

# KIC 005002968

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 005002968-01 | OBS      | No   | 480.068745    | 541.504583   | 66.6        | 3.204            | 7.2 | 3.1 | 79.19                       | 3669            | 91.31                  | 493.31                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 005002968-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—<br>INCONSISTENT_TRANS—CENT_SATURATED |

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

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

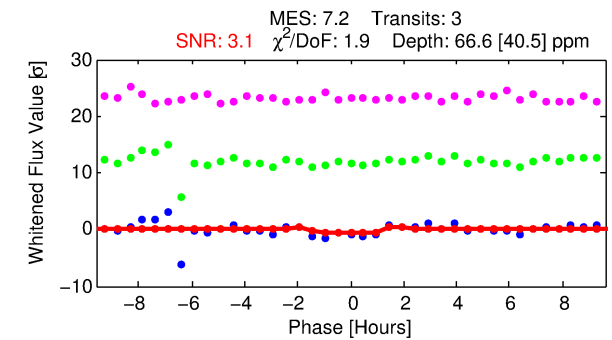
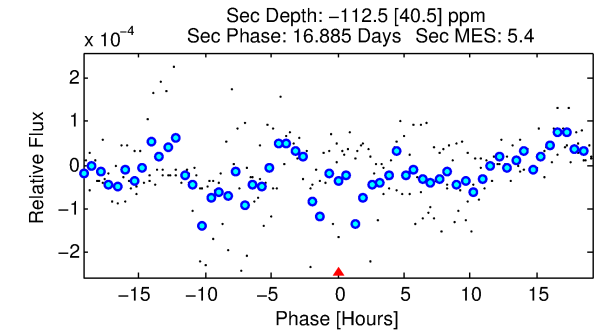
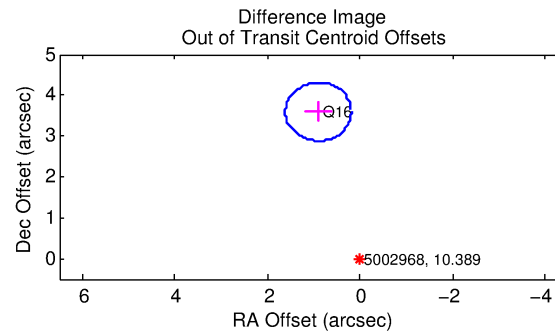
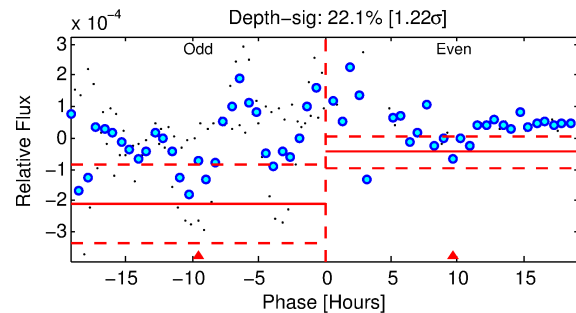
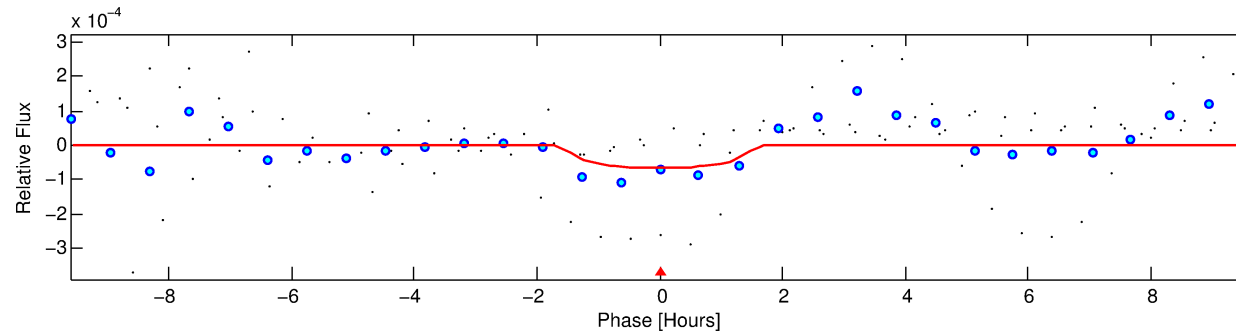
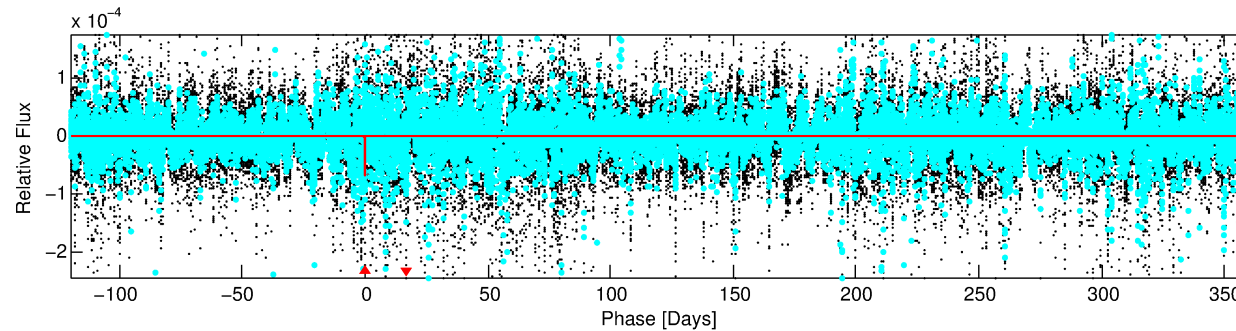
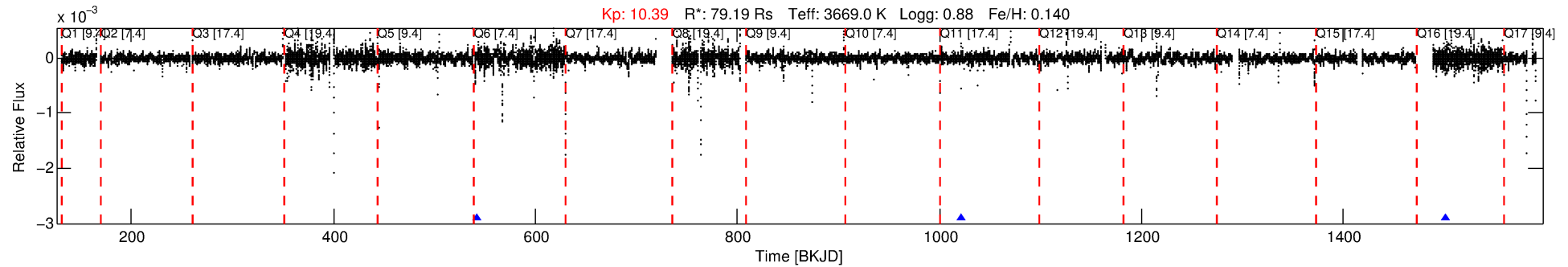
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005002968-01

No Significant Match Found

# DV One-Page Summary

KIC: 5002968 Candidate: 1 of 1 Period: 480.069 d



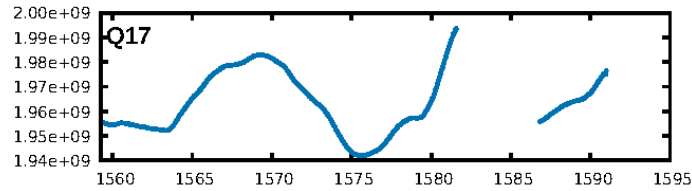
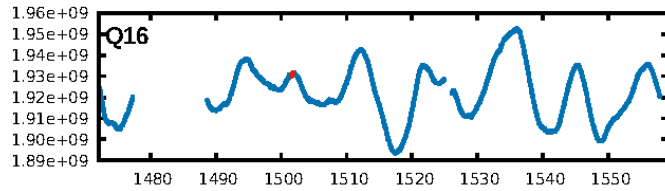
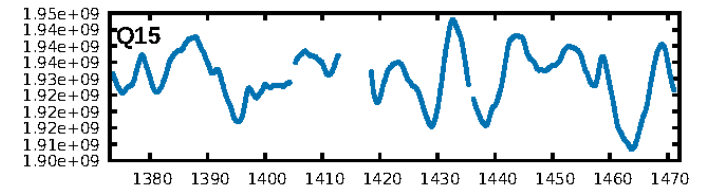
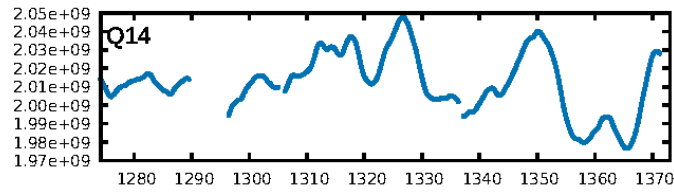
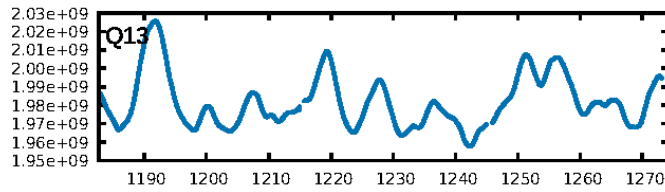
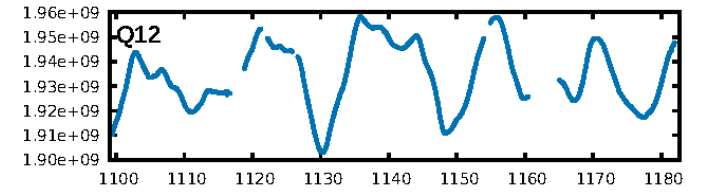
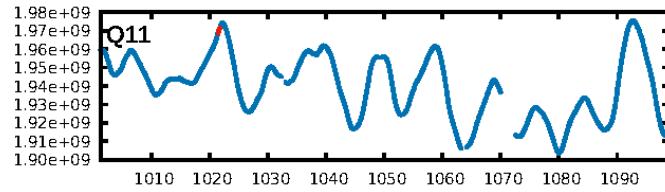
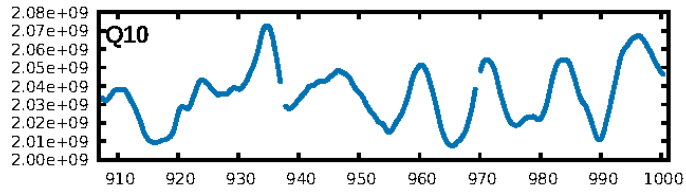
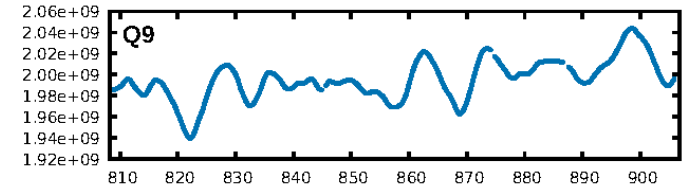
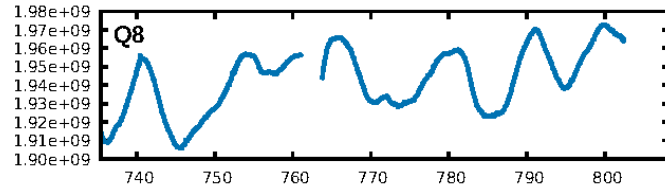
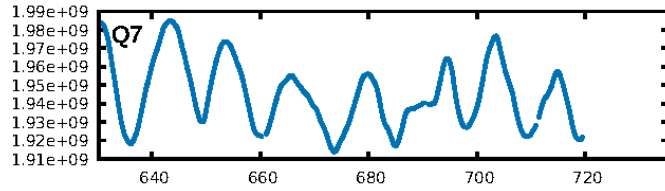
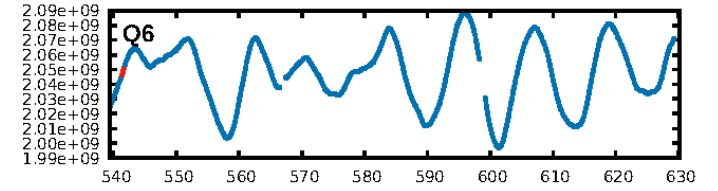
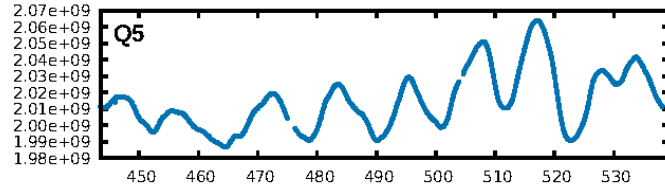
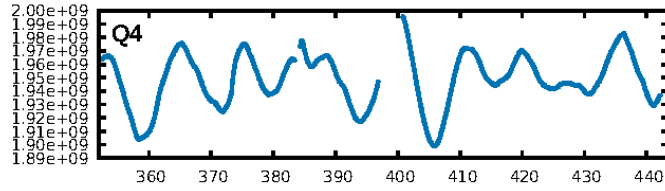
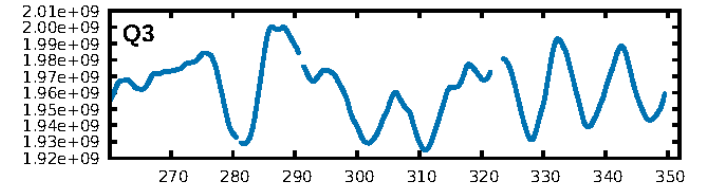
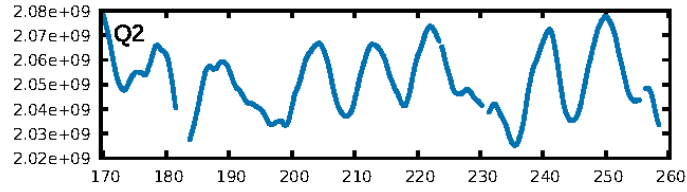
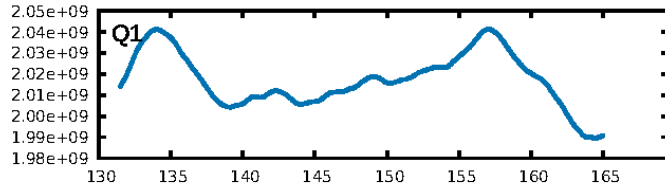
## DV Fit Results:

Period = 480.06874 [0.02512] d  
Epoch = 541.5046 [0.0268] BKJD  
Rp/R\* = 0.0106 [0.0135]  
a/R\* = 390.18 [1723.12]  
b = 0.95 [0.45]  
Seff = 493.31 [83.08]  
Teq = 1202 [51] K  
Rp = 91.31 [117.76] Re  
a = 1.4366 [0.1753] AU  
Ag = N/A  
Teffp = N/A

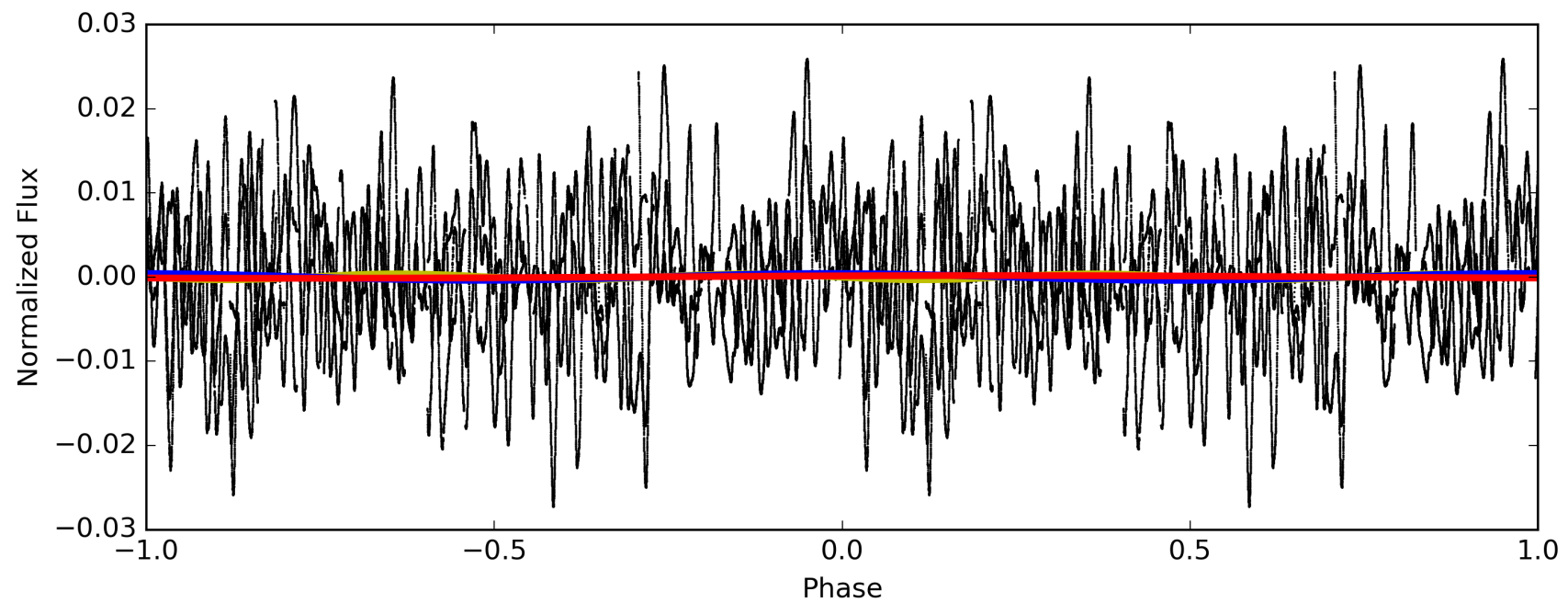
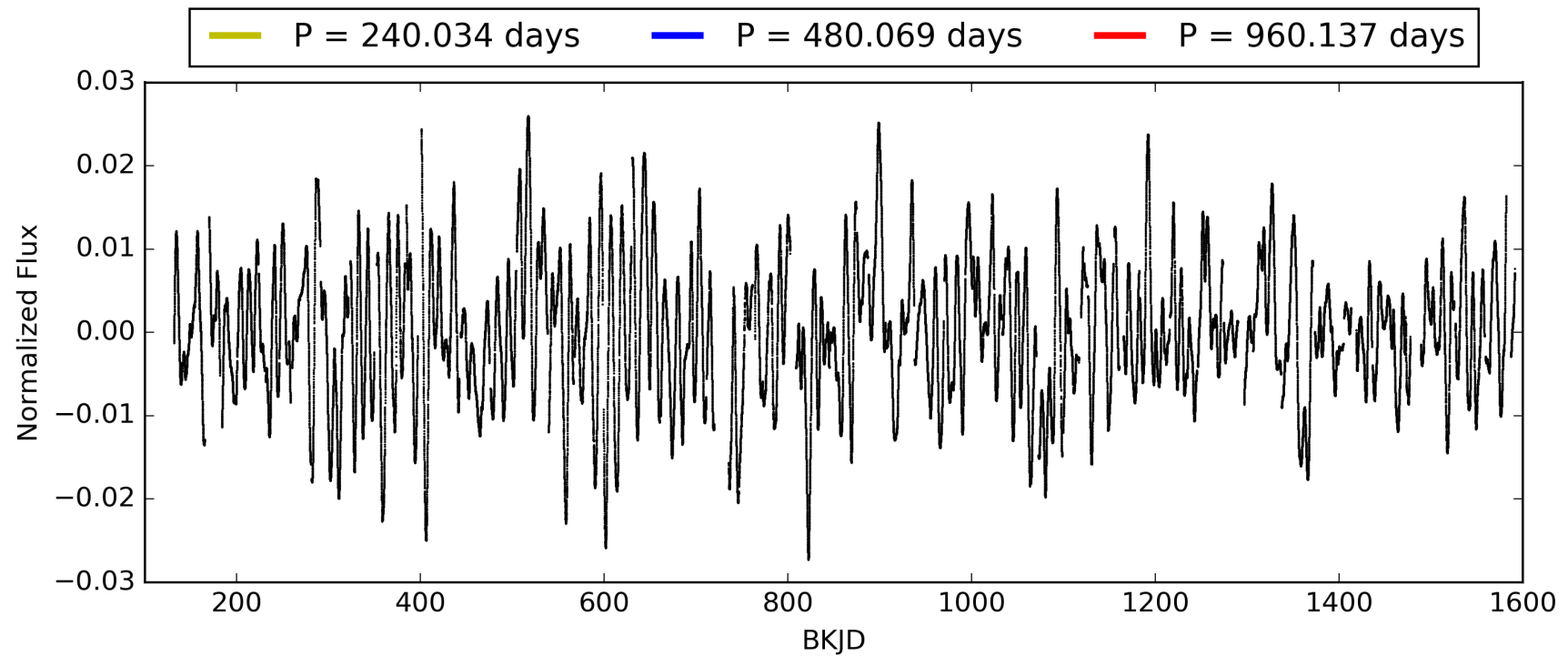
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.2%  
ModelChiSquareGof-sig: 19.2%  
Bootstrap-pfa: 6.97e-04  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.1%  
Centroid-so: 25.207 arcsec [3.34 $\sigma$ ]  
OotOffset-rm: 3.705 arcsec [15.57 $\sigma$ ]  
KicOffset-rm: 4.114 arcsec [16.51 $\sigma$ ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 005002968-01, PDC Light Curves

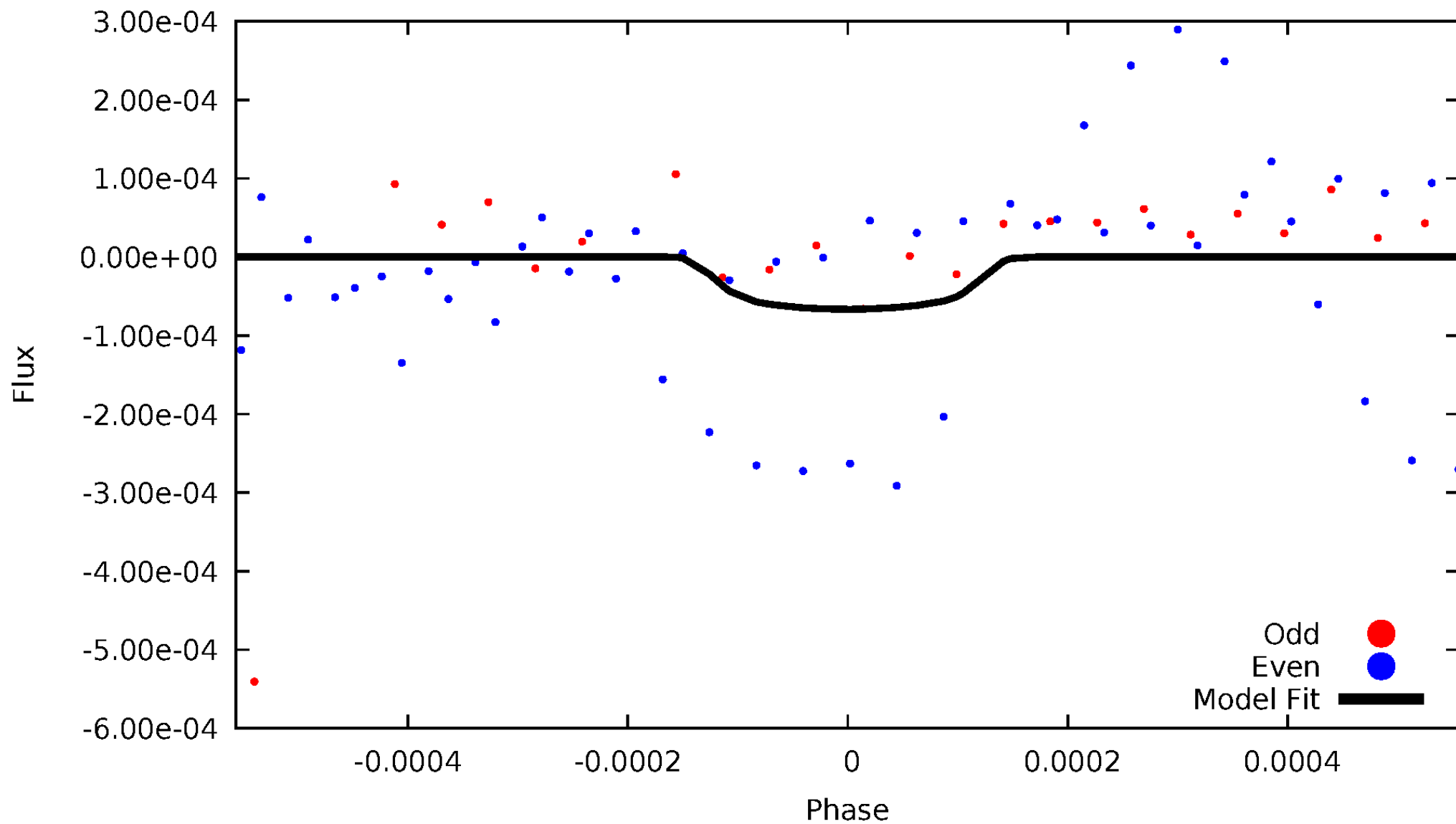


TCE 005002968-01



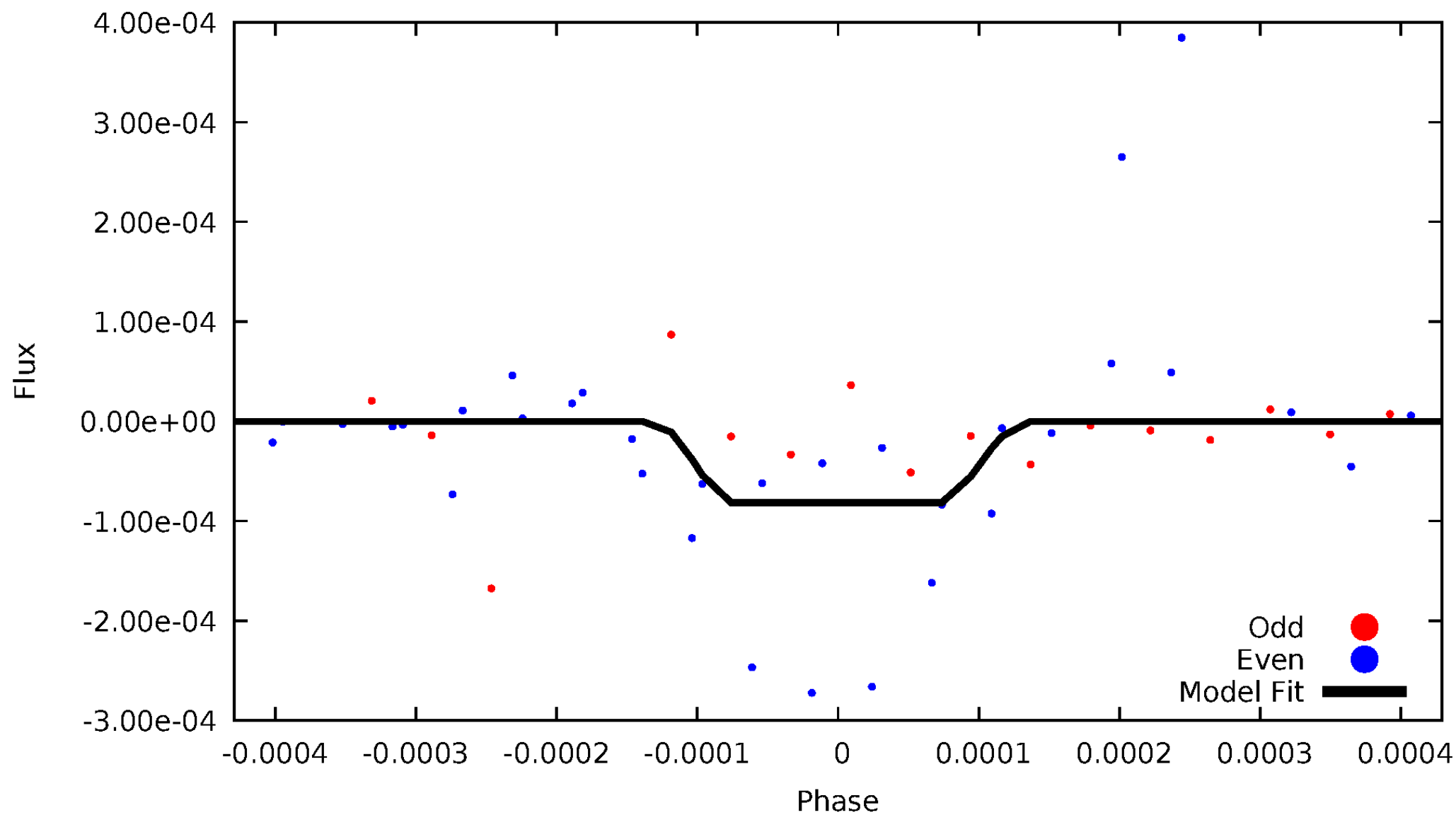
# DV Odd/Even

TCE 005002968-01



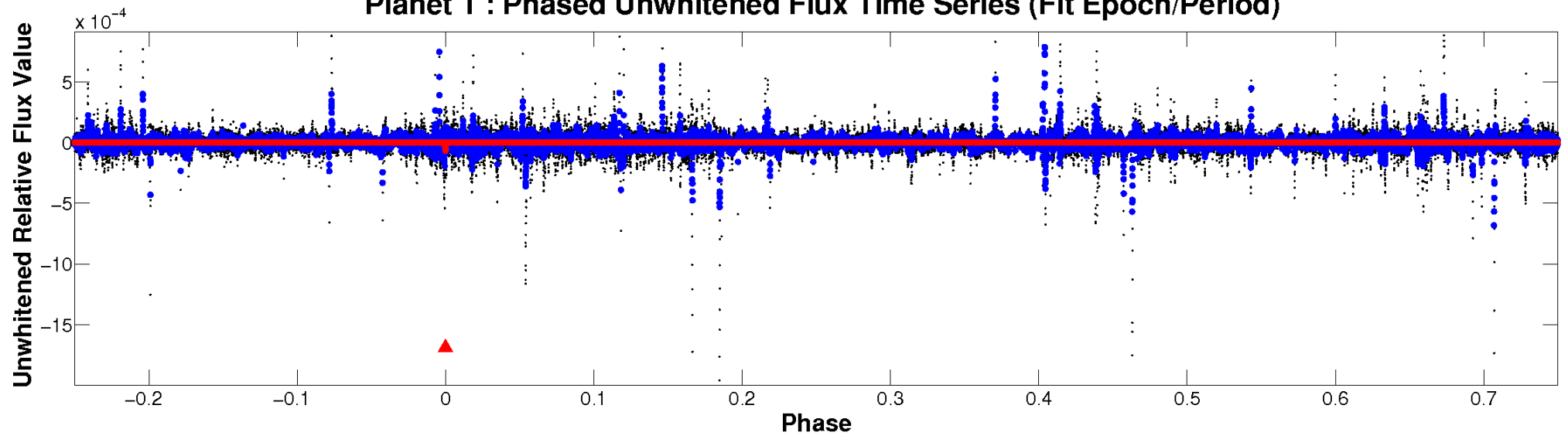
# ALT Odd/Even

TCE 005002968-01

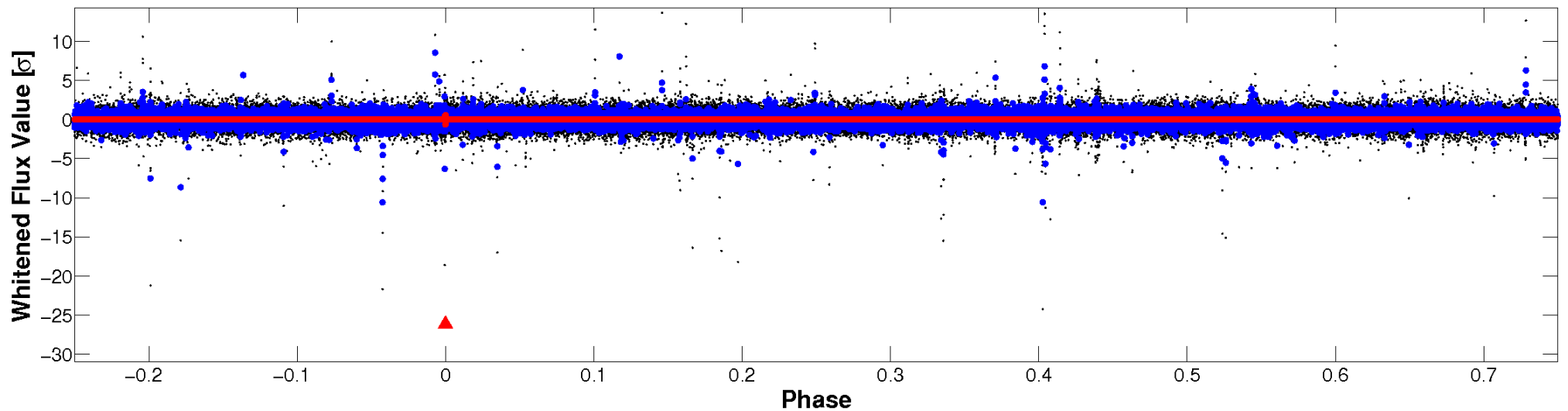


# Non-Whitened Vs. Whitened Light Curve

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

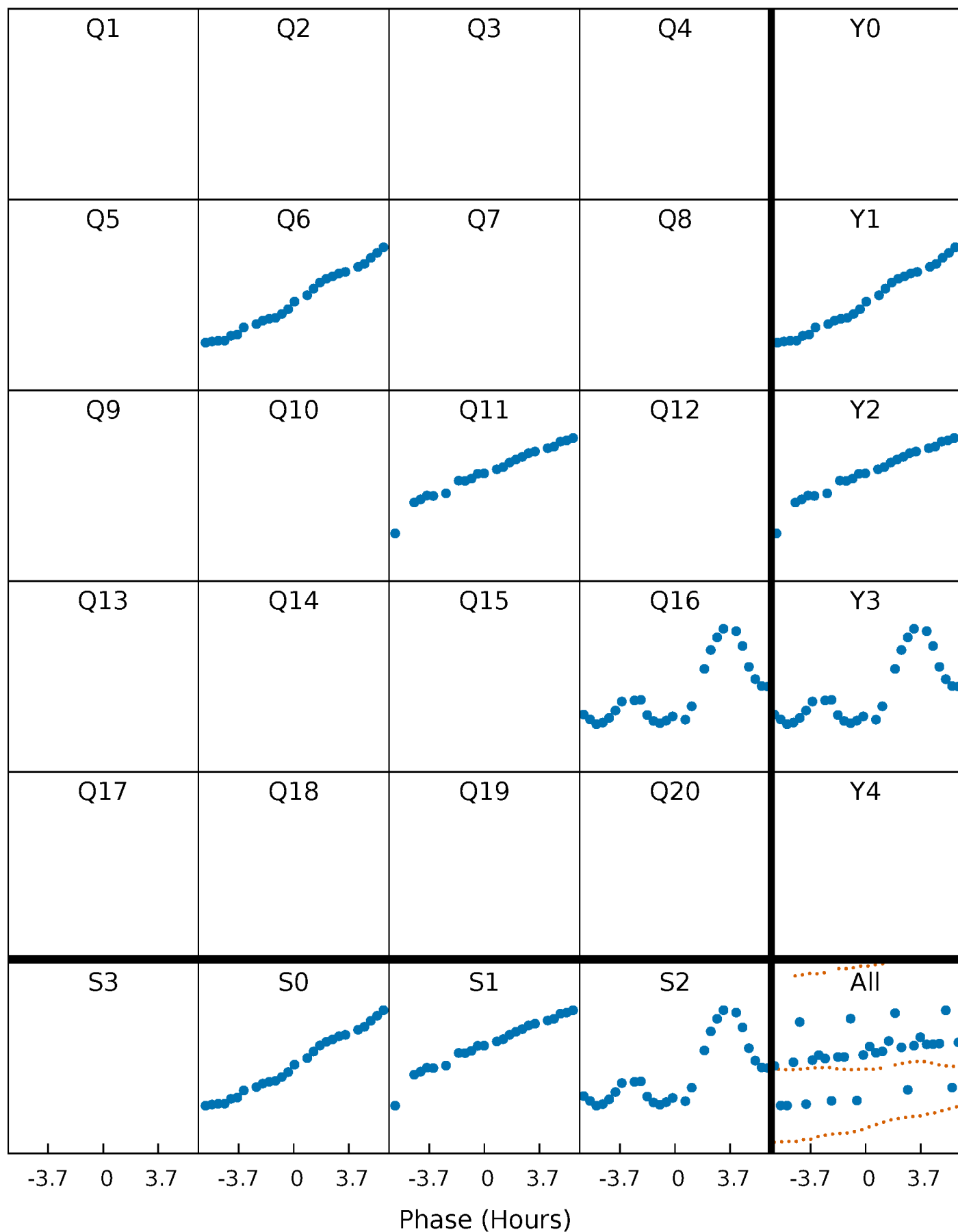


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 005002968-01 P=480.068745 Days  $T_0=541.504583$  (BKJD)





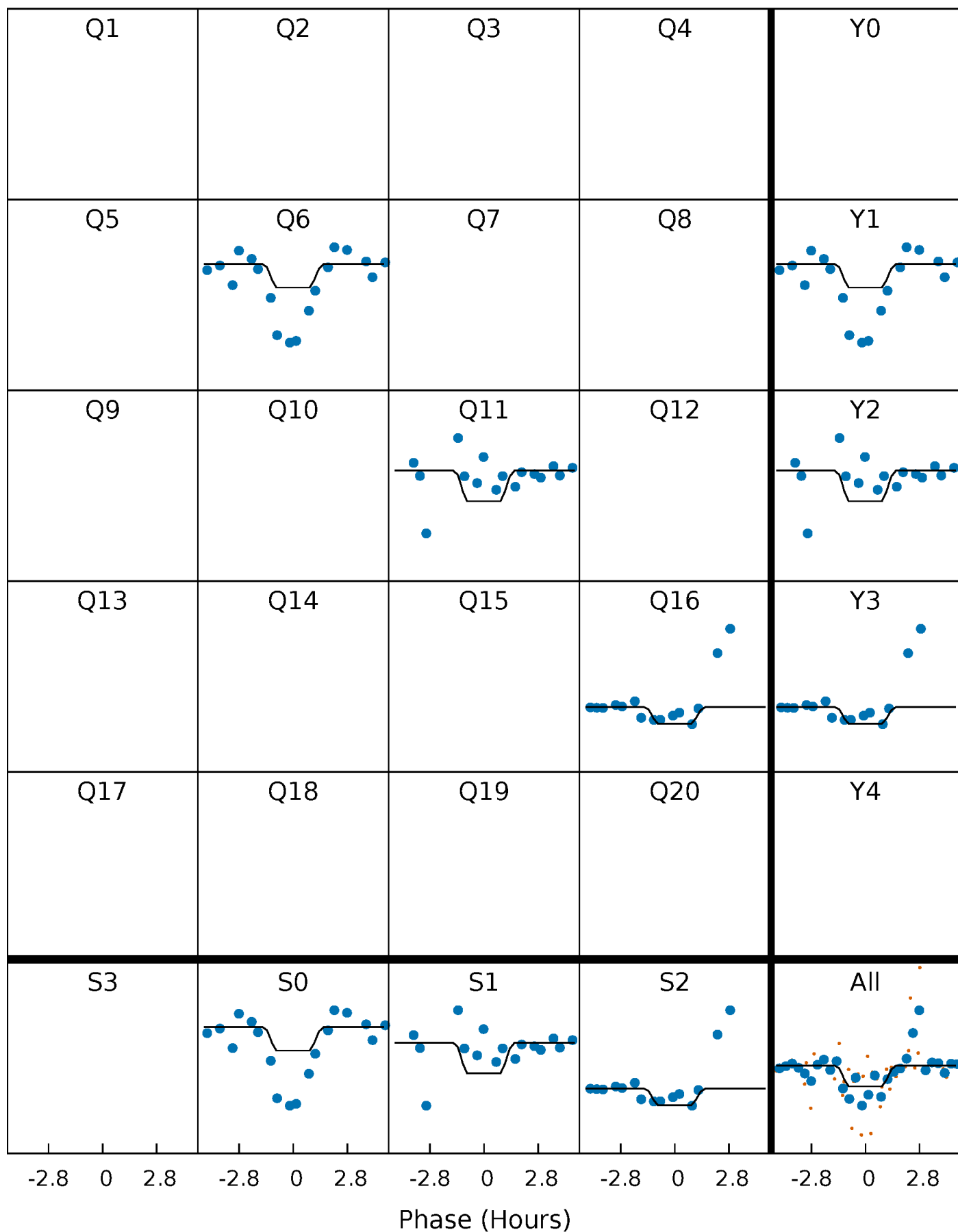
# DV Quarter-Phased Transit Curves

TCE 005002968-01 P=480.068745 Days  $T_0=541.504583$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

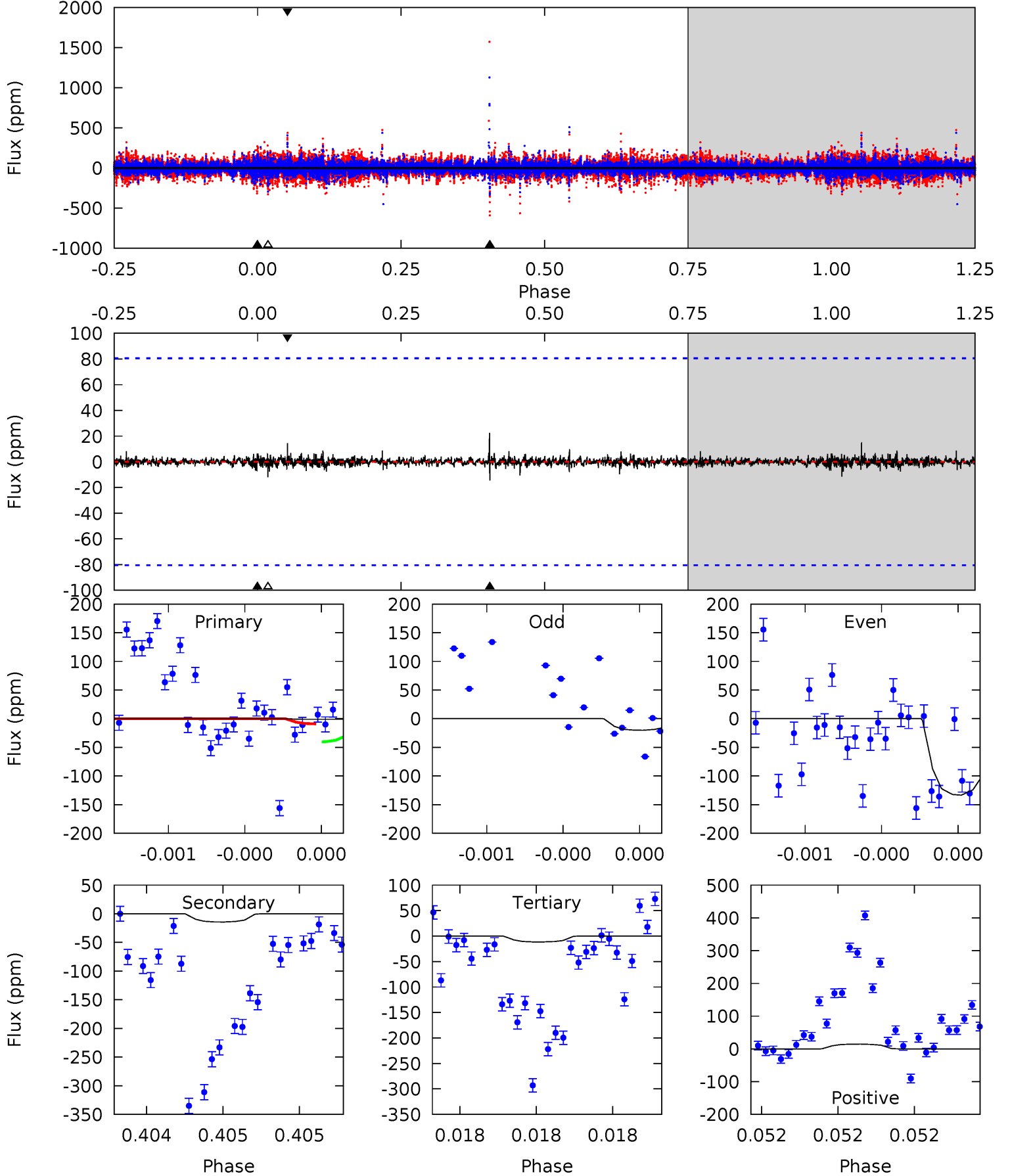
TCE 005002968-01 P=480.072870 Days  $T_0=541.482309$  (BKJD)



# DV Model-Shift Uniqueness Test

005002968-01,  $P = 480.068745$  Days,  $E = 61.435838$  Days

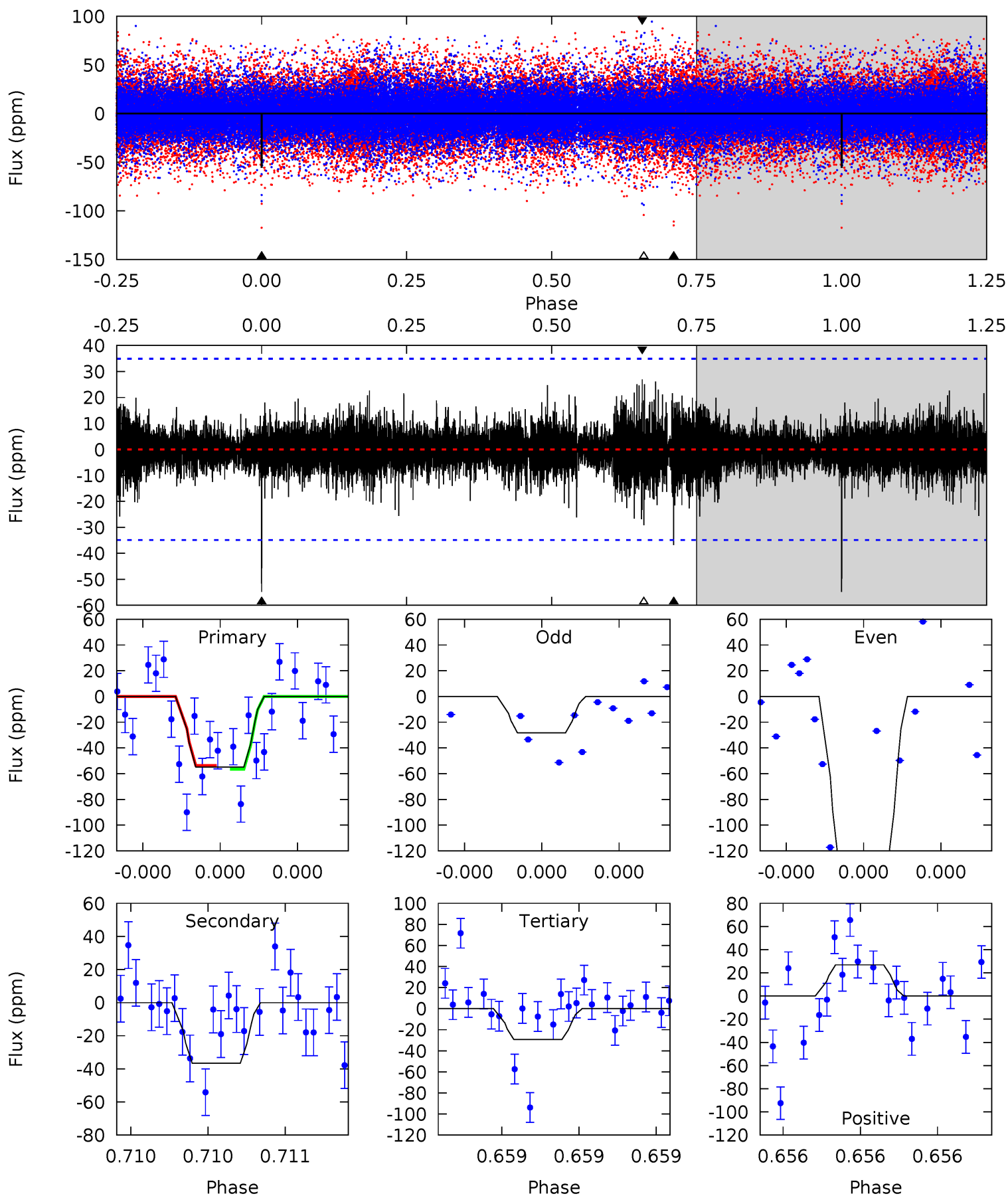
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 0.08 | 1.01 | 0.81 | 1.02 | 5.65            | 3.60            | 0.11             | -0.73   | -0.94   | 0.20    | -0.01   | 4.09    | 4.80 | 0.61  | 1.13 |



# Alt Model-Shift Uniqueness Test

005002968-01, P = 480.072870 Days, E = 61.409439 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.96 | 5.99 | 4.77 | 4.39 | 5.70            | 3.67            | 0.81             | 4.18    | 4.57    | 1.21    | 1.60    | 8.98    | 1.79 | 0.33  | 0.24 |



### Stellar Parameters For KIC 005002968

|        | $T_{\text{eff}}(K)$ | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$             | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|-----------------------------|---------------------------|---|
|        | $3669^{+89}_{-100}$ | $0.875^{+0.030}_{-0.030}$ | $0.140^{+0.200}_{-0.250}$ | $79.187^{+3.558}_{-14.232}$ | $1.716^{+0.063}_{-0.567}$ | $0.000^{+0.000}_{-0.000}$                 |
|        | +2%/-3%             | +3%/-3%                   | +143%/-179%               | +4%/-18%                    | +4%/-33%                  | +27%/-9%                                  |
| Source | PHO54               | AST54                     | PHO54                     | DSEP                        |                           |   |

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

### Secondary Eclipse Parameters for KIC 005002968-01 / KOI

| Detrend | Depth (ppm)  | $R_p (R_{\oplus})$          | $T_{max} (K)$      | $T_{obs} (K)$          | $A_{obs}$                  |
|---------|--------------|-----------------------------|--------------------|------------------------|----------------------------|
| DV      | $-14 \pm 14$ | $118.19^{+101.49}_{-78.69}$ | $1682^{+47}_{-53}$ | $2358^{+1042}_{-4490}$ | $0.919^{+9.038}_{-0.867}$  |
| Alt.    | $-37 \pm 6$  | $108.21^{+103.09}_{-69.91}$ | $1681^{+48}_{-51}$ | $2915^{+1167}_{-557}$  | $3.525^{+24.101}_{-2.581}$ |

$T_{max}$  = 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

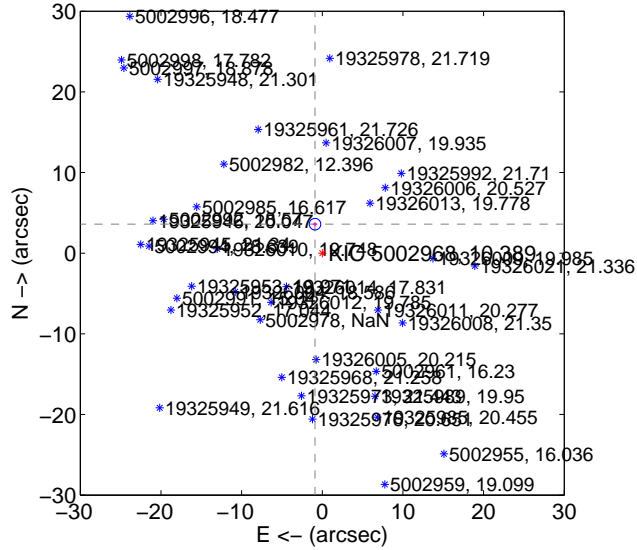
Supplemental centroid analysis for 005002968-01. **Kepler magnitude: 10.39.** Transit SNR 3.14

**There are 0 quarters with good PRF difference image offsets**

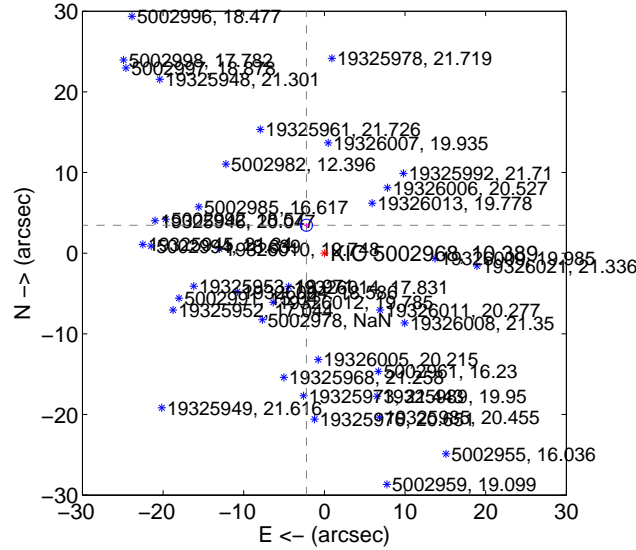
The direct PRF centroid is offset from the target star catalog position by about 1.33 arcsec

|   | Distance in arcsec                  | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|-------------------------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | <b><math>3.705 \pm 0.238</math></b> | <b>15.57</b>        | $0.902 \pm 0.280$ | $3.593 \pm 0.235$ |
| PRF-fit source offset from KIC position | <b><math>4.114 \pm 0.249</math></b> | <b>16.51</b>        | $2.222 \pm 0.280$ | $3.463 \pm 0.235$ |
| photometric centroid source offset      | <b><math>25.21 \pm 7.55</math></b>  | <b>3.34</b>         | $-2.46 \pm 4.48$  | $25.09 \pm 7.57$  |

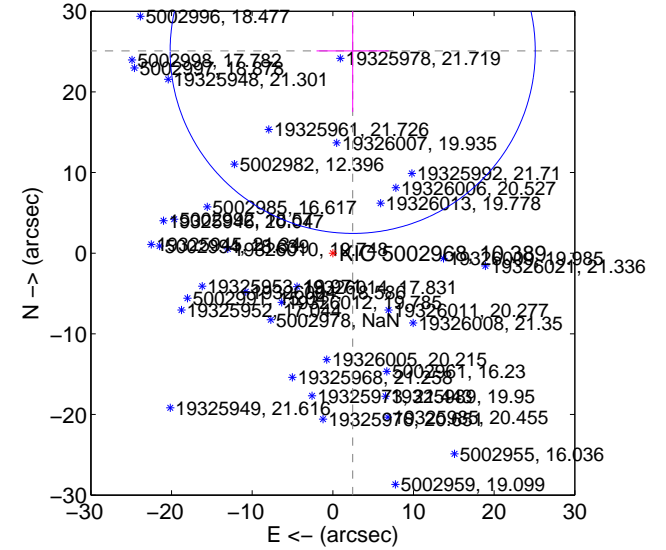
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

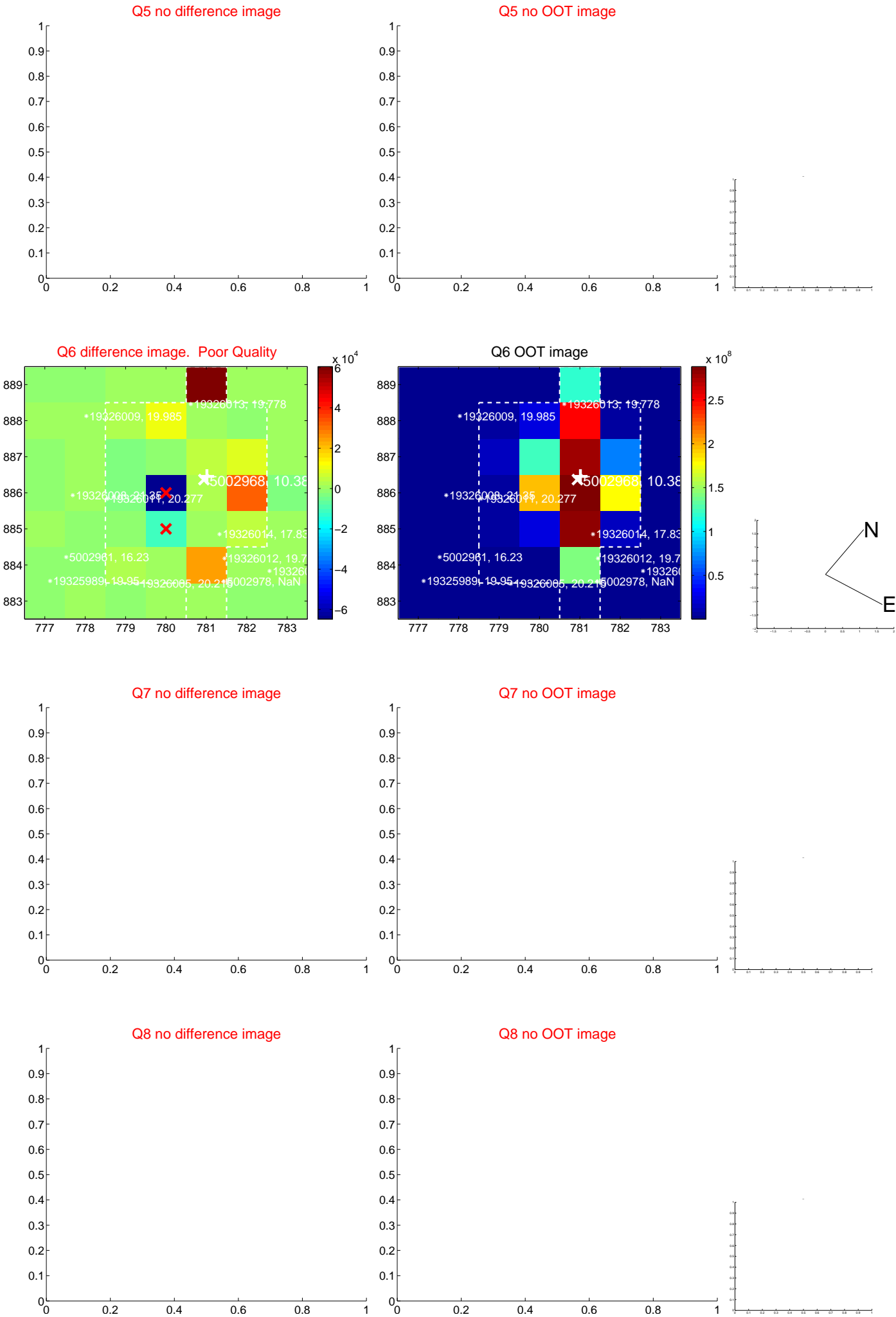


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

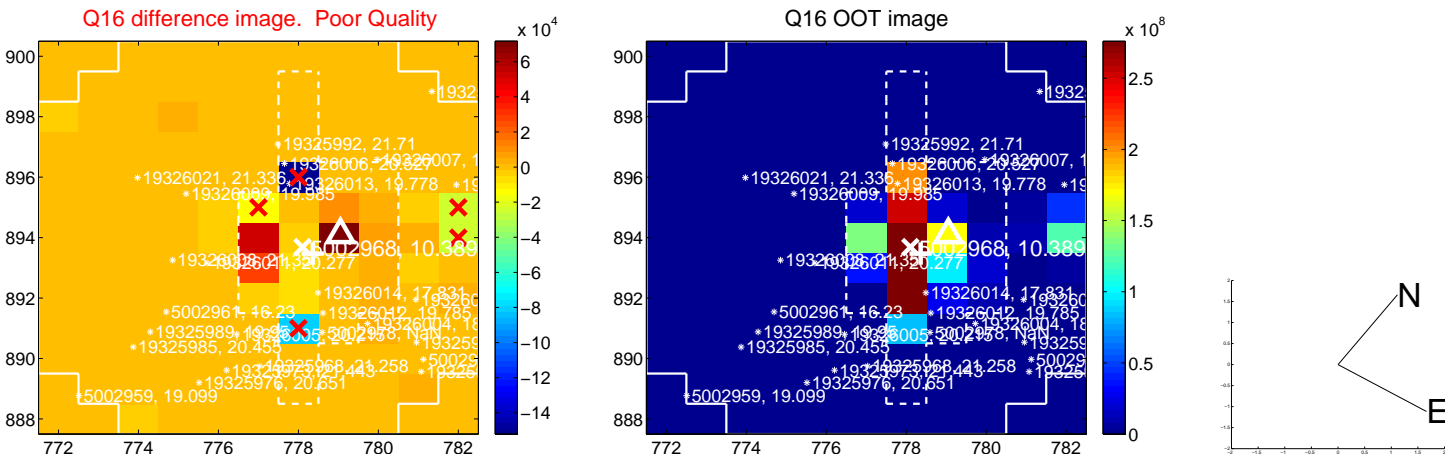
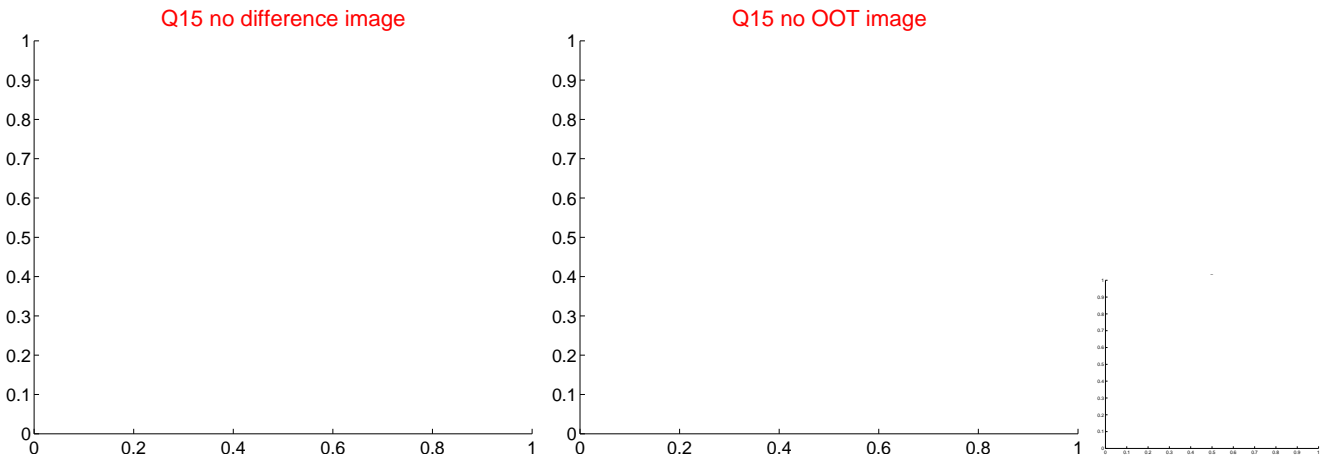
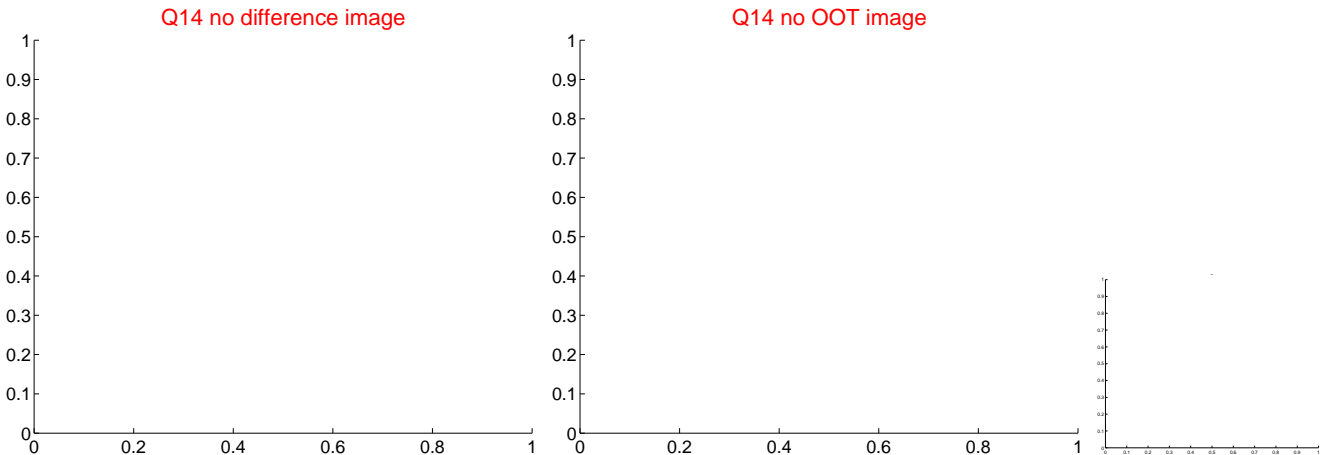
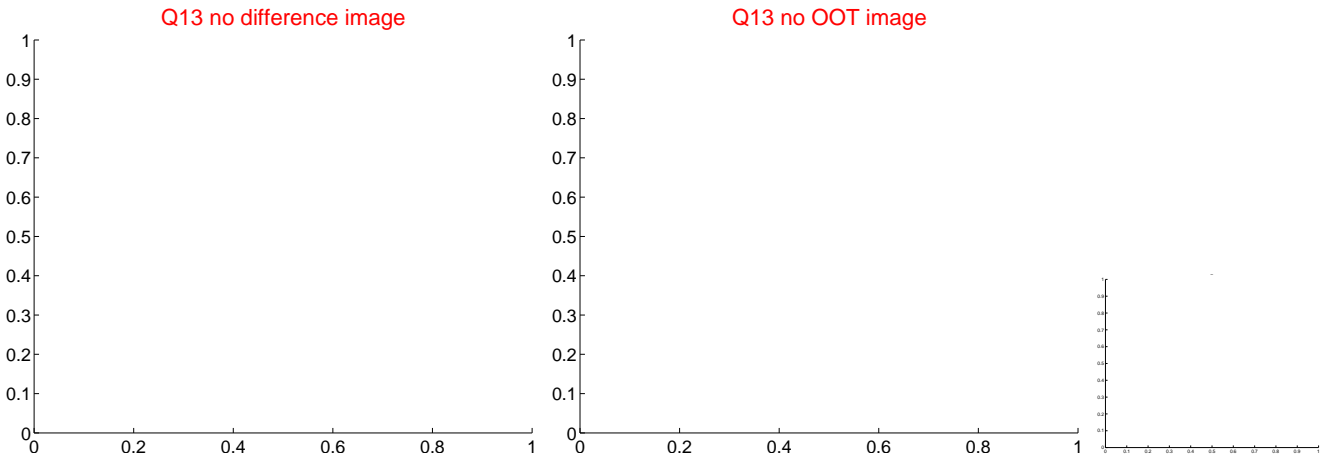




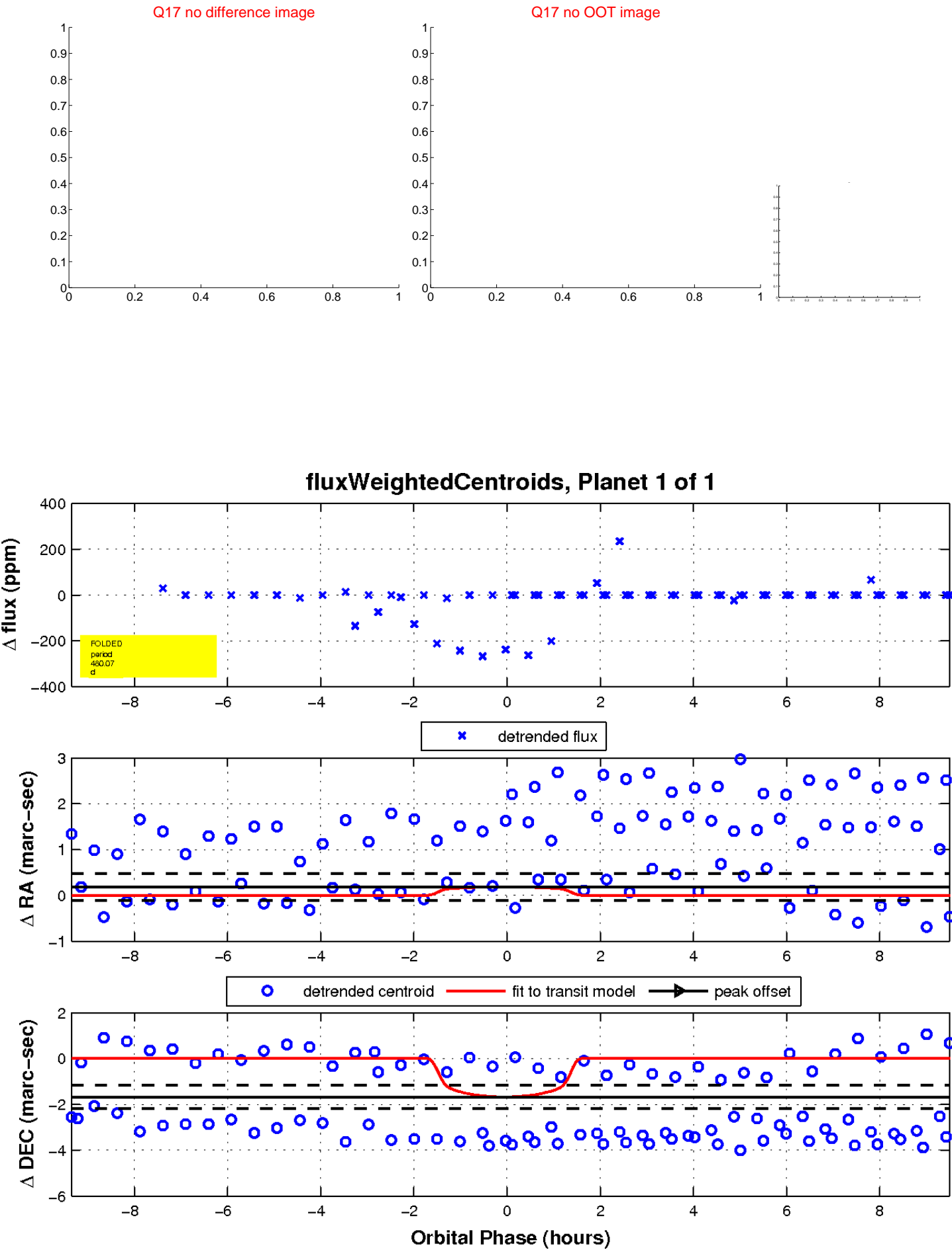
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UKIRT Image

