

KIC 009935983

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 009935983-01 | OBS | 5736.01 | 161.651035 | 289.325593 | 255.9 | 2.522 | 8.4 | 8.3 | 1.29 | 5725 | 2.31 | 4.78 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 009935983-01 | OBS | PC | 0.56 | 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.

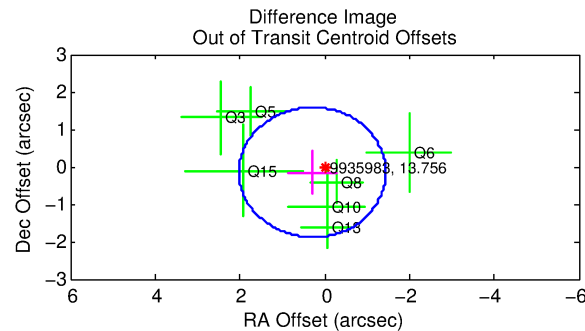
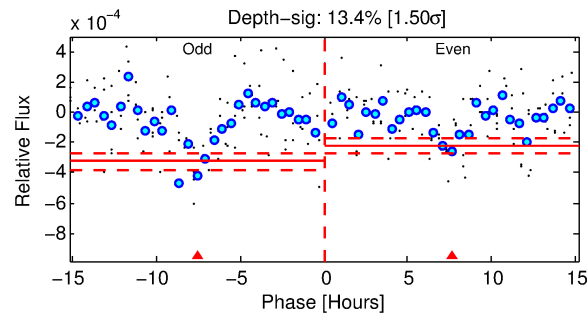
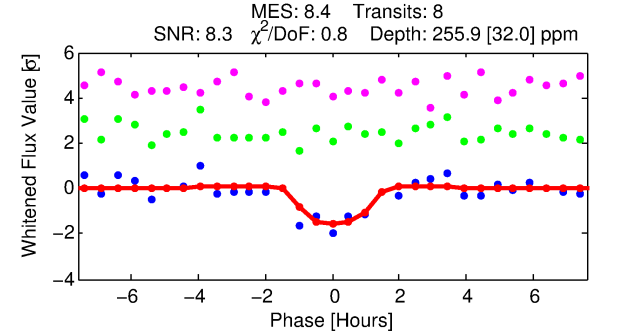
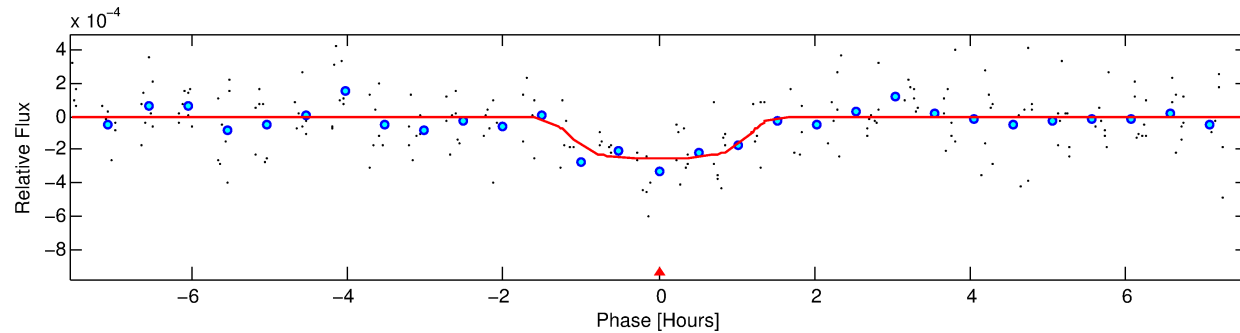
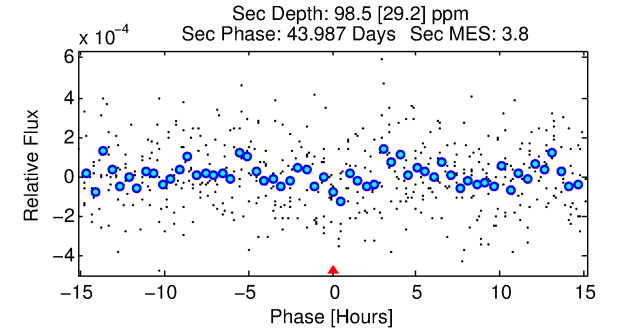
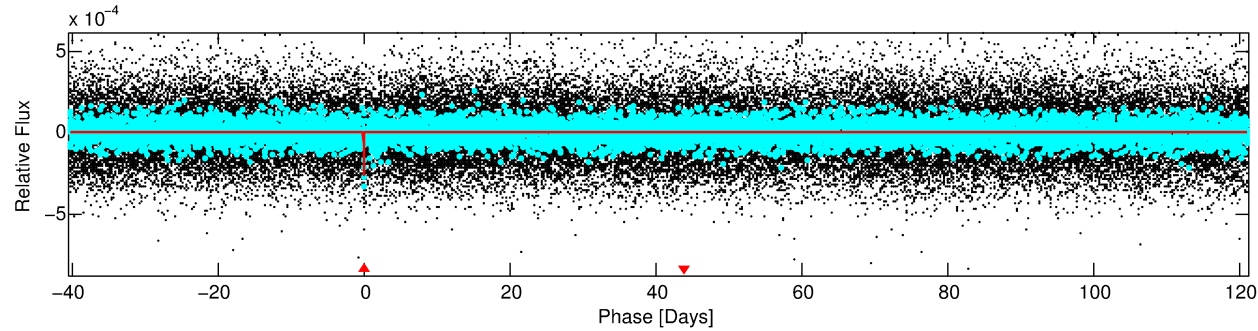
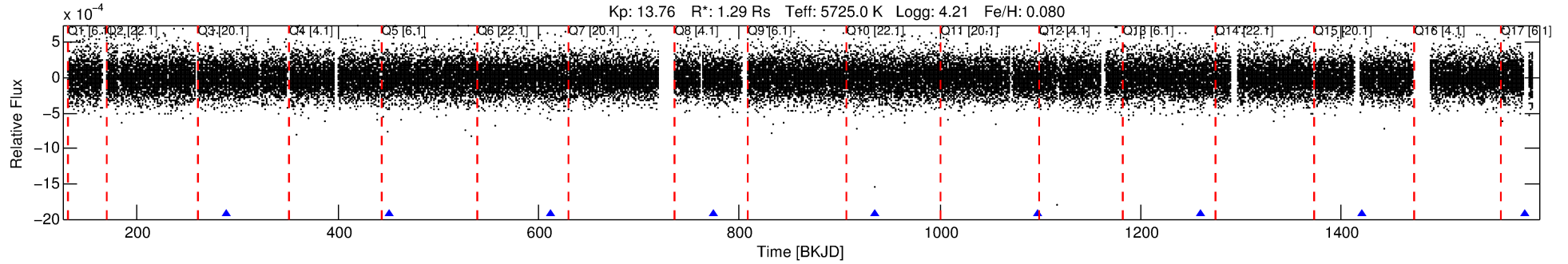
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935983-01

No Significant Match Found

DV One-Page Summary

KIC: 9935983 Candidate: 1 of 1 Period: 161.651 d
KOI: K05736.01 Corr: 0.984



DV Fit Results:

Period = 161.65104 [0.00172] d
Epoch = 289.3256 [0.0076] BKJD
Rp/R* = 0.0165 [0.0341]
a/R* = 296.82 [2742.38]
b = 0.82 [3.86]
Seff = 4.78 [1.34]
Teq = 377 [26] K
Rp = 2.31 [4.82] Re
a = 0.5784 [0.0993] AU
Ag = 3382.34 [14087.34] [0.24σ]
Teffp = 4445 [4619] K [0.88σ]

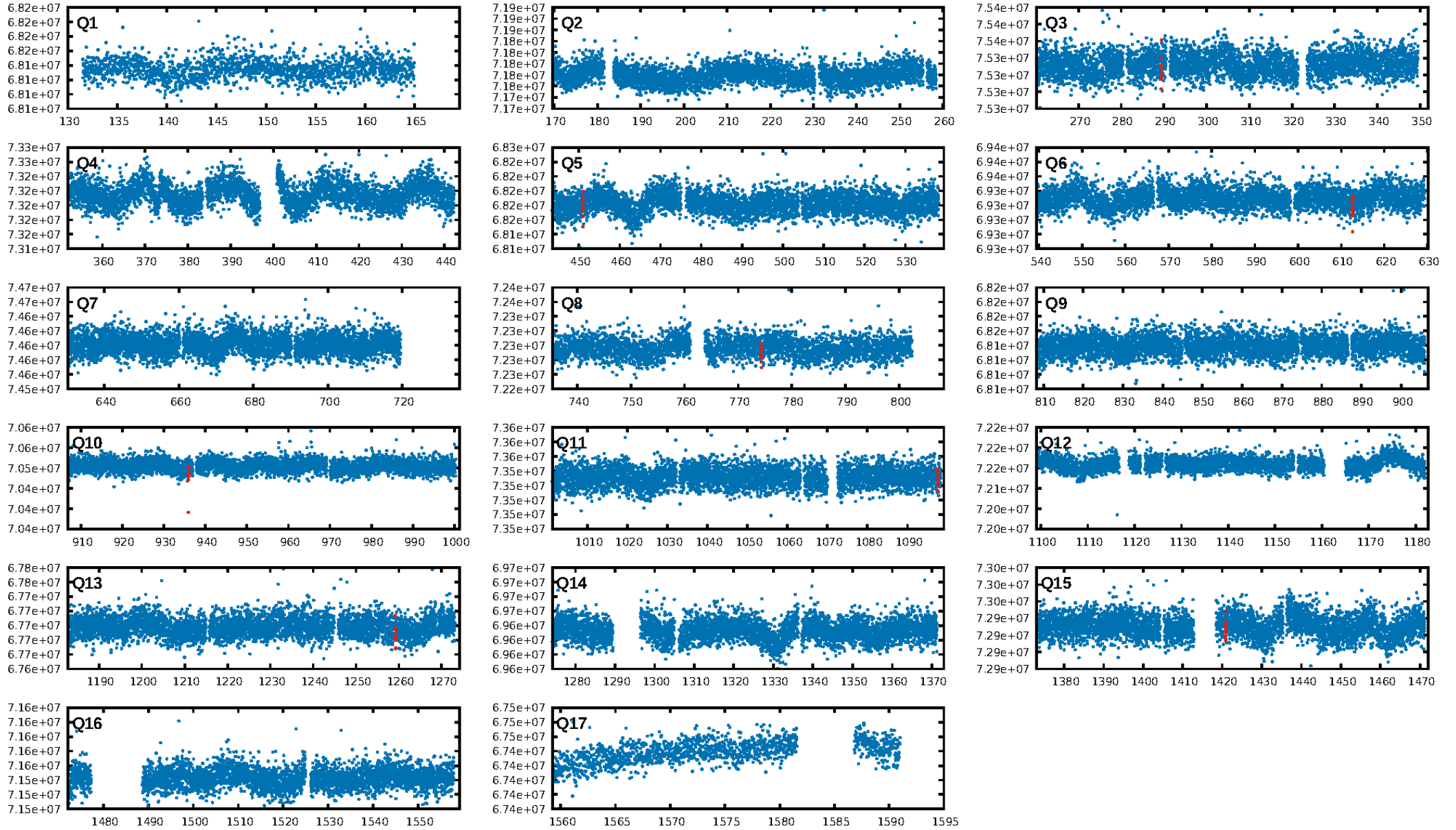
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 85.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.87e-17
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 2.565
Centroid-sig: 8.6%
Centroid-so: 2.980 arcsec [1.69σ]
OotOffset-rm: 0.329 arcsec [0.57σ]
OotOffset-st: 2/2/1/2 [7]
KicOffset-rm: 0.345 arcsec [0.60σ]
KicOffset-st: 2/2/1/2 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 1.00 [8/8]

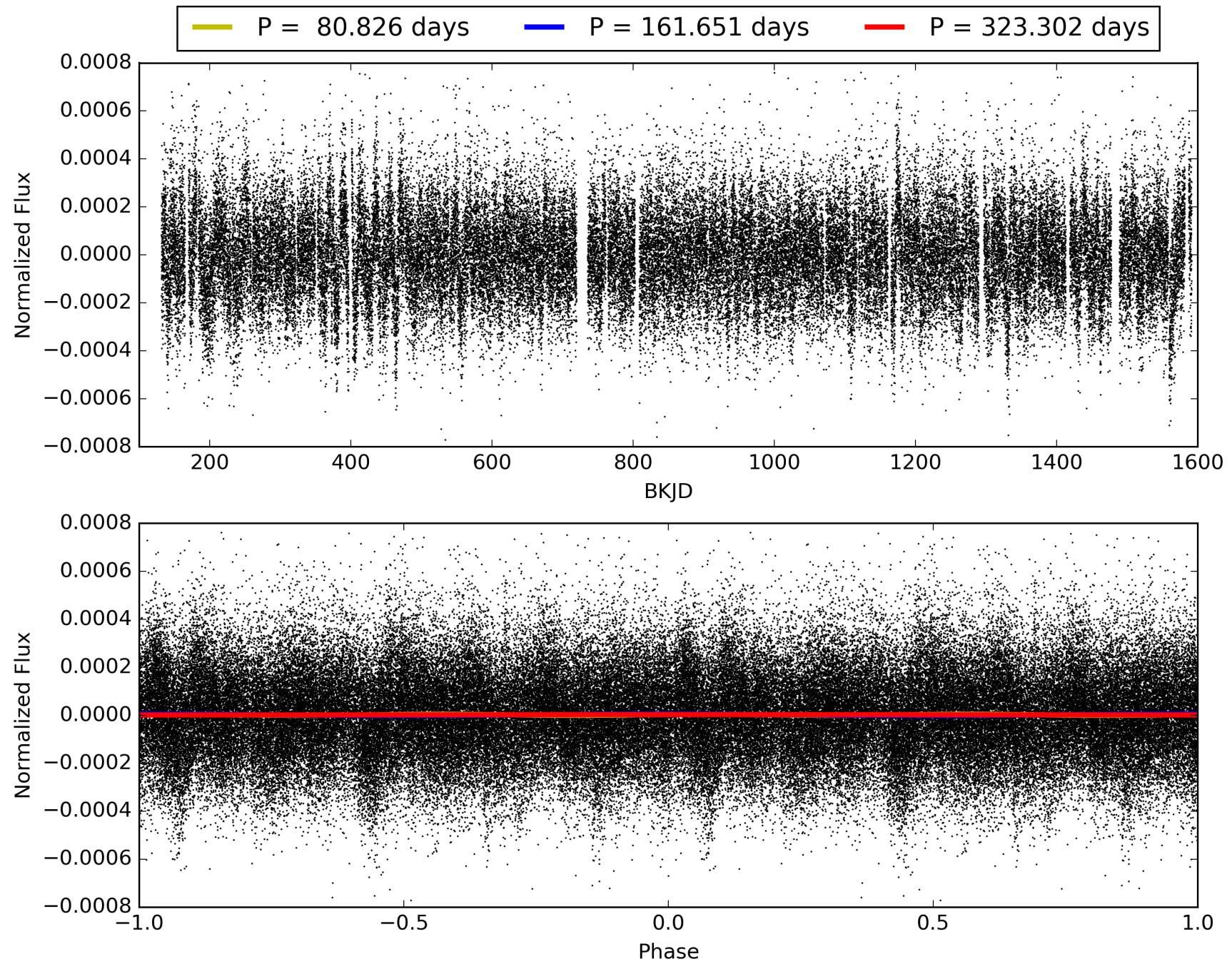
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:36:35 Z

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

TCE 009935983-01, PDC Light Curves

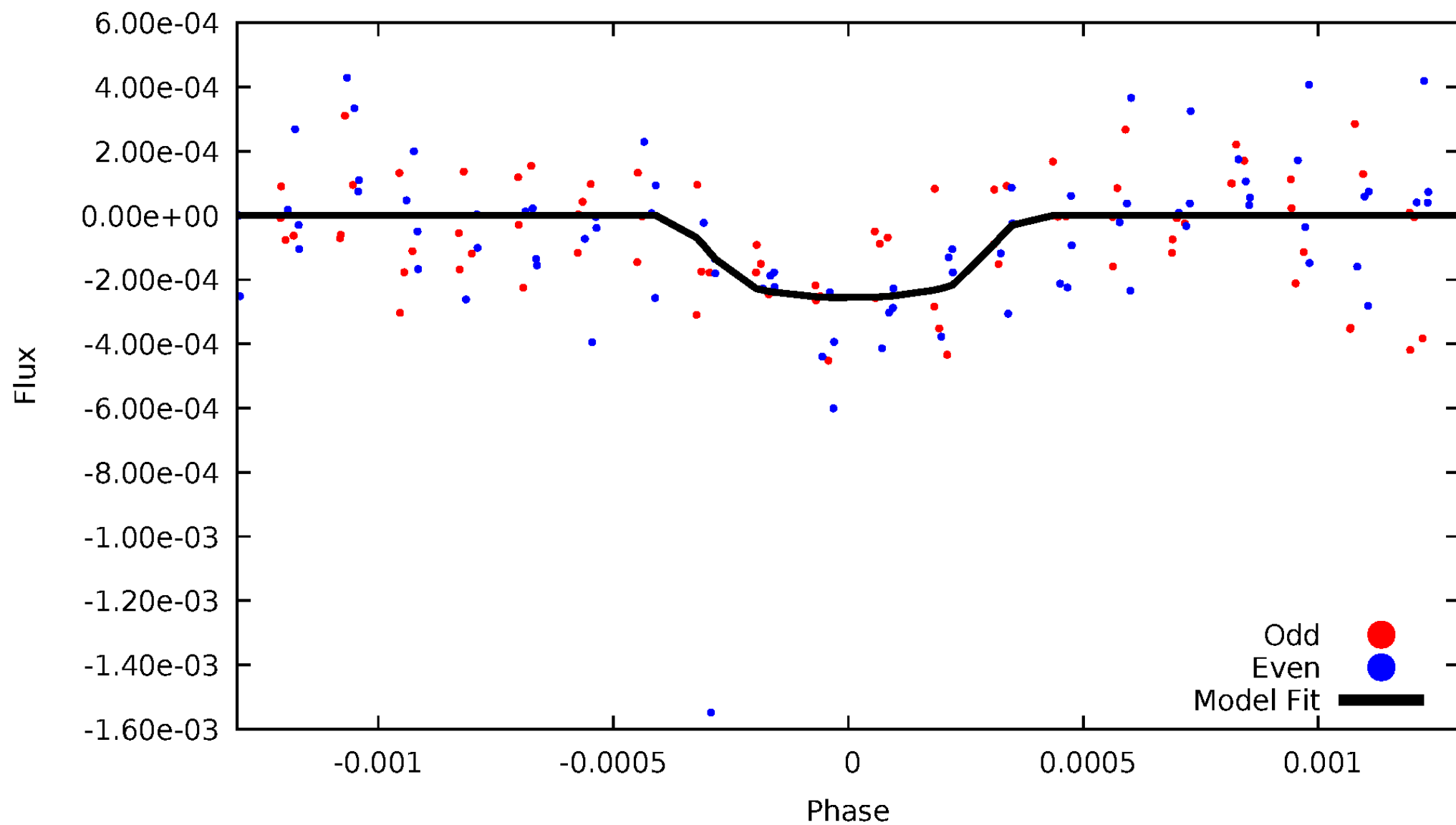


TCE 009935983-01



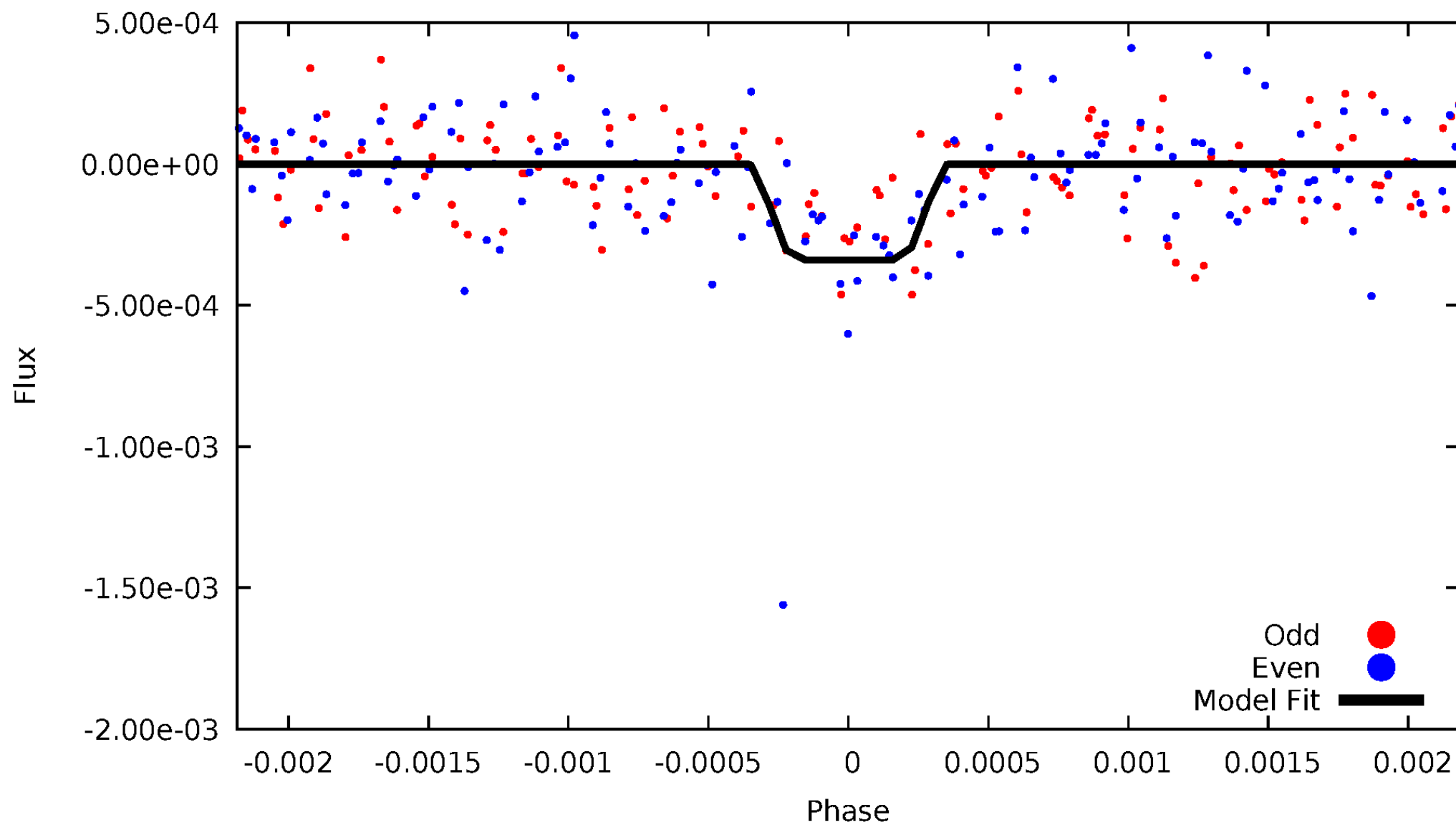
DV Odd/Even

TCE 009935983-01

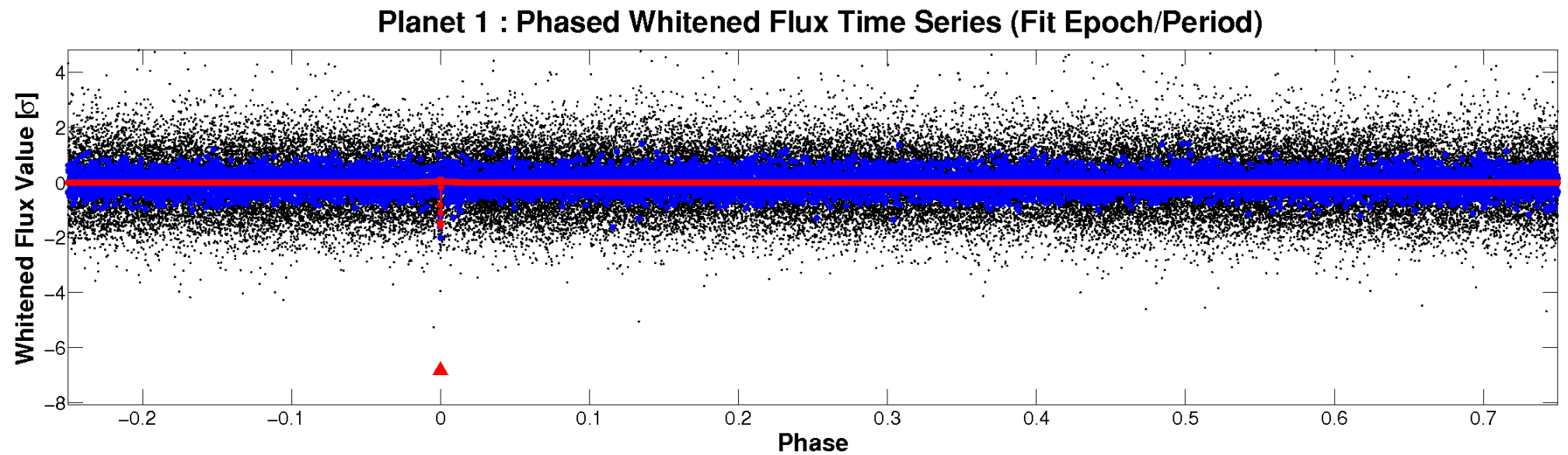
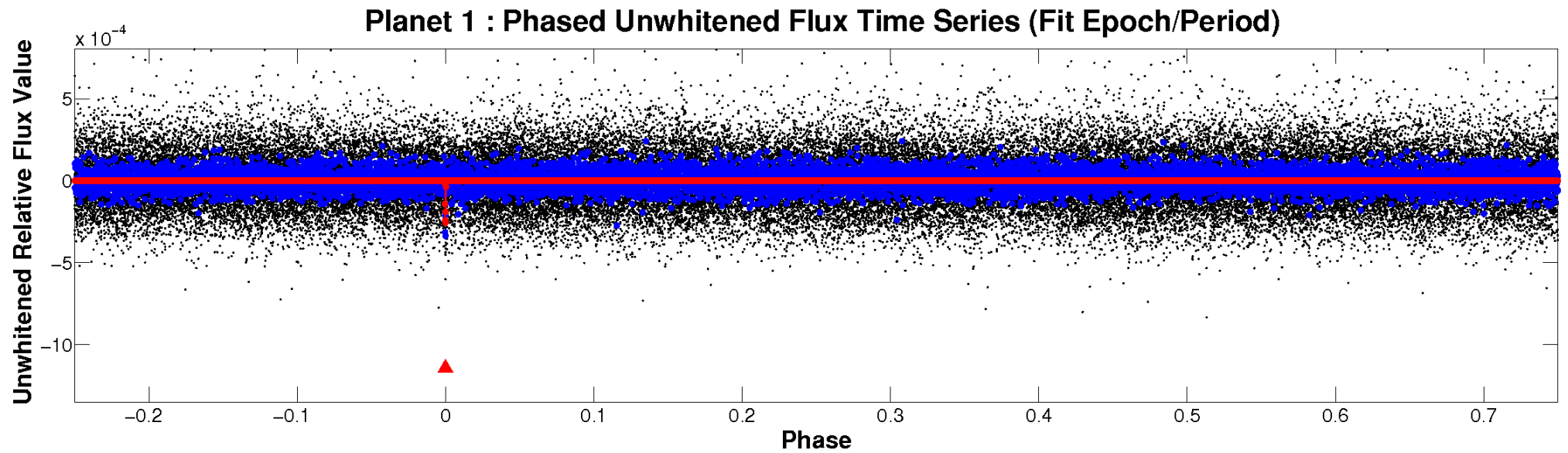


ALT Odd/Even

TCE 009935983-01

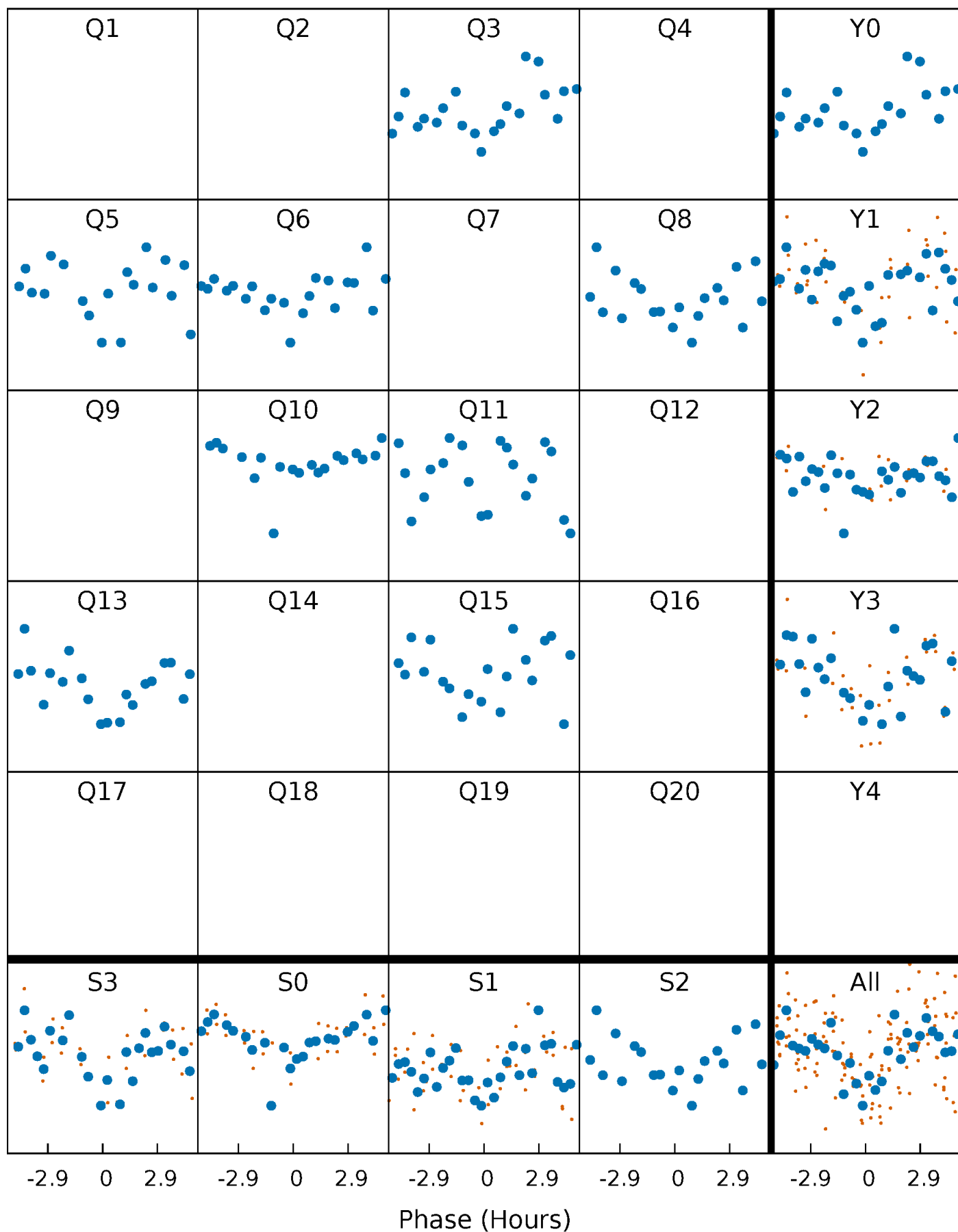


Non-Whitened Vs. Whitened Light Curve



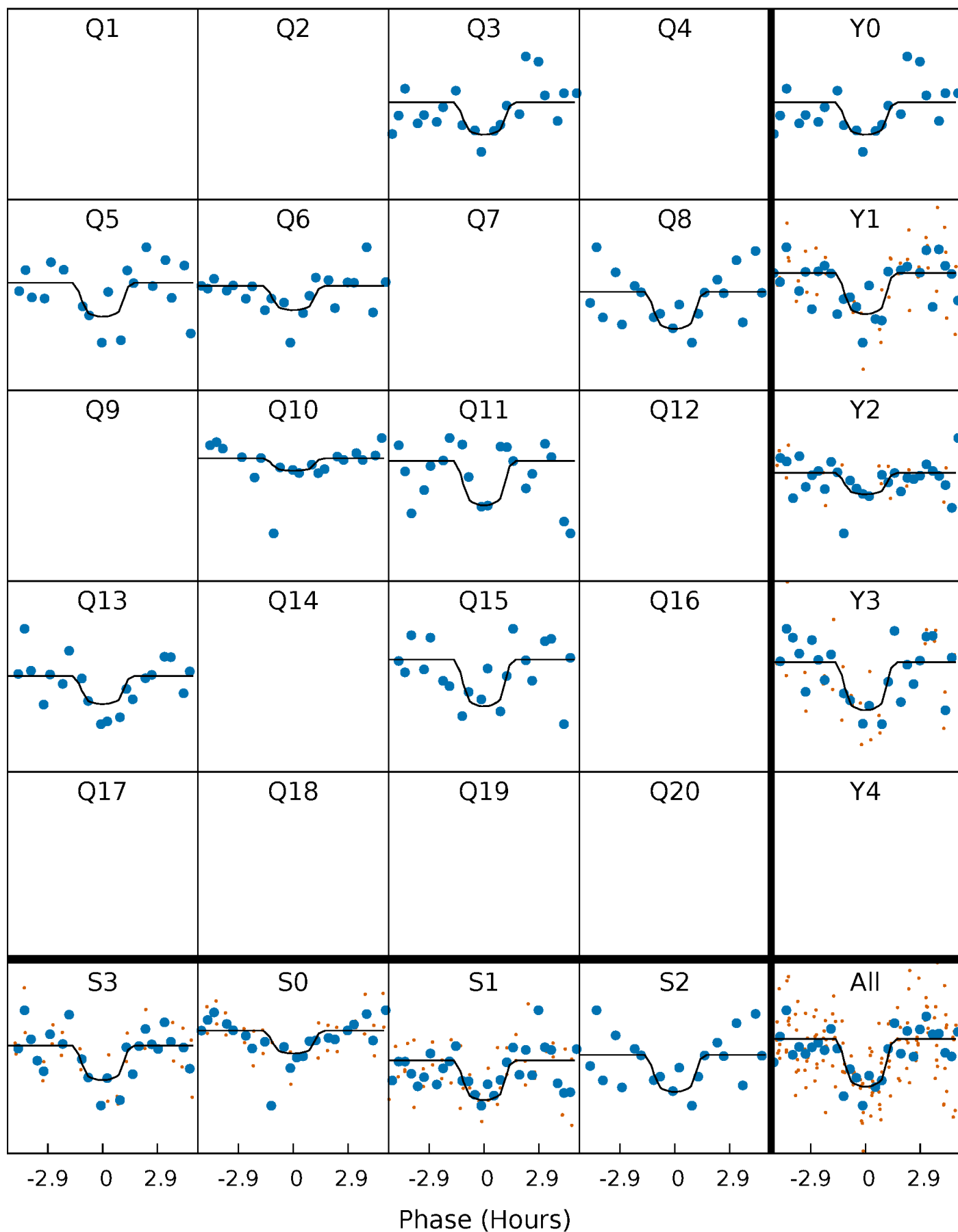
PDC Quarter-Phased Transit Curves

TCE 009935983-01 P=161.651035 Days $T_0=289.325593$ (BKJD)



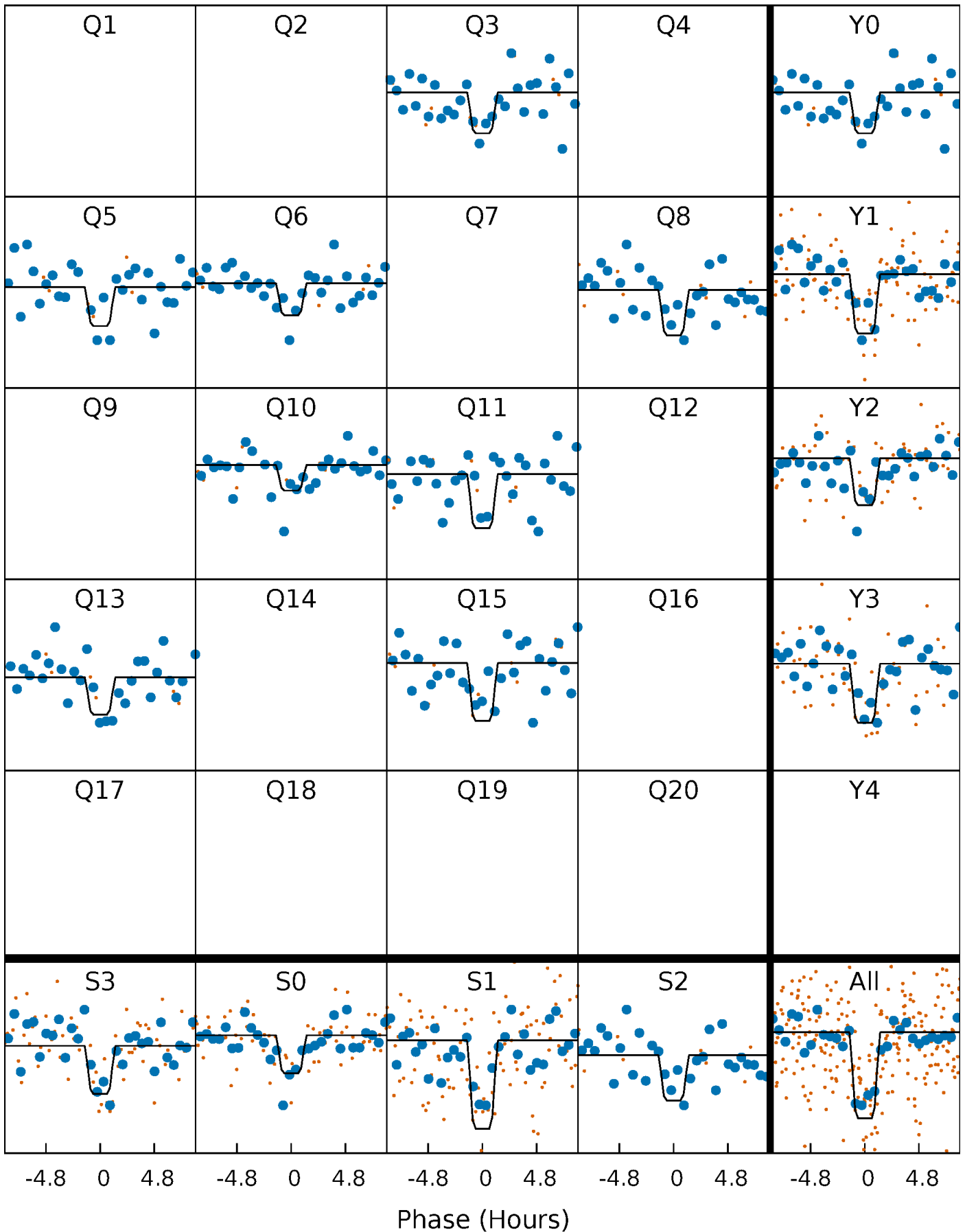
DV Quarter-Phased Transit Curves

TCE 009935983-01 P=161.651035 Days $T_0=289.325593$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

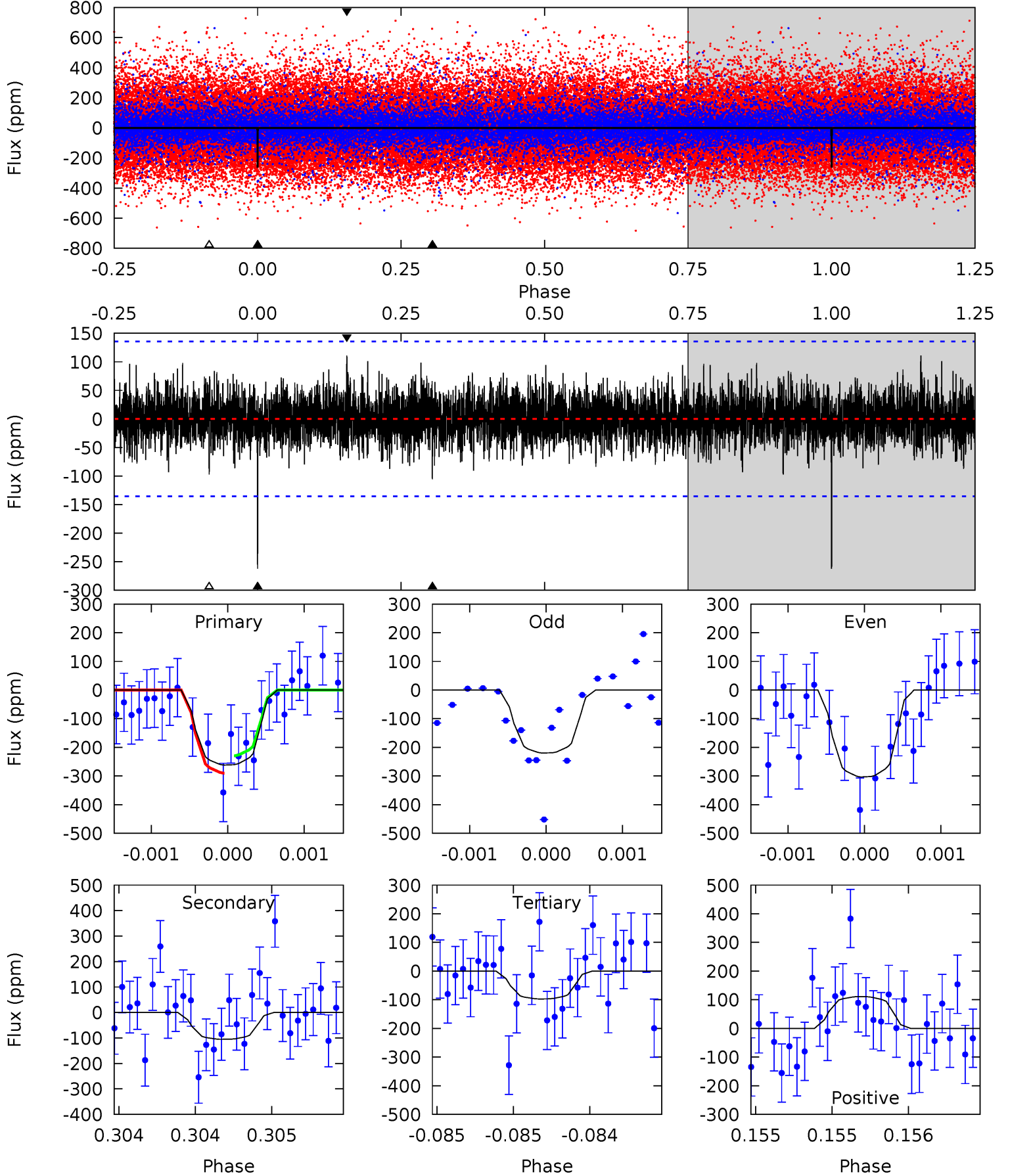
TCE 009935983-01 P=161.648753 Days $T_0=289.325131$ (BKJD)



DV Model-Shift Uniqueness Test

009935983-01, P = 161.651035 Days, E = 127.674558 Days

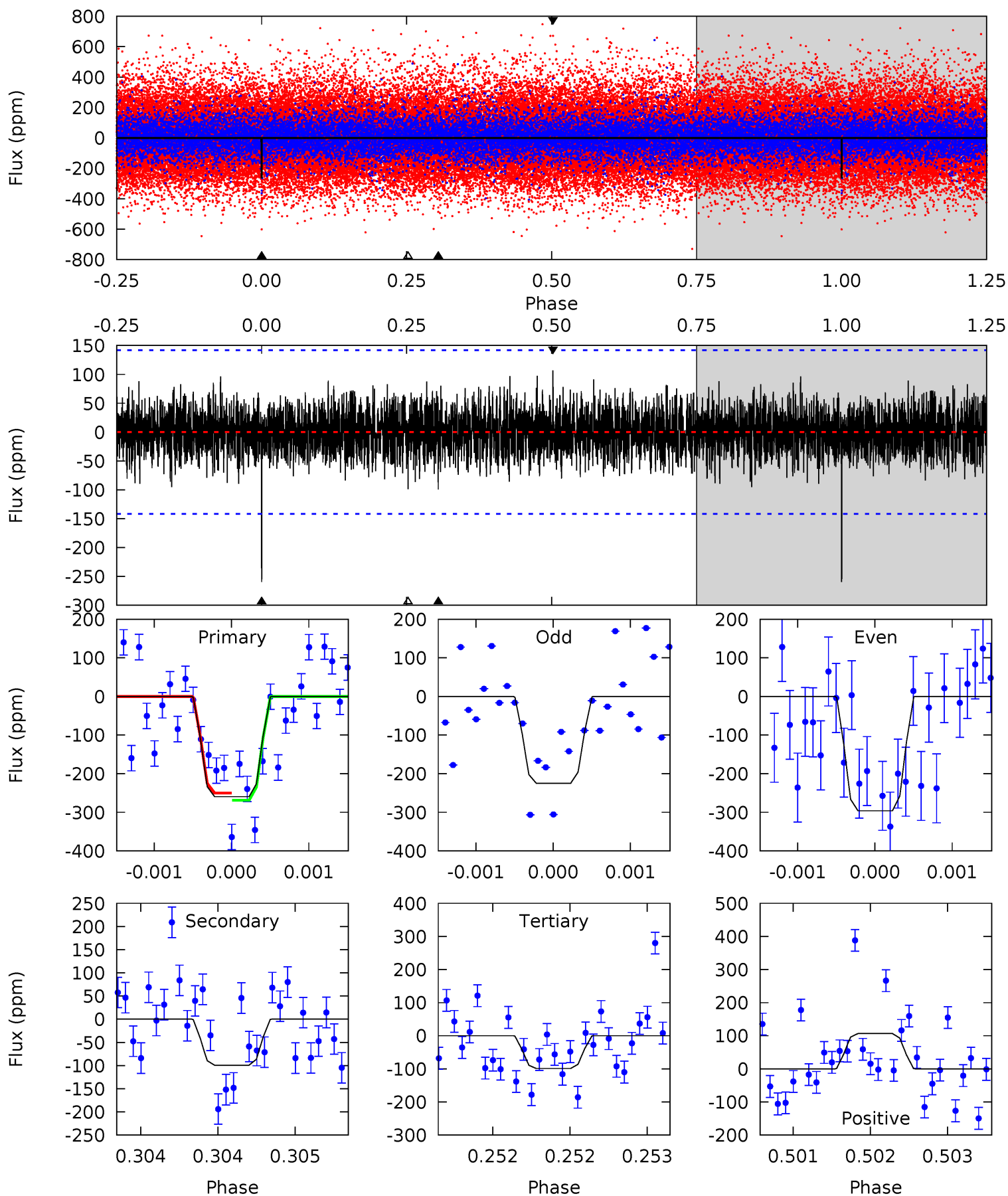
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.7 | 4.29 | 3.96 | 4.52 | 5.52 | 3.40 | 1.15 | 6.71 | 6.15 | 0.33 | -0.23 | 1.70 | 0.96 | 0.30 | 1.23 |



Alt Model-Shift Uniqueness Test

009935983-01, P = 161.648753 Days, E = 127.676378 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.1 | 3.86 | 3.85 | 4.15 | 5.51 | 3.39 | 1.12 | 6.25 | 5.95 | 0.01 | -0.29 | 1.39 | 0.98 | 0.29 | 0.37 |



Stellar Parameters For KIC 009935983

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5725^{+78}_{-78} | $4.212^{+0.162}_{-0.108}$ | $0.080^{+0.150}_{-0.150}$ | $1.289^{+0.206}_{-0.229}$ | $0.988^{+0.081}_{-0.057}$ | $0.650^{+0.538}_{-0.217}$ |
| | +1%/-1% | +4%/-3% | +188%/-188% | +16%/-18% | +8%/-6% | +83%/-33% |
| Source | SPE90 | SPE90 | 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 009935983-01 / KOI 5736.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-------------------|-----------------------|------------------------|
| DV | -105 ± 25 | $4.32^{+3.94}_{-2.99}$ | 523^{+26}_{-26} | 3705^{+2226}_{-674} | 1073^{+10083}_{-788} |
| Alt. | -99 ± 26 | $4.20^{+4.40}_{-2.78}$ | 526^{+22}_{-26} | 3688^{+2081}_{-709} | 1040^{+8755}_{-792} |

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

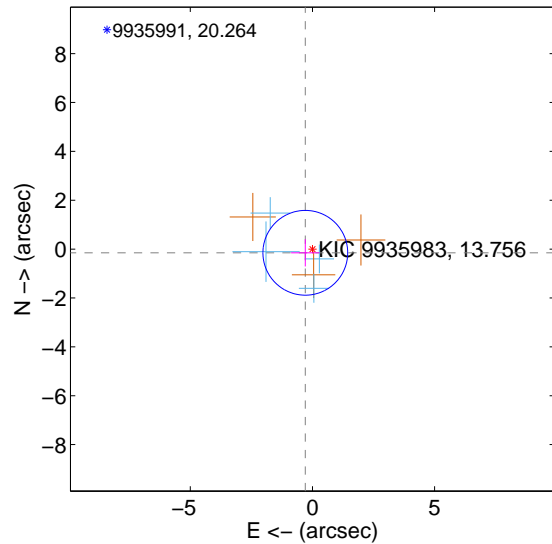
Supplemental centroid analysis for 009935983-01. Kepler magnitude: 13.76. Transit SNR 8.35

There are 4 quarters with good PRF difference image offsets

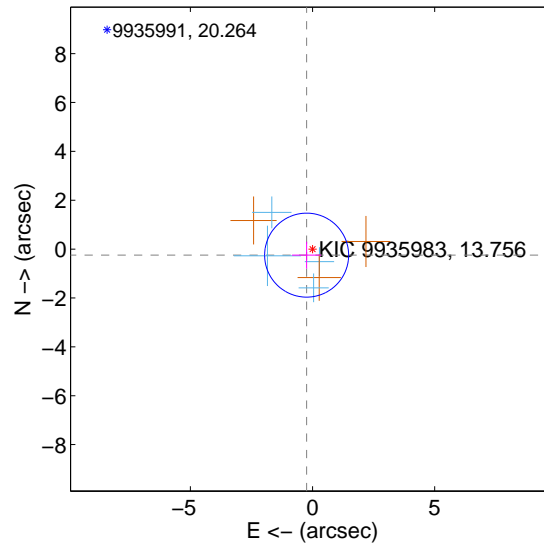
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.329 ± 0.578 | 0.57 | 0.292 ± 0.584 | -0.152 ± 0.558 |
| PRF-fit source offset from KIC position | 0.345 ± 0.573 | 0.60 | 0.241 ± 0.596 | -0.247 ± 0.550 |
| photometric centroid source offset | 2.98 ± 1.76 | 1.69 | -2.85 ± 1.76 | 0.88 ± 1.76 |

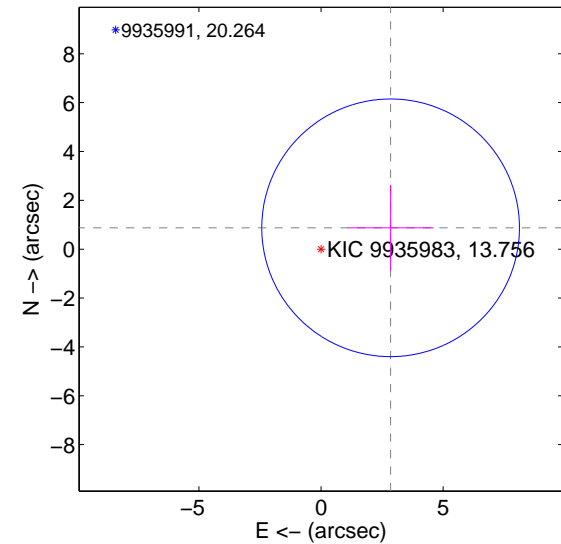
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

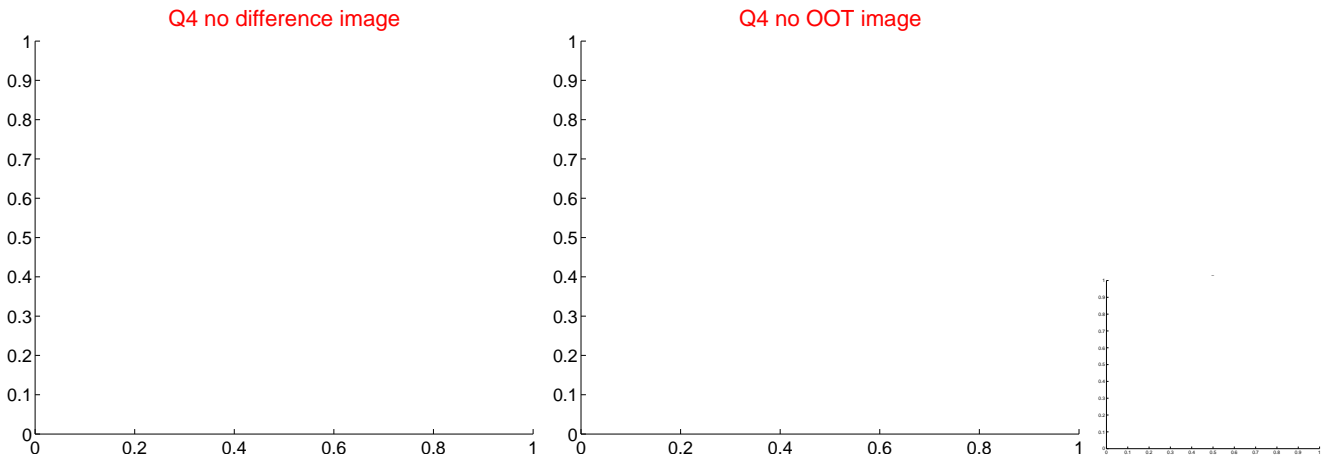
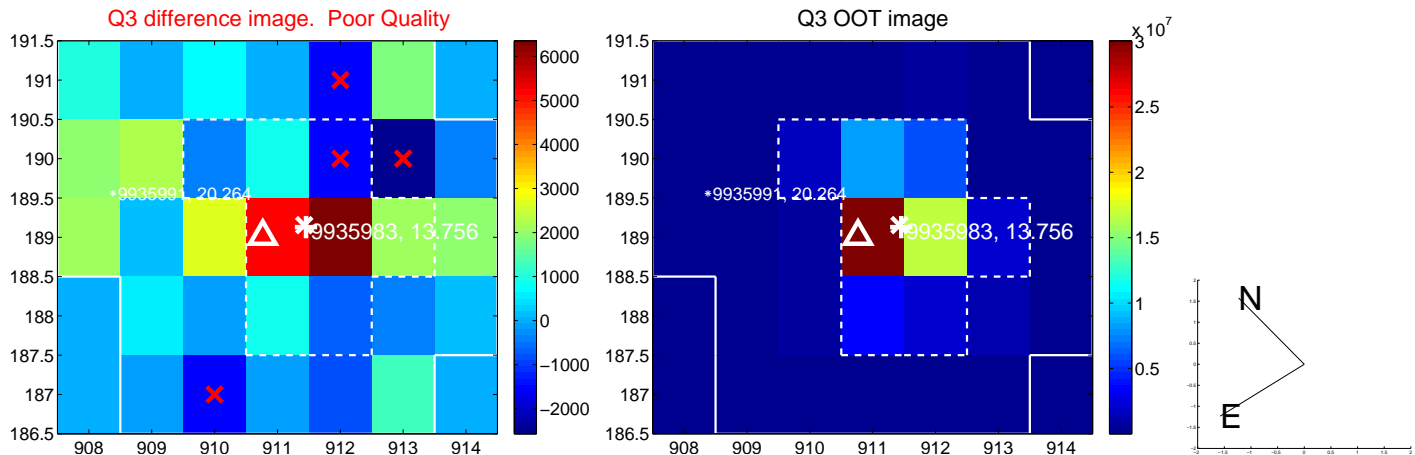
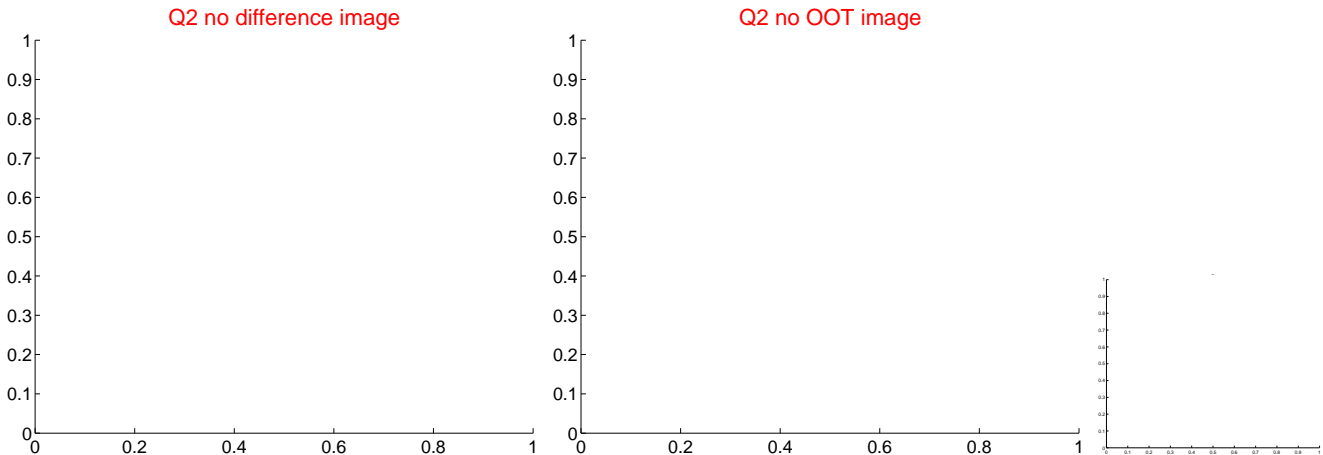


offset from photometric centroids

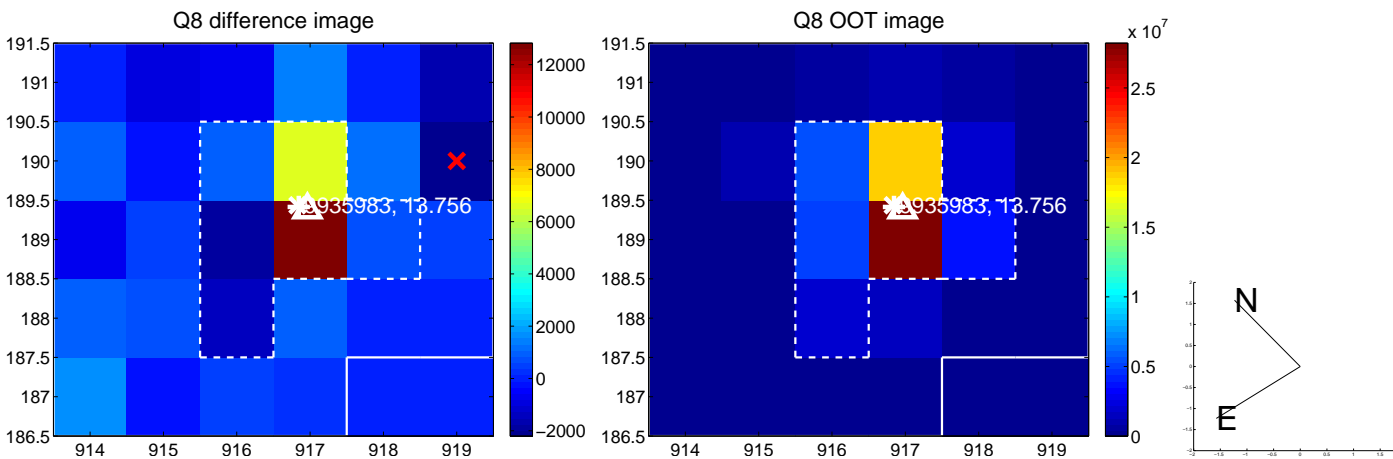
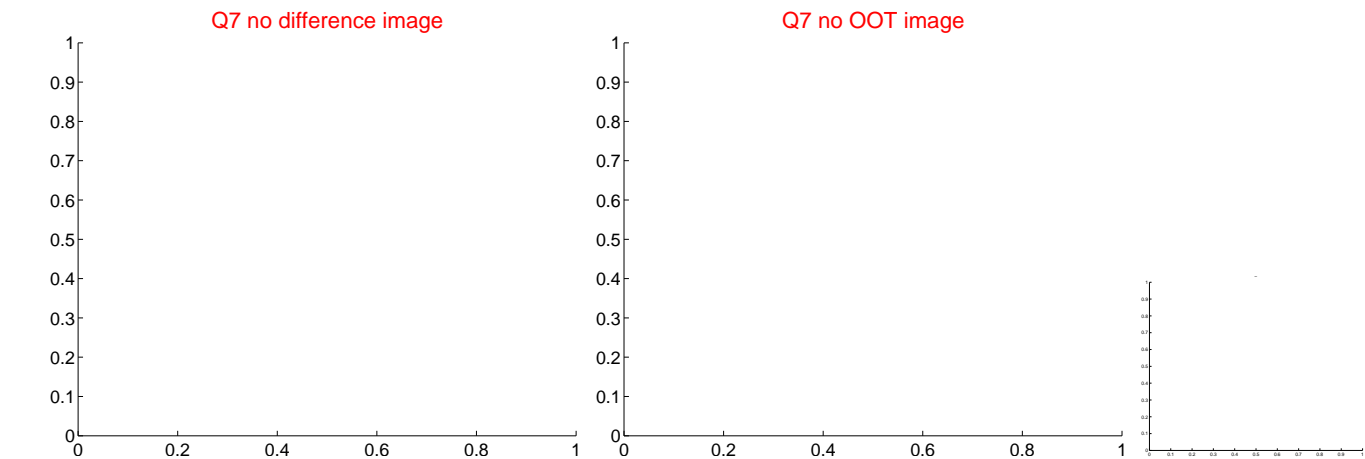
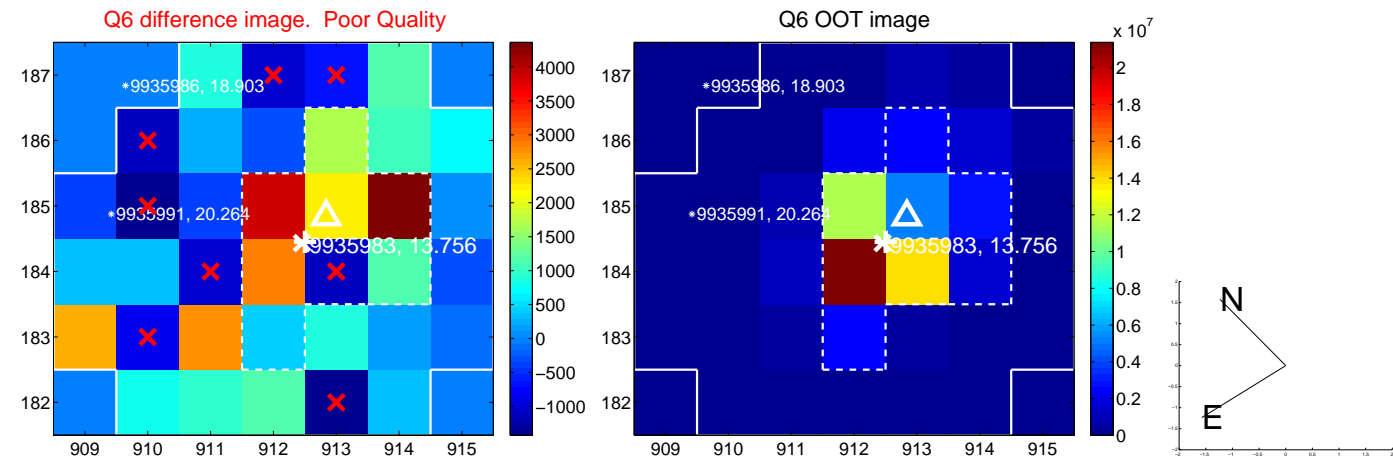
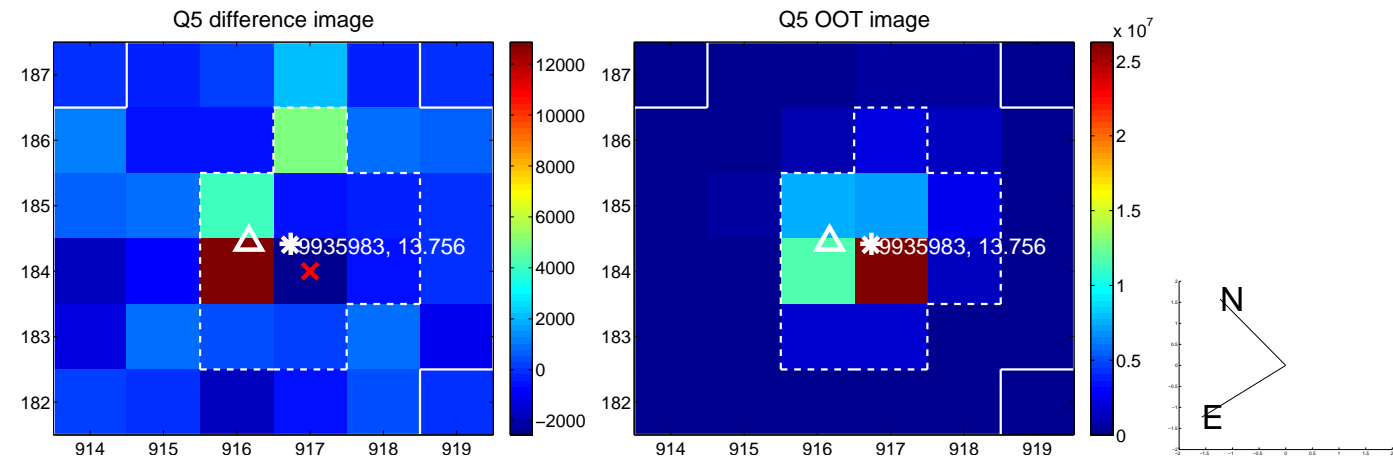


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

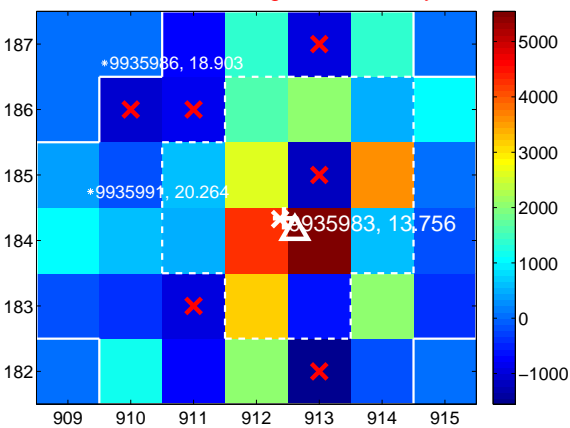
Q9 no difference image



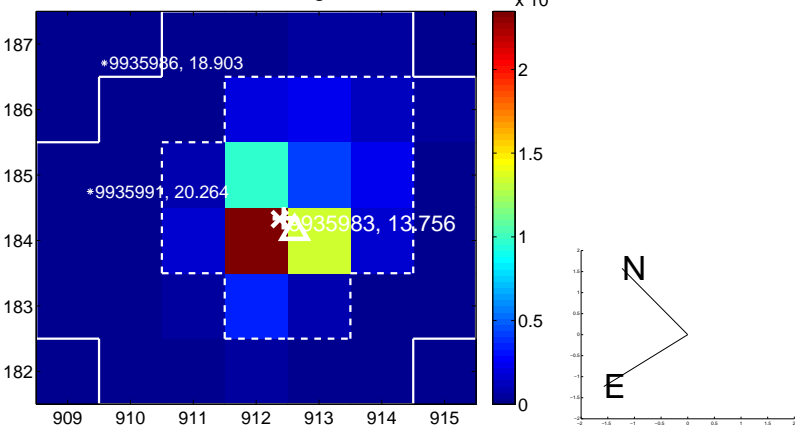
Q9 no OOT image



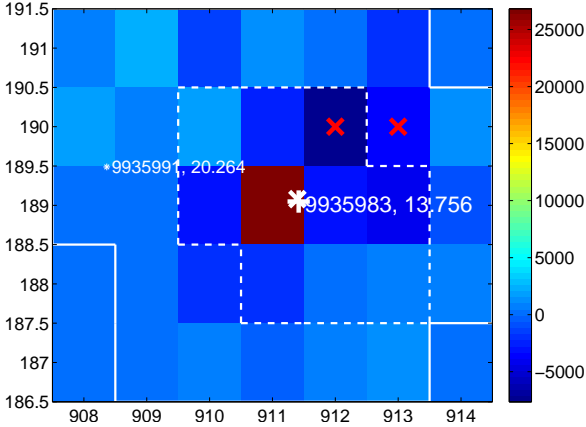
Q10 difference image. Poor Quality



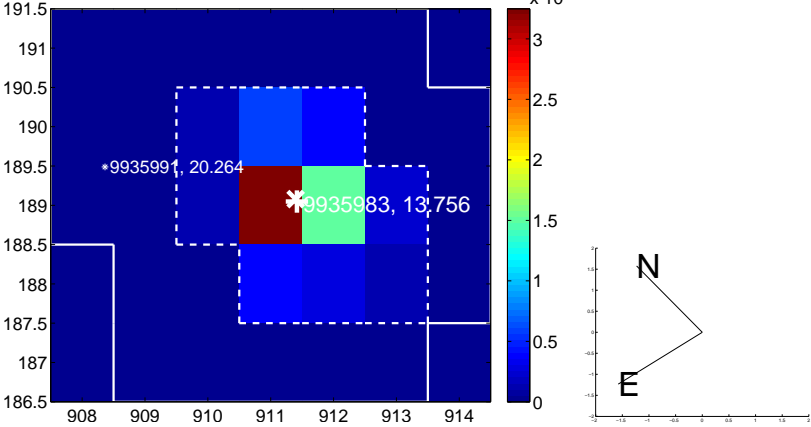
Q10 OOT image



Q11 difference image. Poor Quality



Q11 OOT image



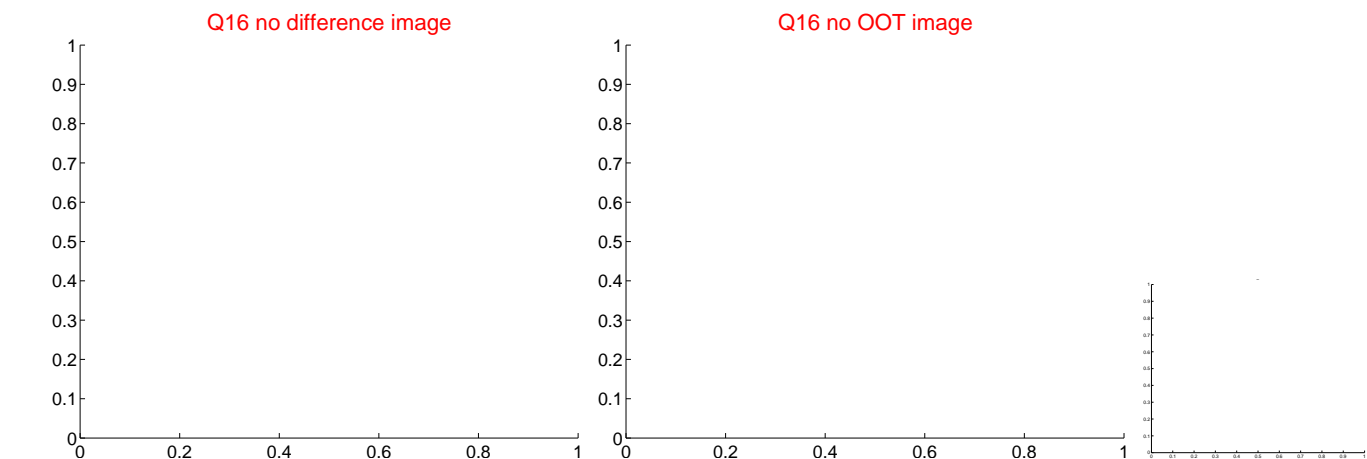
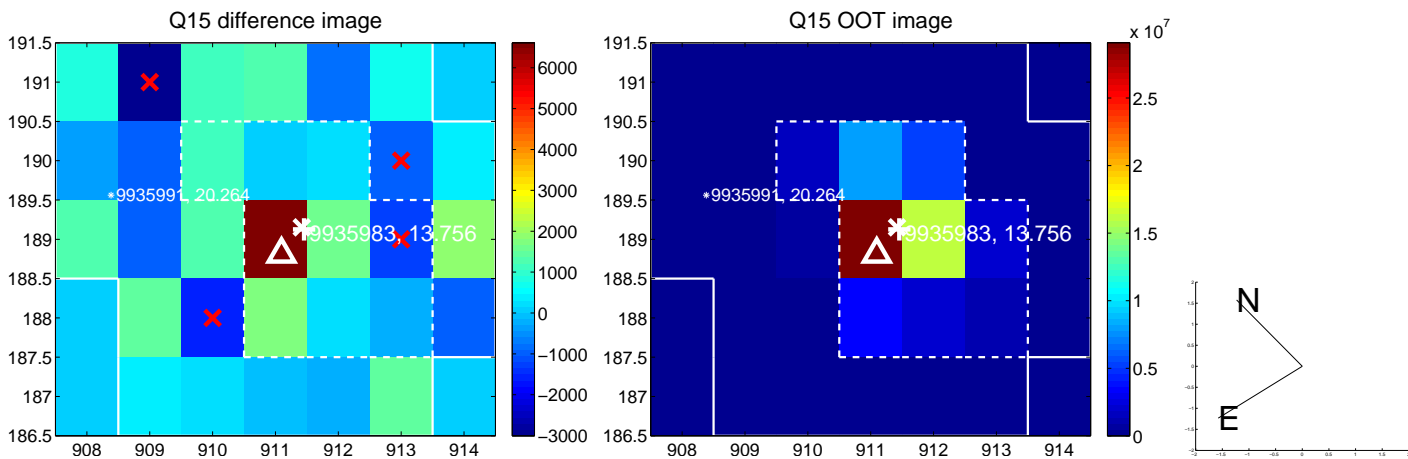
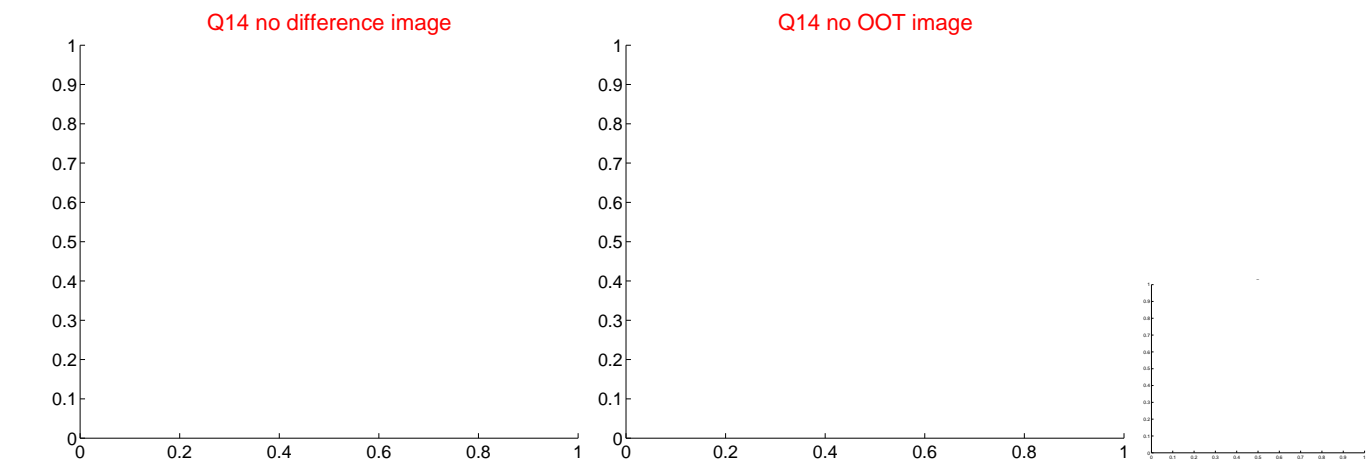
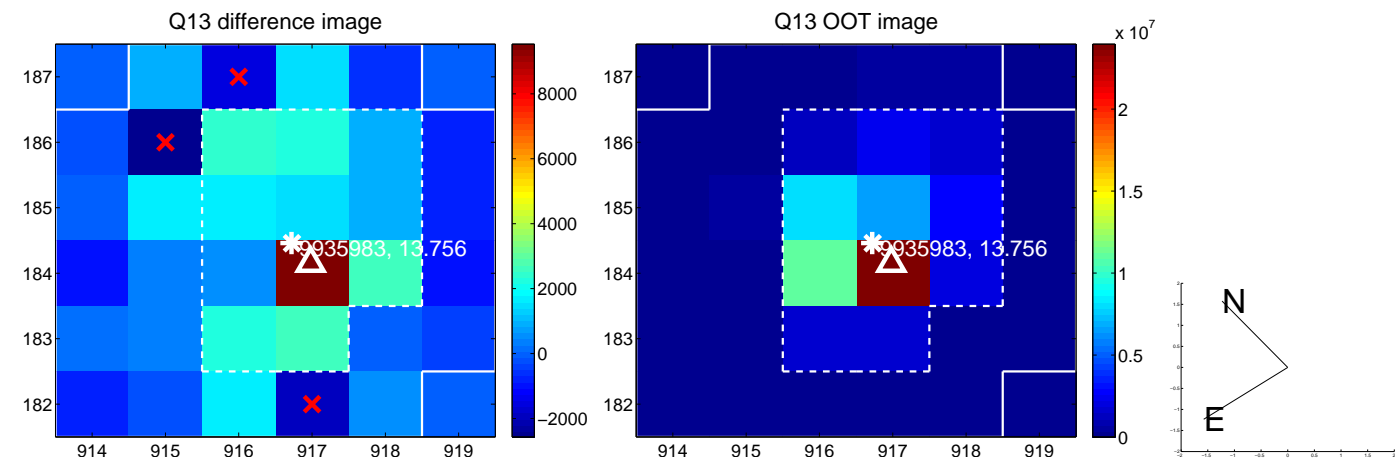
Q12 no difference image



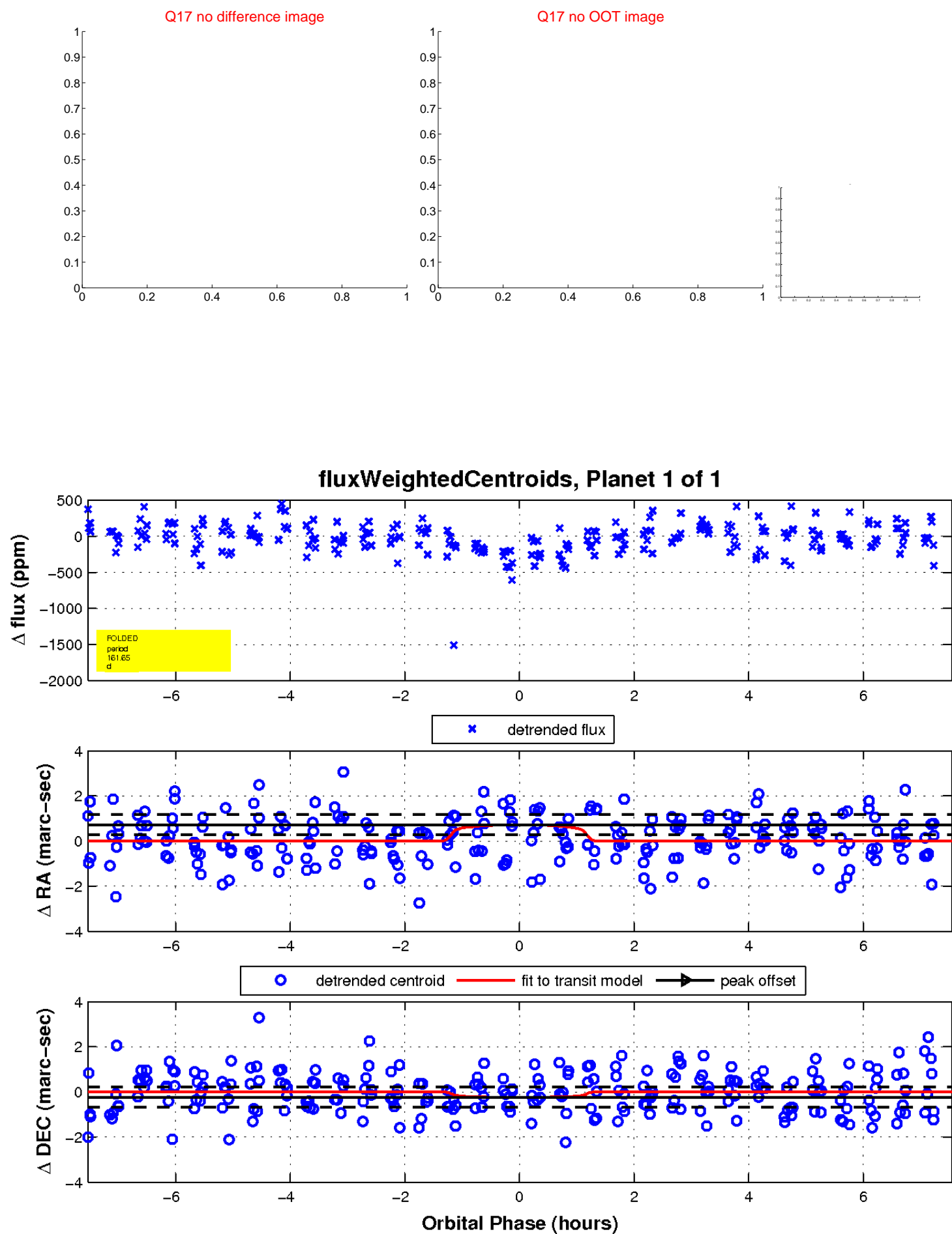
Q12 no OOT image



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.



UKIRT Image

Declination

