

# KIC 011618937

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011618937-01 | OBS      | No   | 1.027211      | 131.872282   | 26.3        | 2.326            | 8.0 | 7.8 | 0.90                        | 5743            | 0.55                   | 2001.47                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments                       |
|--------------|----------|------|-------|---|---|---|---|--------------------------------|
| 011618937-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT |

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

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

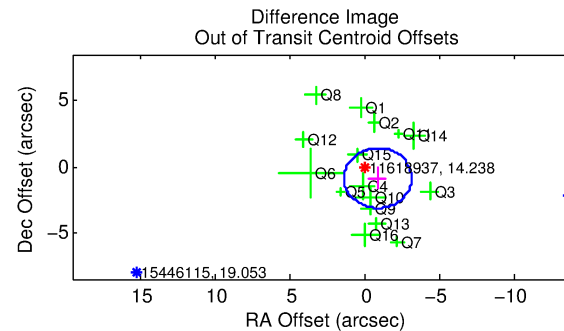
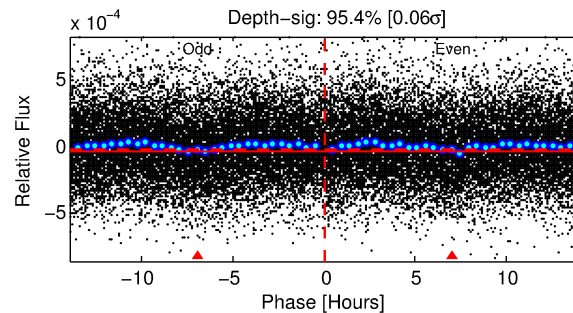
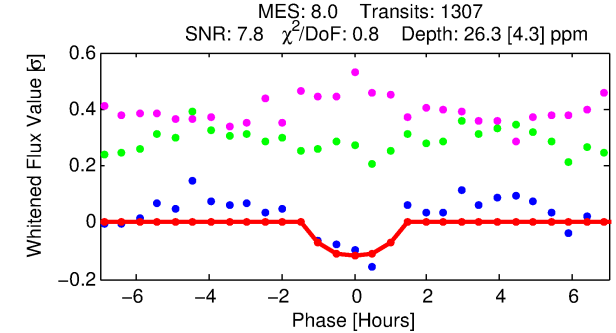
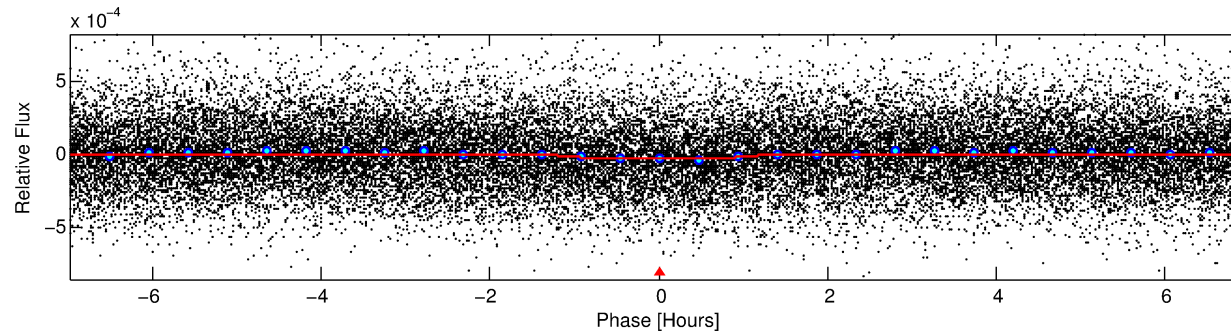
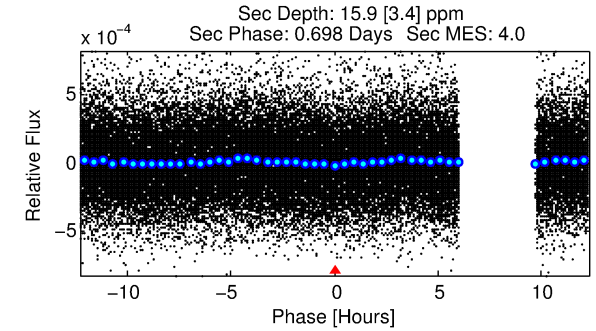
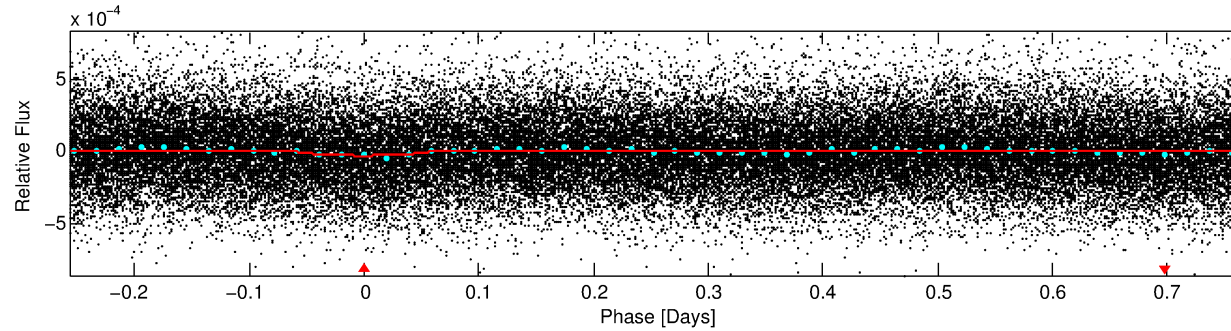
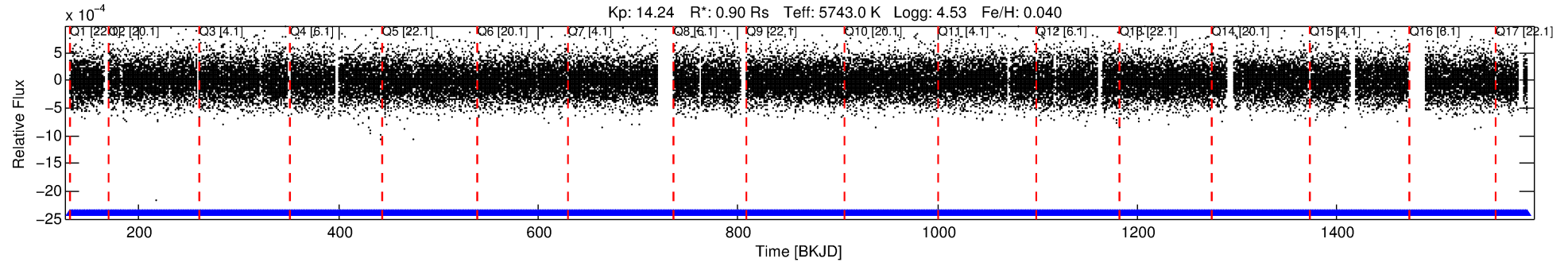
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011618937-01

No Significant Match Found

# DV One-Page Summary

KIC: 11618937 Candidate: 1 of 1 Period: 1.027 d



## DV Fit Results:

Period = 1.02721 [0.00001] d  
Epoch = 131.8723 [0.0041] BKJD  
Rp/R\* = 0.0056 [0.0036]  
a/R\* = 1.80 [3.81]  
b = 0.90 [0.69]  
Self = 2001.47 [773.48]  
Teff = 1706 [165] K  
Rp = 0.55 [0.39] Re  
a = 0.0199 [0.0049] AU  
Ag = 11.46 [15.70] [0.67σ]  
Teffp = 4852 [1607] K [1.95σ]

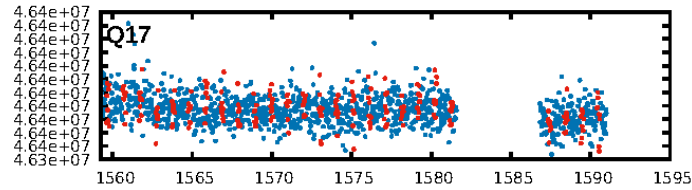
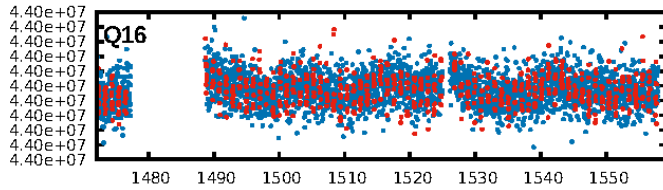
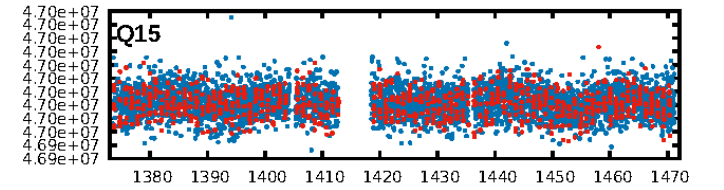
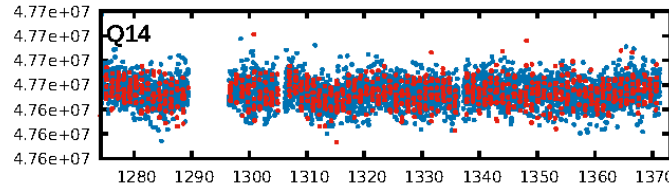
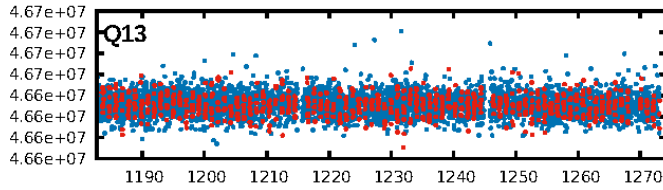
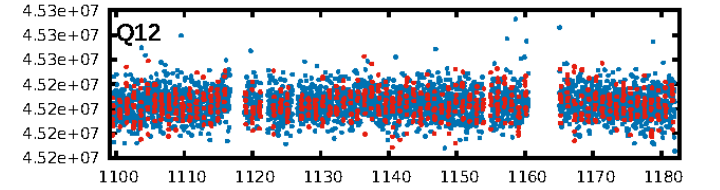
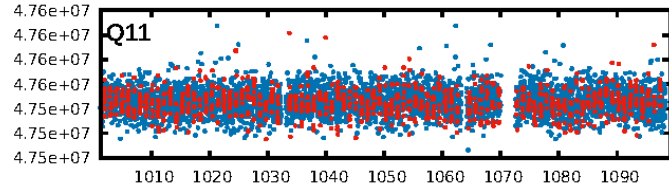
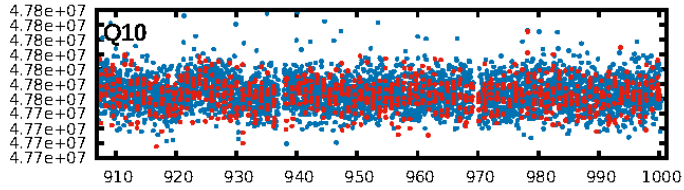
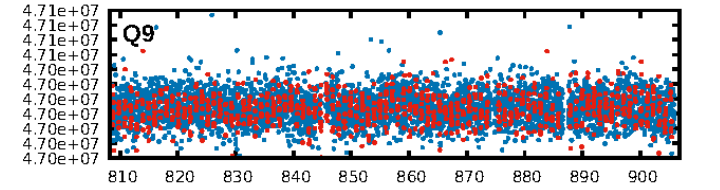
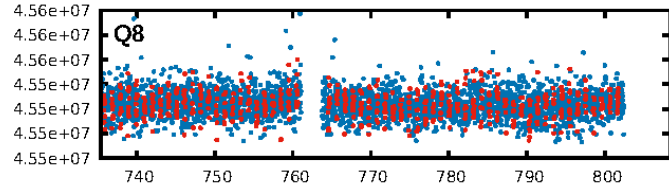
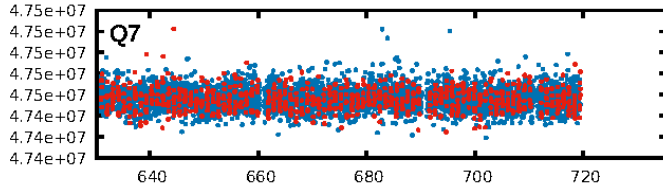
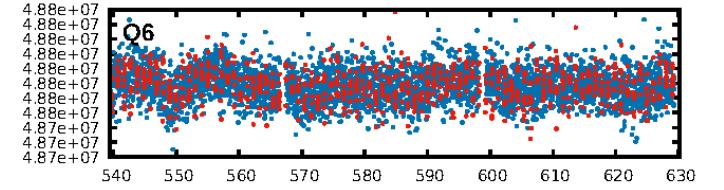
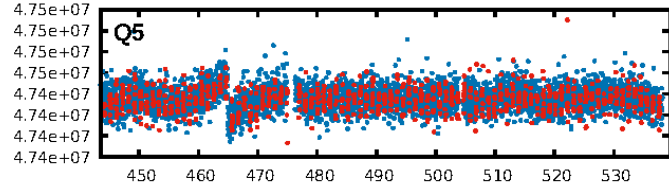
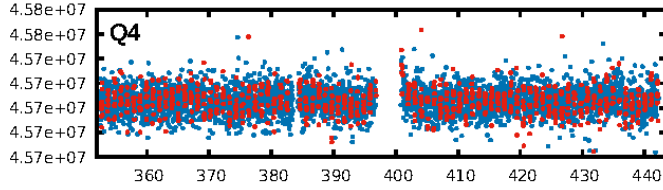
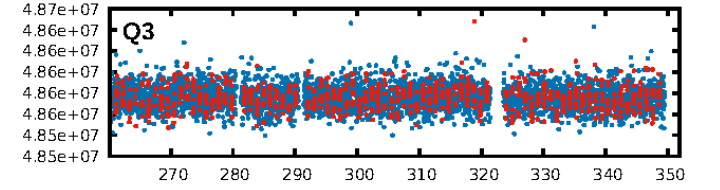
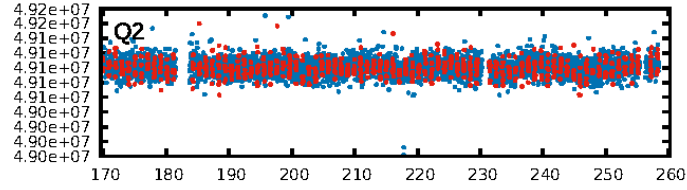
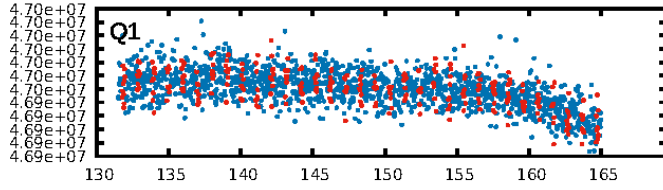
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.56e-16  
RollingBand-fgt: 1.00 [1248/1248]  
GhostDiagnostic-chr: 1.423  
Centroid-sig: 6.4%  
Centroid-so: 2.294 arcsec [1.29σ]  
OotOffset-rm: 1.255 arcsec [1.66σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 1.170 arcsec [1.50σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.19 [3/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:02:02 Z

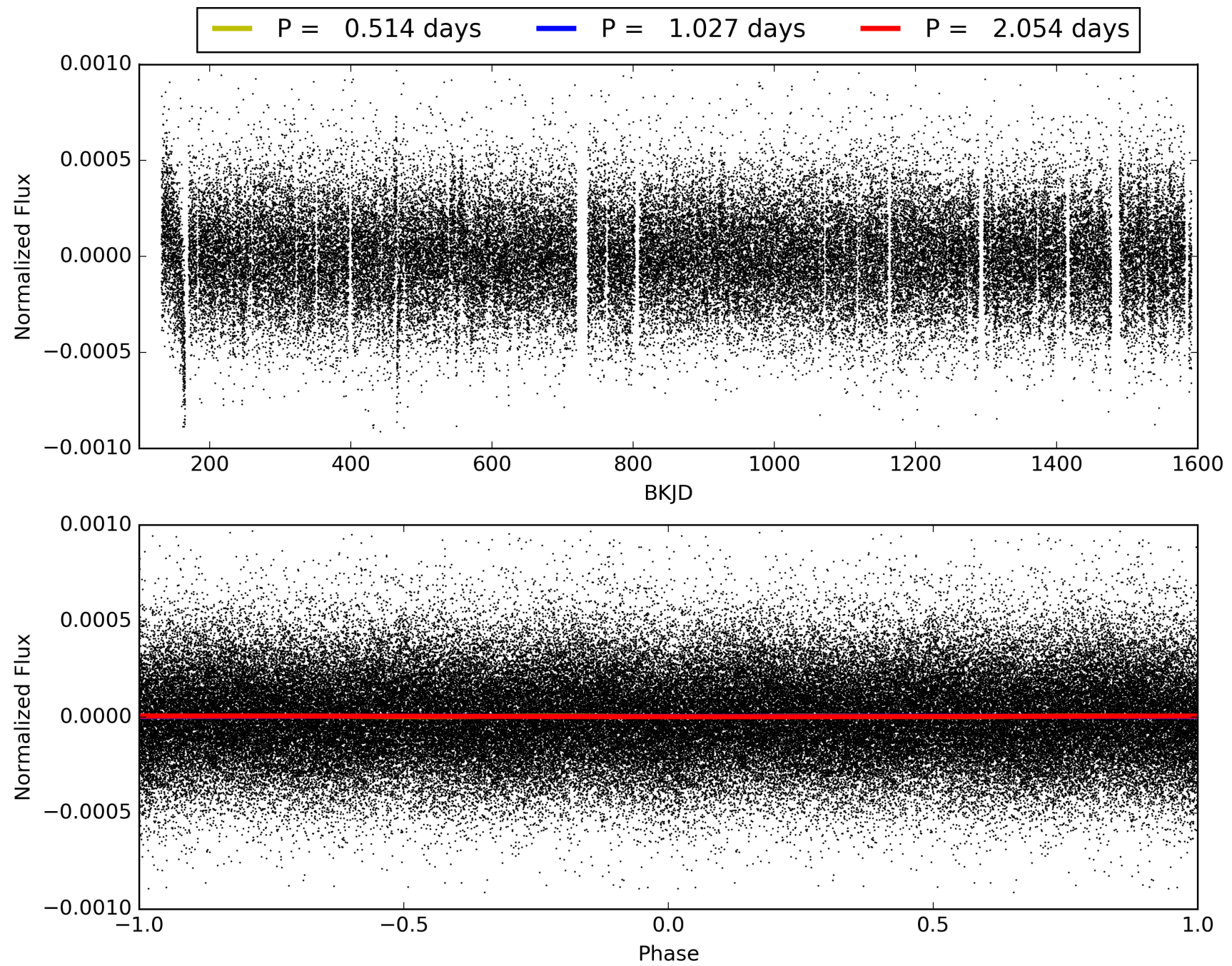
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011618937-01, PDC Light Curves



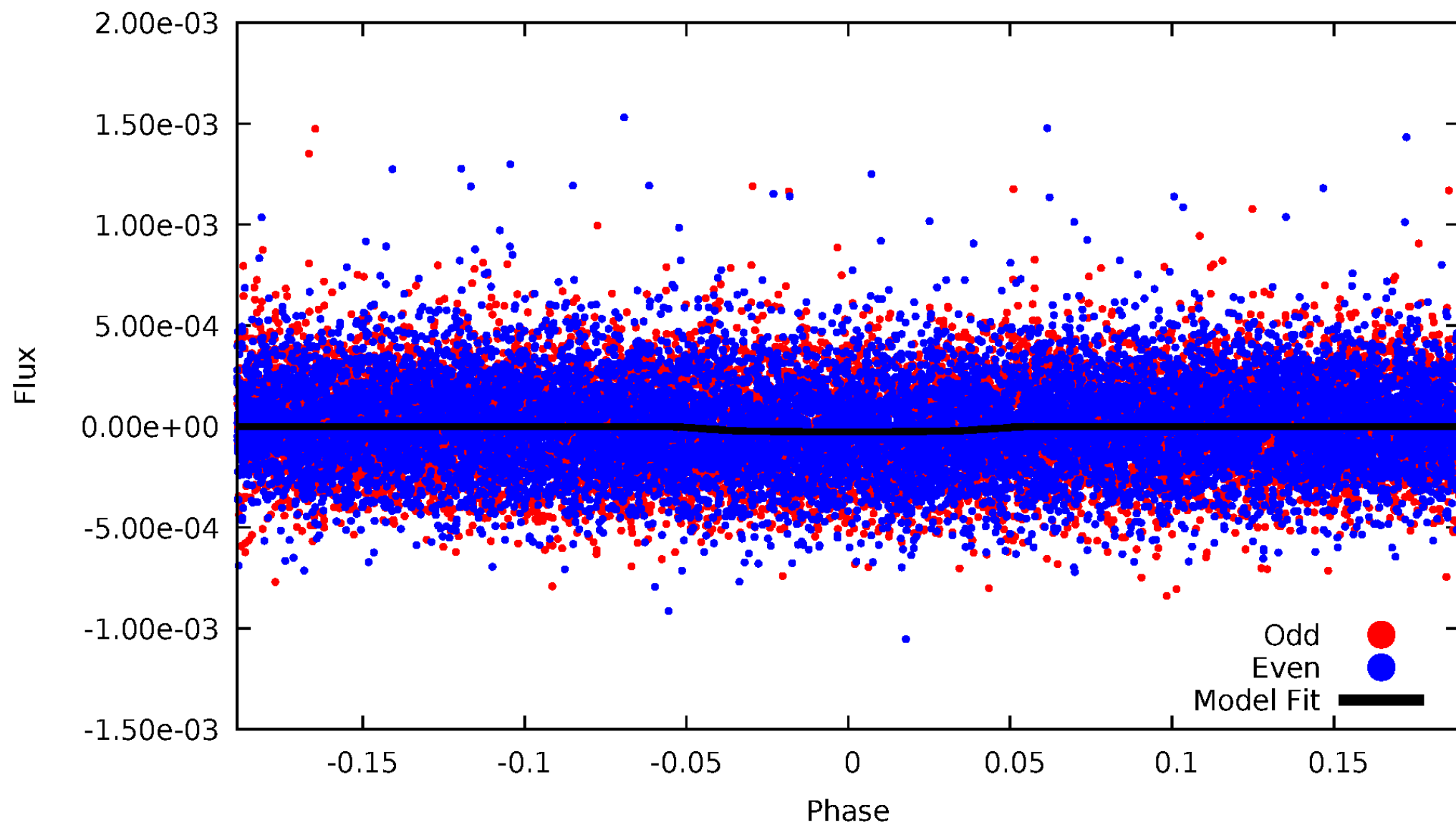


TCE 011618937-01



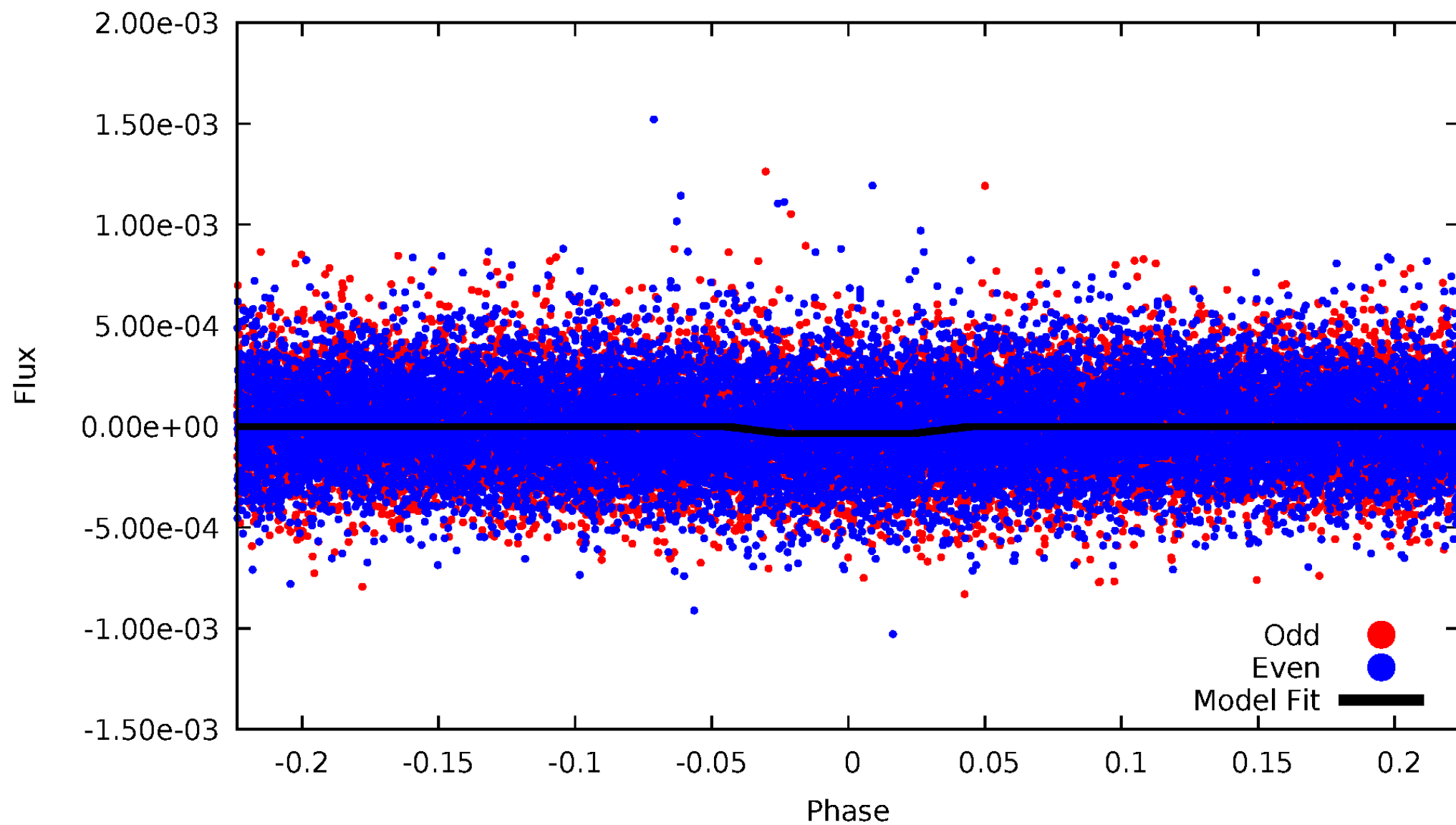
# DV Odd/Even

TCE 011618937-01



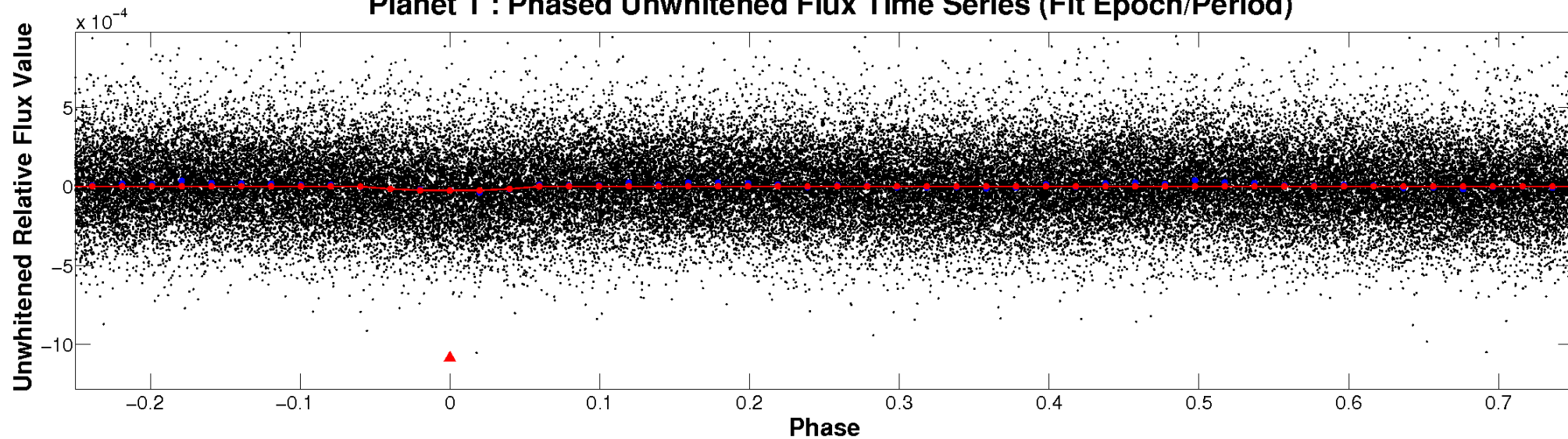
# ALT Odd/Even

TCE 011618937-01

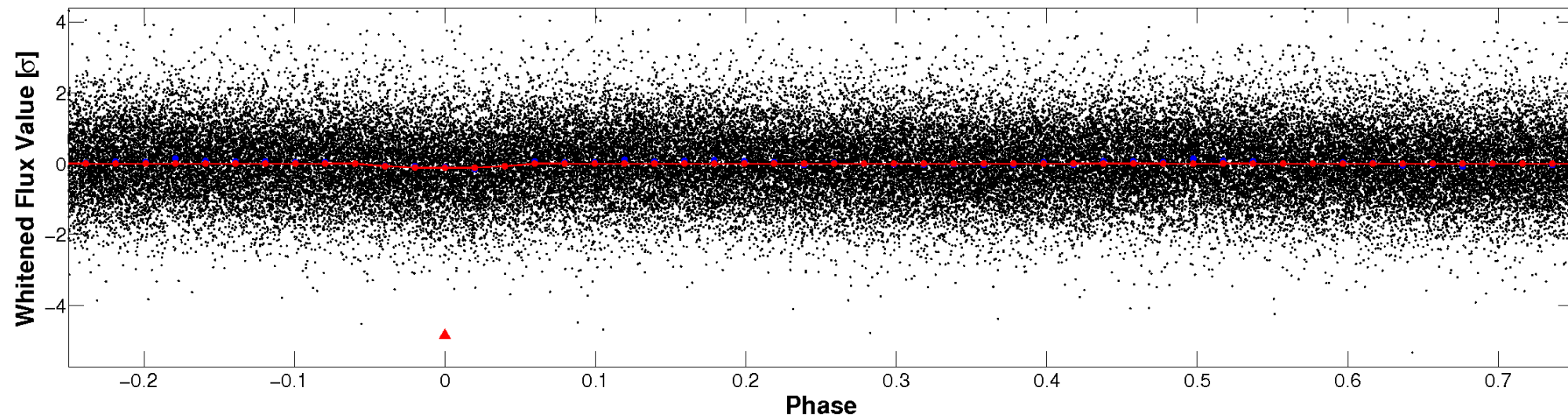


# Non-Whitened Vs. Whitened Light Curve

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



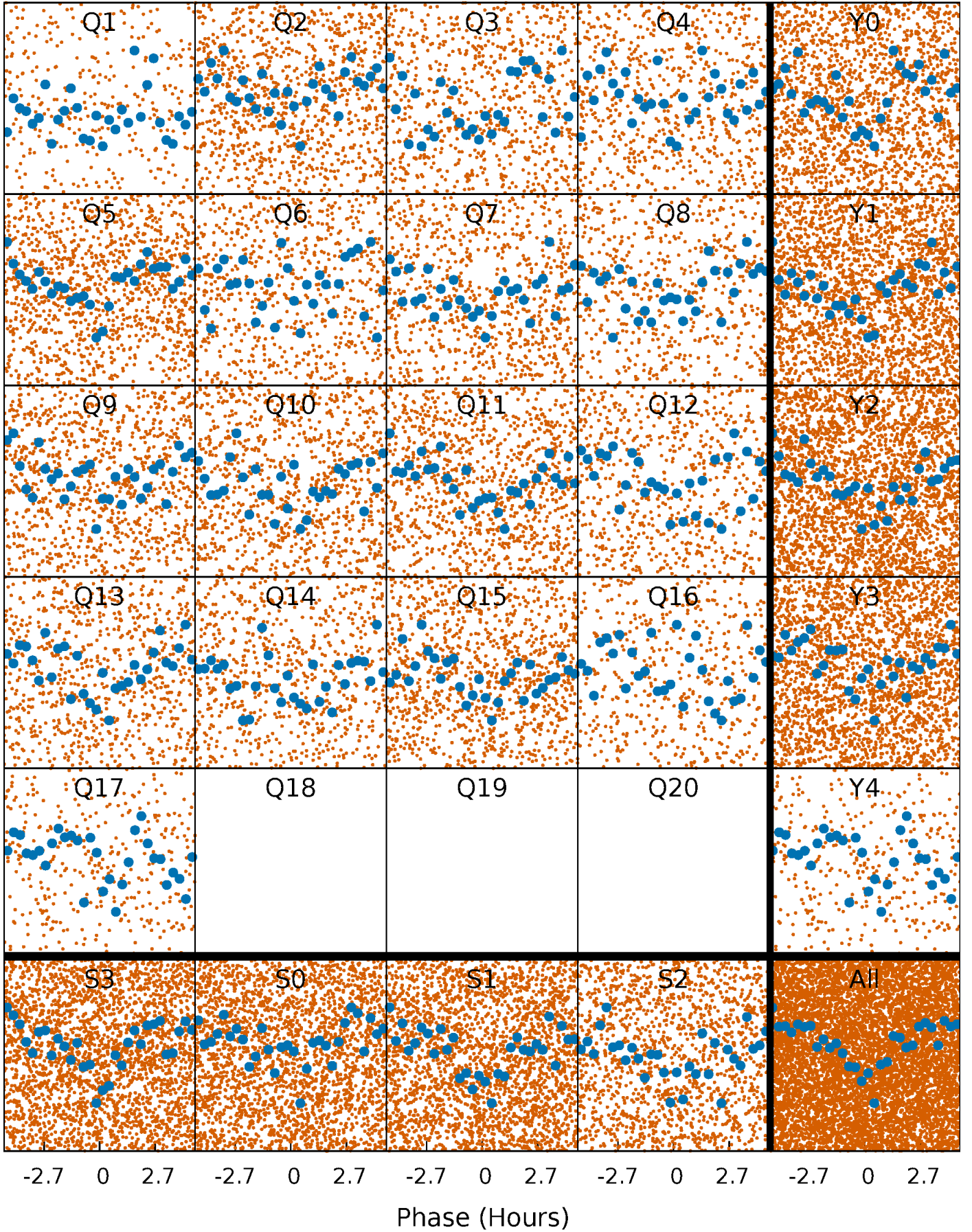
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

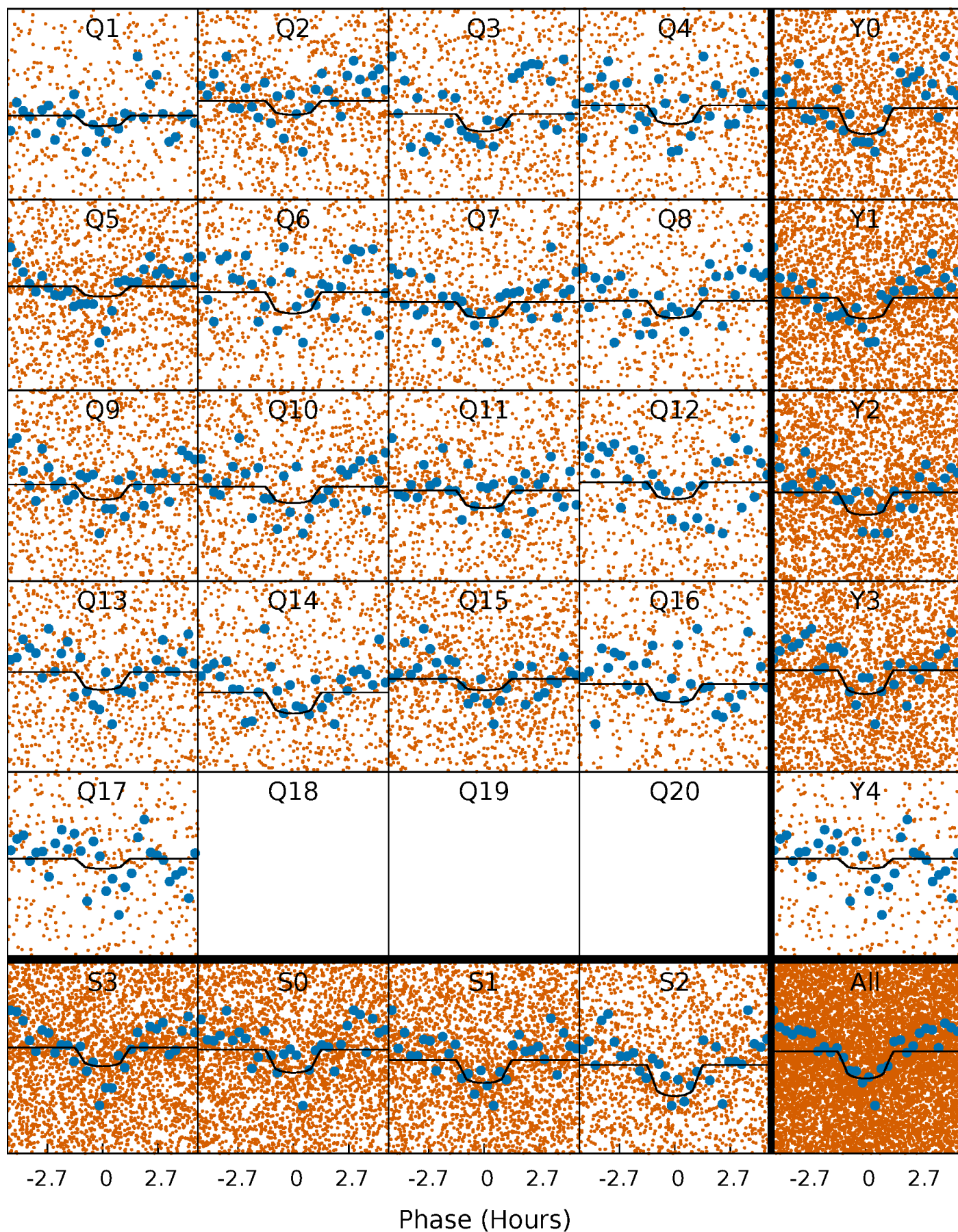
TCE 011618937-01 P= 1.027211 Days  $T_0=131.872282$  (BKJD)





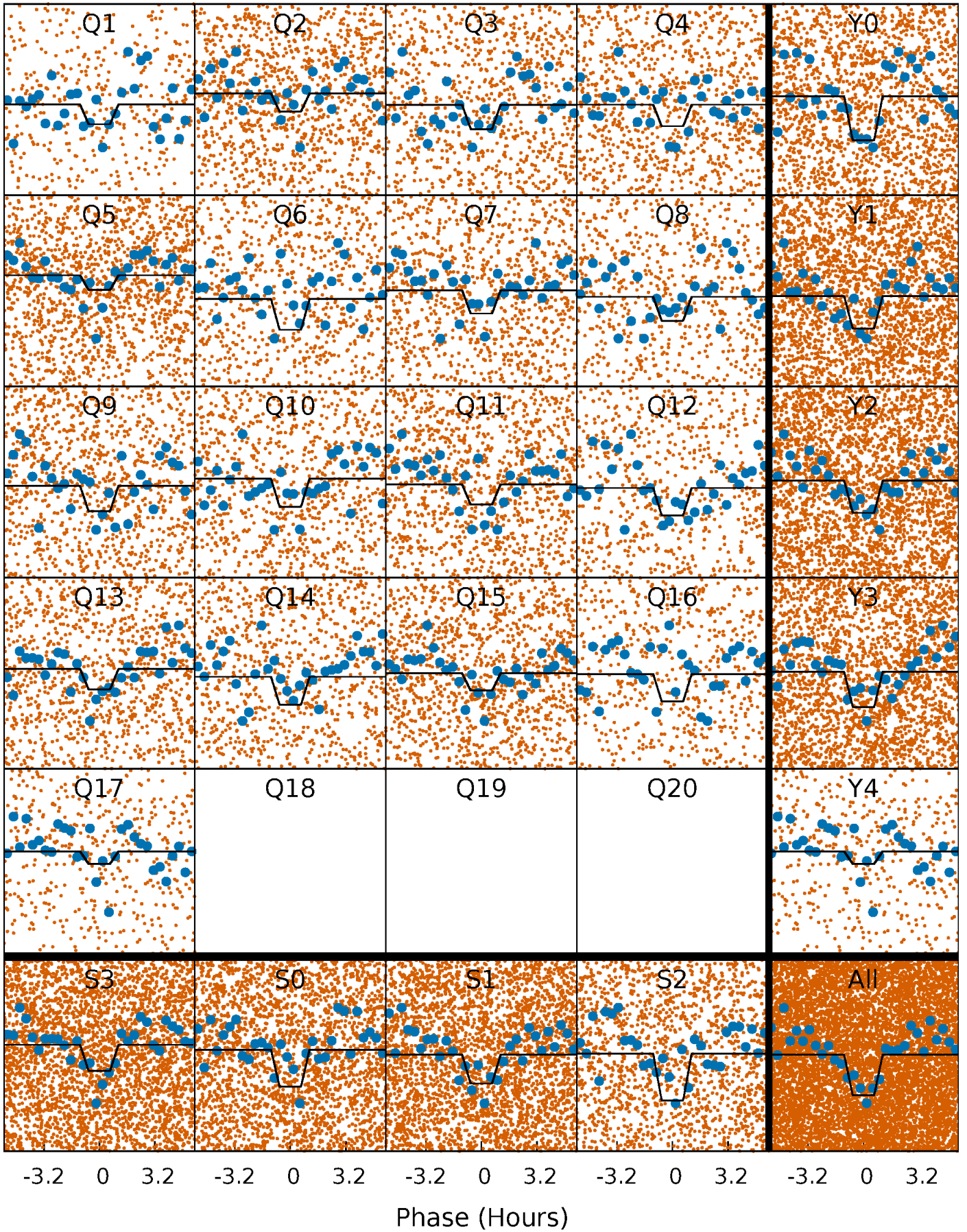
# DV Quarter-Phased Transit Curves

TCE 011618937-01 P= 1.027211 Days  $T_0=131.872282$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011618937-01 P= 1.027223 Days  $T_0=131.869915$  (BKJD)

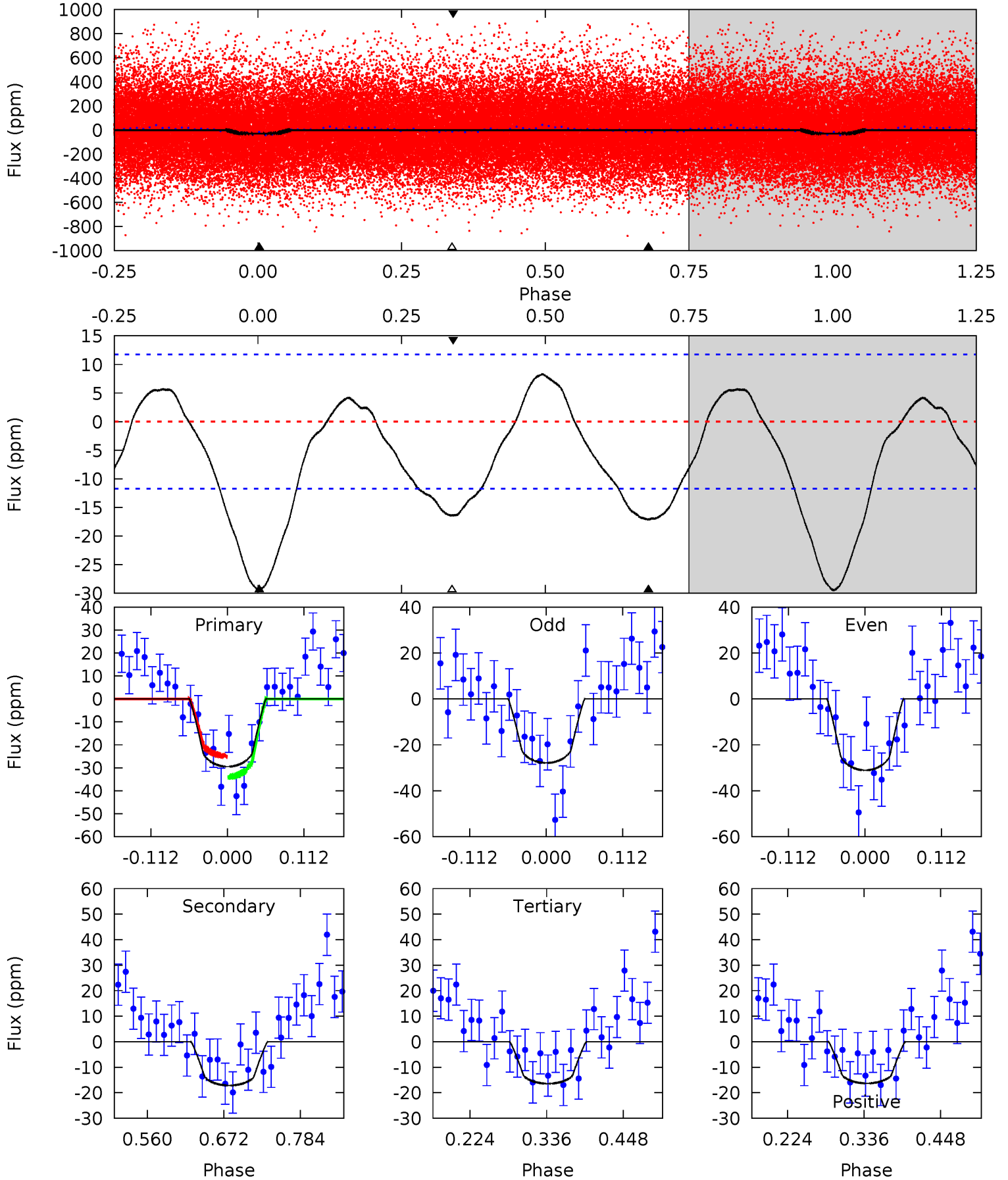




# DV Model-Shift Uniqueness Test

011618937-01, P = 1.027211 Days, E = 130.845071 Days

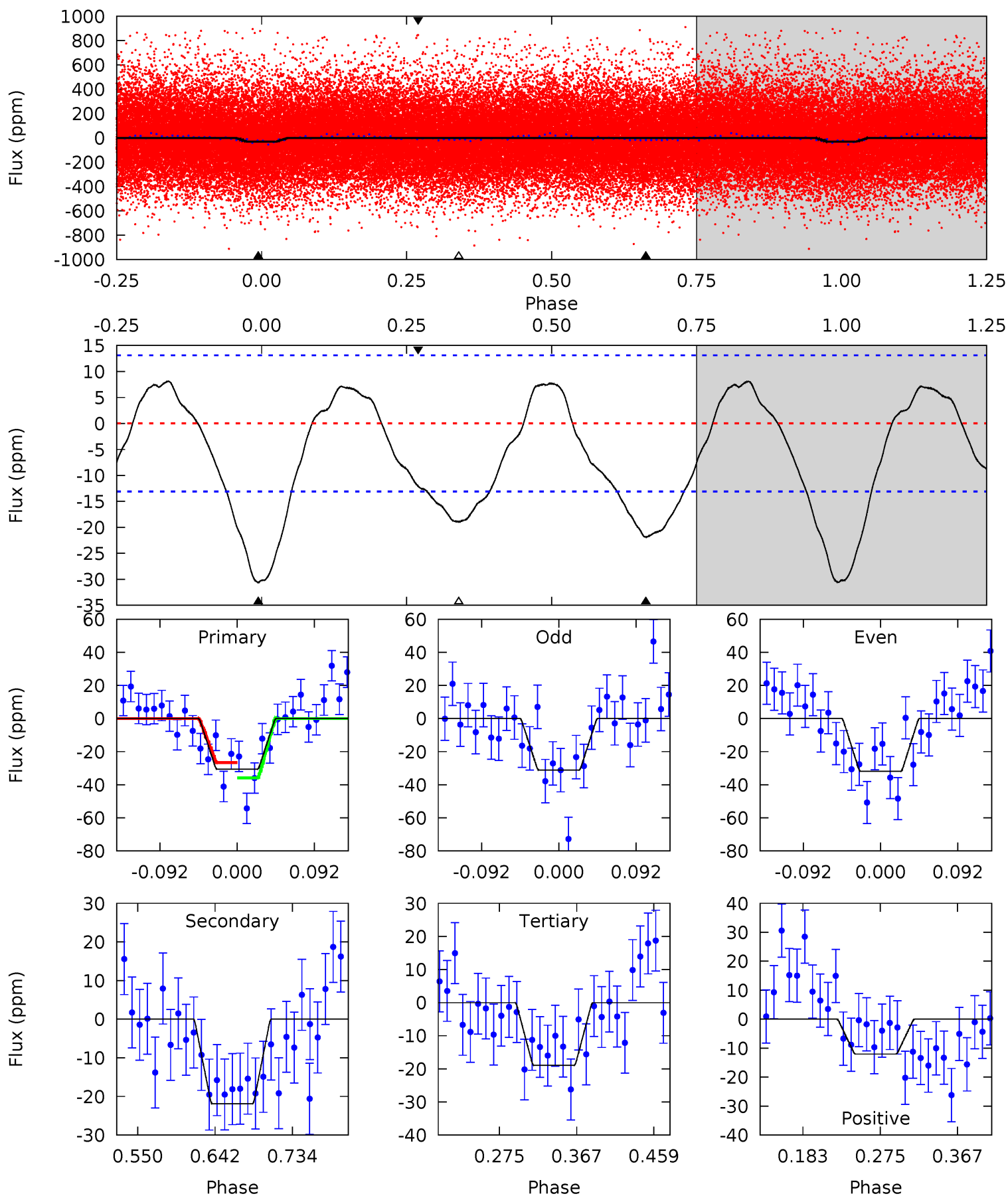
| Pri  | Sec  | Ter  | Pos   | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.4 | 6.63 | 6.35 | -6.31 | 4.54            | 1.59            | 2.94             | 5.05    | 17.7    | 0.28    | 12.9    | 0.61    | 0.90 | 0.22  | 1.75 |



# Alt Model-Shift Uniqueness Test

011618937-01, P = 1.027223 Days, E = 130.842692 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  |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.7 | 7.65 | 6.62 | -4.21 | 4.58            | 1.69            | 2.98             | 4.09    | 14.9    | 1.03    | 11.9    | 0.14    | 1.05 | 0.21  | 1.63 |





### Stellar Parameters For KIC 011618937

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                    | $R$ ( $R_{\odot}$ )       | $M$ ( $M_{\odot}$ )       | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $5743^{+138}_{-173}$ | $4.527^{+0.036}_{-0.204}$ | $0.040^{+0.250}_{-0.300}$ | $0.904^{+0.260}_{-0.081}$ | $1.003^{+0.102}_{-0.125}$ | $1.914^{+0.385}_{-1.002}$                     |
|        | +2%/-3%              | +1%/-5%                   | +625%/-750%               | +29%/-9%                  | +10%/-12%                 | +20%/-52%                                     |
| Source | PHO1                 | 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 011618937-01 / KOI

| Detrend | Depth (ppm) | $R_p$ ( $R_{\oplus}$ ) | $T_{max}$ (K)        | $T_{obs}$ (K)         | $A_{obs}$                  |
|---------|-------------|------------------------|----------------------|-----------------------|----------------------------|
| DV      | $-17 \pm 3$ | $0.63^{+0.36}_{-0.33}$ | $2439^{+178}_{-110}$ | $4819^{+2191}_{-823}$ | $9.202^{+31.083}_{-5.485}$ |
| Alt.    | $-22 \pm 3$ | $0.62^{+0.39}_{-0.34}$ | $2446^{+175}_{-113}$ | $5111^{+2326}_{-907}$ | $12^{+44}_{-7}$            |

$T_{max}$  = 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

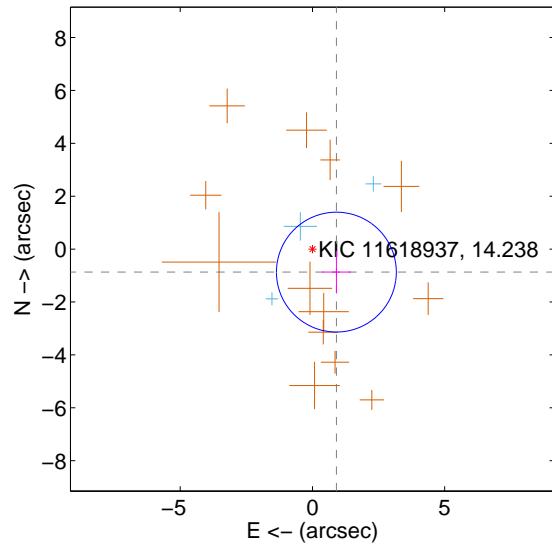
Supplemental centroid analysis for 011618937-01. Kepler magnitude: 14.24. Transit SNR 7.84

There are 3 quarters with good PRF difference image offsets

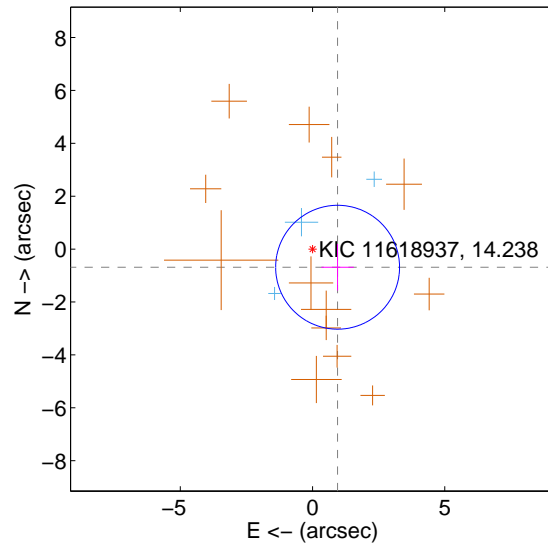
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $1.255 \pm 0.755$  | 1.66                | $-0.905 \pm 0.545$ | $-0.870 \pm 0.798$ |
| PRF-fit source offset from KIC position | $1.170 \pm 0.781$  | 1.50                | $-0.948 \pm 0.612$ | $-0.685 \pm 0.878$ |
| photometric centroid source offset      | $2.29 \pm 1.78$    | 1.29                | $0.70 \pm 1.72$    | $-2.18 \pm 1.78$   |

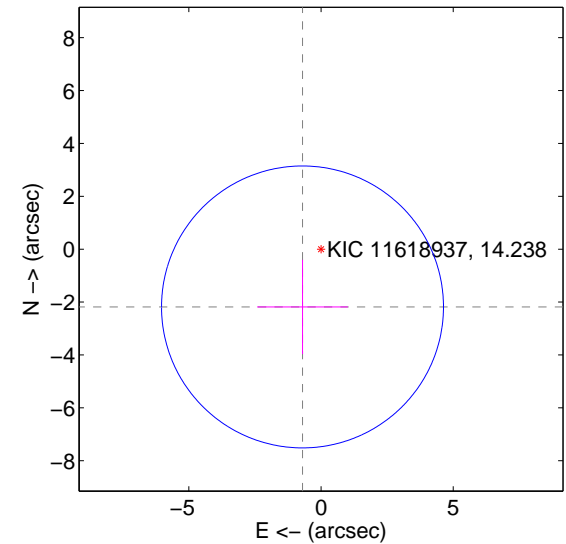
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

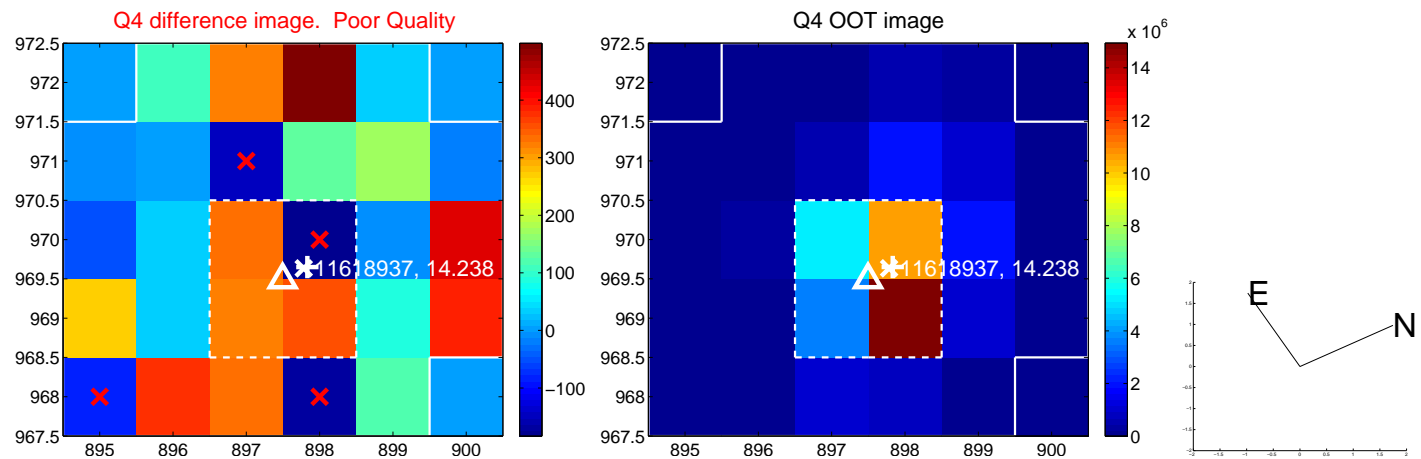
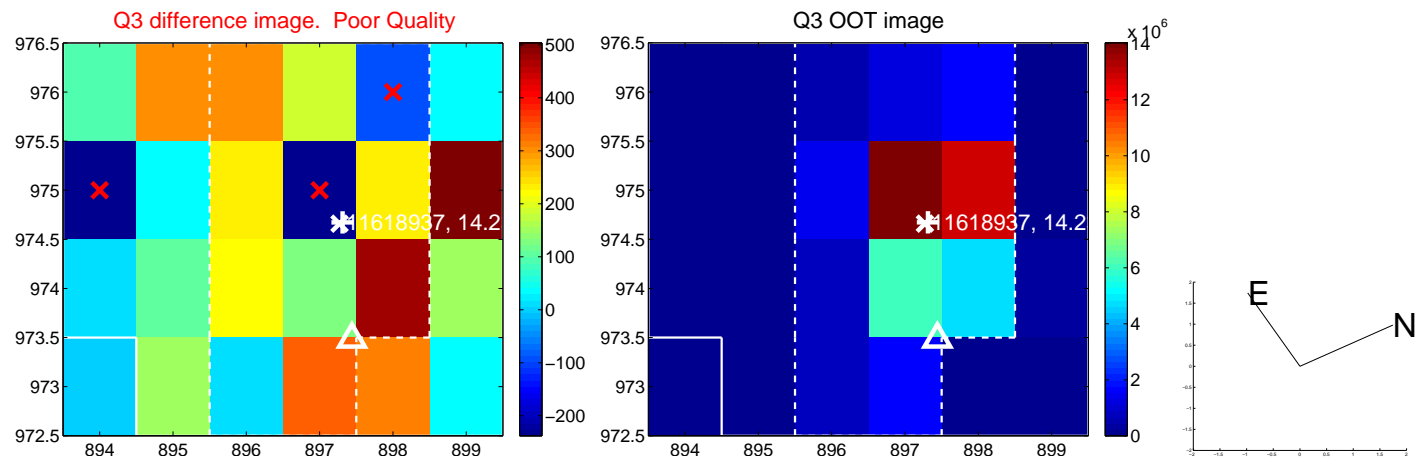
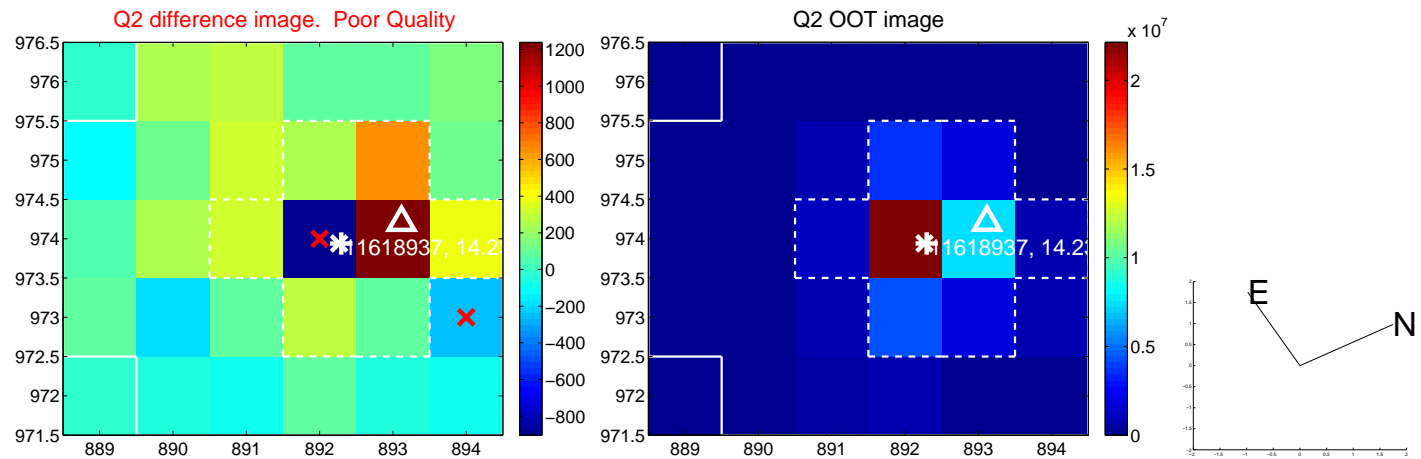
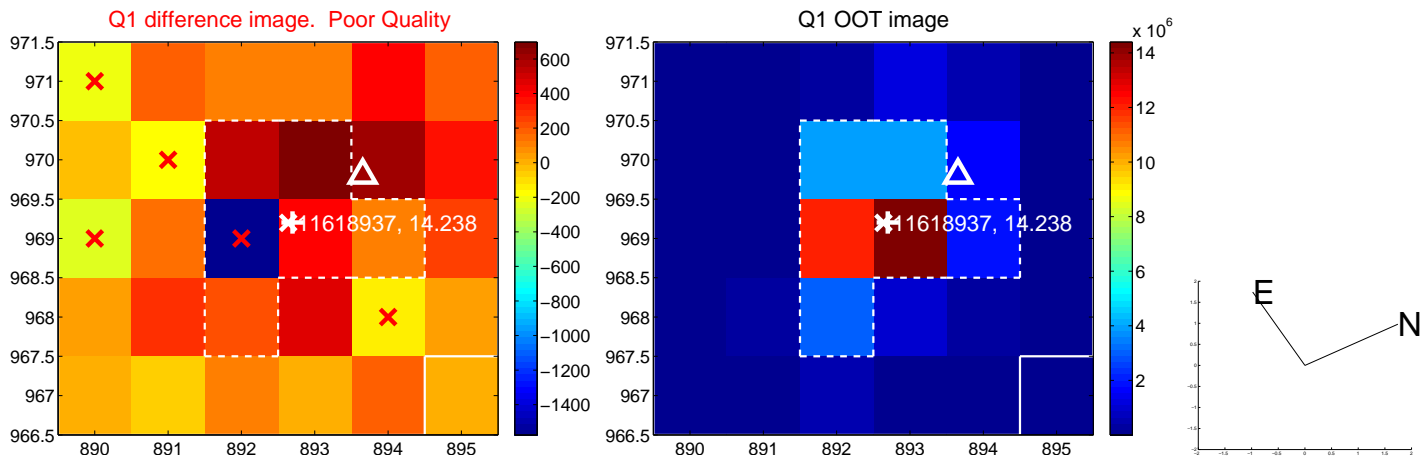


offset from photometric centroids

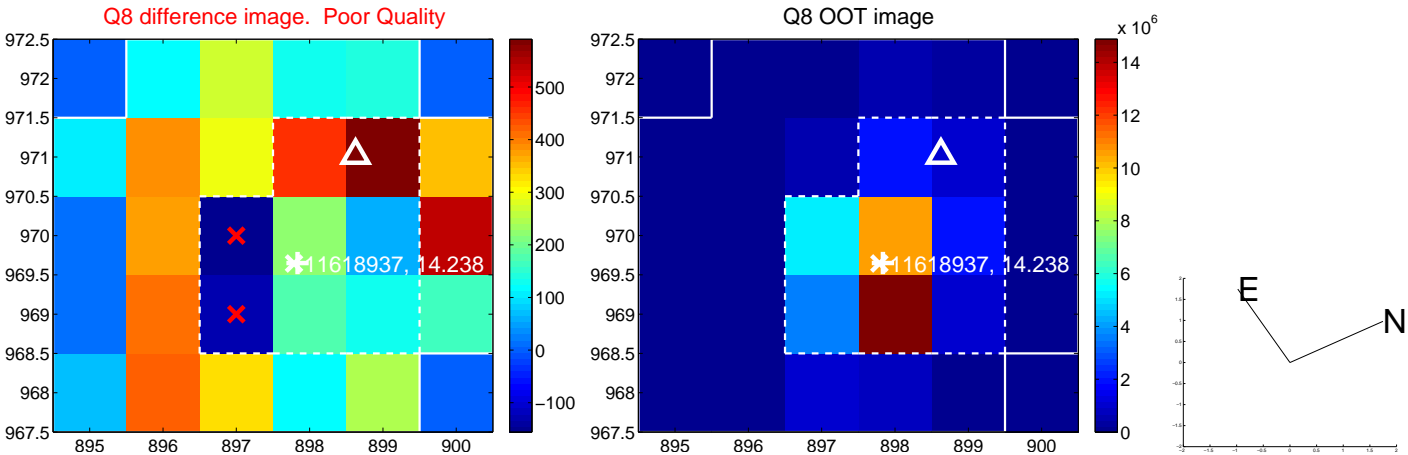
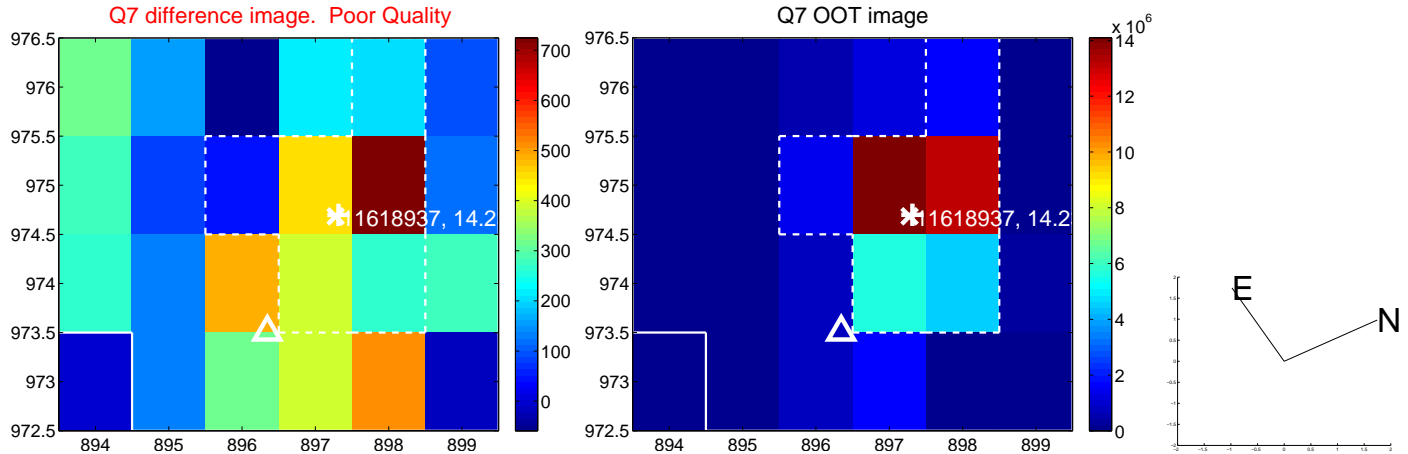
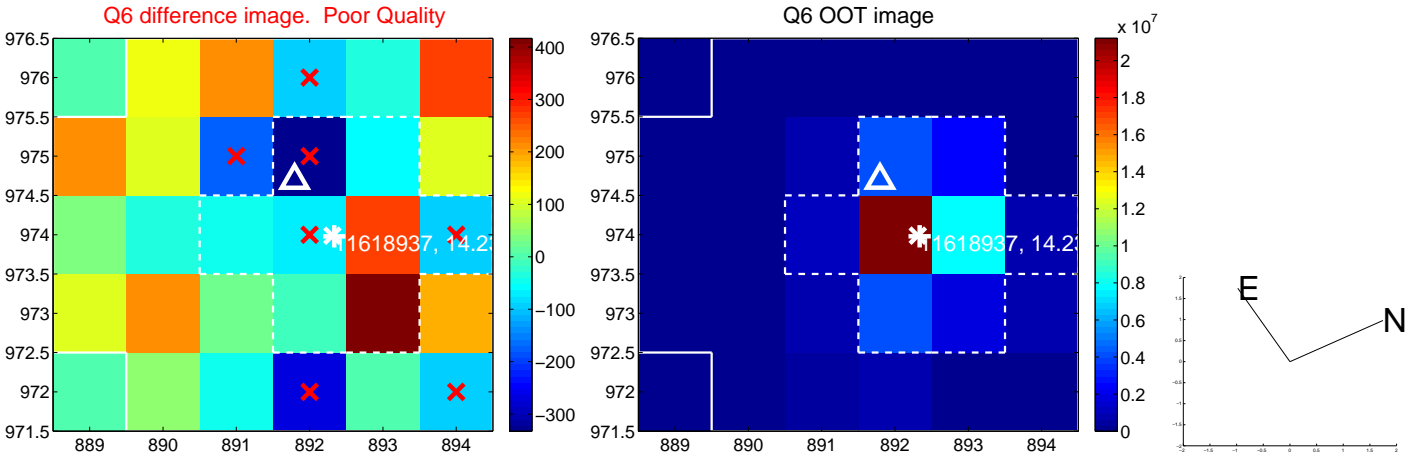
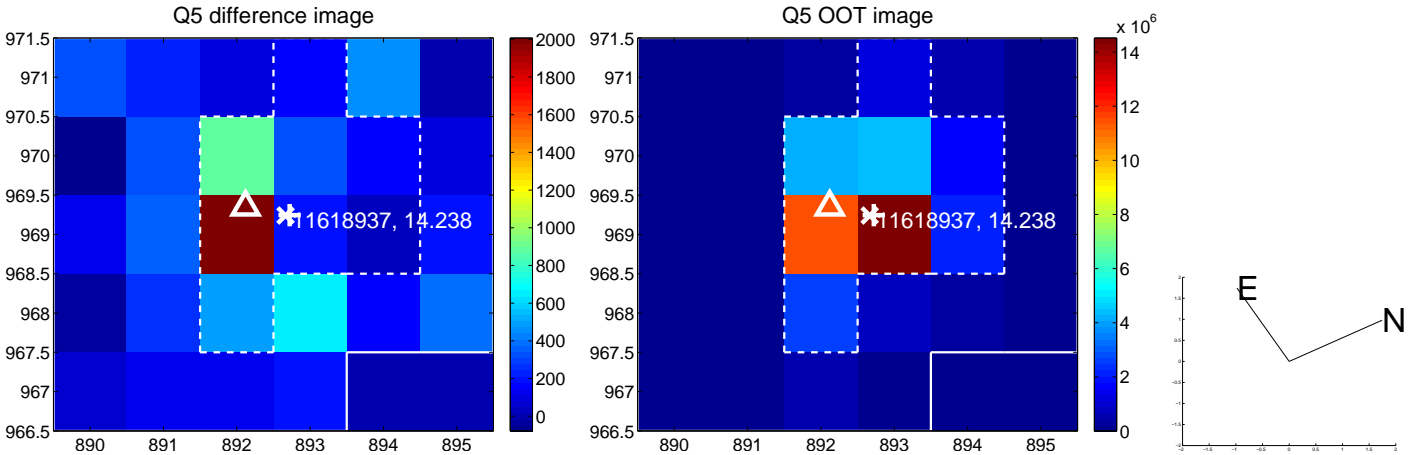


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

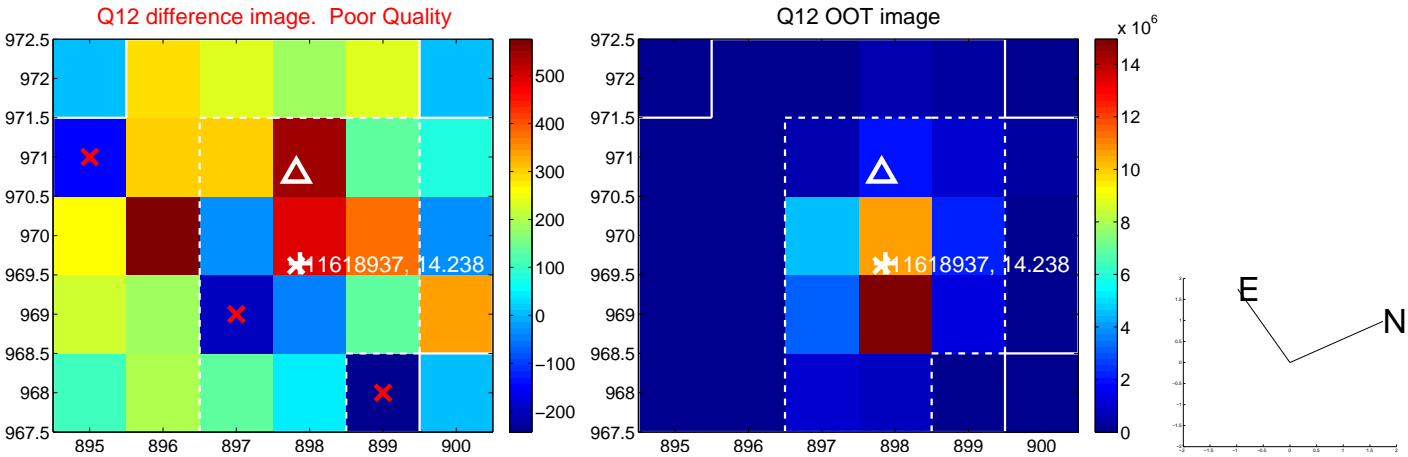
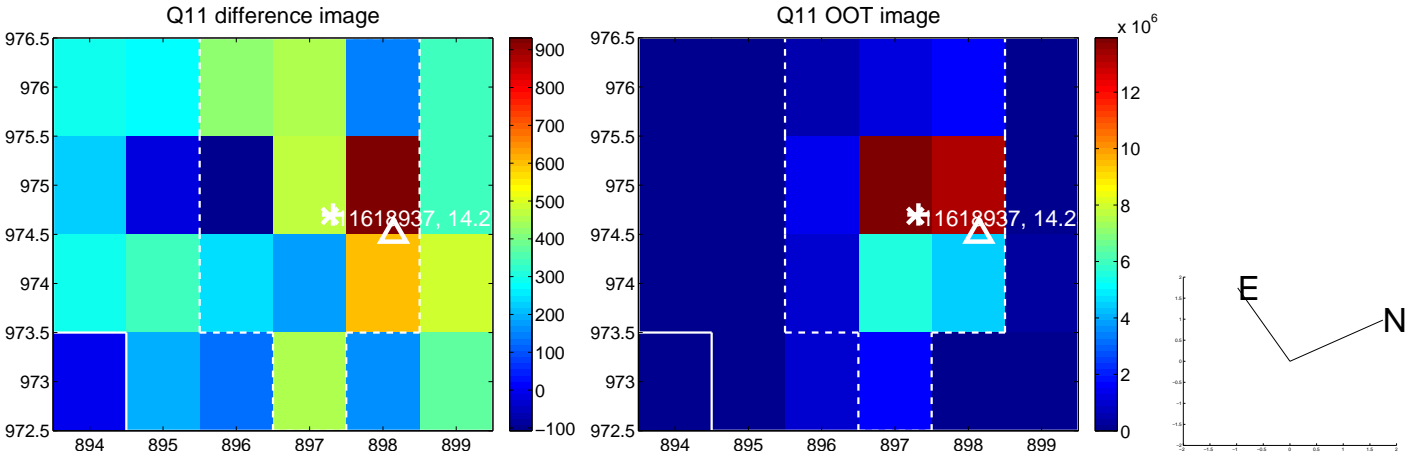
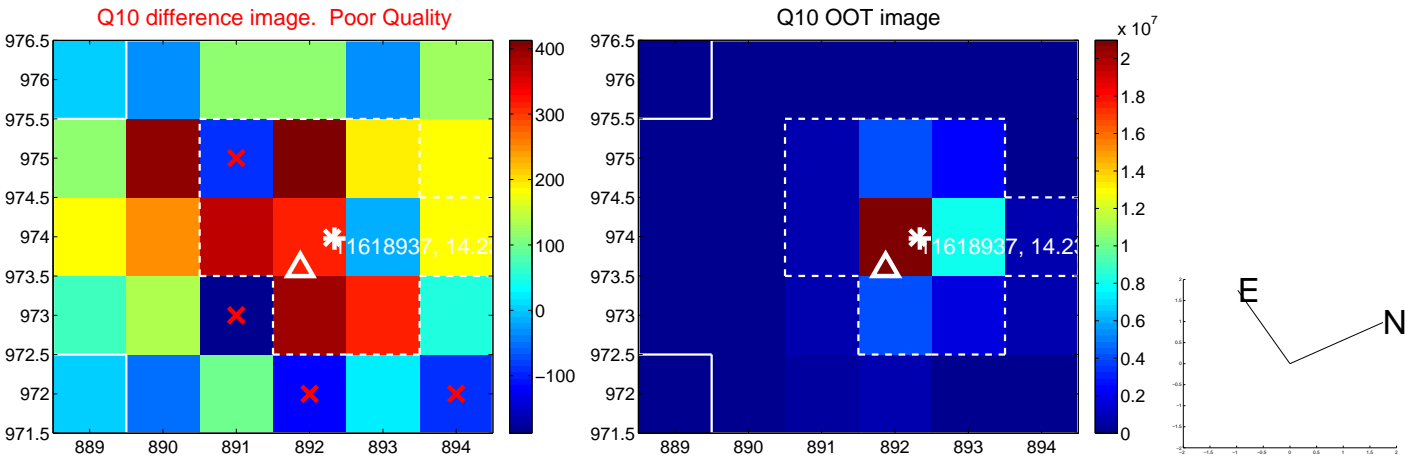
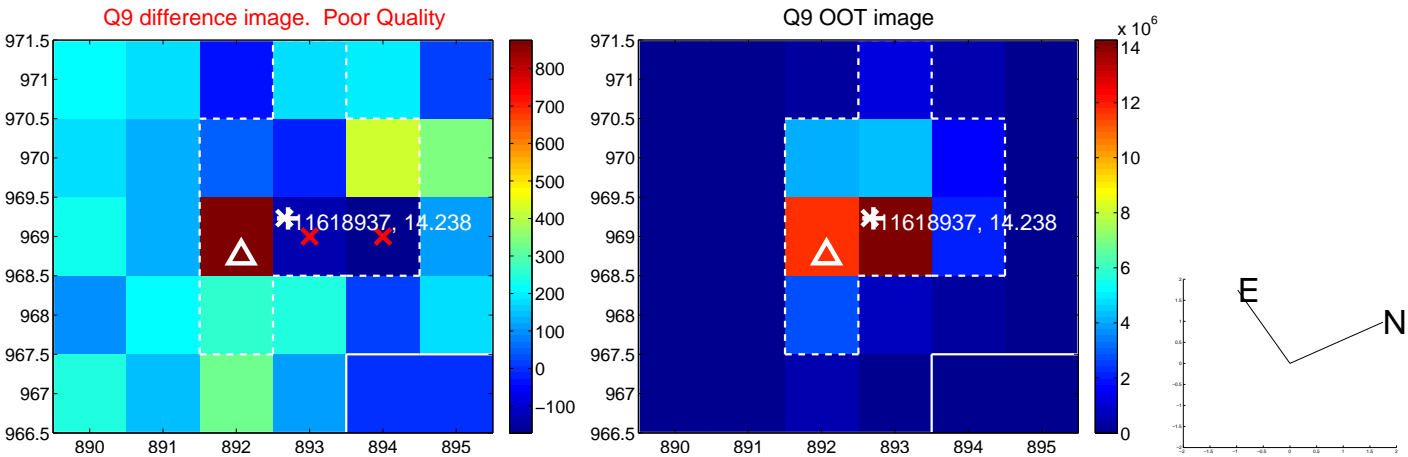


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

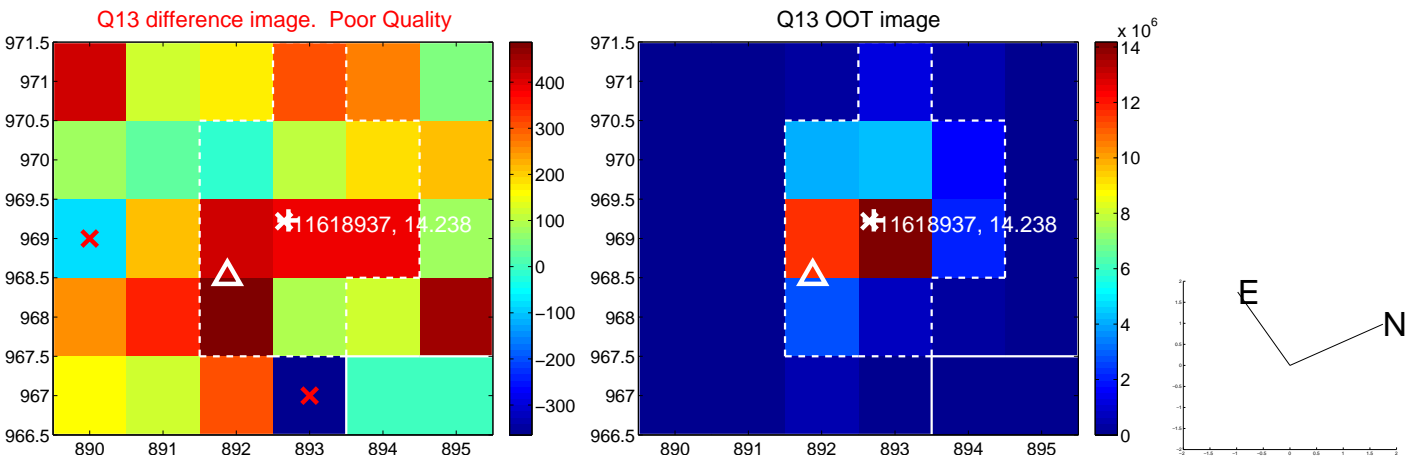




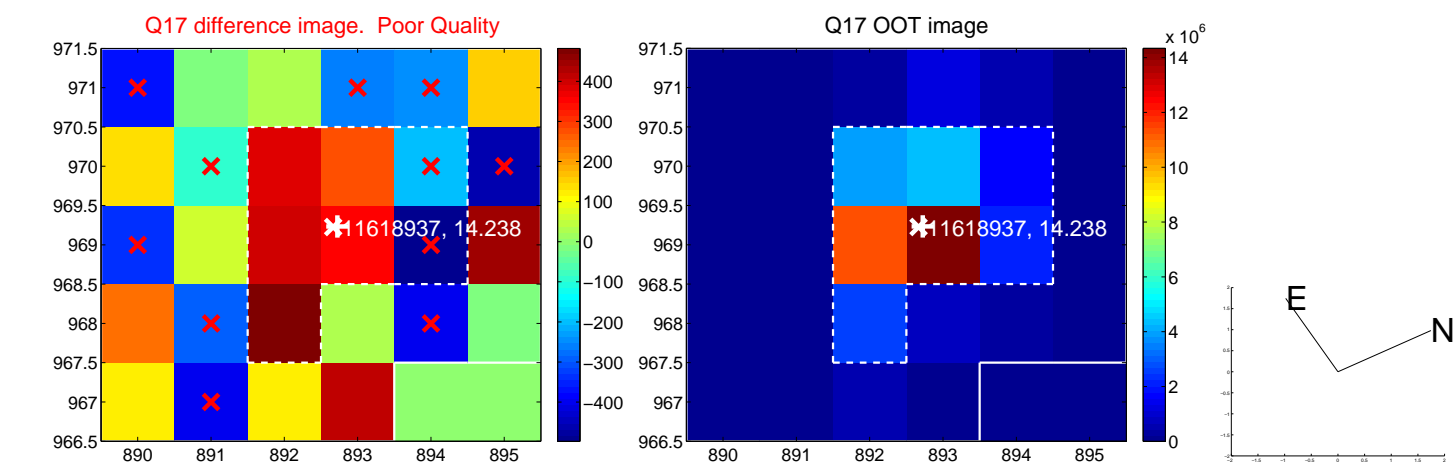
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



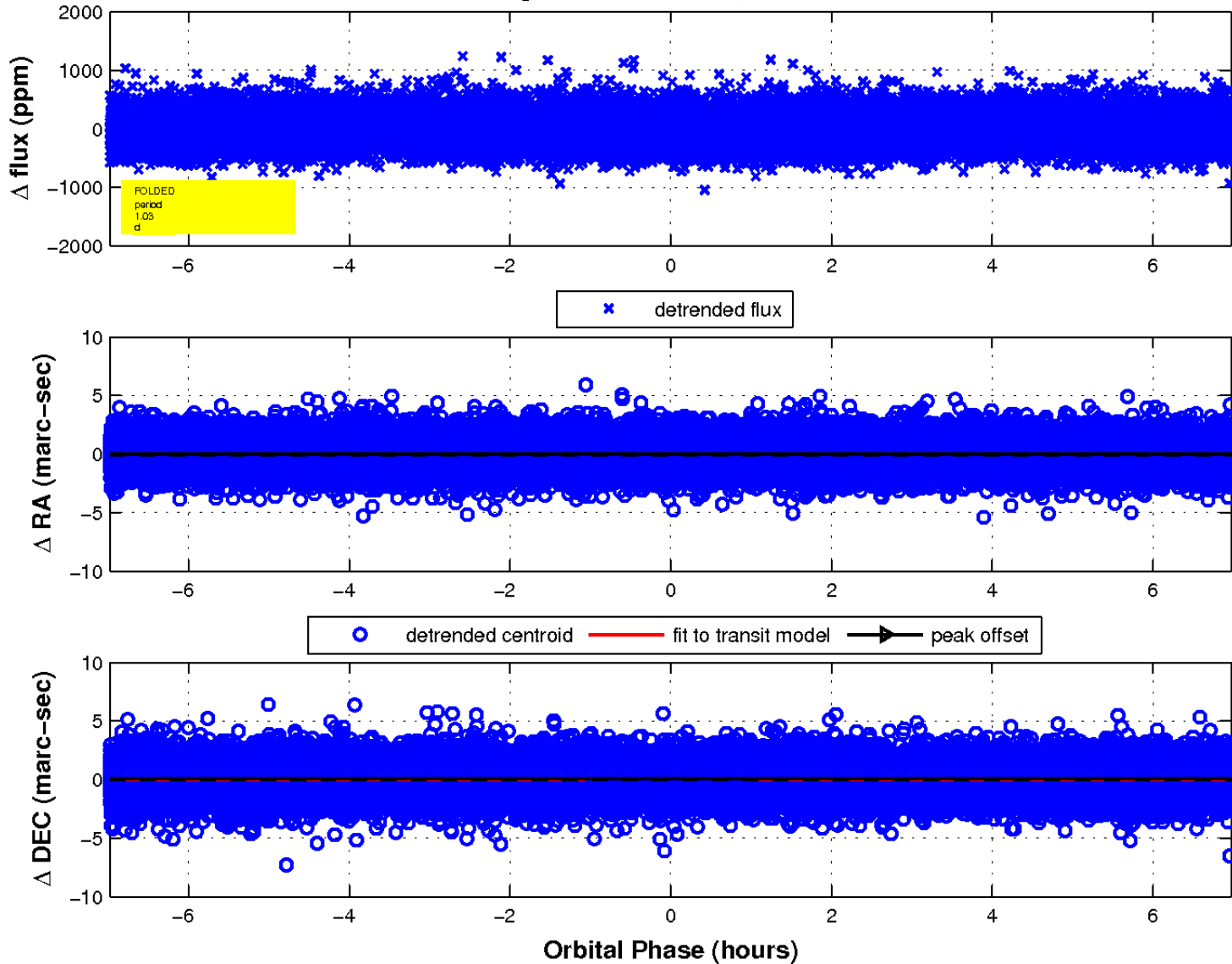
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

