

KIC 012506770

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 012506770-01 | OBS | 1577.01 | 2.806233 | 133.733790 | 596.2 | 1.760 | 18.0 | 22.8 | 0.58 | 4153 | 1.66 | 83.87 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--------------|
| 012506770-01 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

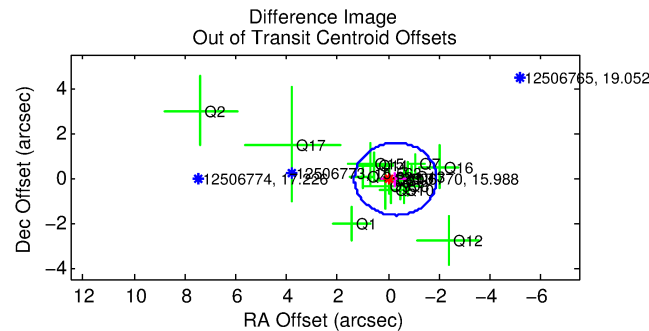
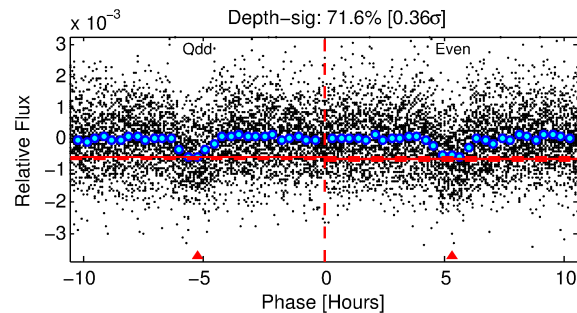
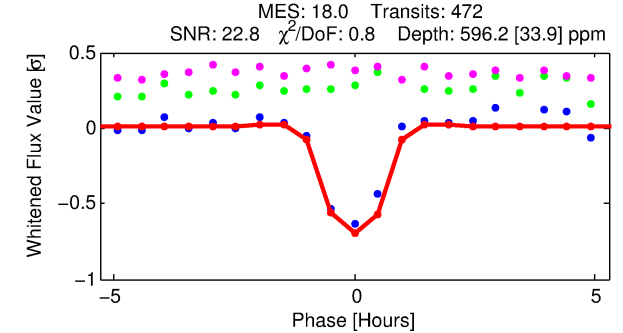
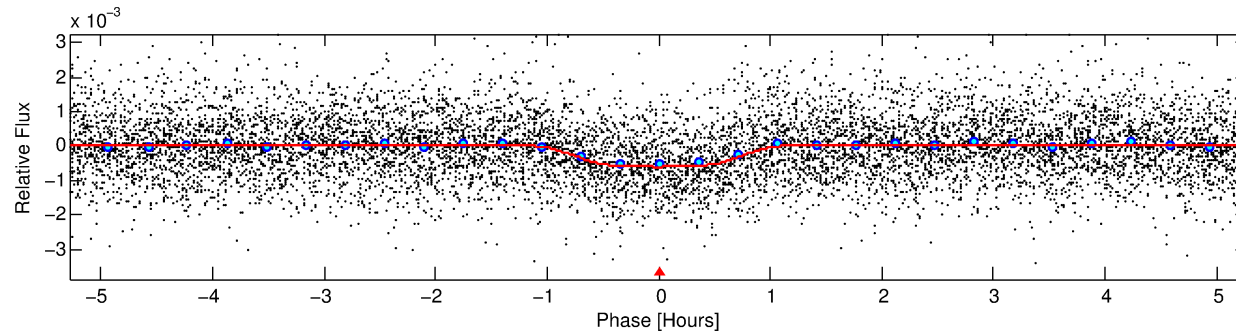
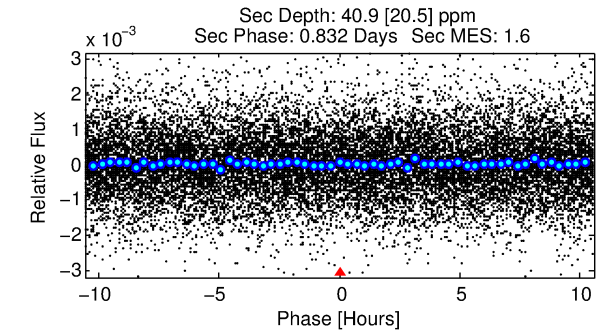
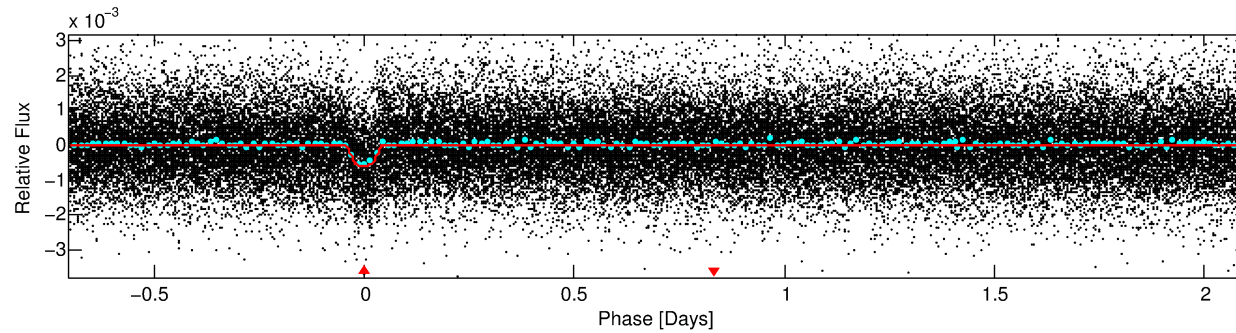
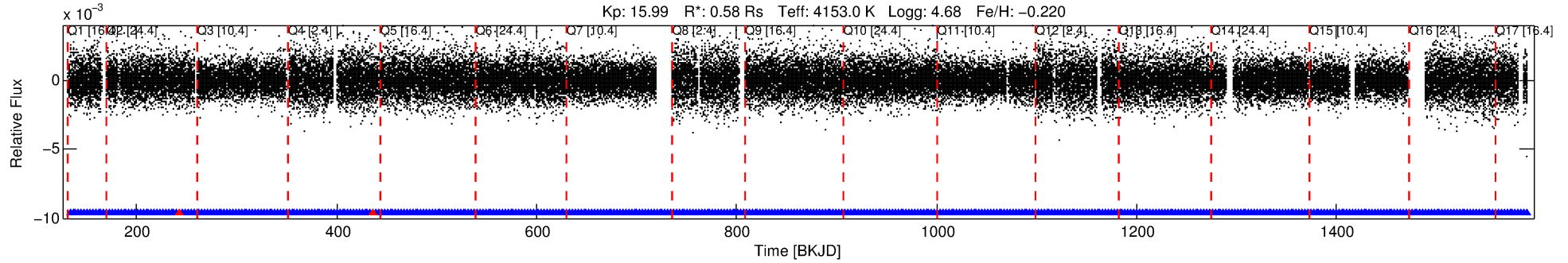
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012506770-01

No Significant Match Found

DV One-Page Summary

KIC: 12506770 Candidate: 1 of 1 Period: 2.806 d
KOI: K01577.01 Corr: 0.981



DV Fit Results:

Period = 2.80623 [0.00001] d
Epoch = 133.7338 [0.0014] BKJD
Rp/R* = 0.0262 [0.0112]
a/R* = 6.84 [11.52]
b = 0.86 [0.53]
Seff = 83.87 [8.53]
Teq = 772 [20] K
Rp = 1.66 [0.71] Re
a = 0.0328 [0.0013] AU
Ag = 8.77 [8.70] [0.89σ]
Teffp = 2053 [510] K [2.51σ]

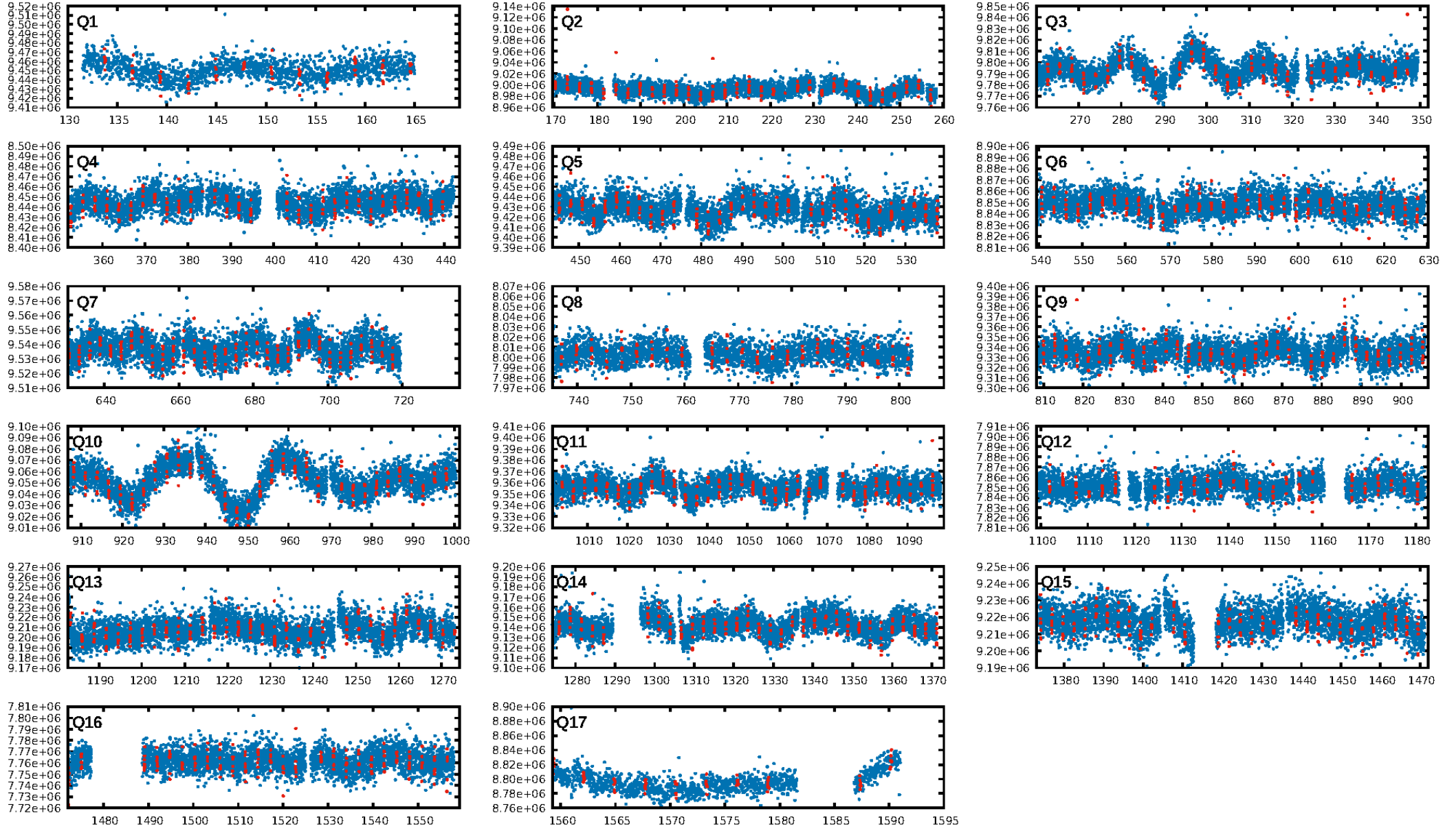
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.63e-69
RollingBand-fgt: 1.00 [448/450]
GhostDiagnostic-chr: 2.47
Centroid-sig: 0.7%
Centroid-so: 0.440 arcsec [0.83σ]
OotOffset-rm: 0.291 arcsec [0.54σ]
KicOffset-rm: 0.369 arcsec [1.12σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 1.00 [17/17]

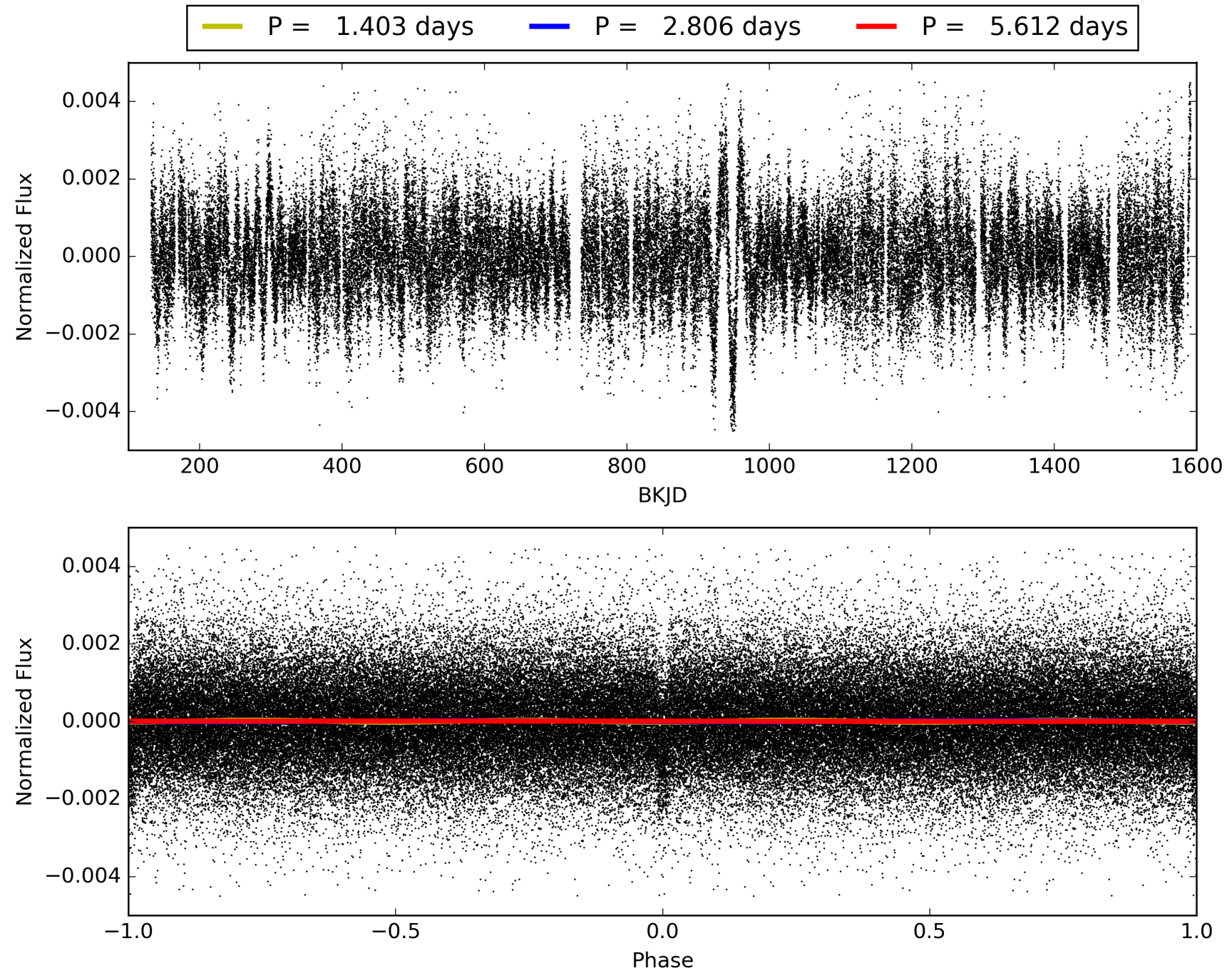
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:06:13 Z

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

TCE 012506770-01, PDC Light Curves

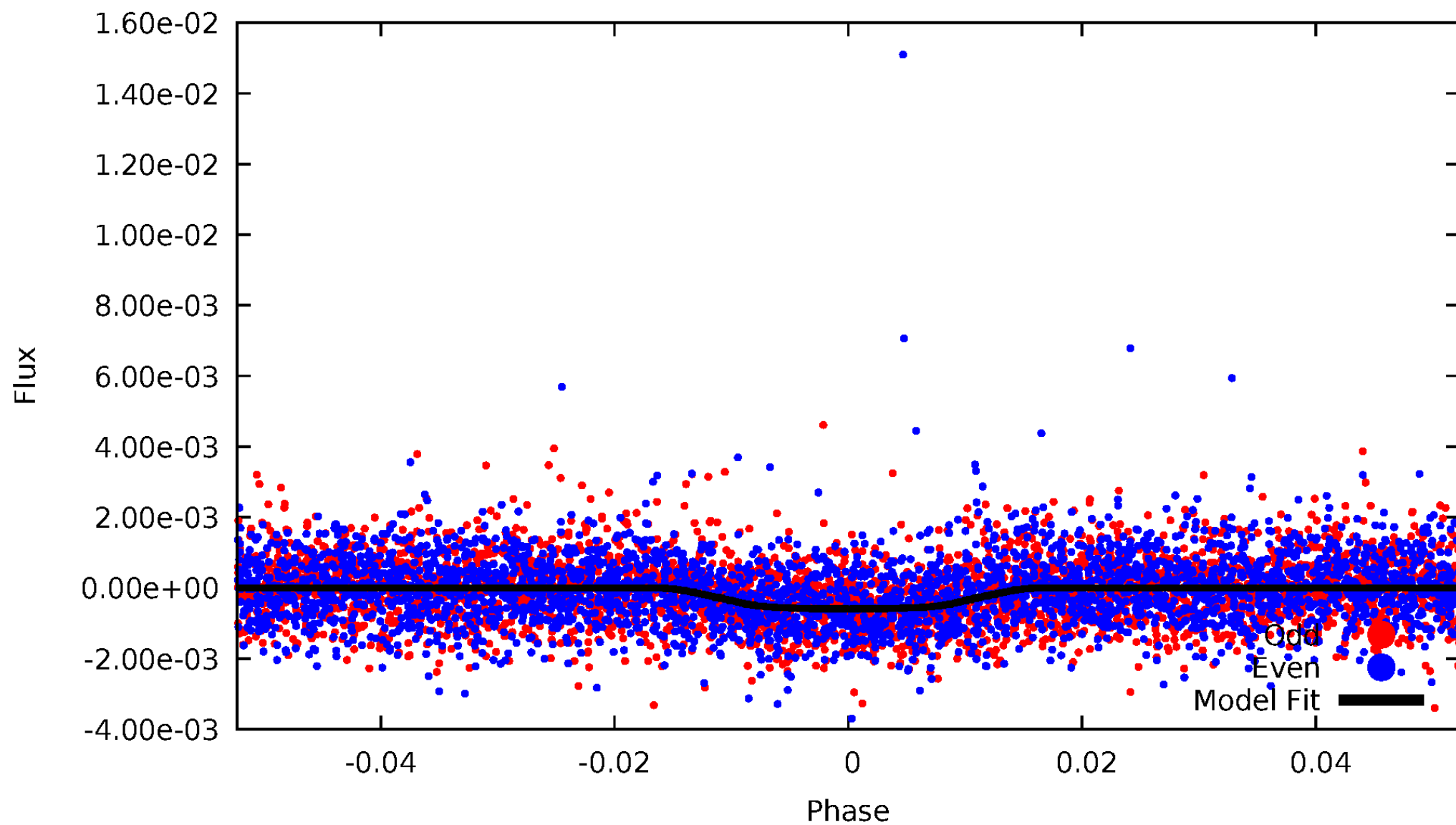


TCE 012506770-01



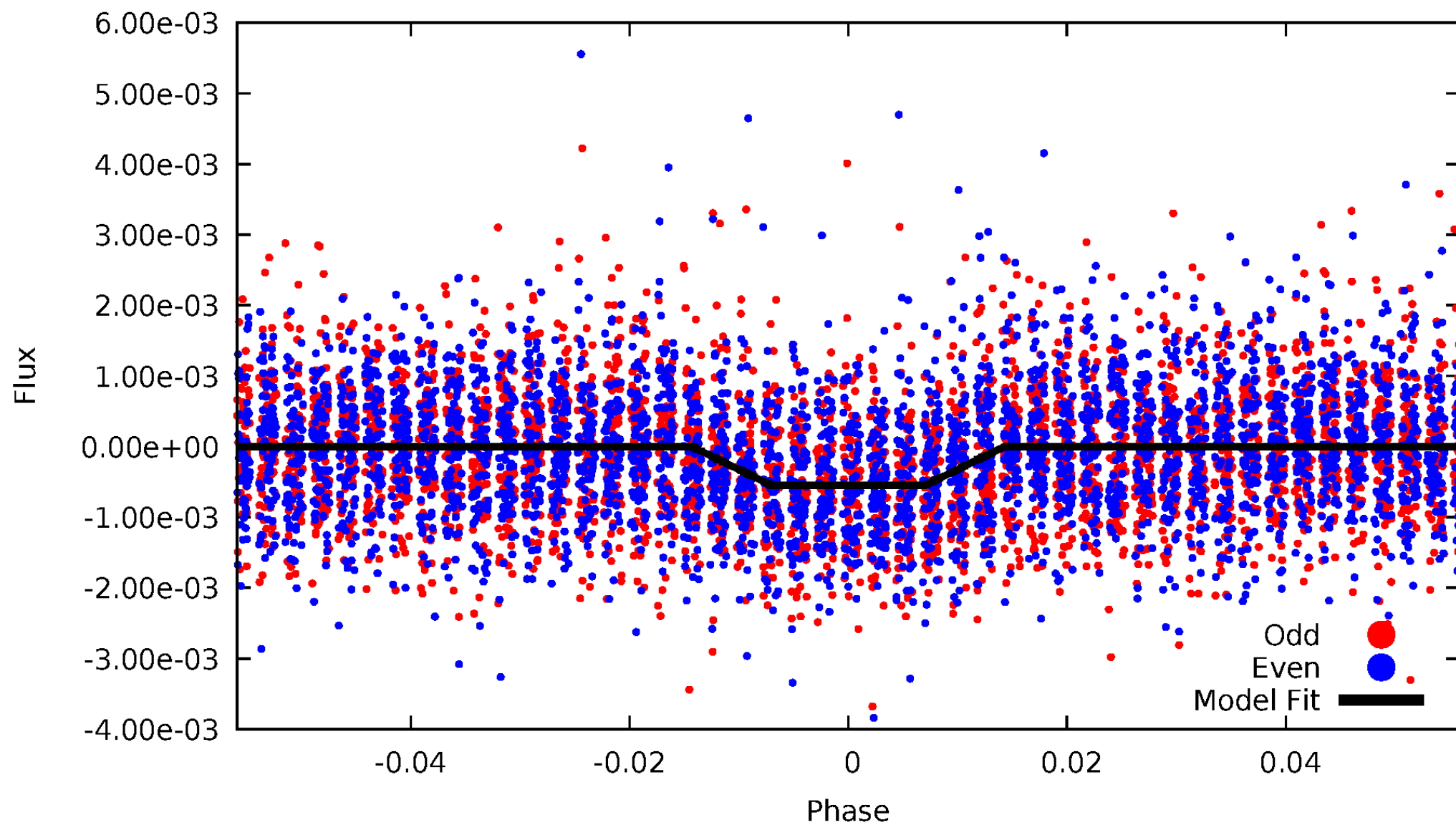
DV Odd/Even

TCE 012506770-01



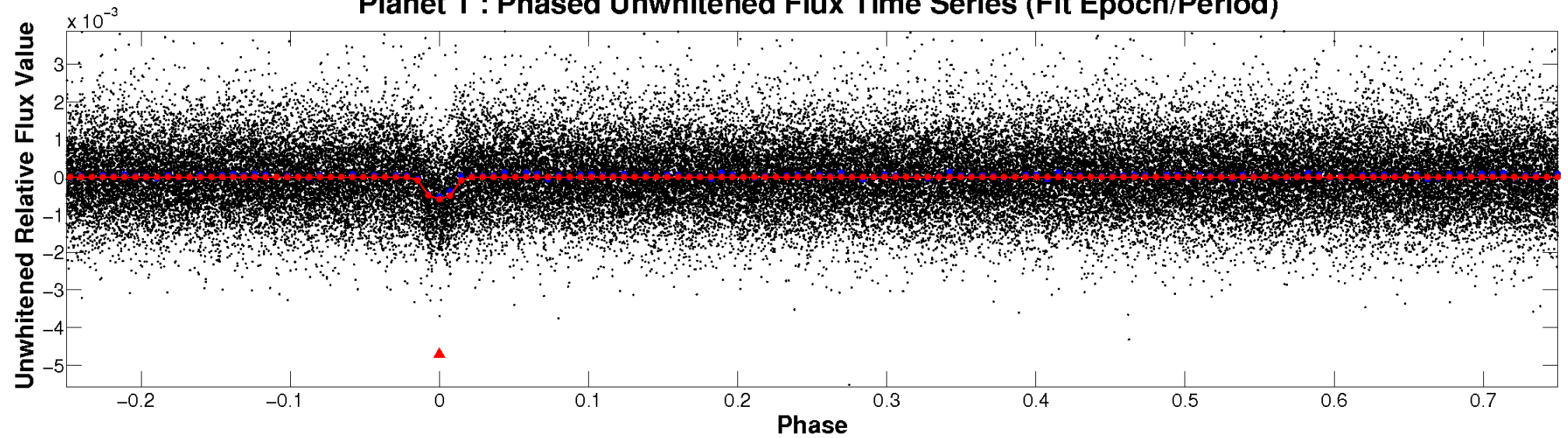
ALT Odd/Even

TCE 012506770-01

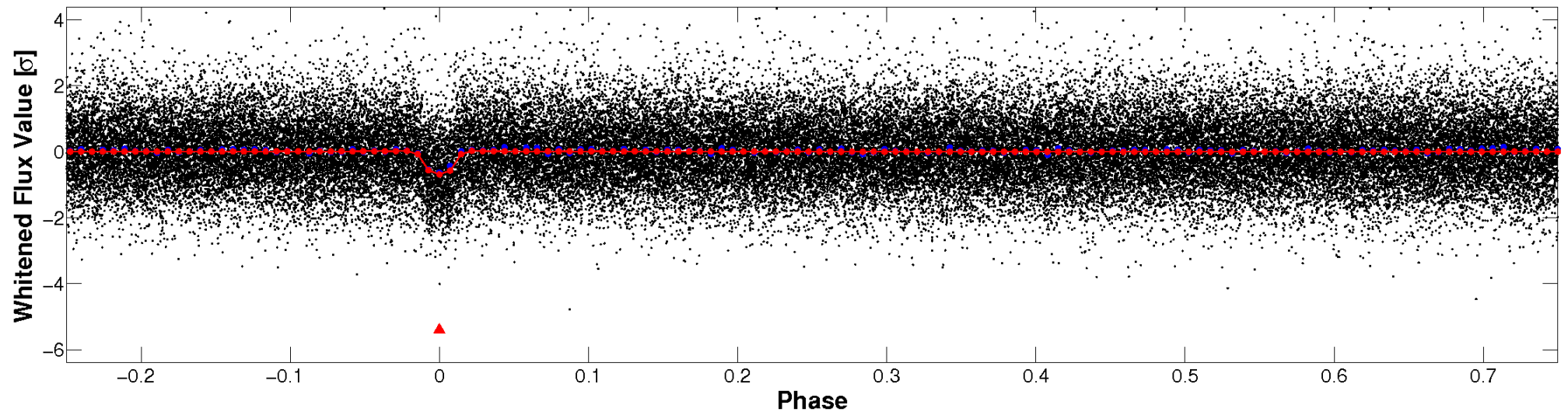


Non-Whitened Vs. Whitened Light Curve

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

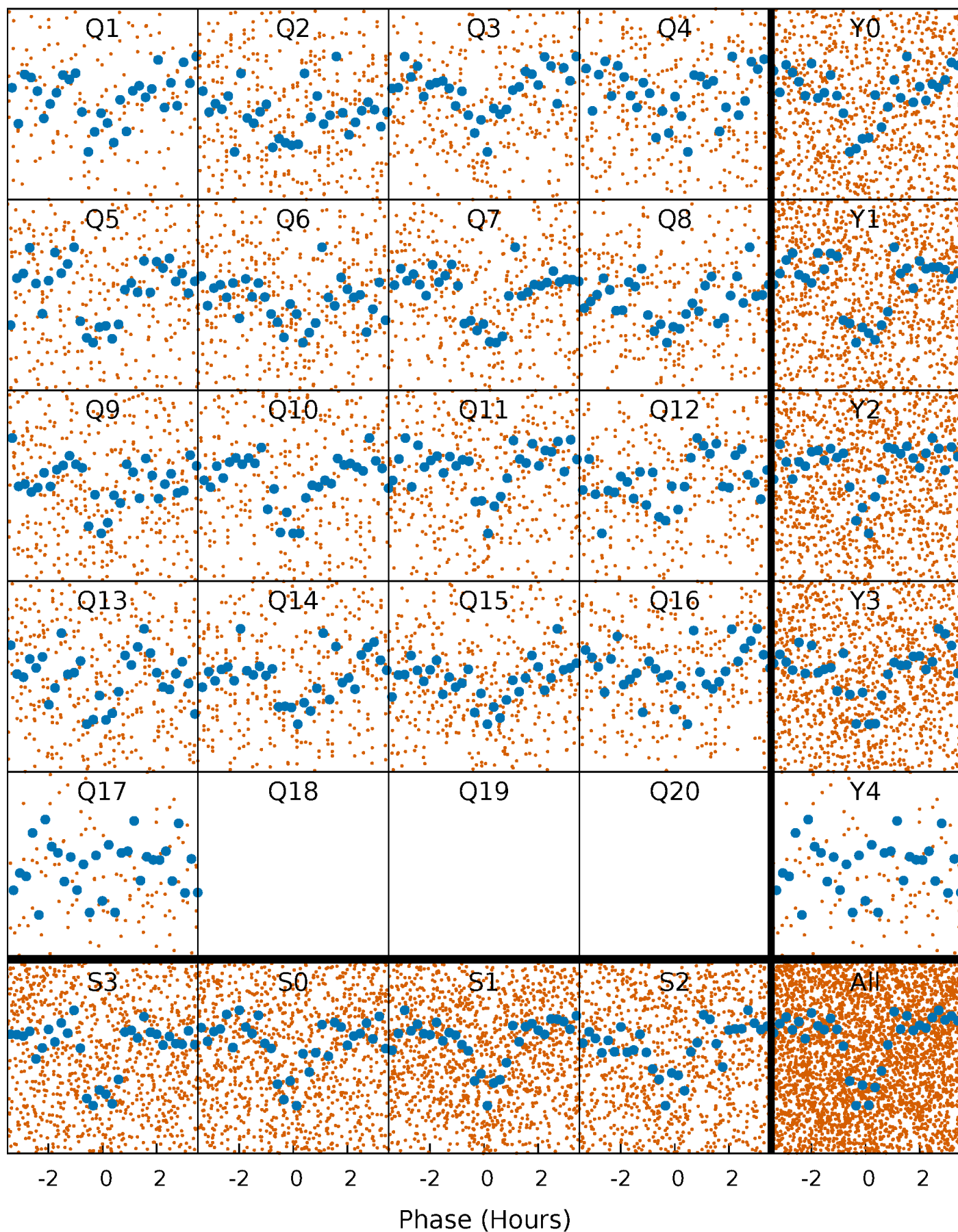


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



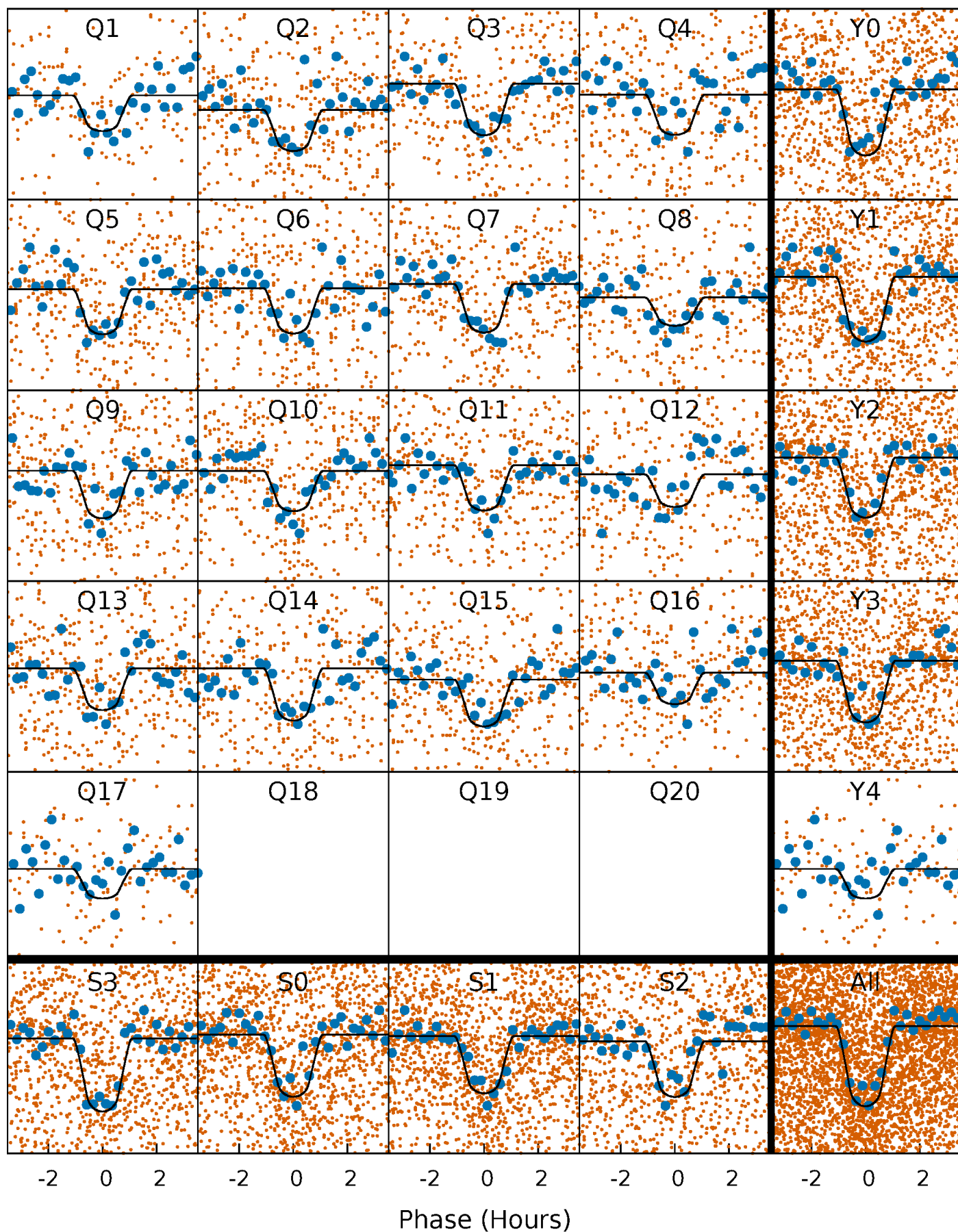
PDC Quarter-Phased Transit Curves

TCE 012506770-01 P= 2.806233 Days $T_0=133.733790$ (BKJD)



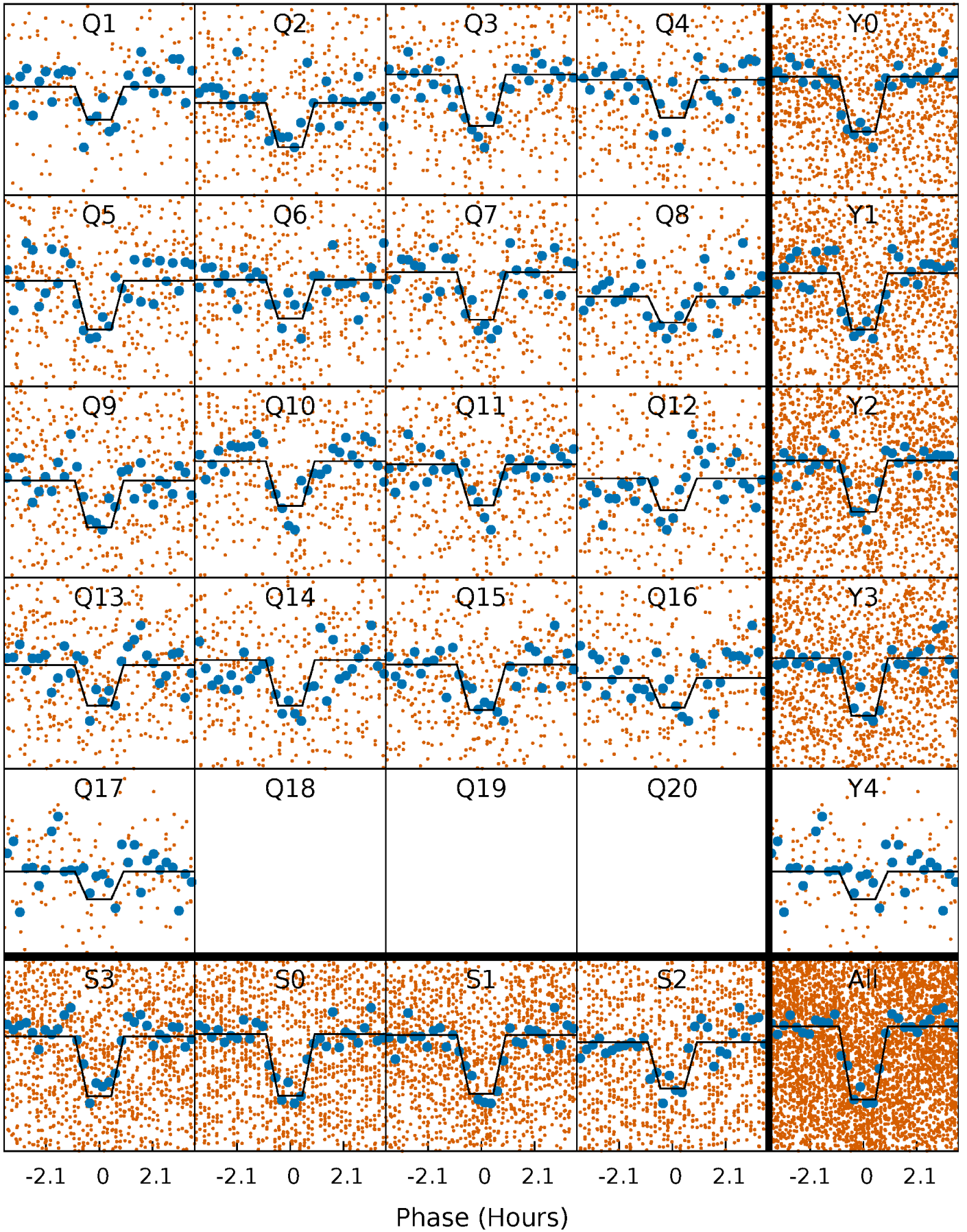
DV Quarter-Phased Transit Curves

TCE 012506770-01 P= 2.806233 Days $T_0=133.733790$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

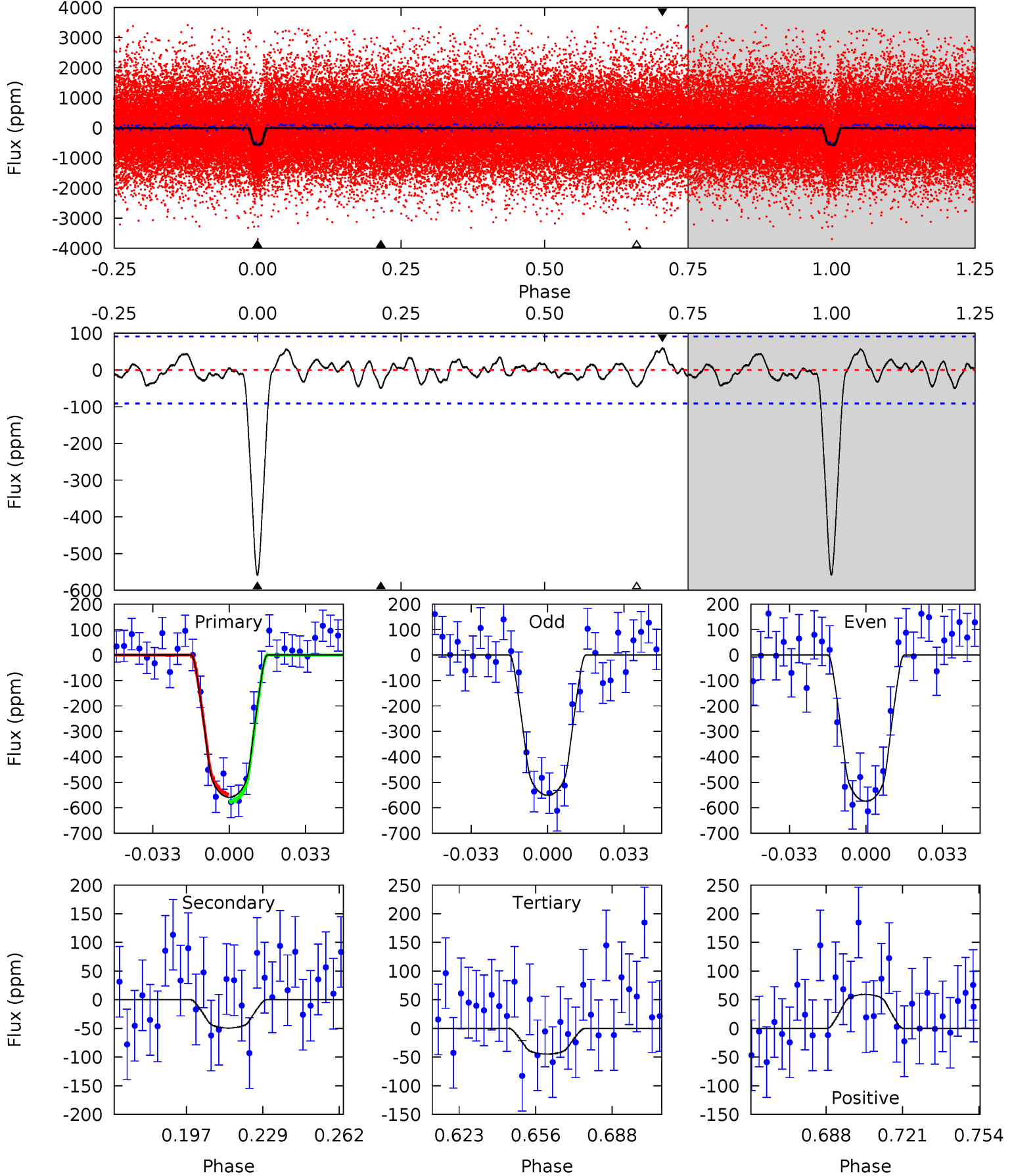
TCE 012506770-01 P= 2.806212 Days $T_0=133.738813$ (BKJD)



DV Model-Shift Uniqueness Test

012506770-01, P = 2.806233 Days, E = 130.927557 Days

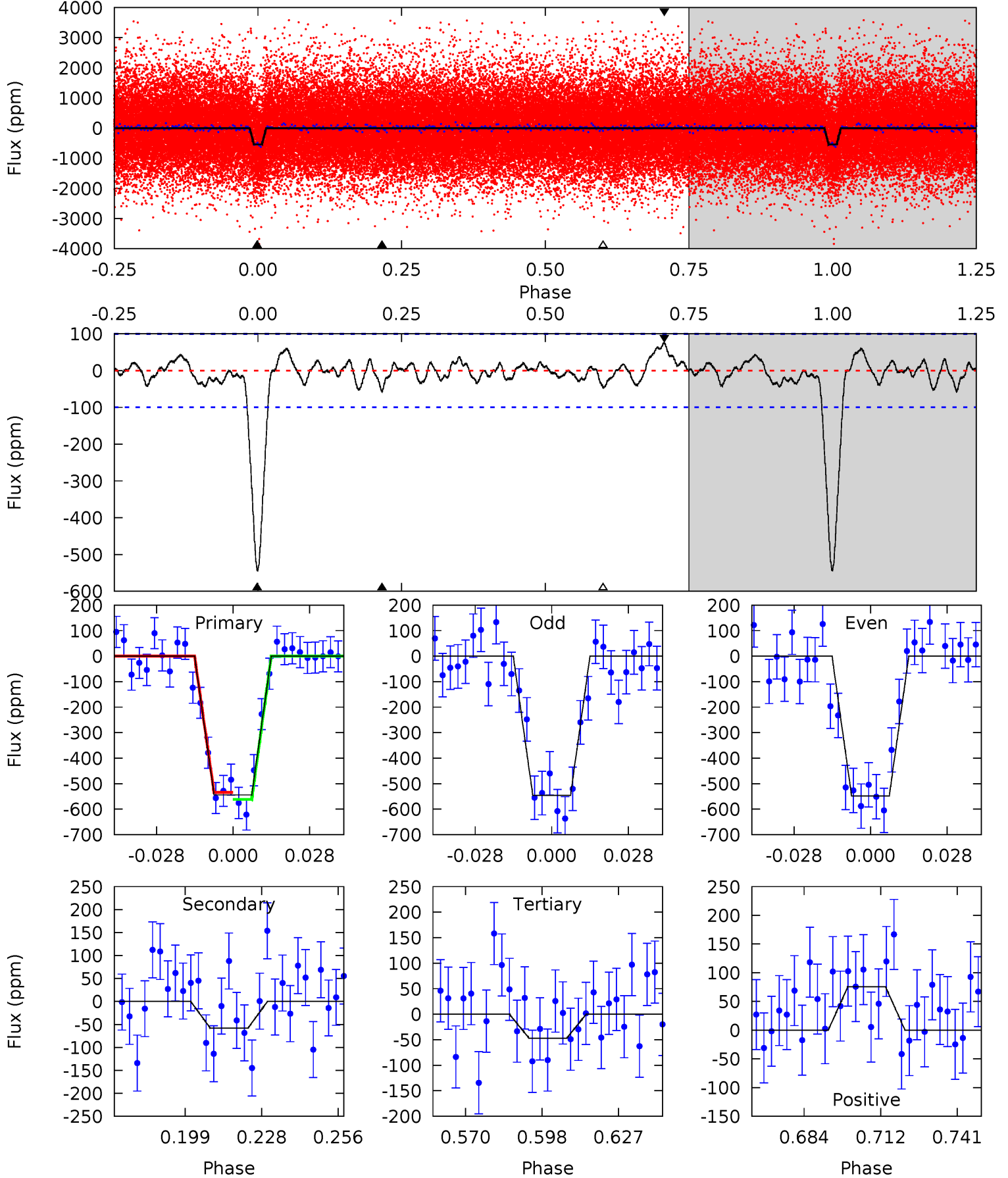
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 29.4 | 2.59 | 2.35 | 3.12 | 4.79 | 2.13 | 1.14 | 27.0 | 26.2 | 0.24 | -0.52 | 0.61 | 0.89 | 0.10 | 0.78 |



Alt Model-Shift Uniqueness Test

012506770-01, P = 2.806212 Days, E = 130.932601 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 26.3 | 2.81 | 2.27 | 3.66 | 4.82 | 2.19 | 1.15 | 24.0 | 22.7 | 0.54 | -0.85 | 0.05 | 1.01 | 0.12 | 0.66 |



Stellar Parameters For KIC 012506770

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|---------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4153^{+83}_{-91} | $4.684^{+0.023}_{-0.025}$ | $-0.220^{+0.150}_{-0.150}$ | $0.581^{+0.027}_{-0.030}$ | $0.595^{+0.028}_{-0.036}$ | $4.271^{+0.466}_{-0.420}$ |
| | +2%/-2% | +0%/-1% | +68%/-68% | +5%/-5% | +5%/-6% | +11%/-10% |
| Source | SPE60 | SPE60 | SPE60 | DSEP | | |

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 012506770-01 / KOI 1577.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|------------------|
| DV | -49 ± 19 | $1.63^{+0.71}_{-0.69}$ | 1080^{+23}_{-26} | 2766^{+486}_{-316} | 11^{+21}_{-6} |
| Alt. | -58 ± 21 | $1.50^{+0.69}_{-0.71}$ | 1080^{+23}_{-27} | 2887^{+604}_{-326} | 15^{+38}_{-9} |

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

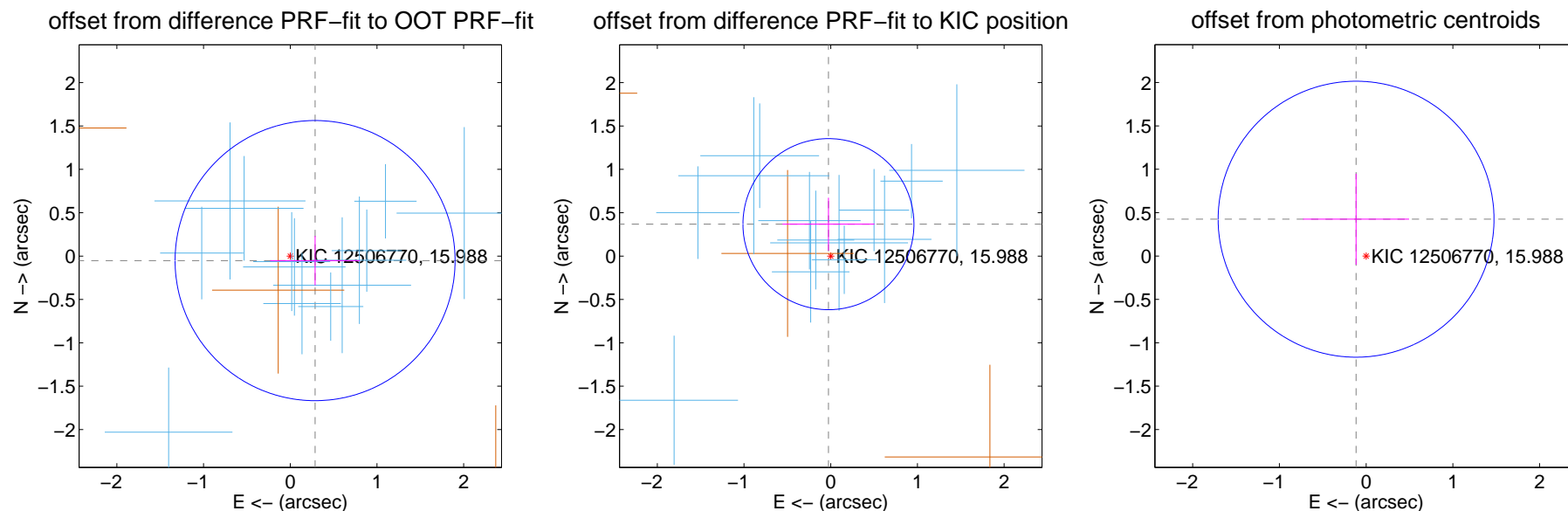
DV Centroid Data

Supplemental centroid analysis for 012506770-01. Kepler magnitude: 15.99. Transit SNR 22.85

There are 13 quarters with good PRF difference image offsets

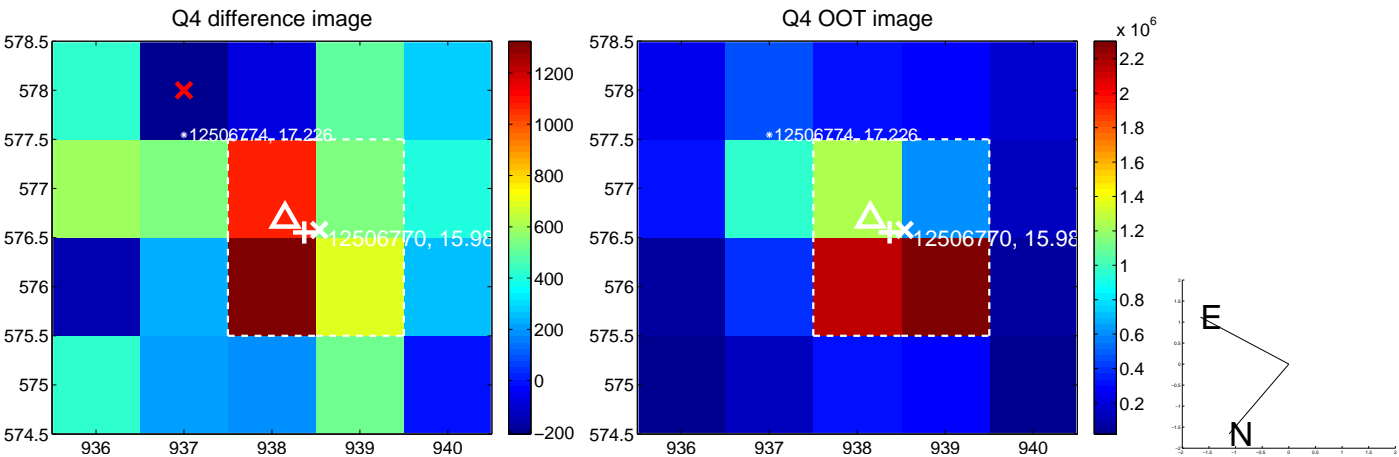
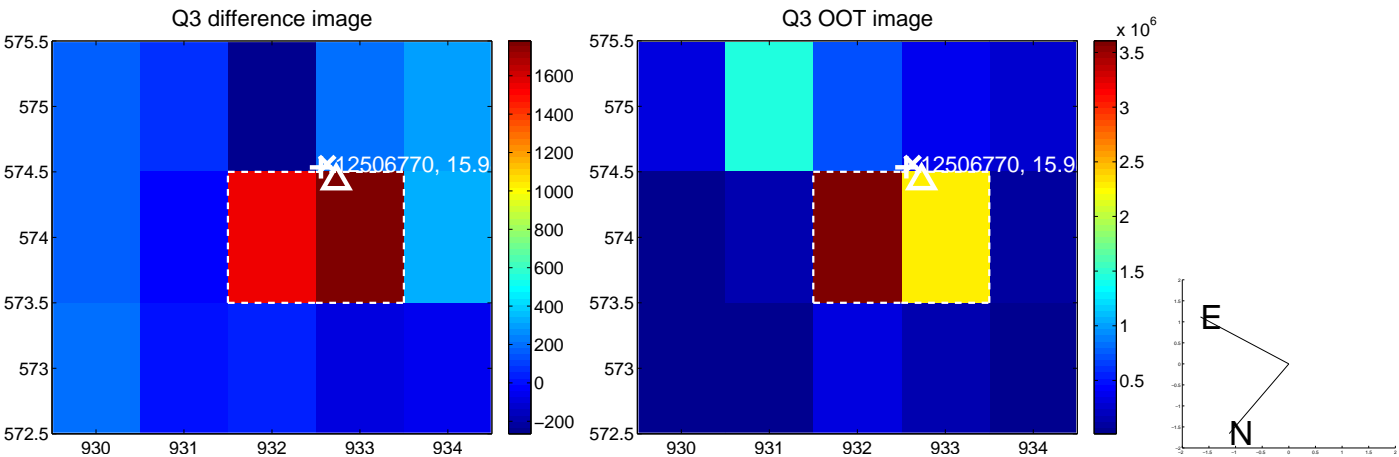
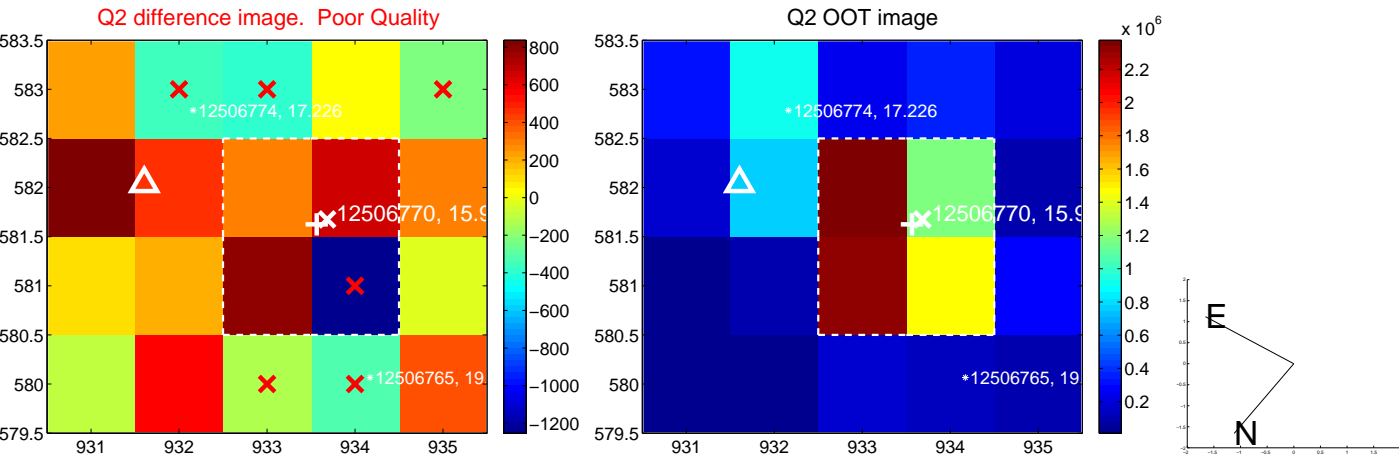
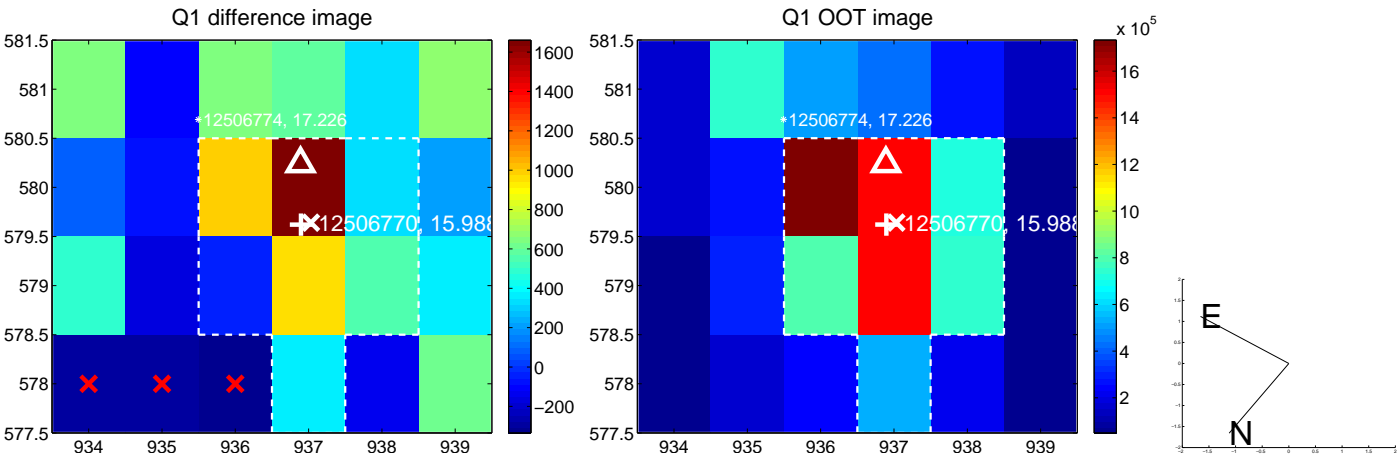
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.291 ± 0.538 | 0.54 | -0.286 ± 0.517 | -0.052 ± 0.285 |
| PRF-fit source offset from KIC position | 0.369 ± 0.329 | 1.12 | 0.026 ± 0.530 | 0.368 ± 0.305 |
| photometric centroid source offset | 0.44 ± 0.53 | 0.83 | 0.12 ± 0.61 | 0.42 ± 0.52 |

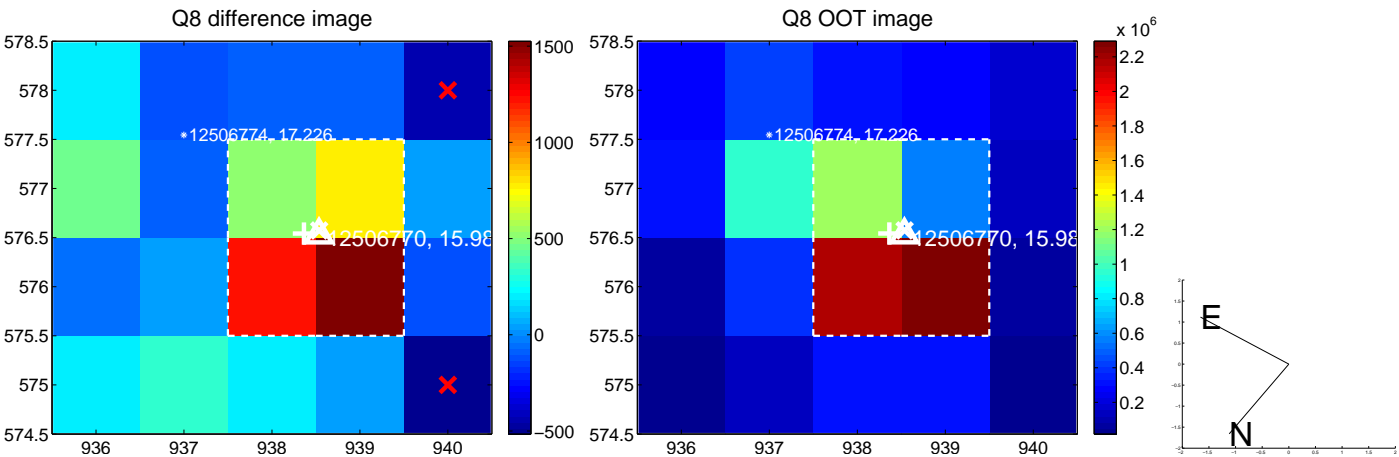
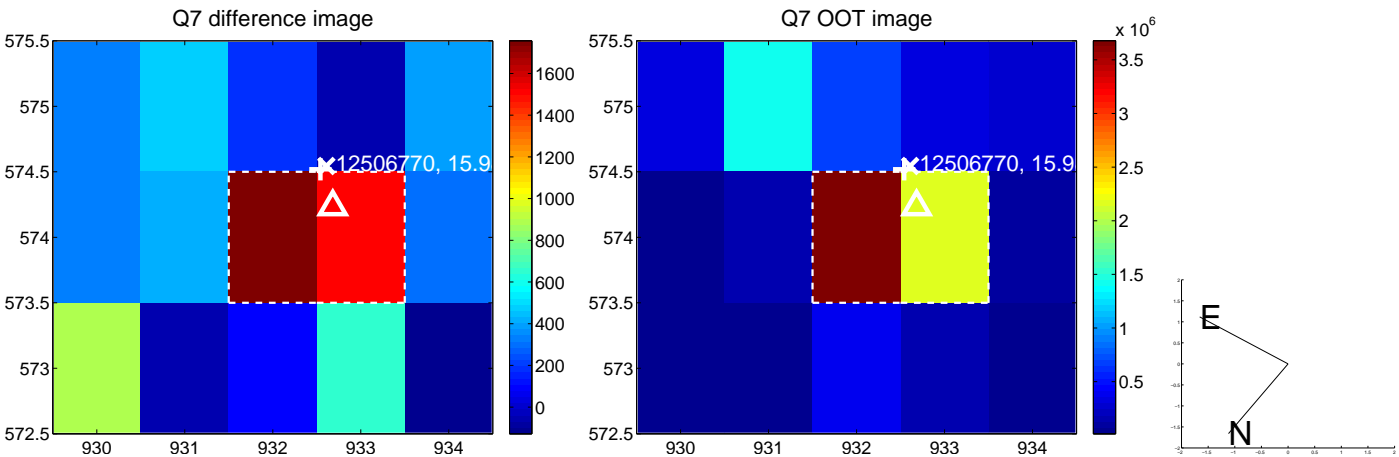
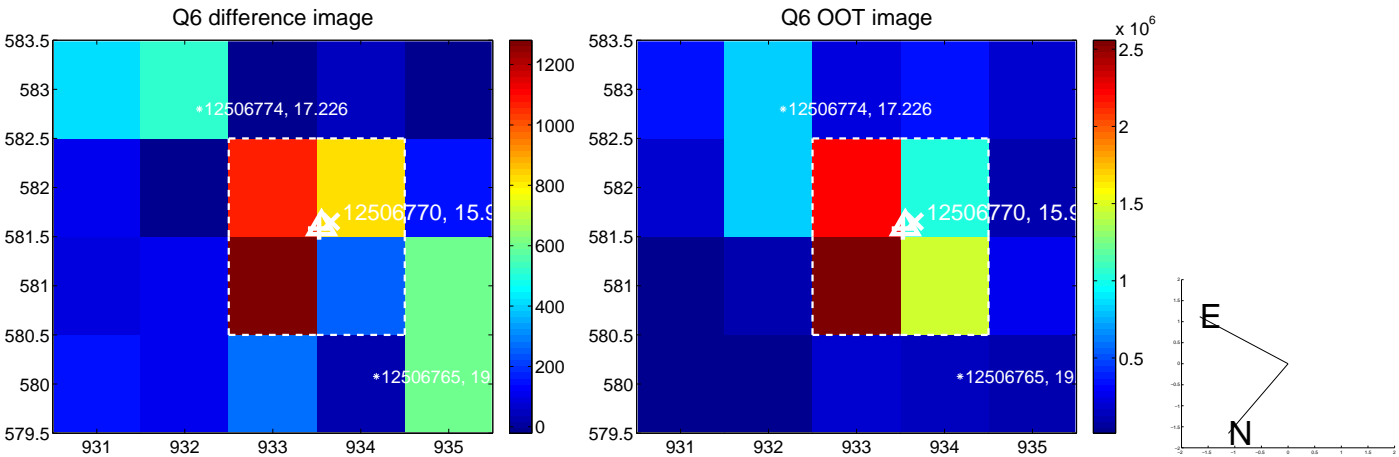
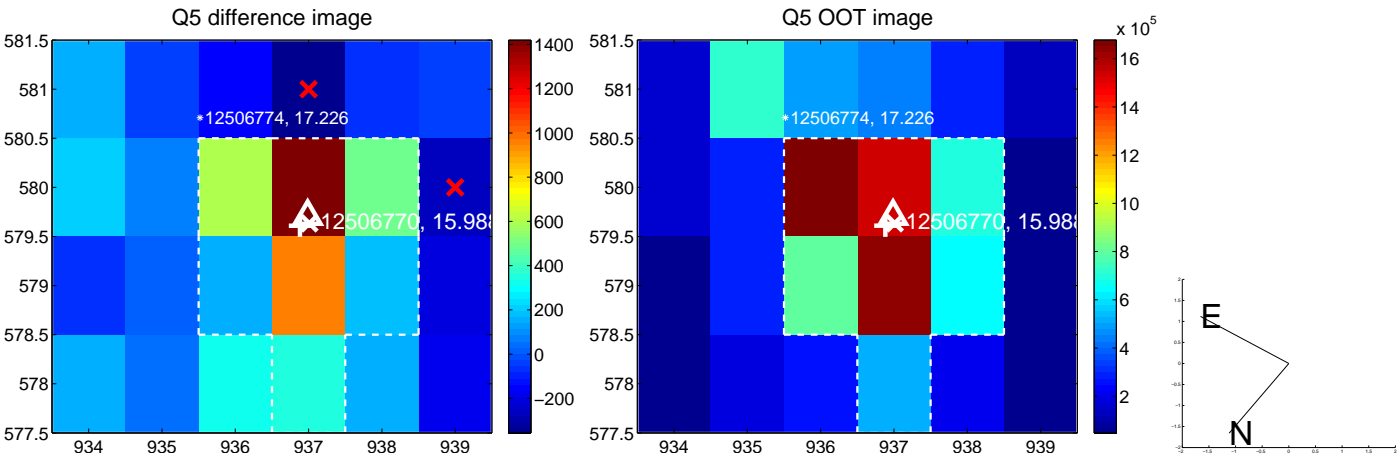


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

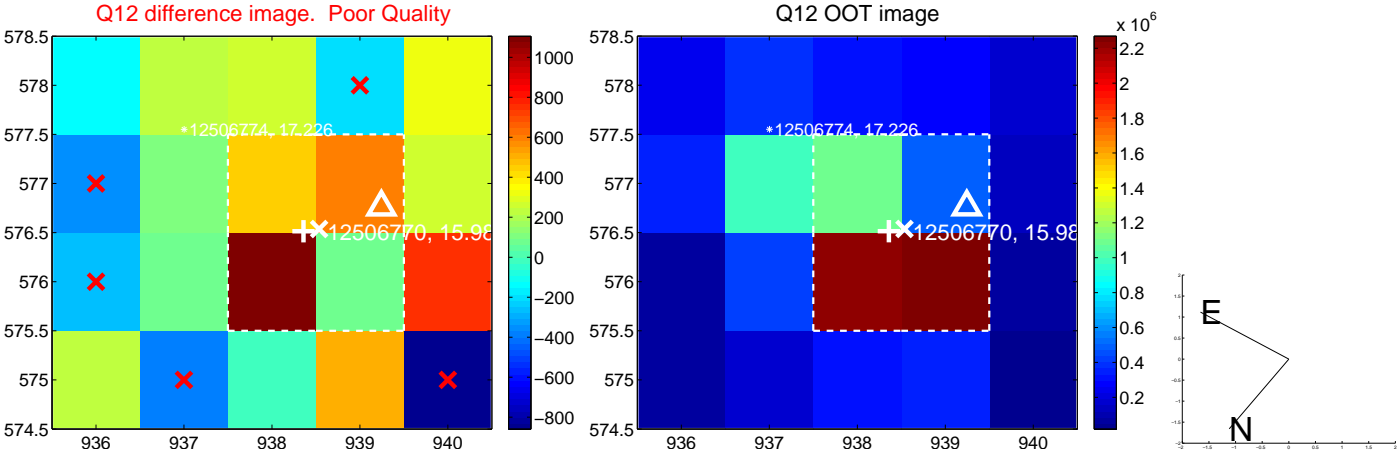
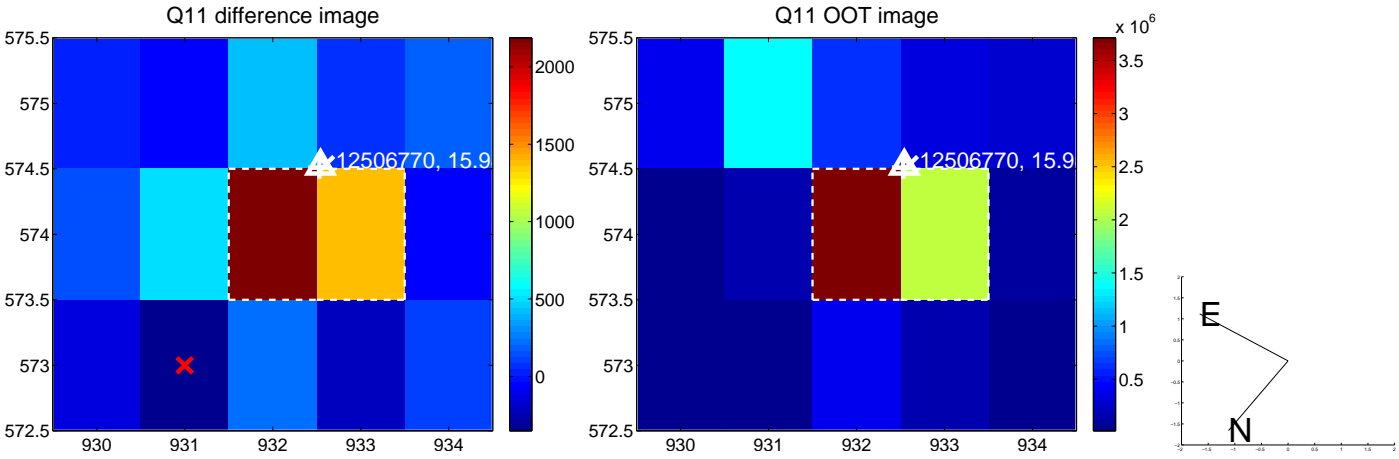
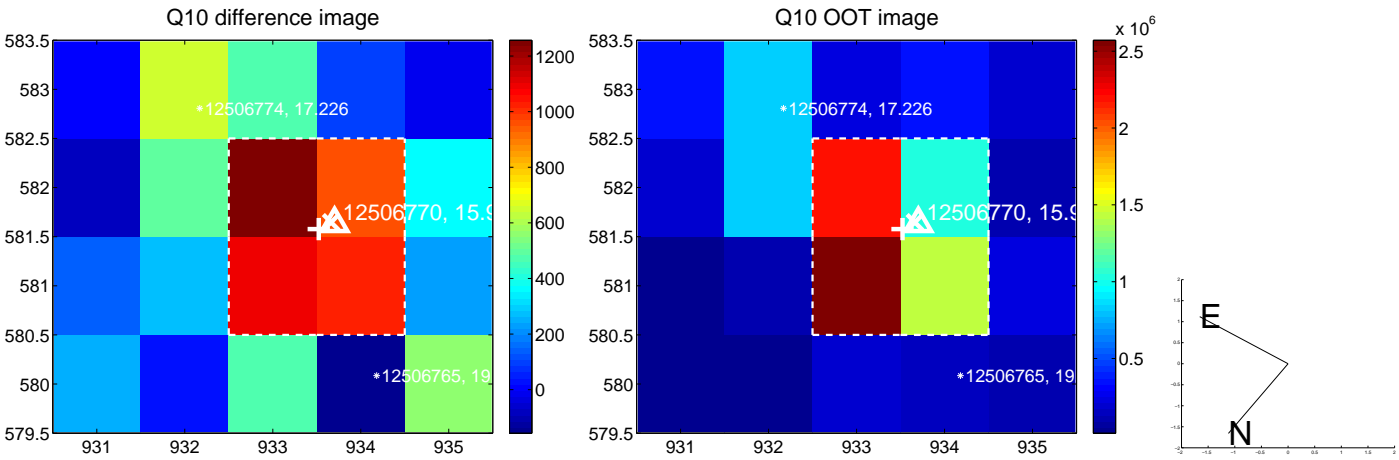
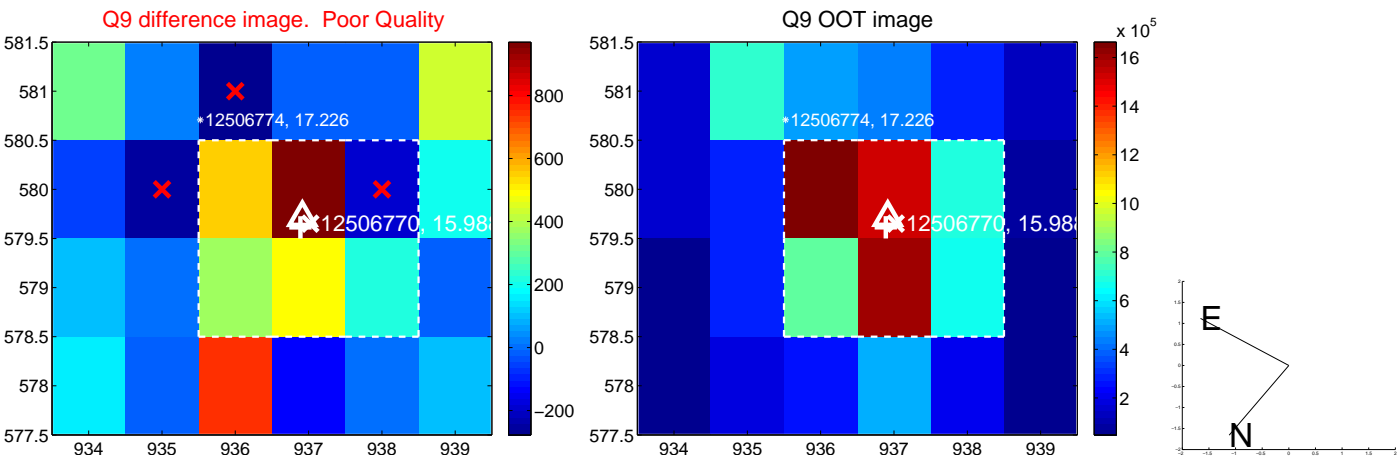
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



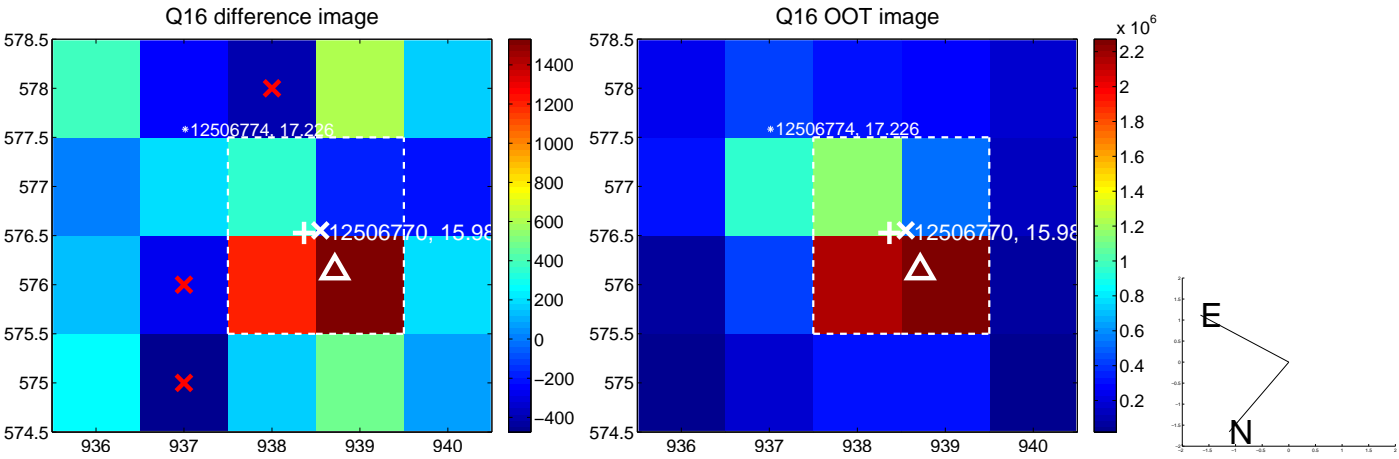
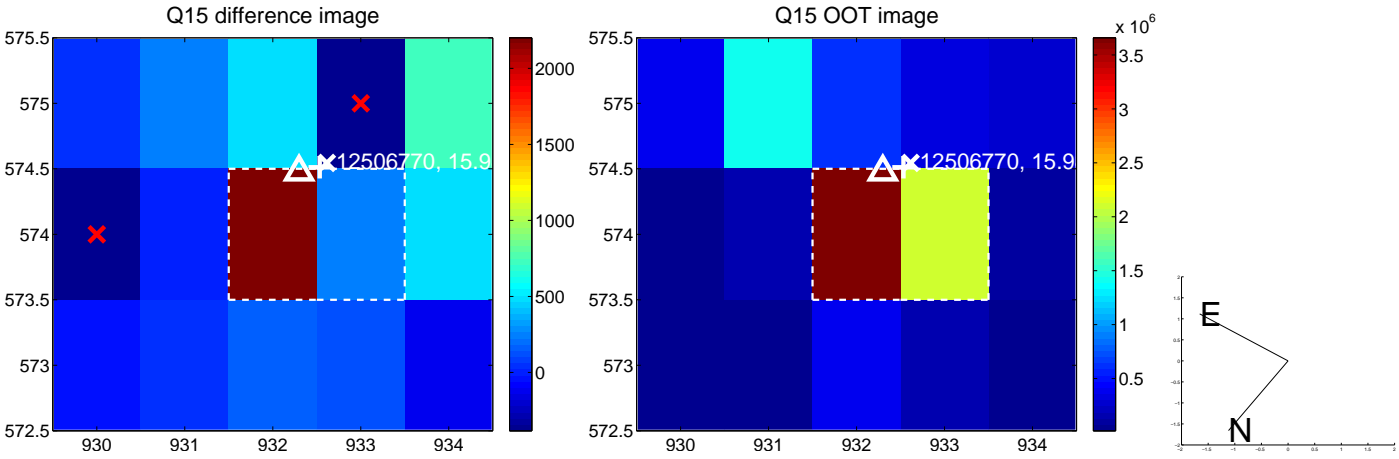
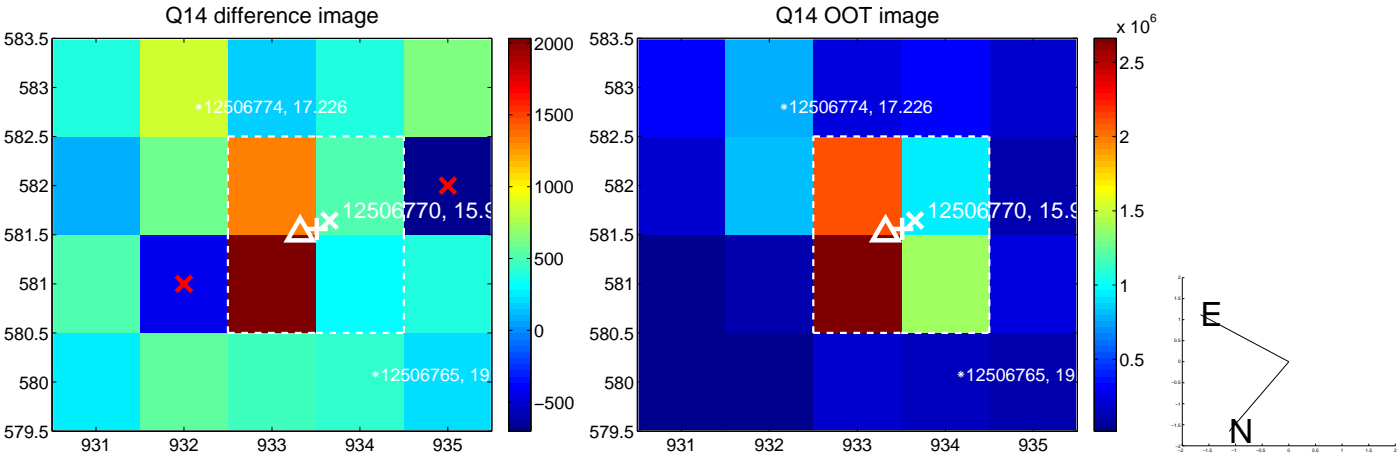
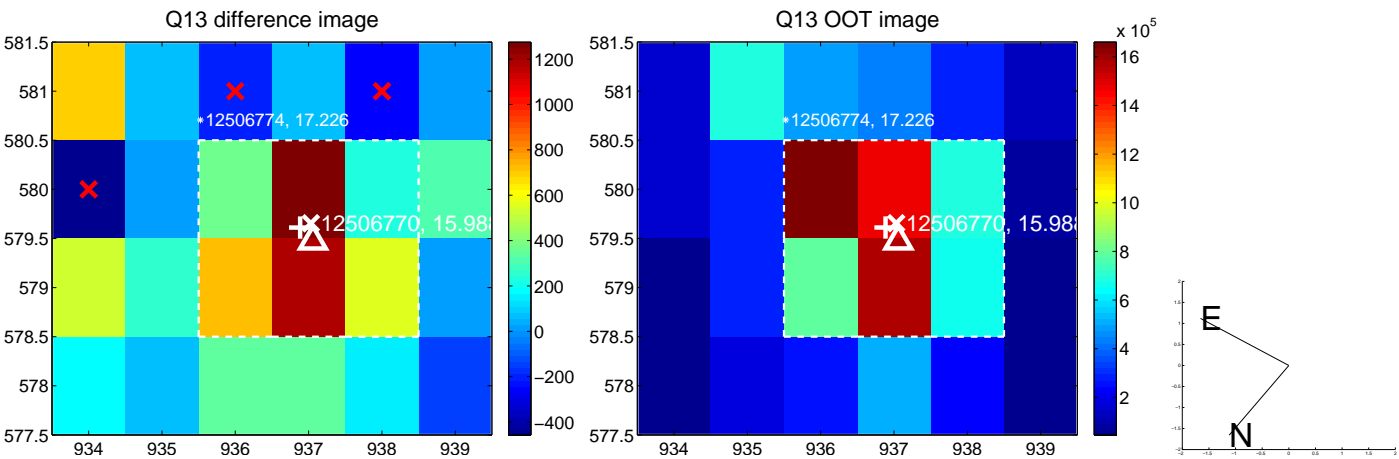
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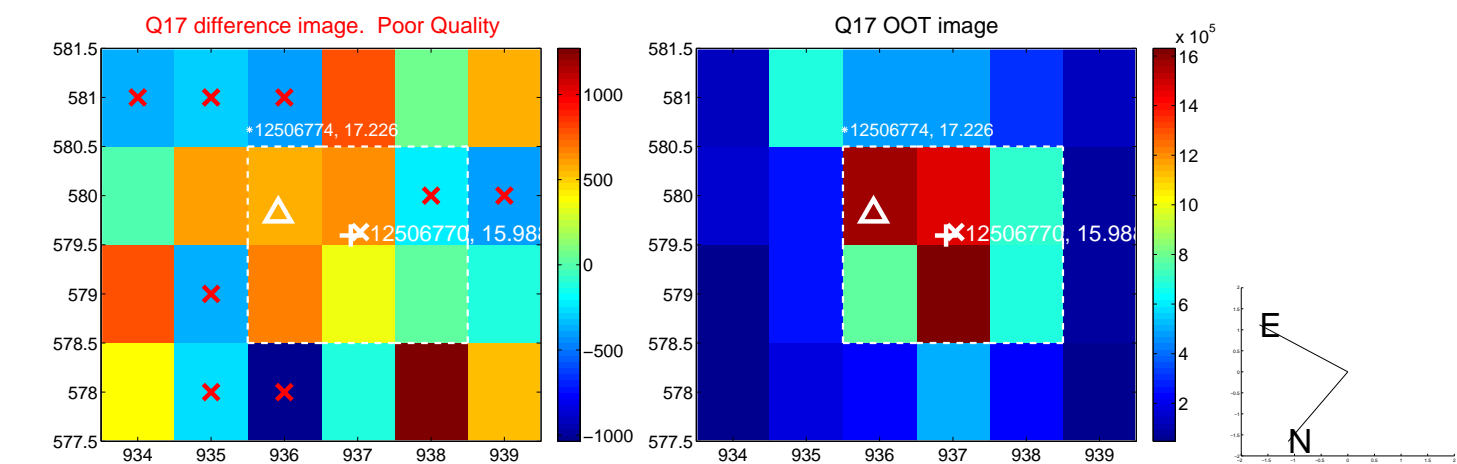
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



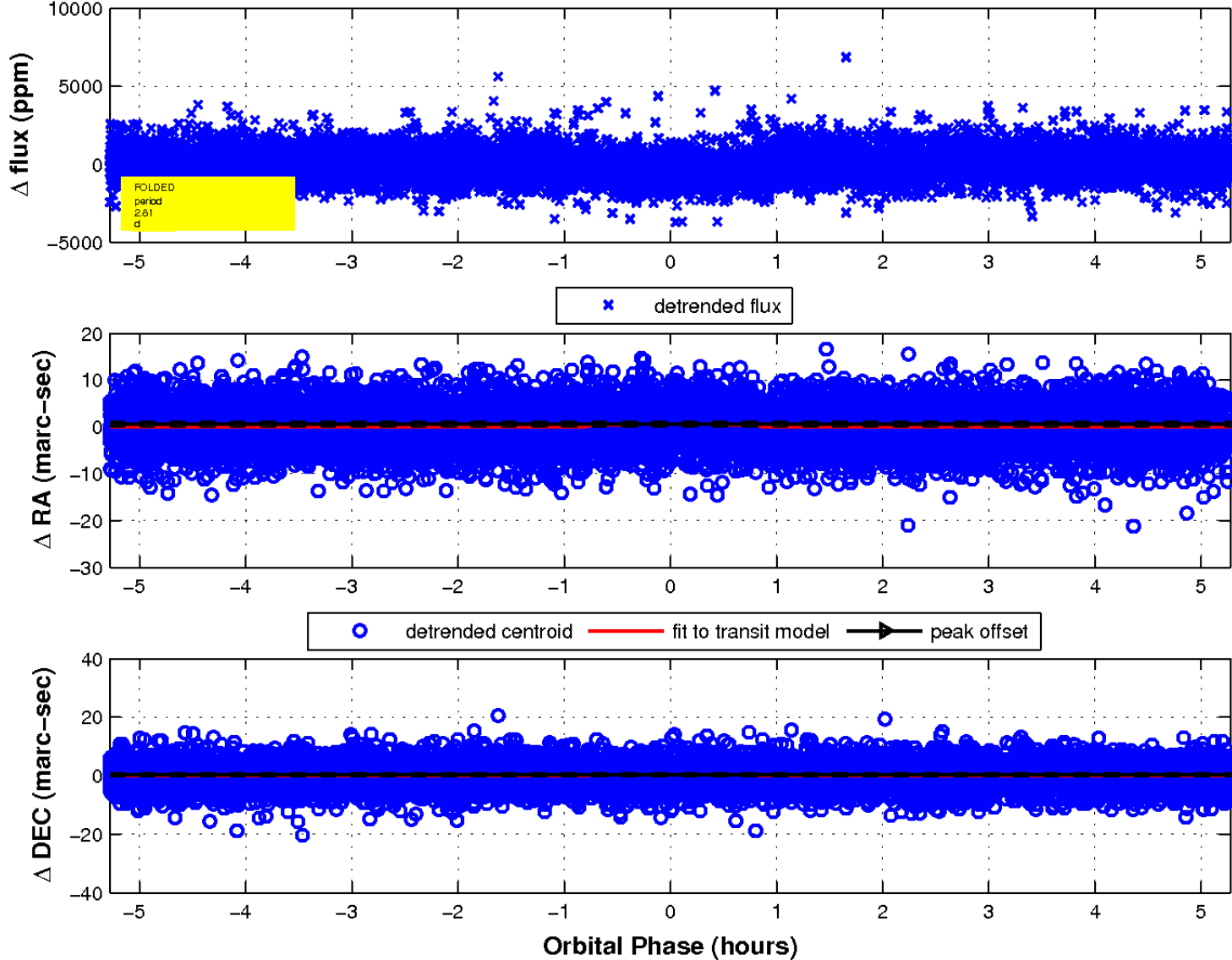
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

