

KIC 004935914

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 004935914-01 | OBS | 3743.01 | 3.486341 | 134.869270 | 59990.0 | 2.810 | 215.9 | 222.5 | 1.00 | 5780 | 35.08 | 493.68 |
| 004935914-02 | OBS | No | 3.486290 | 133.134353 | 11822.2 | 2.609 | 40.4 | 45.5 | 1.00 | 5780 | 15.33 | 493.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004935914-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS |
| 004935914-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE—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.

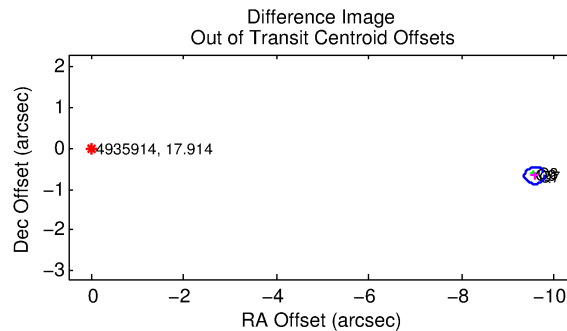
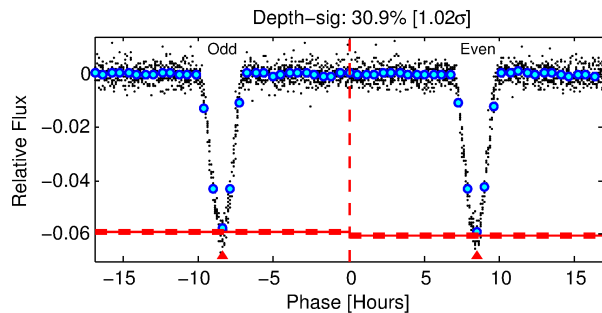
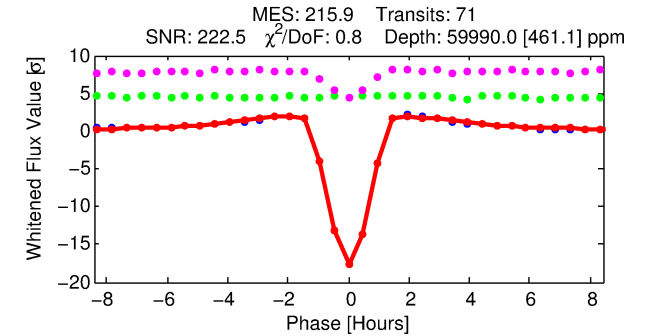
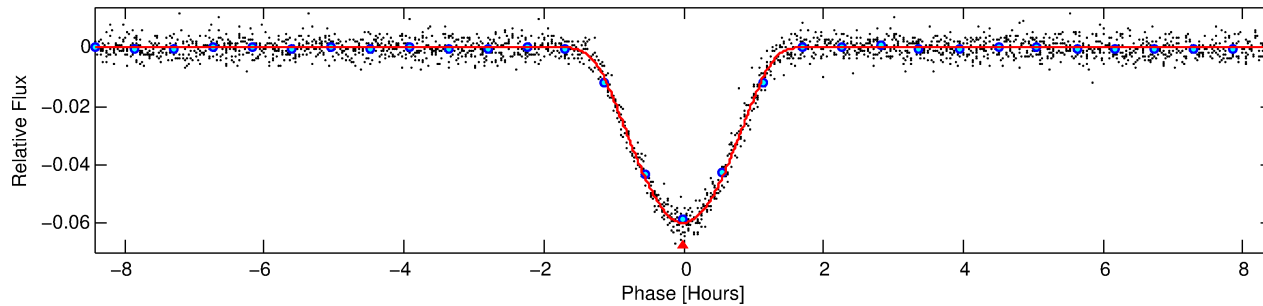
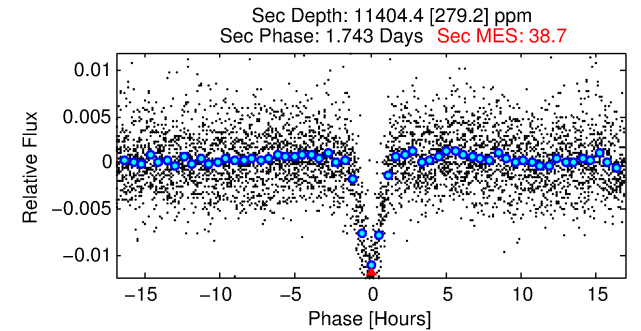
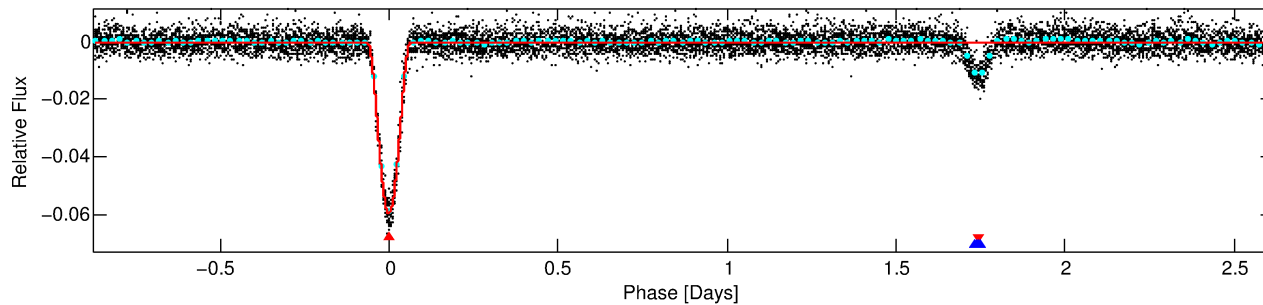
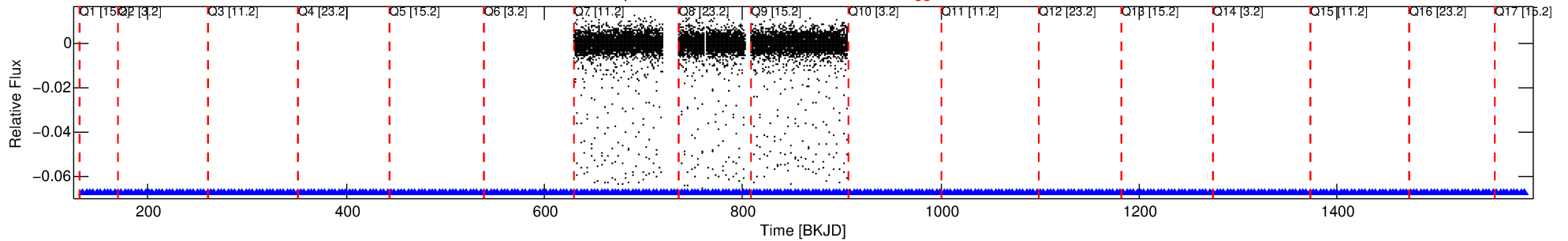
Ephemeris Match Information For 004935914-01

No Significant Match Found

DV One-Page Summary

KIC: 4935914 Candidate: 1 of 2 Period: 3.486 d
KOI: K03743.01 Corr: 0.973

Kp: 17.91 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 3.48634 [0.00000] d
Epoch = 134.8693 [0.0006] BKJD
Rp/R* = 0.3215 [0.0705]
a/R* = 9.20 [0.16]
b = 0.90 [0.11]
Seff = 493.68 [0.00]
Teff = 1202 [0] K
Rp = 35.08 [7.70] Re
a = 0.0450 [0.0000] AU
Ag = 10.33 [4.54] [2.05σ]
Teffp = 3331 [366] K [5.82σ]

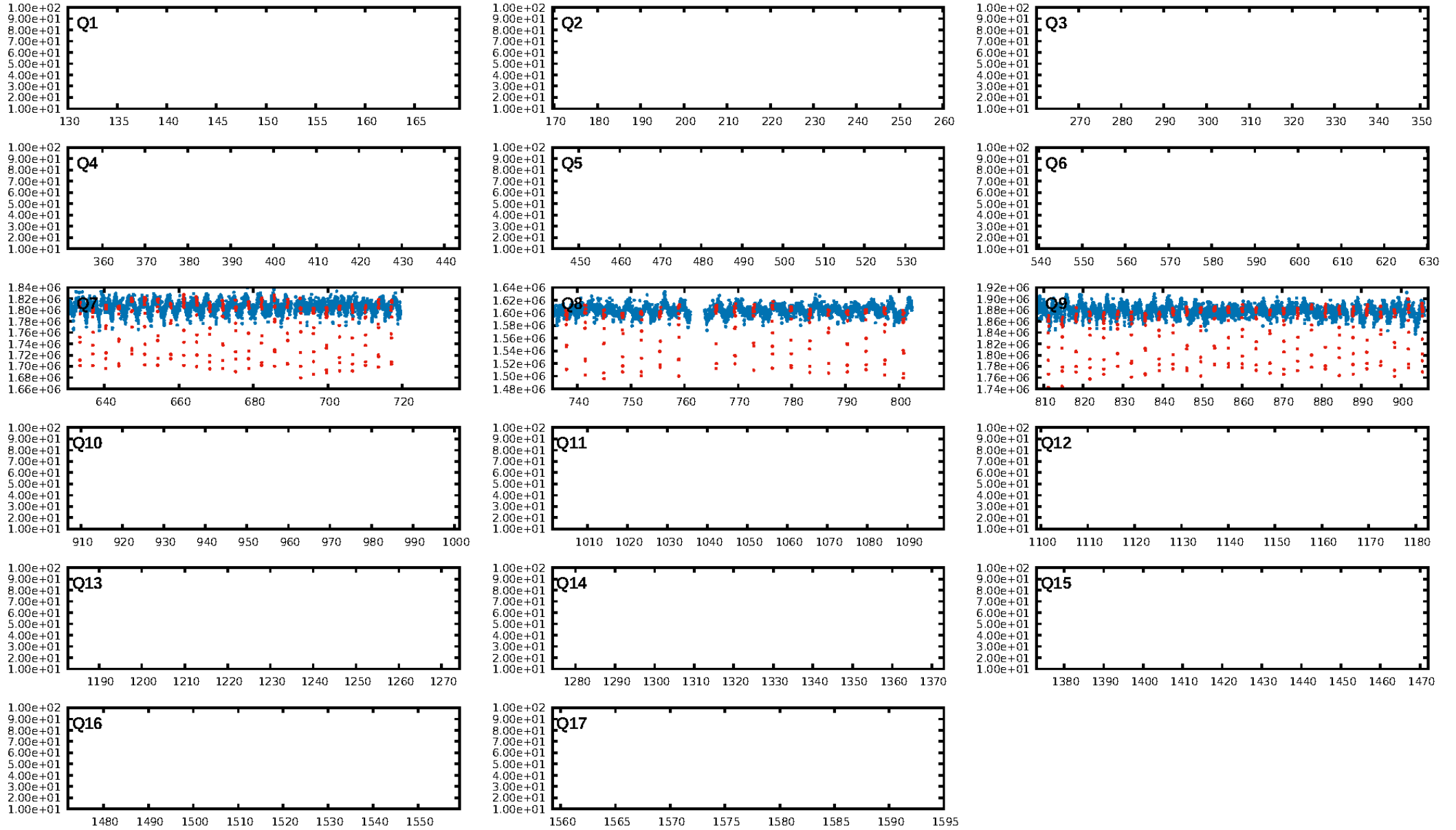
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 79.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [71/71]
GhostDiagnostic-chr: 3.893
Centroid-sig: 0.0%
Centroid-so: 3.408 arcsec [204.83σ]
OotOffset-rm: 9.598 arcsec [137.15σ]
KicOffset-rm: 0.611 arcsec [6.42σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

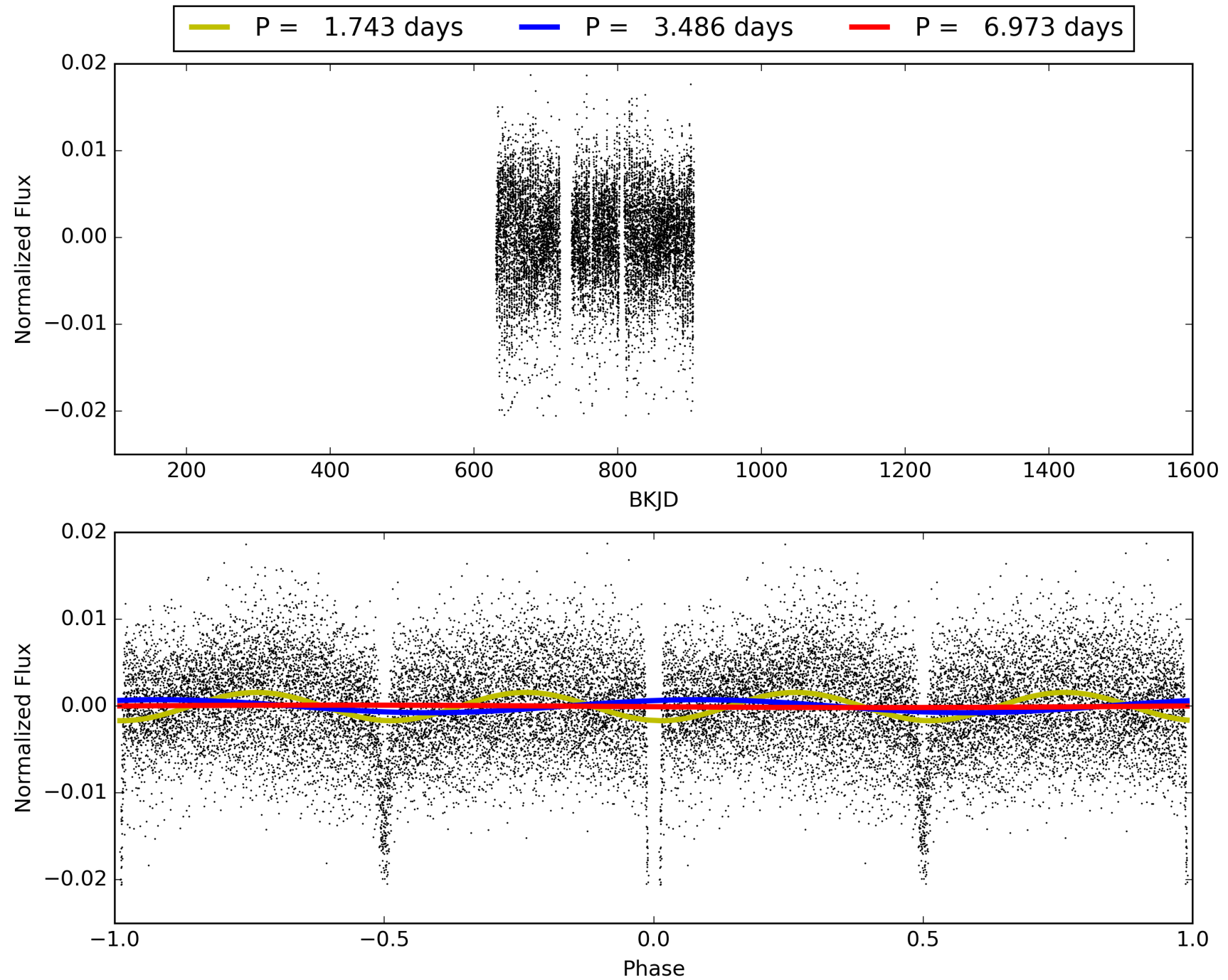
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:19:16 Z

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

TCE 004935914-01, PDC Light Curves

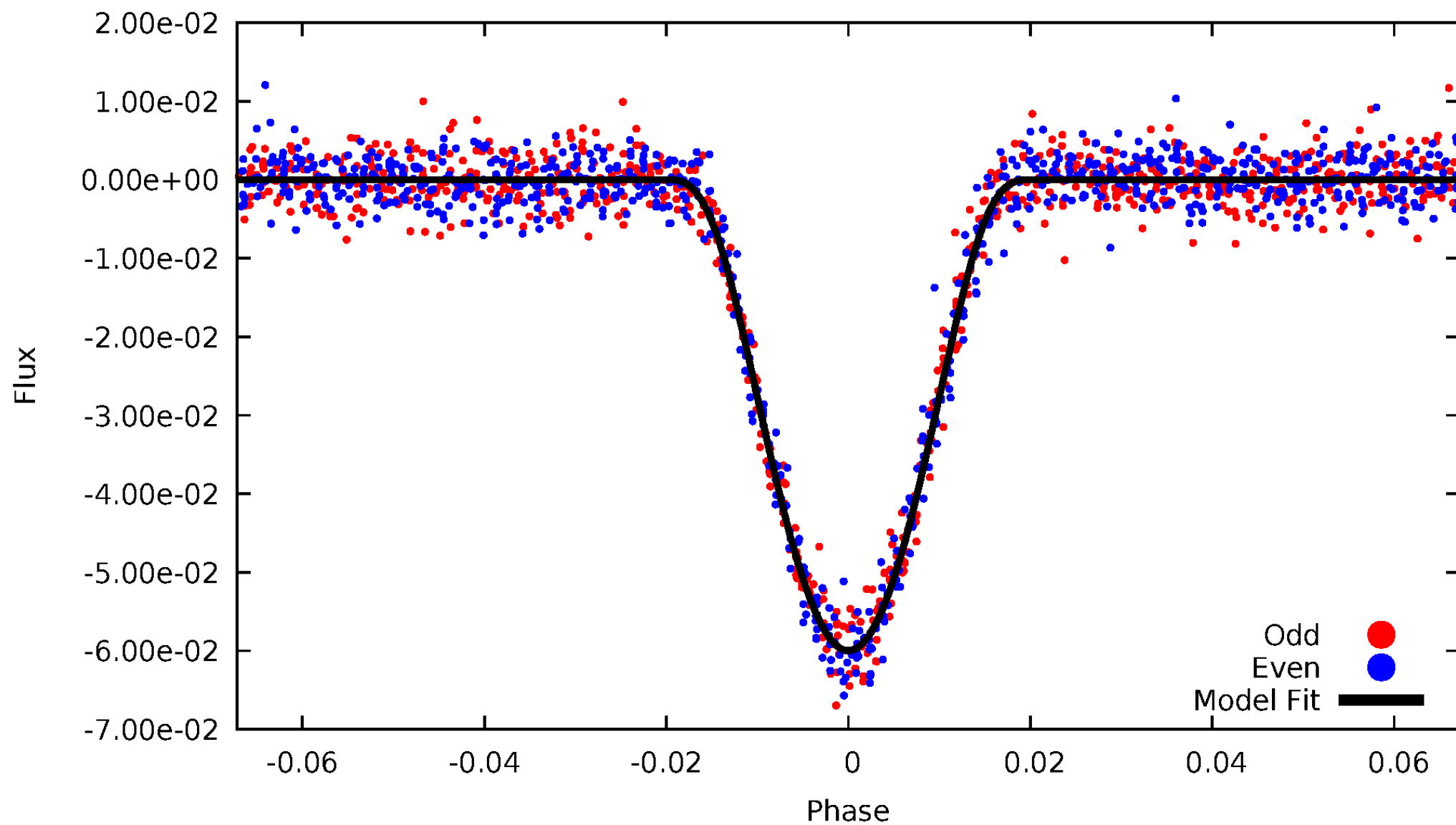


TCE 004935914-01



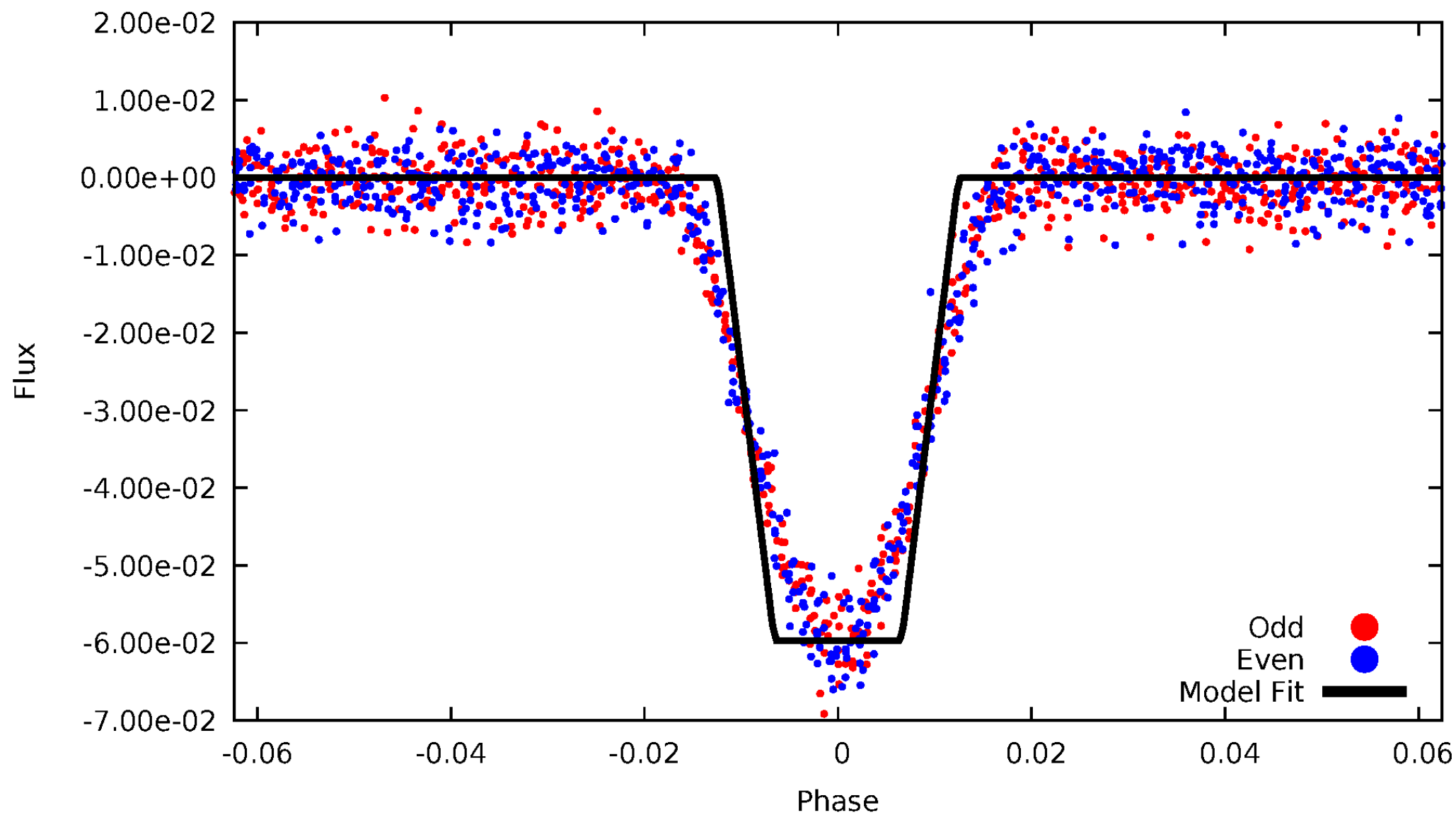
DV Odd/Even

TCE 004935914-01



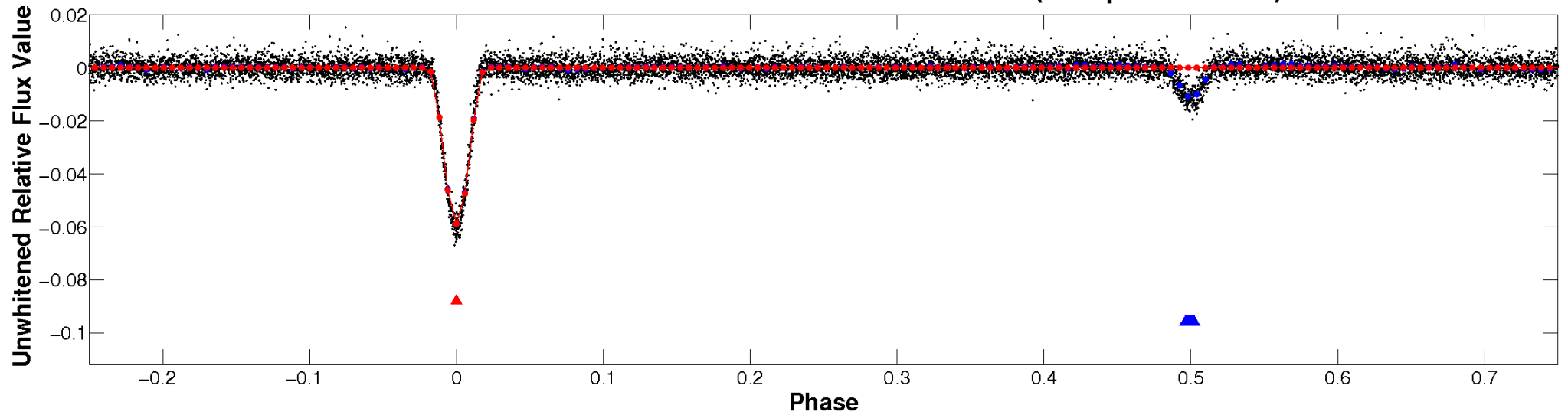
ALT Odd/Even

TCE 004935914-01

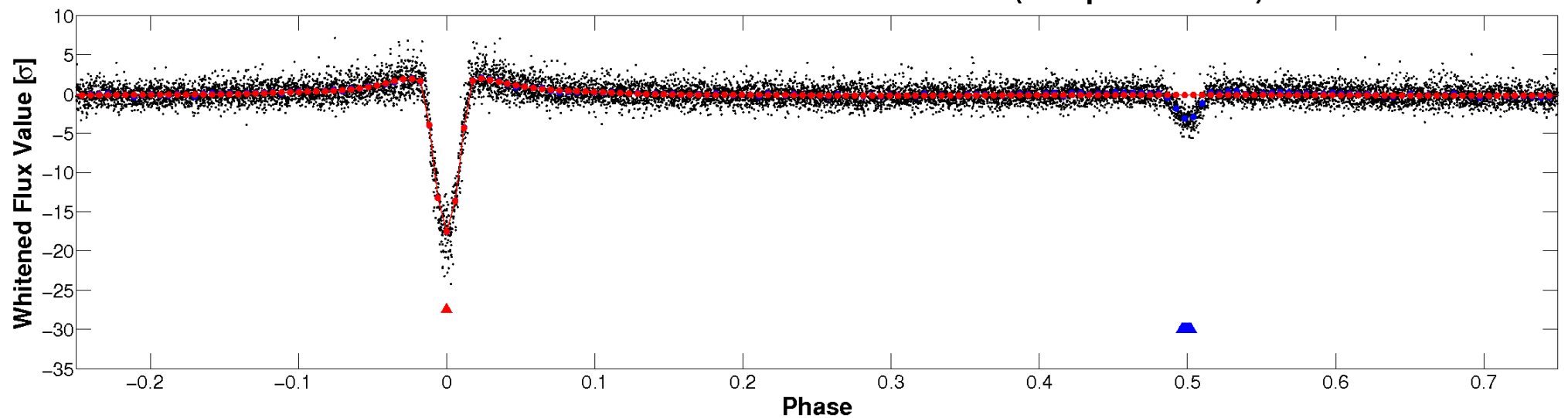


Non-Whitened Vs. Whitened Light Curve

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

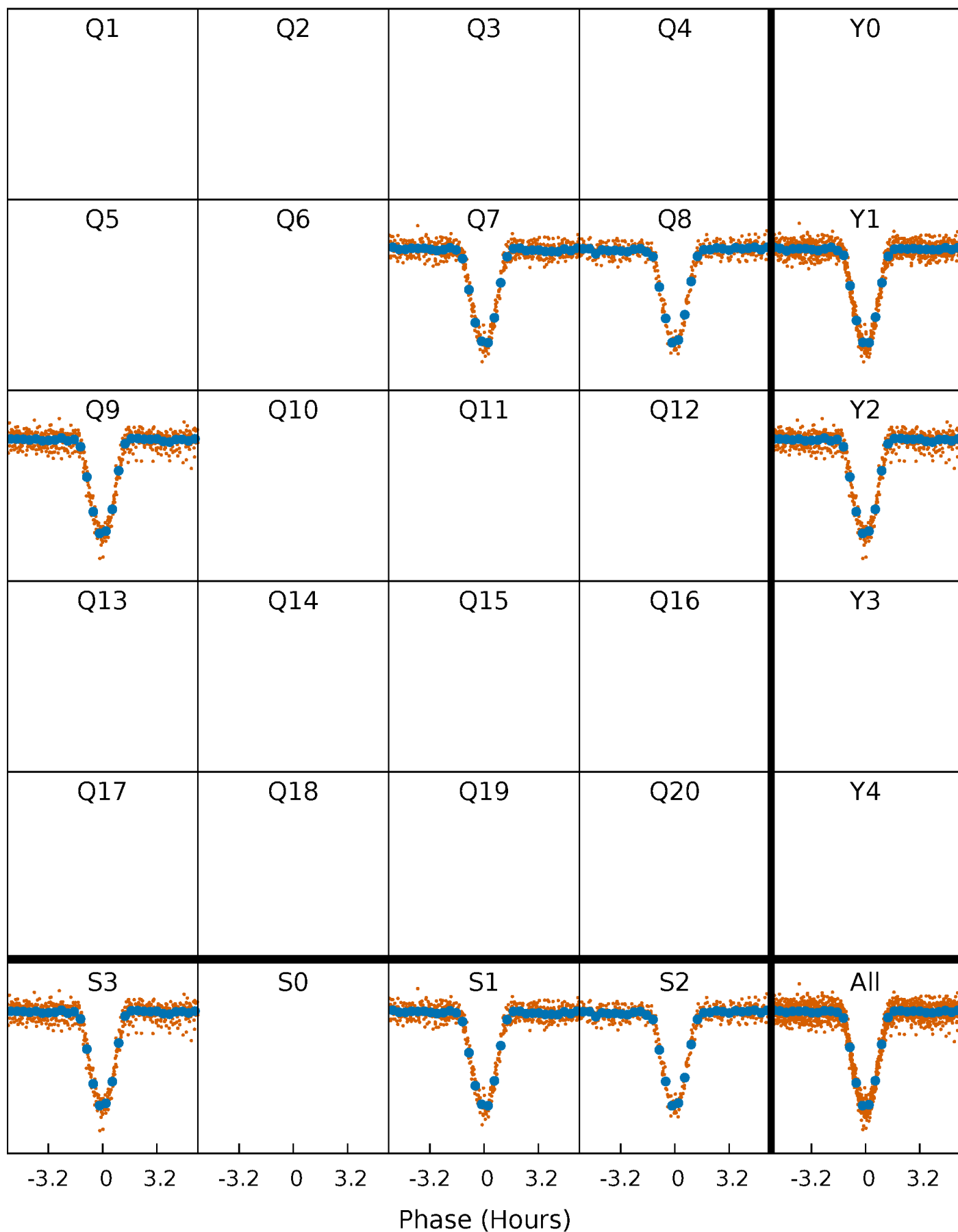


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



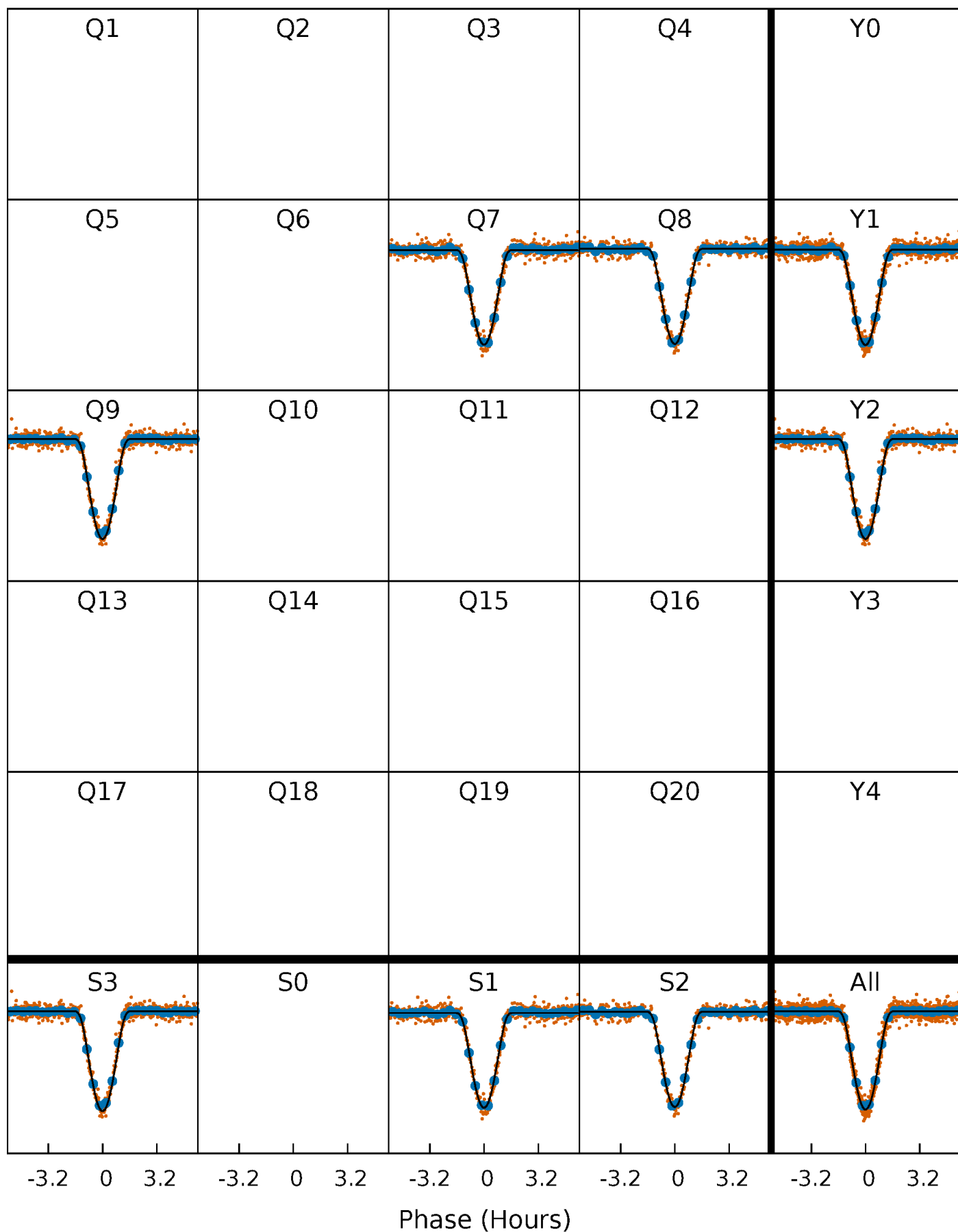
PDC Quarter-Phased Transit Curves

TCE 004935914-01 P= 3.486341 Days $T_0=134.869270$ (BKJD)



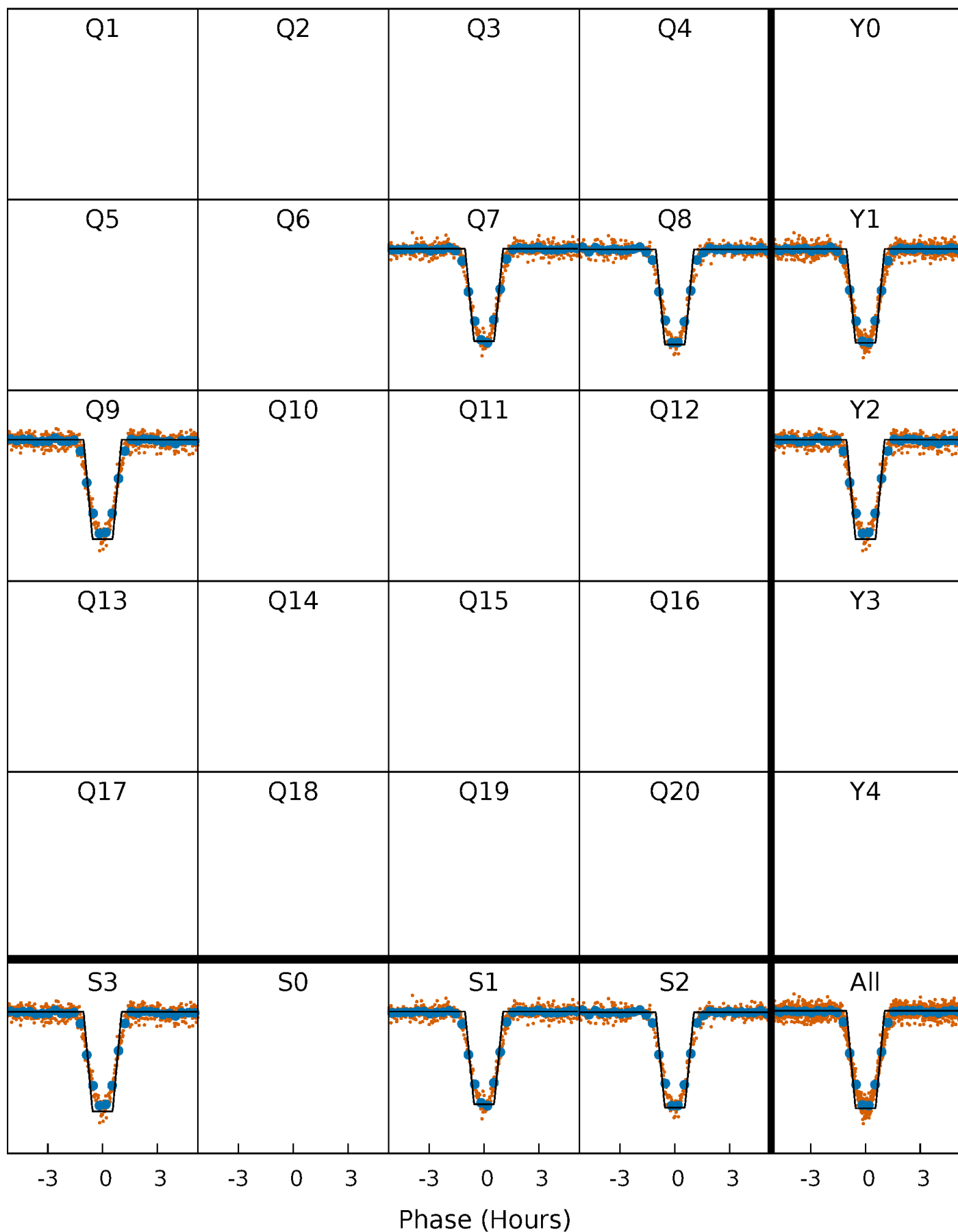
DV Quarter-Phased Transit Curves

TCE 004935914-01 P= 3.486341 Days $T_0=134.869270$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

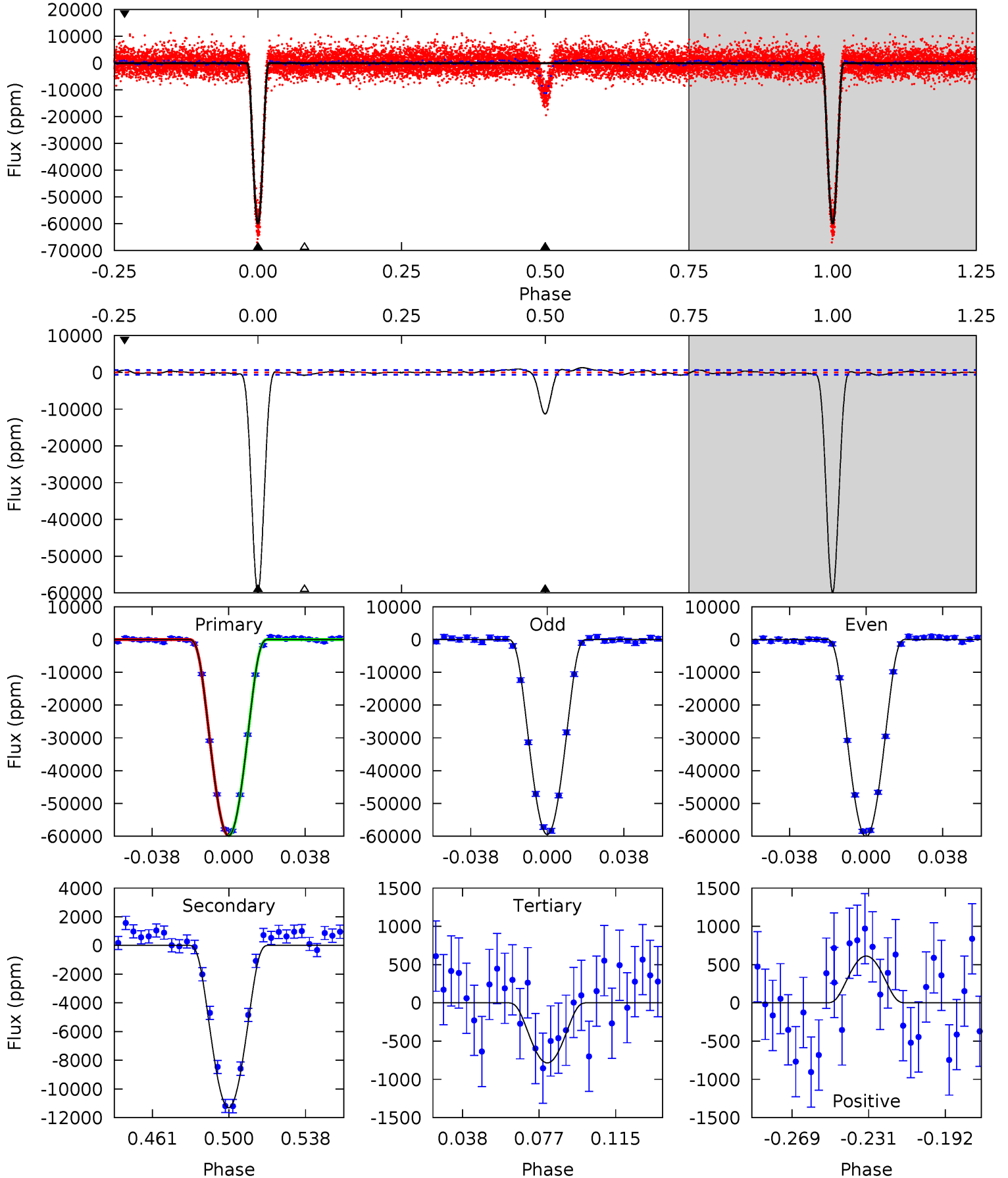
TCE 004935914-01 P= 3.486326 Days $T_0=134.871898$ (BKJD)



DV Model-Shift Uniqueness Test

004935914-01, P = 3.486341 Days, E = 134.869270 Days

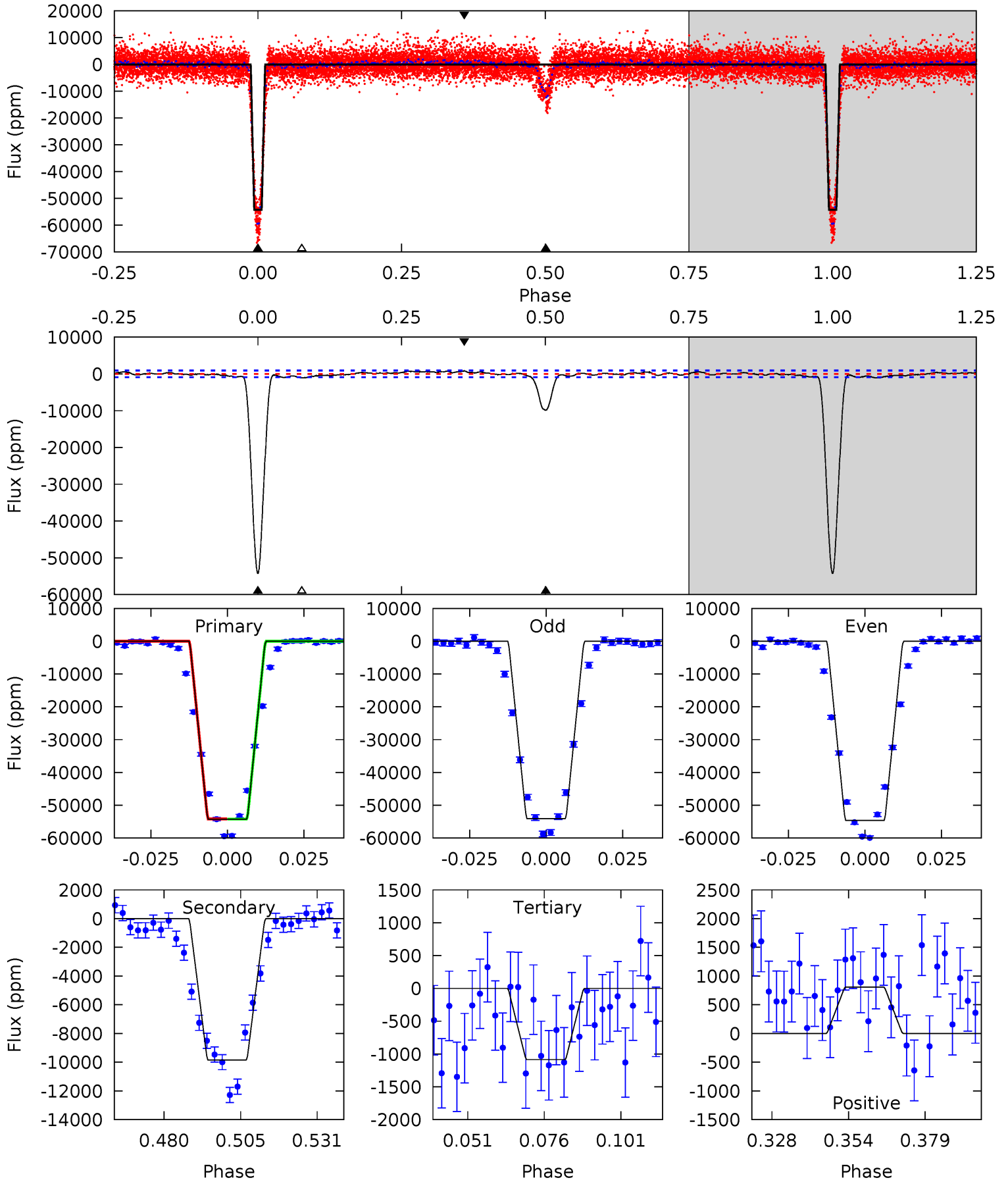
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 440.8 | 83.3 | 5.78 | 4.51 | 4.76 | 2.07 | 2.88 | 435.0 | 436.3 | 77.5 | 78.8 | 2.46 | 1.00 | 0.02 | 0.34 |



Alt Model-Shift Uniqueness Test

004935914-01, P = 3.486326 Days, E = 134.871898 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 288.9 | 52.4 | 5.78 | 4.30 | 4.85 | 2.24 | 2.17 | 283.1 | 284.6 | 46.6 | 48.1 | 1.52 | 1.01 | 0.01 | 0.20 |



Stellar Parameters For KIC 004935914

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|----------------------------|---|
| | 5780^{+1}_{-1} | $4.438^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ |
| | +0%/-0% | +23%/-23% | +inf%/-inf% | +100%/-100% | +100%/-100% | +100%/-100% |
| Source | Solar | Solar | Solar | Solar | | |

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

Secondary Eclipse Parameters for KIC 004935914-01 / KOI 3743.01

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|------------------|-------------------------|----------------------|----------------------|------------------|
| DV | -11310 ± 136 | $35.33^{+7.79}_{-8.16}$ | 1681^{+76}_{-76} | 3716^{+340}_{-259} | 10^{+7}_{-4} |
| Alt. | -9847 ± 188 | $26.82^{+7.56}_{-7.63}$ | 1685^{+78}_{-82} | 3980^{+557}_{-317} | 16^{+14}_{-6} |

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

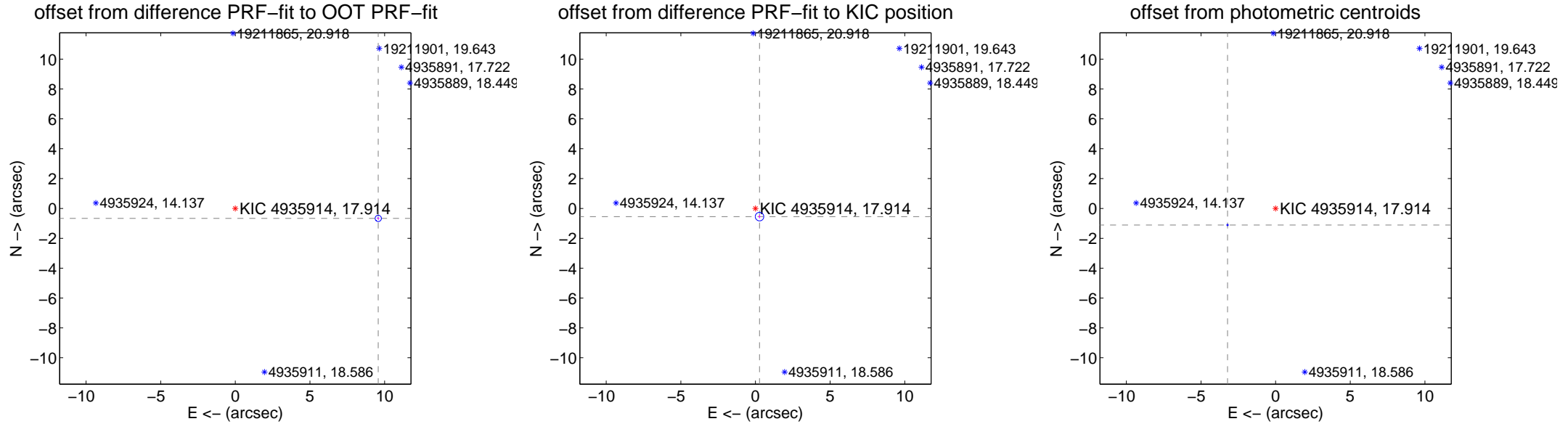
DV Centroid Data

Supplemental centroid analysis for 004935914-01. Kepler magnitude: 17.91. Transit SNR 222.46

There are 3 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 9.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 9.598 ± 0.070 | 137.15 | -9.575 ± 0.070 | -0.666 ± 0.075 |
| PRF-fit source offset from KIC position | 0.611 ± 0.095 | 6.42 | -0.270 ± 0.067 | -0.548 ± 0.101 |
| photometric centroid source offset | 3.41 ± 0.02 | 204.83 | 3.22 ± 0.02 | -1.11 ± 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.

Q5 no difference image



Q5 no OOT image



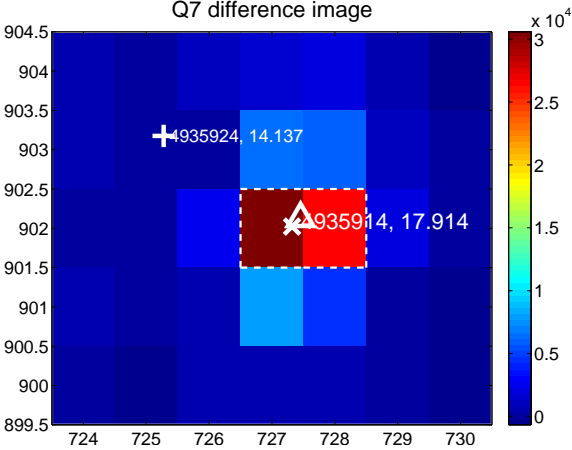
Q6 no difference image



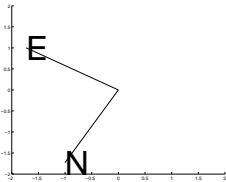
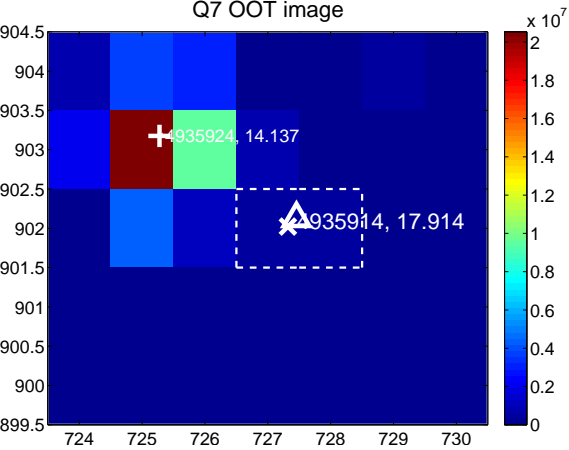
Q6 no OOT image



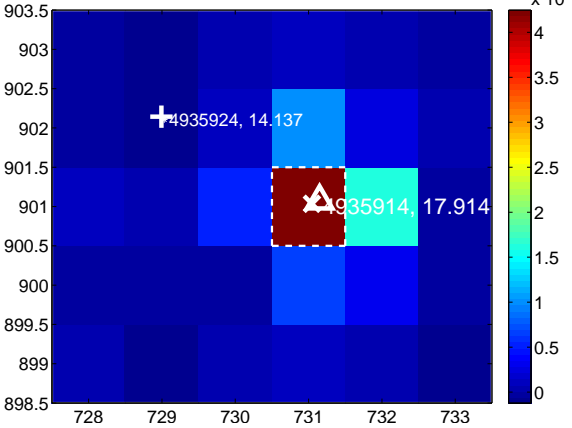
Q7 difference image



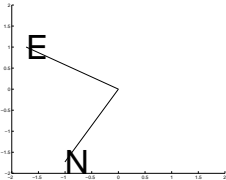
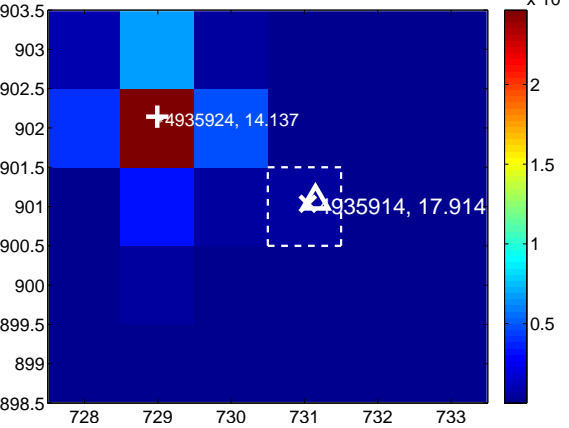
Q7 OOT image



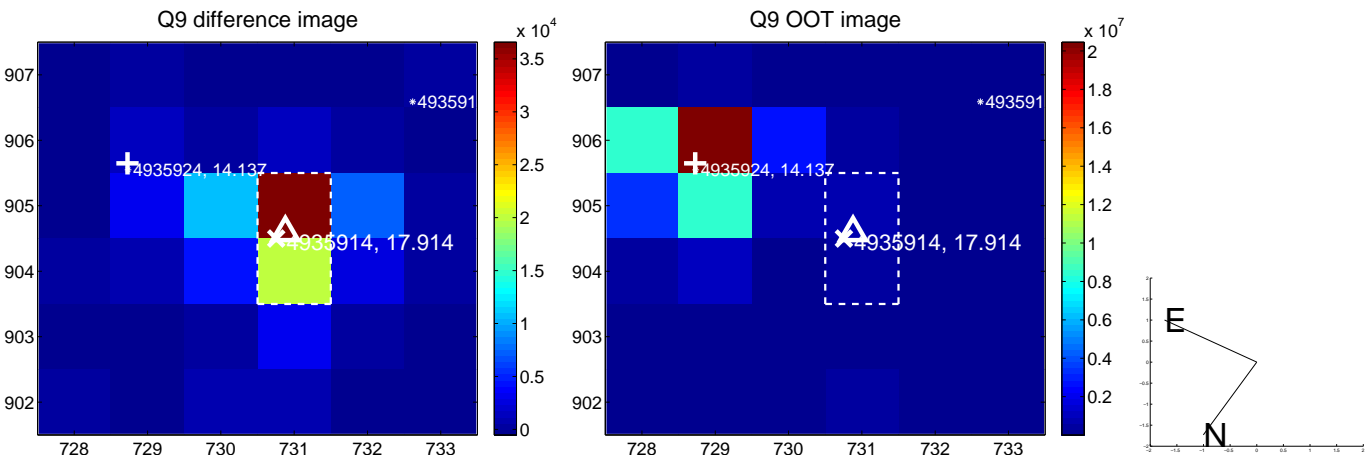
Q8 difference image



Q8 OOT image



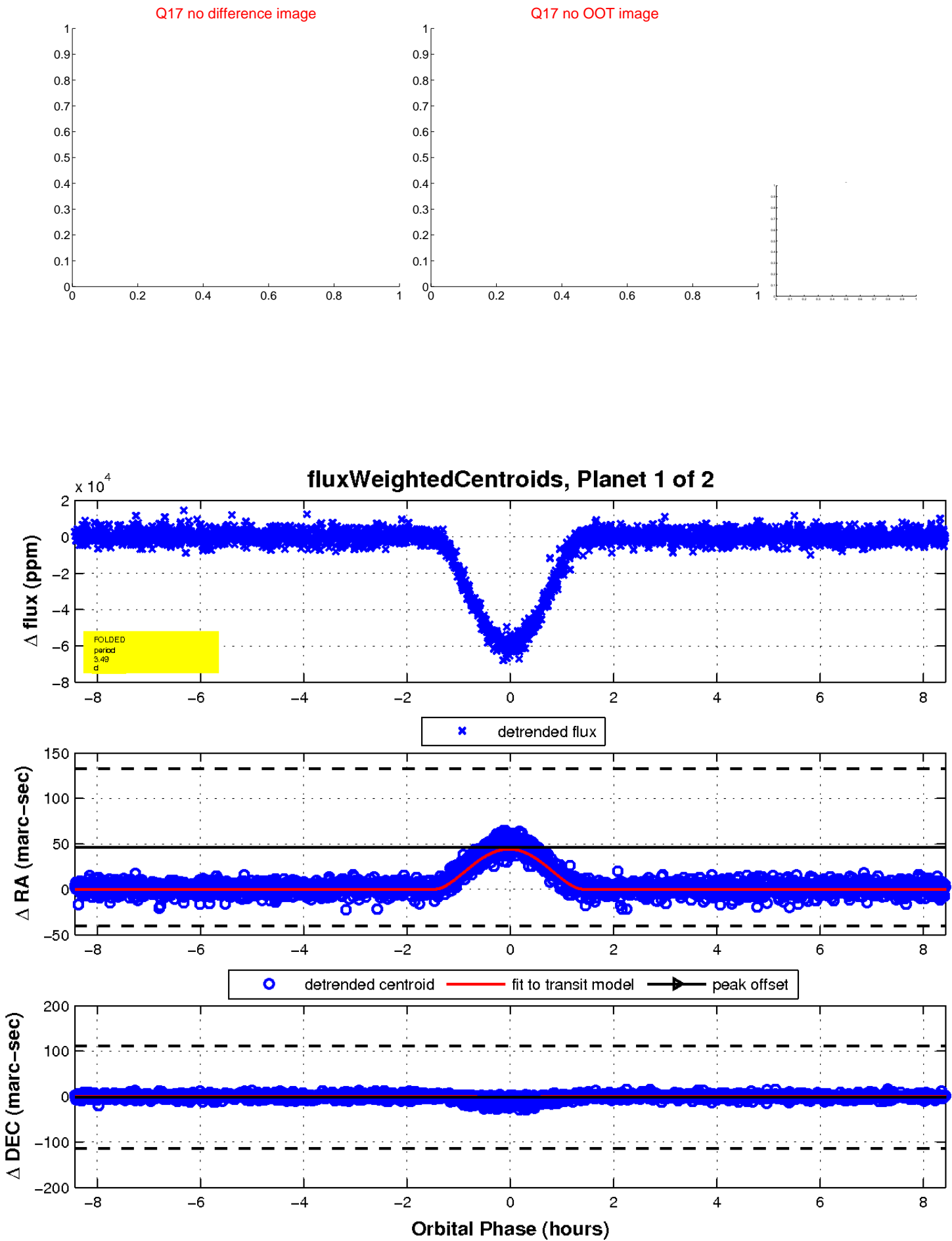
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



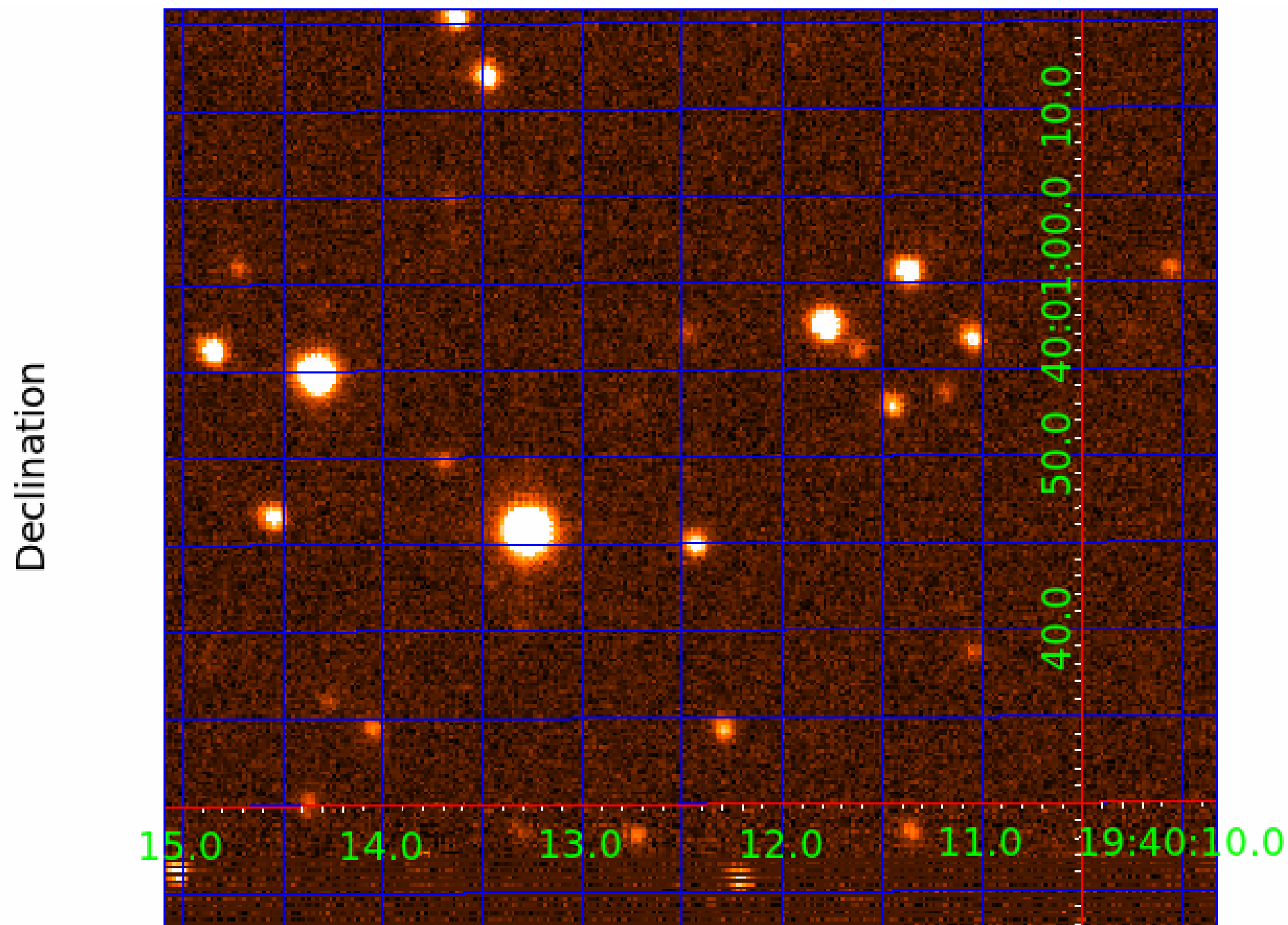
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004935914

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 004935914-01 | OBS | 3743.01 | 3.486341 | 134.869270 | 59990.0 | 2.810 | 215.9 | 222.5 | 1.00 | 5780 | 35.08 | 493.68 |
| 004935914-02 | OBS | No | 3.486290 | 133.134353 | 11822.2 | 2.609 | 40.4 | 45.5 | 1.00 | 5780 | 15.33 | 493.69 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 004935914-01 | OBS | FP | 0.00 | 0 | 1 | 0 | 0 | MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS |
| 004935914-02 | OBS | FP | 0.00 | 1 | 1 | 0 | 0 | IS_SEC_TCE—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 004935914-02

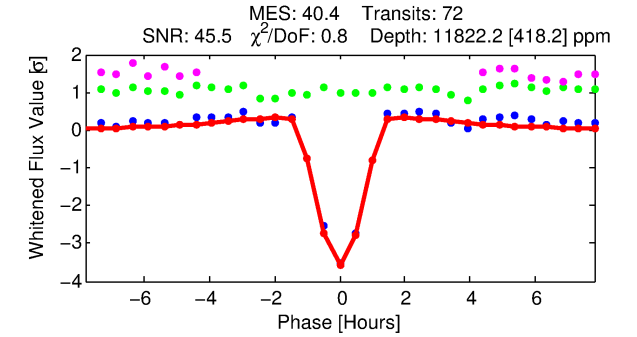
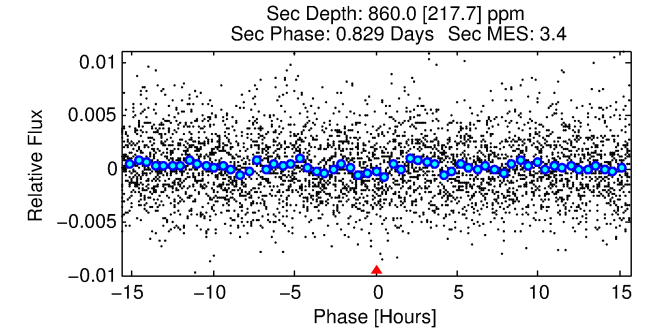
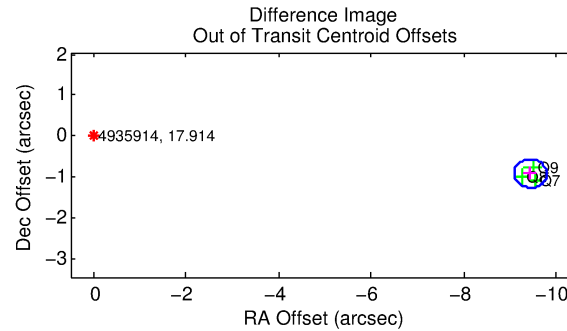
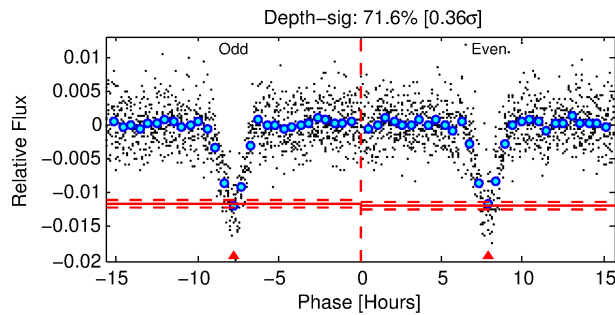
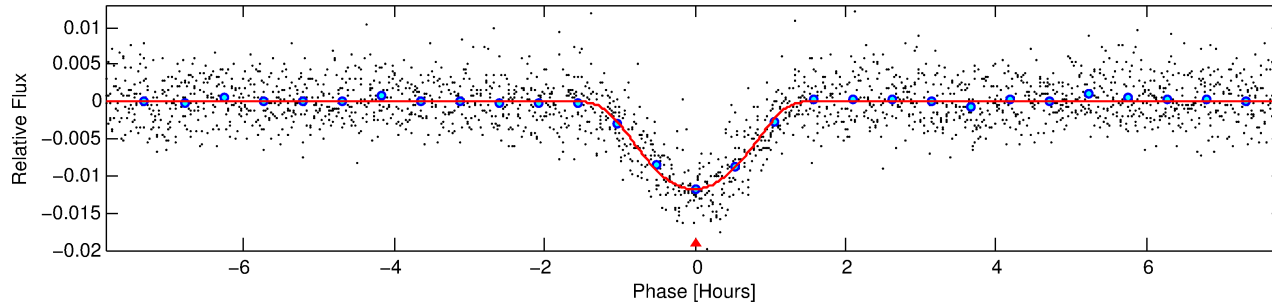
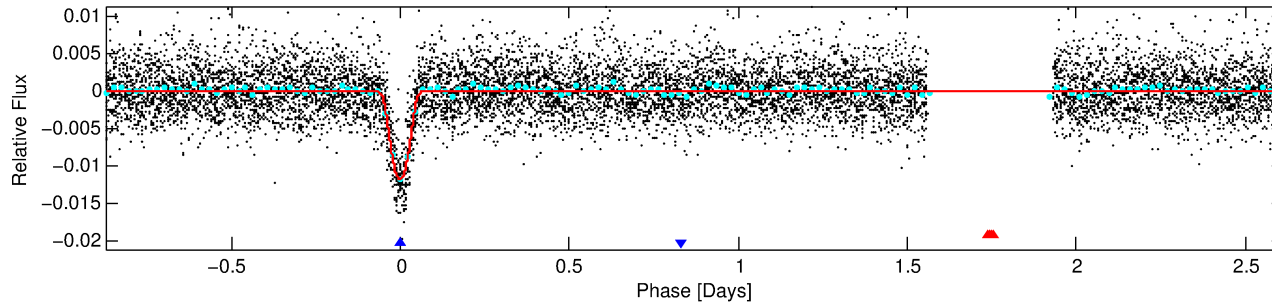
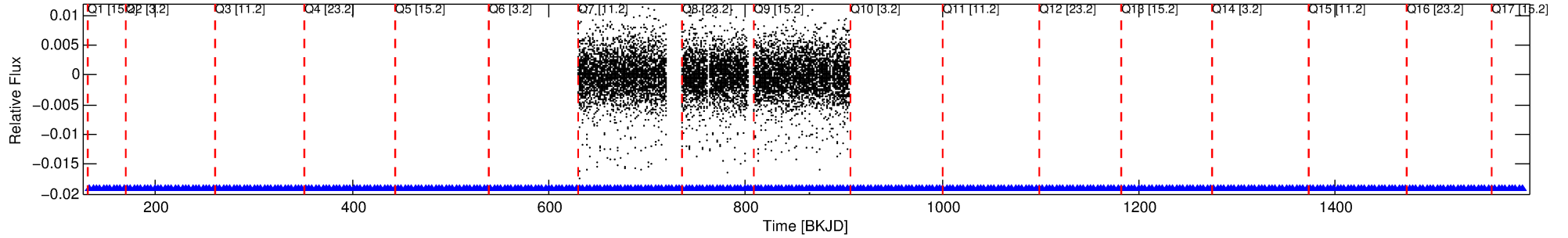
No Significant Match Found

DV One-Page Summary

KIC: 4935914 Candidate: 2 of 2 Period: 3.486 d

KOI: K03743 Corr: No Ephemeris Match

Kp: 17.91 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 3.48629 [0.00002] d
Epoch = 133.1344 [0.0027] BKJD
Rp/R* = 0.1405 [0.0645]
a/R* = 6.72 [0.94]
b = 0.94 [0.12]
Seff = 493.69 [0.00]
Teq = 1202 [0] K
Rp = 15.33 [7.03] Re
a = 0.0450 [0.0000] AU
Ag = 4.08 [3.88] [0.79σ]
Teffp = 2641 [628] K [2.29σ]

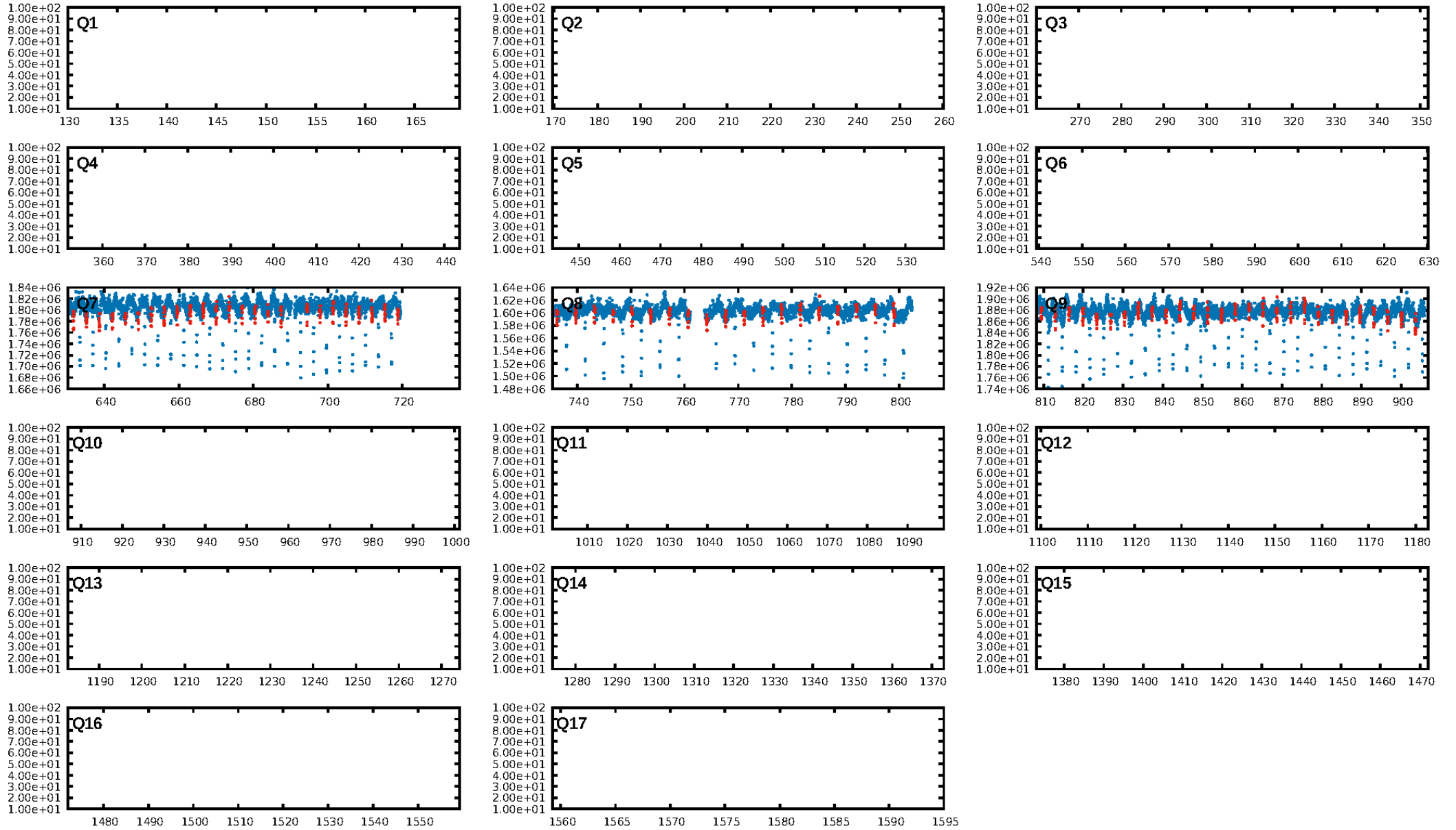
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 91.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [72/72]
GhostDiagnostic-chr: 2.186
Centroid-sig: 0.0%
Centroid-so: 3.206 arcsec [38.52σ]
OotOffset-rm: 9.484 arcsec [81.04σ]
KicOffset-rm: 0.794 arcsec [5.93σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

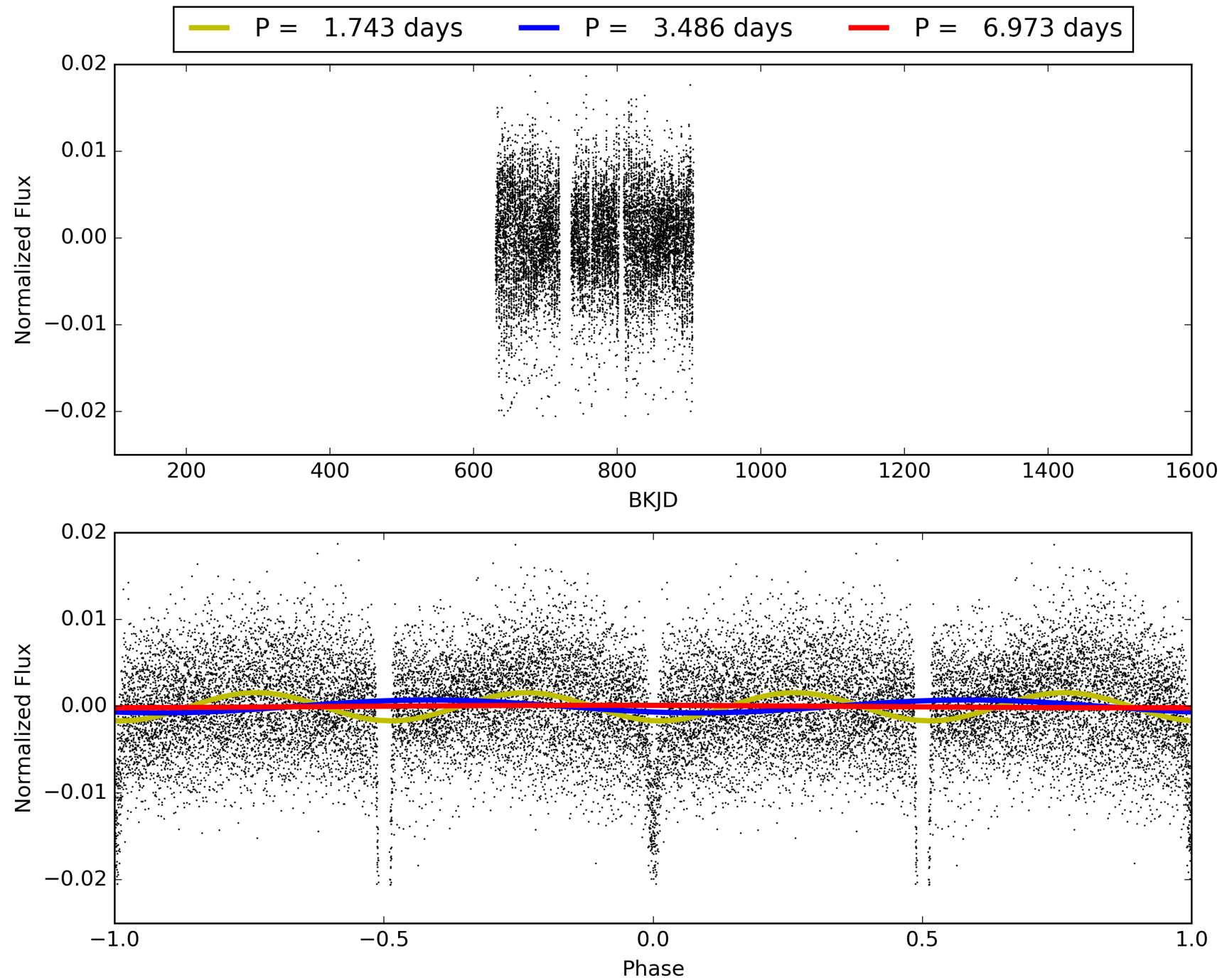
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:19:20 Z

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

TCE 004935914-02, PDC Light Curves

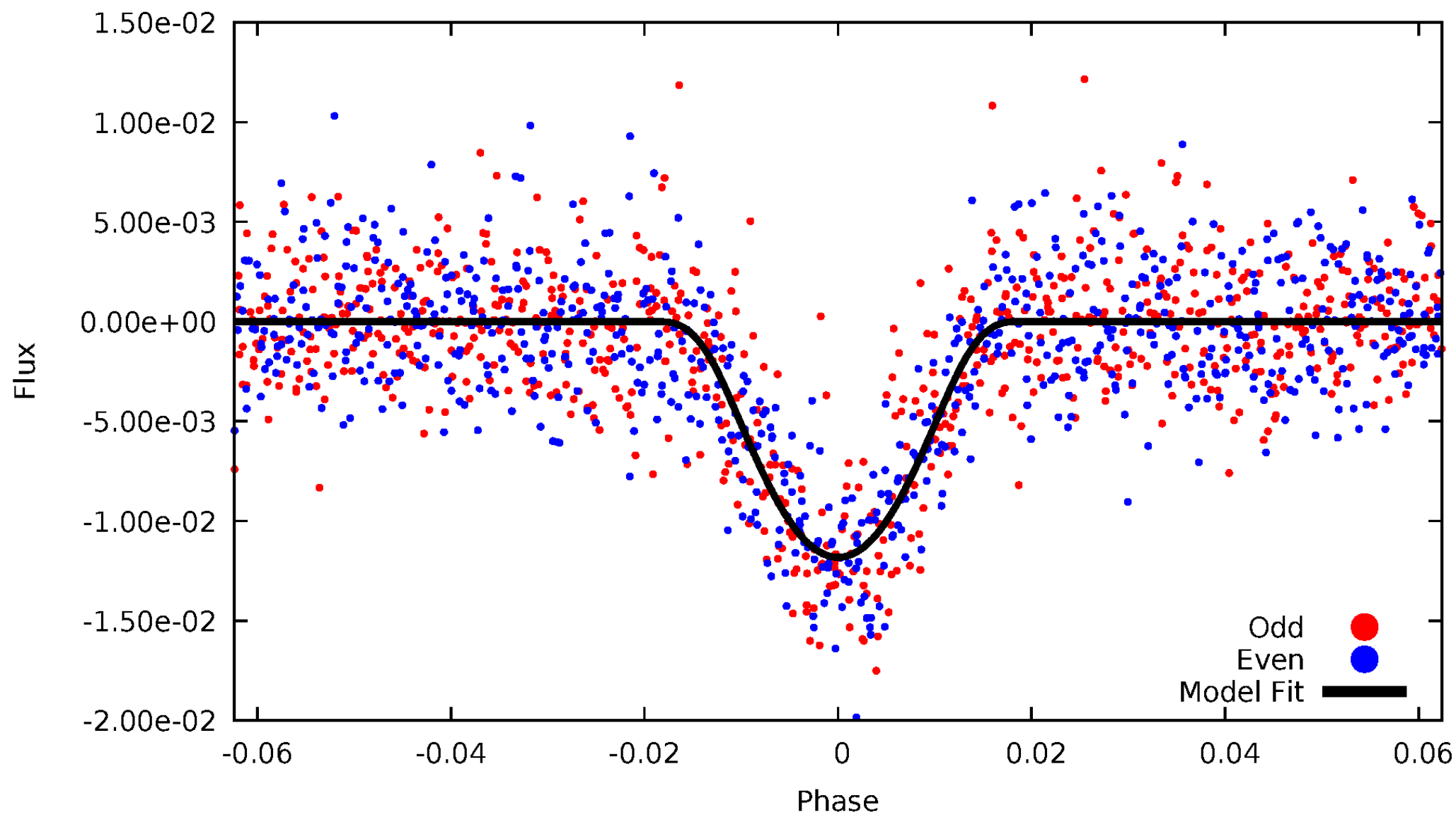


TCE 004935914-02



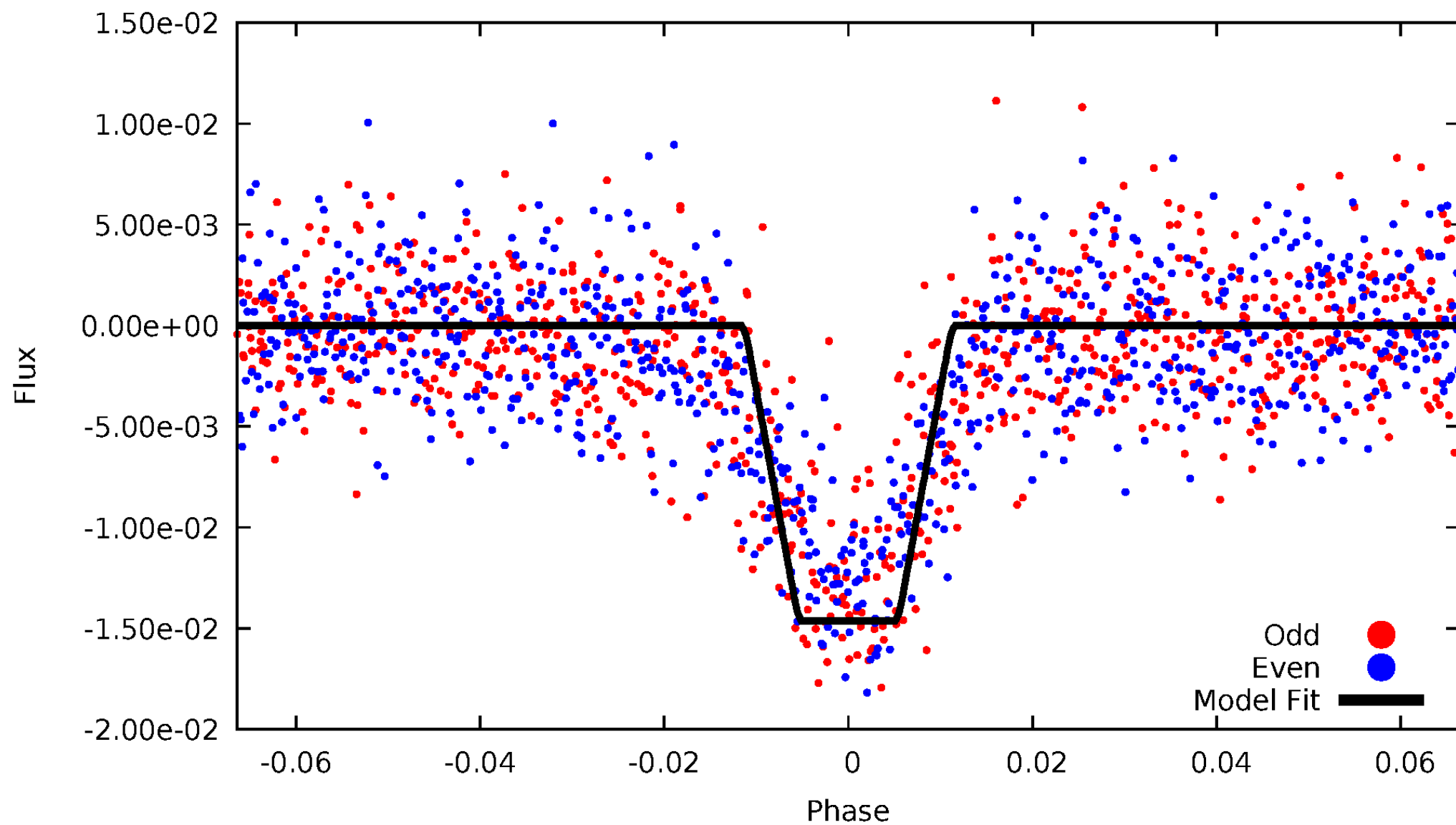
DV Odd/Even

TCE 004935914-02



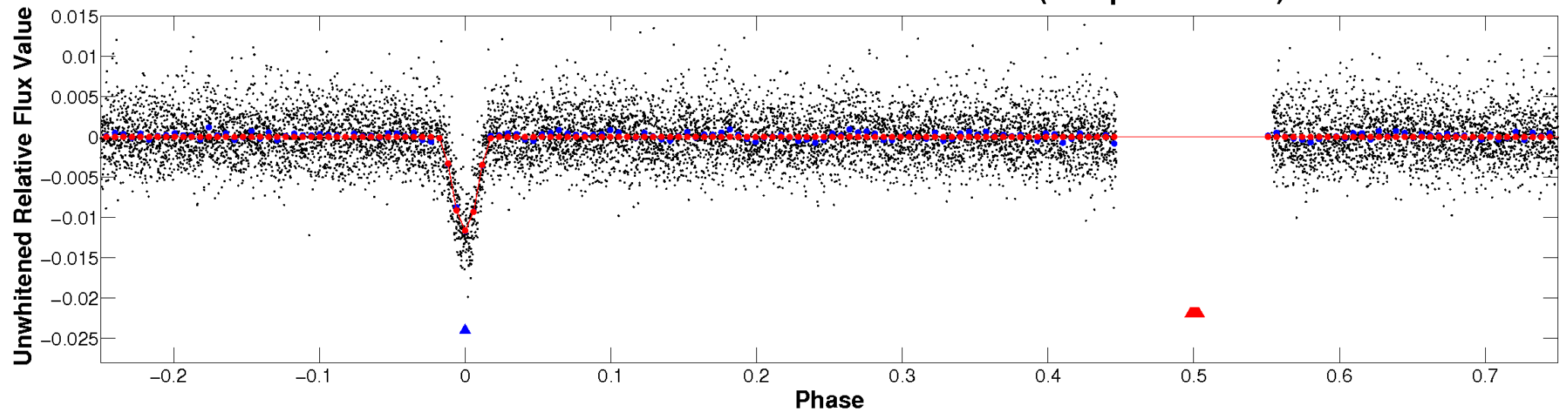
ALT Odd/Even

TCE 004935914-02

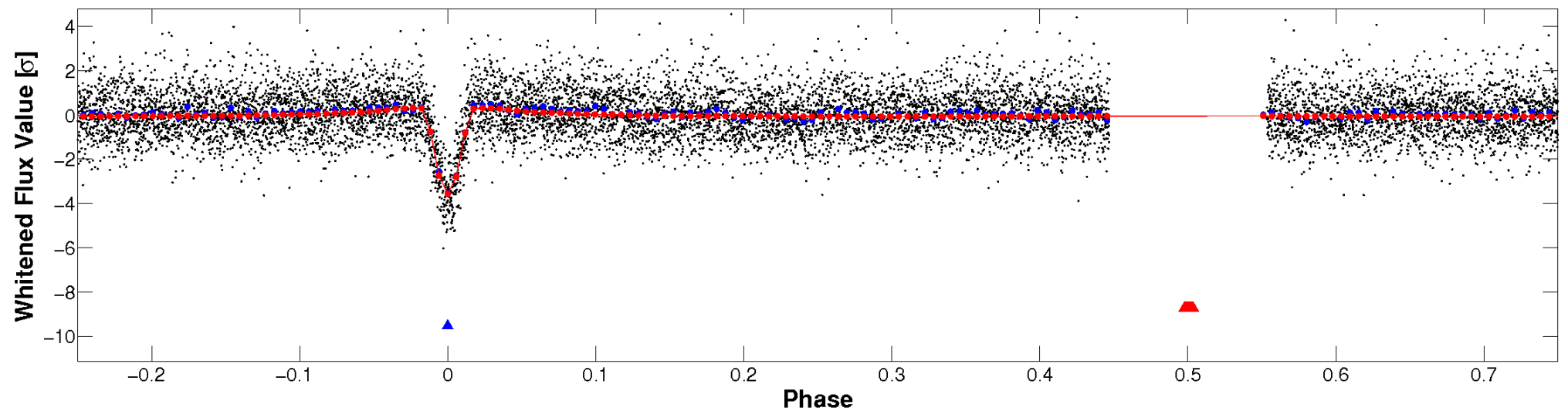


Non-Whitened Vs. Whitened Light Curve

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

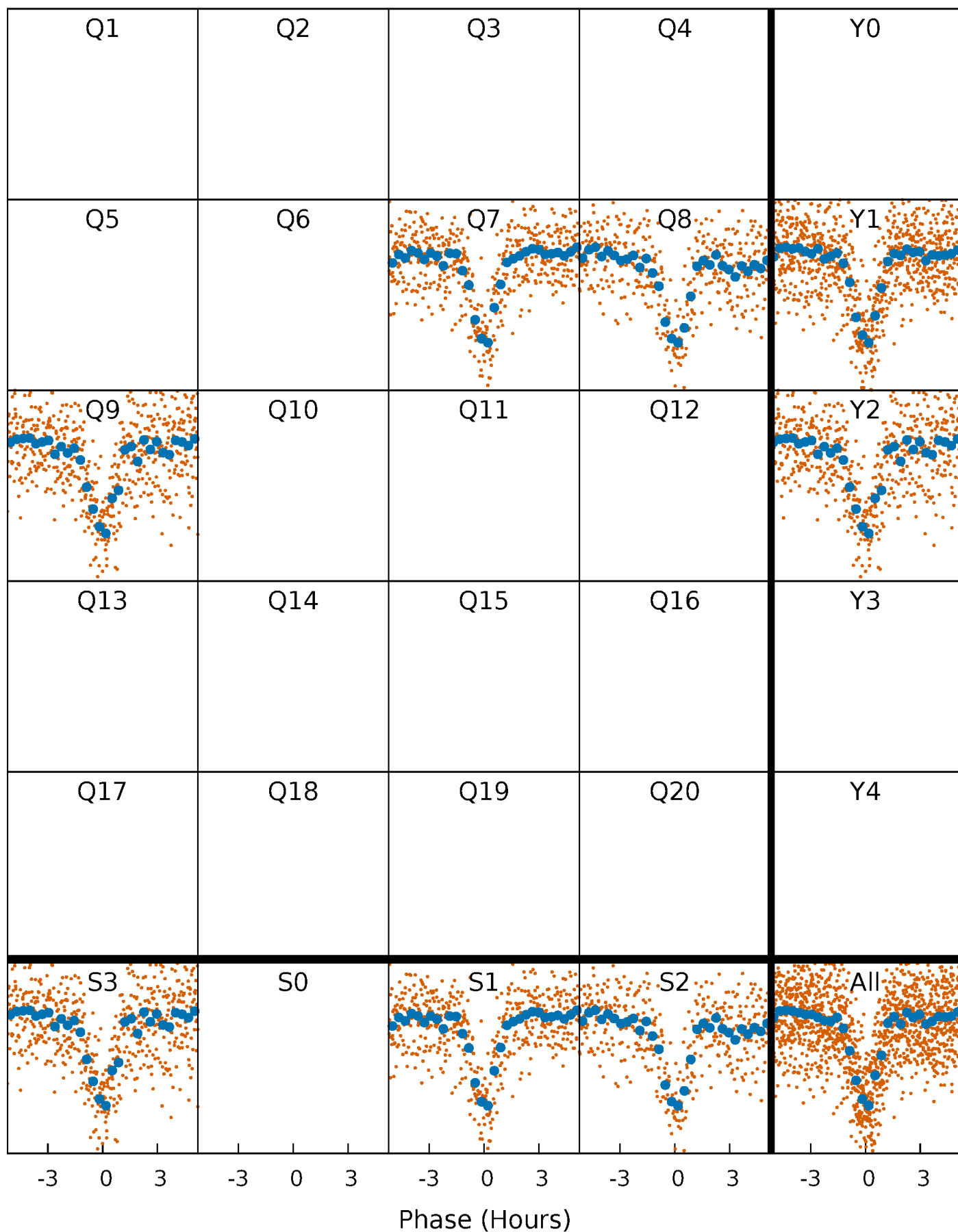


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



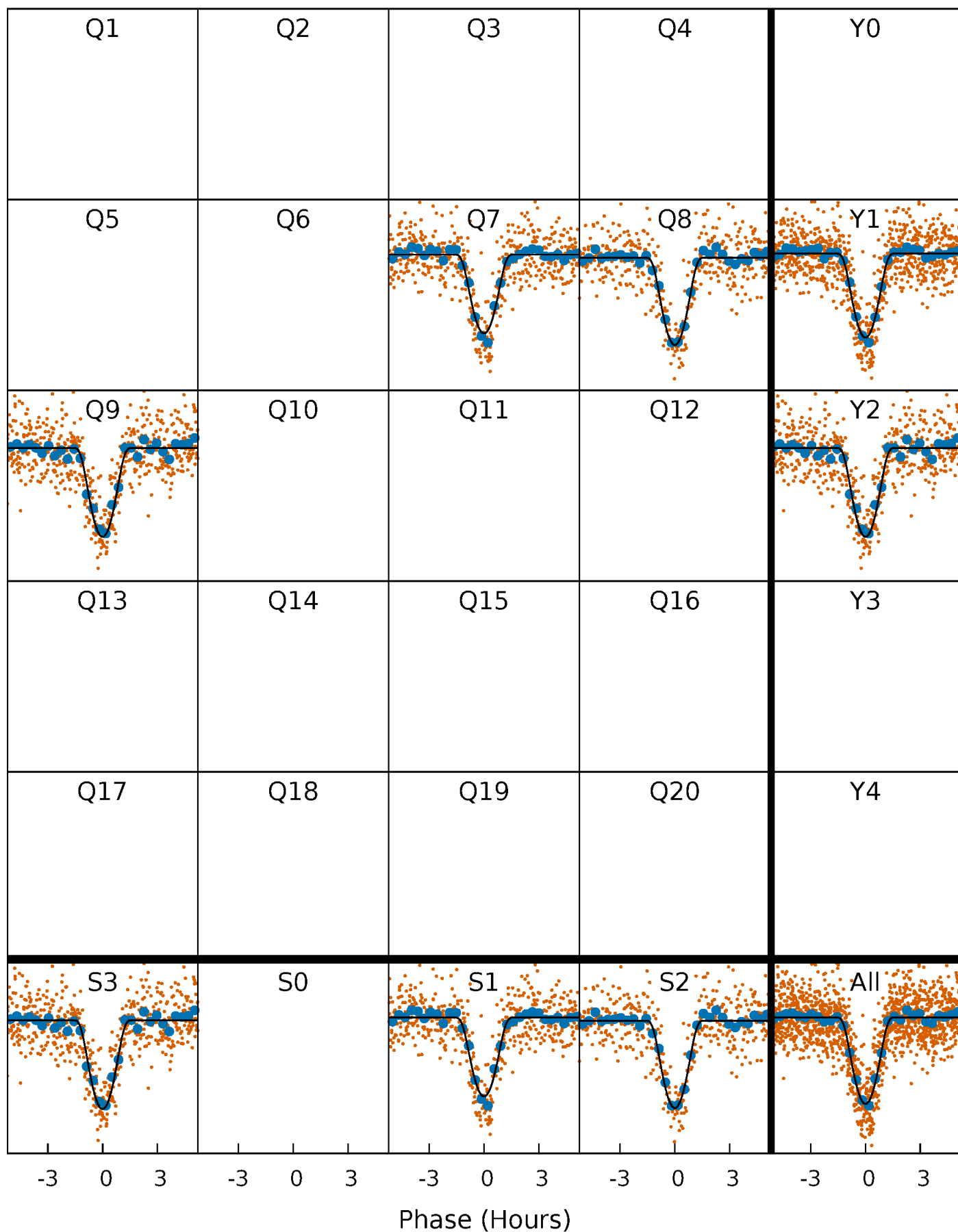
PDC Quarter-Phased Transit Curves

TCE 004935914-02 $P = 3.486290$ Days $T_0 = 133.134353$ (BKJD)



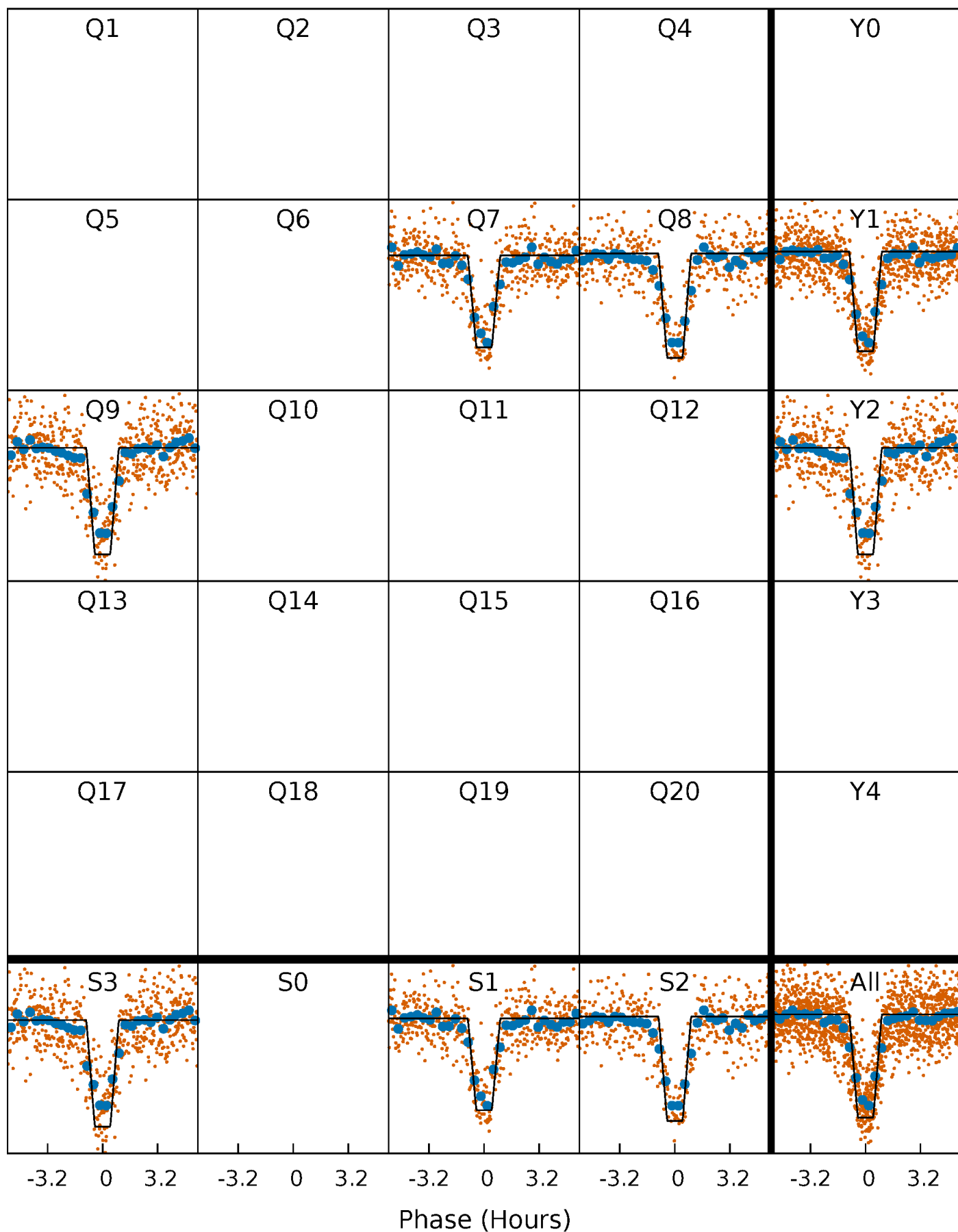
DV Quarter-Phased Transit Curves

TCE 004935914-02 P= 3.486290 Days $T_0=133.134353$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

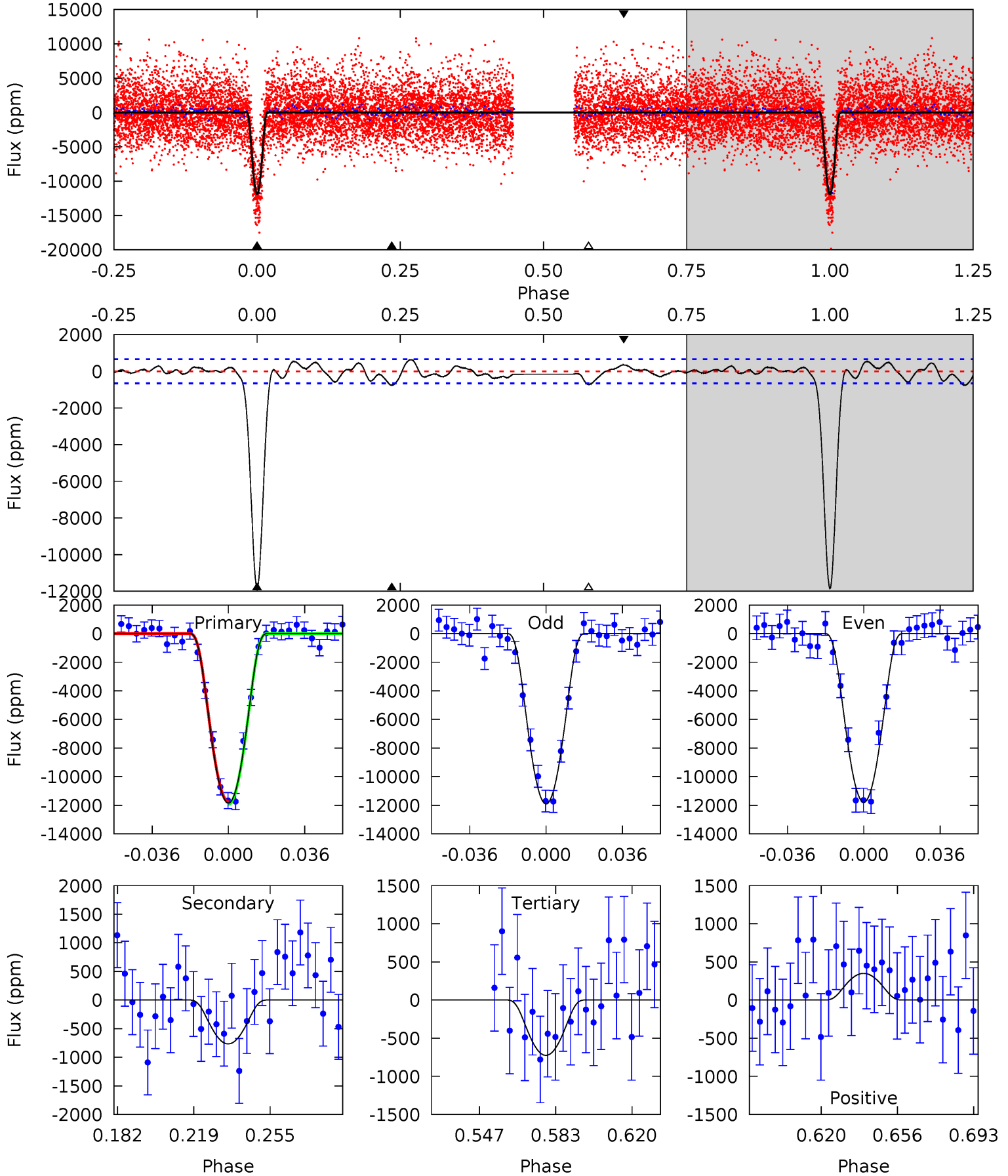
TCE 004935914-02 P= 3.486265 Days $T_0=133.139180$ (BKJD)



DV Model-Shift Uniqueness Test

004935914-02, P = 3.486290 Days, E = 133.134353 Days

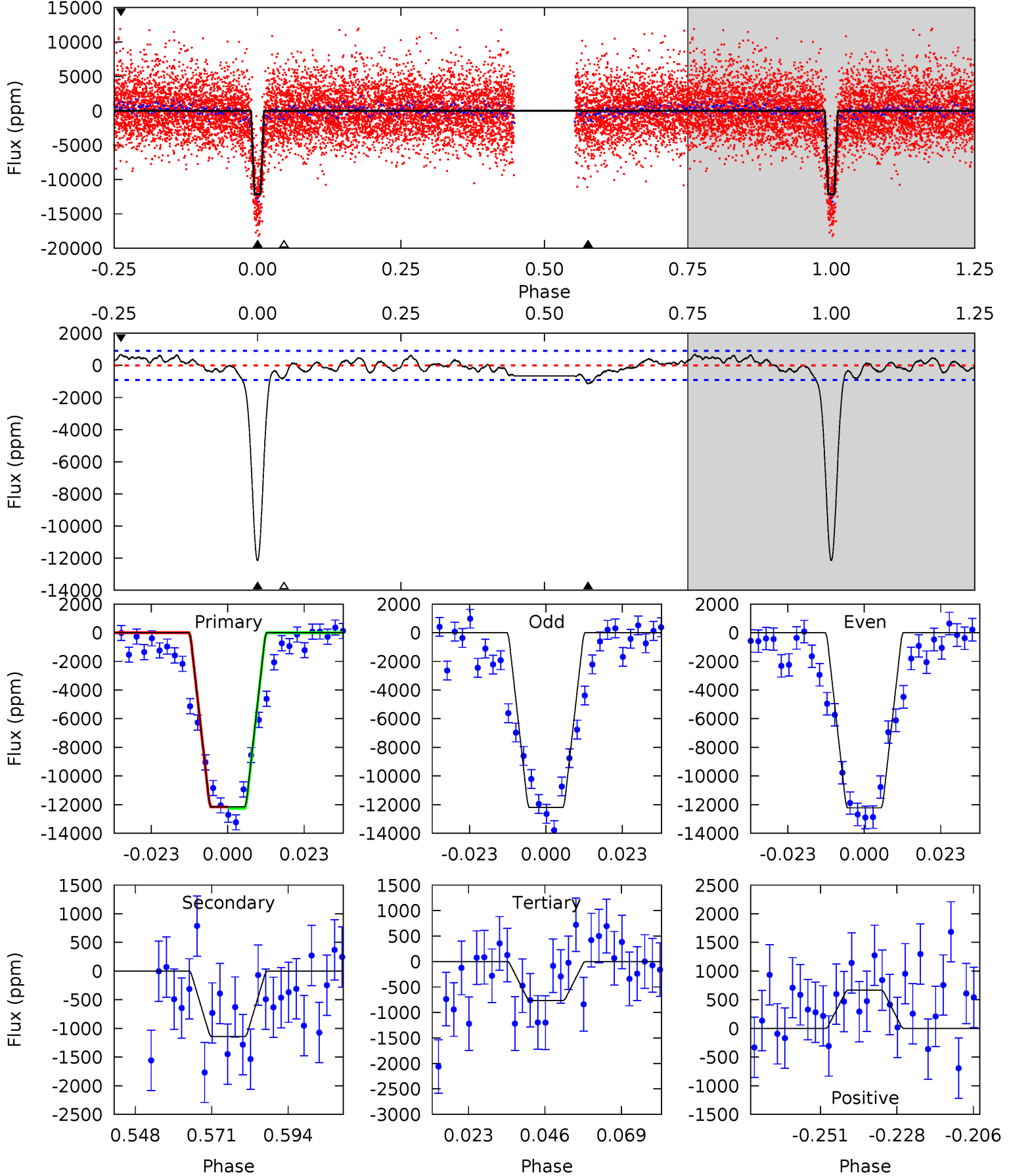
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 85.8 | 5.55 | 5.25 | 2.53 | 4.77 | 2.09 | 1.79 | 80.5 | 83.2 | 0.30 | 3.02 | 0.44 | 1.03 | 0.05 | 0.64 |



Alt Model-Shift Uniqueness Test

004935914-02, P = 3.486265 Days, E = 133.139180 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 65.5 | 6.16 | 4.11 | 3.60 | 4.87 | 2.28 | 1.77 | 61.4 | 61.9 | 2.05 | 2.56 | 0.10 | 1.04 | 0.05 | 0.26 |



Stellar Parameters For KIC 004935914

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|---------------------|---------------------------|---------------------------|---------------------------|----------------------------|---|
| | 5780^{+1}_{-1} | $4.438^{+1.000}_{-1.000}$ | $0.000^{+1.000}_{-1.000}$ | $1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ | $-1.000^{+1.000}_{-1.000}$ |
| | +0%/-0% | +23%/-23% | +inf%/-inf% | +100%/-100% | +100%/-100% | +100%/-100% |
| Source | Solar | Solar | Solar | Solar | | |

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

Secondary Eclipse Parameters for KIC 004935914-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|-----------------|-------------------------|--------------------|----------------------|----------------------------|
| DV | -766 ± 138 | $14.98^{+7.09}_{-6.76}$ | 1680^{+80}_{-83} | 3157^{+671}_{-383} | $3.831^{+8.876}_{-2.143}$ |
| Alt. | -1142 ± 185 | $13.52^{+6.98}_{-6.60}$ | 1676^{+79}_{-75} | 3481^{+928}_{-455} | $6.887^{+19.294}_{-3.944}$ |

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 $A_{obs} \gg 1.0$

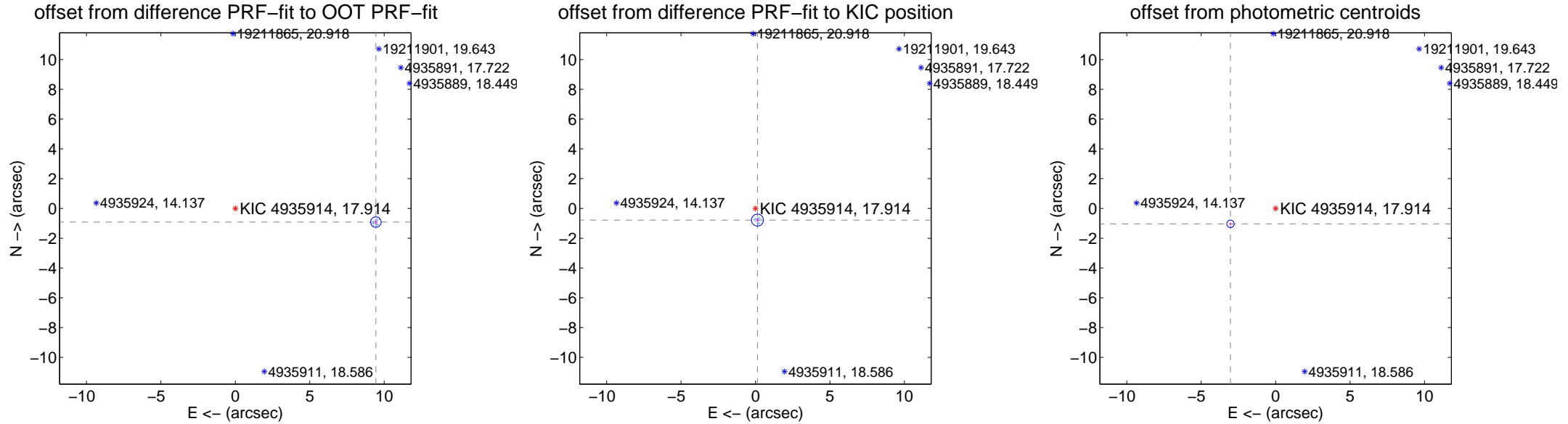
DV Centroid Data

Supplemental centroid analysis for 004935914-02. Kepler magnitude: 17.91. Transit SNR 45.51

There are 3 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 9.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 9.484 ± 0.117 | 81.04 | -9.440 ± 0.117 | -0.916 ± 0.134 |
| PRF-fit source offset from KIC position | 0.794 ± 0.134 | 5.93 | -0.131 ± 0.088 | -0.783 ± 0.132 |
| photometric centroid source offset | 3.21 ± 0.08 | 38.52 | 3.03 ± 0.09 | -1.04 ± 0.06 |

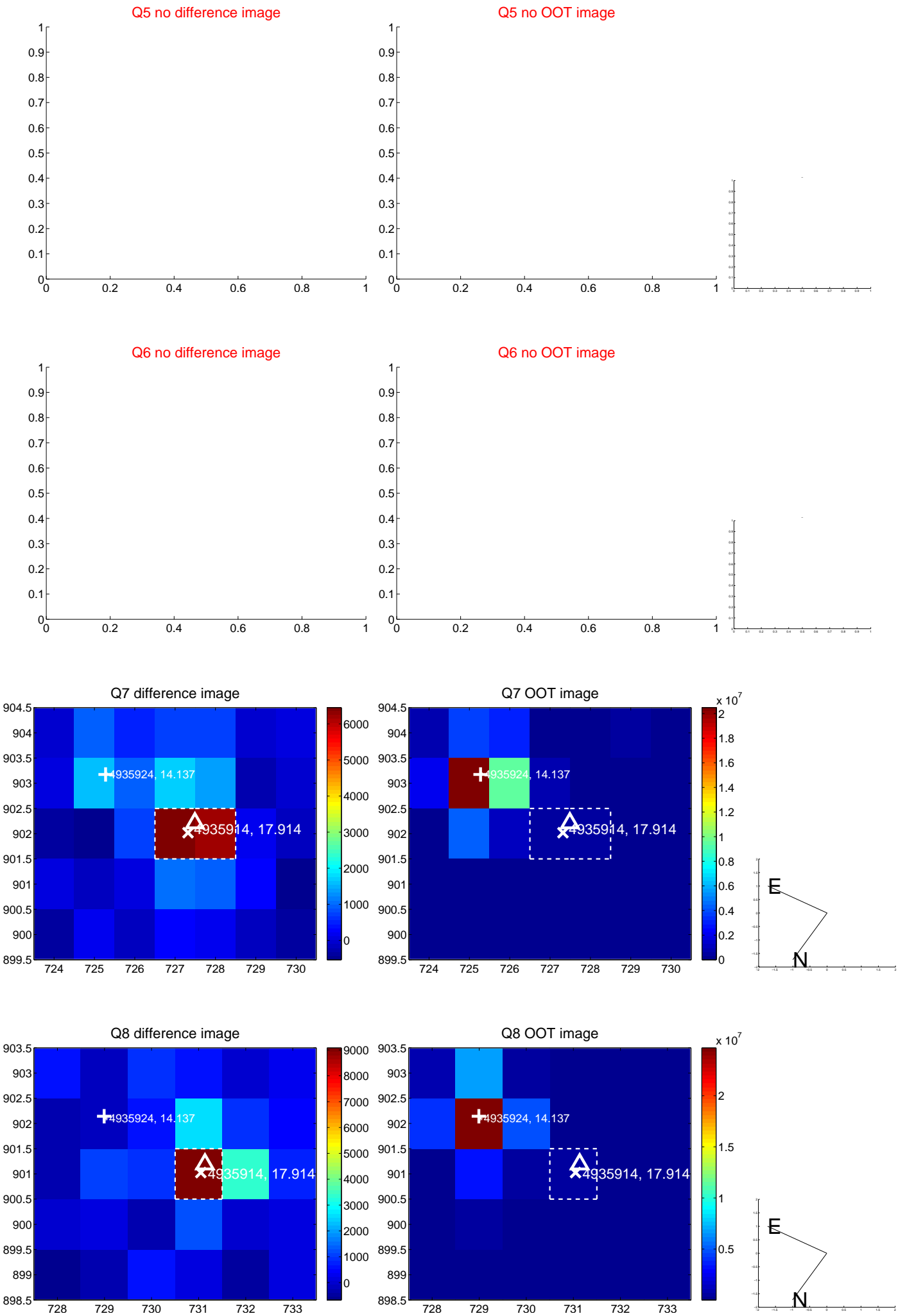


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

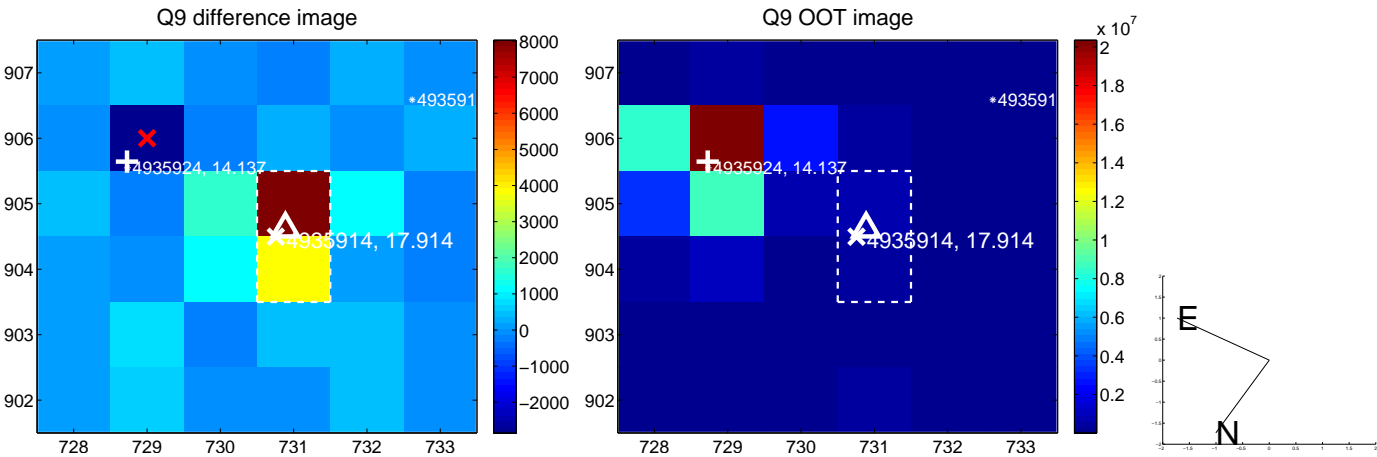
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



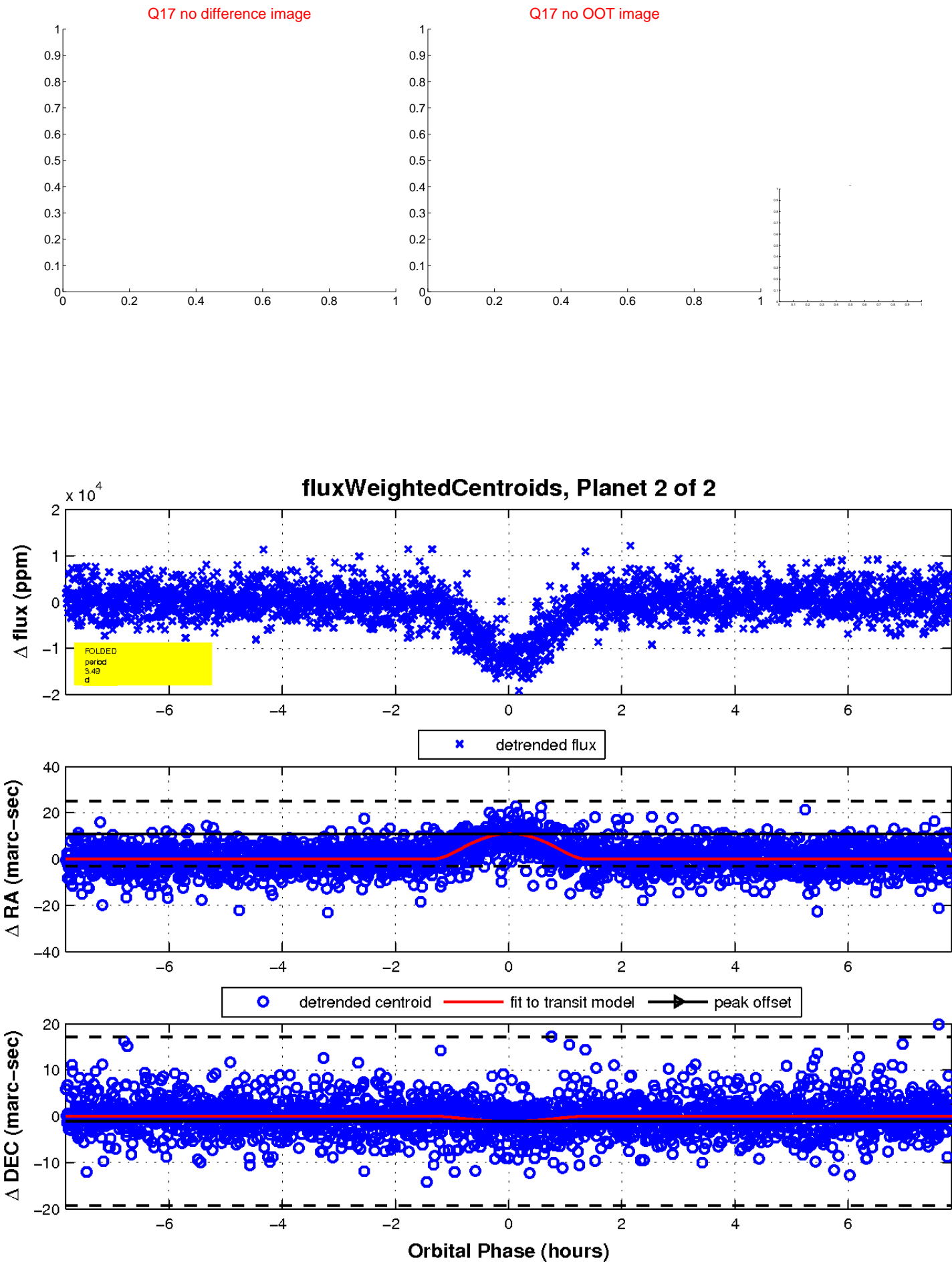
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

