

# KIC 011905398

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|------|-----------------------------|-----------------|------------------------|------------------------|
| 011905398-01 | OBS      | 5940.01 | 24.796420     | 131.918165   | 842.7       | 3.252            | 9.2 | 10.5 | 0.78                        | 5496            | 2.44                   | 19.67                  |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments             |
|--------------|----------|------|-------|---|---|---|---|----------------------|
| 011905398-01 | OBS      | FP   | 0.38  | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET |

**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.

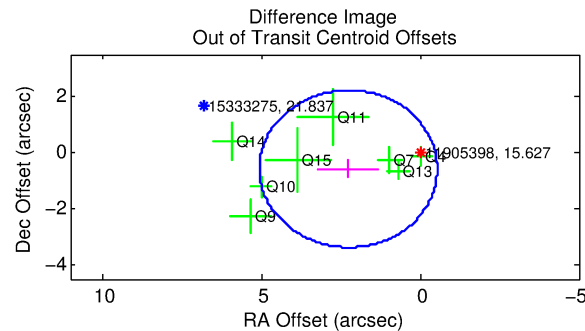
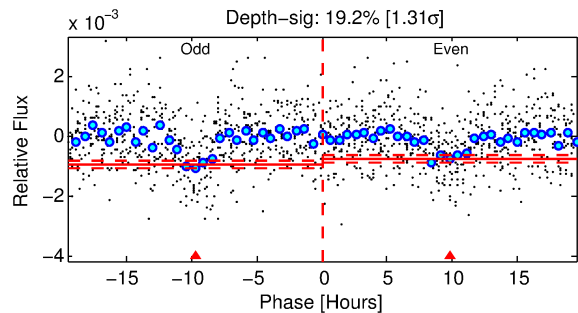
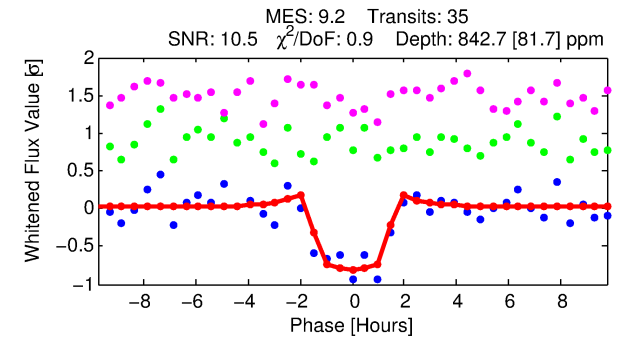
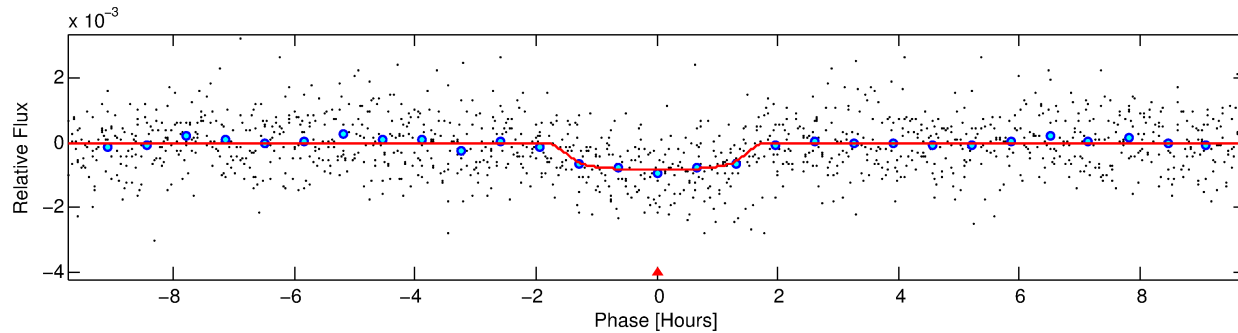
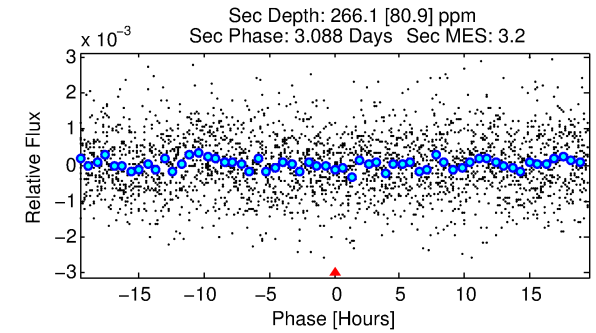
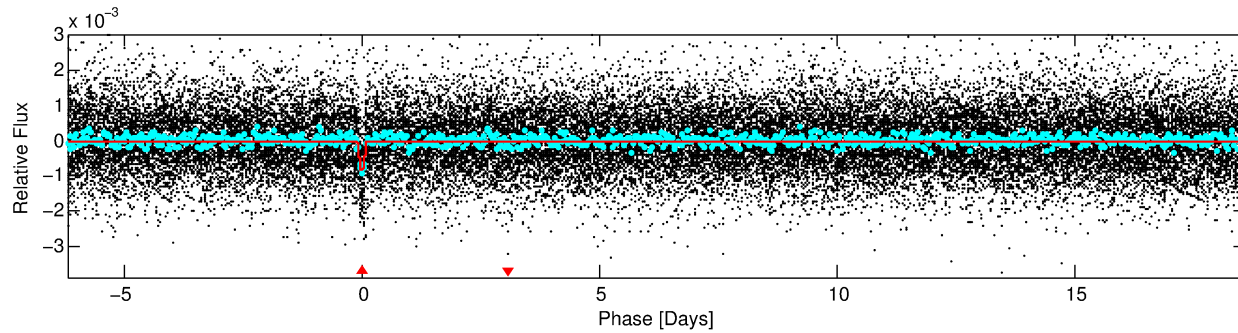
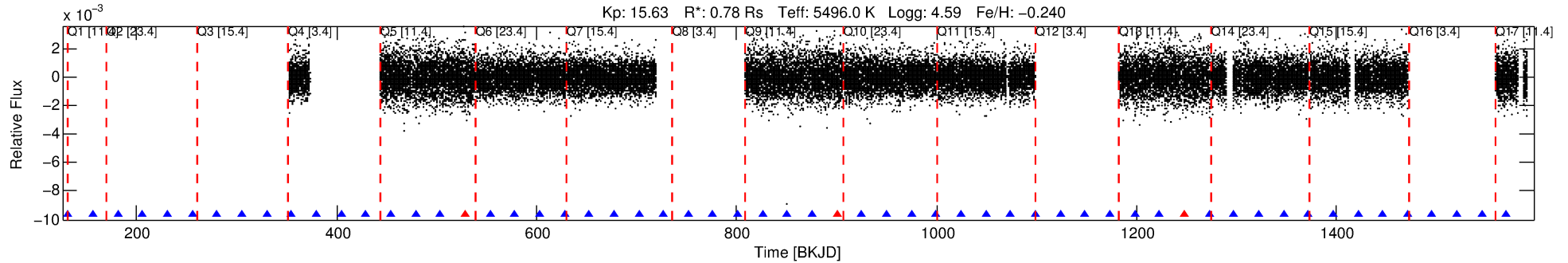
## Ephemeris Match Information For 011905398-01

No Significant Match Found

# DV One-Page Summary

KIC: 11905398 Candidate: 1 of 1 Period: 24.796 d

KOI: K05940.01 Corr: 0.943



## DV Fit Results:

Period = 24.79642 [0.00022] d  
Epoch = 131.9182 [0.0081] BKJD  
Rp/R\* = 0.0288 [0.0221]  
a/R\* = 41.45 [131.65]  
b = 0.74 [1.95]  
Seff = 19.67 [5.24]  
Teq = 537 [36] K  
Rp = 2.44 [1.93] Re  
a = 0.1582 [0.0253] AU  
Ag = 613.77 [967.00] [0.63σ]  
Teffp = 4133 [1617] K [2.22σ]

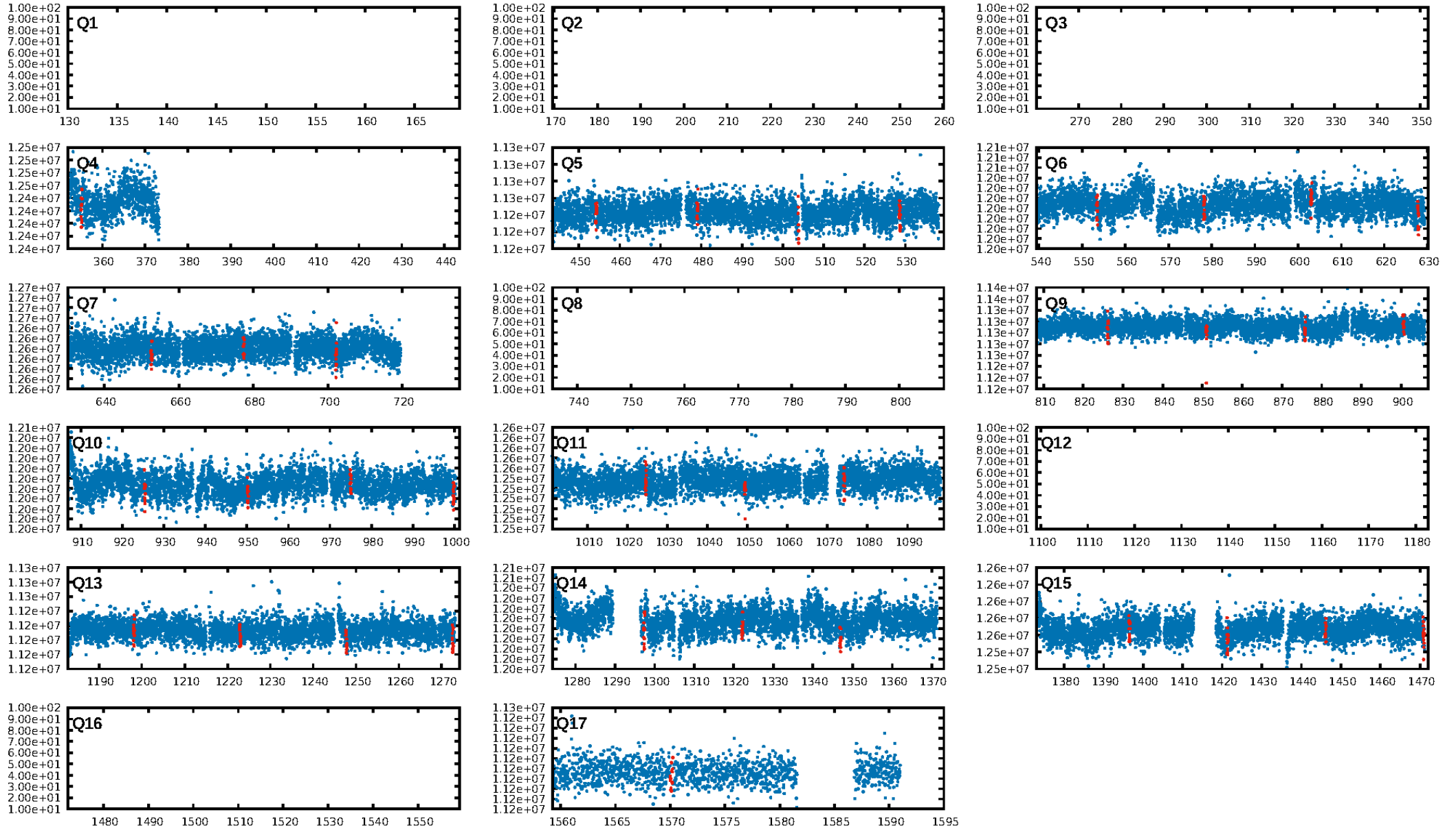
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 83.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.46e-19  
RollingBand-fgt: 0.91 [30/33]  
GhostDiagnostic-chr: -24.04  
Centroid-sig: 0.3%  
Centroid-so: 2.508 arcsec [5.80σ]  
OotOffset-rm: 2.328 arcsec [2.50σ]  
KicOffset-rm: 2.641 arcsec [3.10σ]  
OotOffset-st: 2/3/1/2 [8]  
KicOffset-st: 2/3/1/2 [8]  
DiffImageQuality-fgm: 0.75 [6/8]  
DiffImageOverlap-fno: 1.00 [11/11]

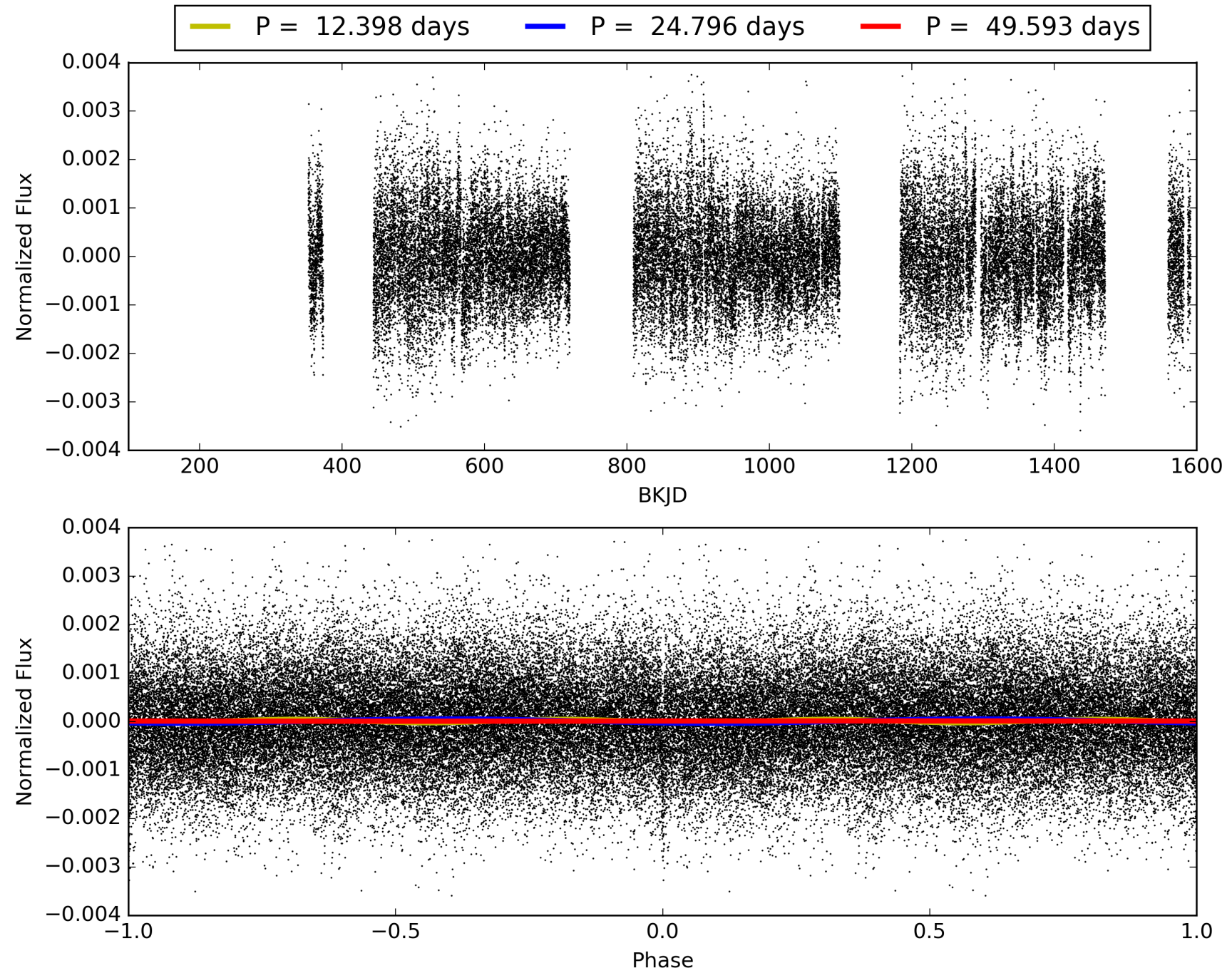
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:26:07 Z

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

# TCE 011905398-01, PDC Light Curves

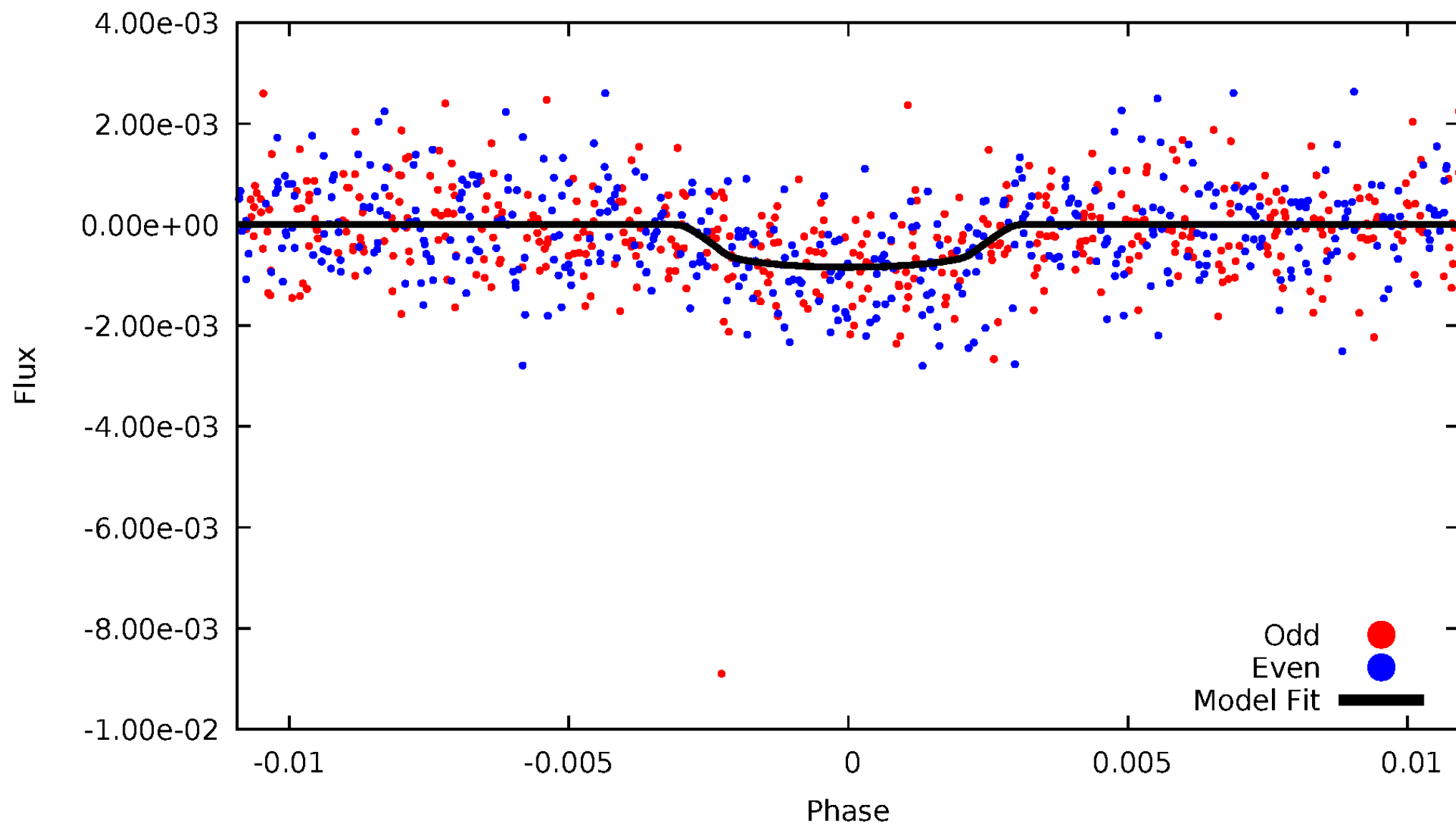


TCE 011905398-01



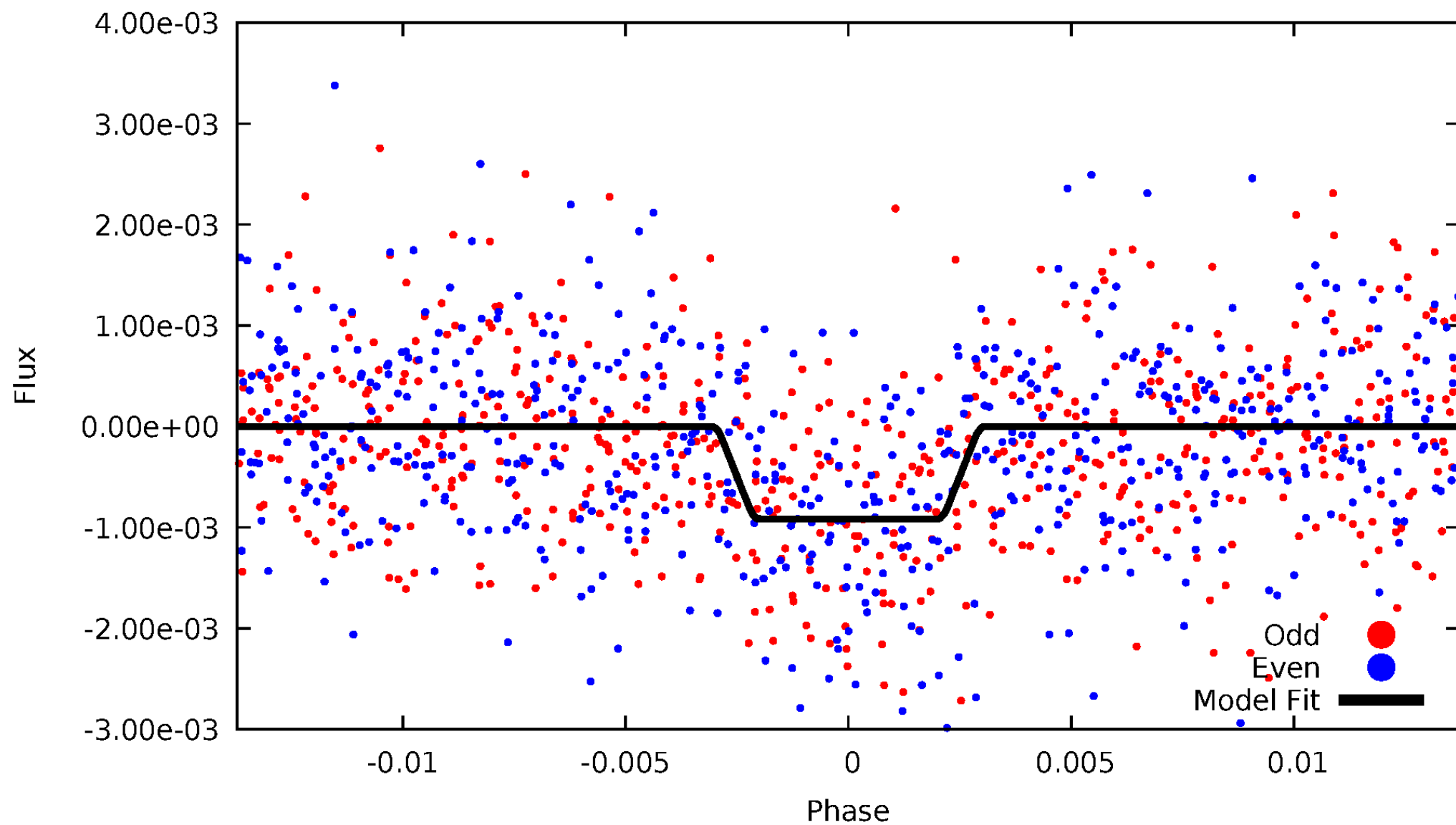
# DV Odd/Even

TCE 011905398-01



# ALT Odd/Even

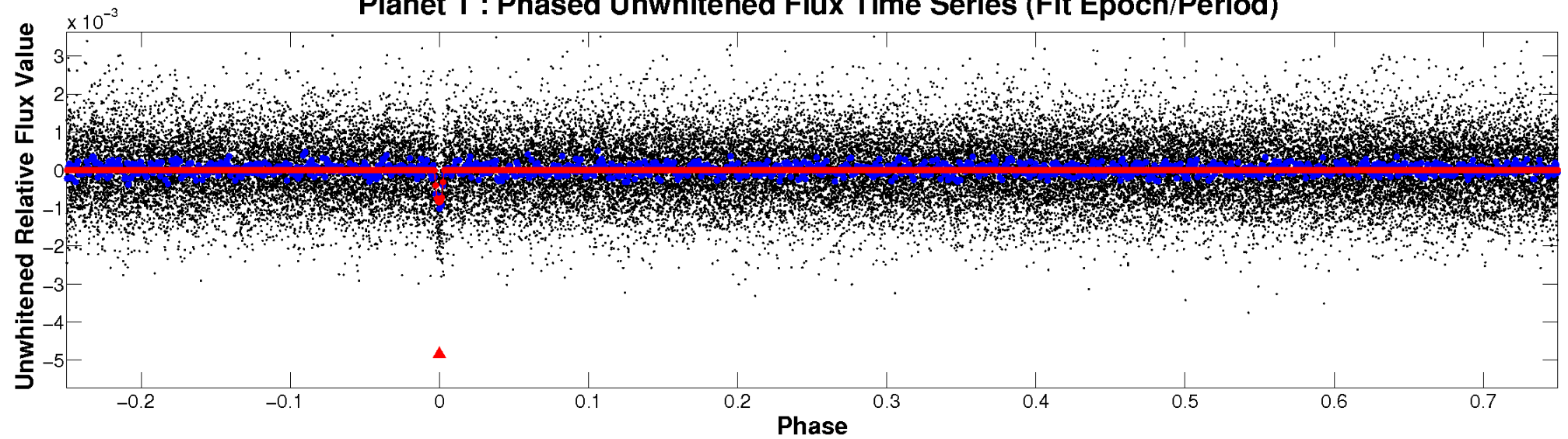
TCE 011905398-01



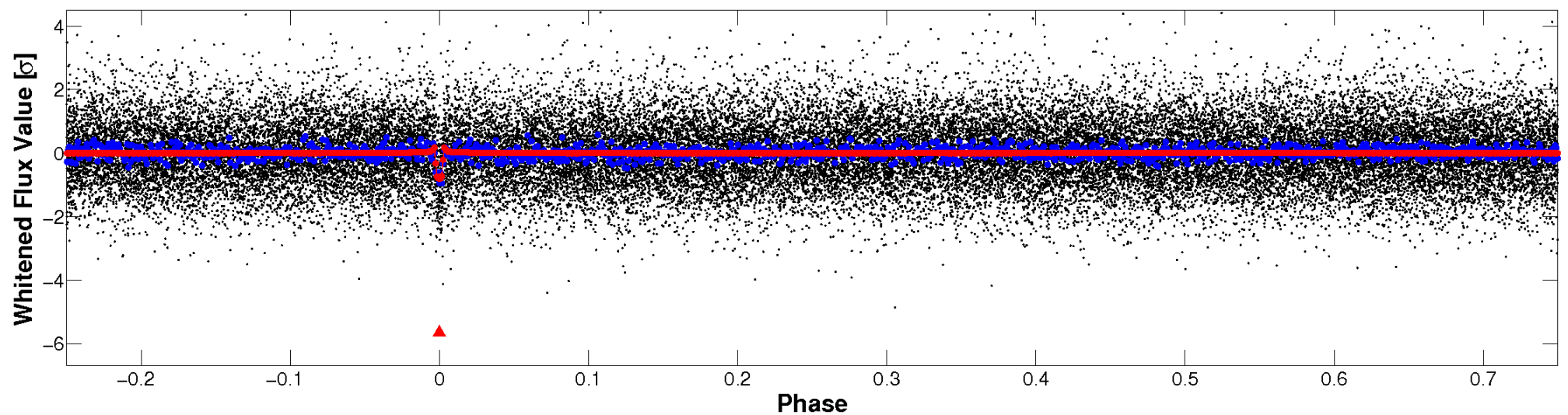


# Non-Whitened Vs. Whitened Light Curve

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

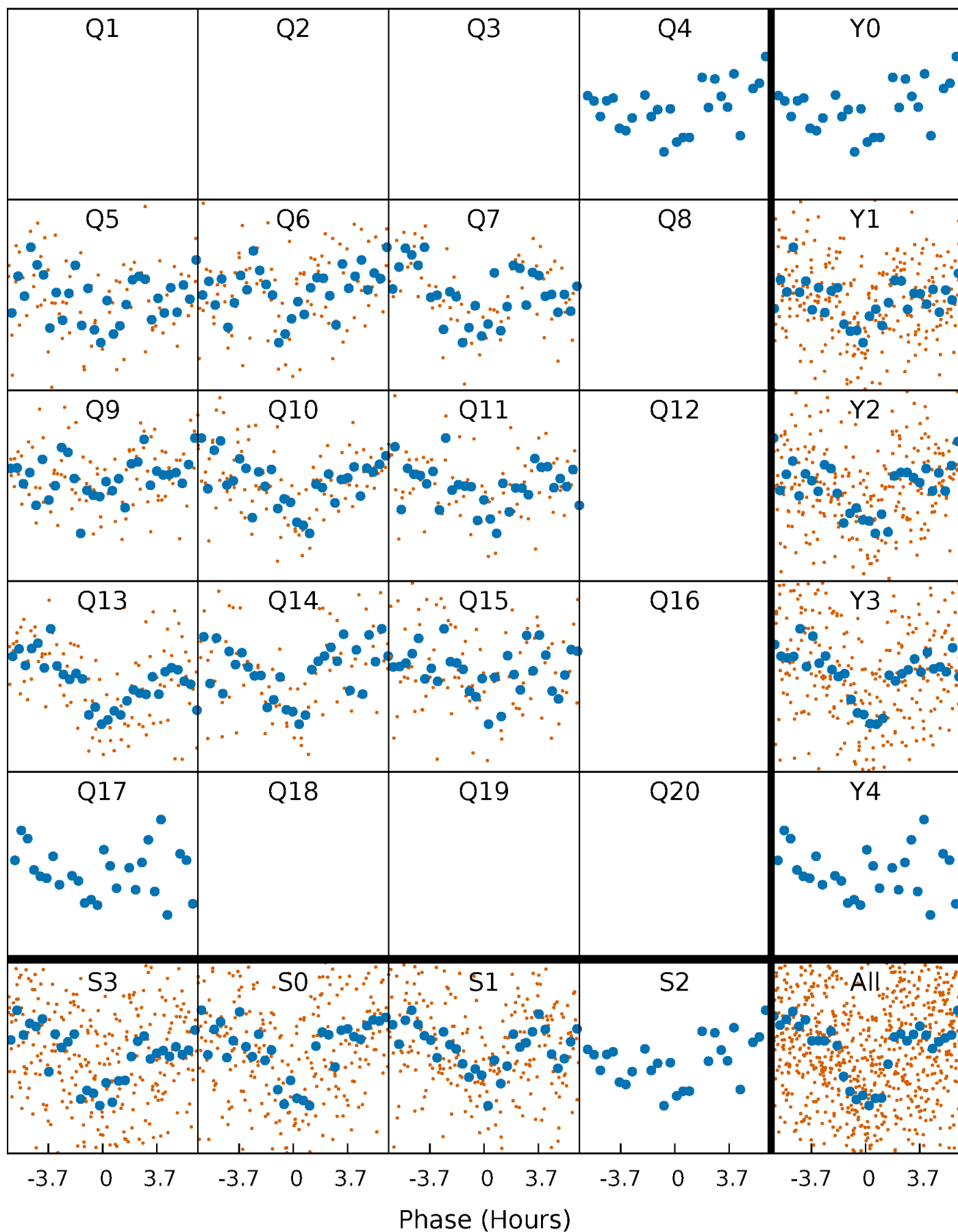


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

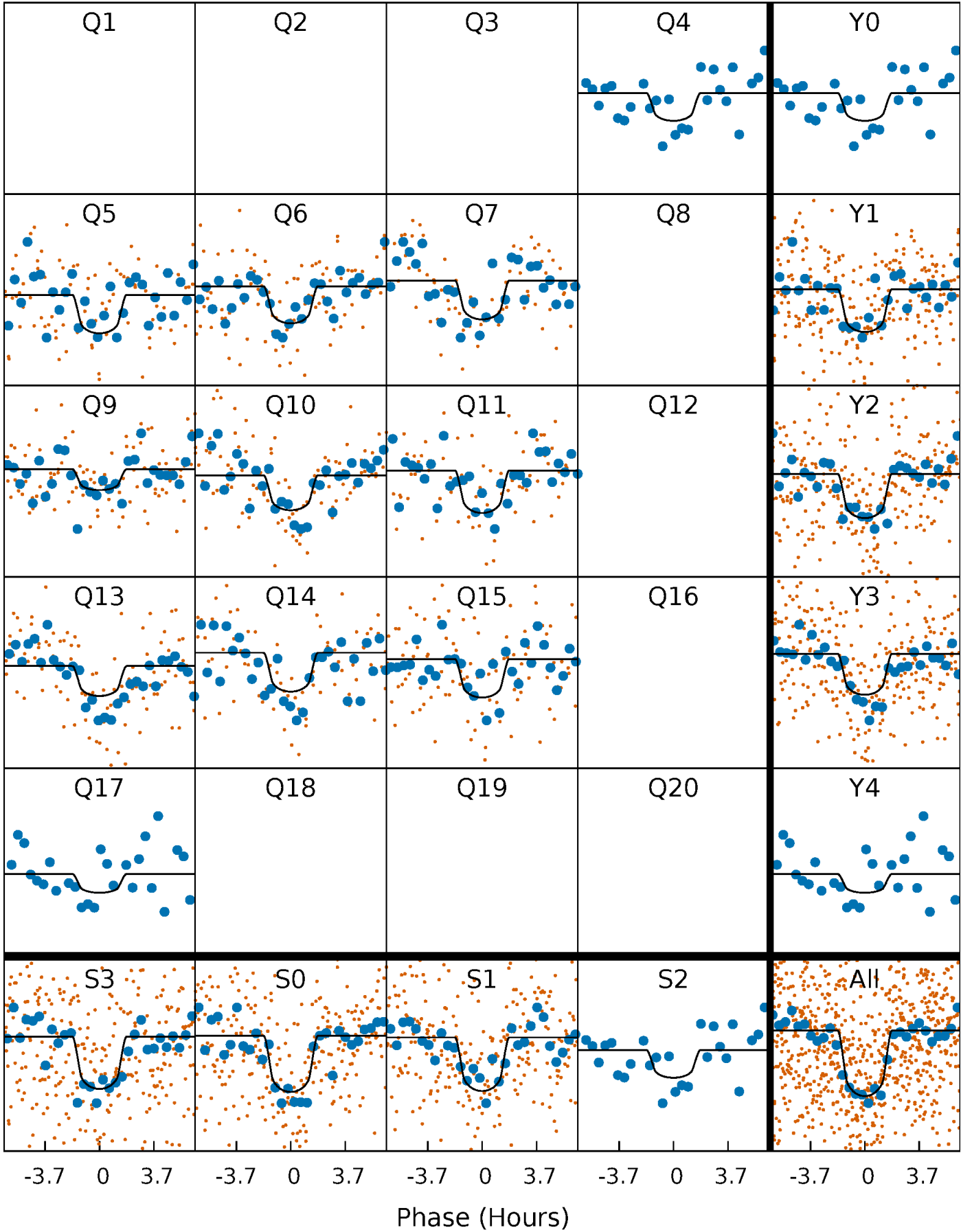
TCE 011905398-01 P= 24.796420 Days  $T_0=131.918165$  (BKJD)





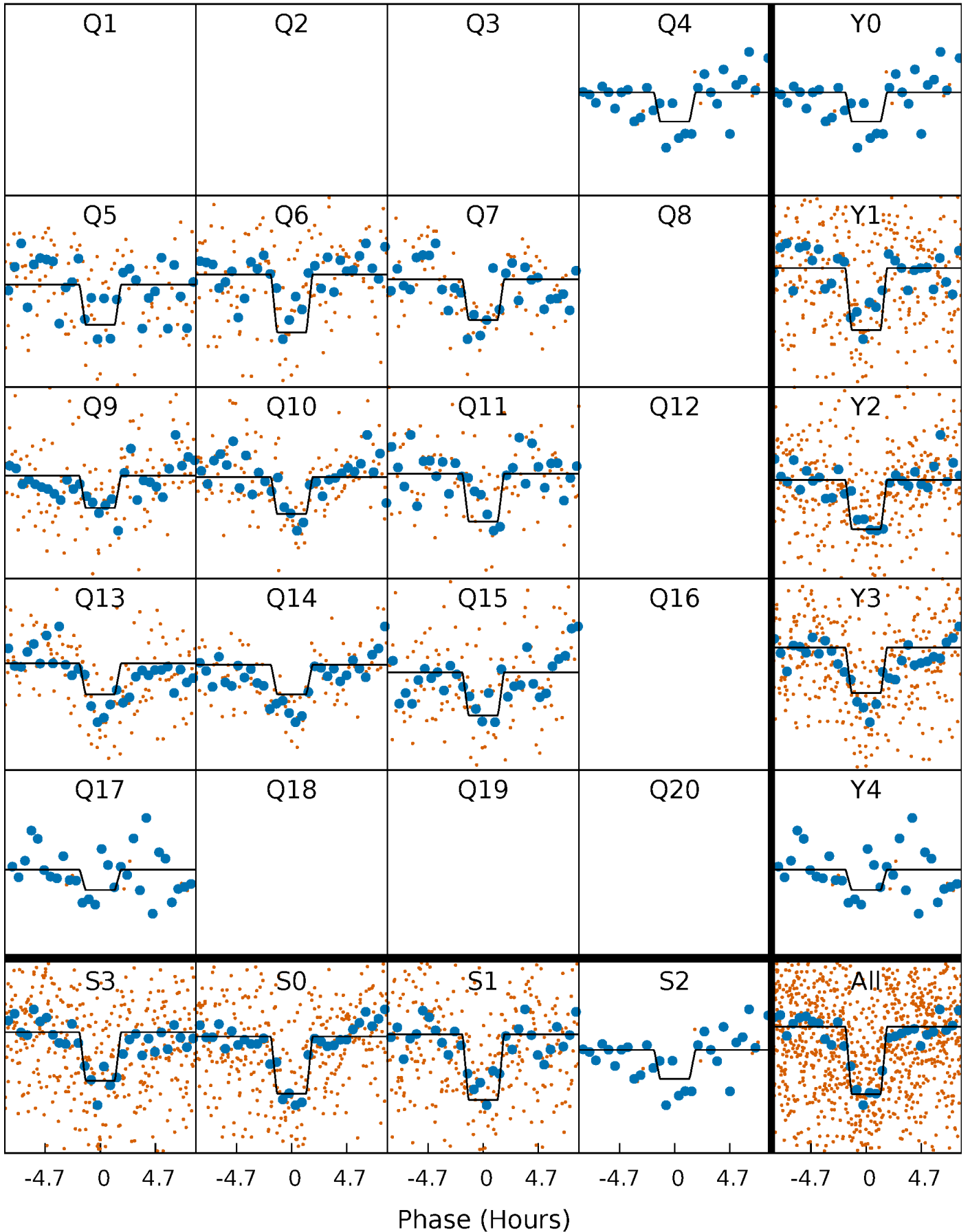
# DV Quarter-Phased Transit Curves

TCE 011905398-01     $P = 24.796420$  Days     $T_0 = 131.918165$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

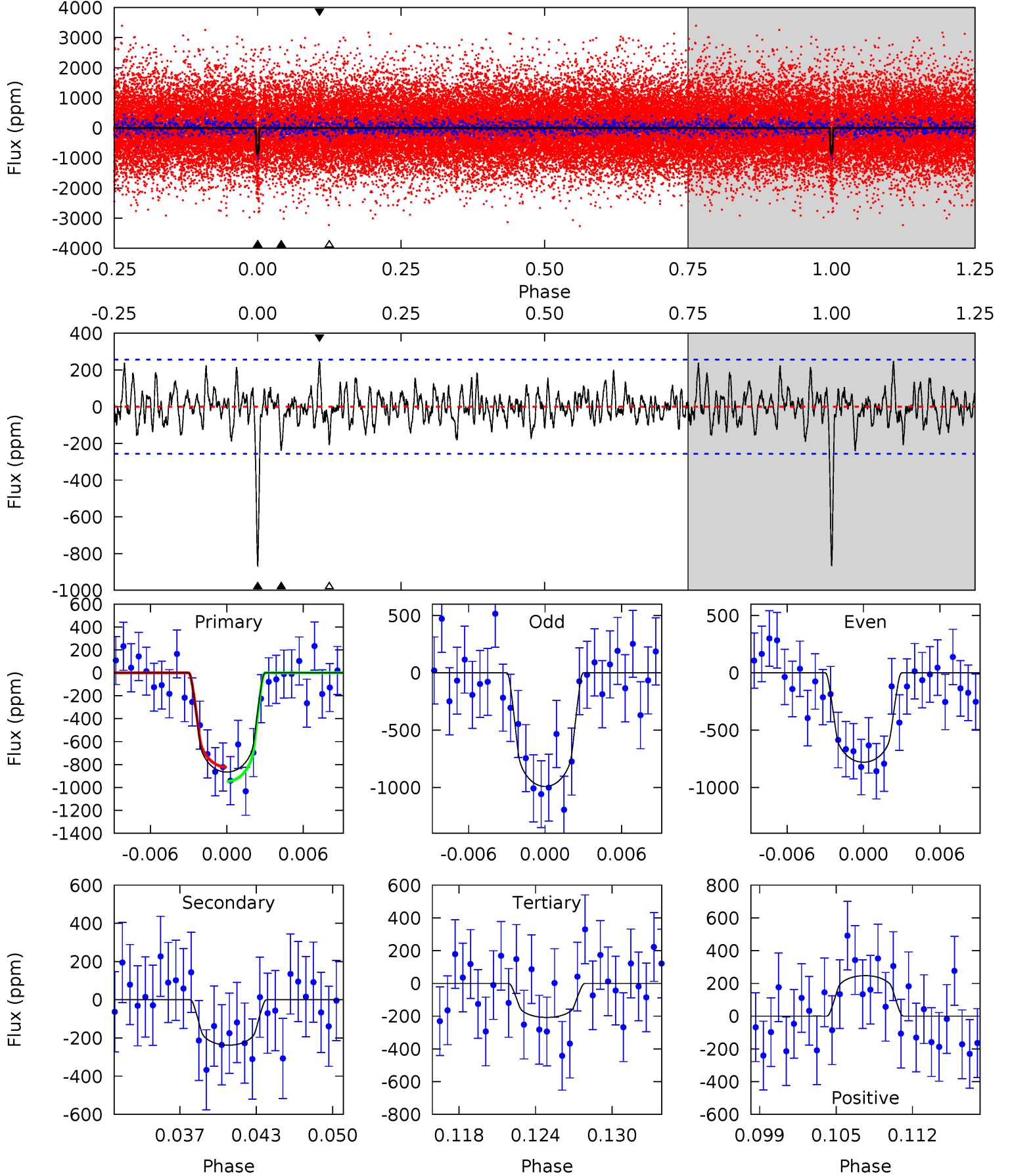
TCE 011905398-01   P= 24.796538 Days    $T_0=131.915631$  (BKJD)



# DV Model-Shift Uniqueness Test

011905398-01,  $P = 24.796420$  Days,  $E = 131.918165$  Days

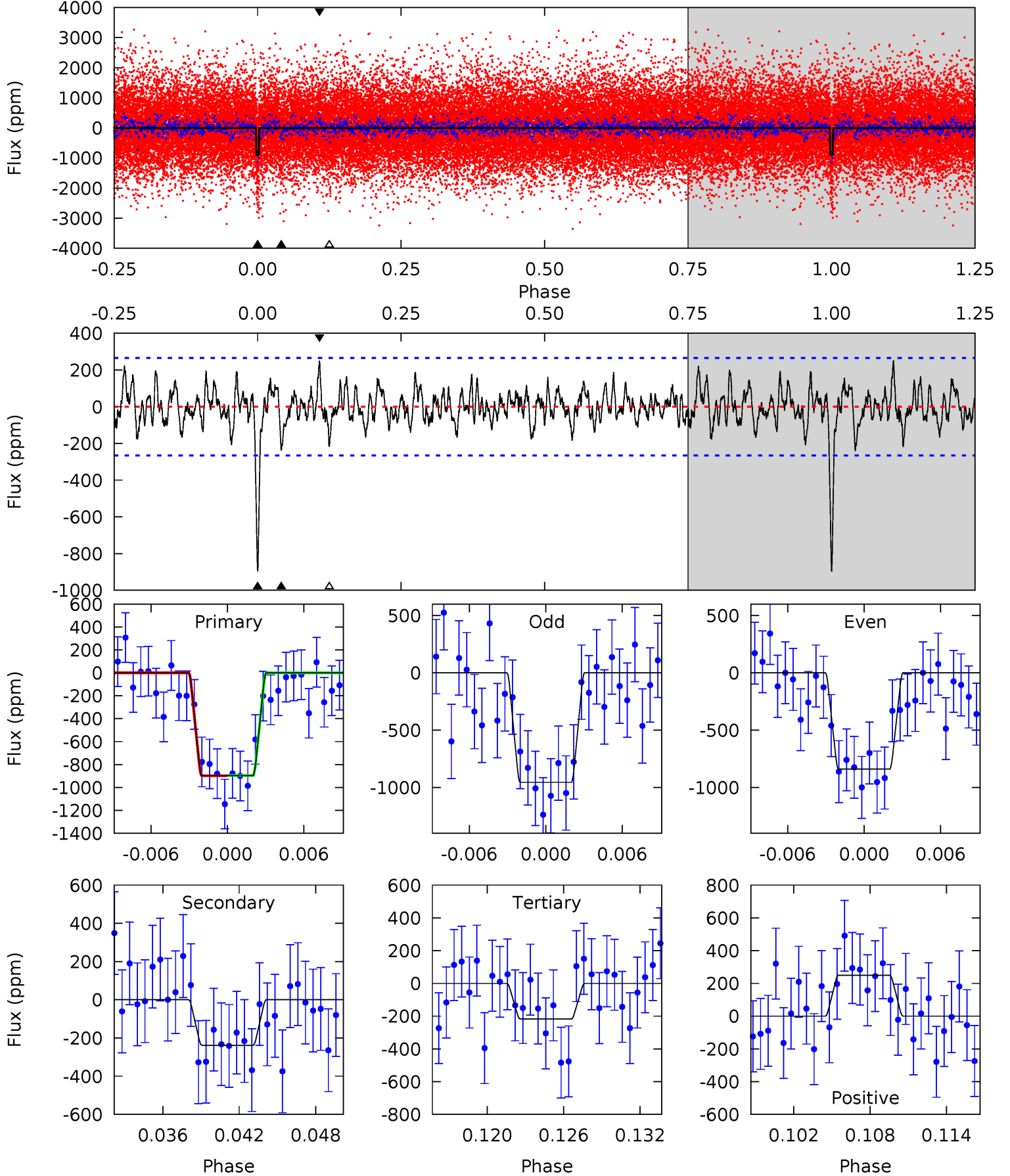
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.3 | 4.74 | 4.14 | 4.93 | 5.12            | 2.74            | 1.39             | 13.1    | 12.3    | 0.60    | -0.19   | 2.11    | 1.02 | 0.22  | 1.25 |



# Alt Model-Shift Uniqueness Test

011905398-01,  $P = 24.796538$  Days,  $E = 131.915631$  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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 17.3 | 4.60 | 4.18 | 4.83 | 5.12            | 2.75            | 1.41             | 13.1    | 12.5    | 0.42    | -0.22   | 1.11    | 1.10 | 0.22  | 0.02 |



### Stellar Parameters For KIC 011905398

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5496^{+174}_{-194}$ | $4.592^{+0.040}_{-0.120}$ | $-0.240^{+0.300}_{-0.300}$ | $0.776^{+0.152}_{-0.065}$ | $0.869^{+0.083}_{-0.102}$ | $2.619^{+0.529}_{-0.961}$                 |
|        | +3%/-4%              | +1%/-3%                   | +125%/-125%                | +20%/-8%                  | +10%/-12%                 | +20%/-37%                                 |
| 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 011905398-01 / KOI 5940.01

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{max} (K)$     | $T_{obs} (K)$         | $A_{obs}$            |
|---------|---------------|------------------------|-------------------|-----------------------|----------------------|
| DV      | $-238 \pm 50$ | $2.77^{+1.81}_{-1.65}$ | $761^{+38}_{-33}$ | $4109^{+1890}_{-653}$ | $437^{+2253}_{-282}$ |
| Alt.    | $-239 \pm 52$ | $2.84^{+1.91}_{-1.51}$ | $762^{+39}_{-31}$ | $4070^{+1480}_{-677}$ | $402^{+1522}_{-262}$ |

$T_{max}$  = 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

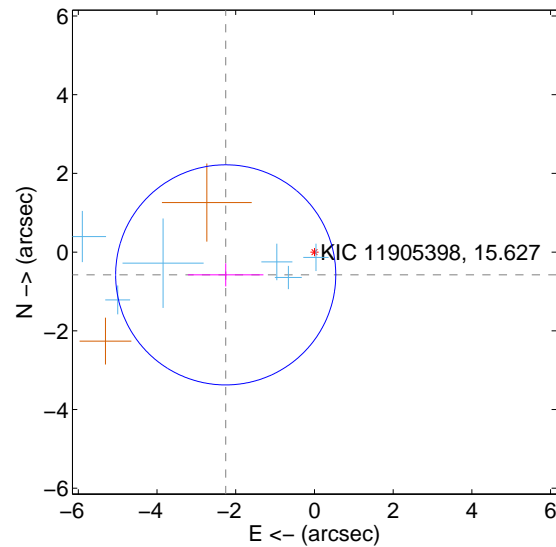
Supplemental centroid analysis for 011905398-01. Kepler magnitude: 15.63. Transit SNR 10.52

There are 6 quarters with good PRF difference image offsets

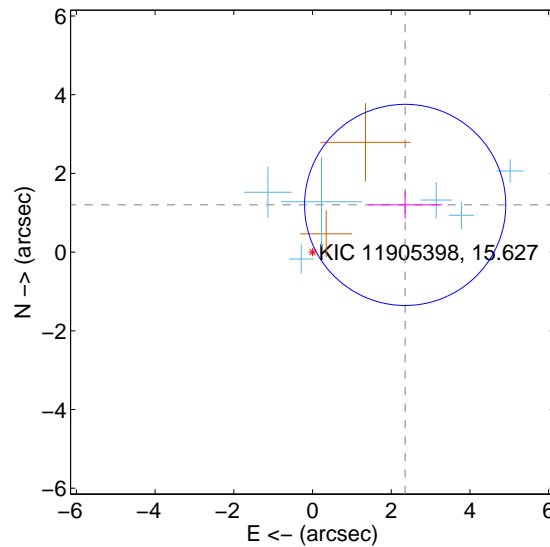
The OOT PRF centroid is offset from the target star catalog position by about 4.36 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $2.328 \pm 0.932$  | 2.50                | $2.255 \pm 0.959$  | $-0.578 \pm 0.292$ |
| PRF-fit source offset from KIC position | $2.641 \pm 0.852$  | 3.10                | $-2.354 \pm 0.939$ | $1.199 \pm 0.349$  |
| photometric centroid source offset      | $2.51 \pm 0.43$    | 5.80                | $-2.23 \pm 0.46$   | $1.16 \pm 0.31$    |

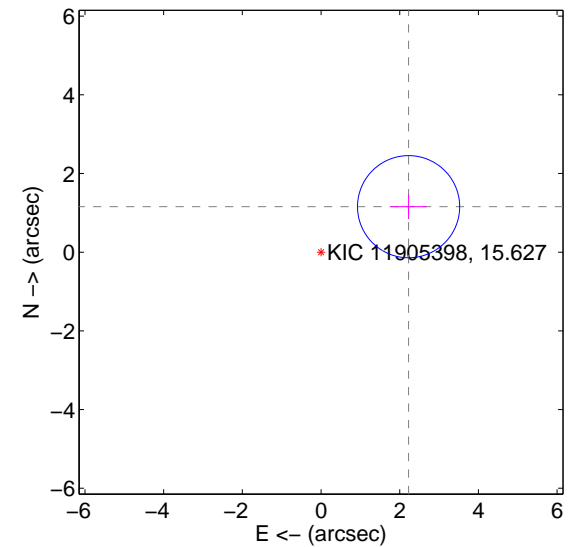
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



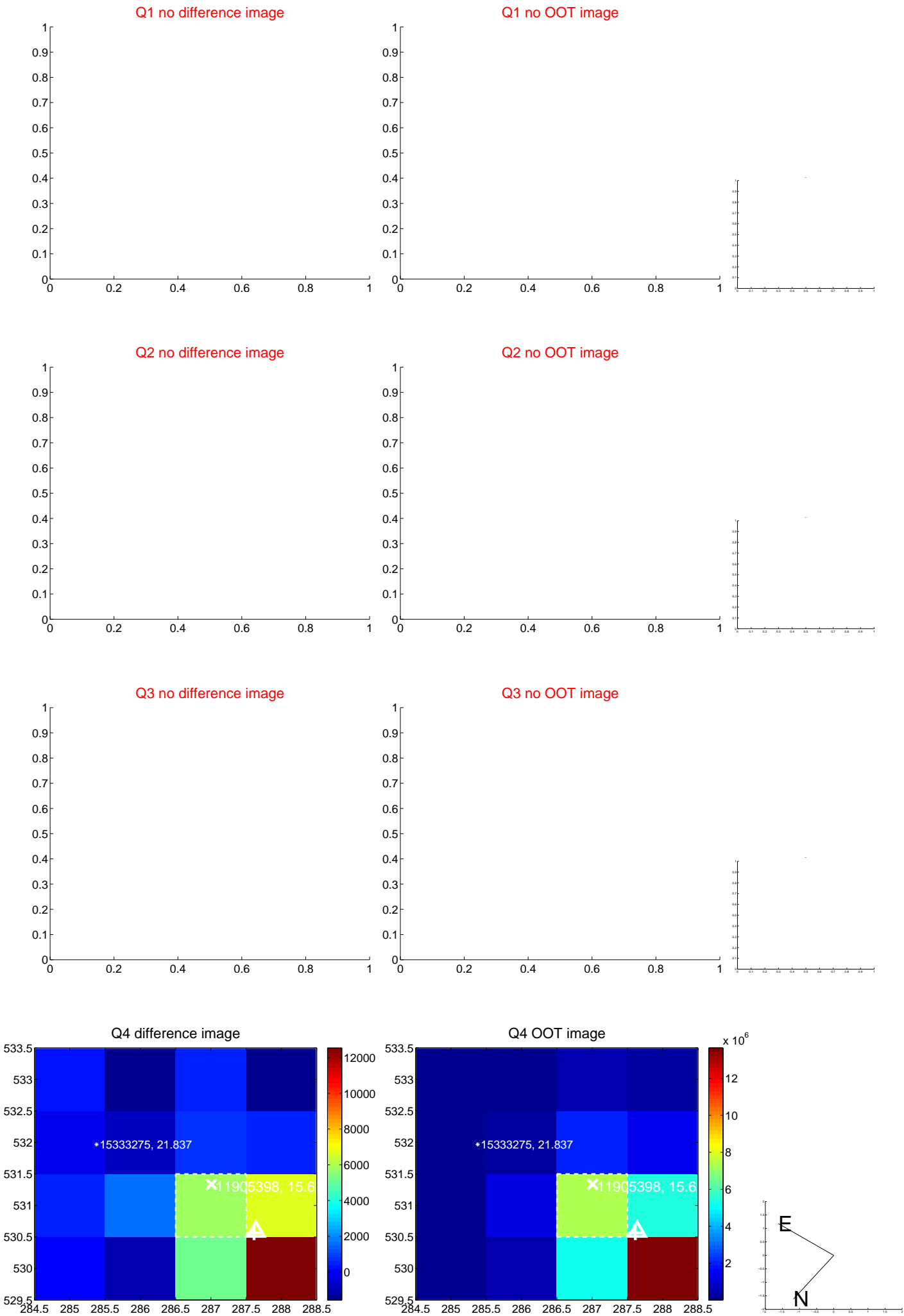
offset from photometric centroids



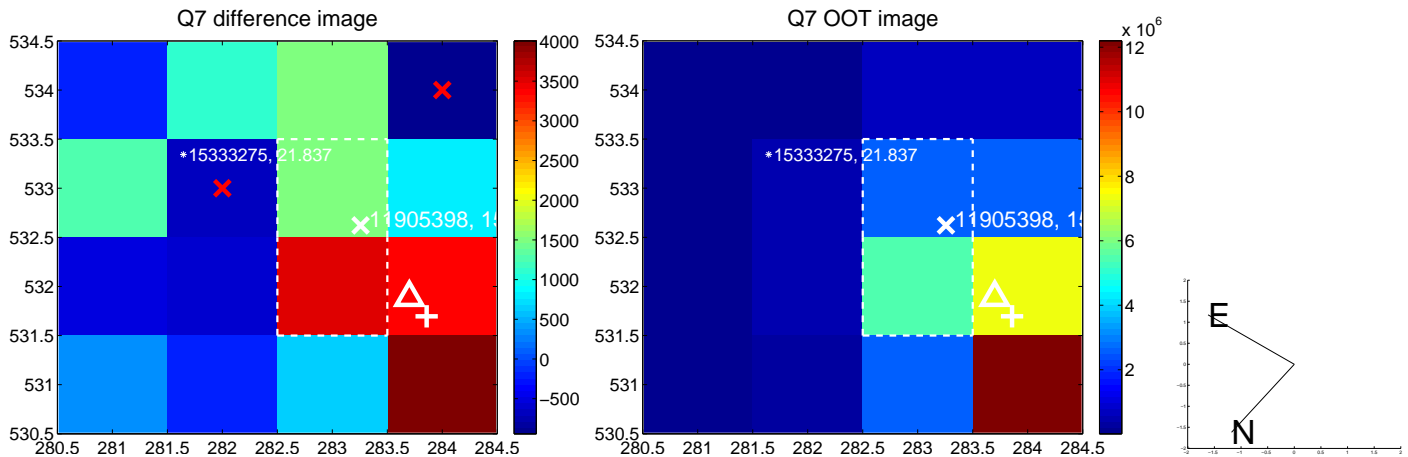
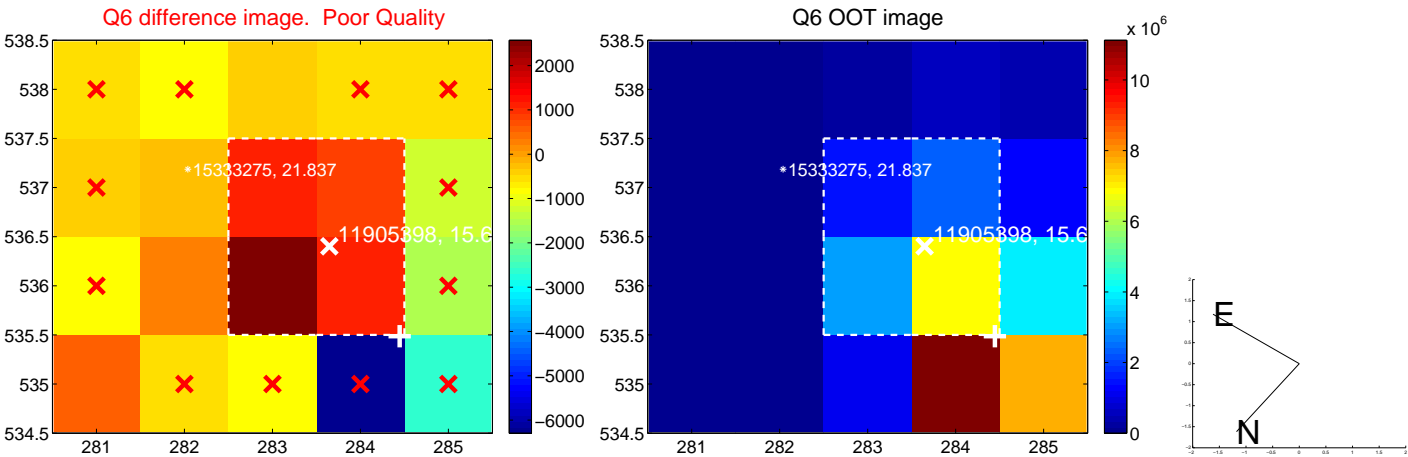
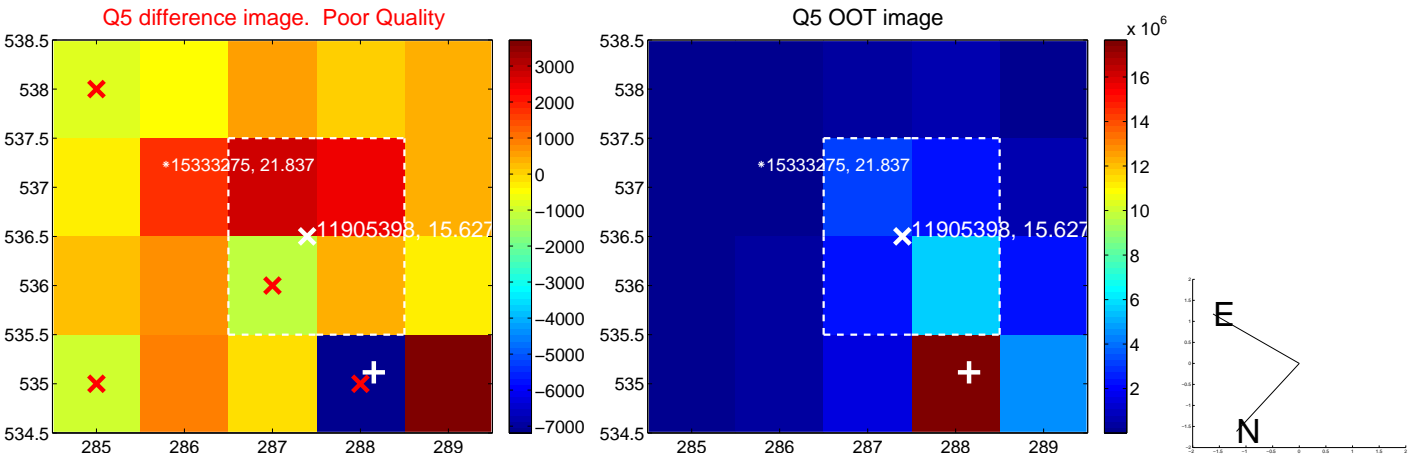
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



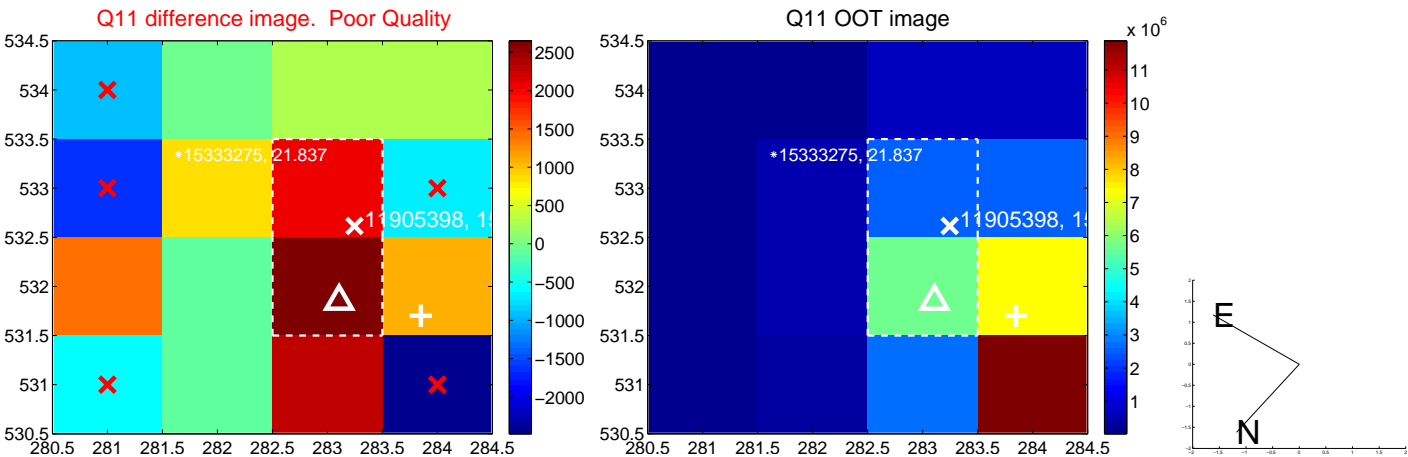
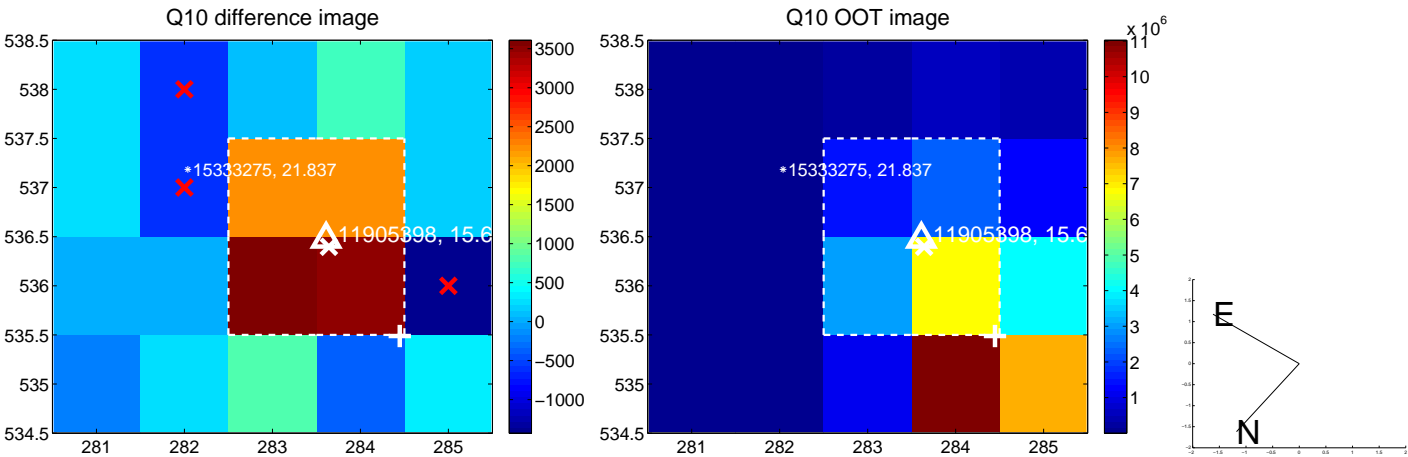
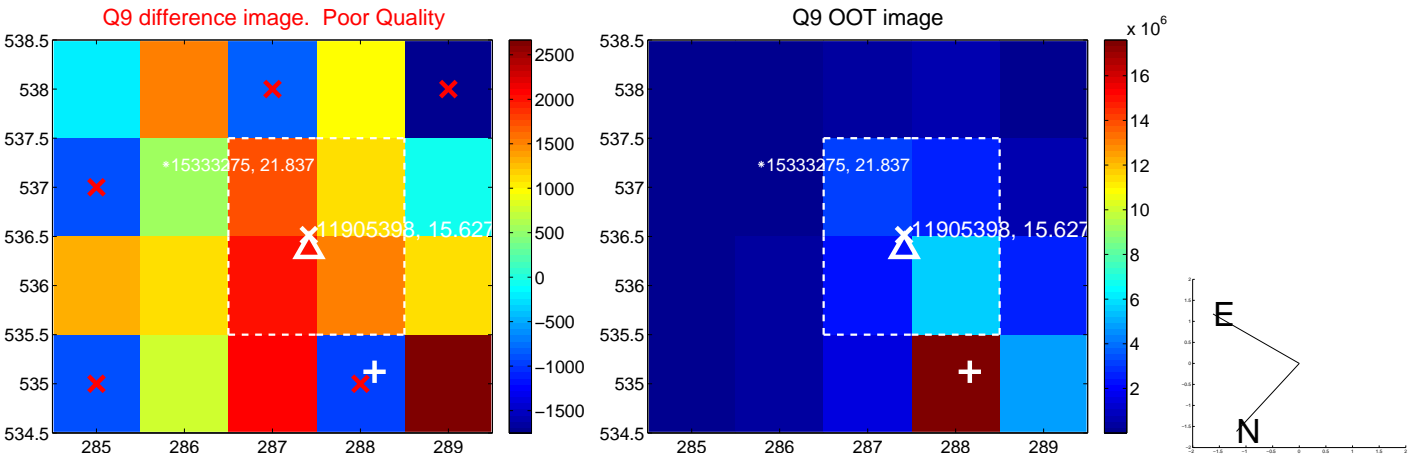
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



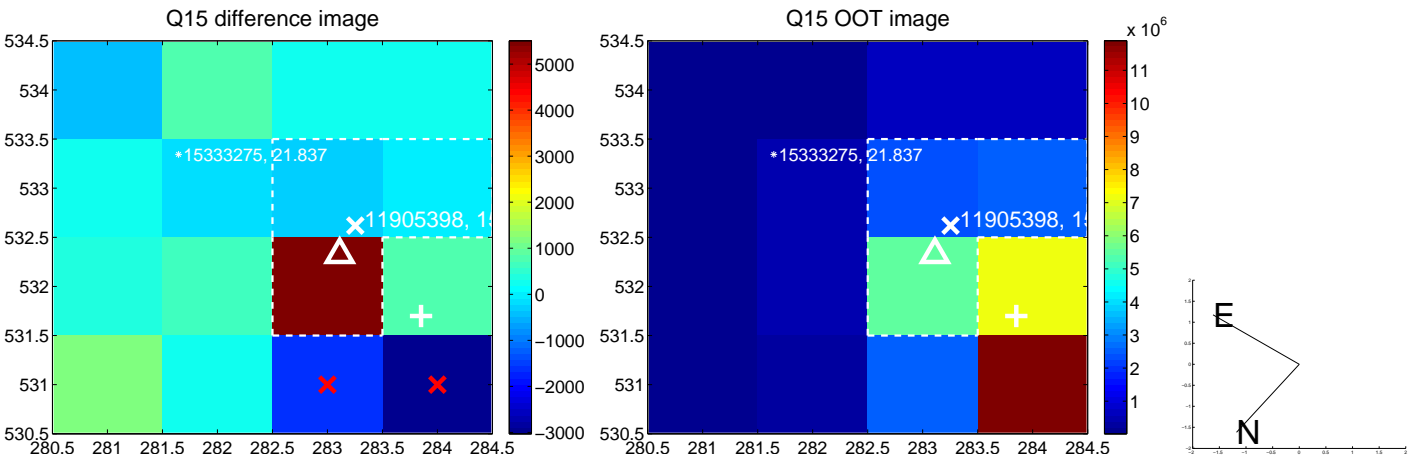
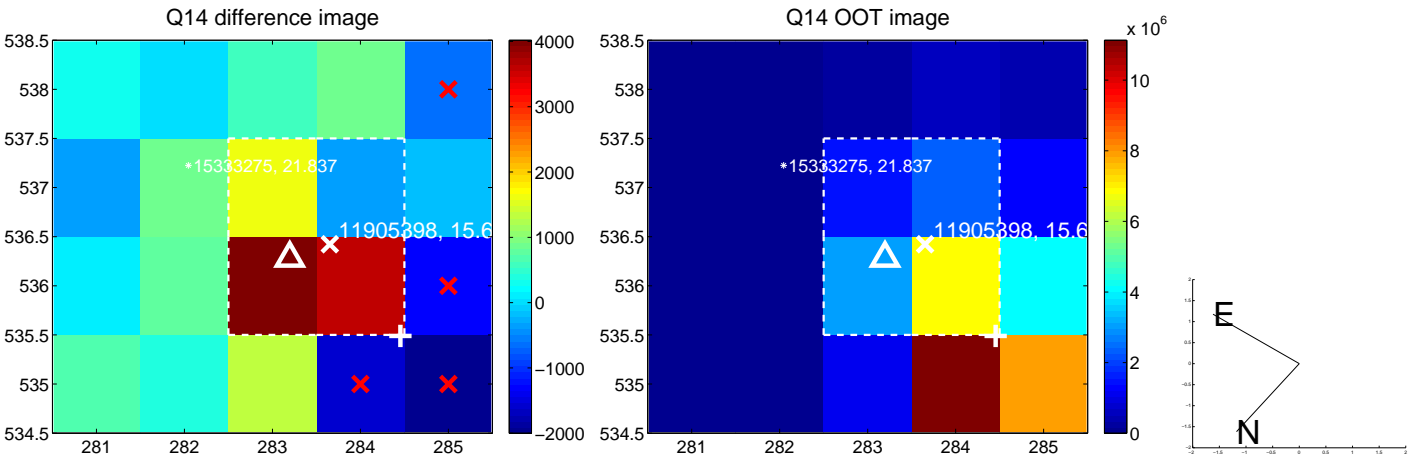
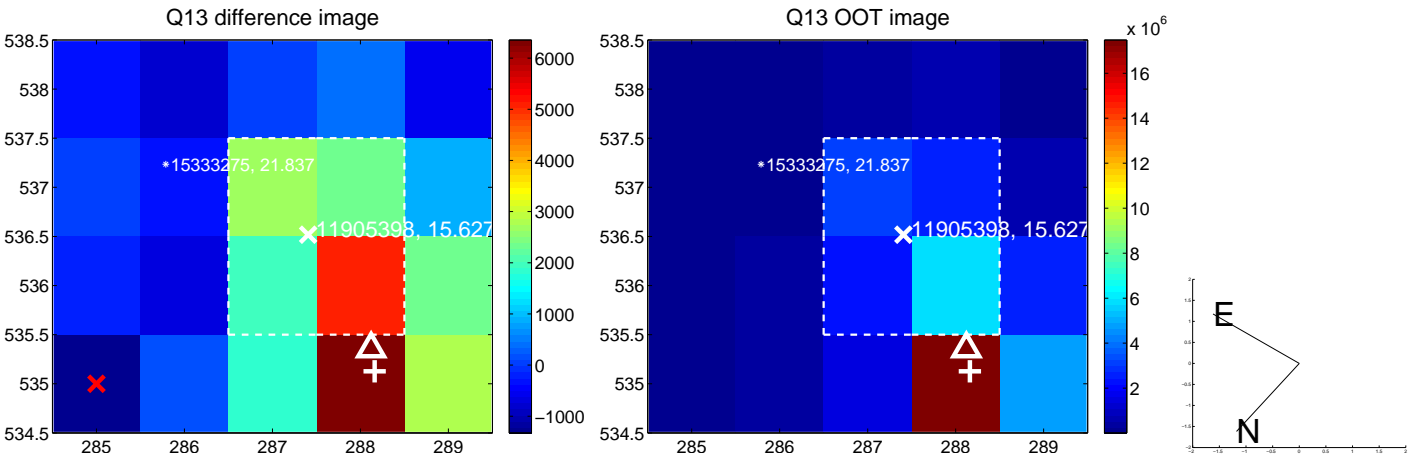
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



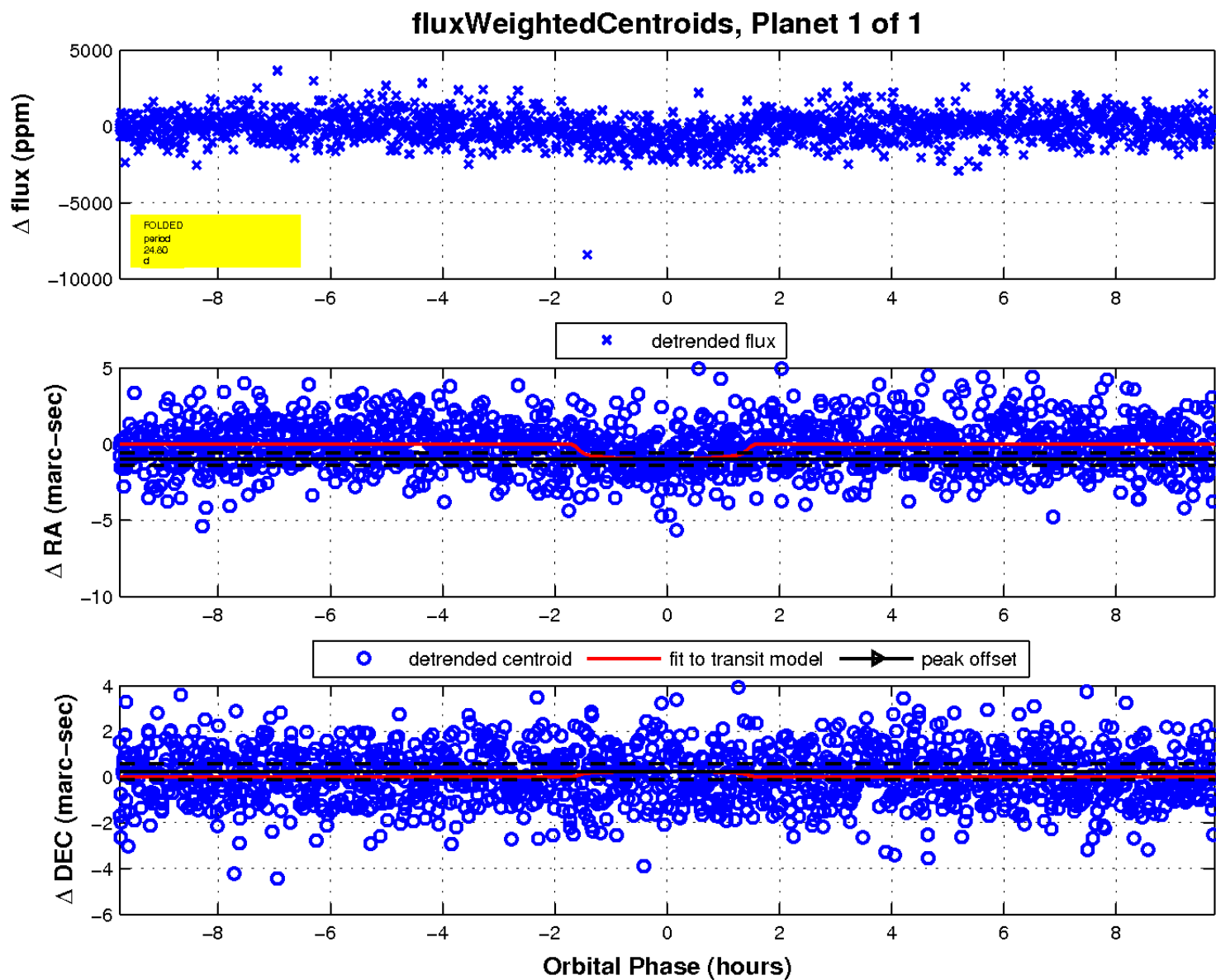
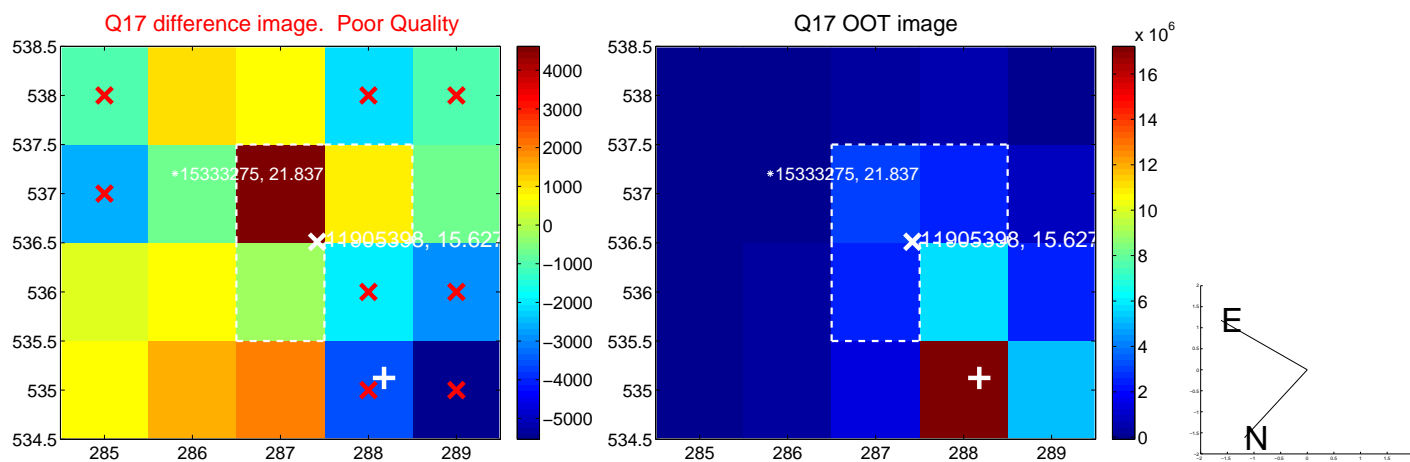
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

