

# KIC 007973673

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007973673-01 | OBS      | No   | 537.058521    | 374.204024   | 185.0       | 7.428            | 8.1 | 8.3 | 1.52                        | 6165            | 2.36                   | 1.76                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 007973673-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

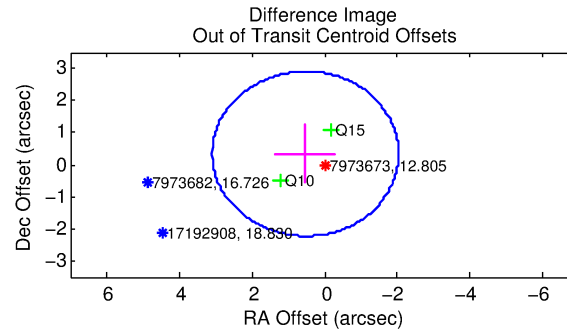
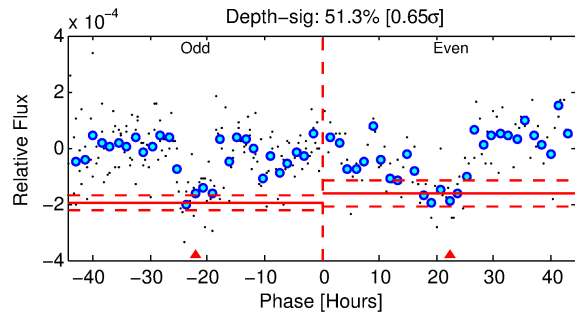
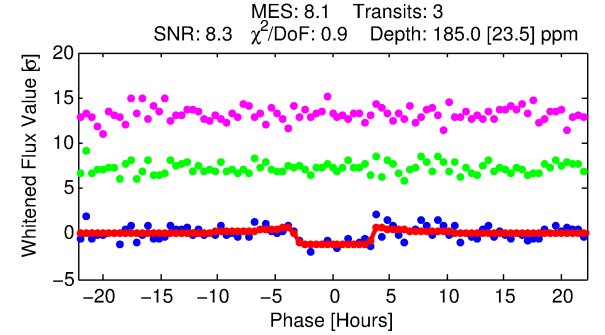
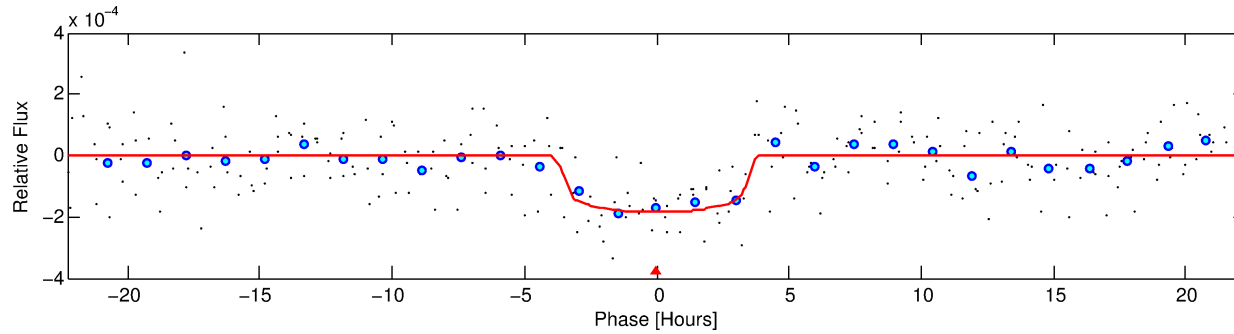
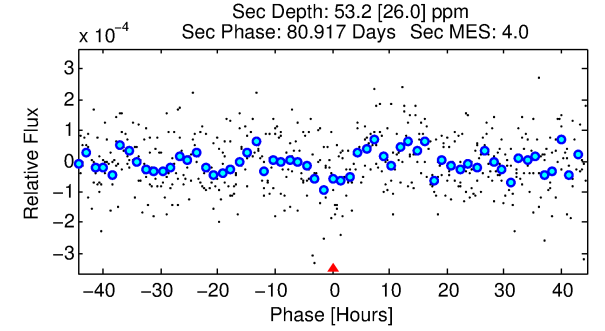
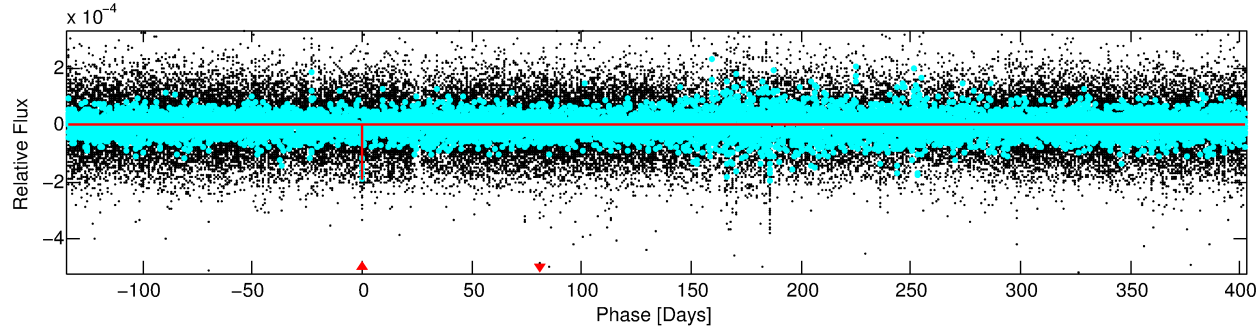
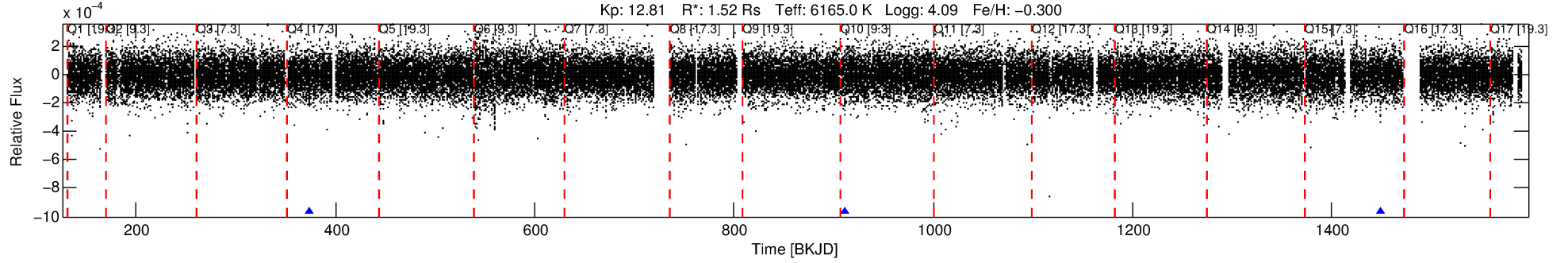
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007973673-01

No Significant Match Found

# DV One-Page Summary

KIC: 7973673 Candidate: 1 of 1 Period: 537.059 d



## DV Fit Results:

Period = 537.05852 [0.00762] d  
Epoch = 374.2040 [0.0099] BKJD  
Rp/R\* = 0.0142 [0.0039]  
a/R\* = 294.91 [420.97]  
b = 0.86 [0.43]  
Seff = 1.76 [0.96]  
Teq = 294 [40] K  
Rp = 2.36 [1.02] Re  
a = 1.3056 [0.4242] AU  
Ag = 8948.21 [8122.17] [1.10σ]  
Teffp = 4414 [831] K [4.96σ]

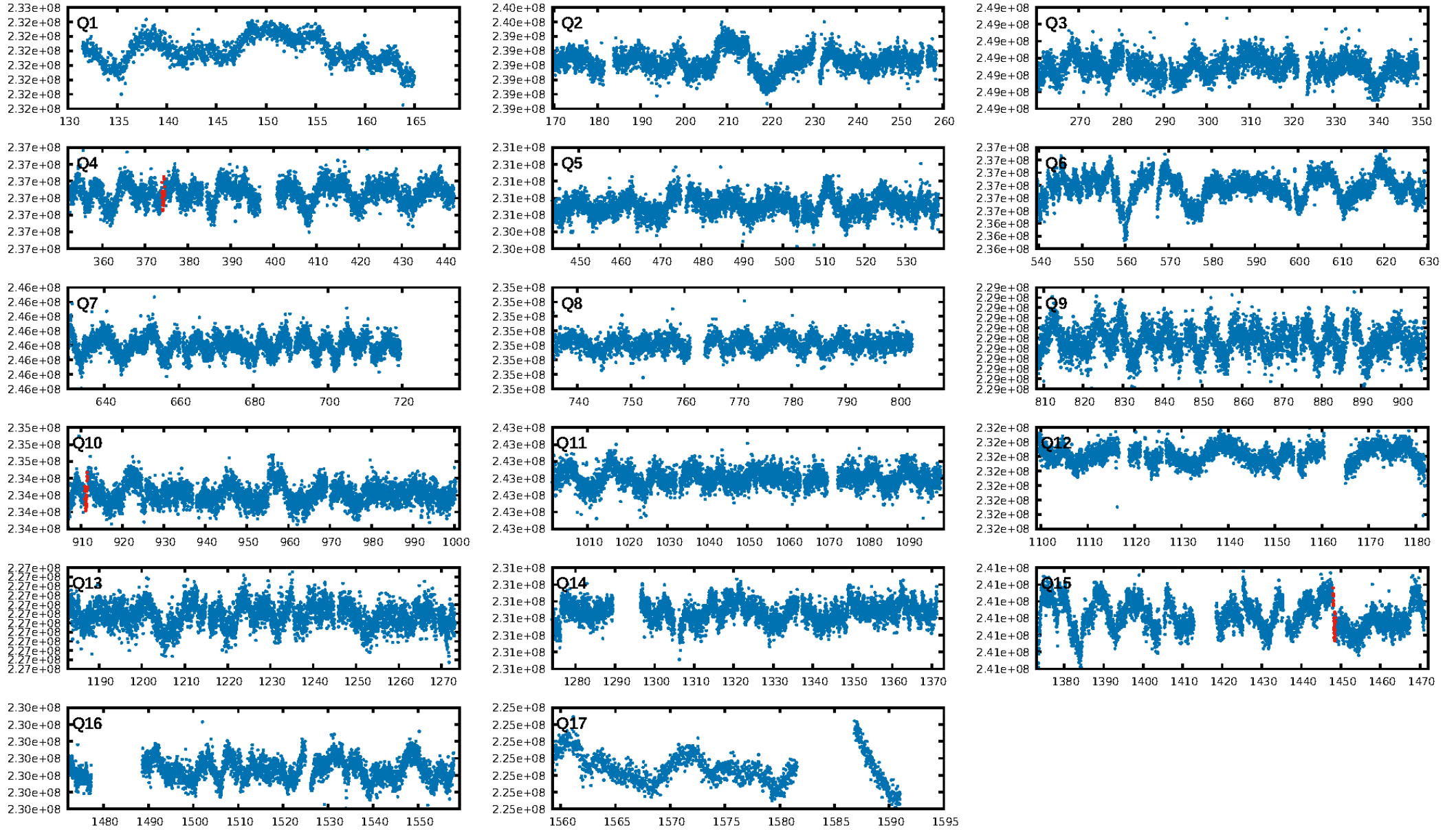
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 13.5%  
ModelChiSquareGof-sig: 98.6%  
**Bootstrap-pfa: 4.50e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.013  
Centroid-sig: 14.8%  
Centroid-so: 1.123 arcsec [0.96σ]  
OotOffset-rm: 0.628 arcsec [0.73σ]  
KicOffset-rm: 0.572 arcsec [0.66σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

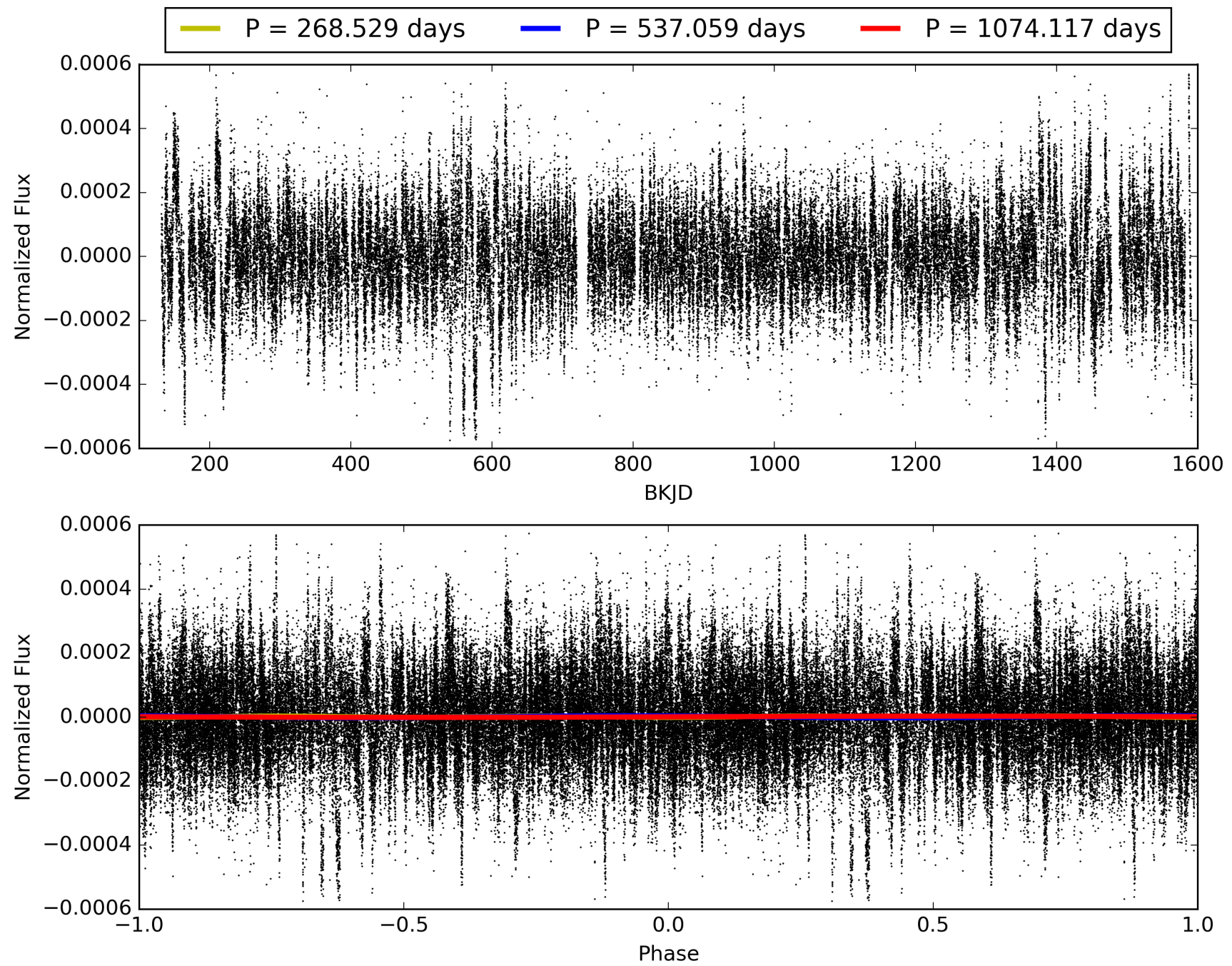
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:28:30 Z

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

# TCE 007973673-01, PDC Light Curves

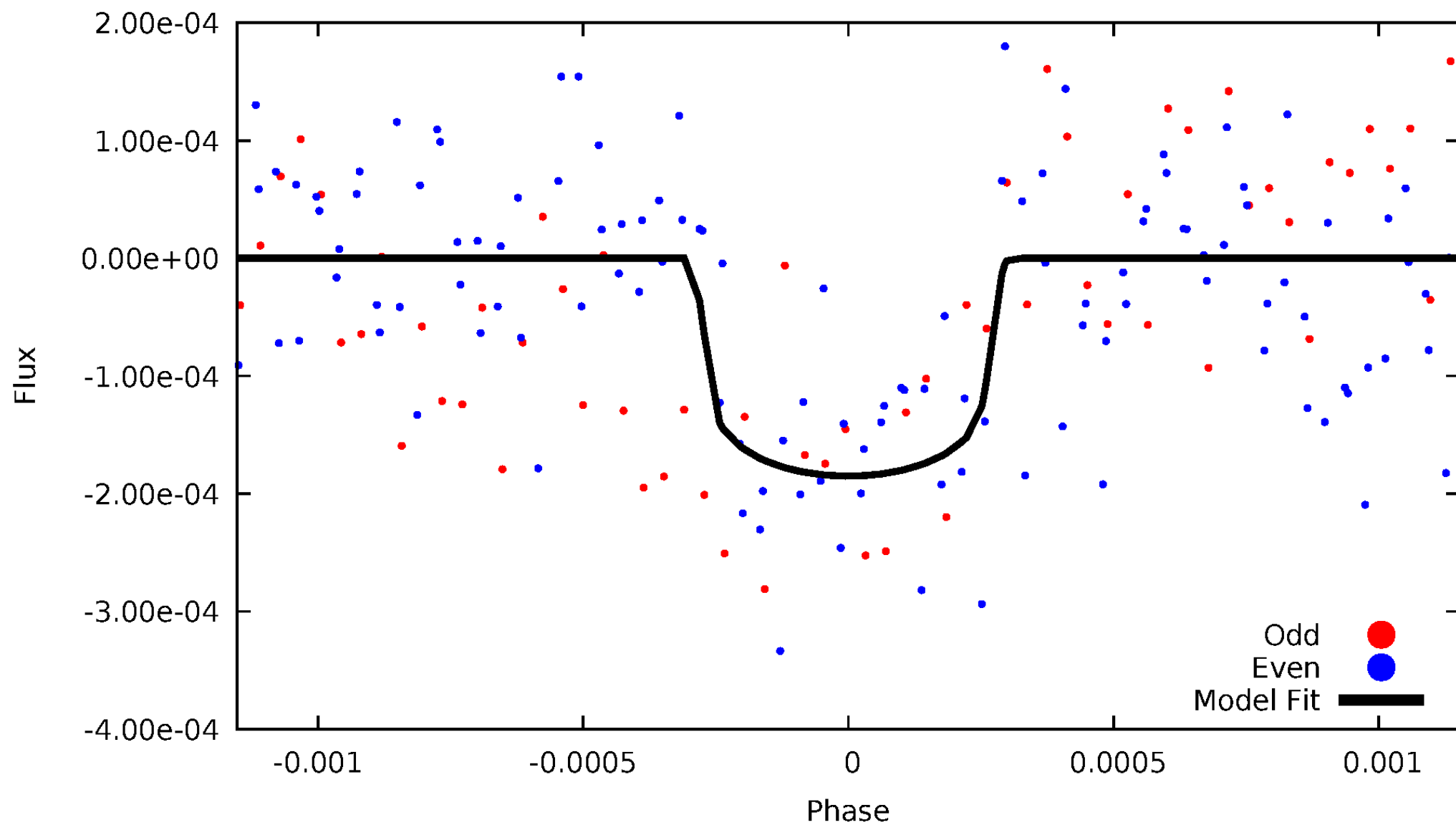


TCE 007973673-01



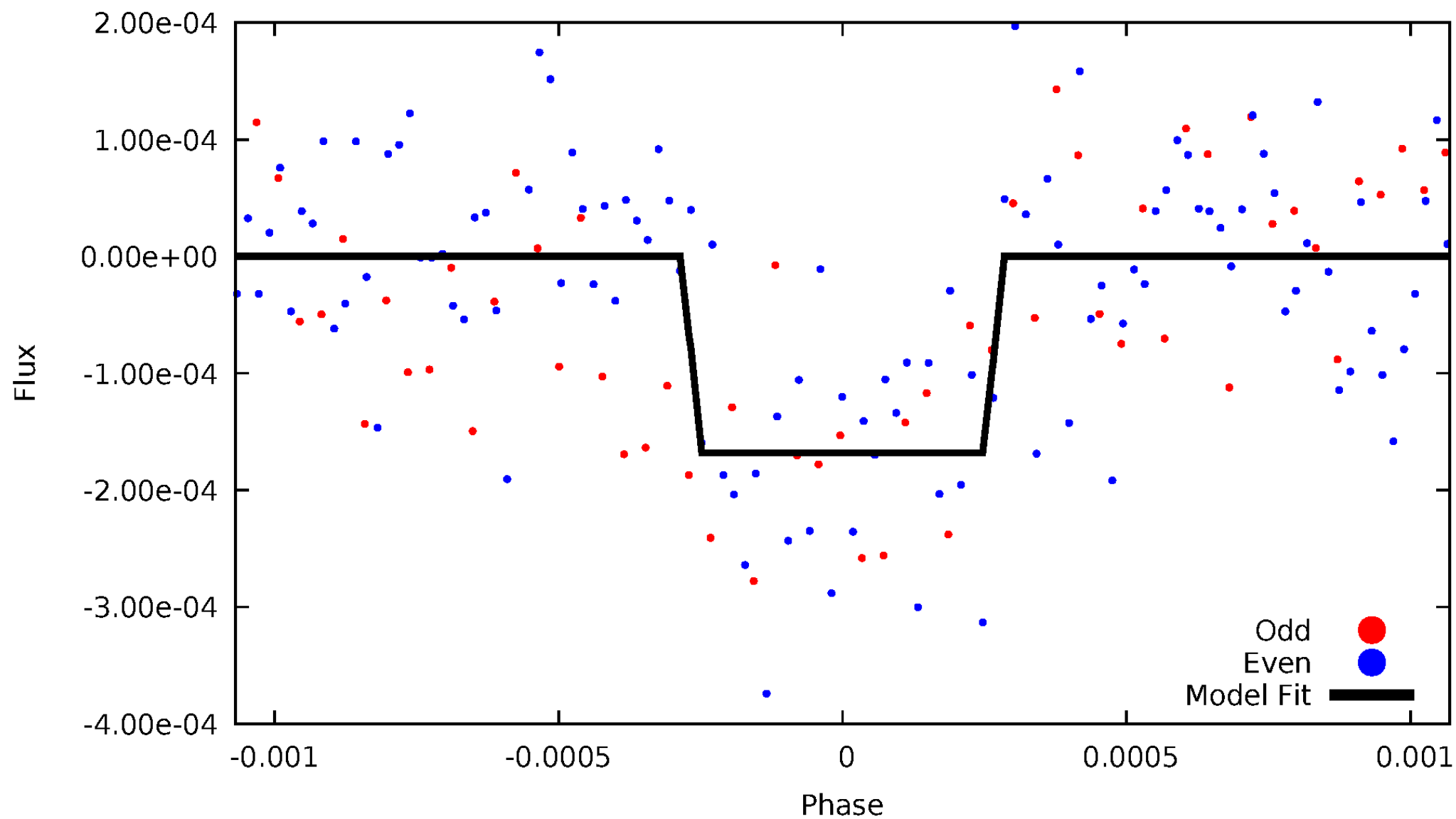
# DV Odd/Even

TCE 007973673-01



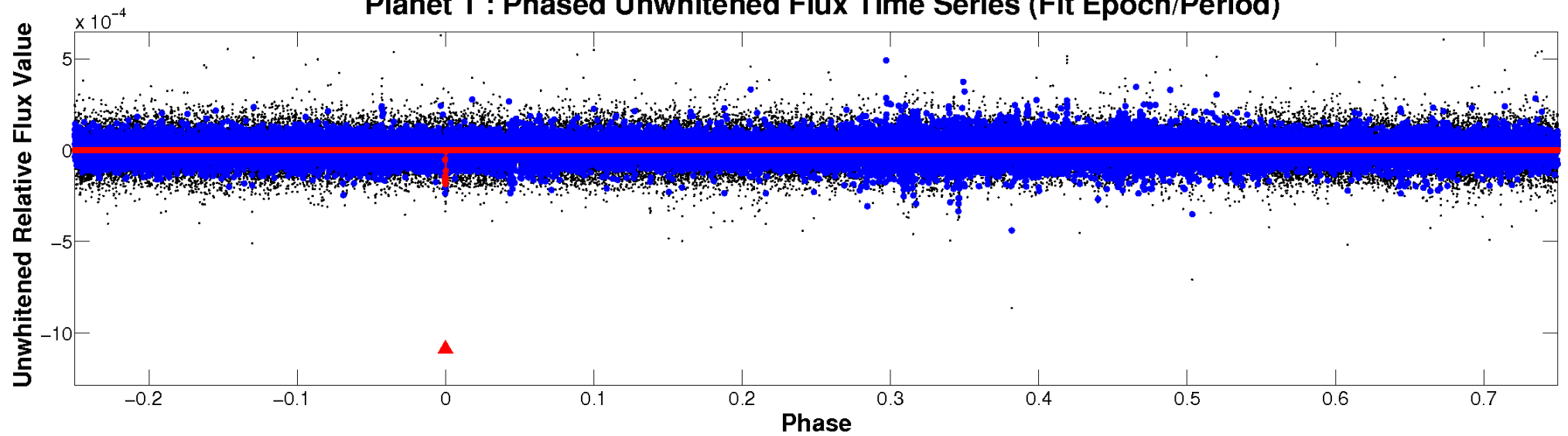
# ALT Odd/Even

TCE 007973673-01

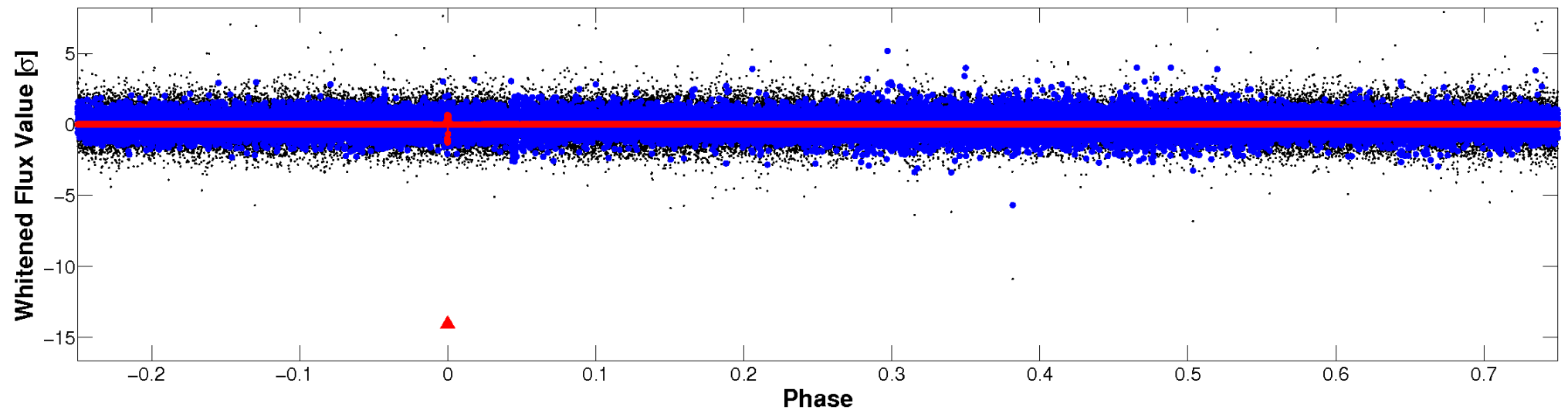


# Non-Whitened Vs. Whitened Light Curve

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

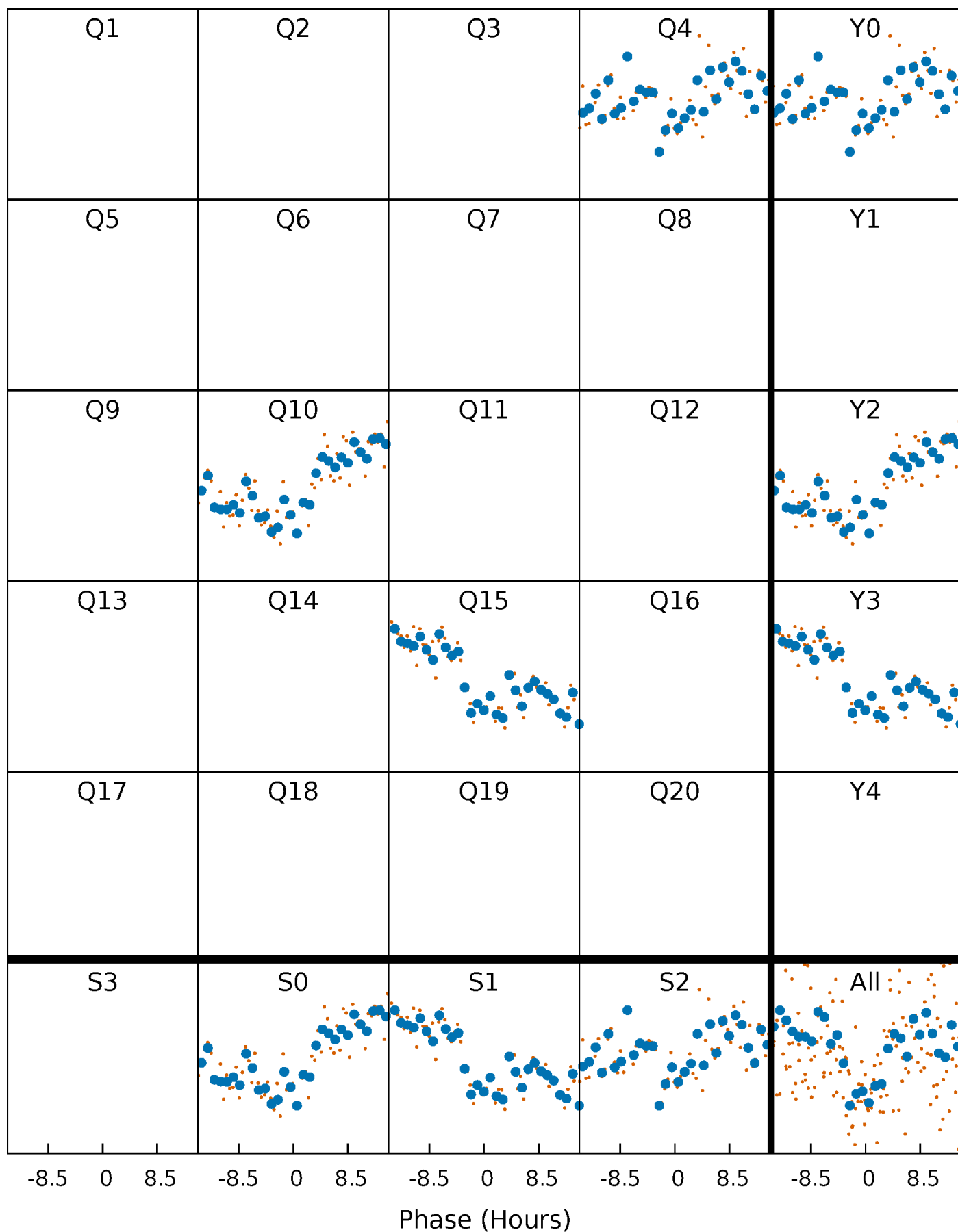


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

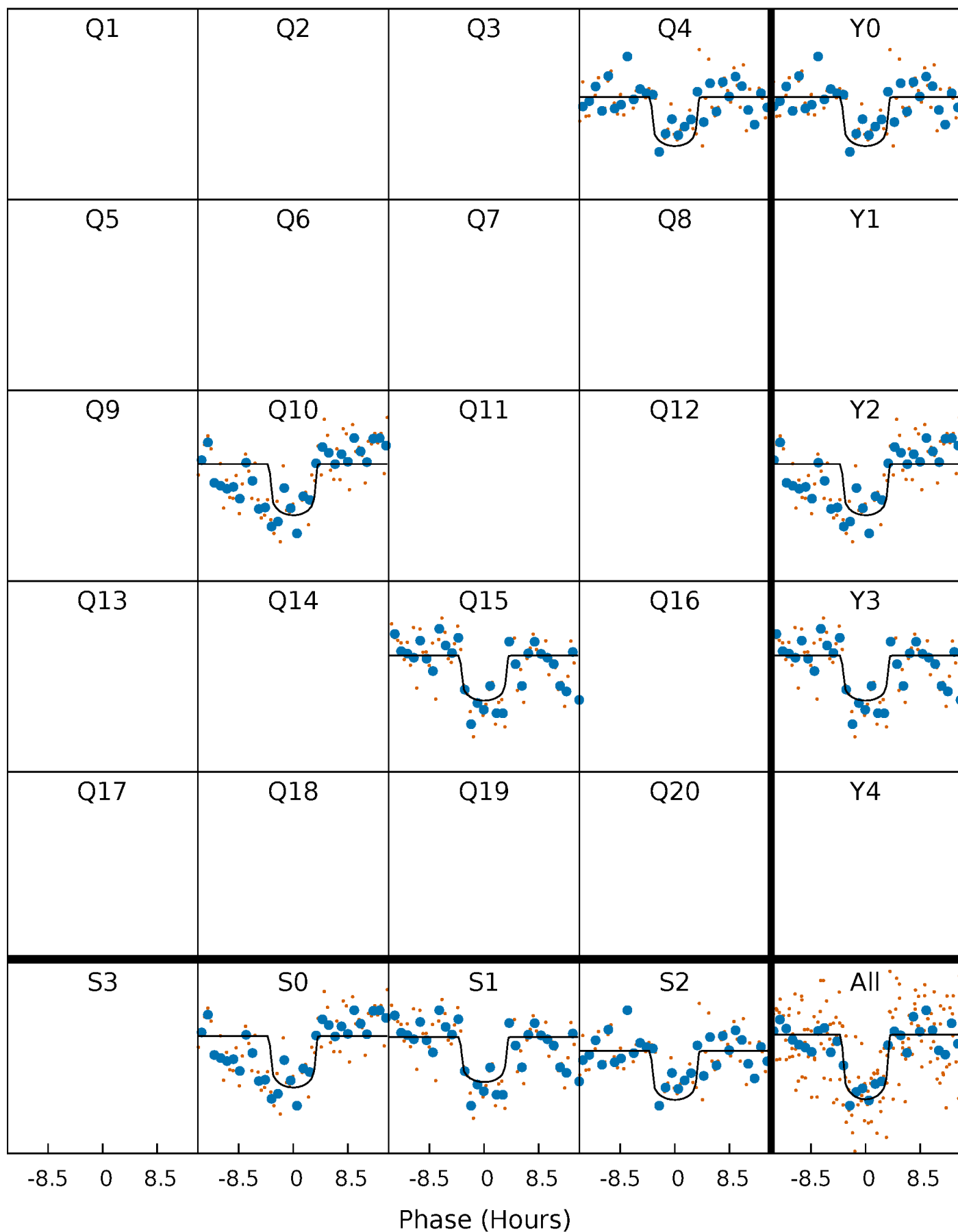
TCE 007973673-01 P=537.058521 Days  $T_0=374.204024$  (BKJD)





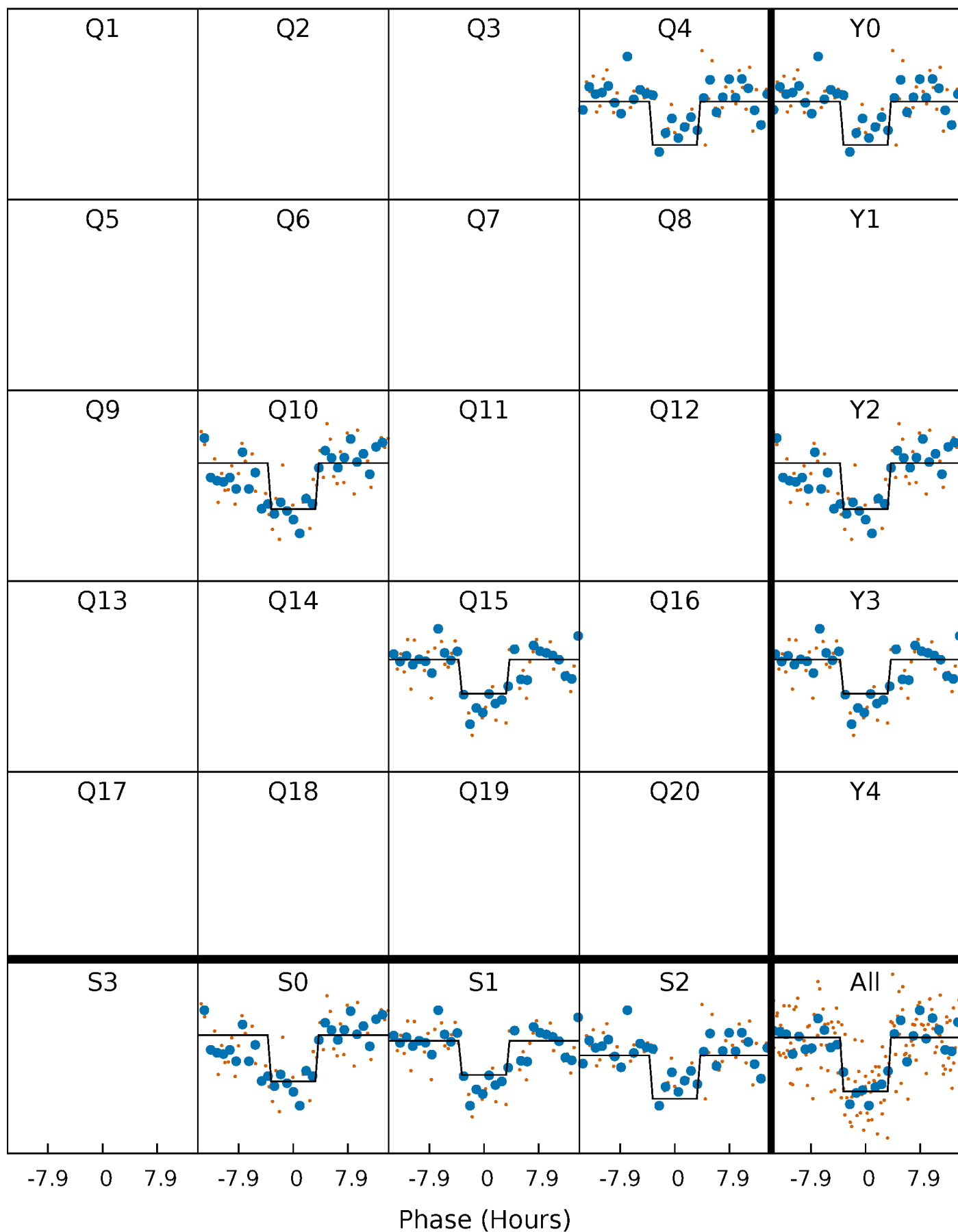
# DV Quarter-Phased Transit Curves

TCE 007973673-01 P=537.058521 Days  $T_0=374.204024$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

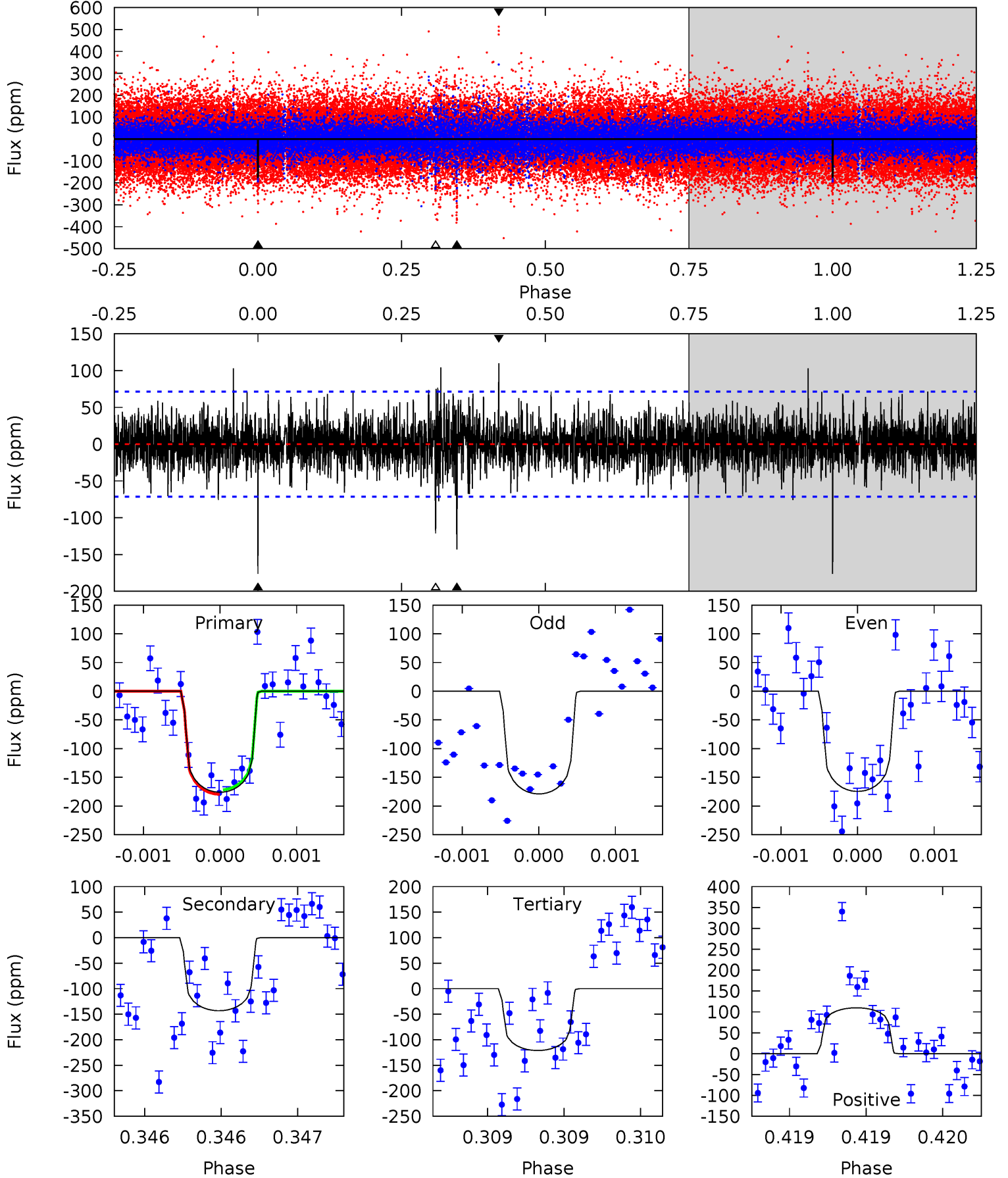
TCE 007973673-01 P=537.062069 Days  $T_0=374.199713$  (BKJD)



# DV Model-Shift Uniqueness Test

007973673-01, P = 537.058521 Days, E = 374.204024 Days

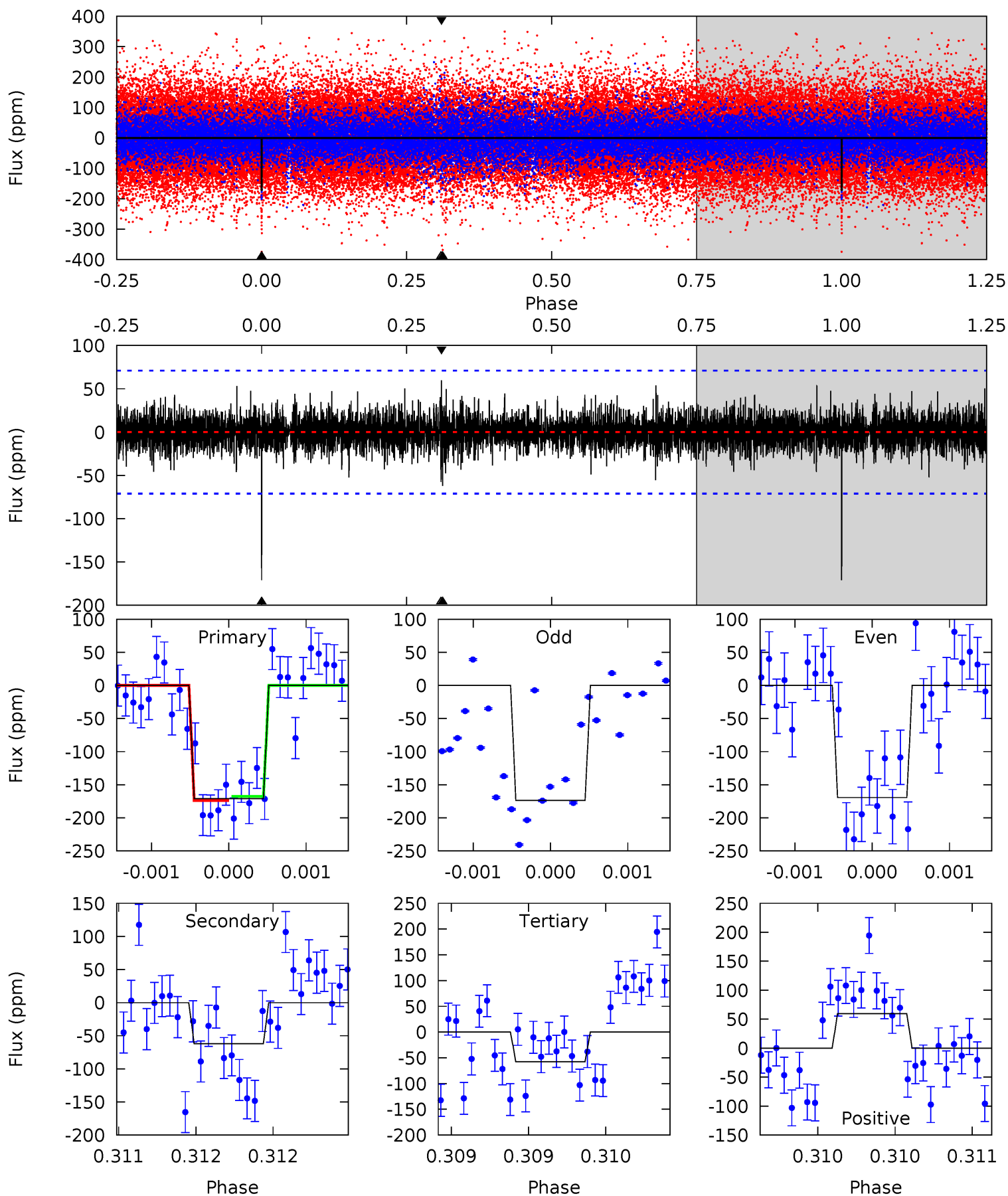
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.7 | 11.1 | 9.40 | 8.52 | 5.54            | 3.43            | 1.72             | 4.26    | 5.14    | 1.71    | 2.59    | 0.17    | 0.98 | 0.38  | 0.31 |



# Alt Model-Shift Uniqueness Test

007973673-01, P = 537.062069 Days, E = 374.199713 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.4 | 4.85 | 4.50 | 4.66 | 5.56            | 3.45            | 1.06             | 8.86    | 8.70    | 0.35    | 0.19    | 0.16    | 0.98 | 0.26  | 0.24 |



### Stellar Parameters For KIC 007973673

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6165^{+197}_{-219}$ | $4.086^{+0.312}_{-0.168}$ | $-0.300^{+0.300}_{-0.300}$ | $1.521^{+0.410}_{-0.501}$ | $1.029^{+0.169}_{-0.154}$ | $0.412^{+0.958}_{-0.182}$                 |
|        | +3%/-4%              | +8%/-4%                   | +100%/-100%                | +27%/-33%                 | +16%/-15%                 | +233%/-44%                                |
| Source | PHO54                | PHO54                     | 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 007973673-01 / KOI

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{max} (K)$     | $T_{obs} (K)$         | $A_{obs}$                 |
|---------|---------------|------------------------|-------------------|-----------------------|---------------------------|
| DV      | $-143 \pm 13$ | $2.26^{+0.84}_{-0.72}$ | $405^{+33}_{-39}$ | $5659^{+1006}_{-620}$ | $26586^{+29578}_{-12489}$ |
| Alt.    | $-62 \pm 13$  | $2.09^{+0.80}_{-0.67}$ | $408^{+32}_{-39}$ | $4884^{+869}_{-551}$  | $13048^{+15619}_{-6364}$  |

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

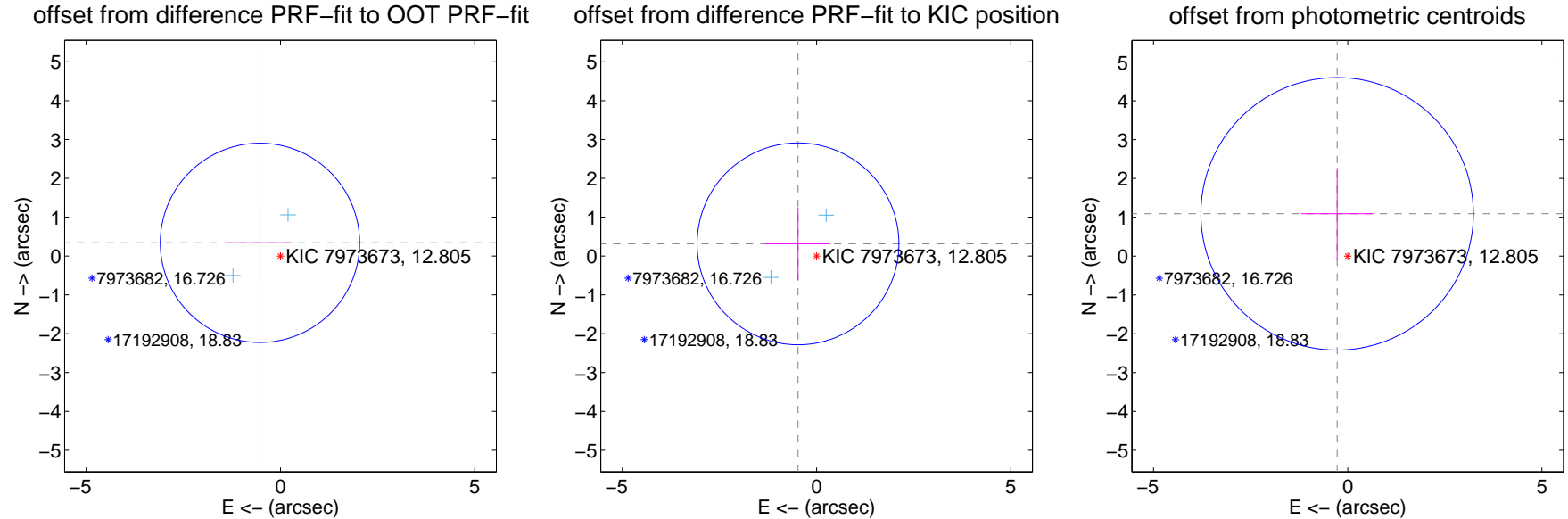
## DV Centroid Data

Supplemental centroid analysis for 007973673-01. Kepler magnitude: 12.80. Transit SNR 8.25

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $0.628 \pm 0.855$  | 0.73                | $0.528 \pm 0.831$ | $0.340 \pm 0.910$ |
| PRF-fit source offset from KIC position | $0.572 \pm 0.866$  | 0.66                | $0.478 \pm 0.834$ | $0.313 \pm 0.936$ |
| photometric centroid source offset      | $1.12 \pm 1.17$    | 0.96                | $0.27 \pm 0.93$   | $1.09 \pm 1.18$   |



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.

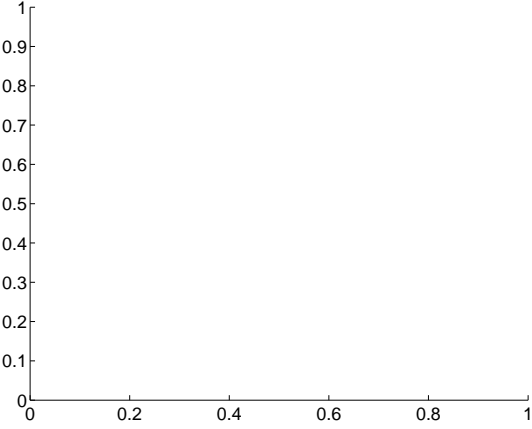
Q1 no difference image



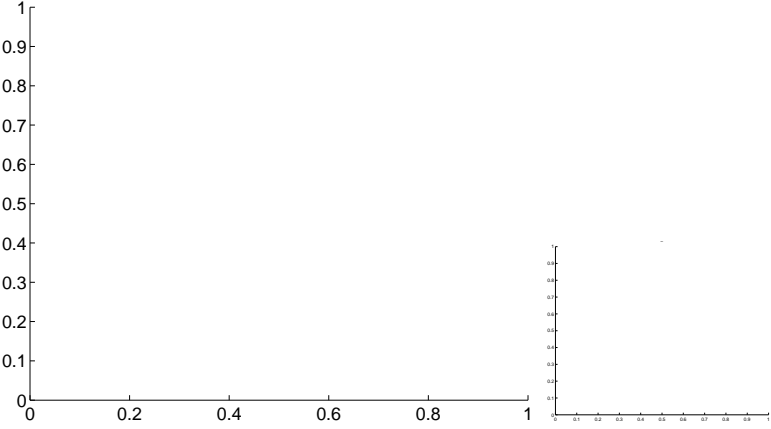
Q1 no OOT image



Q2 no difference image



Q2 no OOT image



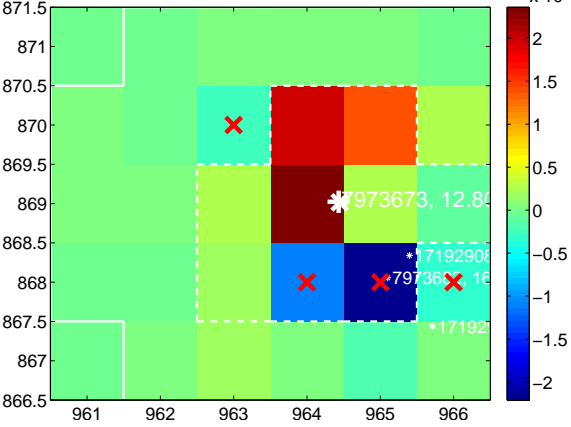
Q3 no difference image



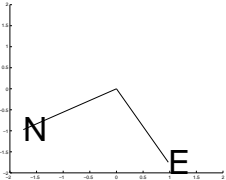
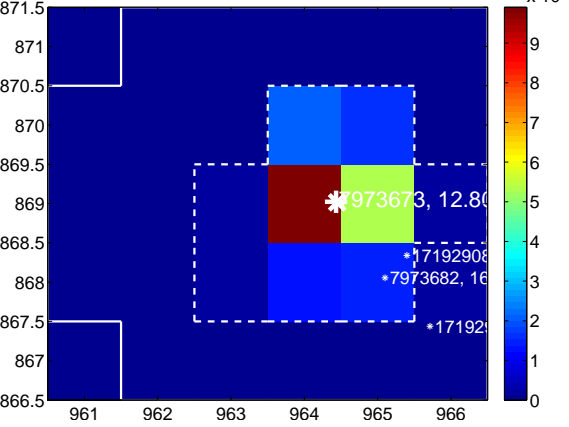
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image

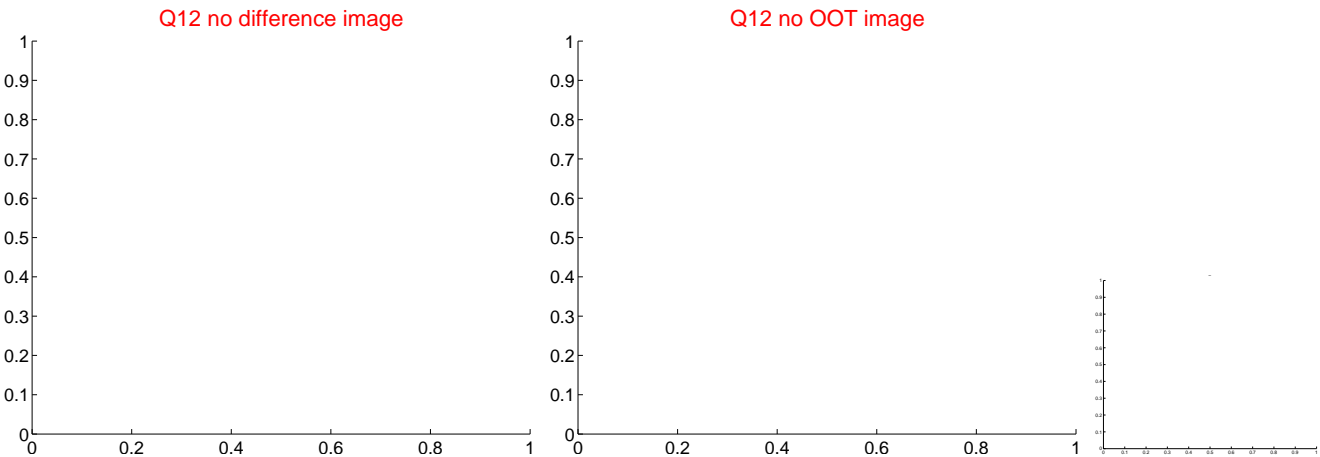
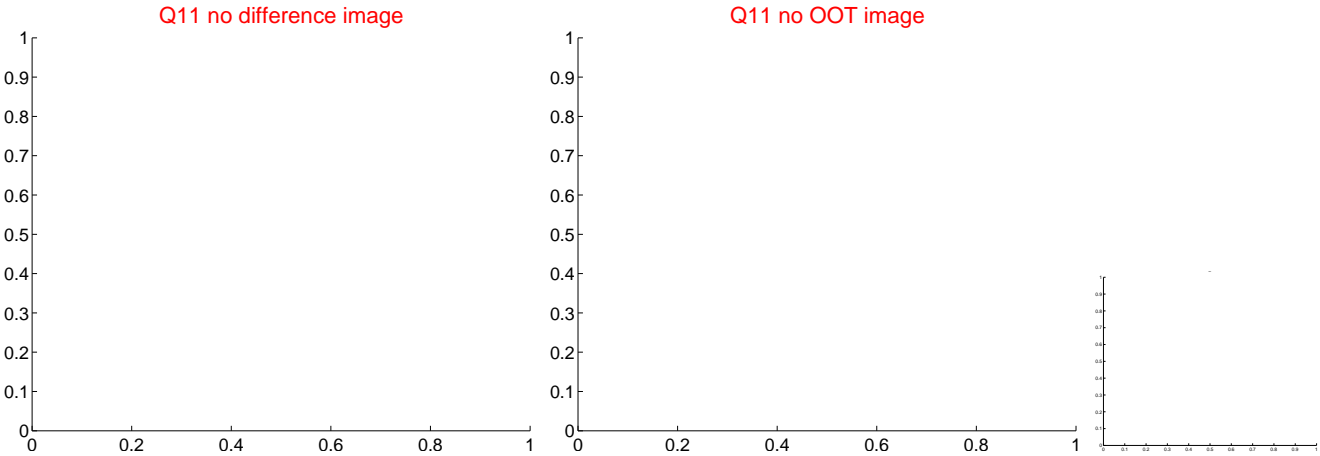
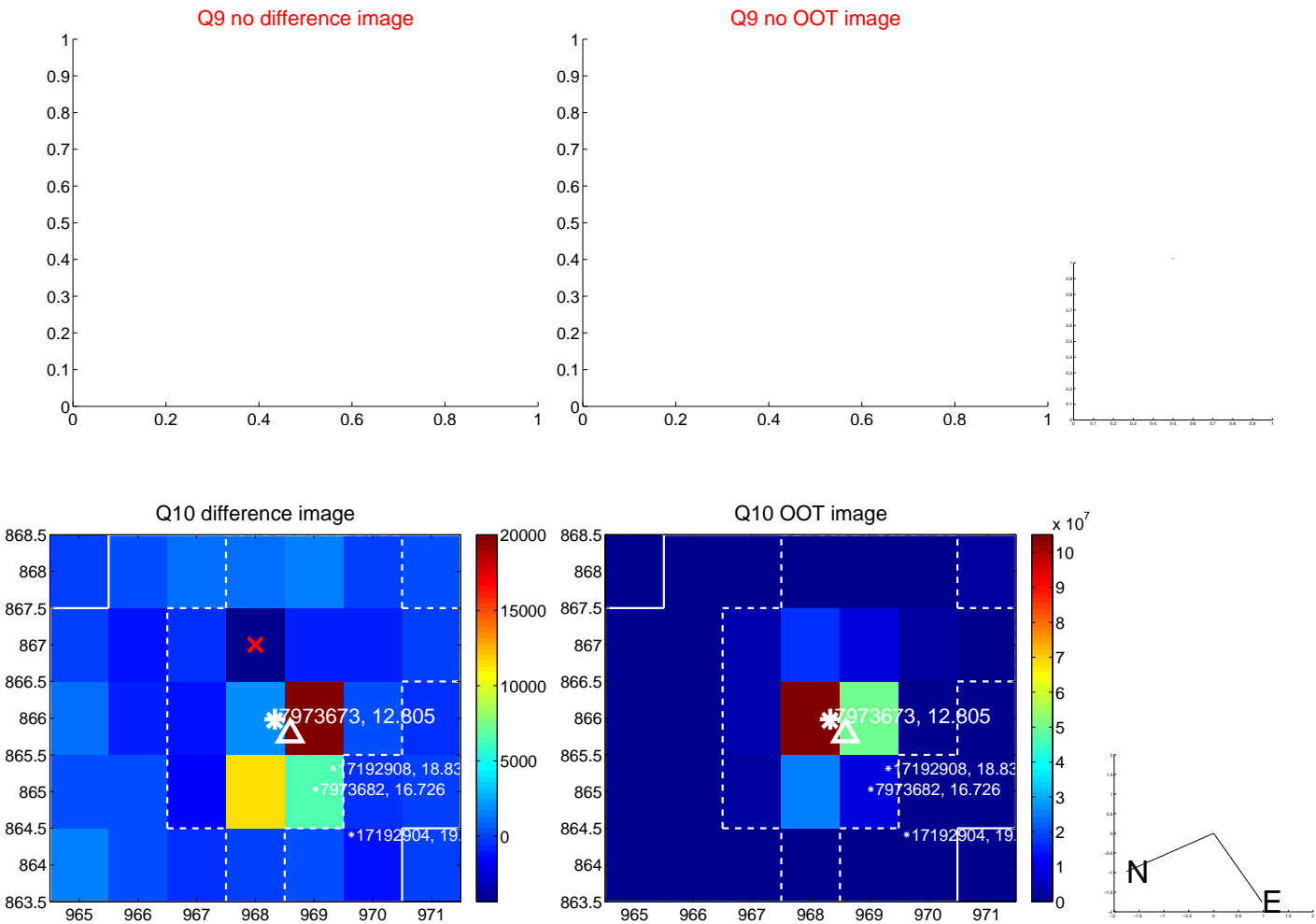


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

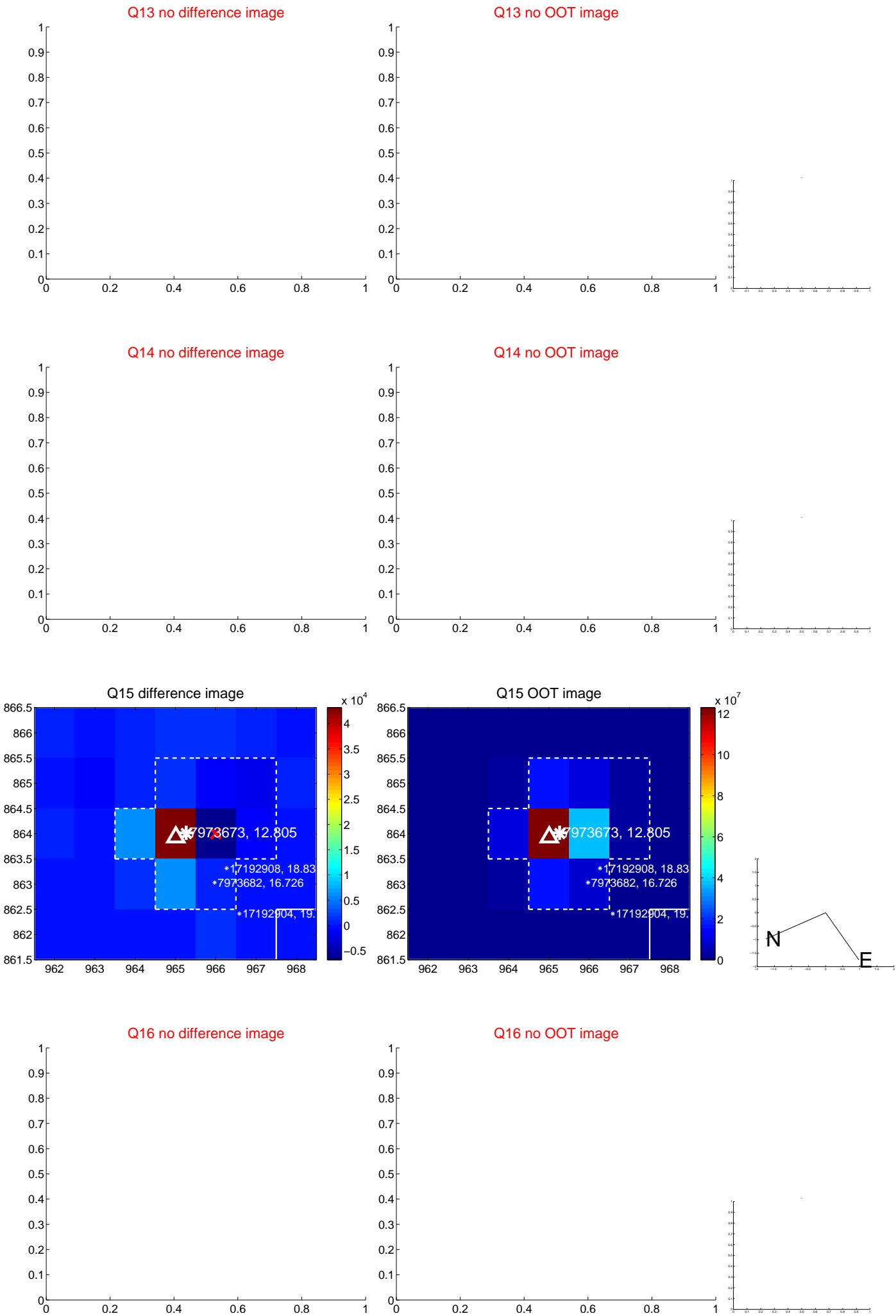




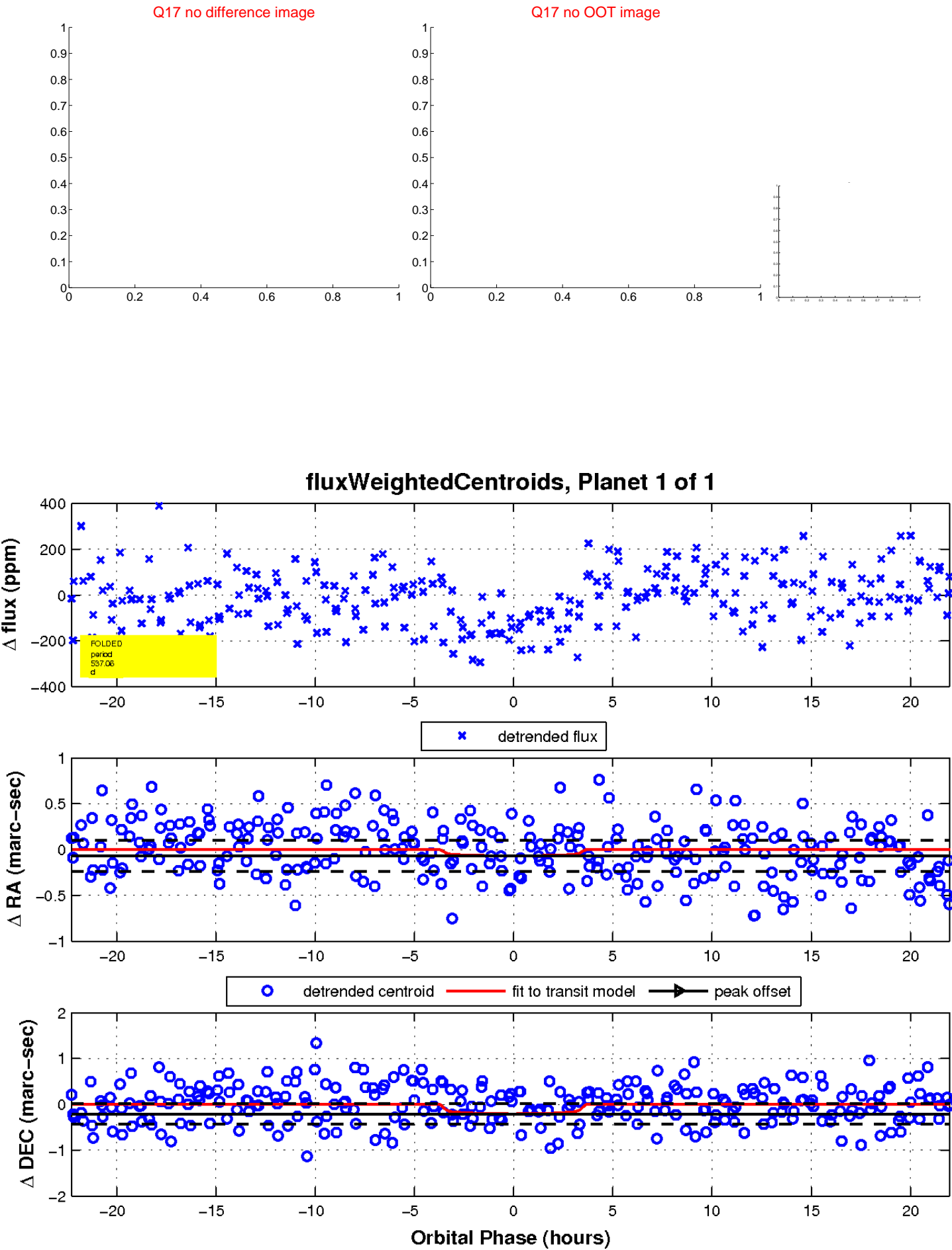
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

