

# KIC 007531327

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 007531327-01 | OBS      | No   | 336.465077    | 446.355479   | 2047.6      | 4.433            | 14.4 | 6.9 | 0.63                        | 5266            | 2.93                   | 0.42                   |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments  |
|--------------|----------|------|-------|---|---|---|---|---|
| 007531327-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—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.

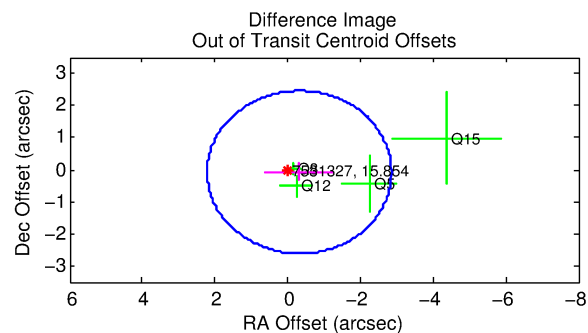
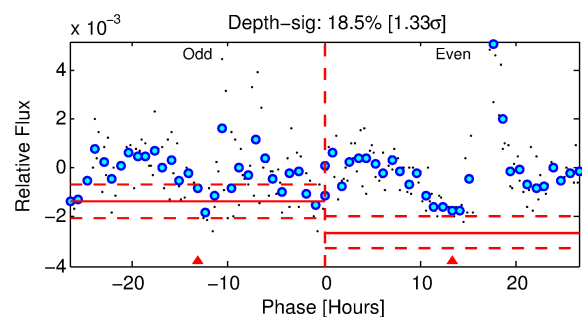
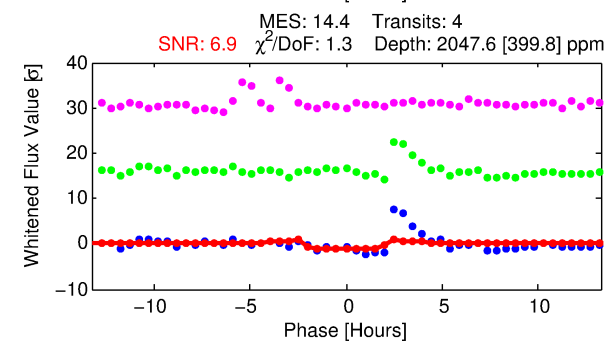
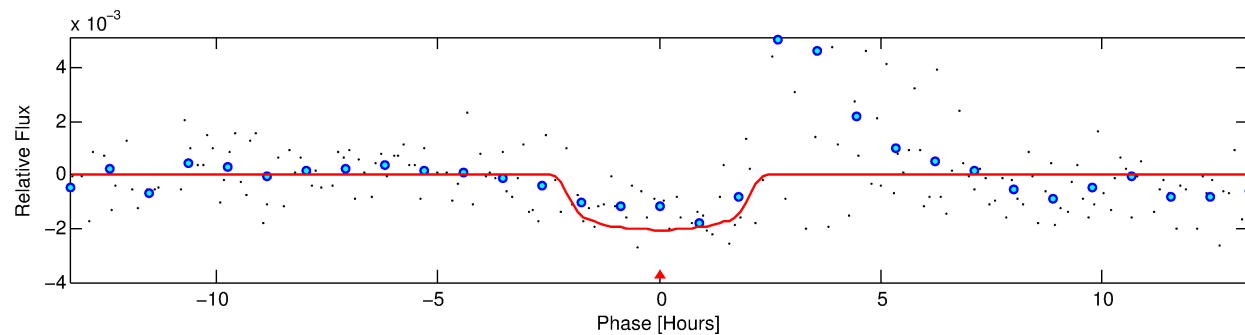
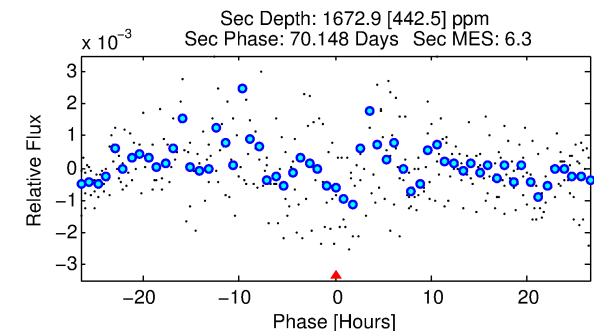
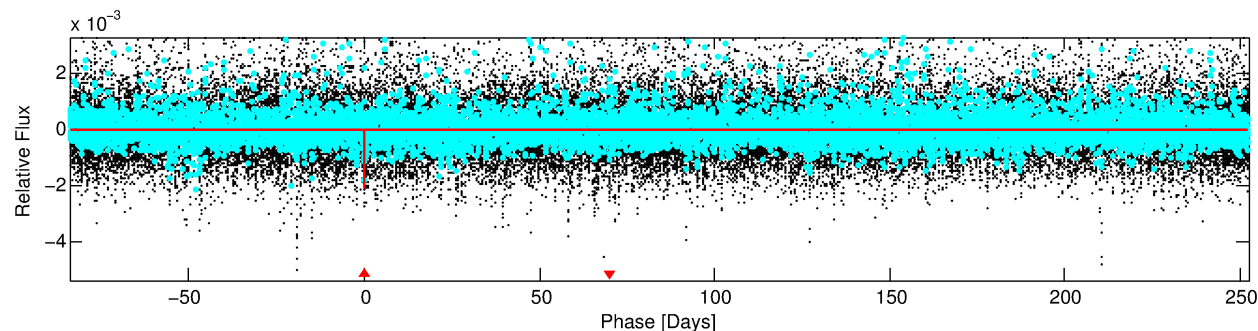
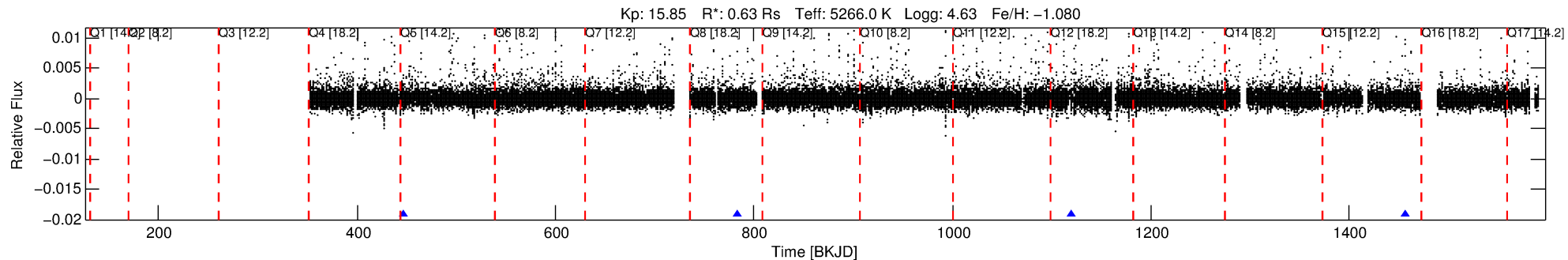
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007531327-01

No Significant Match Found

# DV One-Page Summary

KIC: 7531327 Candidate: 1 of 1 Period: 336.465 d



## DV Fit Results:

Period = 336.46508 [0.00442] d  
Epoch = 446.3555 [0.0084] BKJD  
Rp/R\* = 0.0427 [0.0313]  
a/R\* = 516.46 [1639.99]  
b = 0.54 [4.16]  
Seff = 0.42 [0.08]  
Teq = 205 [9] K  
Rp = 2.93 [2.16] Re  
a = 0.8080 [0.0618] AU  
Ag = 69908.71 [104426.35] [0.67σ]  
Teff = 5153 [1927] K [2.57σ]

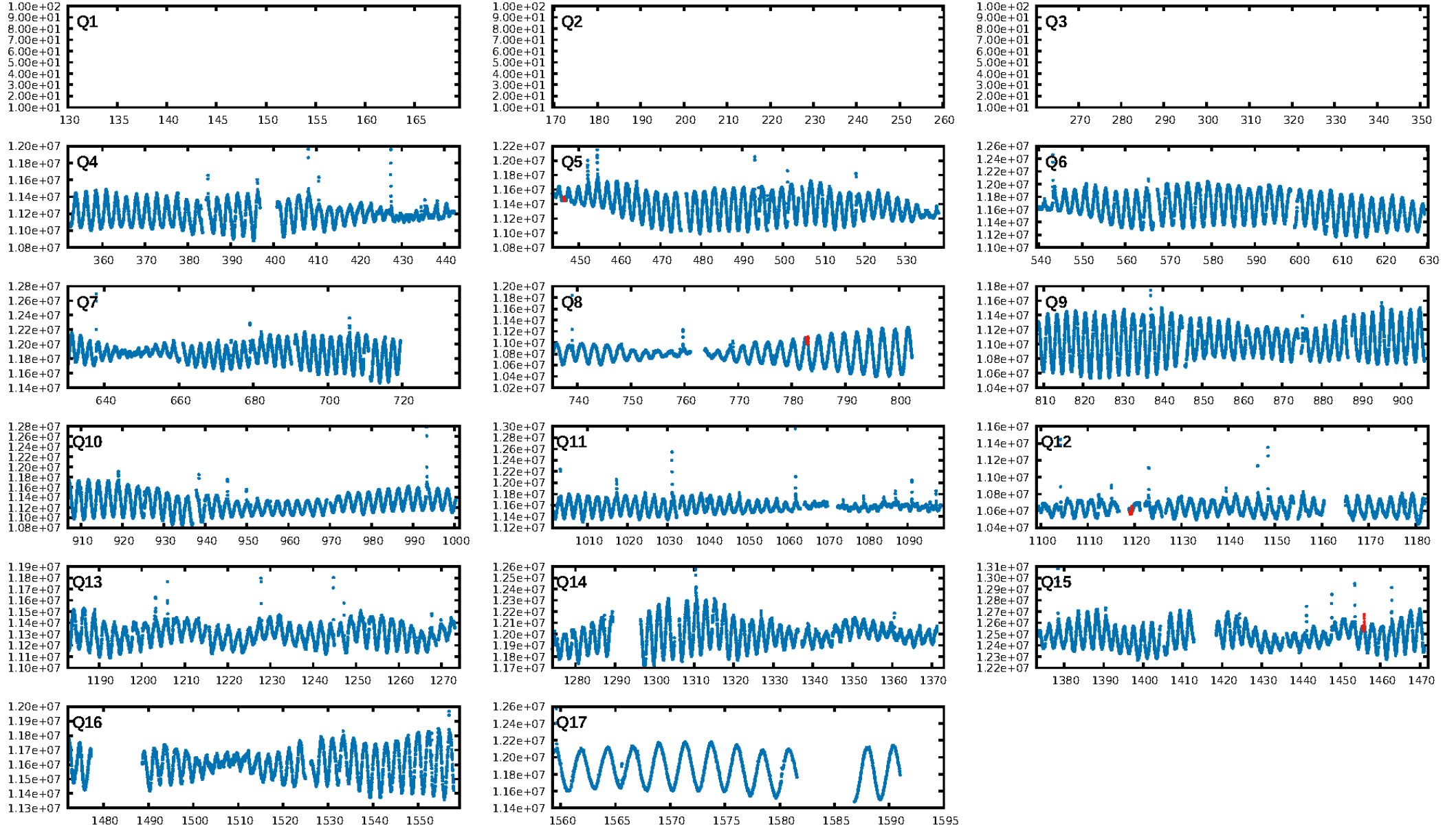
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.2%  
ModelChiSquareGof-sig: 82.9%  
Bootstrap-pfa: 4.87e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.348  
Centroid-sig: 93.1%  
Centroid-so: 0.504 arcsec [0.49σ]  
OotOffset-rm: 0.328 arcsec [0.39σ]  
KicOffset-rm: 0.302 arcsec [0.46σ]  
OotOffset-st: 0/1/2/1 [4]  
KicOffset-st: 0/1/2/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 1.00 [4/4]

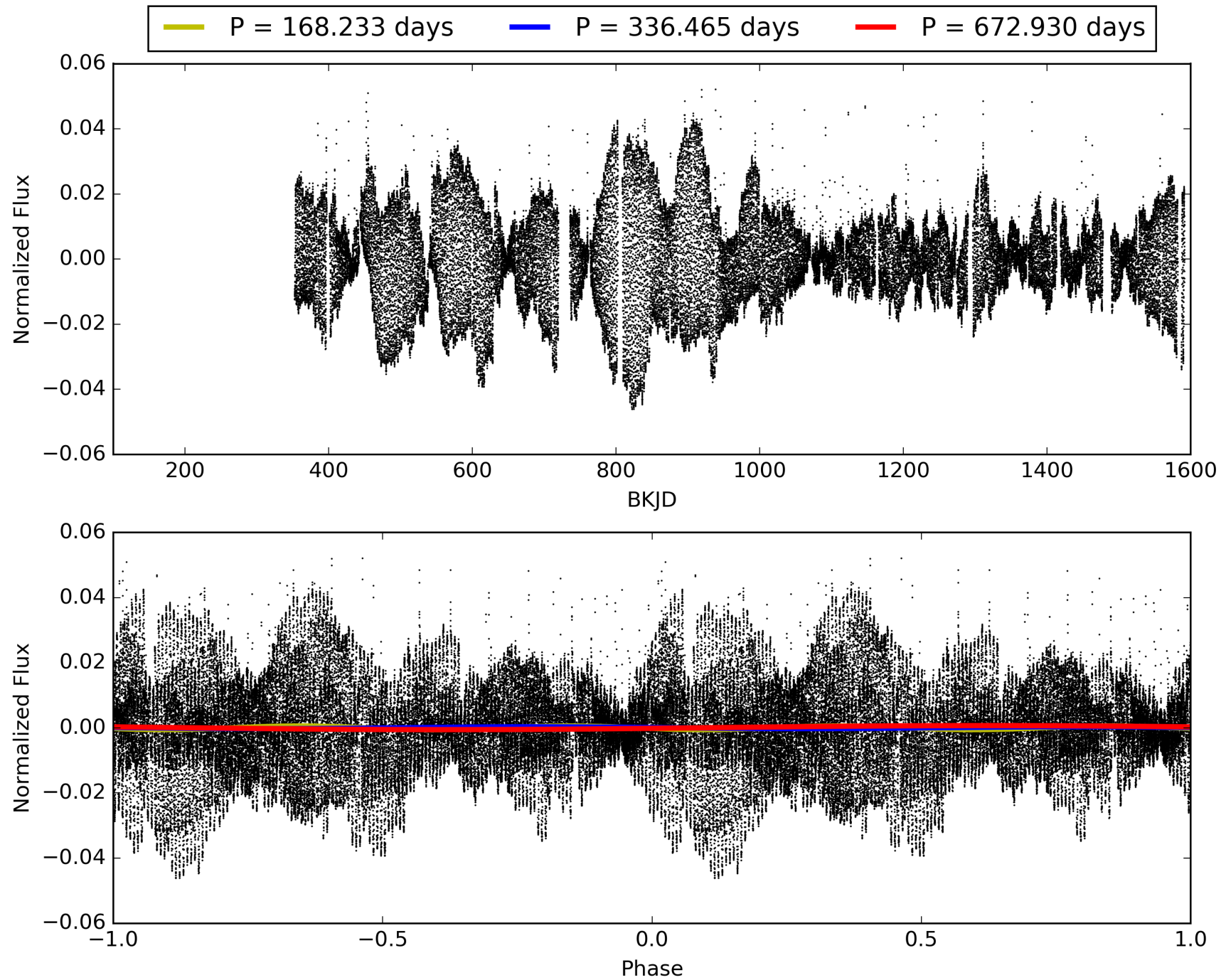
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:52:16 Z

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

# TCE 007531327-01, PDC Light Curves

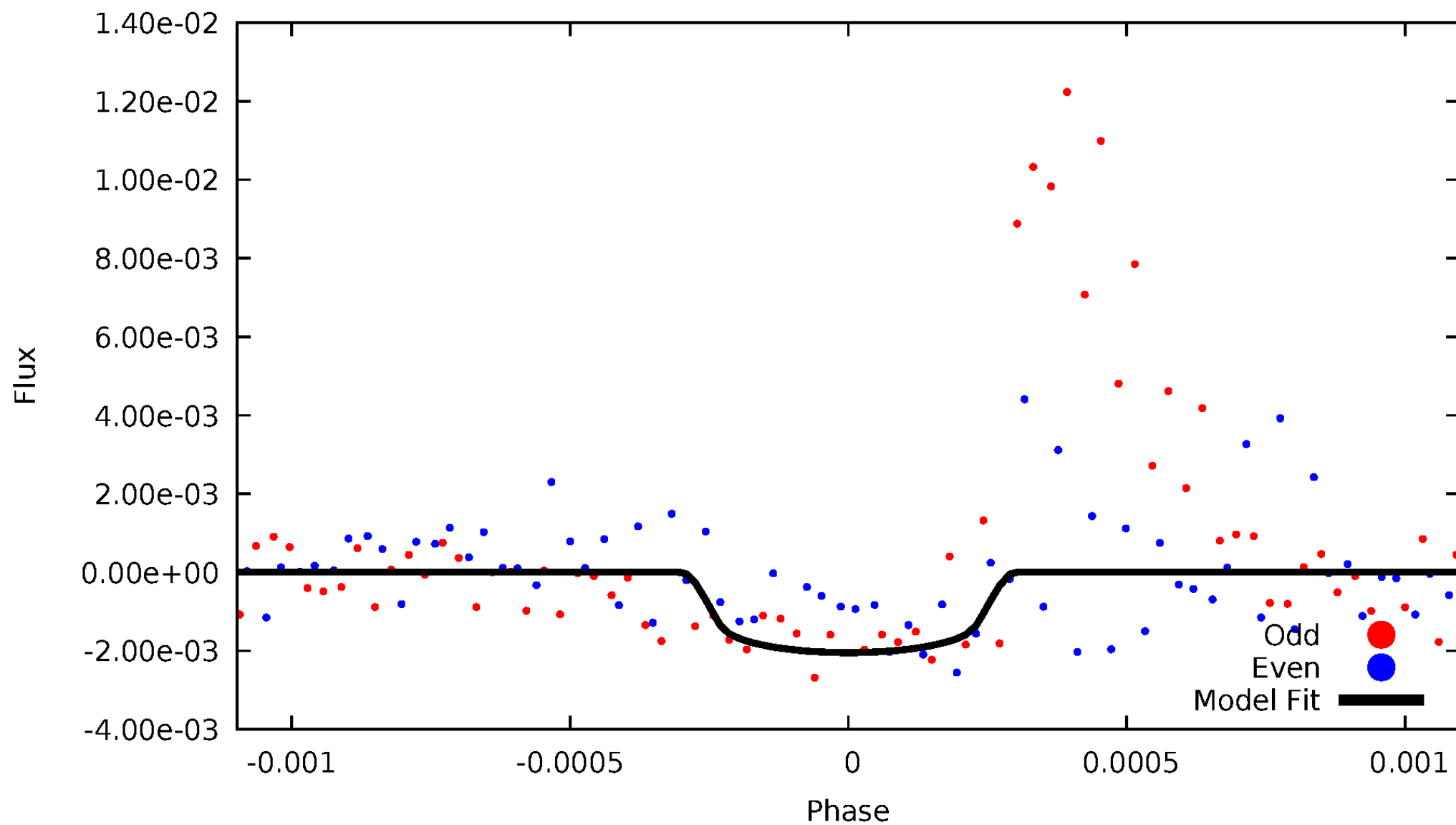


TCE 007531327-01



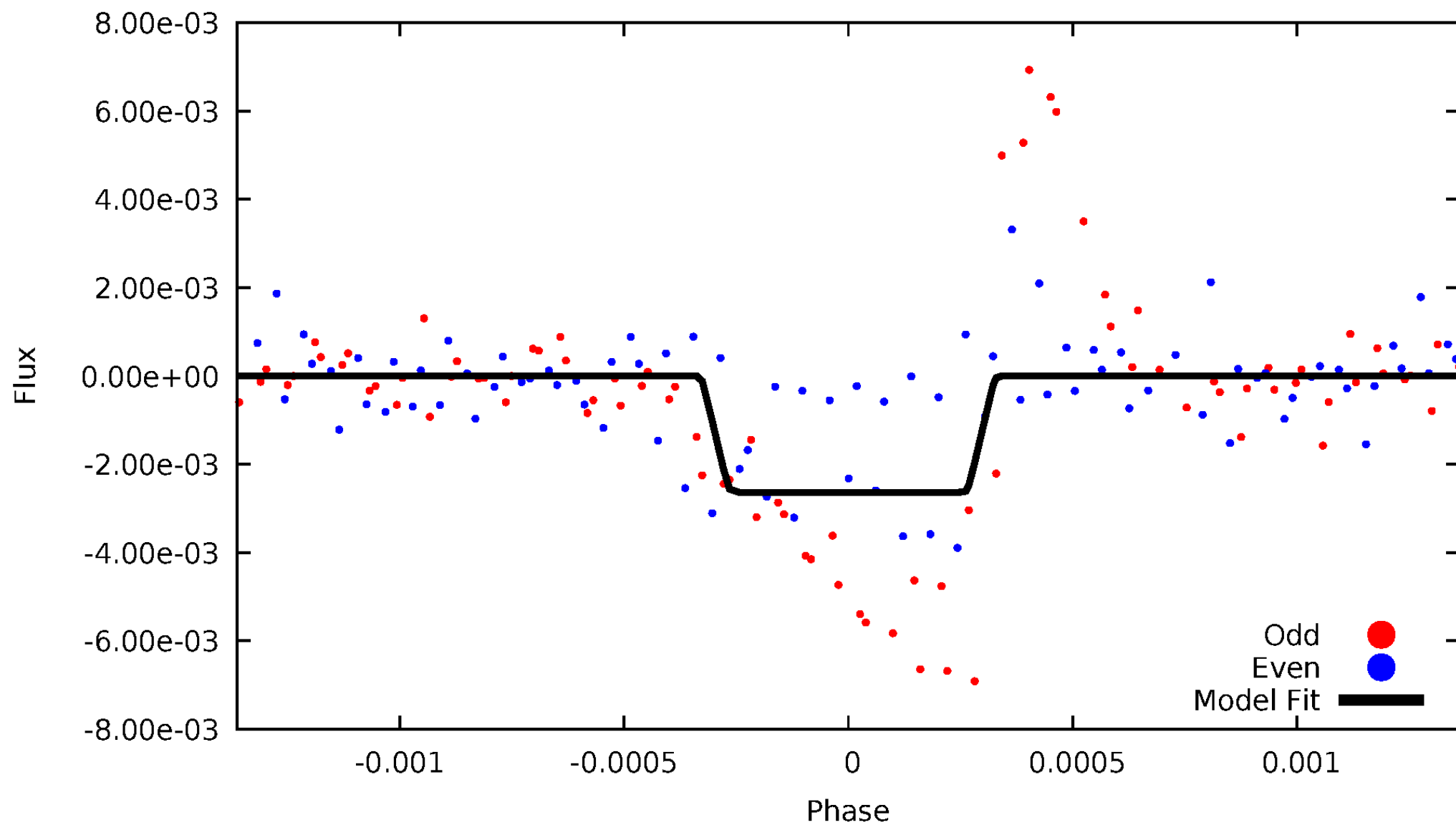
# DV Odd/Even

TCE 007531327-01



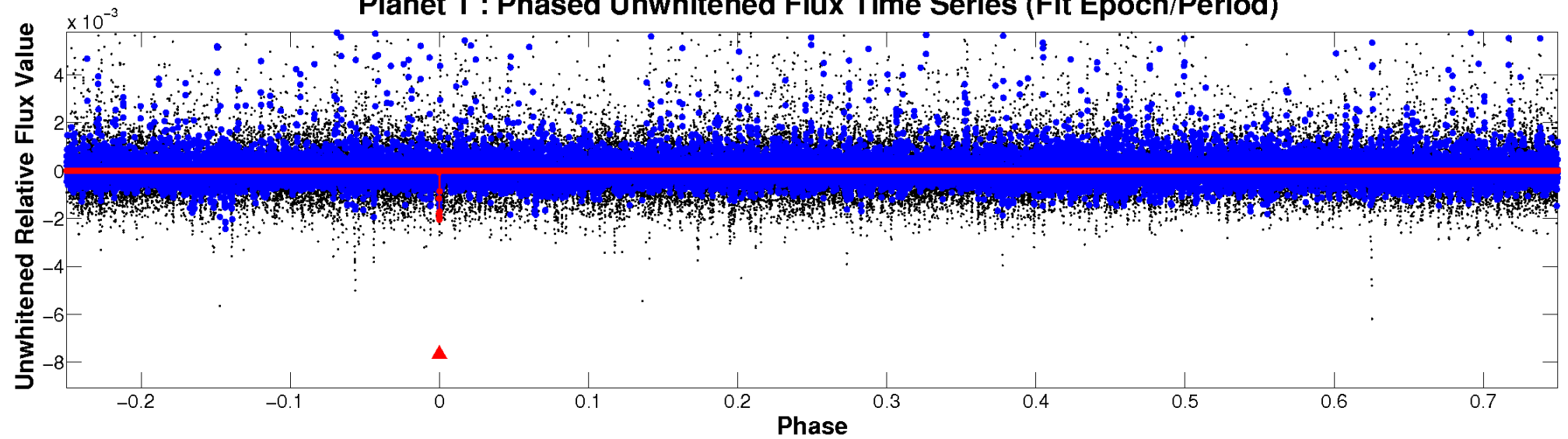
# ALT Odd/Even

TCE 007531327-01

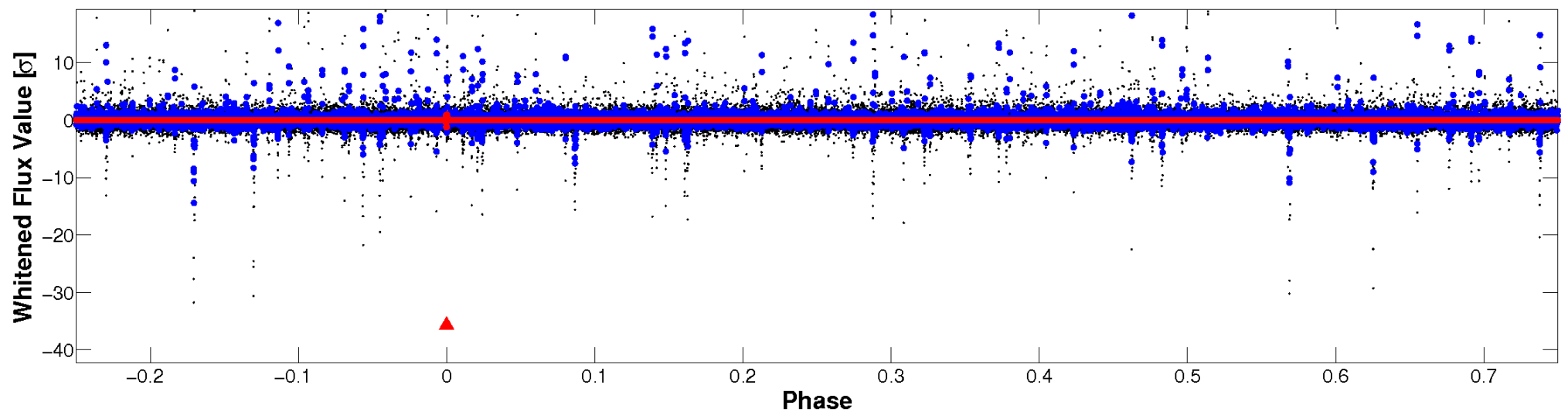


# Non-Whitened Vs. Whitened Light Curve

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

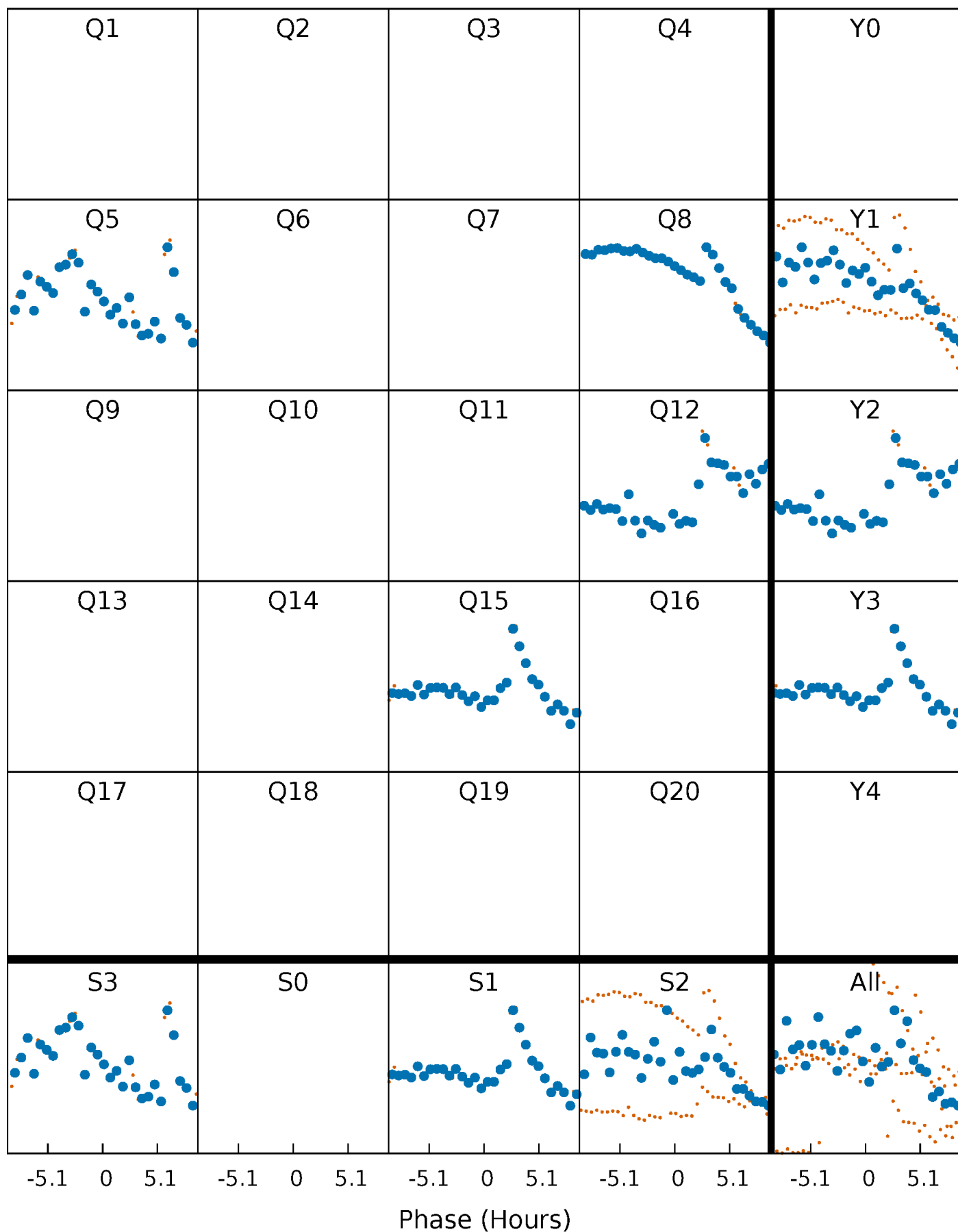


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

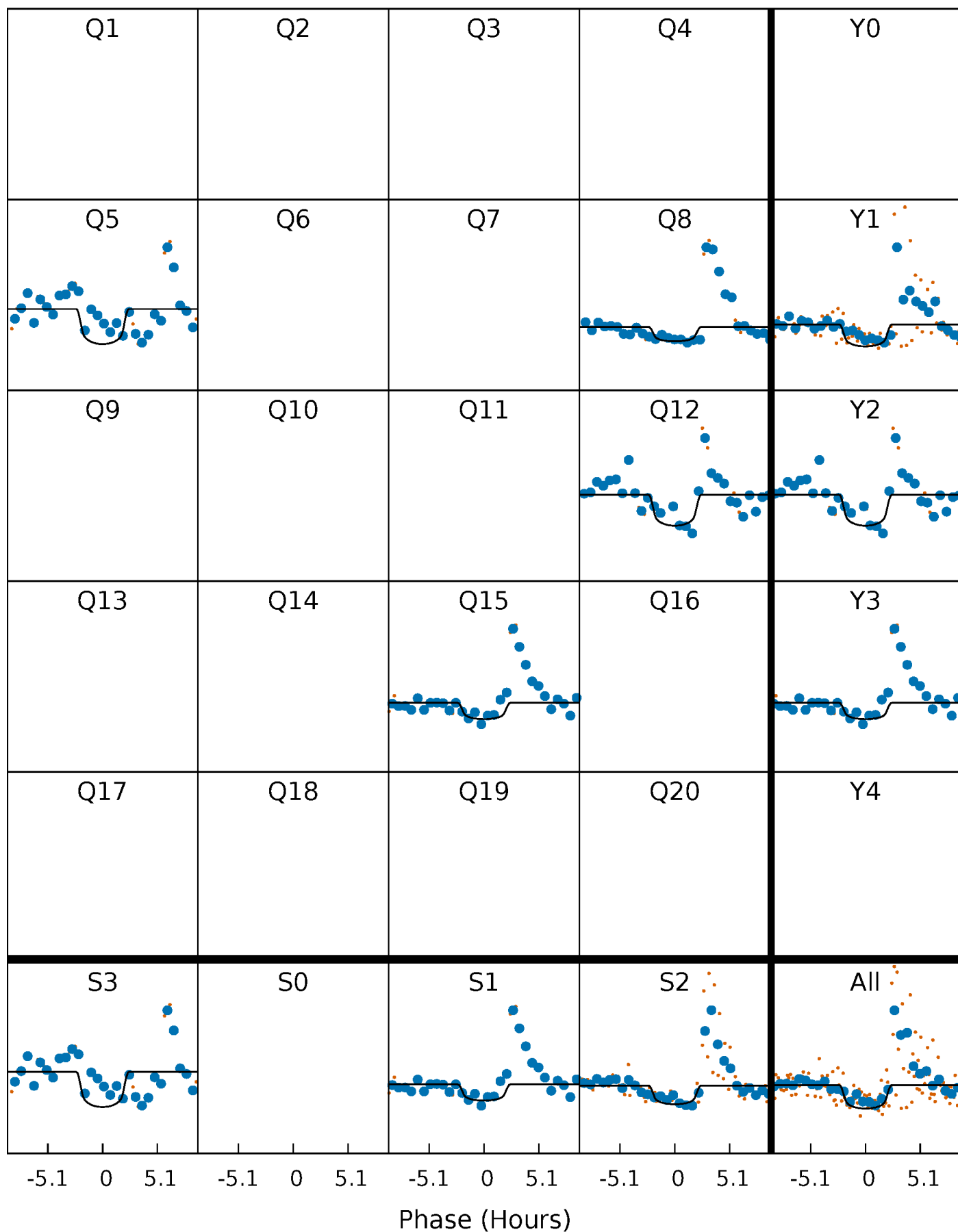
TCE 007531327-01 P=336.465077 Days  $T_0=446.355479$  (BKJD)





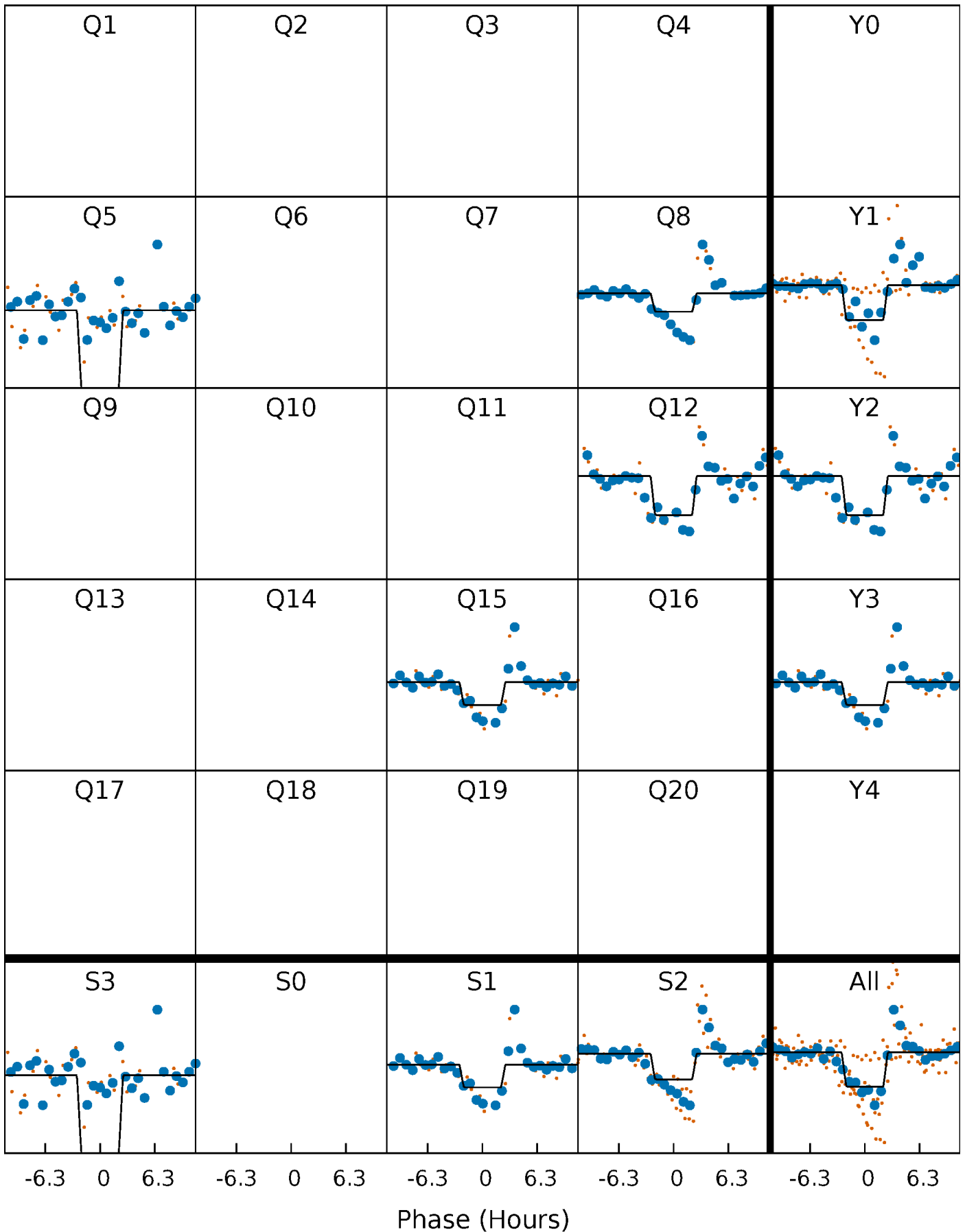
# DV Quarter-Phased Transit Curves

TCE 007531327-01 P=336.465077 Days  $T_0=446.355479$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

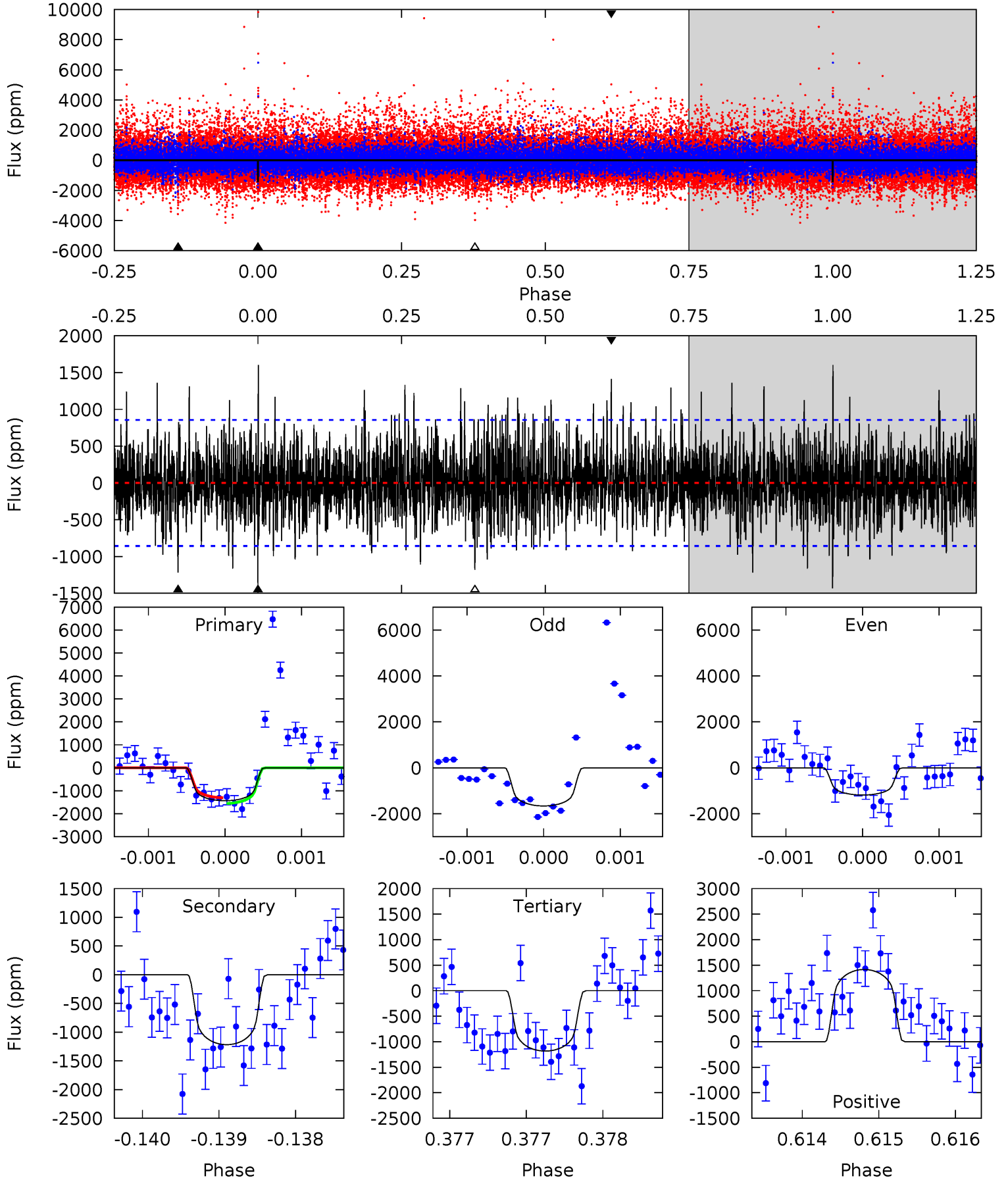
TCE 007531327-01 P=336.452188 Days  $T_0=446.364992$  (BKJD)



# DV Model-Shift Uniqueness Test

007531327-01,  $P = 336.465077$  Days,  $E = 109.890402$  Days

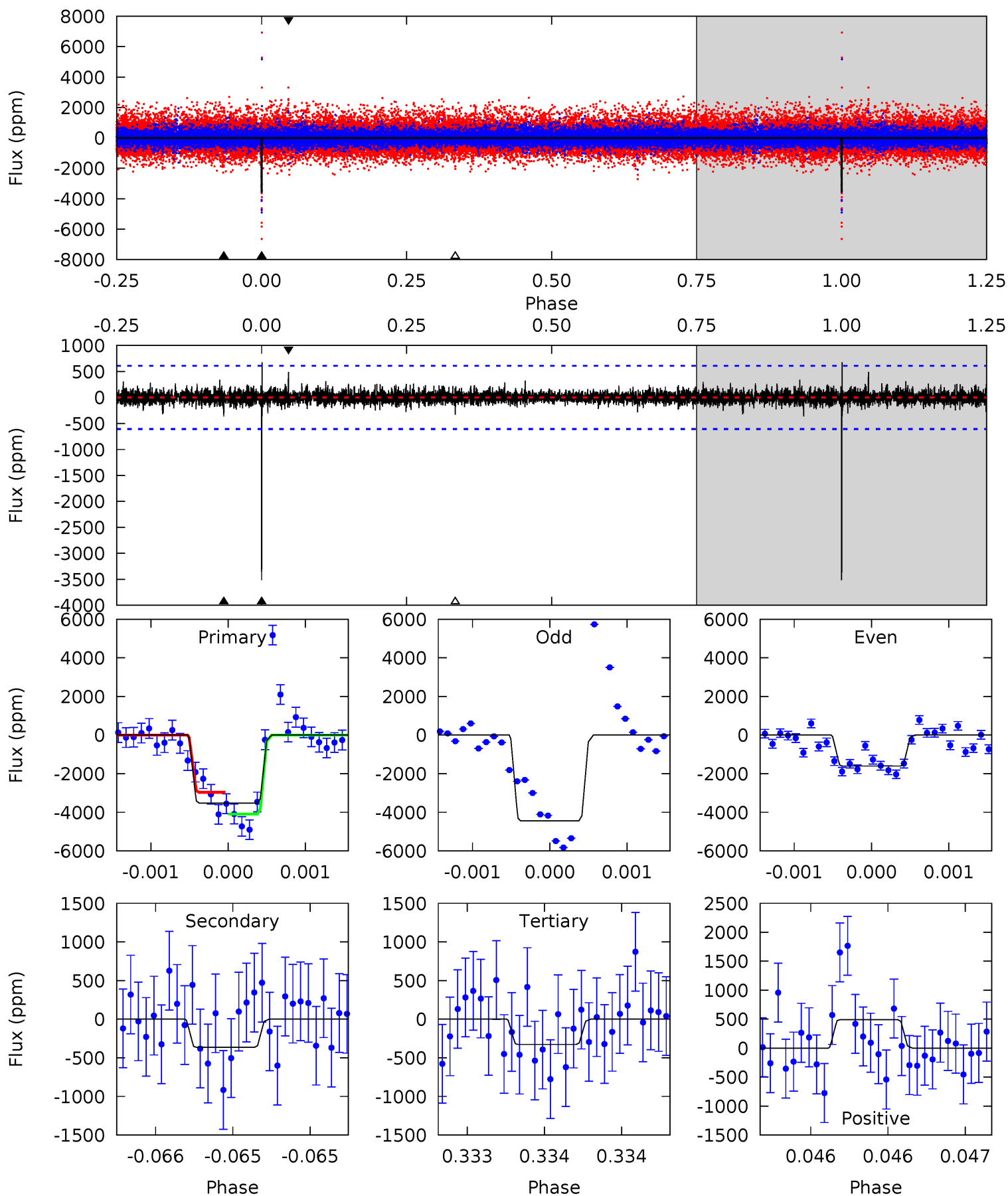
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 9.28 | 7.87 | 7.64 | 9.15 | 5.54            | 3.43            | 2.24             | 1.63    | 0.13    | 0.23    | -1.28   | 1.14    | 0.97 | 0.53  | 0.80 |



# Alt Model-Shift Uniqueness Test

007531327-01, P = 336.452188 Days, E = 109.912804 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 32.0 | 3.31 | 2.98 | 4.46 | 5.53            | 3.41            | 0.65             | 29.0    | 27.5    | 0.33    | -1.15   | 14.6    | 0.89 | 0.16  | 5.02 |



### Stellar Parameters For KIC 007531327

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )       | $M(M_{\odot})$            | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5266^{+185}_{-185}$ | $4.634^{+0.066}_{-0.044}$ | $-1.080^{+0.300}_{-0.300}$ | $0.629^{+0.054}_{-0.049}$ | $0.620^{+0.059}_{-0.023}$ | $3.516^{+0.897}_{-0.535}$                     |
|        | +4%/-4%              | +1%/-1%                   | +28%/-28%                  | +9%/-8%                   | +10%/-4%                  | +26%/-15%                                     |
| 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 007531327-01 / KOI

| Detrend | Depth (ppm)     | $R_p$ ( $R_{\oplus}$ ) | $T_{max}$ (K)     | $T_{obs}$ (K)         | $A_{obs}$                  |
|---------|-----------------|------------------------|-------------------|-----------------------|----------------------------|
| DV      | $-1217 \pm 155$ | $3.12^{+2.00}_{-1.72}$ | $285^{+12}_{-11}$ | $4718^{+2042}_{-838}$ | $45707^{+179076}_{-29191}$ |
| Alt.    | $-364 \pm 110$  | $3.72^{+2.24}_{-2.03}$ | $285^{+11}_{-12}$ | $3515^{+1135}_{-466}$ | $8782^{+36064}_{-5367}$    |

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

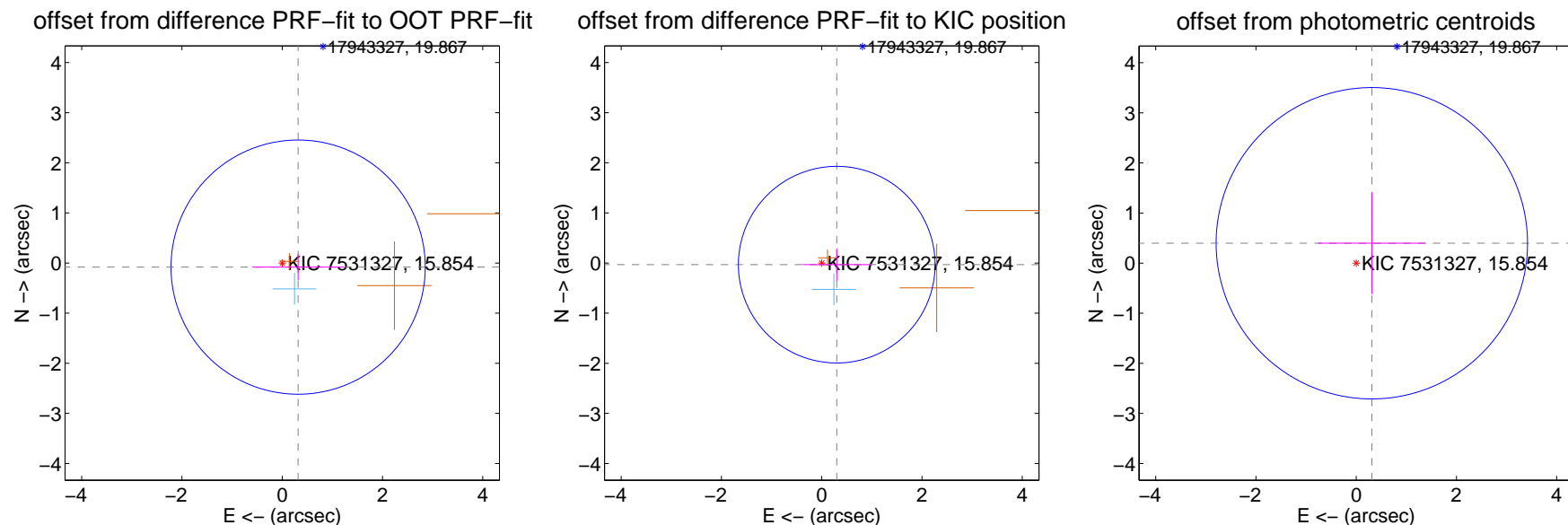
## DV Centroid Data

Supplemental centroid analysis for 007531327-01. Kepler magnitude: 15.85. Transit SNR 6.92

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.328 \pm 0.845$  | 0.39                | $-0.317 \pm 0.914$ | $-0.081 \pm 0.258$ |
| PRF-fit source offset from KIC position | $0.302 \pm 0.654$  | 0.46                | $-0.300 \pm 0.681$ | $-0.032 \pm 0.322$ |
| photometric centroid source offset      | $0.50 \pm 1.04$    | 0.49                | $-0.31 \pm 1.07$   | $0.40 \pm 1.01$    |

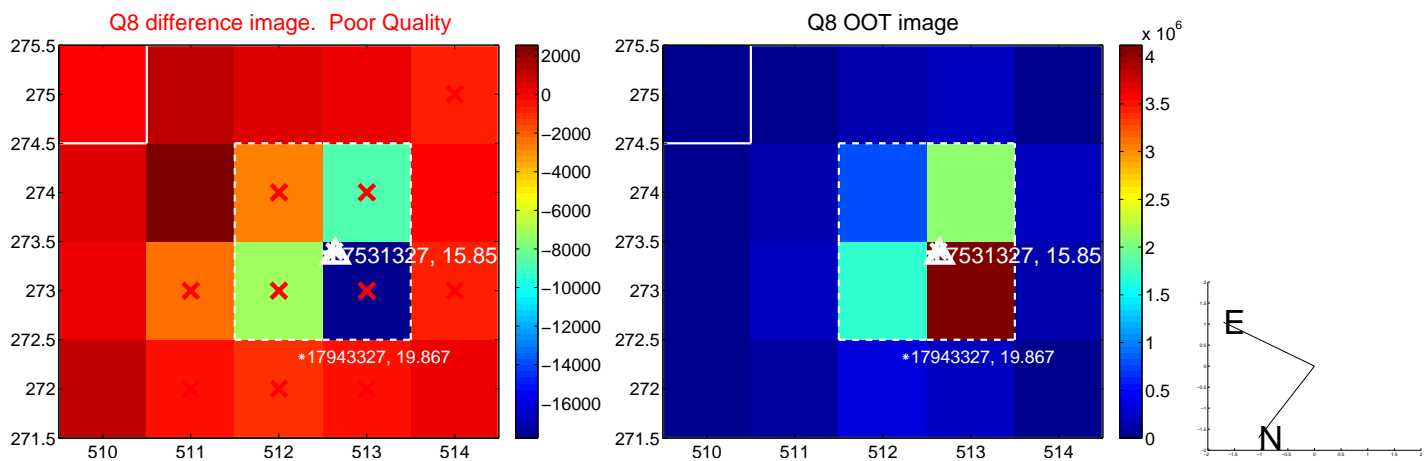
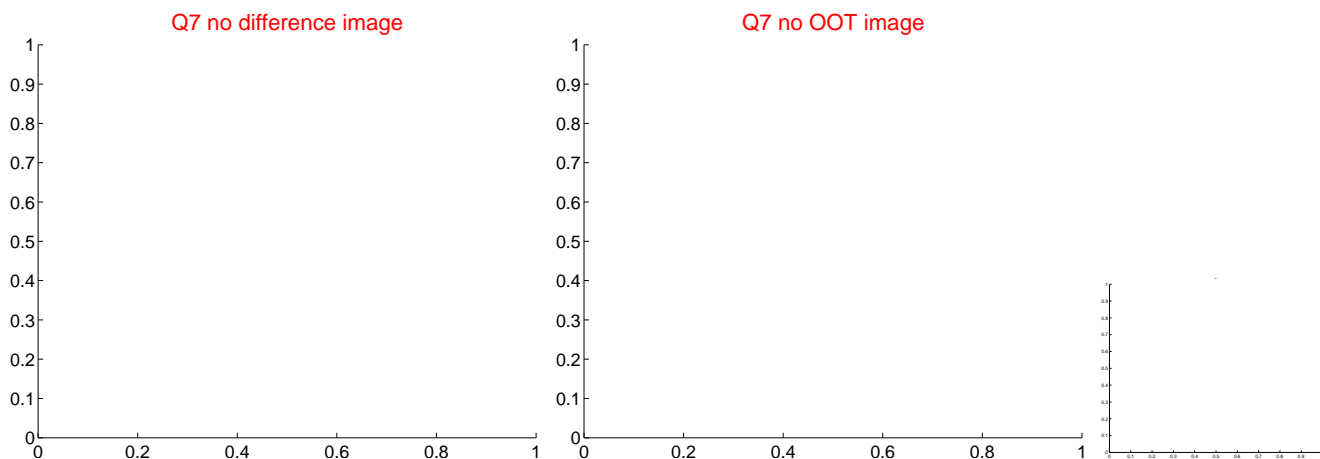
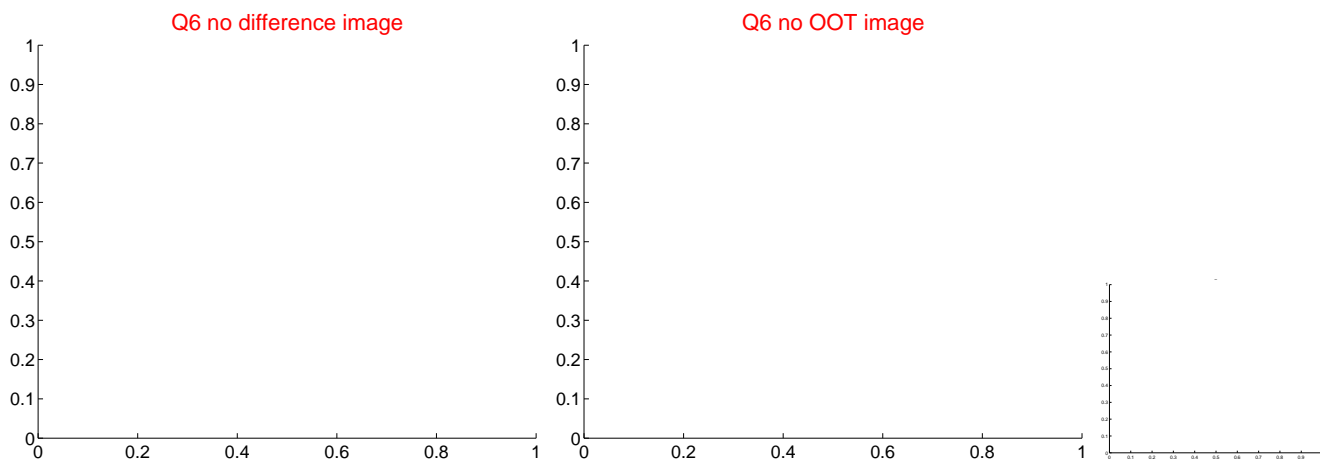
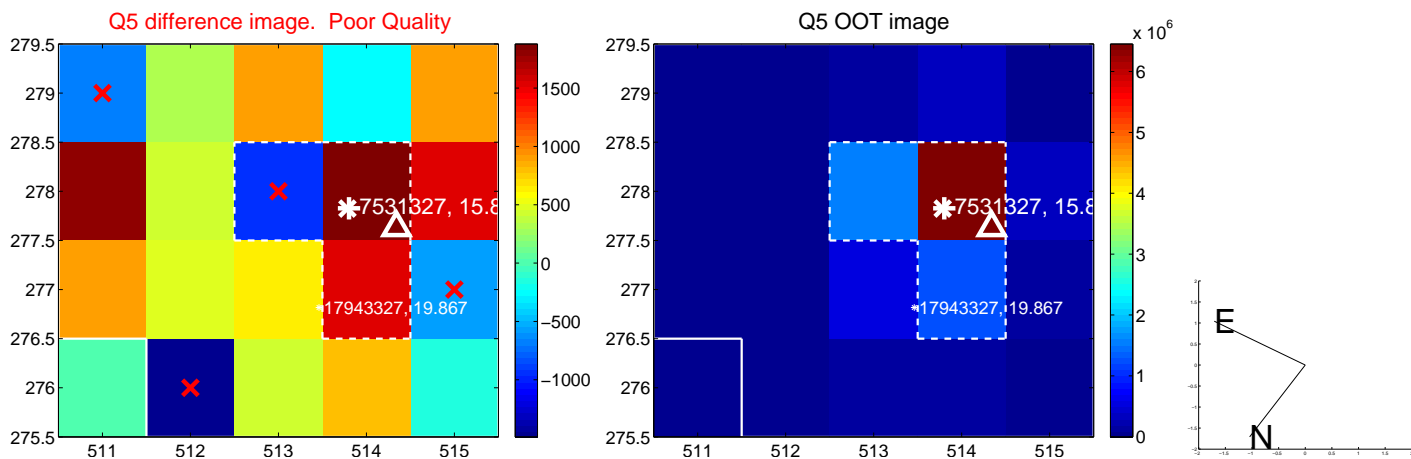


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

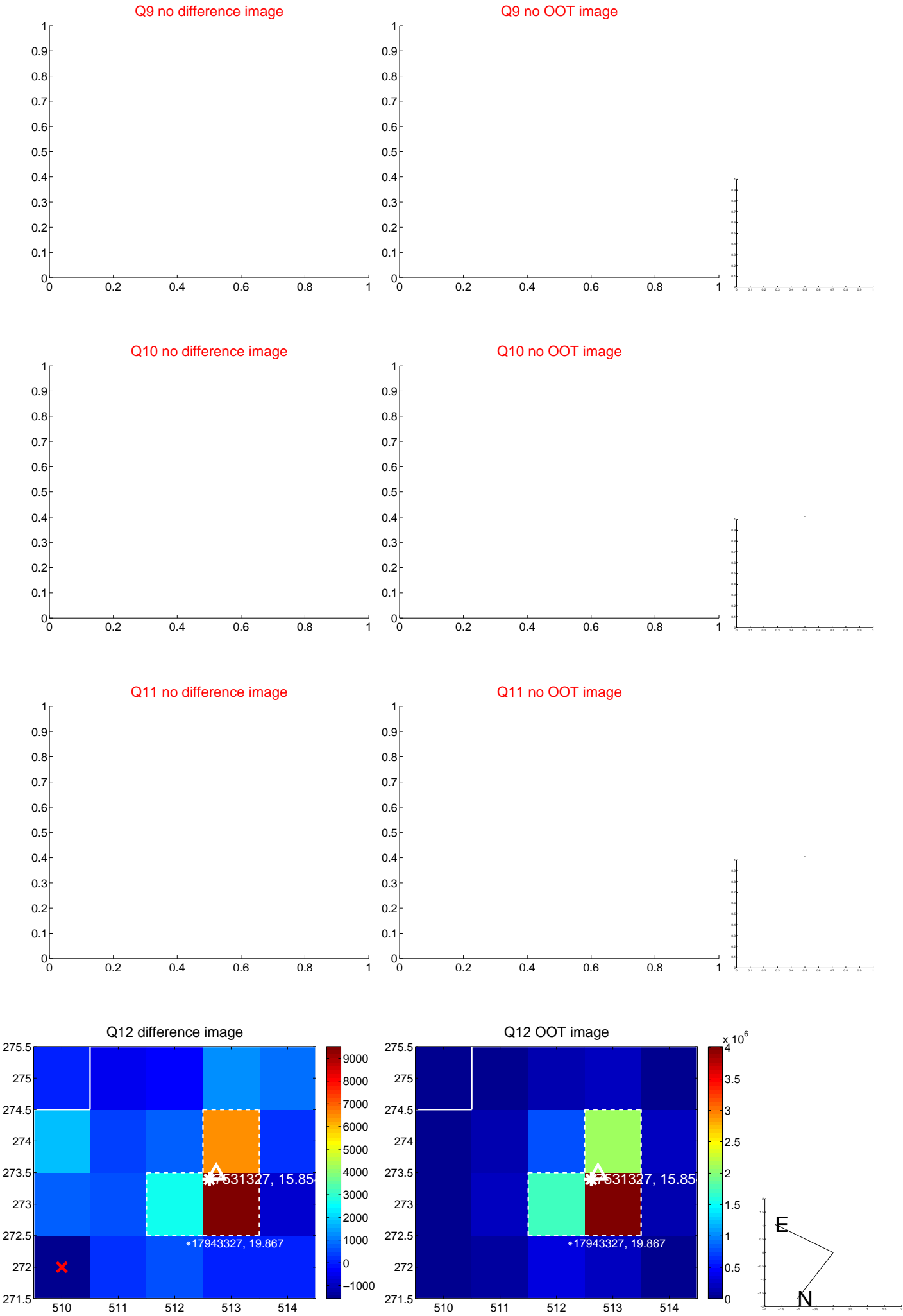


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

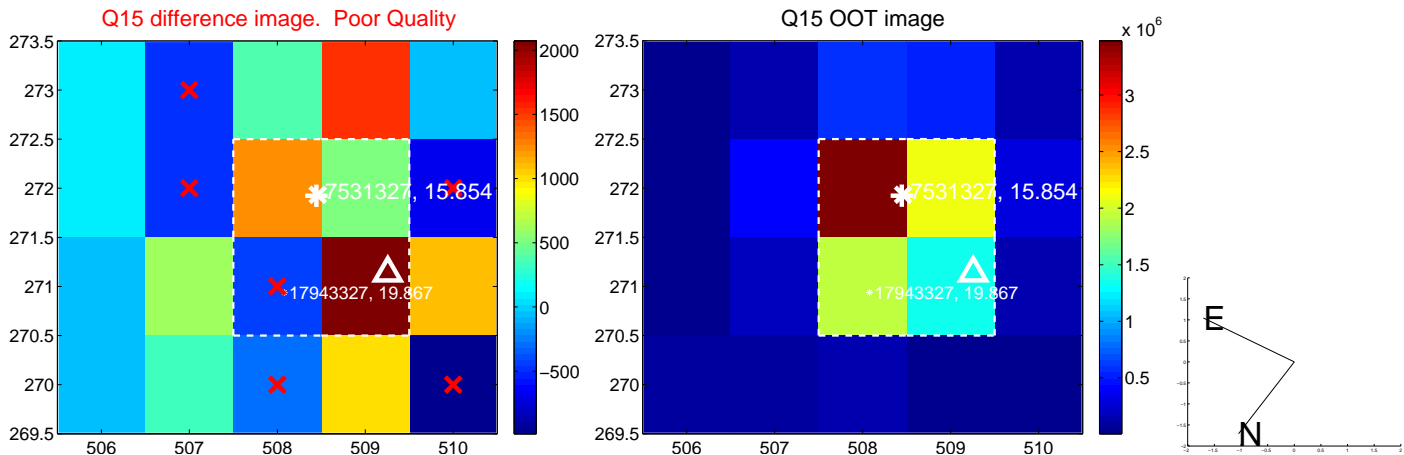




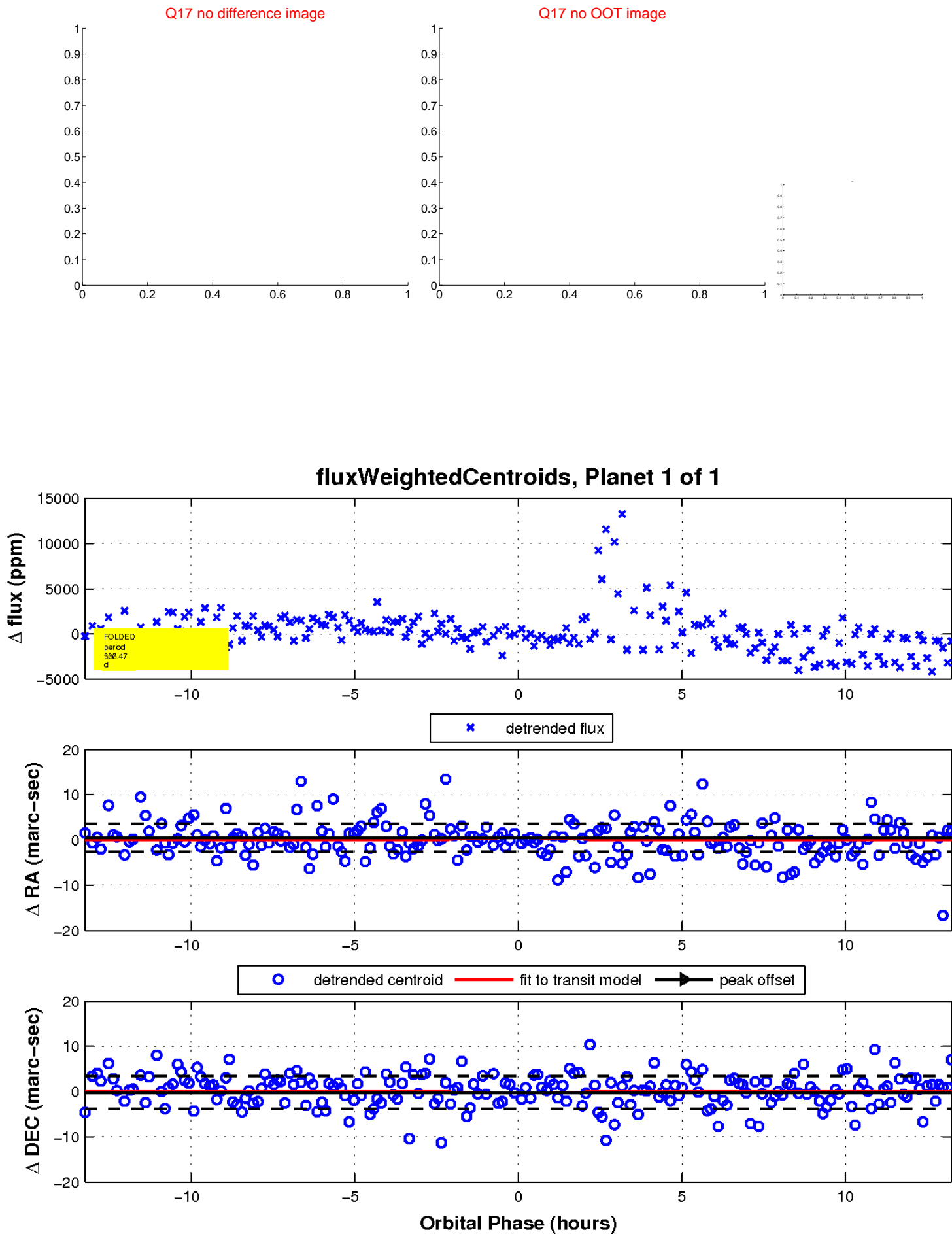
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

