

KIC 012454613

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 012454613-01 | OBS | No | 245.458376 | 244.816508 | 755.0 | 15.510 | 14.8 | 15.3 | 0.84 | 5530 | 2.75 | 1.04 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 012454613-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE_ZUMA—INCONSISTENT_TRANS—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.

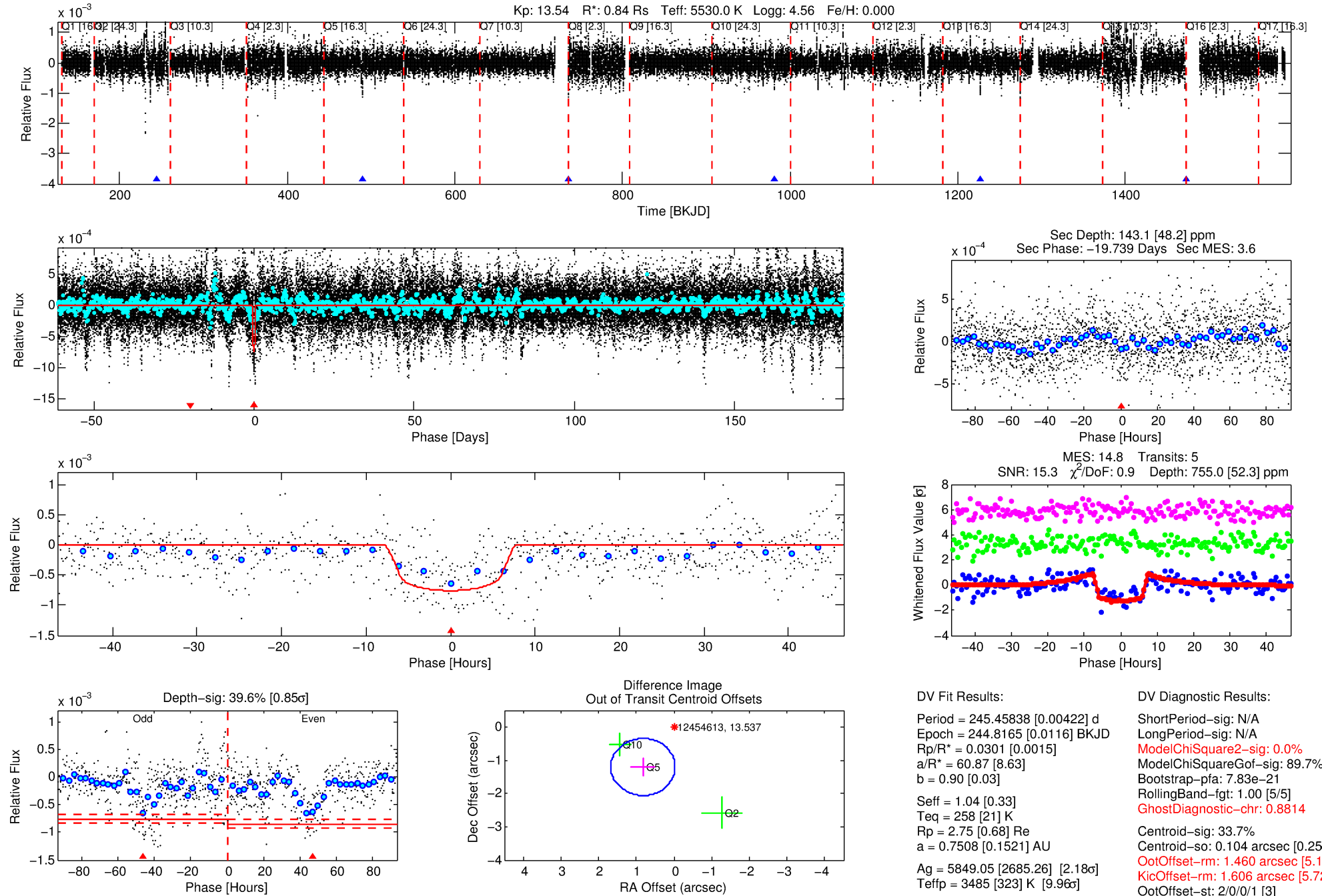
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012454613-01

No Significant Match Found

DV One-Page Summary

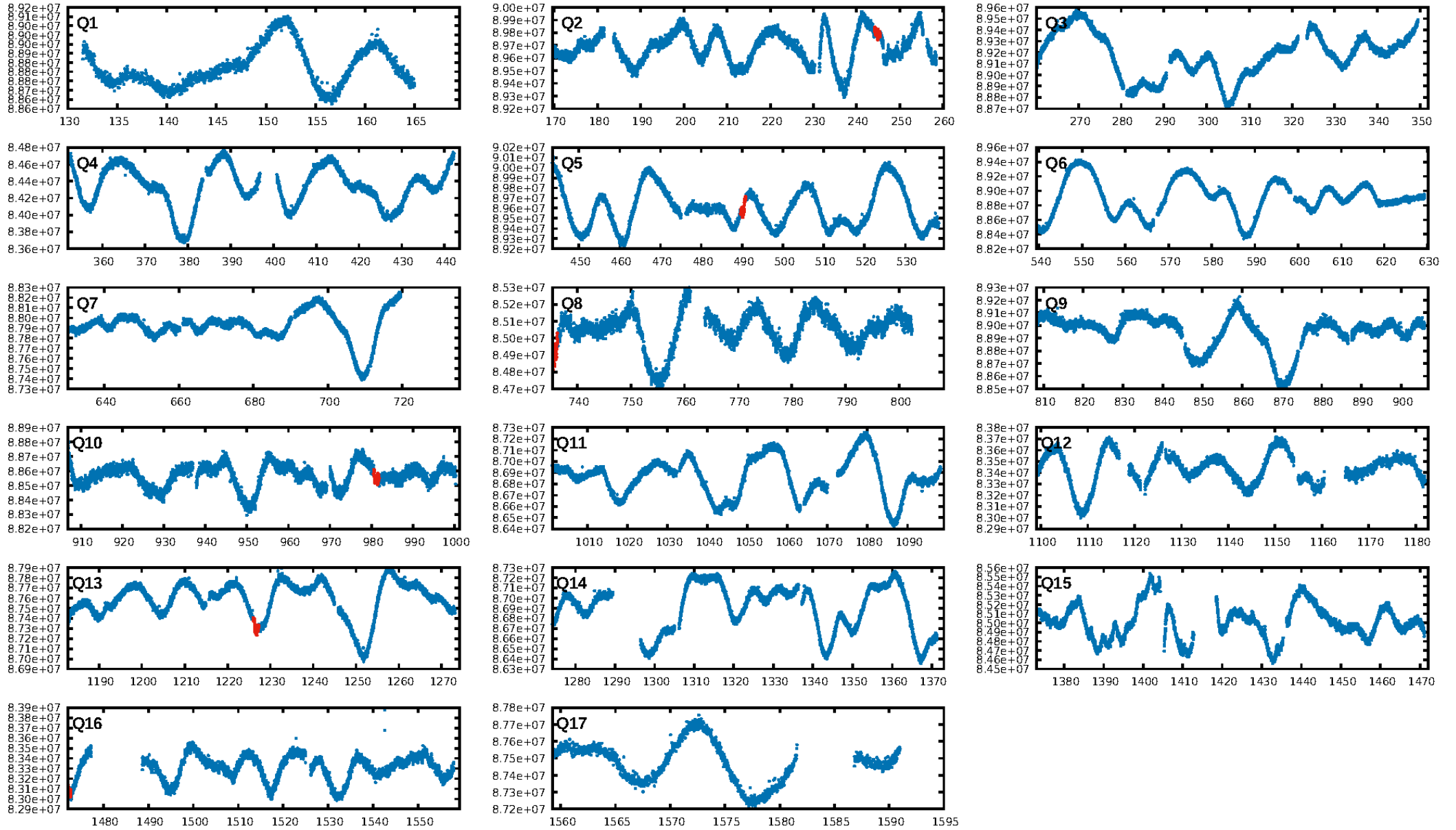
KIC: 12454613 Candidate: 1 of 1 Period: 245.458 d



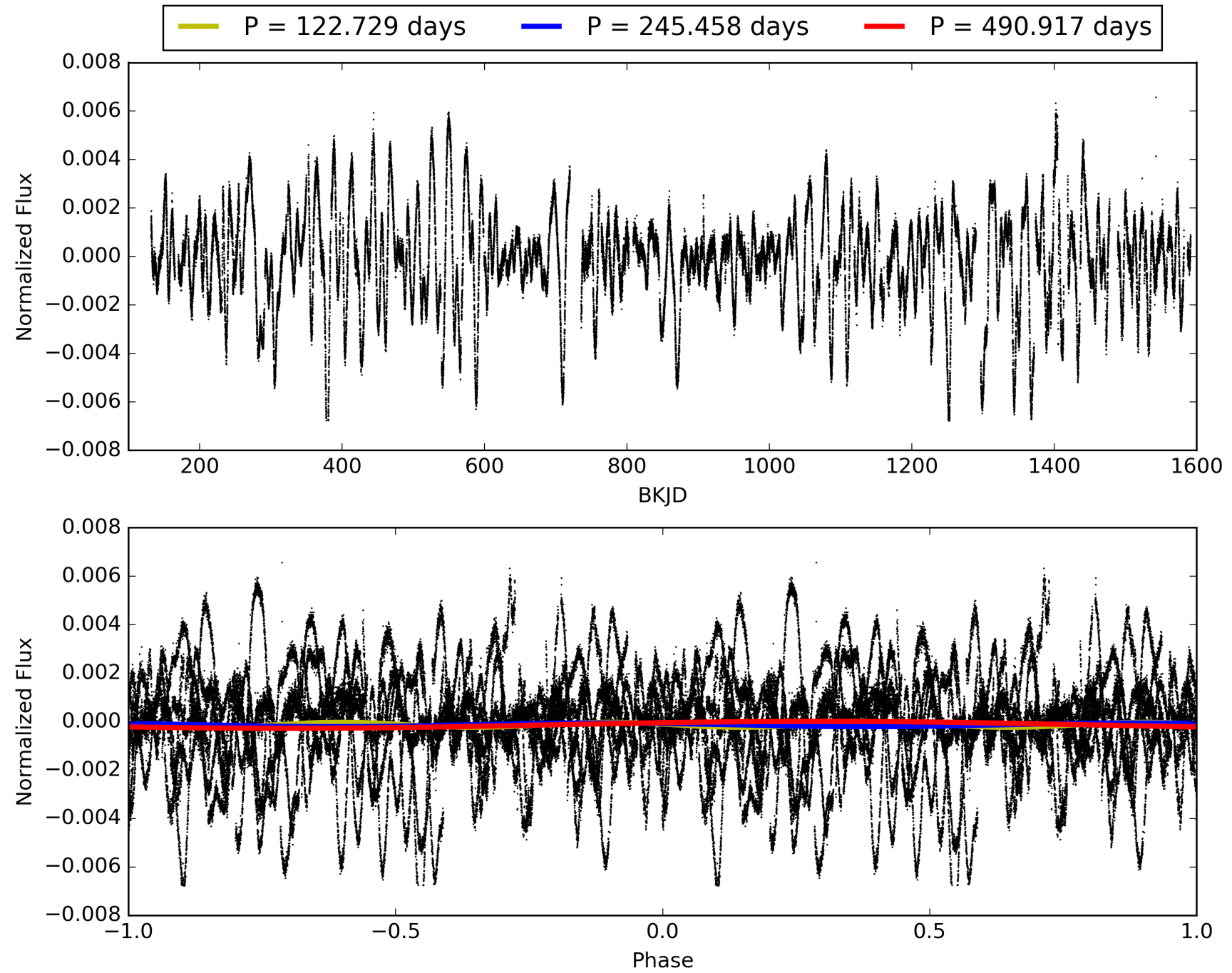
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:36:32 Z

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

TCE 012454613-01, PDC Light Curves

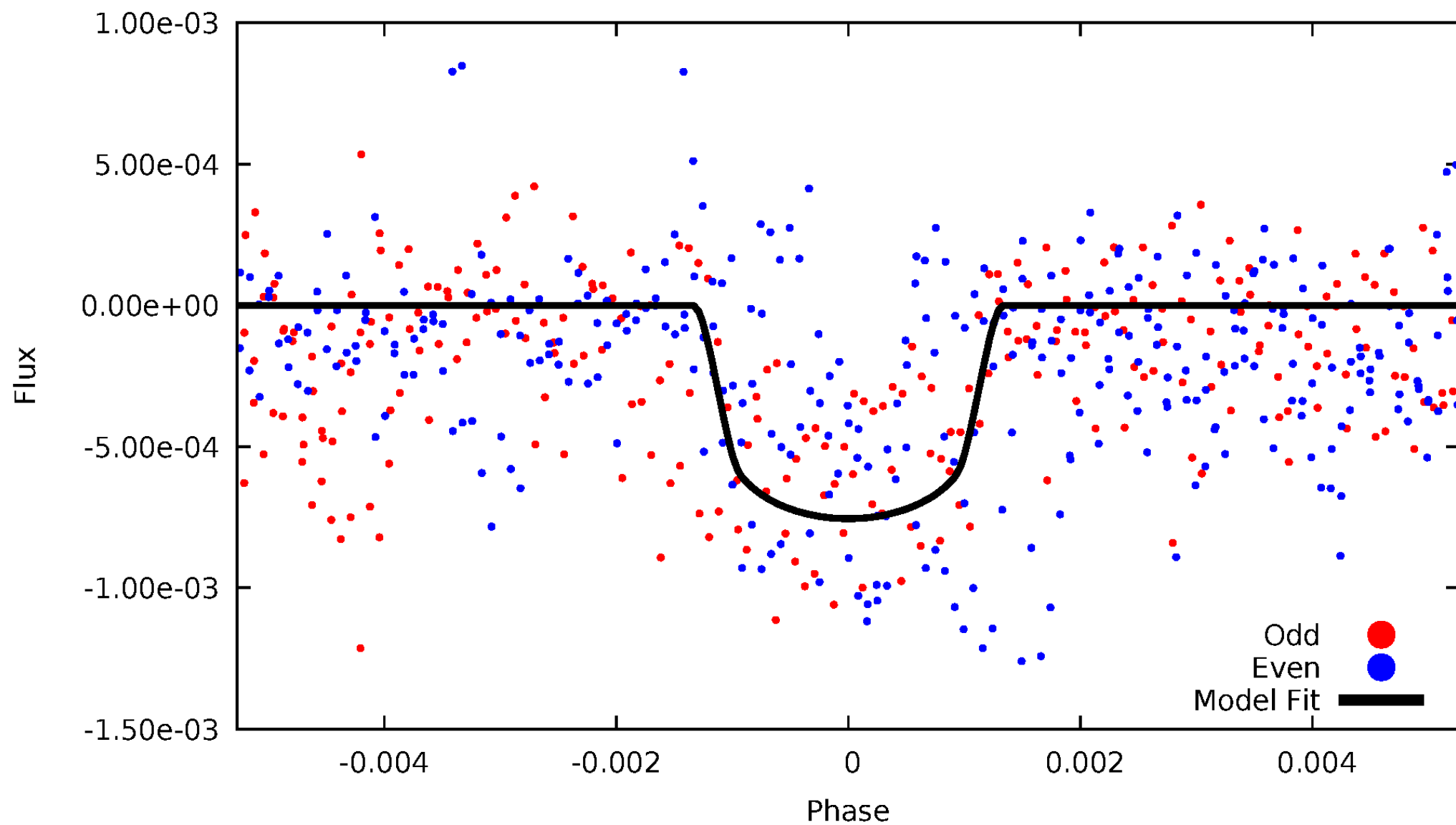


TCE 012454613-01



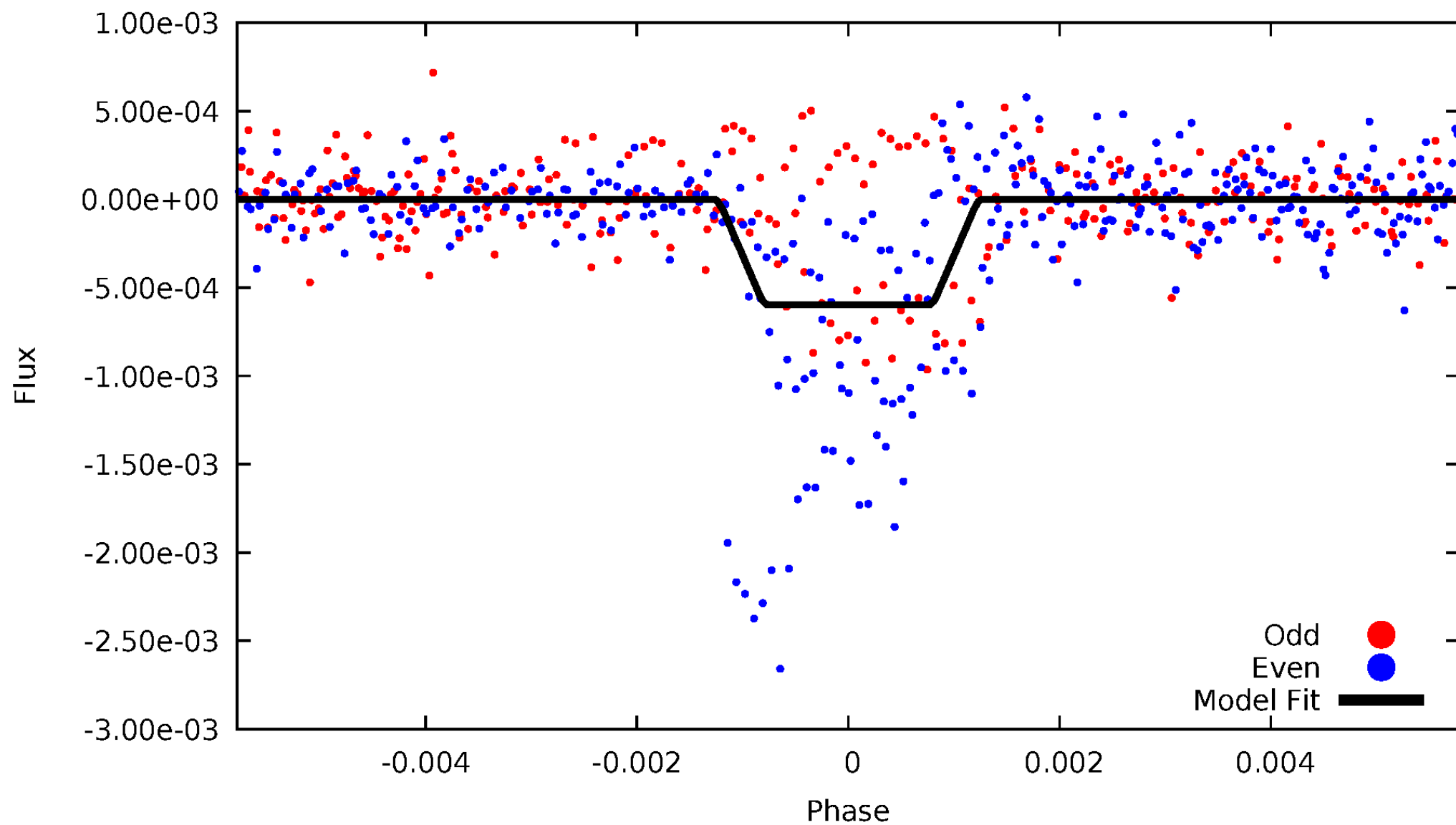
DV Odd/Even

TCE 012454613-01

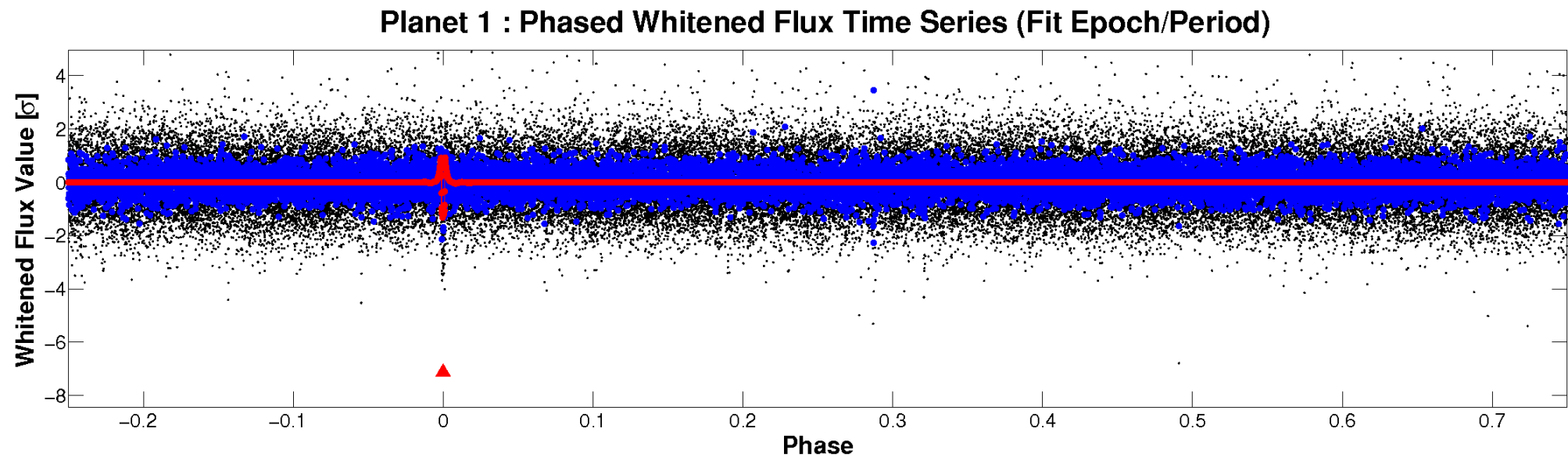
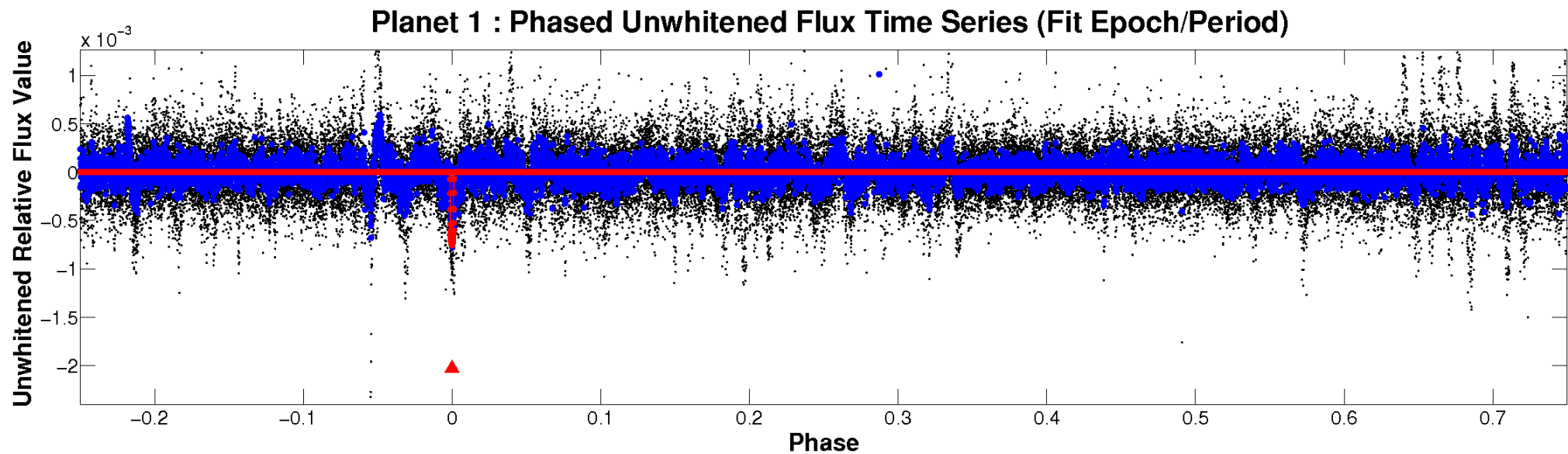


ALT Odd/Even

TCE 012454613-01

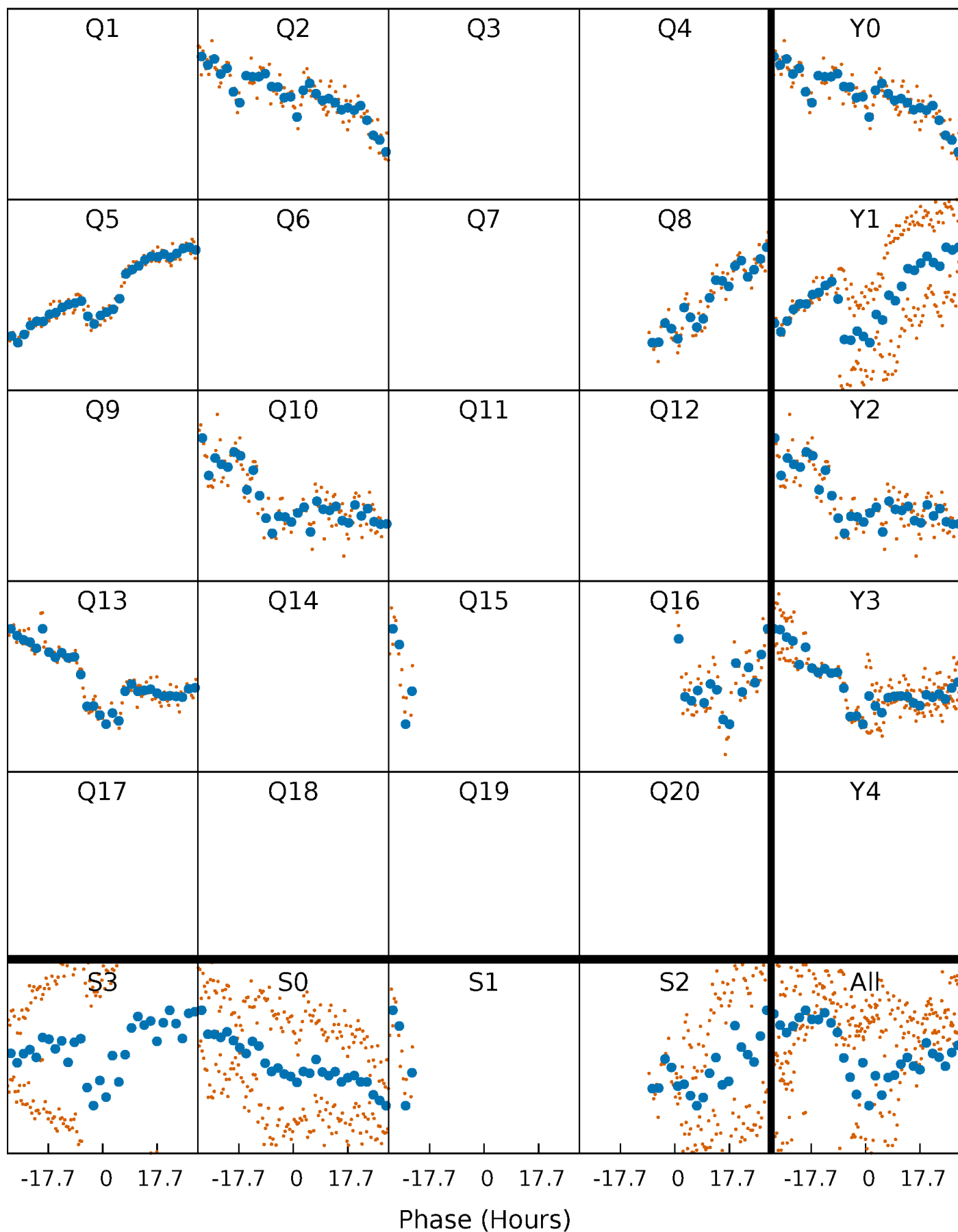


Non-Whitened Vs. Whitened Light Curve



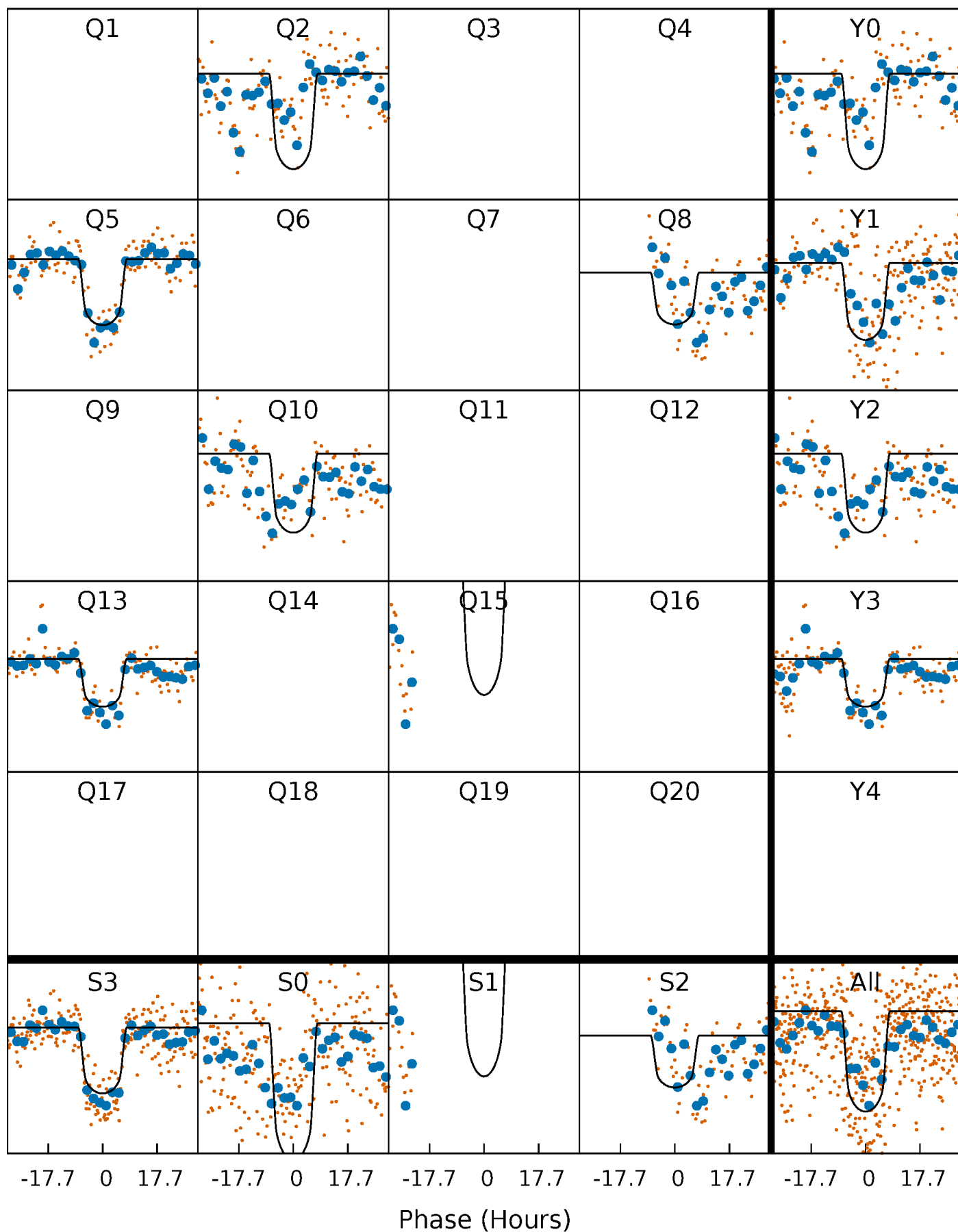
PDC Quarter-Phased Transit Curves

TCE 012454613-01 P=245.458376 Days $T_0=244.816508$ (BKJD)



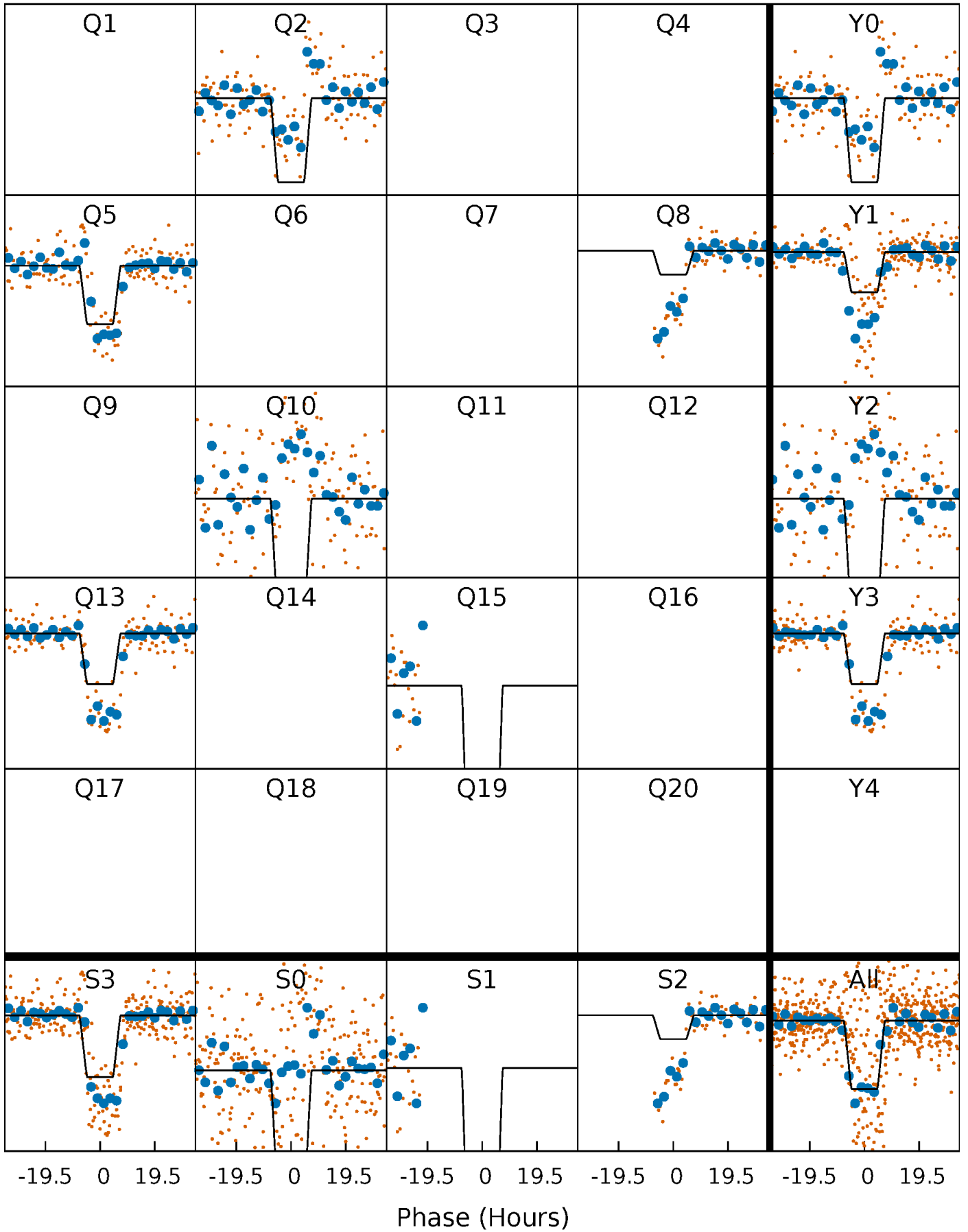
DV Quarter-Phased Transit Curves

TCE 012454613-01 P=245.458376 Days $T_0=244.816508$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

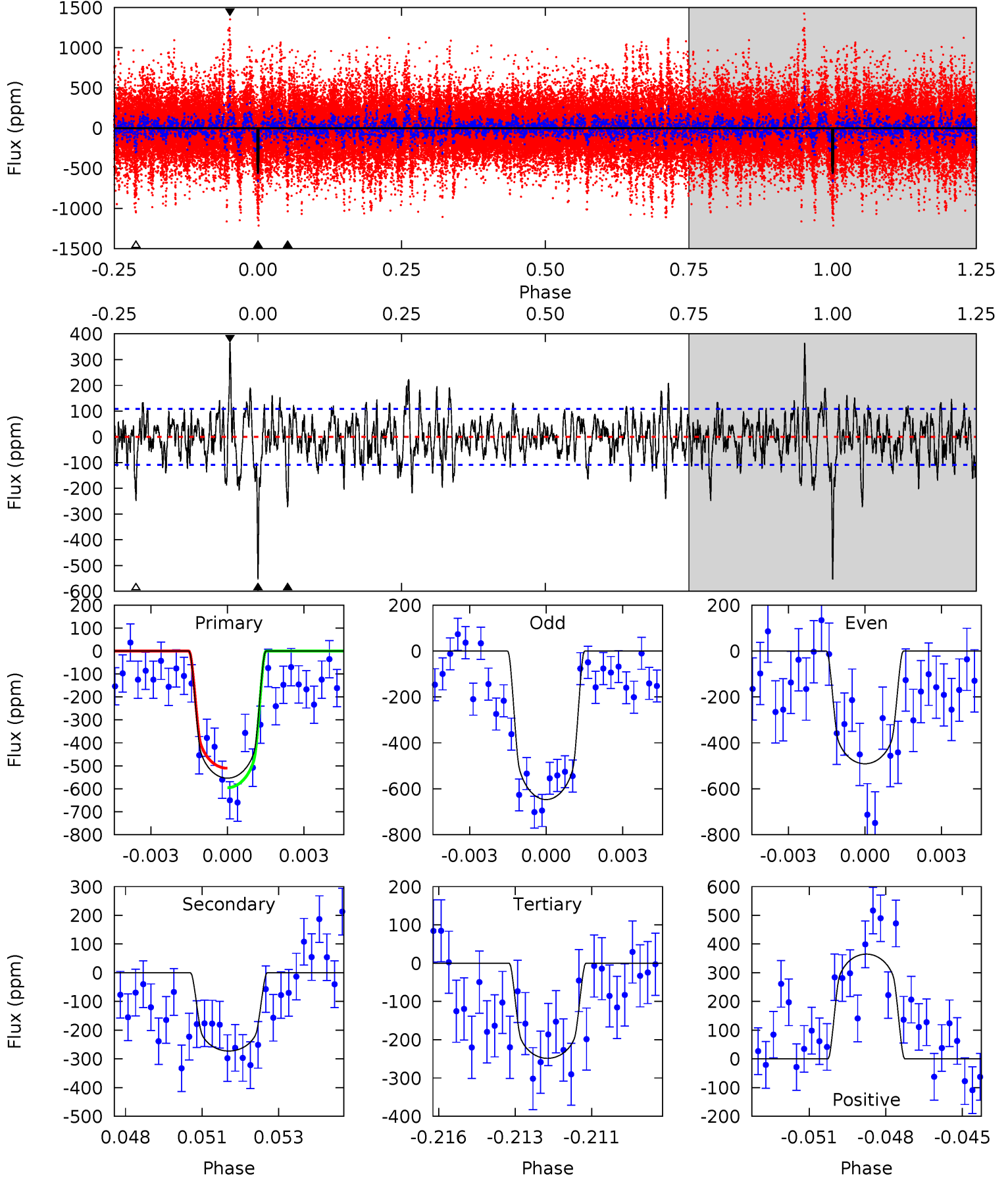
TCE 012454613-01 P=245.461545 Days $T_0=244.742041$ (BKJD)



DV Model-Shift Uniqueness Test

012454613-01, P = 245.458376 Days, E = 244.816508 Days

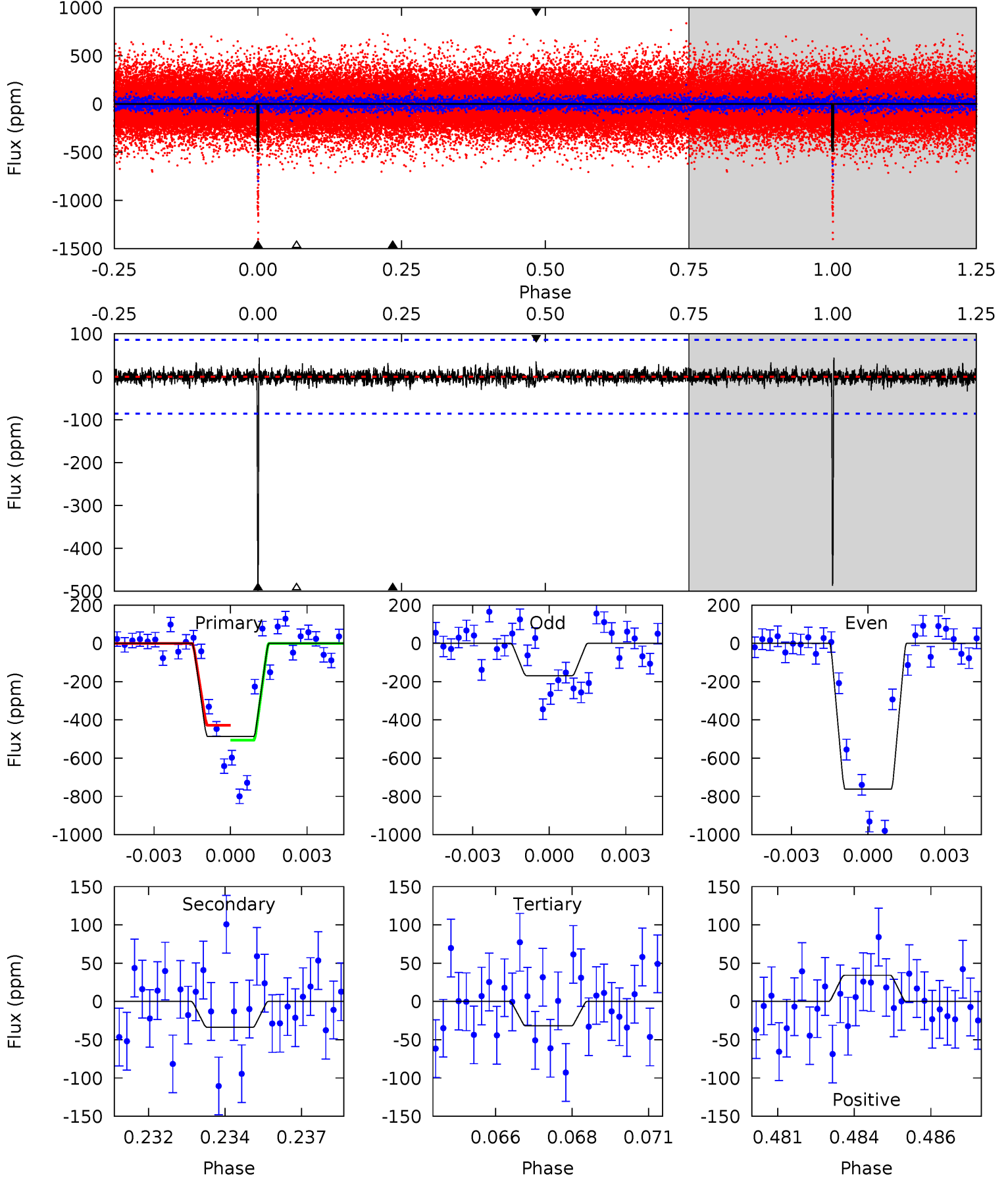
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 26.9 | 13.2 | 12.1 | 17.7 | 5.27 | 3.00 | 3.47 | 14.8 | 9.18 | 1.17 | -4.48 | 3.67 | 1.18 | 0.40 | 2.06 |



Alt Model-Shift Uniqueness Test

012454613-01, P = 245.461545 Days, E = 244.742041 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 29.9 | 2.08 | 1.96 | 2.10 | 5.28 | 3.02 | 0.52 | 28.0 | 27.8 | 0.12 | -0.03 | 19.6 | 1.07 | 0.08 | 2.39 |



Stellar Parameters For KIC 012454613

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5530^{+149}_{-166} | $4.563^{+0.029}_{-0.162}$ | $0.000^{+0.300}_{-0.300}$ | $0.838^{+0.201}_{-0.067}$ | $0.939^{+0.074}_{-0.102}$ | $2.247^{+0.356}_{-0.998}$ |
| | +3%/-3% | +1%/-4% | +inf%/-inf% | +24%/-8% | +8%/-11% | +16%/-44% |
| 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 012454613-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|----------------------|-------------------------|
| DV | -273 ± 21 | $2.84^{+0.37}_{-0.24}$ | 368^{+21}_{-14} | 4306^{+152}_{-139} | 10148^{+2059}_{-1988} |
| Alt. | -34 ± 16 | $2.33^{+0.30}_{-0.23}$ | 367^{+19}_{-15} | 3253^{+224}_{-288} | 1854^{+1142}_{-909} |

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 $A_{\text{obs}} \gg 1.0$

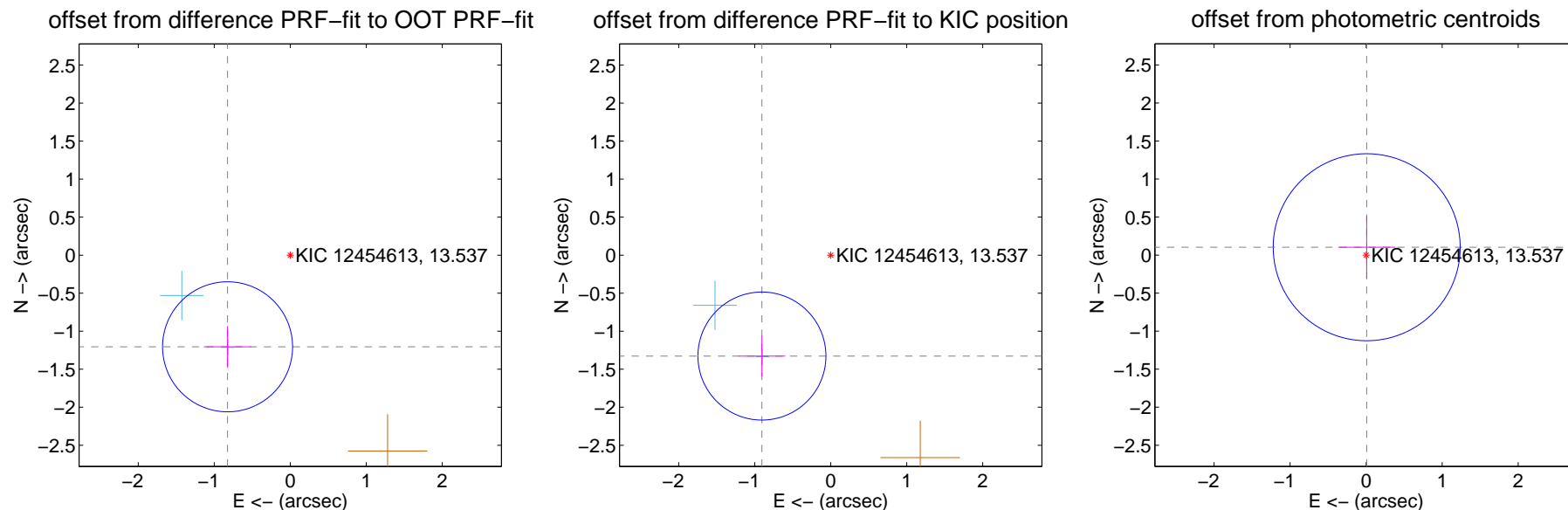
DV Centroid Data

Supplemental centroid analysis for 012454613-01. Kepler magnitude: 13.54. Transit SNR 15.25

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 1.460 ± 0.285 | 5.12 | 0.825 ± 0.310 | -1.205 ± 0.272 |
| PRF-fit source offset from KIC position | 1.606 ± 0.281 | 5.72 | 0.905 ± 0.308 | -1.327 ± 0.267 |
| photometric centroid source offset | 0.10 ± 0.41 | 0.25 | -0.01 ± 0.37 | 0.10 ± 0.41 |



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.

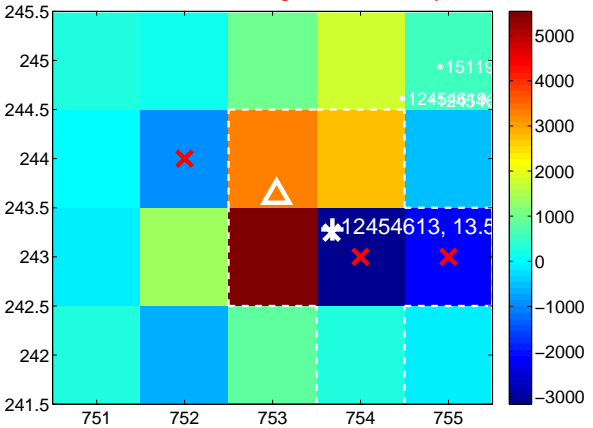
Q1 no difference image



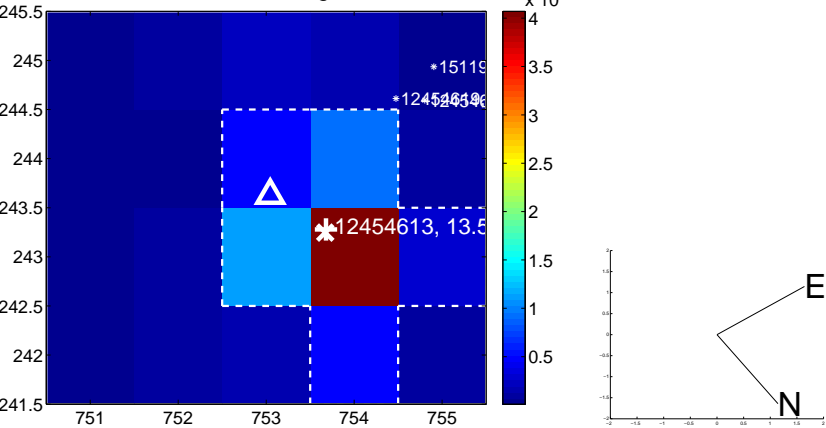
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



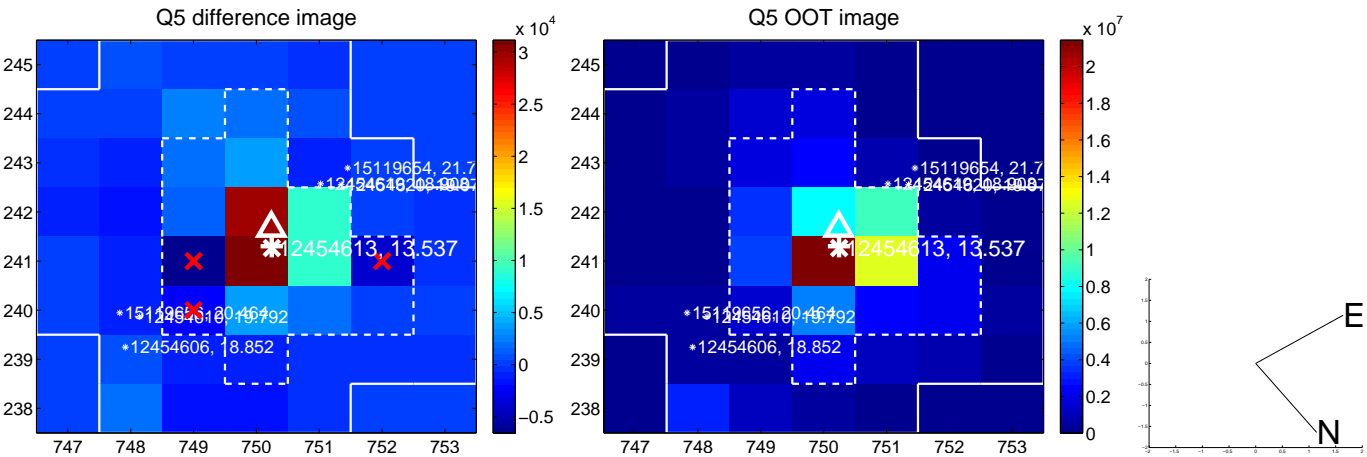
Q4 no difference image



Q4 no OOT image



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

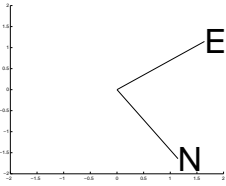
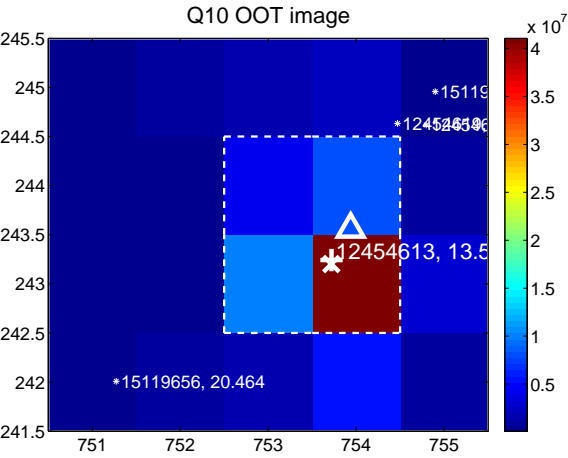
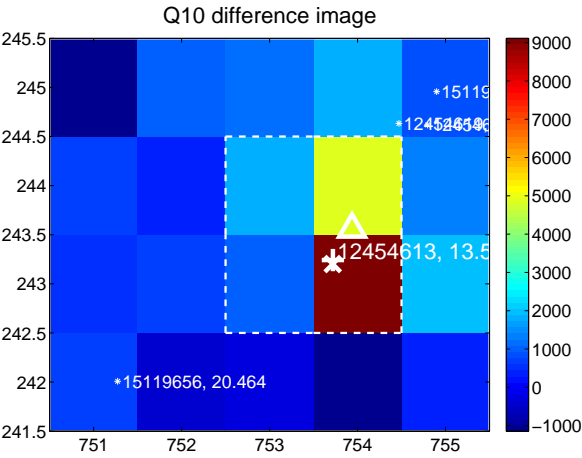


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

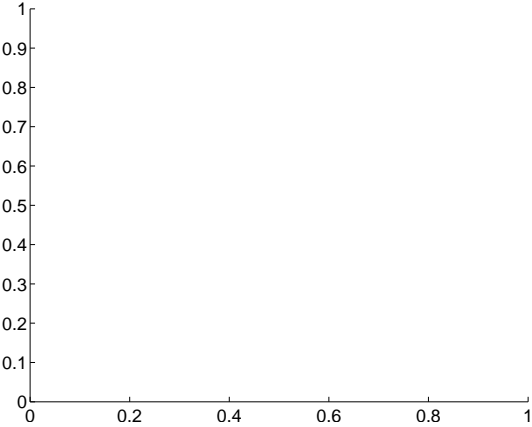
Q9 no difference image



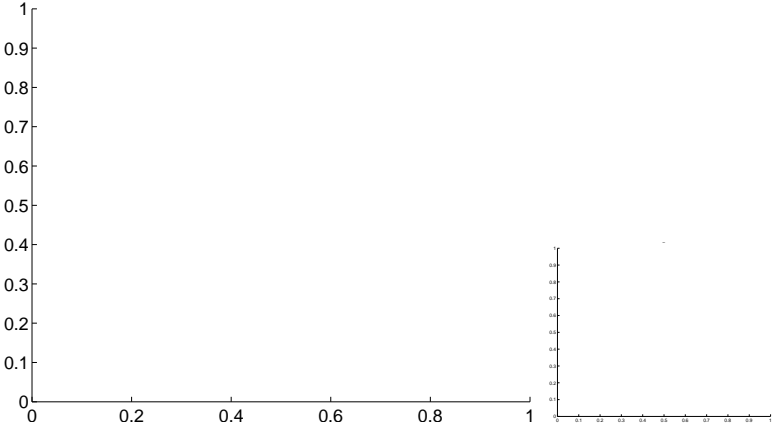
Q9 no OOT image



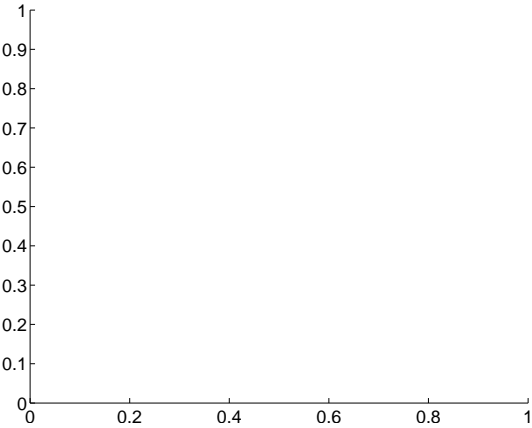
Q11 no difference image



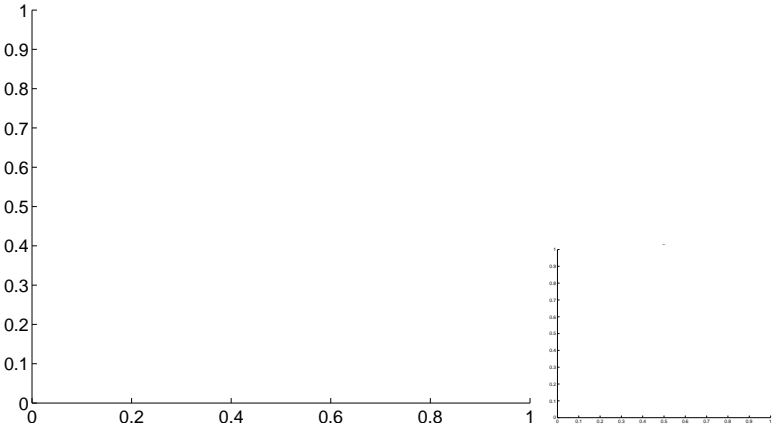
Q11 no OOT image



Q12 no difference image



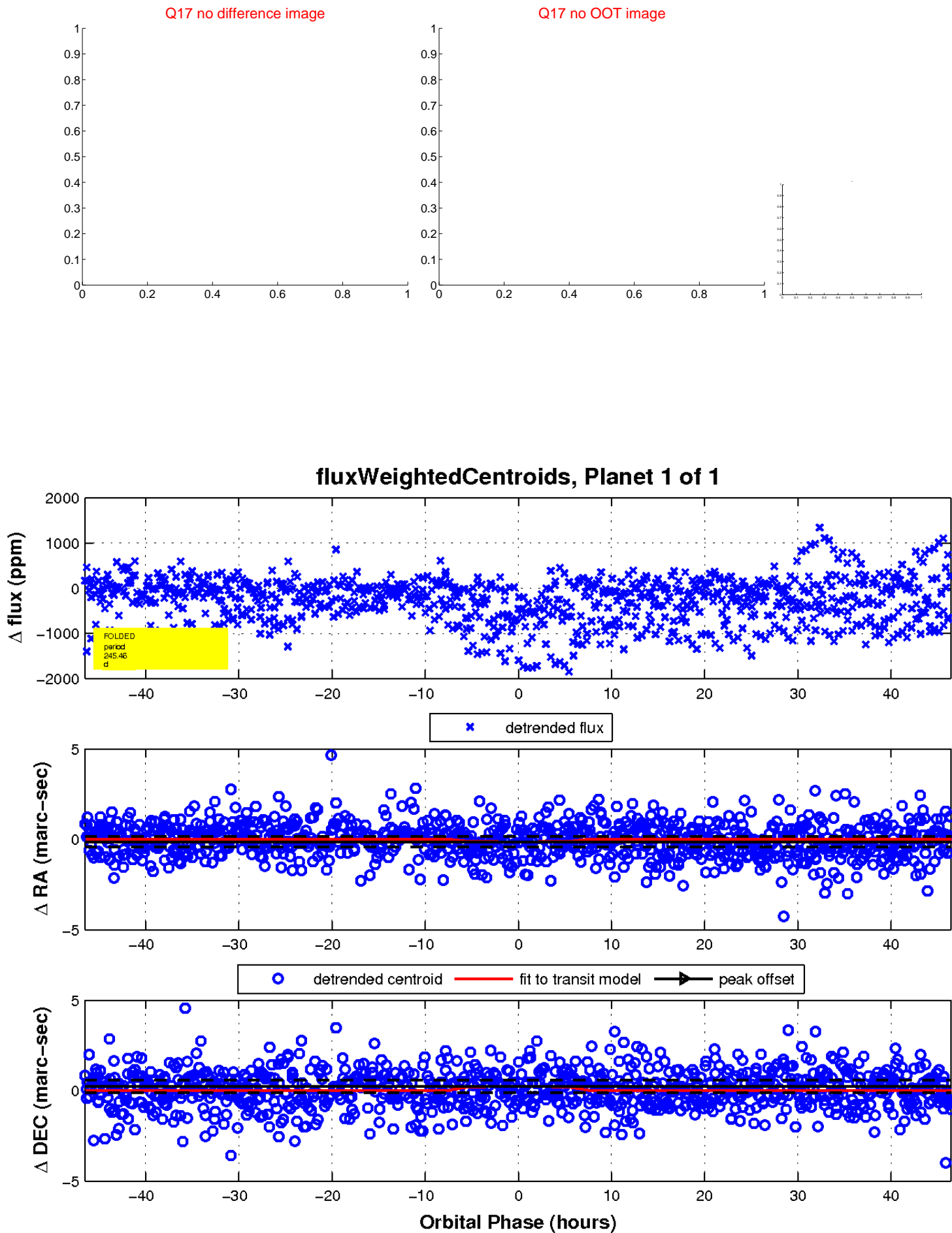
Q12 no OOT image



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

