

KIC 009893468

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009893468-01 | OBS | 4575.01 | 201.338097 | 174.722057 | 138.0 | 12.849 | 9.0 | 9.7 | 1.70 | 6120 | 2.23 | 6.72 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009893468-01 | OBS | PC | 0.83 | 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.

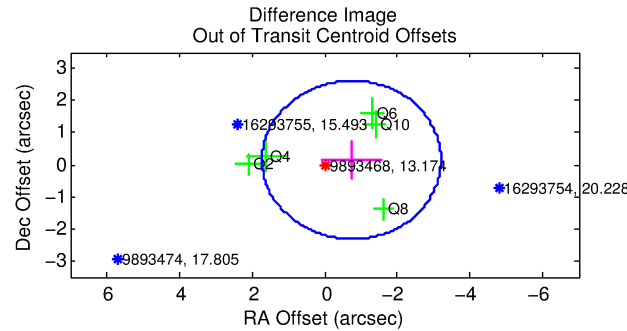
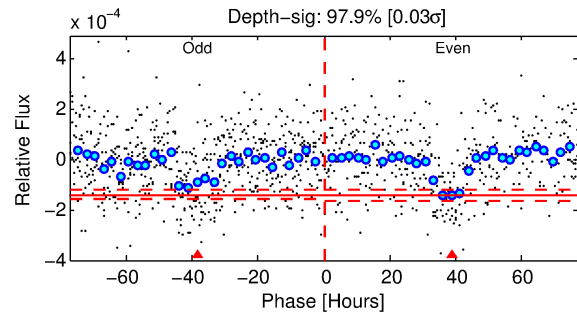
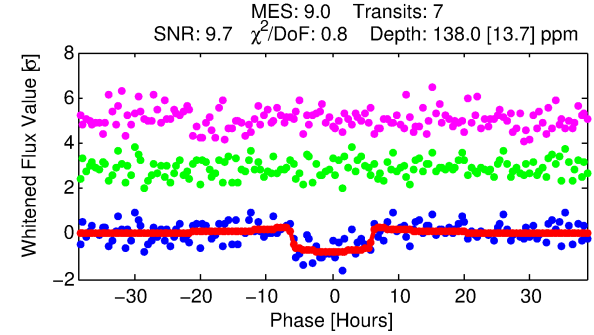
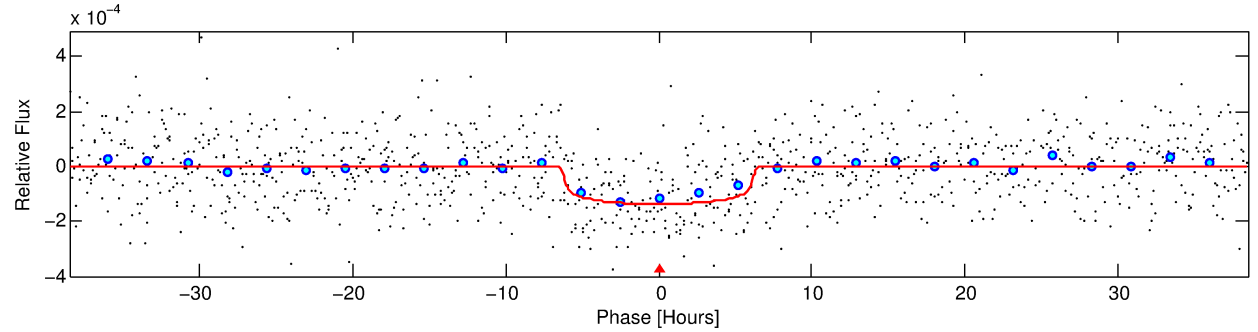
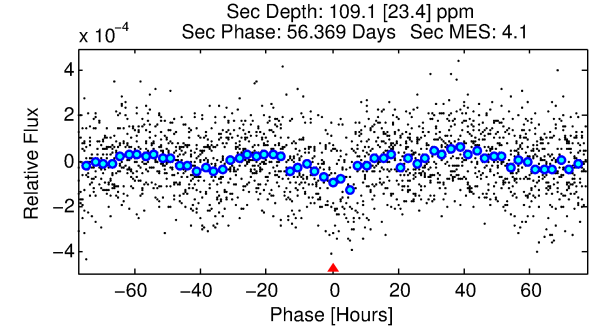
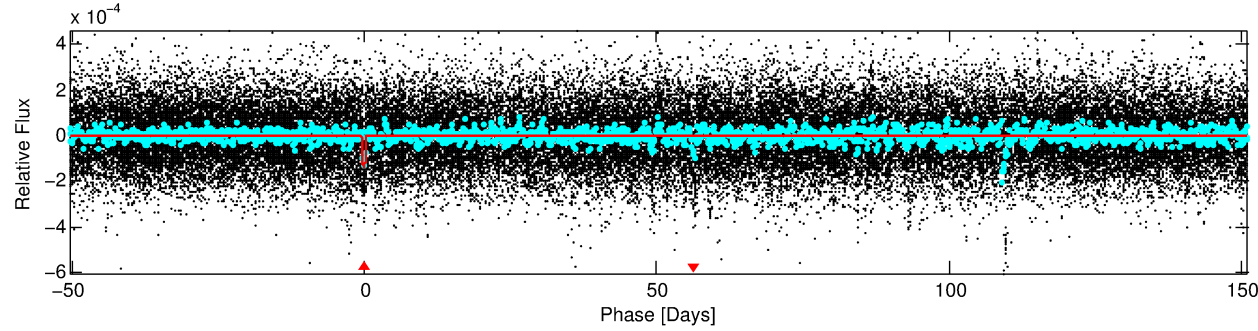
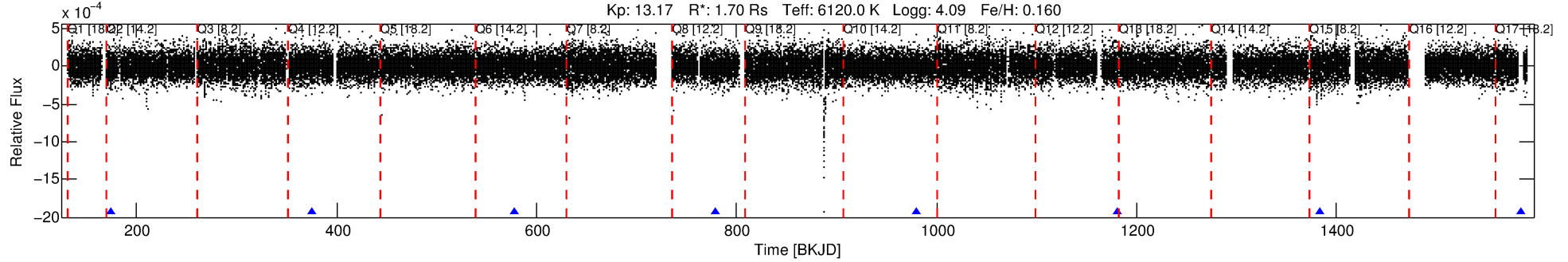
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009893468-01

No Significant Match Found

DV One-Page Summary

KIC: 9893468 Candidate: 1 of 1 Period: 201.338 d
KOI: K04575.01 Corr: 0.960



DV Fit Results:

Period = 201.33810 [0.00393] d
Epoch = 174.7221 [0.0140] BKJD
Rp/R* = 0.0120 [0.0029]
a/R* = 71.36 [83.05]
b = 0.82 [0.48]
Seff = 6.72 [2.49]
Teff = 411 [38] K
Rp = 2.23 [0.79] Re
a = 0.7347 [0.1744] AU
Ag = 6524.93 [4191.81] [1.56σ]
Teffp = 5705 [757] K [6.99σ]

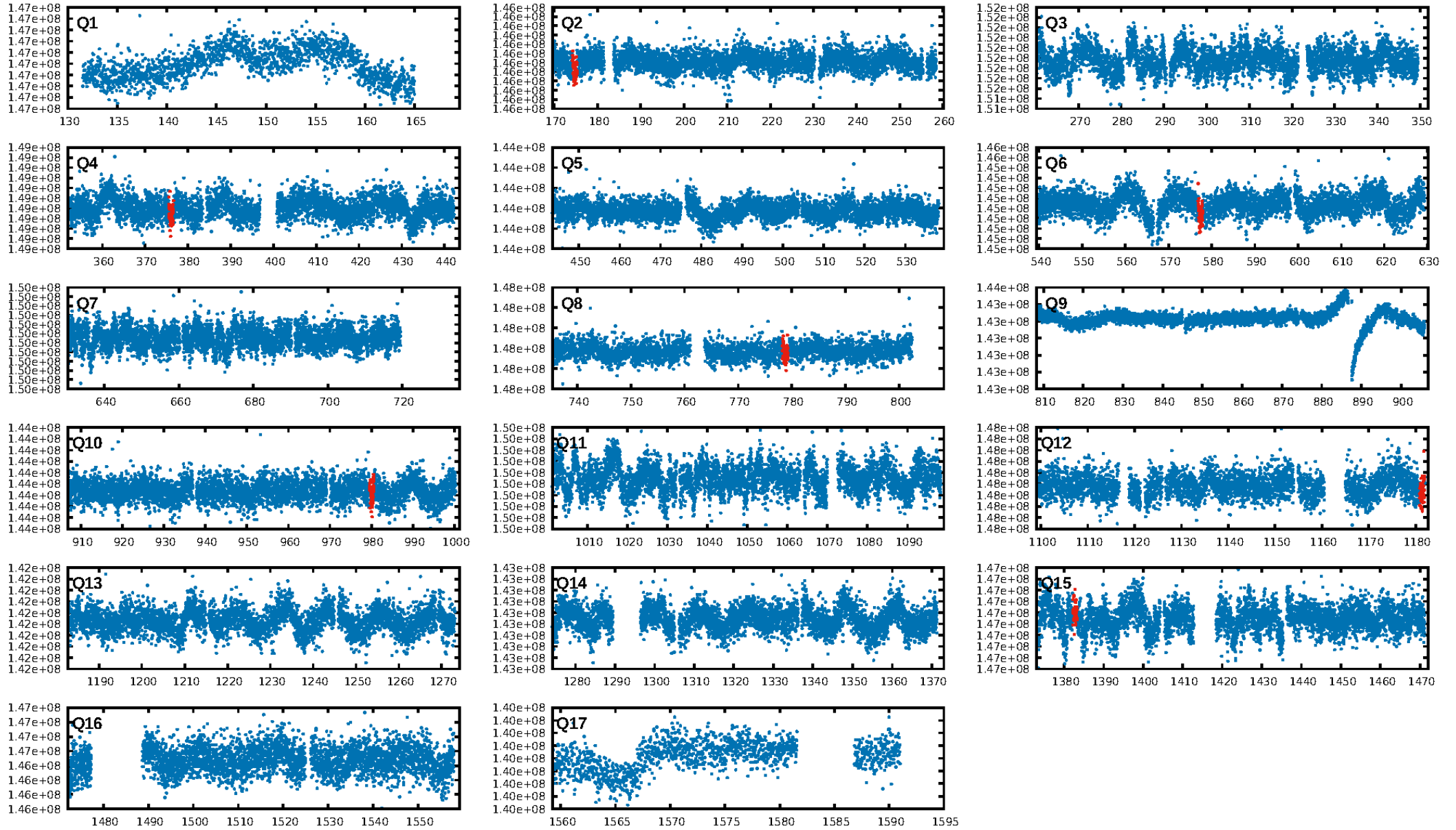
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.96e-16
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -31.2
Centroid-sig: 0.2%
Centroid-so: 2.066 arcsec [2.06σ]
OotOffset-rm: 0.756 arcsec [0.92σ]
KicOffset-rm: 0.691 arcsec [0.82σ]
OotOffset-st: 3/0/2/0 [5]
KicOffset-st: 3/0/2/0 [5]
DiffImageQuality-fgm: 1.00 [5/5]
DiffImageOverlap-fno: 1.00 [6/6]

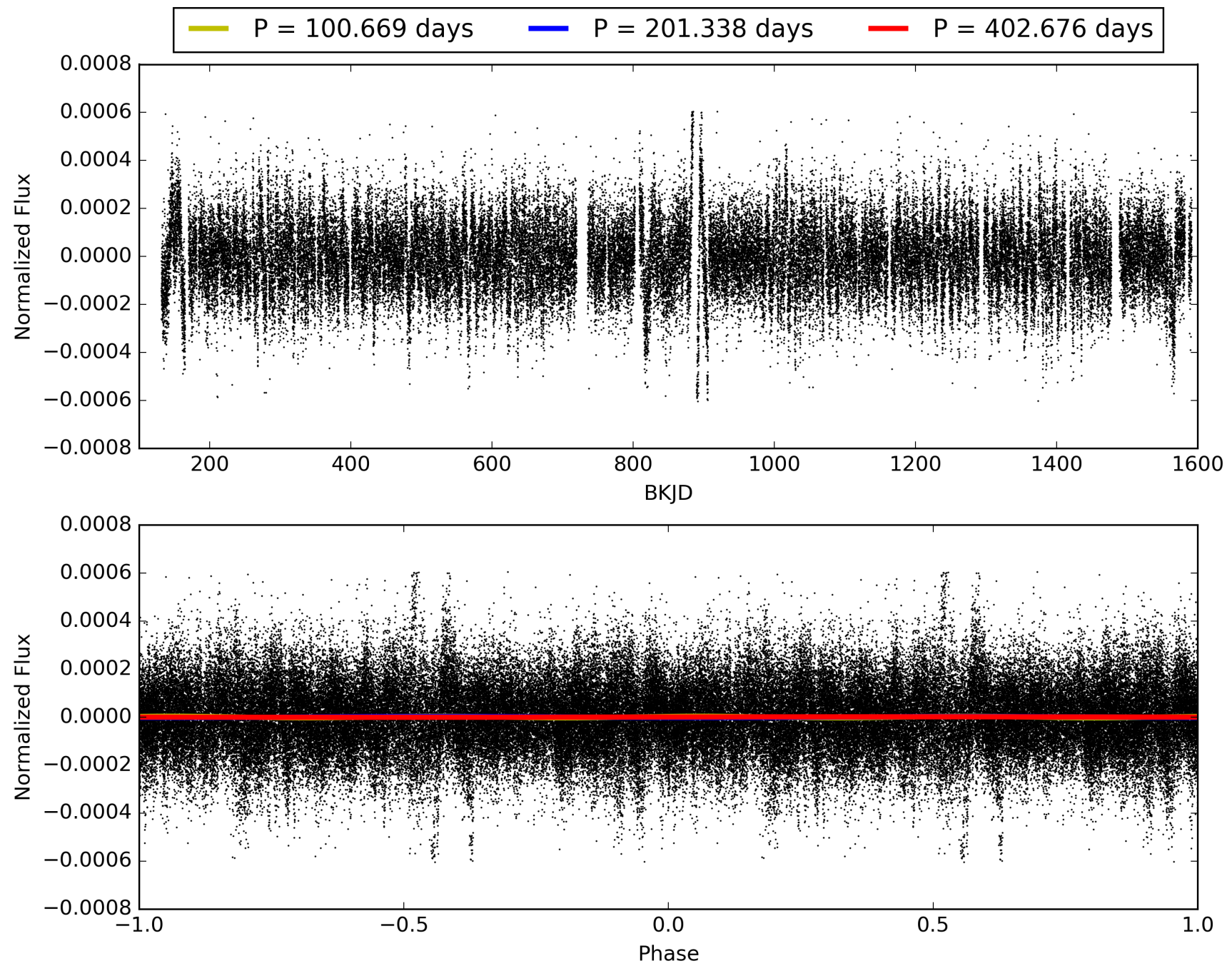
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:04:06 Z

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

TCE 009893468-01, PDC Light Curves

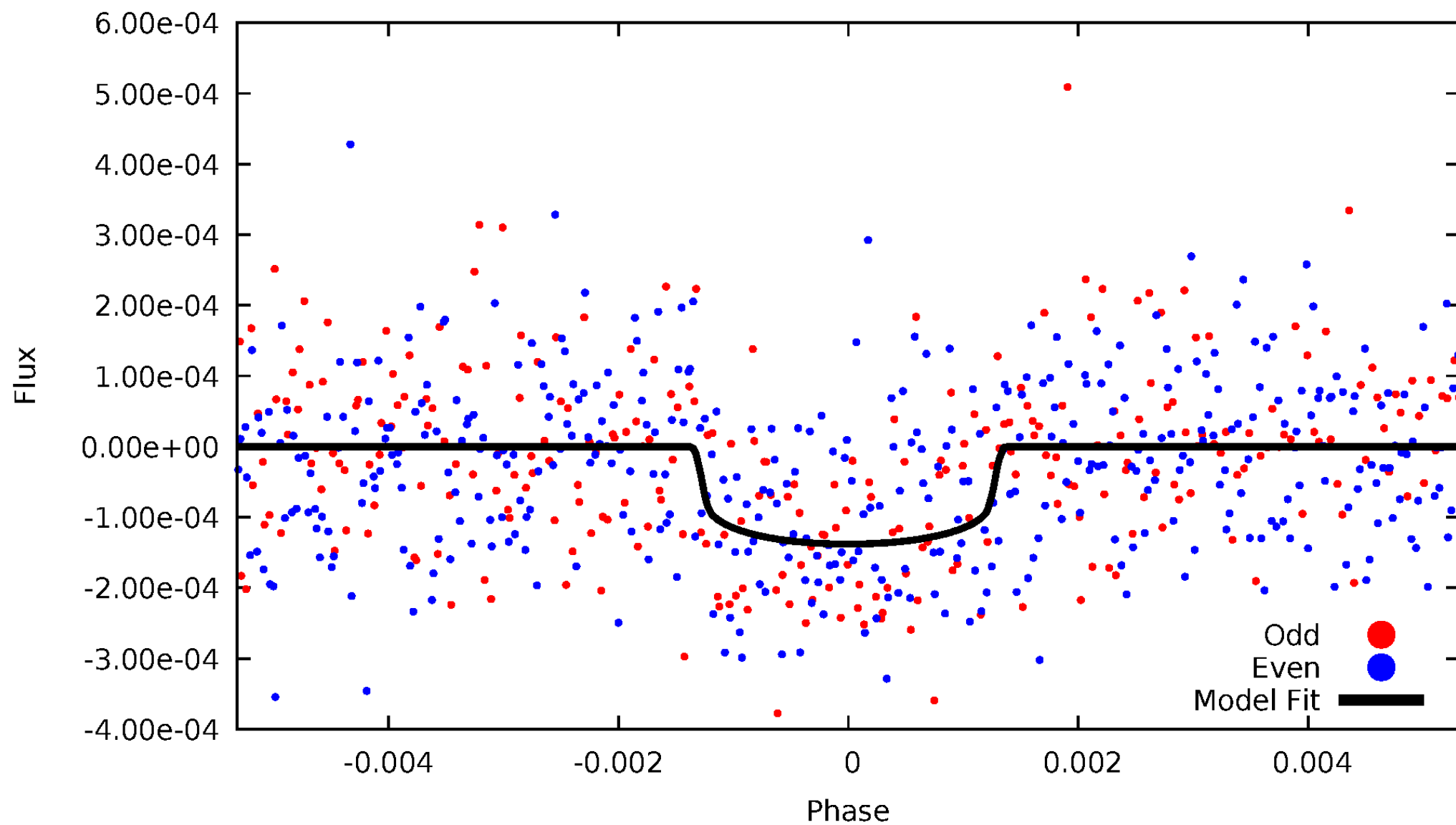


TCE 009893468-01



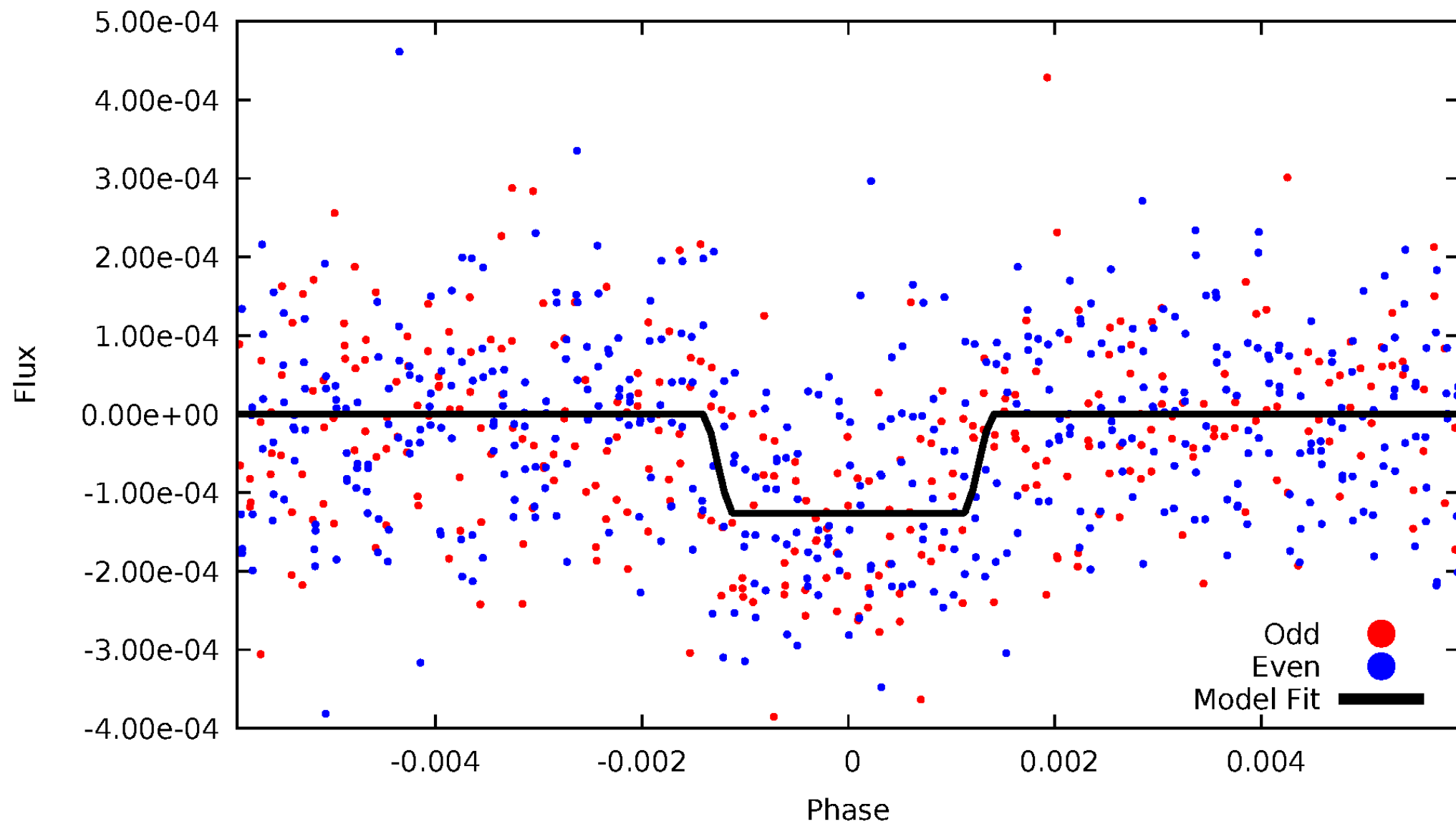
DV Odd/Even

TCE 009893468-01

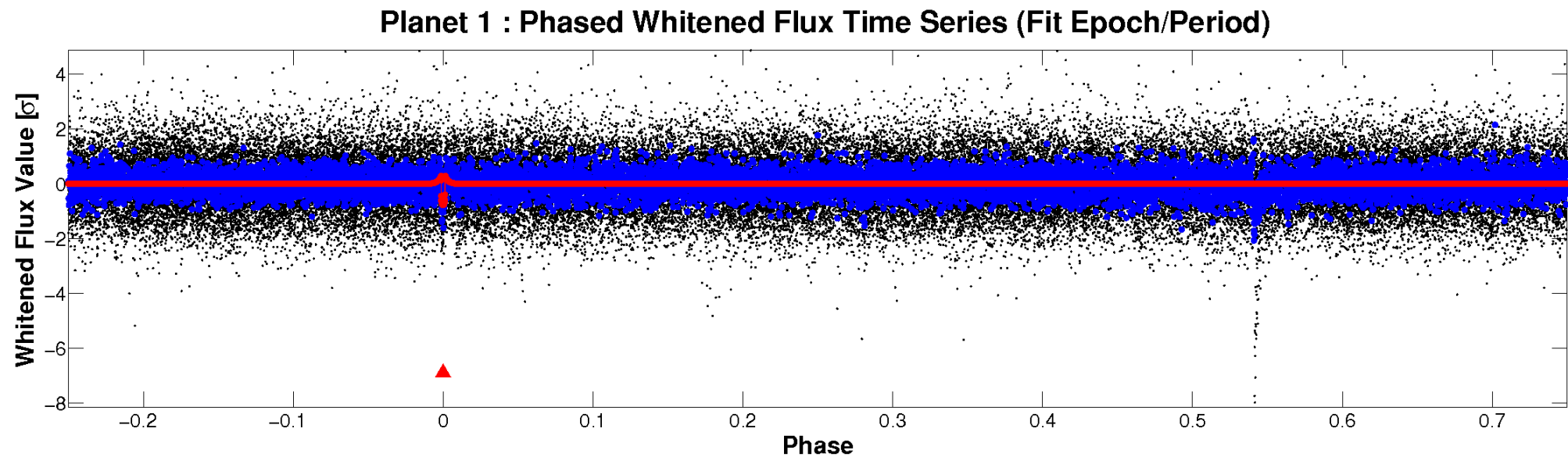
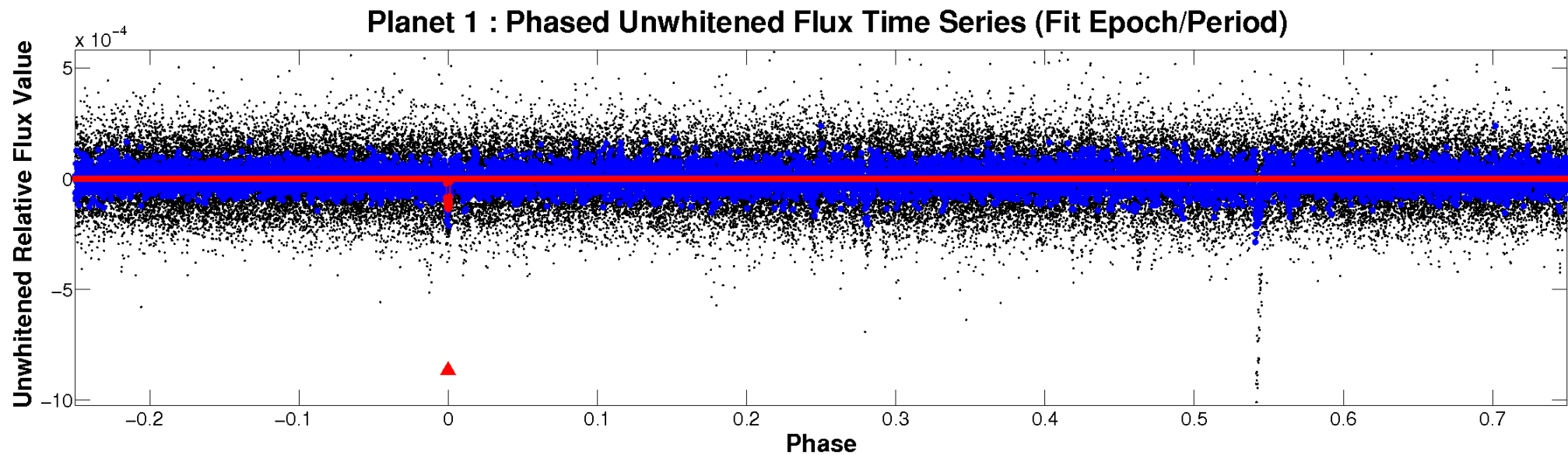


ALT Odd/Even

TCE 009893468-01

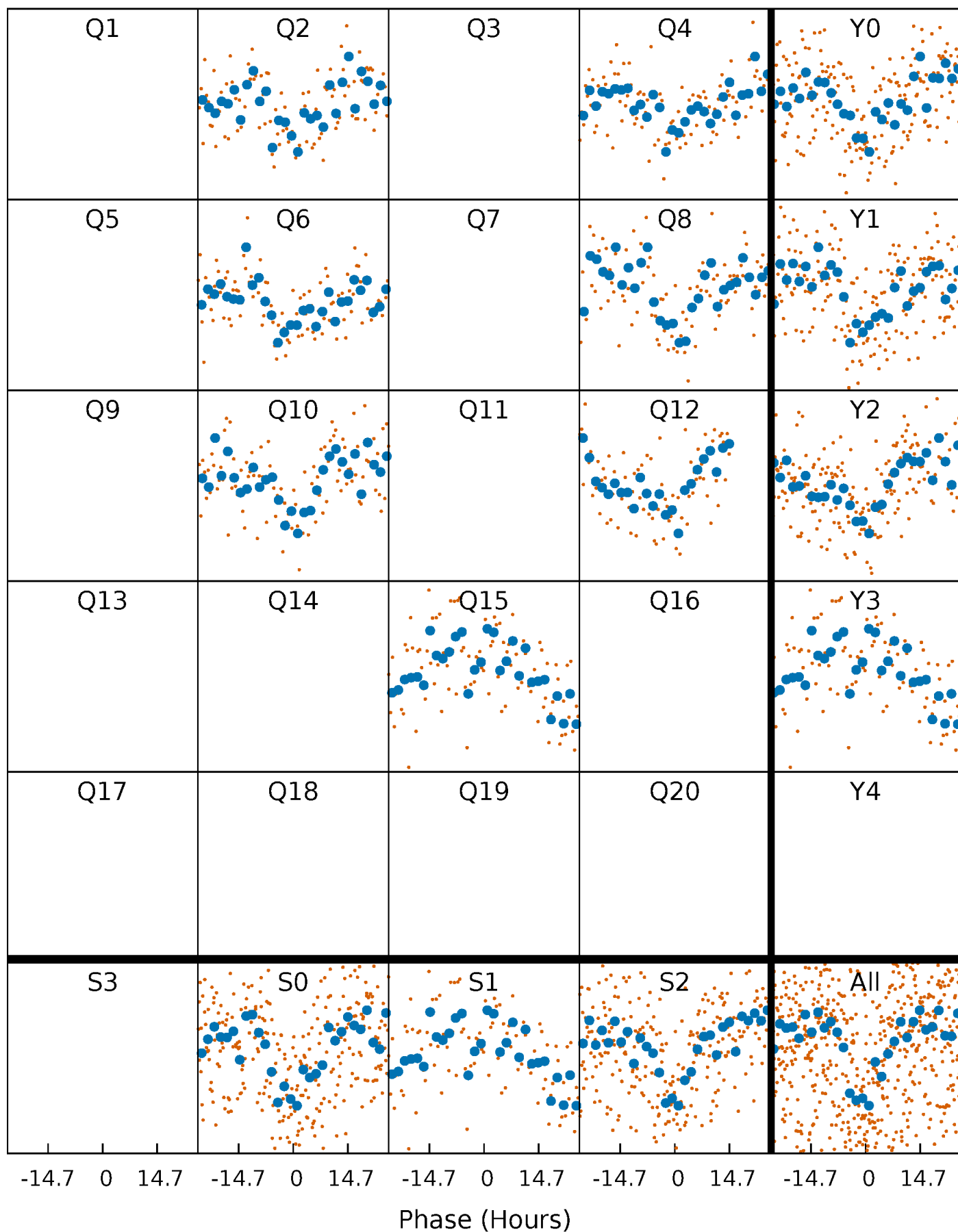


Non-Whitened Vs. Whitened Light Curve



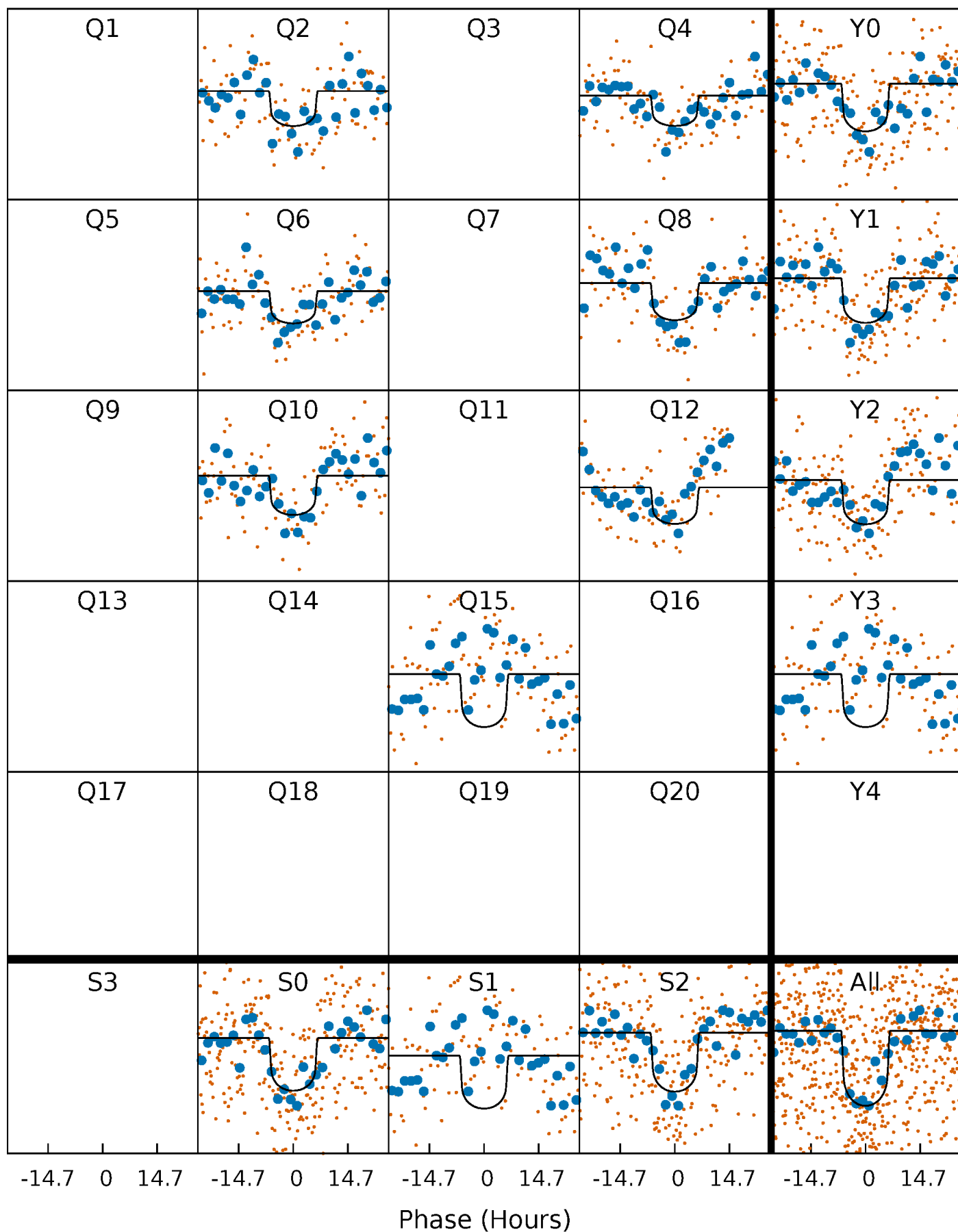
PDC Quarter-Phased Transit Curves

TCE 009893468-01 P=201.338097 Days $T_0=174.722057$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009893468-01 P=201.338097 Days $T_0=174.722057$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

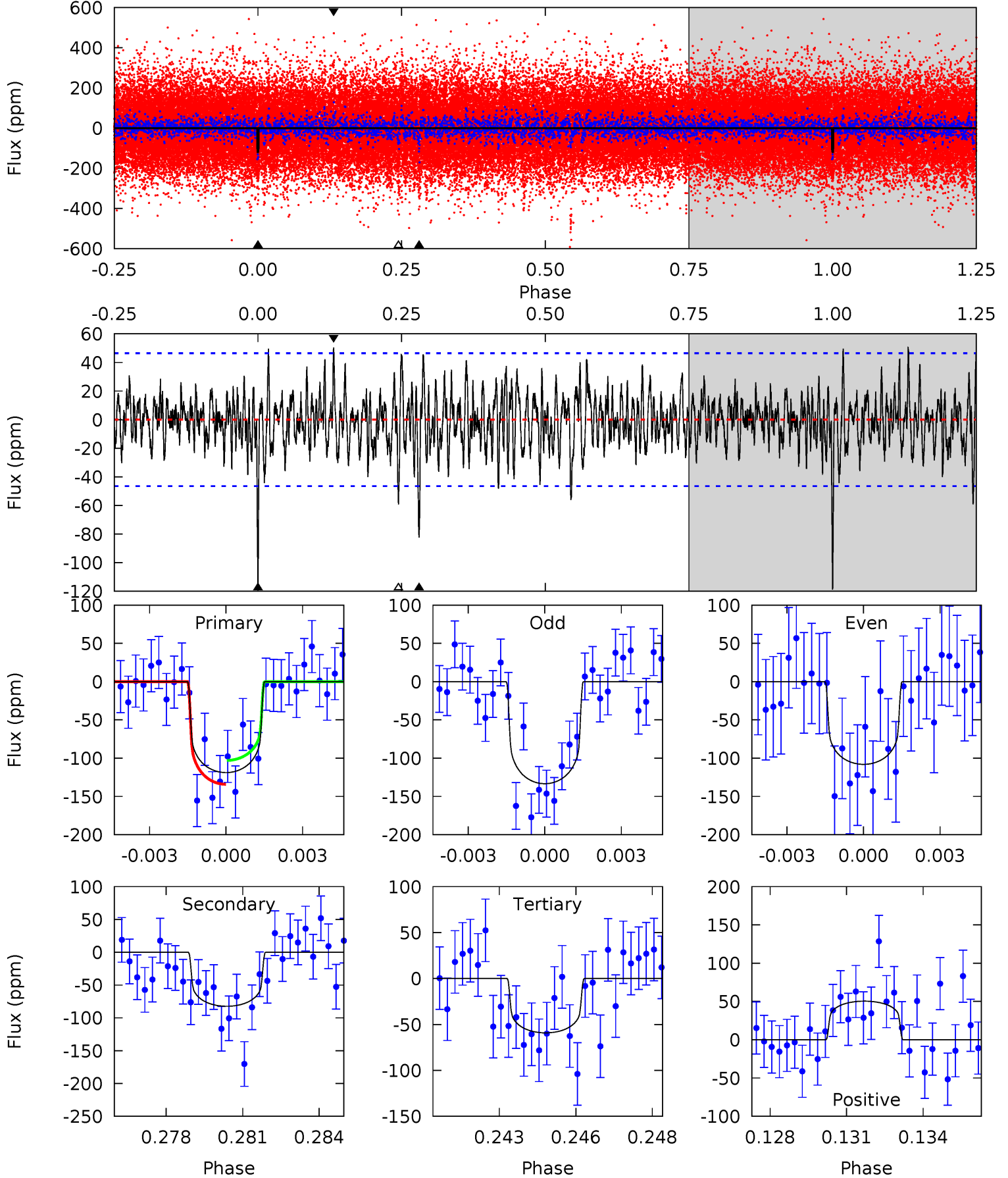
TCE 009893468-01 P=201.331867 Days $T_0=174.749802$ (BKJD)



DV Model-Shift Uniqueness Test

009893468-01, P = 201.338097 Days, E = 174.722057 Days

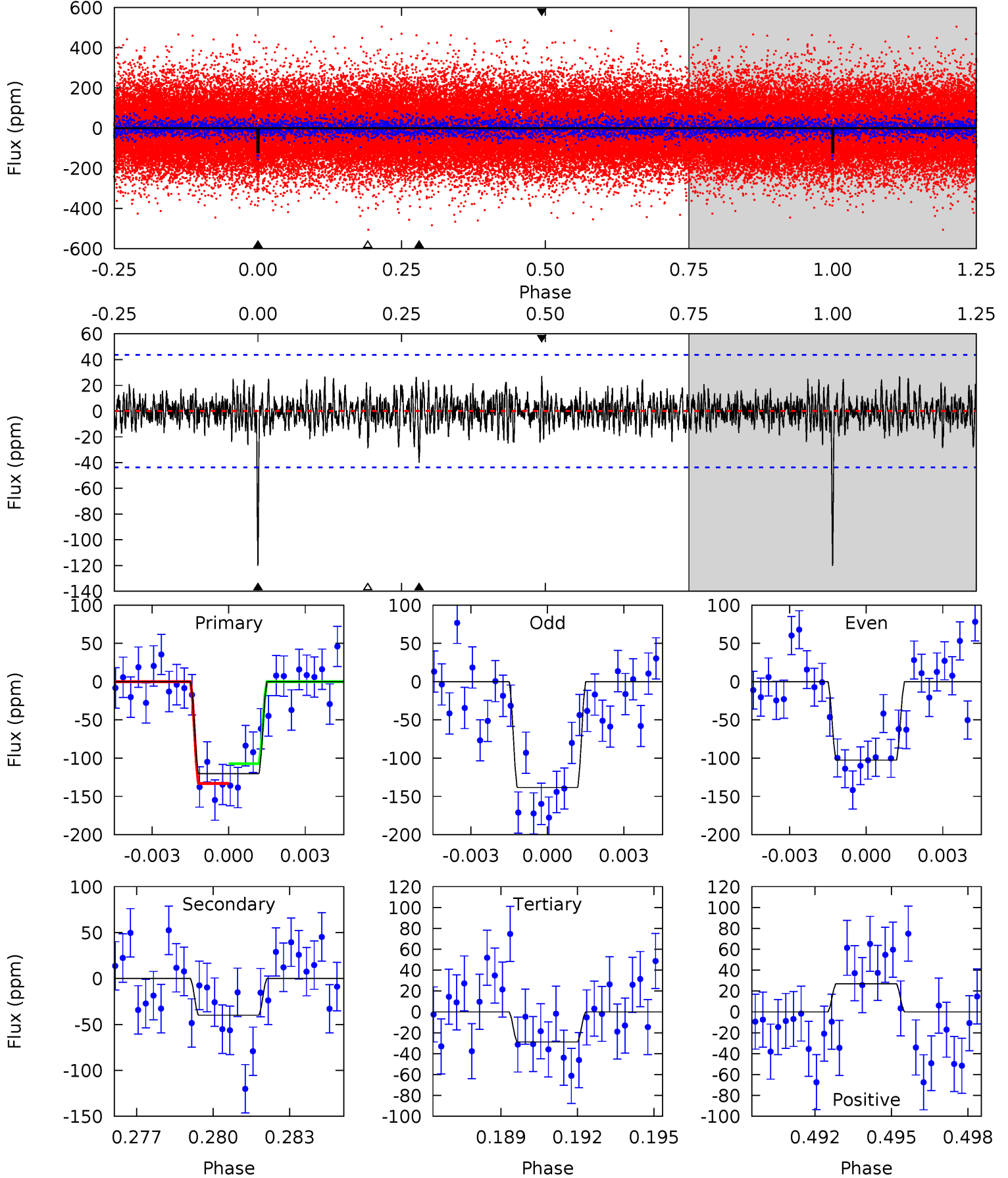
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.5 | 9.34 | 6.71 | 5.71 | 5.27 | 3.00 | 1.82 | 6.76 | 7.76 | 2.63 | 3.62 | 1.42 | 0.79 | 0.30 | 1.77 |



Alt Model-Shift Uniqueness Test

009893468-01, P = 201.331867 Days, E = 174.749802 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.5 | 4.81 | 3.47 | 3.26 | 5.26 | 2.99 | 1.03 | 11.0 | 11.2 | 1.33 | 1.55 | 2.14 | 0.83 | 0.18 | 1.56 |



Stellar Parameters For KIC 009893468

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | M (M_{\odot}) | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 6120^{+79}_{-85} | $4.093^{+0.210}_{-0.140}$ | $0.160^{+0.150}_{-0.150}$ | $1.699^{+0.364}_{-0.444}$ | $1.306^{+0.131}_{-0.160}$ | $0.375^{+0.443}_{-0.153}$ |
| | +1%/-1% | +5%/-3% | +94%/-94% | +21%/-26% | +10%/-12% | +118%/-41% |
| Source | SPE90 | FLK73 | SPE90 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 009893468-01 / KOI 4575.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|-------------------|----------------------|------------------------|
| DV | -82 ± 9 | $2.18^{+0.63}_{-0.57}$ | 574^{+32}_{-43} | 5354^{+774}_{-478} | 5140^{+4400}_{-2110} |
| Alt. | -40 ± 8 | $2.03^{+0.66}_{-0.58}$ | 573^{+35}_{-39} | 4724^{+723}_{-462} | 2848^{+2929}_{-1305} |

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

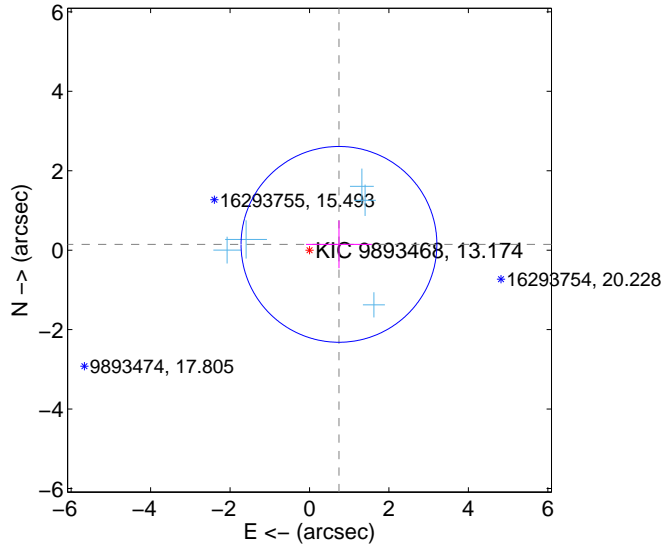
Supplemental centroid analysis for 009893468-01. Kepler magnitude: 13.17. Transit SNR 9.75

There are 5 quarters with good PRF difference image offsets

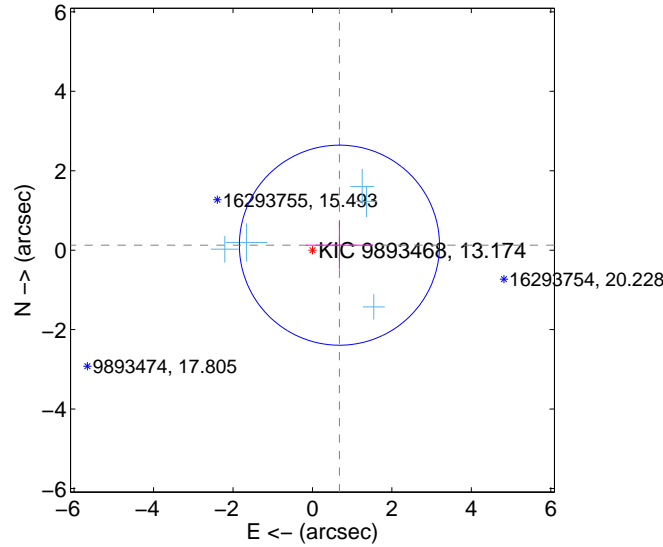
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.756 ± 0.822 | 0.92 | -0.742 ± 0.829 | 0.146 ± 0.599 |
| PRF-fit source offset from KIC position | 0.691 ± 0.840 | 0.82 | -0.680 ± 0.846 | 0.126 ± 0.606 |
| photometric centroid source offset | 2.07 ± 1.00 | 2.06 | -1.10 ± 1.01 | 1.75 ± 1.00 |

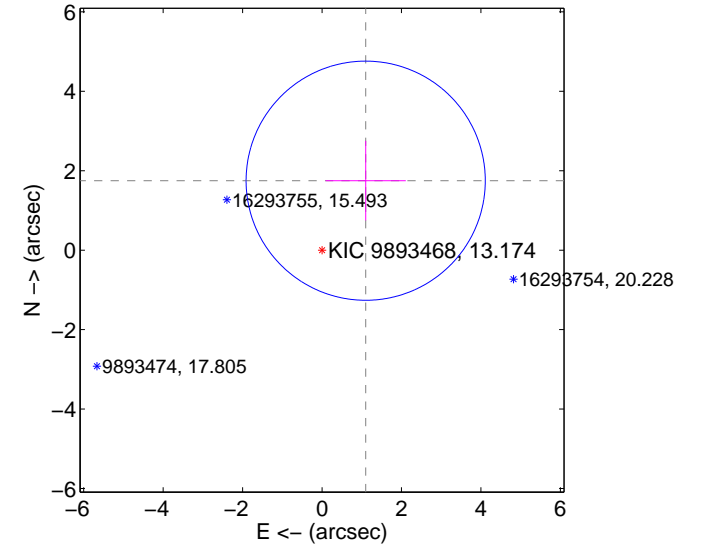
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



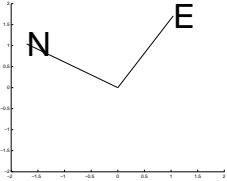
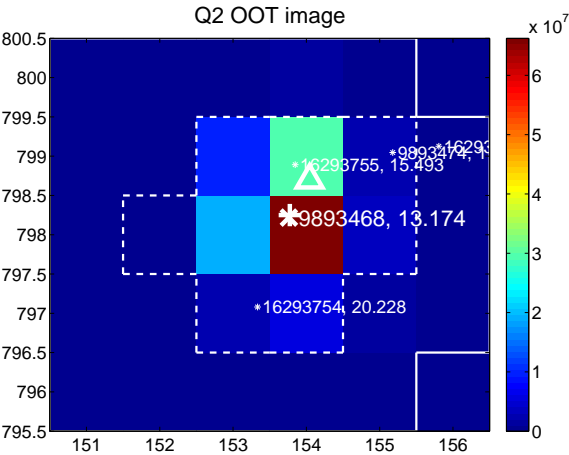
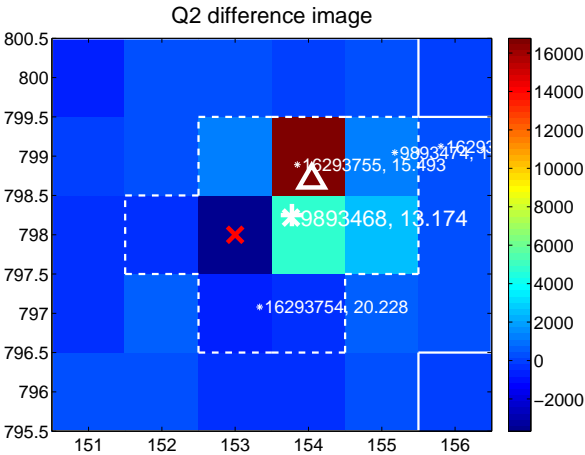
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

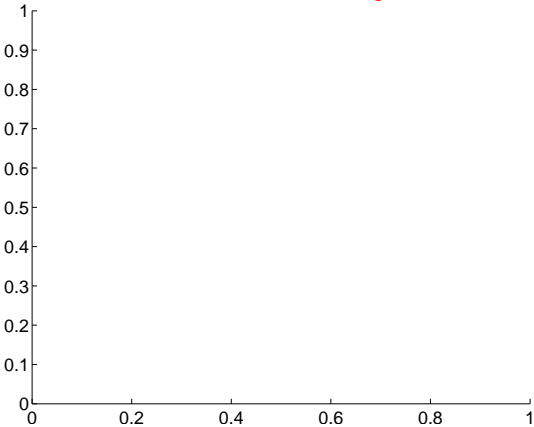
Q1 no difference image



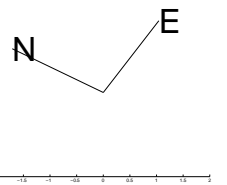
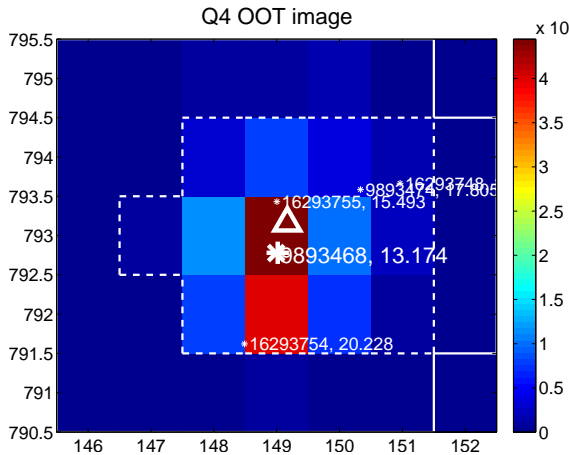
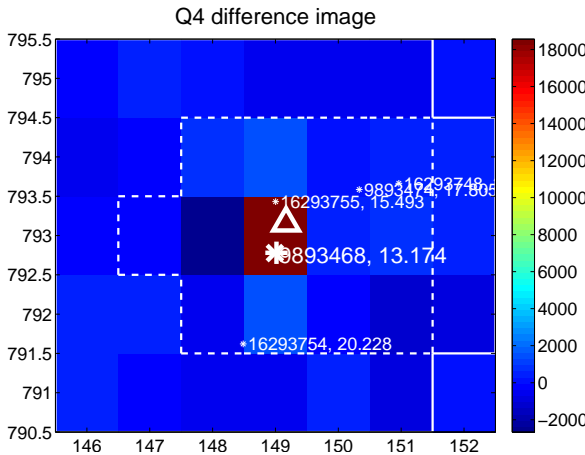
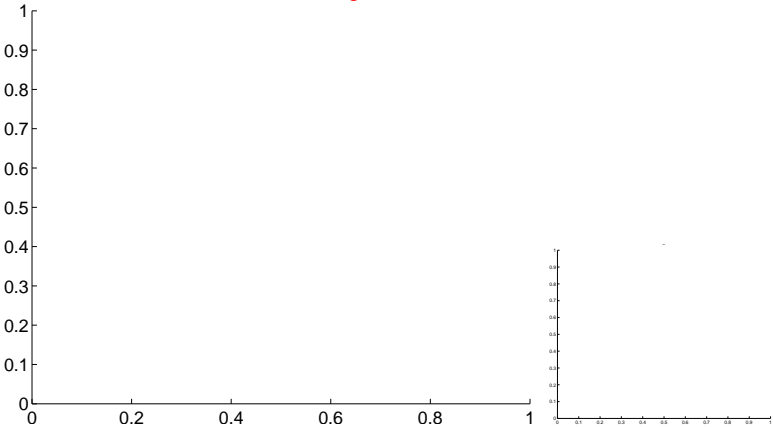
Q1 no OOT image



Q3 no difference image



Q3 no OOT image



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

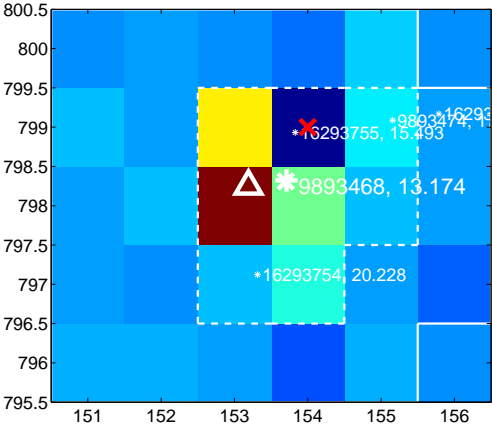
Q5 no difference image



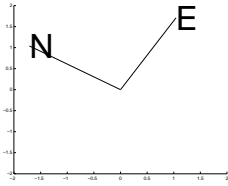
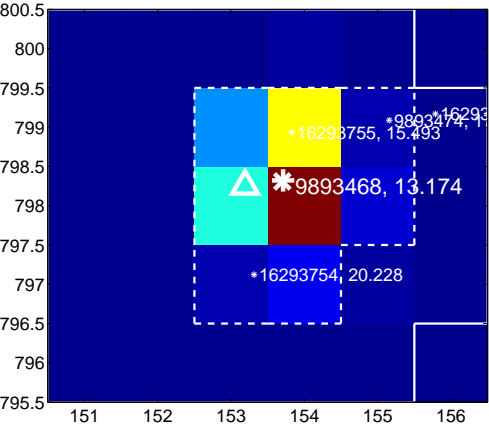
Q5 no OOT image



Q6 difference image



Q6 OOT image



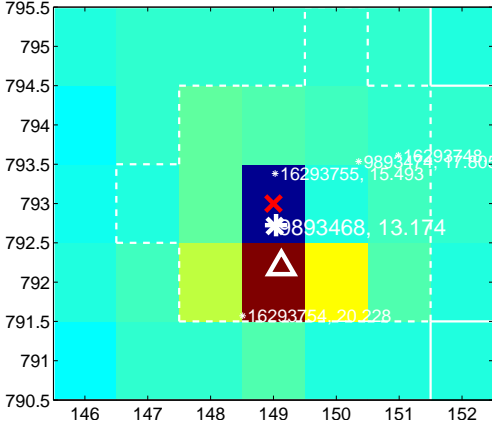
Q7 no difference image



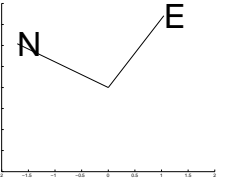
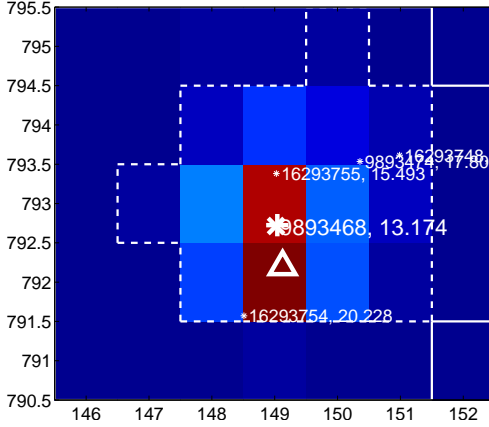
Q7 no OOT image



Q8 difference image



Q8 OOT image

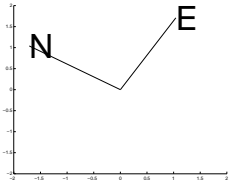
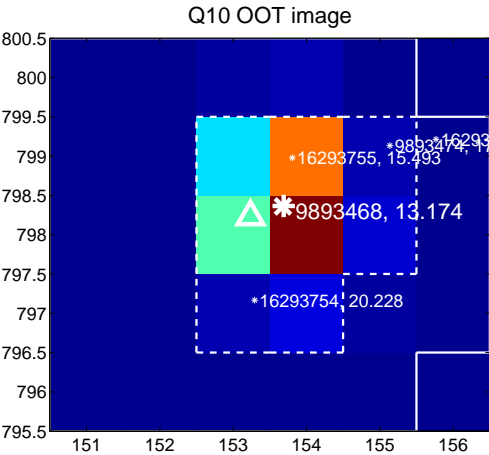
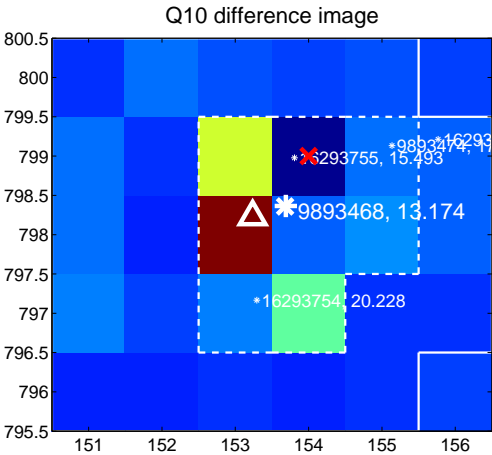


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

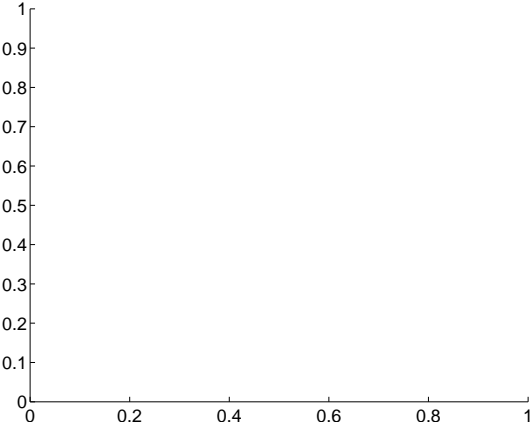
Q9 no difference image



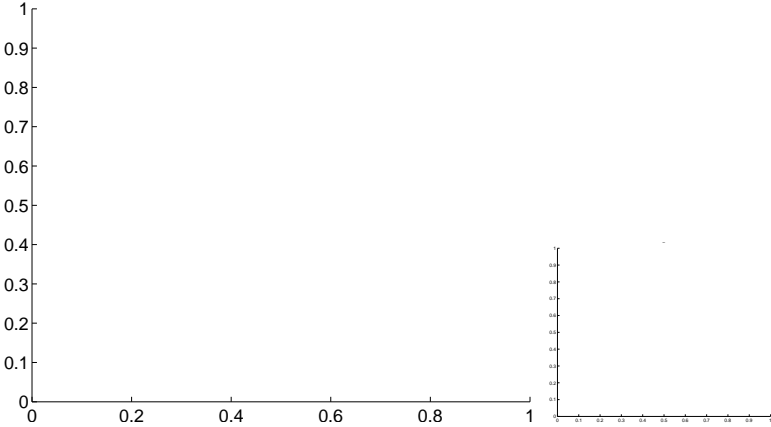
Q9 no OOT image



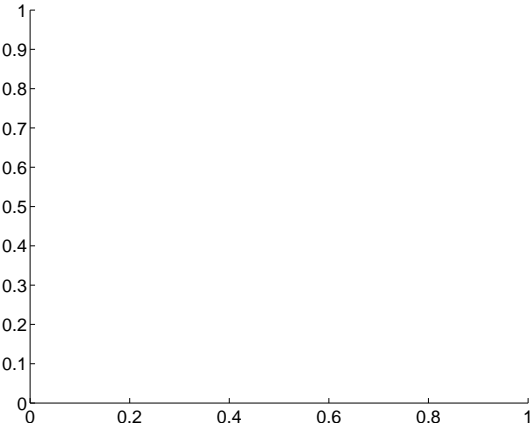
Q11 no difference image



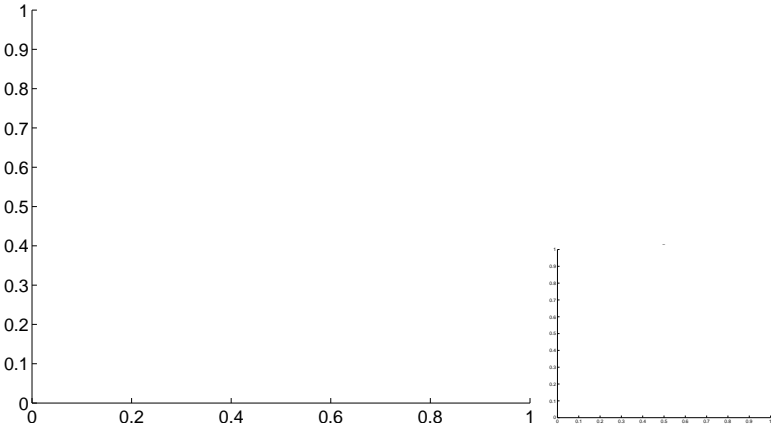
Q11 no OOT image



Q12 no difference image



Q12 no OOT image

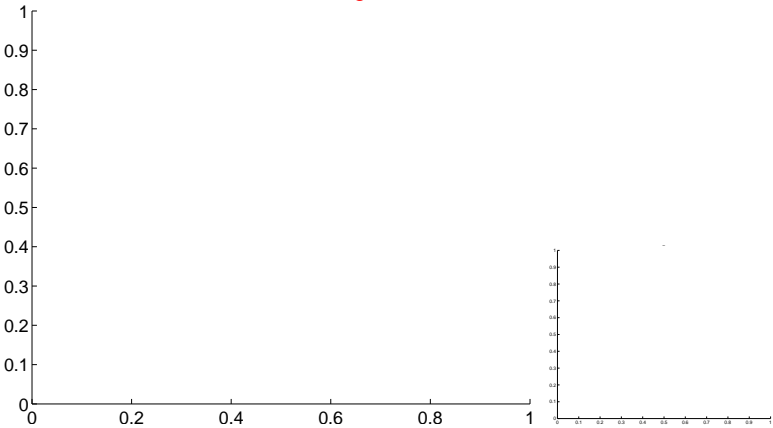


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



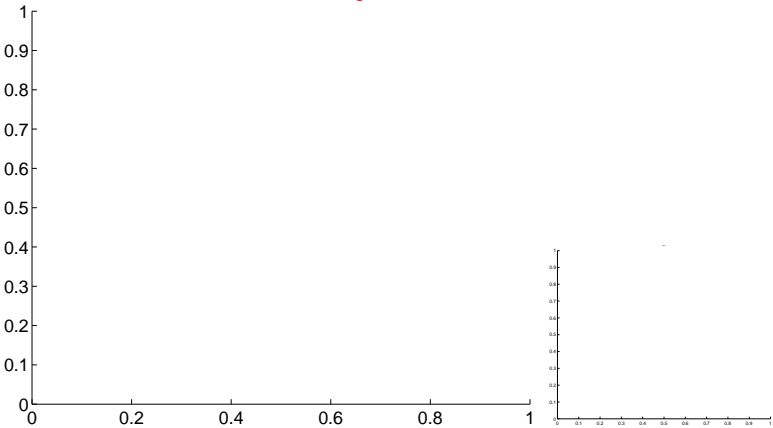
Q13 no OOT image



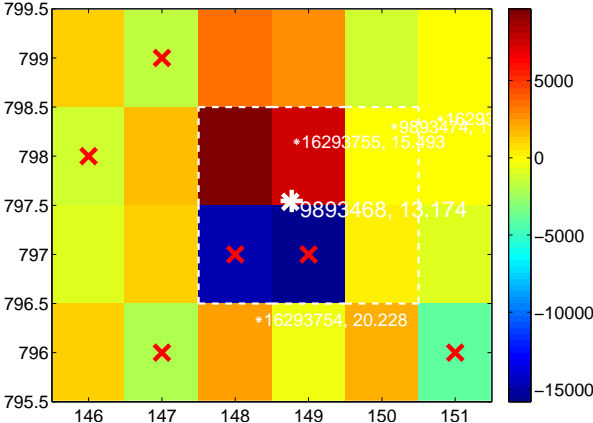
Q14 no difference image



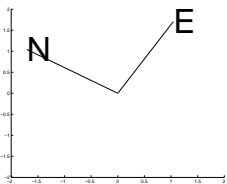
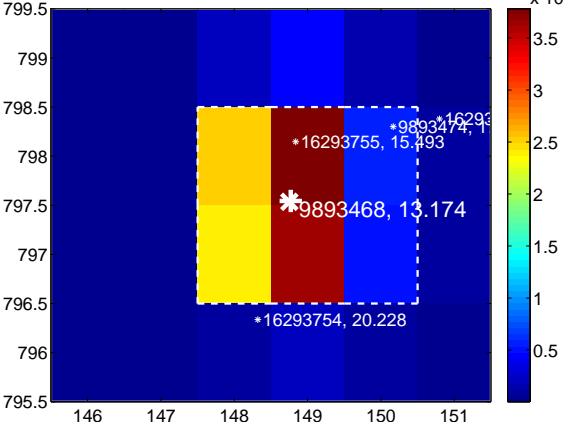
Q14 no OOT image



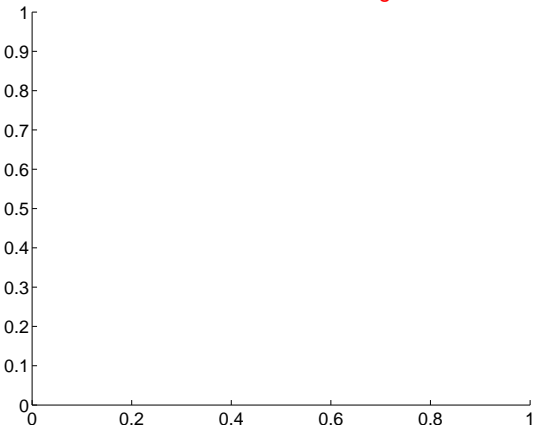
Q15 difference image. Poor Quality



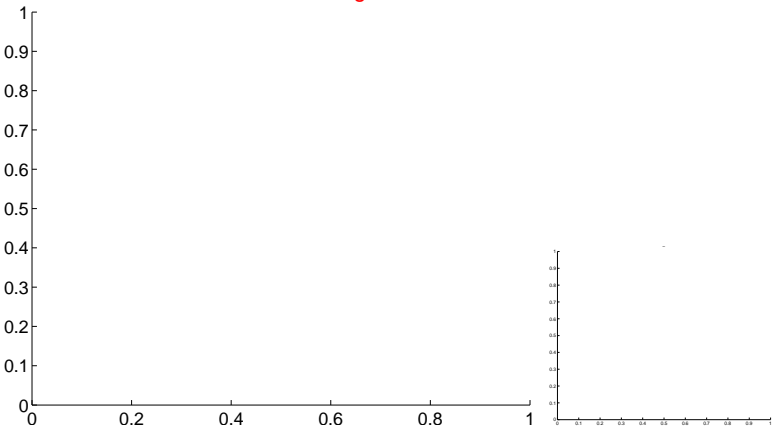
Q15 OOT image



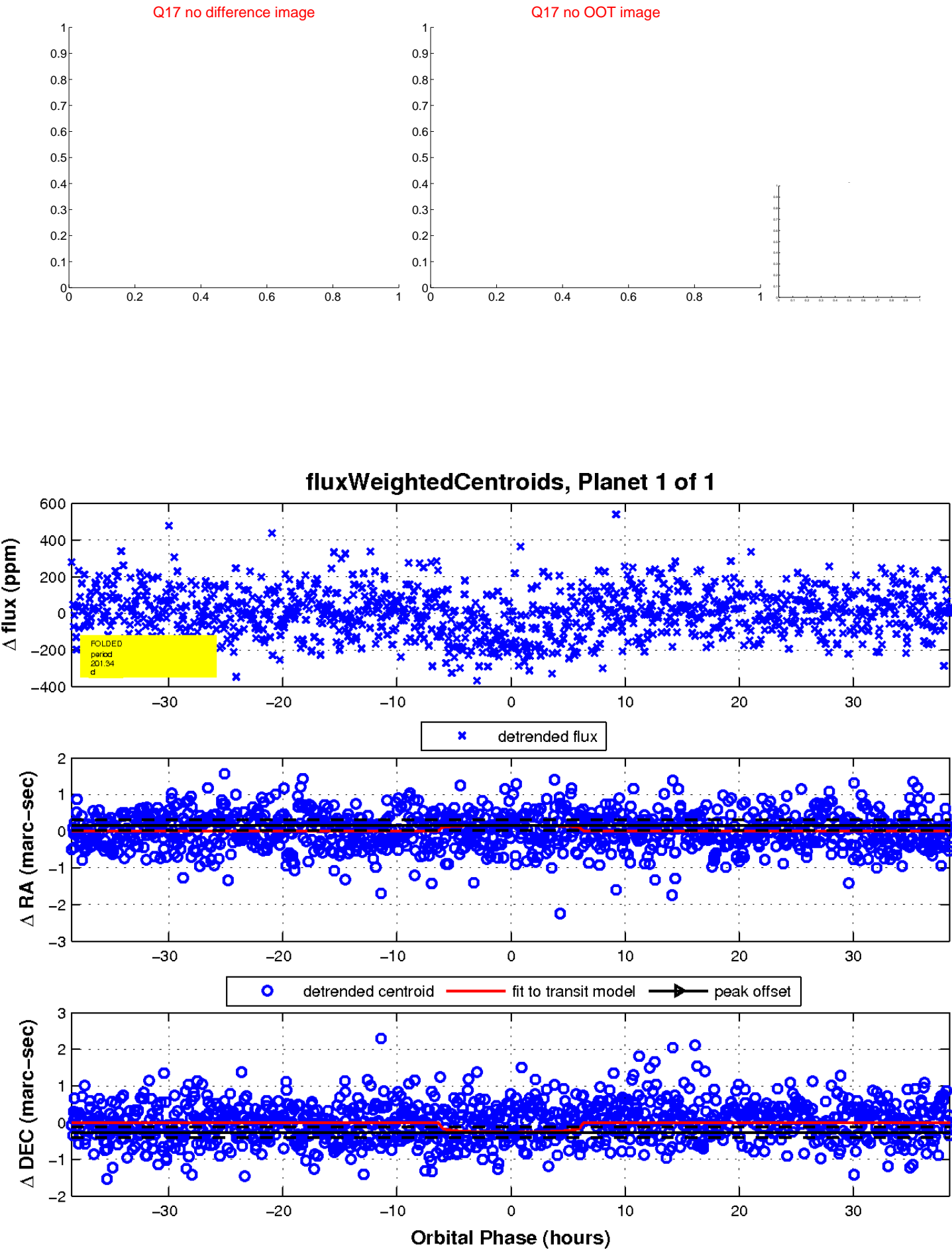
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

