

KIC 009459198

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009459198-01 | OBS | No | 514.435488 | 433.729436 | 247.5 | 6.022 | 7.9 | 8.0 | 0.69 | 4656 | 1.22 | 0.17 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 009459198-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—MOD_NONUNIQ_ALT—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.

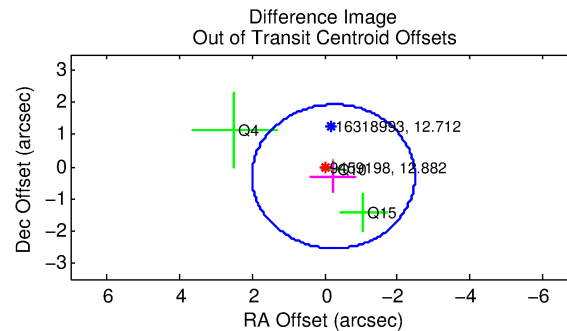
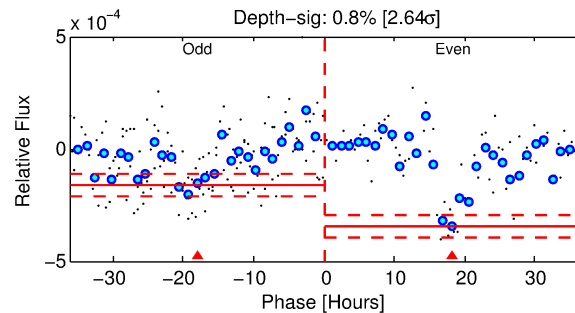
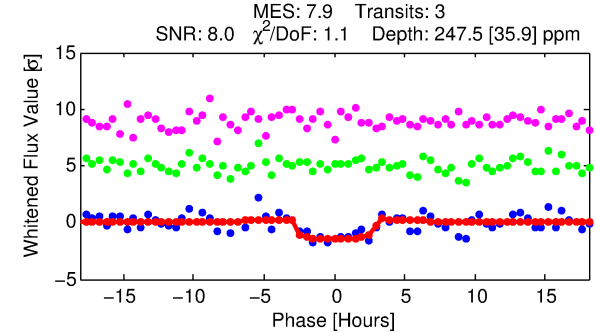
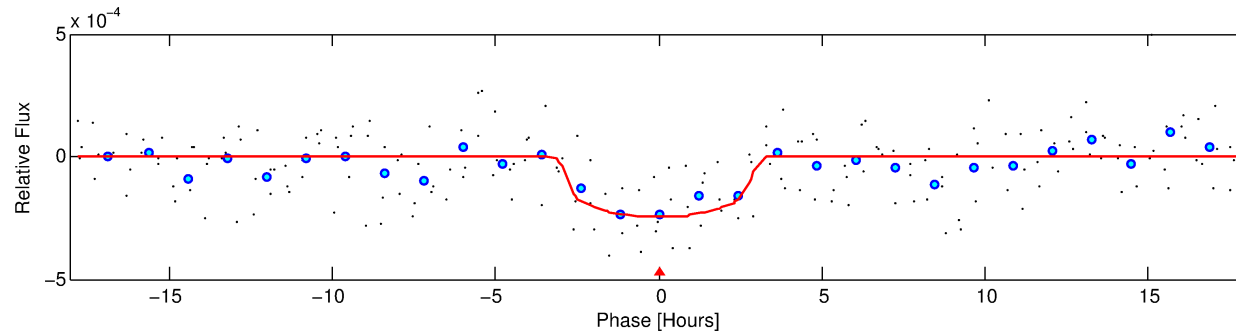
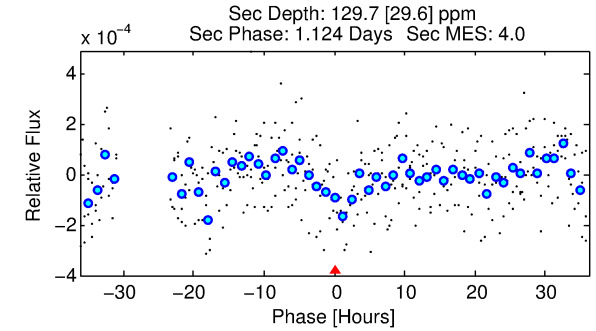
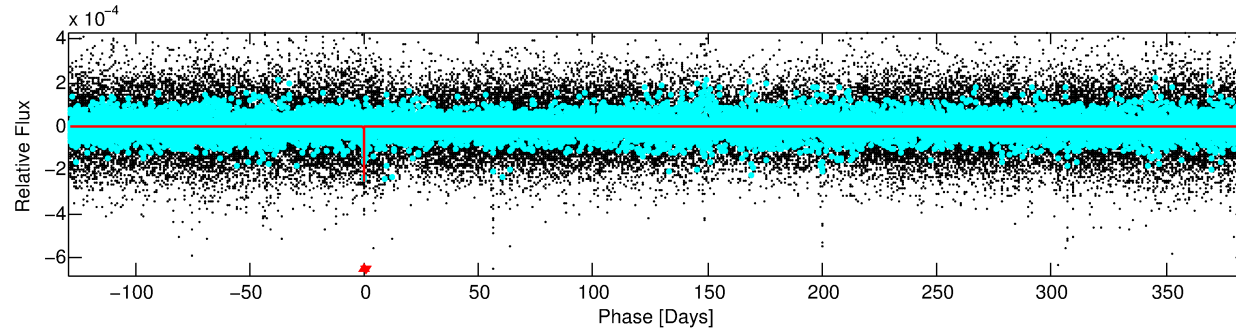
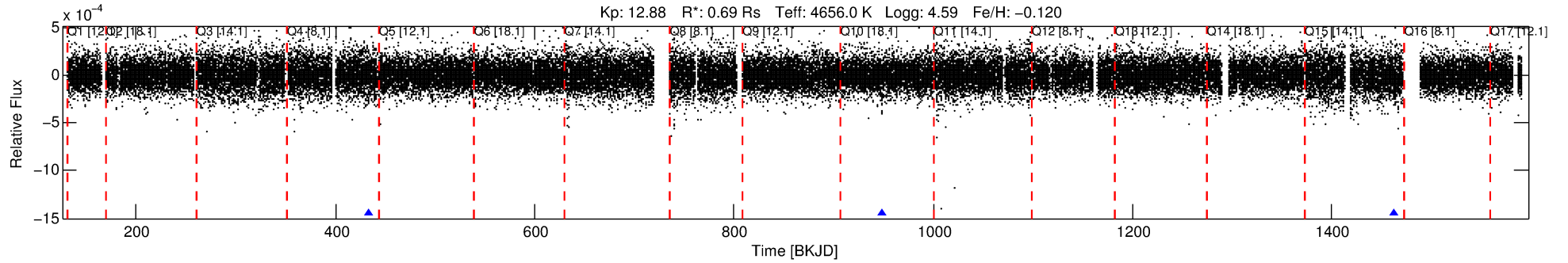
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009459198-01

No Significant Match Found

DV One-Page Summary

KIC: 9459198 Candidate: 1 of 1 Period: 514.435 d



DV Fit Results:

Period = 514.43549 [0.00878] d
Epoch = 433.7294 [0.0114] BKJD
Rp/R* = 0.0161 [0.0132]
a/R* = 419.83 [1162.93]
b = 0.79 [1.38]
Seff = 0.16 [0.03]
Teq = 163 [6] K
Rp = 1.22 [1.00] Re
a = 1.1087 [0.0786] AU
Ag = 59217.20 [98324.59] [0.60σ]
Teffp = 3920 [1628] K [2.31σ]

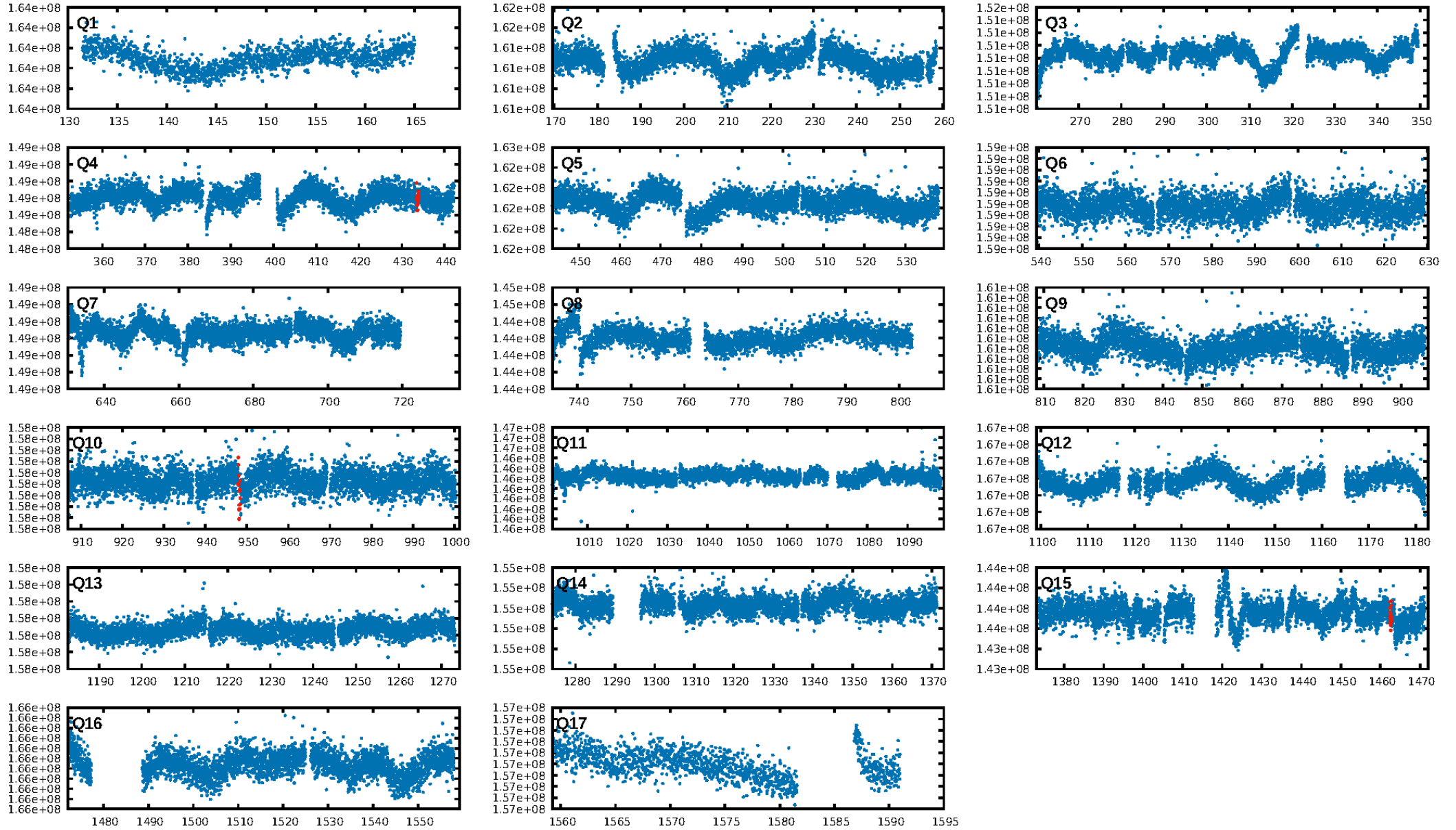
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 4.3%
ModelChiSquareGof-sig: 71.8%
Bootstrap-pfa: 6.52e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 3.51
Centroid-sig: 36.8%
Centroid-so: 1.524 arcsec [1.65σ]
OotOffset-rm: 0.389 arcsec [0.52σ]
KicOffset-rm: 1.230 arcsec [2.60σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

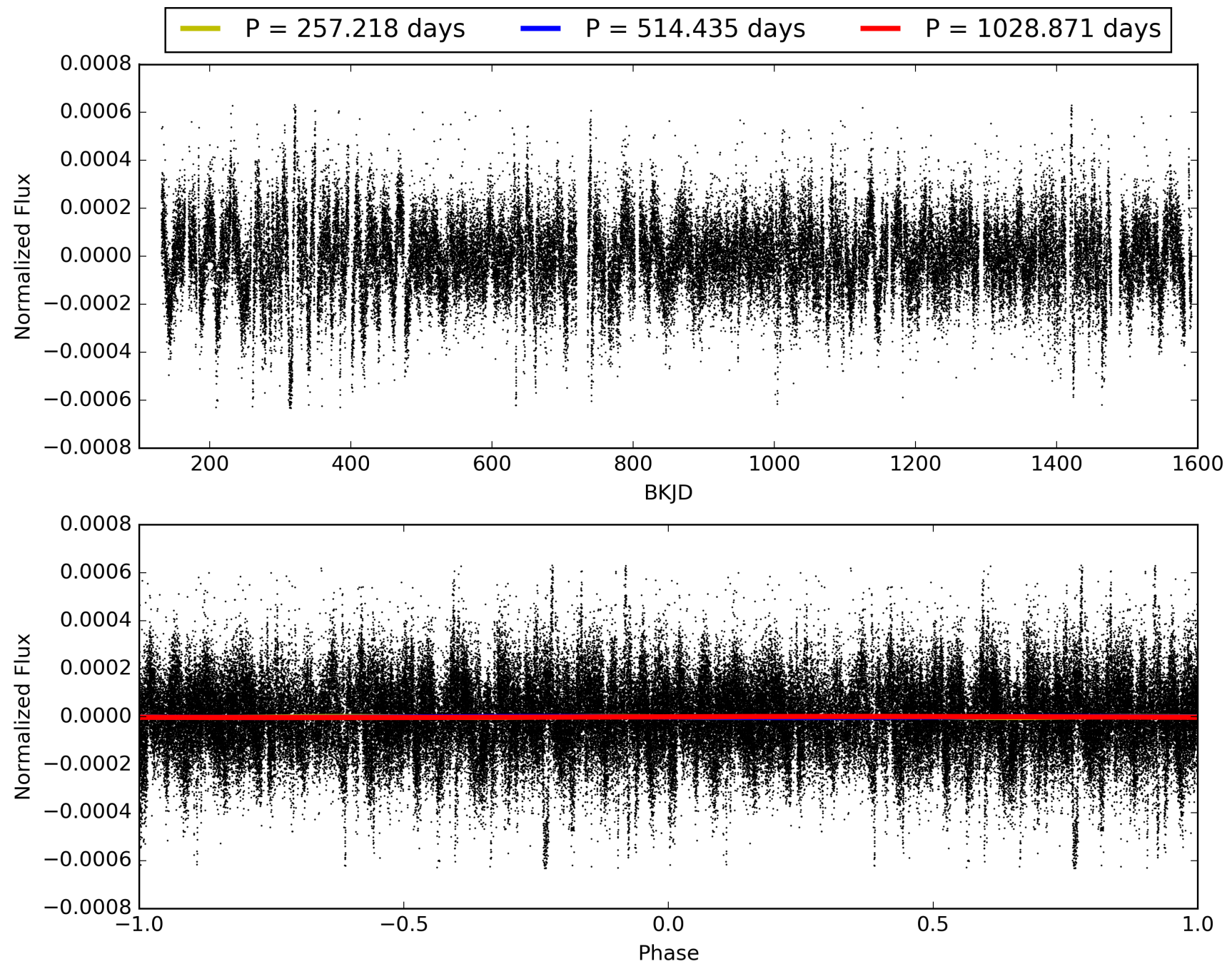
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:52:33 Z

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

TCE 009459198-01, PDC Light Curves

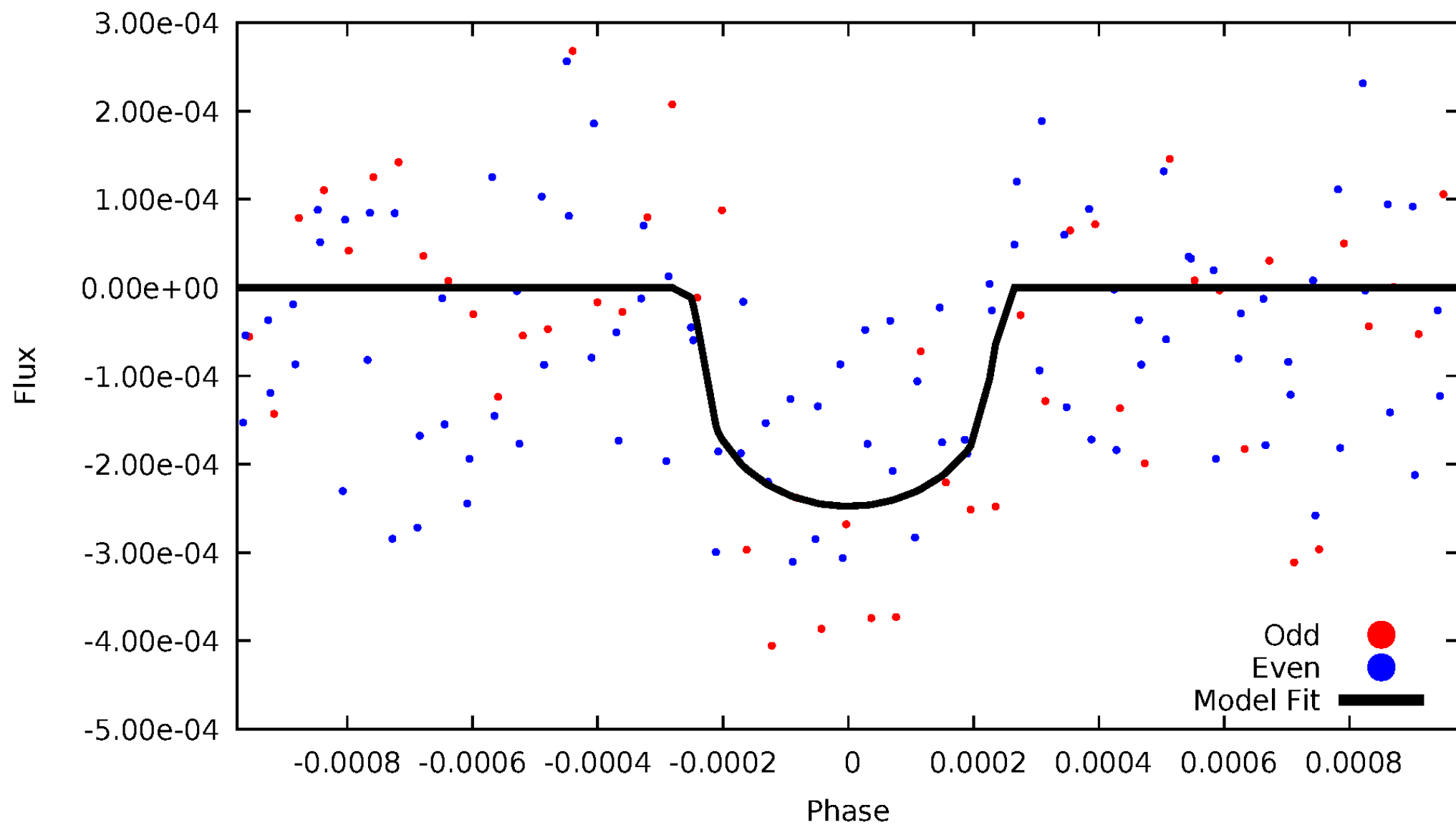


TCE 009459198-01



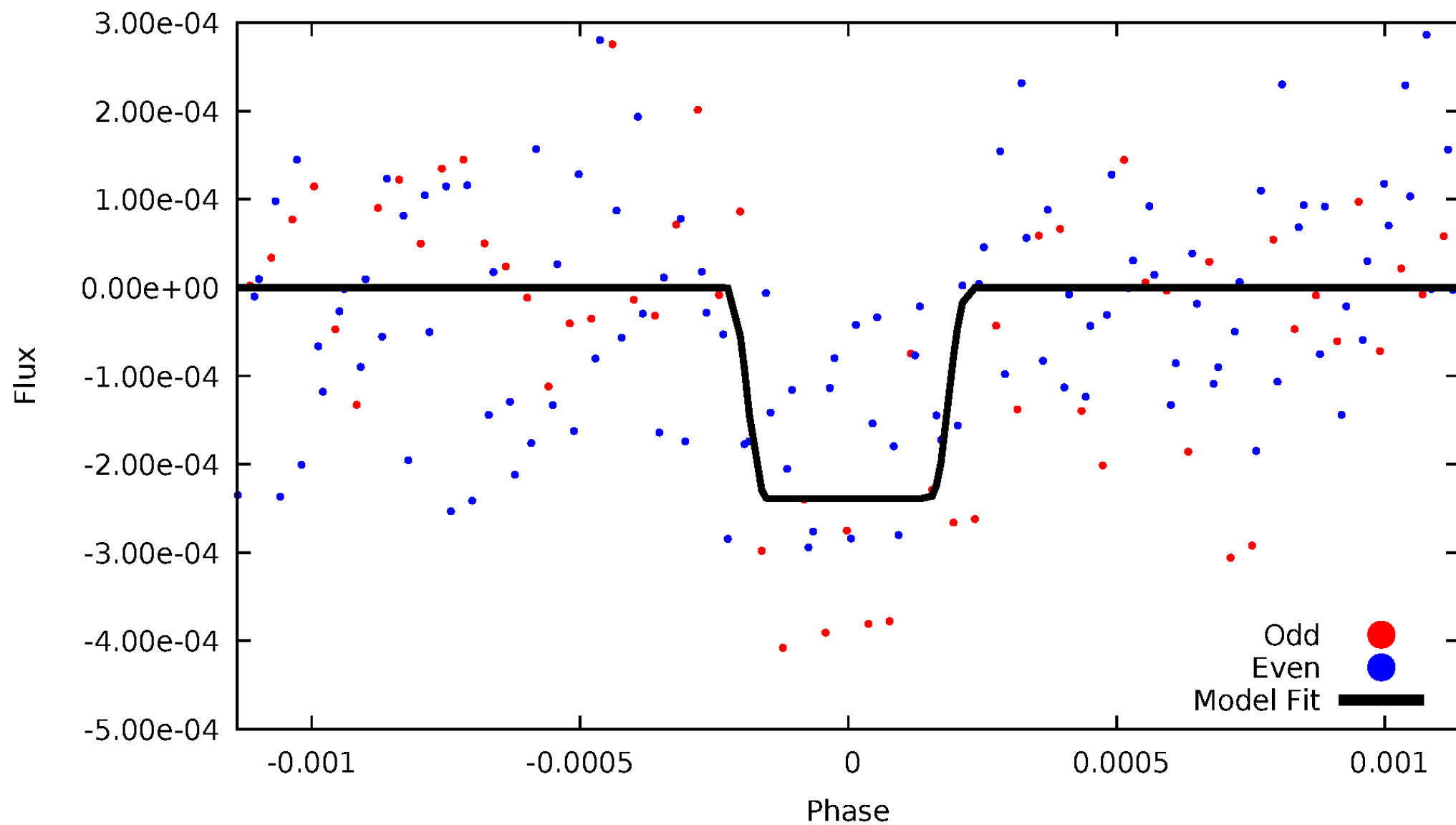
DV Odd/Even

TCE 009459198-01

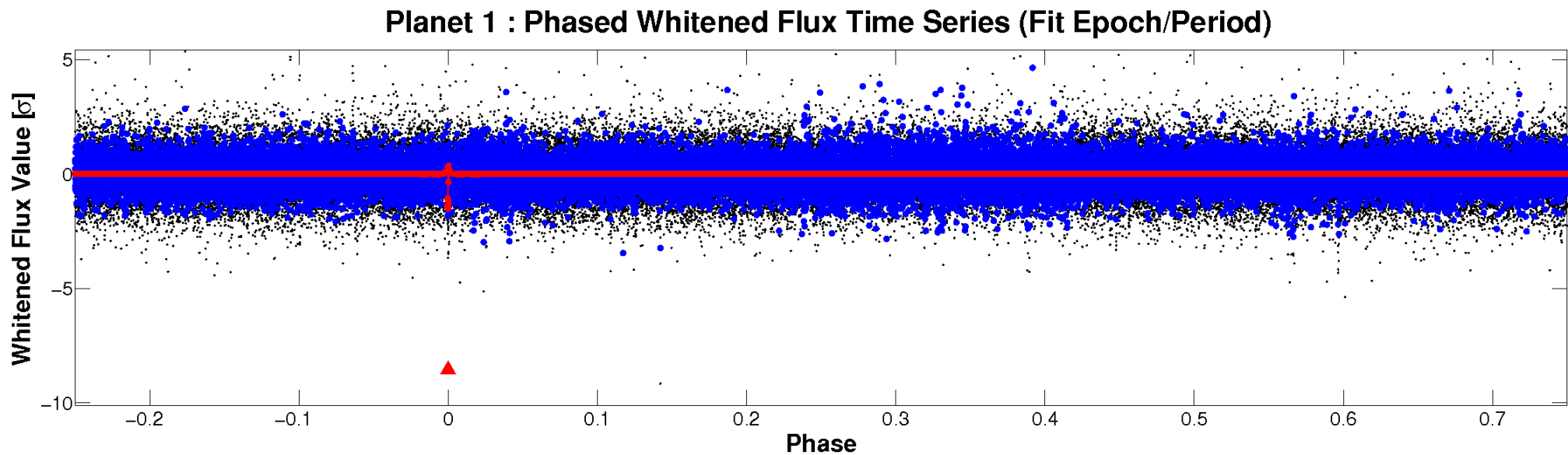
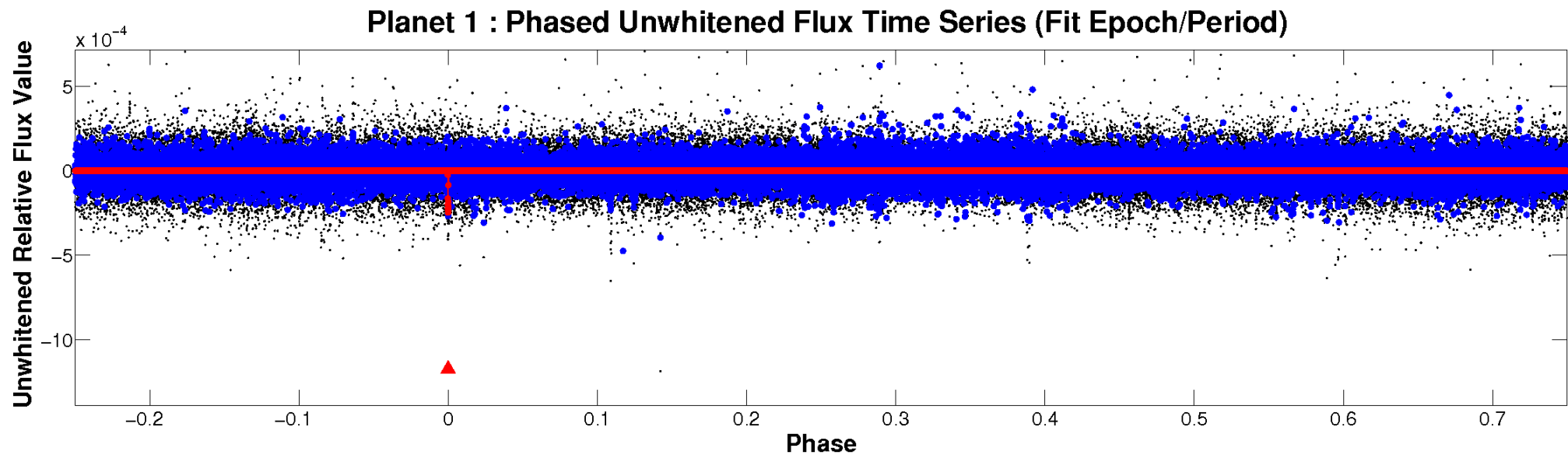


ALT Odd/Even

TCE 009459198-01

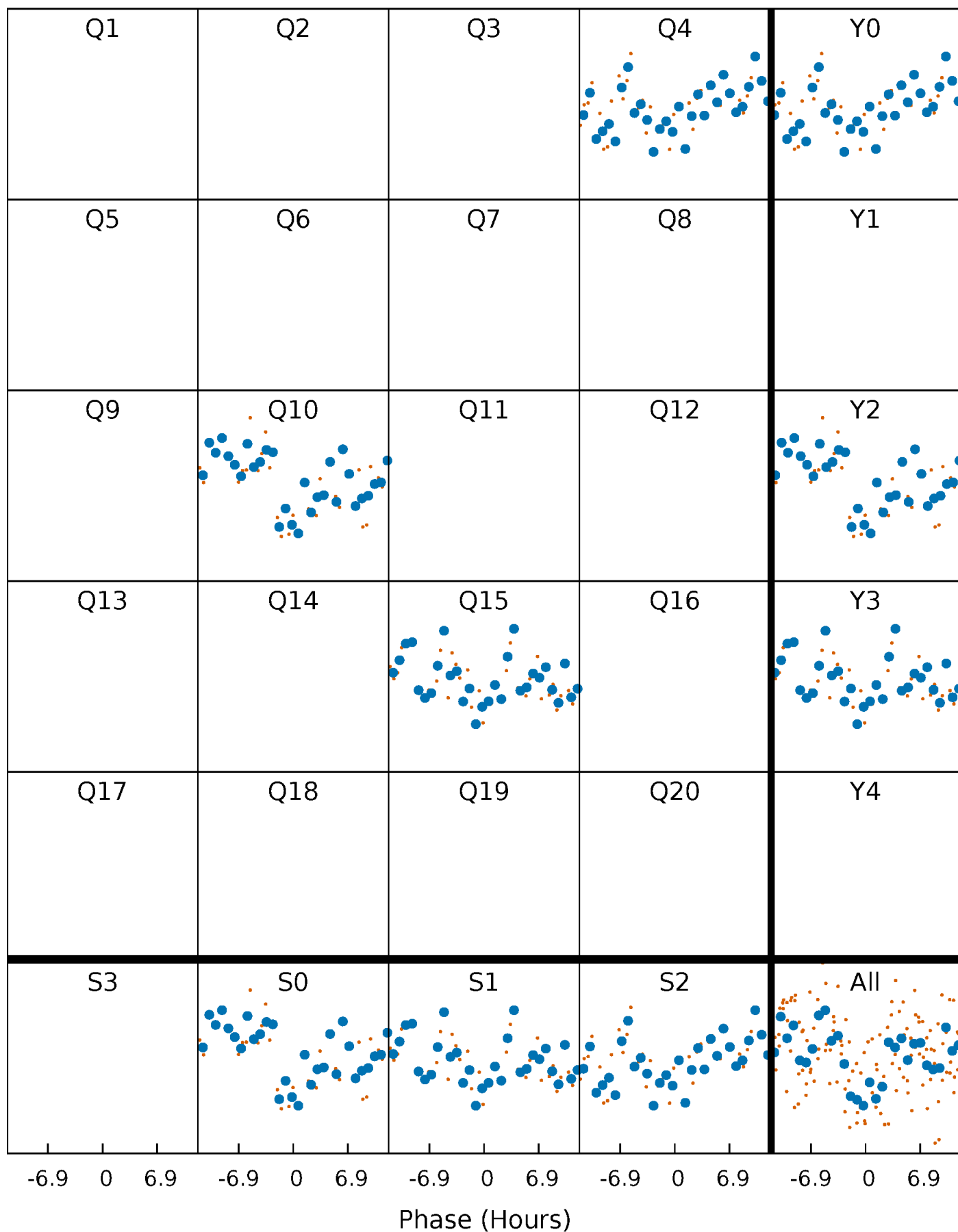


Non-Whitened Vs. Whitened Light Curve



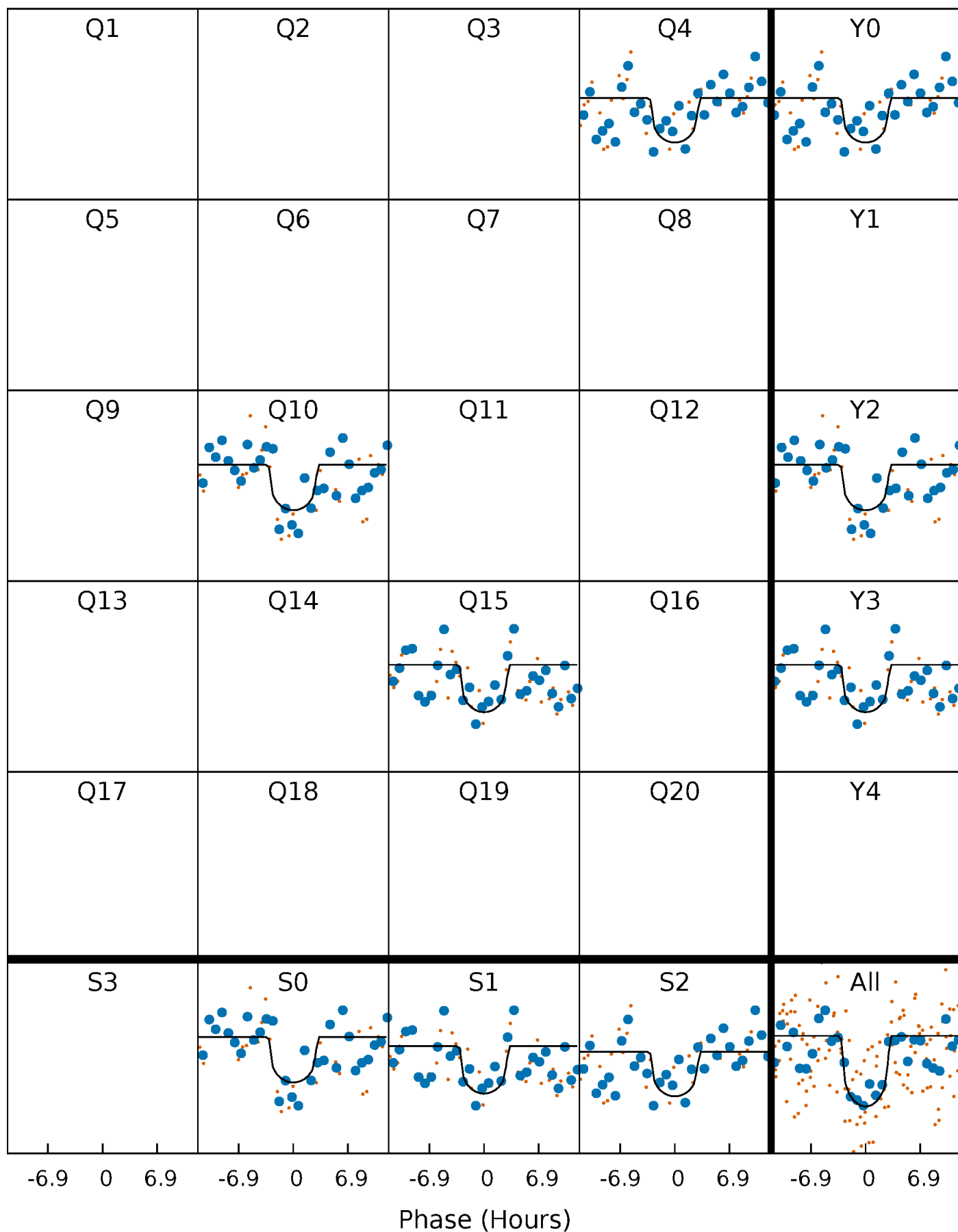
PDC Quarter-Phased Transit Curves

TCE 009459198-01 P=514.435488 Days $T_0=433.729436$ (BKJD)



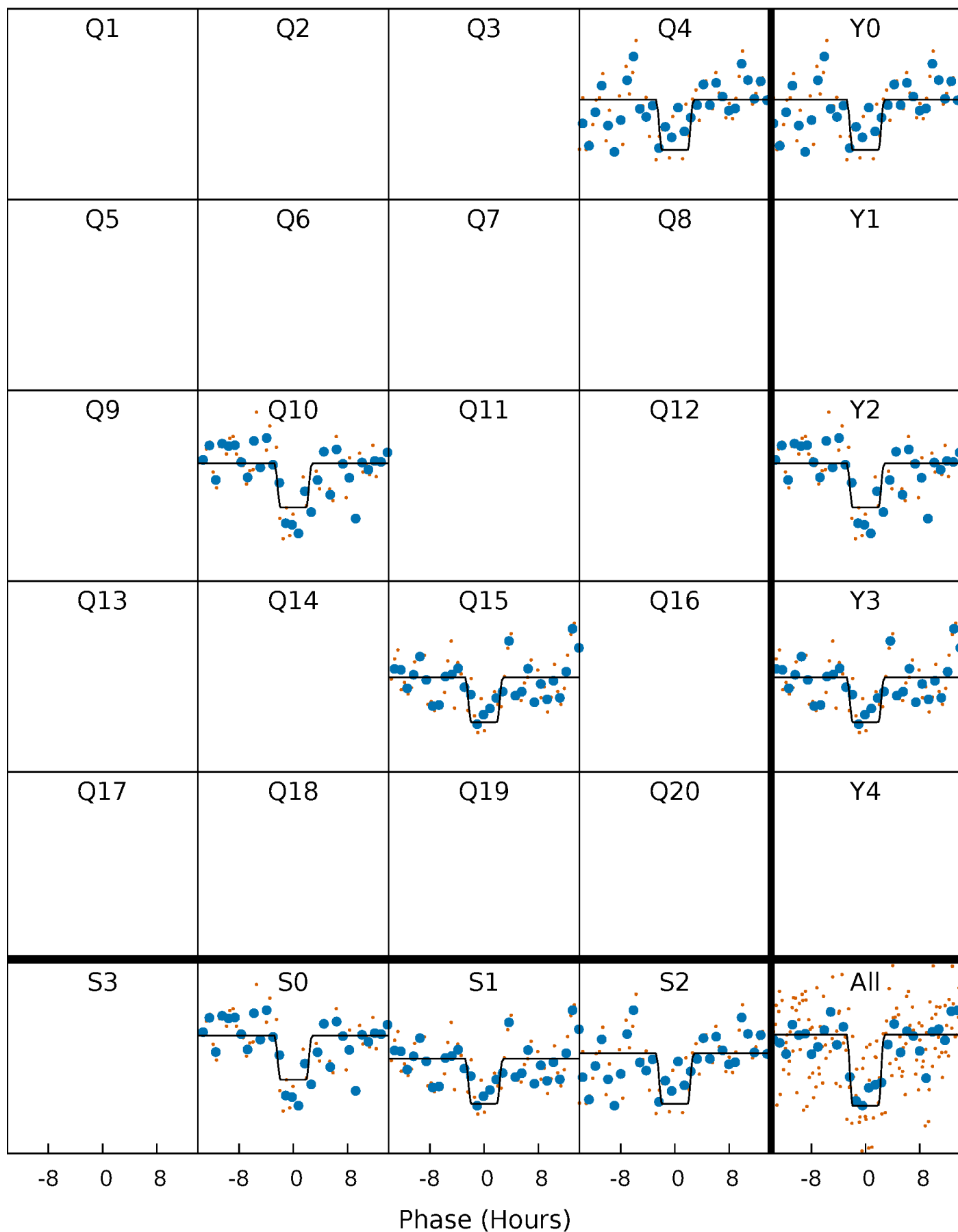
DV Quarter-Phased Transit Curves

TCE 009459198-01 P=514.435488 Days $T_0=433.729436$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

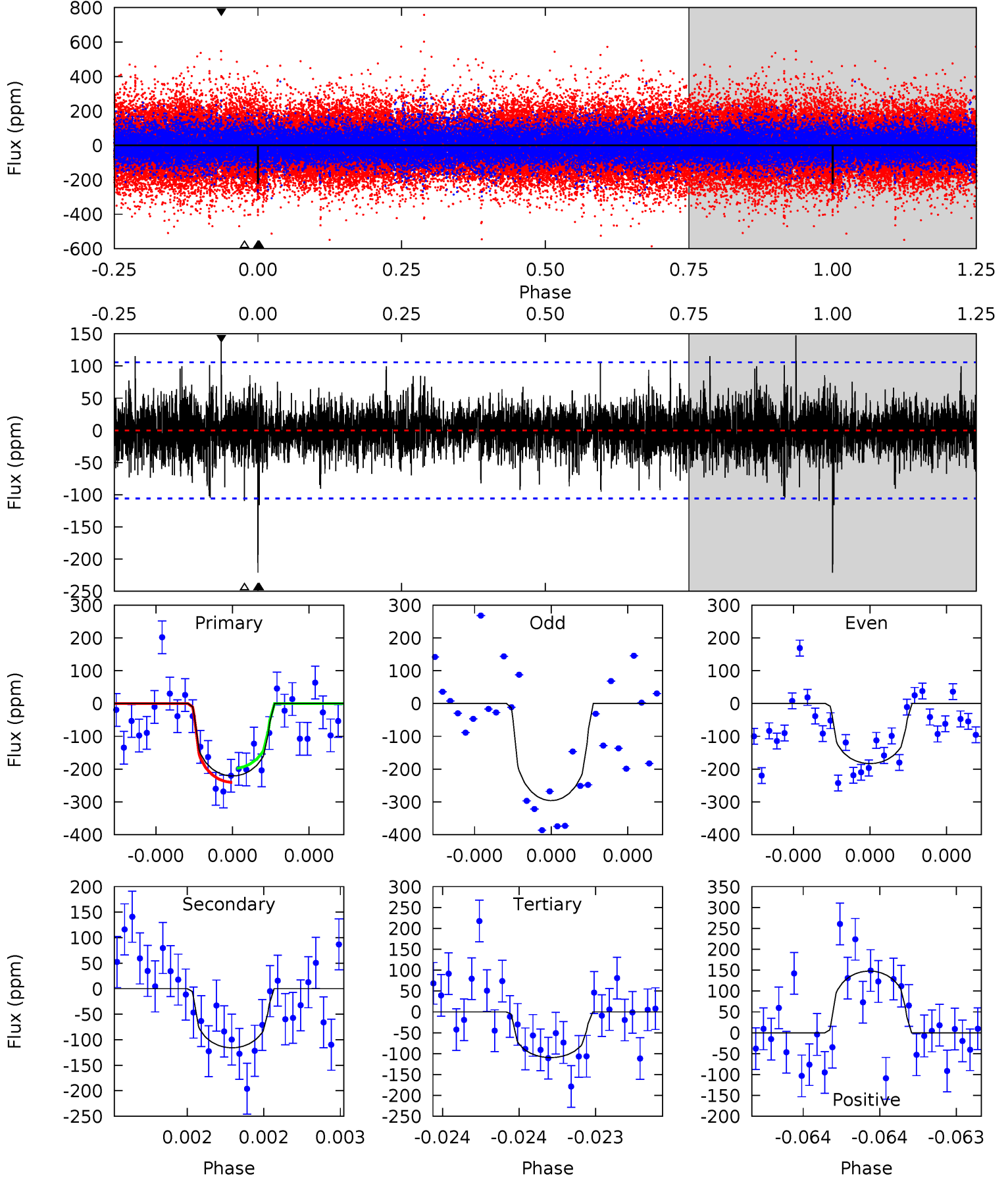
TCE 009459198-01 P=514.428495 Days $T_0=433.736116$ (BKJD)



DV Model-Shift Uniqueness Test

009459198-01, P = 514.435488 Days, E = 433.729436 Days

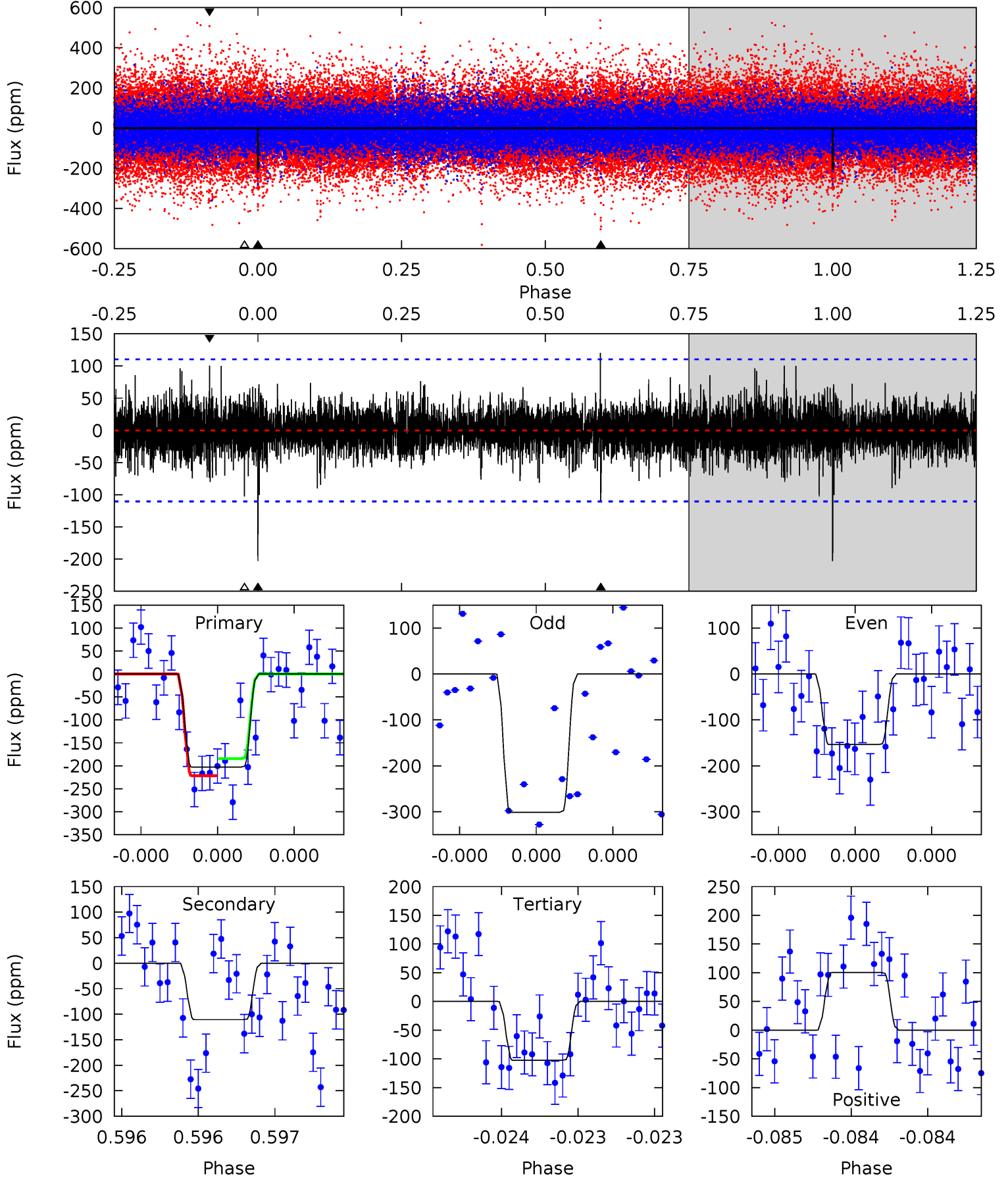
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.7 | 6.11 | 5.78 | 7.80 | 5.58 | 3.49 | 1.33 | 5.88 | 3.85 | 0.34 | -1.69 | 2.83 | 1.08 | 0.40 | 1.13 |



Alt Model-Shift Uniqueness Test

009459198-01, P = 514.428495 Days, E = 433.736116 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 | 5.61 | 5.19 | 5.09 | 5.60 | 3.52 | 1.14 | 5.09 | 5.19 | 0.41 | 0.52 | 3.46 | 1.19 | 0.37 | 0.94 |



Stellar Parameters For KIC 009459198

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (g \cdot \text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--------------------------------------|
| | 4656^{+139}_{-125} | $4.592^{+0.052}_{-0.028}$ | $-0.120^{+0.300}_{-0.300}$ | $0.694^{+0.050}_{-0.061}$ | $0.687^{+0.070}_{-0.057}$ | $2.892^{+0.678}_{-0.352}$ |
| | +3%/-3% | +1%/-1% | +250%/-250% | +7%/-9% | +10%/-8% | +23%/-12% |
| 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 009459198-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -116 ± 19 | $1.37^{+0.91}_{-0.80}$ | 226^{+7}_{-8} | 3848^{+1526}_{-608} | $43165^{+191181}_{-28824}$ |
| Alt. | -111 ± 20 | $1.34^{+0.90}_{-0.78}$ | 226^{+8}_{-8} | 3833^{+1533}_{-605} | $40687^{+203569}_{-26628}$ |

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

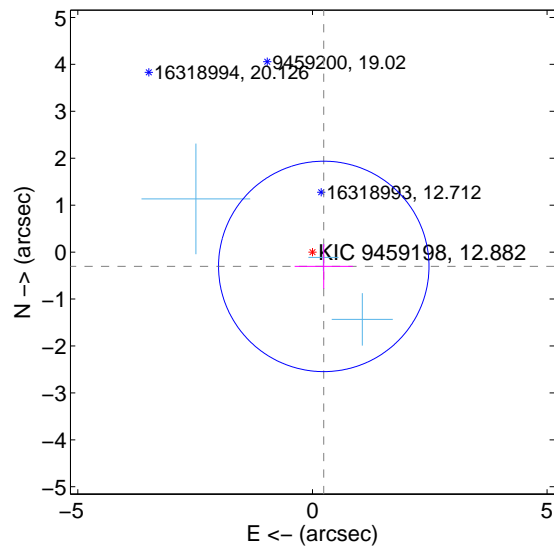
Supplemental centroid analysis for 009459198-01. Kepler magnitude: 12.88. Transit SNR 7.97

There are 3 quarters with good PRF difference image offsets

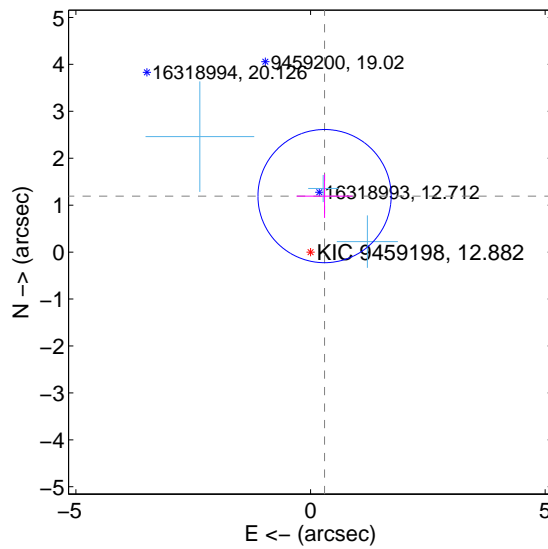
The direct PRF centroid is offset from the target star catalog position by about 1.66 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.389 ± 0.747 | 0.52 | -0.241 ± 0.620 | -0.305 ± 0.474 |
| PRF-fit source offset from KIC position | 1.230 ± 0.473 | 2.60 | -0.299 ± 0.597 | 1.193 ± 0.464 |
| photometric centroid source offset | 1.52 ± 0.92 | 1.65 | 0.96 ± 0.95 | 1.18 ± 0.91 |

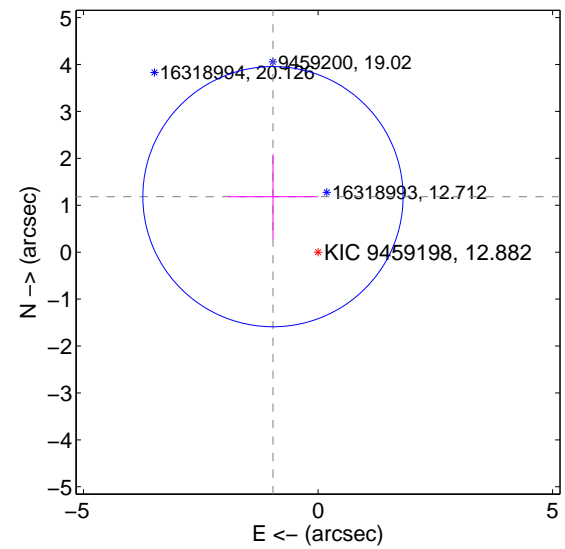
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

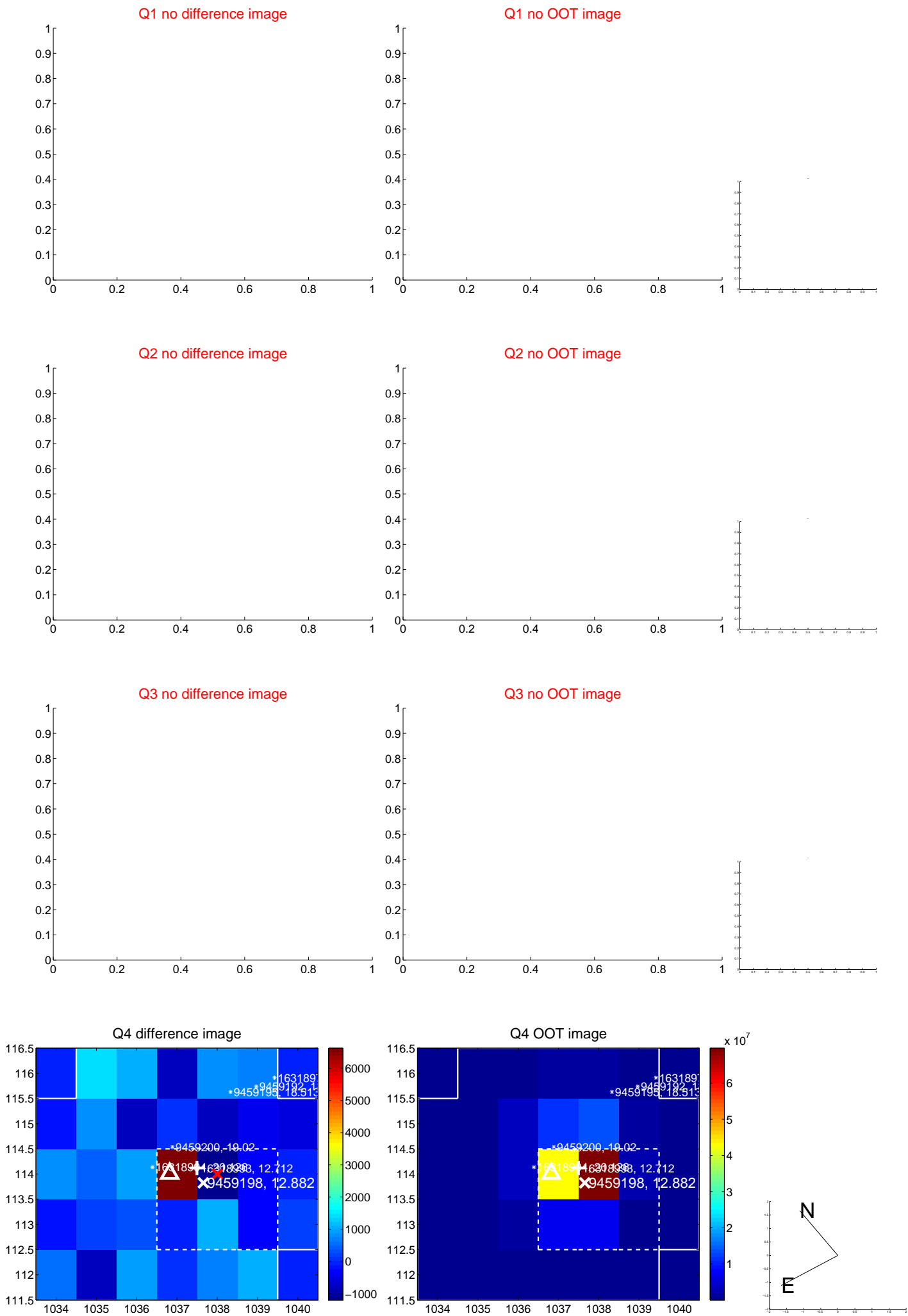


offset from photometric centroids



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.

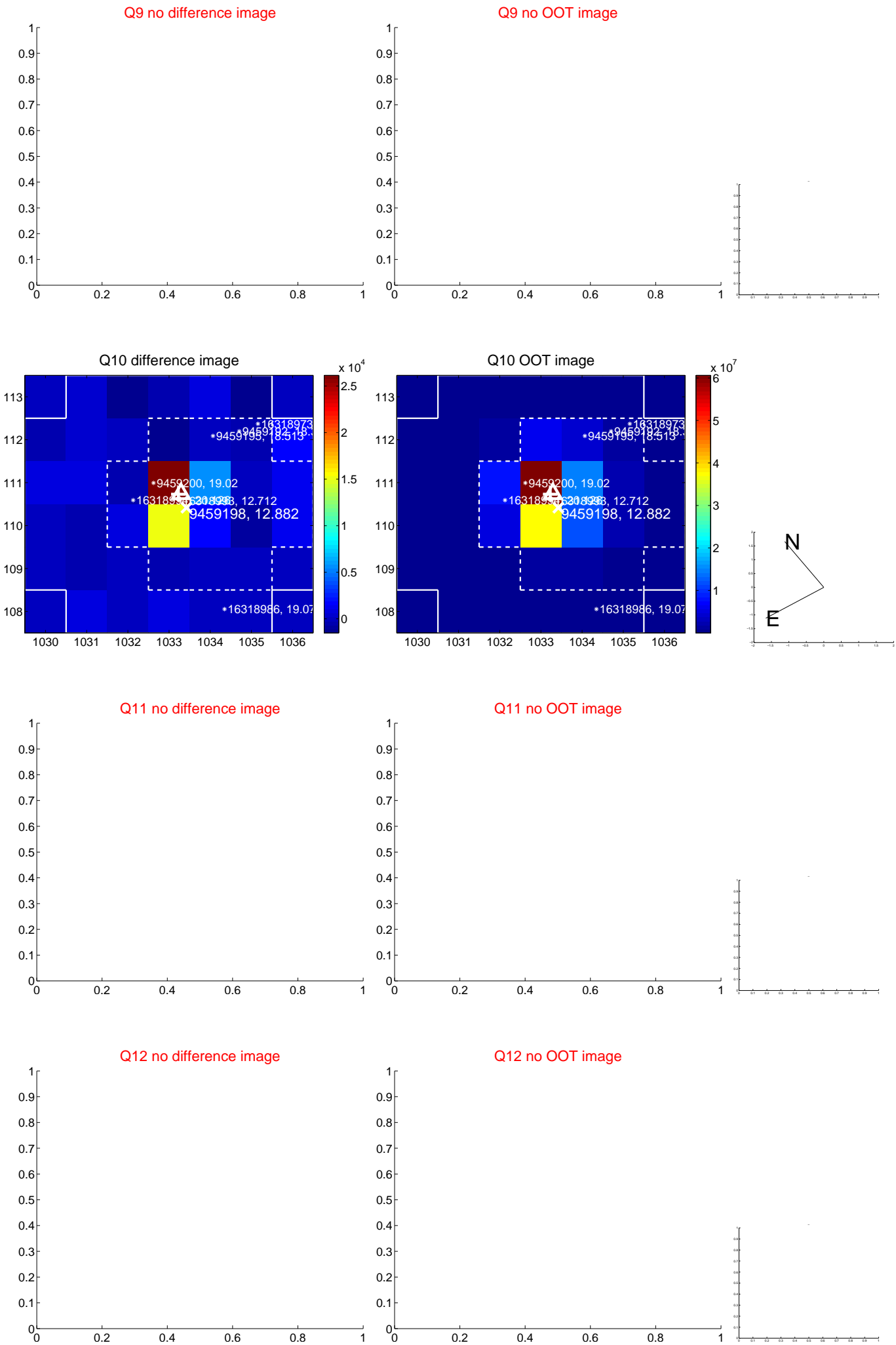
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



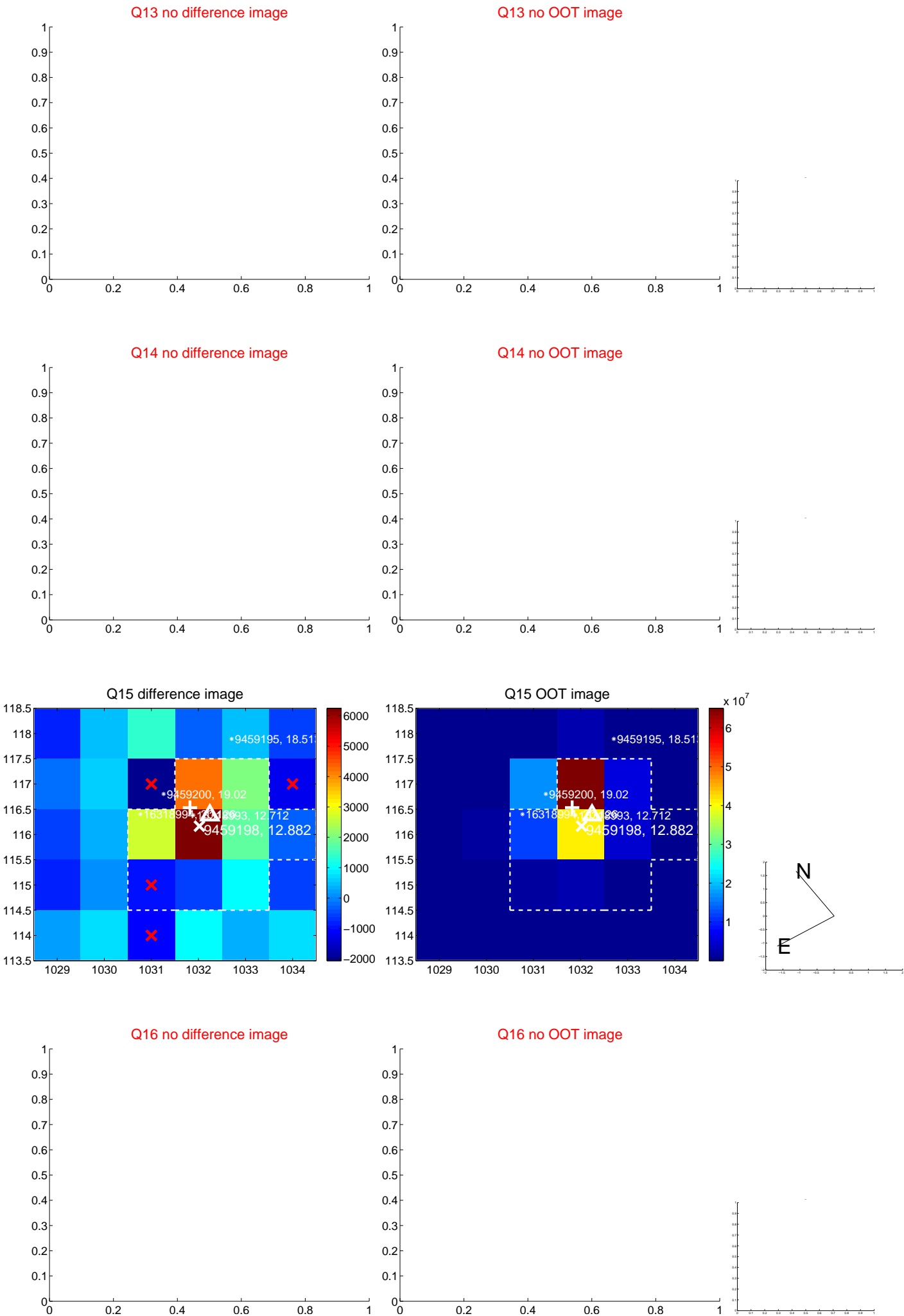
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



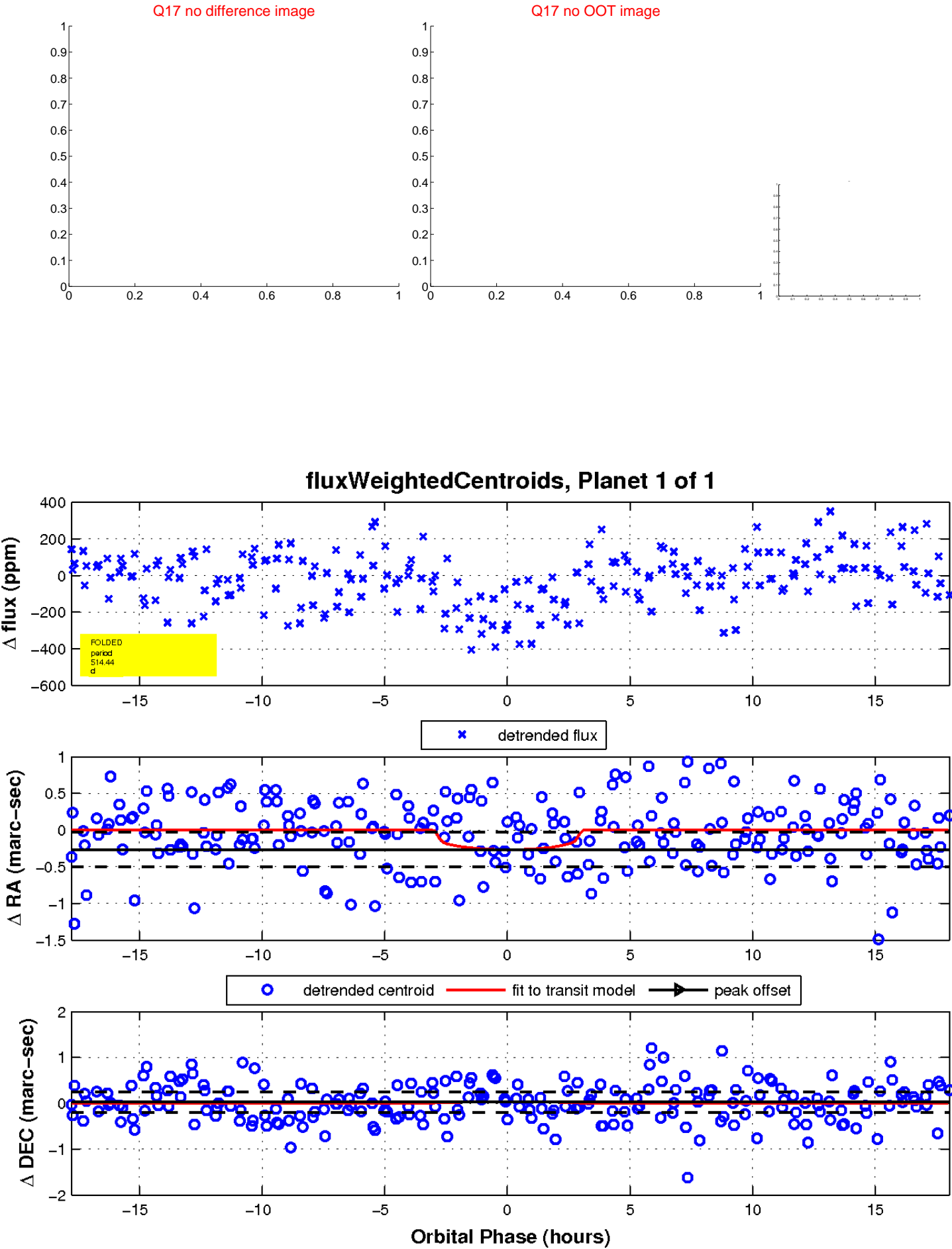
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

