

# KIC 012024120

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 012024120-01 | OBS      | 0265.01 | 3.568081      | 134.065277   | 97.3        | 3.353            | 42.2 | 47.0 | 1.33                        | 6007            | 1.56                   | 928.36                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|------------|
| 012024120-01 | OBS      | PC   | 1.00  | 0 | 0 | 0 | 0 | NO_COMMENT |

**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 012024120-01

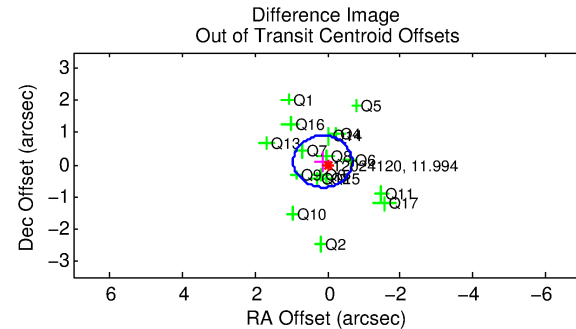
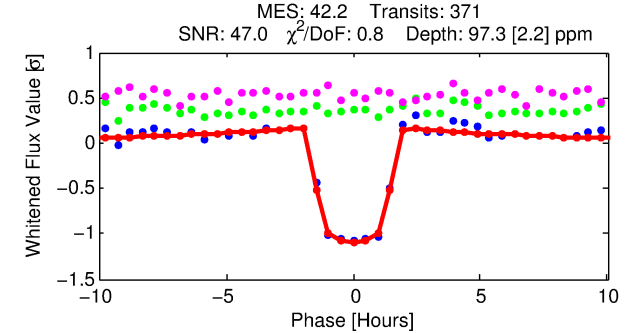
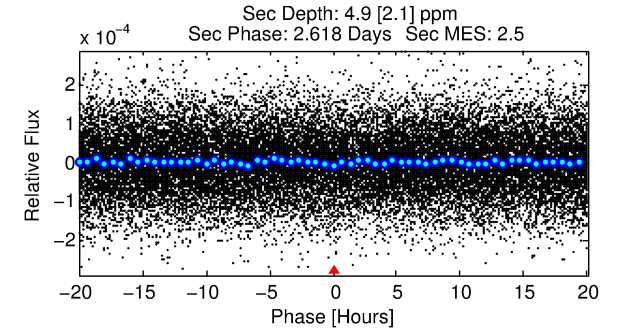
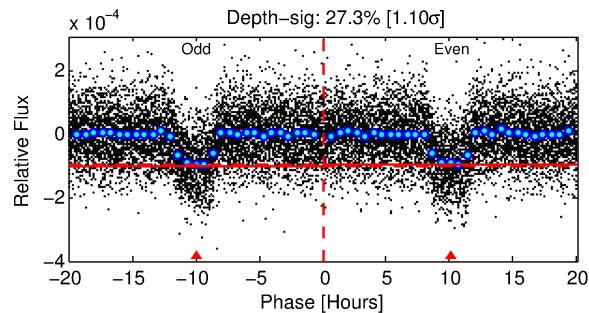
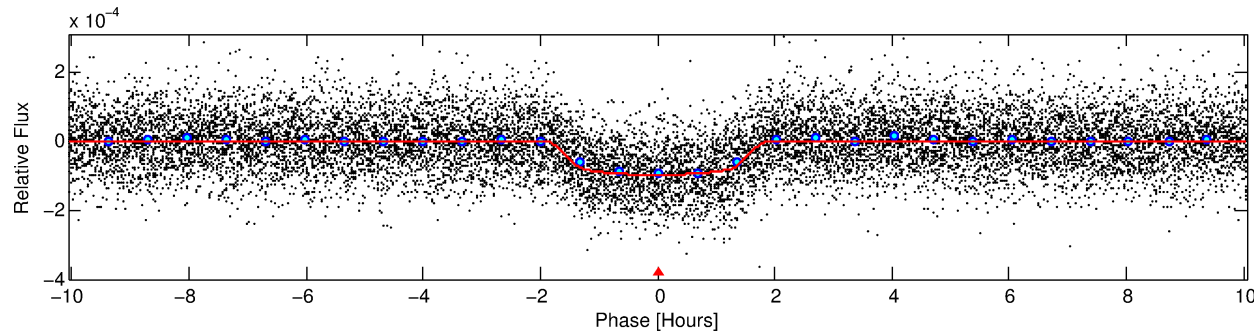
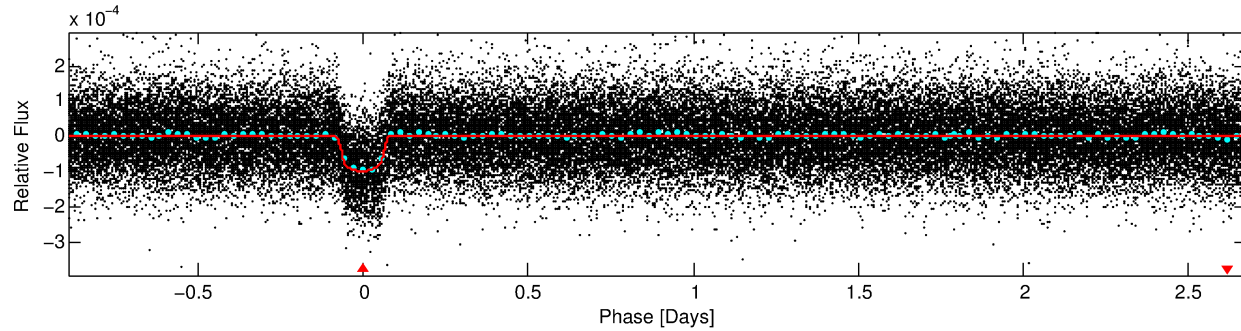
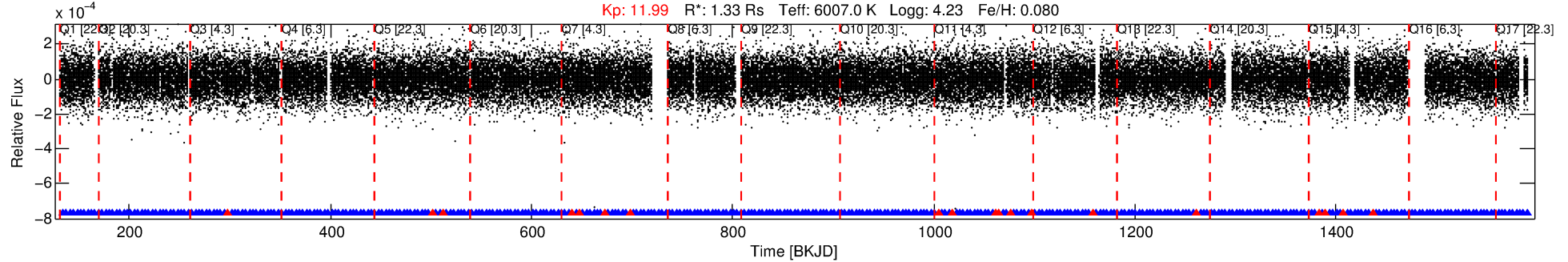
No Significant Match Found

# DV One-Page Summary

KIC: 12024120 Candidate: 1 of 1 Period: 3.568 d

KOI: K00265.01 Corr: 0.982

Kp: 11.99 R\*: 1.33 Rs Teff: 6007.0 K Logg: 4.23 Fe/H: 0.080



## DV Fit Results:

Period = 3.56808 [0.00001] d  
Epoch = 134.0653 [0.0010] BKJD  
Rp/R\* = 0.0107 [0.0012]  
a/R\* = 3.85 [2.07]  
b = 0.90 [0.12]  
Seff = 928.36 [241.48]  
Teq = 1408 [92] K  
Rp = 1.56 [0.32] Re  
a = 0.0473 [0.0075] AU  
Ag = 2.47 [1.35] [1.09σ]  
Teffp = 2729 [337] K [3.79σ]

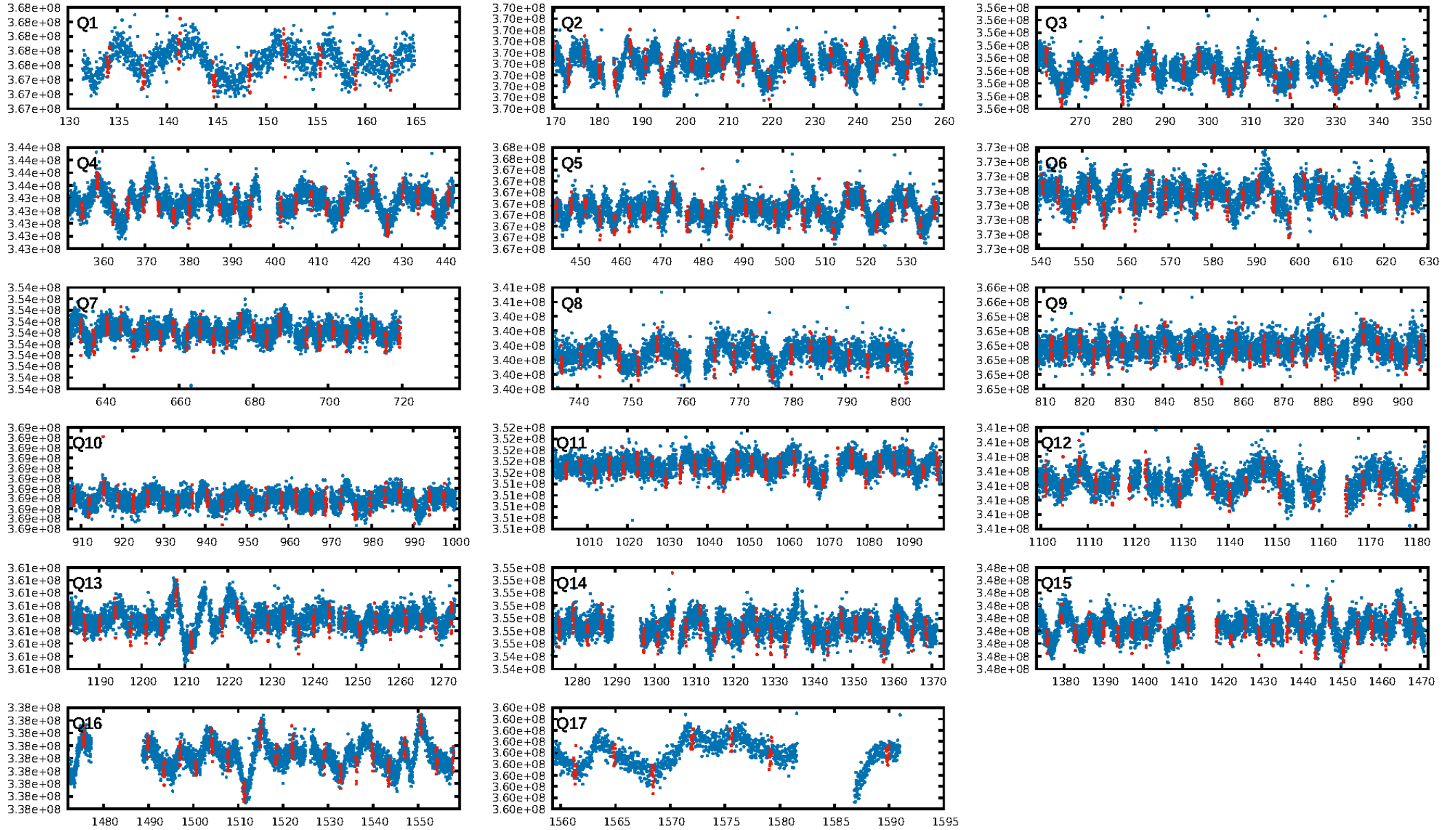
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.95 [336/355]  
GhostDiagnostic-chr: 8.551  
Centroid-sig: N/A  
Centroid-so: 0.630 arcsec [2.23σ]  
OotOffset-rm: 0.166 arcsec [0.62σ]  
KicOffset-rm: 0.367 arcsec [1.14σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

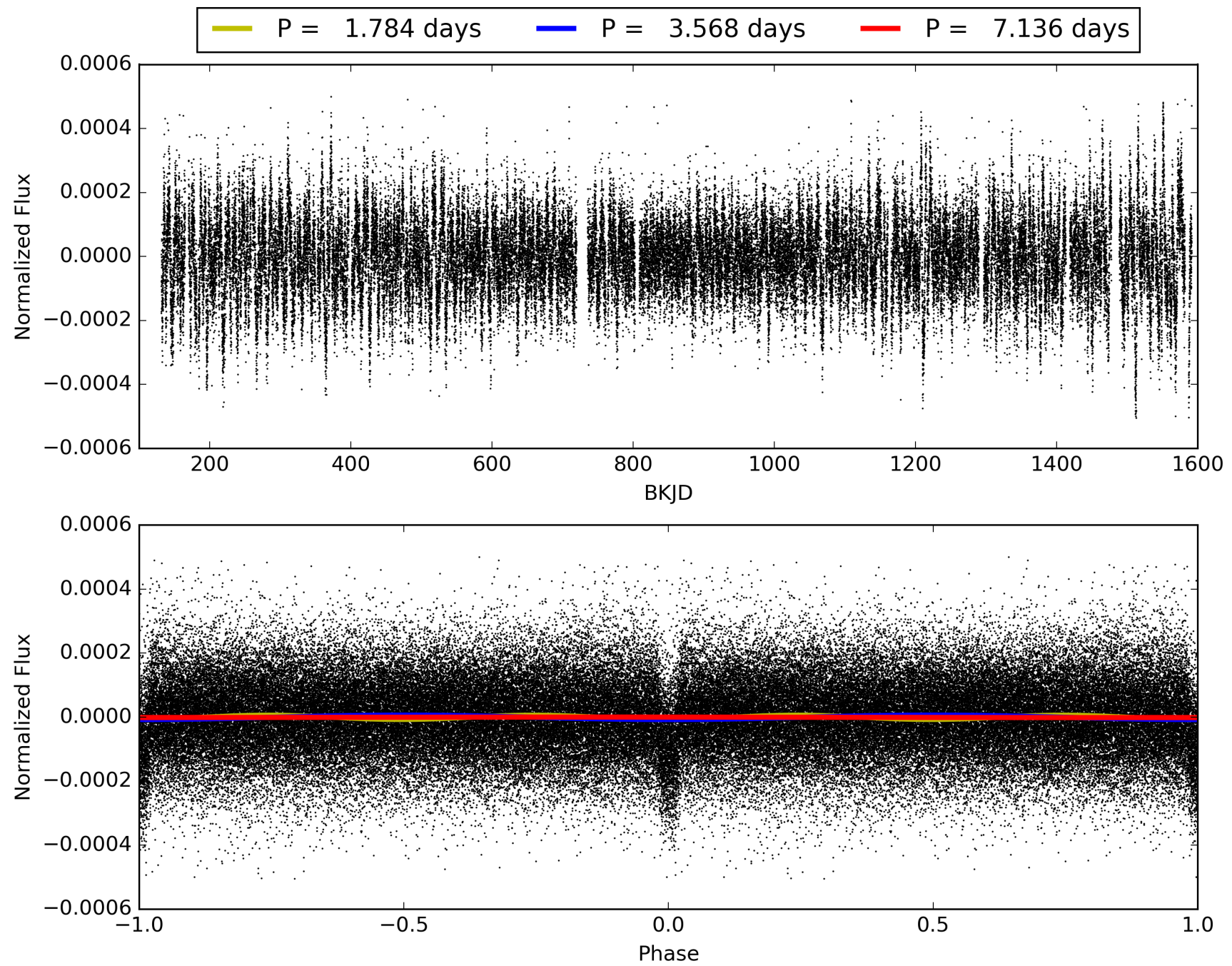
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:57:14 Z

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

# TCE 012024120-01, PDC Light Curves

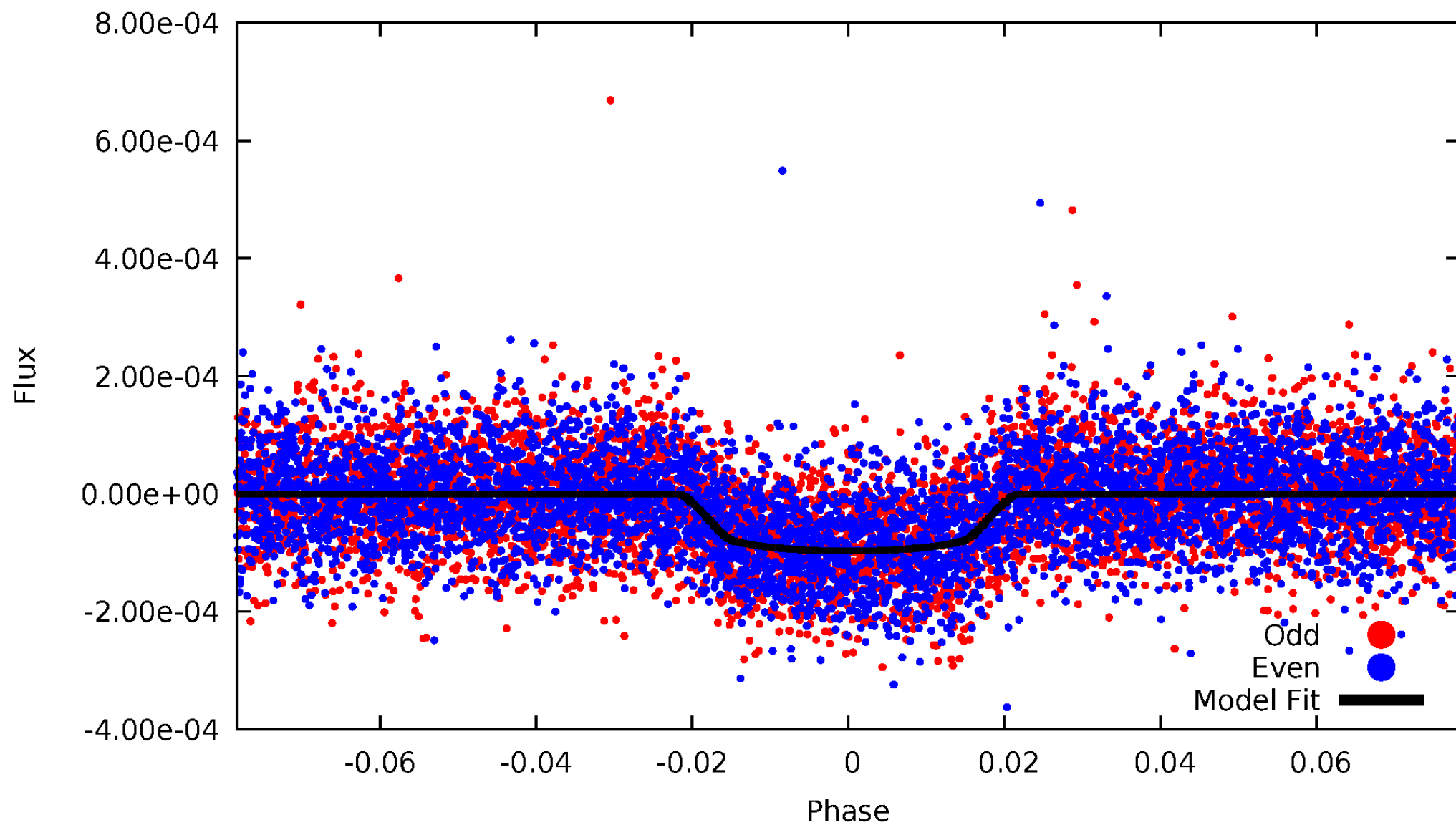


TCE 012024120-01



# DV Odd/Even

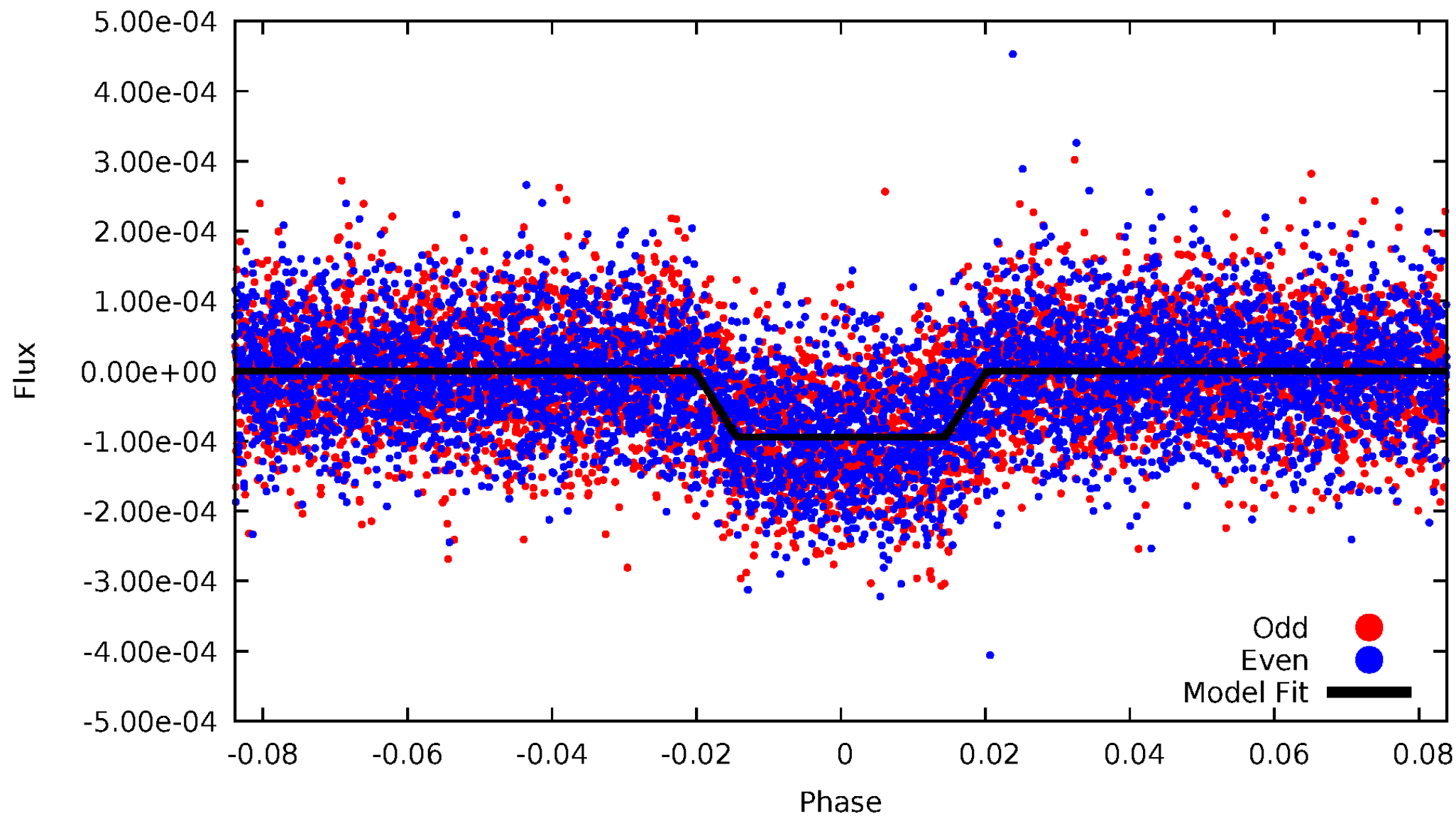
TCE 012024120-01





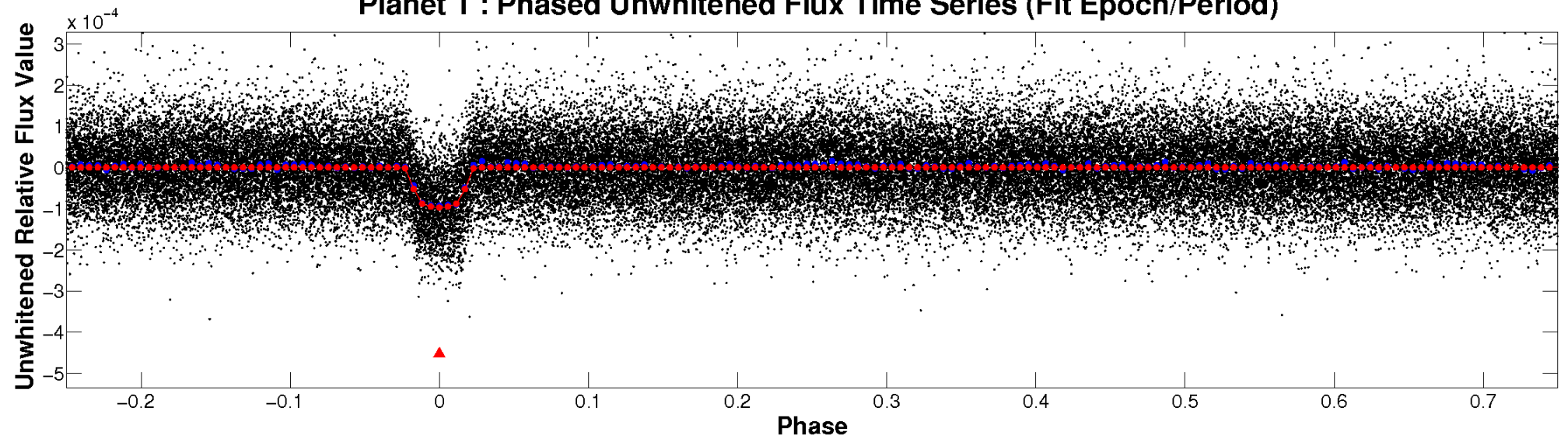
# ALT Odd/Even

TCE 012024120-01

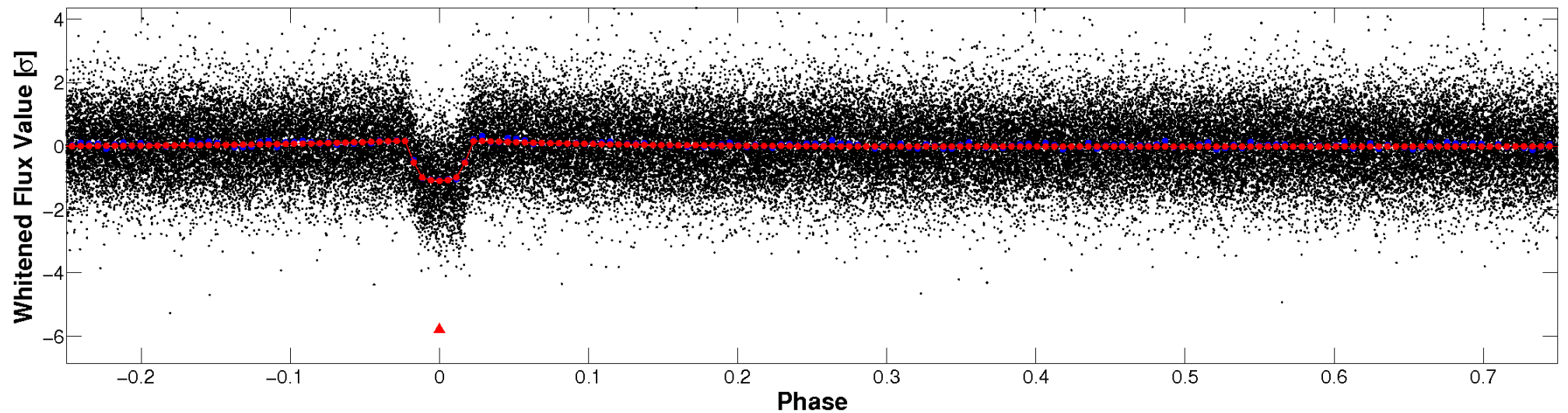


# Non-Whitened Vs. Whitened Light Curve

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

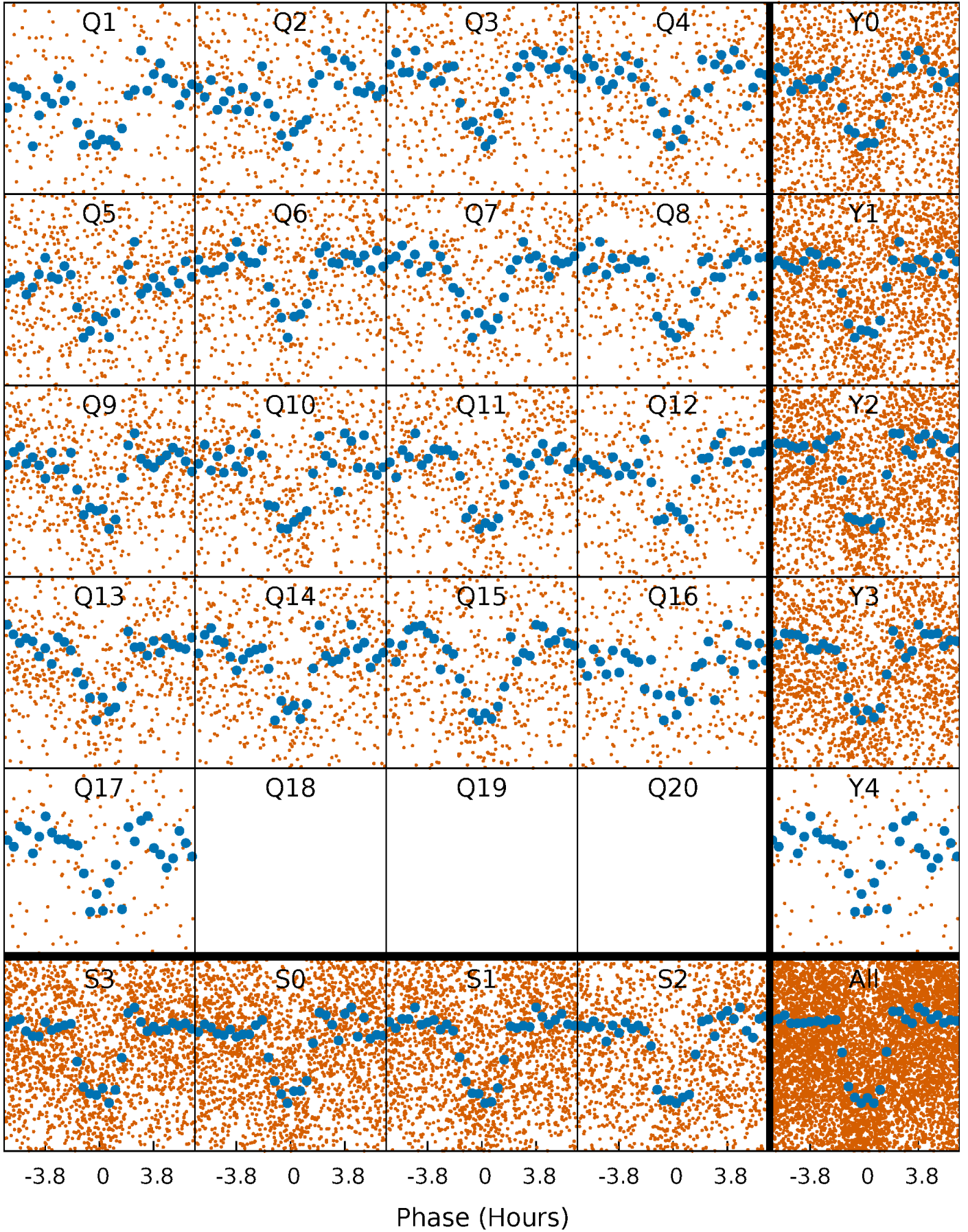


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

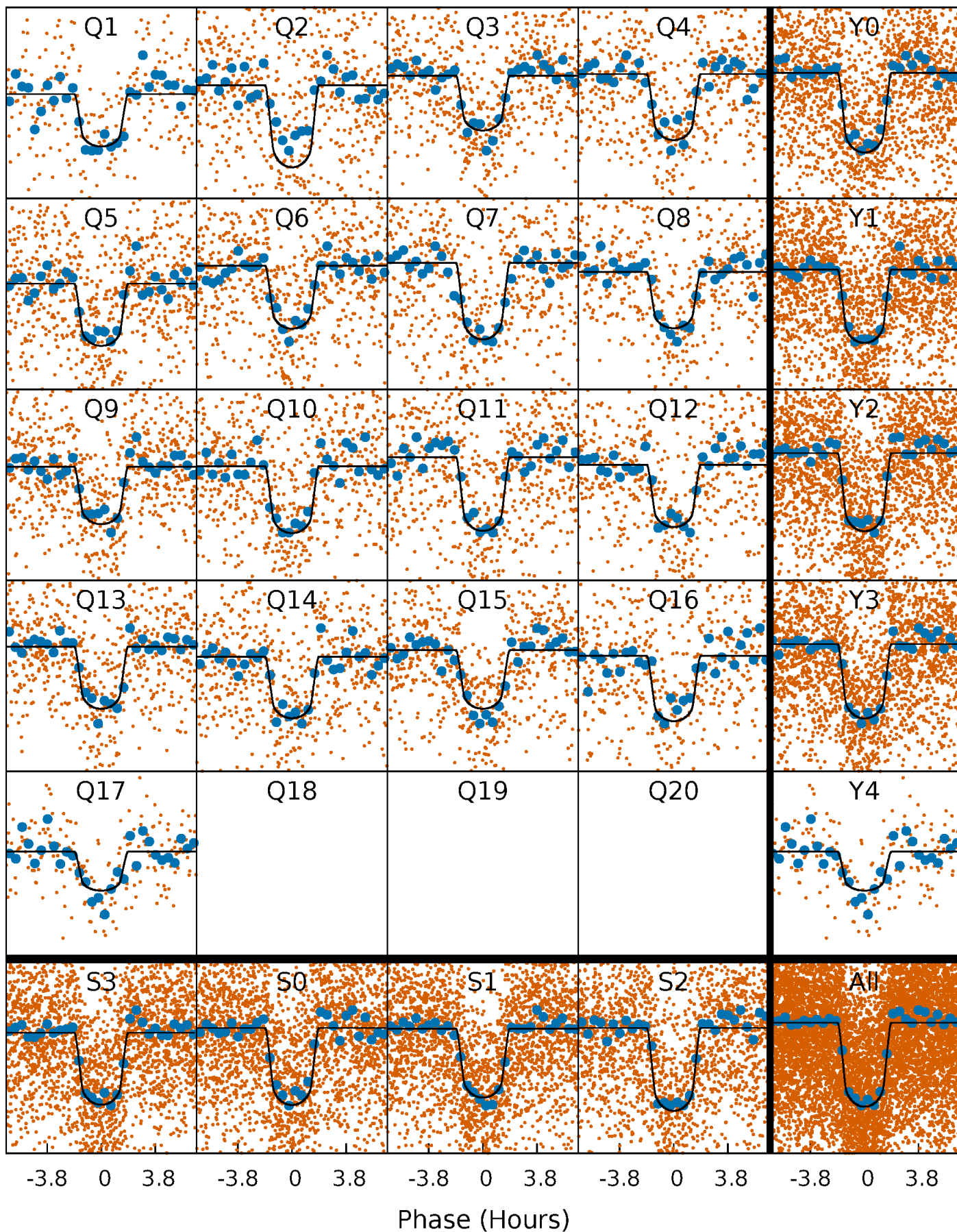
TCE 012024120-01   P= 3.568081 Days    $T_0=134.065277$  (BKJD)





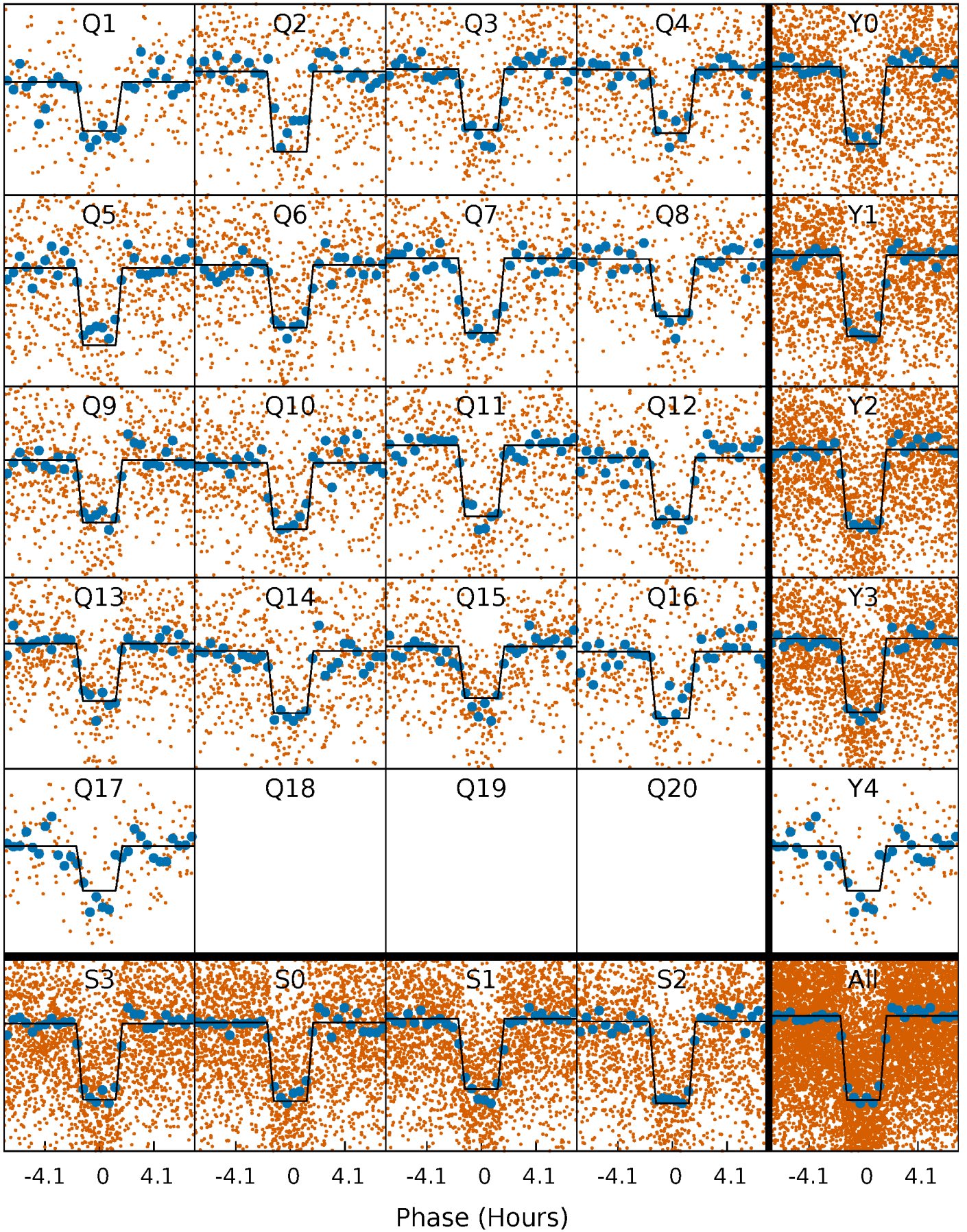
# DV Quarter-Phased Transit Curves

TCE 012024120-01 P= 3.568081 Days  $T_0=134.065277$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

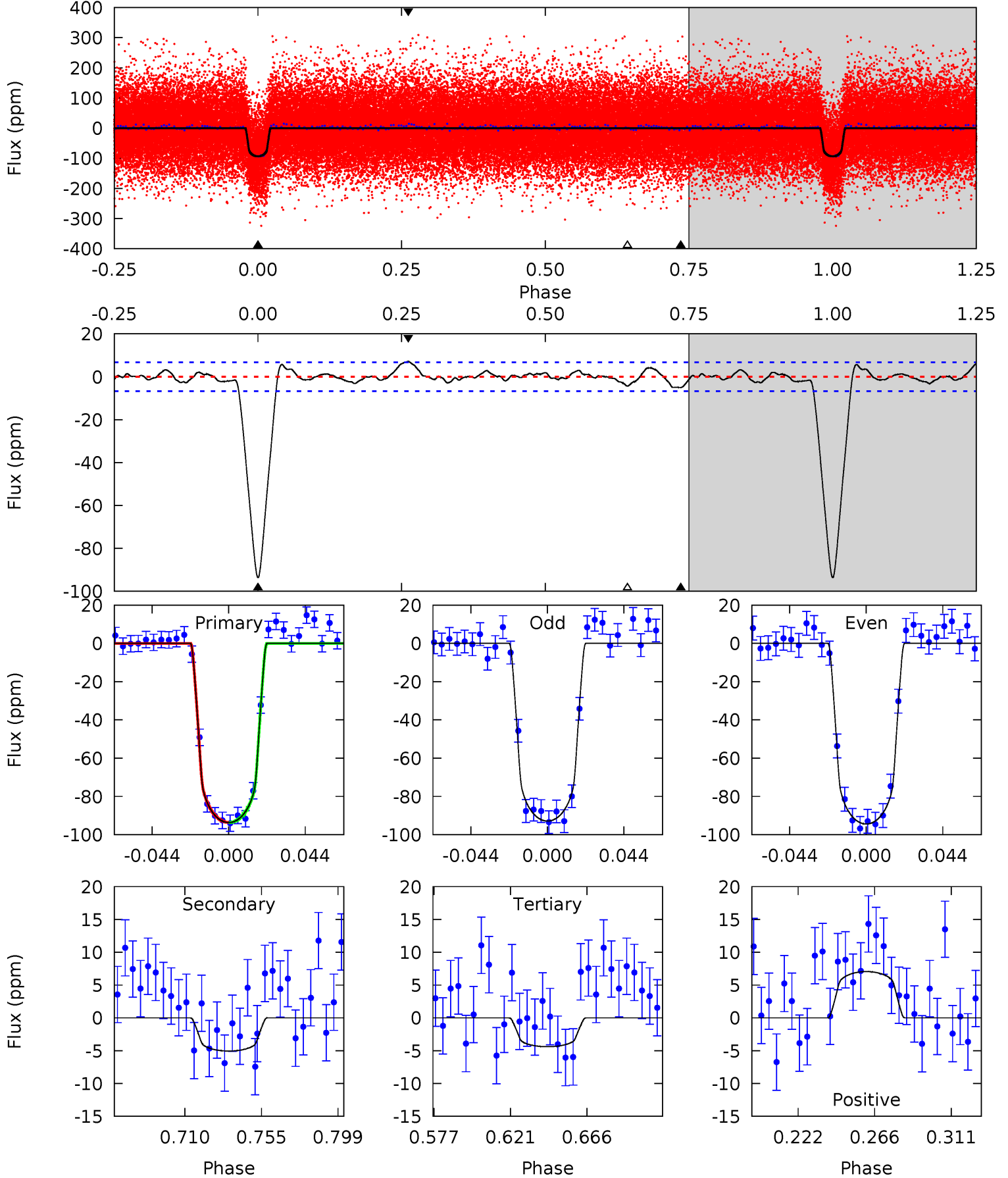
TCE 012024120-01 P= 3.568102 Days  $T_0=134.061239$  (BKJD)



# DV Model-Shift Uniqueness Test

012024120-01, P = 3.568081 Days, E = 130.497196 Days

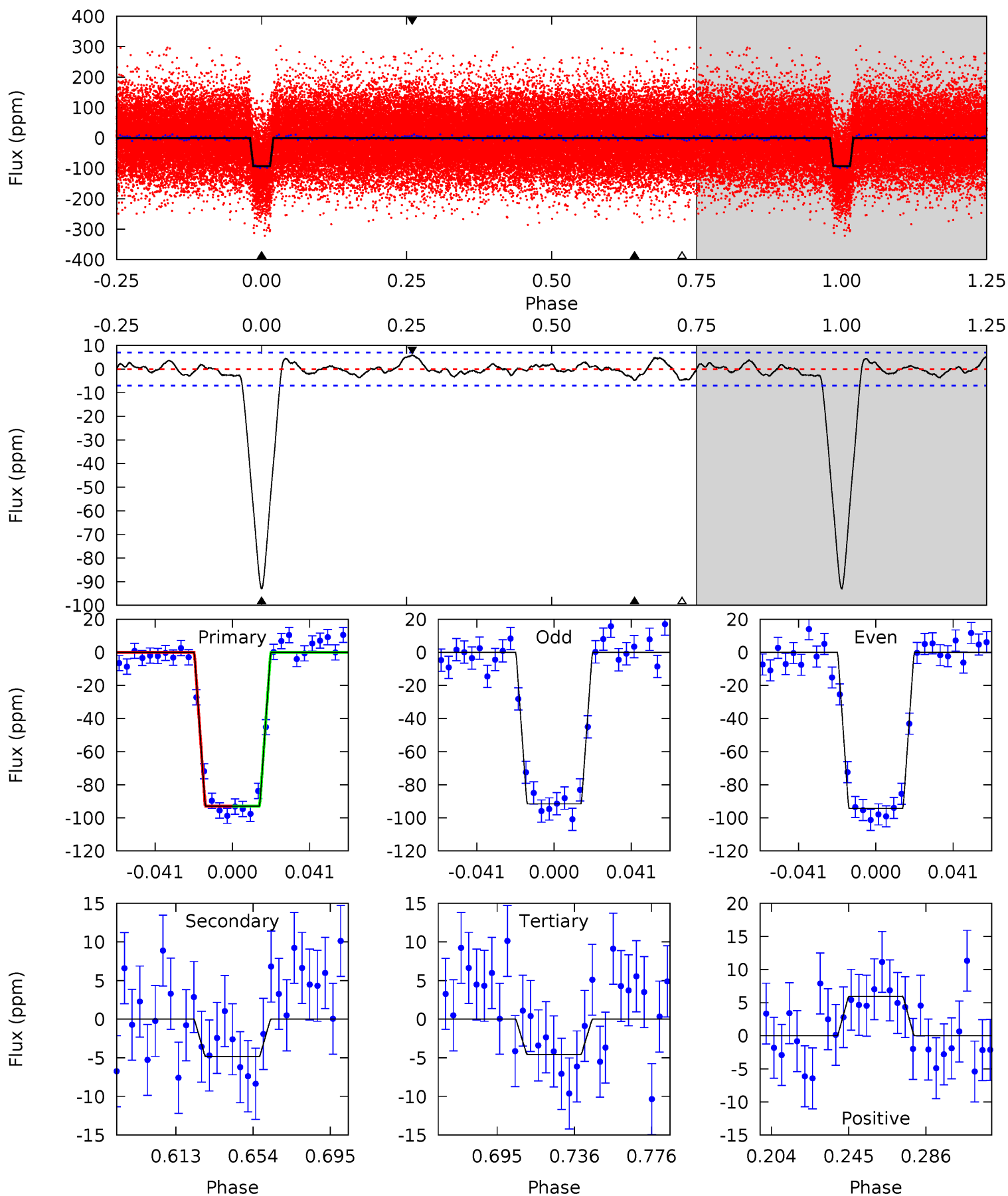
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 65.8 | 3.56 | 3.09 | 4.96 | 4.73            | 2.01            | 1.43             | 62.7    | 60.9    | 0.47    | -1.40   | 0.54    | 1.00 | 0.07  | 0.04 |



# Alt Model-Shift Uniqueness Test

012024120-01, P = 3.568102 Days, E = 130.493137 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 63.1 | 3.29 | 3.10 | 4.03 | 4.75            | 2.04            | 1.37             | 60.0    | 59.1    | 0.19    | -0.74   | 0.93    | 1.01 | 0.06  | 0.00 |





### Stellar Parameters For KIC 012024120

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $6007^{+121}_{-121}$ | $4.232^{+0.143}_{-0.117}$ | $0.080^{+0.150}_{-0.150}$ | $1.334^{+0.228}_{-0.228}$ | $1.107^{+0.102}_{-0.083}$ | $0.657^{+0.449}_{-0.228}$                 |
|        | +2%/-2%              | +3%/-3%                   | +188%/-188%               | +17%/-17%                 | +9%/-7%                   | +68%/-35%                                 |
| Source | SPE59                | SPE59                     | SPE59                     | DSEP                      |                           |   |

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

### Secondary Eclipse Parameters for KIC 012024120-01 / KOI 0265.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{max} (K)$        | $T_{obs} (K)$        | $A_{obs}$                 |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-5 \pm 1$  | $1.57^{+0.21}_{-0.23}$ | $1972^{+100}_{-105}$ | $3233^{+225}_{-196}$ | $2.497^{+1.373}_{-0.859}$ |
| Alt.    | $-5 \pm 1$  | $1.42^{+0.23}_{-0.23}$ | $1967^{+99}_{-96}$   | $3329^{+237}_{-242}$ | $2.976^{+1.717}_{-1.195}$ |

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

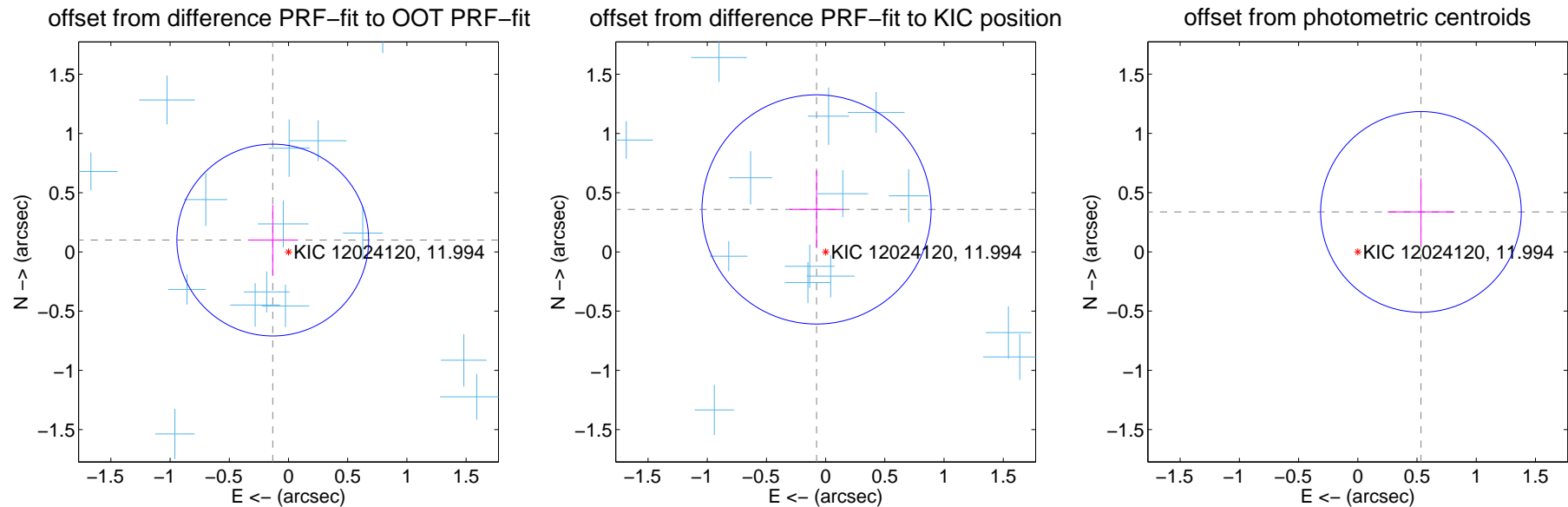
## DV Centroid Data

Supplemental centroid analysis for 012024120-01. **Kepler magnitude: 11.99.** Transit SNR 46.96

There are 17 quarters with good PRF difference image offsets

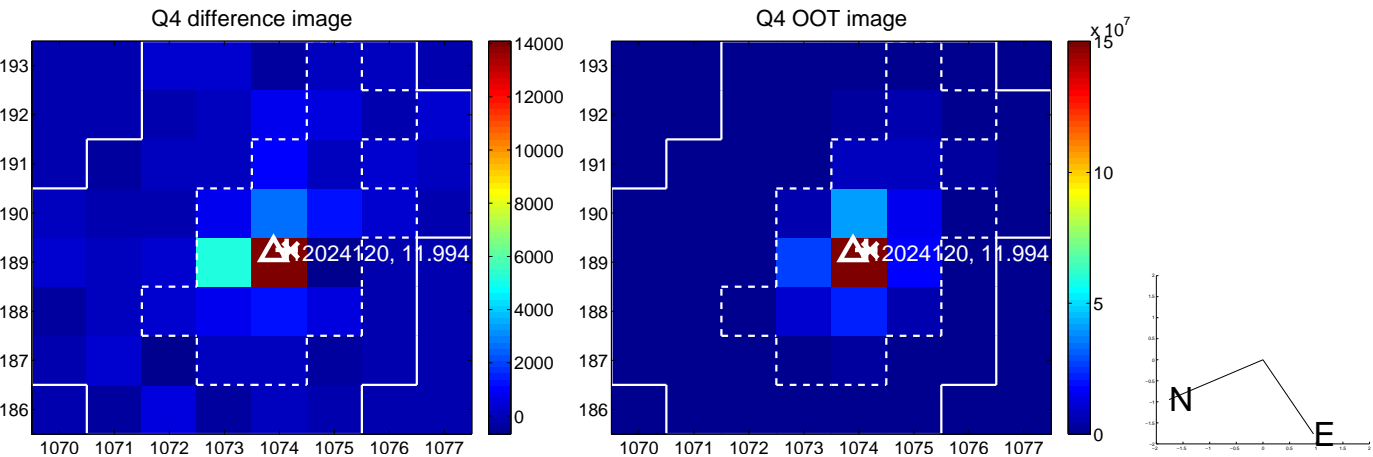
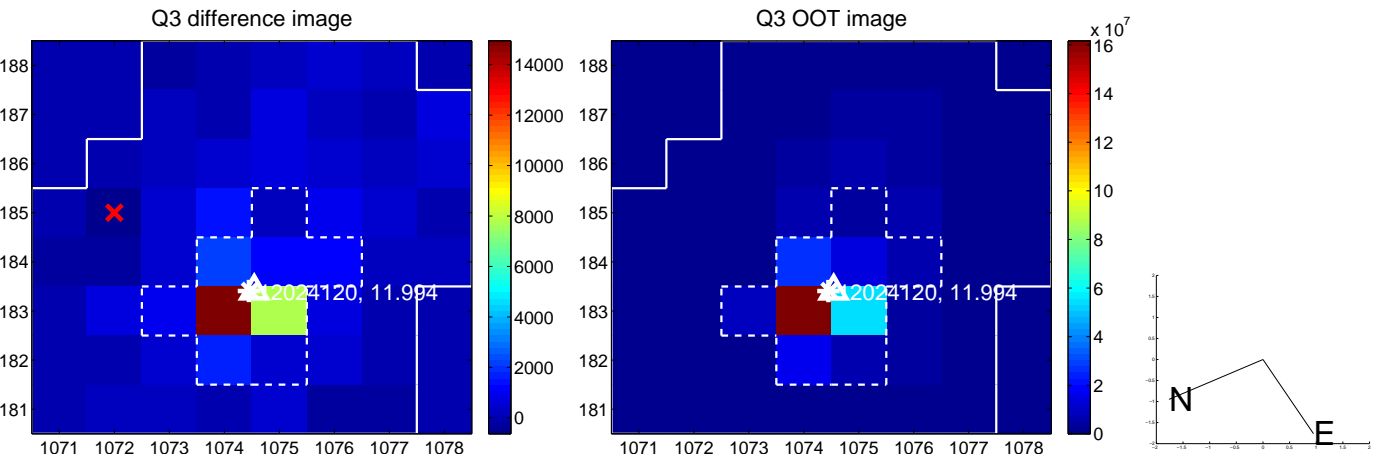
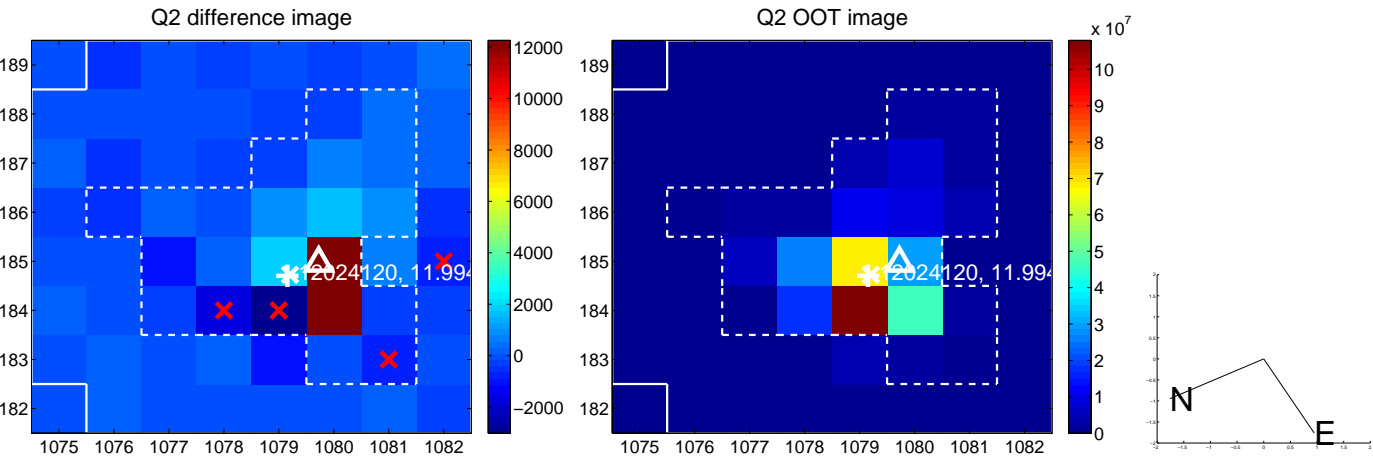
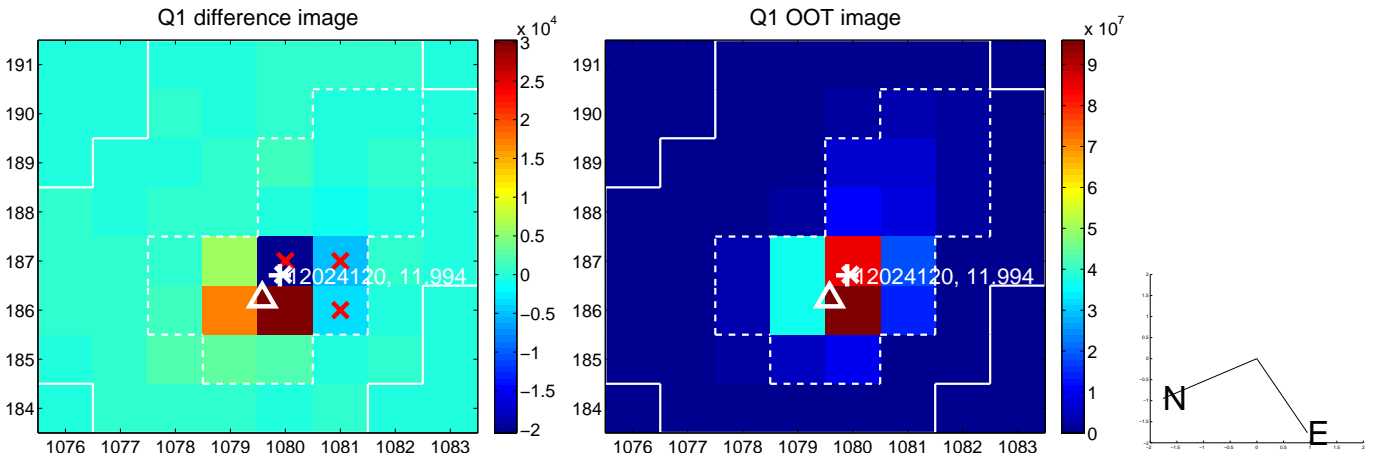
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $0.166 \pm 0.270$  | 0.62                | $0.133 \pm 0.209$ | $0.100 \pm 0.296$ |
| PRF-fit source offset from KIC position | $0.367 \pm 0.322$  | 1.14                | $0.077 \pm 0.228$ | $0.359 \pm 0.326$ |
| photometric centroid source offset      | $0.63 \pm 0.28$    | 2.23                | $-0.53 \pm 0.28$  | $0.34 \pm 0.28$   |

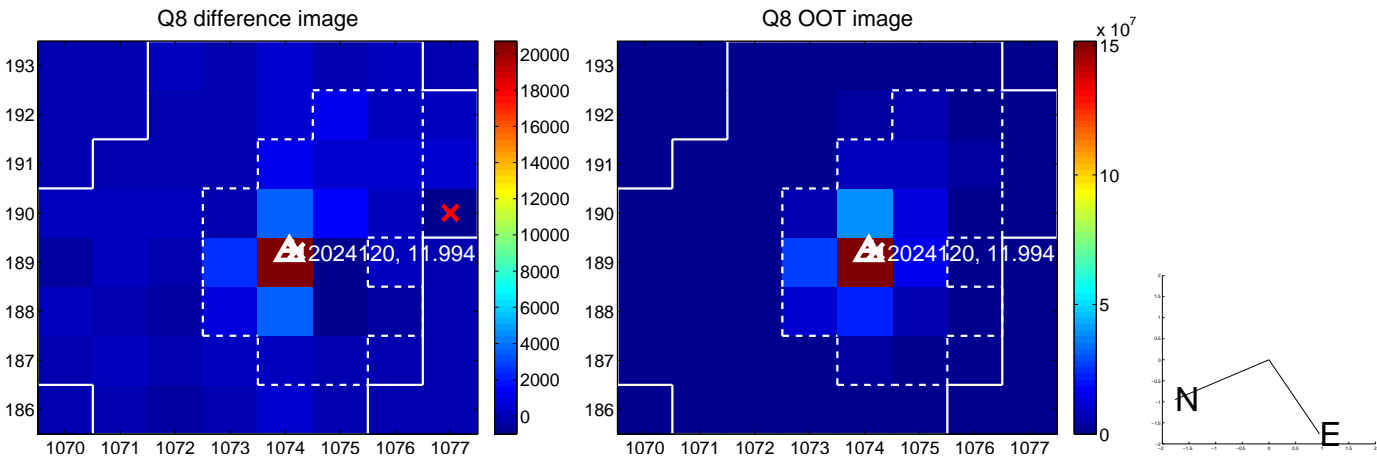
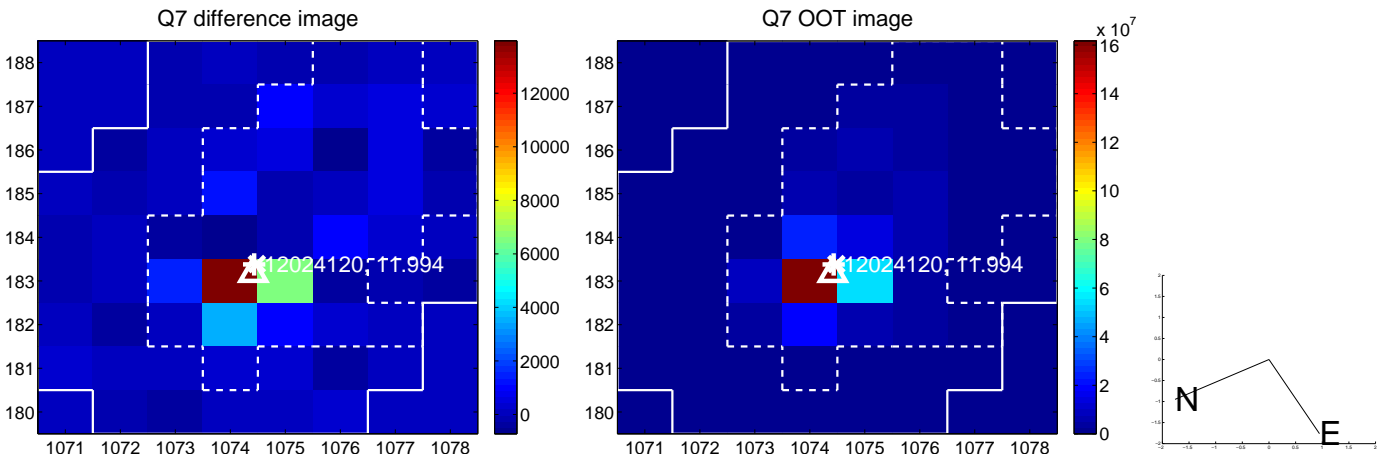
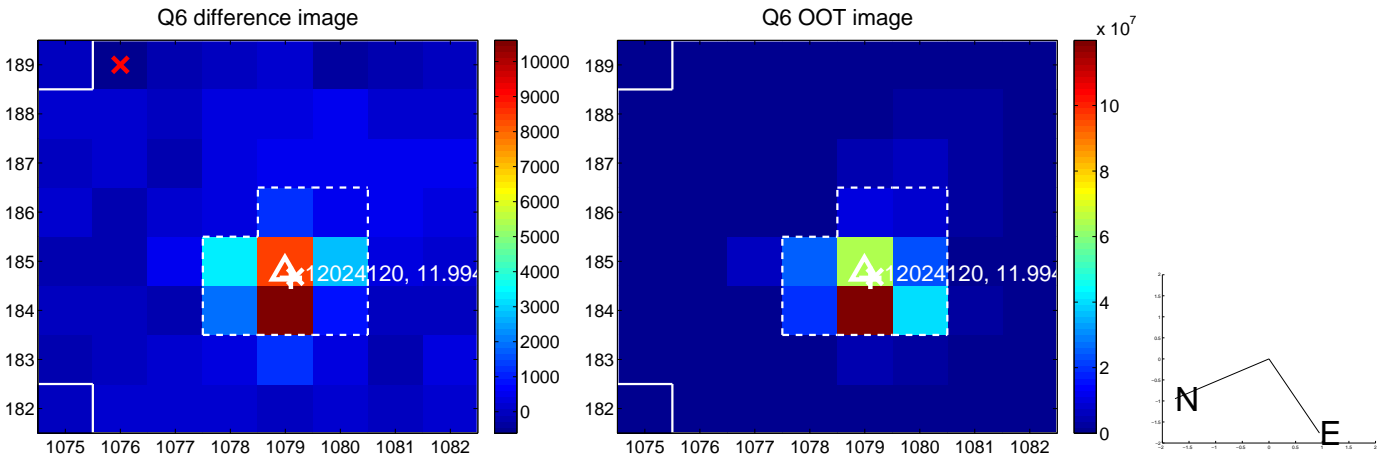
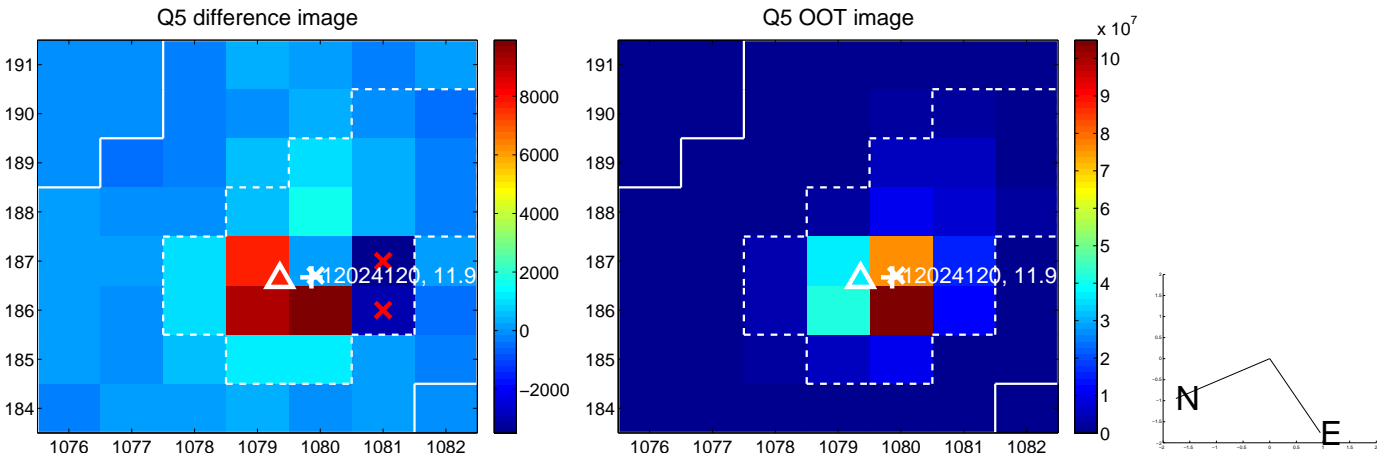


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

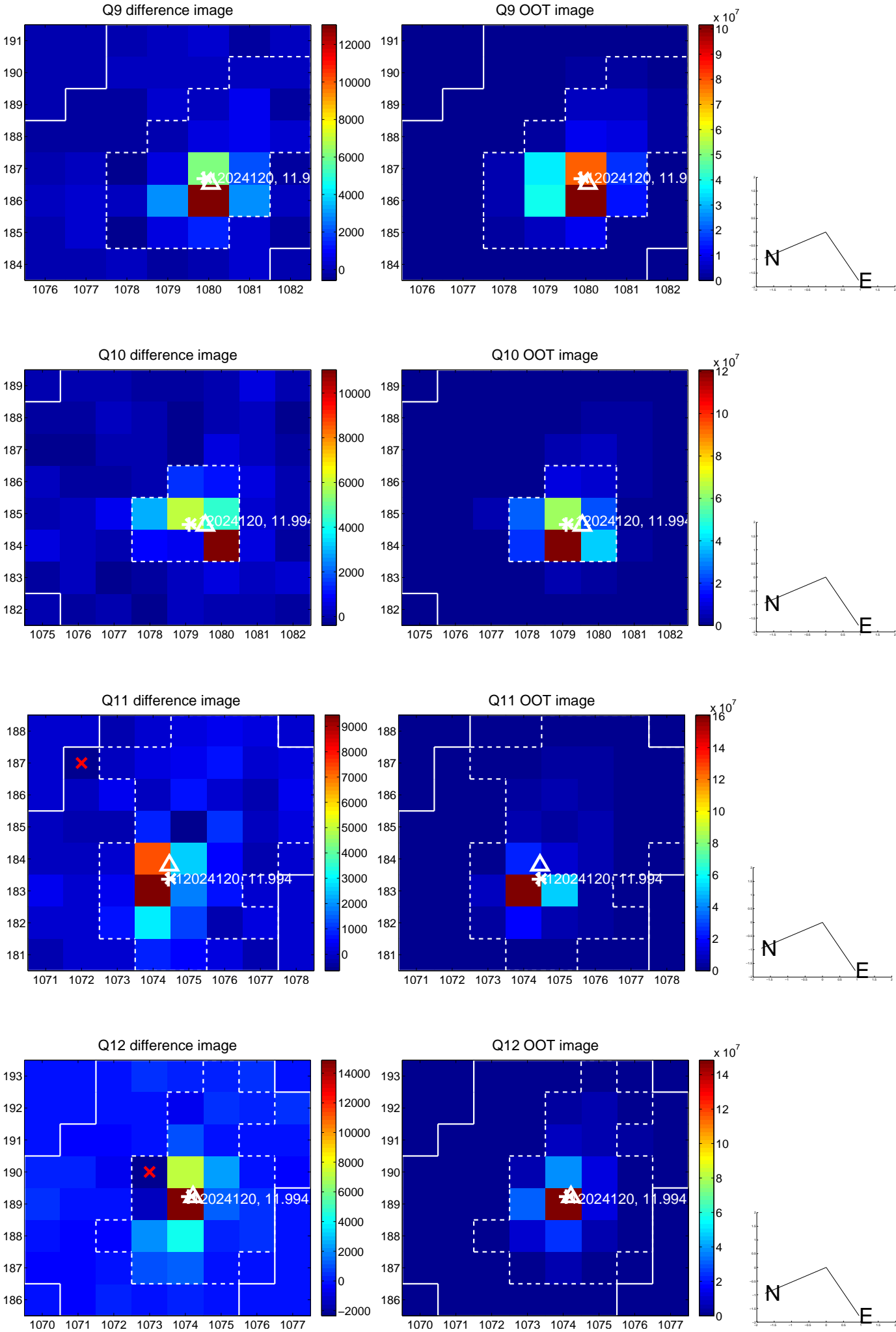


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

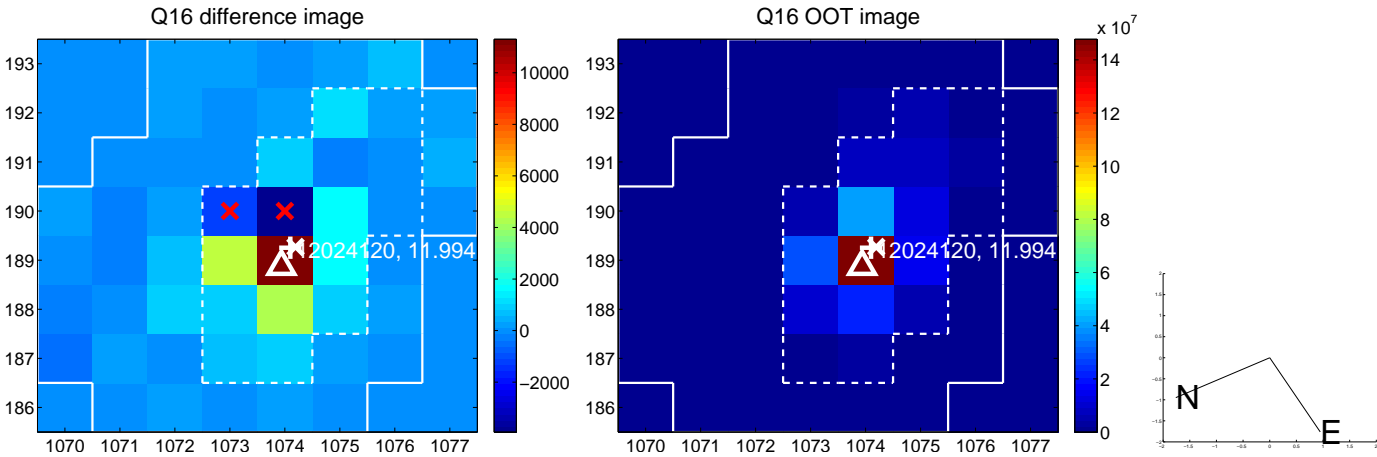
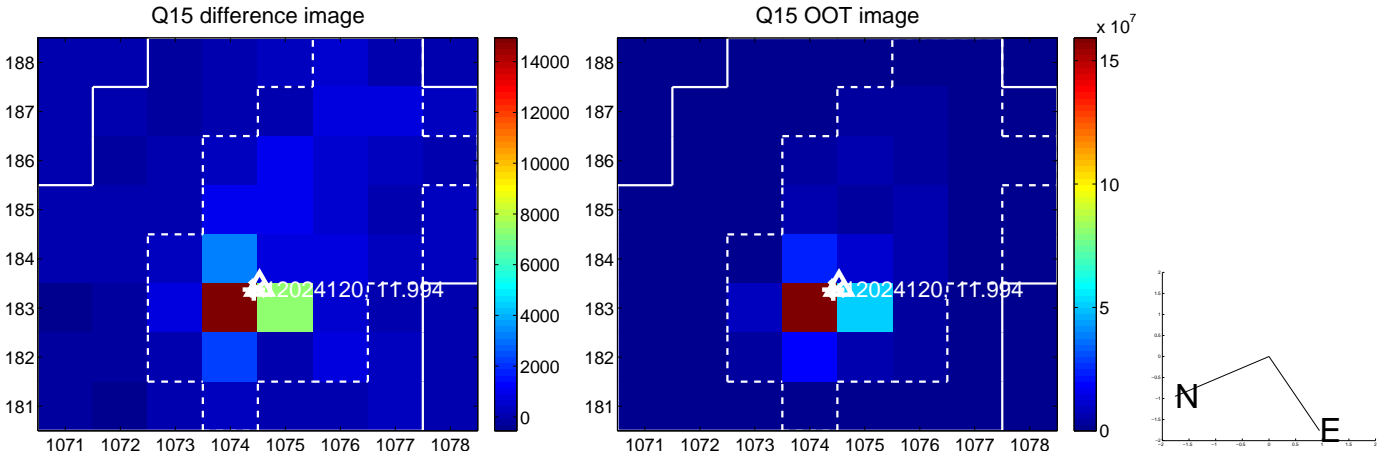
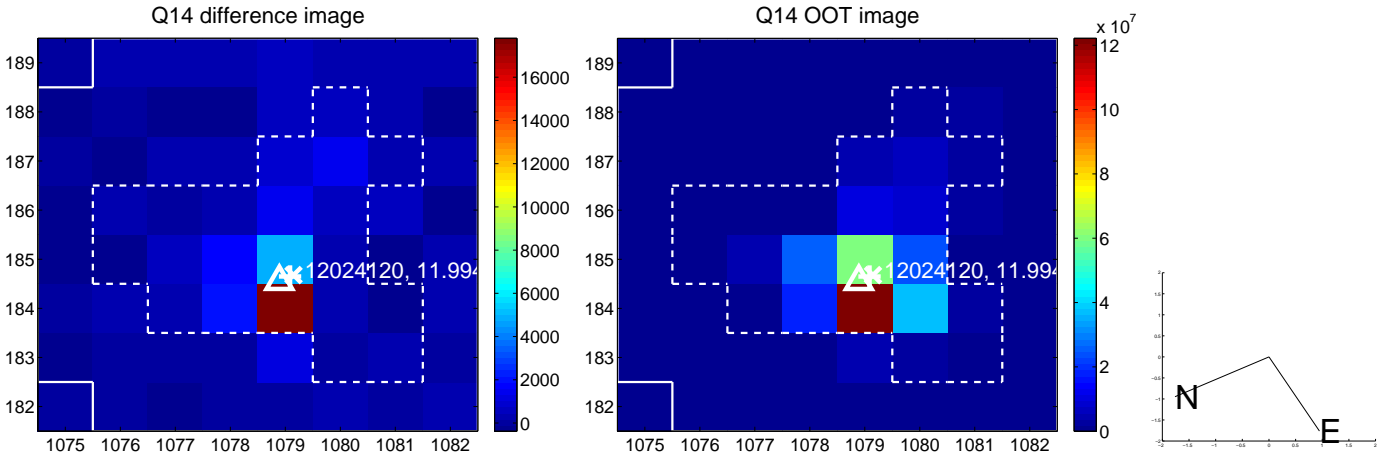
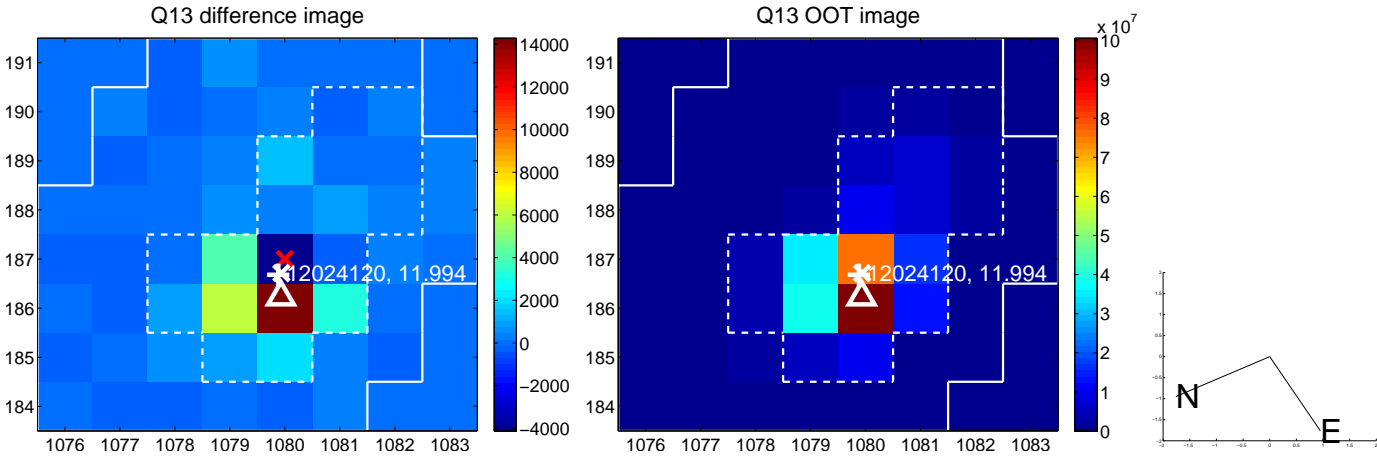




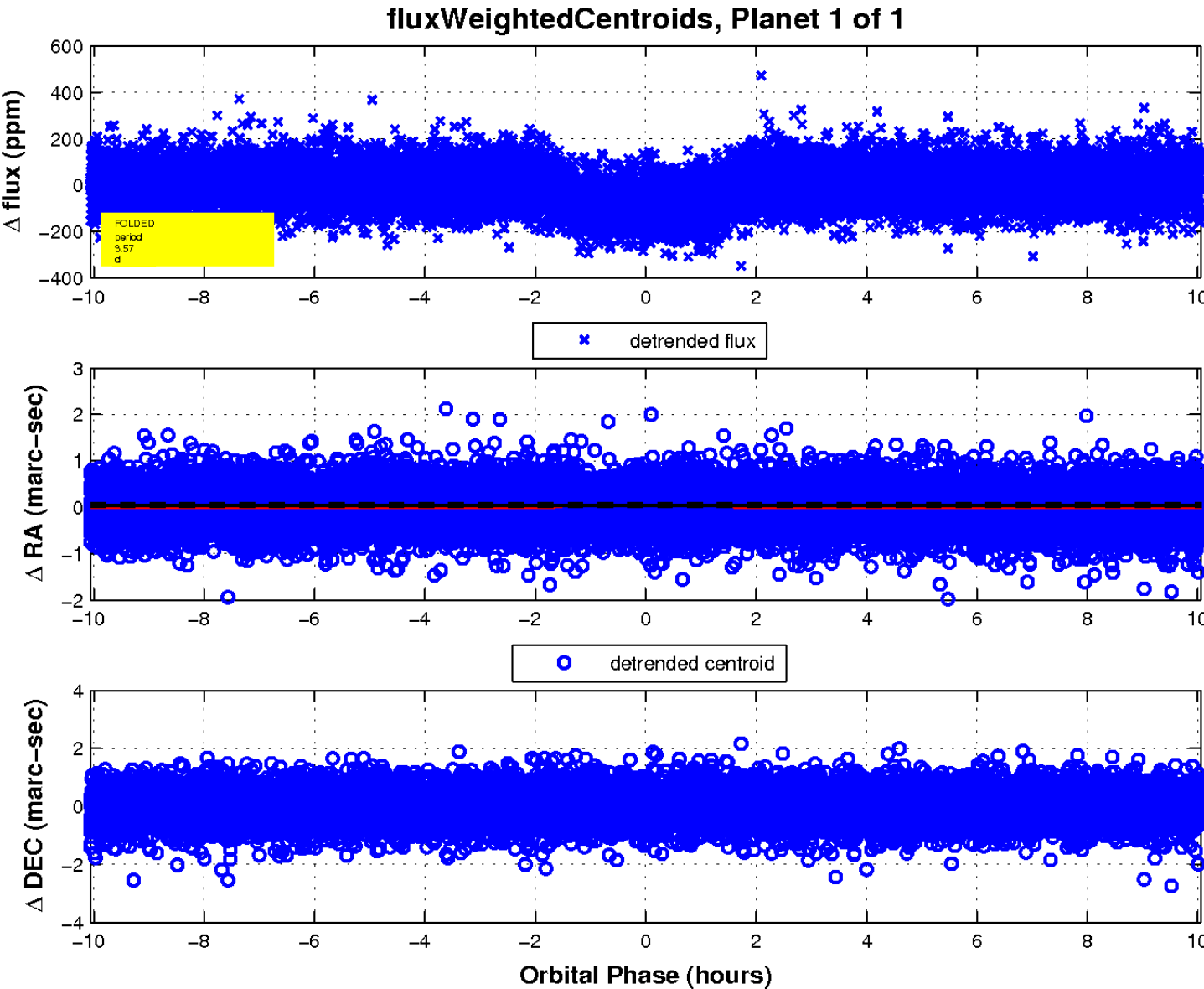
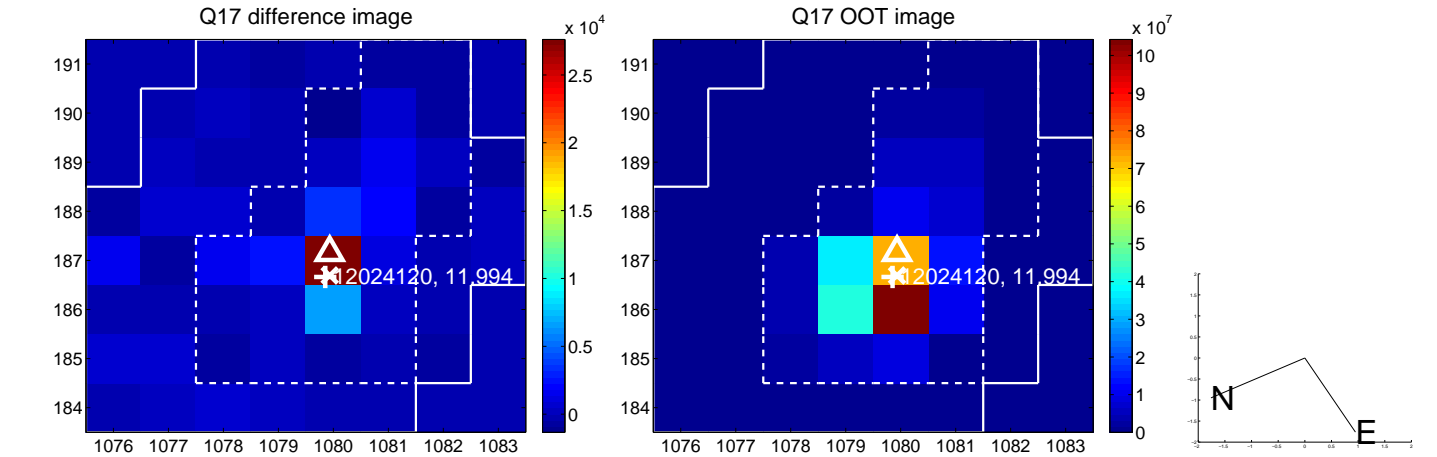
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

