

KIC 010937029

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 010937029-01 | OBS | 0433.02 | 328.239759 | 199.204527 | 13820.7 | 12.190 | 225.9 | 214.1 | 0.85 | 5234 | 10.96 | 0.59 |
| 010937029-02 | OBS | 0433.01 | 4.030469 | 134.817691 | 2896.0 | 2.928 | 218.6 | 215.9 | 0.85 | 5234 | 5.01 | 209.92 |
| 010937029-03 | OBS | No | 393.146156 | 496.136255 | 560.3 | 14.709 | 7.2 | 7.5 | 0.85 | 5234 | 2.47 | 0.47 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010937029-01 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST |

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

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

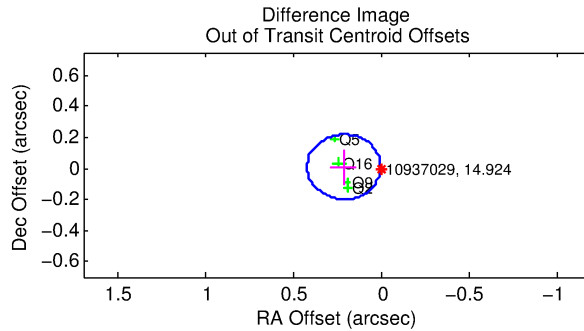
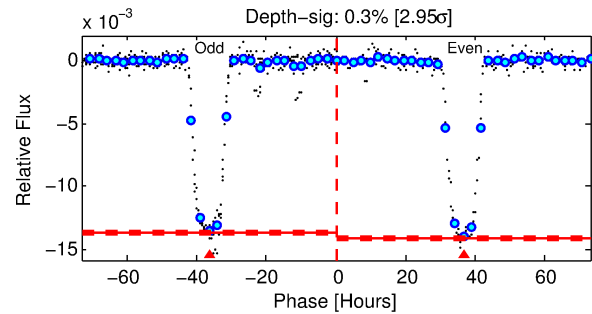
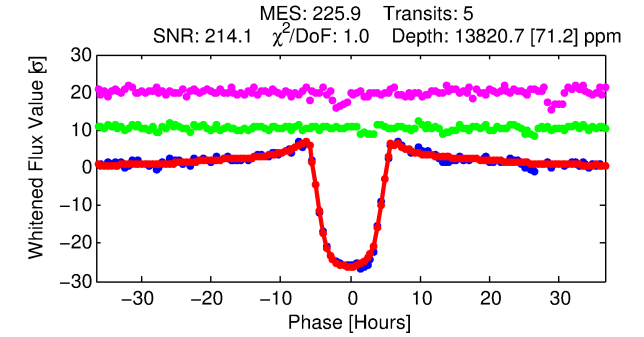
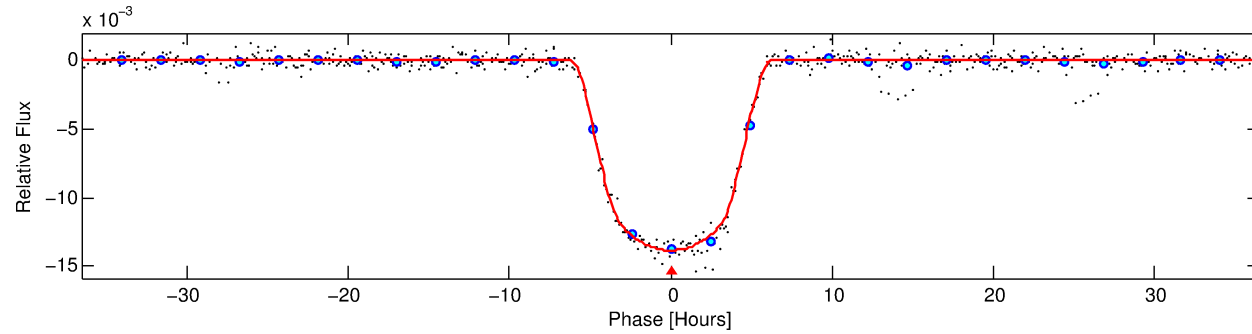
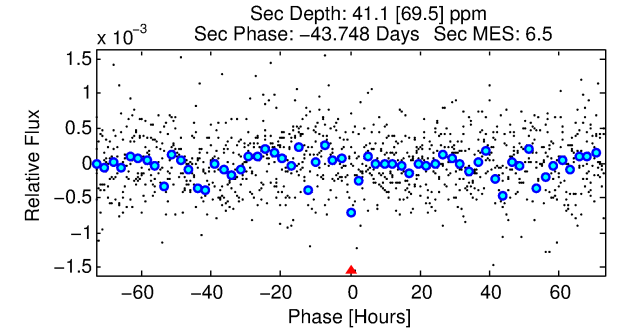
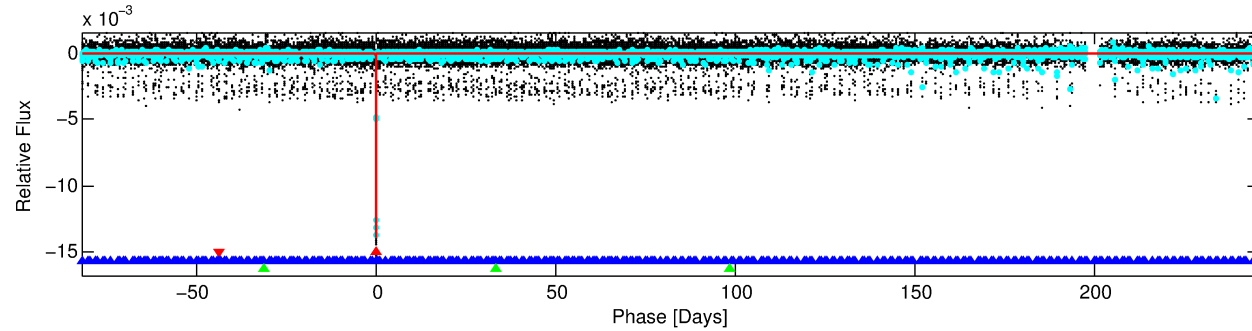
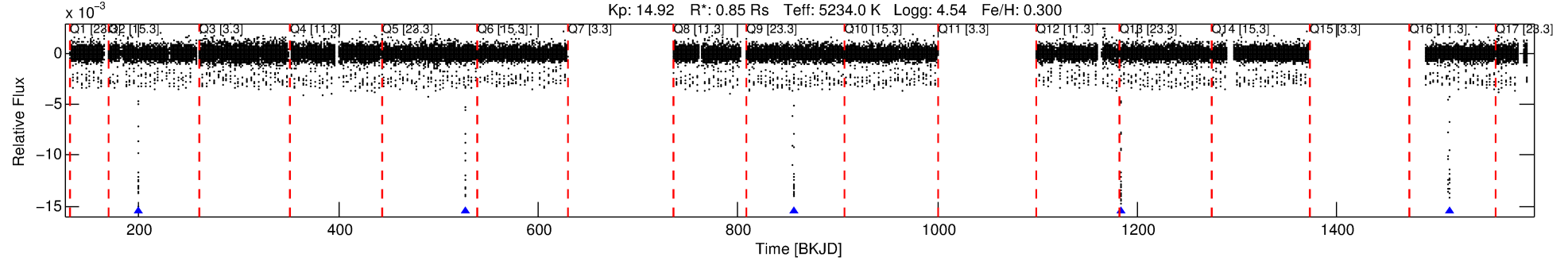
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010937029-01

No Significant Match Found

DV One-Page Summary

KIC: 10937029 Candidate: 1 of 3 Period: 328.240 d
KOI: K00433.02 Corr: 0.997



DV Fit Results:

Period = 328.23976 [0.00040] d
Epoch = 199.2045 [0.0010] BKJD
Rp/R* = 0.1176 [0.0006]
a/R* = 171.13 [2.27]
b = 0.75 [0.01]
Seff = 0.59 [0.10]
Teq = 224 [9] K
Rp = 10.95 [1.03] Re
a = 0.9081 [0.0810] AU
Ag = 155.41 [263.57] [0.59 σ]
Teffp = 1222 [517] K [1.93 σ]

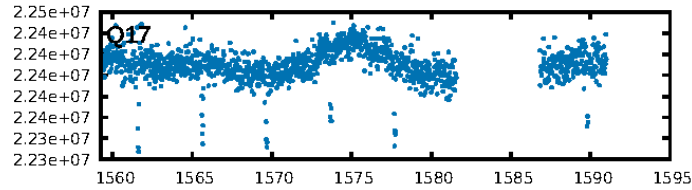
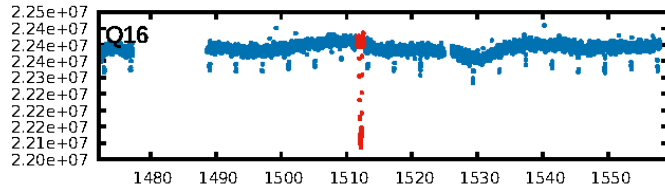
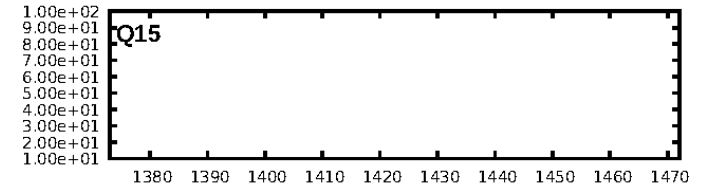
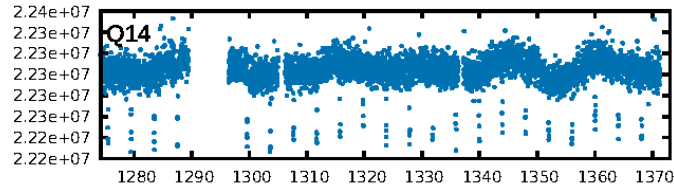
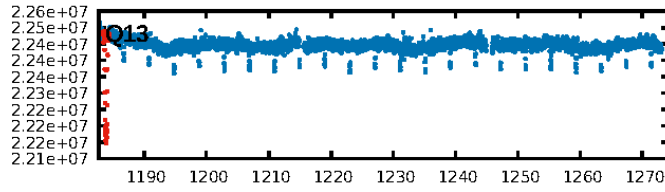
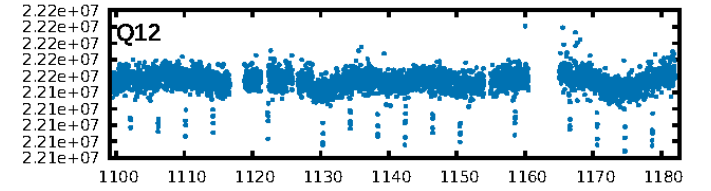
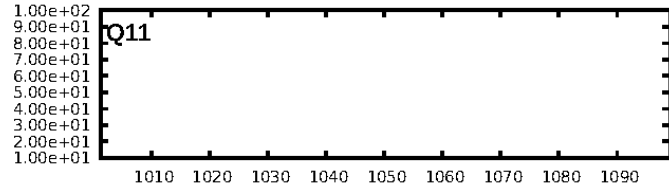
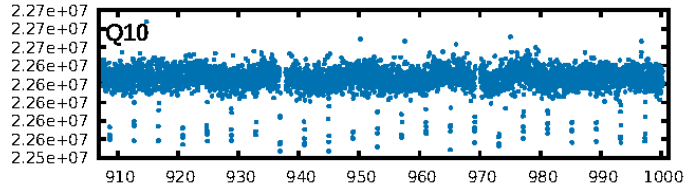
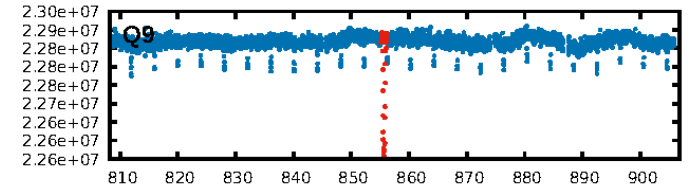
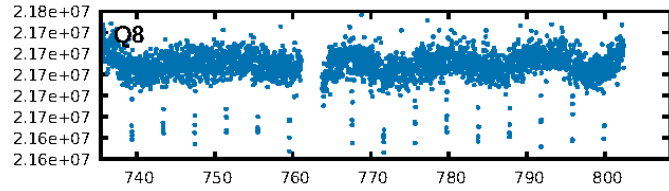
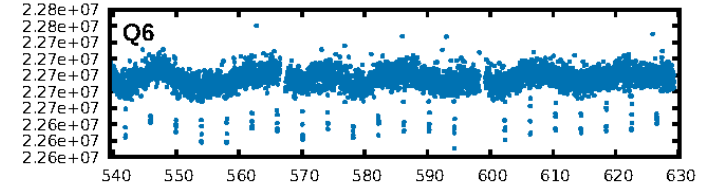
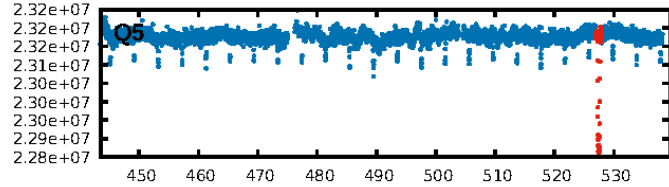
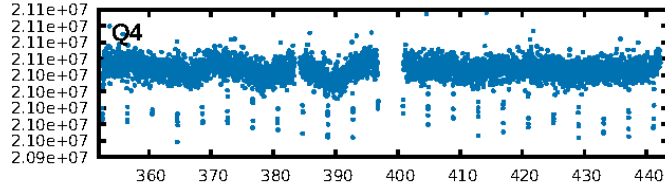
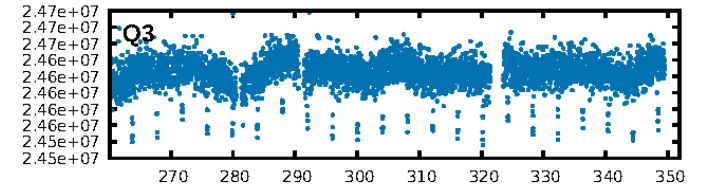
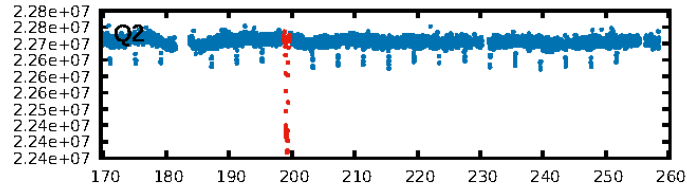
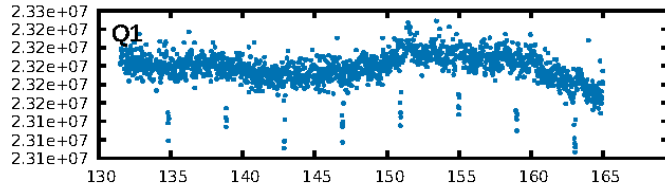
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [620.65 σ]
LongPeriod-sig: 100.0% [81.54 σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 5.645
Centroid-sig: 0.0%
Centroid-so: 0.596 arcsec [10.62 σ]
OotOffset-rm: 0.215 arcsec [3.08 σ]
KicOffset-rm: 0.399 arcsec [4.72 σ]
OotOffset-st: 1/0/1/2 [4]
KicOffset-st: 1/0/1/2 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.50 [2/4]

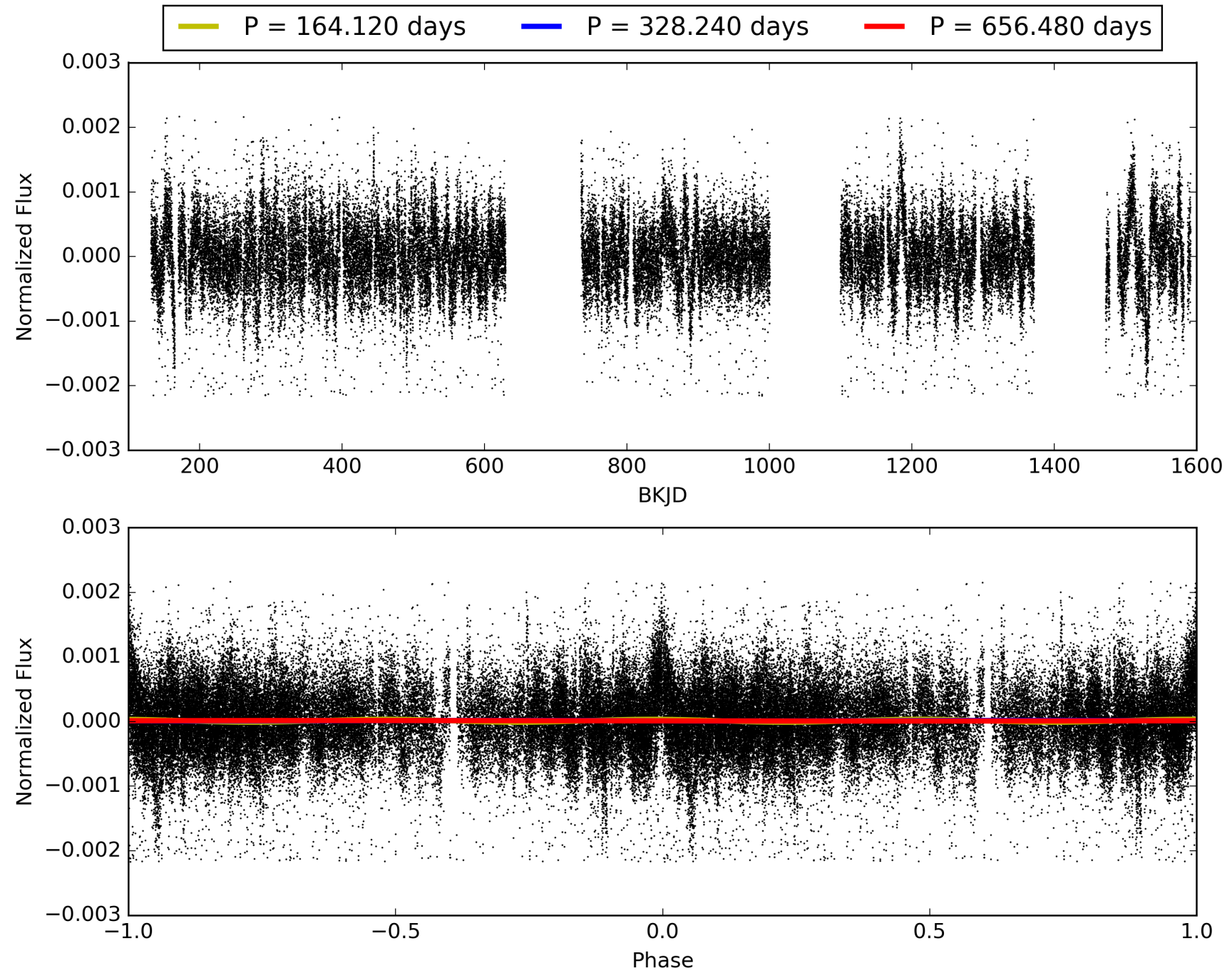
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:26:20 Z

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

TCE 010937029-01, PDC Light Curves

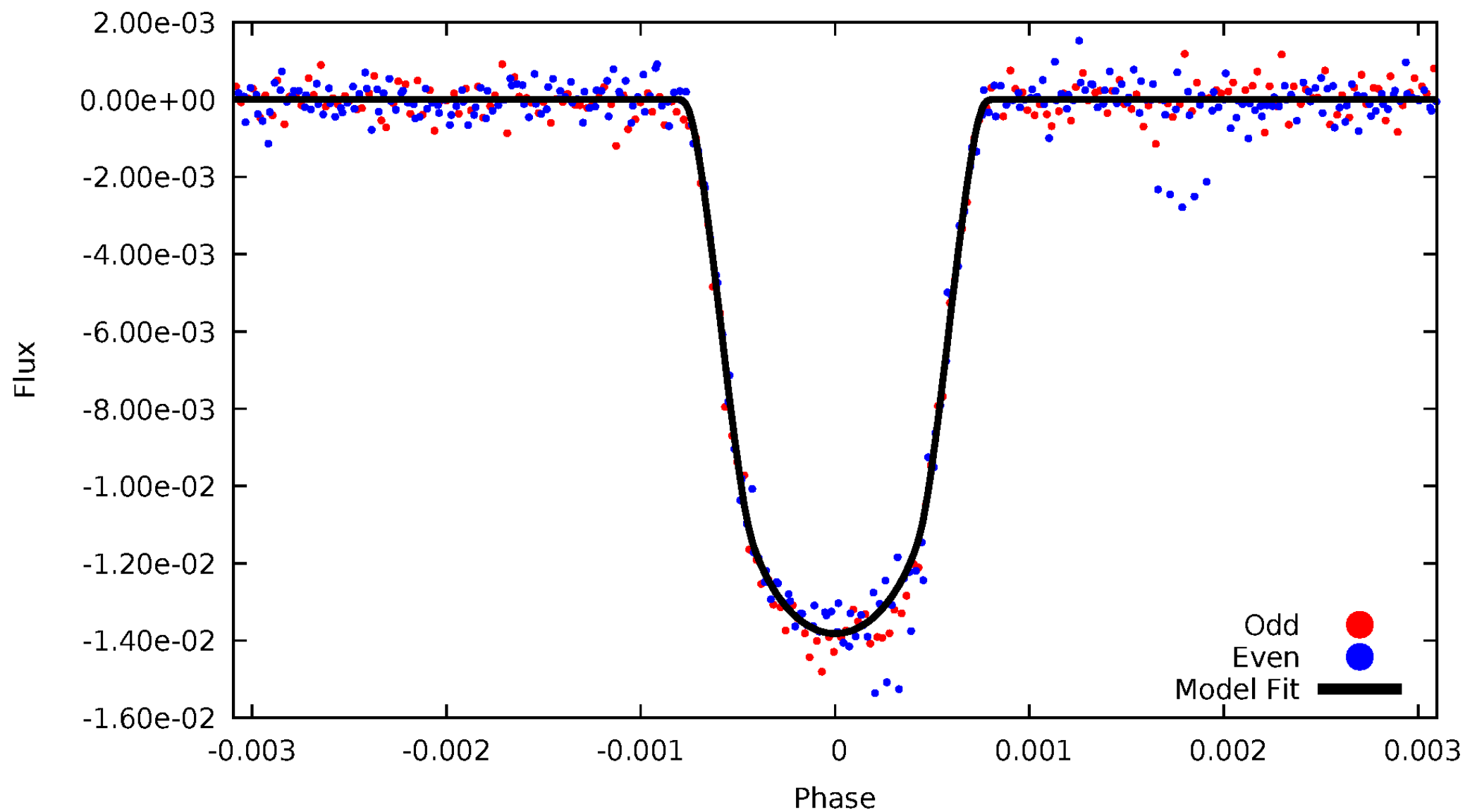


TCE 010937029-01



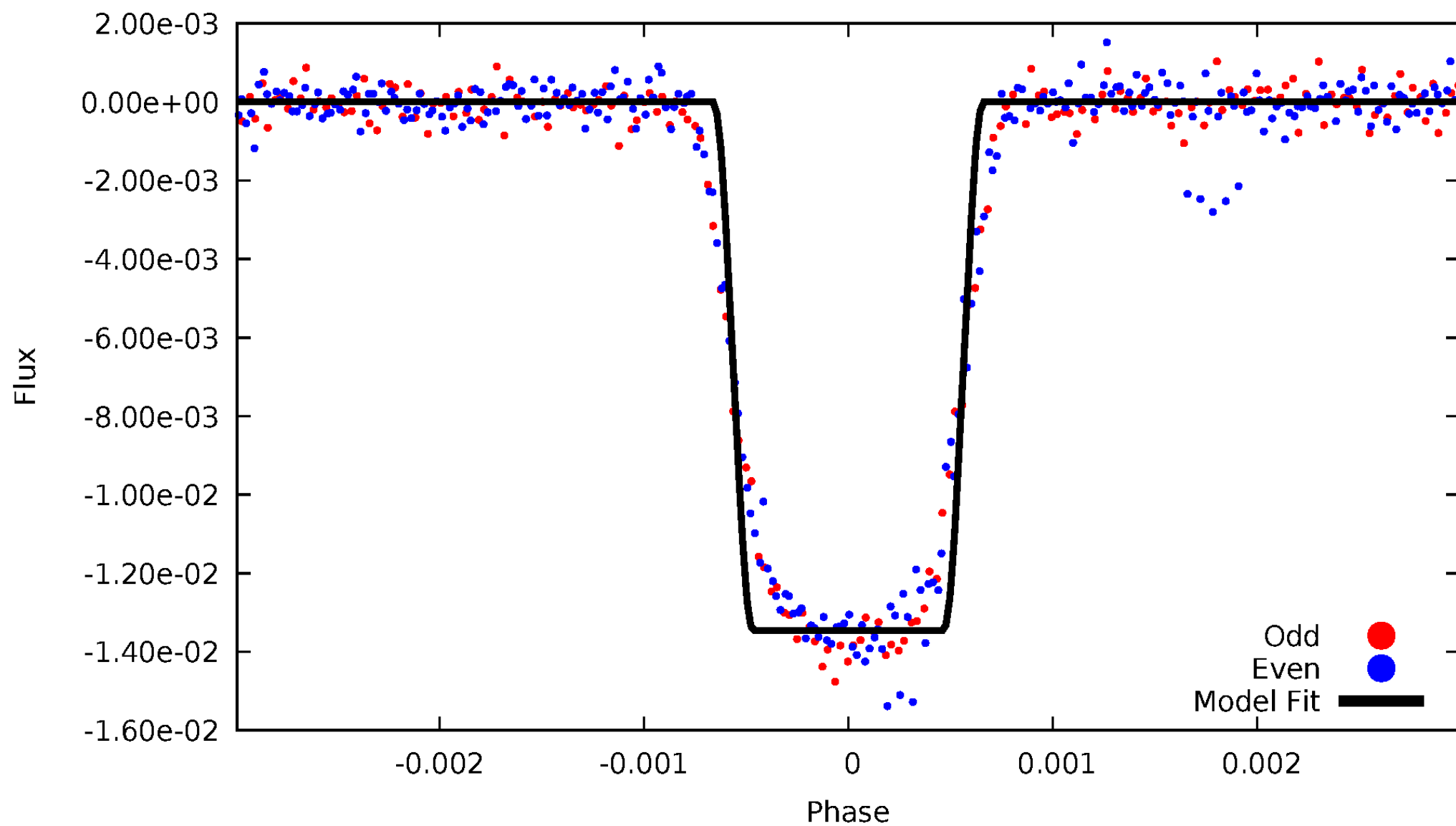
DV Odd/Even

TCE 010937029-01



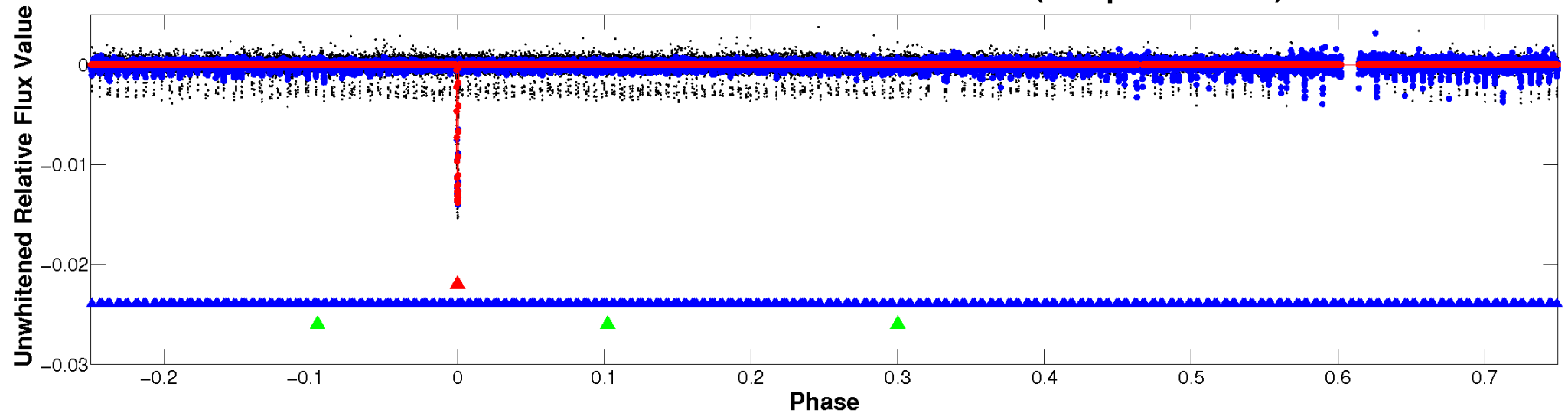
ALT Odd/Even

TCE 010937029-01

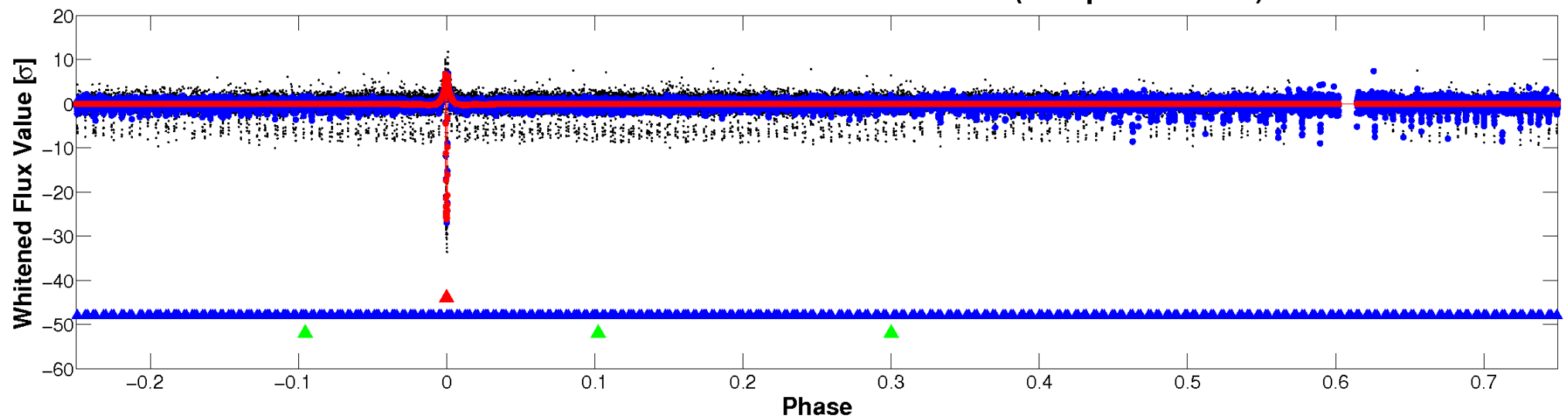


Non-Whitened Vs. Whitened Light Curve

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

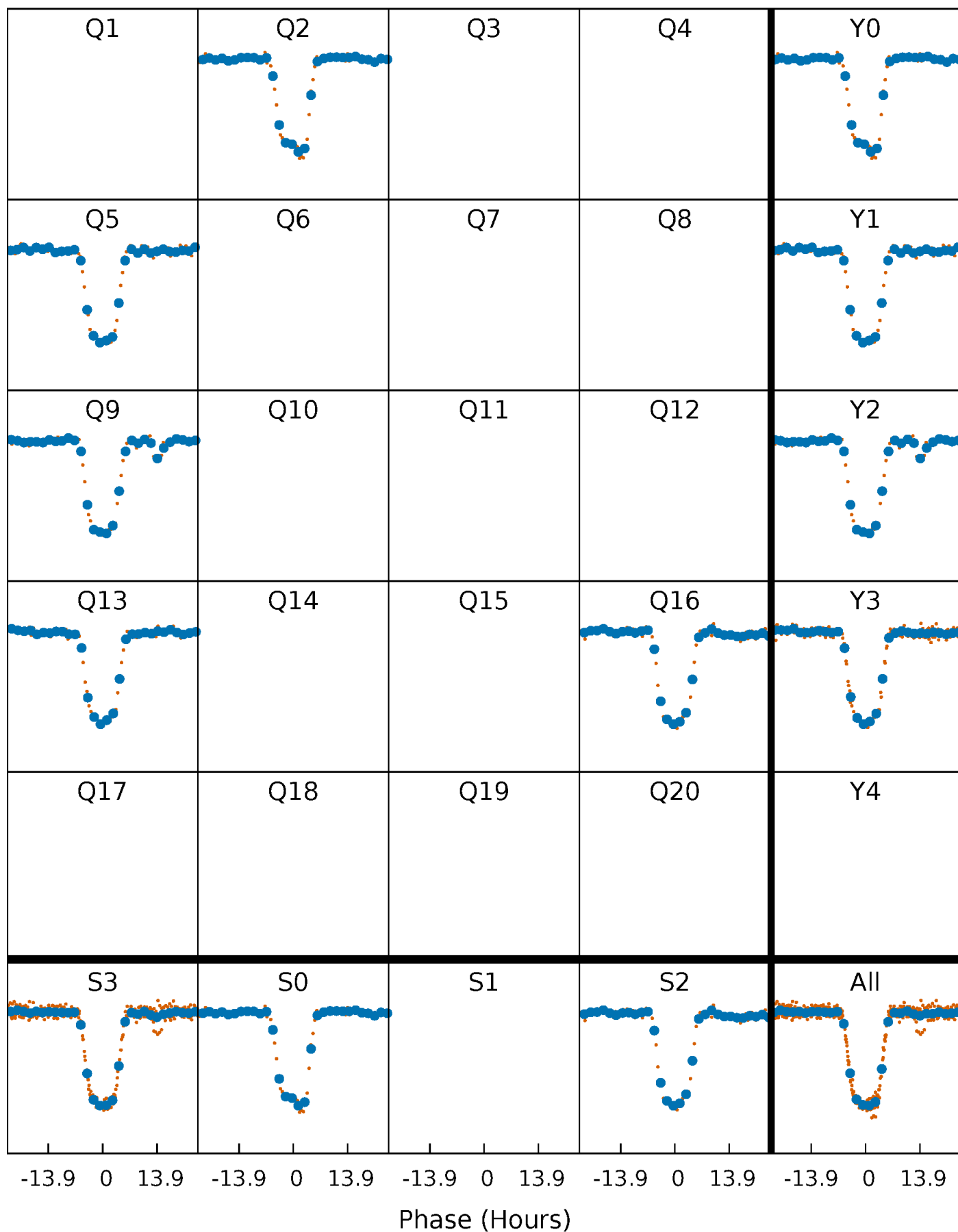


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



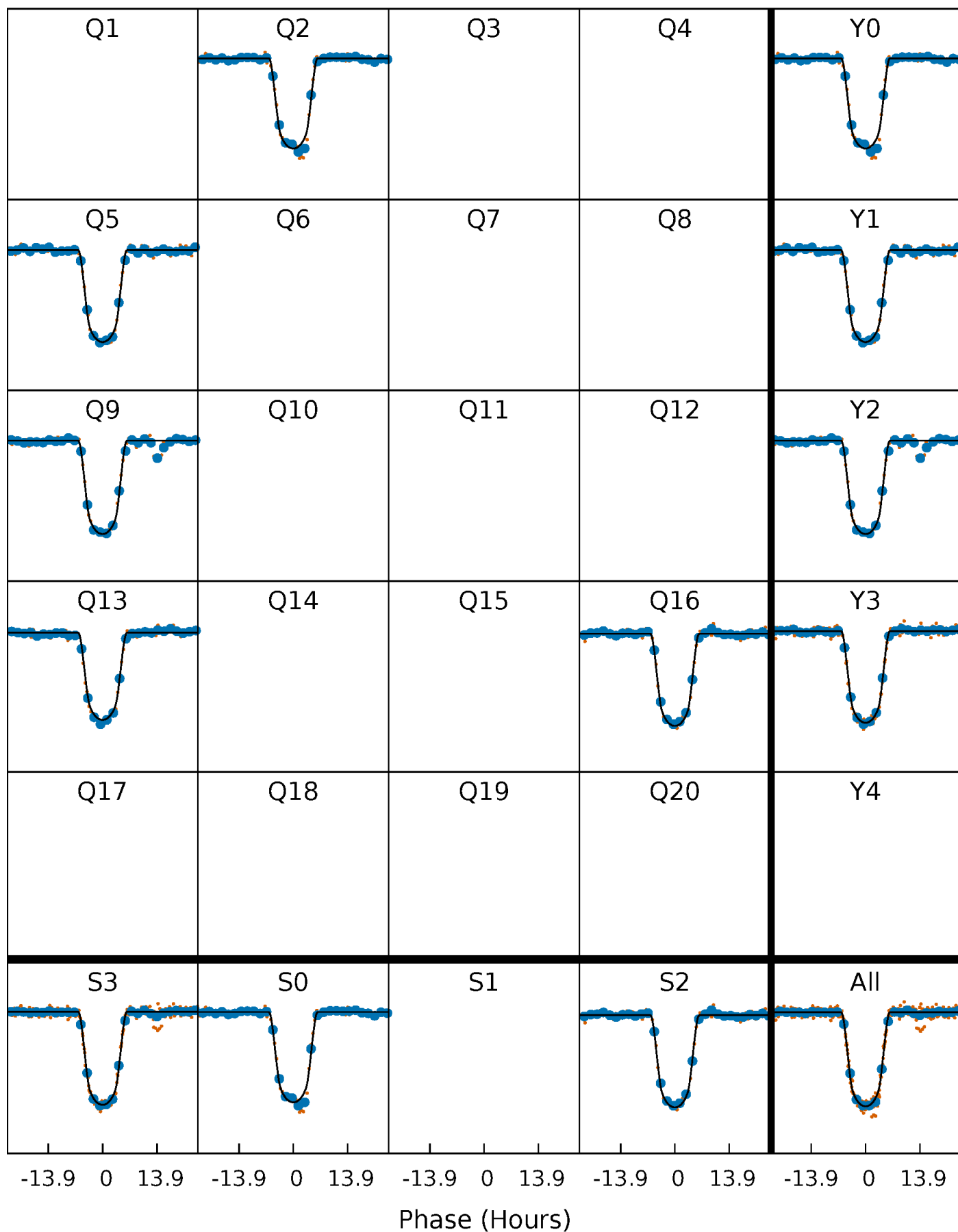
PDC Quarter-Phased Transit Curves

TCE 010937029-01 P=328.239759 Days $T_0=199.204527$ (BKJD)



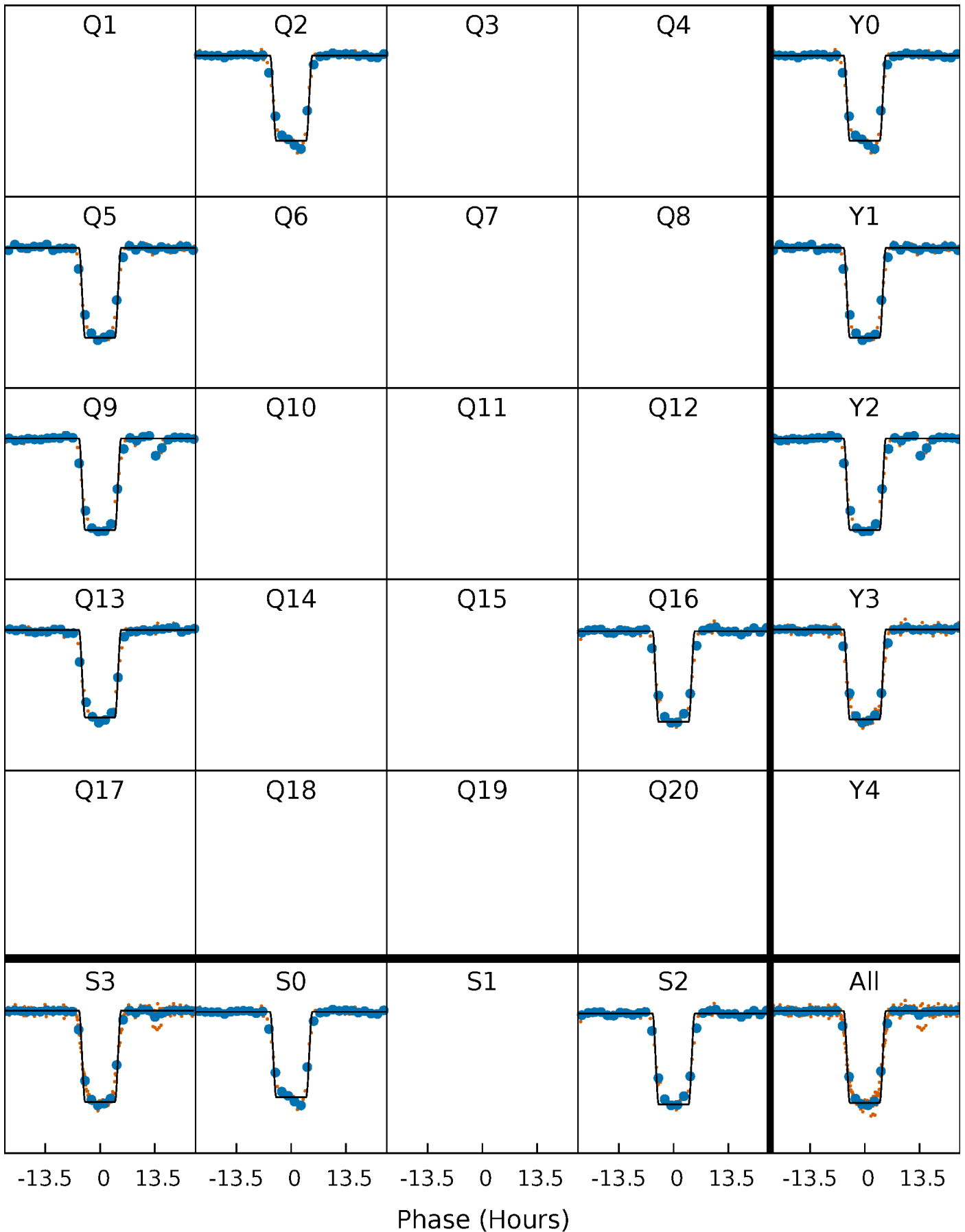
DV Quarter-Phased Transit Curves

TCE 010937029-01 P=328.239759 Days $T_0=199.204527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

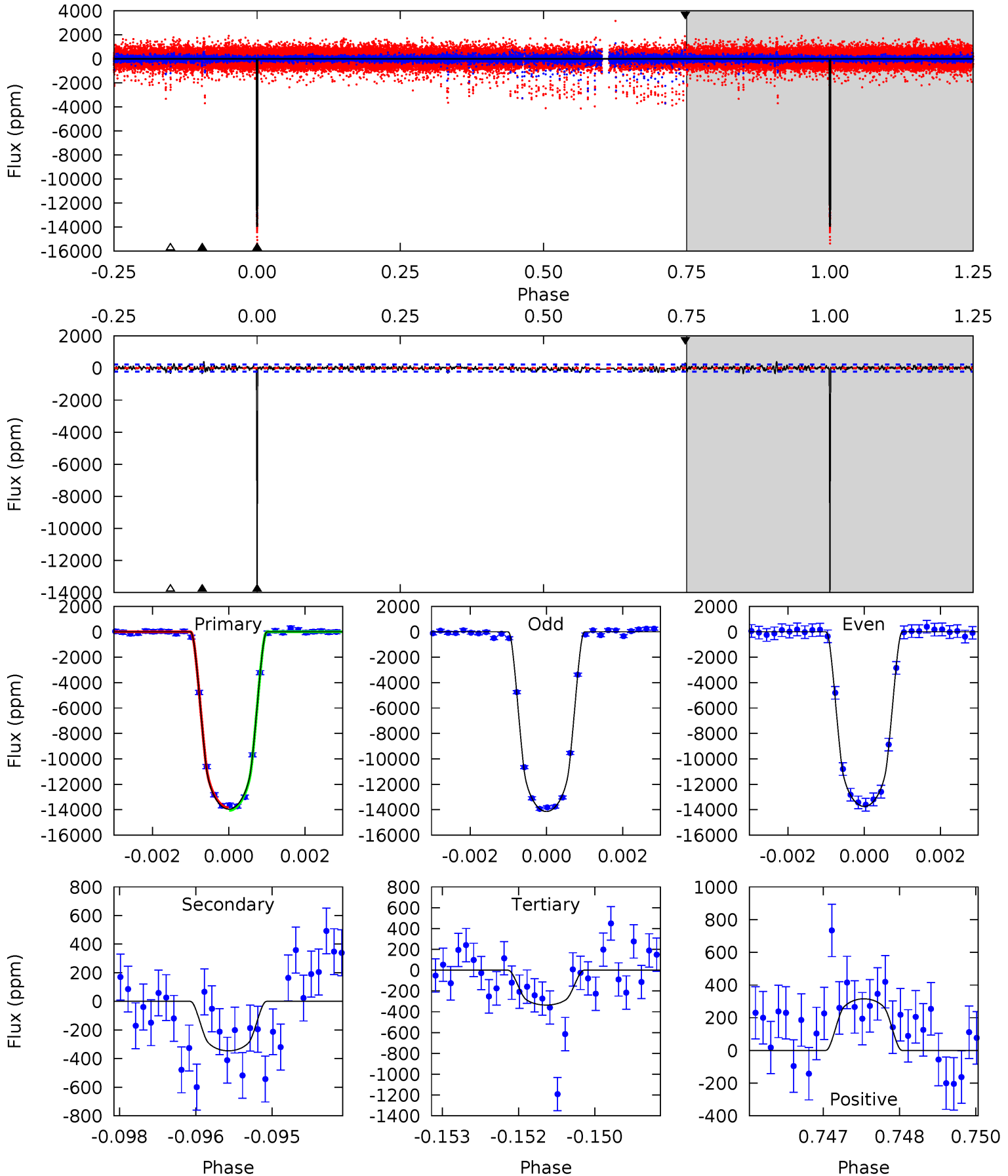
TCE 010937029-01 P=328.237897 Days $T_0=199.208811$ (BKJD)



DV Model-Shift Uniqueness Test

010937029-01, P = 328.239759 Days, E = 199.204527 Days

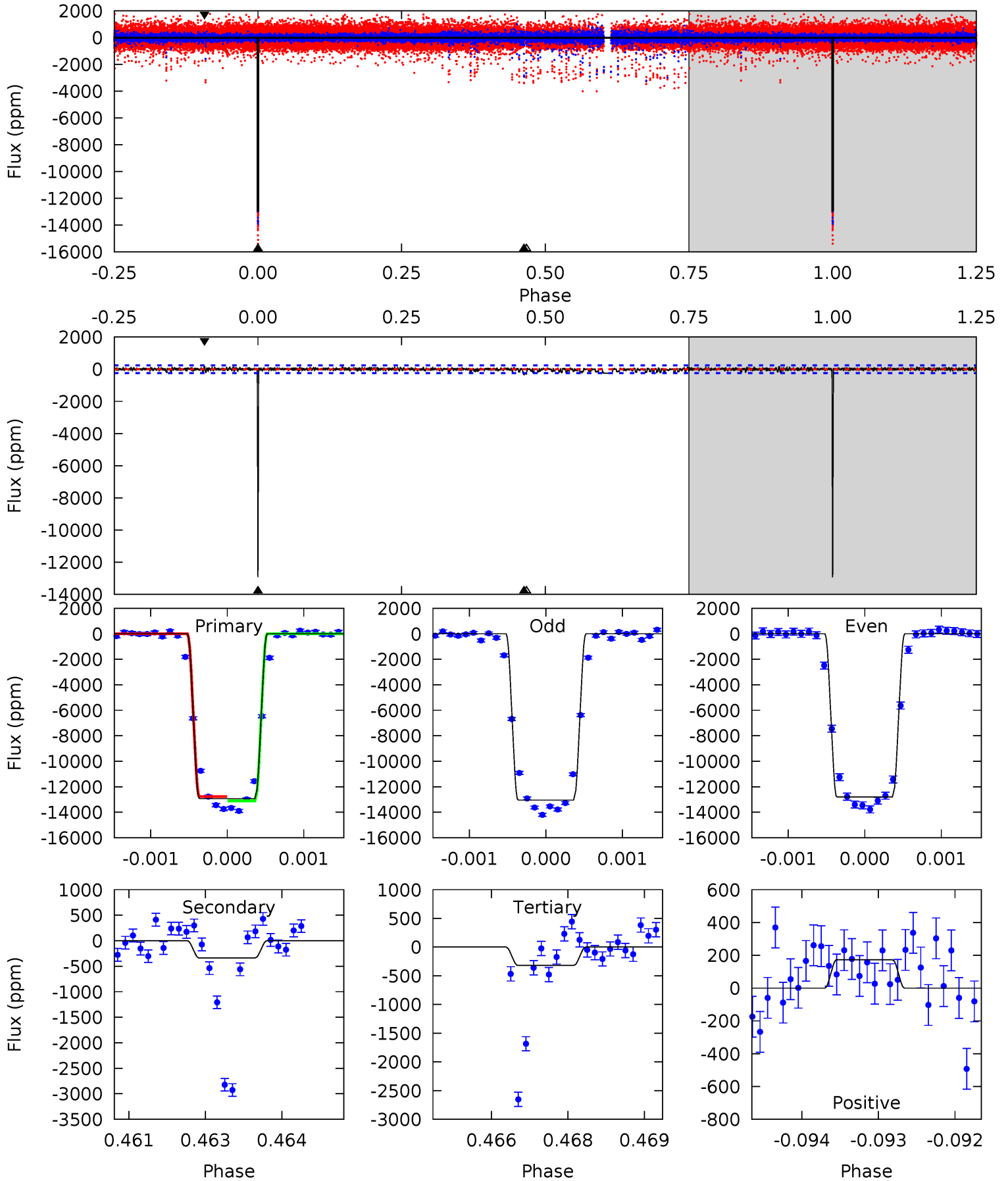
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 342.6 | 8.48 | 8.24 | 7.75 | 5.37 | 3.16 | 1.80 | 334.4 | 334.9 | 0.24 | 0.74 | 4.09 | 1.00 | 0.03 | 2.50 |



Alt Model-Shift Uniqueness Test

010937029-01, P = 328.237897 Days, E = 199.208811 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 291.7 | 7.66 | 7.22 | 3.90 | 5.41 | 3.22 | 1.18 | 284.5 | 287.8 | 0.44 | 3.75 | 2.22 | 1.01 | 0.01 | 3.85 |



Stellar Parameters For KIC 010937029

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5234^{+103}_{-103} | $4.542^{+0.028}_{-0.083}$ | $0.300^{+0.150}_{-0.150}$ | $0.854^{+0.080}_{-0.040}$ | $0.927^{+0.032}_{-0.059}$ | $2.095^{+0.204}_{-0.510}$ |
| | +2%/-2% | +1%/-2% | +50%/-50% | +9%/-5% | +3%/-6% | +10%/-24% |
| Source | SPE59 | SPE59 | SPE59 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010937029-01 / KOI 0433.02

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|-------------------------|------------------|--------------------|----------------------|
| DV | -346 ± 41 | $11.02^{+0.58}_{-0.36}$ | 316^{+9}_{-9} | 2808^{+55}_{-61} | 1269^{+179}_{-186} |
| Alt. | -339 ± 44 | $10.87^{+0.63}_{-0.35}$ | 315^{+10}_{-8} | 2807^{+57}_{-55} | 1270^{+194}_{-190} |

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 $A_{obs} \gg 1.0$

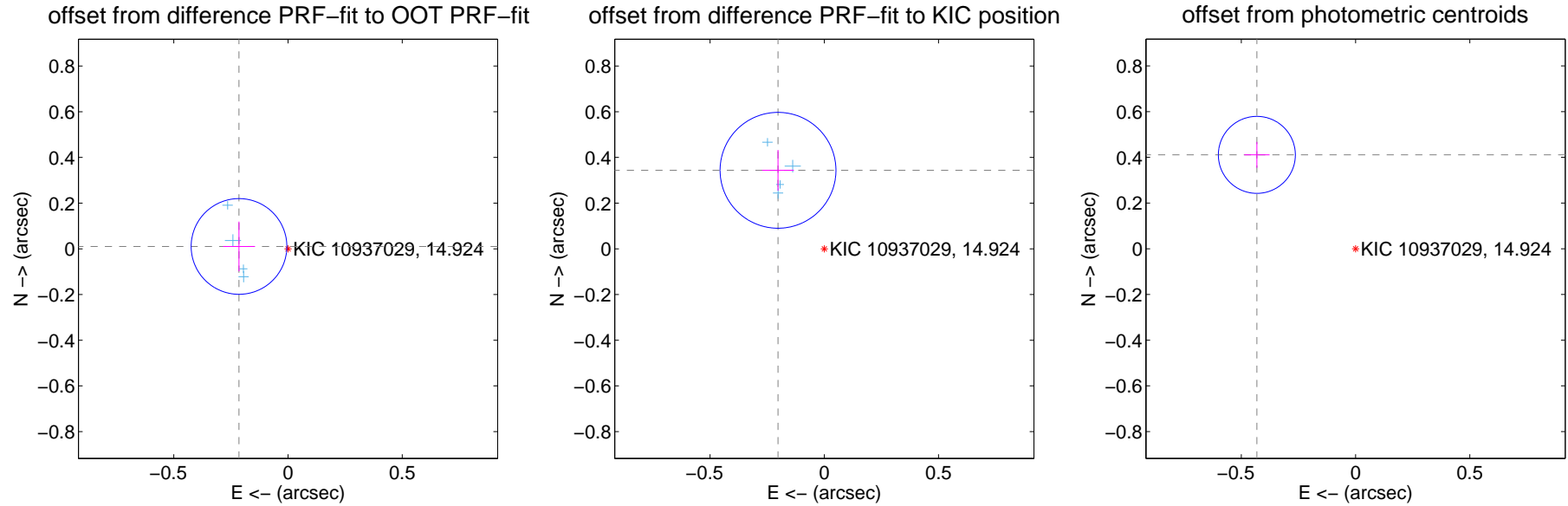
DV Centroid Data

Supplemental centroid analysis for 010937029-01. Kepler magnitude: 14.92. Transit SNR 214.06

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT | 0.215 ± 0.070 | 3.08 | 0.215 ± 0.070 | 0.010 ± 0.109 |
| PRF-fit source offset from KIC position | 0.399 ± 0.085 | 4.72 | 0.203 ± 0.070 | 0.344 ± 0.089 |
| photometric centroid source offset | 0.60 ± 0.06 | 10.62 | 0.43 ± 0.06 | 0.41 ± 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.

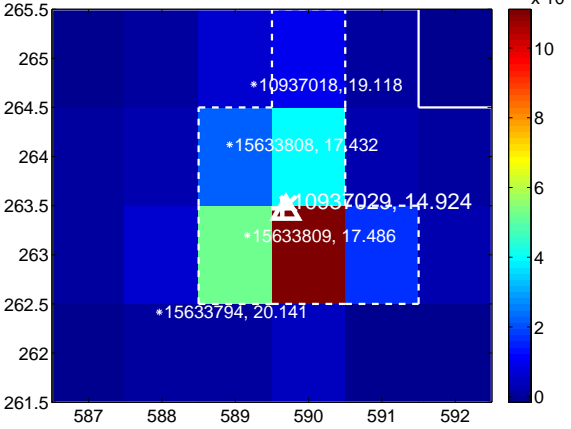
Q1 no difference image



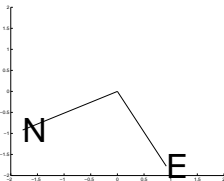
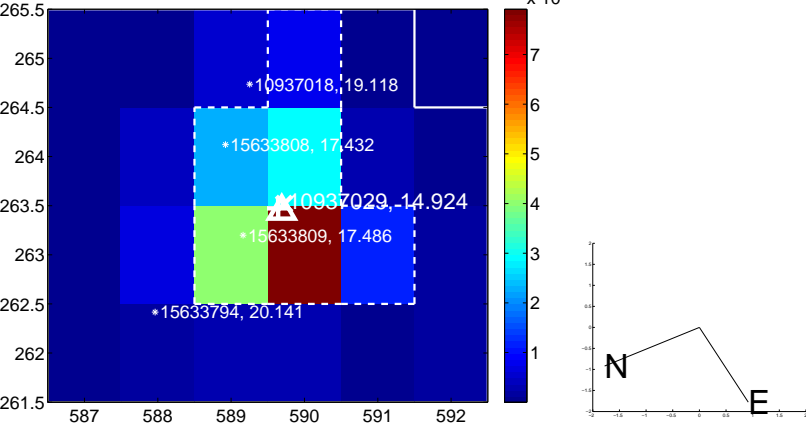
Q1 no OOT image



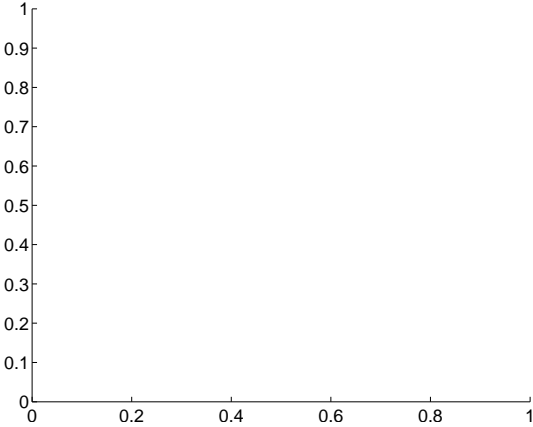
Q2 difference image



Q2 OOT image



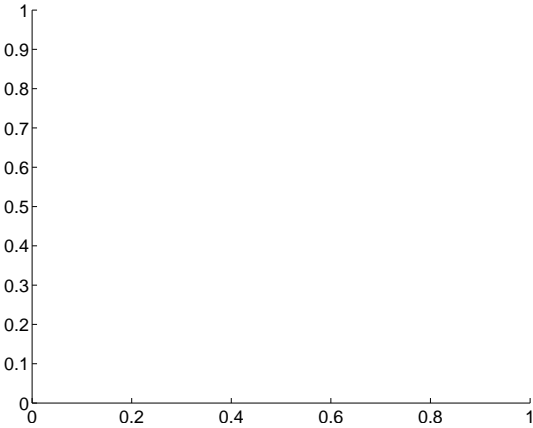
Q3 no difference image



Q3 no OOT image



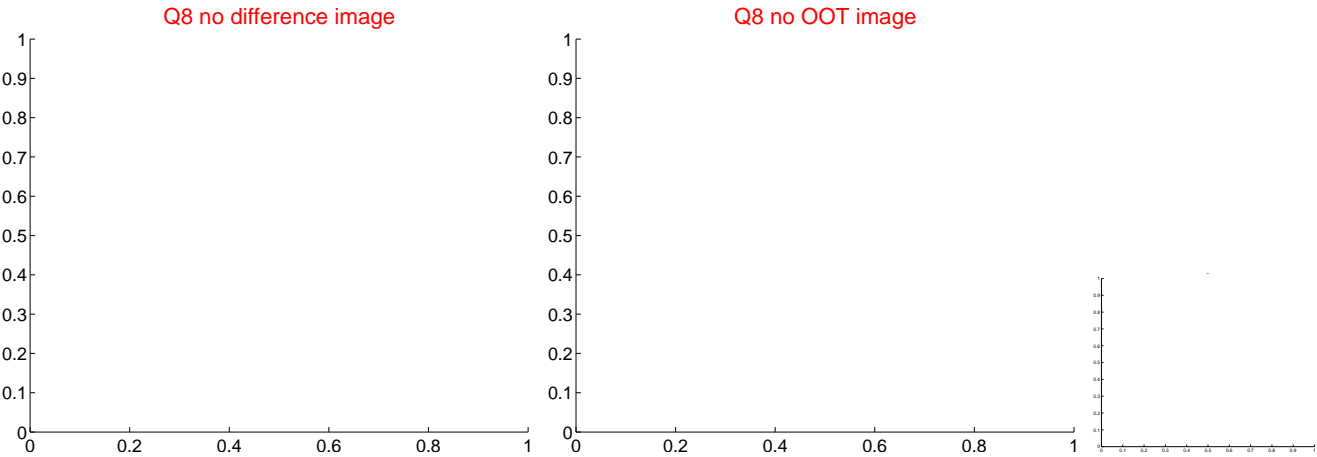
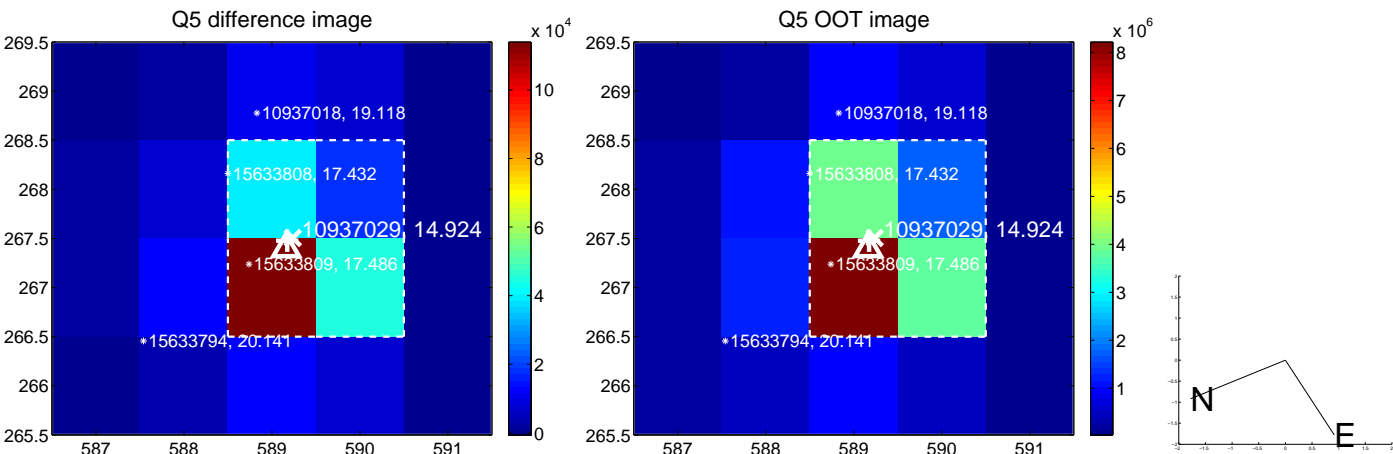
Q4 no difference image



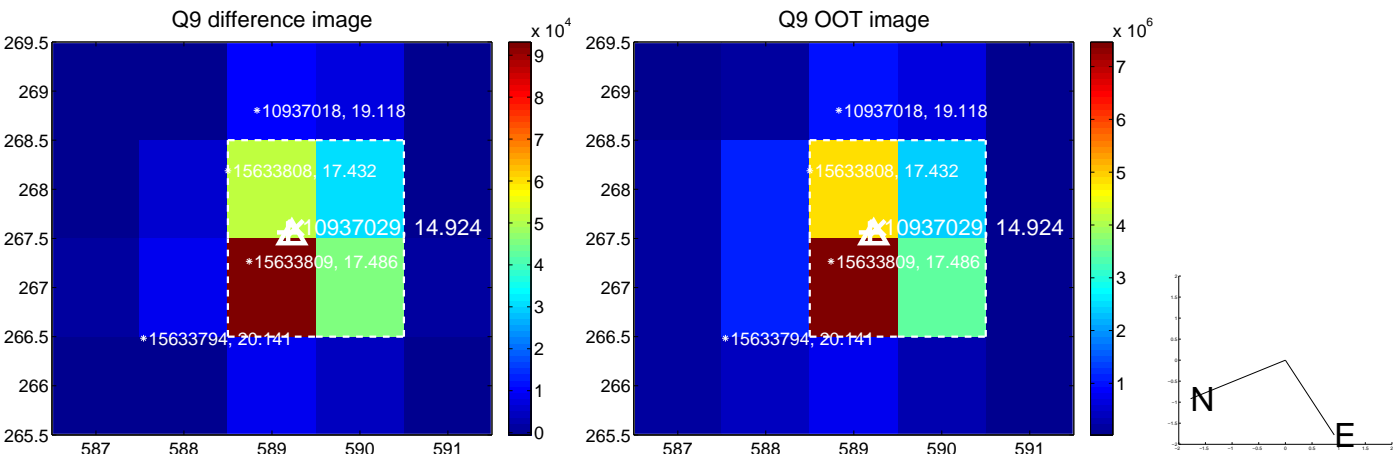
Q4 no OOT image



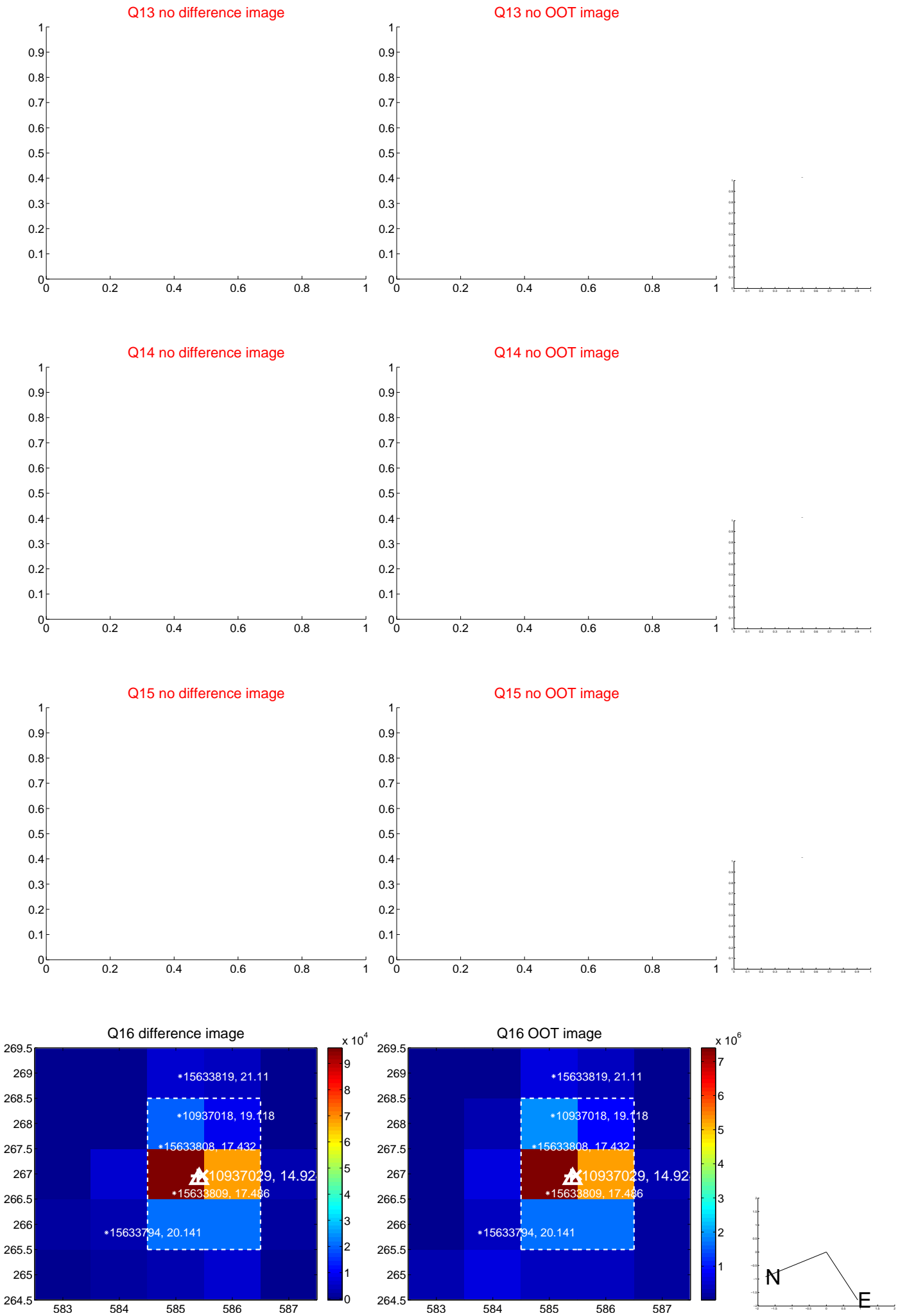
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



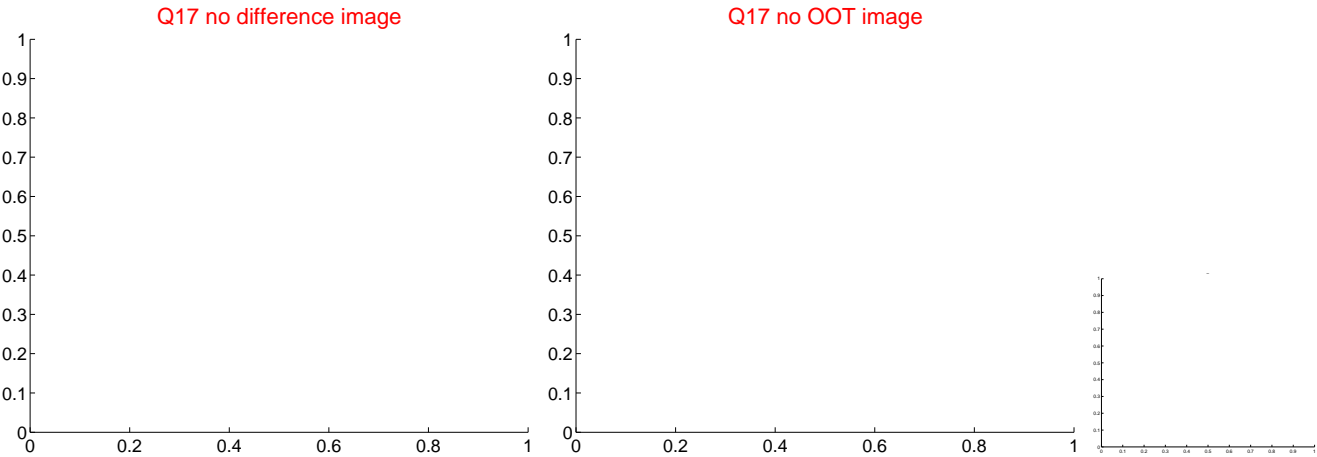
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



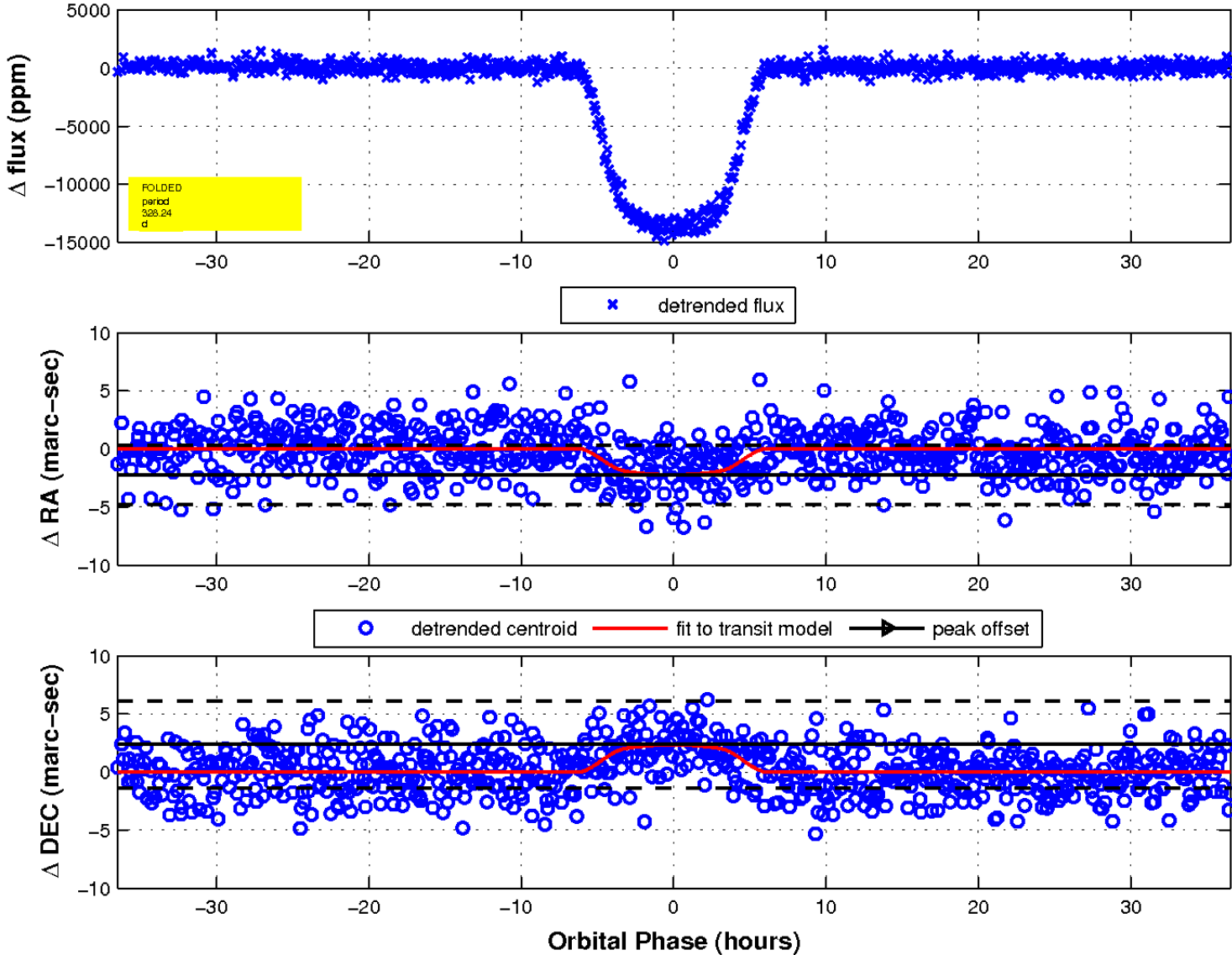
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

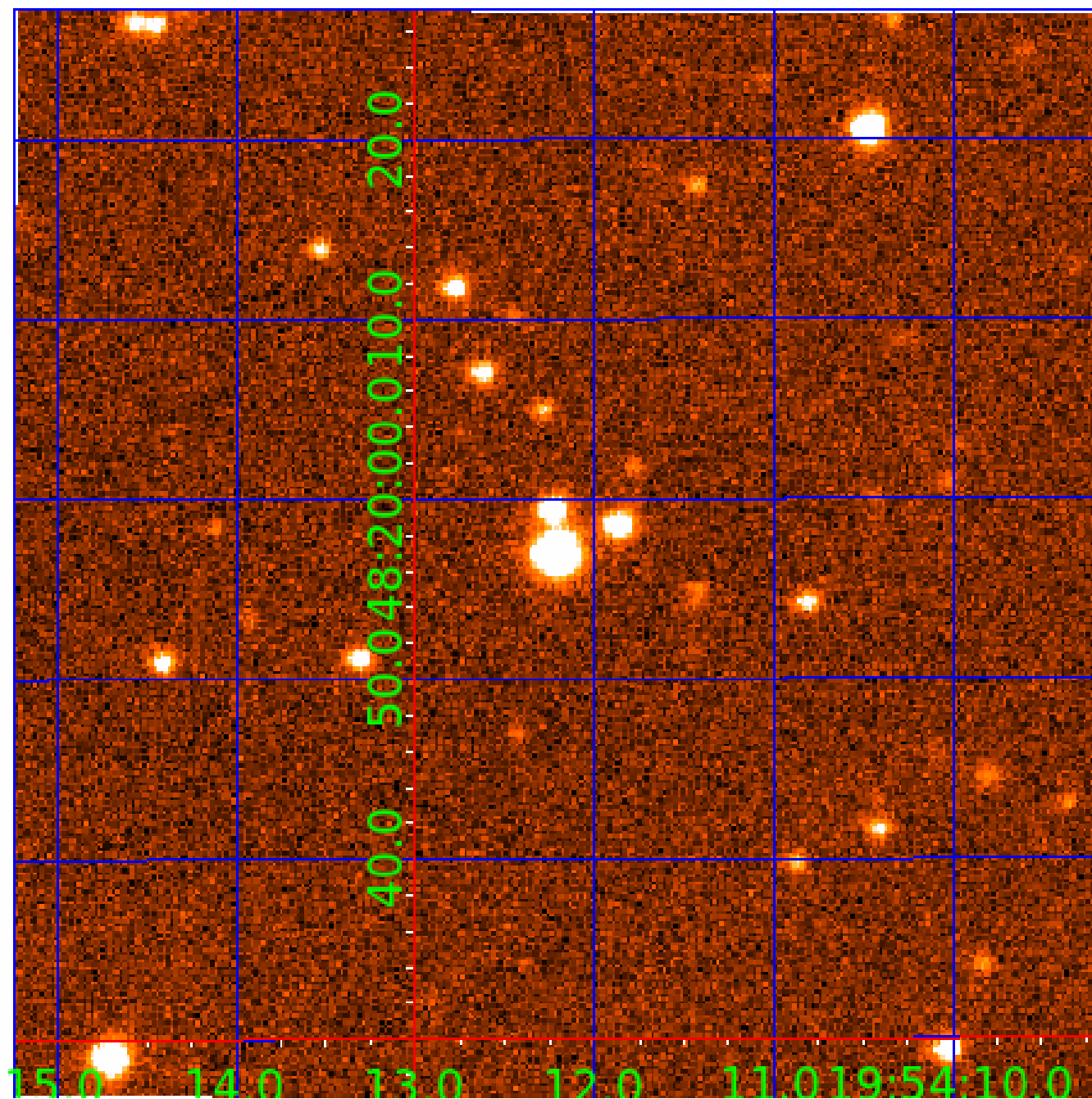


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 010937029

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 010937029-01 | OBS | 0433.02 | 328.239759 | 199.204527 | 13820.7 | 12.190 | 225.9 | 214.1 | 0.85 | 5234 | 10.96 | 0.59 |
| 010937029-02 | OBS | 0433.01 | 4.030469 | 134.817691 | 2896.0 | 2.928 | 218.6 | 215.9 | 0.85 | 5234 | 5.01 | 209.92 |
| 010937029-03 | OBS | No | 393.146156 | 496.136255 | 560.3 | 14.709 | 7.2 | 7.5 | 0.85 | 5234 | 2.47 | 0.47 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010937029-01 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST |

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

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

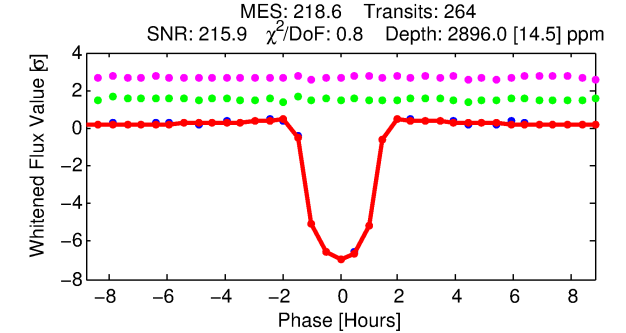
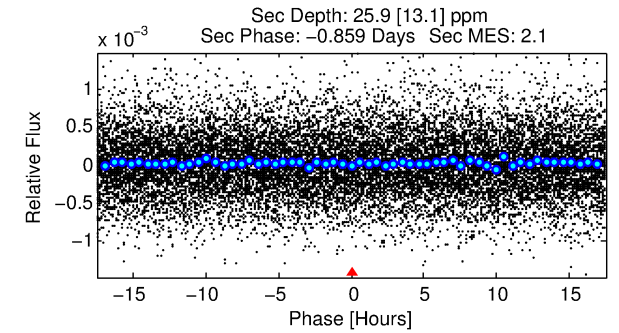
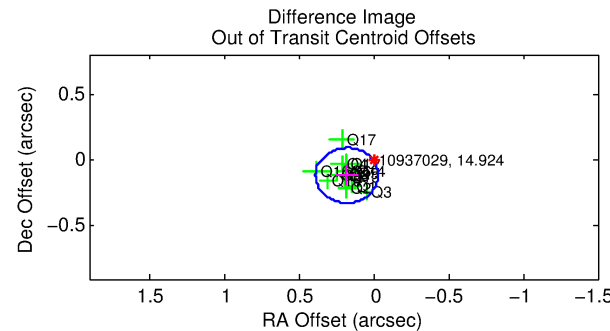
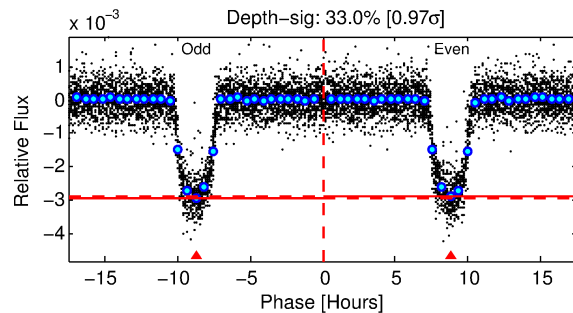
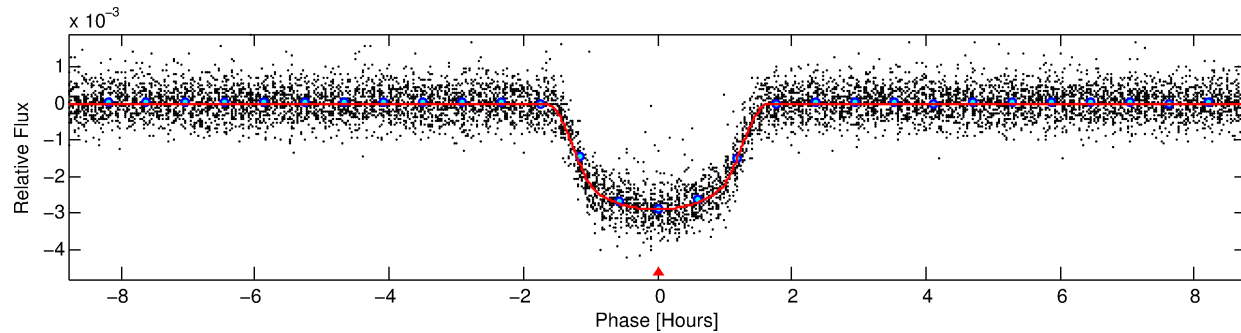
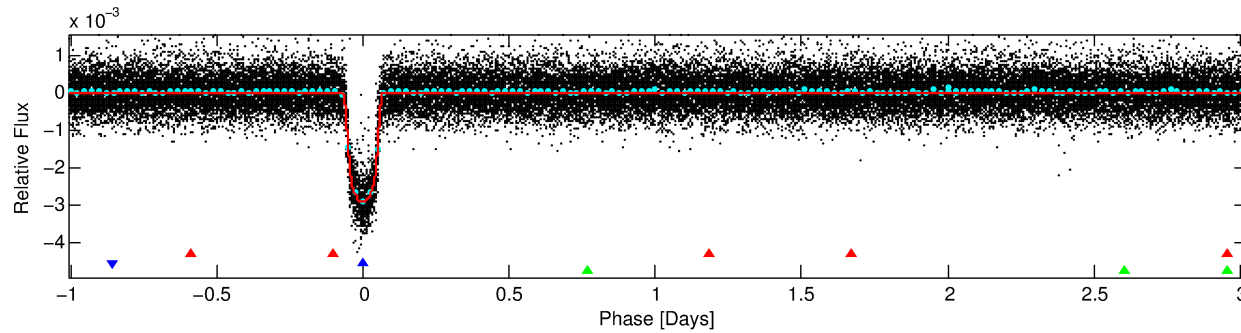
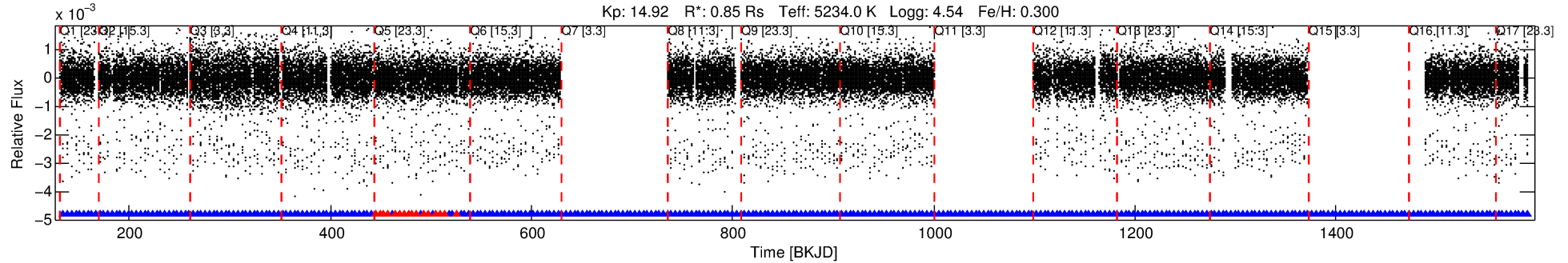
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010937029-02

No Significant Match Found

DV One-Page Summary

KIC: 10937029 Candidate: 2 of 3 Period: 4.030 d
KOI: K00433.01 Corr: 0.978



DV Fit Results:

Period = 4.03047 [0.00000] d
Epoch = 134.8177 [0.0002] BKJD
Rp/R* = 0.0537 [0.0014]
a/R* = 7.86 [0.72]
b = 0.75 [0.06]
Seff = 209.92 [34.06]
Teff = 971 [39] K
Rp = 5.01 [0.49] Re
a = 0.0483 [0.0043] AU
Ag = 1.33 [0.70] [0.47 σ]
Teffp = 1611 [208] K [3.03 σ]

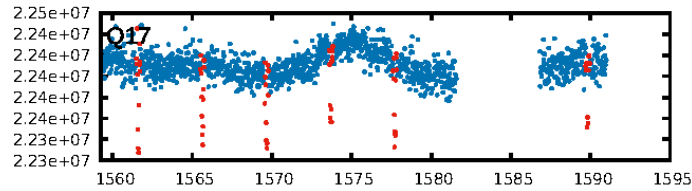
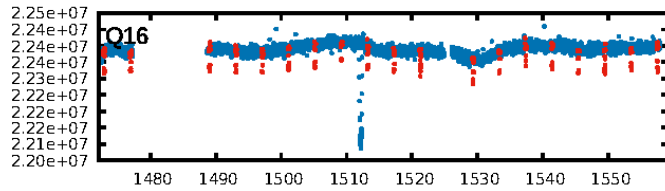
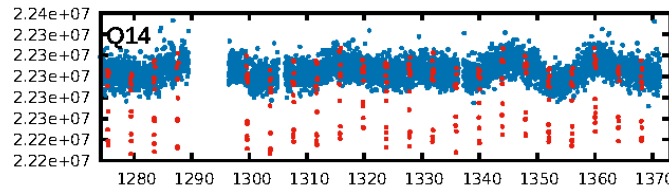
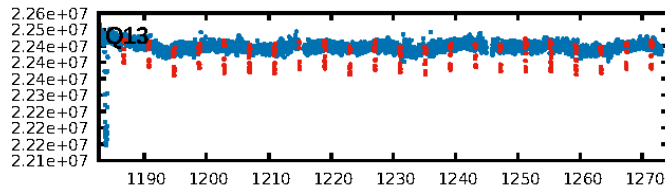
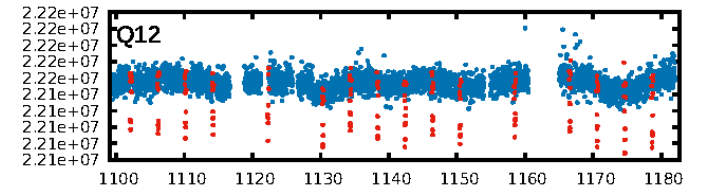
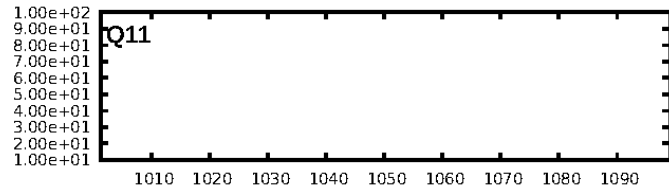
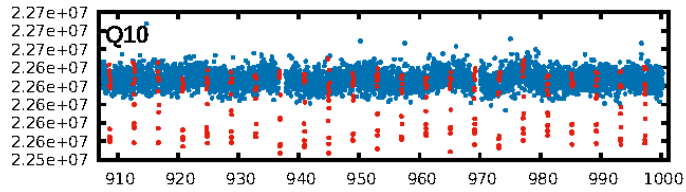
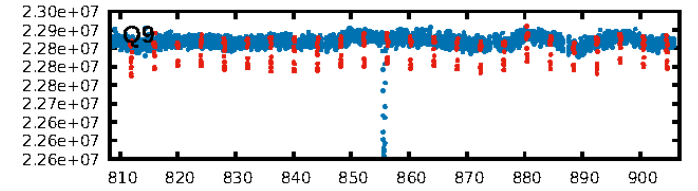
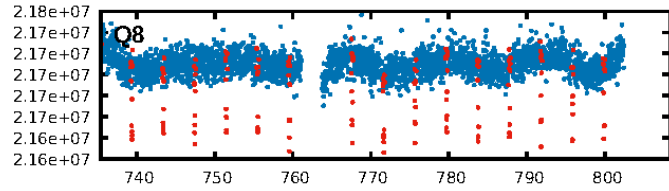
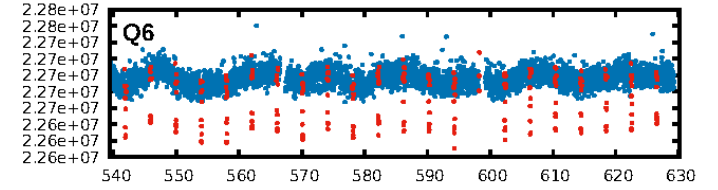
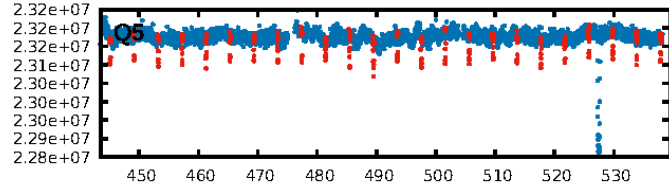
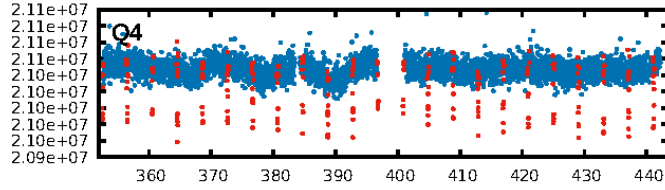
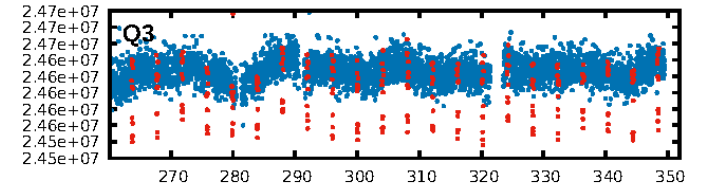
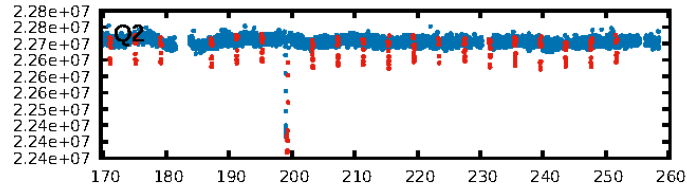
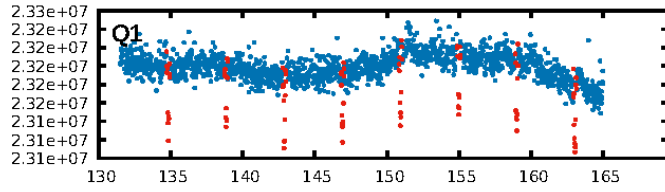
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [620.65 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.94 [234/250]
GhostDiagnostic-chr: 6.675
Centroid-sig: 0.0%
Centroid-so: 0.611 arcsec [9.23 σ]
OotOffset-rm: 0.214 arcsec [3.07 σ]
KicOffset-rm: 0.268 arcsec [3.68 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

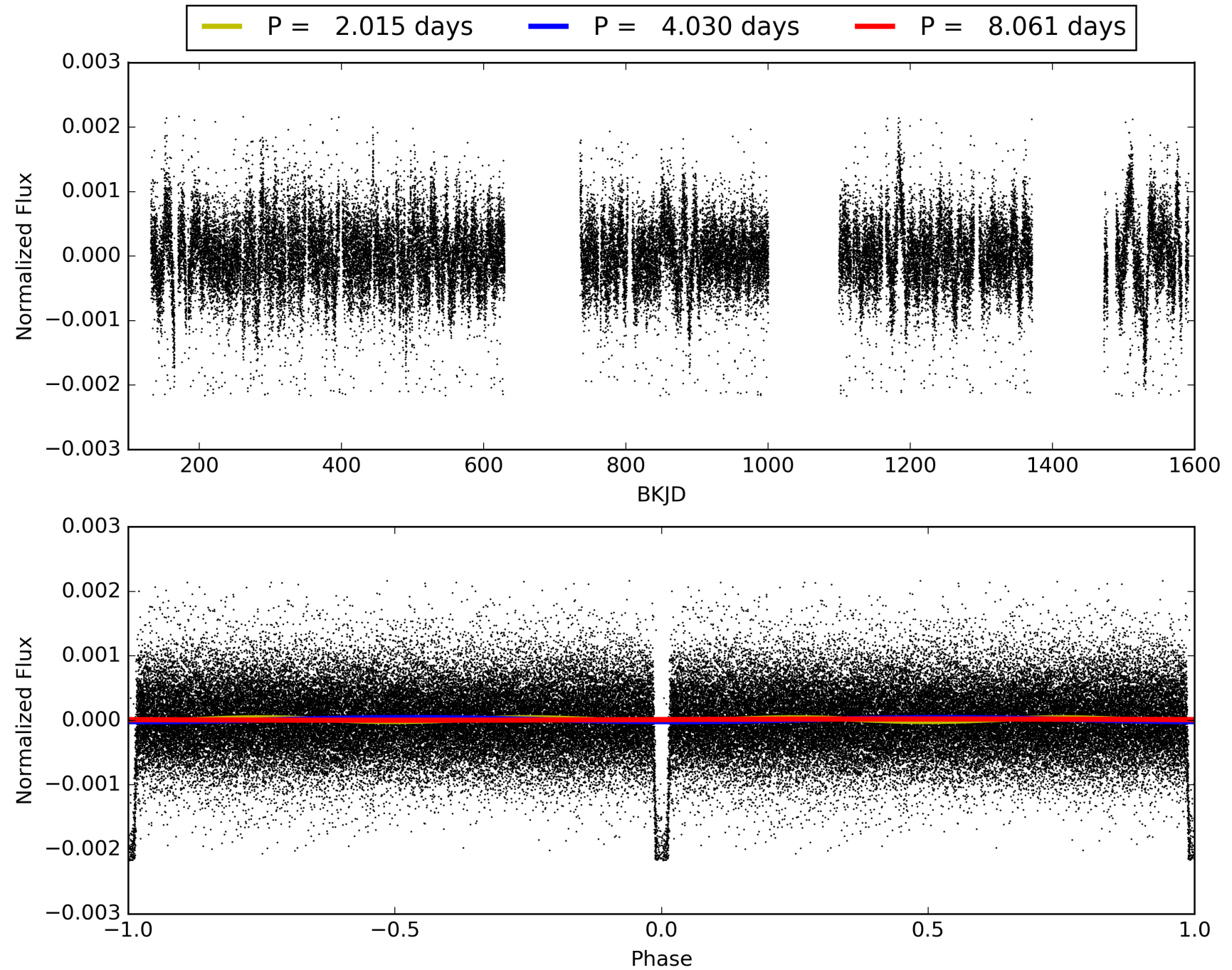
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:26:26 Z

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

TCE 010937029-02, PDC Light Curves

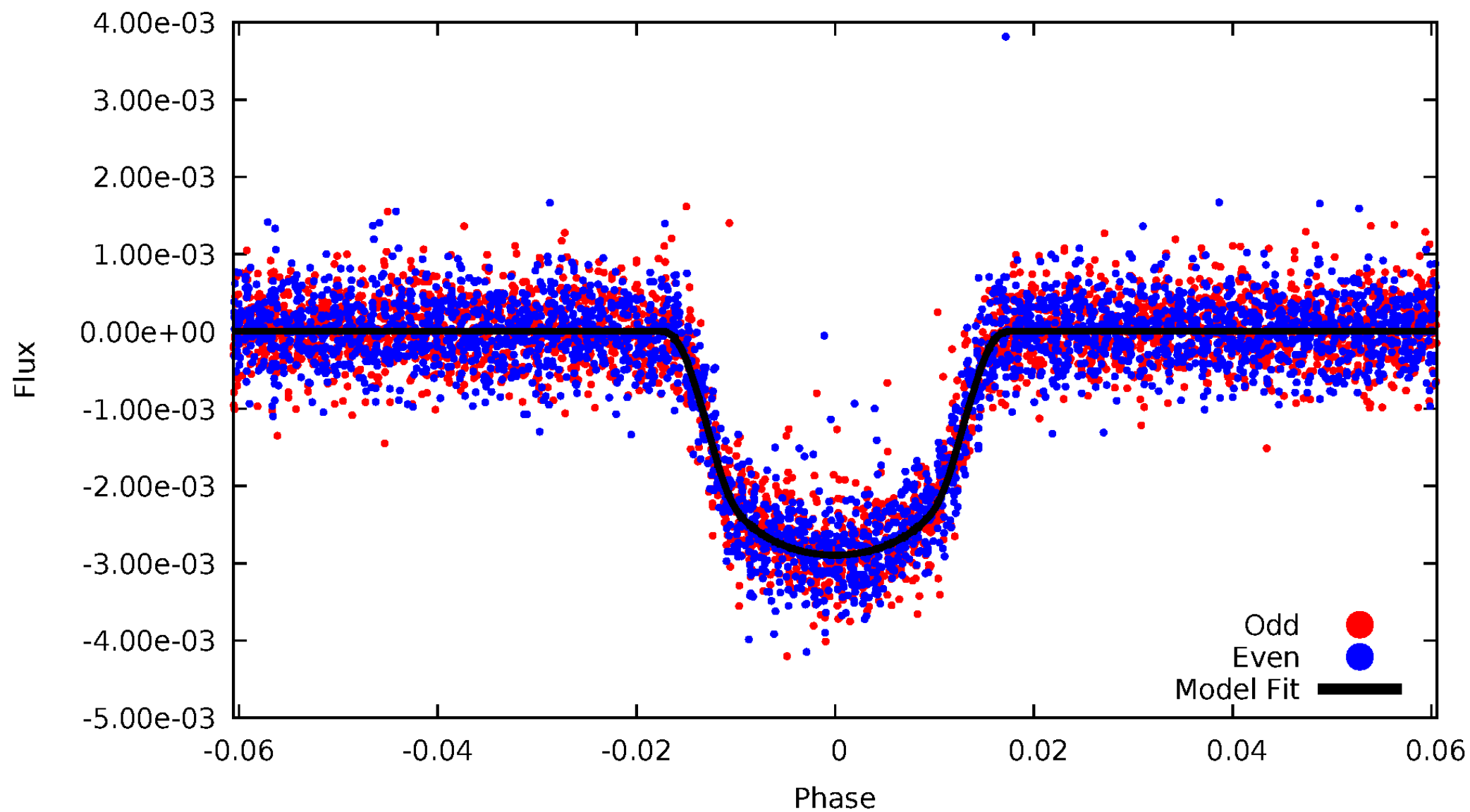


TCE 010937029-02



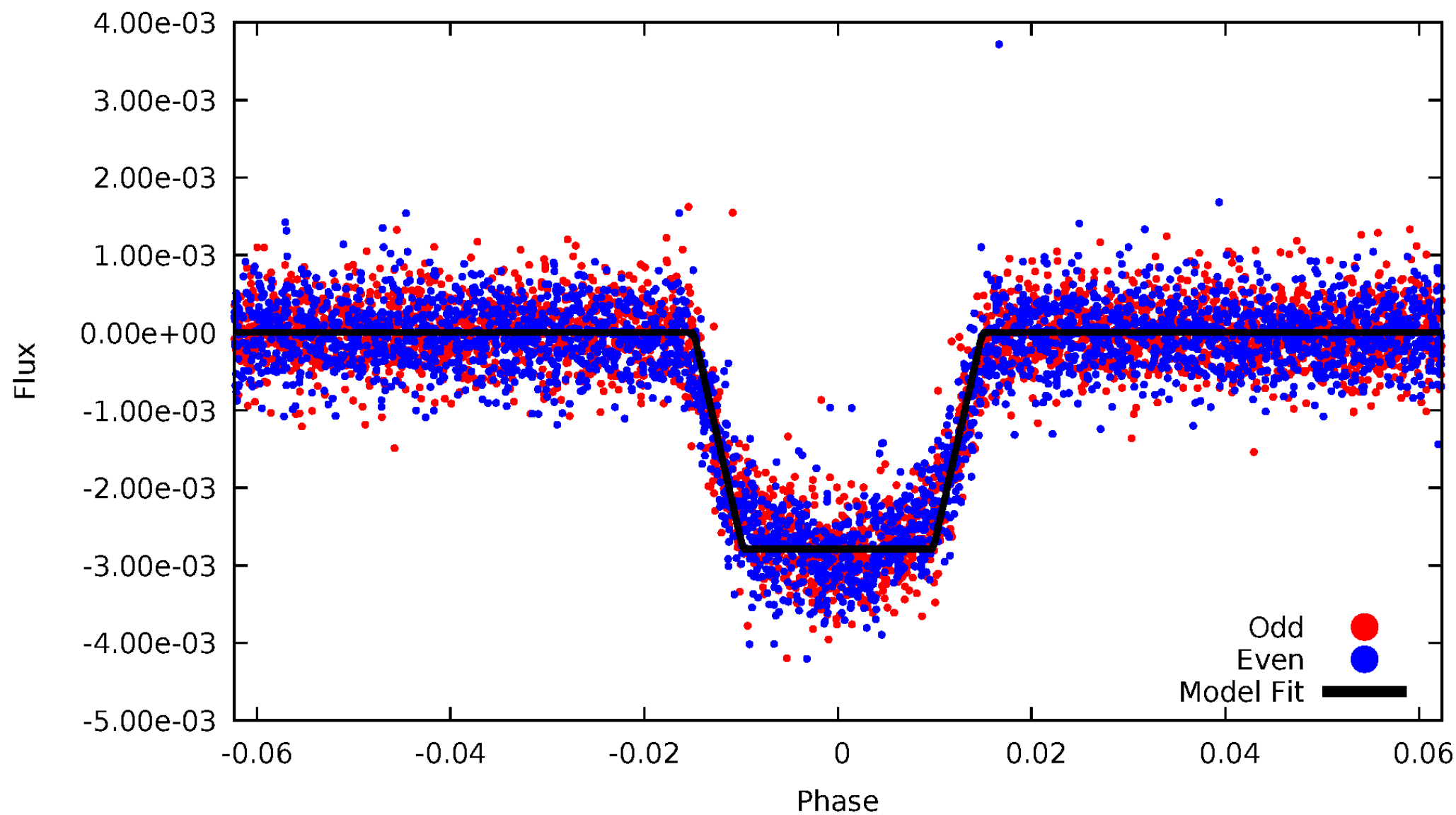
DV Odd/Even

TCE 010937029-02



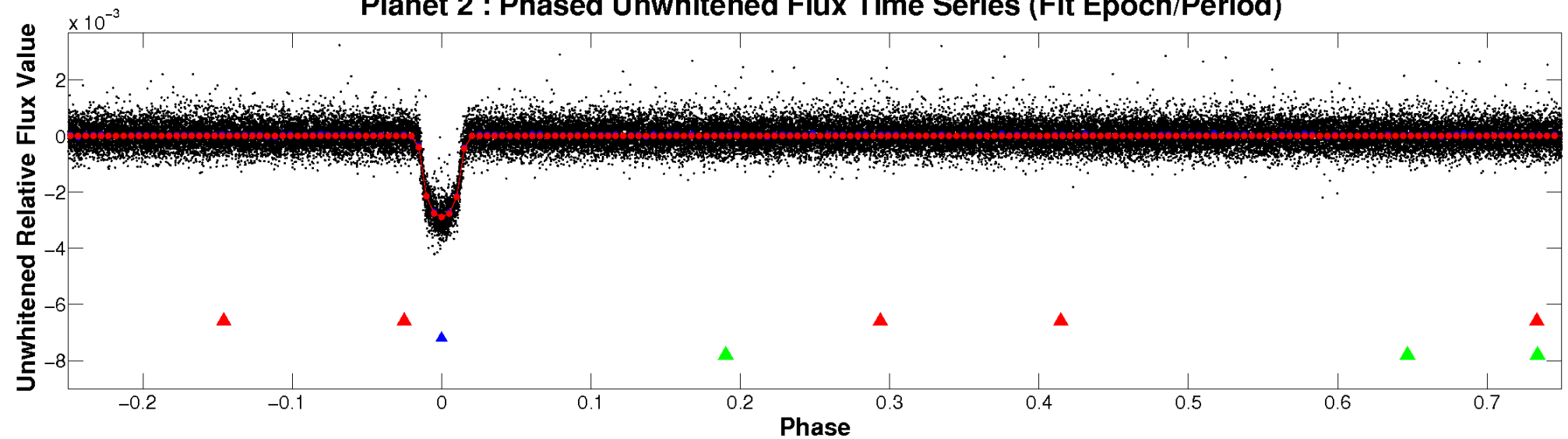
ALT Odd/Even

TCE 010937029-02

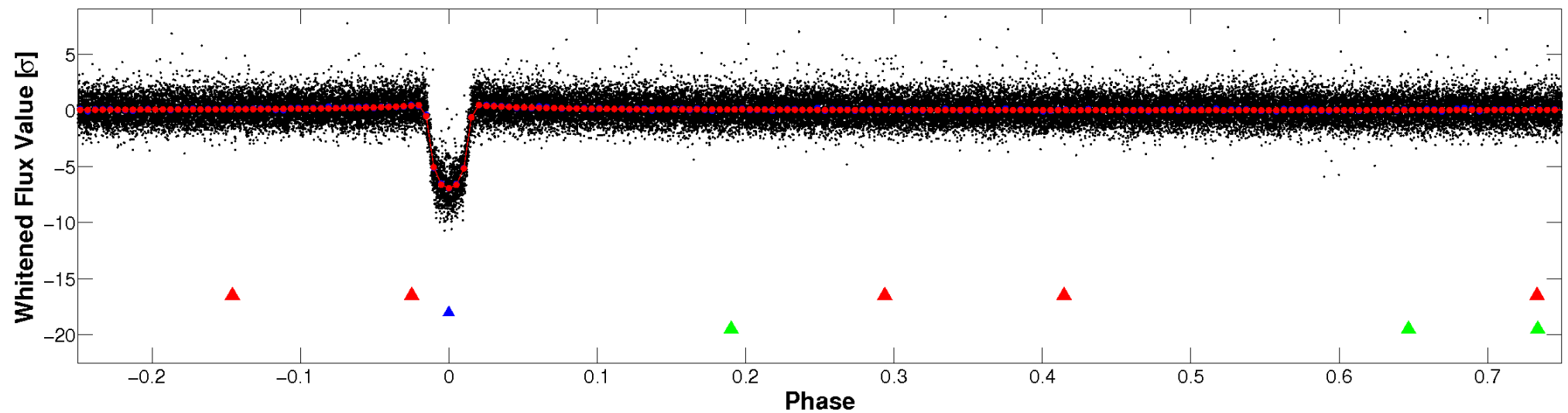


Non-Whitened Vs. Whitened Light Curve

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

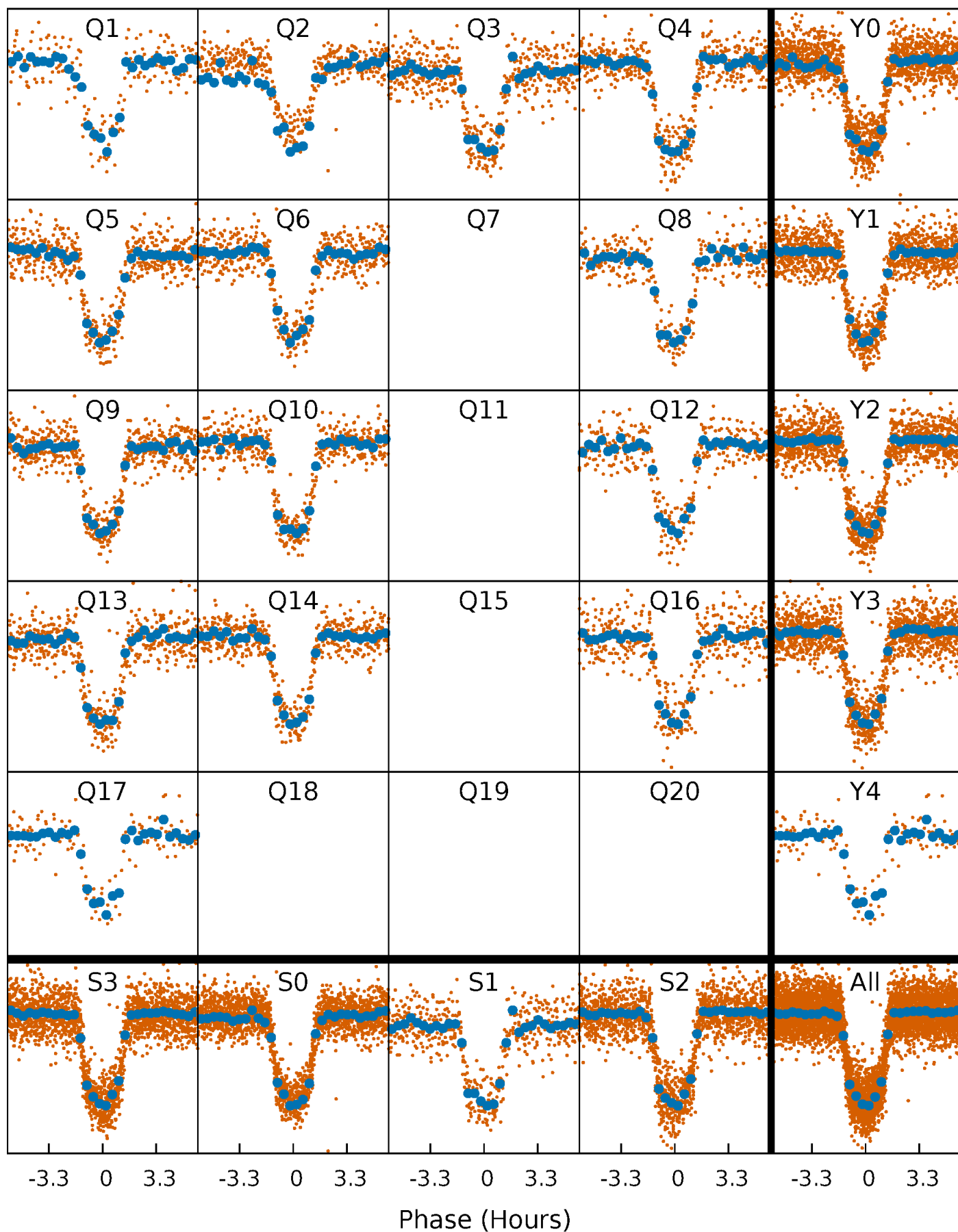


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



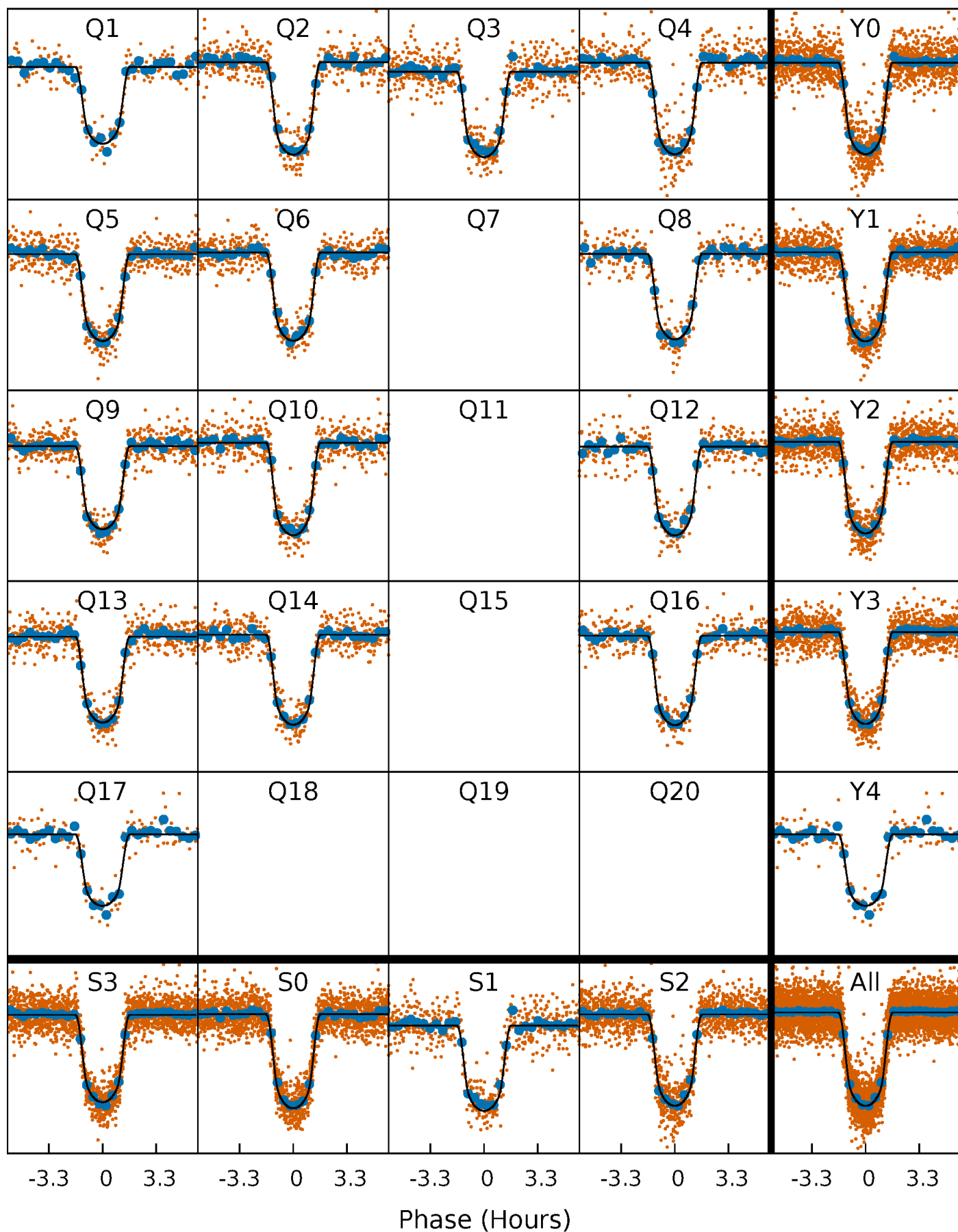
PDC Quarter-Phased Transit Curves

TCE 010937029-02 P= 4.030469 Days $T_0=134.817691$ (BKJD)



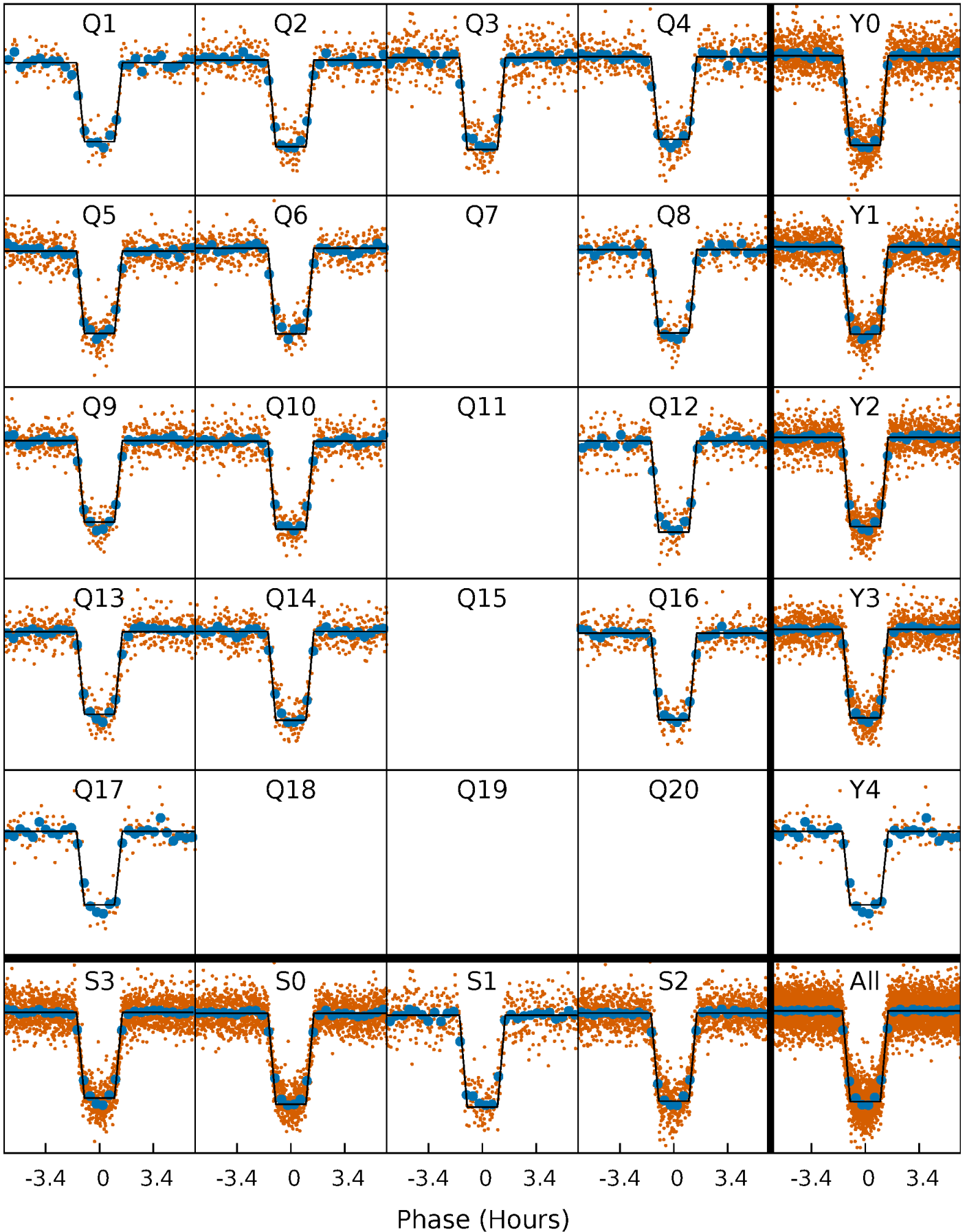
DV Quarter-Phased Transit Curves

TCE 010937029-02 P= 4.030469 Days $T_0=134.817691$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

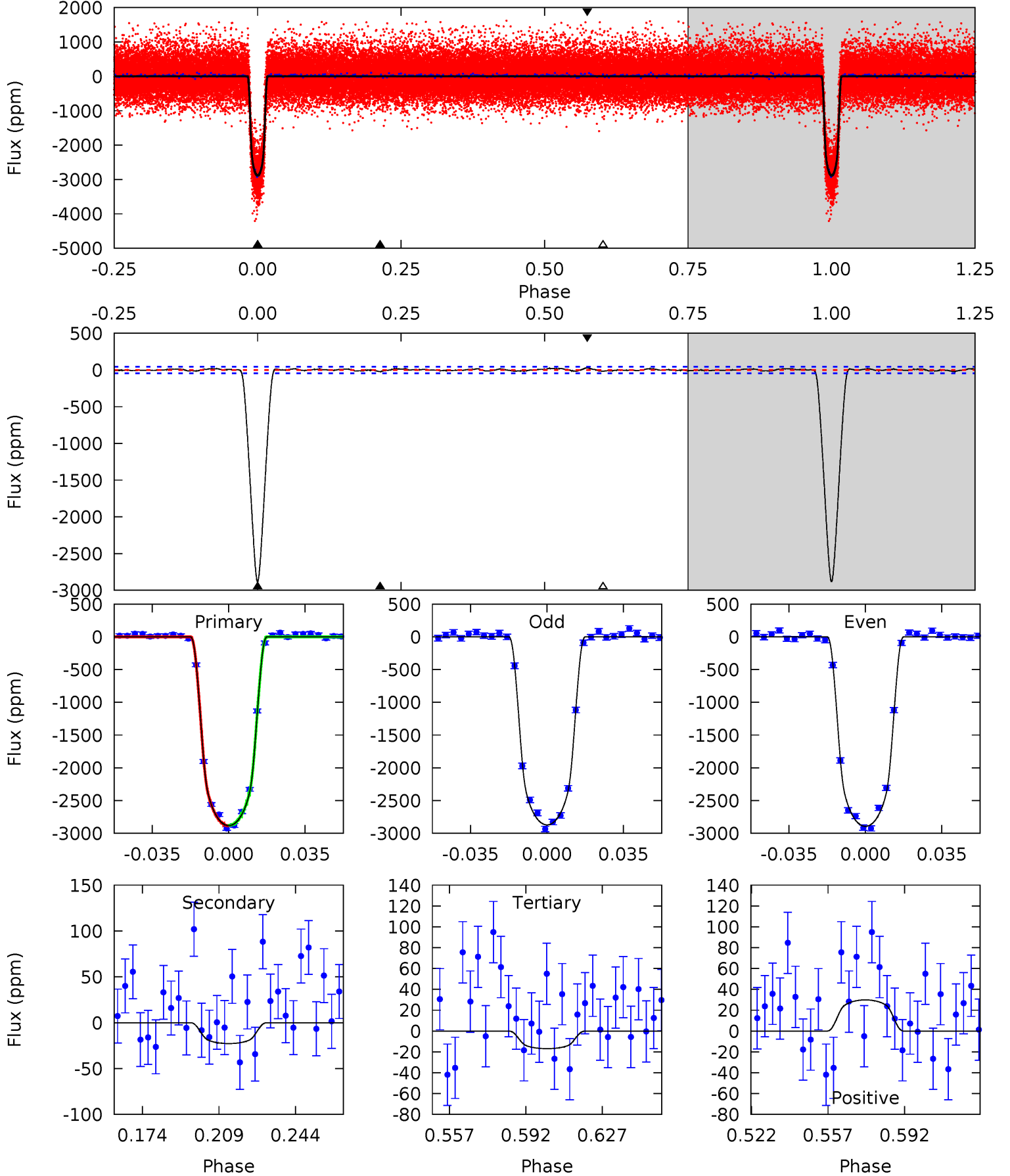
TCE 010937029-02 P= 4.030453 Days $T_0=134.820502$ (BKJD)



DV Model-Shift Uniqueness Test

010937029-02, P = 4.030469 Days, E = 130.787222 Days

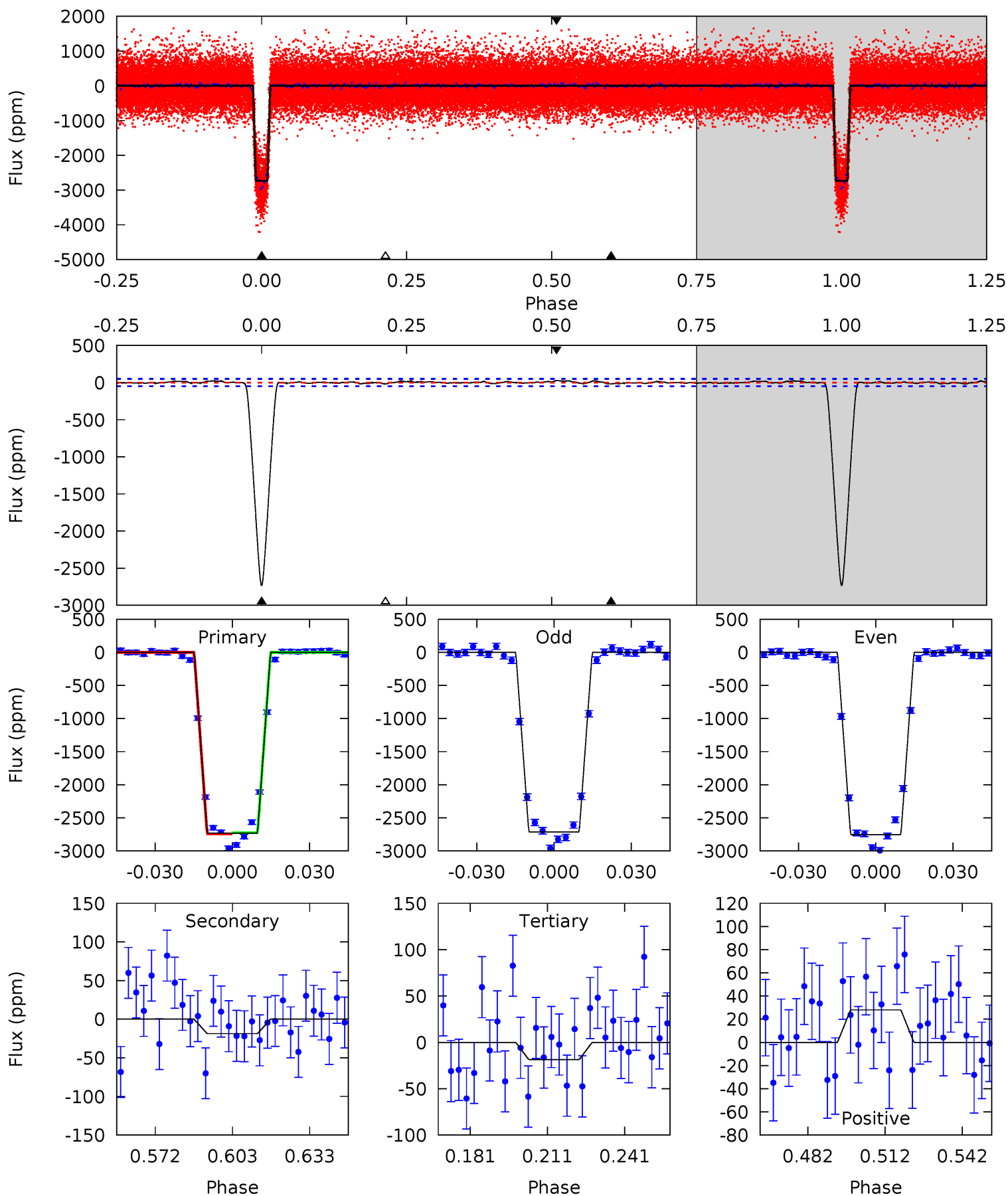
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 306.1 | 2.42 | 1.80 | 3.17 | 4.78 | 2.11 | 1.00 | 304.3 | 303.0 | 0.62 | -0.75 | 1.19 | 1.00 | 0.01 | 0.35 |



Alt Model-Shift Uniqueness Test

010937029-02, P = 4.030453 Days, E = 130.790049 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 268.3 | 1.83 | 1.83 | 2.74 | 4.81 | 2.17 | 0.91 | 266.5 | 265.6 | 0.01 | -0.91 | 1.91 | 1.00 | 0.01 | 0.83 |



Stellar Parameters For KIC 010937029

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5234^{+103}_{-103} | $4.542^{+0.028}_{-0.083}$ | $0.300^{+0.150}_{-0.150}$ | $0.854^{+0.080}_{-0.040}$ | $0.927^{+0.032}_{-0.059}$ | $2.095^{+0.204}_{-0.510}$ |
| | +2%/-2% | +1%/-2% | +50%/-50% | +9%/-5% | +3%/-6% | +10%/-24% |
| Source | SPE59 | SPE59 | SPE59 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010937029-02 / KOI 0433.01

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|--------------|------------------------|----------------------|----------------------|---------------------------|
| DV | -23 ± 9 | $5.05^{+0.31}_{-0.23}$ | 1368^{+41}_{-37} | 2341^{+132}_{-202} | $1.127^{+0.482}_{-0.461}$ |
| Alt. | -19 ± 10 | $4.98^{+0.28}_{-0.23}$ | 1369^{+38}_{-35} | 2265^{+175}_{-390} | $0.918^{+0.537}_{-0.517}$ |

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

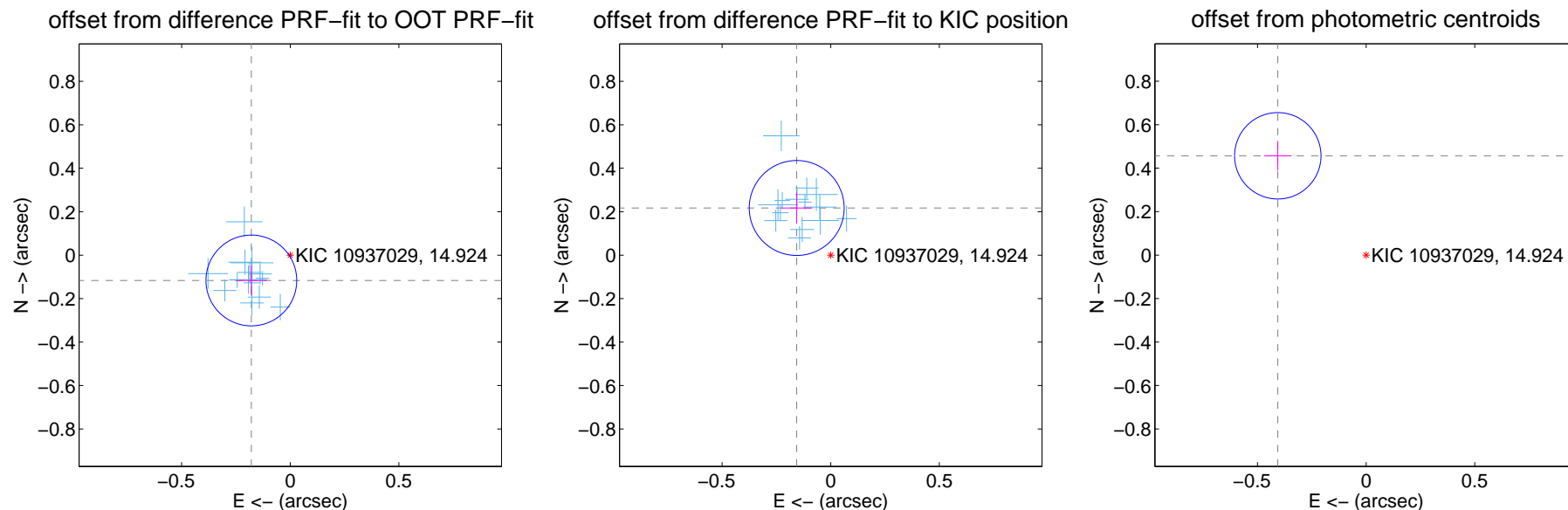
DV Centroid Data

Supplemental centroid analysis for 010937029-02. Kepler magnitude: 14.92. Transit SNR 215.87

There are 14 quarters with good PRF difference image offsets

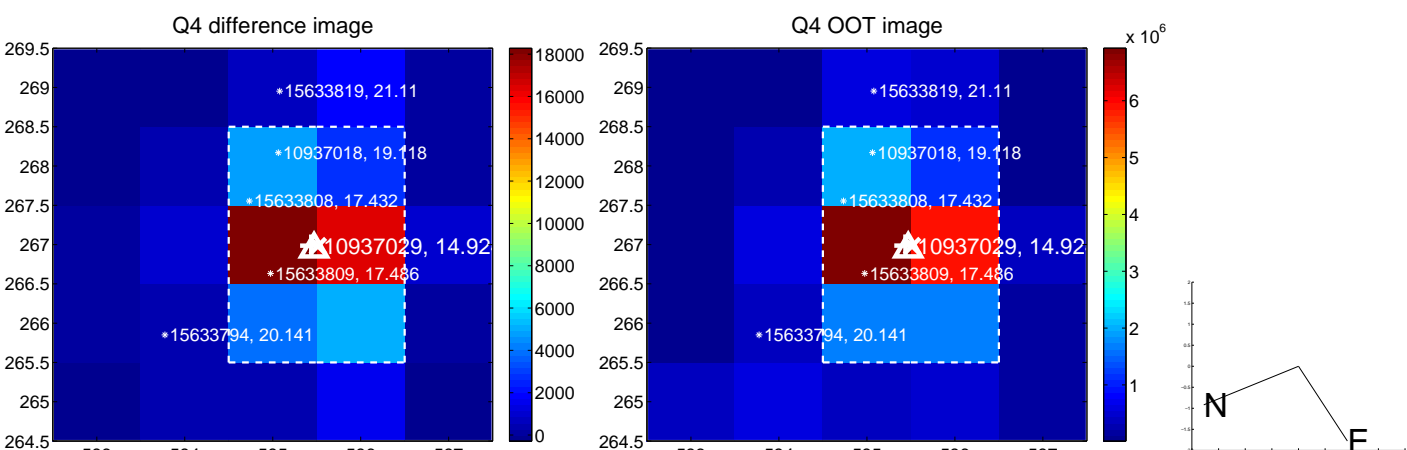
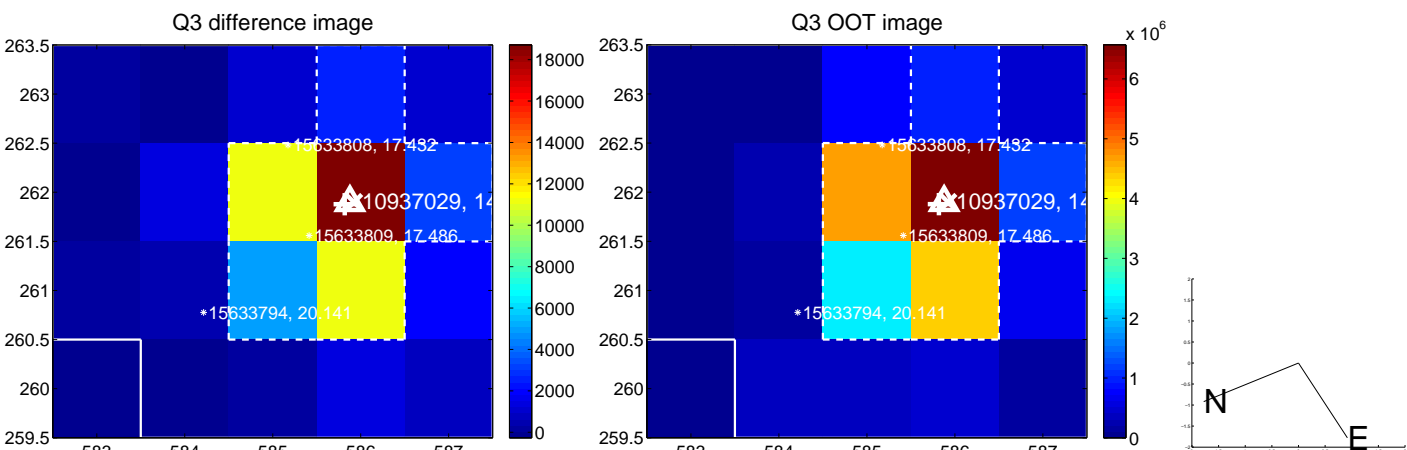
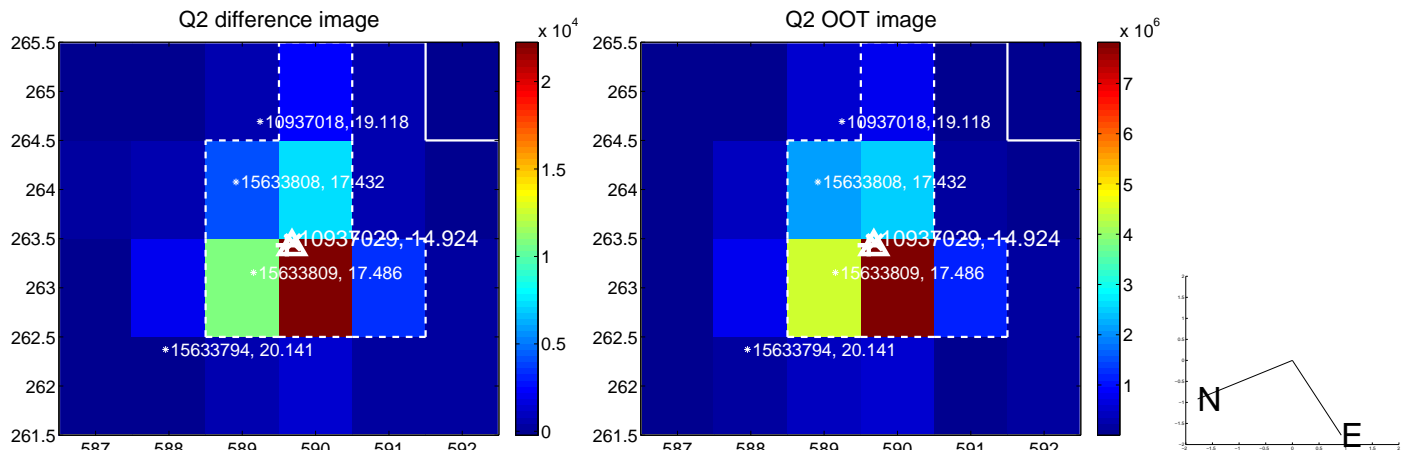
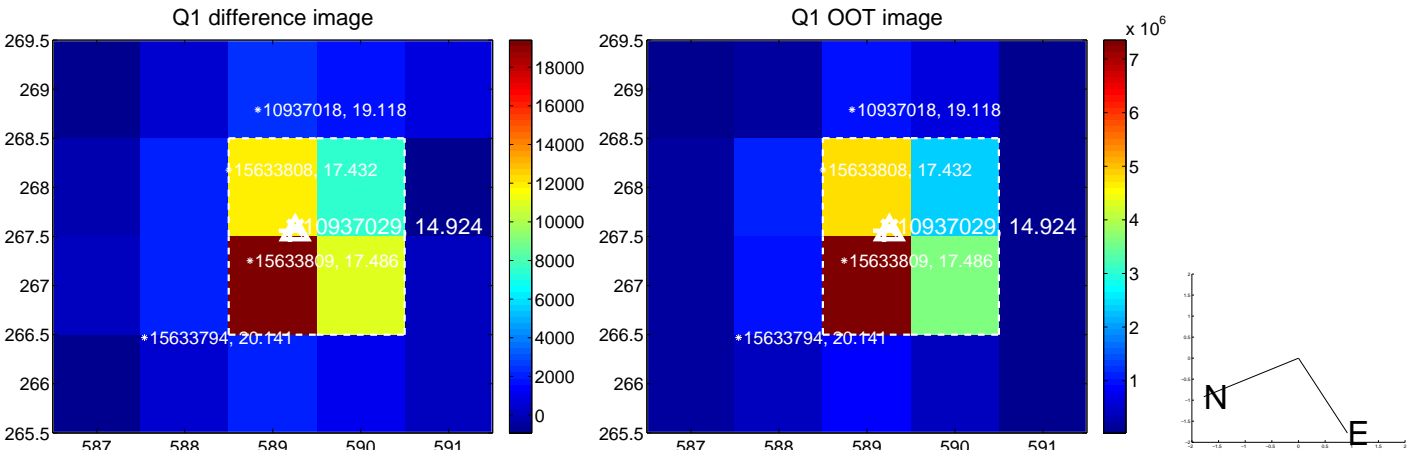
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.214 ± 0.070 | 3.07 | 0.179 ± 0.070 | -0.116 ± 0.069 |
| PRF-fit source offset from KIC position | 0.268 ± 0.073 | 3.68 | 0.157 ± 0.071 | 0.217 ± 0.072 |
| photometric centroid source offset | 0.61 ± 0.07 | 9.23 | 0.41 ± 0.06 | 0.46 ± 0.07 |

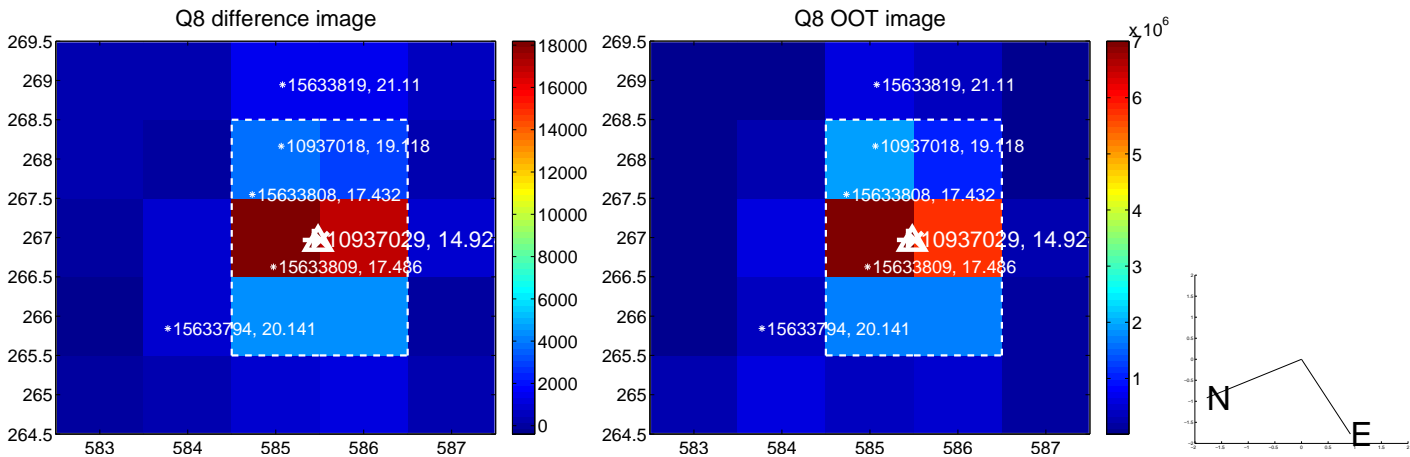
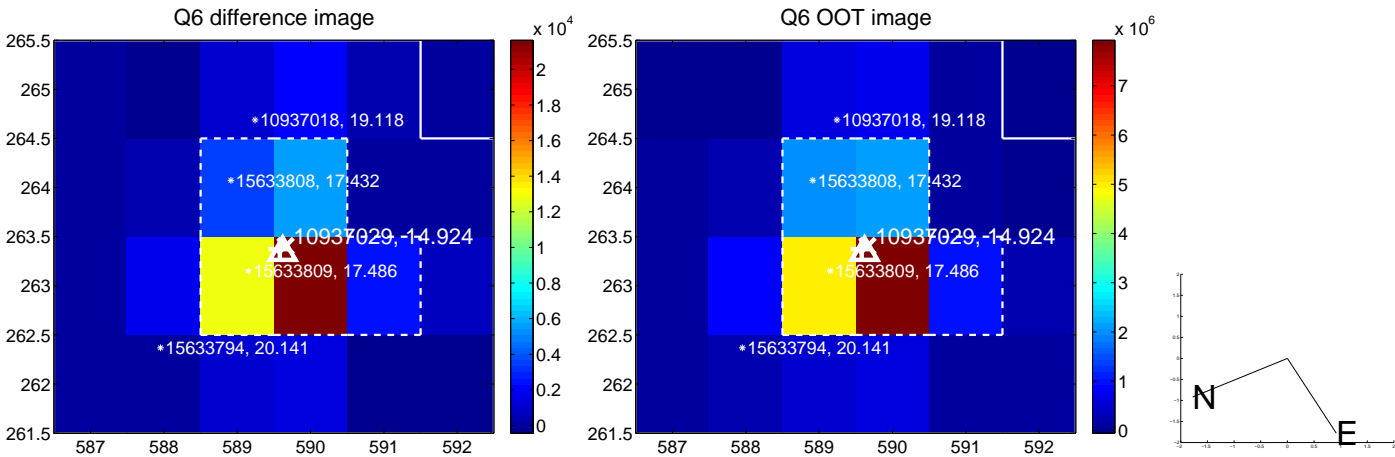
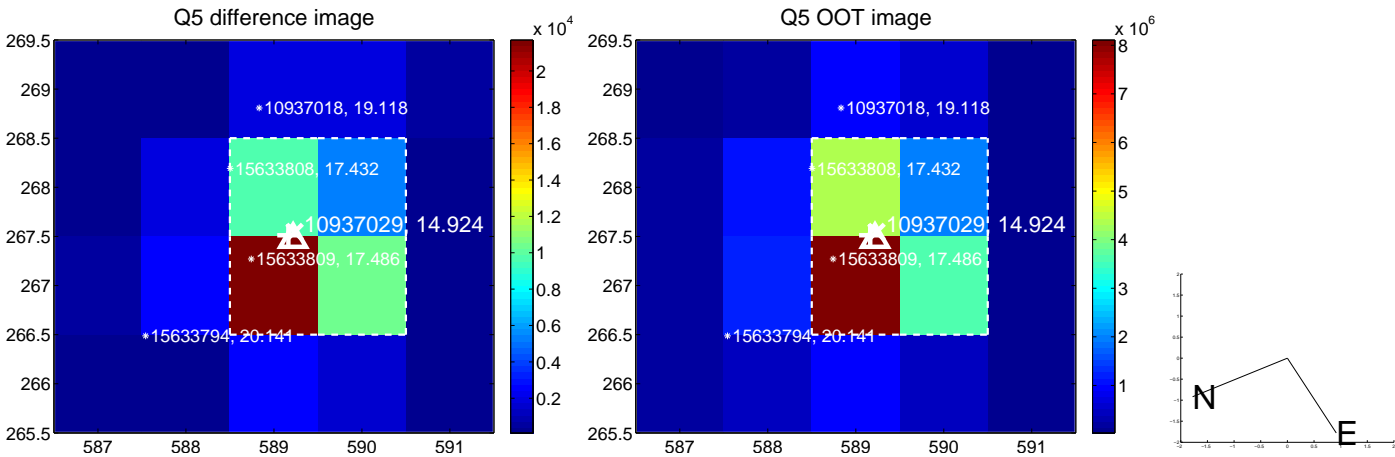


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

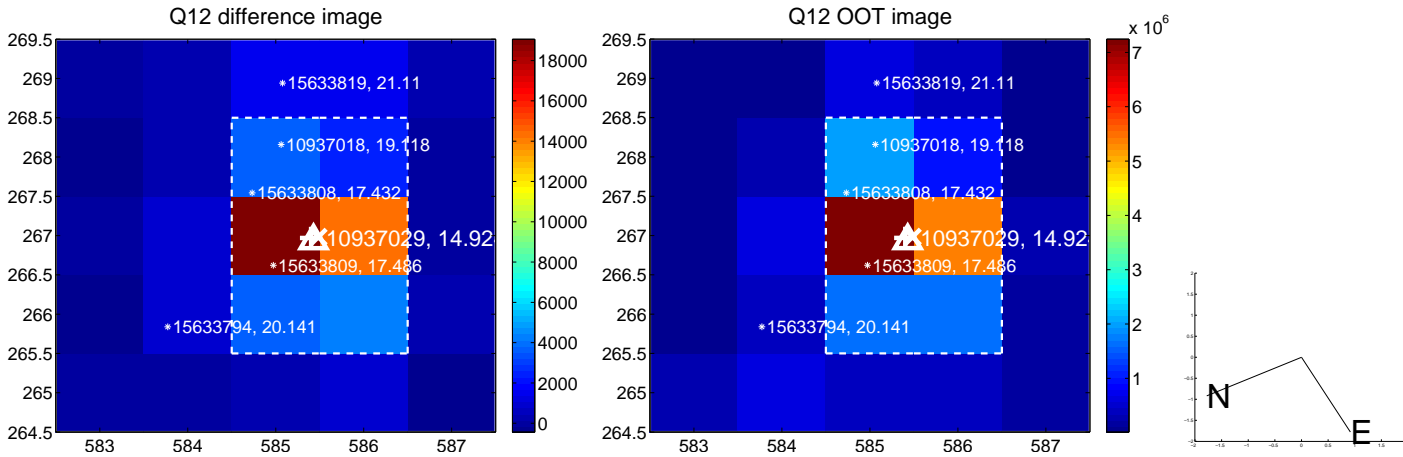
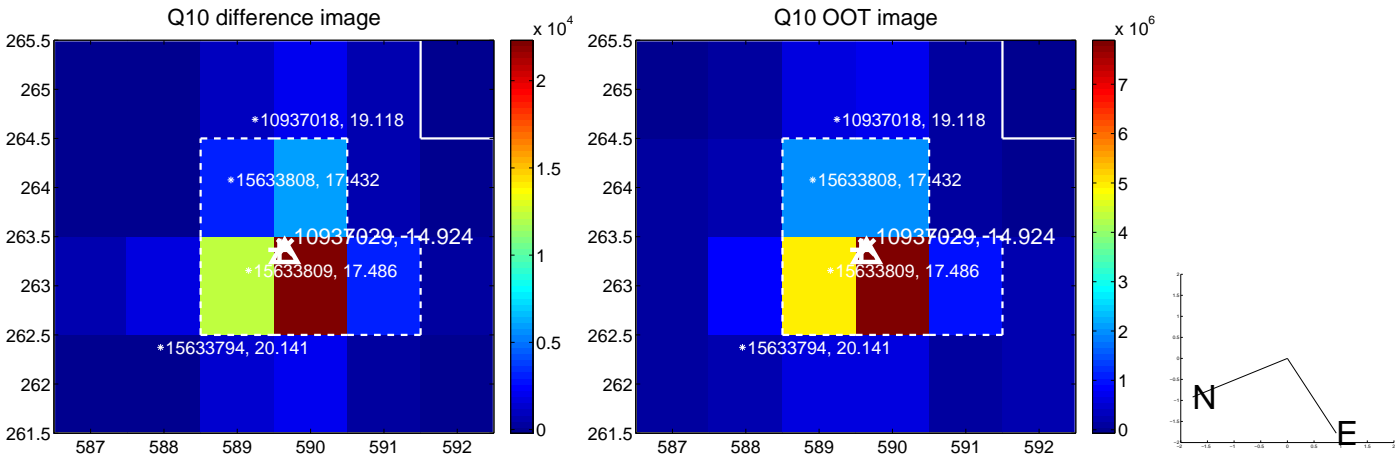
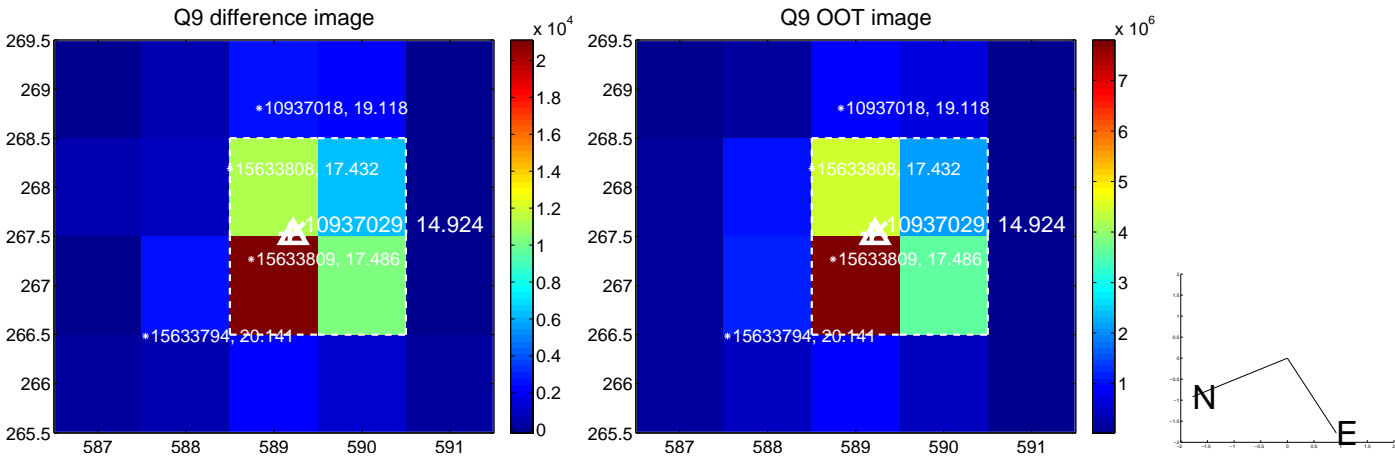
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



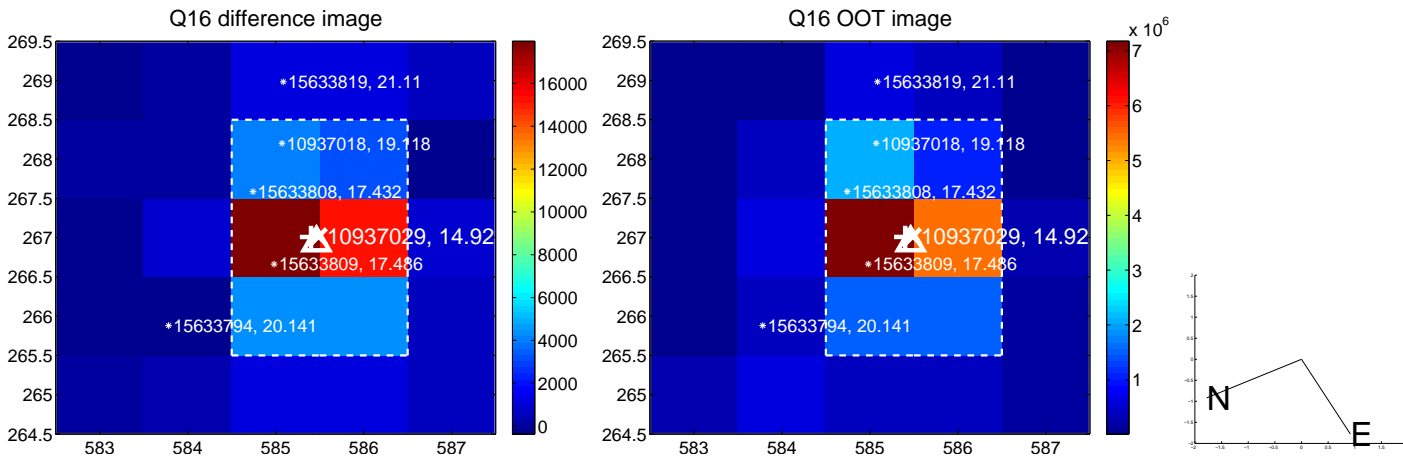
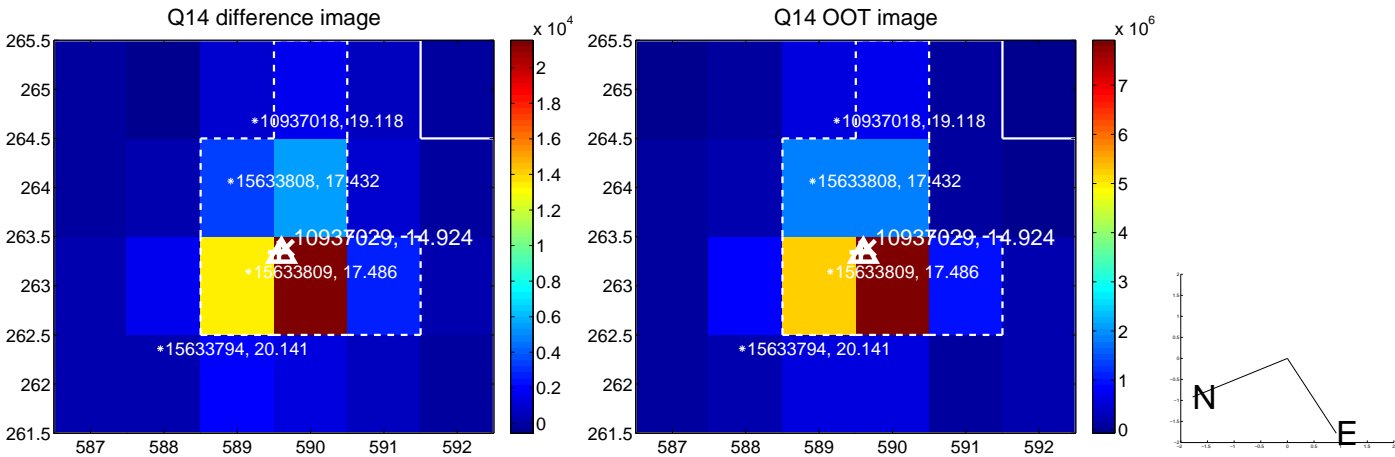
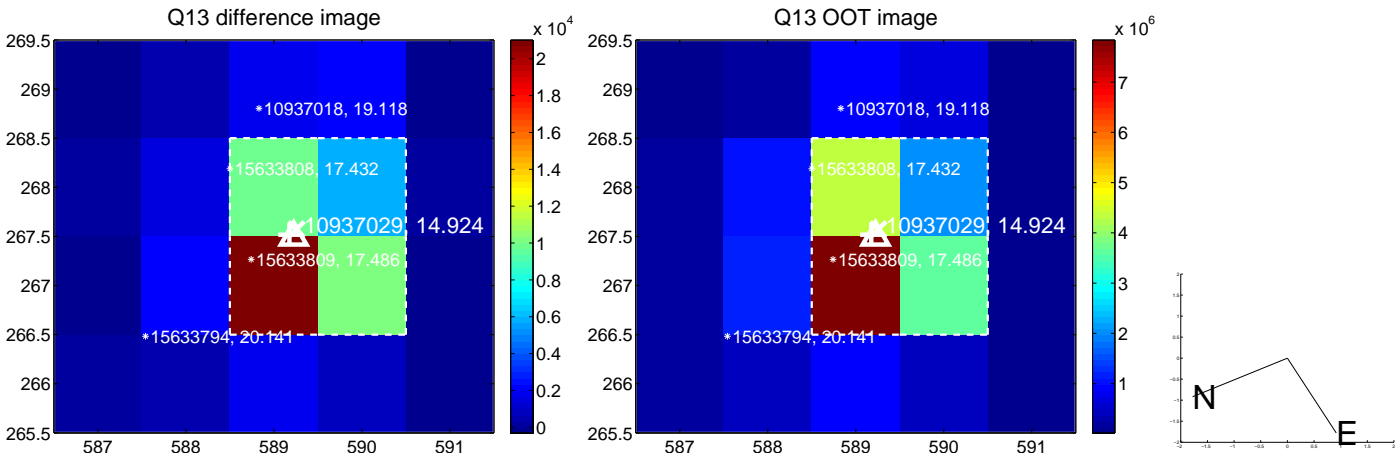
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



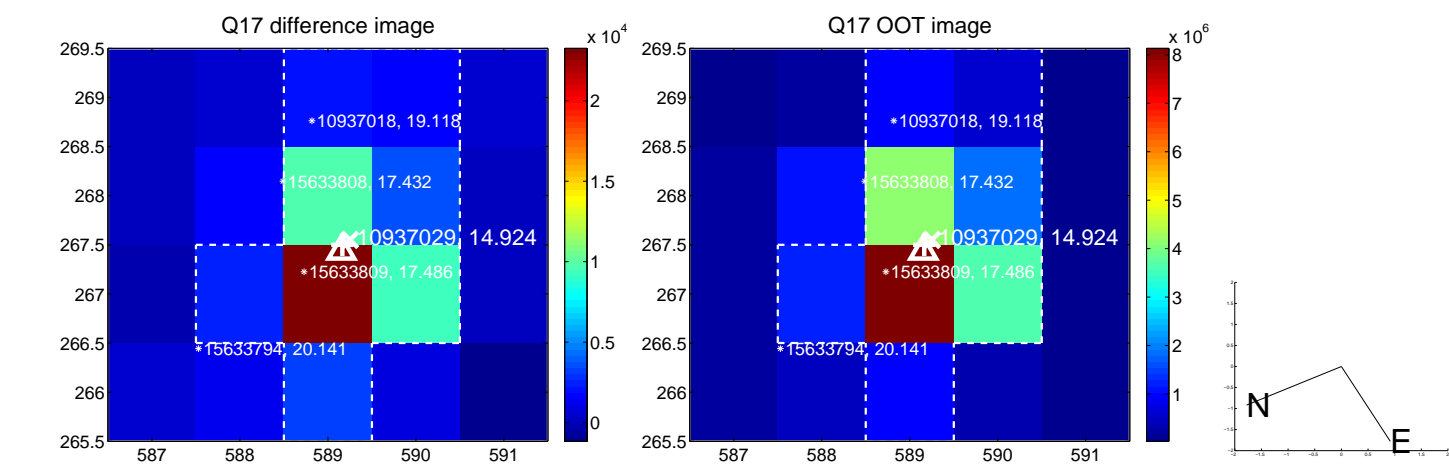
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



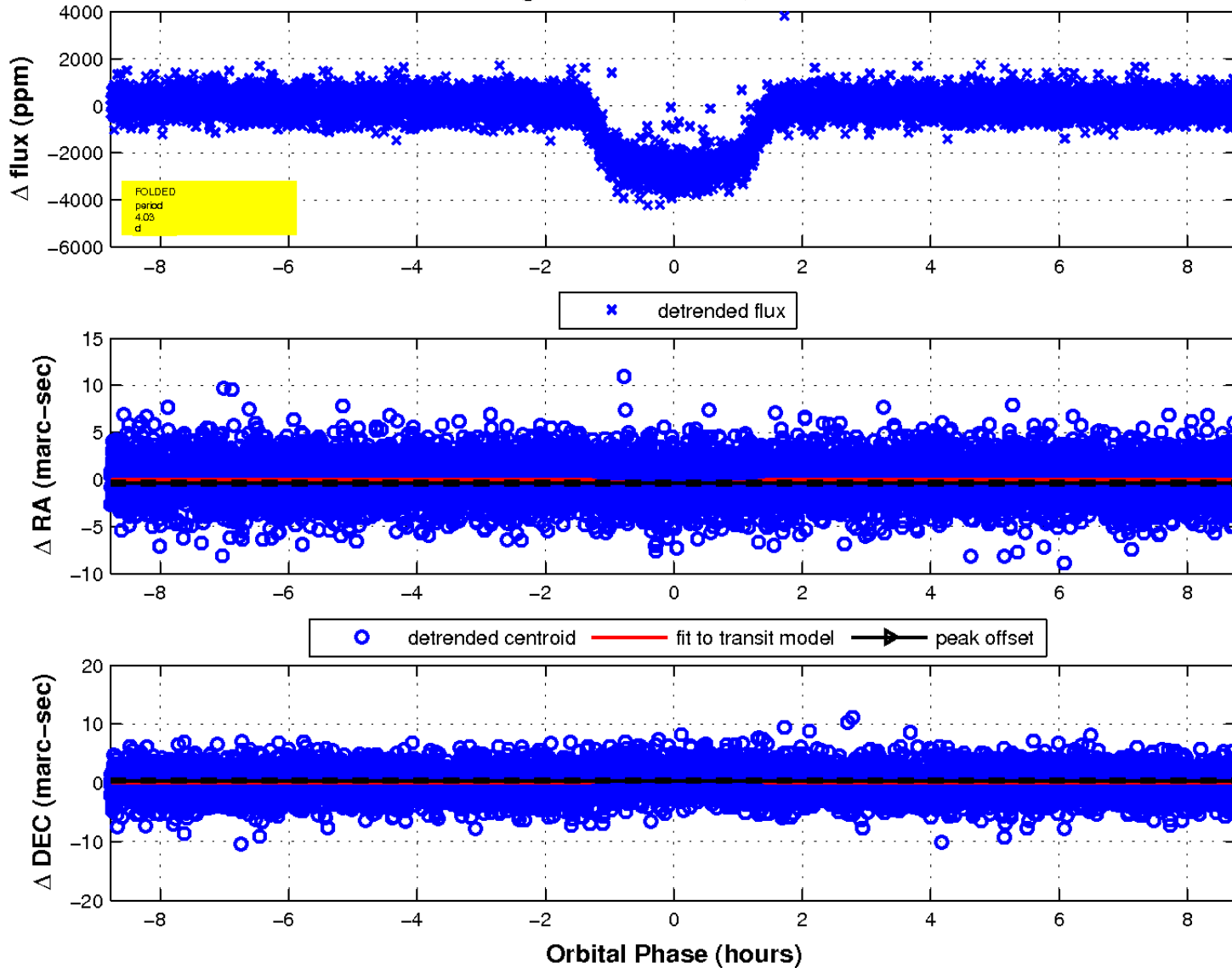
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

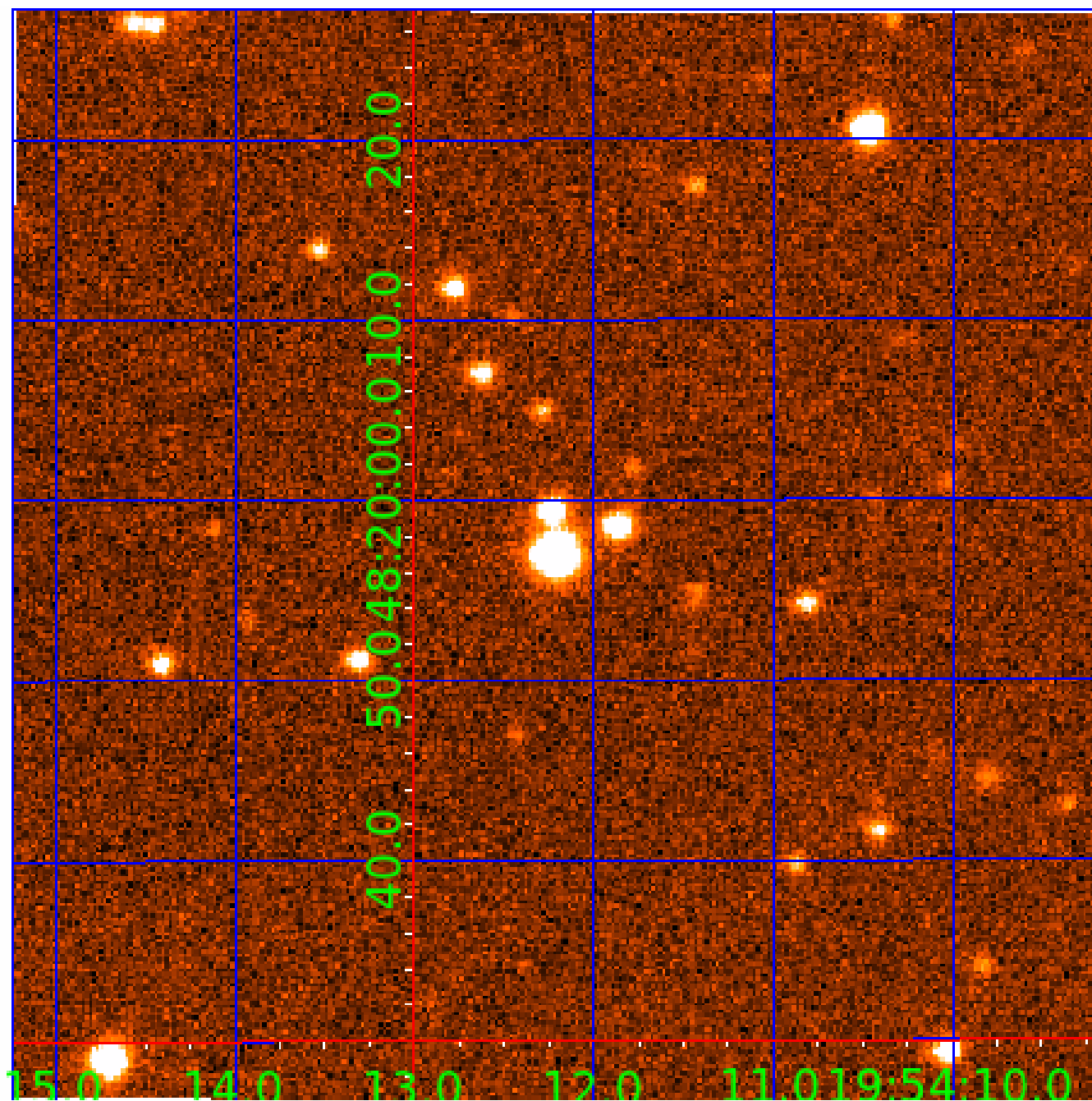


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 010937029

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}) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|-------|-------|-----------------------------|-----------------|------------------------|------------------------|
| 010937029-01 | OBS | 0433.02 | 328.239759 | 199.204527 | 13820.7 | 12.190 | 225.9 | 214.1 | 0.85 | 5234 | 10.96 | 0.59 |
| 010937029-02 | OBS | 0433.01 | 4.030469 | 134.817691 | 2896.0 | 2.928 | 218.6 | 215.9 | 0.85 | 5234 | 5.01 | 209.92 |
| 010937029-03 | OBS | No | 393.146156 | 496.136255 | 560.3 | 14.709 | 7.2 | 7.5 | 0.85 | 5234 | 2.47 | 0.47 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 010937029-01 | OBS | PC | 0.99 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-02 | OBS | PC | 1.00 | 0 | 0 | 0 | 0 | CENT_KIC_POS |
| 010937029-03 | OBS | FP | 0.00 | 1 | 0 | 1 | 0 | INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—CENT_FEW_DIFFS—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.

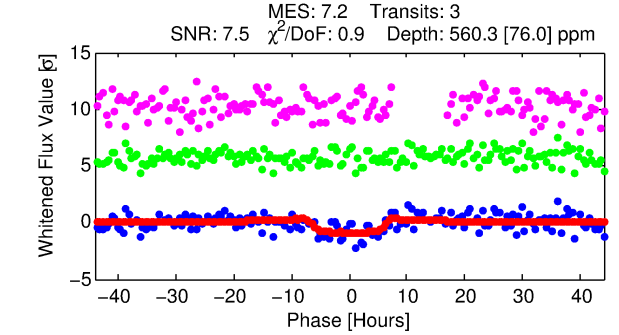
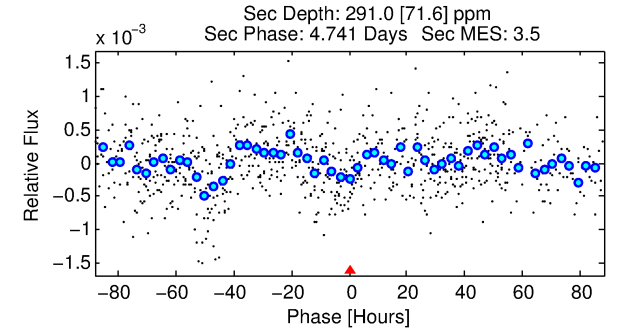
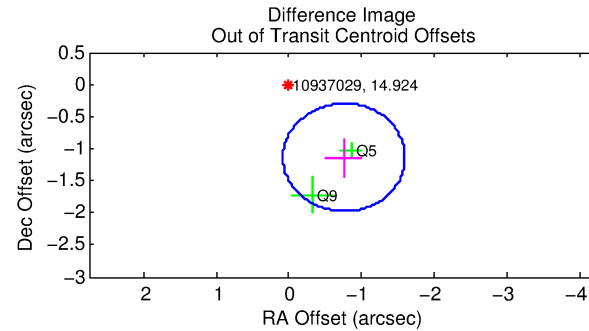
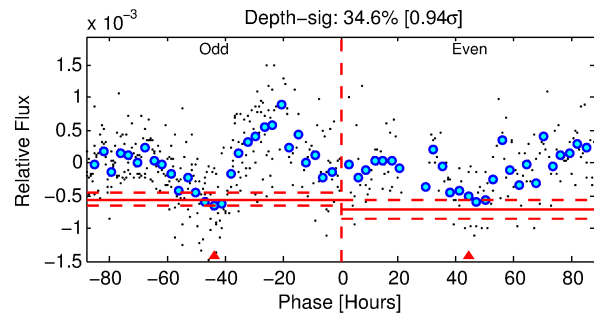
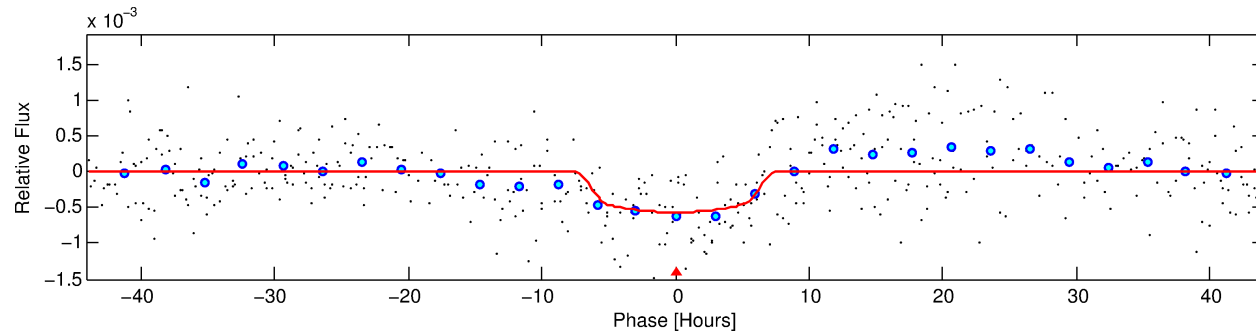
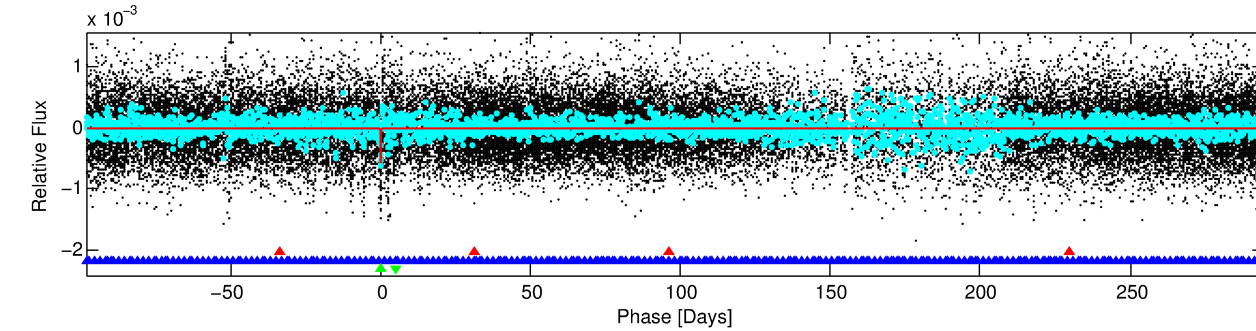
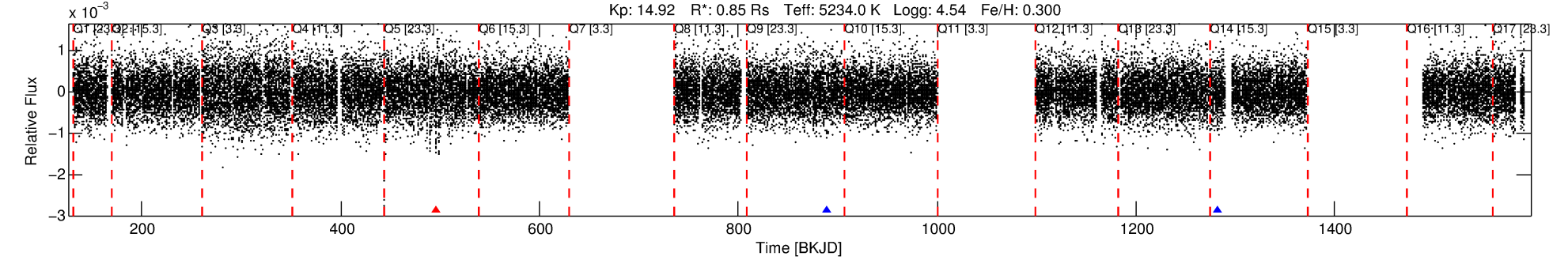
Ephemeris Match Information For 010937029-03

No Significant Match Found

DV One-Page Summary

KIC: 10937029 Candidate: 3 of 3 Period: 393.146 d
KOI: K00433 Corr: No Ephemeris Match

Kp: 14.92 R*: 0.85 Rs Teff: 5234.0 K Logg: 4.54 Fe/H: 0.300



DV Fit Results:

Period = 393.14616 [0.01931] d
Epoch = 496.1363 [0.0271] BKJD
Rp/R* = 0.0265 [0.0038]
a/R* = 98.55 [48.04]
b = 0.91 [0.10]
Seff = 0.47 [0.08]
Teq = 211 [9] K
Rp = 2.47 [0.42] Re
a = 1.0242 [0.0914] AU
Ag = 27531.72 [11148.88] [2.47σ]
Teffp = 4199 [407] K [9.81σ]

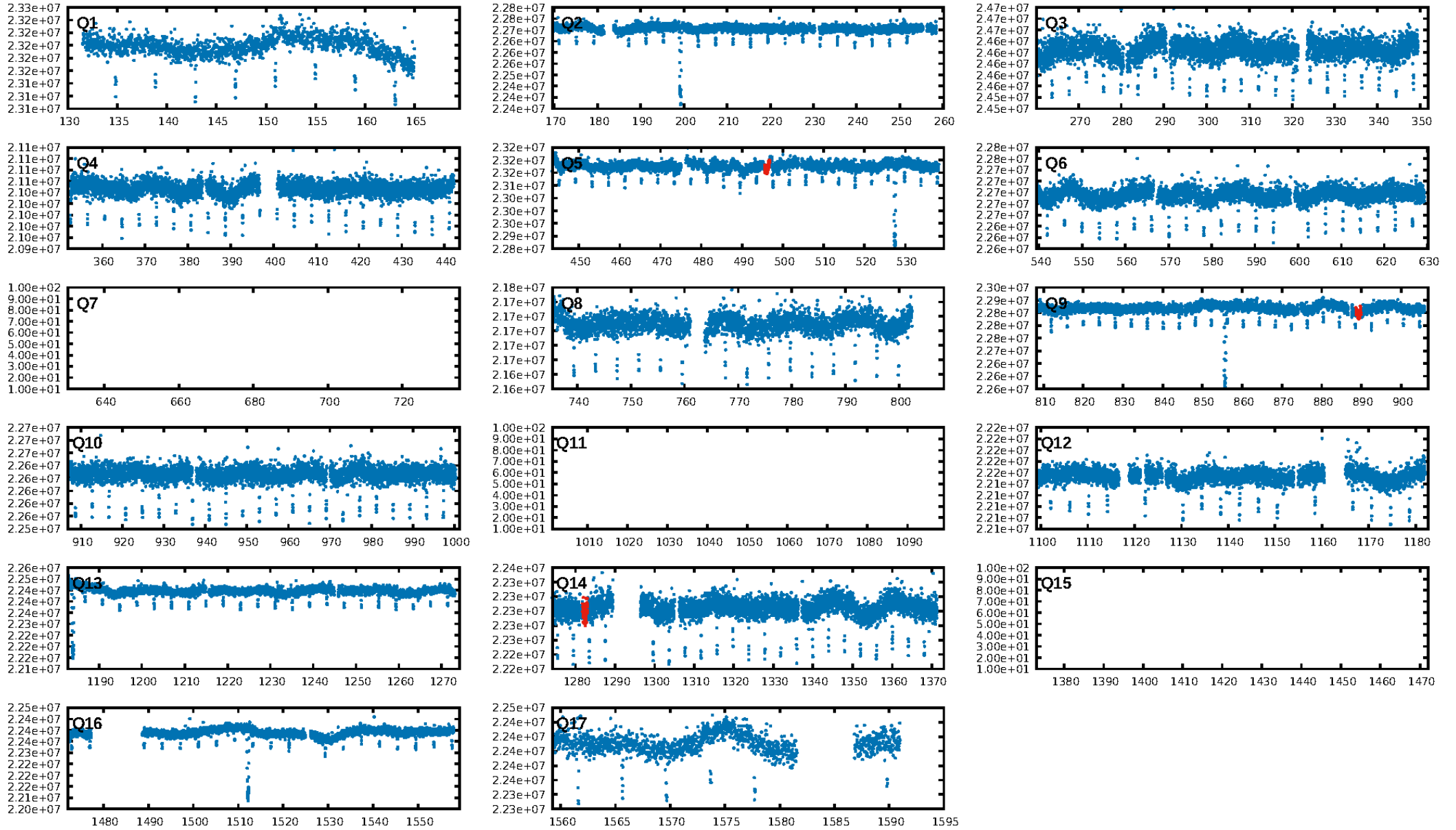
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [81.54σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 16.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.90e-09
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 0.04659
Centroid-sig: 3.2%
Centroid-so: 2.158 arcsec [1.15σ]
OotOffset-rm: 1.367 arcsec [4.88σ]
KicOffset-rm: 1.116 arcsec [4.13σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.50 [1/2]

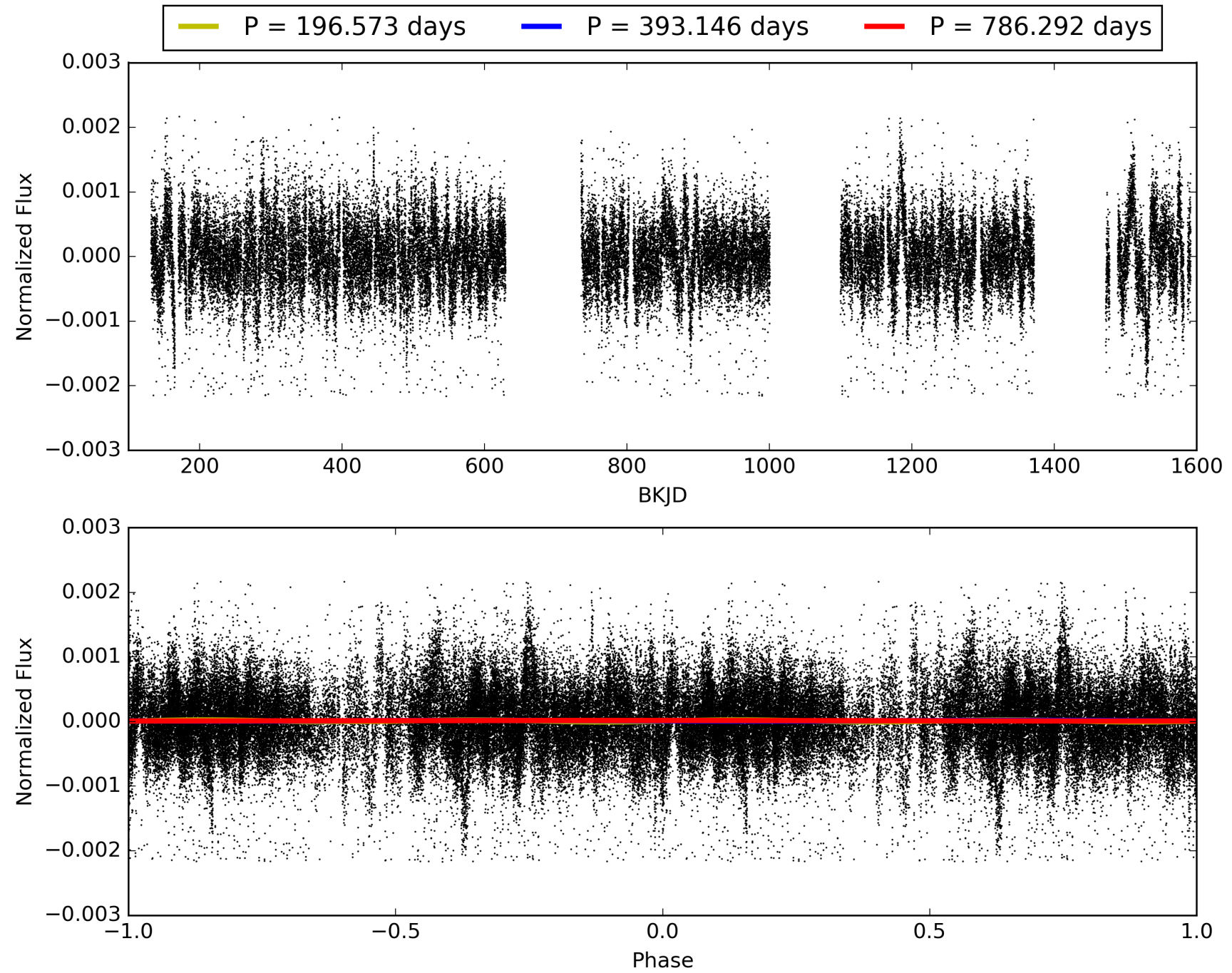
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:26:34 Z

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

TCE 010937029-03, PDC Light Curves

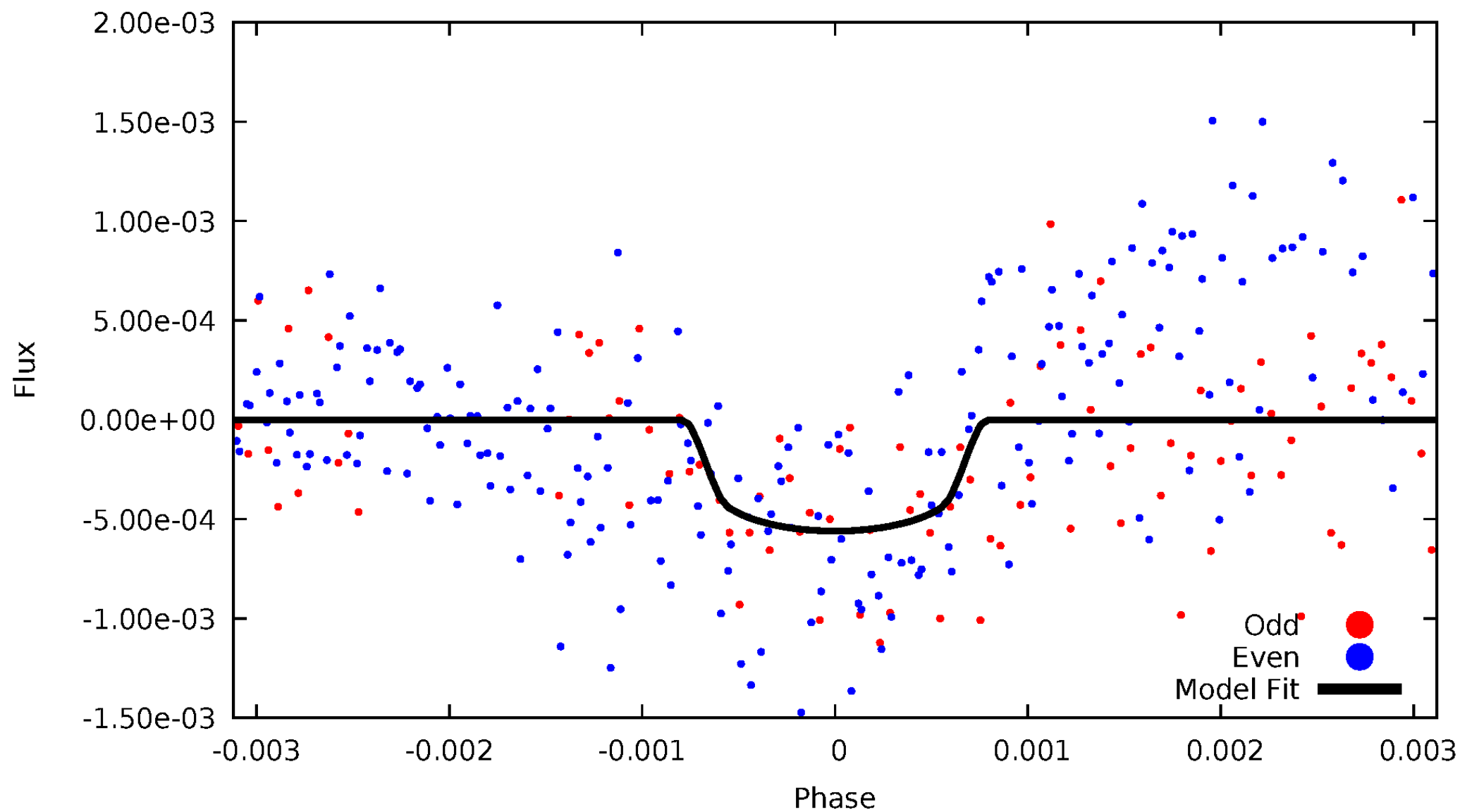


TCE 010937029-03



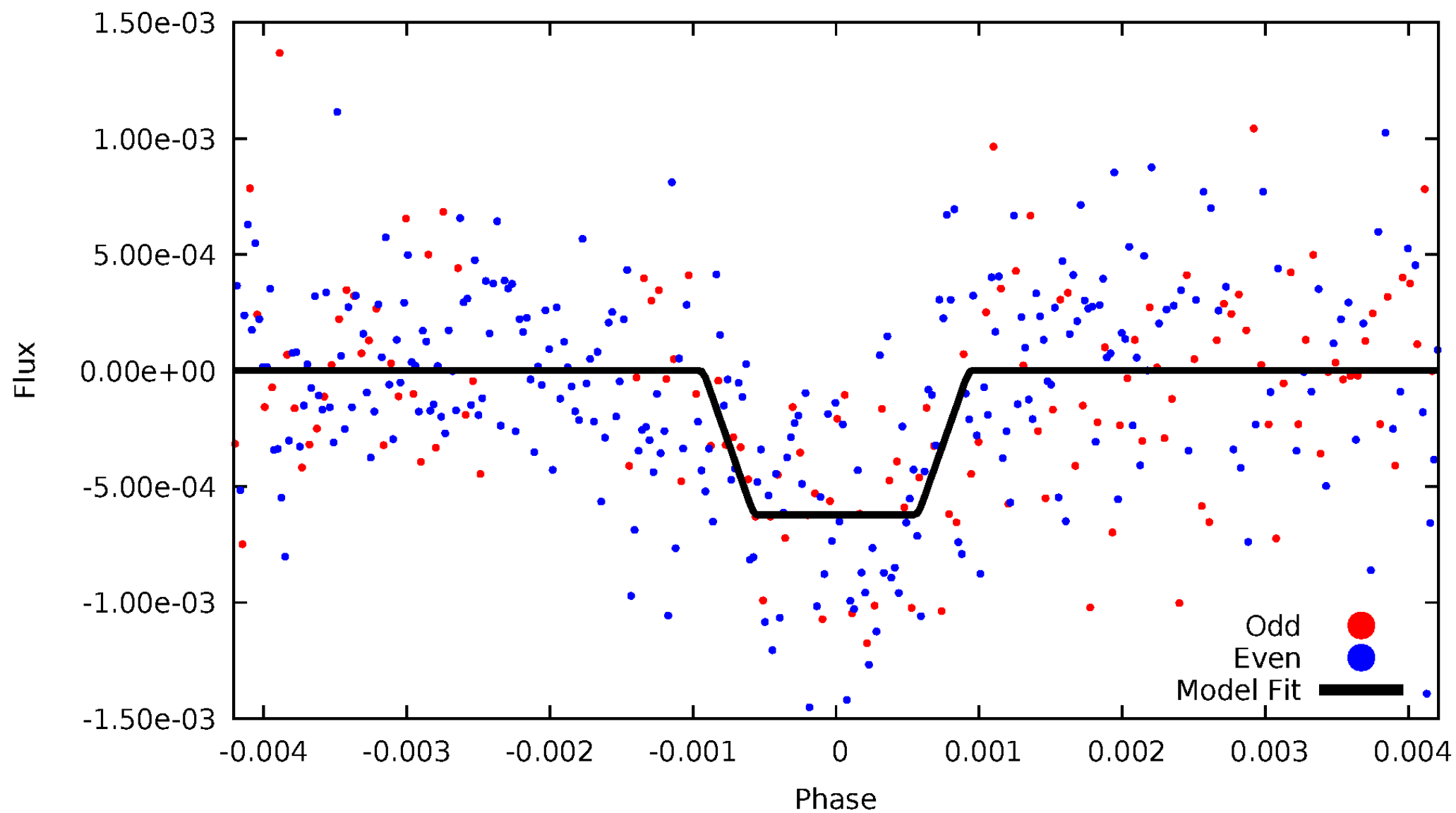
DV Odd/Even

TCE 010937029-03

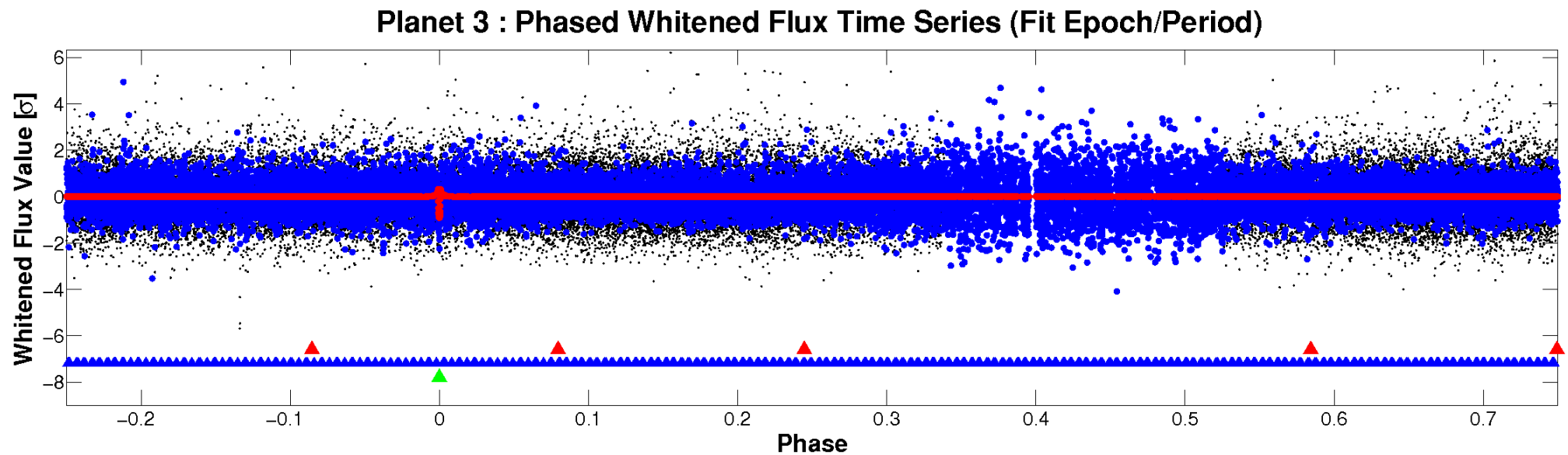
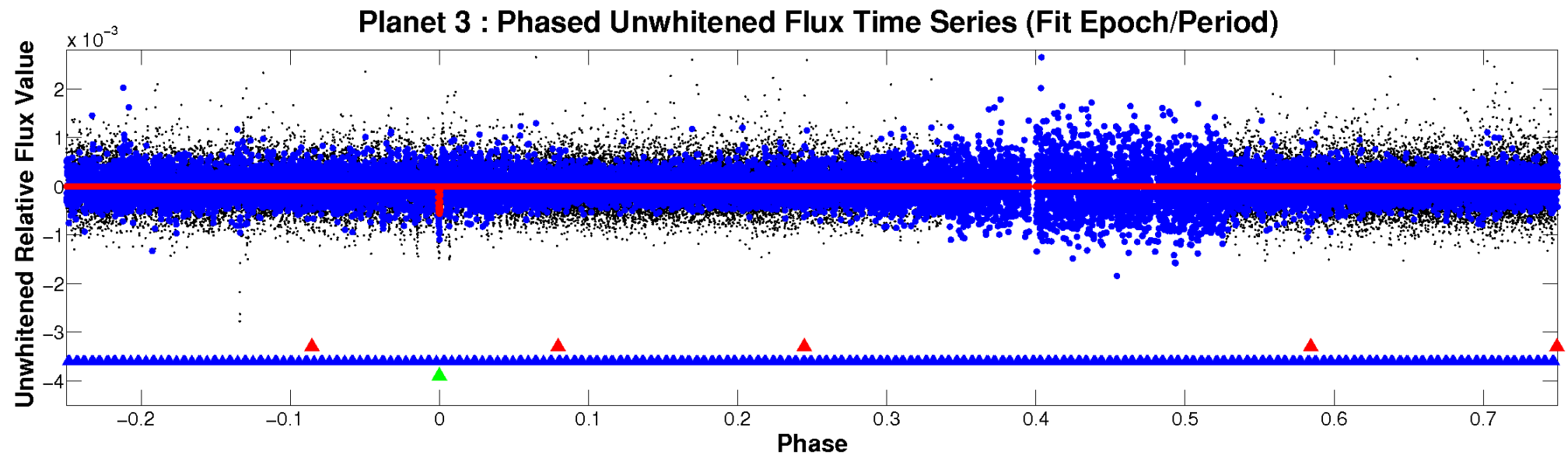


ALT Odd/Even

TCE 010937029-03

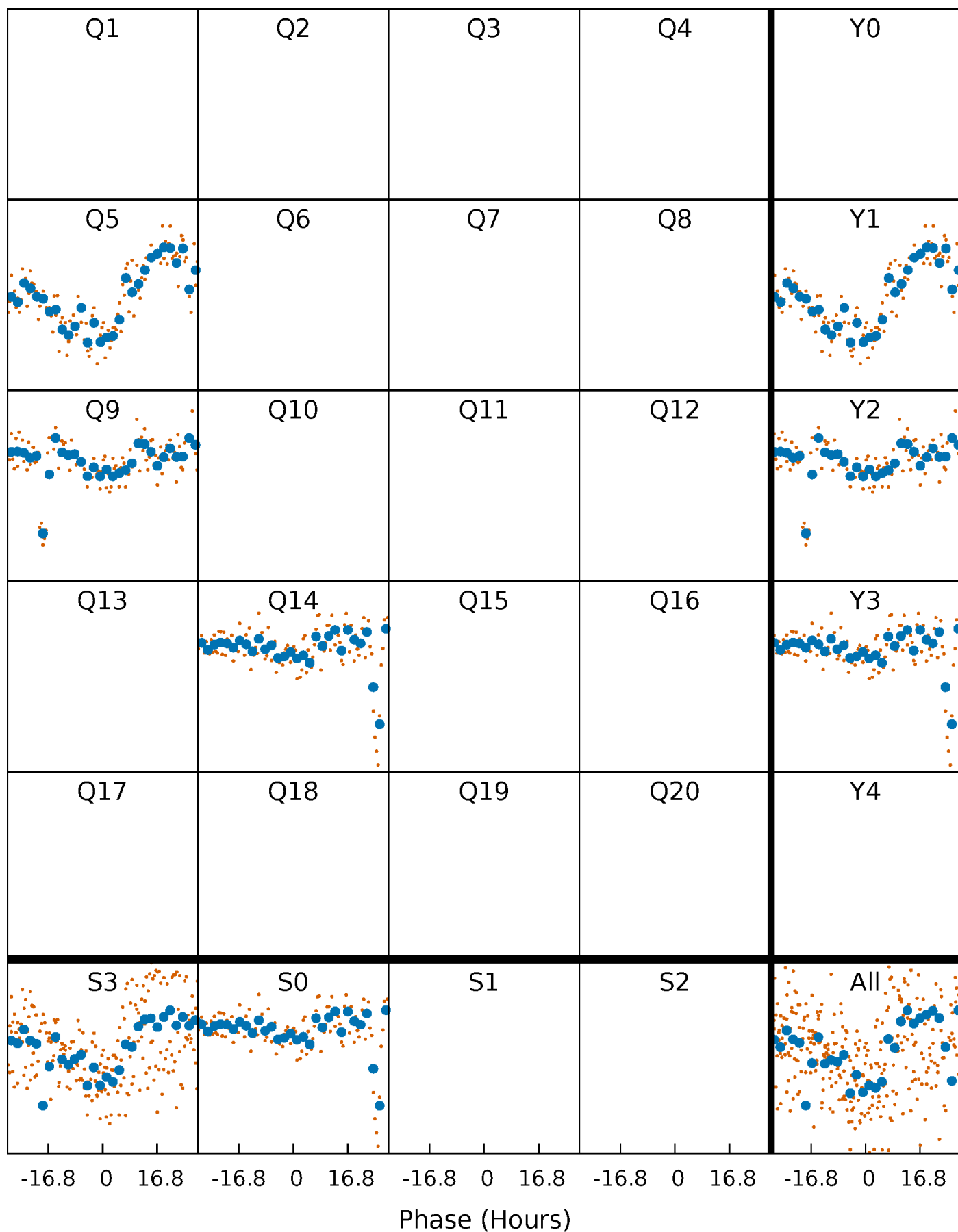


Non-Whitened Vs. Whitened Light Curve



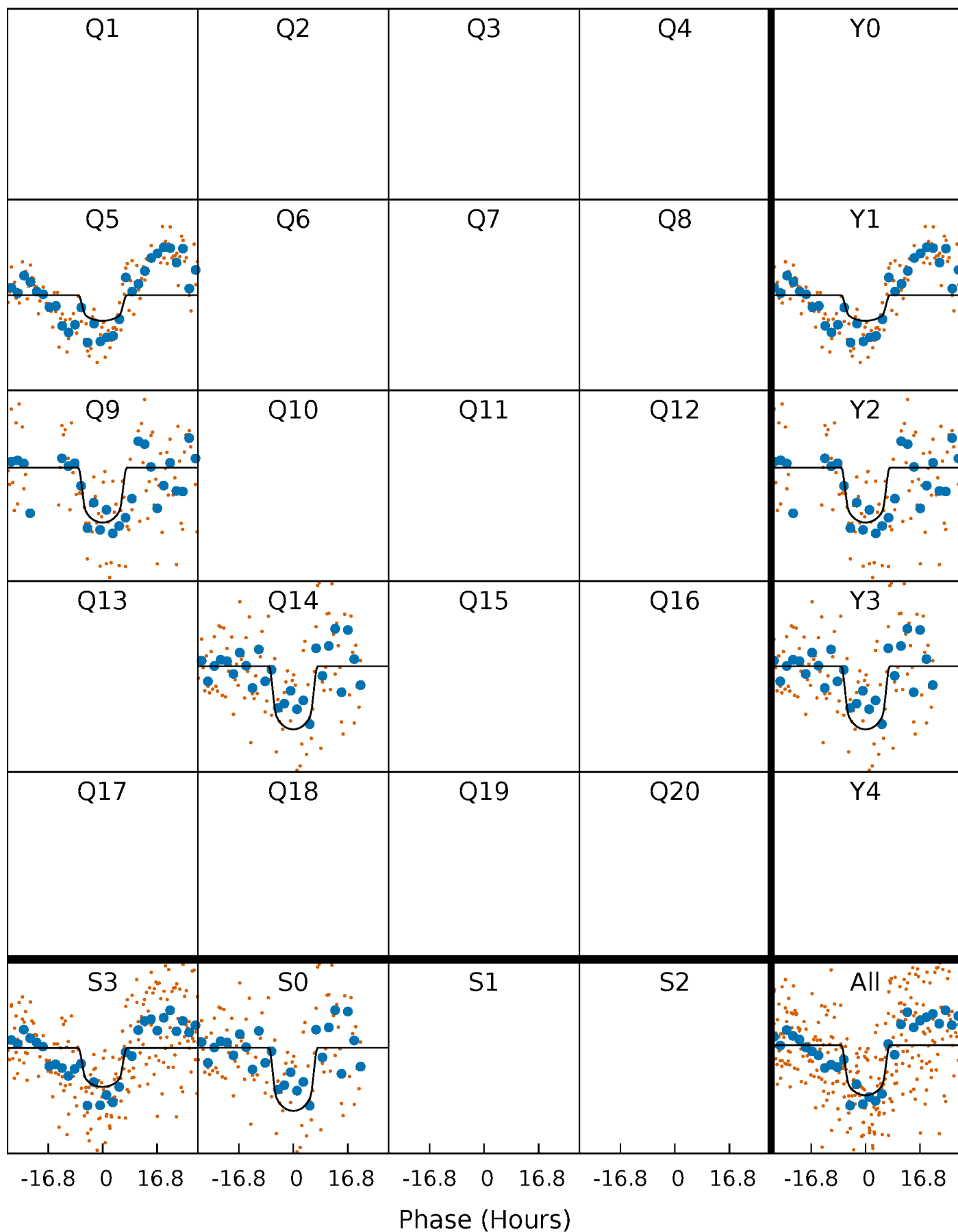
PDC Quarter-Phased Transit Curves

TCE 010937029-03 $P=393.146156$ Days $T_0=496.136255$ (BKJD)



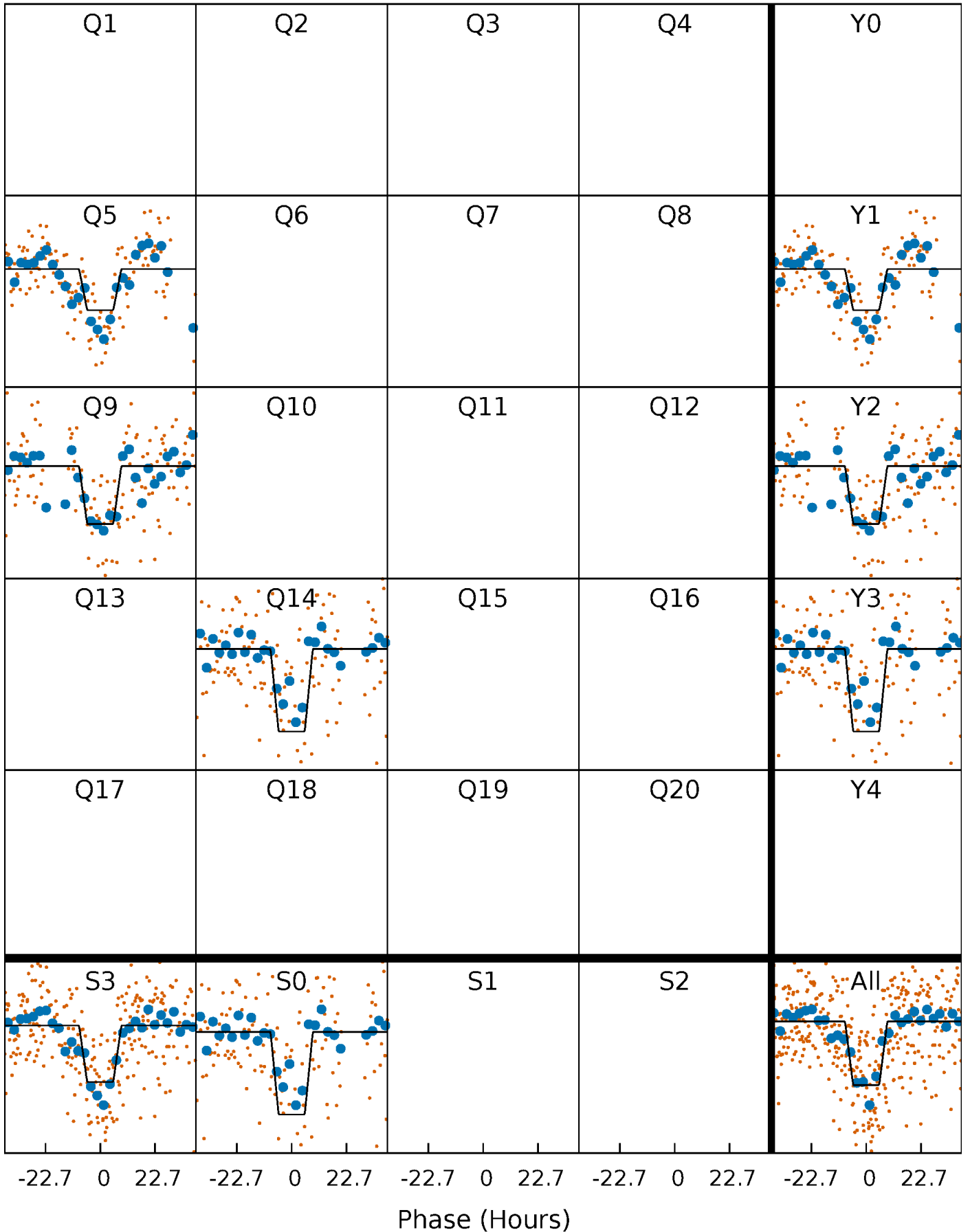
DV Quarter-Phased Transit Curves

TCE 010937029-03 $P=393.146156$ Days $T_0=496.136255$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

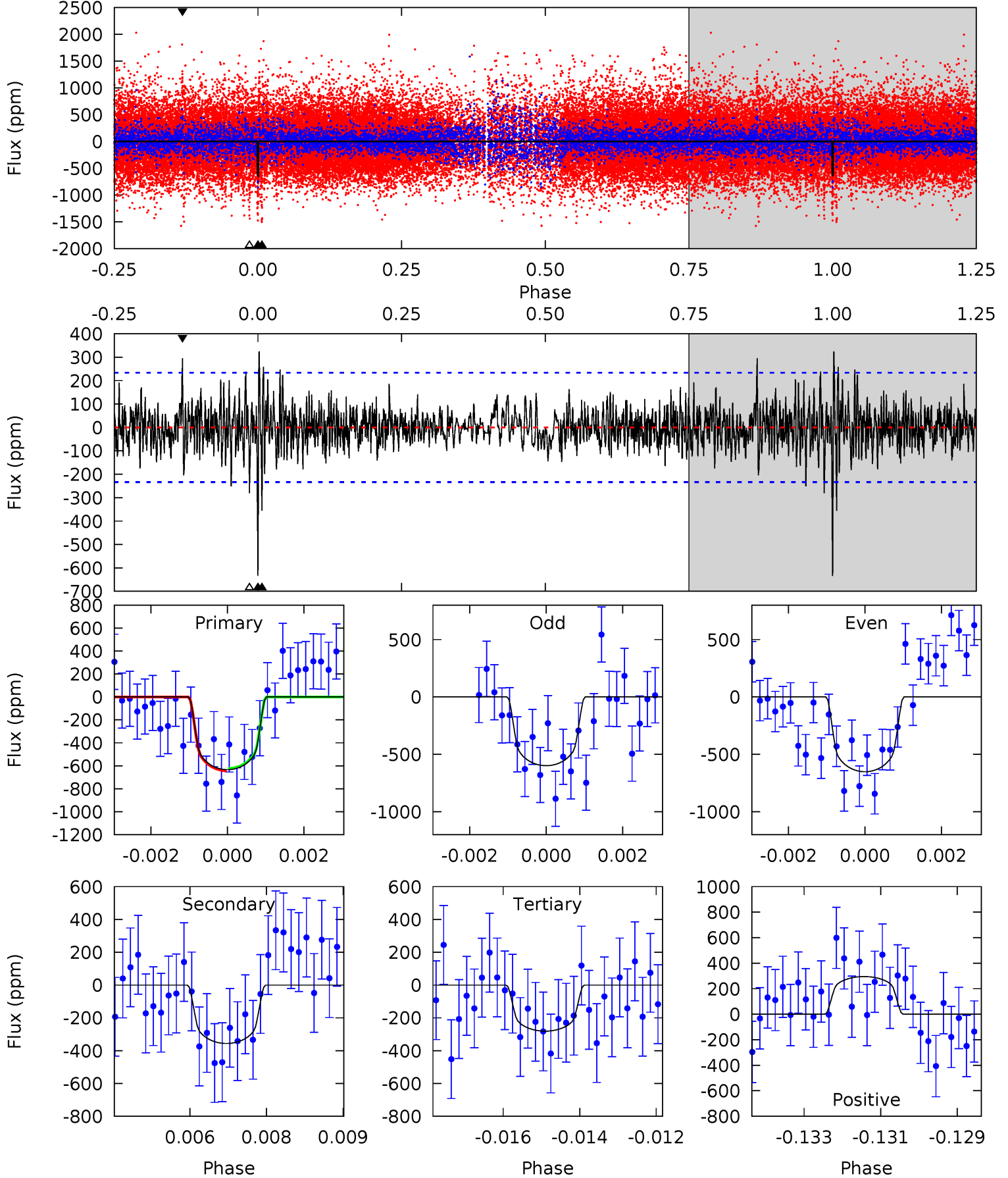
TCE 010937029-03 $P=393.148506$ Days $T_0=496.140102$ (BKJD)



DV Model-Shift Uniqueness Test

010937029-03, P = 393.146156 Days, E = 102.990099 Days

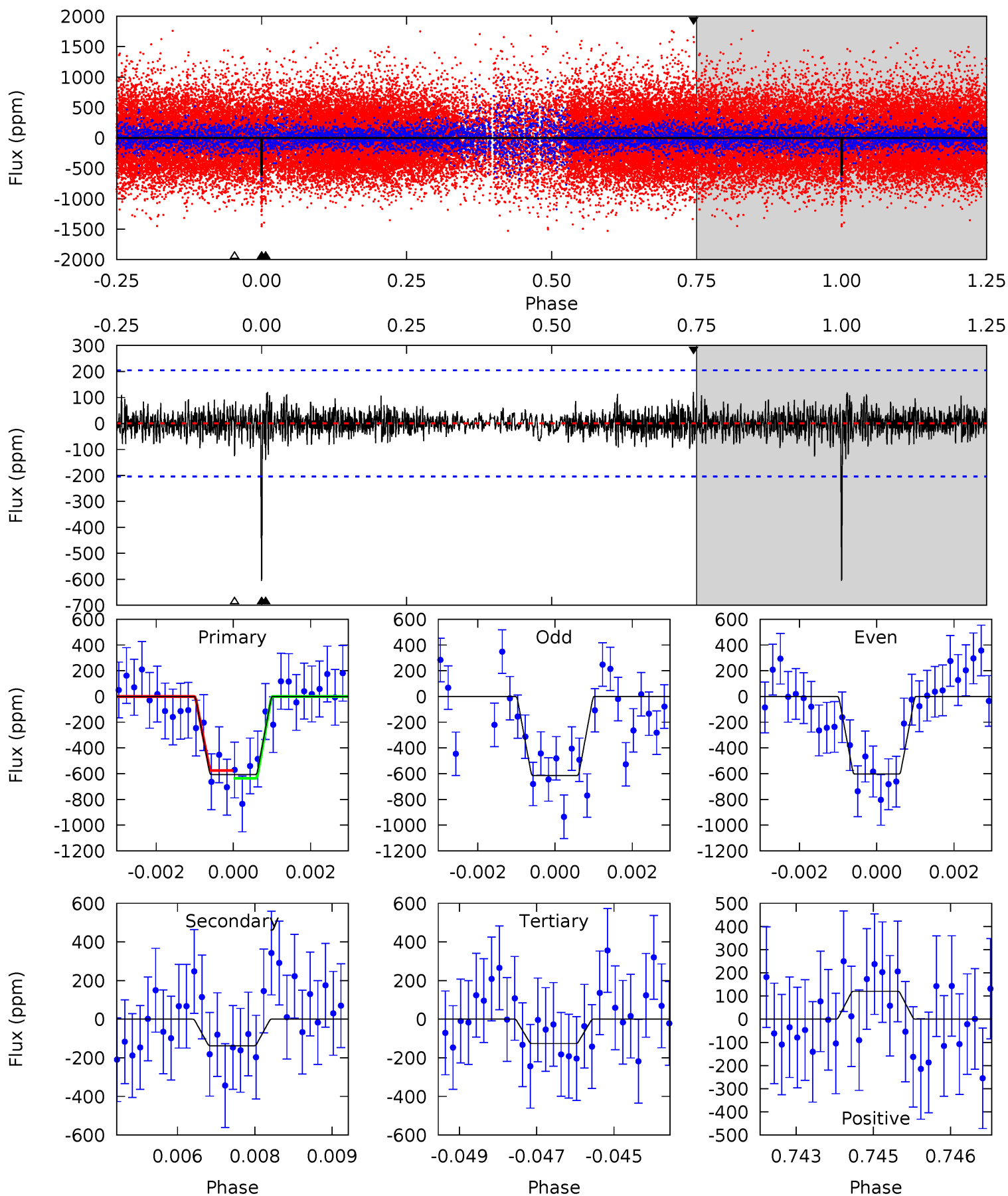
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.6 | 8.19 | 6.46 | 6.79 | 5.37 | 3.16 | 1.53 | 8.11 | 7.78 | 1.73 | 1.40 | 0.58 | 1.05 | 0.34 | 0.22 |



Alt Model-Shift Uniqueness Test

010937029-03, P = 393.148506 Days, E = 102.991596 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.8 | 3.58 | 3.29 | 3.14 | 5.34 | 3.11 | 0.86 | 12.5 | 12.7 | 0.30 | 0.45 | 0.14 | 0.98 | 0.17 | 0.79 |



Stellar Parameters For KIC 010937029

| | $T_{\text{eff}}(K)$ | $\log(g)$ | [Fe/H] | R (R_{\odot}) | $M(M_{\odot})$ | p_{\star} ($\text{g}\cdot\text{cm}^{-3}$) |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
| | 5234^{+103}_{-103} | $4.542^{+0.028}_{-0.083}$ | $0.300^{+0.150}_{-0.150}$ | $0.854^{+0.080}_{-0.040}$ | $0.927^{+0.032}_{-0.059}$ | $2.095^{+0.204}_{-0.510}$ |
| | +2%/-2% | +1%/-2% | +50%/-50% | +9%/-5% | +3%/-6% | +10%/-24% |
| Source | SPE59 | SPE59 | SPE59 | DSEP | | |

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

Secondary Eclipse Parameters for KIC 010937029-03 / KOI

| Detrend | Depth (ppm) | R_p (R_{\oplus}) | T_{max} (K) | T_{obs} (K) | A_{obs} |
|---------|---------------|------------------------|------------------|----------------------|--------------------------|
| DV | -356 ± 43 | $2.50^{+0.37}_{-0.36}$ | 297^{+9}_{-7} | 4550^{+324}_{-276} | 32138^{+12934}_{-8398} |
| Alt. | -137 ± 38 | $2.34^{+0.38}_{-0.36}$ | 297^{+10}_{-8} | 3908^{+298}_{-289} | 14177^{+7045}_{-5278} |

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 $A_{obs} \gg 1.0$

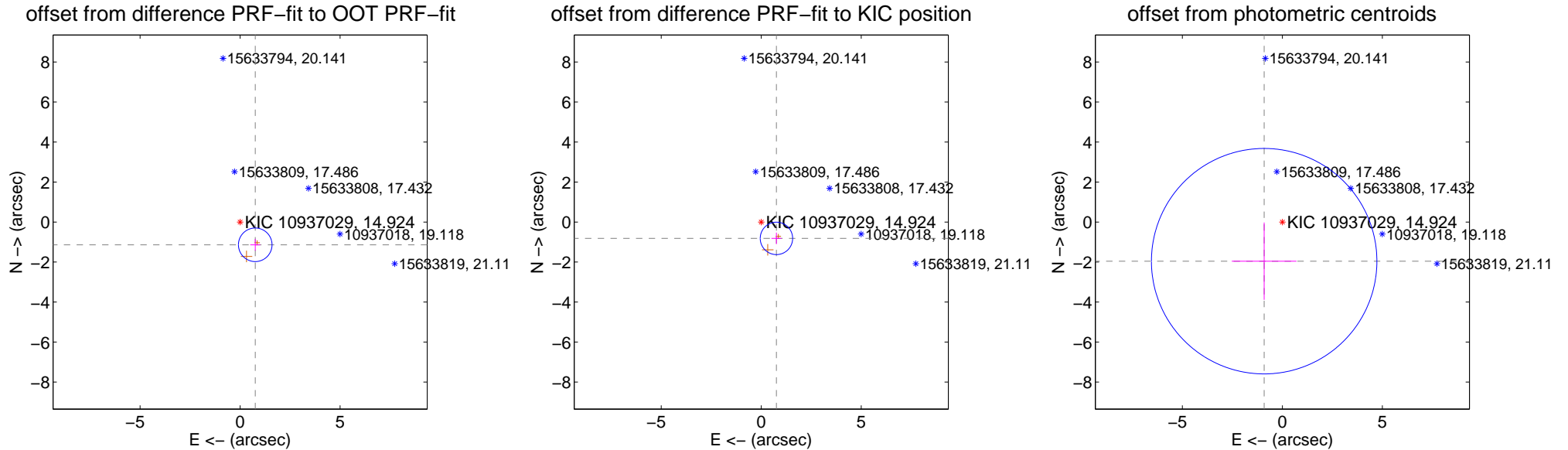
DV Centroid Data

Supplemental centroid analysis for 010937029-03. Kepler magnitude: 14.92. Transit SNR 7.50

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 1.367 ± 0.280 | 4.88 | -0.758 ± 0.249 | -1.138 ± 0.293 |
| PRF-fit source offset from KIC position | 1.116 ± 0.270 | 4.13 | -0.760 ± 0.248 | -0.817 ± 0.288 |
| photometric centroid source offset | 2.16 ± 1.88 | 1.15 | 0.91 ± 1.62 | -1.96 ± 1.93 |

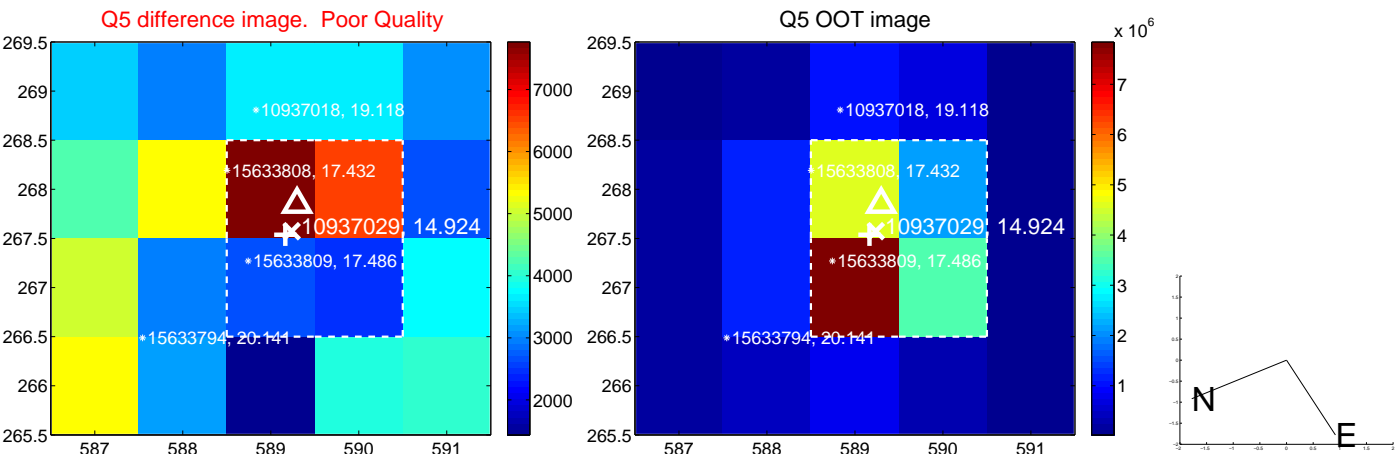


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

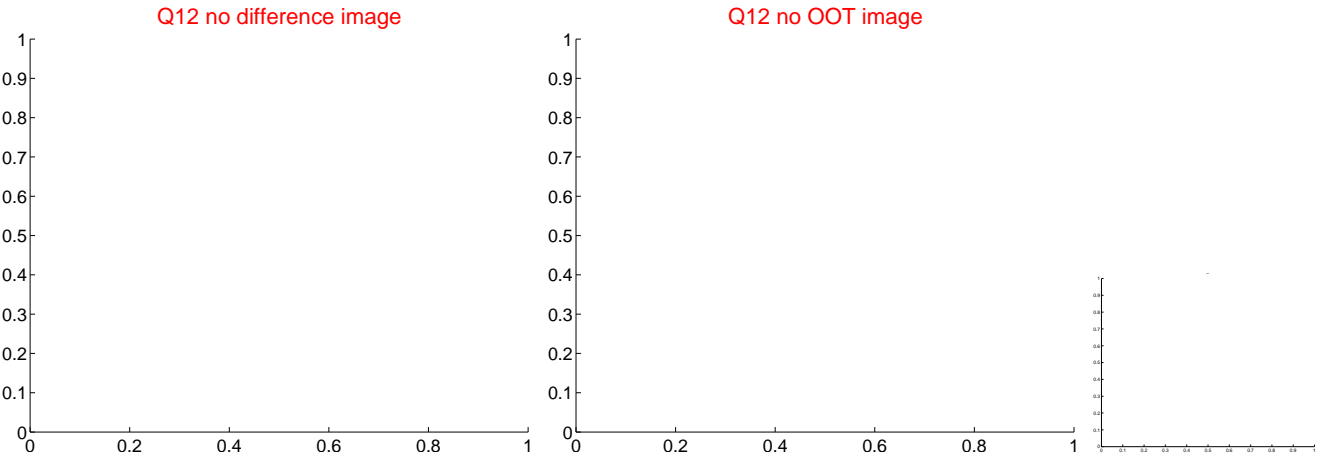
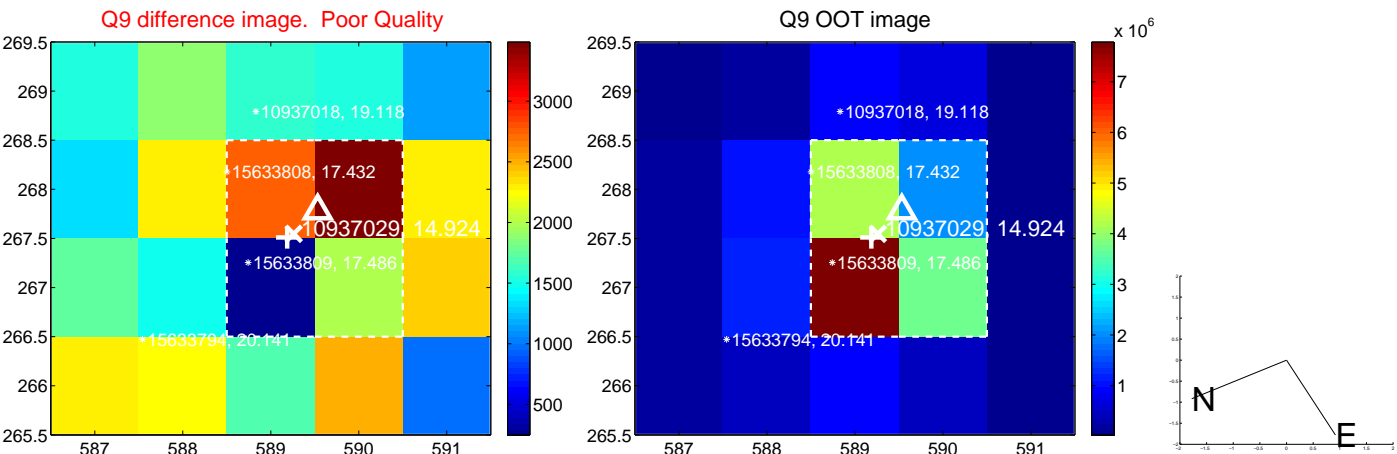
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



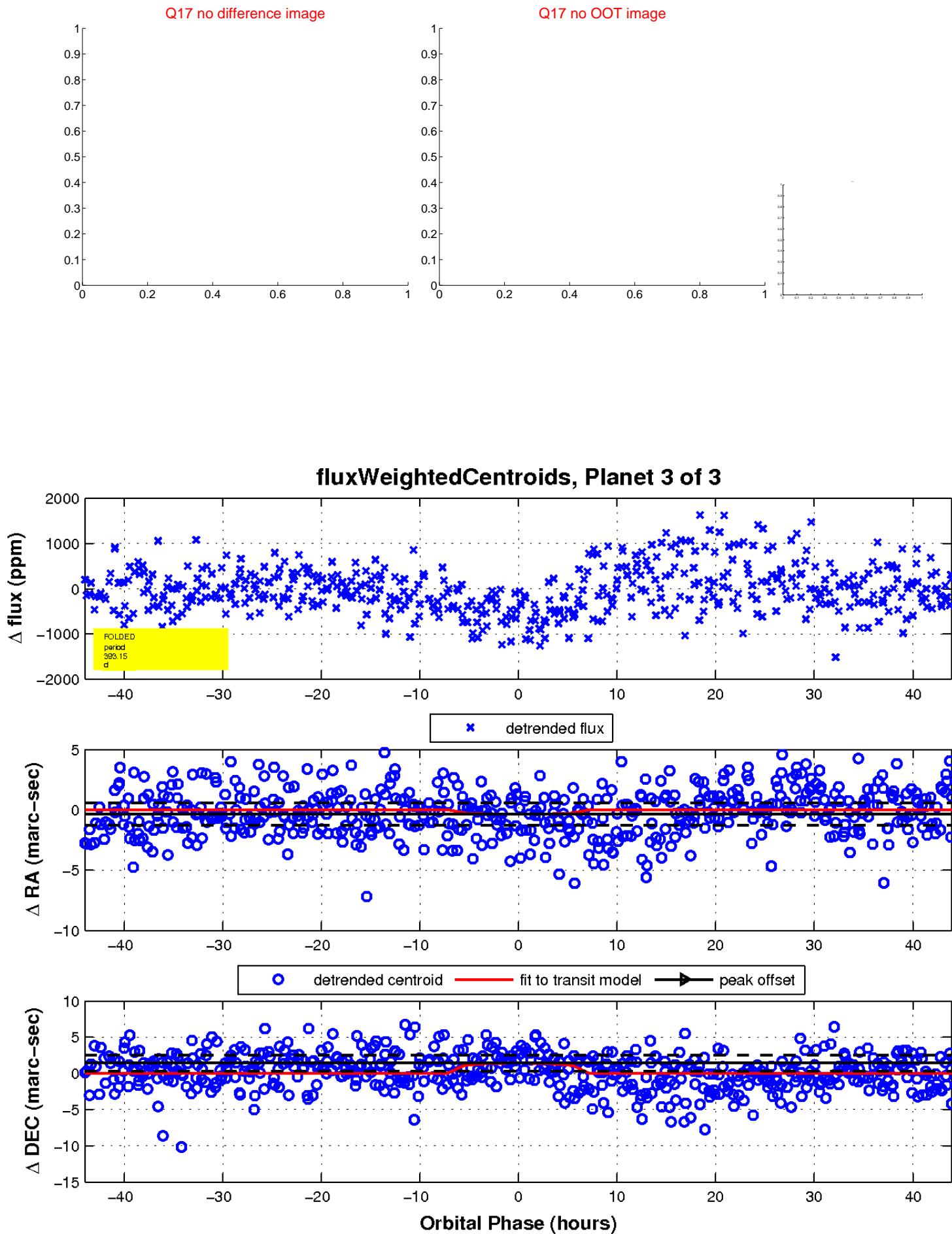
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

