

KIC 009941550

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009941550-01 | OBS | 5739.01 | 476.725898 | 496.426892 | 961.6 | 9.540 | 7.6 | 7.2 | 7.42 | 5068 | 23.97 | 18.68 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|-------------------------------------|
| 009941550-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL—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.

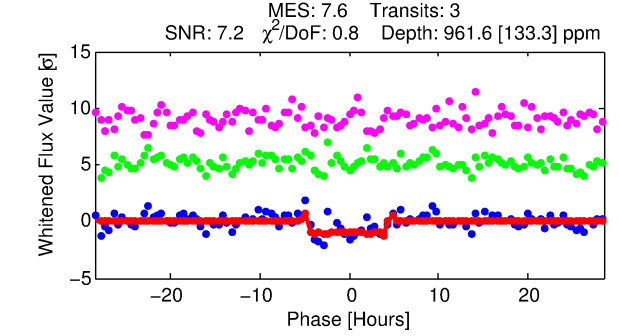
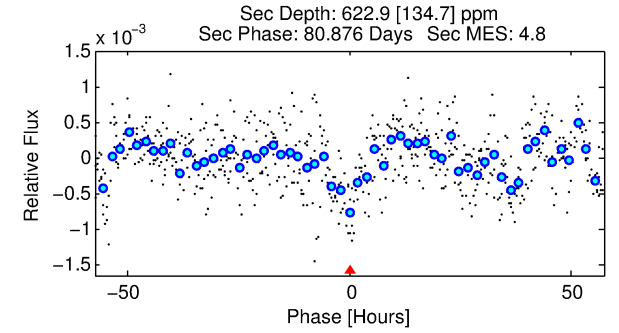
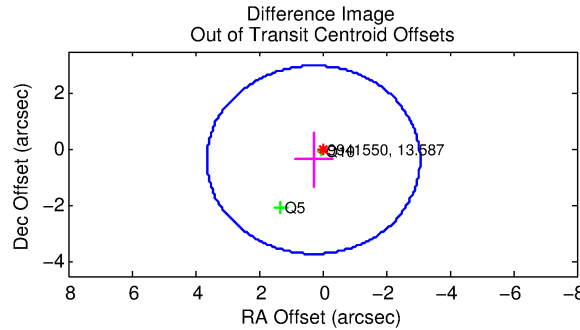
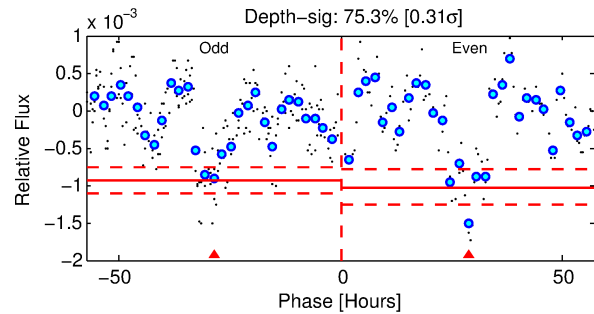
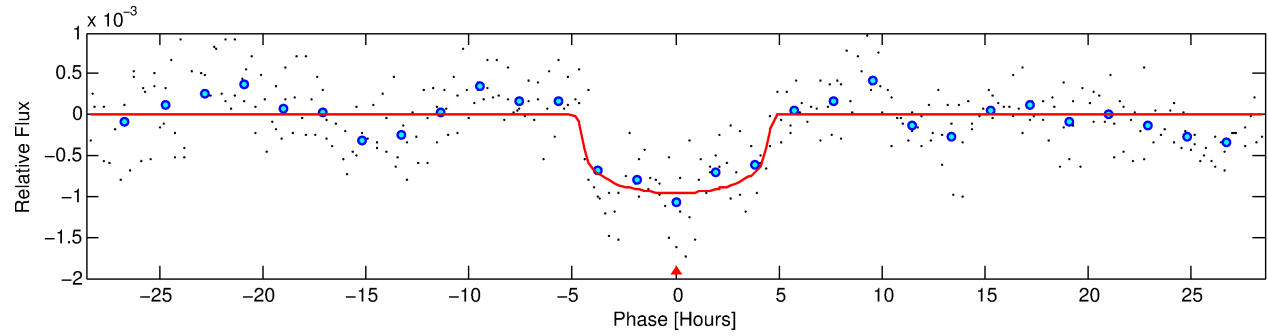
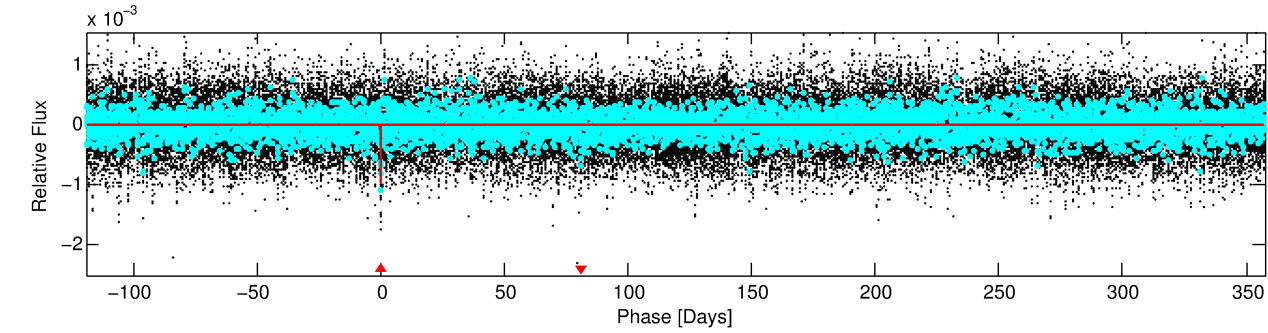
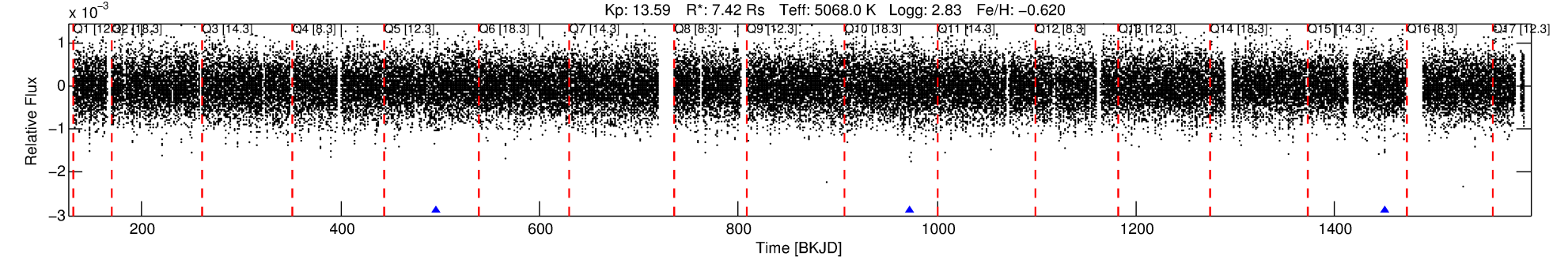
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009941550-01

No Significant Match Found

DV One-Page Summary

KIC: 9941550 Candidate: 1 of 1 Period: 476.726 d
KOI: K05739.01 Corr: 0.986



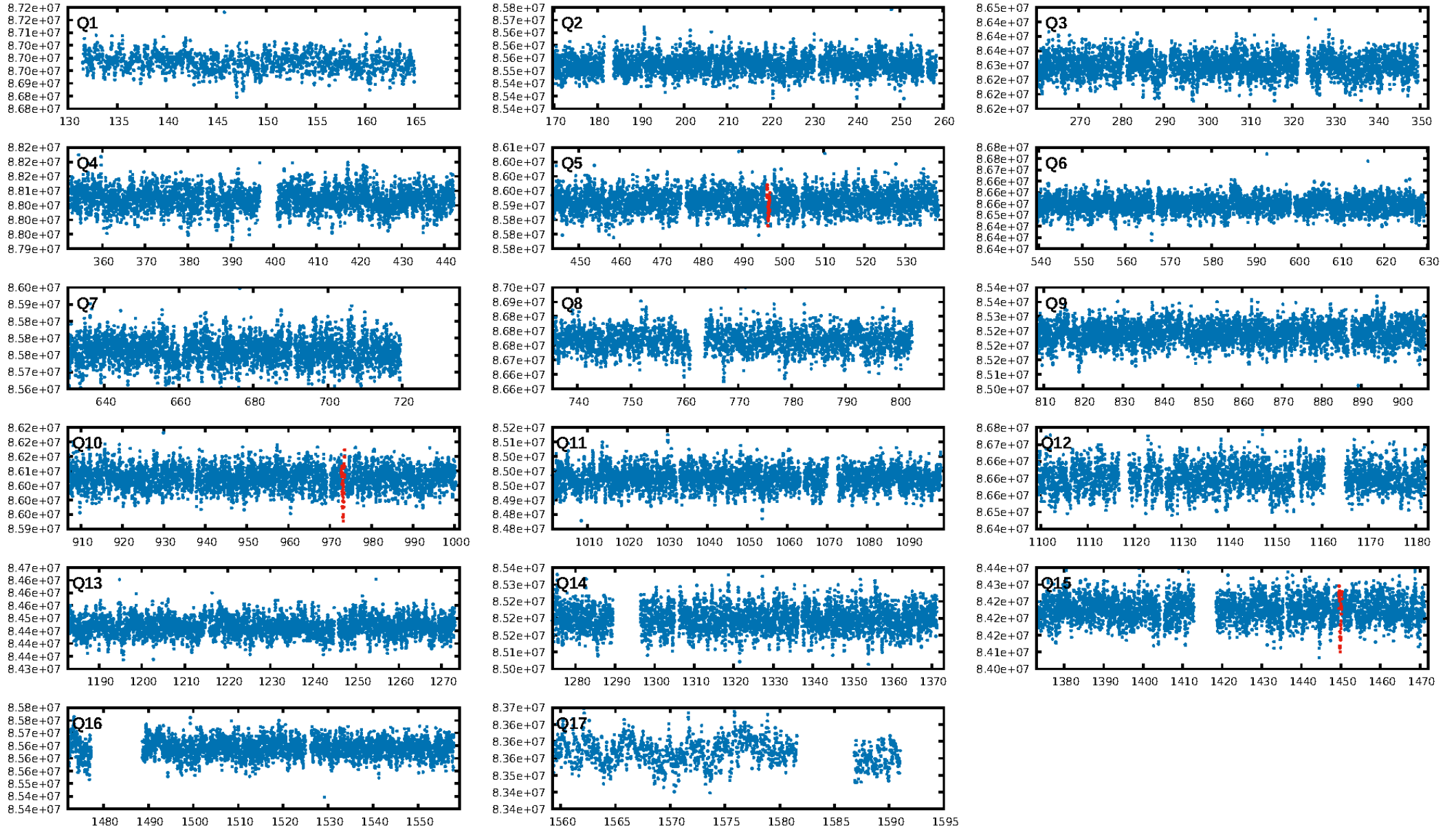
DV Fit Results:

Period = 476.72590 [0.00553] d
Epoch = 496.4269 [0.0073] BKJD
Rp/R* = 0.0296 [0.0069]
a/R* = 313.09 [260.67]
b = 0.62 [0.83]
Seff = 18.68 [2.65]
Teff = 530 [19] K
Rp = 23.97 [6.68] Re
a = 1.3194 [0.1374] AU
Ag = 1037.98 [545.98] [1.90σ]
Teffp = 4652 [606] K [6.79σ]

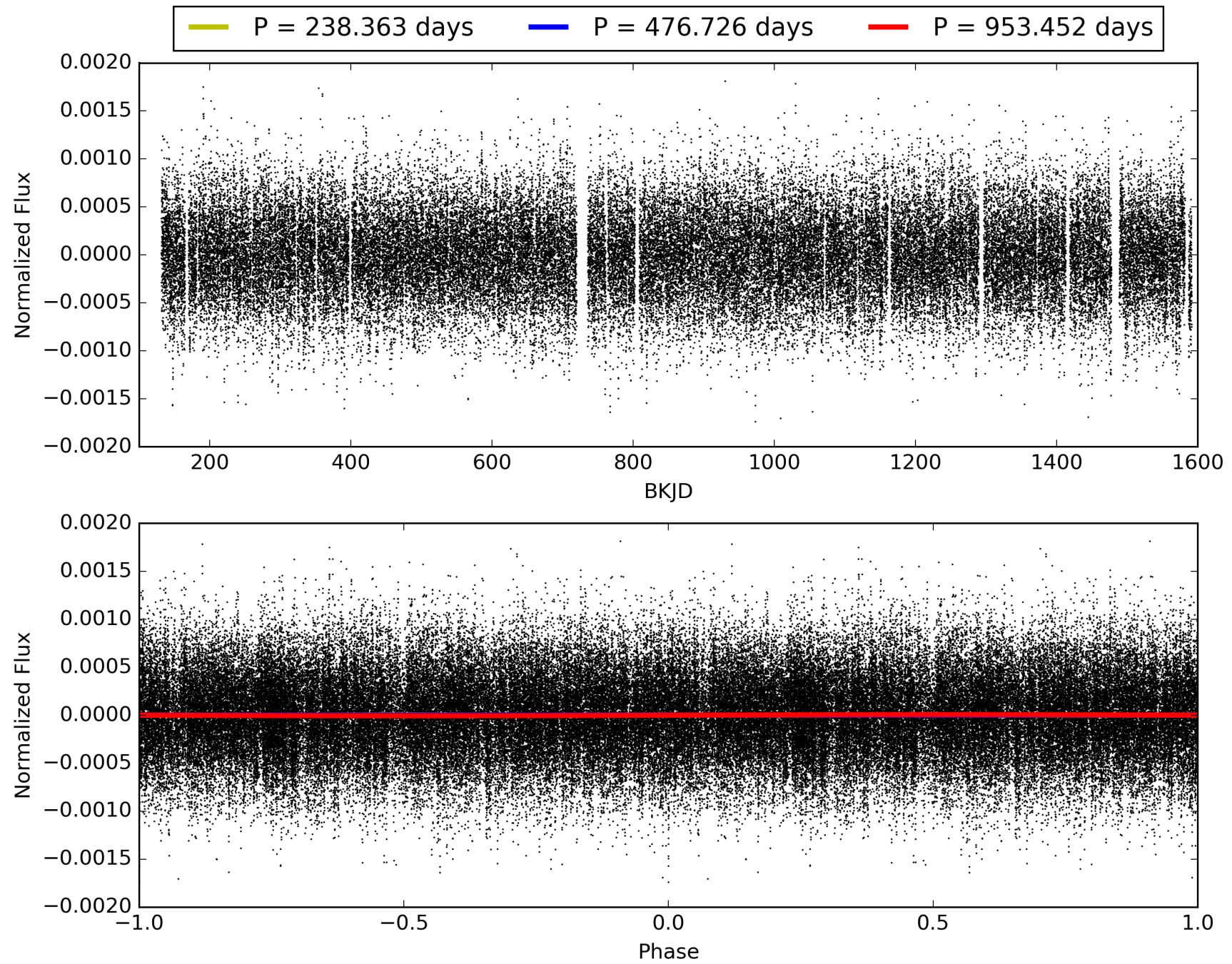
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 48.1%
ModelChiSquareGof-sig: 97.4%
Bootstrap-pfa: 5.38e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.37
Centroid-sig: 2.3%
Centroid-so: 0.611 arcsec [1.94σ]
OotOffset-rm: 0.461 arcsec [0.41σ]
KicOffset-rm: 0.301 arcsec [0.38σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 009941550-01, PDC Light Curves

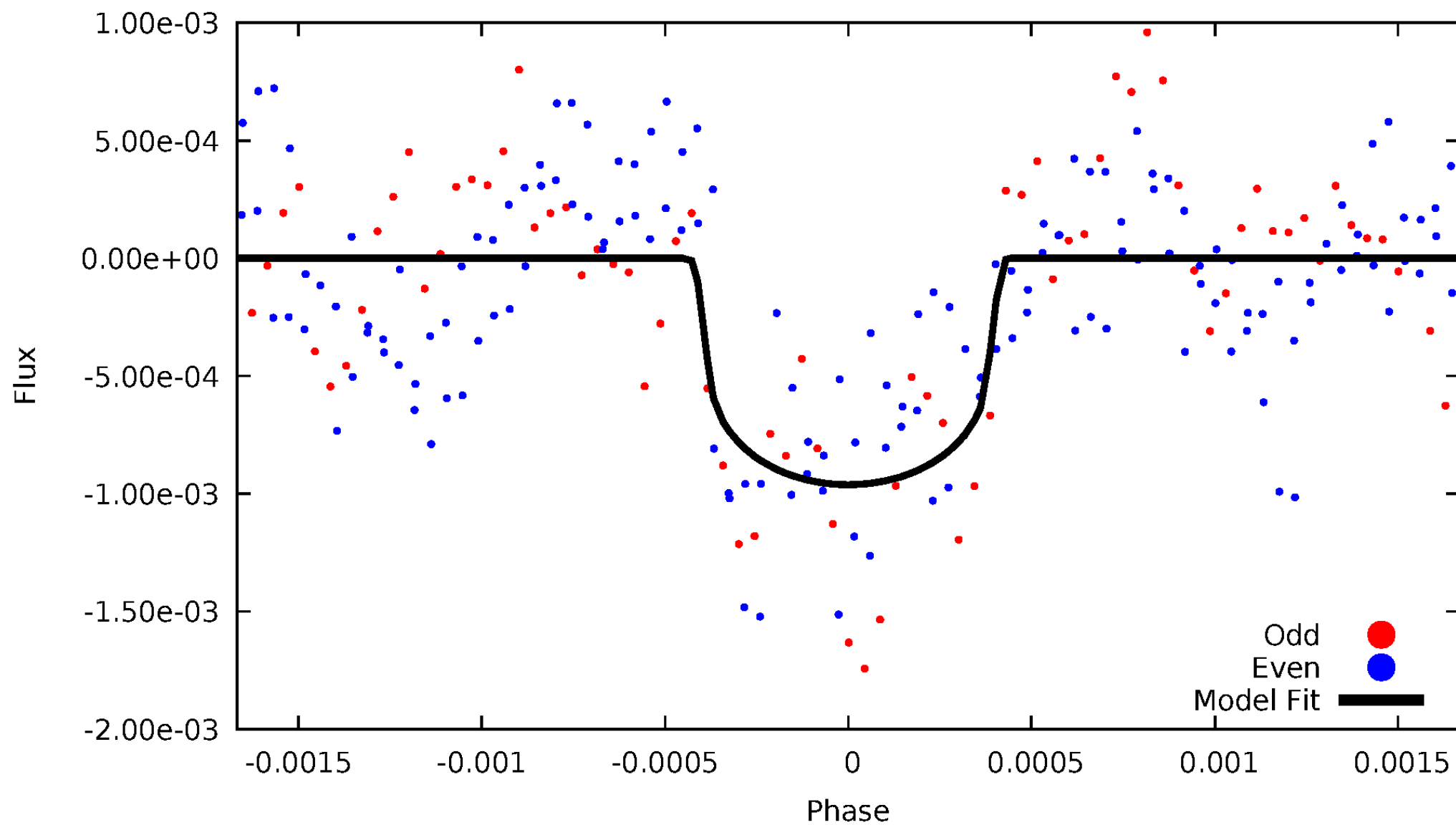


TCE 009941550-01



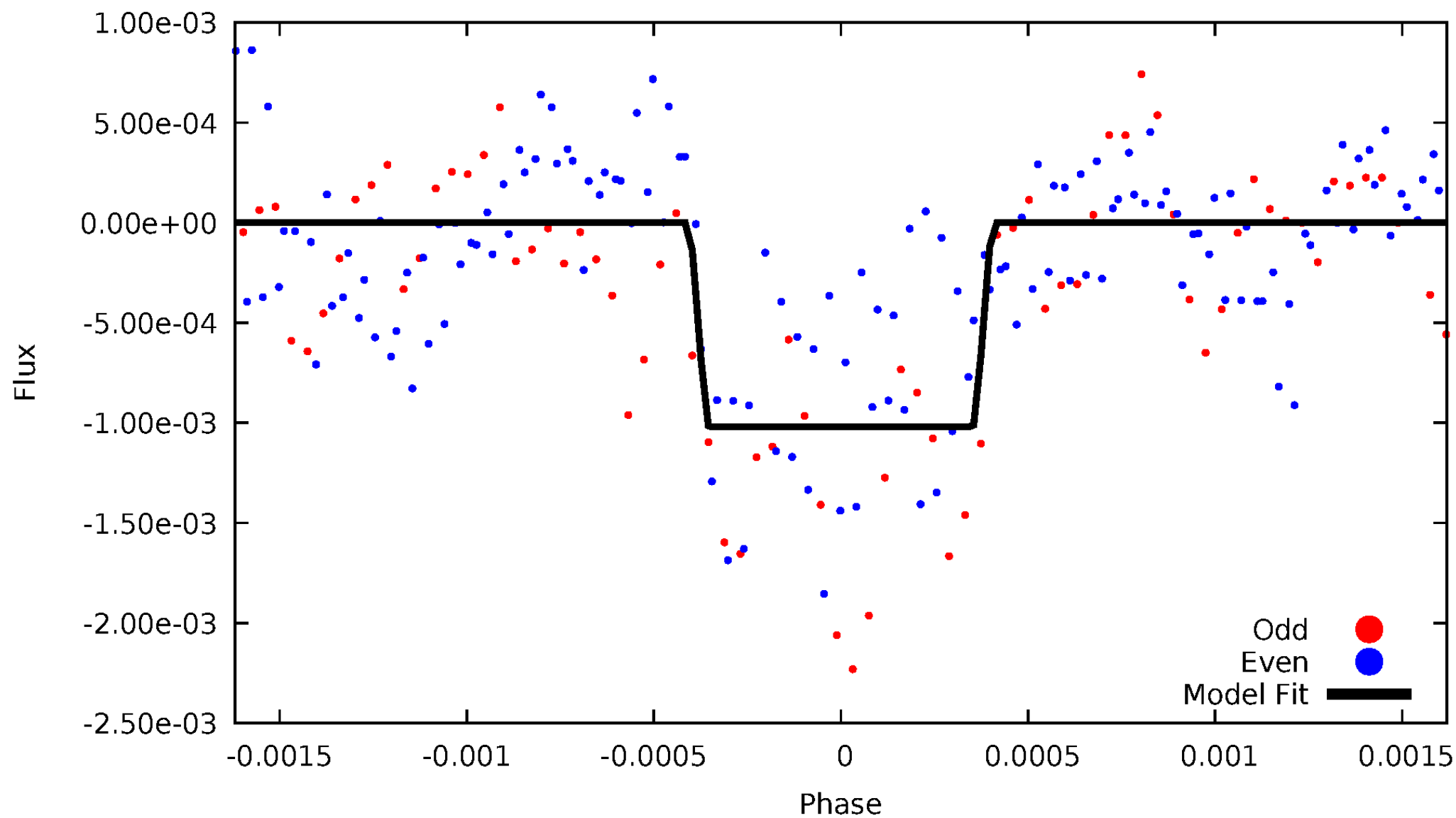
DV Odd/Even

TCE 009941550-01



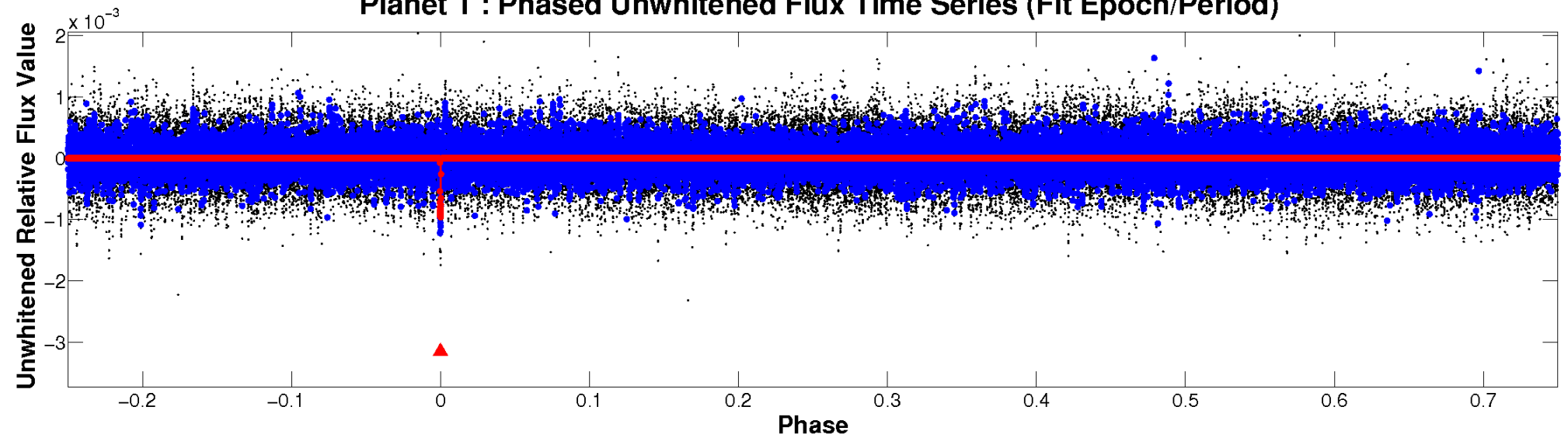
ALT Odd/Even

TCE 009941550-01

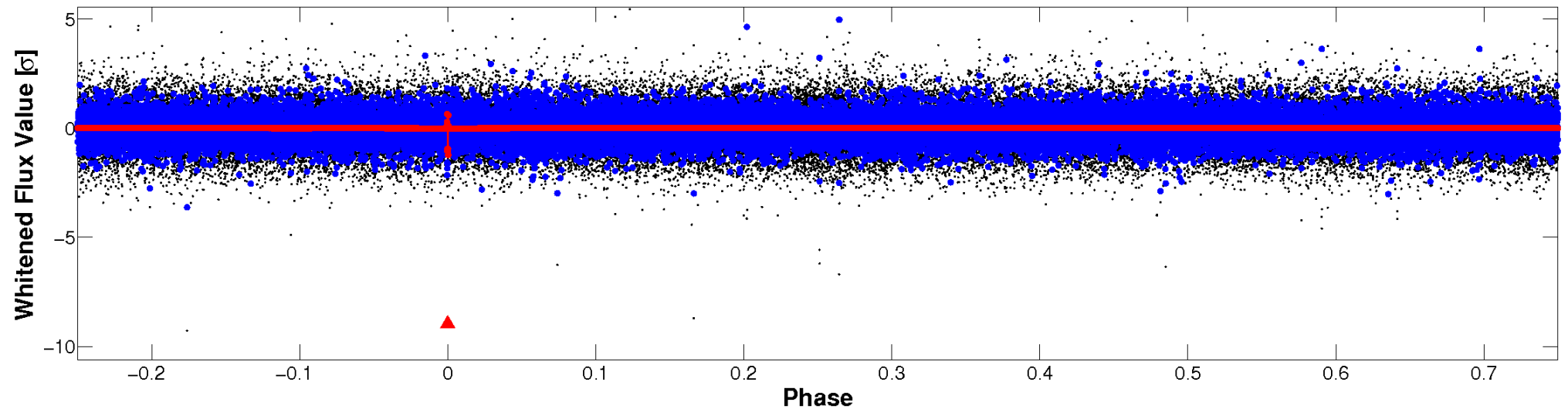


Non-Whitened Vs. Whitened Light Curve

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

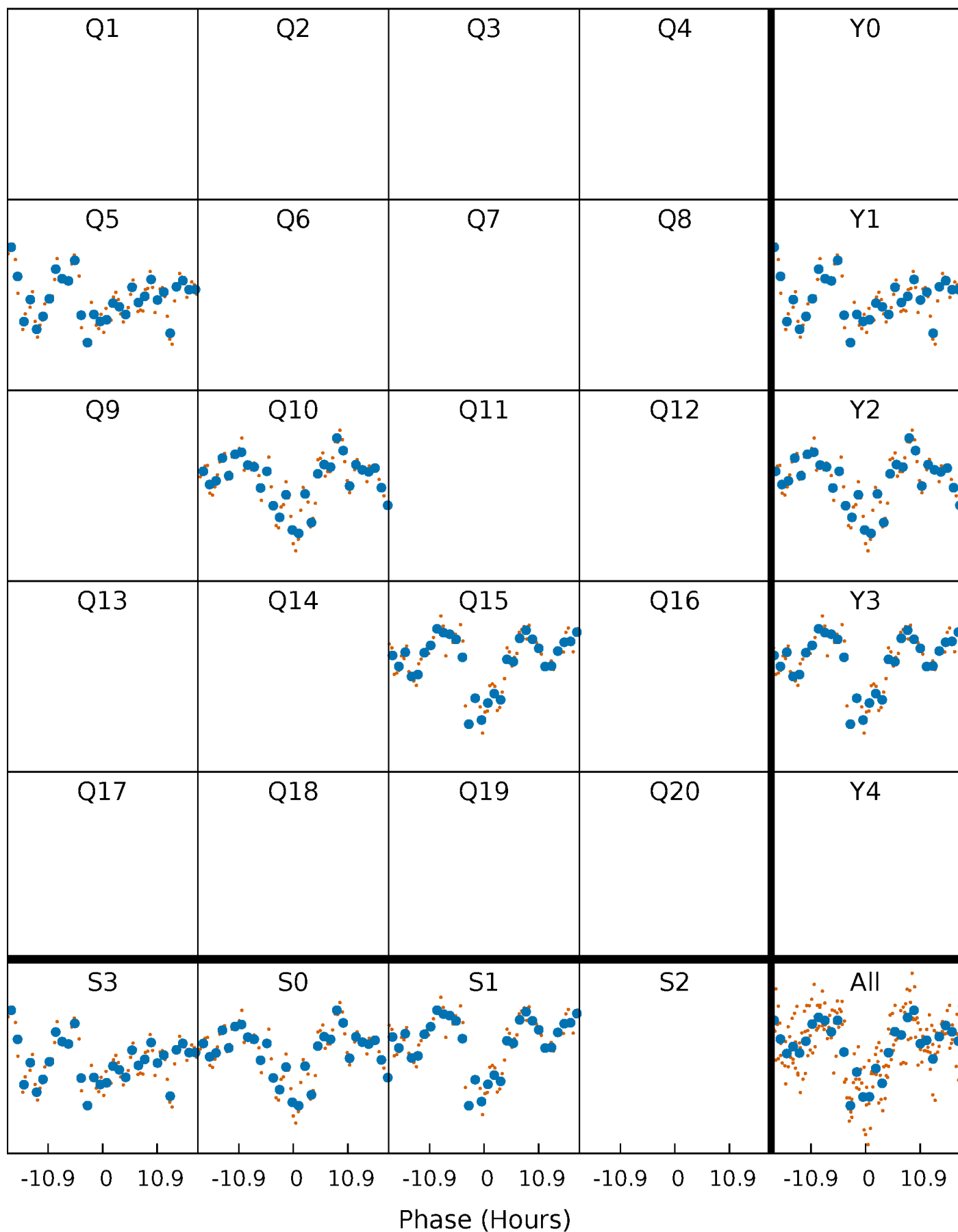


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



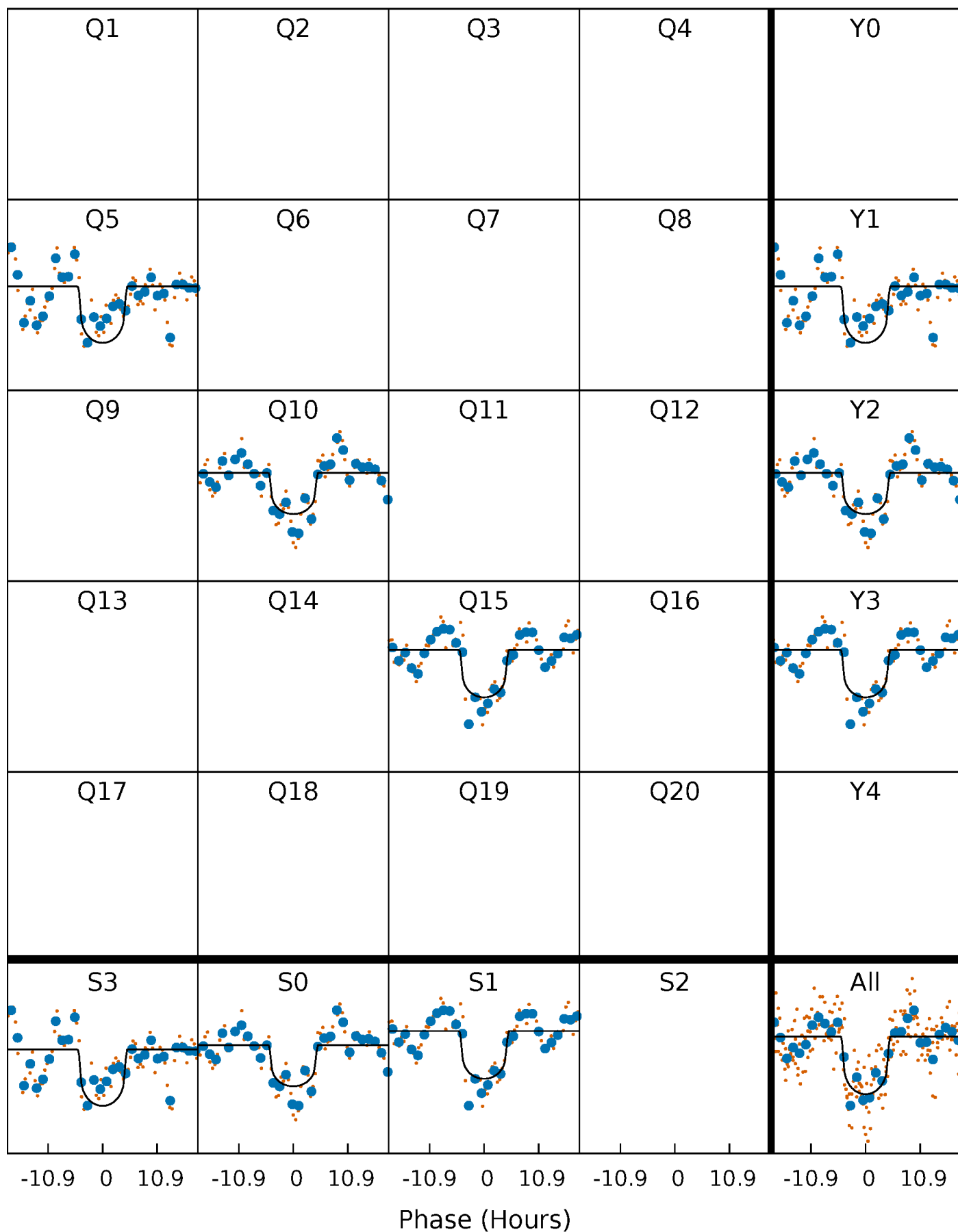
PDC Quarter-Phased Transit Curves

TCE 009941550-01 $P=476.725898$ Days $T_0=496.426892$ (BKJD)



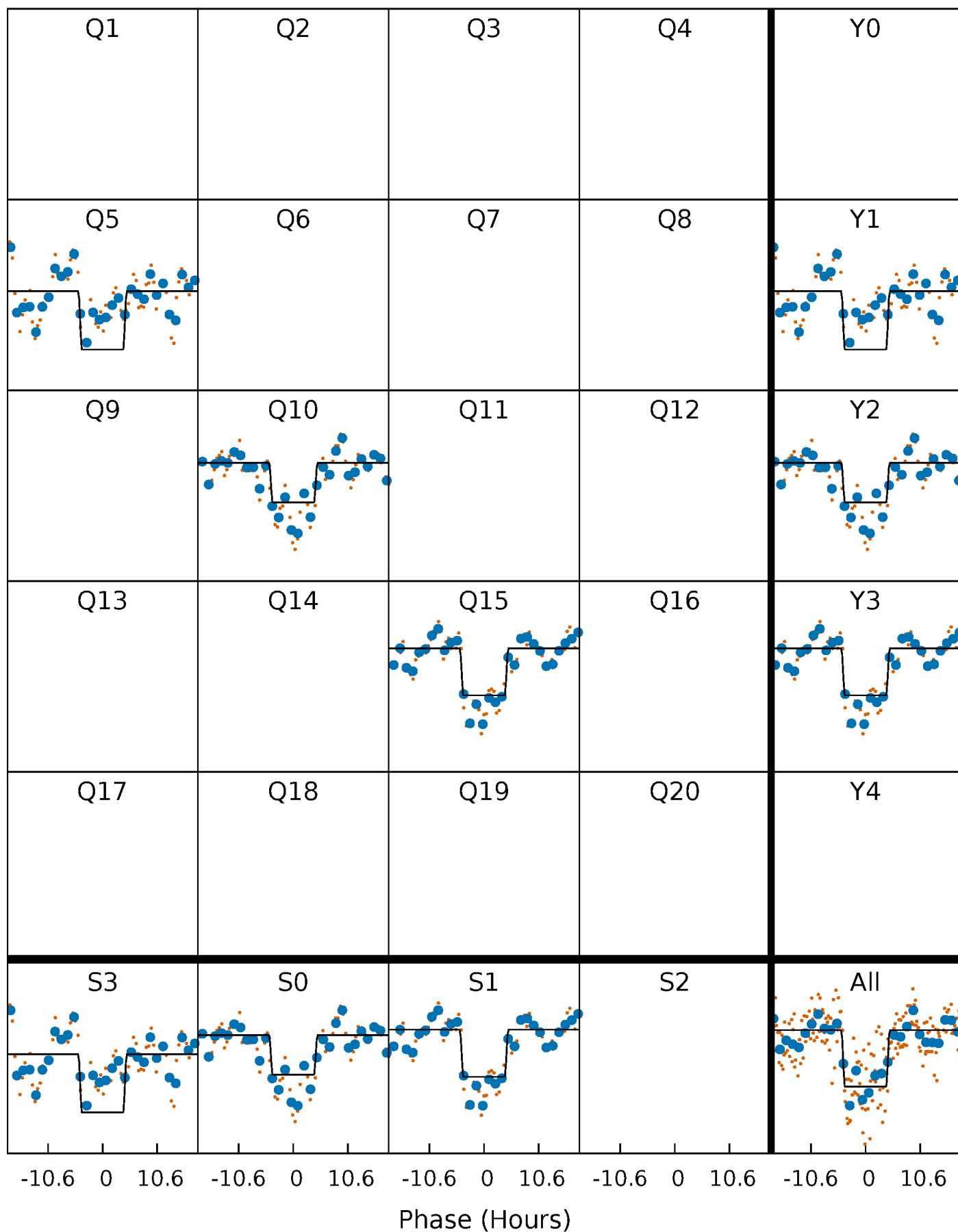
DV Quarter-Phased Transit Curves

TCE 009941550-01 $P=476.725898$ Days $T_0=496.426892$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

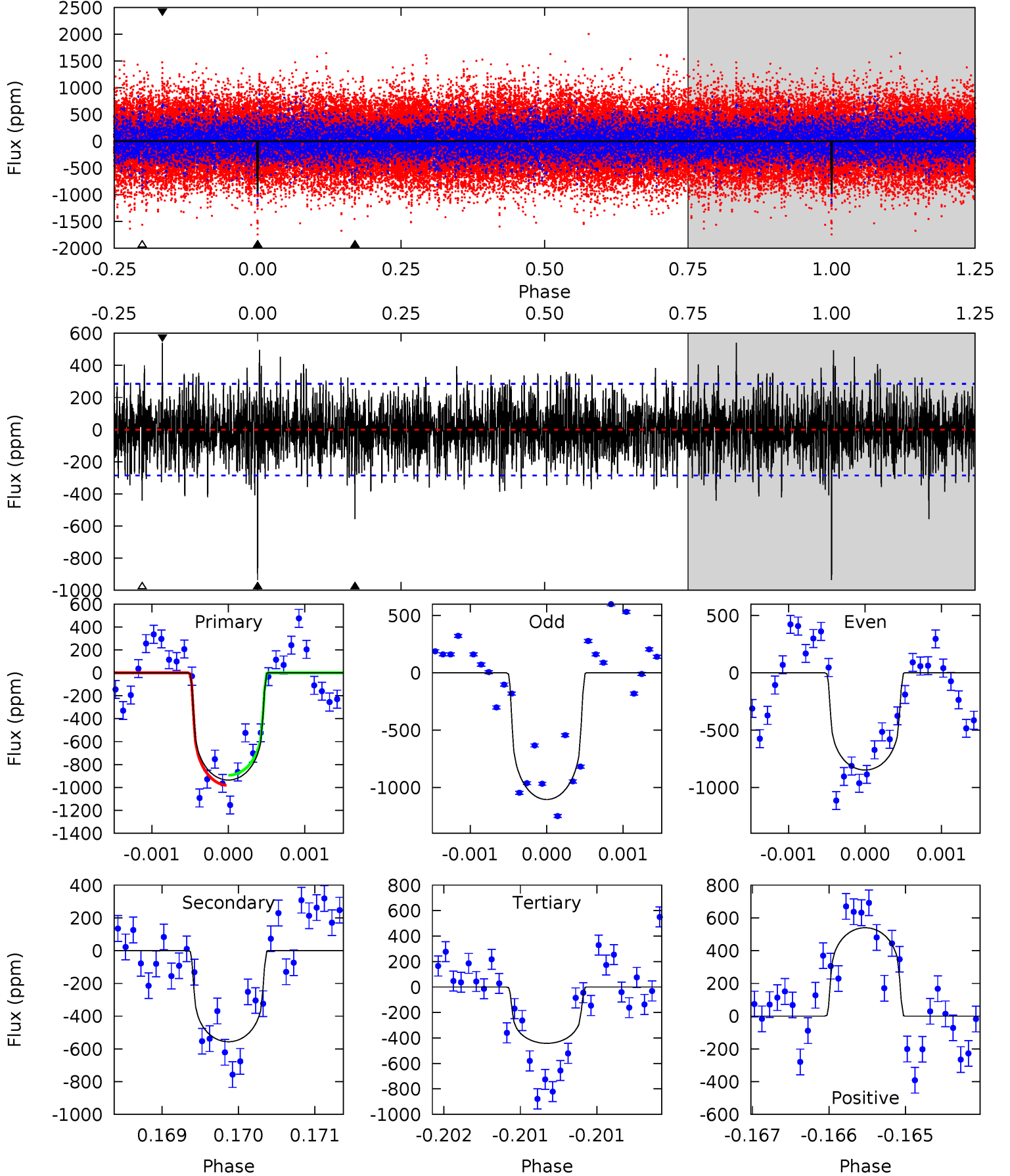
TCE 009941550-01 P=476.728577 Days $T_0=496.430092$ (BKJD)



DV Model-Shift Uniqueness Test

009941550-01, $P = 476.725898$ Days, $E = 19.700994$ Days

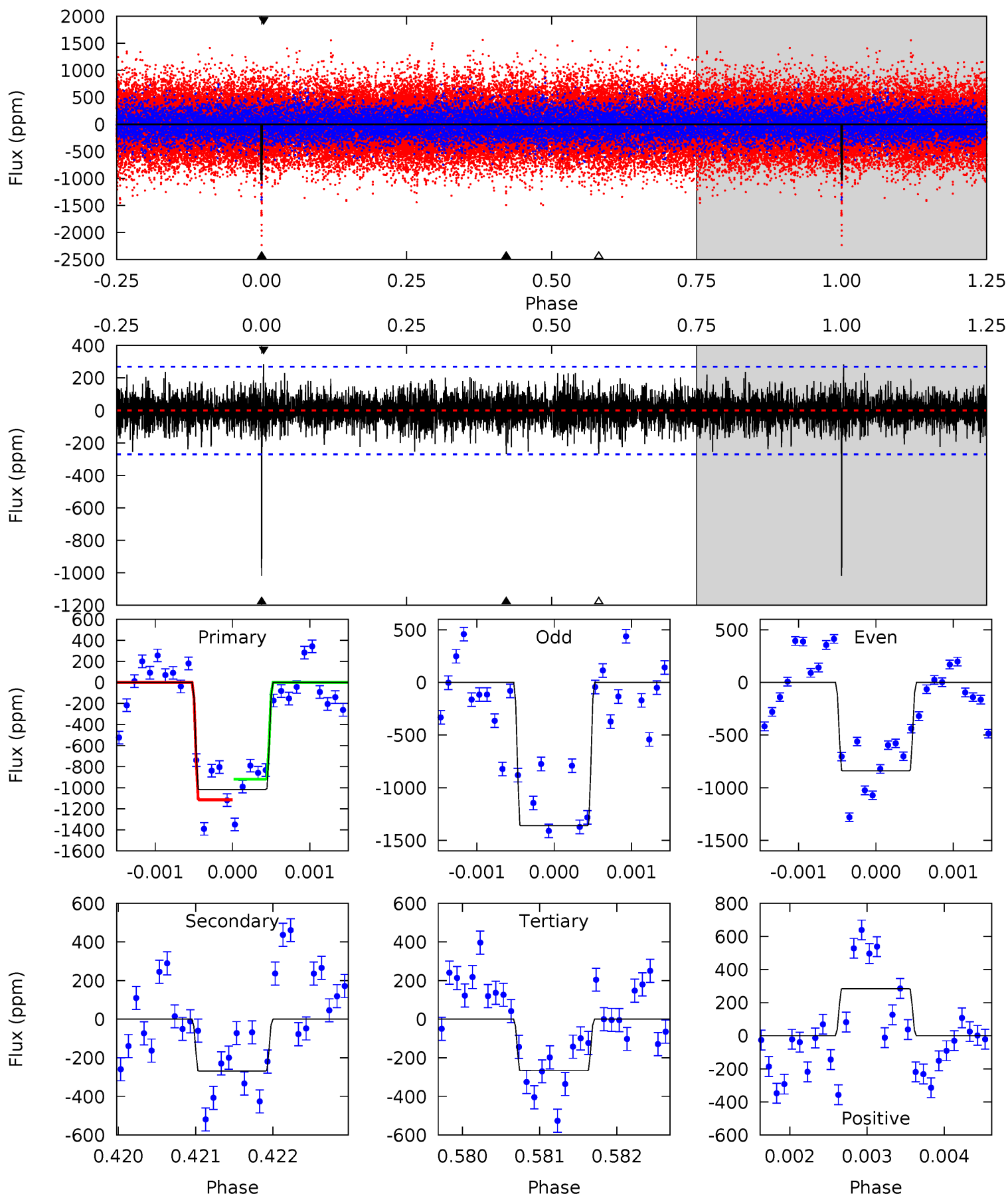
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 18.0 | 10.7 | 8.49 | 10.4 | 5.48 | 3.33 | 2.49 | 9.48 | 7.60 | 2.20 | 0.32 | 2.32 | 0.87 | 0.37 | 0.84 |



Alt Model-Shift Uniqueness Test

009941550-01, $P = 476.728577$ Days, $E = 19.701515$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 20.7 | 5.47 | 5.42 | 5.78 | 5.49 | 3.35 | 1.45 | 15.3 | 14.9 | 0.04 | -0.32 | 5.00 | 0.82 | 0.22 | 2.00 |



Stellar Parameters For KIC 009941550

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5068^{+101}_{-111} | $2.827^{+0.030}_{-0.030}$ | $-0.620^{+0.200}_{-0.250}$ | $7.417^{+0.659}_{-1.130}$ | $1.347^{+0.214}_{-0.367}$ | $0.005^{+0.001}_{-0.001}$ |
| | +2%/-2% | +1%/-1% | +32%/-40% | +9%/-15% | +16%/-27% | +21%/-12% |
| Source | PHO1 | AST9 | 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 009941550-01 / KOI 5739.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|-------------------------|----------------------|----------------------|---------------------|
| DV | -557 ± 52 | $23.86^{+5.98}_{-5.25}$ | 742^{+18}_{-20} | 4622^{+538}_{-379} | 941^{+620}_{-338} |
| Alt. | -268 ± 49 | $26.10^{+5.90}_{-6.30}$ | 741^{+20}_{-20} | 3910^{+421}_{-297} | 380^{+280}_{-137} |

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

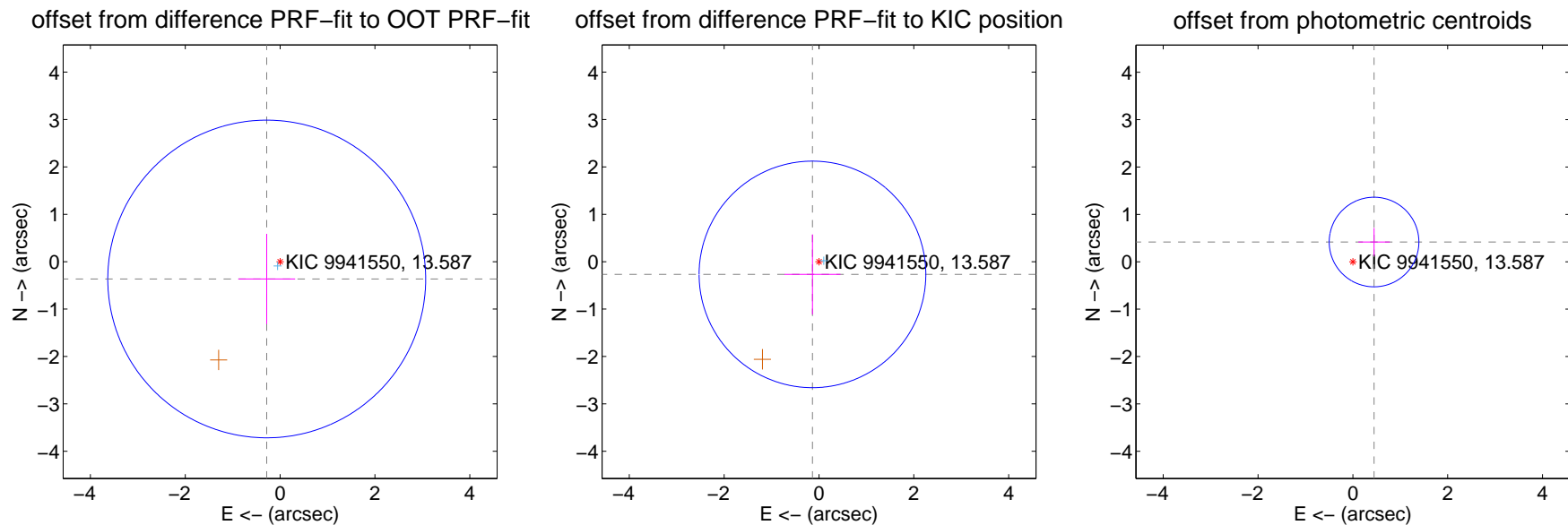
DV Centroid Data

Supplemental centroid analysis for 009941550-01. Kepler magnitude: 13.59. Transit SNR 7.24

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.461 ± 1.117 | 0.41 | 0.282 ± 0.599 | -0.365 ± 0.952 |
| PRF-fit source offset from KIC position | 0.301 ± 0.797 | 0.38 | 0.138 ± 0.590 | -0.268 ± 0.843 |
| photometric centroid source offset | 0.61 ± 0.32 | 1.94 | -0.45 ± 0.33 | 0.42 ± 0.30 |

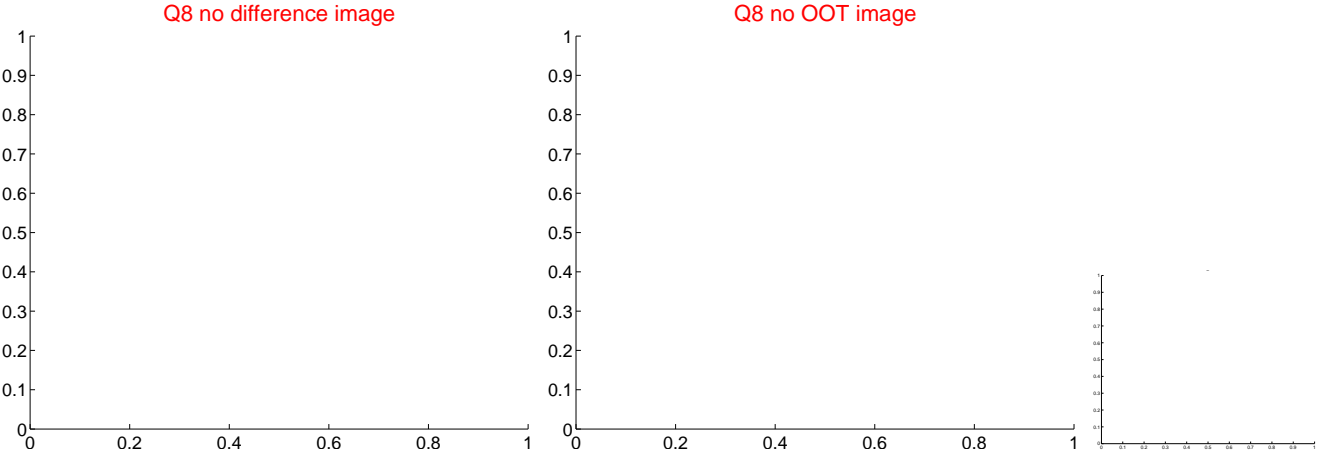
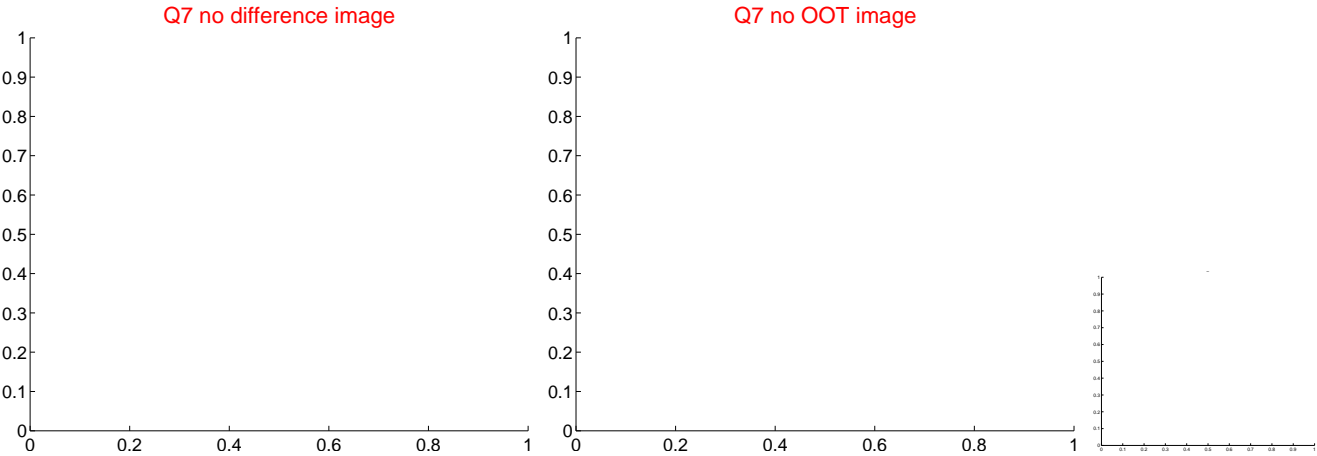
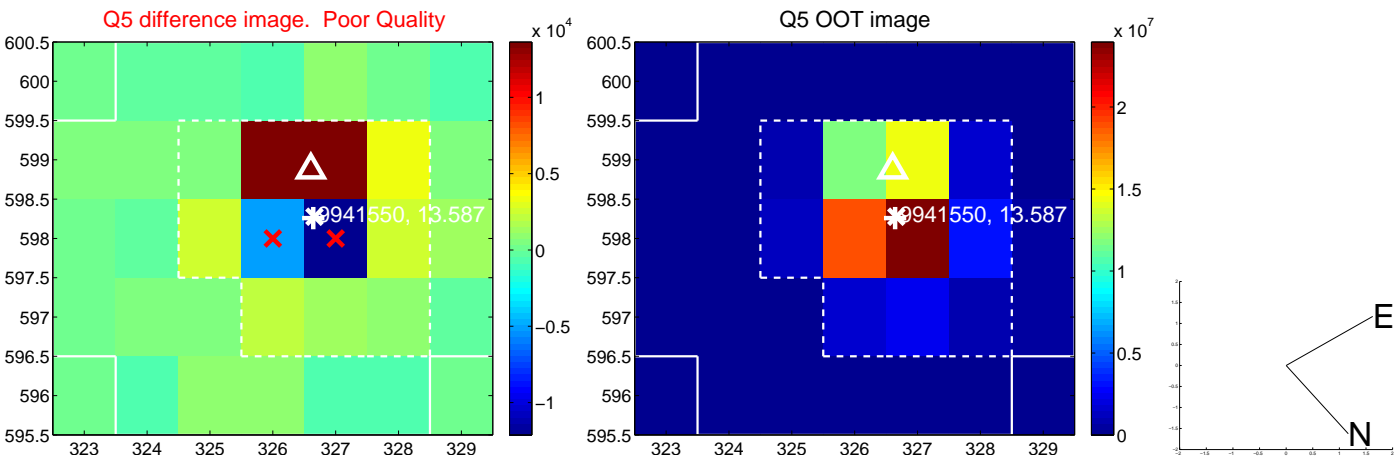


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

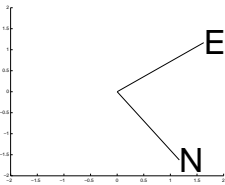
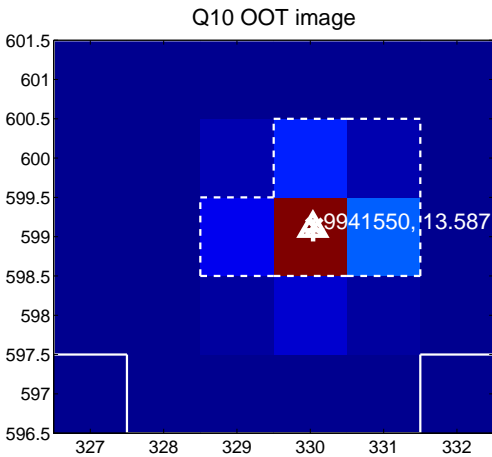
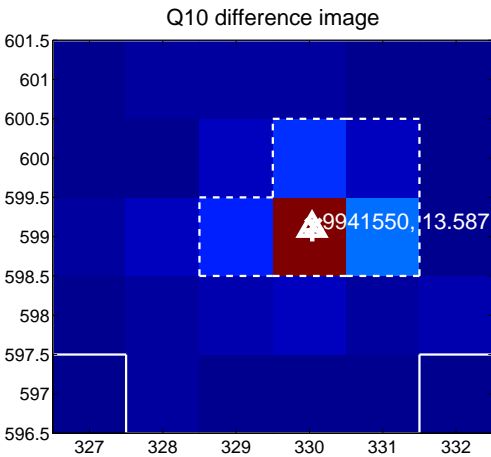


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

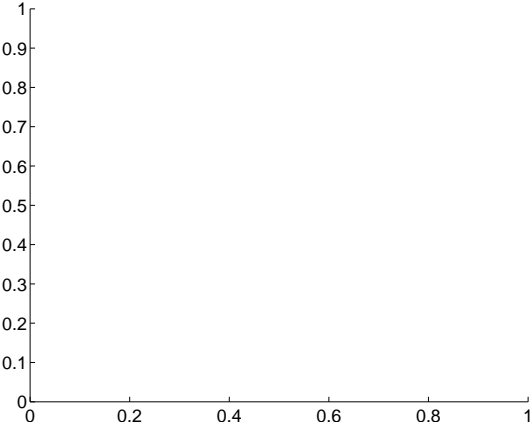
Q9 no difference image



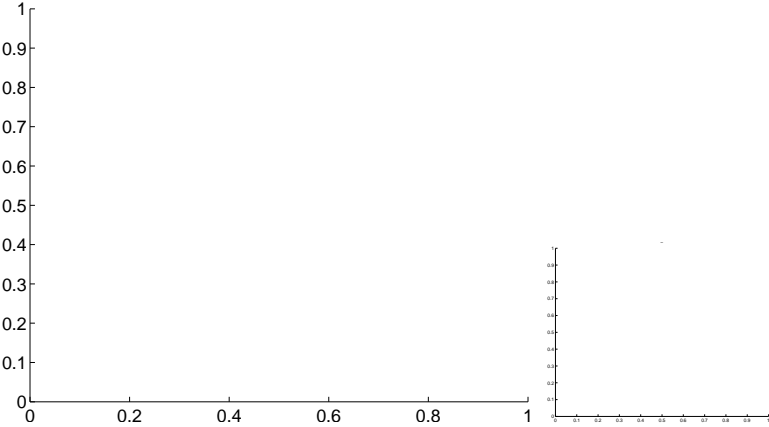
Q9 no OOT image



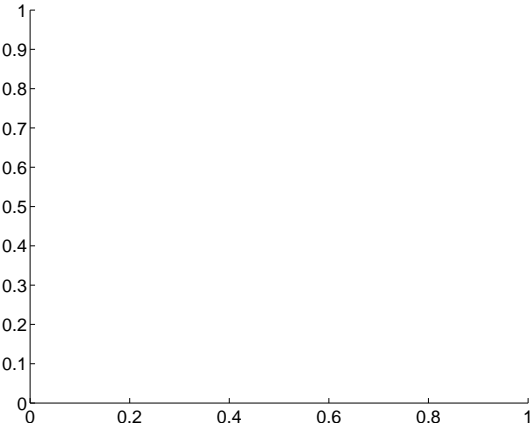
Q11 no difference image



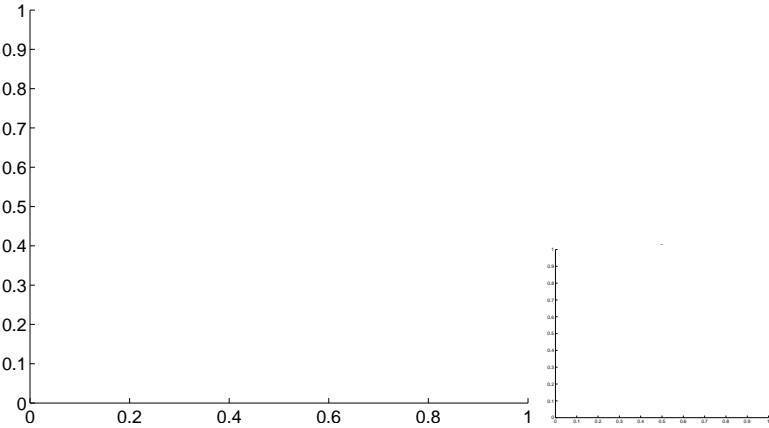
Q11 no OOT image



Q12 no difference image



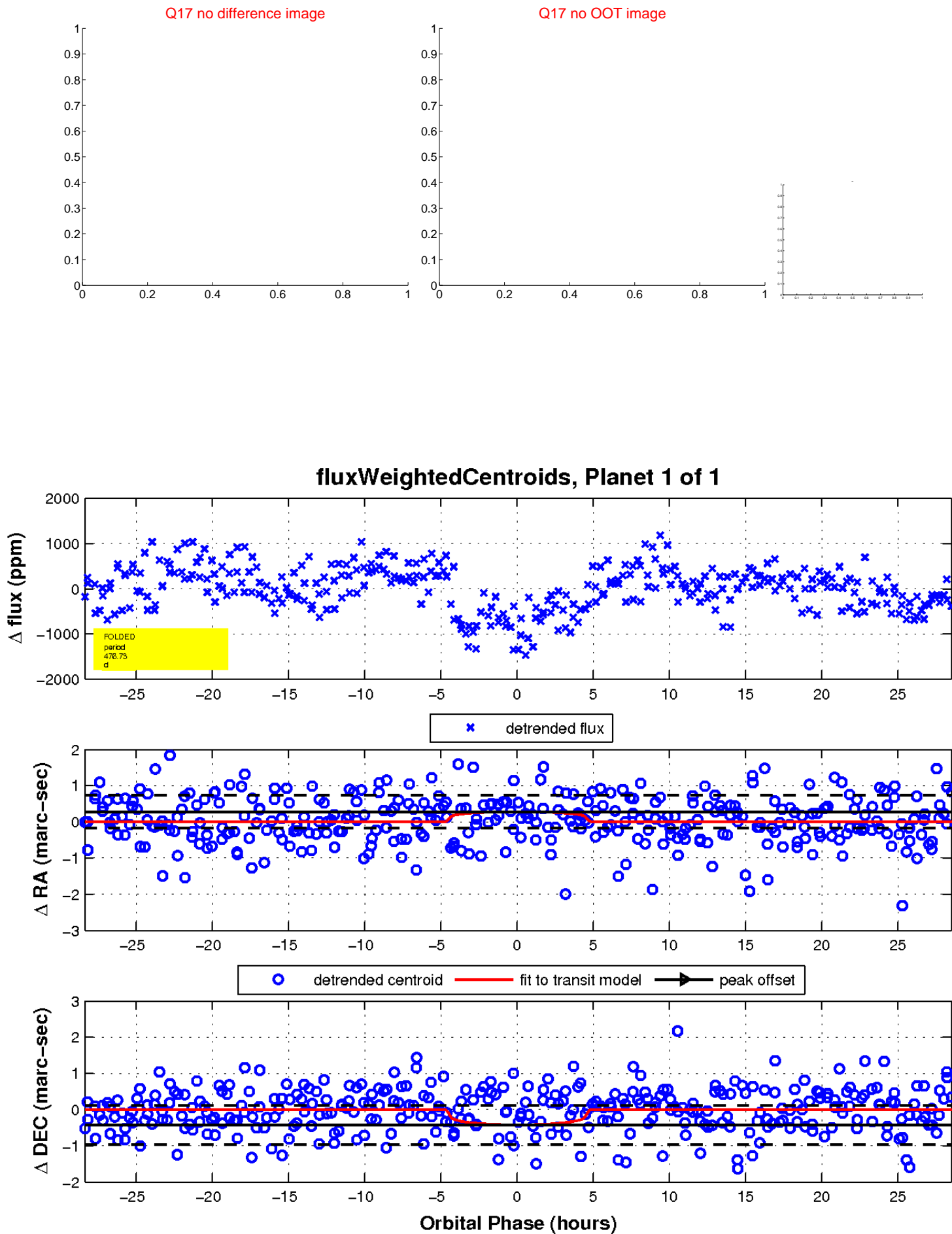
Q12 no OOT image



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

