

KIC 007989422

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 007989422-01 | OBS | 2151.01 | 7.477562 | 133.416469 | 80.1 | 2.657 | 29.1 | 18.7 | 1.95 | 5957 | 2.10 | 777.07 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 007989422-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST |

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 007989422-01

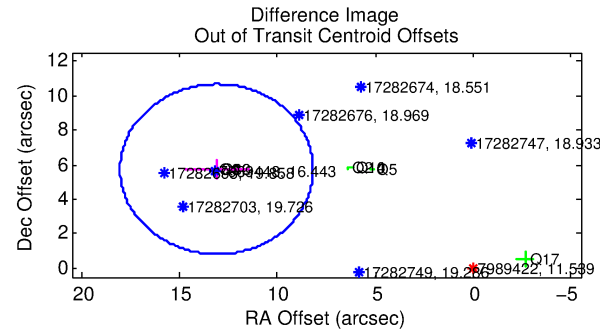
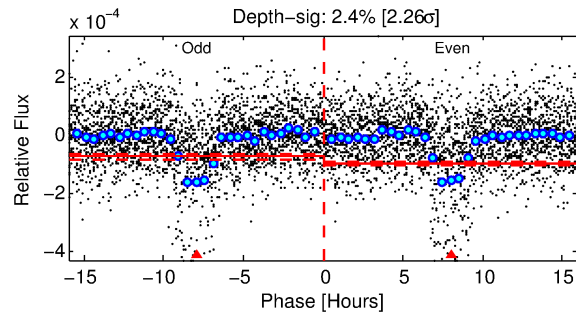
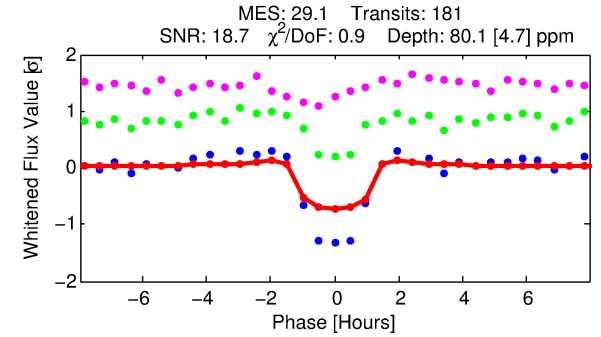
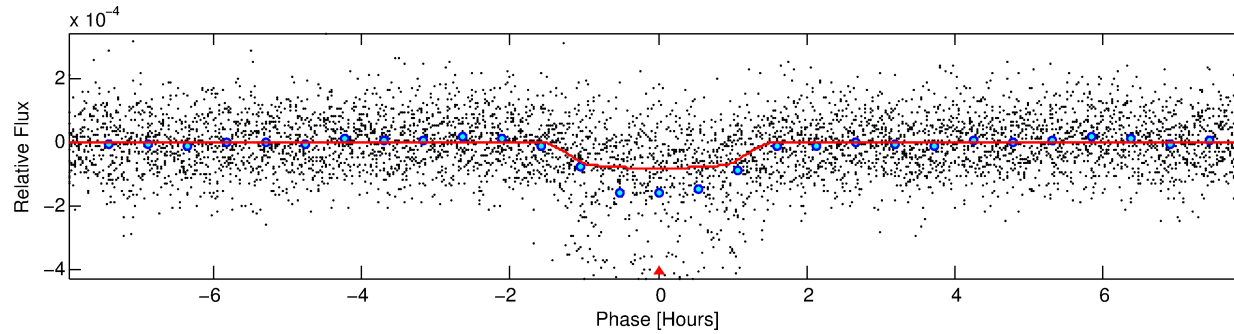
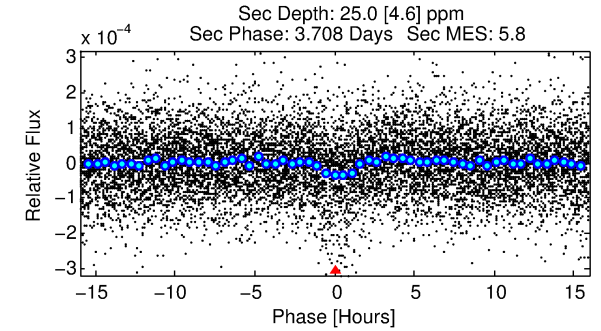
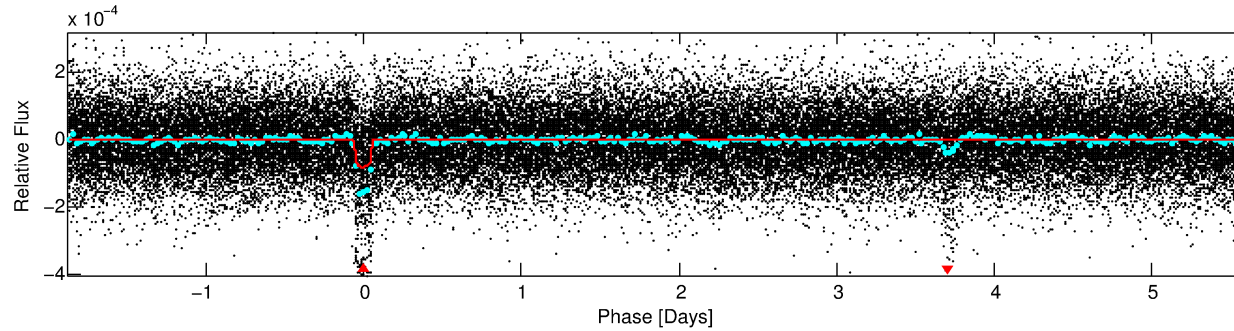
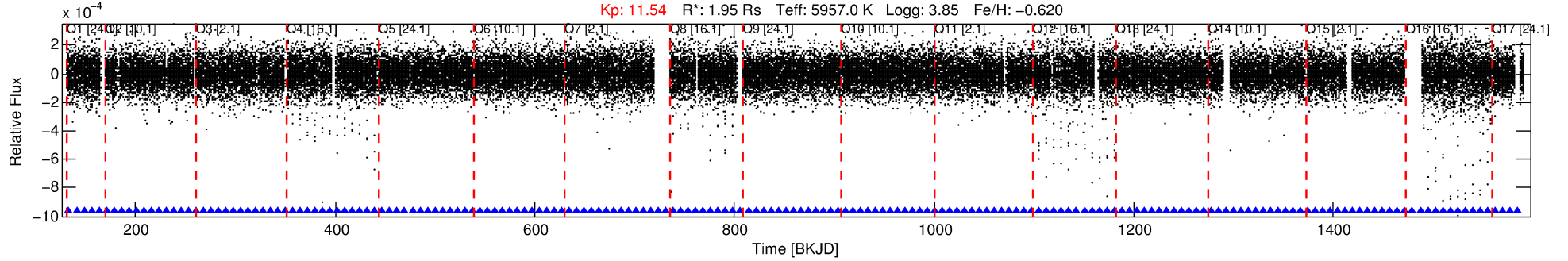
No Significant Match Found

DV One-Page Summary

KIC: 7989422 Candidate: 1 of 1 Period: 7.478 d

KOI: K02151.01 Corr: 0.945

Kp: 11.54 R*: 1.95 Rs Teff: 5957.0 K Logg: 3.85 Fe/H: -0.620



DV Fit Results:

Period = 7.47756 [0.00002] d
Epoch = 133.4165 [0.0024] BKJD
Rp/R* = 0.0099 [0.0022]
a/R* = 8.90 [10.85]
b = 0.92 [0.20]
Seff = 777.07 [412.70]
Teq = 1346 [179] K
Rp = 2.10 [0.83] Re
a = 0.0744 [0.0238] AU
Ag = 17.27 [12.33] [1.32σ]
Teffp = 4243 [532] K [5.16σ]

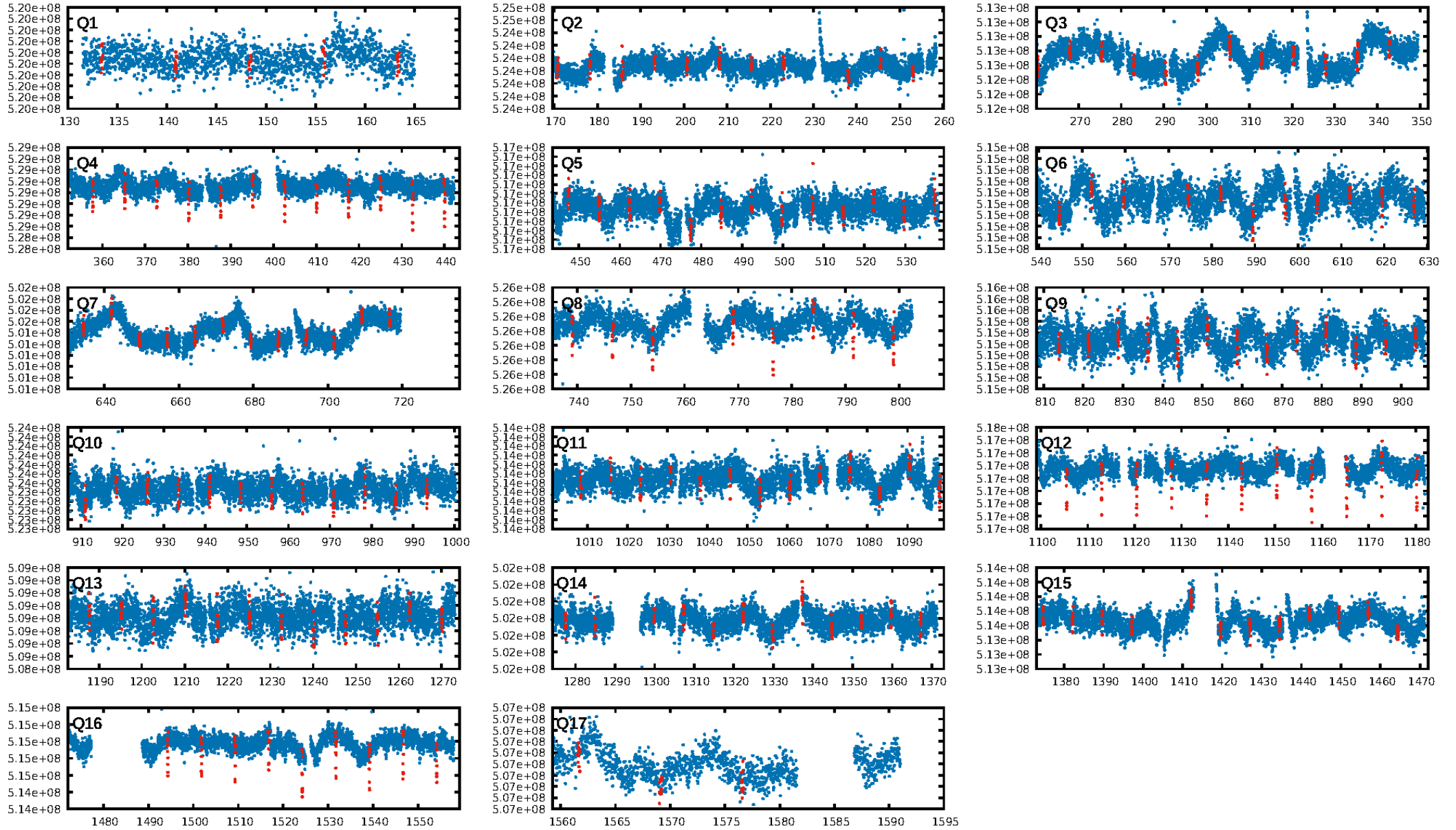
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.80e-170
RollingBand-fgt: 1.00 [173/173]
GhostDiagnostic-chr: -0.09548
Centroid-sig: 0.0%
Centroid-so: 8.951 arcsec [13.84σ]
OotOffset-rm: 14.304 arcsec [8.71σ]
KicOffset-rm: 14.139 arcsec [8.57σ]
OotOffset-st: 4/0/4/2 [10]
KicOffset-st: 4/0/4/2 [10]
DiffImageQuality-fgm: 0.50 [5/10]
DiffImageOverlap-fno: 1.00 [17/17]

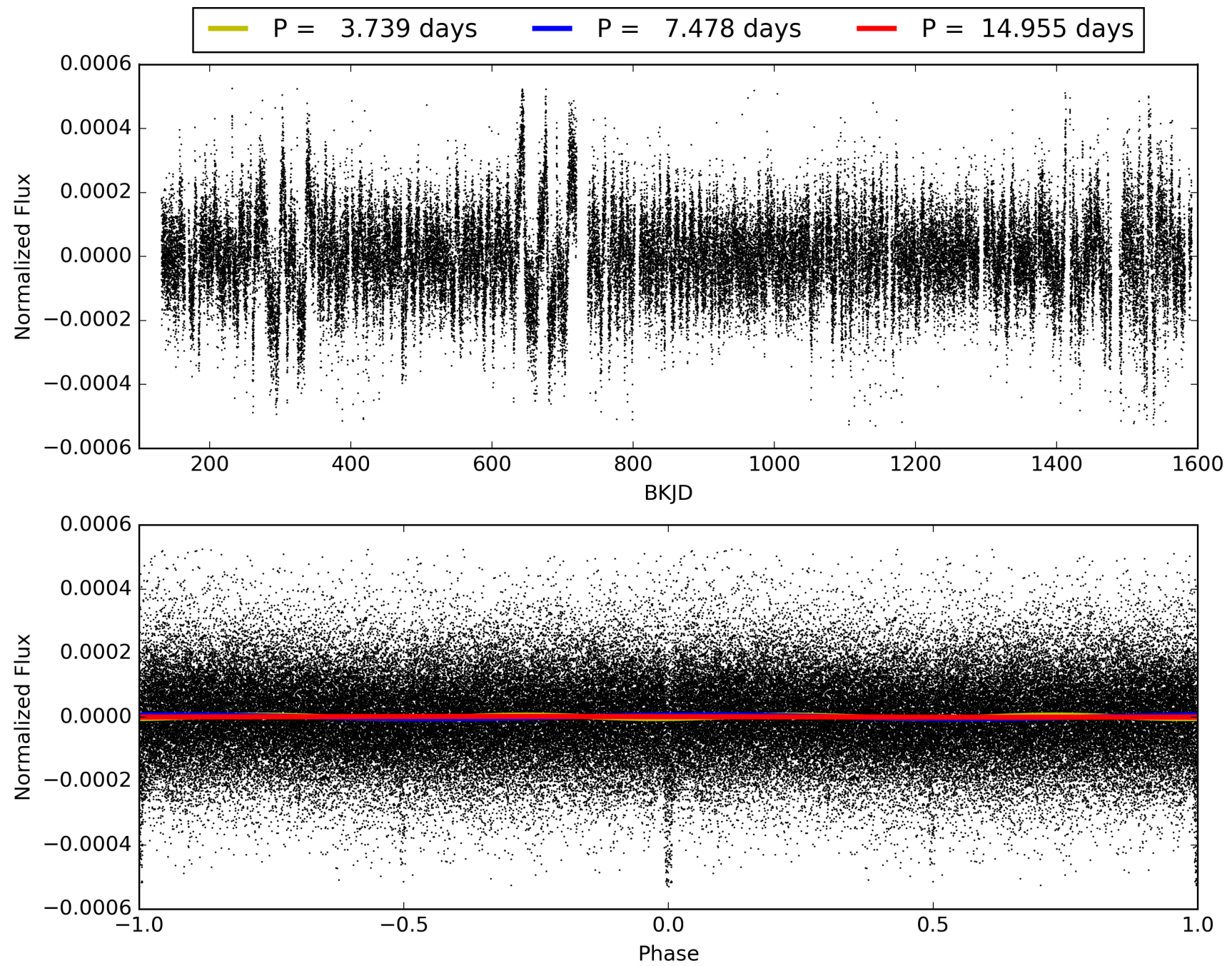
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:33:25 Z

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

TCE 007989422-01, PDC Light Curves

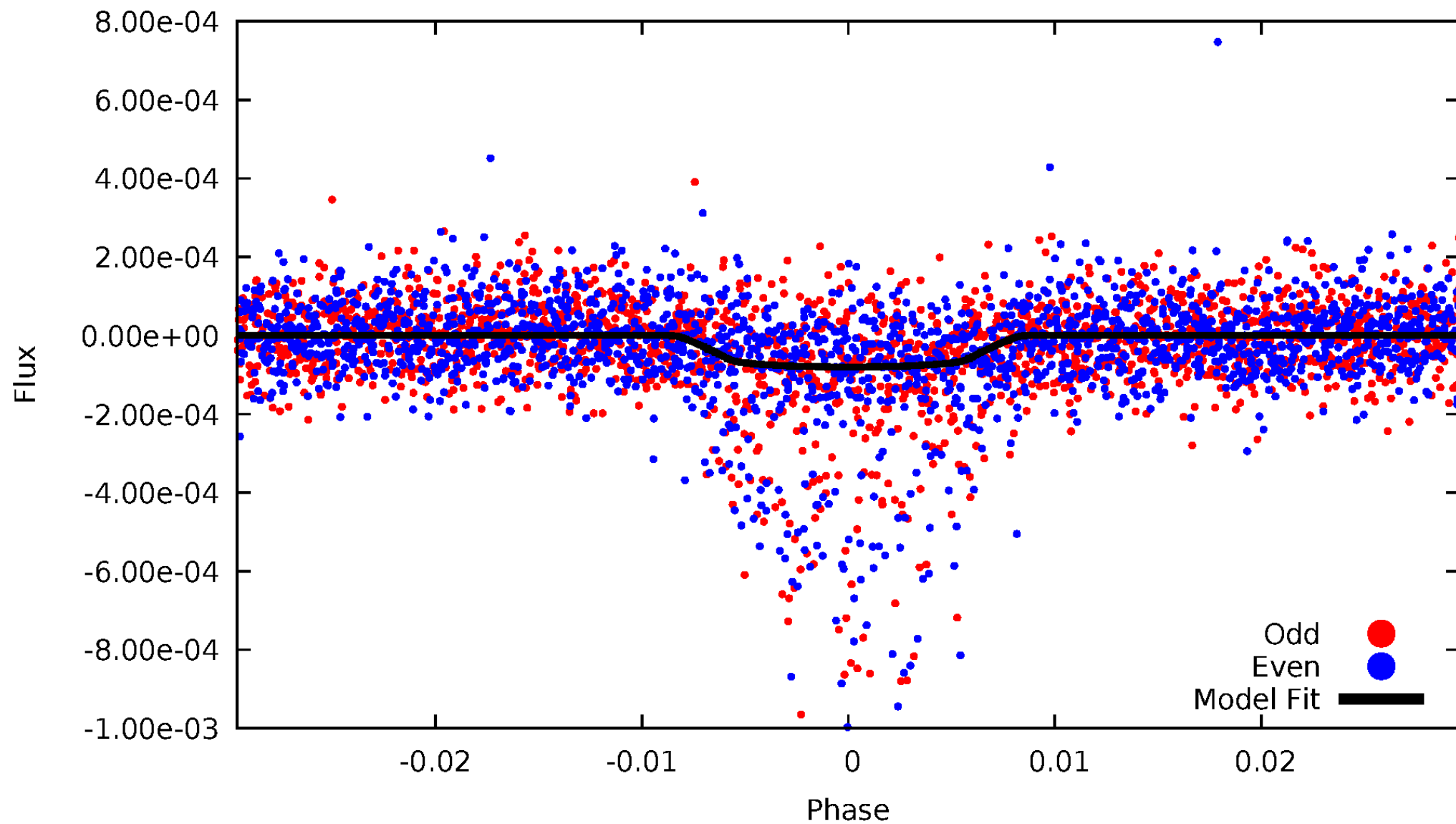


TCE 007989422-01



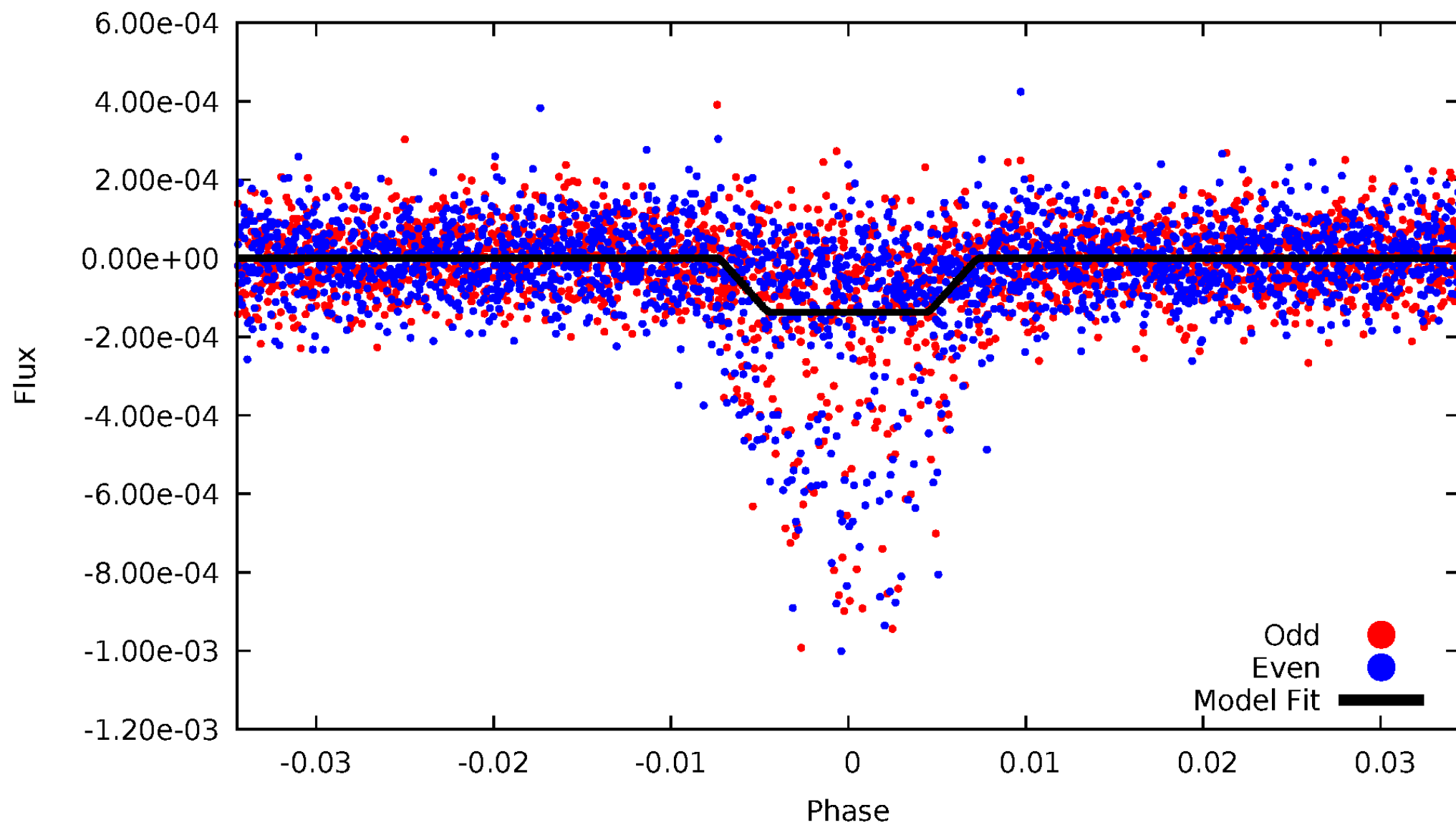
DV Odd/Even

TCE 007989422-01



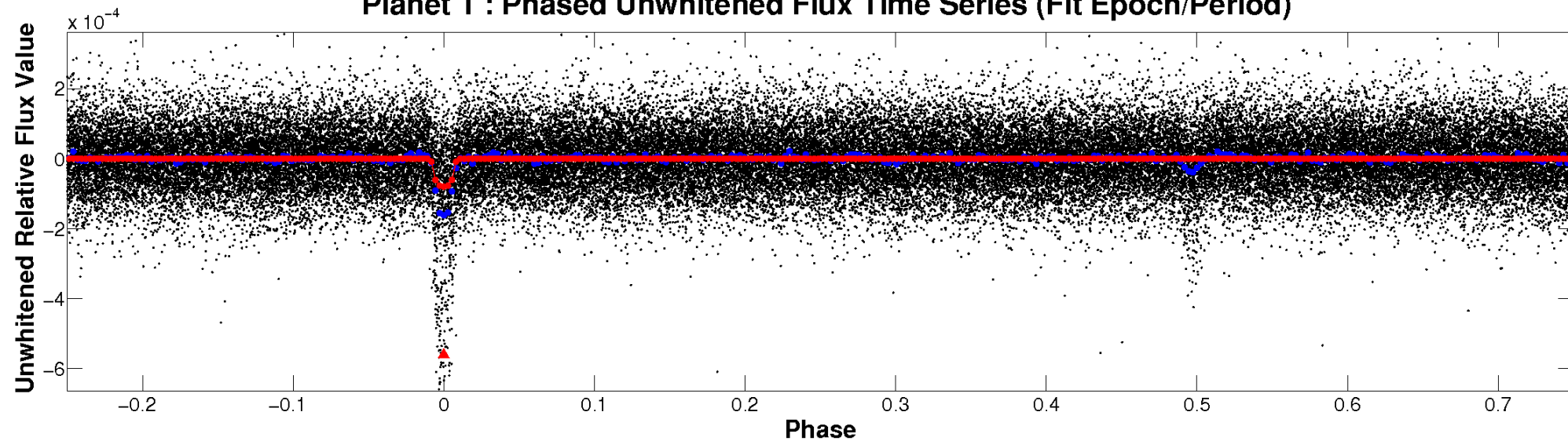
ALT Odd/Even

TCE 007989422-01

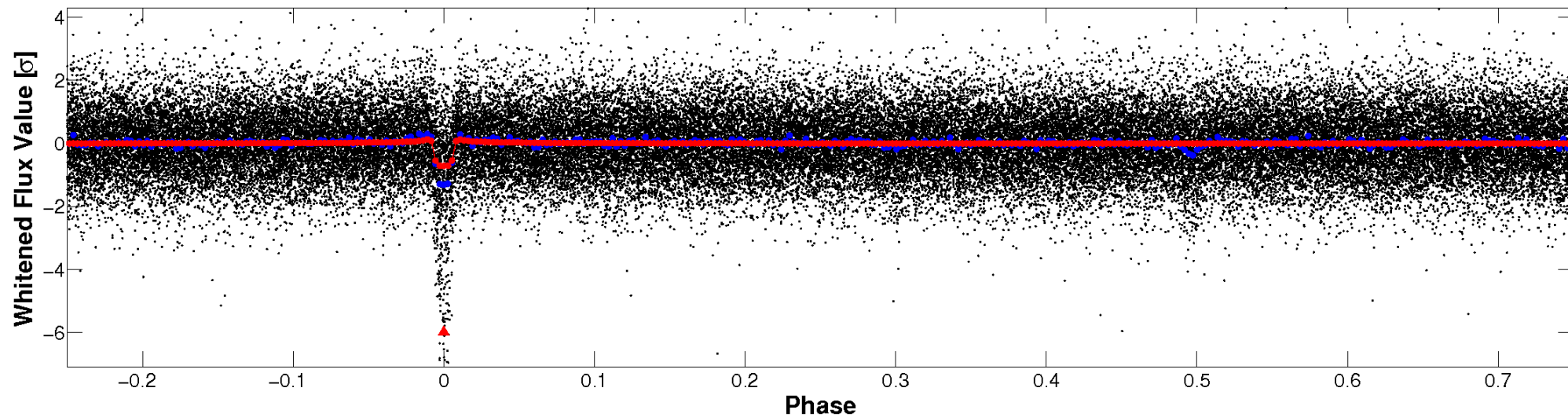


Non-Whitened Vs. Whitened Light Curve

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

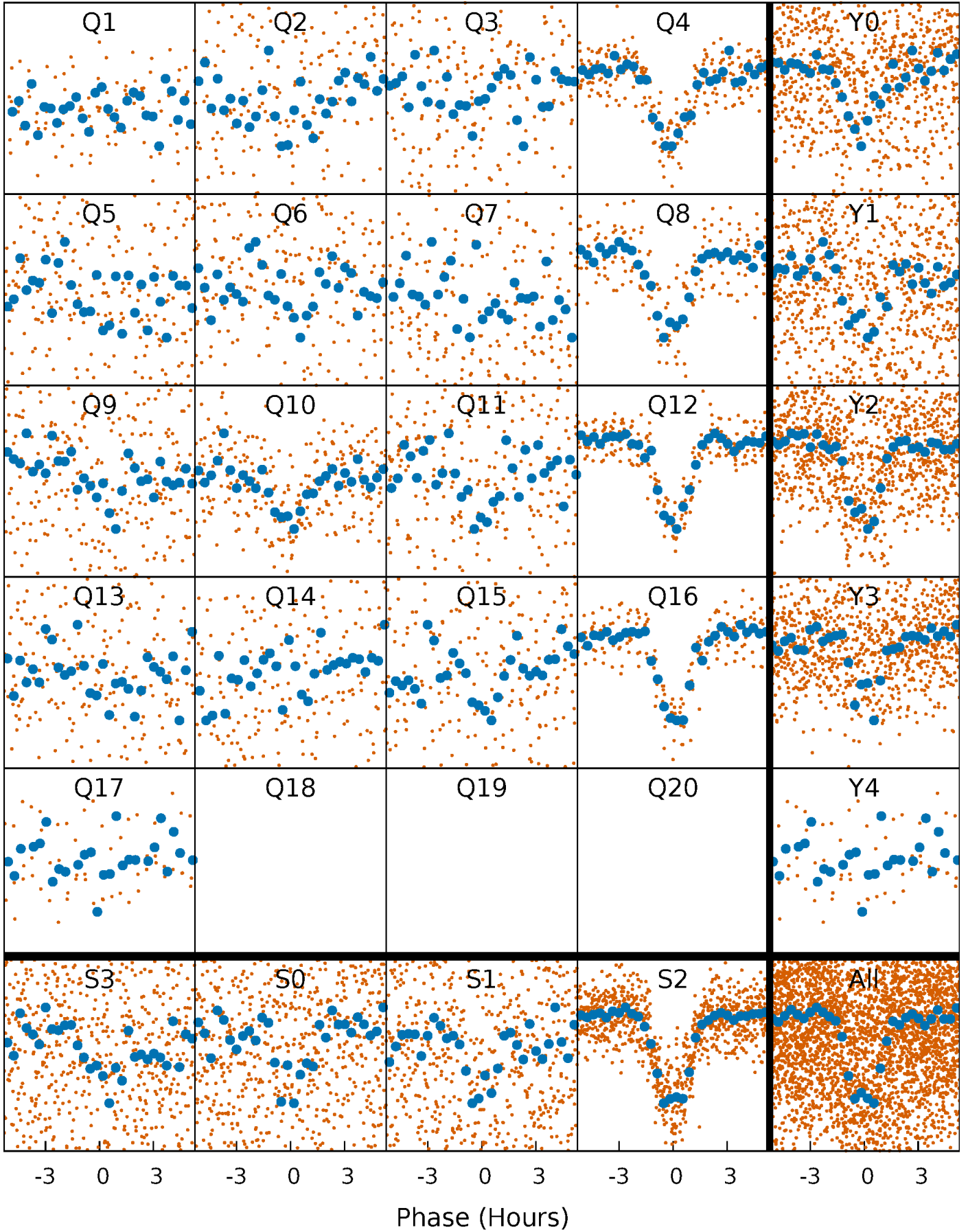


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



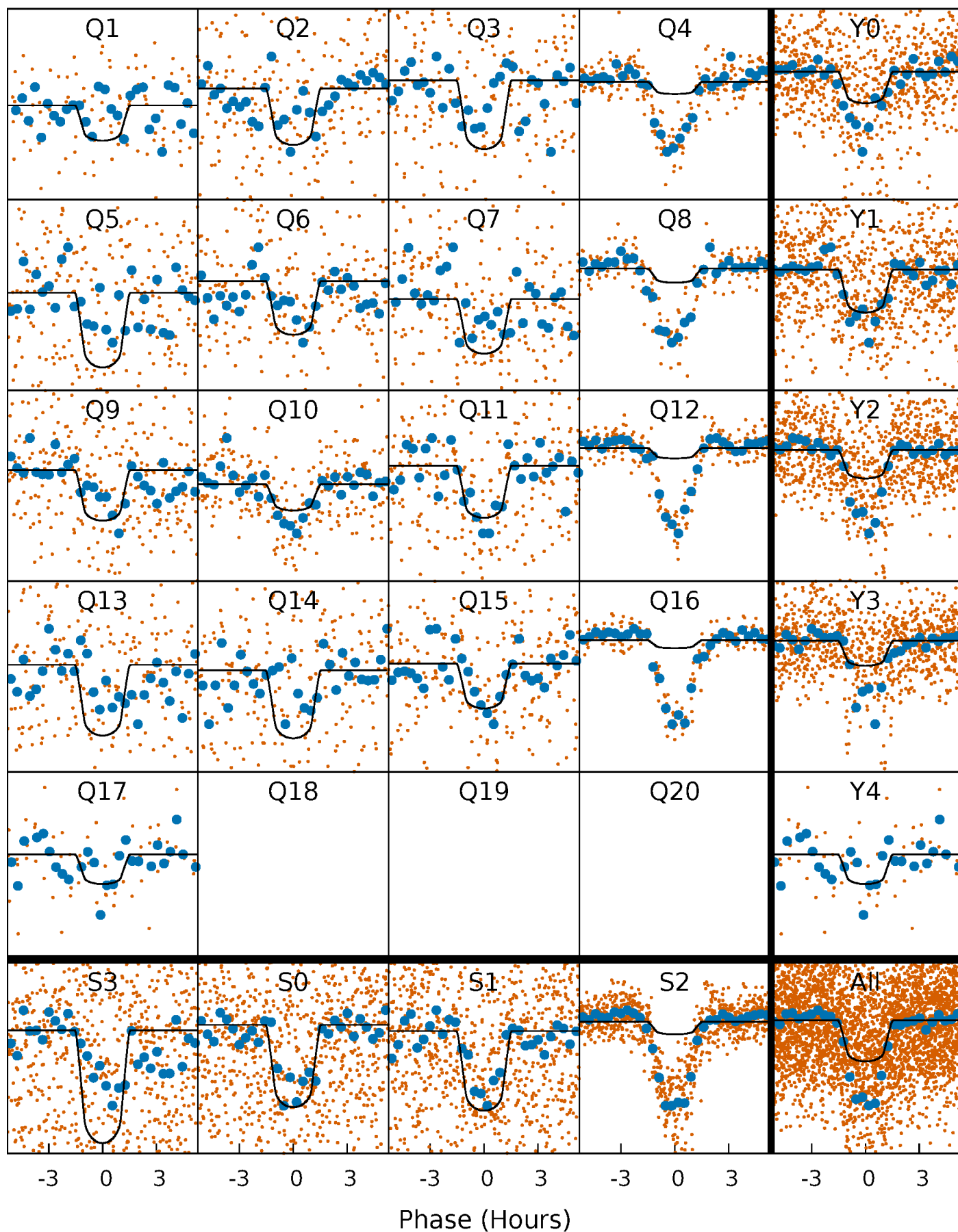
PDC Quarter-Phased Transit Curves

TCE 007989422-01 P= 7.477562 Days $T_0=133.416469$ (BKJD)



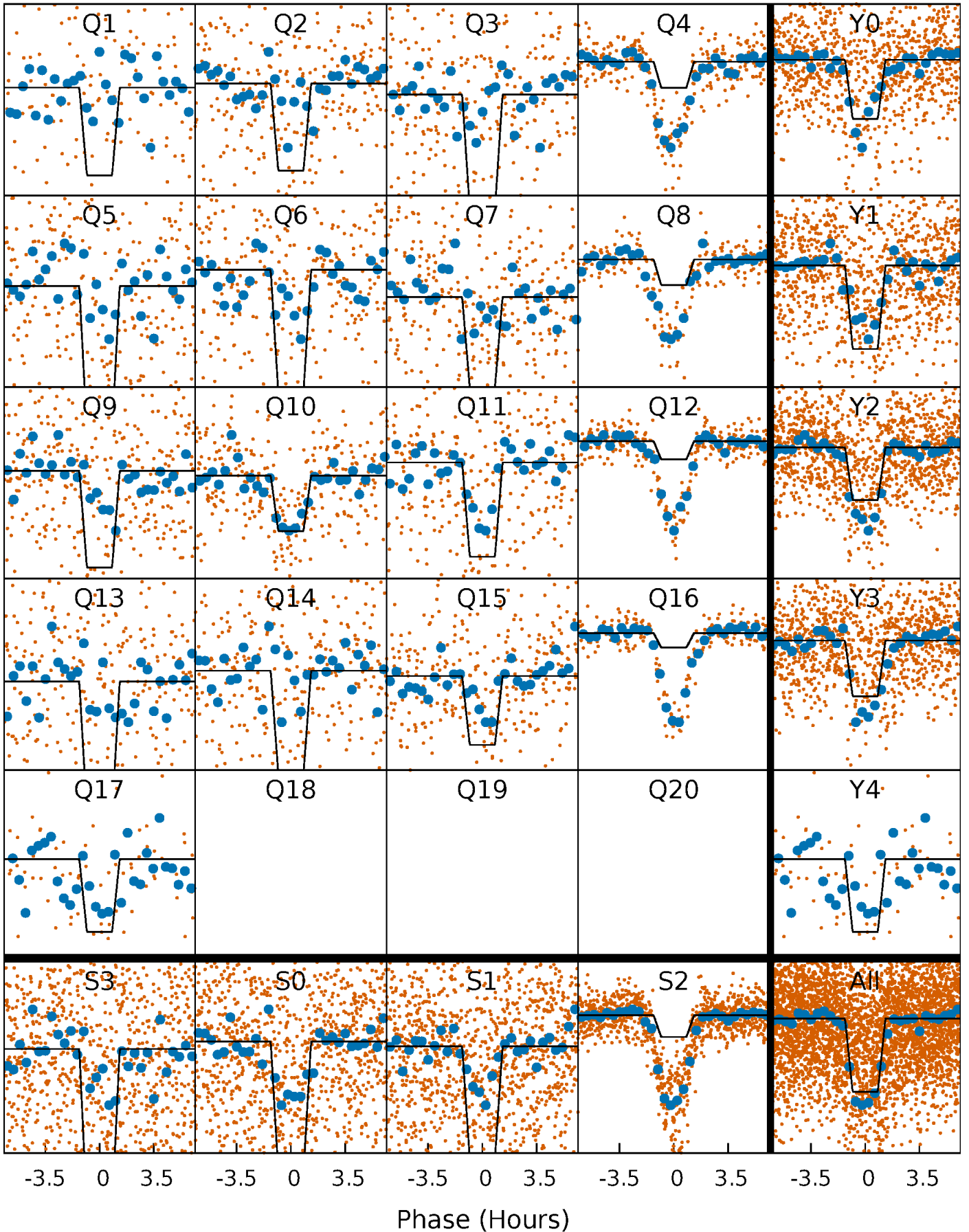
DV Quarter-Phased Transit Curves

TCE 007989422-01 P= 7.477562 Days $T_0=133.416469$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

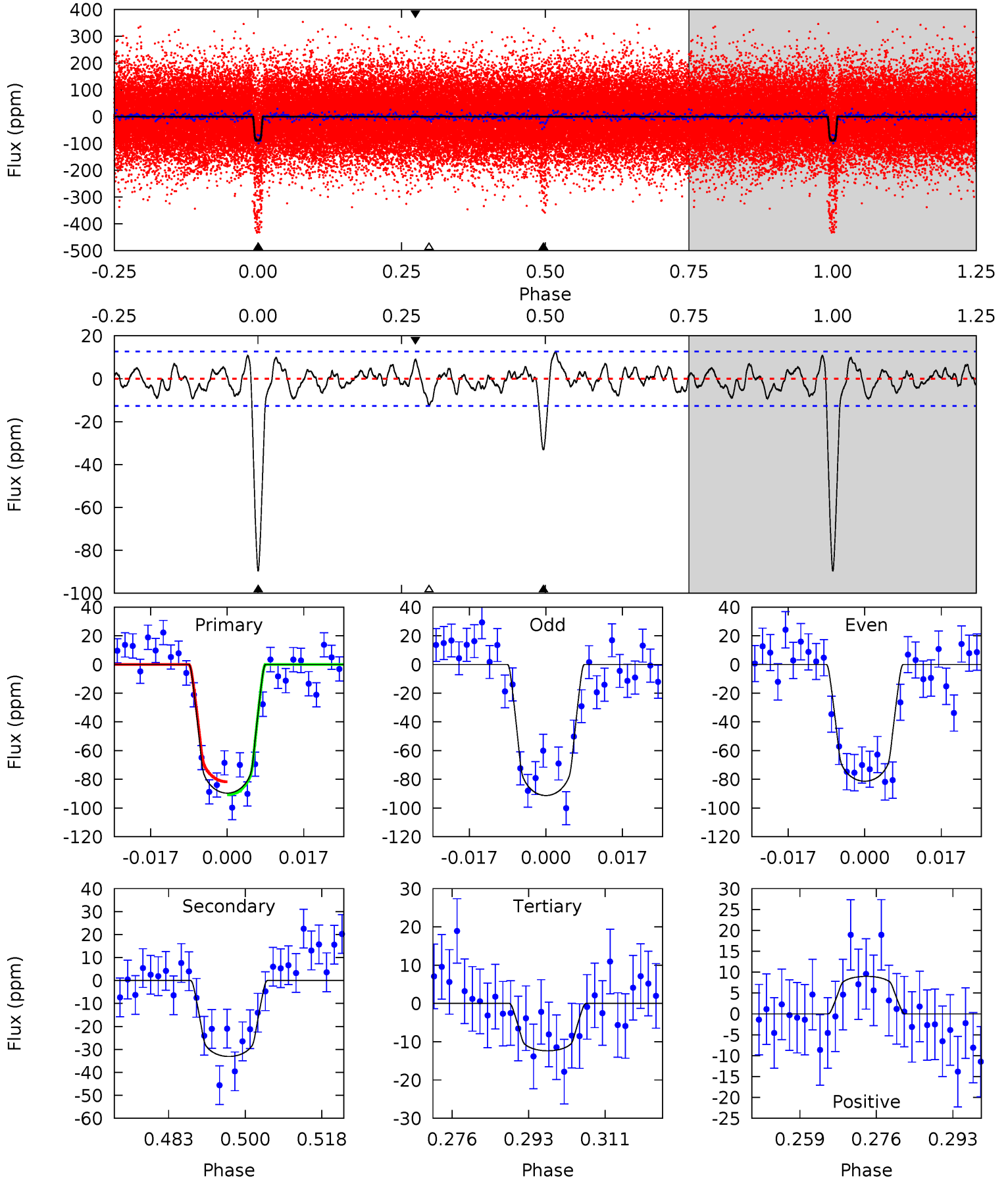
TCE 007989422-01 P= 7.477578 Days $T_0=133.416035$ (BKJD)



DV Model-Shift Uniqueness Test

007989422-01, P = 7.477562 Days, E = 125.938907 Days

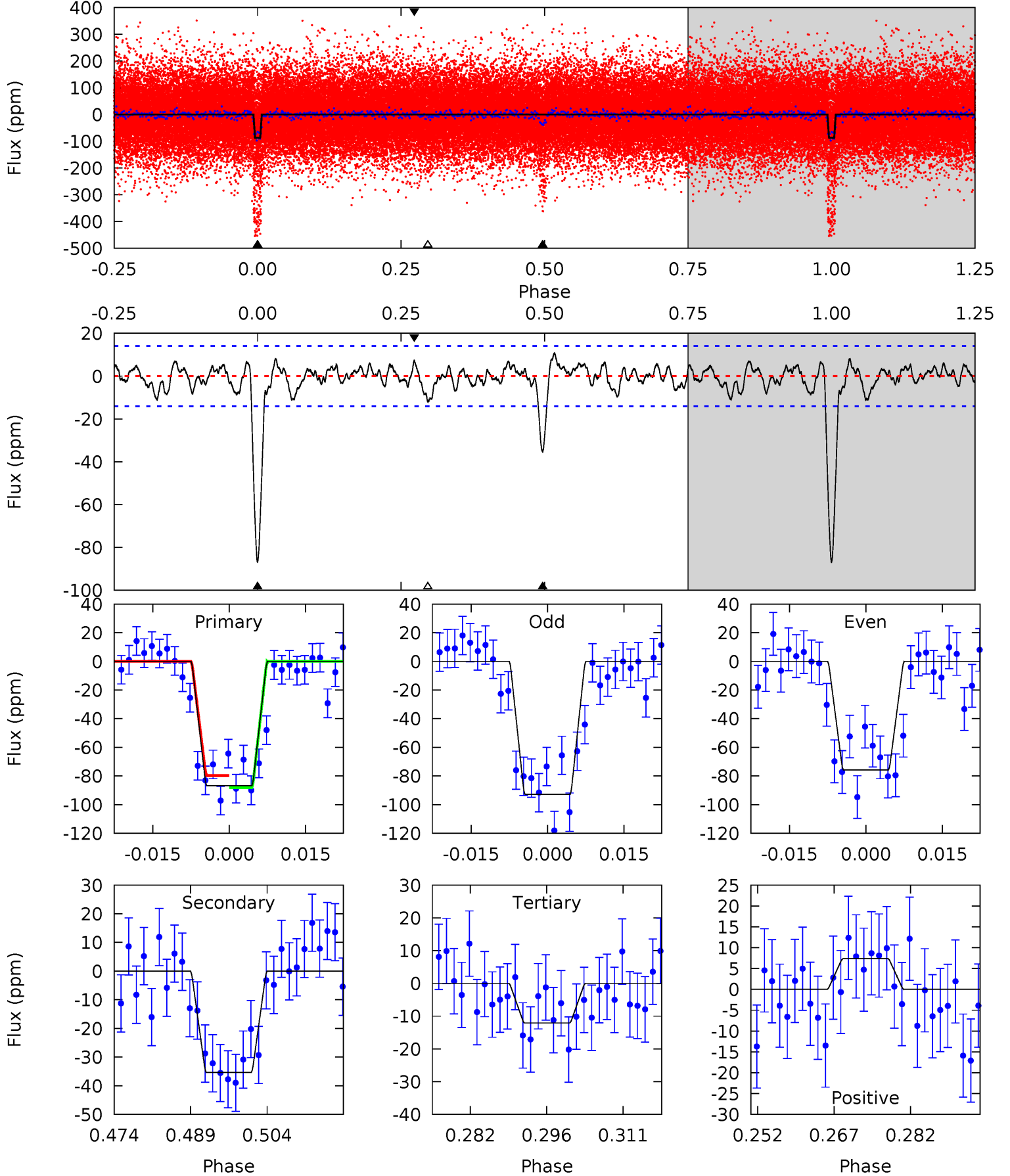
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 34.6 | 12.8 | 4.78 | 3.47 | 4.92 | 2.38 | 1.62 | 29.9 | 31.2 | 8.01 | 9.31 | 1.92 | 2.12 | 0.12 | 1.74 |



Alt Model-Shift Uniqueness Test

007989422-01, P = 7.477578 Days, E = 125.938457 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 30.5 | 12.4 | 4.25 | 2.58 | 4.95 | 2.44 | 1.45 | 26.3 | 27.9 | 8.18 | 9.85 | 3.00 | 2.19 | 0.11 | 1.46 |



Stellar Parameters For KIC 007989422

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5957^{+164}_{-149} | $3.849^{+0.308}_{-0.132}$ | $-0.620^{+0.350}_{-0.200}$ | $1.953^{+0.421}_{-0.631}$ | $0.983^{+0.148}_{-0.133}$ | $0.186^{+0.376}_{-0.069}$ |
| | +3%/-3% | +8%/-3% | +56%/-32% | +22%/-32% | +15%/-14% | +202%/-37% |
| 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 007989422-01 / KOI 2151.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|-------------|------------------------|----------------------|----------------------|------------------|
| DV | -33 ± 3 | $2.01^{+0.62}_{-0.54}$ | 1867^{+115}_{-171} | 4682^{+566}_{-369} | 25^{+20}_{-11} |
| Alt. | -35 ± 3 | $2.43^{+0.61}_{-0.58}$ | 1870^{+120}_{-156} | 4428^{+401}_{-288} | 18^{+12}_{-7} |

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 $A_{\text{obs}} \gg 1.0$

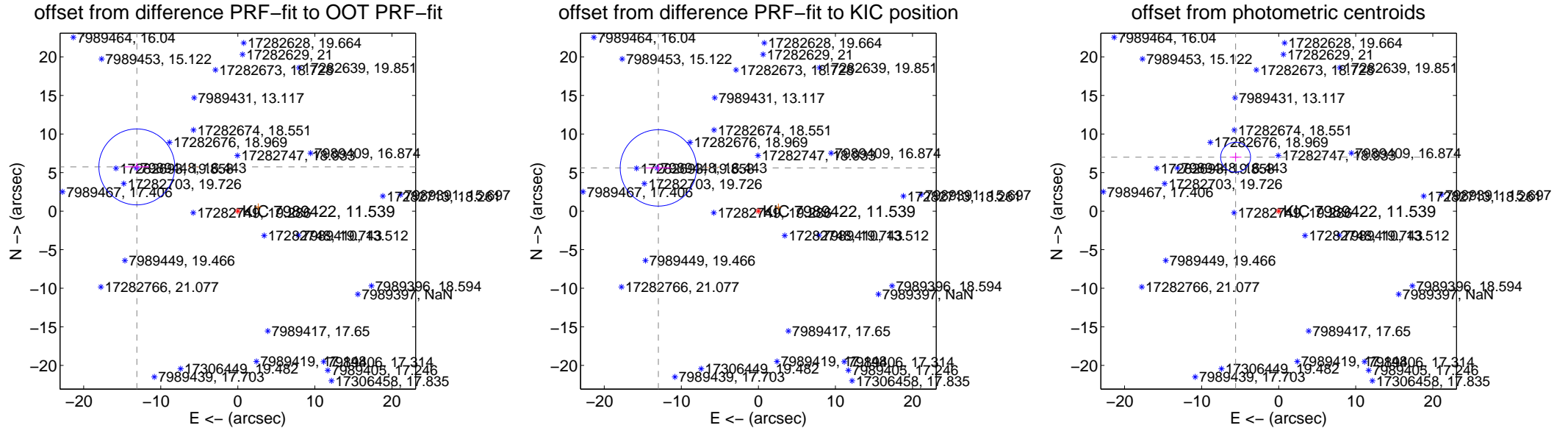
DV Centroid Data

Supplemental centroid analysis for 007989422-01. **Kepler magnitude: 11.54.** Transit SNR 18.71

There are 5 quarters with good PRF difference image offsets

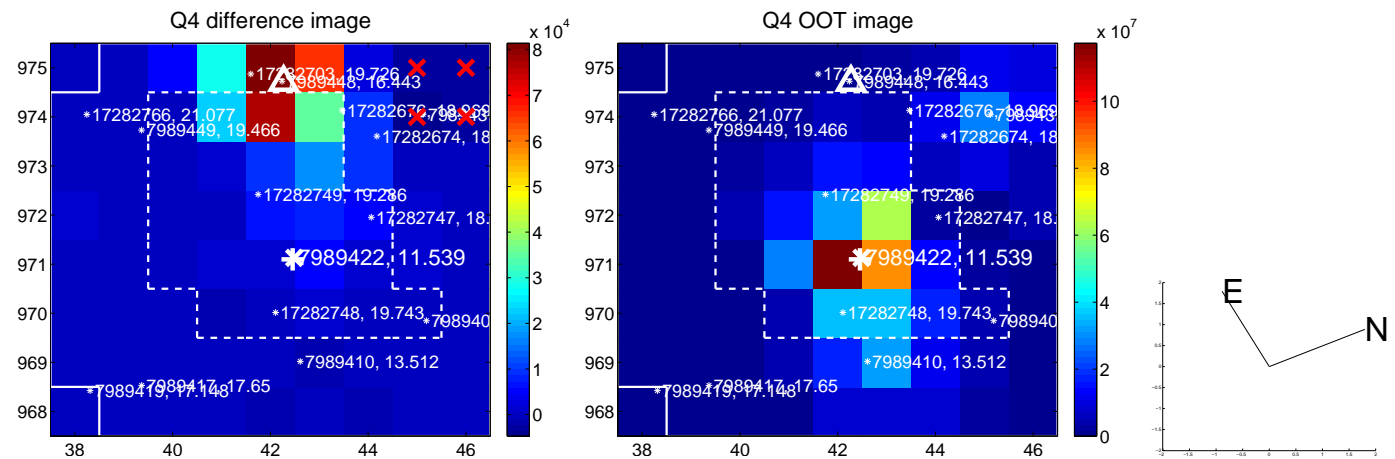
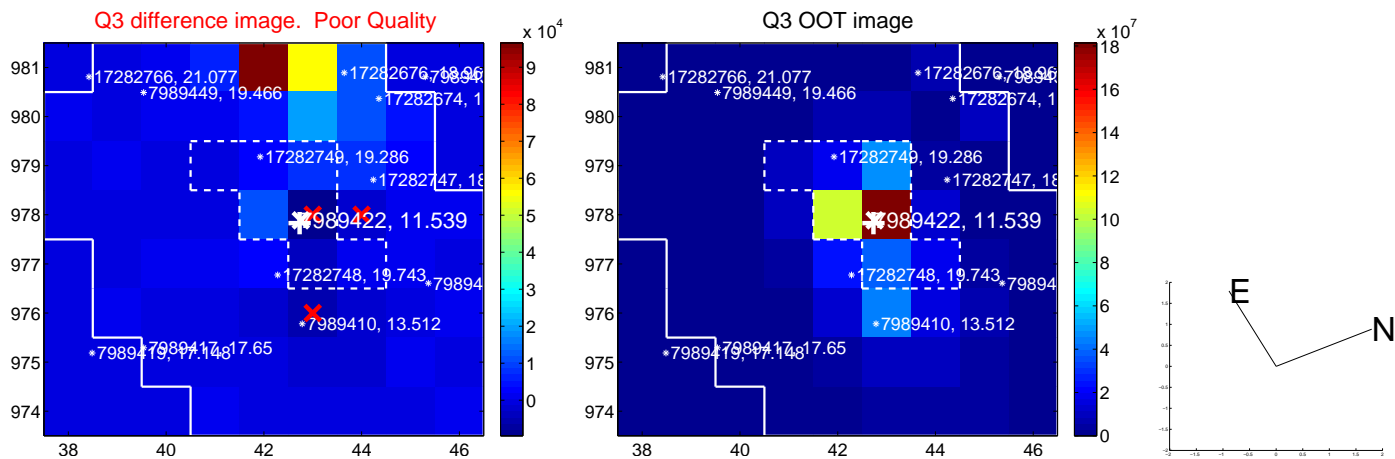
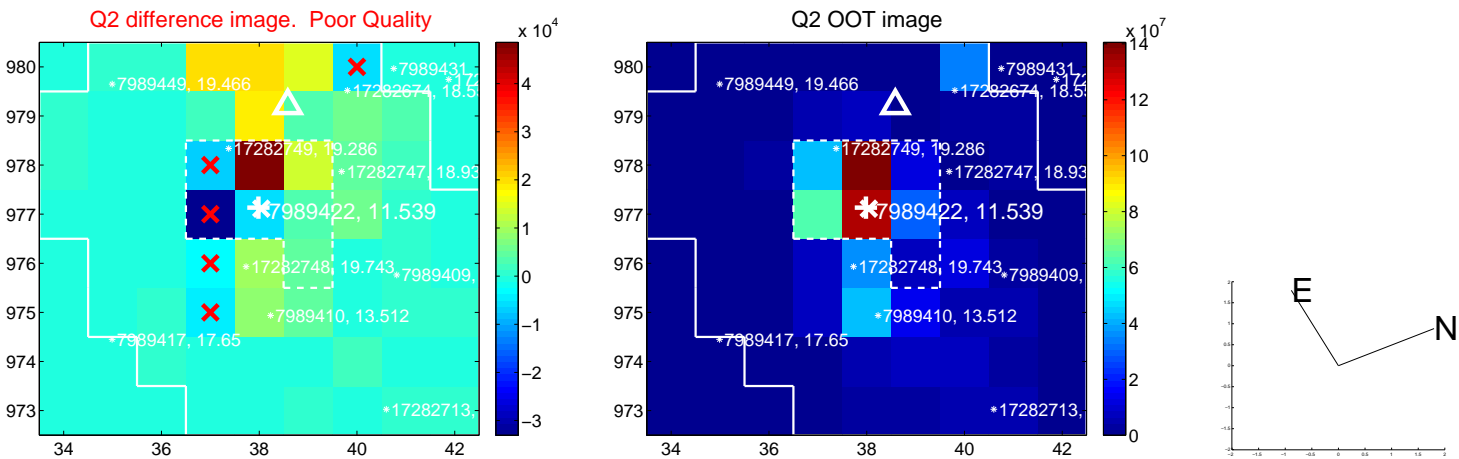
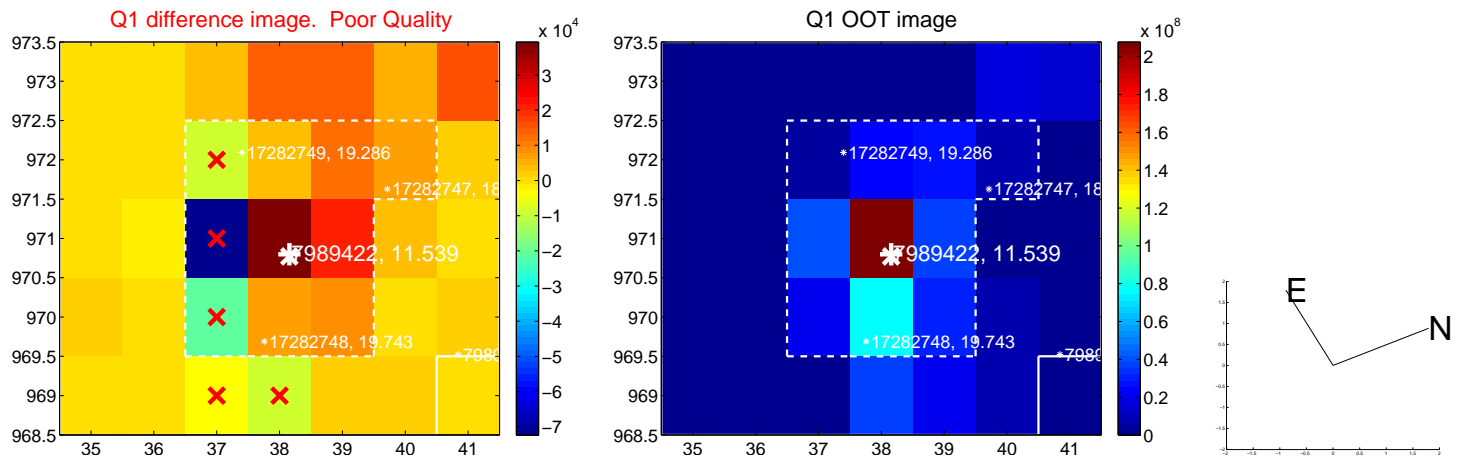
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 14.304 \pm 1.642 | 8.71 | 13.104 \pm 1.606 | 5.735 \pm 0.519 |
| PRF-fit source offset from KIC position | 14.139 \pm 1.650 | 8.57 | 12.982 \pm 1.633 | 5.603 \pm 0.502 |
| photometric centroid source offset | 8.95 \pm 0.65 | 13.84 | 5.59 \pm 0.76 | 6.99 \pm 0.56 |

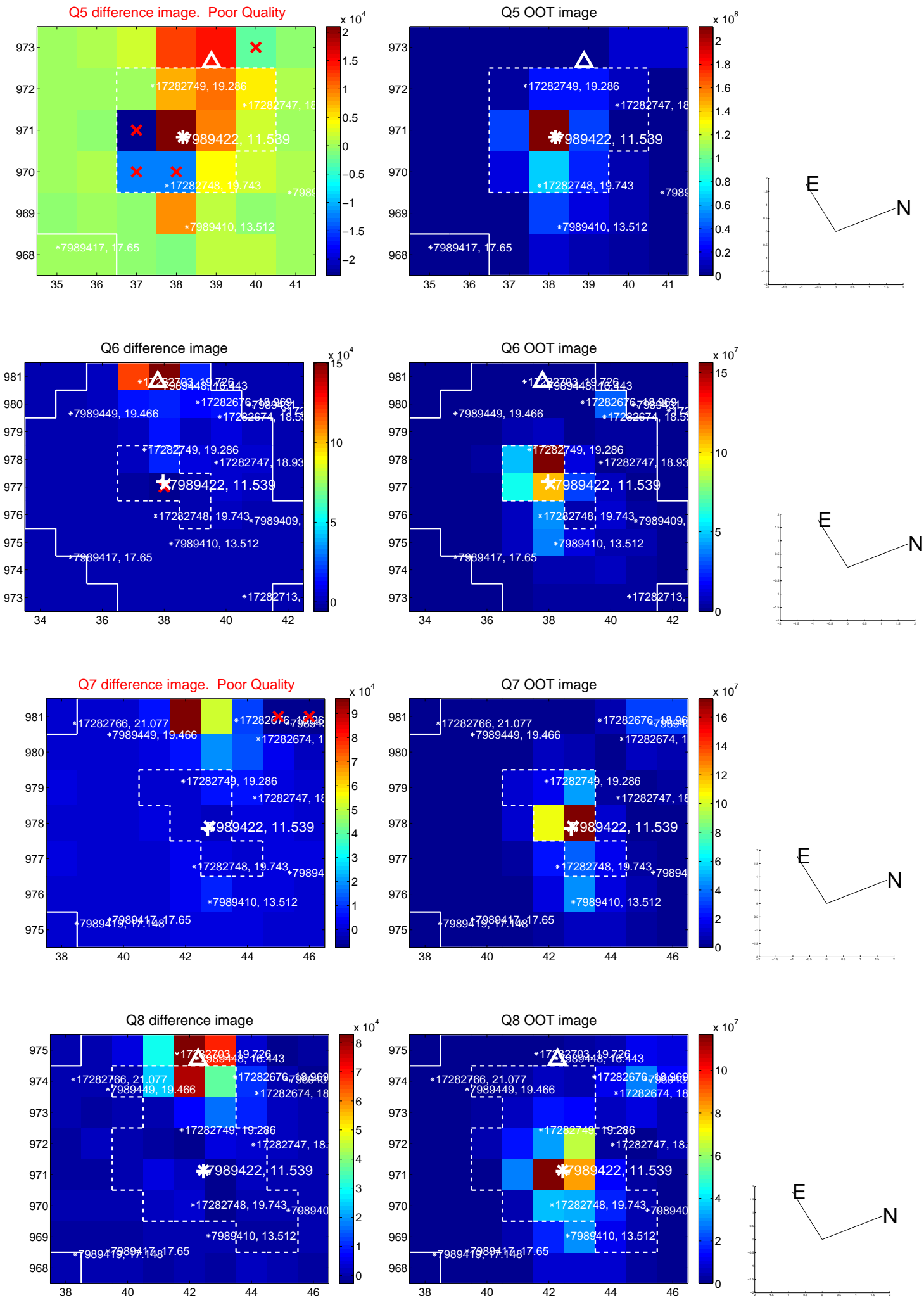


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

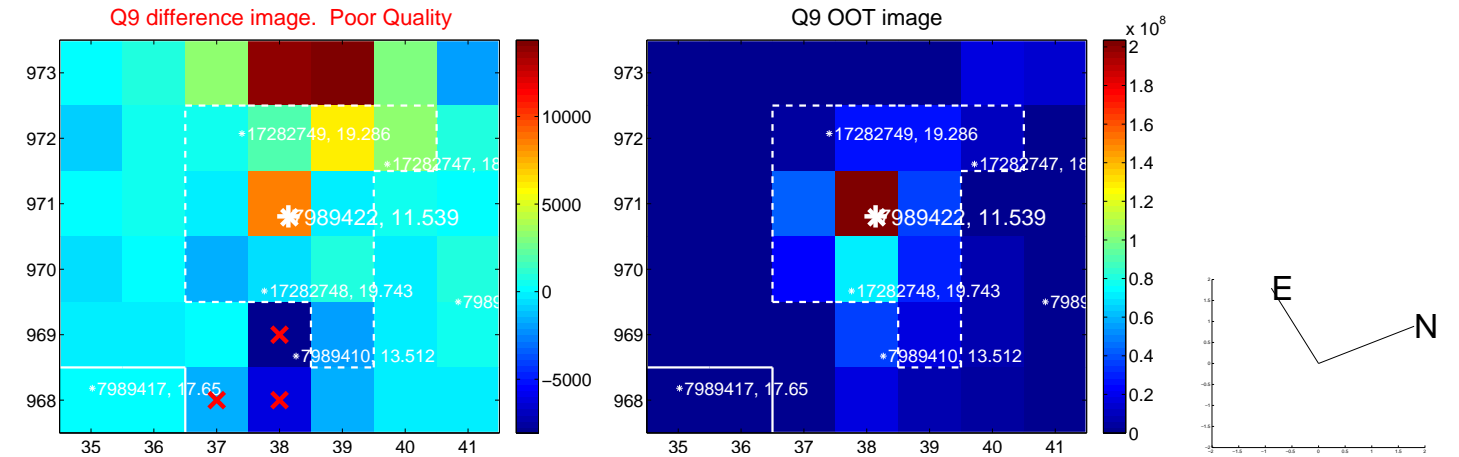
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



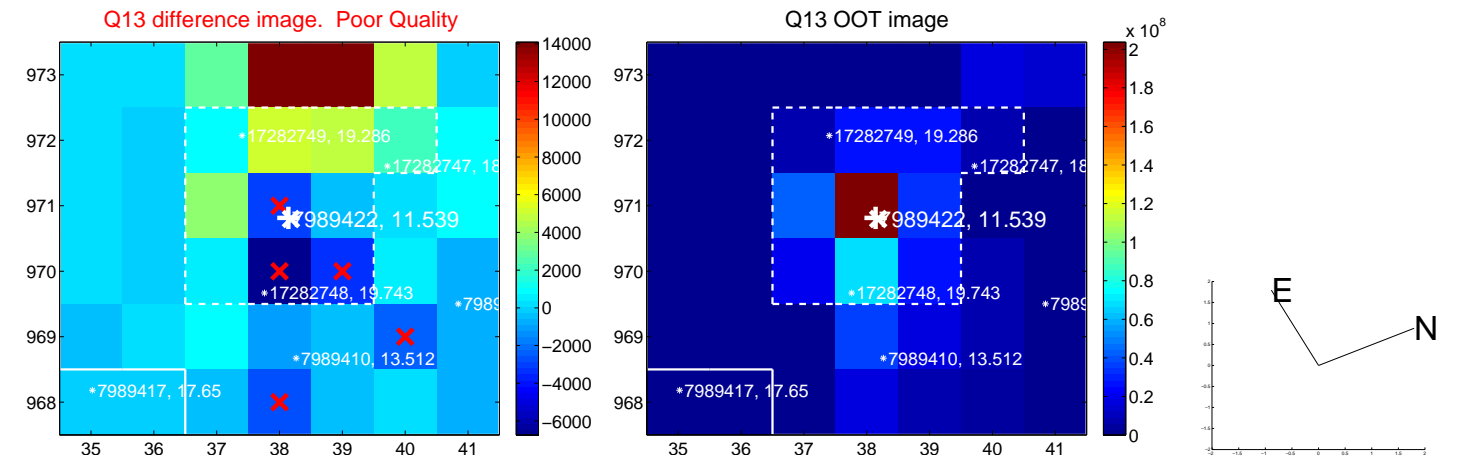
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



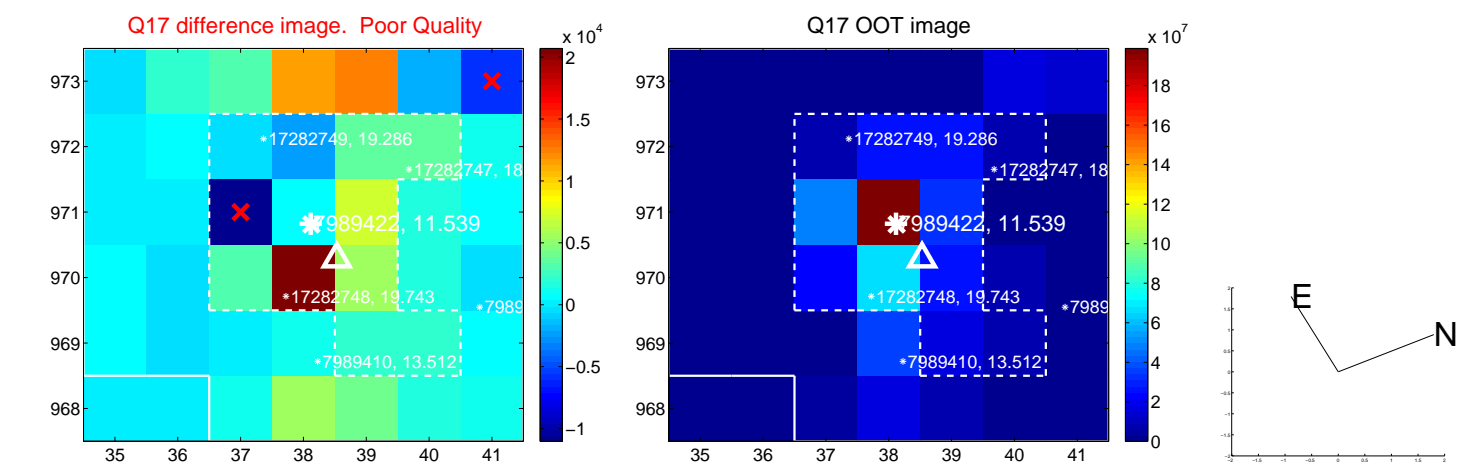
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



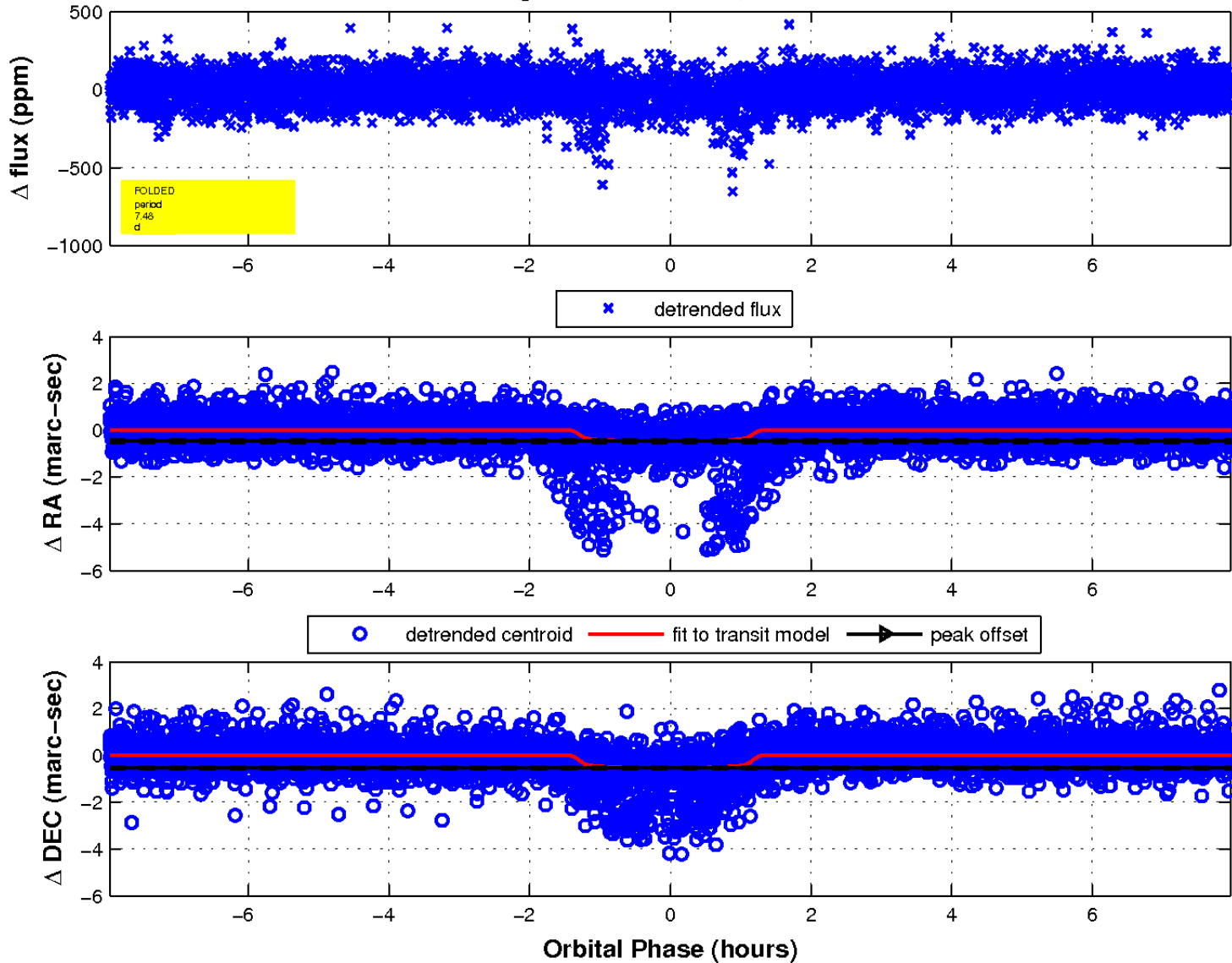
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

