

KIC 010031500

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|------|-----------------------------|-----------------|------------------------|------------------------|
| 010031500-01 | OBS | 3107.01 | 8.589357 | 132.078705 | 190.3 | 7.340 | 9.9 | 10.4 | 0.94 | 5766 | 1.42 | 149.07 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|-----------------------------------|
| 010031500-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 1 | LPP_DV—CENT_FEW_DIFFS—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.

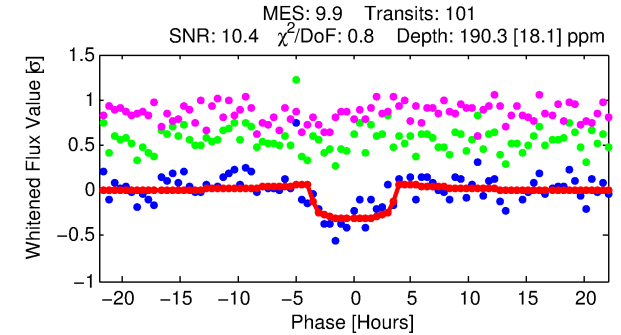
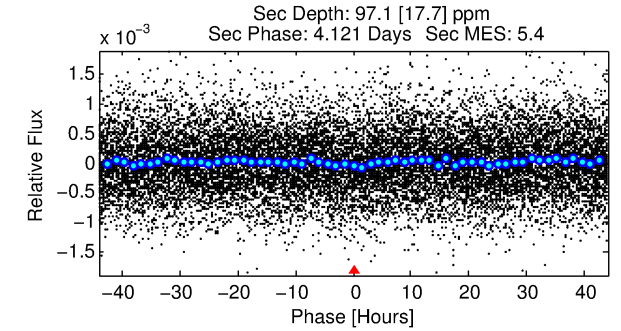
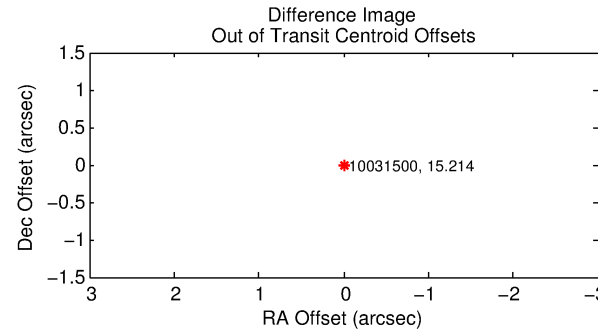
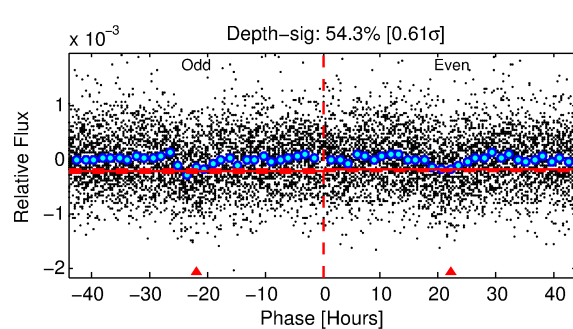
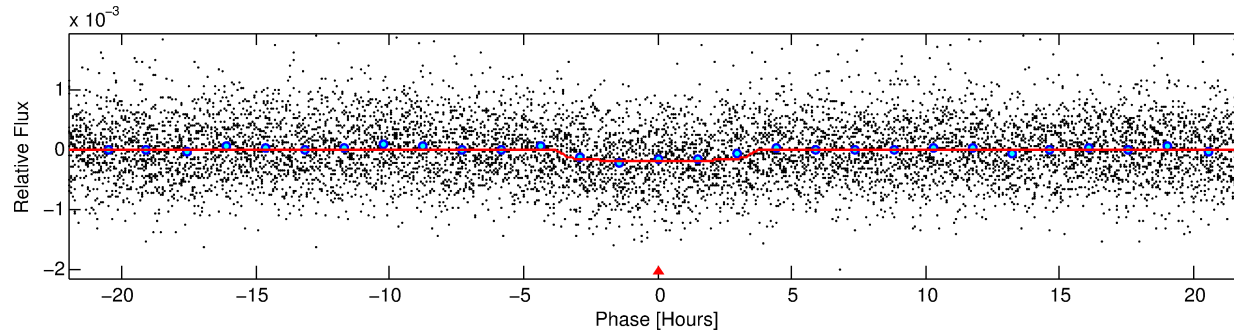
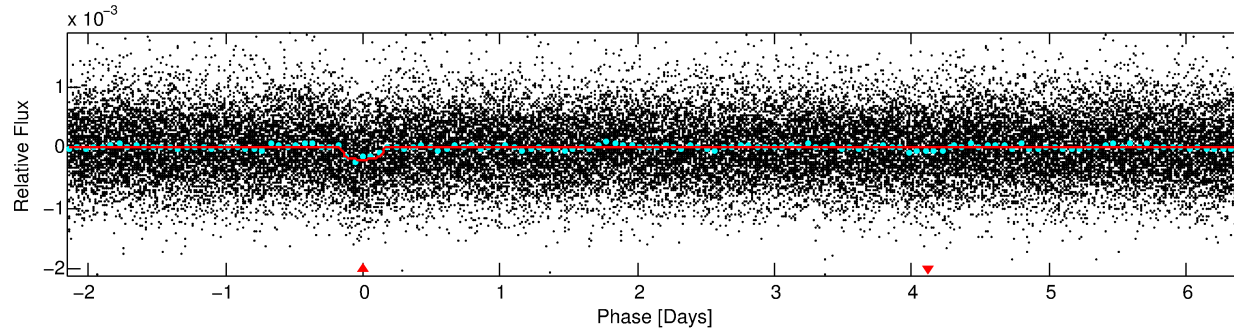
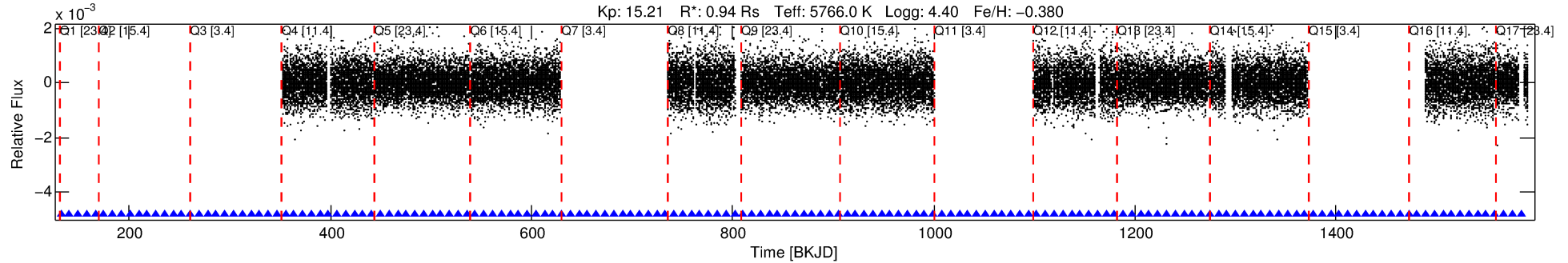
Ephemeris Match Information For 010031500-01

| TCE (1) | KIC | Parent (2) | Parent KIC | $P_1:P_2$ | Dist ($''$) | Δ Row | Δ Col | m_2 | m_1 | D_2/D_1 | Mechanism | Flag | σ_P | σ_T |
|--------------|----------|--------------|------------|-----------|---------------|--------------|--------------|-------|-------|-----------|------------|------|------------|------------|
| 010031500-01 | 10031500 | 010031808-01 | 10031808 | 1:1 | 228.3 | 58 | 2 | 9.56 | 15.22 | 1421.80 | Direct-PRF | 0 | 0.96 | 2.47 |

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 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 $\sigma_P < 5.0$ and $\sigma_T < 5.0$. 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: 10031500 Candidate: 1 of 1 Period: 8.589 d
KOI: K03107.01 Corr: 0.891



DV Fit Results:

Period = 8.58936 [0.00012] d
Epoch = 132.0787 [0.0118] BKJD
Rp/R* = 0.0138 [0.0083]
a/R* = 6.09 [16.95]
b = 0.76 [1.63]
Seff = 149.07 [53.03]
Teq = 891 [79] K
Rp = 1.42 [0.93] Re
a = 0.0770 [0.0173] AU
Ag = 157.52 [198.73] [0.79 σ]
Teffp = 4880 [1494] K [2.67 σ]

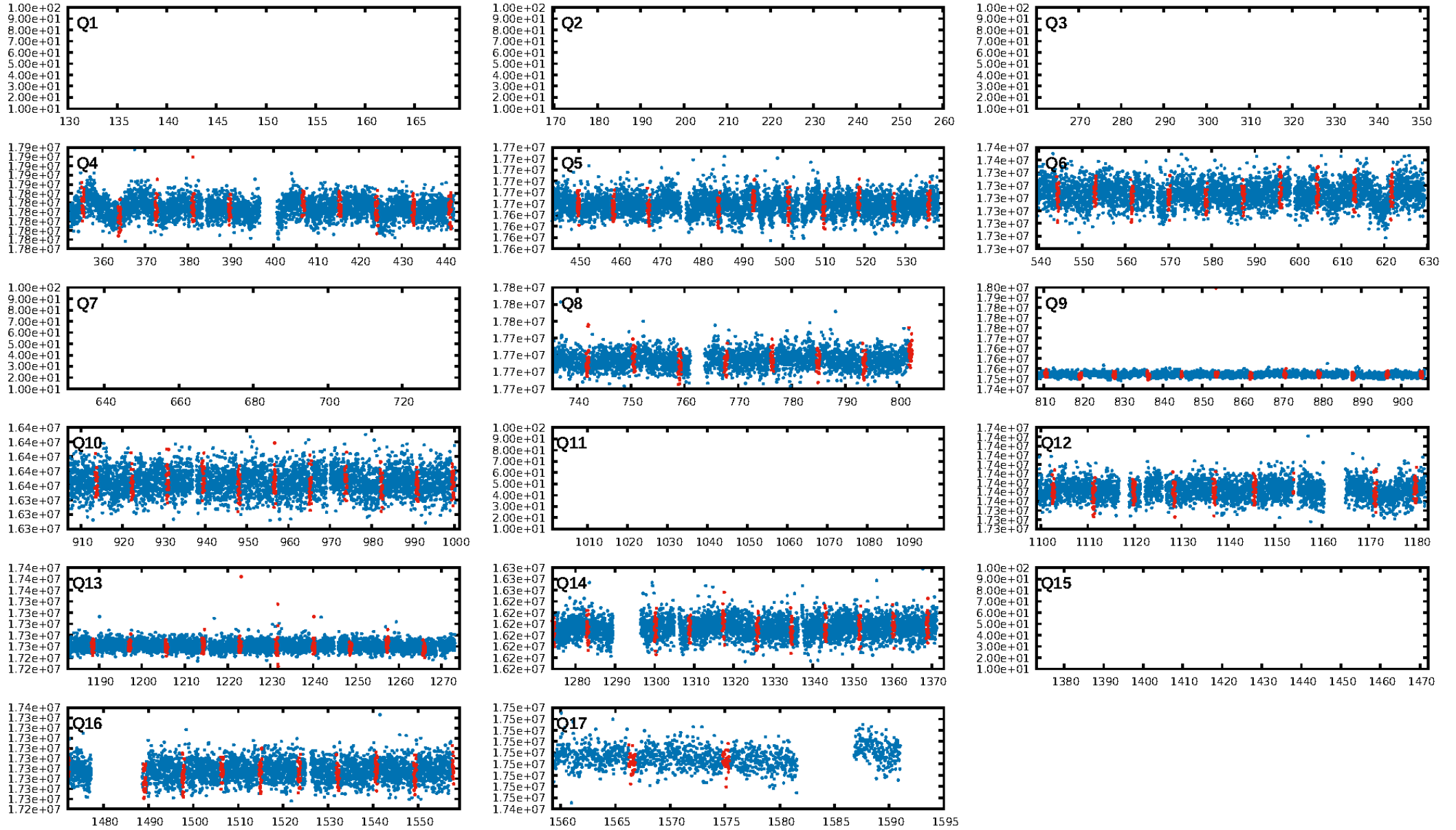
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 62.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.73e-23
RollingBand-fgt: 1.00 [99/99]
GhostDiagnostic-chr: 1.739
Centroid-sig: 0.0%
Centroid-so: 3.331 arcsec [2.97 σ]
OotOffset-rm: N/A
KicOffset-rm: 5.147 arcsec [4.45 σ]
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 3/0/3/0 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 1.00 [11/11]

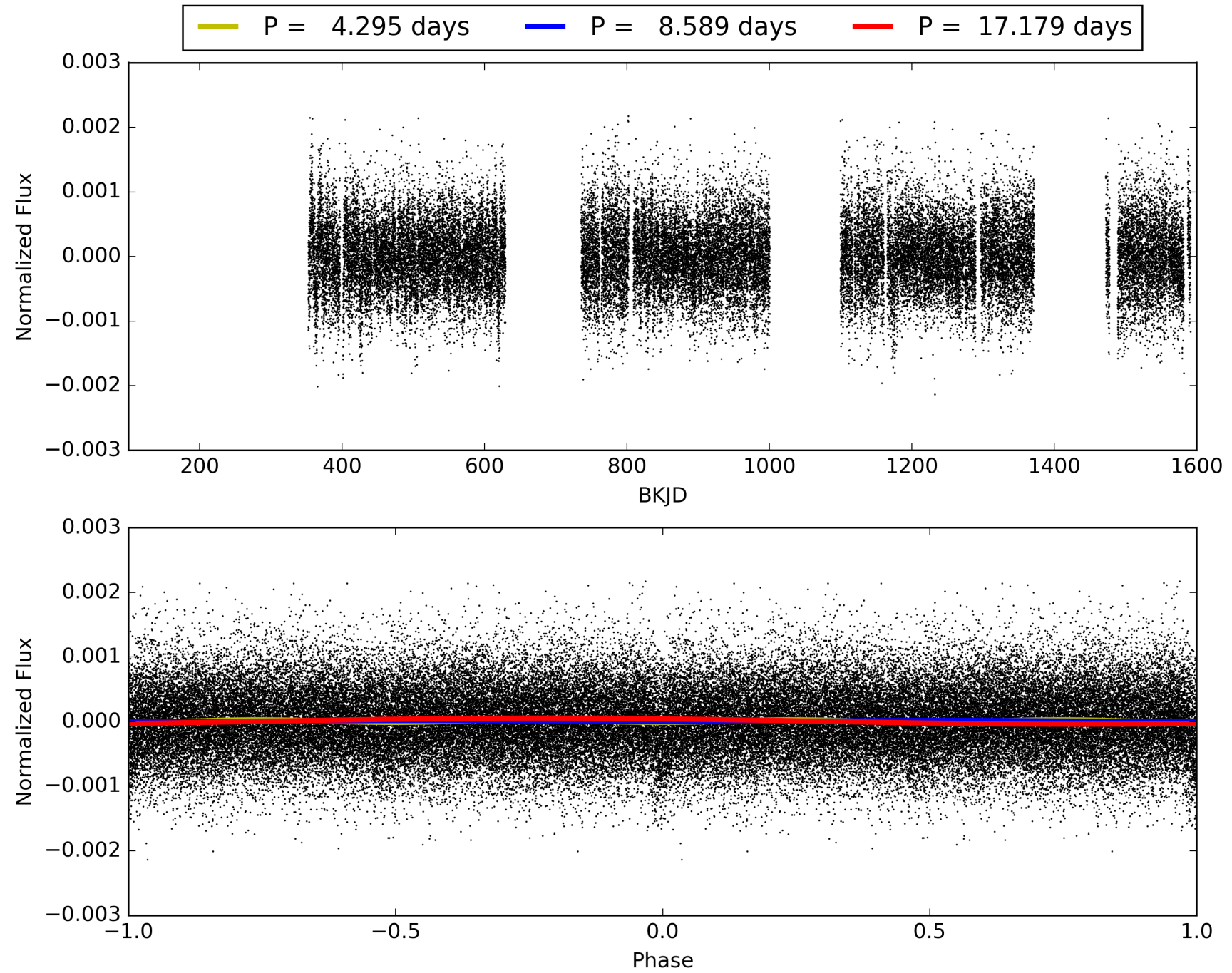
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:15:38 Z

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

TCE 010031500-01, PDC Light Curves

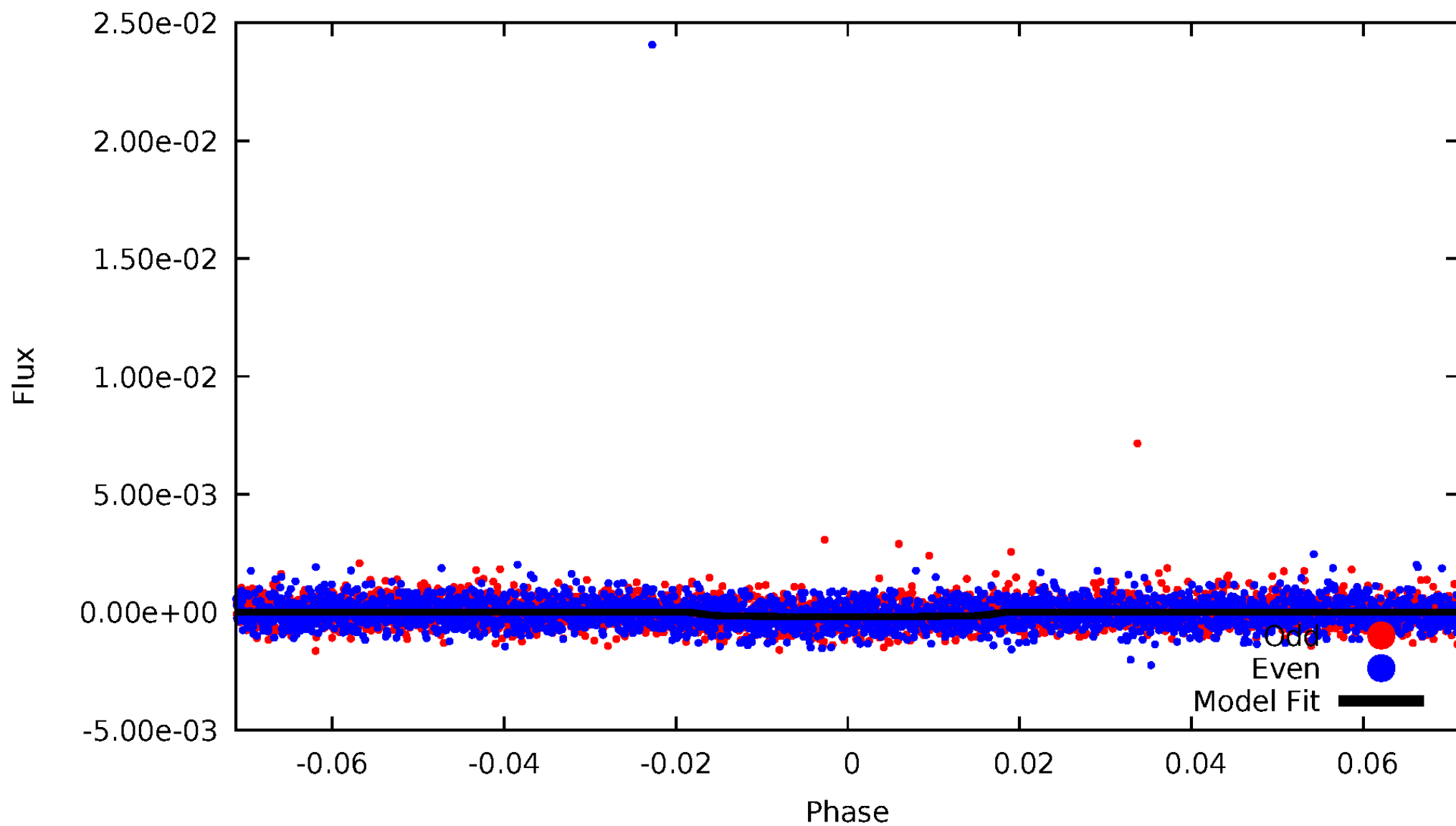


TCE 010031500-01



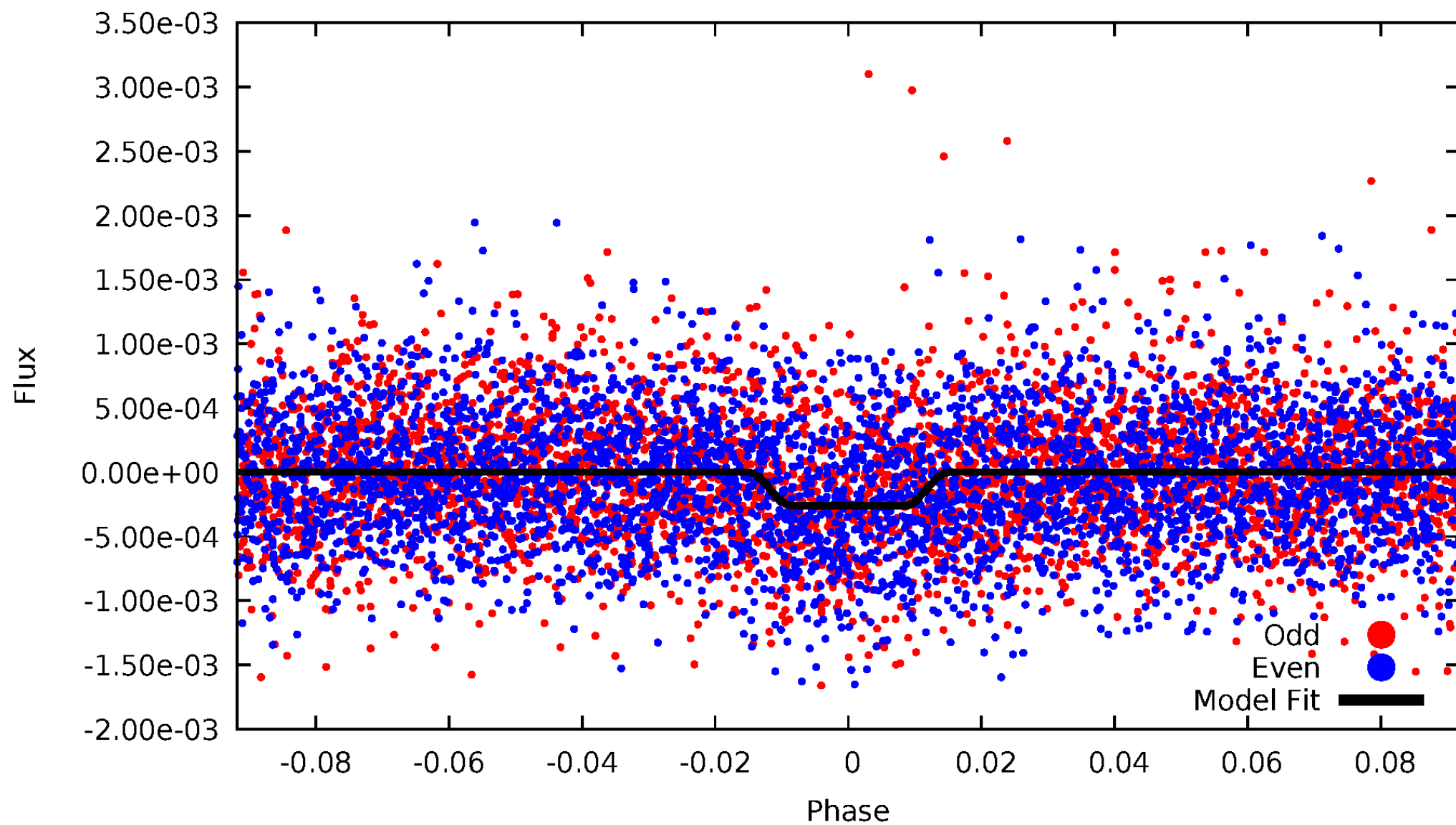
DV Odd/Even

TCE 010031500-01

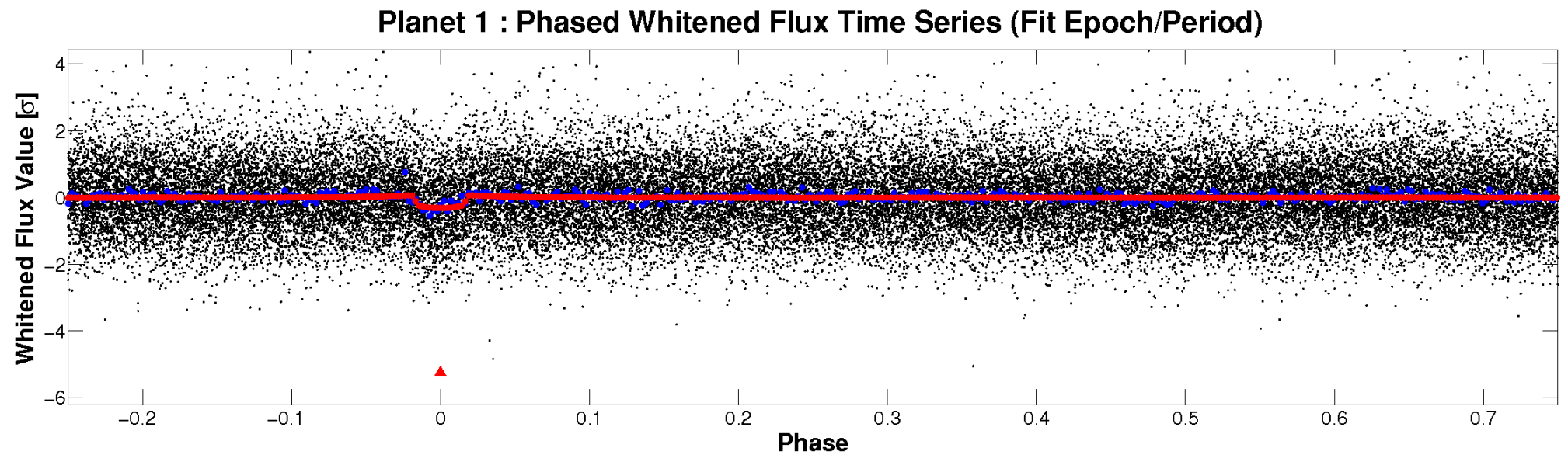
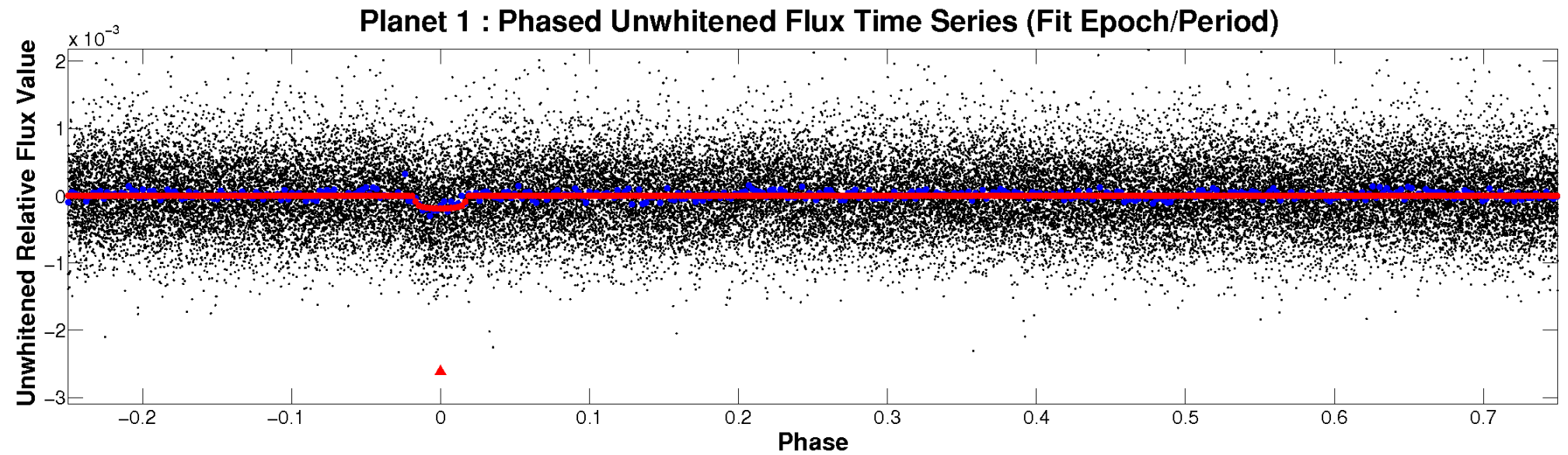


ALT Odd/Even

TCE 010031500-01

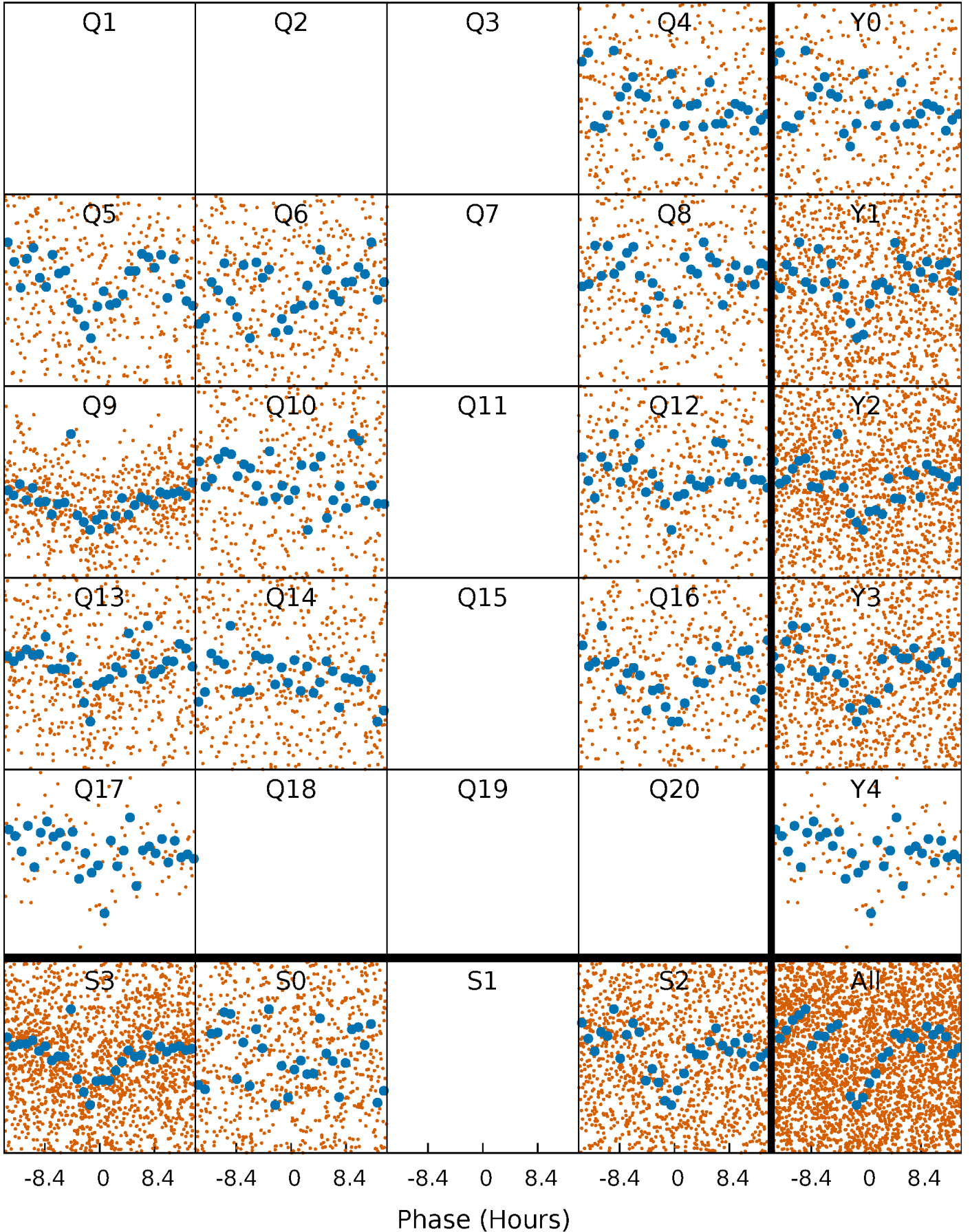


Non-Whitened Vs. Whitened Light Curve



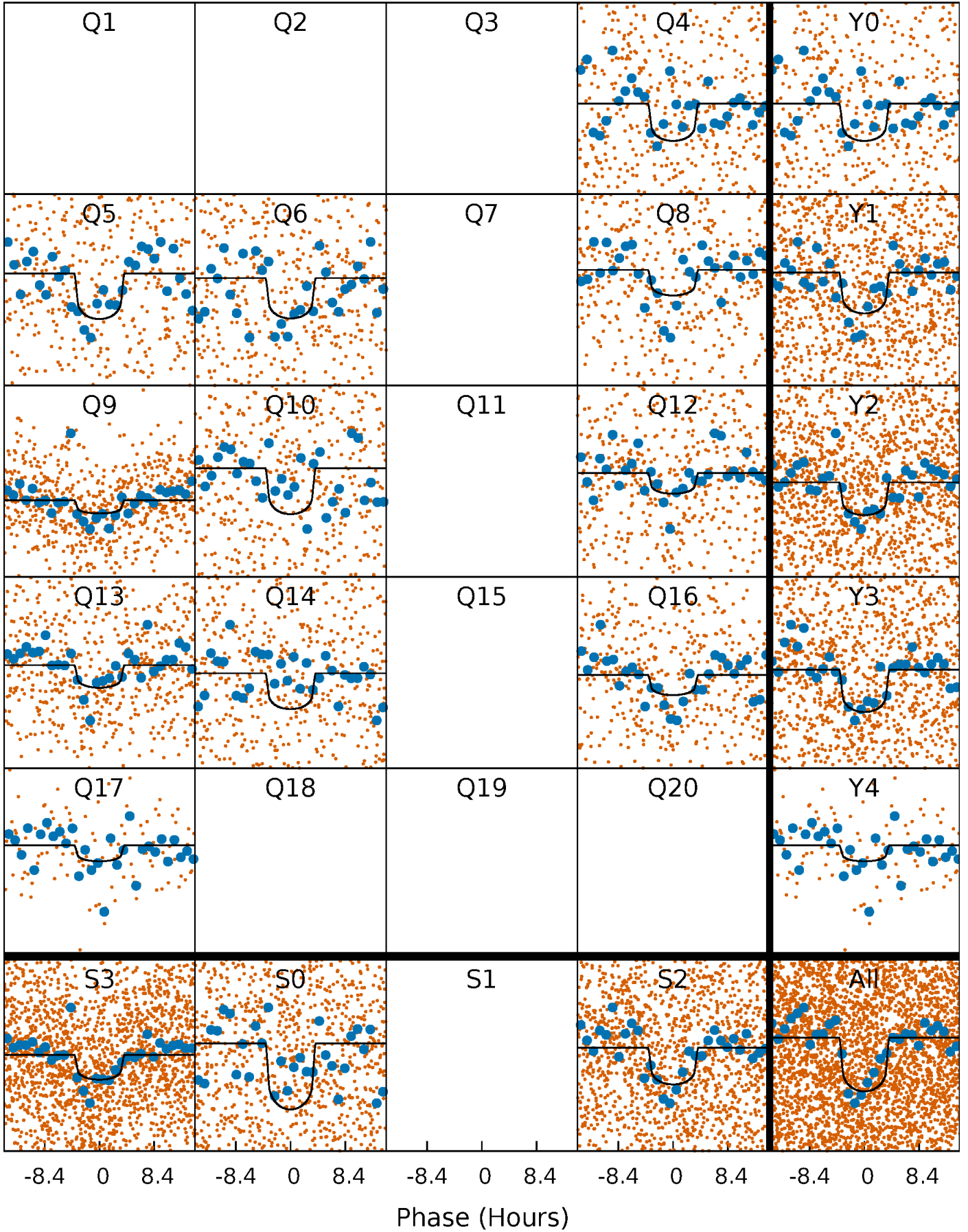
PDC Quarter-Phased Transit Curves

TCE 010031500-01 P= 8.589357 Days $T_0=132.078705$ (BKJD)



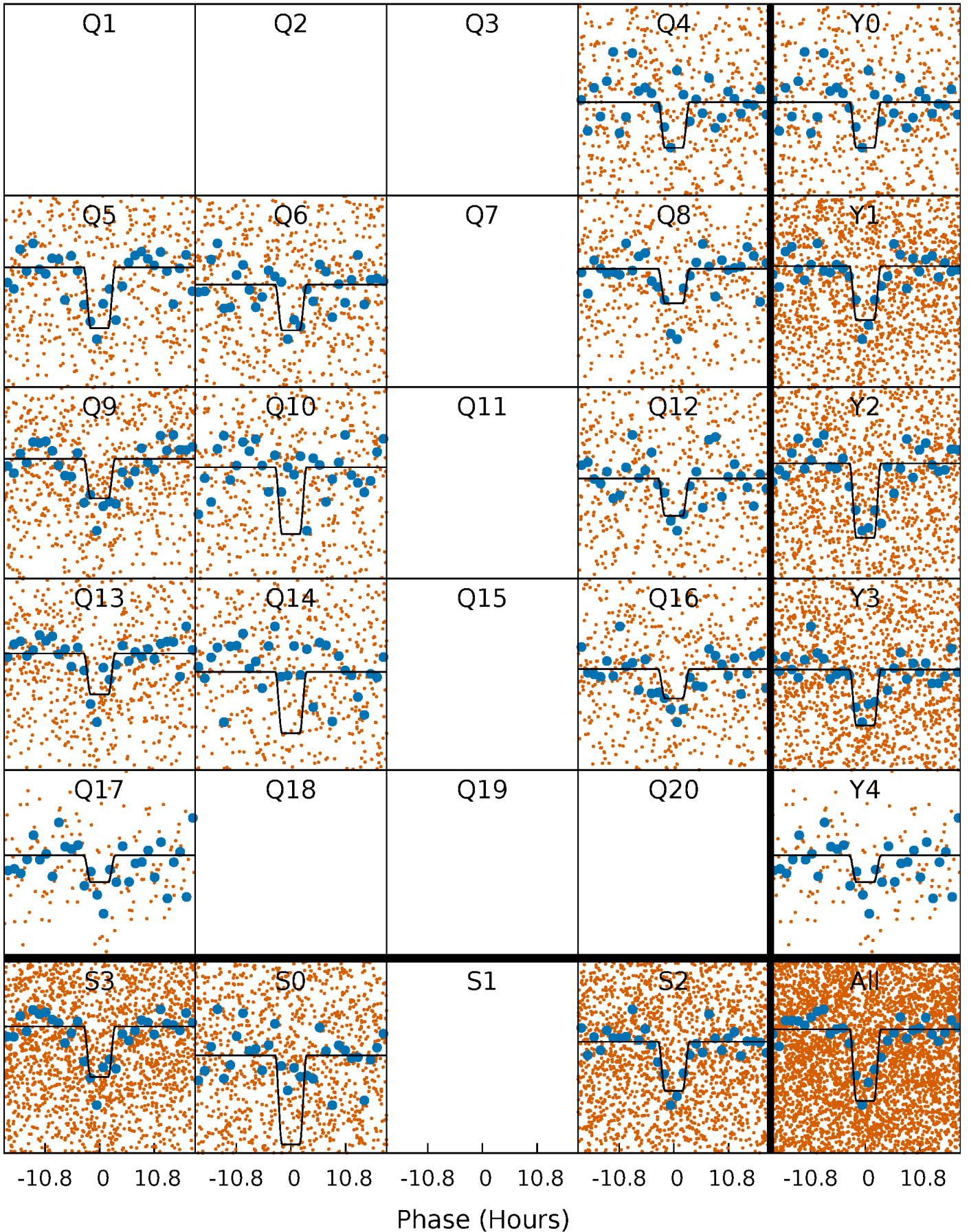
DV Quarter-Phased Transit Curves

TCE 010031500-01 P= 8.589357 Days $T_0=132.078705$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

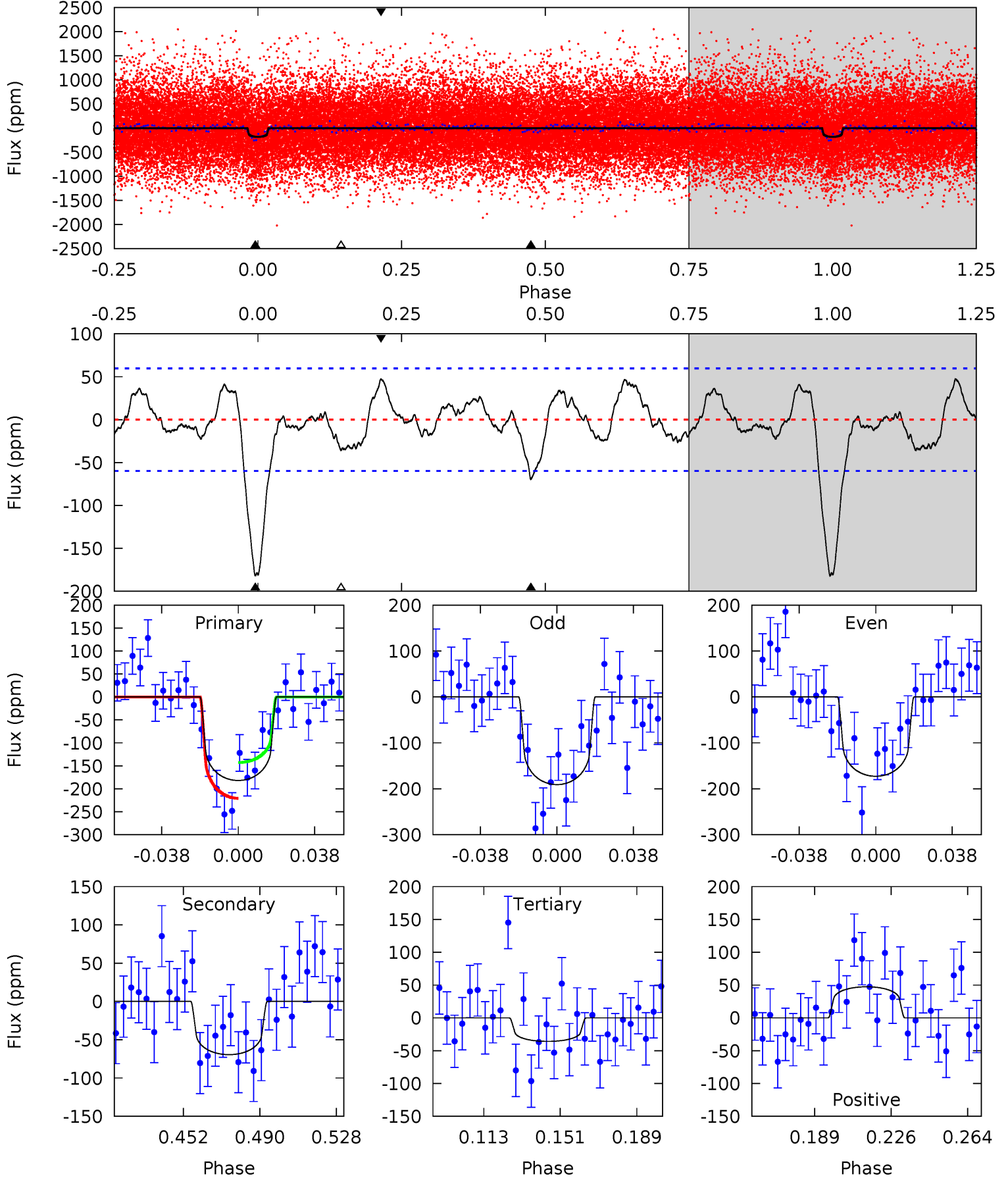
TCE 010031500-01 P= 8.589540 Days $T_0=132.024024$ (BKJD)



DV Model-Shift Uniqueness Test

010031500-01, P = 8.589357 Days, E = 132.078705 Days

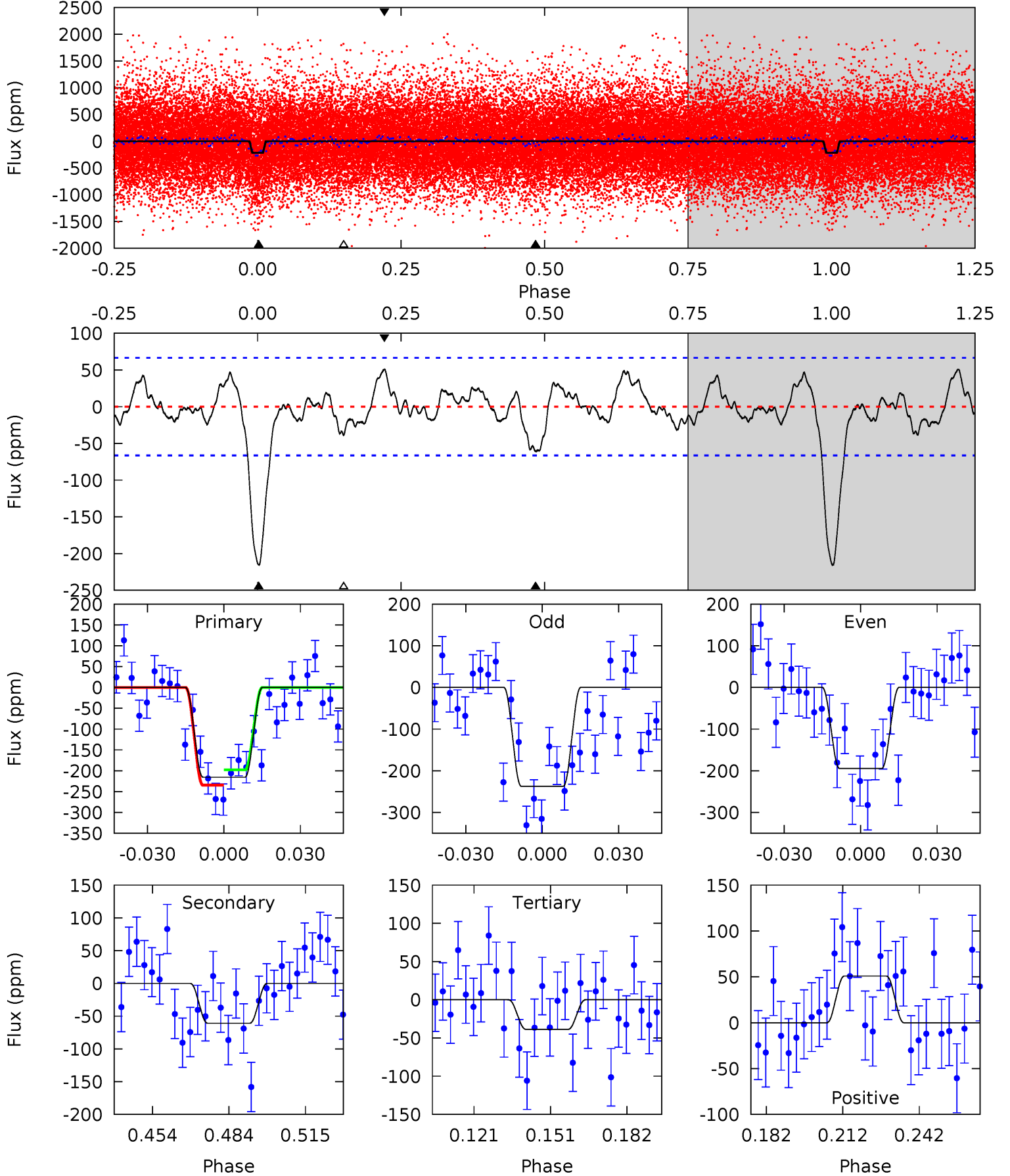
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.5 | 5.54 | 2.86 | 3.78 | 4.77 | 2.08 | 1.57 | 11.7 | 10.7 | 2.68 | 1.76 | 0.73 | 0.91 | 0.21 | 3.12 |



Alt Model-Shift Uniqueness Test

010031500-01, P = 8.589540 Days, E = 132.024024 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.6 | 4.41 | 2.81 | 3.68 | 4.81 | 2.17 | 1.38 | 12.8 | 11.9 | 1.60 | 0.72 | 1.53 | 1.11 | 0.19 | 1.33 |



Stellar Parameters For KIC 010031500

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5766^{+190}_{-190} | $4.404^{+0.149}_{-0.182}$ | $-0.380^{+0.300}_{-0.300}$ | $0.945^{+0.250}_{-0.146}$ | $0.827^{+0.116}_{-0.068}$ | $1.381^{+0.942}_{-0.644}$ |
| | +3%/-3% | +3%/-4% | +79%/-79% | +26%/-15% | +14%/-8% | +68%/-47% |
| Source | KIC0 | 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 010031500-01 / KOI 3107.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|-----------------------|-------------------|
| DV | -69 ± 13 | $1.54^{+0.87}_{-0.83}$ | 1252^{+85}_{-85} | 4513^{+1814}_{-691} | 98^{+392}_{-59} |
| Alt. | -61 ± 14 | $1.78^{+0.91}_{-0.77}$ | 1251^{+86}_{-79} | 4171^{+1100}_{-580} | 64^{+135}_{-38} |

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

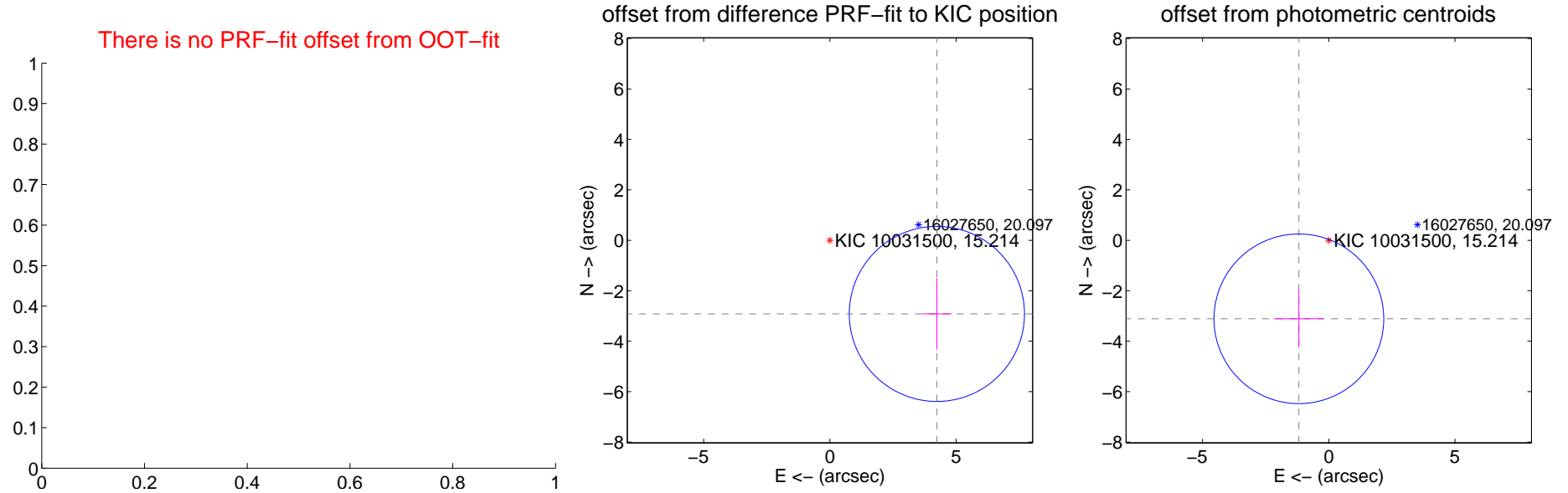
DV Centroid Data

Supplemental centroid analysis for 010031500-01. Kepler magnitude: 15.21. Transit SNR 10.37

There are 1 quarters with good PRF difference image offsets

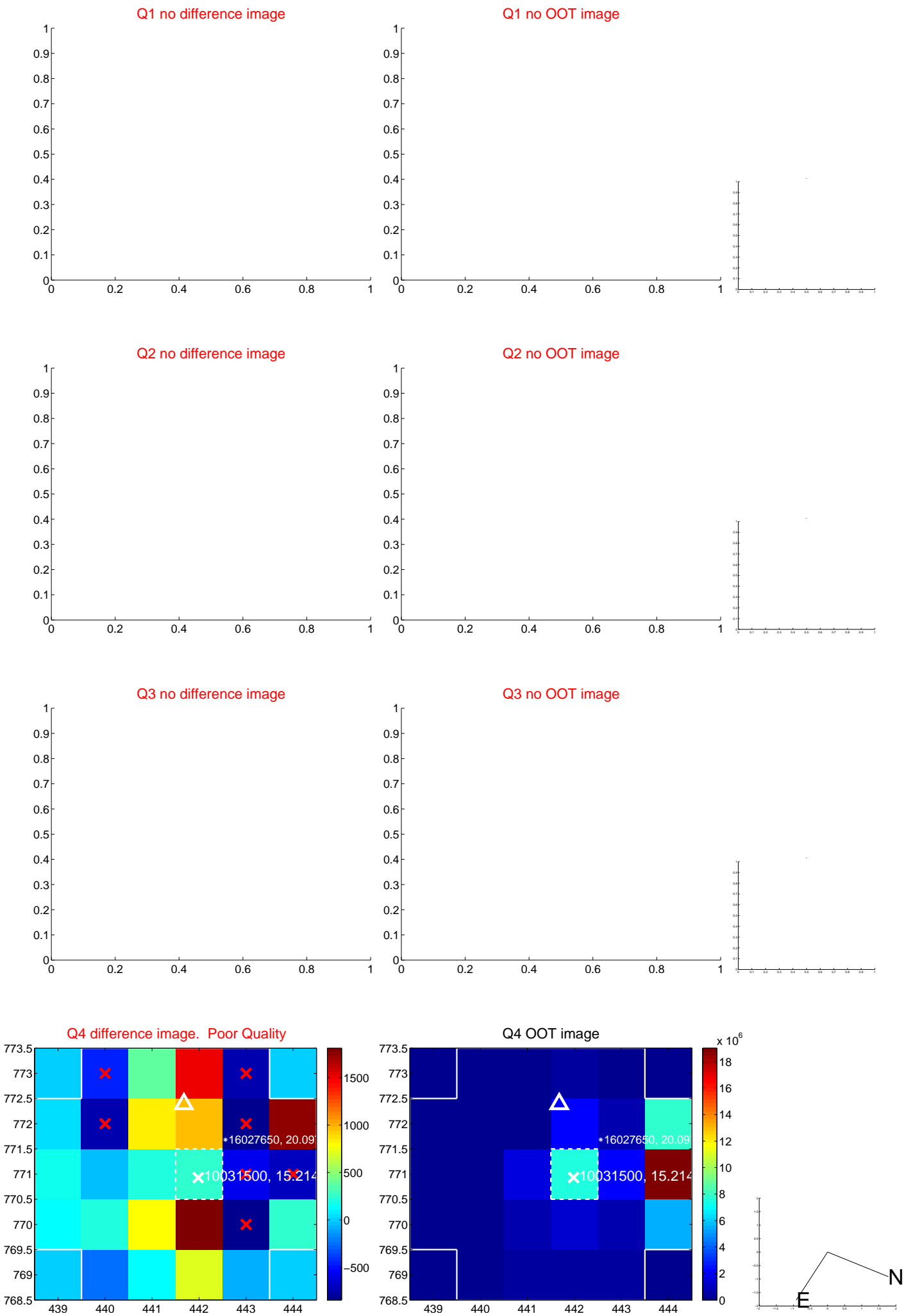
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | — | — | — | — |
| PRF-fit source offset from KIC position | 5.147 ± 1.157 | 4.45 | -4.240 ± 0.578 | -2.919 ± 1.417 |
| photometric centroid source offset | 3.33 ± 1.12 | 2.97 | 1.18 ± 0.99 | -3.11 ± 1.14 |

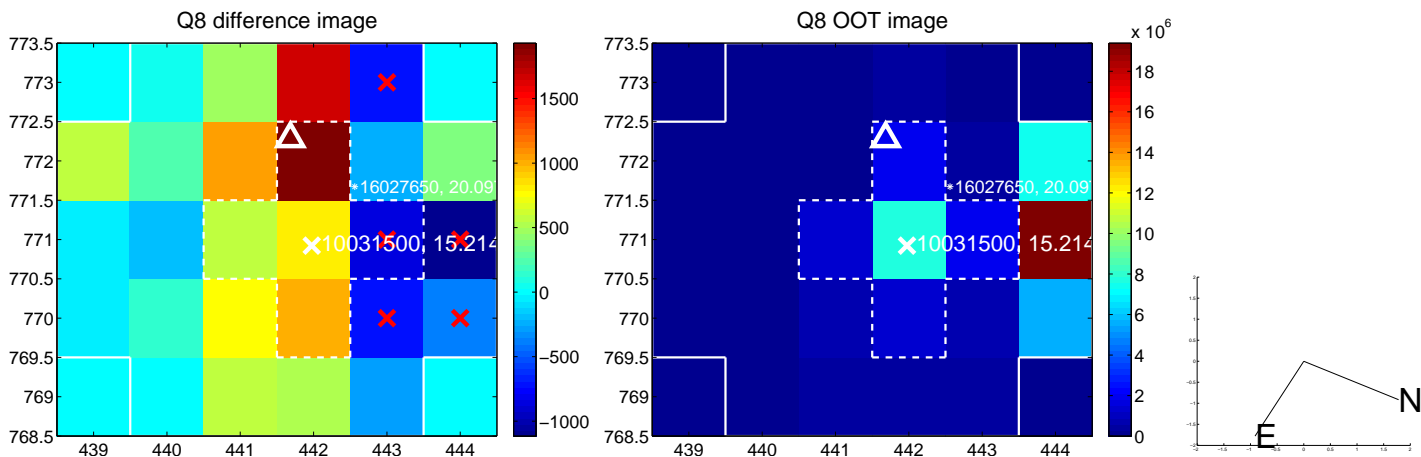
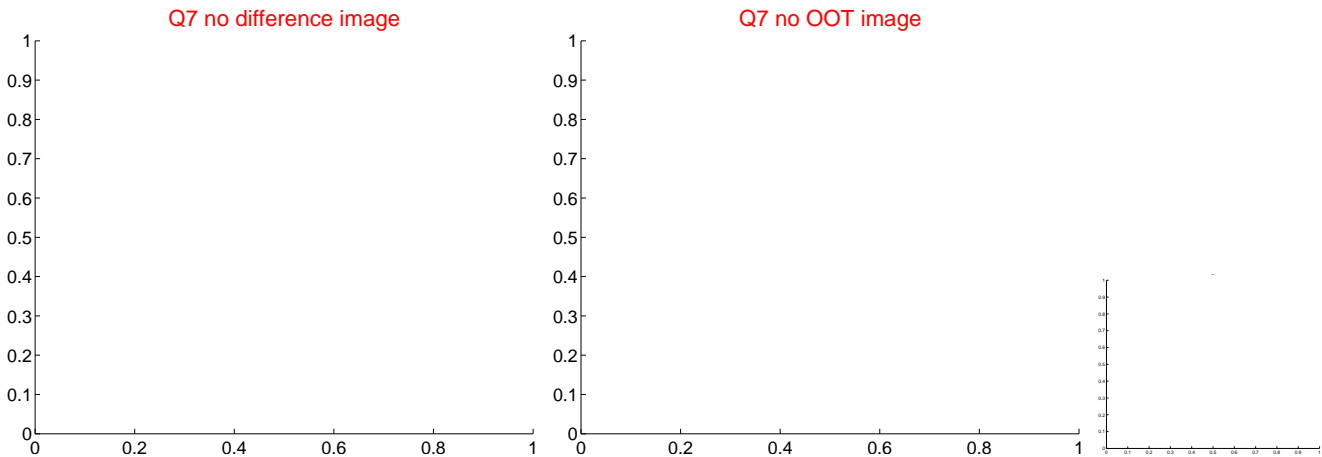
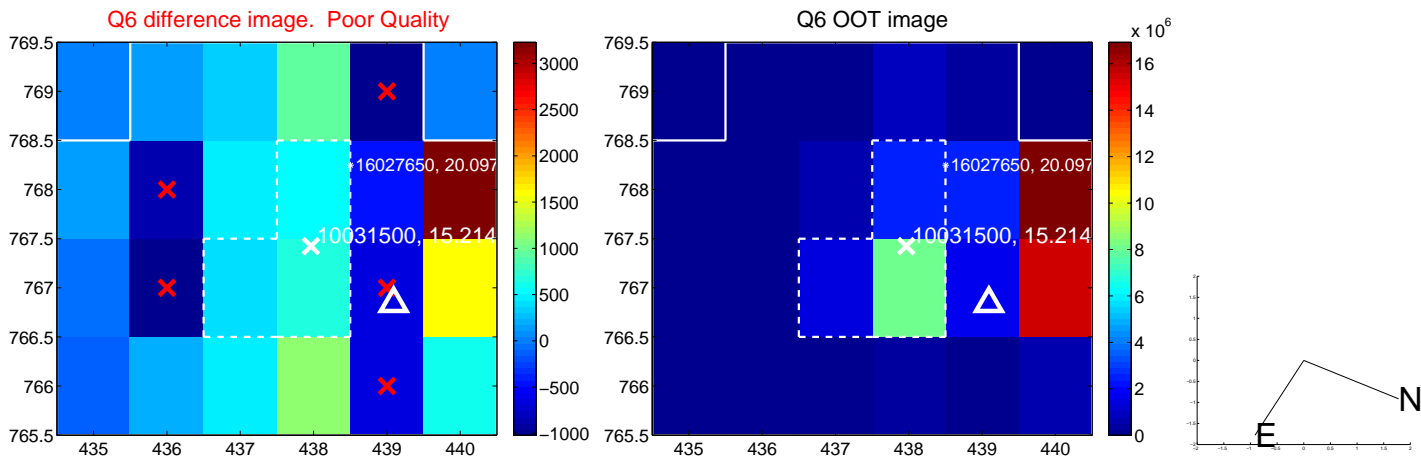
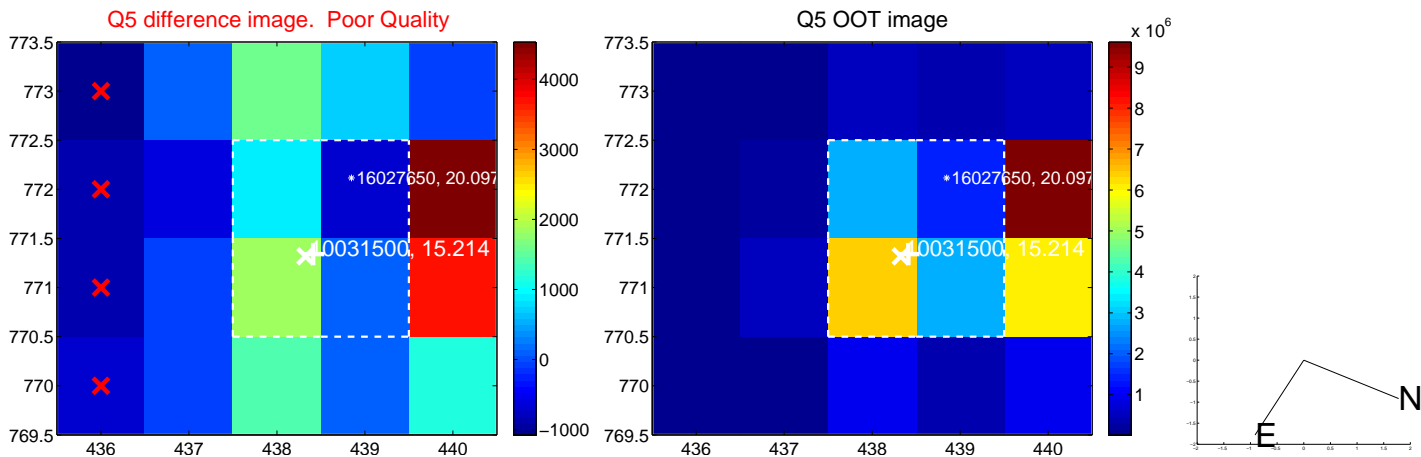


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

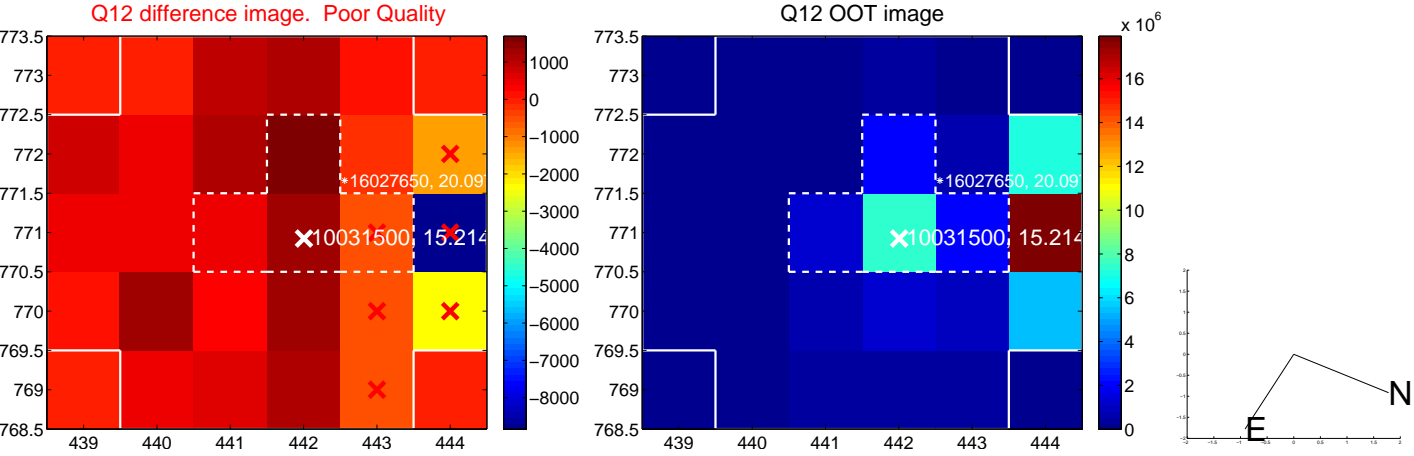
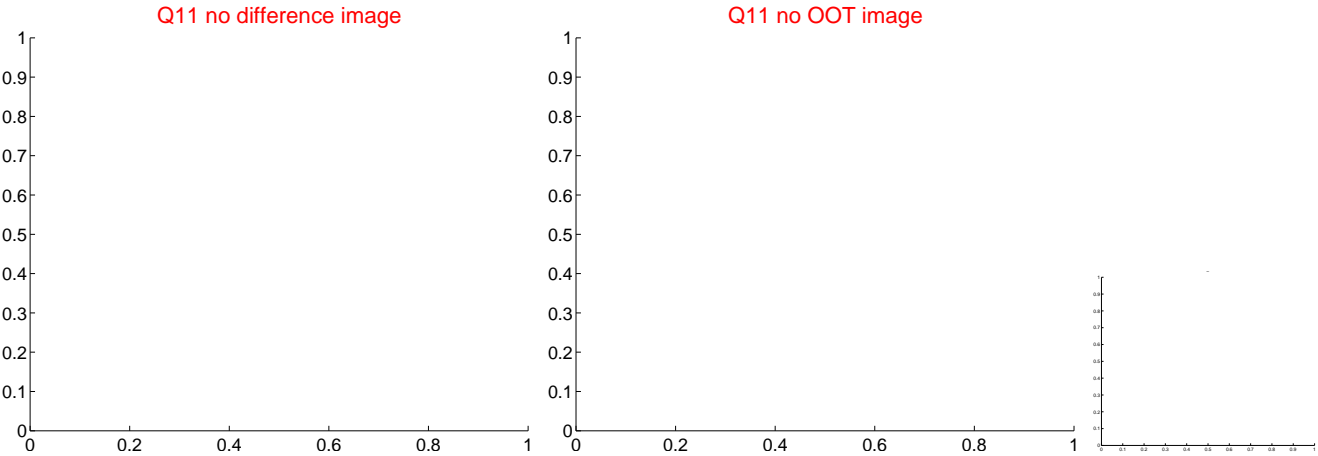
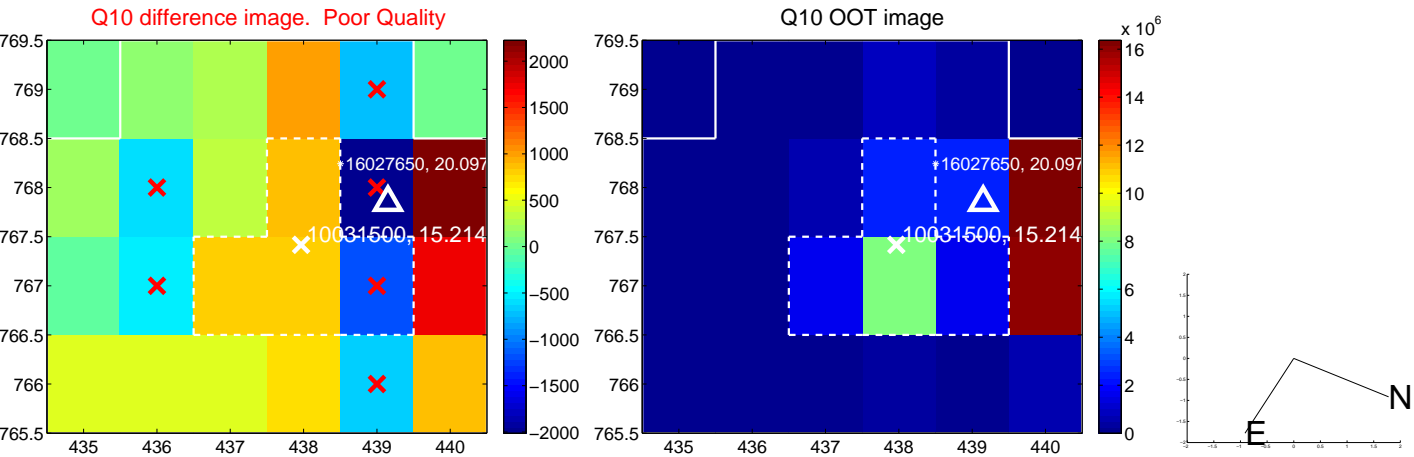
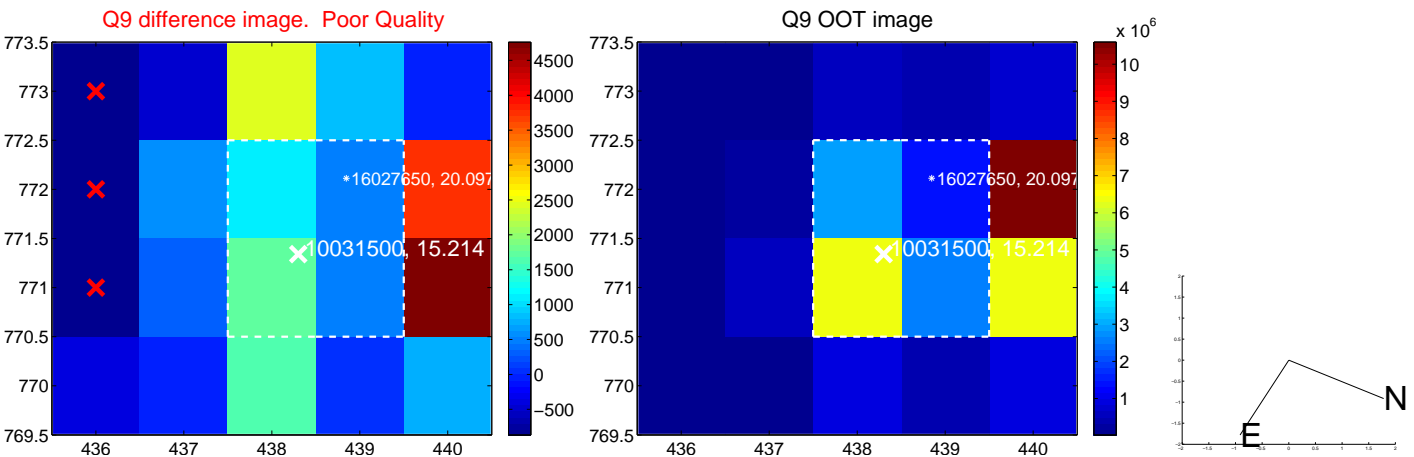
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



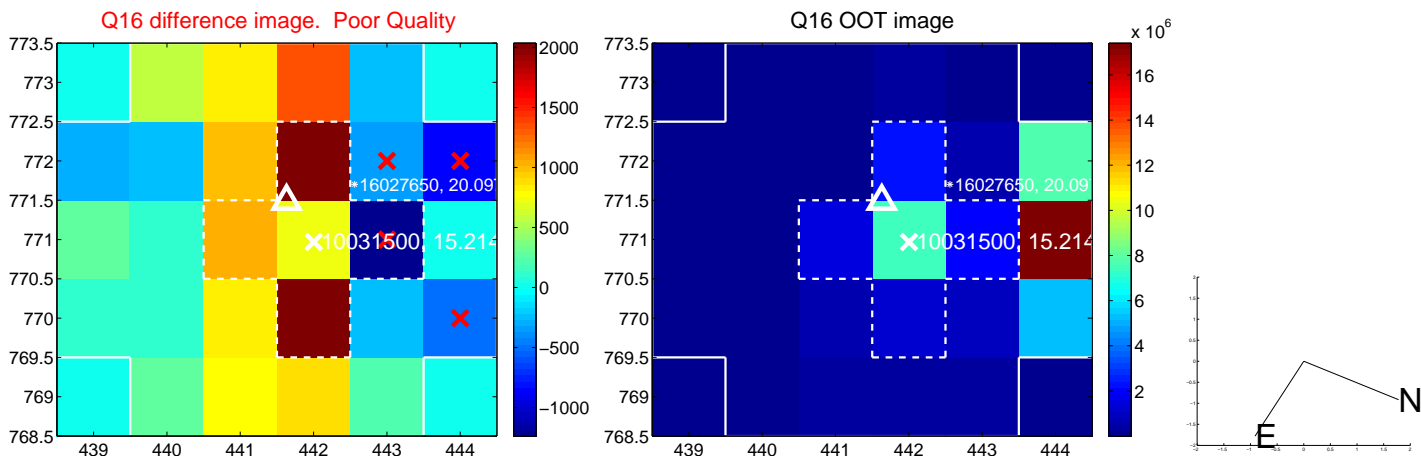
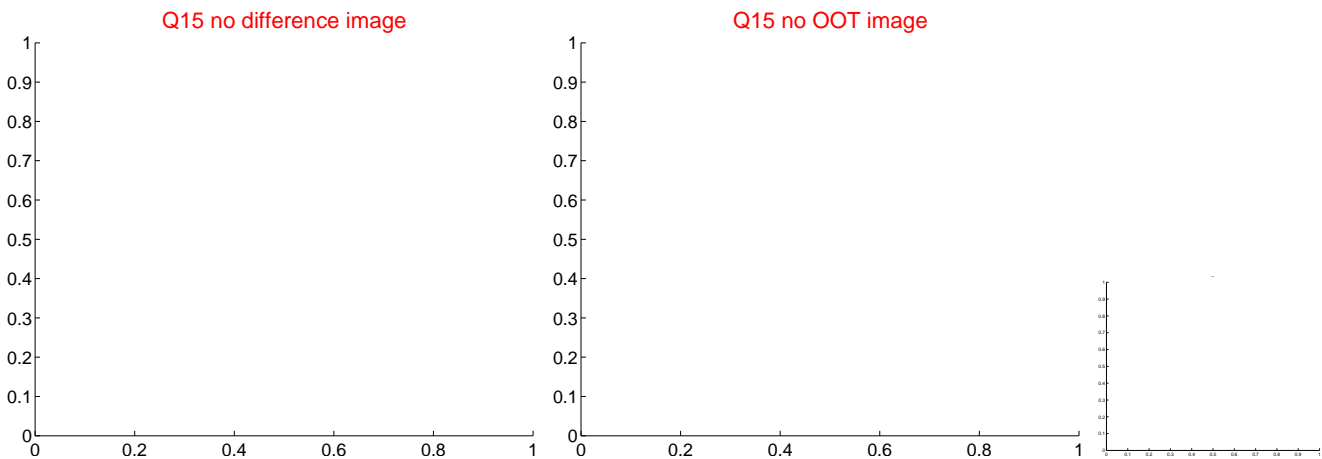
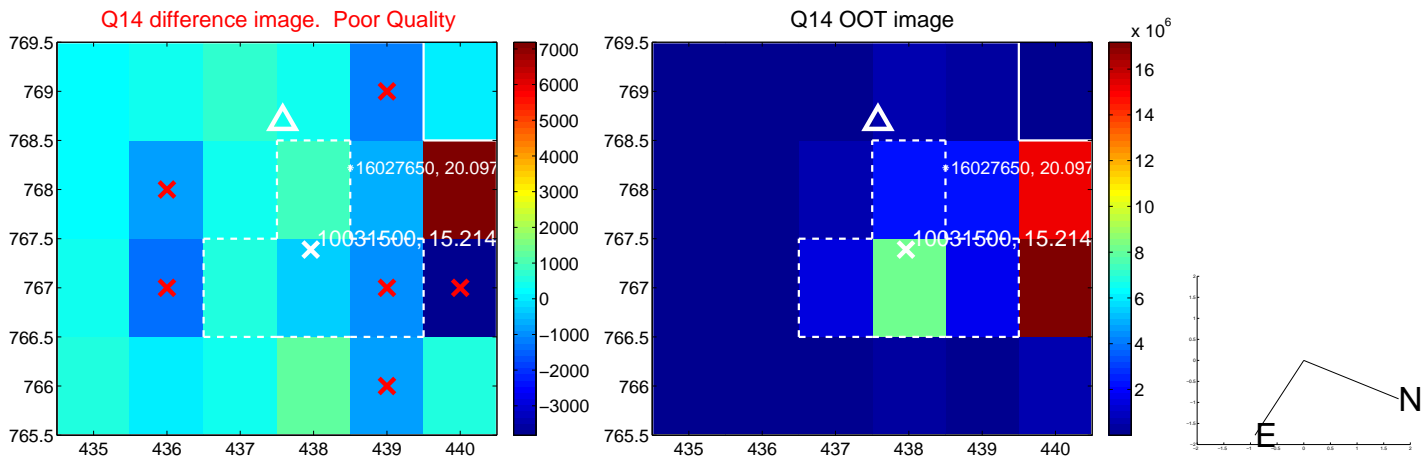
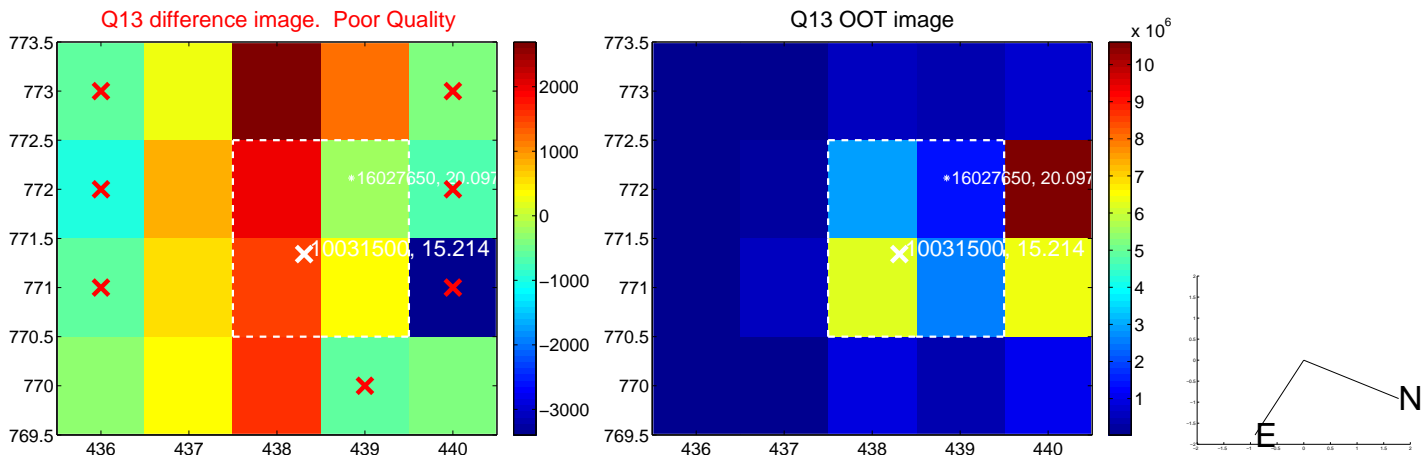
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



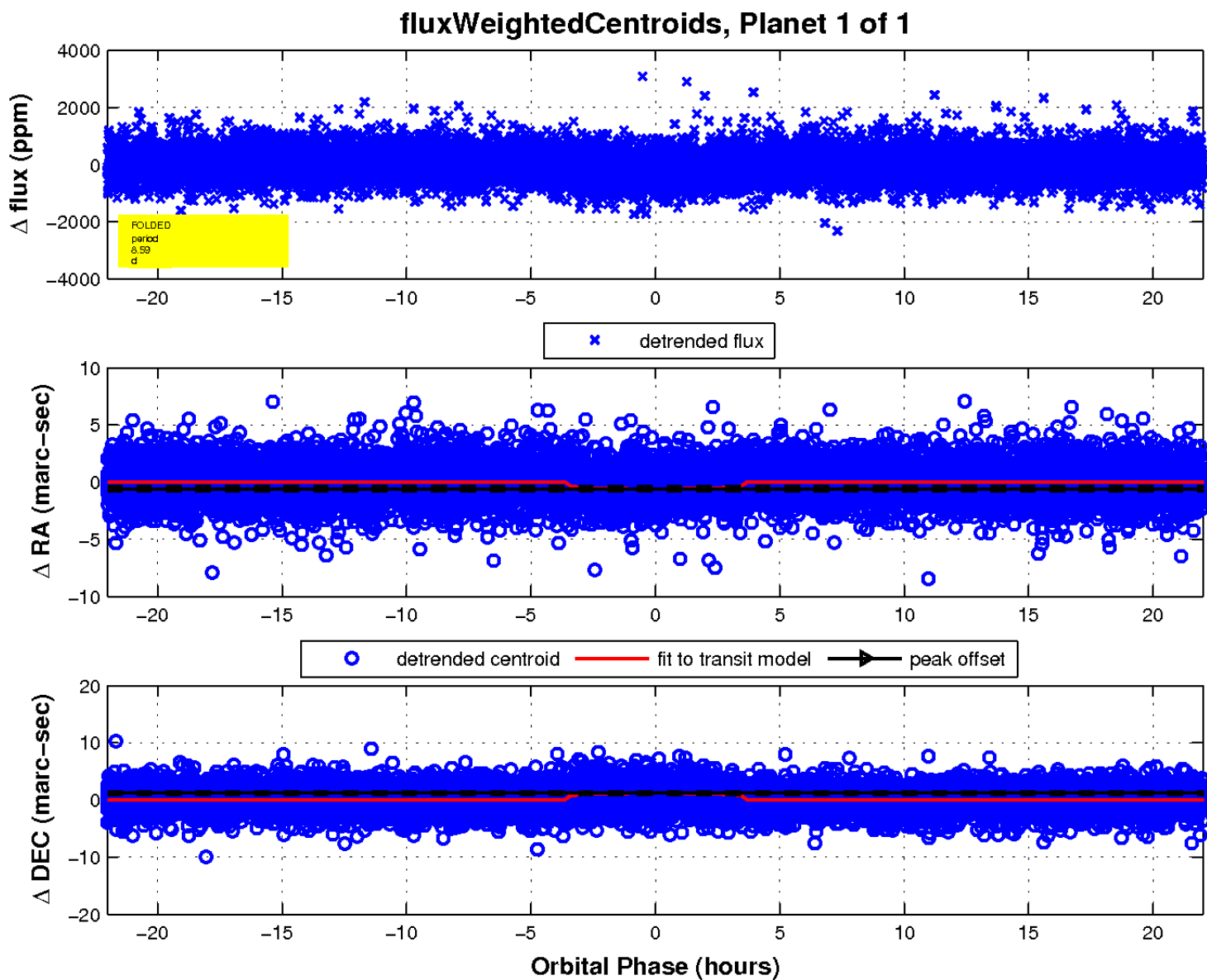
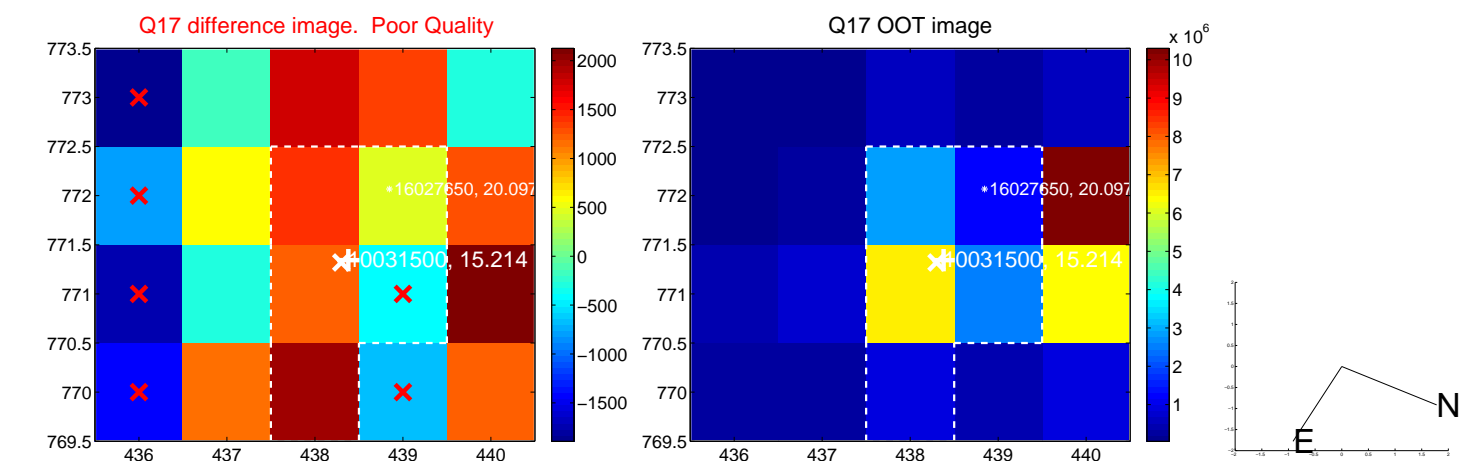
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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UKIRT Image

