

KIC 009838949

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 009838949-01 | OBS | 1716.01 | 4.880854 | 136.195787 | 328.5 | 2.698 | 26.8 | 29.3 | 0.86 | 4929 | 1.82 | 141.23 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009838949-01 | OBS | PC | 1.00 | 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.

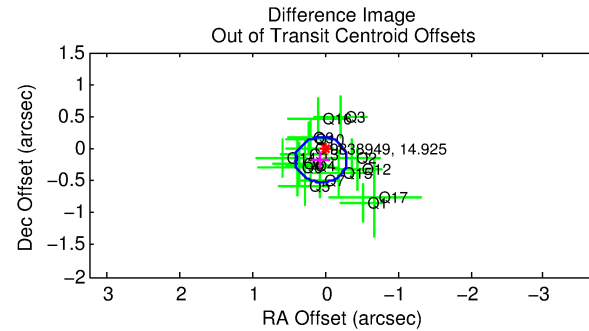
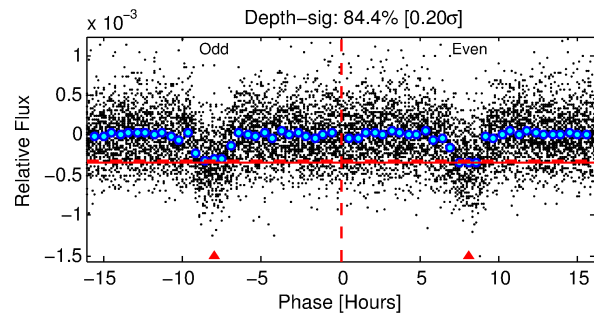
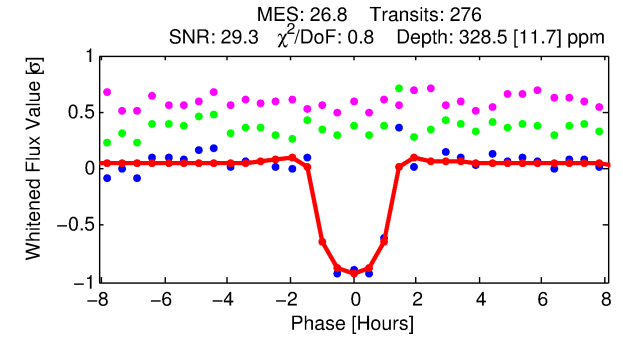
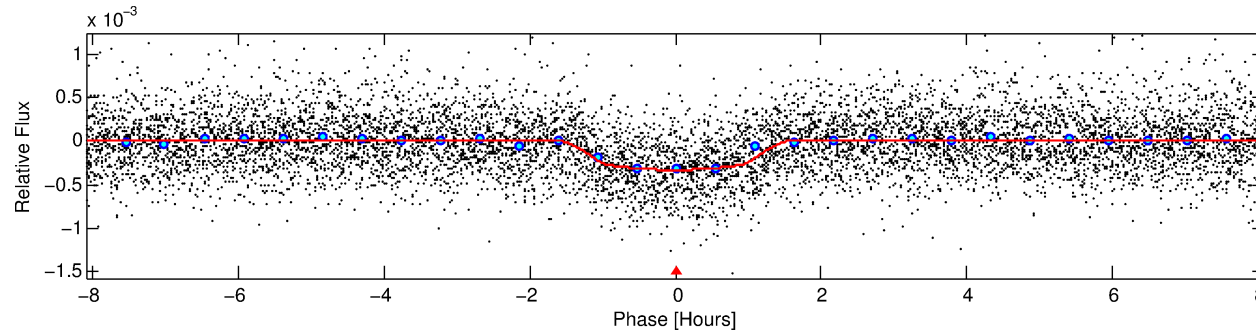
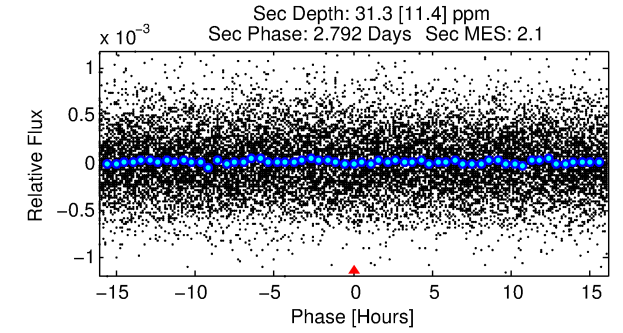
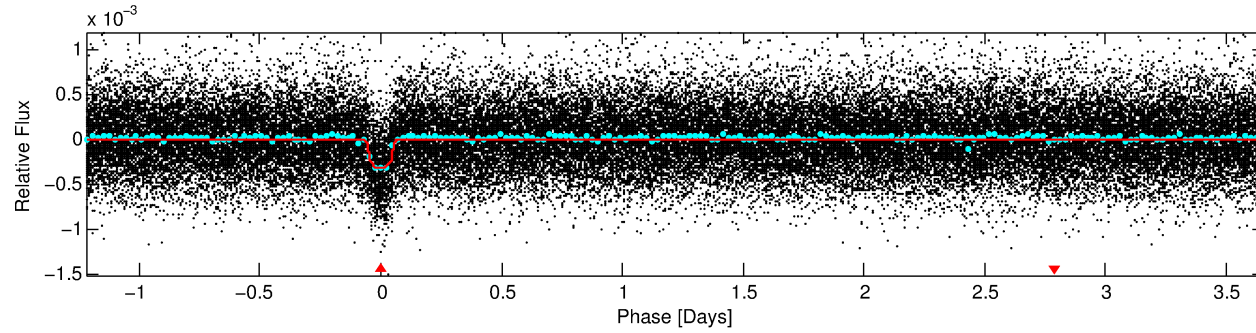
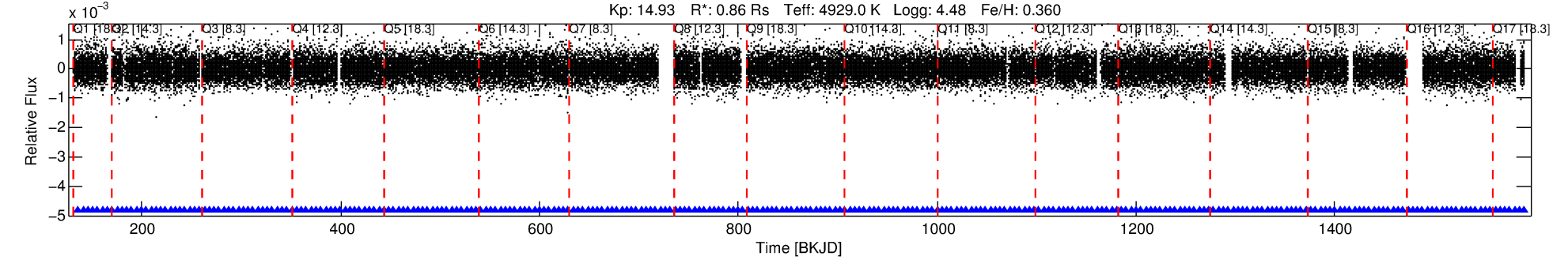
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009838949-01

No Significant Match Found

DV One-Page Summary

KIC: 9838949 Candidate: 1 of 1 Period: 4.881 d
KOI: K01716.01 Corr: 0.965



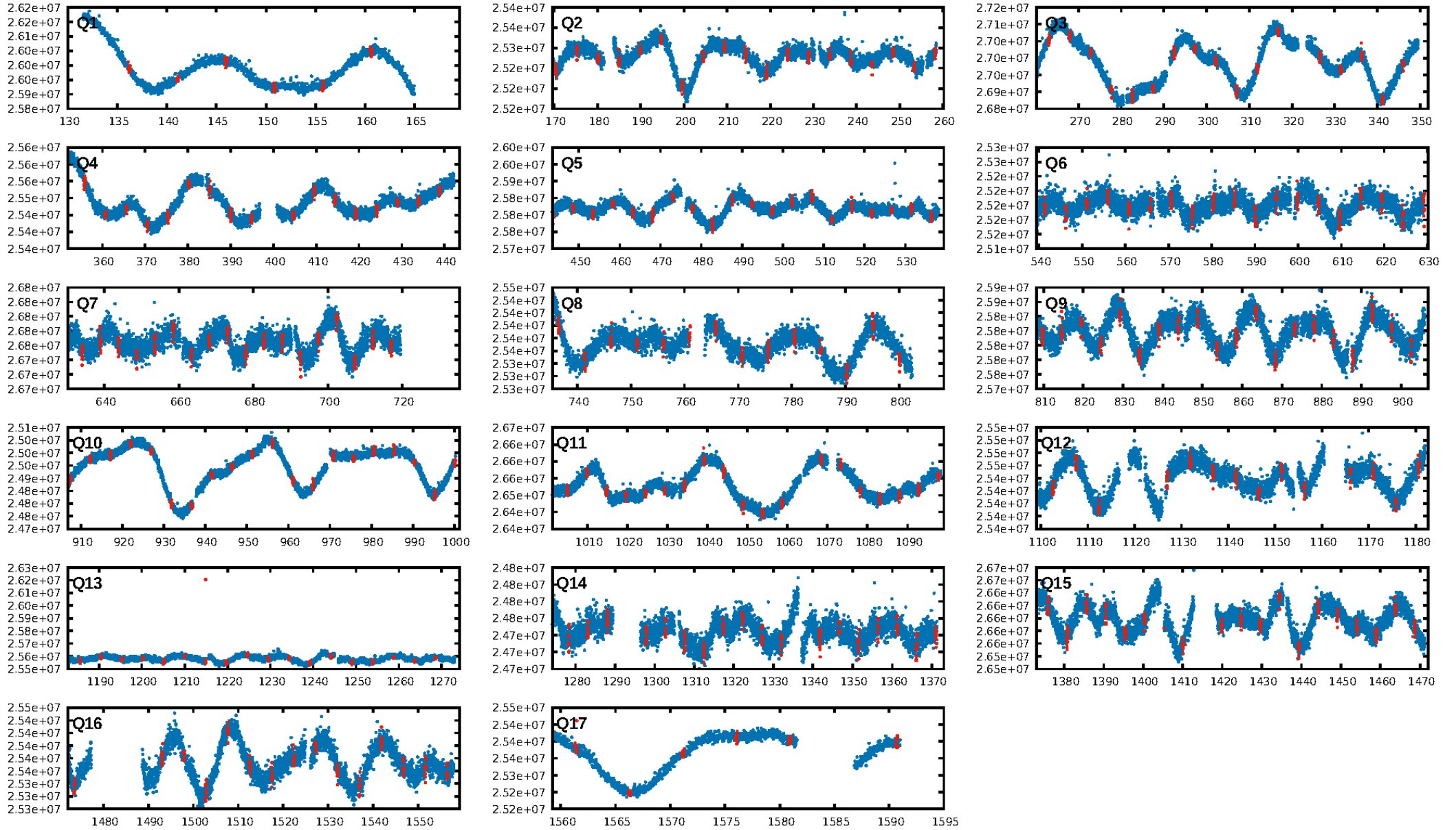
DV Fit Results:

Period = 4.88085 [0.00001] d
Epoch = 136.1958 [0.0016] BKJD
Rp/R* = 0.0194 [0.0058]
a/R* = 7.80 [8.36]
b = 0.85 [0.36]
Seff = 141.23 [123.47]
Teff = 879 [192] K
Rp = 1.82 [0.62] Re
a = 0.0527 [0.0233] AU
Ag = 14.40 [16.07] [0.83 σ]
Teffp = 2647 [473] K [3.47 σ]

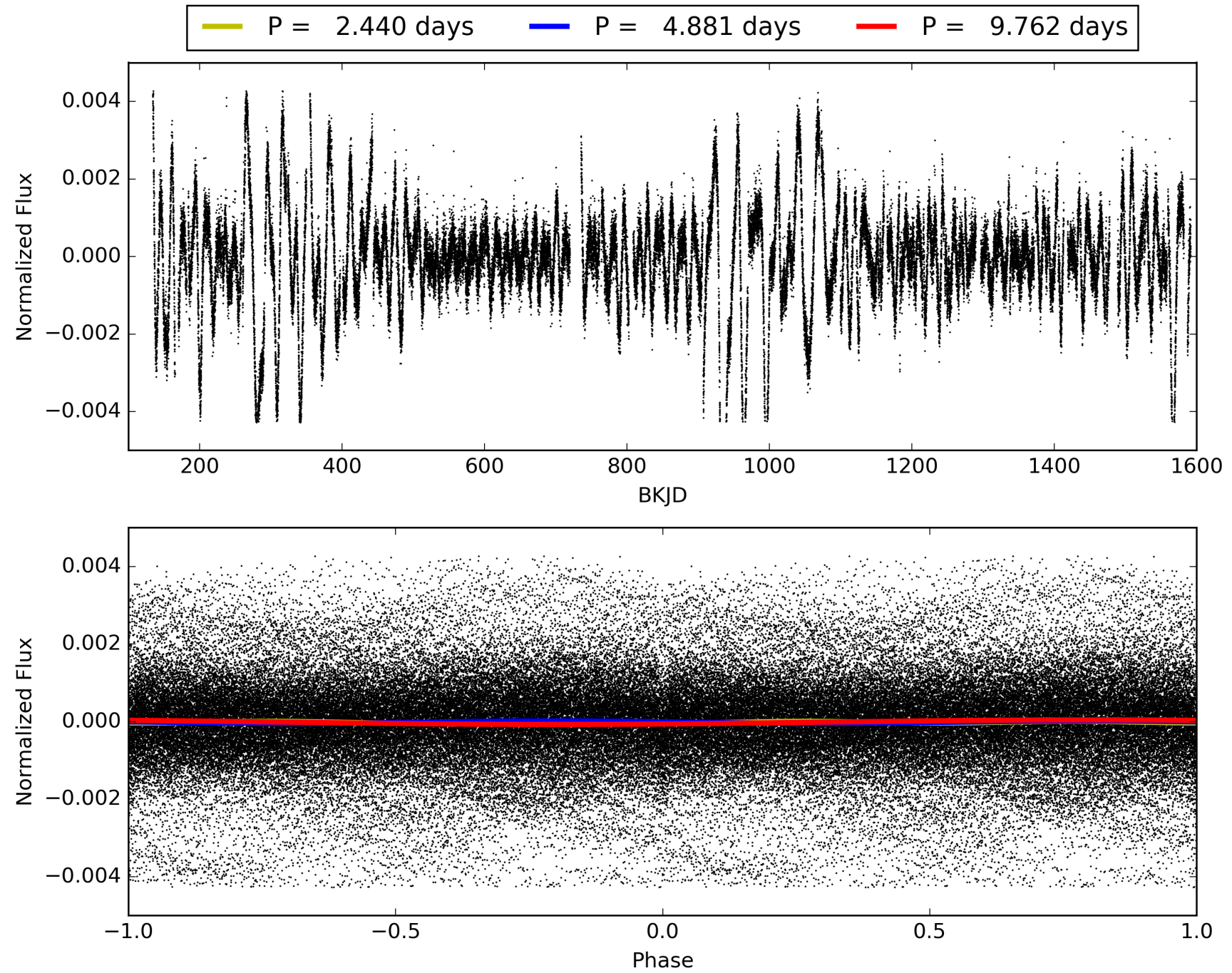
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.51e-152
RollingBand-fgt: 1.00 [264/264]
GhostDiagnostic-chr: 2.944
Centroid-sig: 35.2%
Centroid-so: 0.313 arcsec [0.70 σ]
OotOffset-rm: 0.183 arcsec [1.55 σ]
KicOffset-rm: 0.316 arcsec [2.79 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009838949-01, PDC Light Curves

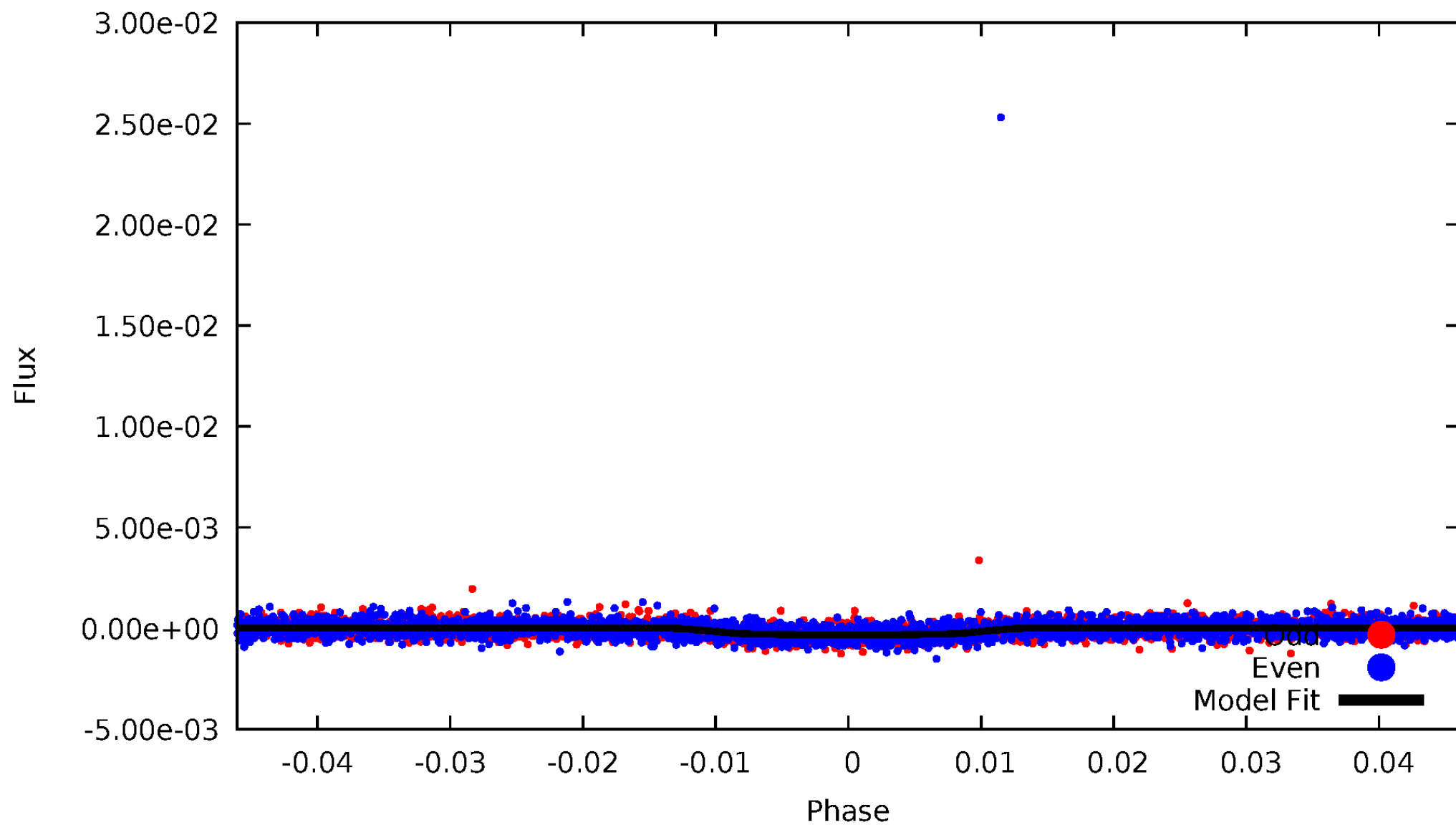


TCE 009838949-01



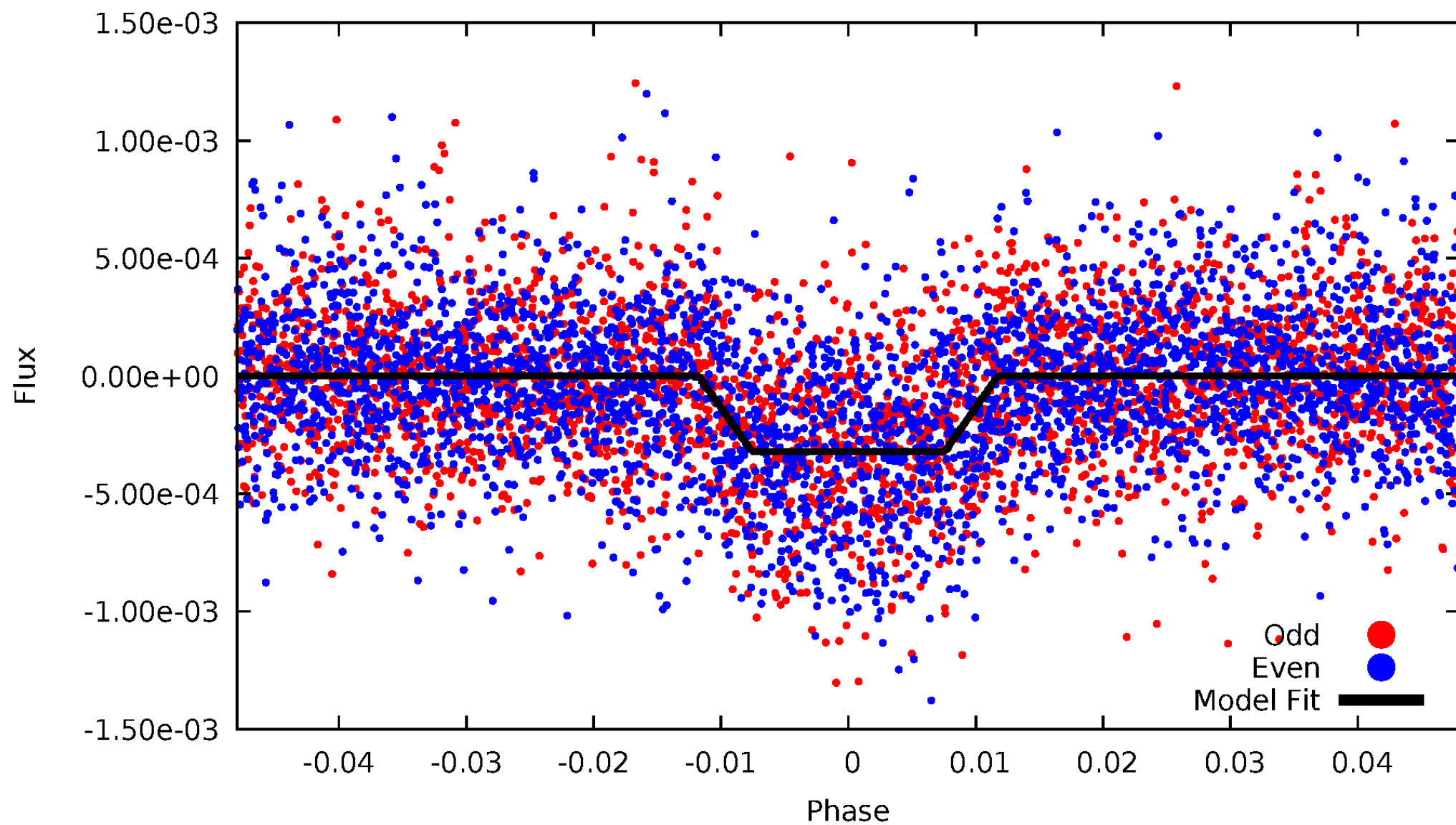
DV Odd/Even

TCE 009838949-01

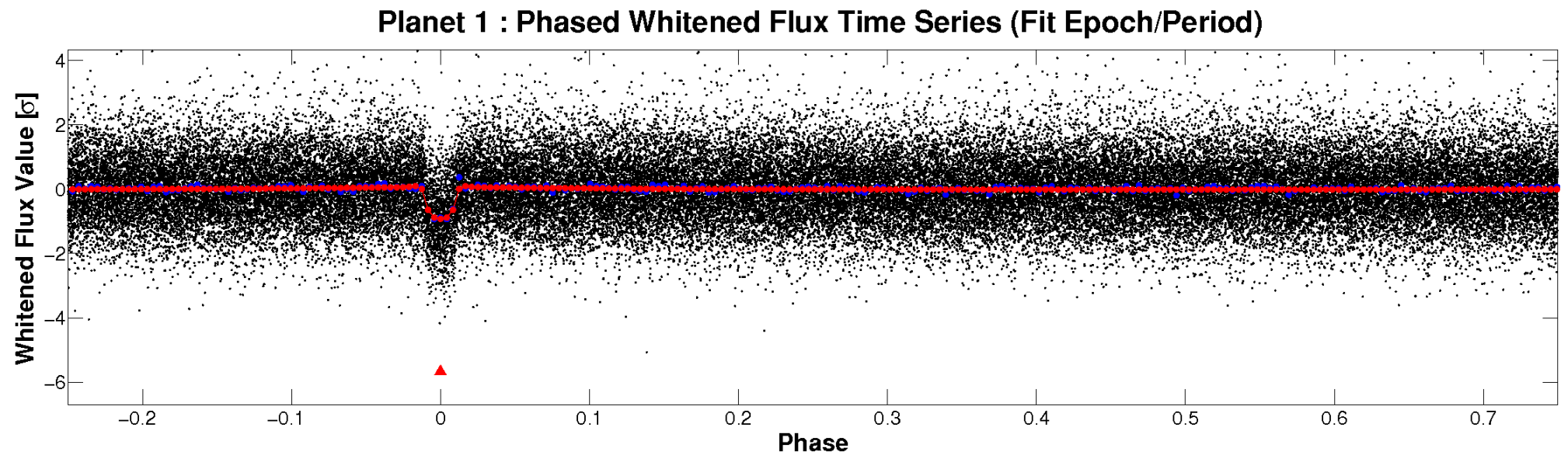
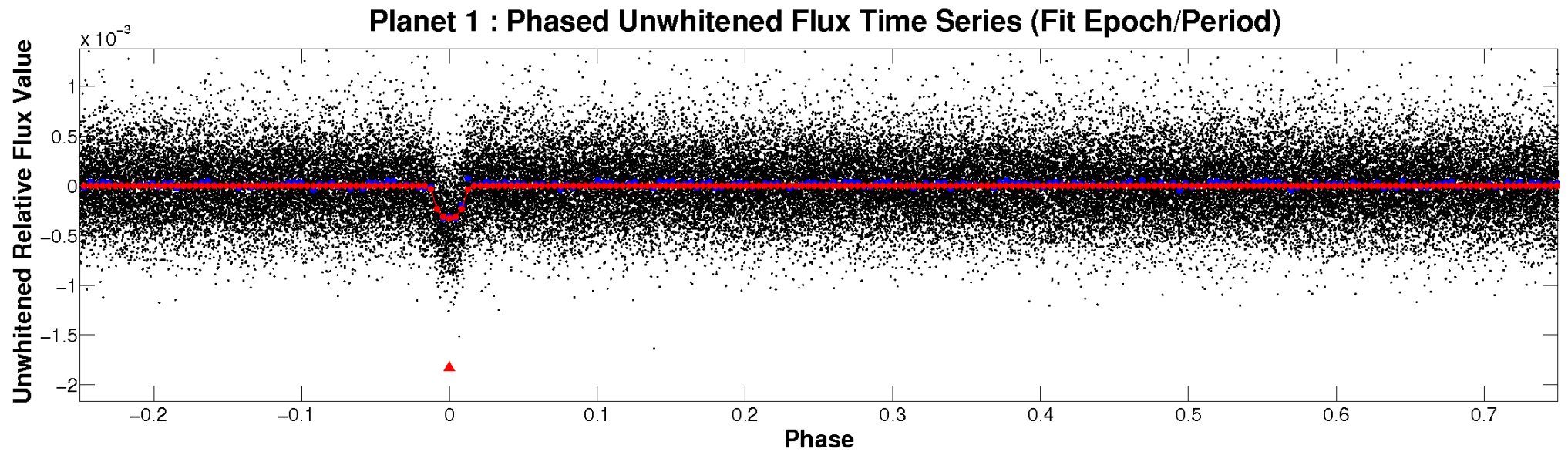


ALT Odd/Even

TCE 009838949-01

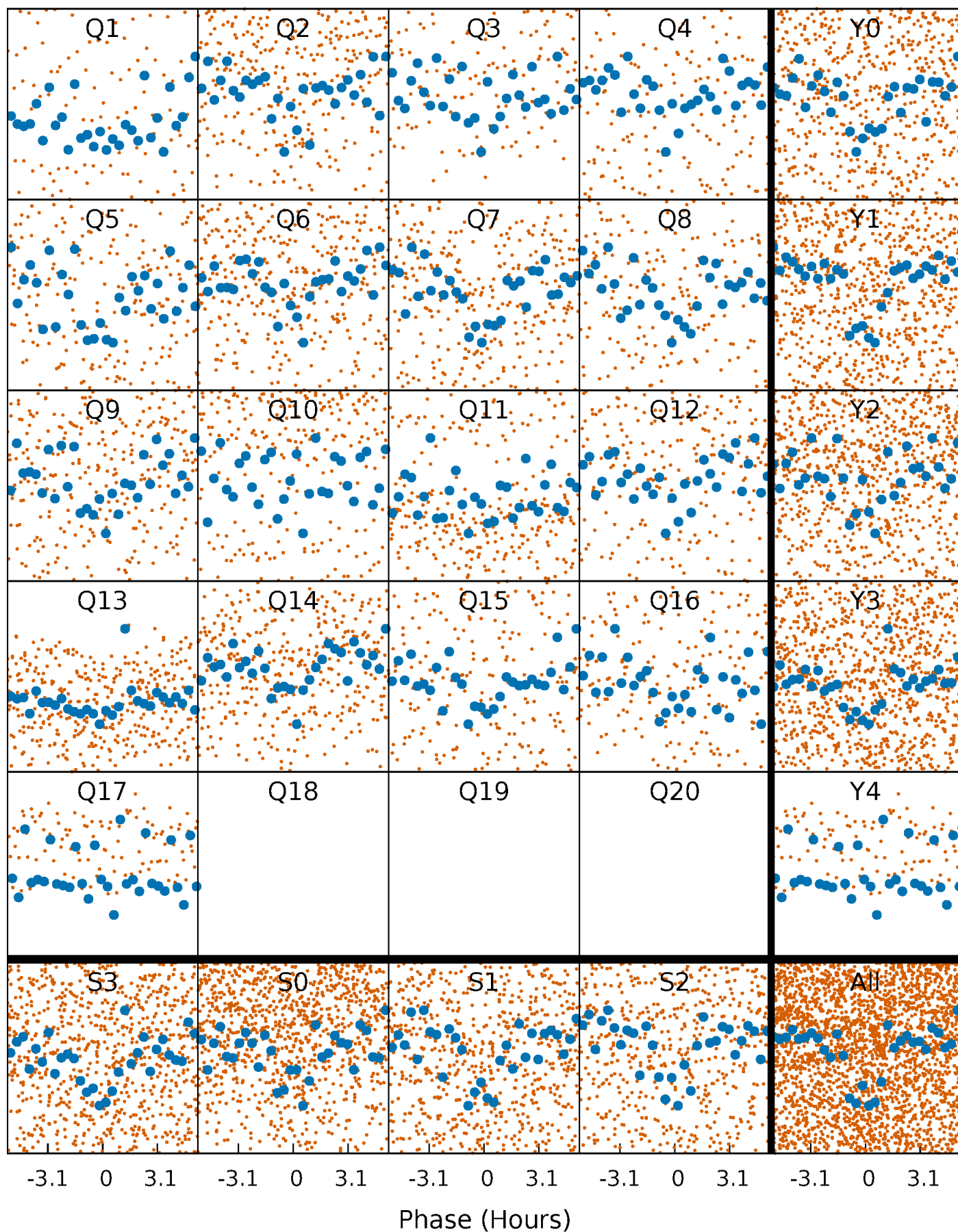


Non-Whitened Vs. Whitened Light Curve



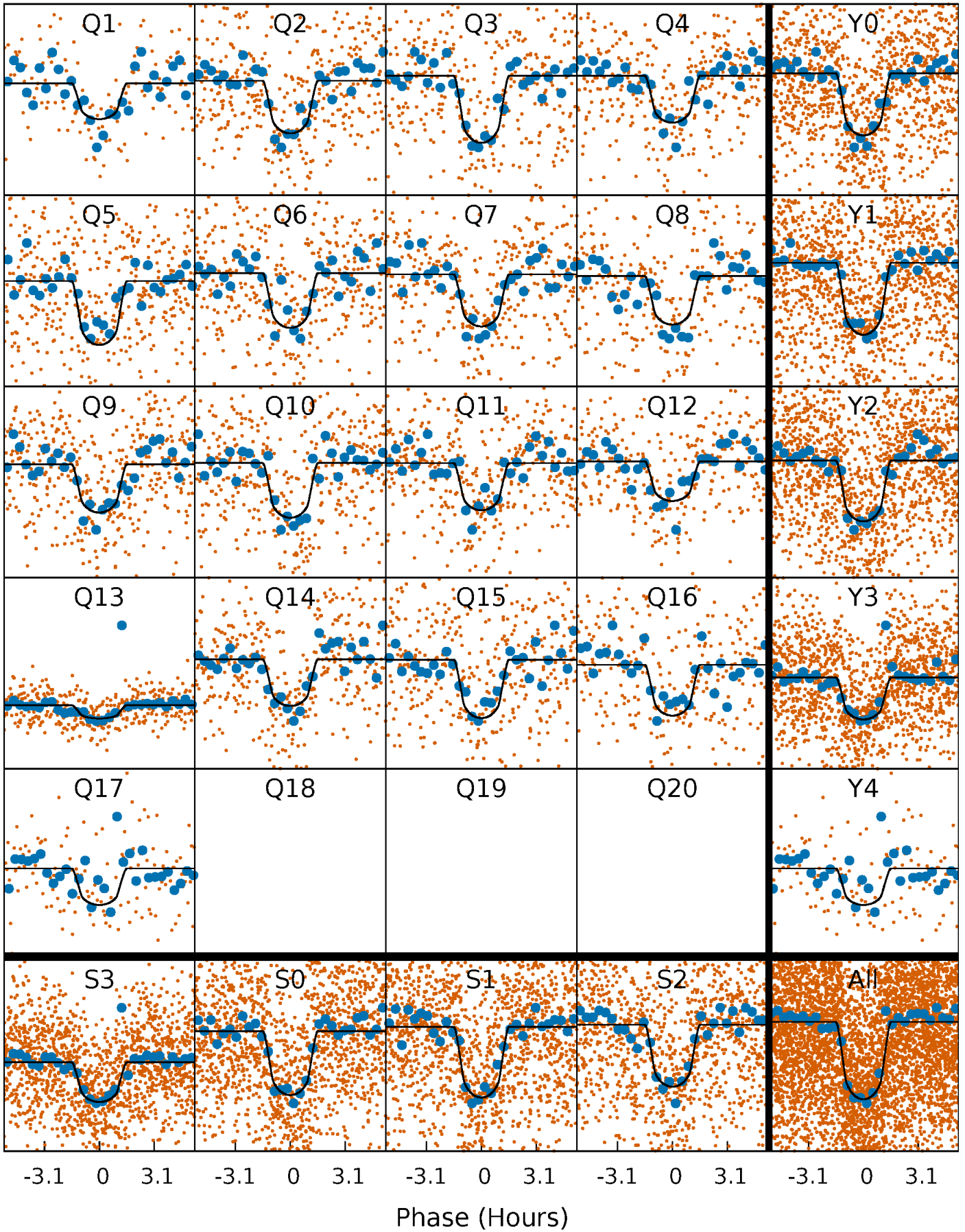
PDC Quarter-Phased Transit Curves

TCE 009838949-01 P= 4.880854 Days $T_0=136.195787$ (BKJD)



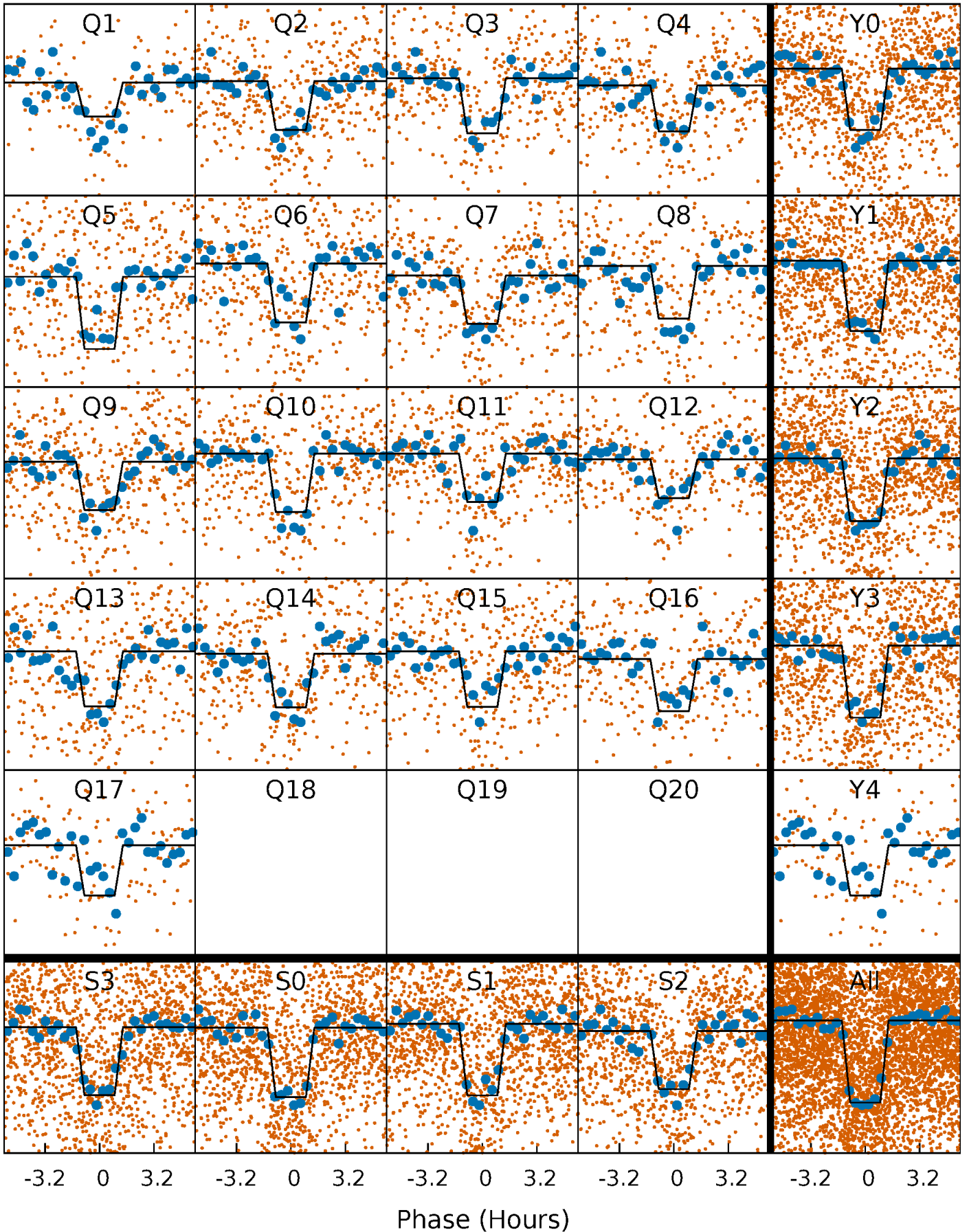
DV Quarter-Phased Transit Curves

TCE 009838949-01 P= 4.880854 Days $T_0=136.195787$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

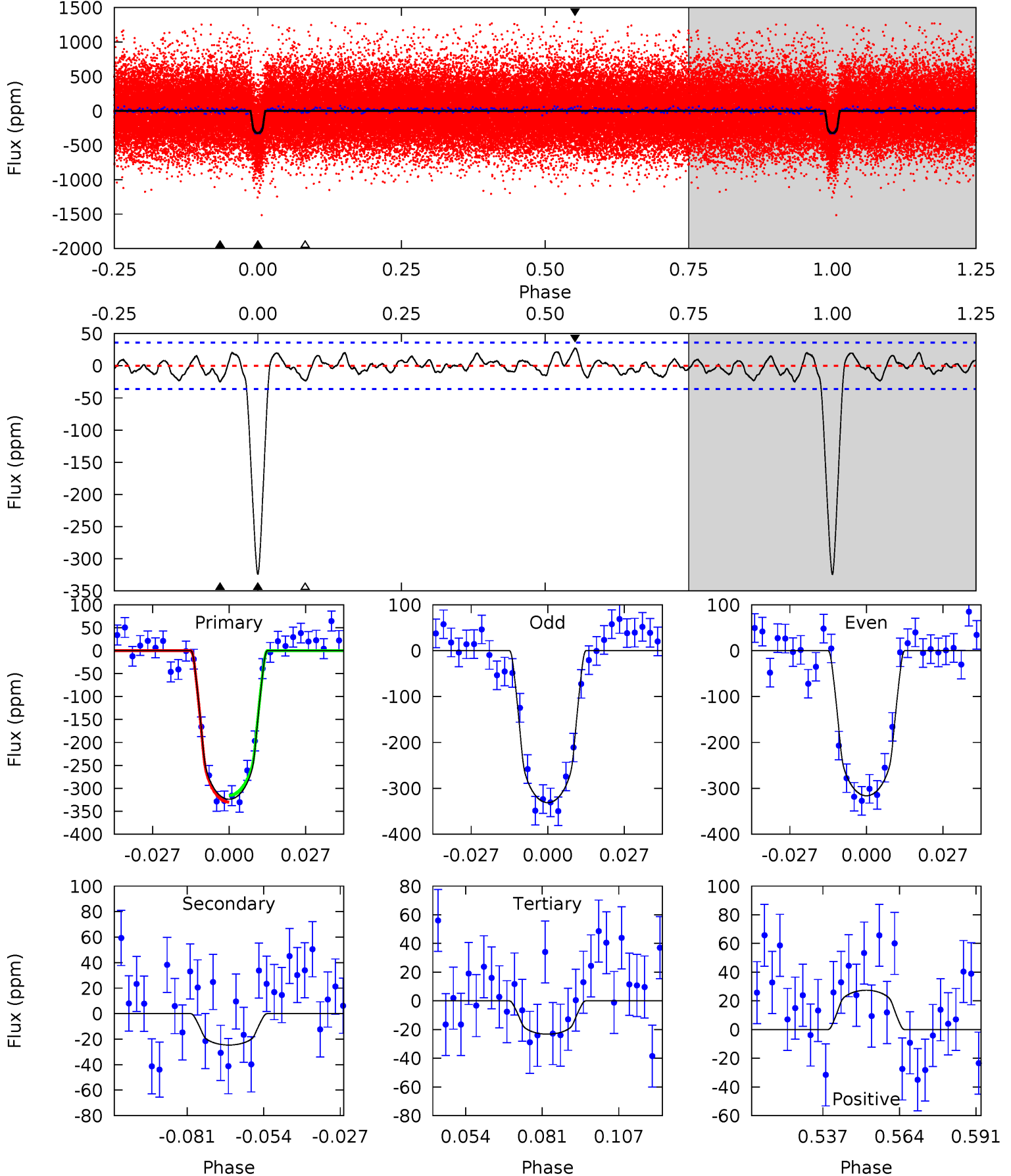
TCE 009838949-01 P= 4.880837 Days $T_0=136.198092$ (BKJD)



DV Model-Shift Uniqueness Test

009838949-01, P = 4.880854 Days, E = 131.314933 Days

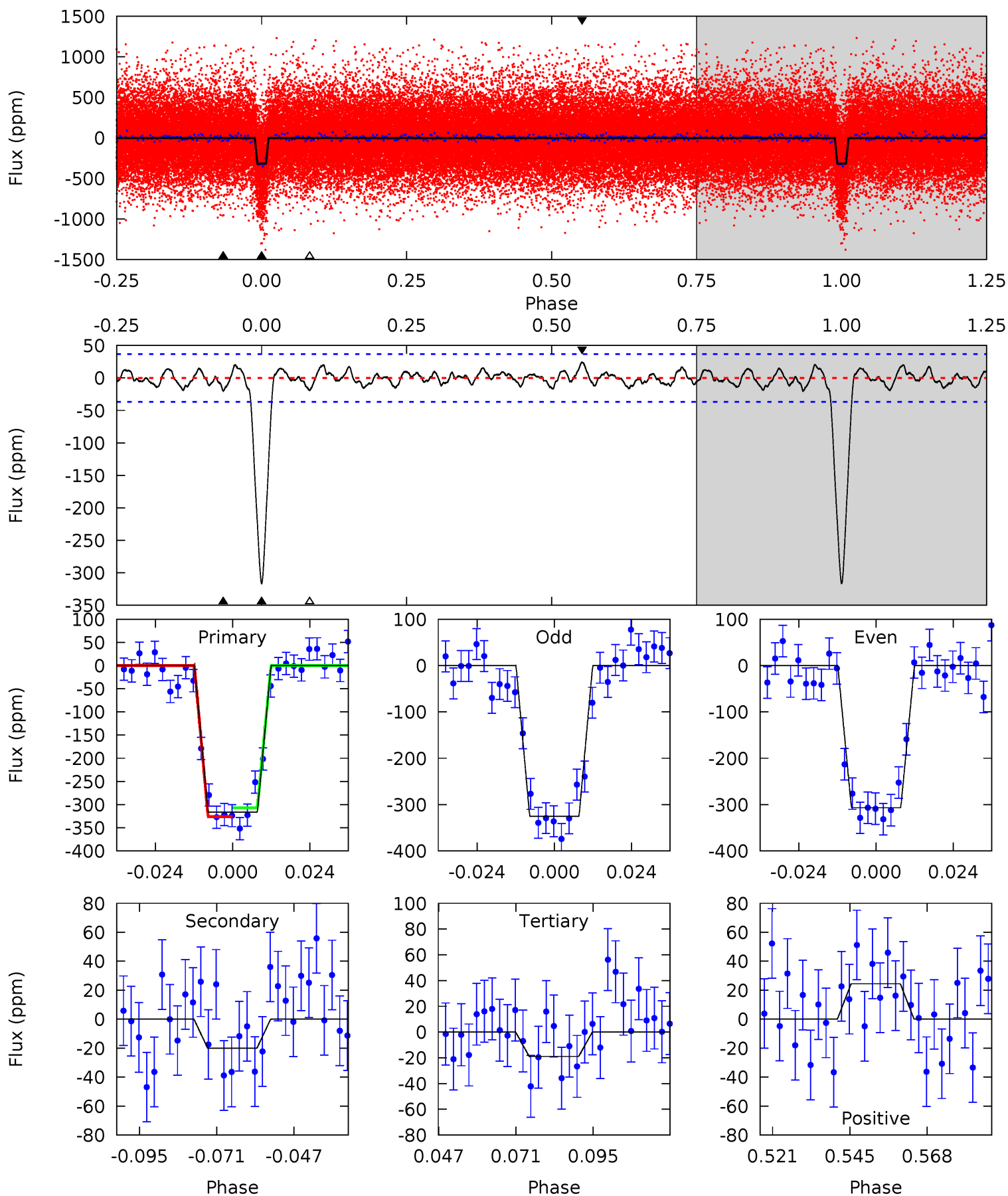
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 43.4 | 3.30 | 3.11 | 3.67 | 4.83 | 2.21 | 1.27 | 40.3 | 39.7 | 0.19 | -0.37 | 1.01 | 0.94 | 0.08 | 0.97 |



Alt Model-Shift Uniqueness Test

009838949-01, P = 4.880837 Days, E = 131.317255 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 41.9 | 2.64 | 2.51 | 3.23 | 4.86 | 2.26 | 1.11 | 39.4 | 38.6 | 0.13 | -0.58 | 1.23 | 0.96 | 0.07 | 1.27 |



Stellar Parameters For KIC 009838949

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 4929^{+148}_{-148} | $4.481^{+0.105}_{-0.560}$ | $0.360^{+0.100}_{-0.300}$ | $0.861^{+0.135}_{-0.098}$ | $0.817^{+0.057}_{-0.052}$ | $1.805^{+0.759}_{-1.553}$ |
| | +3%/-3% | +2%/-12% | +28%/-83% | +16%/-11% | +7%/-6% | +42%/-86% |
| 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 009838949-01 / KOI 1716.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|--------------------|----------------------|----------------------------|
| DV | -25 ± 7 | $1.95^{+0.63}_{-0.61}$ | 1256^{+82}_{-65} | 3056^{+372}_{-285} | $9.688^{+12.119}_{-4.853}$ |
| Alt. | -20 ± 8 | $1.74^{+0.62}_{-0.56}$ | 1253^{+86}_{-71} | 3047^{+432}_{-320} | $9.820^{+13.771}_{-5.348}$ |

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 $A_{obs} \gg 1.0$

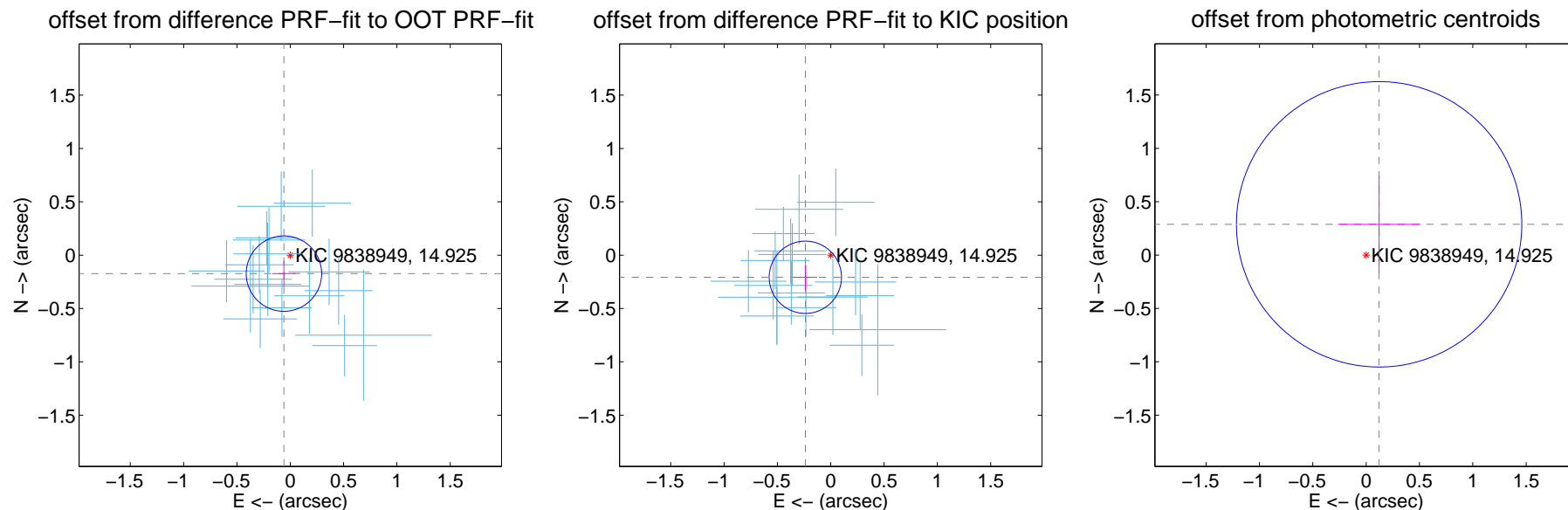
DV Centroid Data

Supplemental centroid analysis for 009838949-01. Kepler magnitude: 14.93. Transit SNR 29.33

There are 17 quarters with good PRF difference image offsets

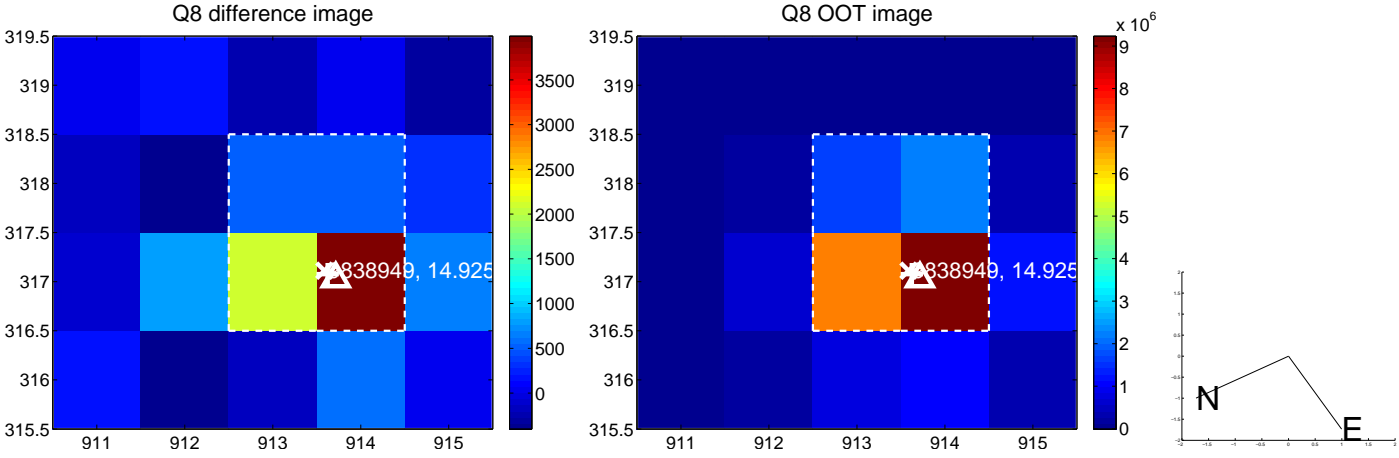
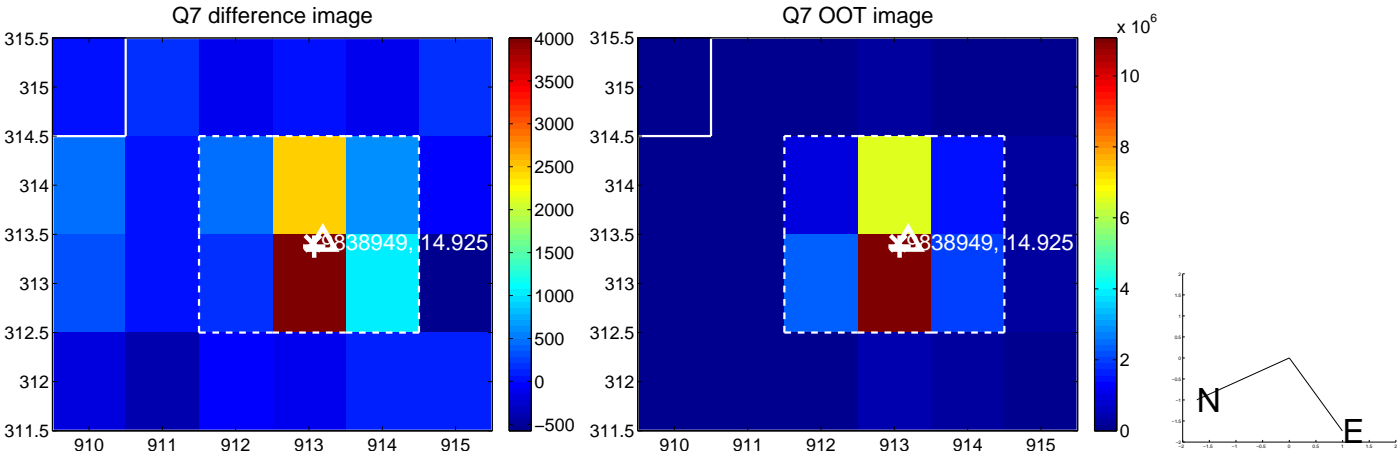
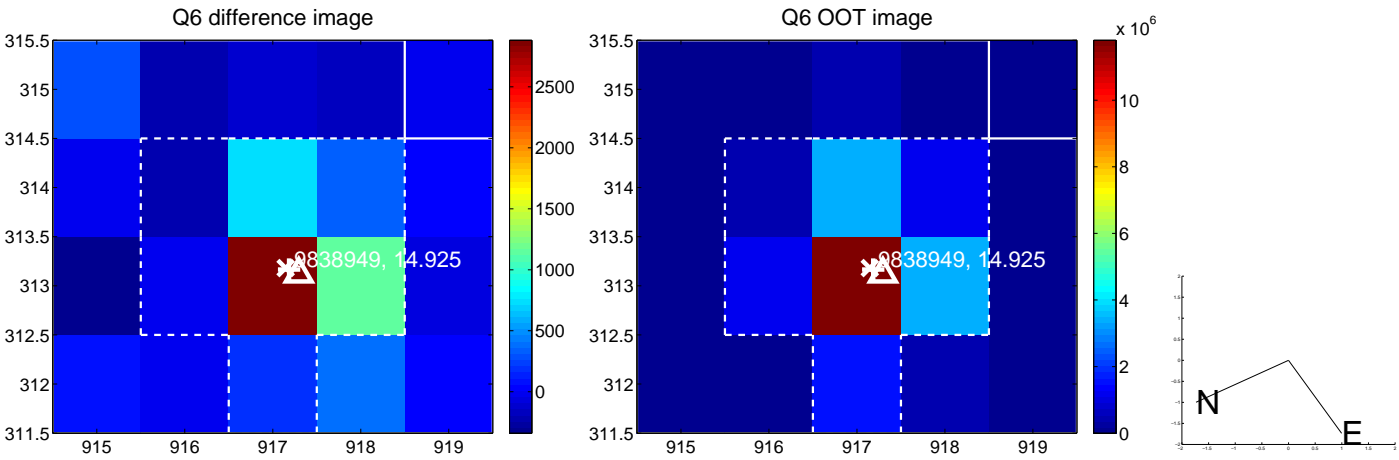
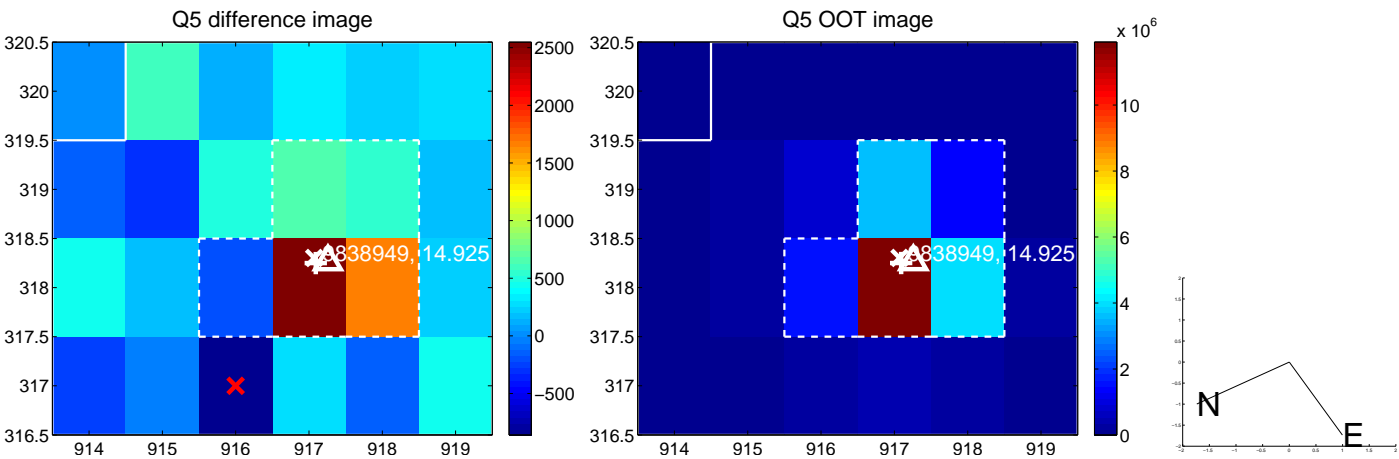
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.183 ± 0.118 | 1.55 | 0.059 ± 0.110 | -0.173 ± 0.119 |
| PRF-fit source offset from KIC position | 0.316 ± 0.113 | 2.79 | 0.238 ± 0.110 | -0.207 ± 0.116 |
| photometric centroid source offset | 0.31 ± 0.45 | 0.70 | -0.12 ± 0.39 | 0.29 ± 0.46 |

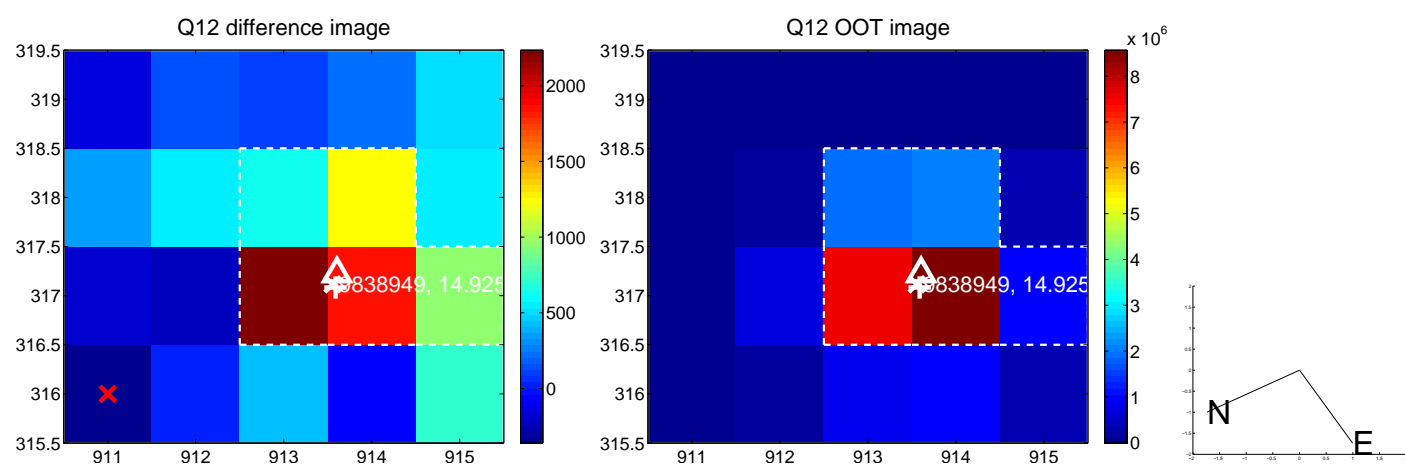
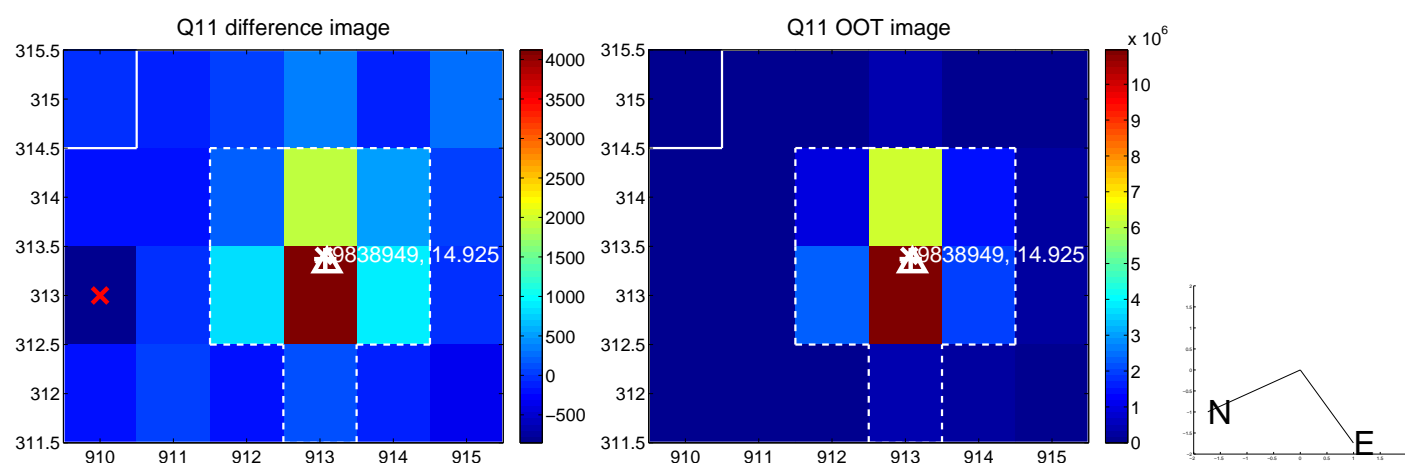
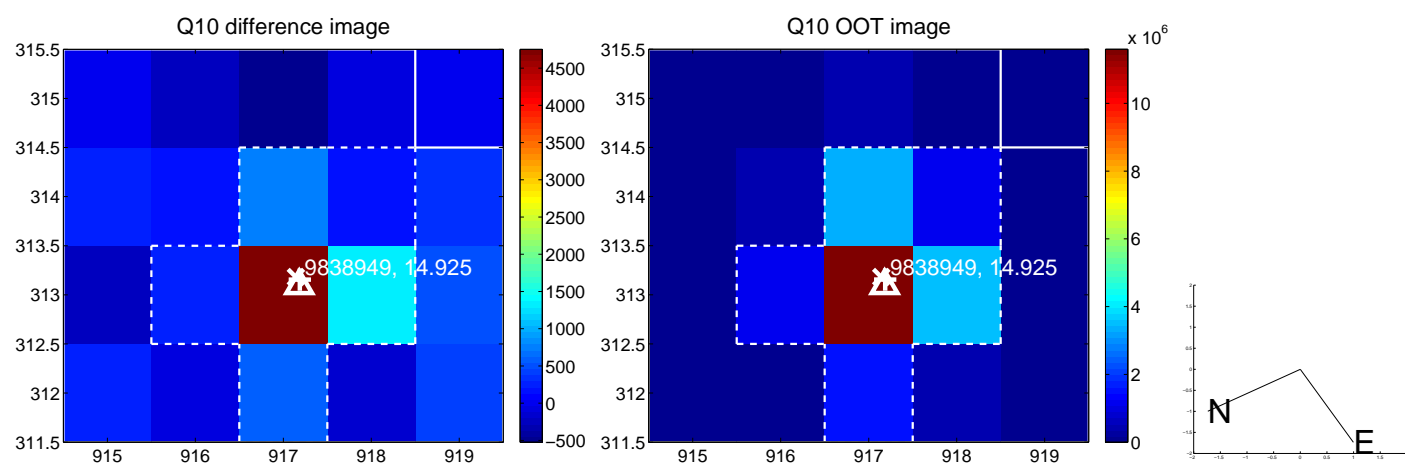
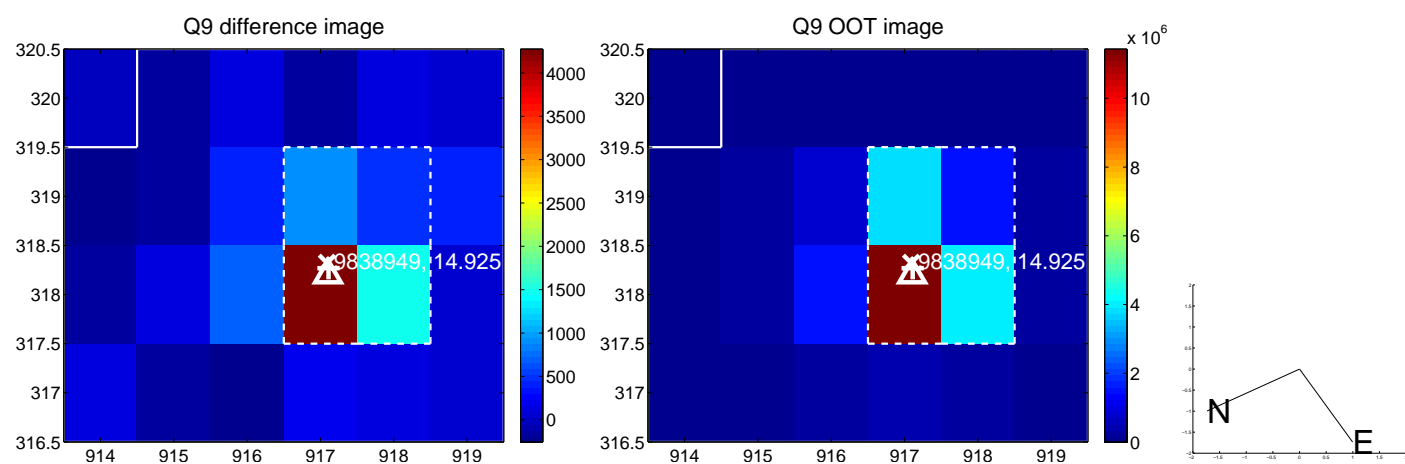


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

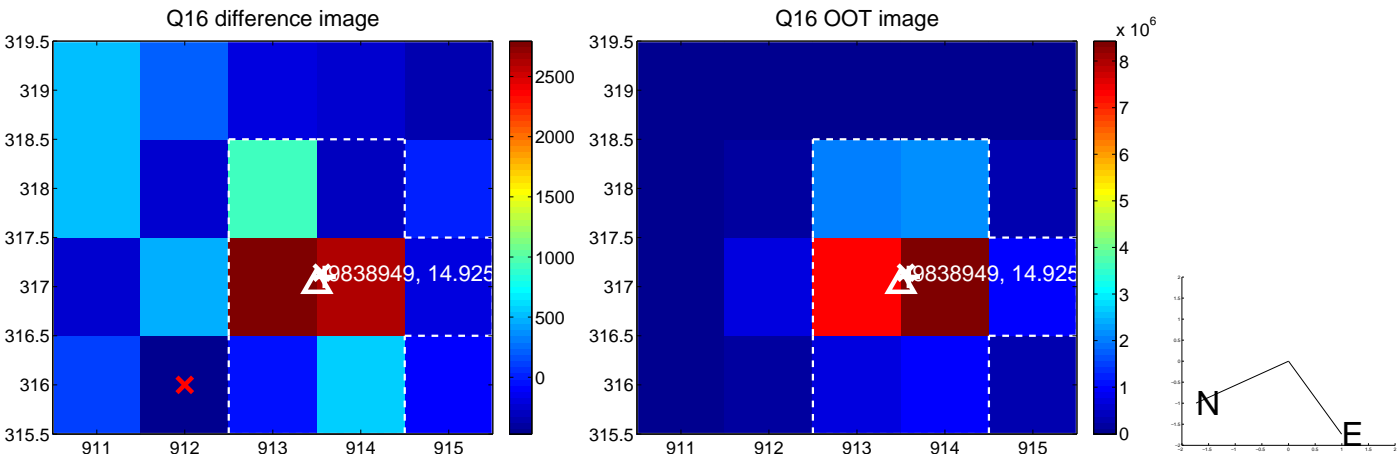
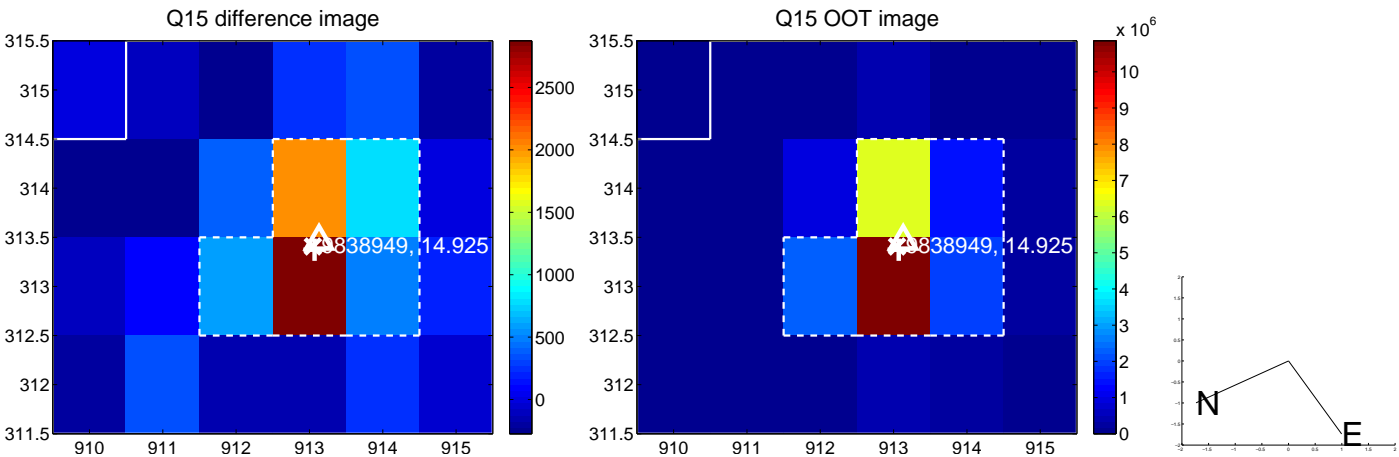
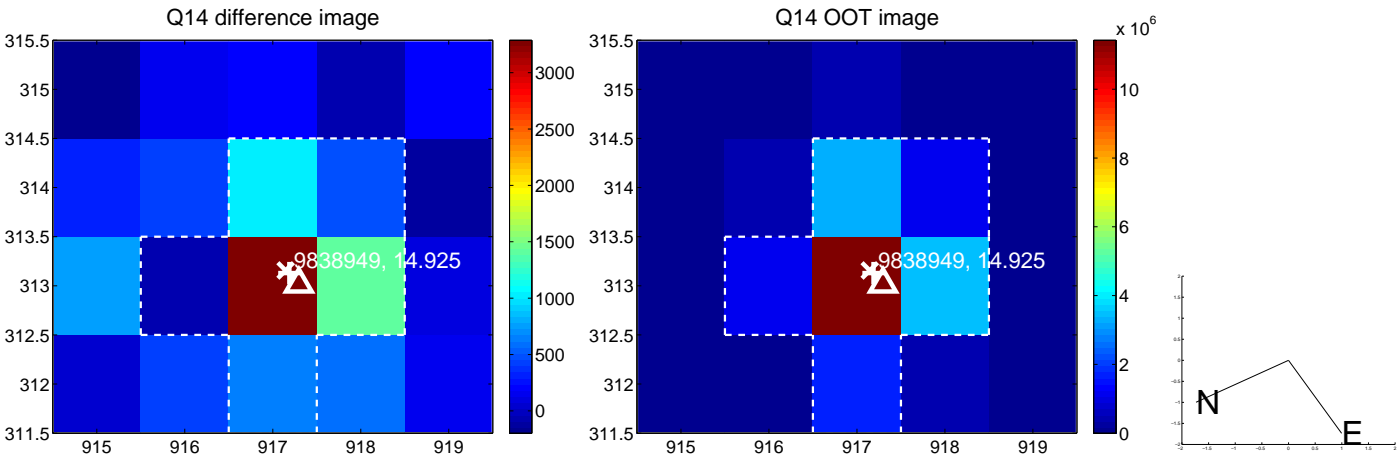
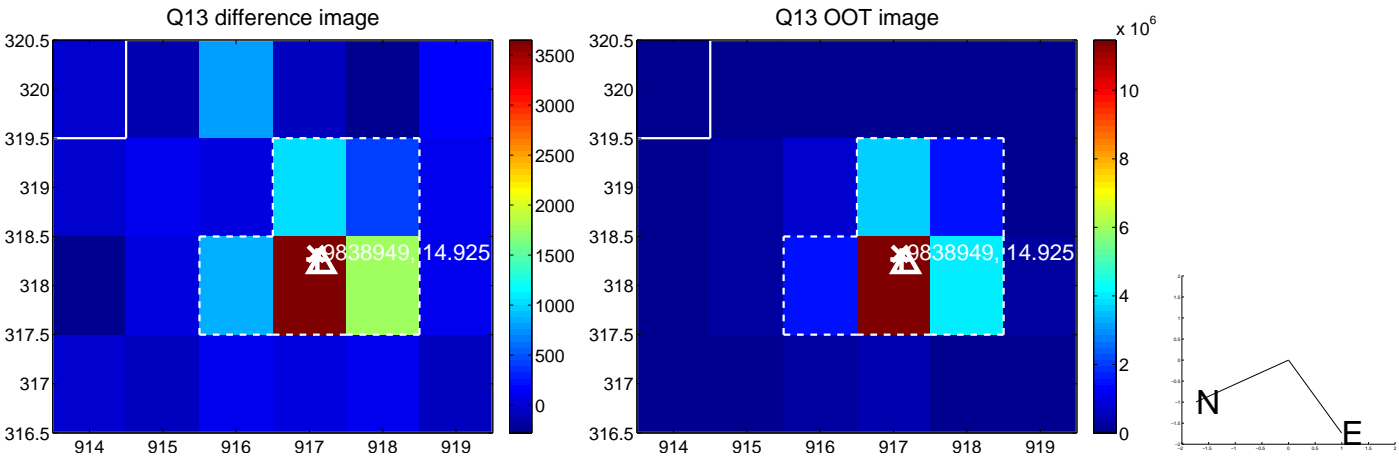
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



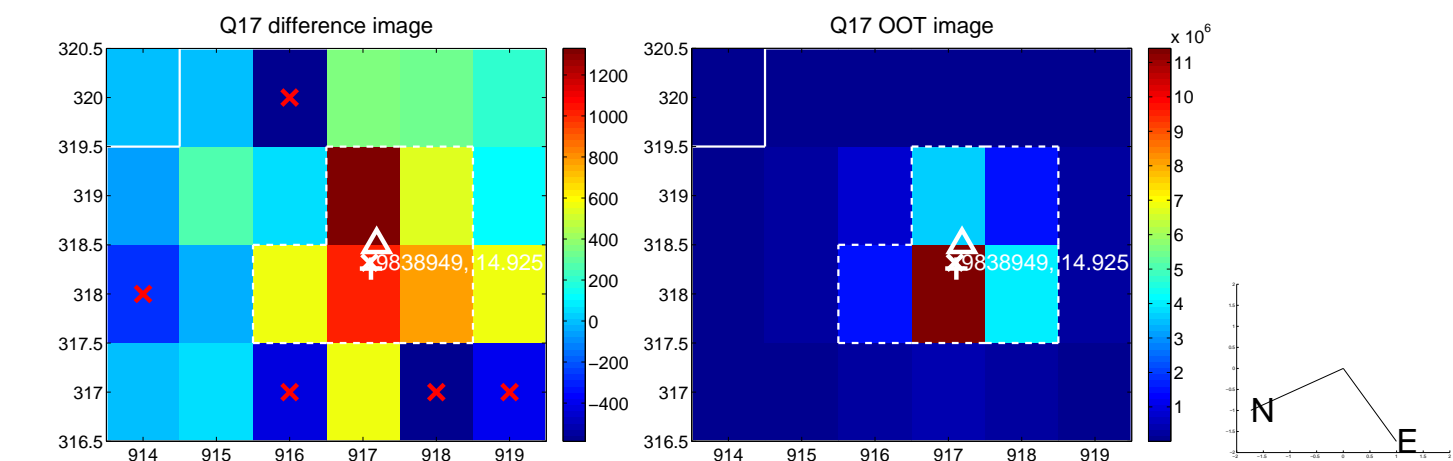
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



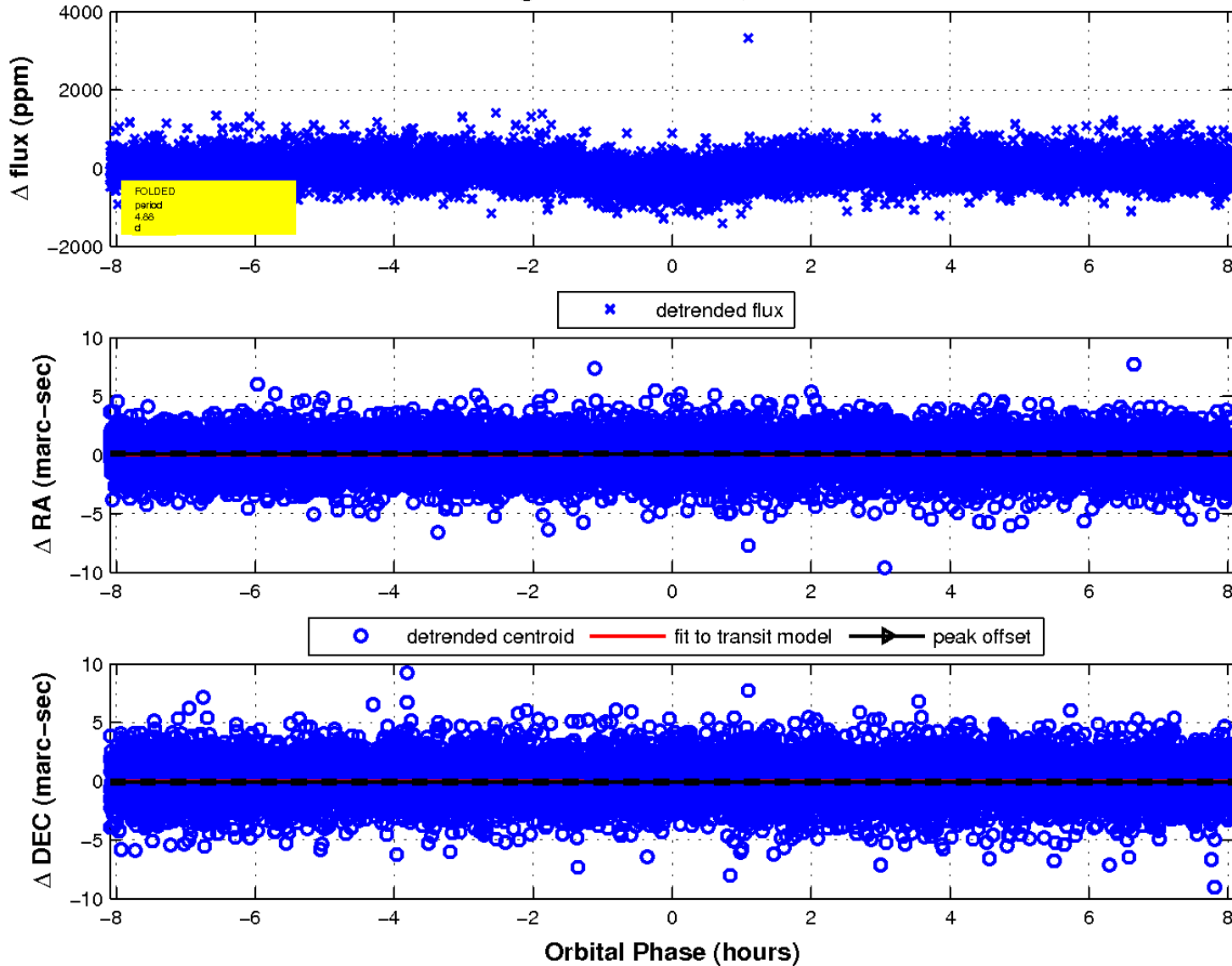
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

