

KIC 011955364

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011955364-01 | OBS | No | 707.153217 | 155.354868 | 1033.4 | 10.023 | 14.0 | 6.6 | 0.83 | 5705 | 3.92 | 0.33 |
| 011955364-02 | OBS | No | 533.513594 | 331.621870 | 745.9 | 4.328 | 9.0 | 6.2 | 0.83 | 5705 | 2.40 | 0.48 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 011955364-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011955364-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

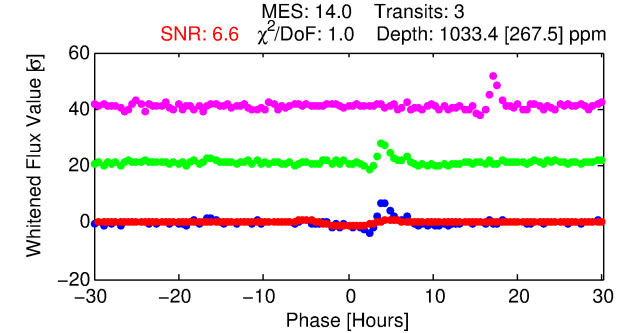
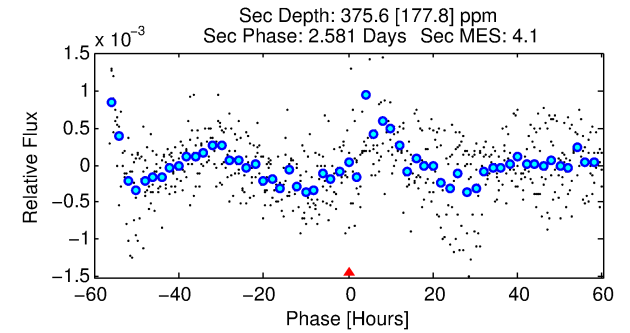
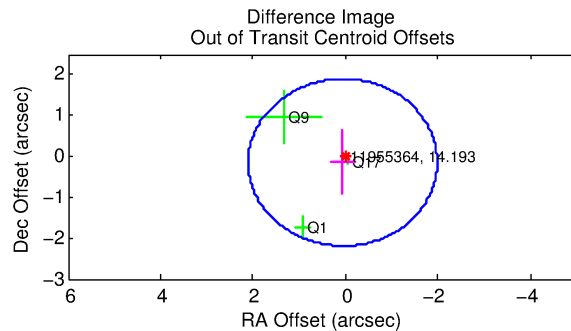
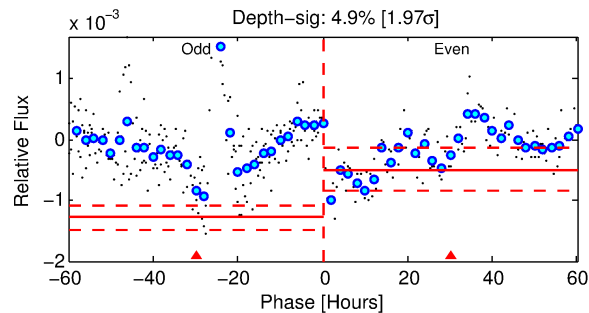
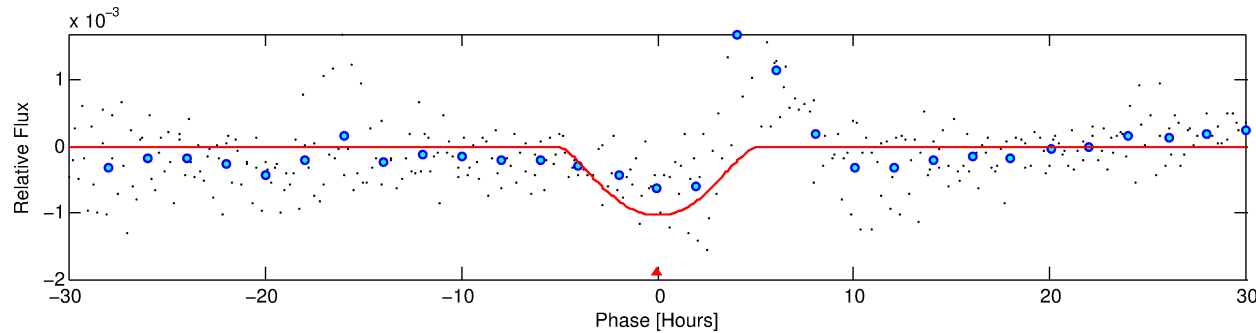
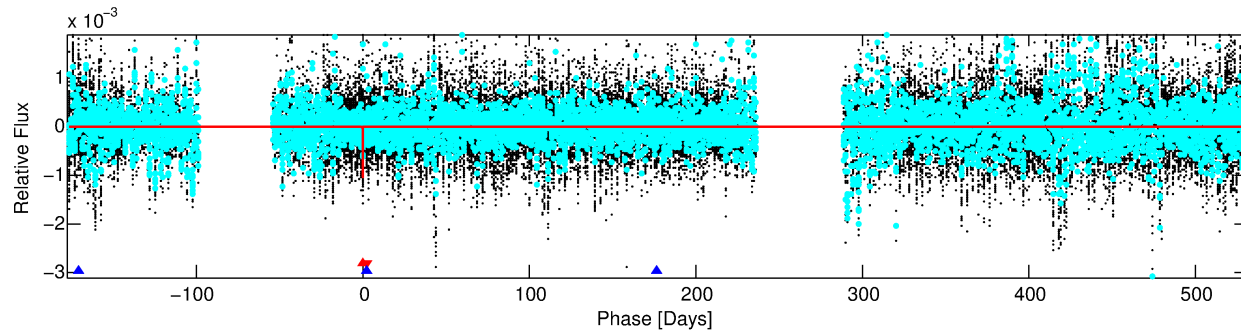
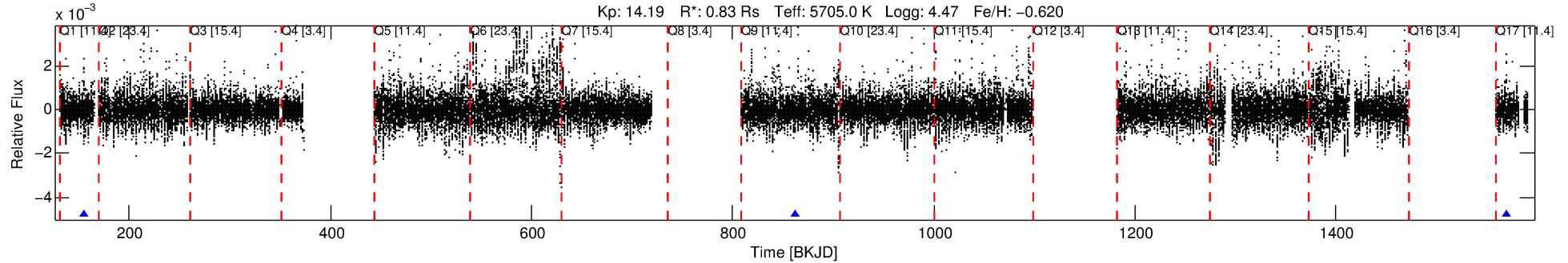
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011955364-01

No Significant Match Found

DV One-Page Summary

KIC: 11955364 Candidate: 1 of 2 Period: 707.153 d



DV Fit Results:

Period = 707.15322 [0.01667] d
Epoch = 155.3549 [0.0242] BKJD
Rp/R* = 0.0431 [0.0406]
a/R* = 197.54 [80.56]
b = 0.98 [0.08]
Seff = 0.33 [0.10]
Teq = 193 [14] K
Rp = 3.92 [3.79] Re
a = 1.4129 [0.2585] AU
Ag = 26913.88 [52808.40] [0.51 σ]
Teffp = 3825 [1861] K [1.95 σ]

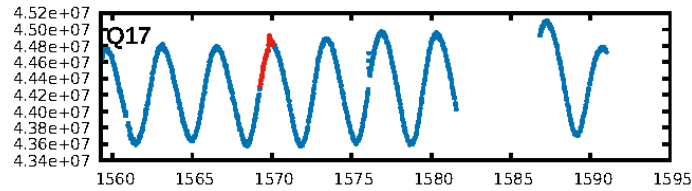
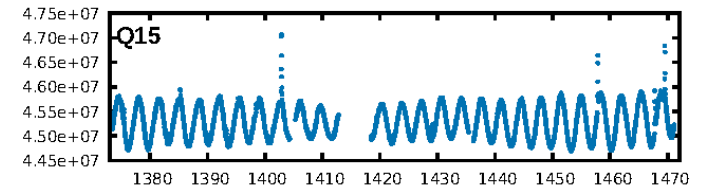
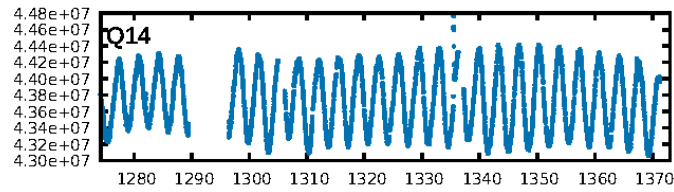
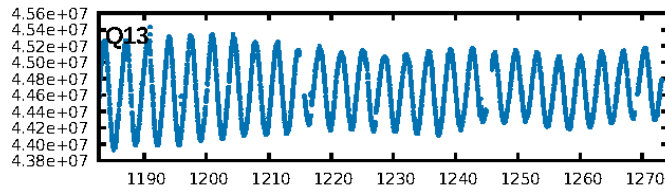
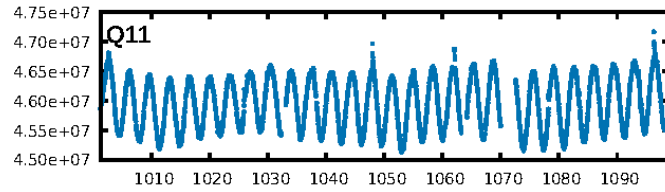
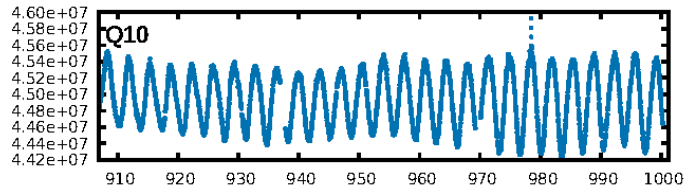
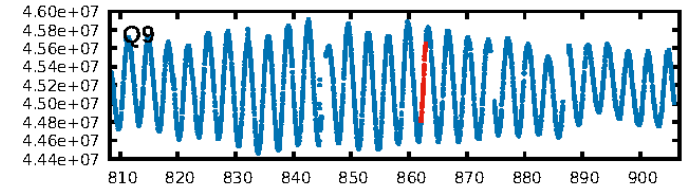
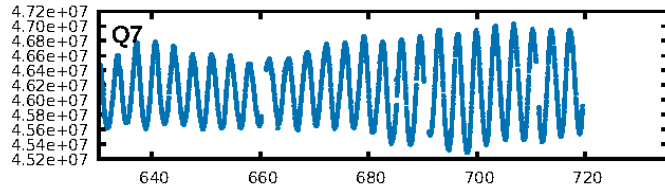
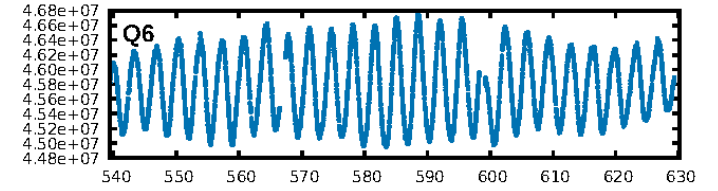
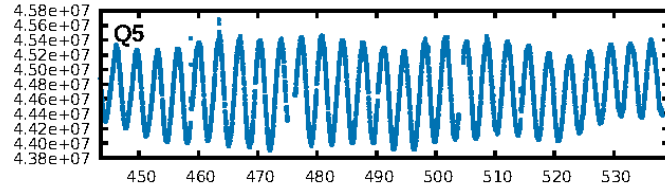
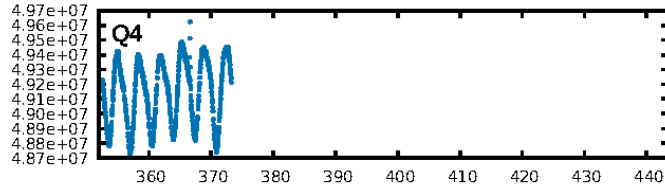
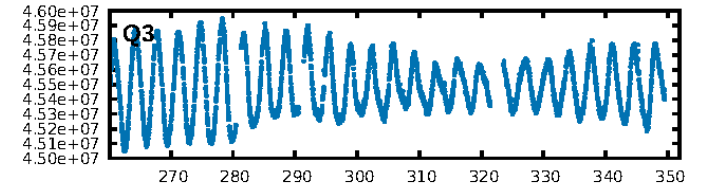
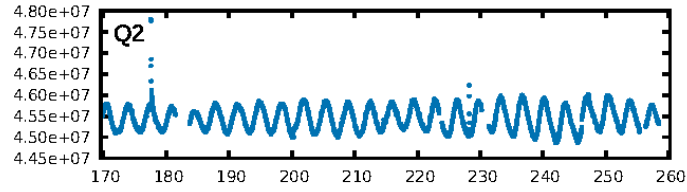
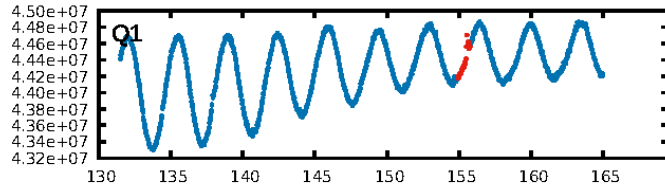
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [381.72 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.0%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 2.88e-12
RollingBand-fgt: 1.00 [1/1]
GhostDiagnostic-chr: -3.402
Centroid-sig: 4.6%
Centroid-so: 1.293 arcsec [1.66 σ]
OotOffset-rm: 0.160 arcsec [0.24 σ]
KicOffset-rm: 0.286 arcsec [0.60 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

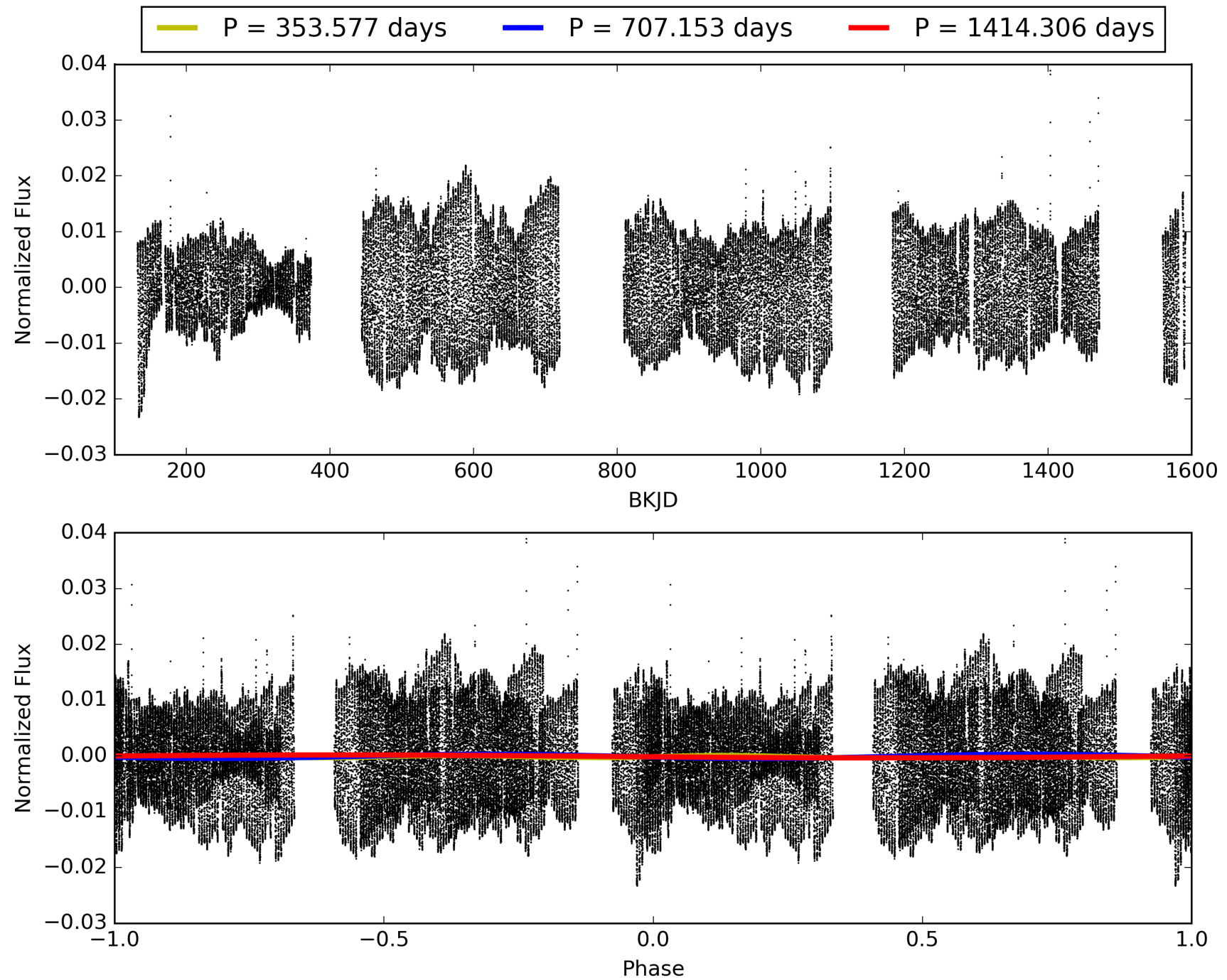
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:27:34 Z

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

TCE 011955364-01, PDC Light Curves

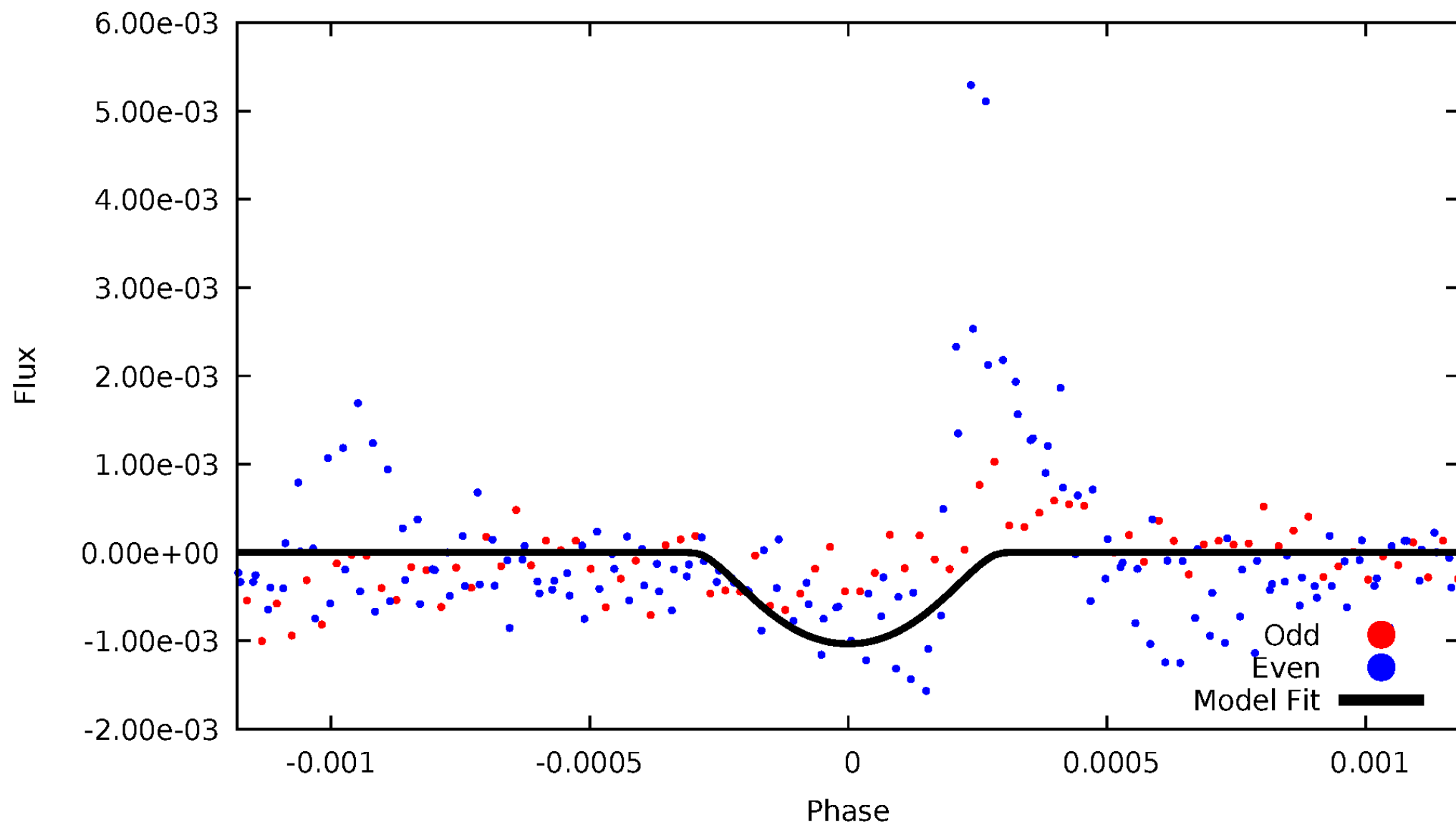


TCE 011955364-01



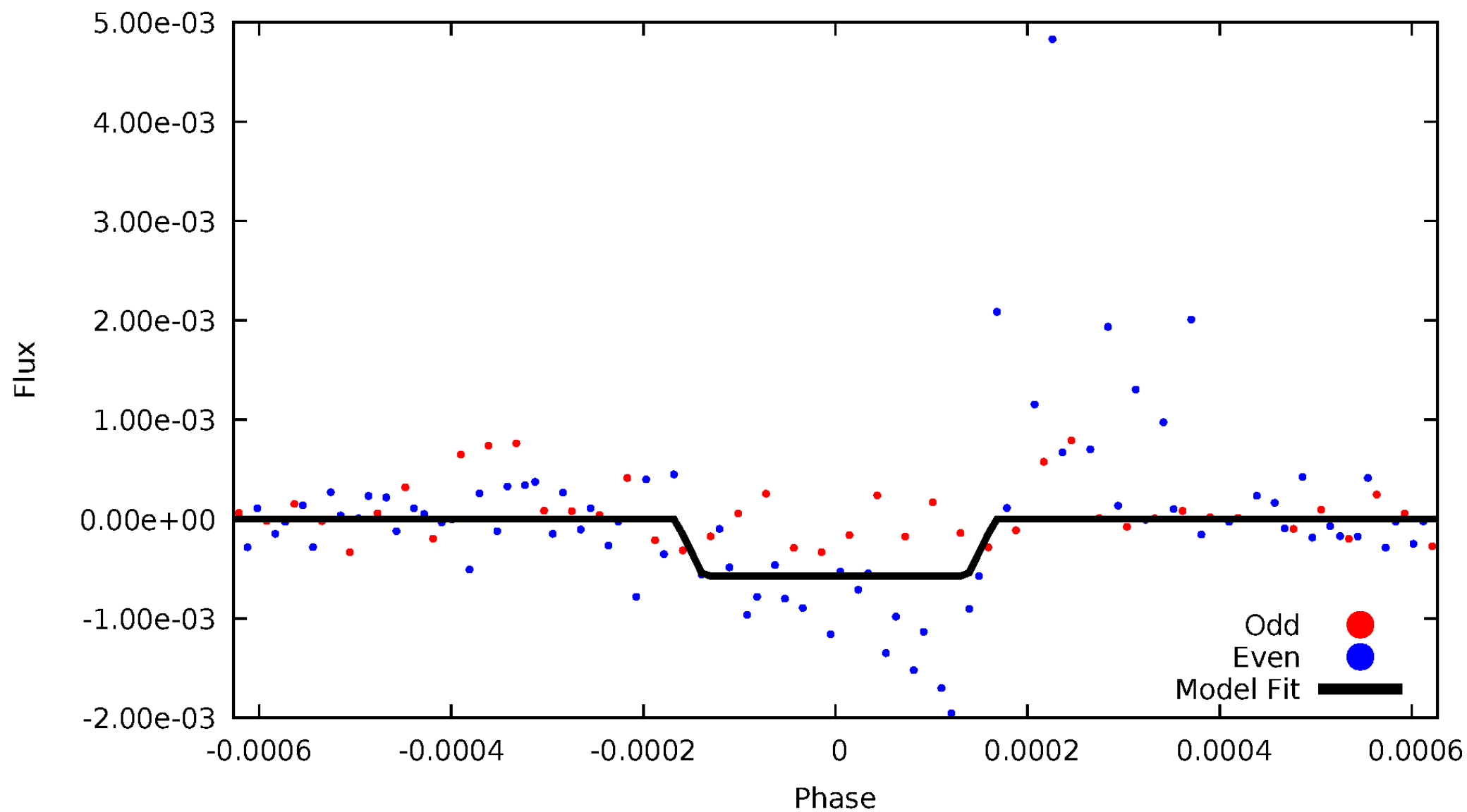
DV Odd/Even

TCE 011955364-01

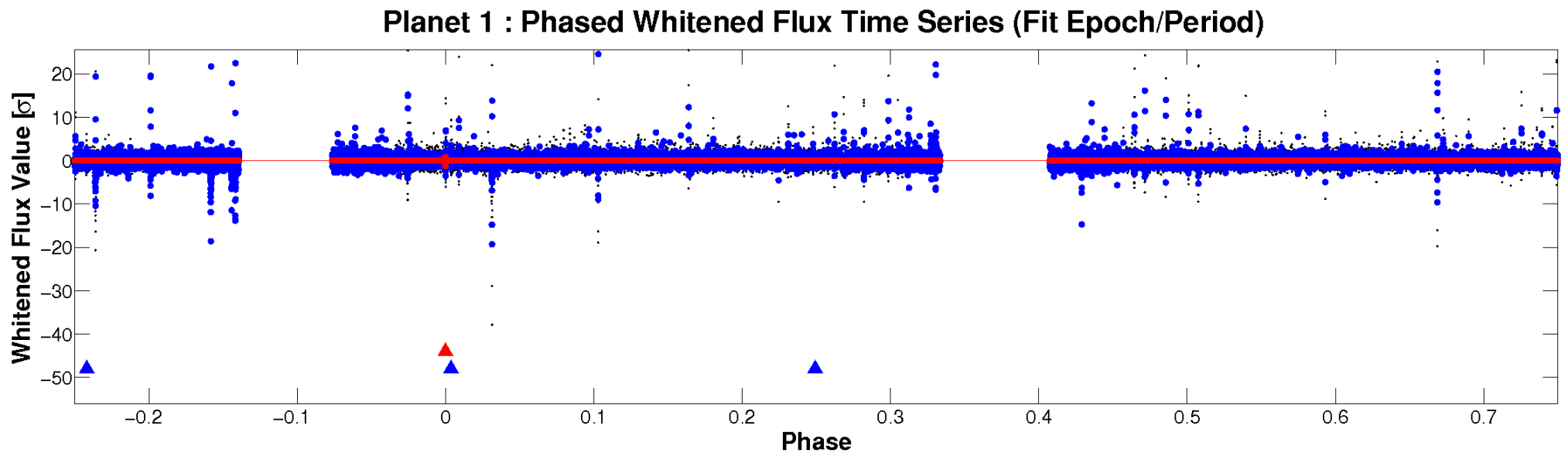
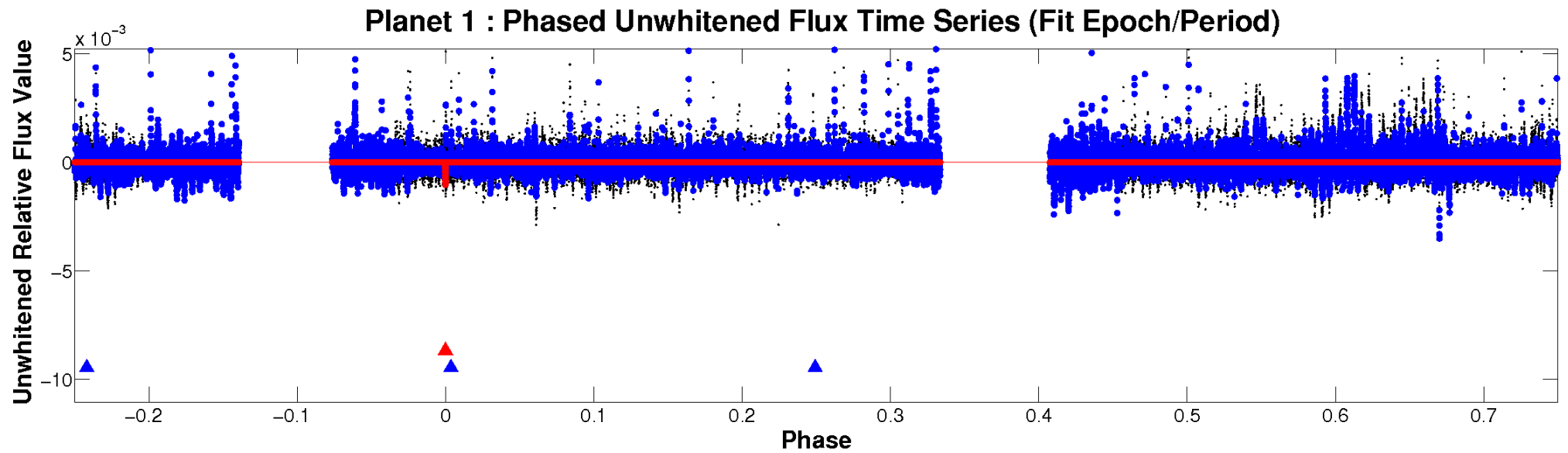


ALT Odd/Even

TCE 011955364-01

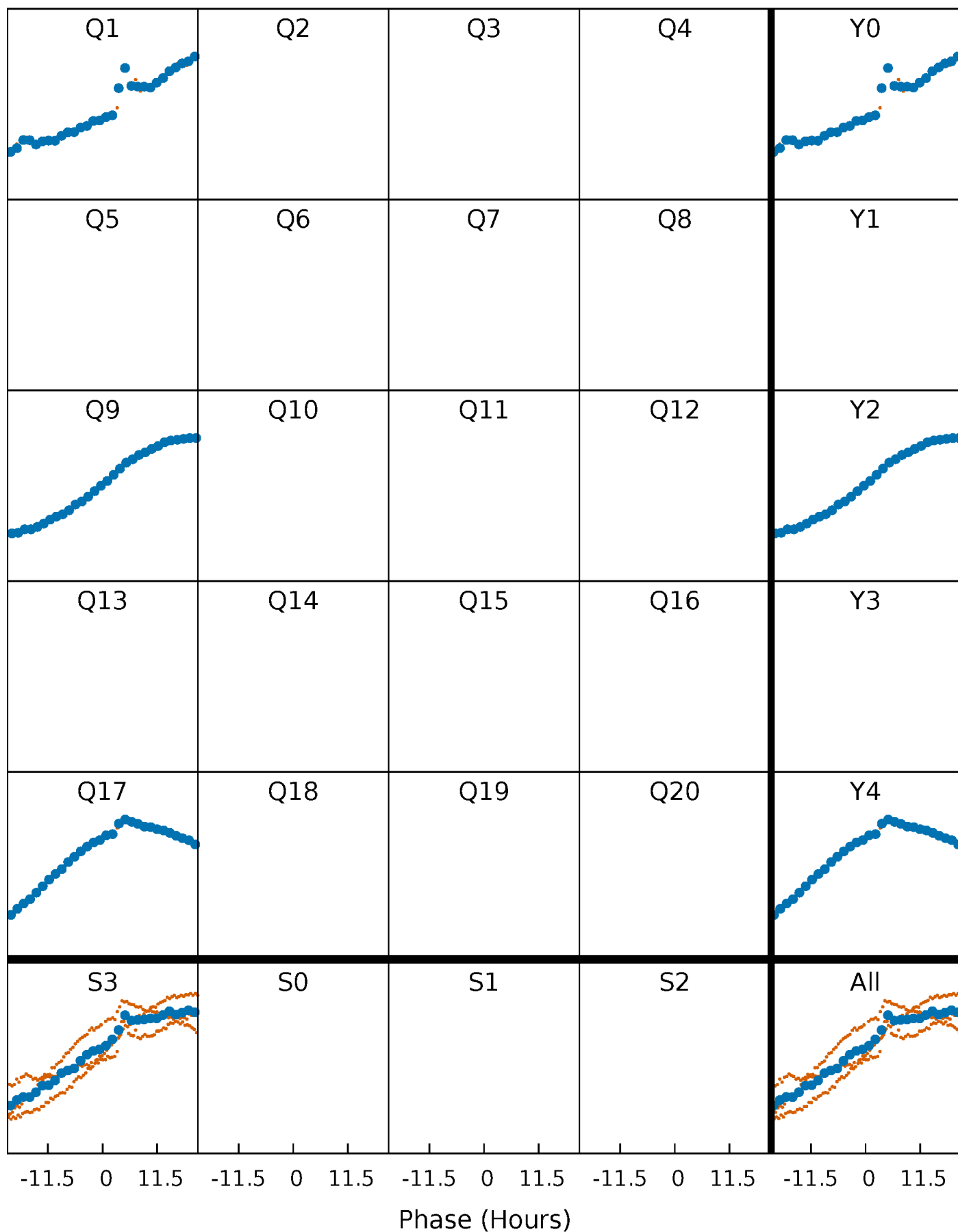


Non-Whitened Vs. Whitened Light Curve



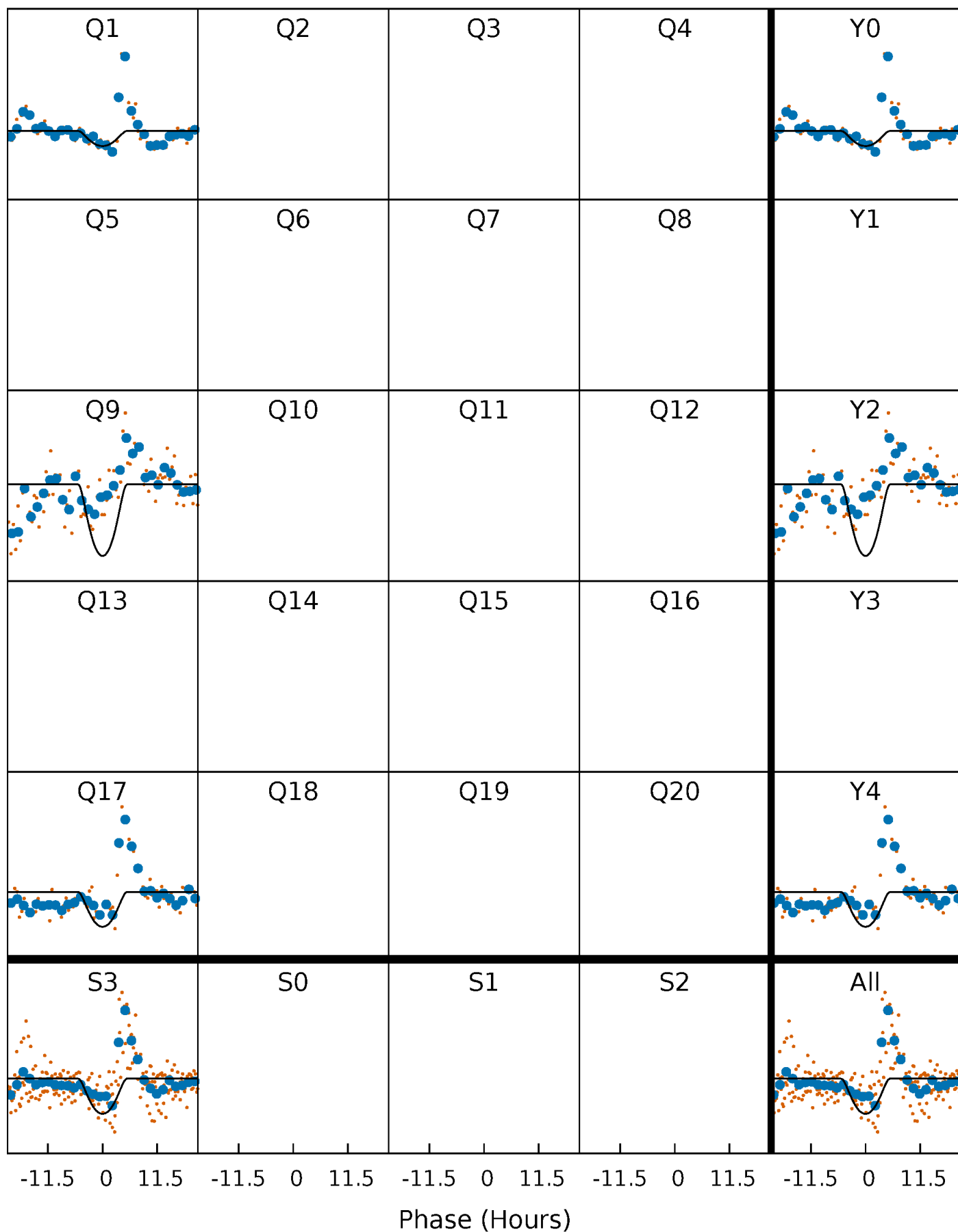
PDC Quarter-Phased Transit Curves

TCE 011955364-01 P=707.153217 Days $T_0=155.354868$ (BKJD)



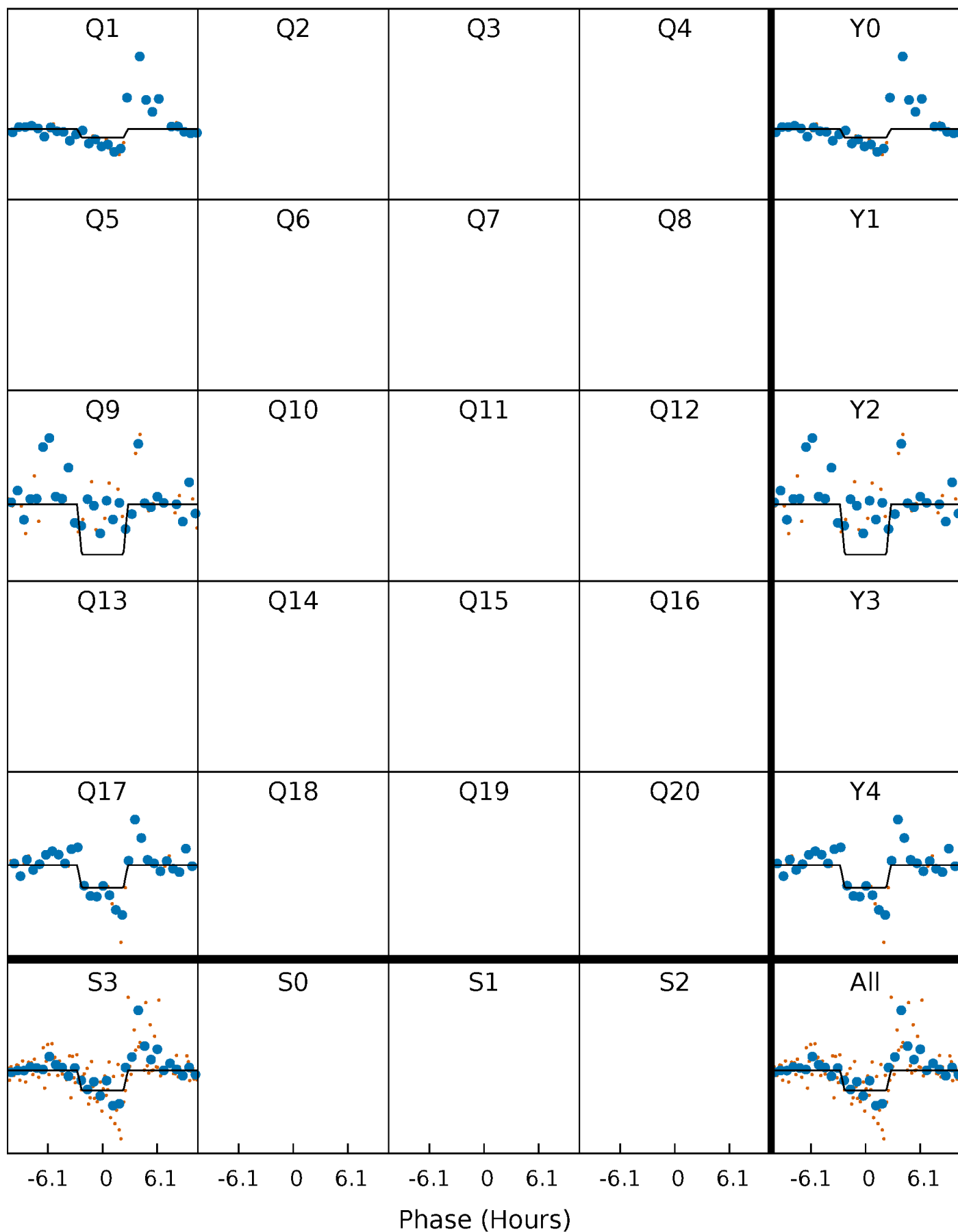
DV Quarter-Phased Transit Curves

TCE 011955364-01 $P=707.153217$ Days $T_0=155.354868$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

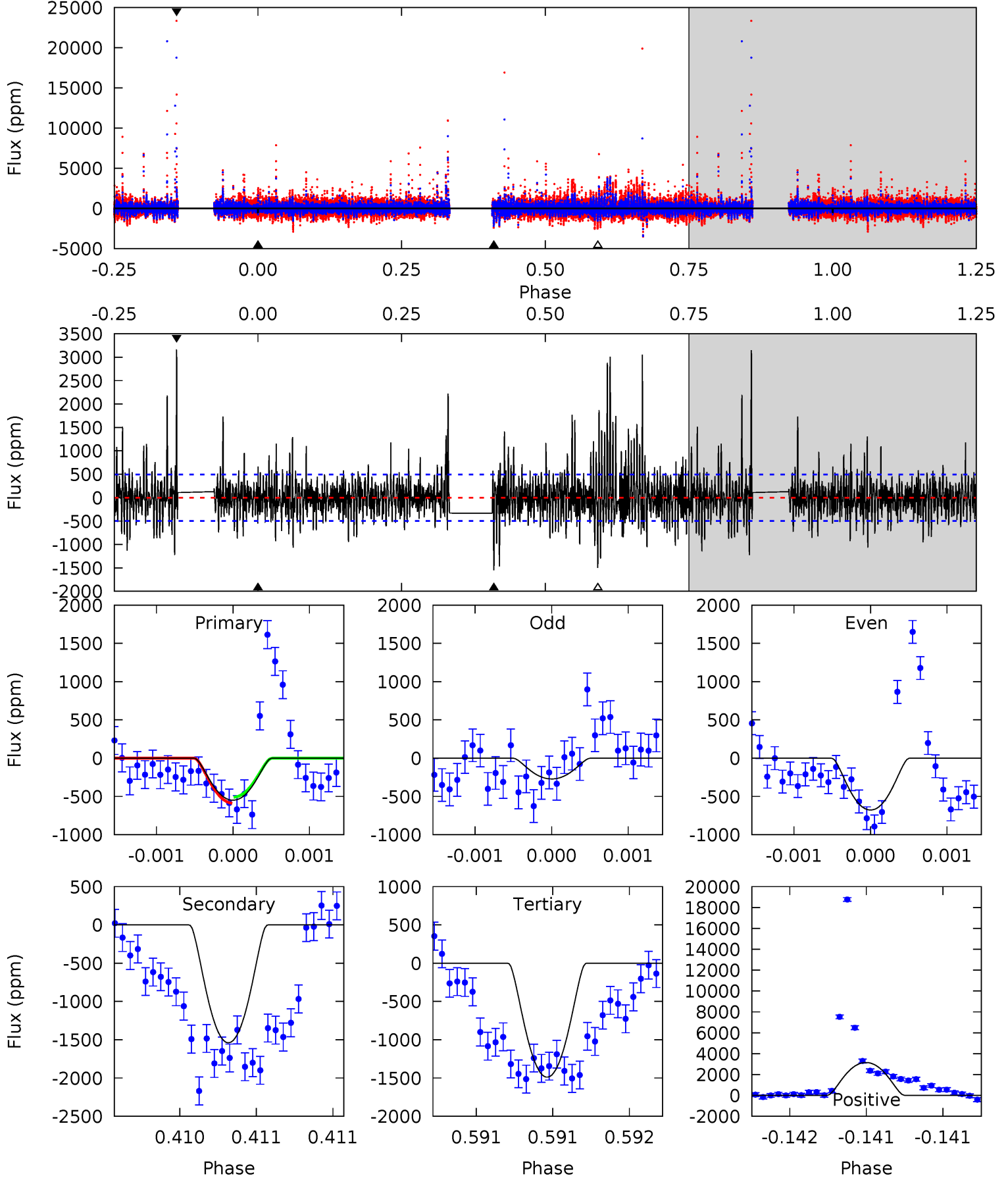
TCE 011955364-01 P=707.151022 Days $T_0=155.383023$ (BKJD)



DV Model-Shift Uniqueness Test

011955364-01, P = 707.153217 Days, E = 155.354868 Days

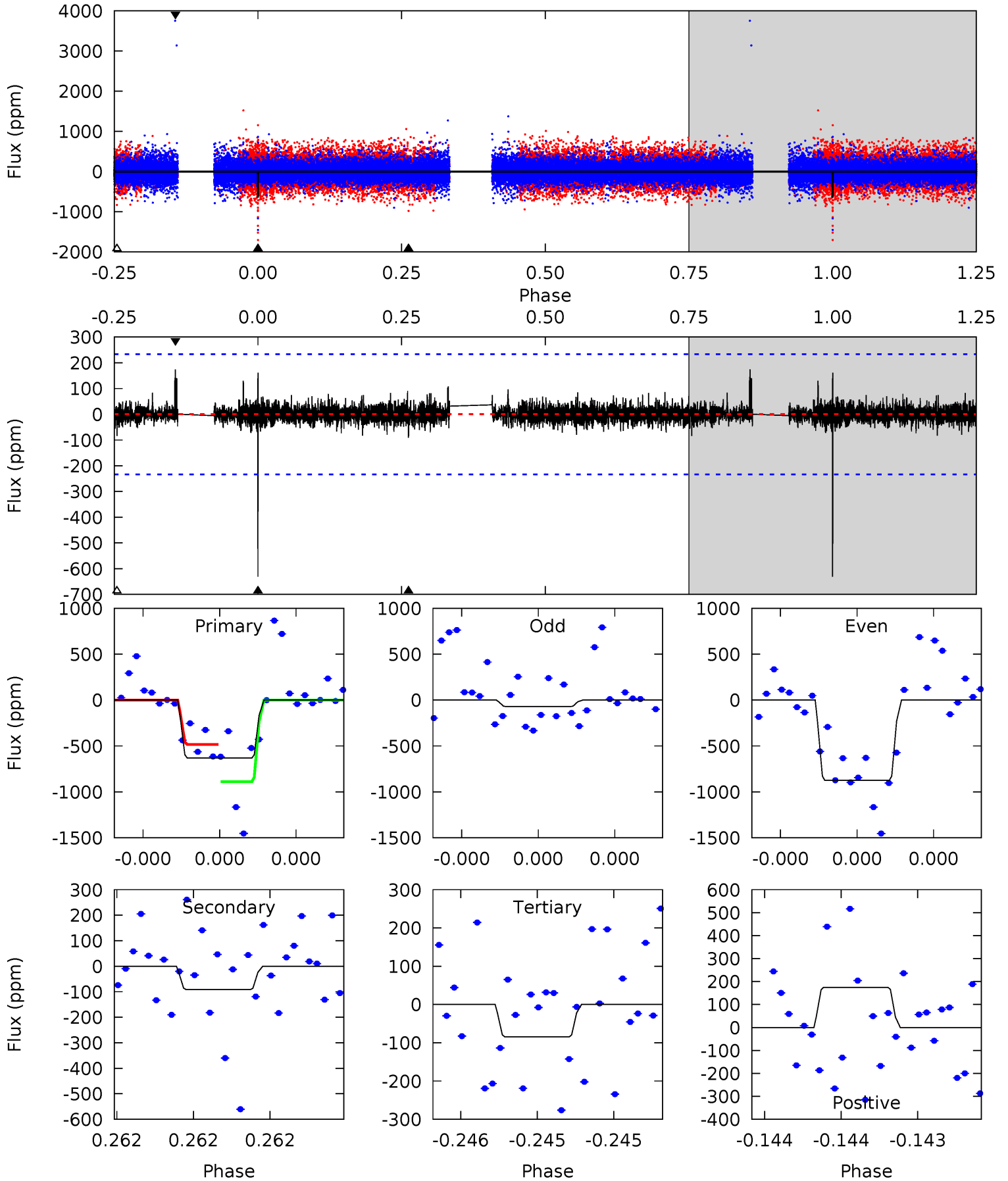
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.14 | 17.2 | 16.6 | 35.2 | 5.54 | 3.43 | 4.54 | -10.5 | -29.1 | 0.57 | -18.0 | 1.87 | 1.21 | 0.67 | 0.44 |



Alt Model-Shift Uniqueness Test

011955364-01, P = 707.151022 Days, E = 155.383023 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.3 | 2.21 | 2.04 | 4.22 | 5.66 | 3.61 | 0.49 | 13.2 | 11.1 | 0.17 | -2.01 | 9.57 | 0.73 | 0.22 | 4.83 |



Stellar Parameters For KIC 011955364

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5705^{+153}_{-153} | $4.474^{+0.121}_{-0.148}$ | $-0.620^{+0.300}_{-0.300}$ | $0.832^{+0.179}_{-0.124}$ | $0.752^{+0.100}_{-0.043}$ | $1.840^{+0.985}_{-0.753}$ |
| | +3%/-3% | +3%/-3% | +48%/-48% | +22%/-15% | +13%/-6% | +54%/-41% |
| 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 011955364-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|----------------|------------------------|-------------------|-----------------------|----------------------------|
| DV | -1539 ± 90 | $4.76^{+3.25}_{-2.91}$ | 271^{+15}_{-15} | 5062^{+3121}_{-983} | $77167^{+425569}_{-50567}$ |
| Alt. | -91 ± 41 | $3.36^{+3.60}_{-2.25}$ | 270^{+17}_{-15} | 3378^{+1668}_{-662} | 8347^{+68880}_{-6595} |

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 $A_{obs} \gg 1.0$

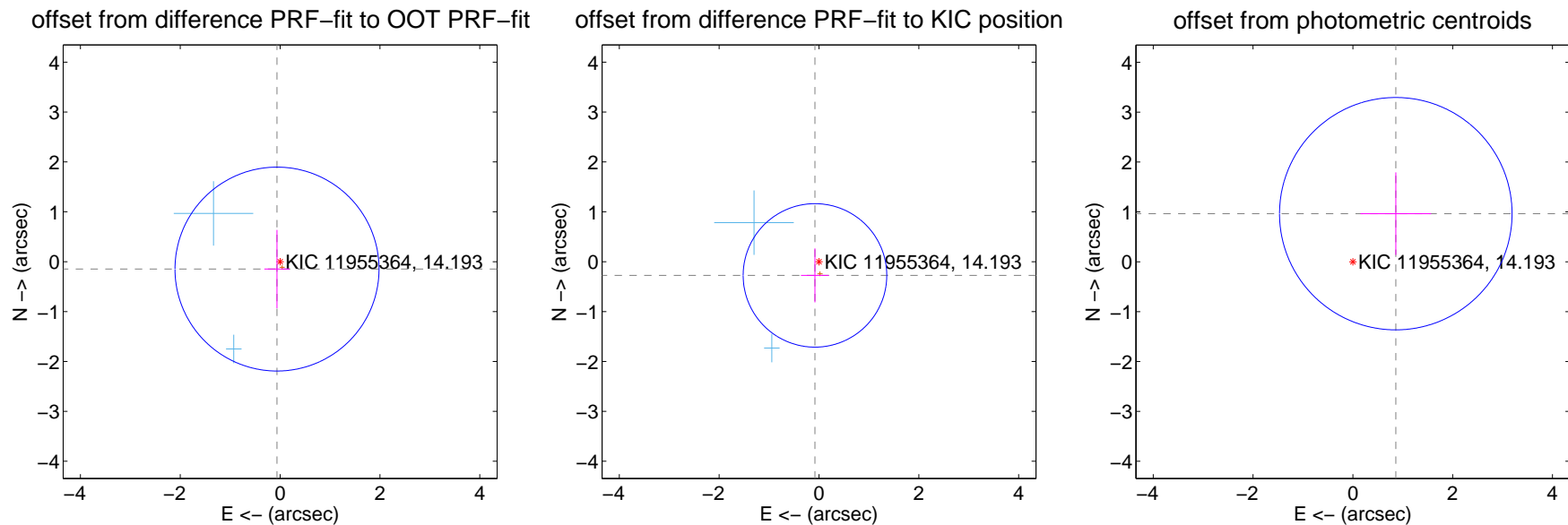
DV Centroid Data

Supplemental centroid analysis for 011955364-01. Kepler magnitude: 14.19. Transit SNR 6.57

There are 2 quarters with good PRF difference image offsets

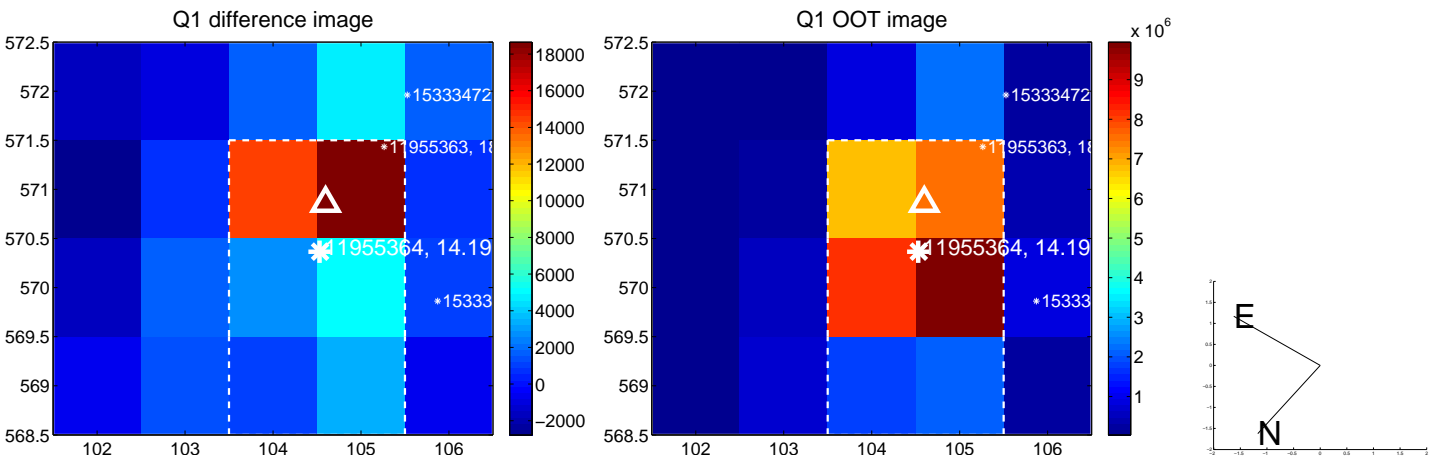
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.160 ± 0.681 | 0.24 | 0.062 ± 0.255 | -0.148 ± 0.785 |
| PRF-fit source offset from KIC position | 0.286 ± 0.480 | 0.60 | 0.080 ± 0.280 | -0.275 ± 0.541 |
| photometric centroid source offset | 1.29 ± 0.78 | 1.66 | -0.86 ± 0.71 | 0.96 ± 0.83 |



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.

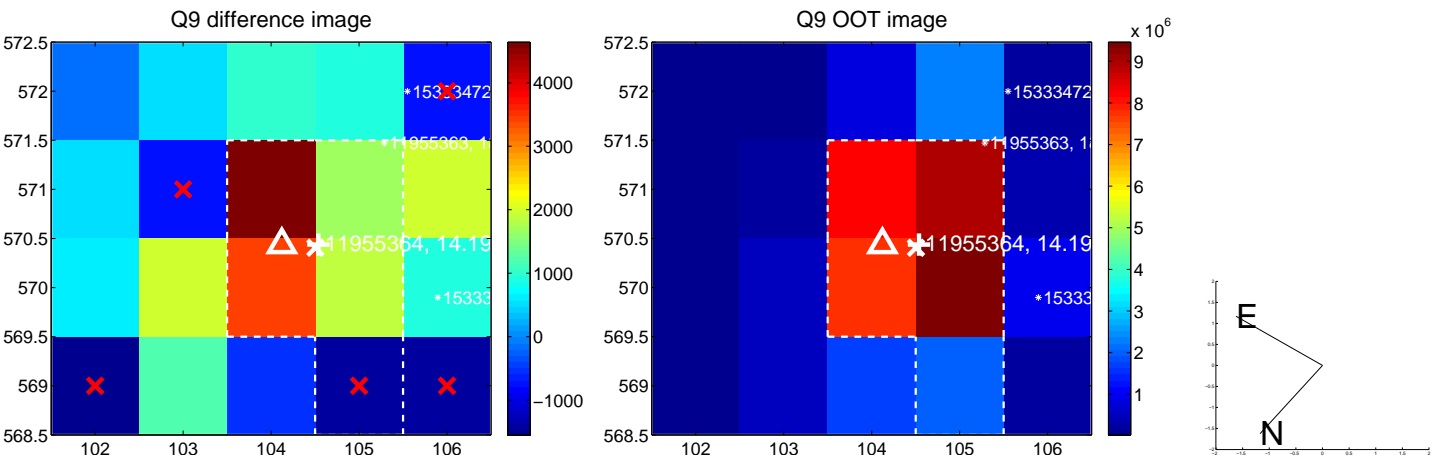
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



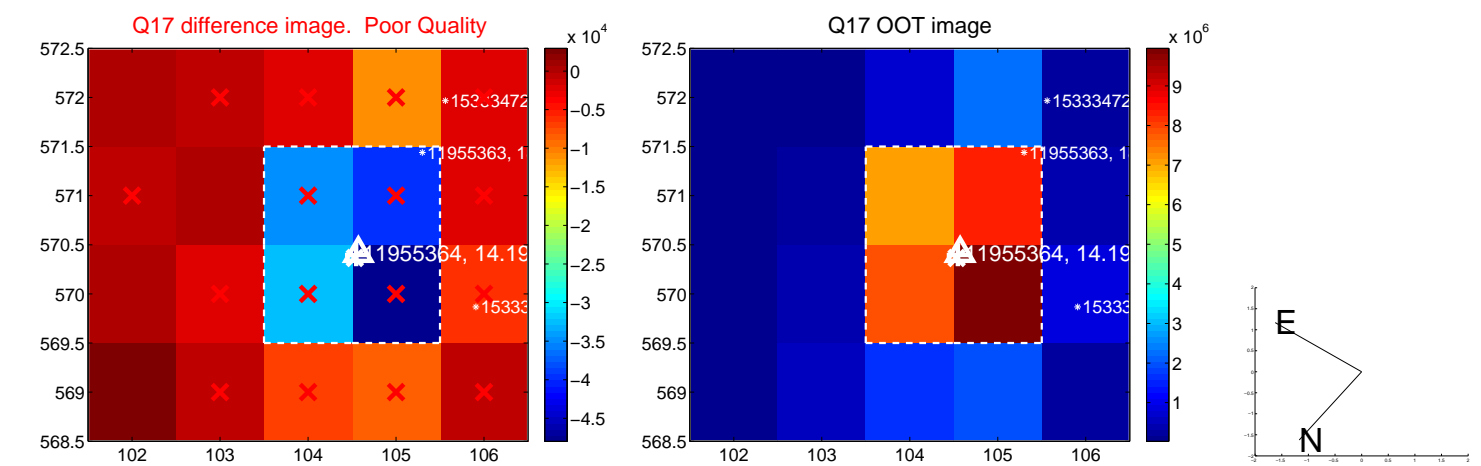
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



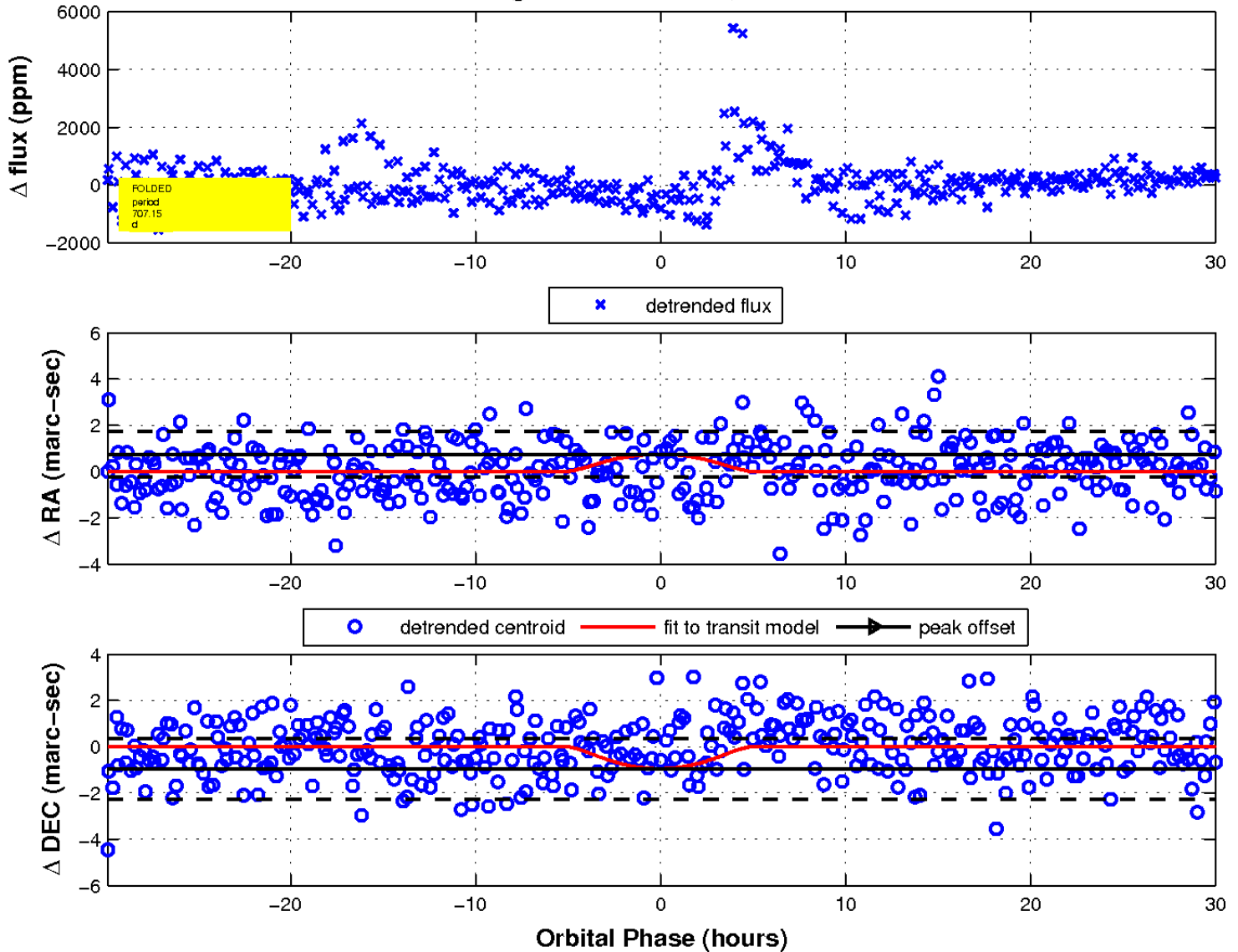
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



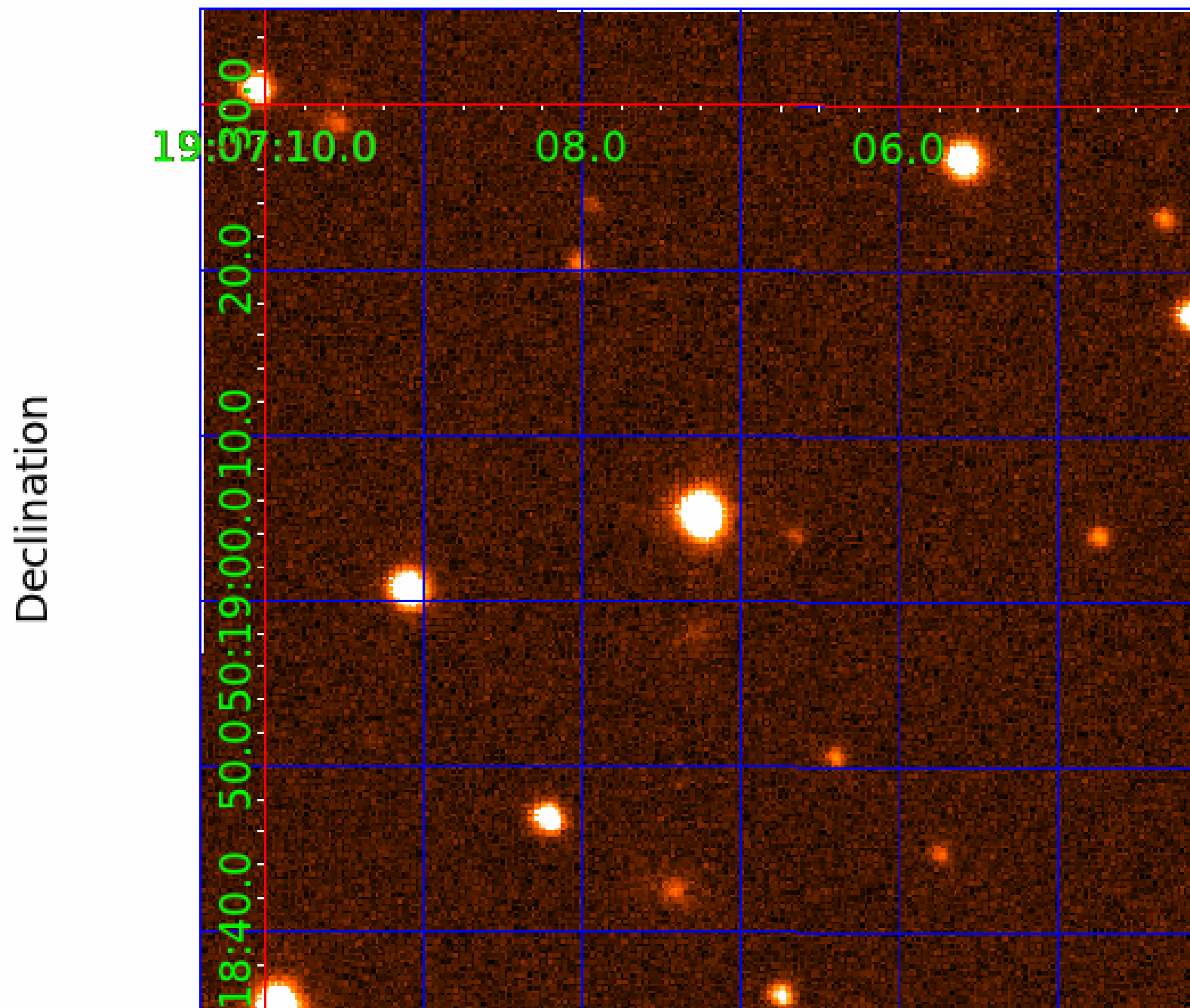
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 011955364

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011955364-01 | OBS | No | 707.153217 | 155.354868 | 1033.4 | 10.023 | 14.0 | 6.6 | 0.83 | 5705 | 3.92 | 0.33 |
| 011955364-02 | OBS | No | 533.513594 | 331.621870 | 745.9 | 4.328 | 9.0 | 6.2 | 0.83 | 5705 | 2.40 | 0.48 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|--|
| 011955364-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |
| 011955364-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS |

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

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

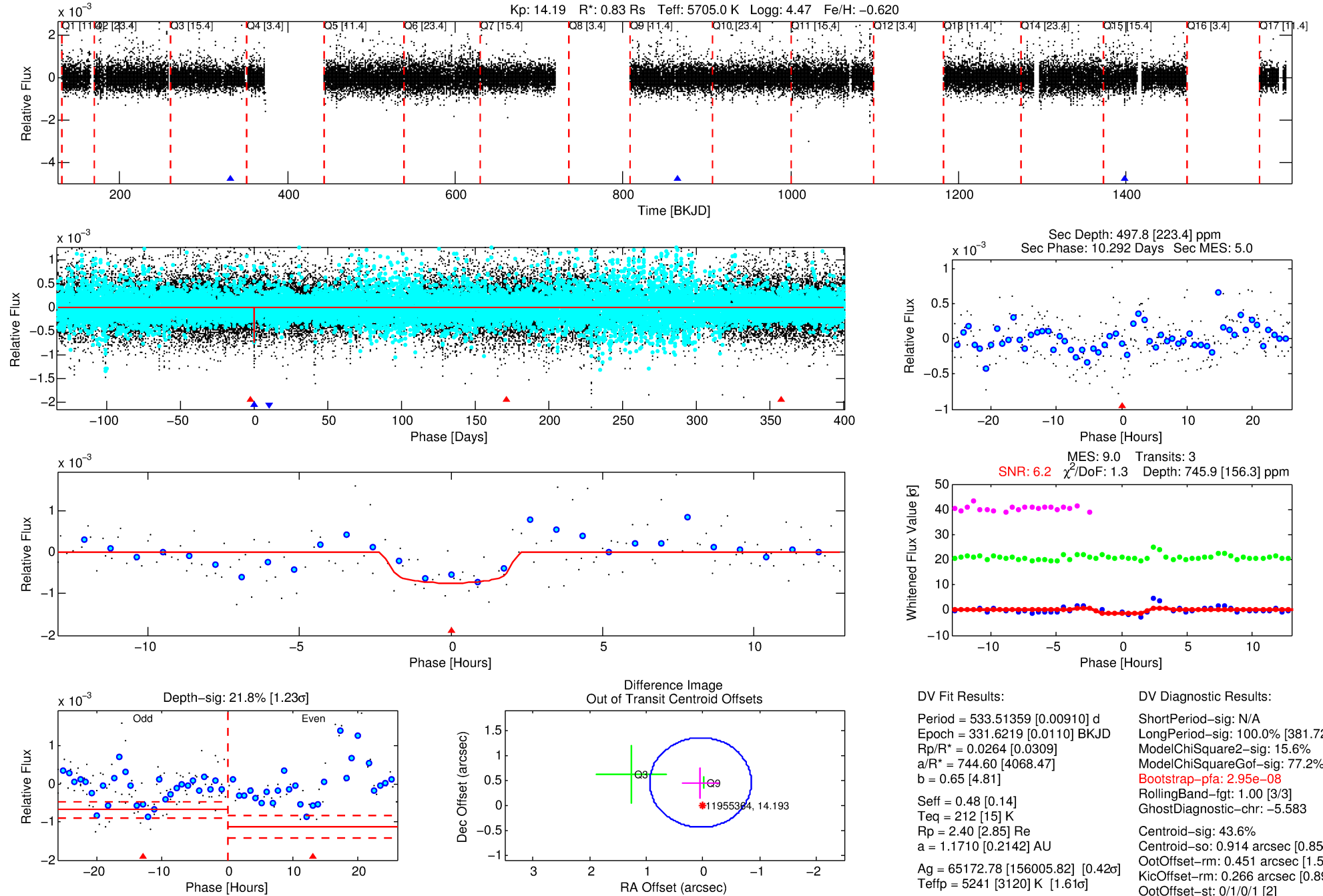
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011955364-02

No Significant Match Found

DV One-Page Summary

KIC: 11955364 Candidate: 2 of 2 Period: 533.514 d



DV Fit Results:

Period = 533.51359 [0.00910] d
Epoch = 331.6219 [0.0110] BKJD
Rp/R* = 0.0264 [0.0309]
a/R* = 744.60 [4068.47]
b = 0.65 [4.81]
Seff = 0.48 [0.14]
Teq = 212 [15] K
Rp = 2.40 [2.85] Re
a = 1.1710 [0.2142] AU
Ag = 65172.78 [156005.82] [0.42 σ]
Teffp = 5241 [3120] K [1.61 σ]

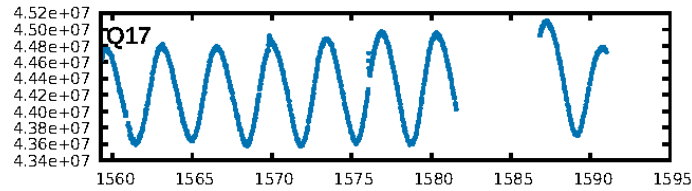
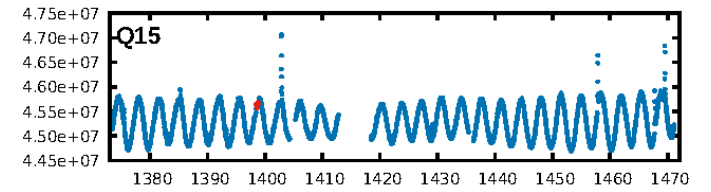
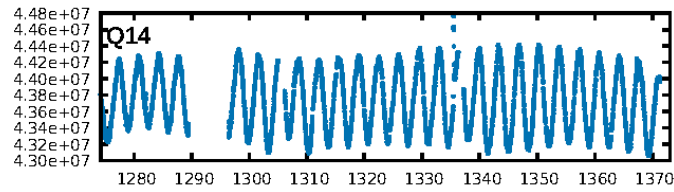
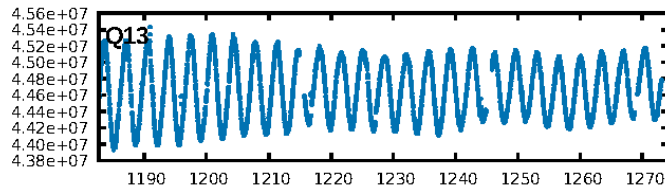
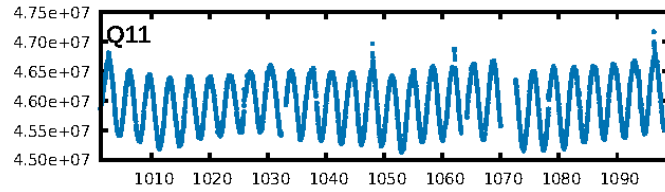
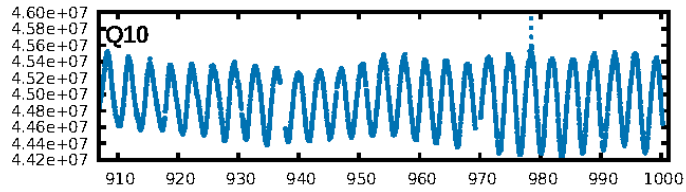
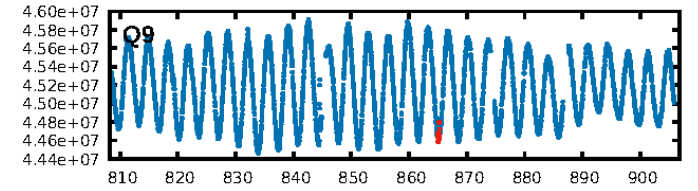
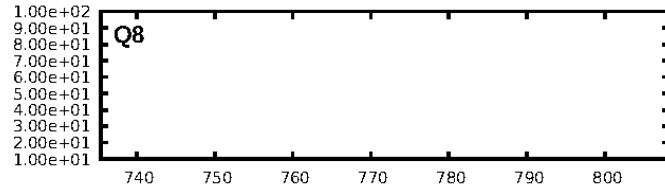
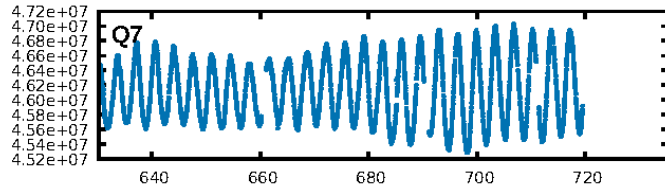
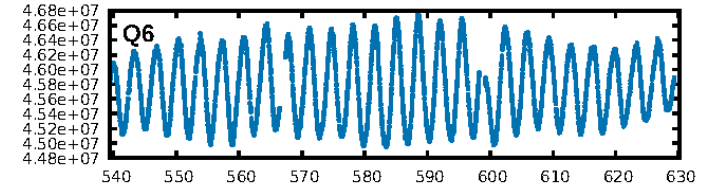
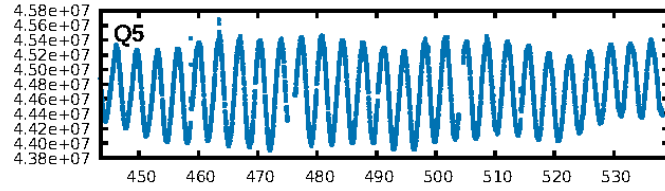
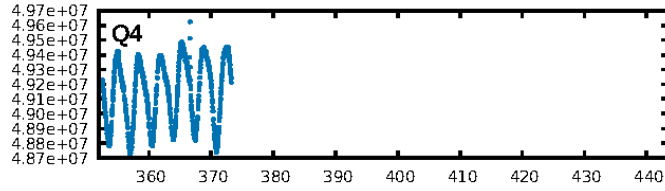
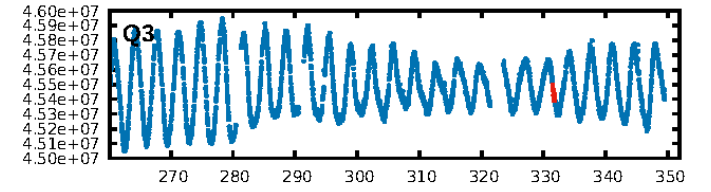
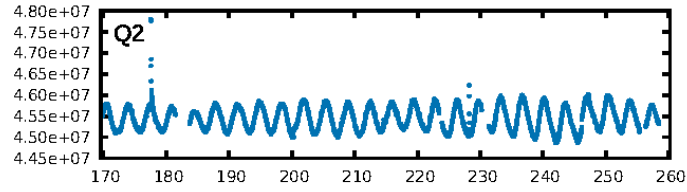
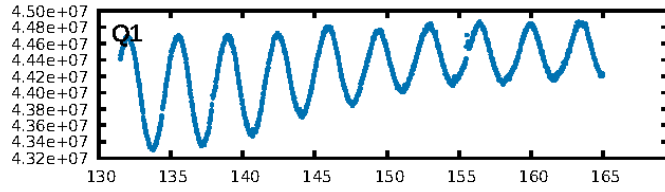
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [381.72 σ]
ModelChiSquare2-sig: 15.6%
ModelChiSquareGof-sig: 77.2%
Bootstrap-pfa: 2.95e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.583
Centroid-sig: 43.6%
Centroid-so: 0.914 arcsec [0.85 σ]
OotOffset-rm: 0.451 arcsec [1.51 σ]
KicOffset-rm: 0.266 arcsec [0.89 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
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DiffImageOverlap-fno: 1.00 [3/3]

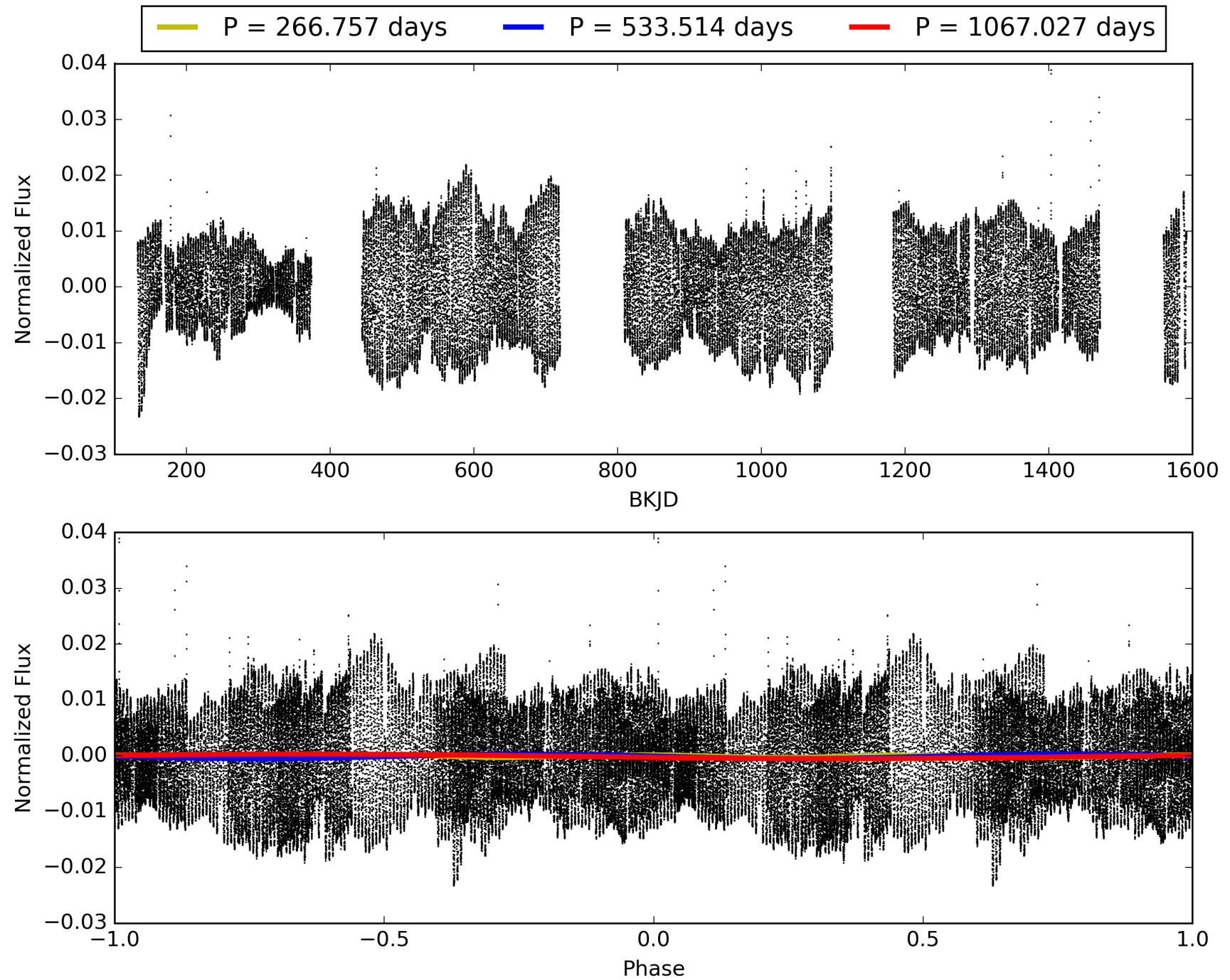
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:27:49 Z

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

TCE 011955364-02, PDC Light Curves

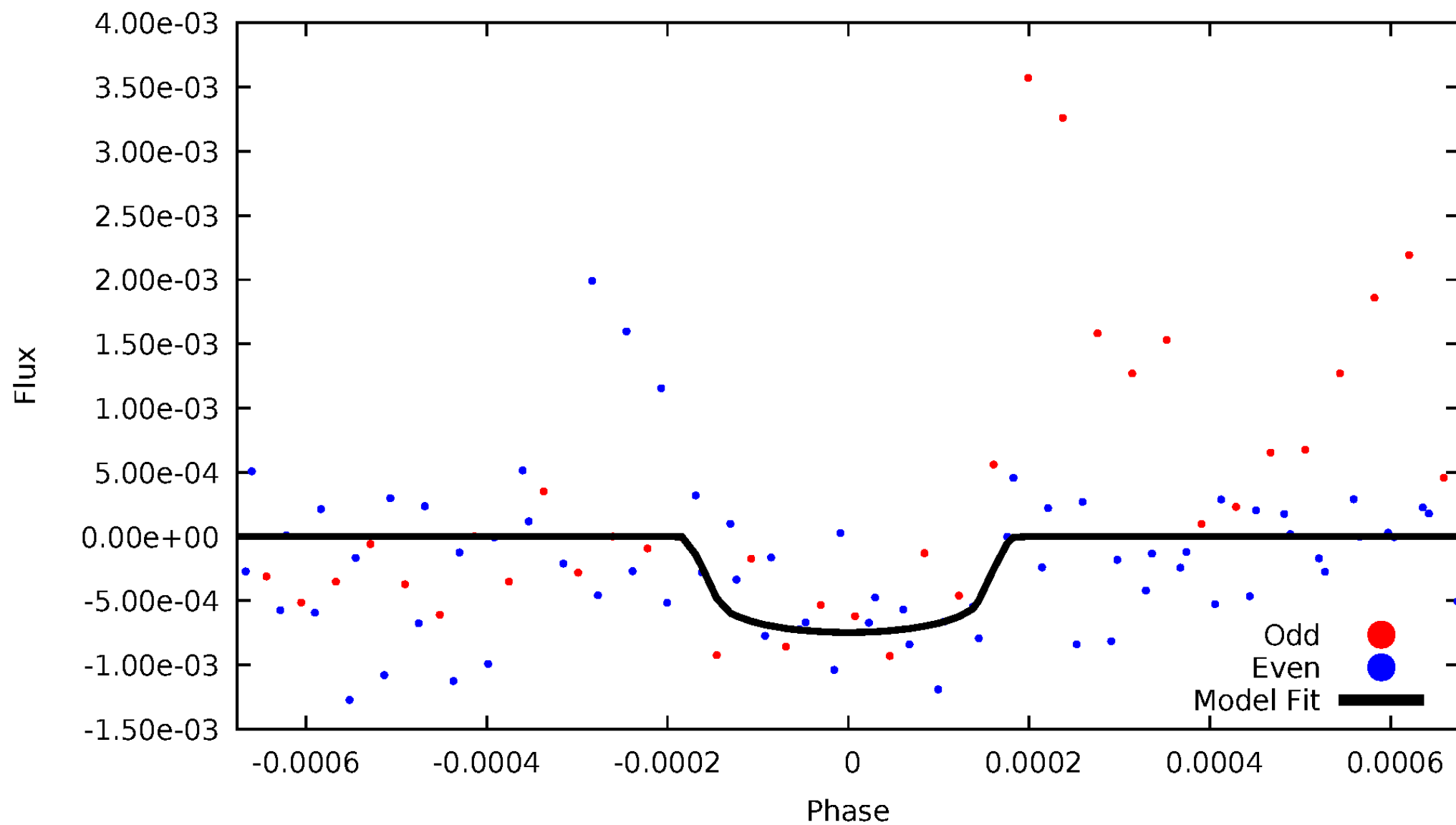


TCE 011955364-02



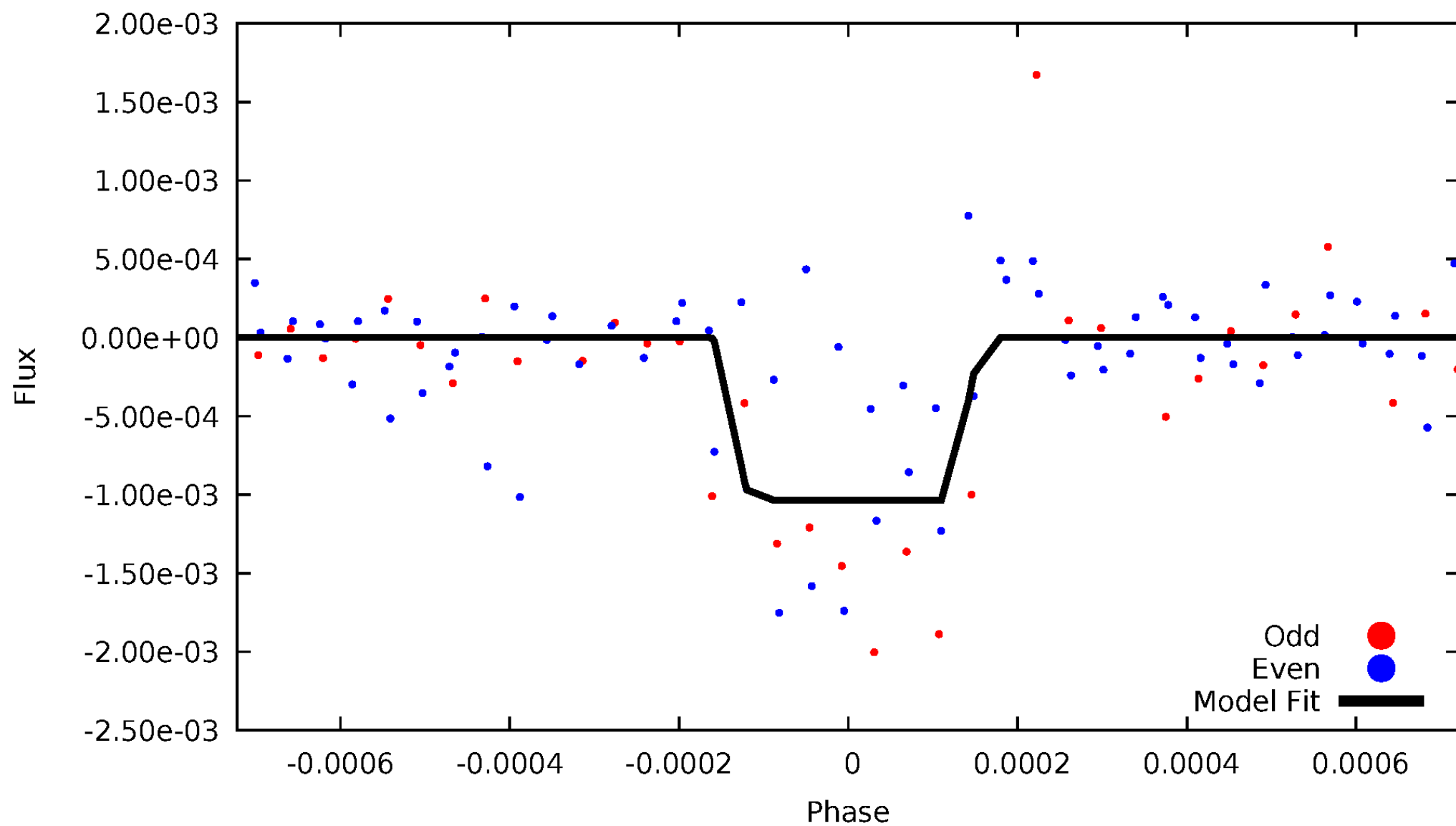
DV Odd/Even

TCE 011955364-02



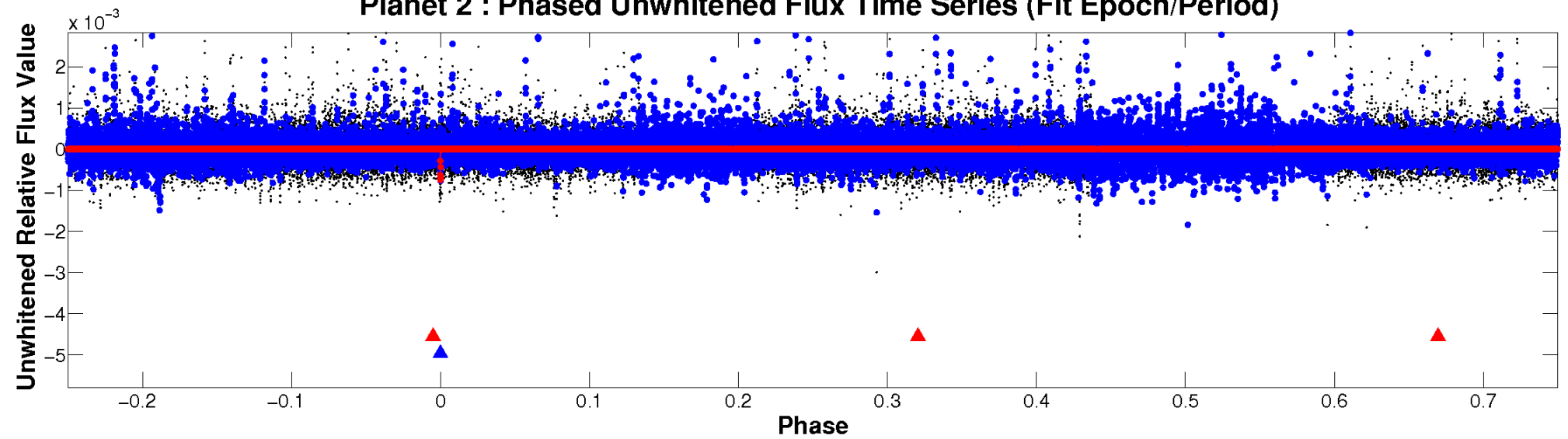
ALT Odd/Even

TCE 011955364-02

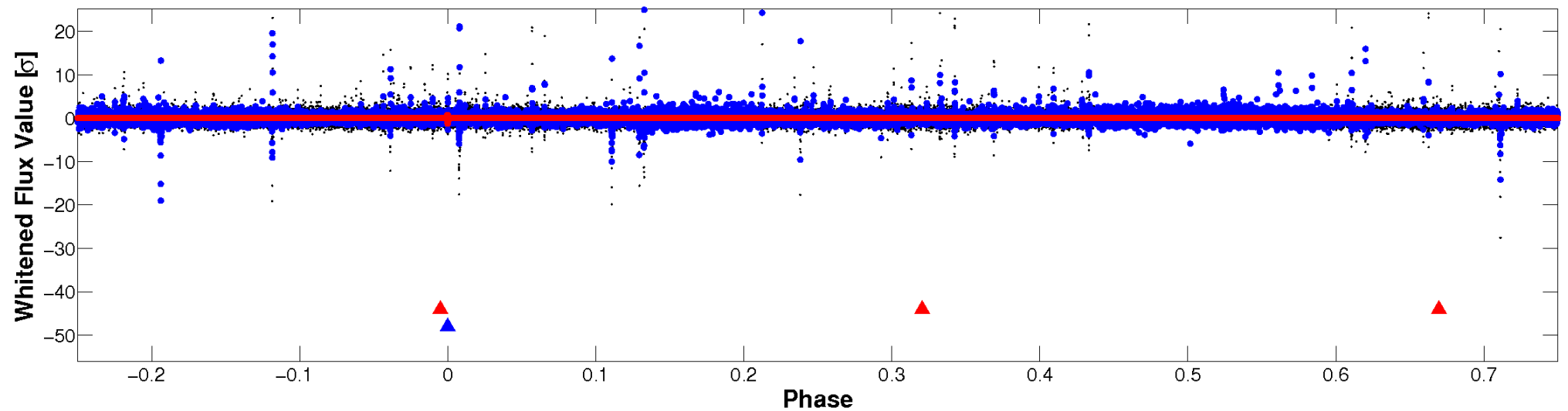


Non-Whitened Vs. Whitened Light Curve

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

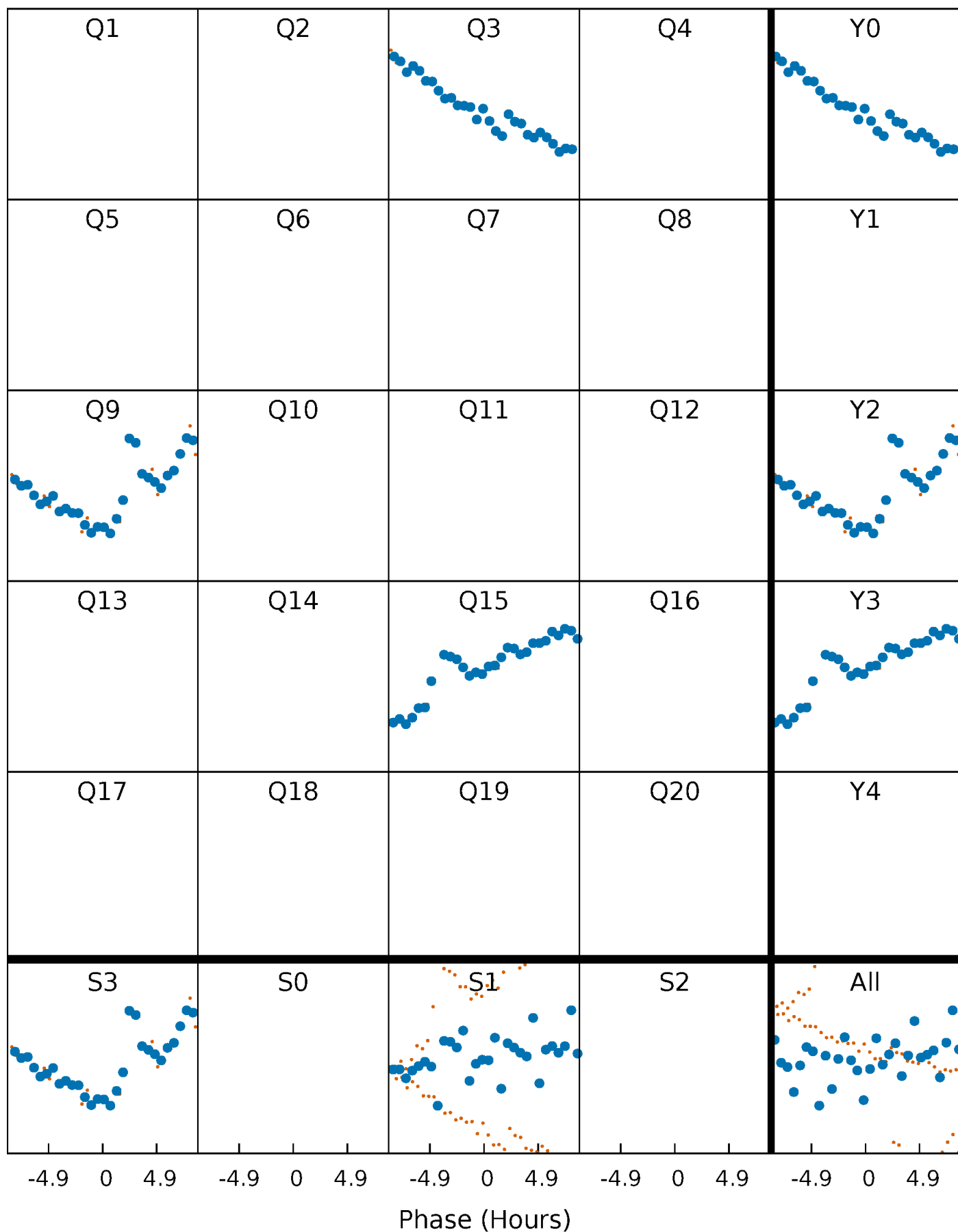


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



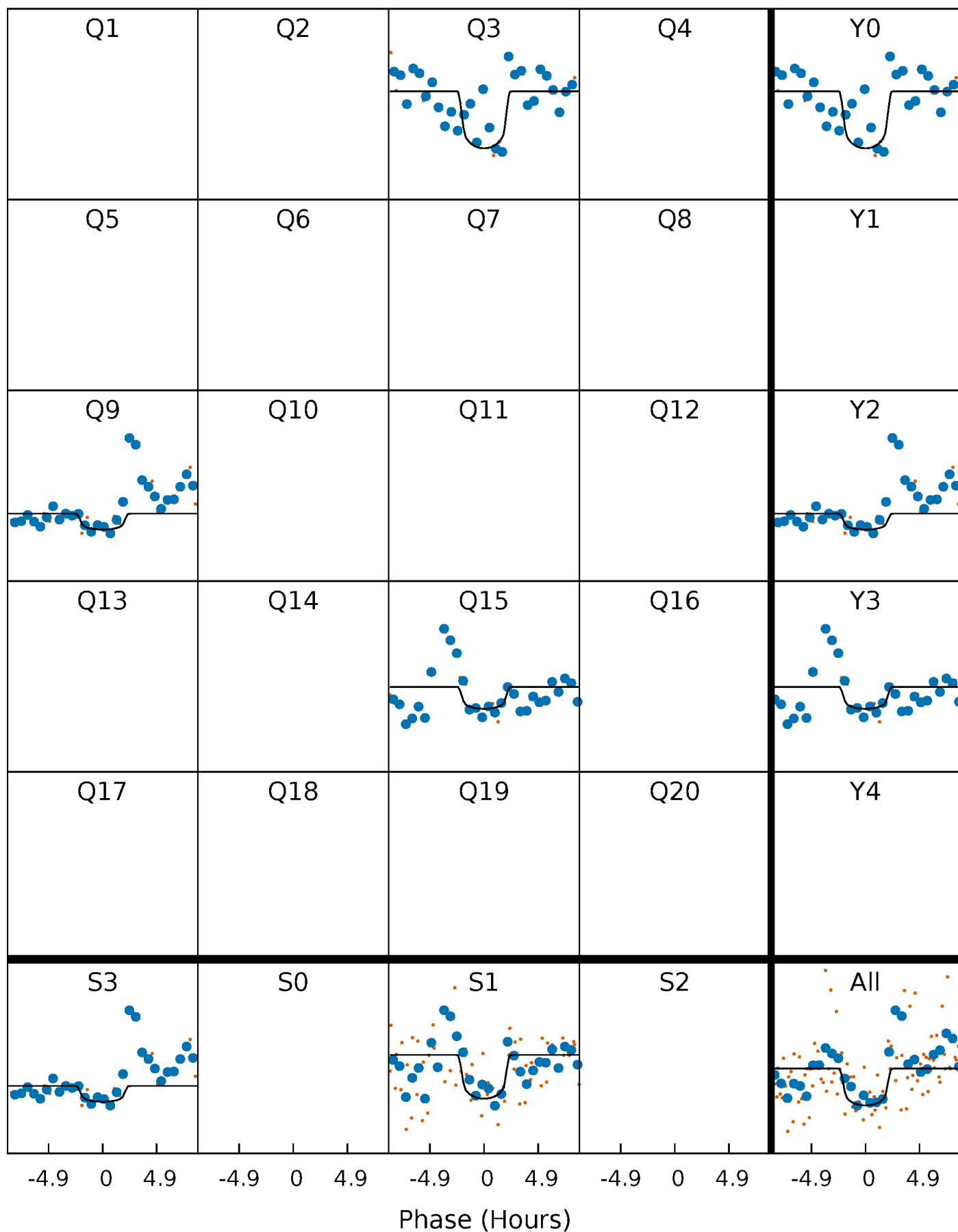
PDC Quarter-Phased Transit Curves

TCE 011955364-02 $P=533.513594$ Days $T_0=331.621870$ (BKJD)



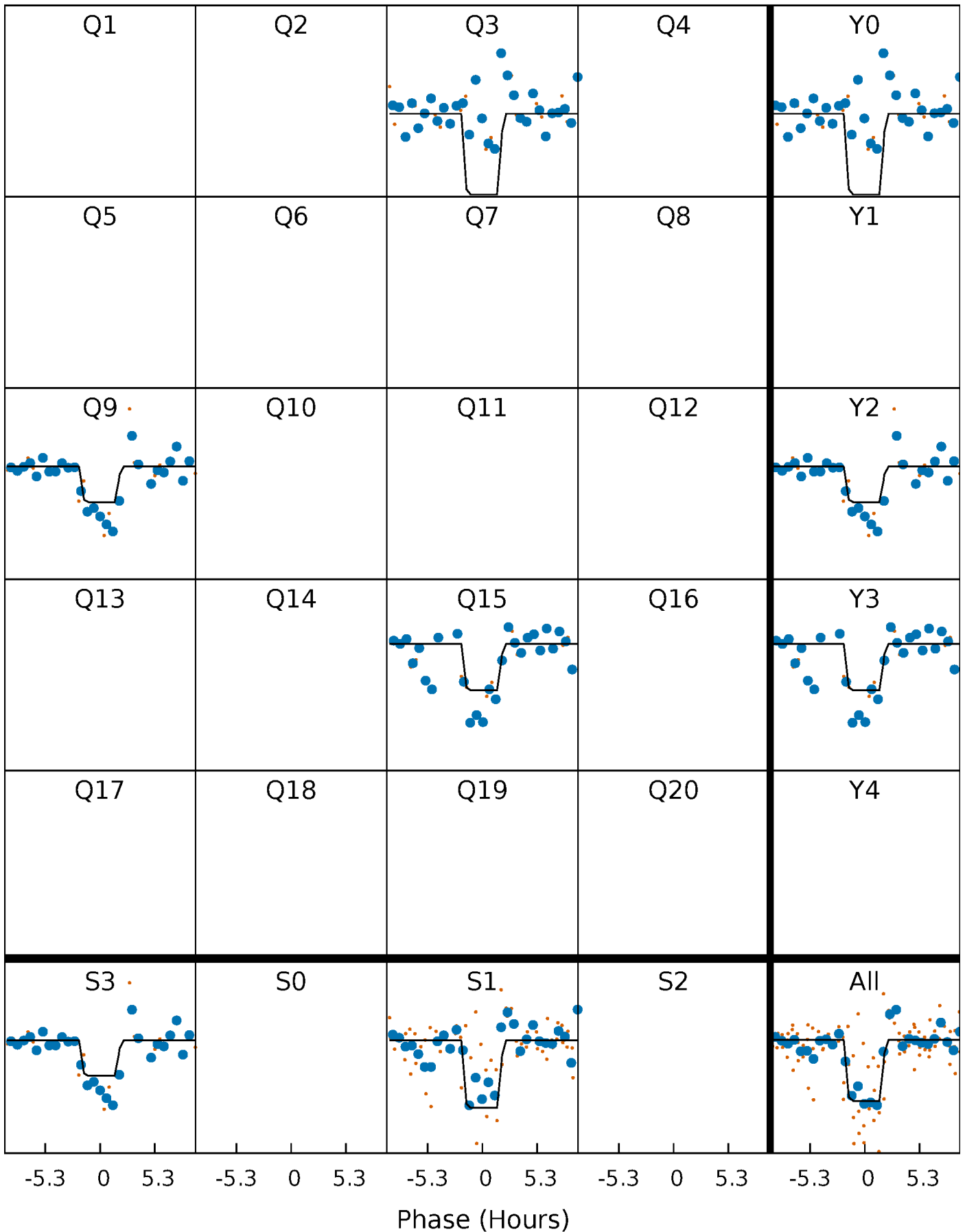
DV Quarter-Phased Transit Curves

TCE 011955364-02 $P=533.513594$ Days $T_0=331.621870$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

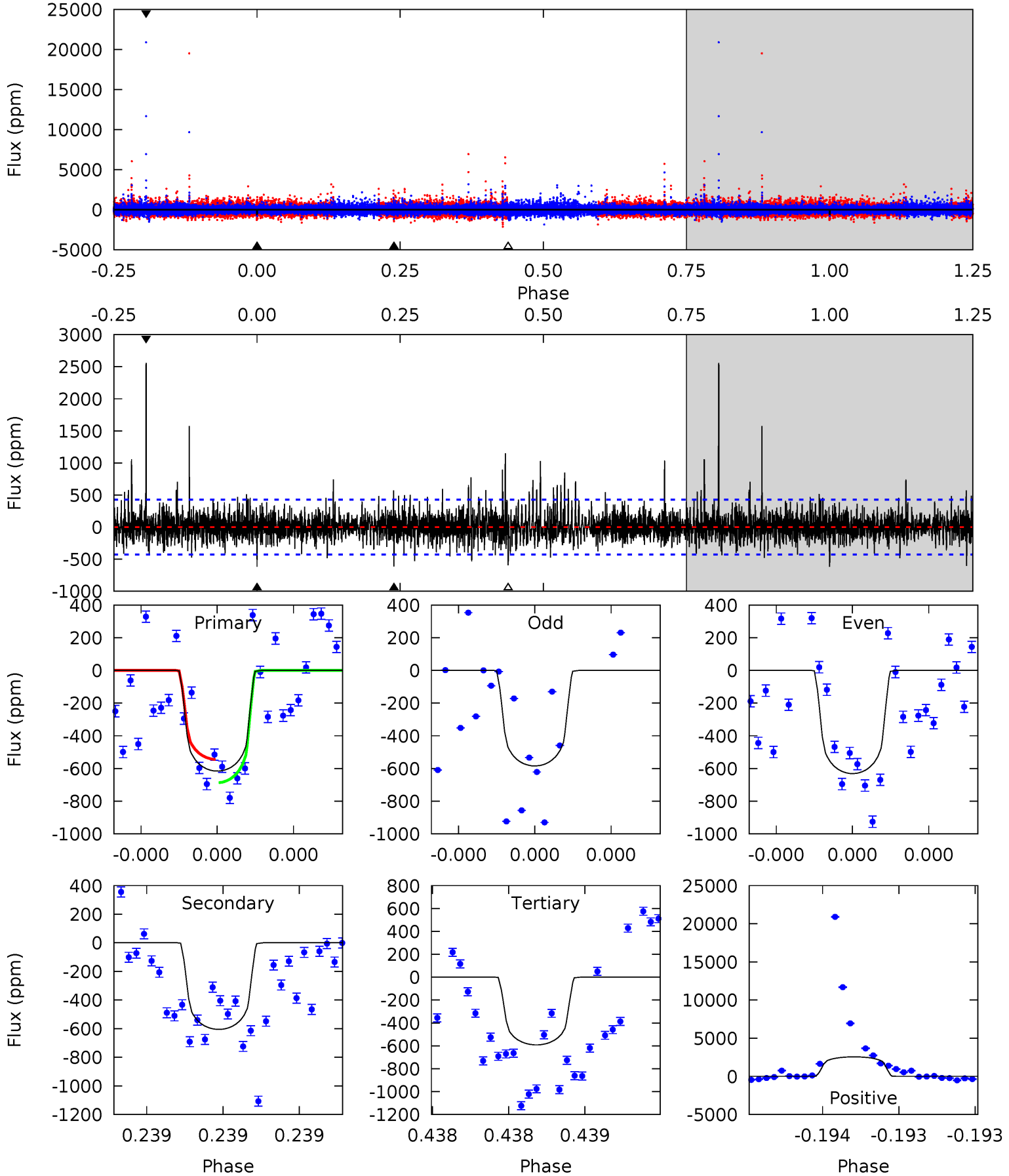
TCE 011955364-02 P=533.499818 Days $T_0=331.643794$ (BKJD)



DV Model-Shift Uniqueness Test

011955364-02, P = 533.513594 Days, E = 331.621870 Days

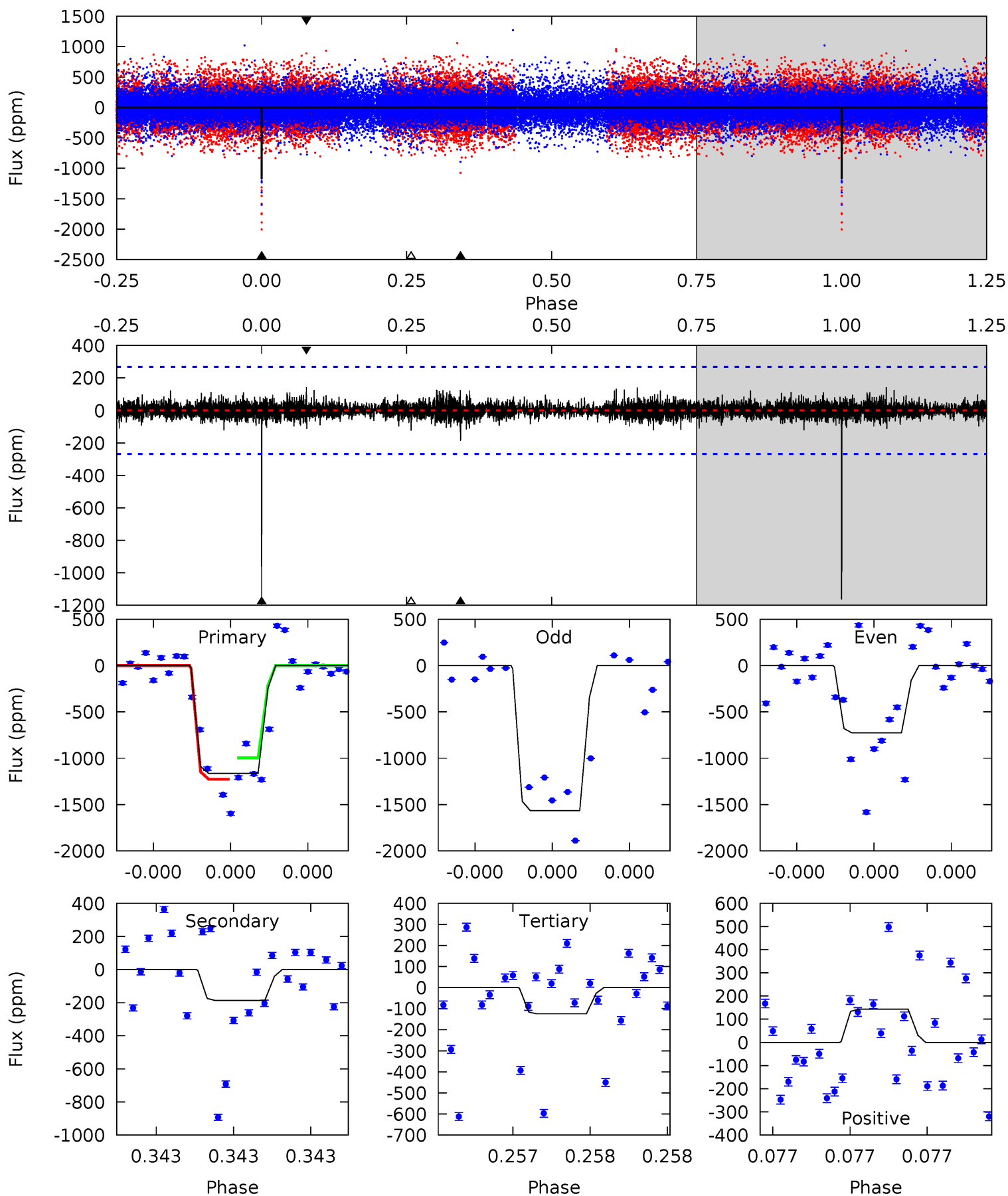
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.08 | 7.94 | 7.76 | 33.6 | 5.63 | 3.56 | 2.12 | 0.32 | -25.5 | 0.18 | -25.6 | 0.24 | 1.05 | 0.81 | 0.93 |



Alt Model-Shift Uniqueness Test

011955364-02, P = 533.499818 Days, E = 331.643794 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 24.6 | 3.95 | 2.63 | 3.01 | 5.66 | 3.61 | 0.57 | 21.9 | 21.5 | 1.31 | 0.93 | 8.72 | 0.71 | 0.11 | 2.37 |



Stellar Parameters For KIC 011955364

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 5705^{+153}_{-153} | $4.474^{+0.121}_{-0.148}$ | $-0.620^{+0.300}_{-0.300}$ | $0.832^{+0.179}_{-0.124}$ | $0.752^{+0.100}_{-0.043}$ | $1.840^{+0.985}_{-0.753}$ |
| | +3%/-3% | +3%/-3% | +48%/-48% | +22%/-15% | +13%/-6% | +54%/-41% |
| 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 011955364-02 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|----------------------------|
| DV | -605 ± 76 | $3.08^{+2.63}_{-1.98}$ | 297^{+18}_{-16} | 4940^{+3399}_{-994} | $47123^{+326873}_{-32925}$ |
| Alt. | -187 ± 47 | $3.54^{+2.57}_{-2.28}$ | 299^{+16}_{-16} | 3774^{+1939}_{-593} | 11283^{+76260}_{-7719} |

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

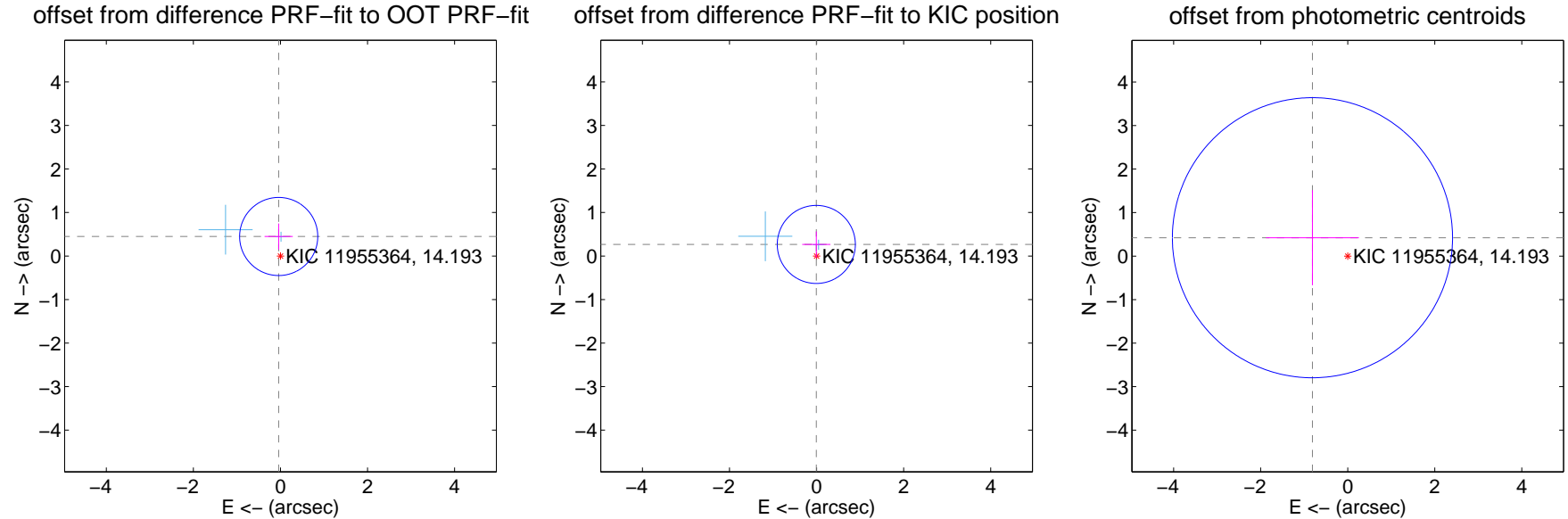
DV Centroid Data

Supplemental centroid analysis for 011955364-02. Kepler magnitude: 14.19. Transit SNR 6.22

There are 2 quarters with good PRF difference image offsets

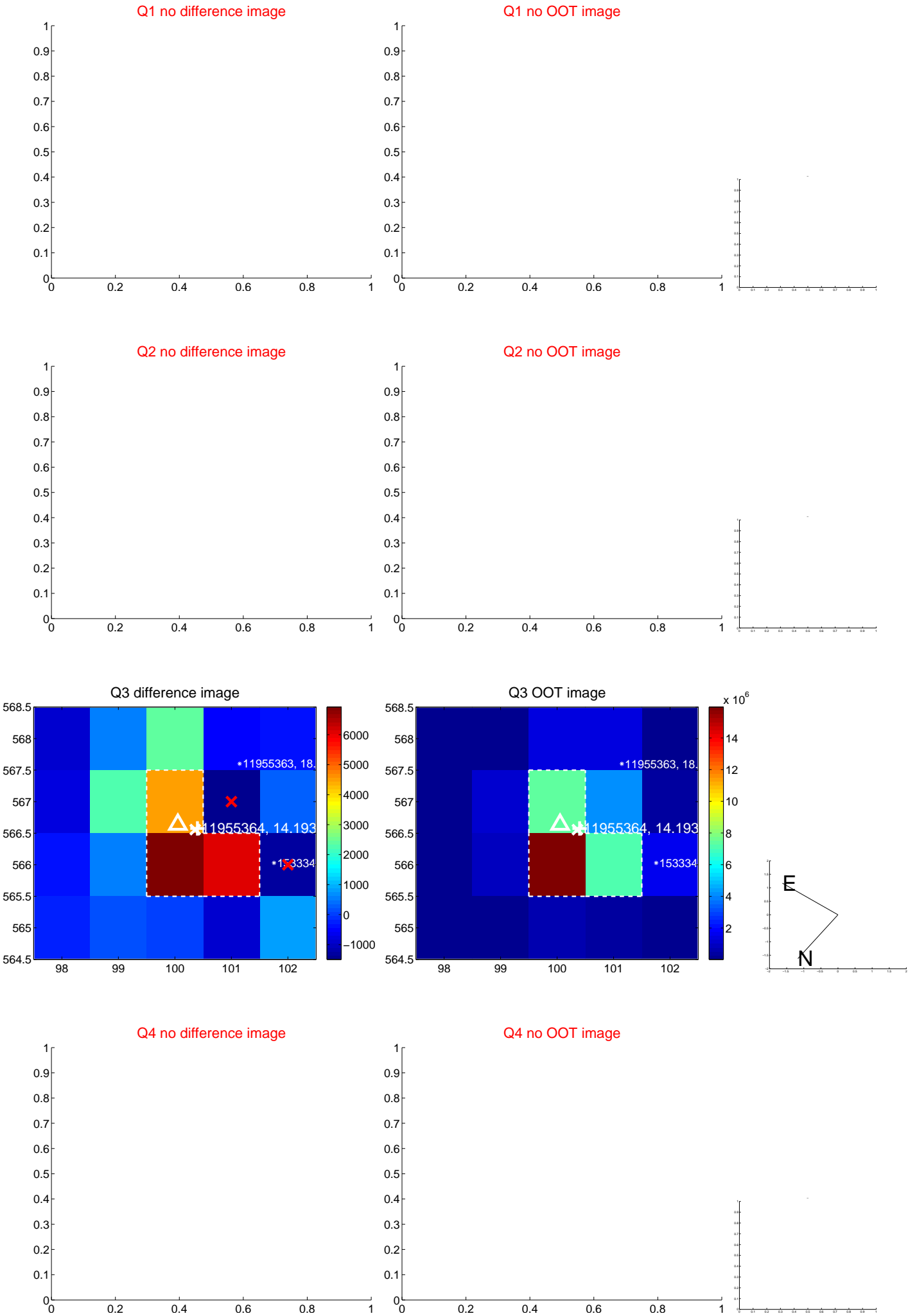
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.451 ± 0.299 | 1.51 | 0.041 ± 0.324 | 0.449 ± 0.299 |
| PRF-fit source offset from KIC position | 0.266 ± 0.299 | 0.89 | 0.006 ± 0.324 | 0.266 ± 0.299 |
| photometric centroid source offset | 0.91 ± 1.07 | 0.85 | 0.81 ± 1.07 | 0.42 ± 1.09 |



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.

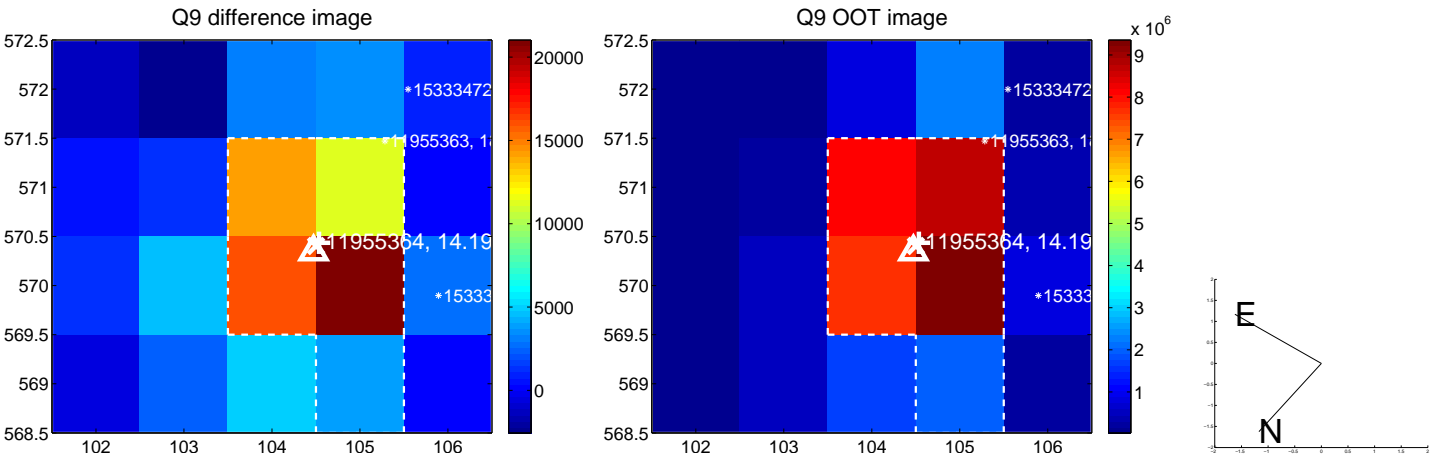
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



white ×: 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.

Q13 no difference image



Q13 no OOT image



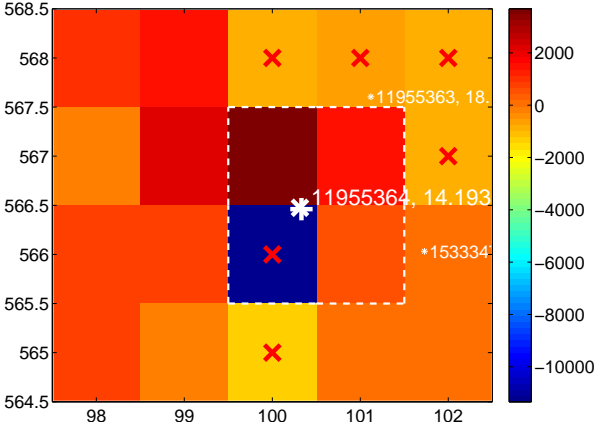
Q14 no difference image



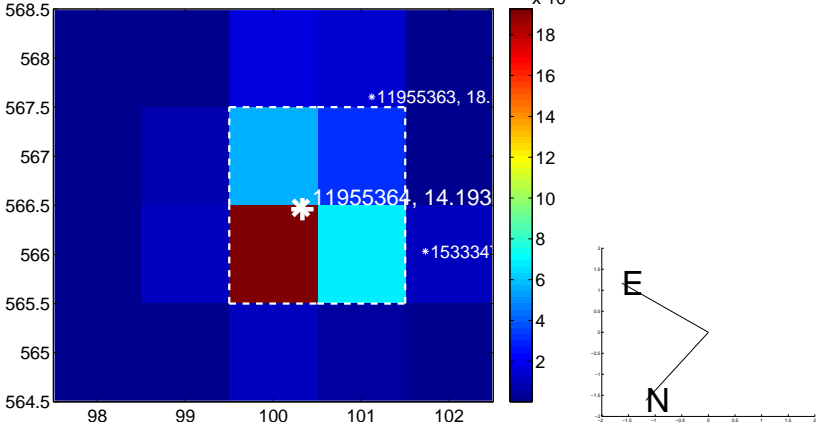
Q14 no OOT image



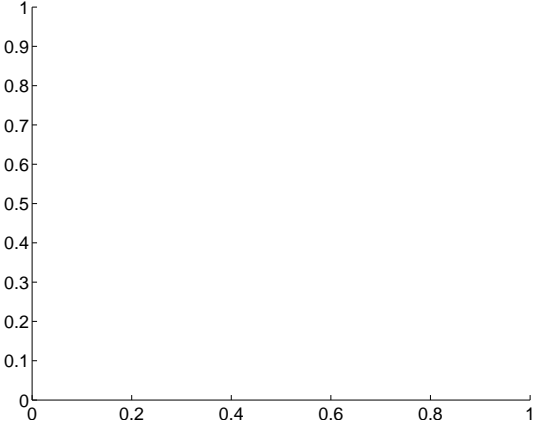
Q15 difference image. Poor Quality



Q15 OOT image



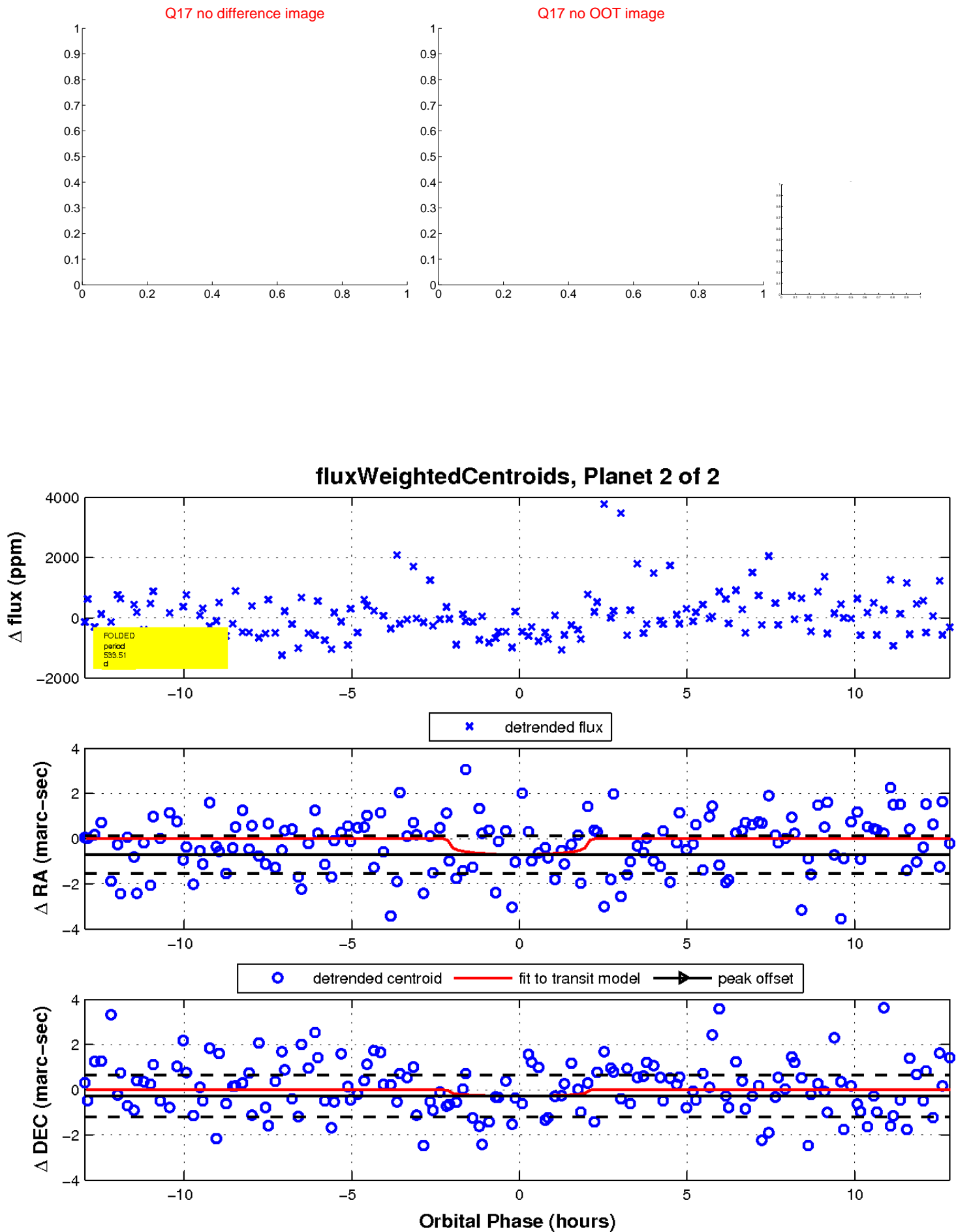
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

