

KIC 009415129

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009415129-01 | OBS | No | 205.110578 | 161.868257 | 720.4 | 2.877 | 7.2 | 7.4 | 0.82 | 5557 | 2.79 | 1.42 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------|
| 009415129-01 | OBS | FP | 0.04 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT |

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

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

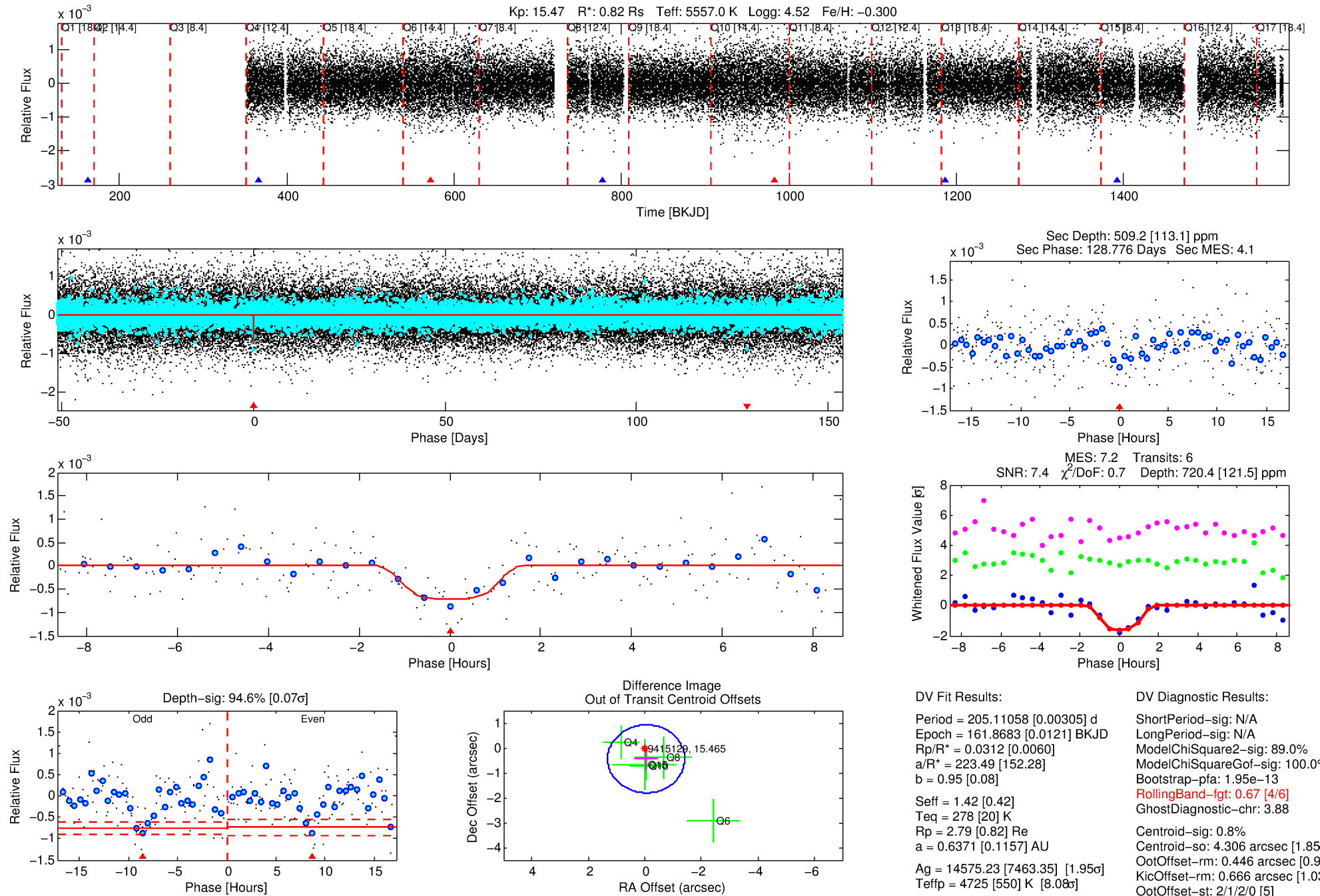
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009415129-01

No Significant Match Found

DV One-Page Summary

KIC: 9415129 Candidate: 1 of 1 Period: 205.111 d



DV Fit Results:

Period = 205.11058 [0.00305] d
Epoch = 161.8683 [0.0121] BKJD
Rp/R* = 0.0312 [0.0060]
a/R* = 223.49 [152.28]
b = 0.95 [0.08]
Seff = 1.42 [0.42]
Teq = 278 [20] K
Rp = 2.79 [0.82] Re
a = 0.6371 [0.1157] AU
Ag = 14575.23 [7463.35] [1.95 σ]
Teff = 4725 [550] K [8.08 σ]

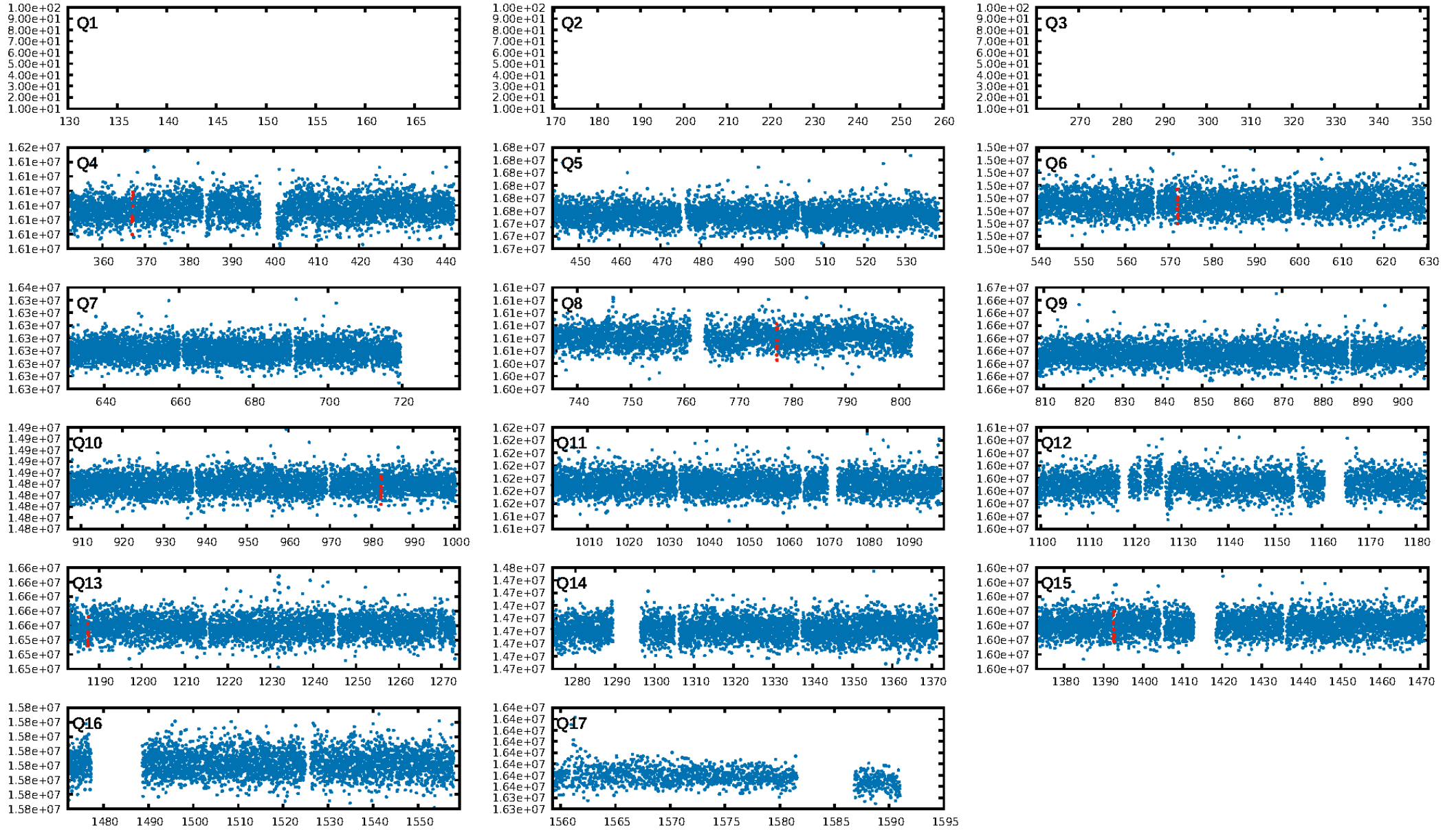
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 89.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.95e-13
RollingBand-fgt: 0.67 [4/6]
GhostDiagnostic-chr: 3.88
Centroid-sig: 0.8%
Centroid-so: 4.306 arcsec [1.85 σ]
OotOffset-rm: 0.446 arcsec [0.98 σ]
KicOffset-rm: 0.666 arcsec [1.03 σ]
OotOffset-st: 2/1/2/0 [5]
KicOffset-st: 2/1/2/0 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 1.00 [5/5]

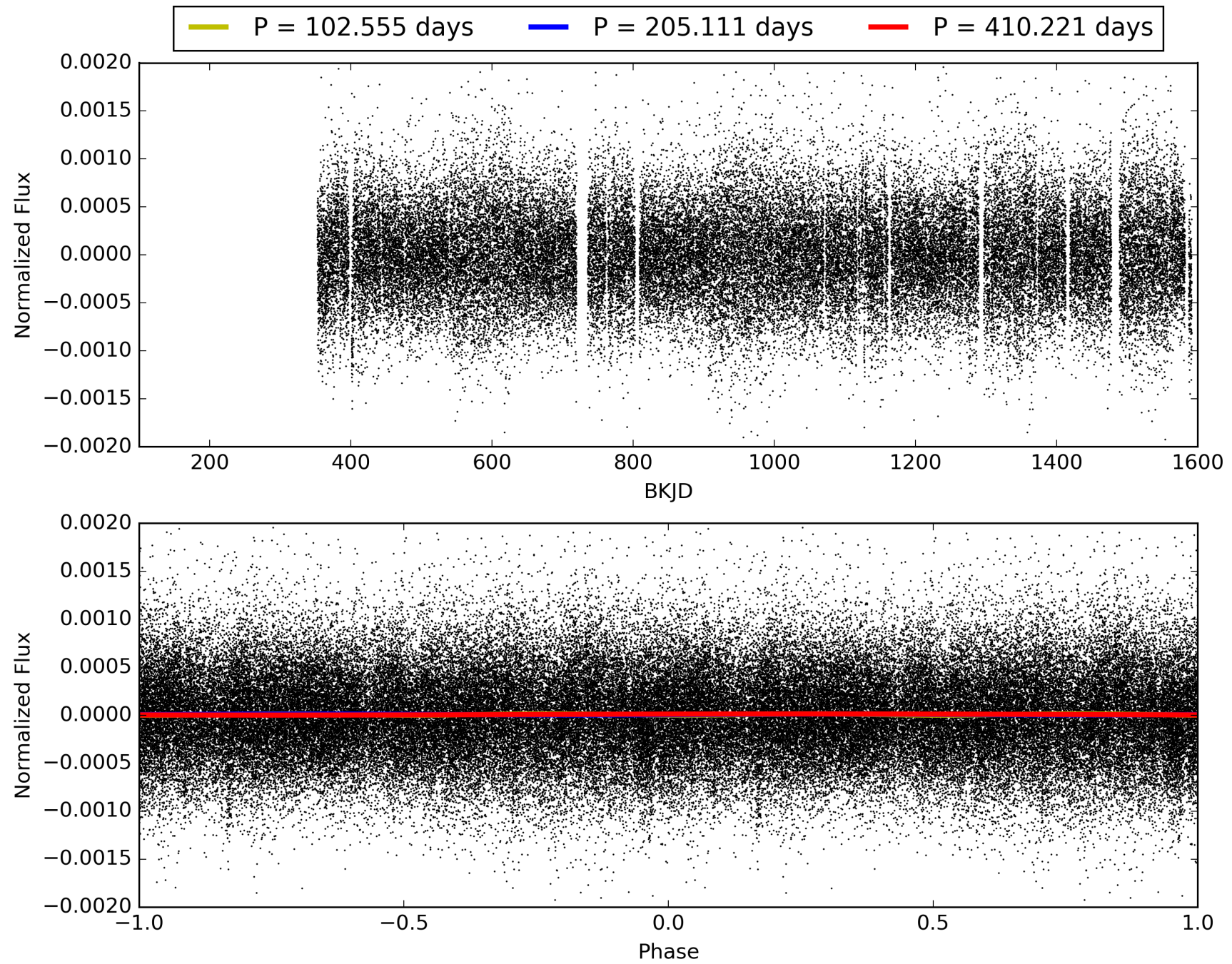
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:58:20 Z

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

TCE 009415129-01, PDC Light Curves

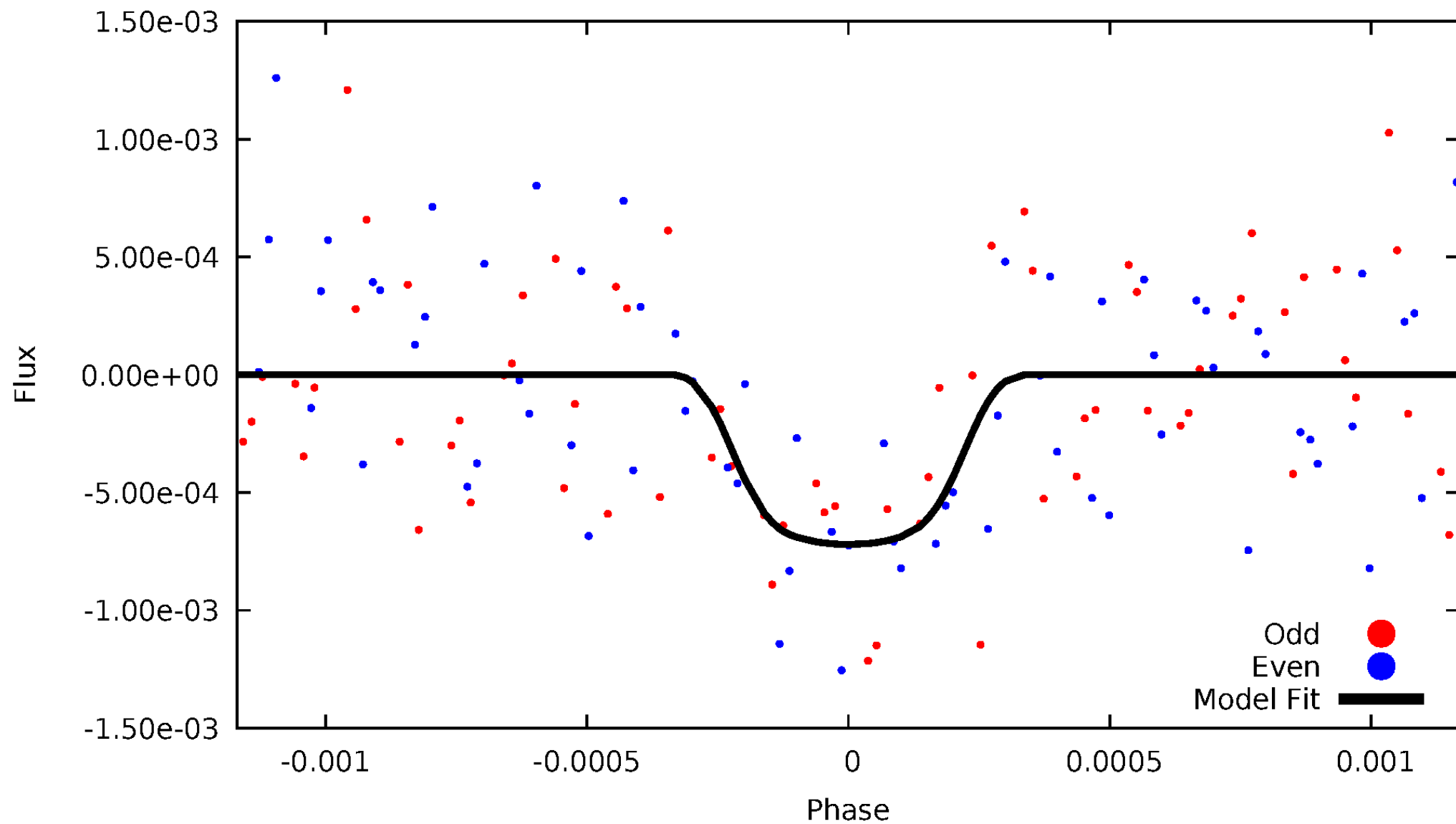


TCE 009415129-01



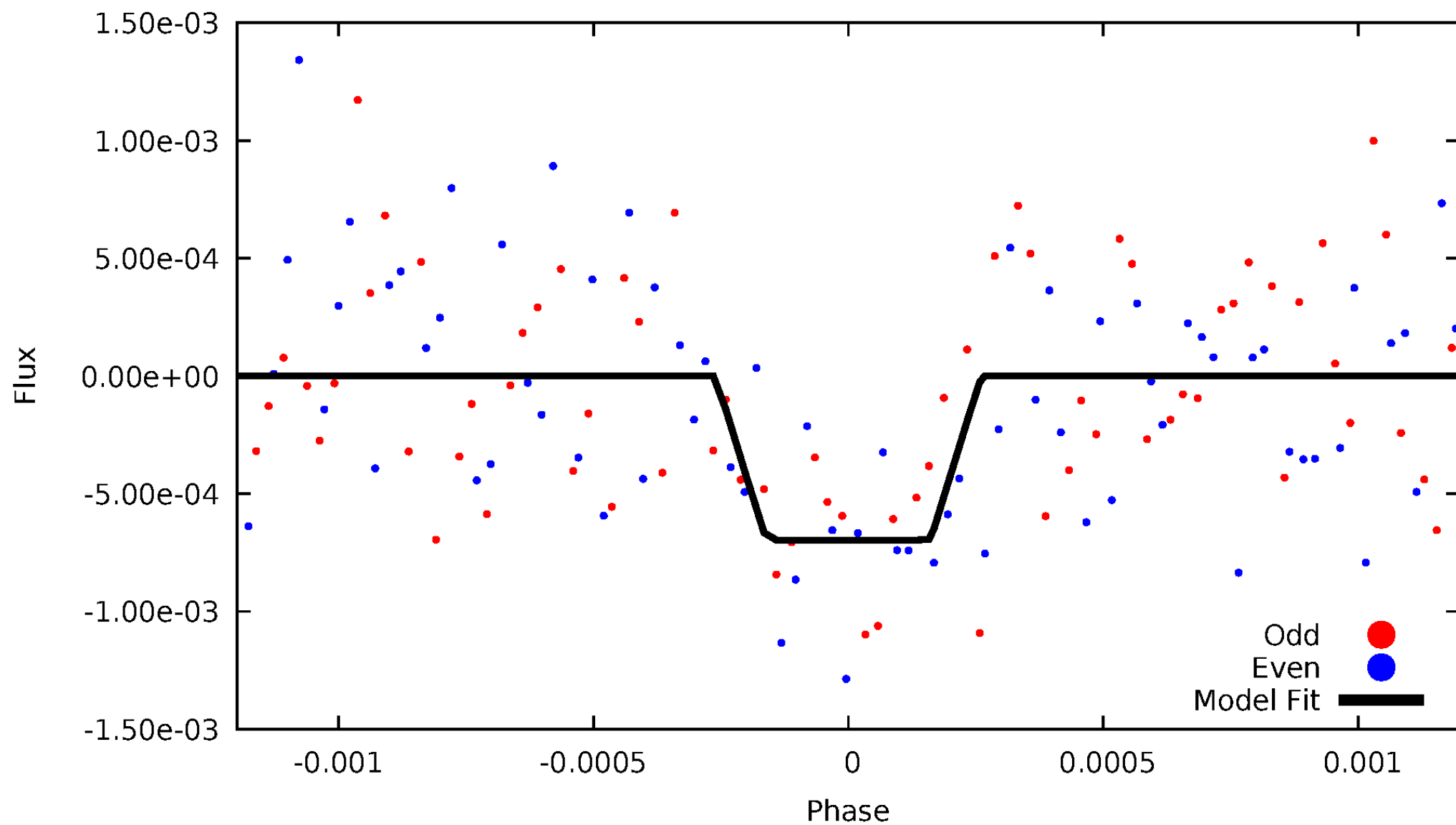
DV Odd/Even

TCE 009415129-01



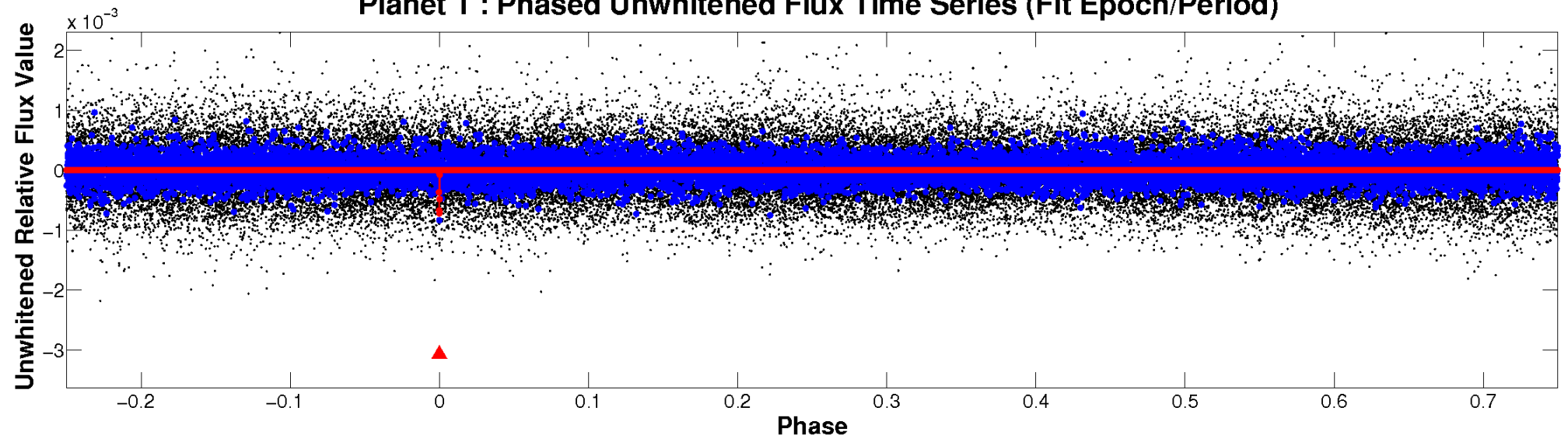
ALT Odd/Even

TCE 009415129-01

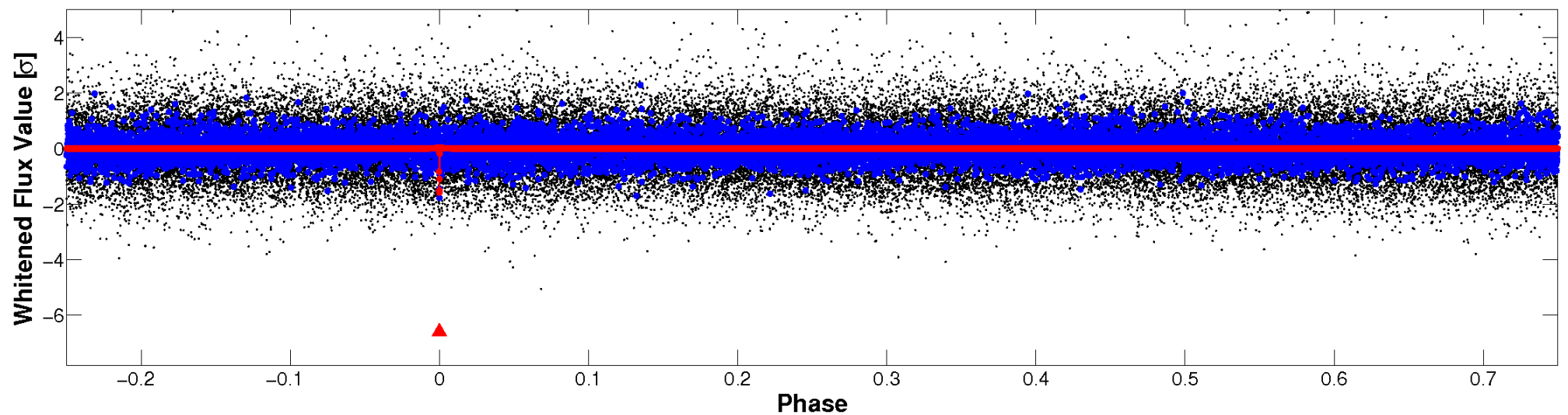


Non-Whitened Vs. Whitened Light Curve

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

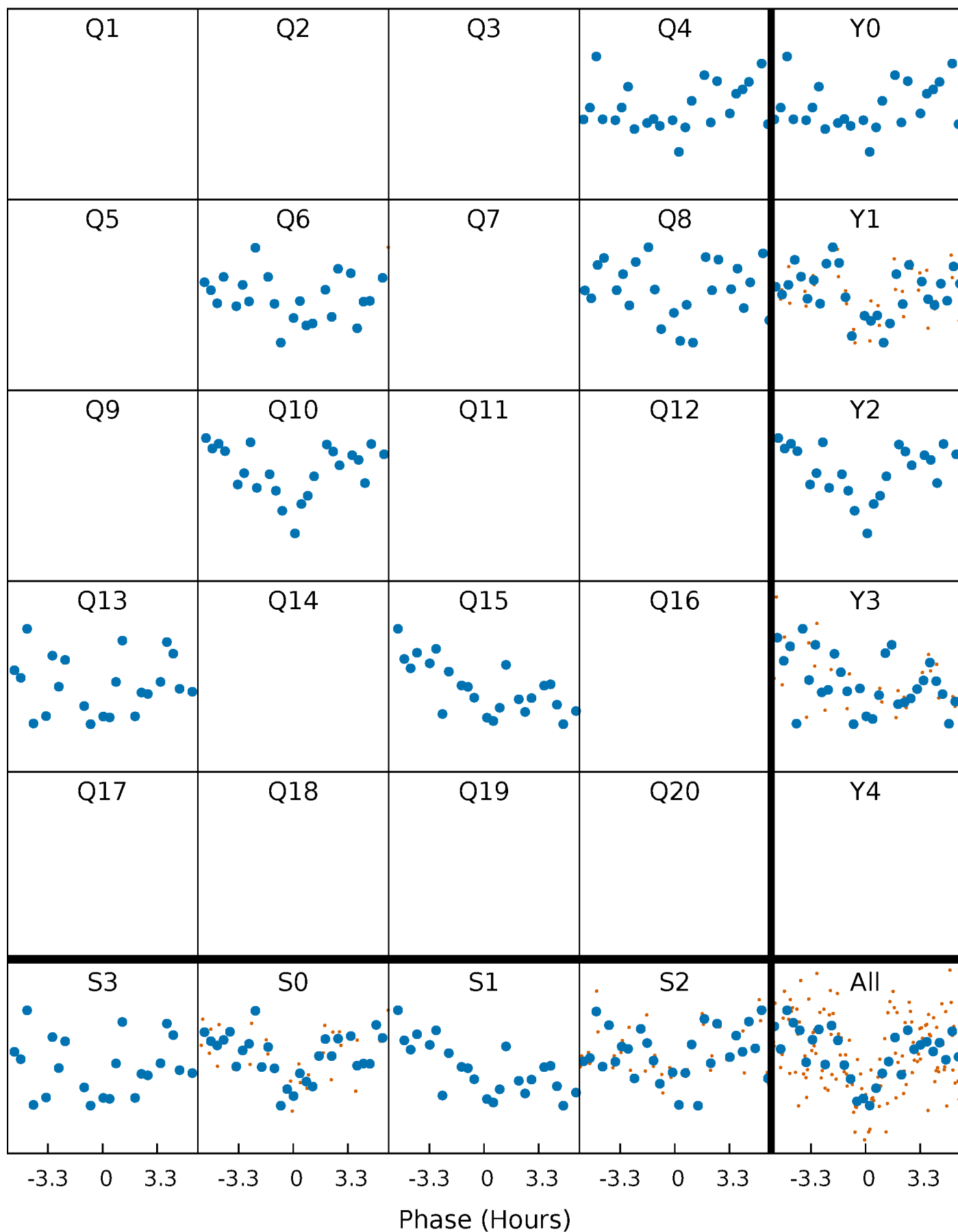


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



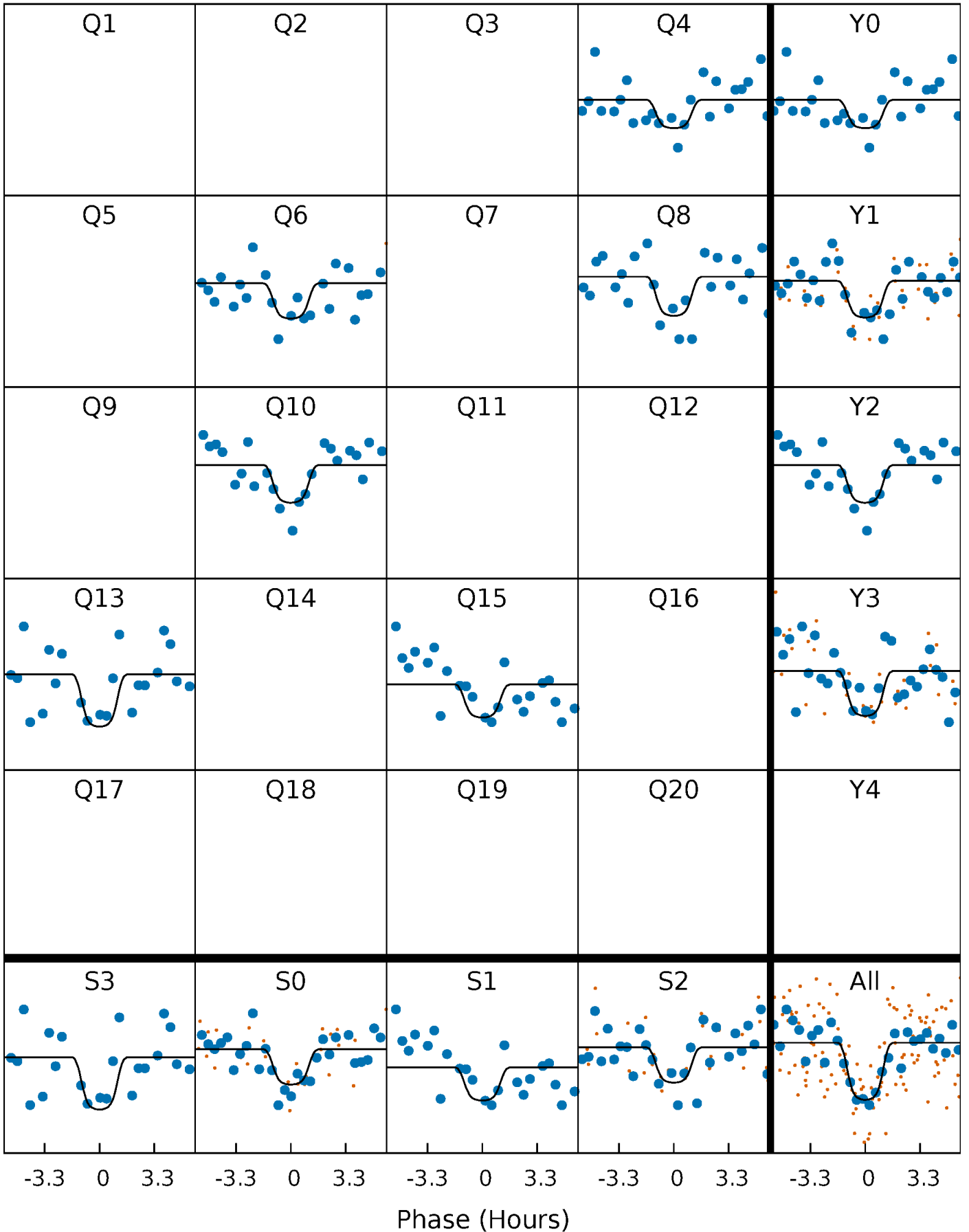
PDC Quarter-Phased Transit Curves

TCE 009415129-01 P=205.110578 Days $T_0=161.868257$ (BKJD)



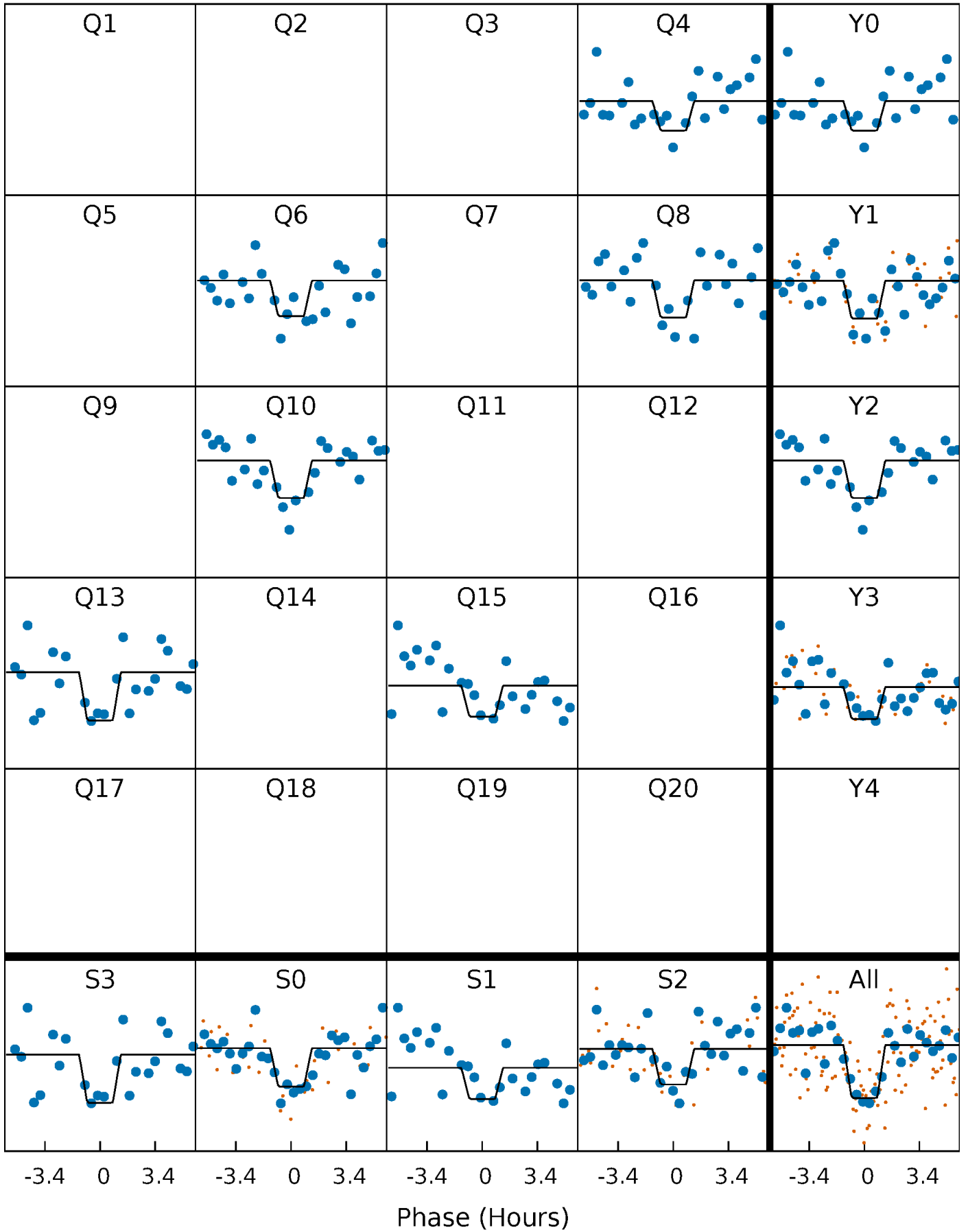
DV Quarter-Phased Transit Curves

TCE 009415129-01 P=205.110578 Days $T_0=161.868257$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

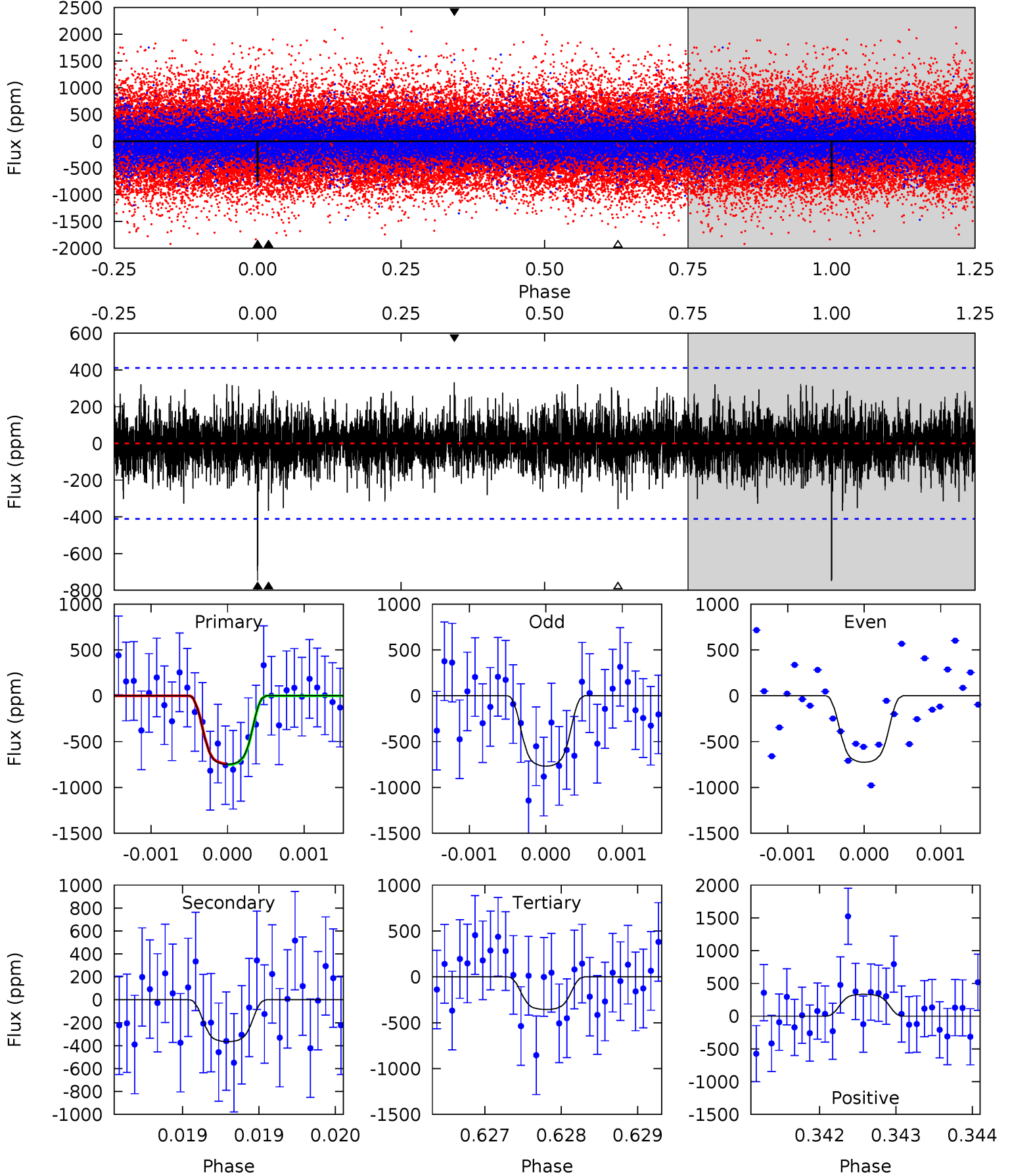
TCE 009415129-01 P=205.109701 Days $T_0=161.869942$ (BKJD)



DV Model-Shift Uniqueness Test

009415129-01, P = 205.110578 Days, E = 161.868257 Days

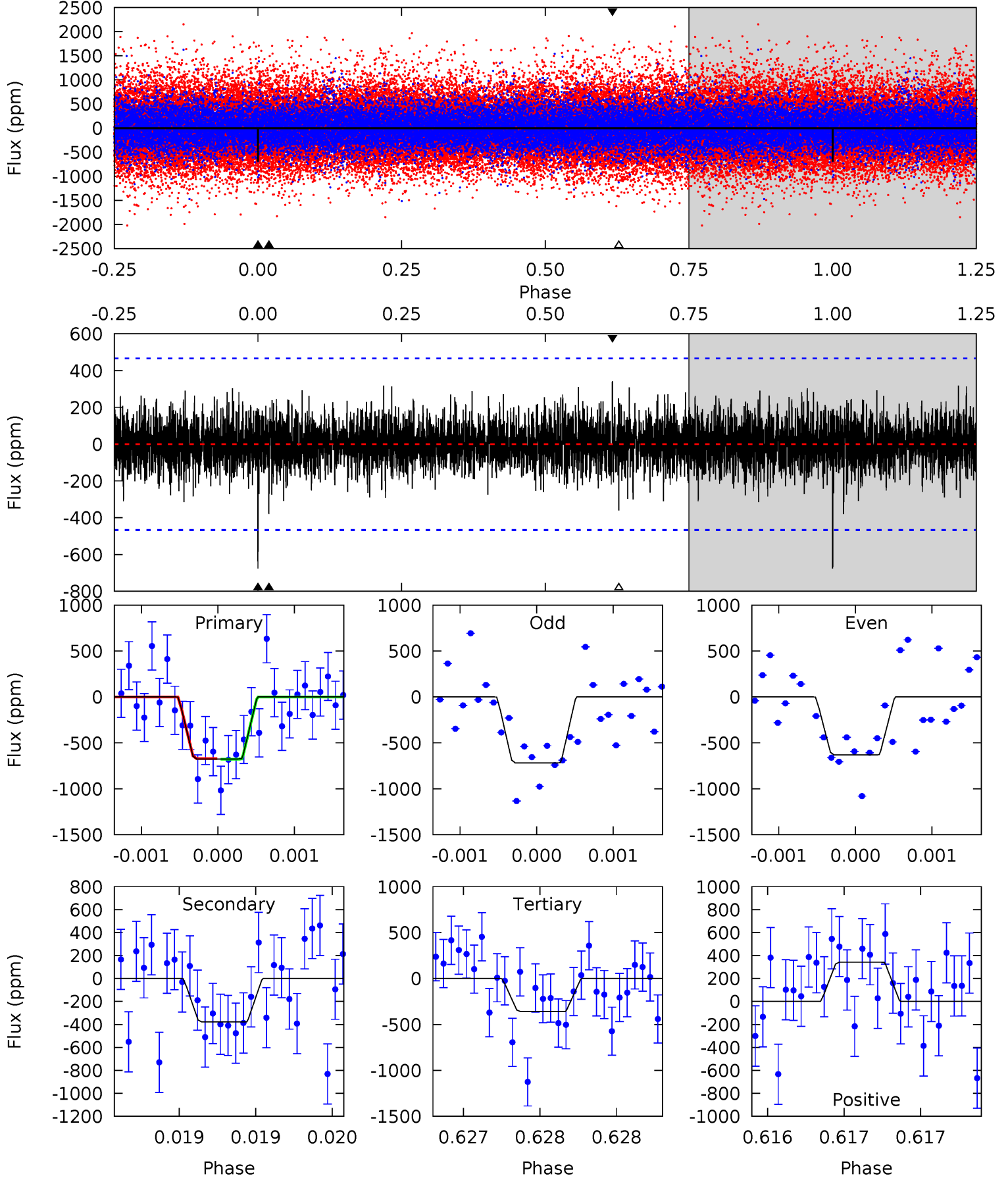
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.0 | 4.91 | 4.78 | 4.48 | 5.52 | 3.40 | 1.25 | 5.27 | 5.57 | 0.13 | 0.44 | 0.29 | 0.96 | 0.31 | 0.07 |



Alt Model-Shift Uniqueness Test

009415129-01, P = 205.109701 Days, E = 161.869942 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.06 | 4.52 | 4.29 | 4.08 | 5.57 | 3.48 | 1.08 | 3.77 | 3.98 | 0.23 | 0.44 | 0.53 | 1.03 | 0.34 | 0.04 |



Stellar Parameters For KIC 009415129

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5557^{+200}_{-183} | $4.524^{+0.074}_{-0.137}$ | $-0.300^{+0.300}_{-0.300}$ | $0.820^{+0.182}_{-0.084}$ | $0.821^{+0.109}_{-0.072}$ | $2.097^{+0.674}_{-0.853}$ |
| | +4%/-3% | +2%/-3% | +100%/-100% | +22%/-10% | +13%/-9% | +32%/-41% |
| 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 009415129-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|----------------------|--------------------------|
| DV | -366 ± 74 | $2.85^{+0.61}_{-0.59}$ | 392^{+21}_{-19} | 4512^{+493}_{-366} | 10095^{+6457}_{-3804} |
| Alt. | -379 ± 84 | $2.39^{+0.64}_{-0.56}$ | 392^{+22}_{-19} | 4860^{+677}_{-449} | 14376^{+11652}_{-5802} |

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

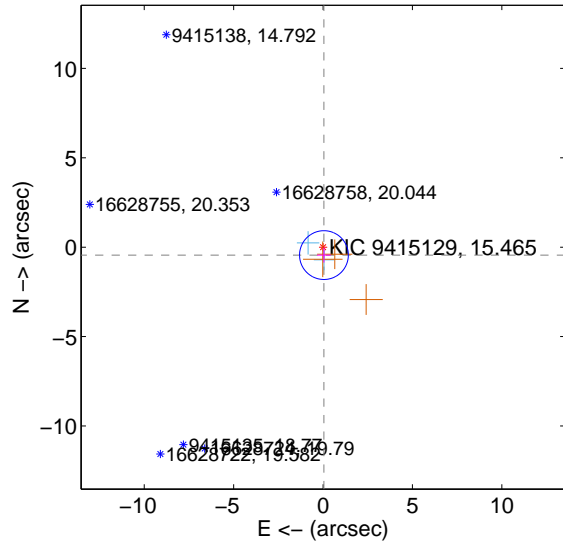
Supplemental centroid analysis for 009415129-01. Kepler magnitude: 15.46. Transit SNR 7.39

There are 2 quarters with good PRF difference image offsets

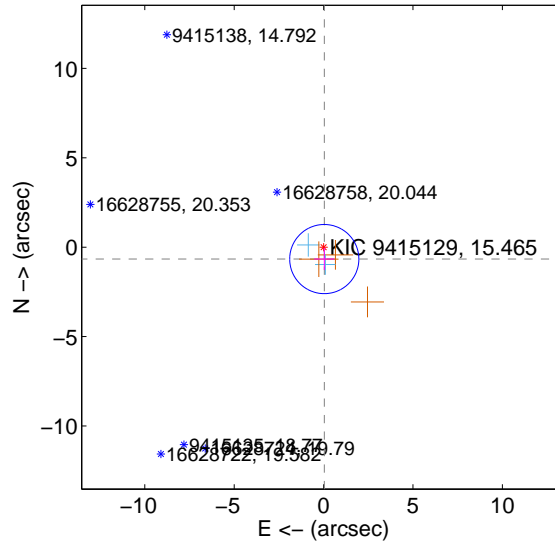
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.446 ± 0.455 | 0.98 | -0.051 ± 0.383 | -0.443 ± 0.417 |
| PRF-fit source offset from KIC position | 0.666 ± 0.645 | 1.03 | -0.039 ± 0.568 | -0.665 ± 0.615 |
| photometric centroid source offset | 4.31 ± 2.32 | 1.85 | -1.93 ± 2.08 | 3.85 ± 2.38 |

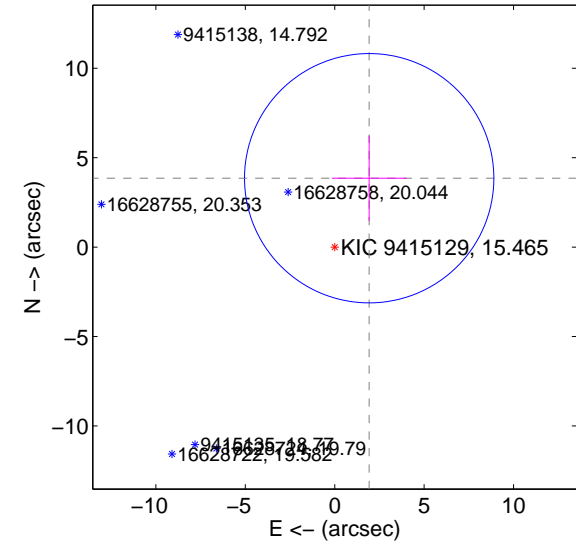
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

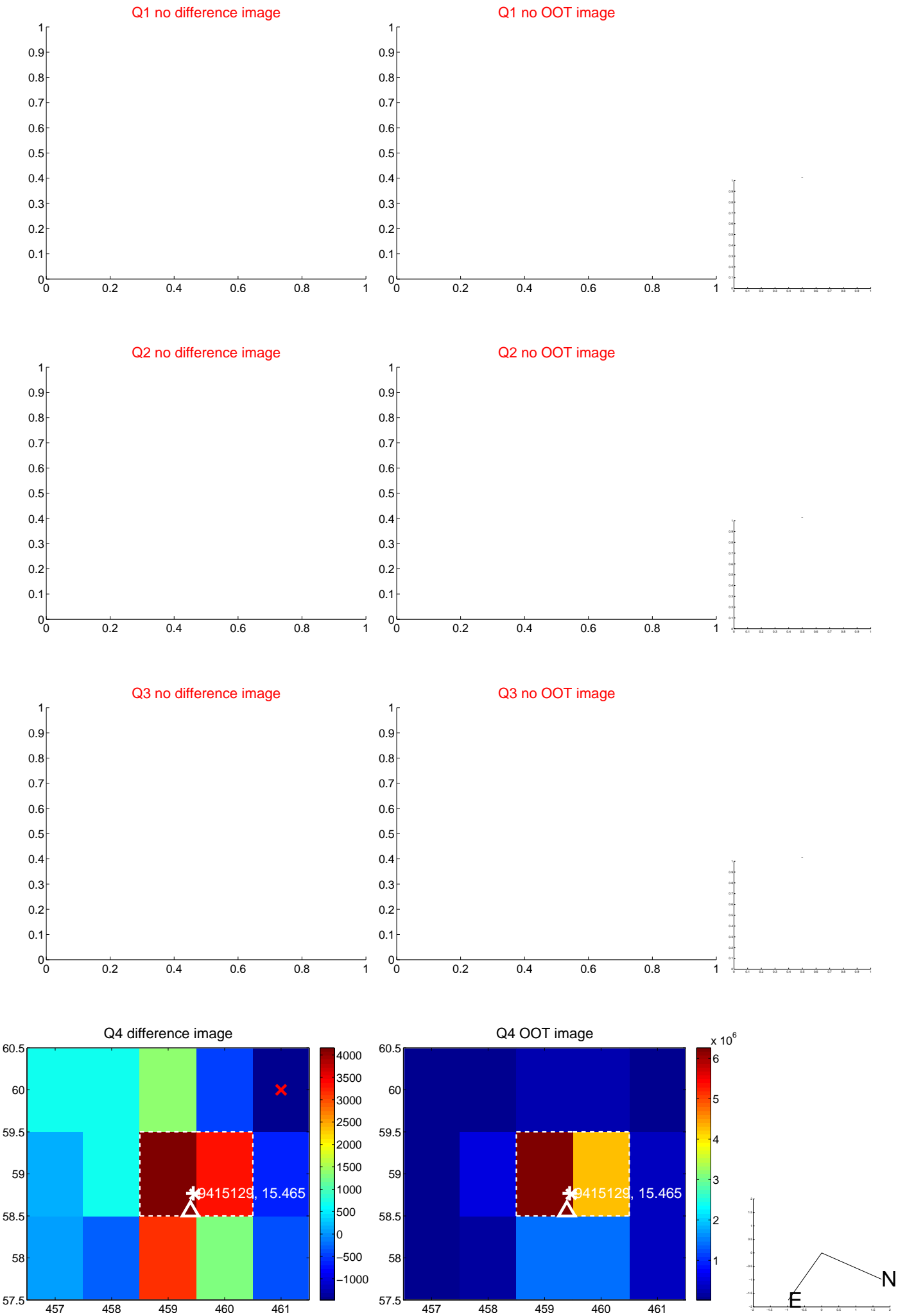


offset from photometric centroids

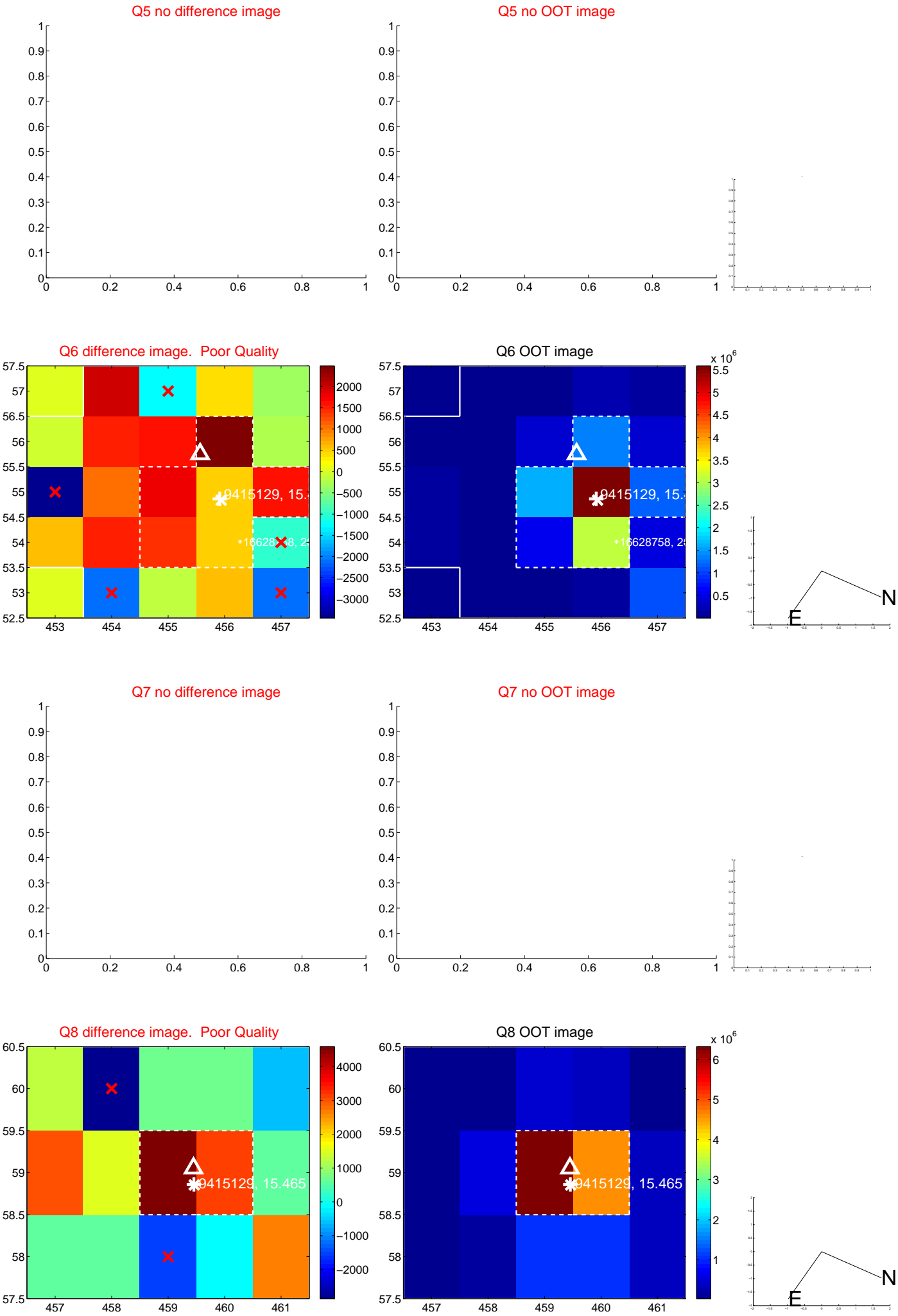


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

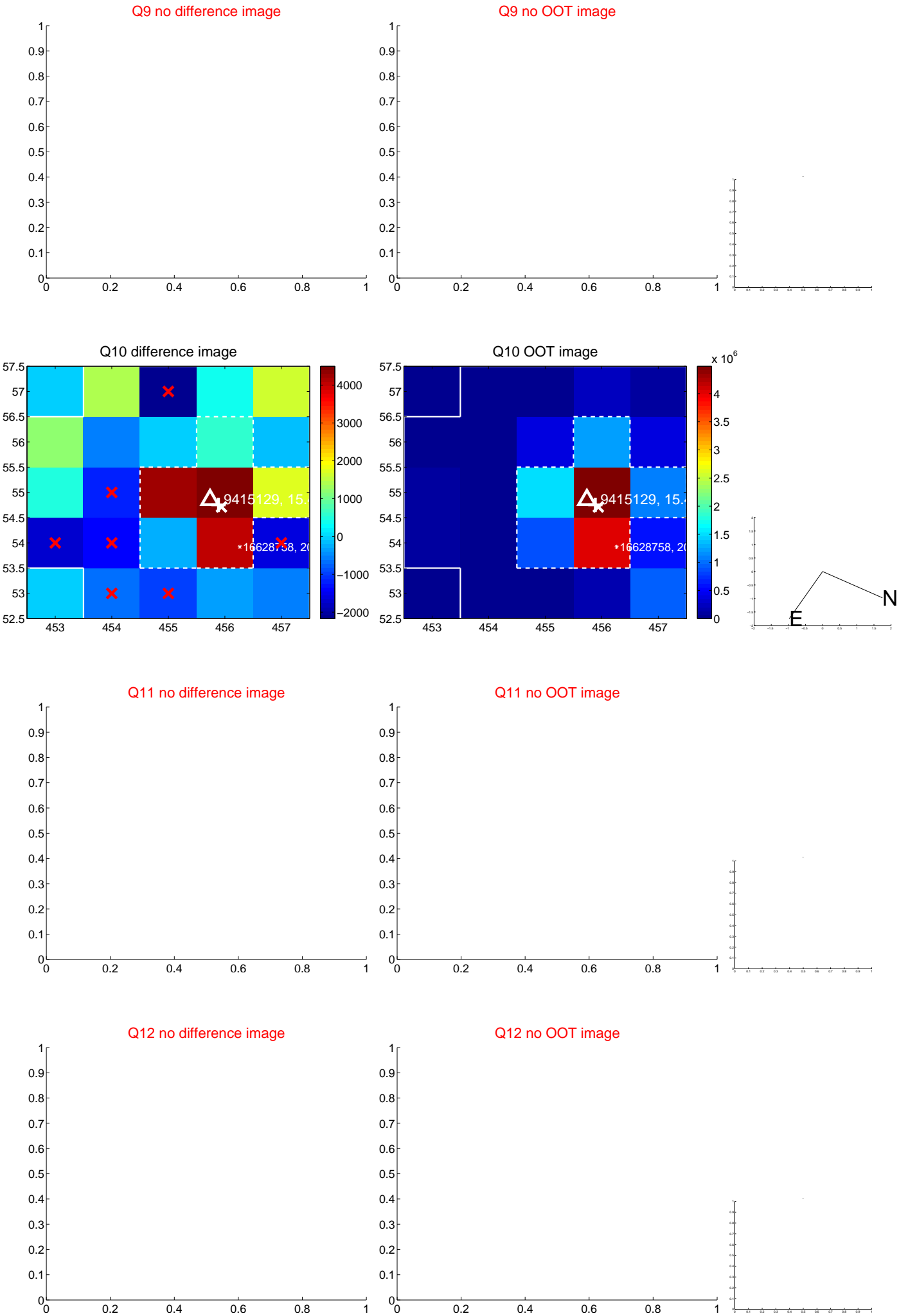
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



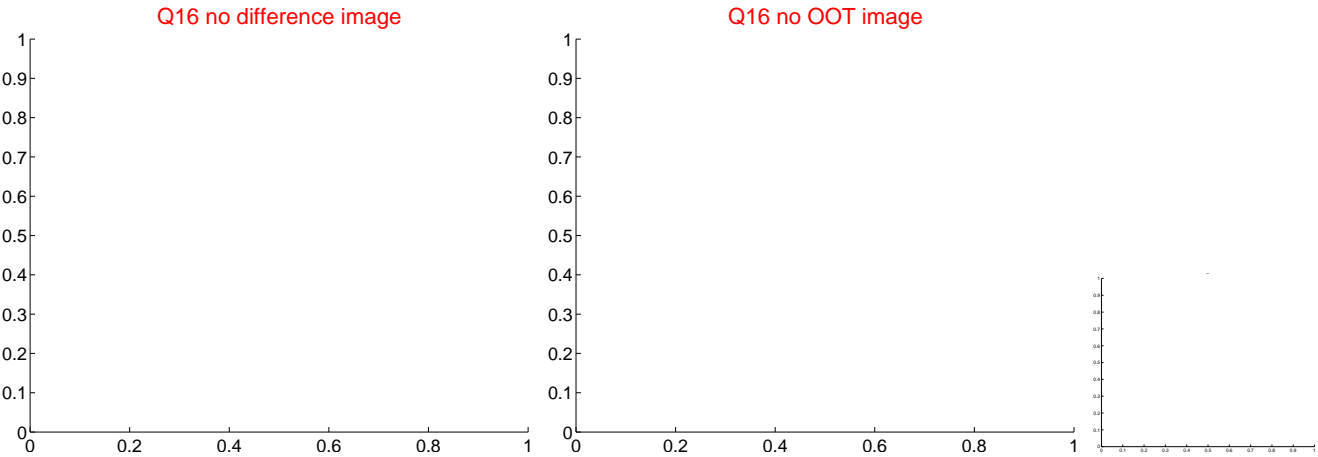
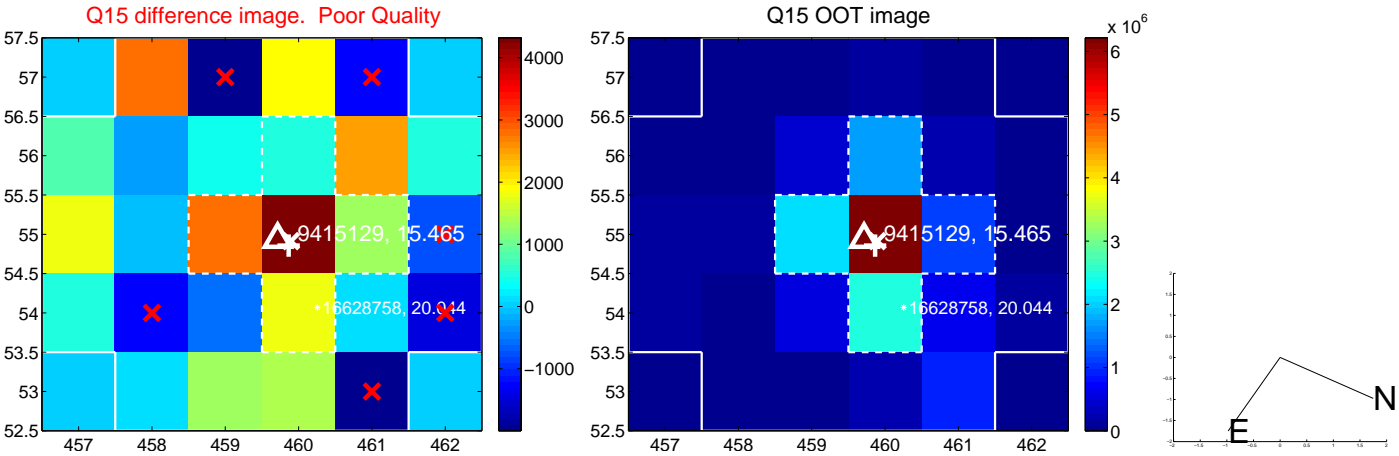
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



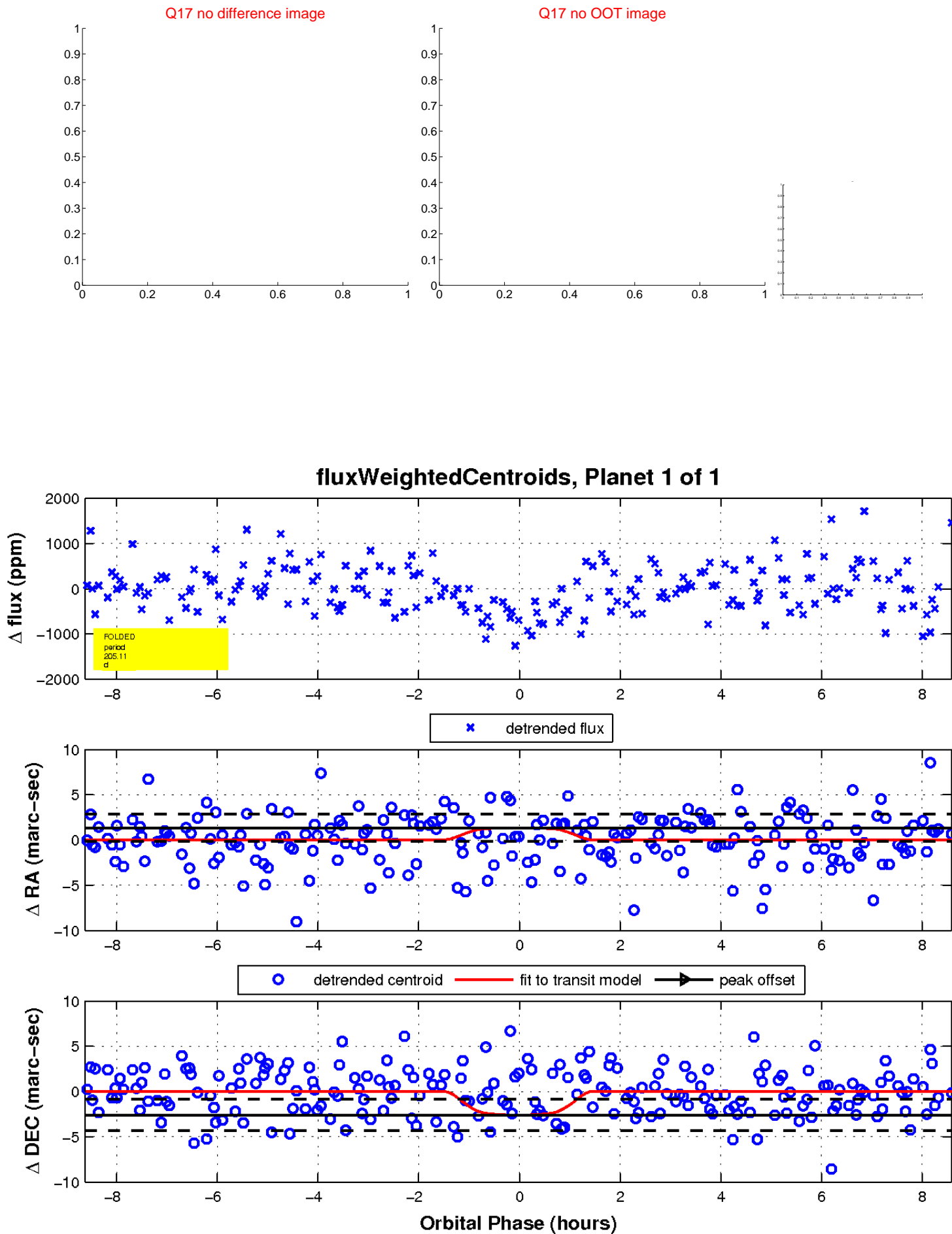
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

