

# KIC 003229028

## Q1-17 DR25 TCE Parameters

| TCE          | Run Type | KOI?    | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES  | SNR  | R <sub>★</sub> (R <sub>☉</sub> ) | T <sub>★</sub> (K) | R <sub>p</sub> (R <sub>⊕</sub> ) | S <sub>p</sub> (S <sub>⊕</sub> ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 003229028-01 | OBS      | 6100.01 | 0.730934      | 132.219360   | 20.5        | 2.765            | 14.6 | 13.3 | 1.46                             | 5929               | 0.79                             | 8772.95                          |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments                |
|--------------|----------|------|-------|---|---|---|---|-------------------------|
| 003229028-01 | OBS      | FP   | 0.00  | 0 | 1 | 0 | 1 | MOD_SEC_ALT—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.

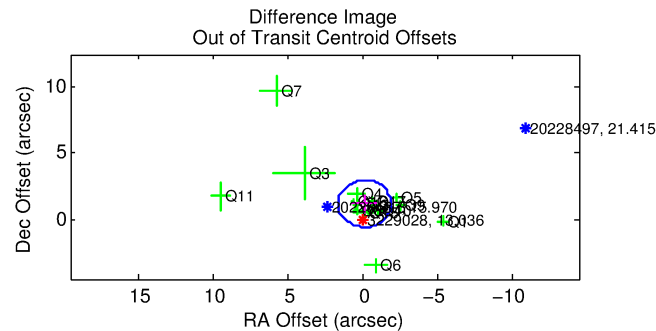
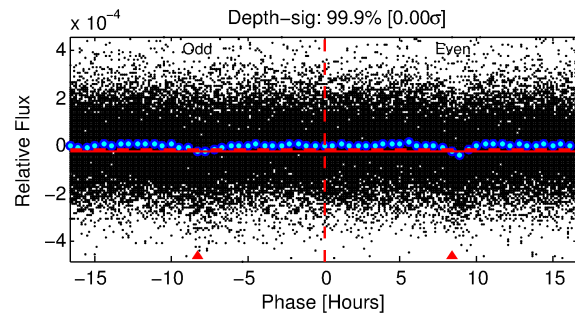
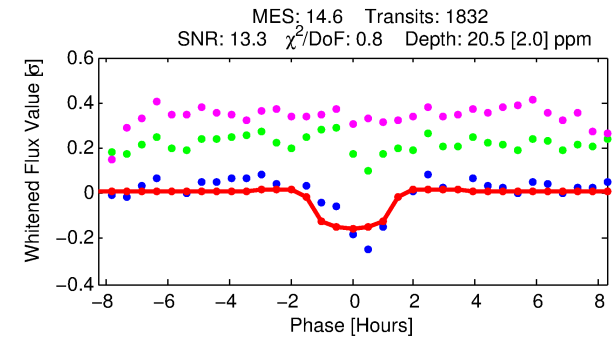
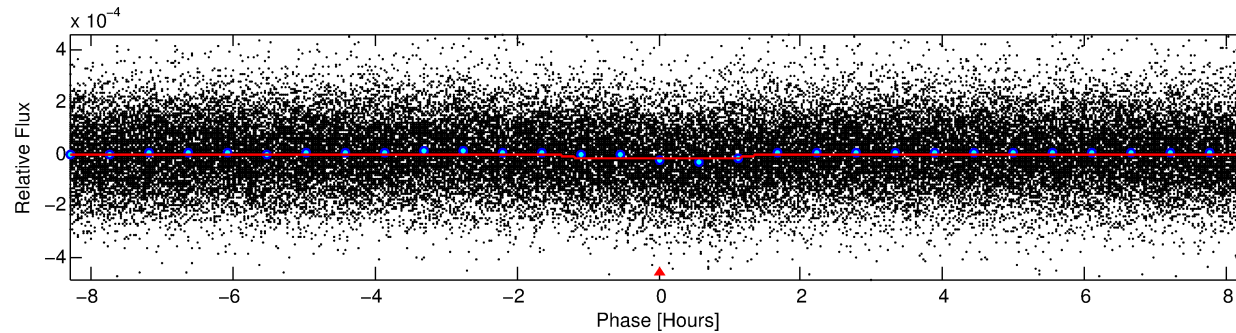
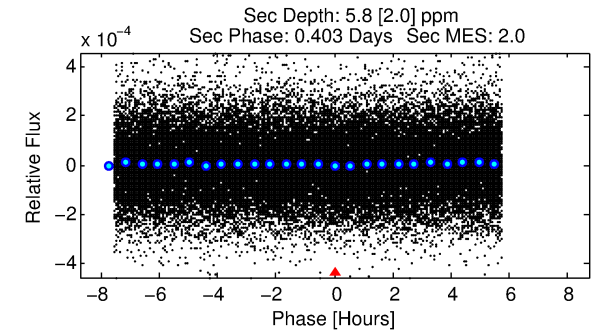
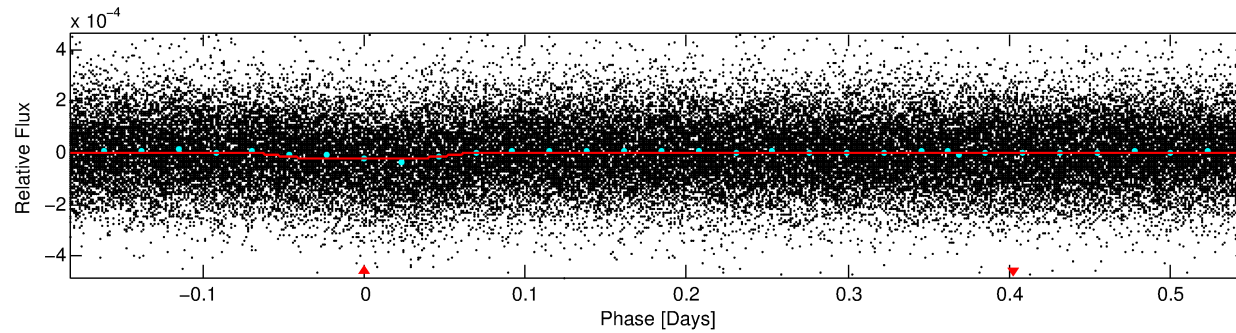
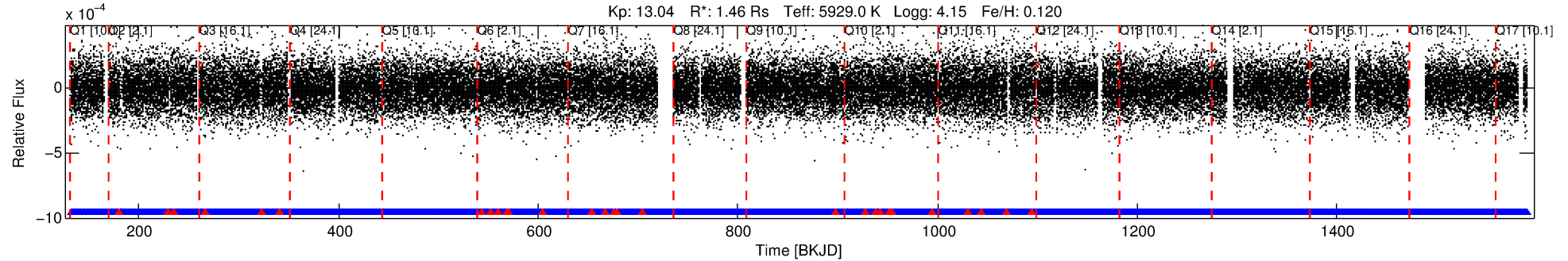
## Ephemeris Match Information For 003229028-01

| TCE (1)      | KIC     | Parent (2)   | Parent KIC | P <sub>1</sub> :P <sub>2</sub> | Dist (″) | ΔRow | ΔCol | m <sub>2</sub> | m <sub>1</sub> | D <sub>2</sub> /D <sub>1</sub> | Mechanism  | Flag | σ <sub>P</sub> | σ <sub>T</sub> |
|--------------|---------|--------------|------------|--------------------------------|----------|------|------|----------------|----------------|--------------------------------|------------|------|----------------|----------------|
| 003229028-01 | 3229028 | V404-Lyr-pri | 3228863    | 1:1                            | 182.9    | 46   | 1    | 11.82          | 13.04          | 24827.00                       | Direct-PRF | 0    | 1.30           | 0.70           |

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 3229028 Candidate: 1 of 1 Period: 0.731 d  
KOI: K06100.01 Corr: 0.860



## DV Fit Results:

Period = 0.73093 [0.00001] d  
Epoch = 132.2194 [0.0024] BKJD  
Rp/R\* = 0.0049 [0.0016]  
a/R\* = 1.30 [0.88]  
b = 0.90 [0.35]  
Seff = 8772.95 [2505.26]  
Teq = 2468 [176] K  
Rp = 0.79 [0.30] Re  
a = 0.0164 [0.0030] AU  
Ag = 1.39 [1.11] [0.35σ]  
Teffp = 4140 [780] K [2.09σ]

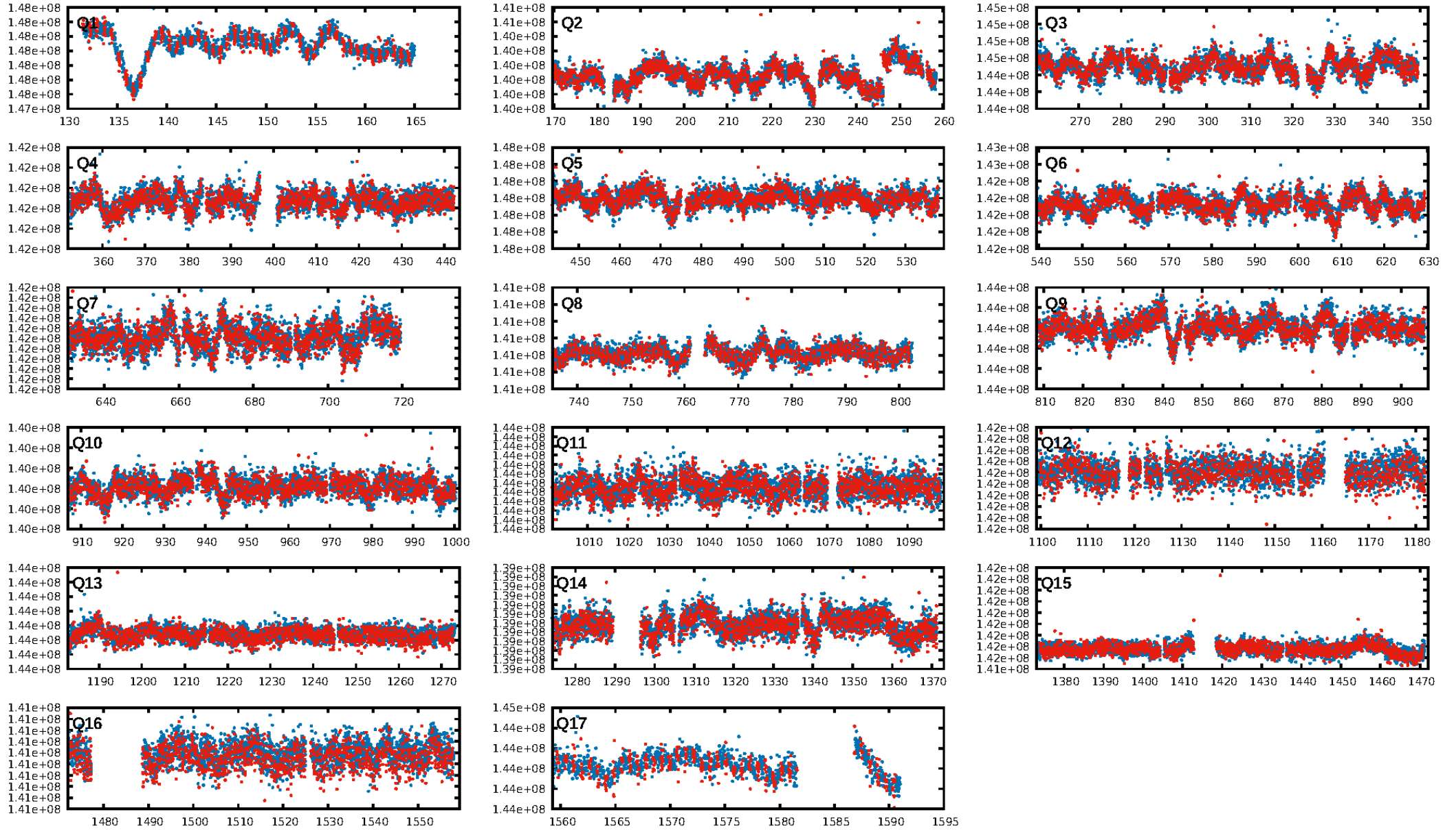
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.05e-42  
RollingBand-fgt: 0.98 [1722/1750]  
**GhostDiagnostic-chr: 0.9171**  
Centroid-sig: 0.0%  
Centroid-so: 3.362 arcsec [3.46σ]  
OotOffset-rm: 1.206 arcsec [2.04σ]  
KicOffset-rm: 1.306 arcsec [2.55σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.56 [9/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:25:07 Z

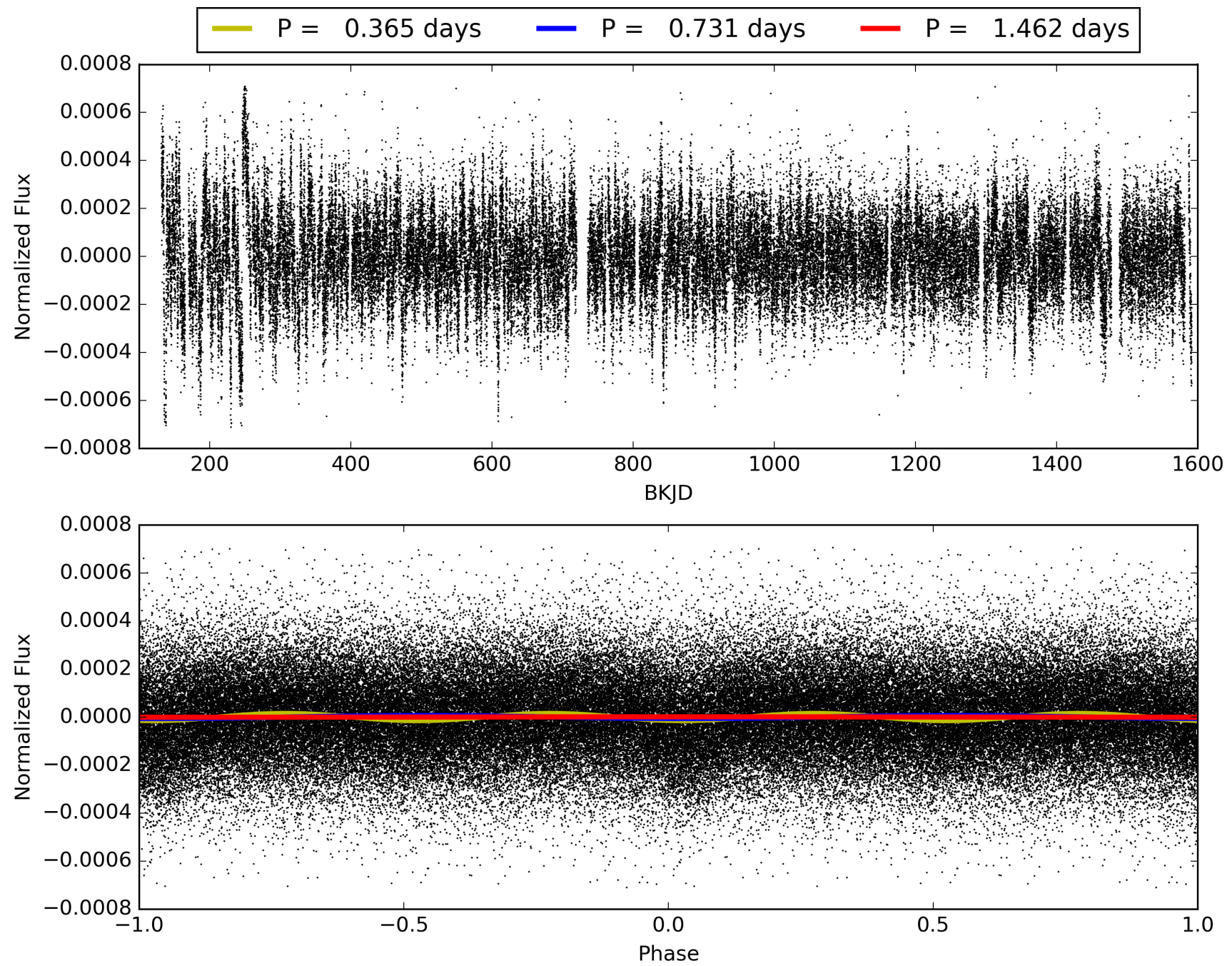
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003229028-01, PDC Light Curves



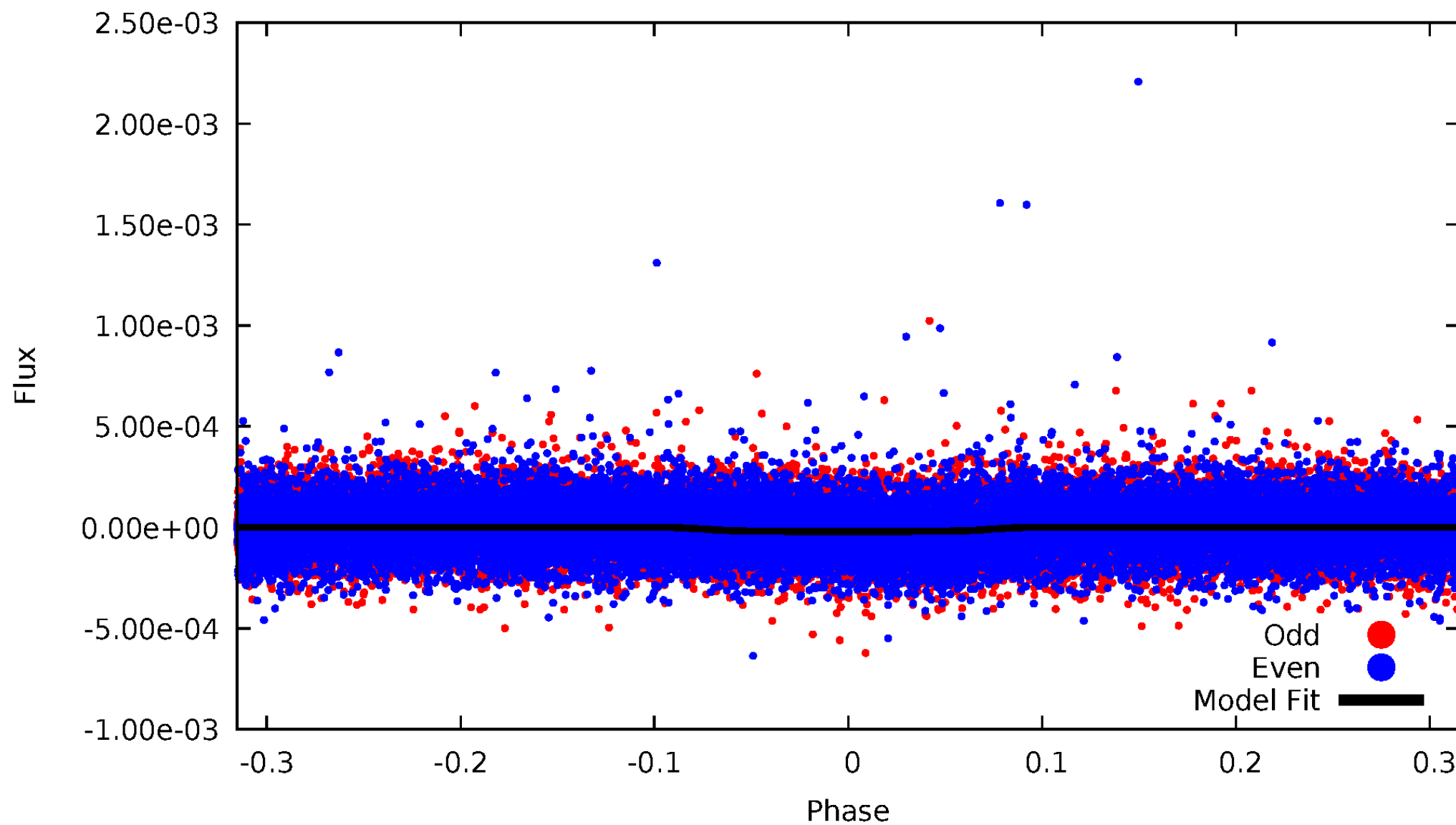


TCE 003229028-01



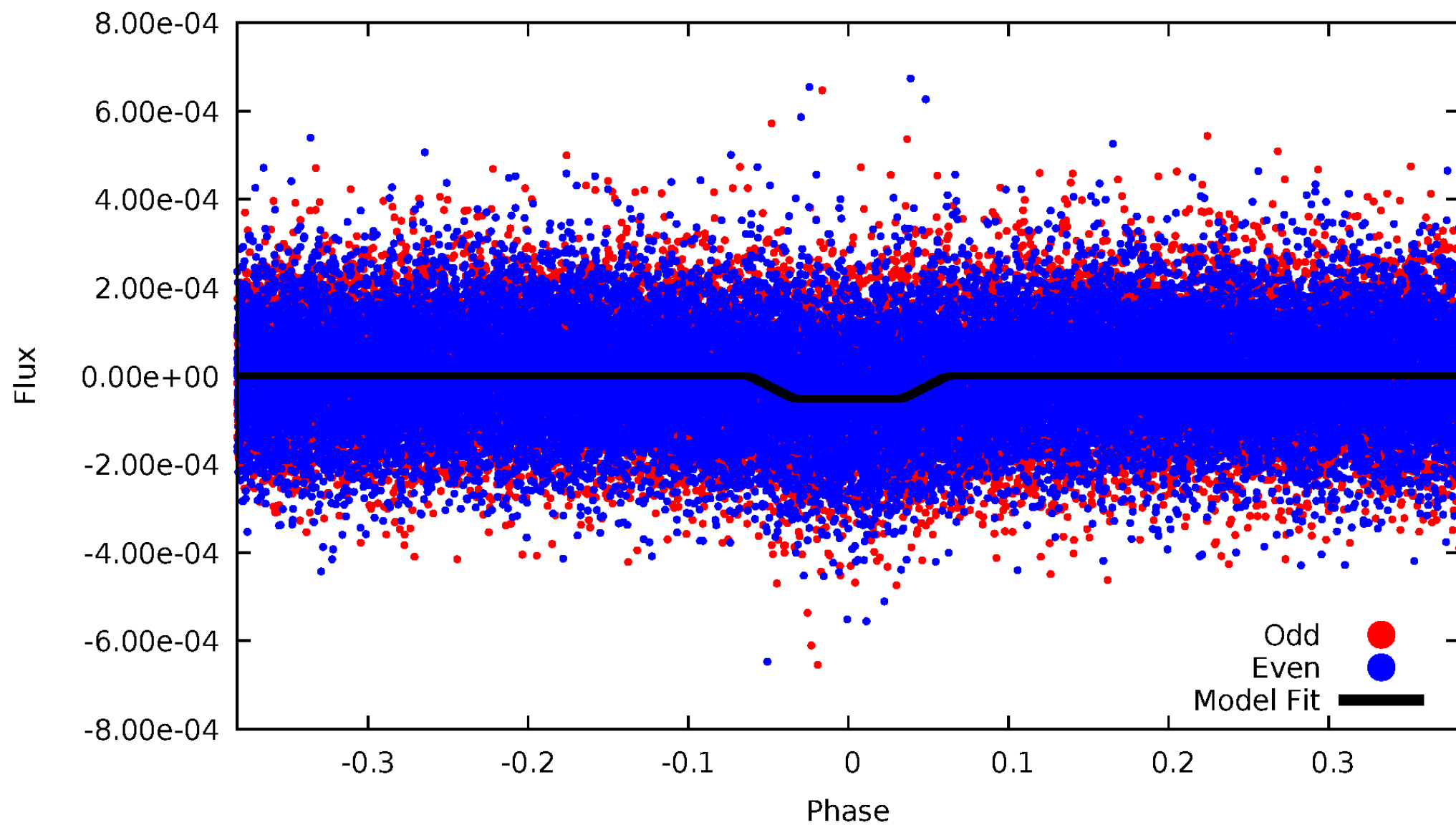
# DV Odd/Even

TCE 003229028-01



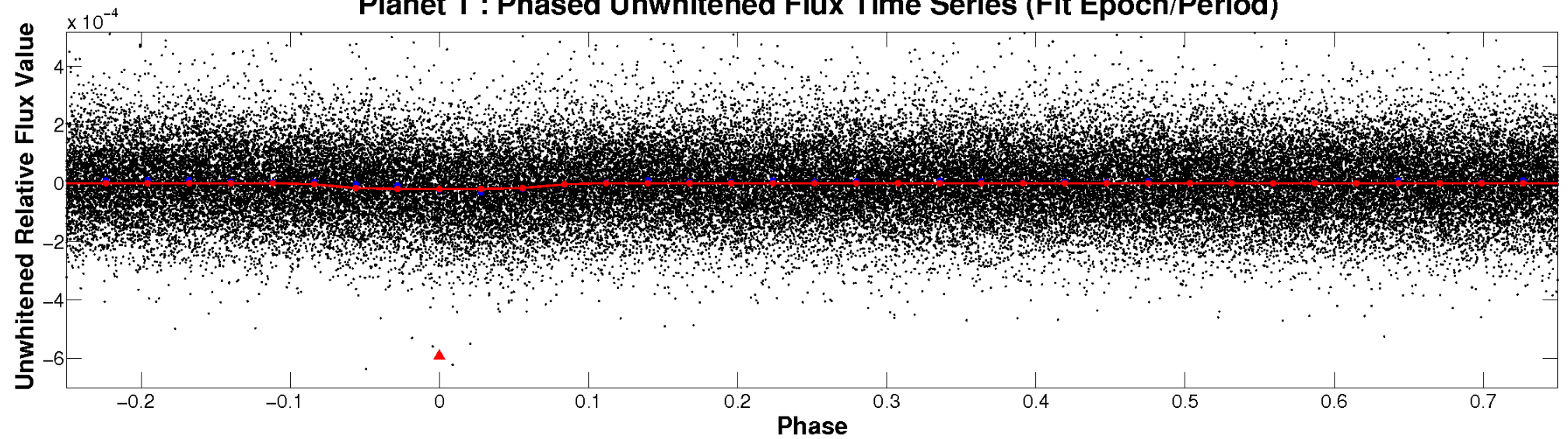
# ALT Odd/Even

TCE 003229028-01

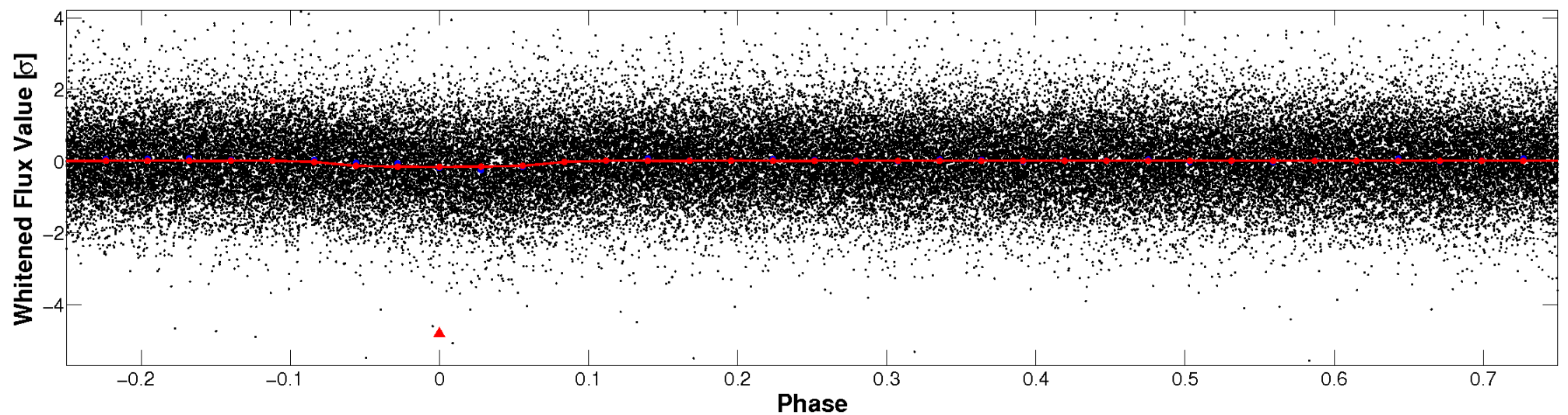


# Non-Whitened Vs. Whitened Light Curve

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



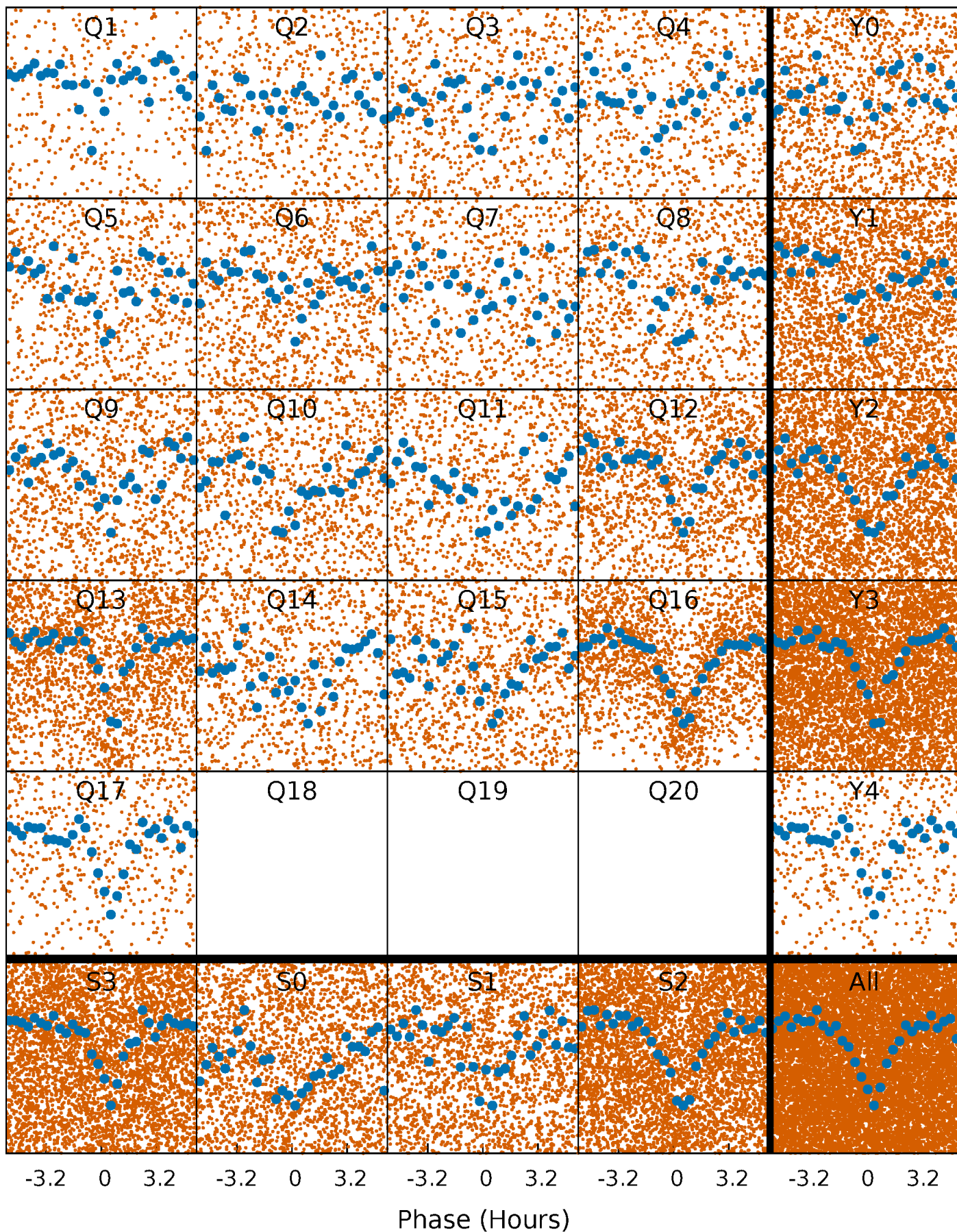
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

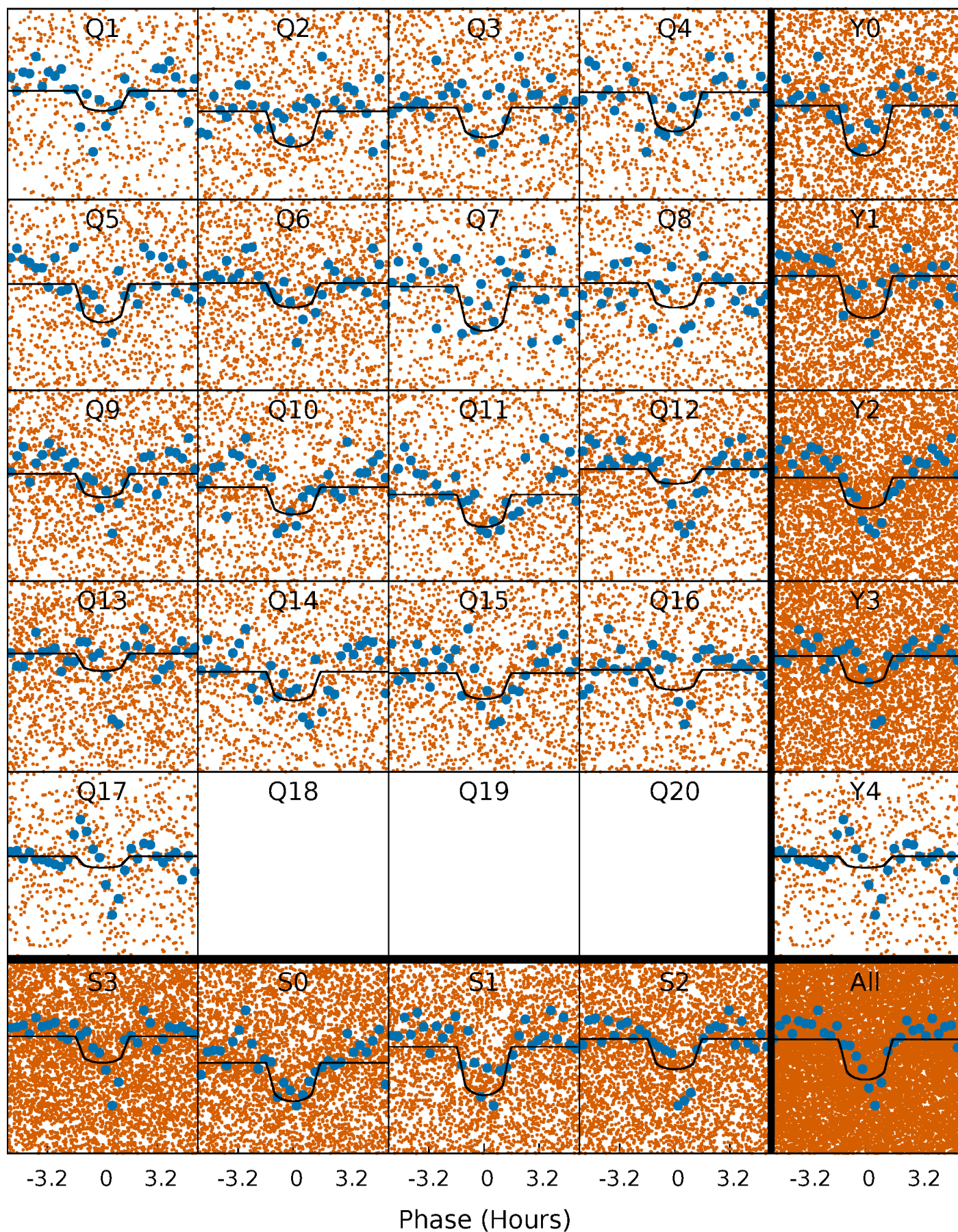
TCE 003229028-01 P= 0.730934 Days  $T_0=132.219360$  (BKJD)





# DV Quarter-Phased Transit Curves

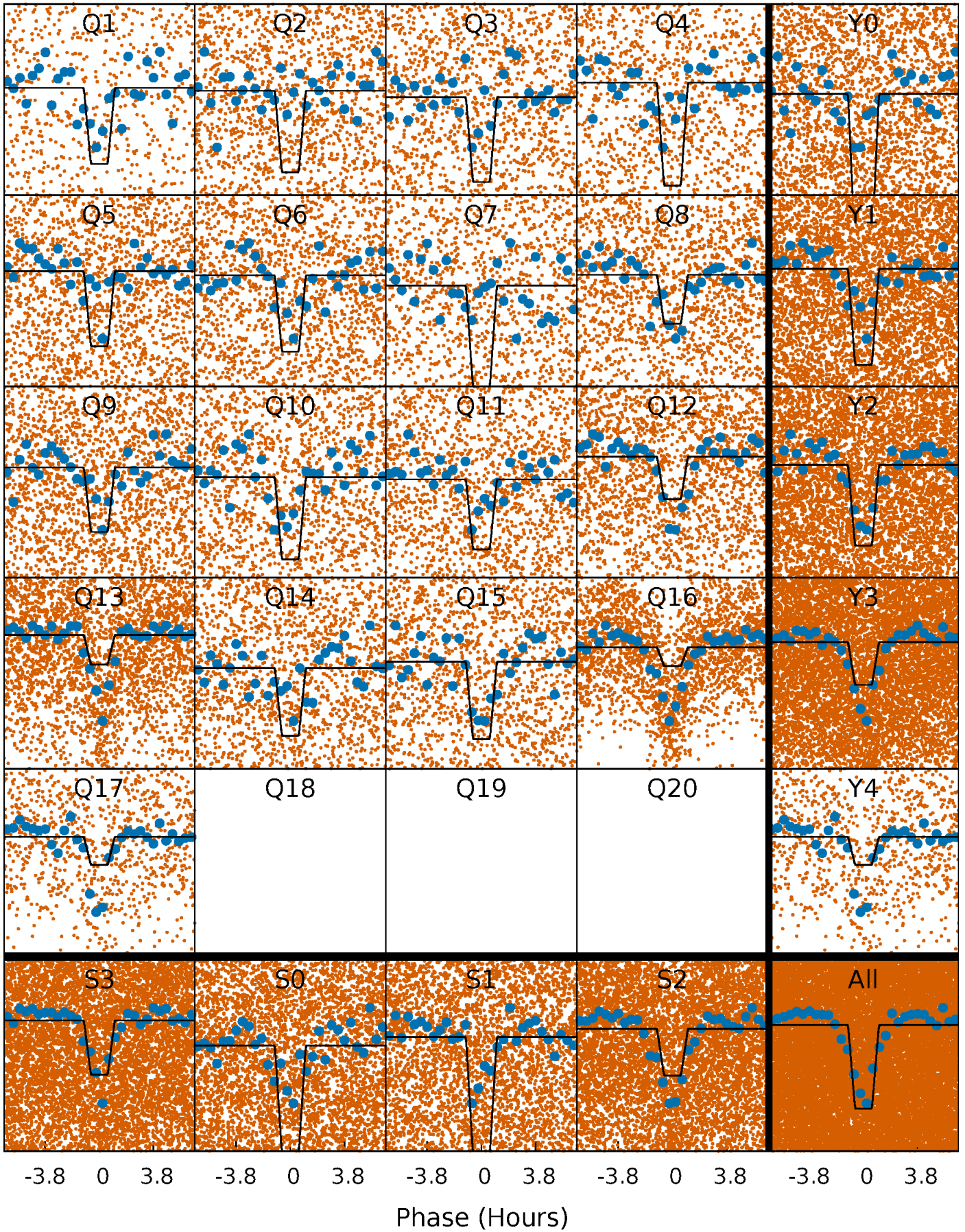
TCE 003229028-01   P= 0.730934 Days    $T_0=132.219360$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

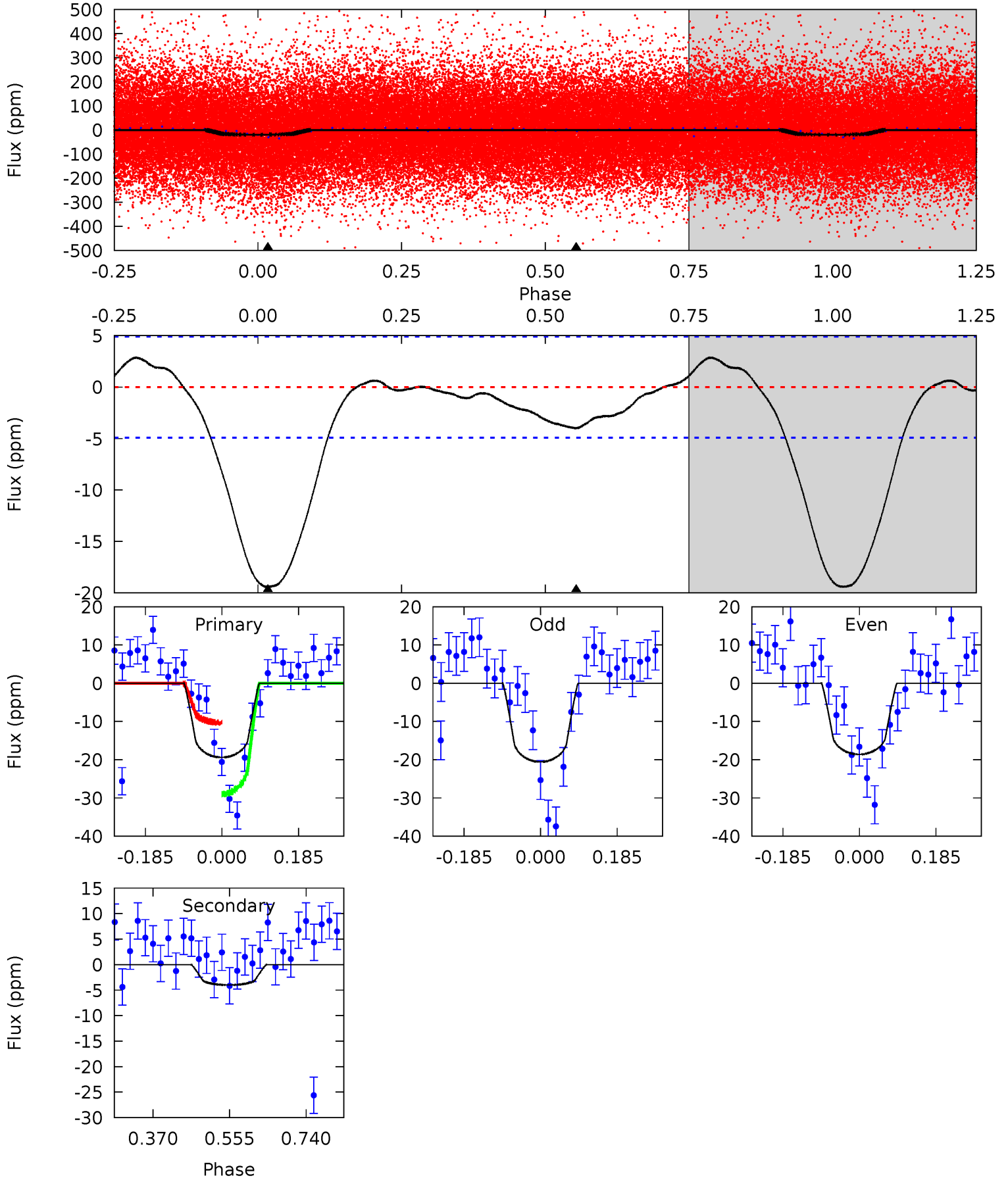
TCE 003229028-01 P= 0.730952 Days  $T_0=132.214595$  (BKJD)



# DV Model-Shift Uniqueness Test

003229028-01, P = 0.730934 Days, E = 131.488426 Days

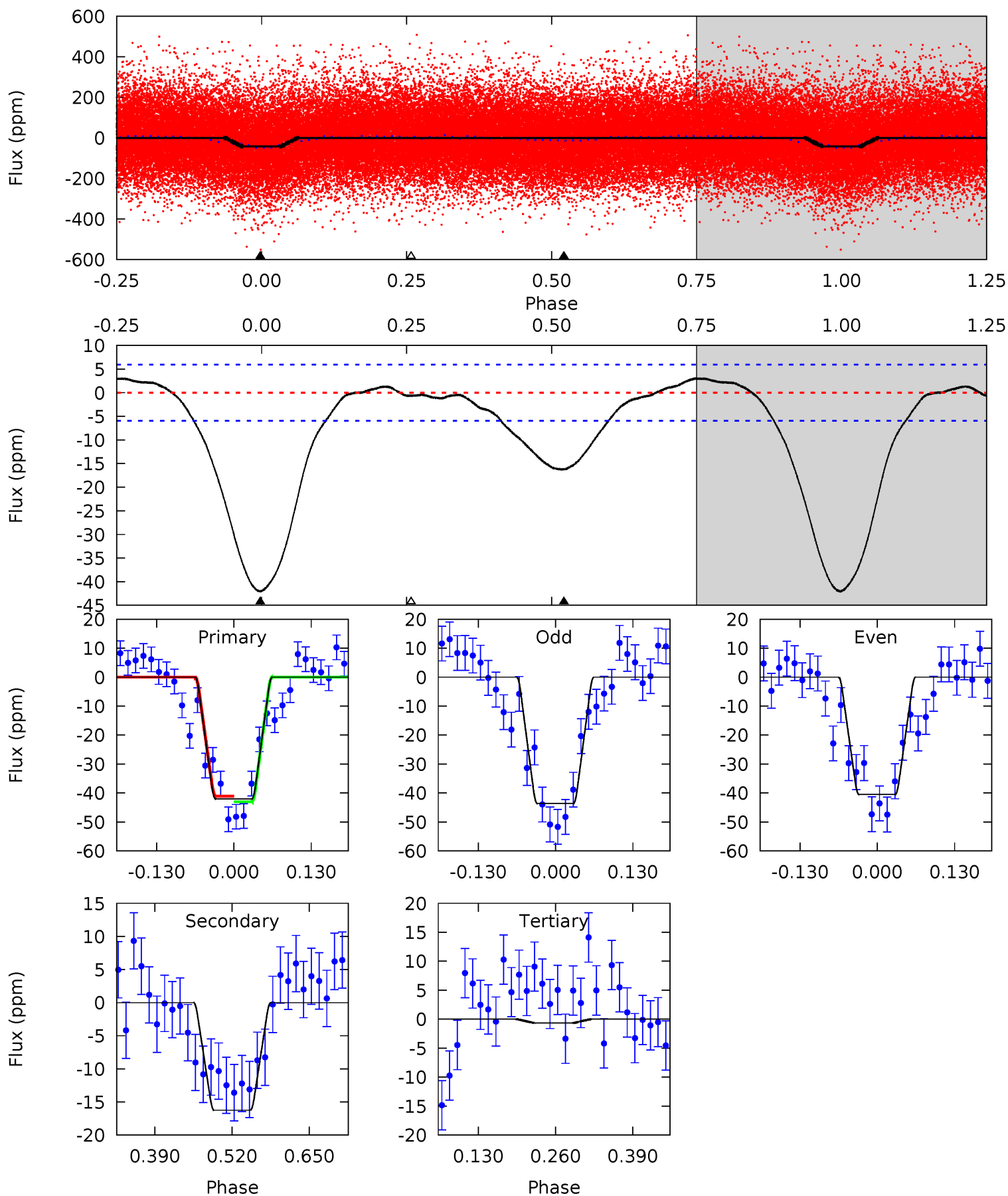
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.5 | 3.62 | 0   | 0   | 4.43            | 1.33            | 1.12             | 17.5    | 17.5    | 3.62    | 3.62    | 0.89    | 0.91 | 0.13  | 8.48 |



# Alt Model-Shift Uniqueness Test

003229028-01, P = 0.730952 Days, E = 131.483643 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 | 12.4 | 0.50 | 0   | 4.51            | 1.51            | 1.20             | 31.5    | 32.0    | 11.9    | 12.4    | 1.18    | 1.08 | 0.07  | 0.72 |





### Stellar Parameters For KIC 003229028

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $5929^{+79}_{-79}$  | $4.152^{+0.162}_{-0.108}$ | $0.120^{+0.150}_{-0.150}$ | $1.463^{+0.233}_{-0.285}$ | $1.107^{+0.099}_{-0.089}$ | $0.497^{+0.427}_{-0.170}$                 |
|        | +1%/-1%             | +4%/-3%                   | +125%/-125%               | +16%/-19%                 | +9%/-8%                   | +86%/-34%                                 |
| Source | SPE90               | SPE90                     | SPE90                     | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 003229028-01 / KOI 6100.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$          |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-4 \pm 1$  | $0.78^{+0.26}_{-0.27}$ | $3444^{+167}_{-187}$ | $3813^{+796}_{-641}$ | $0.971^{+1.371}_{-0.472}$ |
| Alt.    | $-16 \pm 1$ | $1.11^{+0.30}_{-0.25}$ | $3436^{+155}_{-172}$ | $4478^{+560}_{-427}$ | $1.964^{+1.362}_{-0.730}$ |

$T_{\text{max}}$  = 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

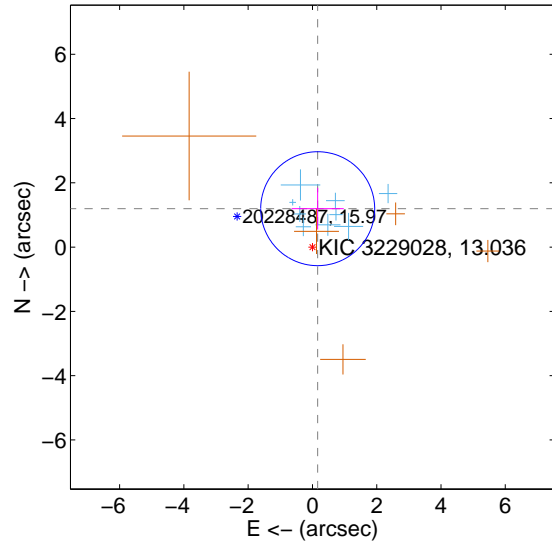
Supplemental centroid analysis for 003229028-01. Kepler magnitude: 13.04. Transit SNR 13.28

There are 9 quarters with good PRF difference image offsets

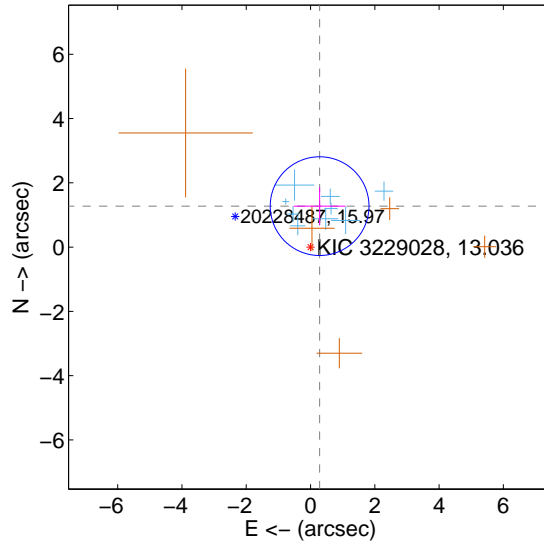
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $1.206 \pm 0.591$  | 2.04                | $-0.163 \pm 0.813$ | $1.195 \pm 0.648$ |
| PRF-fit source offset from KIC position | $1.306 \pm 0.512$  | 2.55                | $-0.283 \pm 0.804$ | $1.275 \pm 0.593$ |
| photometric centroid source offset      | $3.36 \pm 0.97$    | <b>3.46</b>         | $-1.22 \pm 0.85$   | $3.13 \pm 0.99$   |

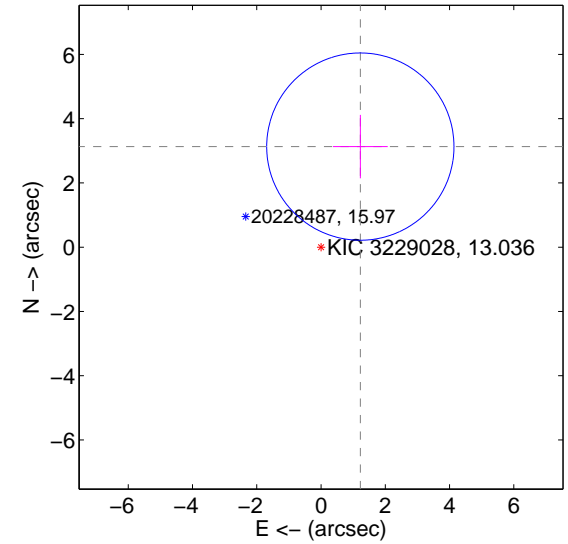
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

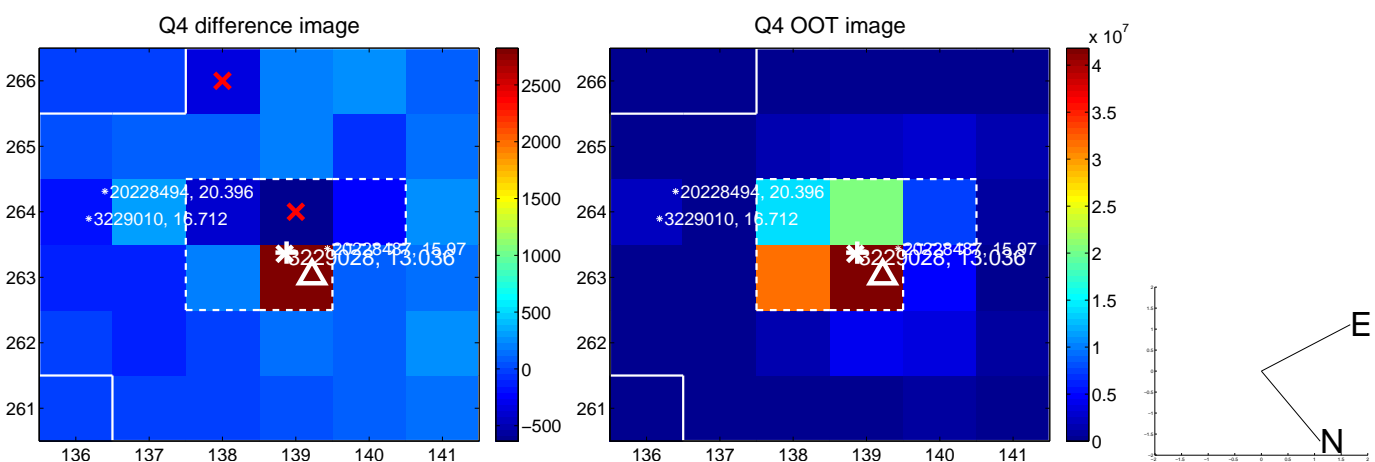
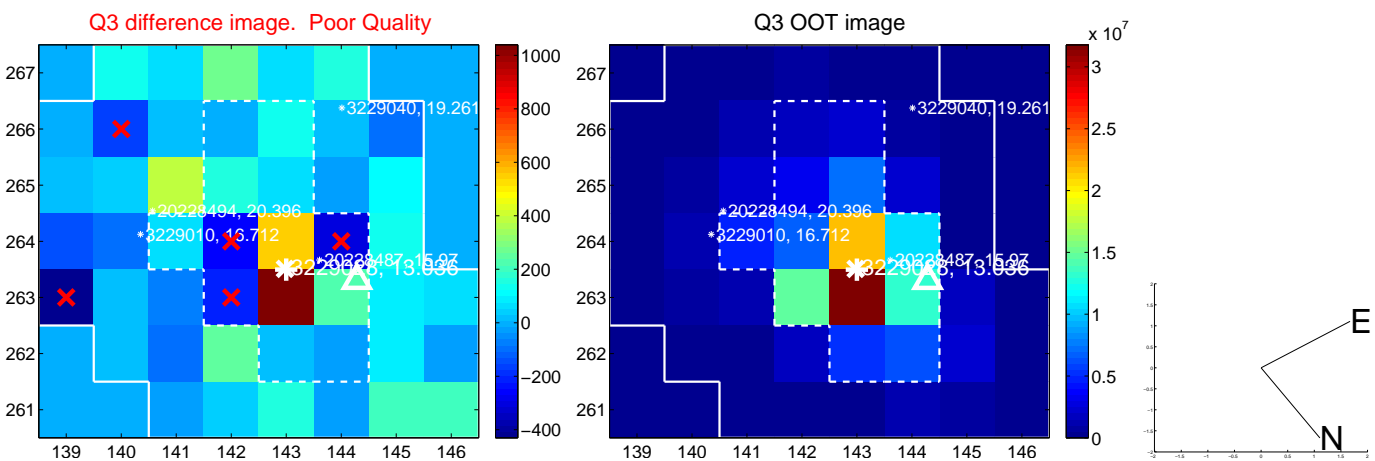
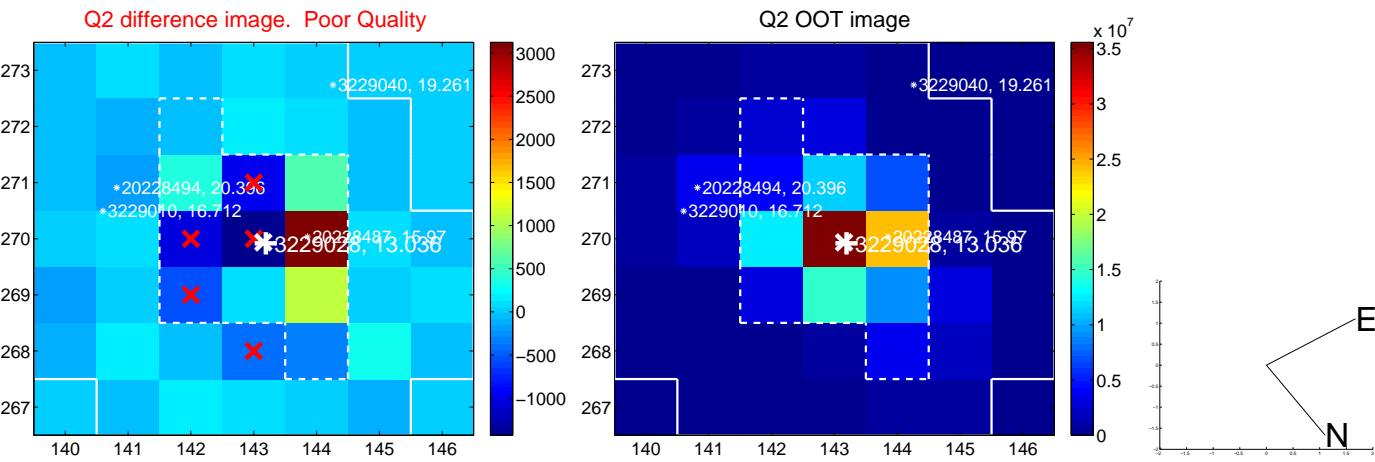
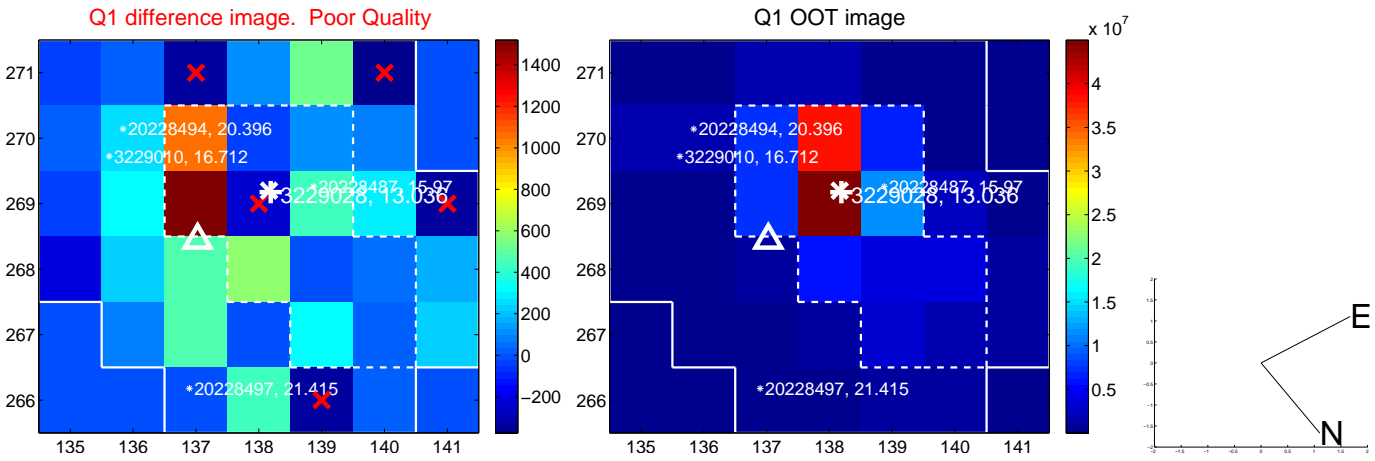


offset from photometric centroids

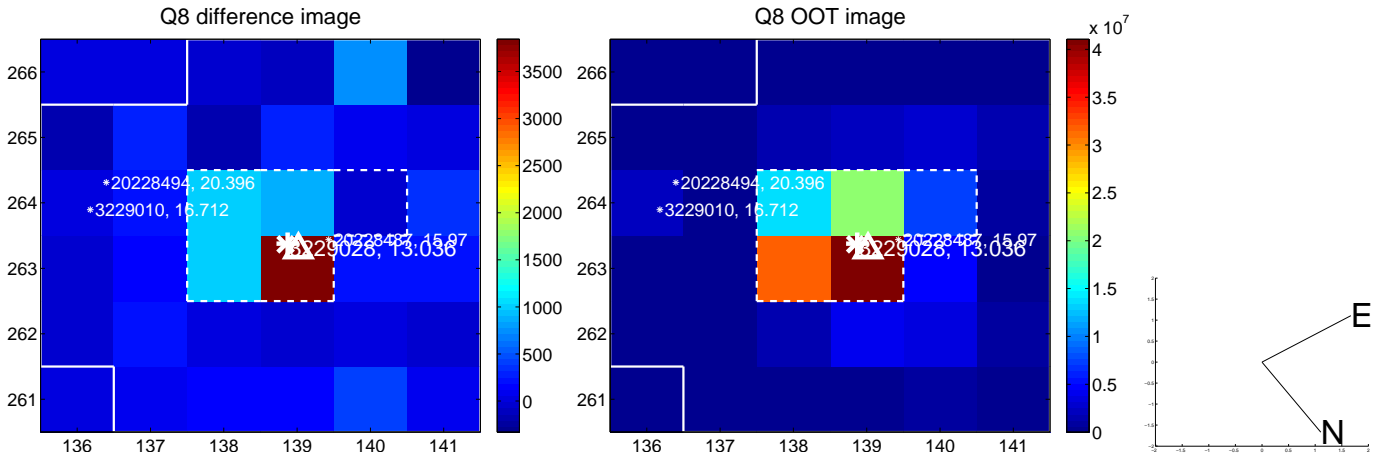
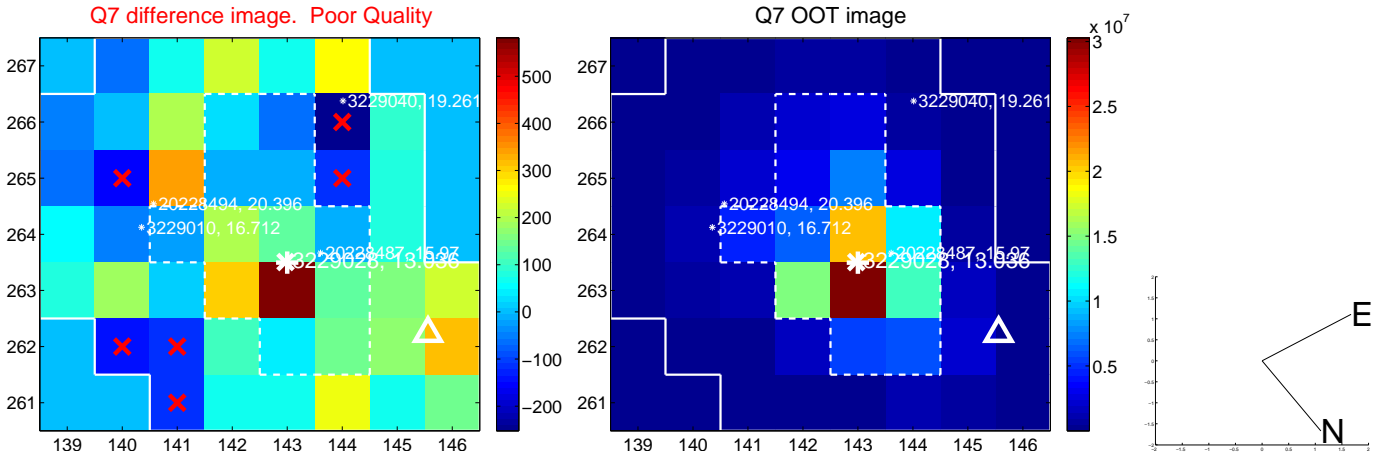
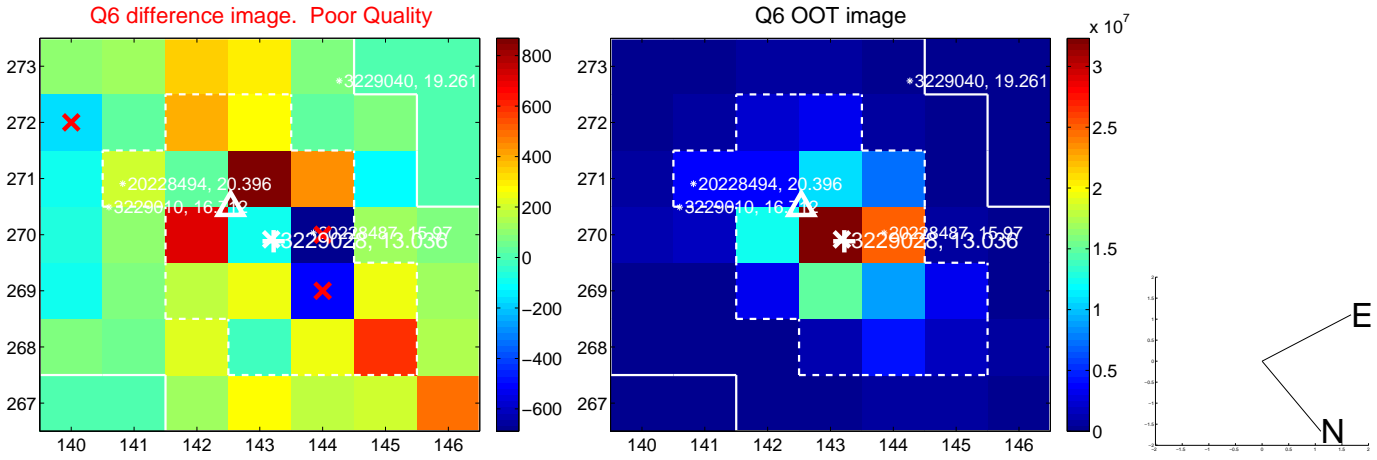
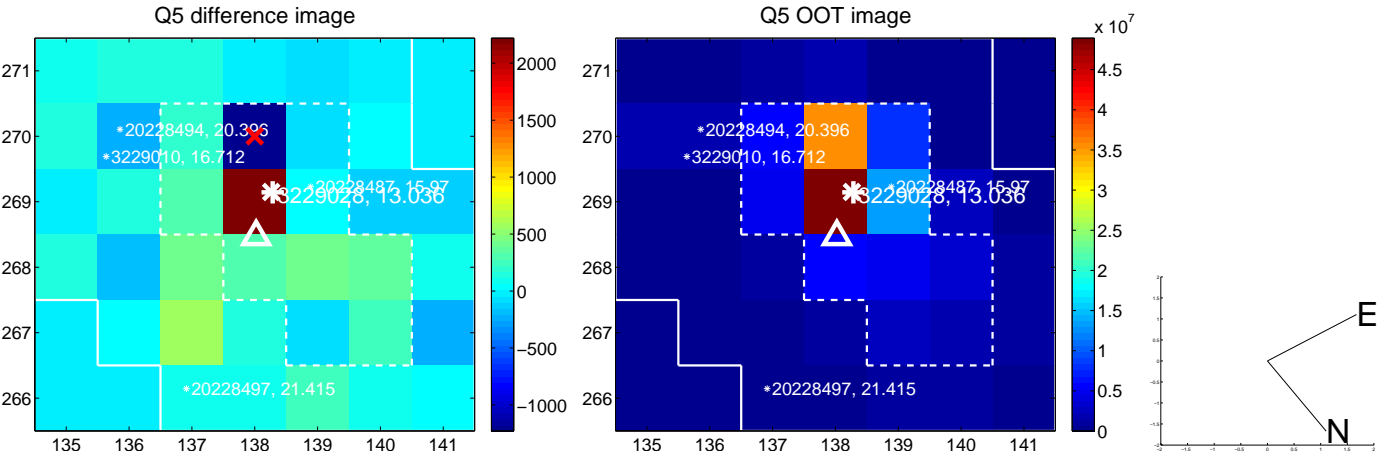


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

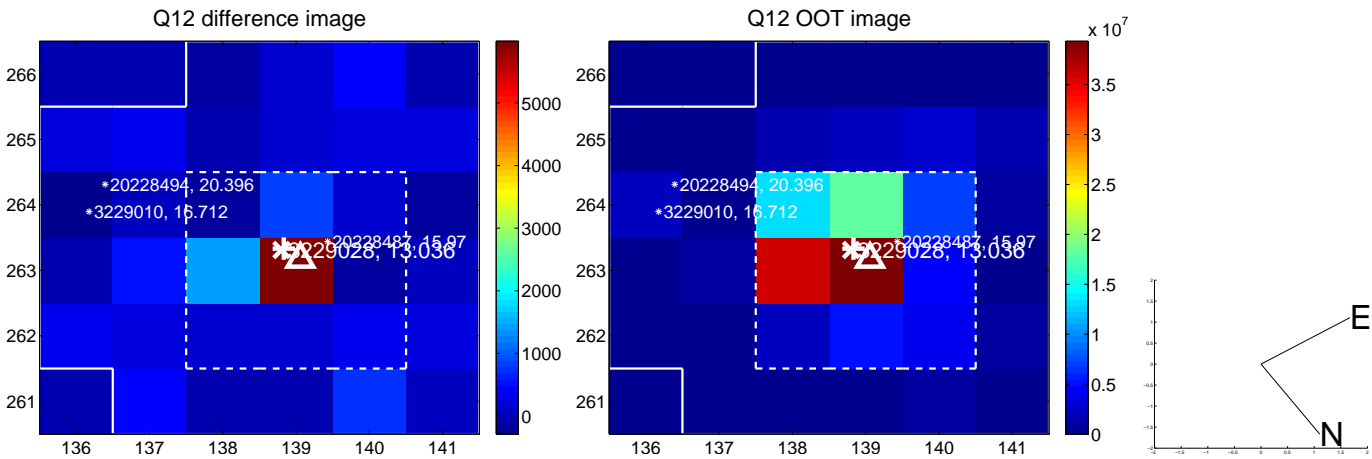
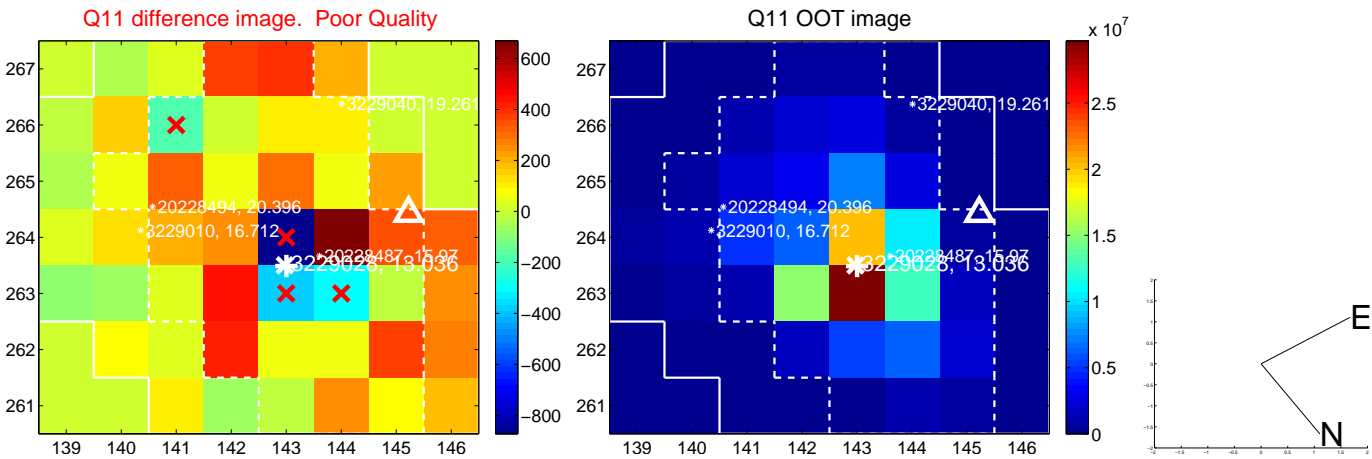
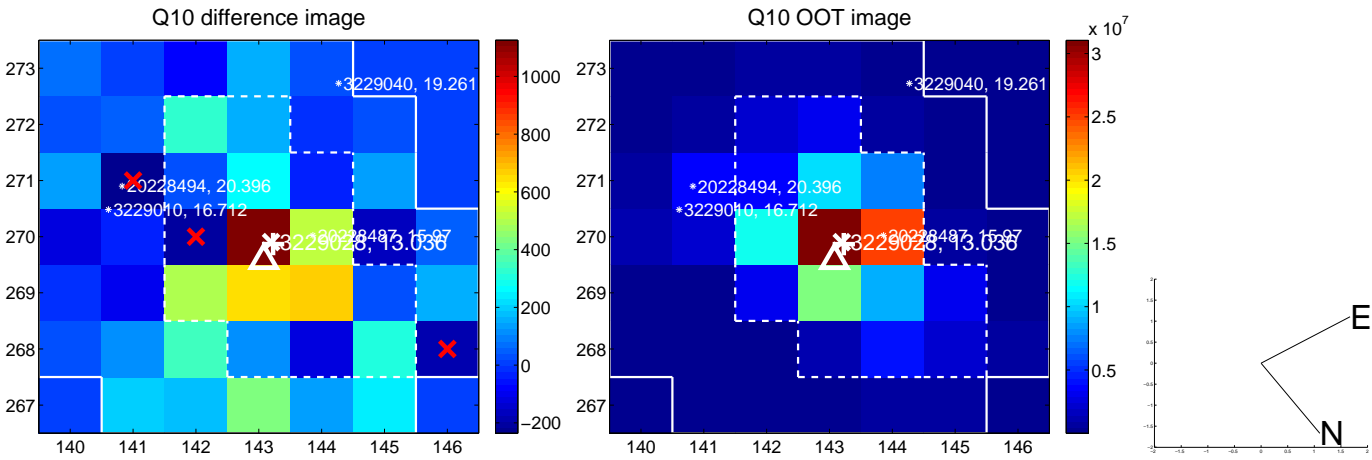
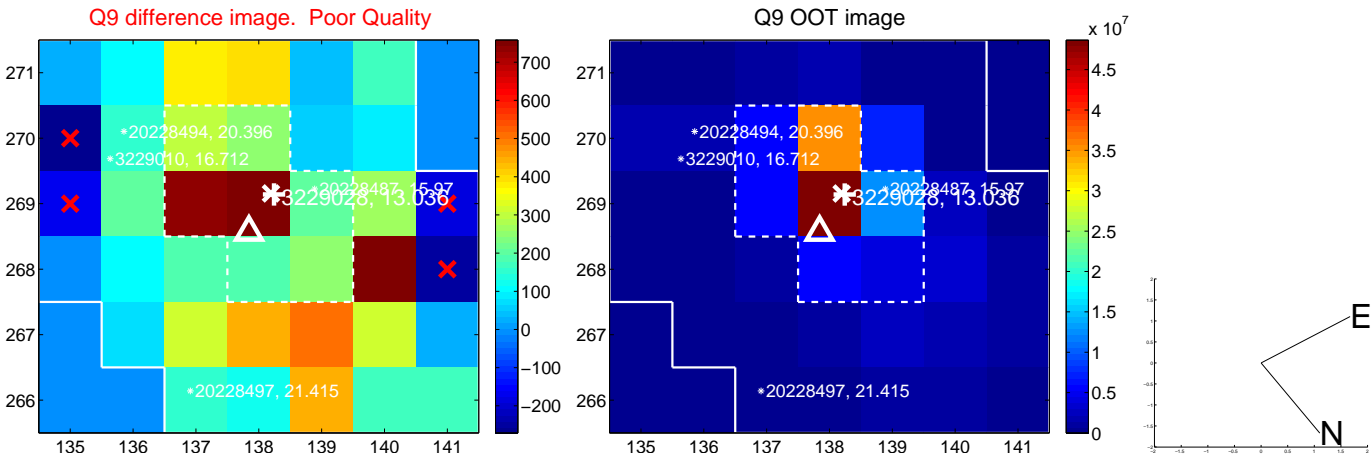


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



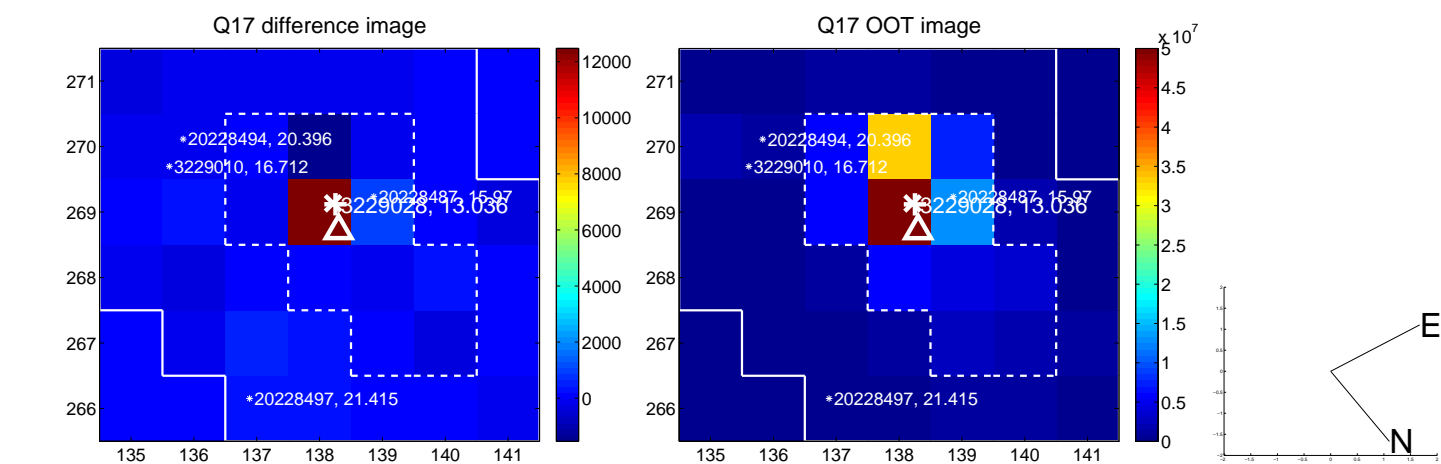


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

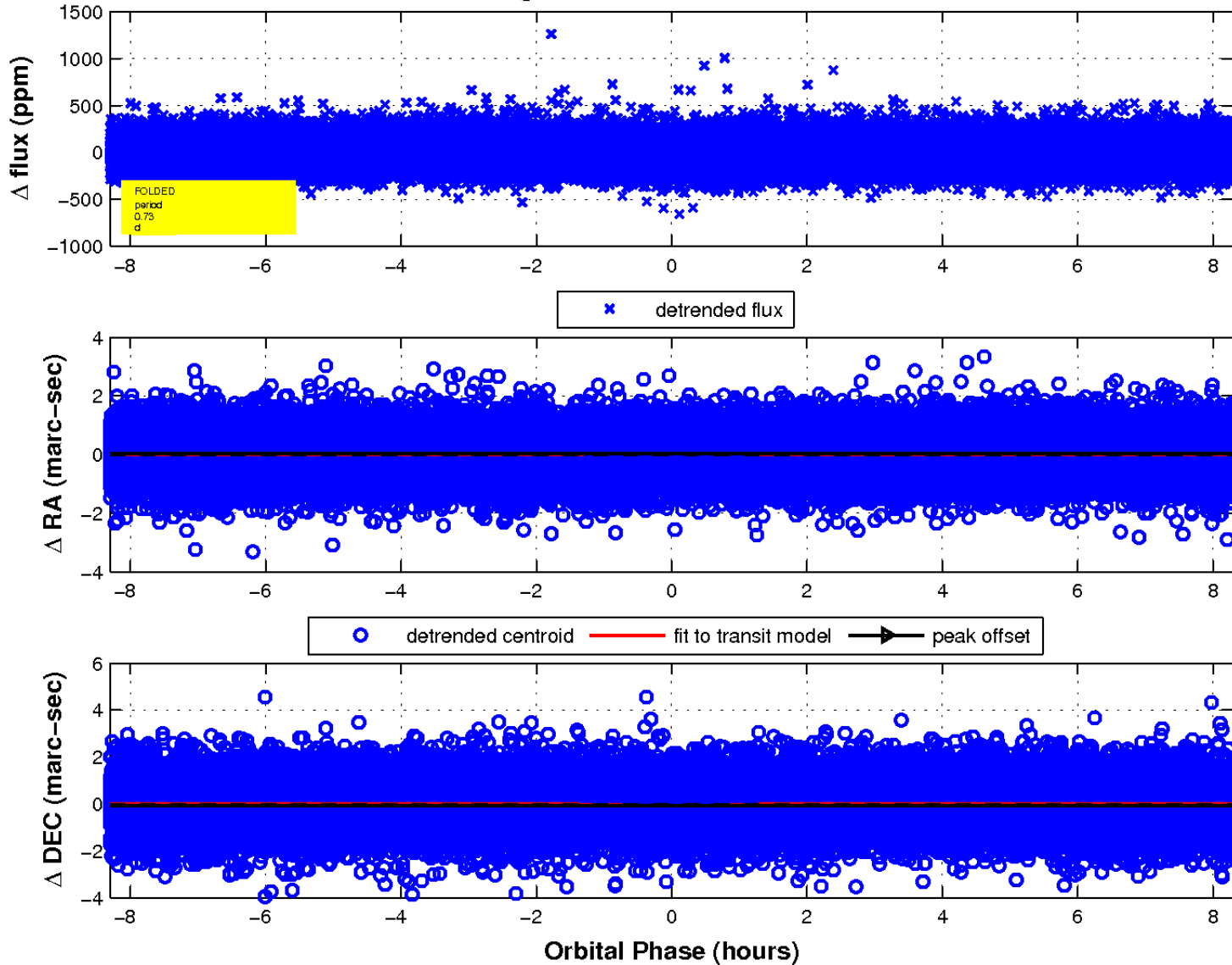




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

