

KIC 009536108

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|------|-----------------------------|-----------------|------------------------|------------------------|
| 009536108-01 | OBS | 3472.01 | 10.430016 | 133.297742 | 122.3 | 2.057 | 9.3 | 10.7 | 1.03 | 6277 | 1.32 | 159.84 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009536108-01 | OBS | PC | 0.97 | 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.

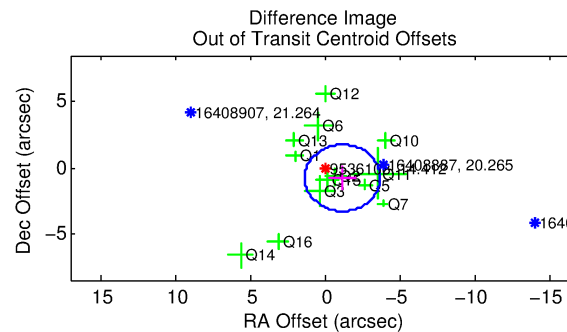
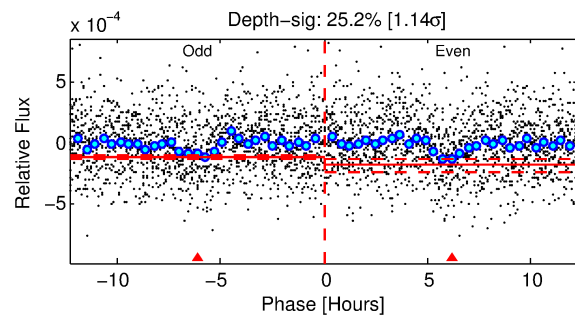
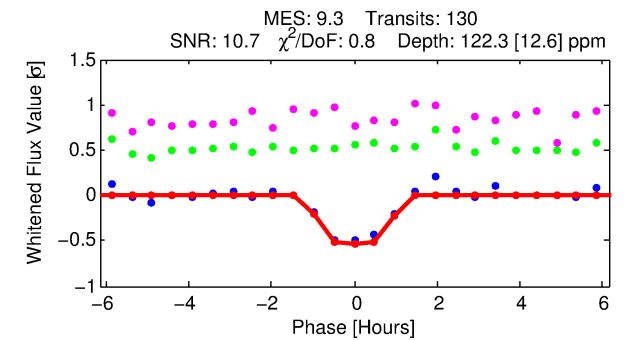
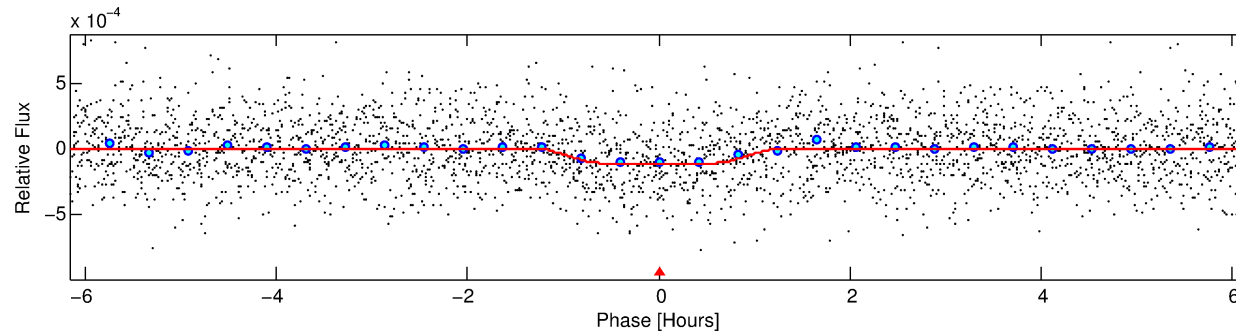
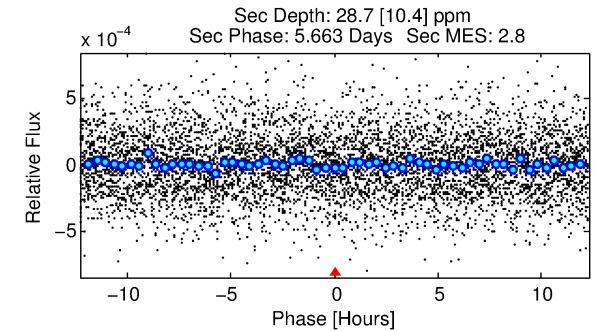
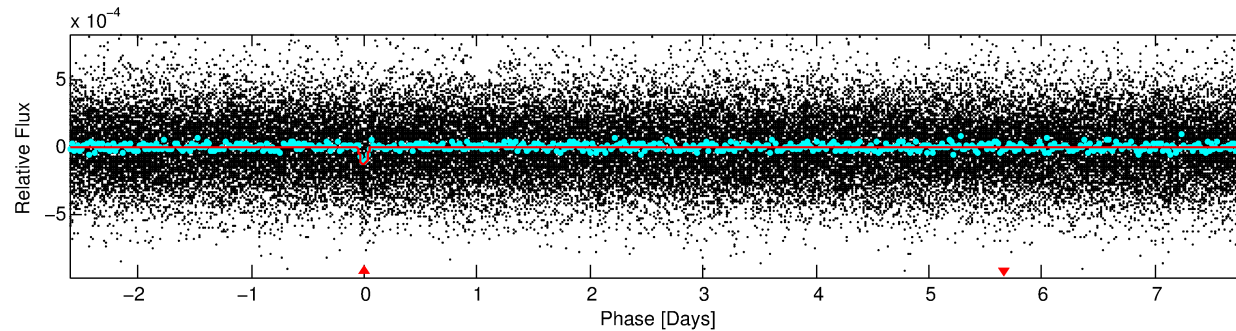
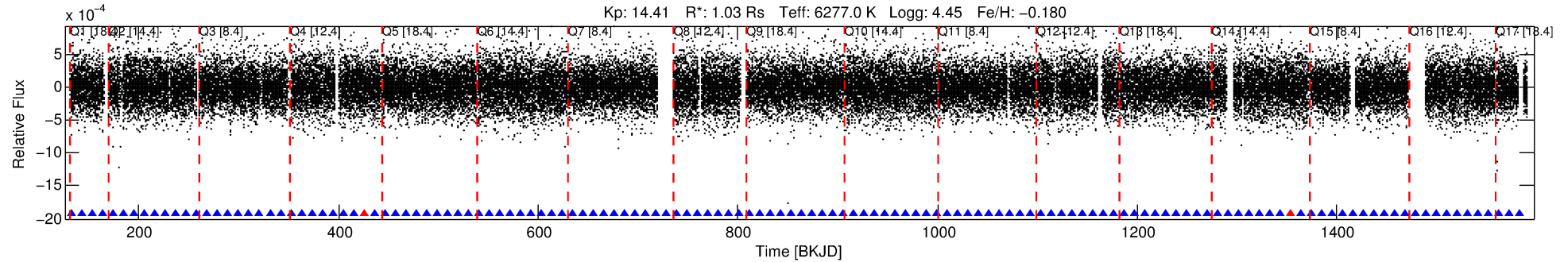
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009536108-01

No Significant Match Found

DV One-Page Summary

KIC: 9536108 Candidate: 1 of 1 Period: 10.430 d
KOI: K03472.01 Corr: 0.967



DV Fit Results:

Period = 10.43002 [0.00007] d
Epoch = 133.2977 [0.0049] BKJD
Rp/R* = 0.0117 [0.0080]
a/R* = 19.52 [72.72]
b = 0.88 [0.99]
Seff = 159.84 [64.33]
Teq = 907 [91] K
Rp = 1.32 [0.99] Re
a = 0.0962 [0.0251] AU
Ag = 84.20 [123.74] [0.67σ]
Teffp = 4246 [1513] K [2.20σ]

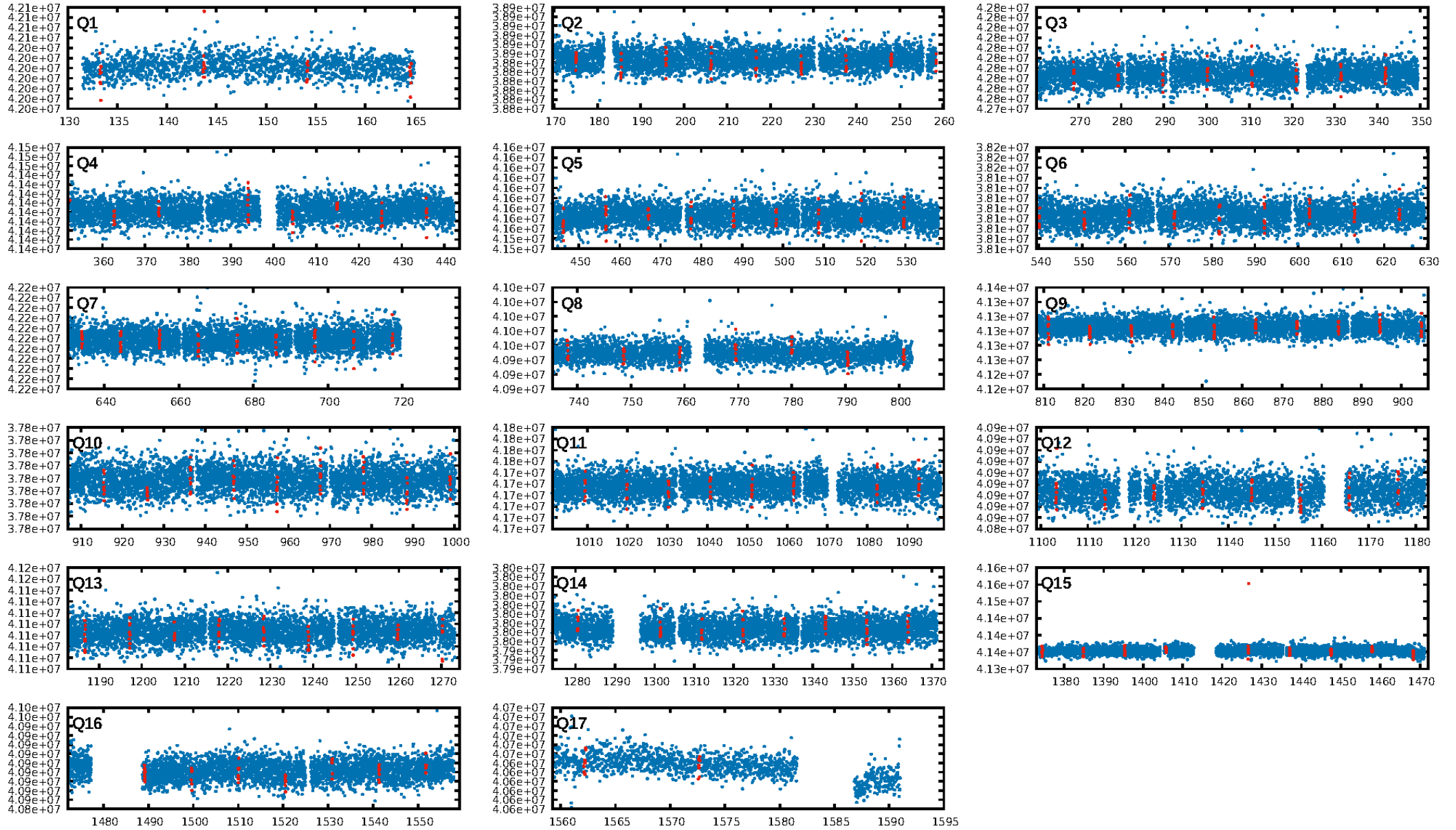
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.58e-20
RollingBand-fgt: 0.98 [122/124]
GhostDiagnostic-chr: -6.347
Centroid-sig: 0.0%
Centroid-so: 3.794 arcsec [3.01σ]
OotOffset-rm: 1.407 arcsec [1.68σ]
KicOffset-rm: 1.260 arcsec [1.49σ]
OotOffset-st: 4/4/2/3 [13]
KicOffset-st: 4/4/2/3 [13]
DiffImageQuality-fgm: 0.38 [5/13]
DiffImageOverlap-fno: 1.00 [17/17]

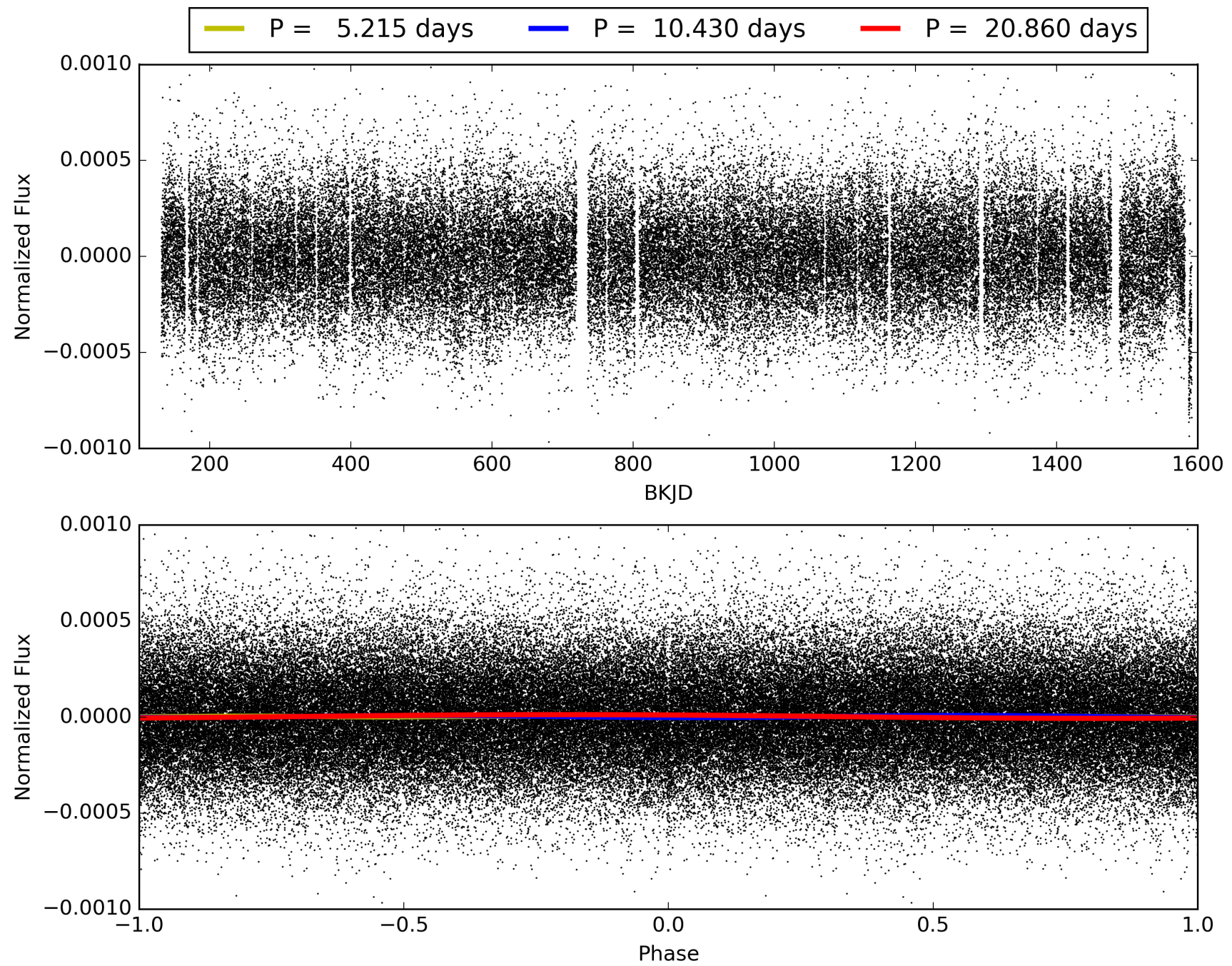
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:46:49 Z

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

TCE 009536108-01, PDC Light Curves

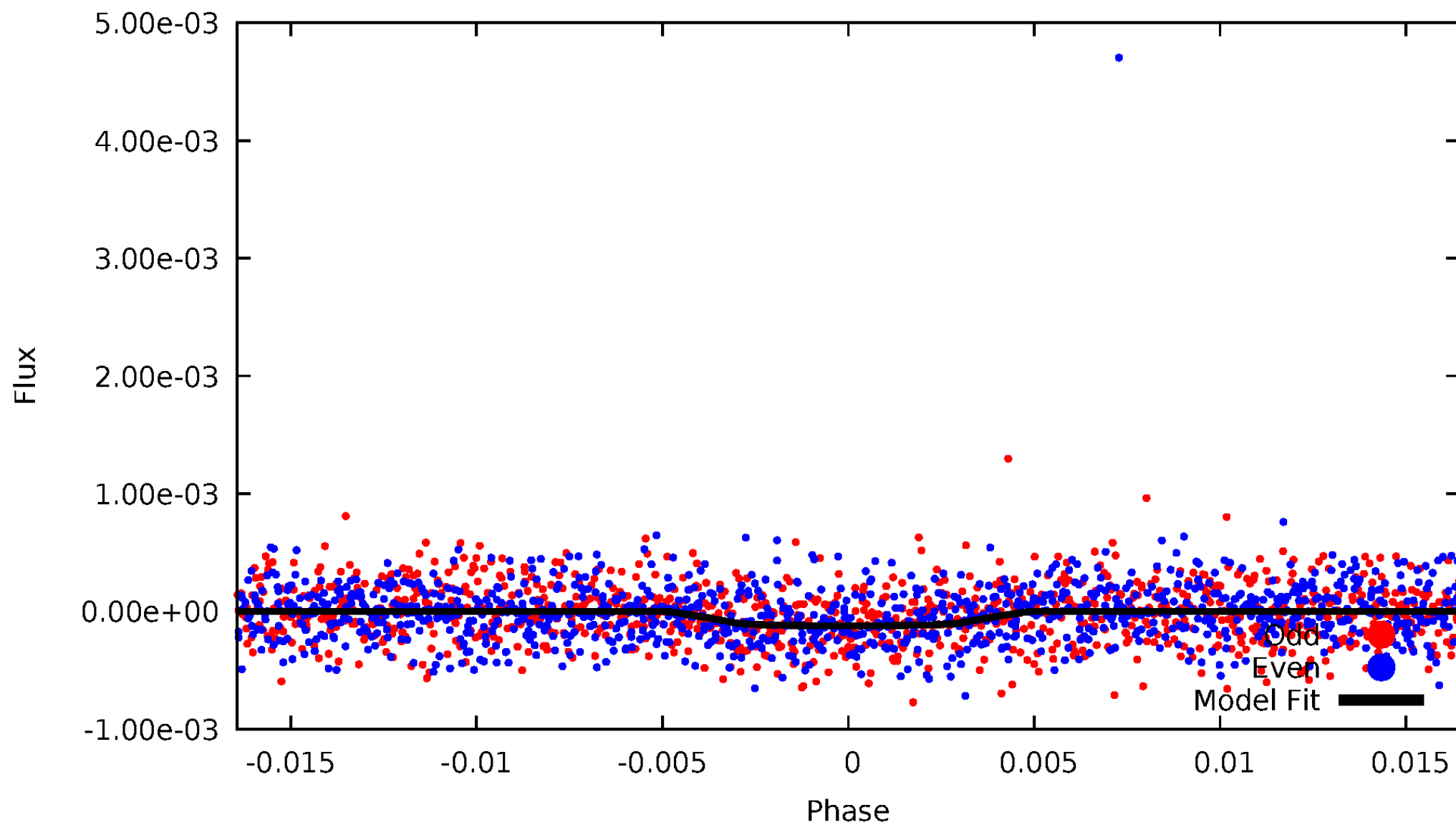


TCE 009536108-01



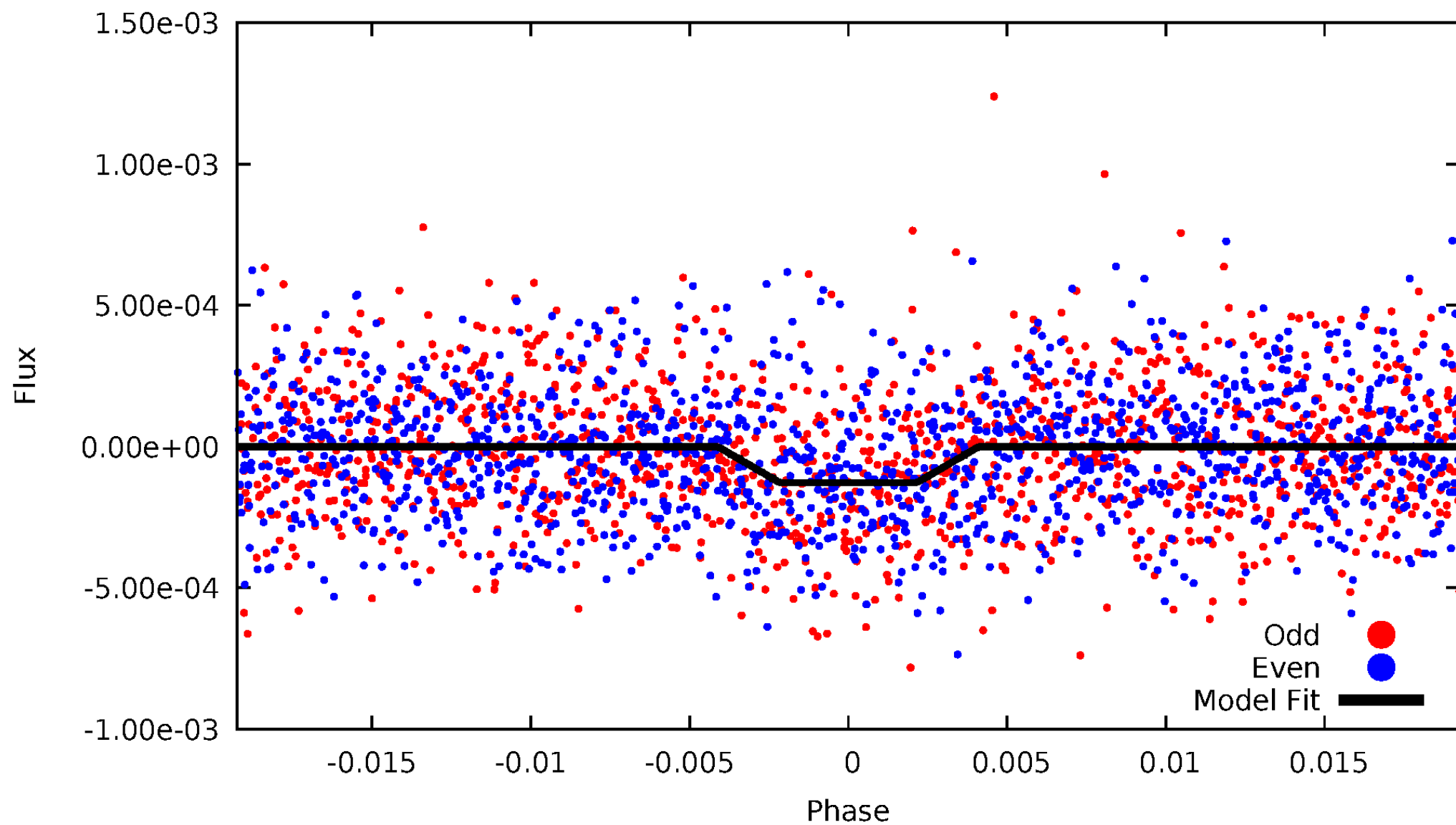
DV Odd/Even

TCE 009536108-01

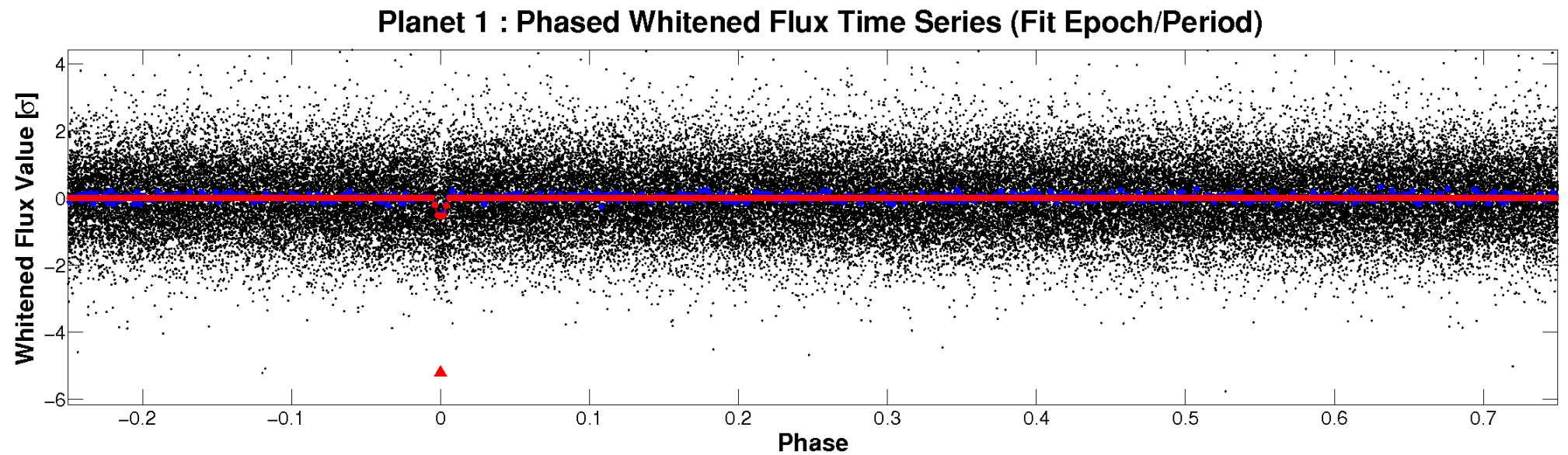
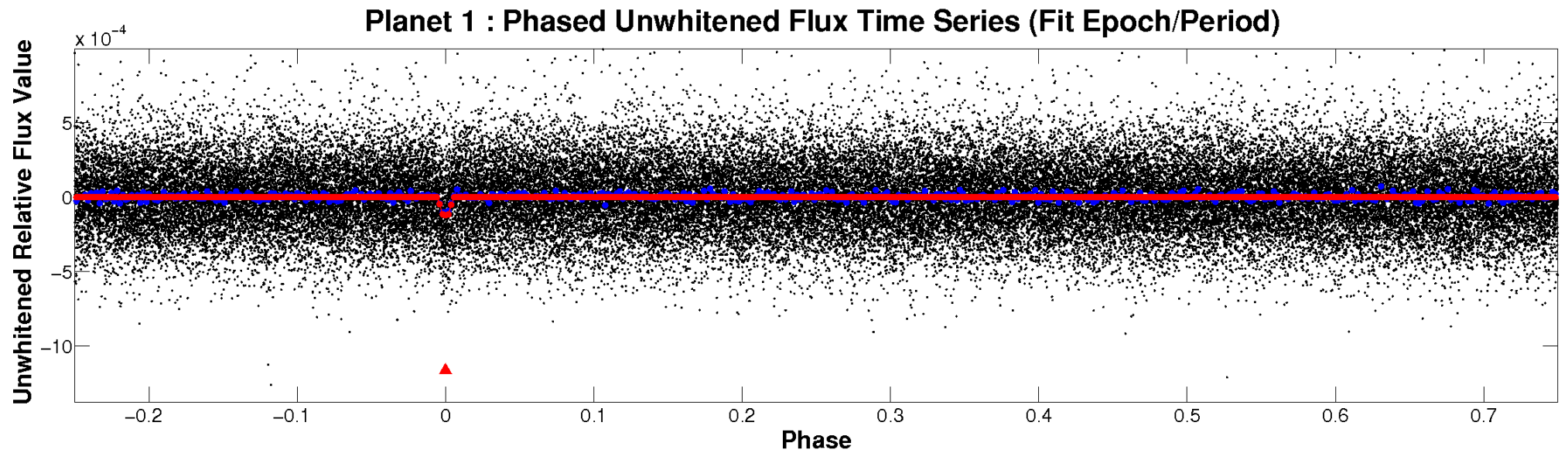


ALT Odd/Even

TCE 009536108-01

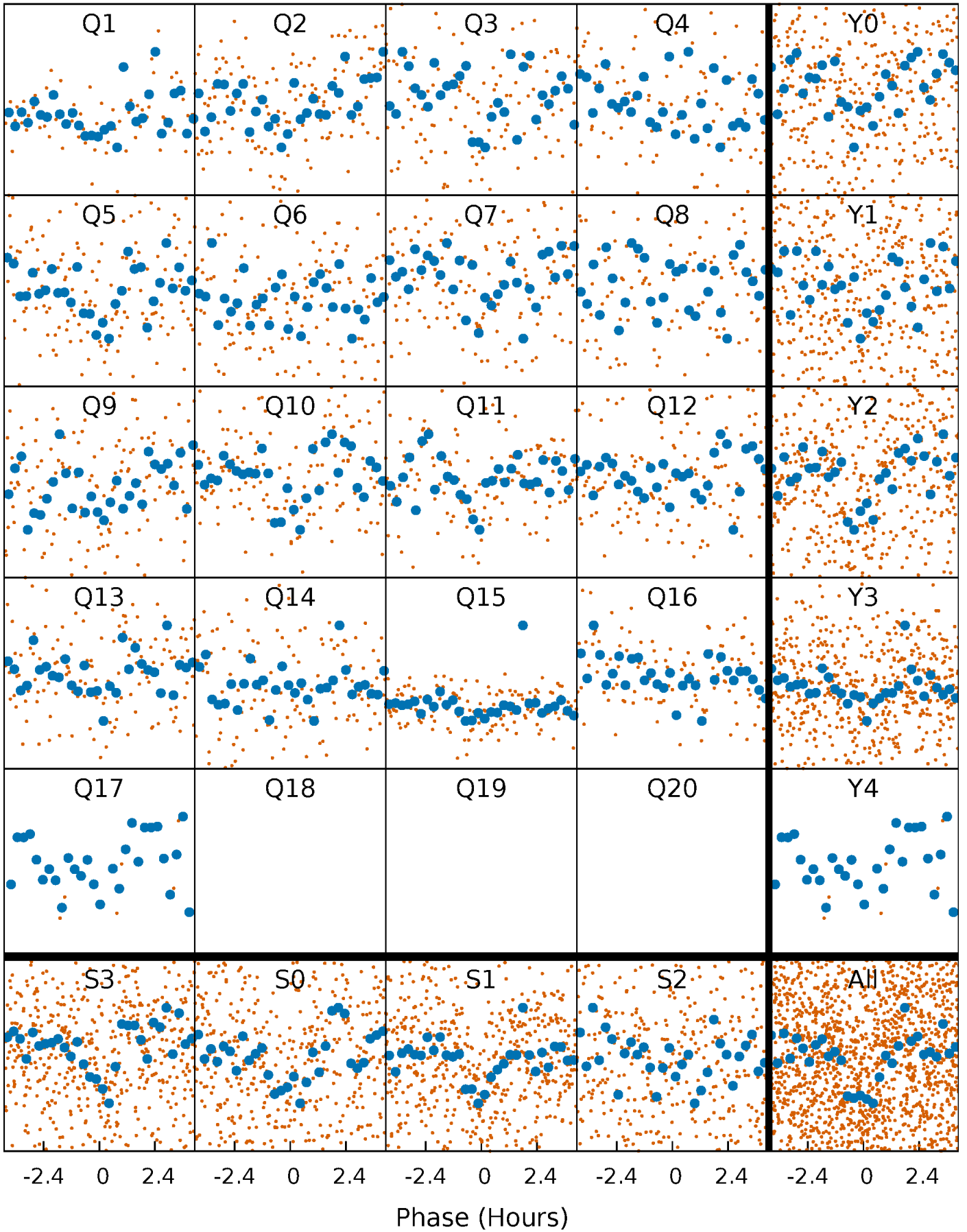


Non-Whitened Vs. Whitened Light Curve



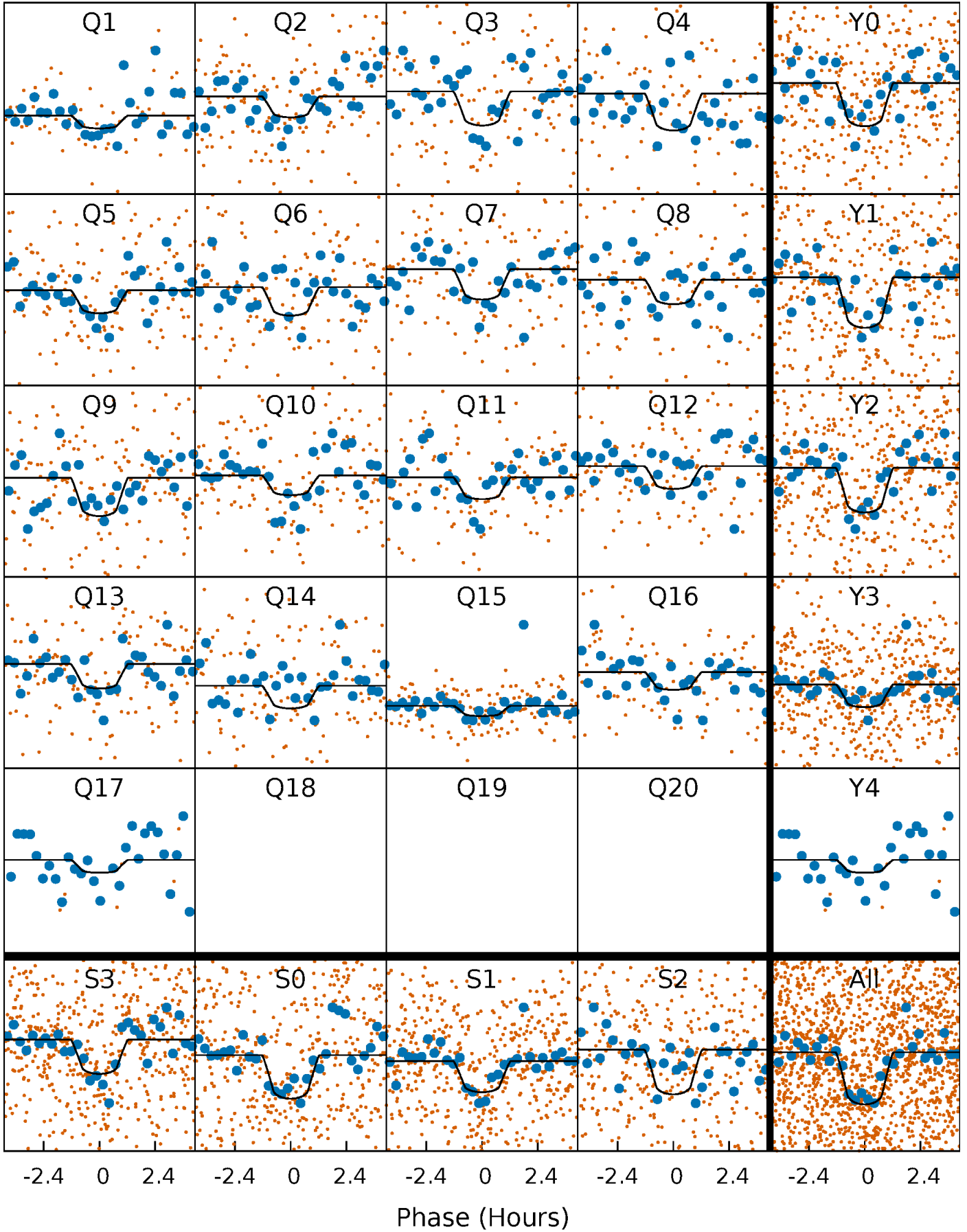
PDC Quarter-Phased Transit Curves

TCE 009536108-01 P= 10.430016 Days $T_0=133.297742$ (BKJD)



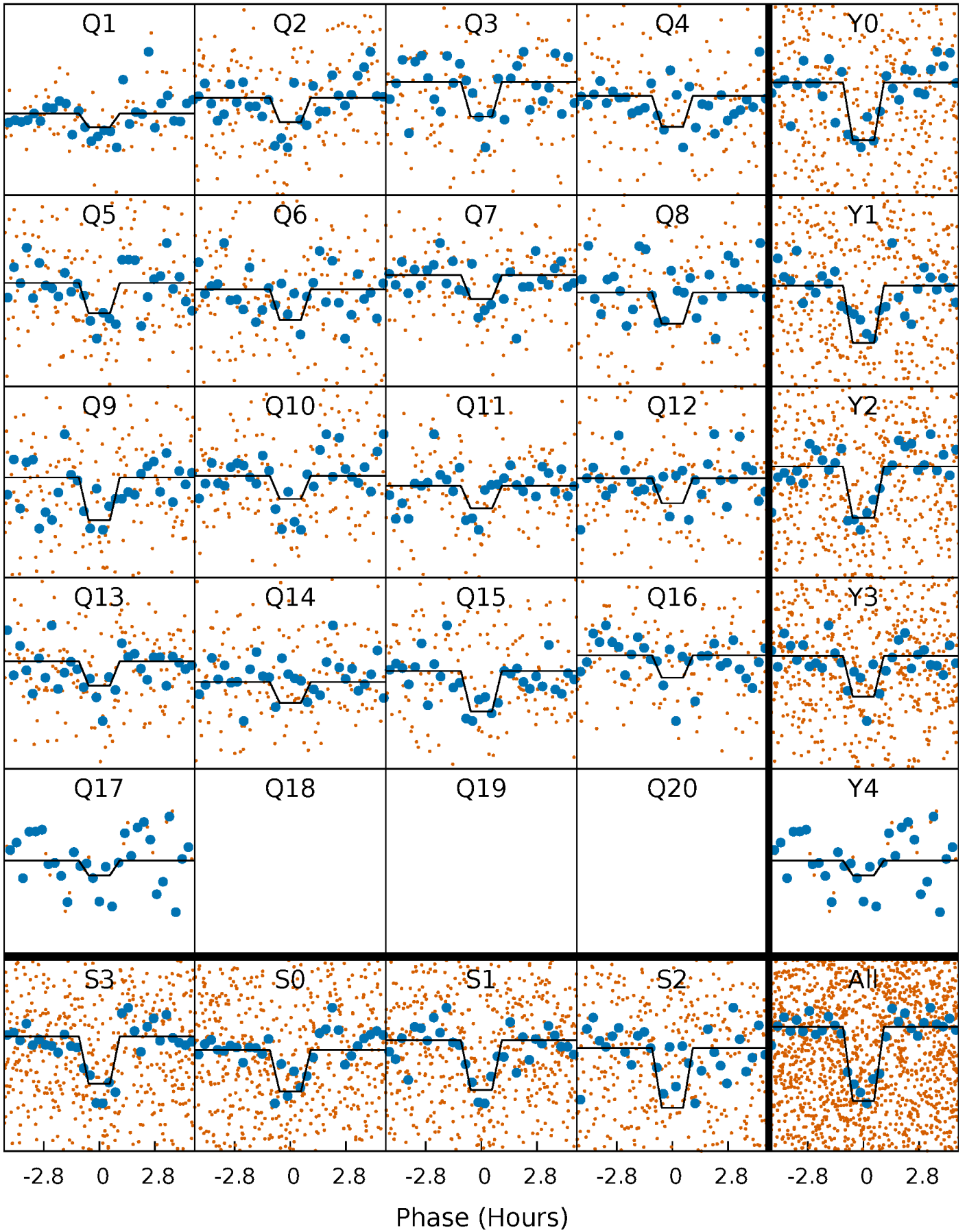
DV Quarter-Phased Transit Curves

TCE 009536108-01 P= 10.430016 Days $T_0=133.297742$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

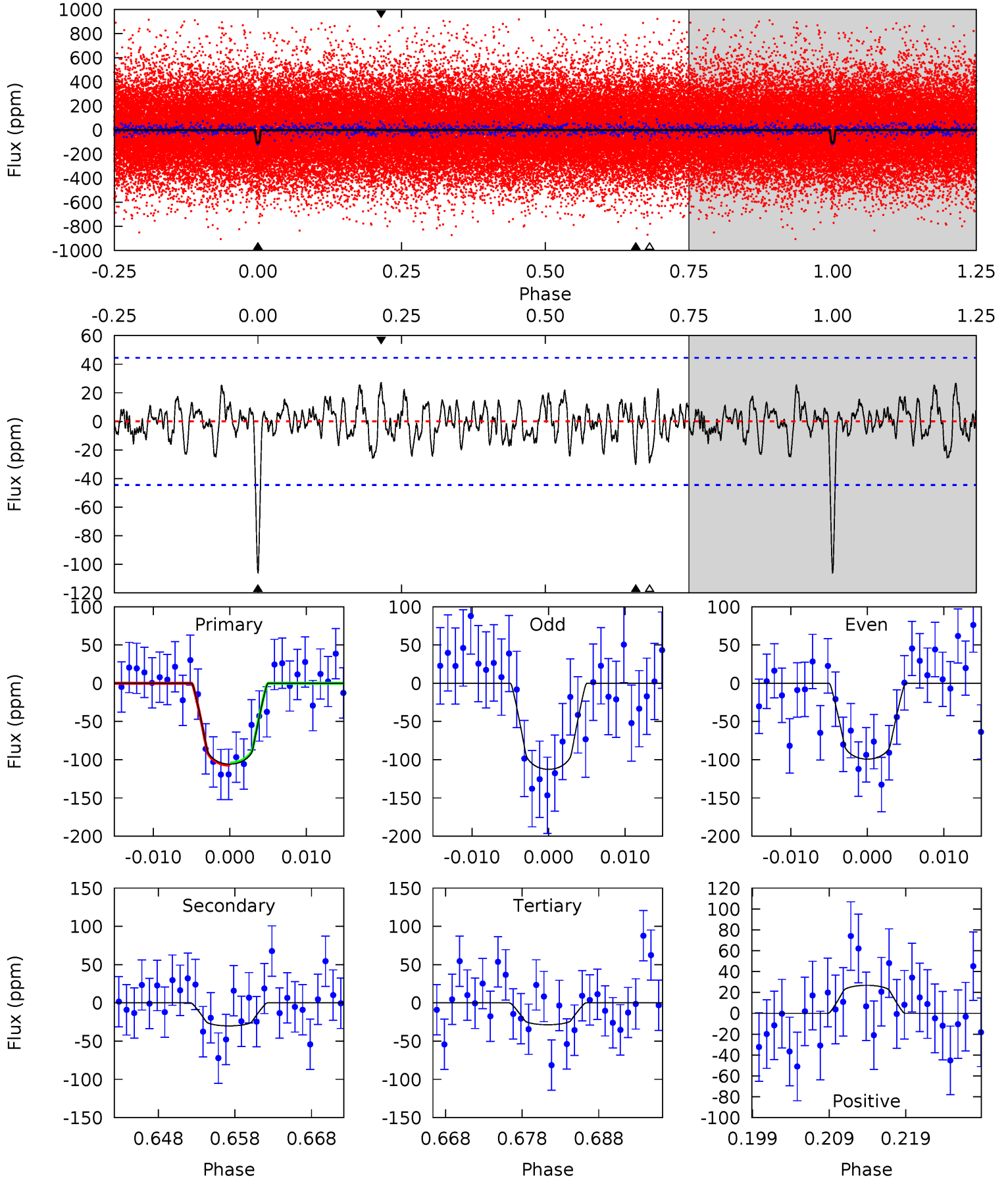
TCE 009536108-01 P= 10.430043 Days $T_0=133.294677$ (BKJD)



DV Model-Shift Uniqueness Test

009536108-01, P = 10.430016 Days, E = 122.867726 Days

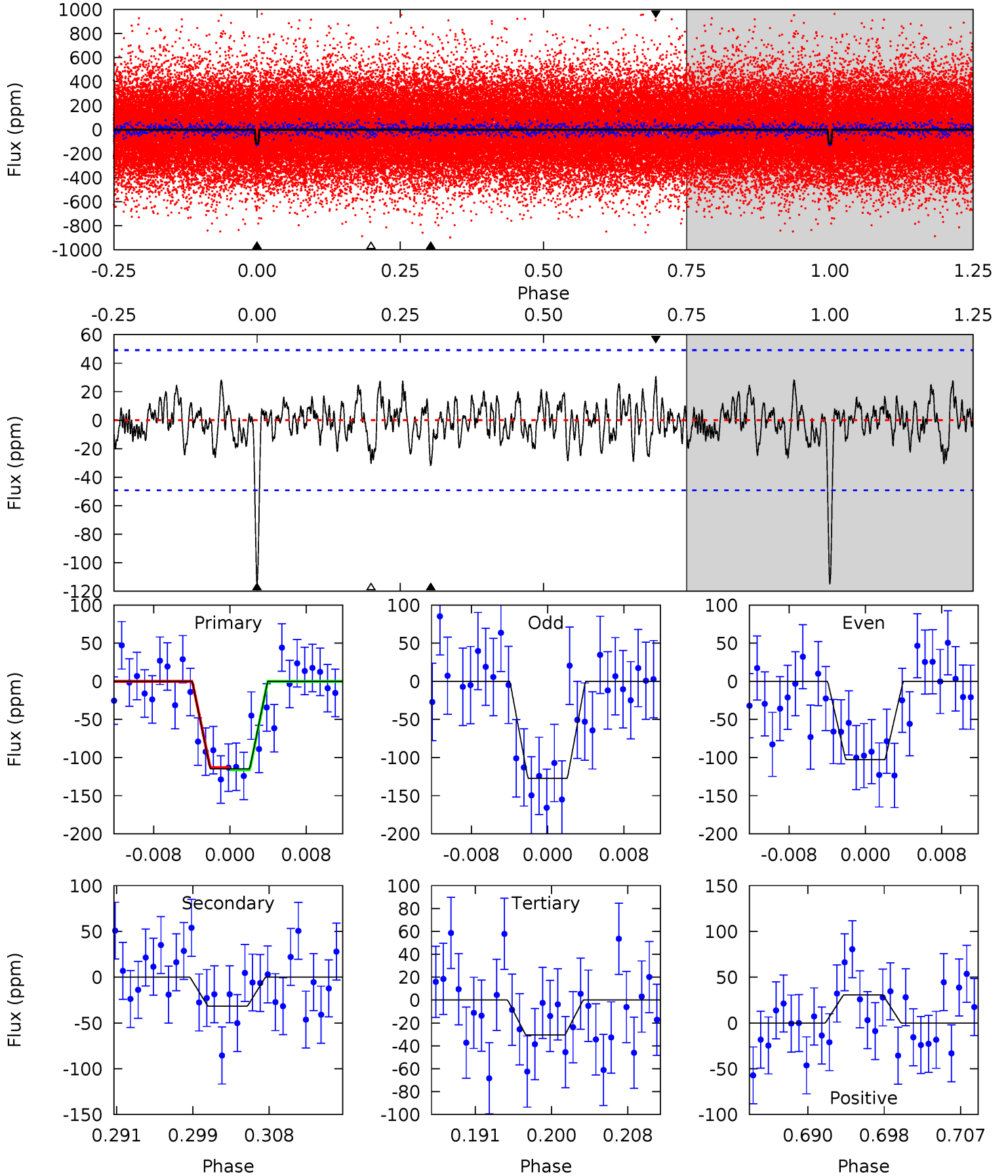
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.9 | 3.40 | 3.23 | 3.03 | 5.03 | 2.58 | 1.14 | 8.72 | 8.92 | 0.17 | 0.37 | 0.76 | 0.86 | 0.20 | 0.16 |



Alt Model-Shift Uniqueness Test

009536108-01, $P = 10.430043$ Days, $E = 122.864634$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.8 | 3.27 | 3.13 | 3.15 | 5.06 | 2.64 | 1.12 | 8.67 | 8.65 | 0.14 | 0.12 | 1.26 | 0.78 | 0.21 | 0.16 |



Stellar Parameters For KIC 009536108

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 6277^{+169}_{-206} | $4.449^{+0.052}_{-0.208}$ | $-0.180^{+0.250}_{-0.300}$ | $1.031^{+0.320}_{-0.107}$ | $1.085^{+0.144}_{-0.144}$ | $1.396^{+0.390}_{-0.736}$ |
| | +3%/-3% | +1%/-5% | +139%/-167% | +31%/-10% | +13%/-13% | +28%/-53% |
| 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 009536108-01 / KOI 3472.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|-----------------------|-------------------|
| DV | -30 ± 9 | $1.42^{+0.85}_{-0.80}$ | 1290^{+98}_{-62} | 4395^{+1986}_{-699} | 72^{+311}_{-44} |
| Alt. | -32 ± 10 | $1.38^{+0.96}_{-0.81}$ | 1295^{+91}_{-63} | 4475^{+2284}_{-782} | 78^{+363}_{-52} |

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

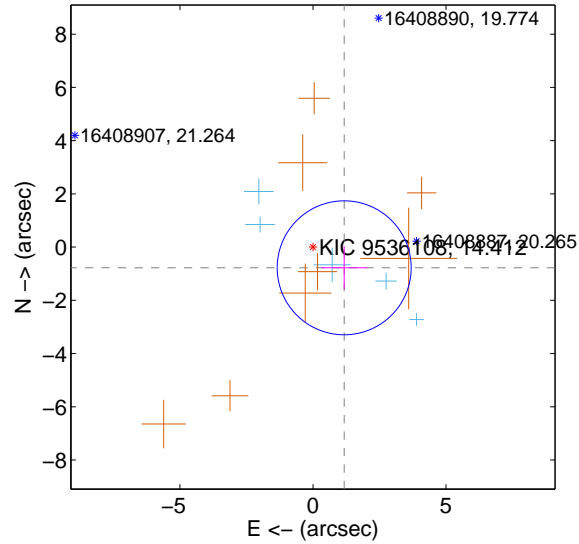
Supplemental centroid analysis for 009536108-01. Kepler magnitude: 14.41. Transit SNR 10.68

There are 5 quarters with good PRF difference image offsets

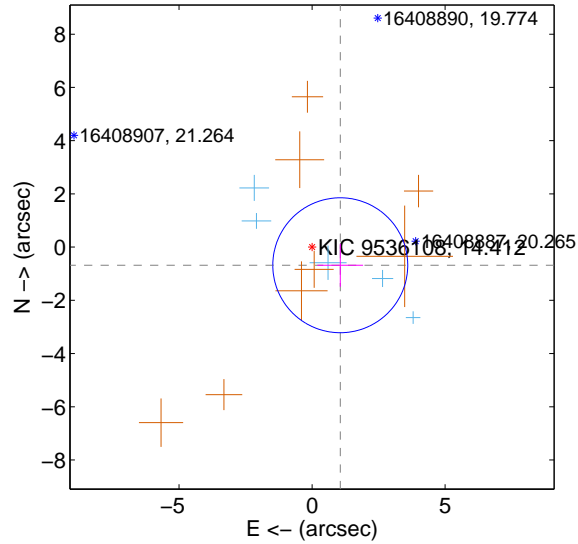
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.407 ± 0.839 | 1.68 | -1.173 ± 0.855 | -0.778 ± 0.803 |
| PRF-fit source offset from KIC position | 1.260 ± 0.845 | 1.49 | -1.060 ± 0.859 | -0.682 ± 0.810 |
| photometric centroid source offset | 3.79 ± 1.26 | 3.01 | 1.43 ± 1.19 | 3.51 ± 1.27 |

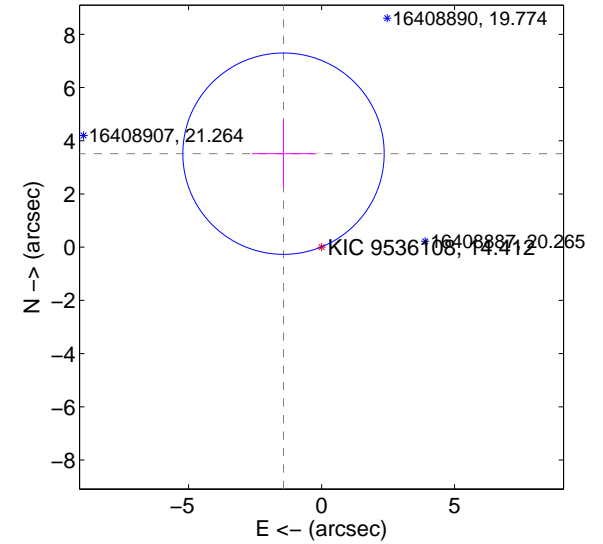
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

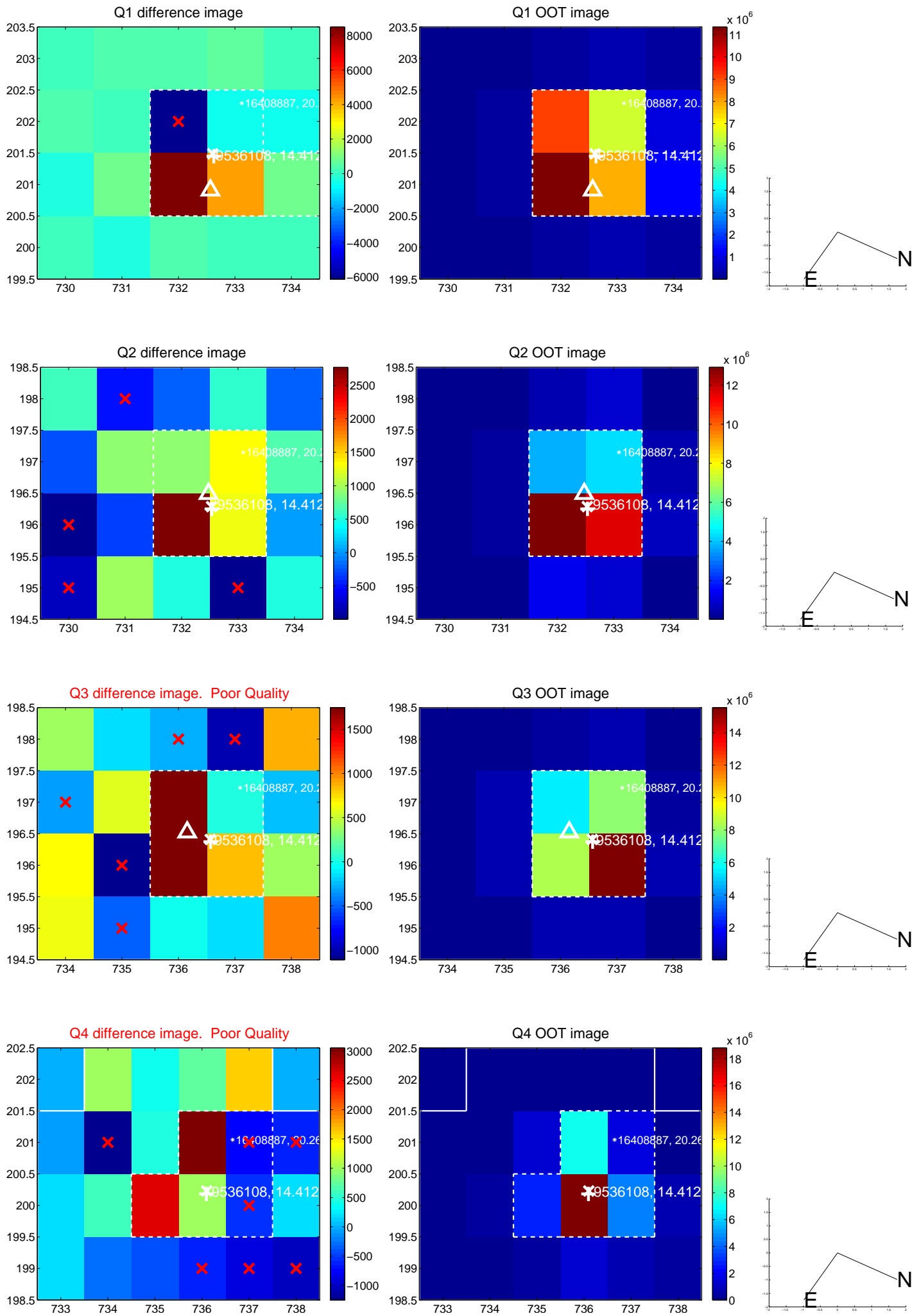


offset from photometric centroids

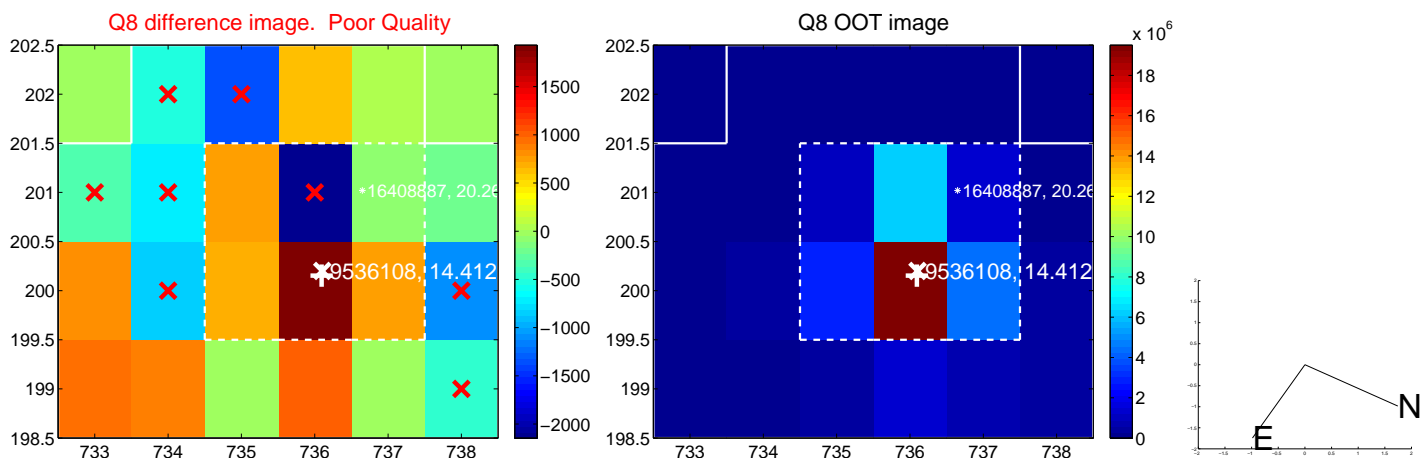
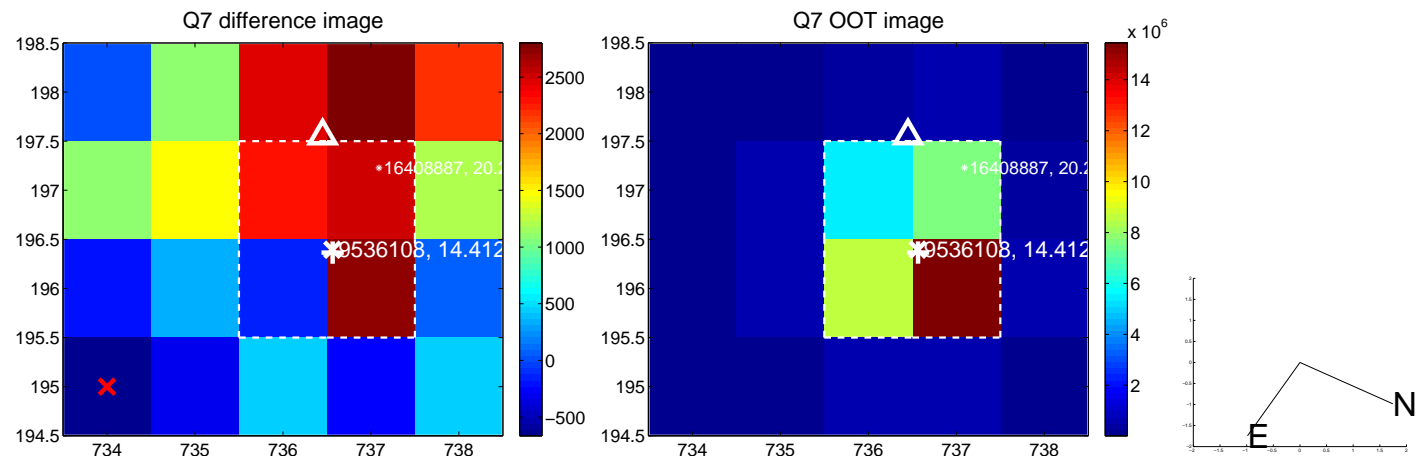
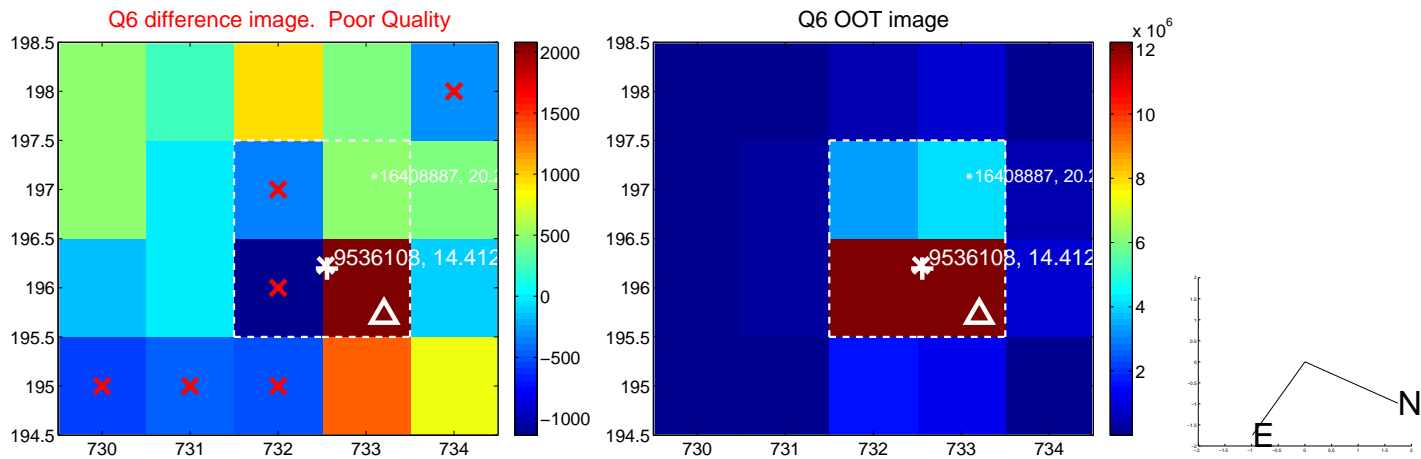
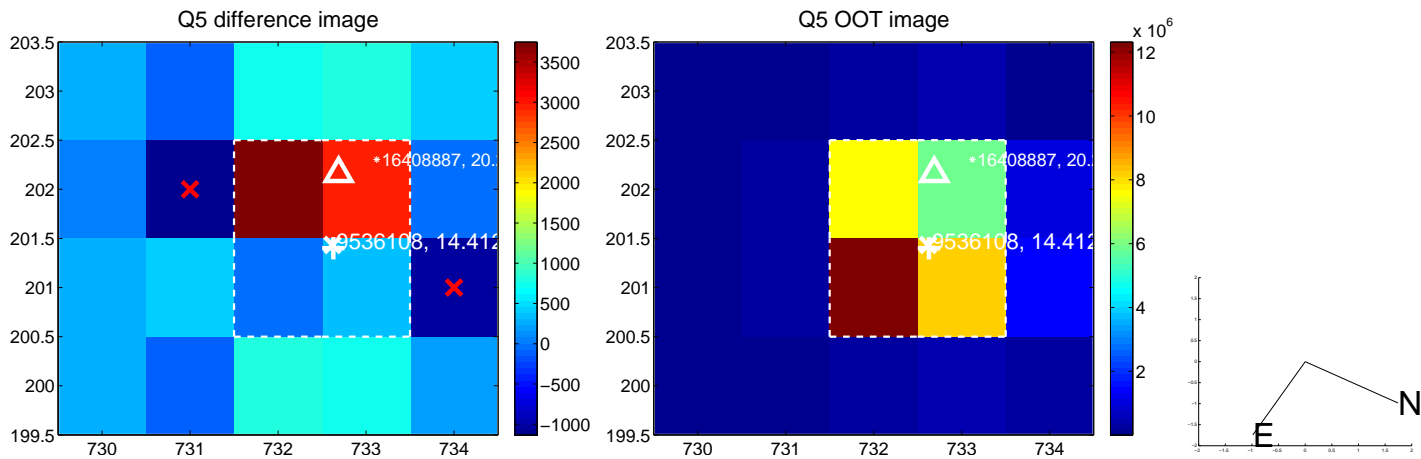


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

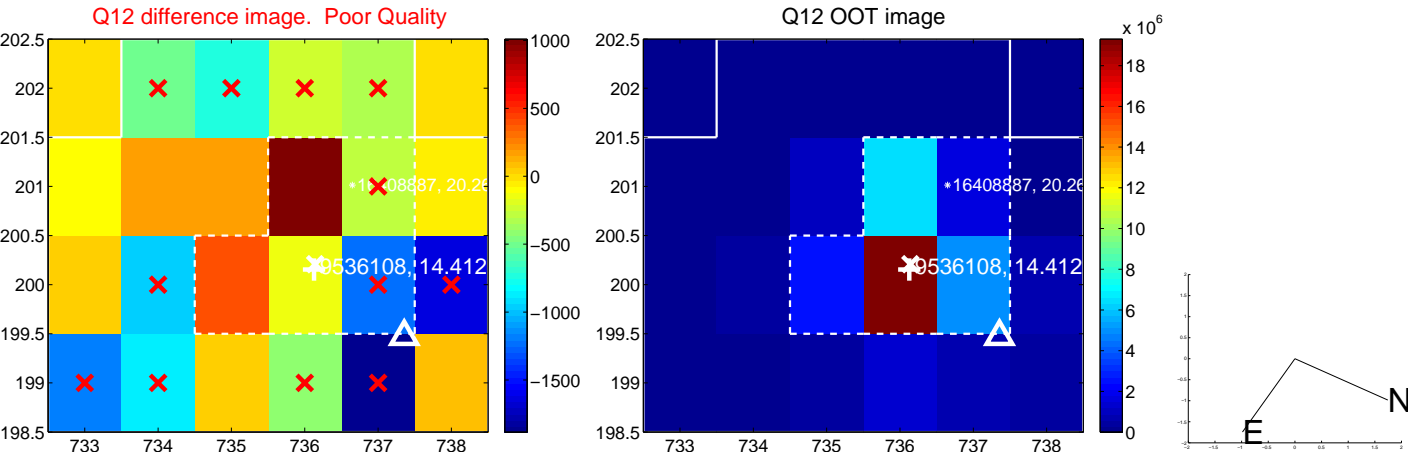
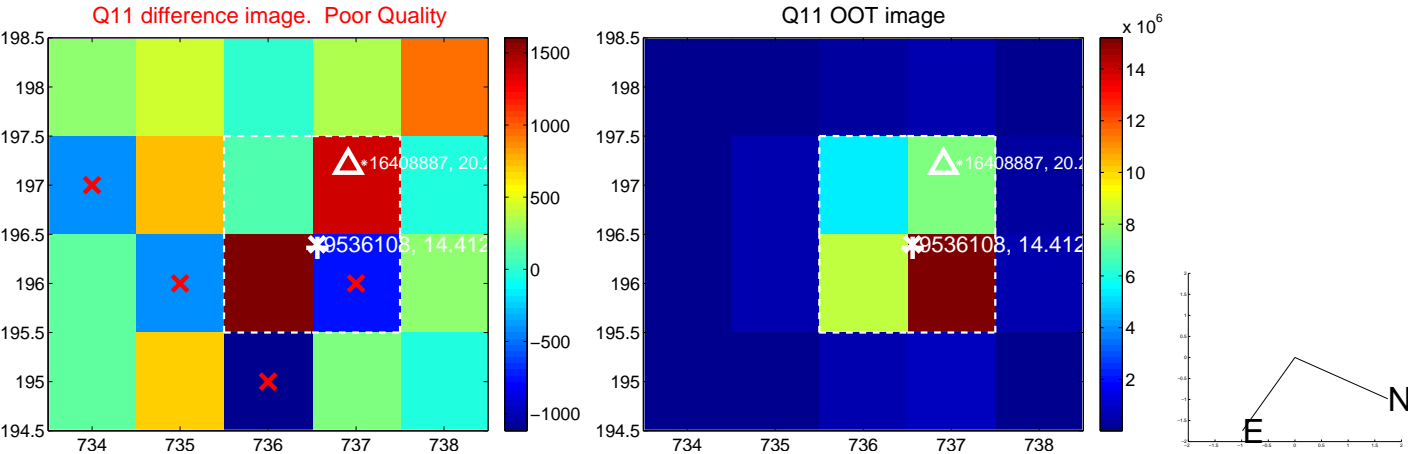
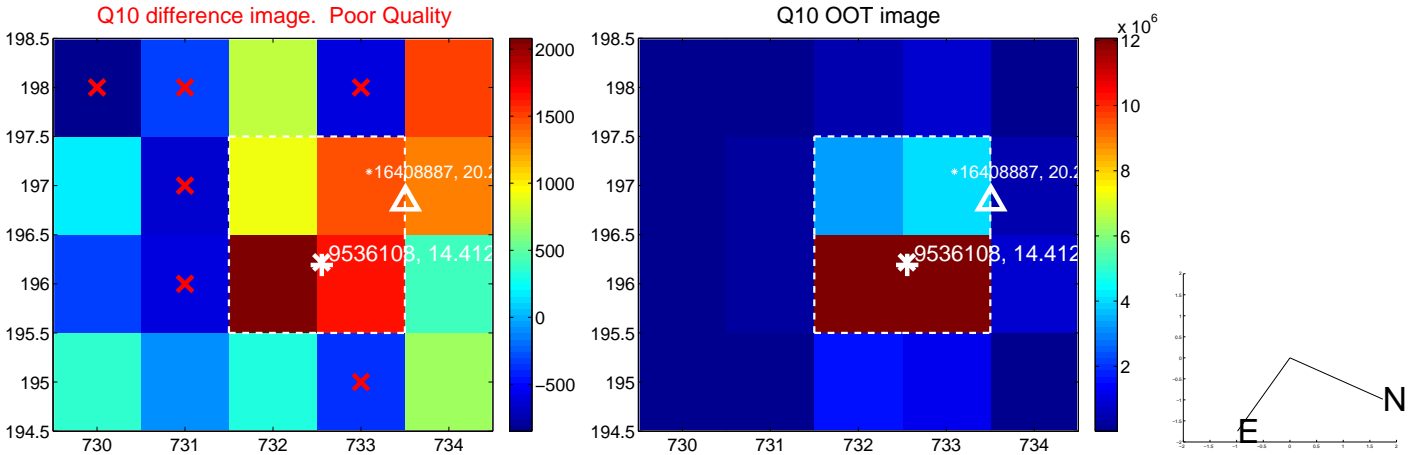
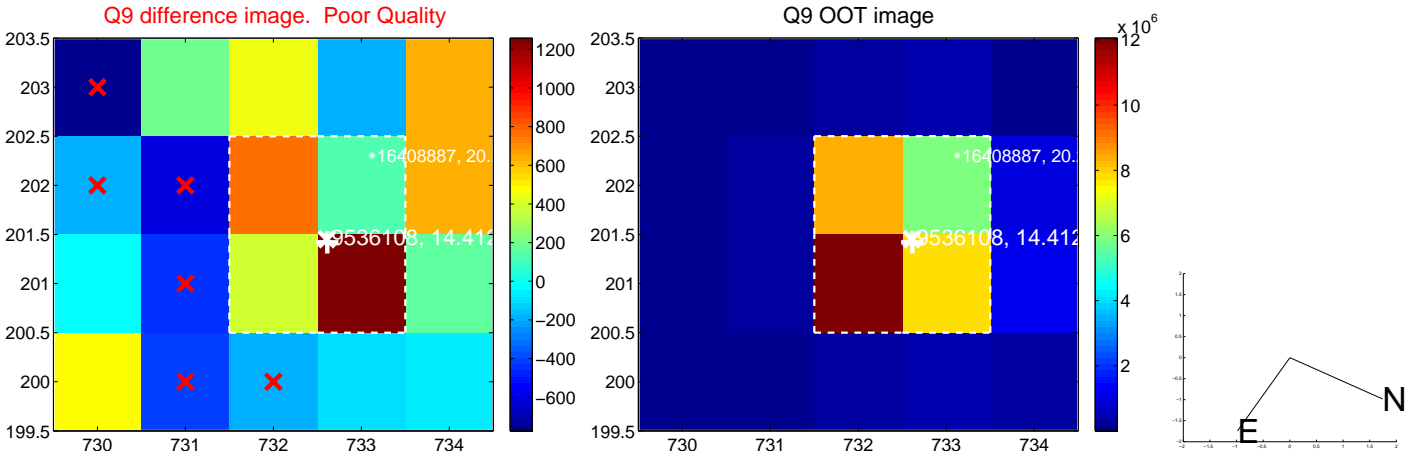
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



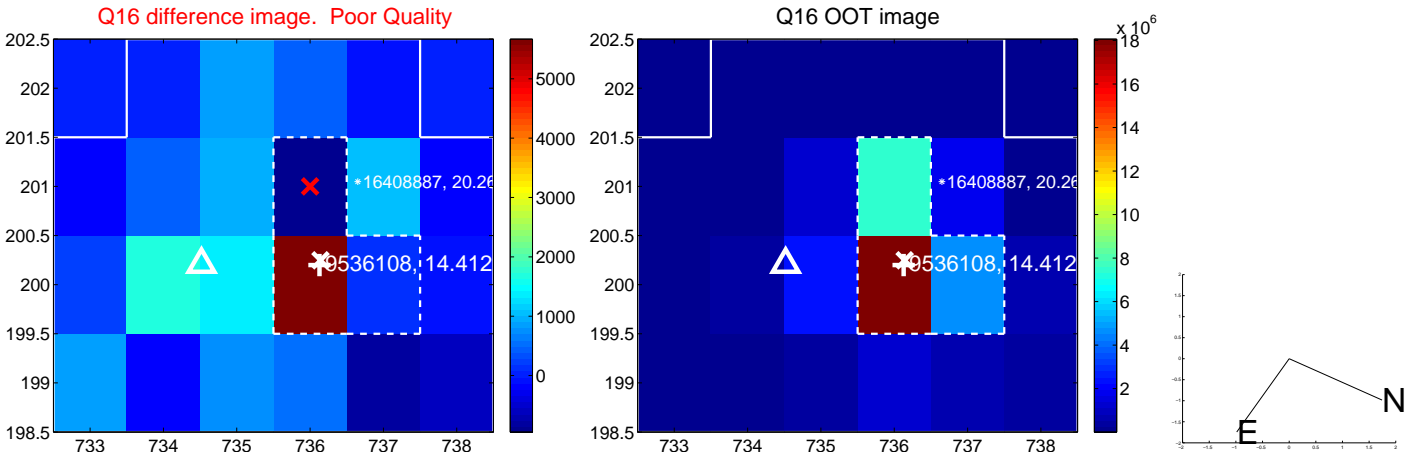
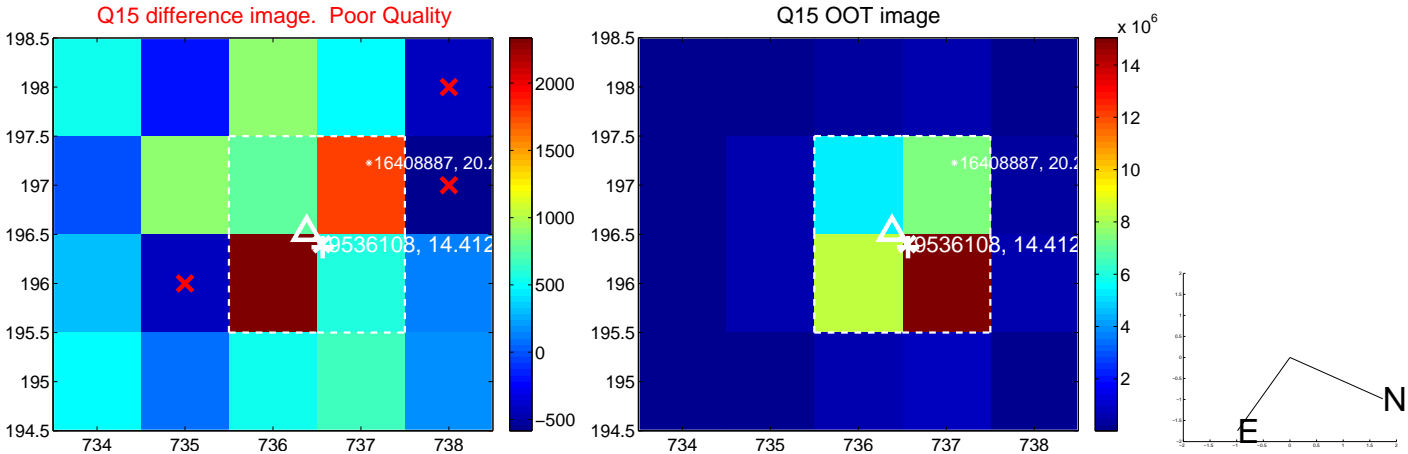
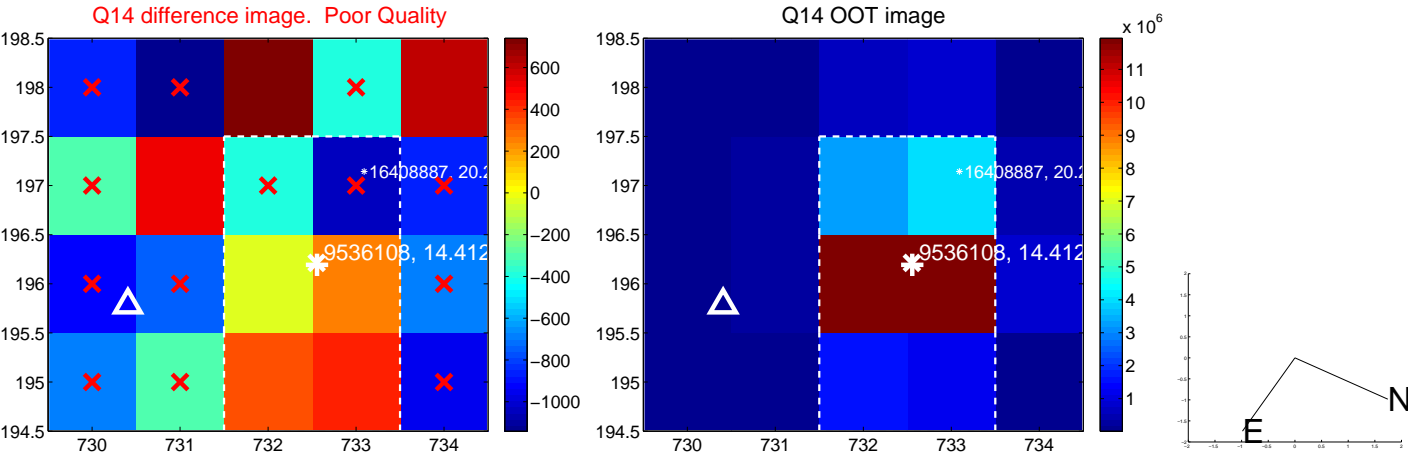
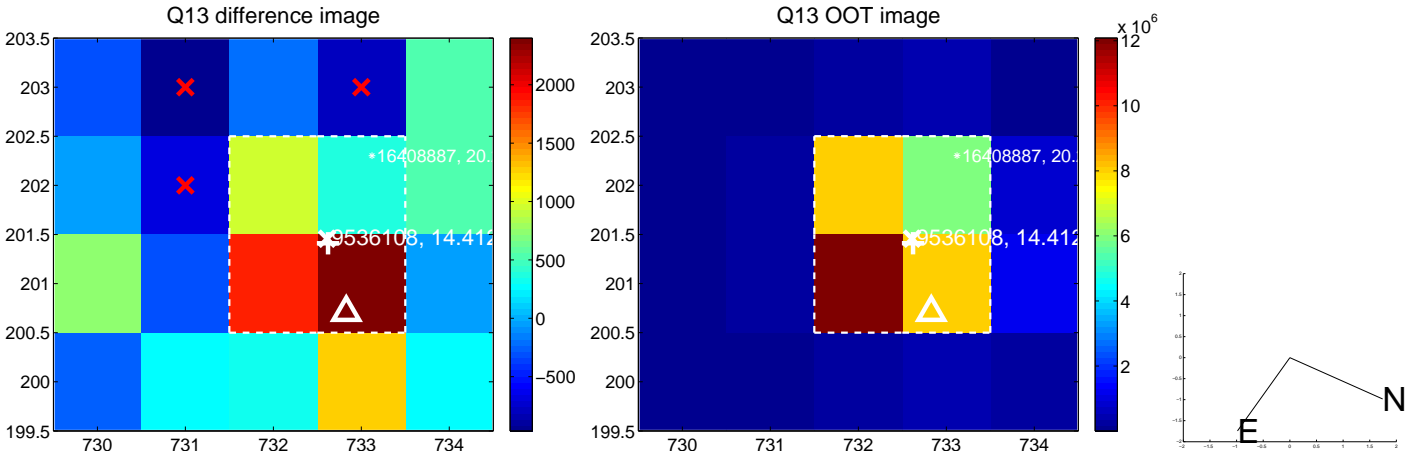
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



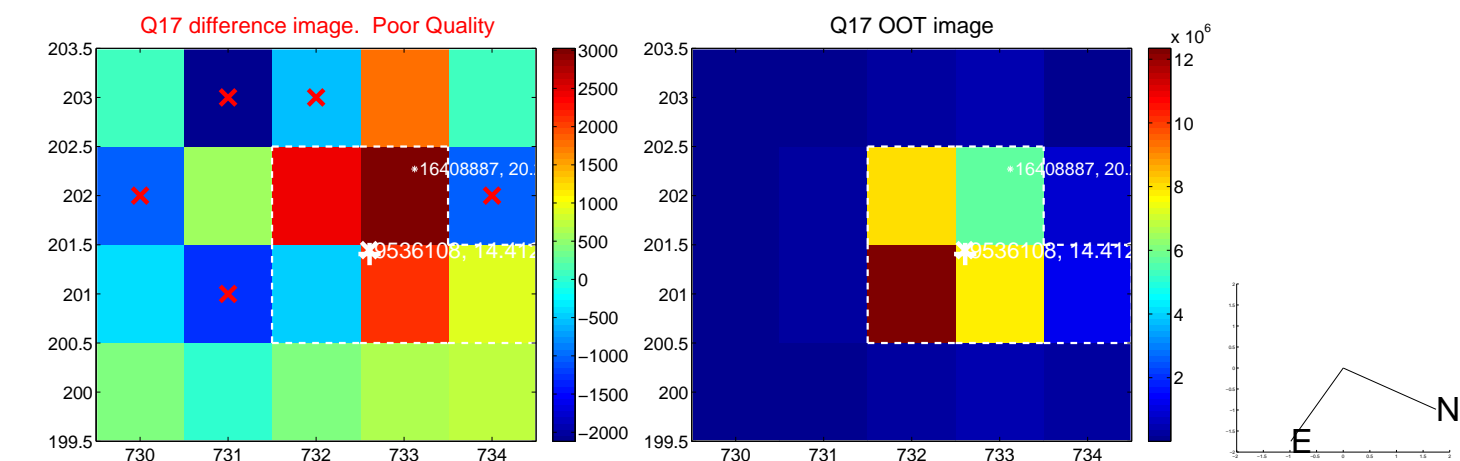
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



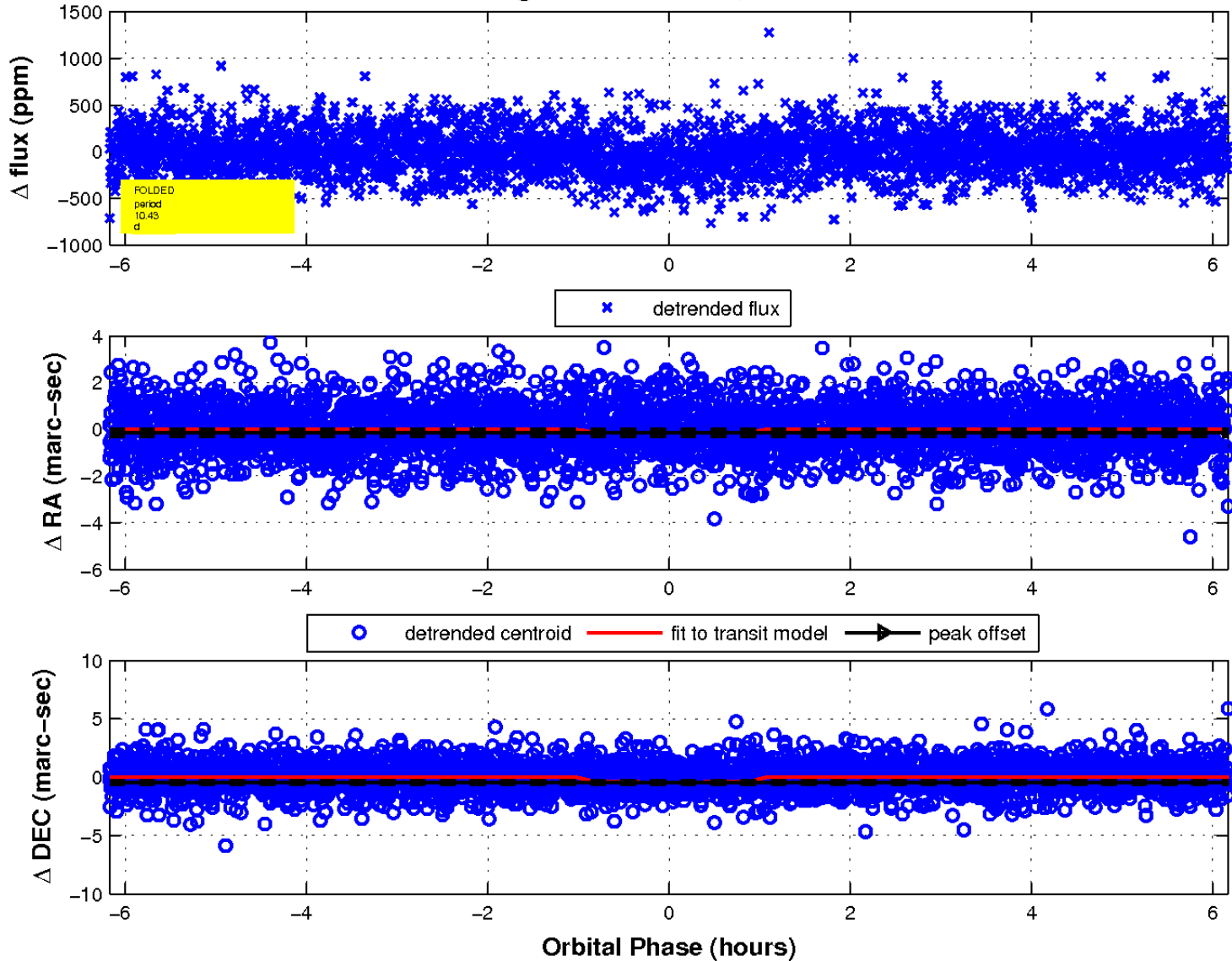
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

