

# KIC 009007609

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009007609-01 | OBS      | 4795.01 | 1.316379      | 132.304906   | 112.0       | 1.350            | 10.8 | 9.0 | 0.81                        | 5088            | 1.04                   | 844.89                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments                        |
|--------------|----------|------|-------|---|---|---|---|---------------------------------|
| 009007609-01 | OBS      | FP   | 0.00  | 0 | 0 | 1 | 0 | CENT_RESOLVED_OFFSET—HALO_GHOST |

**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.

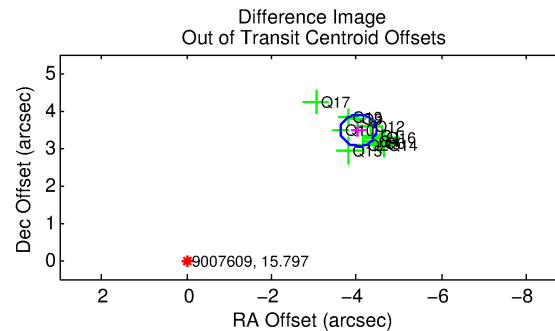
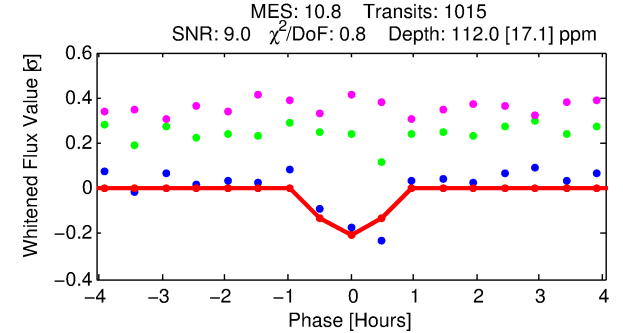
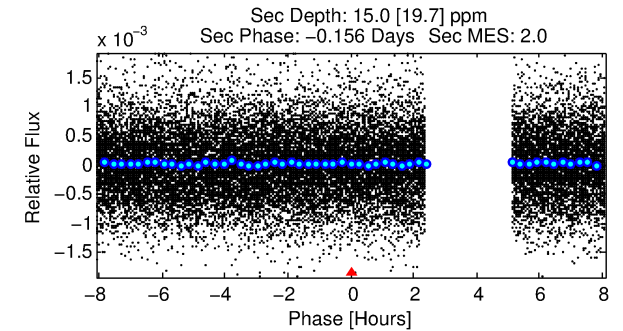
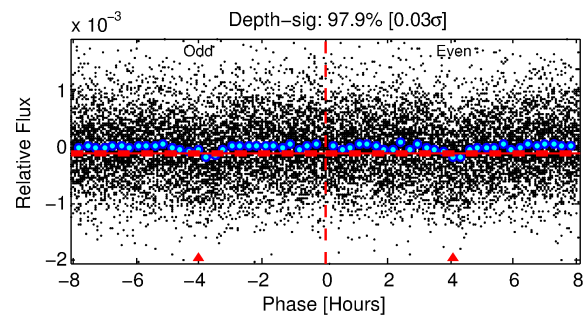
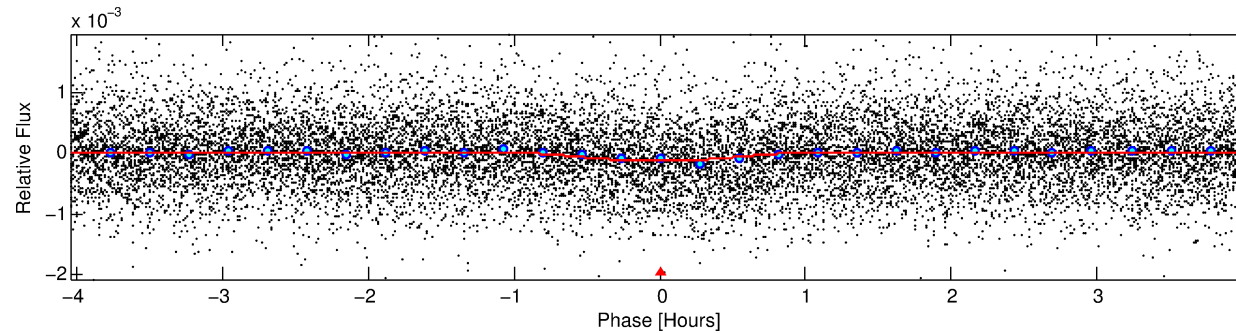
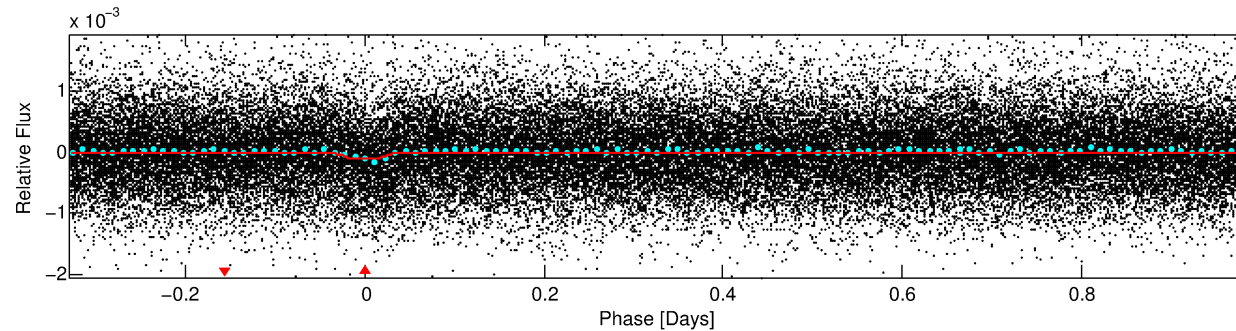
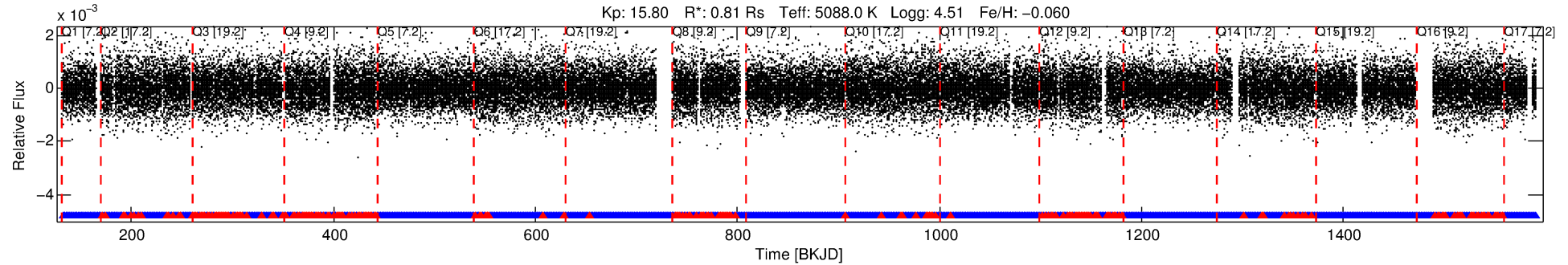
## Ephemeris Match Information For 009007609-01

No Significant Match Found

# DV One-Page Summary

KIC: 9007609 Candidate: 1 of 1 Period: 1.316 d  
KOI: K04795.01 Corr: 0.886

Kp: 15.80 R\*: 0.81 Rs Teff: 5088.0 K Logg: 4.51 Fe/H: -0.060



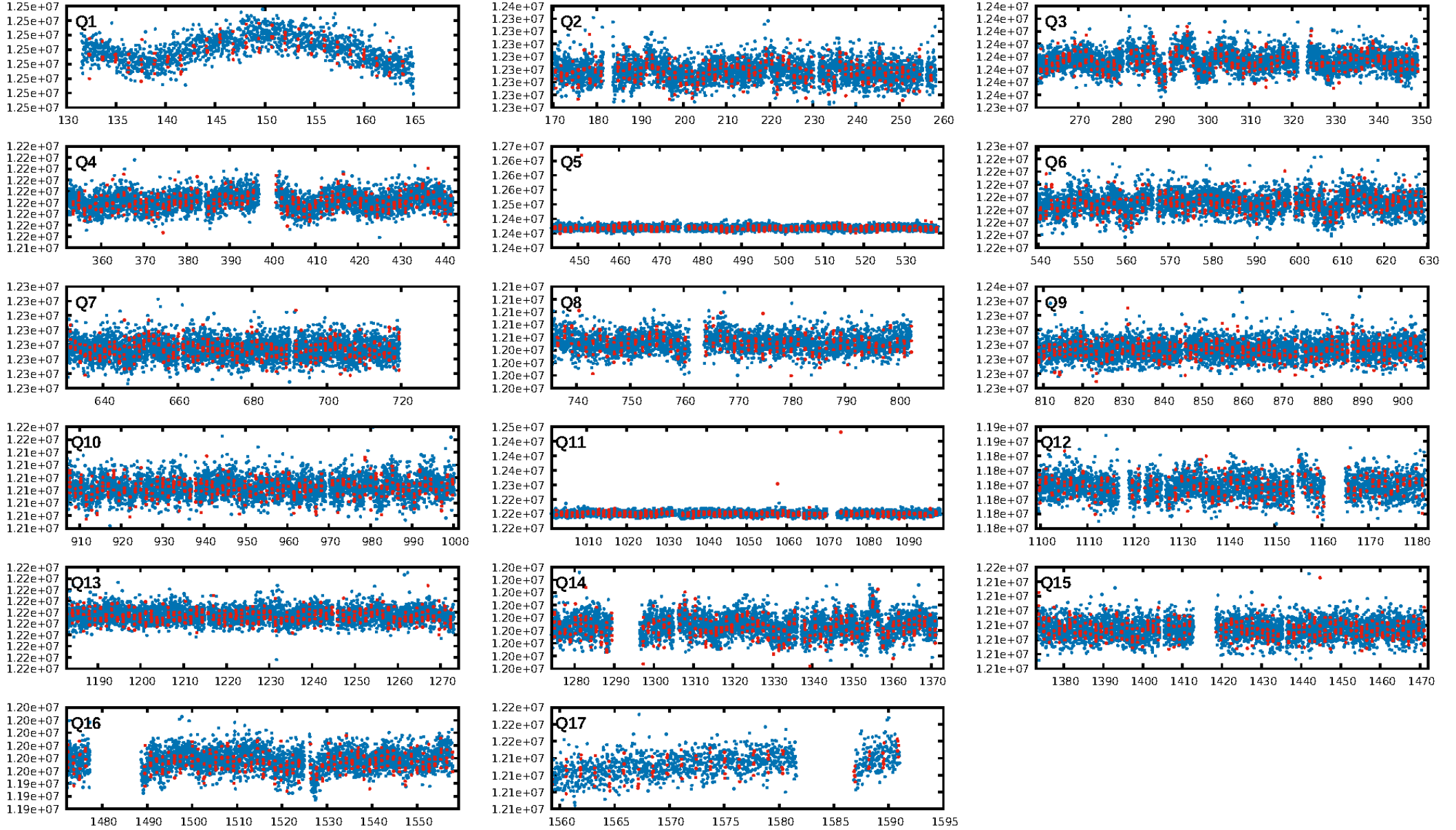
## DV Fit Results:

Period = 1.31638 [0.00001] d  
Epoch = 132.3049 [0.0024] BKJD  
Rp/R\* = 0.0118 [0.0121]  
a/R\* = 3.57 [13.70]  
b = 0.90 [0.91]  
Seff = 844.89 [164.99]  
Teq = 1375 [67] K  
Rp = 1.04 [1.07] Re  
a = 0.0215 [0.0021] AU  
Ag = 3.52 [8.55] [0.29σ]  
Teffp = 2911 [1766] K [0.87σ]

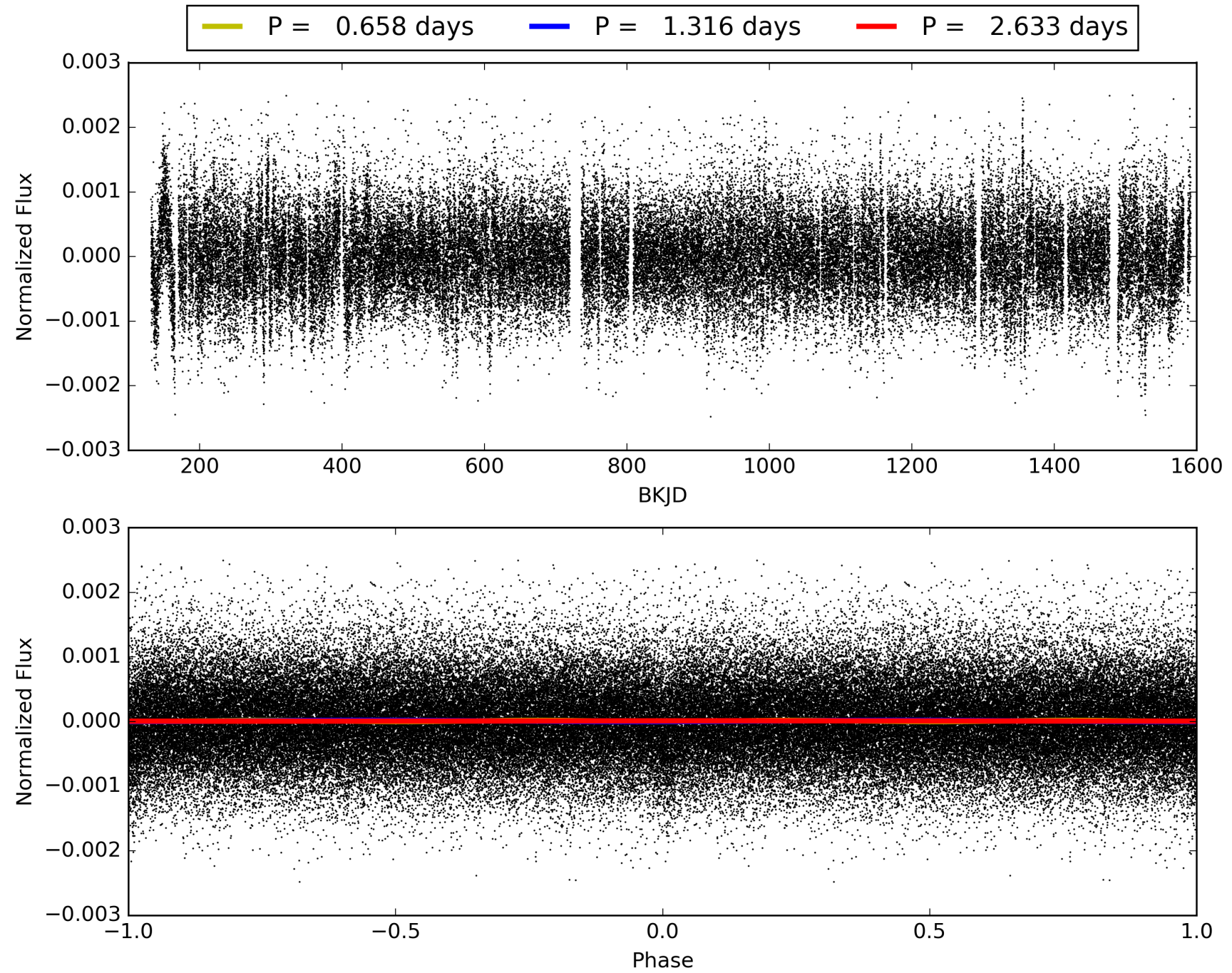
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.12e-27  
RollingBand-fgt: 0.78 [758/969]  
GhostDiagnostic-chr: -0.1516  
Centroid-sig: 0.0%  
Centroid-so: 24.413 arcsec [13.44σ]  
OotOffset-rm: 5.325 arcsec [38.09σ]  
KicOffset-rm: 5.411 arcsec [38.89σ]  
OotOffset-st: 4/1/3/4 [12]  
KicOffset-st: 4/1/3/4 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009007609-01, PDC Light Curves

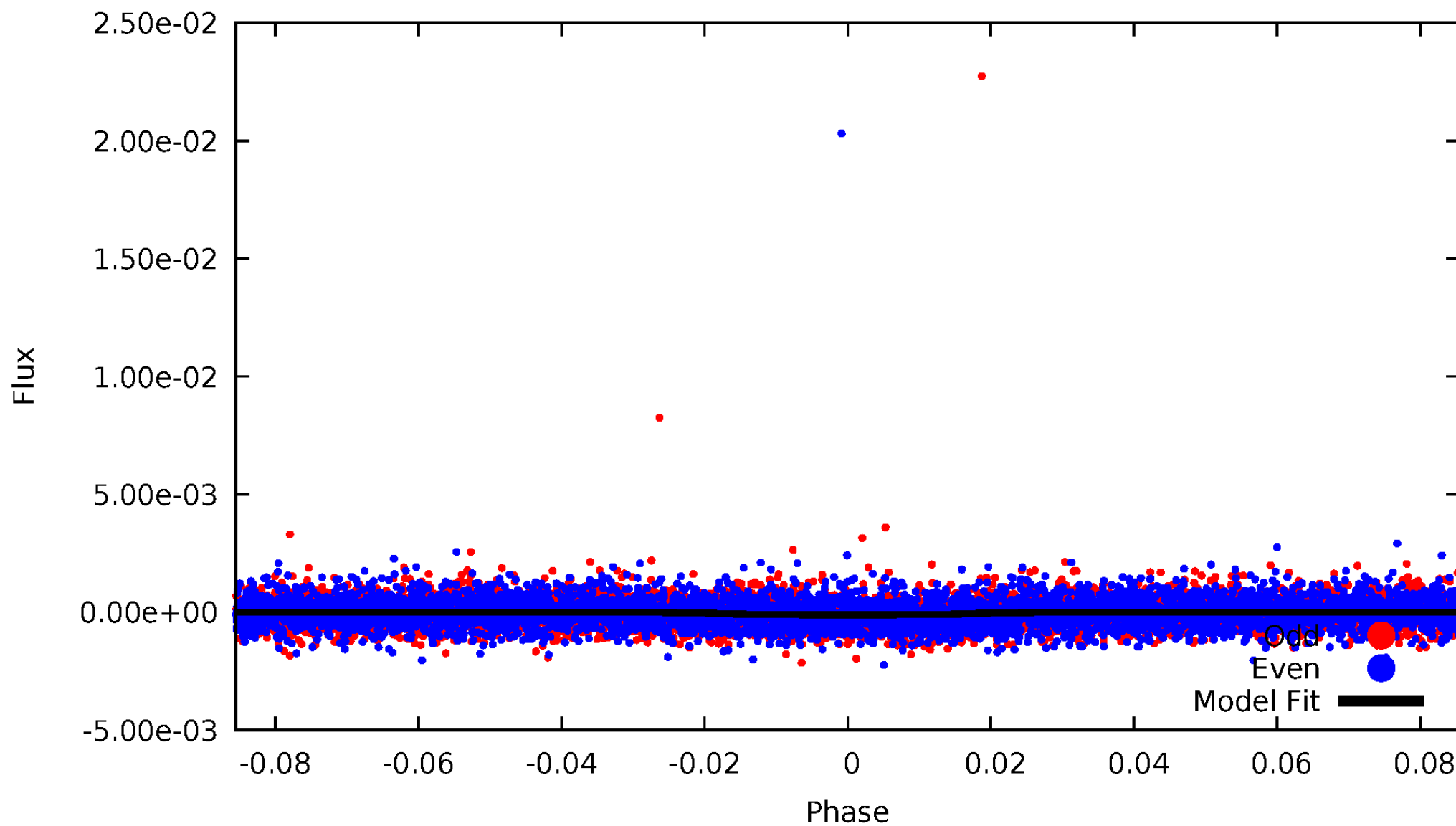


TCE 009007609-01



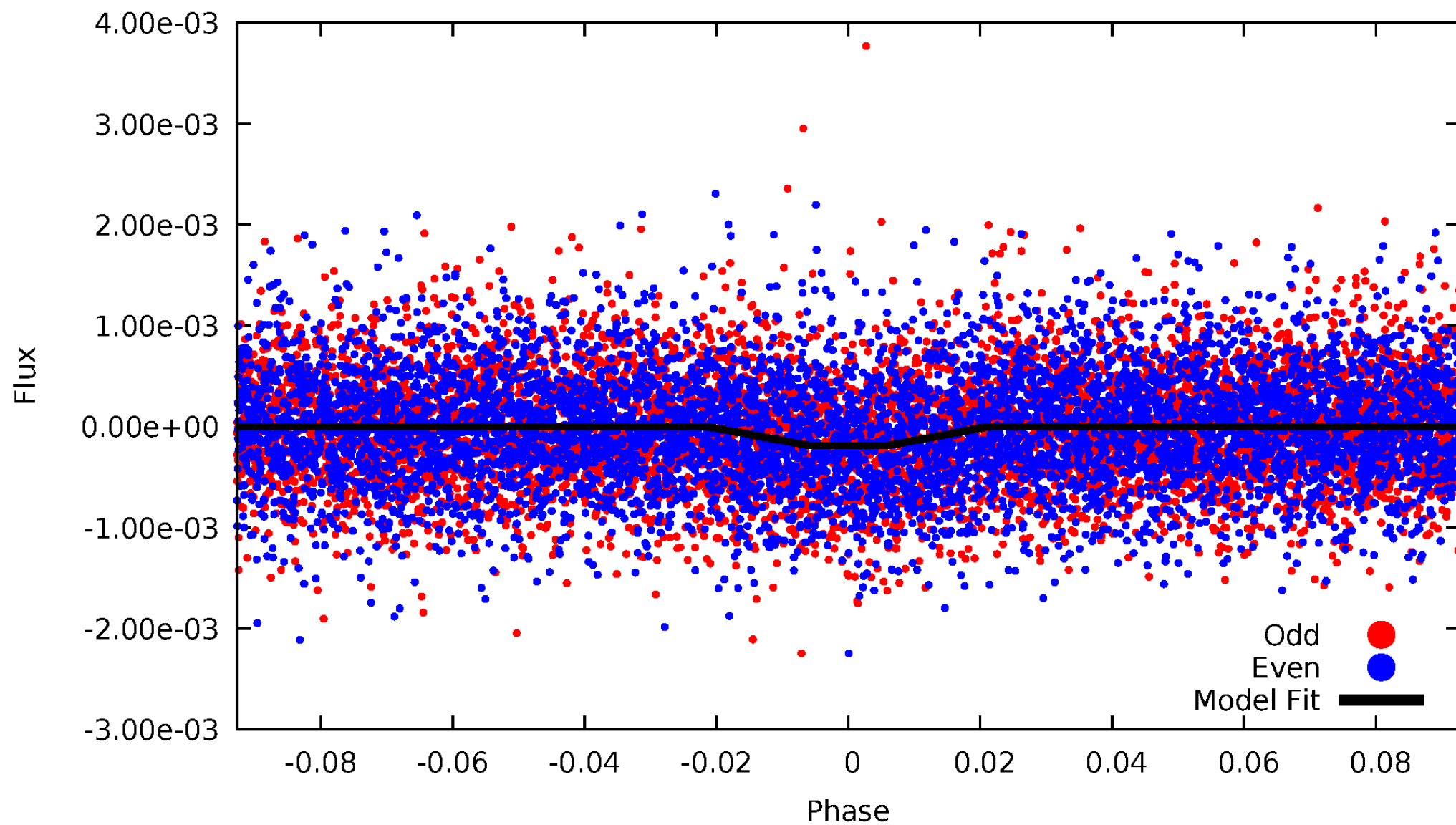
# DV Odd/Even

TCE 009007609-01



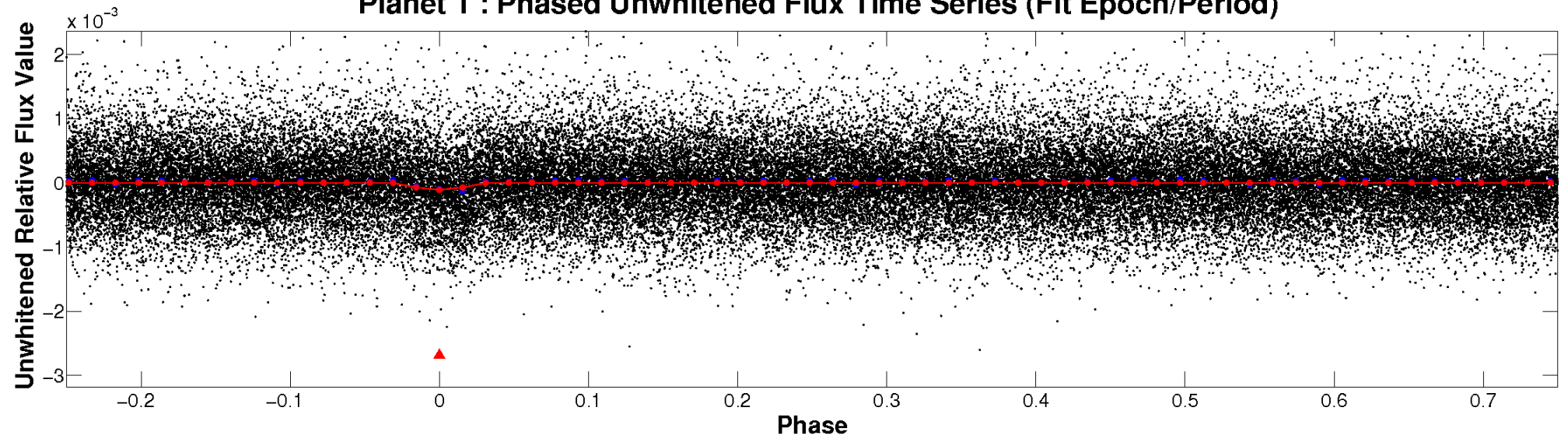
# ALT Odd/Even

TCE 009007609-01

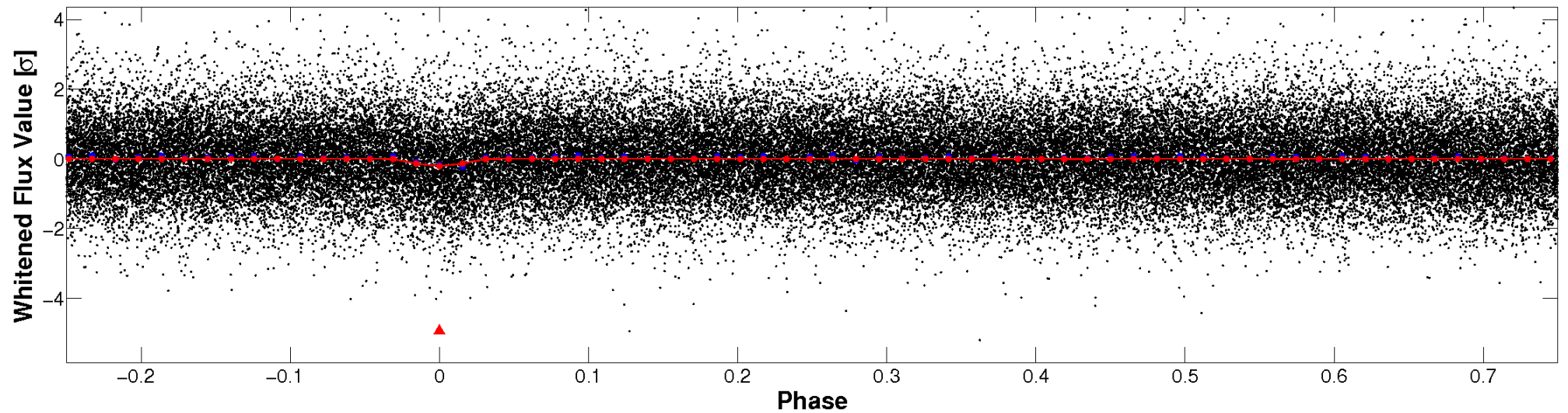


# Non-Whitened Vs. Whitened Light Curve

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

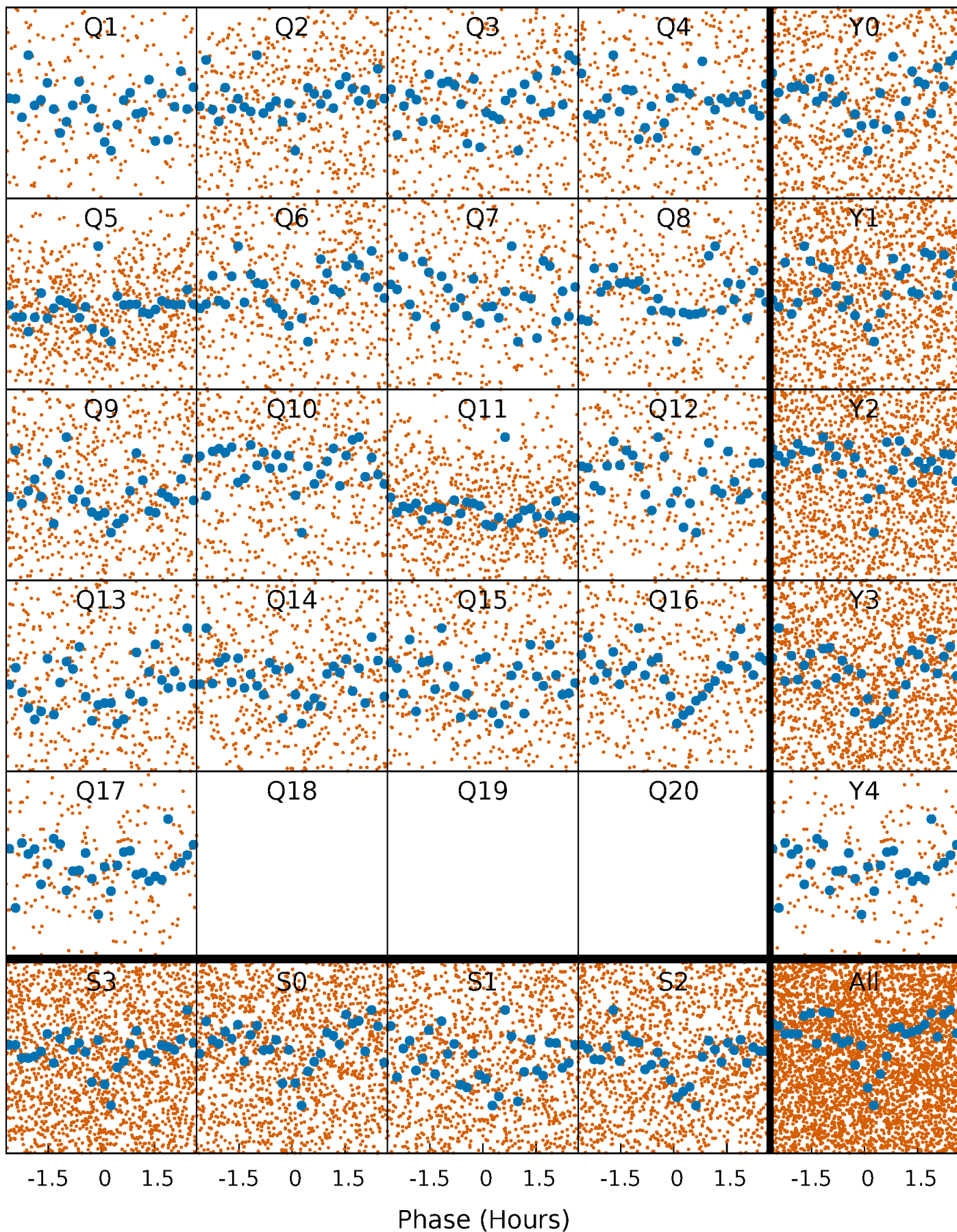


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



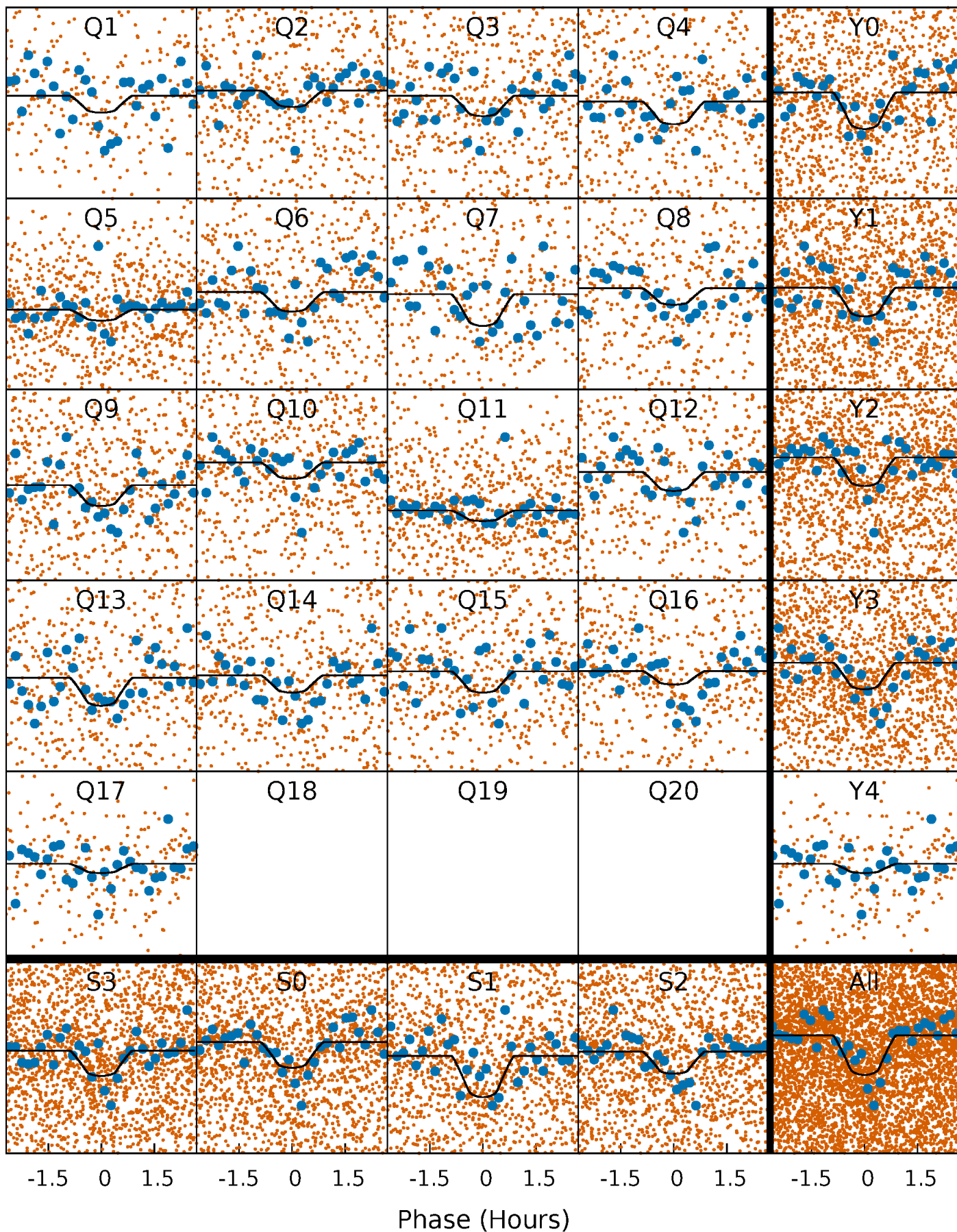
# PDC Quarter-Phased Transit Curves

TCE 009007609-01 P= 1.316379 Days  $T_0=132.304906$  (BKJD)



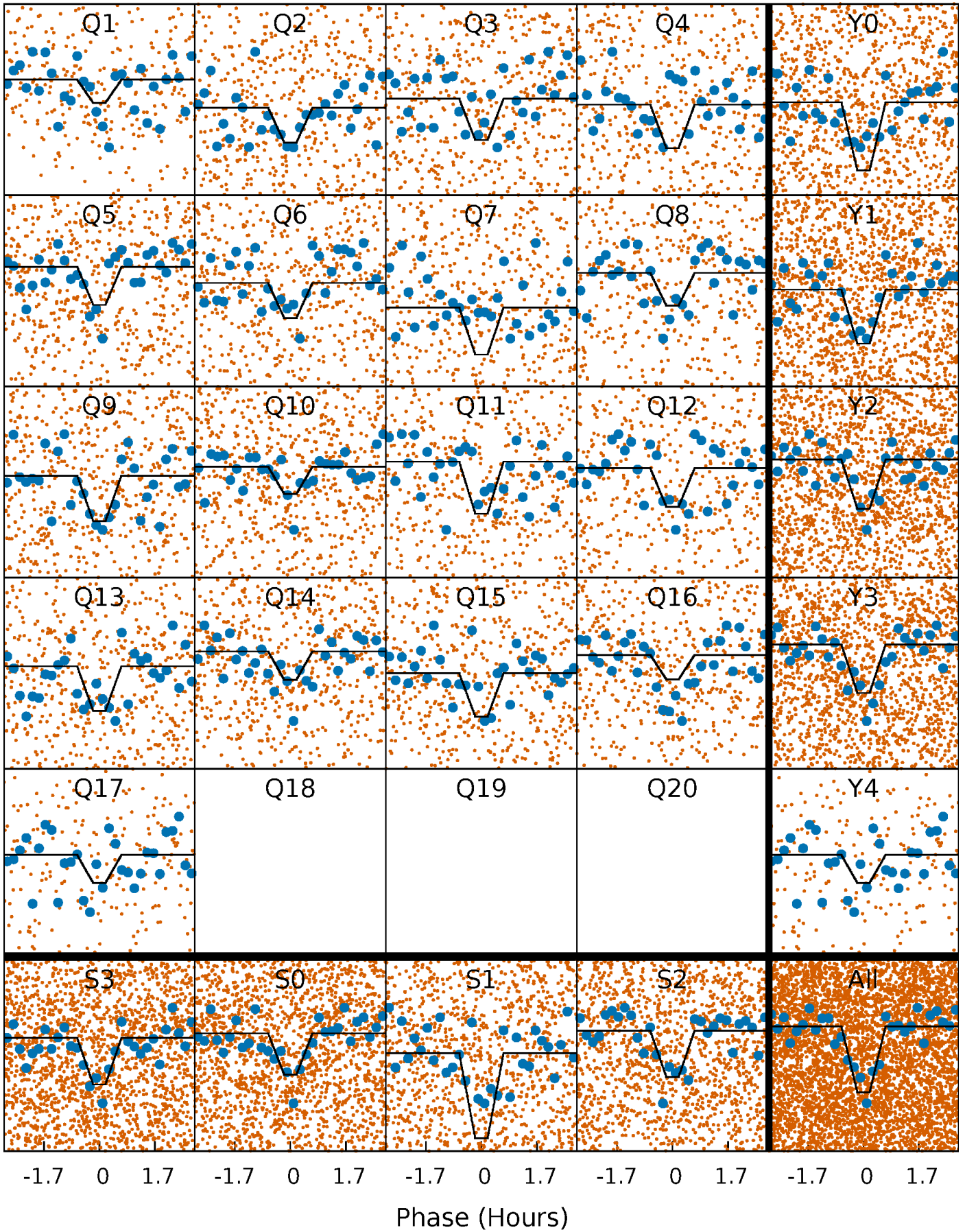
# DV Quarter-Phased Transit Curves

TCE 009007609-01 P= 1.316379 Days  $T_0=132.304906$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

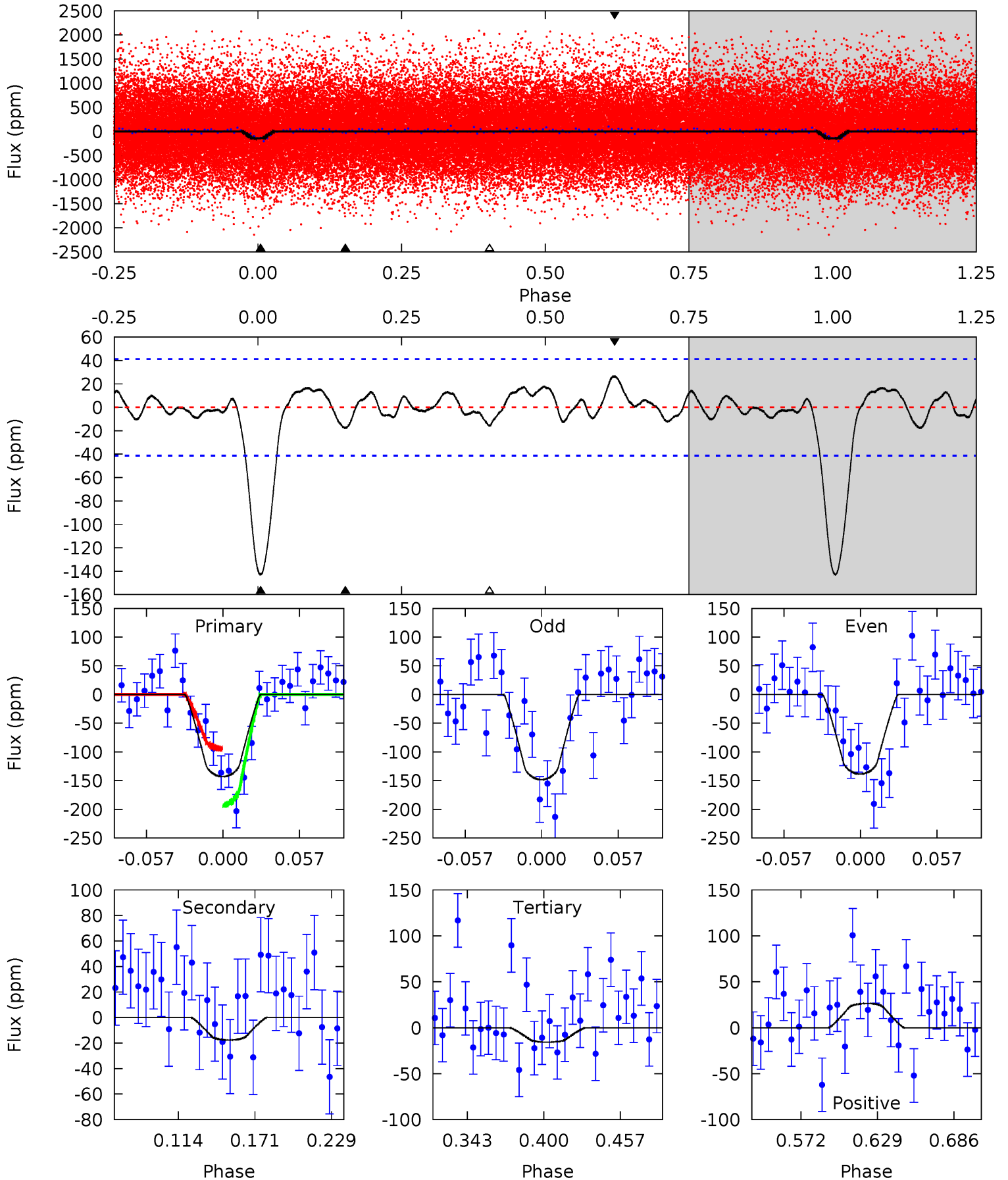
TCE 009007609-01 P= 1.316389 Days  $T_0=132.306591$  (BKJD)



# DV Model-Shift Uniqueness Test

009007609-01, P = 1.316379 Days, E = 130.988527 Days

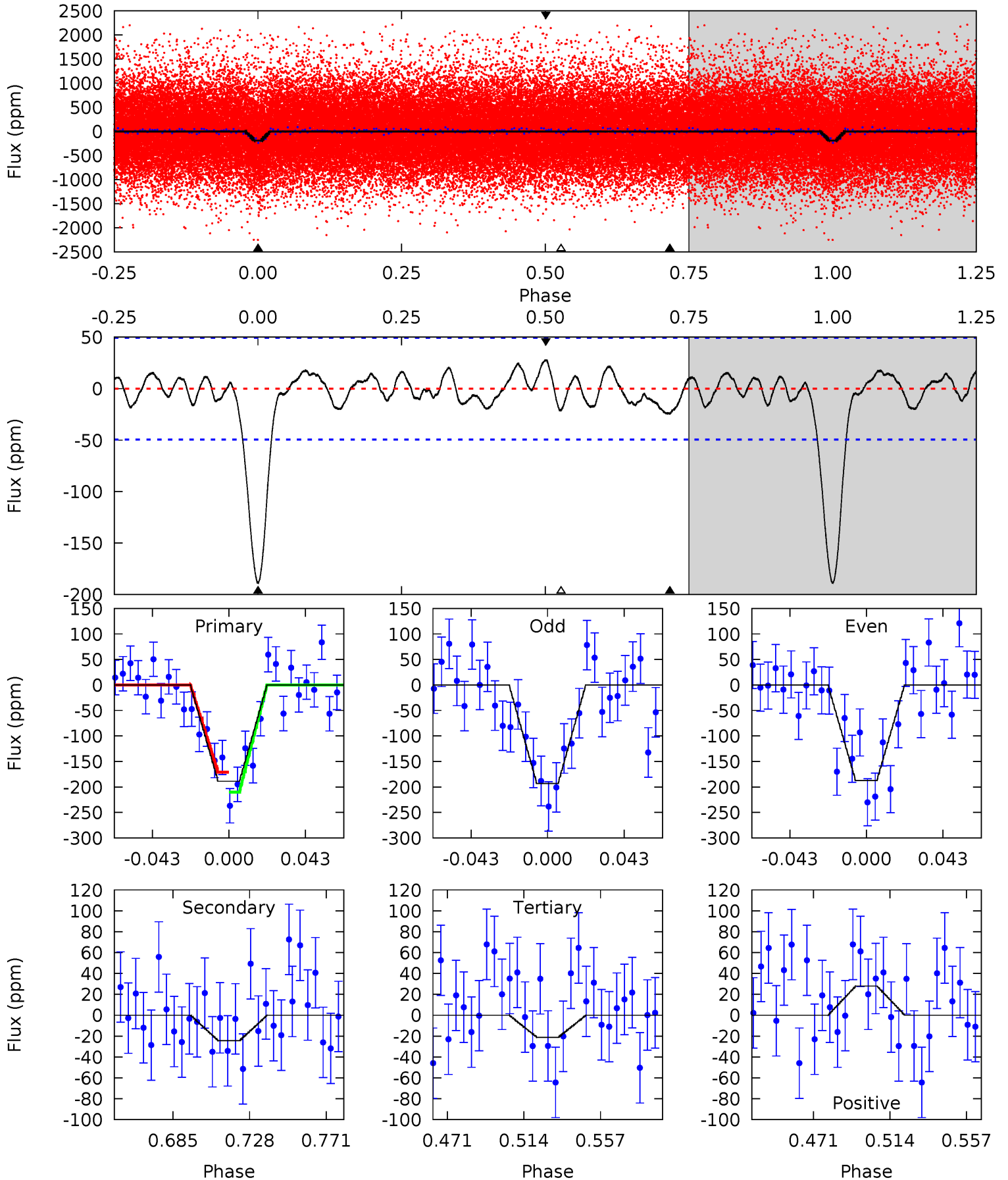
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 16.2 | 2.00 | 1.78 | 3.00 | 4.68            | 1.90            | 1.02             | 14.4    | 13.2    | 0.22    | -1.00   | 0.55    | 0.80 | 0.16  | 5.58 |



# Alt Model-Shift Uniqueness Test

009007609-01, P = 1.316389 Days, E = 130.990202 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 18.1 | 2.34 | 2.04 | 2.67 | 4.74            | 2.03            | 1.10             | 16.1    | 15.4    | 0.30    | -0.33   | 0.28    | 0.90 | 0.13  | 1.87 |



### Stellar Parameters For KIC 009007609

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )       | $M$ ( $M_{\odot}$ )       | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5088^{+153}_{-153}$ | $4.508^{+0.088}_{-0.064}$ | $-0.060^{+0.300}_{-0.300}$ | $0.806^{+0.081}_{-0.089}$ | $0.763^{+0.098}_{-0.057}$ | $2.050^{+0.760}_{-0.419}$                     |
|        | +3%/-3%              | +2%/-1%                   | +500%/-500%                | +10%/-11%                 | +13%/-7%                  | +37%/-20%                                     |
| 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 009007609-01 / KOI 4795.01

| Detrend | Depth (ppm)  | $R_p$ ( $R_{\oplus}$ ) | $T_{max}$ (K)      | $T_{obs}$ (K)         | $A_{obs}$                  |
|---------|--------------|------------------------|--------------------|-----------------------|----------------------------|
| DV      | $-18 \pm 9$  | $1.24^{+0.99}_{-0.76}$ | $1916^{+77}_{-84}$ | $3182^{+1435}_{-659}$ | $2.653^{+17.268}_{-1.927}$ |
| Alt.    | $-24 \pm 10$ | $1.39^{+0.95}_{-0.82}$ | $1918^{+74}_{-70}$ | $3279^{+1243}_{-613}$ | $3.224^{+15.164}_{-2.274}$ |

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

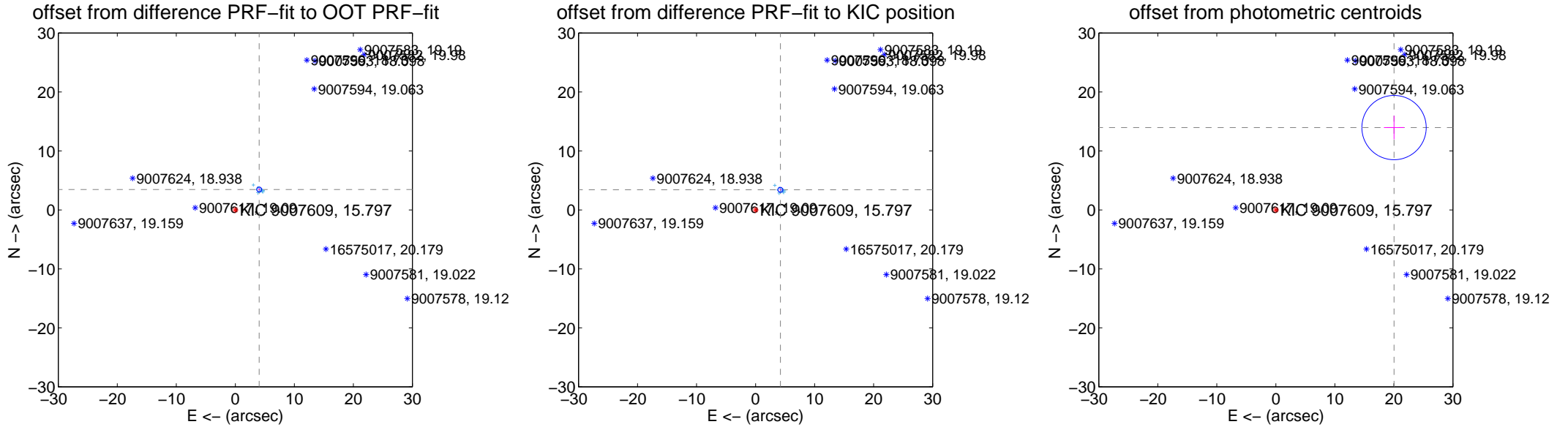
## DV Centroid Data

Supplemental centroid analysis for 009007609-01. Kepler magnitude: 15.80. Transit SNR 9.03

There are 12 quarters with good PRF difference image offsets

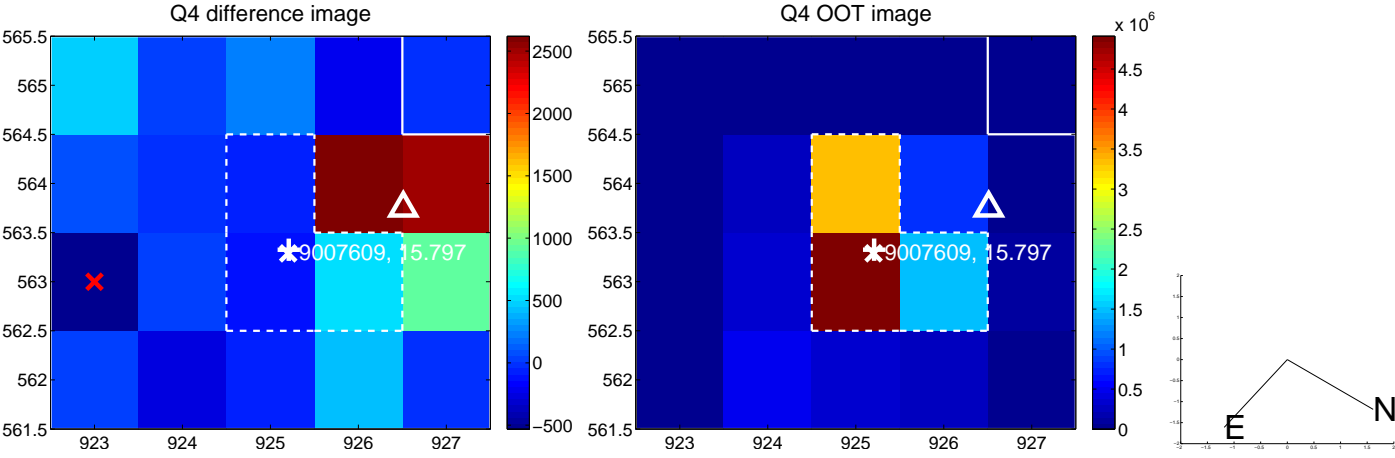
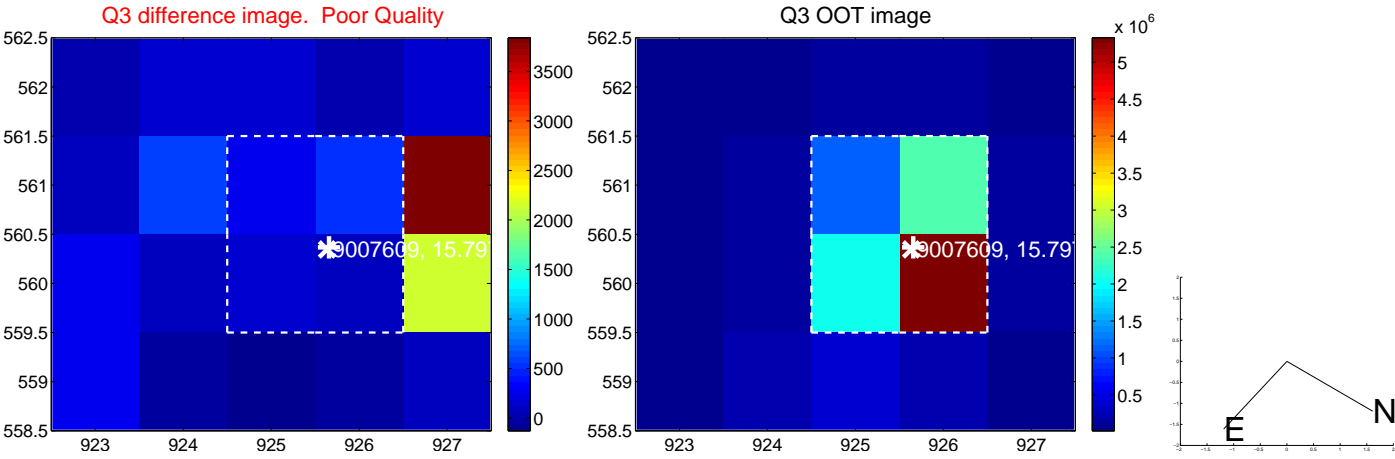
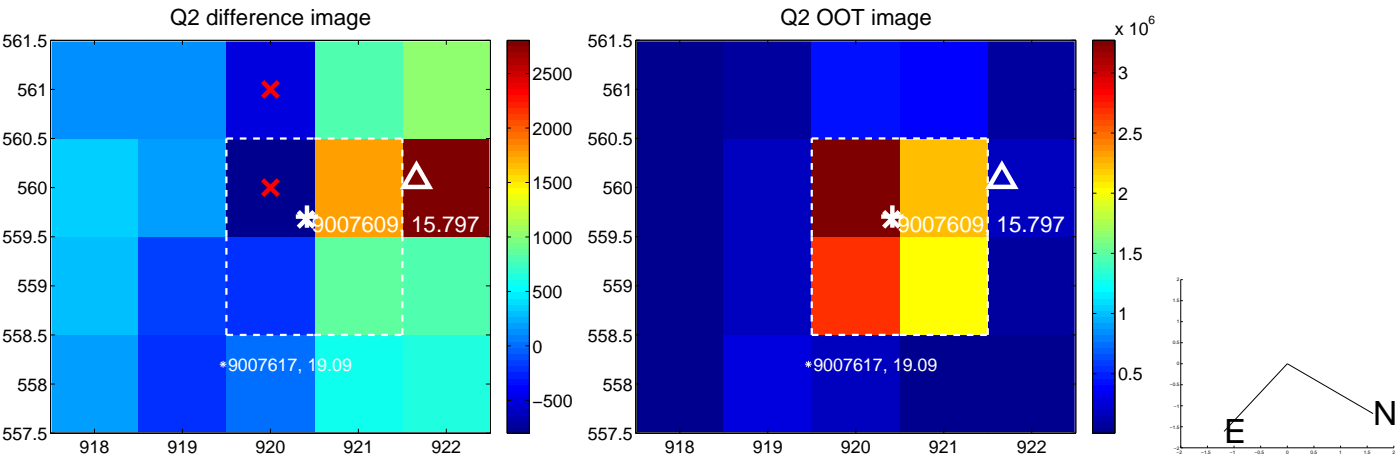
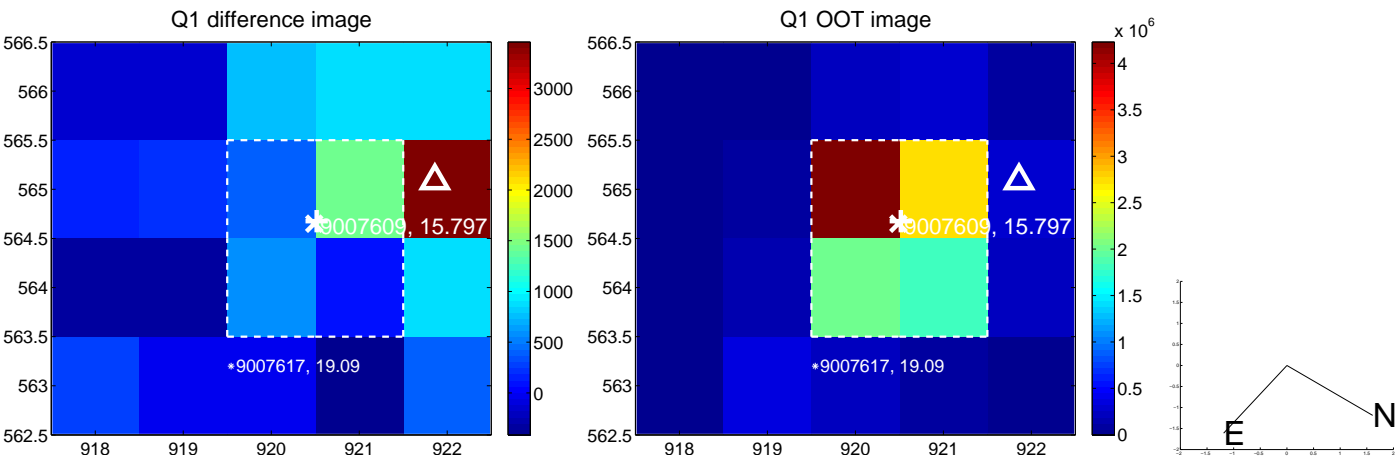
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $5.325 \pm 0.140$  | 38.09               | $-4.044 \pm 0.150$ | $3.464 \pm 0.125$ |
| PRF-fit source offset from KIC position | $5.411 \pm 0.139$  | 38.89               | $-4.203 \pm 0.148$ | $3.408 \pm 0.125$ |
| photometric centroid source offset      | $24.41 \pm 1.82$   | 13.44               | $-20.03 \pm 1.72$  | $13.96 \pm 2.01$  |

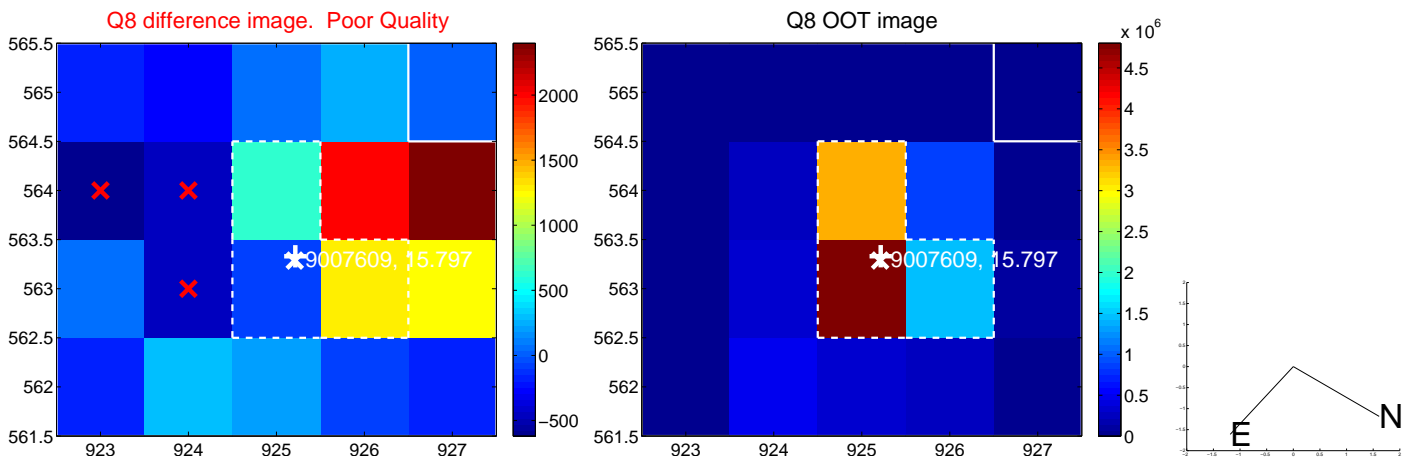
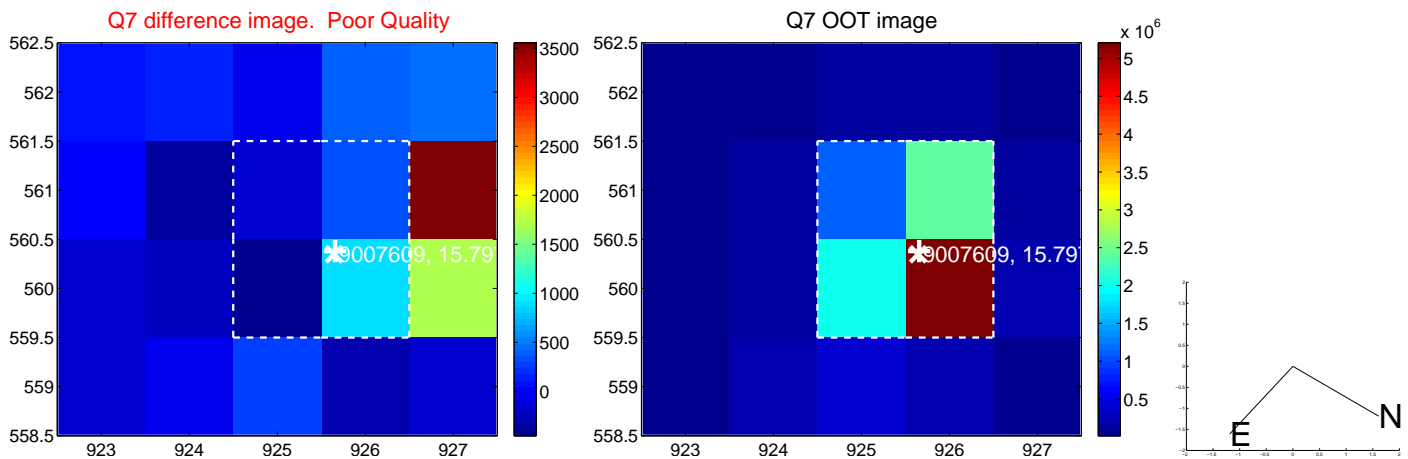
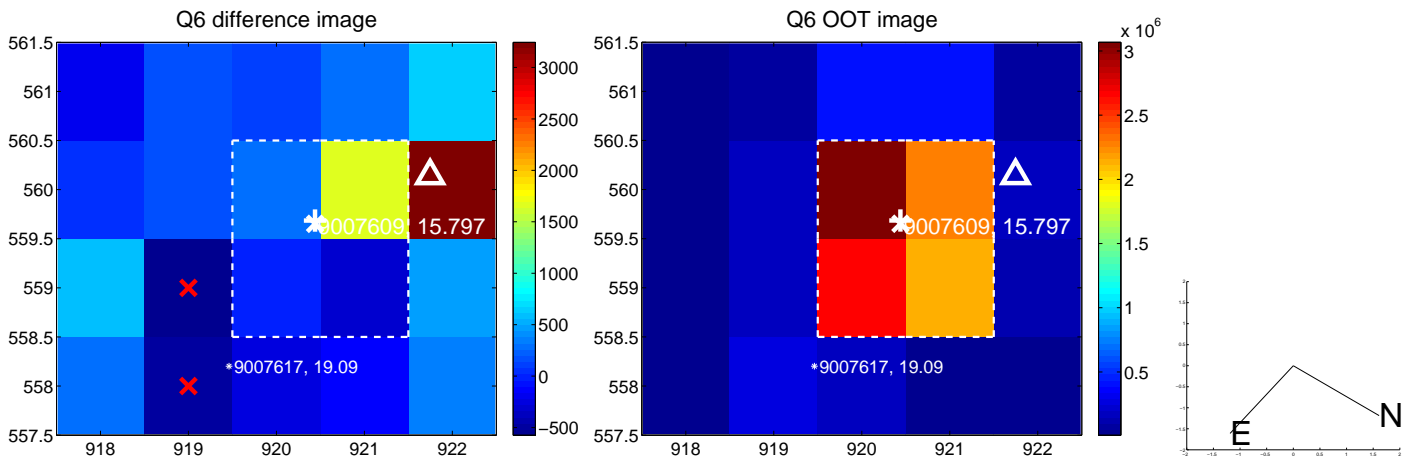
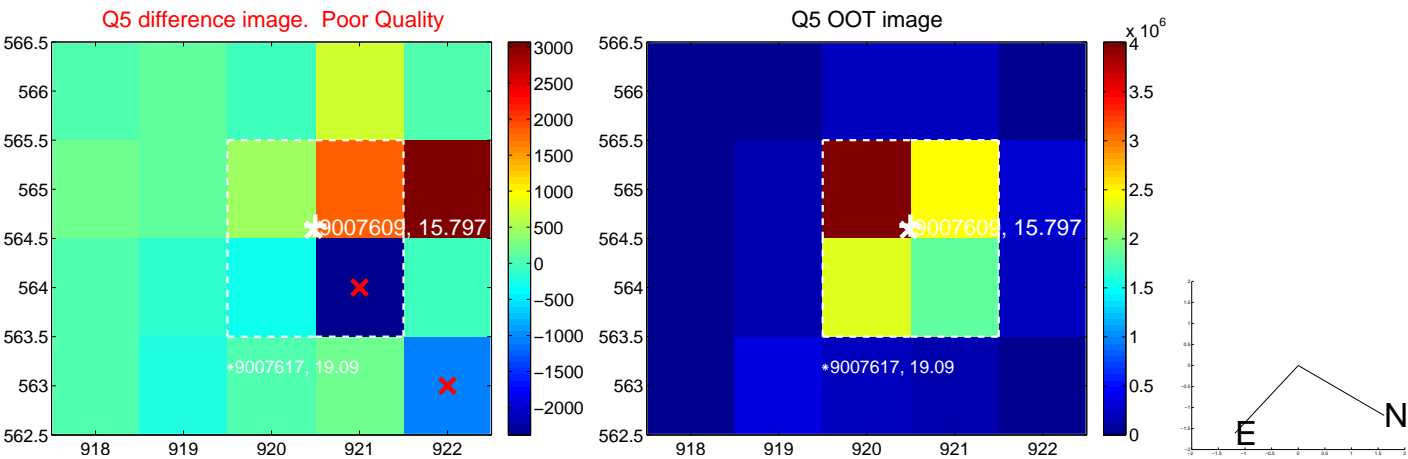


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

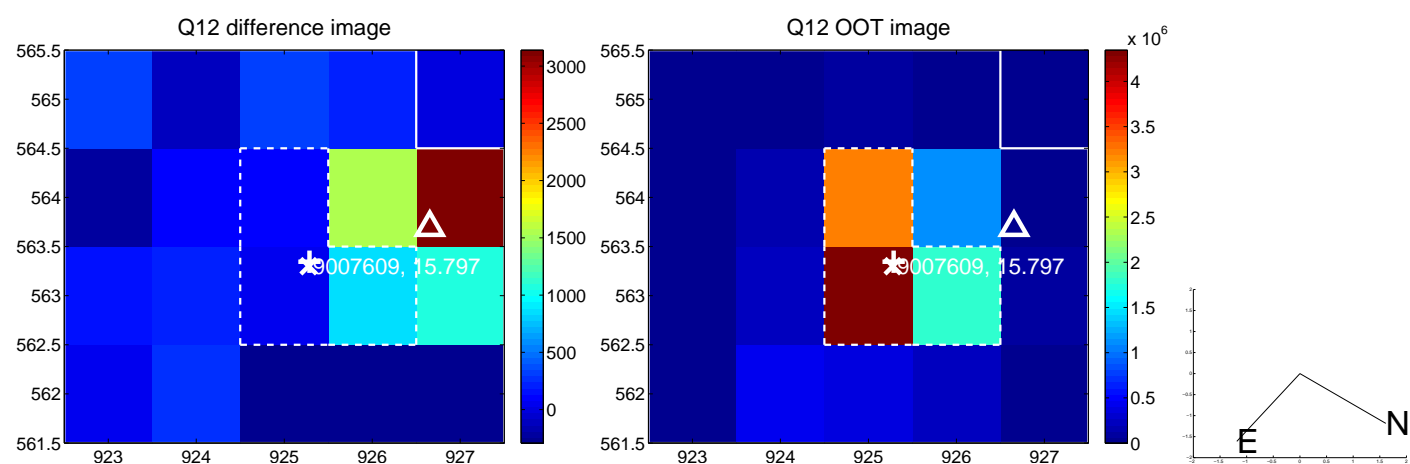
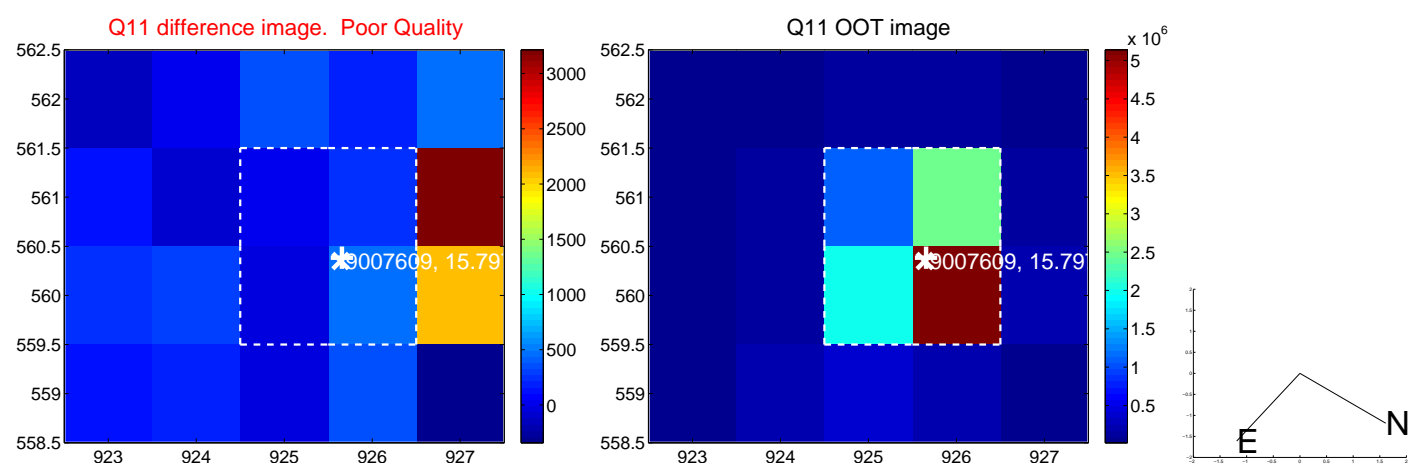
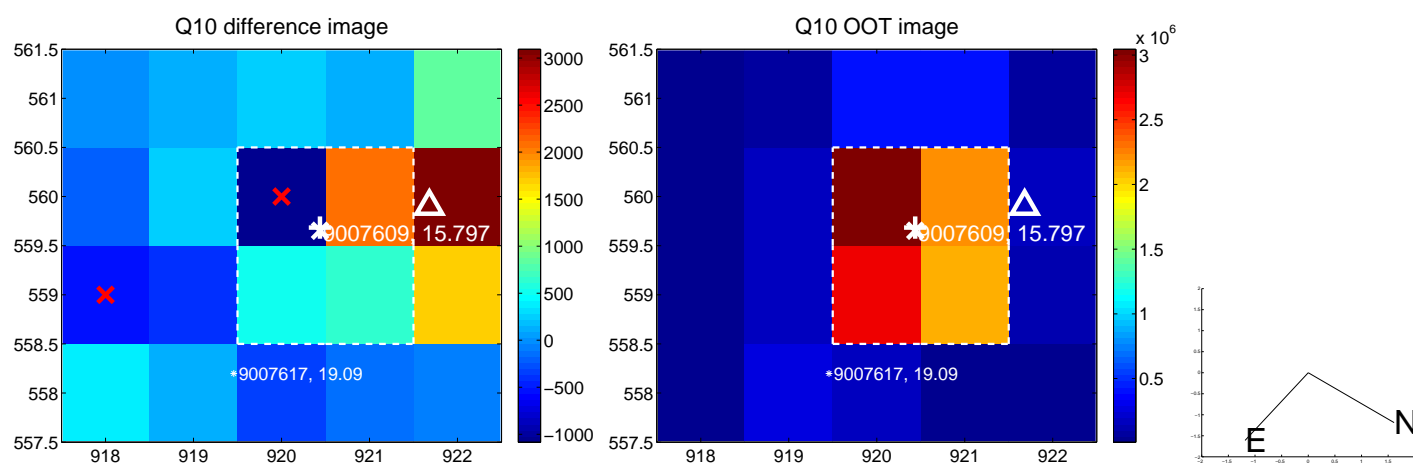
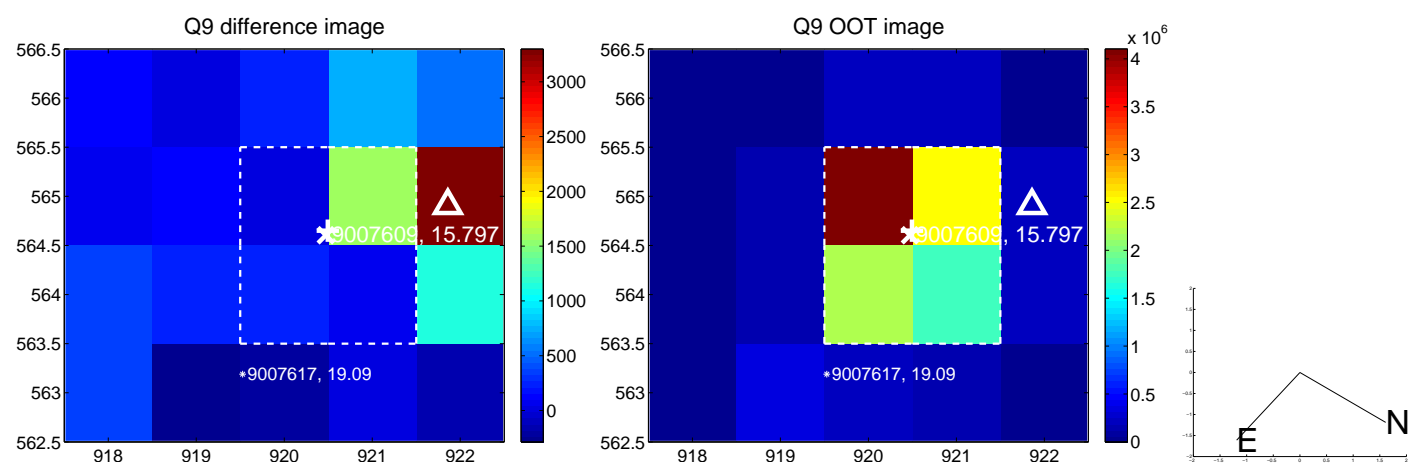
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



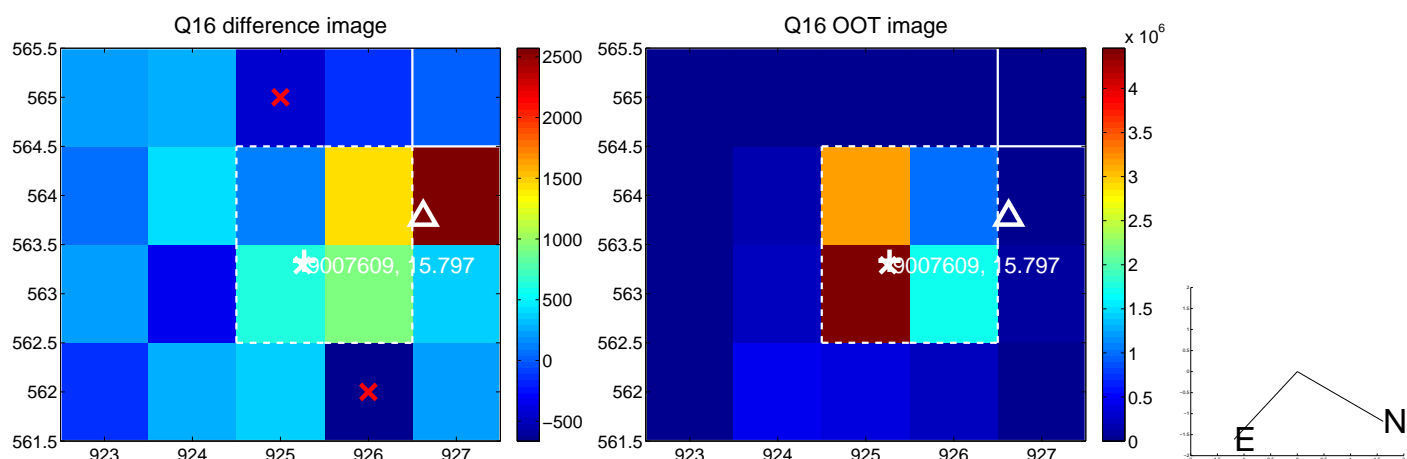
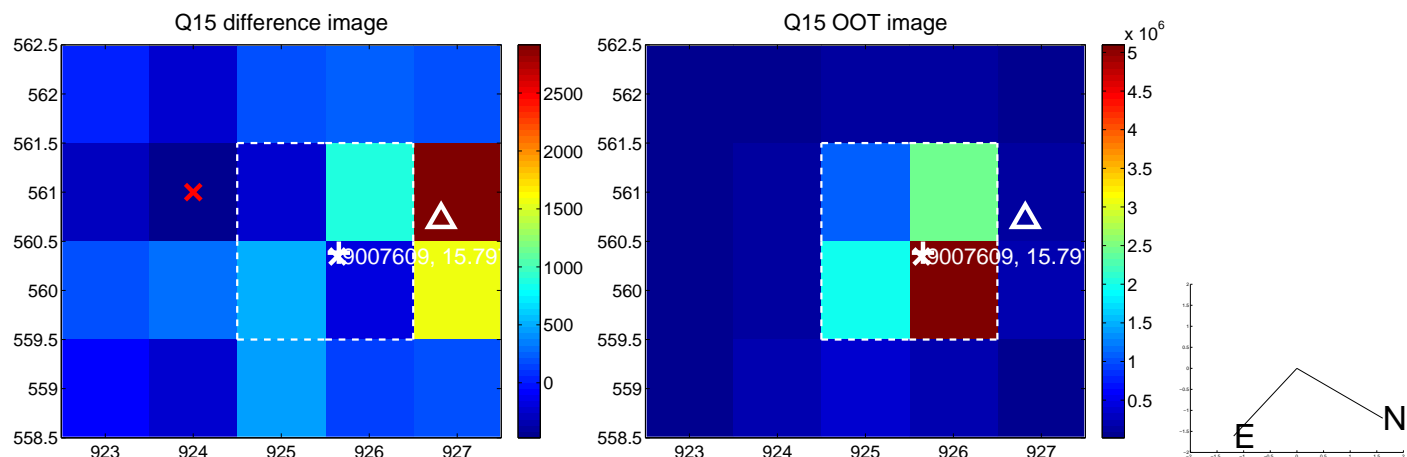
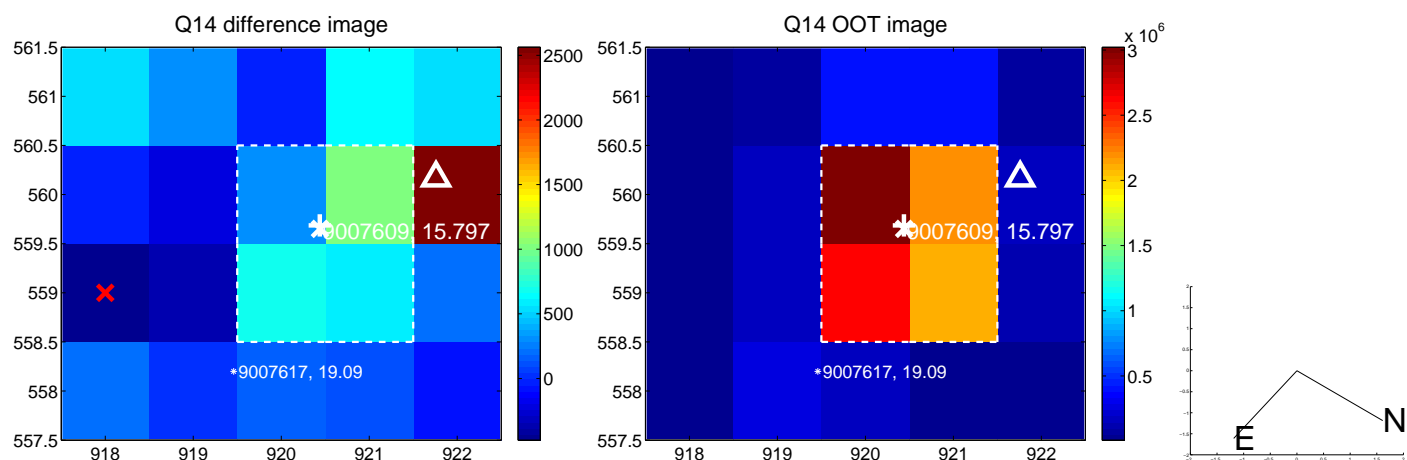
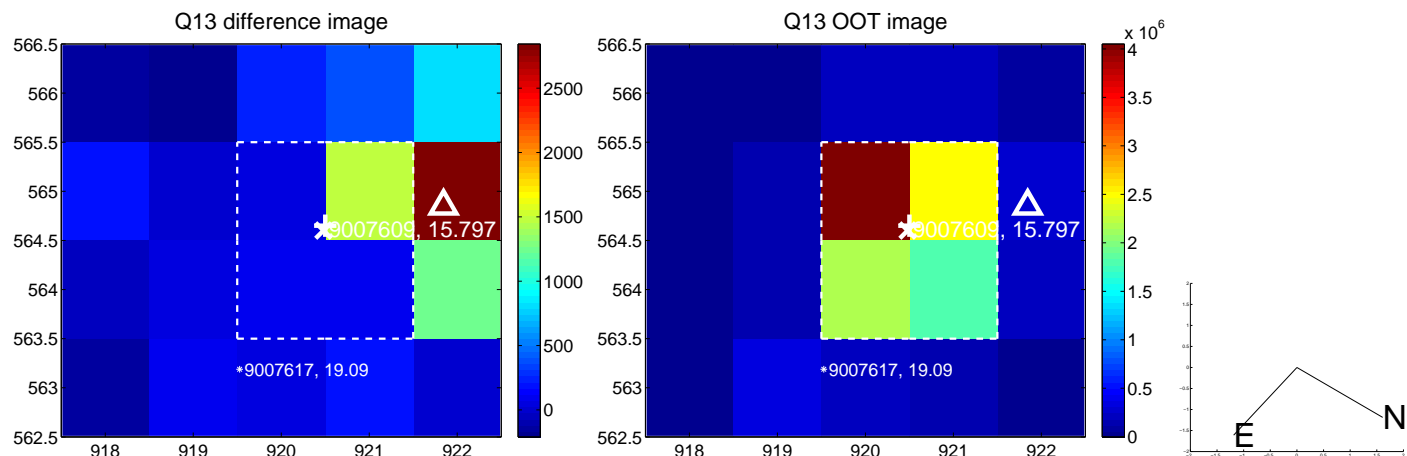
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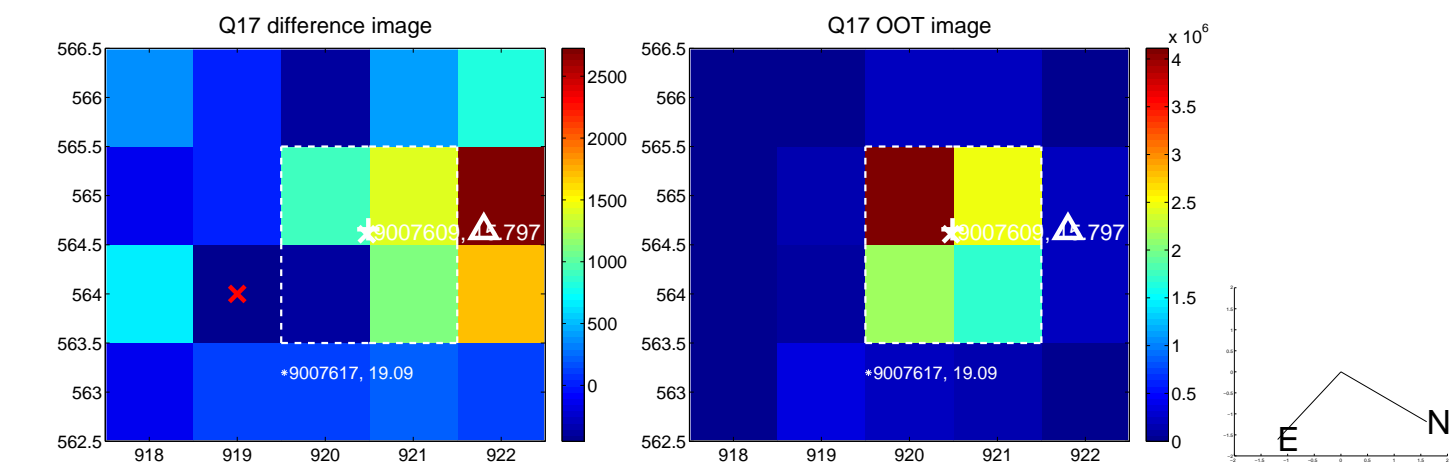
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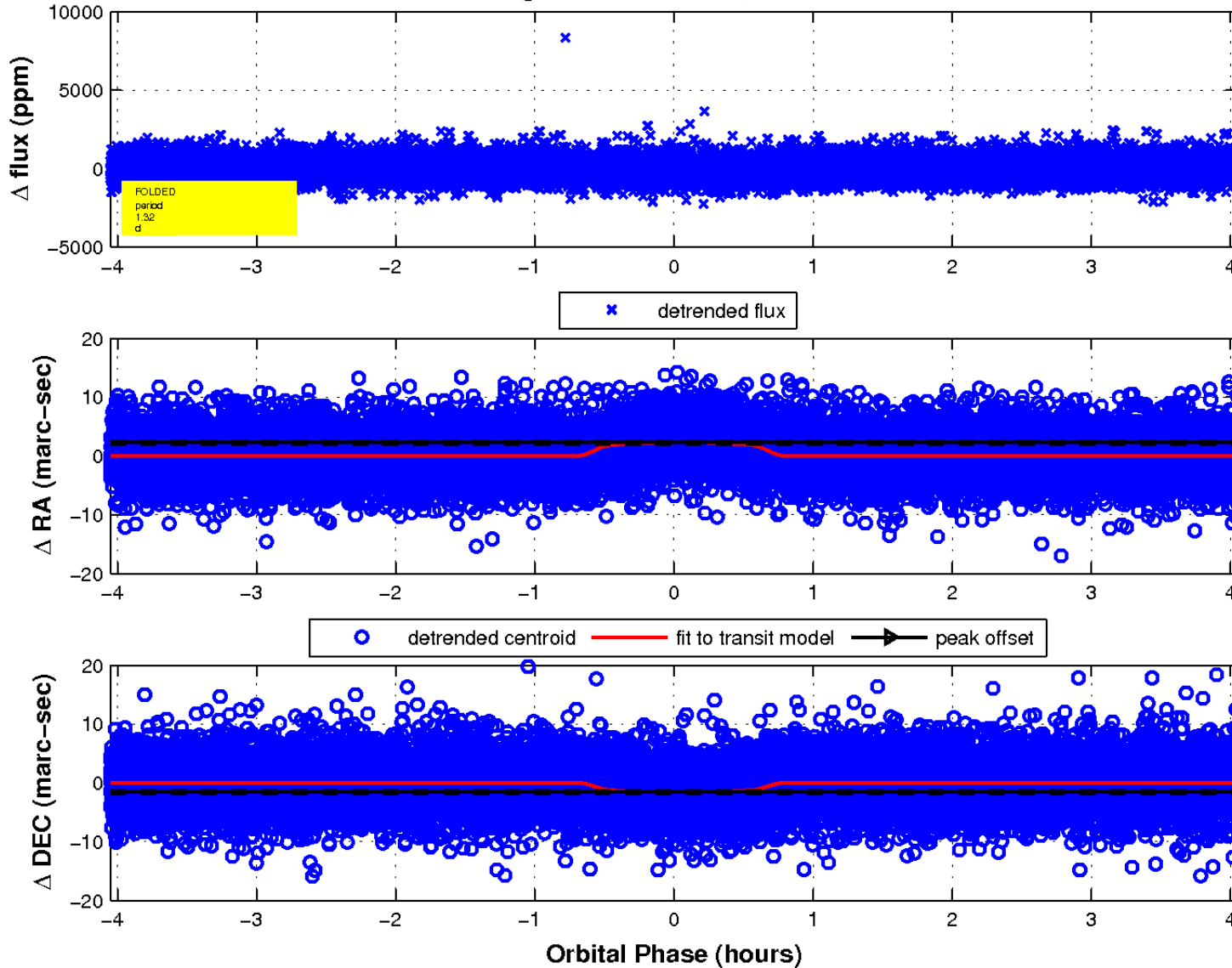
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

