

# KIC 008557371

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|------|-----------------------------|-----------------|------------------------|------------------------|
| 008557371-01 | OBS      | No   | 374.801721    | 133.246361   | 1809.9      | 76.626           | 8.6 | 15.0 | 0.78                        | 5268            | 4.27                   | 0.44                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 008557371-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 1 | INDIV_TRANS_SKYE—ALL_TRANS_CHASES—CENT_FEW_DIFFS—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.

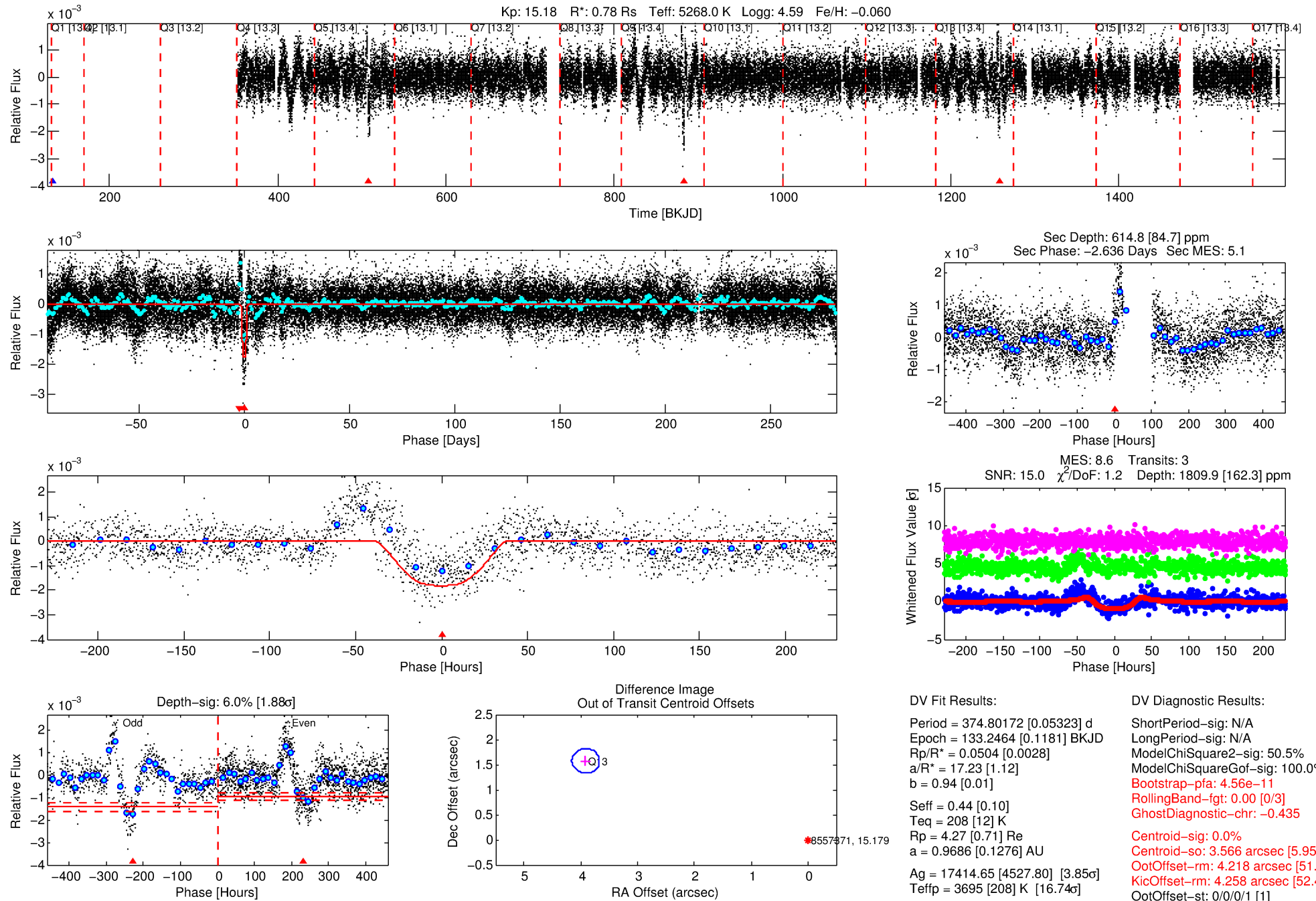
## Ephemeris Match Information For 008557371-01

| TCE (1)      | KIC     | Parent (2)   | Parent KIC | $P_1:P_2$ | Dist ( $''$ ) | $\Delta$ Row | $\Delta$ Col | $m_2$ | $m_1$ | $D_2/D_1$ | Mechanism  | Flag | $\sigma_P$ | $\sigma_T$ |
|--------------|---------|--------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 008557371-01 | 8557371 | 008557304-01 | 8557304    | 1:1       | 69.8          | -17          | -3           | 15.94 | 15.18 | 1.60      | Direct-PRF | 1    | 1.11       | 3.87       |

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

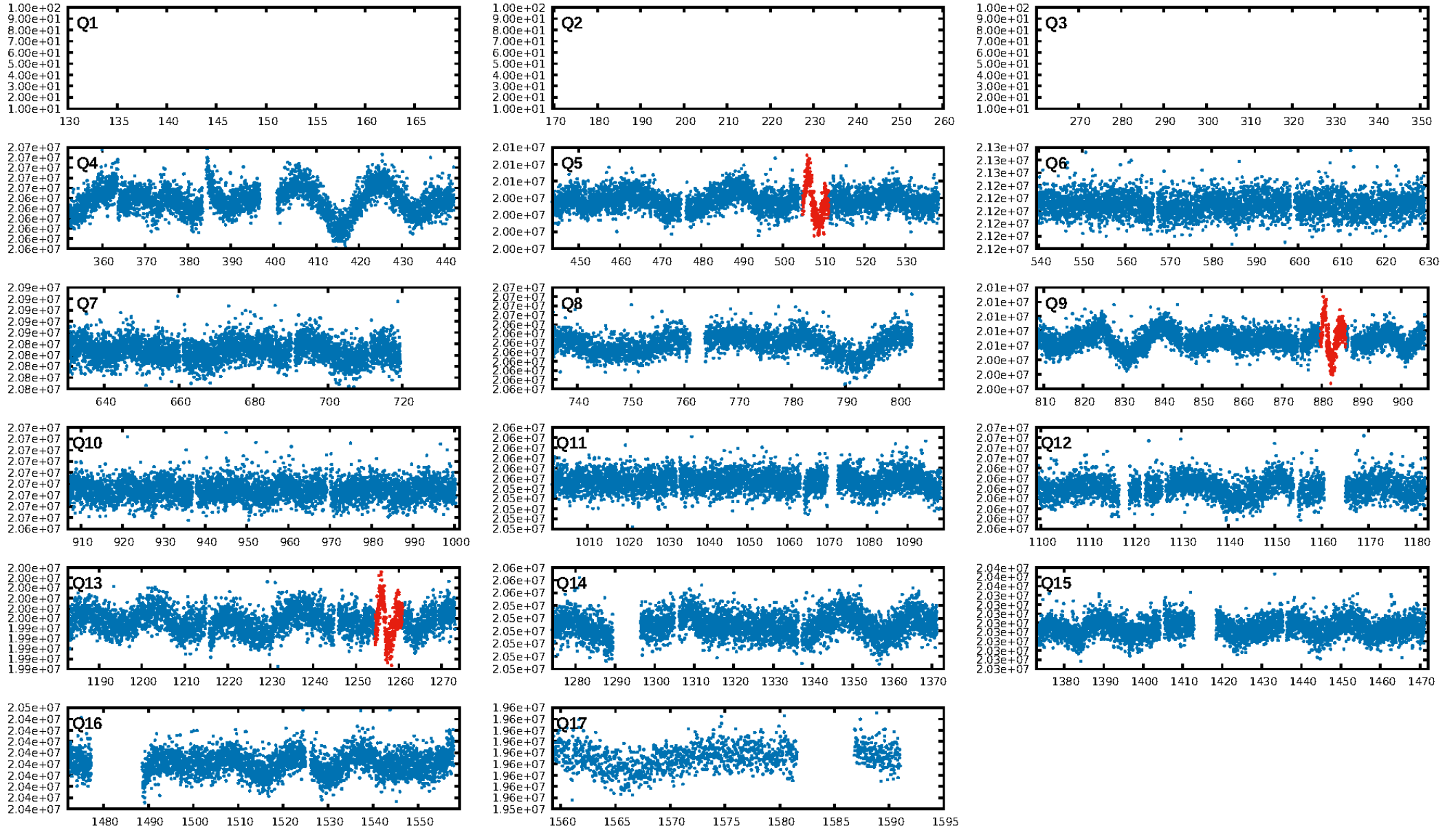
KIC: 8557371 Candidate: 1 of 1 Period: 374.802 d



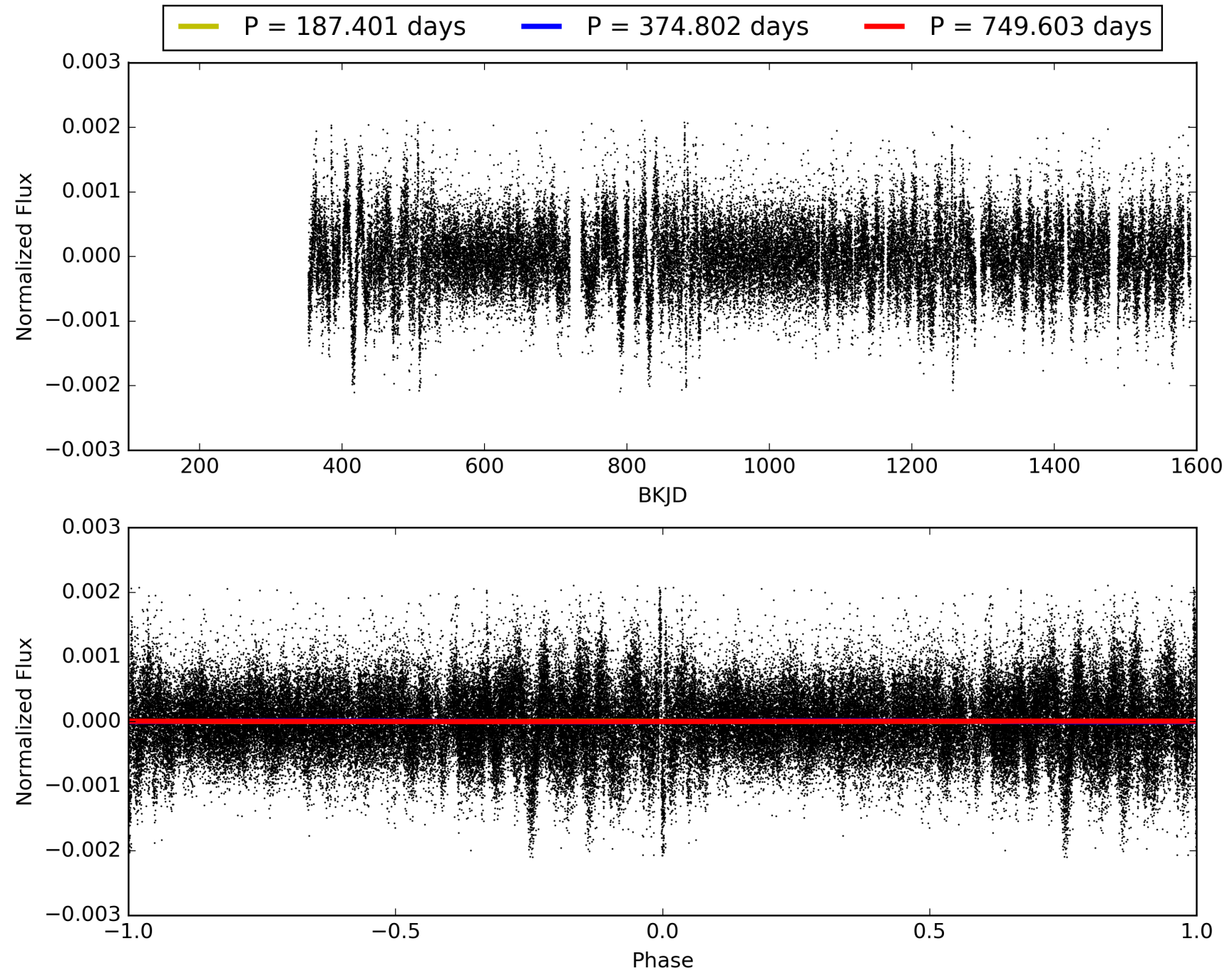
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:45:00 Z

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

# TCE 008557371-01, PDC Light Curves

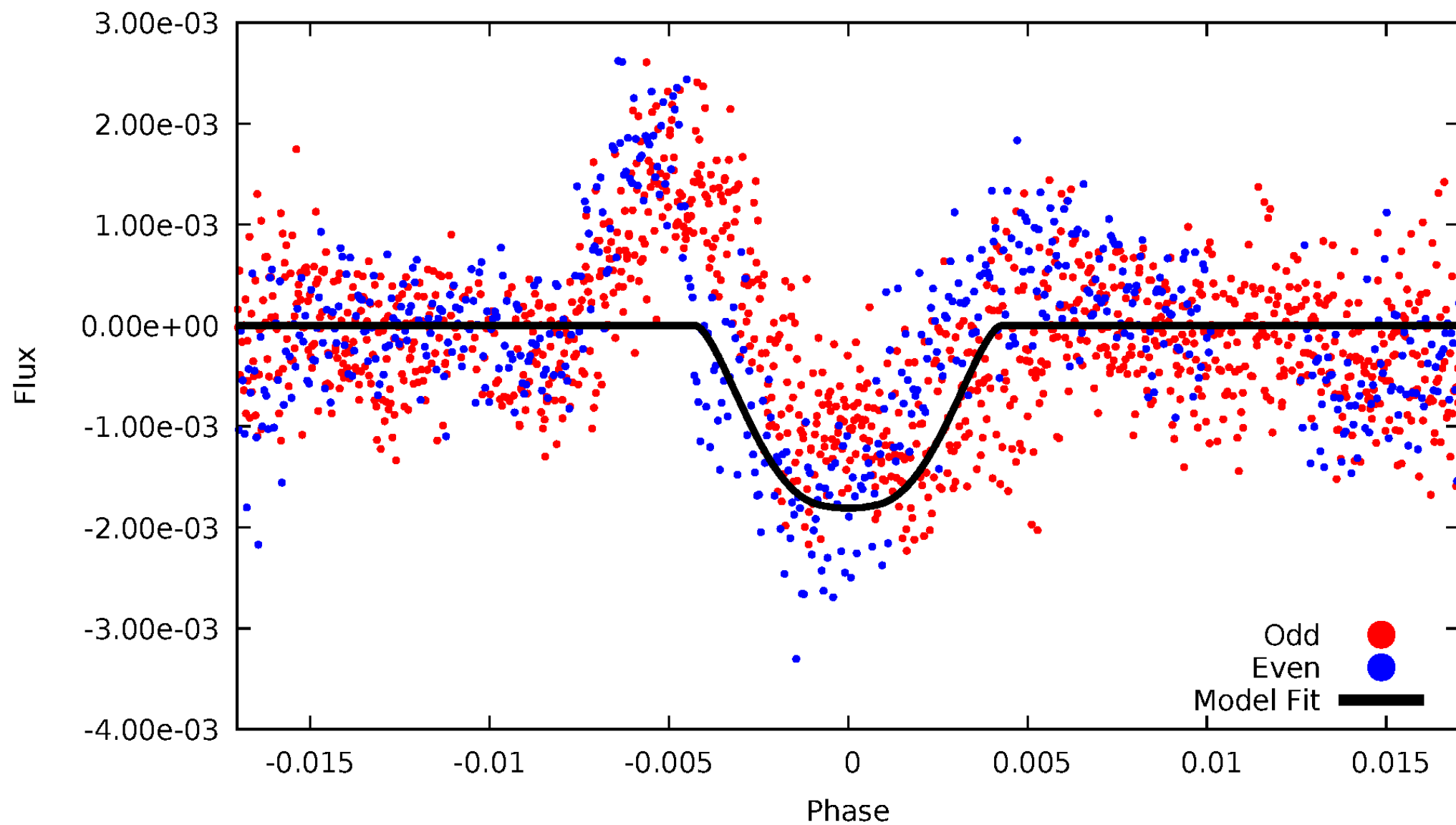


TCE 008557371-01



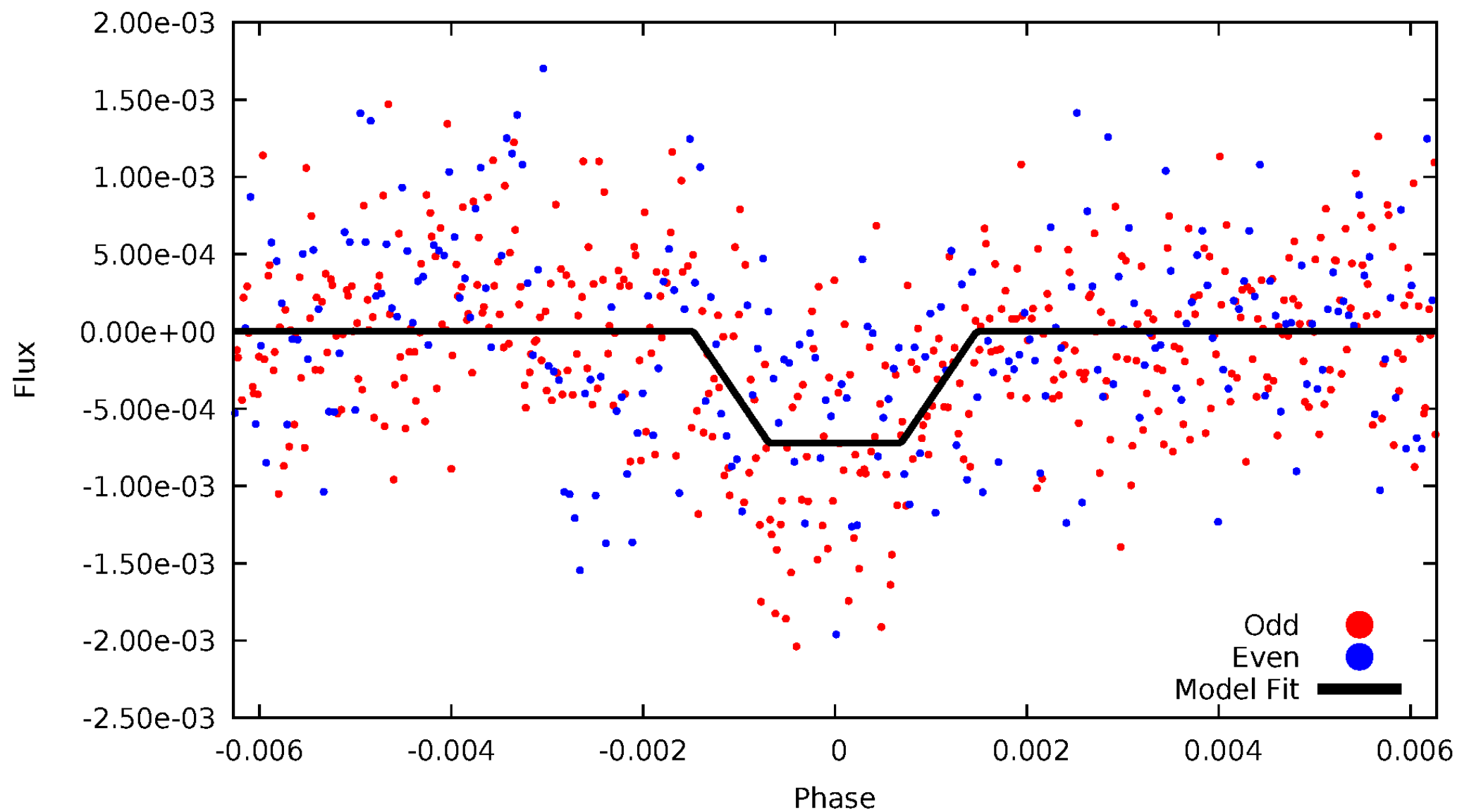
# DV Odd/Even

TCE 008557371-01



# ALT Odd/Even

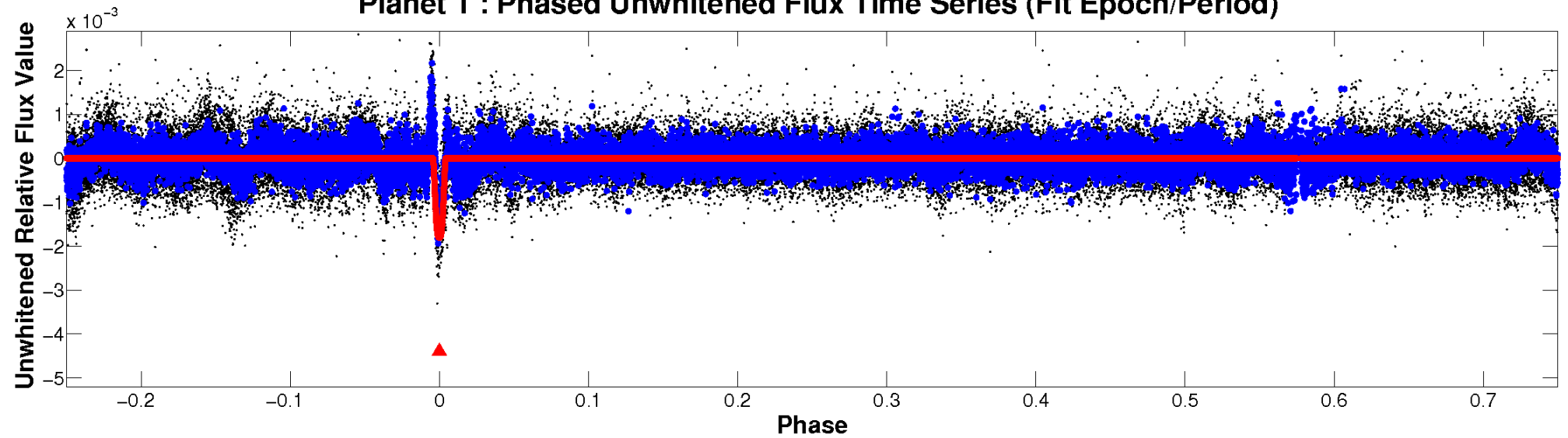
TCE 008557371-01



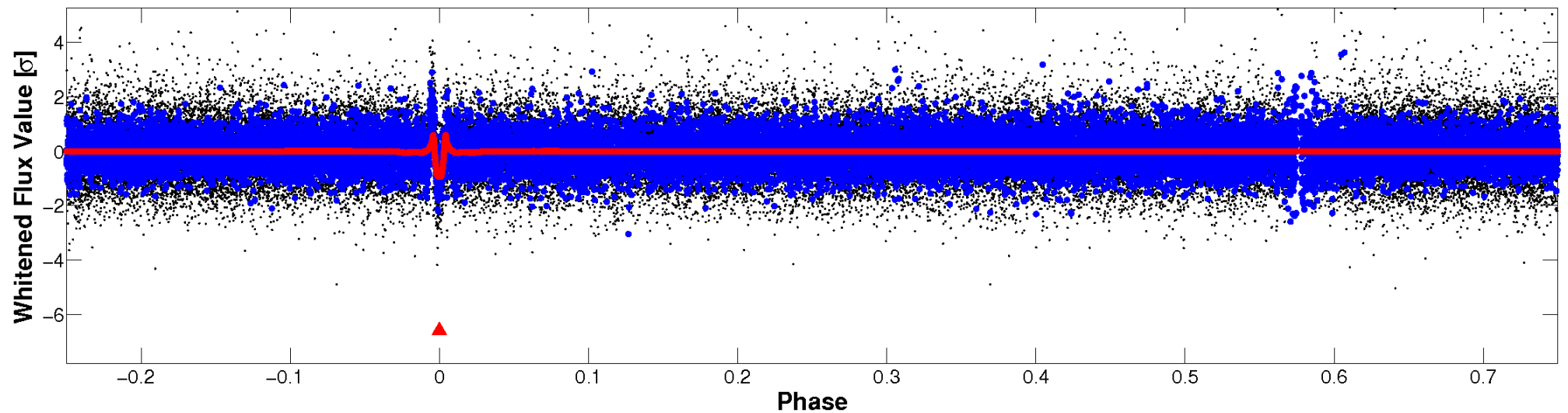


# Non-Whitened Vs. Whitened Light Curve

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

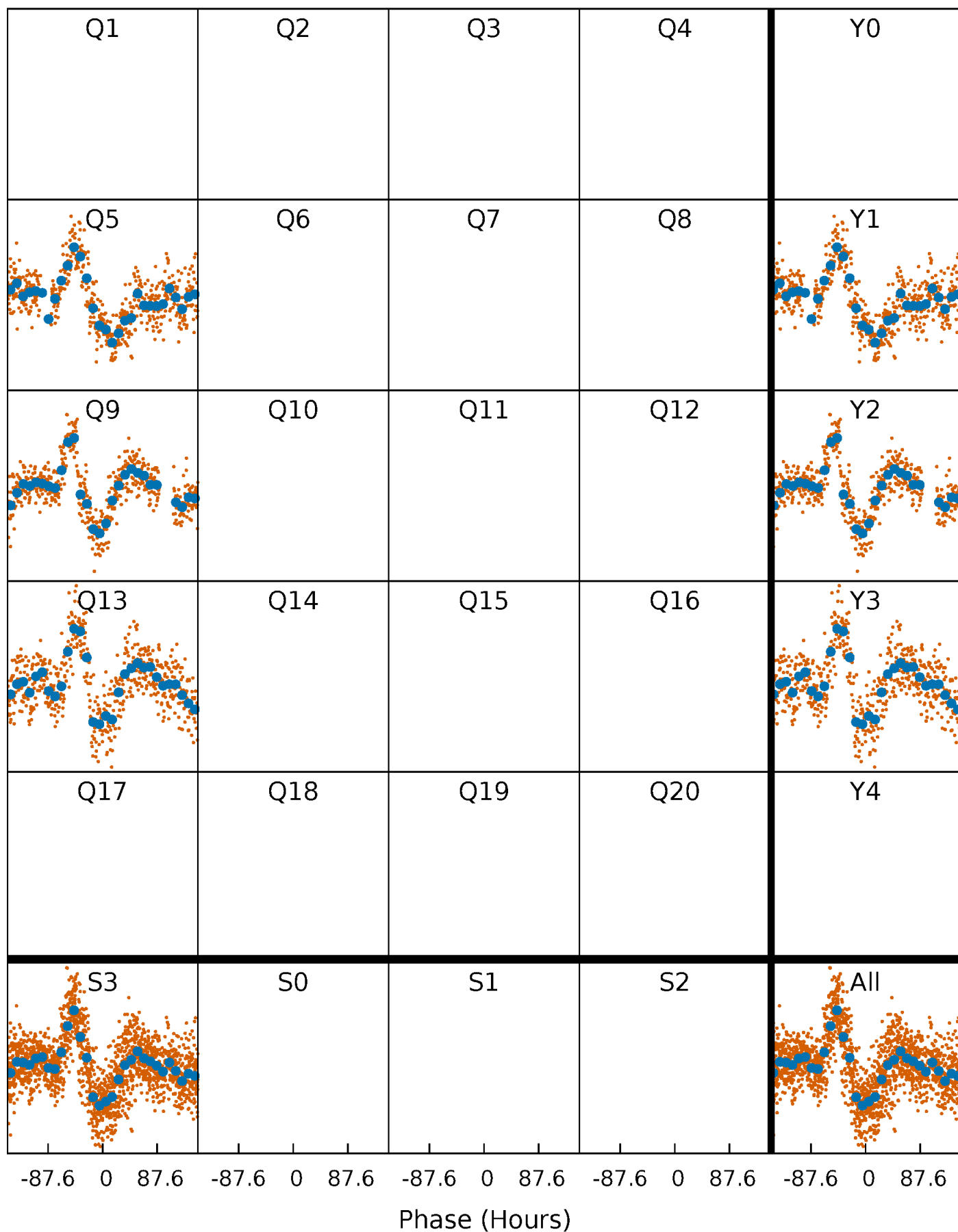


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

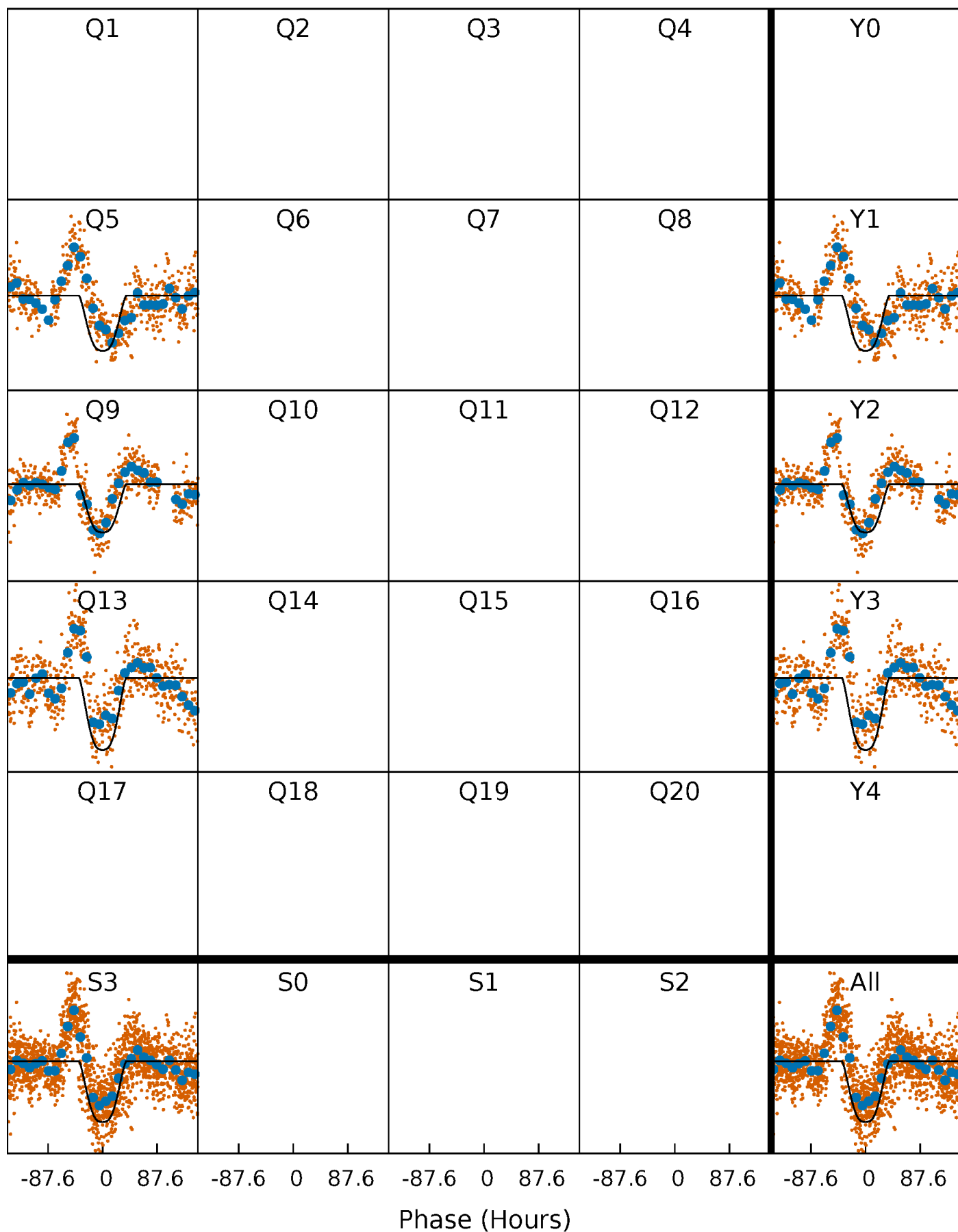
TCE 008557371-01 P=374.801721 Days  $T_0=133.246361$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 008557371-01 P=374.801721 Days  $T_0=133.246361$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

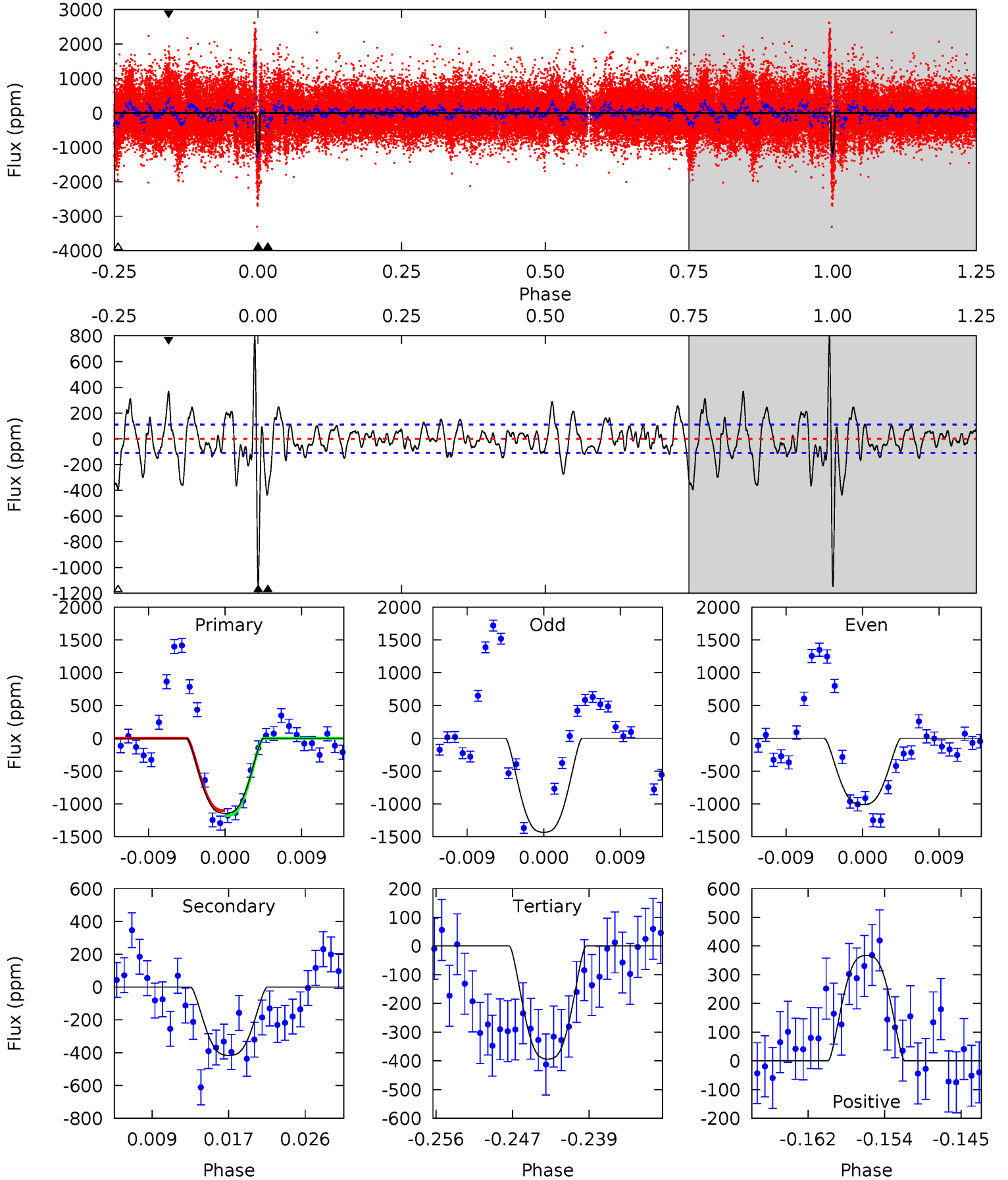
TCE 008557371-01 P=374.846847 Days  $T_0=132.605638$  (BKJD)



# DV Model-Shift Uniqueness Test

008557371-01, P = 374.801721 Days, E = 133.246361 Days

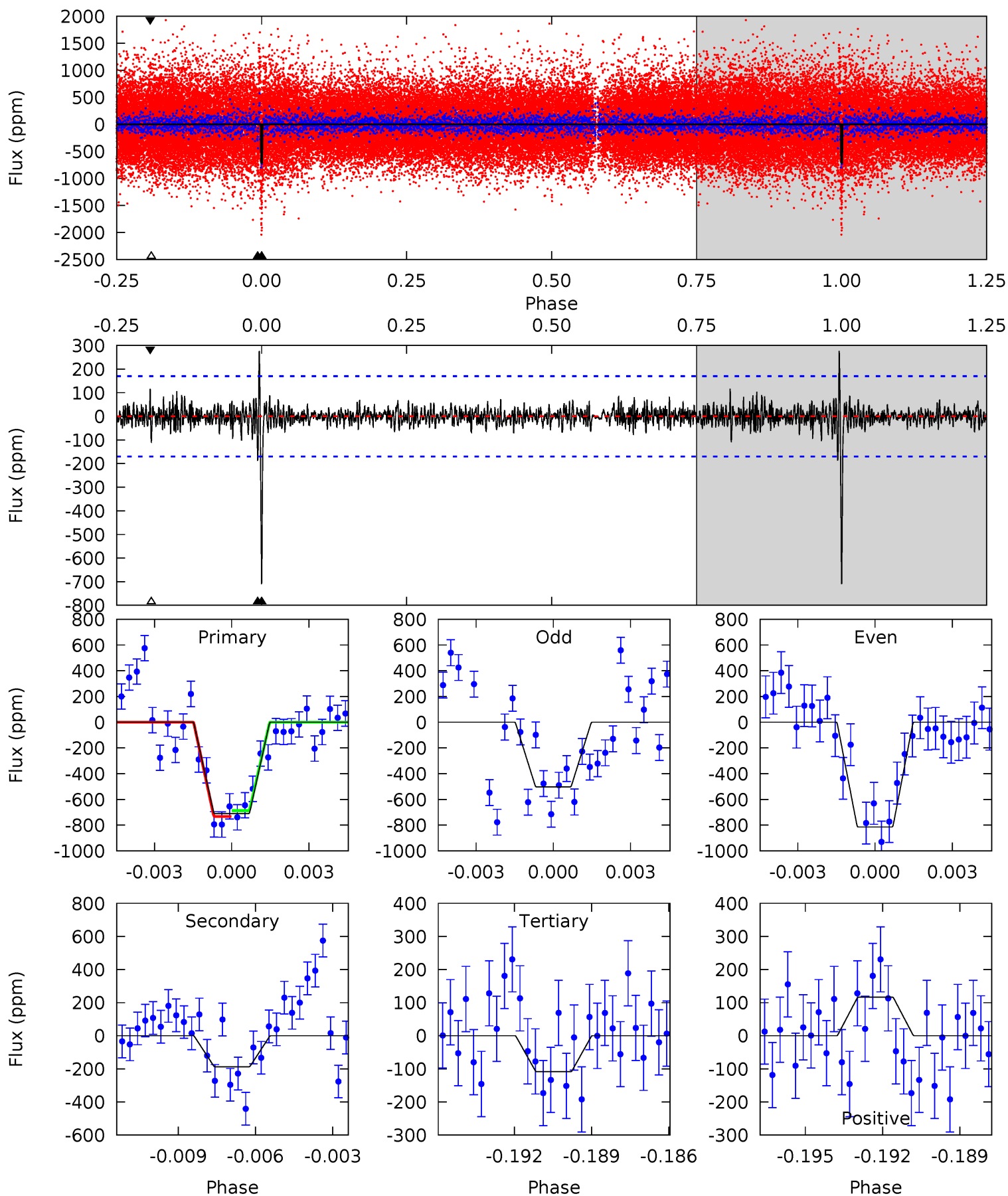
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 52.7 | 19.2 | 18.1 | 16.9 | 5.06            | 2.63            | 5.45             | 34.5    | 35.7    | 1.05    | 2.27    | 9.32    | 1.11 | 0.41  | 1.80 |



# Alt Model-Shift Uniqueness Test

008557371-01, P = 374.846847 Days, E = 132.605638 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 21.9 | 5.78 | 3.36 | 3.59 | 5.25            | 2.97            | 0.87             | 18.5    | 18.3    | 2.42    | 2.19    | 4.54    | 1.12 | 0.28  | 0.71 |



### Stellar Parameters For KIC 008557371

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5268^{+184}_{-166}$ | $4.594^{+0.032}_{-0.104}$ | $-0.060^{+0.300}_{-0.300}$ | $0.776^{+0.122}_{-0.066}$ | $0.871^{+0.069}_{-0.103}$ | $2.621^{+0.477}_{-0.849}$                 |
|        | +3%/-3%              | +1%/-2%                   | +500%/-500%                | +16%/-9%                  | +8%/-12%                  | +18%/-32%                                 |
| 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 008557371-01 / KOI

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$        |
|---------|---------------|------------------------|----------------------|----------------------|-------------------------|
| DV      | $-417 \pm 22$ | $4.36^{+0.45}_{-0.36}$ | $295^{+15}_{-12}$    | $3733^{+134}_{-119}$ | $11214^{+1997}_{-1852}$ |
| Alt.    | $-187 \pm 32$ | $2.34^{+0.29}_{-0.25}$ | $295^{+13}_{-11}$    | $4018^{+244}_{-204}$ | $17021^{+5644}_{-4027}$ |

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

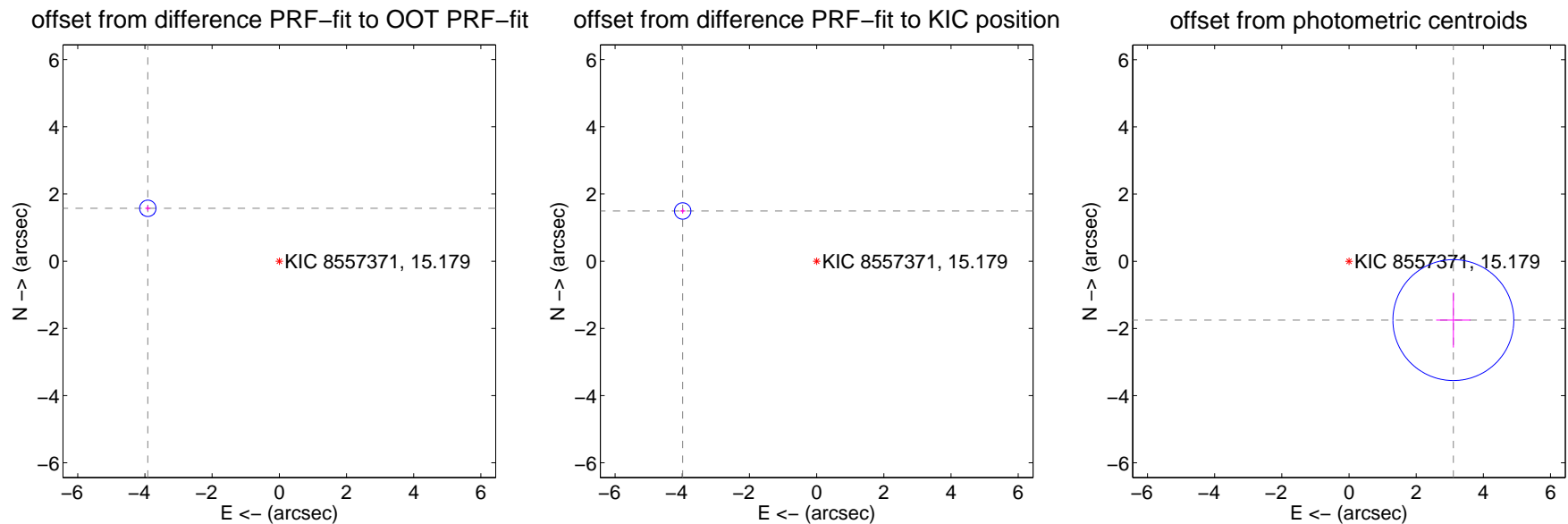
## DV Centroid Data

Supplemental centroid analysis for 008557371-01. Kepler magnitude: 15.18. Transit SNR 14.96

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $4.218 \pm 0.081$  | 51.94               | $3.913 \pm 0.082$ | $1.573 \pm 0.079$ |
| PRF-fit source offset from KIC position | $4.258 \pm 0.081$  | 52.41               | $3.987 \pm 0.082$ | $1.494 \pm 0.079$ |
| photometric centroid source offset      | $3.57 \pm 0.60$    | 5.95                | $-3.11 \pm 0.51$  | $-1.75 \pm 0.82$  |



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.





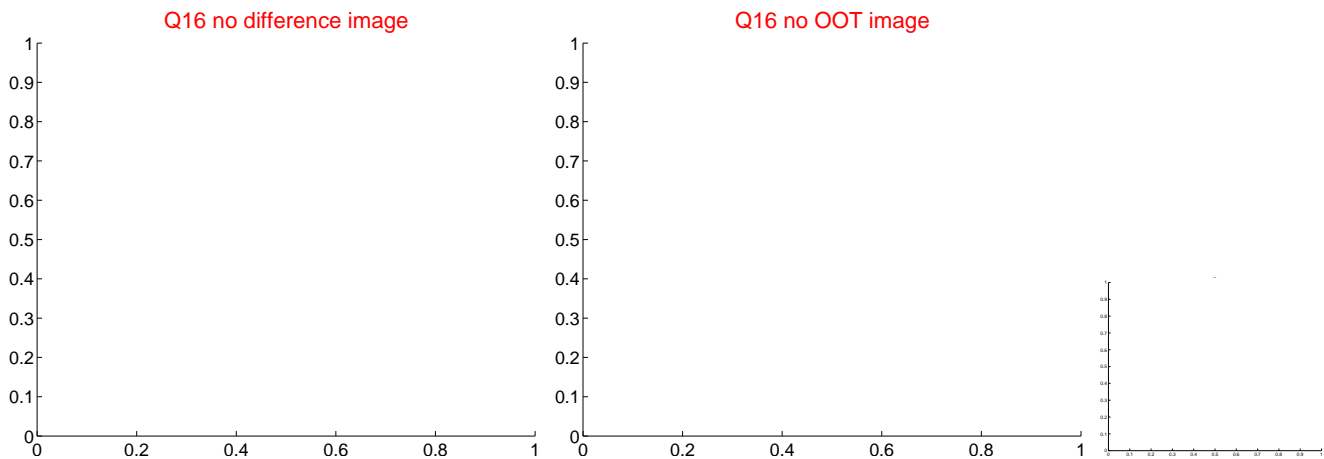
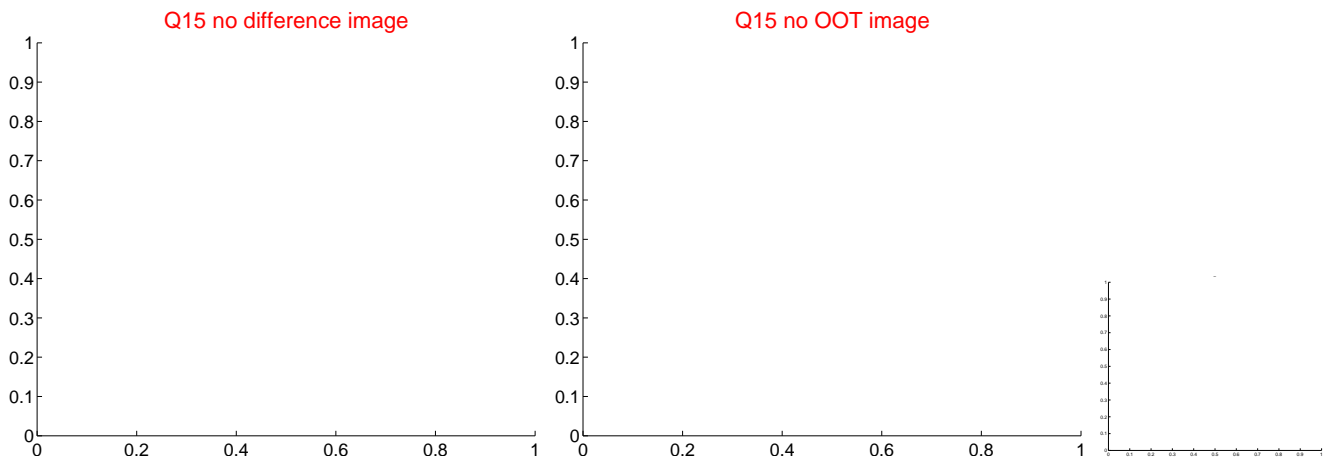
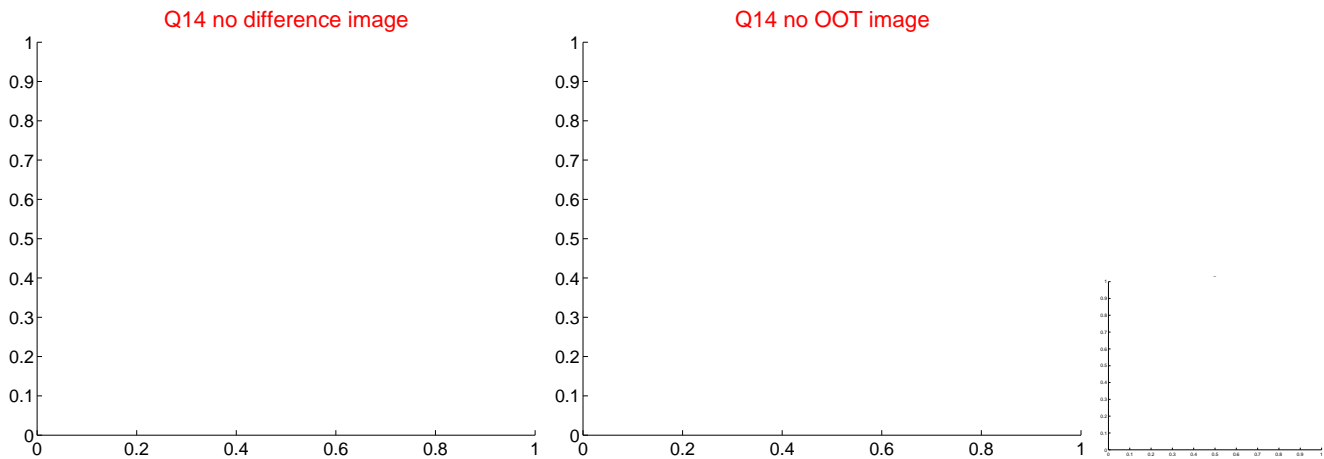
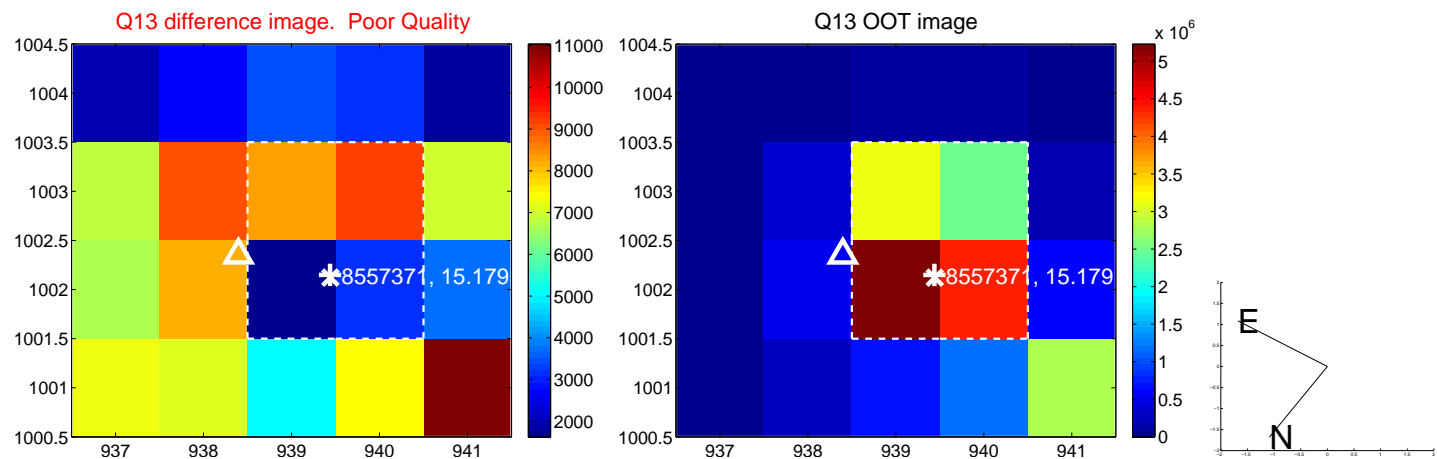
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



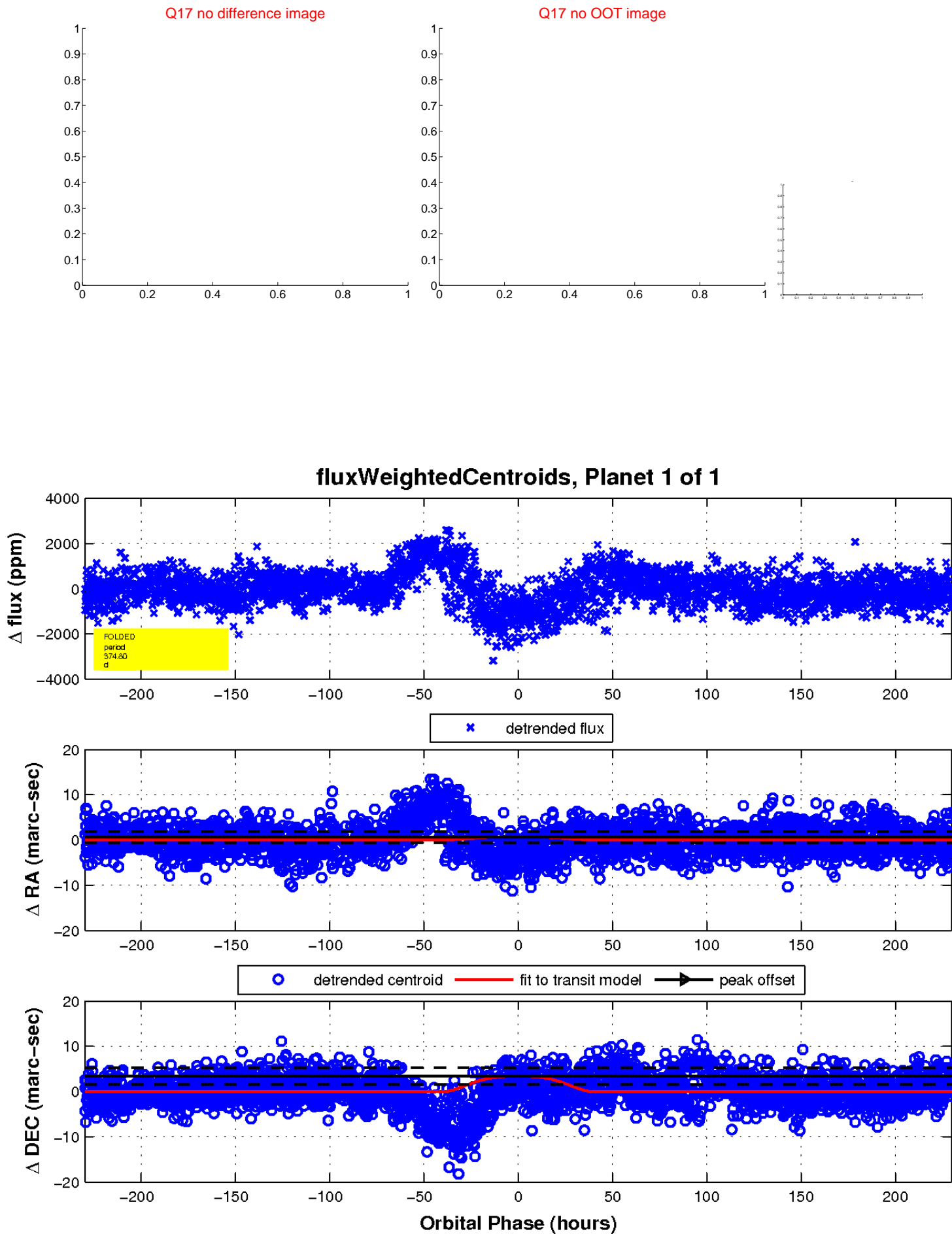
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image

Declination

