

KIC 009028104

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009028104-01 | OBS | No | 1.535854 | 132.627848 | 83.7 | 12.743 | 12.0 | 11.6 | 2.08 | 7334 | 1.94 | 11984.22 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---------------------|
| 009028104-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—CENT_KIC_POS |

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

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

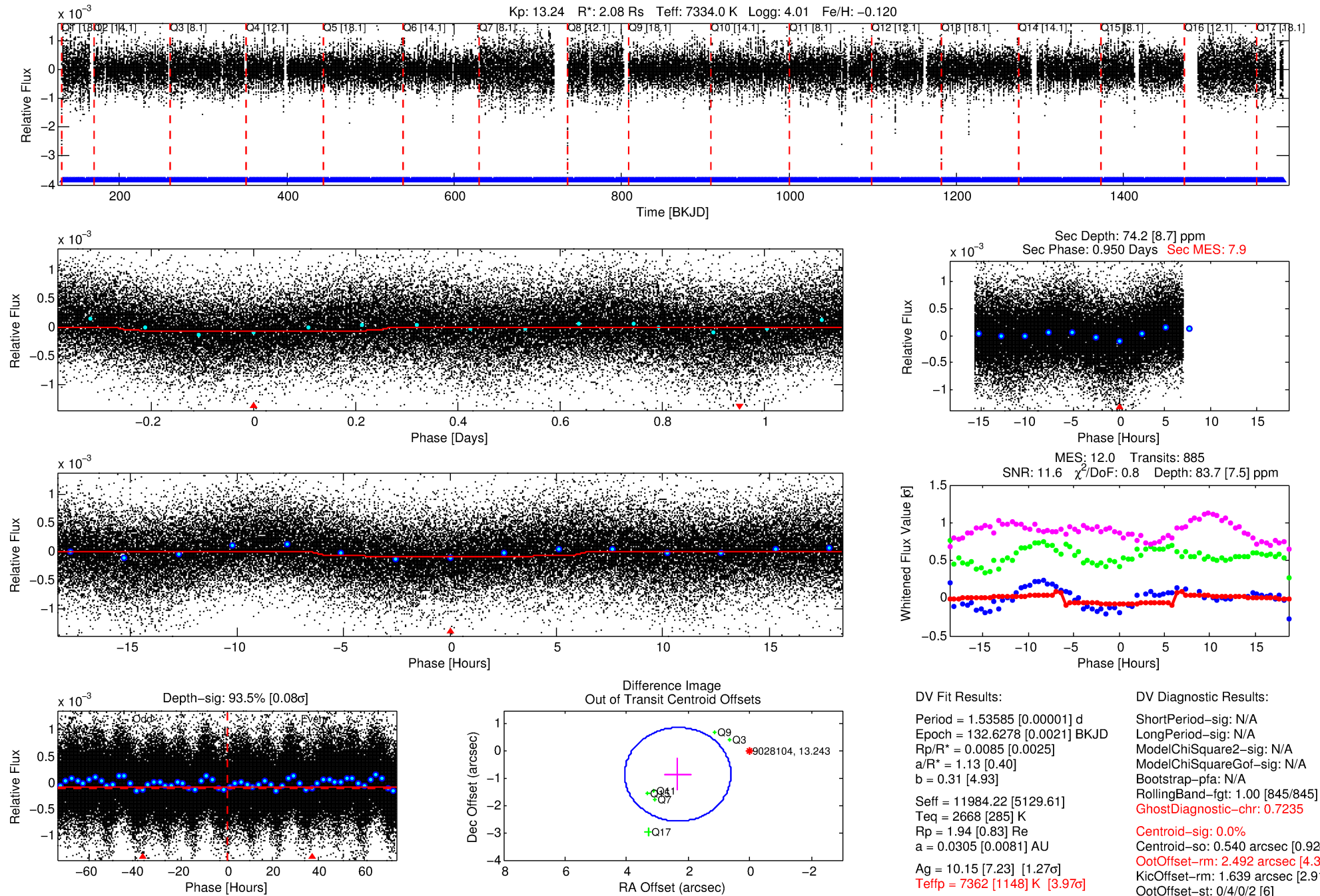
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009028104-01

No Significant Match Found

DV One-Page Summary

KIC: 9028104 Candidate: 1 of 1 Period: 1.536 d



DV Fit Results:

Period = 1.53585 [0.00001] d
Epoch = 132.6278 [0.0021] BKJD
Rp/R* = 0.0085 [0.0025]
a/R* = 1.13 [0.40]
b = 0.31 [4.93]
Seff = 11984.22 [5129.61]
Teff = 2668 [285] K
Rp = 1.94 [0.83] Re
a = 0.0305 [0.0081] AU
Ag = 10.15 [7.23] [1.27 σ]
Teffp = 7362 [1148] K [3.97 σ]

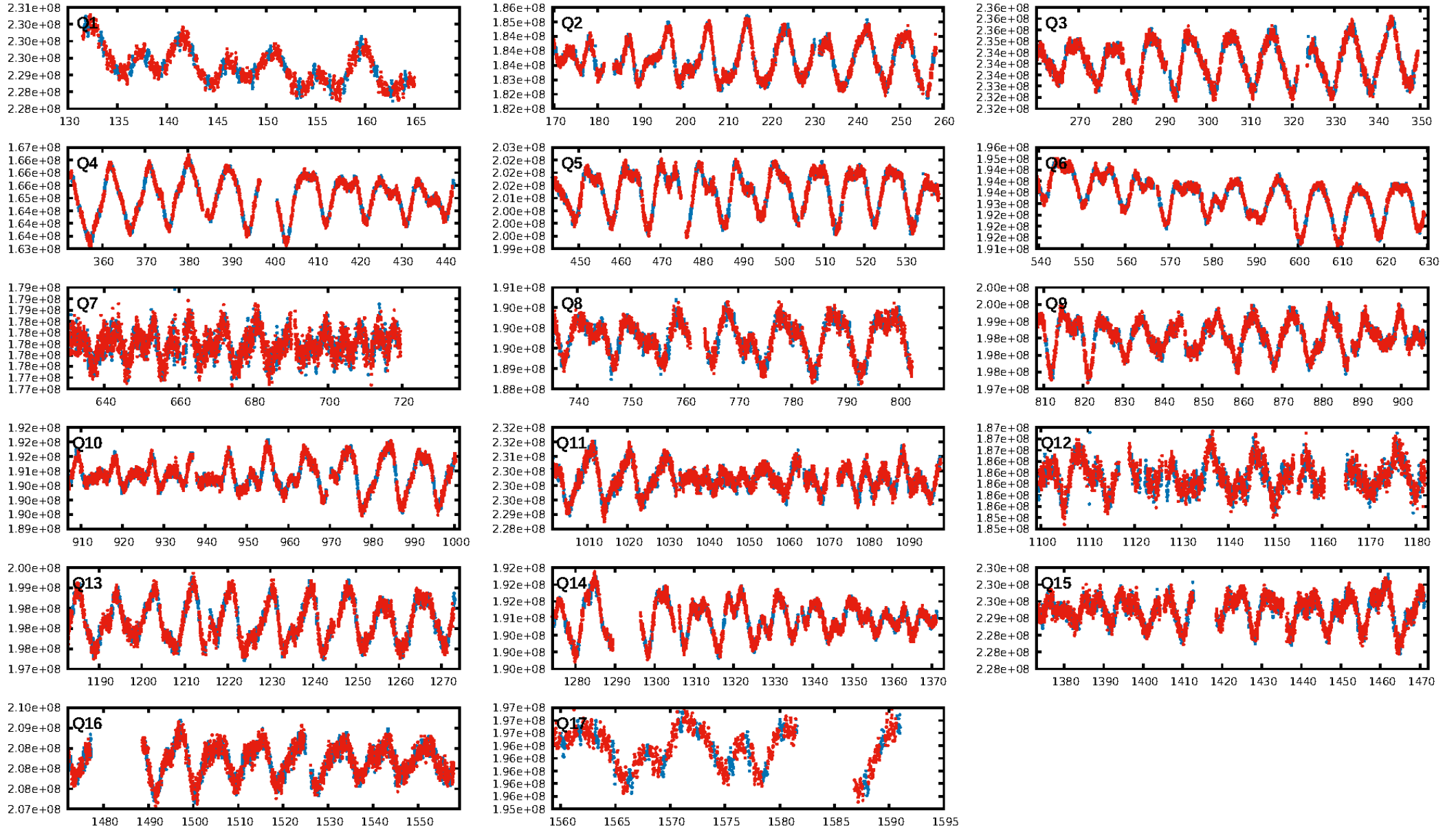
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [845/845]
GhostDiagnostic-chr: 0.7235
Centroid-sig: 0.0%
Centroid-so: 0.540 arcsec [0.92 σ]
OotOffset-rm: 2.492 arcsec [4.34 σ]
KicOffset-rm: 1.639 arcsec [2.91 σ]
OotOffset-st: 0/4/0/2 [6]
KicOffset-st: 0/4/0/2 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 1.00 [17/17]

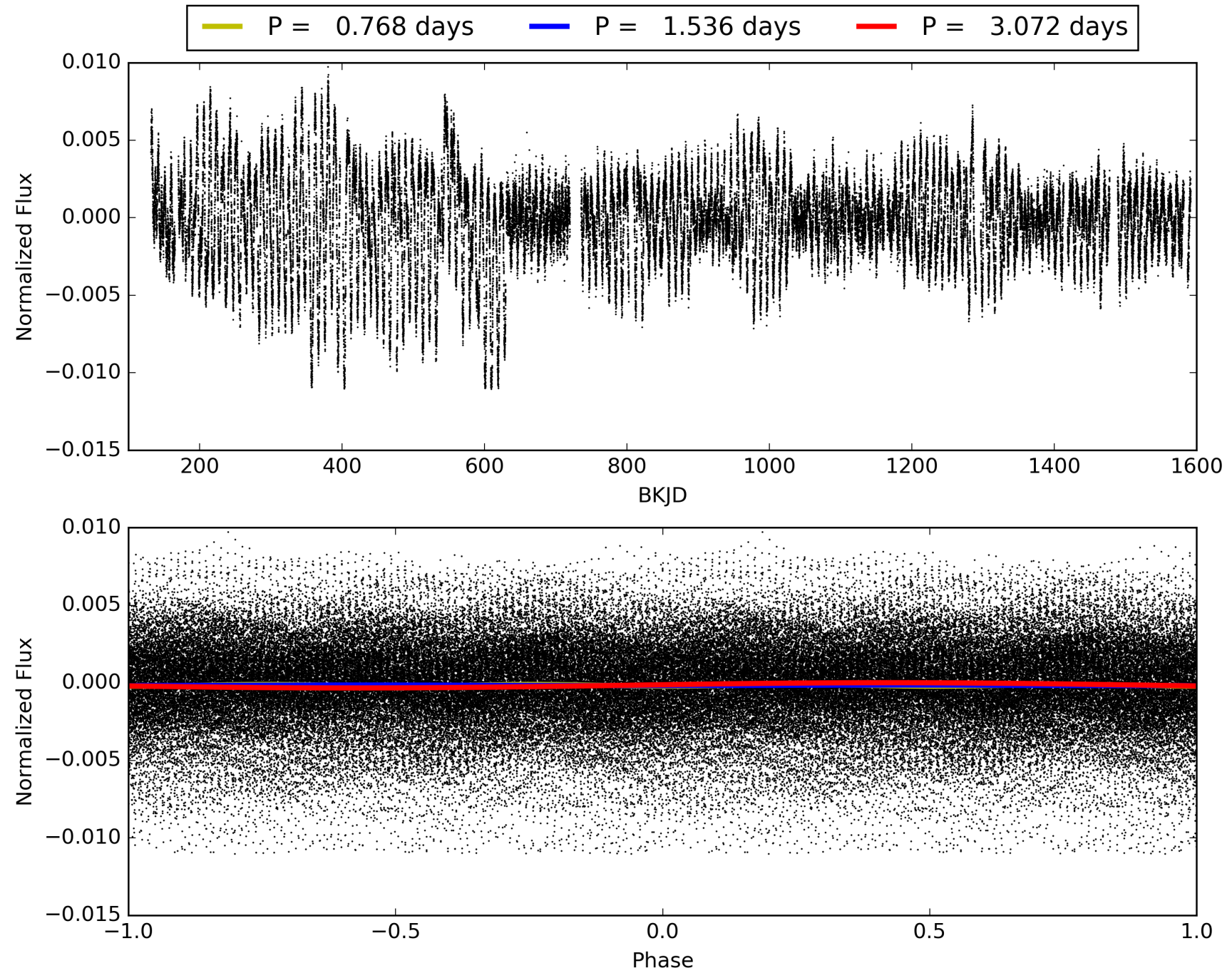
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:04:59 Z

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

TCE 009028104-01, PDC Light Curves

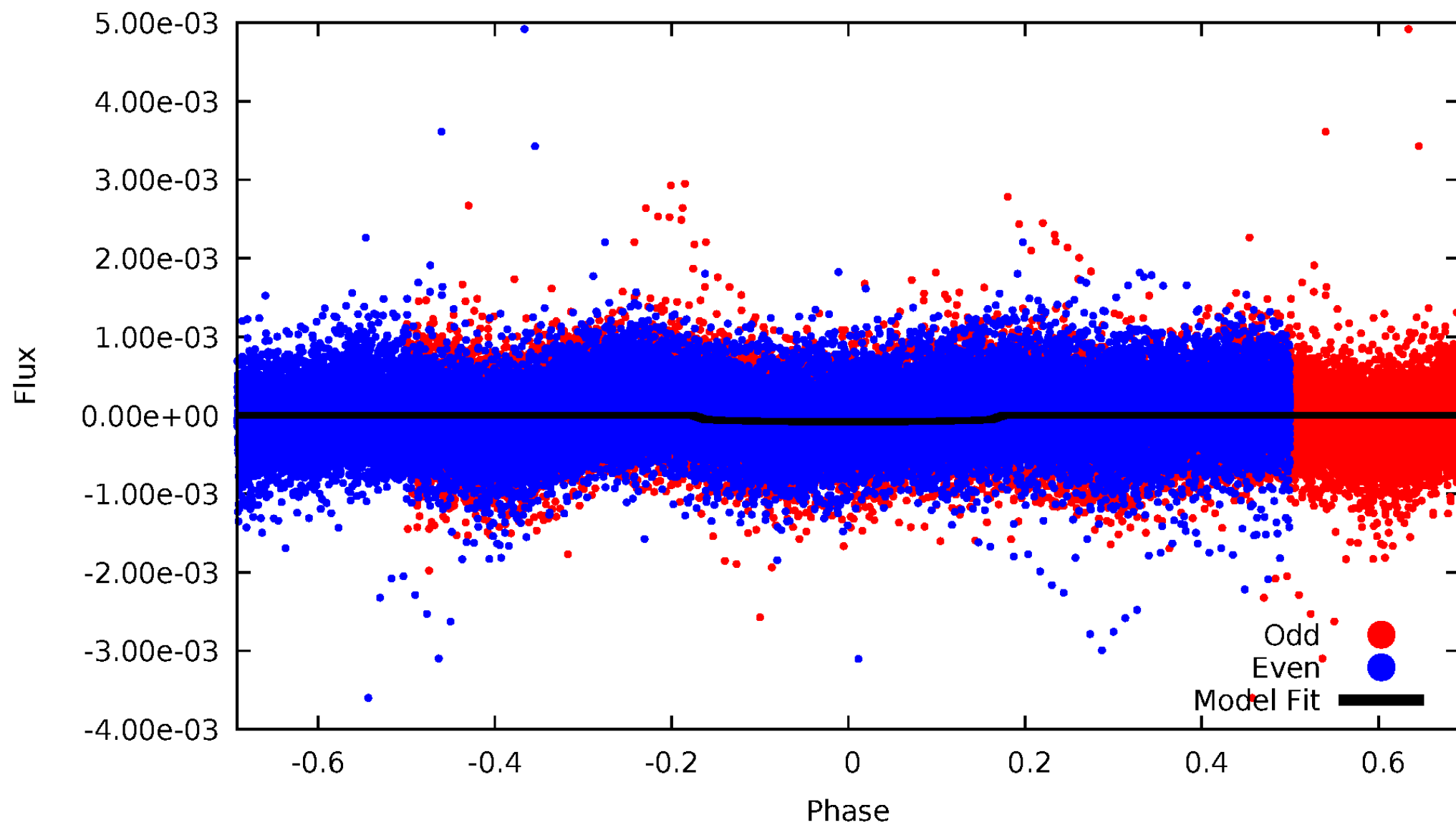


TCE 009028104-01



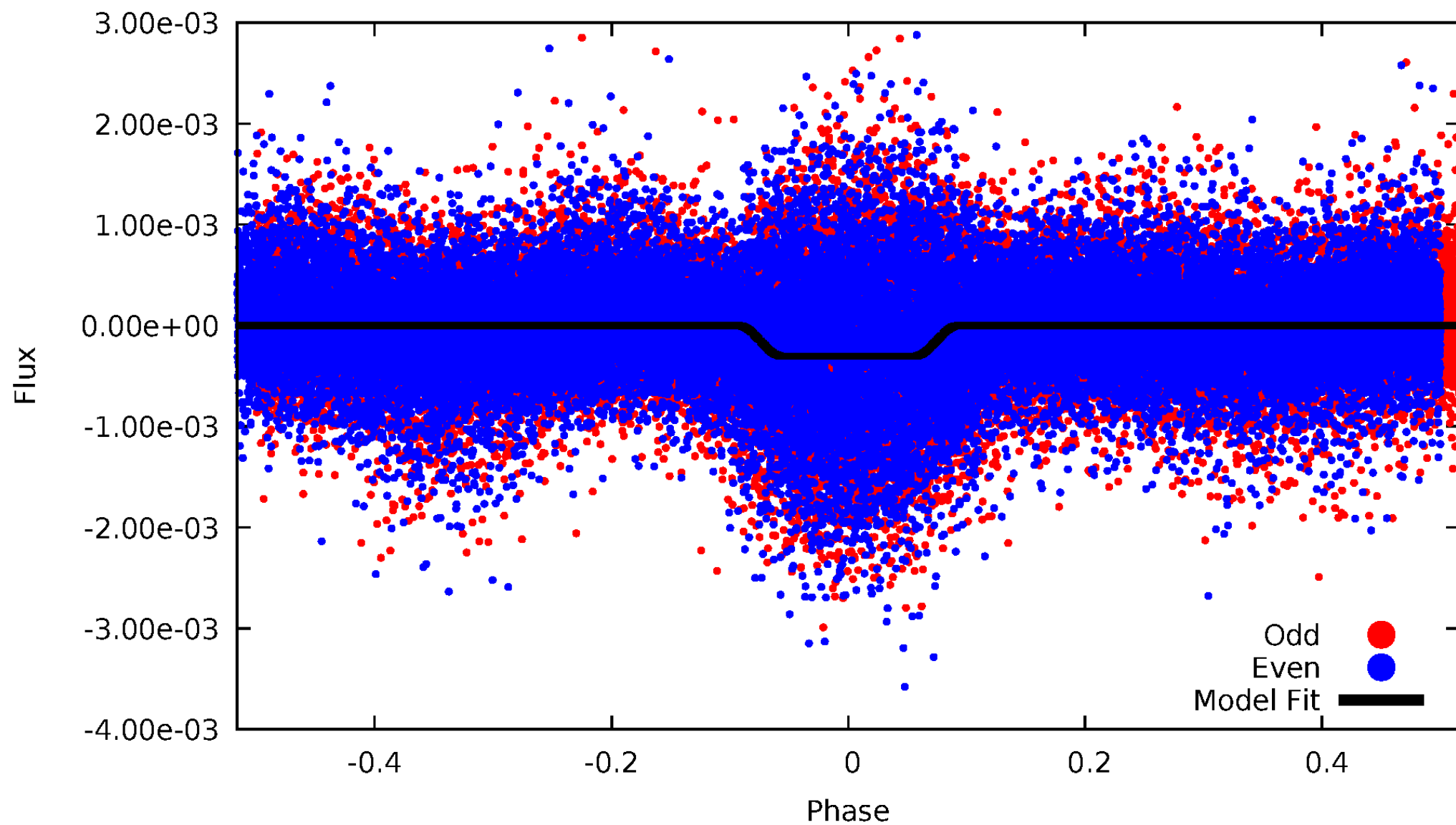
DV Odd/Even

TCE 009028104-01



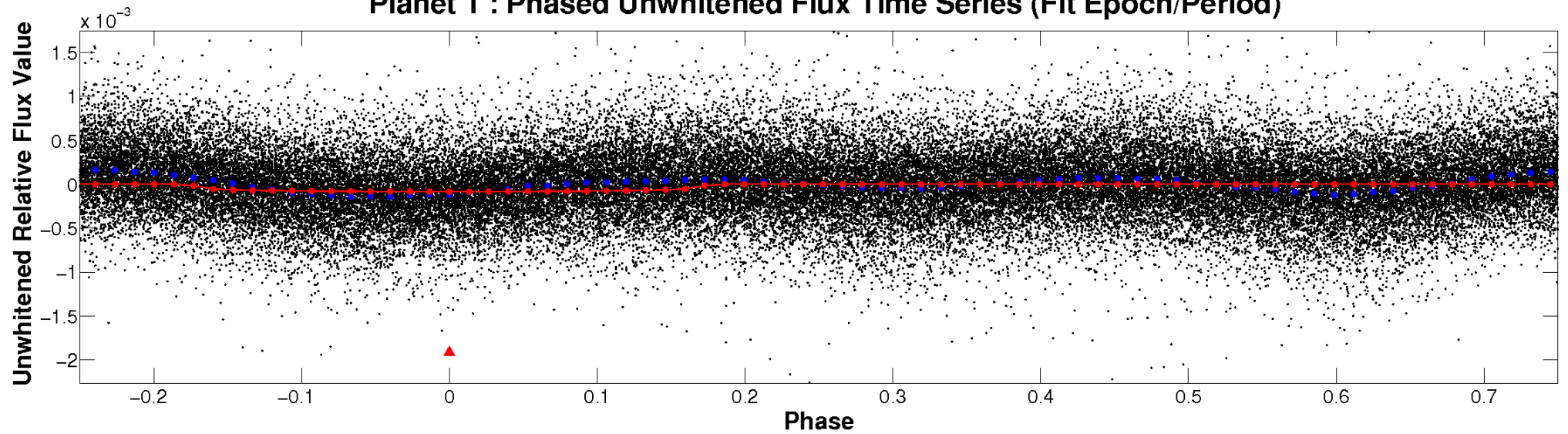
ALT Odd/Even

TCE 009028104-01

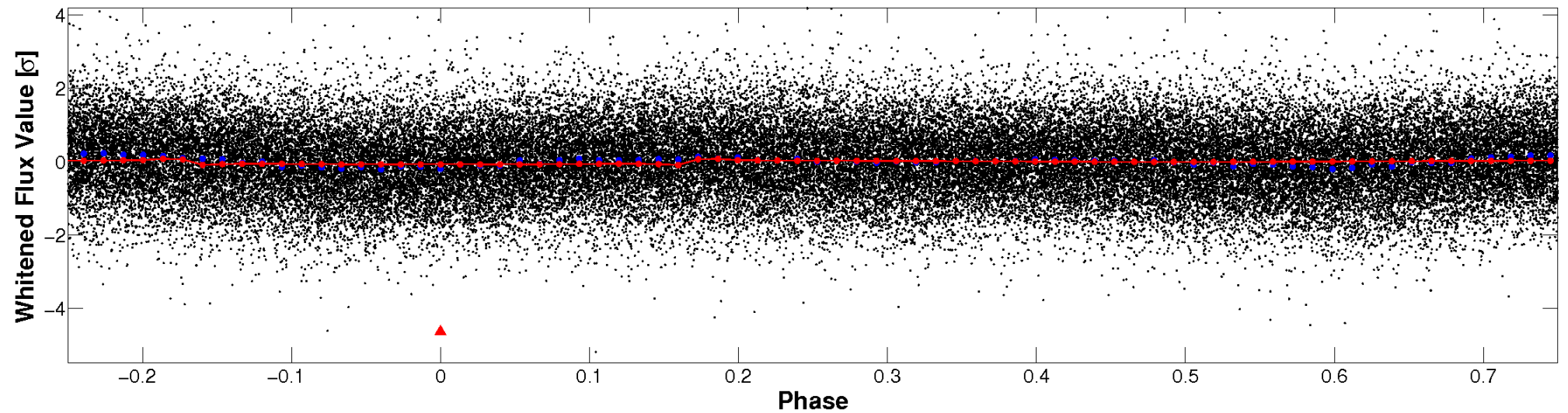


Non-Whitened Vs. Whitened Light Curve

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

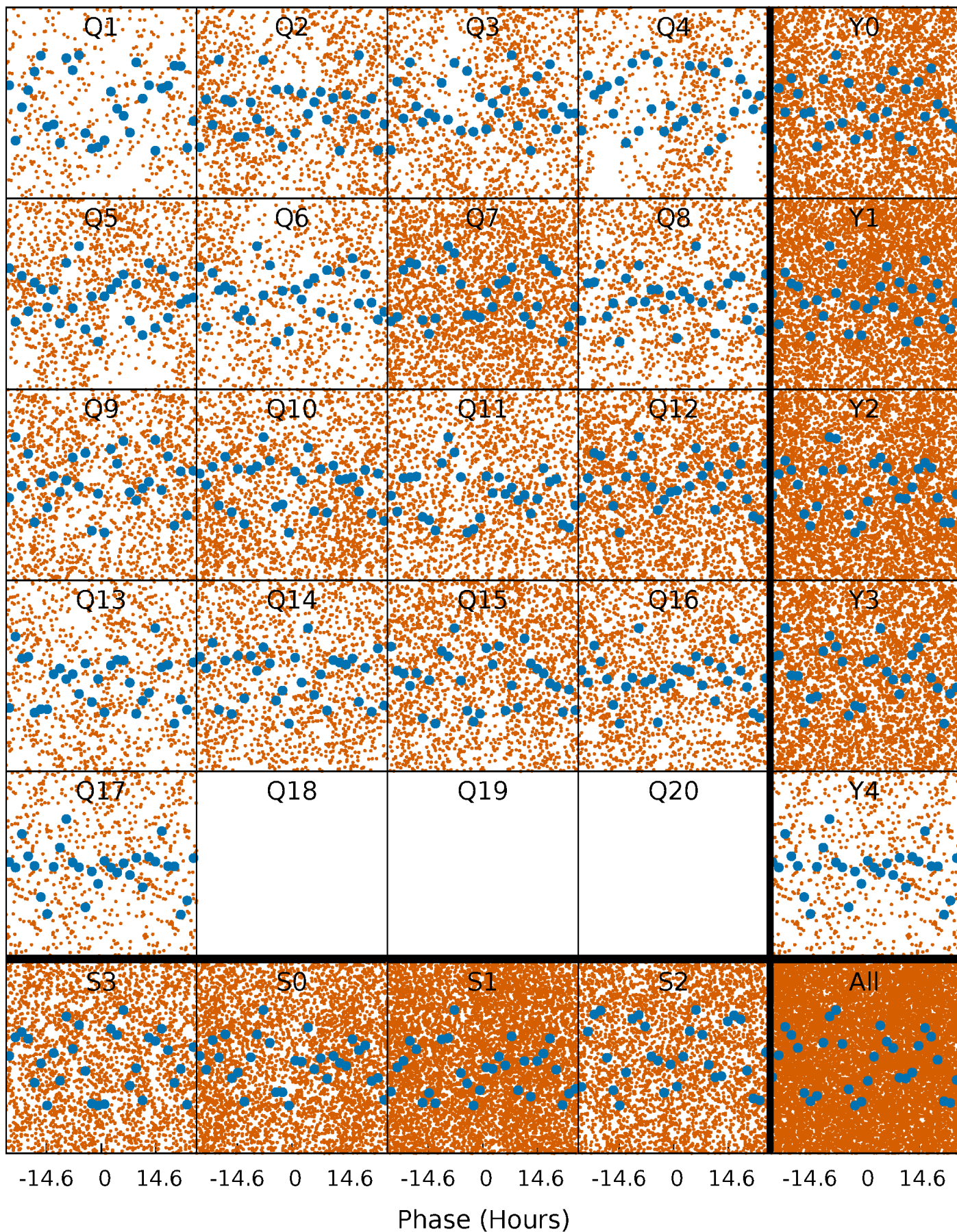


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



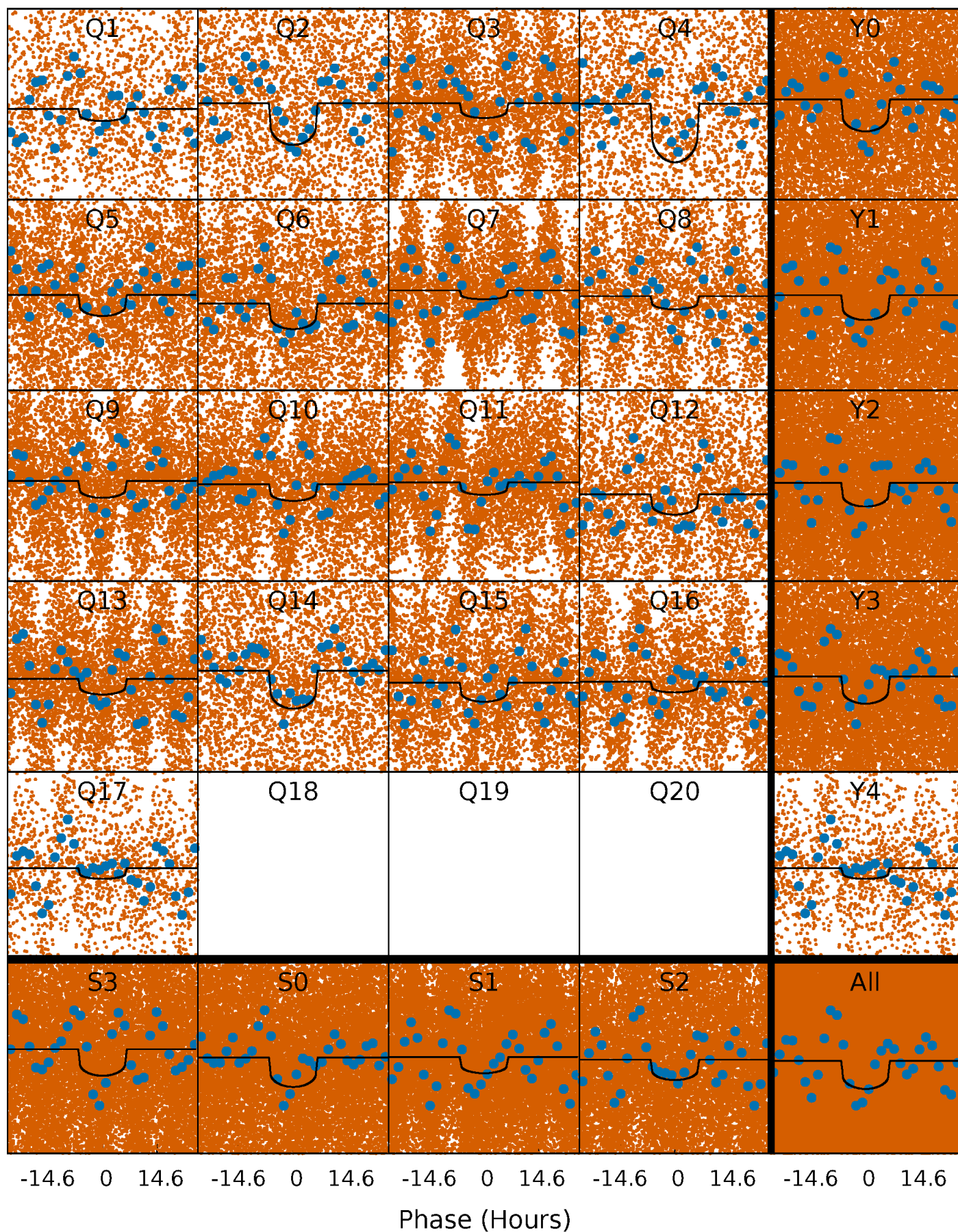
PDC Quarter-Phased Transit Curves

TCE 009028104-01 P= 1.535854 Days $T_0=132.627848$ (BKJD)



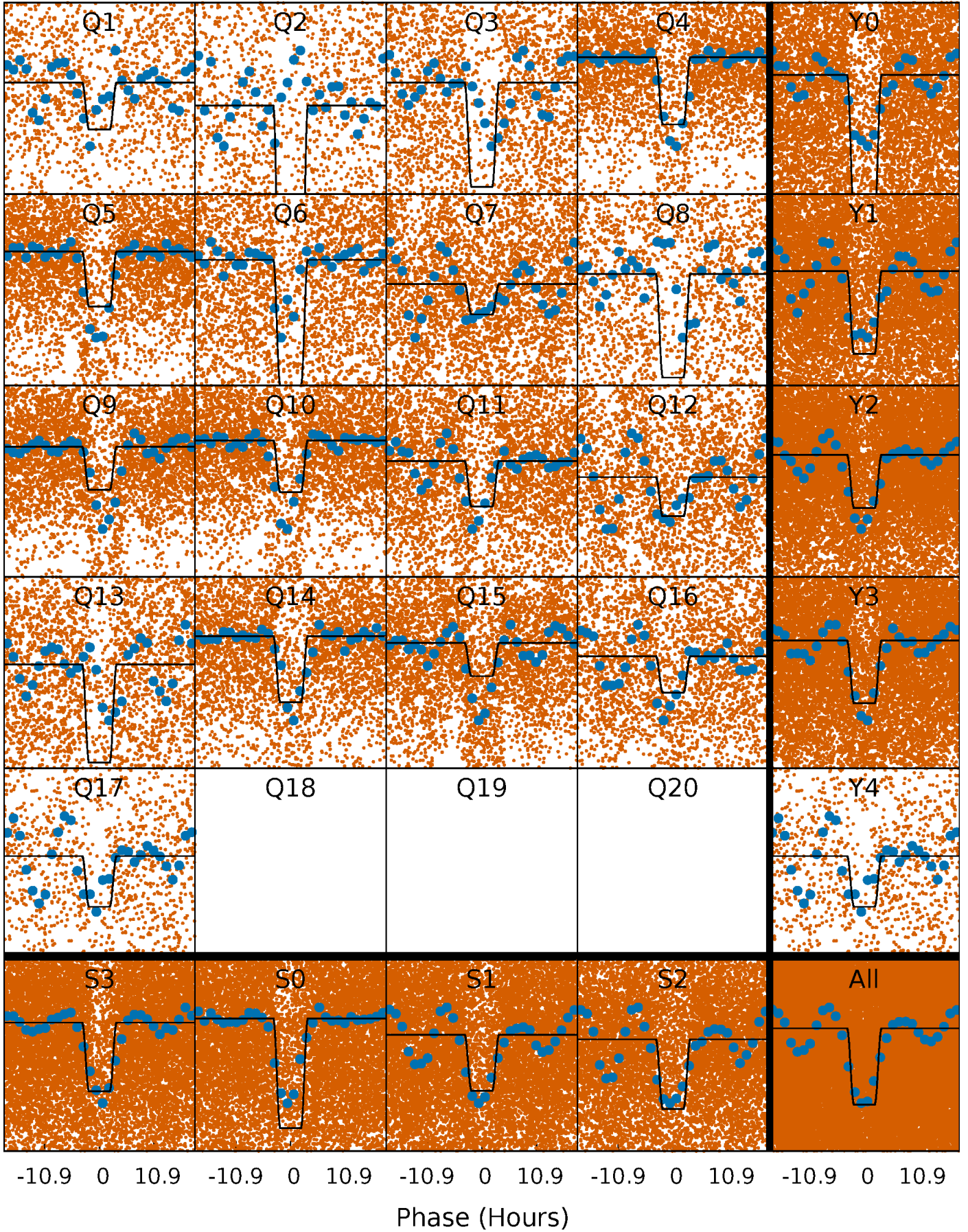
DV Quarter-Phased Transit Curves

TCE 009028104-01 P= 1.535854 Days $T_0=132.627848$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

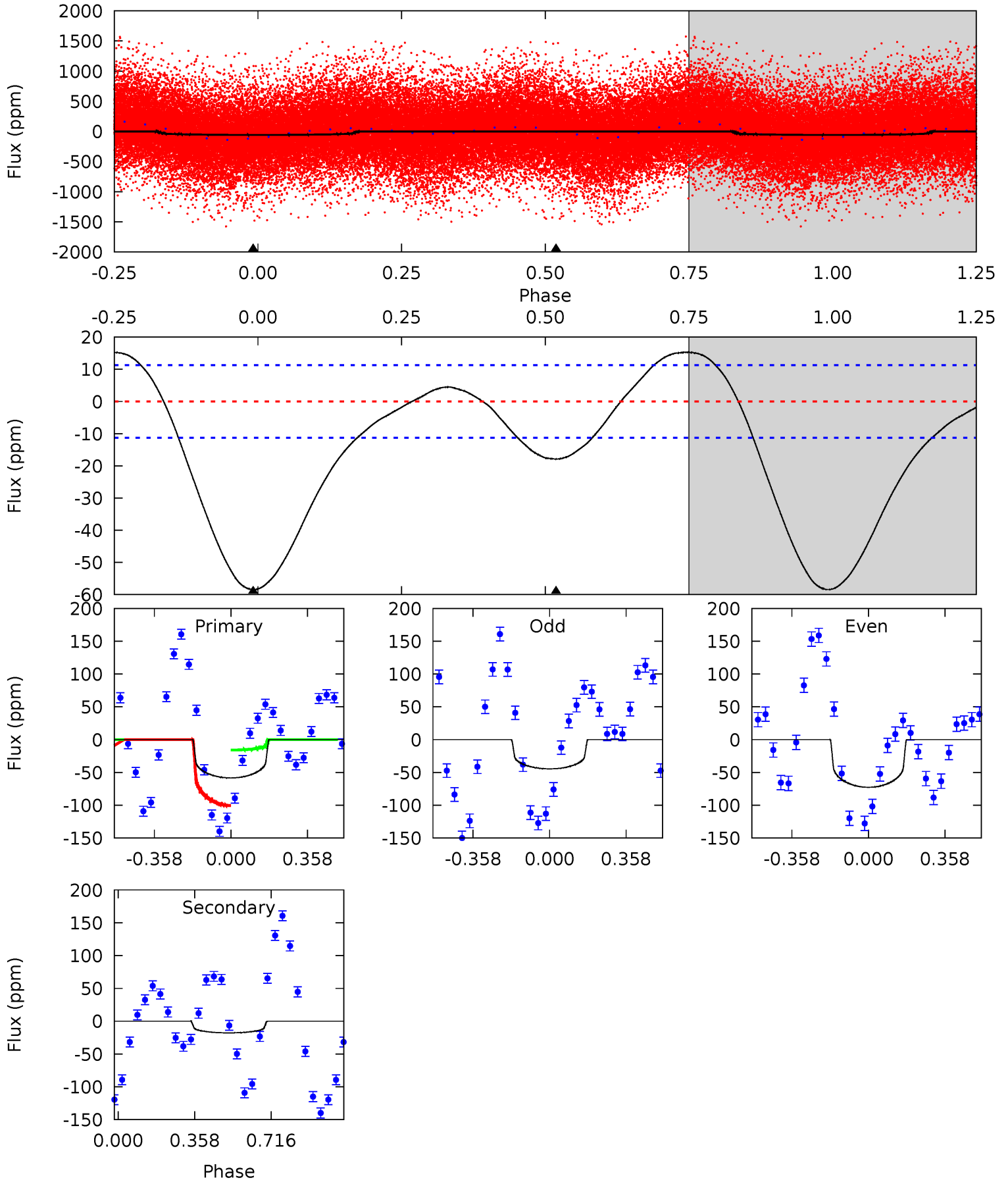
TCE 009028104-01 P= 1.535732 Days $T_0=132.617304$ (BKJD)



DV Model-Shift Uniqueness Test

009028104-01, P = 1.535854 Days, E = 131.091994 Days

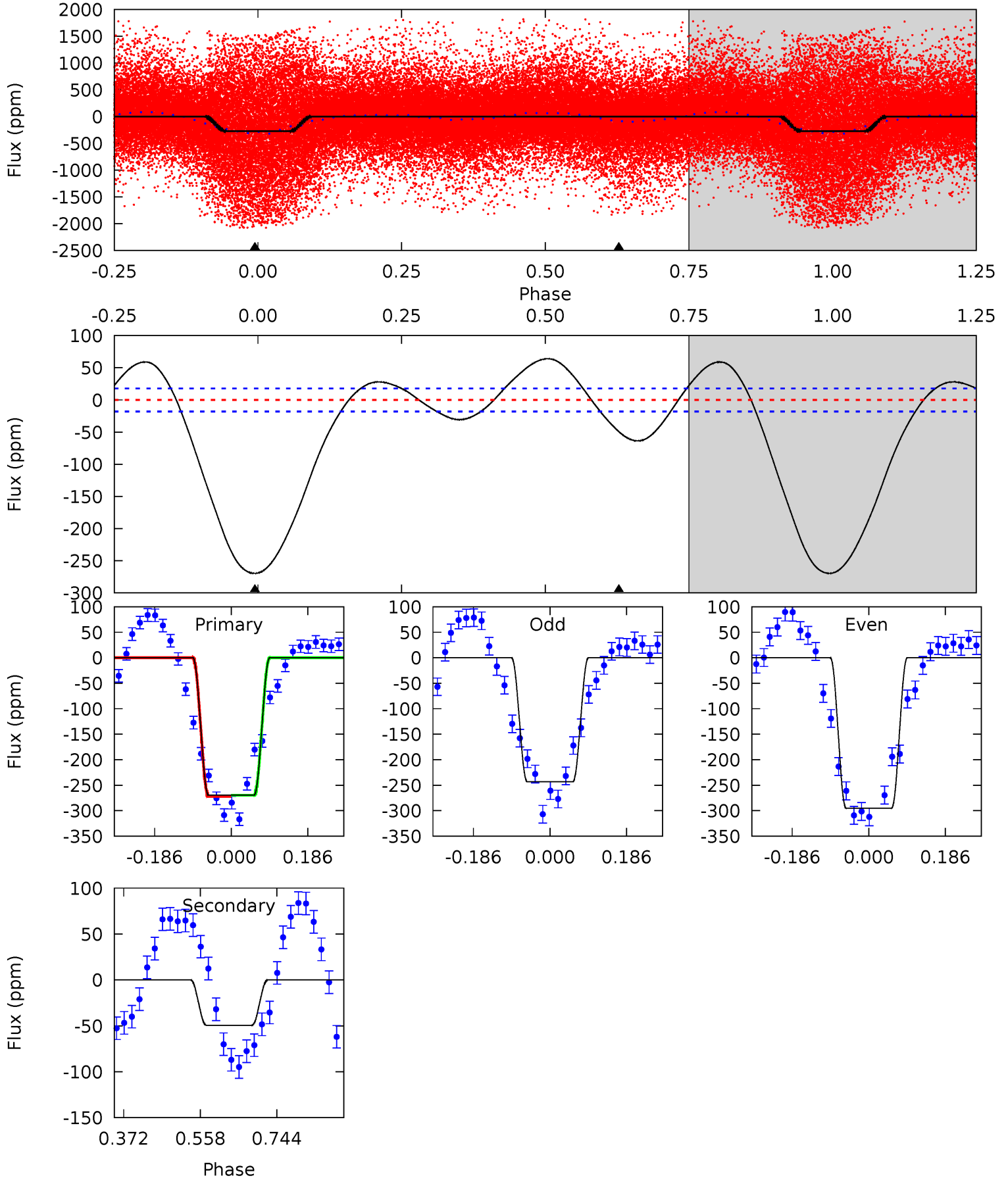
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 22.2 | 6.80 | 0 | 0 | 4.29 | 0.92 | 2.79 | 22.2 | 22.2 | 6.80 | 6.80 | 5.55 | 1.12 | 0.21 | 17.6 |



Alt Model-Shift Uniqueness Test

009028104-01, P = 1.535732 Days, E = 131.081572 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 66.6 | 12.2 | 0 | 0 | 4.43 | 1.32 | 5.19 | 66.6 | 66.6 | 12.2 | 12.2 | 6.39 | 1.03 | 0.19 | 0.24 |



Stellar Parameters For KIC 009028104

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
| | 7334^{+203}_{-330} | $4.010^{+0.214}_{-0.156}$ | $-0.120^{+0.250}_{-0.350}$ | $2.076^{+0.528}_{-0.645}$ | $1.605^{+0.184}_{-0.342}$ | $0.253^{+0.363}_{-0.114}$ |
| | +3%/-4% | +5%/-4% | +208%/-292% | +25%/-31% | +11%/-21% | +144%/-45% |
| 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 009028104-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -18 ± 3 | $1.89^{+0.67}_{-0.63}$ | 3689^{+284}_{-302} | 4978^{+980}_{-624} | $2.521^{+2.877}_{-1.165}$ |
| Alt. | -49 ± 4 | $3.88^{+0.80}_{-0.81}$ | 3710^{+295}_{-308} | 4522^{+370}_{-306} | $1.651^{+0.834}_{-0.535}$ |

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

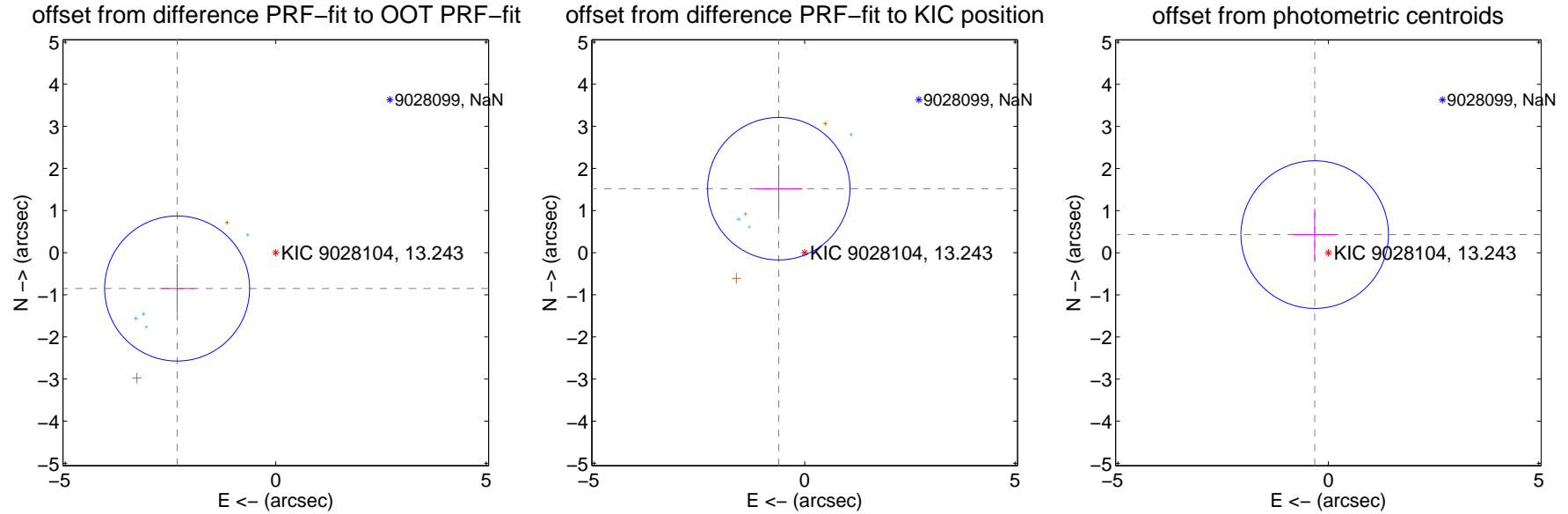
DV Centroid Data

Supplemental centroid analysis for 009028104-01. Kepler magnitude: 13.24. Transit SNR 11.60

There are 4 quarters with good PRF difference image offsets

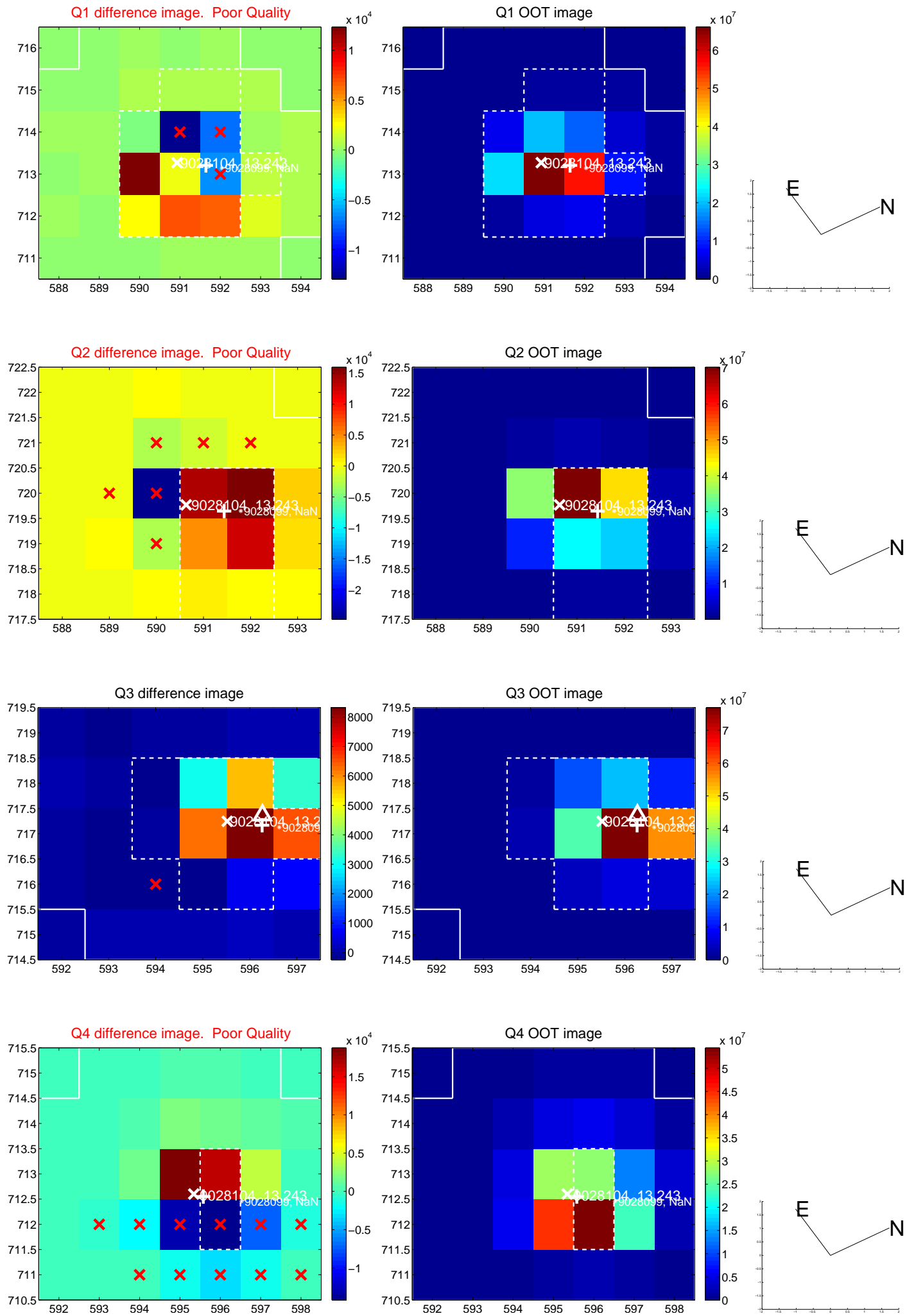
The OOT PRF centroid is offset from the target star catalog position by about 2.90 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 2.492 ± 0.574 | 4.34 | 2.342 ± 0.413 | -0.850 ± 0.579 |
| PRF-fit source offset from KIC position | 1.639 ± 0.564 | 2.91 | 0.615 ± 0.562 | 1.519 ± 0.564 |
| photometric centroid source offset | 0.54 ± 0.58 | 0.92 | 0.32 ± 0.53 | 0.43 ± 0.61 |

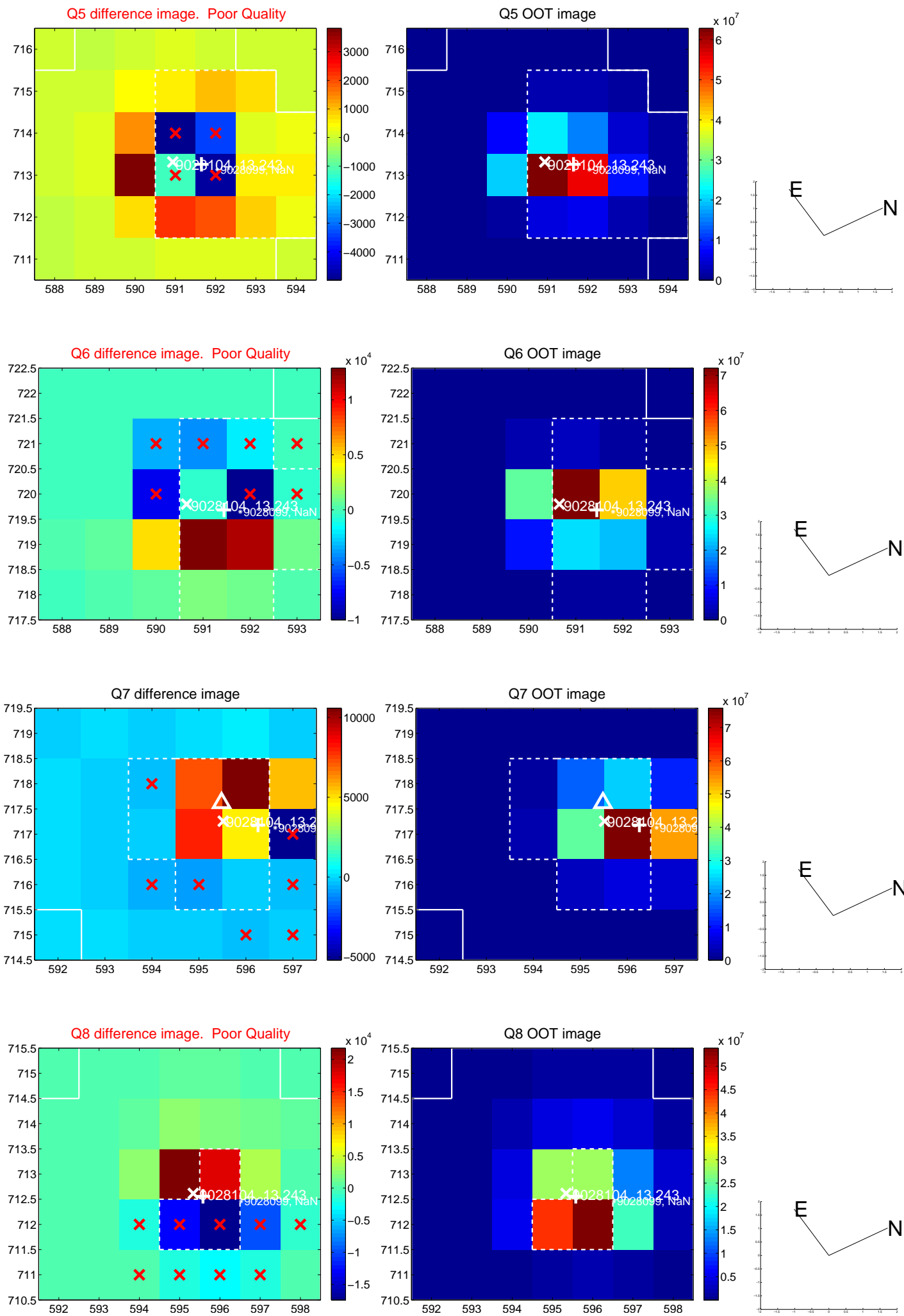


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

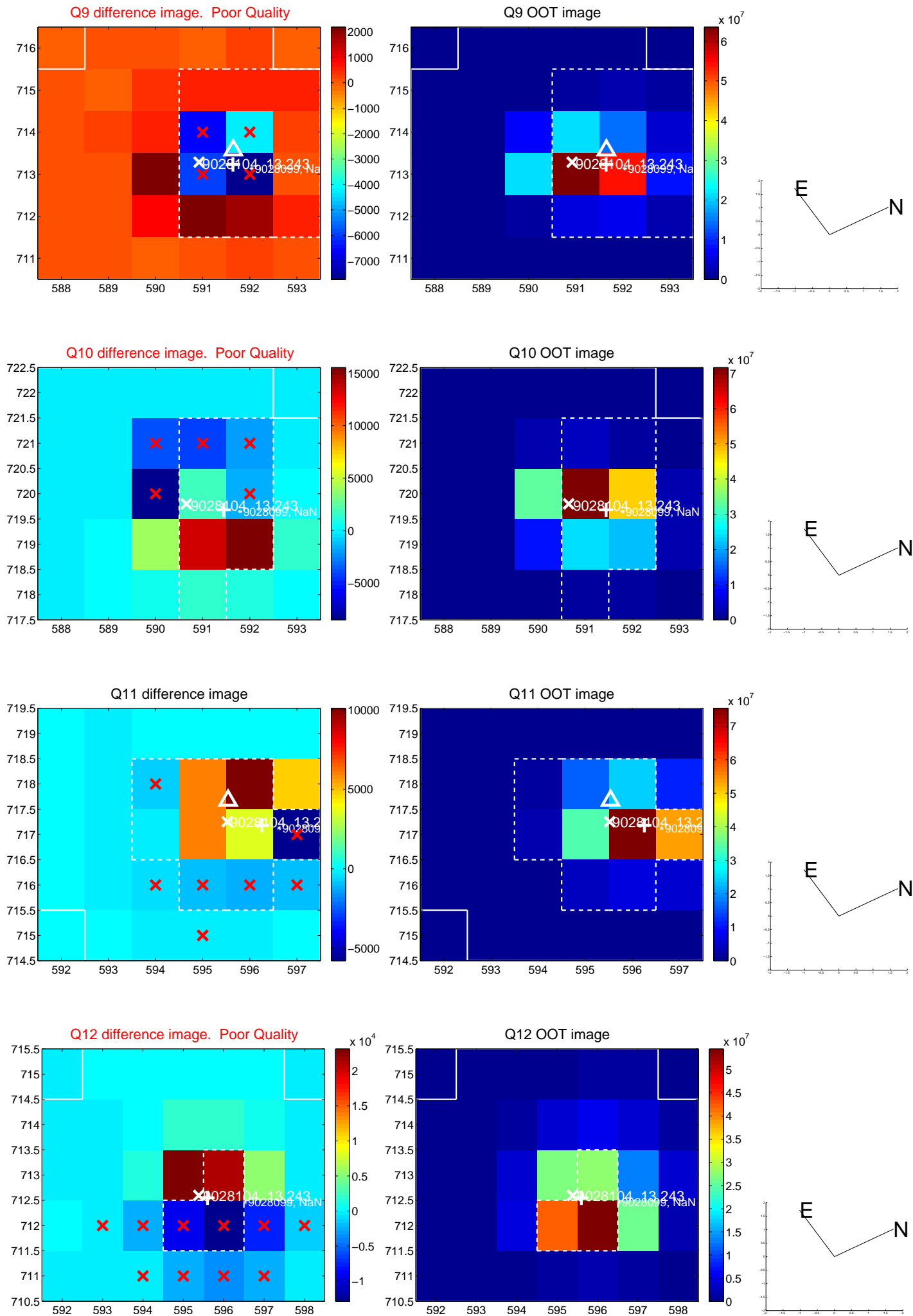
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



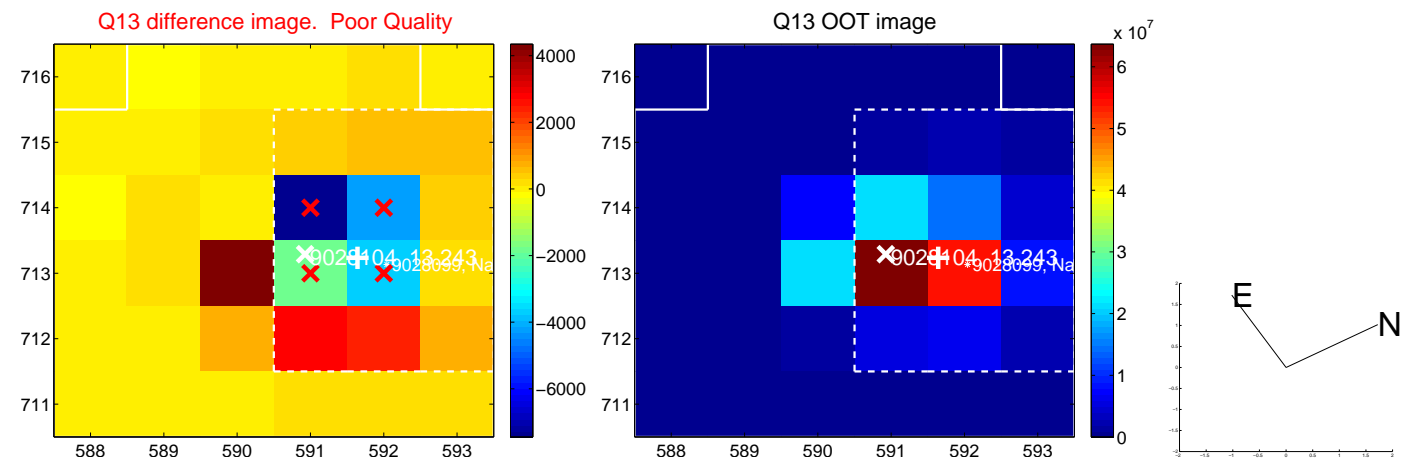
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



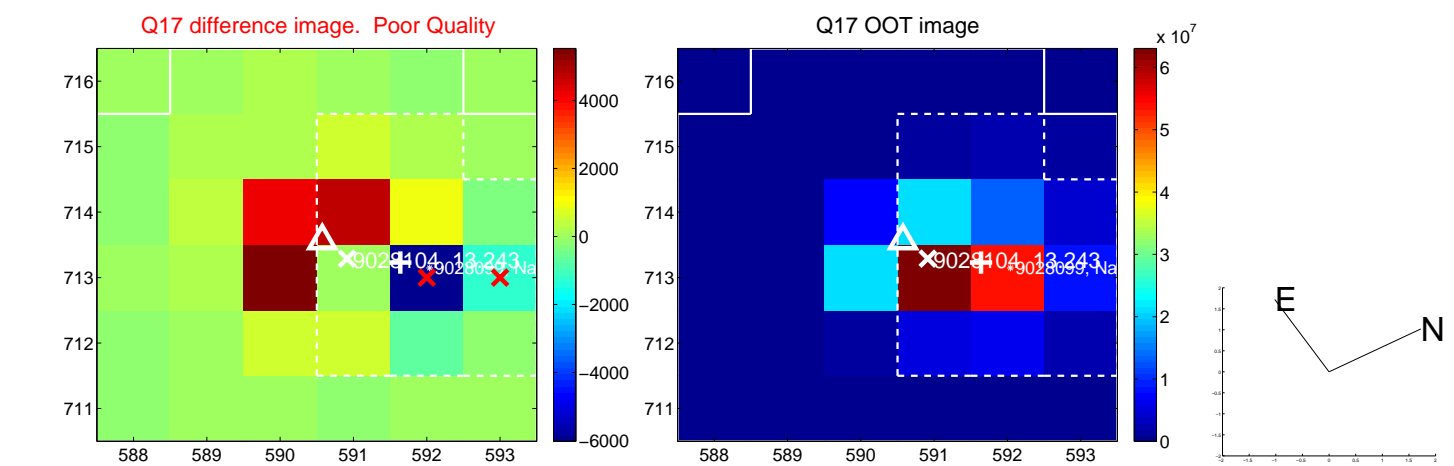
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



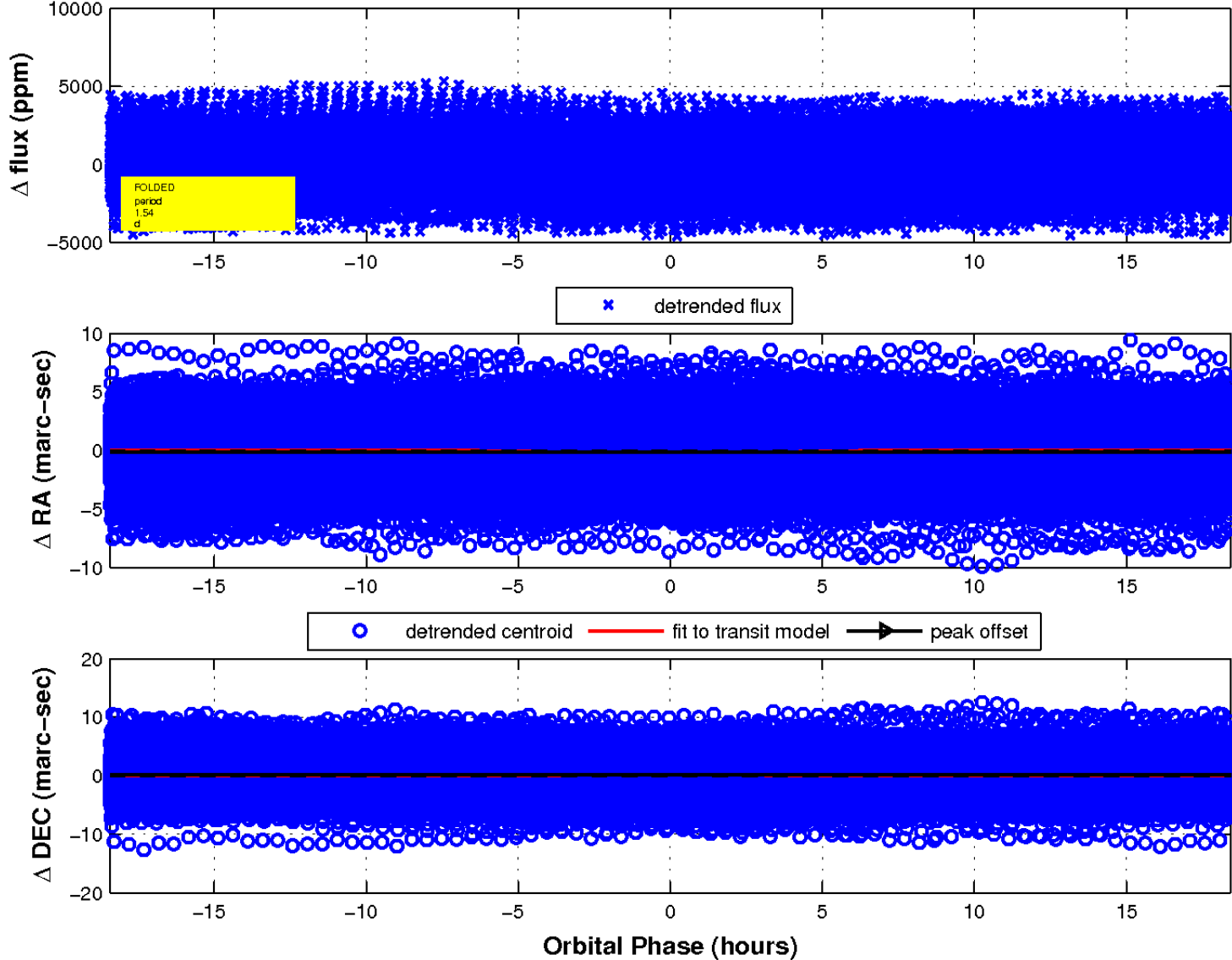
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

