

KIC 004906988

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|------|-----------------------------|-----------------|------------------------|------------------------|
| 004906988-01 | OBS | No | 42.554381 | 153.529713 | 109.8 | 31.811 | 8.6 | 12.1 | 1.43 | 6611 | 3.00 | 53.41 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------------------------------|
| 004906988-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED |

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

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

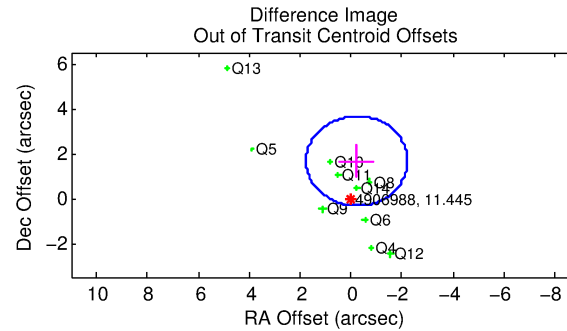
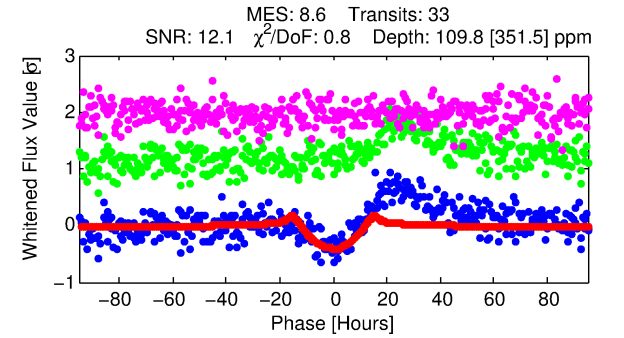
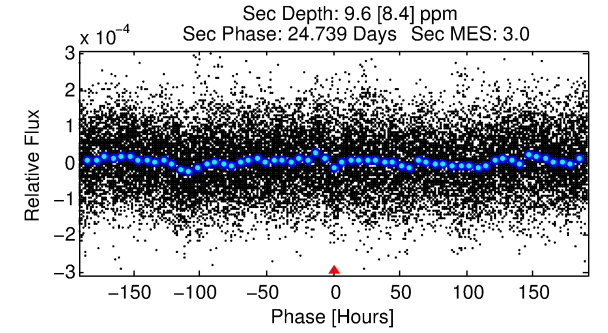
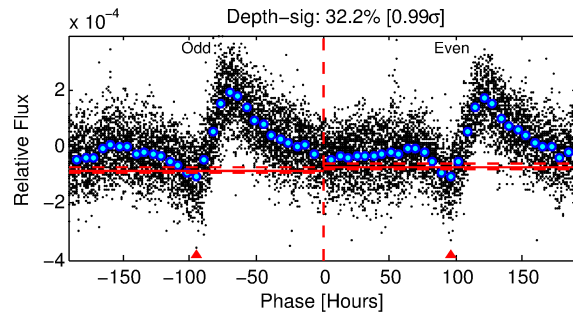
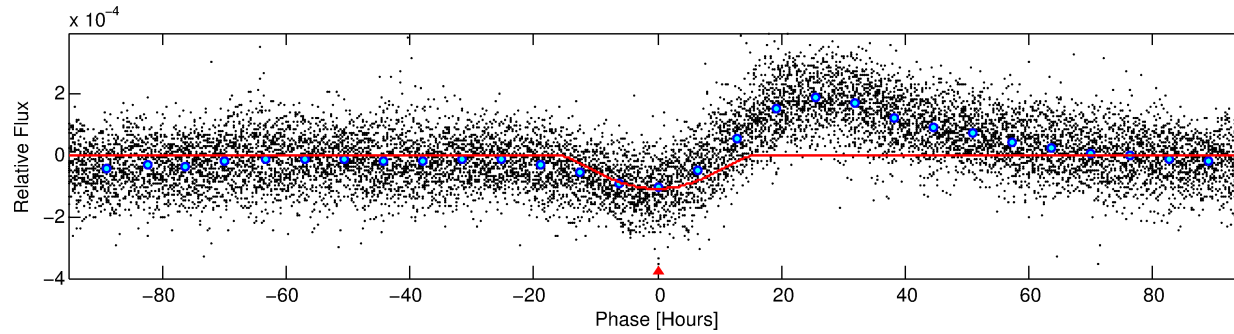
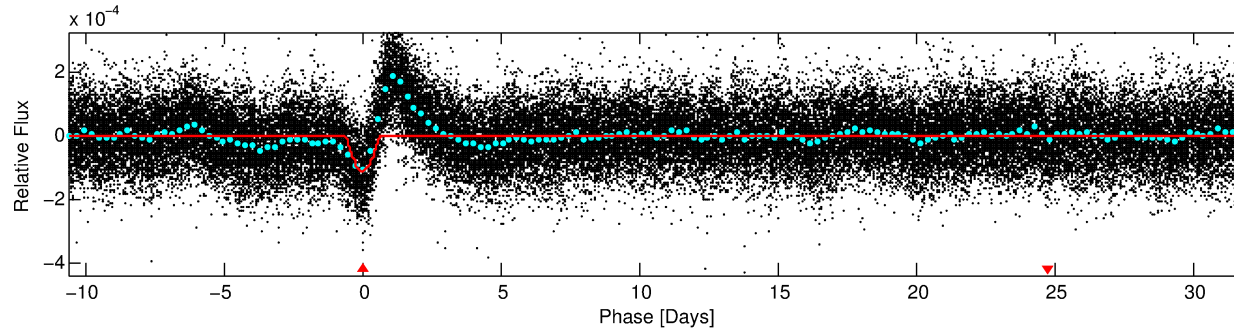
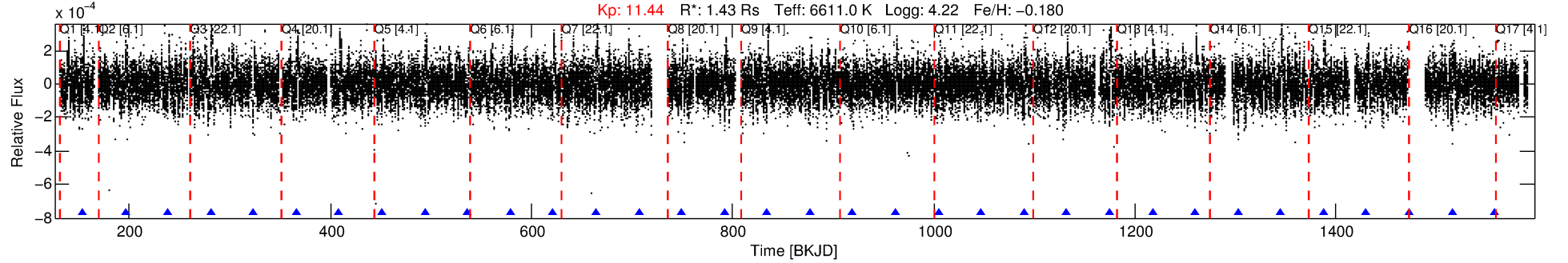
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004906988-01

No Significant Match Found

DV One-Page Summary

KIC: 4906988 Candidate: 1 of 1 Period: 42.554 d



DV Fit Results:

Period = 42.55438 [0.00230] d
Epoch = 153.5297 [0.0428] BKJD
Rp/R* = 0.0192 [0.0215]
a/R* = 2.25 [0.52]
b = 1.00 [0.01]
Seff = 53.41 [14.08]
Teq = 689 [45] K
Rp = 3.00 [3.41] Re
a = 0.2560 [0.0423] AU
Ag = 38.64 [93.53] [0.40 σ]
Teffp = 2657 [1602] K [1.23 σ]

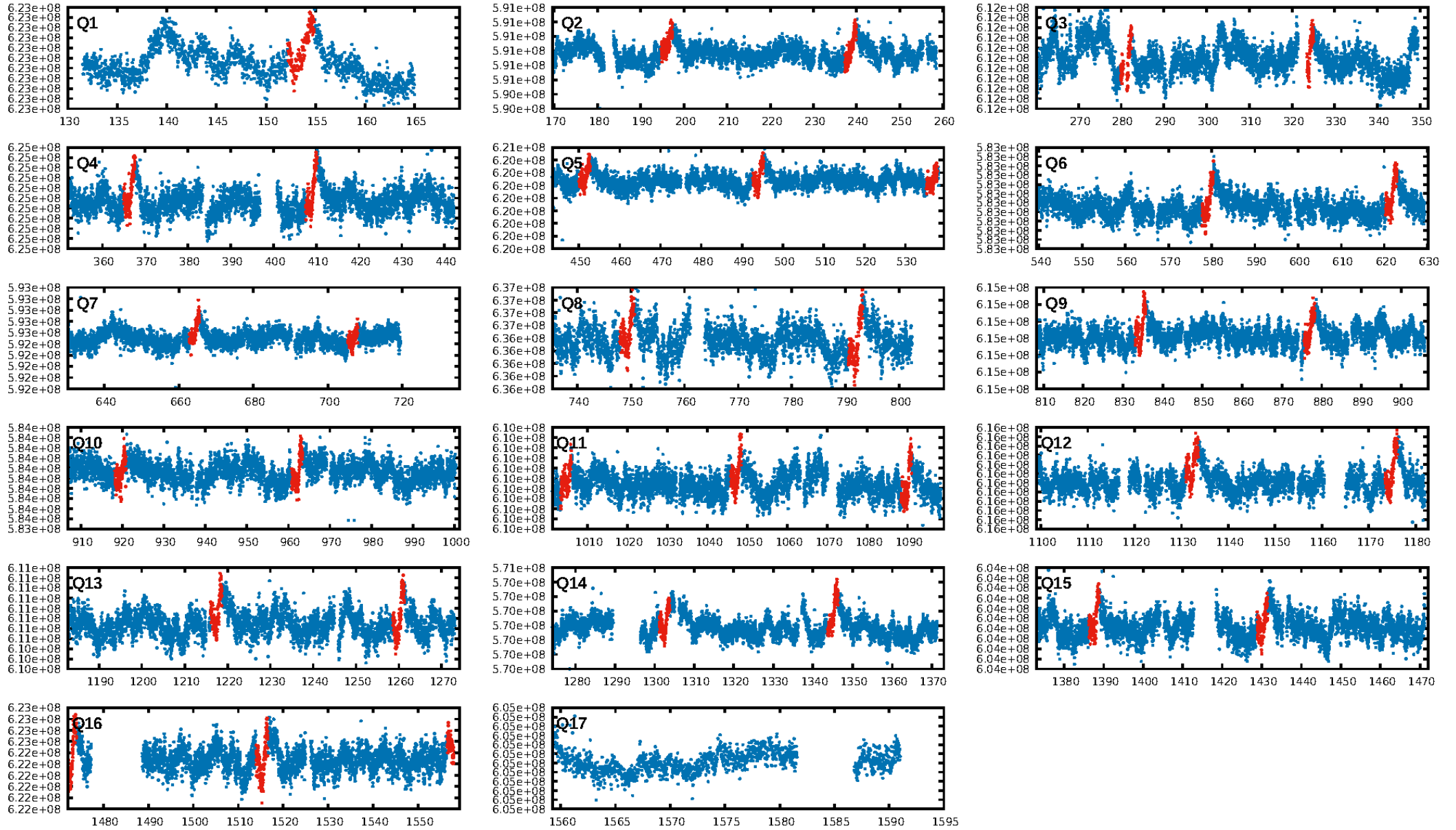
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 91.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.30e-17
RollingBand-fgt: 1.00 [32/32]
GhostDiagnostic-chr: 2.035
Centroid-sig: 3.1%
Centroid-so: 1.018 arcsec [2.30 σ]
OotOffset-rm: 1.679 arcsec [2.53 σ]
OotOffset-st: 3/1/3/3 [10]
KicOffset-rm: 2.424 arcsec [3.05 σ]
KicOffset-st: 3/1/3/3 [10]
DiffImageQuality-fgm: 0.80 [8/10]
DiffImageOverlap-fno: 1.00 [14/14]

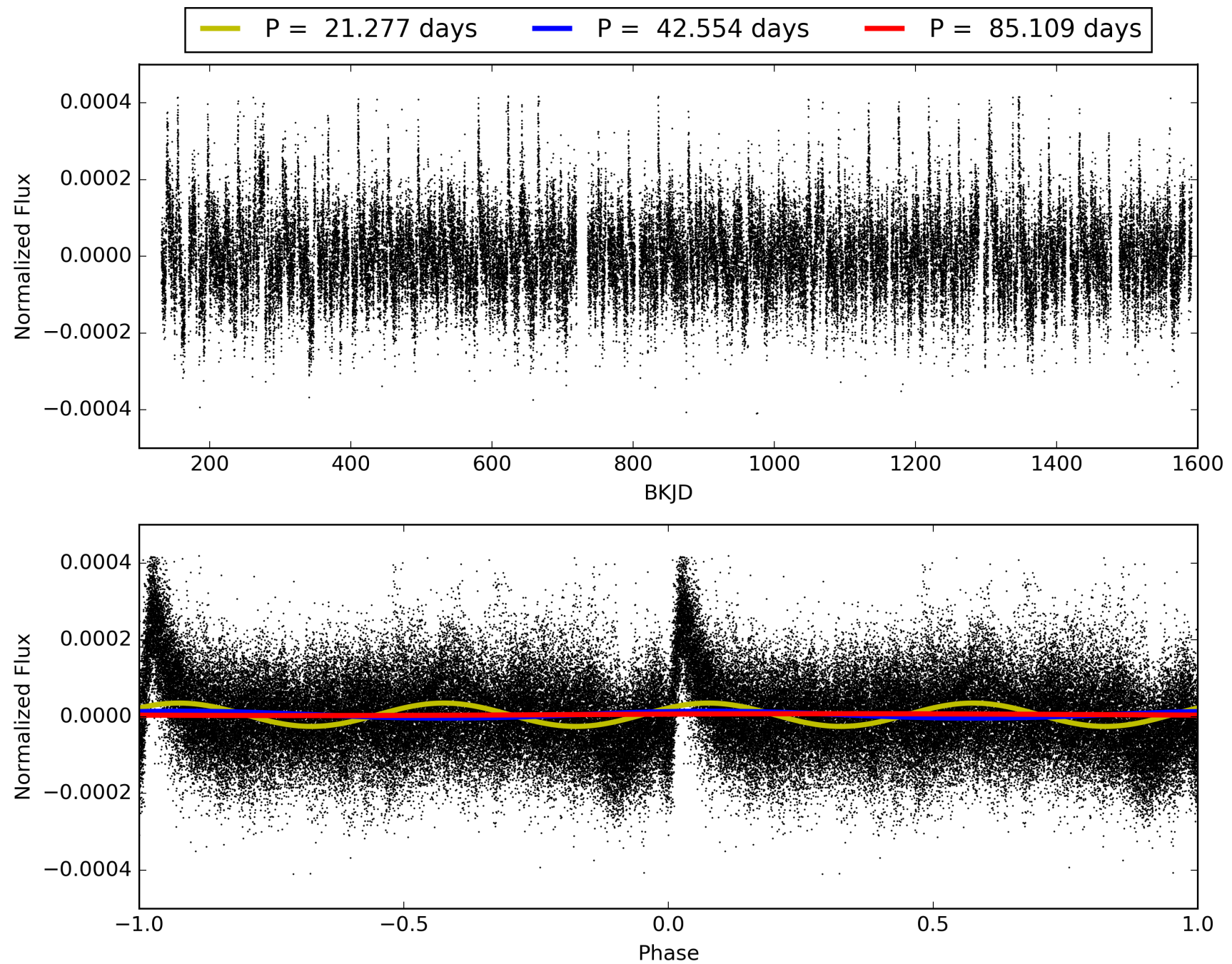
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:02:02 Z

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

TCE 004906988-01, PDC Light Curves

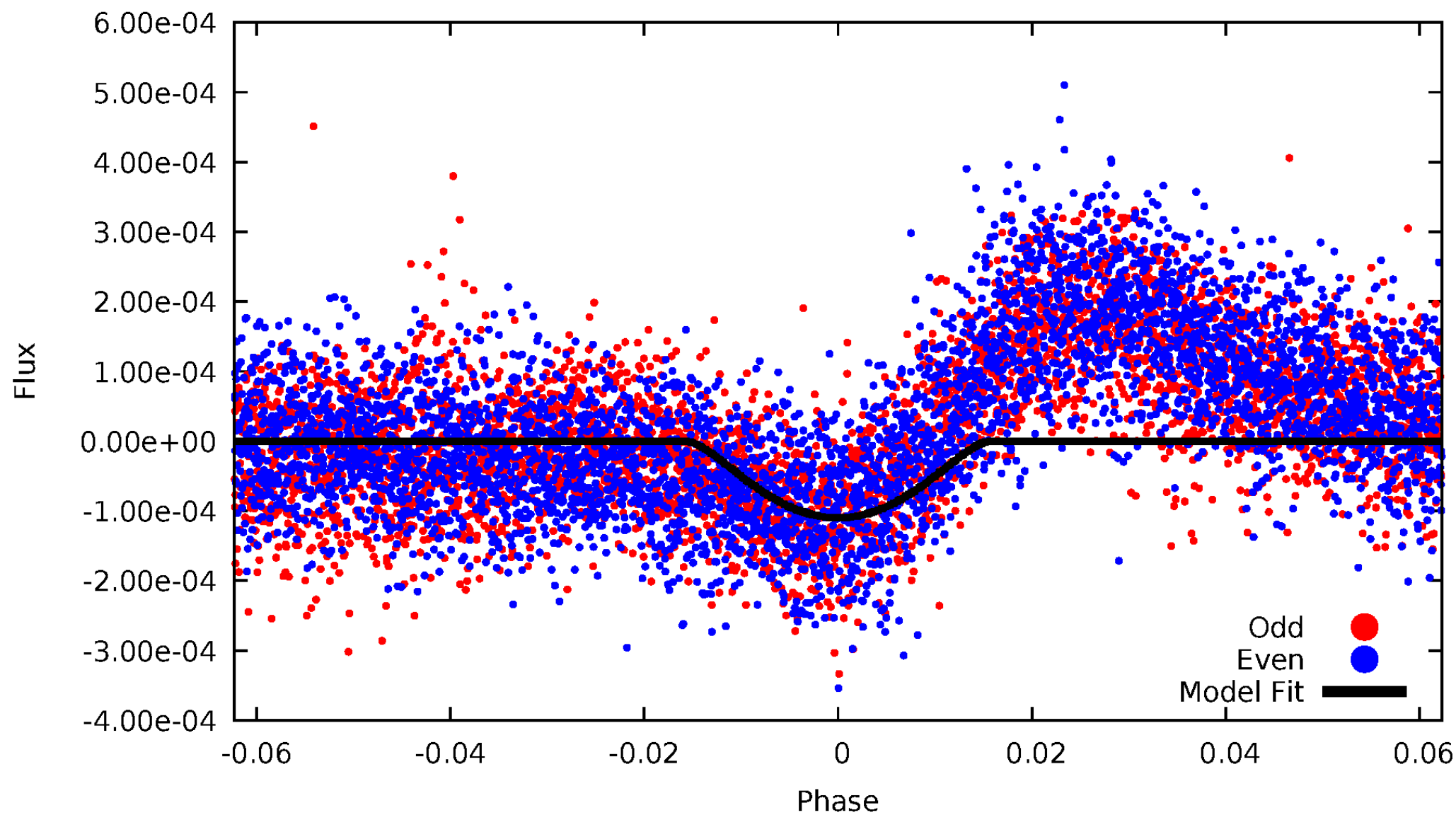


TCE 004906988-01



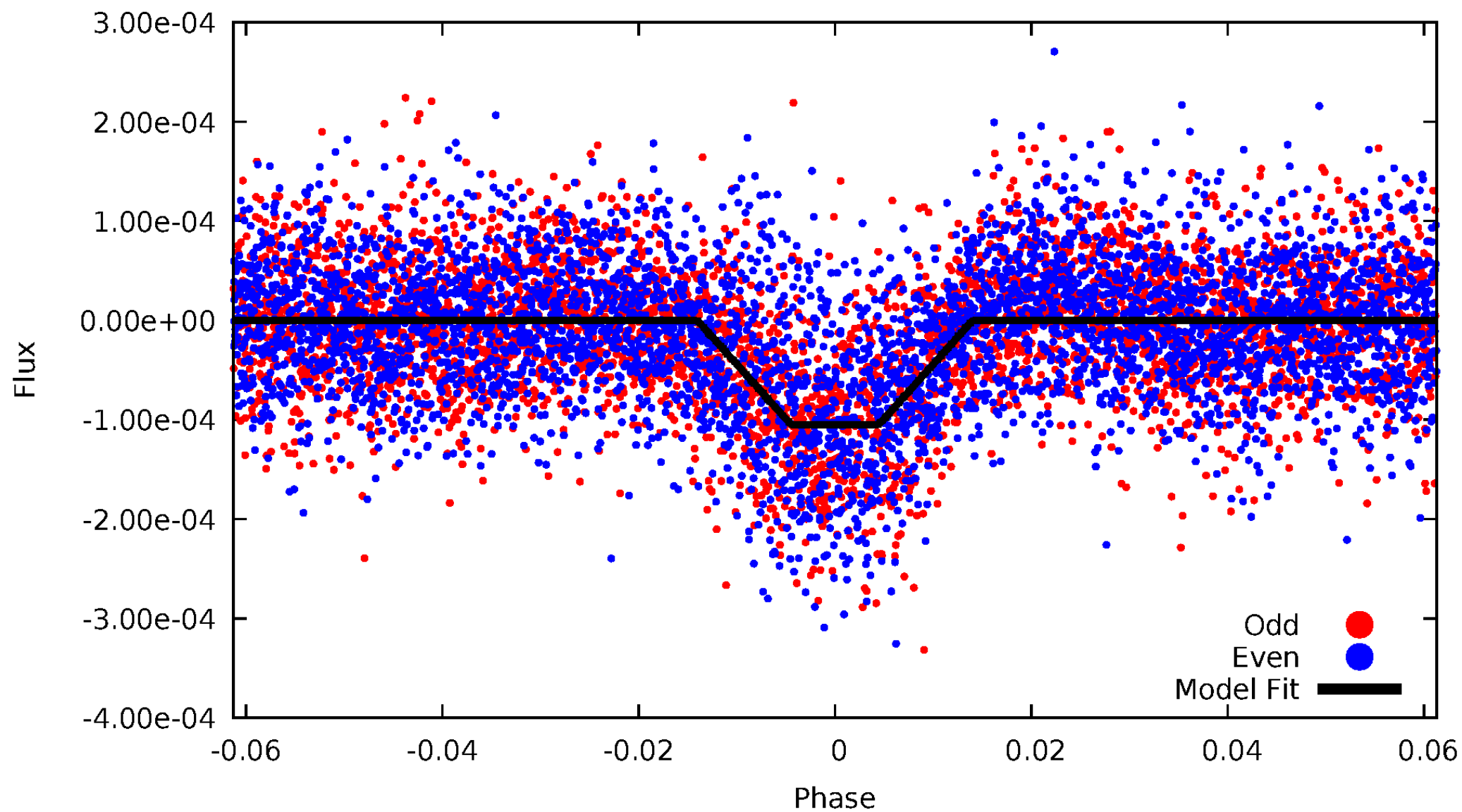
DV Odd/Even

TCE 004906988-01



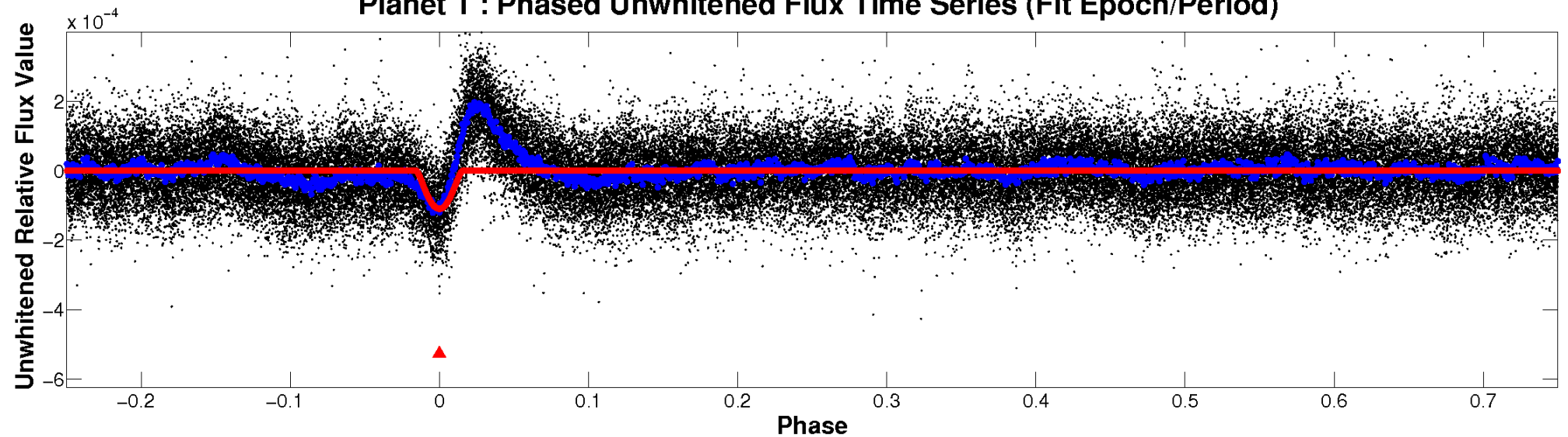
ALT Odd/Even

TCE 004906988-01

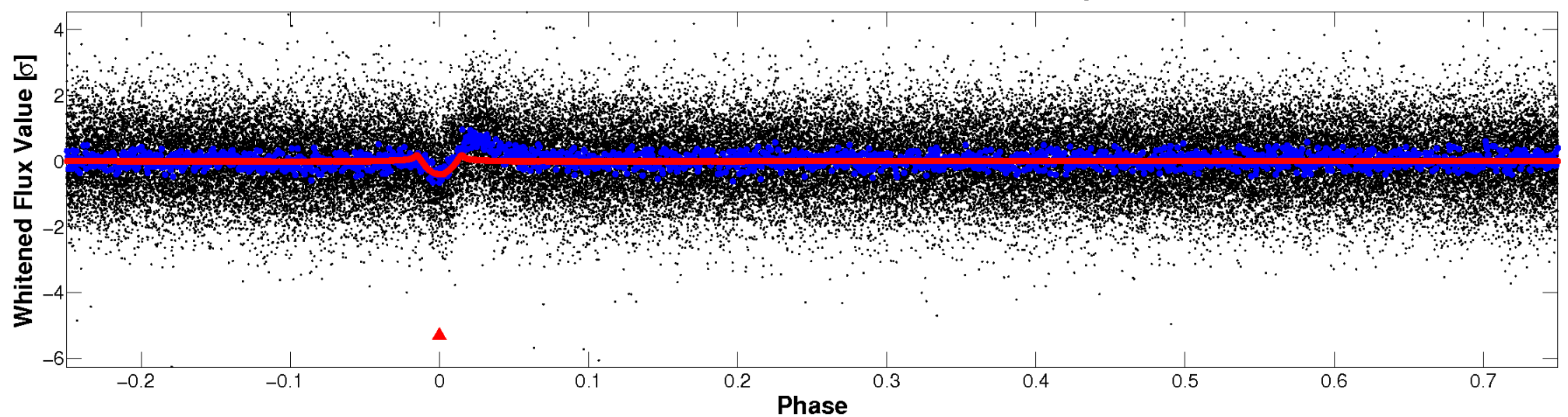


Non-Whitened Vs. Whitened Light Curve

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

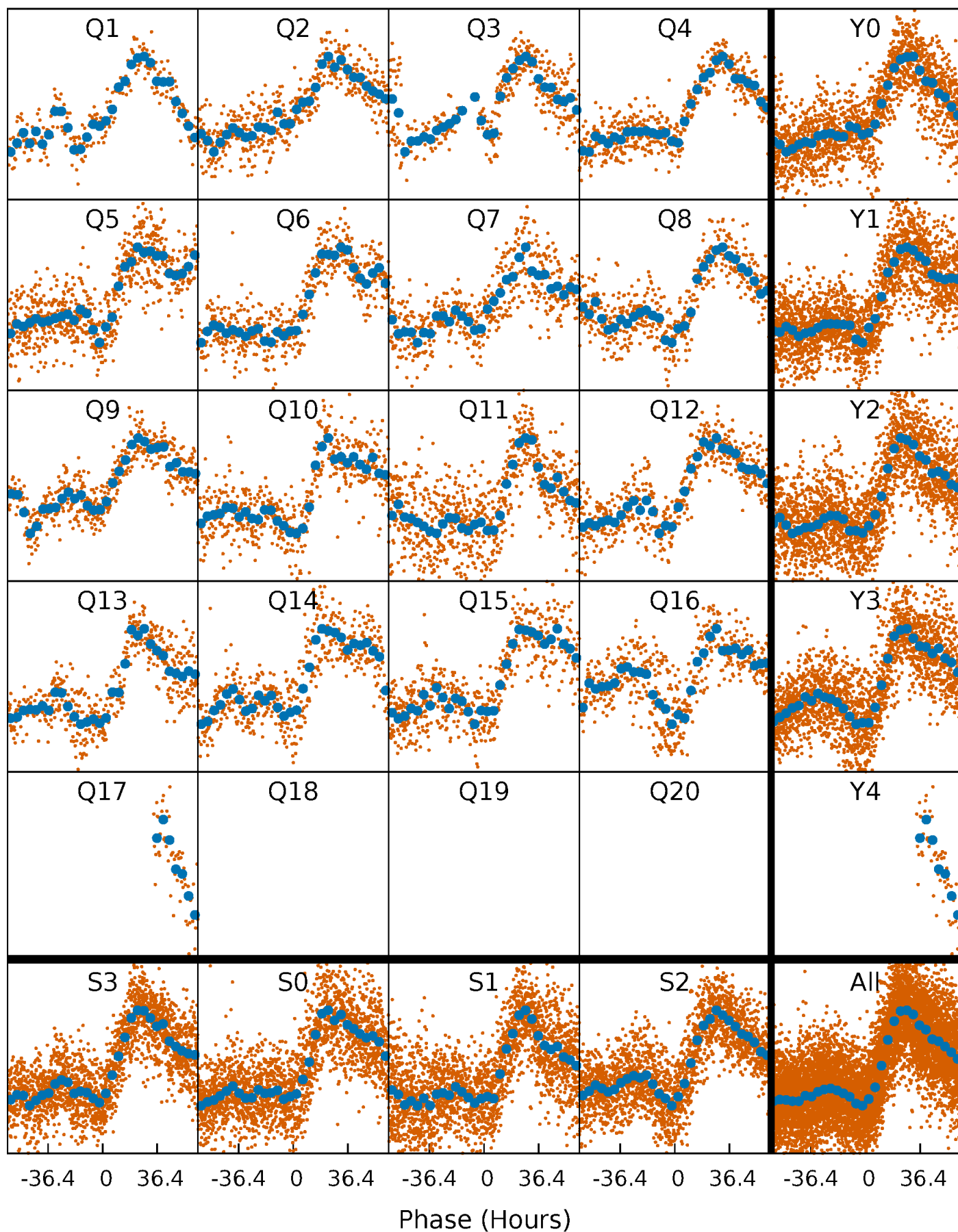


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



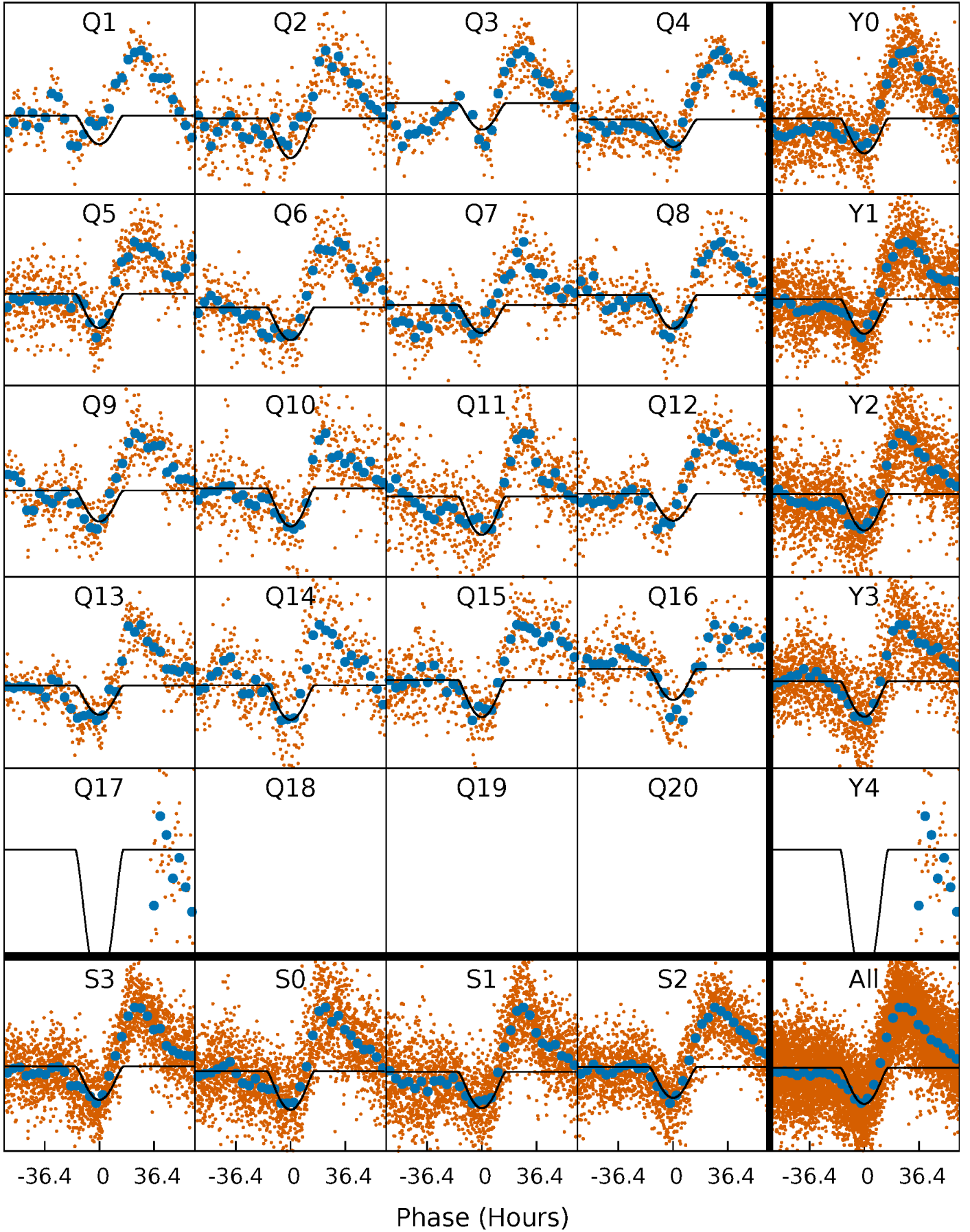
PDC Quarter-Phased Transit Curves

TCE 004906988-01 P= 42.554381 Days $T_0=153.529713$ (BKJD)



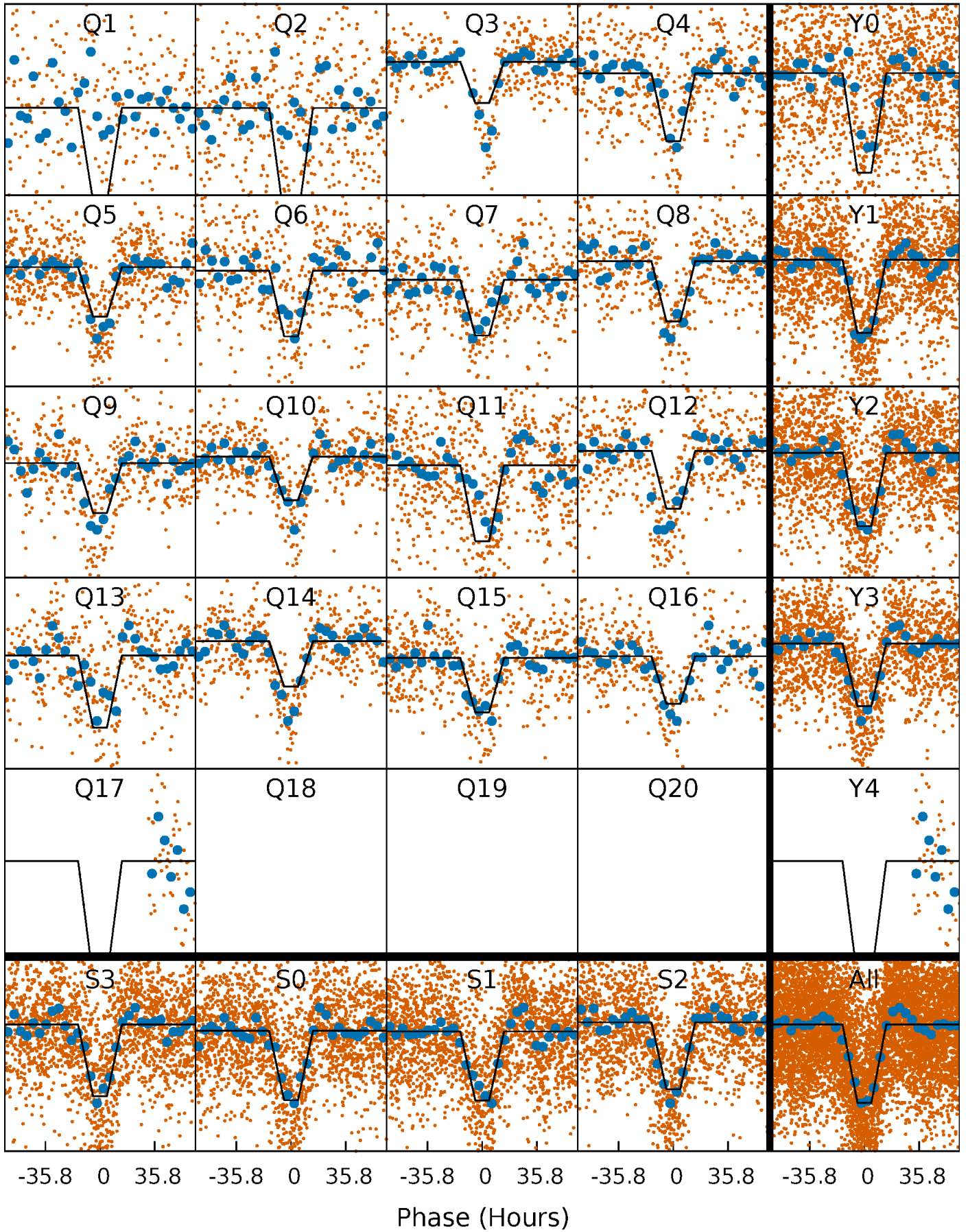
DV Quarter-Phased Transit Curves

TCE 004906988-01 $P = 42.554381$ Days $T_0 = 153.529713$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

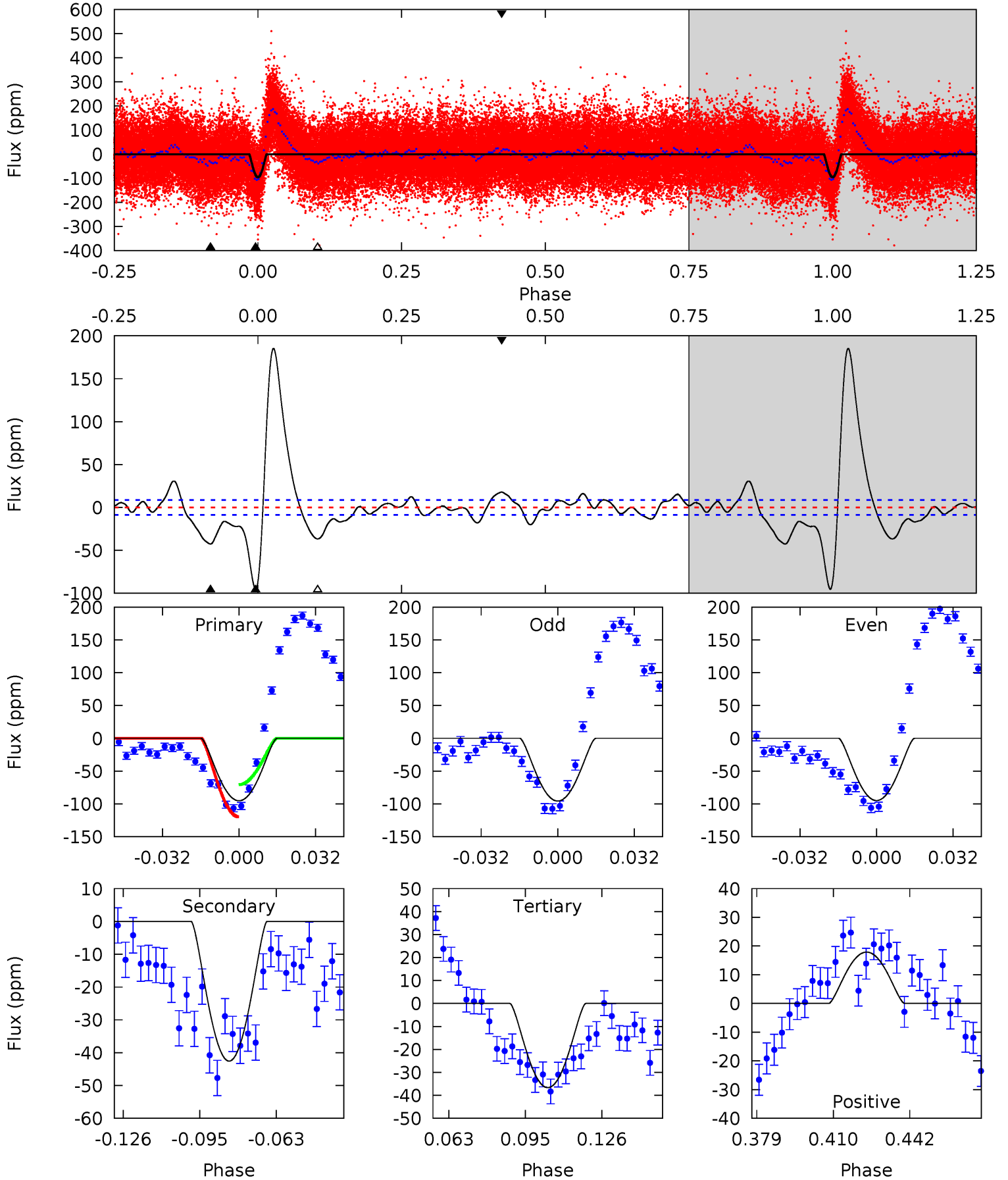
TCE 004906988-01 P= 42.556708 Days $T_0=153.544687$ (BKJD)



DV Model-Shift Uniqueness Test

004906988-01, P = 42.554381 Days, E = 110.975332 Days

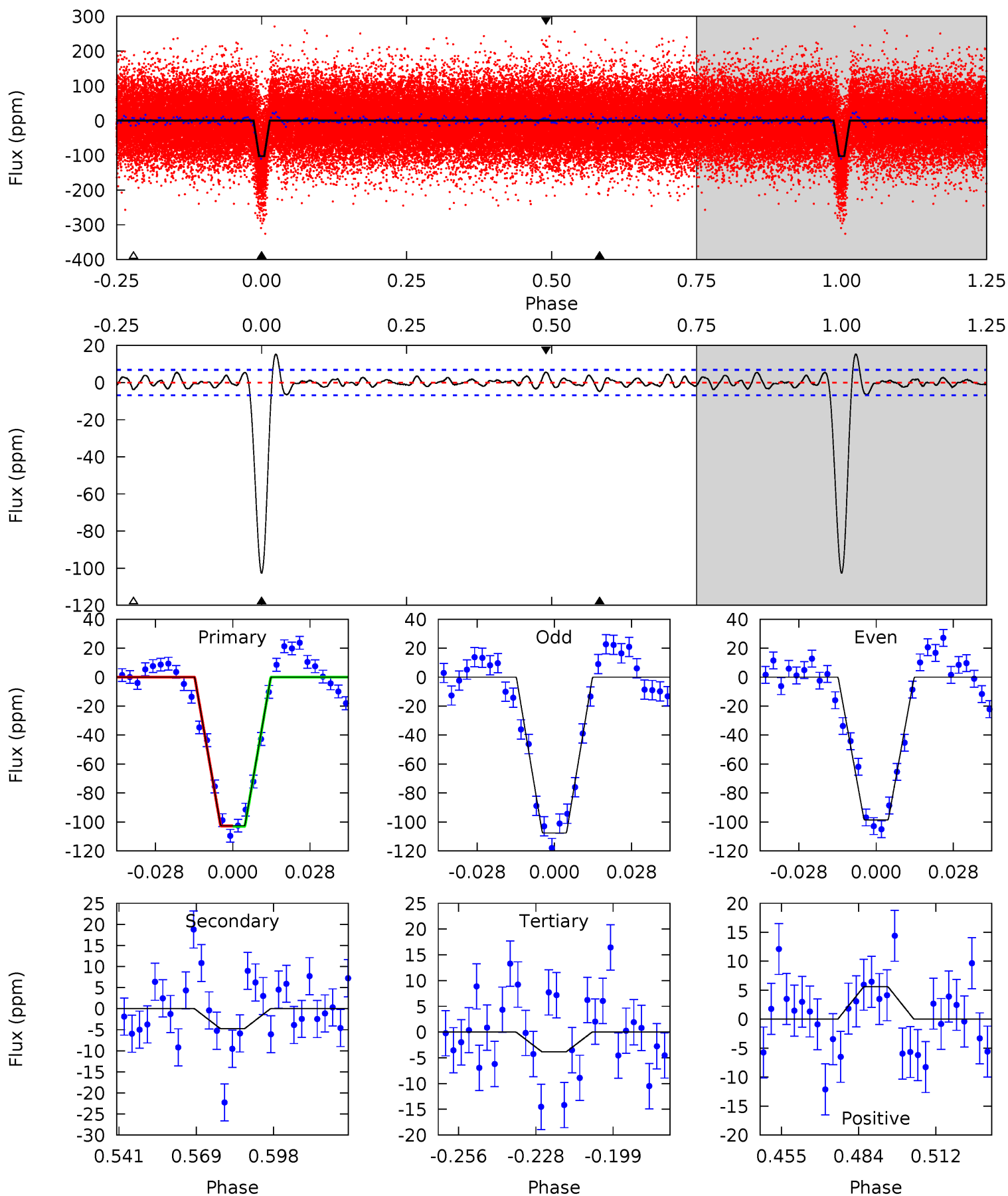
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 52.8 | 23.6 | 20.3 | 9.92 | 4.80 | 2.15 | 14.5 | 32.5 | 42.9 | 3.27 | 13.7 | 0.21 | 1.06 | 0.66 | 13.7 |



Alt Model-Shift Uniqueness Test

004906988-01, $P = 42.556708$ Days, $E = 110.987979$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 72.2 | 3.34 | 2.70 | 3.94 | 4.82 | 2.19 | 1.42 | 69.5 | 68.2 | 0.64 | -0.60 | 3.17 | 0.90 | 0.13 | 0.11 |



Stellar Parameters For KIC 004906988

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6611^{+149}_{-183} | $4.219^{+0.130}_{-0.130}$ | $-0.180^{+0.250}_{-0.300}$ | $1.430^{+0.283}_{-0.254}$ | $1.240^{+0.145}_{-0.177}$ | $0.597^{+0.369}_{-0.228}$ |
| | +2%/-3% | +3%/-3% | +139%/-167% | +20%/-18% | +12%/-14% | +62%/-38% |
| Source | PHO1 | FLK73 | 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 004906988-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|-------------------|-----------------------|--------------------|
| DV | -43 ± 2 | $3.91^{+3.11}_{-2.60}$ | 961^{+52}_{-51} | 3718^{+2168}_{-597} | 100^{+787}_{-70} |
| Alt. | -5 ± 1 | $3.02^{+2.76}_{-1.94}$ | 965^{+52}_{-56} | 2897^{+1073}_{-466} | 18^{+119}_{-13} |

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

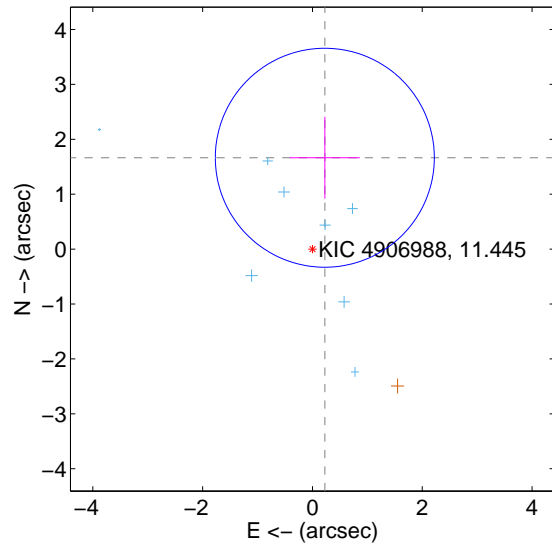
Supplemental centroid analysis for 004906988-01. **Kepler magnitude: 11.45.** Transit SNR 12.08

There are 8 quarters with good PRF difference image offsets

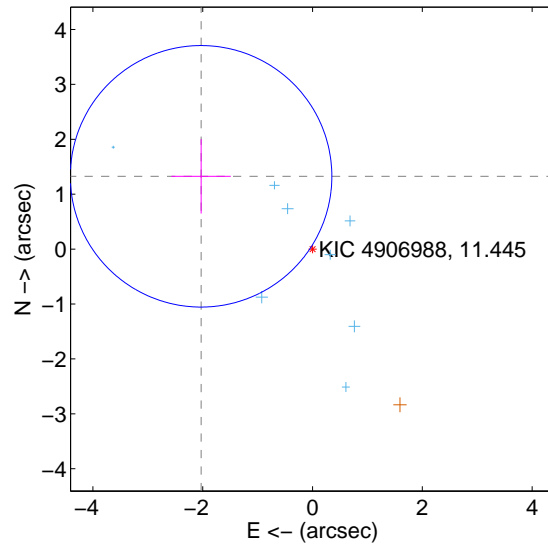
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|-------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 1.679 ± 0.665 | 2.53 | -0.225 ± 0.638 | 1.664 ± 0.746 |
| PRF-fit source offset from KIC position | 2.424 ± 0.794 | 3.05 | 2.030 ± 0.542 | 1.326 ± 0.677 |
| photometric centroid source offset | 1.02 ± 0.44 | 2.30 | -0.79 ± 0.41 | -0.64 ± 0.50 |

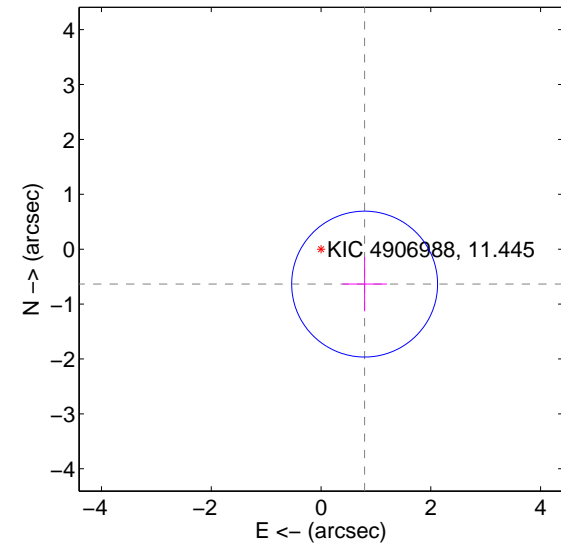
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

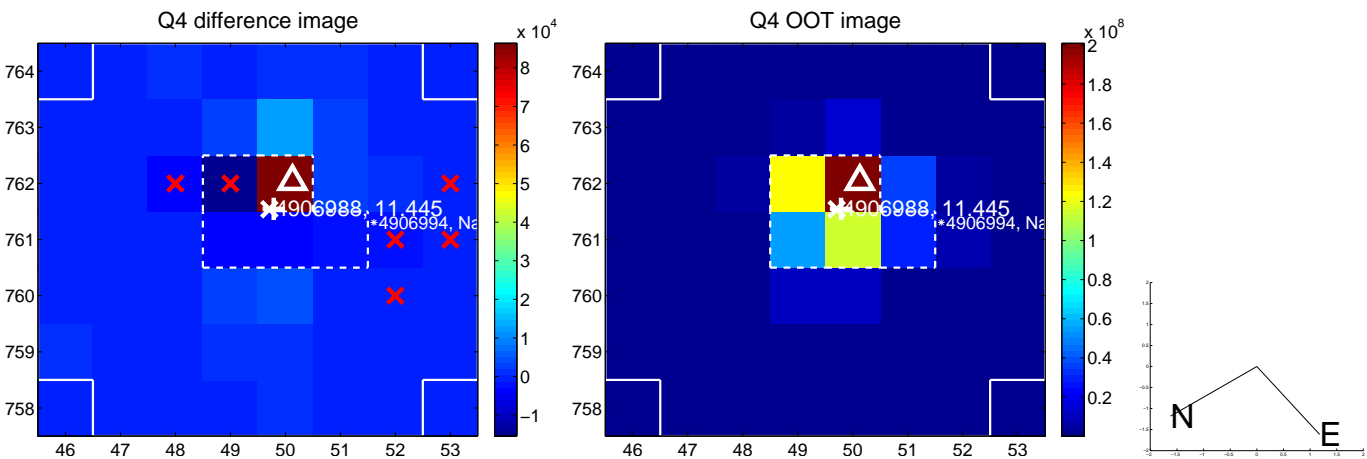
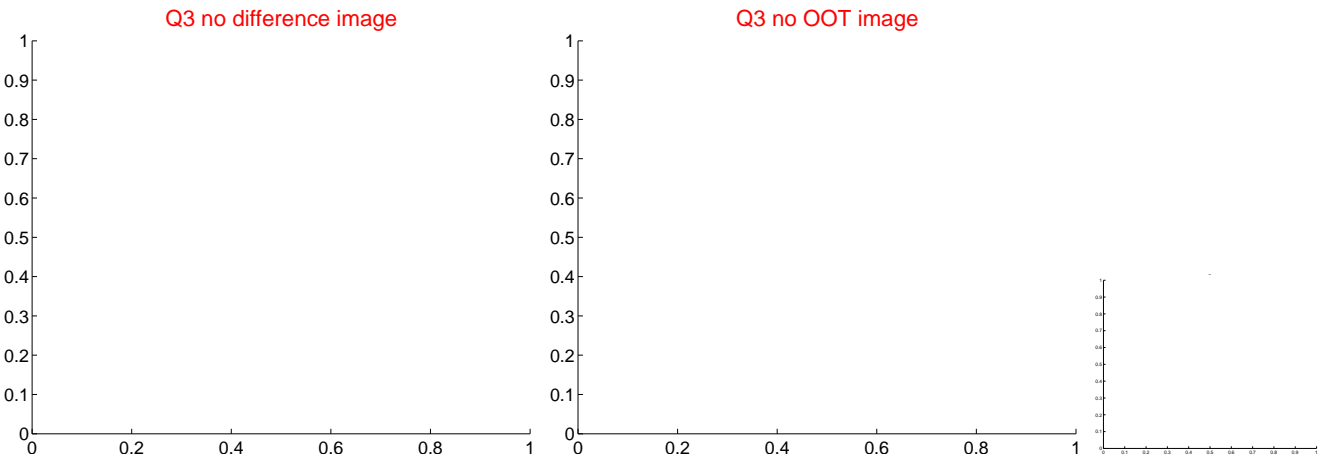
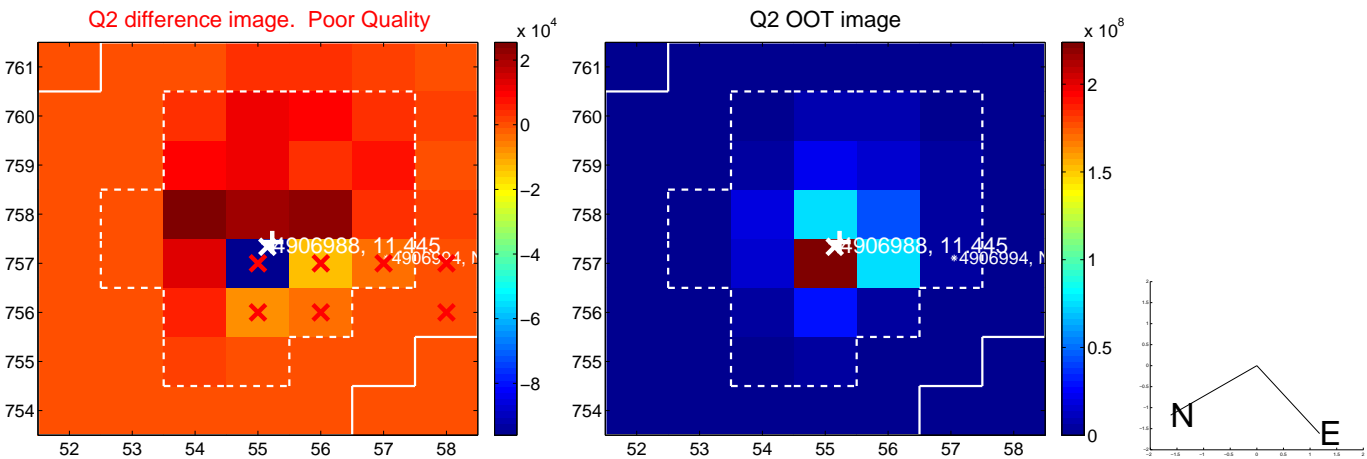
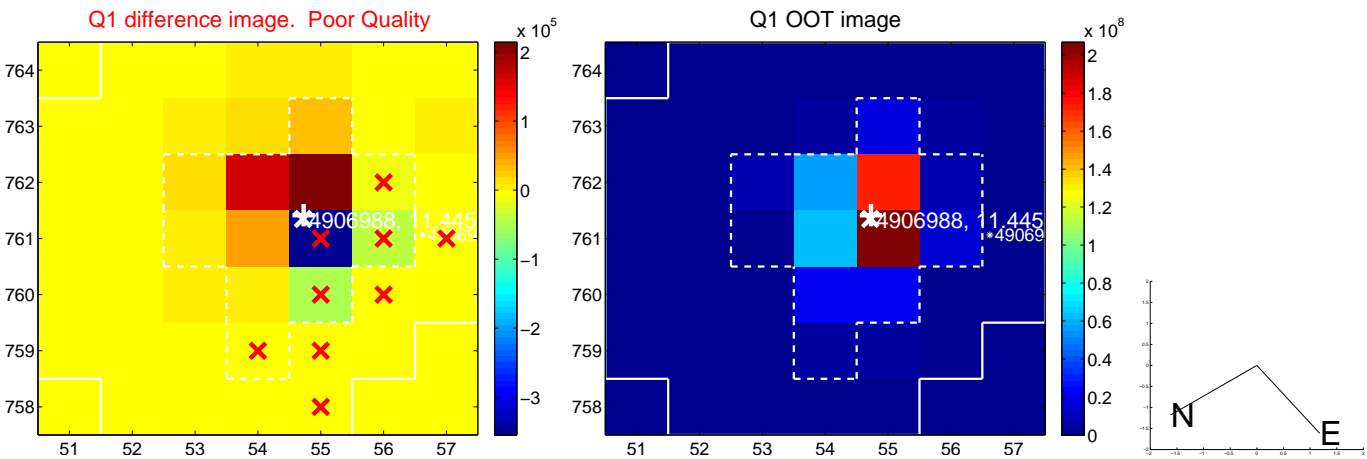


offset from photometric centroids

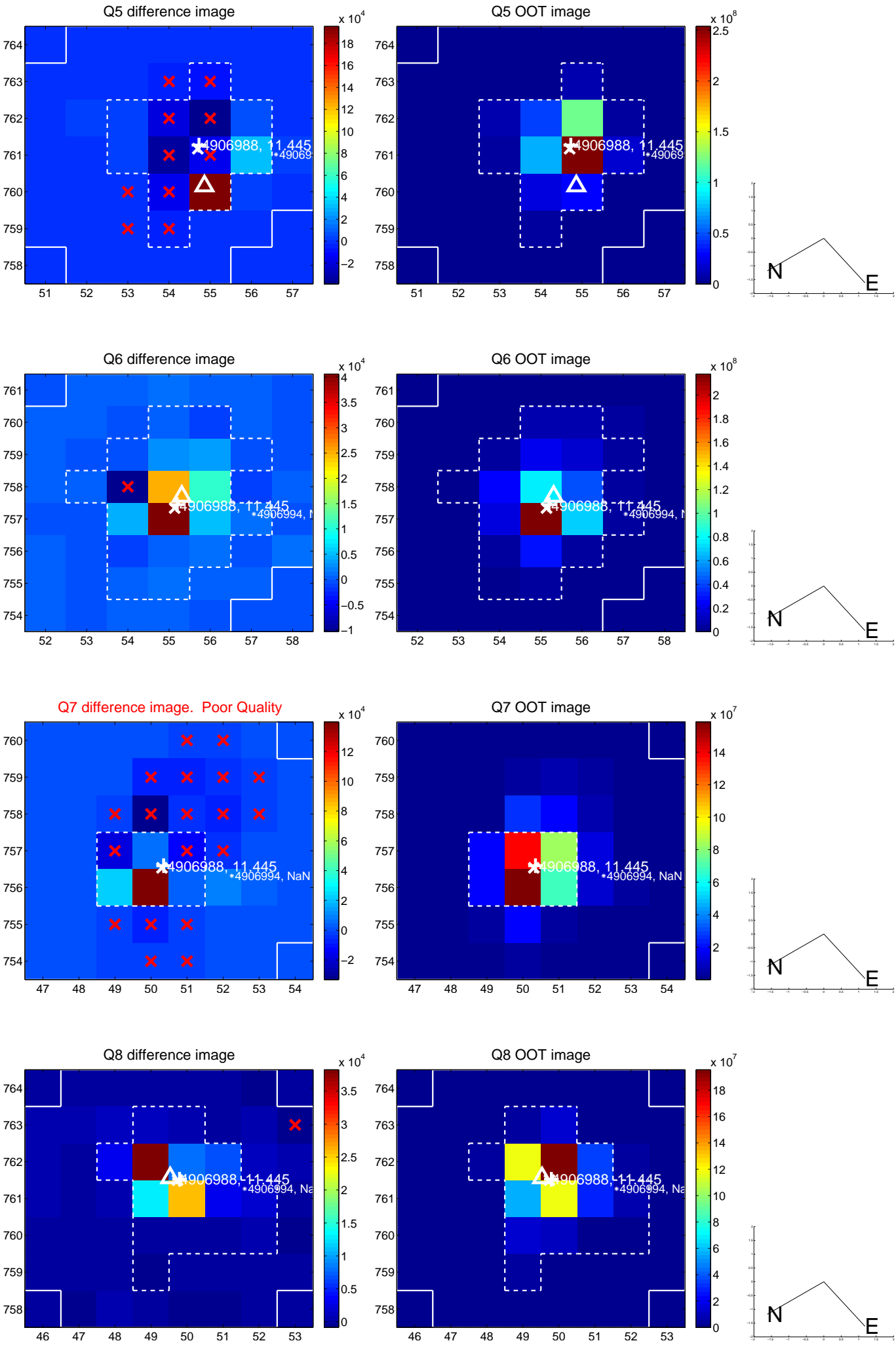


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

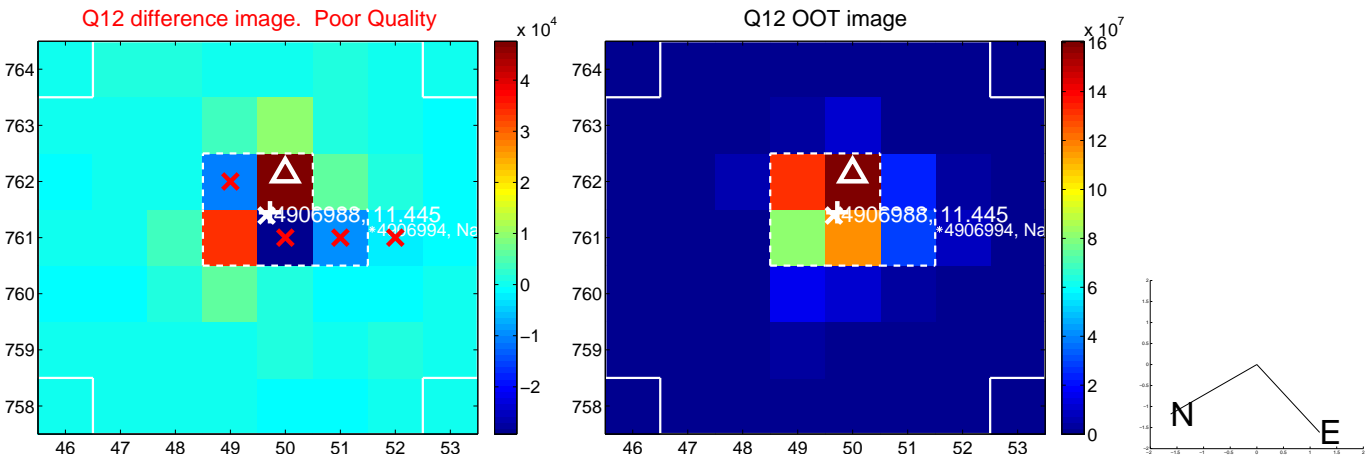
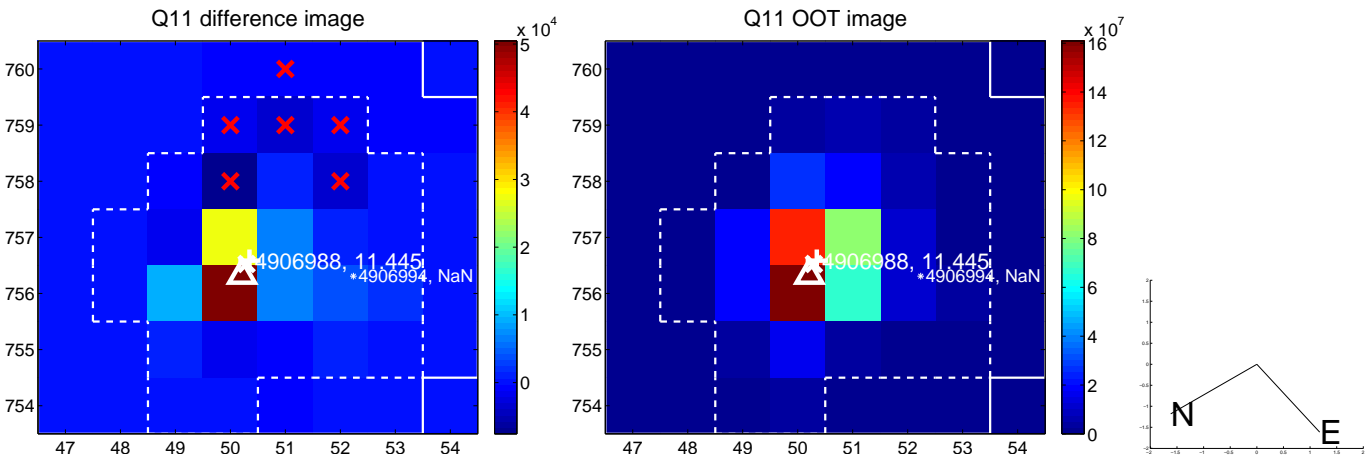
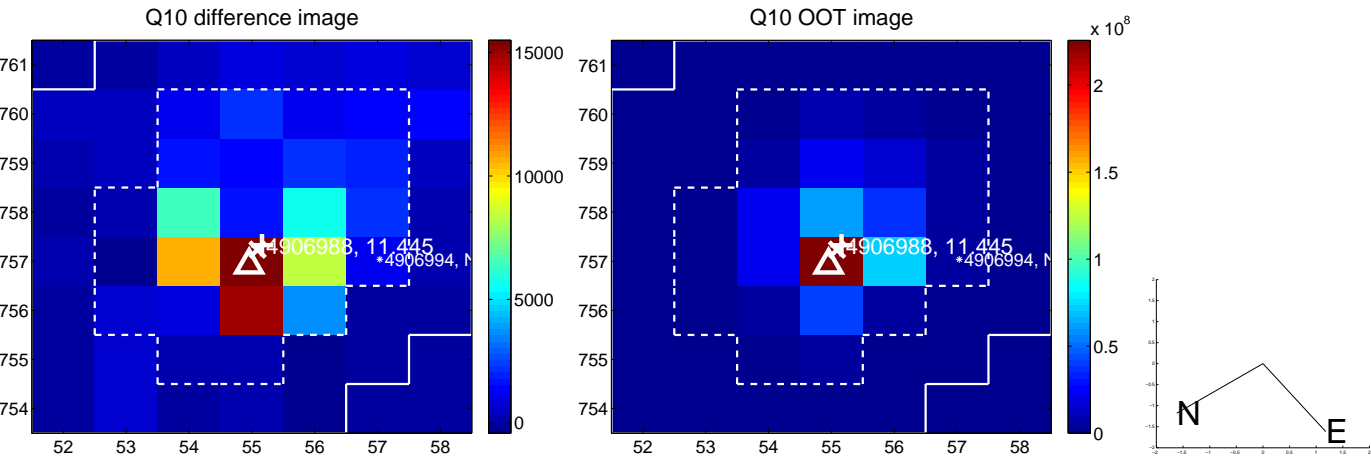
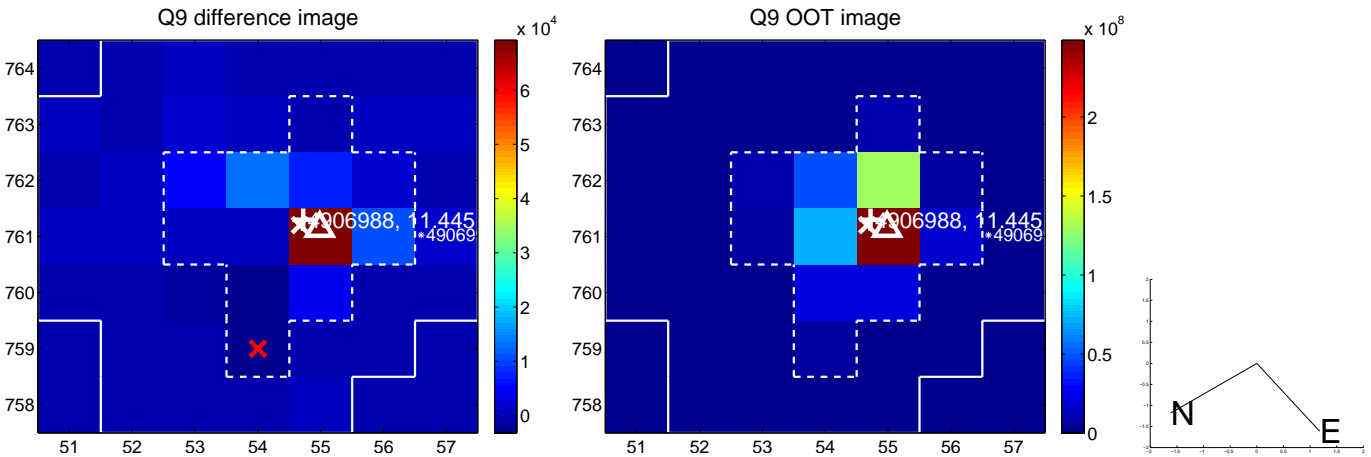
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



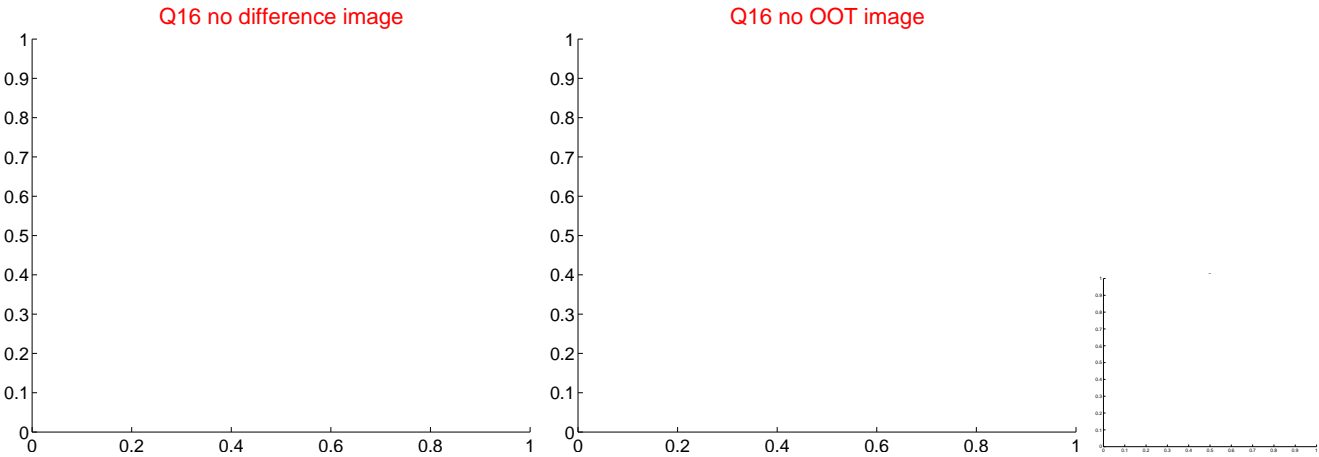
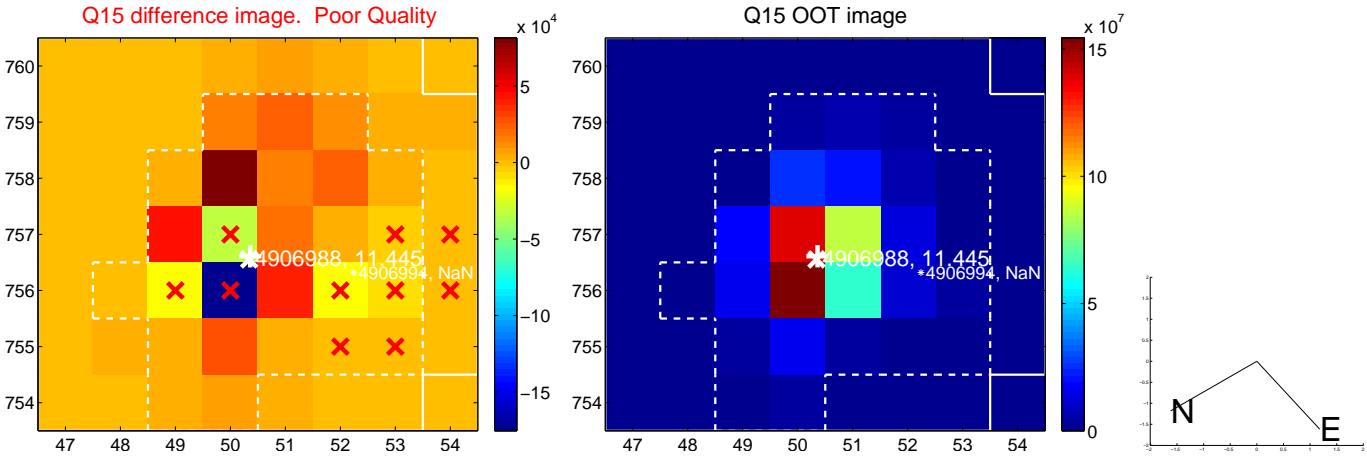
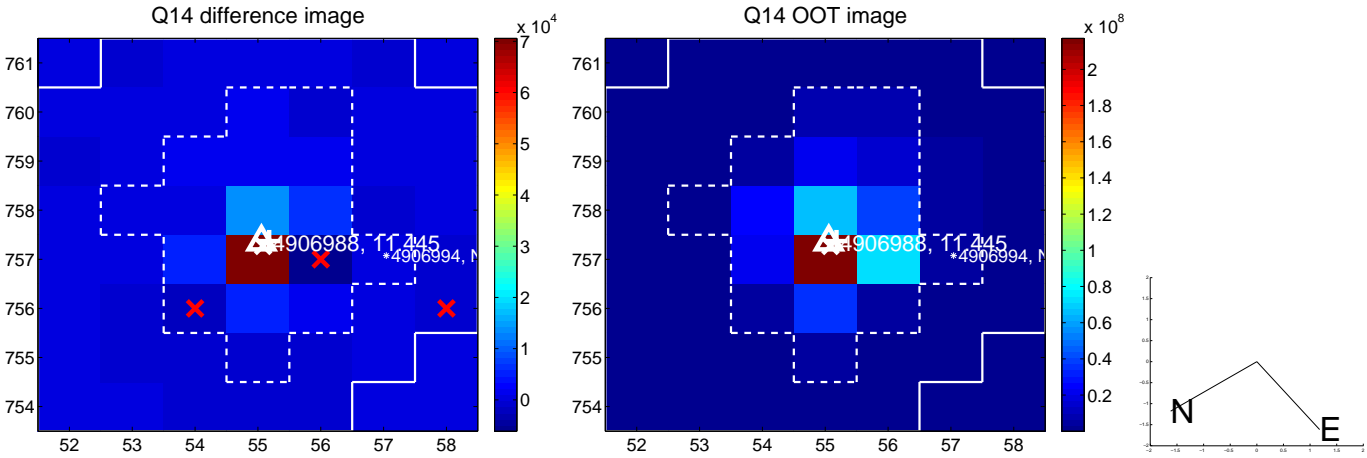
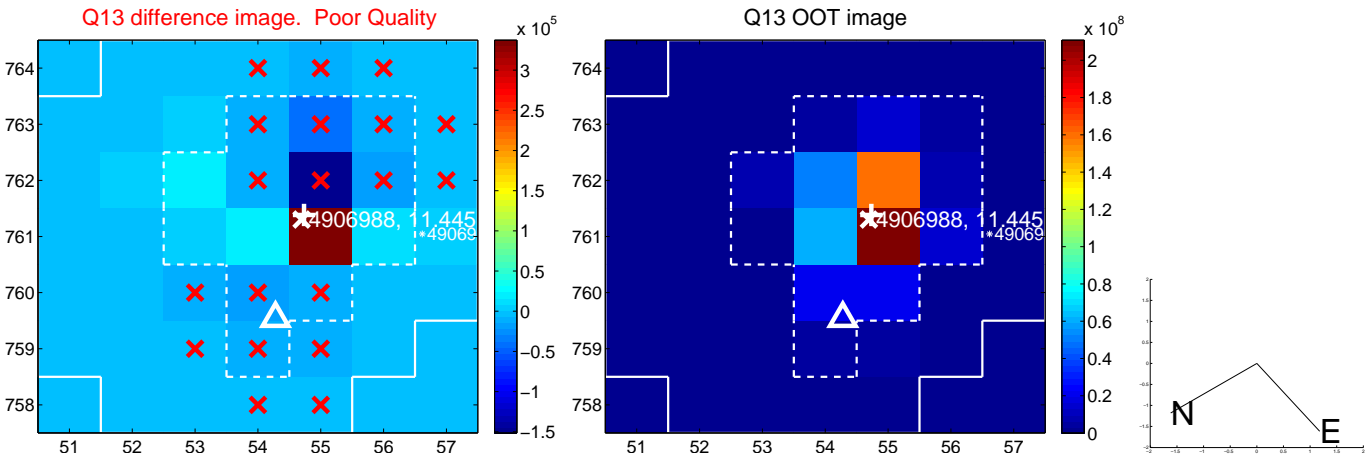
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



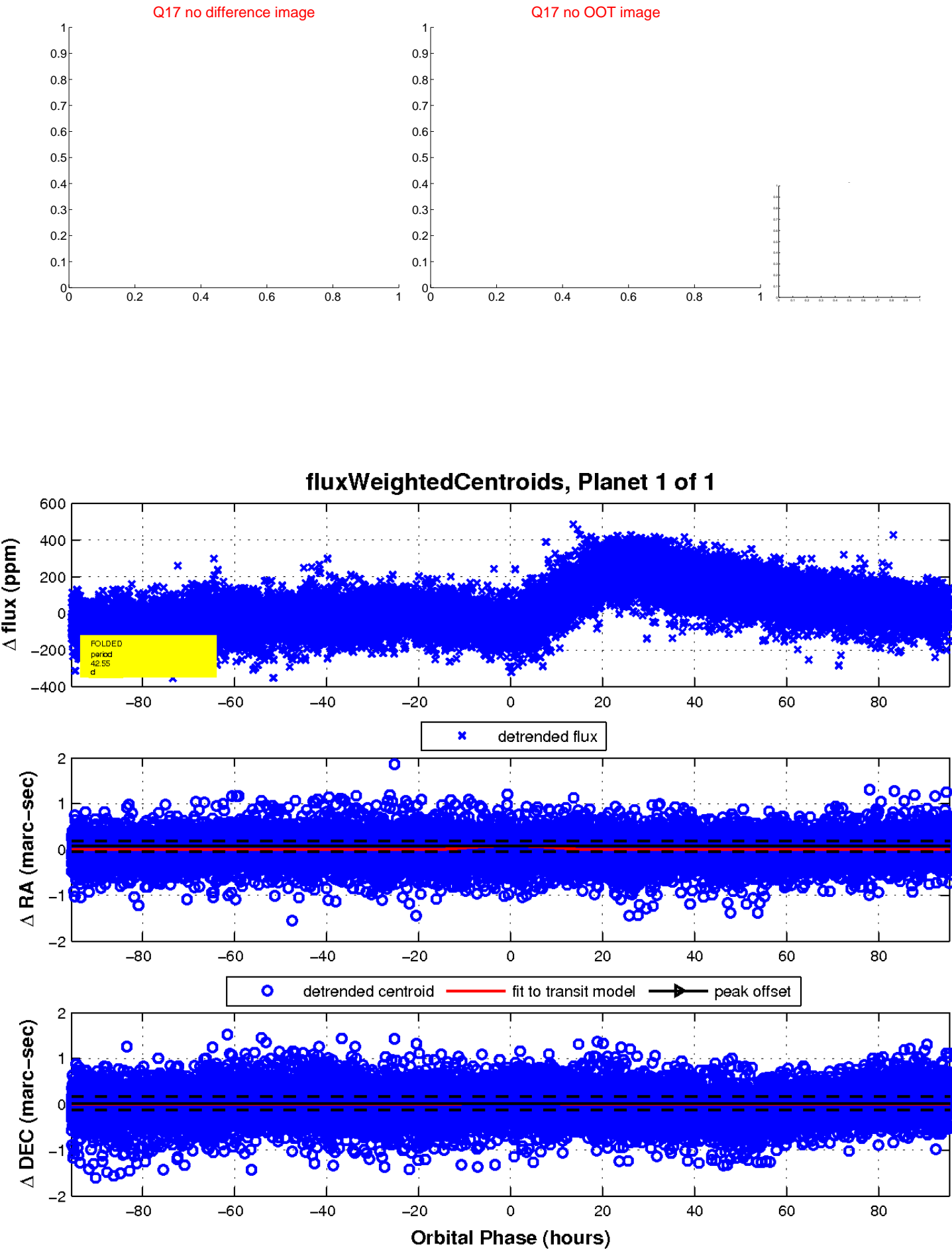
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

