

KIC 010003058

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010003058-01 | OBS | 4519.01 | 148.567881 | 139.604687 | 364.6 | 4.515 | 9.6 | 9.6 | 2.98 | 5814 | 6.42 | 22.54 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|------------|
| 010003058-01 | OBS | PC | 0.90 | 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.

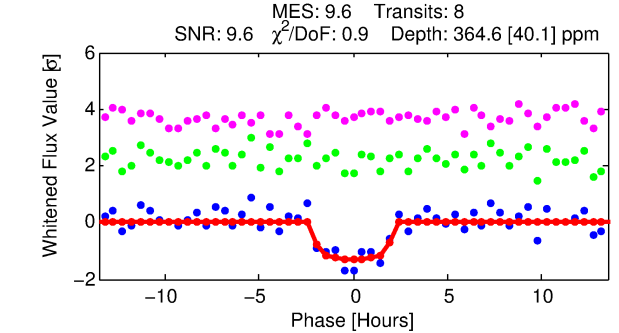
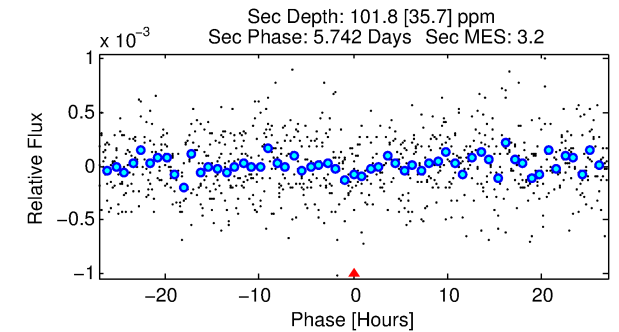
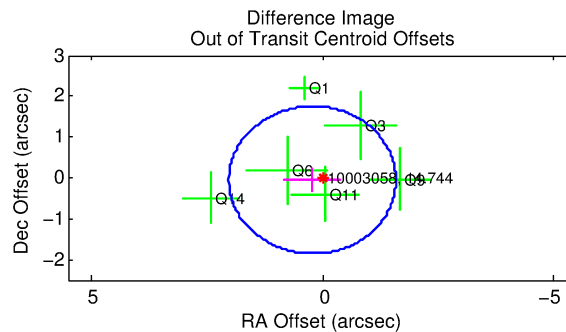
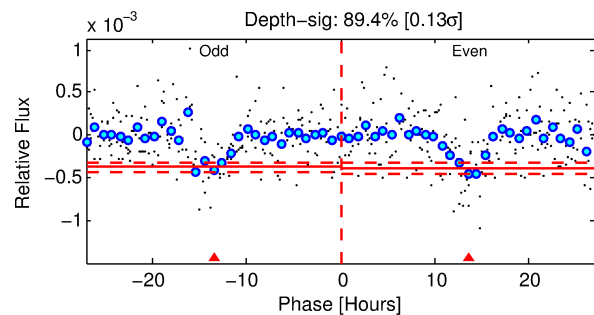
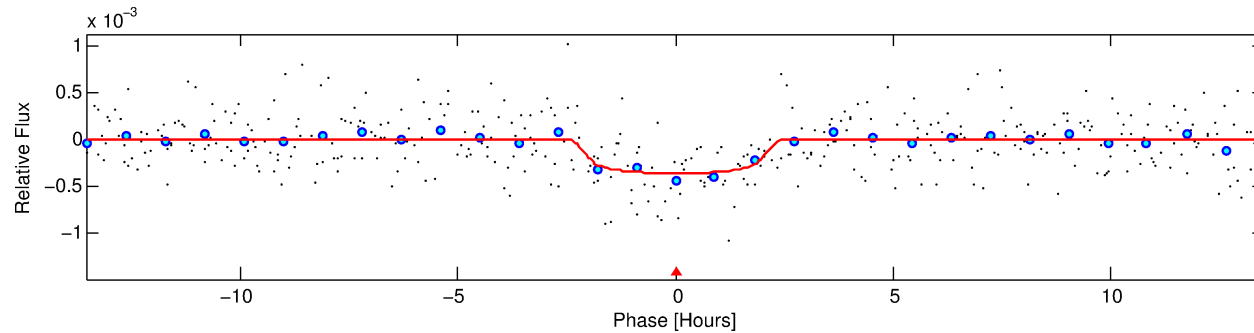
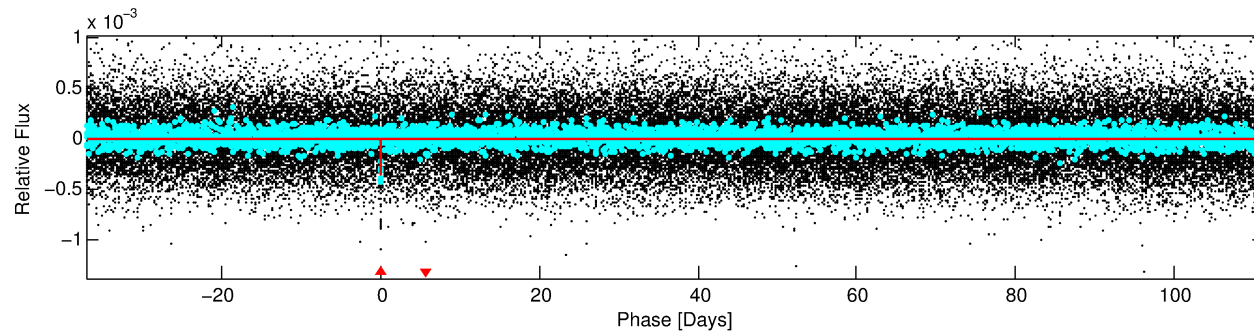
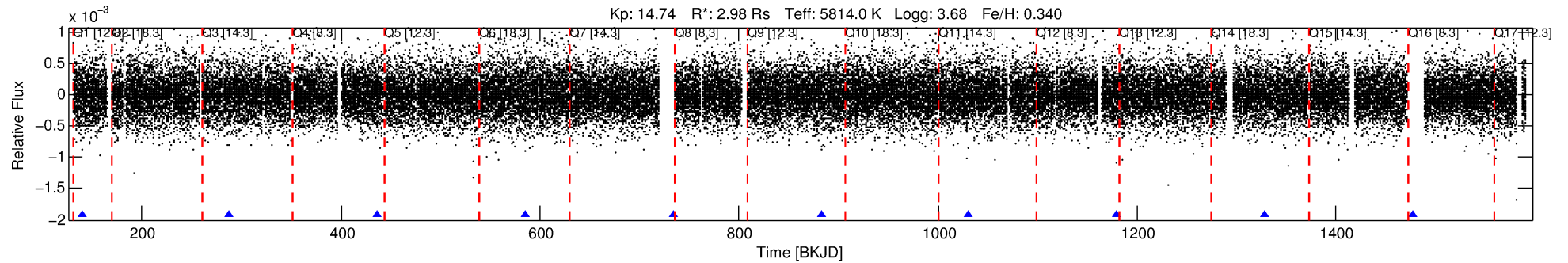
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010003058-01

No Significant Match Found

DV One-Page Summary

KIC: 10003058 Candidate: 1 of 1 Period: 148.568 d
KOI: K04519.01 Corr: 0.989



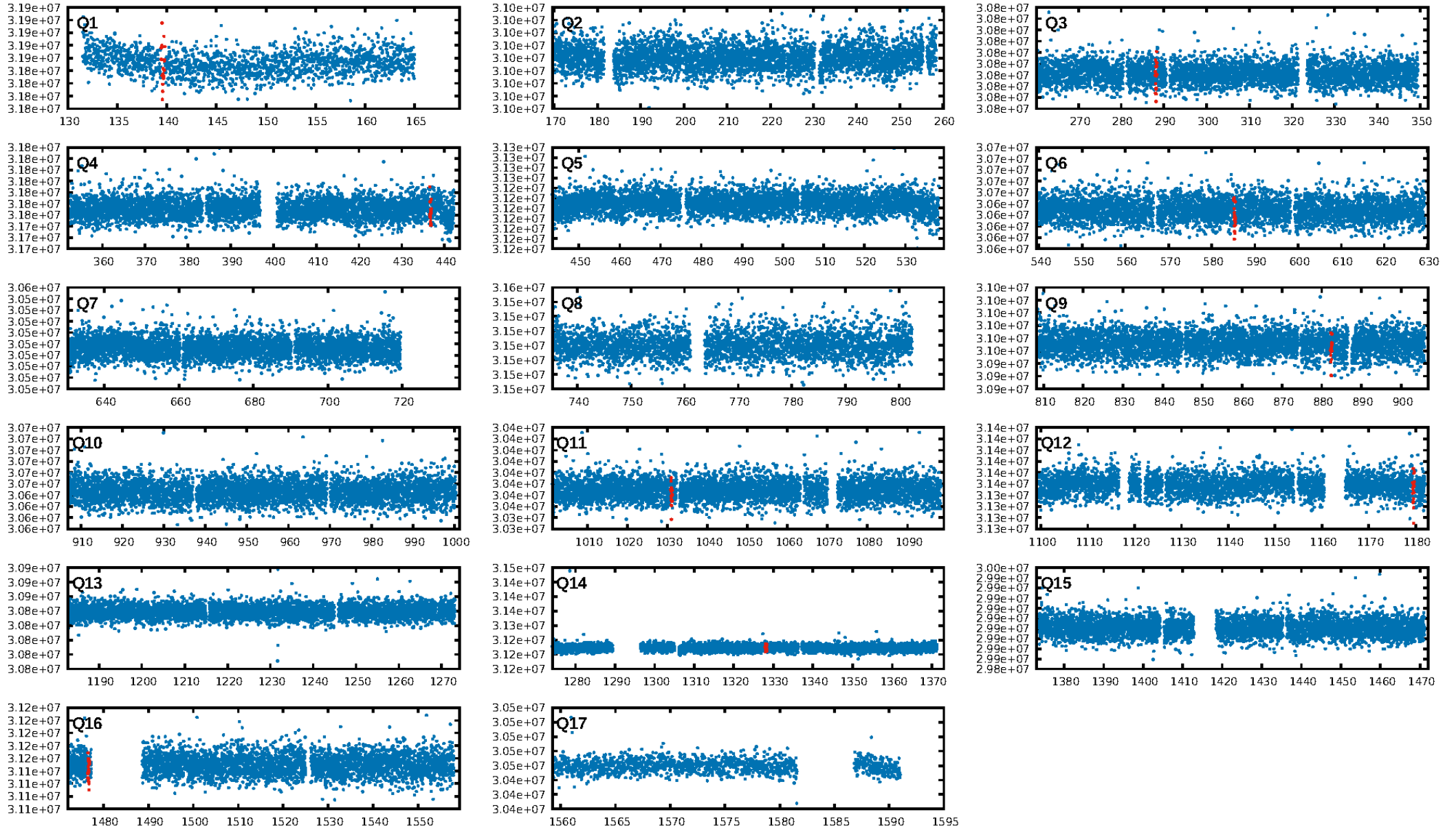
DV Fit Results:

Period = 148.56788 [0.00182] d
Epoch = 139.6047 [0.0093] BKJD
Rp/R* = 0.0197 [0.0136]
a/R* = 150.74 [464.04]
b = 0.82 [1.21]
Seff = 22.53 [11.33]
Teff = 556 [70] K
Rp = 6.42 [4.88] Re
a = 0.6362 [0.1988] AU
Ag = 550.38 [828.32] [0.66 σ]
Teffp = 4161 [1478] K [2.44 σ]

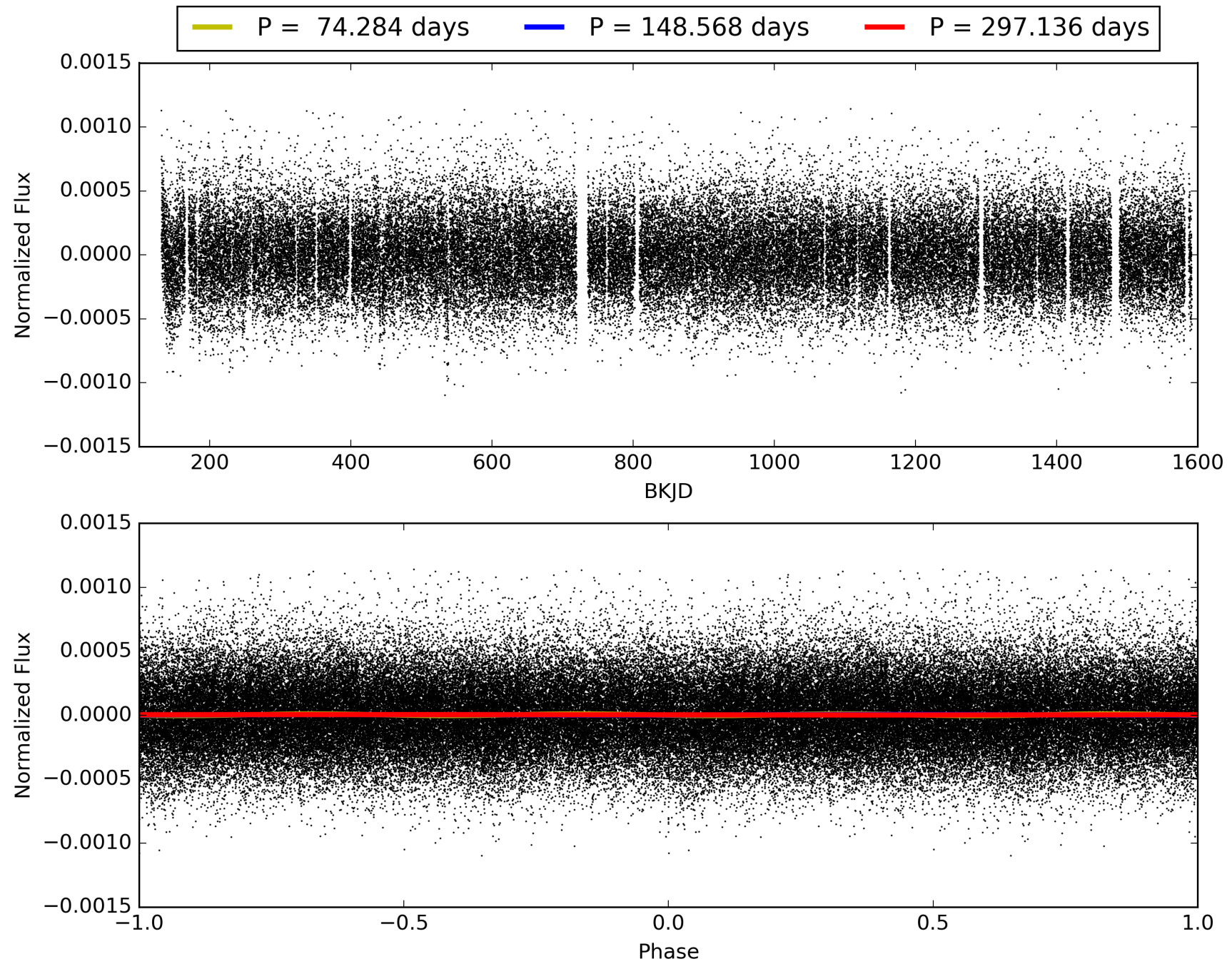
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 90.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.36e-22
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 10.33
Centroid-sig: 16.0%
Centroid-so: 1.532 arcsec [1.02 σ]
OotOffset-rm: 0.225 arcsec [0.37 σ]
KicOffset-rm: 0.293 arcsec [0.51 σ]
OotOffset-st: 2/2/0/2 [6]
KicOffset-st: 2/2/0/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [7/7]

TCE 010003058-01, PDC Light Curves

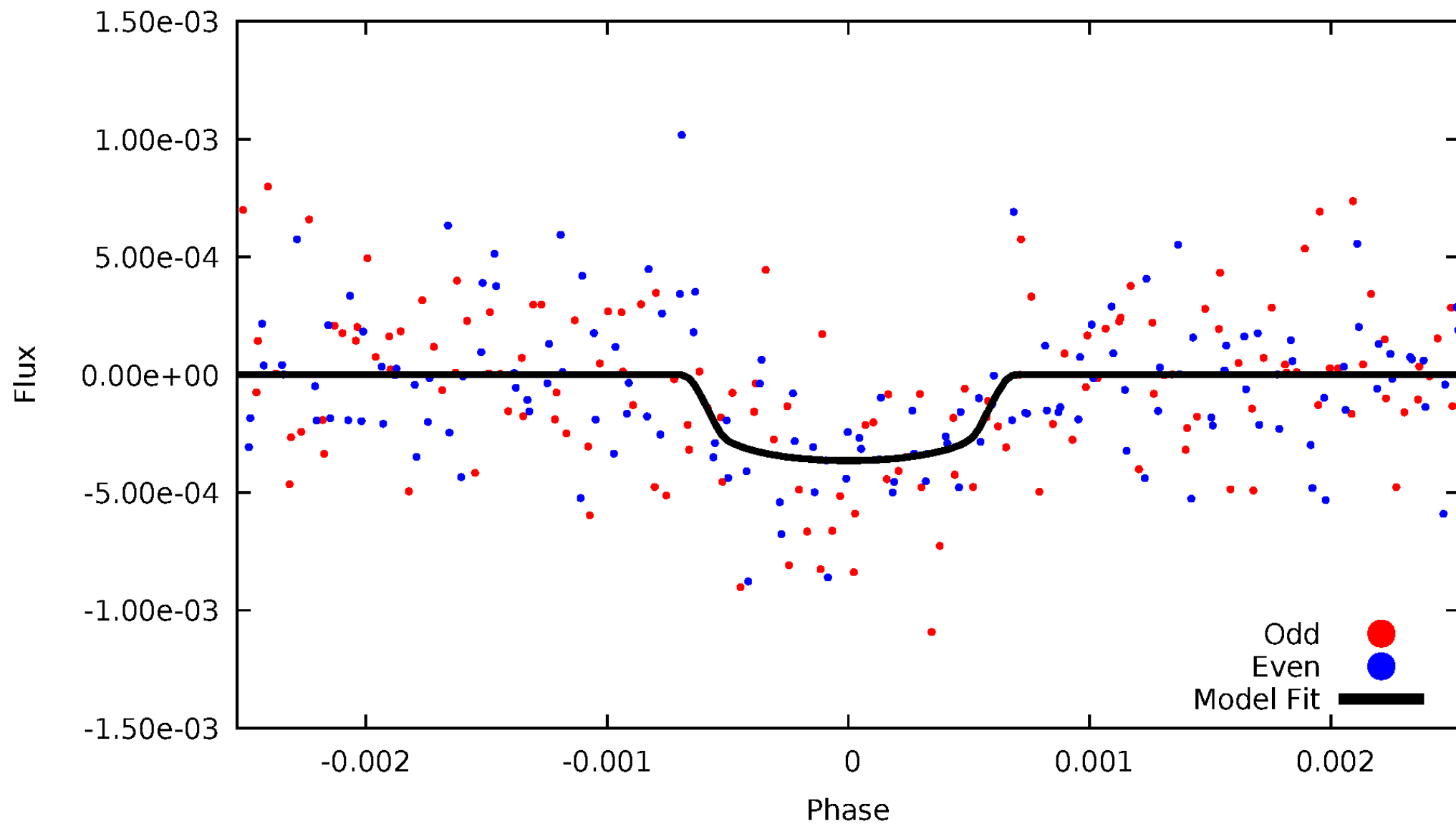


TCE 010003058-01



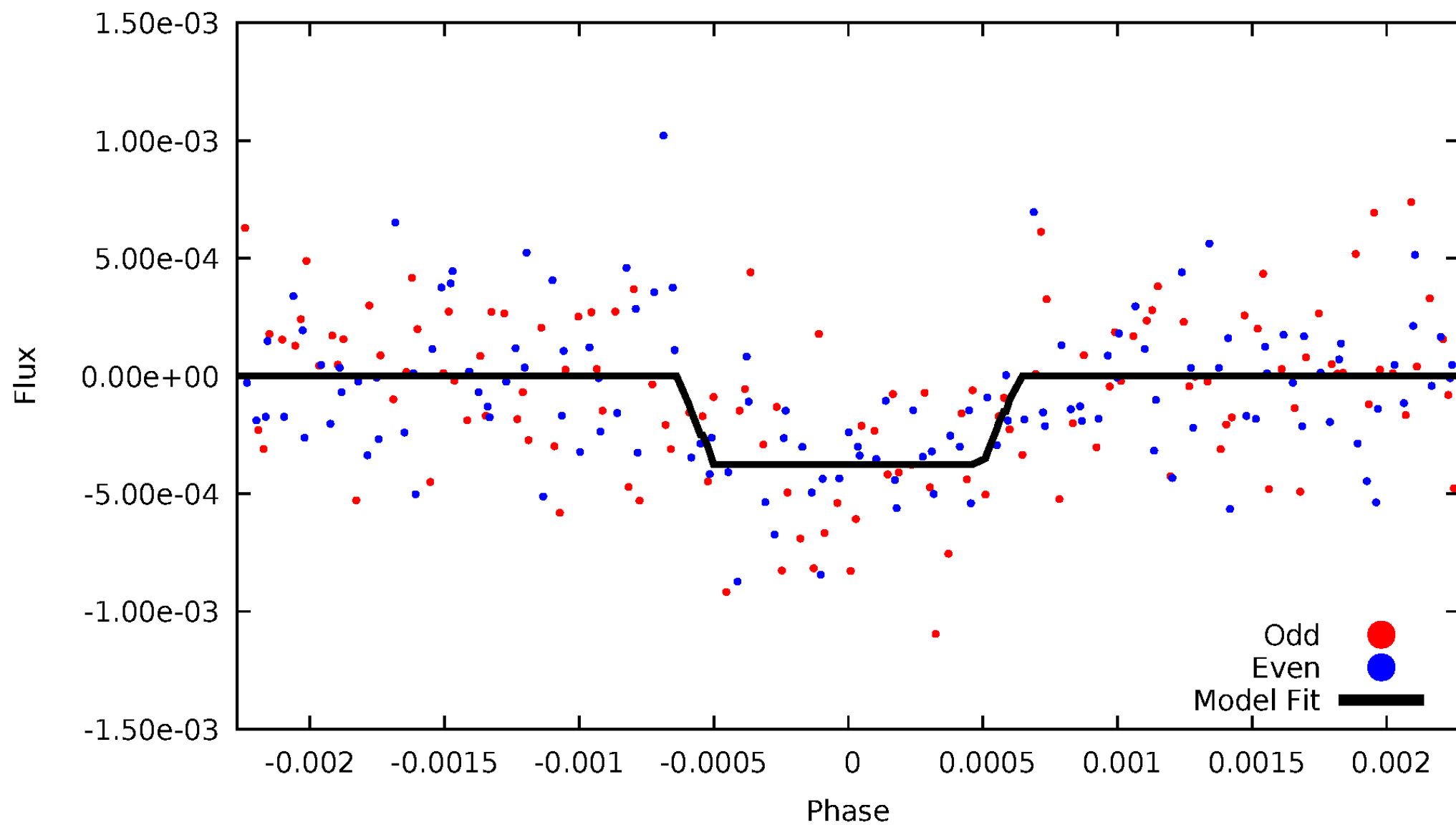
DV Odd/Even

TCE 010003058-01



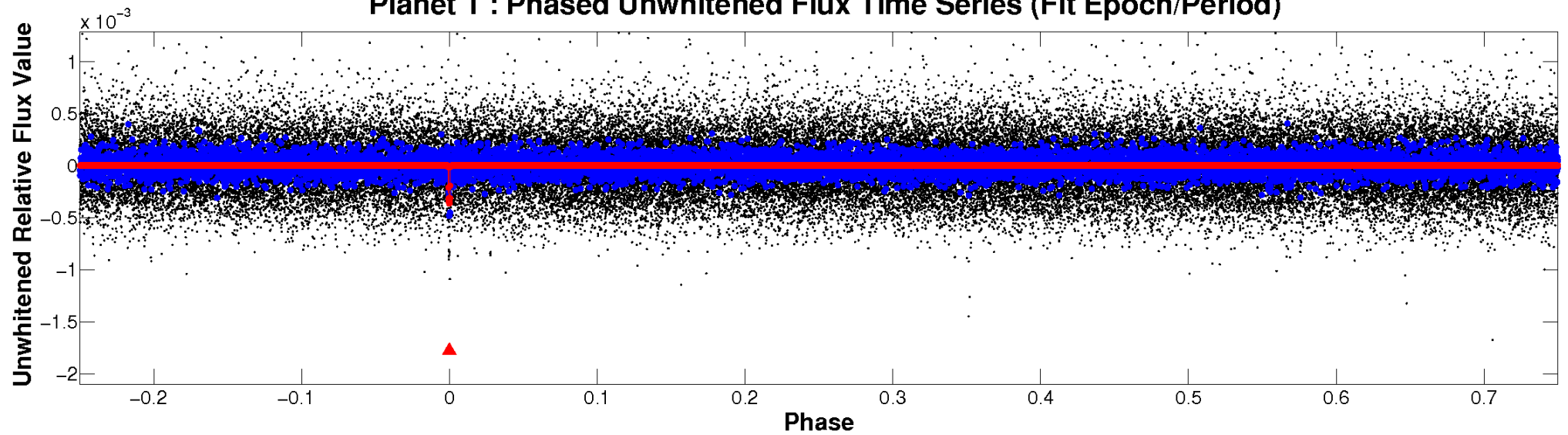
ALT Odd/Even

TCE 010003058-01

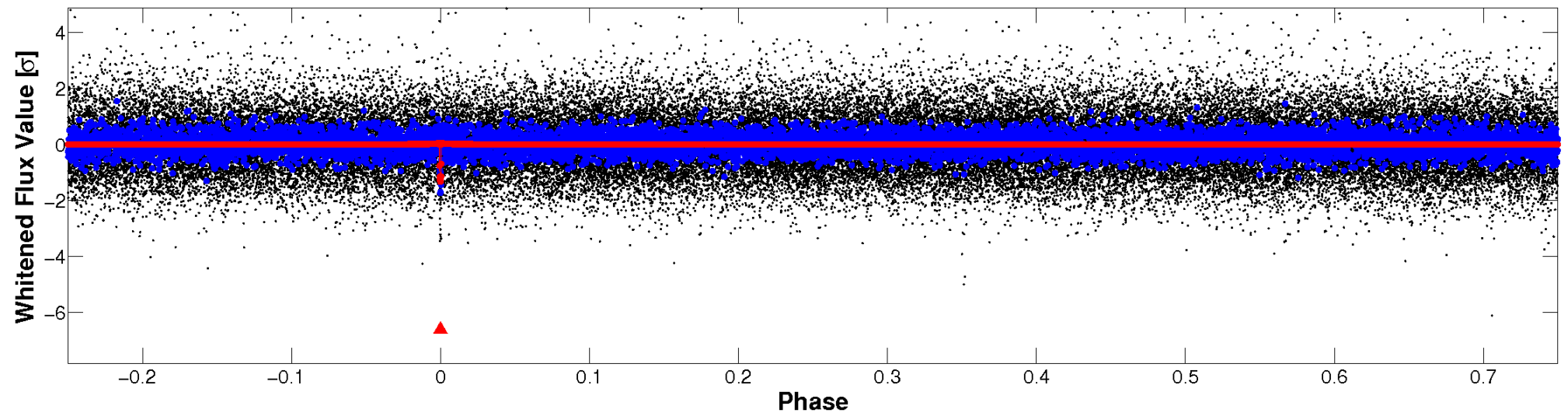


Non-Whitened Vs. Whitened Light Curve

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

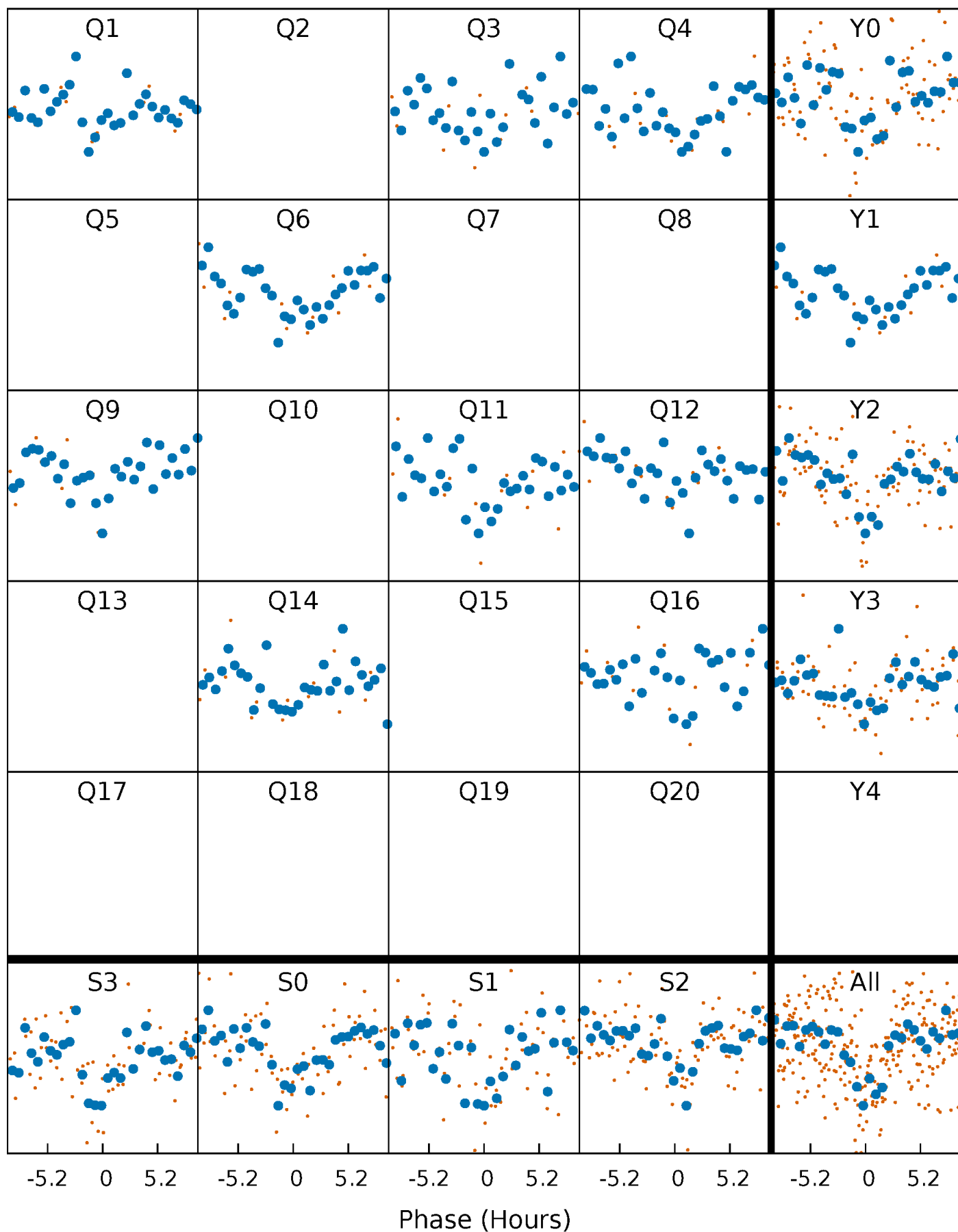


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



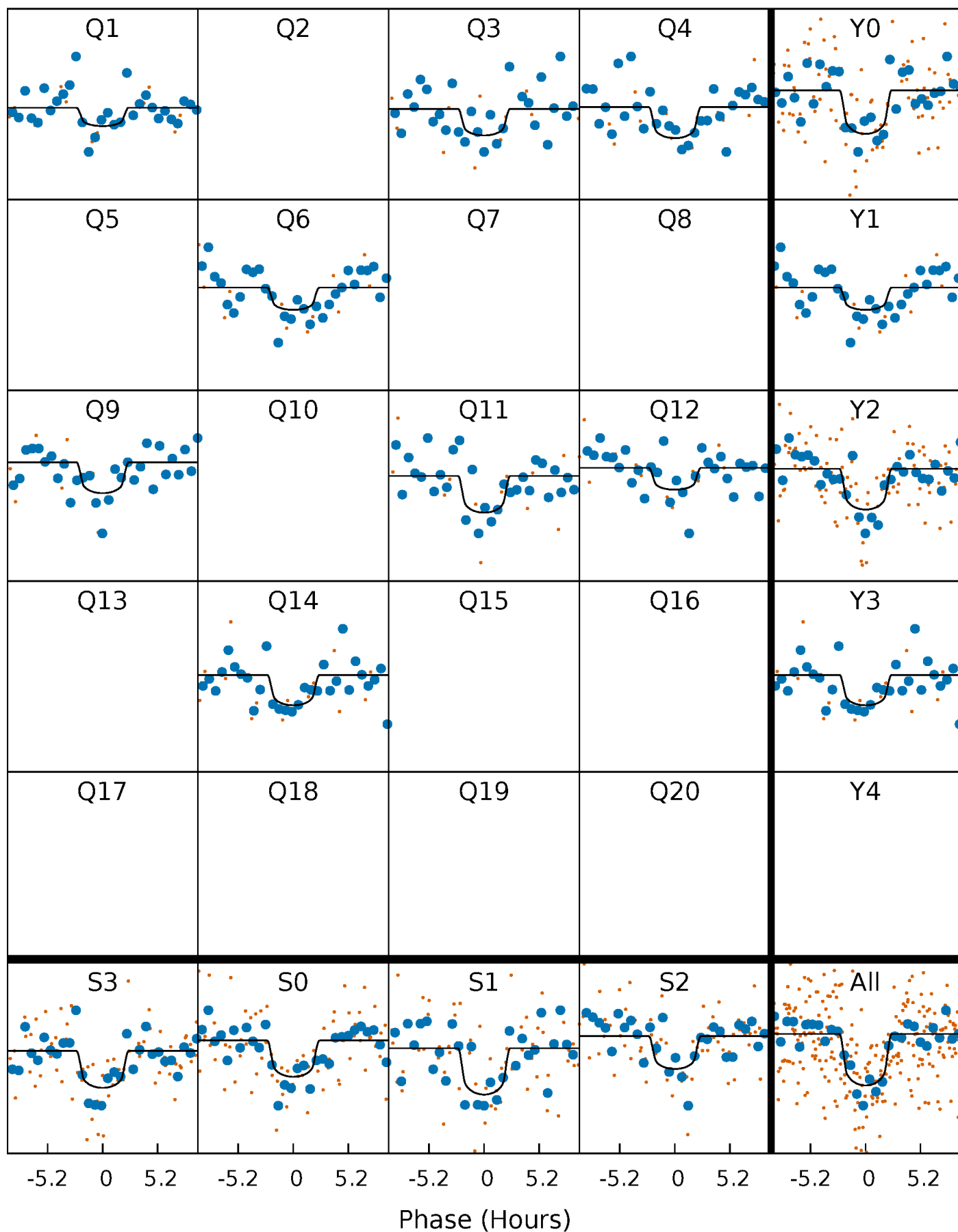
PDC Quarter-Phased Transit Curves

TCE 010003058-01 P=148.567881 Days $T_0=139.604687$ (BKJD)



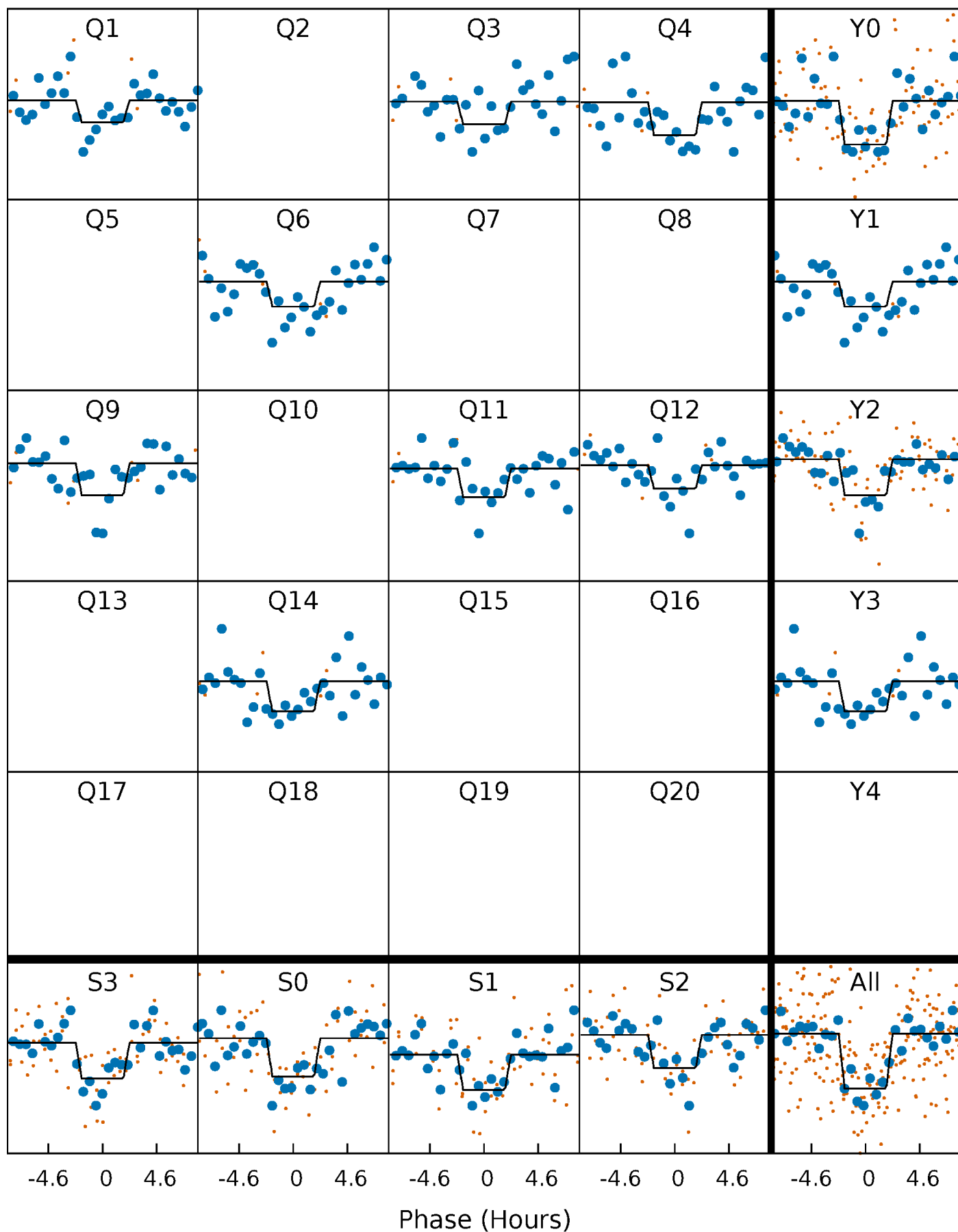
DV Quarter-Phased Transit Curves

TCE 010003058-01 P=148.567881 Days $T_0=139.604687$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

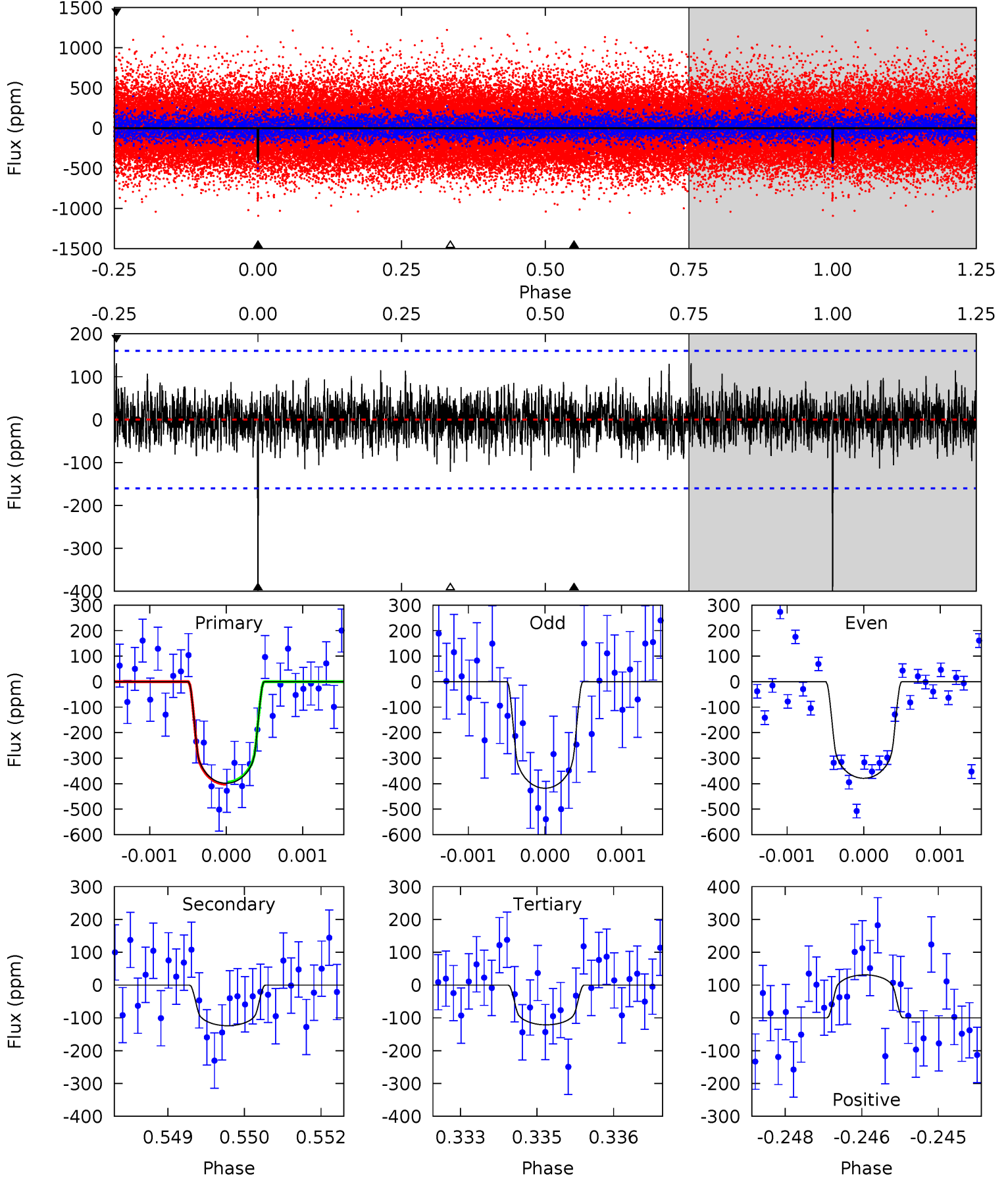
TCE 010003058-01 P=148.568402 Days $T_0=139.604147$ (BKJD)



DV Model-Shift Uniqueness Test

010003058-01, P = 148.567881 Days, E = 139.604687 Days

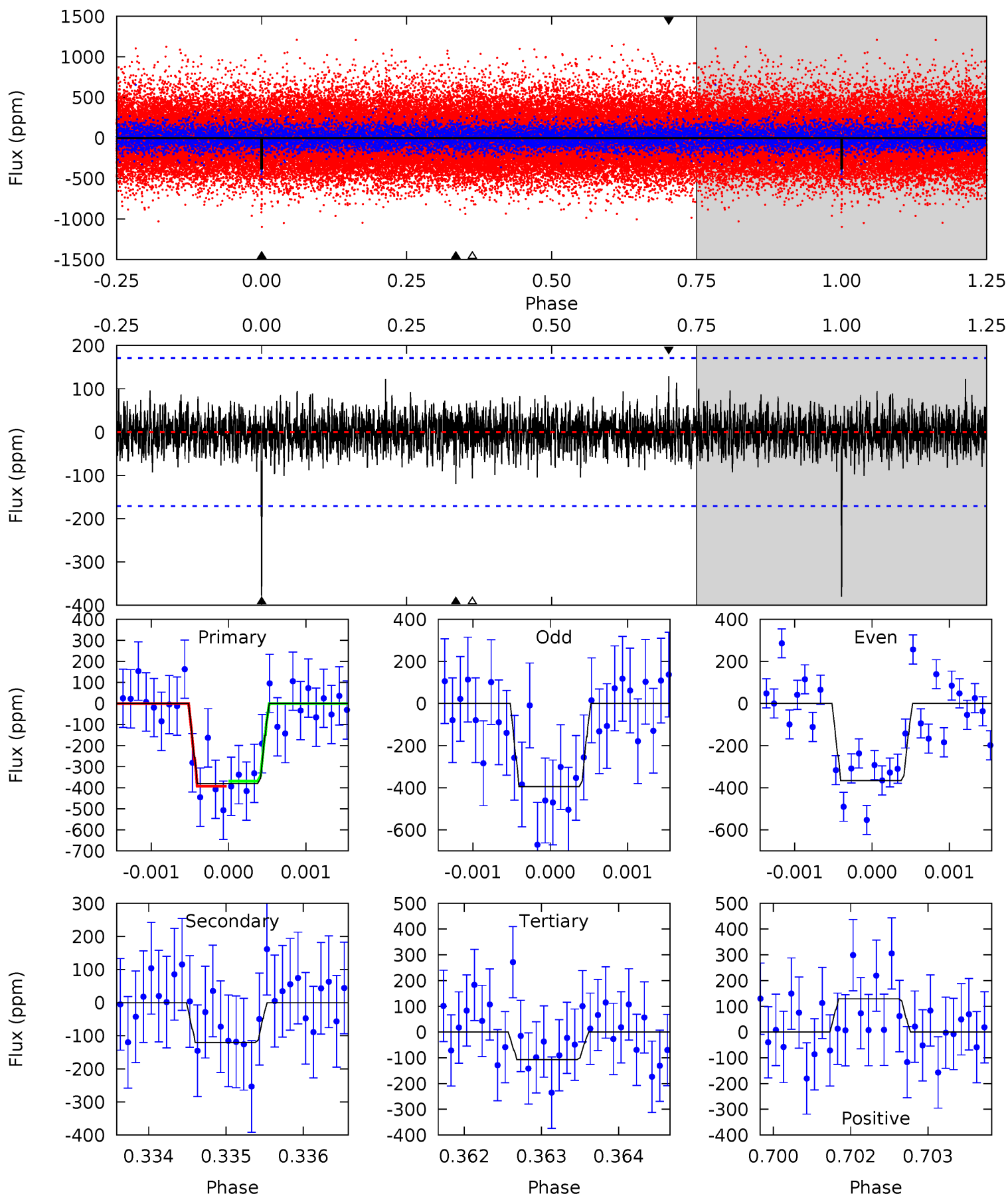
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.4 | 4.17 | 4.08 | 4.41 | 5.39 | 3.19 | 1.15 | 9.32 | 9.00 | 0.09 | -0.24 | 0.66 | 1.07 | 0.25 | 0.13 |



Alt Model-Shift Uniqueness Test

010003058-01, P = 148.568402 Days, E = 139.604147 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.0 | 3.80 | 3.38 | 4.09 | 5.41 | 3.23 | 0.98 | 8.66 | 7.95 | 0.42 | -0.29 | 0.44 | 1.08 | 0.25 | 0.38 |



Stellar Parameters For KIC 010003058

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5814^{+87}_{-79} | $3.680^{+0.293}_{-0.098}$ | $0.340^{+0.100}_{-0.150}$ | $2.985^{+0.567}_{-0.971}$ | $1.556^{+0.125}_{-0.250}$ | $0.082^{+0.156}_{-0.026}$ |
| | +1%/-1% | +8%/-3% | +29%/-44% | +19%/-33% | +8%/-16% | +189%/-32% |
| 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 010003058-01 / KOI 4519.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|----------------------|
| DV | -124 ± 30 | $6.44^{+4.51}_{-3.64}$ | 766^{+42}_{-57} | 4388^{+1964}_{-699} | 658^{+2864}_{-431} |
| Alt. | -120 ± 32 | $6.29^{+4.28}_{-3.56}$ | 763^{+39}_{-59} | 4398^{+1923}_{-722} | 654^{+2829}_{-428} |

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

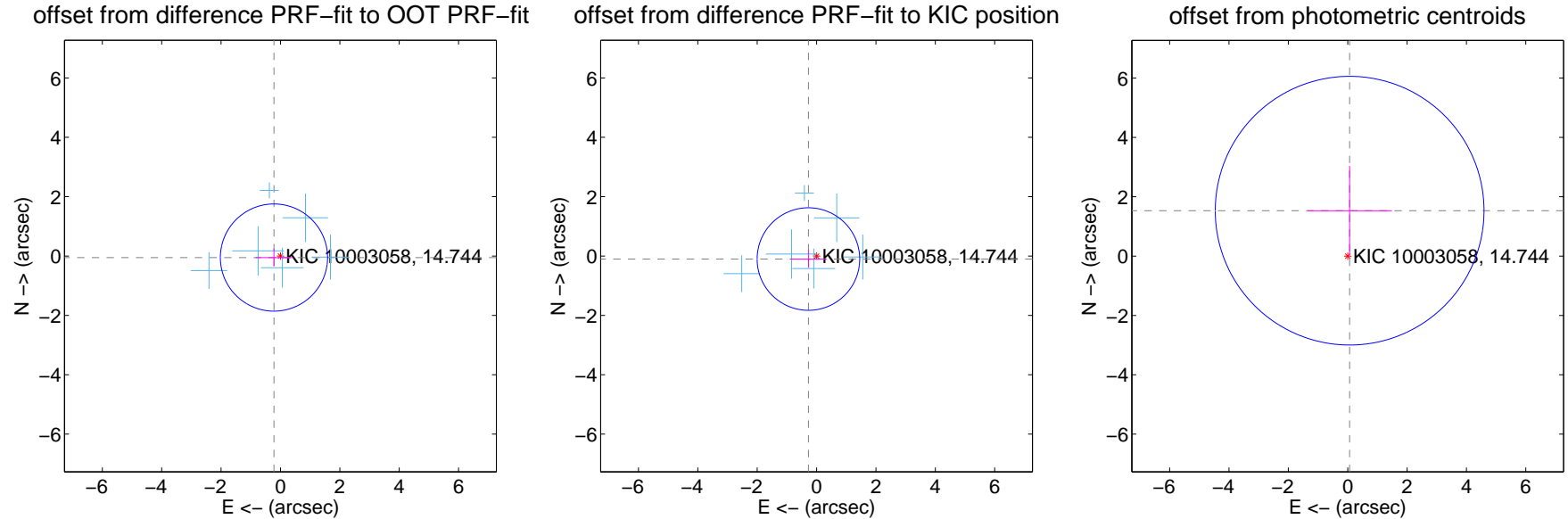
DV Centroid Data

Supplemental centroid analysis for 010003058-01. Kepler magnitude: 14.74. Transit SNR 9.59

There are 6 quarters with good PRF difference image offsets

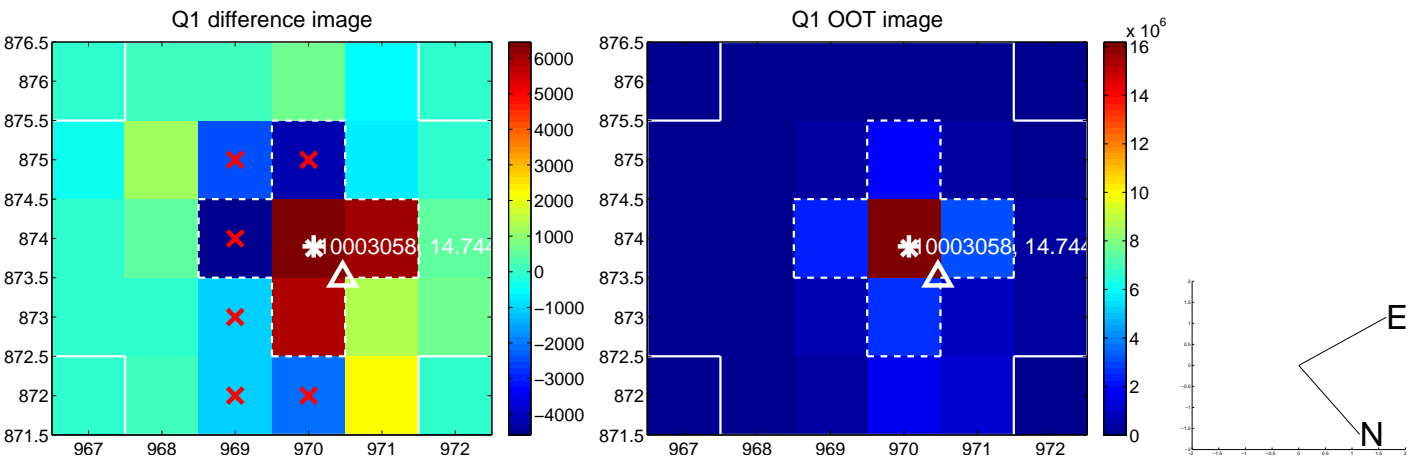
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.225 ± 0.602 | 0.37 | 0.219 ± 0.615 | -0.052 ± 0.293 |
| PRF-fit source offset from KIC position | 0.293 ± 0.576 | 0.51 | 0.275 ± 0.604 | -0.102 ± 0.297 |
| photometric centroid source offset | 1.53 ± 1.51 | 1.02 | -0.06 ± 1.43 | 1.53 ± 1.51 |

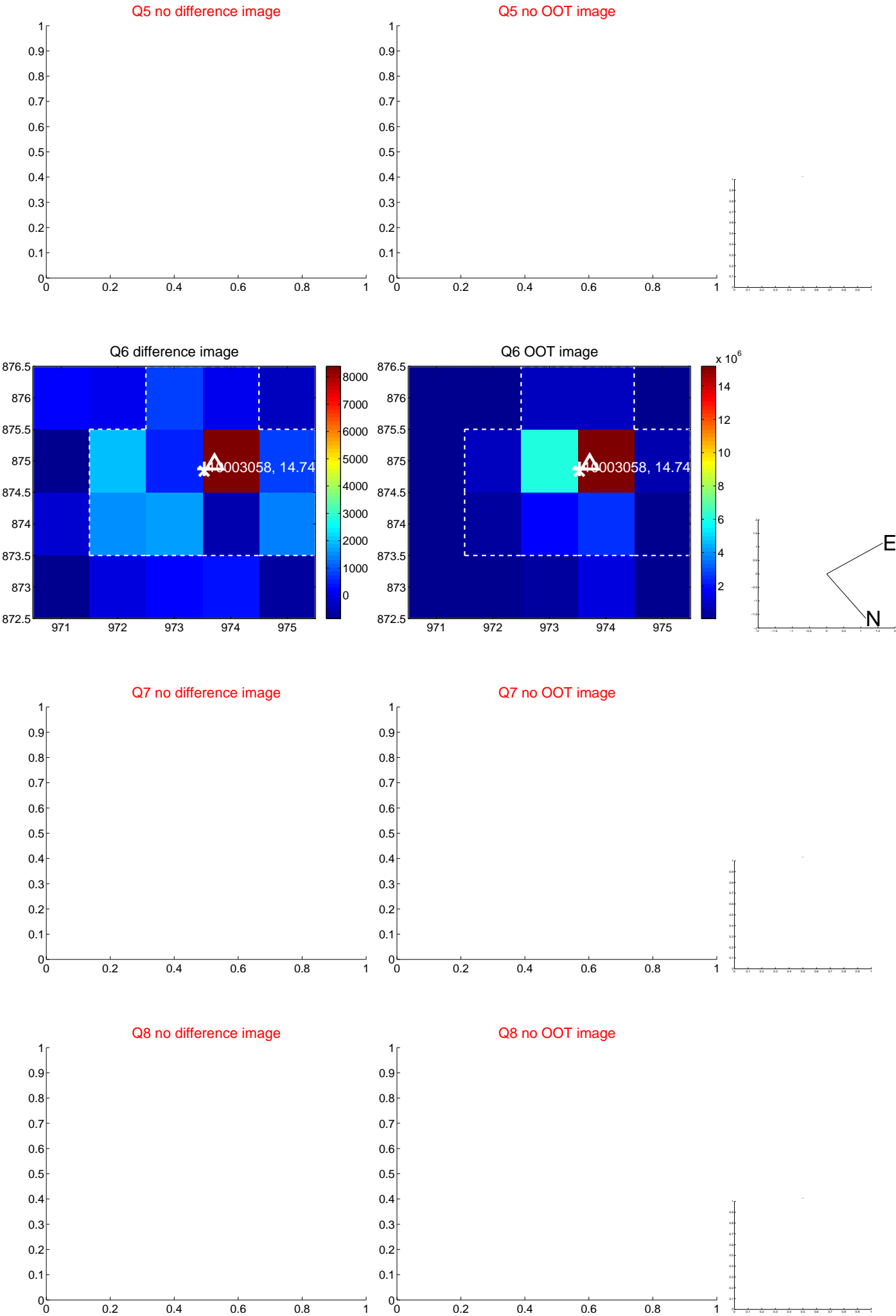


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

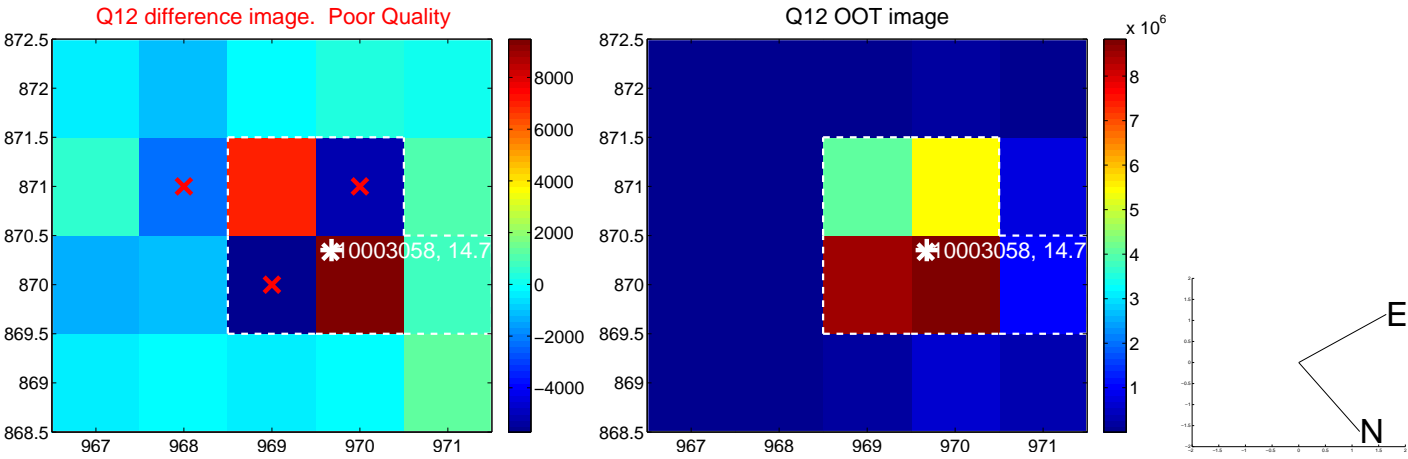
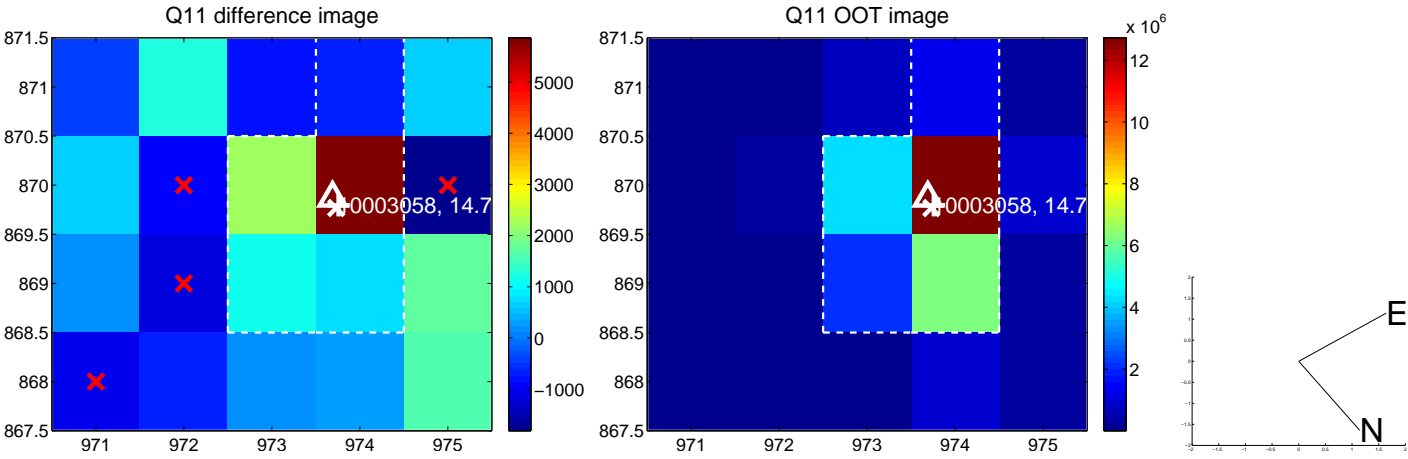
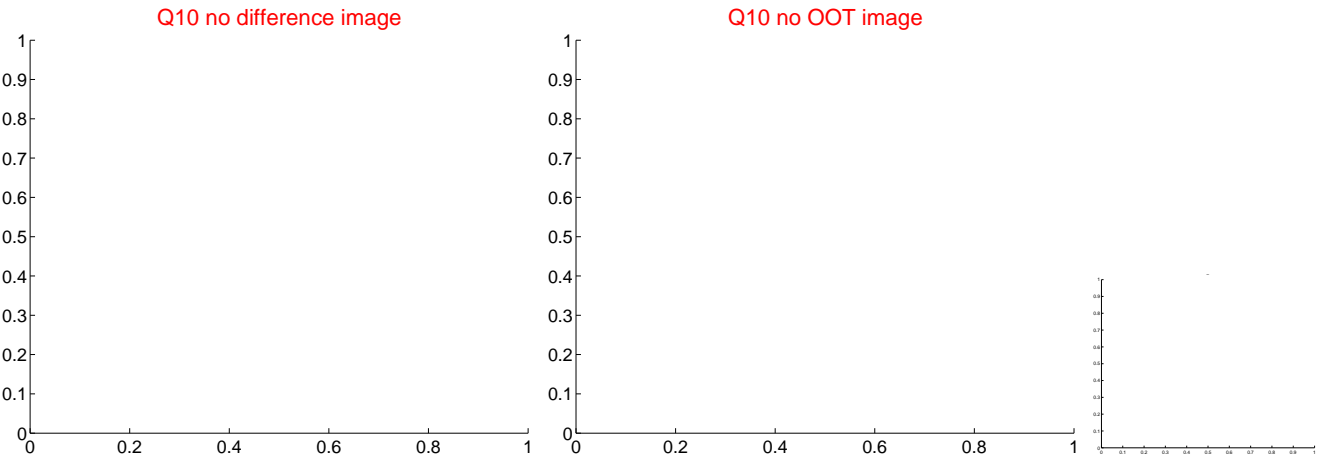
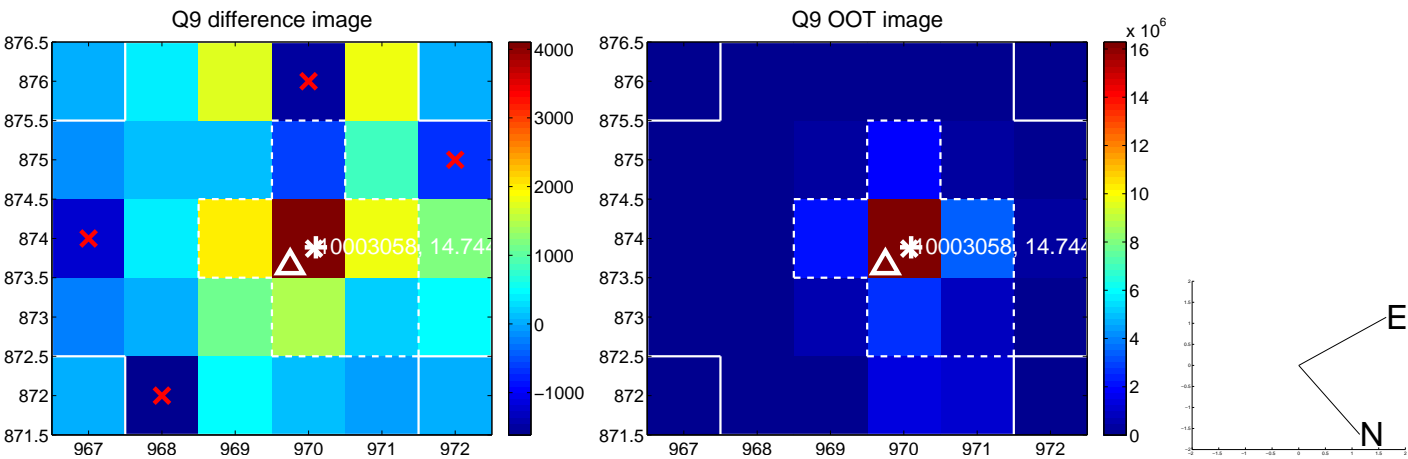
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



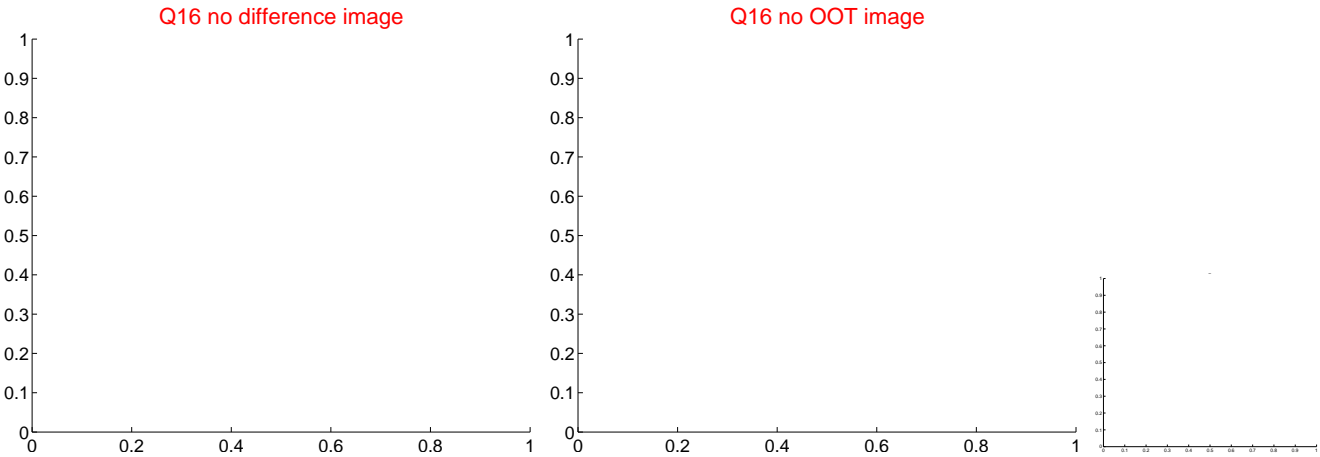
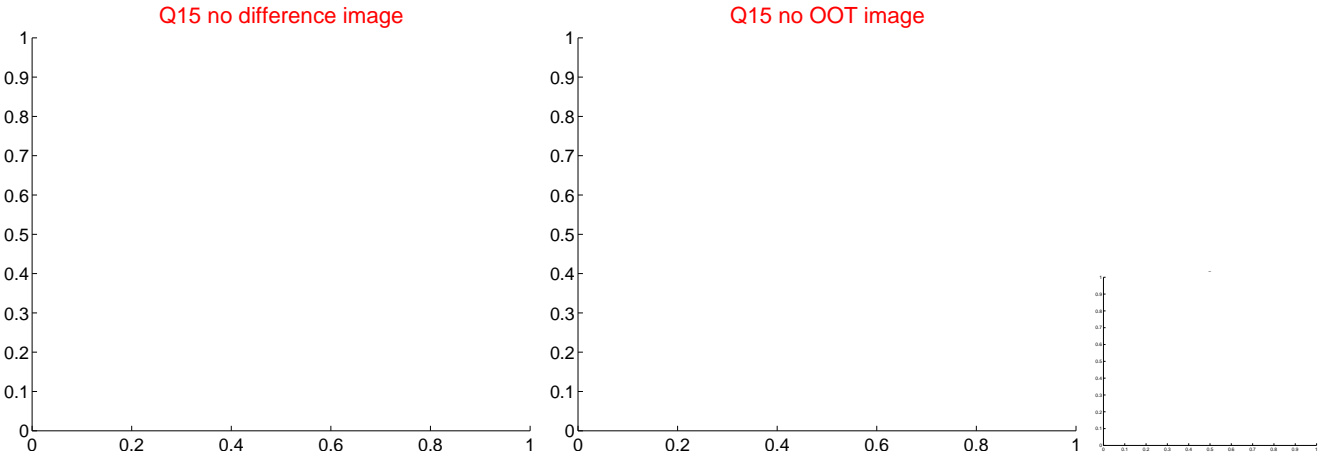
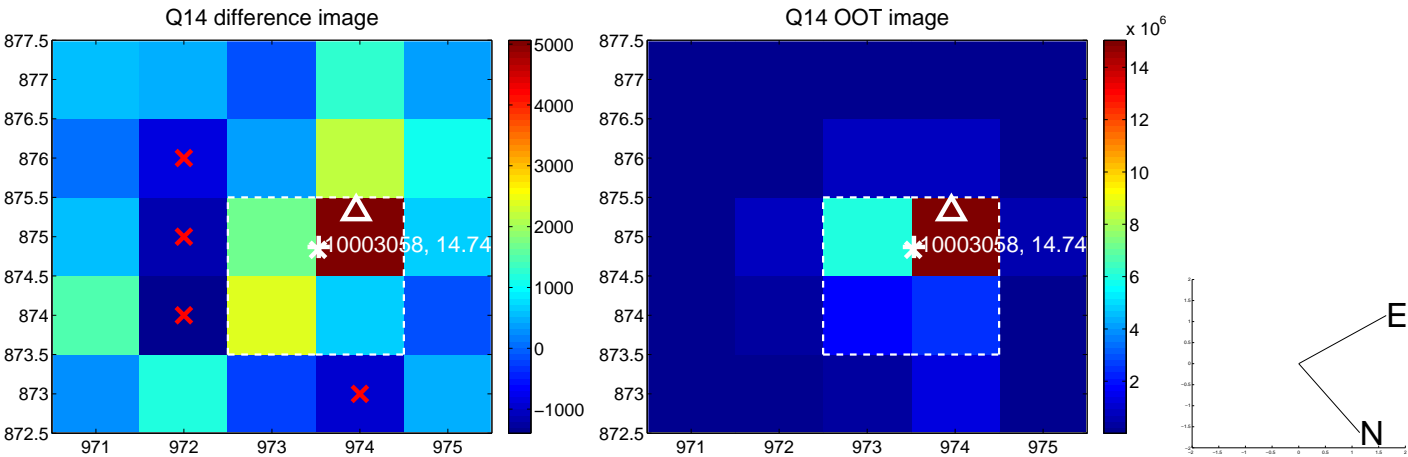
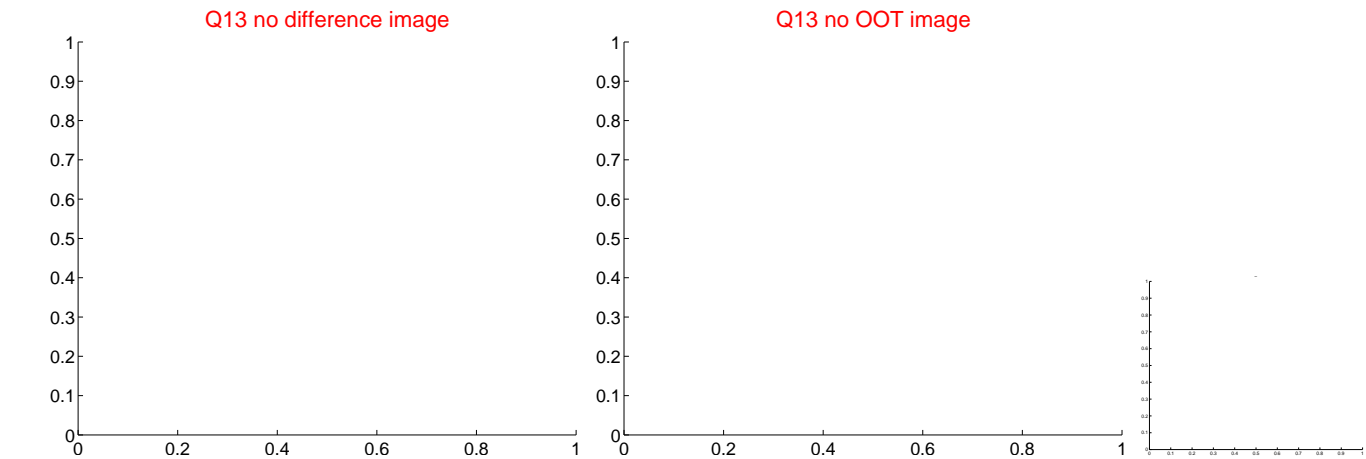
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



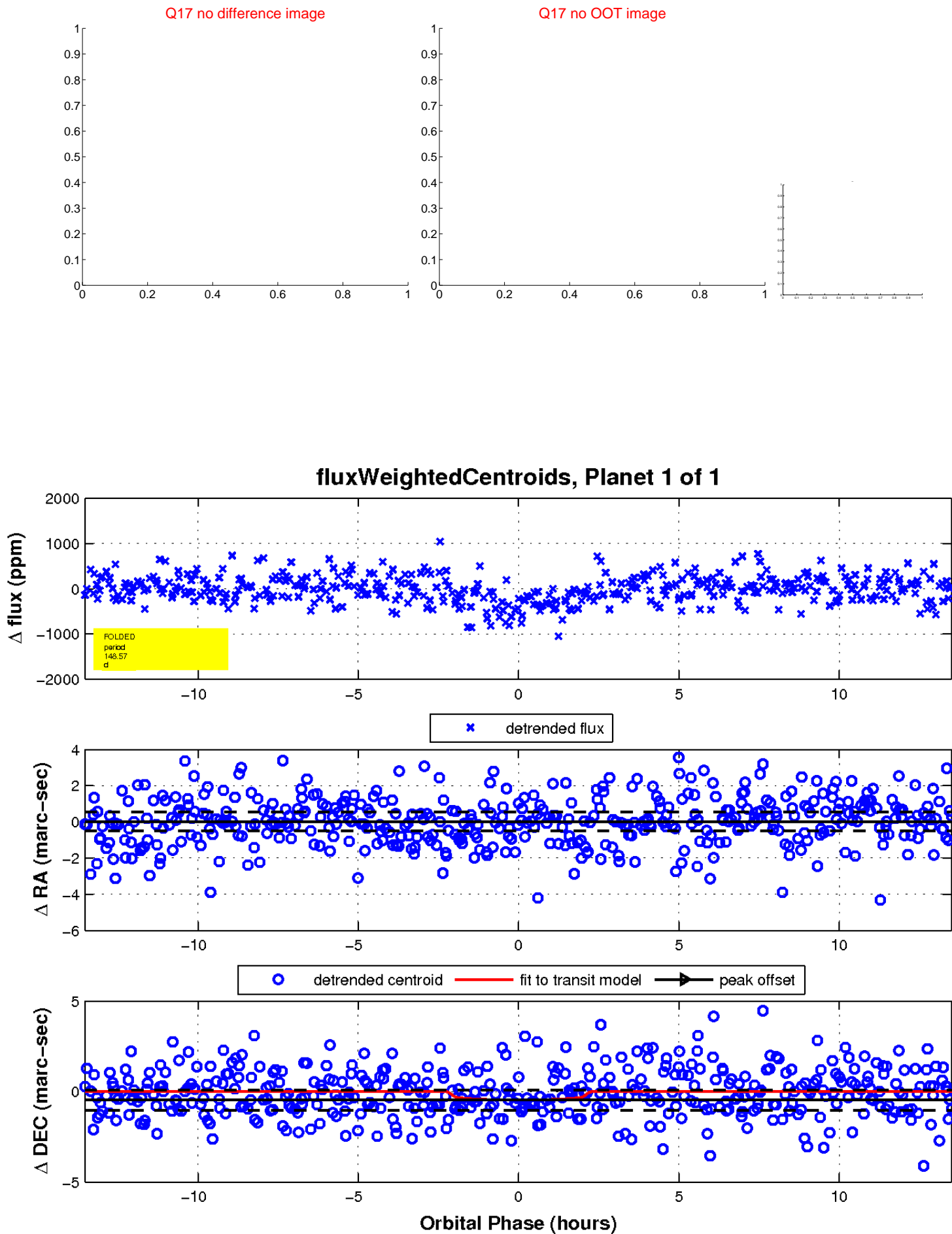
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination

