

KIC 011717648

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011717648-01 | OBS | No | 156.201232 | 133.798885 | 649.7 | 5.161 | 10.8 | 7.9 | 0.60 | 4162 | 1.64 | 0.43 |
| 011717648-02 | OBS | No | 447.173068 | 564.512709 | 861.7 | 6.207 | 11.9 | 5.9 | 0.60 | 4162 | 1.82 | 0.11 |
| 011717648-03 | OBS | No | 410.219512 | 178.306387 | 1039.7 | 4.705 | 12.0 | 7.2 | 0.60 | 4162 | 2.12 | 0.12 |
| 011717648-04 | OBS | No | 314.797591 | 167.255764 | 1236.3 | 5.361 | 11.9 | 8.7 | 0.60 | 4162 | 2.64 | 0.17 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011717648-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV |
| 011717648-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS |
| 011717648-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS |
| 011717648-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS |

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

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

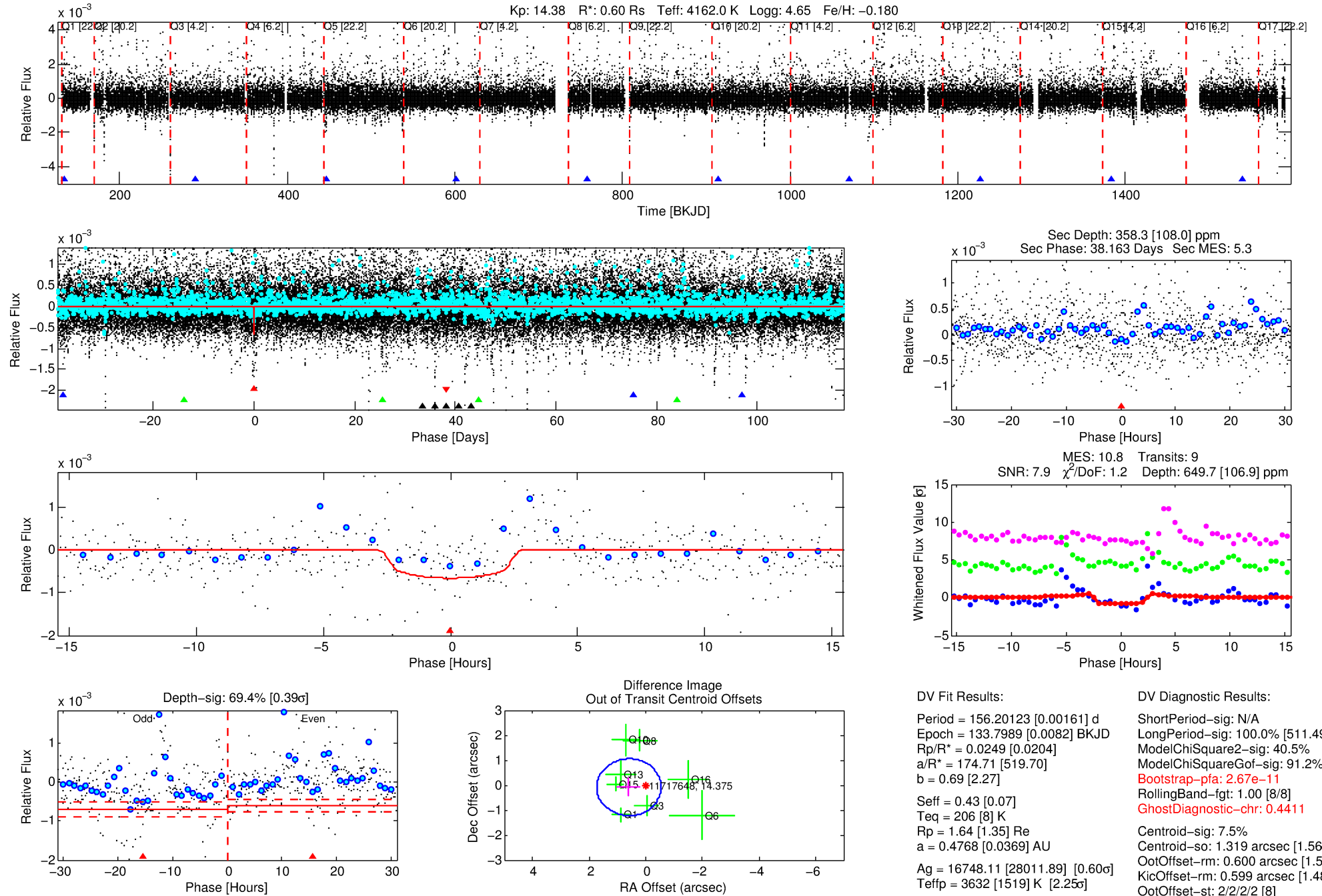
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011717648-01

No Significant Match Found

DV One-Page Summary

KIC: 11717648 Candidate: 1 of 4 Period: 156.201 d



DV Fit Results:

Period = 156.20123 [0.00161] d
Epoch = 133.7989 [0.0082] BKJD
Rp/R* = 0.0249 [0.0204]
a/R* = 174.71 [519.70]
b = 0.69 [2.27]
Seff = 0.43 [0.07]
Teq = 206 [8] K
Rp = 1.64 [1.35] Re
a = 0.4768 [0.0369] AU
Ag = 16748.11 [28011.89] [0.60 σ]
Teffp = 3632 [1519] K [2.25 σ]

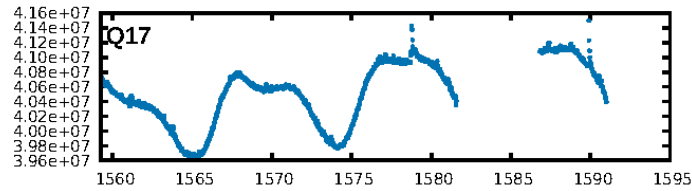
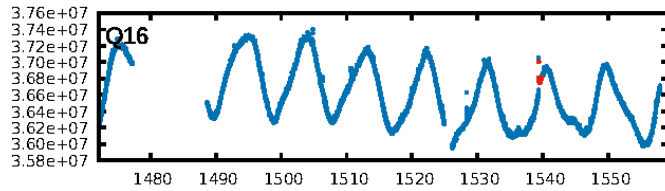
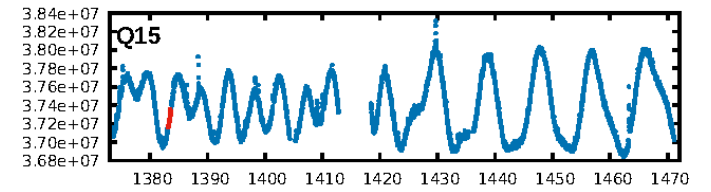
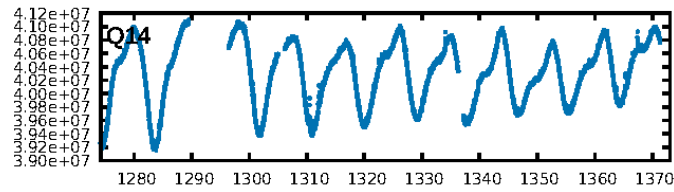
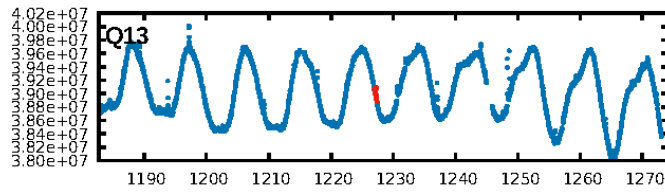
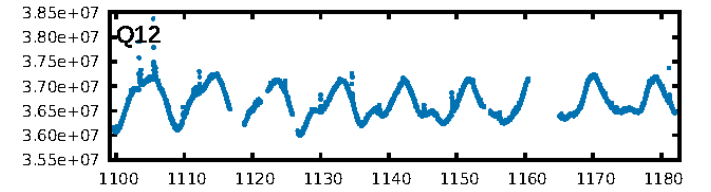
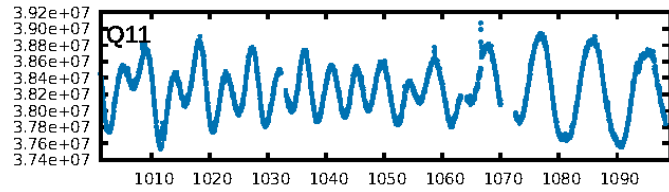
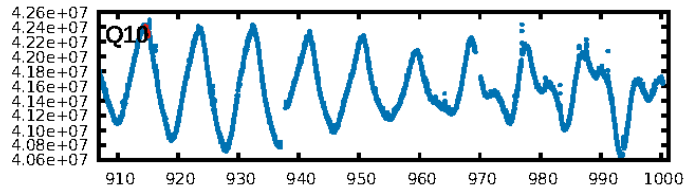
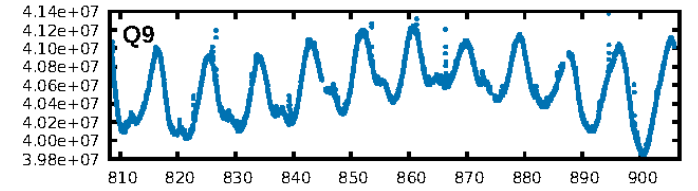
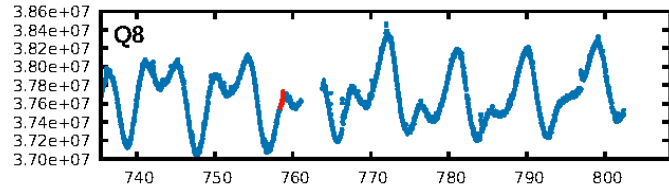
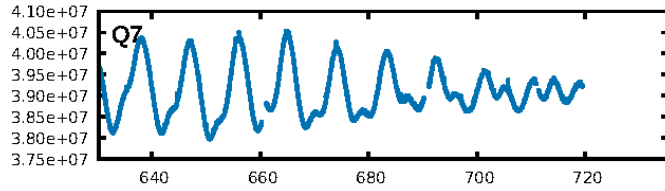
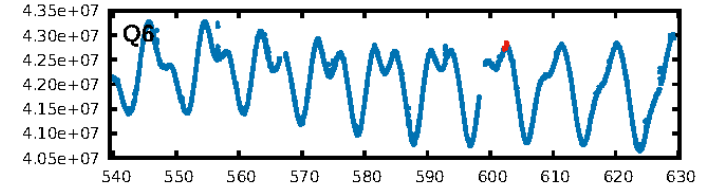
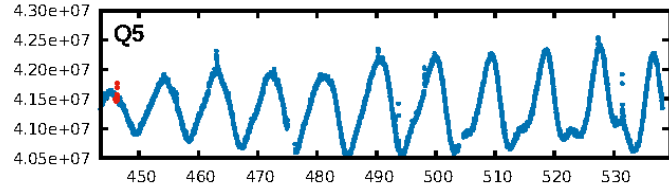
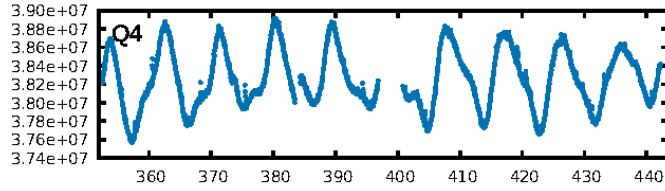
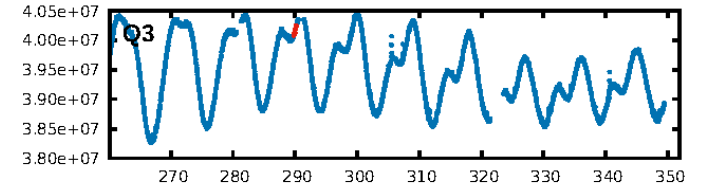
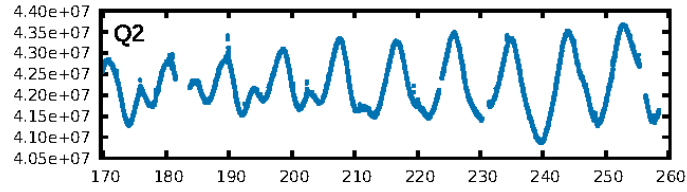
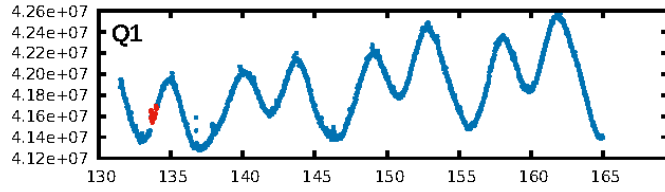
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [511.49 σ]
ModelChiSquare2-sig: 40.5%
ModelChiSquareGof-sig: 91.2%
Bootstrap-pfa: 2.67e-11
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 0.4411
Centroid-sig: 7.5%
Centroid-so: 1.319 arcsec [1.56 σ]
OotOffset-rm: 0.600 arcsec [1.58 σ]
KicOffset-rm: 0.599 arcsec [1.48 σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 1.00 [9/9]

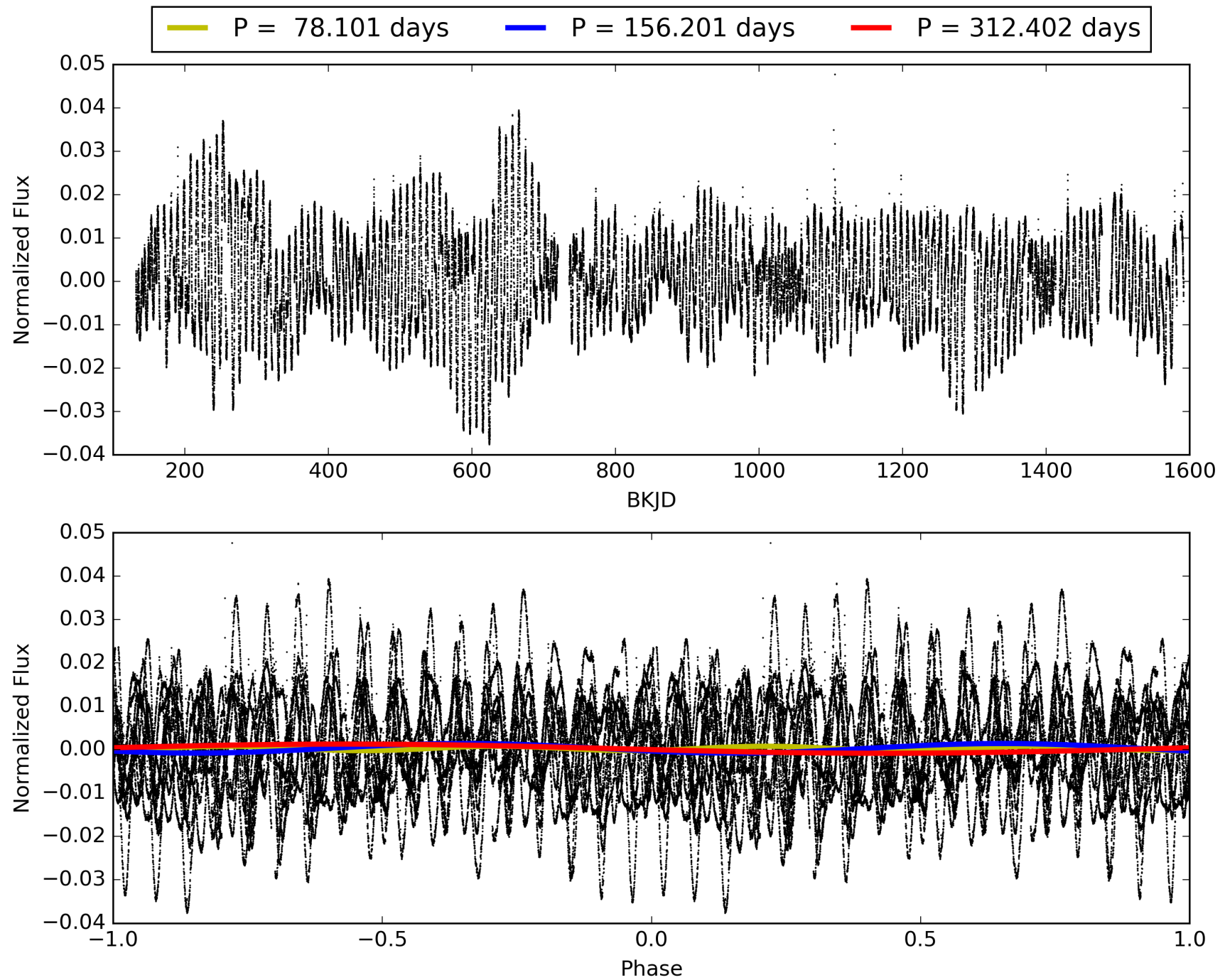
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:40:41 Z

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

TCE 011717648-01, PDC Light Curves

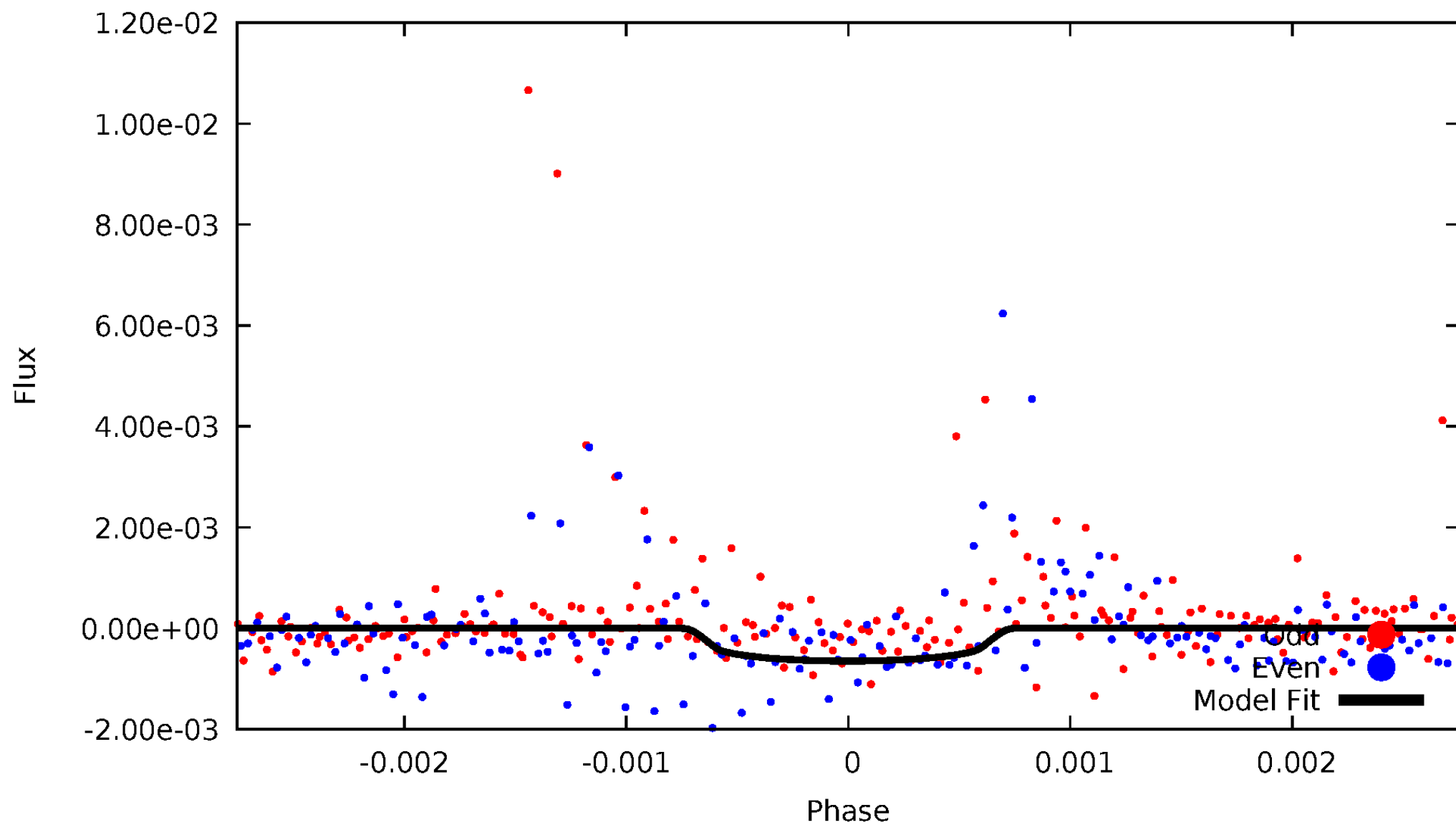


TCE 011717648-01



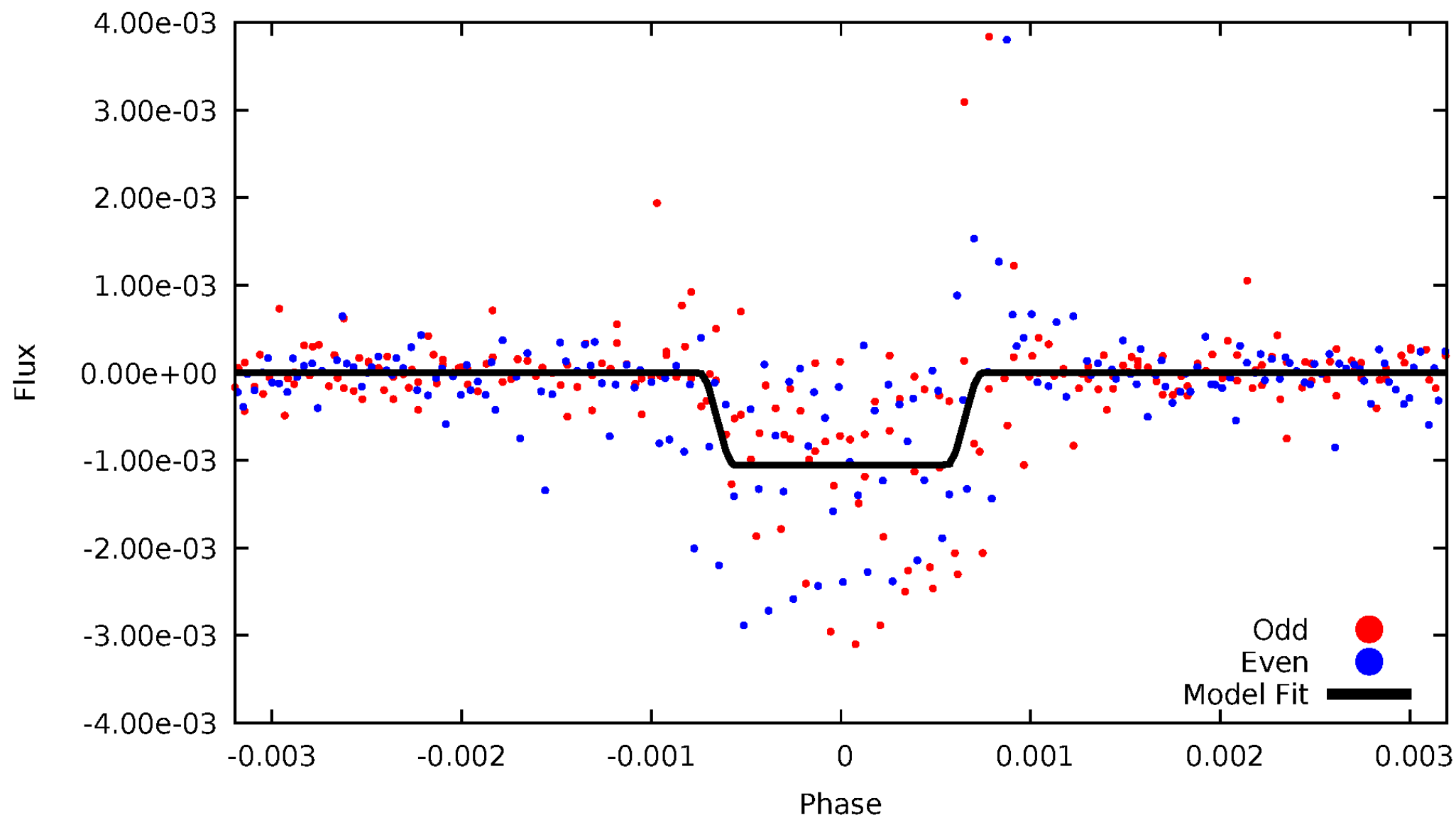
DV Odd/Even

TCE 011717648-01



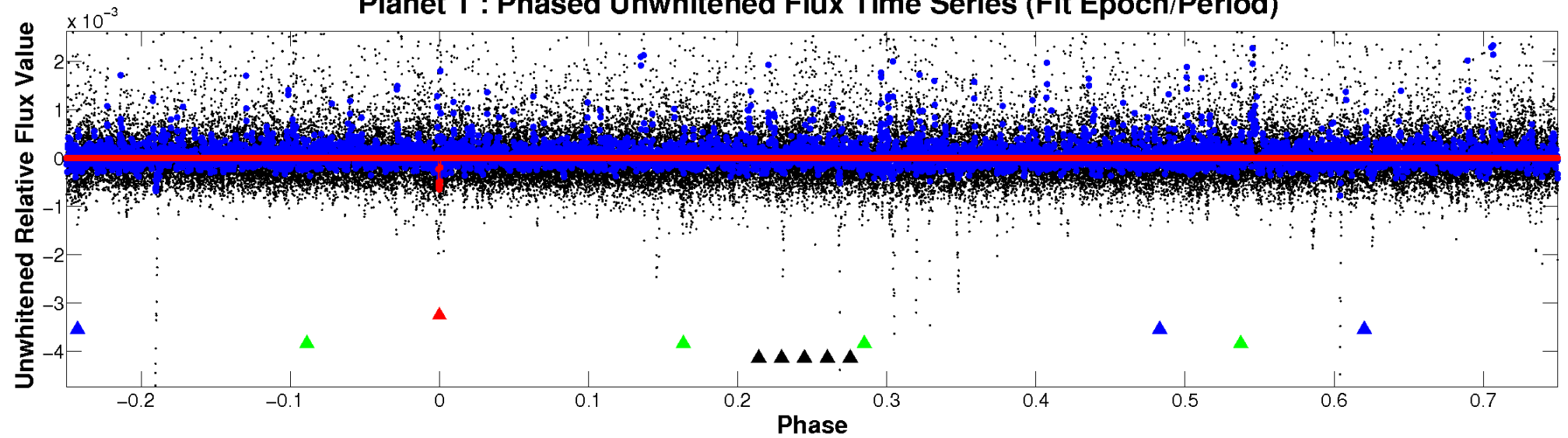
ALT Odd/Even

TCE 011717648-01

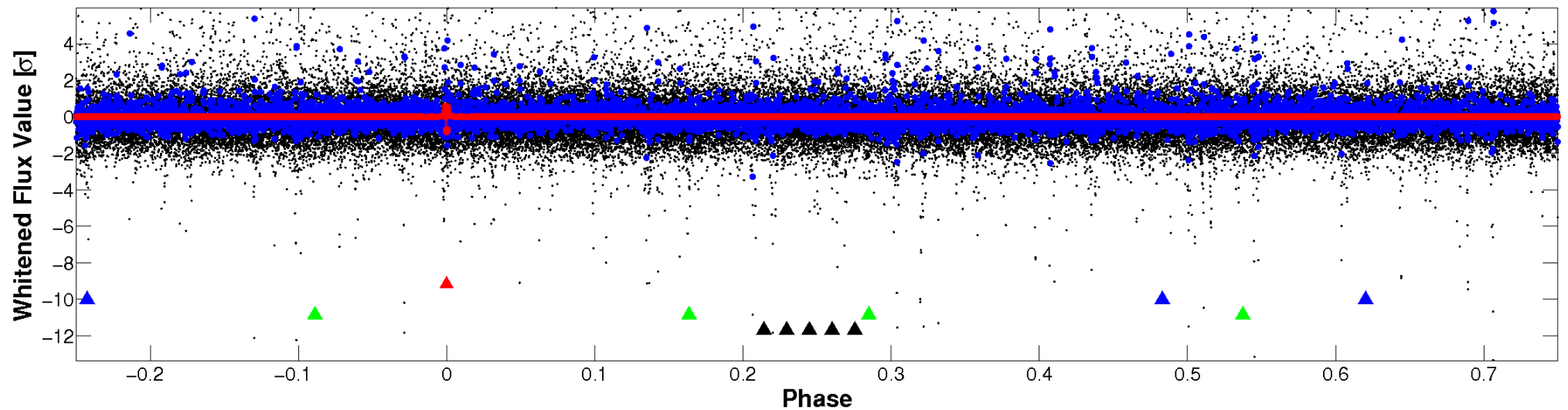


Non-Whitened Vs. Whitened Light Curve

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

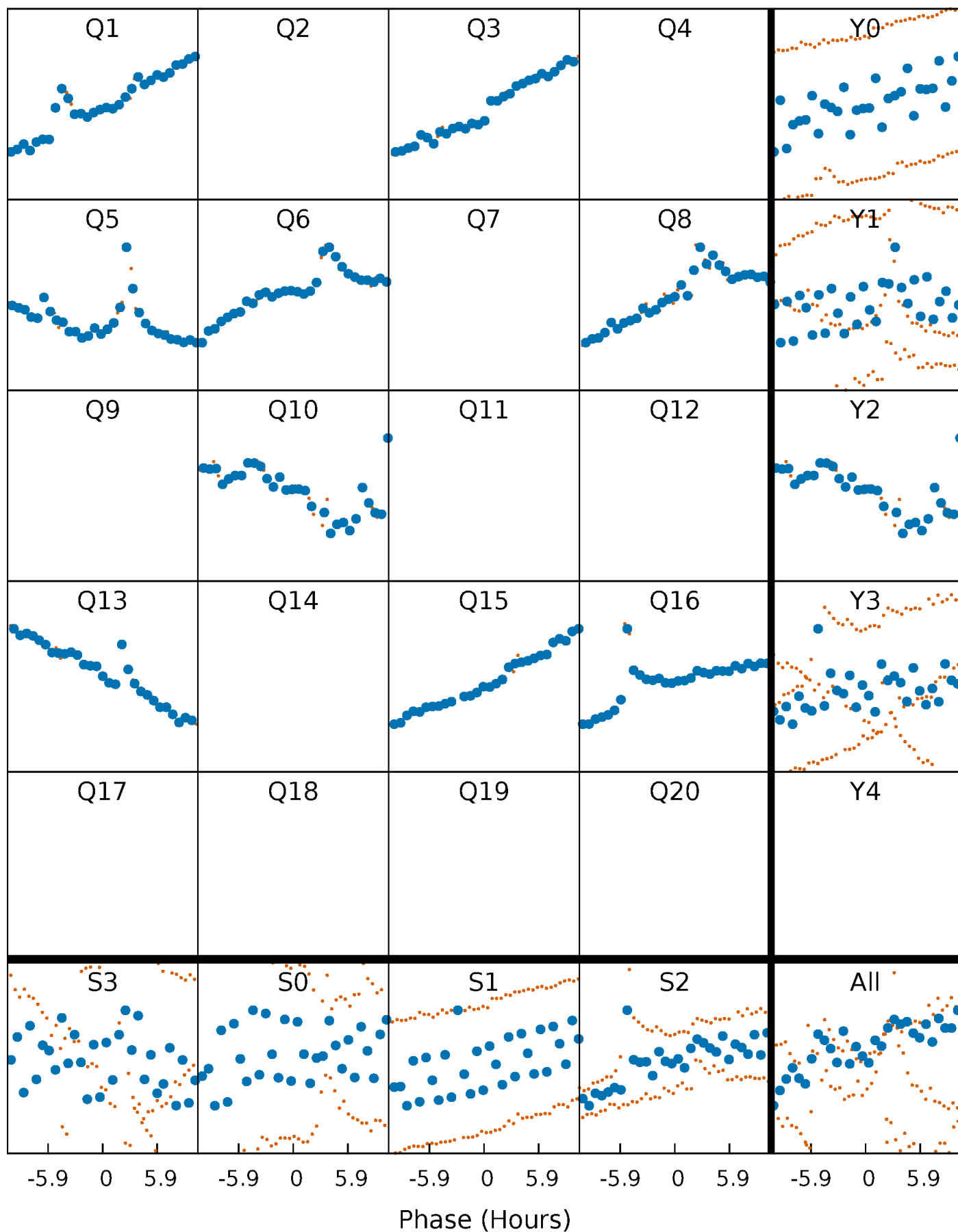


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



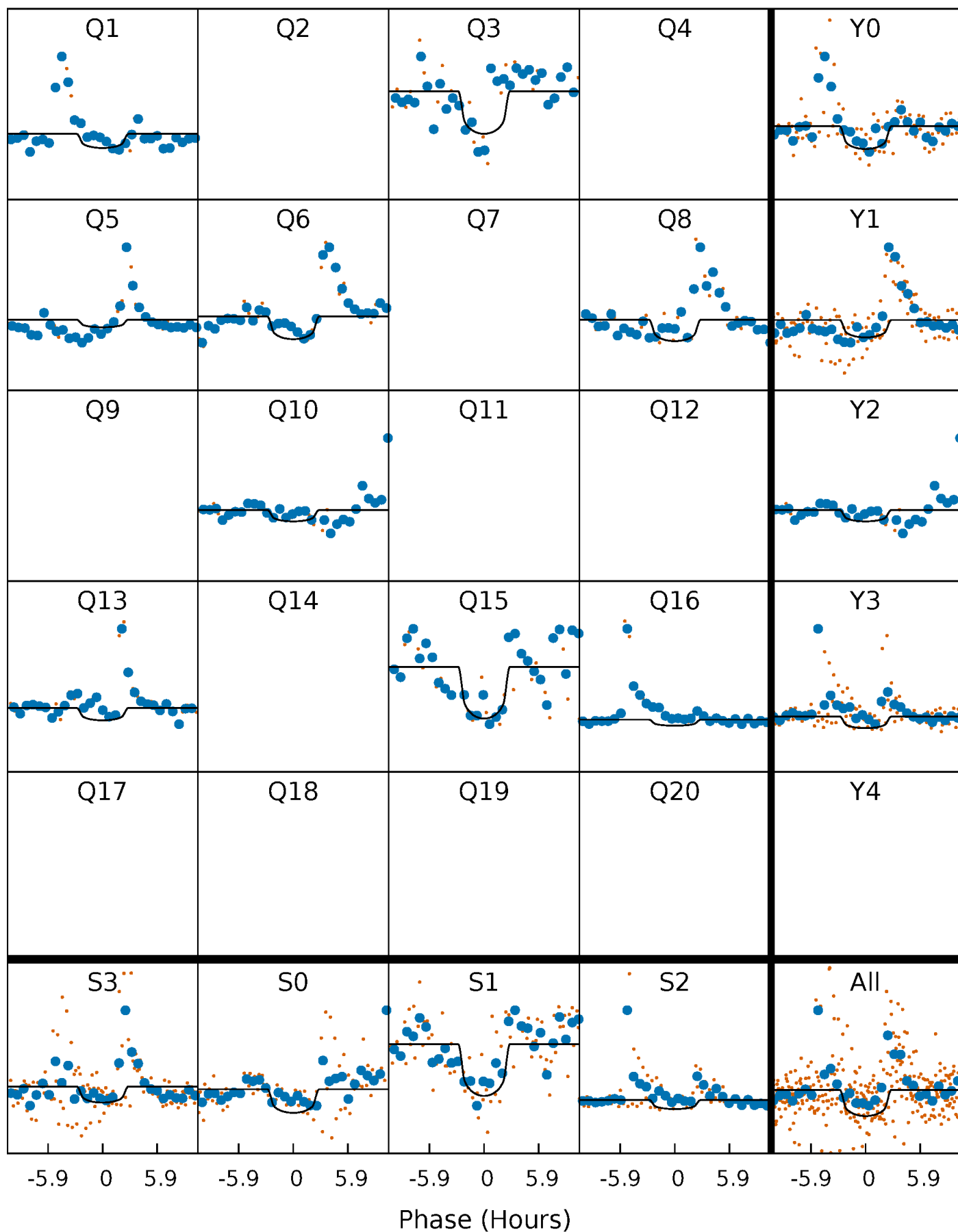
PDC Quarter-Phased Transit Curves

TCE 011717648-01 P=156.201232 Days $T_0=133.798885$ (BKJD)



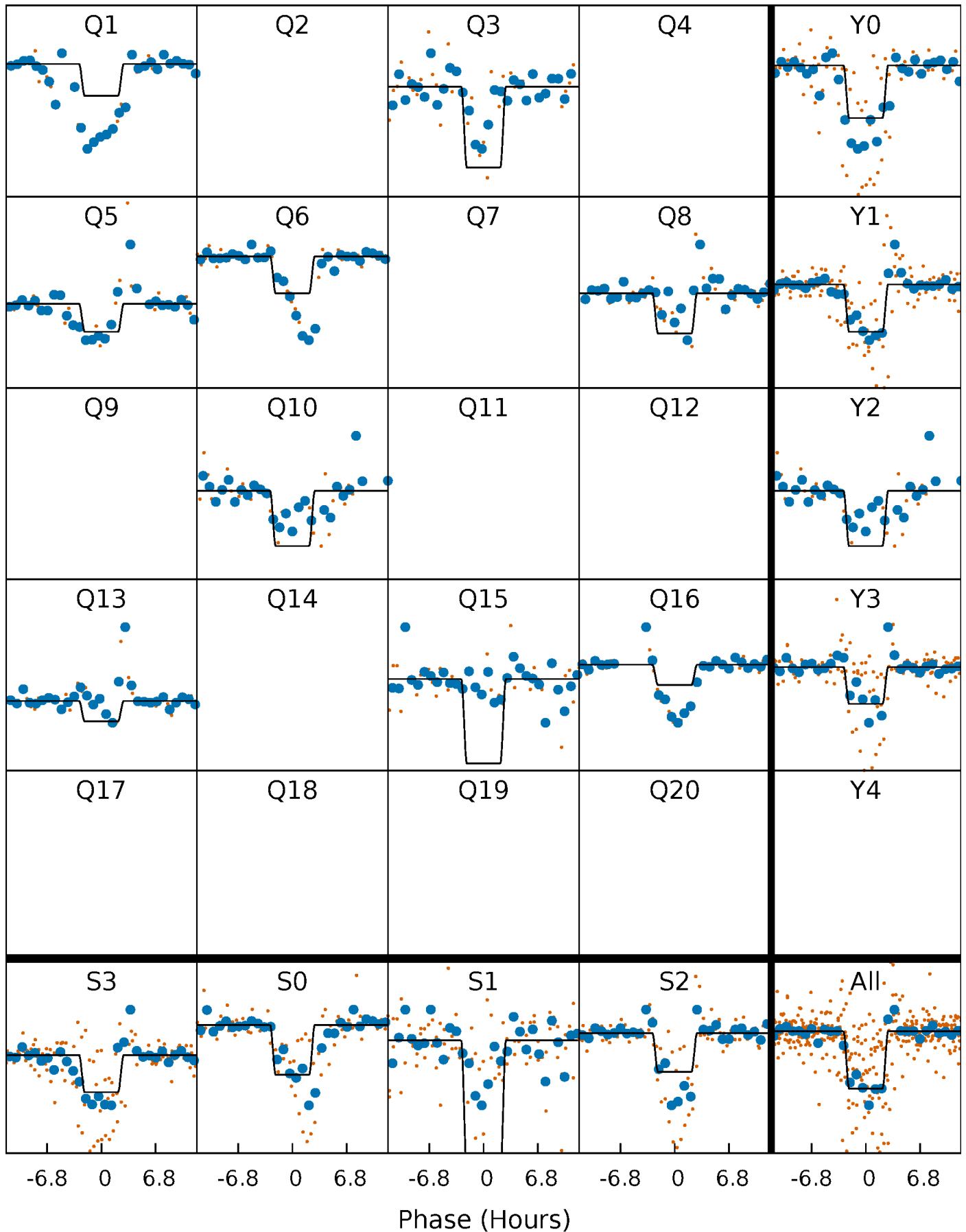
DV Quarter-Phased Transit Curves

TCE 011717648-01 P=156.201232 Days $T_0=133.798885$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

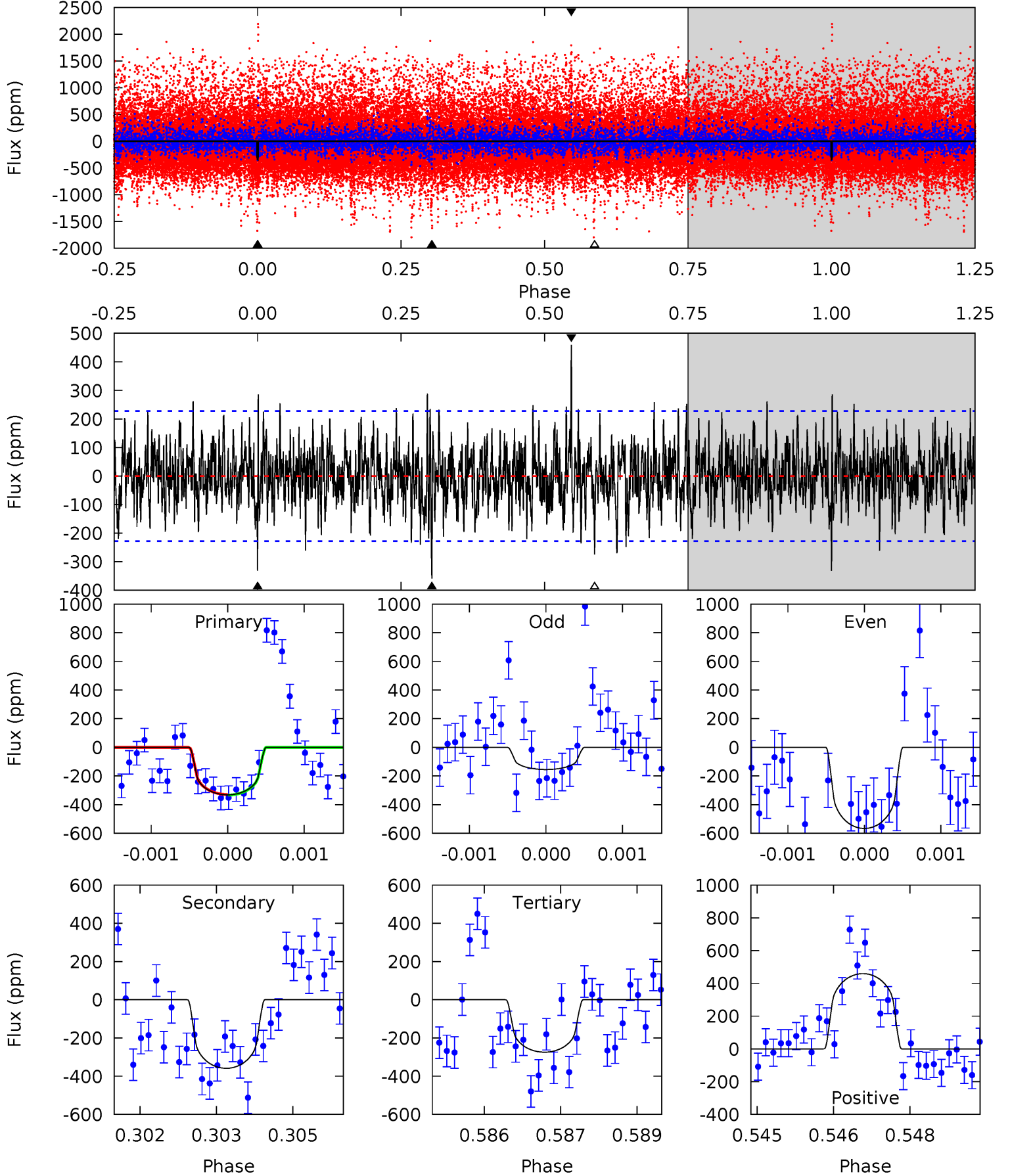
TCE 011717648-01 P=156.197578 Days $T_0=133.798777$ (BKJD)



DV Model-Shift Uniqueness Test

011717648-01, P = 156.201232 Days, E = 133.798885 Days

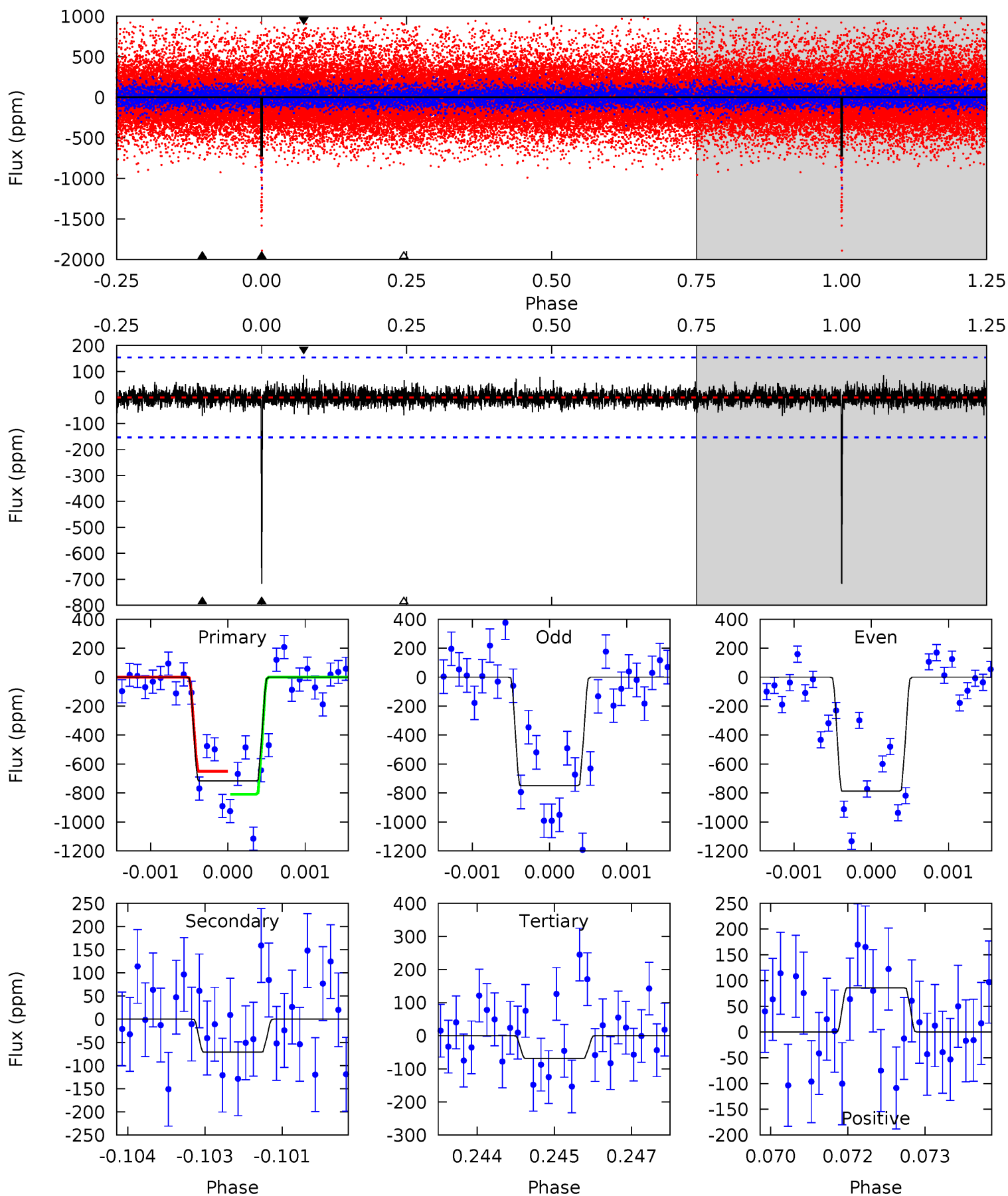
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.84 | 8.48 | 6.48 | 10.9 | 5.38 | 3.18 | 2.03 | 1.35 | -3.02 | 1.99 | -2.38 | 4.81 | 0.53 | 0.56 | 0.05 |



Alt Model-Shift Uniqueness Test

011717648-01, P = 156.197578 Days, E = 133.798777 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 25.0 | 2.48 | 2.40 | 2.99 | 5.38 | 3.18 | 0.63 | 22.6 | 22.0 | 0.08 | -0.51 | 0.66 | 1.61 | 0.11 | 0 |



Stellar Parameters For KIC 011717648

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4162^{+124}_{-124} | $4.650^{+0.052}_{-0.024}$ | $-0.180^{+0.300}_{-0.300}$ | $0.603^{+0.043}_{-0.060}$ | $0.592^{+0.065}_{-0.053}$ | $3.805^{+0.963}_{-0.436}$ |
| | +3%/-3% | +1%/-1% | +167%/-167% | +7%/-10% | +11%/-9% | +25%/-11% |
| 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 011717648-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|-----------------------|--------------------------|
| DV | -359 ± 42 | $1.78^{+1.23}_{-1.05}$ | 287^{+10}_{-10} | 3636^{+1562}_{-509} | 13904^{+72731}_{-8899} |
| Alt. | -71 ± 29 | $2.24^{+1.36}_{-1.19}$ | 287^{+9}_{-9} | 2697^{+643}_{-328} | 1747^{+6039}_{-1132} |

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

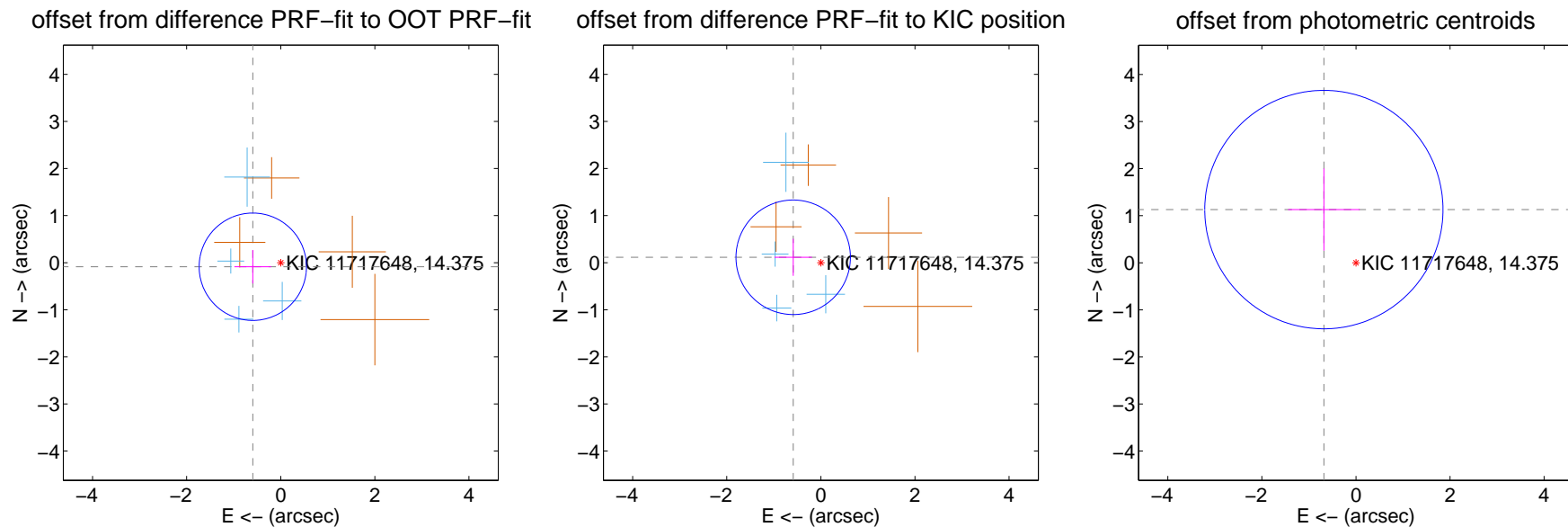
DV Centroid Data

Supplemental centroid analysis for 011717648-01. Kepler magnitude: 14.38. Transit SNR 7.91

There are 4 quarters with good PRF difference image offsets

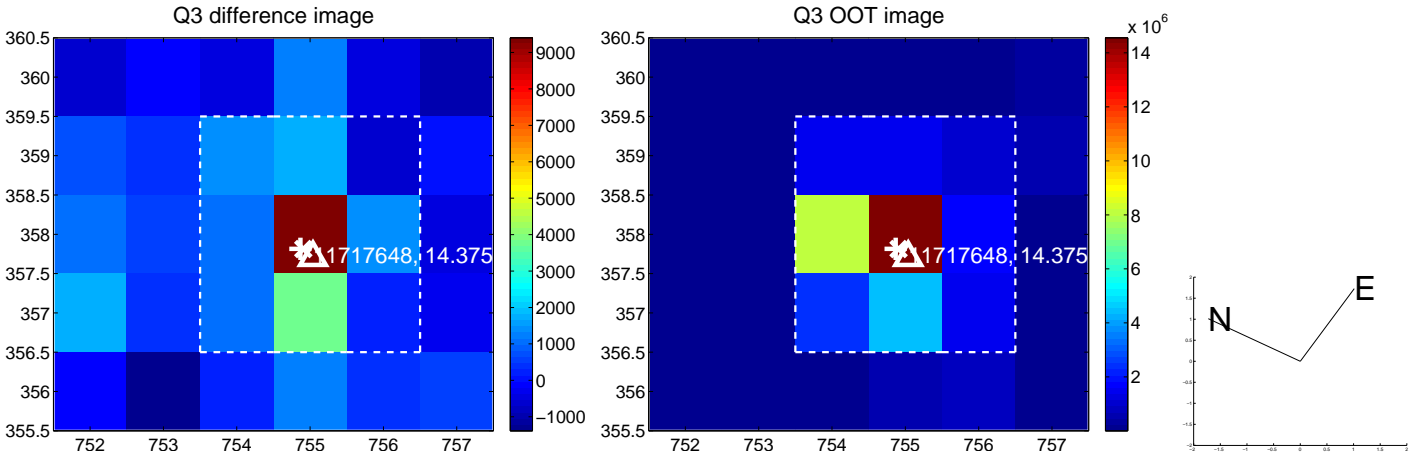
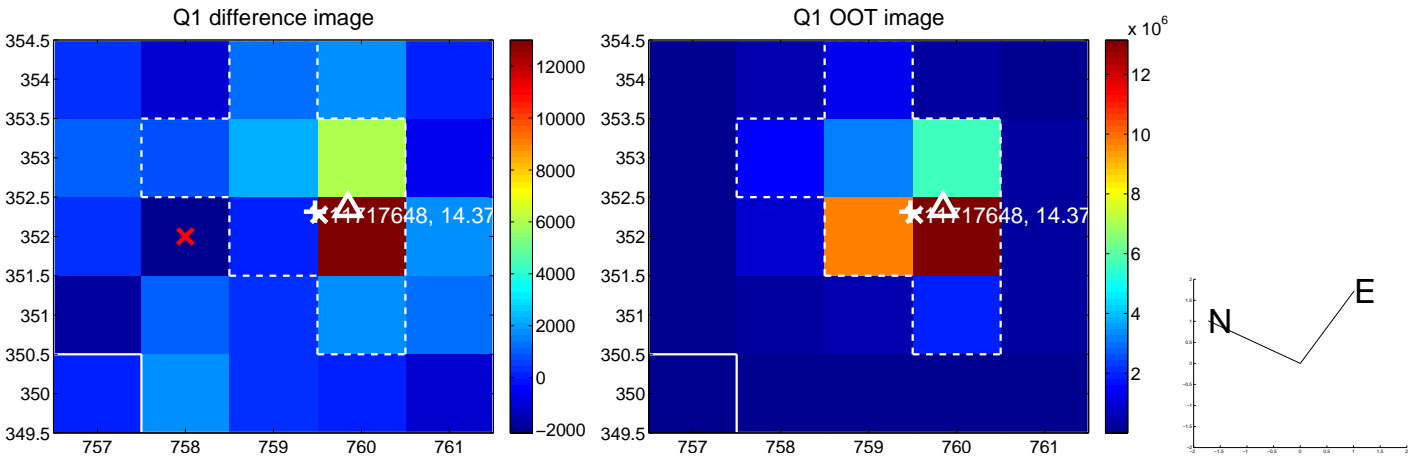
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT | 0.600 ± 0.380 | 1.58 | 0.594 ± 0.392 | -0.086 ± 0.355 |
| PRF-fit source offset from KIC position | 0.599 ± 0.405 | 1.48 | 0.588 ± 0.399 | 0.115 ± 0.393 |
| photometric centroid source offset | 1.32 ± 0.84 | 1.56 | 0.68 ± 0.76 | 1.13 ± 0.87 |

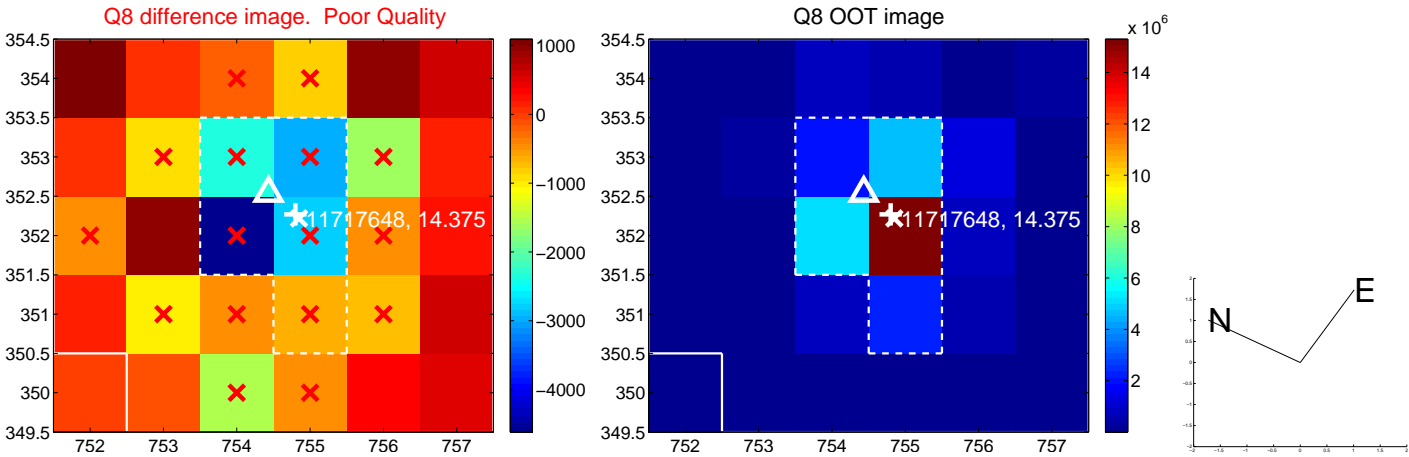
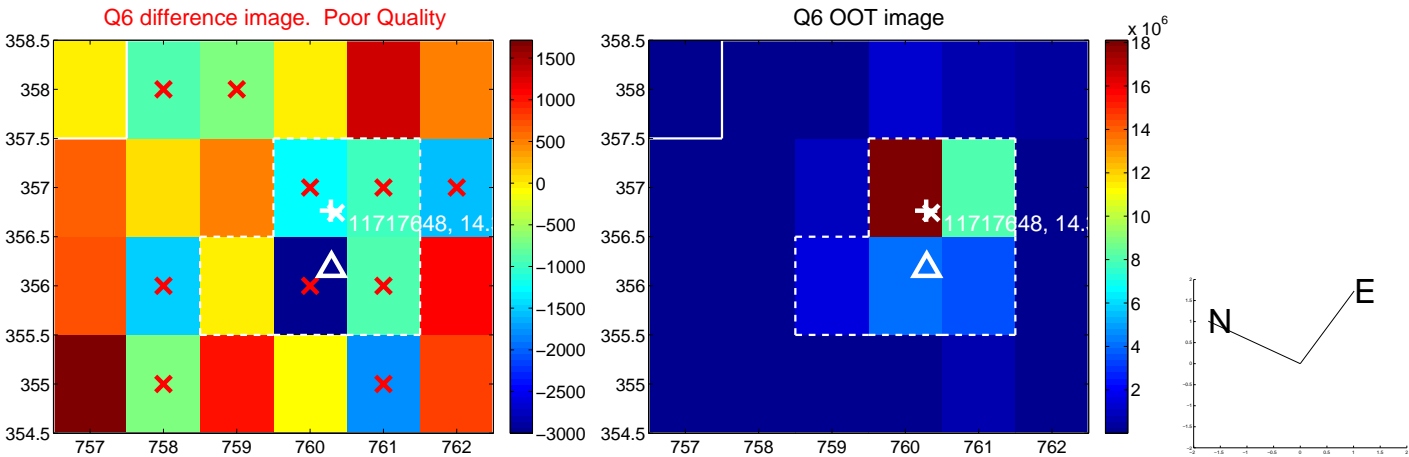
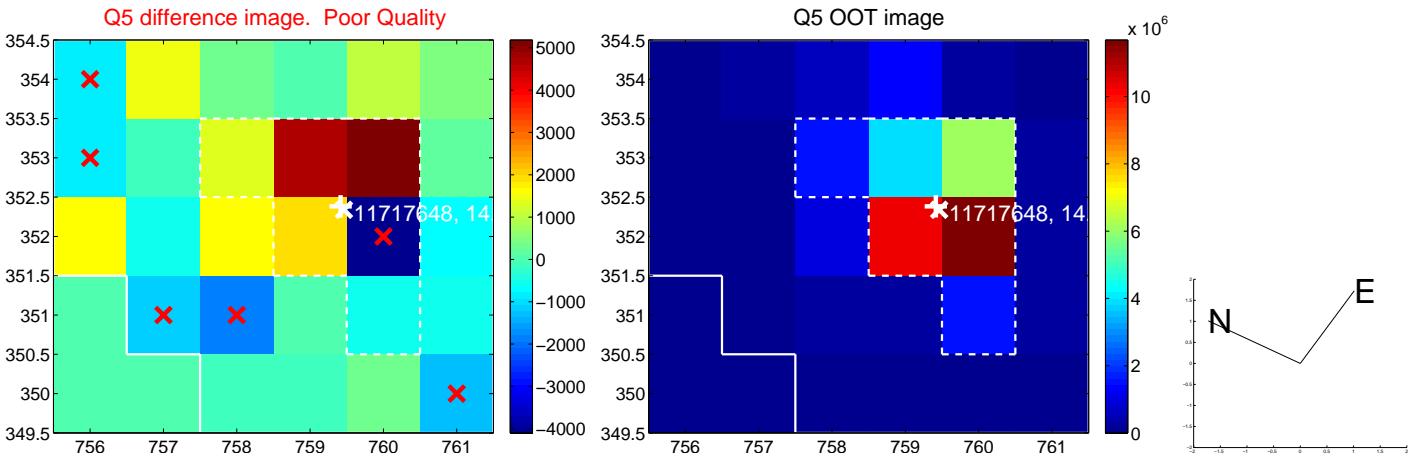


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

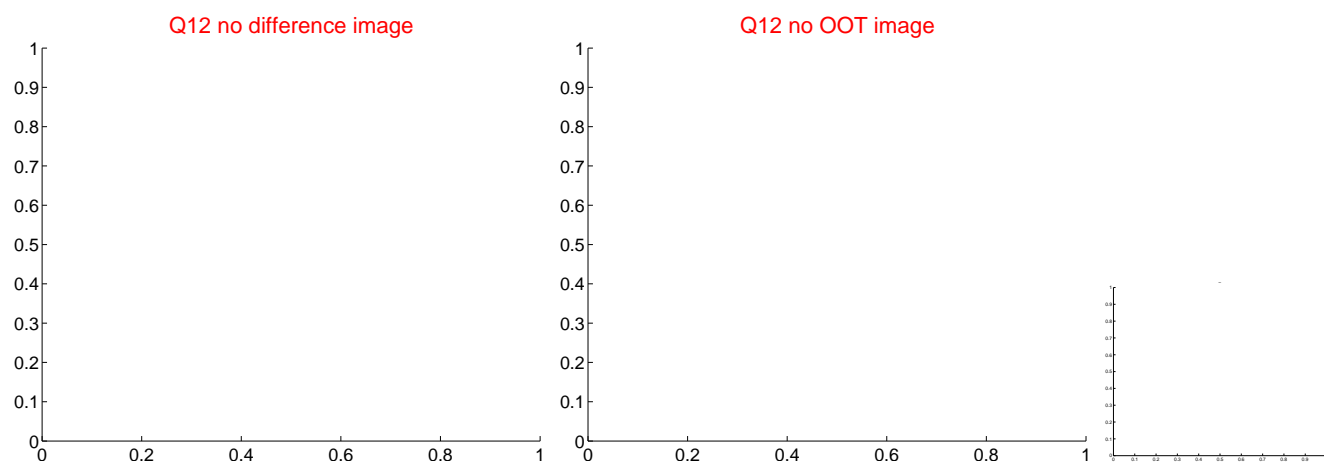
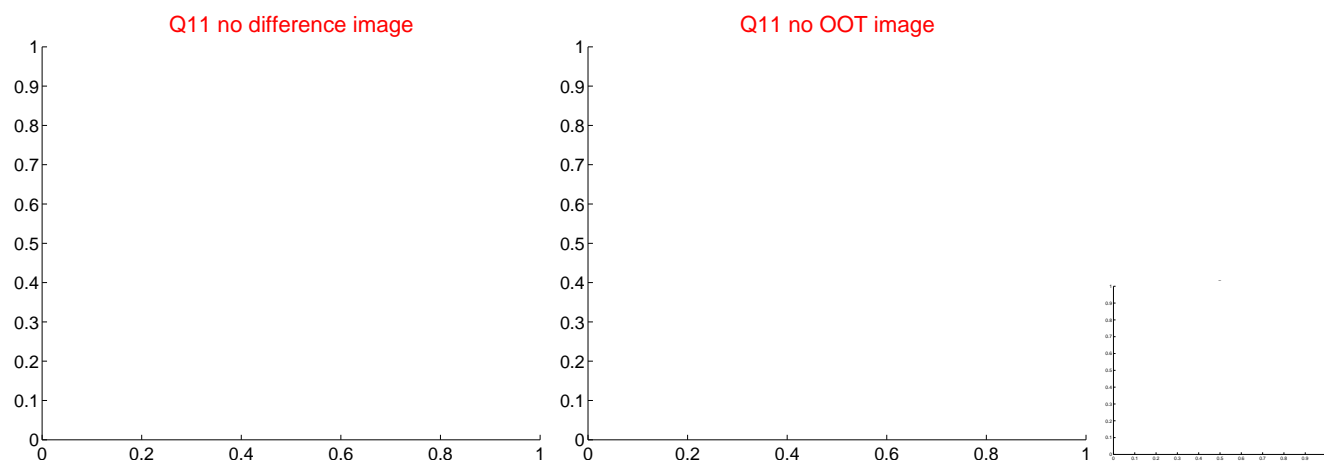
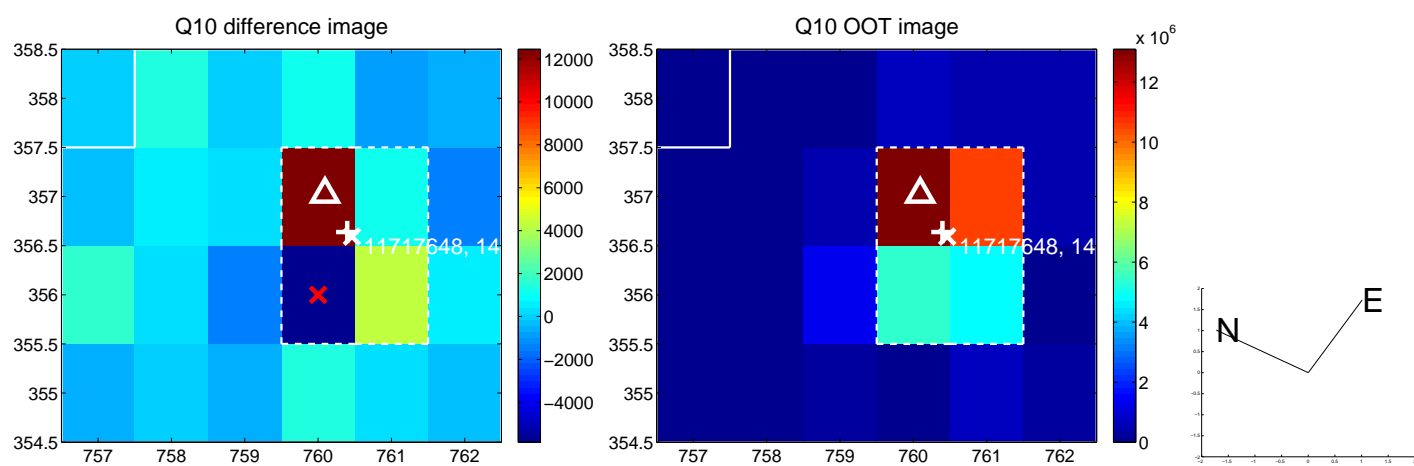
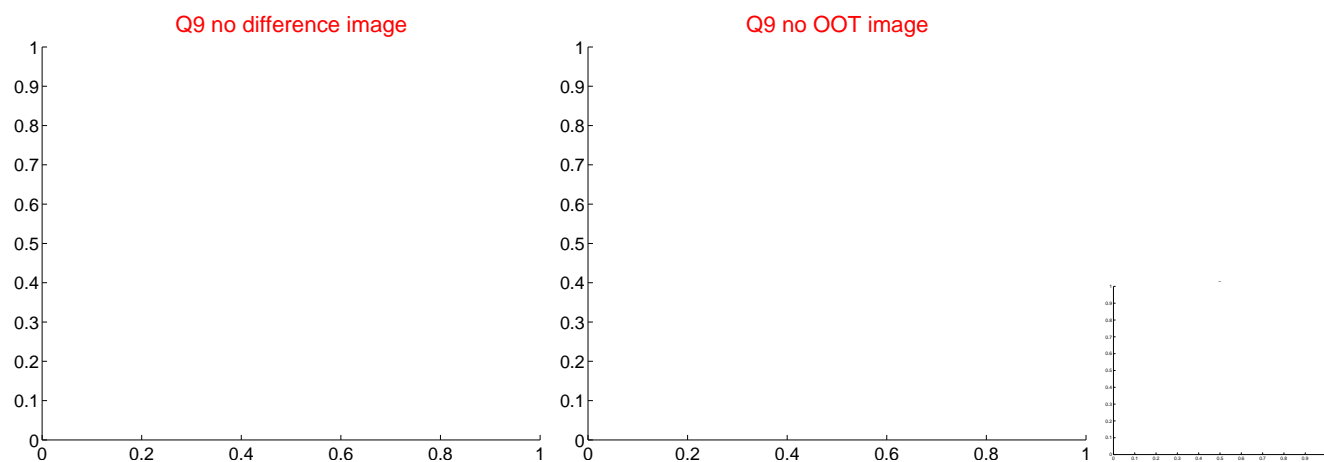
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



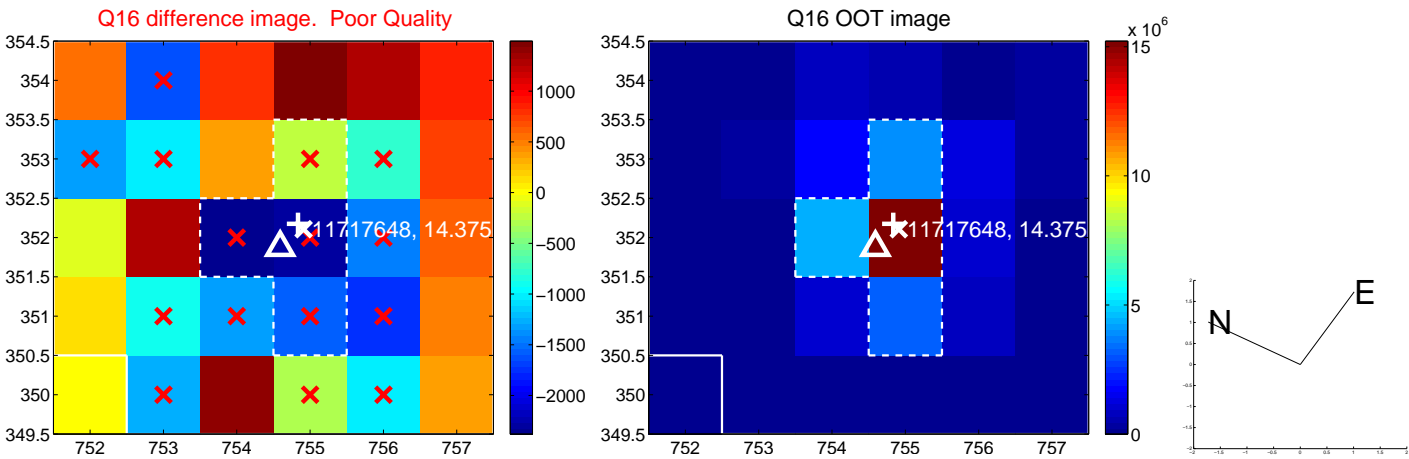
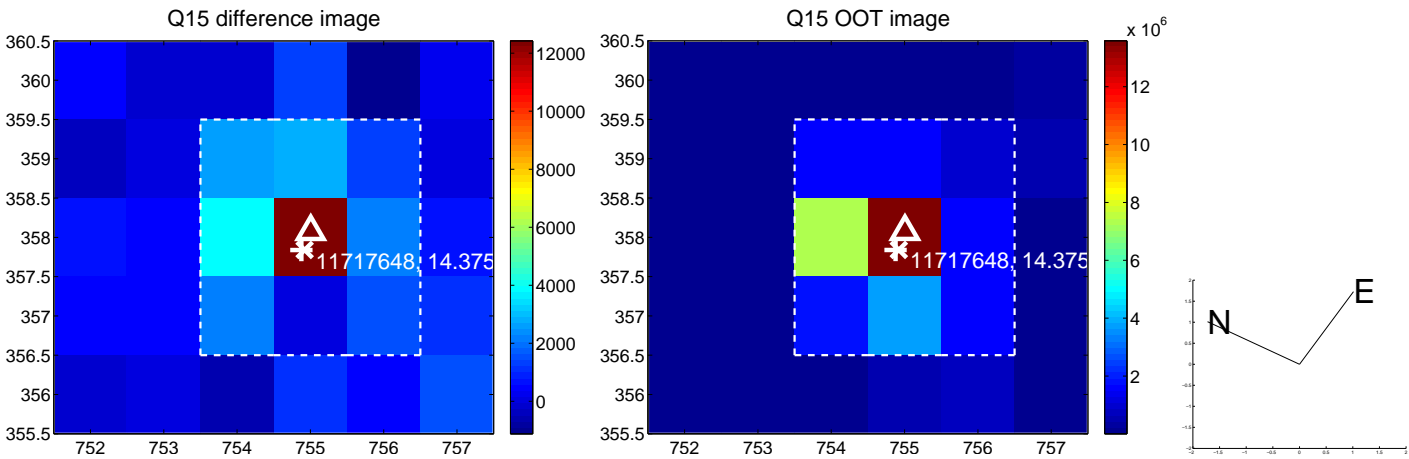
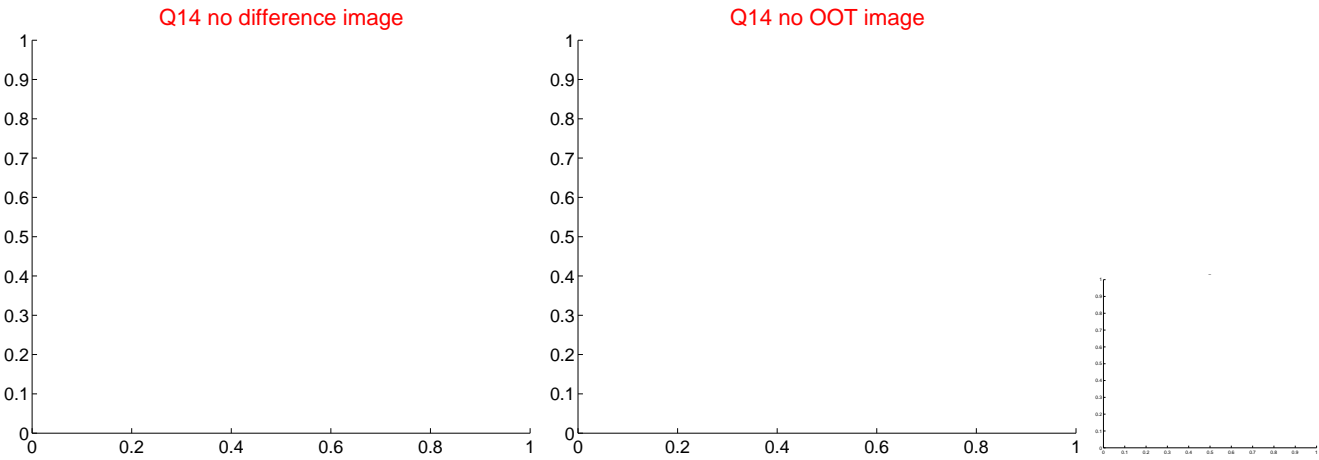
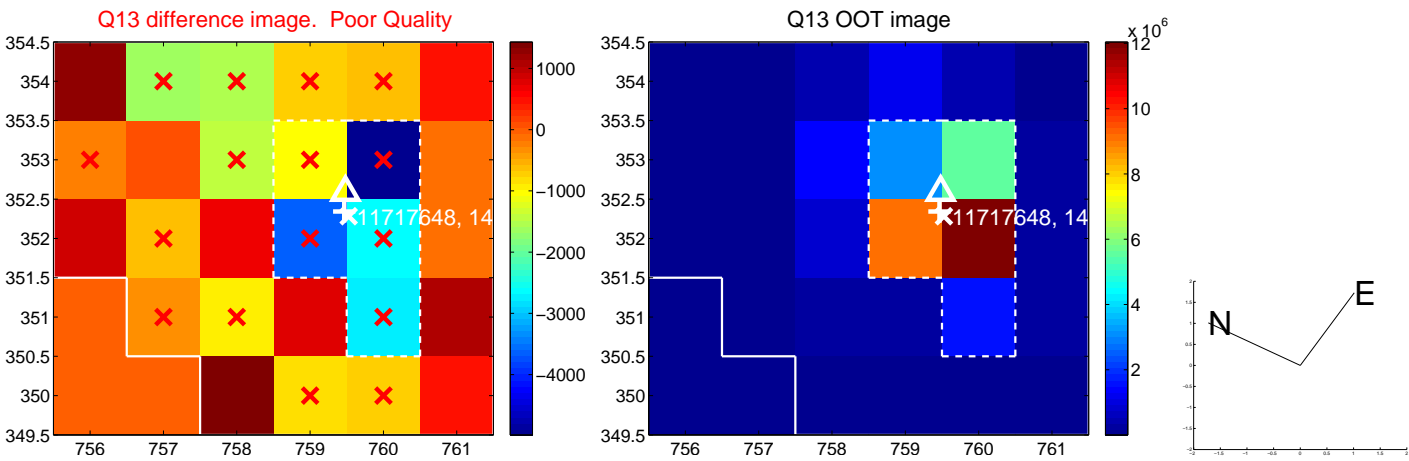
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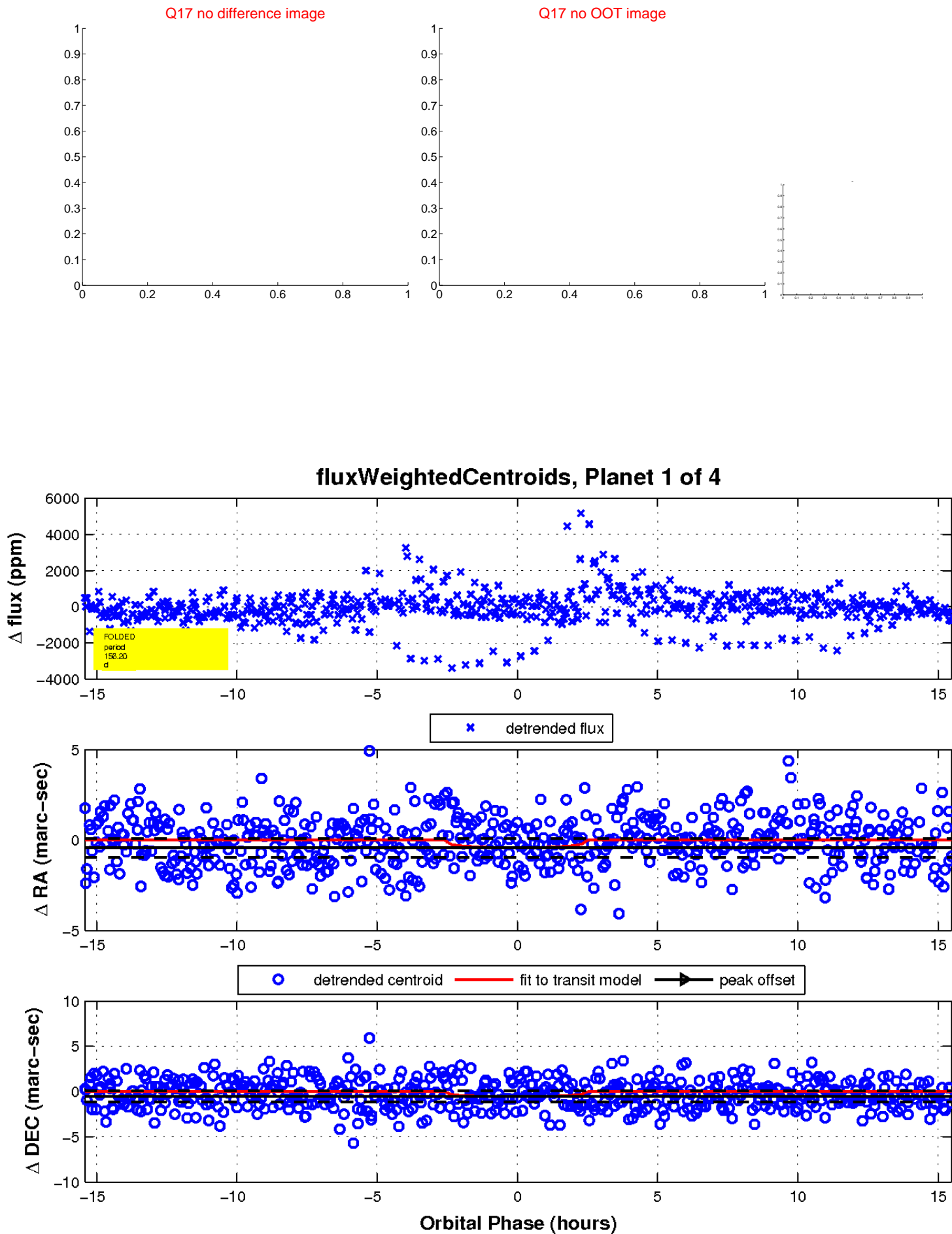
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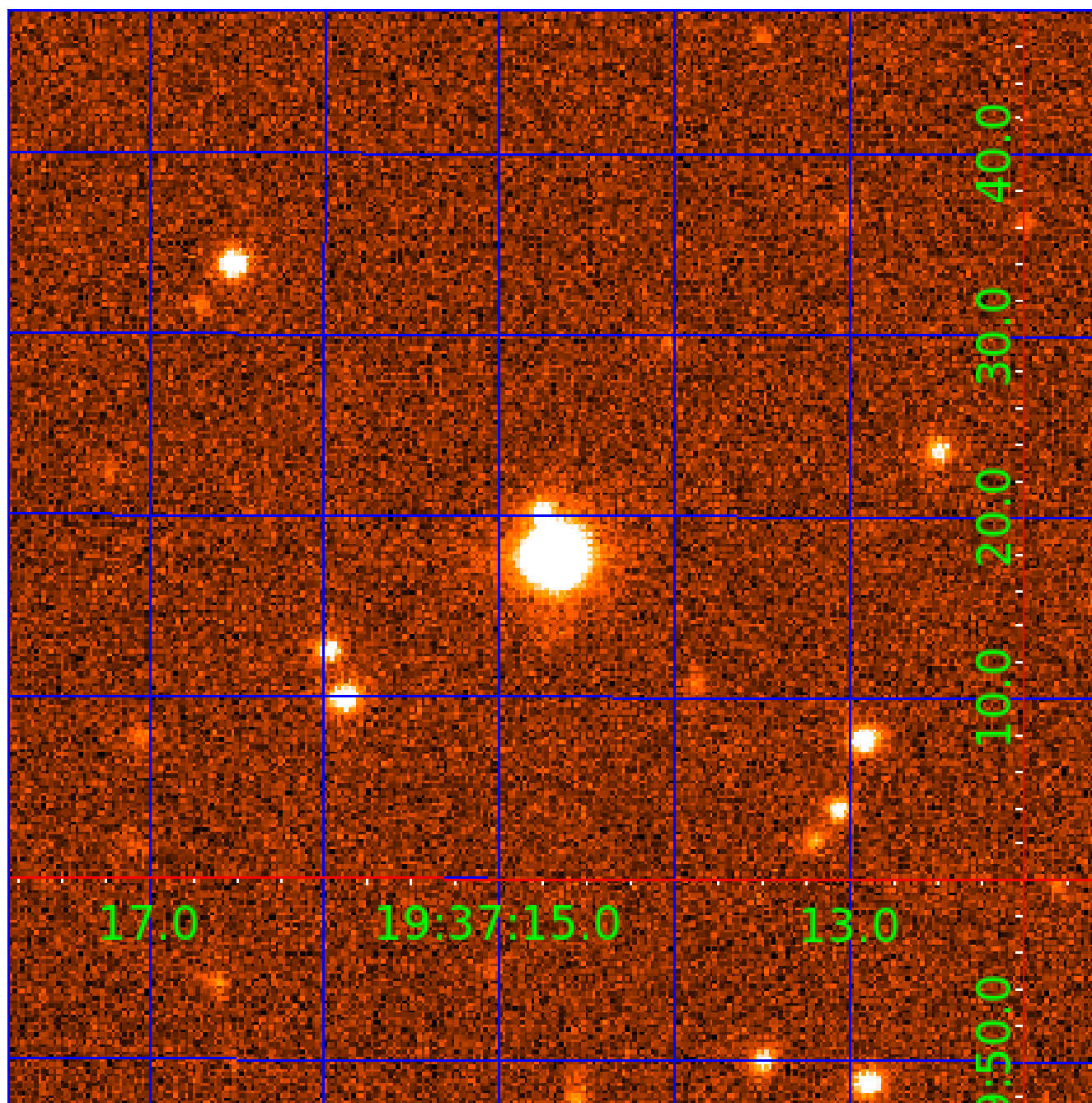


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011717648

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
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Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011717648-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV |
| 011717648-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS |
| 011717648-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS |
| 011717648-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS |

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

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

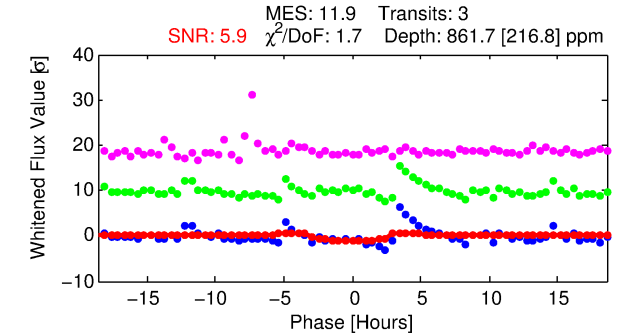
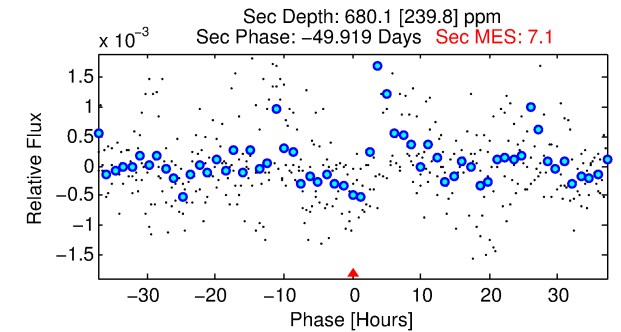
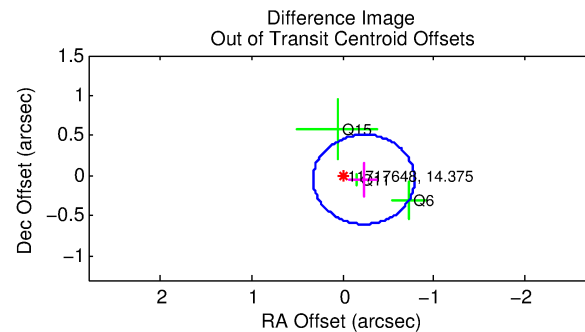
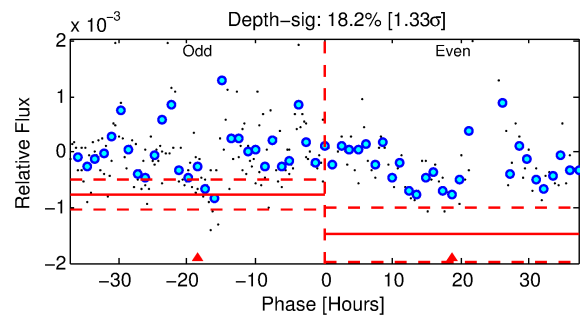
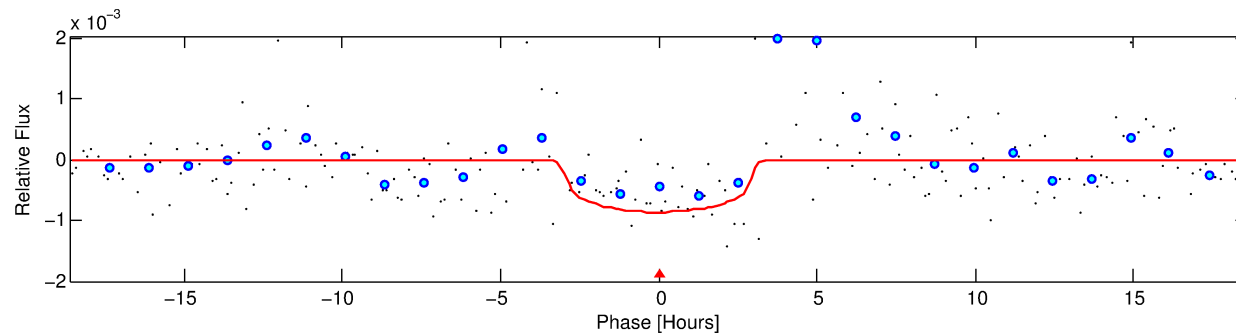
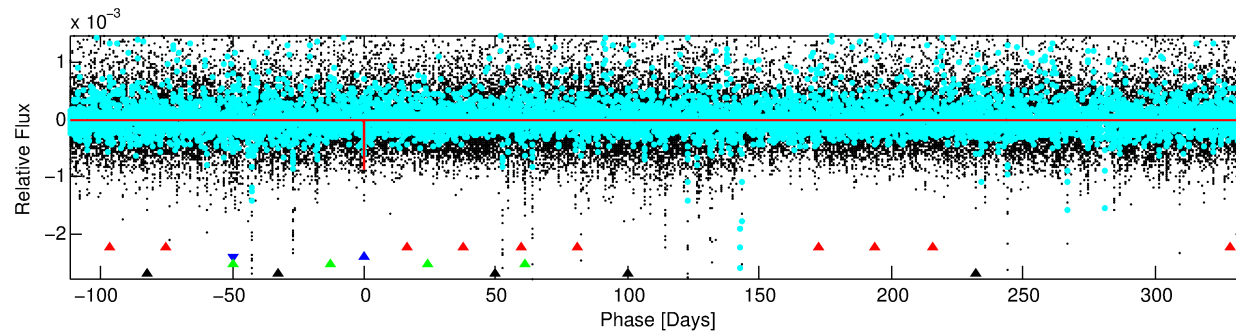
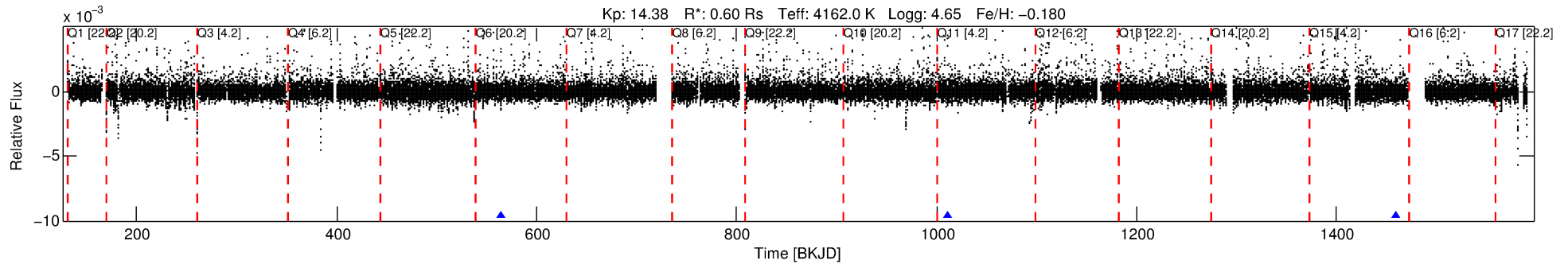
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011717648-02

No Significant Match Found

DV One-Page Summary

KIC: 11717648 Candidate: 2 of 4 Period: 447.173 d



DV Fit Results:

Period = 447.17307 [0.01397] d
Epoch = 564.5127 [0.0161] BKJD
Rp/R* = 0.0277 [0.0378]
a/R* = 466.13 [2225.41]
b = 0.58 [5.51]
Seff = 0.11 [0.02]
Teq = 145 [6] K
Rp = 1.82 [2.49] Re
a = 0.9614 [0.0744] AU
Ag = 104256.63 [287301.64] [0.36 σ]
Teffp = 4040 [2784] K [1.40 σ]

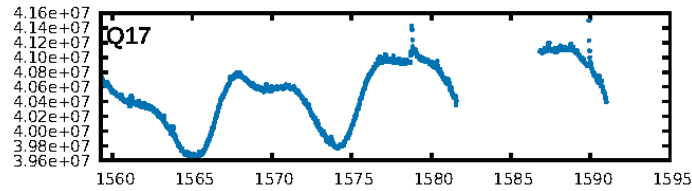
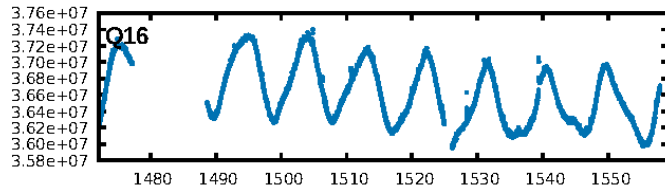
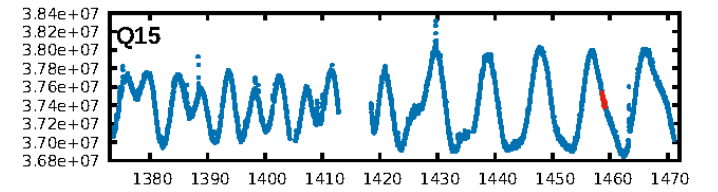
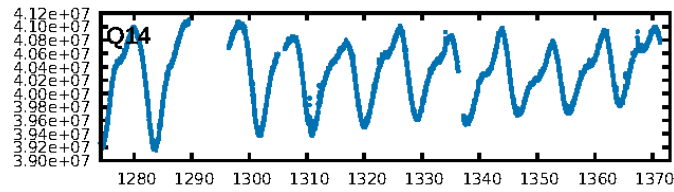
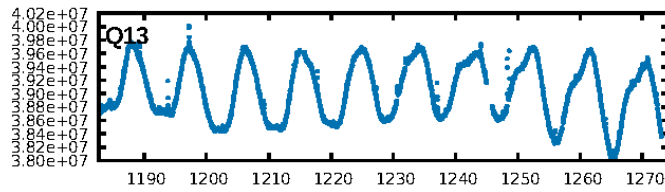
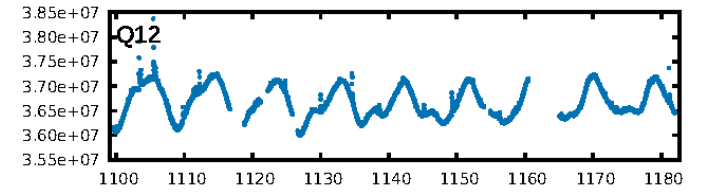
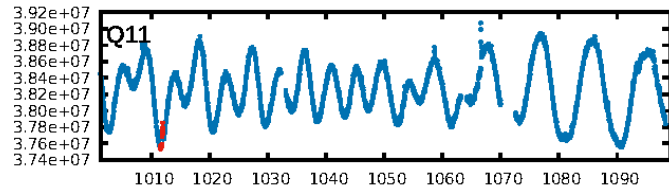
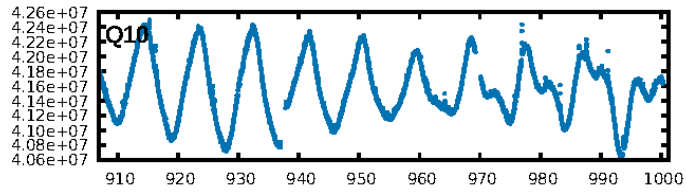
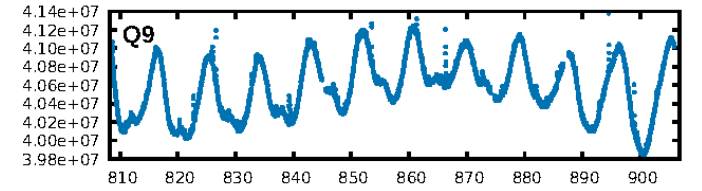
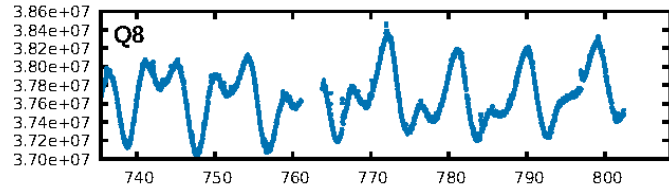
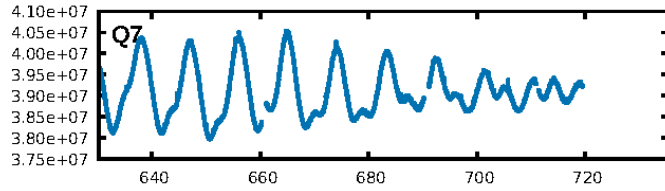
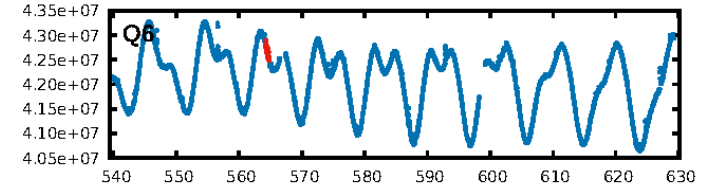
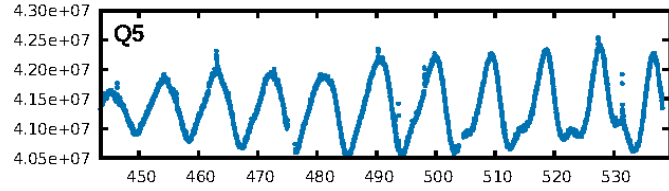
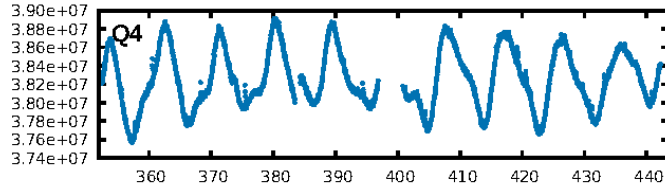
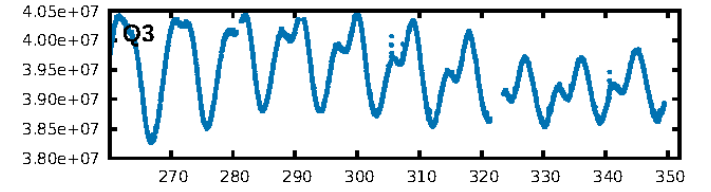
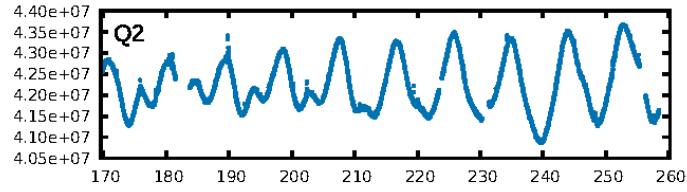
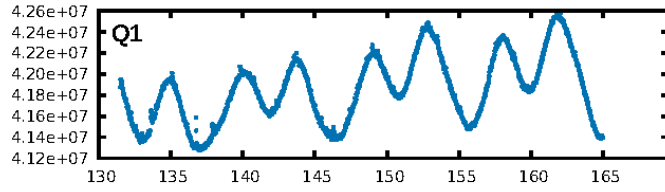
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [113.87 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 19.1%
Bootstrap-pfa: 1.20e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.3179
Centroid-sig: 4.9%
Centroid-so: 1.041 arcsec [0.99 σ]
OotOffset-rm: 0.238 arcsec [1.28 σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-rm: 0.329 arcsec [1.88 σ]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

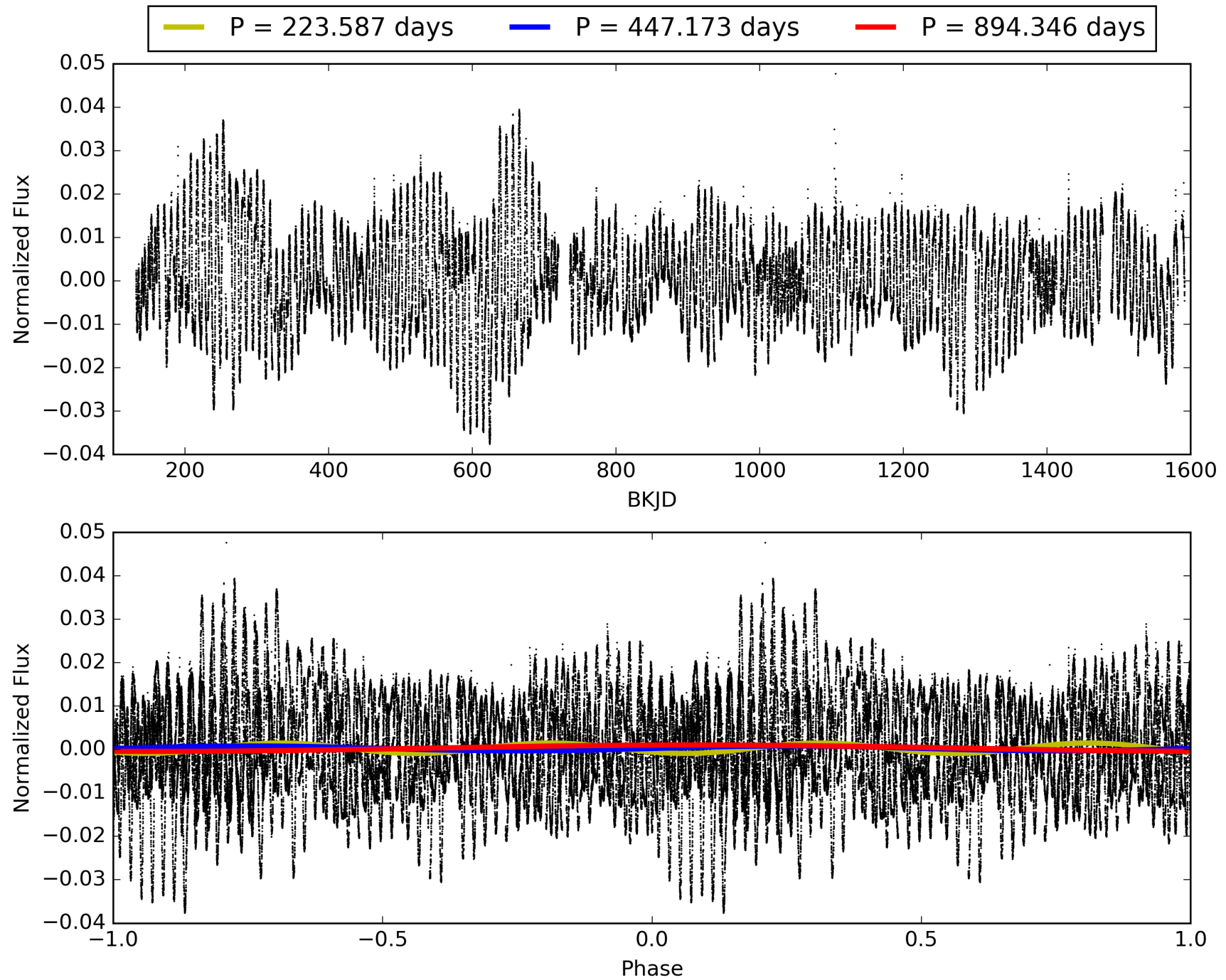
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:40:54 Z

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

TCE 011717648-02, PDC Light Curves

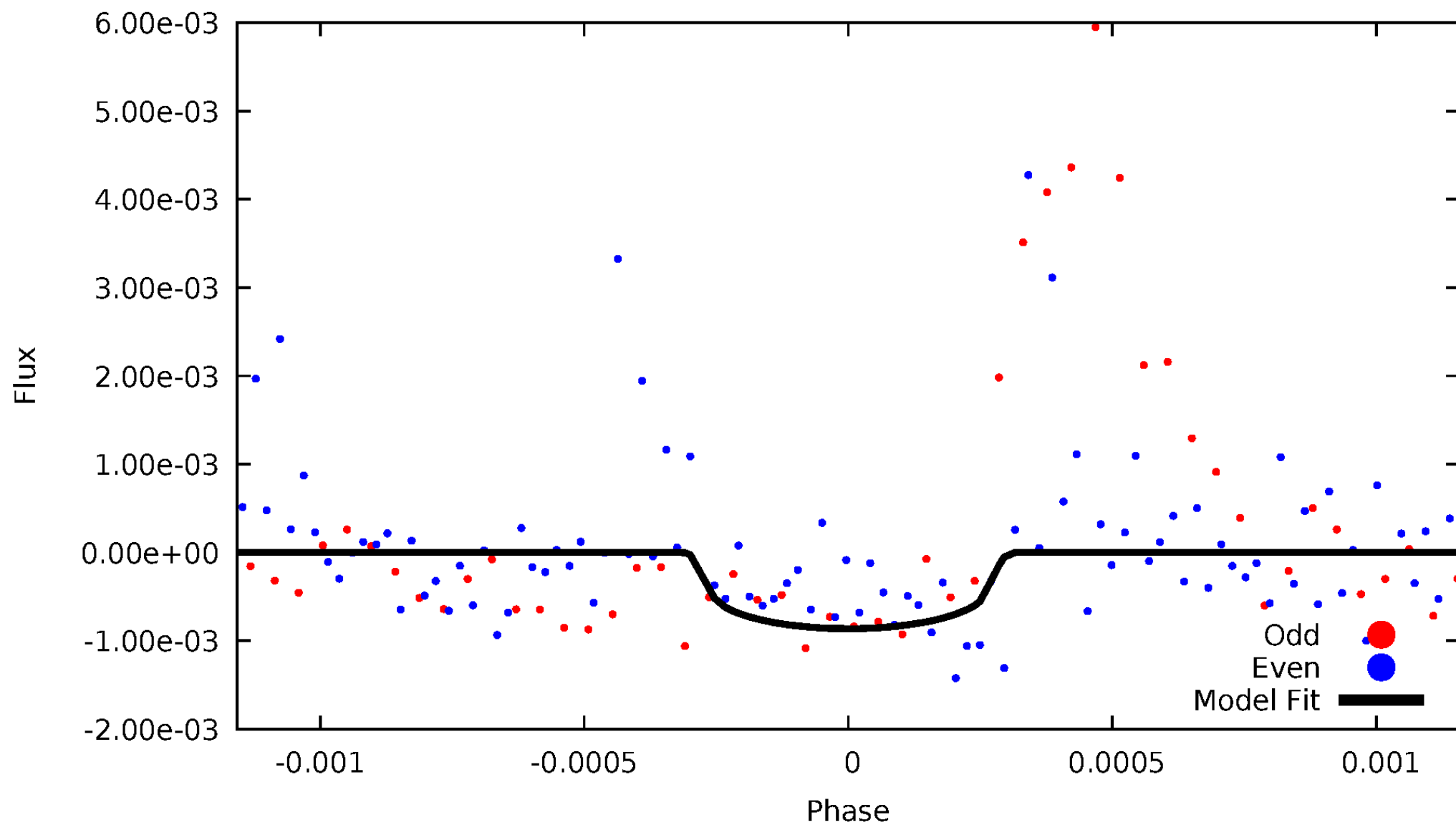


TCE 011717648-02



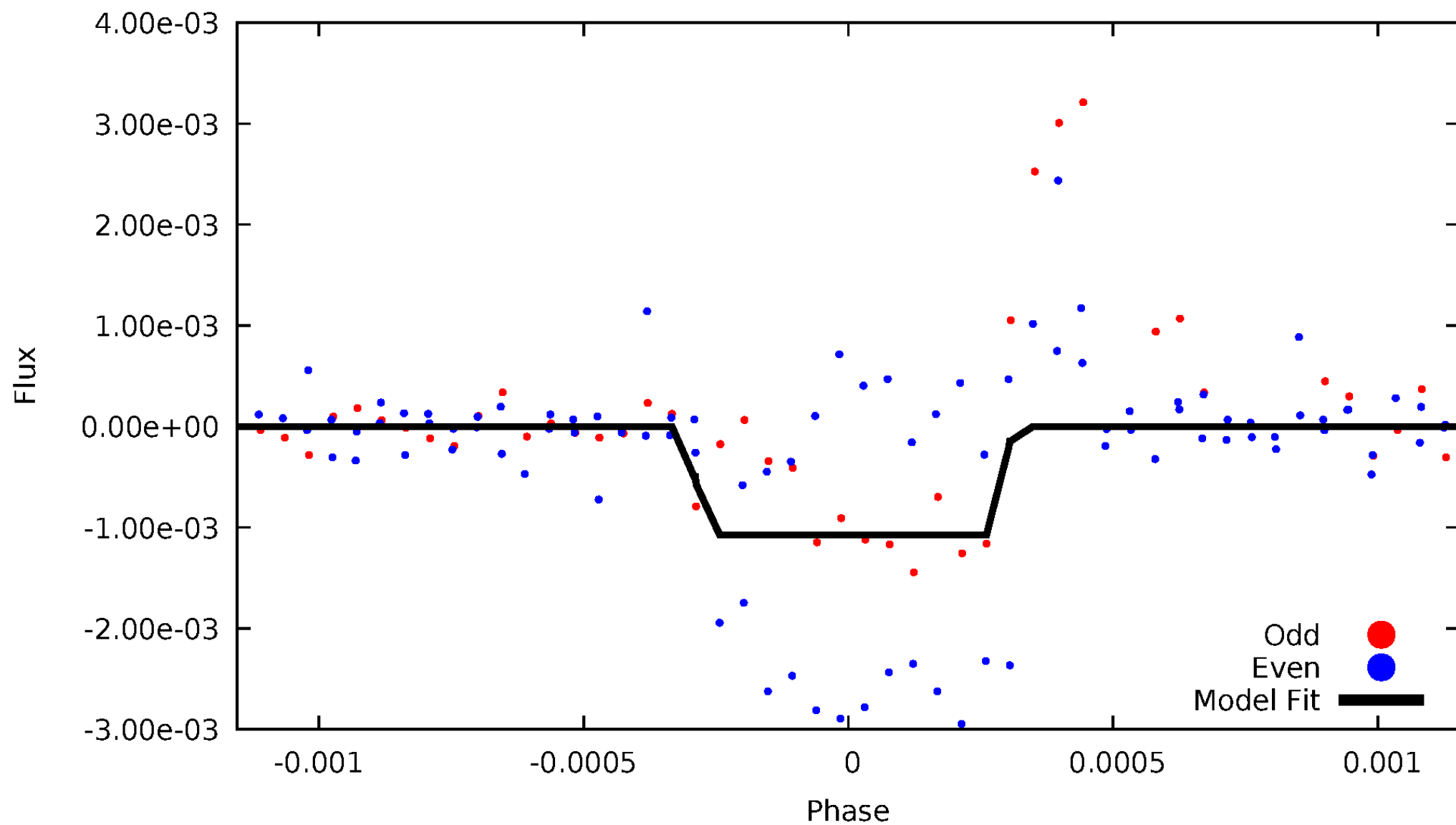
DV Odd/Even

TCE 011717648-02



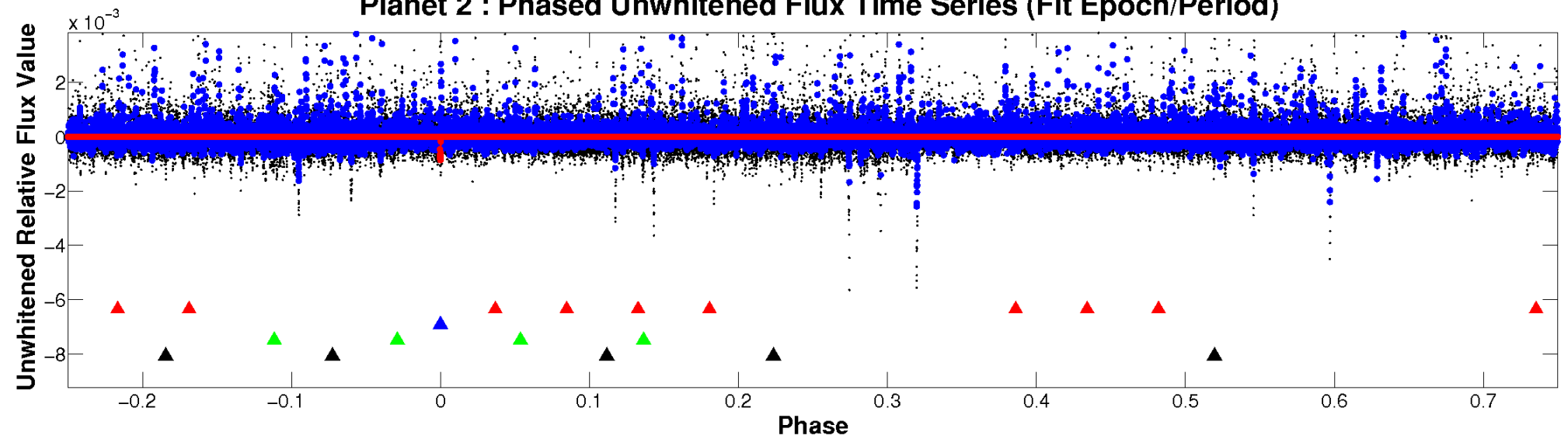
ALT Odd/Even

TCE 011717648-02

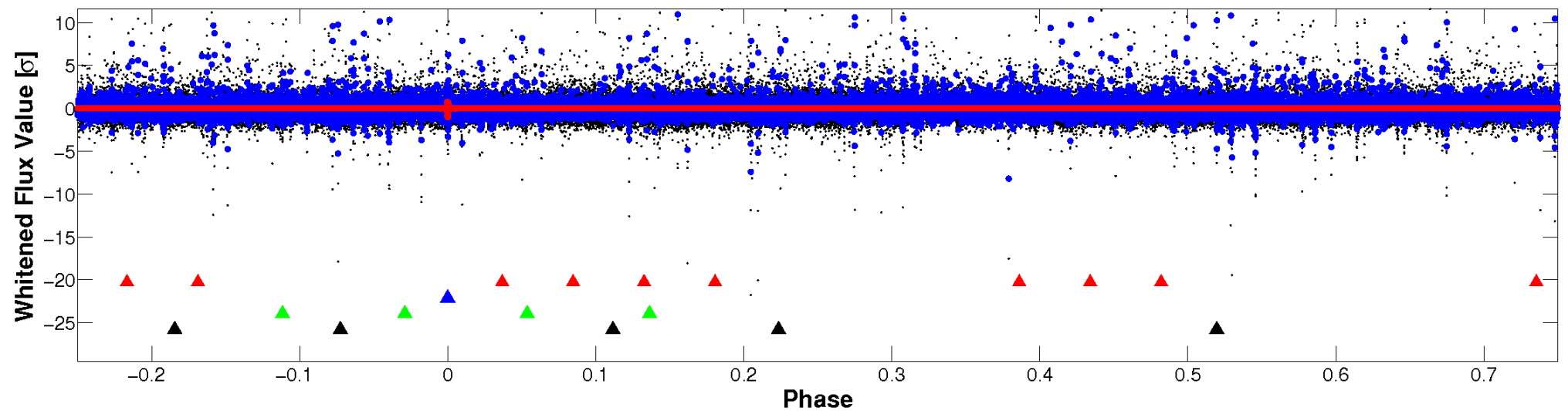


Non-Whitened Vs. Whitened Light Curve

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

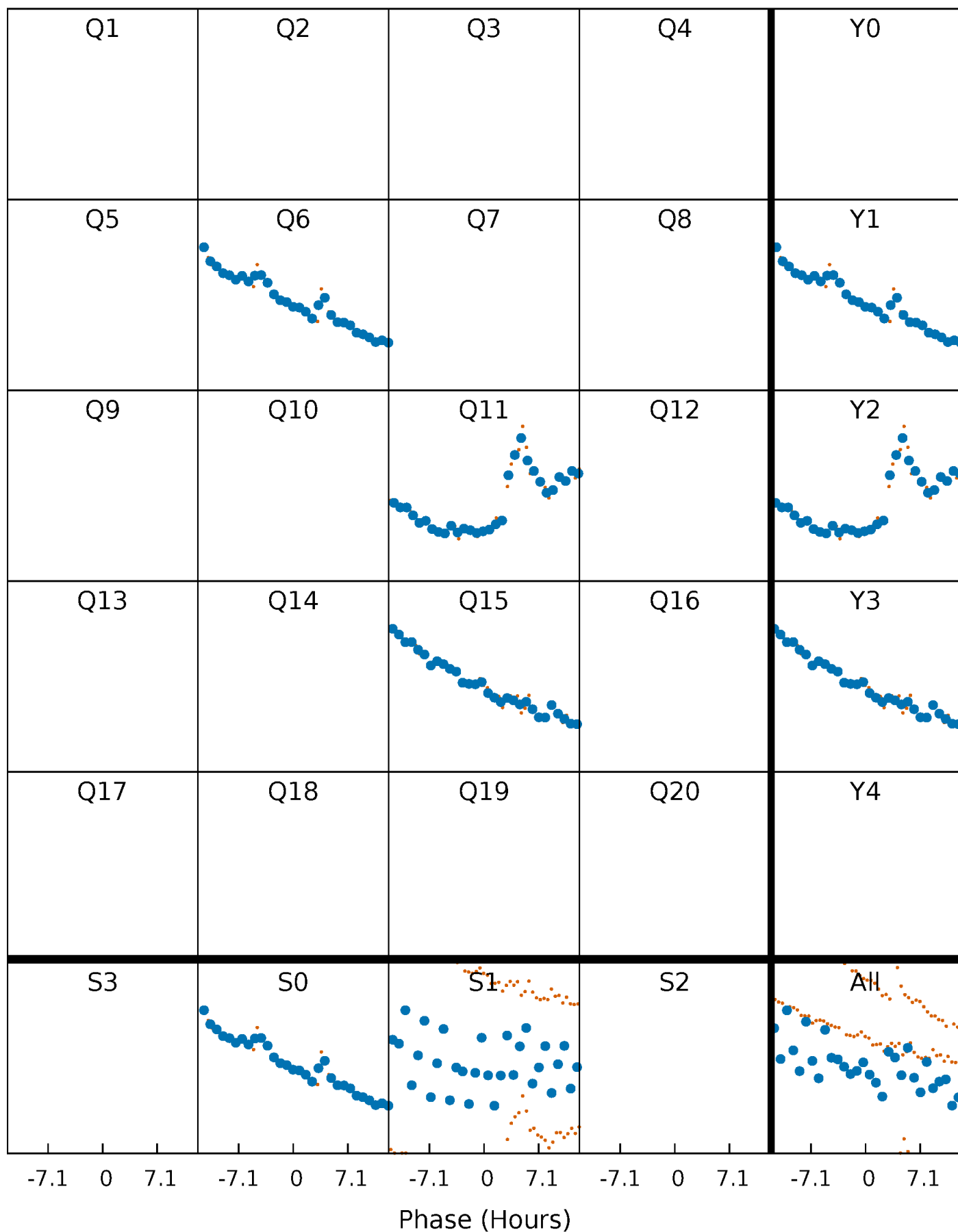


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



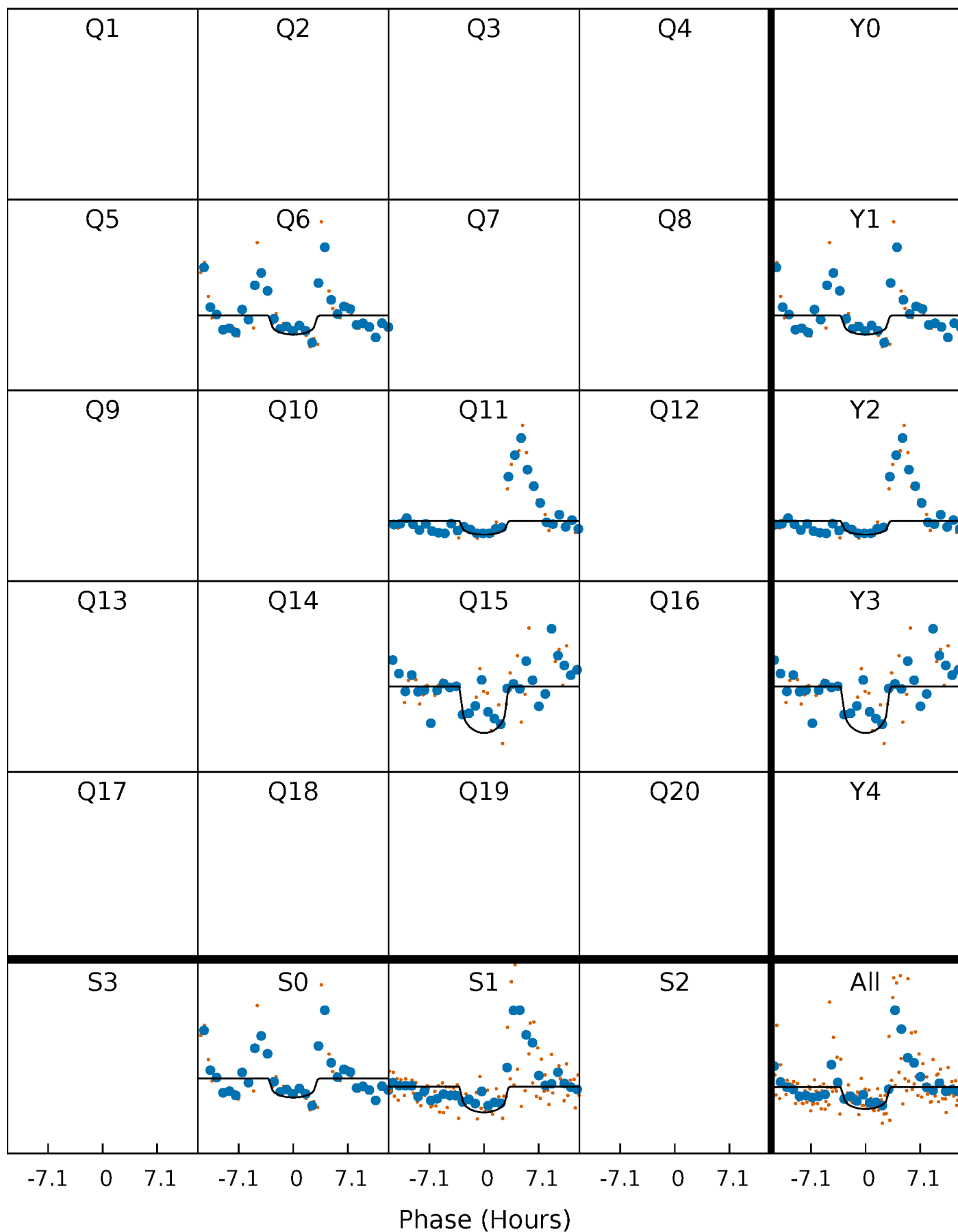
PDC Quarter-Phased Transit Curves

TCE 011717648-02 $P=447.173068$ Days $T_0=564.512709$ (BKJD)



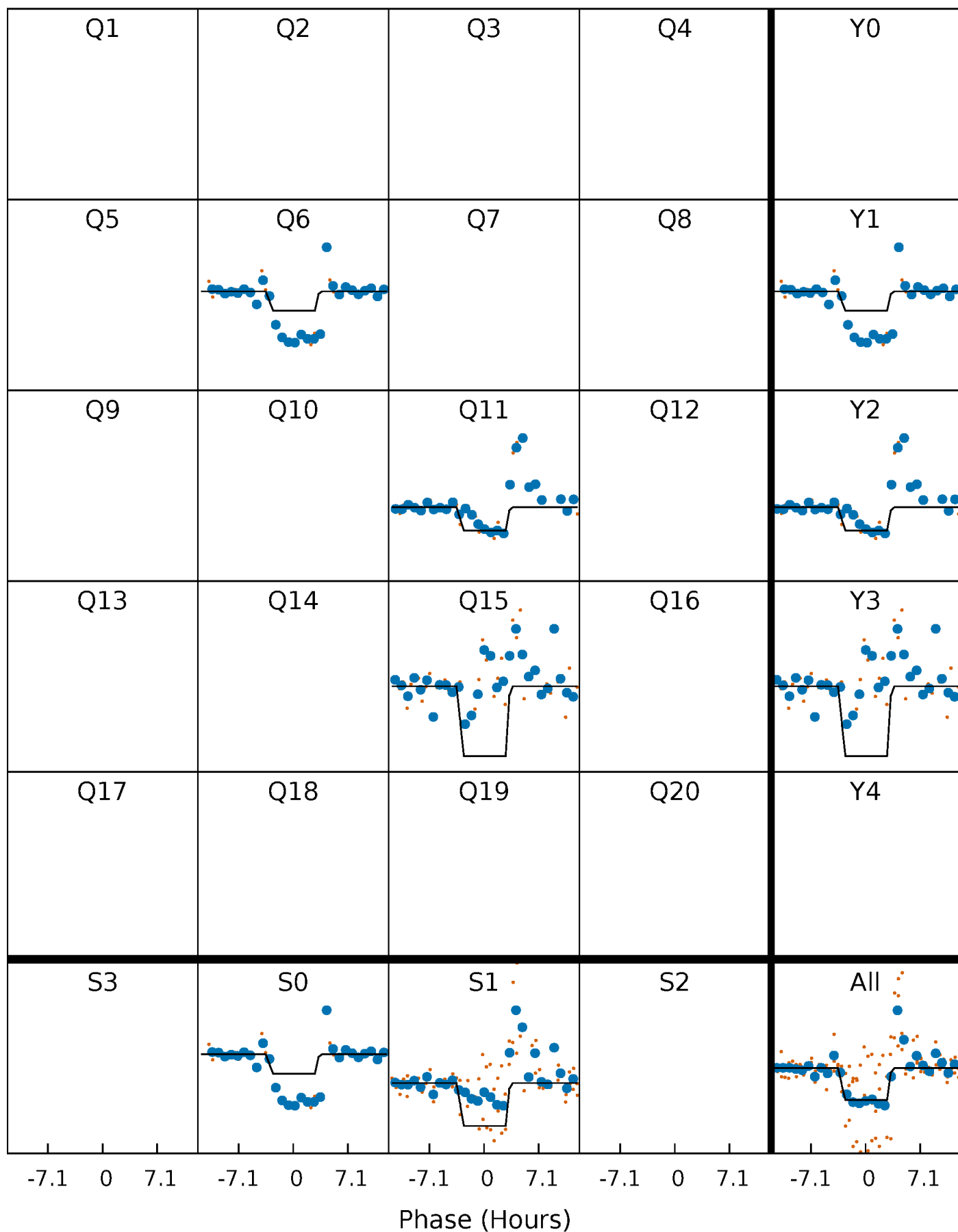
DV Quarter-Phased Transit Curves

TCE 011717648-02 P=447.173068 Days $T_0=564.512709$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

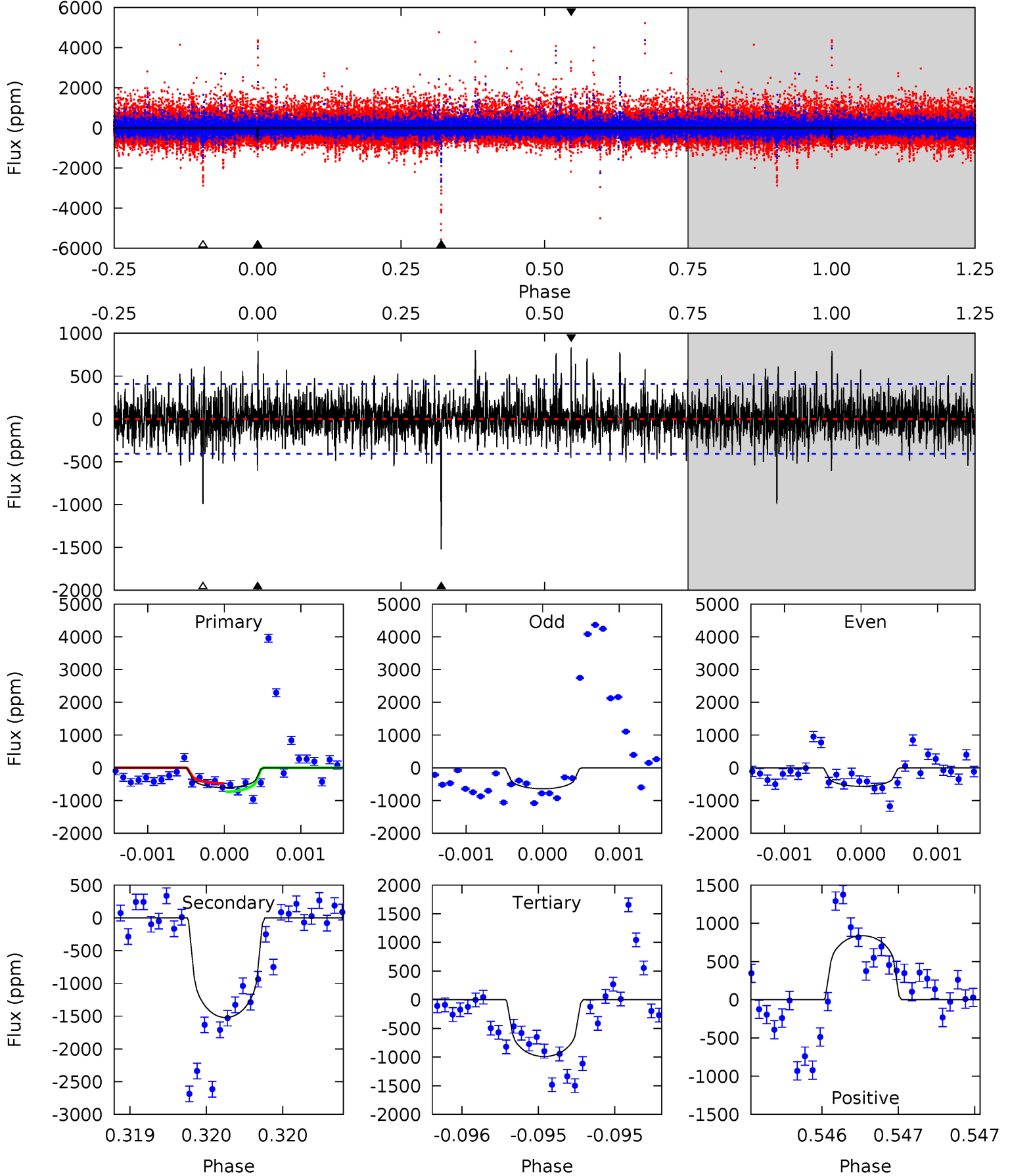
TCE 011717648-02 P=447.168027 Days $T_0=564.508096$ (BKJD)



DV Model-Shift Uniqueness Test

011717648-02, P = 447.173068 Days, E = 117.339641 Days

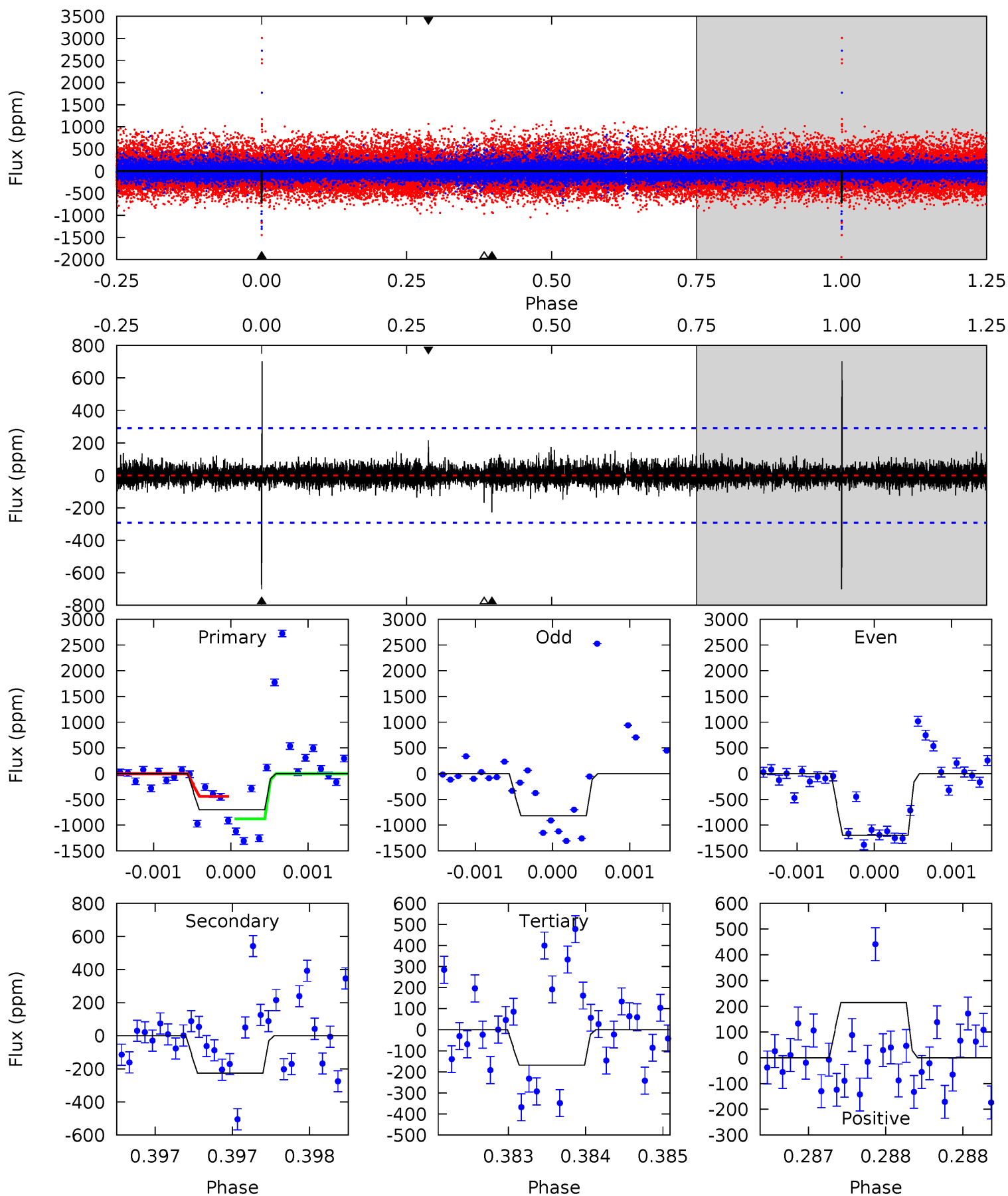
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.21 | 20.7 | 13.4 | 11.4 | 5.54 | 3.42 | 2.22 | -5.24 | -3.17 | 7.22 | 9.28 | 0.41 | 0.92 | 0.36 | 1.75 |



Alt Model-Shift Uniqueness Test

011717648-02, P = 447.168027 Days, E = 117.340069 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.3 | 4.30 | 3.20 | 4.08 | 5.54 | 3.43 | 0.62 | 10.1 | 9.25 | 1.11 | 0.22 | 4.58 | 1.33 | 0.50 | 4.07 |



Stellar Parameters For KIC 011717648

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4162^{+124}_{-124} | $4.650^{+0.052}_{-0.024}$ | $-0.180^{+0.300}_{-0.300}$ | $0.603^{+0.043}_{-0.060}$ | $0.592^{+0.065}_{-0.053}$ | $3.805^{+0.963}_{-0.436}$ |
| | +3%/-3% | +1%/-1% | +167%/-167% | +7%/-10% | +11%/-9% | +25%/-11% |
| 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 011717648-02 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|----------------|------------------------|----------------------|-----------------------|-----------------------------|
| DV | -1522 ± 74 | $2.60^{+2.26}_{-1.69}$ | 202^{+7}_{-7} | 4150^{+2344}_{-759} | $119047^{+814071}_{-85462}$ |
| Alt. | -226 ± 53 | $2.74^{+2.13}_{-1.67}$ | 202^{+7}_{-7} | 3003^{+1005}_{-432} | 15650^{+81874}_{-10881} |

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

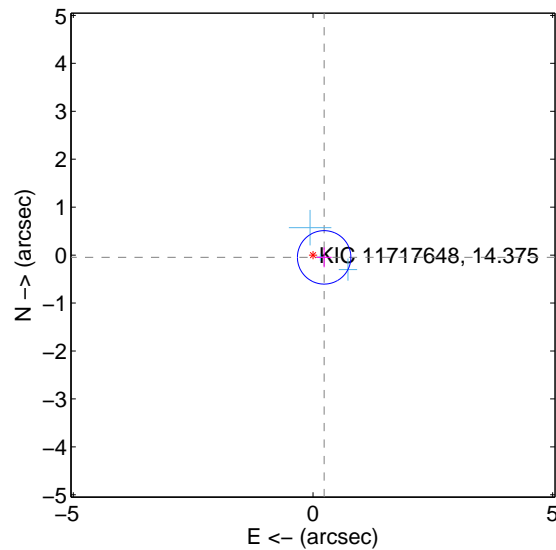
Supplemental centroid analysis for 011717648-02. Kepler magnitude: 14.38. Transit SNR 5.92

There are 3 quarters with good PRF difference image offsets

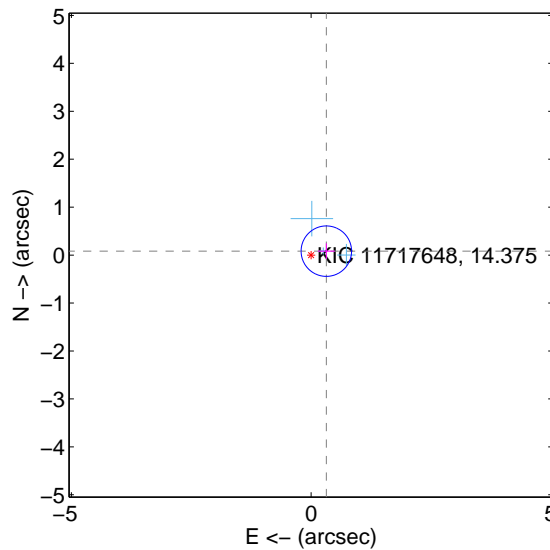
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.238 ± 0.186 | 1.28 | -0.233 ± 0.158 | -0.047 ± 0.208 |
| PRF-fit source offset from KIC position | 0.329 ± 0.175 | 1.88 | -0.319 ± 0.176 | 0.082 ± 0.162 |
| photometric centroid source offset | 1.04 ± 1.06 | 0.99 | 0.06 ± 1.00 | -1.04 ± 1.06 |

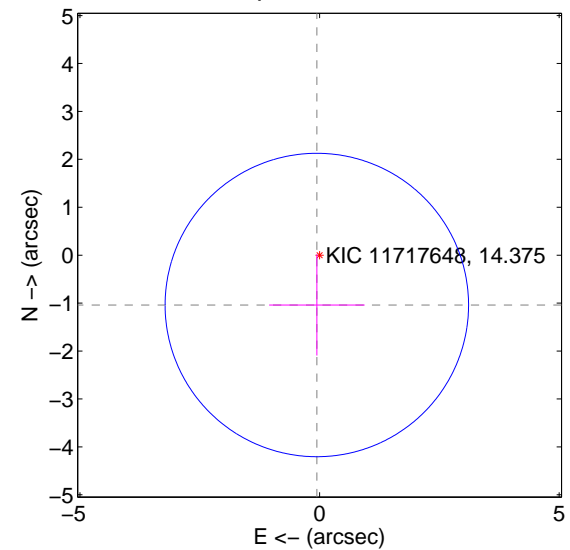
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

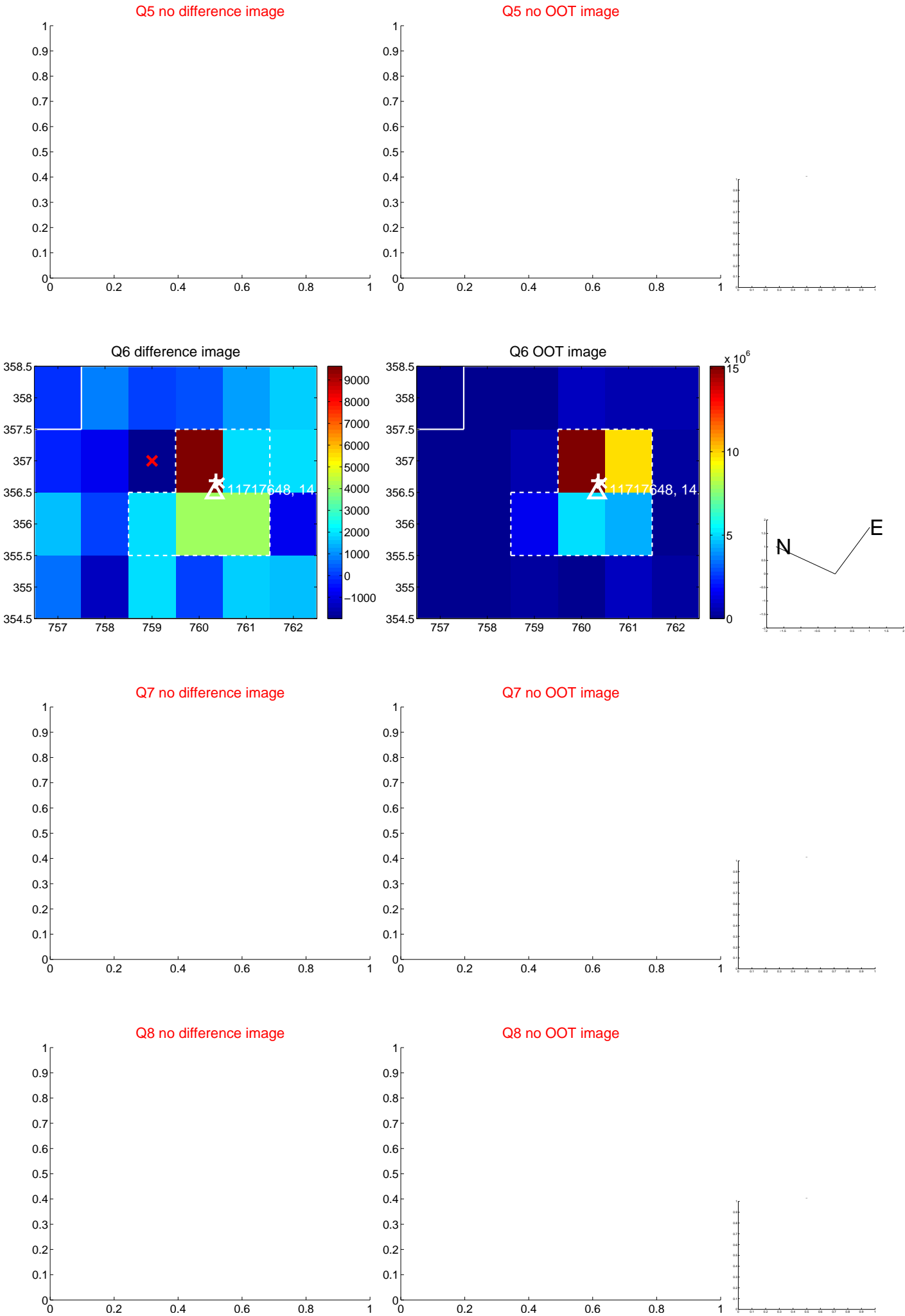


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

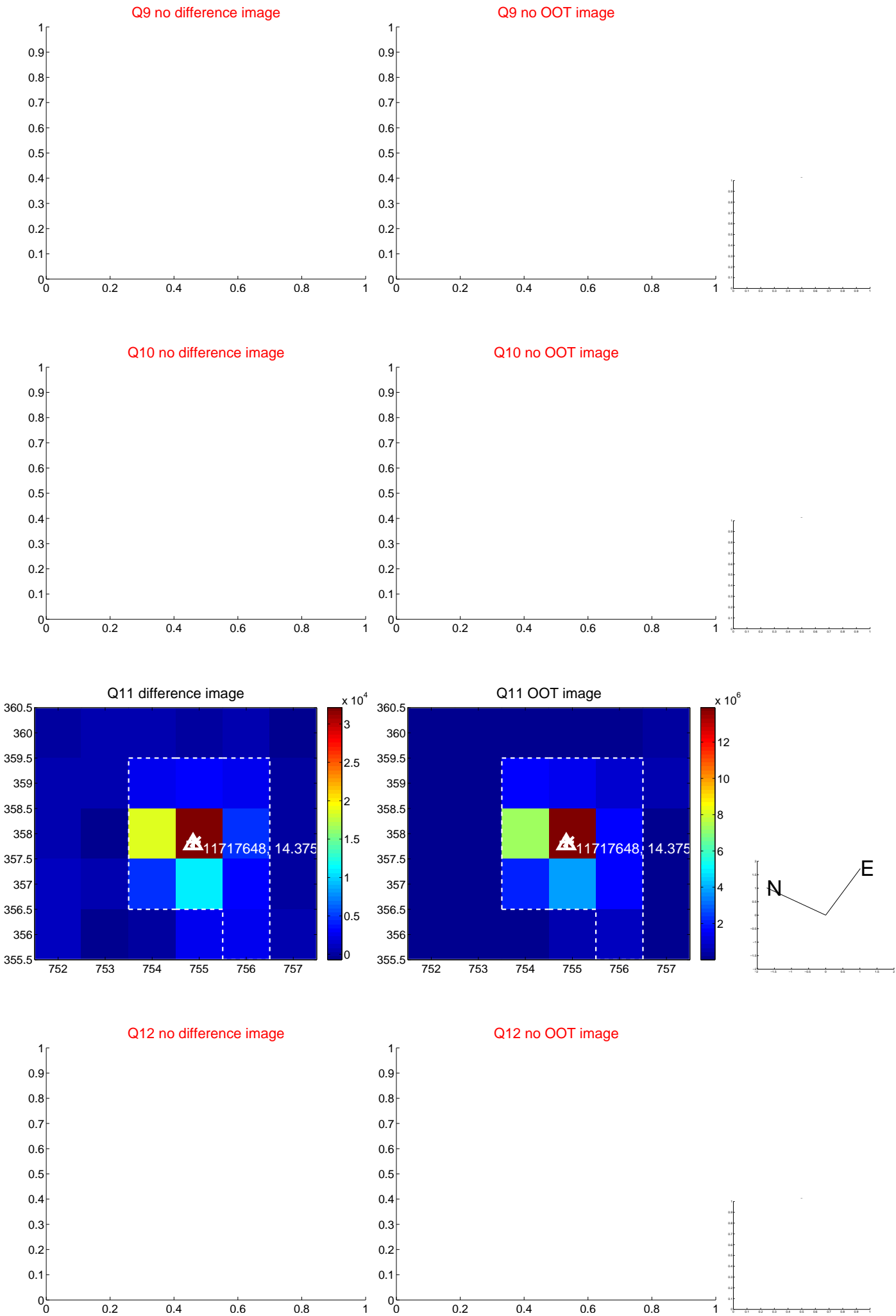
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



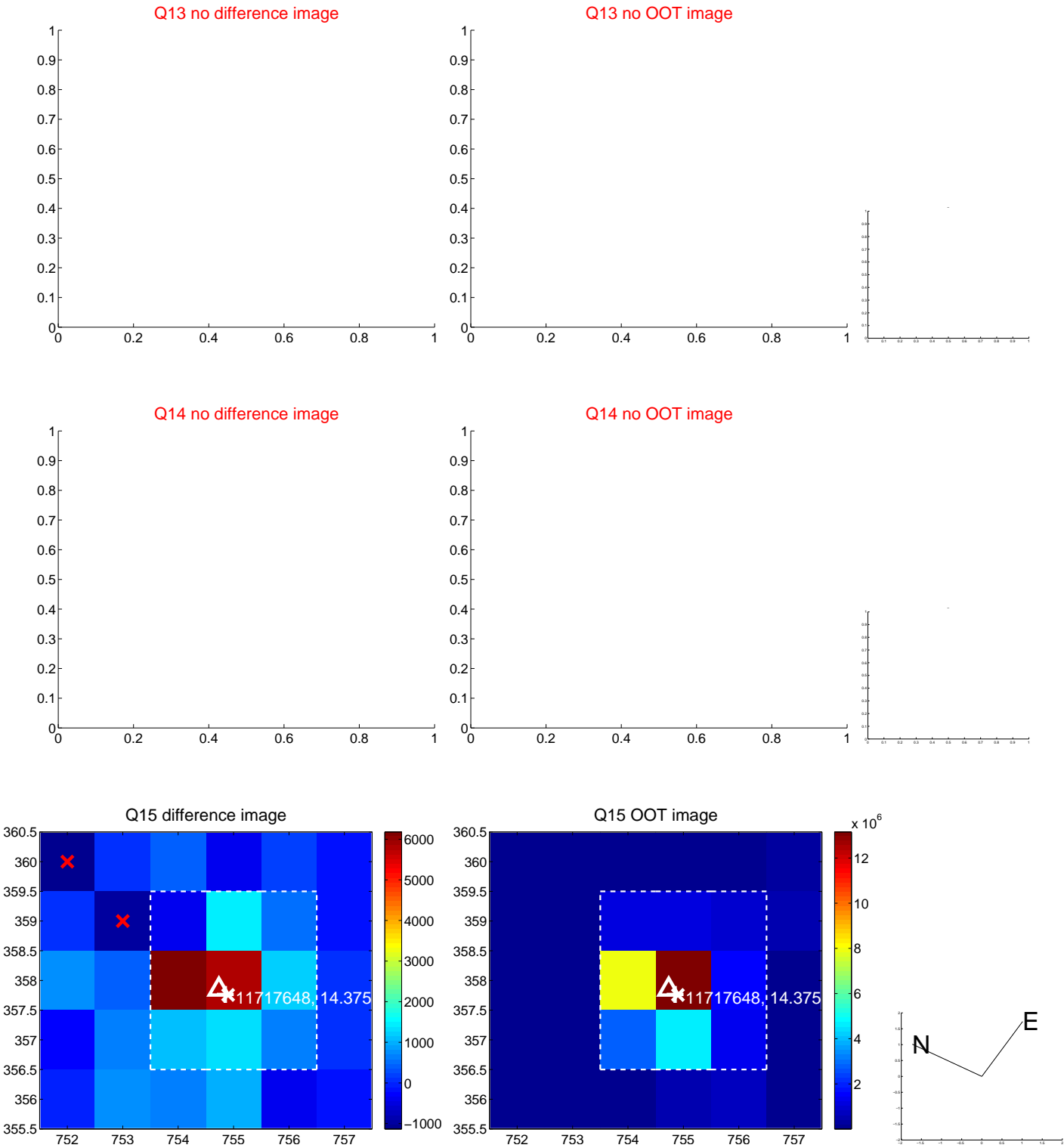
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



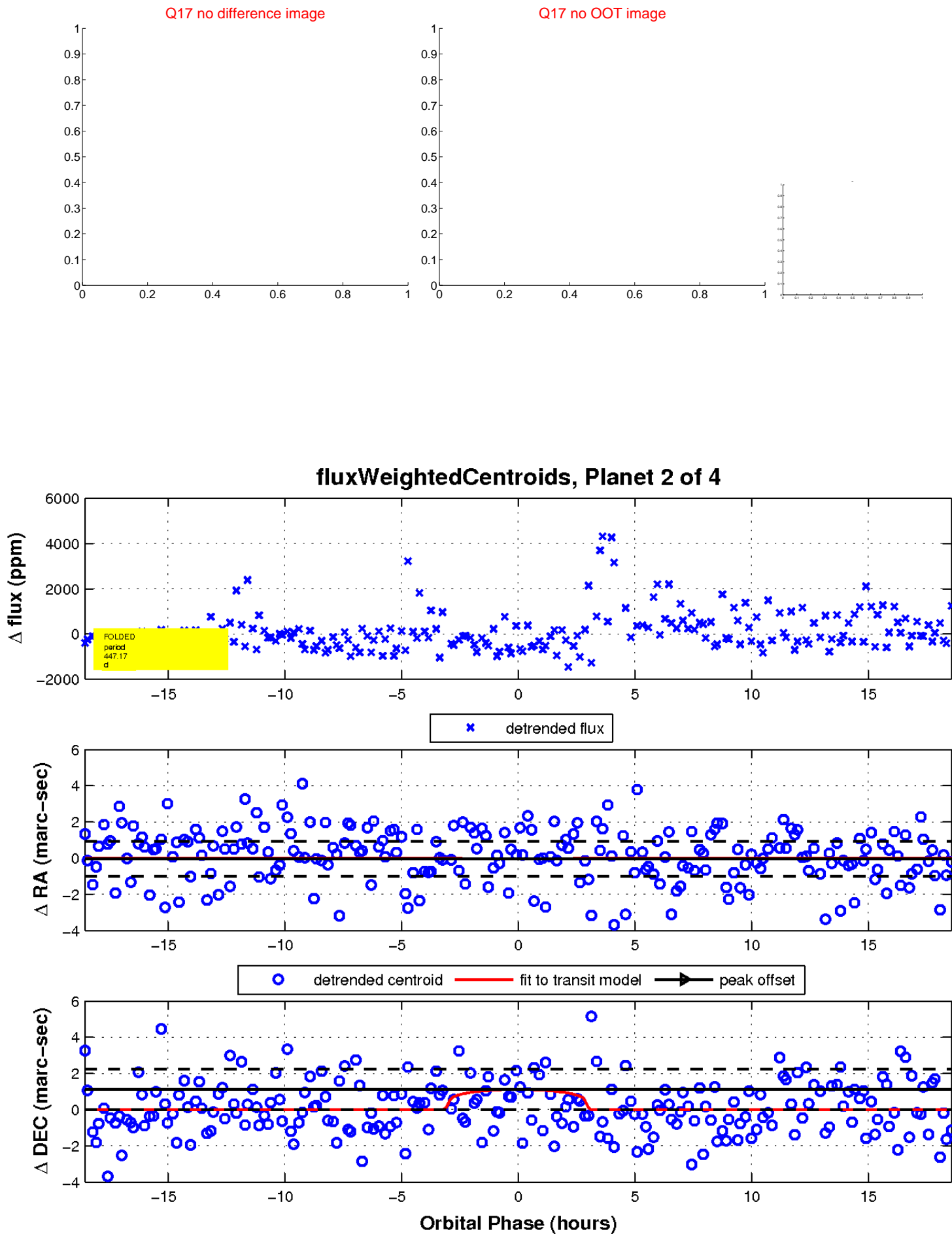
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

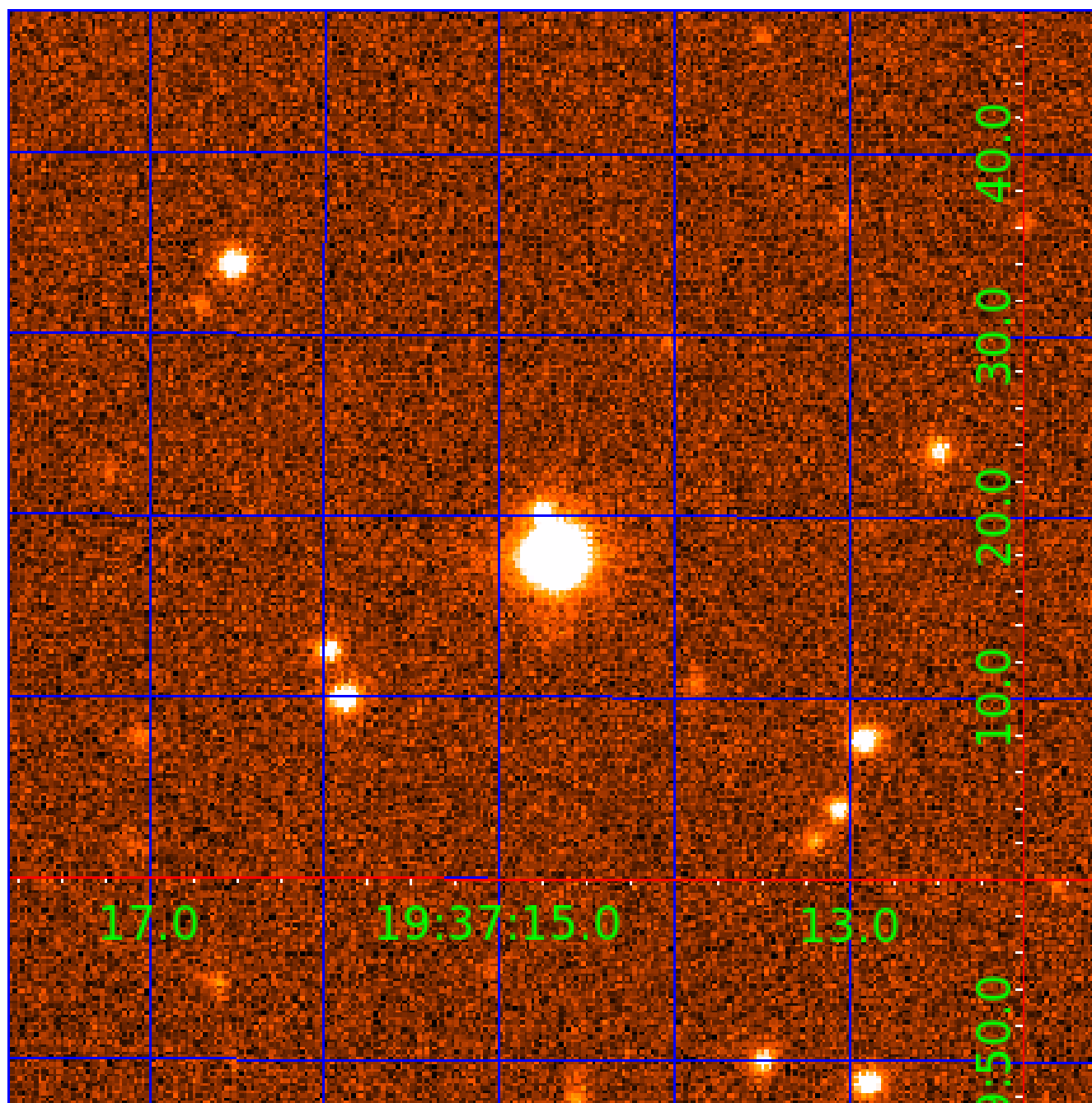


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011717648

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011717648-01 | OBS | No | 156.201232 | 133.798885 | 649.7 | 5.161 | 10.8 | 7.9 | 0.60 | 4162 | 1.64 | 0.43 |
| 011717648-02 | OBS | No | 447.173068 | 564.512709 | 861.7 | 6.207 | 11.9 | 5.9 | 0.60 | 4162 | 1.82 | 0.11 |
| 011717648-03 | OBS | No | 410.219512 | 178.306387 | 1039.7 | 4.705 | 12.0 | 7.2 | 0.60 | 4162 | 2.12 | 0.12 |
| 011717648-04 | OBS | No | 314.797591 | 167.255764 | 1236.3 | 5.361 | 11.9 | 8.7 | 0.60 | 4162 | 2.64 | 0.17 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011717648-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV |
| 011717648-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS |
| 011717648-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS |
| 011717648-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS |

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

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

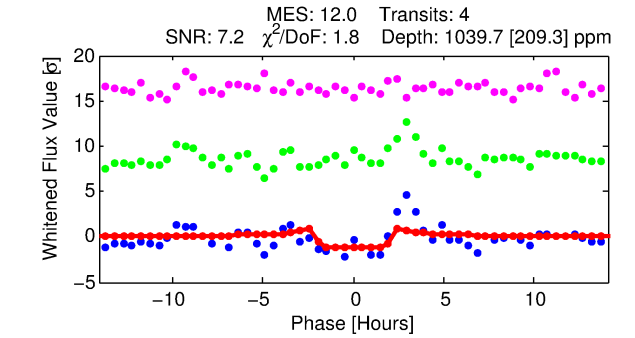
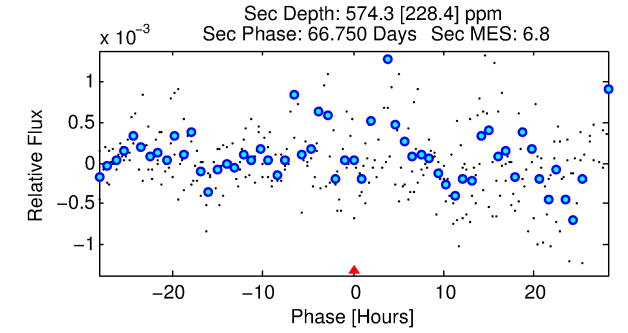
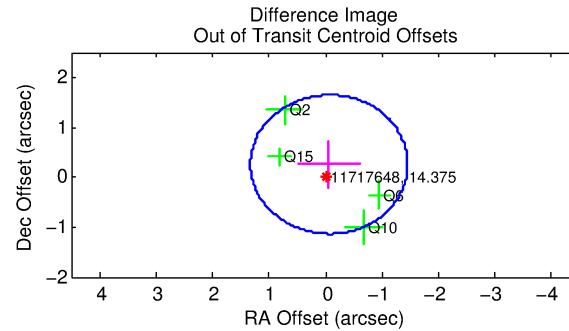
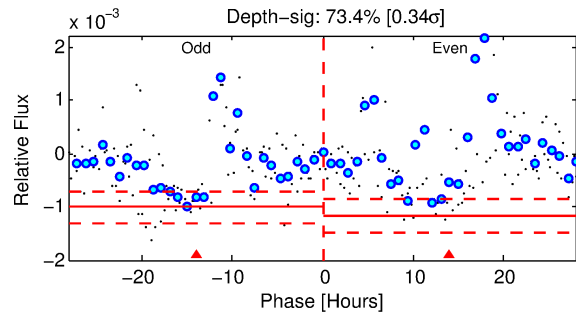
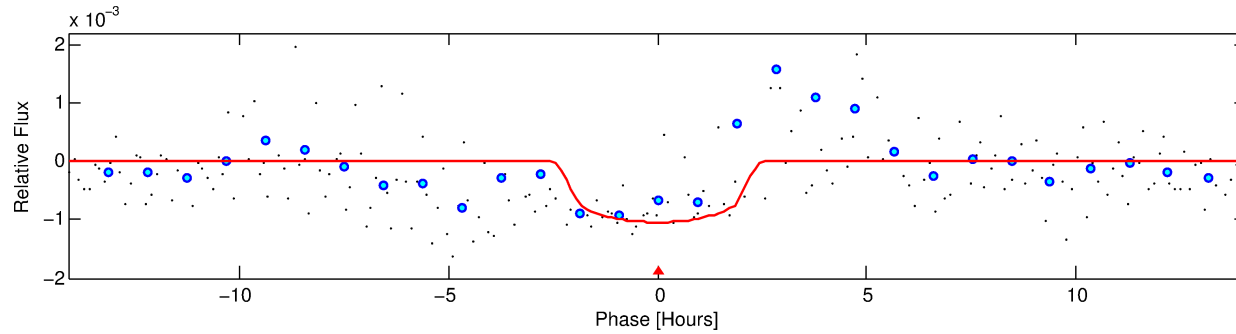
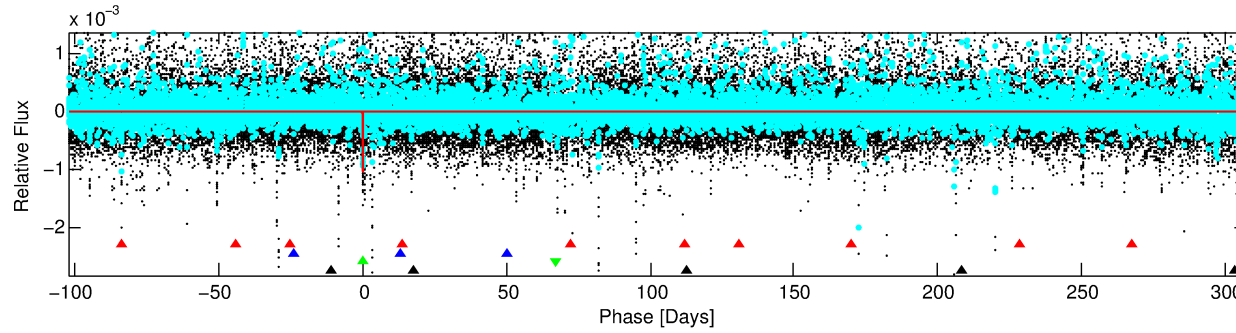
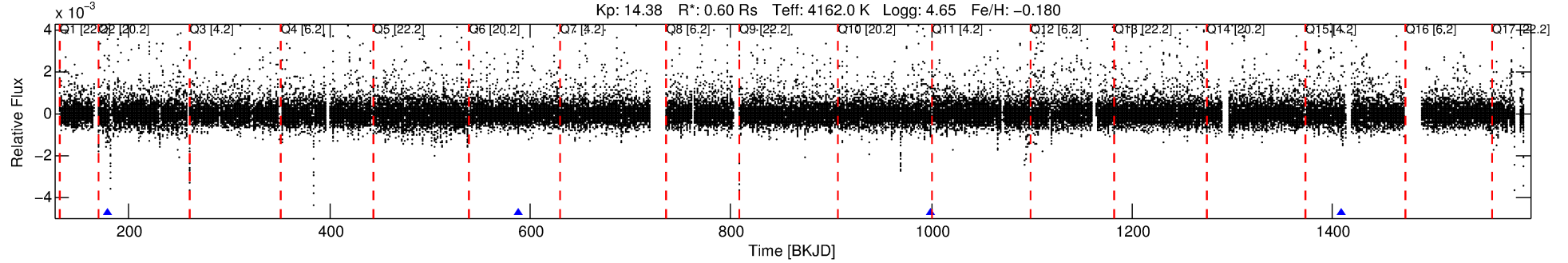
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011717648-03

No Significant Match Found

DV One-Page Summary

KIC: 11717648 Candidate: 3 of 4 Period: 410.220 d



DV Fit Results:

Period = 410.21951 [0.00581] d
Epoch = 178.3064 [0.0117] BKJD
Rp/R* = 0.0322 [0.0230]
a/R* = 471.48 [1221.46]
b = 0.75 [1.52]
Seff = 0.12 [0.02]
Teq = 150 [6] K
Rp = 2.12 [1.53] Re
a = 0.9077 [0.0703] AU
Ag = 57847.51 [86040.68] [0.67 σ]
Teffp = 3588 [1335] K [2.58 σ]

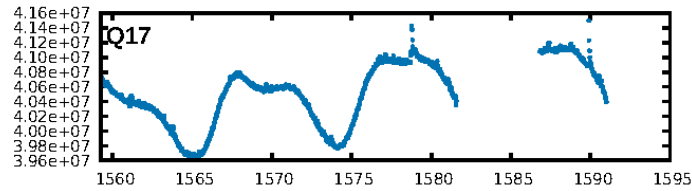
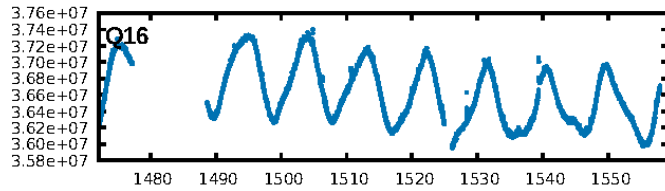
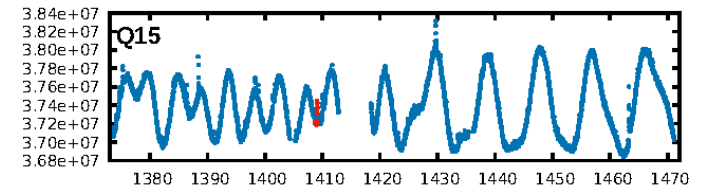
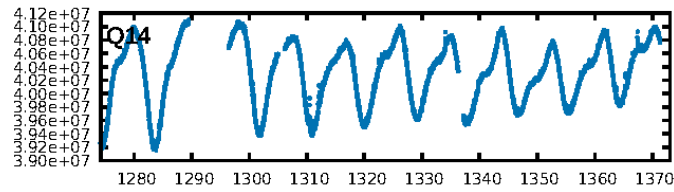
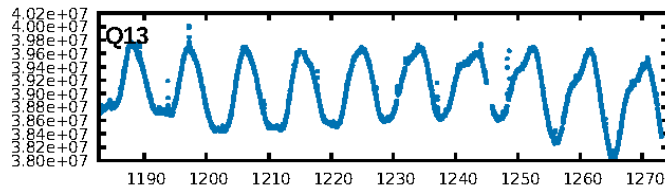
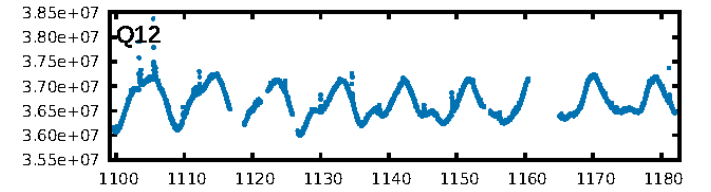
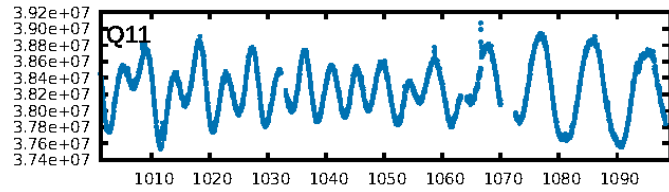
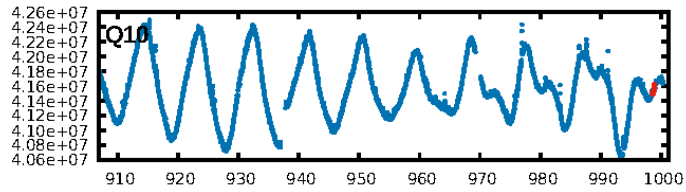
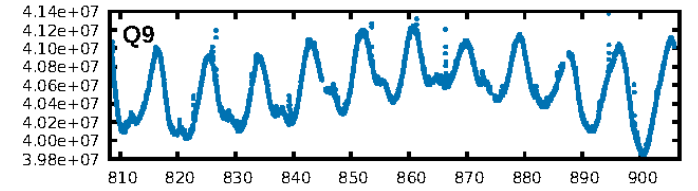
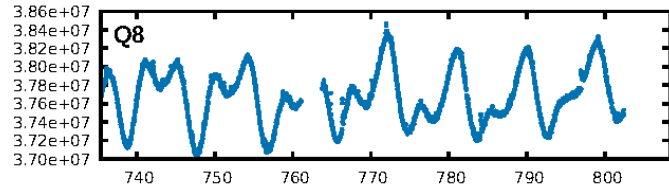
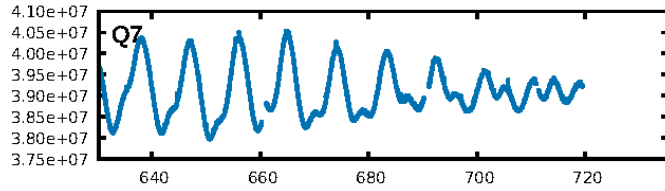
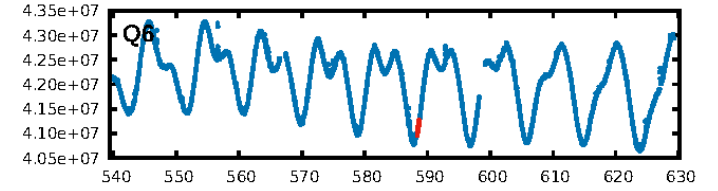
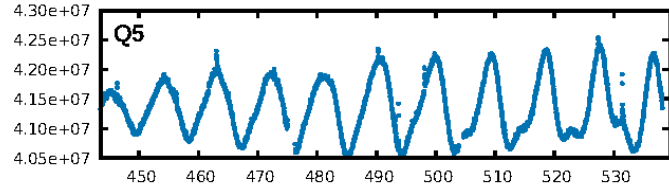
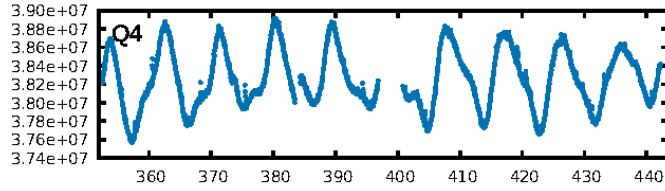
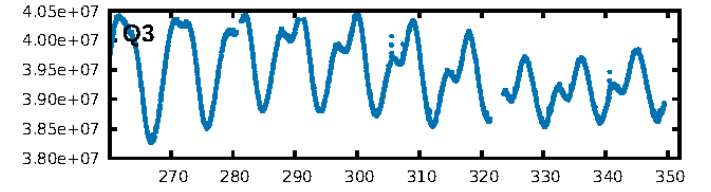
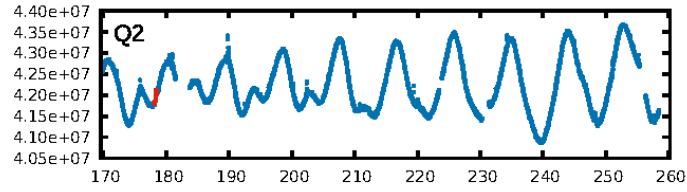
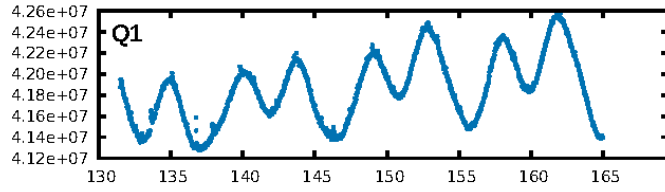
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [321.05 σ]
LongPeriod-sig: 100.0% [113.87 σ]
ModelChiSquare2-sig: 1.8%
ModelChiSquareGof-sig: 28.3%
Bootstrap-pfa: 2.02e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.372
Centroid-sig: 38.2%
Centroid-so: 0.884 arcsec [0.97 σ]
OotOffset-rm: 0.261 arcsec [0.56 σ]
KicOffset-rm: 0.481 arcsec [1.07 σ]
OotOffset-st: 3/1/0/0 [4]
KicOffset-st: 3/1/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

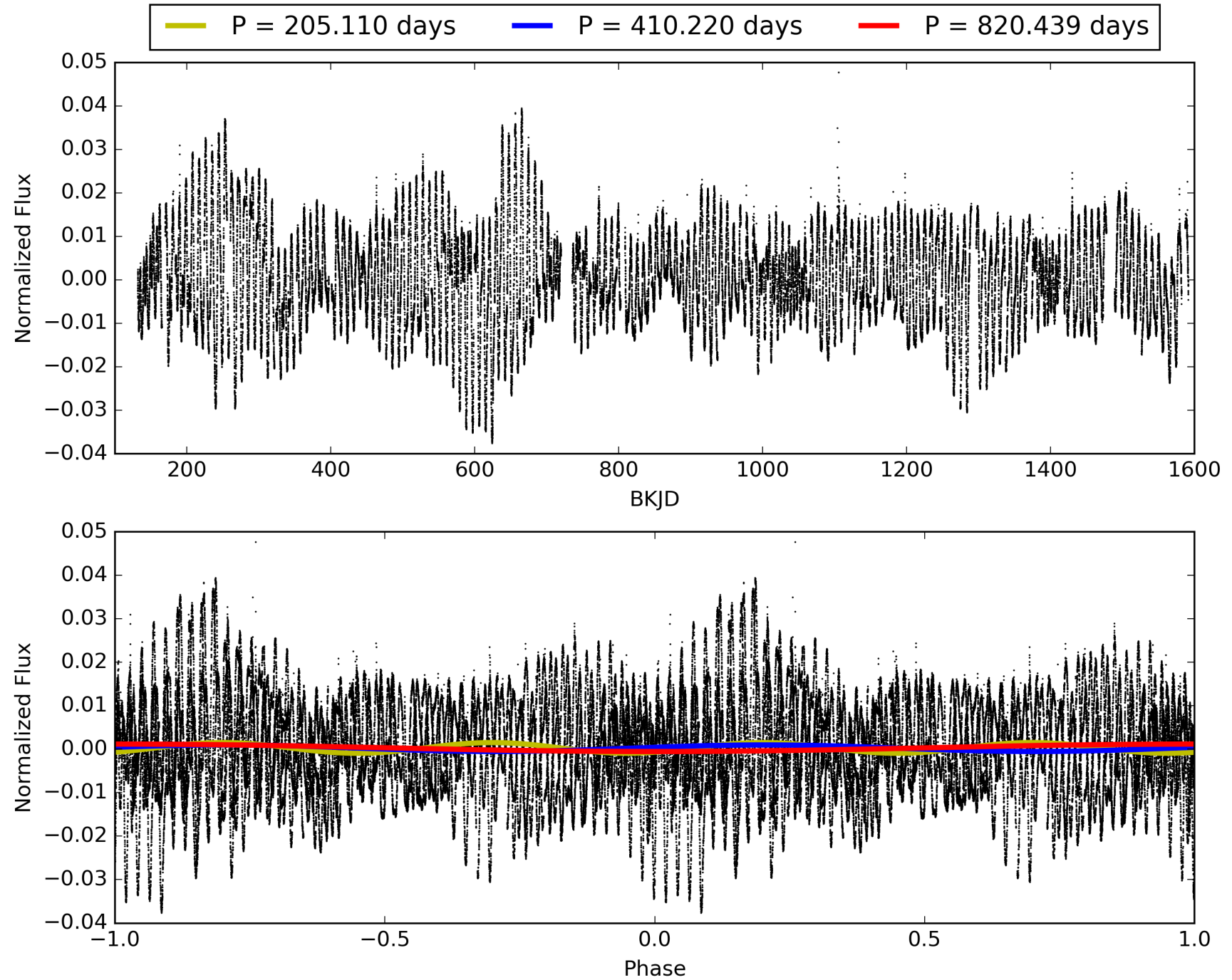
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:41:08 Z

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

TCE 011717648-03, PDC Light Curves

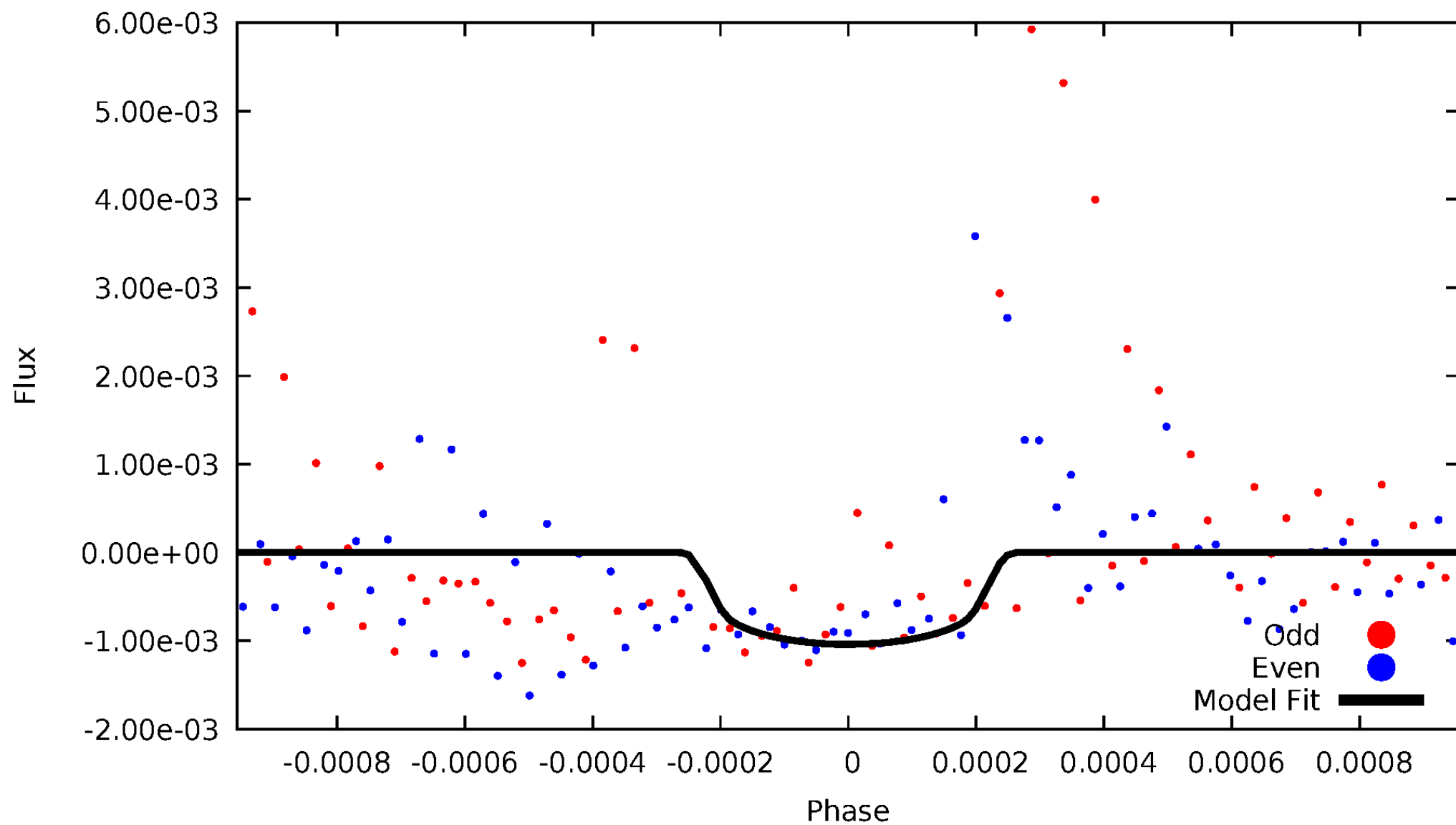


TCE 011717648-03



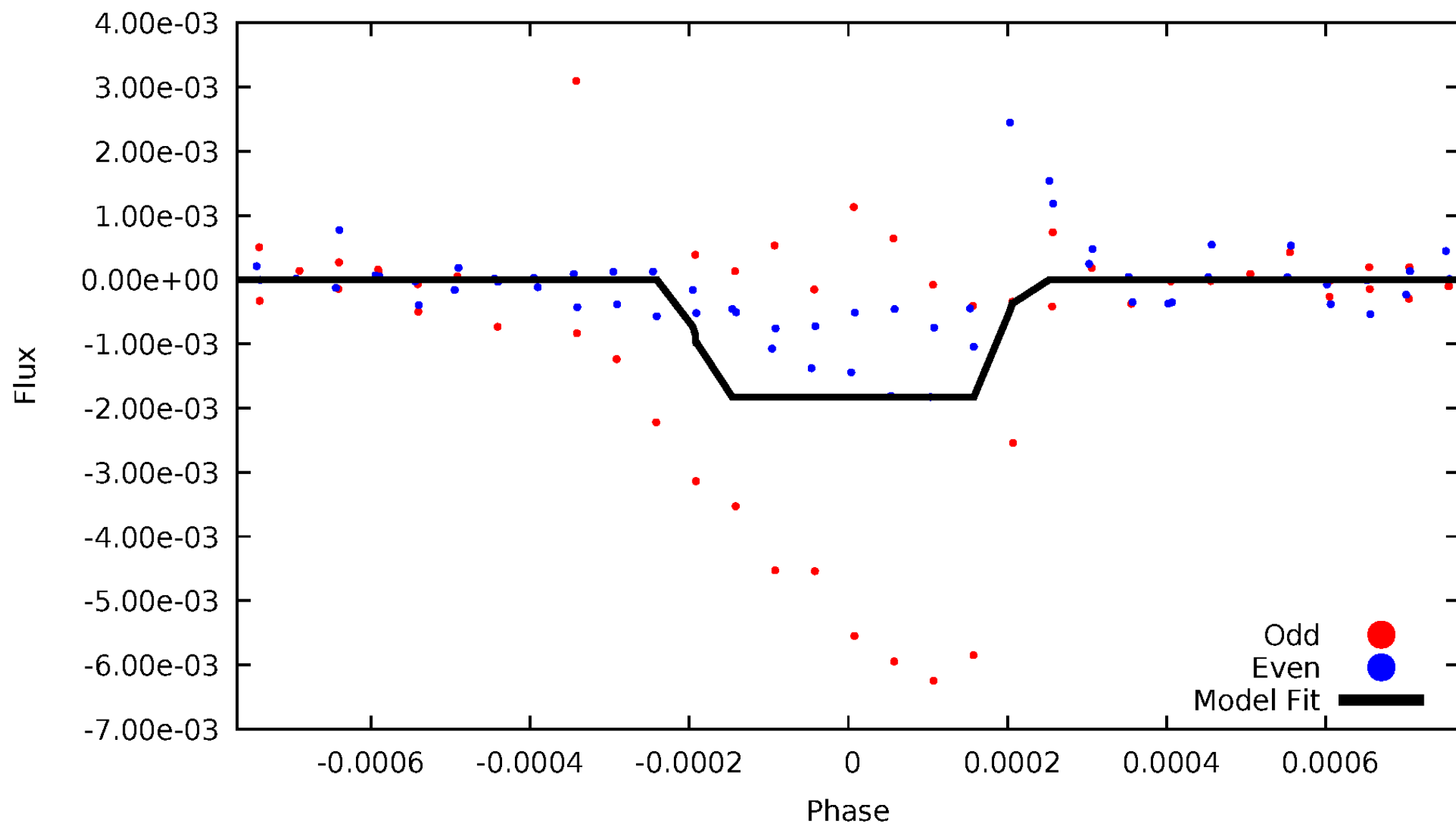
DV Odd/Even

TCE 011717648-03



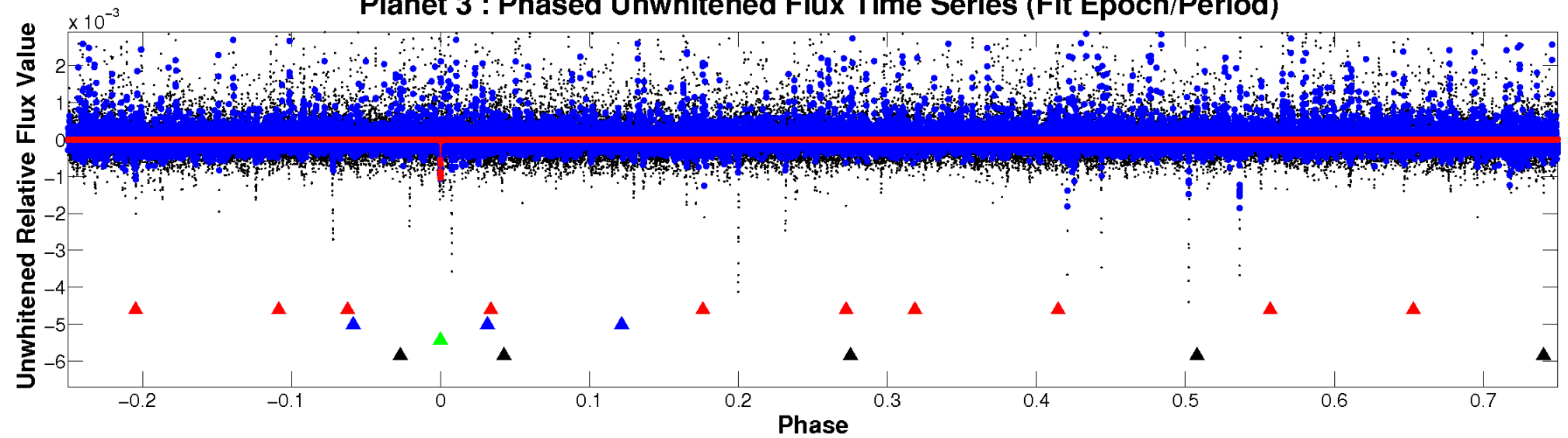
ALT Odd/Even

TCE 011717648-03

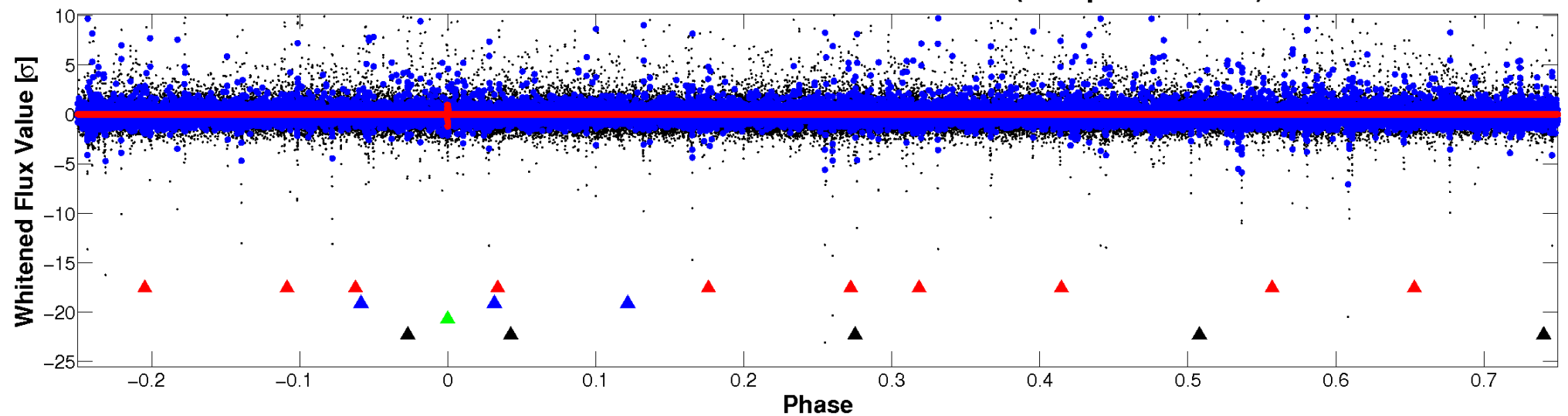


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

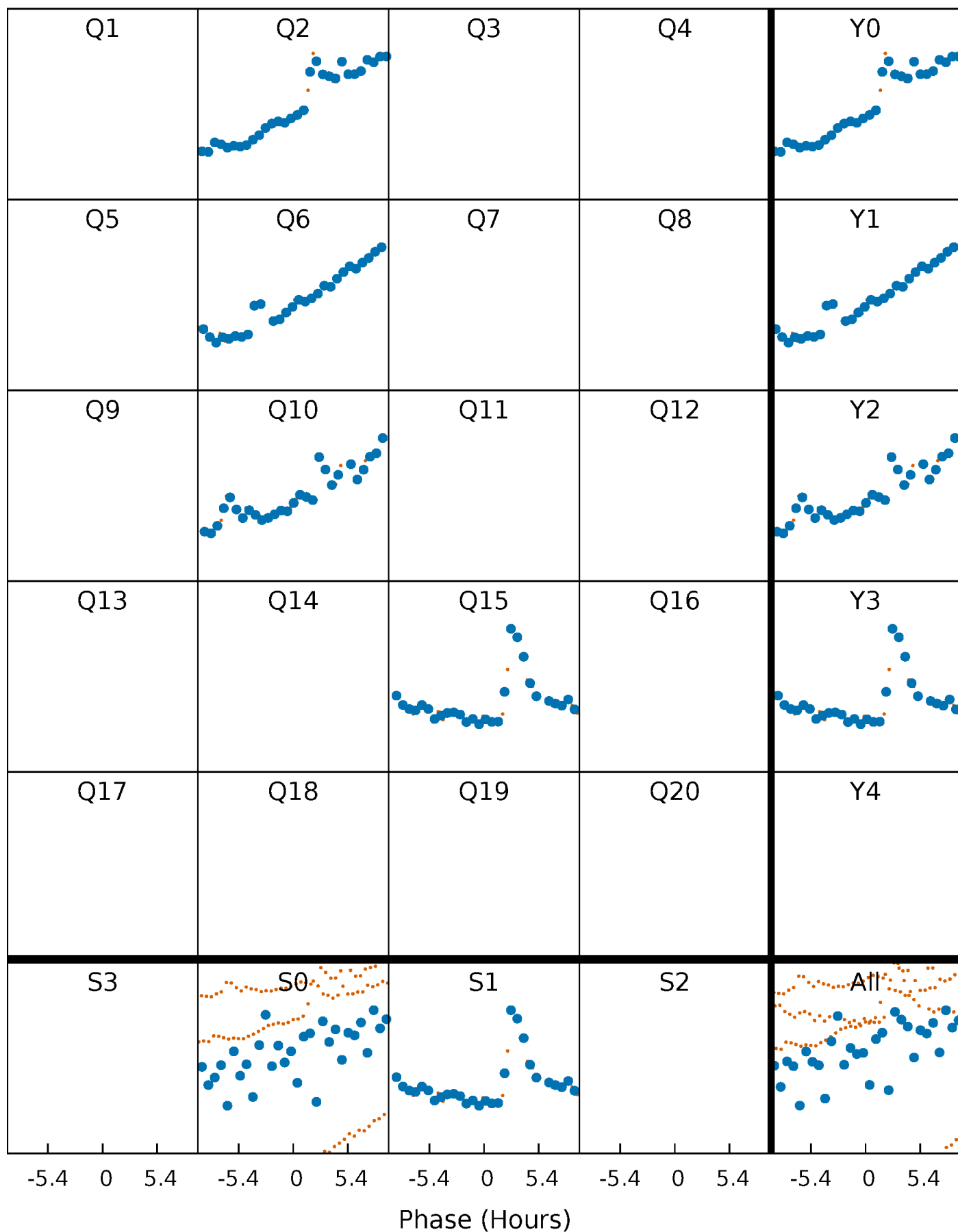


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



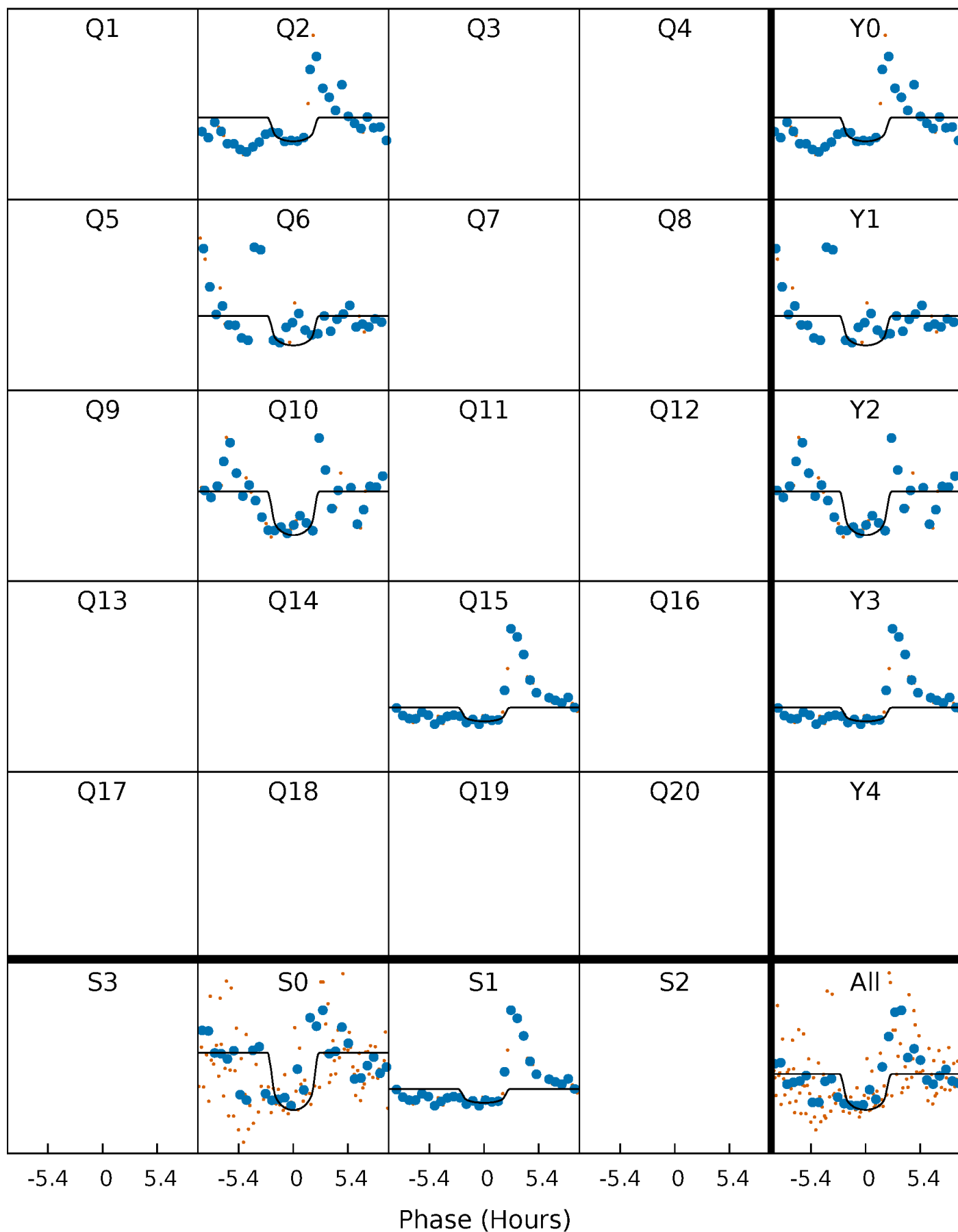
PDC Quarter-Phased Transit Curves

TCE 011717648-03 P=410.219512 Days $T_0=178.306387$ (BKJD)



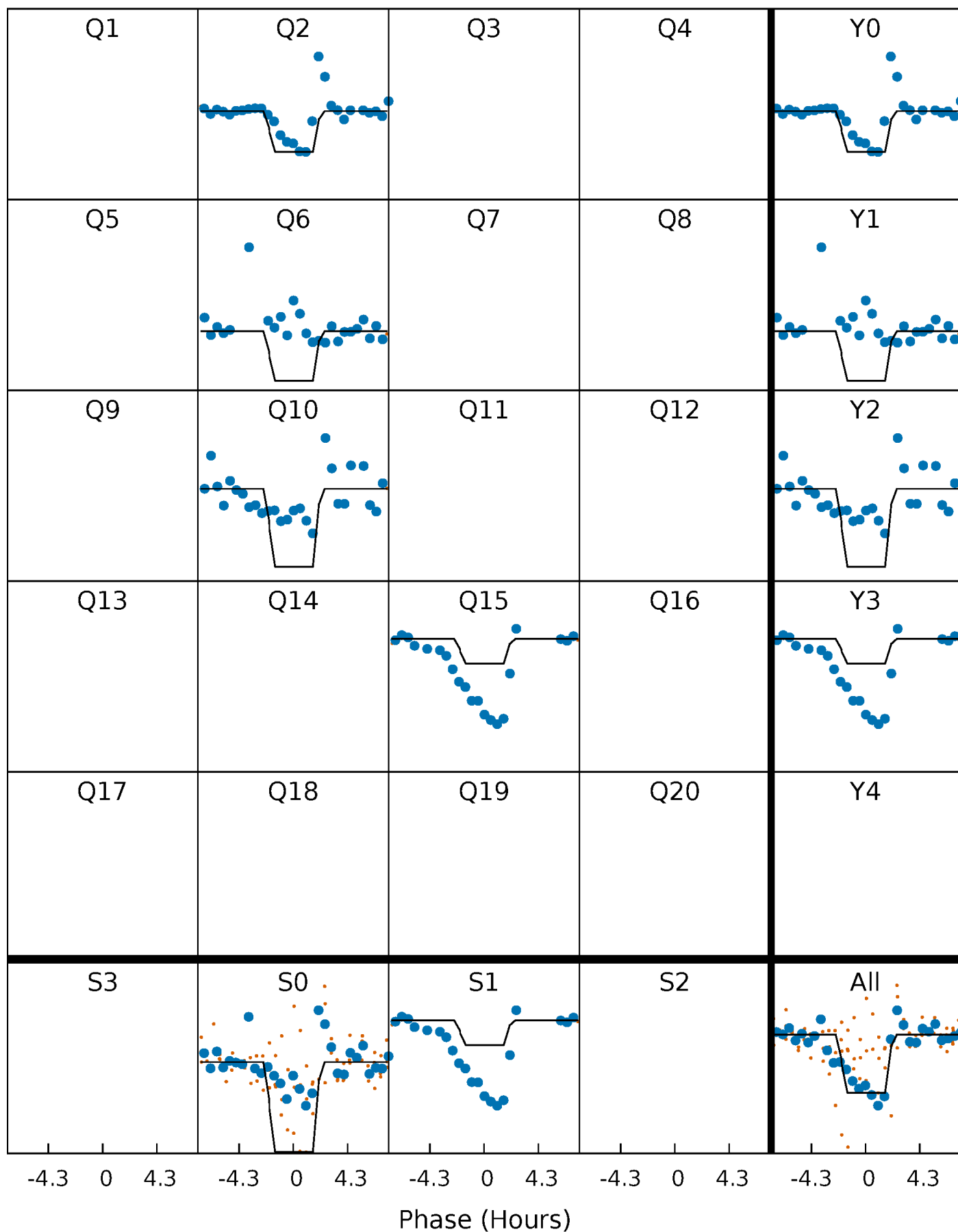
DV Quarter-Phased Transit Curves

TCE 011717648-03 P=410.219512 Days $T_0=178.306387$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

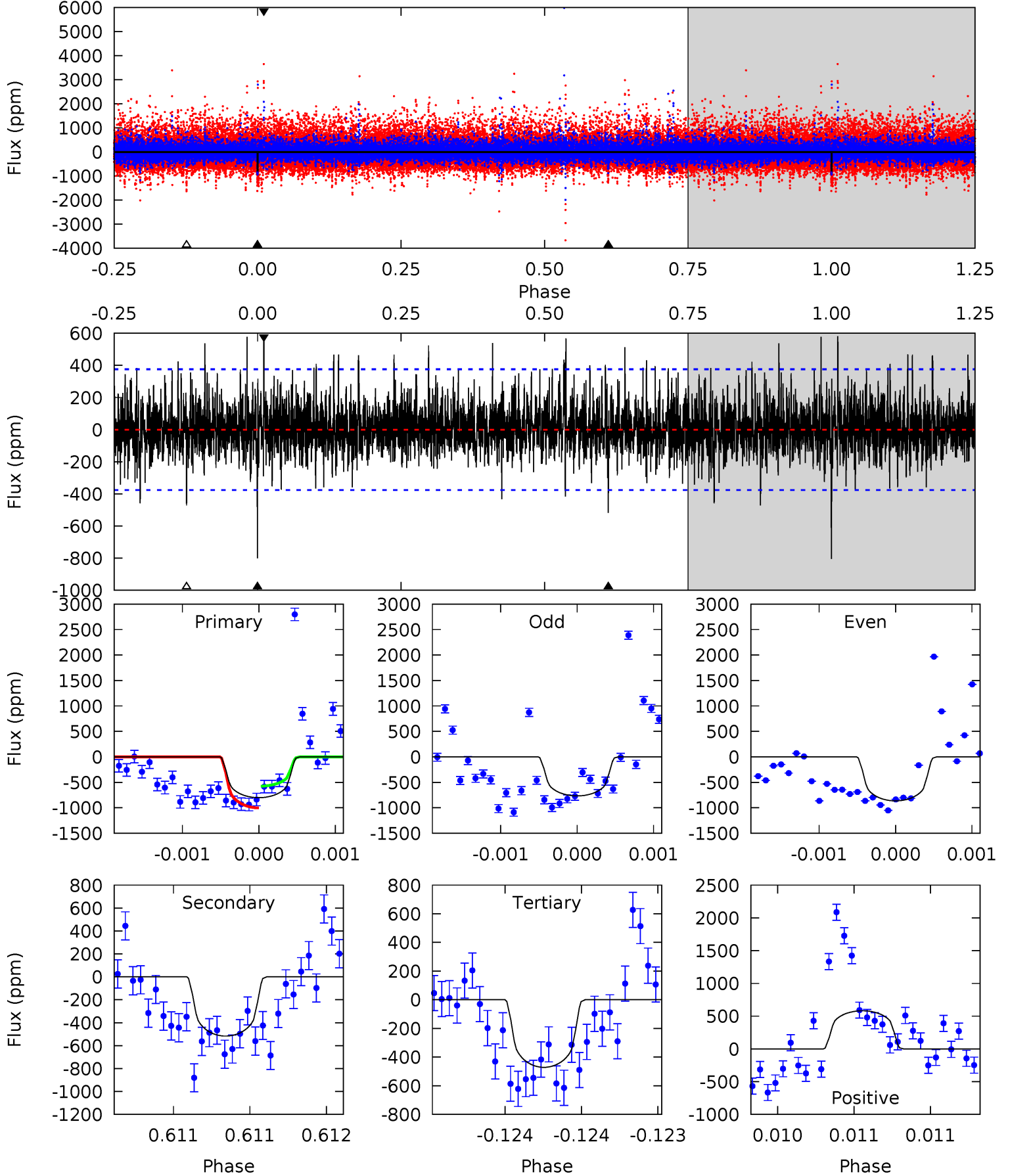
TCE 011717648-03 P=410.224151 Days $T_0=178.304714$ (BKJD)



DV Model-Shift Uniqueness Test

011717648-03, P = 410.219512 Days, E = 178.306387 Days

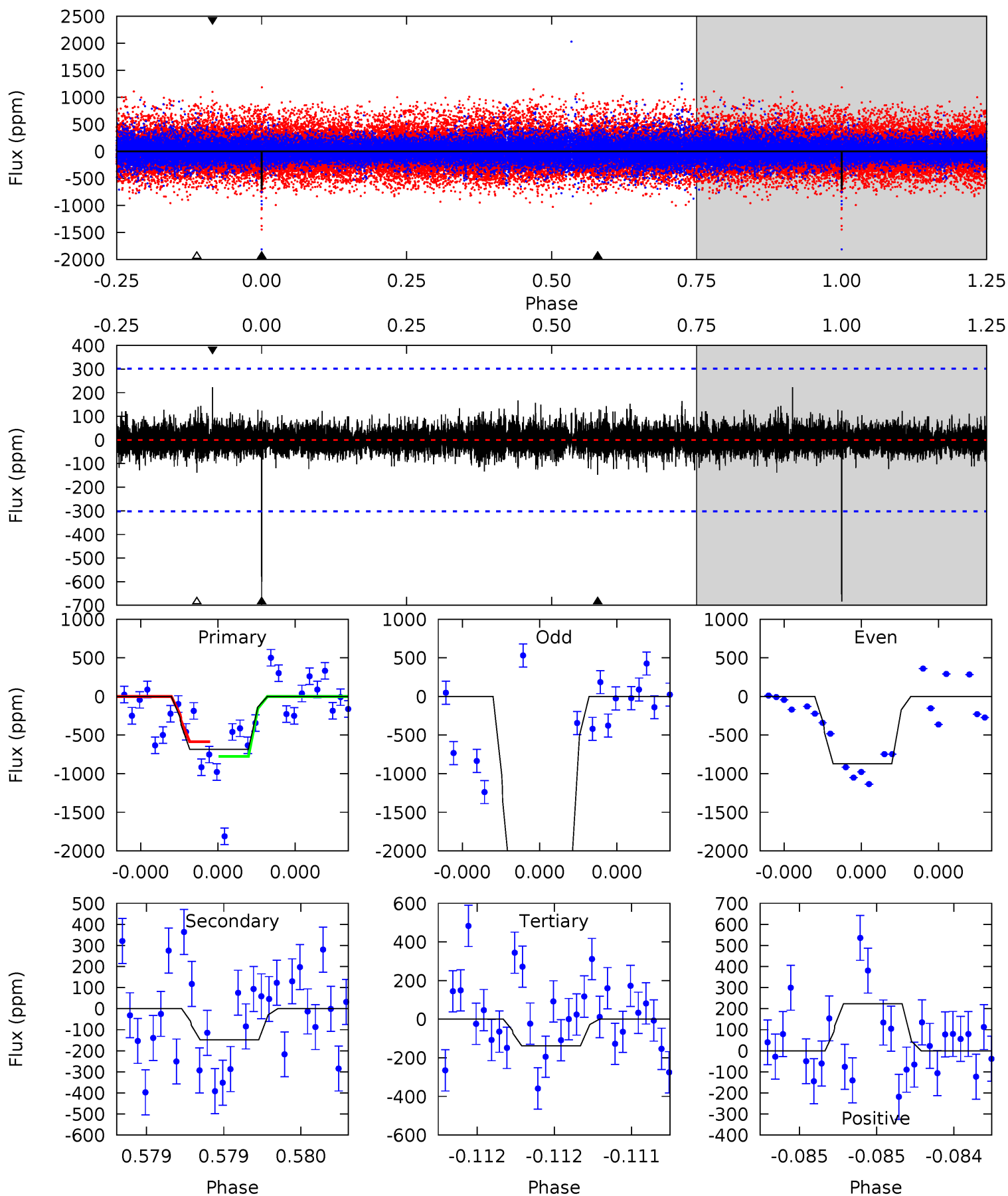
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.9 | 7.66 | 6.99 | 8.62 | 5.57 | 3.47 | 1.75 | 4.89 | 3.26 | 0.67 | -0.96 | 0.59 | 0.98 | 0.42 | 3.19 |



Alt Model-Shift Uniqueness Test

011717648-03, P = 410.224151 Days, E = 178.304714 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 12.7 | 2.74 | 2.57 | 4.15 | 5.61 | 3.54 | 0.62 | 10.1 | 8.55 | 0.18 | -1.40 | 16.9 | 1.90 | 0.25 | 1.76 |



Stellar Parameters For KIC 011717648

| | $T_{\text{eff}} (K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M (M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4162^{+124}_{-124} | $4.650^{+0.052}_{-0.024}$ | $-0.180^{+0.300}_{-0.300}$ | $0.603^{+0.043}_{-0.060}$ | $0.592^{+0.065}_{-0.053}$ | $3.805^{+0.963}_{-0.436}$ |
| | +3%/-3% | +1%/-1% | +167%/-167% | +7%/-10% | +11%/-9% | +25%/-11% |
| 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 011717648-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{max} (K)$ | $T_{obs} (K)$ | A_{obs} |
|---------|---------------|------------------------|-----------------|-----------------------|----------------------------|
| DV | -517 ± 67 | $2.32^{+1.41}_{-1.31}$ | 208^{+8}_{-7} | 3577^{+1218}_{-496} | $43597^{+194558}_{-26284}$ |
| Alt. | -148 ± 54 | $2.82^{+1.40}_{-1.33}$ | 208^{+7}_{-7} | 2792^{+613}_{-317} | 8085^{+23487}_{-4681} |

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 $A_{obs} \gg 1.0$

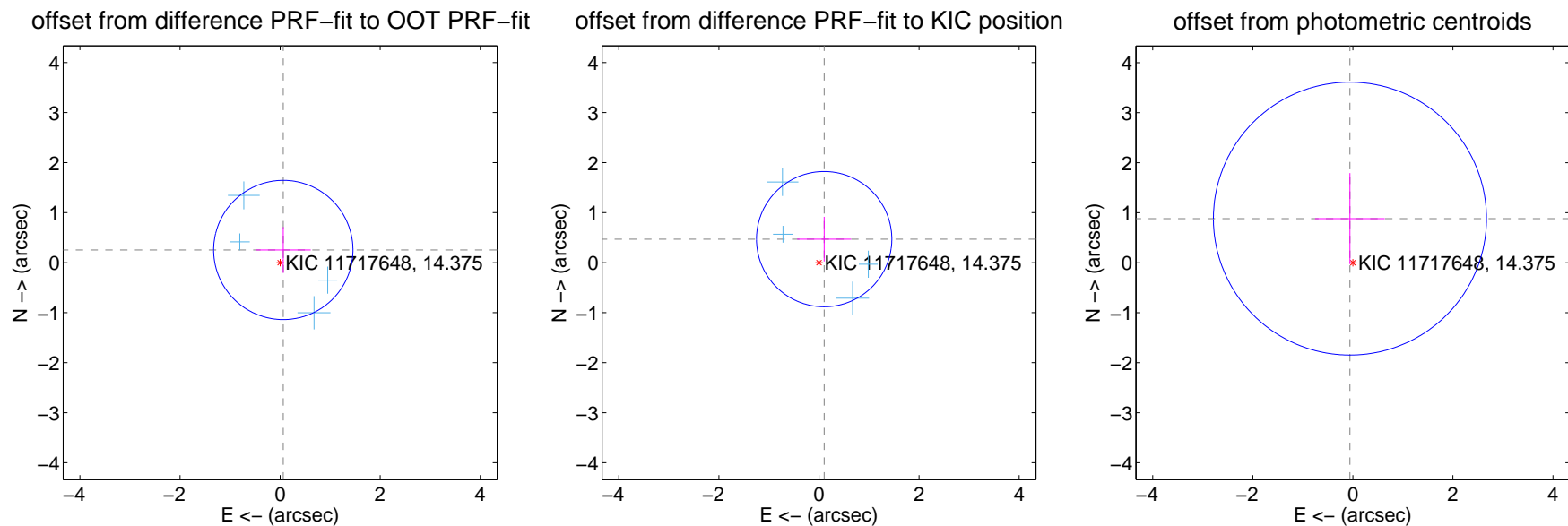
DV Centroid Data

Supplemental centroid analysis for 011717648-03. Kepler magnitude: 14.38. Transit SNR 7.20

There are 4 quarters with good PRF difference image offsets

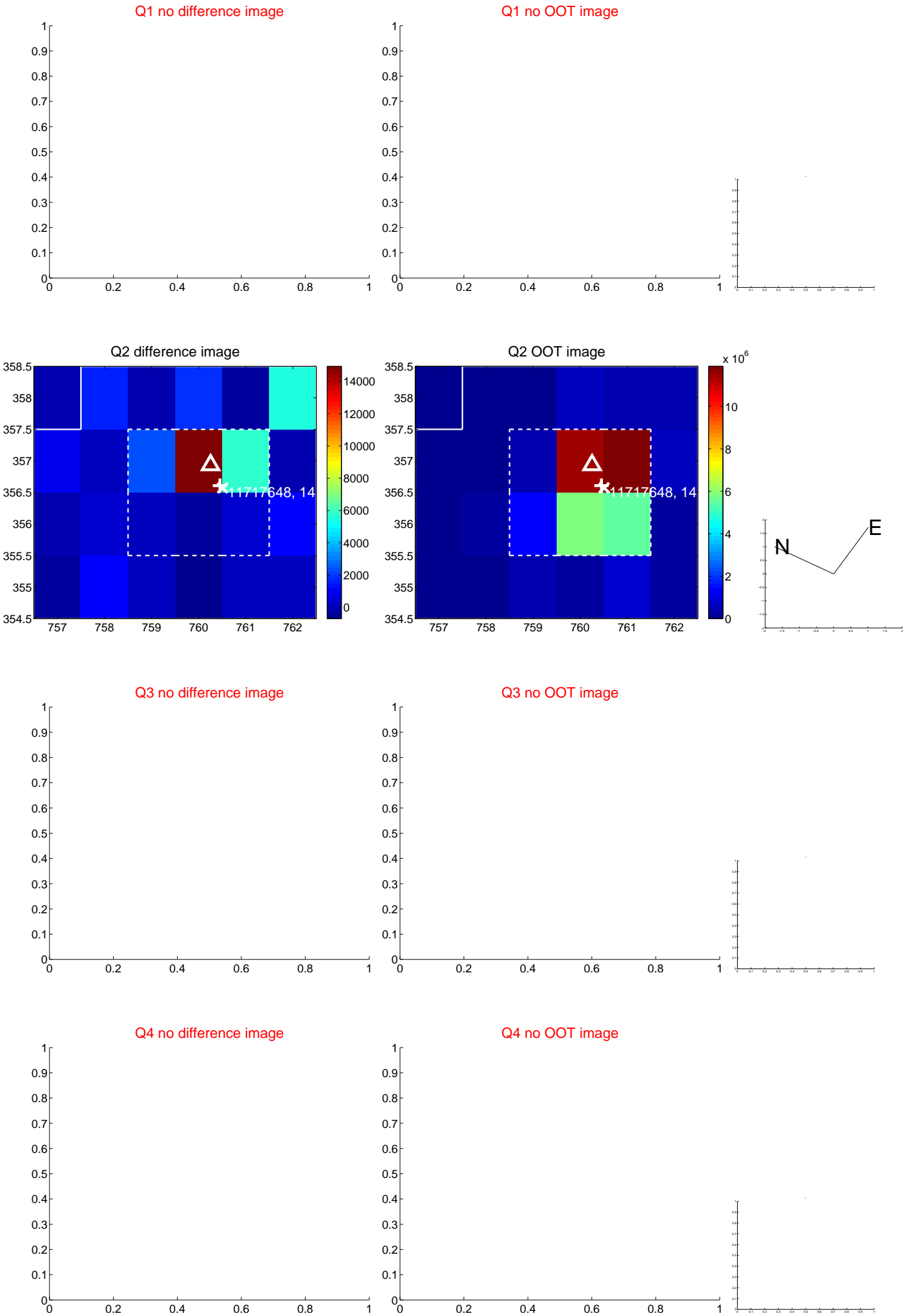
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT | 0.261 ± 0.464 | 0.56 | -0.063 ± 0.549 | 0.253 ± 0.458 |
| PRF-fit source offset from KIC position | 0.481 ± 0.451 | 1.07 | -0.103 ± 0.538 | 0.470 ± 0.446 |
| photometric centroid source offset | 0.88 ± 0.91 | 0.97 | 0.06 ± 0.70 | 0.88 ± 0.91 |

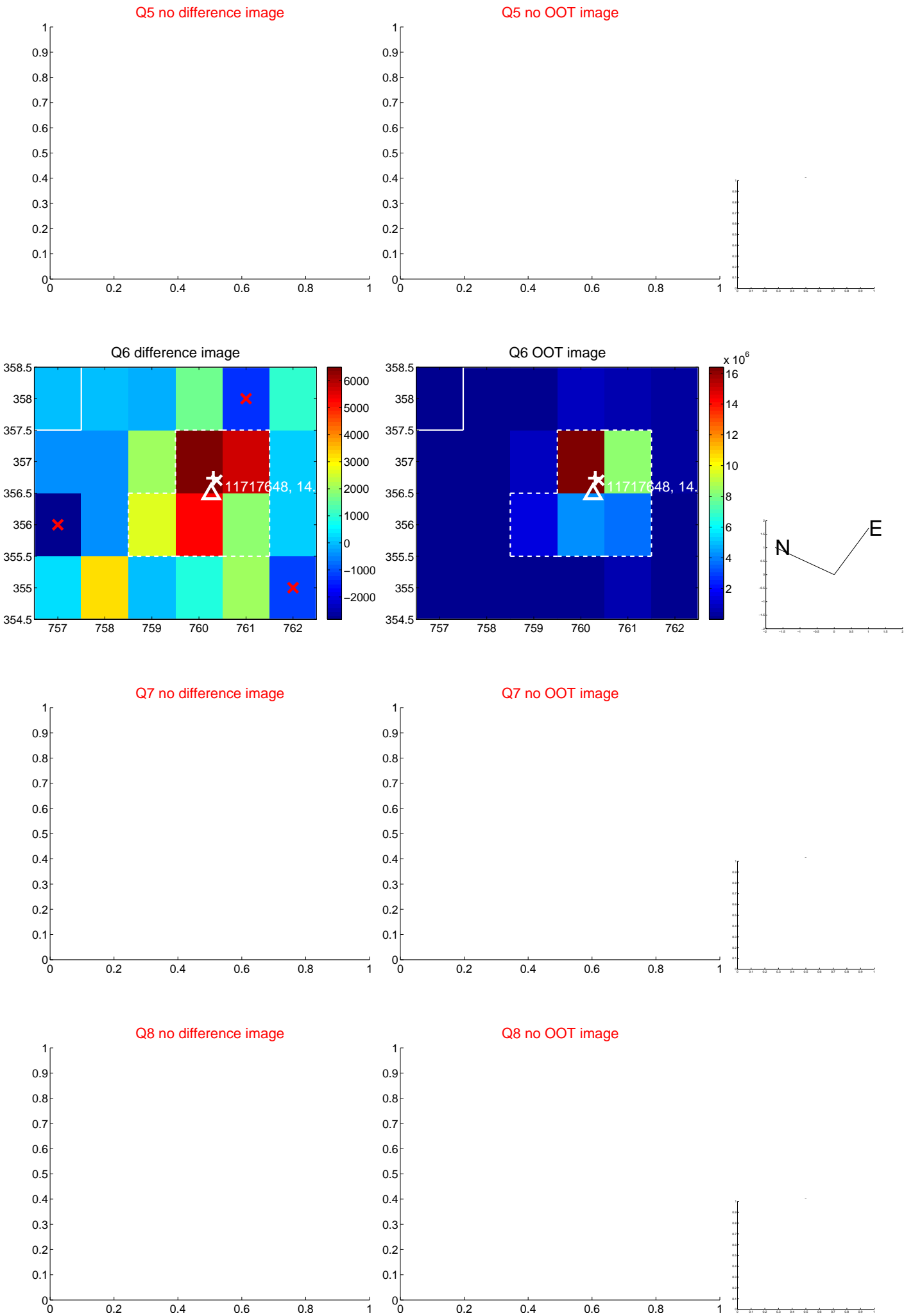


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

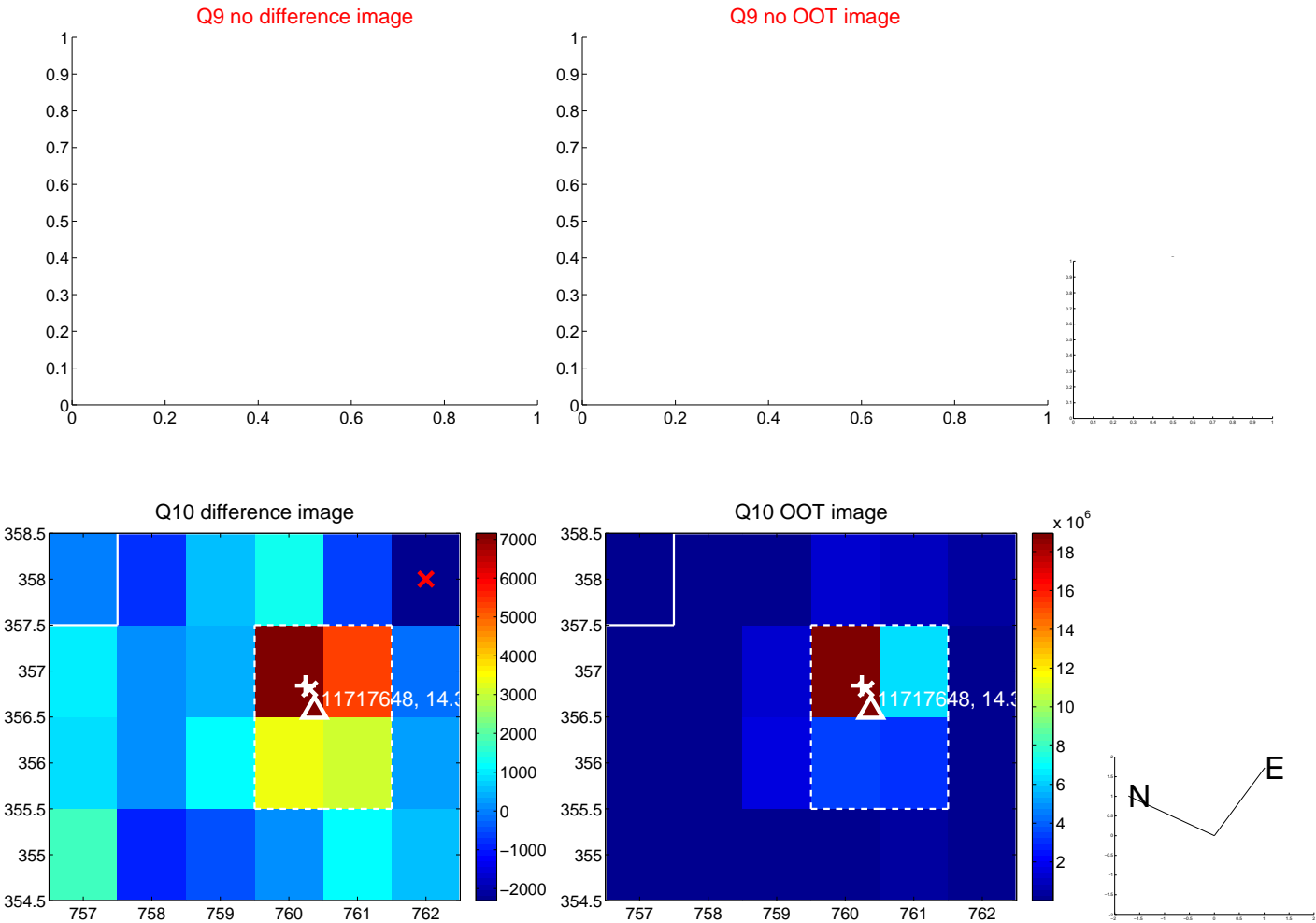
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



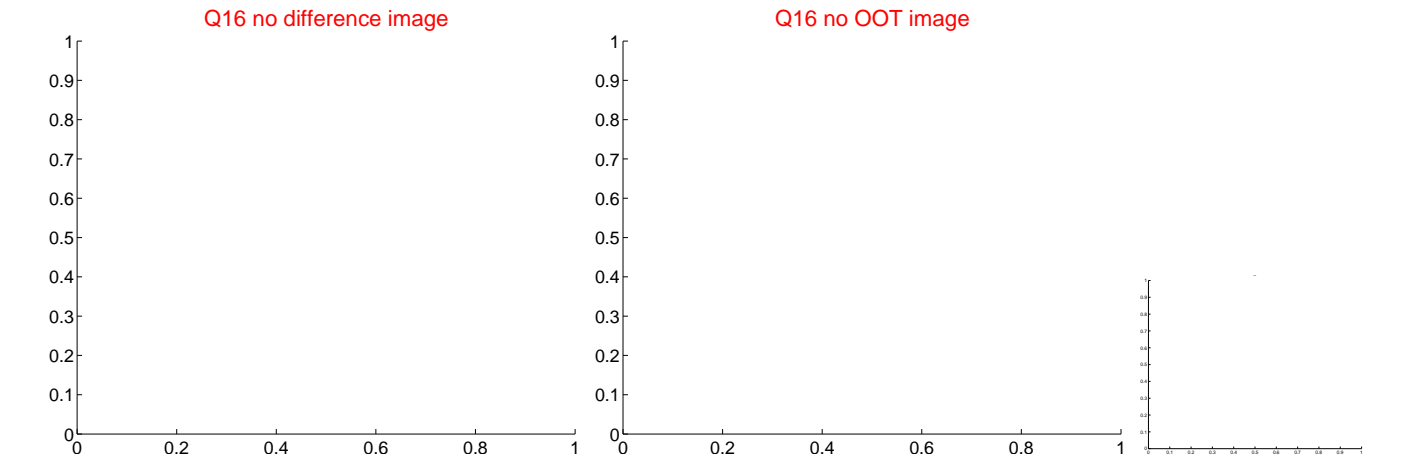
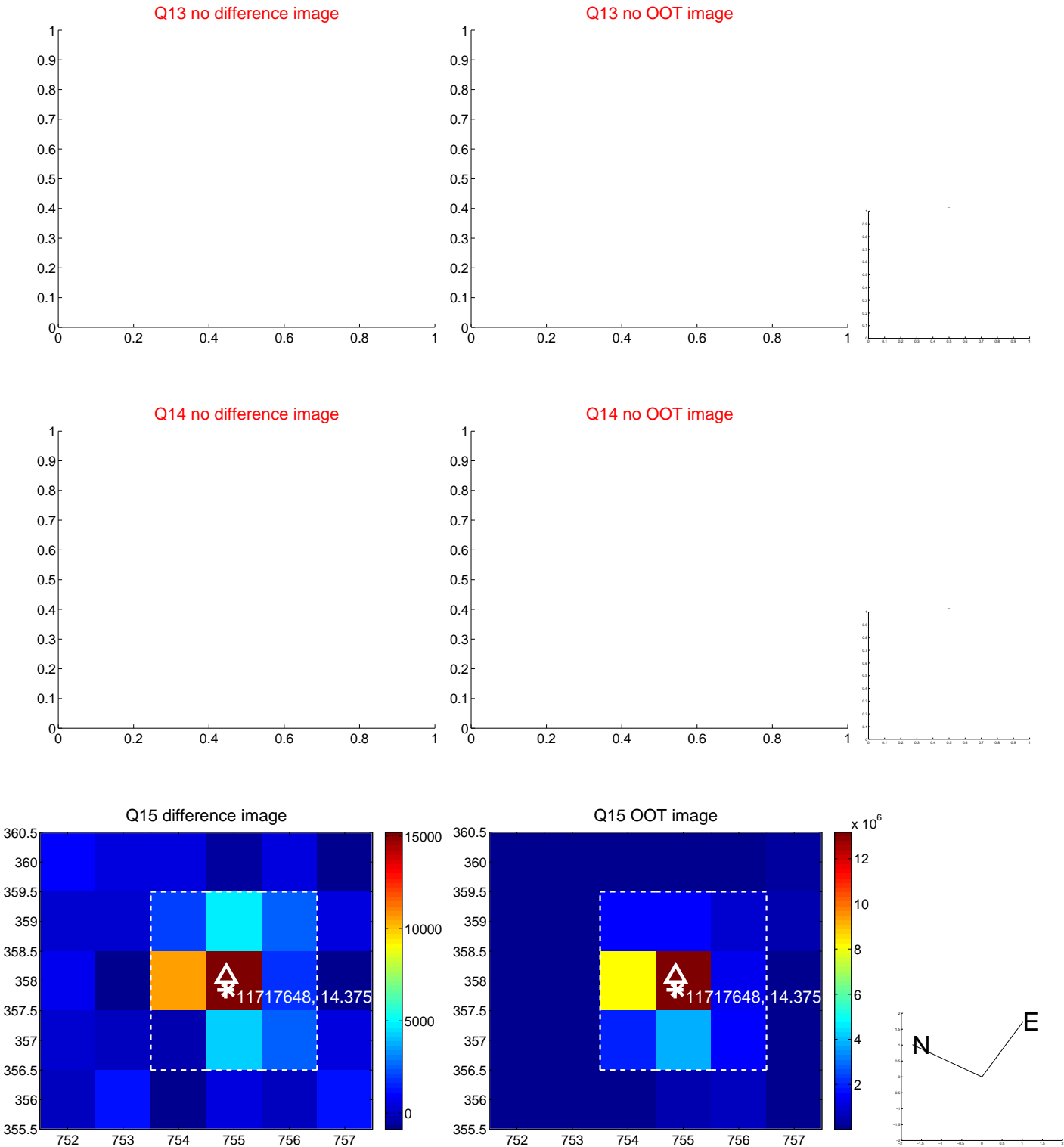
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



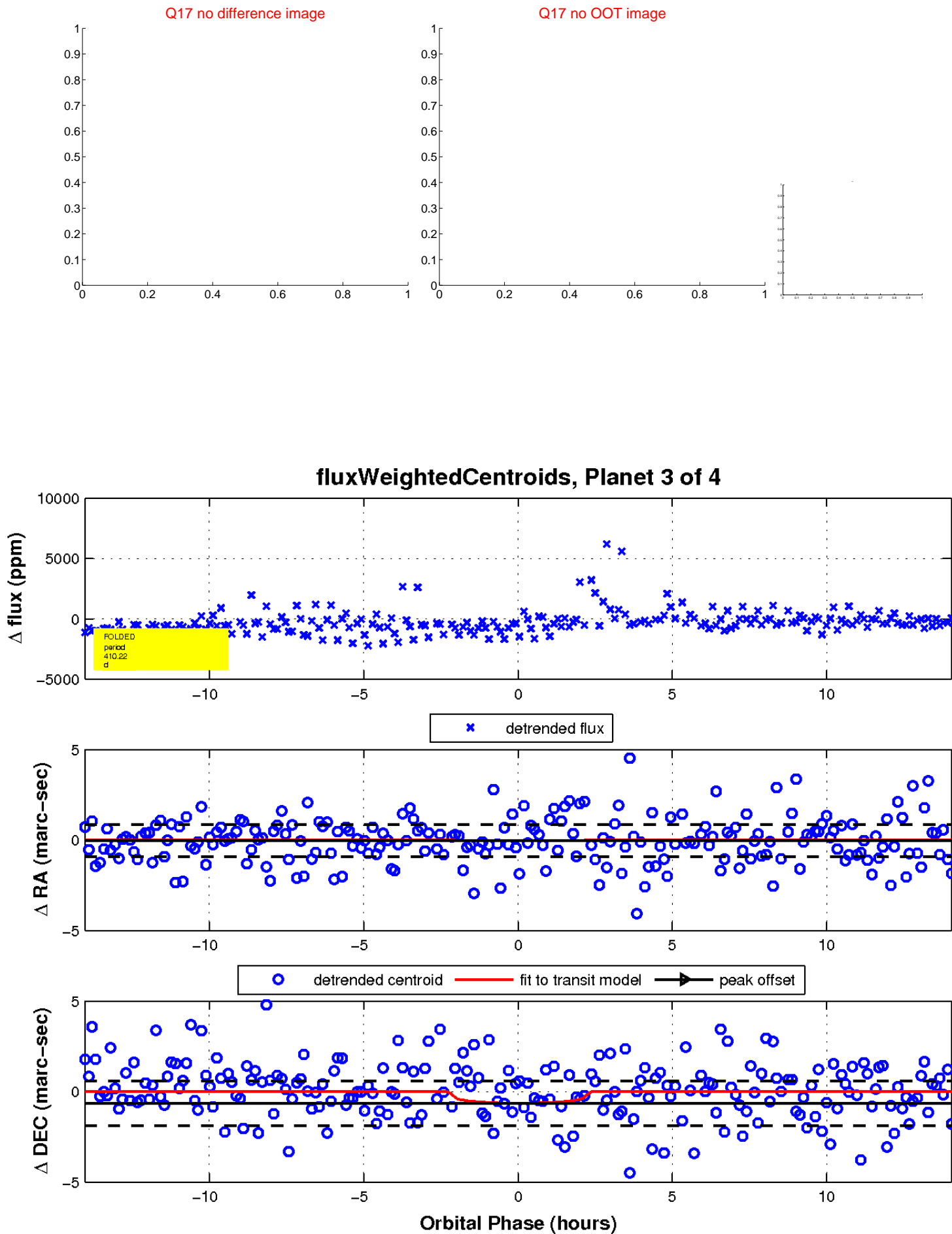
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

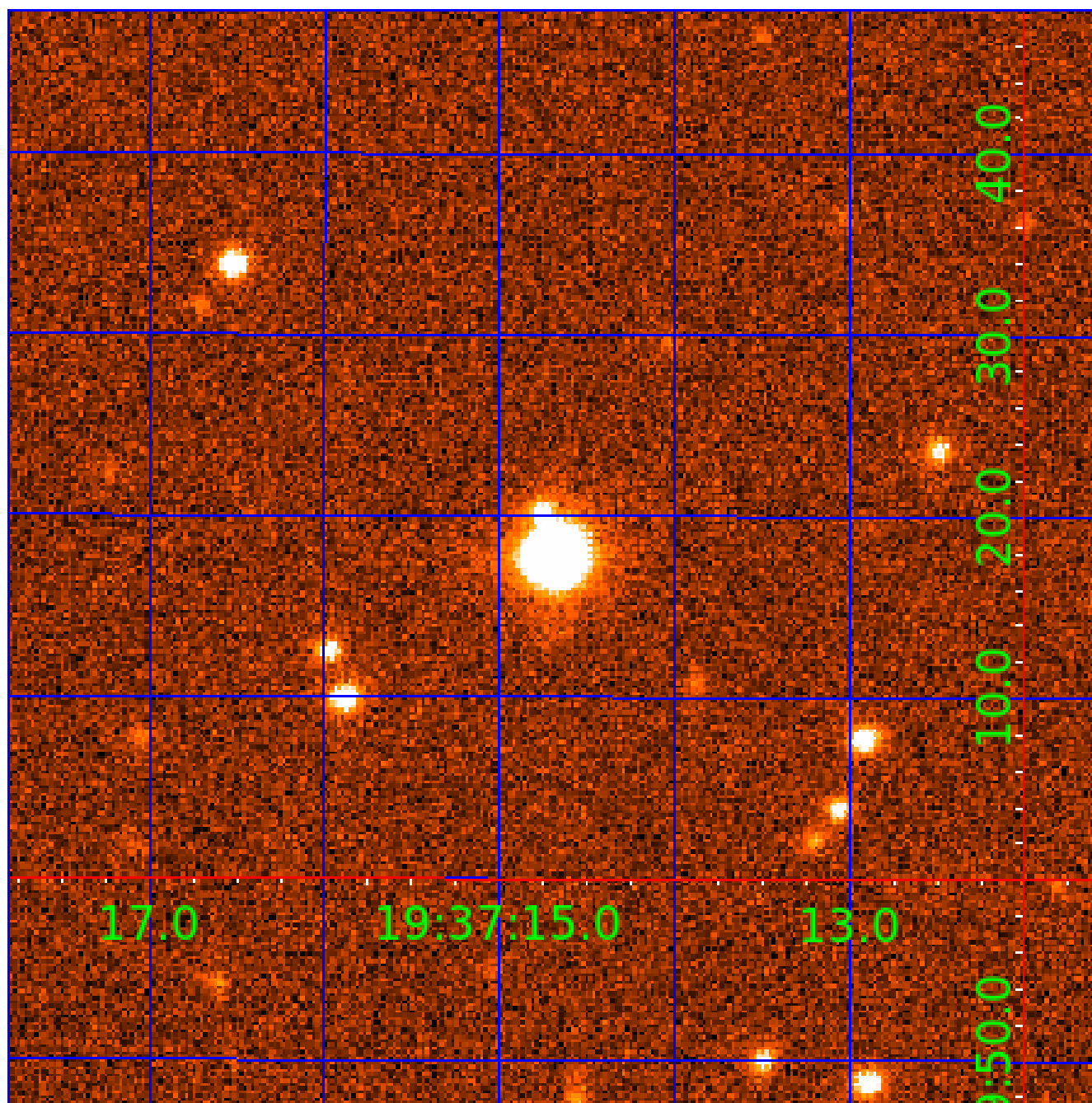


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011717648

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}) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011717648-01 | OBS | No | 156.201232 | 133.798885 | 649.7 | 5.161 | 10.8 | 7.9 | 0.60 | 4162 | 1.64 | 0.43 |
| 011717648-02 | OBS | No | 447.173068 | 564.512709 | 861.7 | 6.207 | 11.9 | 5.9 | 0.60 | 4162 | 1.82 | 0.11 |
| 011717648-03 | OBS | No | 410.219512 | 178.306387 | 1039.7 | 4.705 | 12.0 | 7.2 | 0.60 | 4162 | 2.12 | 0.12 |
| 011717648-04 | OBS | No | 314.797591 | 167.255764 | 1236.3 | 5.361 | 11.9 | 8.7 | 0.60 | 4162 | 2.64 | 0.17 |

Robovetter Results

| TCE | Run Type | Disp | Score | N | S | C | E | Comments |
|--------------|----------|------|-------|---|---|---|---|---|
| 011717648-01 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV |
| 011717648-02 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS |
| 011717648-03 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS |
| 011717648-04 | OBS | FP | 0.00 | 1 | 0 | 0 | 0 | INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS |

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

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

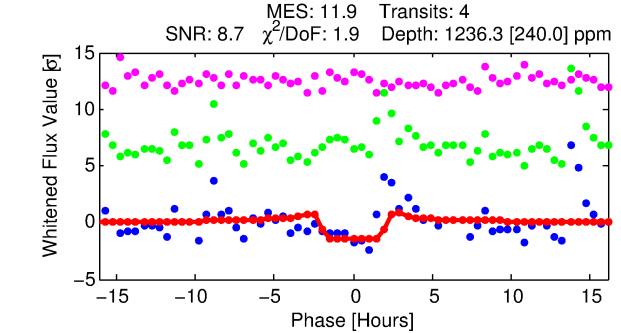
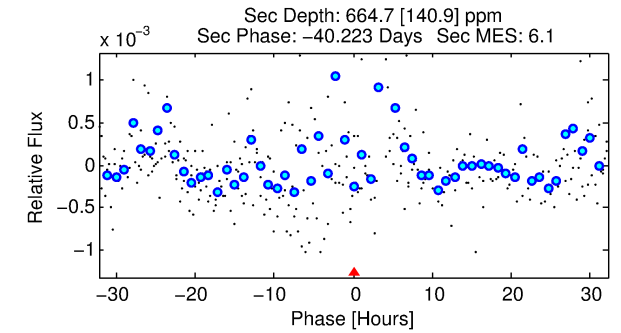
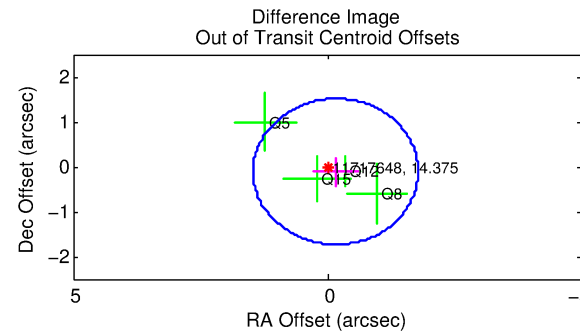
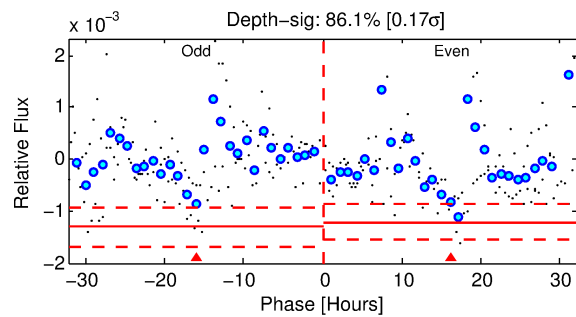
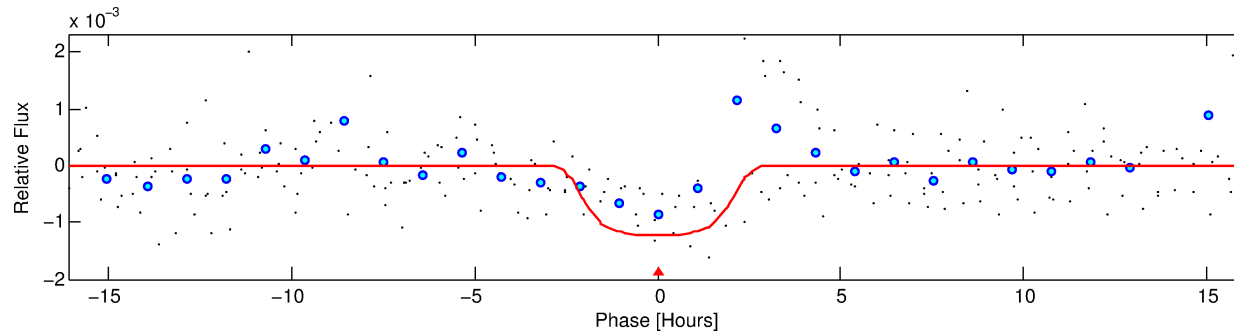
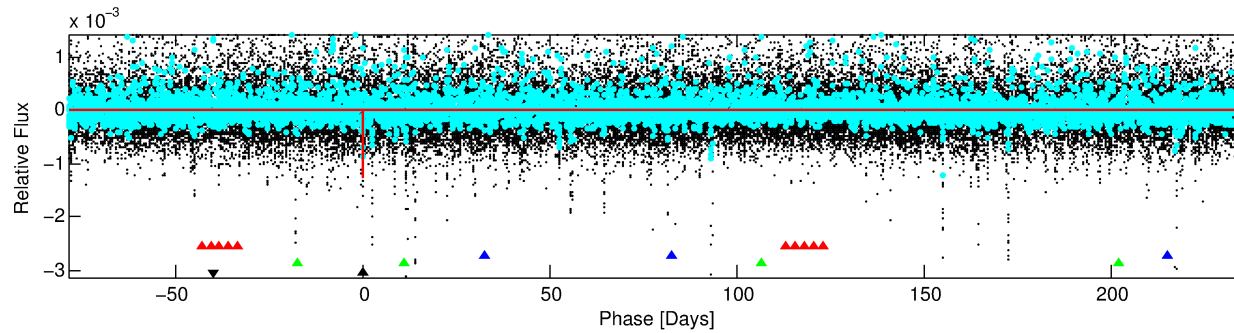
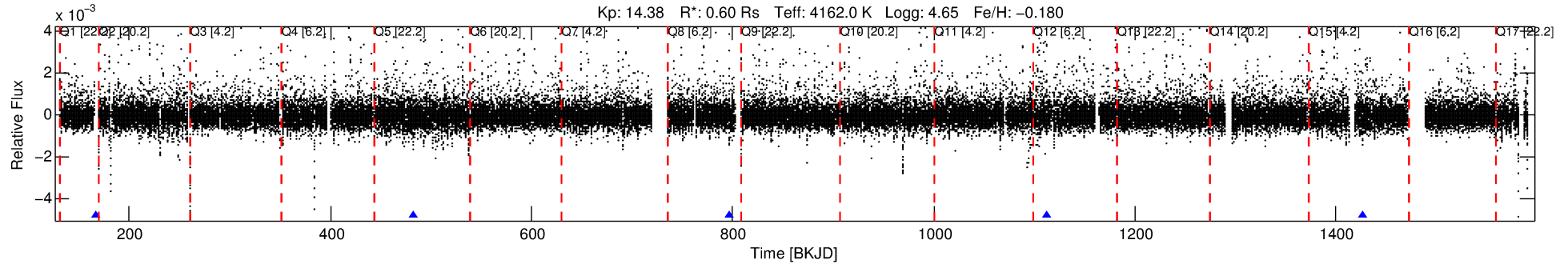
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011717648-04

No Significant Match Found

DV One-Page Summary

KIC: 11717648 Candidate: 4 of 4 Period: 314.798 d



DV Fit Results:

Period = 314.79759 [0.00695] d
Epoch = 167.2558 [0.0189] BKJD
Rp/R* = 0.0401 [0.0056]
a/R* = 217.96 [70.73]
b = 0.92 [0.06]
Seff = 0.17 [0.03]
Teq = 163 [6] K
Rp = 2.64 [0.45] Re
a = 0.7608 [0.0589] AU
Ag = 30376.81 [11132.99] [2.73 σ]
Teffp = 3337 [310] K [10.25 σ]

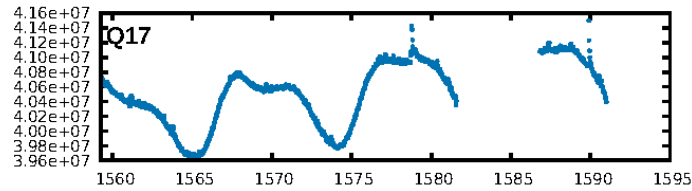
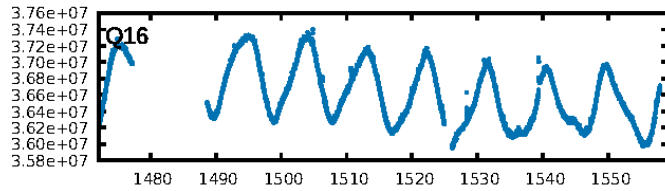
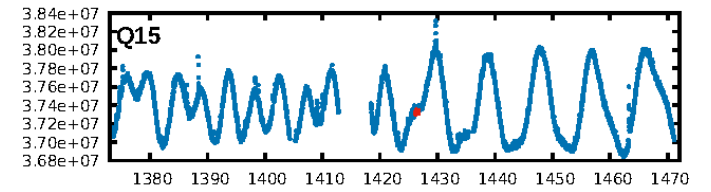
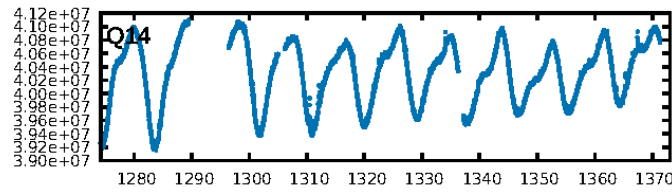
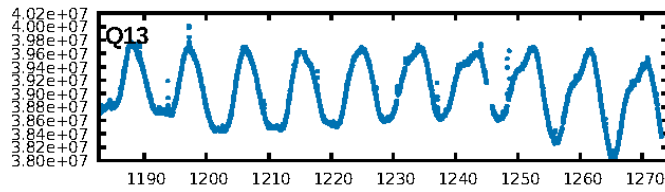
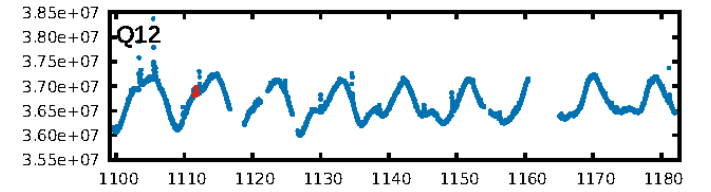
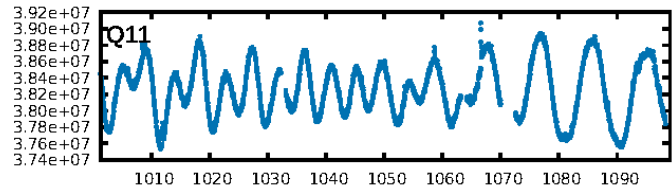
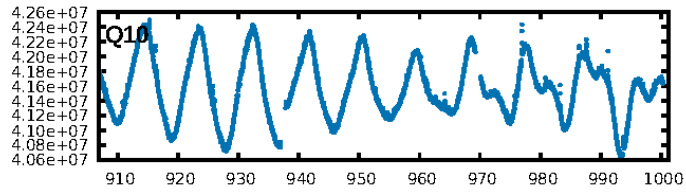
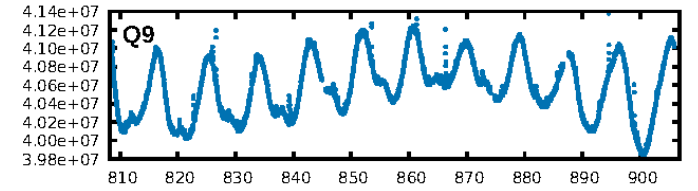
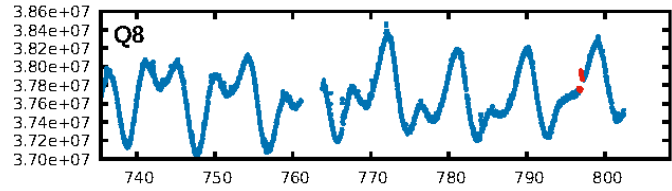
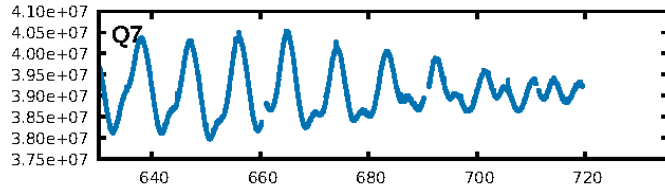
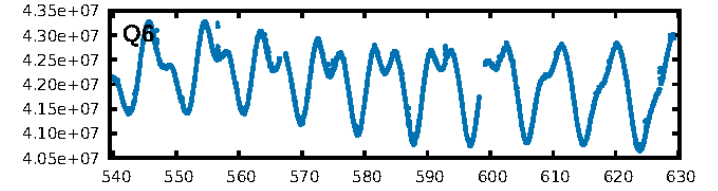
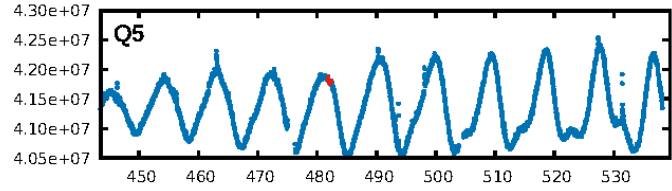
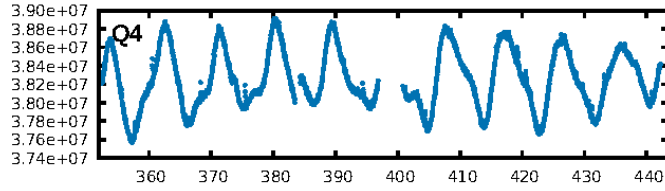
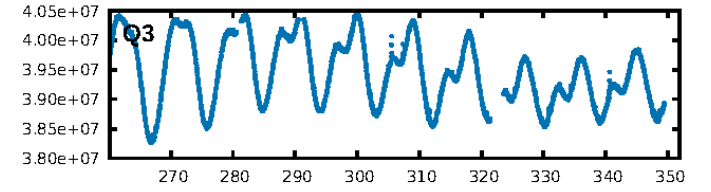
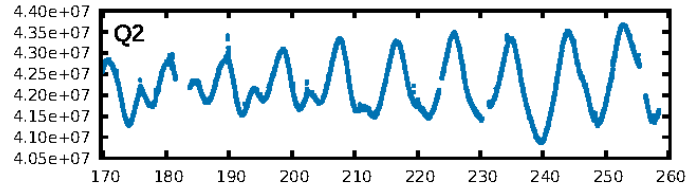
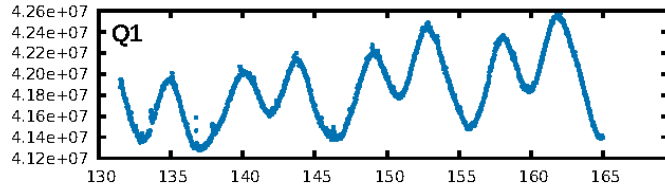
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [511.49 σ]
LongPeriod-sig: 100.0% [321.05 σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 49.6%
Bootstrap-pfa: 1.36e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.3845
Centroid-sig: 20.1%
Centroid-so: 1.097 arcsec [1.34 σ]
OotOffset-rm: 0.194 arcsec [0.36 σ]
OotOffset-st: 0/1/2/1 [4]
KicOffset-rm: 0.230 arcsec [0.65 σ]
KicOffset-st: 0/1/2/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

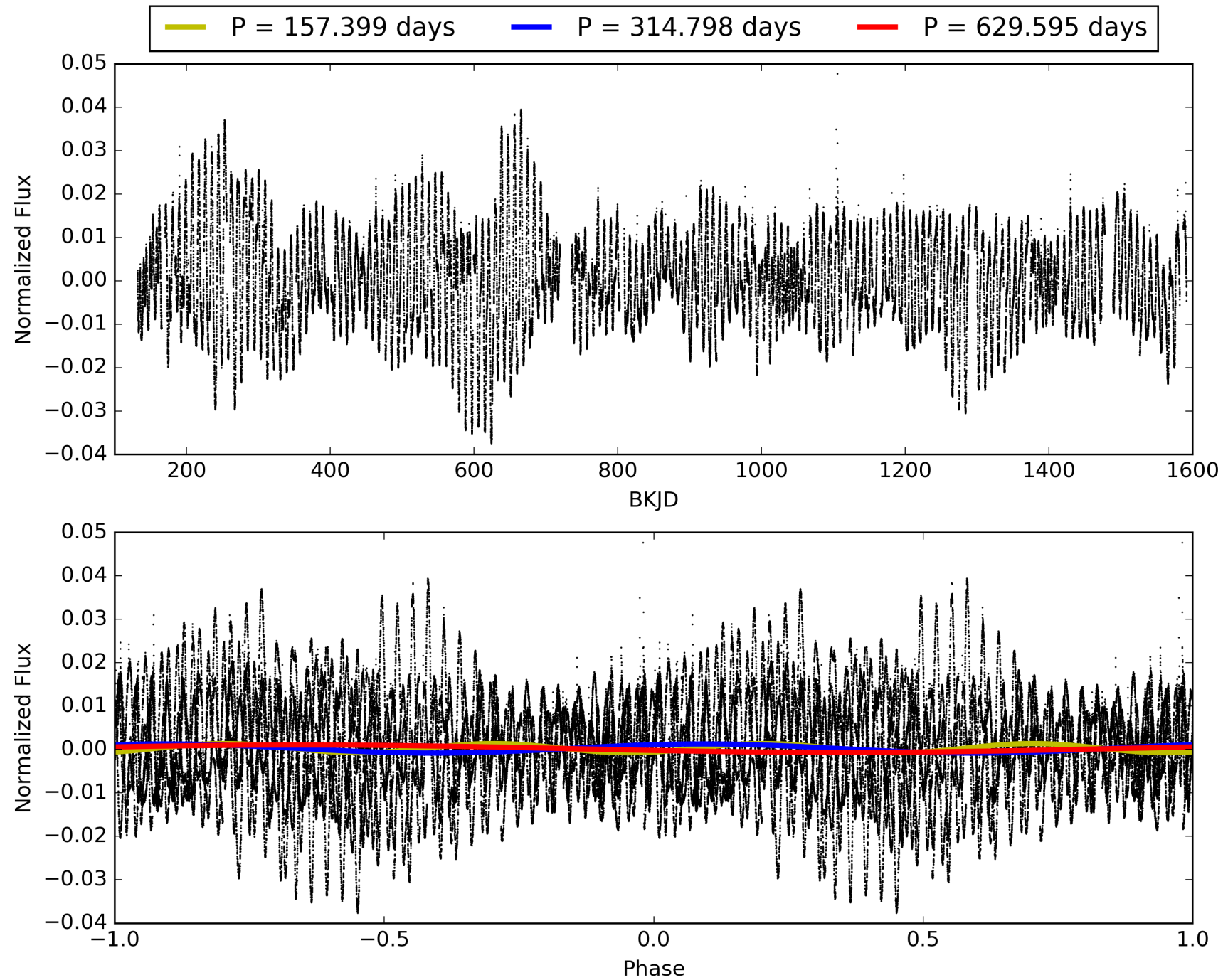
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:41:20 Z

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

TCE 011717648-04, PDC Light Curves

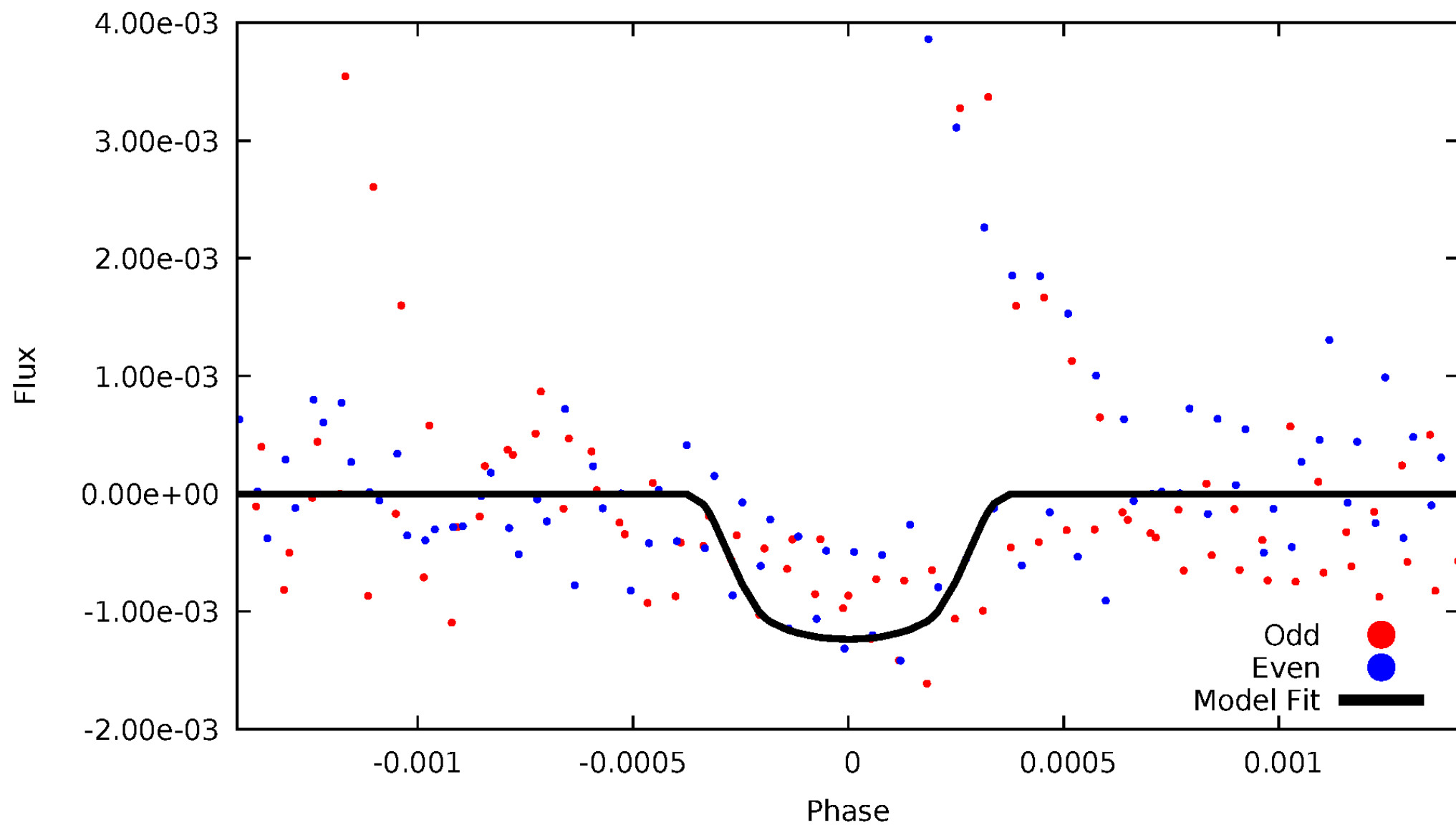


TCE 011717648-04



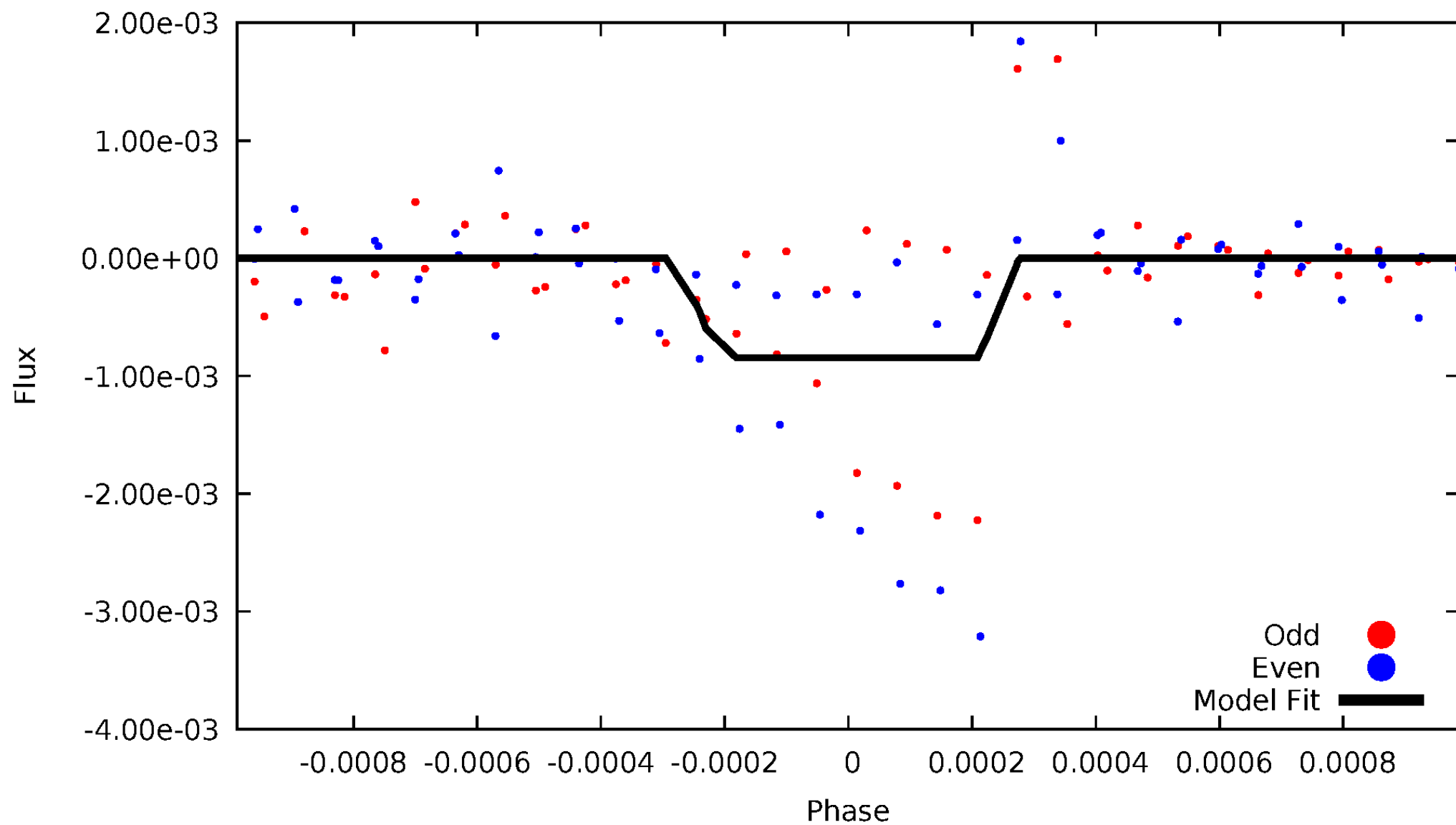
DV Odd/Even

TCE 011717648-04



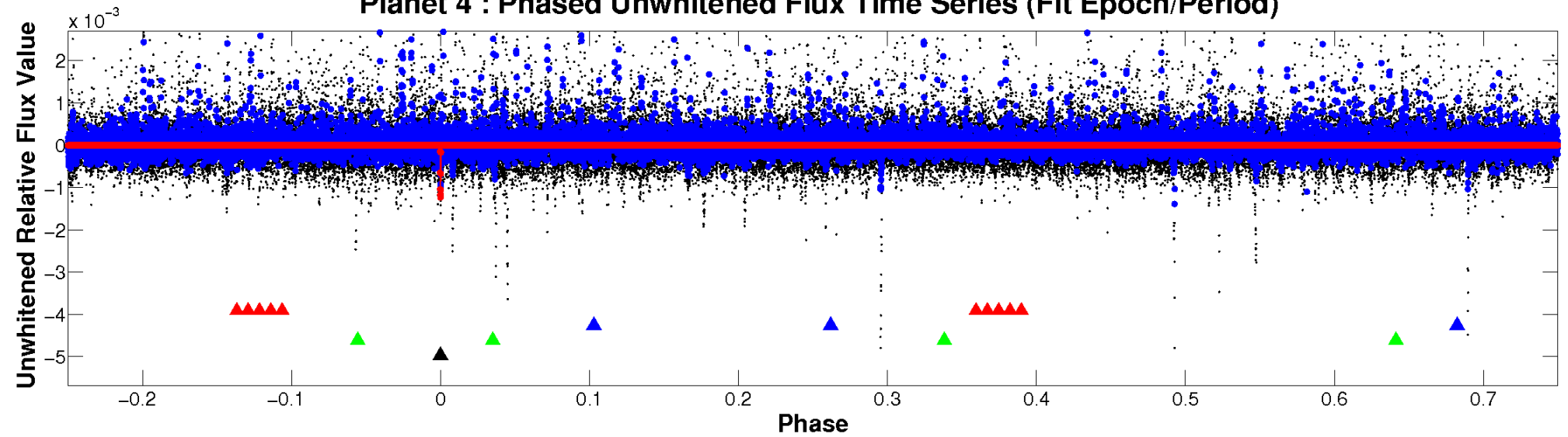
ALT Odd/Even

TCE 011717648-04

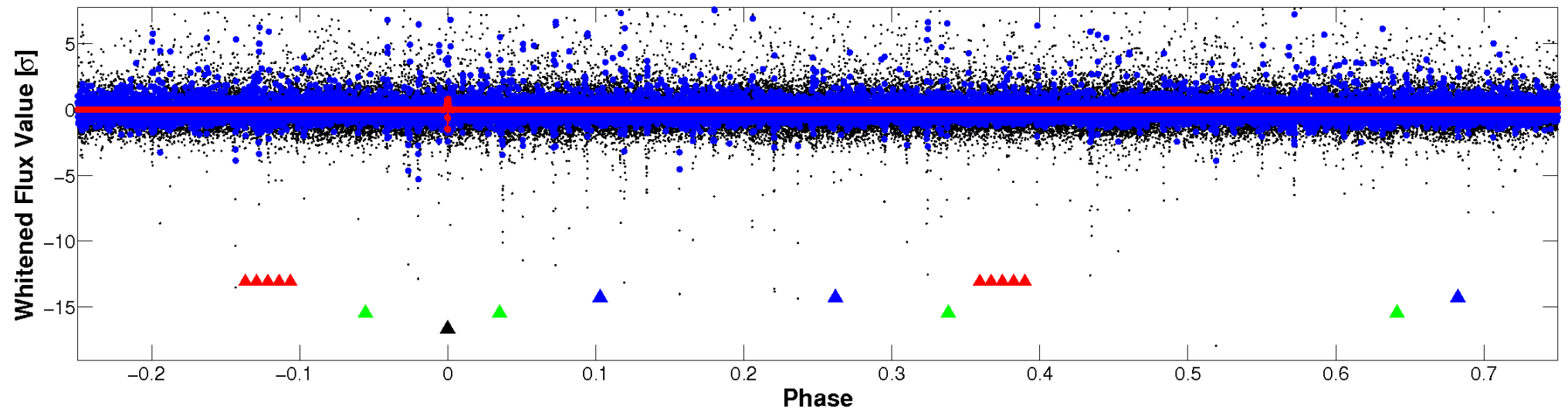


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

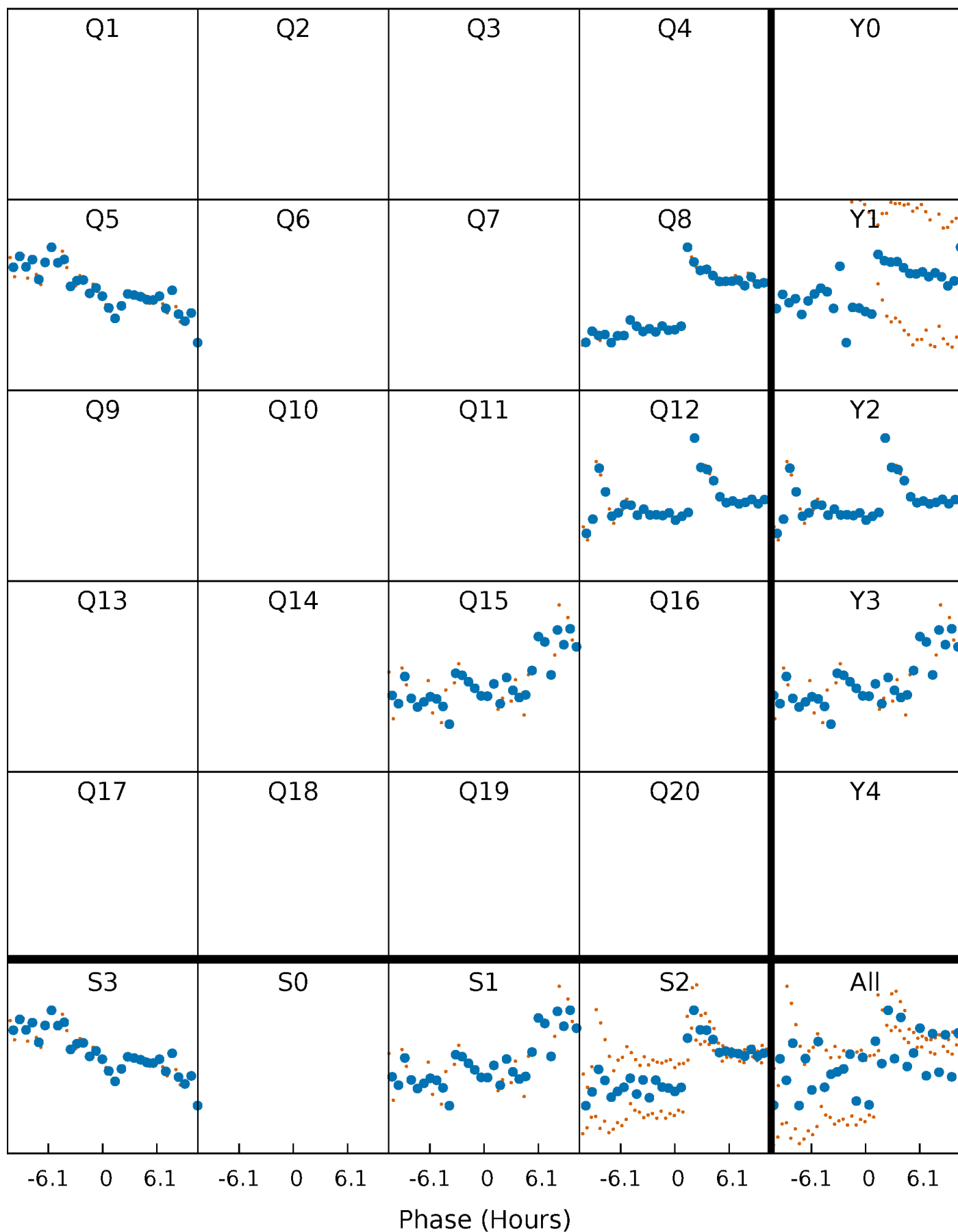


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



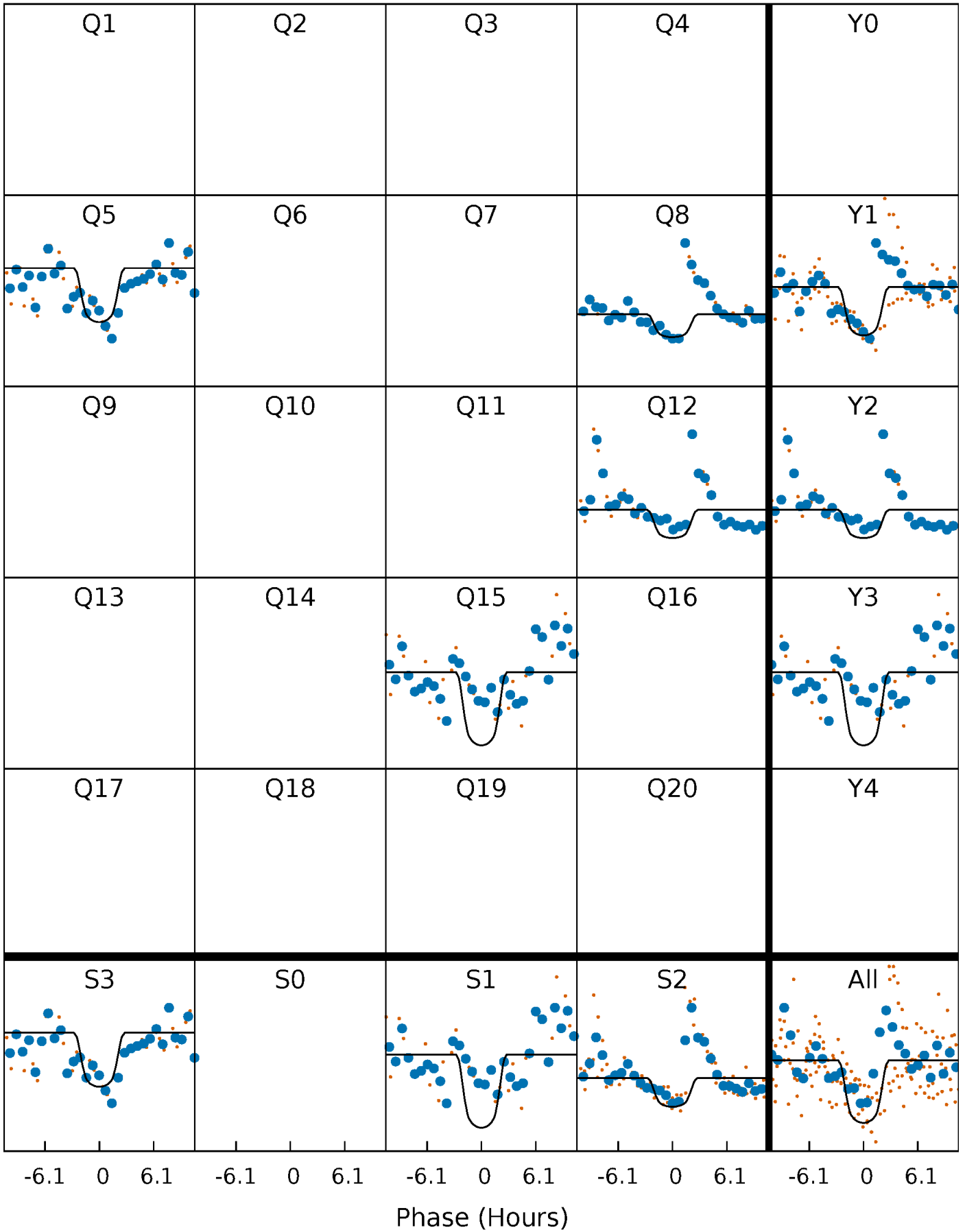
PDC Quarter-Phased Transit Curves

TCE 011717648-04 $P=314.797591$ Days $T_0=167.255764$ (BKJD)



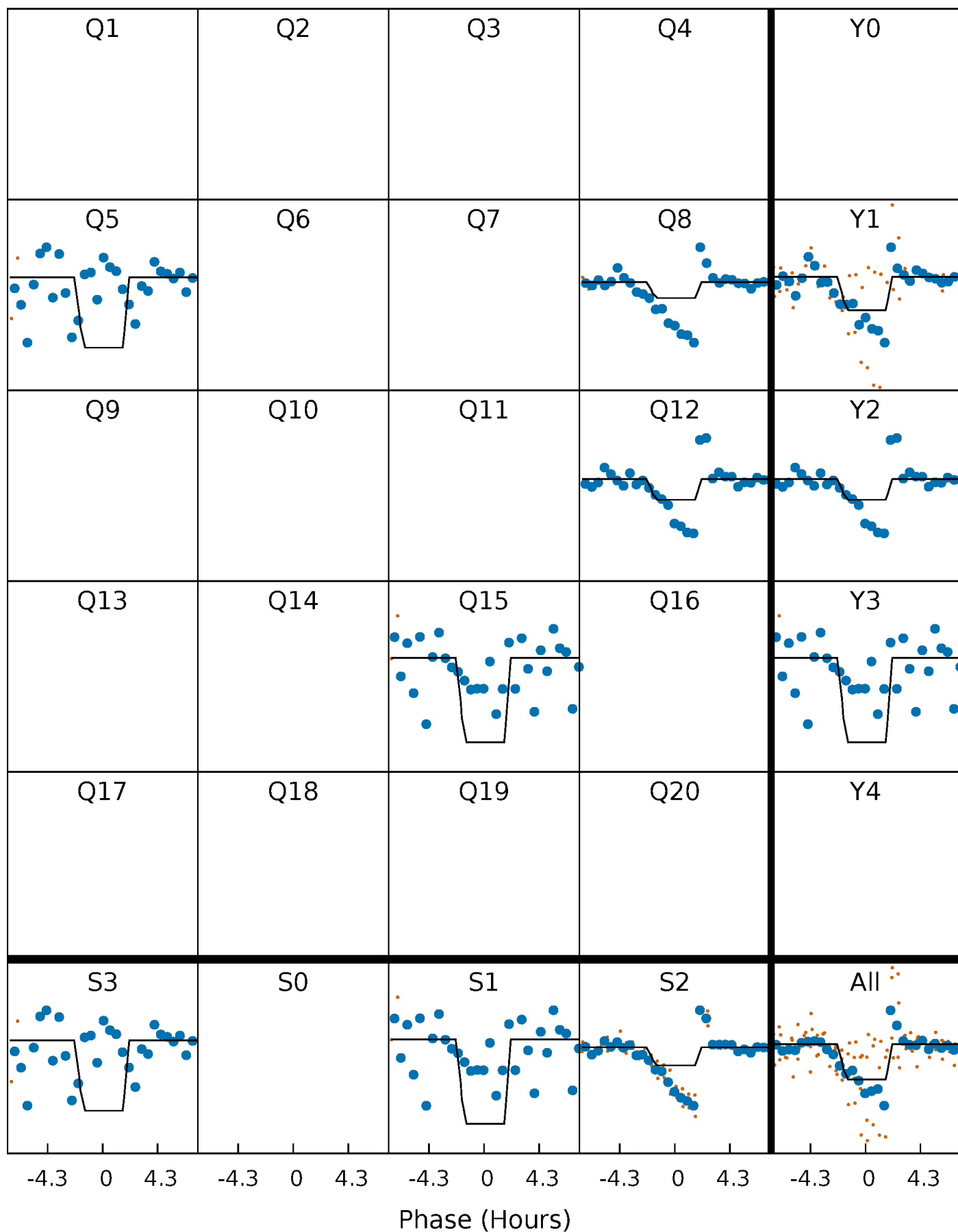
DV Quarter-Phased Transit Curves

TCE 011717648-04 $P=314.797591$ Days $T_0=167.255764$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

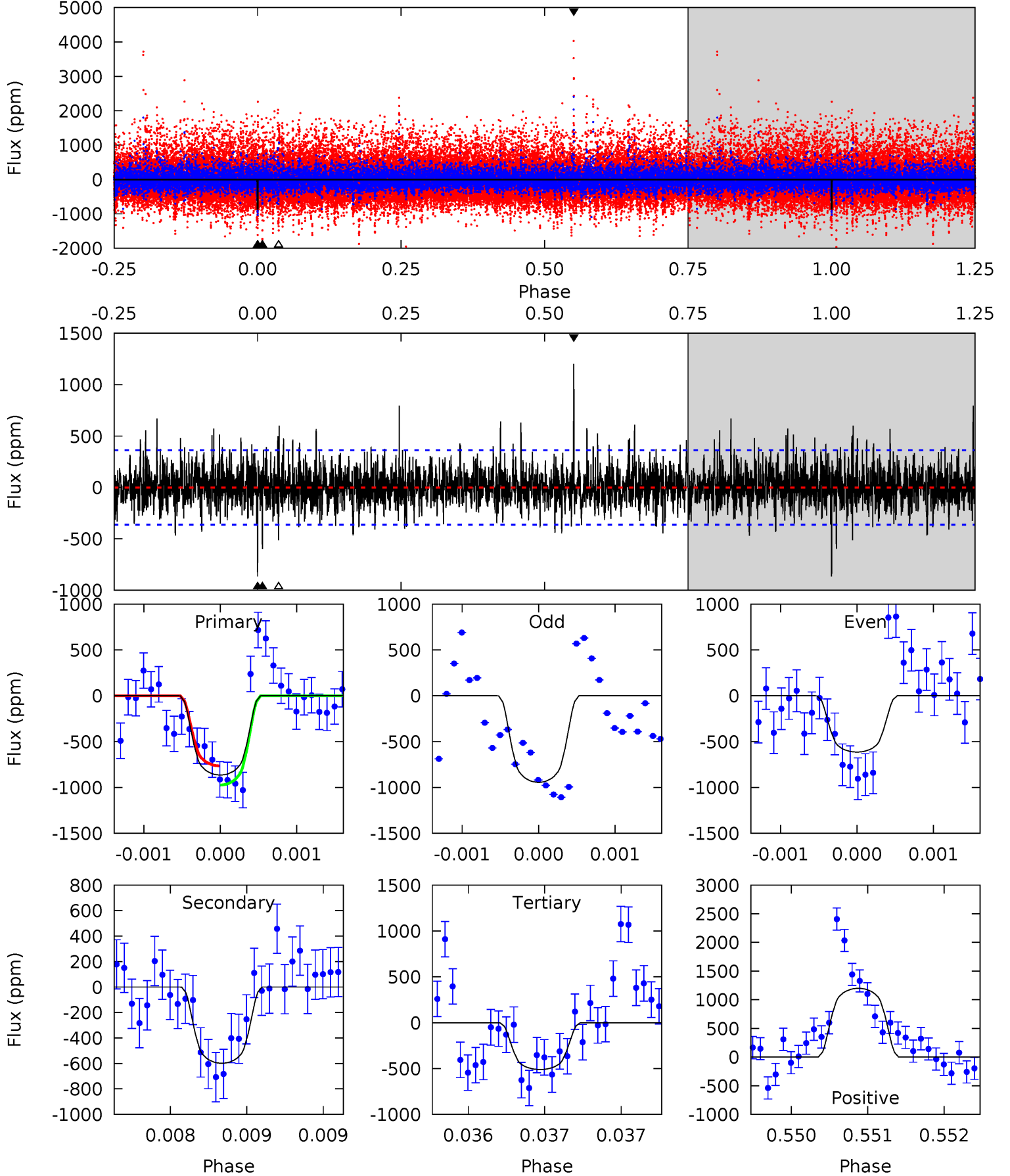
TCE 011717648-04 $P=314.822402$ Days $T_0=167.176994$ (BKJD)



DV Model-Shift Uniqueness Test

011717648-04, P = 314.797591 Days, E = 167.255764 Days

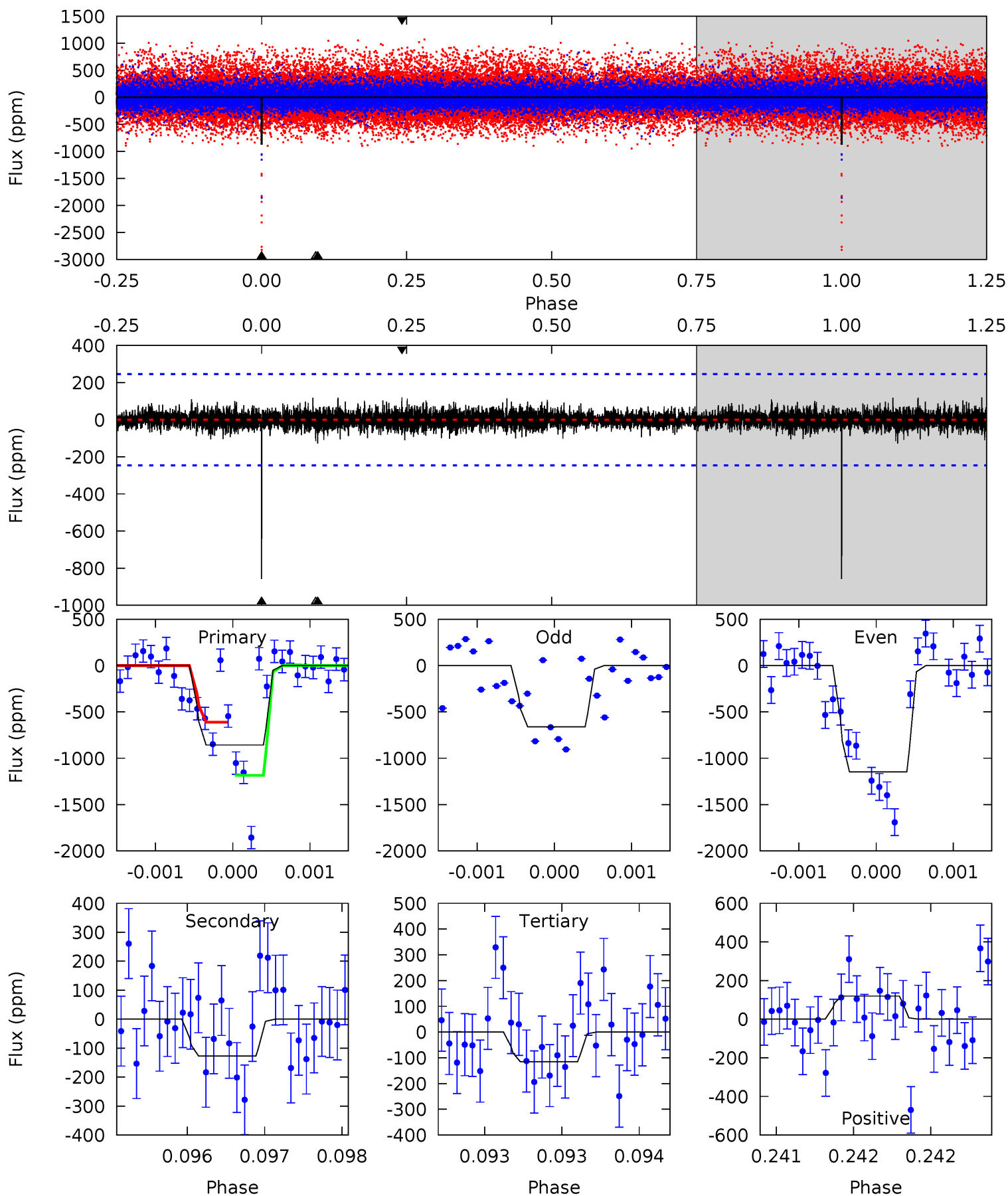
| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 13.1 | 9.10 | 7.76 | 18.2 | 5.51 | 3.38 | 2.19 | 5.38 | -5.09 | 1.34 | -9.13 | 2.19 | 1.43 | 0.58 | 1.59 |



Alt Model-Shift Uniqueness Test

011717648-04, P = 314.822402 Days, E = 167.176994 Days

| Pri | Sec | Ter | Pos | FA ₁ | FA ₂ | F _{Red} | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 19.4 | 2.88 | 2.60 | 2.70 | 5.56 | 3.47 | 0.61 | 16.8 | 16.7 | 0.28 | 0.17 | 5.53 | 1.15 | 0.12 | 6.44 |



Stellar Parameters For KIC 011717648

| | $T_{\text{eff}}(K)$ | $\log(g)$ | $[\text{Fe}/\text{H}]$ | $R (R_{\odot})$ | $M(M_{\odot})$ | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
| | 4162^{+124}_{-124} | $4.650^{+0.052}_{-0.024}$ | $-0.180^{+0.300}_{-0.300}$ | $0.603^{+0.043}_{-0.060}$ | $0.592^{+0.065}_{-0.053}$ | $3.805^{+0.963}_{-0.436}$ |
| | +3%/-3% | +1%/-1% | +167%/-167% | +7%/-10% | +11%/-9% | +25%/-11% |
| 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 011717648-04 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$ | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | A_{obs} |
|---------|---------------|------------------------|----------------------|----------------------|--------------------------|
| DV | -599 ± 66 | $2.60^{+0.41}_{-0.37}$ | 227^{+8}_{-8} | 3523^{+201}_{-191} | 28317^{+10561}_{-7743} |
| Alt. | -127 ± 44 | $1.89^{+0.38}_{-0.37}$ | 227^{+7}_{-8} | 3076^{+238}_{-242} | 11715^{+7272}_{-4861} |

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

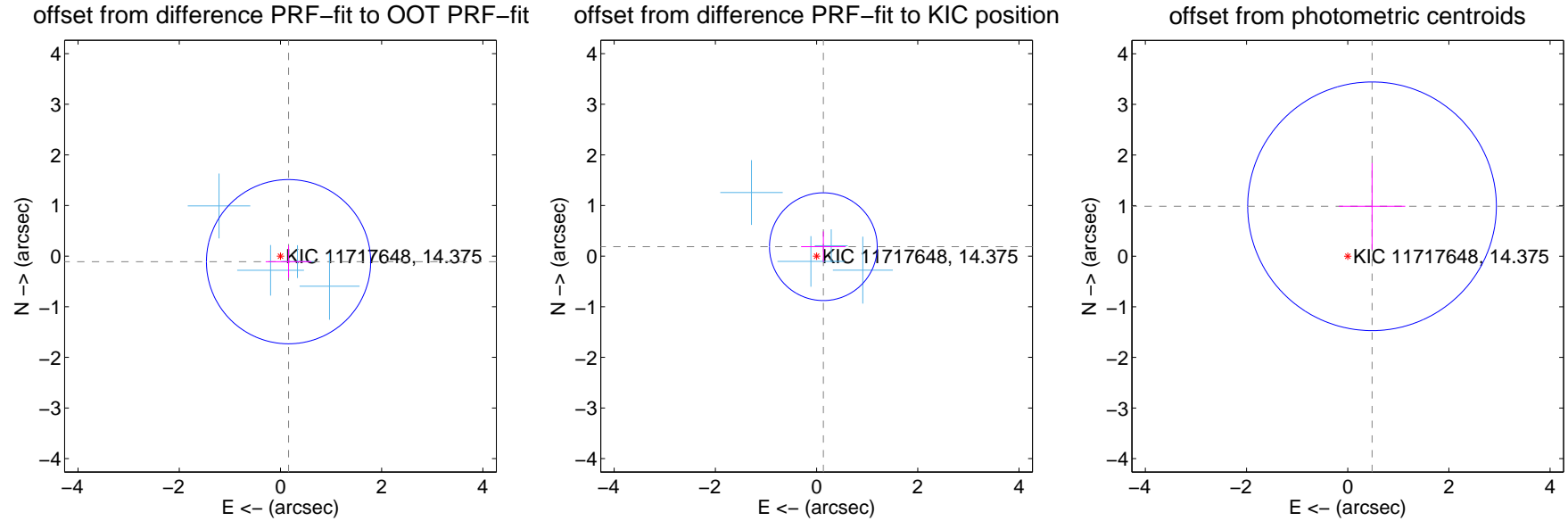
DV Centroid Data

Supplemental centroid analysis for 011717648-04. Kepler magnitude: 14.38. Transit SNR 8.66

There are 4 quarters with good PRF difference image offsets

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

| | Distance in arcsec | Distance / σ | Δ RA | Δ Dec |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT | 0.194 ± 0.541 | 0.36 | -0.160 ± 0.452 | -0.110 ± 0.317 |
| PRF-fit source offset from KIC position | 0.230 ± 0.355 | 0.65 | -0.134 ± 0.441 | 0.187 ± 0.301 |
| photometric centroid source offset | 1.10 ± 0.82 | 1.34 | -0.48 ± 0.66 | 0.99 ± 0.85 |

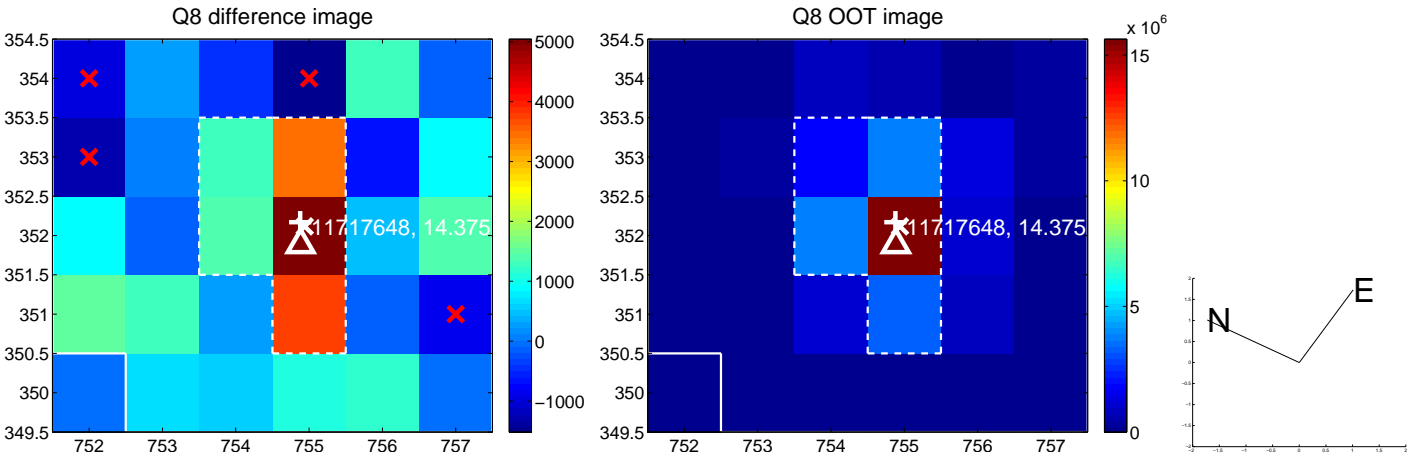
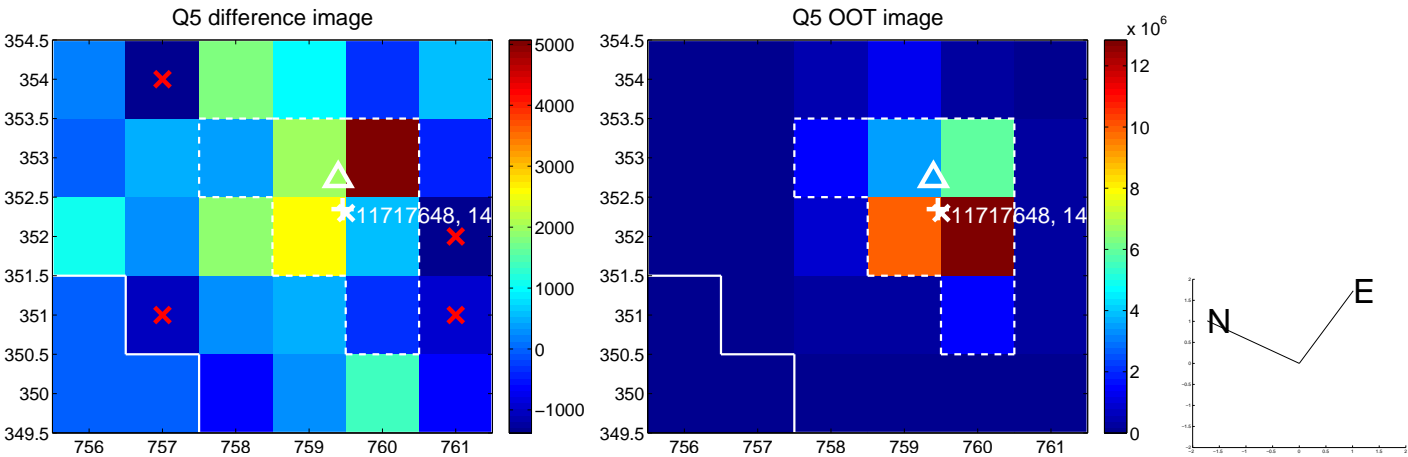


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

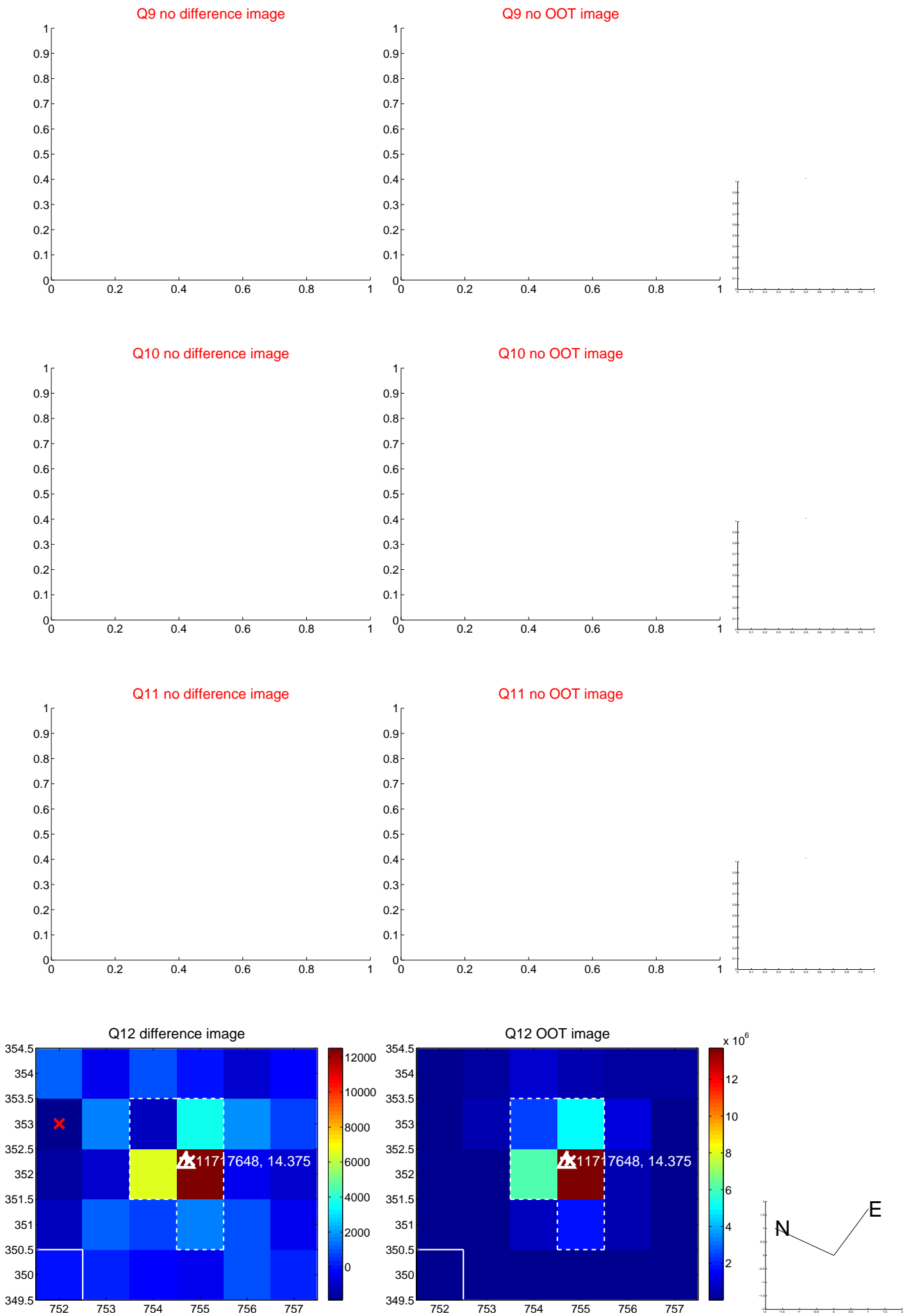
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



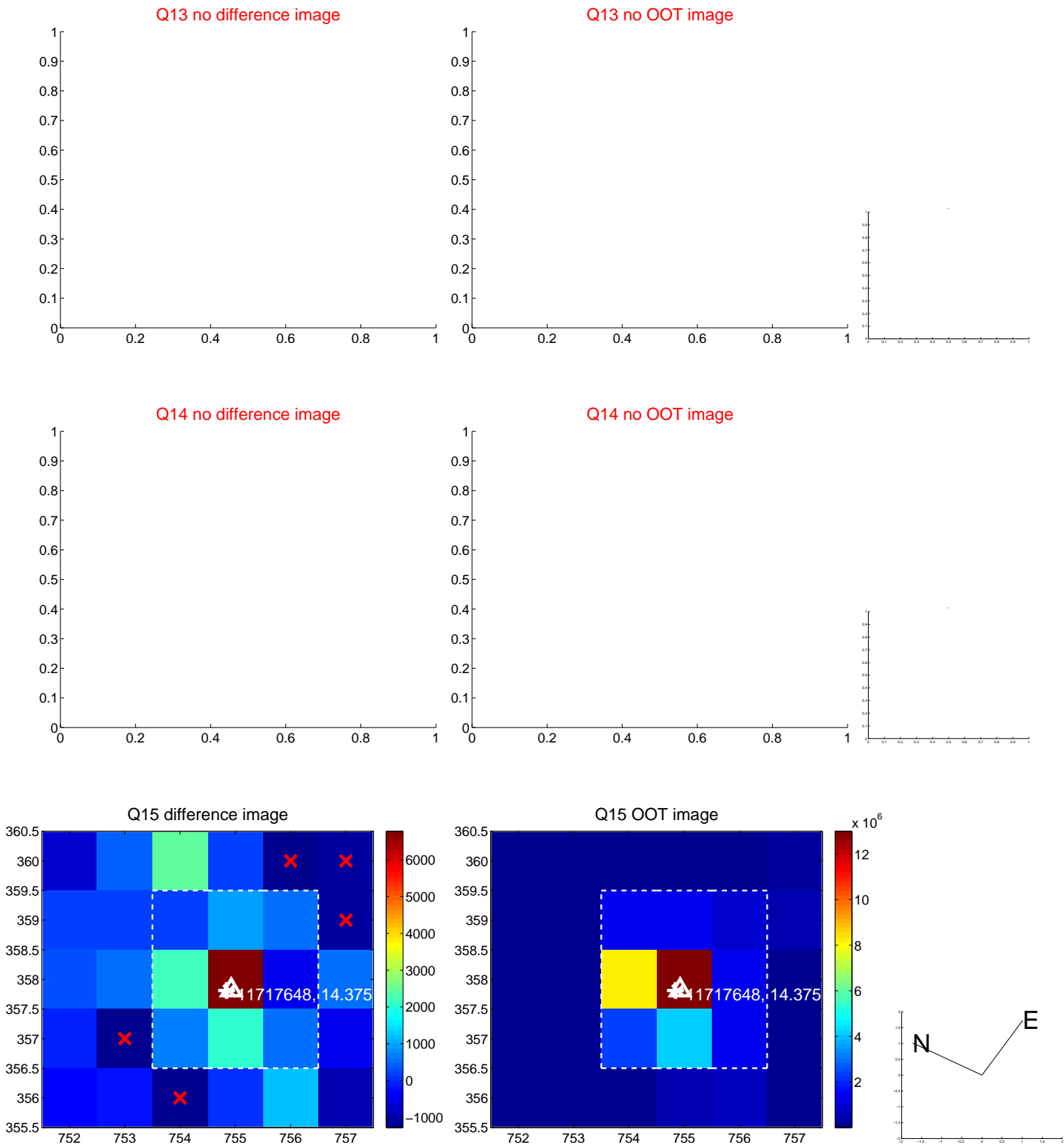
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



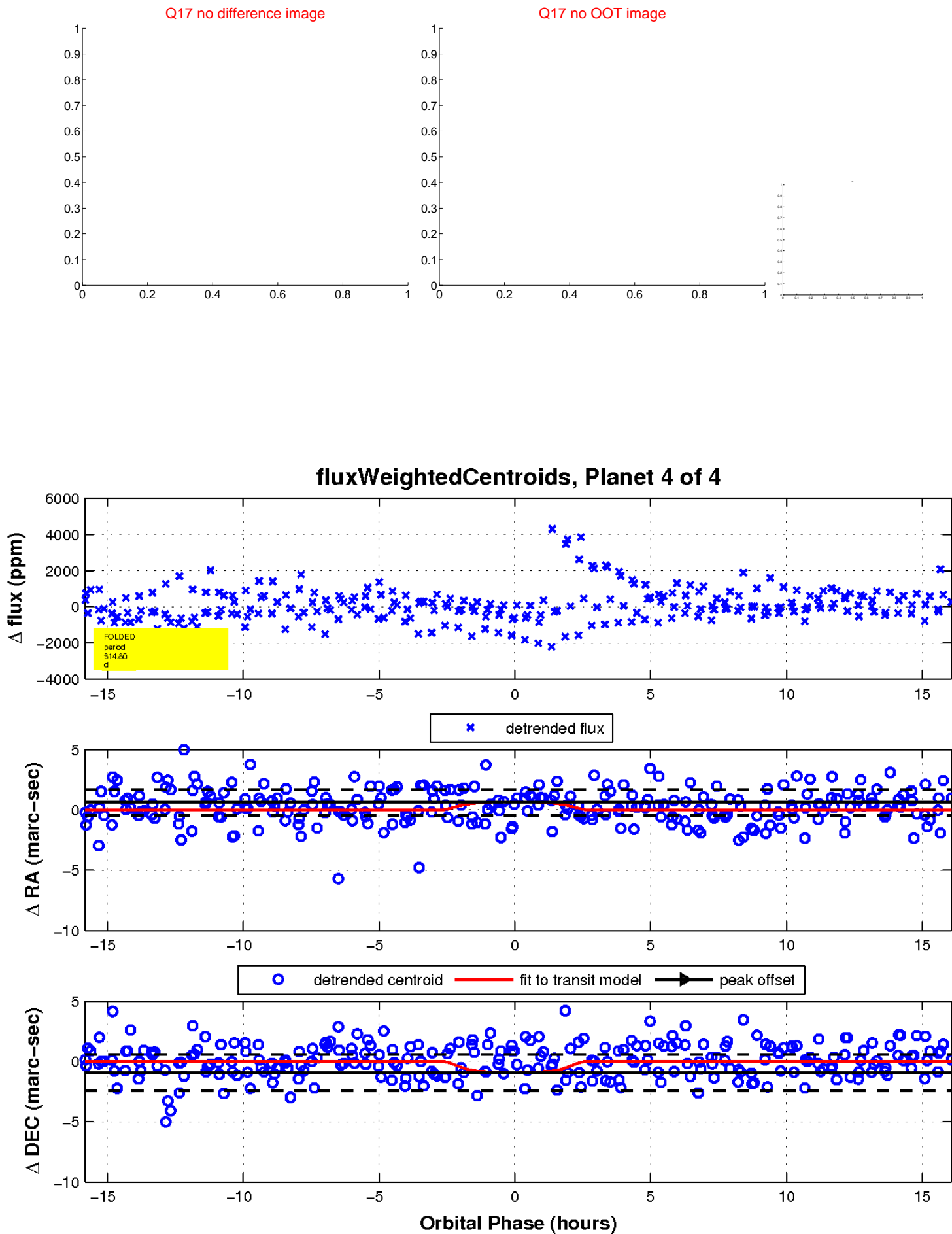
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

