

KIC 012554485

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 012554485-01 | OBS | 8238.01 | 495.663507 | 561.411926 | 673.0 | 4.672 | 8.7 | 8.8 | 0.82 | 5515 | 2.75 | 0.43 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|----------------|
| 012554485-01 | OBS | PC | 0.44 | 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.

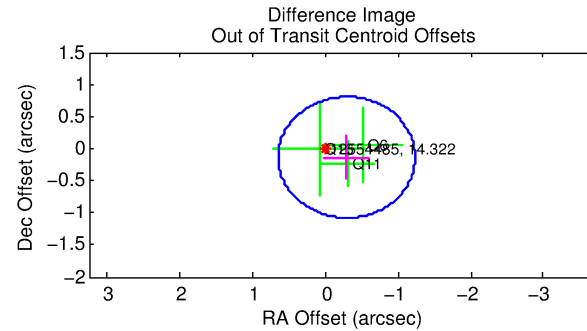
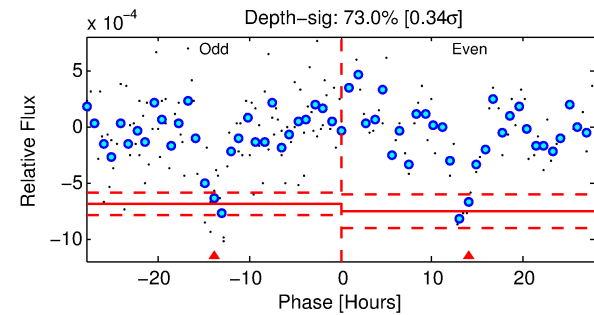
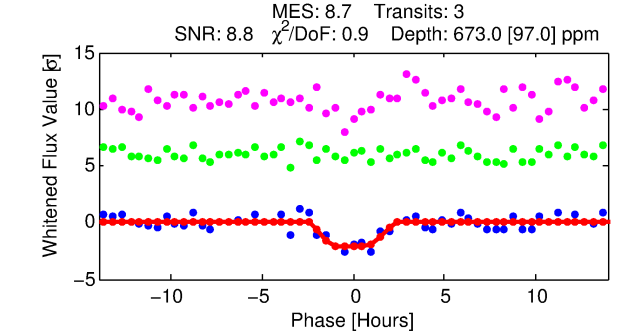
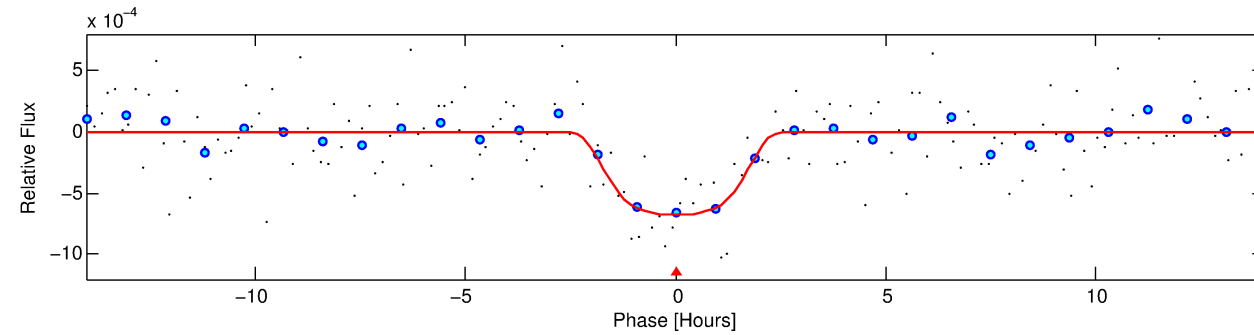
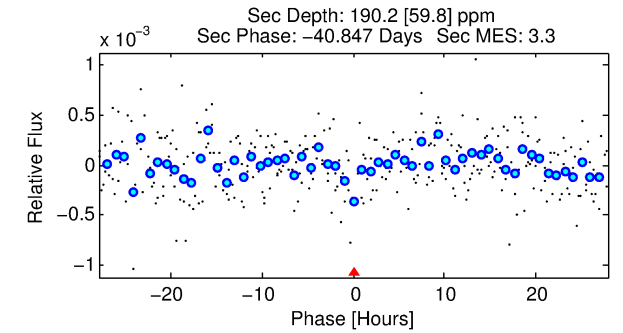
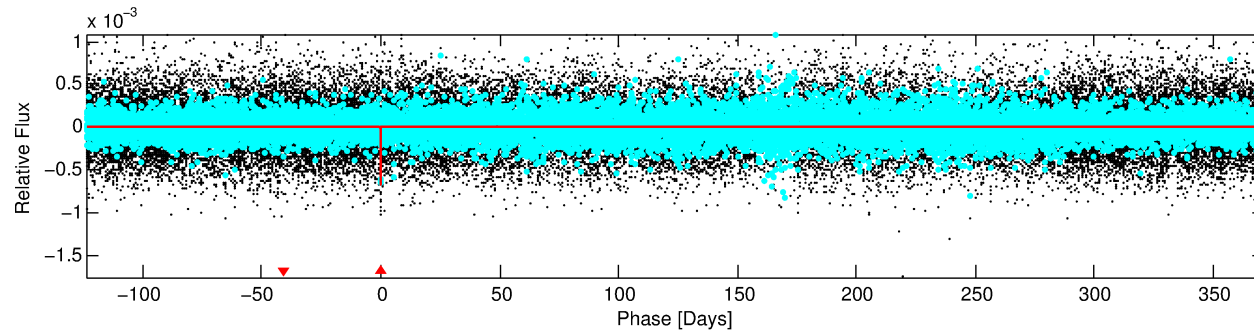
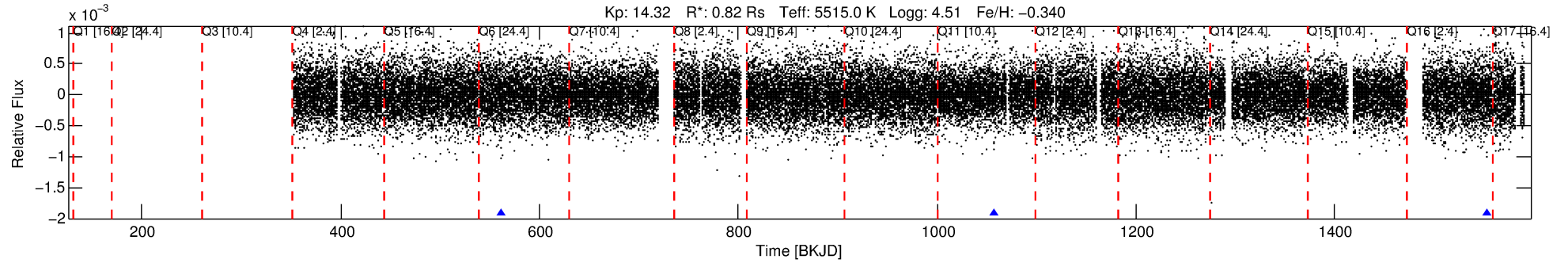
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012554485-01

No Significant Match Found

DV One-Page Summary

KIC: 12554485 Candidate: 1 of 1 Period: 495.664 d



DV Fit Results:

Period = 495.66351 [0.00858] d
Epoch = 561.4119 [0.0114] BKJD
Rp/R* = 0.0308 [0.0037]
a/R* = 313.50 [99.95]
b = 0.96 [0.03]
Seff = 0.43 [0.12]
Teff = 207 [15] K
Rp = 2.75 [0.66] Re
a = 1.1342 [0.1944] AU
Ag = 17776.95 [8251.45] [2.15 σ]
Teffp = 3693 [386] K [9.02 σ]

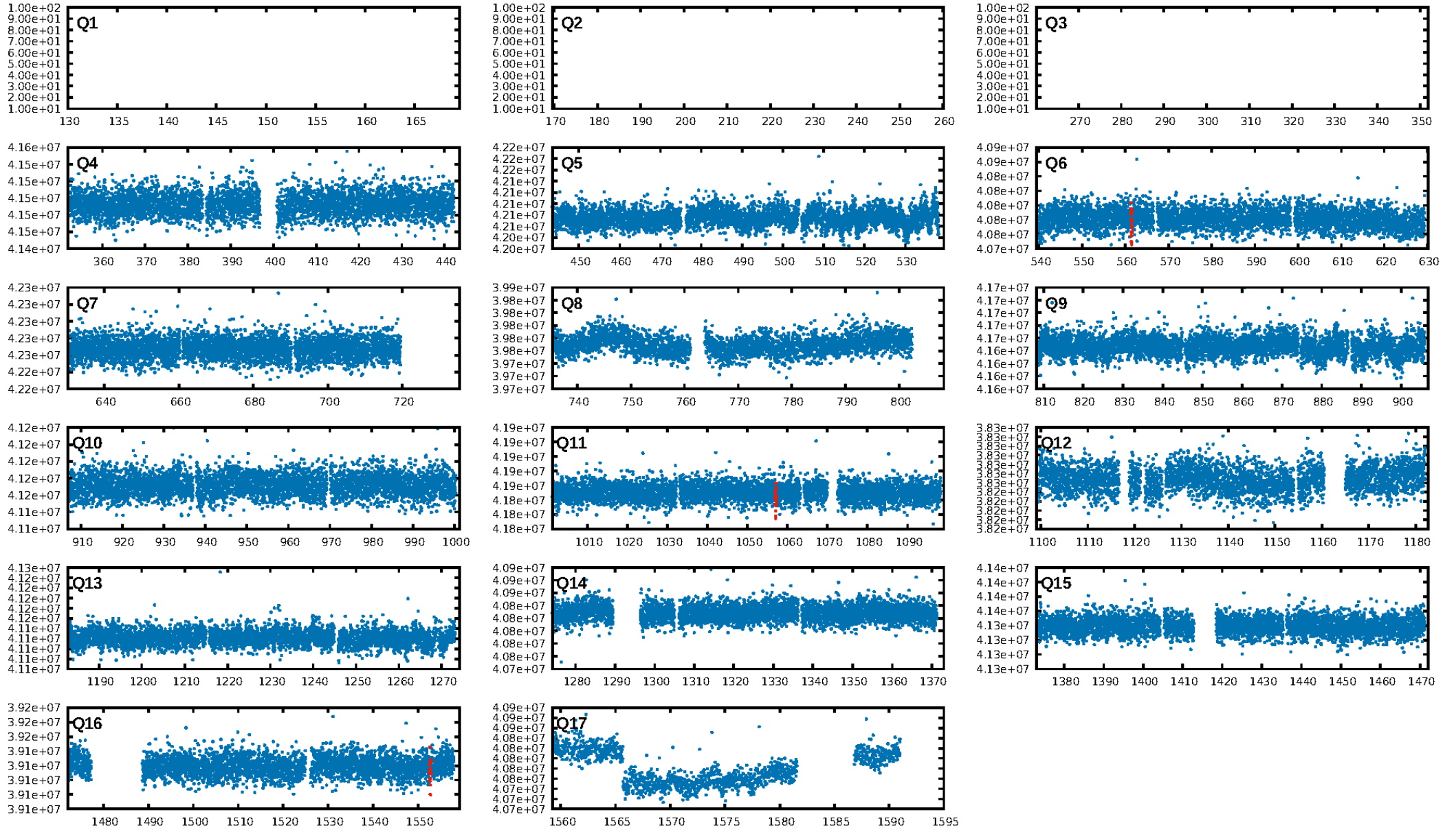
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 94.7%
ModelChiSquareGof-sig: 98.9%
Bootstrap-pfa: 2.81e-16
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.996
Centroid-sig: 8.8%
Centroid-so: 1.896 arcsec [1.35 σ]
OotOffset-rm: 0.322 arcsec [1.02 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.364 arcsec [1.12 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

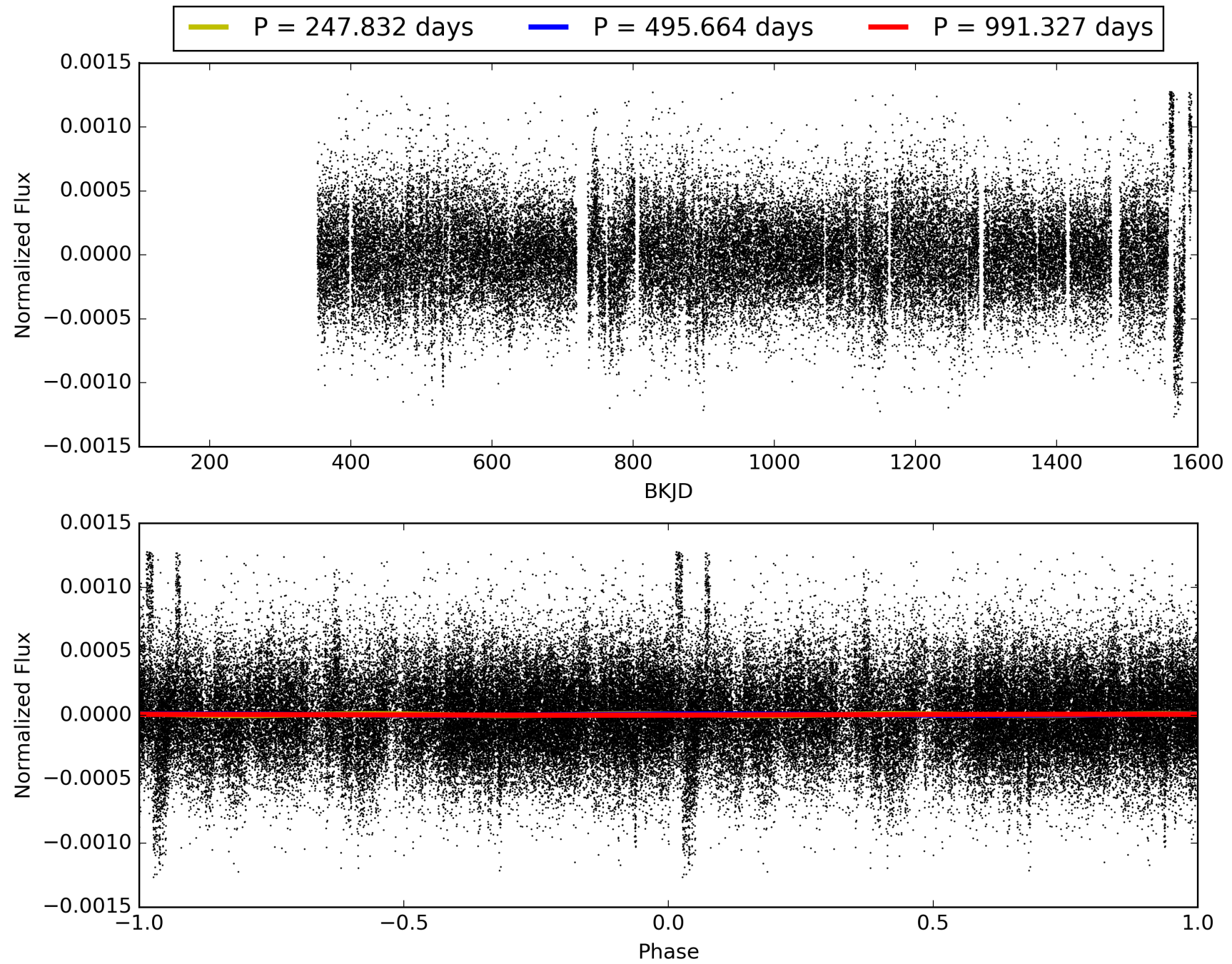
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:01:32 Z

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

TCE 012554485-01, PDC Light Curves

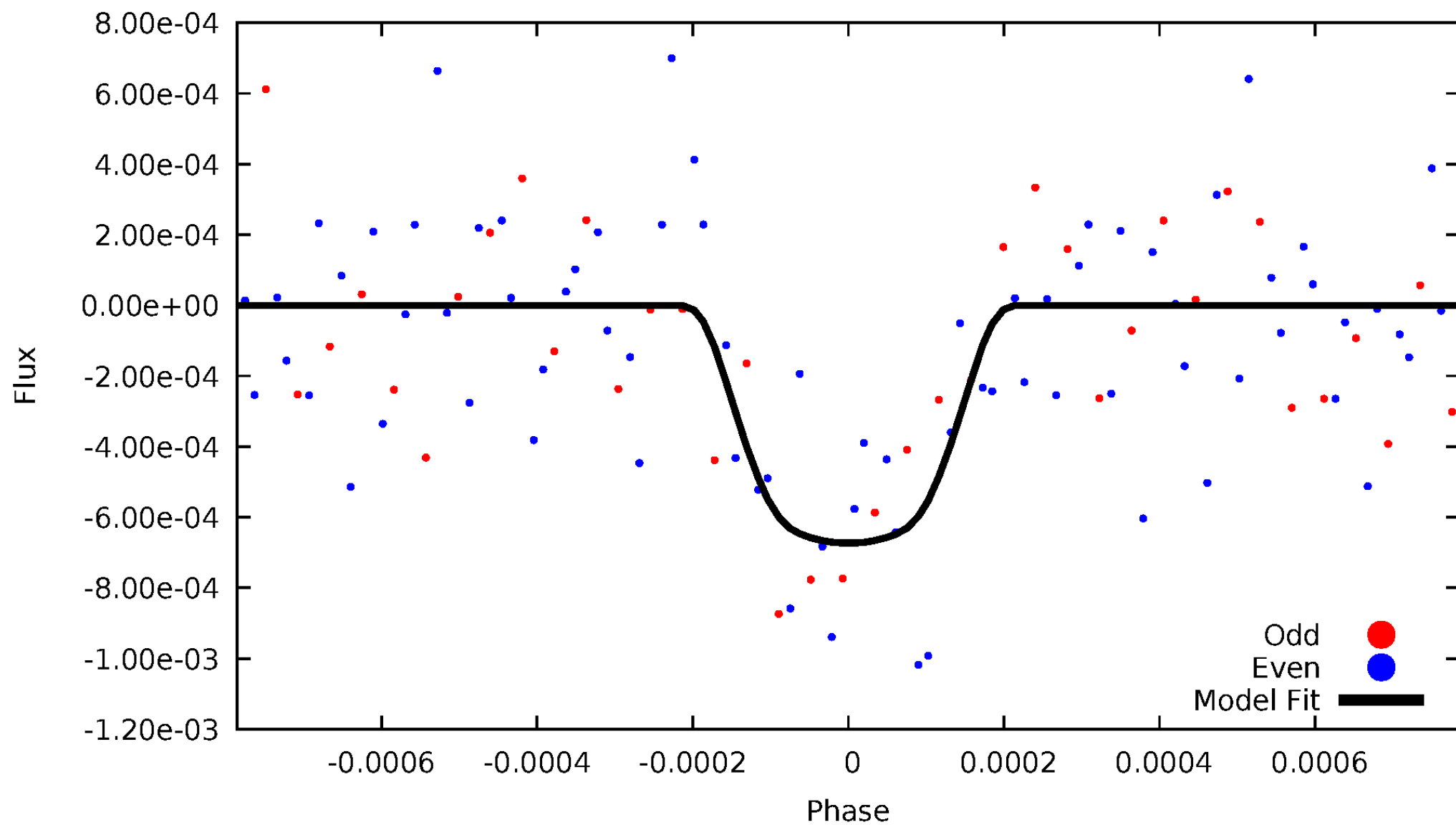


TCE 012554485-01



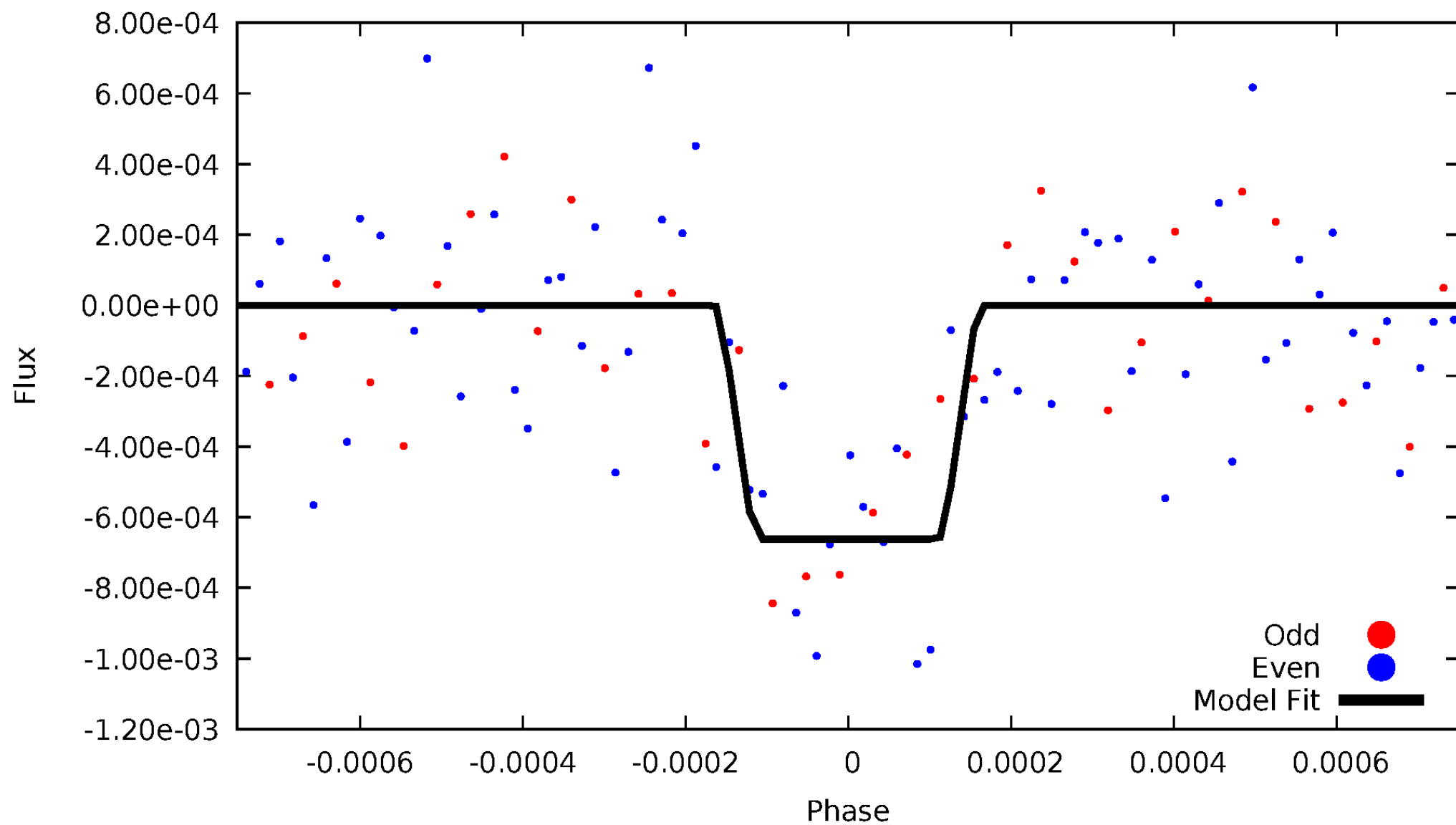
DV Odd/Even

TCE 012554485-01

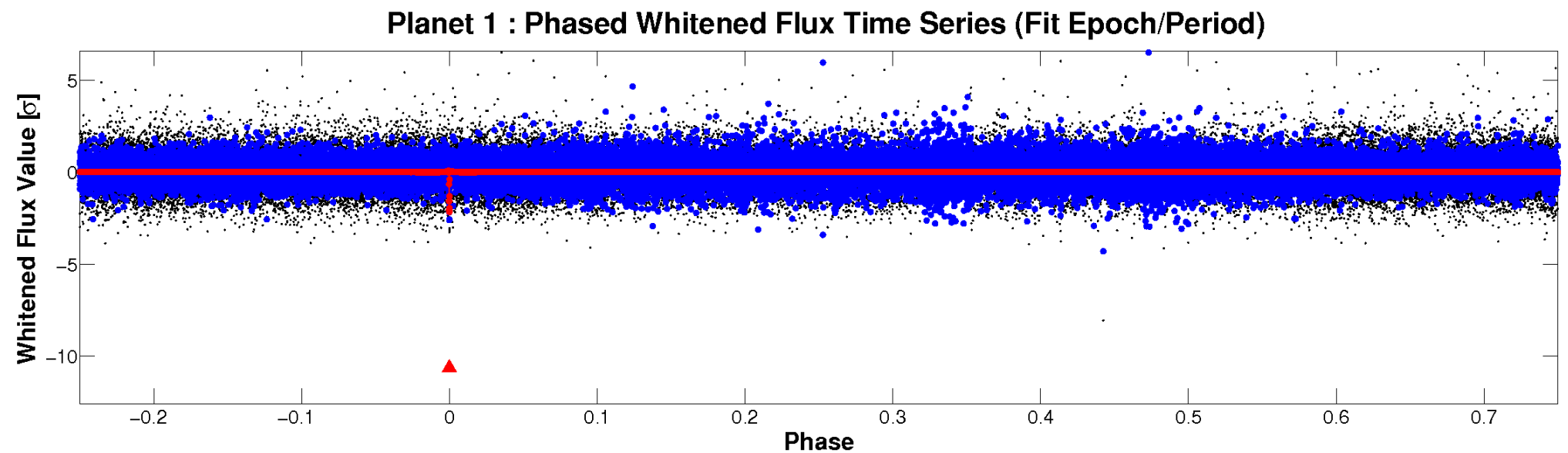
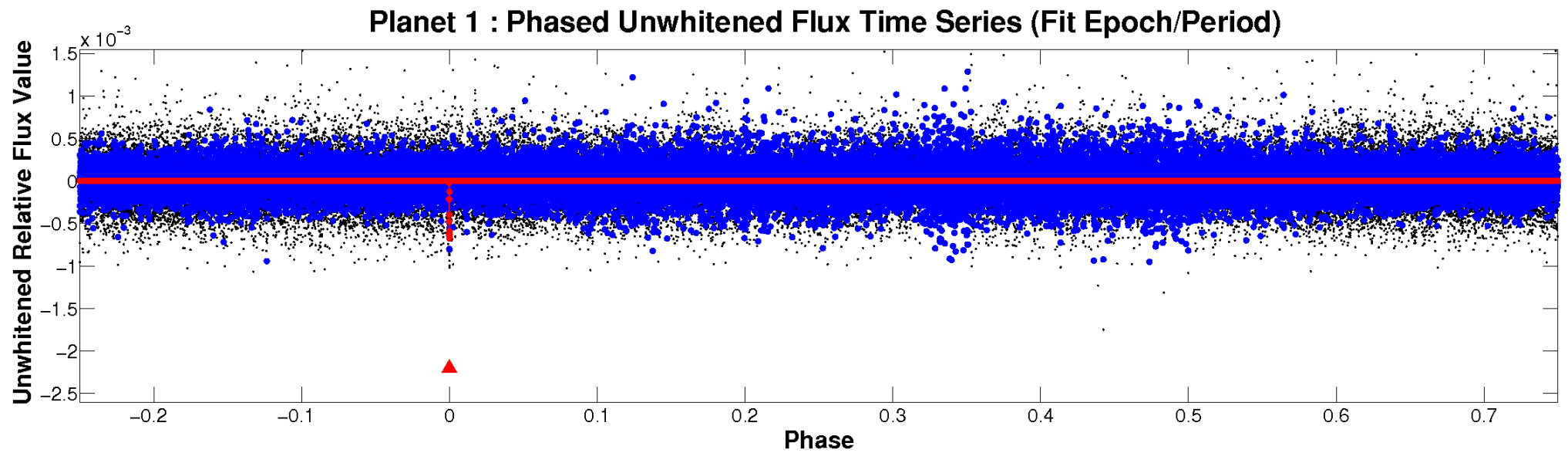


ALT Odd/Even

TCE 012554485-01

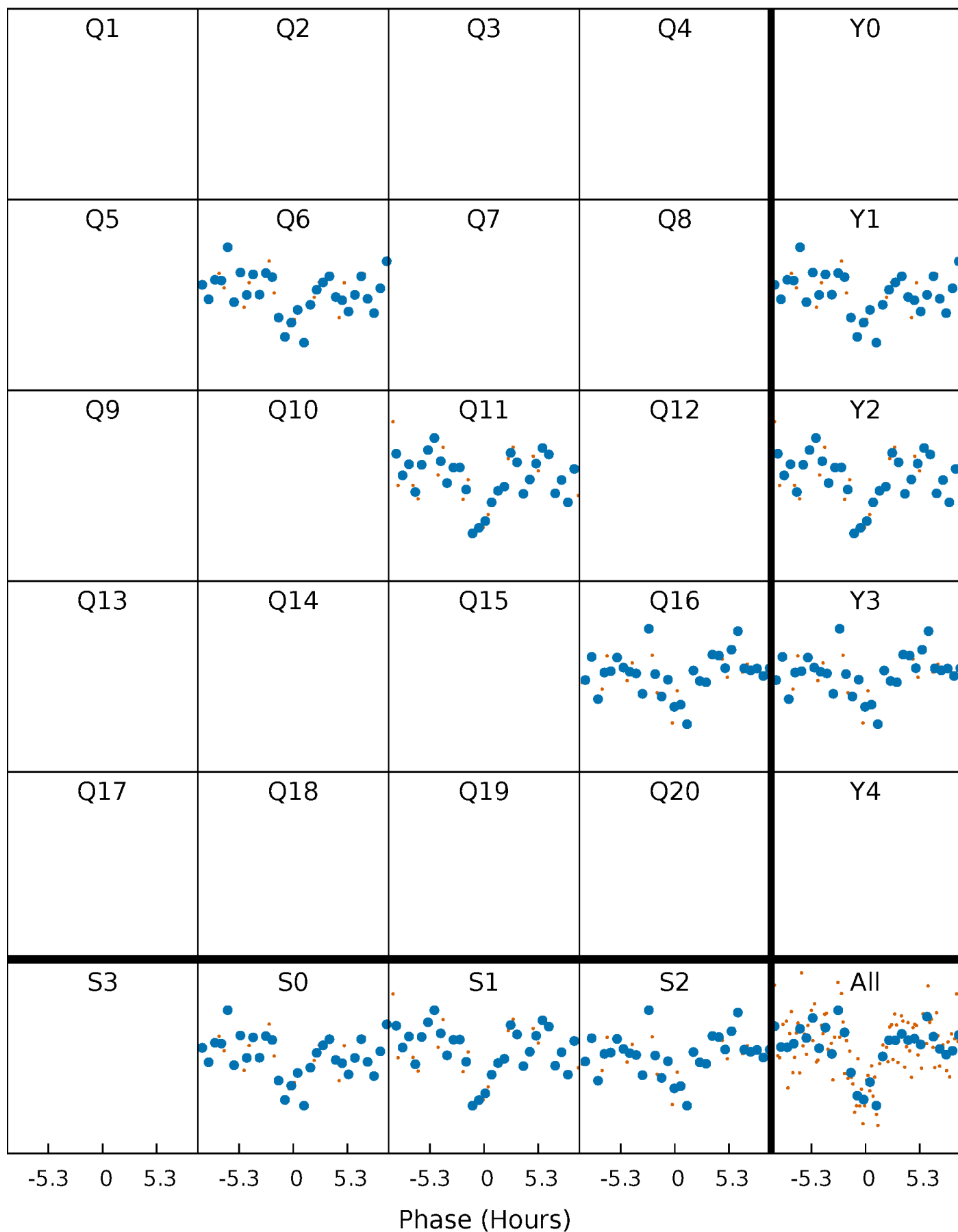


Non-Whitened Vs. Whitened Light Curve



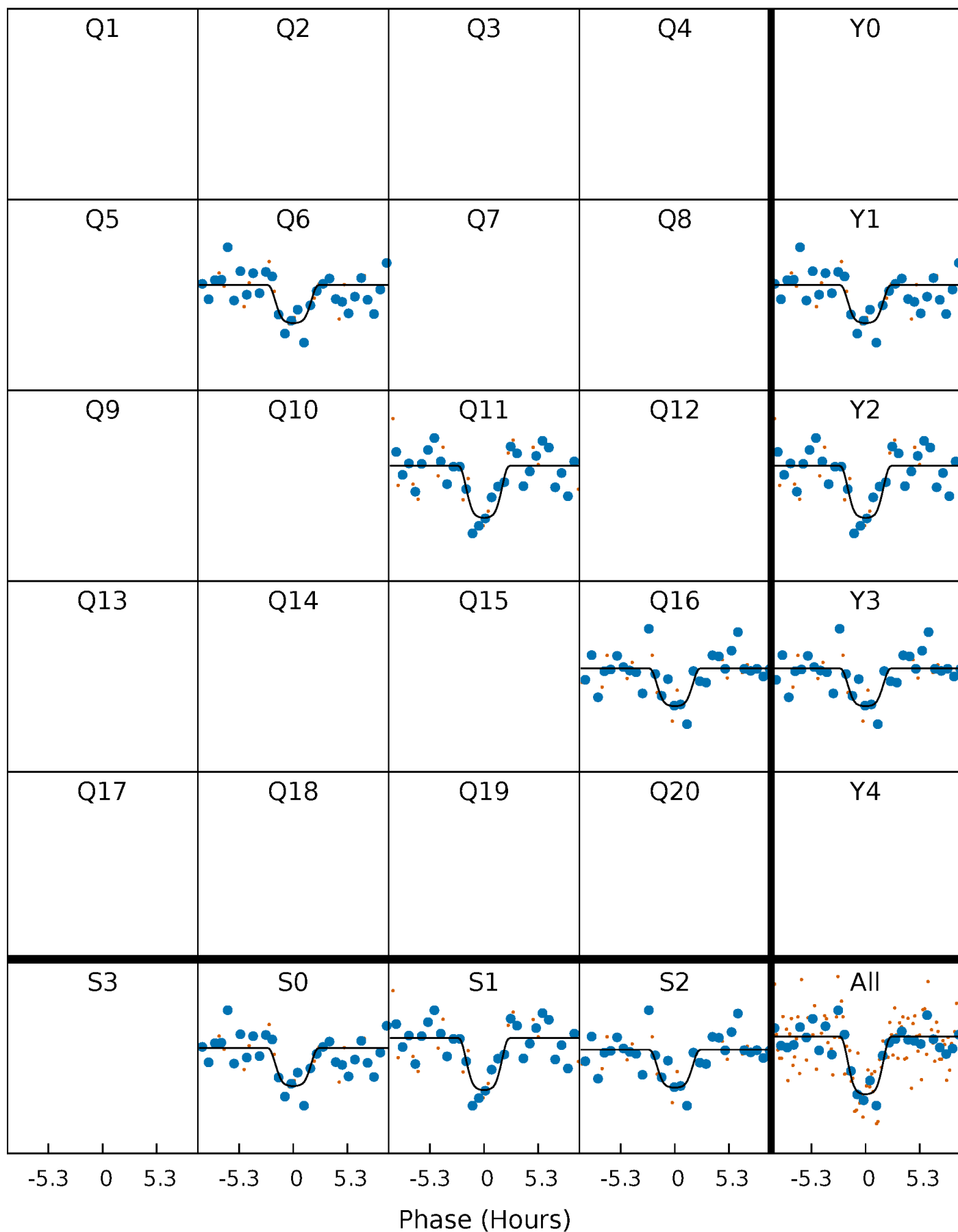
PDC Quarter-Phased Transit Curves

TCE 012554485-01 P=495.663507 Days $T_0=561.411926$ (BKJD)



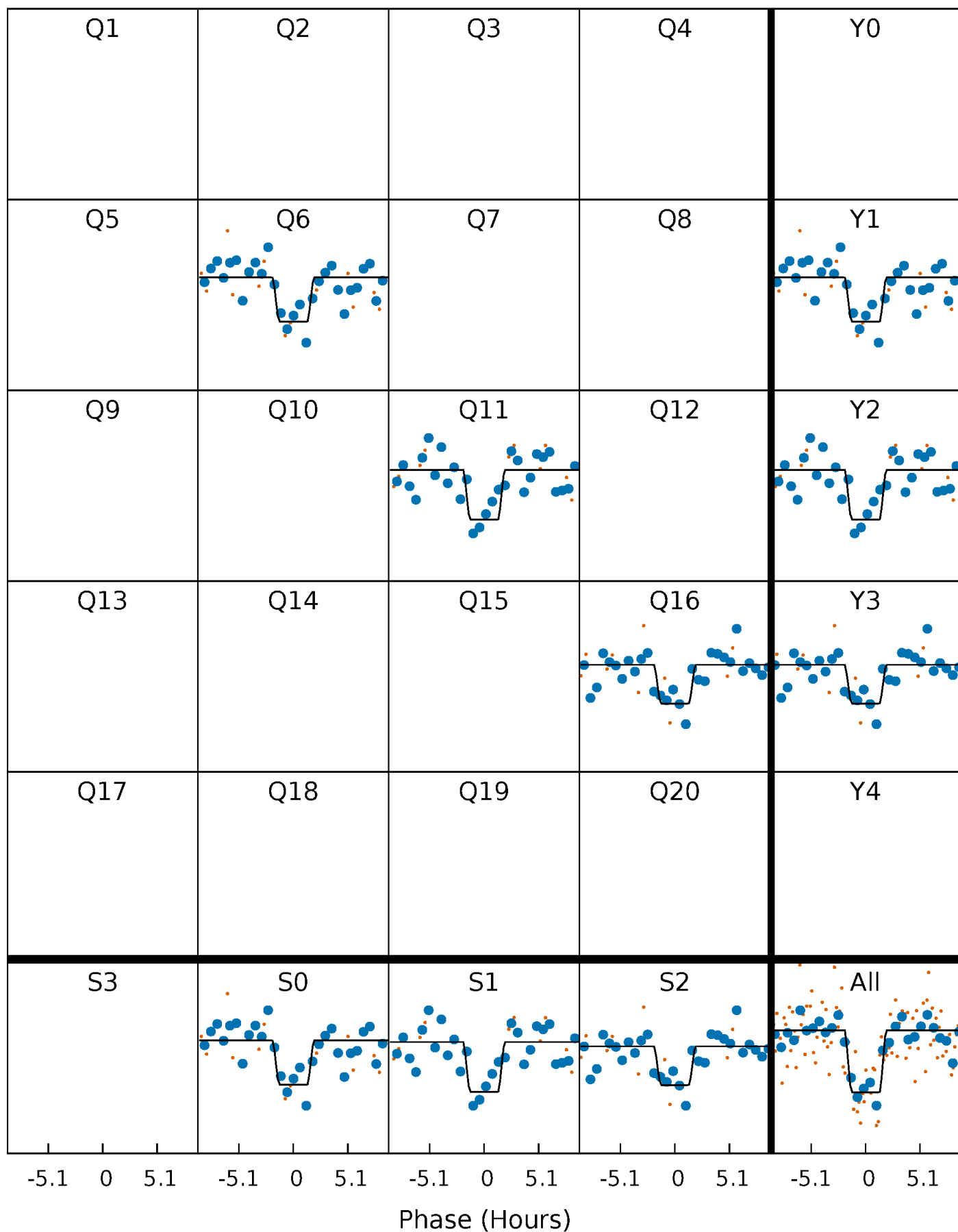
DV Quarter-Phased Transit Curves

TCE 012554485-01 P=495.663507 Days $T_0=561.411926$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

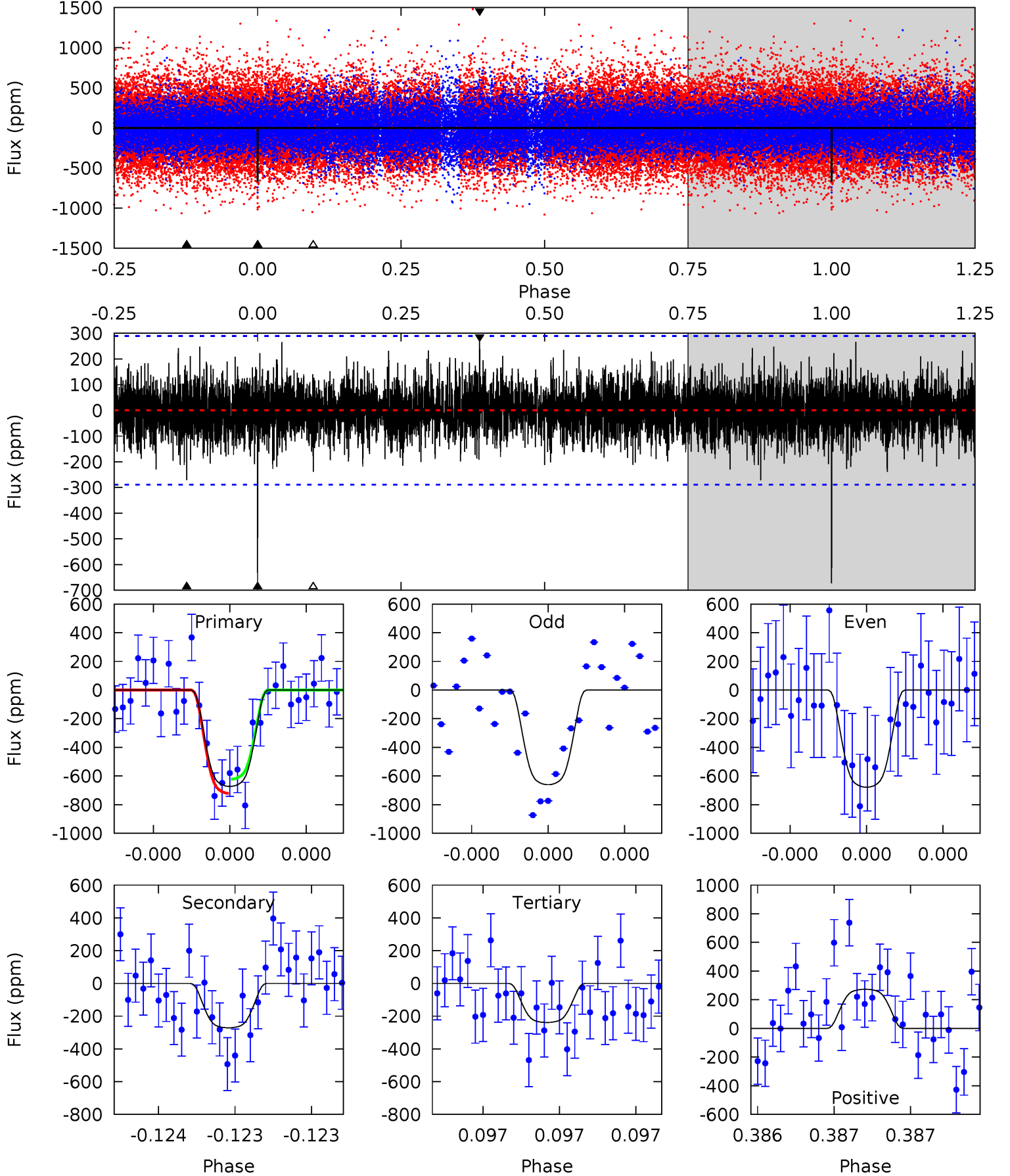
TCE 012554485-01 P=495.670487 Days $T_0=561.406757$ (BKJD)



DV Model-Shift Uniqueness Test

012554485-01, $P = 495.663507$ Days, $E = 65.748419$ Days

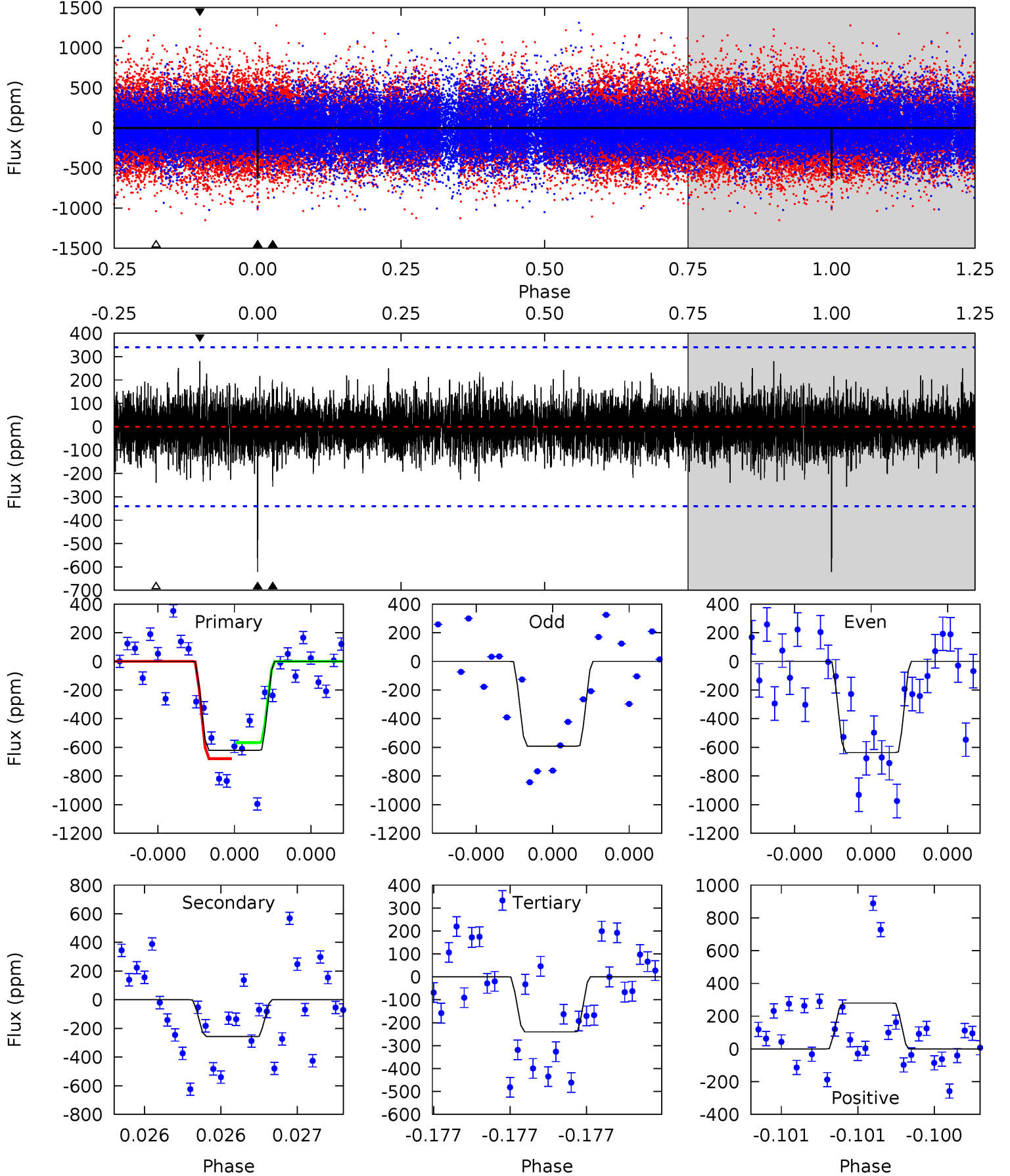
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.0 | 5.26 | 4.62 | 5.29 | 5.60 | 3.52 | 1.35 | 8.40 | 7.74 | 0.63 | -0.03 | 0.16 | 1.02 | 0.29 | 0.96 |



Alt Model-Shift Uniqueness Test

012554485-01, $P = 495.670487$ Days, $E = 65.736270$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.3 | 4.27 | 3.99 | 4.65 | 5.65 | 3.60 | 1.10 | 6.34 | 5.67 | 0.28 | -0.38 | 0.35 | 1.03 | 0.31 | 0.93 |



Stellar Parameters For KIC 012554485

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5515^{+193}_{-193} | $4.509^{+0.077}_{-0.132}$ | $-0.340^{+0.350}_{-0.300}$ | $0.820^{+0.170}_{-0.099}$ | $0.791^{+0.108}_{-0.063}$ | $2.023^{+0.756}_{-0.762}$ |
| | +3%/-3% | +2%/-3% | +103%/-88% | +21%/-12% | +14%/-8% | +37%/-38% |
| 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 012554485-01 / KOI 8238.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -271 ± 52 | $2.81^{+0.40}_{-0.37}$ | 292^{+15}_{-15} | 4264^{+274}_{-269} | 24267^{+10651}_{-6906} |
| Alt. | -257 ± 60 | $2.36^{+0.41}_{-0.38}$ | 292^{+16}_{-14} | 4506^{+398}_{-318} | 32882^{+15383}_{-10809} |

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

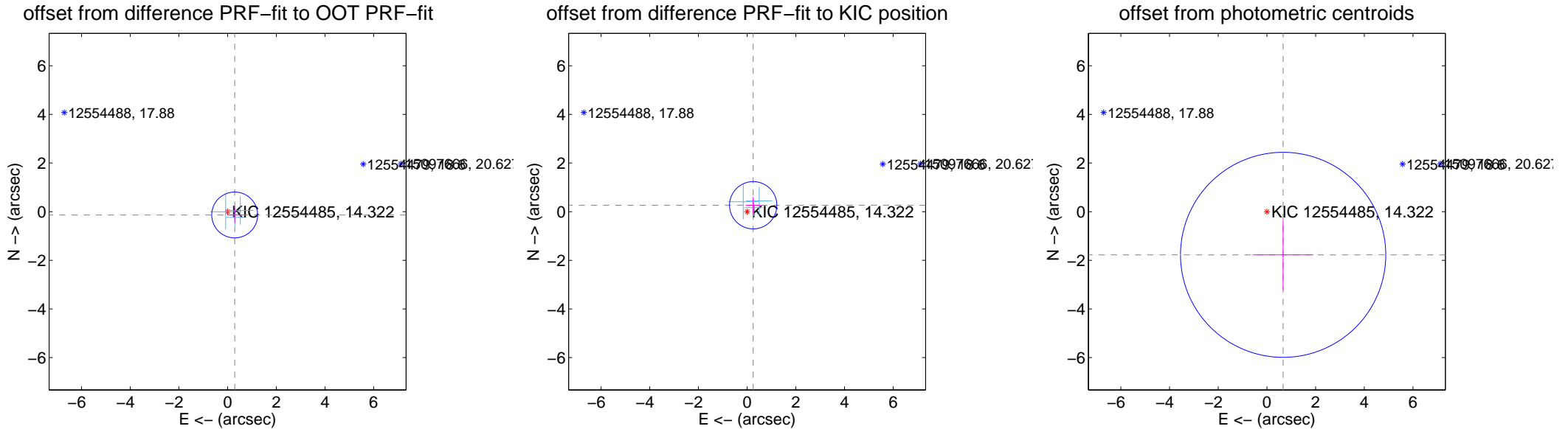
DV Centroid Data

Supplemental centroid analysis for 012554485-01. Kepler magnitude: 14.32. Transit SNR 8.79

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.322 ± 0.314 | 1.02 | -0.292 ± 0.309 | -0.136 ± 0.337 |
| PRF-fit source offset from KIC position | 0.364 ± 0.324 | 1.12 | -0.249 ± 0.309 | 0.264 ± 0.337 |
| photometric centroid source offset | 1.90 ± 1.41 | 1.35 | -0.67 ± 1.24 | -1.78 ± 1.43 |

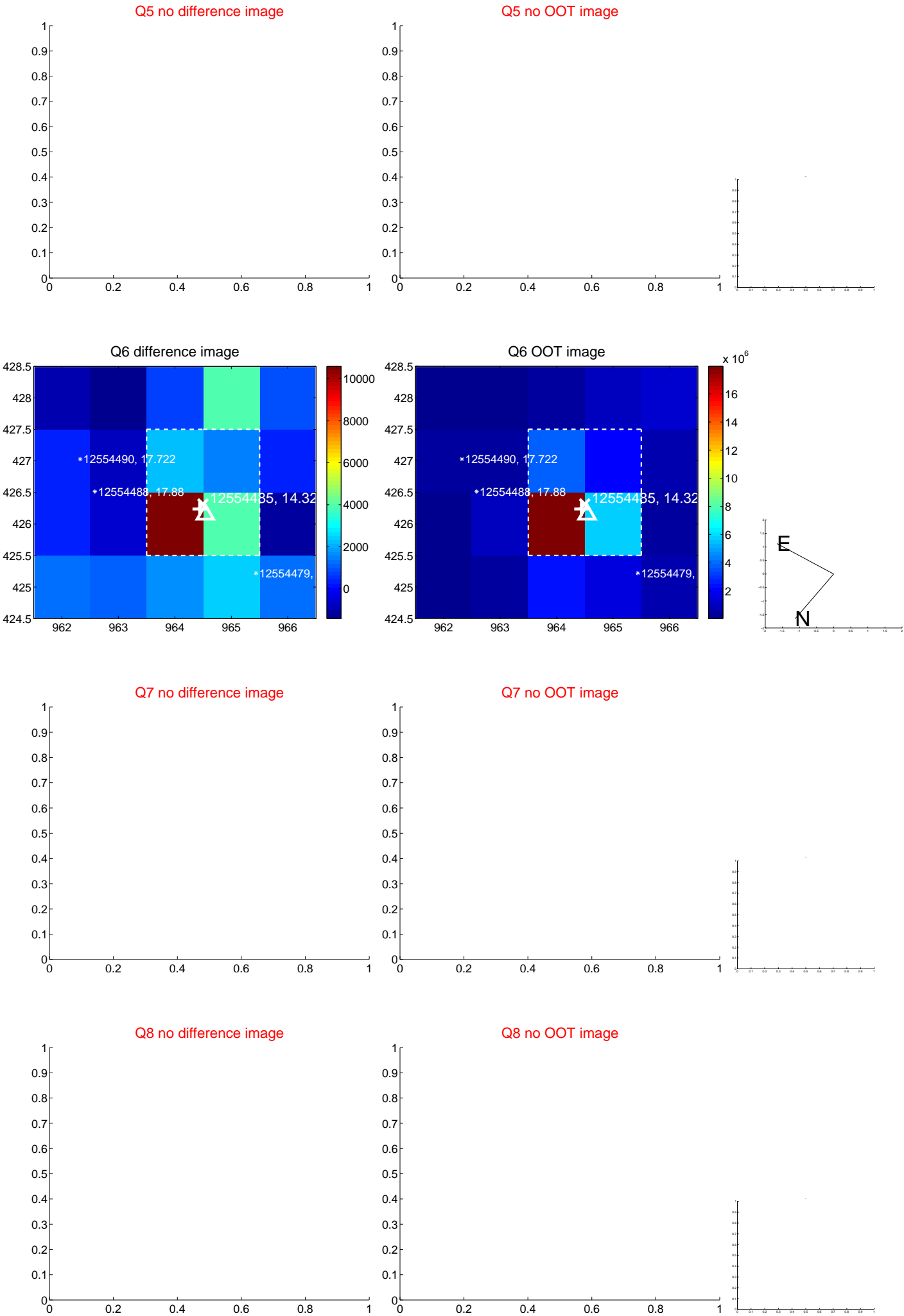


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

Q9 no difference image



Q9 no OOT image



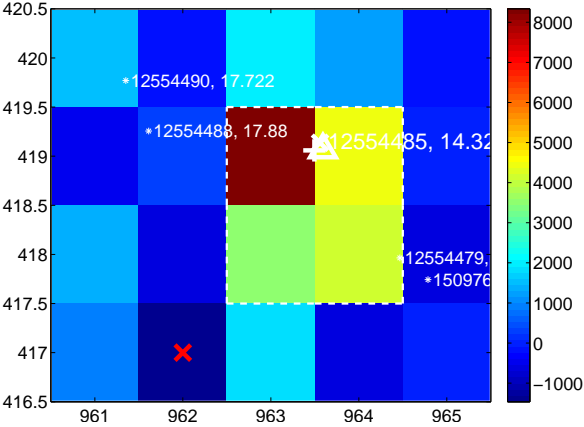
Q10 no difference image



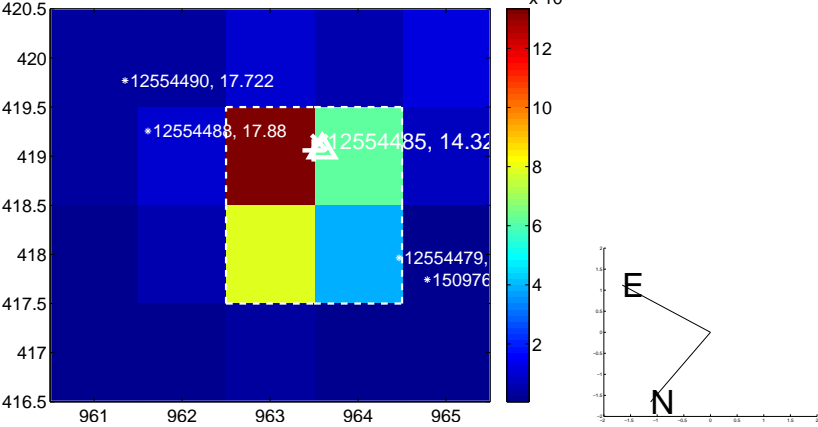
Q10 no OOT image



Q11 difference image



Q11 OOT image



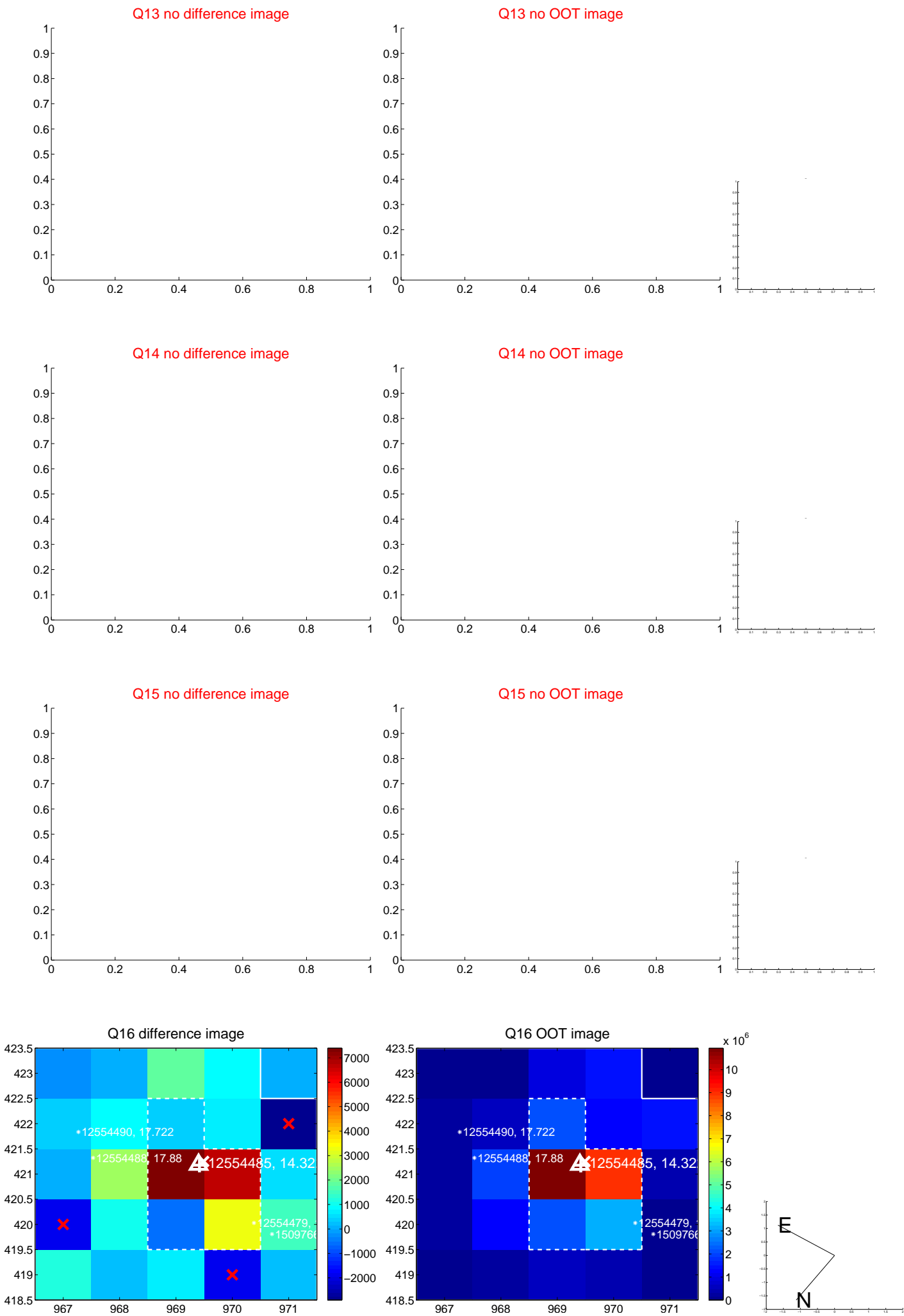
Q12 no difference image



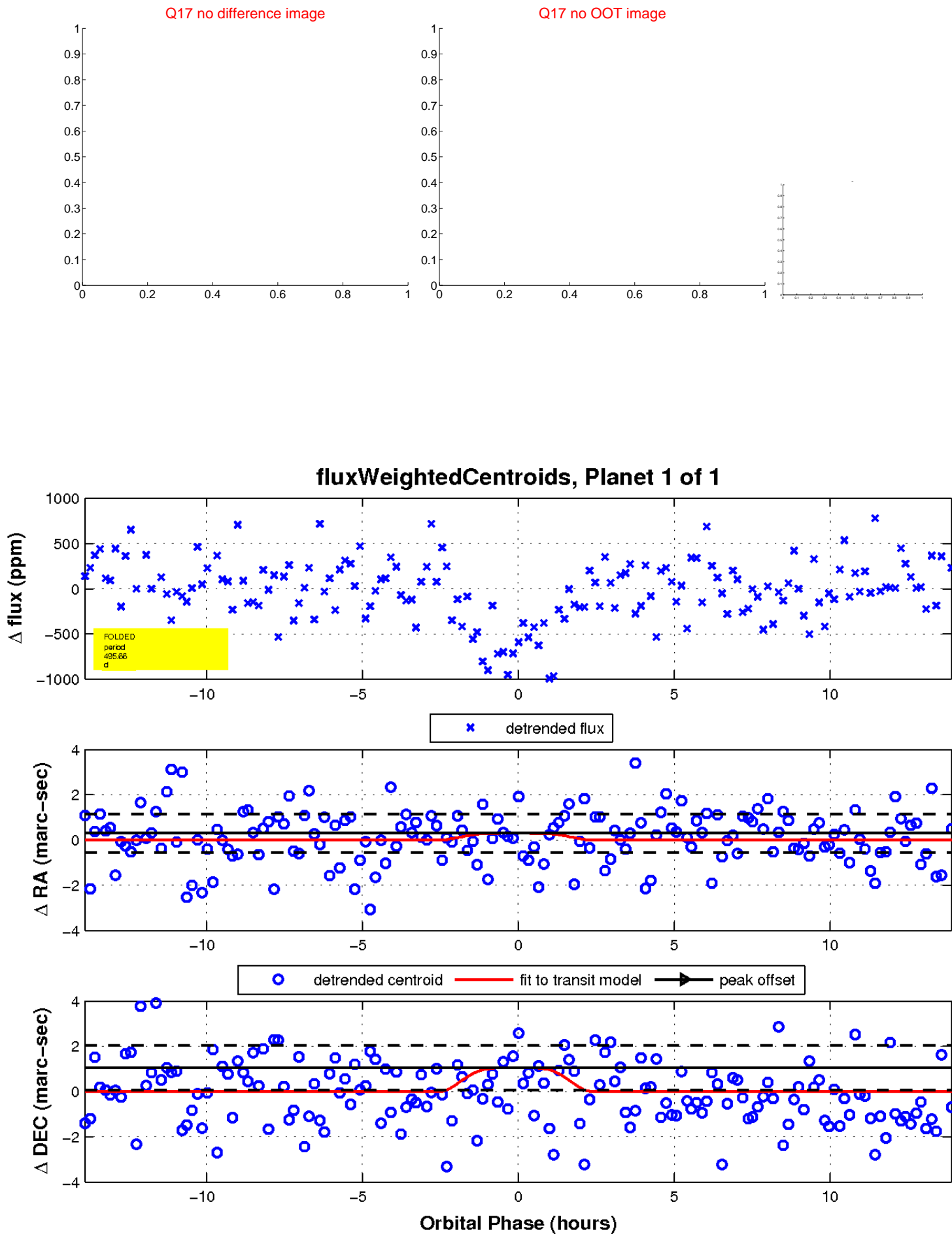
Q12 no OOT image



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.



UKIRT Image

Declination

