

KIC 002142522

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 002142522-01 | OBS | 2403.01 | 13.323501 | 134.036514 | 113.0 | 3.998 | 15.7 | 17.0 | 1.22 | 6113 | 1.51 | 136.83 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 002142522-01 | OBS | PC | 0.76 | 0 | 0 | 0 | 0 | NO_COMMENT |

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

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

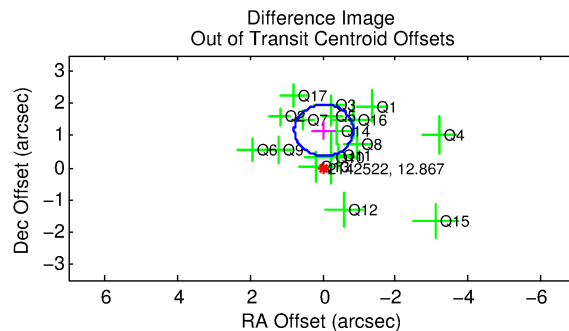
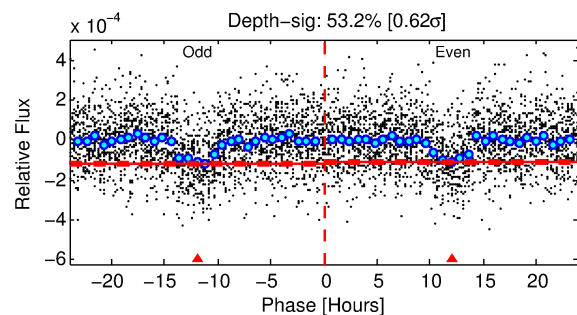
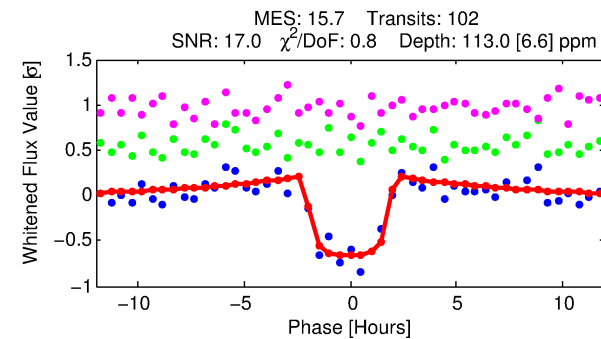
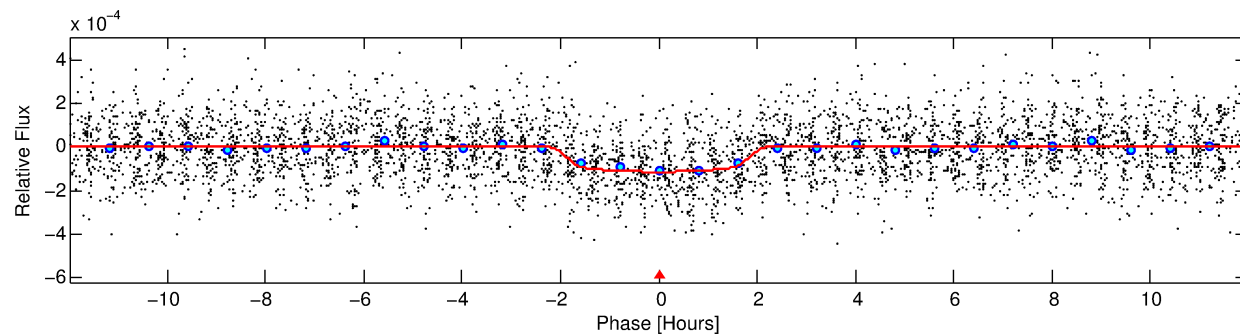
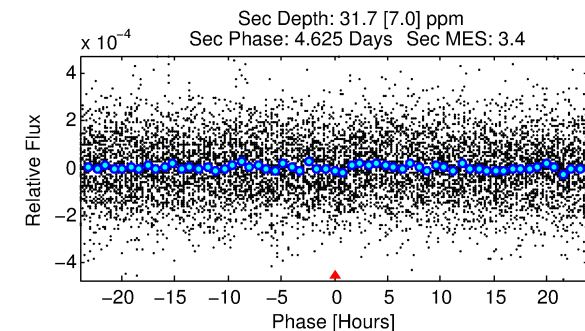
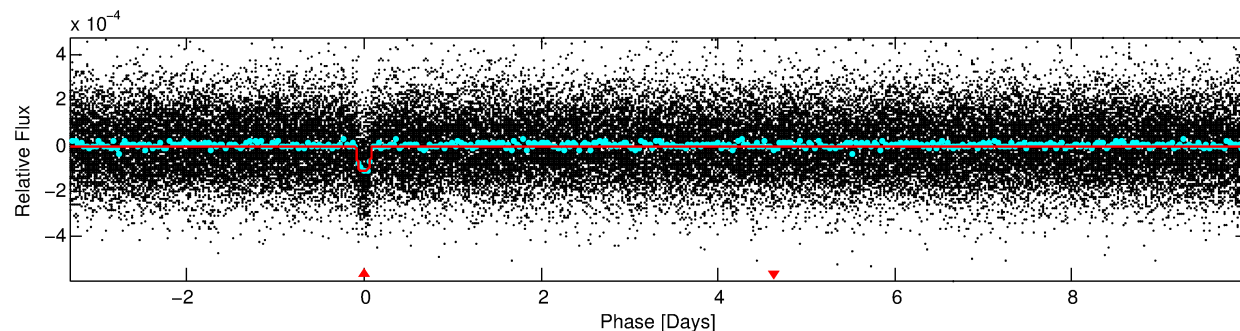
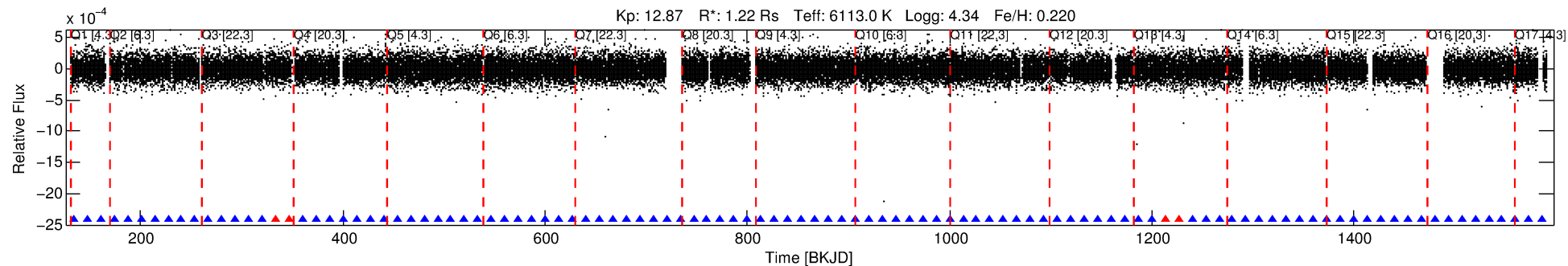
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002142522-01

No Significant Match Found

DV One-Page Summary

KIC: 2142522 Candidate: 1 of 1 Period: 13.324 d
KOI: K02403.01 Corr: 0.991



DV Fit Results:

Period = 13.32350 [0.00007] d
Epoch = 134.0365 [0.0040] BKJD
Rp/R* = 0.0114 [0.0029]
a/R* = 12.52 [15.54]
b = 0.88 [0.31]
Seff = 136.83 [31.27]
Teq = 872 [50] K
Rp = 1.51 [0.46] Re
a = 0.1165 [0.0165] AU
Ag = 103.74 [60.81] [1.69σ]
Teffp = 4303 [599] K [5.71σ]

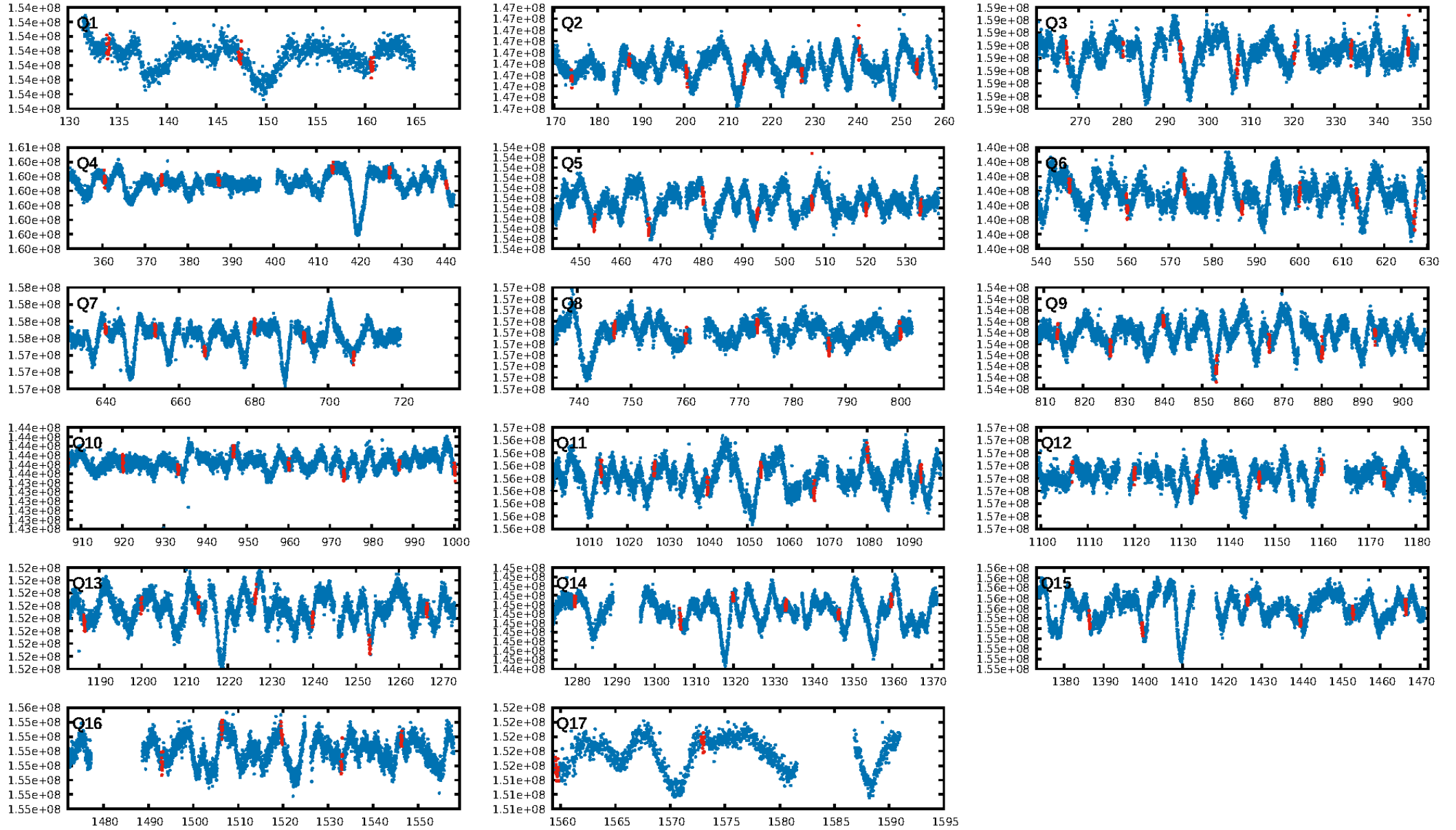
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.1%
ModelChiSquare2-sig: 100.0%
Bootstrap-pfa: 9.57e-55
RollingBand-fgt: 0.96 [93/97]
GhostDiagnostic-chr: 32.93
Centroid-sig: 63.6%
Centroid-so: 0.612 arcsec [0.92σ]
OotOffset-rm: 1.166 arcsec [4.34σ]
KicOffset-rm: 1.203 arcsec [4.52σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

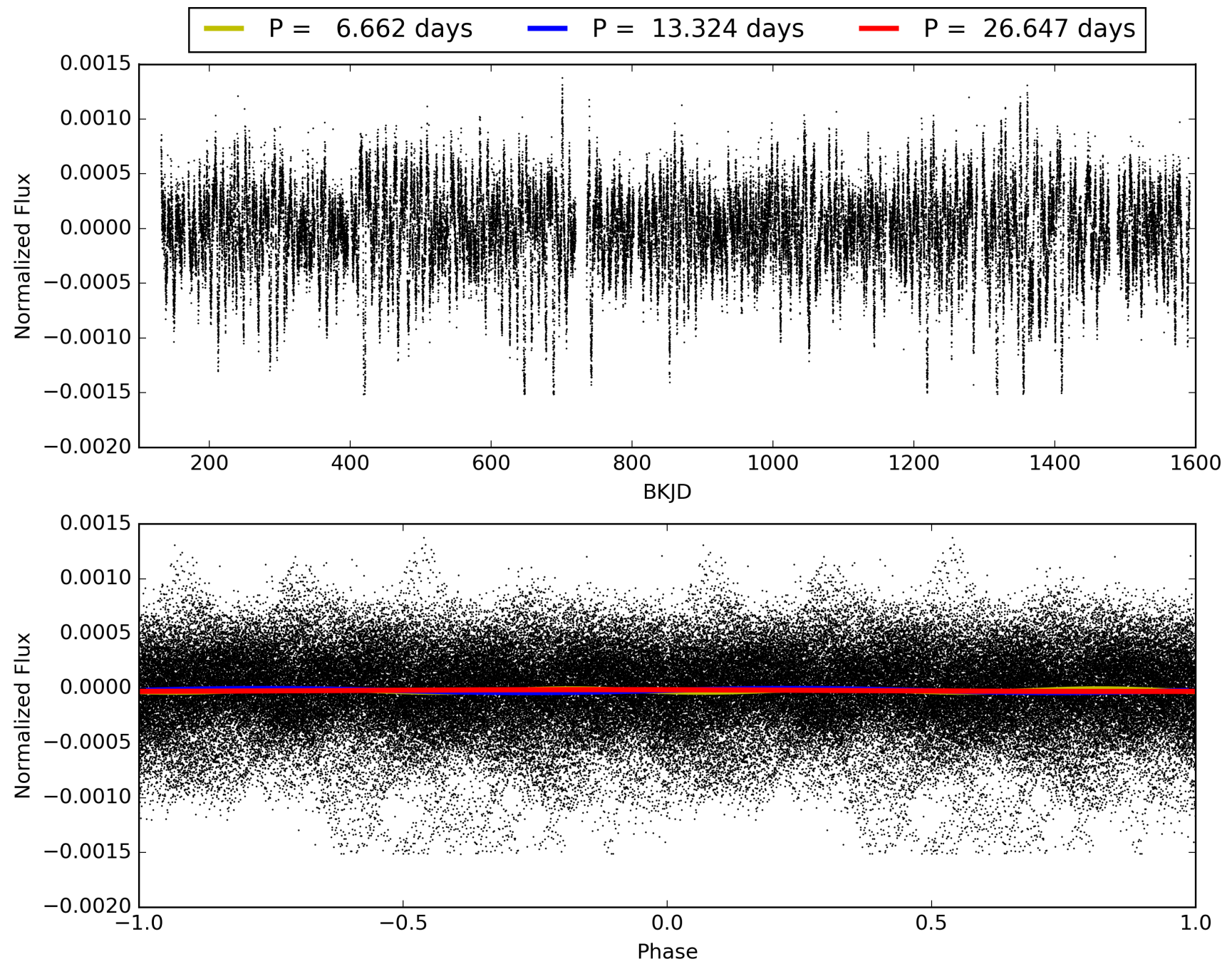
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:18:31 Z

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

TCE 002142522-01, PDC Light Curves

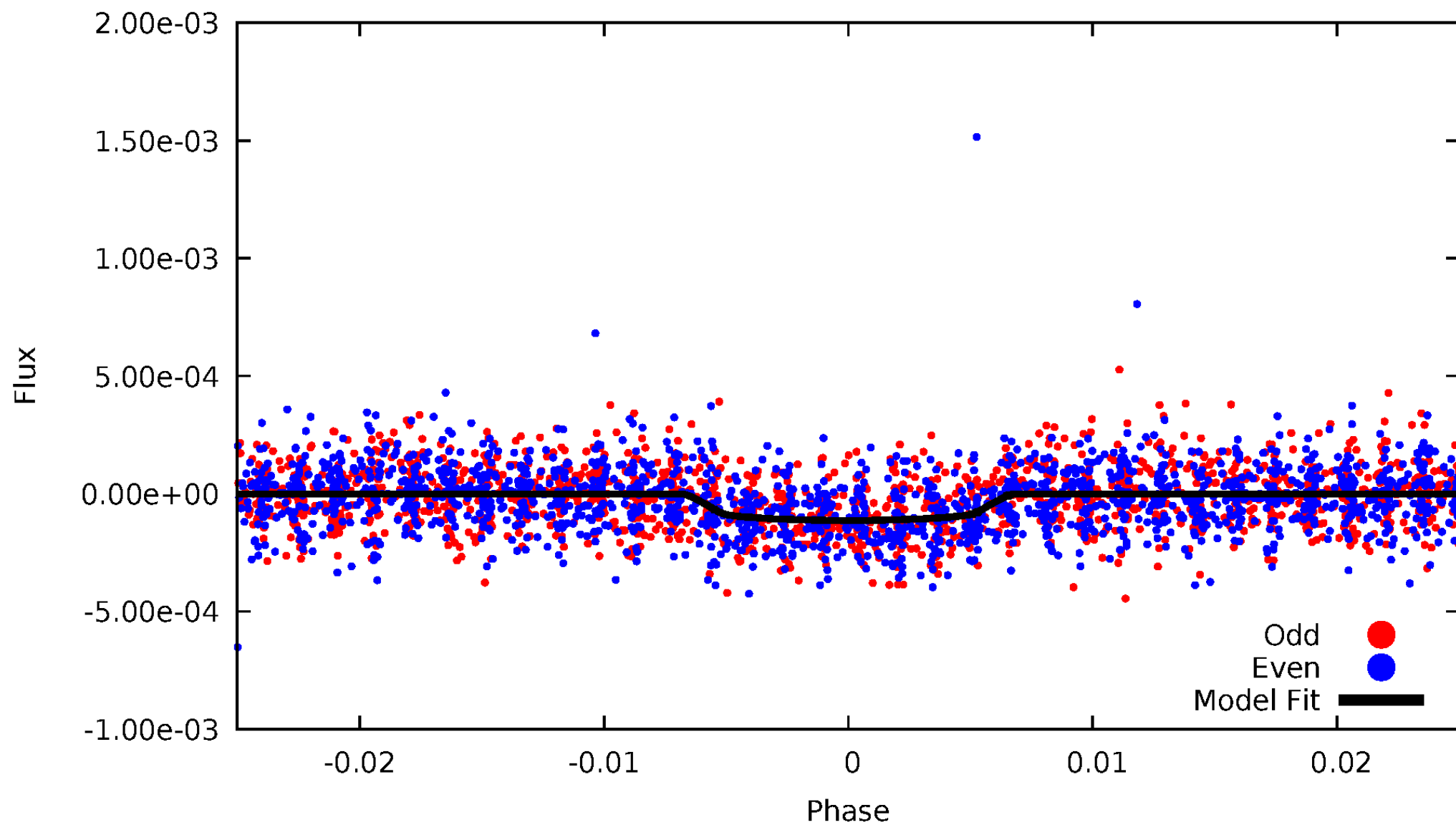


TCE 002142522-01



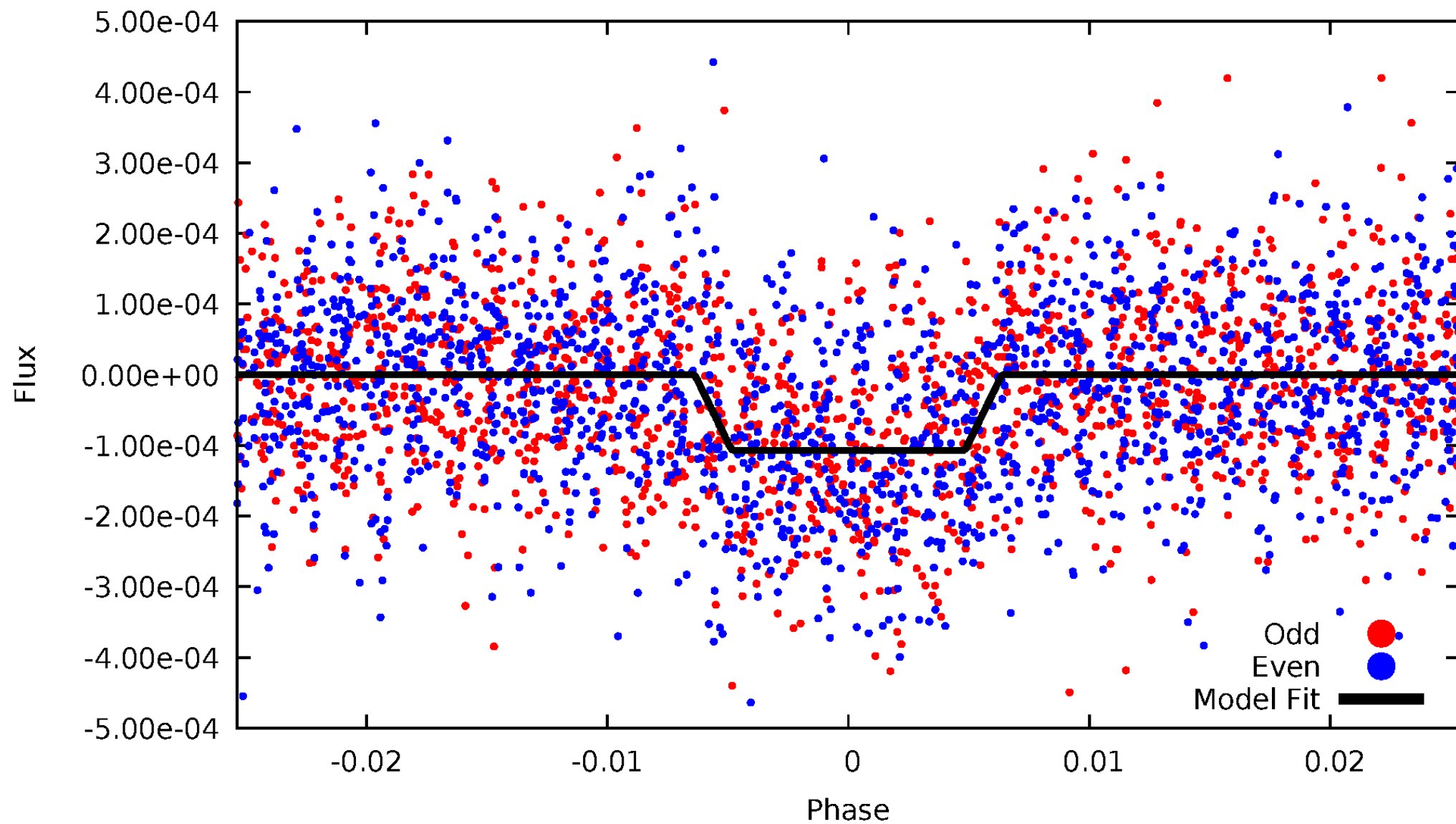
DV Odd/Even

TCE 002142522-01



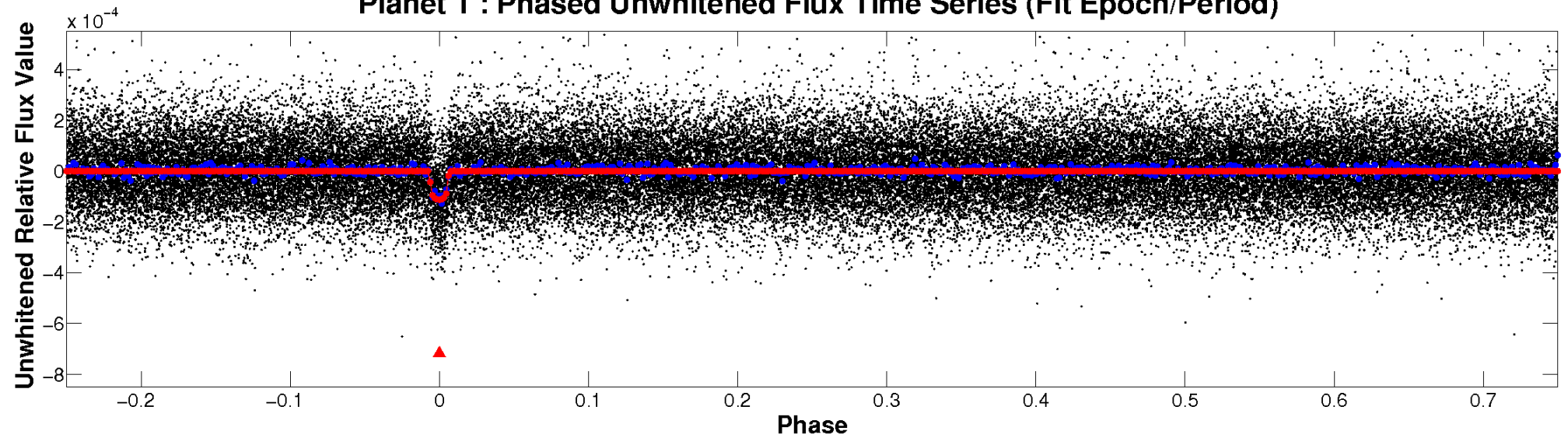
ALT Odd/Even

TCE 002142522-01

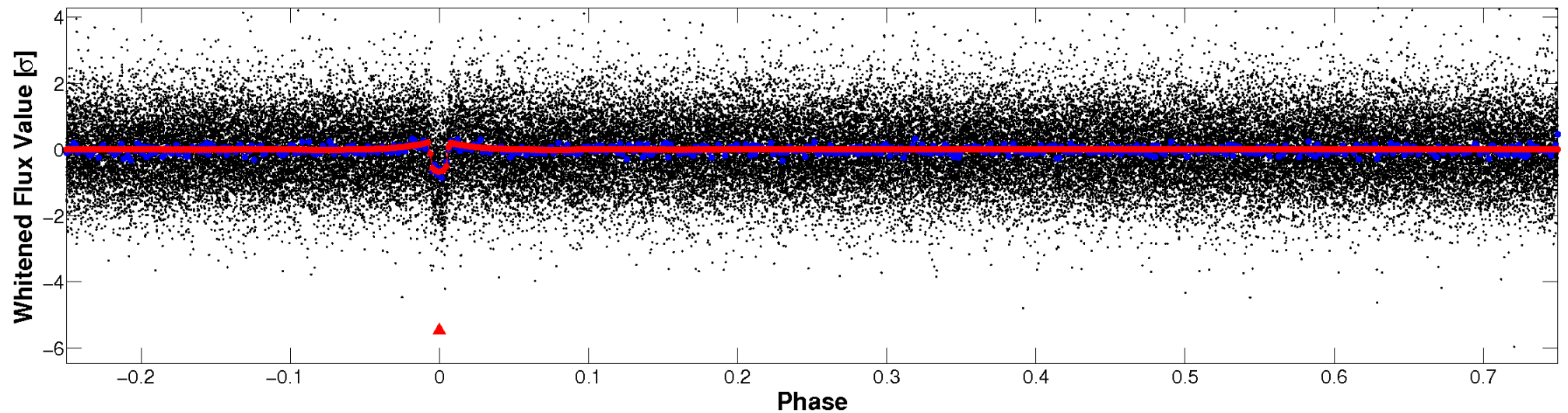


Non-Whitened Vs. Whitened Light Curve

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

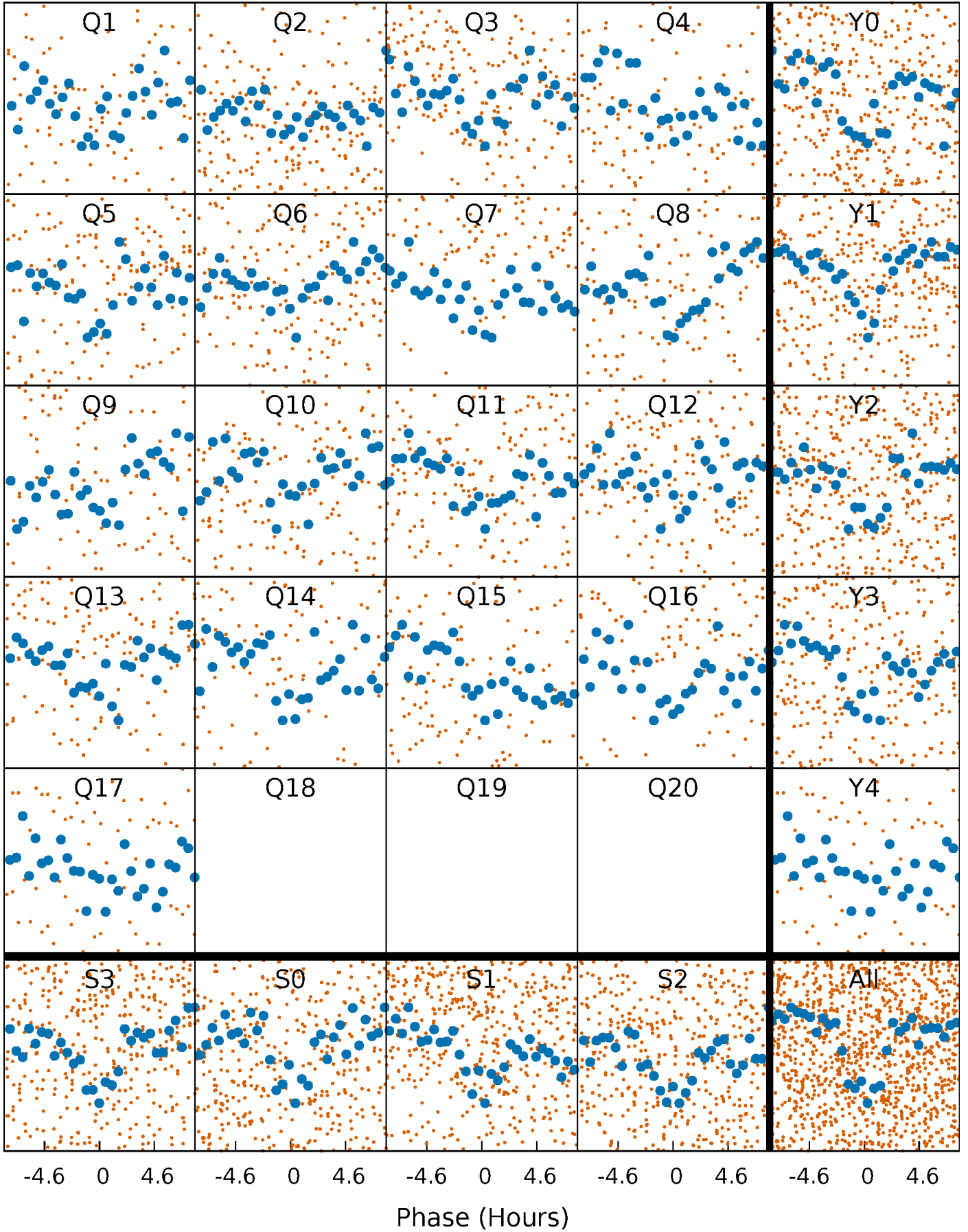


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



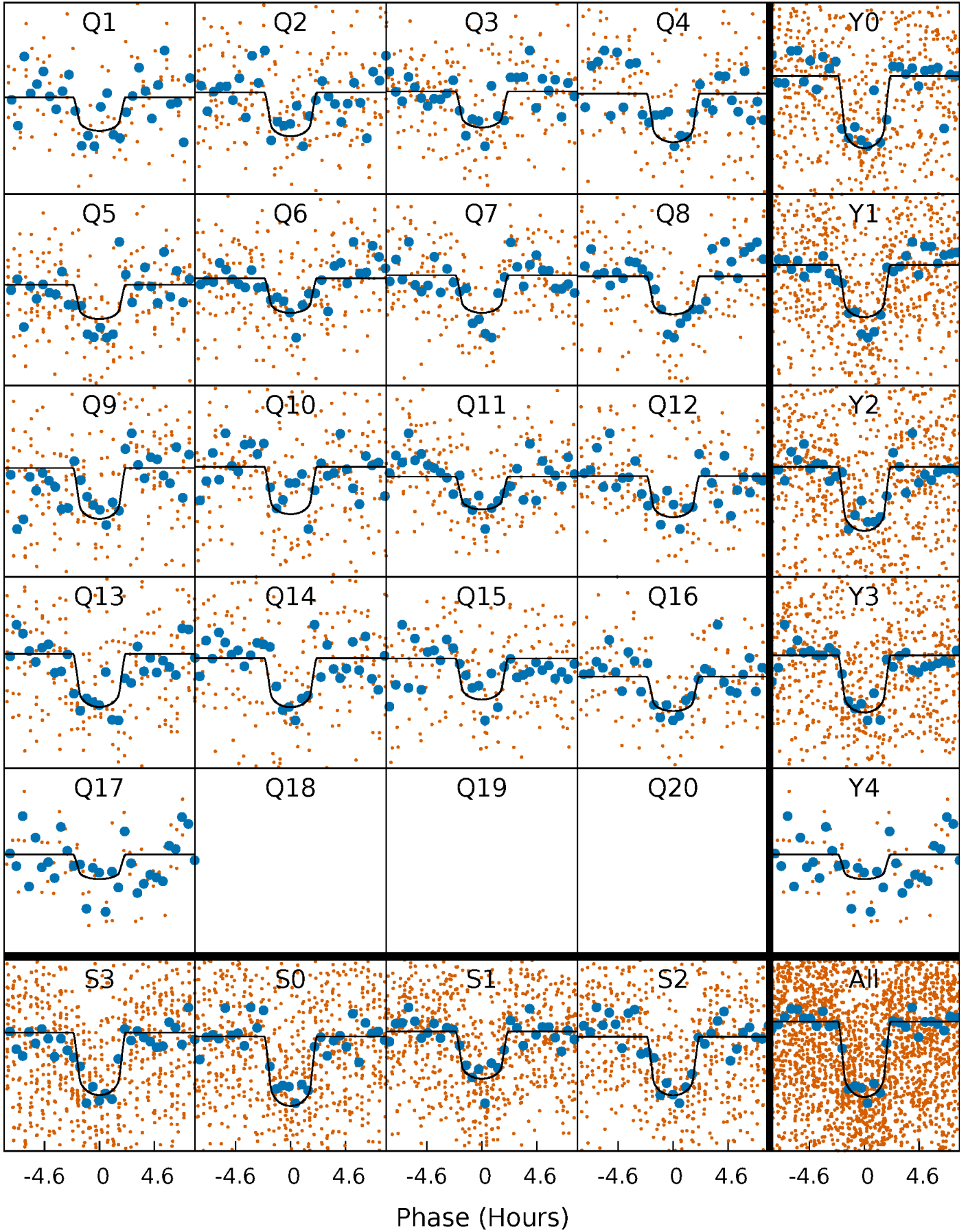
PDC Quarter-Phased Transit Curves

TCE 002142522-01 P= 13.323501 Days $T_0=134.036514$ (BKJD)



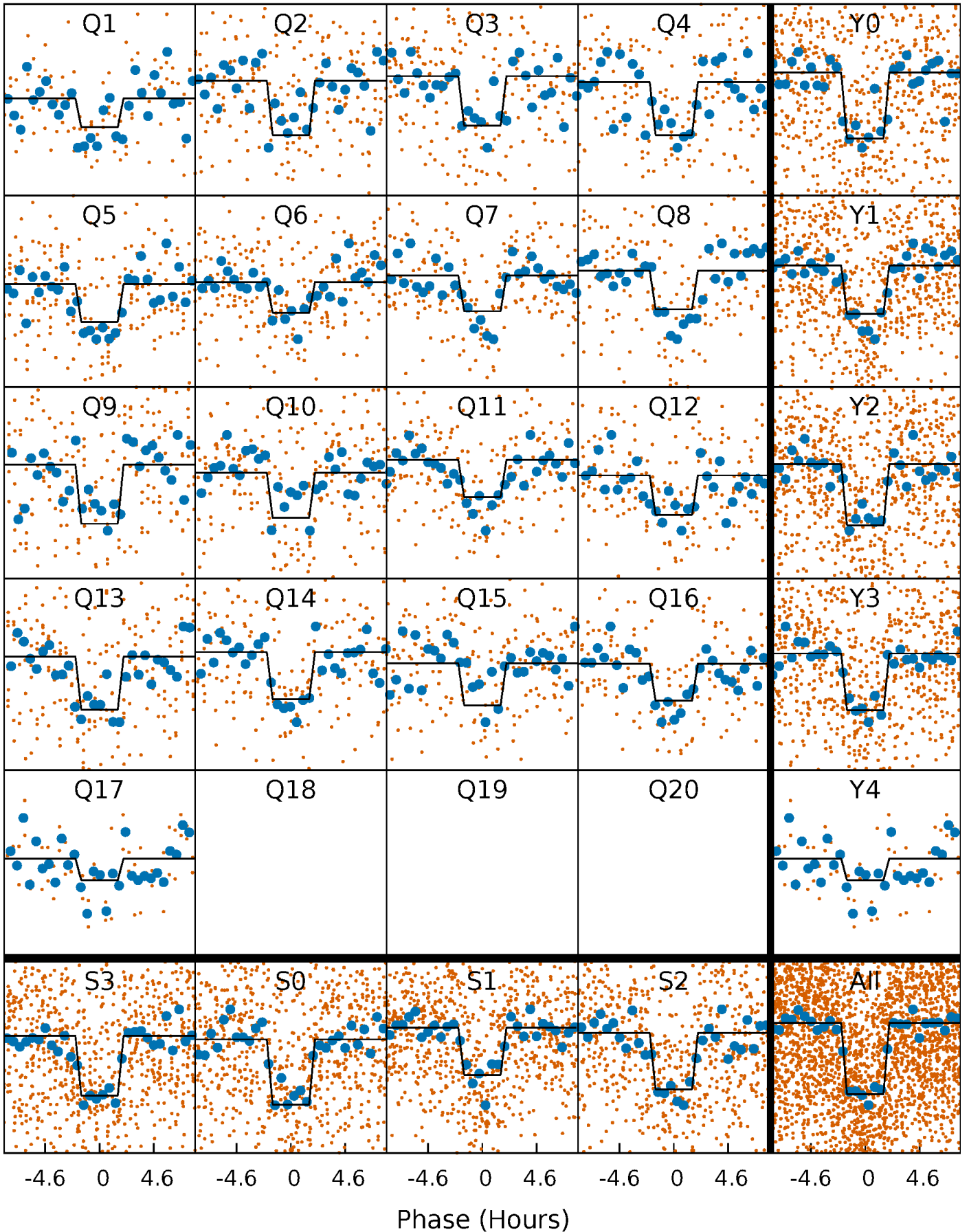
DV Quarter-Phased Transit Curves

TCE 002142522-01 P= 13.323501 Days $T_0=134.036514$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

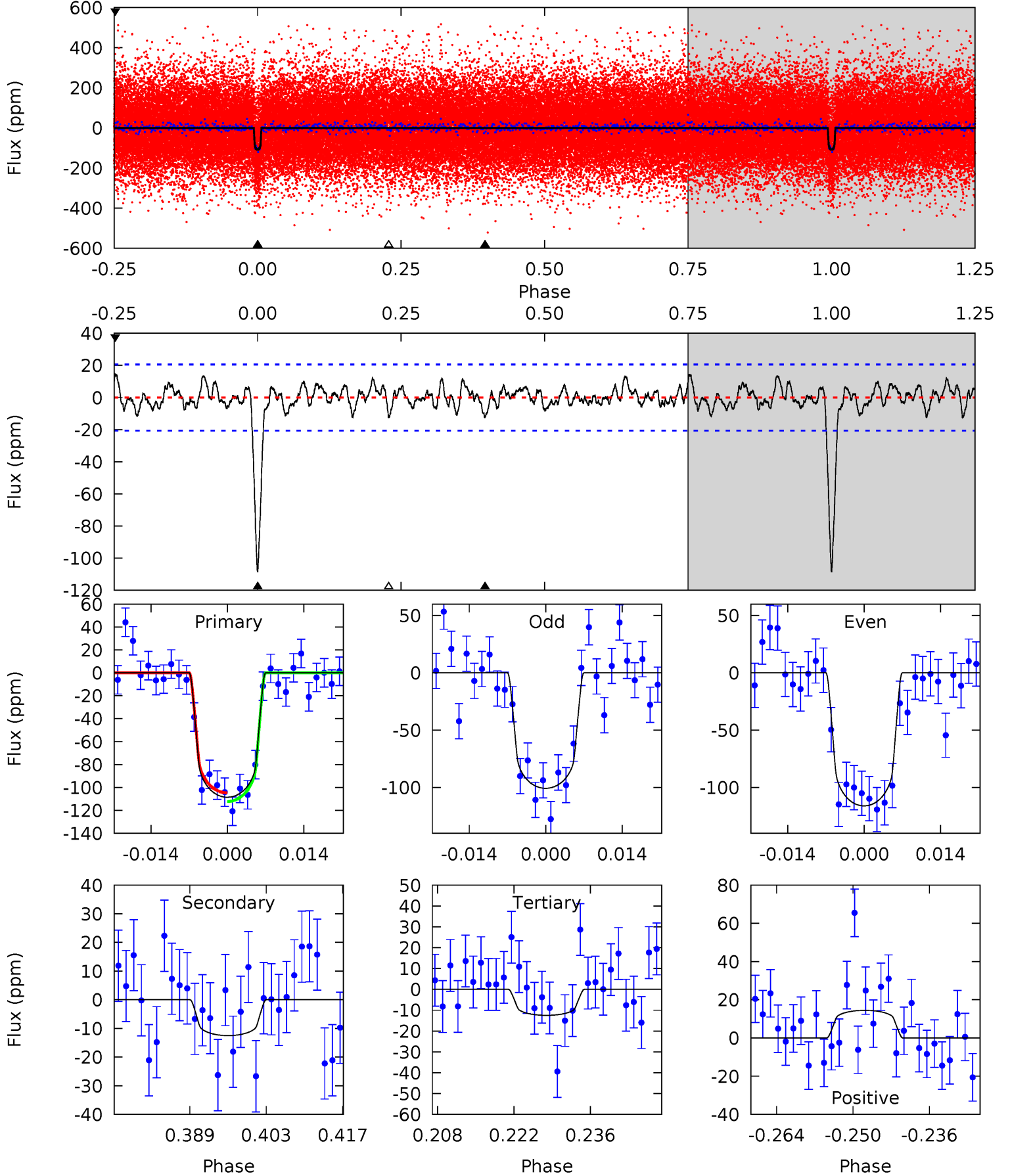
TCE 002142522-01 P= 13.323546 Days $T_0=134.033959$ (BKJD)



DV Model-Shift Uniqueness Test

002142522-01, P = 13.323501 Days, E = 120.713013 Days

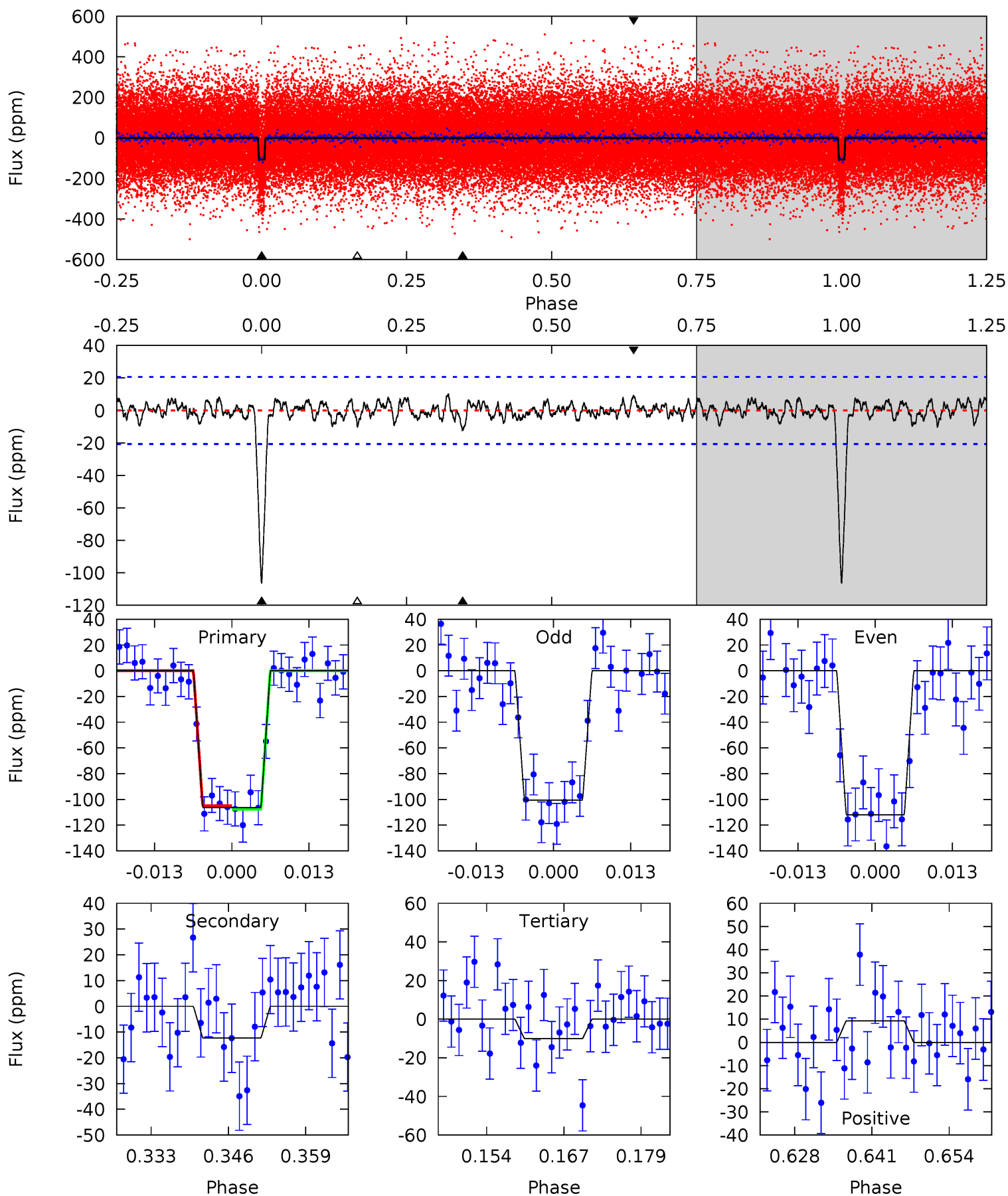
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 26.2 | 3.01 | 3.01 | 3.48 | 4.96 | 2.46 | 1.20 | 23.1 | 22.7 | 0.00 | -0.47 | 1.85 | 1.02 | 0.12 | 0.91 |



Alt Model-Shift Uniqueness Test

002142522-01, P = 13.323546 Days, E = 120.710413 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 25.6 | 2.97 | 2.42 | 2.23 | 4.98 | 2.49 | 0.90 | 23.2 | 23.3 | 0.55 | 0.73 | 1.38 | 1.02 | 0.09 | 0.30 |



Stellar Parameters For KIC 002142522

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6113^{+98}_{-147} | $4.341^{+0.066}_{-0.114}$ | $0.220^{+0.150}_{-0.150}$ | $1.218^{+0.203}_{-0.125}$ | $1.194^{+0.077}_{-0.094}$ | $0.930^{+0.243}_{-0.305}$ |
| | +2%/-2% | +2%/-3% | +68%/-68% | +17%/-10% | +6%/-8% | +26%/-33% |
| Source | SPE59 | SPE59 | SPE59 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 002142522-01 / KOI 2403.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|--------------------|----------------------|------------------|
| DV | -12 ± 4 | $1.52^{+0.40}_{-0.42}$ | 1221^{+56}_{-39} | 3798^{+493}_{-375} | 40^{+38}_{-19} |
| Alt. | -12 ± 4 | $1.39^{+0.40}_{-0.40}$ | 1224^{+48}_{-43} | 3906^{+523}_{-406} | 47^{+49}_{-22} |

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

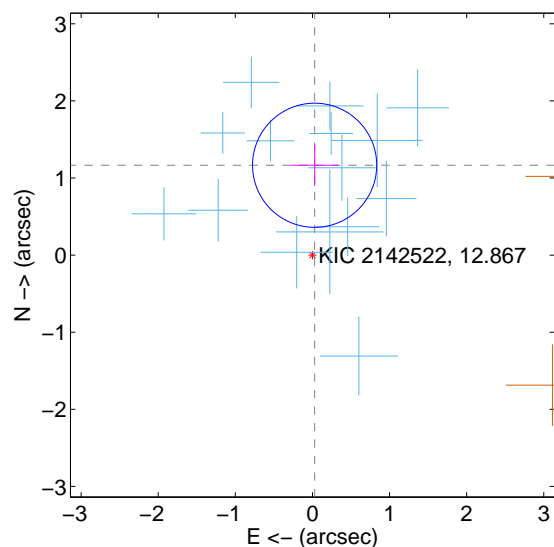
Supplemental centroid analysis for 002142522-01. Kepler magnitude: 12.87. Transit SNR 17.02

There are 15 quarters with good PRF difference image offsets

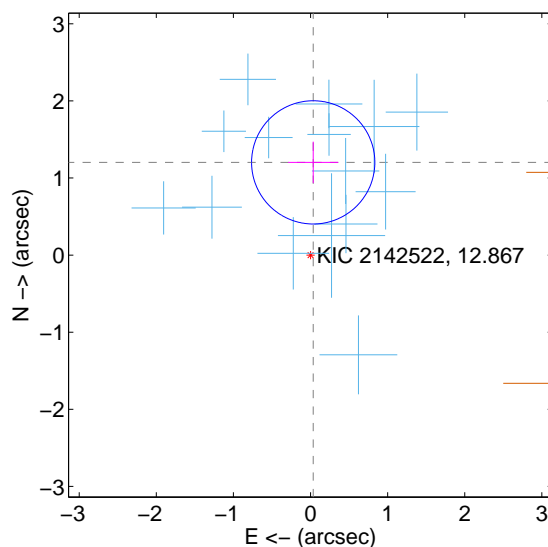
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 1.166 ± 0.268 | 4.34 | -0.028 ± 0.310 | 1.165 ± 0.271 |
| PRF-fit source offset from KIC position | 1.203 ± 0.266 | 4.52 | -0.035 ± 0.325 | 1.203 ± 0.269 |
| photometric centroid source offset | 0.61 ± 0.67 | 0.92 | -0.47 ± 0.63 | -0.40 ± 0.72 |

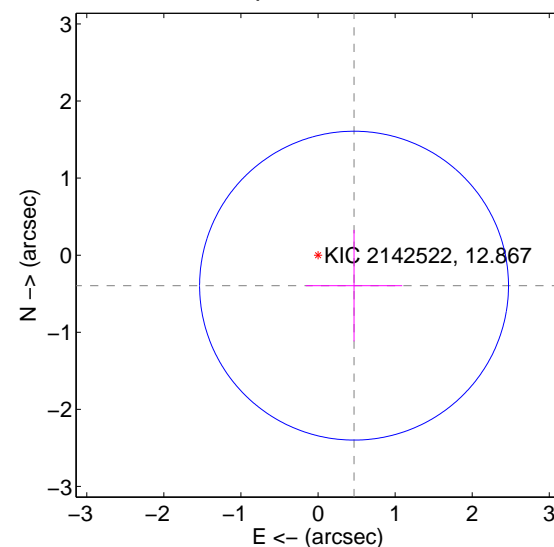
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

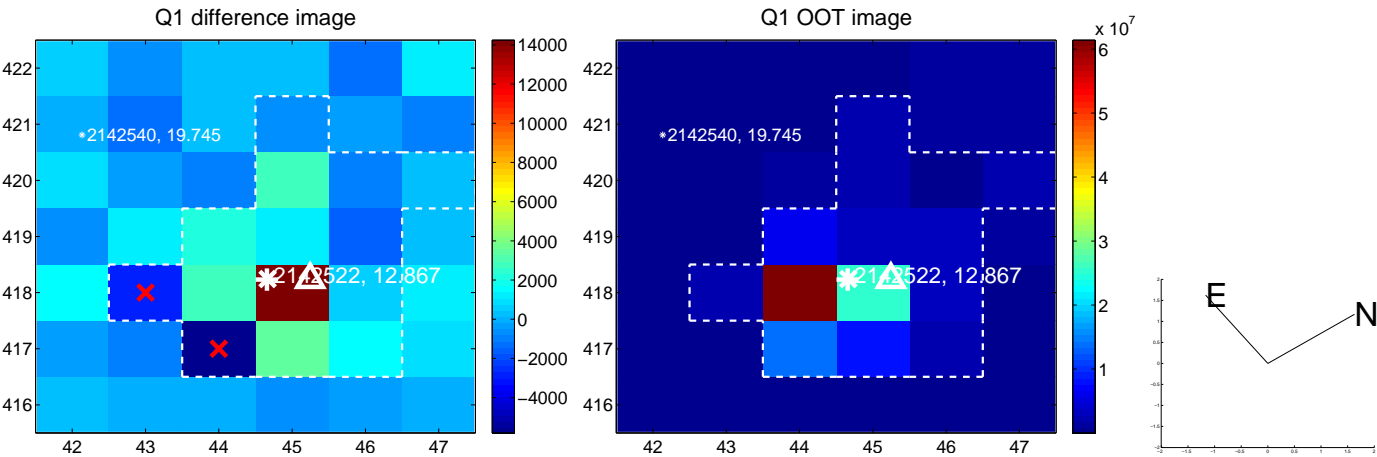


offset from photometric centroids

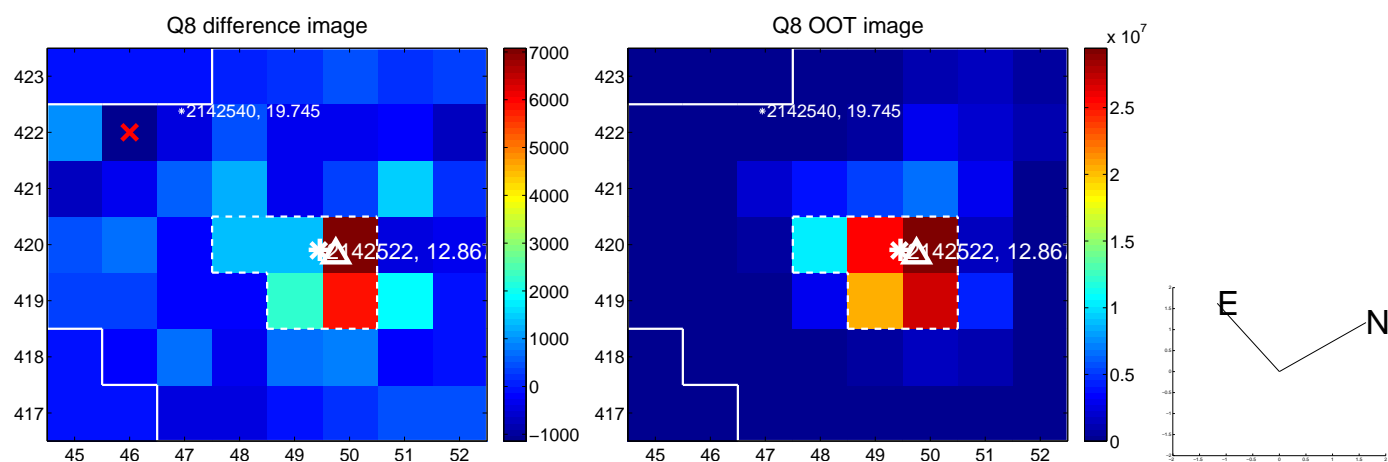
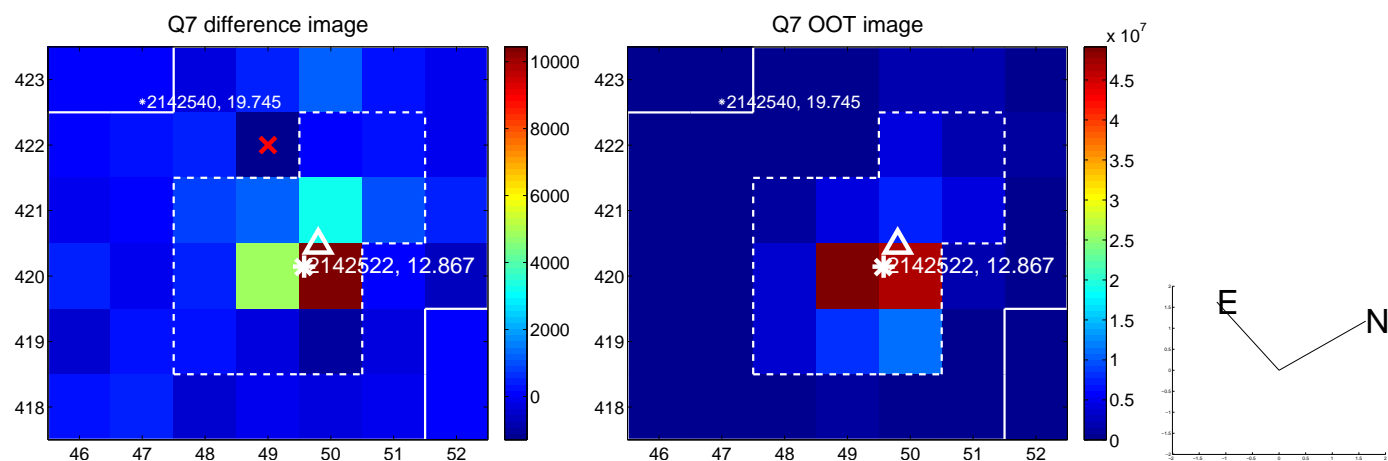
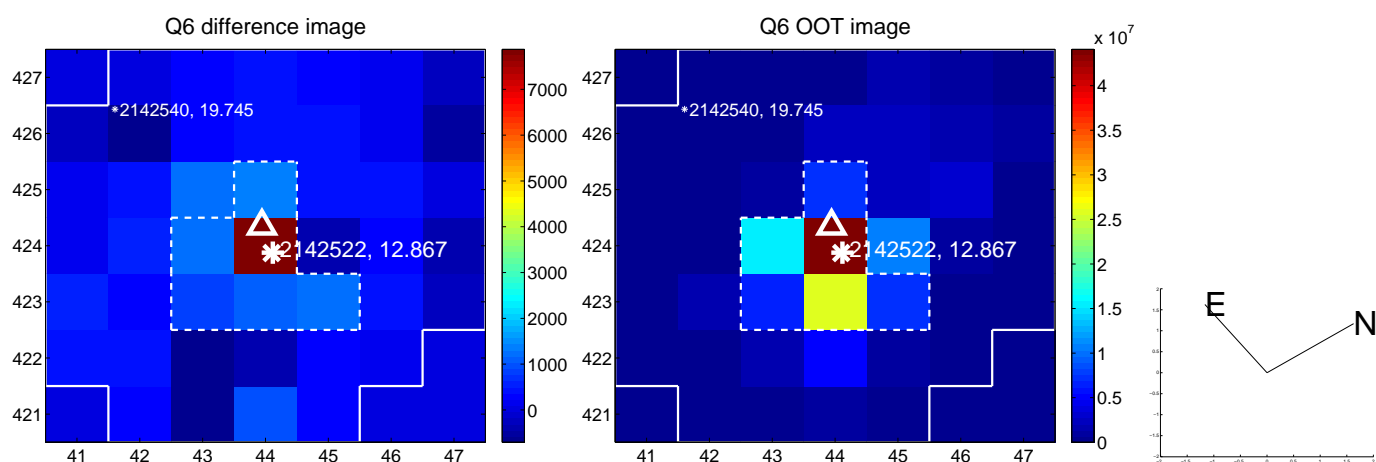
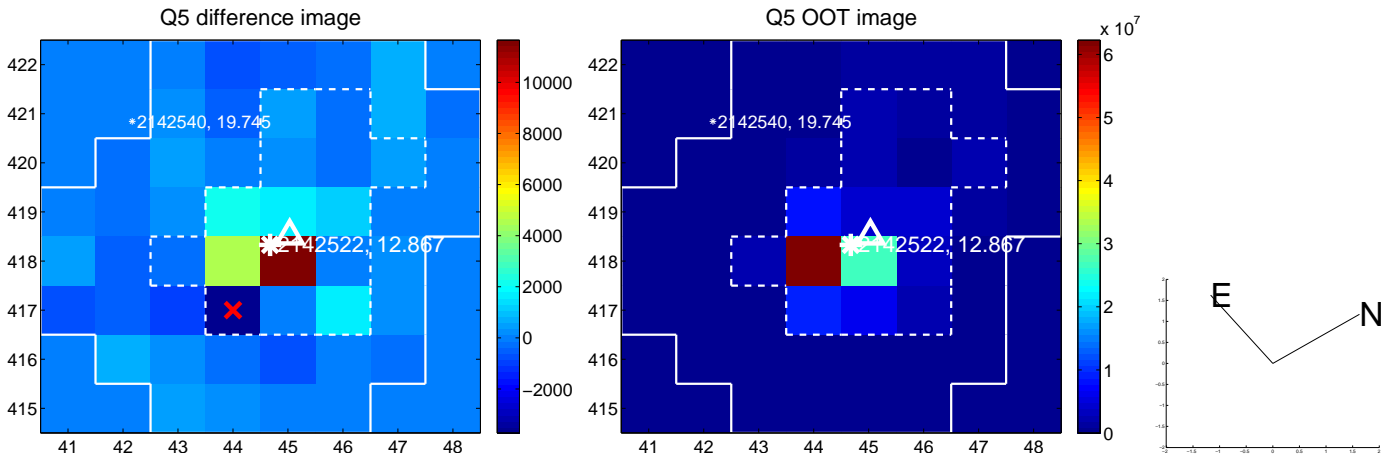


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

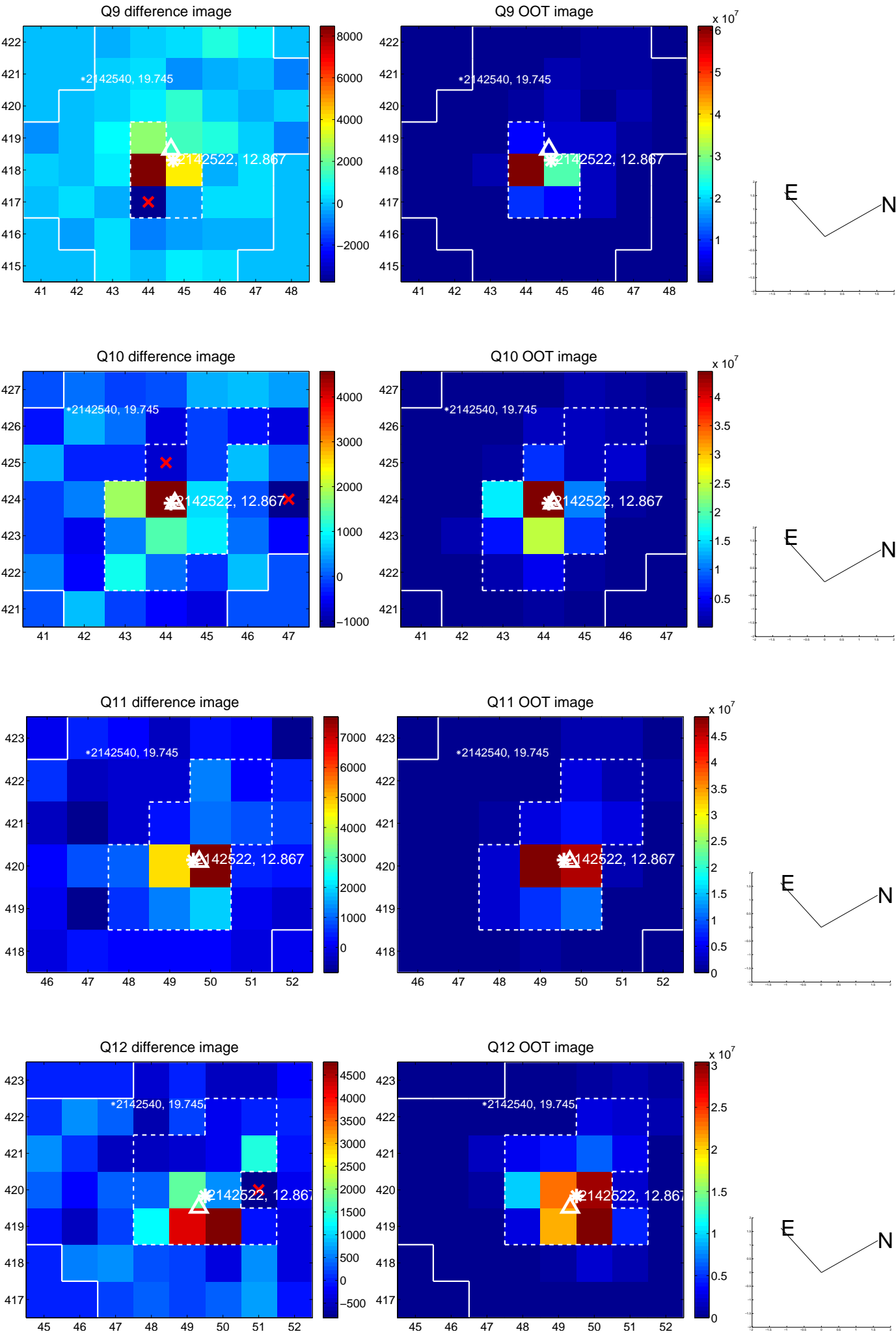
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



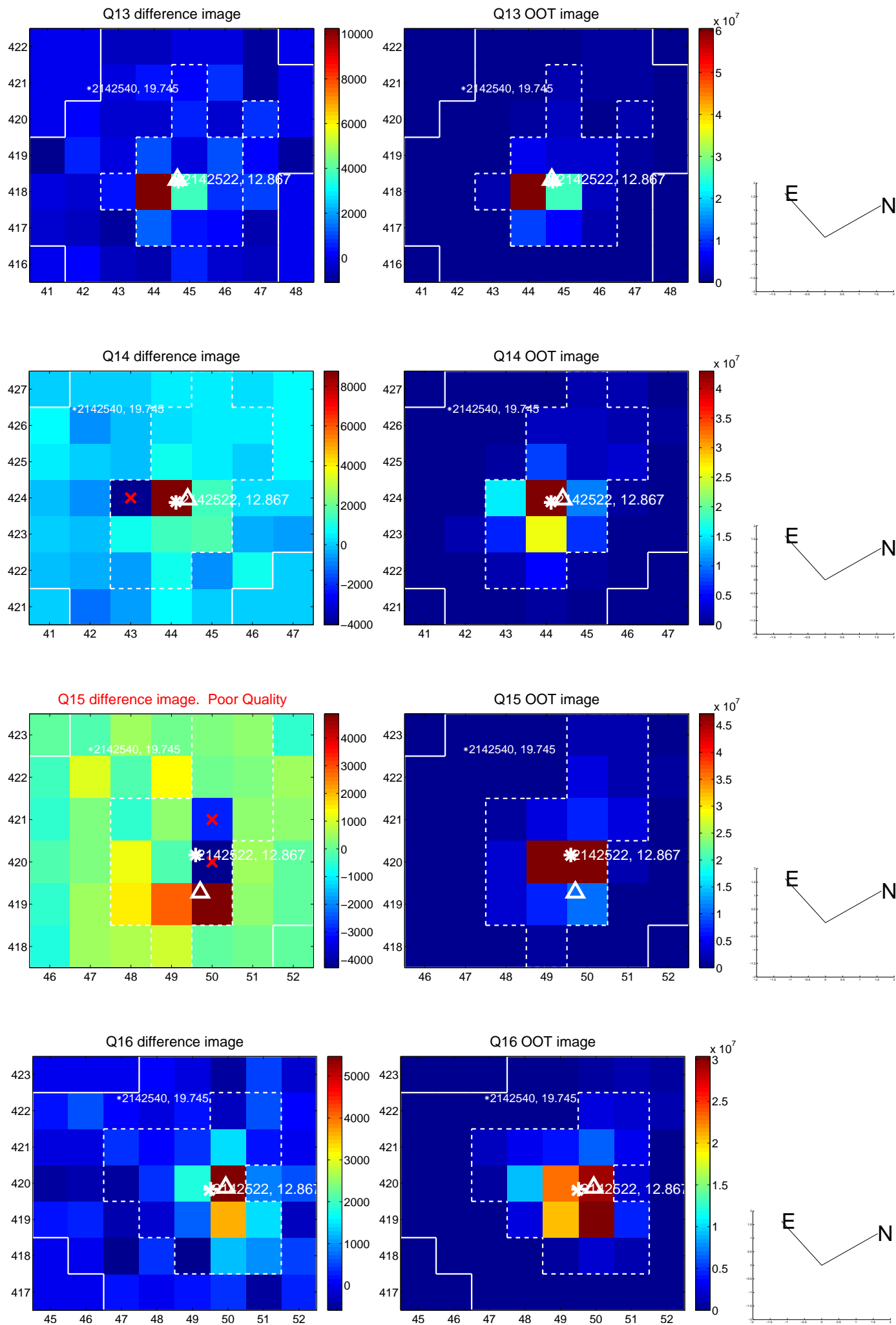
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



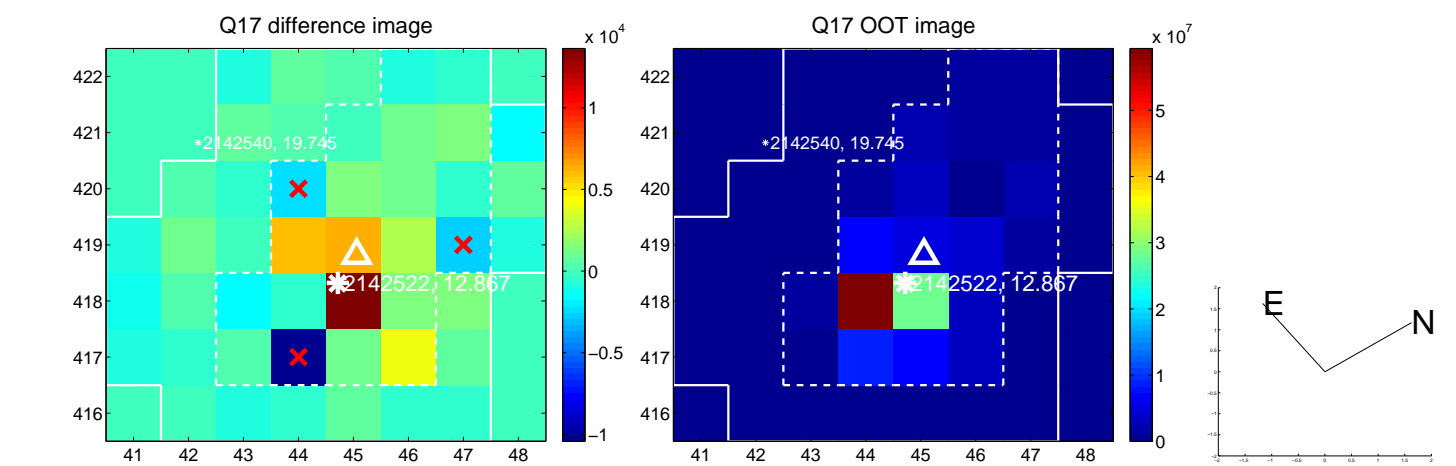
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



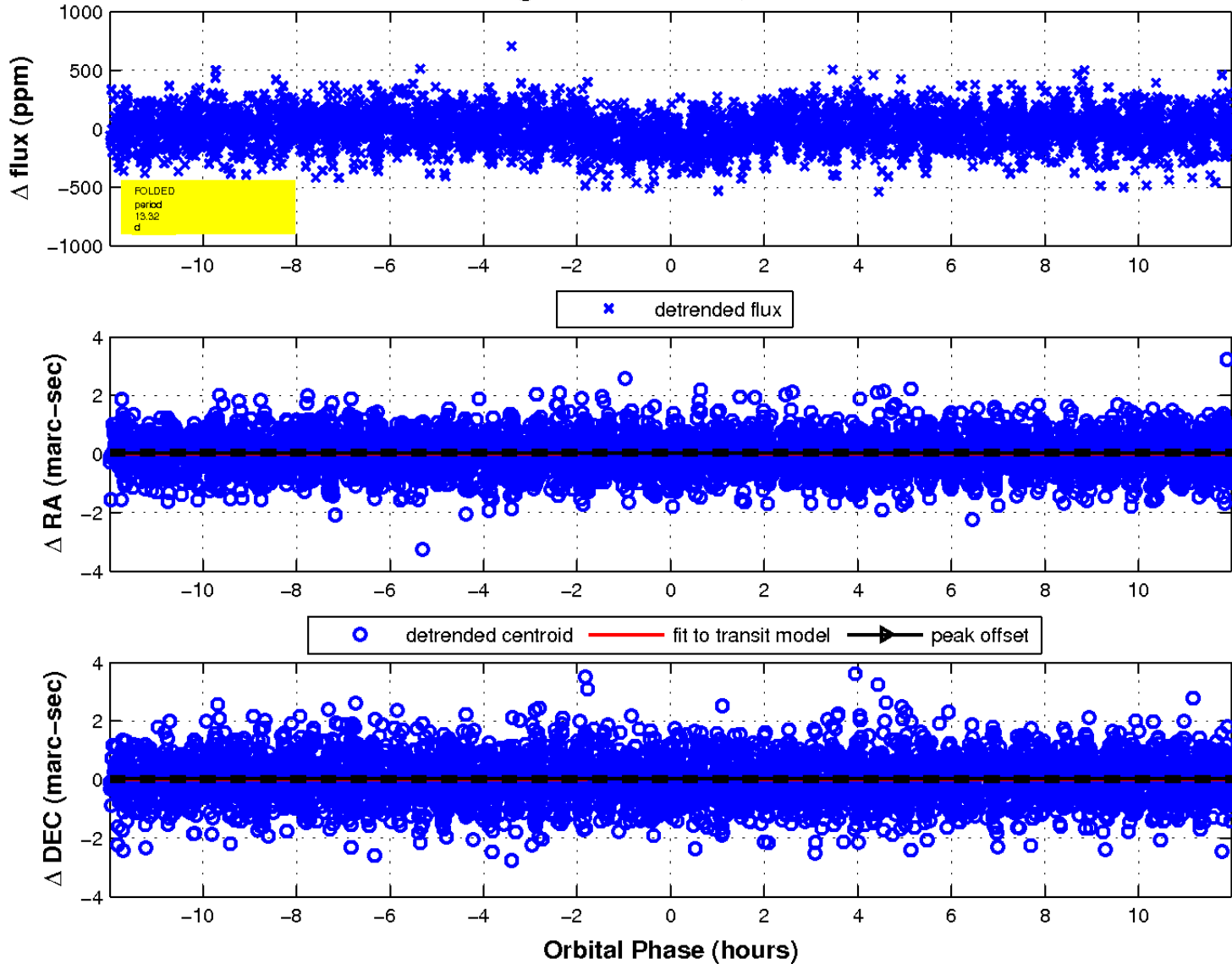
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

