

KIC 003865567

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 003865567-01 | OBS | 1182.01 | 11.116198 | 133.100589 | 3969.7 | 4.340 | 153.3 | 100.9 | 1.00 | 6122 | 7.99 | 125.52 |
| 003865567-02 | OBS | No | 11.116171 | 140.842950 | 886.5 | 2.553 | 20.3 | 22.4 | 1.00 | 6122 | 4.64 | 125.52 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003865567-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST |
| 003865567-02 | OBS | FP | 0.00 | 1 | 1 | 1 | 0 | IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST |

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.

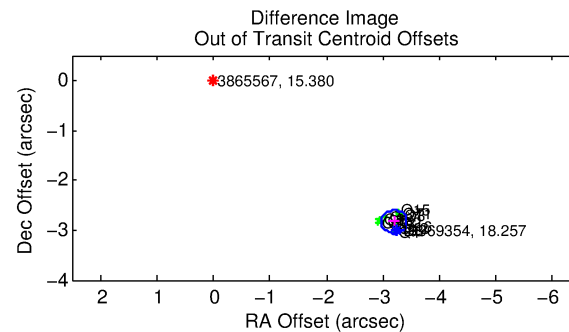
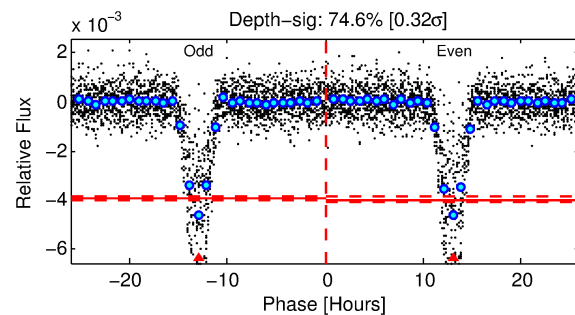
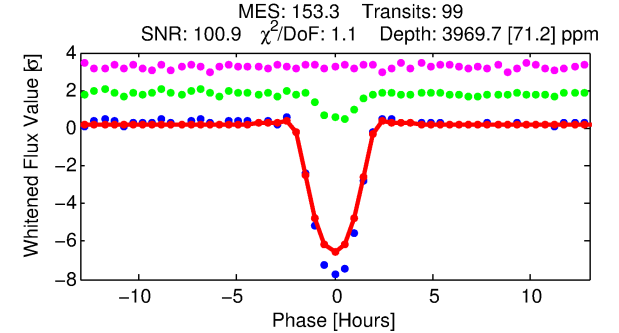
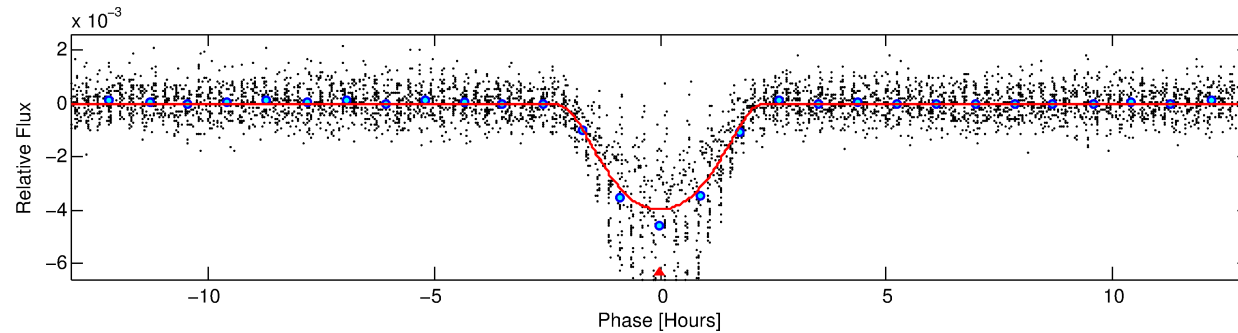
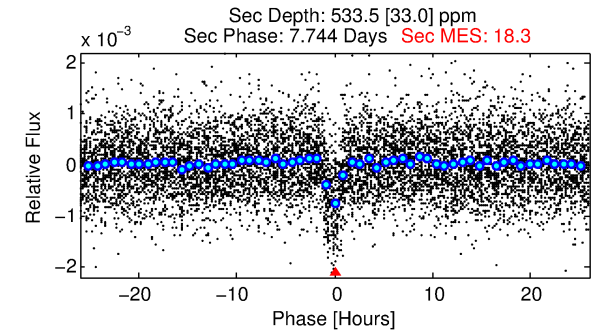
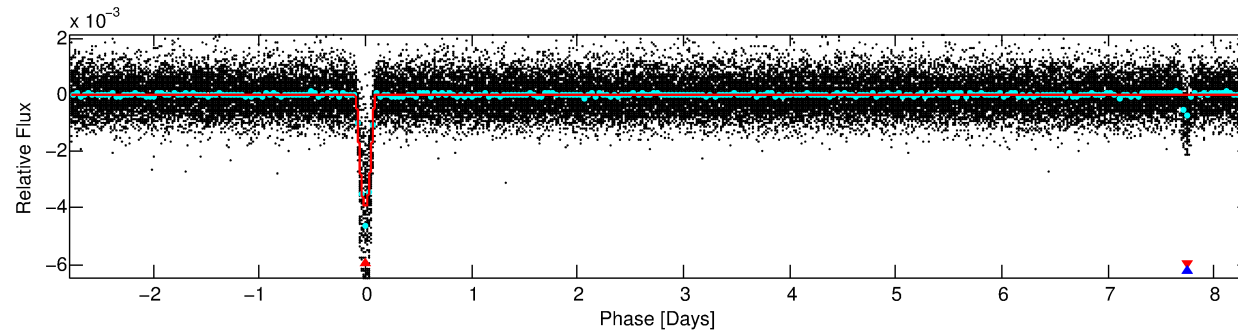
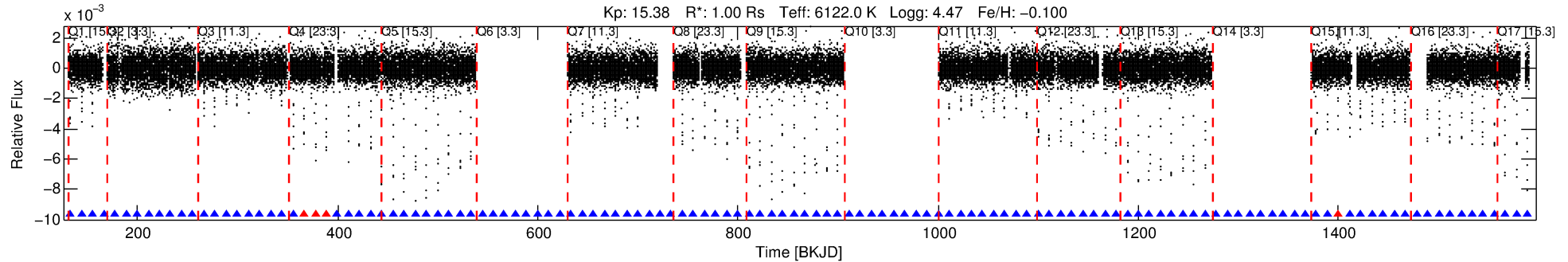
Ephemeris Match Information For 003865567-01

No Significant Match Found

DV One-Page Summary

KIC: 3865567 Candidate: 1 of 2 Period: 11.116 d
KOI: K01182 Corr: No Ephemeris Match

Kp: 15.38 R*: 1.00 Rs Teff: 6122.0 K Logg: 4.47 Fe/H: -0.100



DV Fit Results:

Period = 11.11620 [0.00001] d
Epoch = 133.1006 [0.0009] BKJD
Rp/R* = 0.0735 [0.0033]
a/R* = 10.21 [0.31]
b = 0.94 [0.01]
Seff = 125.52 [47.24]
Teq = 853 [80] K
Rp = 7.99 [2.24] Re
a = 0.0997 [0.0236] AU
Ag = 45.75 [16.67] [2.69σ]
Teffp = 3432 [154] K [14.82σ]

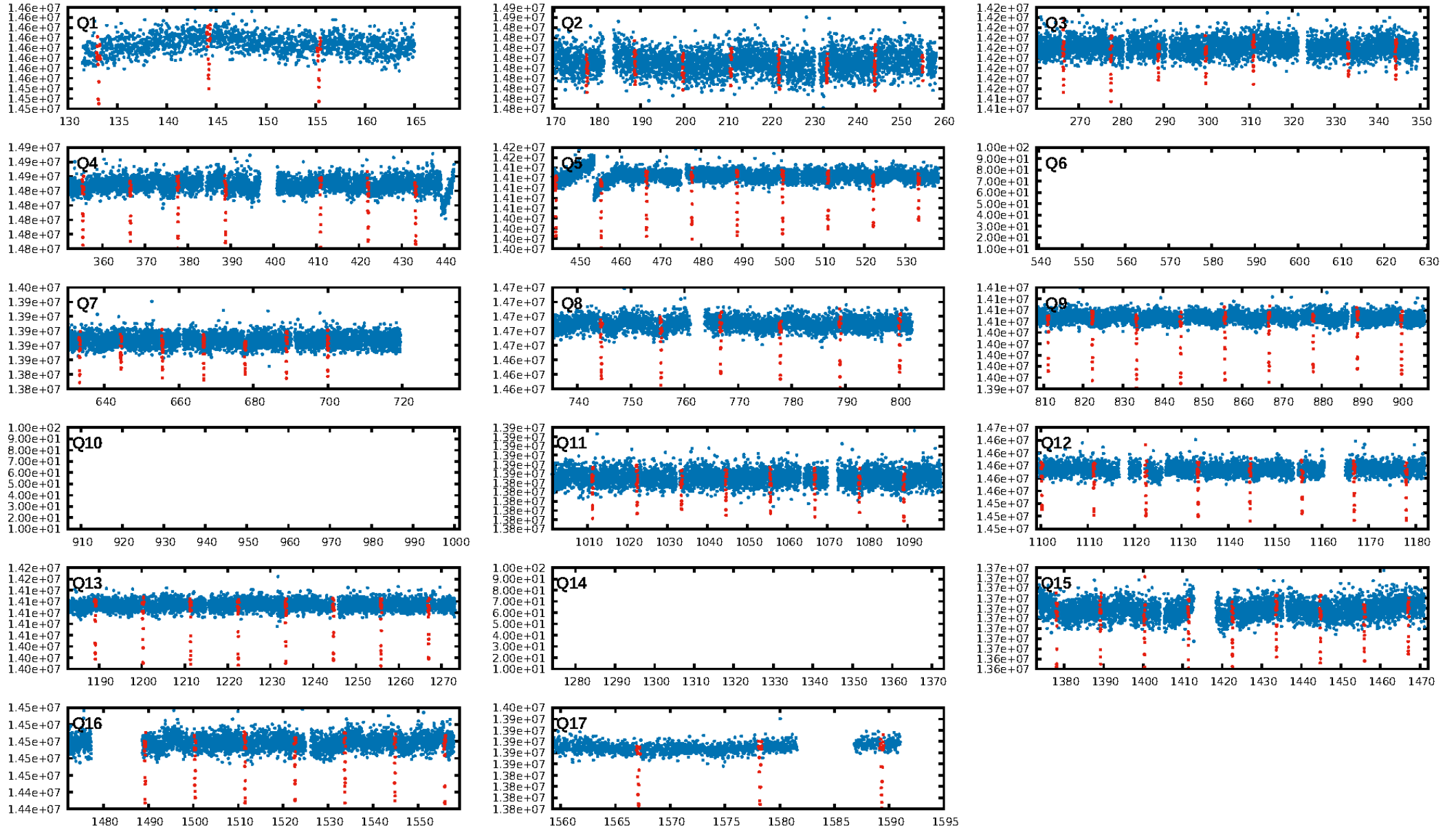
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.96 [89/93]
GhostDiagnostic-chr: 0.1011
Centroid-sig: 0.0%
Centroid-so: 10.649 arcsec [94.68σ]
OotOffset-rm: 4.270 arcsec [55.75σ]
KicOffset-rm: 4.476 arcsec [62.59σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

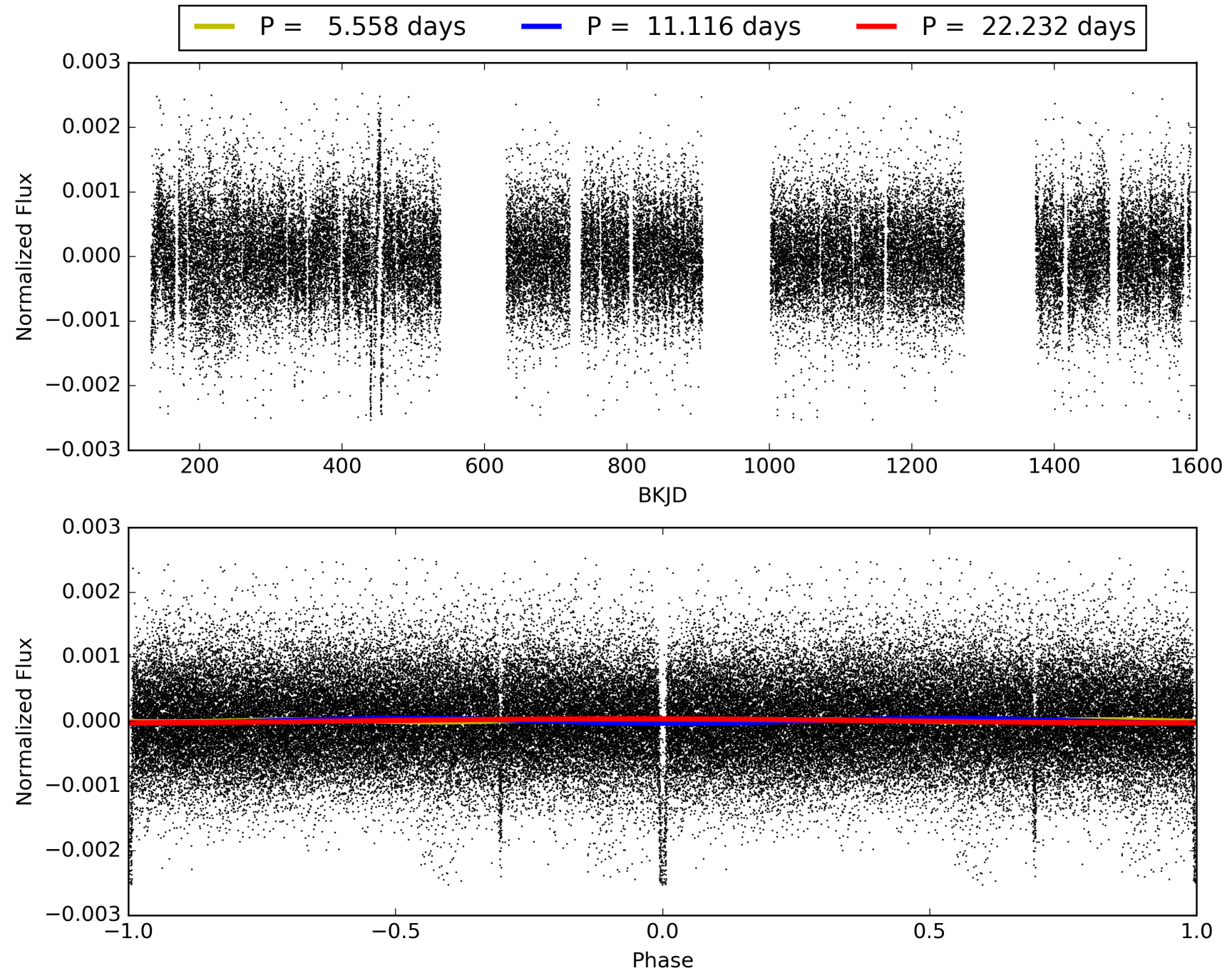
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:51:17 Z

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

TCE 003865567-01, PDC Light Curves

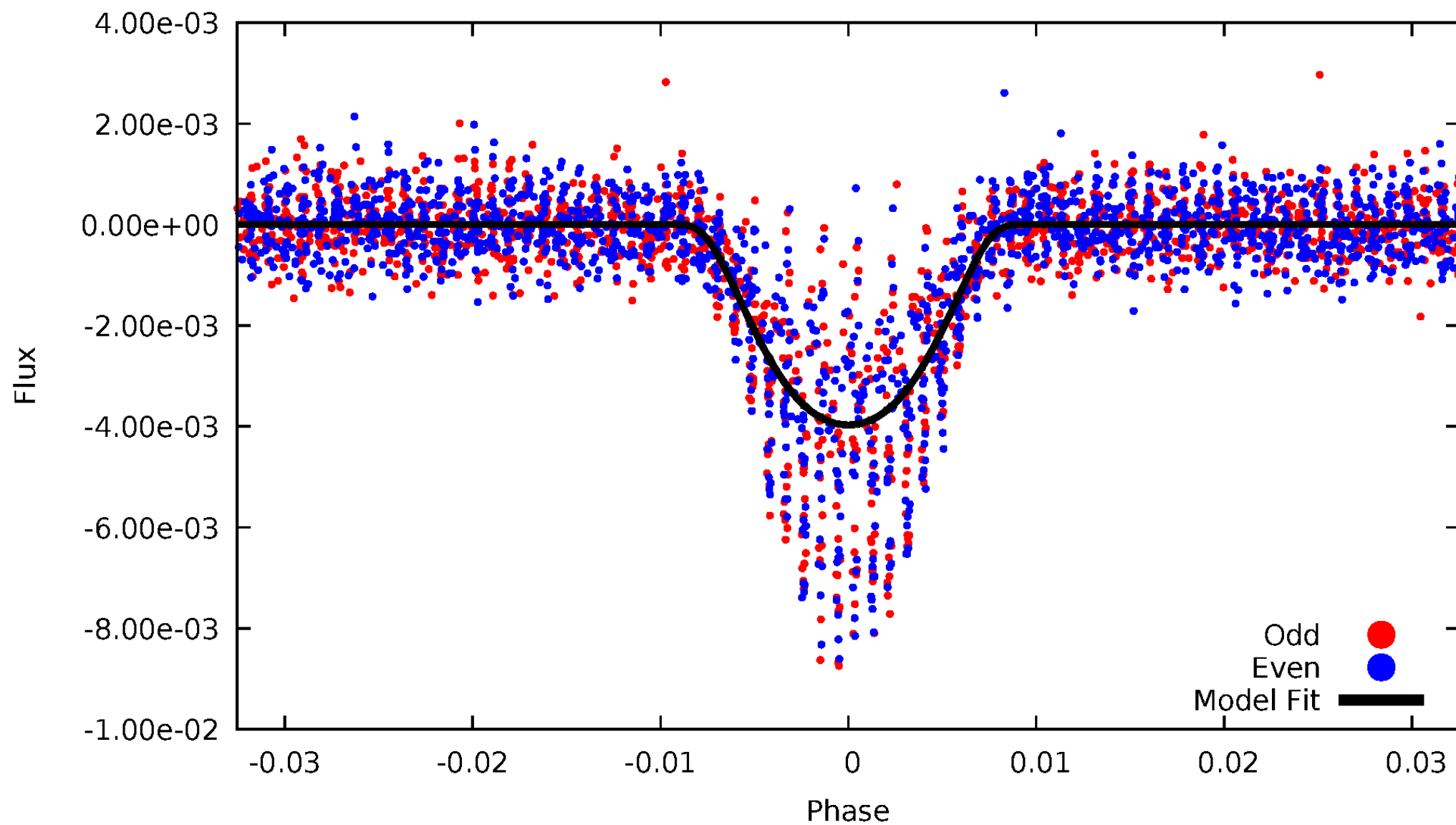


TCE 003865567-01



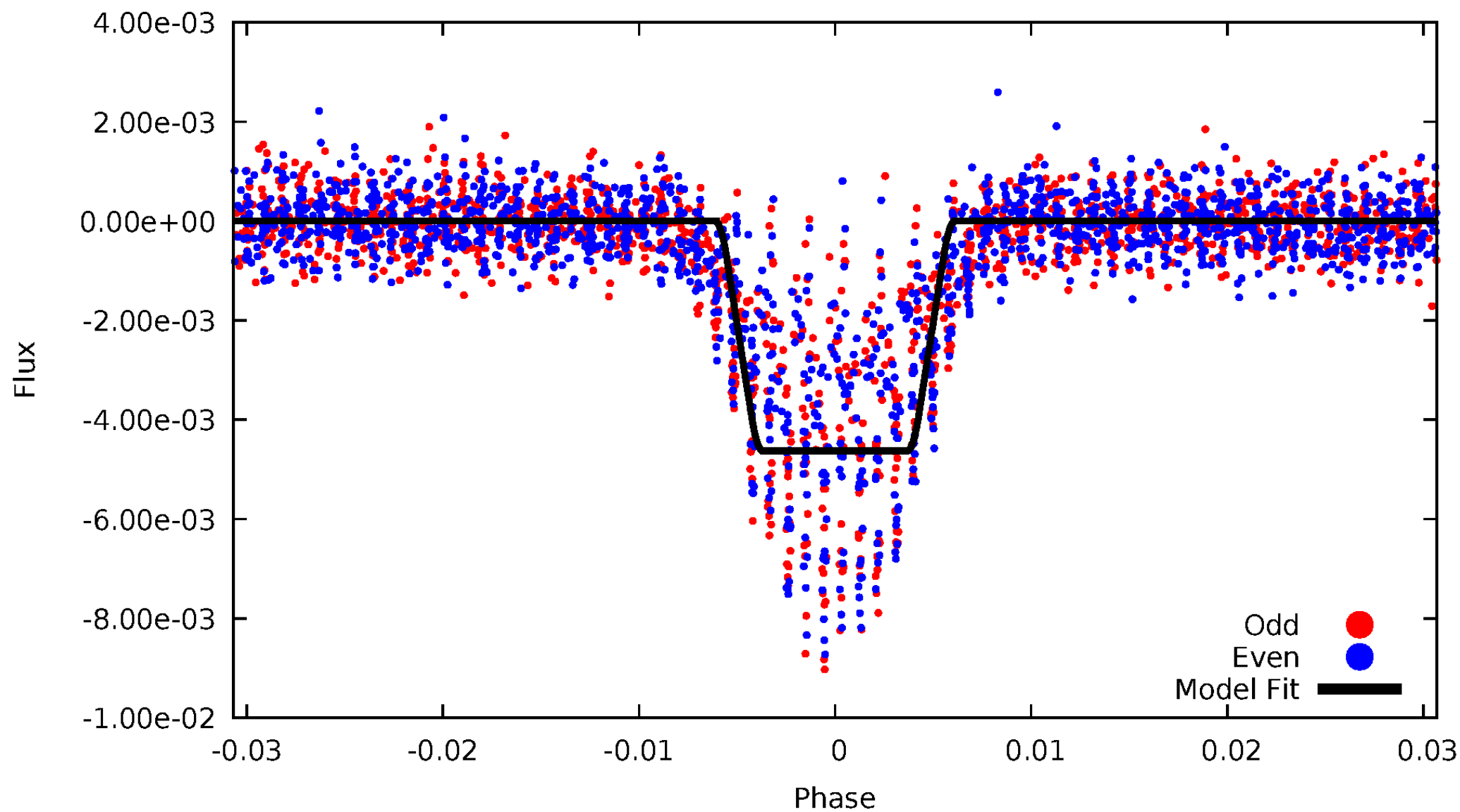
DV Odd/Even

TCE 003865567-01



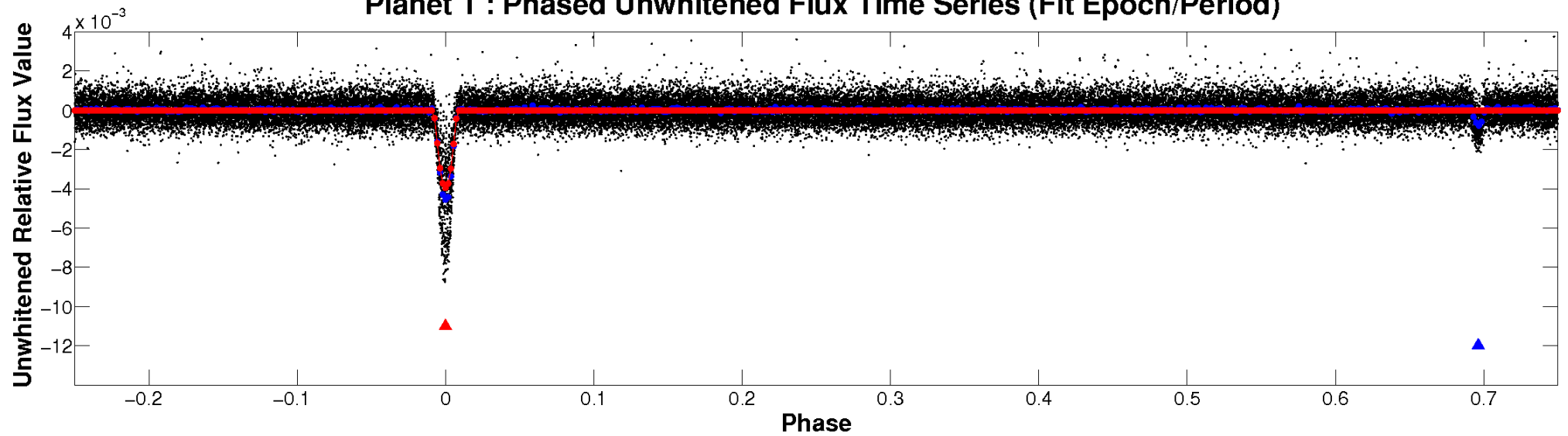
ALT Odd/Even

TCE 003865567-01

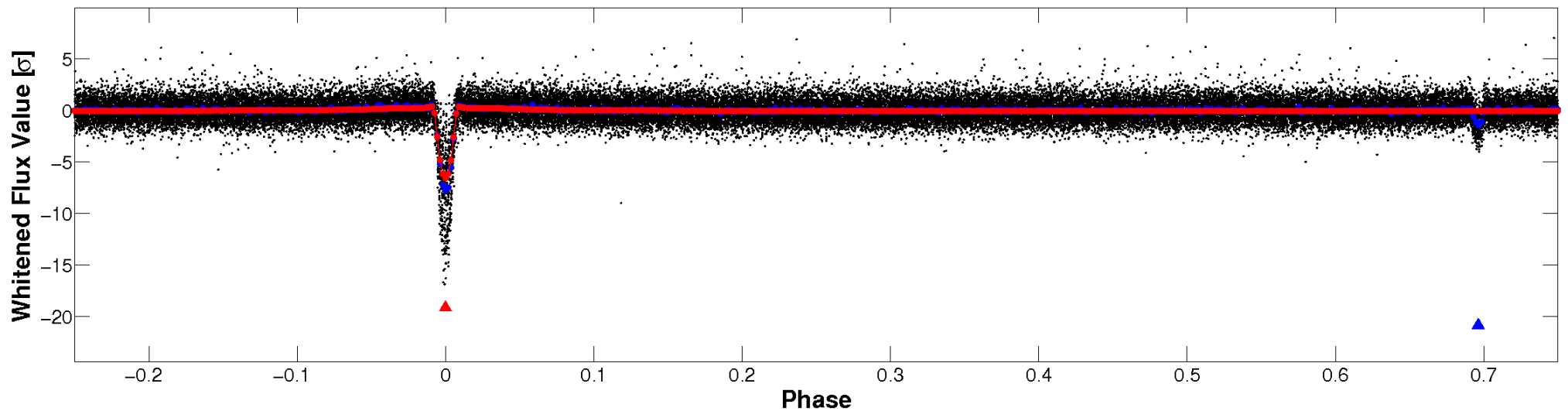


Non-Whitened Vs. Whitened Light Curve

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

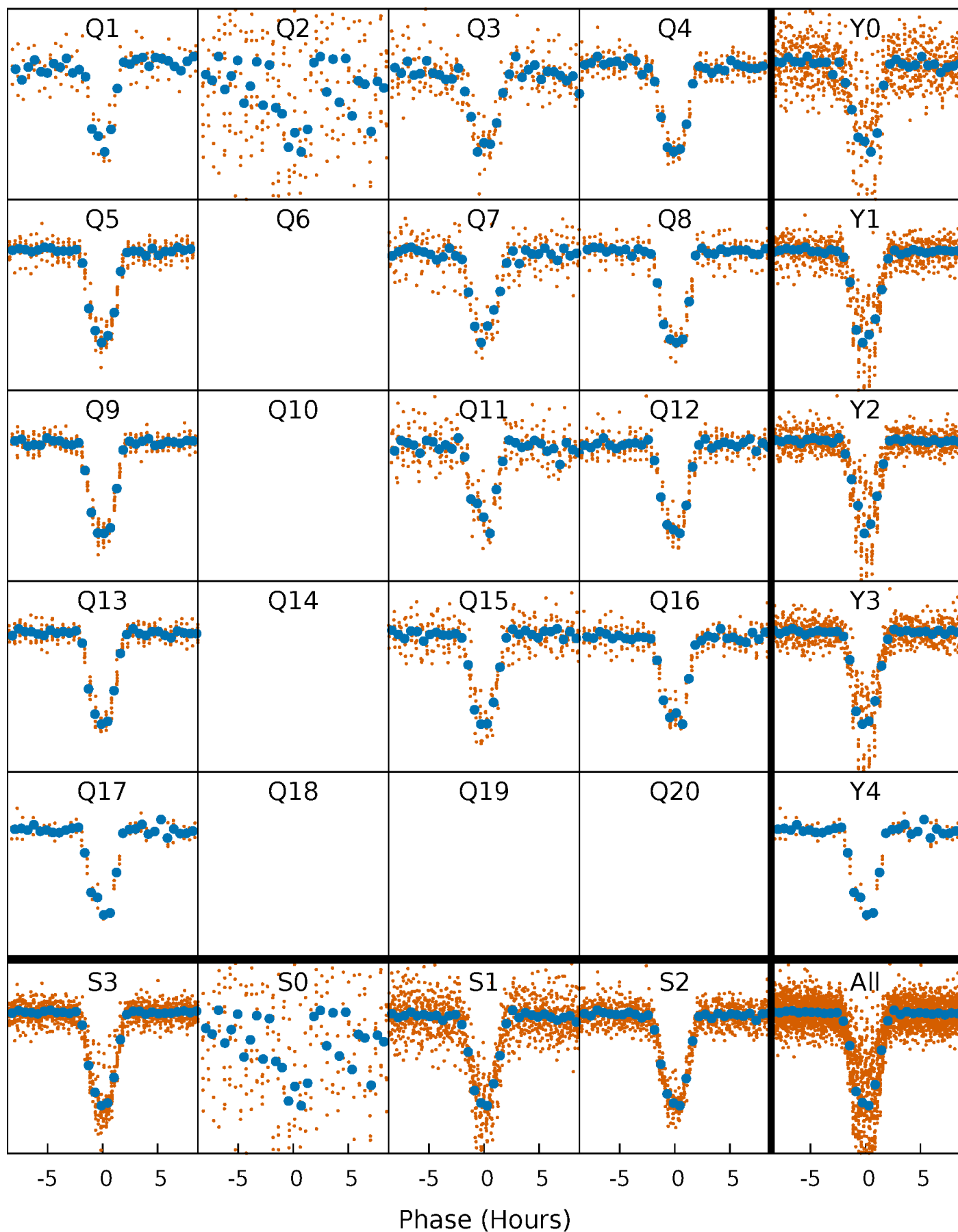


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



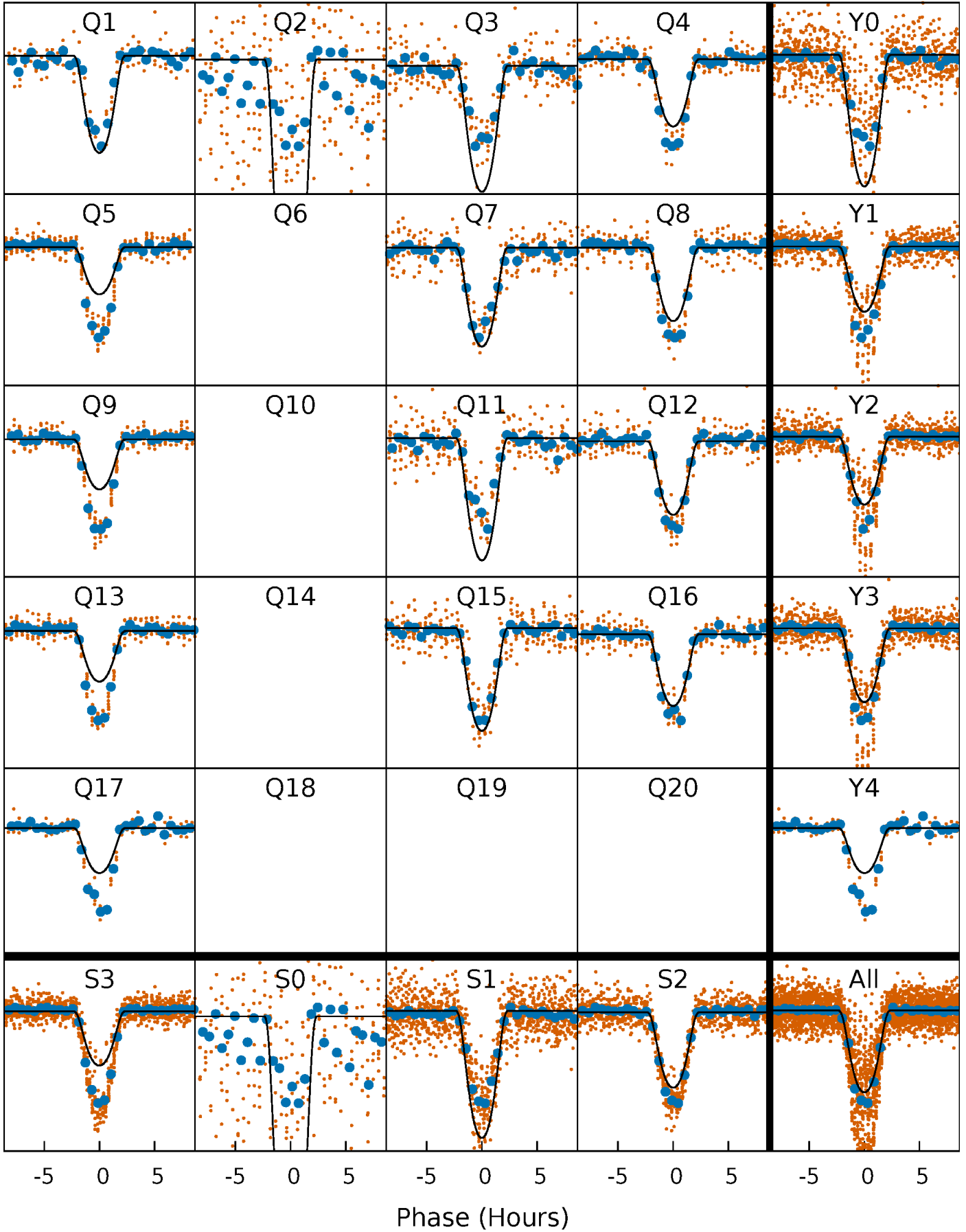
PDC Quarter-Phased Transit Curves

TCE 003865567-01 P= 11.116198 Days $T_0=133.100589$ (BKJD)



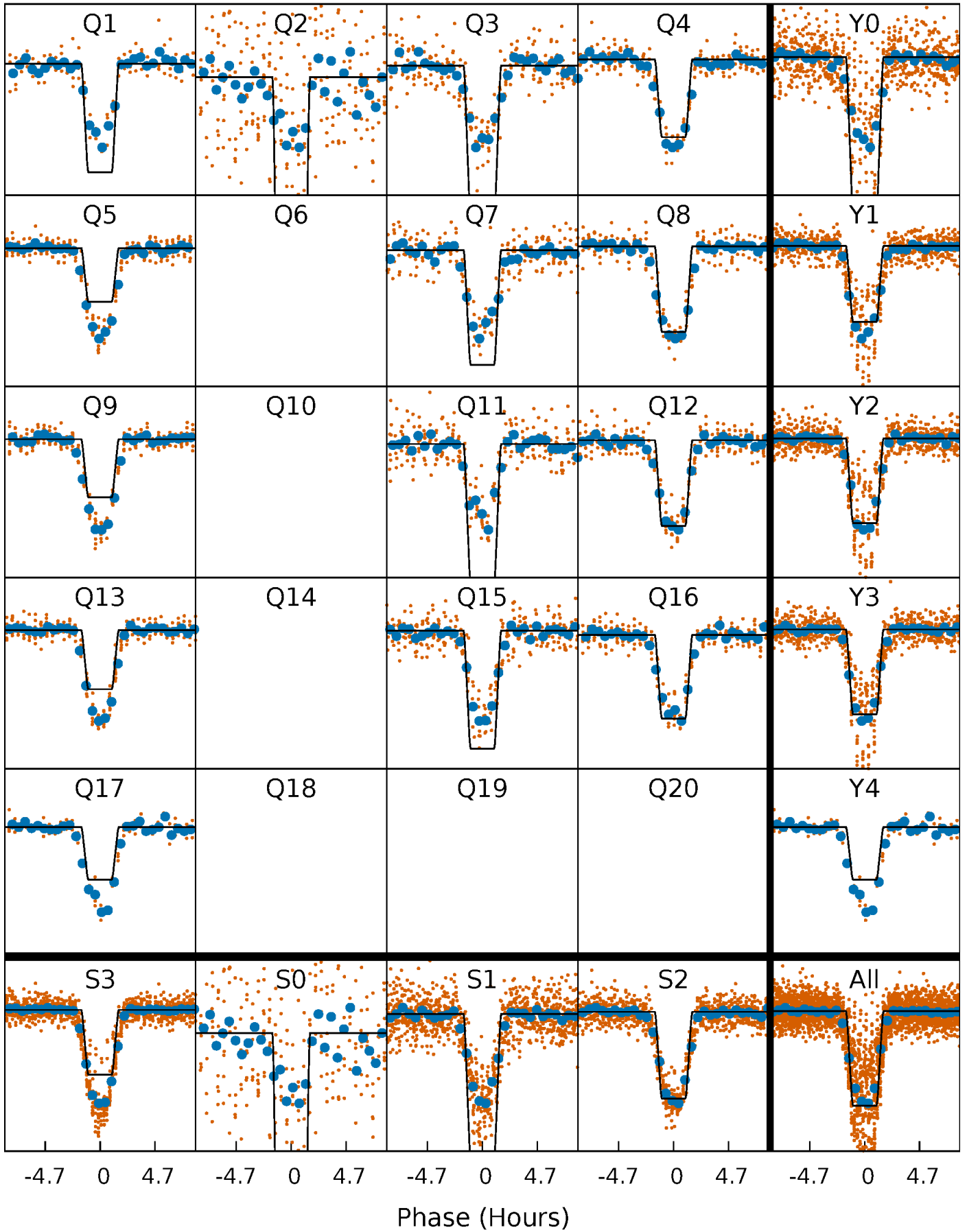
DV Quarter-Phased Transit Curves

TCE 003865567-01 P= 11.116198 Days $T_0=133.100589$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

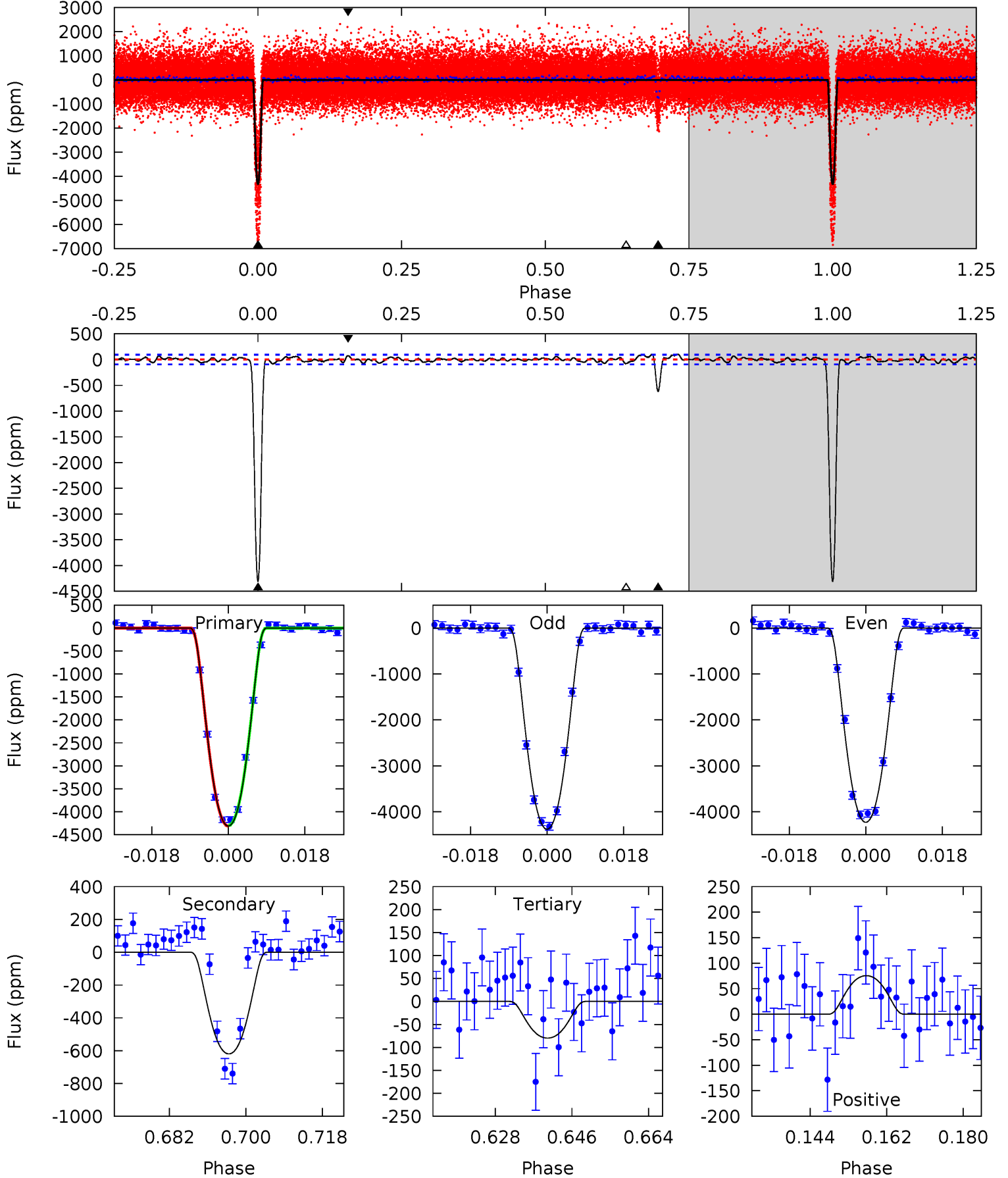
TCE 003865567-01 P= 11.116196 Days $T_0=133.100879$ (BKJD)



DV Model-Shift Uniqueness Test

003865567-01, P = 11.116198 Days, E = 121.984391 Days

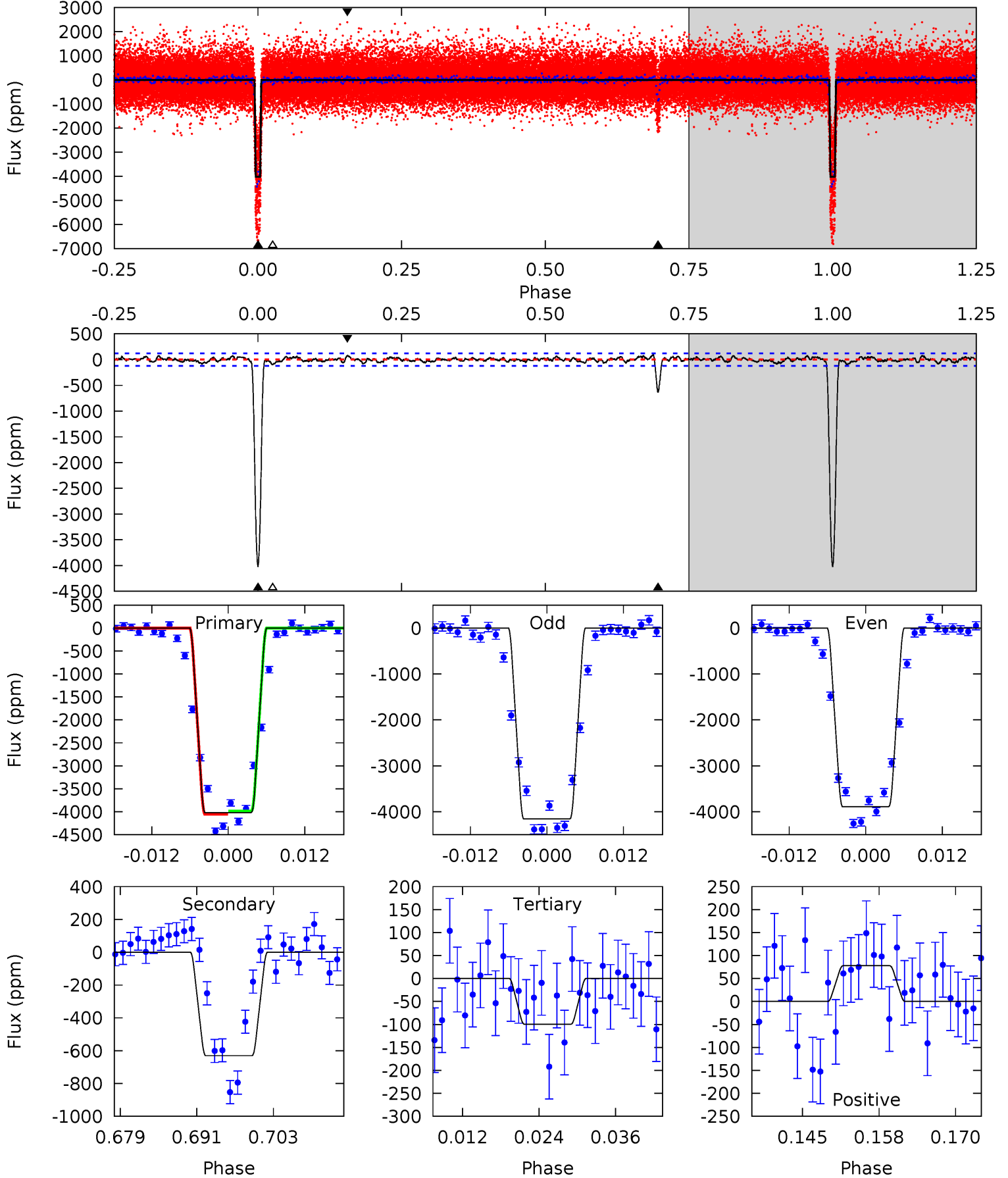
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 225.8 | 32.5 | 4.18 | 3.95 | 4.91 | 2.37 | 1.72 | 221.6 | 221.9 | 28.3 | 28.5 | 3.93 | 0.99 | 0.02 | 0 |



Alt Model-Shift Uniqueness Test

003865567-01, P = 11.116196 Days, E = 121.984683 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 165.1 | 25.9 | 4.09 | 3.20 | 4.99 | 2.51 | 1.26 | 161.0 | 161.9 | 21.8 | 22.7 | 5.46 | 0.99 | 0.02 | 0 |



Stellar Parameters For KIC 003865567

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6122^{+183}_{-220} | $4.471^{+0.048}_{-0.192}$ | $-0.100^{+0.250}_{-0.300}$ | $0.996^{+0.276}_{-0.118}$ | $1.070^{+0.137}_{-0.137}$ | $1.526^{+0.391}_{-0.754}$ |
| | +3%/-4% | +1%/-4% | +250%/-300% | +28%/-12% | +13%/-13% | +26%/-49% |
| 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 003865567-01 / KOI 1182.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|--------------------|----------------------|------------------|
| DV | -620 ± 19 | $8.33^{+1.29}_{-0.85}$ | 1220^{+87}_{-65} | 3907^{+101}_{-113} | 49^{+10}_{-12} |
| Alt. | -631 ± 24 | $7.72^{+1.25}_{-0.78}$ | 1225^{+78}_{-61} | 4031^{+118}_{-130} | 57^{+12}_{-13} |

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 $A_{obs} \gg 1.0$

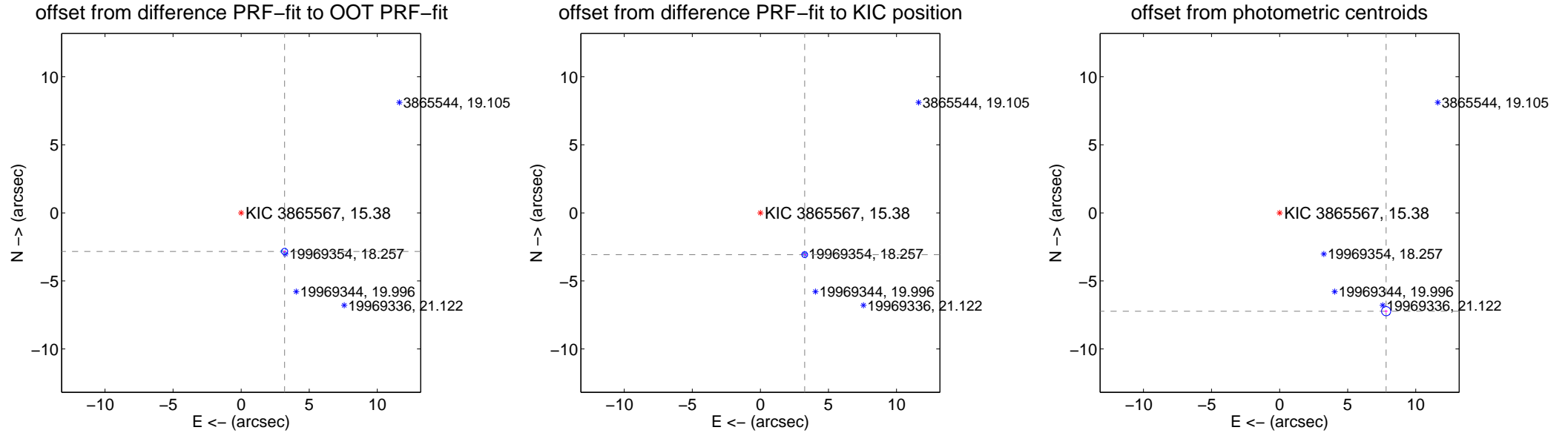
DV Centroid Data

Supplemental centroid analysis for 003865567-01. Kepler magnitude: 15.38. Transit SNR 100.86

There are 14 quarters with good PRF difference image offsets

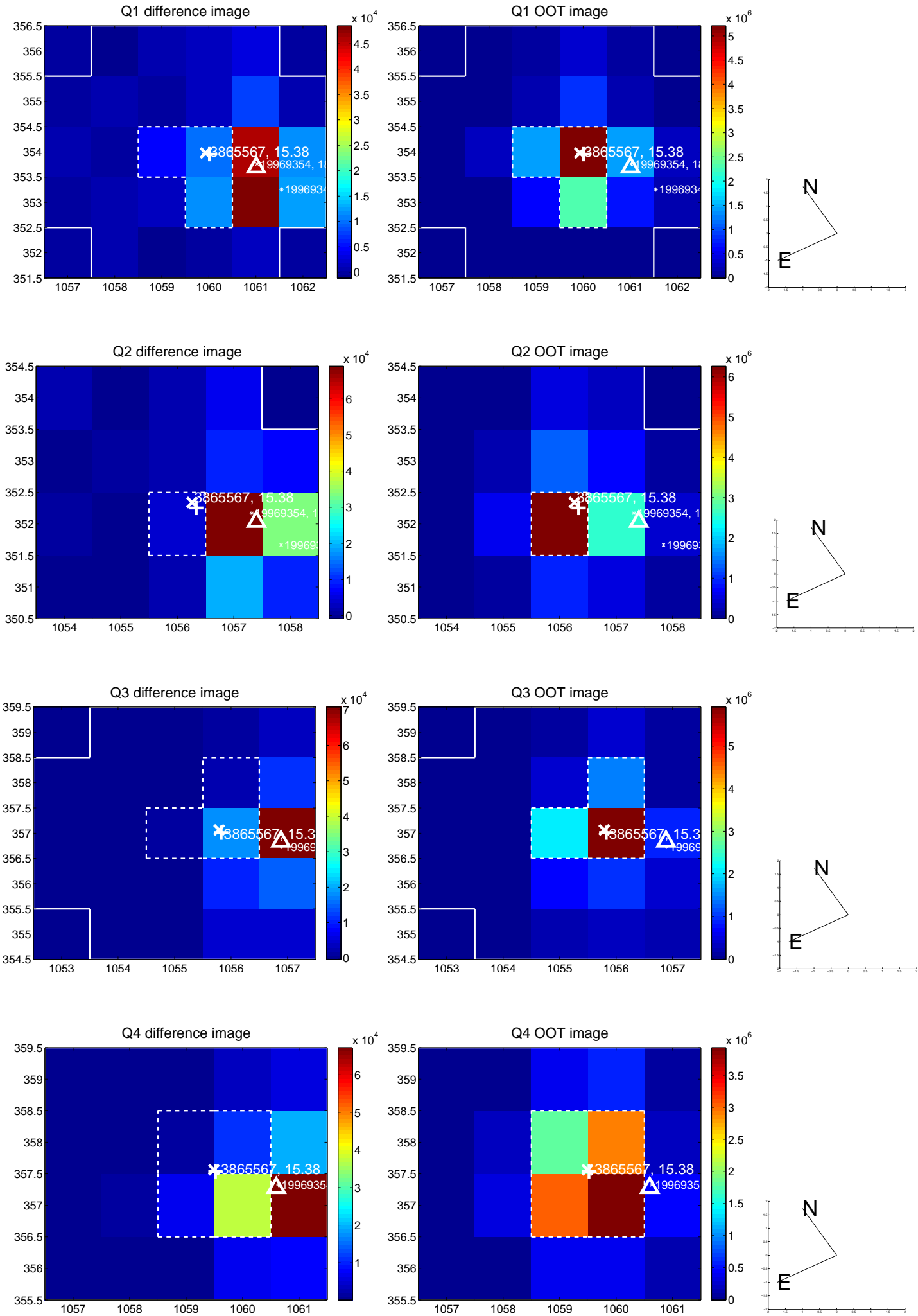
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 4.270 \pm 0.077 | 55.75 | -3.192 \pm 0.077 | -2.835 \pm 0.075 |
| PRF-fit source offset from KIC position | 4.476 \pm 0.072 | 62.59 | -3.255 \pm 0.069 | -3.073 \pm 0.075 |
| photometric centroid source offset | 10.65 \pm 0.11 | 94.68 | -7.82 \pm 0.11 | -7.22 \pm 0.11 |

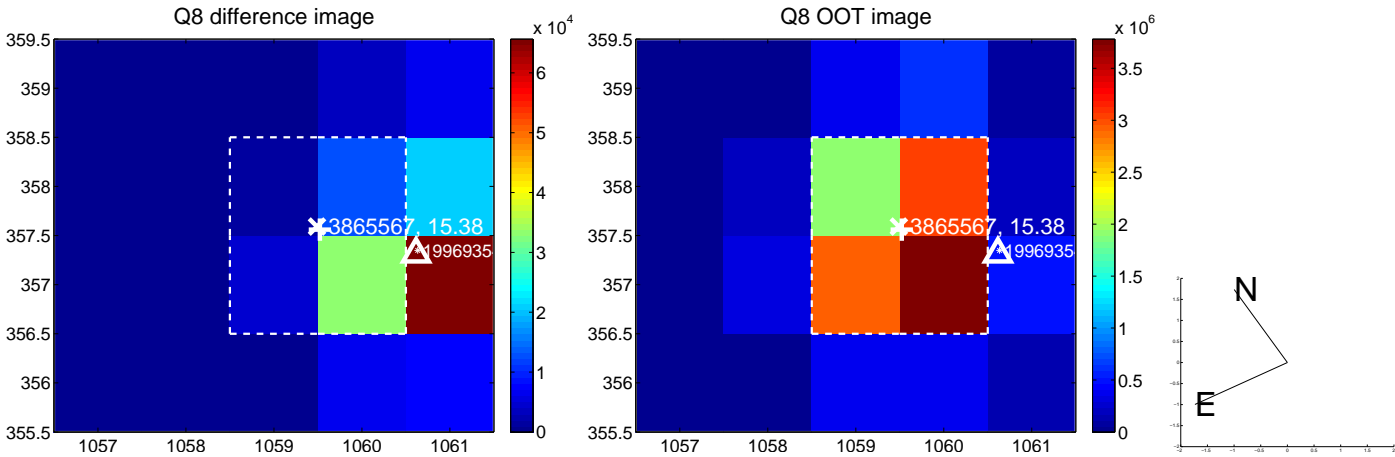
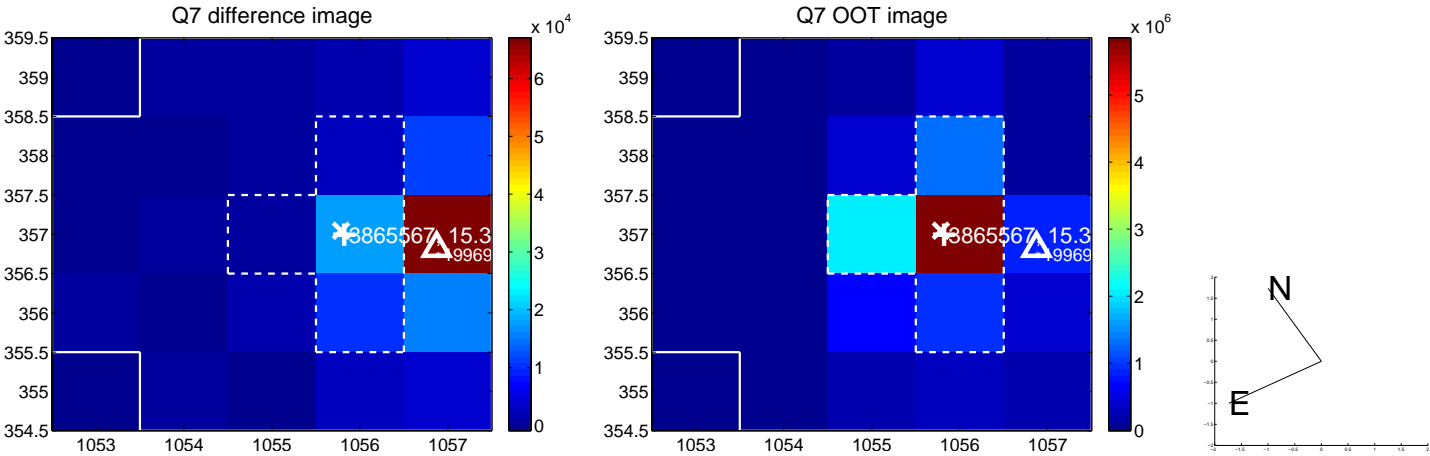
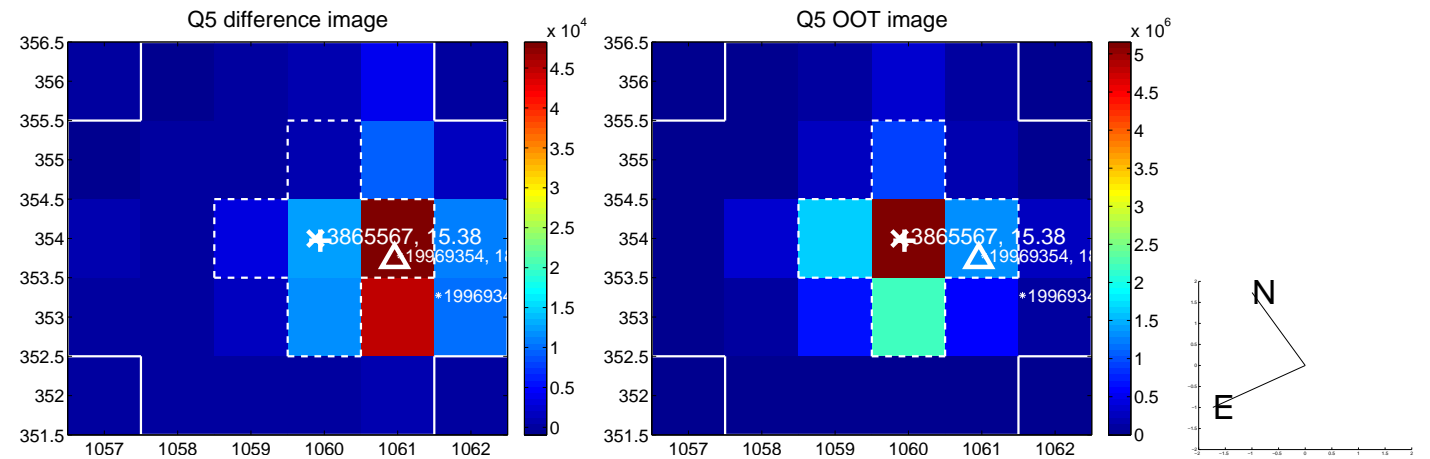


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

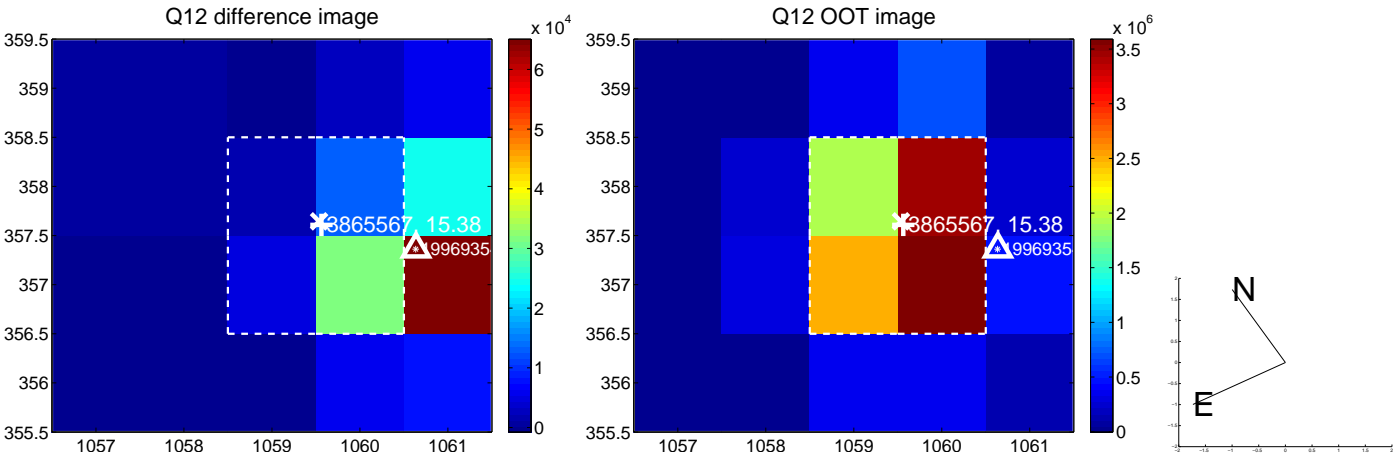
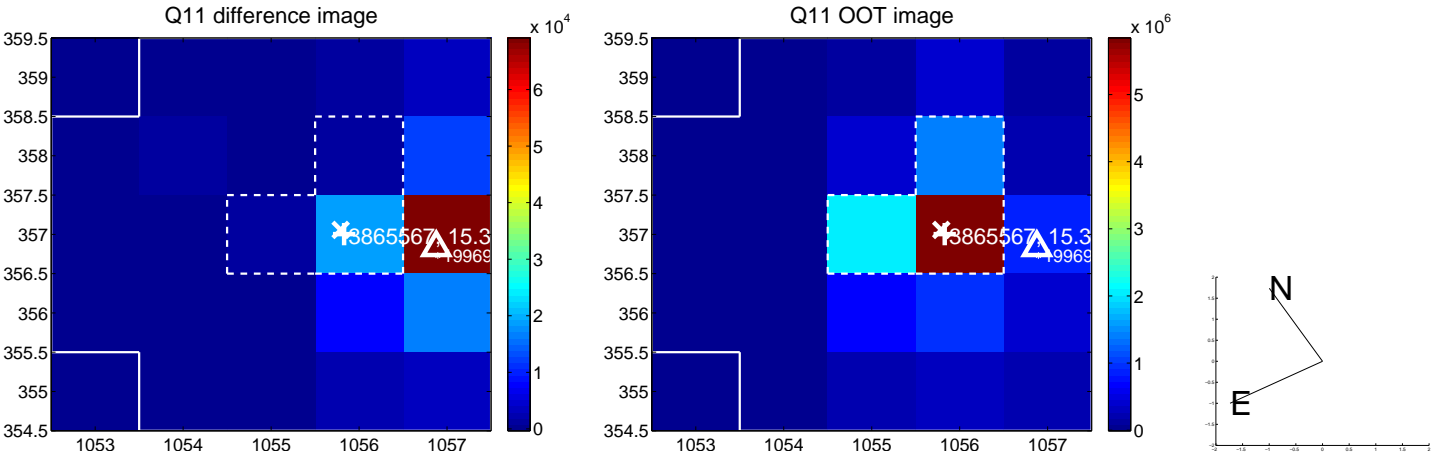
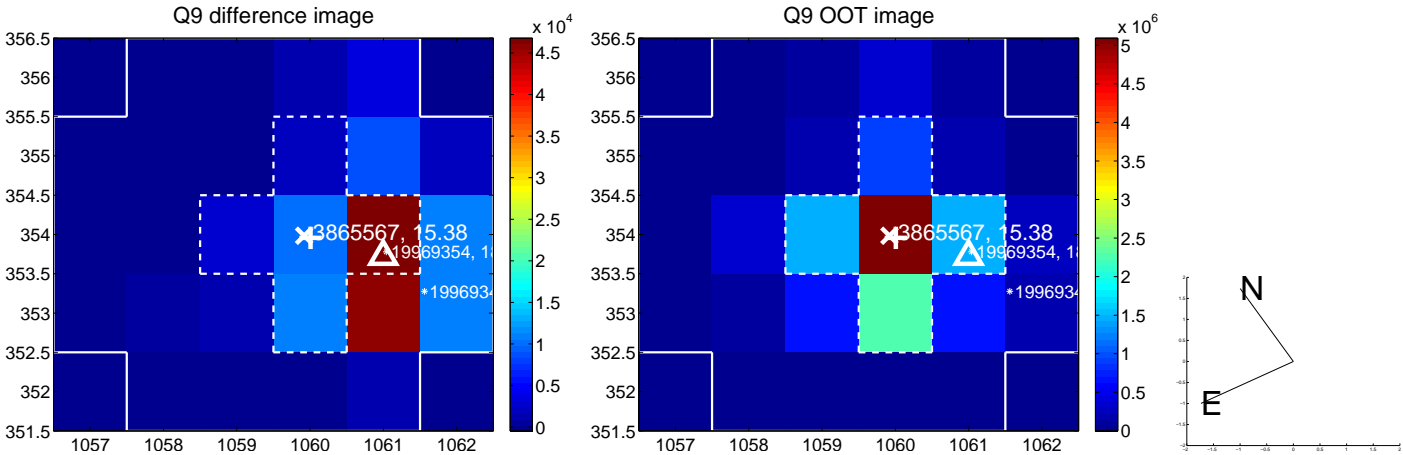
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



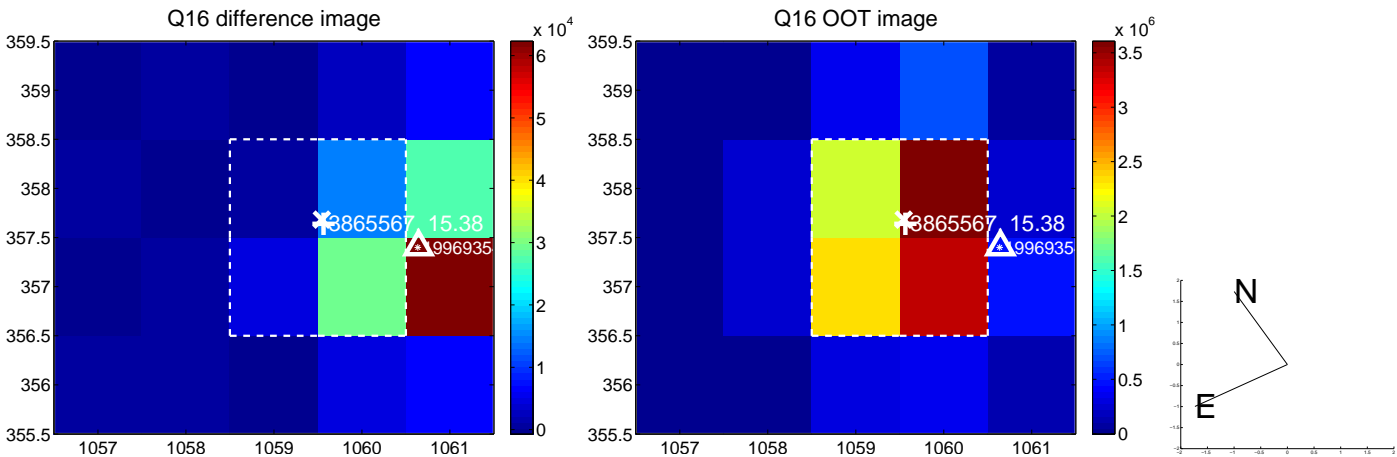
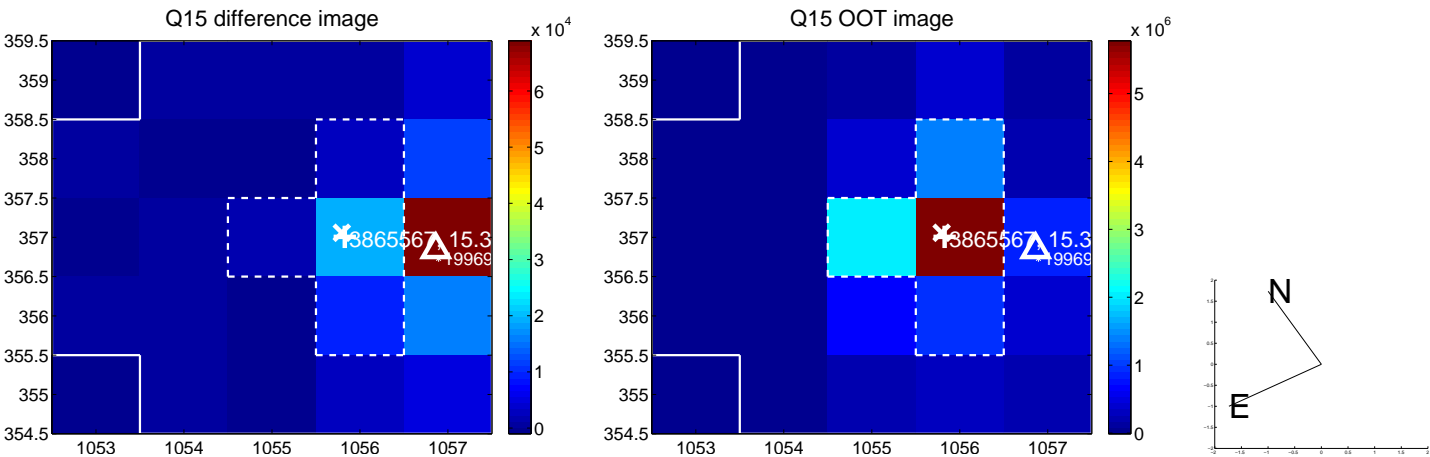
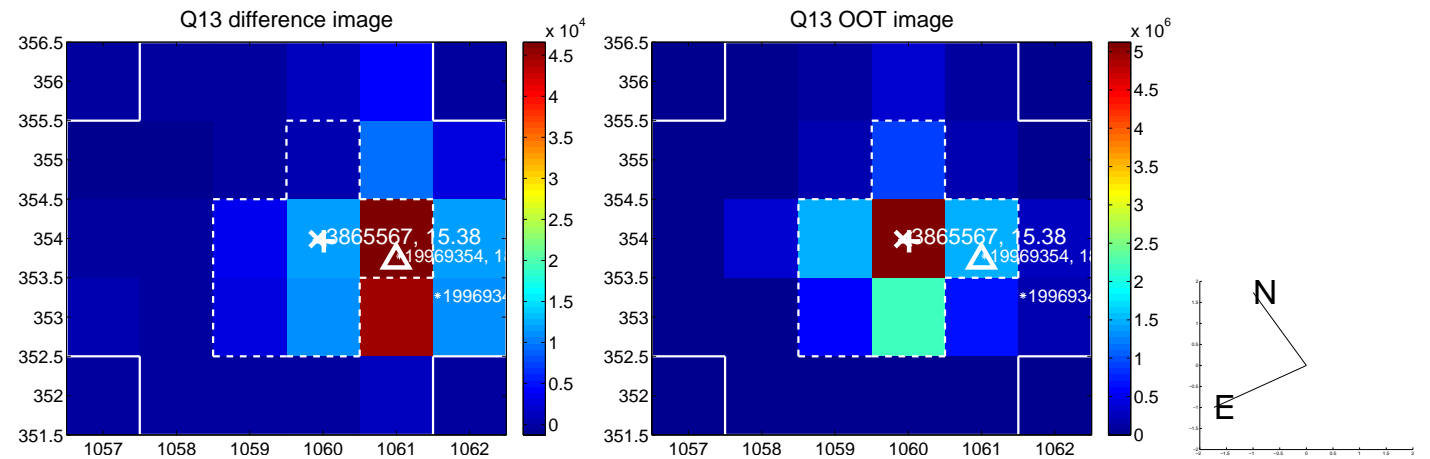
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



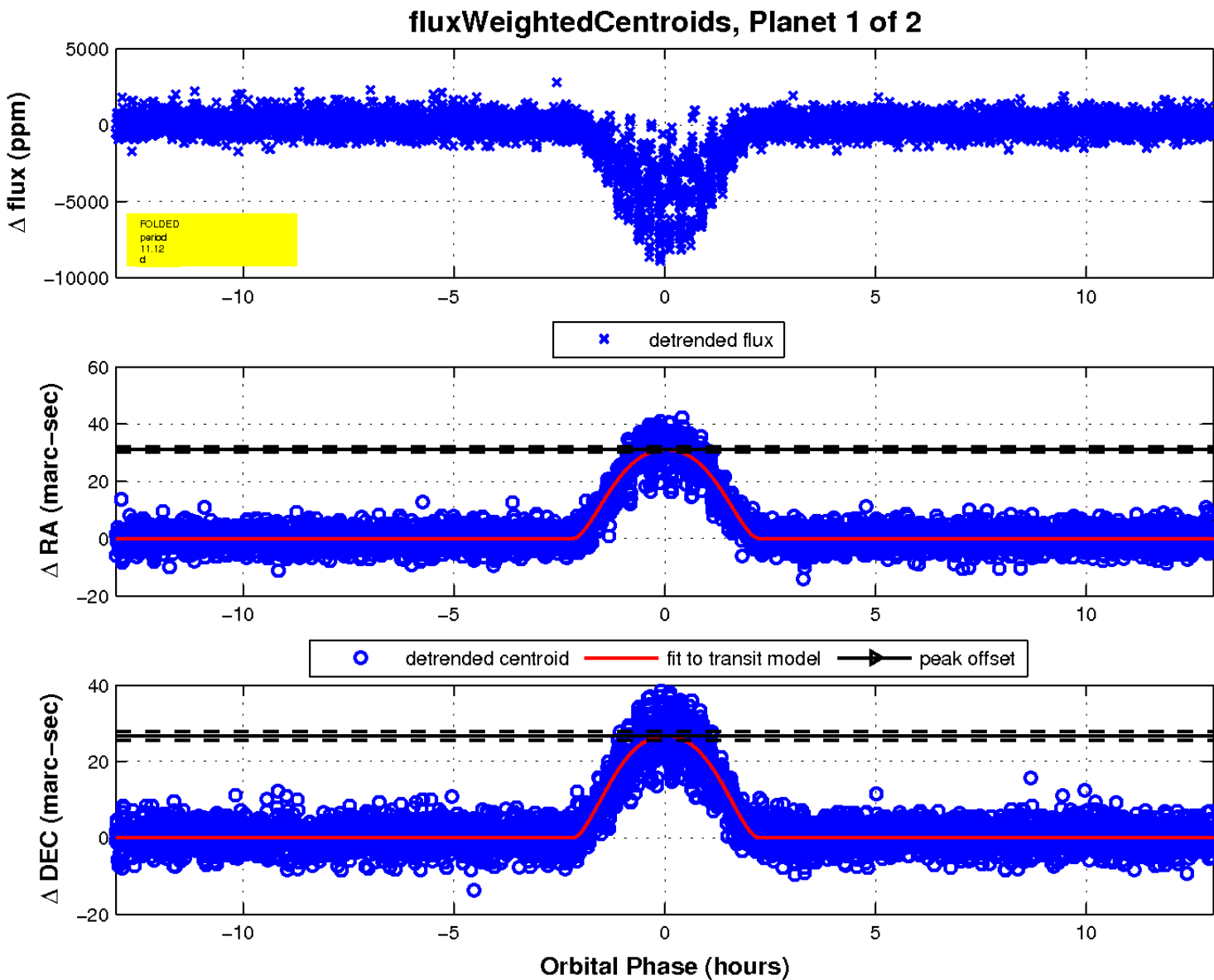
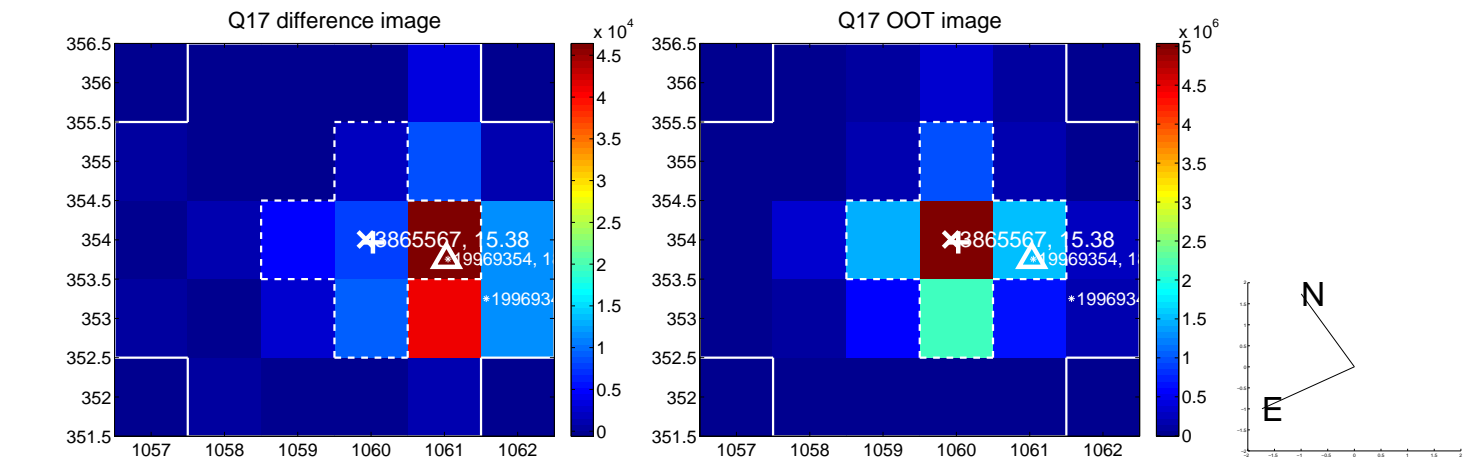
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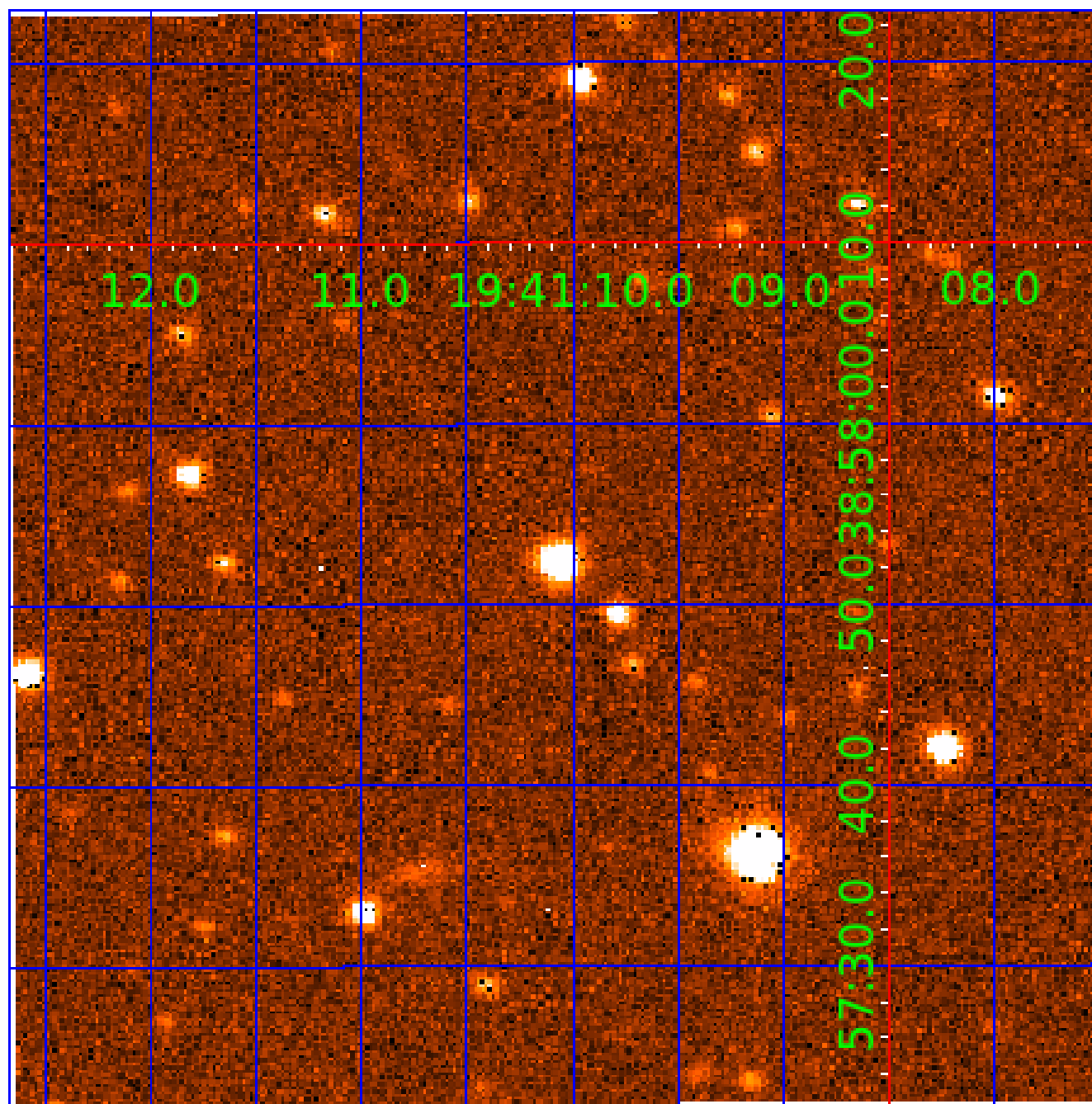


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003865567

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 003865567-01 | OBS | 1182.01 | 11.116198 | 133.100589 | 3969.7 | 4.340 | 153.3 | 100.9 | 1.00 | 6122 | 7.99 | 125.52 |
| 003865567-02 | OBS | No | 11.116171 | 140.842950 | 886.5 | 2.553 | 20.3 | 22.4 | 1.00 | 6122 | 4.64 | 125.52 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 003865567-01 | OBS | FP | 0.00 | 0 | 1 | 1 | 0 | MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_UNRESOLVED_OFFSET—HALO_GHOST |
| 003865567-02 | OBS | FP | 0.00 | 1 | 1 | 1 | 0 | IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—HALO_GHOST |

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.

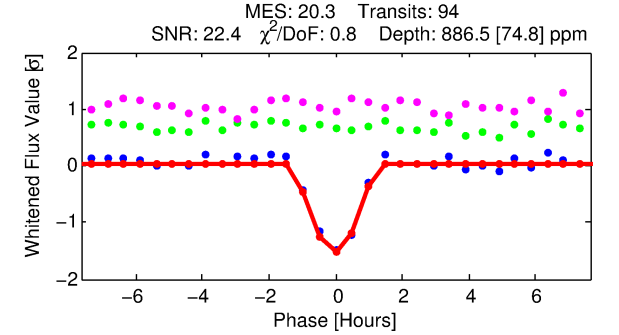
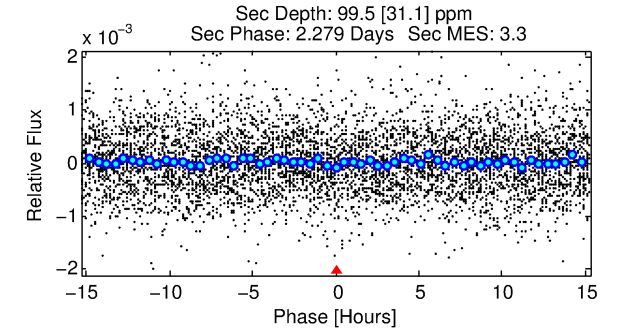
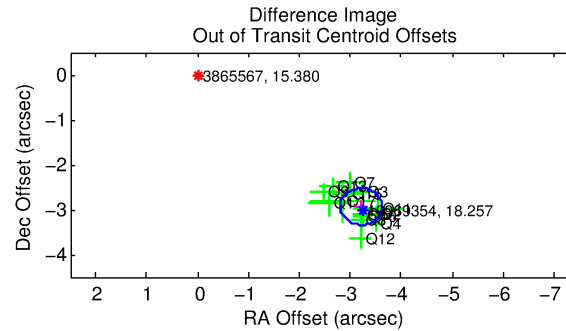
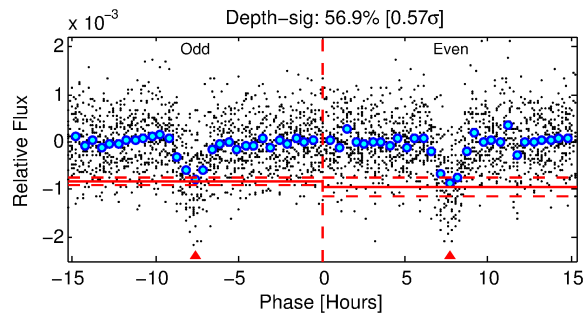
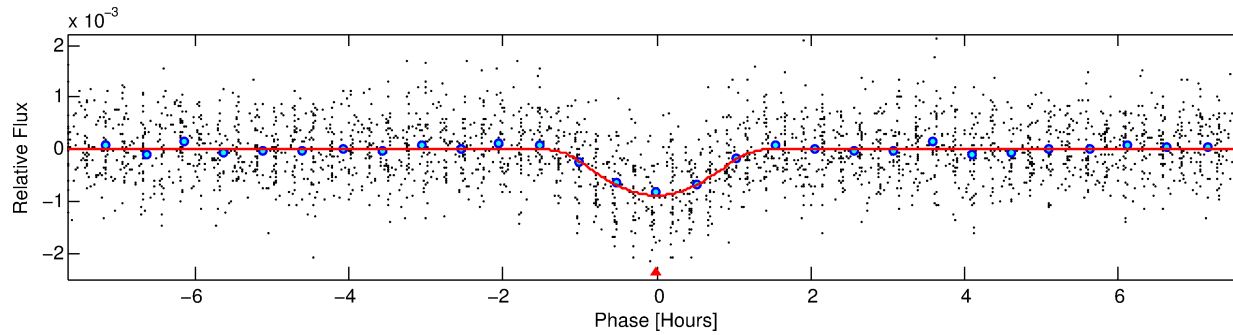
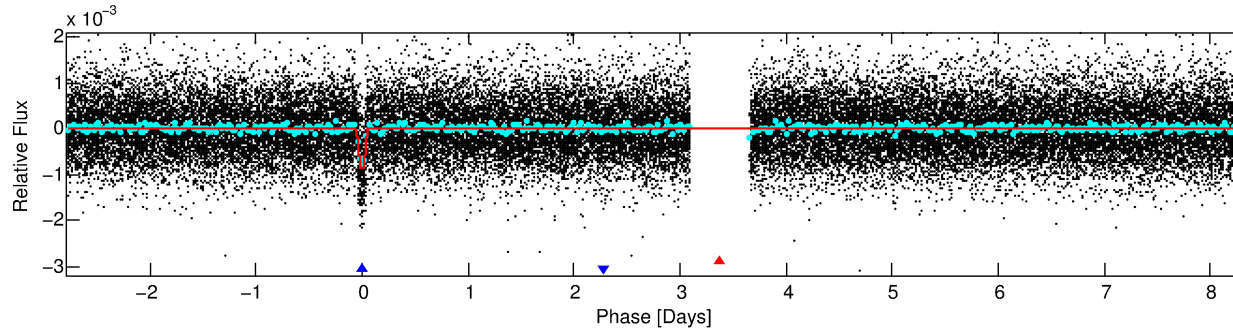
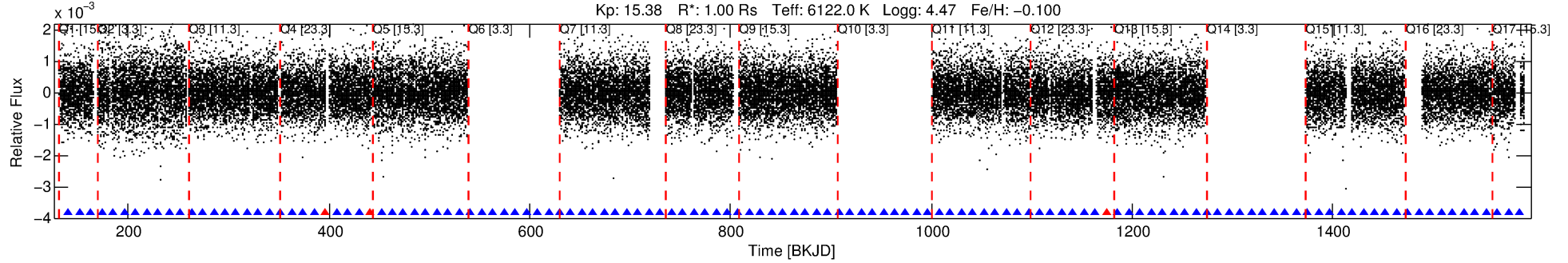
Ephemeris Match Information For 003865567-02

No Significant Match Found

DV One-Page Summary

KIC: 3865567 Candidate: 2 of 2 Period: 11.116 d
KOI: K01182 Corr: No Ephemeris Match

Kp: 15.38 R*: 1.00 Rs Teff: 6122.0 K Logg: 4.47 Fe/H: -0.100



DV Fit Results:

Period = 11.11617 [0.00004] d
Epoch = 140.8429 [0.0026] BKJD
Rp/R* = 0.0427 [0.0380]
a/R* = 11.58 [3.83]
b = 0.98 [0.07]
Seff = 125.52 [47.24]
Teq = 853 [80] K
Rp = 4.64 [4.33] Re
a = 0.0997 [0.0236] AU
Ag = 25.29 [46.60] [0.52σ]
Teff = 2959 [1343] K [1.57σ]

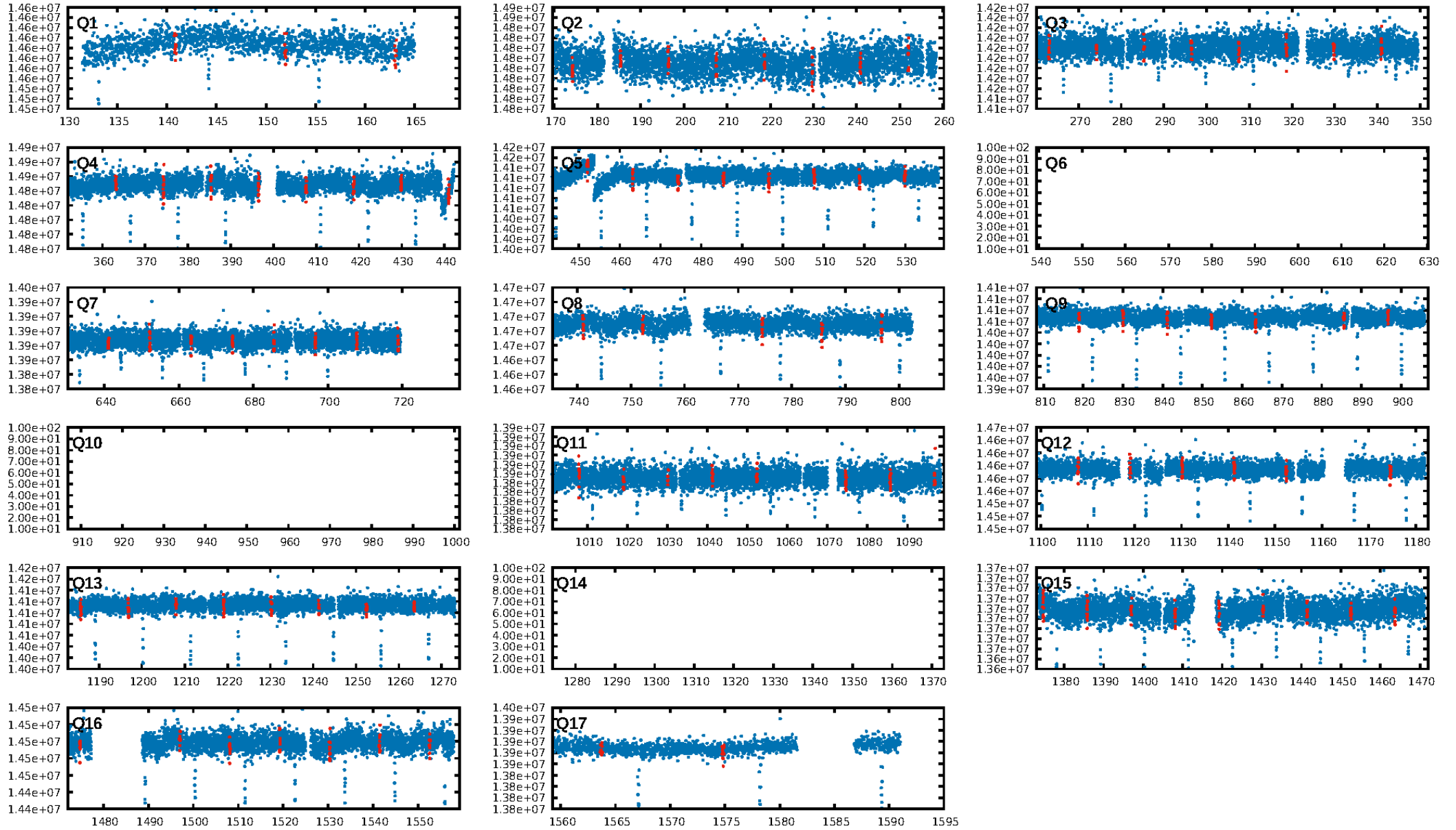
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 9.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.06e-90
RollingBand-fgt: 0.97 [86/89]
GhostDiagnostic-chr: 0.1202
Centroid-sig: 0.0%
Centroid-so: 8.987 arcsec [13.37σ]
OotOffset-rm: 4.347 arcsec [32.01σ]
KicOffset-rm: 4.554 arcsec [37.48σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

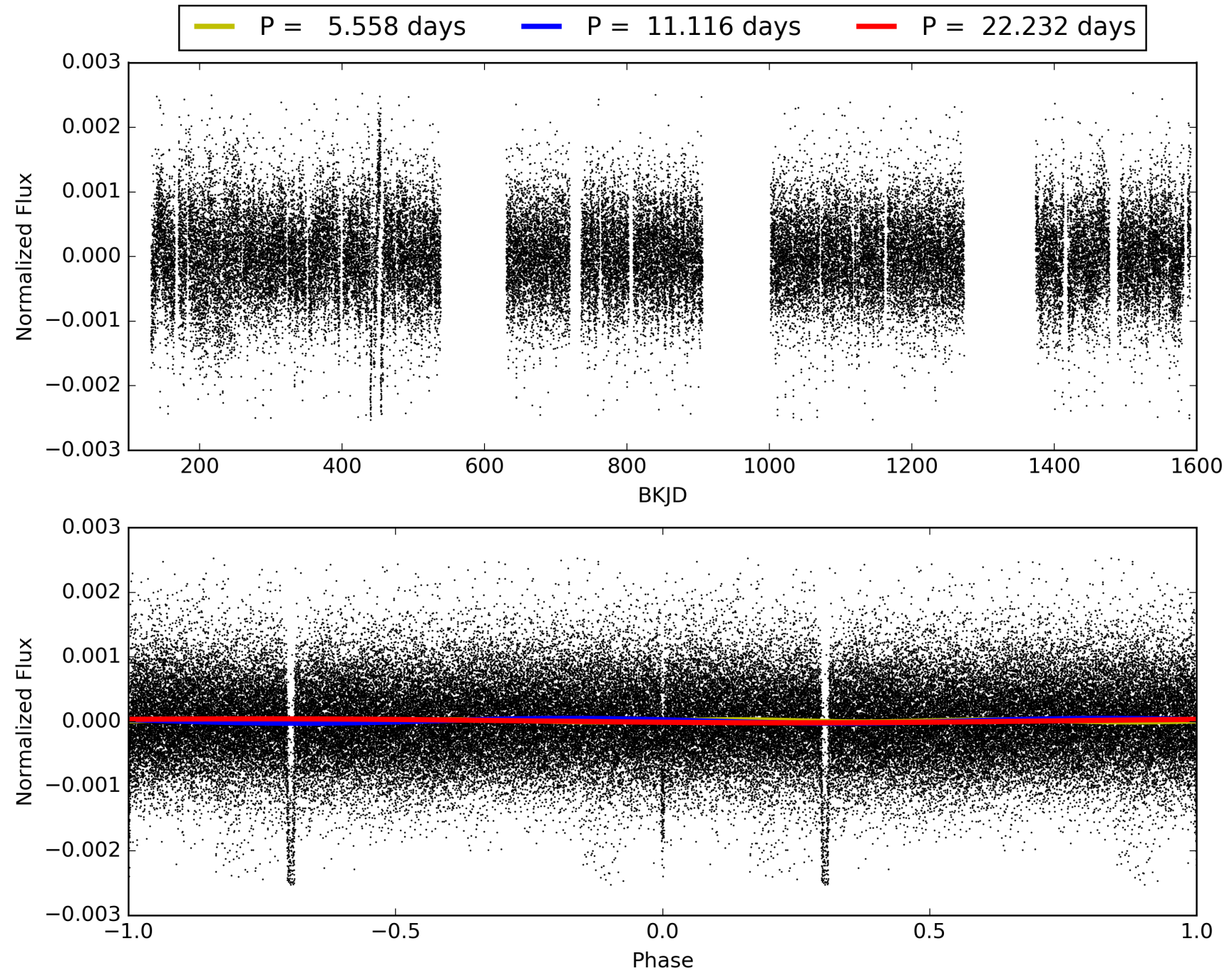
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 10:51:23 Z

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

TCE 003865567-02, PDC Light Curves

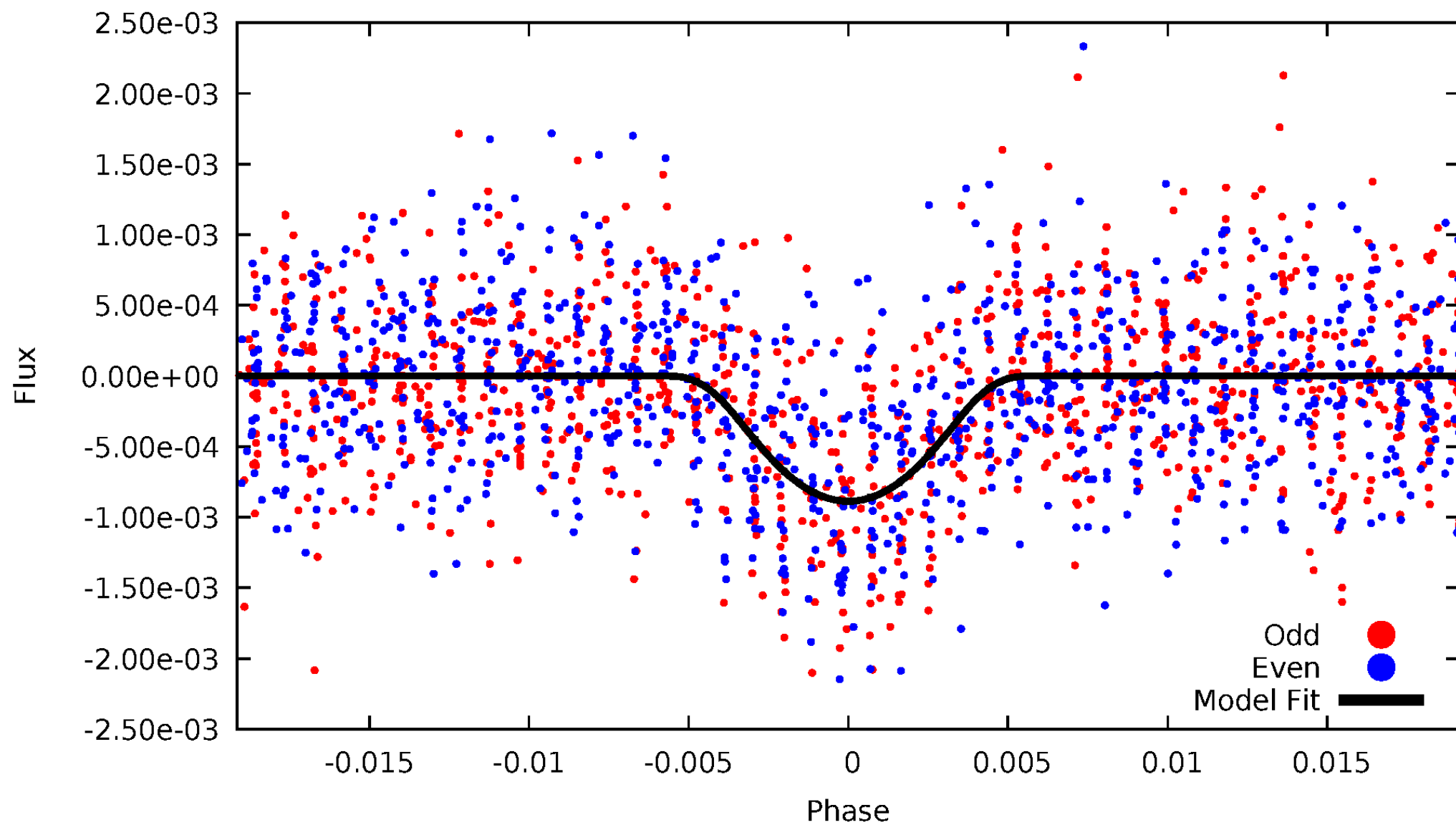


TCE 003865567-02



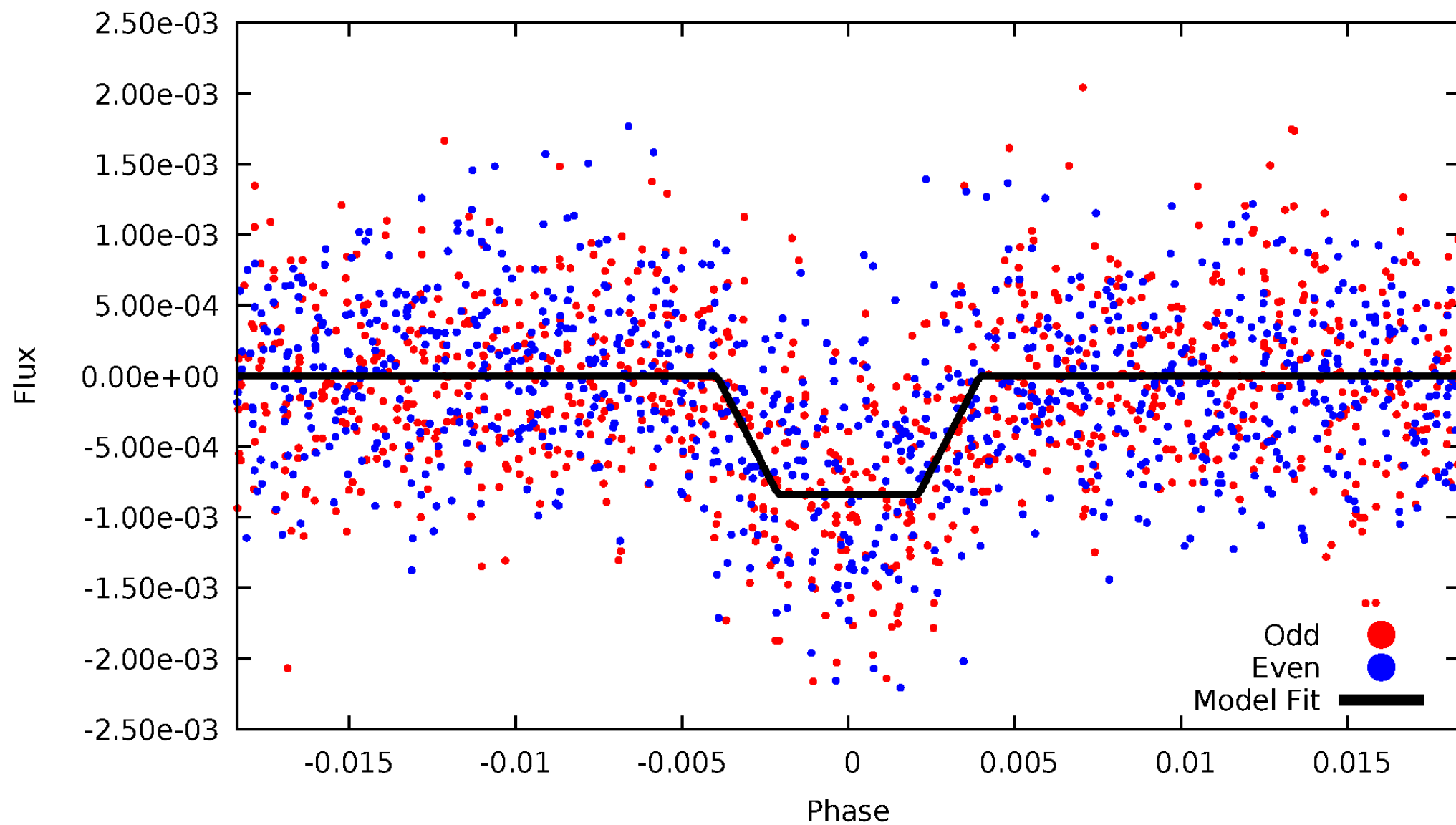
DV Odd/Even

TCE 003865567-02



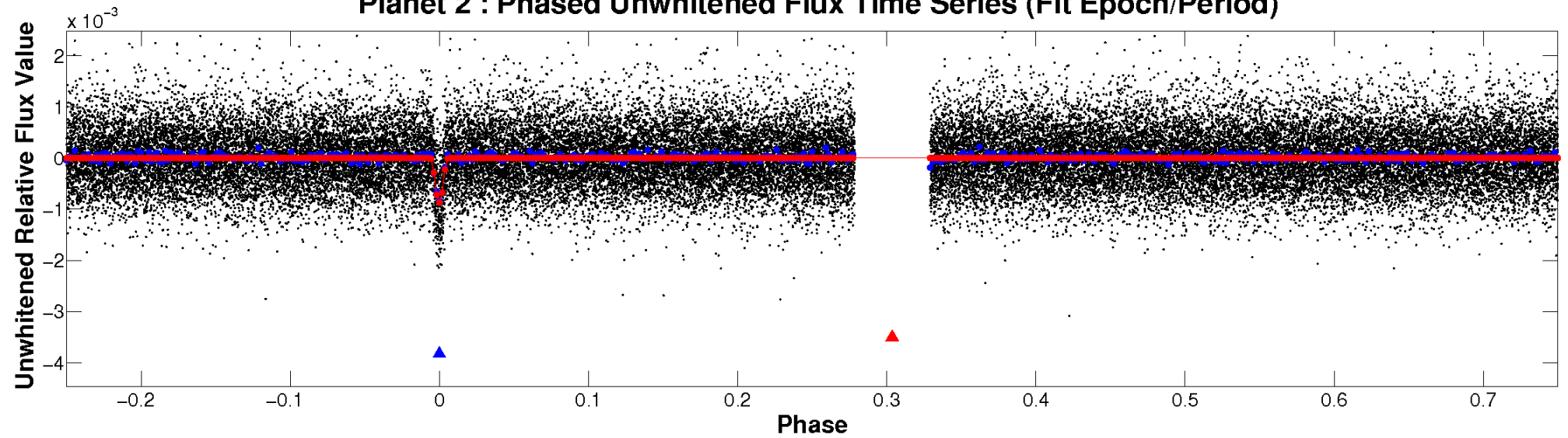
ALT Odd/Even

TCE 003865567-02

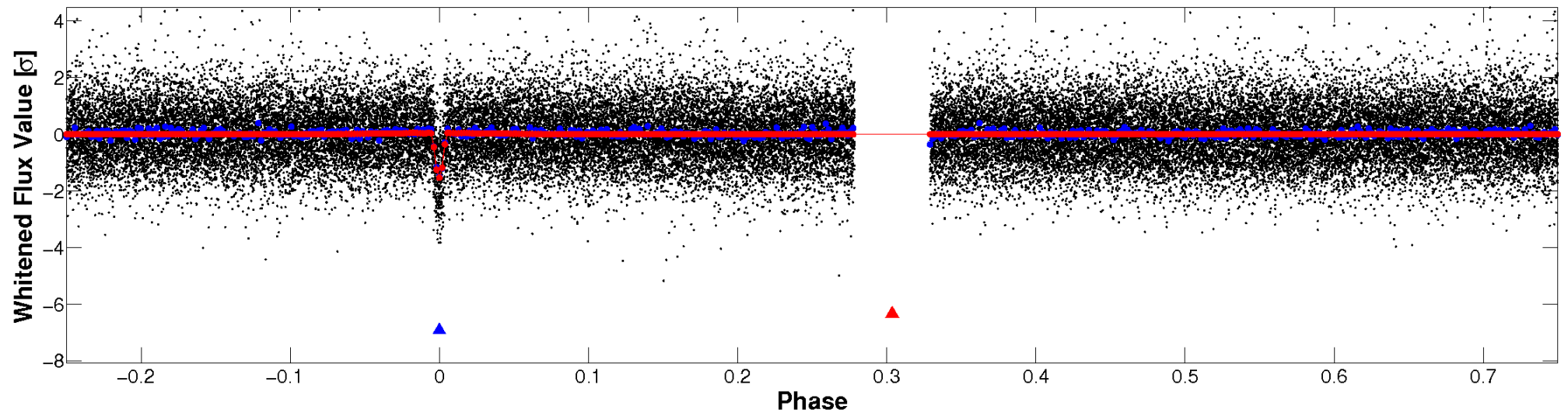


Non-Whitened Vs. Whitened Light Curve

Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

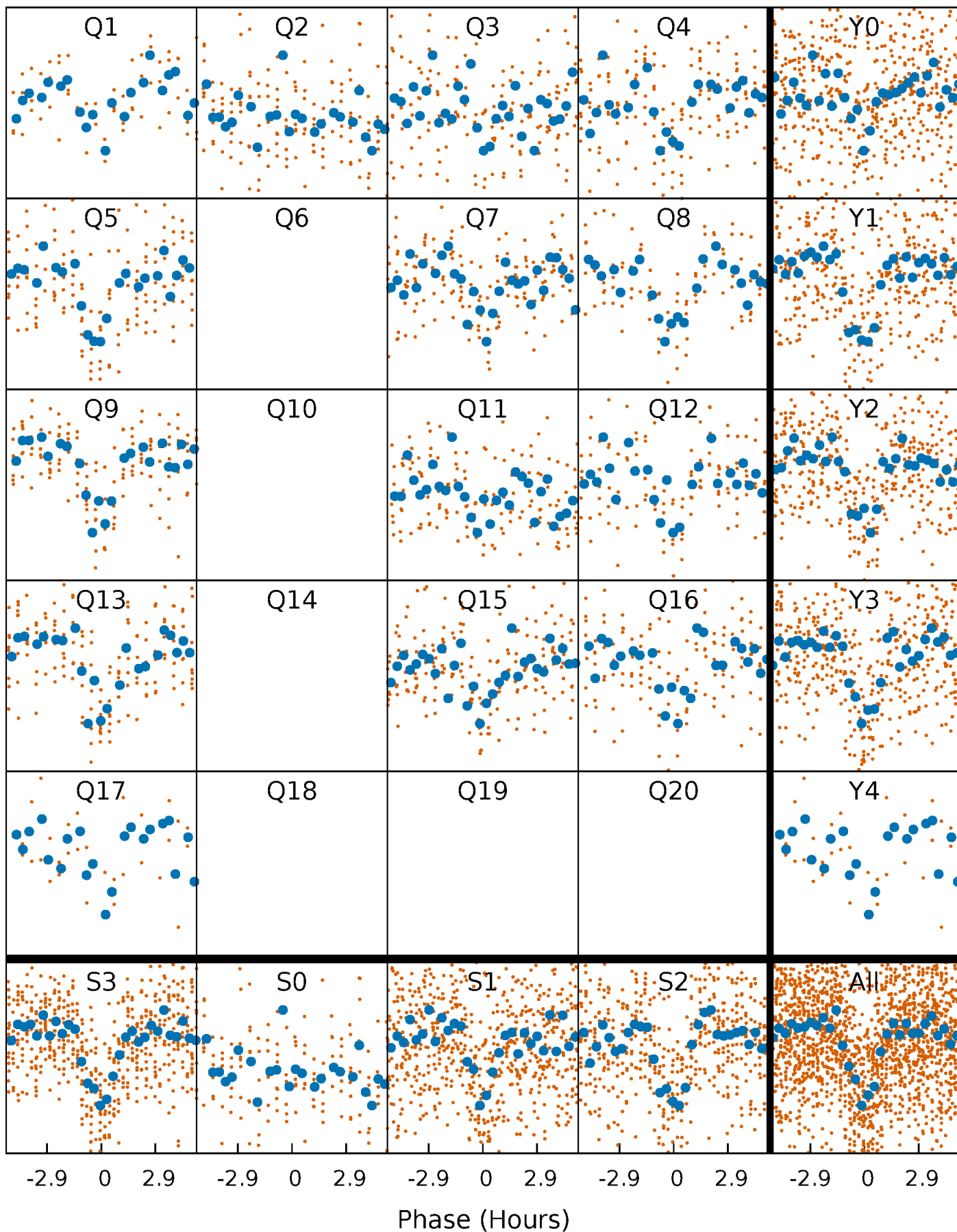


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



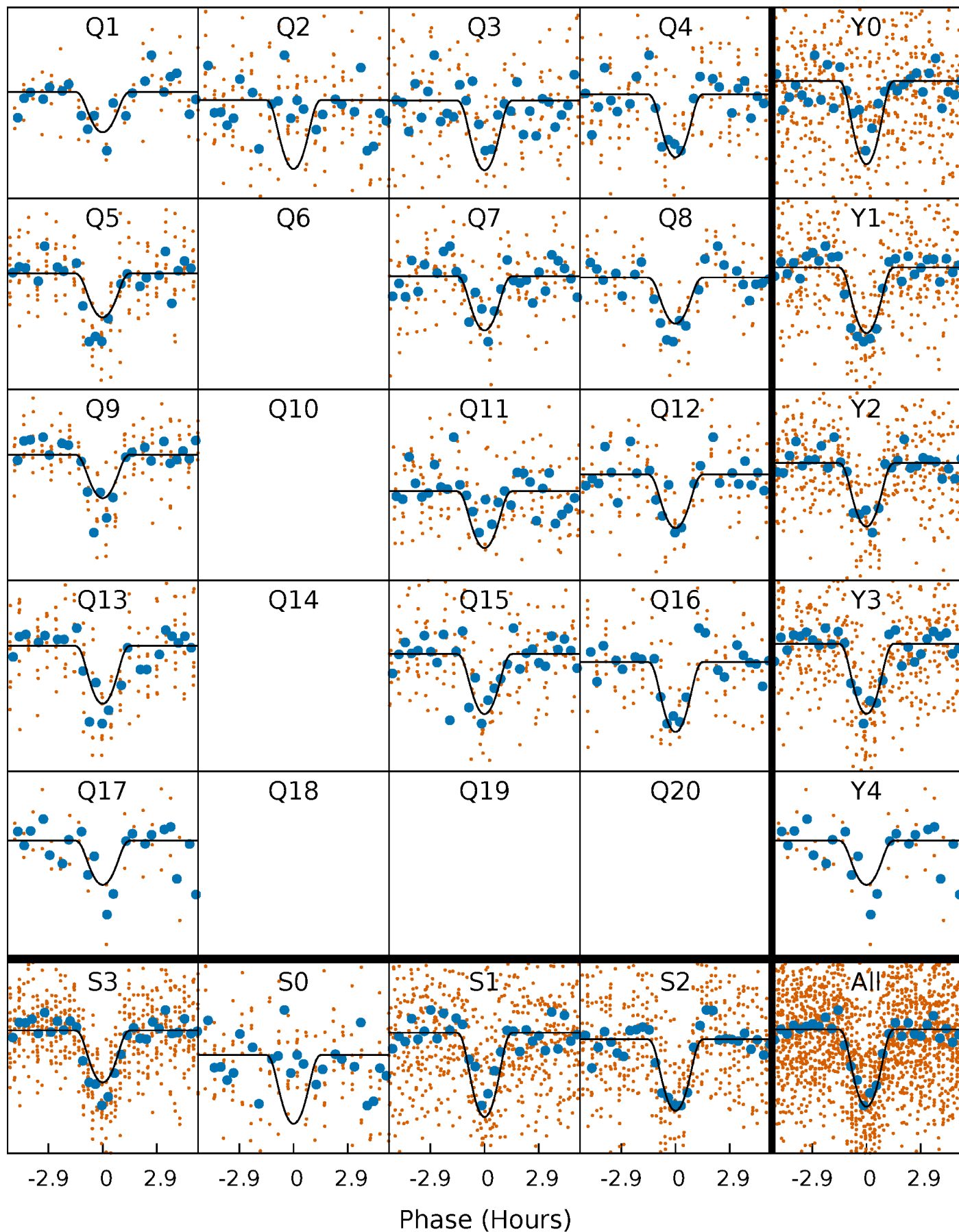
PDC Quarter-Phased Transit Curves

TCE 003865567-02 P= 11.116171 Days $T_0=140.842950$ (BKJD)



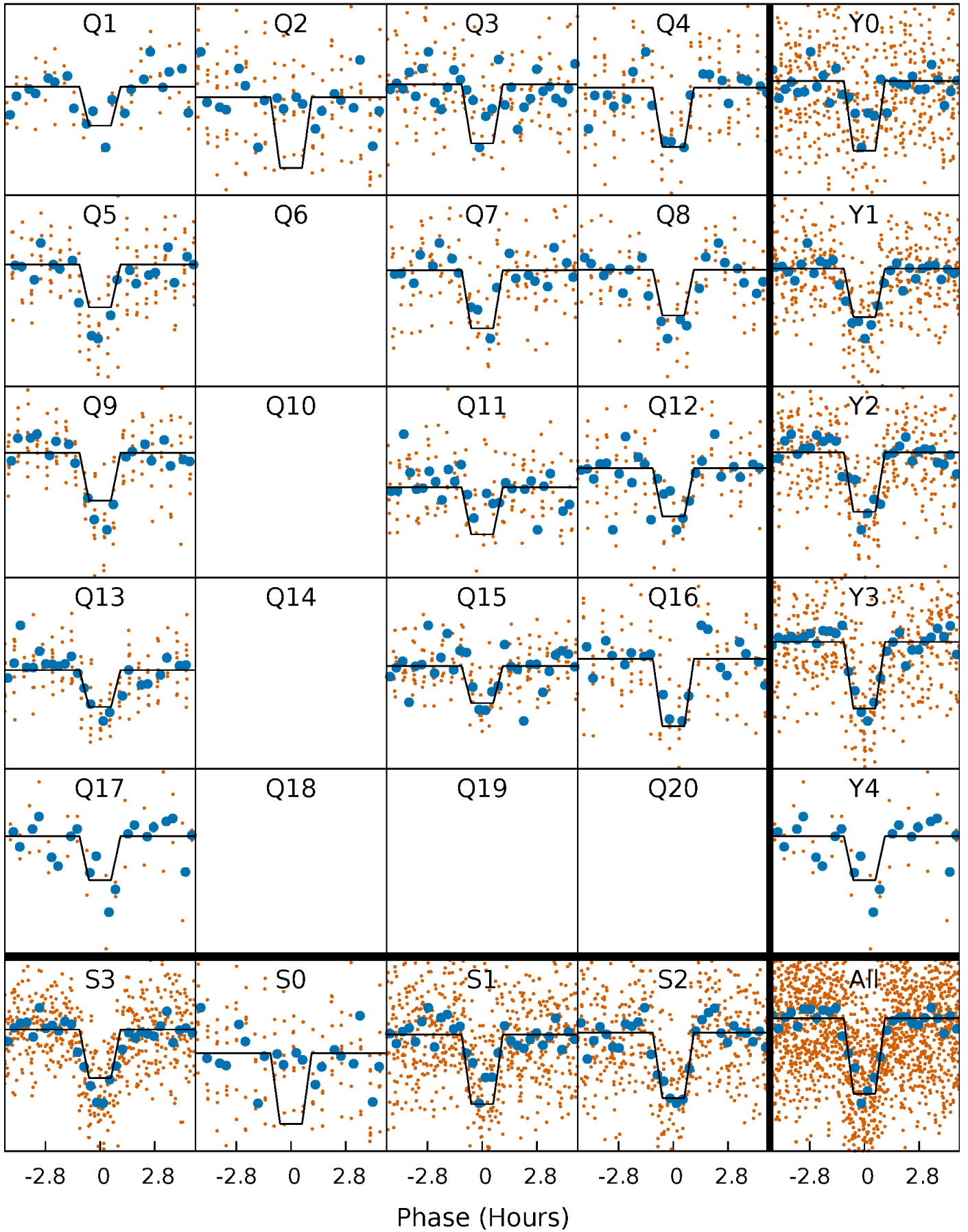
DV Quarter-Phased Transit Curves

TCE 003865567-02 P= 11.116171 Days $T_0=140.842950$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

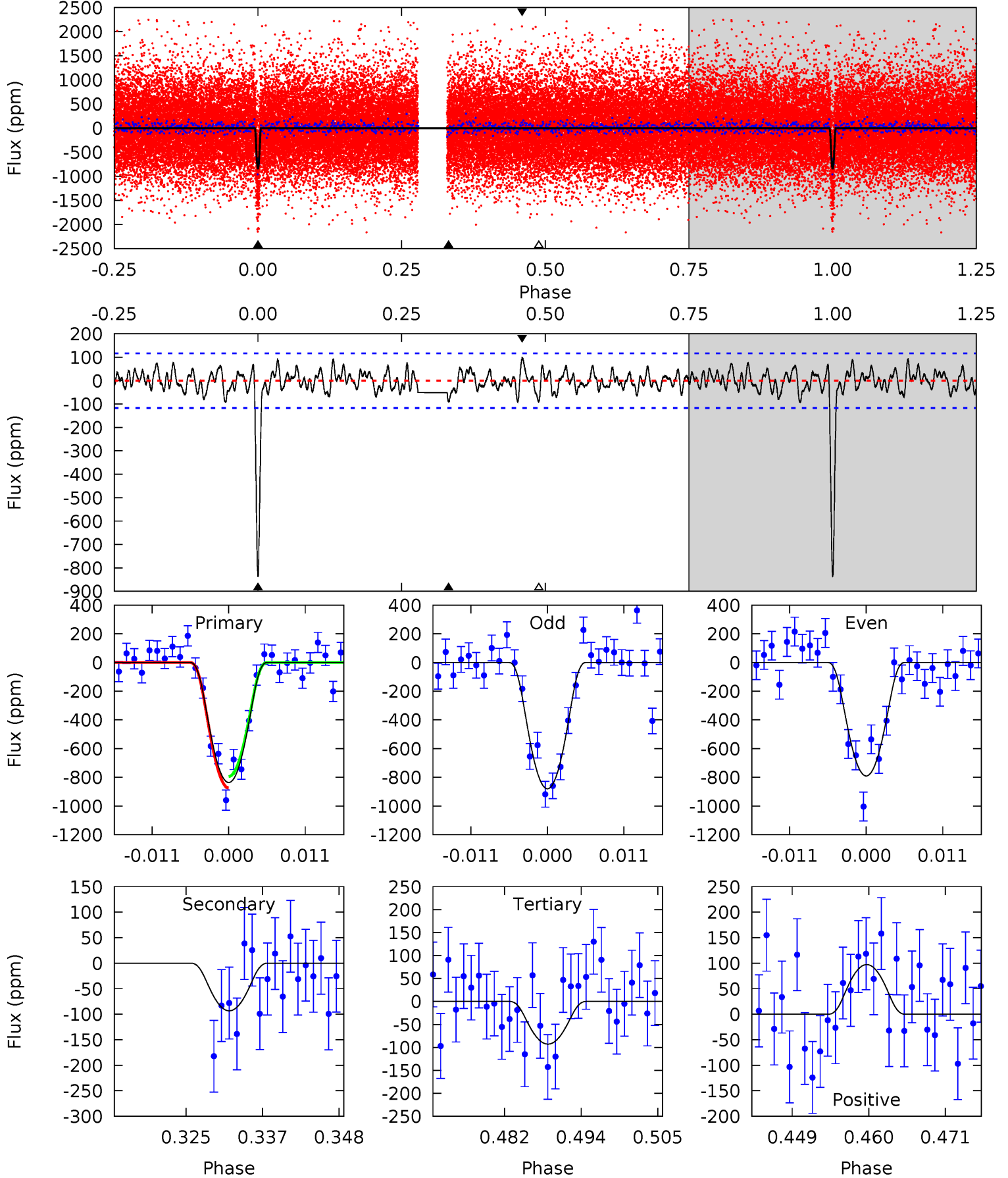
TCE 003865567-02 P= 11.116117 Days $T_0=140.845505$ (BKJD)



DV Model-Shift Uniqueness Test

003865567-02, P = 11.116171 Days, E = 129.726779 Days

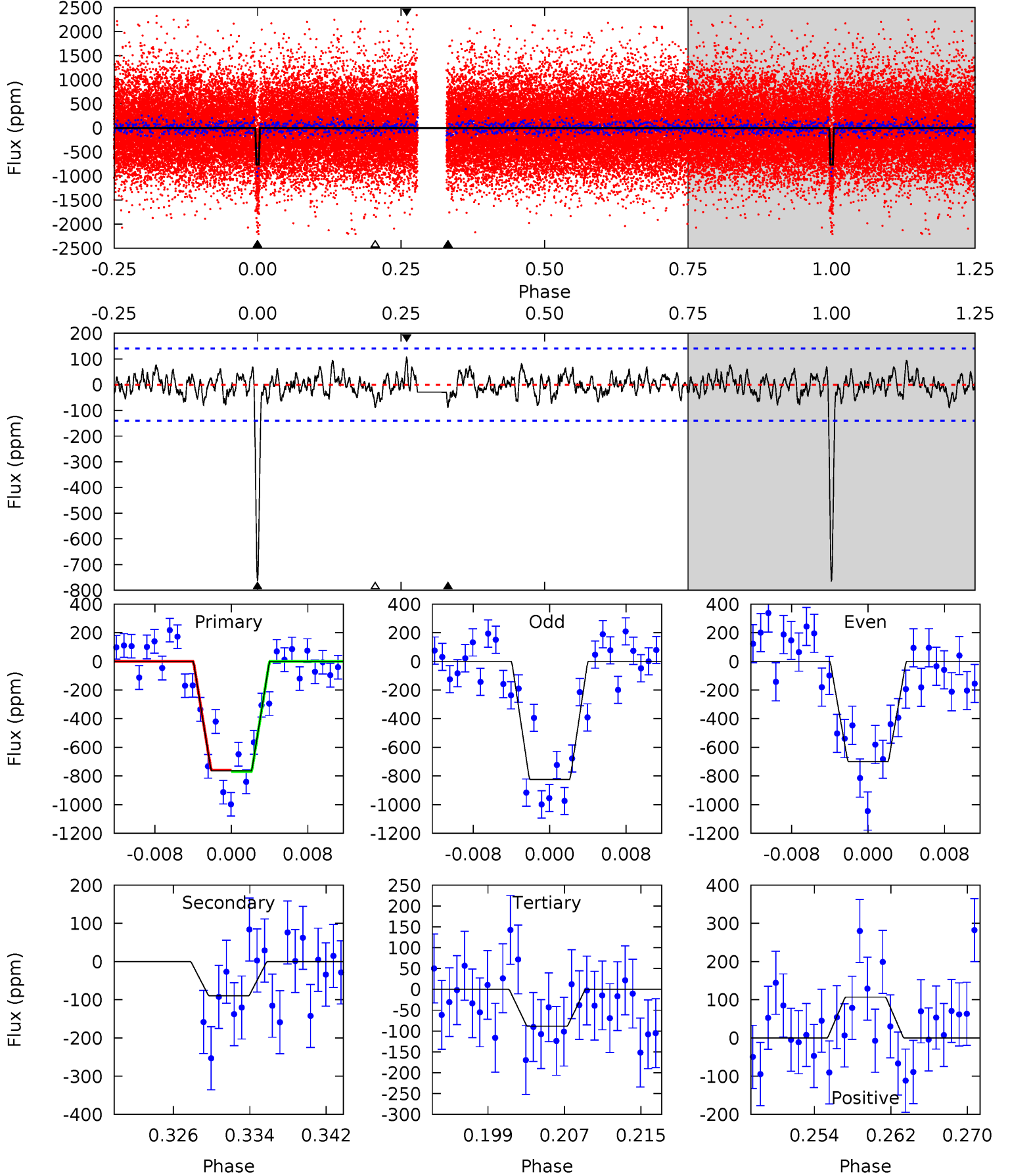
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 35.9 | 4.00 | 3.98 | 4.17 | 5.00 | 2.54 | 1.46 | 31.9 | 31.7 | 0.02 | -0.17 | 1.92 | 1.01 | 0.10 | 1.72 |



Alt Model-Shift Uniqueness Test

003865567-02, $P = 11.116117$ Days, $E = 129.729388$ Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 27.6 | 3.22 | 3.19 | 3.86 | 5.07 | 2.65 | 1.16 | 24.4 | 23.7 | 0.03 | -0.64 | 2.25 | 0.93 | 0.12 | 0.18 |



Stellar Parameters For KIC 003865567

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 6122^{+183}_{-220} | $4.471^{+0.048}_{-0.192}$ | $-0.100^{+0.250}_{-0.300}$ | $0.996^{+0.276}_{-0.118}$ | $1.070^{+0.137}_{-0.137}$ | $1.526^{+0.391}_{-0.754}$ |
| | +3%/-4% | +1%/-4% | +250%/-300% | +28%/-12% | +13%/-13% | +26%/-49% |
| 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 003865567-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|--------------|------------------------|----------------------|-----------------------|-------------------|
| DV | -93 ± 23 | $5.20^{+4.64}_{-3.24}$ | 1221^{+89}_{-64} | 3340^{+1445}_{-578} | 18^{+117}_{-13} |
| Alt. | -89 ± 28 | $4.59^{+3.75}_{-2.74}$ | 1221^{+77}_{-62} | 3449^{+1341}_{-617} | 23^{+115}_{-16} |

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

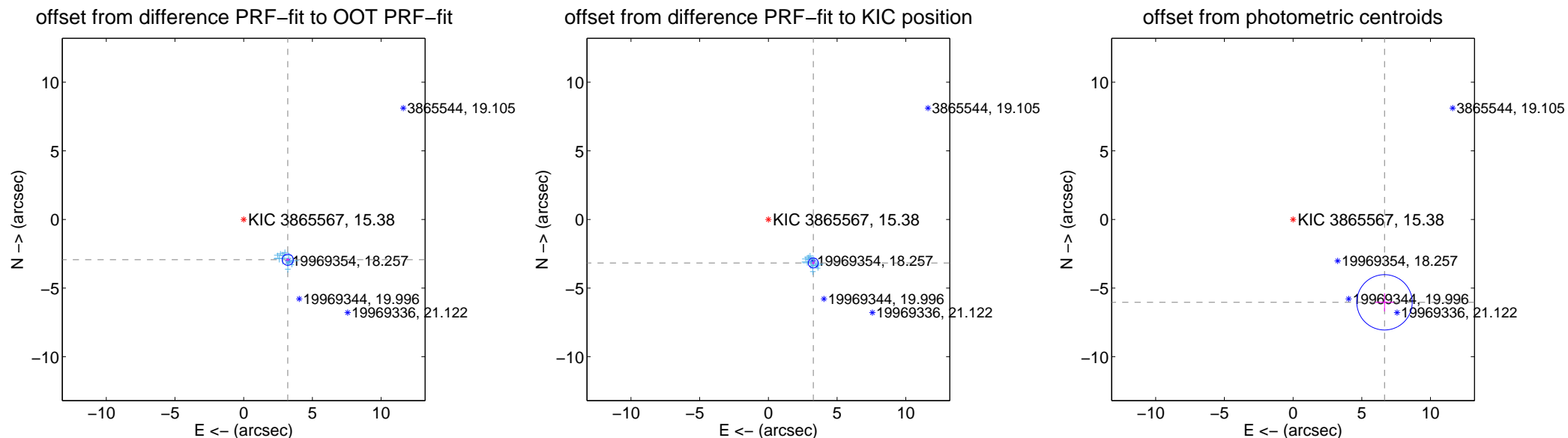
DV Centroid Data

Supplemental centroid analysis for 003865567-02. Kepler magnitude: 15.38. Transit SNR 22.42

There are 14 quarters with good PRF difference image offsets

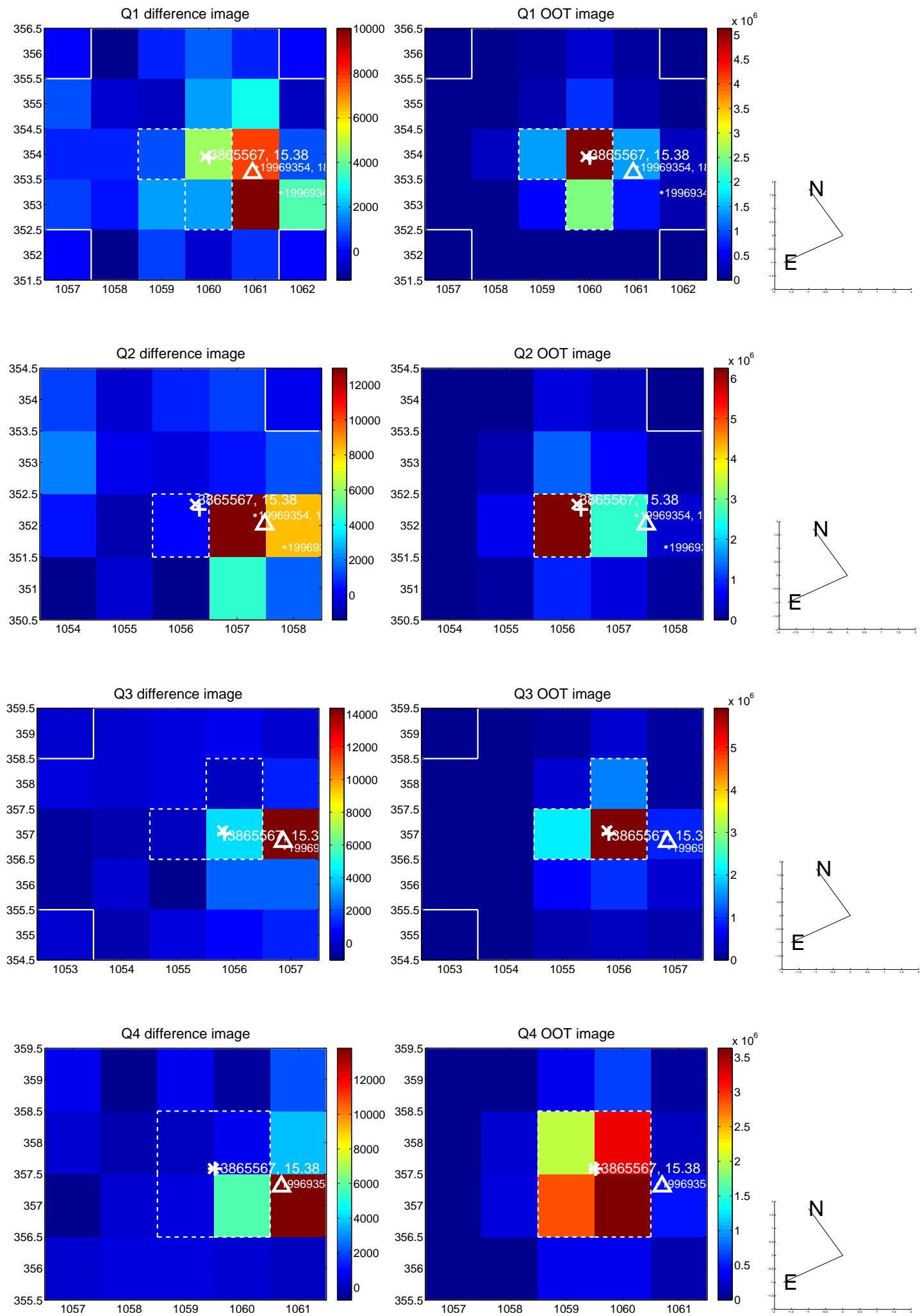
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 4.347 ± 0.136 | 32.01 | -3.208 ± 0.117 | -2.933 ± 0.109 |
| PRF-fit source offset from KIC position | 4.554 ± 0.122 | 37.48 | -3.269 ± 0.099 | -3.171 ± 0.107 |
| photometric centroid source offset | 8.99 ± 0.67 | 13.37 | -6.66 ± 0.68 | -6.04 ± 0.66 |

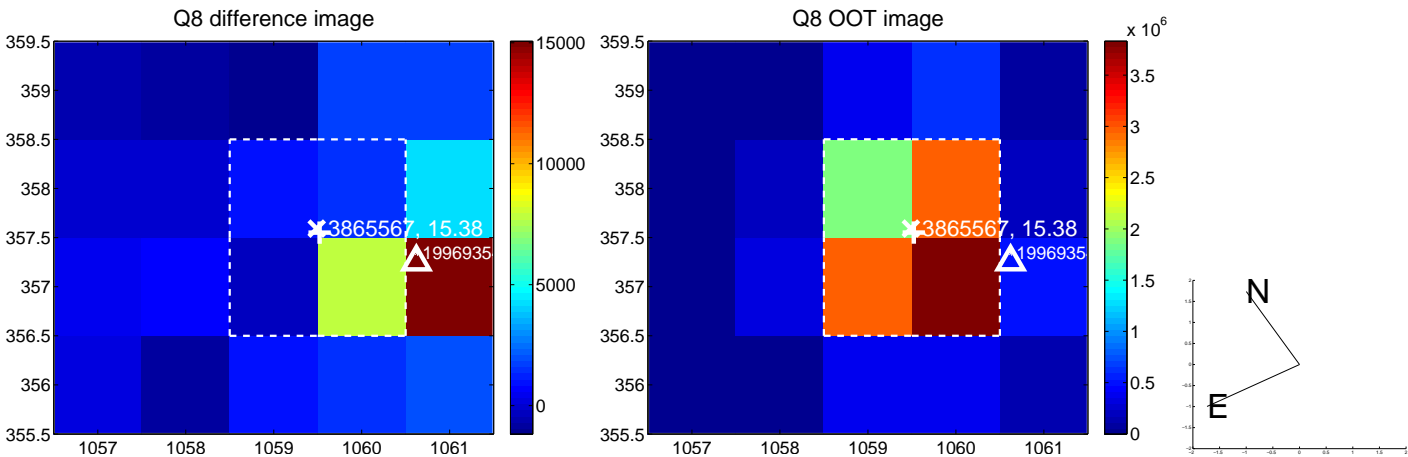
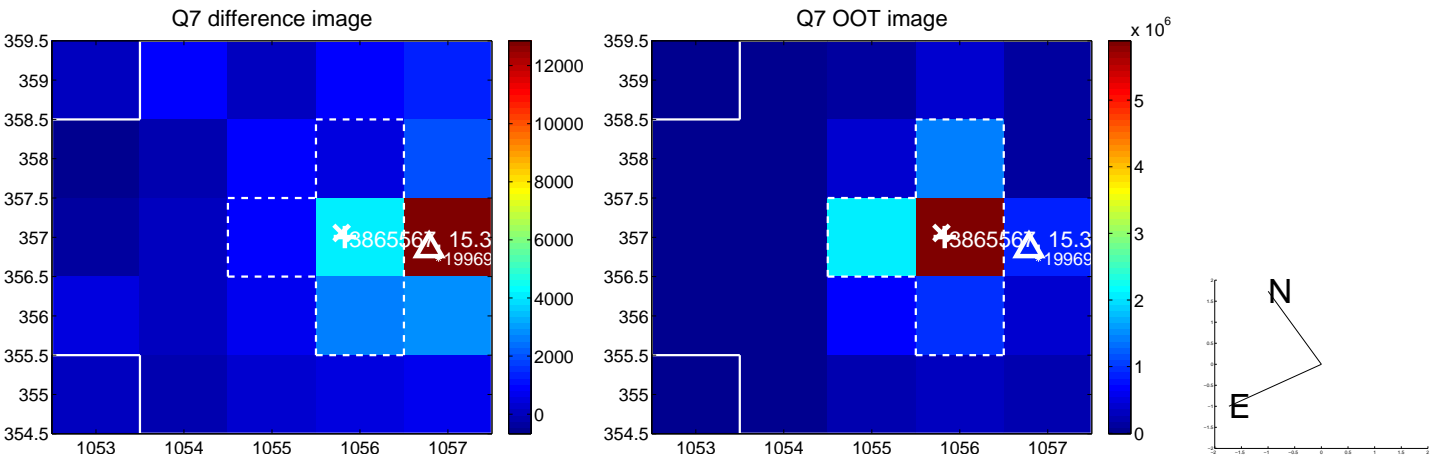
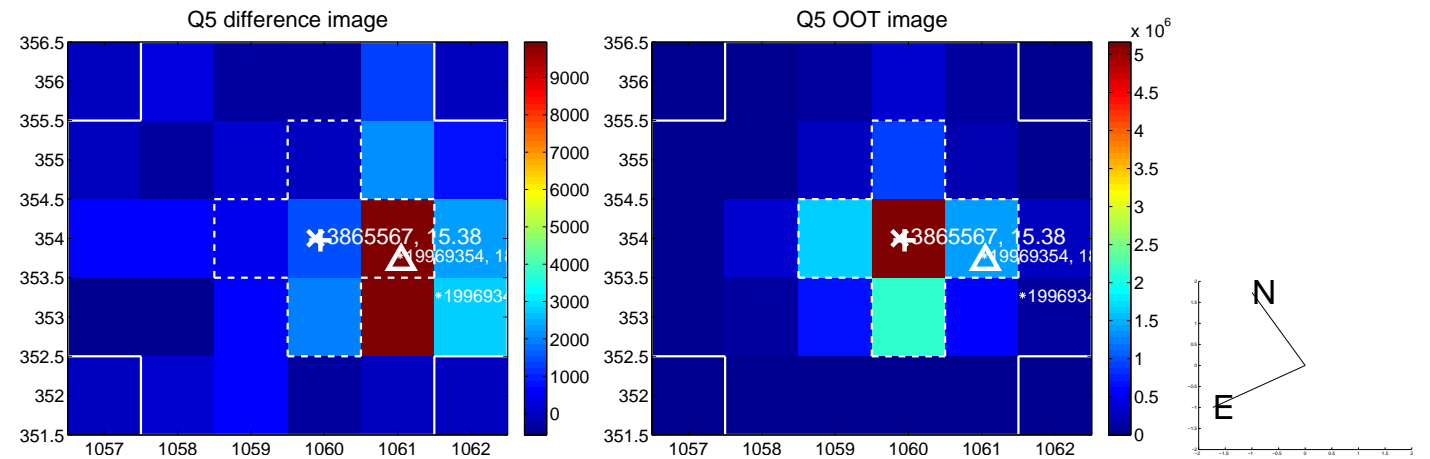


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

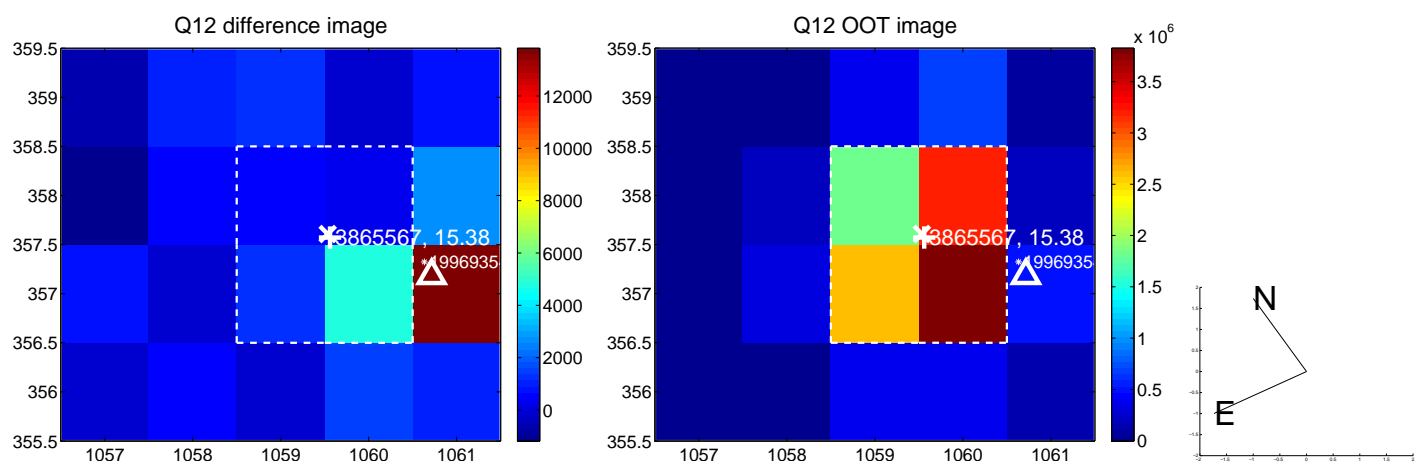
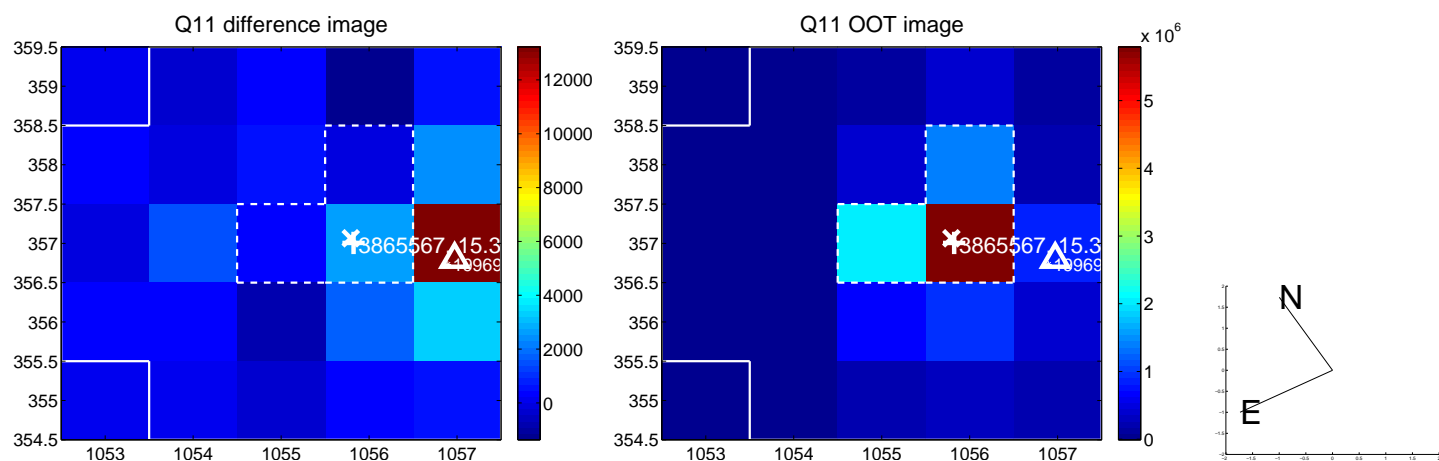
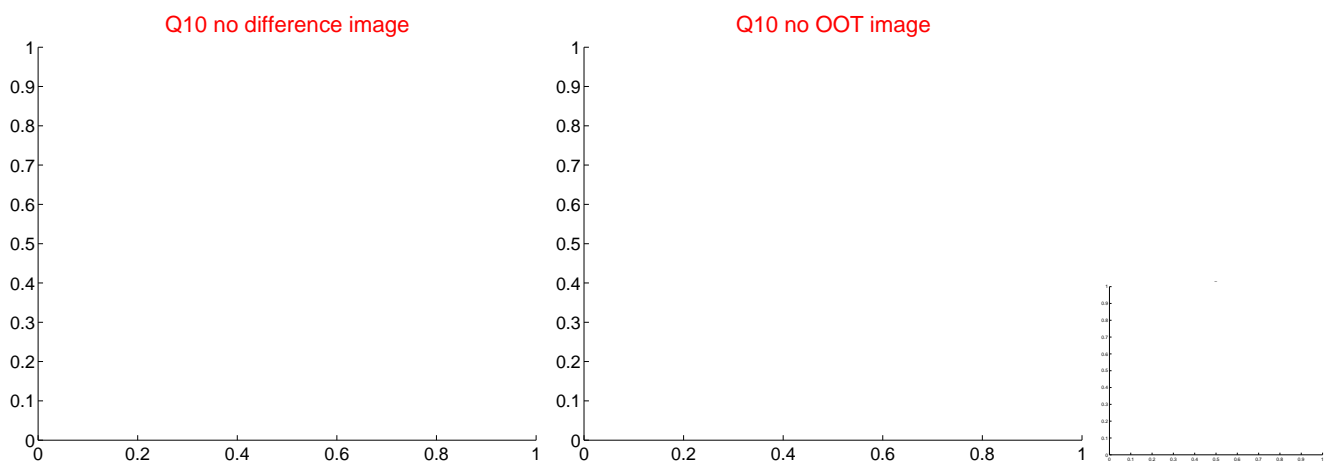
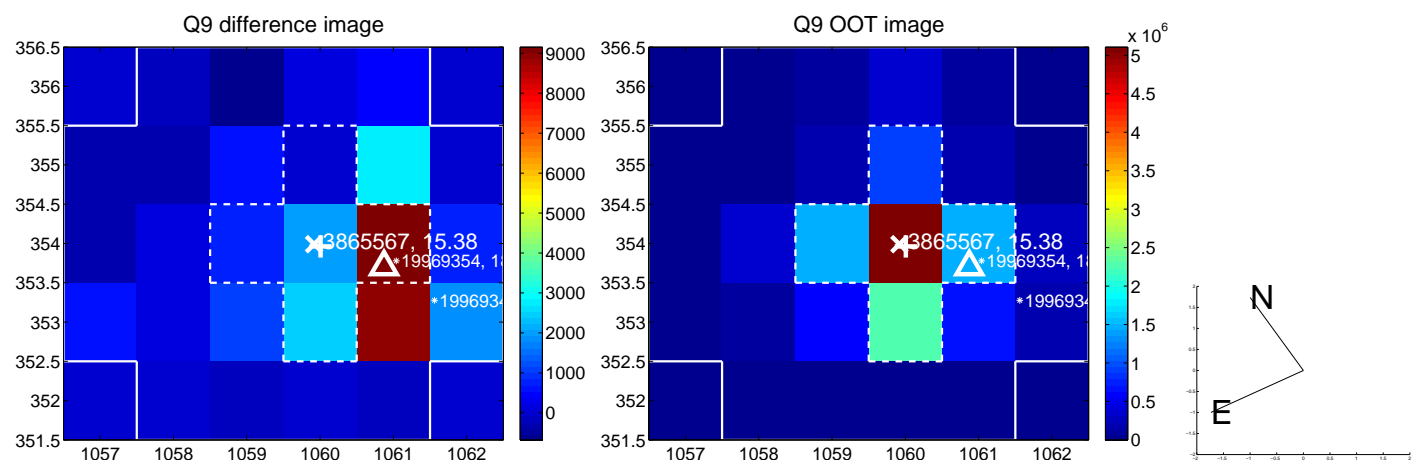
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



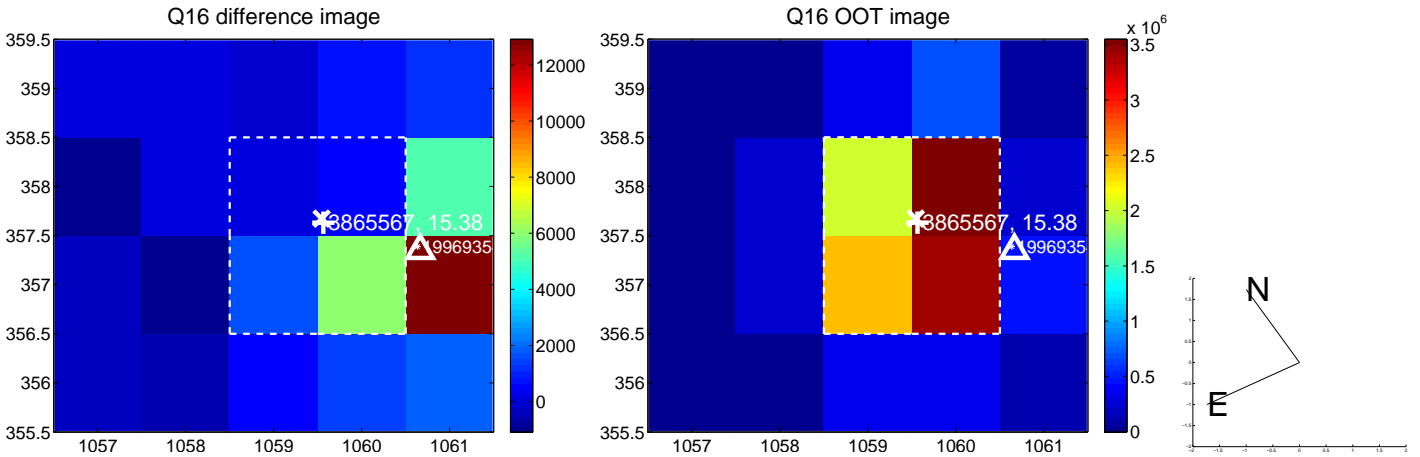
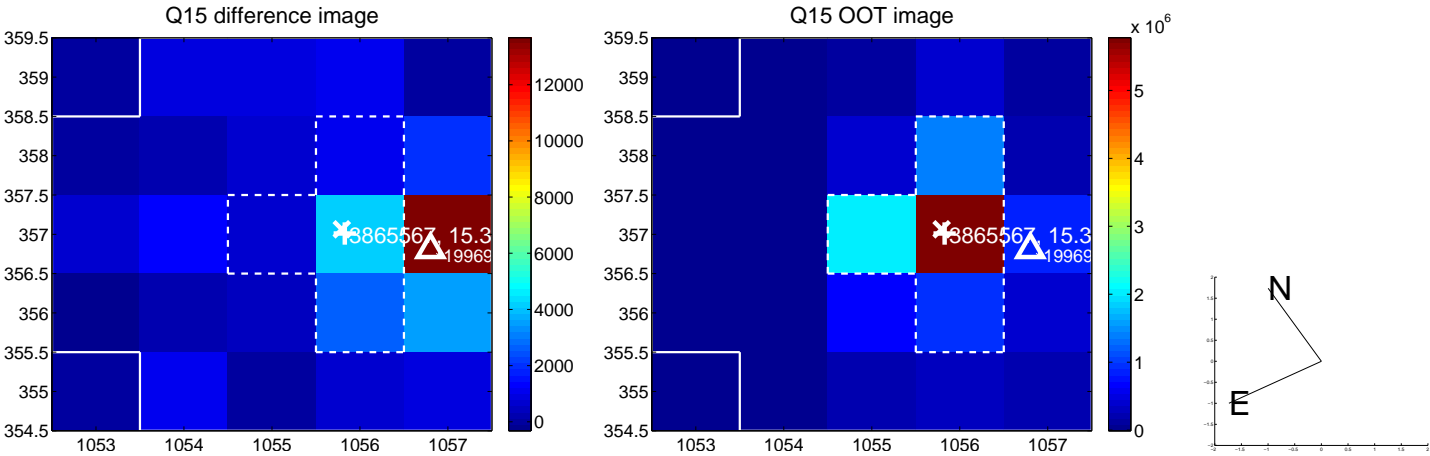
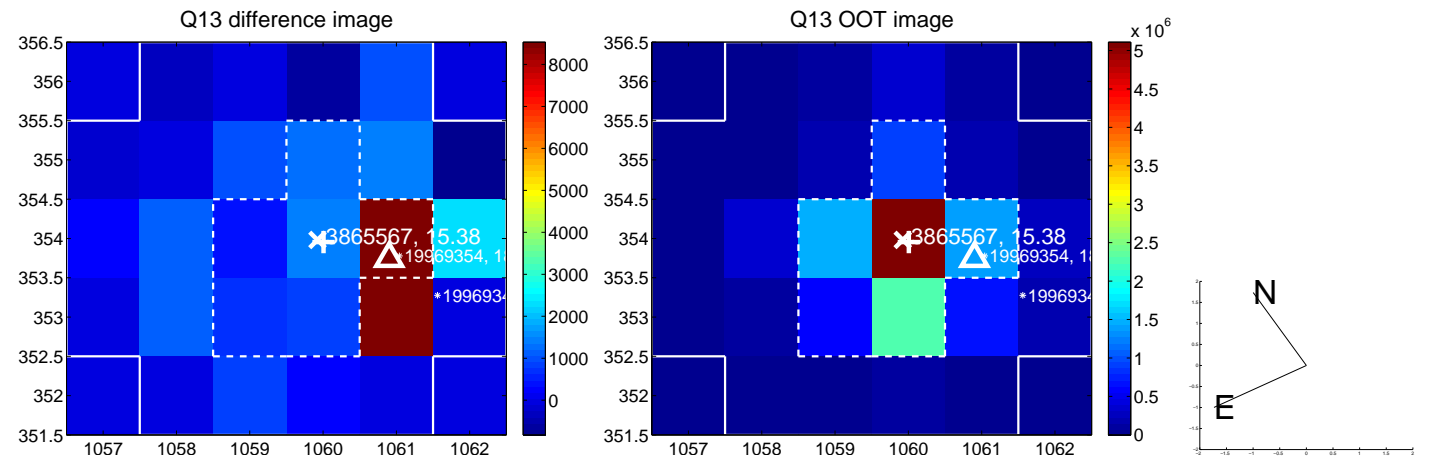
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



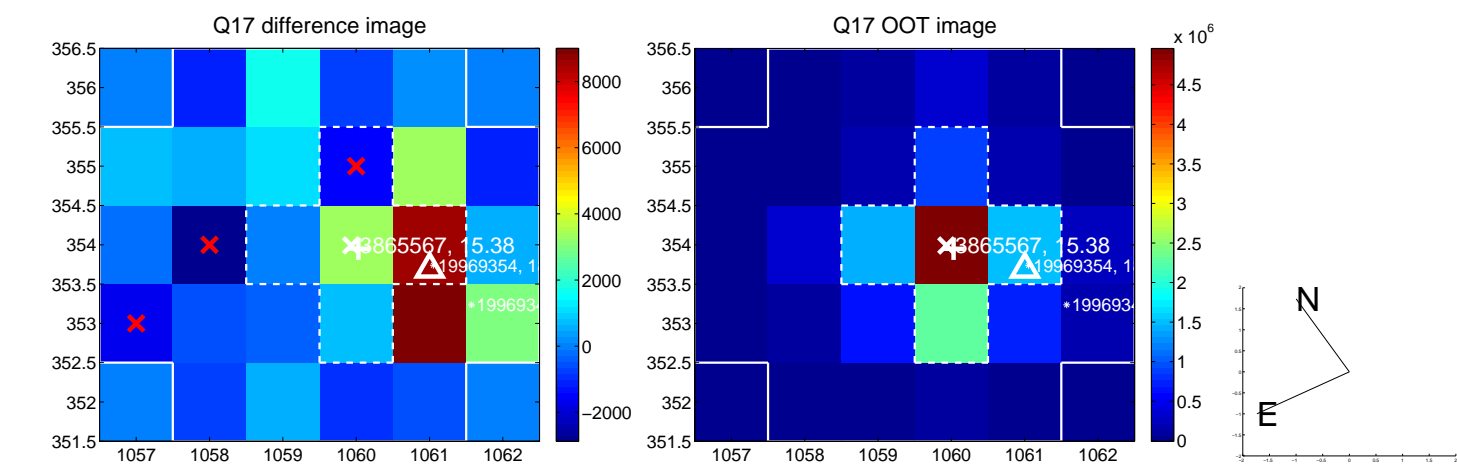
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



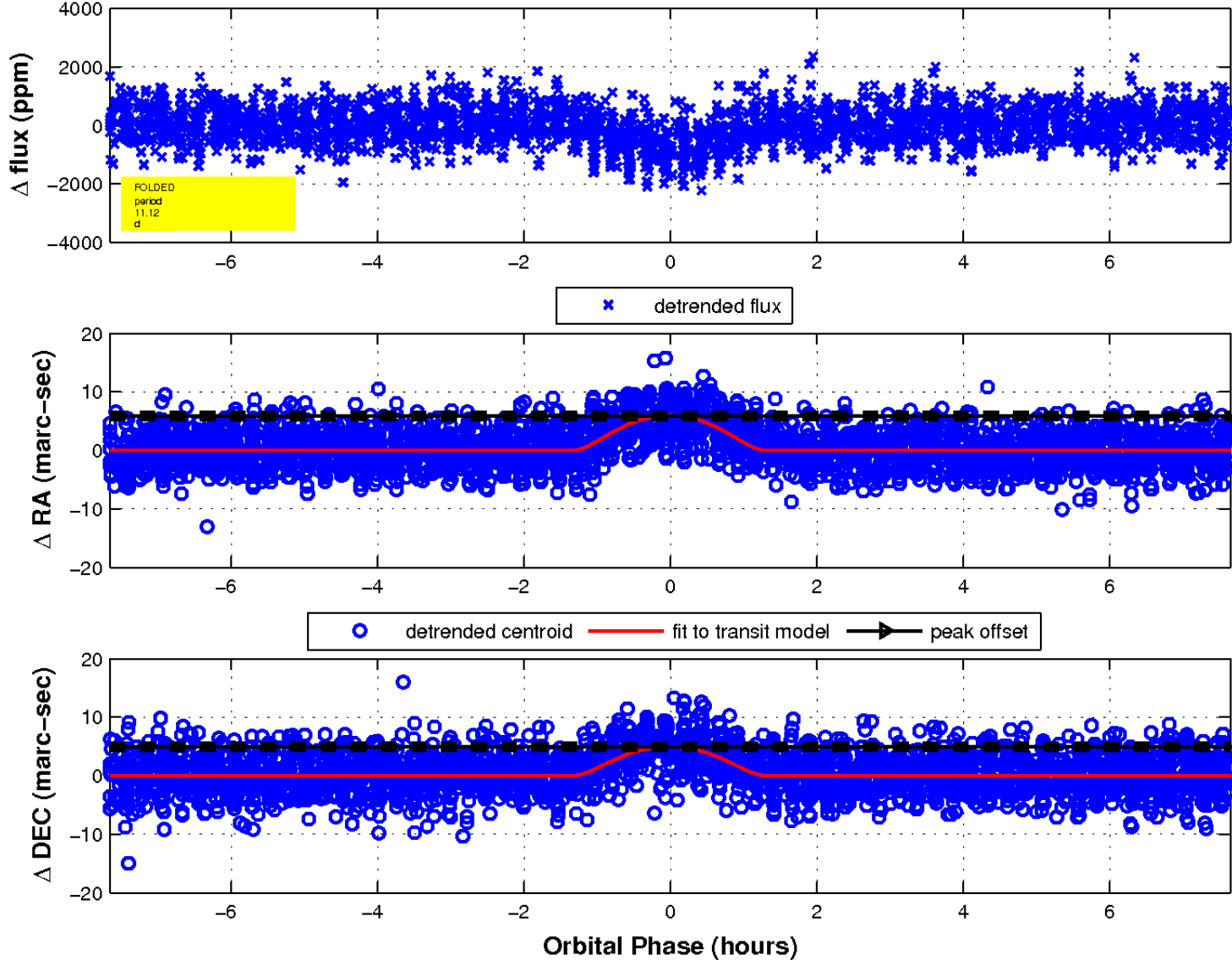
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

