

# KIC 005530112

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 005530112-01 | OBS      | 4067.01 | 9.688599      | 131.838916   | 663.6       | 1.972            | 13.5 | 16.7 | 1.20                        | 6457            | 3.31                   | 250.70                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments       |
|--------------|----------|------|-------|---|---|---|---|----------------|
| 005530112-01 | OBS      | PC   | 1.00  | 0 | 0 | 0 | 0 | CENT_FEW_DIFFS |

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

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

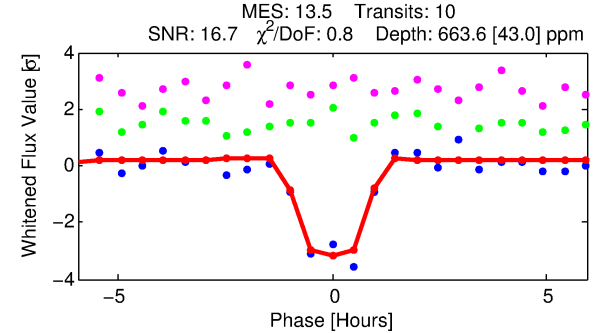
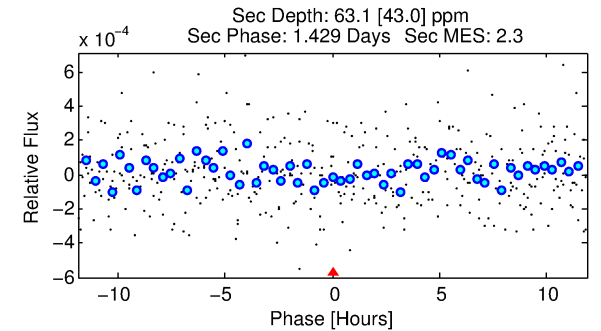
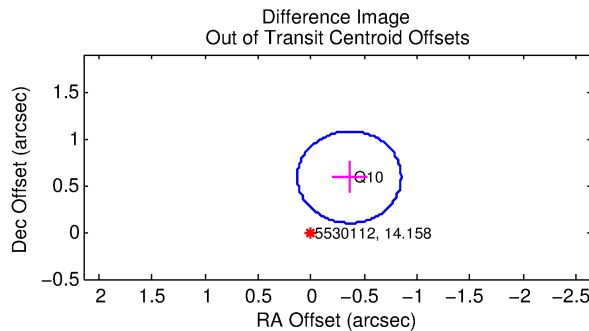
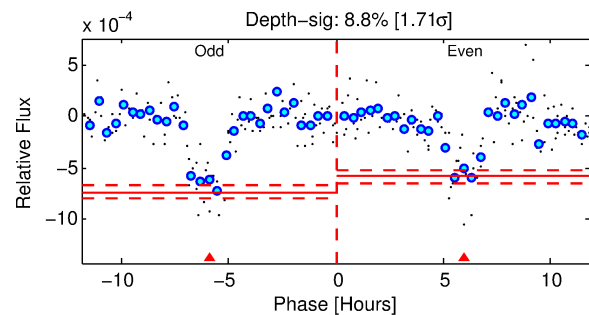
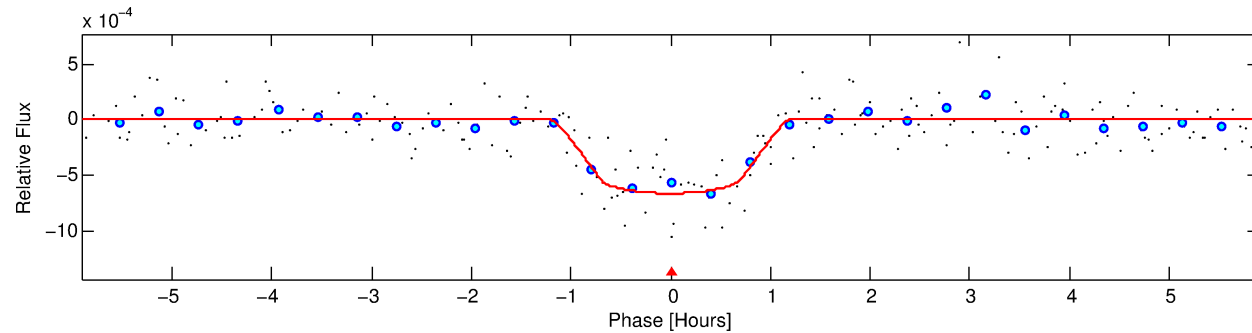
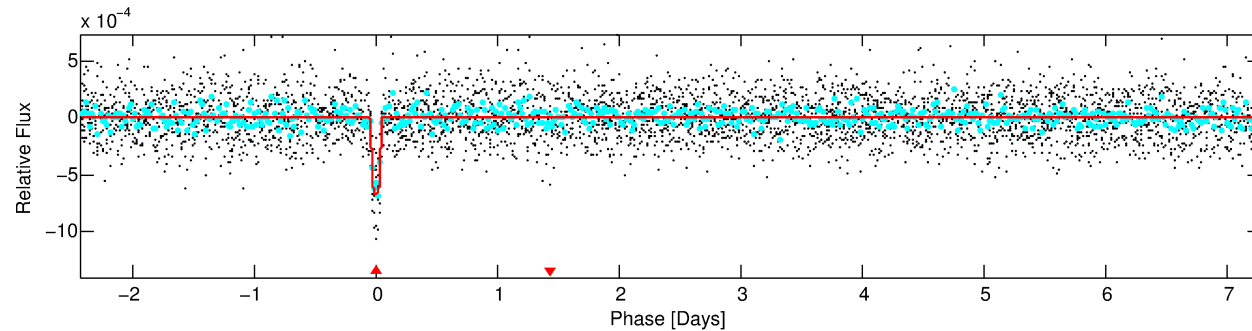
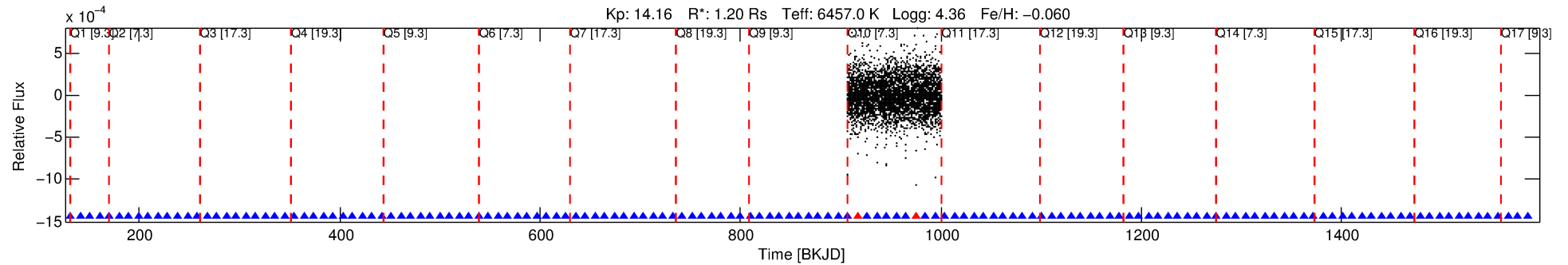
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005530112-01

No Significant Match Found

# DV One-Page Summary

KIC: 5530112 Candidate: 1 of 1 Period: 9.689 d  
KOI: K04067.01 Corr: 0.969



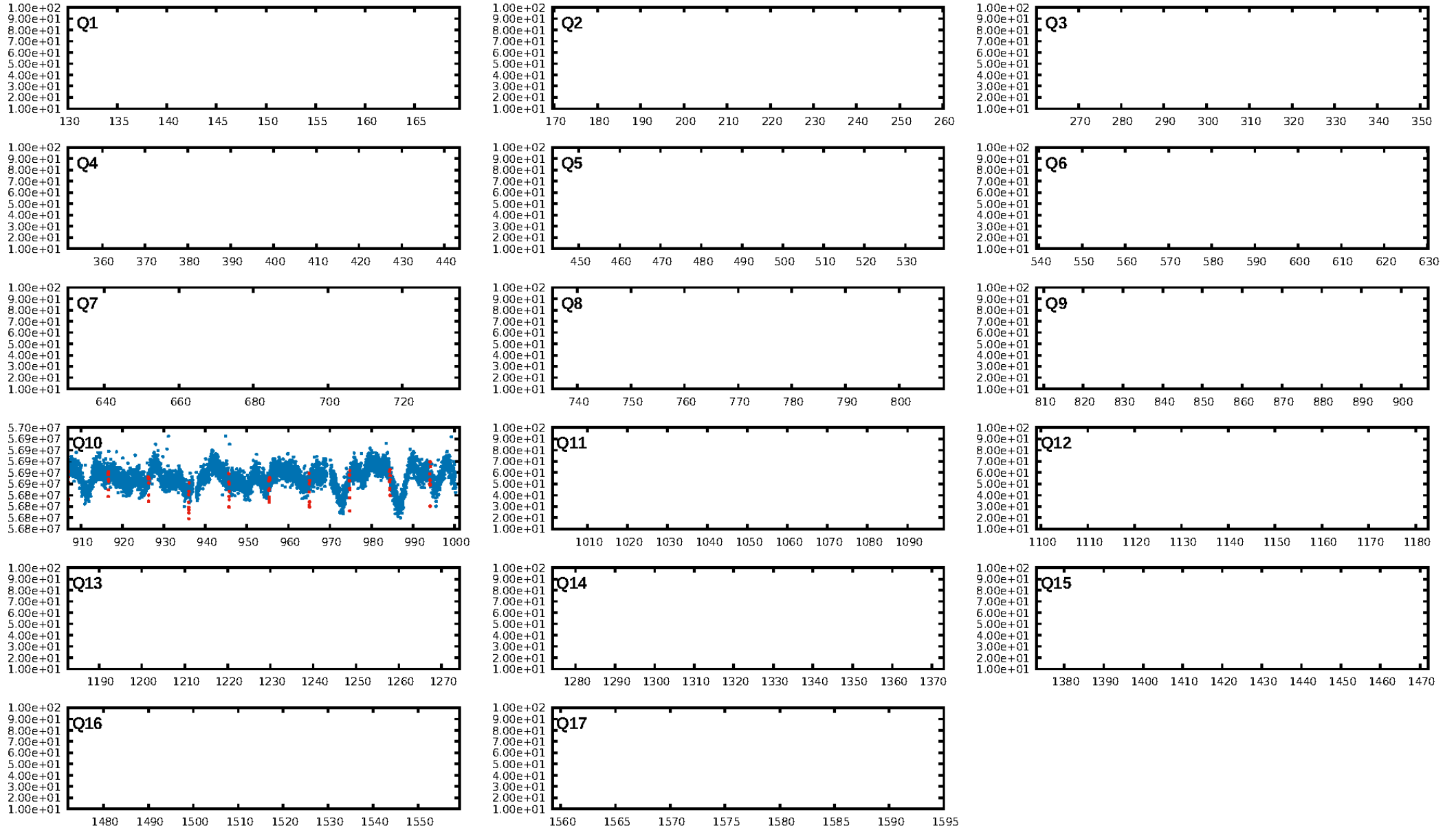
## DV Fit Results:

Period = 9.68860 [0.00008] d  
Epoch = 131.8389 [0.0065] BKJD  
Rp/R\* = 0.0253 [0.0153]  
a/R\* = 28.00 [89.70]  
b = 0.70 [2.32]  
Seff = 250.70 [109.59]  
Teq = 1015 [111] K  
Rp = 3.31 [2.32] Re  
a = 0.0943 [0.0274] AU  
Ag = 28.21 [40.73] [0.67 $\sigma$ ]  
Teffp = 3615 [1259] K [2.06 $\sigma$ ]

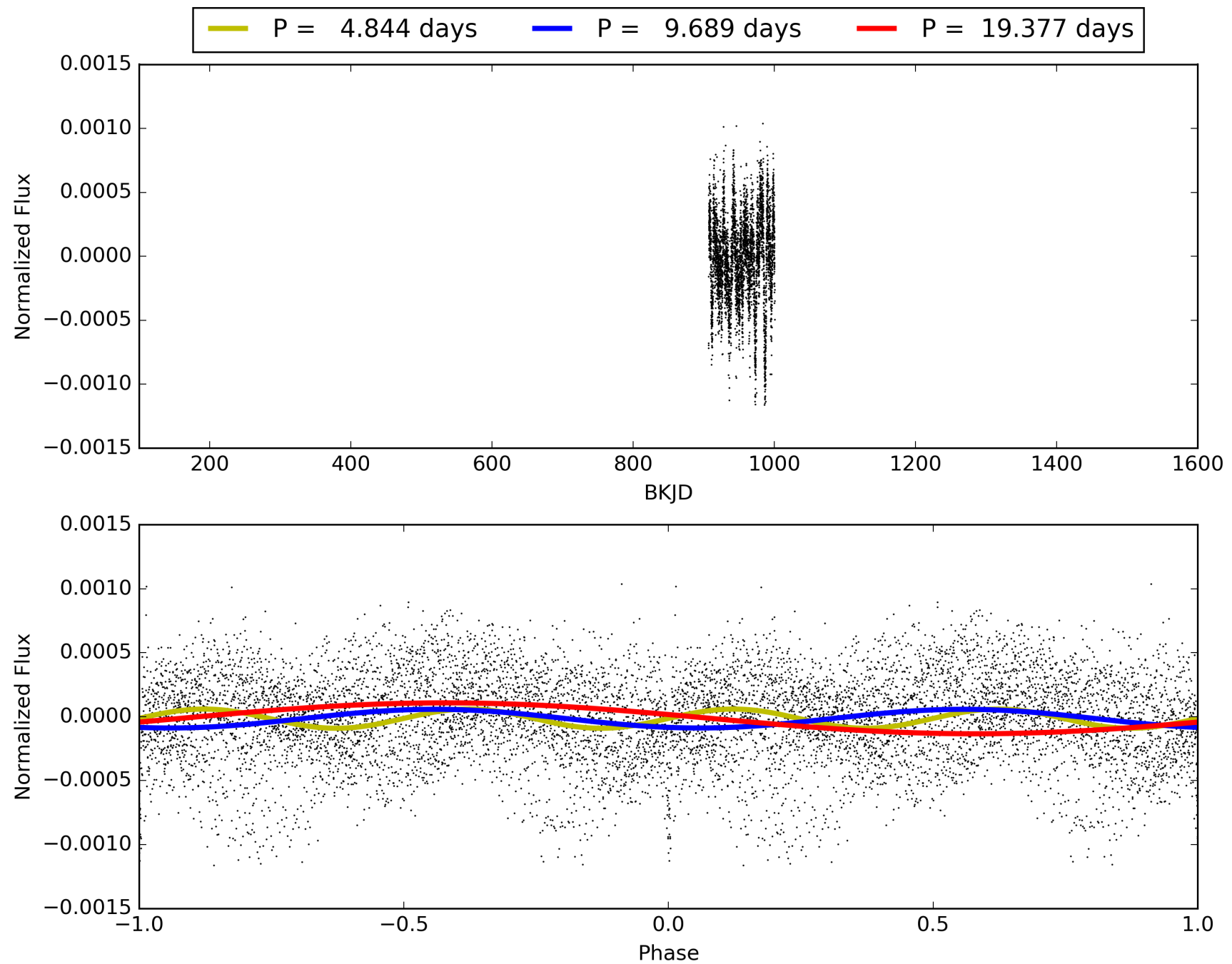
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 27.3%  
ModelChiSquareGof-sig: 93.7%  
Bootstrap-pfa: 1.15e-38  
RollingBand-fgt: 0.80 [8/10]  
GhostDiagnostic-chr: -49.68  
Centroid-sig: 19.2%  
Centroid-so: 0.870 arcsec [0.96 $\sigma$ ]  
OotOffset-rm: 0.689 arcsec [4.21 $\sigma$ ]  
KicOffset-rm: 0.729 arcsec [4.47 $\sigma$ ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

# TCE 005530112-01, PDC Light Curves

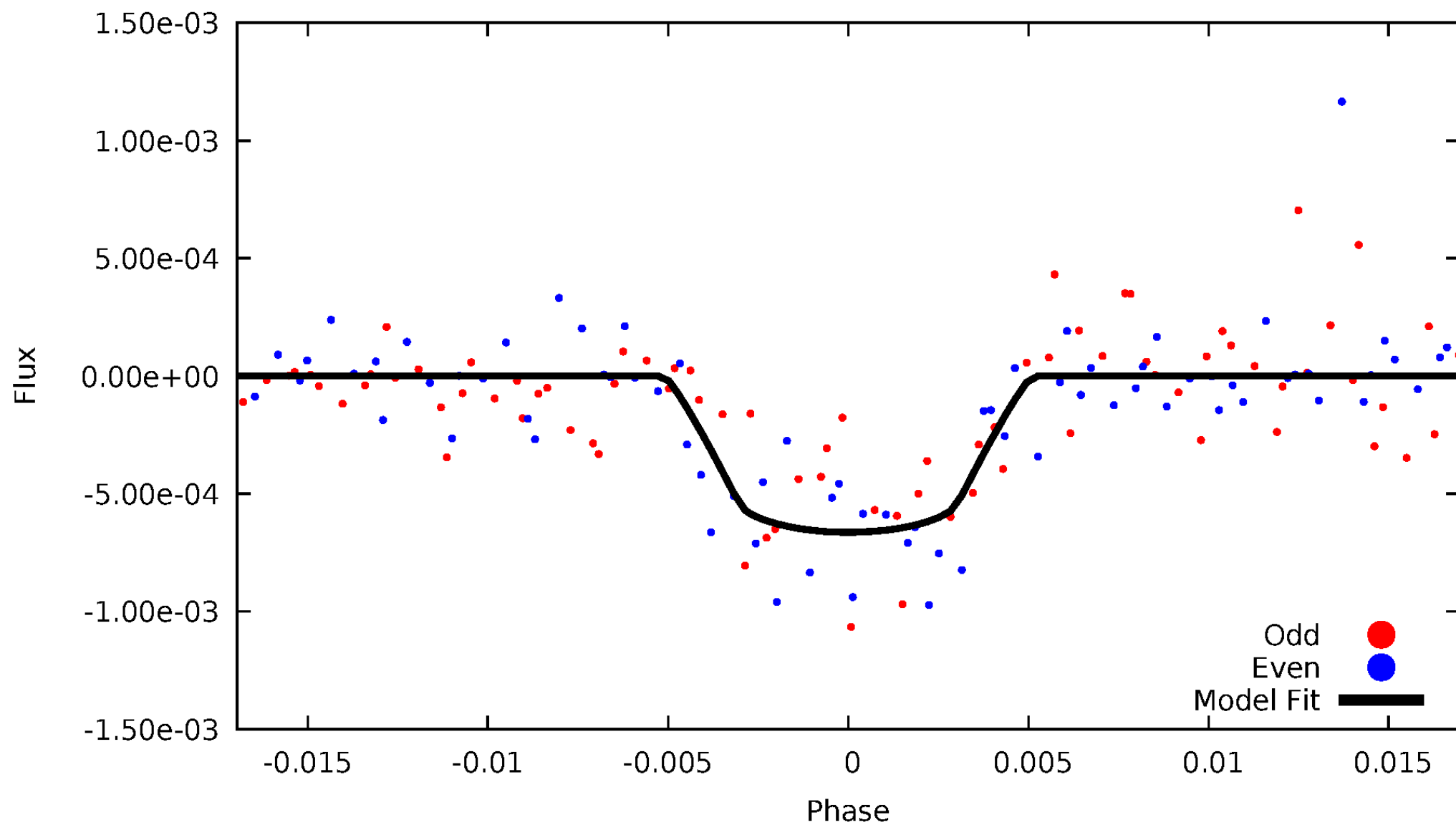


TCE 005530112-01



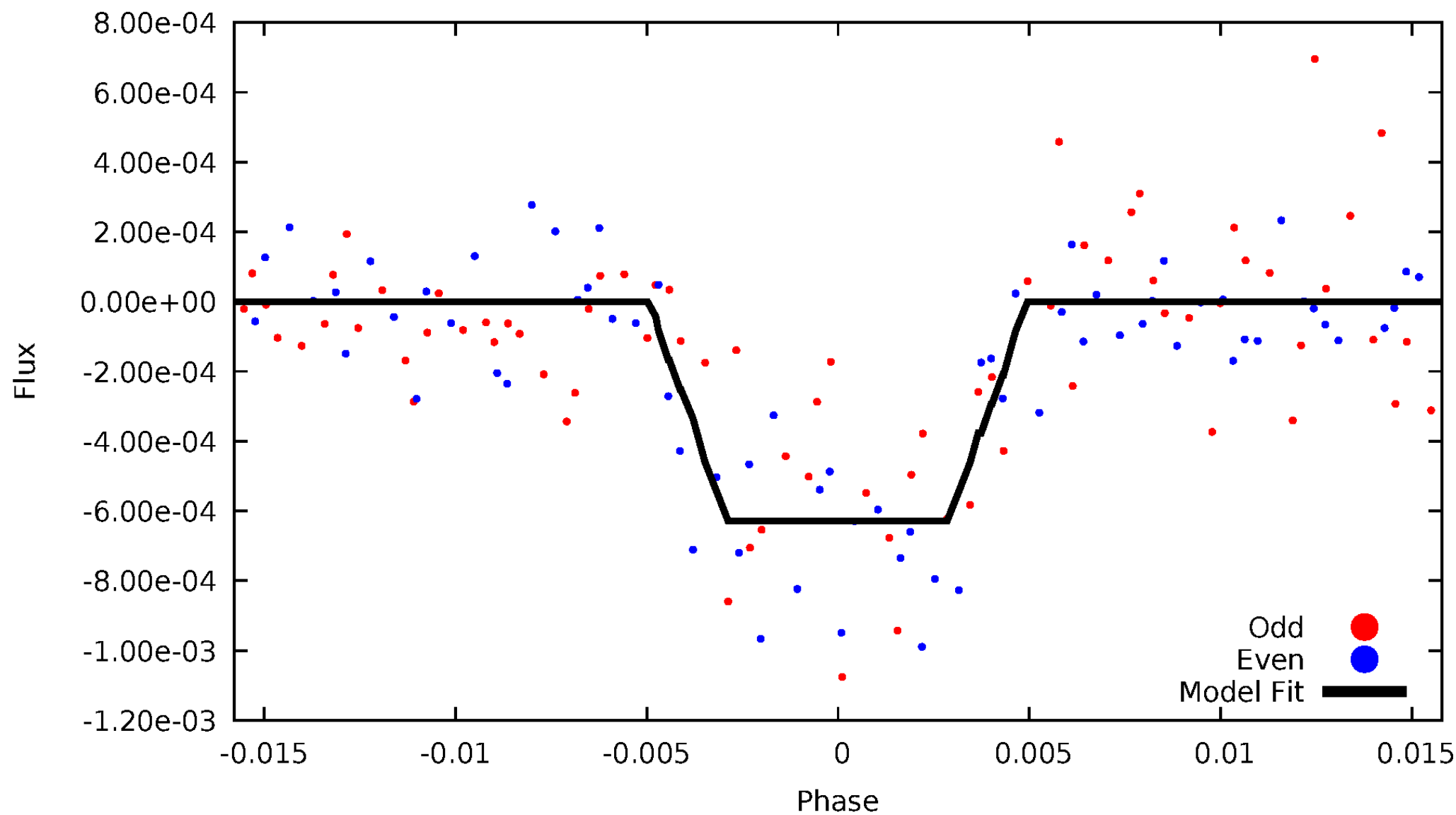
# DV Odd/Even

TCE 005530112-01



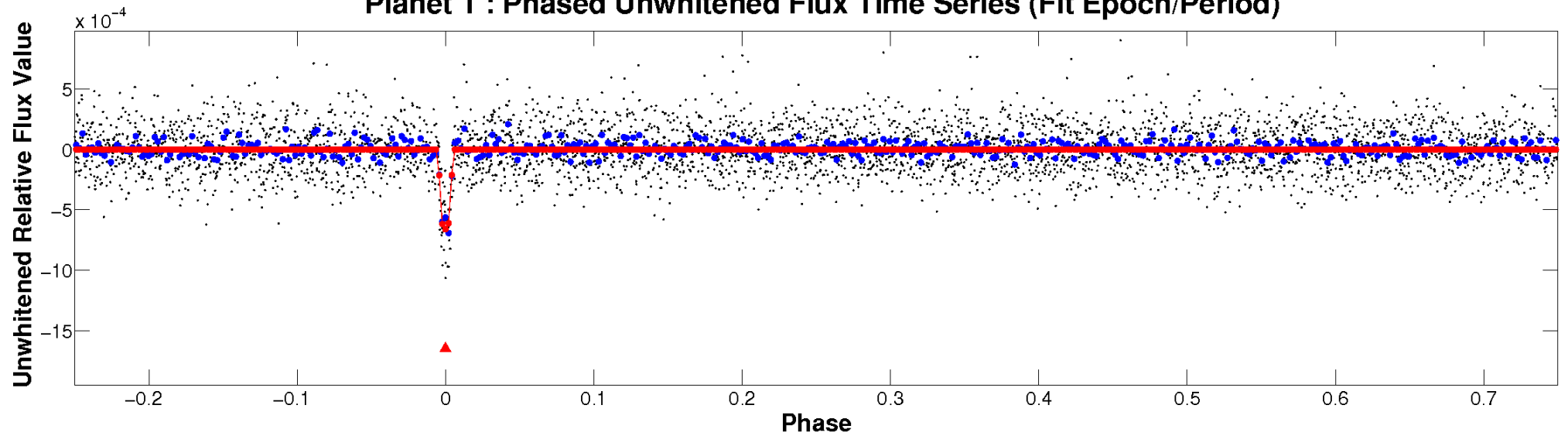
# ALT Odd/Even

TCE 005530112-01

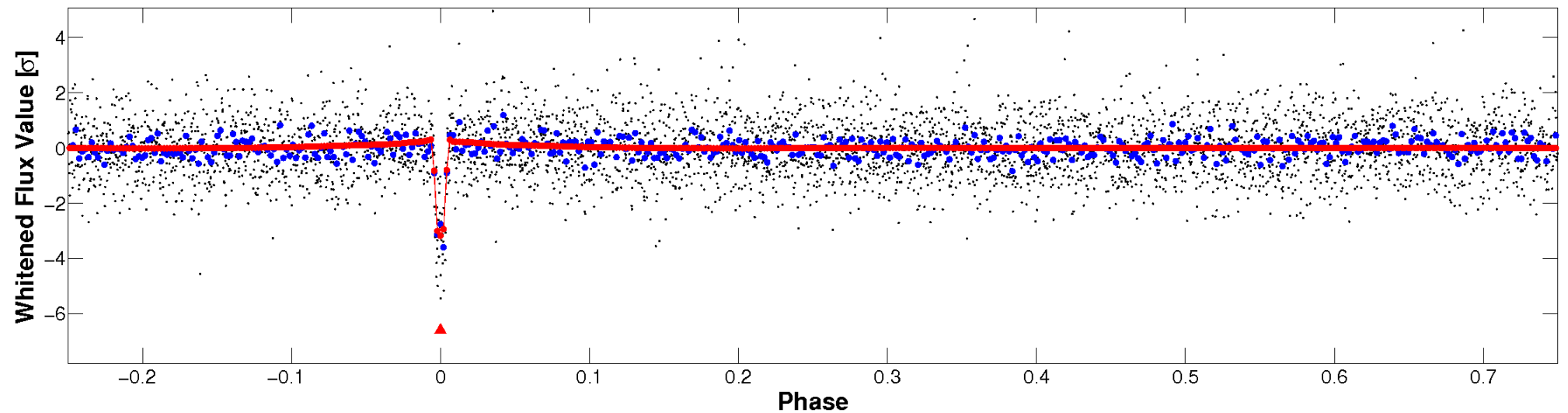


# Non-Whitened Vs. Whitened Light Curve

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

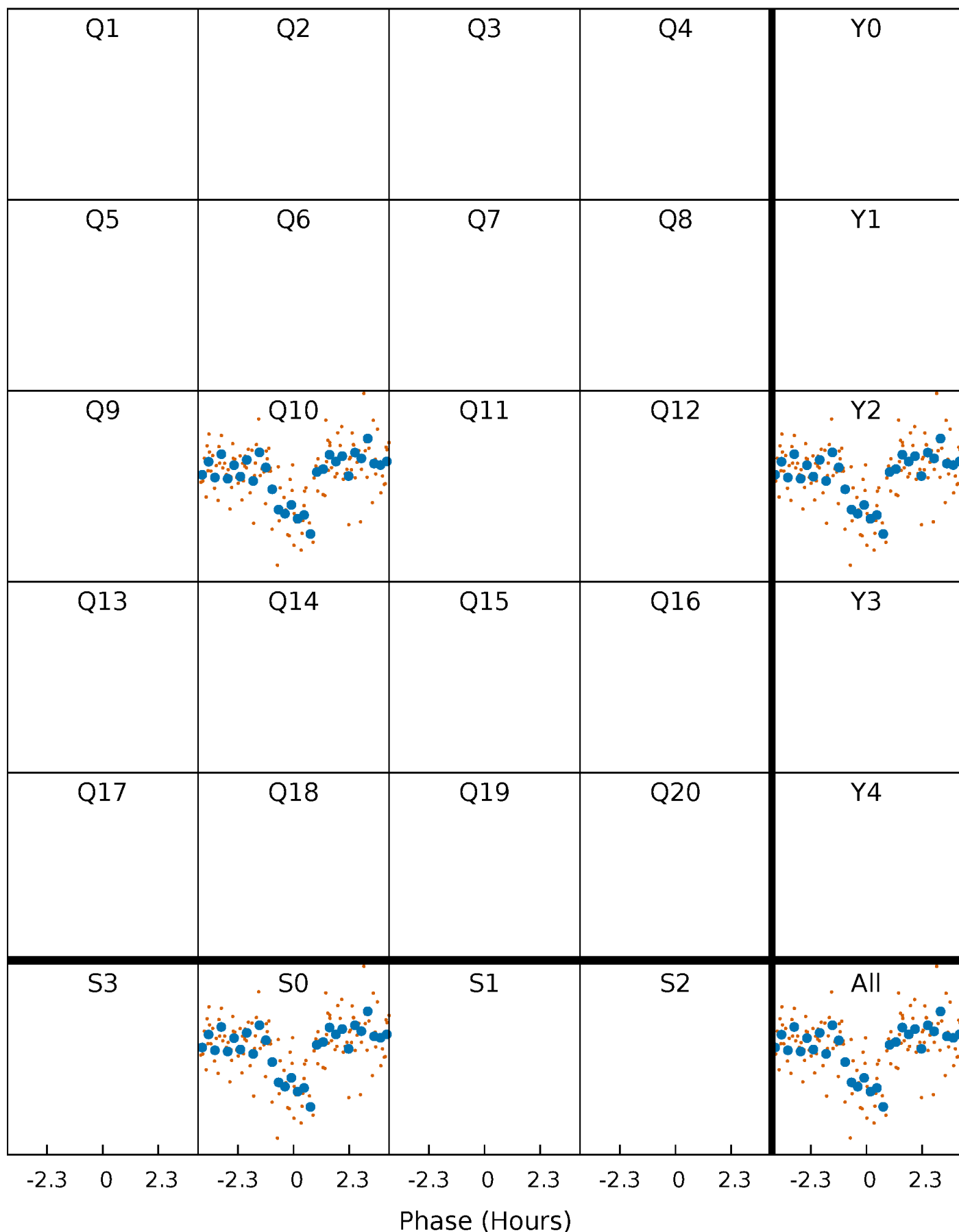


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

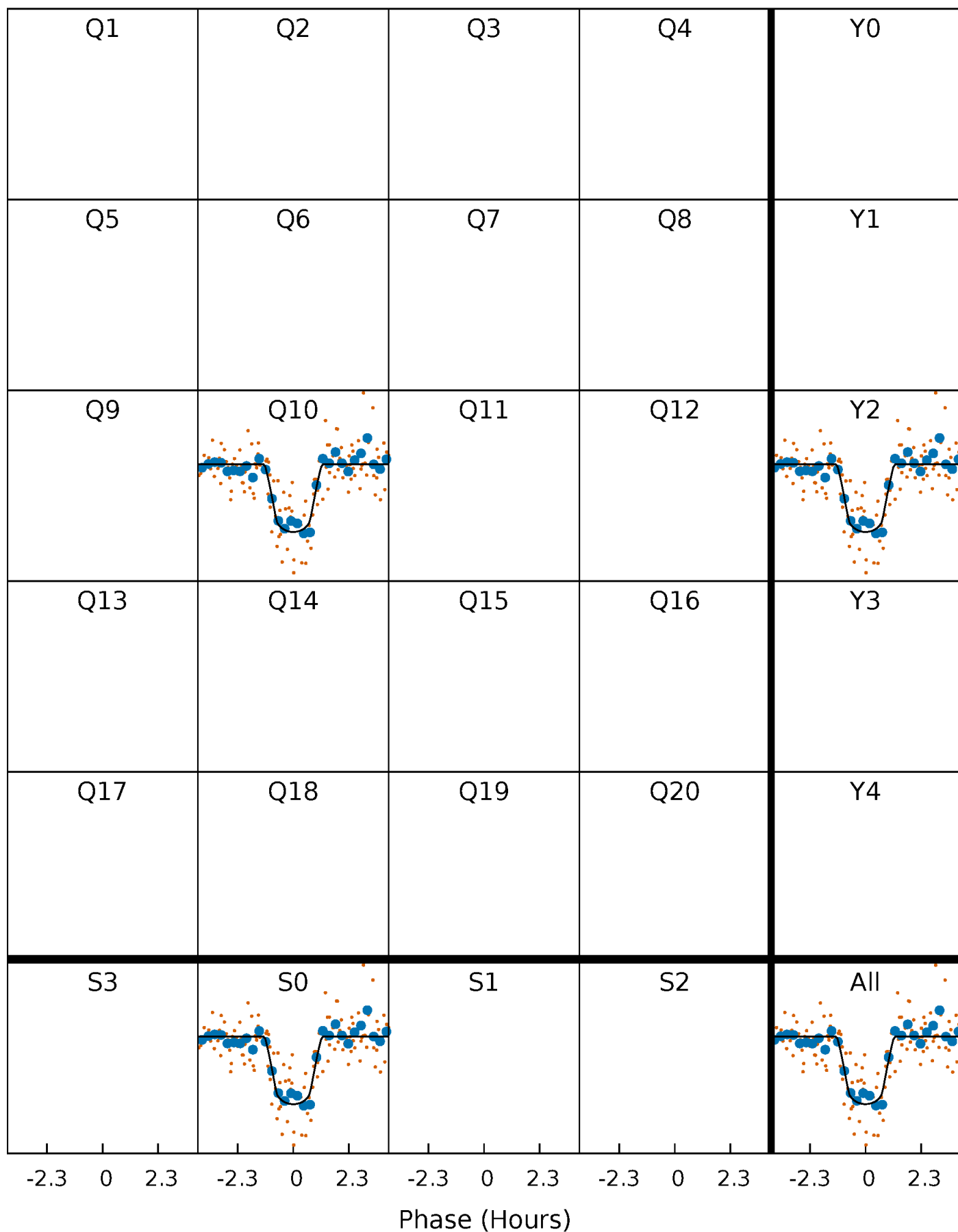
TCE 005530112-01 P= 9.688599 Days  $T_0=131.838916$  (BKJD)





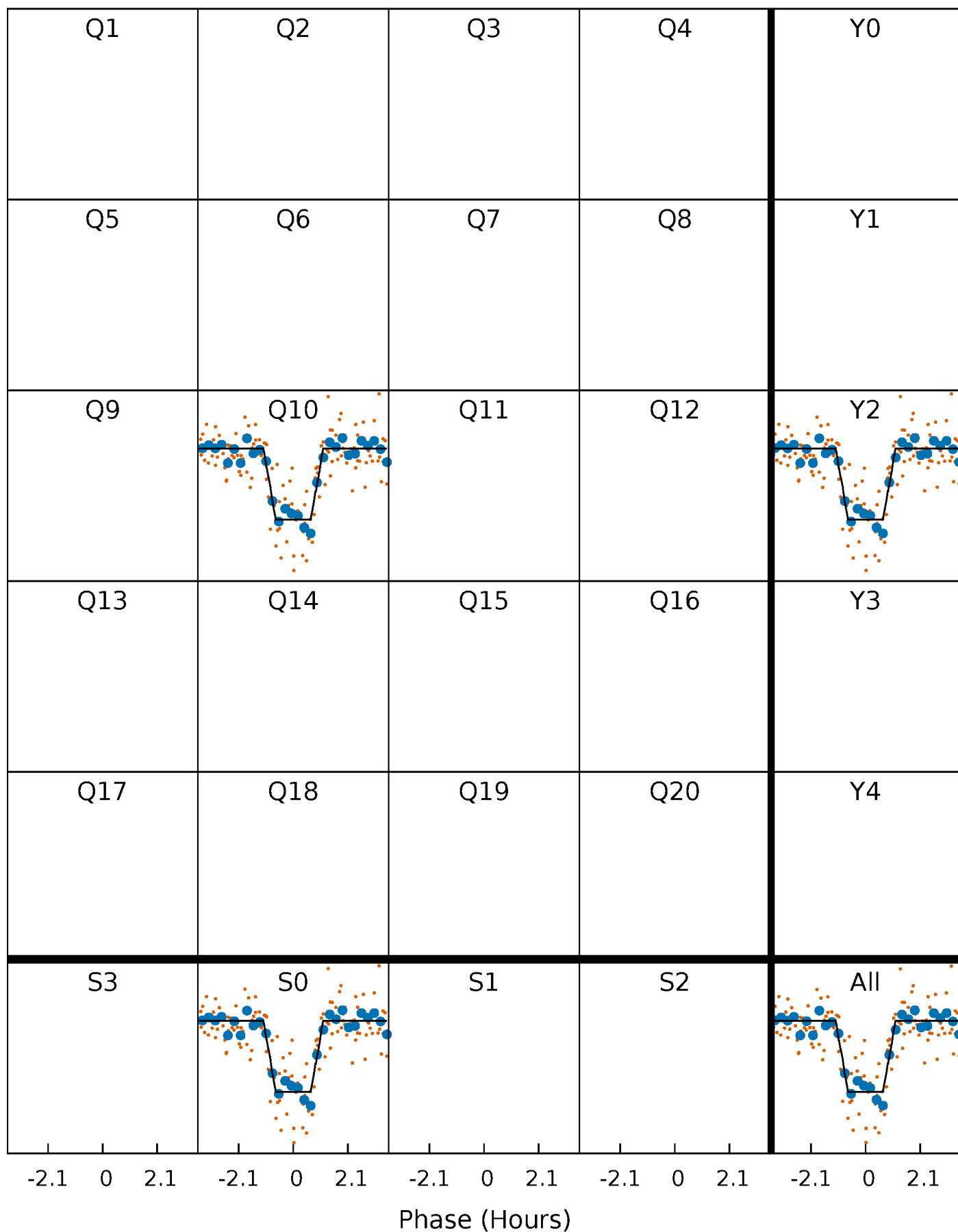
# DV Quarter-Phased Transit Curves

TCE 005530112-01 P= 9.688599 Days  $T_0=131.838916$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

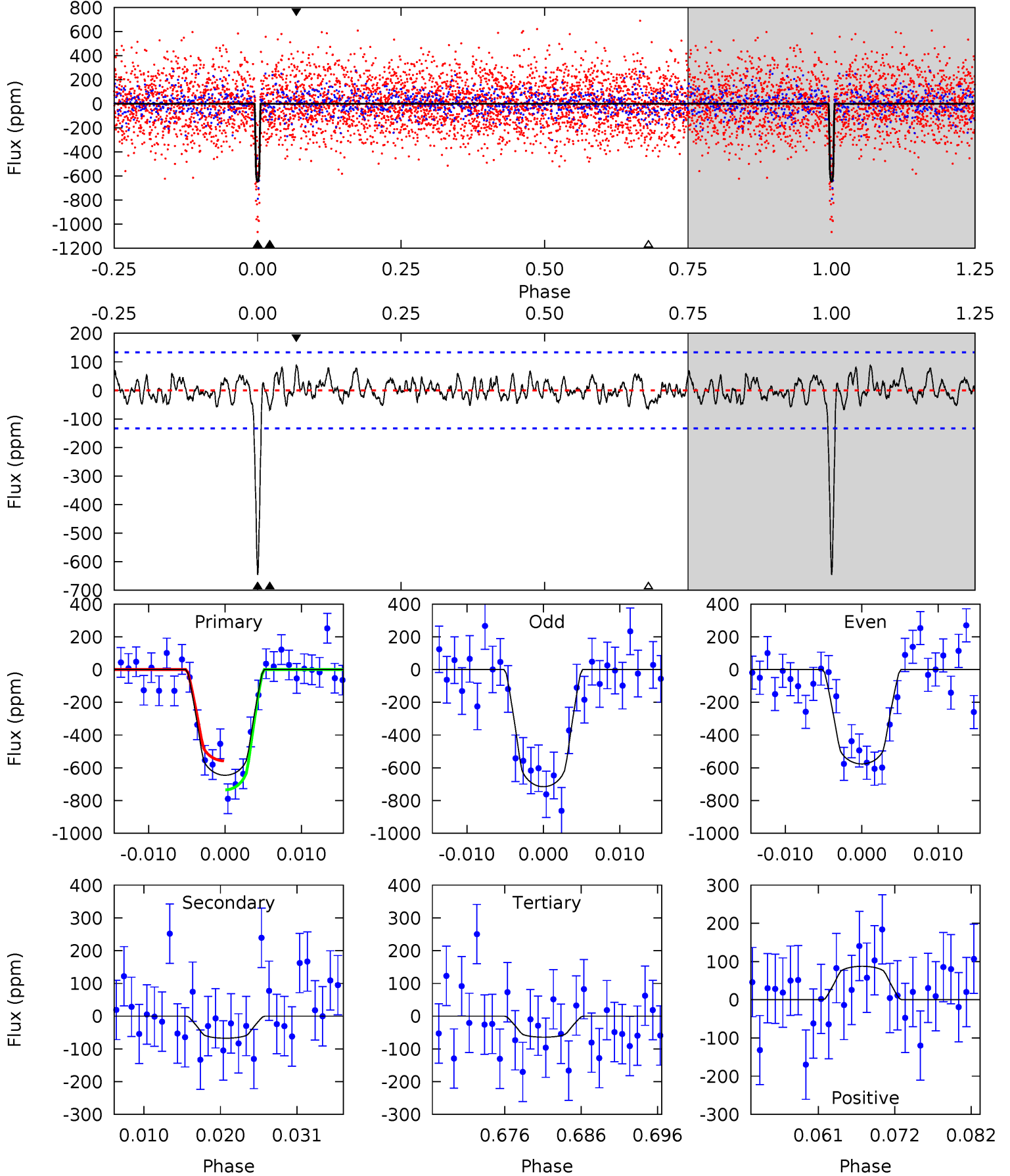
TCE 005530112-01 P= 9.688503 Days  $T_0=131.846938$  (BKJD)



# DV Model-Shift Uniqueness Test

005530112-01, P = 9.688599 Days, E = 131.838916 Days

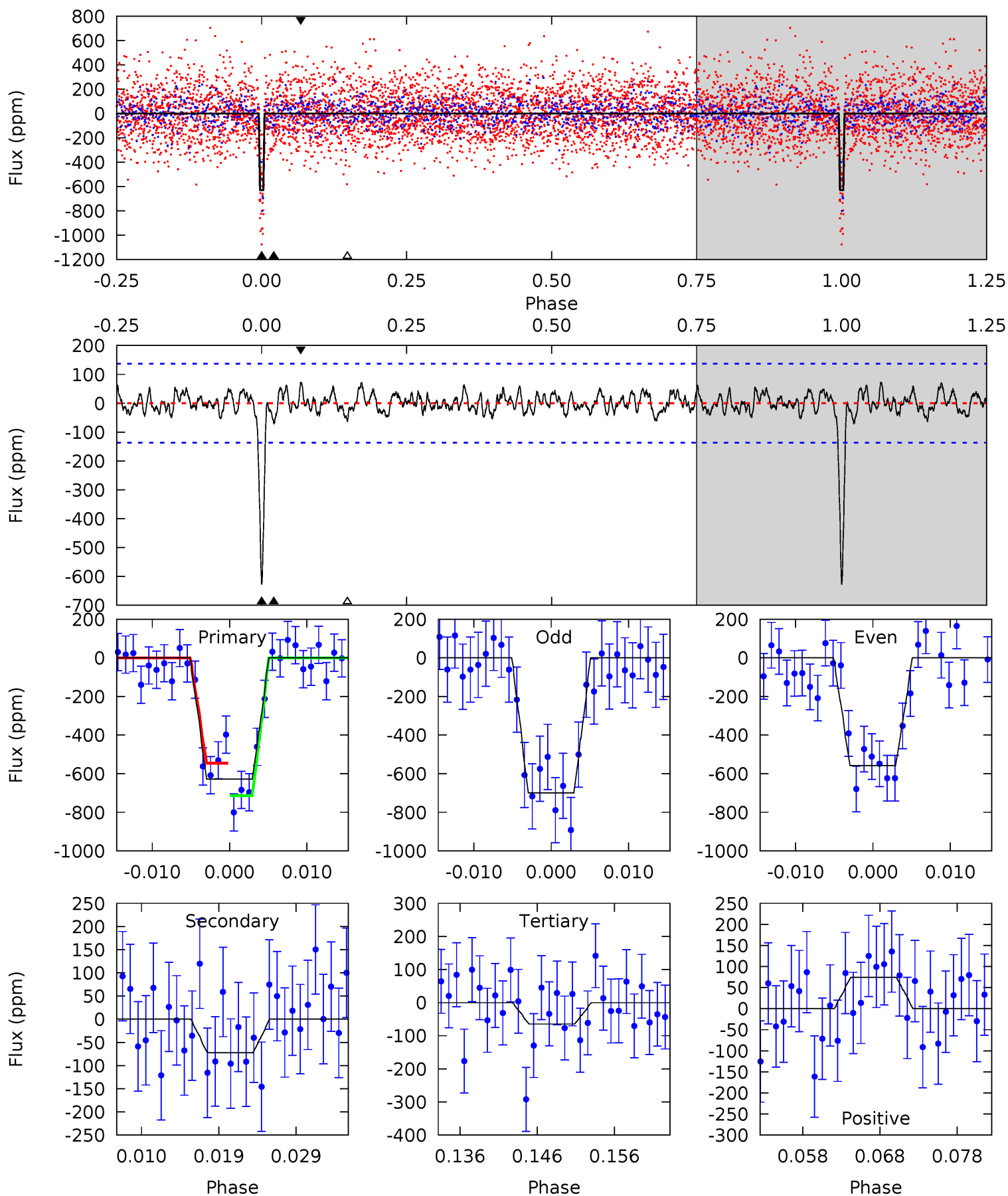
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 24.3 | 2.54 | 2.42 | 3.30 | 5.02            | 2.57            | 1.06             | 21.9    | 21.0    | 0.12    | -0.76   | 2.64    | 1.03 | 0.12  | 3.34 |



# Alt Model-Shift Uniqueness Test

005530112-01, P = 9.688503 Days, E = 131.846938 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  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 23.1 | 2.67 | 2.38 | 2.73 | 5.03            | 2.59            | 0.97             | 20.8    | 20.4    | 0.29    | -0.06   | 2.65    | 1.00 | 0.11  | 3.11 |



### Stellar Parameters For KIC 005530112

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6457^{+179}_{-246}$ | $4.358^{+0.072}_{-0.217}$ | $-0.060^{+0.250}_{-0.300}$ | $1.196^{+0.428}_{-0.143}$ | $1.190^{+0.181}_{-0.163}$ | $0.980^{+0.372}_{-0.515}$                 |
|        | +3%/-4%              | +2%/-5%                   | +417%/-500%                | +36%/-12%                 | +15%/-14%                 | +38%/-53%                                 |
| 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 005530112-01 / KOI 4067.01

| Detrend | Depth (ppm)  | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$  | $A_{\text{obs}}$  |
|---------|--------------|------------------------|----------------------|-----------------------|-------------------|
| DV      | $-67 \pm 27$ | $3.71^{+2.06}_{-1.98}$ | $1439^{+107}_{-79}$  | $3850^{+1400}_{-533}$ | $23^{+81}_{-14}$  |
| Alt.    | $-73 \pm 27$ | $3.46^{+2.30}_{-1.91}$ | $1446^{+110}_{-77}$  | $3986^{+1540}_{-686}$ | $27^{+111}_{-19}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

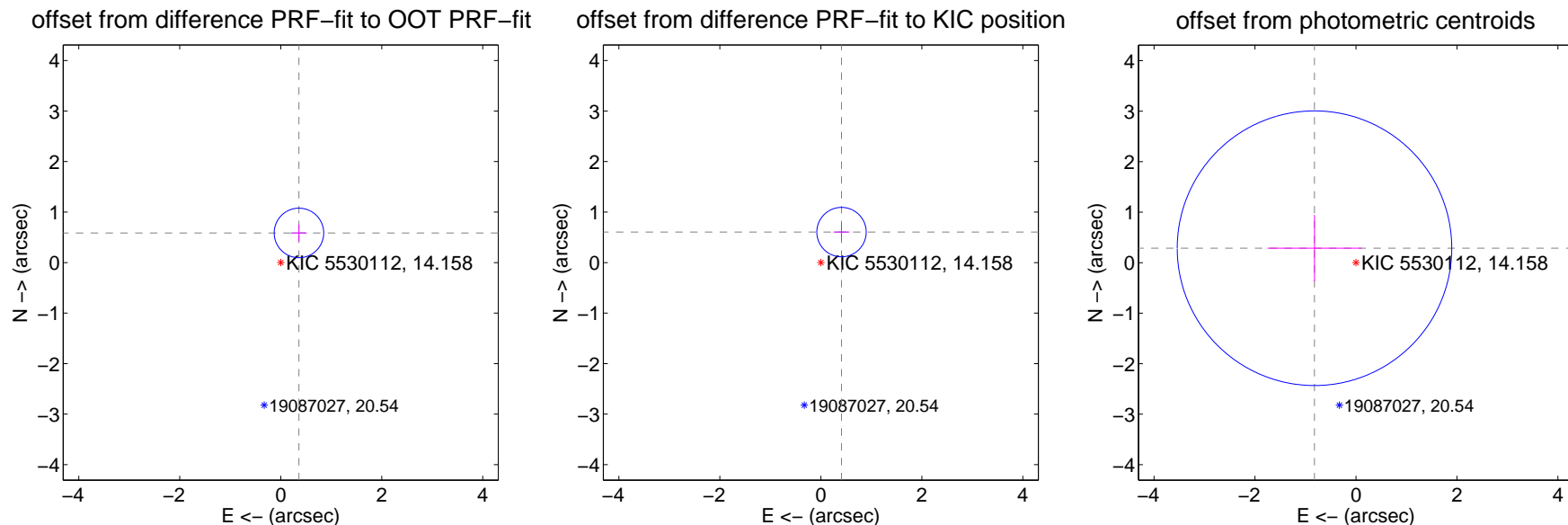
## DV Centroid Data

Supplemental centroid analysis for 005530112-01. Kepler magnitude: 14.16. Transit SNR 16.67

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.689 \pm 0.163$  | 4.21                | $-0.360 \pm 0.155$ | $0.587 \pm 0.166$ |
| PRF-fit source offset from KIC position | $0.729 \pm 0.163$  | 4.47                | $-0.409 \pm 0.155$ | $0.604 \pm 0.166$ |
| photometric centroid source offset      | $0.87 \pm 0.91$    | 0.96                | $0.82 \pm 0.93$    | $0.29 \pm 0.66$   |



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.

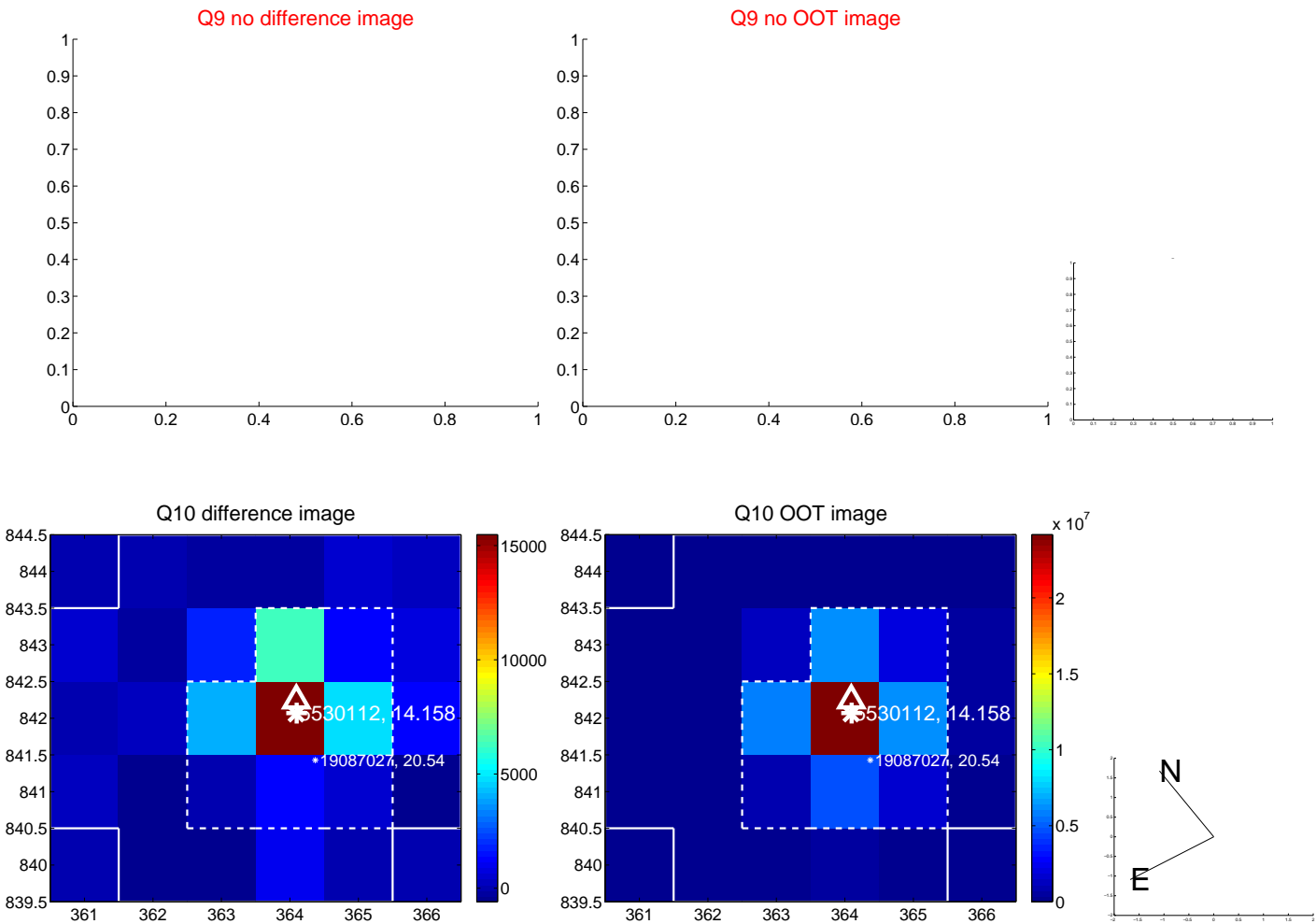


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





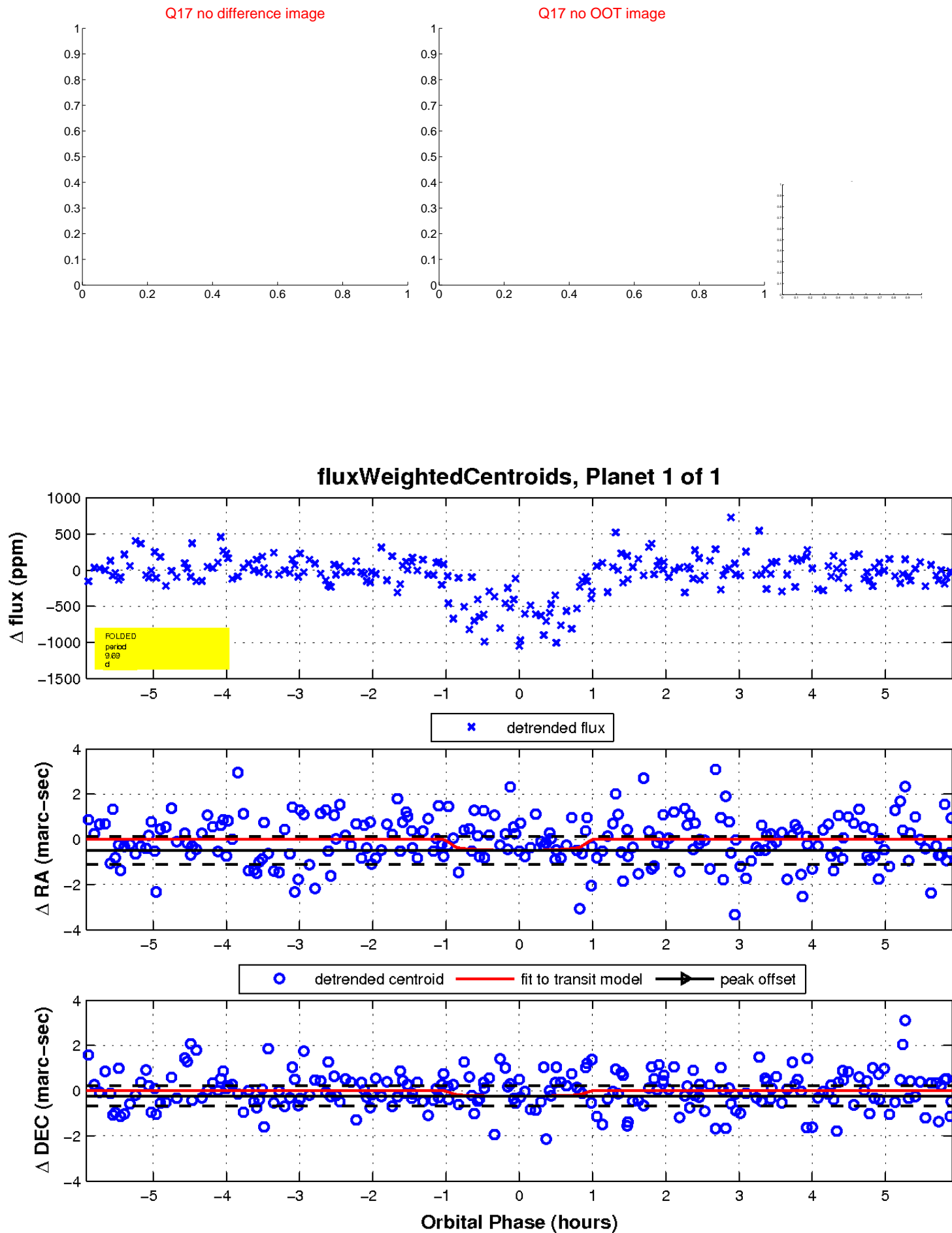
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

