

KIC 010470993

Q1-17 DR25 TCE Parameters

| TCE | Run Type | KOI? | Period (Days) | Epoch (BKJD) | Depth (ppm) | Duration (Hours) | MES | SNR | R _★ (R _☉) | T _★ (K) | R _p (R _⊕) | S _p (S _⊕) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|----------------------------------|--------------------|----------------------------------|----------------------------------|
| 010470993-01 | OBS | 8015.01 | 0.933754 | 132.434397 | 23.0 | 4.096 | 9.0 | 7.6 | 1.13 | 6363 | 0.64 | 4840.31 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------------------|
| 010470993-01 | OBS | FP | 0.00 | 0 | 0 | 1 | 1 | HALO_GHOST—EPHEM_MATCH |

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.

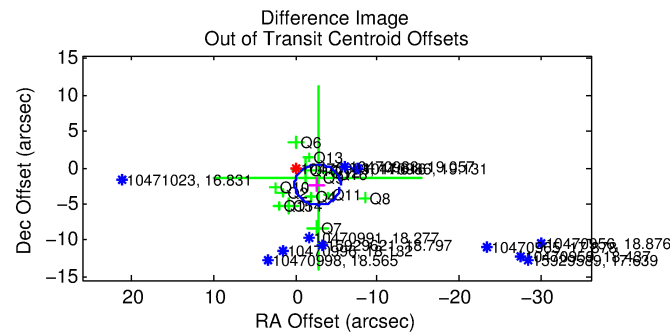
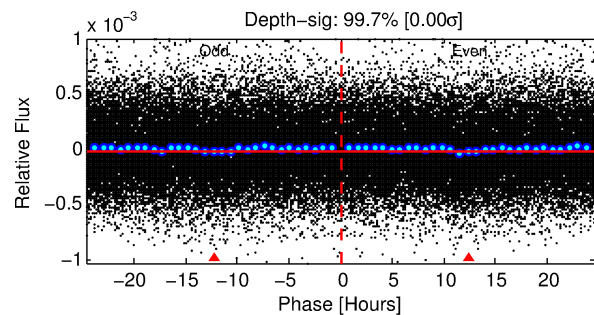
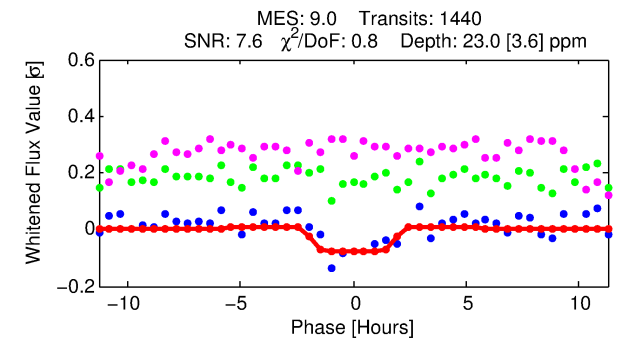
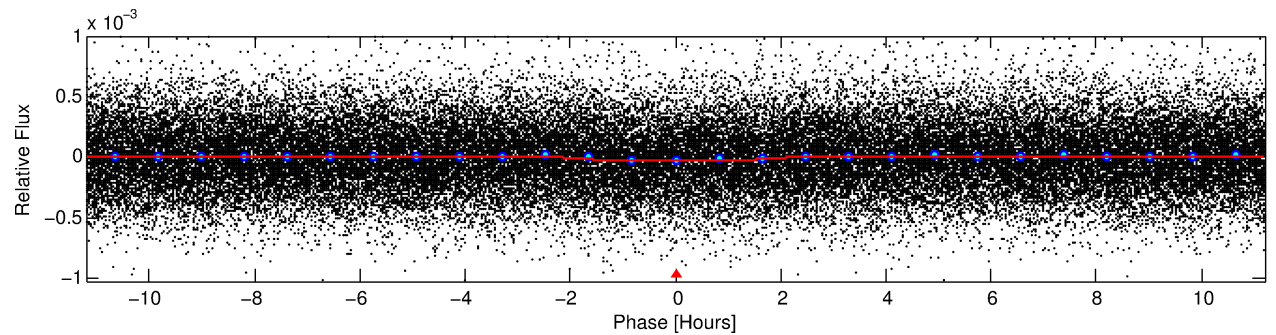
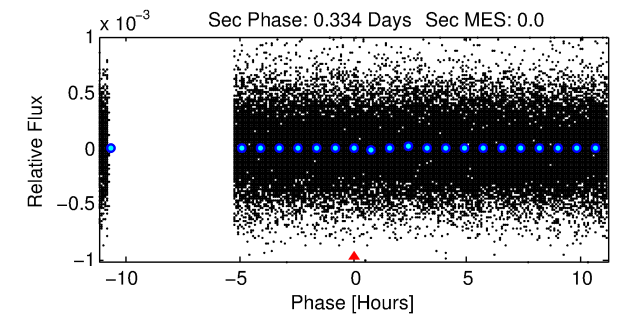
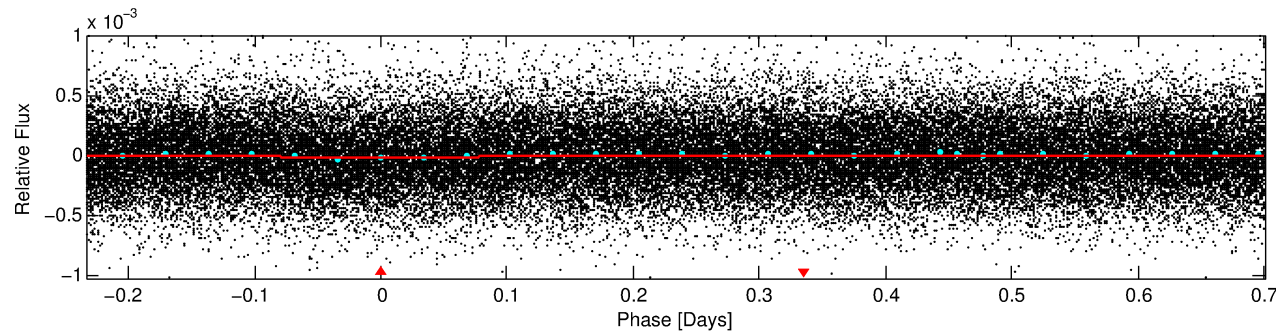
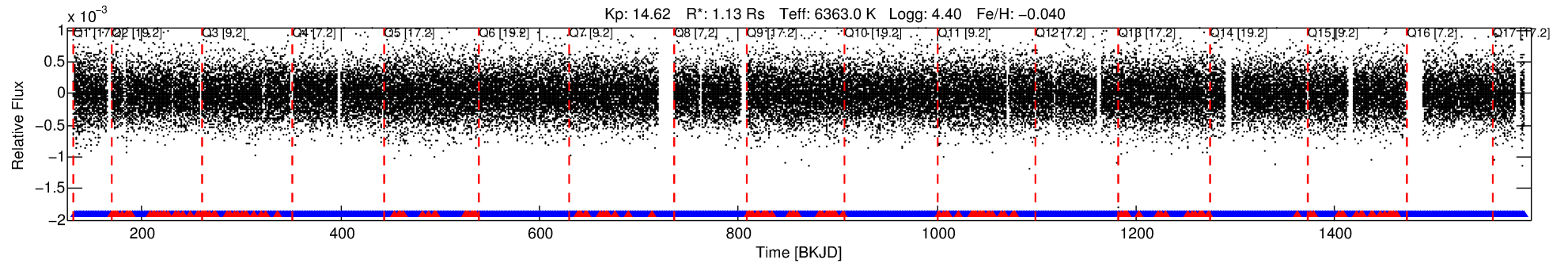
Ephemeris Match Information For 010470993-01

| TCE (1) | KIC | Parent (2) | Parent KIC | P ₁ :P ₂ | Dist (″) | ΔRow | ΔCol | m ₂ | m ₁ | D ₂ /D ₁ | Mechanism | Flag | σ _P | σ _T |
|--------------|----------|---------------|------------|--------------------------------|----------|------|------|----------------|----------------|--------------------------------|------------|------|----------------|----------------|
| 010470993-01 | 10470993 | V2083-Cyg-pri | 10342012 | 1:2 | 1790.6 | 351 | -283 | 6.90 | 14.61 | 8622.70 | Direct-PRF | 0 | 1.08 | 1.39 |

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant σ_P < 5.0 and σ_T < 5.0. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10470993 Candidate: 1 of 1 Period: 0.934 d



DV Fit Results:

Period = 0.93375 [0.00002] d
Epoch = 132.4344 [0.0061] BKJD
Rp/R* = 0.0052 [0.0033]
a/R* = 1.21 [1.40]
b = 0.90 [0.74]
Seff = 4840.31 [2019.56]
Teff = 2127 [222] K
Rp = 0.64 [0.46] Re
a = 0.0197 [0.0055] AU
Ag = N/A
Teffp = N/A

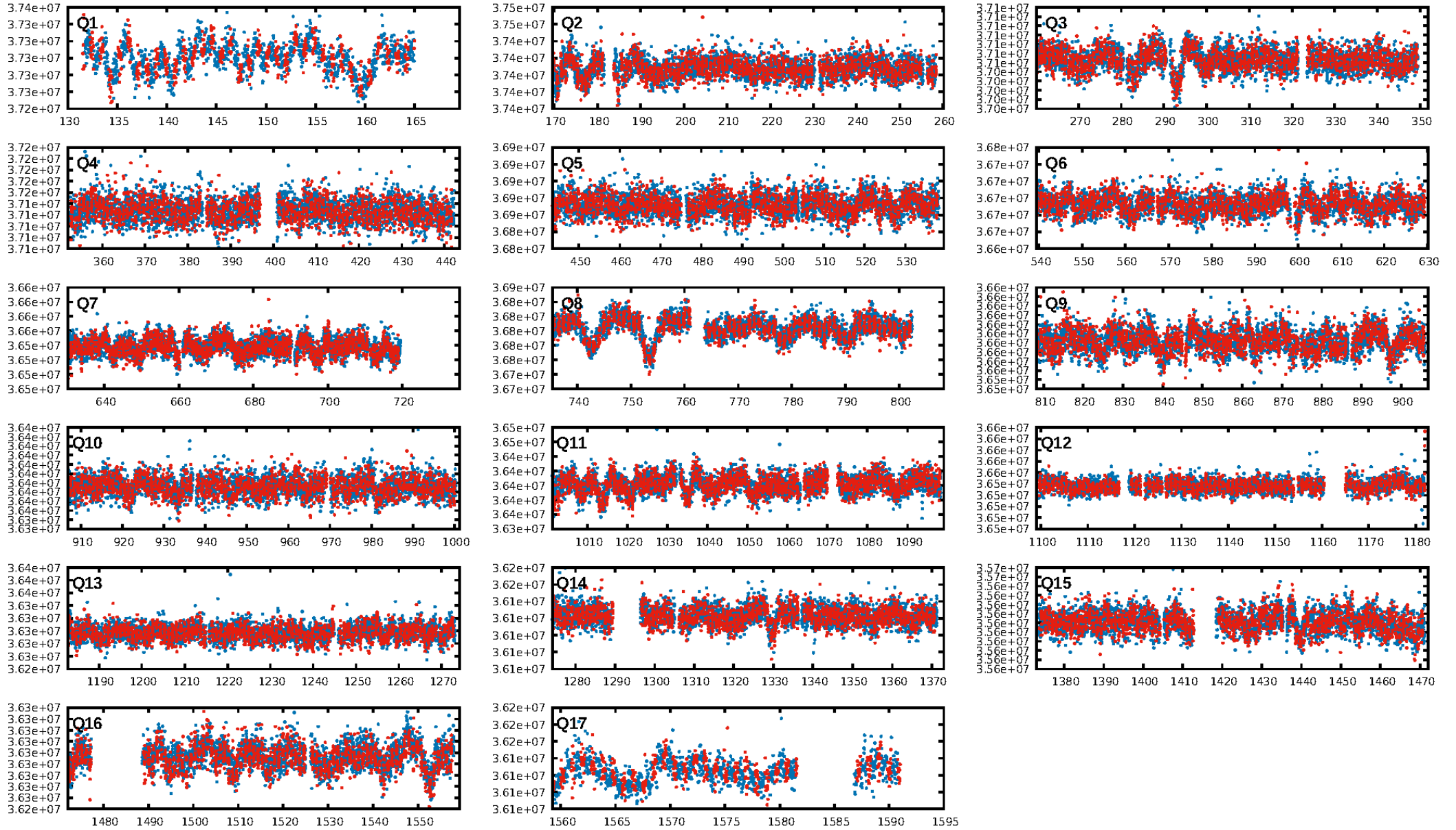
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.96e-19
RollingBand-fgt: 0.88 [1204/1374]
GhostDiagnostic-chr: 0.03677
Centroid-sig: 0.1%
Centroid-so: 4.599 arcsec [2.28σ]
OotOffset-rm: 3.595 arcsec [3.87σ]
KicOffset-rm: 3.704 arcsec [3.99σ]
OotOffset-st: 4/3/4/3 [14]
KicOffset-st: 4/3/4/3 [14]
DiffImageQuality-fgm: 0.00 [0/14]
DiffImageOverlap-fno: 1.00 [17/17]

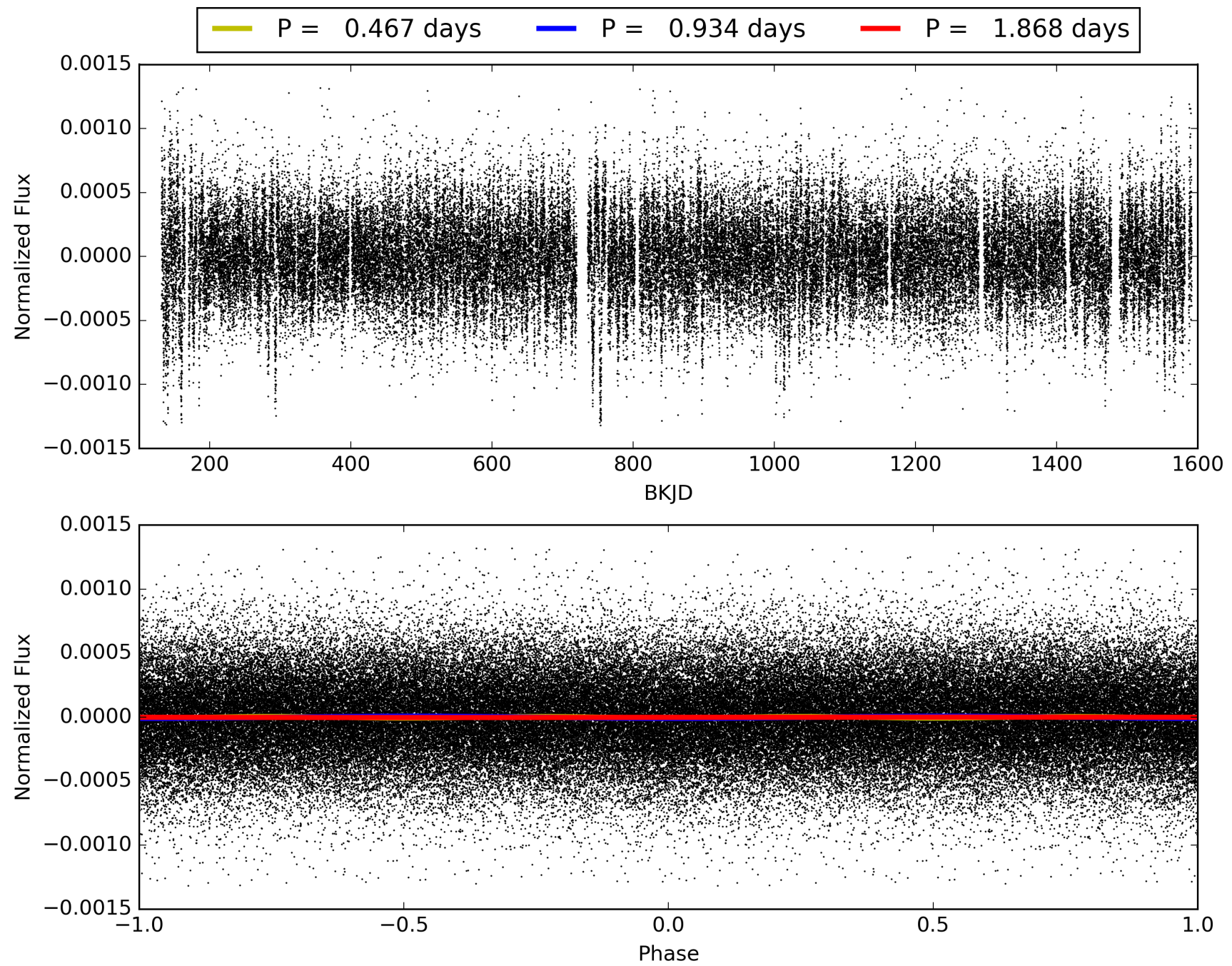
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 23:43:14 Z

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

TCE 010470993-01, PDC Light Curves

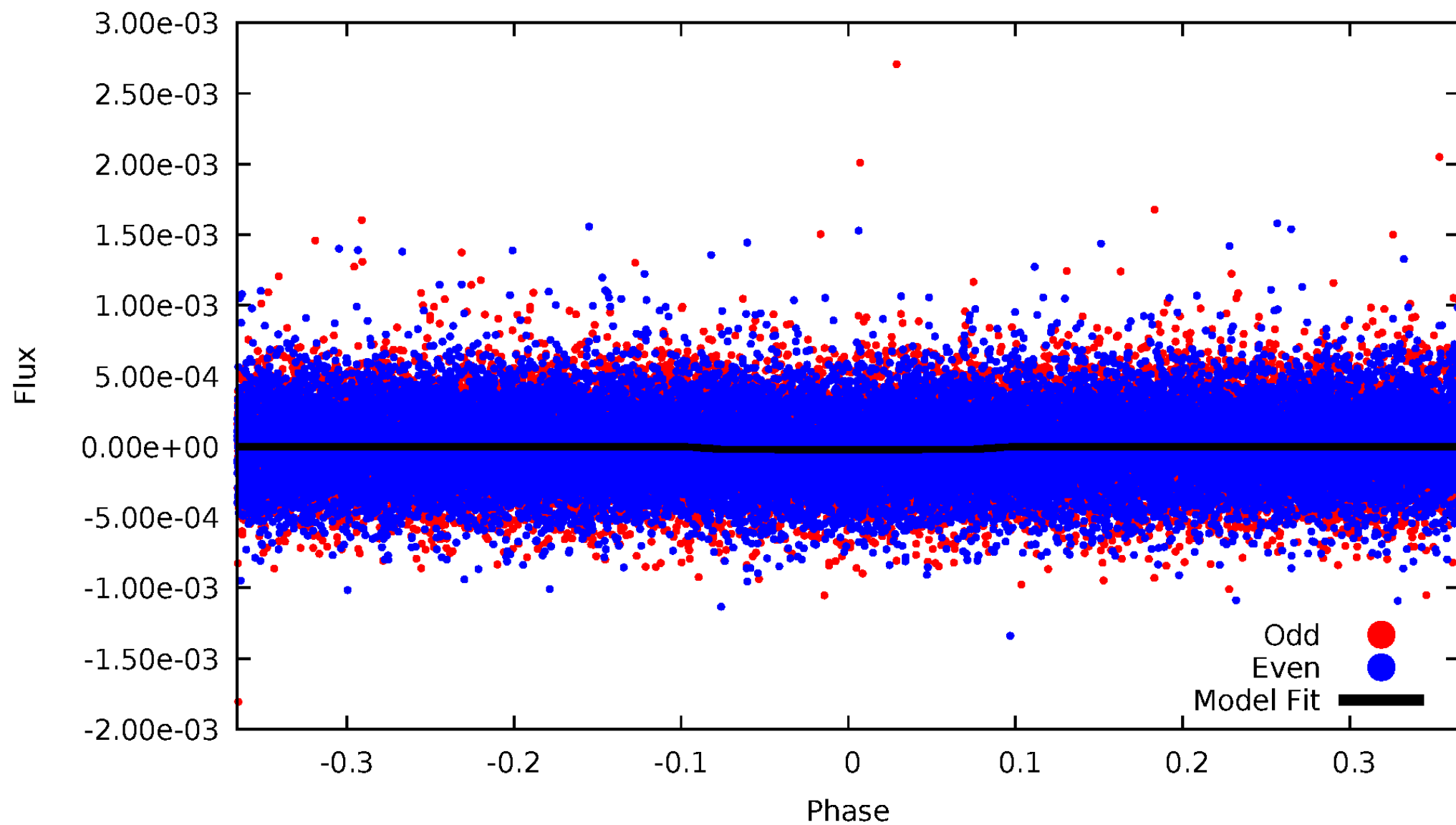


TCE 010470993-01



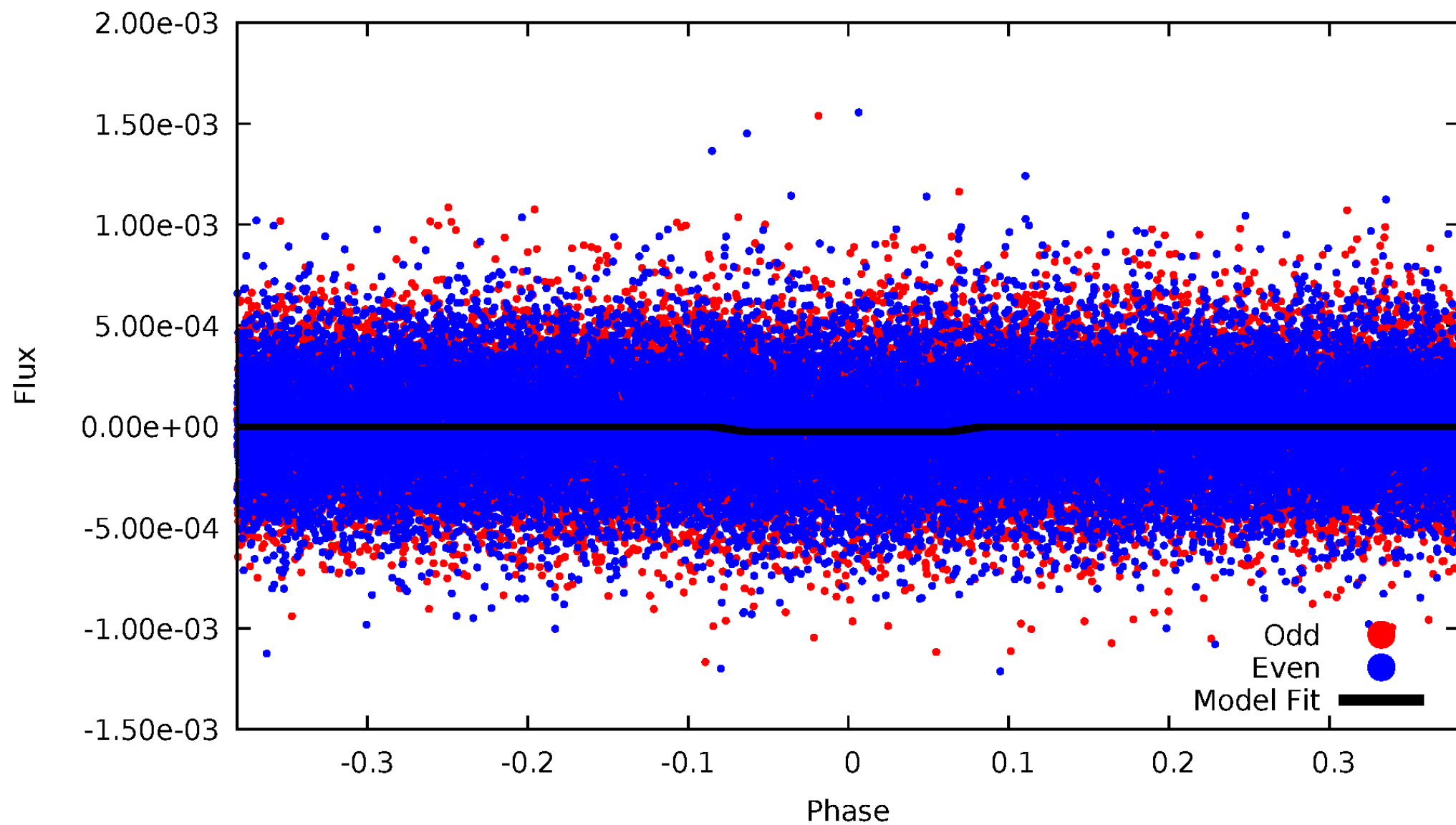
DV Odd/Even

TCE 010470993-01

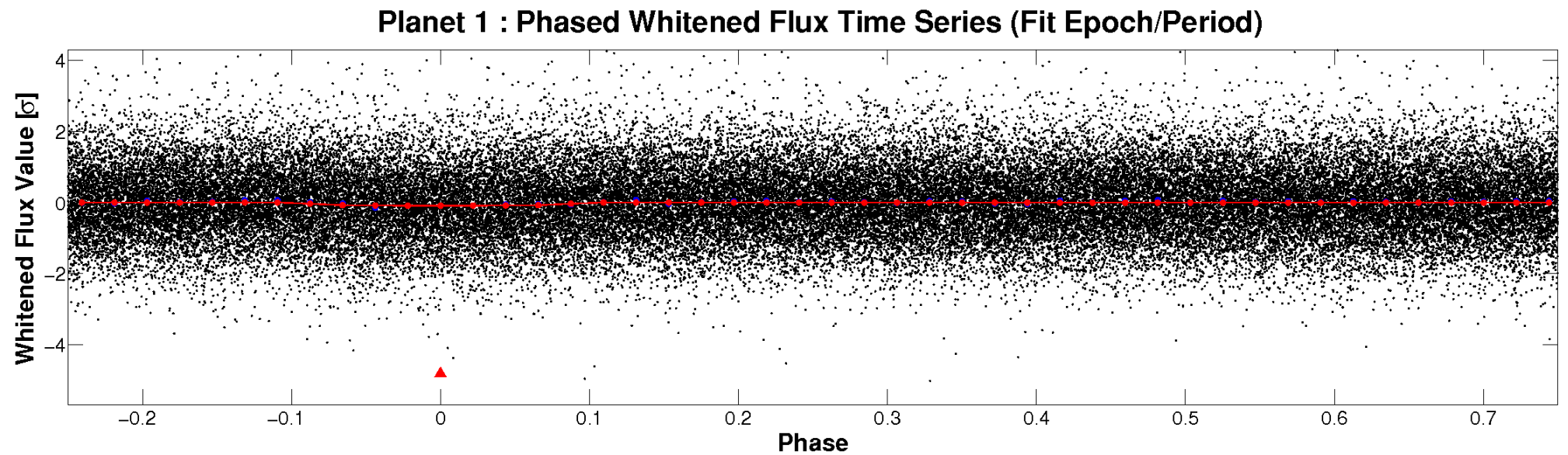
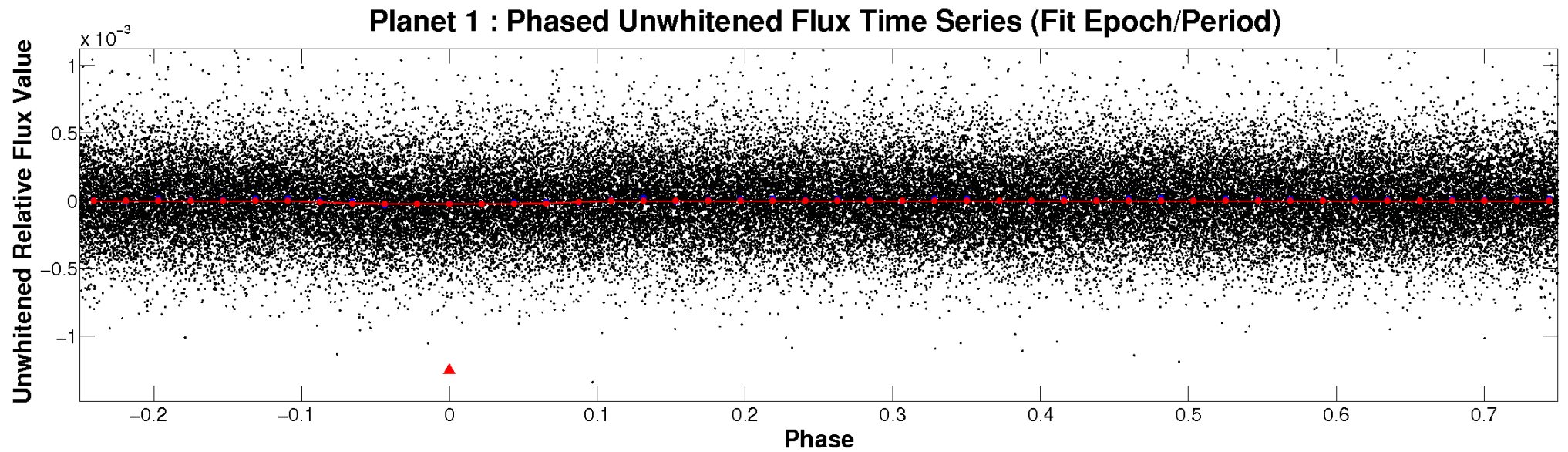


ALT Odd/Even

TCE 010470993-01

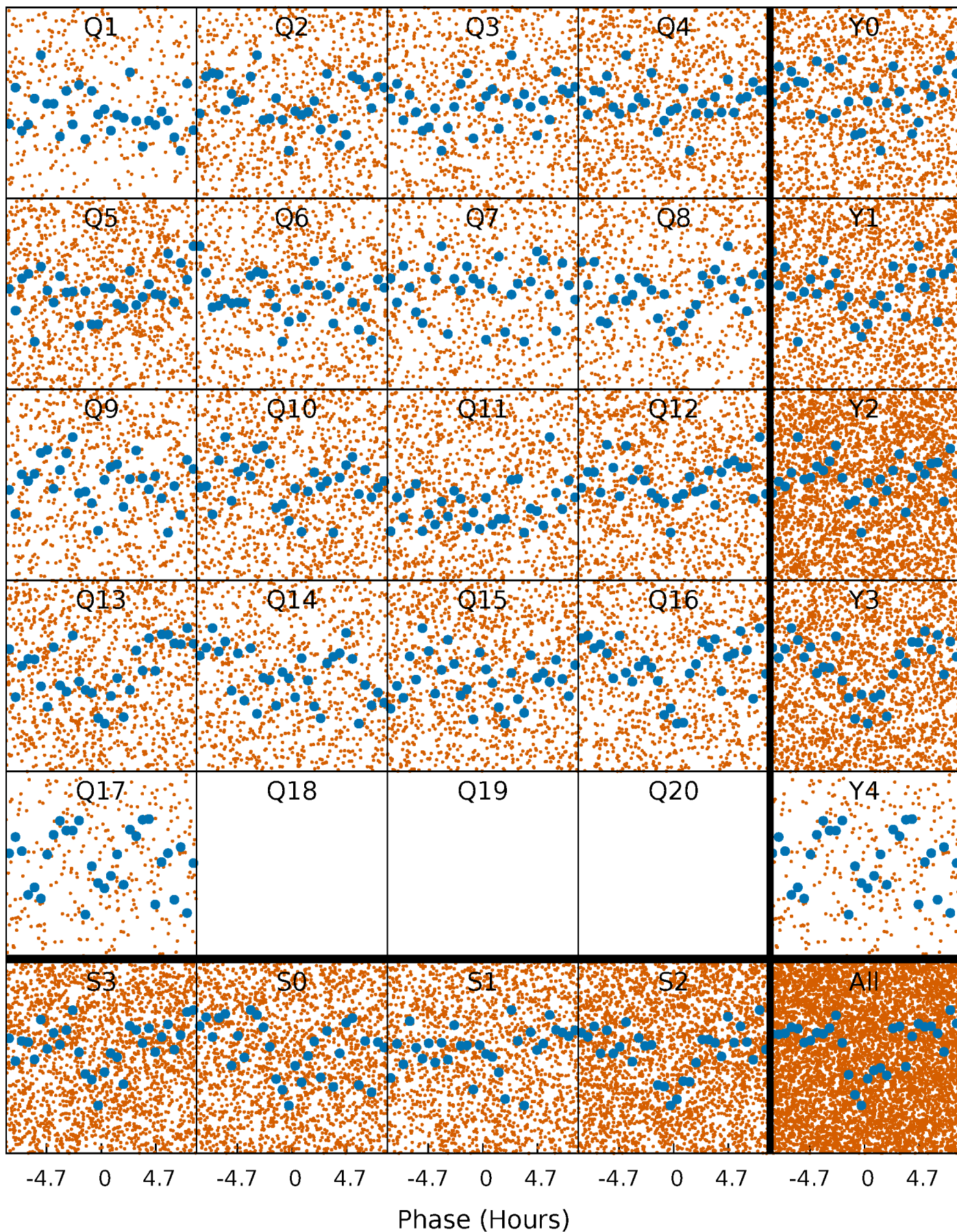


Non-Whitened Vs. Whitened Light Curve



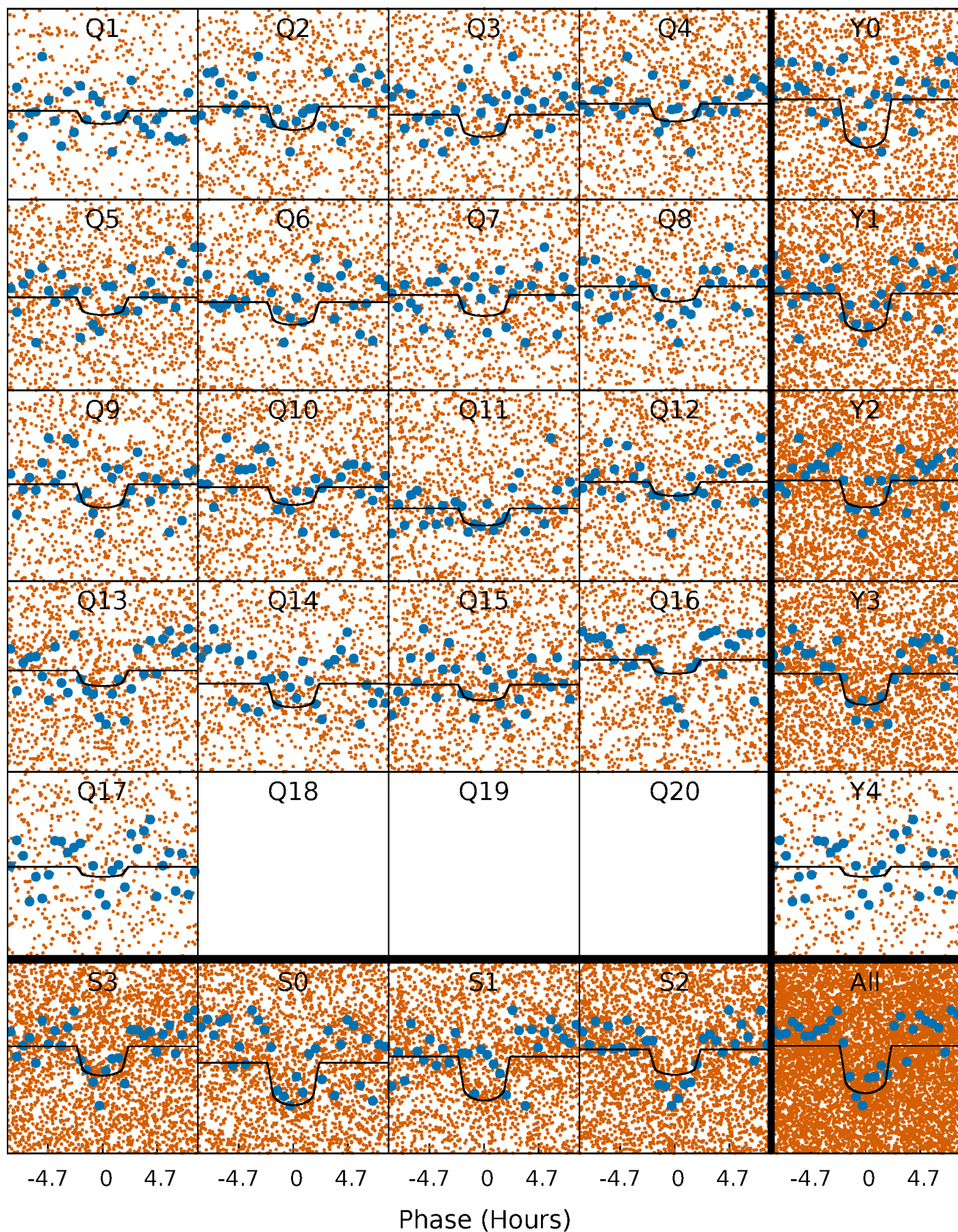
PDC Quarter-Phased Transit Curves

TCE 010470993-01 P= 0.933754 Days $T_0=132.434397$ (BKJD)



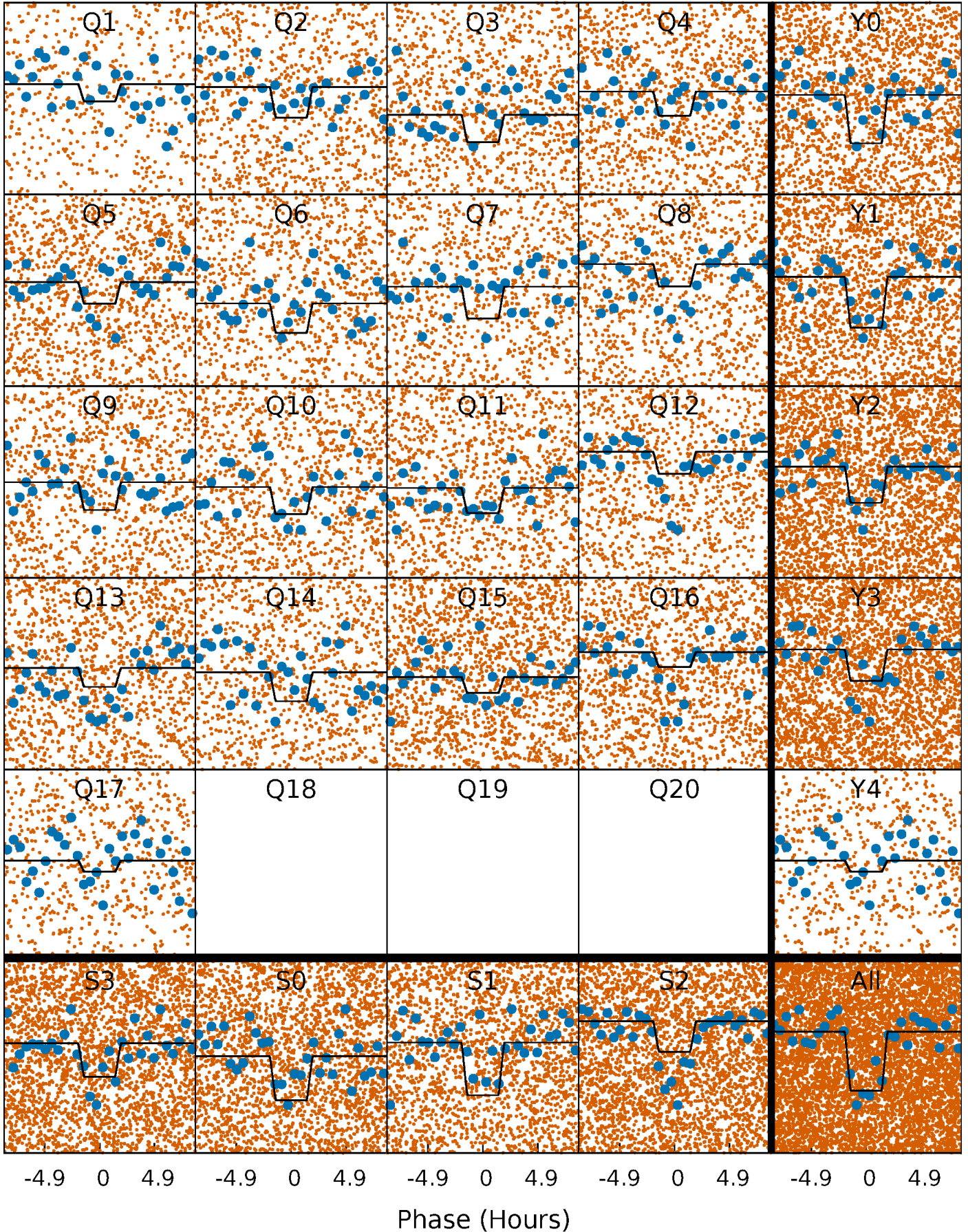
DV Quarter-Phased Transit Curves

TCE 010470993-01 P= 0.933754 Days $T_0=132.434397$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

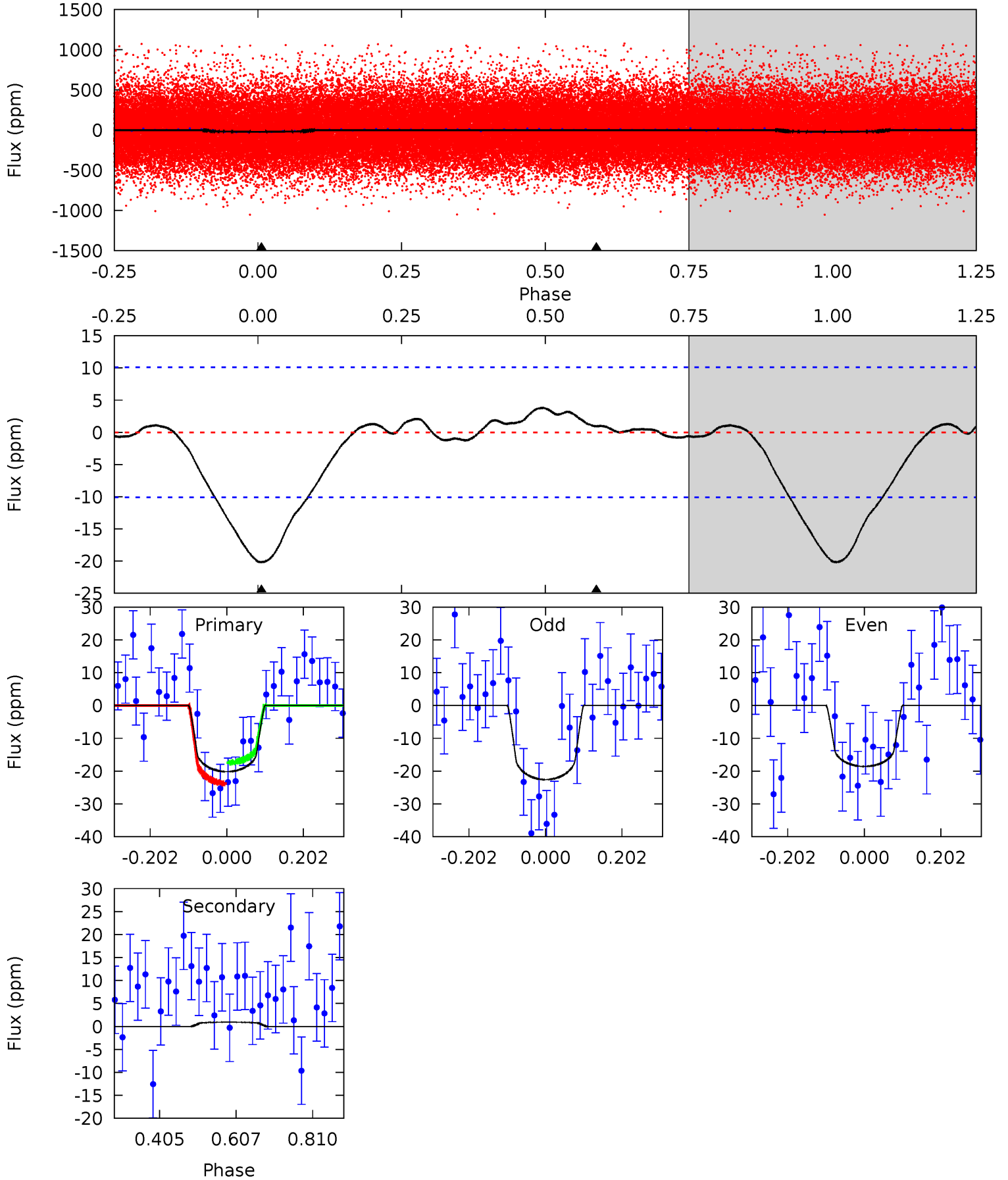
TCE 010470993-01 P= 0.933759 Days $T_0=132.433758$ (BKJD)



DV Model-Shift Uniqueness Test

010470993-01, P = 0.933754 Days, E = 131.500643 Days

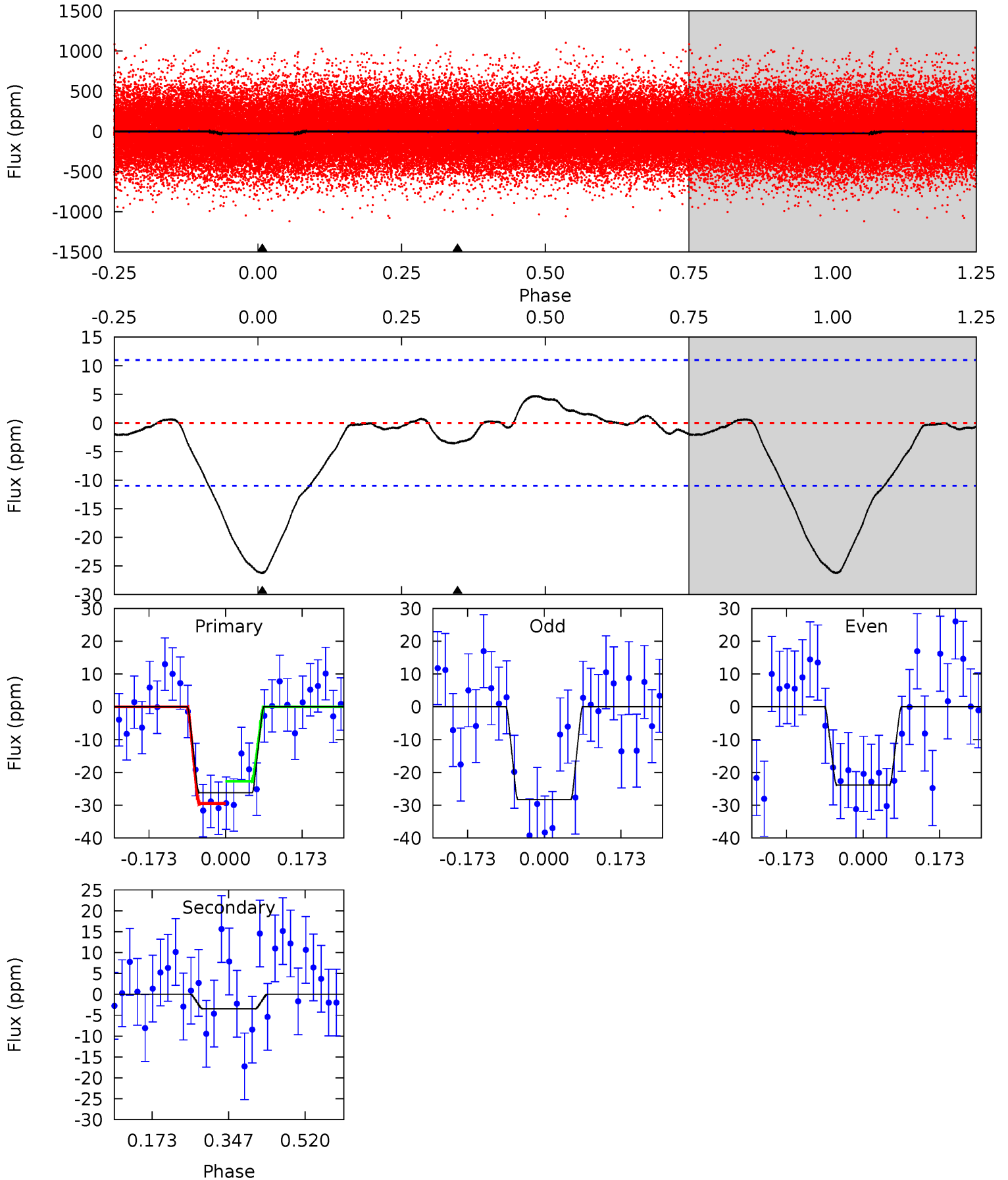
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.81 | -0.41 | 0 | 0 | 4.41 | 1.27 | 0.48 | 8.81 | 8.81 | -0.41 | -0.41 | 0.89 | 1.14 | 0.16 | 1.40 |



Alt Model-Shift Uniqueness Test

010470993-01, P = 0.933759 Days, E = 131.499999 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.6 | 1.39 | 0 | 0 | 4.45 | 1.36 | 0.58 | 10.6 | 10.6 | 1.39 | 1.39 | 0.89 | 0.94 | 0.15 | 1.37 |



Stellar Parameters For KIC 010470993

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|-------------------------------------------|
| | 6363^{+153}_{-211} | $4.399^{+0.070}_{-0.210}$ | $-0.040^{+0.250}_{-0.300}$ | $1.131^{+0.389}_{-0.130}$ | $1.170^{+0.169}_{-0.169}$ | $1.139^{+0.349}_{-0.631}$ |
| | +2%/-3% | +2%/-5% | +625%/-750% | +34%/-11% | +14%/-14% | +31%/-55% |
| 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 010470993-01 / KOI 8015.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-------------|------------------------|----------------------|-------------------------|----------------------------|
| DV | 1 ± 2 | $0.70^{+0.43}_{-0.40}$ | 3015^{+250}_{-153} | -3528^{+6474}_{-1202} | $-0.379^{+0.875}_{-2.488}$ |
| Alt. | -3 ± 2 | $0.69^{+0.42}_{-0.35}$ | 3005^{+244}_{-141} | 3745^{+1523}_{-1832} | $1.282^{+5.034}_{-0.977}$ |

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 $A_{obs} \gg 1.0$

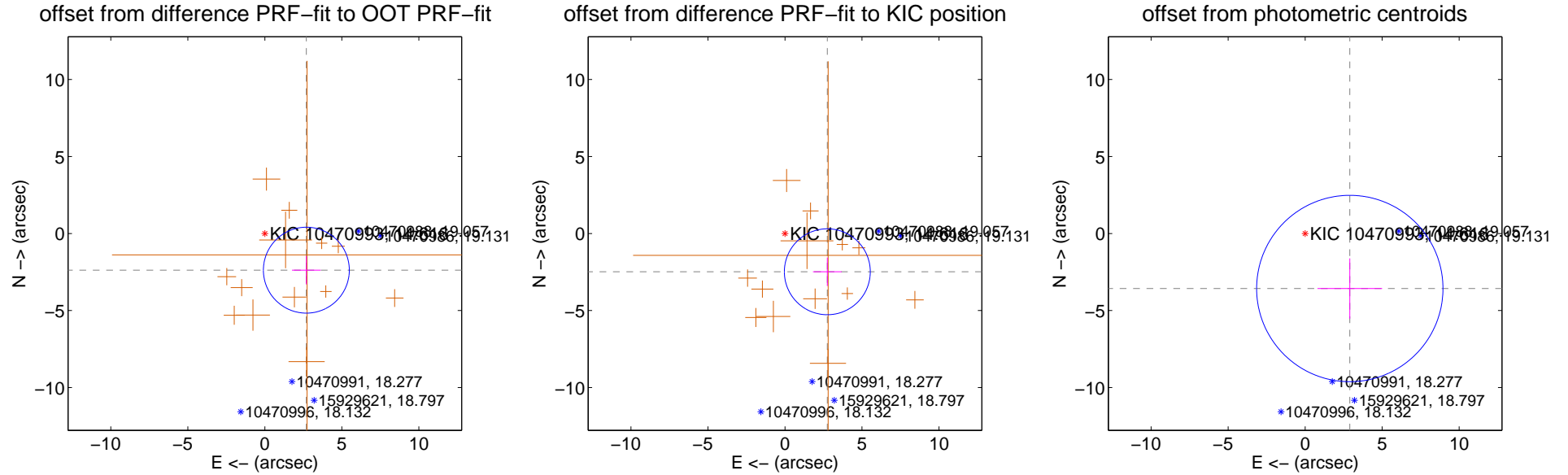
DV Centroid Data

Supplemental centroid analysis for 010470993-01. Kepler magnitude: 14.62. Transit SNR 7.58

There are 0 quarters with good PRF difference image offsets

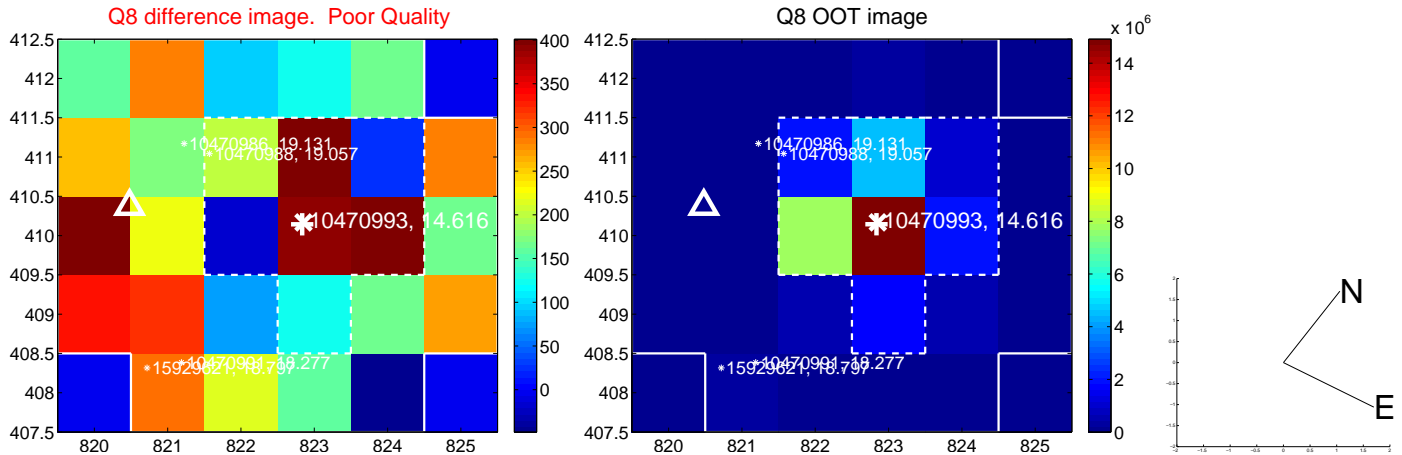
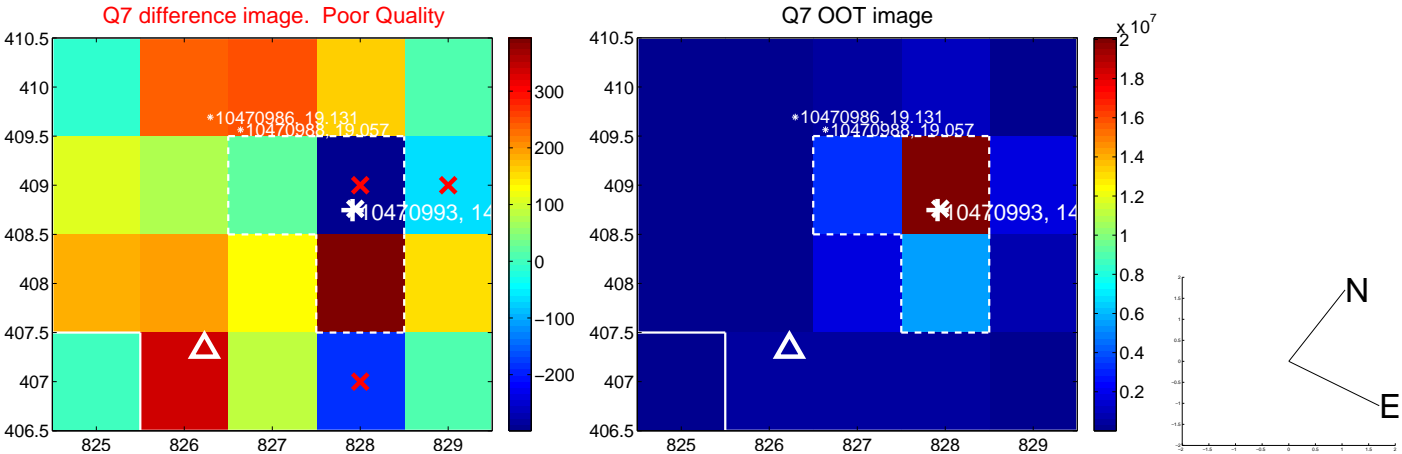
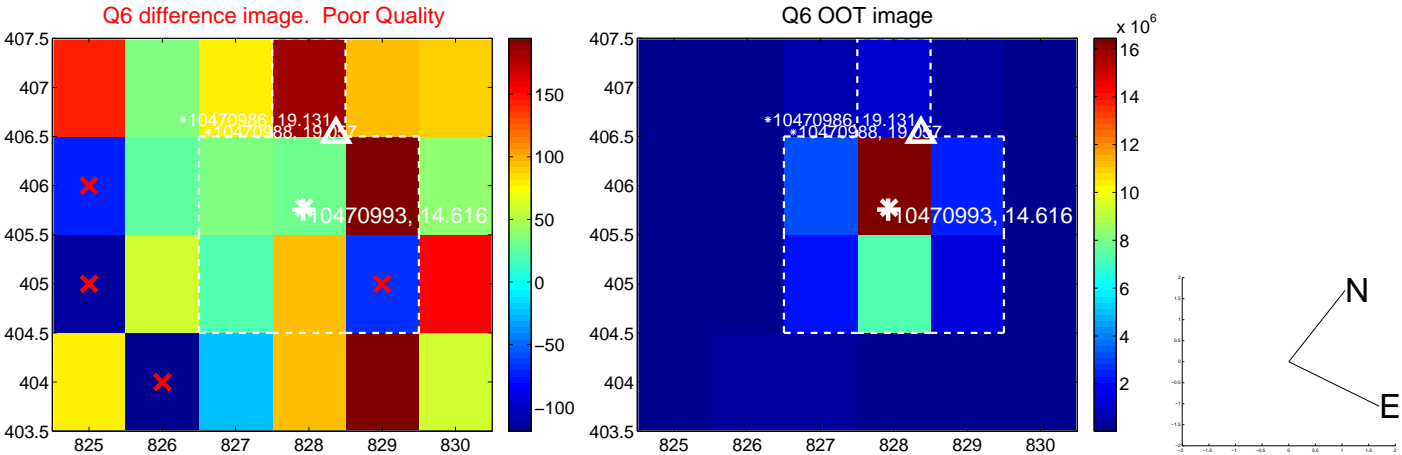
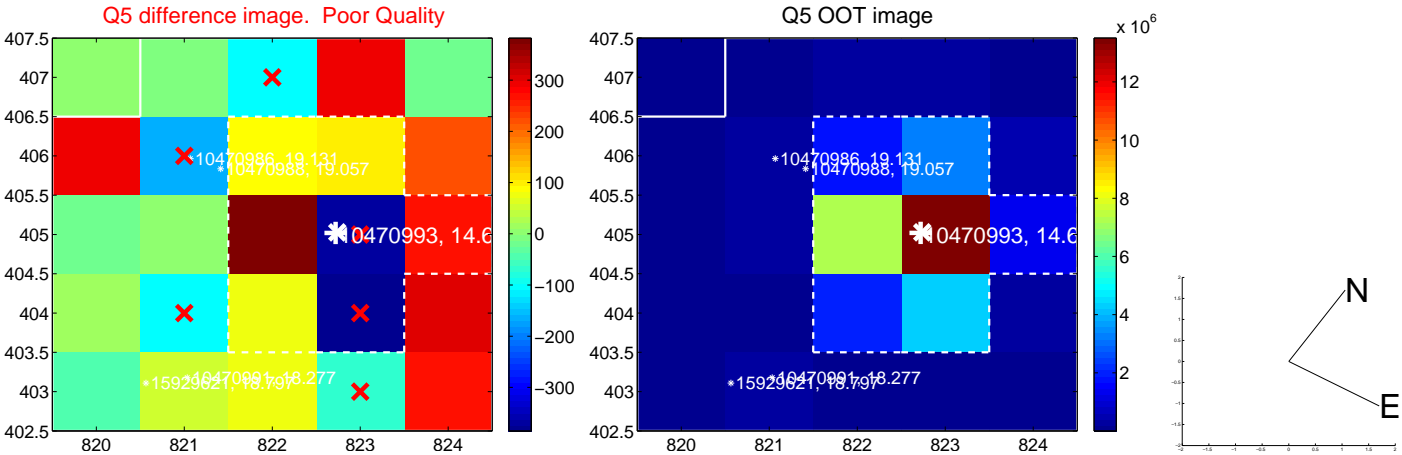
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|-----------------------------------------|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 3.595 ± 0.930 | 3.87 | -2.695 ± 0.933 | -2.380 ± 0.926 |
| PRF-fit source offset from KIC position | 3.704 ± 0.930 | 3.99 | -2.749 ± 0.933 | -2.483 ± 0.926 |
| photometric centroid source offset | 4.60 ± 2.02 | 2.28 | -2.90 ± 2.10 | -3.57 ± 1.96 |

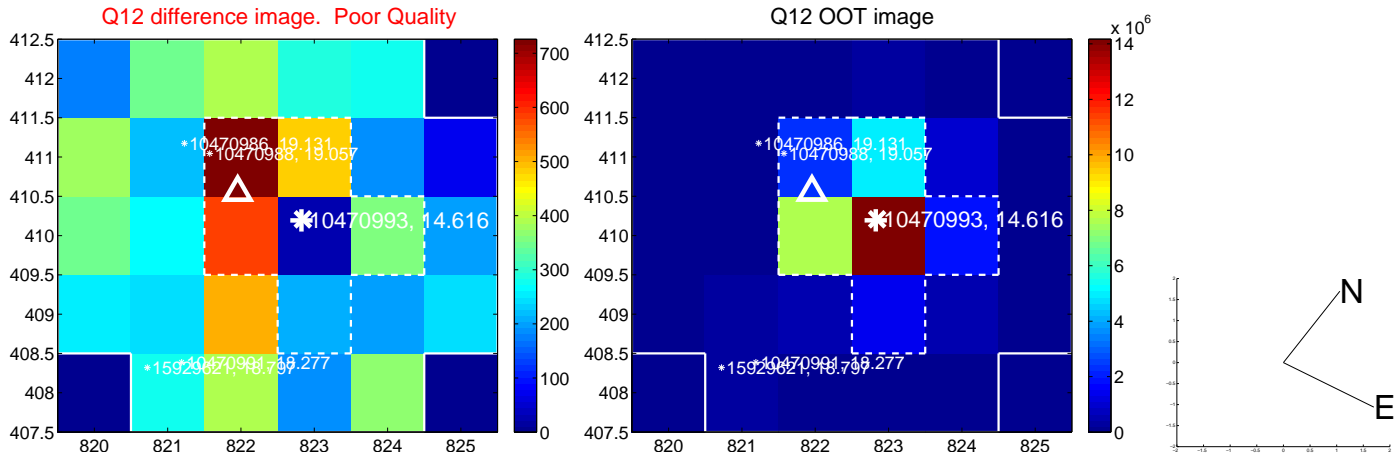
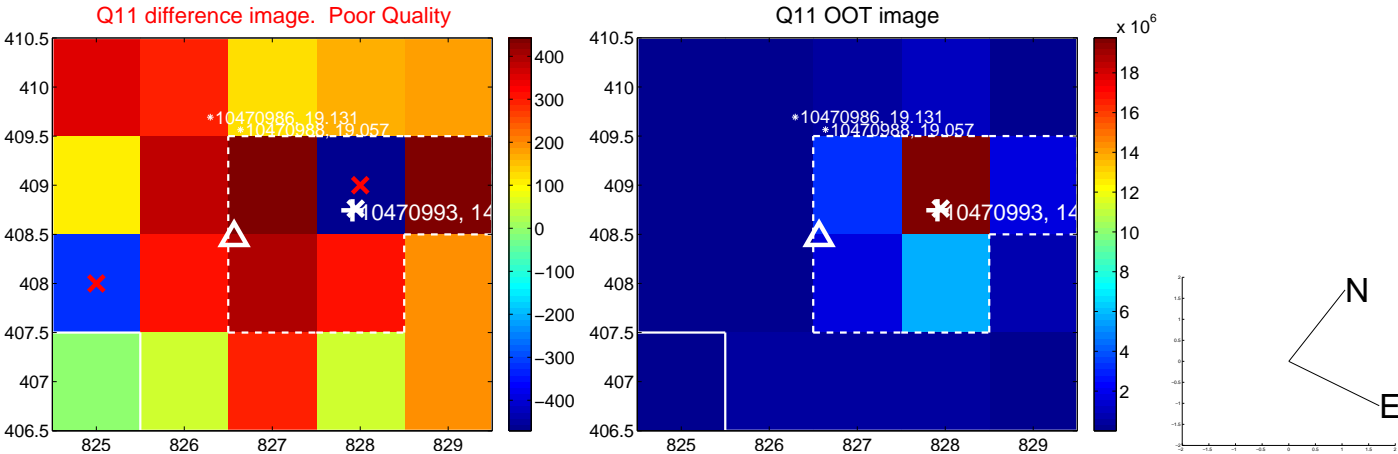
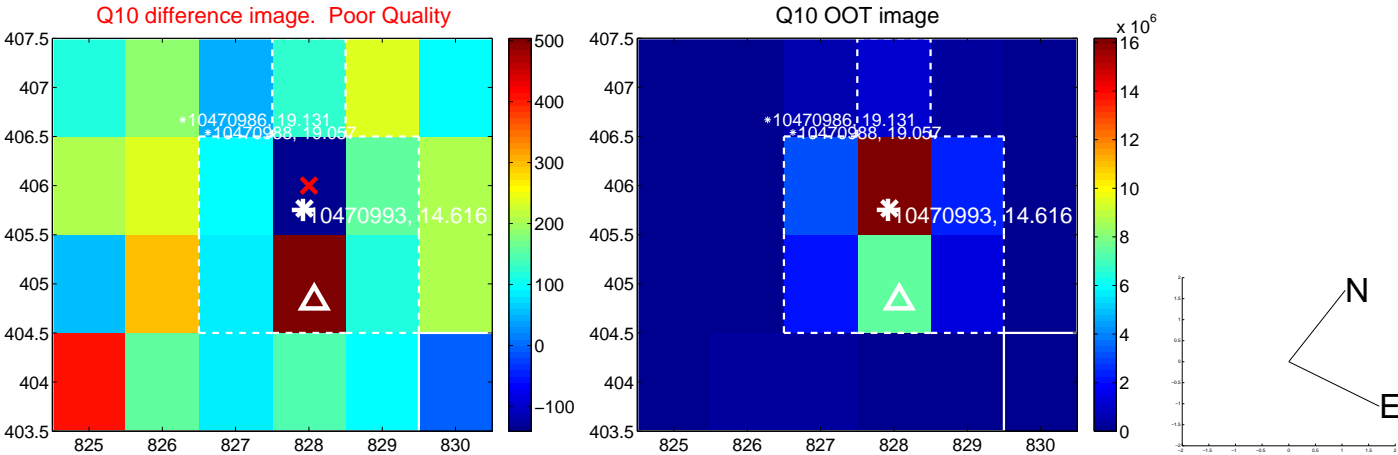
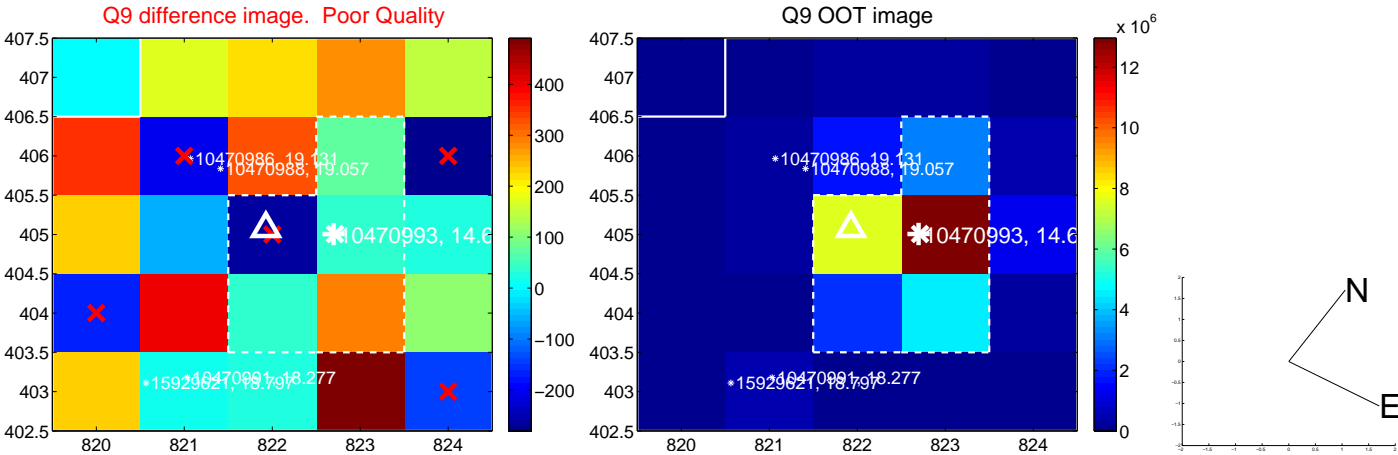


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

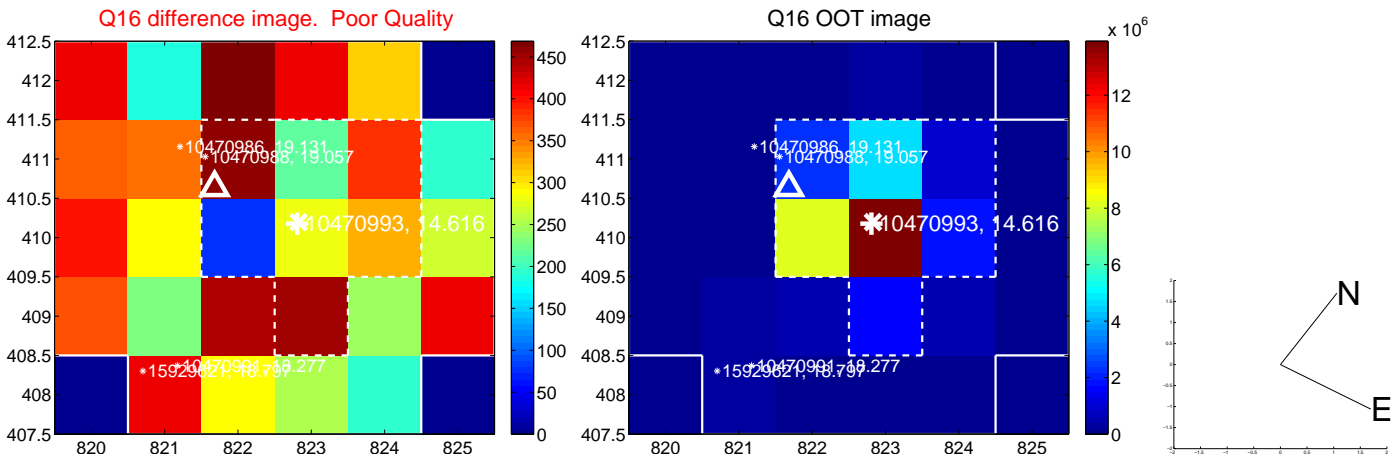
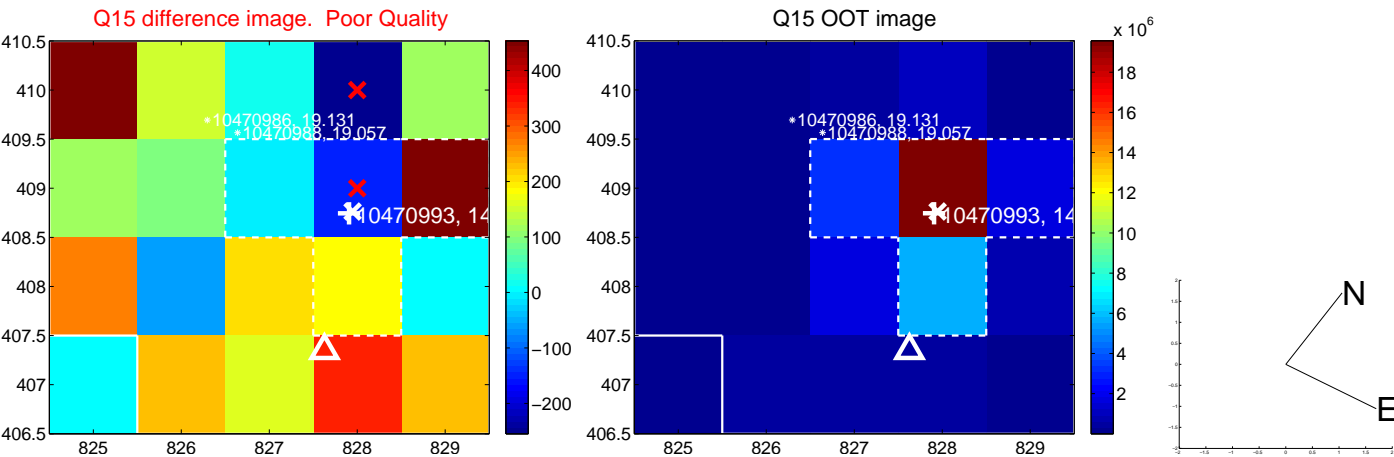
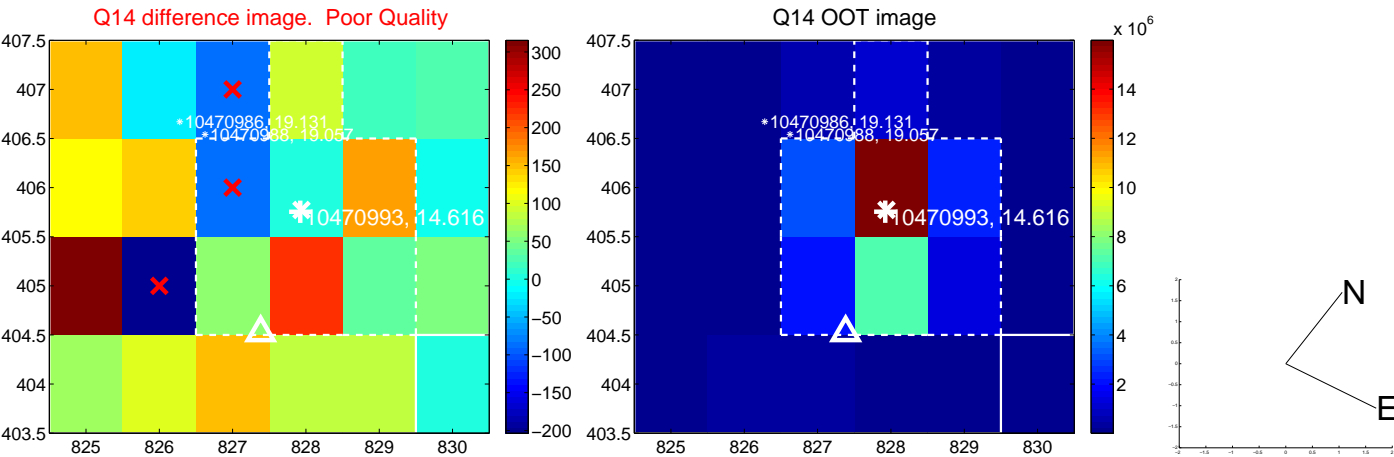
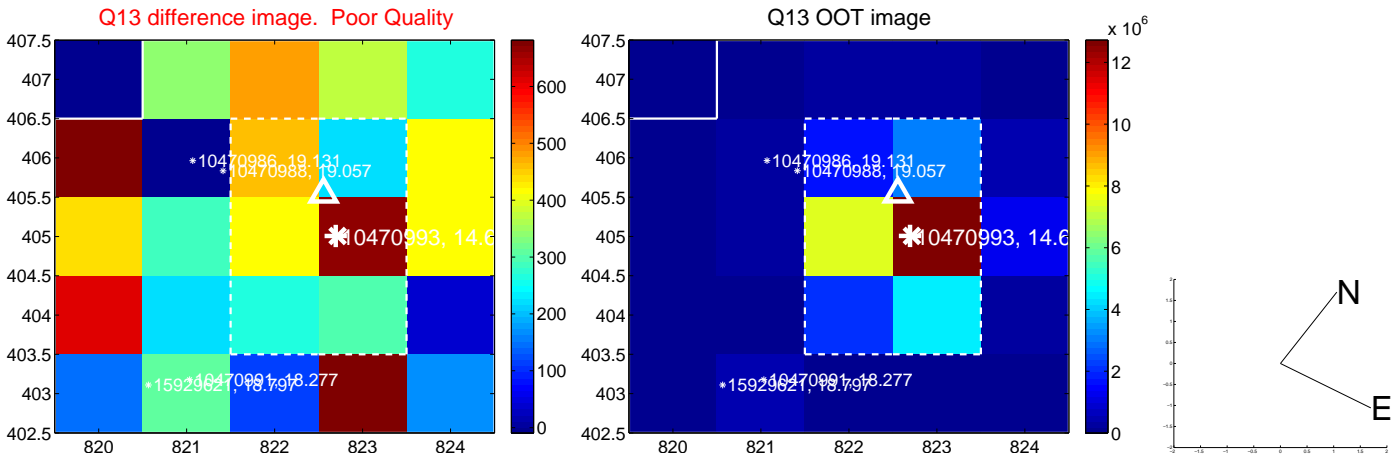
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



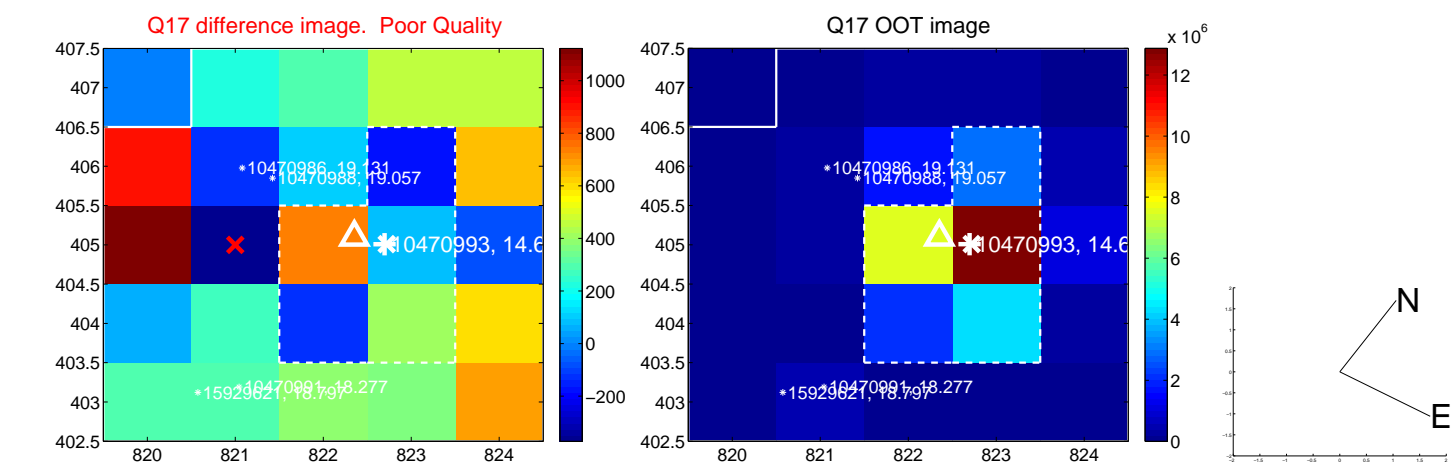
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



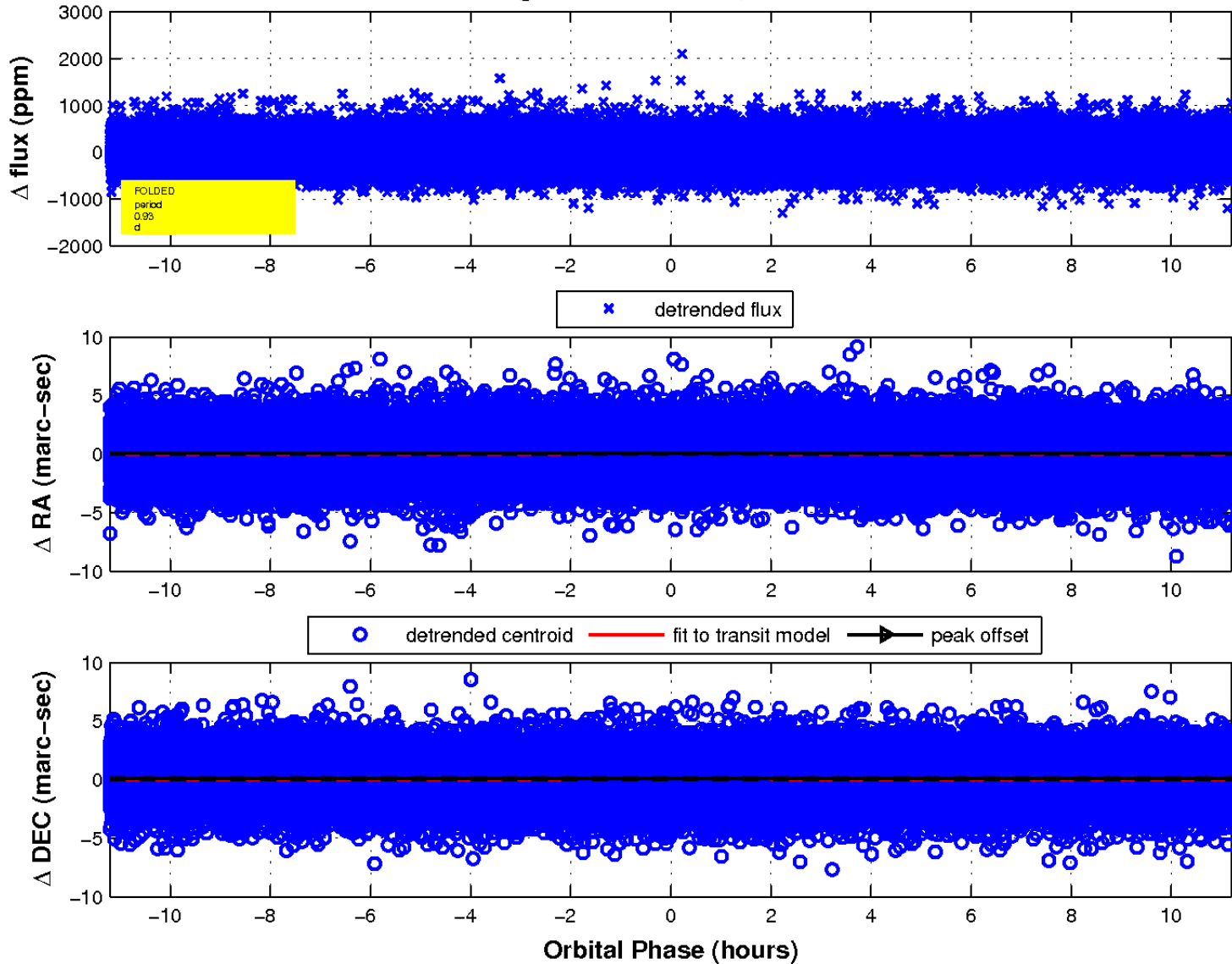
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

