

KIC 009411471

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009411471-01 | OBS | No | 382.134315 | 488.092304 | 246.7 | 10.276 | 11.0 | 12.4 | 1.51 | 5578 | 2.44 | 2.09 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009411471-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_MEAS |

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

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

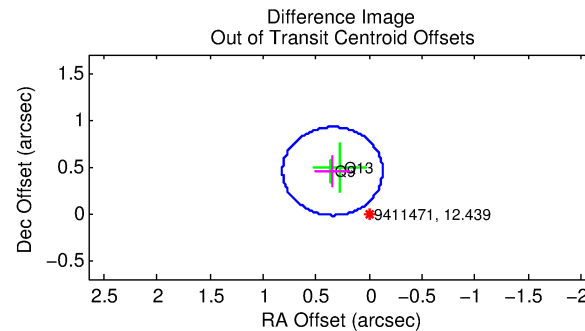
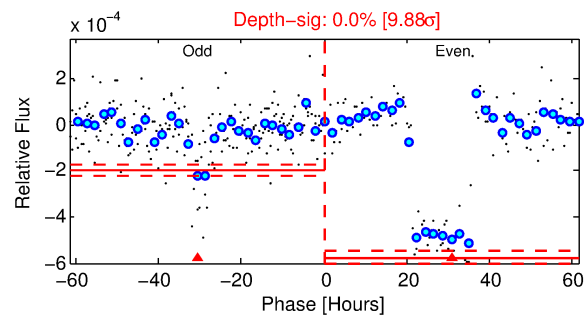
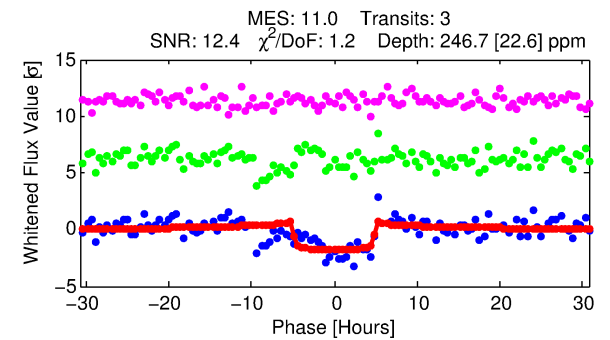
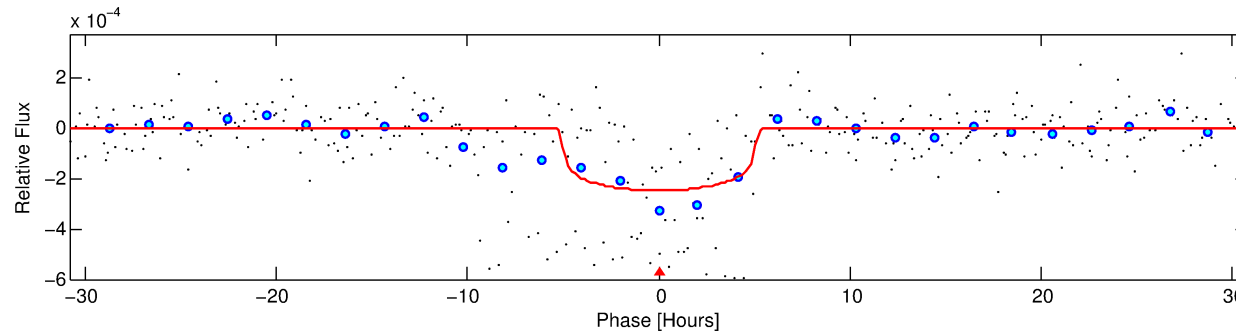
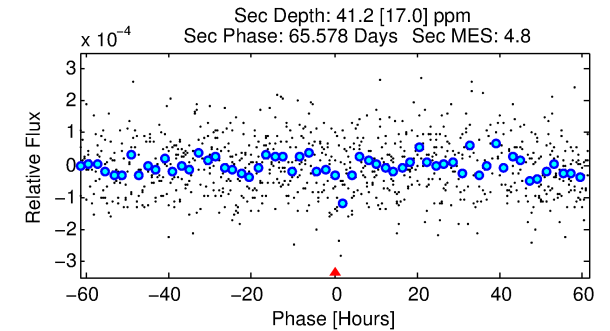
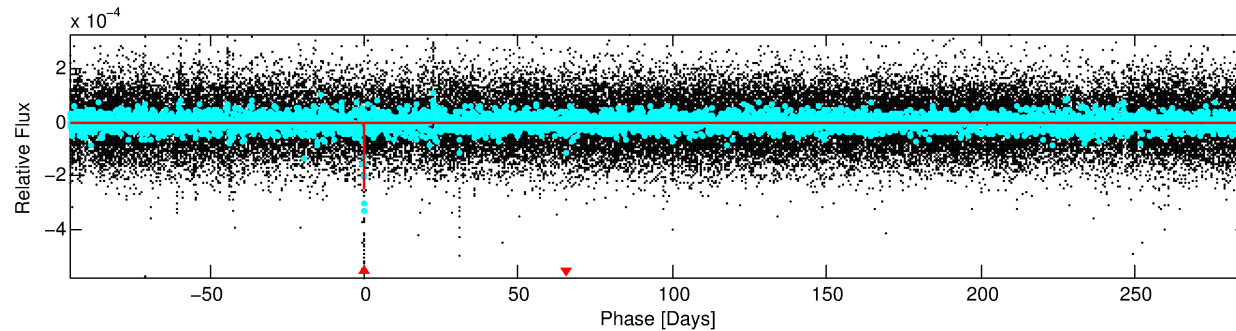
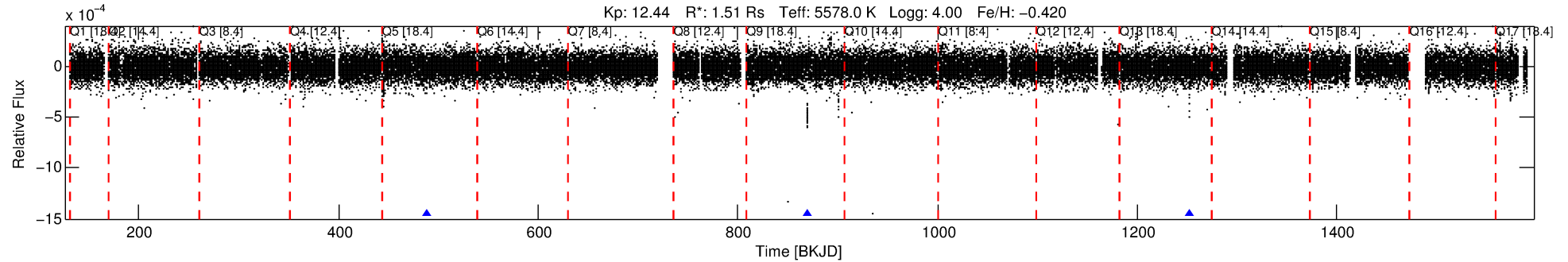
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009411471-01

No Significant Match Found

DV One-Page Summary

KIC: 9411471 Candidate: 1 of 1 Period: 382.134 d



DV Fit Results:

Period = 382.13432 [0.00850] d
Epoch = 488.0923 [0.0103] BKJD
Rp/R* = 0.0148 [0.0109]
a/R* = 244.25 [801.14]
b = 0.54 [4.34]
Seff = 2.09 [1.86]
Teq = 307 [68] K
Rp = 2.43 [2.14] Re
a = 0.9703 [0.5048] AU
Ag = 3595.39 [6349.41] [0.57σ]
Teffp = 3672 [1408] K [2.39σ]

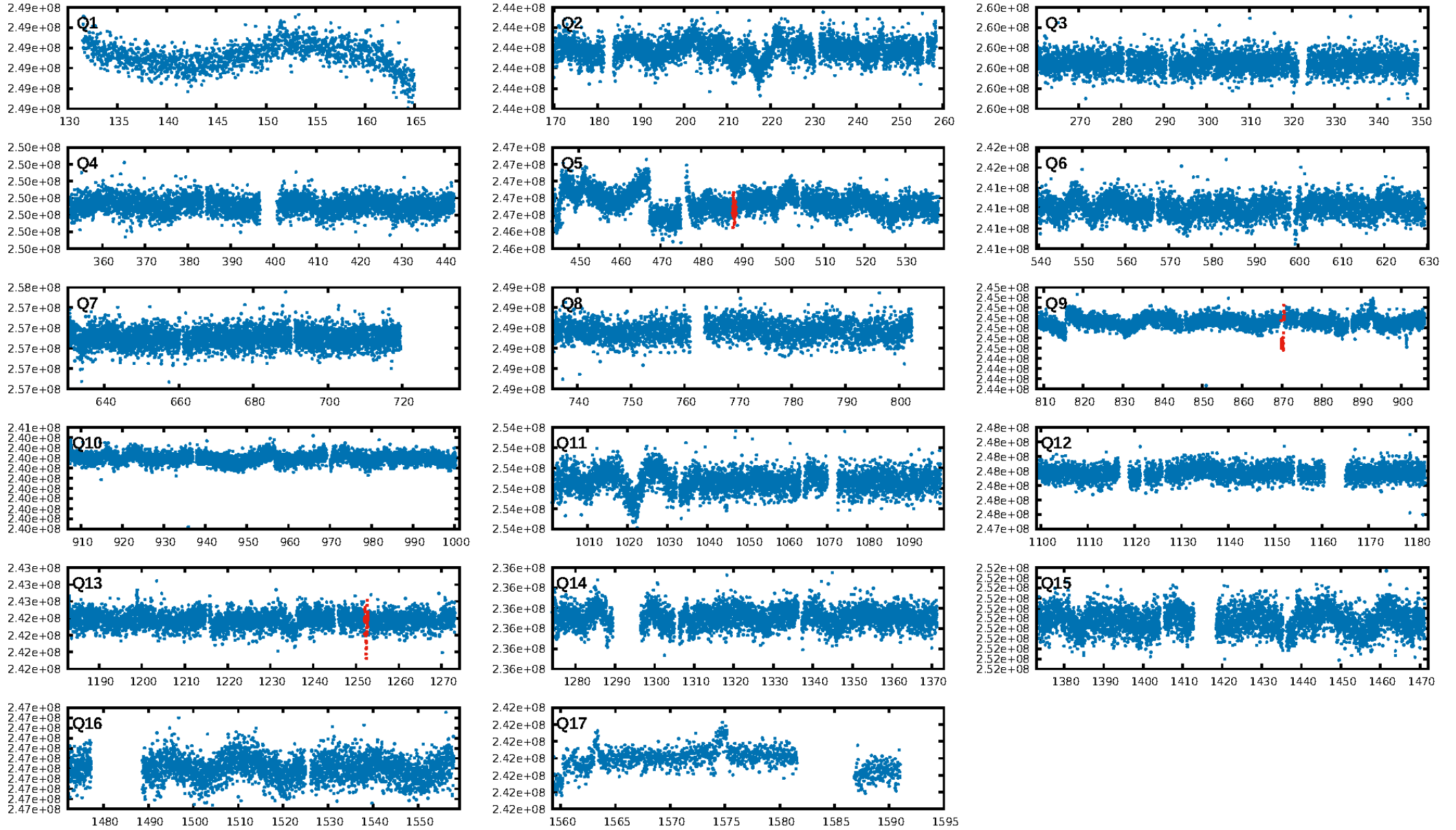
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 9.9%
Bootstrap-pfa: 3.88e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 4.737
Centroid-sig: 0.1%
Centroid-so: 1.138 arcsec [1.40σ]
OotOffset-rm: 0.568 arcsec [3.61σ]
KicOffset-rm: 1.130 arcsec [7.15σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

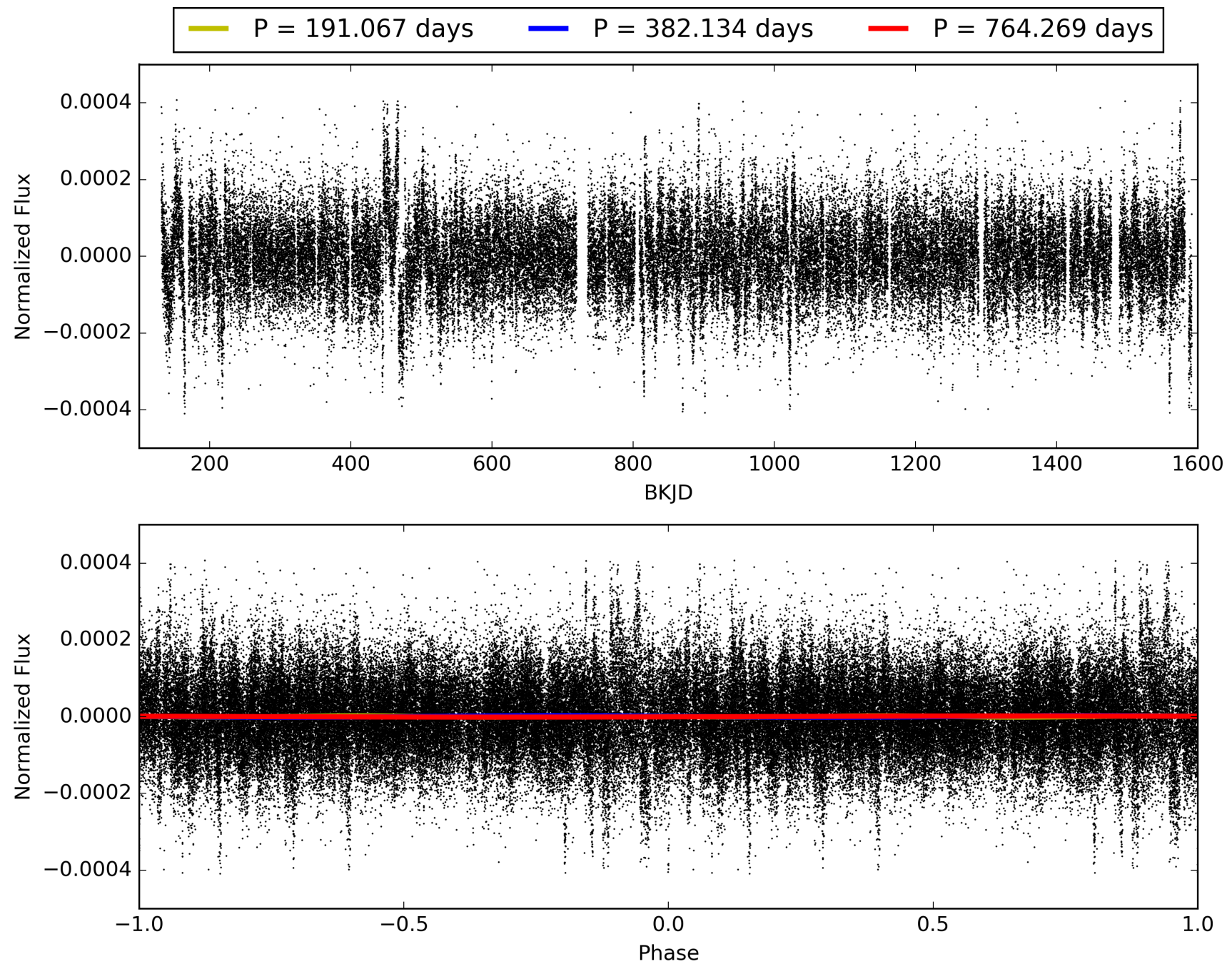
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:11:29 Z

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

TCE 009411471-01, PDC Light Curves

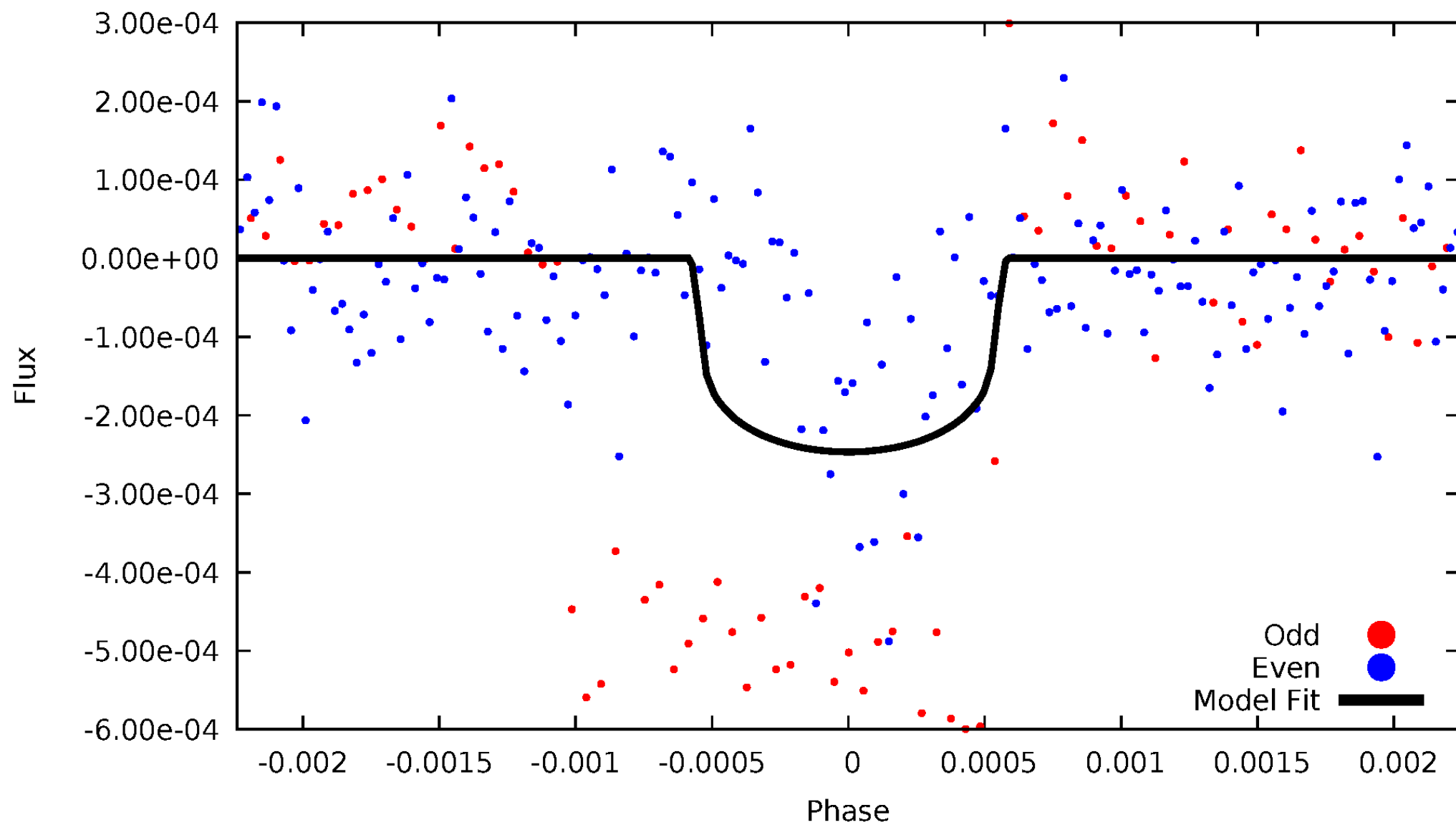


TCE 009411471-01



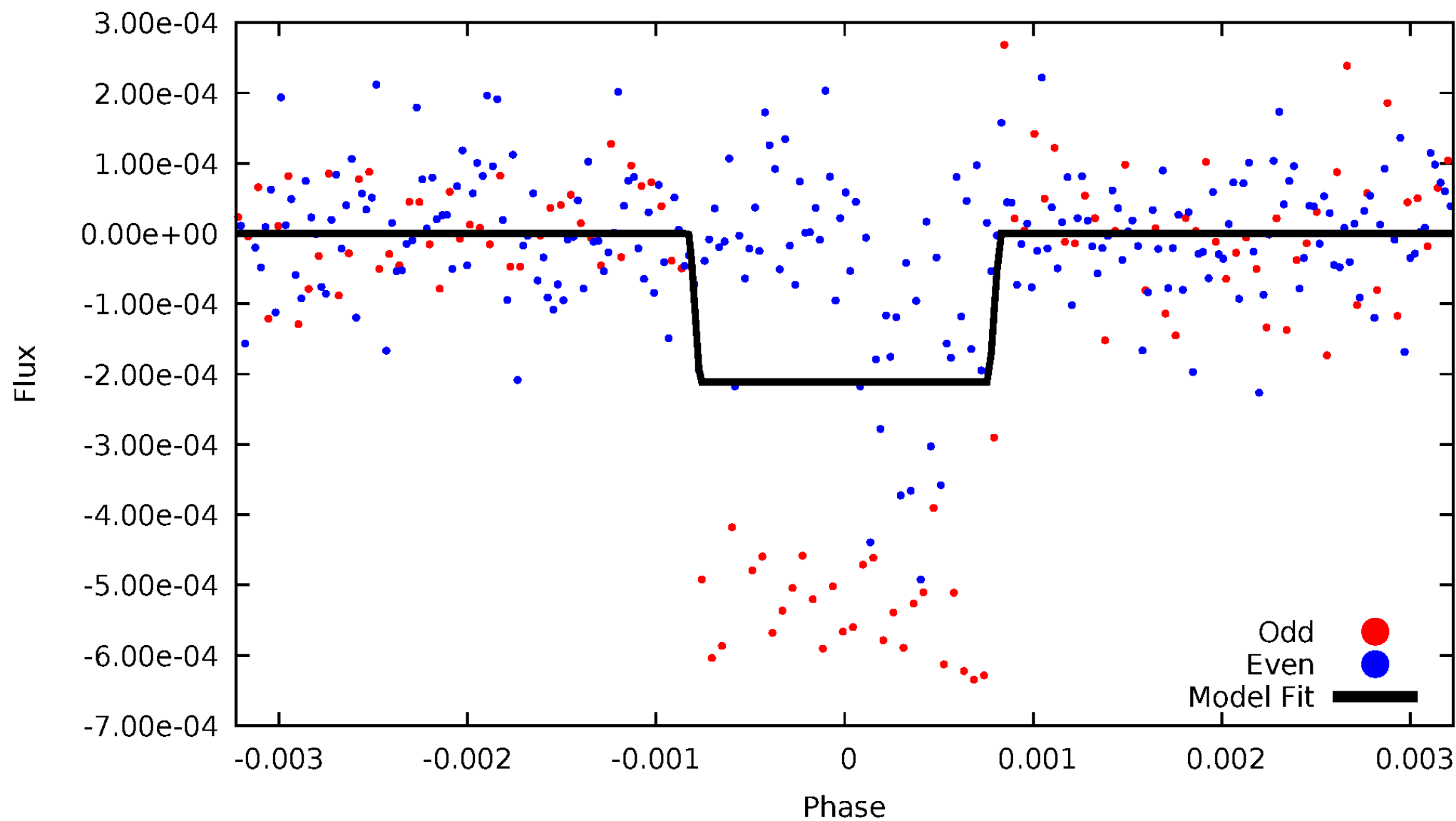
DV Odd/Even

TCE 009411471-01

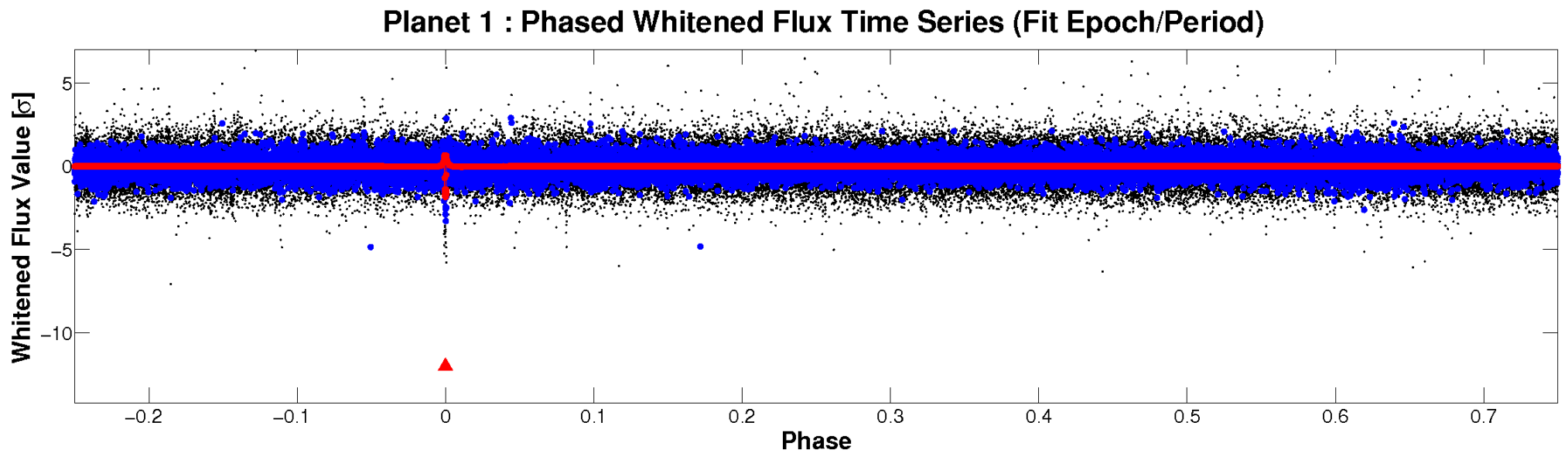
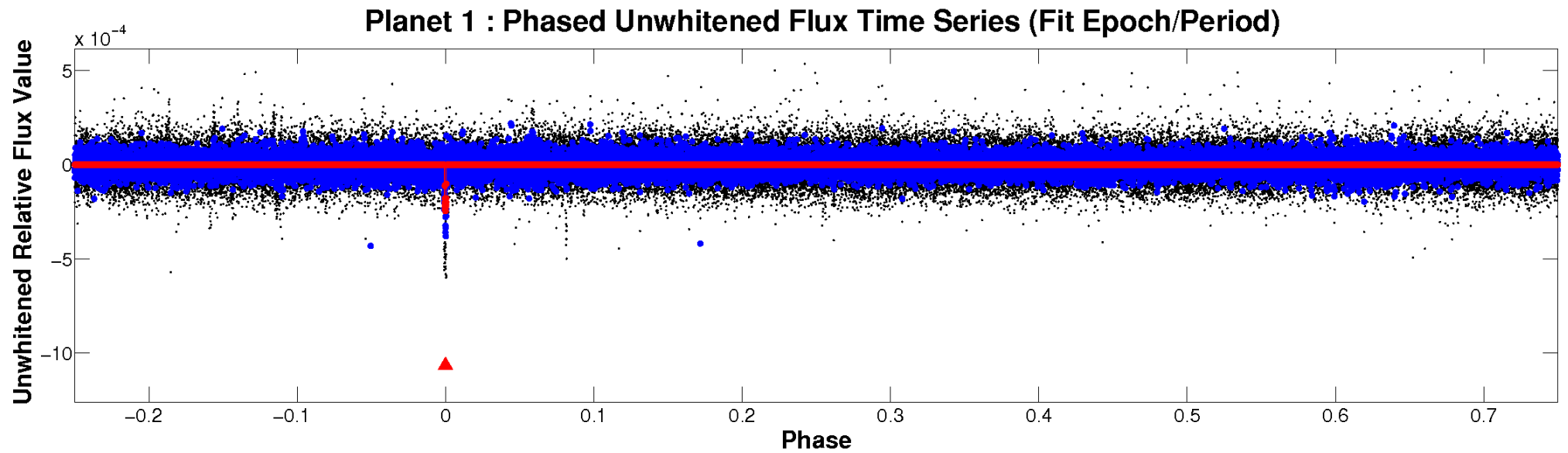


ALT Odd/Even

TCE 009411471-01

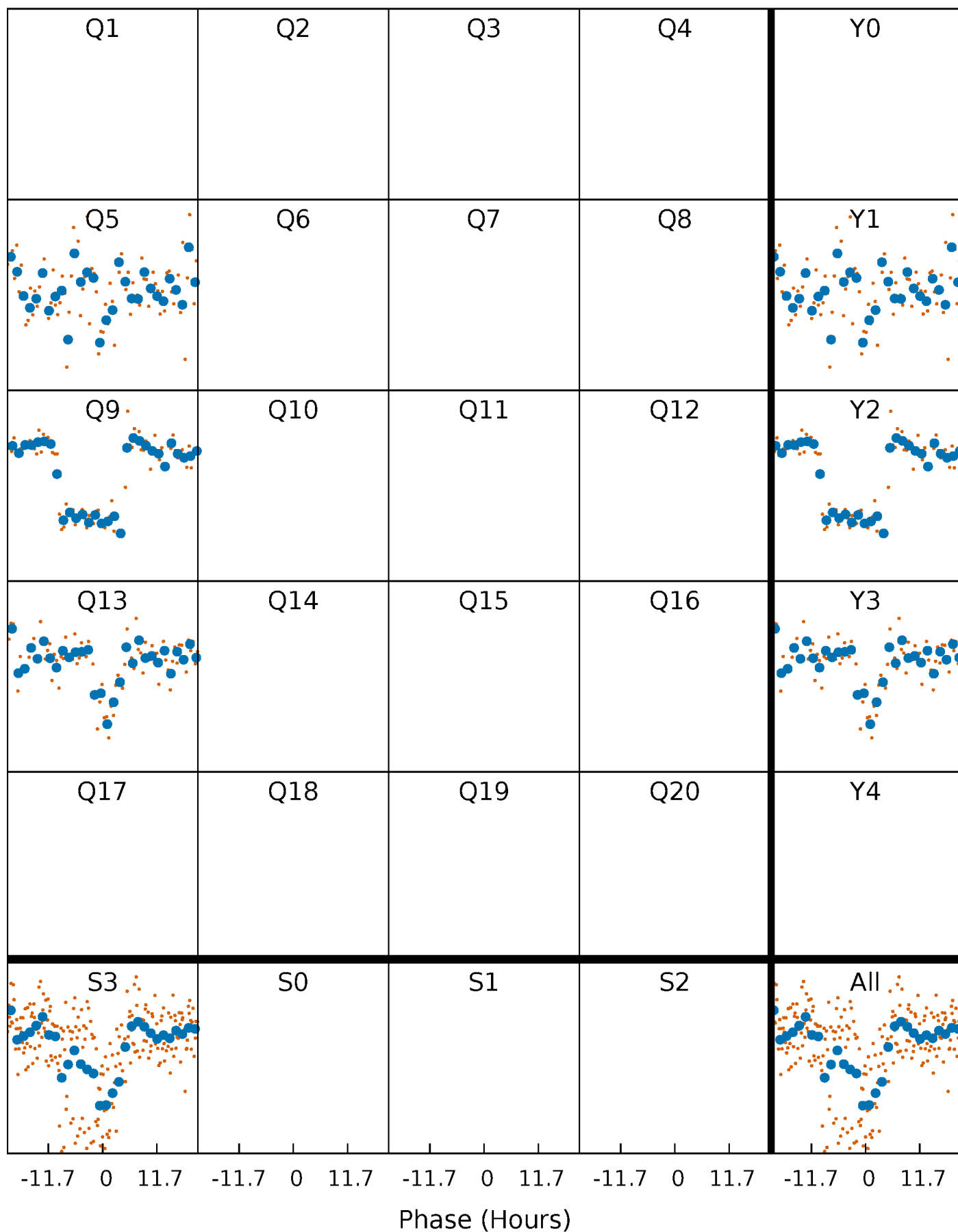


Non-Whitened Vs. Whitened Light Curve



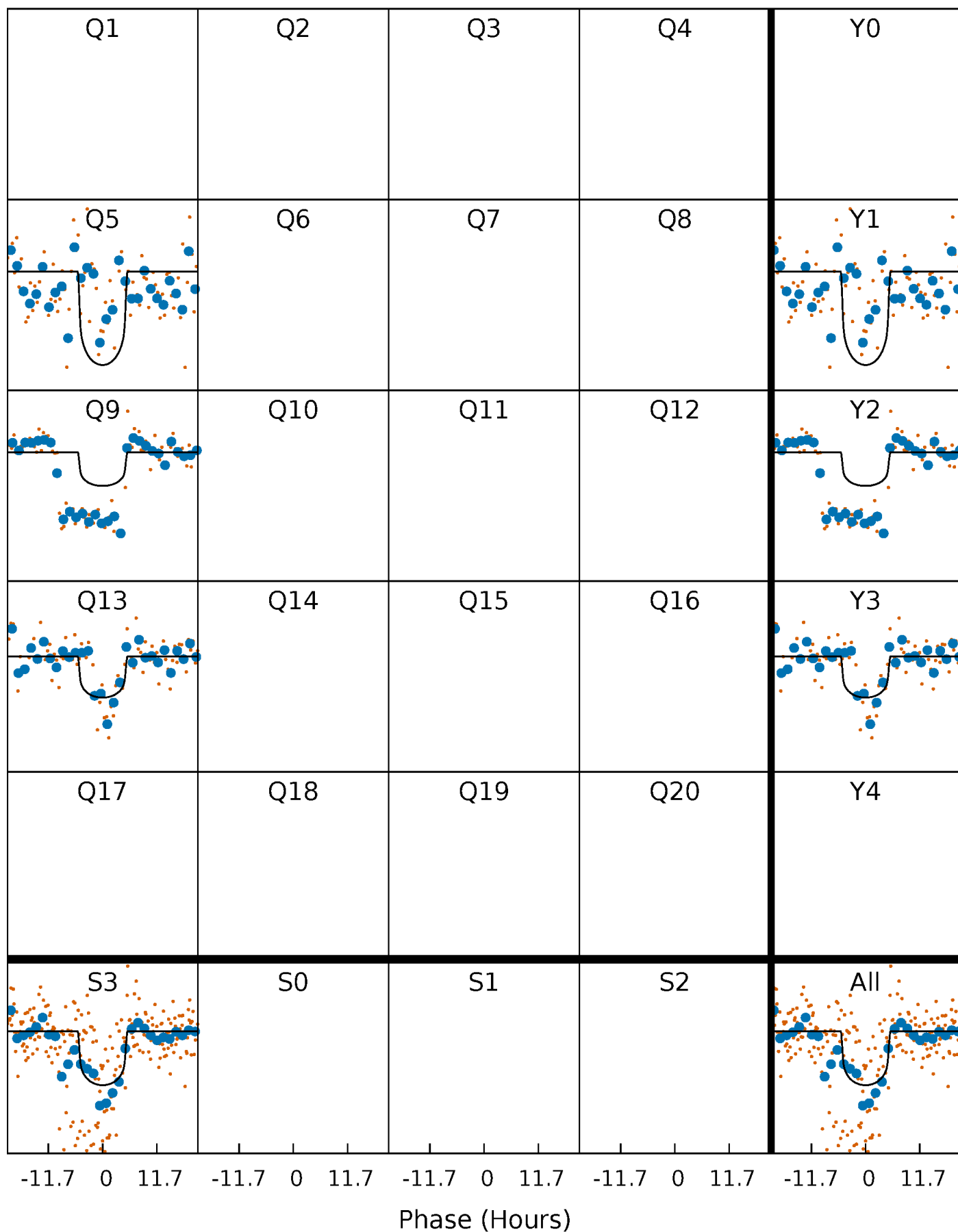
PDC Quarter-Phased Transit Curves

TCE 009411471-01 $P=382.134315$ Days $T_0=488.092304$ (BKJD)



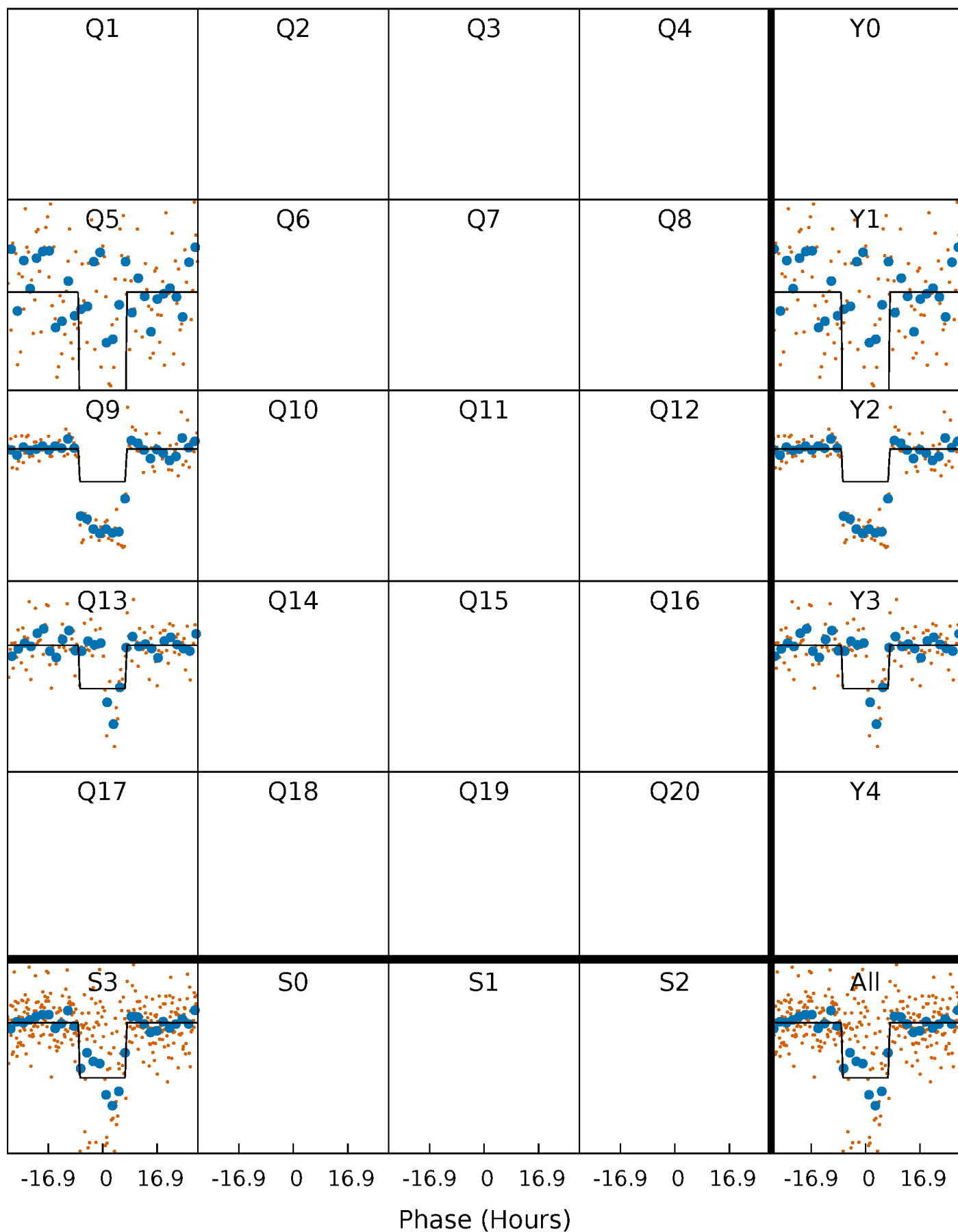
DV Quarter-Phased Transit Curves

TCE 009411471-01 $P=382.134315$ Days $T_0=488.092304$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

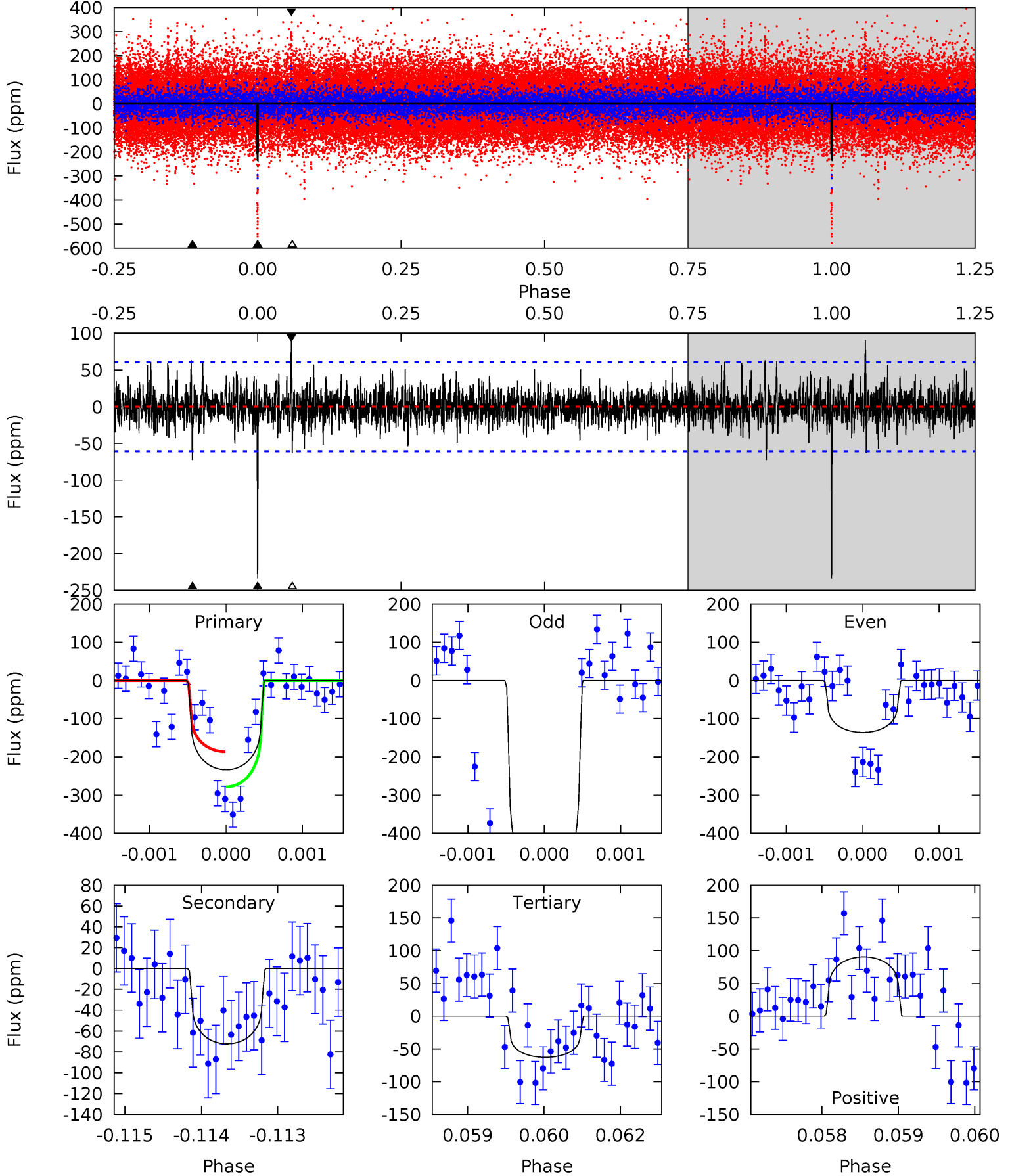
TCE 009411471-01 P=382.134817 Days $T_0=487.993728$ (BKJD)



DV Model-Shift Uniqueness Test

009411471-01, $P = 382.134315$ Days, $E = 105.957989$ Days

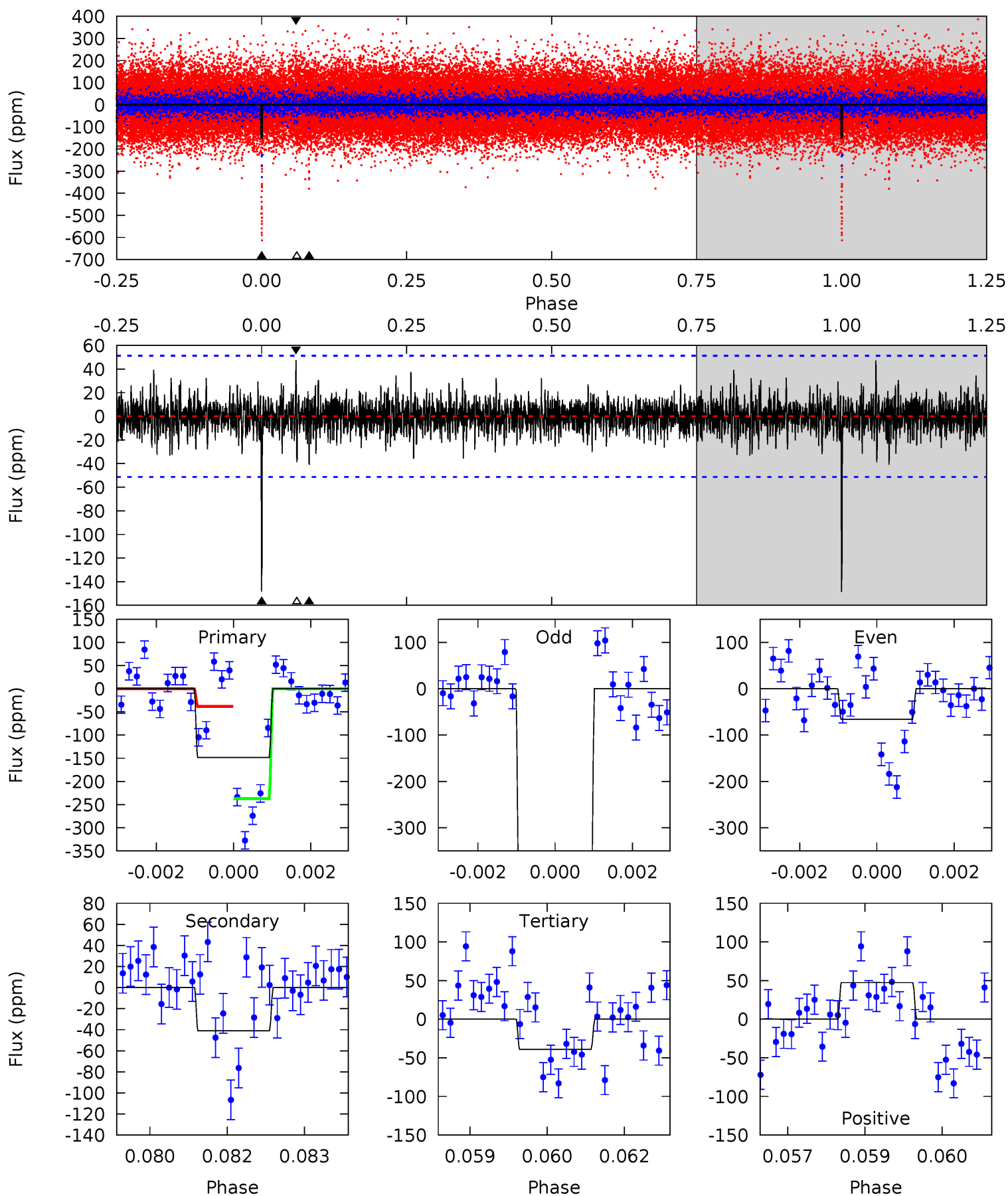
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 20.9 | 6.46 | 5.61 | 8.08 | 5.42 | 3.25 | 1.39 | 15.3 | 12.8 | 0.85 | -1.62 | 18.4 | 1.33 | 0.28 | 4.11 |



Alt Model-Shift Uniqueness Test

009411471-01, $P = 382.134817$ Days, $E = 105.858911$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.5 | 4.29 | 4.08 | 4.96 | 5.36 | 3.15 | 1.00 | 11.5 | 10.6 | 0.21 | -0.67 | 25.3 | 1.78 | 0.24 | 10.4 |



Stellar Parameters For KIC 009411471

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5578^{+150}_{-150} | $4.003^{+0.536}_{-0.134}$ | $-0.420^{+0.300}_{-0.300}$ | $1.507^{+0.308}_{-0.720}$ | $0.835^{+0.082}_{-0.091}$ | $0.344^{+1.989}_{-0.133}$ |
| | +3%/-3% | +13%/-3% | +71%/-71% | +20%/-48% | +10%/-11% | +579%/-39% |
| Source | PHO1 | FLK73 | 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 009411471-01 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|-------------------|-----------------------|-------------------------|
| DV | -72 ± 11 | $2.40^{+1.62}_{-1.43}$ | 419^{+32}_{-58} | 4274^{+1868}_{-657} | 6511^{+32013}_{-4246} |
| Alt. | -41 ± 10 | $2.39^{+1.71}_{-1.43}$ | 418^{+33}_{-52} | 3873^{+1638}_{-594} | 3752^{+20203}_{-2506} |

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

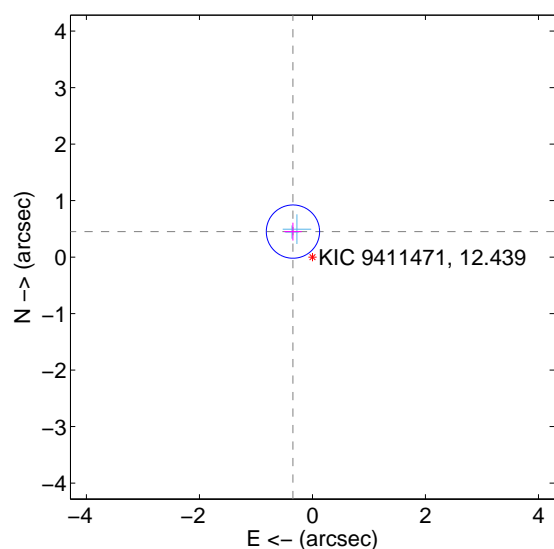
Supplemental centroid analysis for 009411471-01. Kepler magnitude: 12.44. Transit SNR 12.38

There are 2 quarters with good PRF difference image offsets

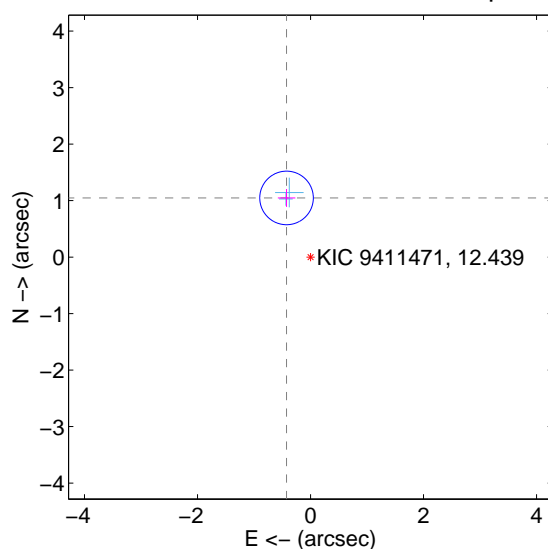
The direct PRF centroid is offset from the target star catalog position by about 0.66 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.568 ± 0.157 | 3.61 | 0.345 ± 0.155 | 0.451 ± 0.159 |
| PRF-fit source offset from KIC position | 1.130 ± 0.158 | 7.15 | 0.424 ± 0.155 | 1.047 ± 0.159 |
| photometric centroid source offset | 1.14 ± 0.81 | 1.40 | 0.81 ± 0.66 | -0.80 ± 0.94 |

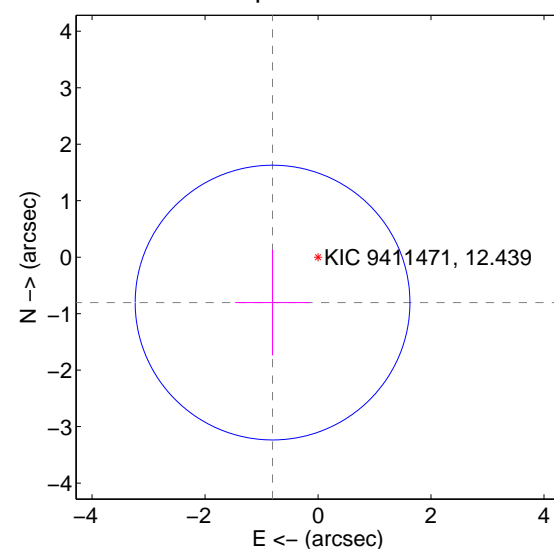
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

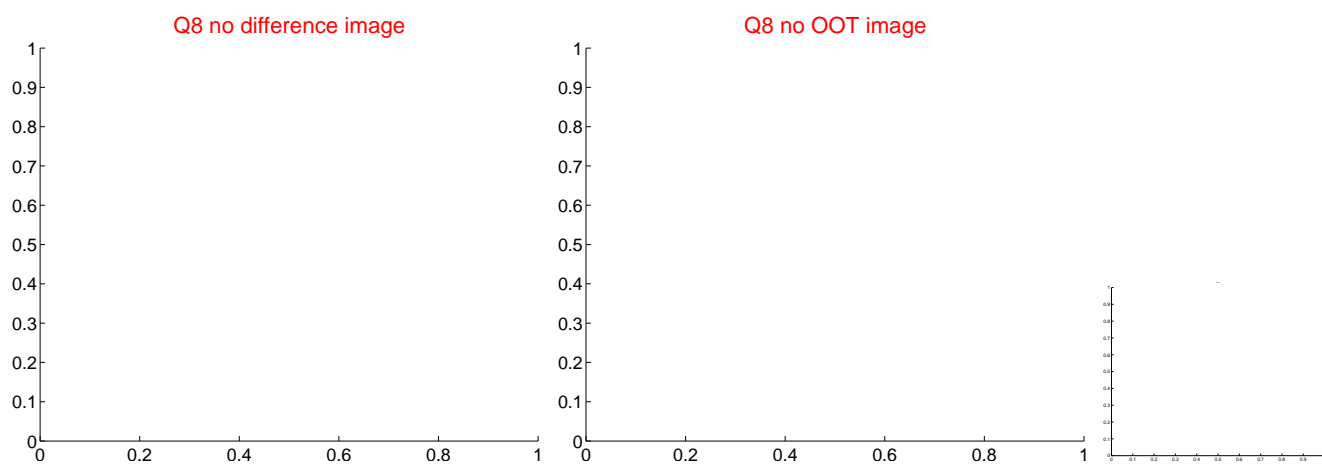
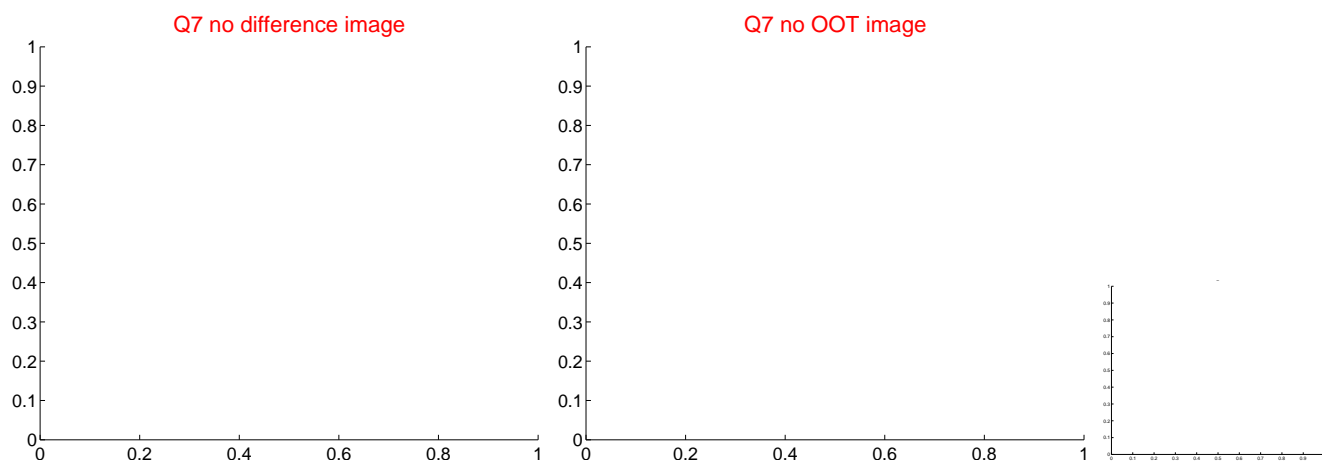
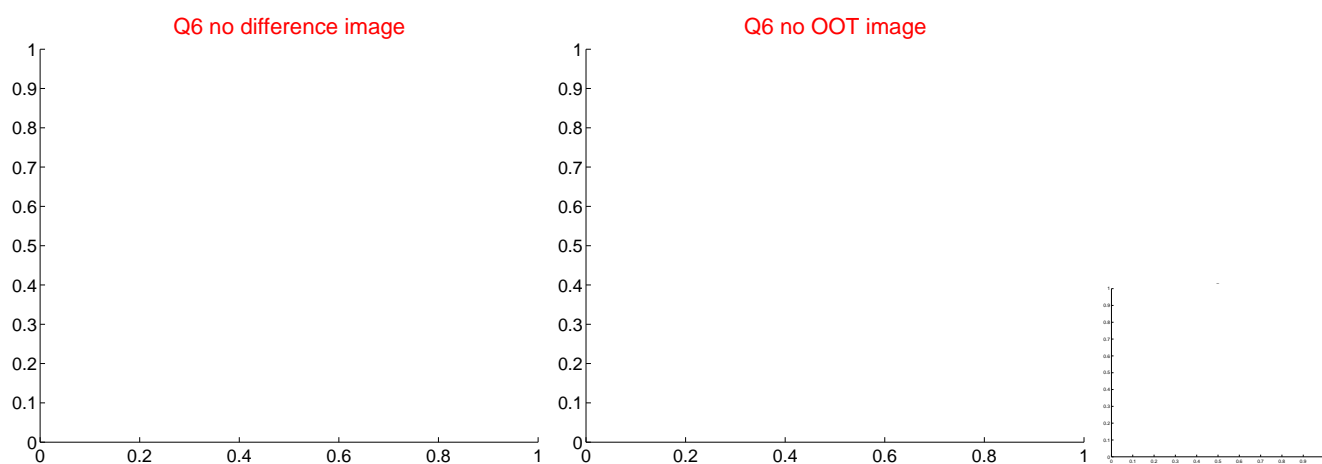
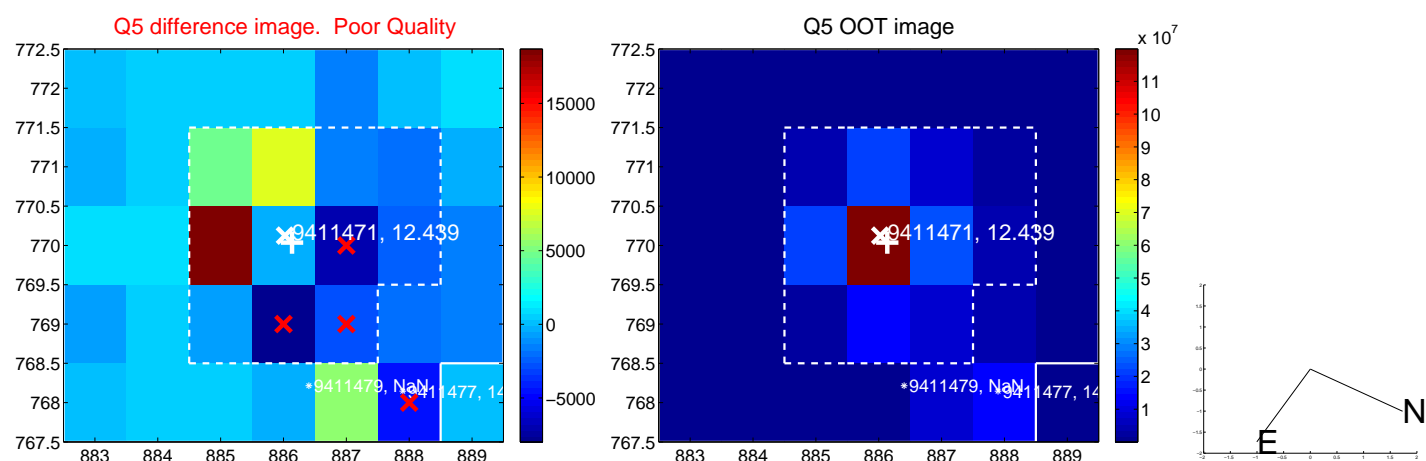


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

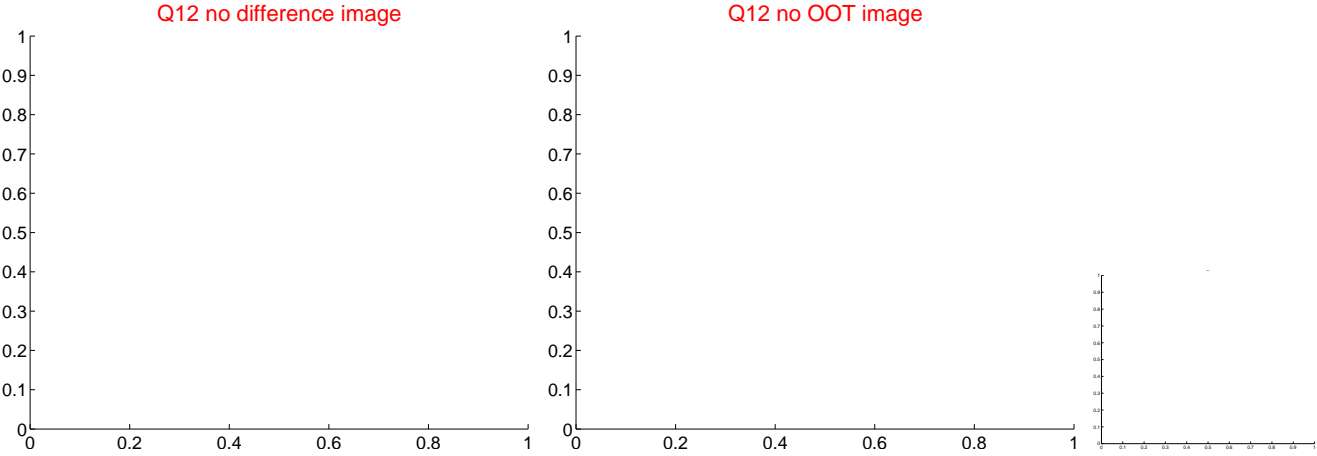
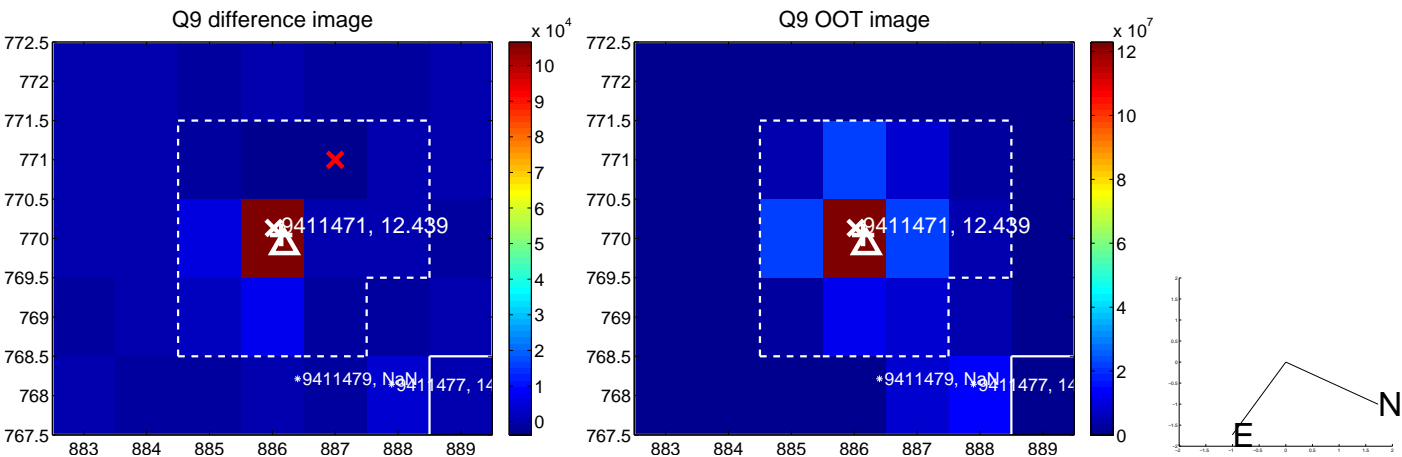
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



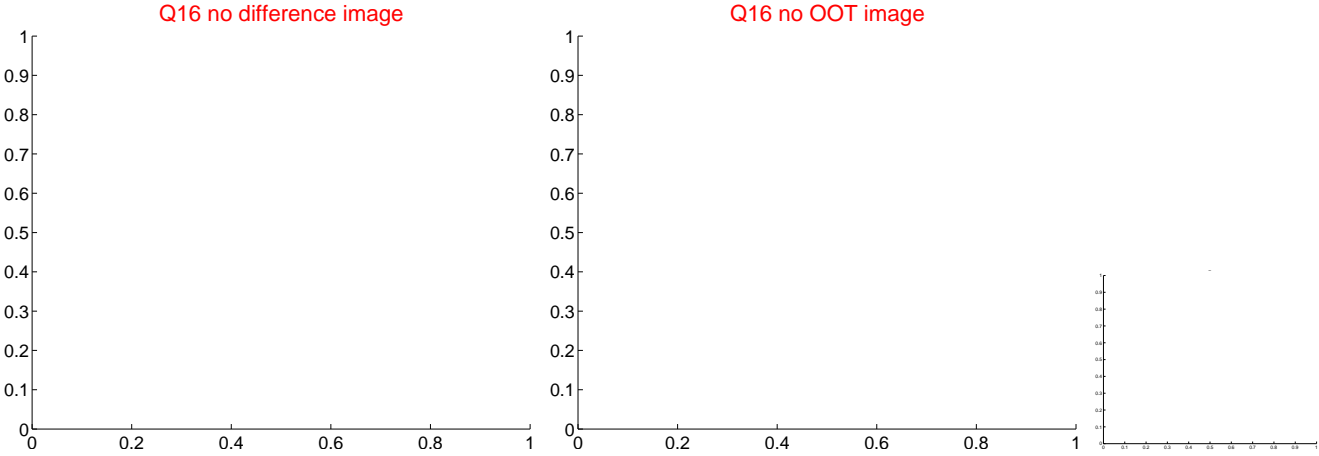
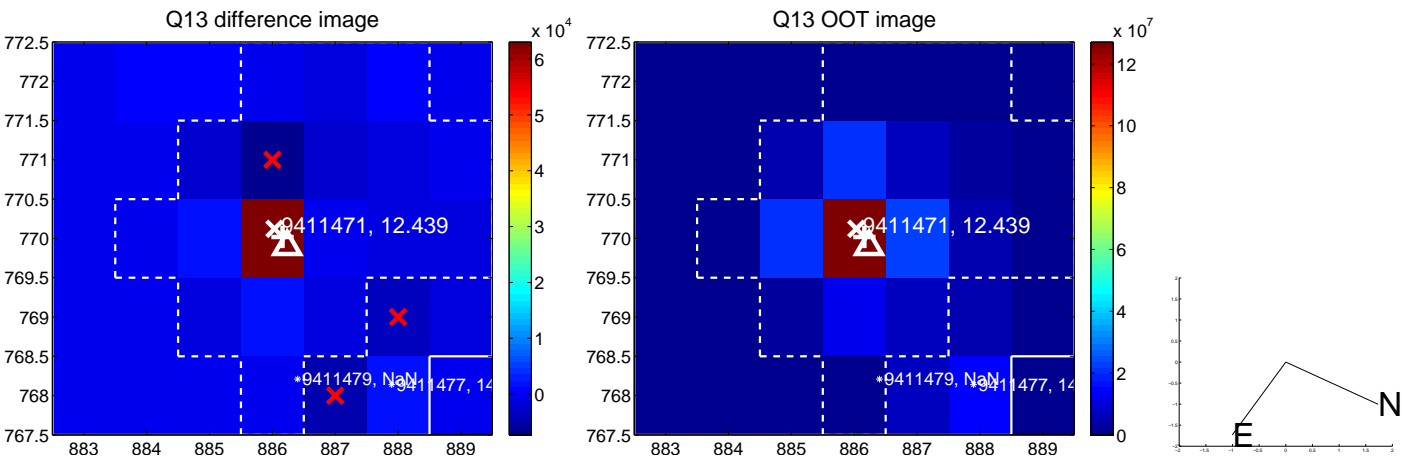
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



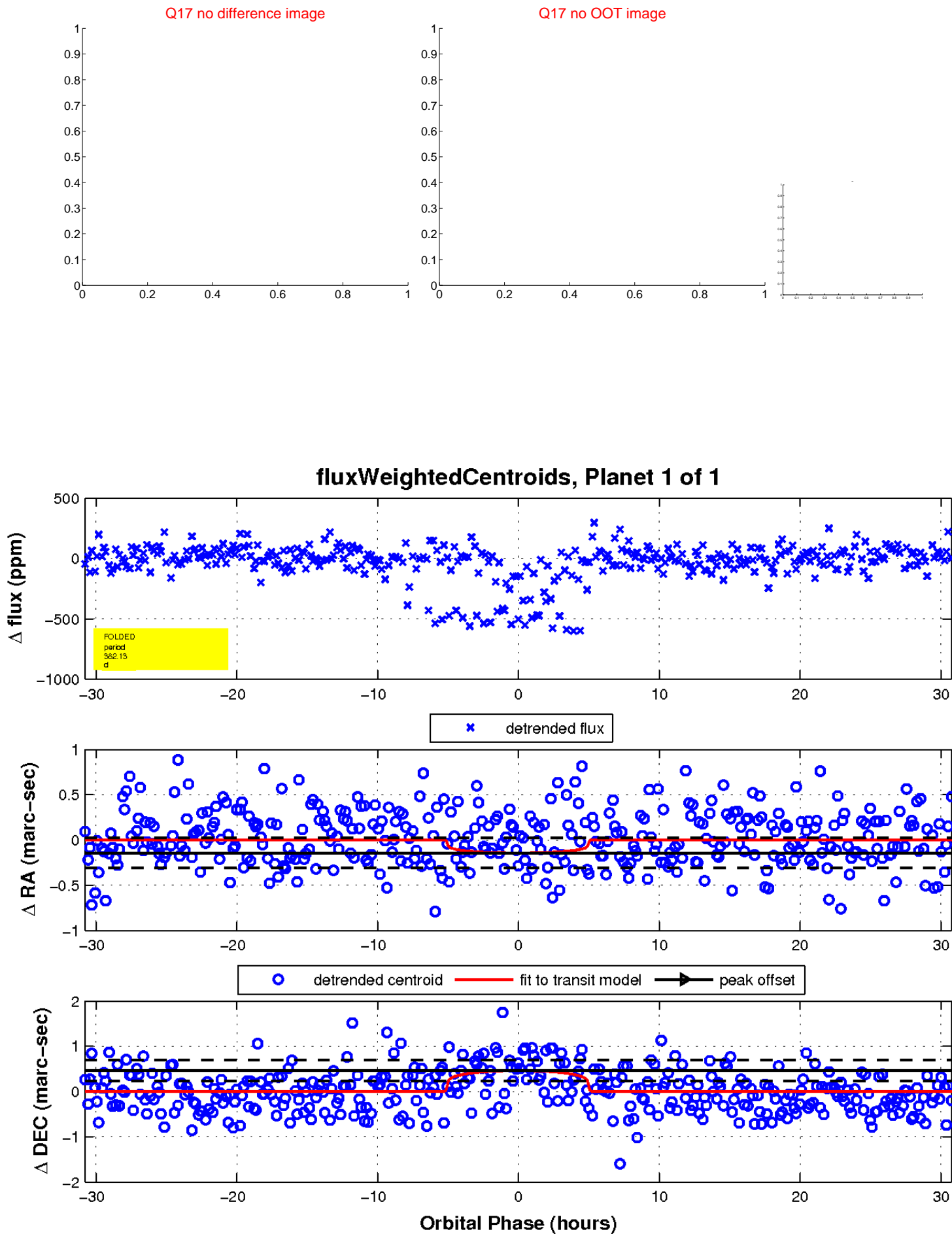
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

