

KIC 005264304

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|--------|--------|-----------------------------|-----------------|------------------------|------------------------|
| 005264304-01 | OBS | 3563.01 | 120.581679 | 248.238710 | 195493.2 | 8.282 | 2436.6 | 1590.4 | 0.67 | 5294 | 44.71 | 1.71 |
| 005264304-02 | OBS | No | 120.581630 | 215.495252 | 61693.4 | 8.579 | 849.4 | 730.7 | 0.67 | 5294 | 24.75 | 1.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005264304-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 005264304-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

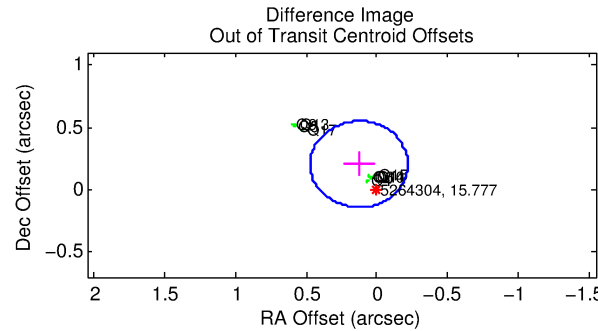
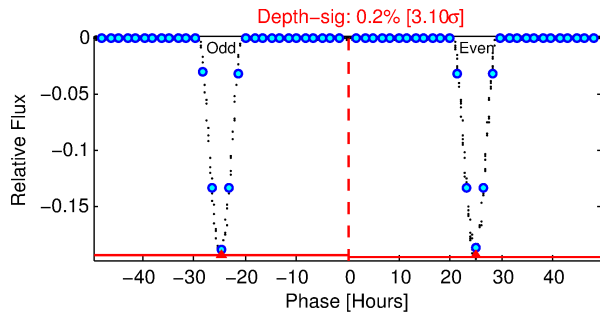
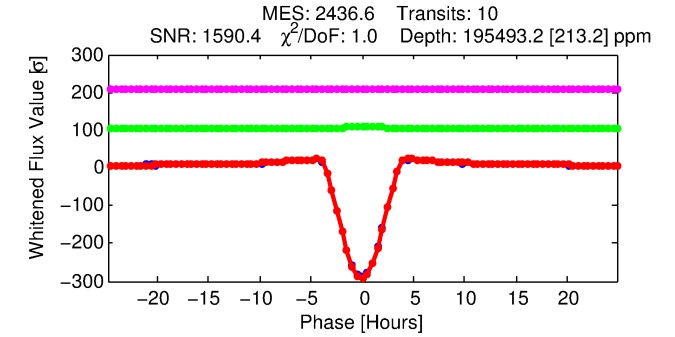
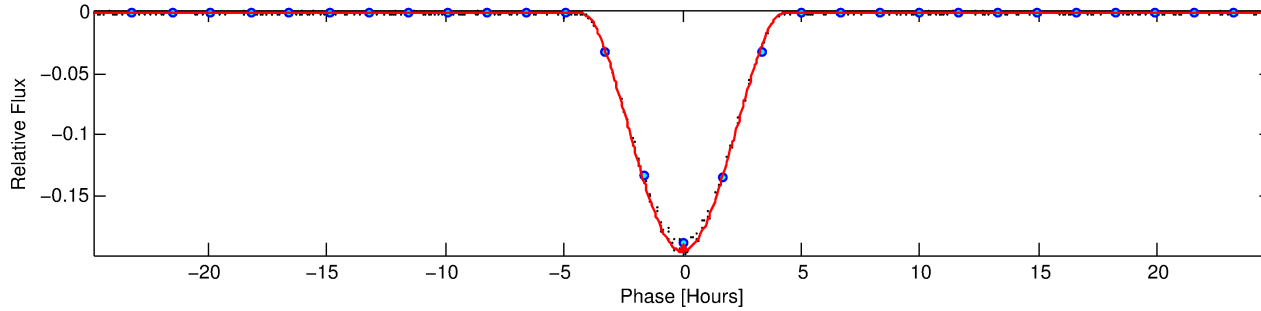
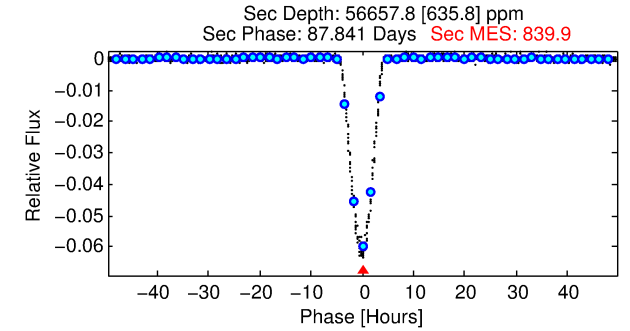
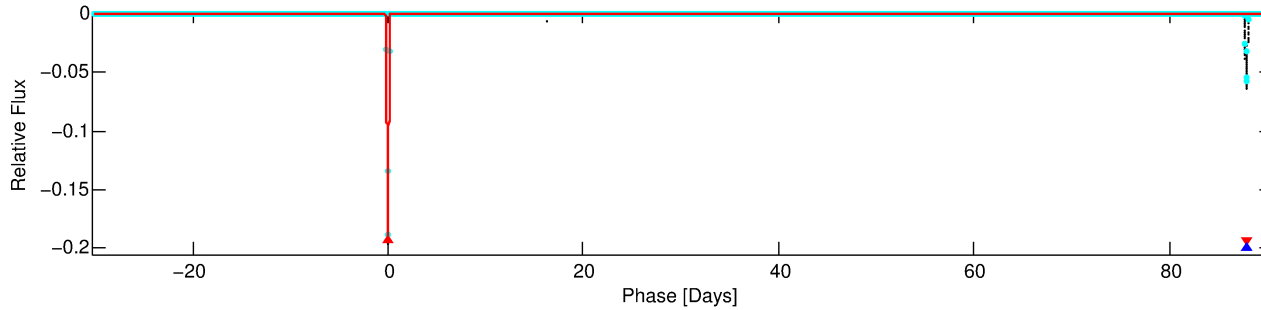
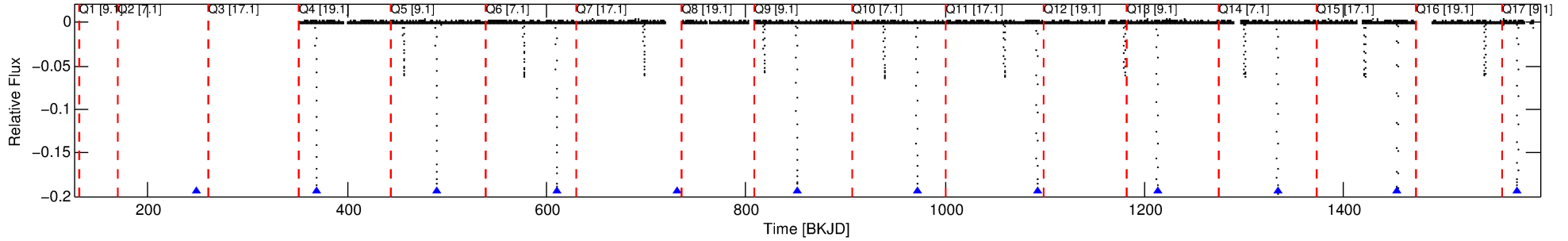
Ephemeris Match Information For 005264304-01

No Significant Match Found

DV One-Page Summary

KIC: 5264304 Candidate: 1 of 2 Period: 120.582 d
KOI: K03563.01 Corr: 0.999

Kp: 15.78 R*: 0.67 Rs Teff: 5294.0 K Logg: 4.65 Fe/H: -0.540



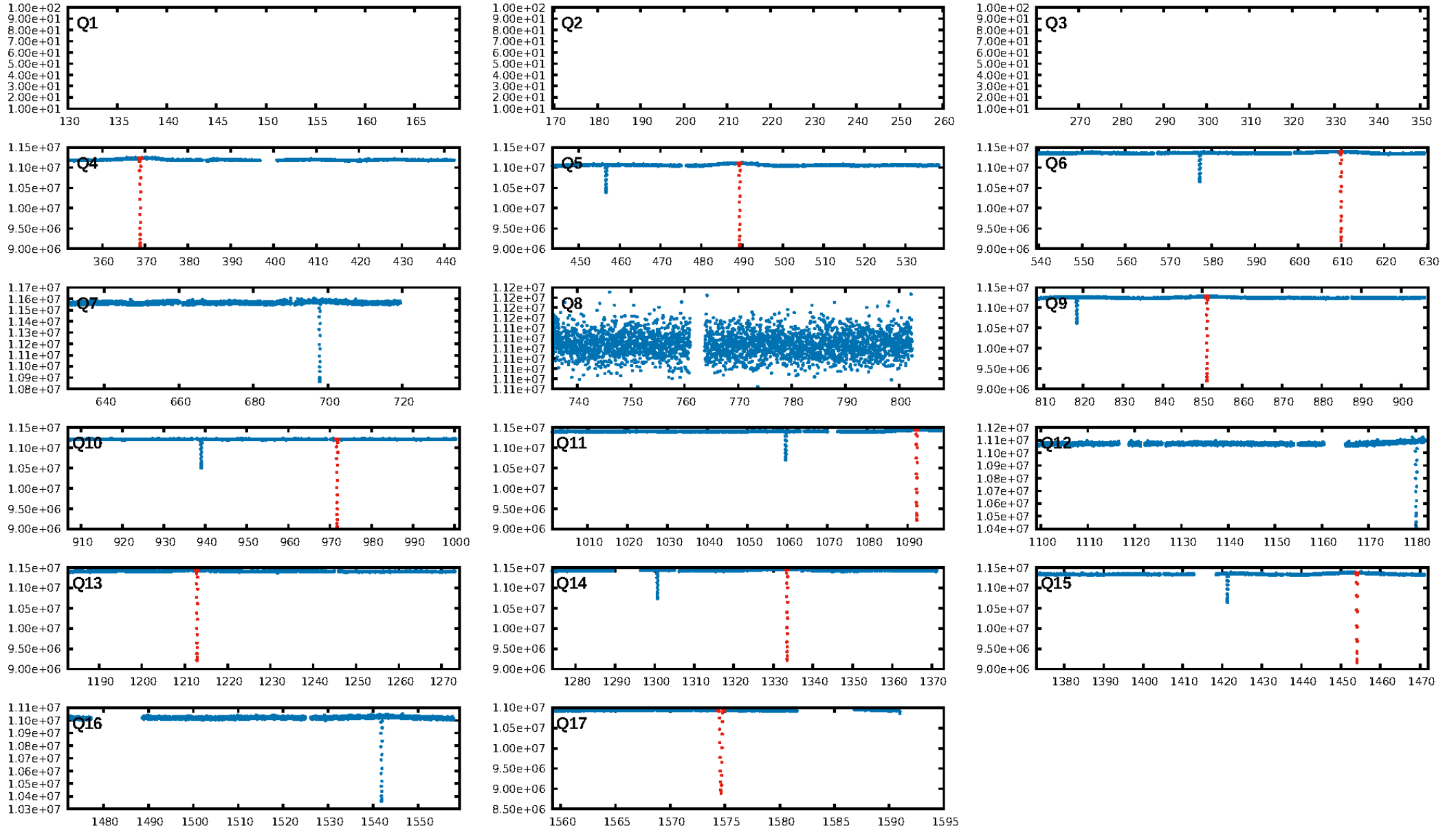
DV Fit Results:

Period = 120.58168 [0.00001] d
Epoch = 248.2387 [0.0001] BKJD
Rp/R* = 0.6088 [0.0289]
a/R* = 148.66 [1.10]
b = 0.90 [0.04]
Seff = 1.71 [0.38]
Teq = 291 [16] K
Rp = 44.71 [7.29] Re
a = 0.4321 [0.0539] AU
Ag = 2911.01 [575.21] [5.06σ]
Teffp = 3310 [143] K [21.01σ]

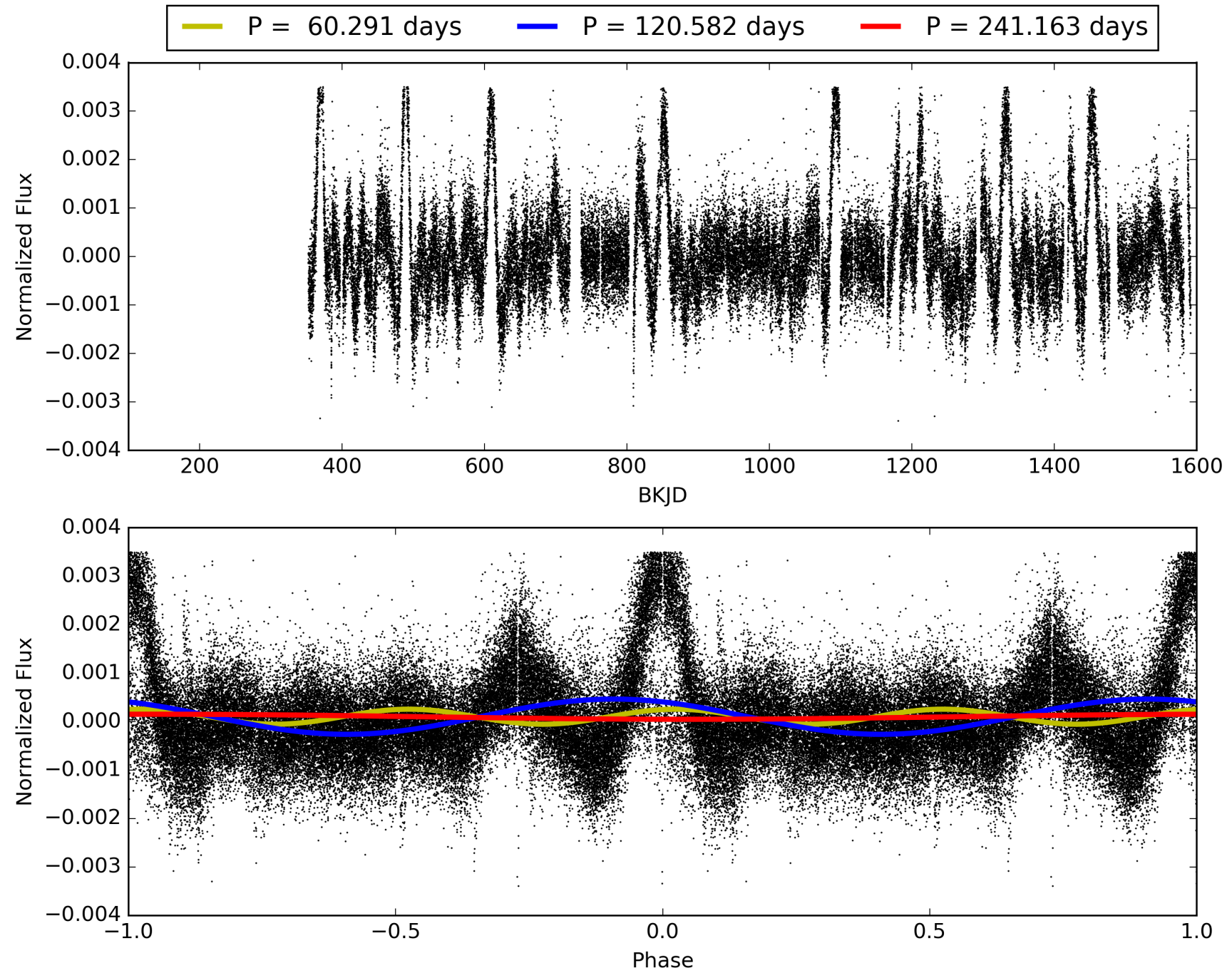
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 7.237
Centroid-sig: 0.0%
Centroid-so: 0.133 arcsec [29.78σ]
OotOffset-rm: 0.240 arcsec [2.08σ]
KicOffset-rm: 0.153 arcsec [1.46σ]
OotOffset-st: 3/2/1/4 [10]
KicOffset-st: 3/2/1/4 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 1.00 [10/10]

TCE 005264304-01, PDC Light Curves

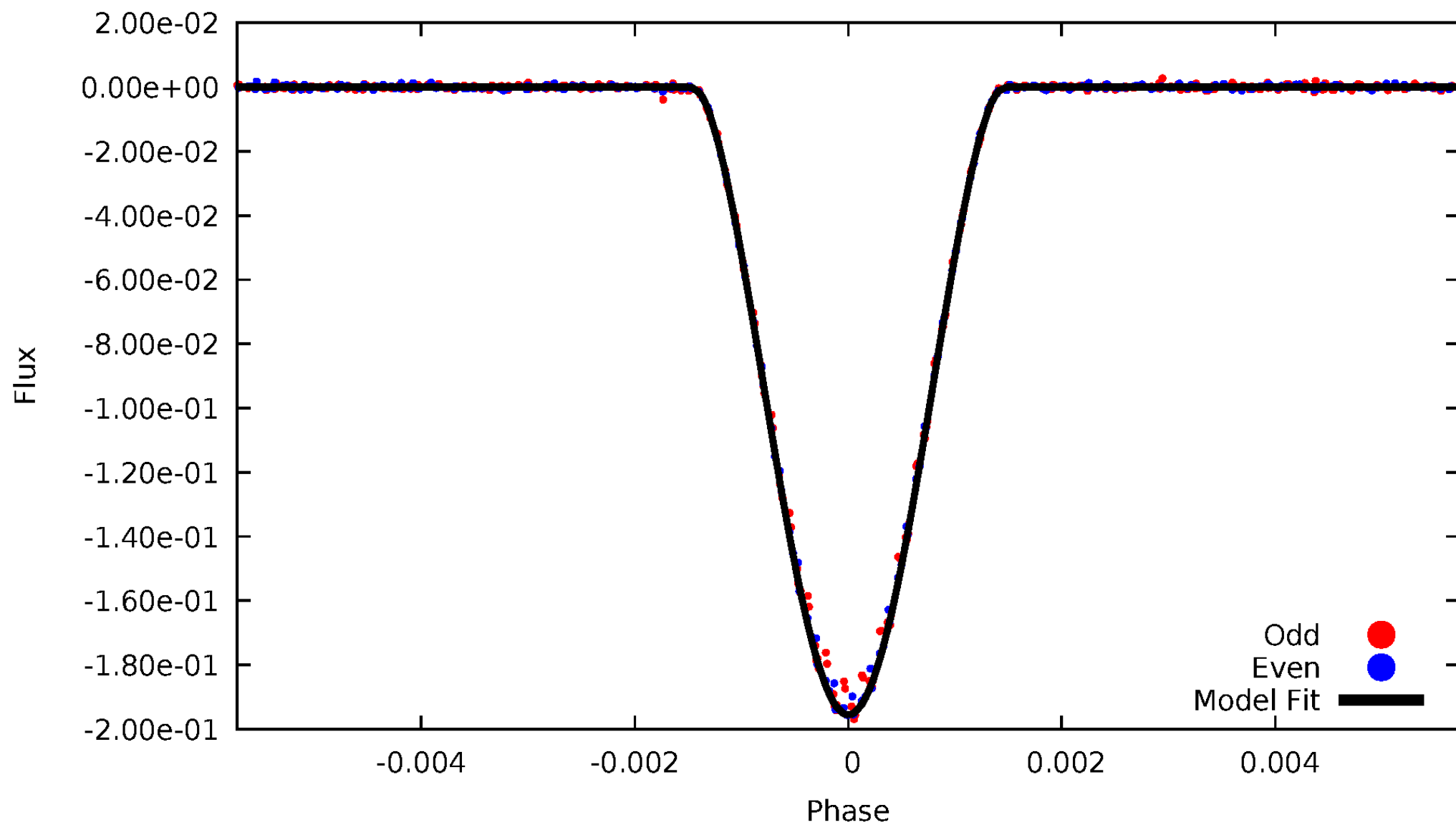


TCE 005264304-01



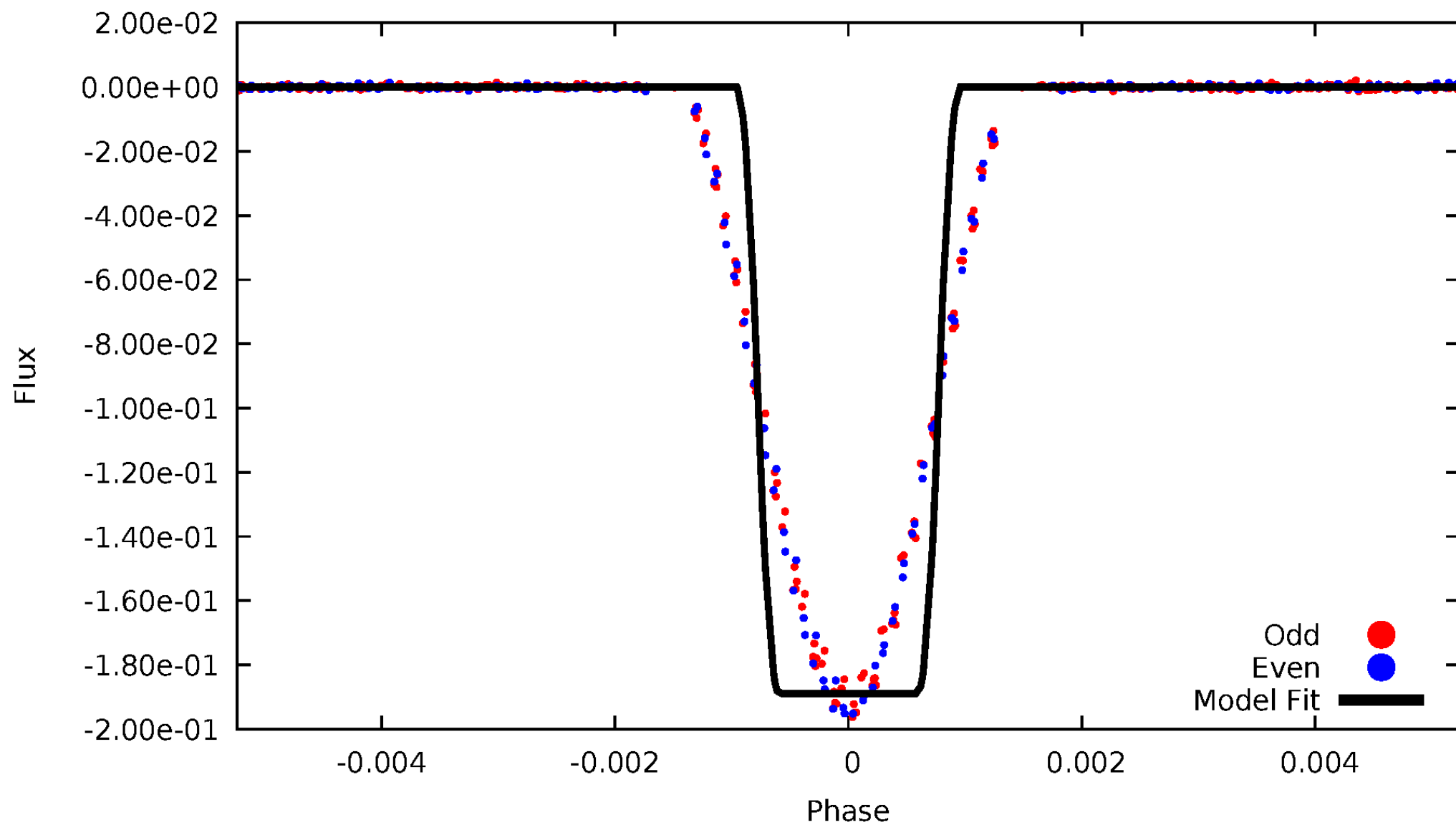
DV Odd/Even

TCE 005264304-01



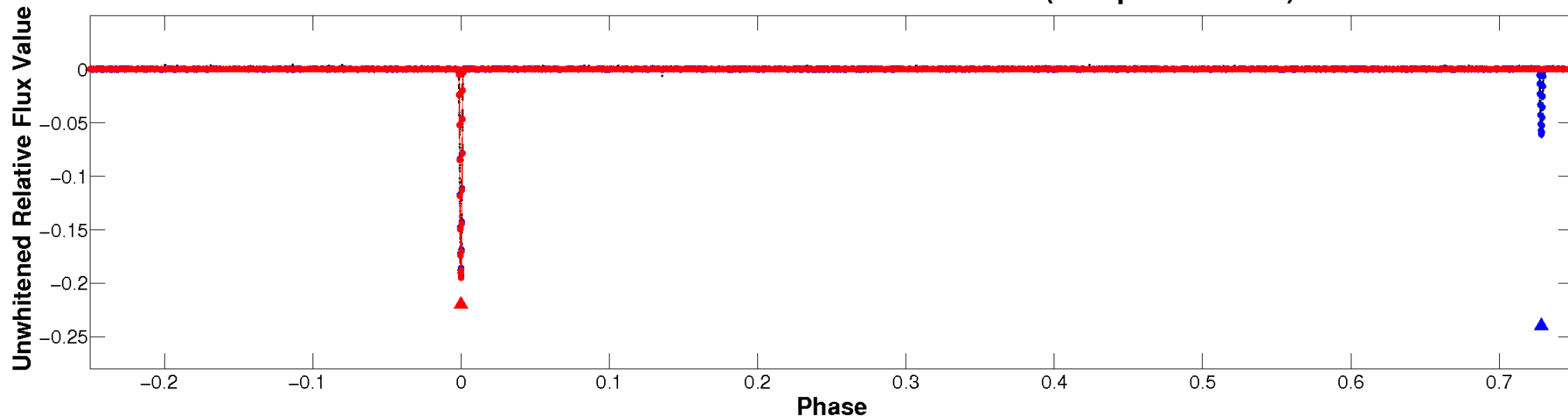
ALT Odd/Even

TCE 005264304-01

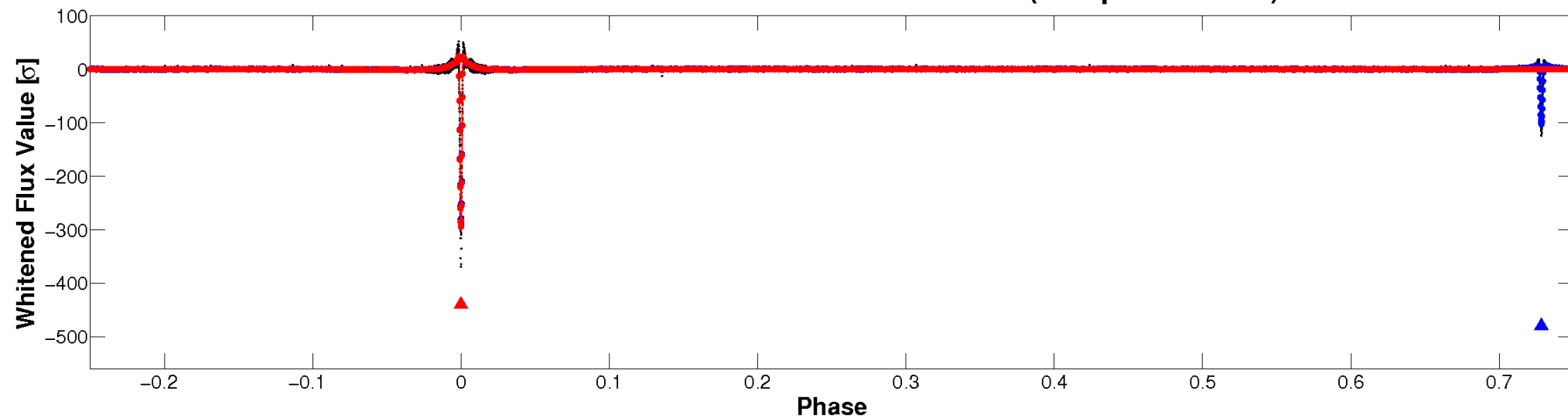


Non-Whitened Vs. Whitened Light Curve

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

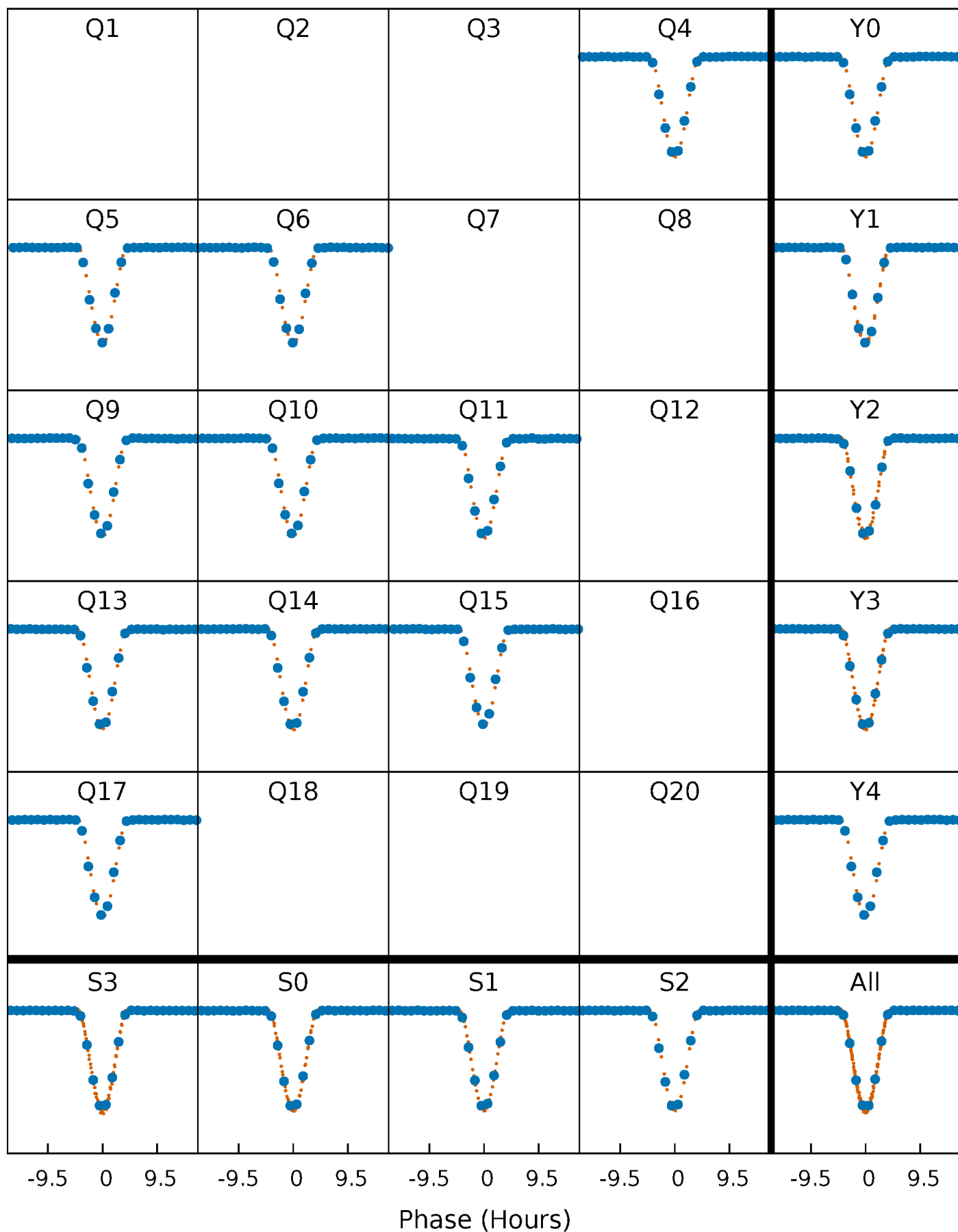


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



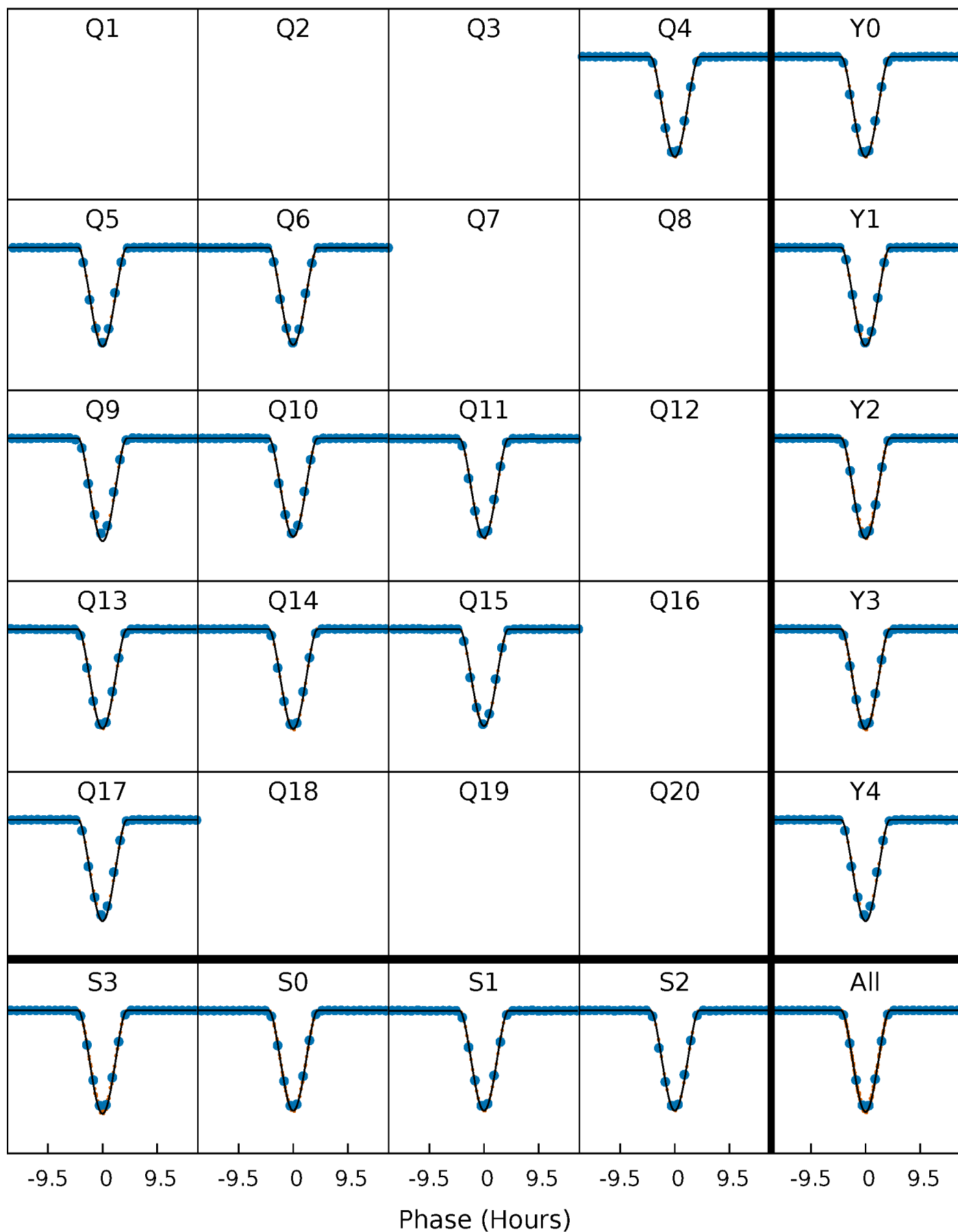
PDC Quarter-Phased Transit Curves

TCE 005264304-01 P=120.581679 Days $T_0=248.238710$ (BKJD)



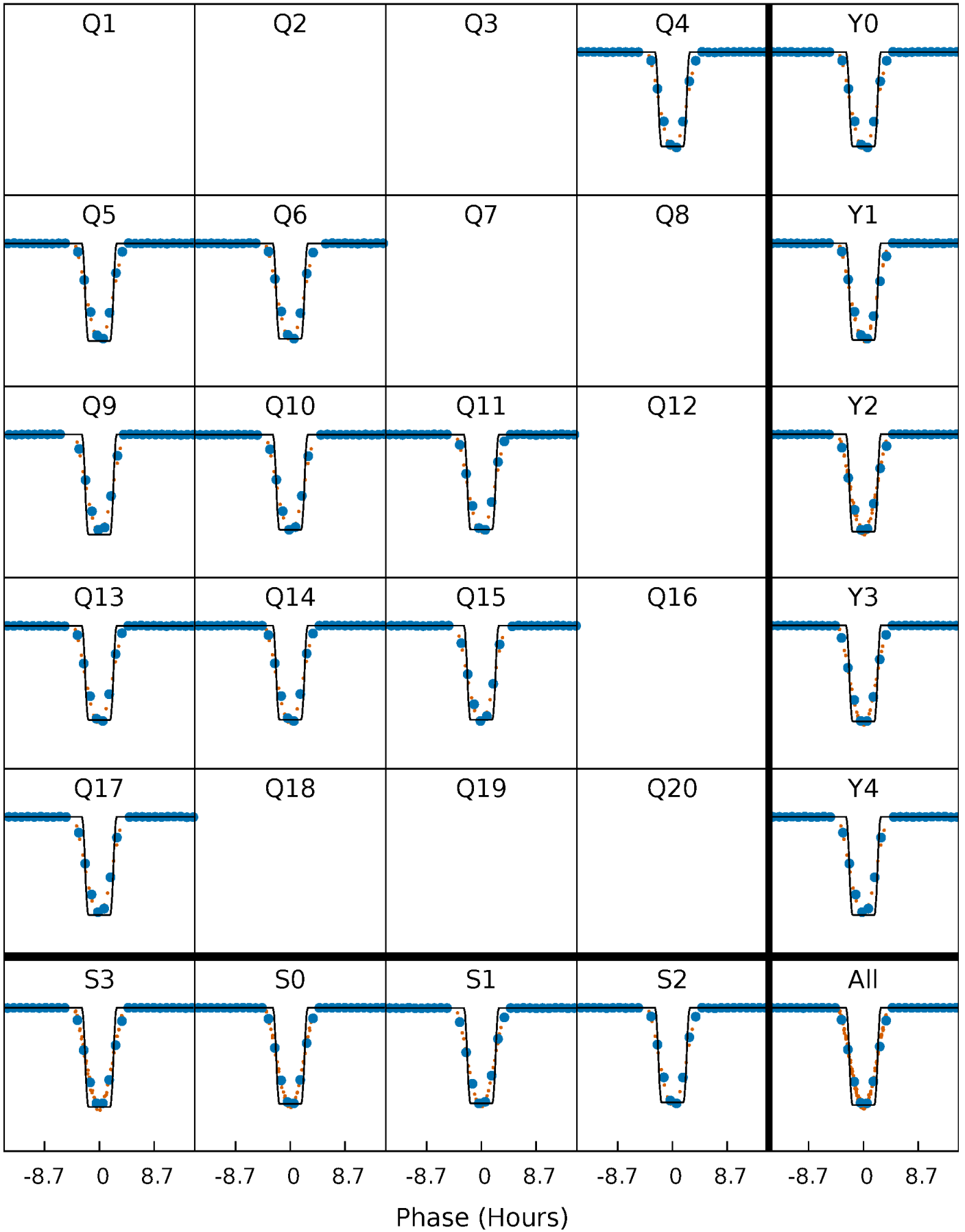
DV Quarter-Phased Transit Curves

TCE 005264304-01 P=120.581679 Days $T_0=248.238710$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

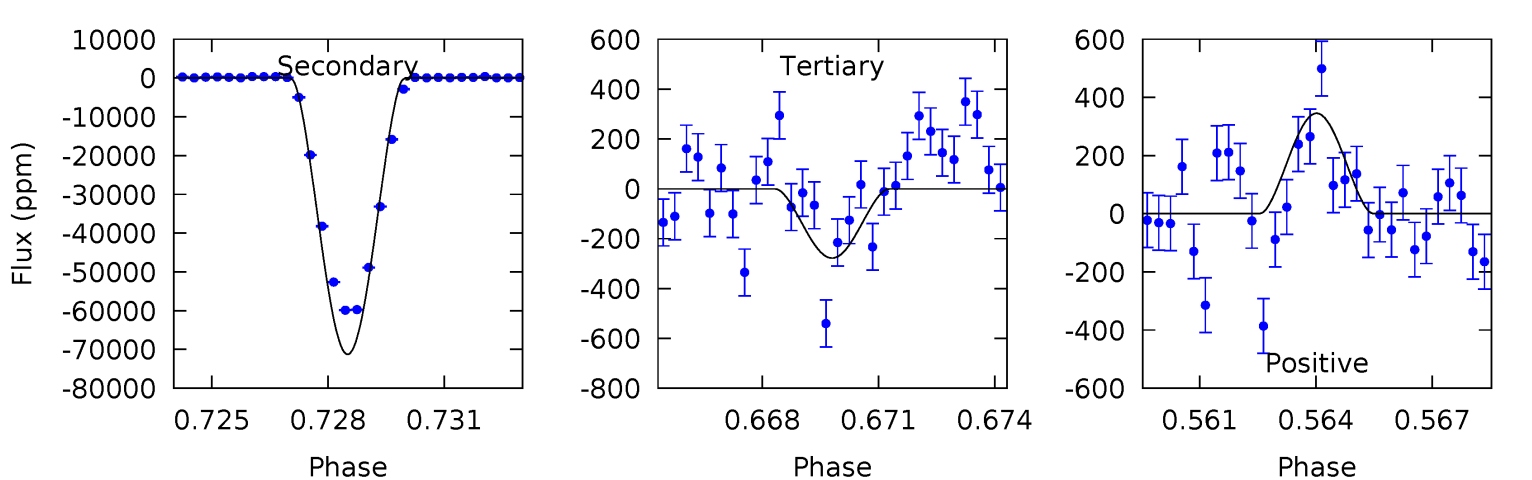
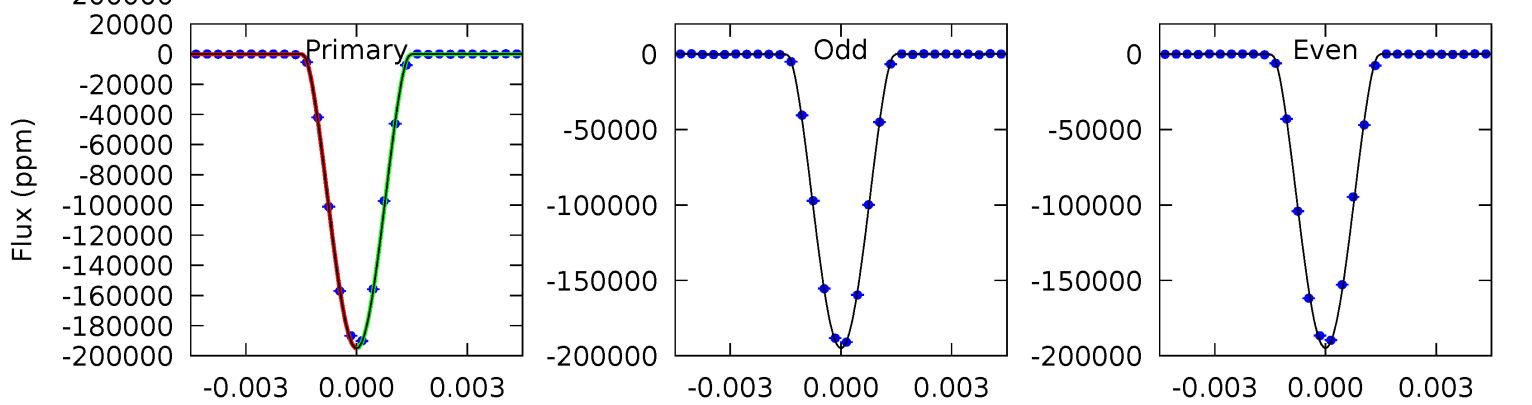
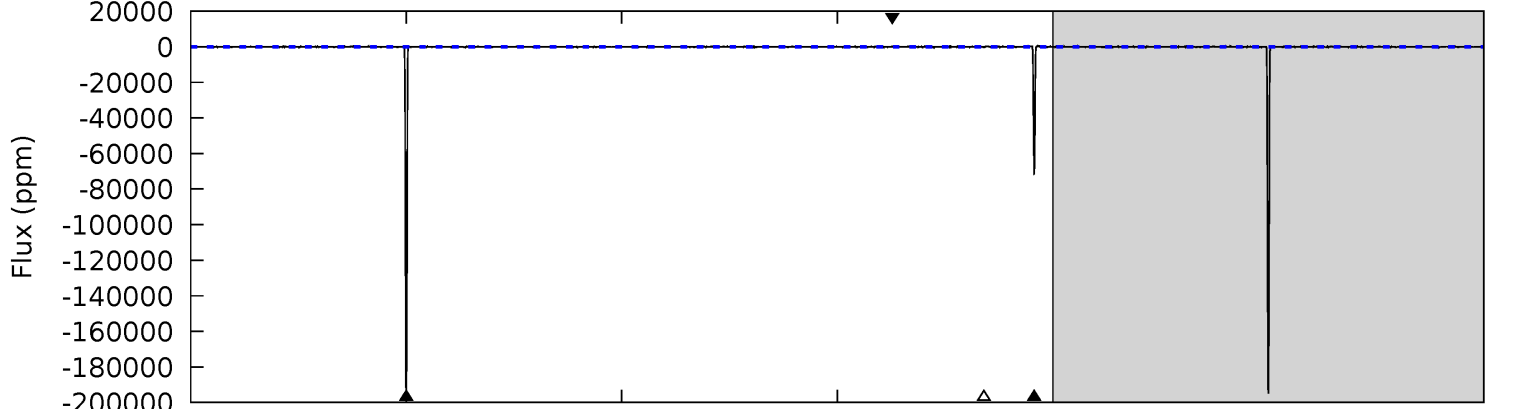
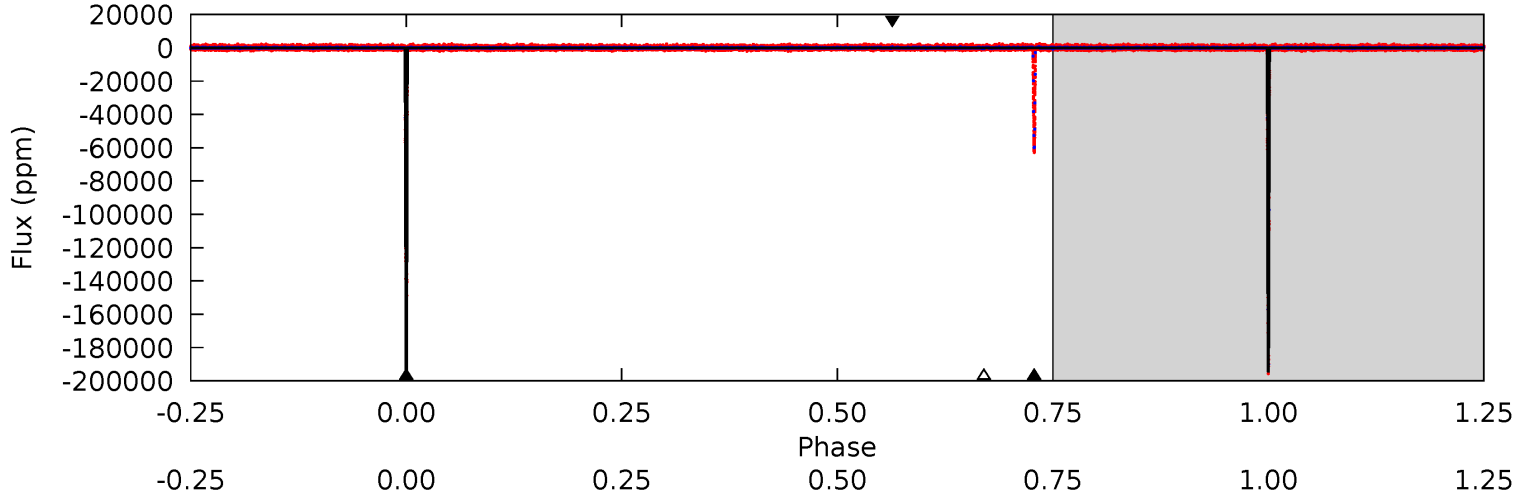
TCE 005264304-01 P=120.582369 Days $T_0=248.234476$ (BKJD)



DV Model-Shift Uniqueness Test

005264304-01, P = 120.581679 Days, E = 248.238710 Days

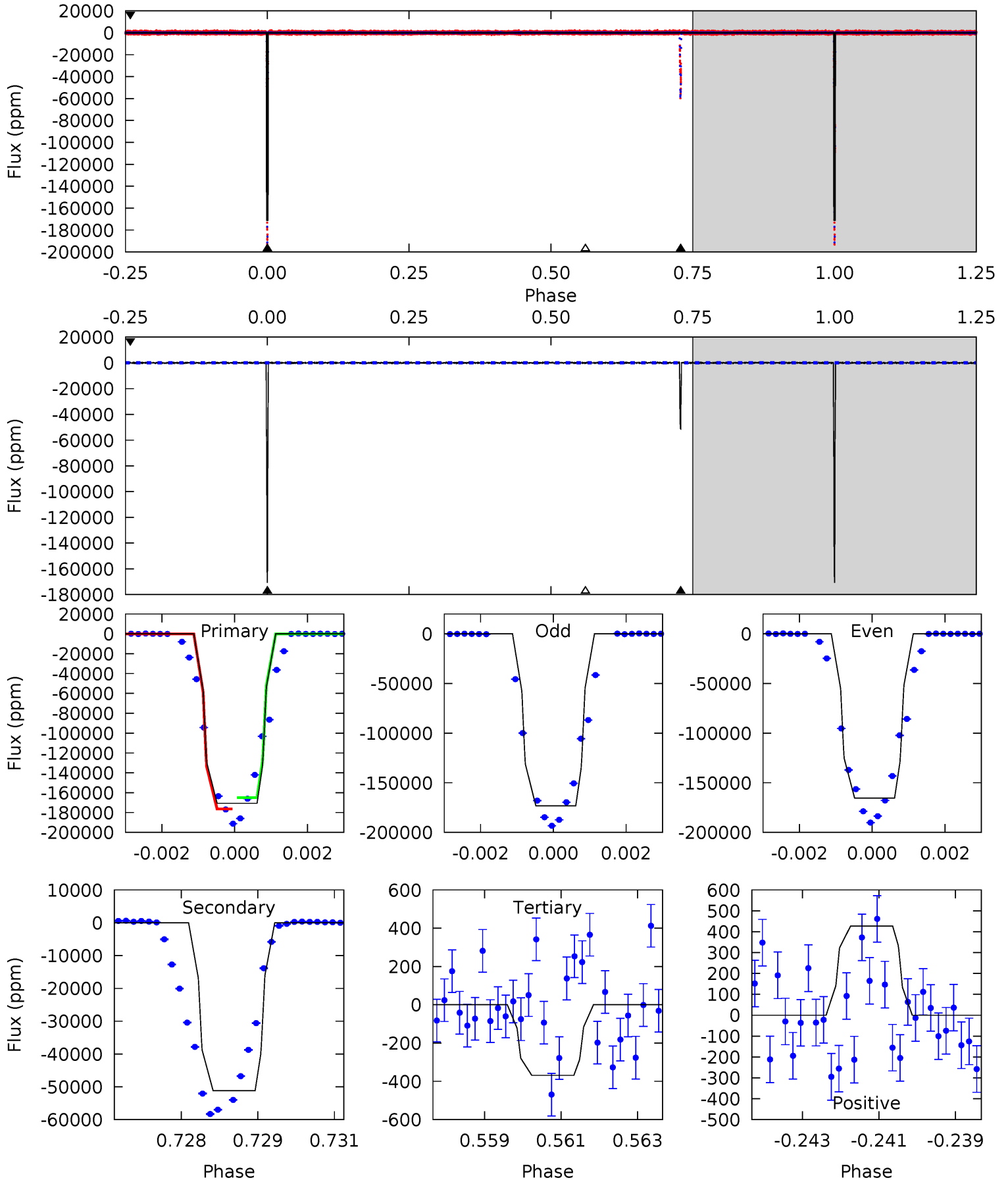
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4235 | 1547 | 6.04 | 7.50 | 5.25 | 2.97 | 1.97 | 4229 | 4227 | 1541 | 1540 | 0.63 | 0.99 | 0.00 | 0.23 |



Alt Model-Shift Uniqueness Test

005264304-01, P = 120.582369 Days, E = 248.234476 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|-------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 1945 | 582.9 | 4.20 | 4.86 | 5.34 | 3.11 | 1.80 | 1941 | 1940 | 578.7 | 578.1 | 50.8 | 0.99 | 0.00 | 0 |



Stellar Parameters For KIC 005264304

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5294^{+190}_{-190} | $4.651^{+0.030}_{-0.090}$ | $-0.540^{+0.300}_{-0.300}$ | $0.673^{+0.105}_{-0.049}$ | $0.744^{+0.073}_{-0.073}$ | $3.440^{+0.537}_{-0.989}$ |
| | +4%/-4% | +1%/-2% | +56%/-56% | +16%/-7% | +10%/-10% | +16%/-29% |
| 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 005264304-01 / KOI 3563.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|-------------------------|-------------------|----------------------|----------------------|
| DV | -71256 ± 46 | $45.95^{+3.78}_{-3.34}$ | 414^{+20}_{-17} | 3897^{+124}_{-129} | 3718^{+525}_{-505} |
| Alt. | -51162 ± 88 | $32.52^{+3.10}_{-2.80}$ | 412^{+20}_{-17} | 4124^{+176}_{-146} | 5170^{+981}_{-769} |

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 $A_{obs} \gg 1.0$

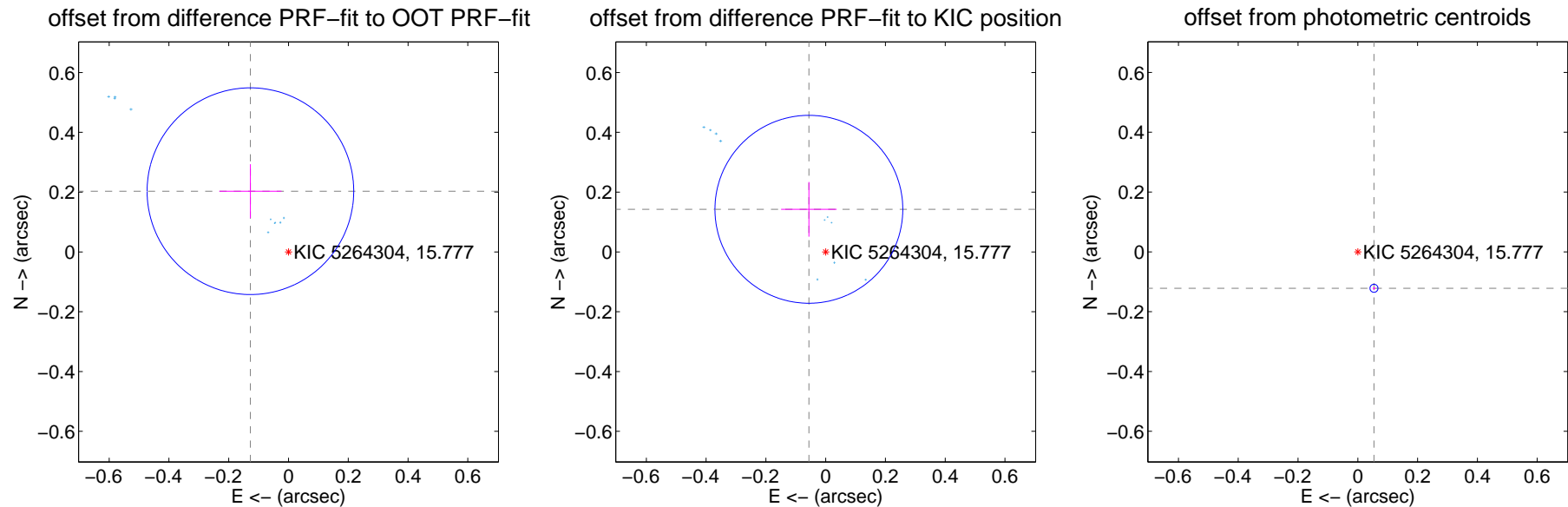
DV Centroid Data

Supplemental centroid analysis for 005264304-01. Kepler magnitude: 15.78. Transit SNR 1590.36

There are 10 quarters with good PRF difference image offsets

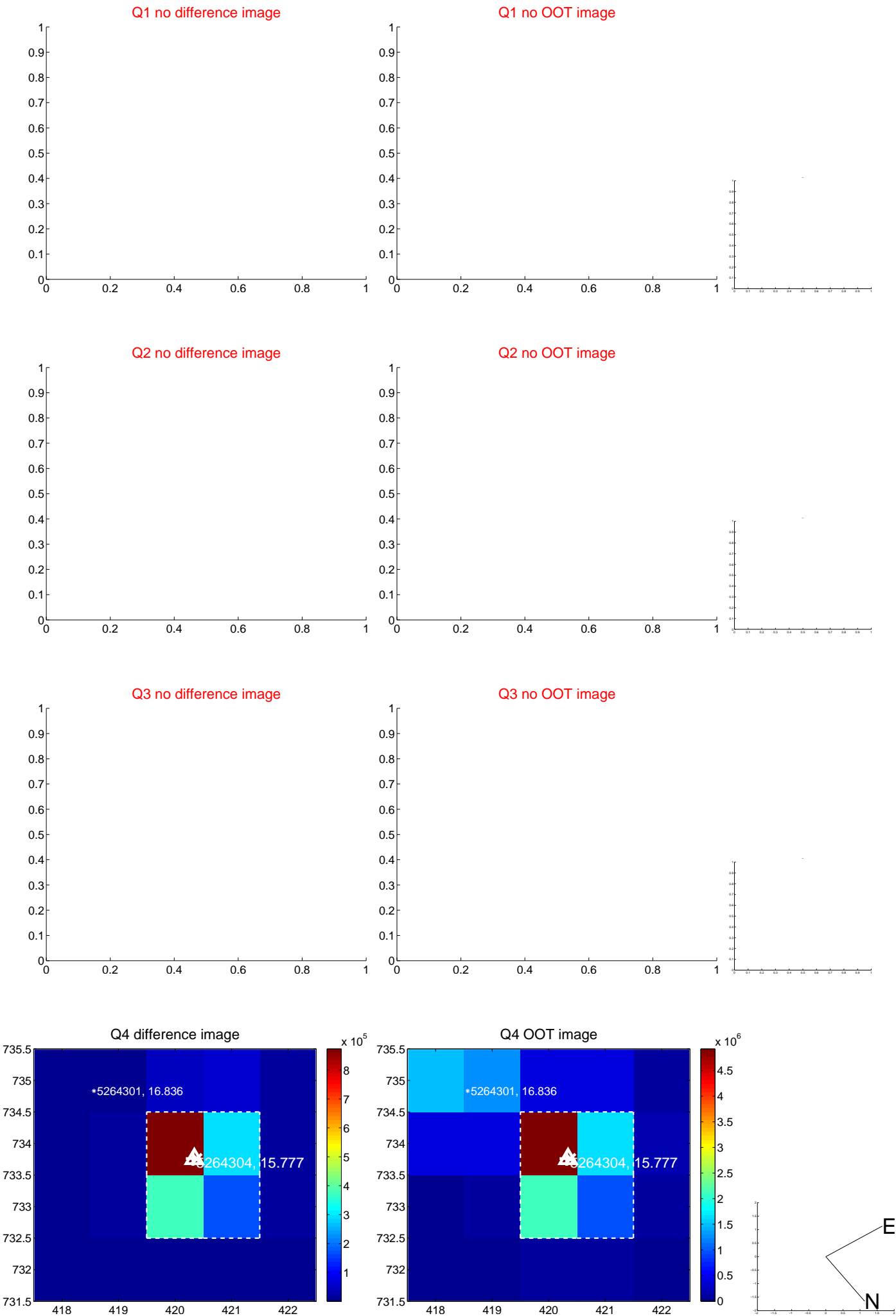
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.240 ± 0.115 | 2.08 | 0.127 ± 0.104 | 0.203 ± 0.090 |
| PRF-fit source offset from KIC position | 0.153 ± 0.105 | 1.46 | 0.056 ± 0.093 | 0.143 ± 0.091 |
| photometric centroid source offset | 0.13 ± 0.00 | 29.78 | -0.05 ± 0.00 | -0.12 ± 0.00 |

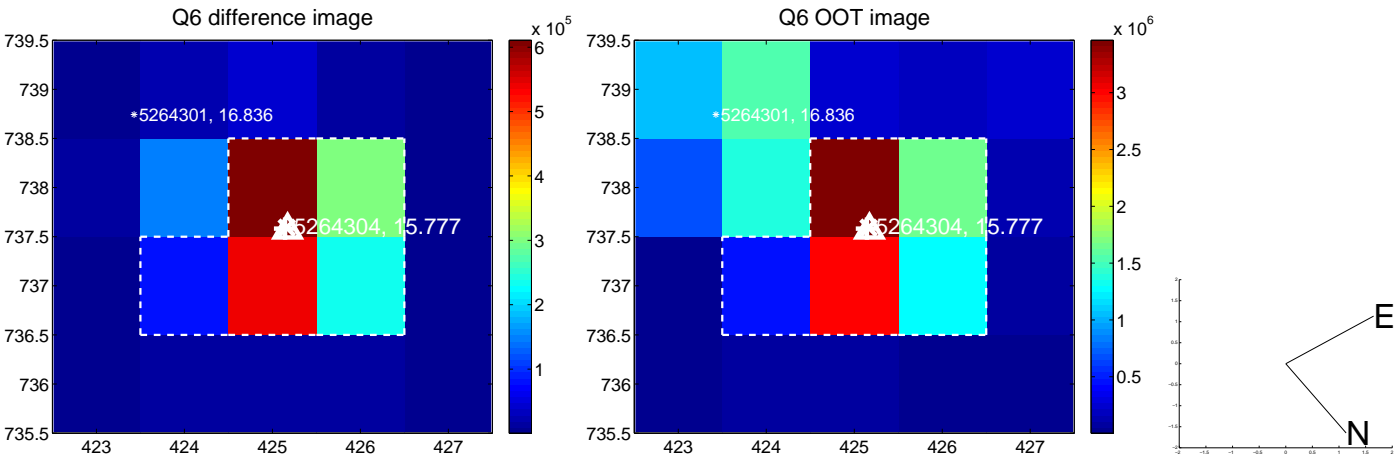
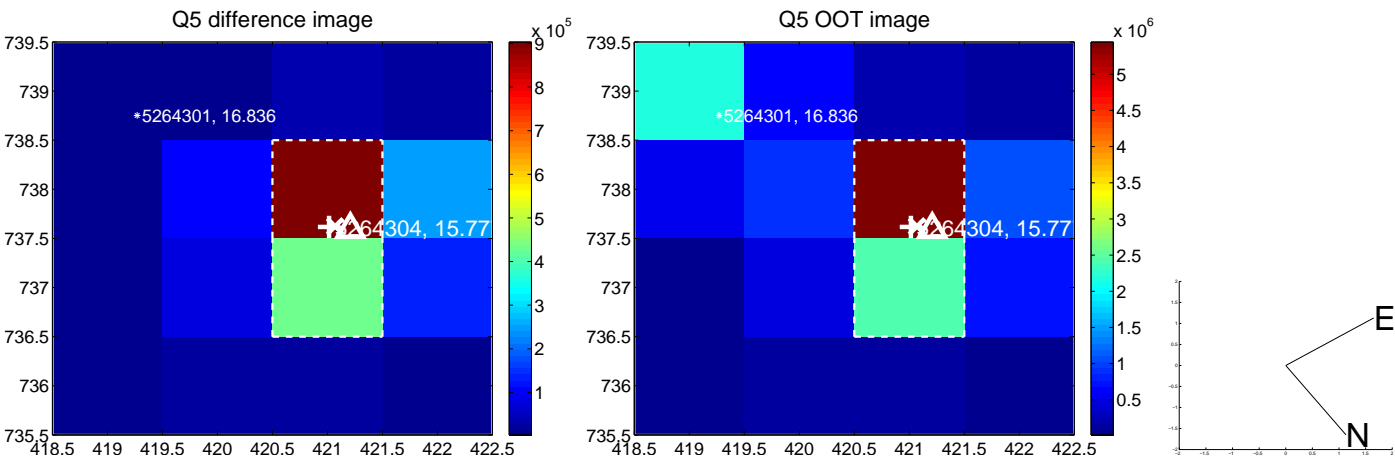


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

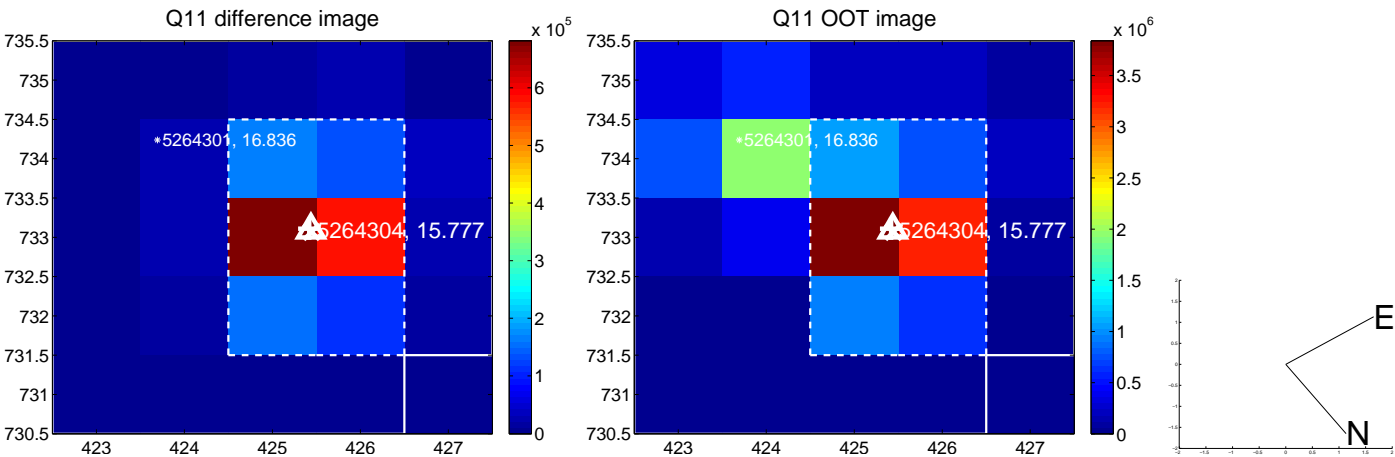
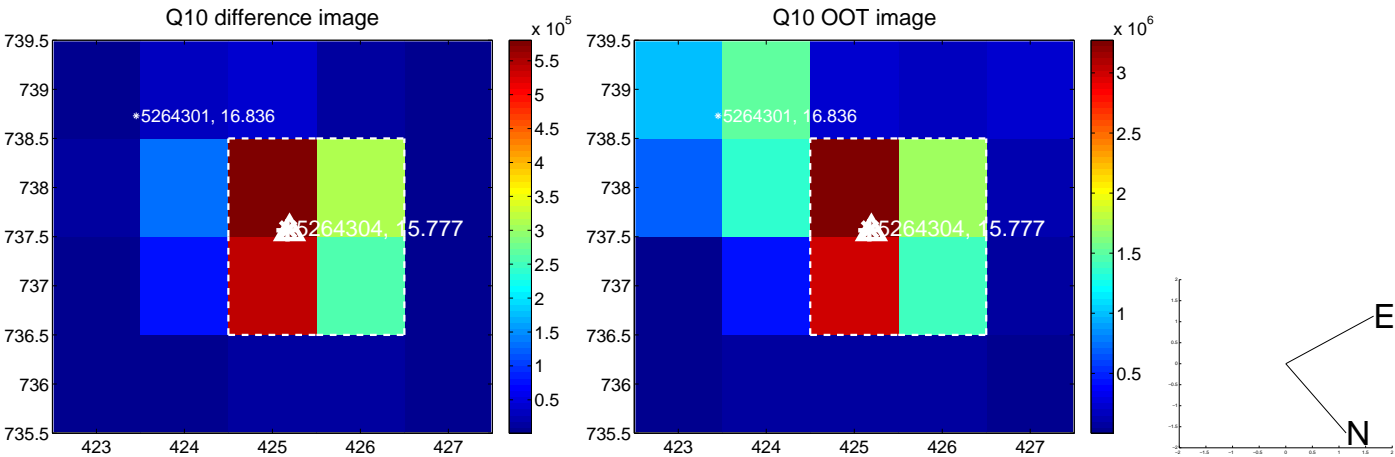
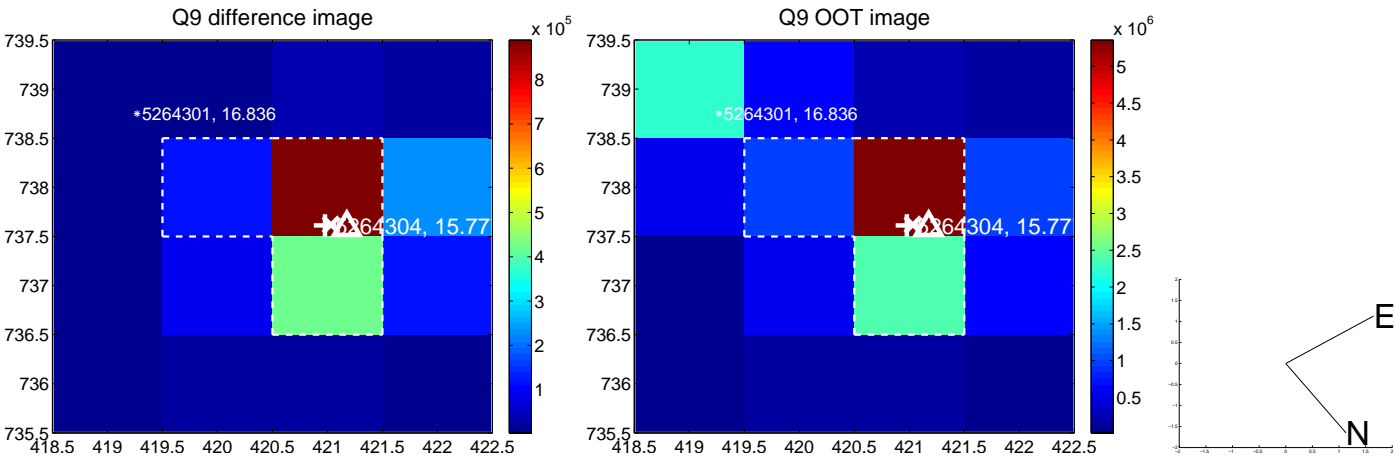
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



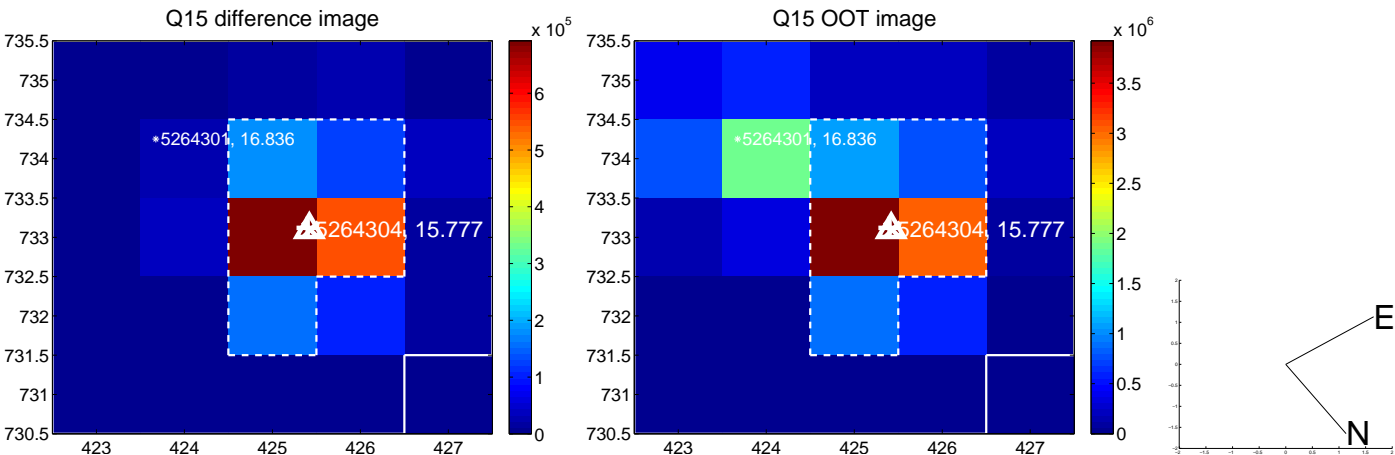
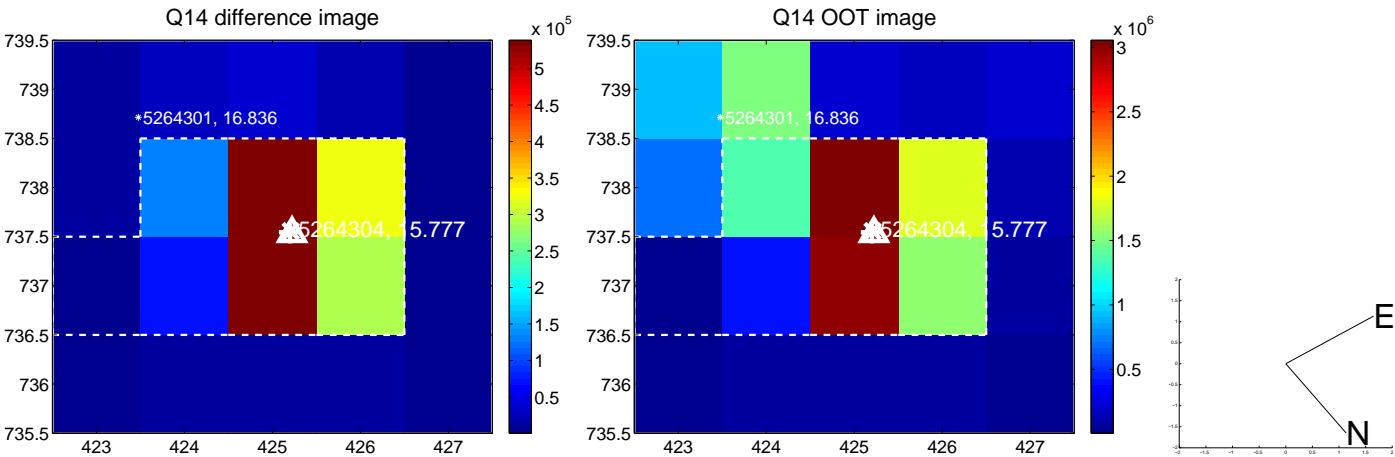
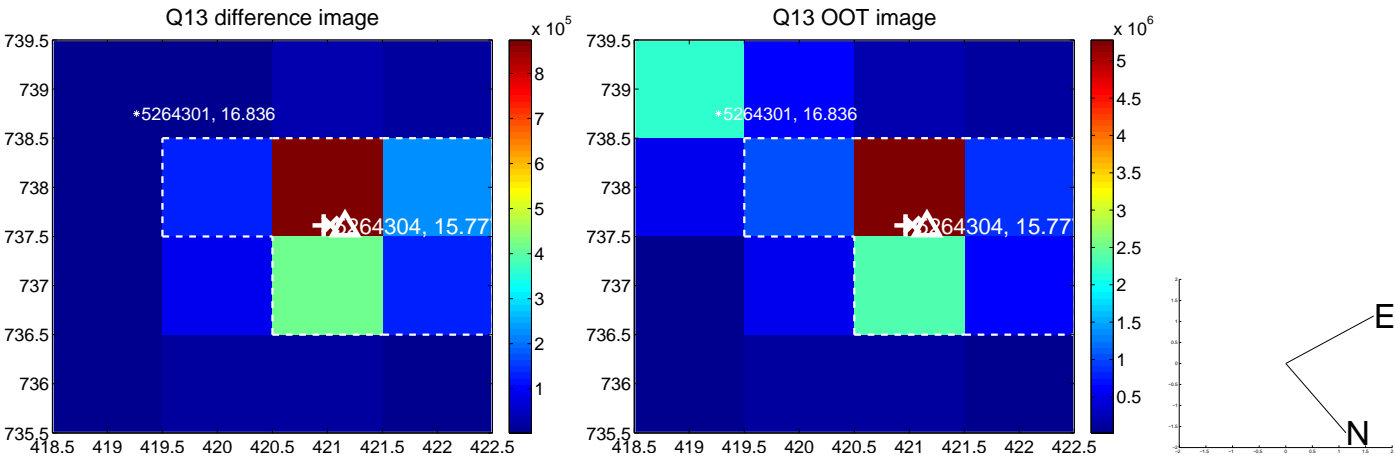
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



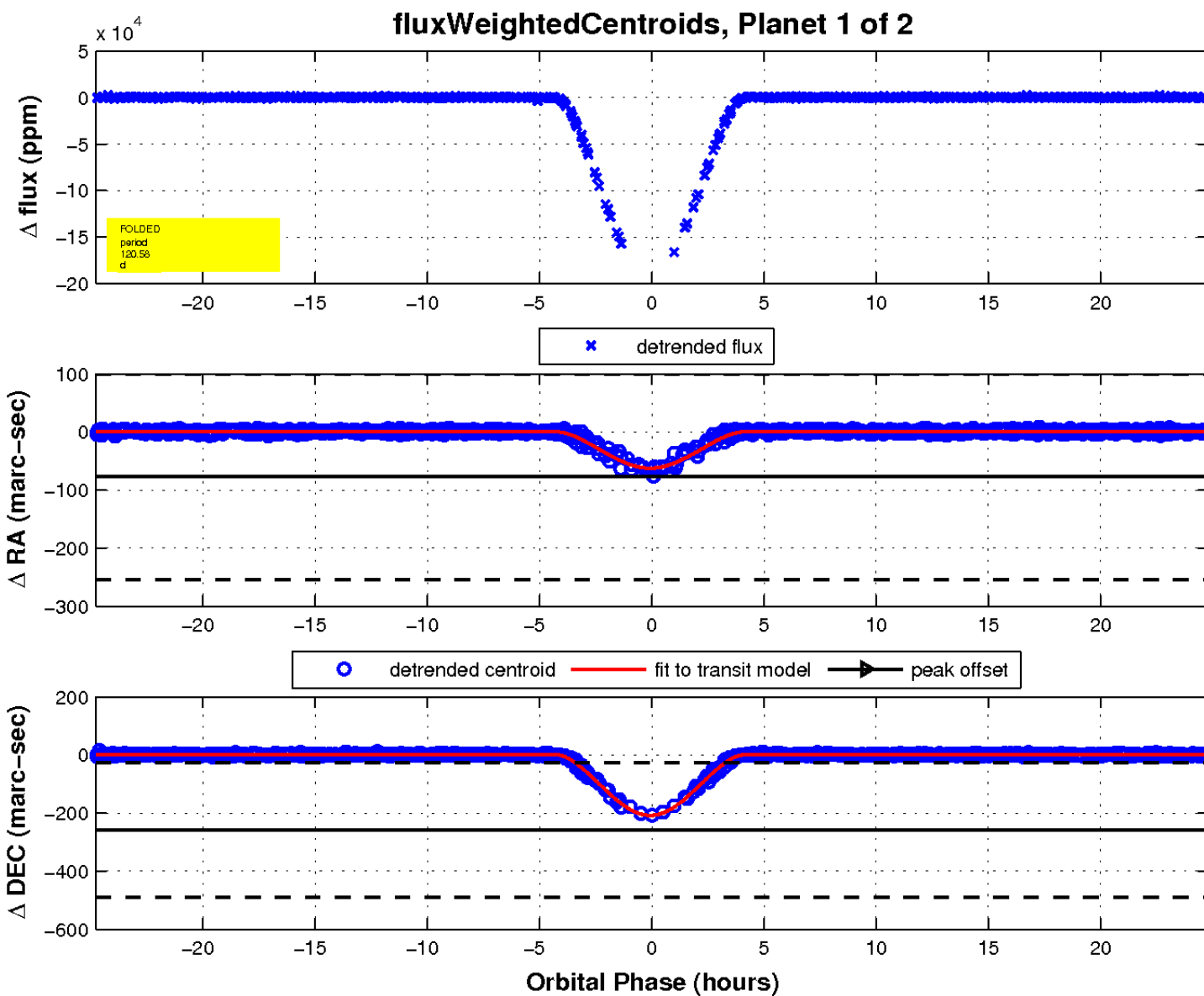
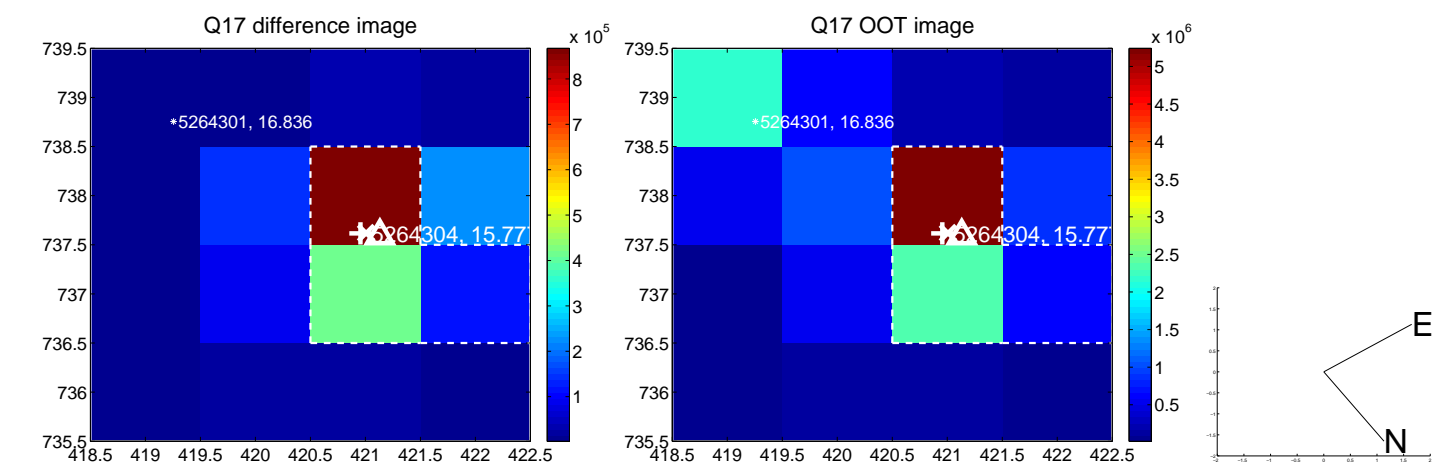
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

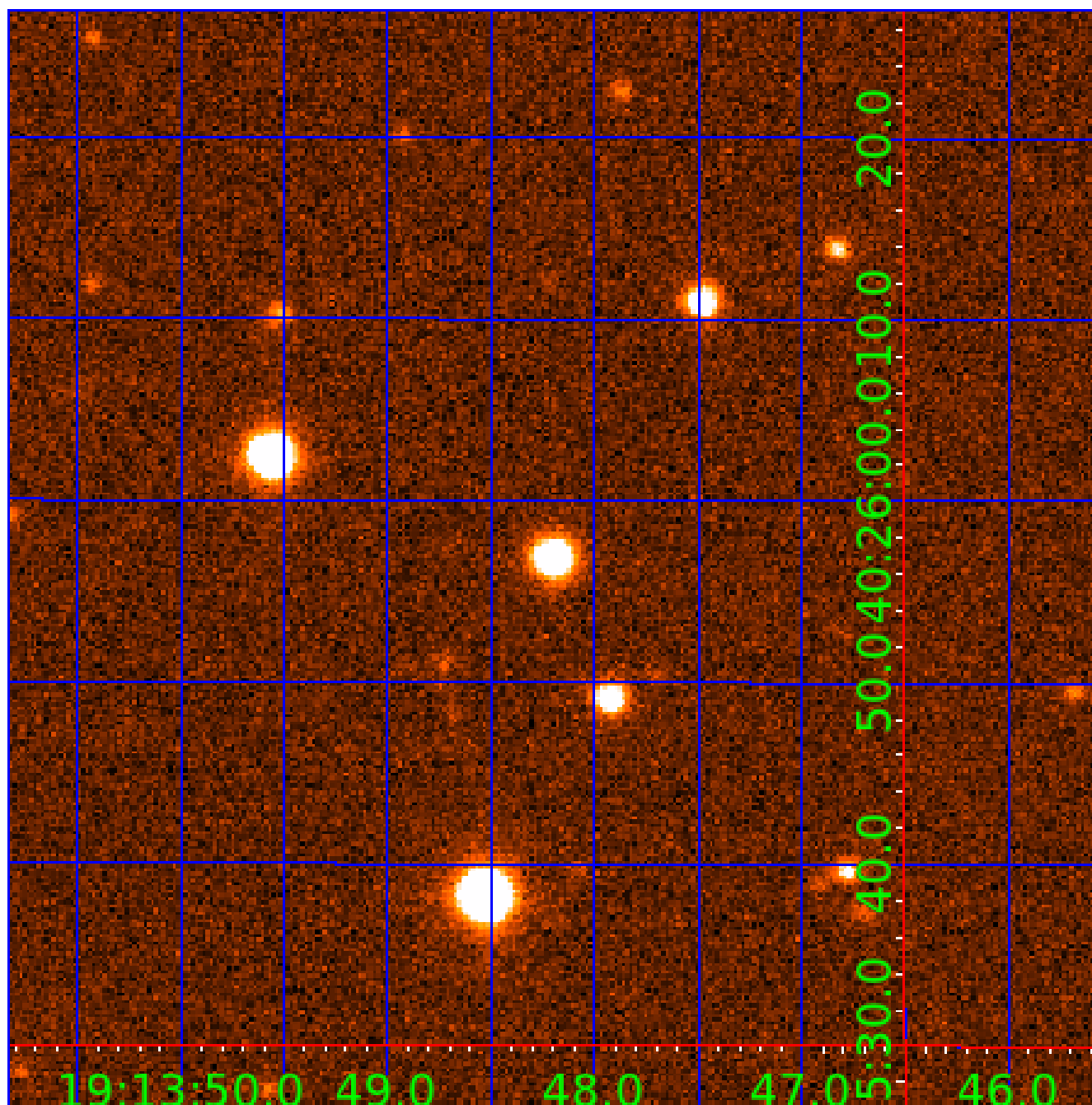


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005264304

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|--------|--------|-----------------------------|-----------------|------------------------|------------------------|
| 005264304-01 | OBS | 3563.01 | 120.581679 | 248.238710 | 195493.2 | 8.282 | 2436.6 | 1590.4 | 0.67 | 5294 | 44.71 | 1.71 |
| 005264304-02 | OBS | No | 120.581630 | 215.495252 | 61693.4 | 8.579 | 849.4 | 730.7 | 0.67 | 5294 | 24.75 | 1.71 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 005264304-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE |
| 005264304-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE |

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.

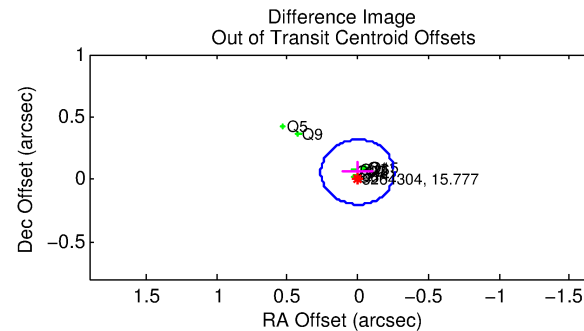
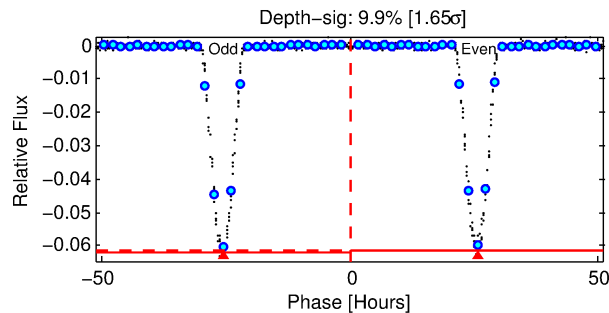
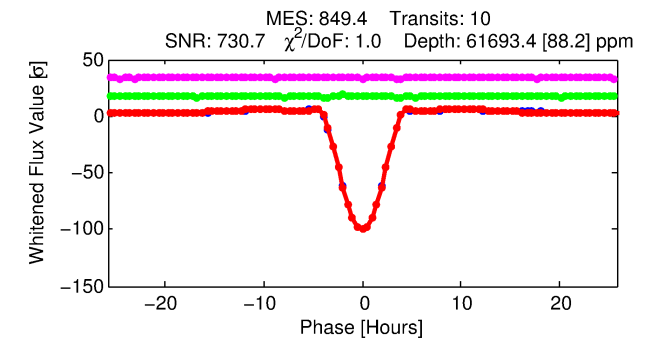
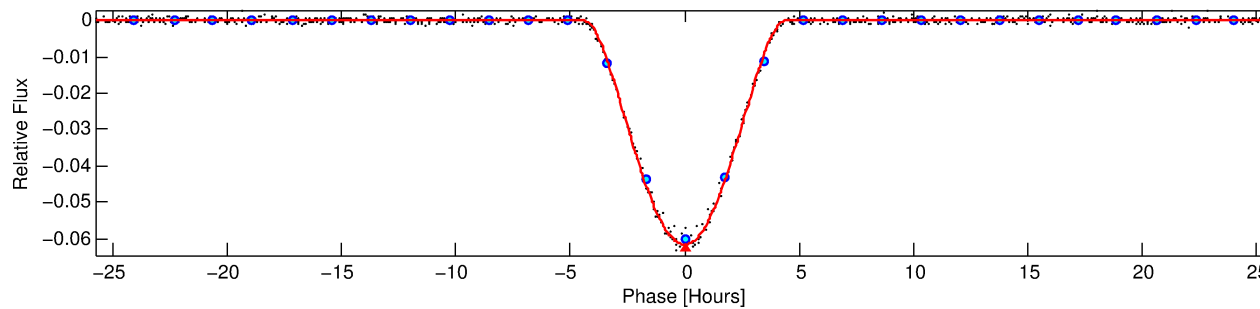
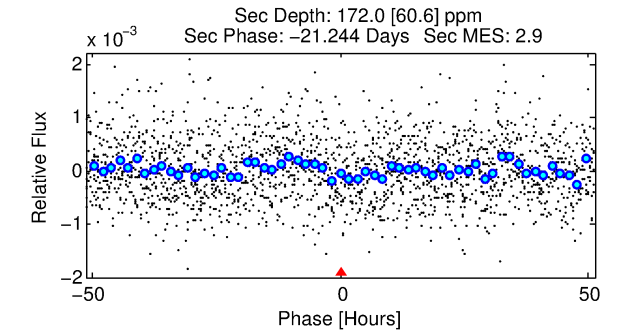
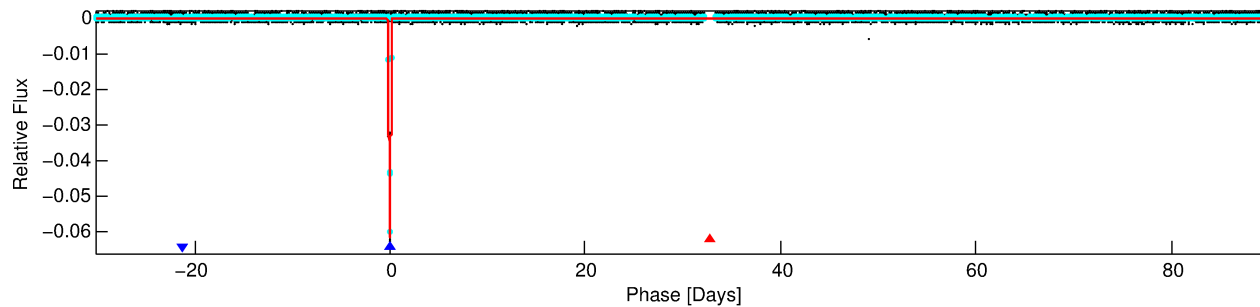
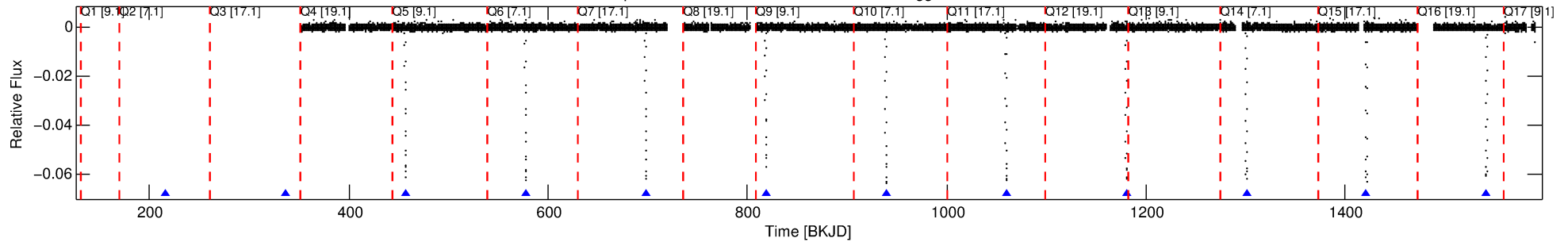
Ephemeris Match Information For 005264304-02

No Significant Match Found

DV One-Page Summary

KIC: 5264304 Candidate: 2 of 2 Period: 120.582 d
KOI: K03563 Corr: No Ephemeris Match

Kp: 15.78 R*: 0.67 Rs Teff: 5294.0 K Logg: 4.65 Fe/H: -0.540



DV Fit Results:

Period = 120.58163 [0.00005] d
Epoch = 215.4953 [0.0003] BKJD
Rp/R* = 0.3371 [0.0244]
a/R* = 103.94 [0.34]
b = 0.92 [0.04]
Seff = 1.71 [0.38]
Teq = 291 [16] K
Rp = 24.75 [4.26] Re
a = 0.4321 [0.0539] AU
Ag = 28.83 [12.06] [2.31 sigma]
Teffp = 1044 [106] K [7.00 sigma]

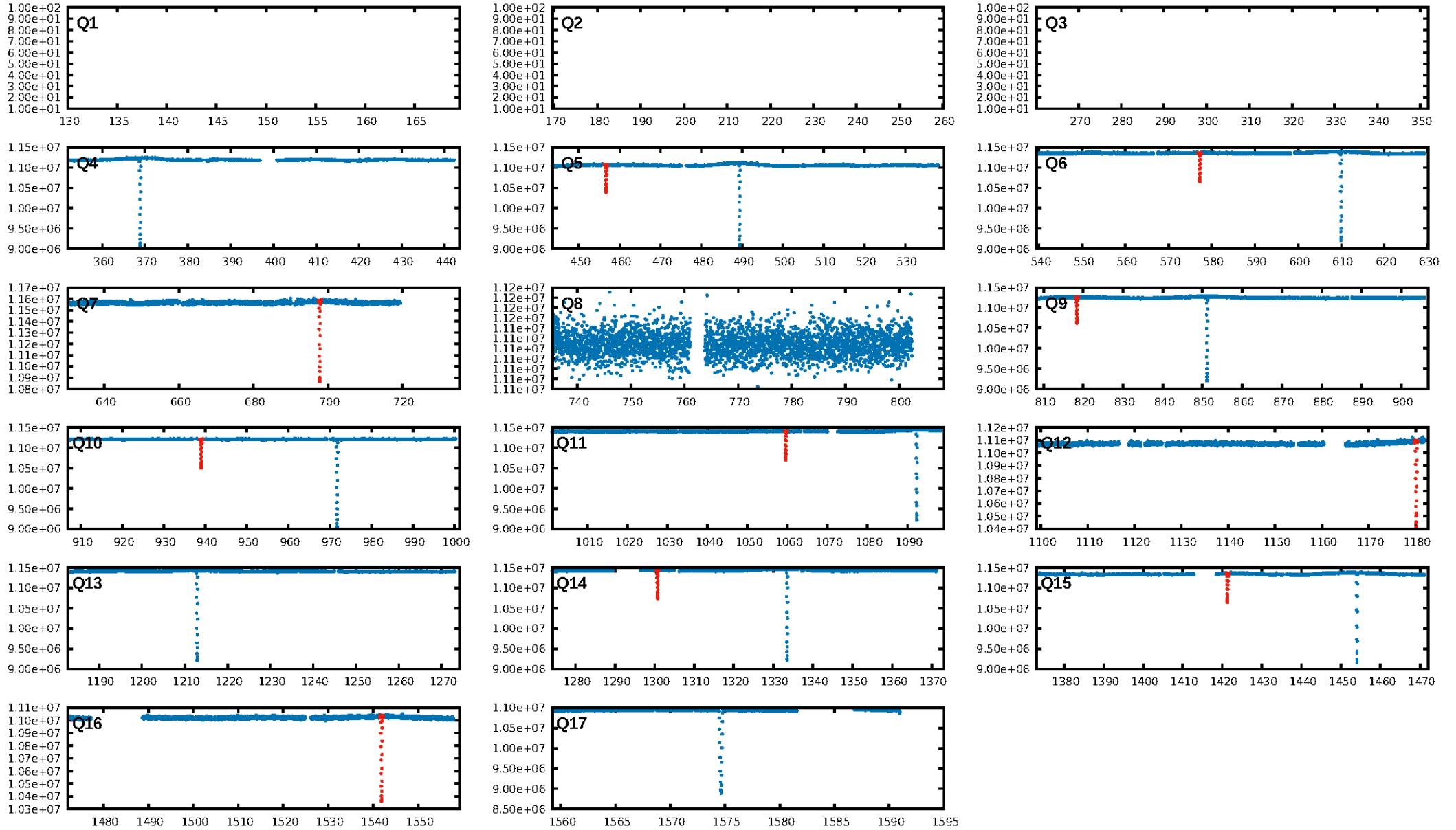
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 sigma]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 92.1%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 6.339
Centroid-sig: 0.0%
Centroid-so: 0.255 arcsec [18.02 sigma]
OotOffset-rm: 0.056 arcsec [0.64 sigma]
KicOffset-rm: 0.058 arcsec [0.71 sigma]
OotOffset-st: 2/3/2/2 [9]
KicOffset-st: 2/3/2/2 [9]
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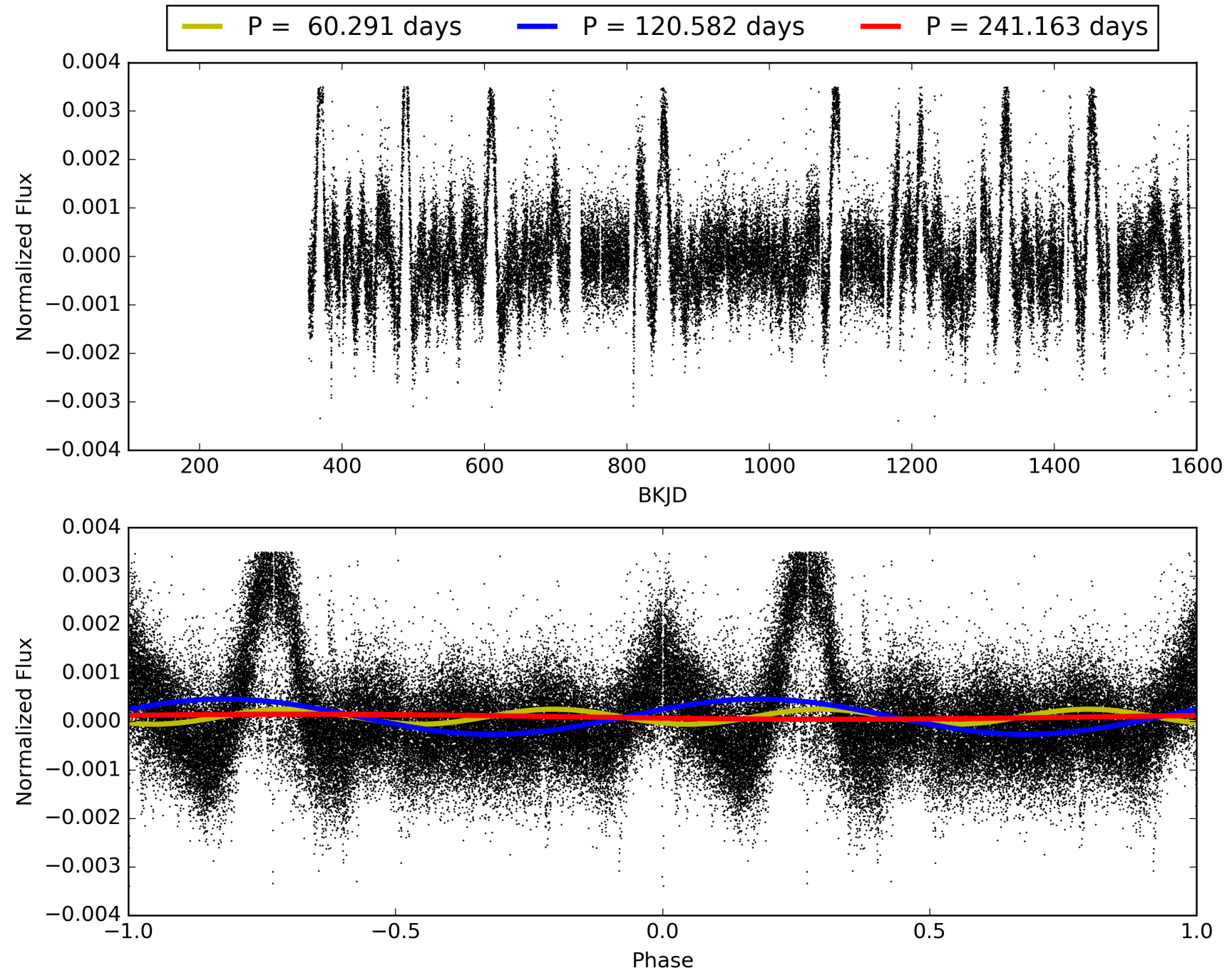
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 005264304-02, PDC Light Curves

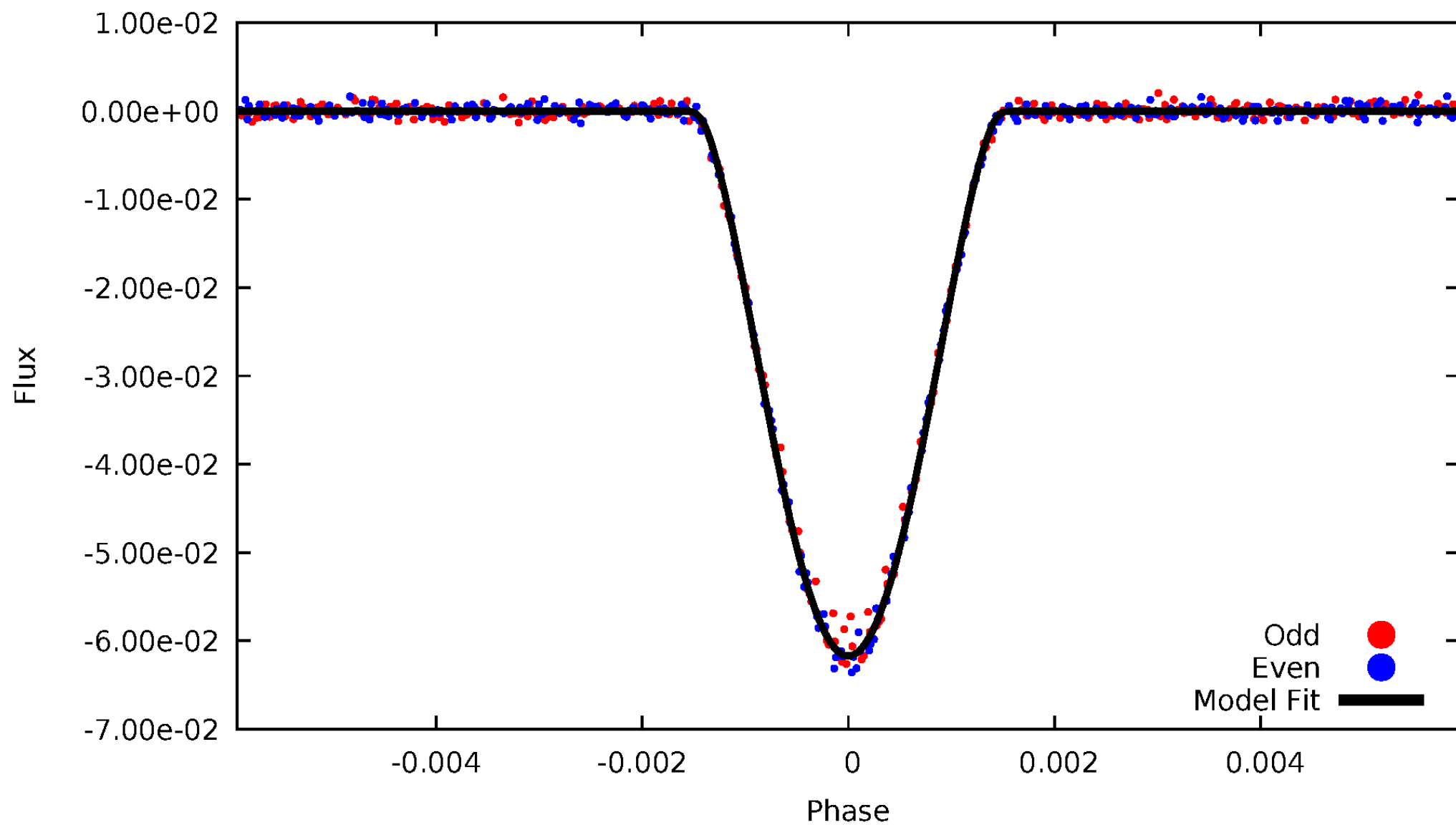


TCE 005264304-02



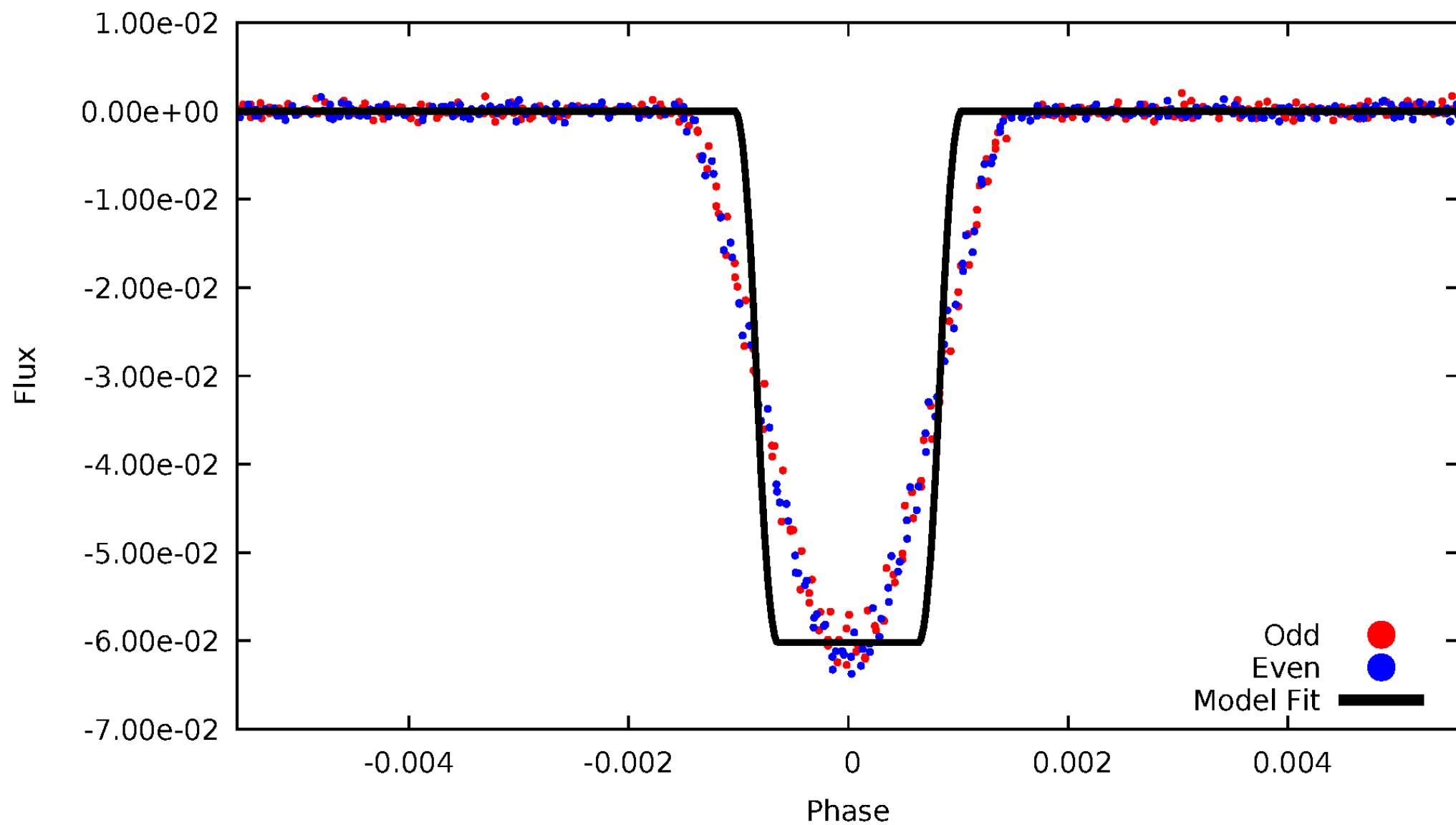
DV Odd/Even

TCE 005264304-02



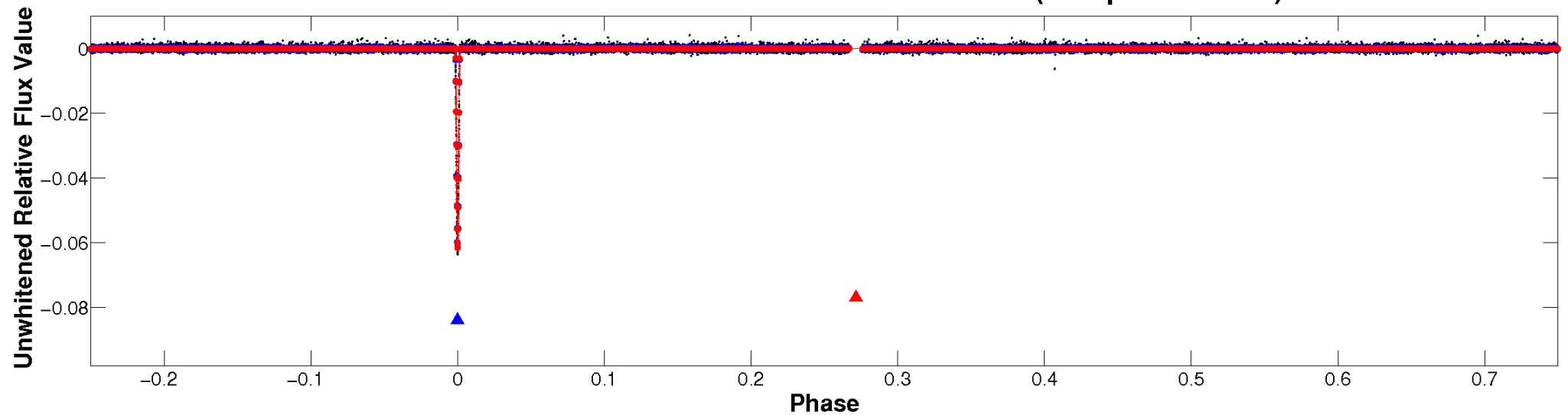
ALT Odd/Even

TCE 005264304-02

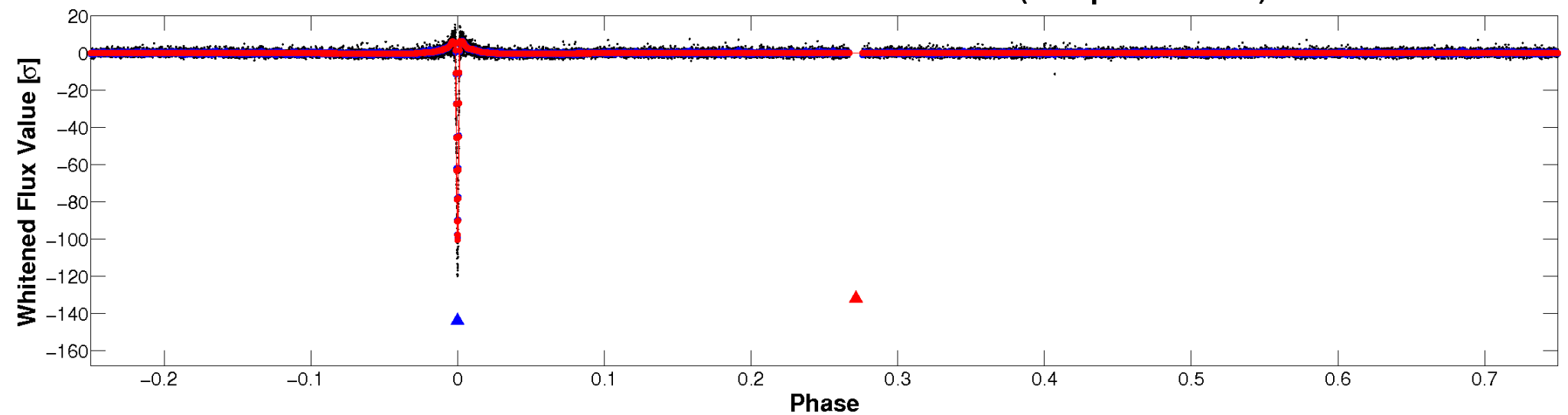


Non-Whitened Vs. Whitened Light Curve

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

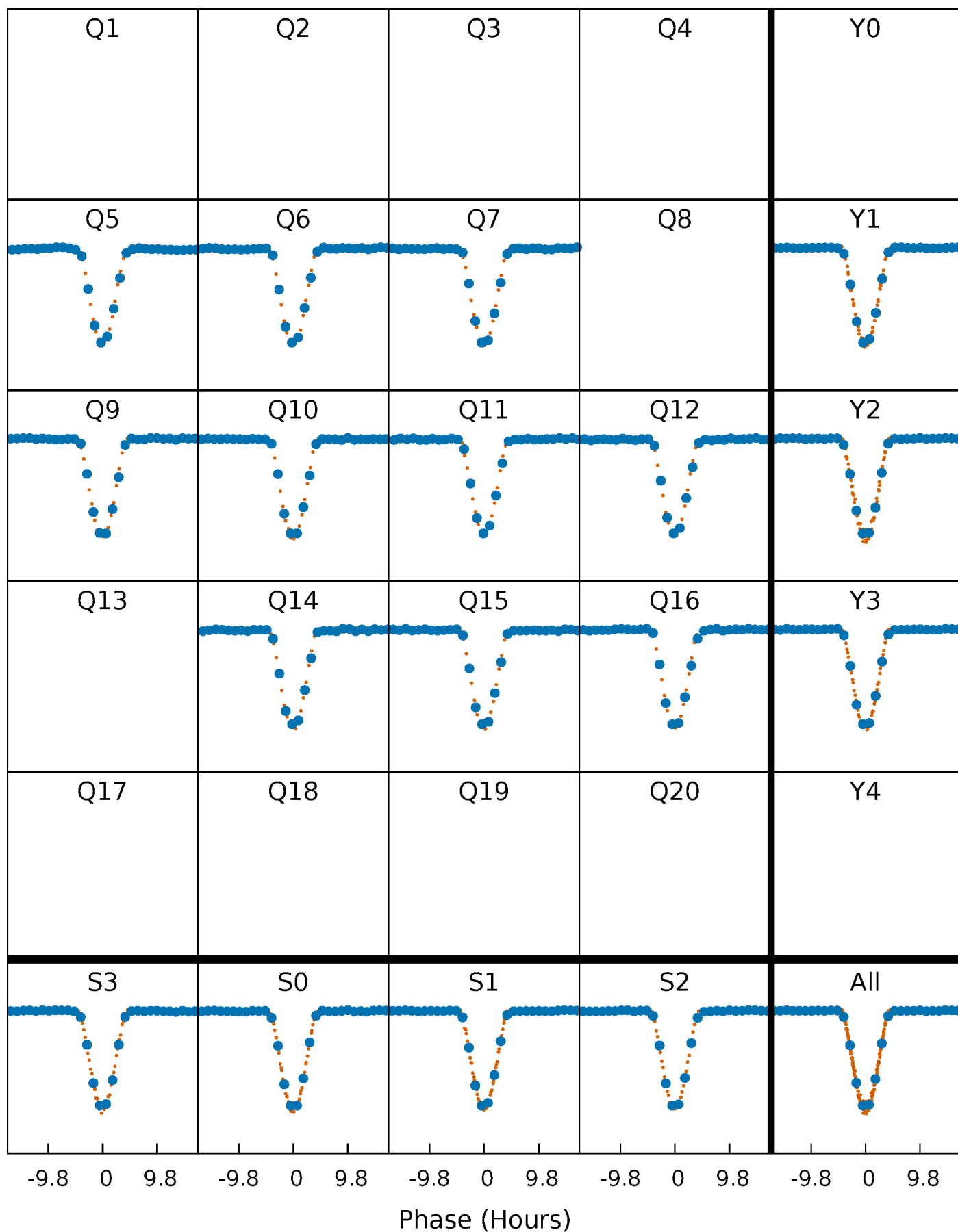


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



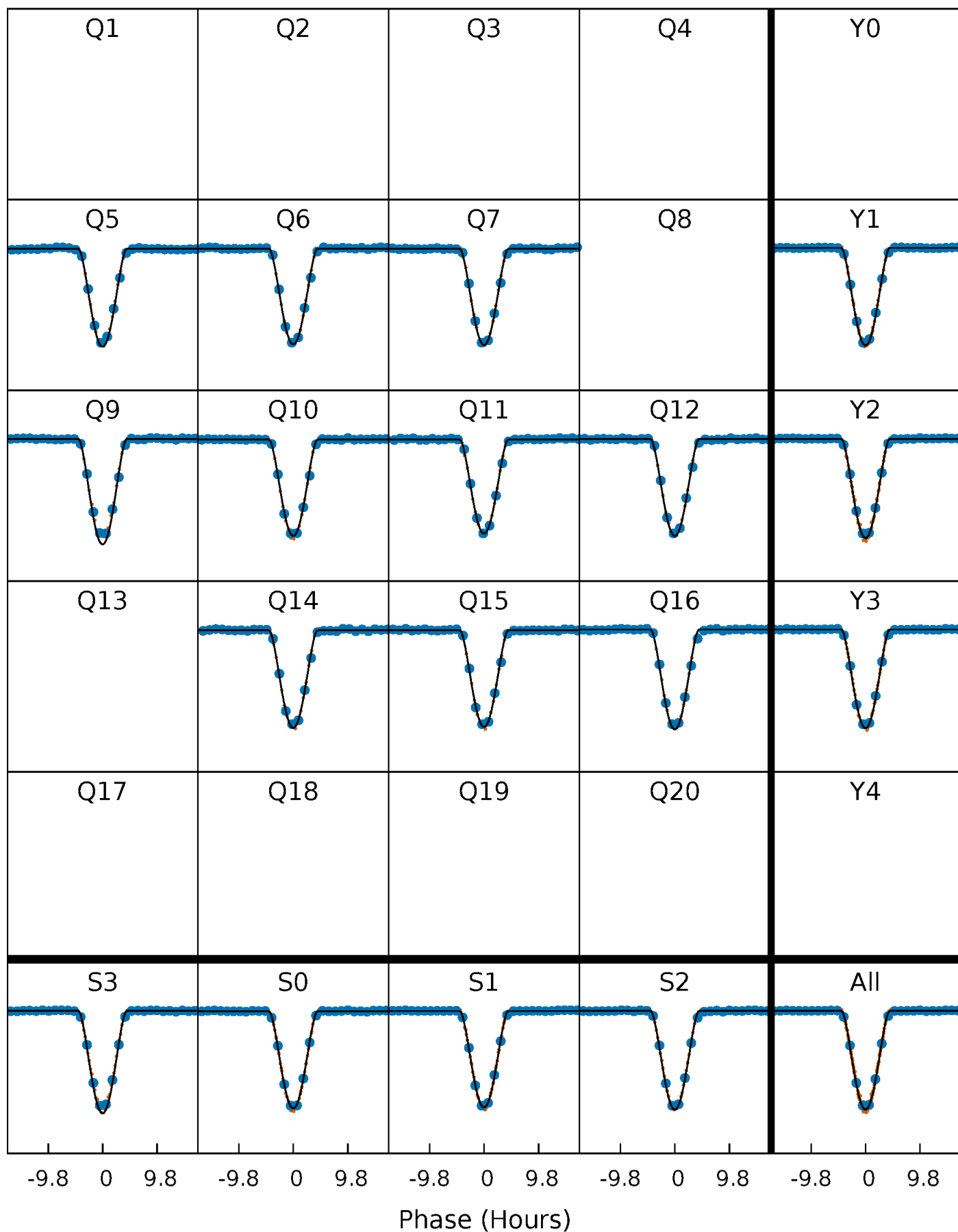
PDC Quarter-Phased Transit Curves

TCE 005264304-02 $P=120.581630$ Days $T_0=215.495252$ (BKJD)



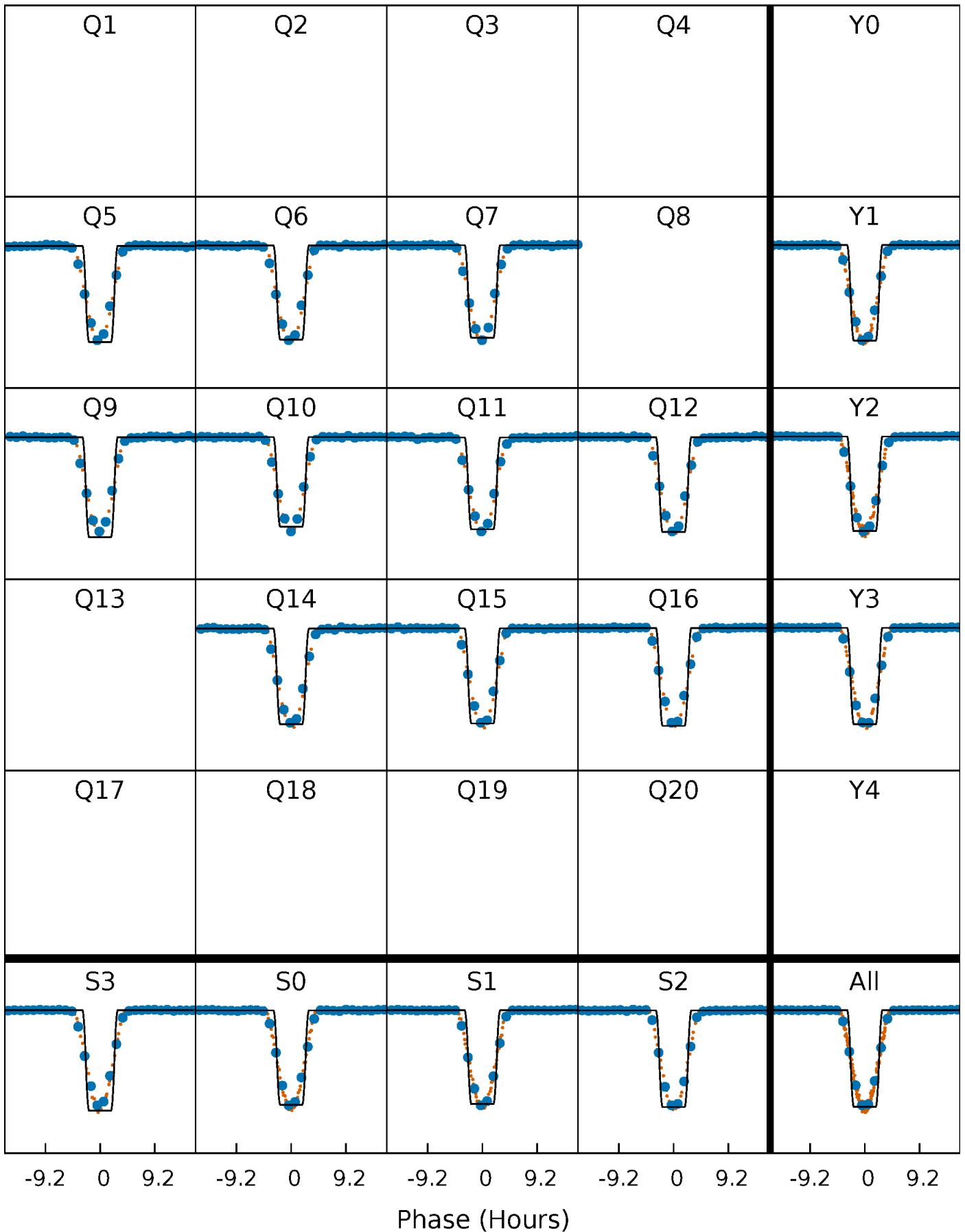
DV Quarter-Phased Transit Curves

TCE 005264304-02 P=120.581630 Days $T_0=215.495252$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

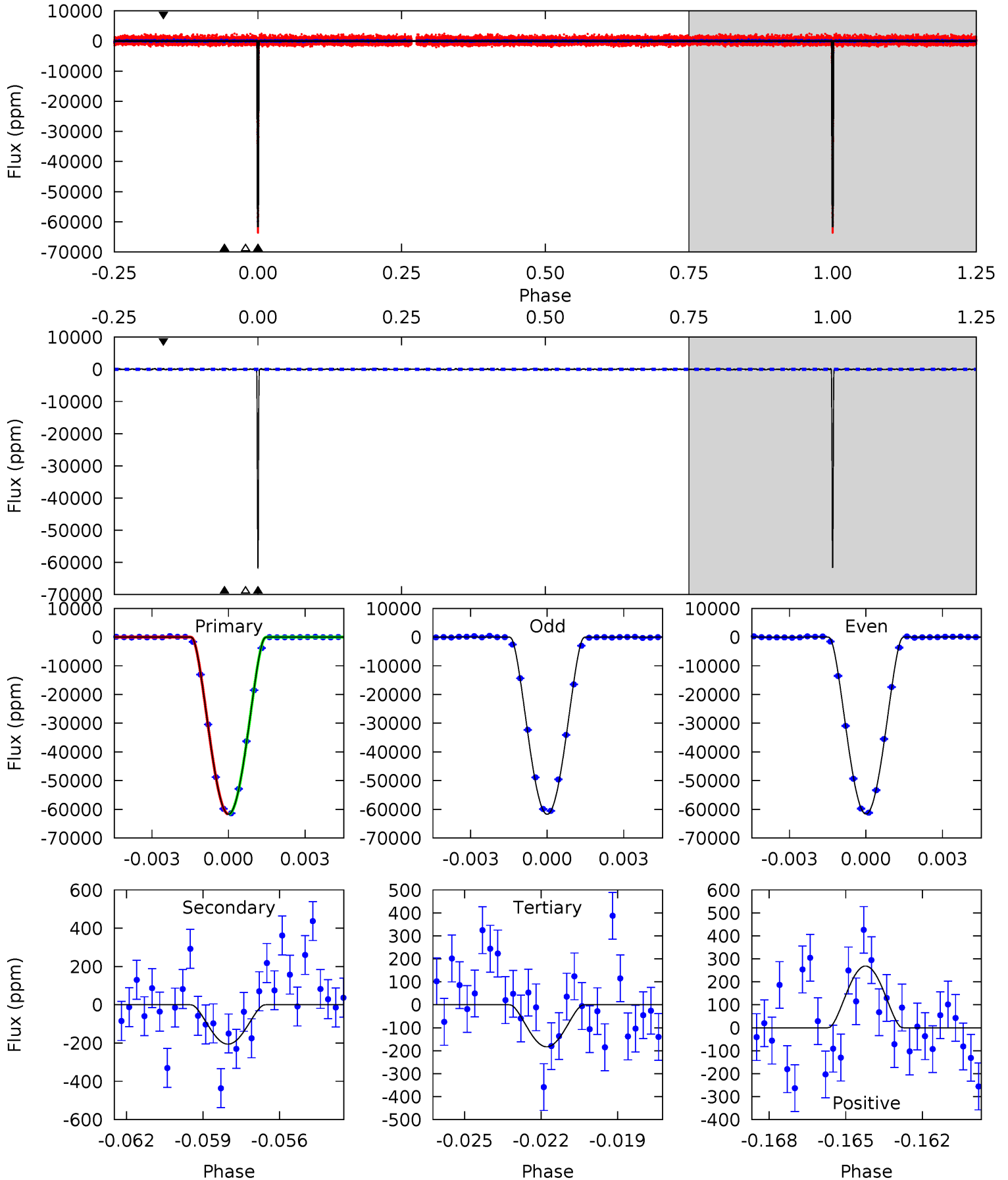
TCE 005264304-02 P=120.580411 Days $T_0=215.503214$ (BKJD)



DV Model-Shift Uniqueness Test

005264304-02, P = 120.581630 Days, E = 215.495252 Days

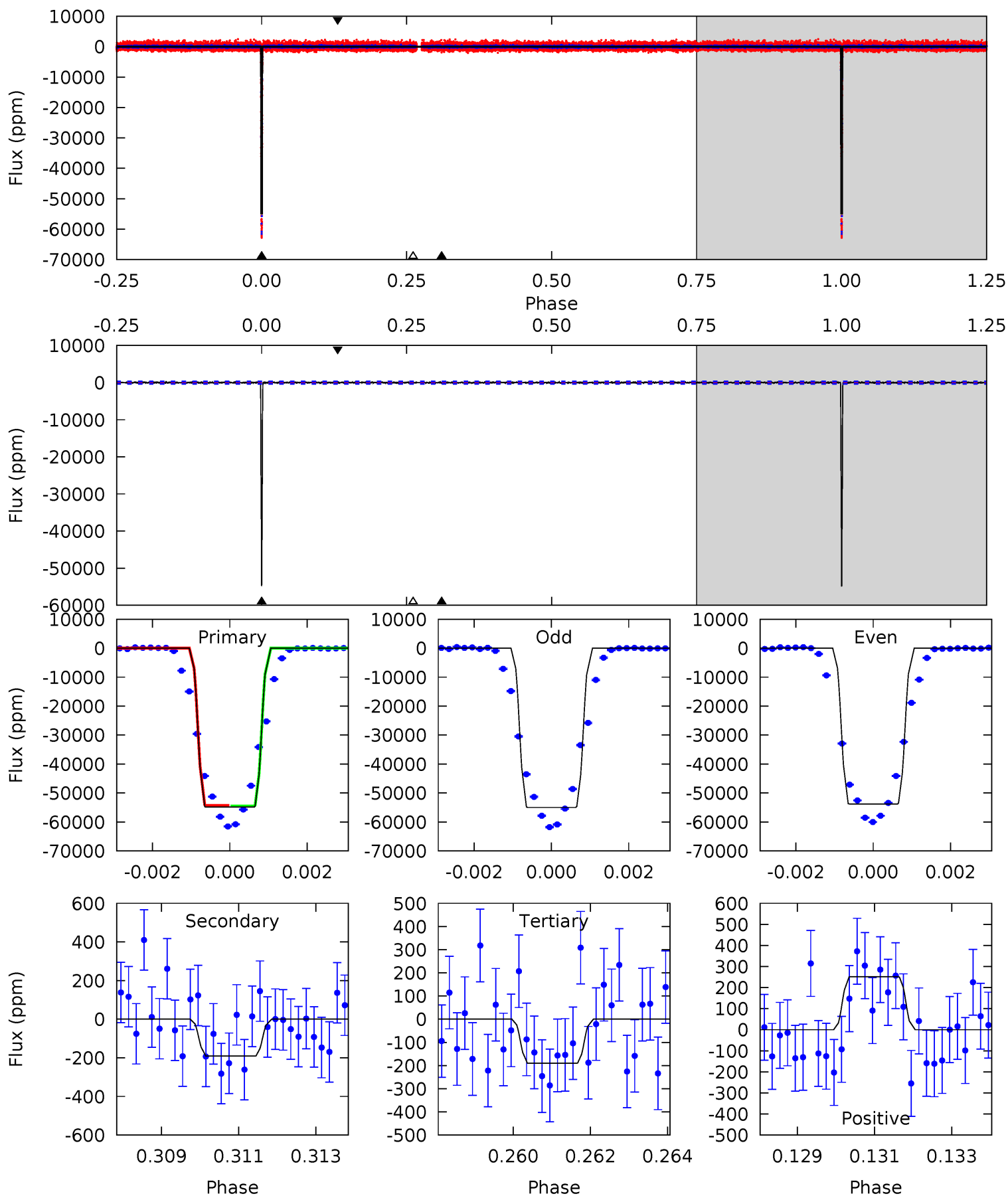
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 1465 | 4.88 | 4.34 | 6.38 | 5.25 | 2.96 | 1.70 | 1461 | 1459 | 0.54 | -1.49 | 1.33 | 0.99 | 0.00 | 0.78 |



Alt Model-Shift Uniqueness Test

005264304-02, P = 120.580411 Days, E = 215.503214 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 935.6 | 3.25 | 3.24 | 4.28 | 5.33 | 3.09 | 1.01 | 932.4 | 931.3 | 0.01 | -1.03 | 9.92 | 0.99 | 0.00 | 2.01 |



Stellar Parameters For KIC 005264304

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5294^{+190}_{-190} | $4.651^{+0.030}_{-0.090}$ | $-0.540^{+0.300}_{-0.300}$ | $0.673^{+0.105}_{-0.049}$ | $0.744^{+0.073}_{-0.073}$ | $3.440^{+0.537}_{-0.989}$ |
| | +4%/-4% | +1%/-2% | +56%/-56% | +16%/-7% | +10%/-10% | +16%/-29% |
| 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 005264304-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|-------------------------|-------------------|---------------------|------------------|
| DV | -206 ± 42 | $25.31^{+2.59}_{-2.32}$ | 412^{+20}_{-17} | 2062^{+66}_{-66} | 32^{+9}_{-9} |
| Alt. | -191 ± 59 | $18.49^{+2.31}_{-2.20}$ | 412^{+20}_{-17} | 2189^{+96}_{-101} | 55^{+24}_{-18} |

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 $A_{obs} \gg 1.0$

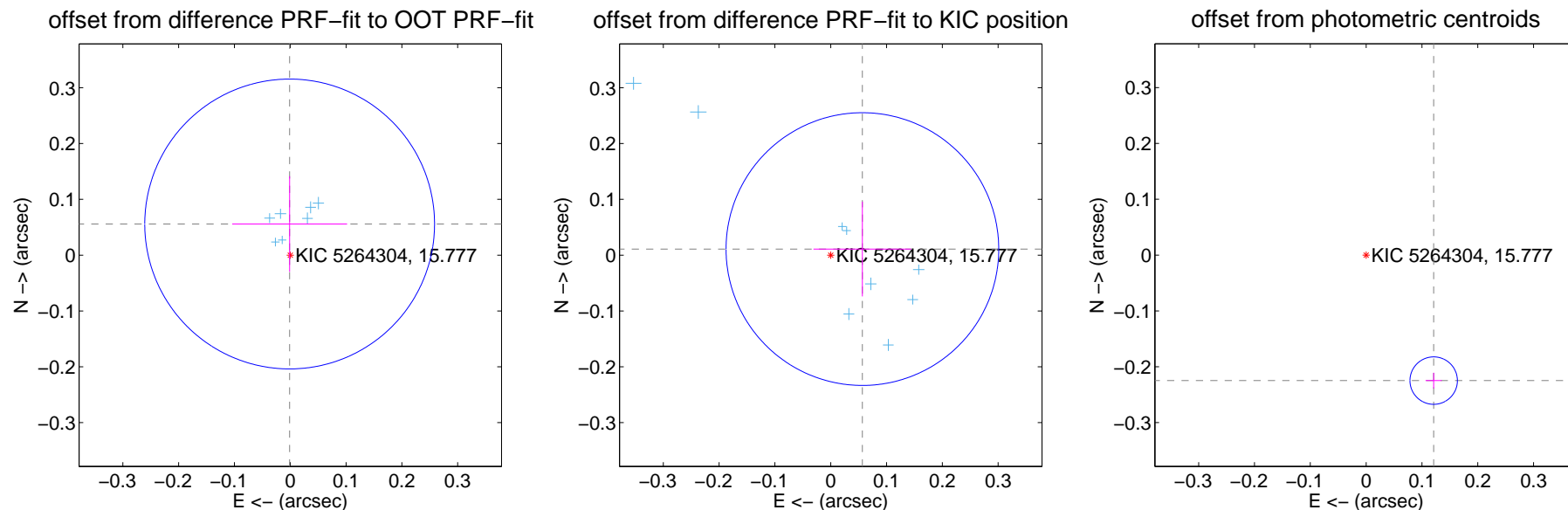
DV Centroid Data

Supplemental centroid analysis for 005264304-02. Kepler magnitude: 15.78. Transit SNR 730.71

There are 9 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.056 ± 0.087 | 0.64 | 0.001 ± 0.103 | 0.056 ± 0.086 |
| PRF-fit source offset from KIC position | 0.058 ± 0.081 | 0.71 | -0.057 ± 0.088 | 0.011 ± 0.085 |
| photometric centroid source offset | 0.26 ± 0.01 | 18.02 | -0.12 ± 0.01 | -0.22 ± 0.01 |

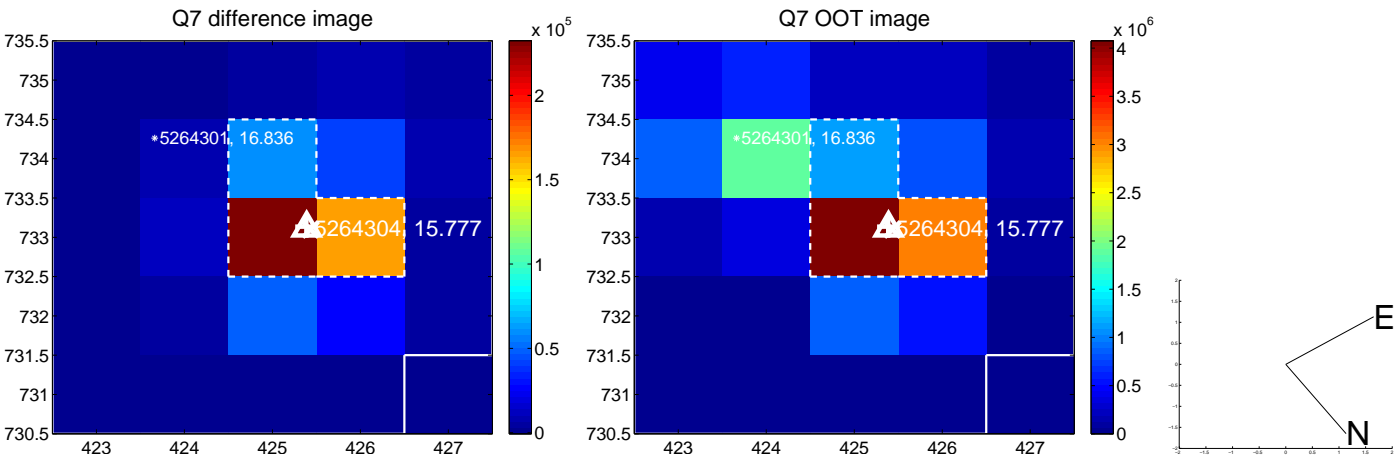
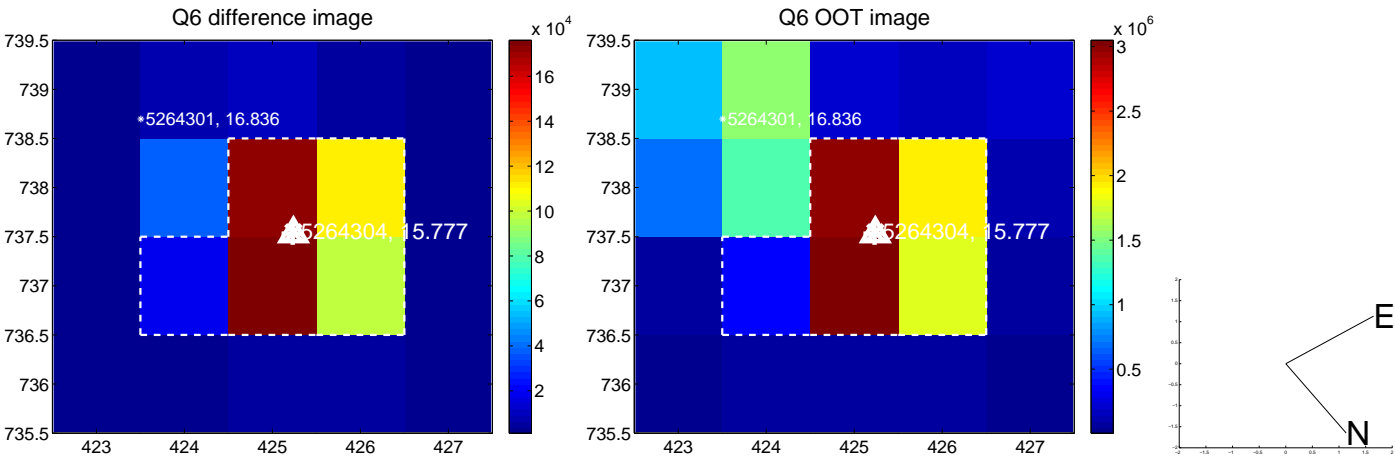
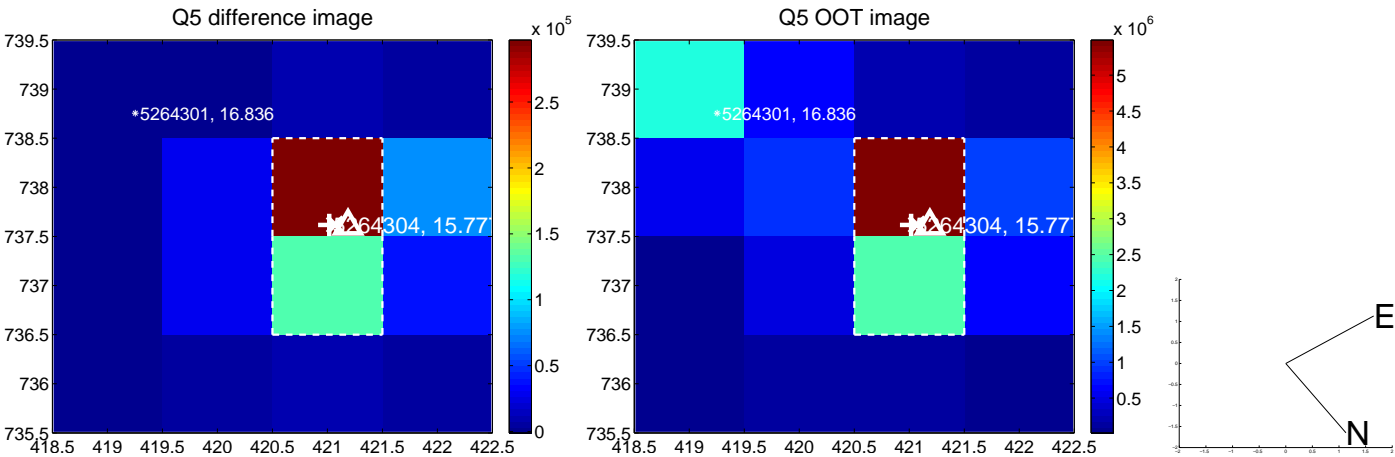


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

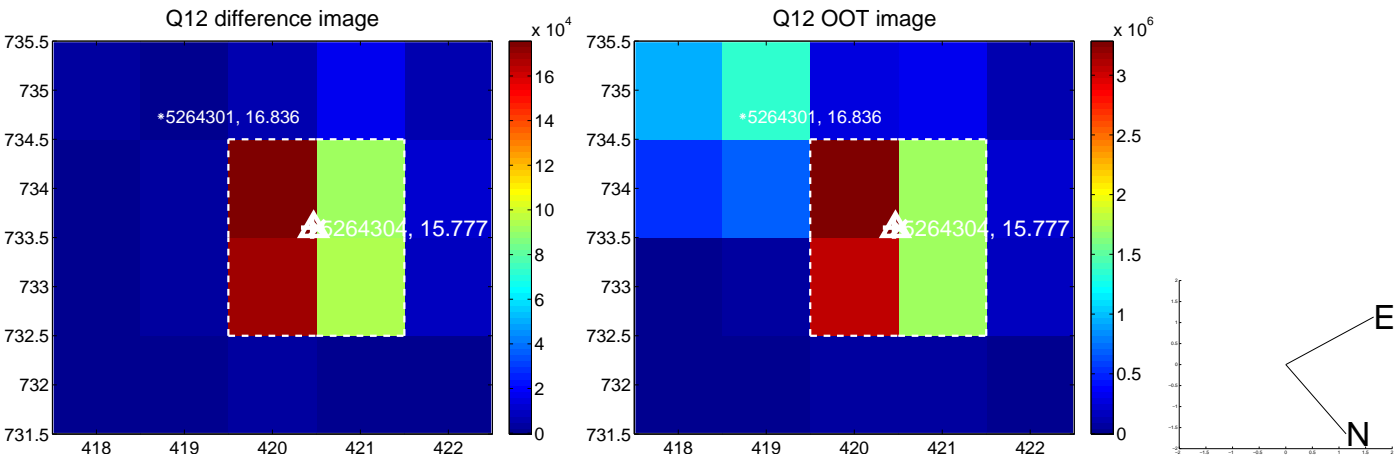
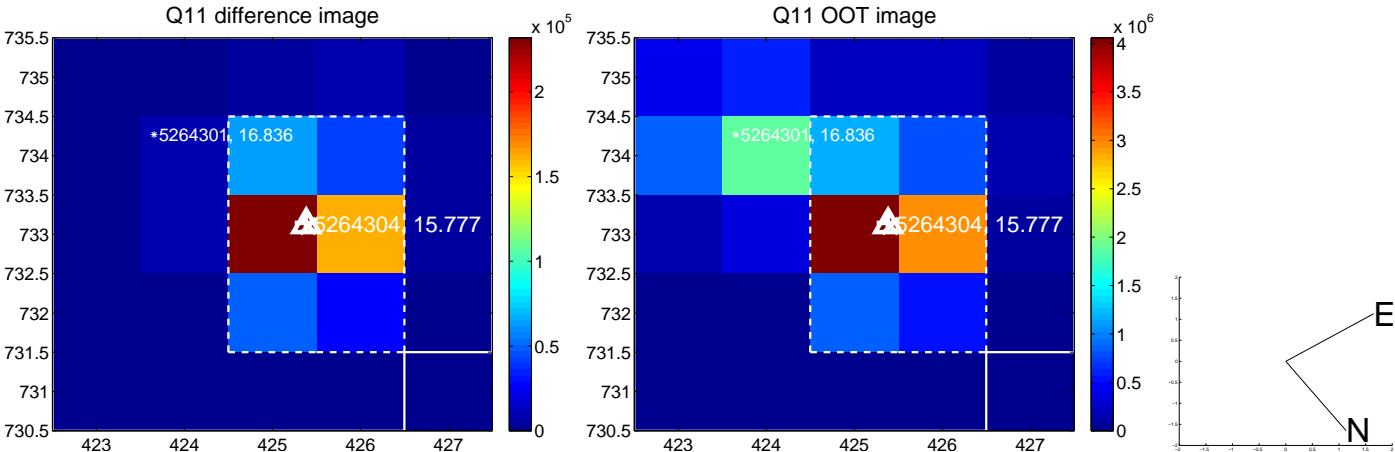
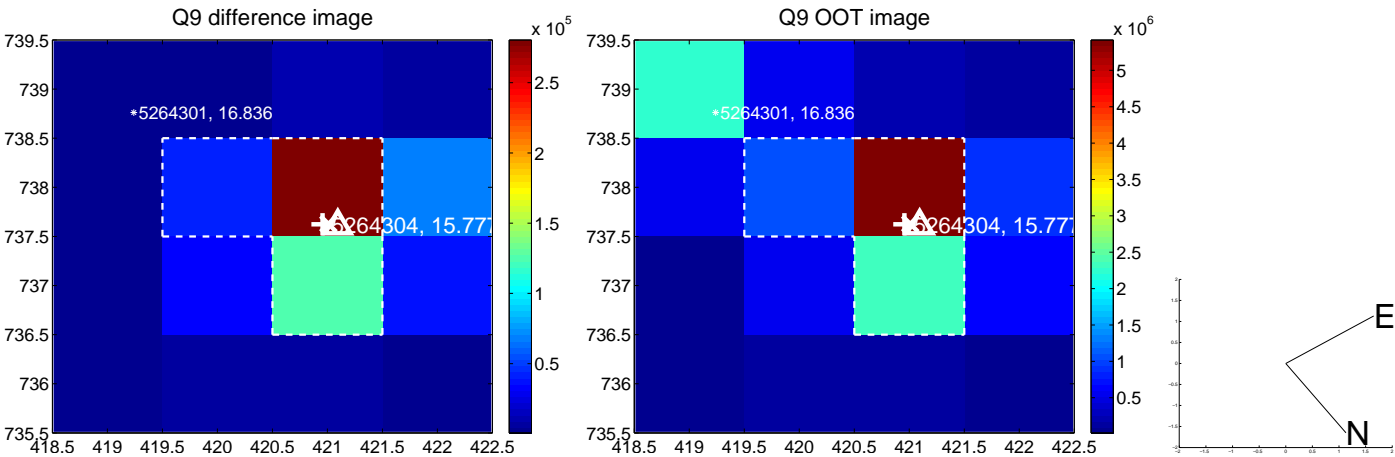
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



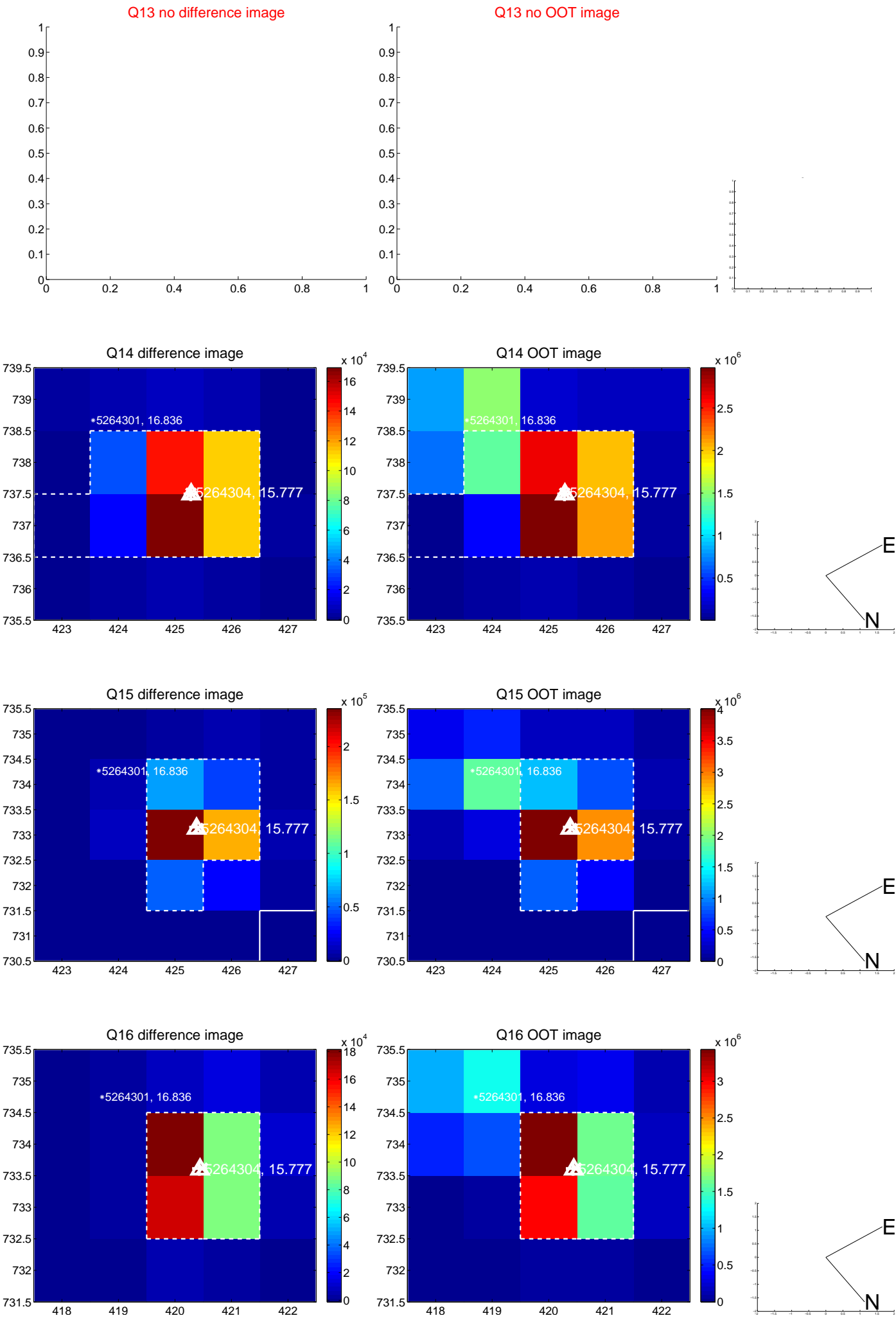
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



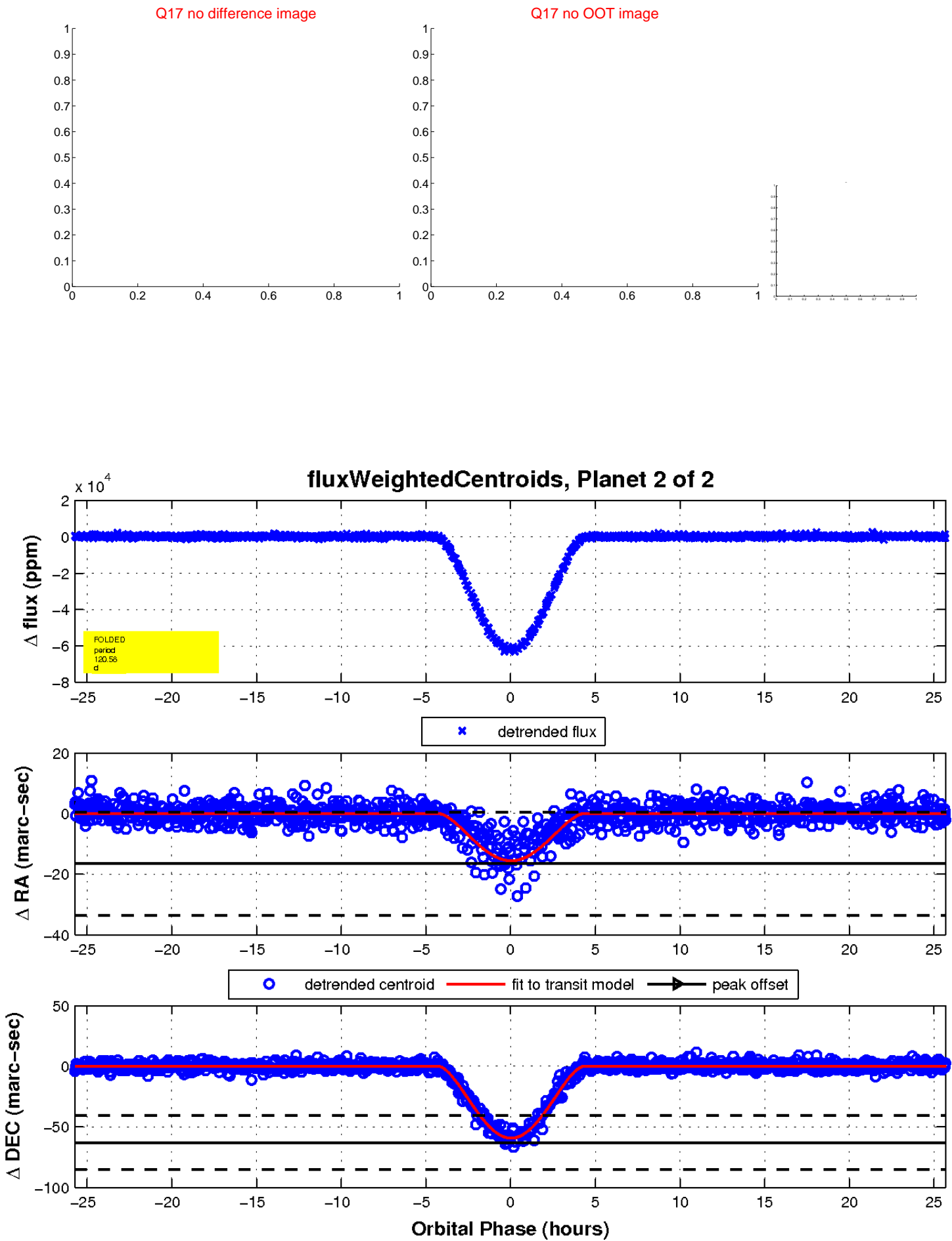
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

