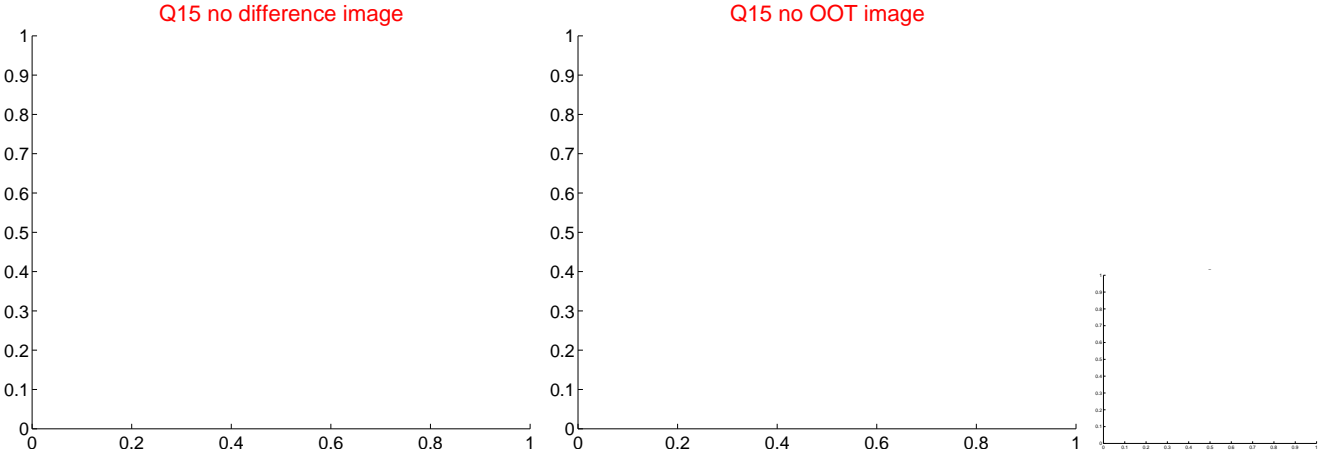
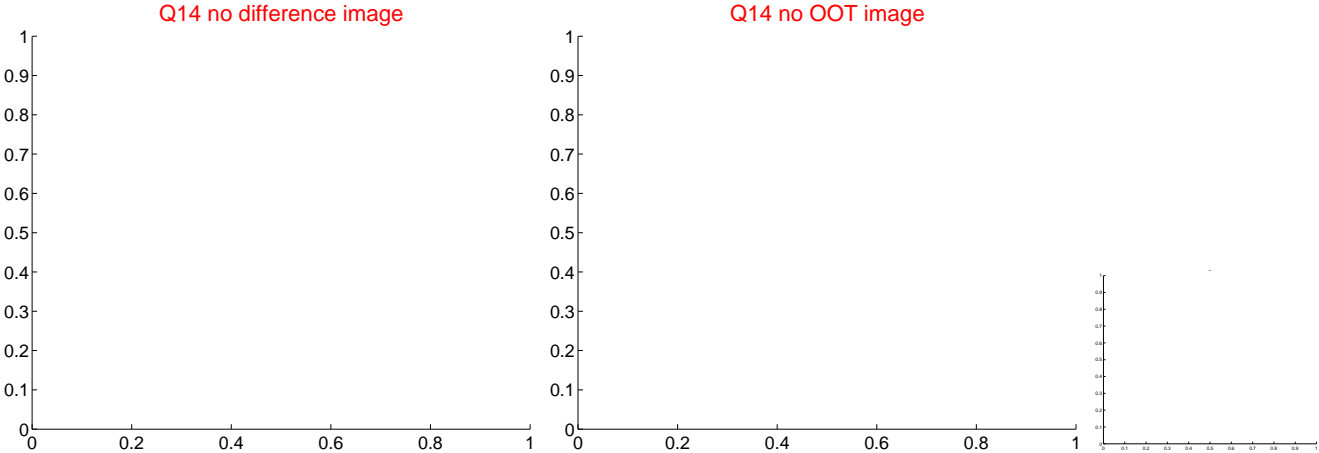
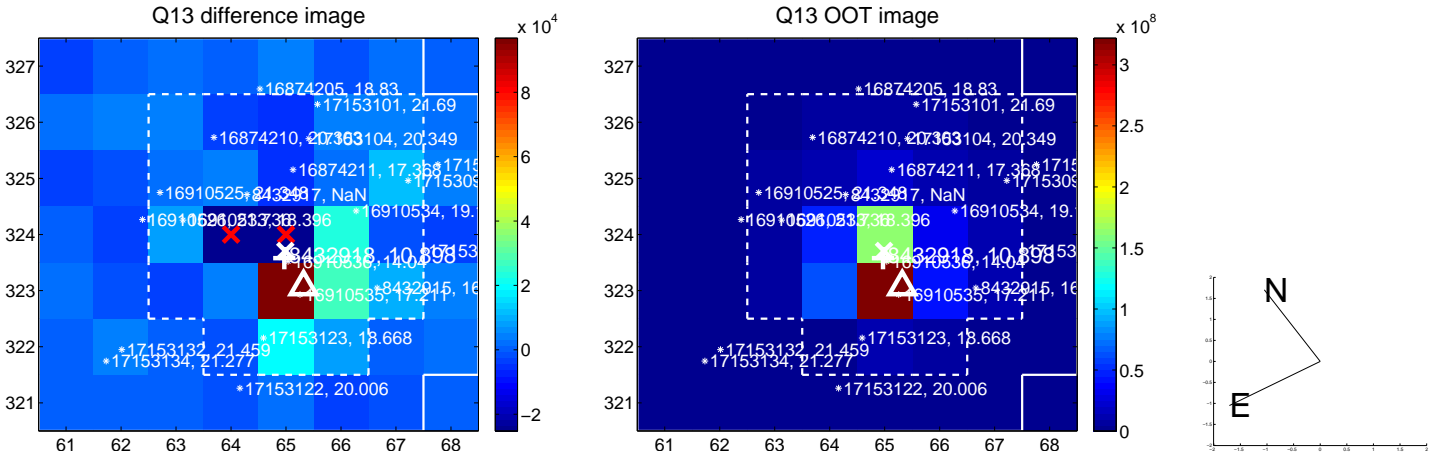




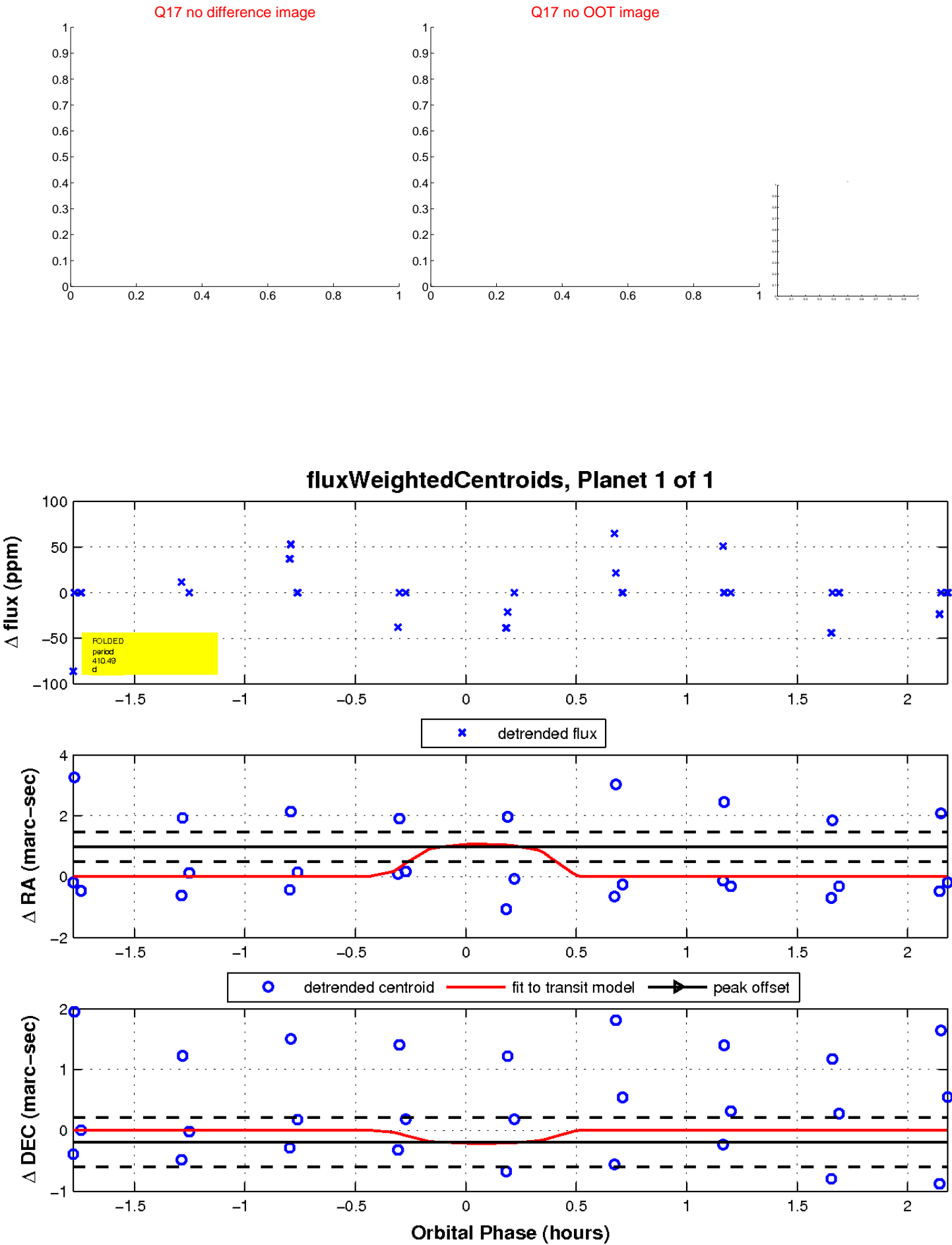
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

