

# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST |

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

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

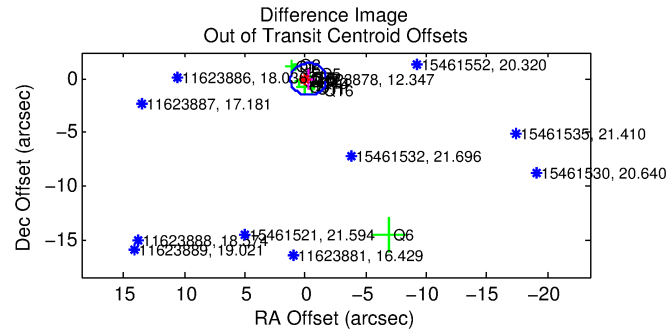
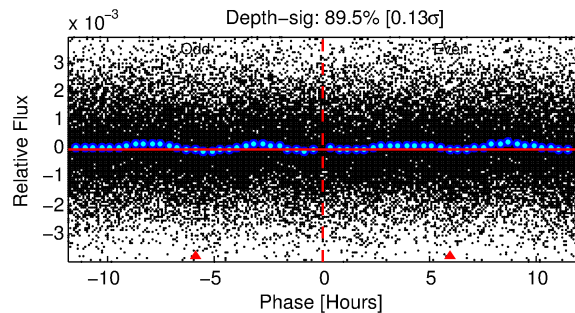
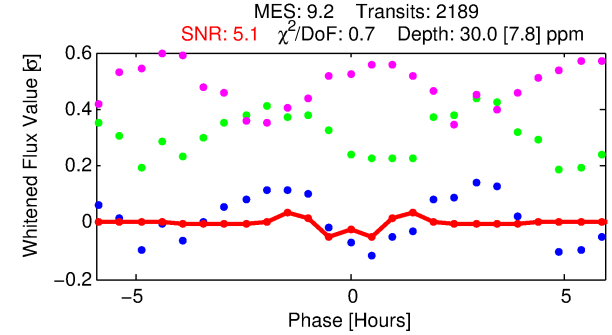
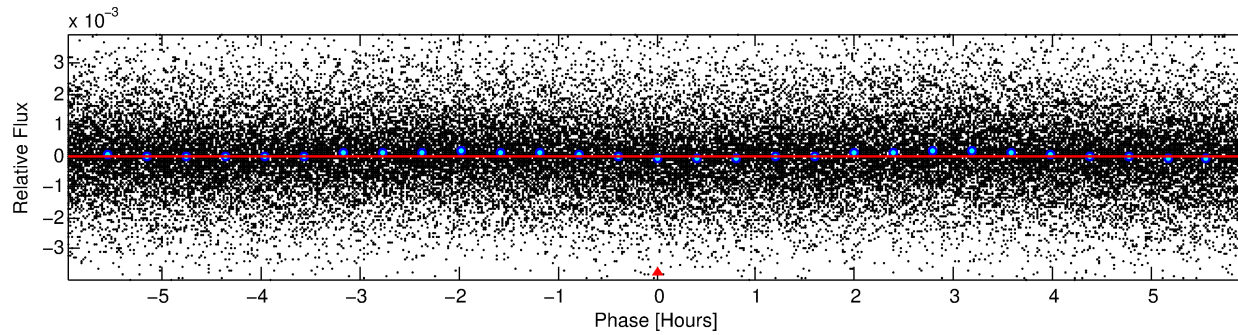
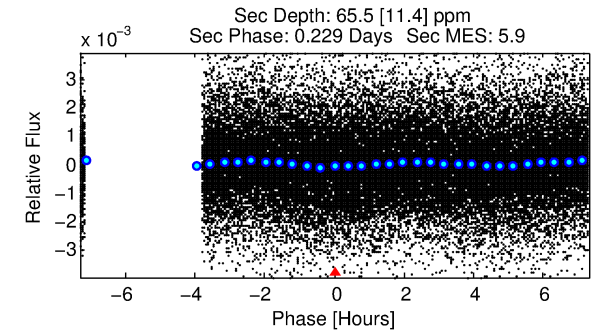
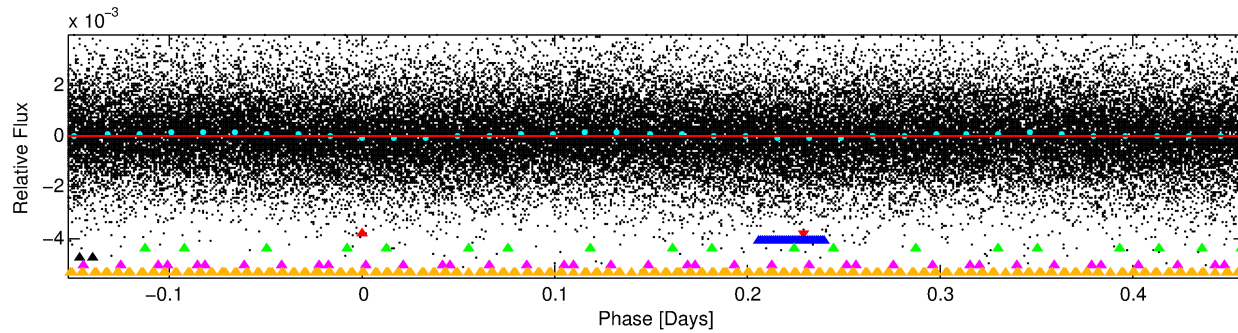
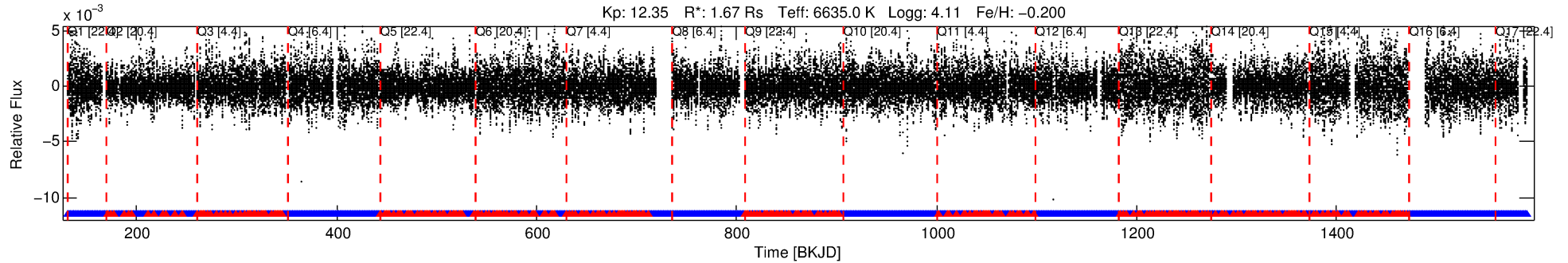
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011623878-01

No Significant Match Found

# DV One-Page Summary

KIC: 11623878 Candidate: 1 of 6 Period: 0.611 d



## DV Fit Results:

Period = 0.61133 [0.00002] d  
Epoch = 131.6247 [0.0019] BKJD  
Rp/R\* = 0.0059 [0.0018]  
a/R\* = 1.41 [1.20]  
b = 0.90 [0.36]  
Seff = 20308.18 [8280.06]  
Teq = 3044 [310] K  
Rp = 1.07 [0.45] Re  
a = 0.0154 [0.0039] AU  
Ag = 7.53 [5.71] [1.14σ]  
Teffp = 7797 [1297] K [3.56σ]

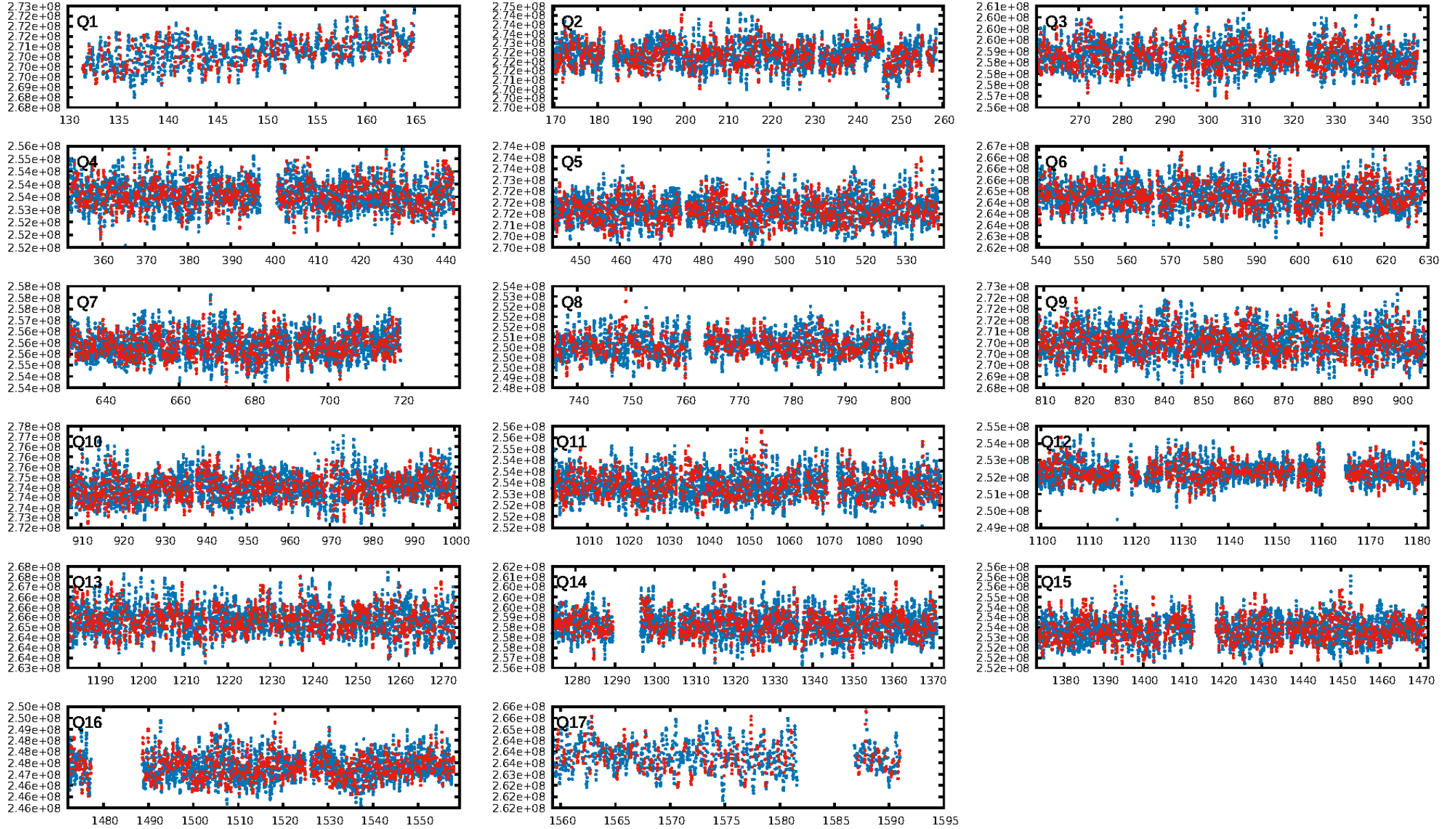
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.84 [1754/2091]  
GhostDiagnostic-chr: 2.203  
Centroid-sig: N/A  
Centroid-so: 1.270 arcsec [2.43σ]  
OotOffset-rm: 0.241 arcsec [0.48σ]  
KicOffset-rm: 0.318 arcsec [0.48σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:13:48 Z

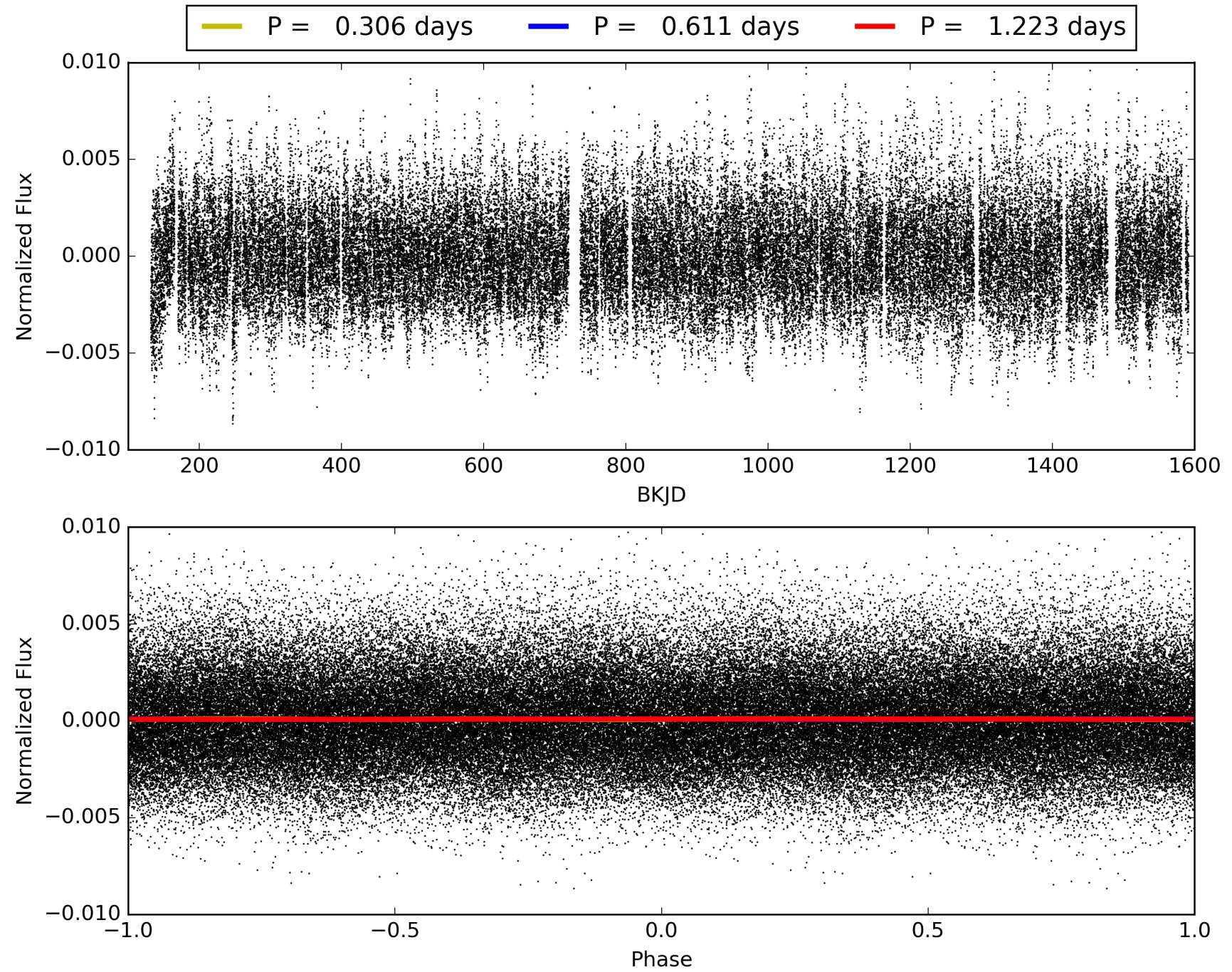
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011623878-01, PDC Light Curves





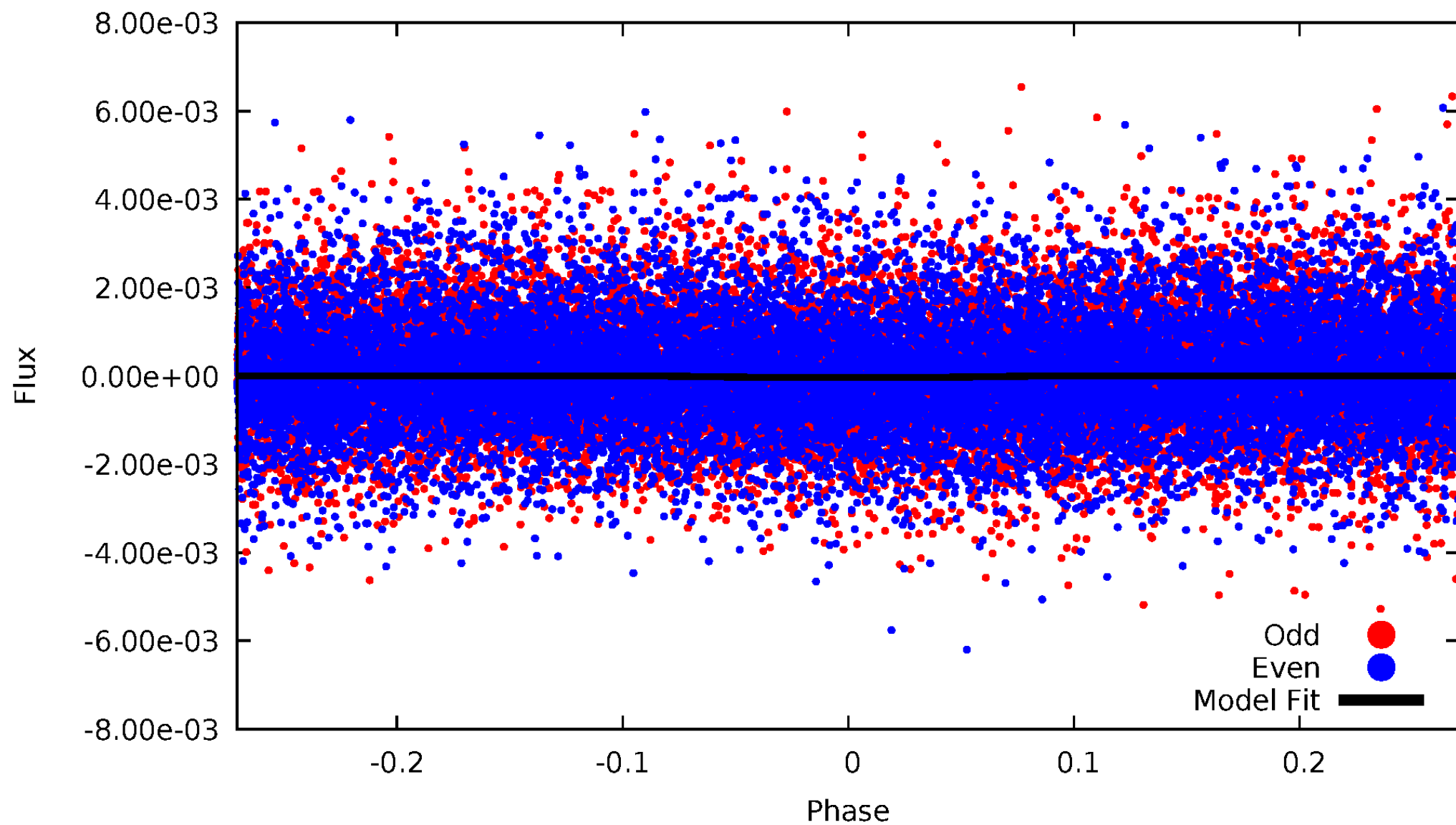
# TCE 011623878-01





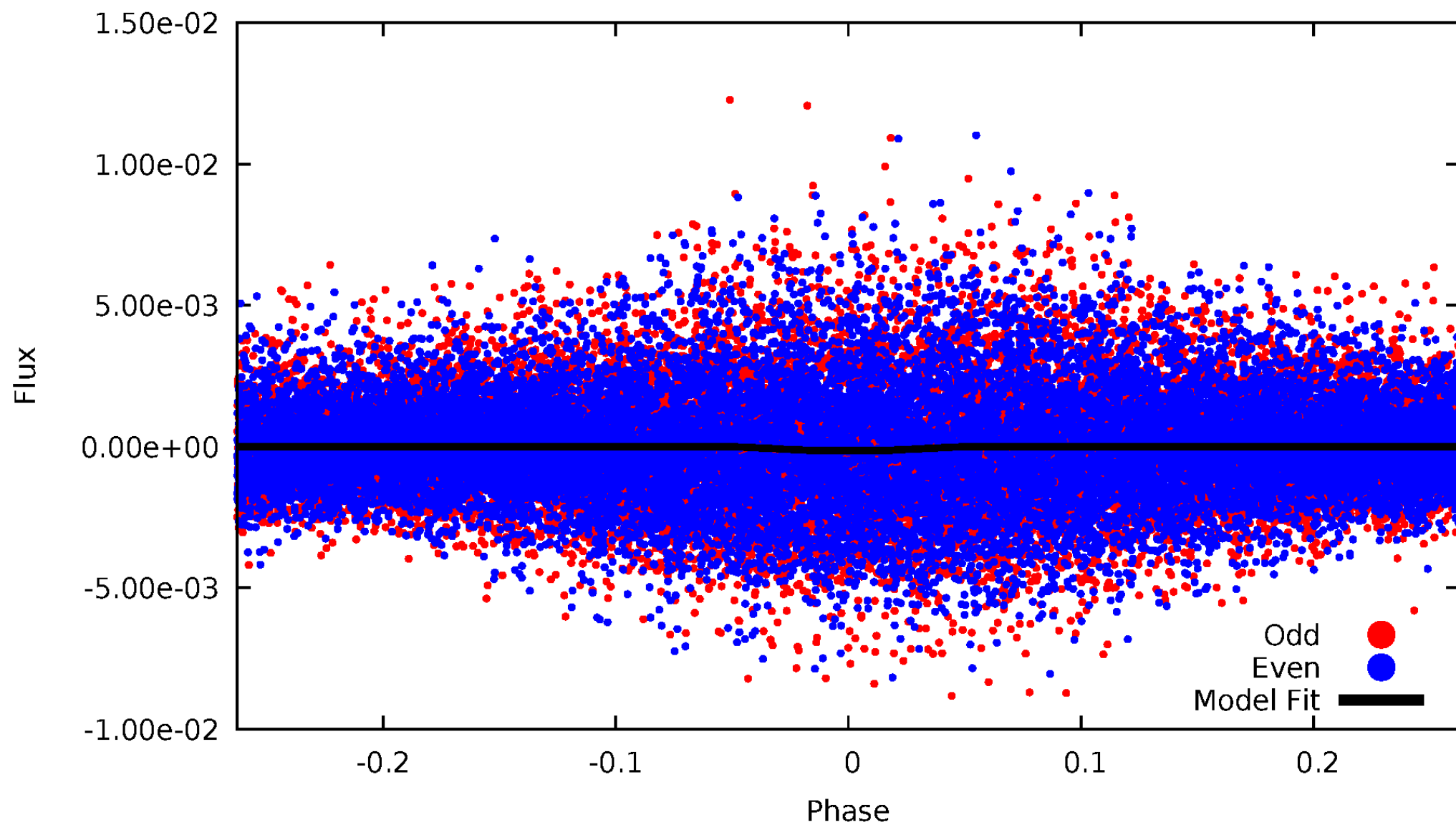
# DV Odd/Even

TCE 011623878-01



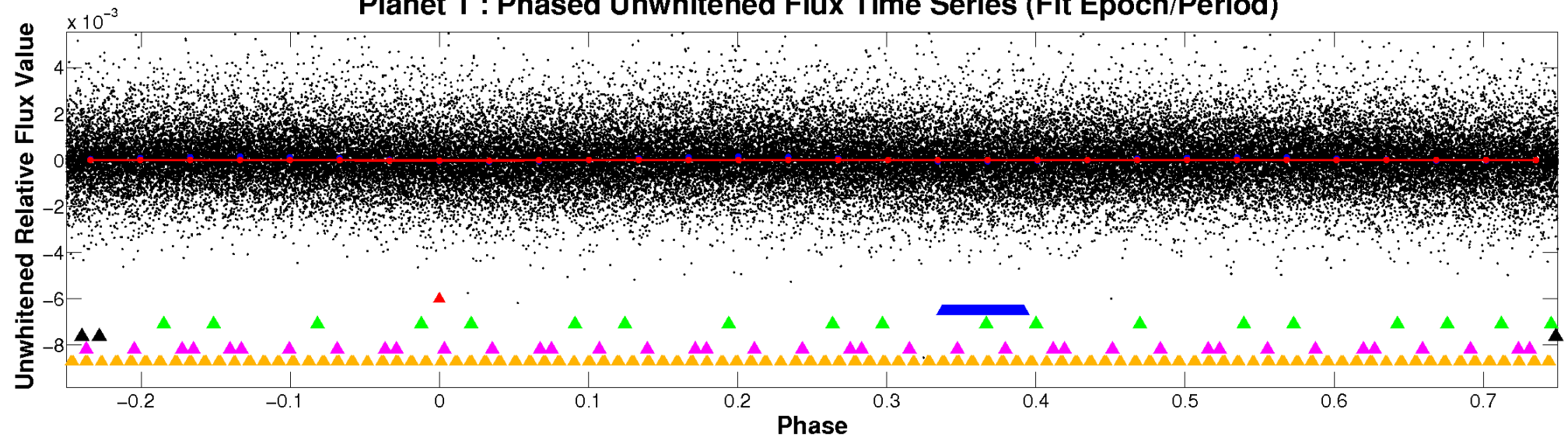
# ALT Odd/Even

TCE 011623878-01

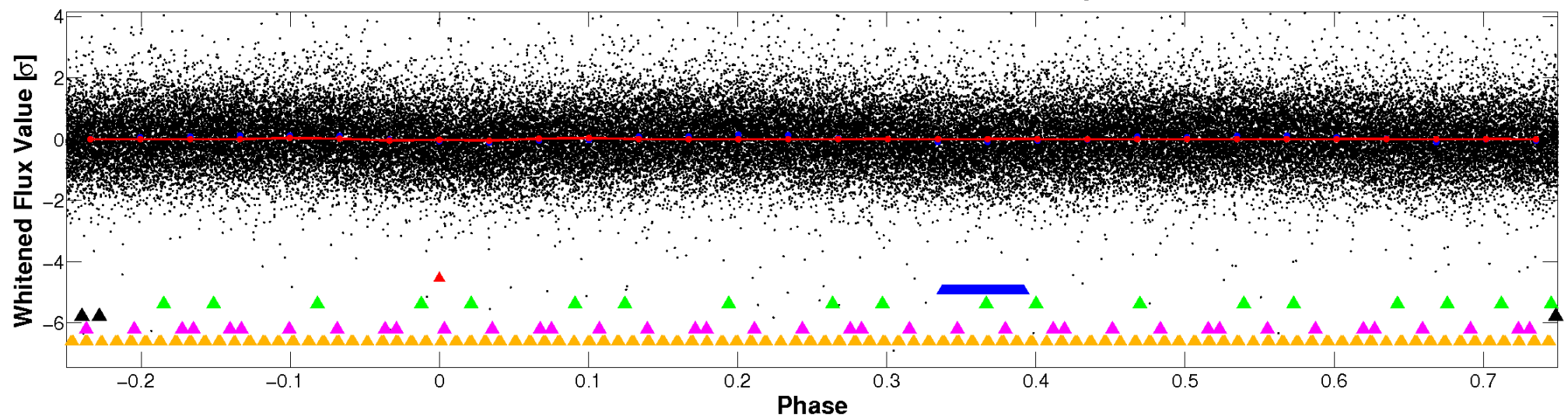


# Non-Whitened Vs. Whitened Light Curve

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



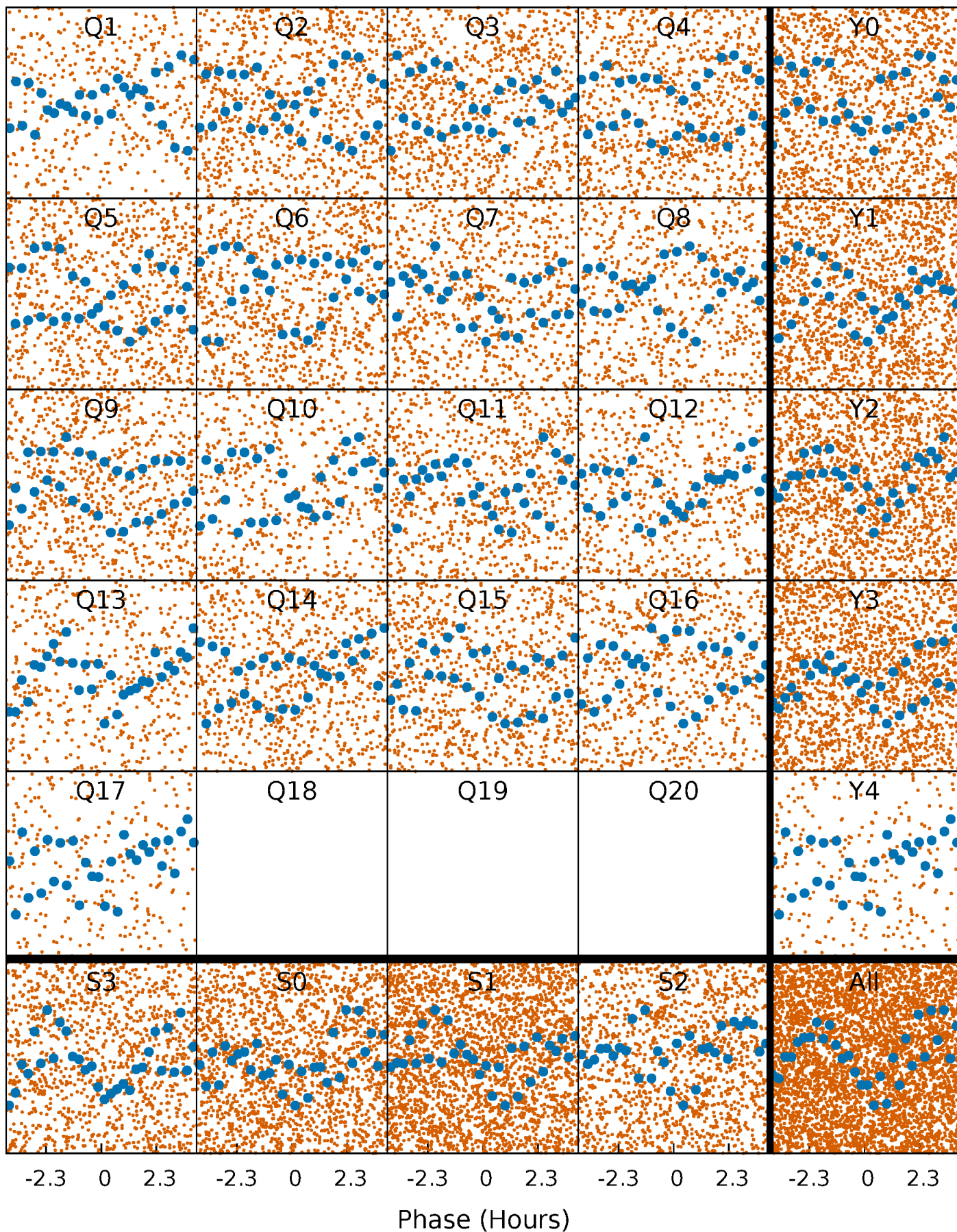
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





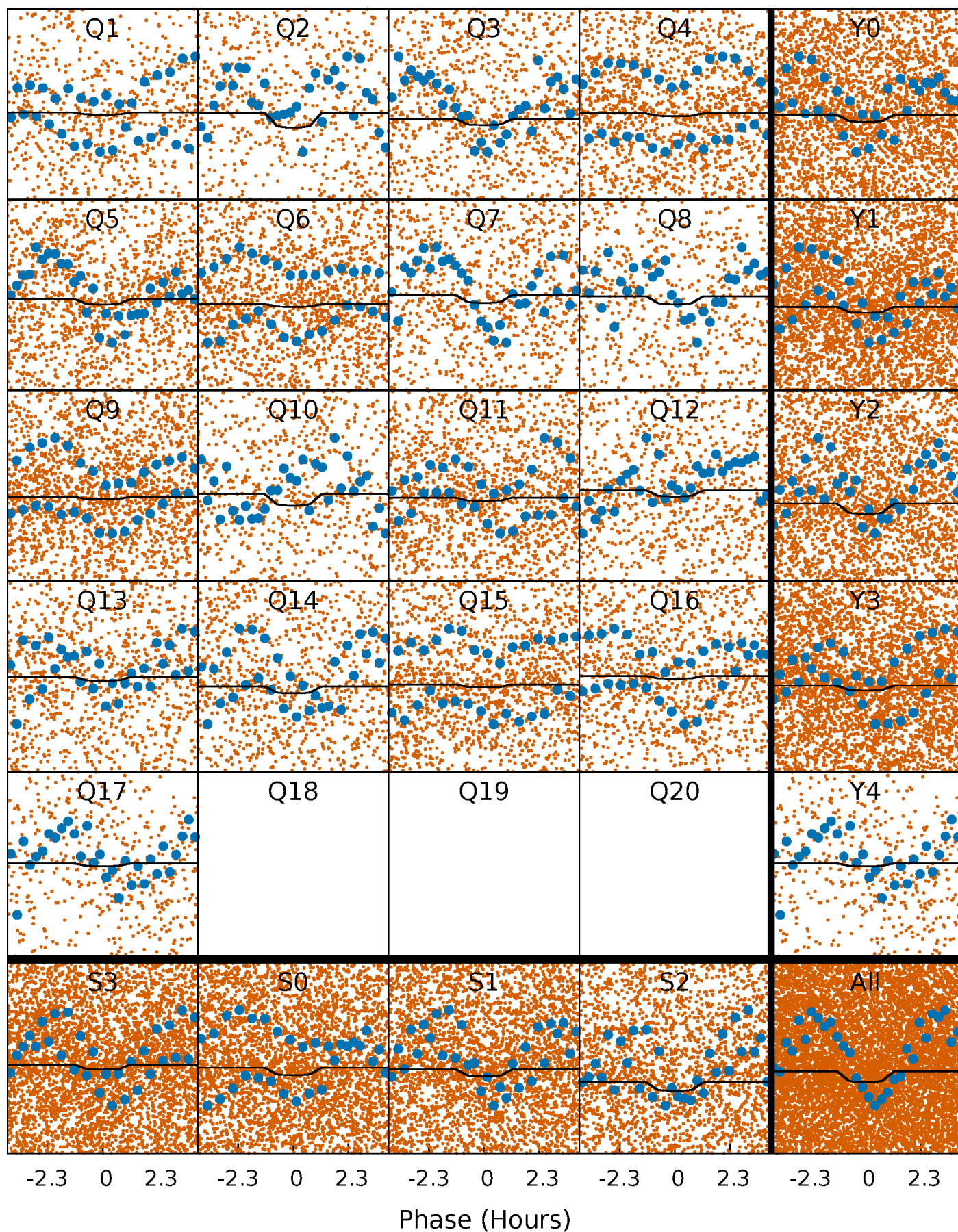
# PDC Quarter-Phased Transit Curves

TCE 011623878-01 P= 0.611333 Days  $T_0=131.624700$  (BKJD)



# DV Quarter-Phased Transit Curves

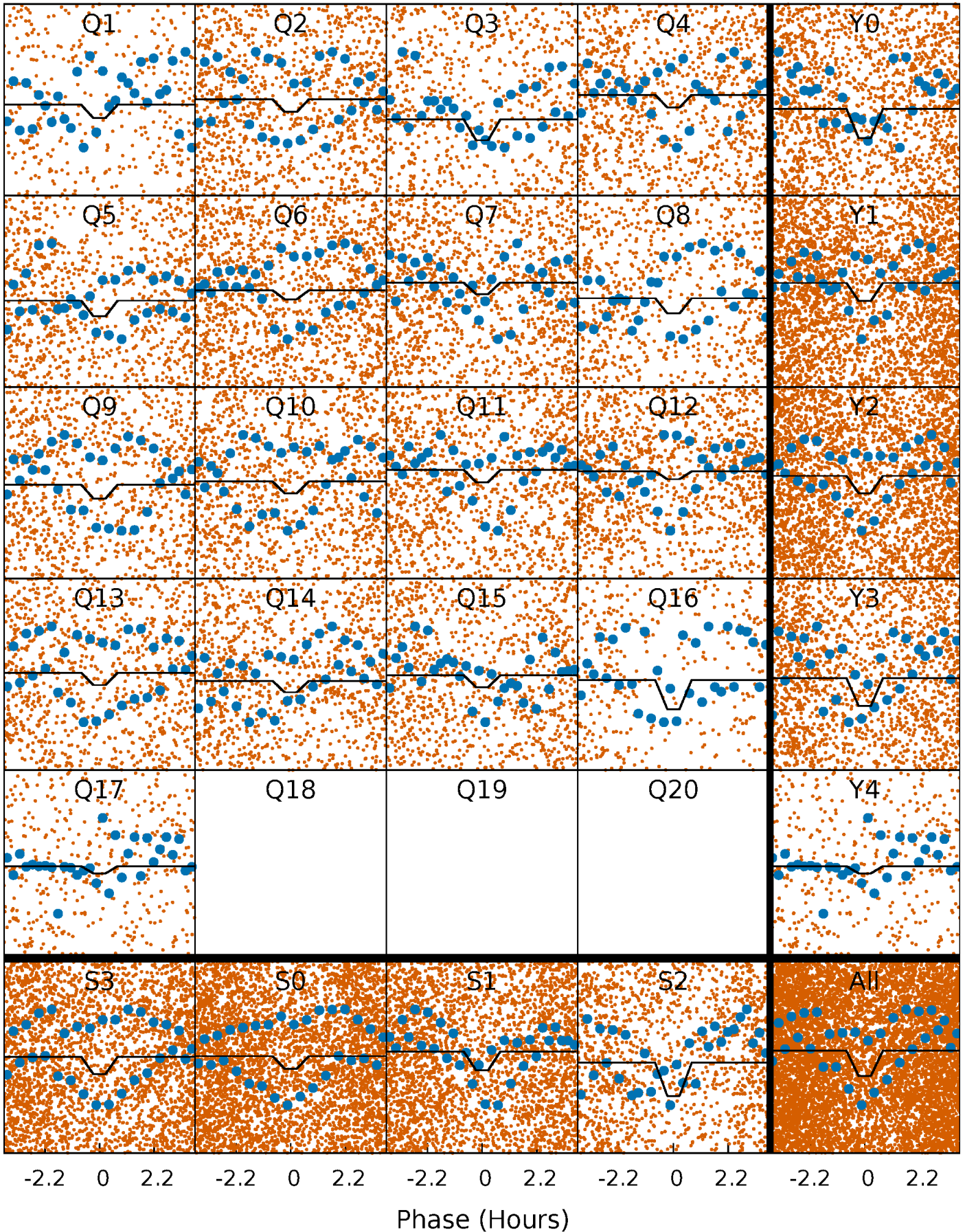
TCE 011623878-01 P= 0.611333 Days  $T_0=131.624700$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011623878-01 P= 0.611350 Days  $T_0=131.622147$  (BKJD)

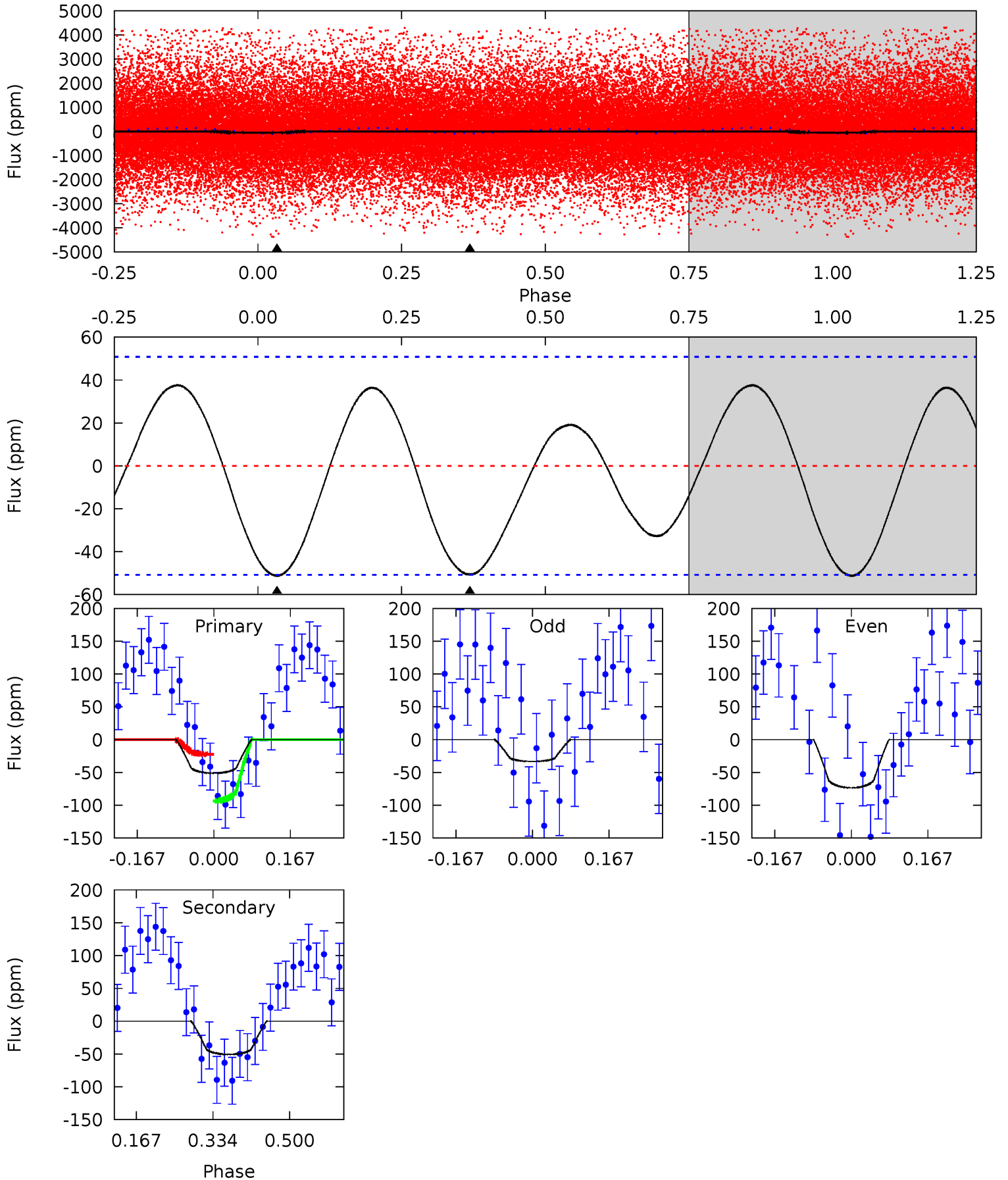




# DV Model-Shift Uniqueness Test

011623878-01, P = 0.611333 Days, E = 131.013367 Days

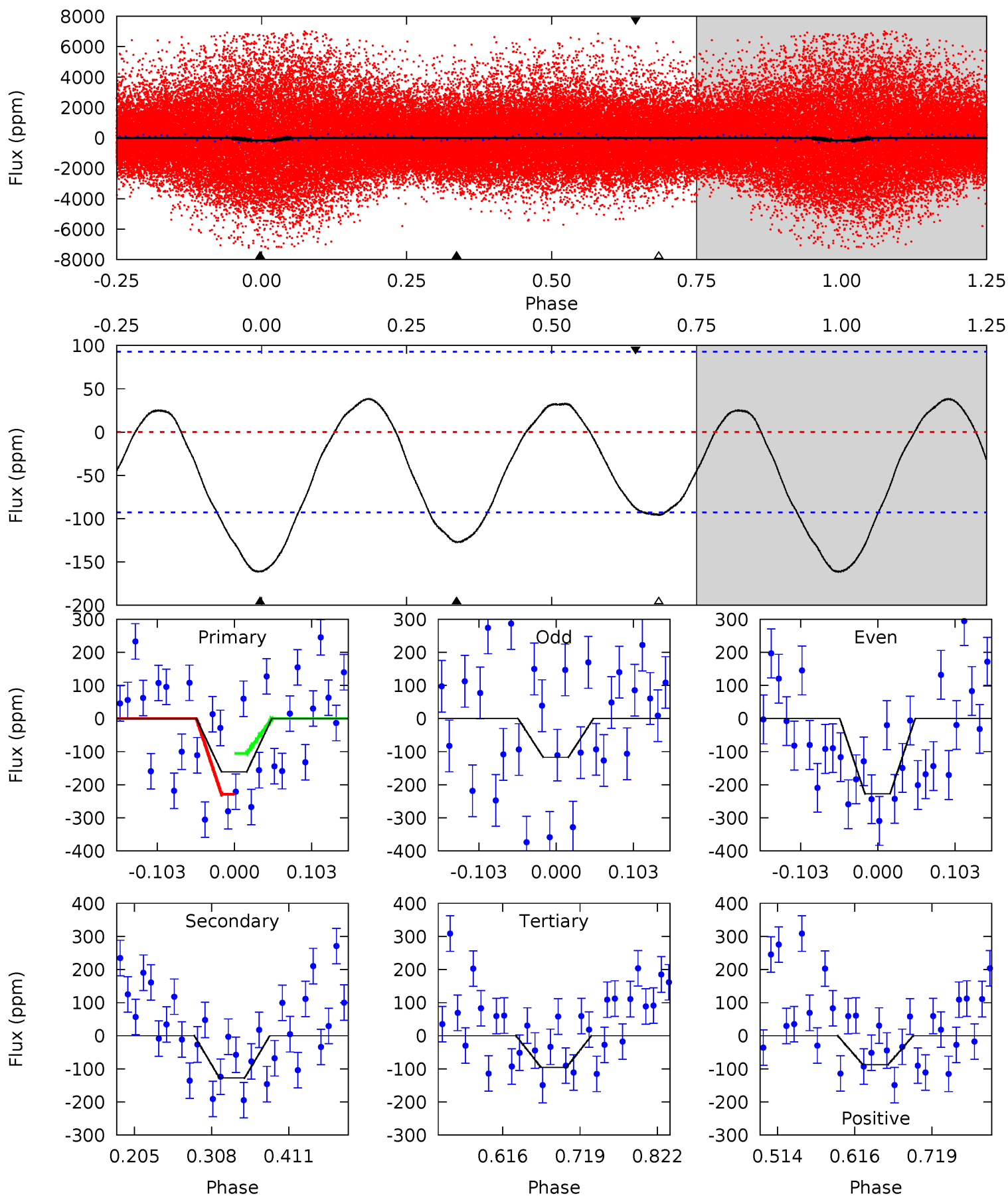
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 4.50 | 4.45 | 0   | 0   | 4.46            | 1.38            | 2.01             | 4.50    | 4.50    | 4.45    | 4.45    | 1.77    | 0.58 | 0.42  | 3.12 |



# Alt Model-Shift Uniqueness Test

011623878-01, P = 0.611350 Days, E = 131.010797 Days

| Pri  | Sec  | Ter  | Pos   | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|-------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 7.94 | 6.27 | 4.71 | -4.30 | 4.56            | 1.63            | 2.12             | 3.24    | 12.2    | 1.56    | 10.6    | 2.70    | 0.64 | 0.19  | 3.07 |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                    |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                   |
| 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 011623878-01 / KOI

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$   | $A_{\text{obs}}$          |
|---------|---------------|------------------------|----------------------|------------------------|---------------------------|
| DV      | $-51 \pm 11$  | $1.04^{+0.40}_{-0.35}$ | $4241^{+309}_{-329}$ | $7211^{+2421}_{-1165}$ | $6.116^{+8.051}_{-3.095}$ |
| Alt.    | $-128 \pm 20$ | $2.07^{+0.49}_{-0.41}$ | $4248^{+325}_{-339}$ | $6371^{+764}_{-612}$   | $3.782^{+2.333}_{-1.359}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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



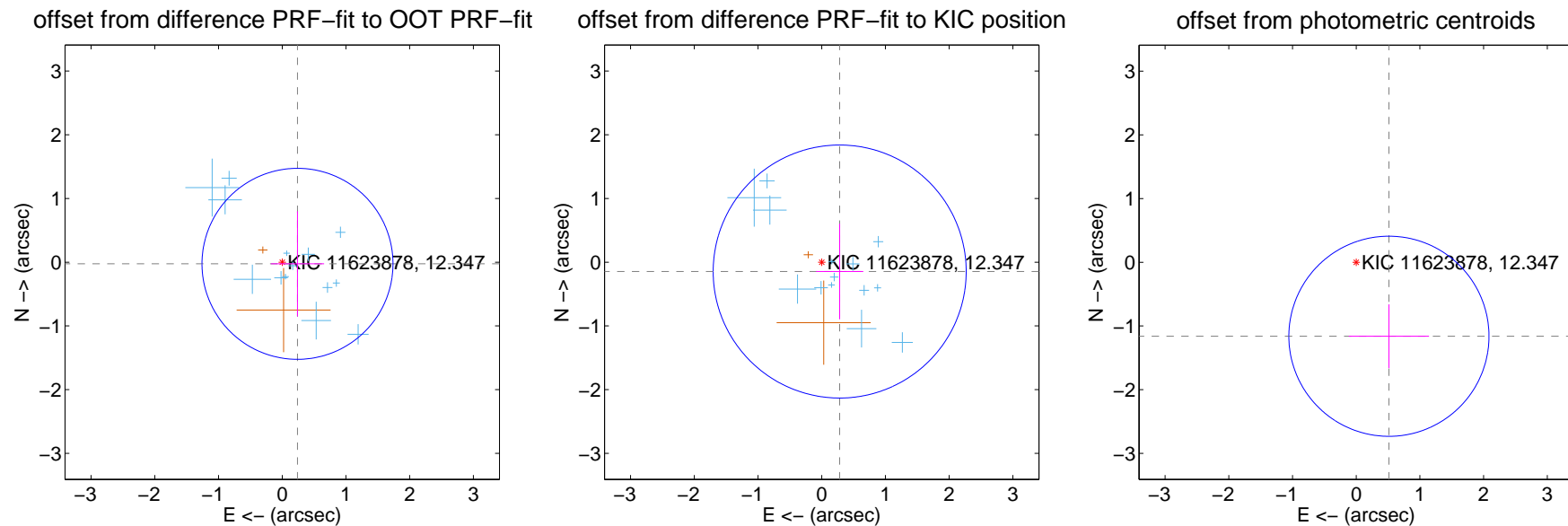
## DV Centroid Data

Supplemental centroid analysis for 011623878-01. Kepler magnitude: 12.35. Transit SNR 5.08

There are 14 quarters with good PRF difference image offsets

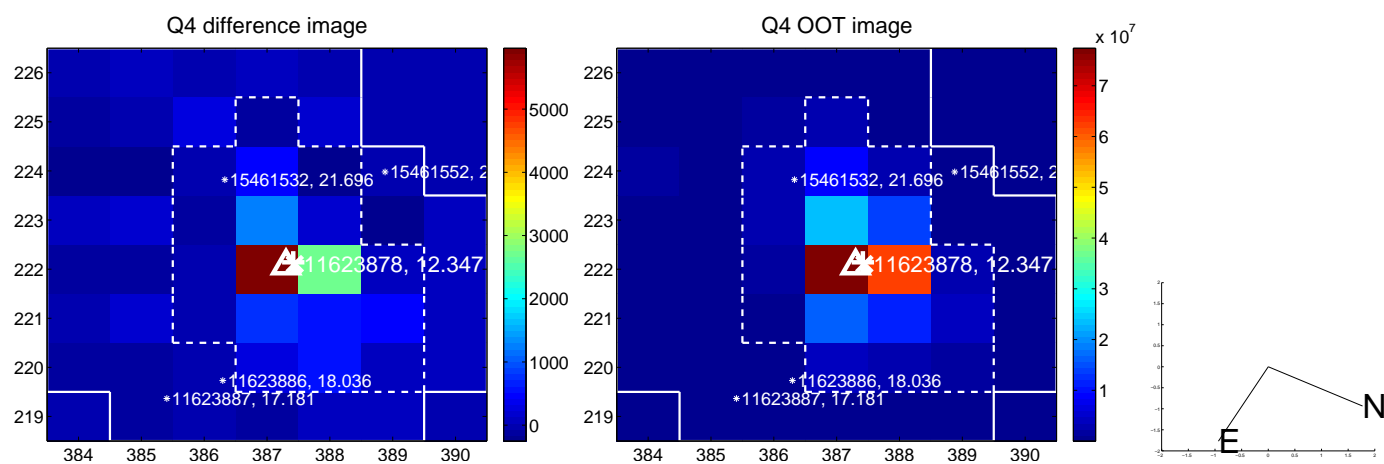
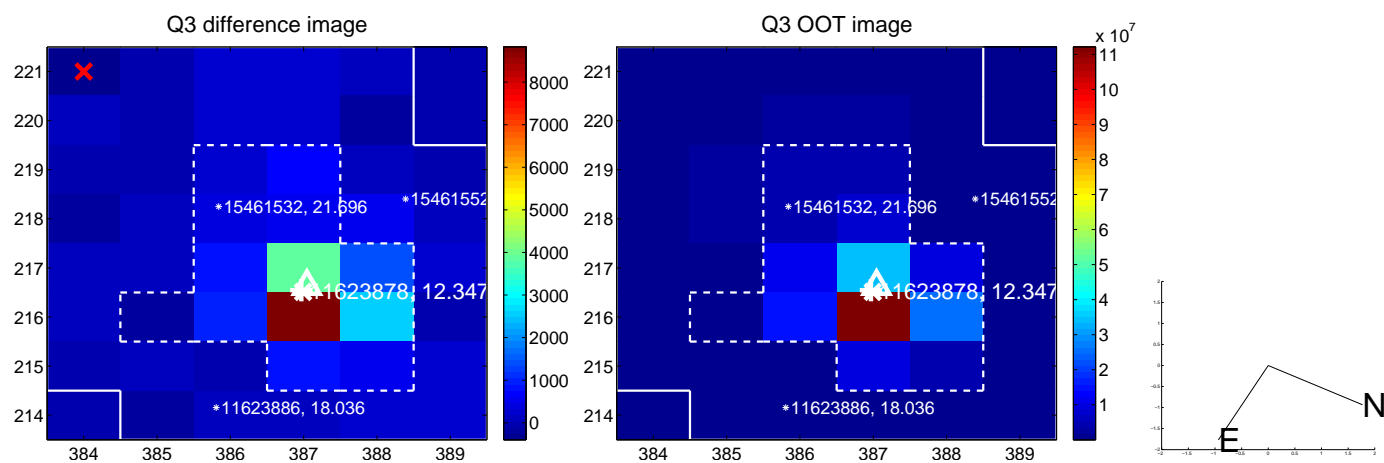
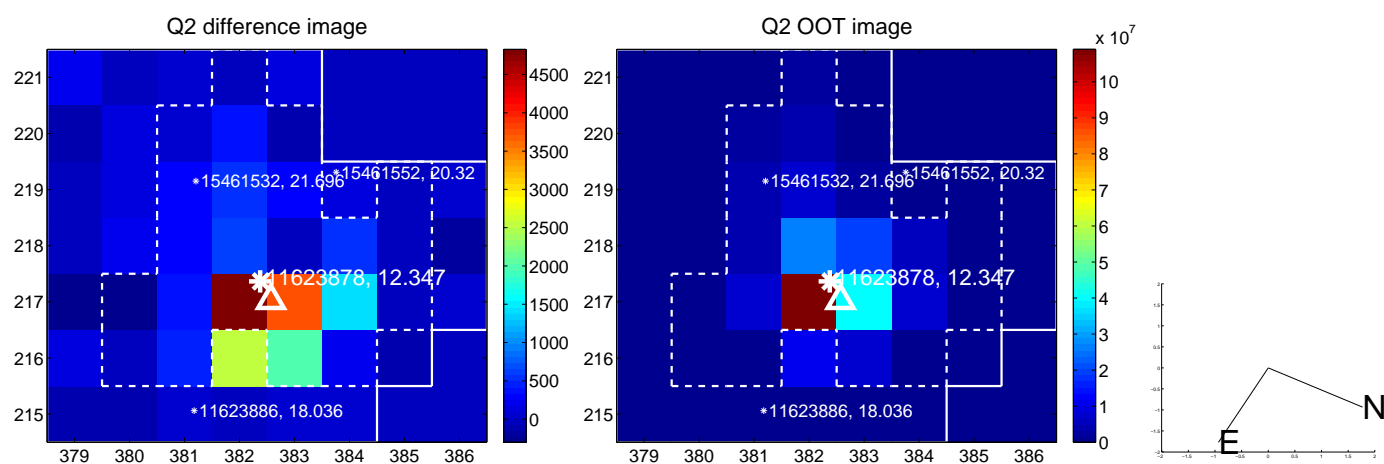
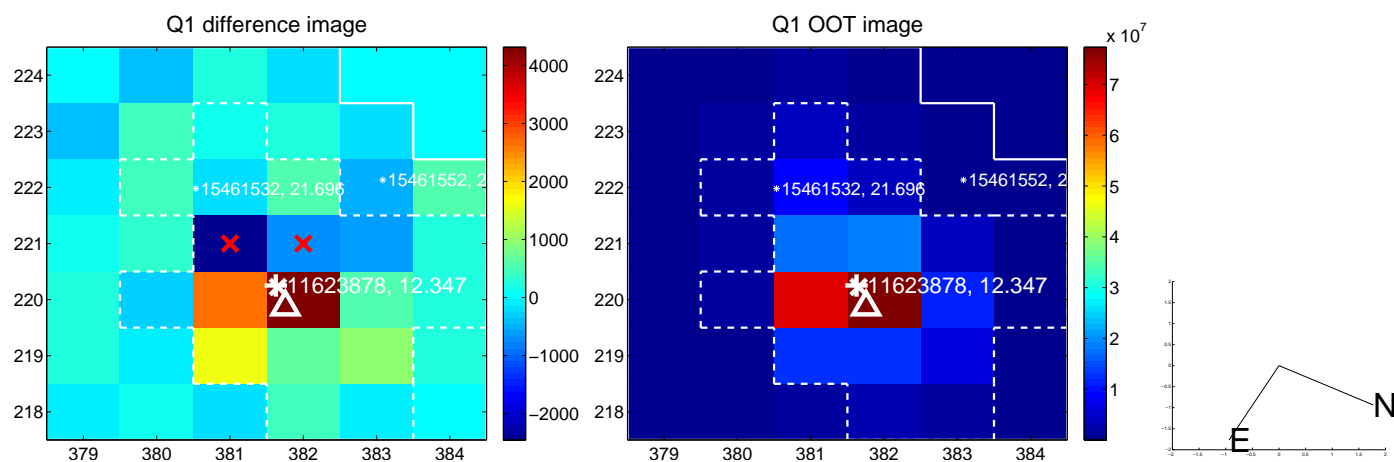
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.241 \pm 0.500$  | 0.48                | $-0.240 \pm 0.418$ | $-0.026 \pm 0.825$ |
| PRF-fit source offset from KIC position | $0.318 \pm 0.662$  | 0.48                | $-0.282 \pm 0.370$ | $-0.147 \pm 0.749$ |
| photometric centroid source offset      | $1.27 \pm 0.52$    | 2.43                | $-0.51 \pm 0.63$   | $-1.16 \pm 0.50$   |

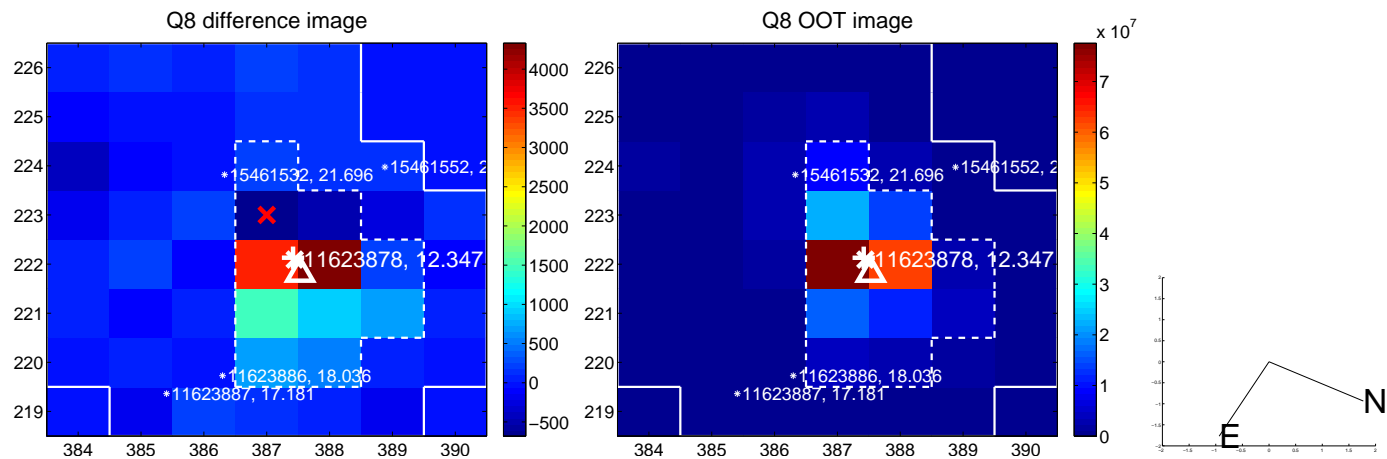
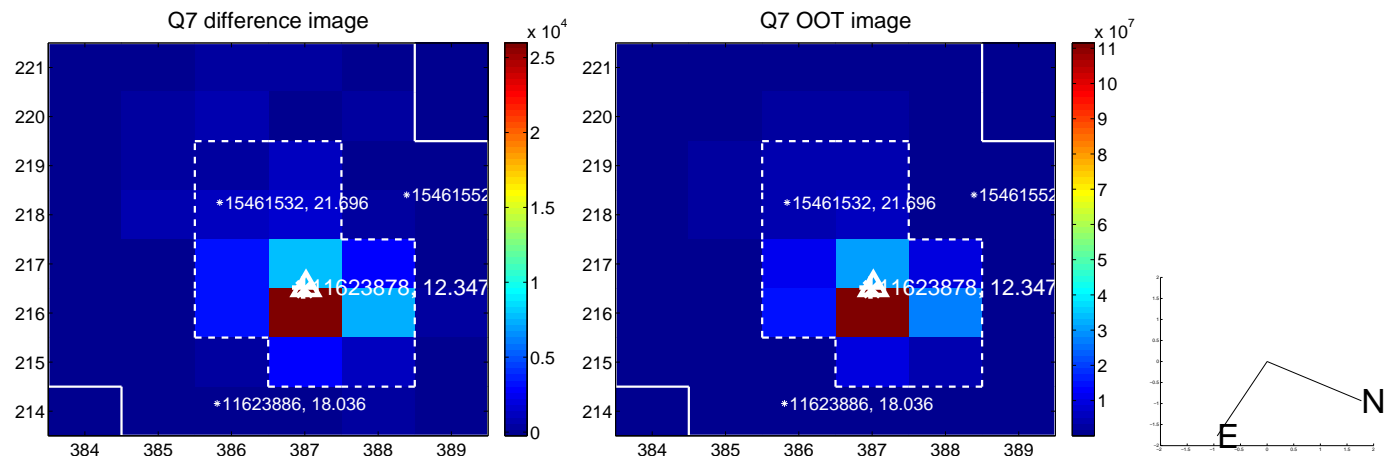
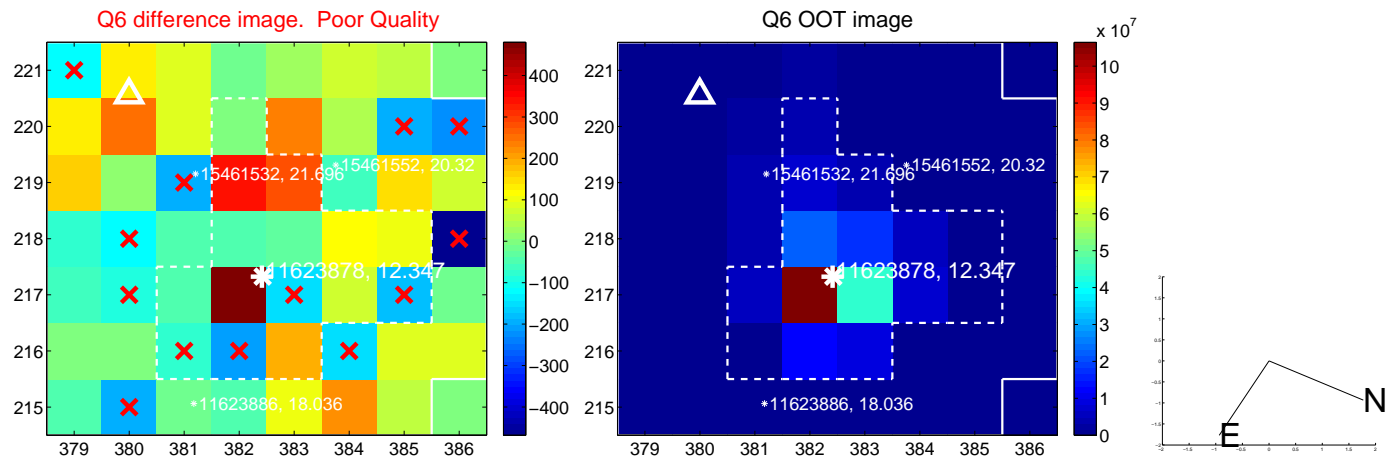
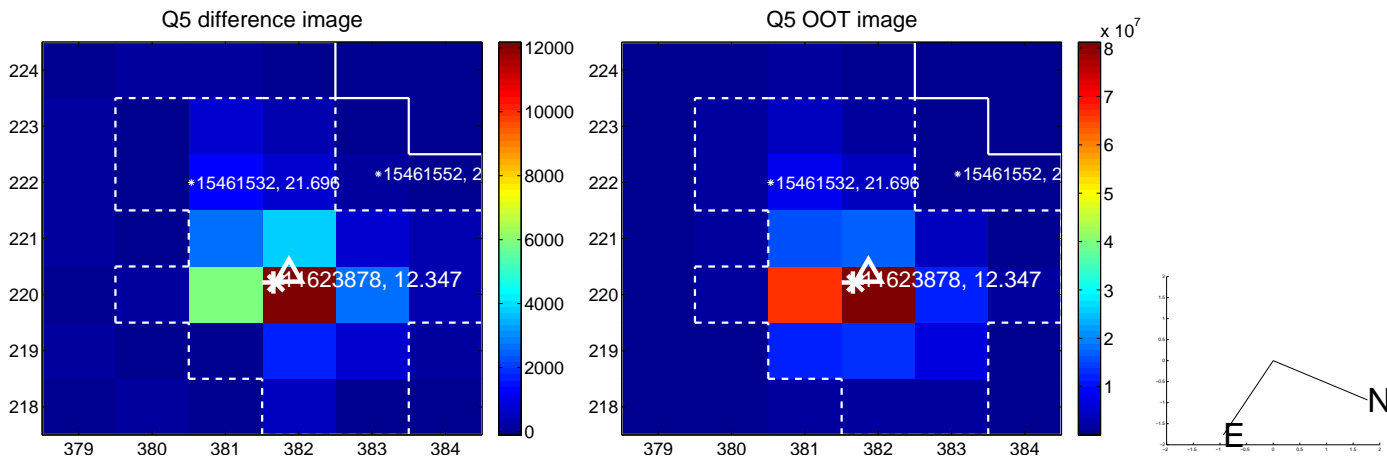


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

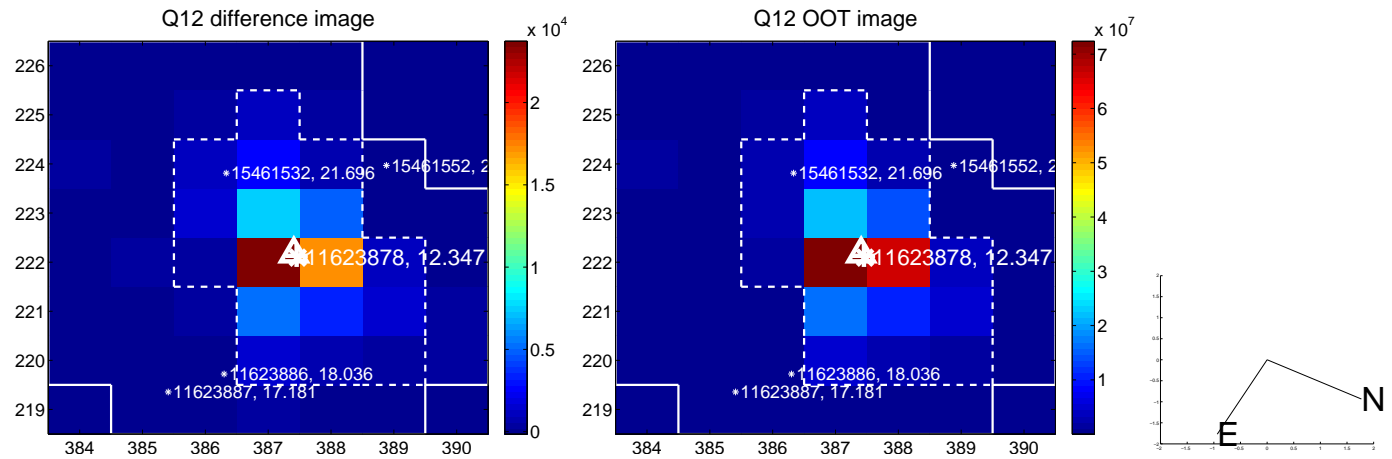
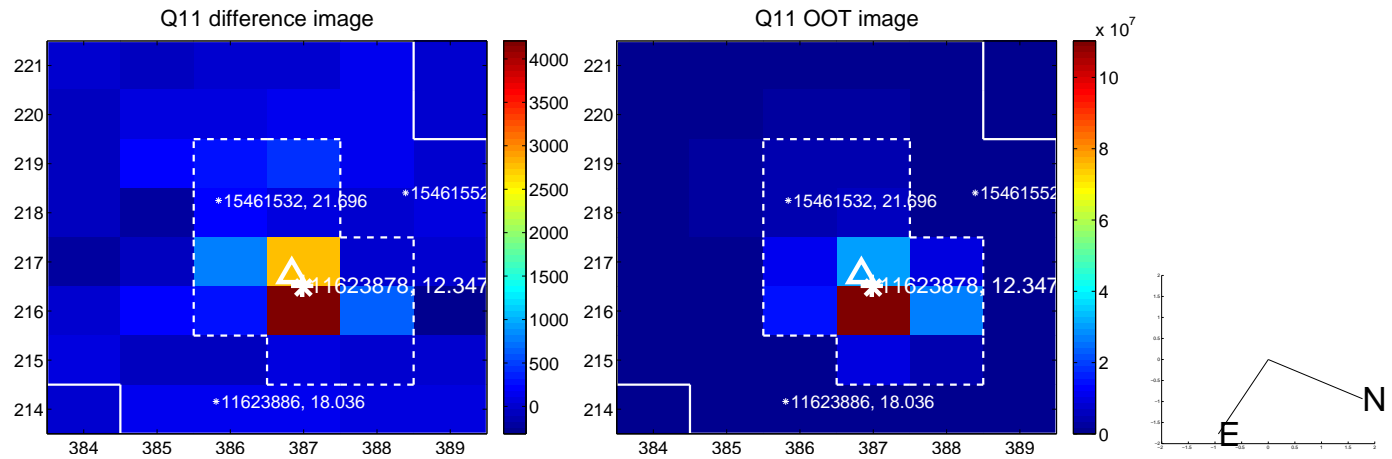
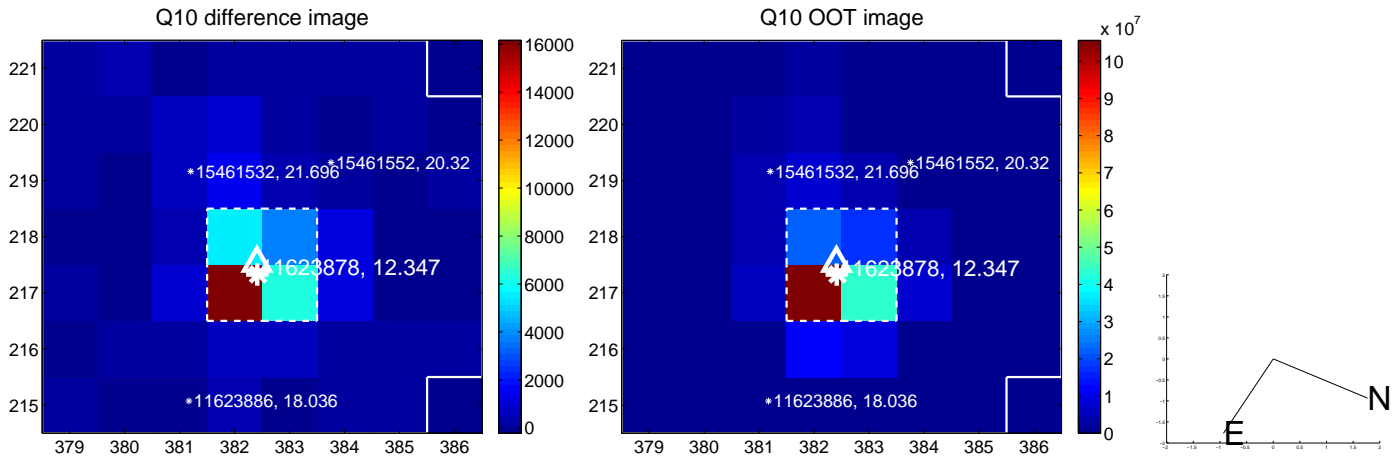
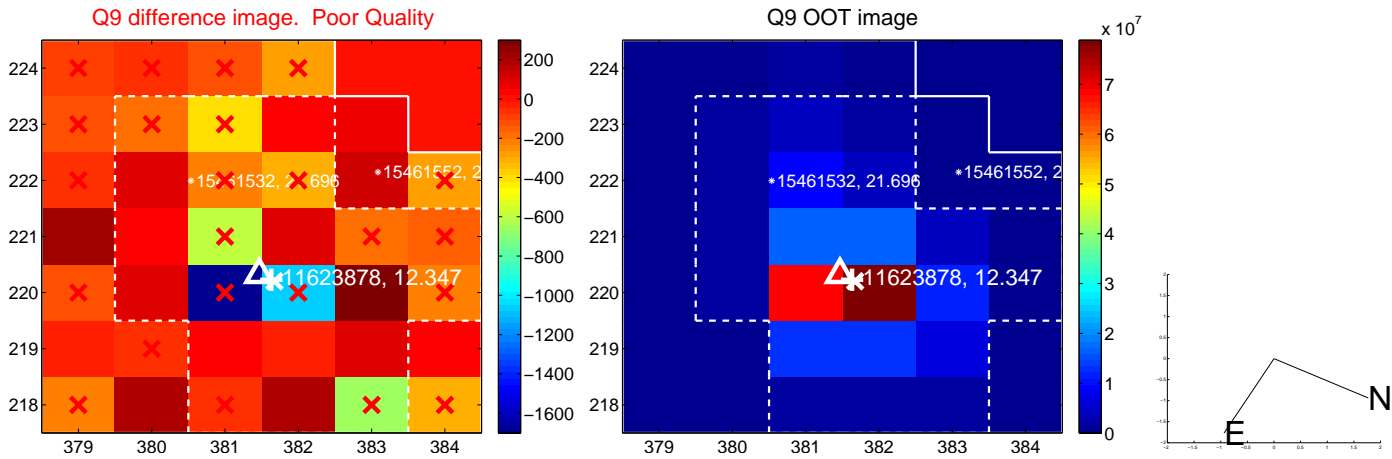
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



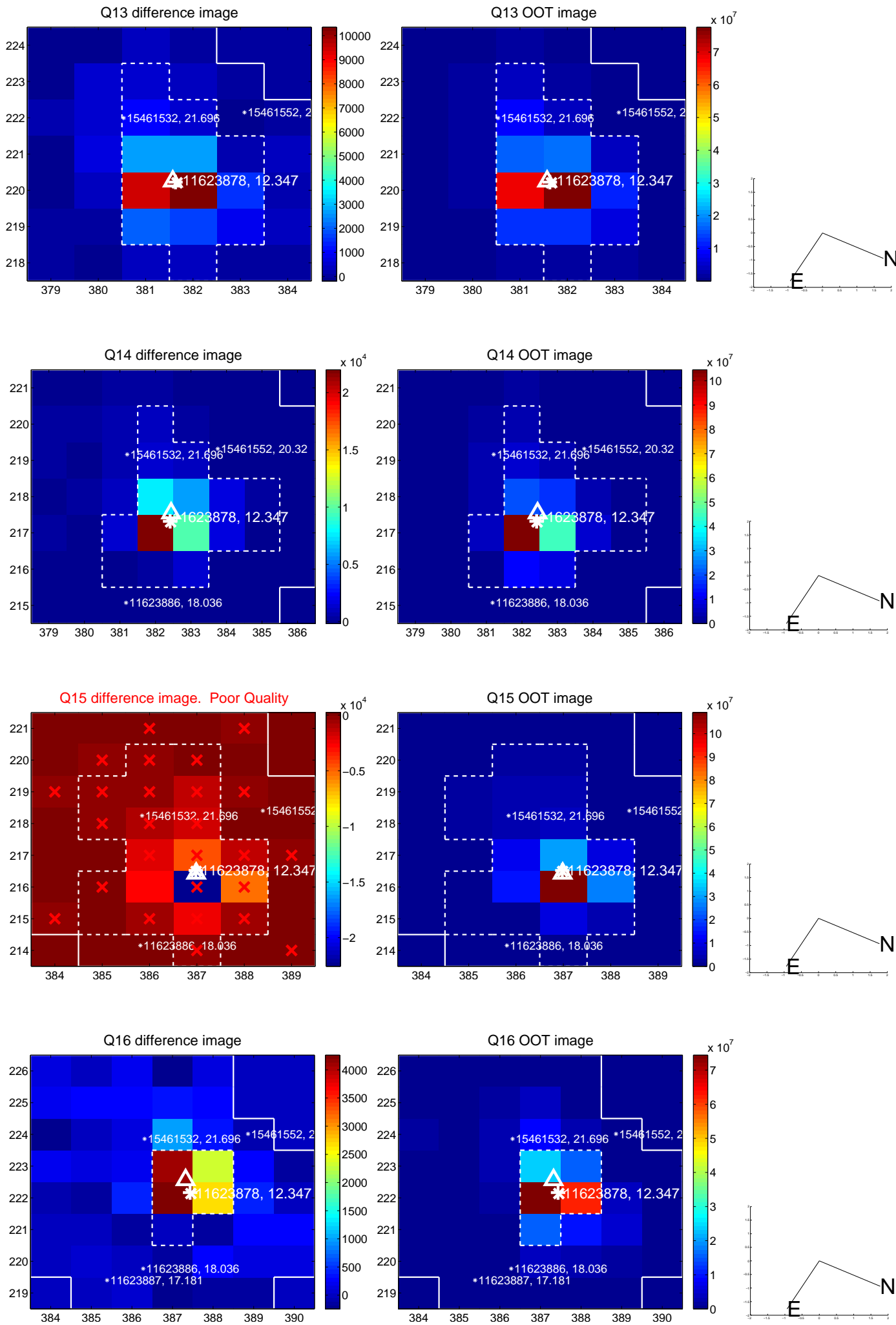
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

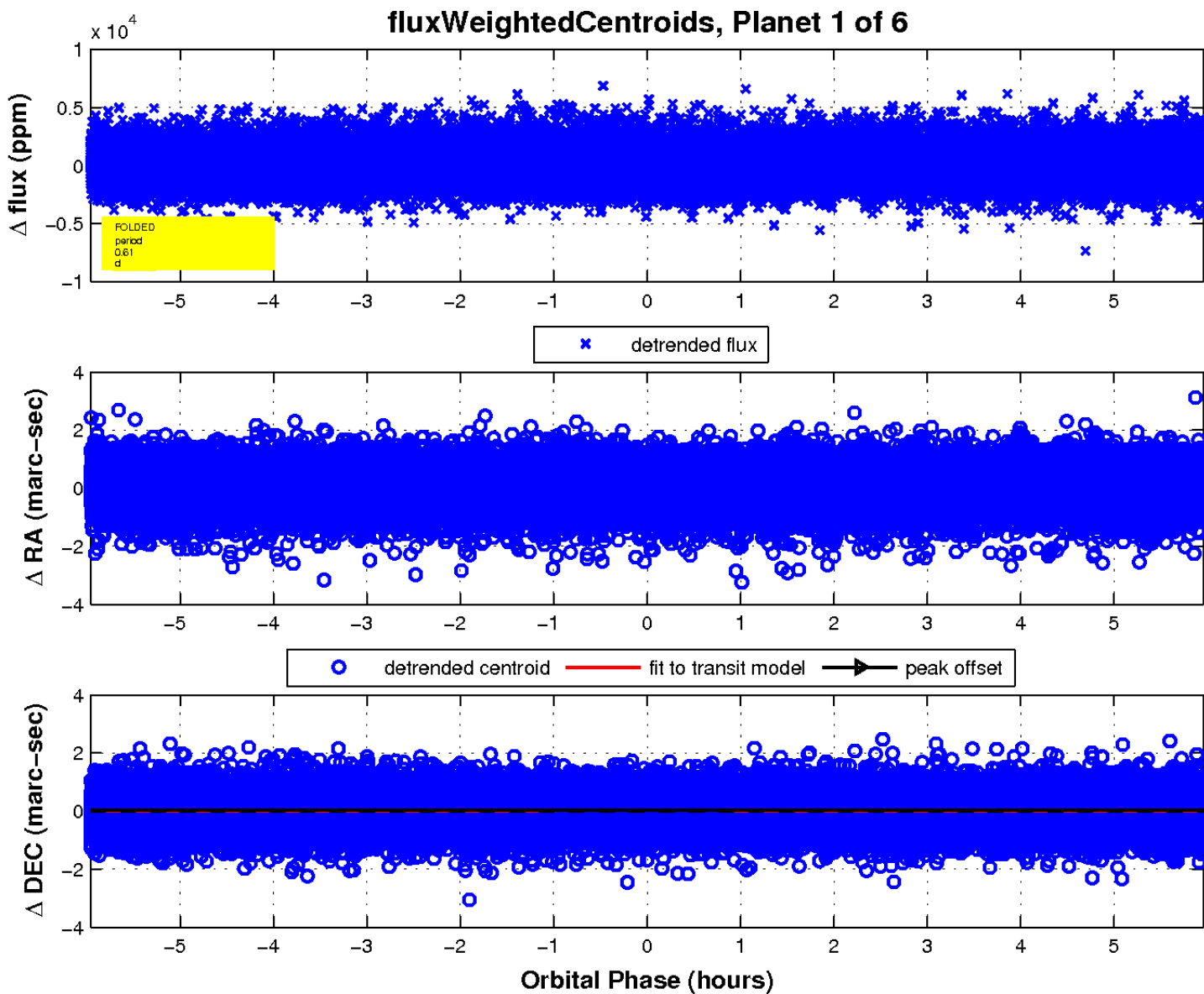
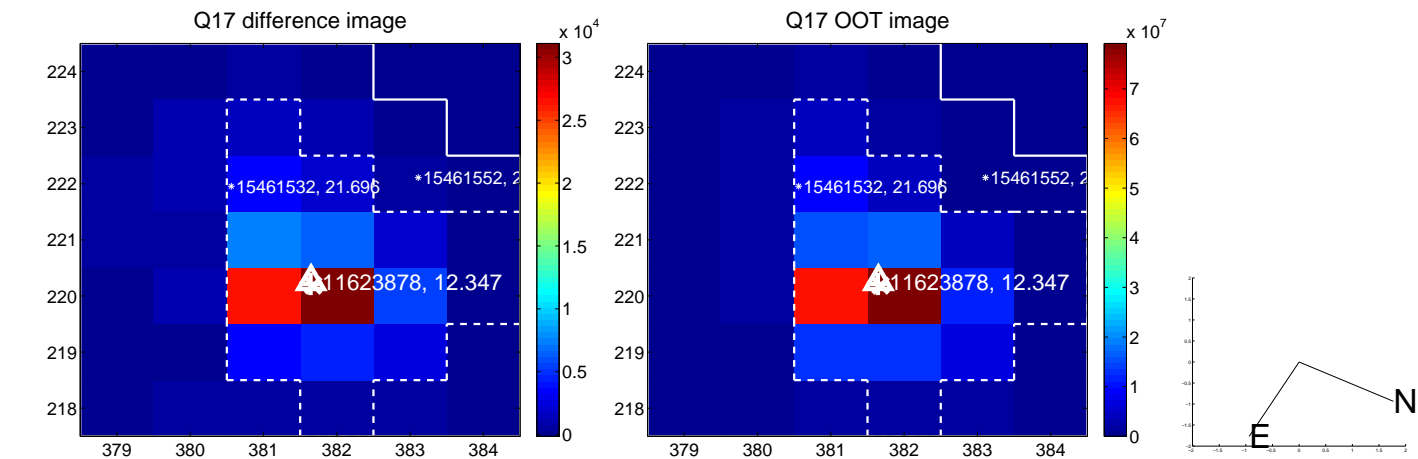


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



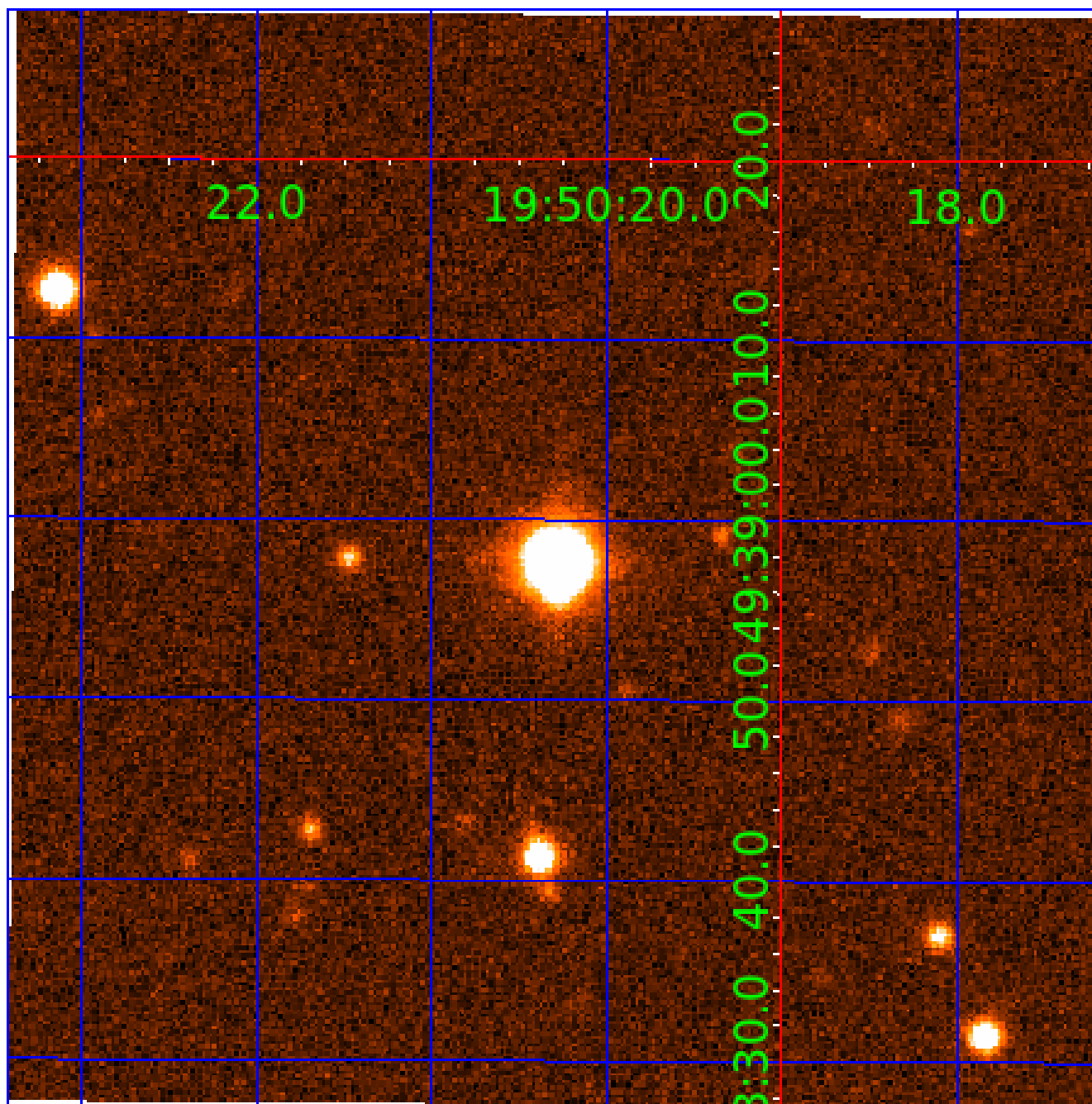


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST |

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

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

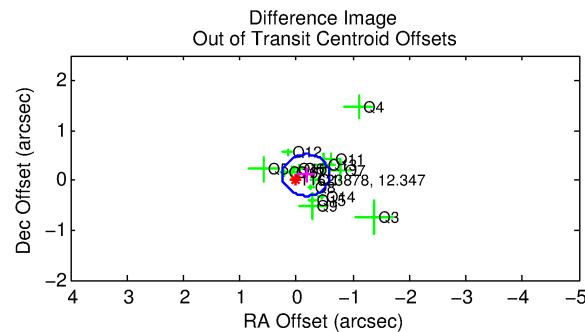
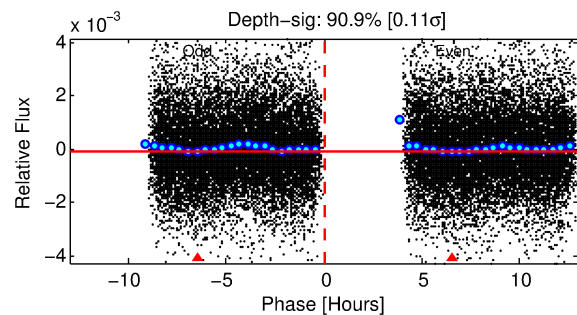
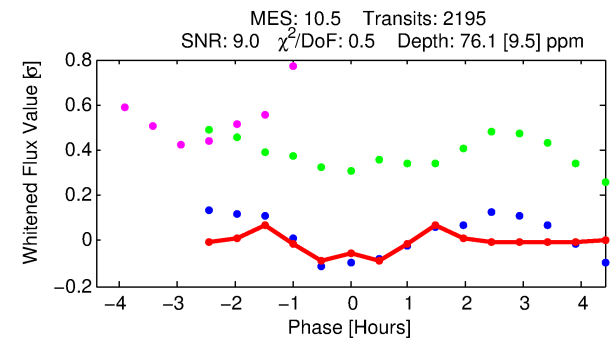
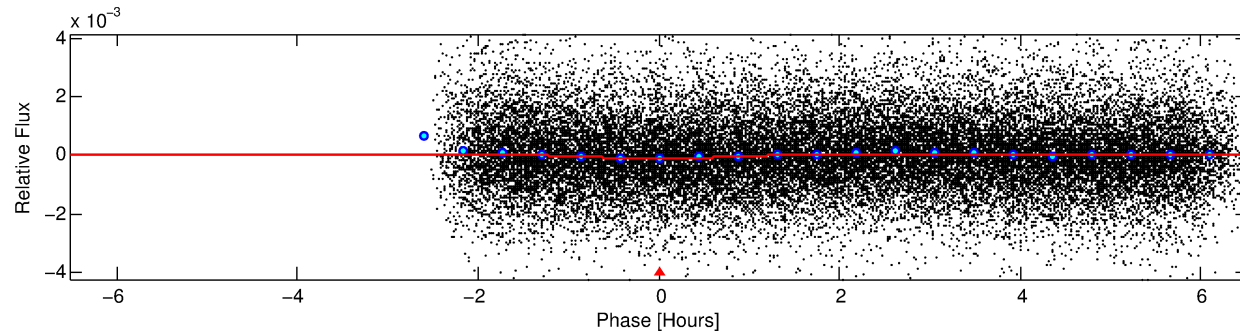
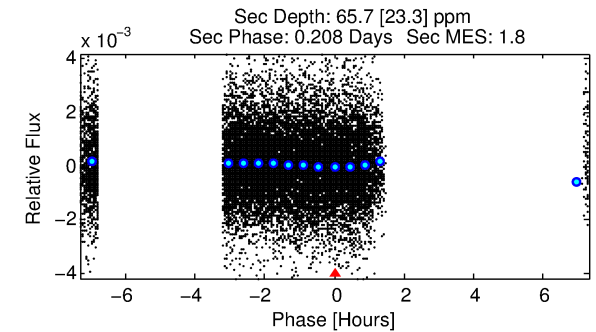
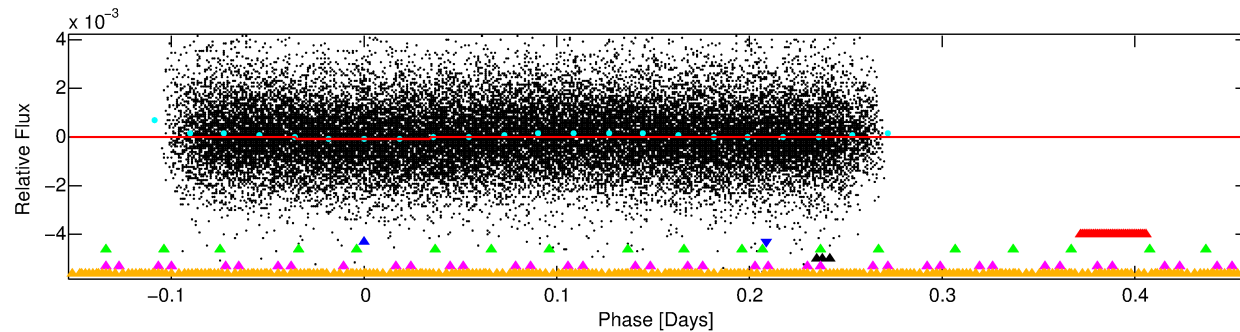
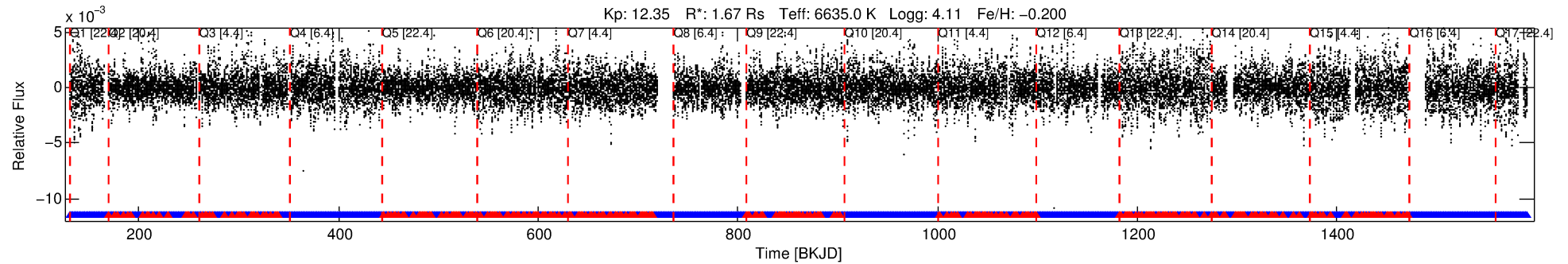
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011623878-02

No Significant Match Found

# DV One-Page Summary

KIC: 11623878 Candidate: 2 of 6 Period: 0.611 d



## DV Fit Results:

Period = 0.61135 [0.00001] d  
Epoch = 131.8309 [0.0011] BKJD  
Rp/R\* = 0.0093 [0.0021]  
a/R\* = 1.36 [0.78]  
b = 0.90 [0.27]  
Seff = 20307.56 [8279.81]  
Teq = 3044 [310] K  
Rp = 1.70 [0.61] Re  
a = 0.0154 [0.0039] AU  
Ag = 2.98 [2.06] [0.96σ]  
Teffp = 6185 [911] K [3.26σ]

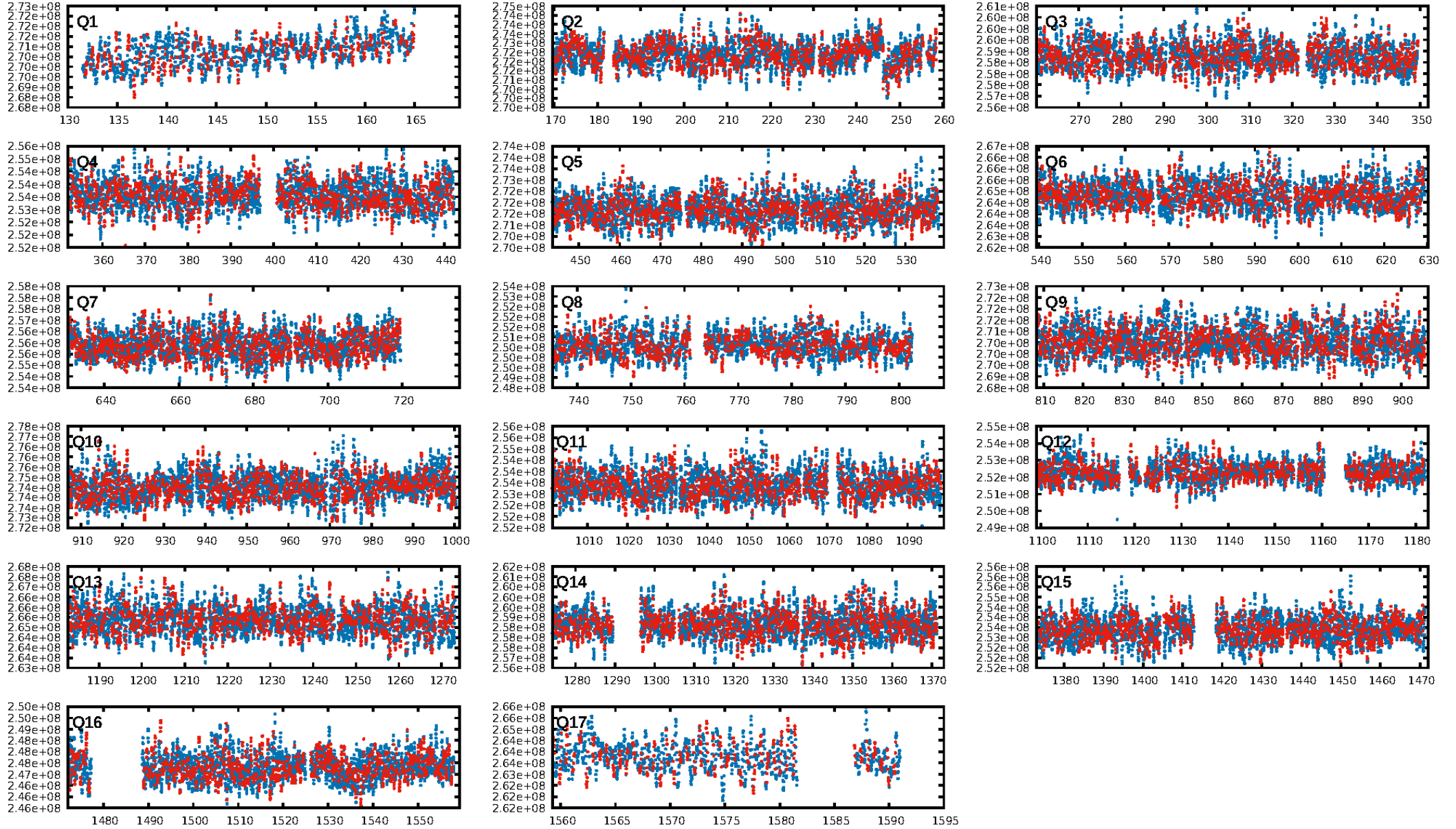
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [12.08σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.84 [1755/2096]  
GhostDiagnostic-chr: 0.8041  
Centroid-sig: N/A  
Centroid-so: 0.354 arcsec [1.47σ]  
OotOffset-rm: 0.199 arcsec [1.43σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-rm: 0.290 arcsec [1.99σ]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.88 [14/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:14:01 Z

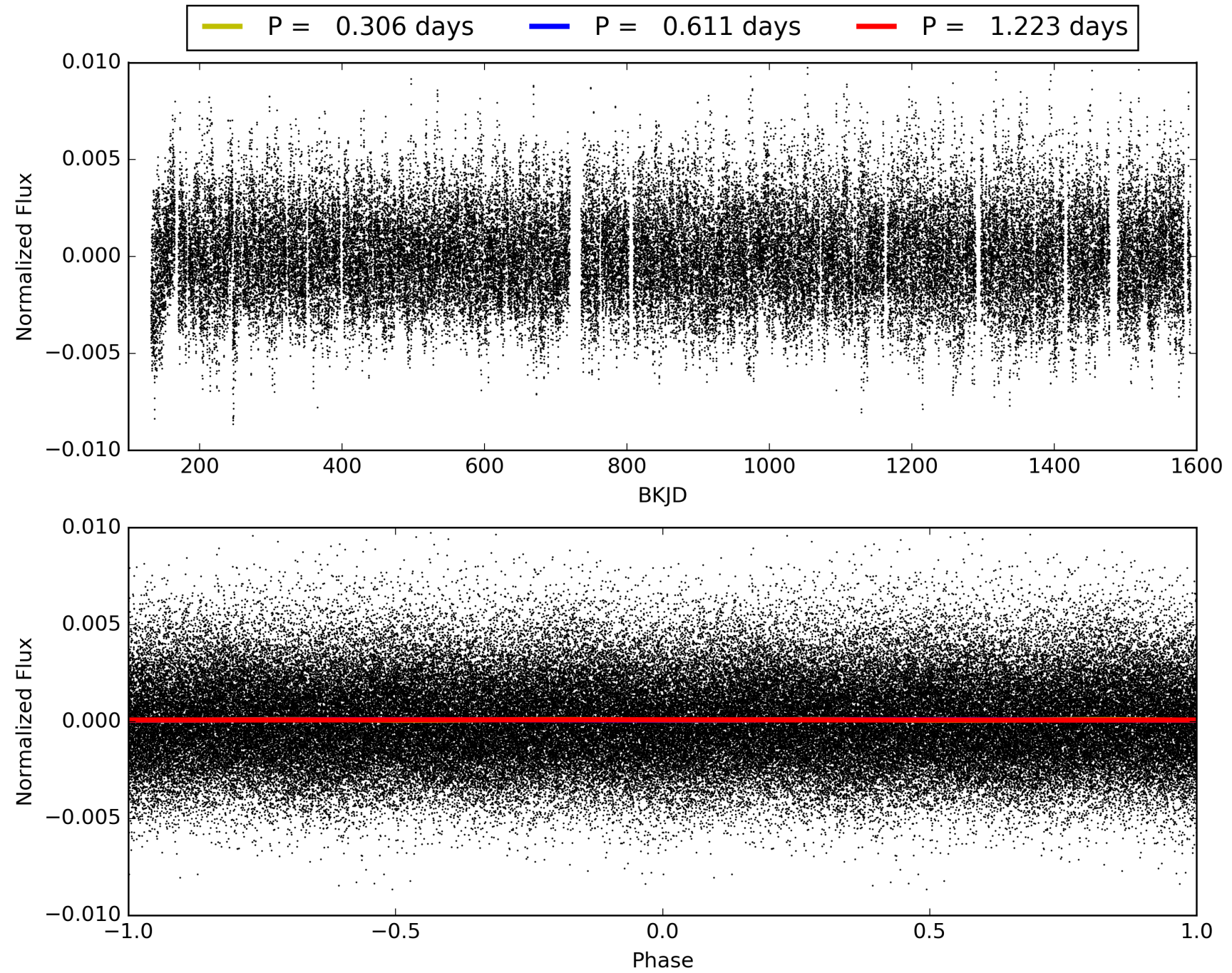
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011623878-02, PDC Light Curves



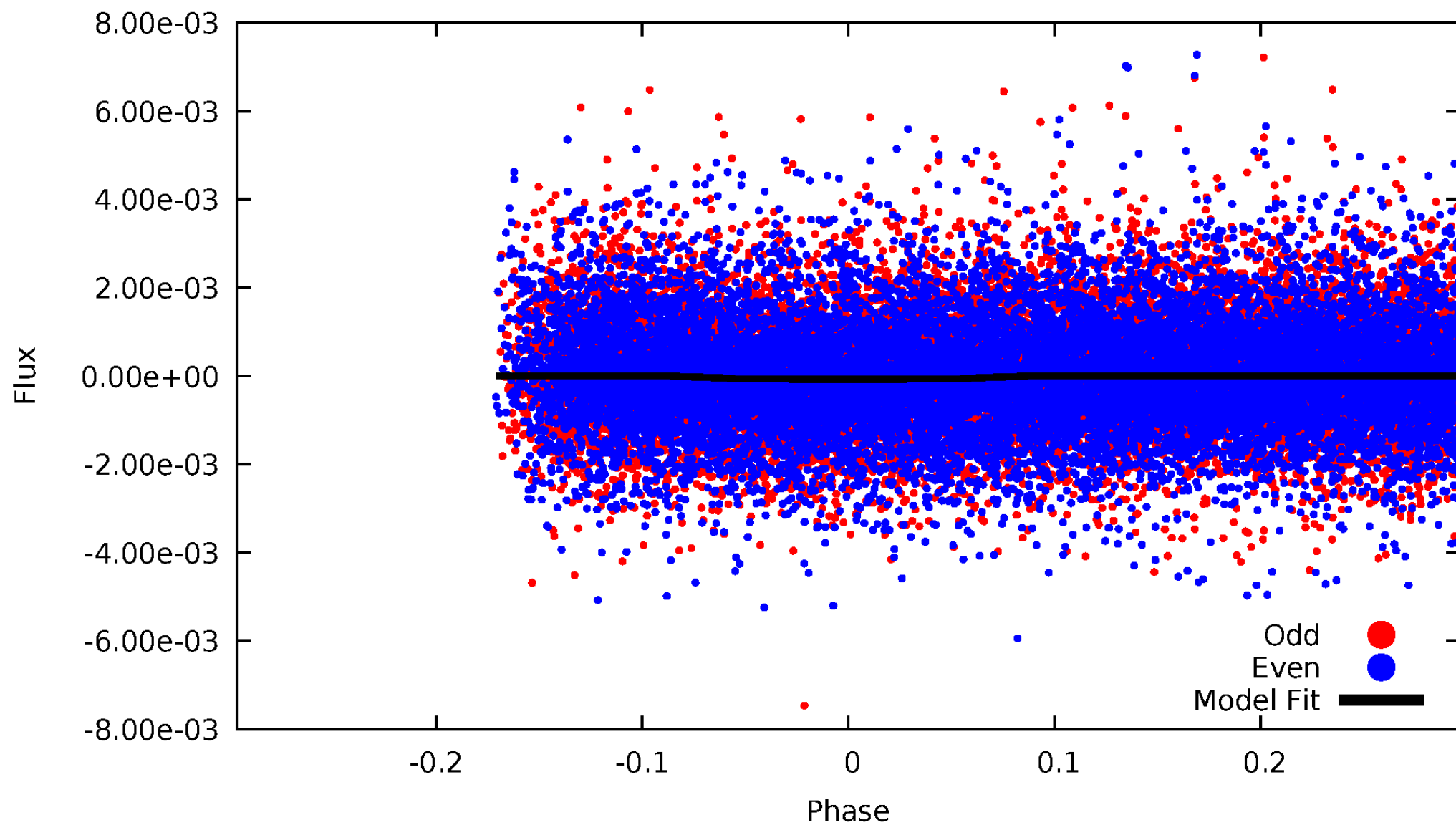


TCE 011623878-02



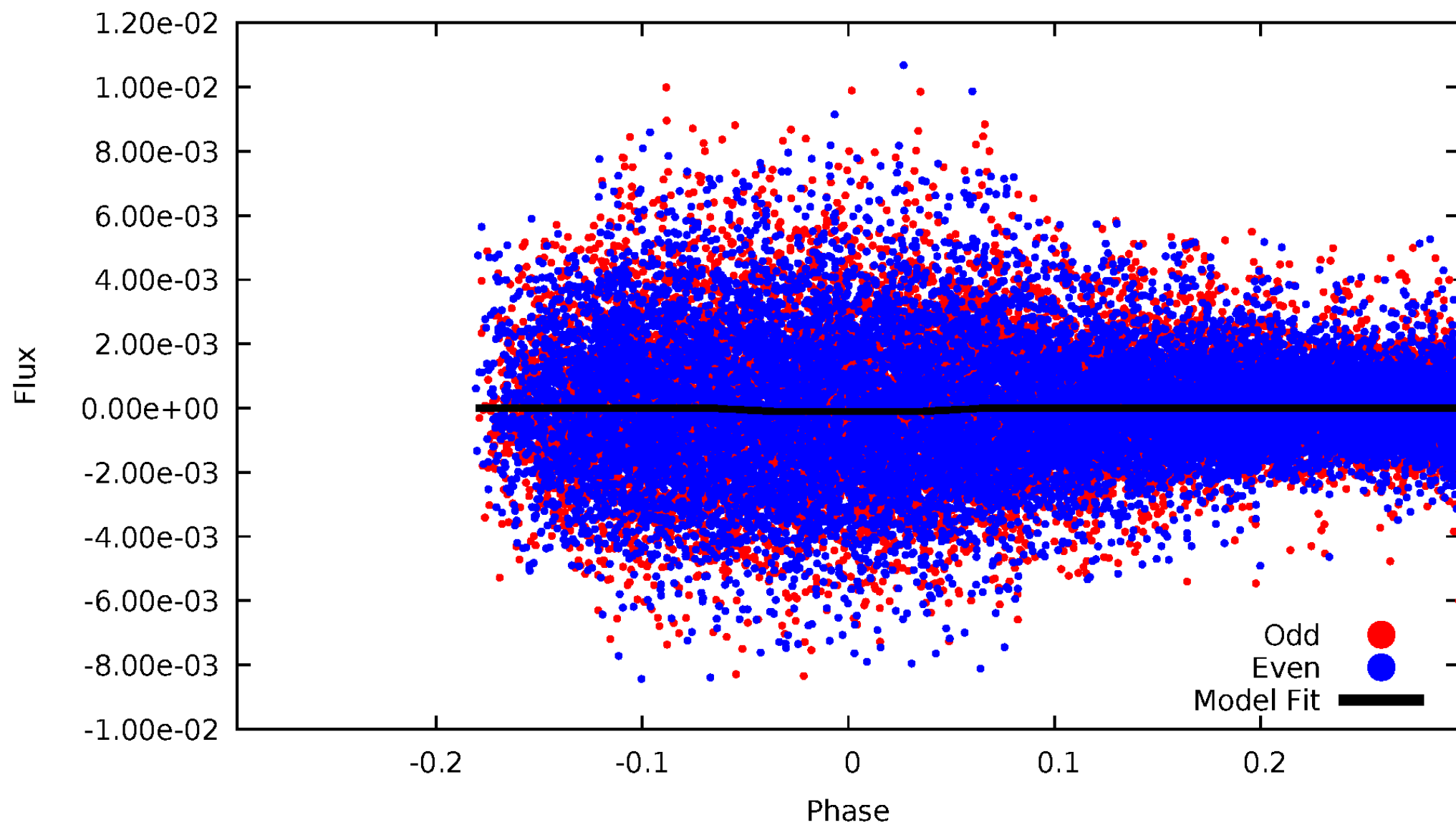
# DV Odd/Even

TCE 011623878-02



# ALT Odd/Even

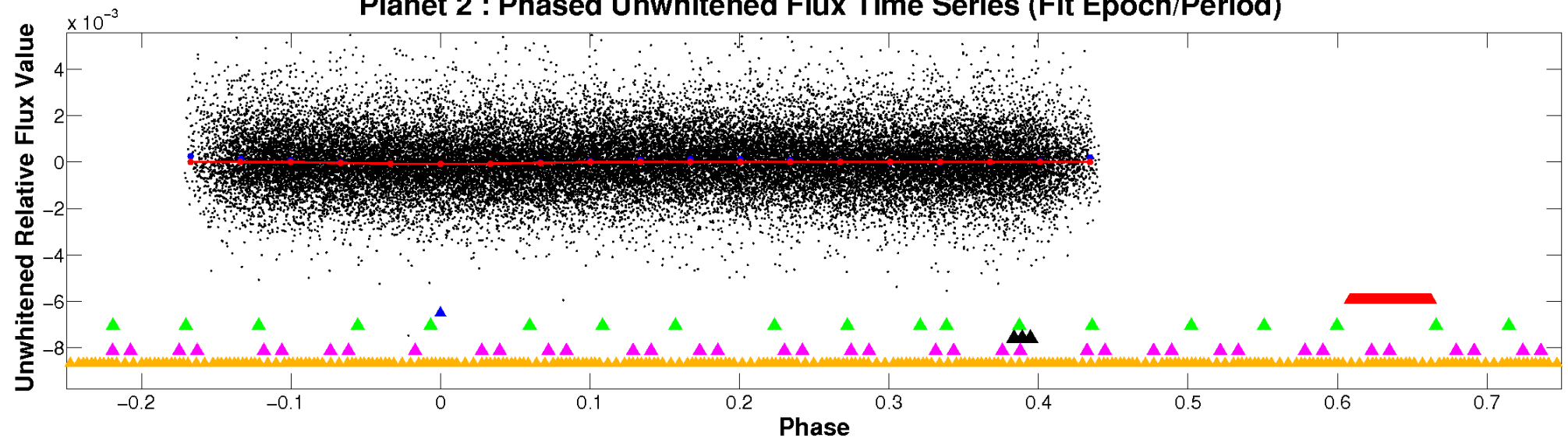
TCE 011623878-02



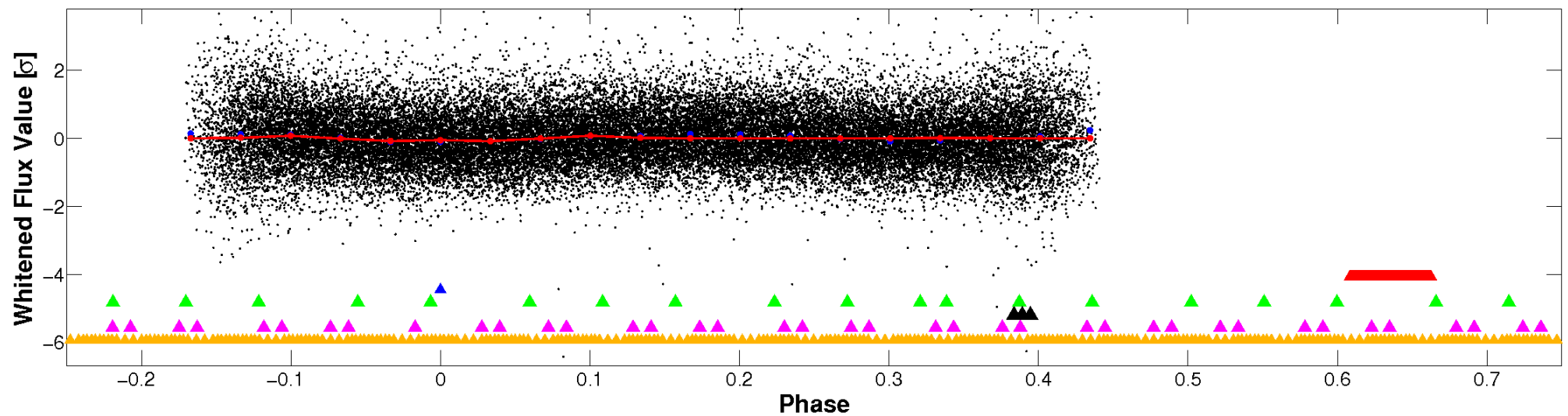


# Non-Whitened Vs. Whitened Light Curve

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

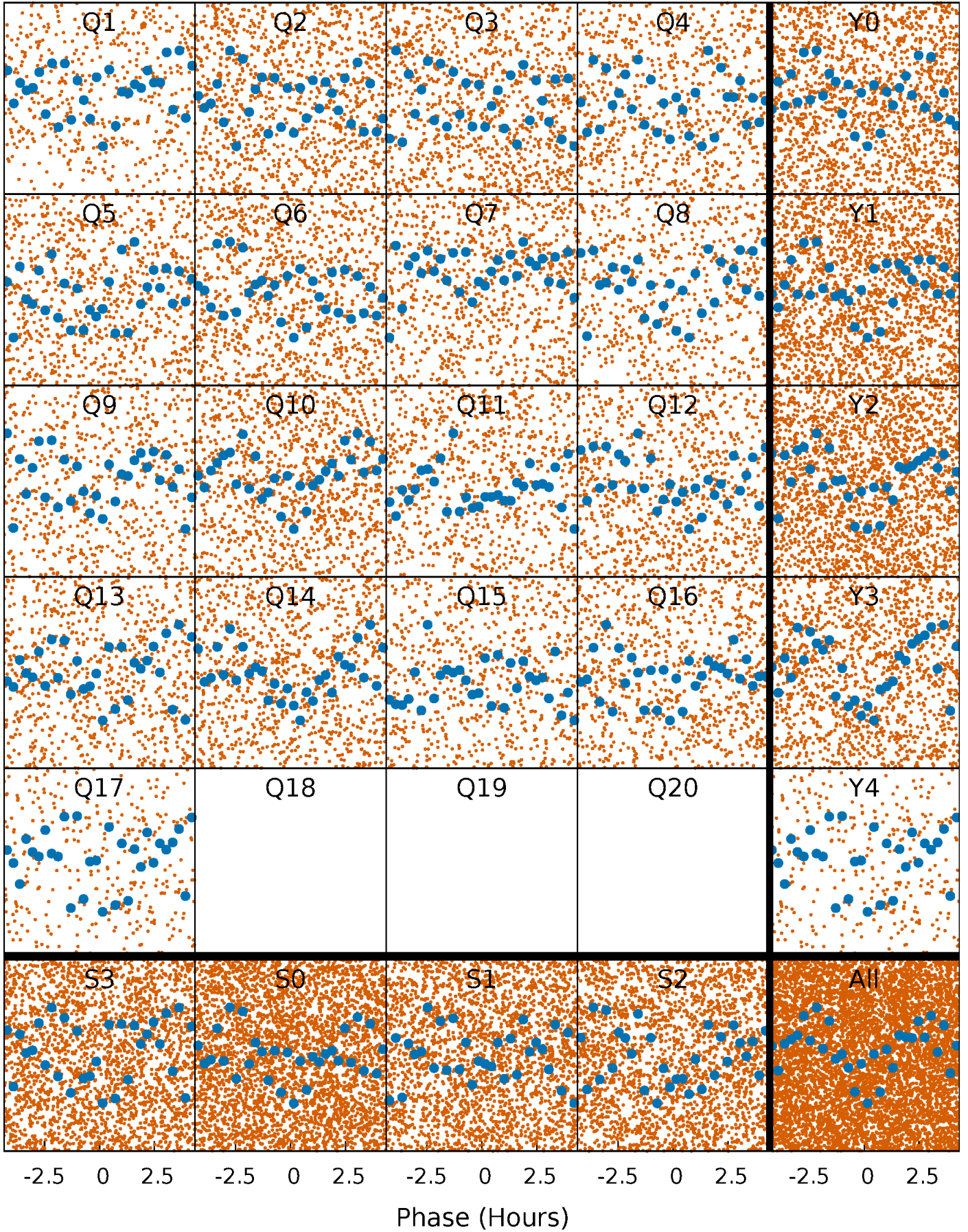


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



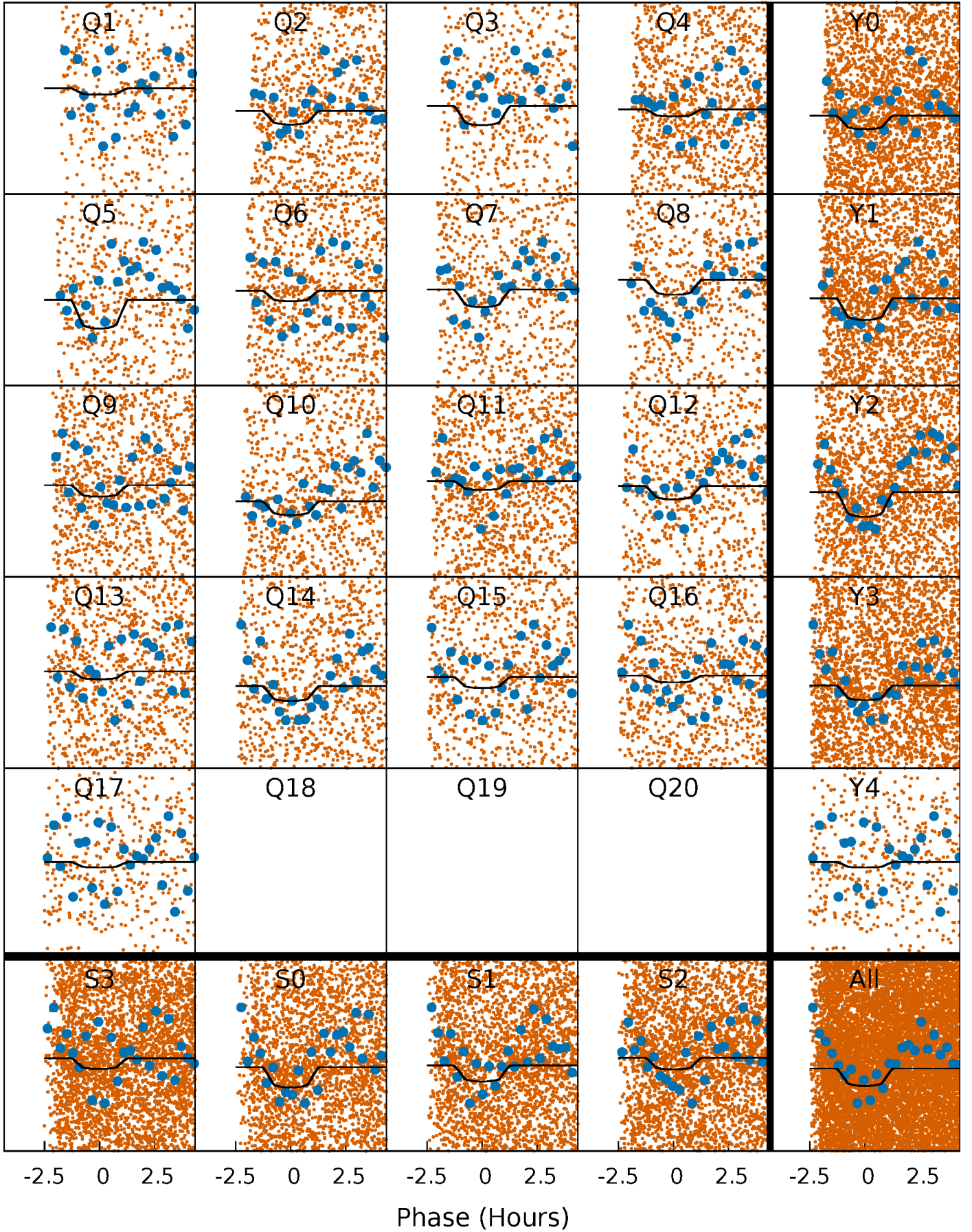
# PDC Quarter-Phased Transit Curves

TCE 011623878-02 P= 0.611347 Days  $T_0=131.830892$  (BKJD)



# DV Quarter-Phased Transit Curves

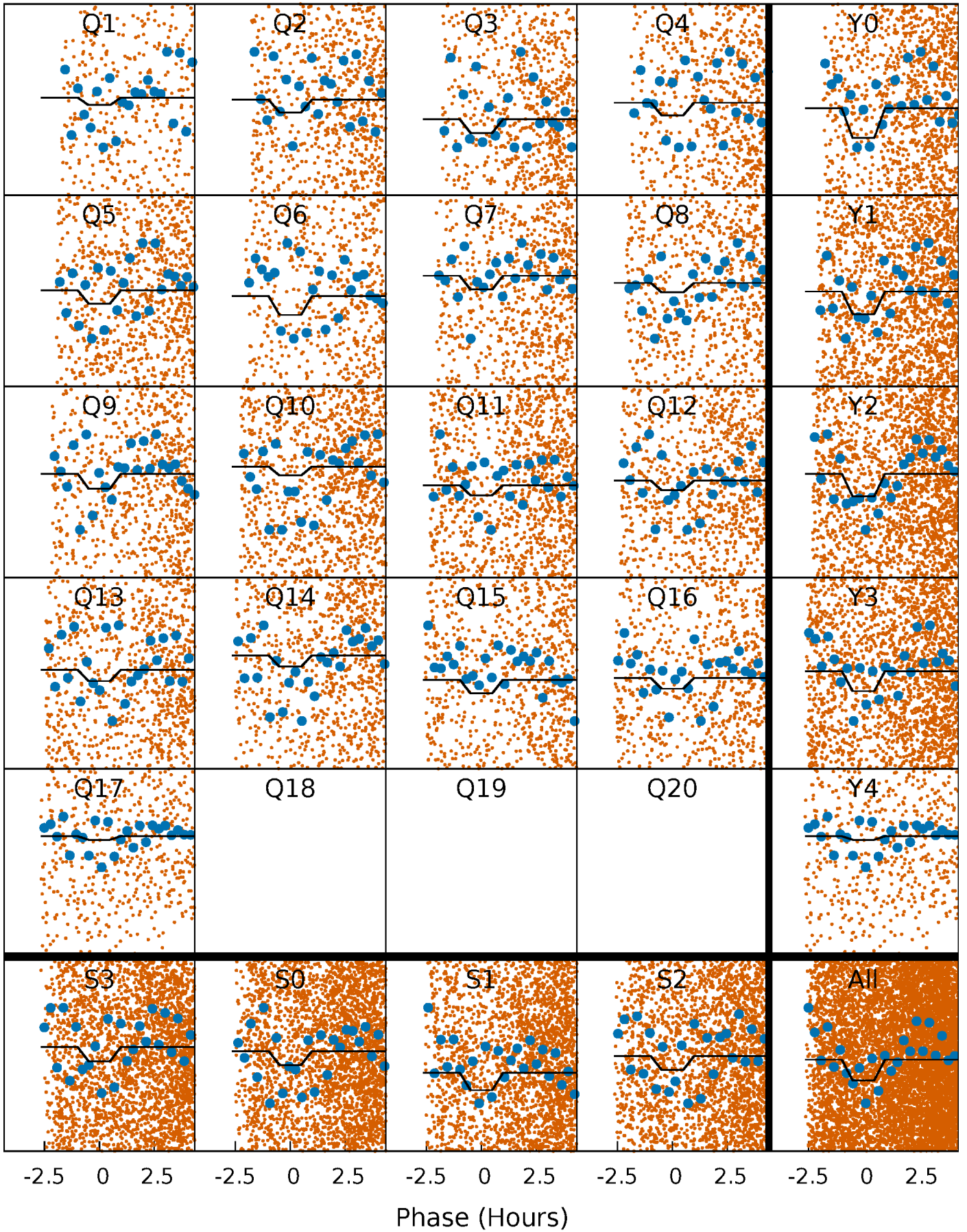
TCE 011623878-02   P= 0.611347 Days    $T_0=131.830892$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

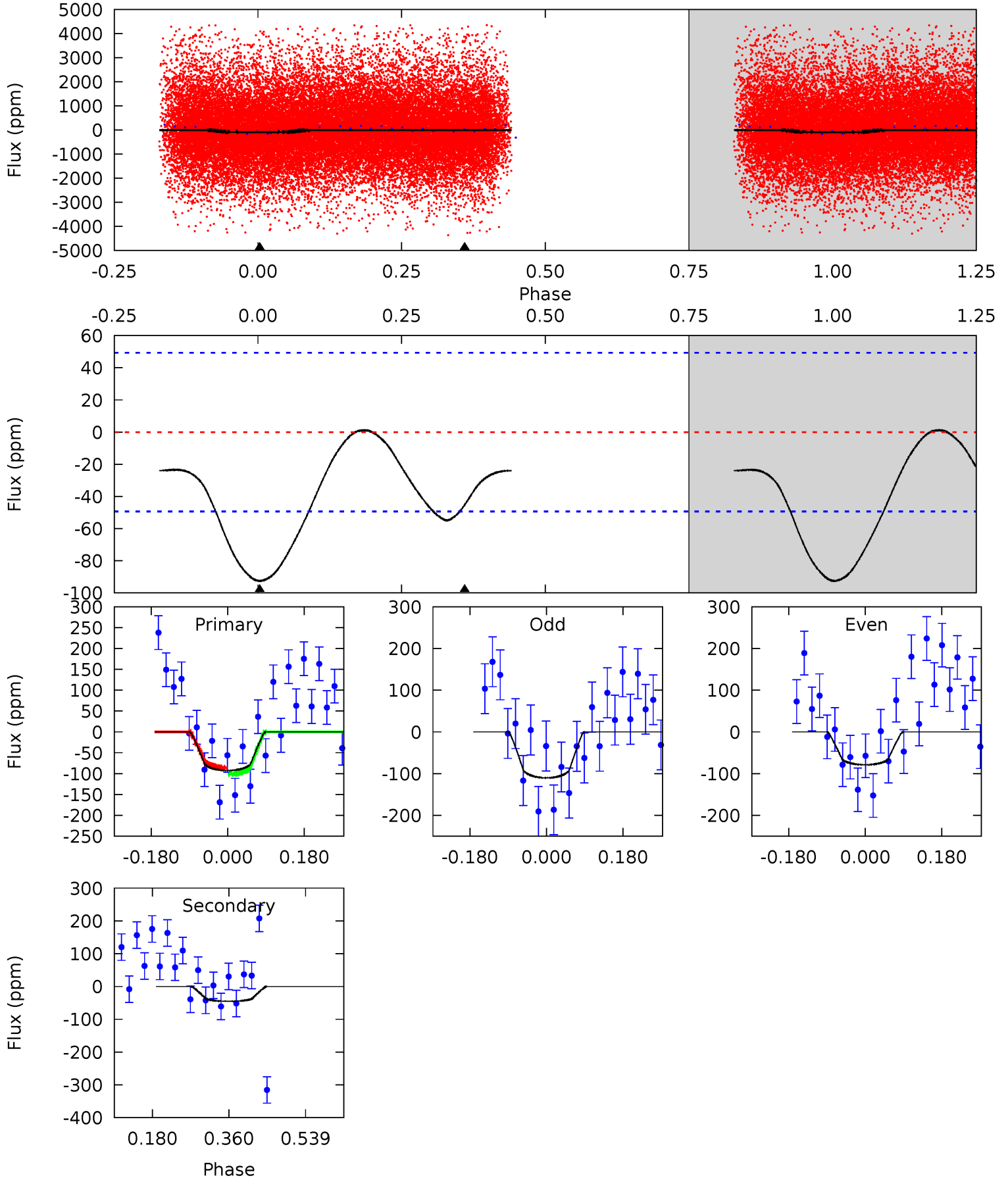
TCE 011623878-02 P= 0.611350 Days  $T_0=131.830007$  (BKJD)



# DV Model-Shift Uniqueness Test

011623878-02, P = 0.611347 Days, E = 131.219545 Days

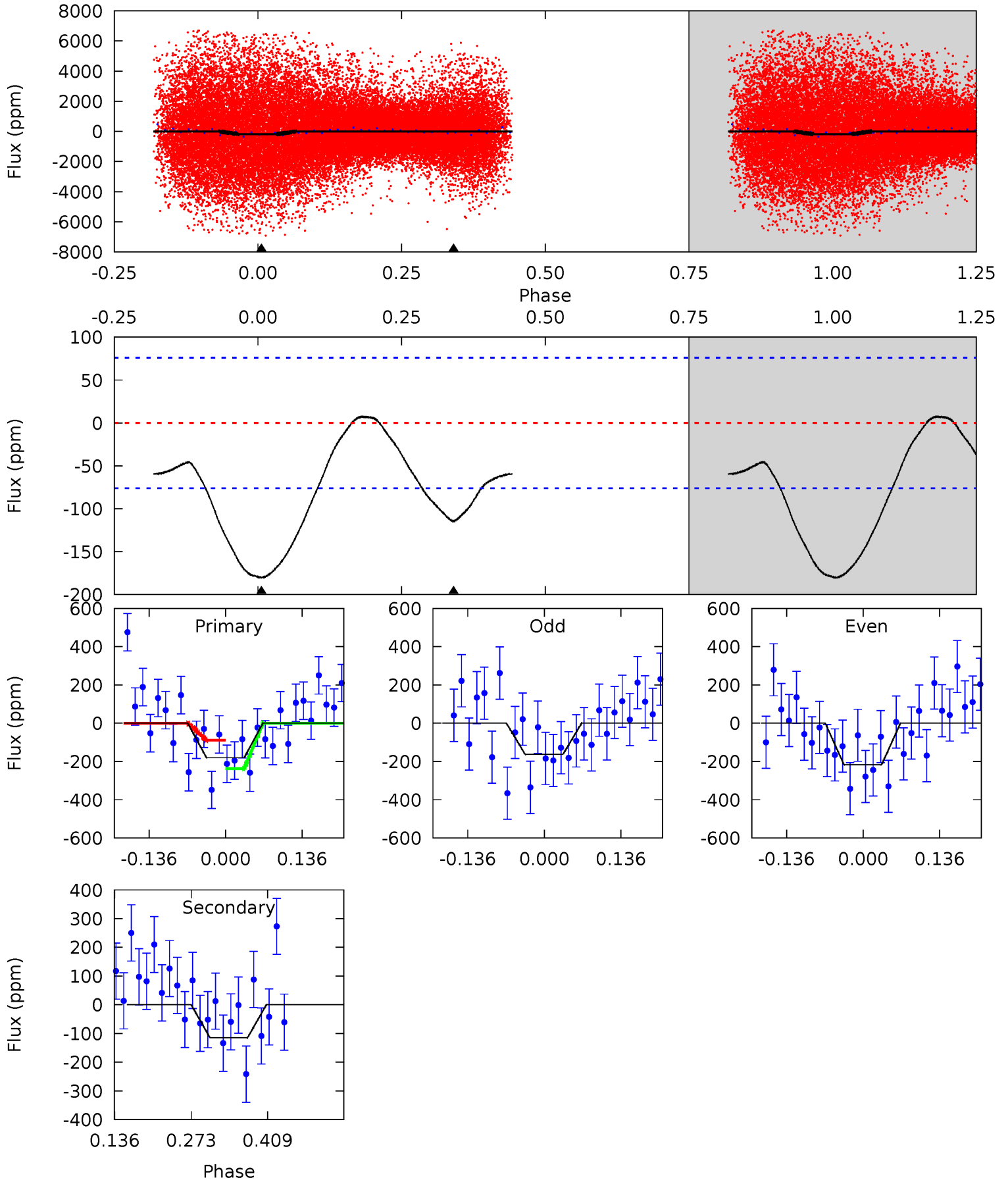
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.33 | 4.07 | 0   | 0   | 4.44            | 1.34            | 0.60             | 8.33    | 8.33    | 4.07    | 4.07    | 1.42    | 0.72 | 0.01  | 0.66 |



# Alt Model-Shift Uniqueness Test

011623878-02, P = 0.611350 Days, E = 131.218657 Days

| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.7 | 6.77 | 0   | 0   | 4.50            | 1.49            | 1.43             | 10.7    | 10.7    | 6.77    | 6.77    | 1.61    | 0.54 | 0.04  | 4.06 |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )       | $M$ ( $M_{\odot}$ )       | $\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                        |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                       |
| 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 011623878-02 / KOI

| Detrend | Depth (ppm)   | $R_p$ ( $R_{\oplus}$ ) | $T_{\text{max}}$ (K) | $T_{\text{obs}}$ (K) | $A_{\text{obs}}$          |
|---------|---------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-45 \pm 11$  | $1.66^{+0.47}_{-0.42}$ | $4239^{+339}_{-317}$ | $5404^{+837}_{-685}$ | $2.061^{+1.779}_{-0.886}$ |
| Alt.    | $-115 \pm 17$ | $1.91^{+0.50}_{-0.44}$ | $4232^{+313}_{-300}$ | $6480^{+935}_{-691}$ | $4.031^{+2.767}_{-1.513}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = 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  $A_{\text{obs}} \gg 1.0$



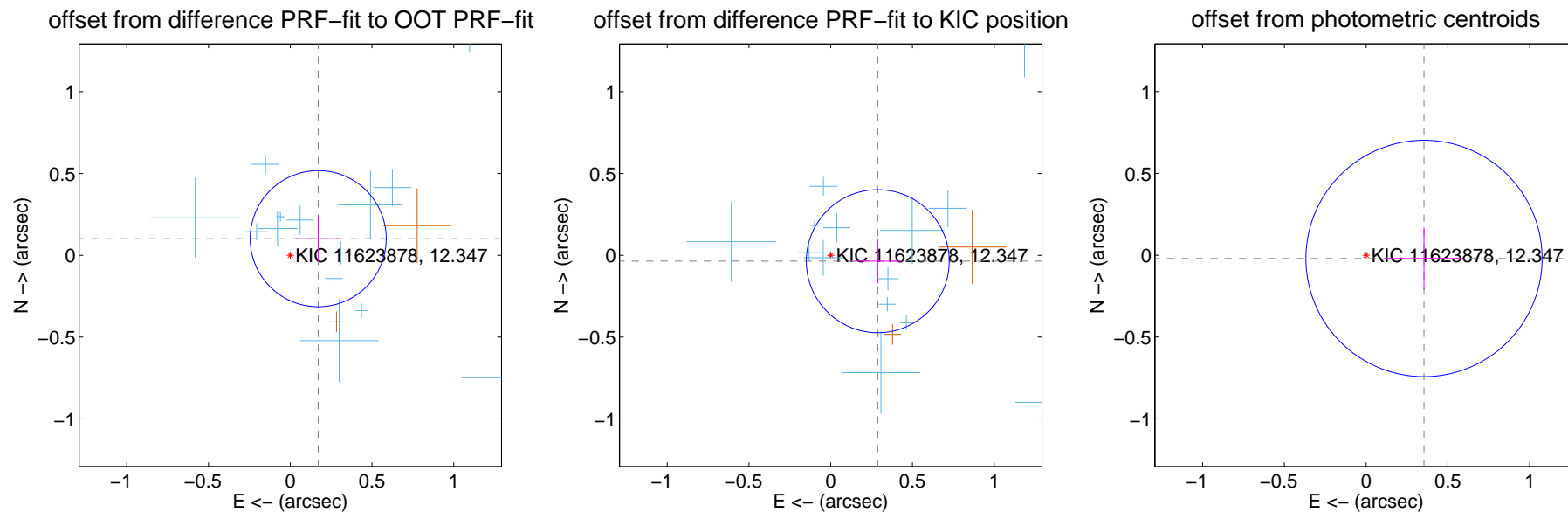
## DV Centroid Data

Supplemental centroid analysis for 011623878-02. Kepler magnitude: 12.35. Transit SNR 9.04

There are 14 quarters with good PRF difference image offsets

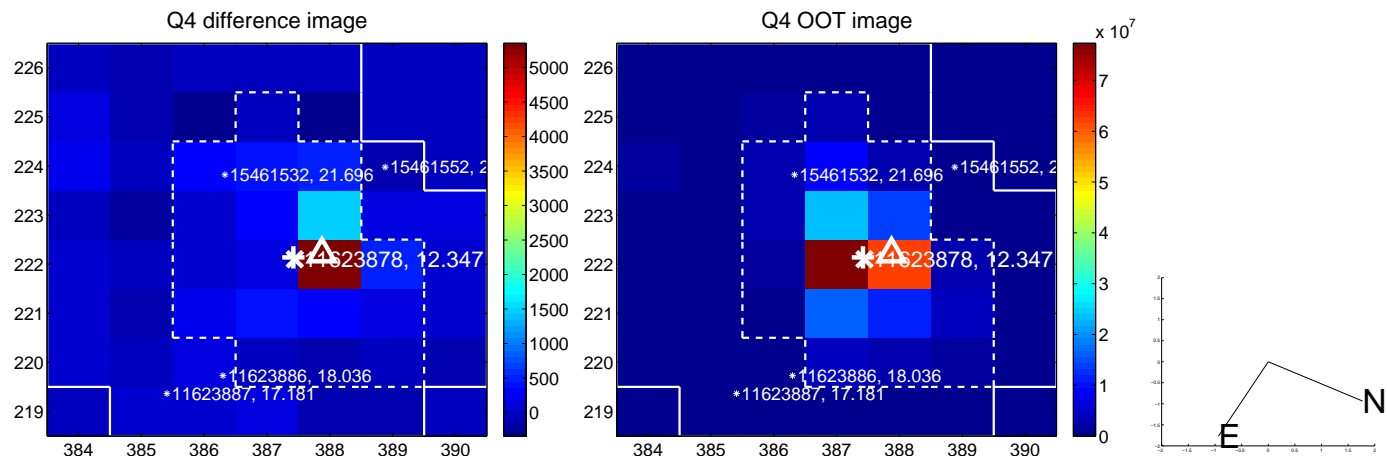
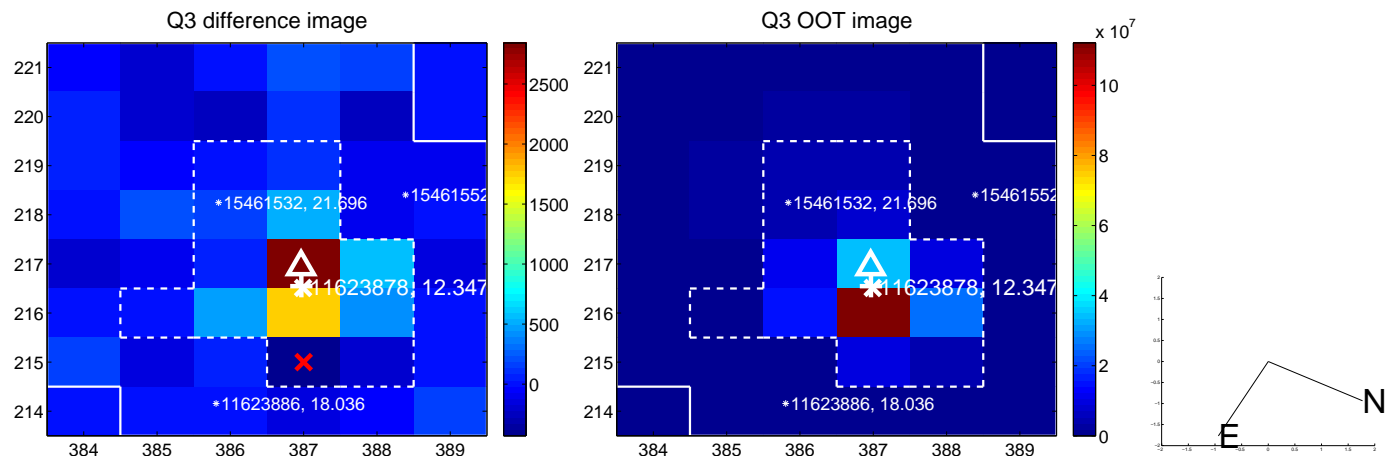
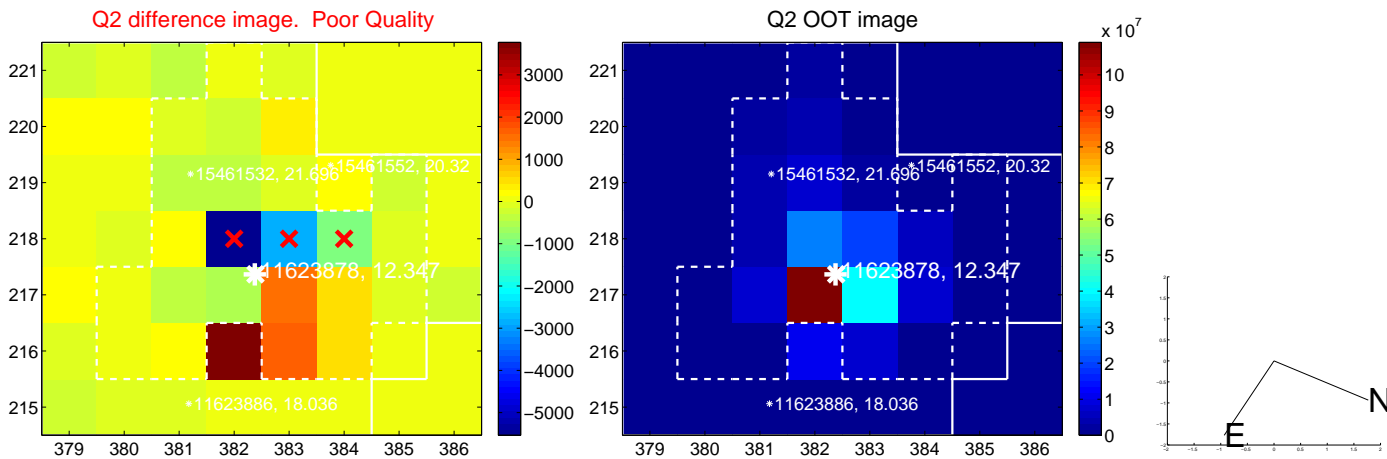
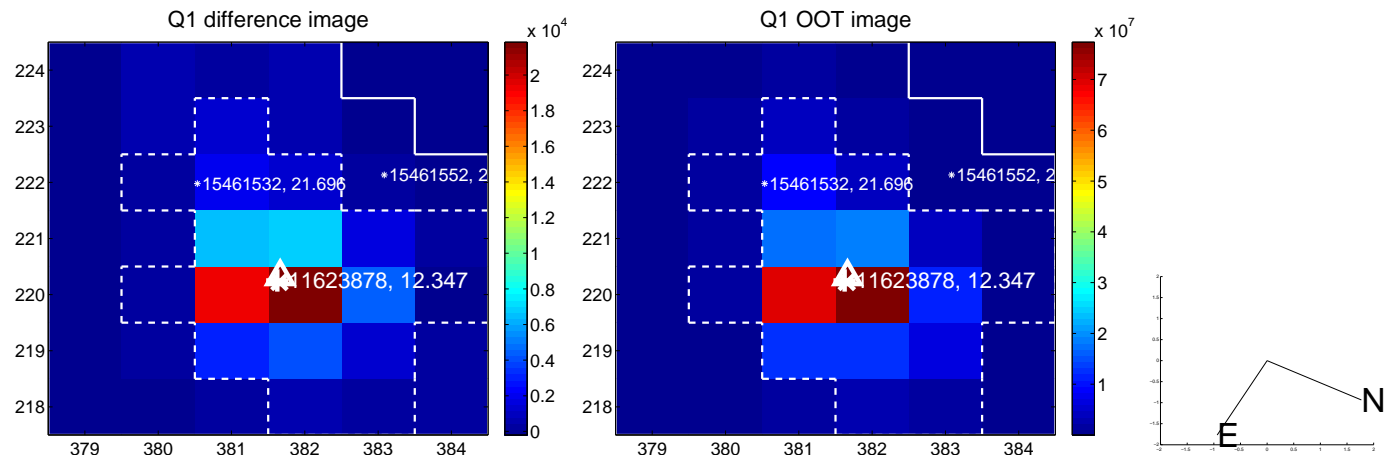
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.199 \pm 0.139$  | 1.43                | $-0.171 \pm 0.138$ | $0.101 \pm 0.141$  |
| PRF-fit source offset from KIC position | $0.290 \pm 0.146$  | 1.99                | $-0.288 \pm 0.145$ | $-0.036 \pm 0.136$ |
| photometric centroid source offset      | $0.35 \pm 0.24$    | 1.47                | $-0.35 \pm 0.24$   | $-0.02 \pm 0.19$   |

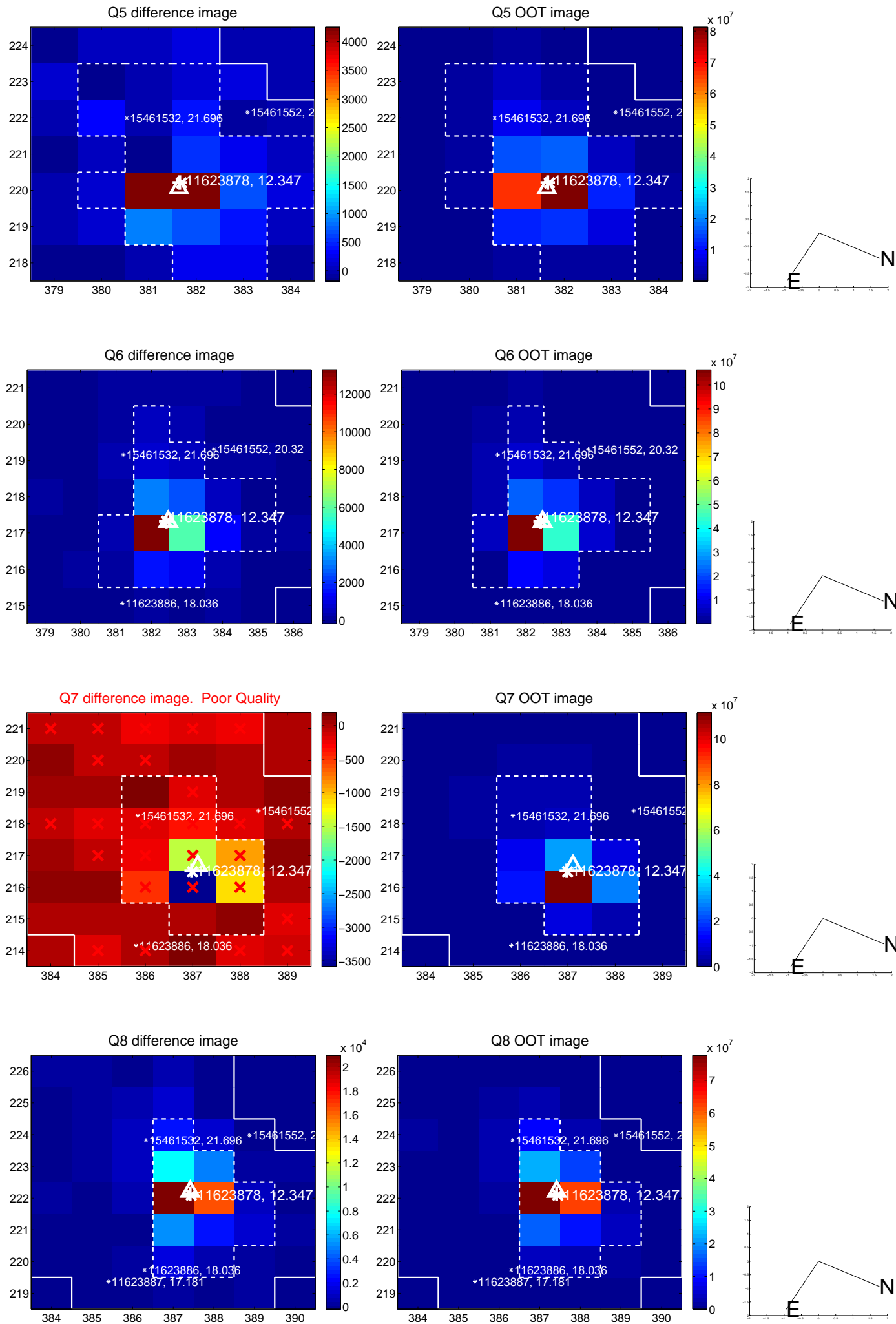


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

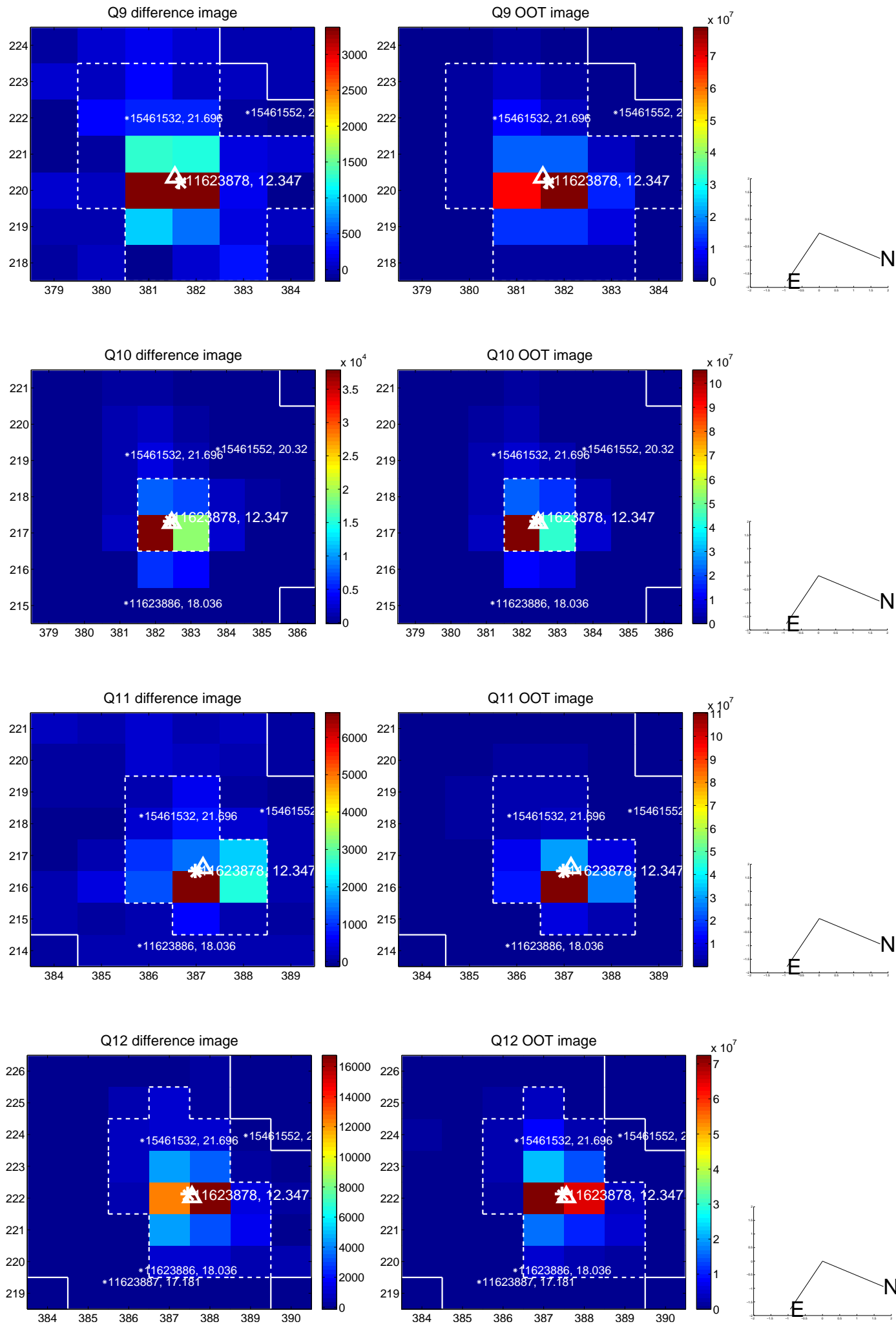
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

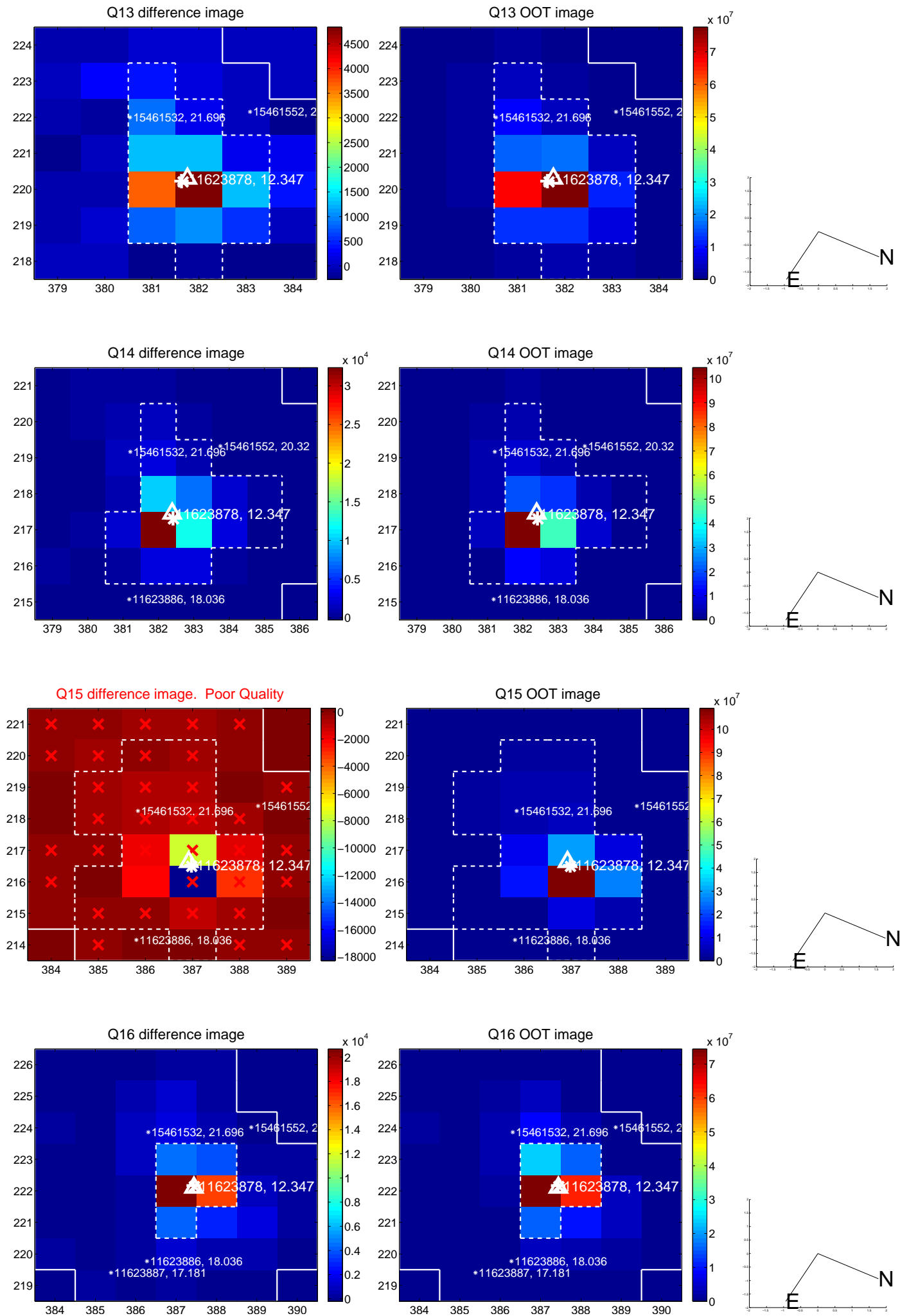


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

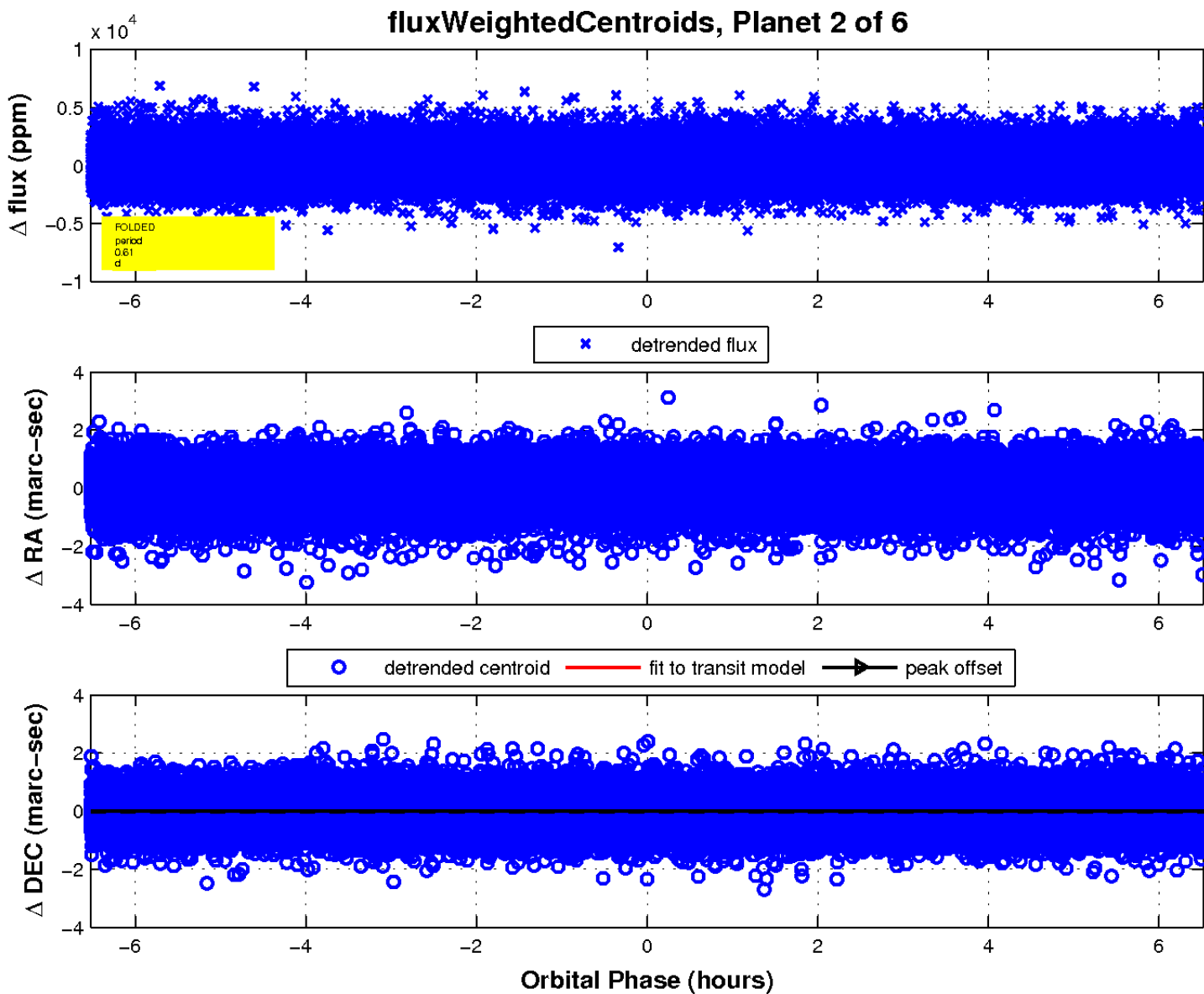
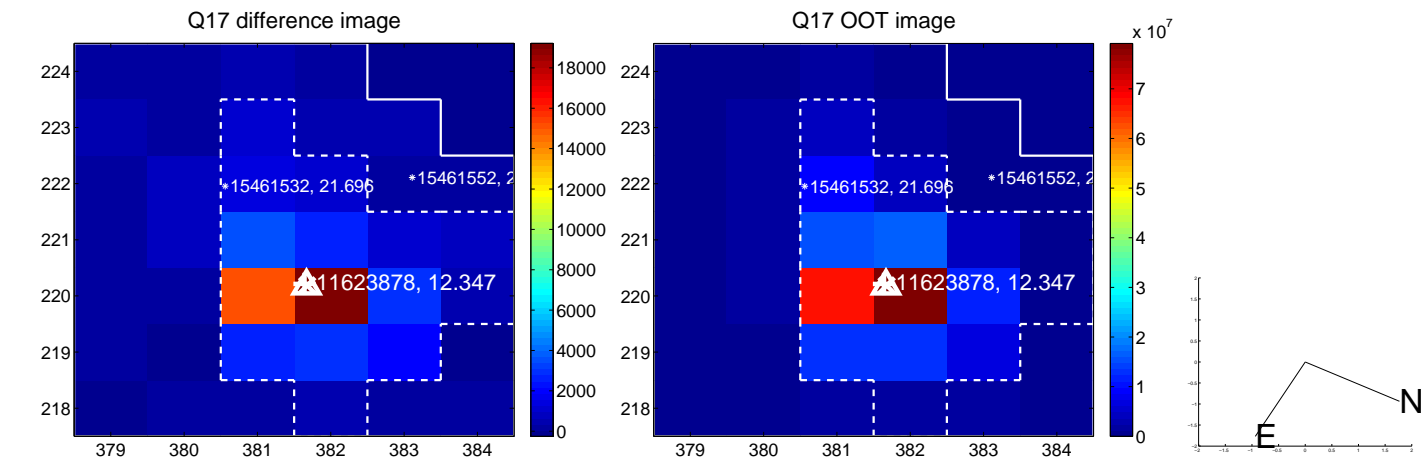




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

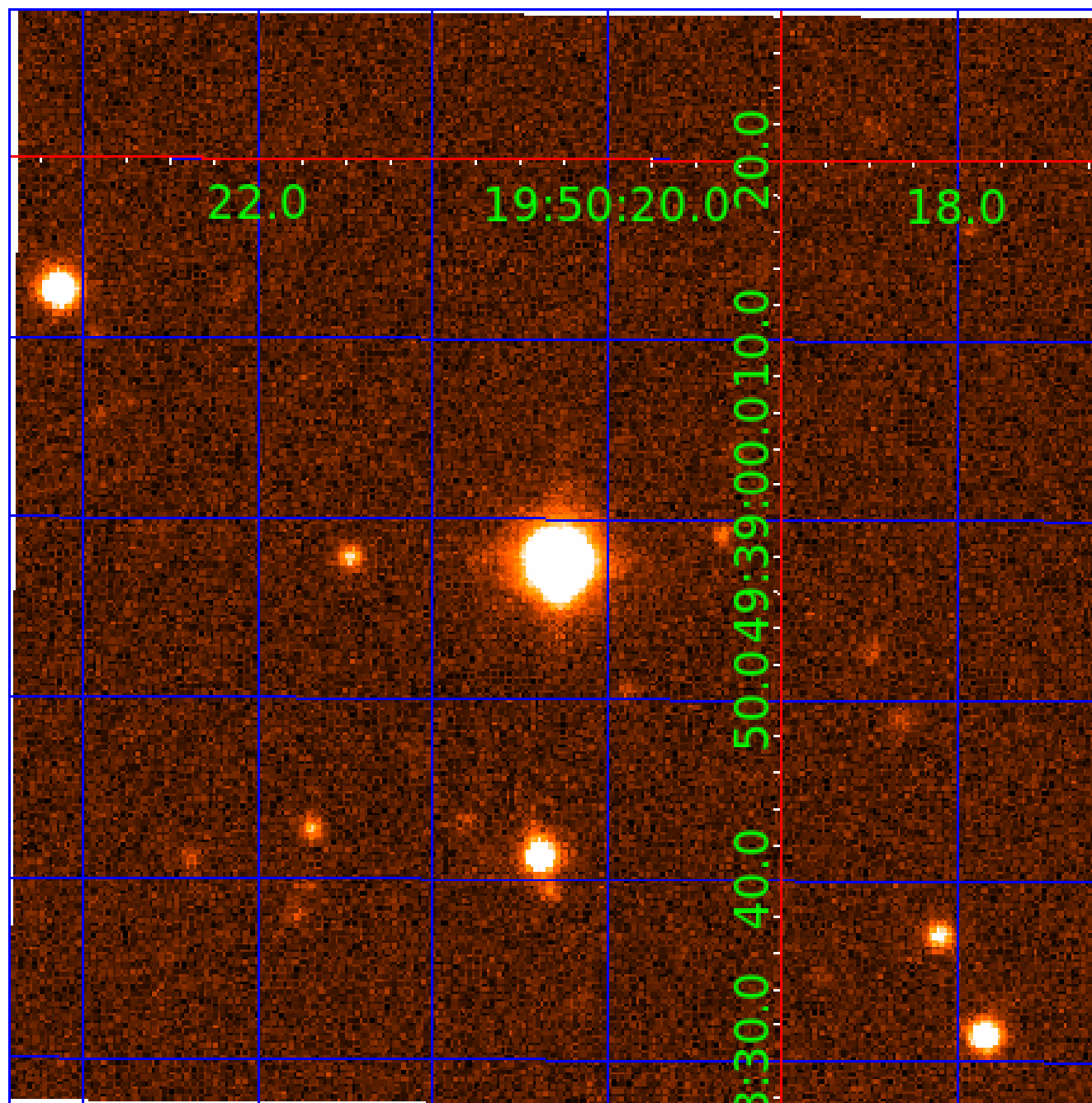


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

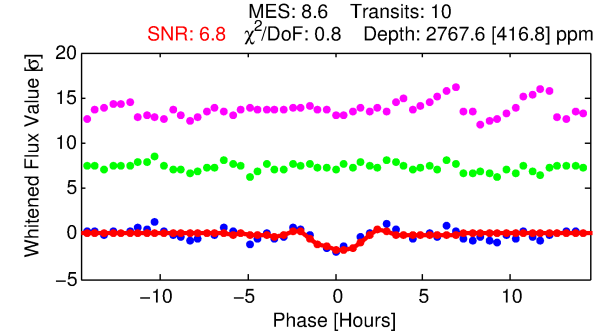
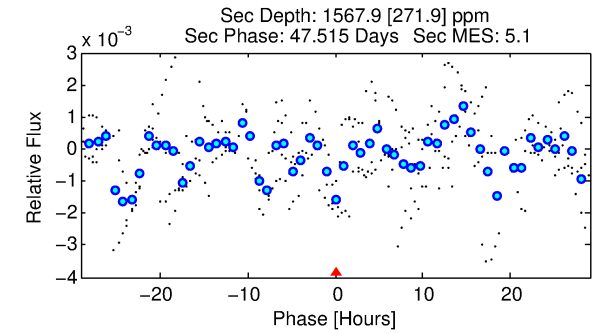
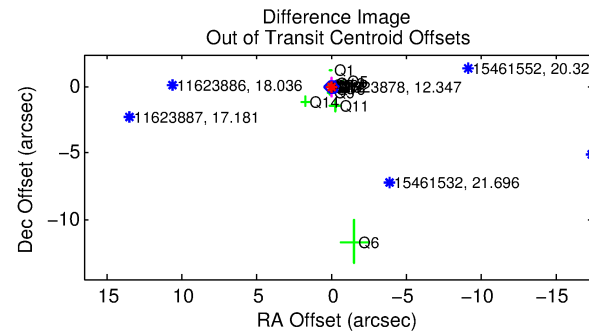
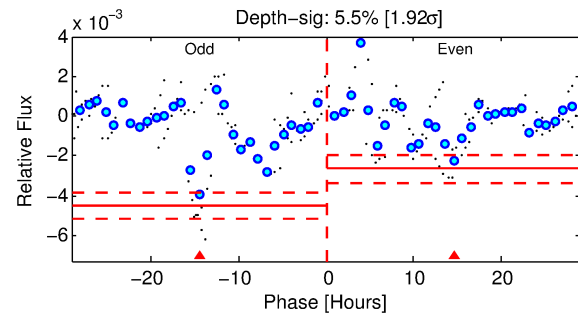
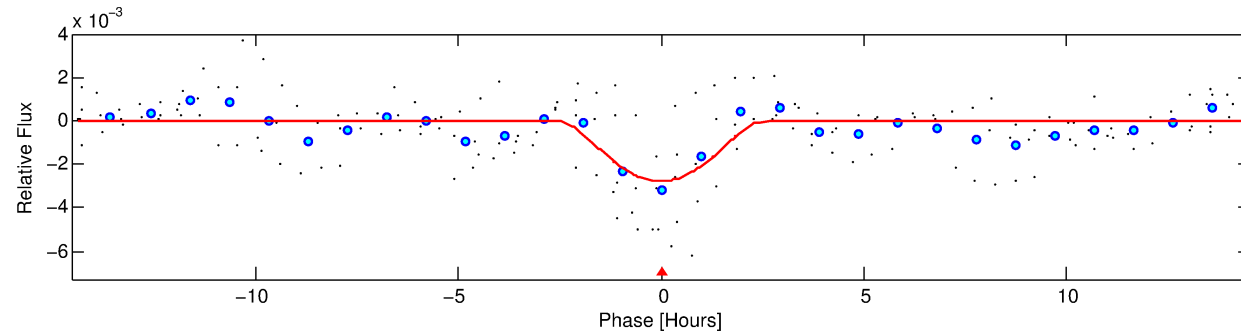
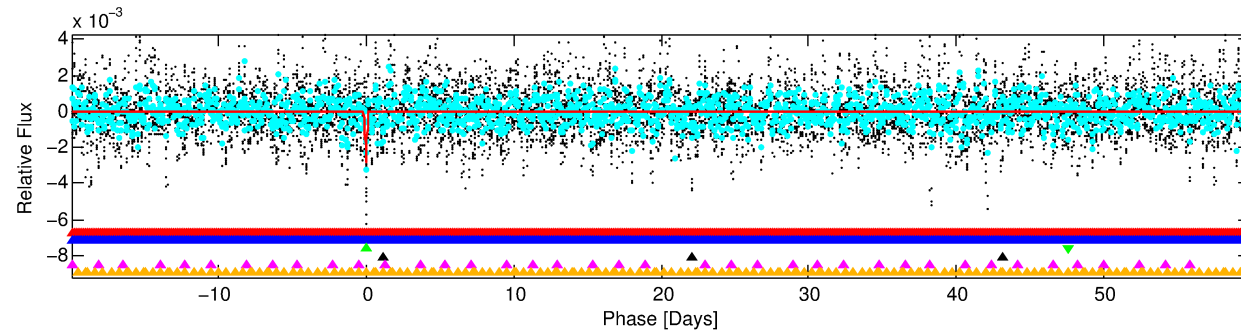
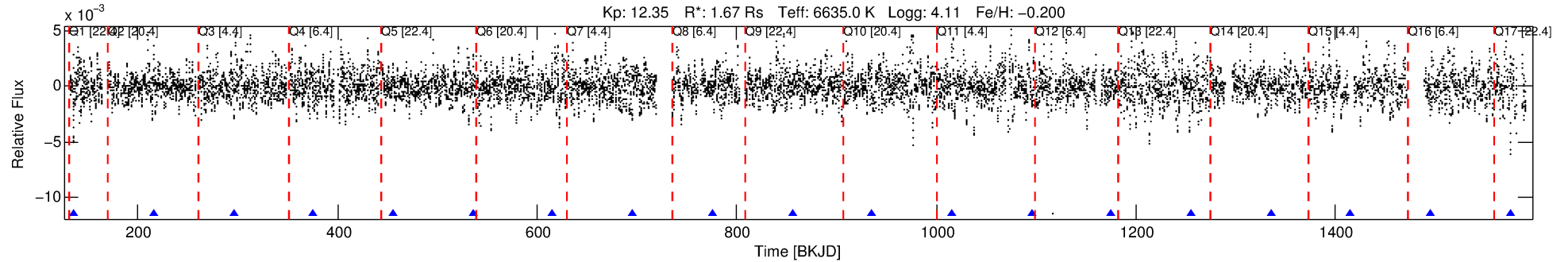
## Ephemeris Match Information For 011623878-03

No Significant Match Found



# DV One-Page Summary

KIC: 11623878 Candidate: 3 of 6 Period: 79.916 d



## DV Fit Results:

Period = 79.91602 [0.00114] d  
Epoch = 136.3172 [0.0114] BKJD  
Rp/R\* = 0.0868 [0.1636]  
a/R\* = 54.07 [22.17]  
b = 1.00 [0.24]  
Seff = 30.61 [12.48]  
Teq = 600 [61] K  
Rp = 15.78 [30.07] Re  
a = 0.3968 [0.1001] AU  
Ag = 545.67 [2070.60] [0.26σ]  
Teffp = 4482 [4232] K [0.92σ]

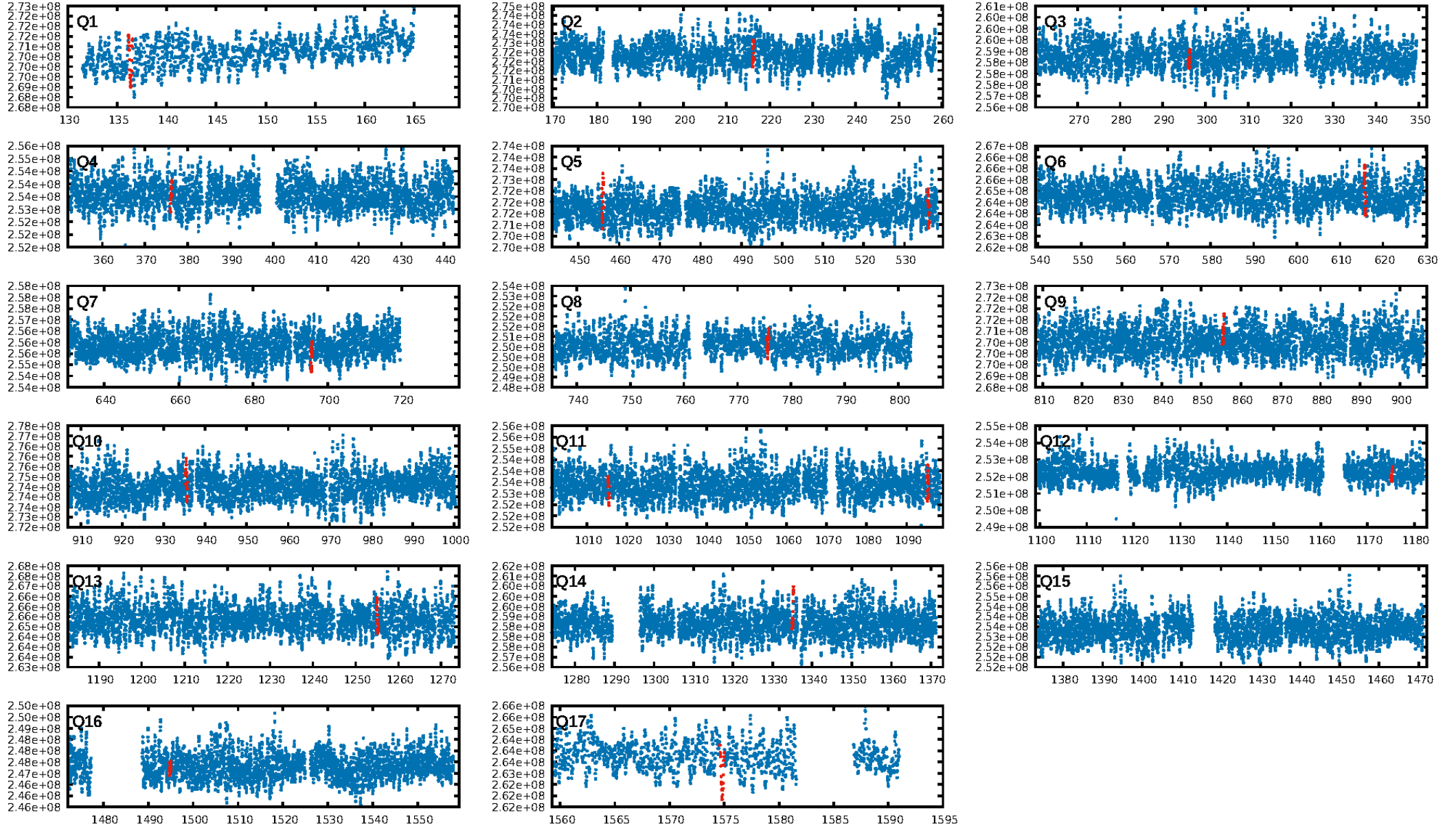
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [126.11σ]  
LongPeriod-sig: 100.0% [1147.81σ]  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 0.9128  
Centroid-sig: N/A  
Centroid-so: 0.134 arcsec [2.36σ]  
OotOffset-rm: 0.060 arcsec [0.40σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-rm: 0.167 arcsec [0.26σ]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.50 [8/16]  
DiffImageOverlap-fno: 0.00 [0/16]

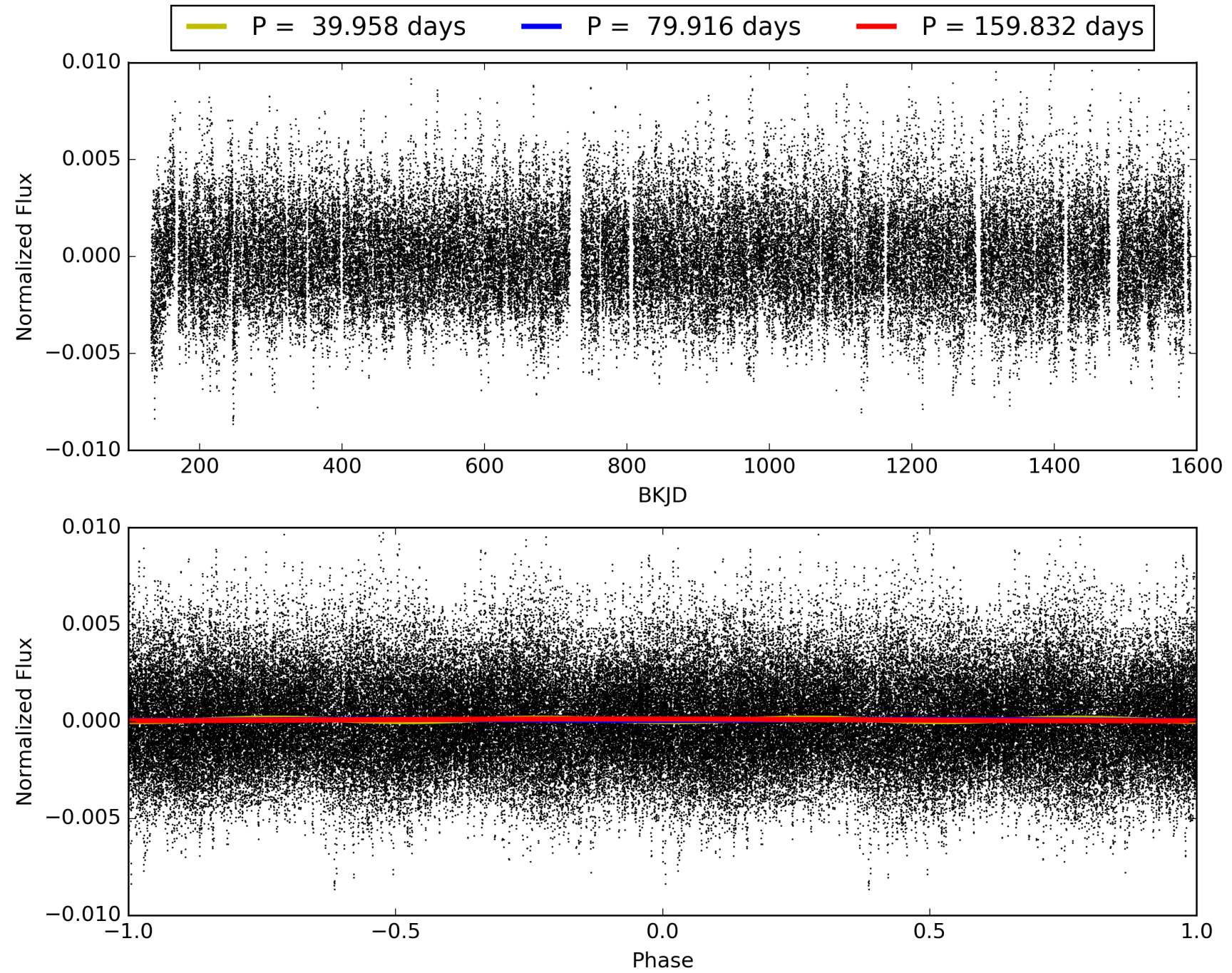
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:14:08 Z

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

# TCE 011623878-03, PDC Light Curves

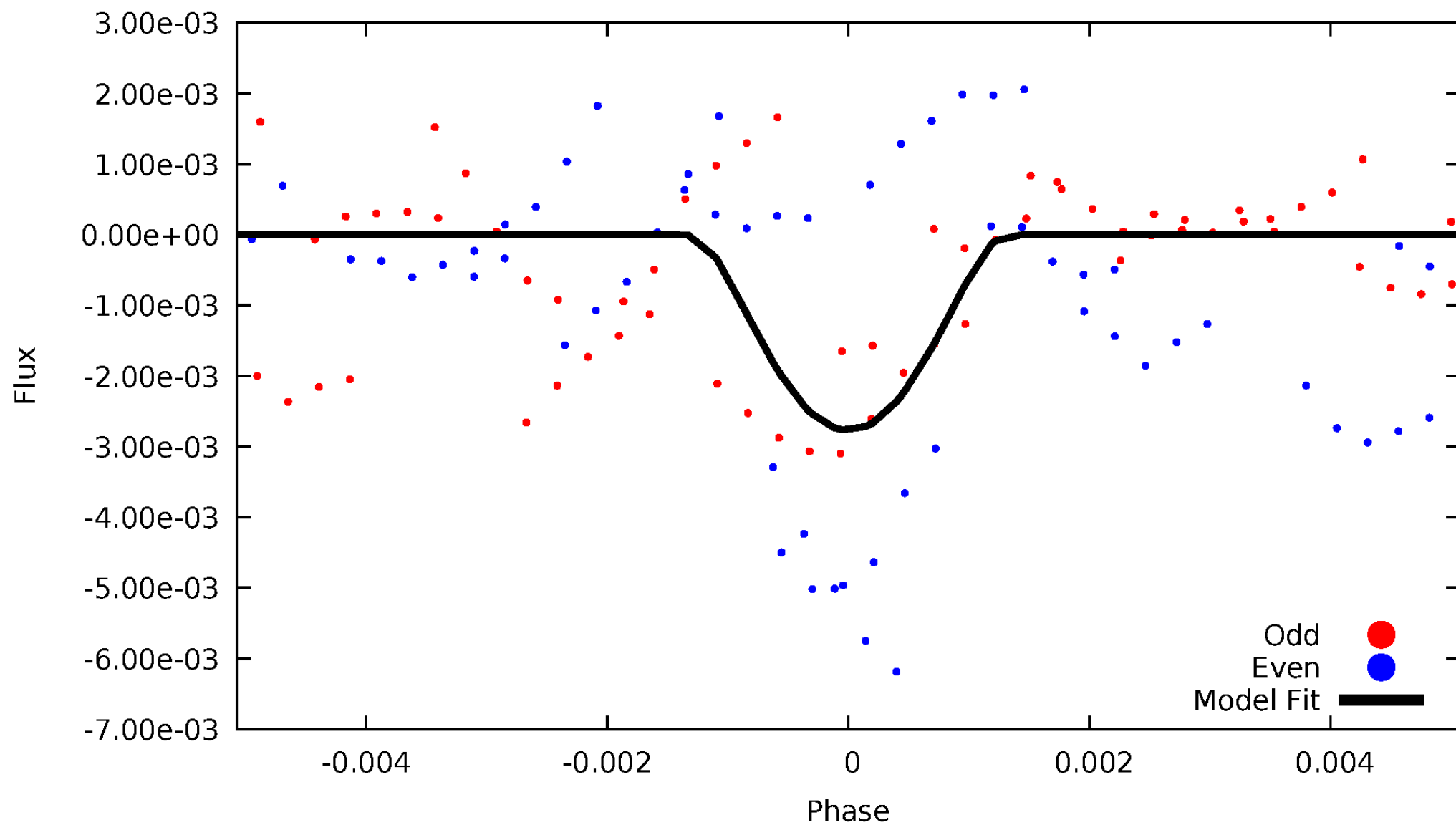


# TCE 011623878-03



# DV Odd/Even

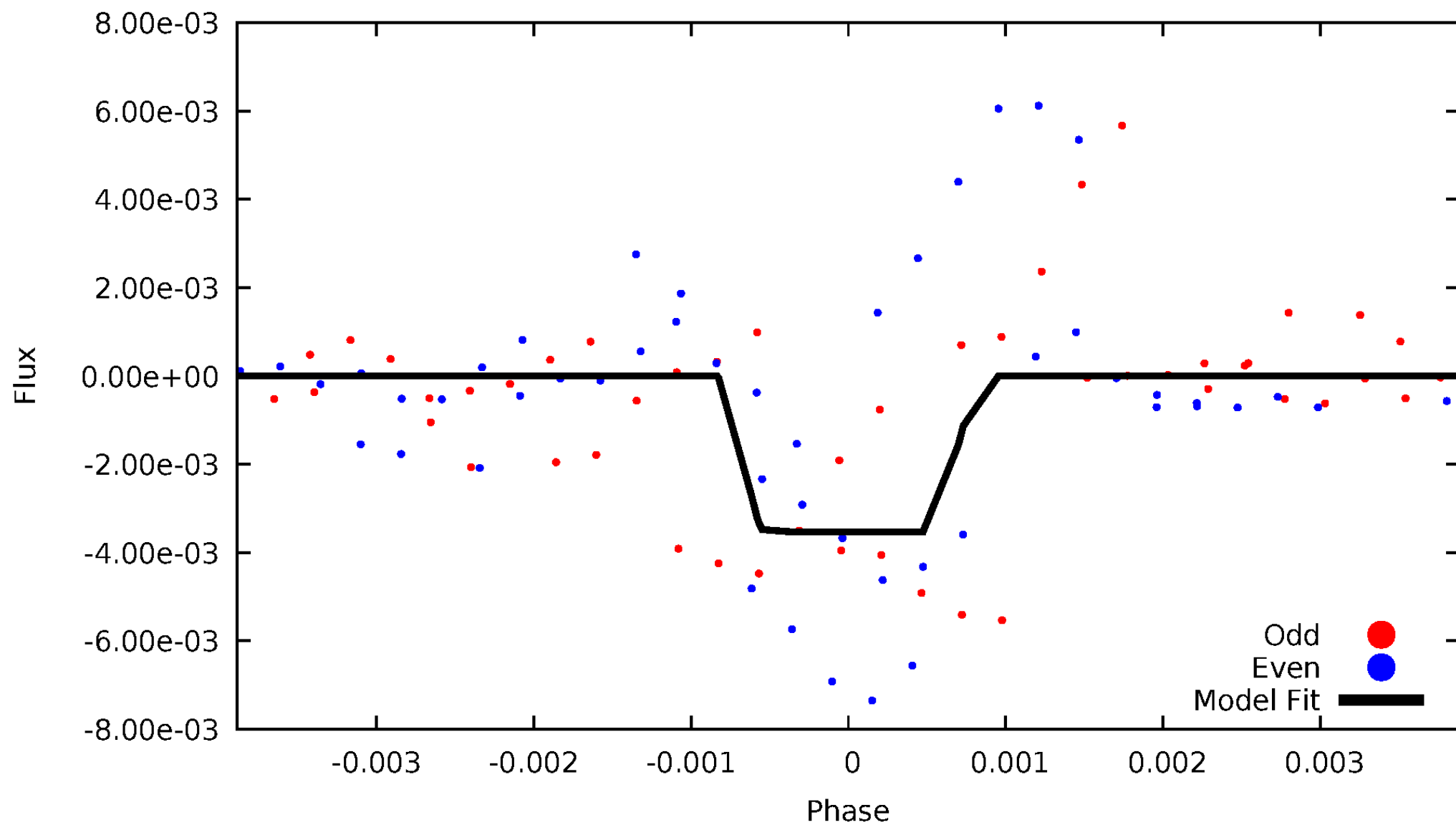
TCE 011623878-03





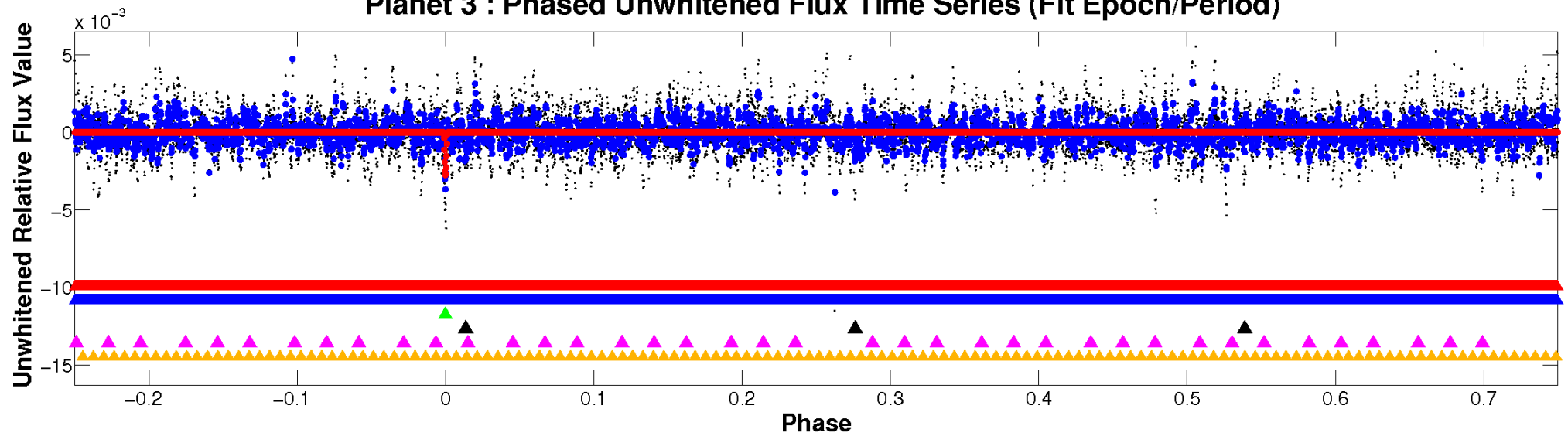
# ALT Odd/Even

TCE 011623878-03

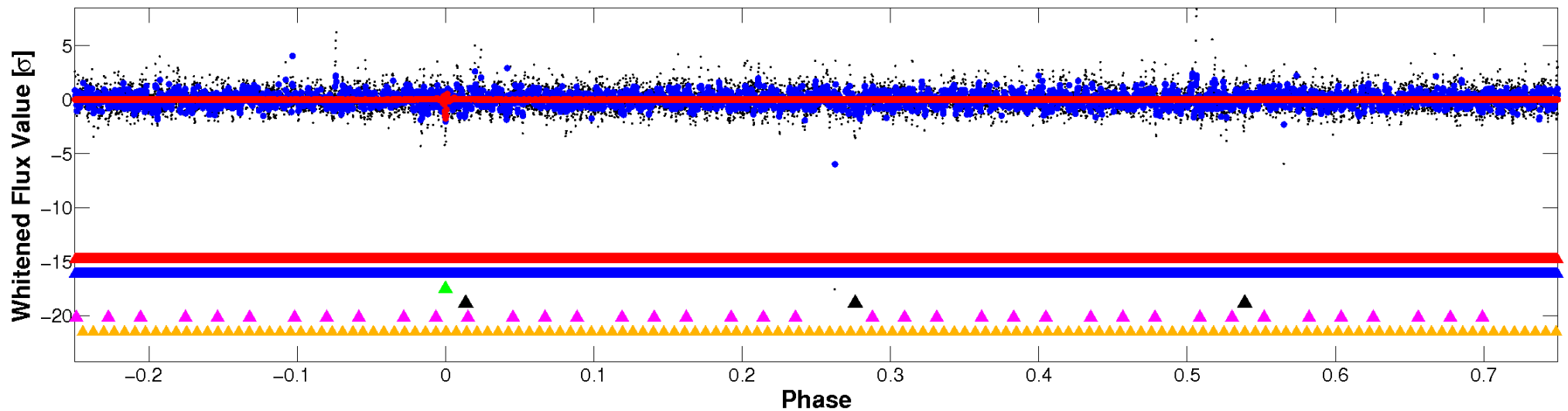


# Non-Whitened Vs. Whitened Light Curve

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

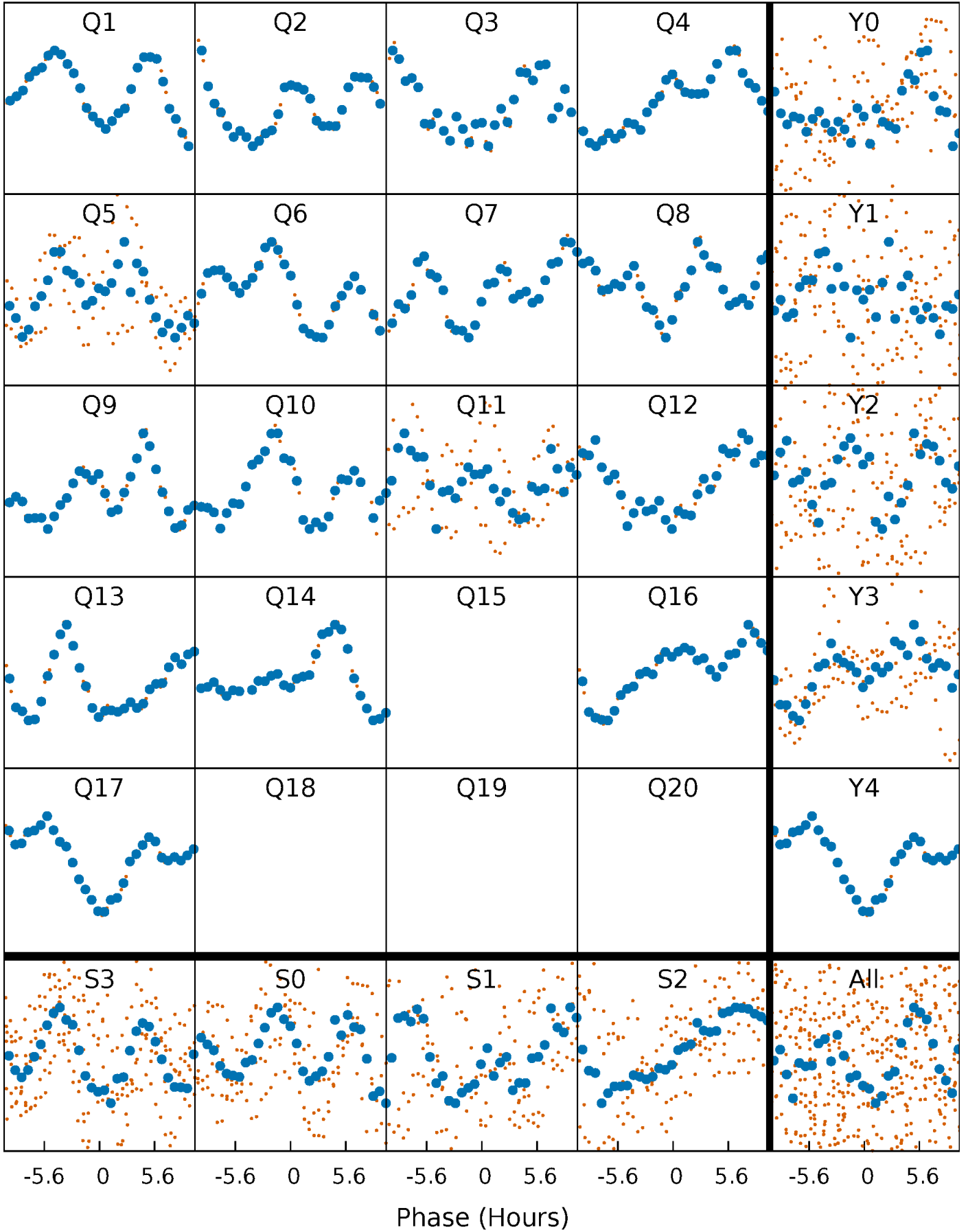


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



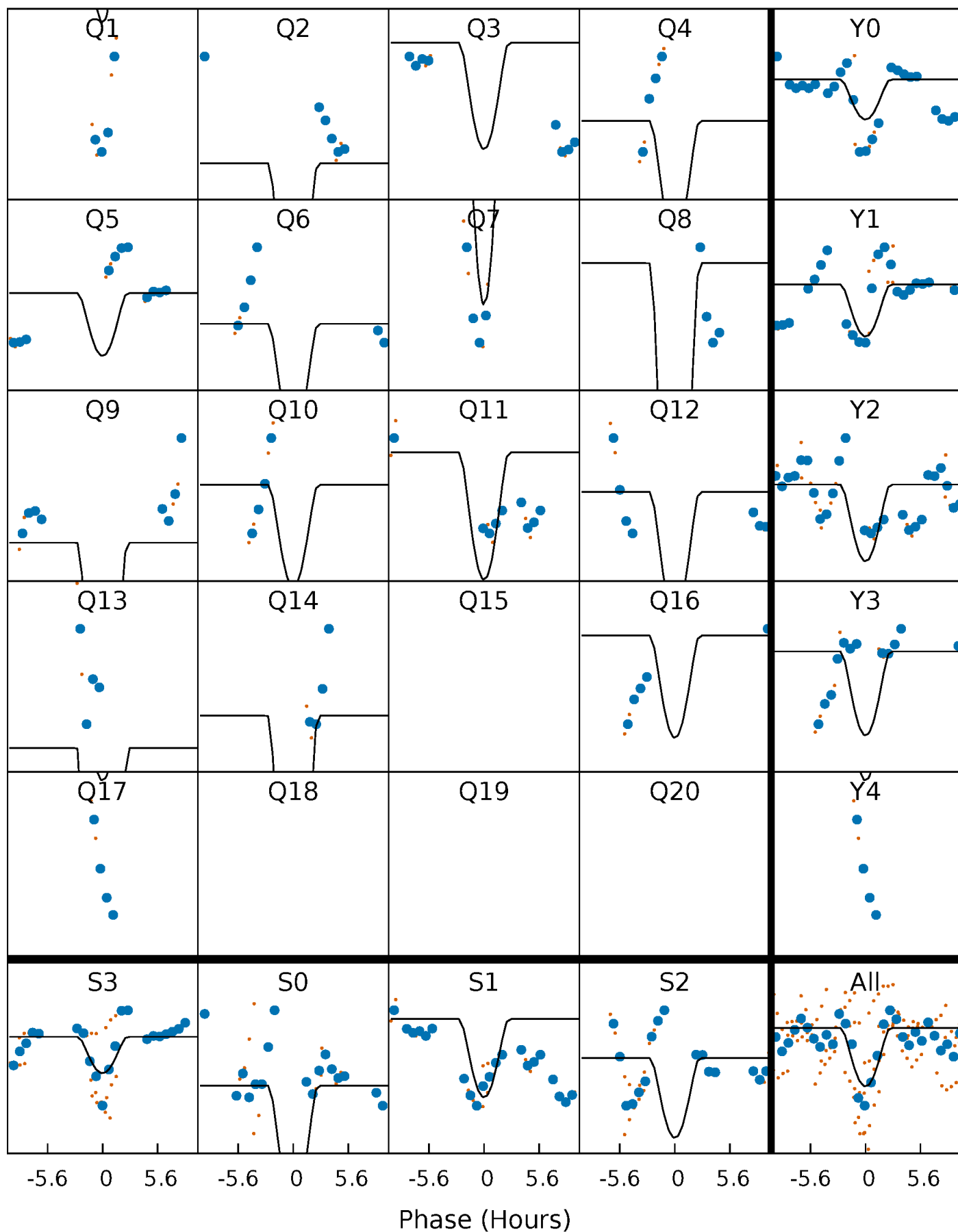
# PDC Quarter-Phased Transit Curves

TCE 011623878-03   P= 79.916019 Days    $T_0=136.317242$  (BKJD)



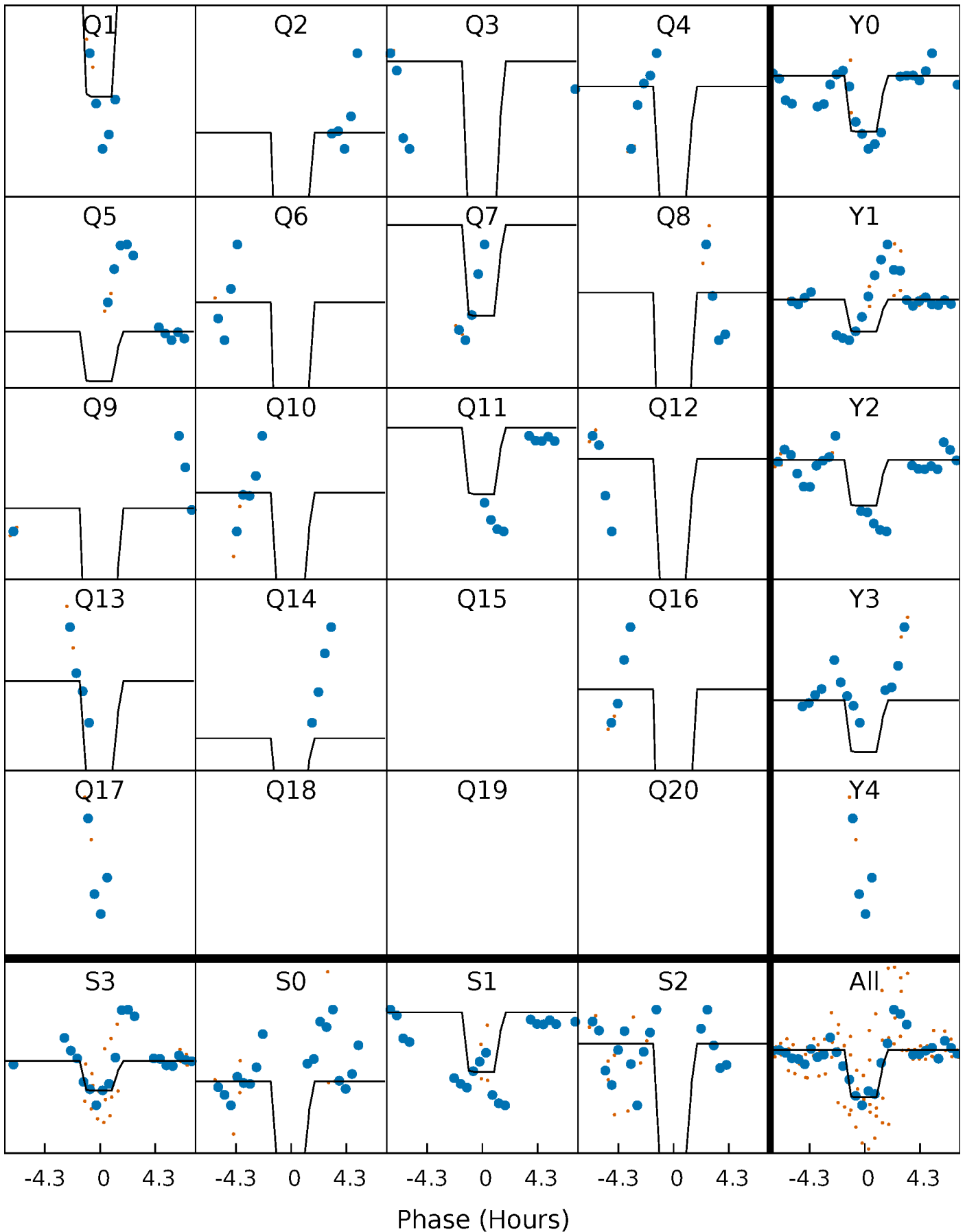
# DV Quarter-Phased Transit Curves

TCE 011623878-03   P= 79.916019 Days    $T_0=136.317242$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011623878-03 P= 79.916012 Days  $T_0=136.316693$  (BKJD)

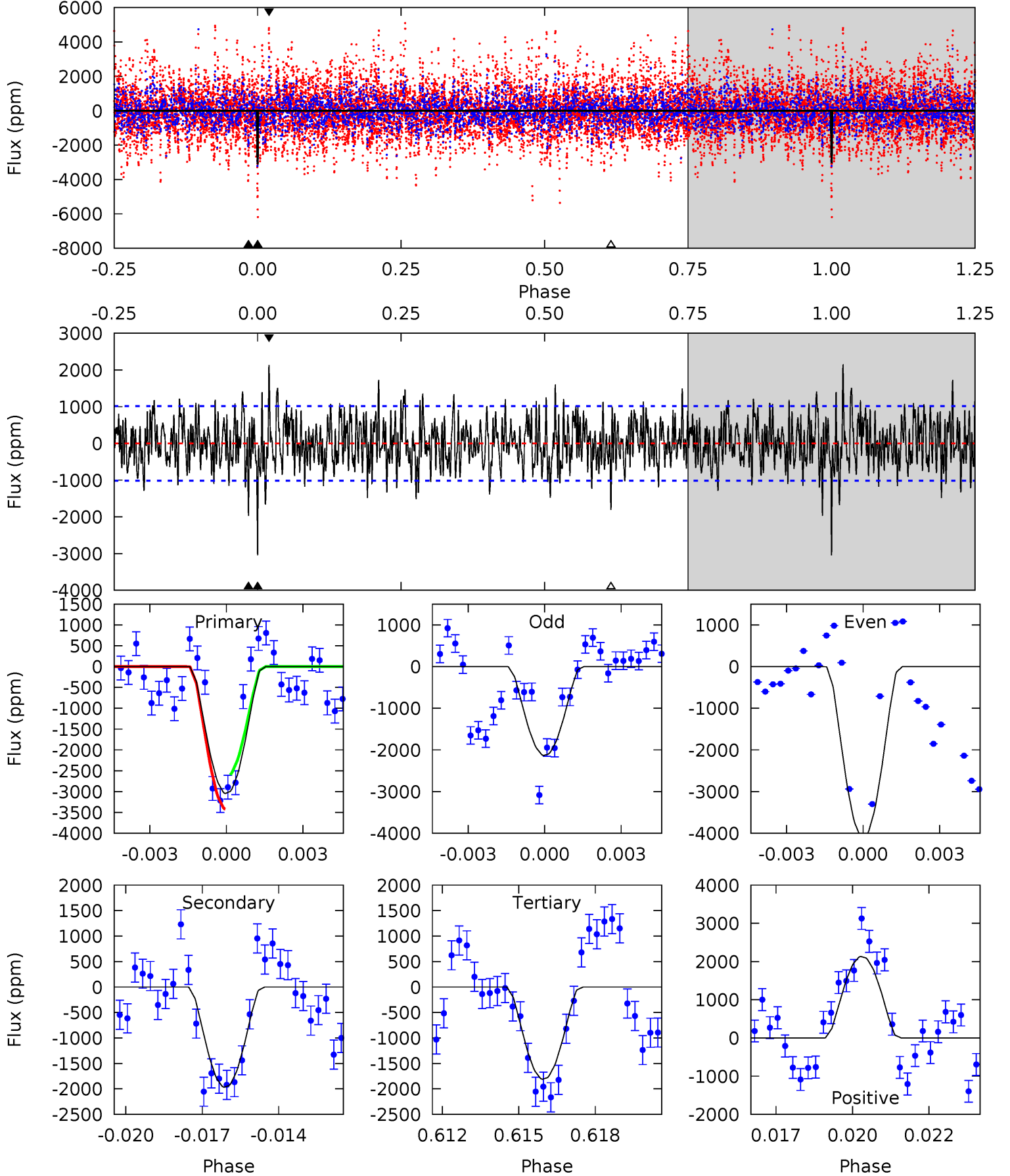




# DV Model-Shift Uniqueness Test

011623878-03, P = 79.916019 Days, E = 56.401223 Days

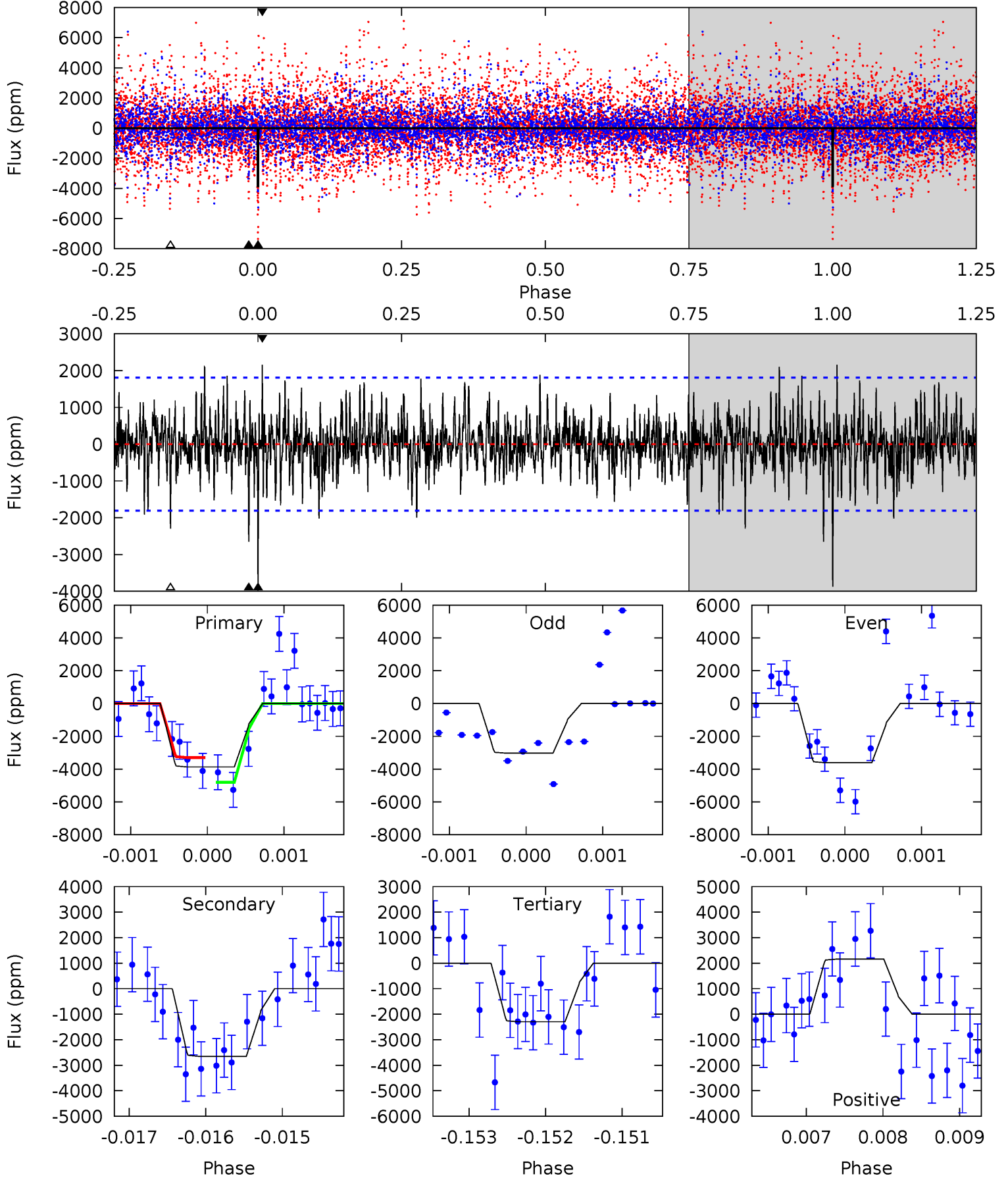
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM   | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-------|-------|------|
| 15.8 | 10.2 | 9.37 | 11.0 | 5.27            | 2.99            | 2.86             | 6.41    | 4.74    | 0.81    | -0.86   | 4.96    | -1.53 | 0.41  | 2.15 |



# Alt Model-Shift Uniqueness Test

011623878-03, P = 79.916012 Days, E = 56.400681 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 11.5 | 7.91 | 6.85 | 6.44 | 5.40            | 3.21            | 1.66             | 4.70    | 5.11    | 1.07    | 1.47    | 0.88    | 0.83 | 0.36  | 2.22 |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M(M_{\odot})$            | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                    |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                   |
| 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 011623878-03 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$        | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$  | $A_{\text{obs}}$     |
|---------|-----------------|---------------------------|----------------------|-----------------------|----------------------|
| DV      | $-1967 \pm 193$ | $27.72^{+26.84}_{-18.60}$ | $836^{+64}_{-72}$    | $3906^{+2012}_{-747}$ | $223^{+1840}_{-166}$ |
| Alt.    | $-2652 \pm 335$ | $24.05^{+23.47}_{-16.49}$ | $837^{+62}_{-67}$    | $4319^{+3138}_{-933}$ | $388^{+3618}_{-291}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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

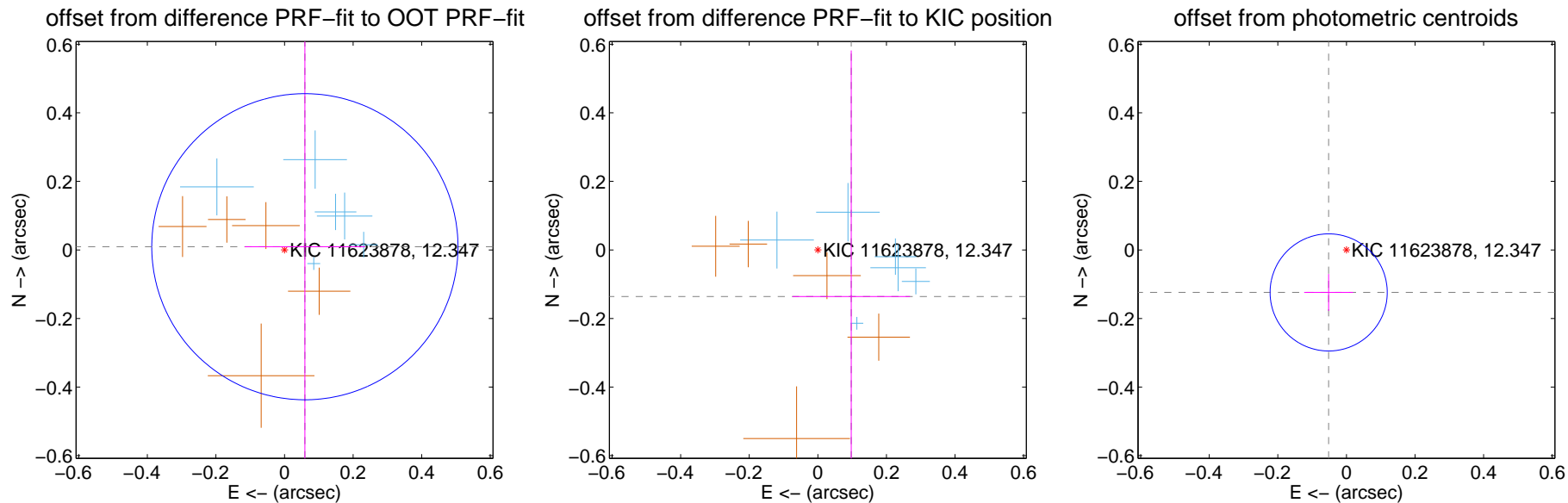
## DV Centroid Data

Supplemental centroid analysis for 011623878-03. Kepler magnitude: 12.35. Transit SNR 6.77

There are 8 quarters with good PRF difference image offsets

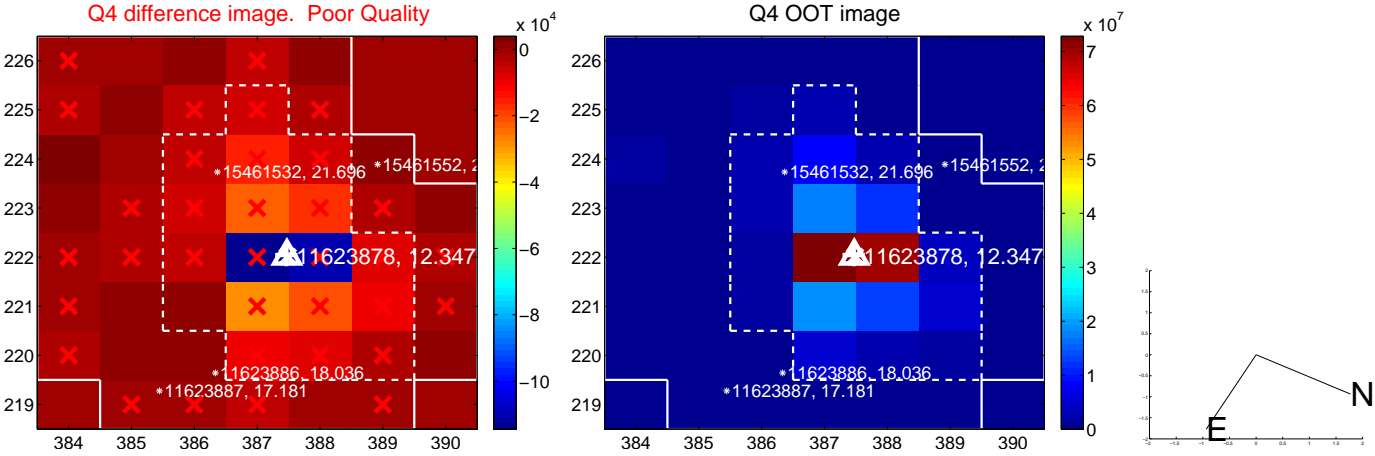
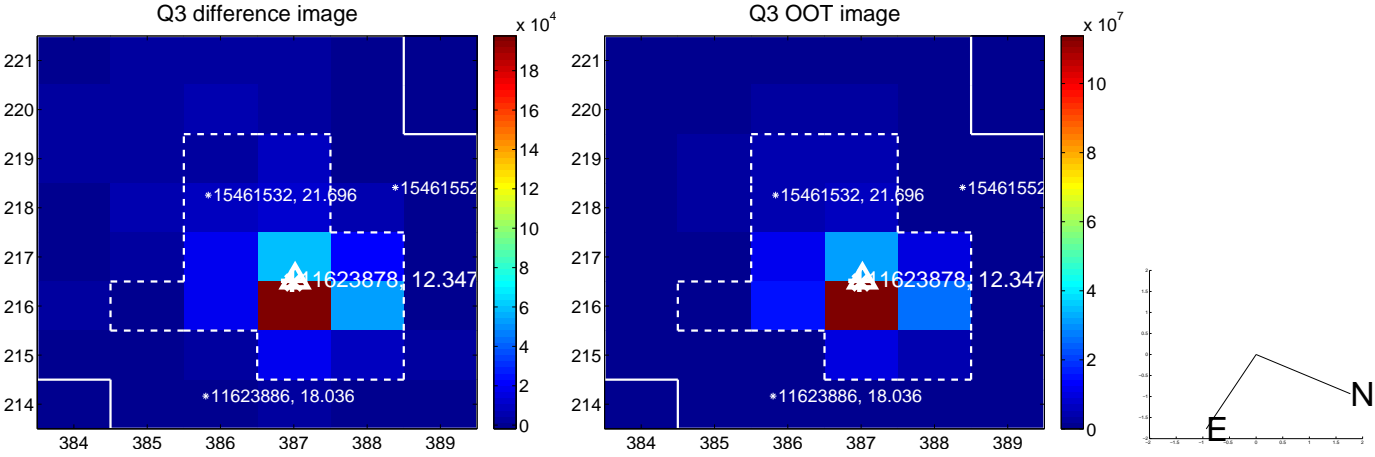
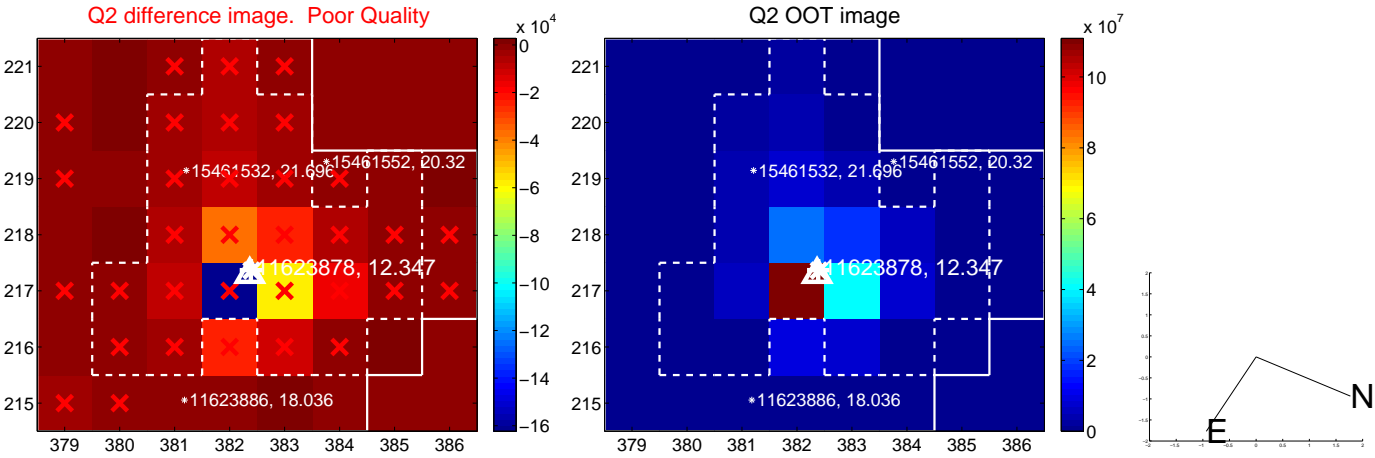
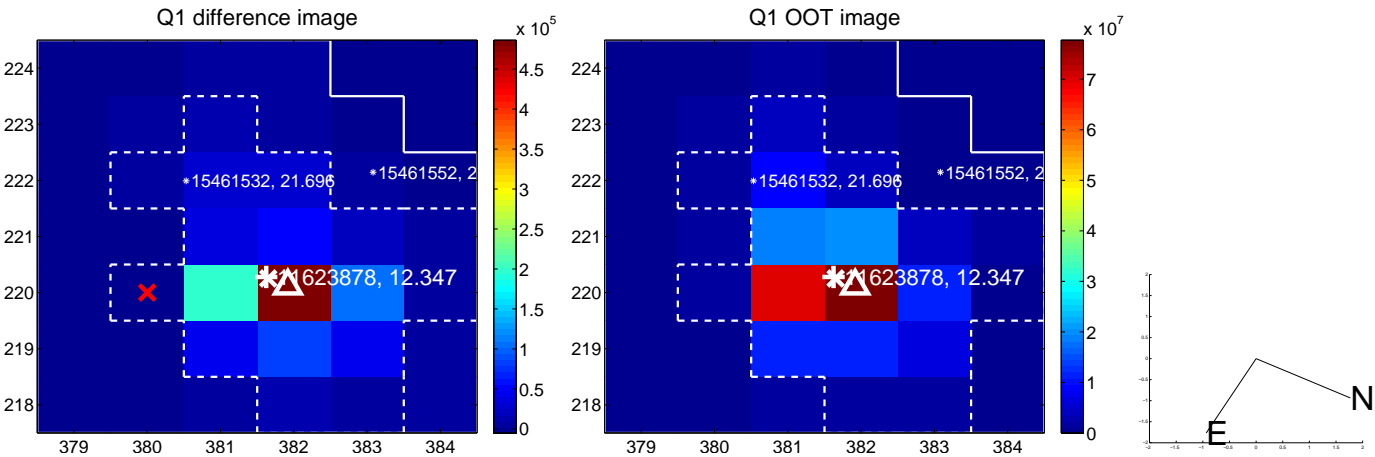
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.060 \pm 0.149$  | 0.40                | $-0.059 \pm 0.175$ | $0.009 \pm 0.711$  |
| PRF-fit source offset from KIC position | $0.167 \pm 0.645$  | 0.26                | $-0.097 \pm 0.171$ | $-0.136 \pm 0.718$ |
| photometric centroid source offset      | $0.13 \pm 0.06$    | 2.36                | $0.05 \pm 0.07$    | $-0.12 \pm 0.05$   |



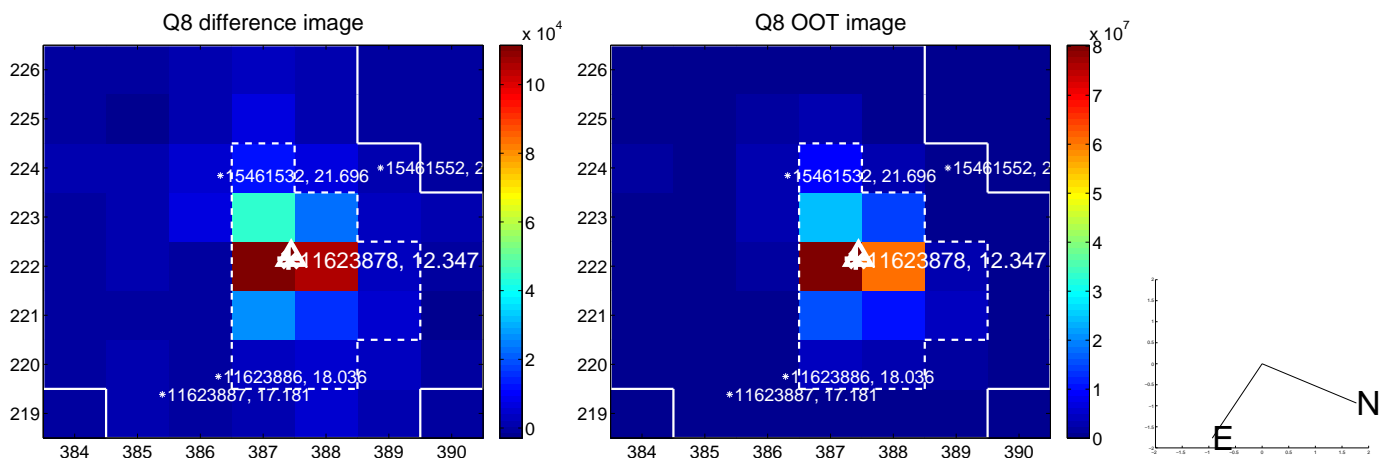
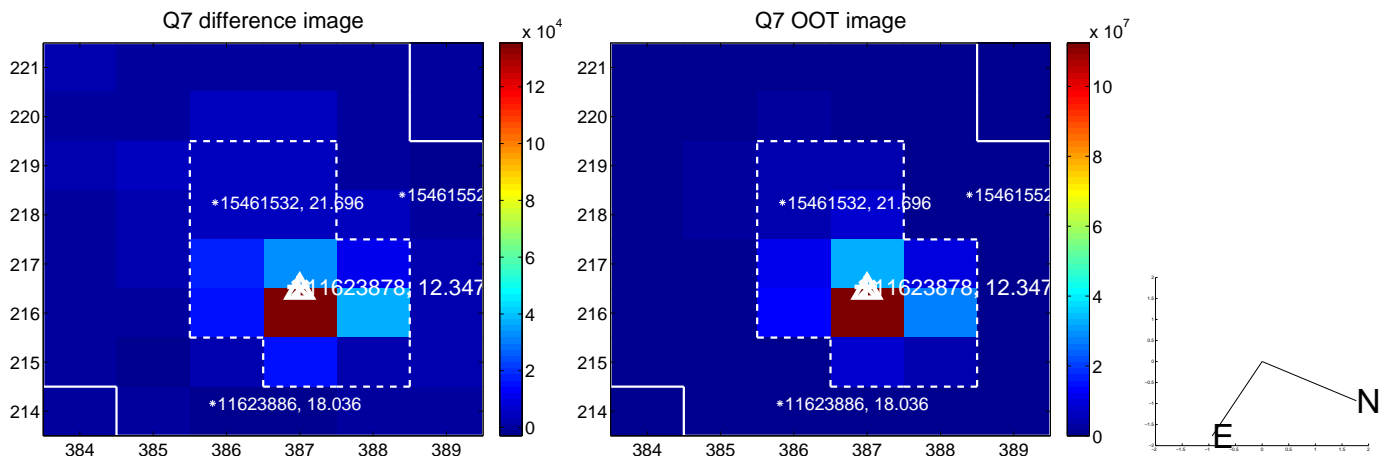
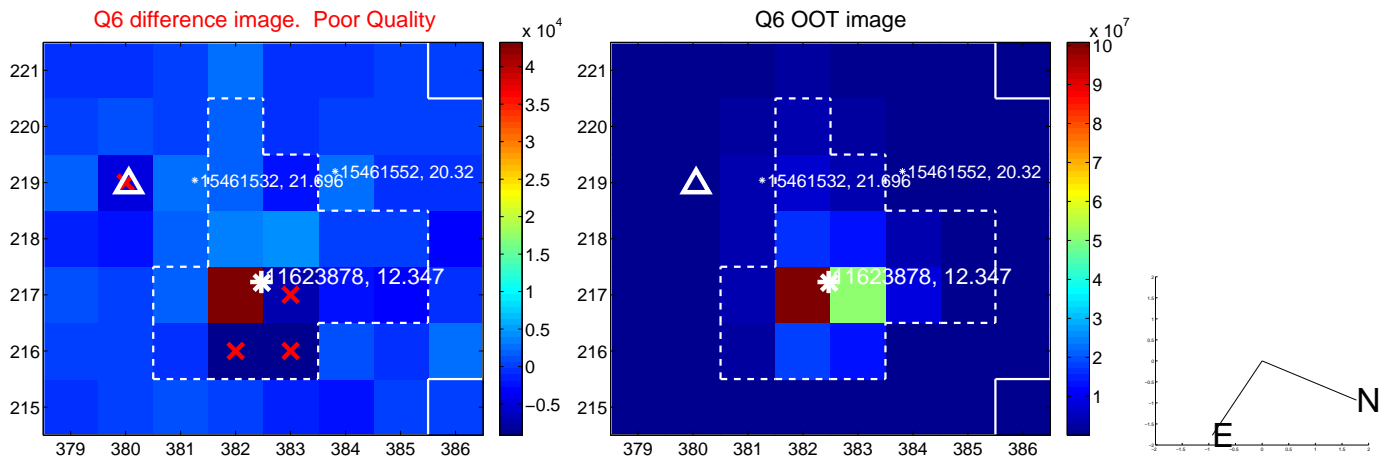
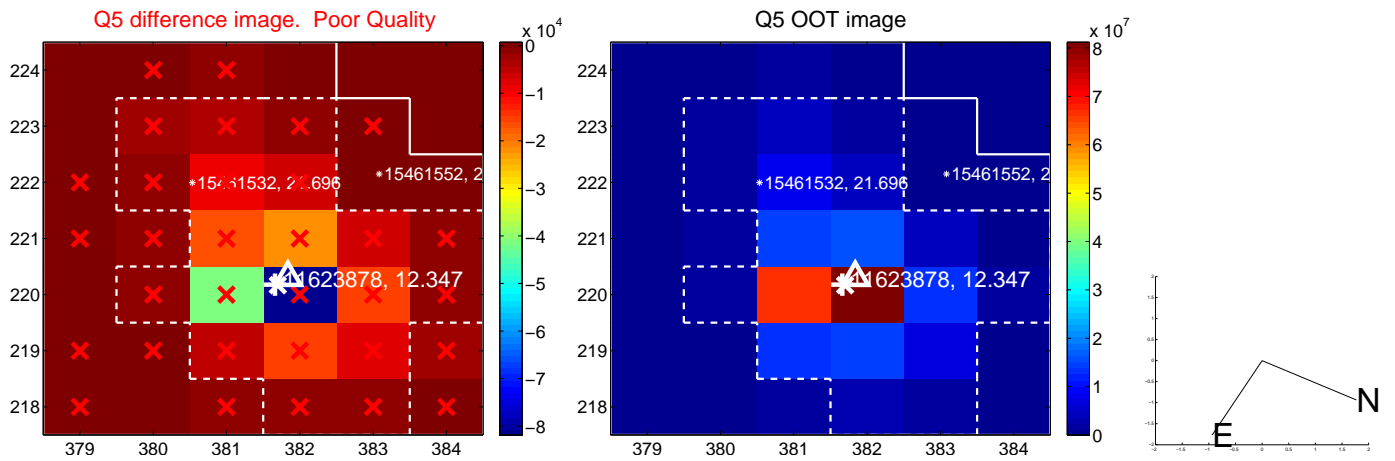
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

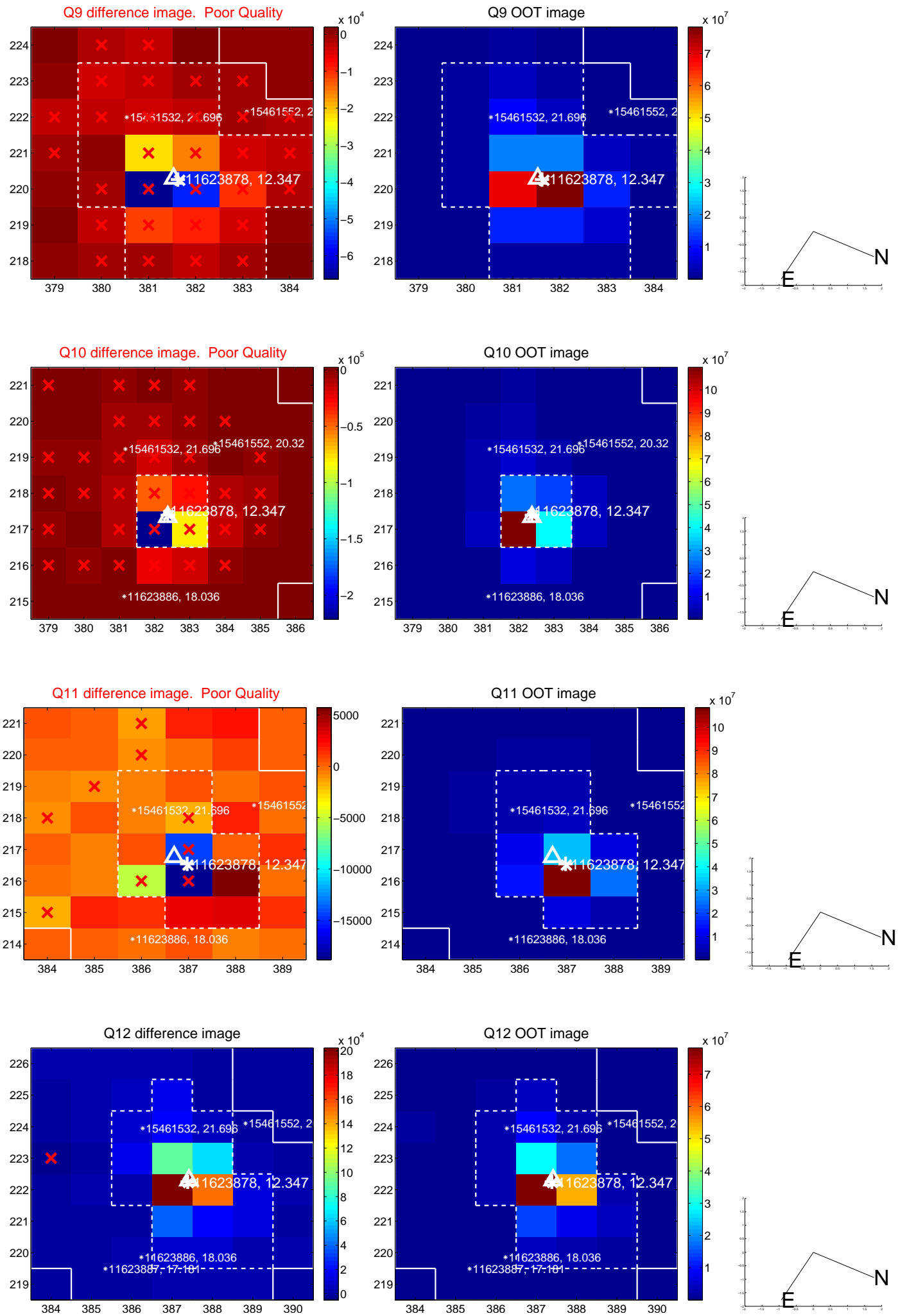




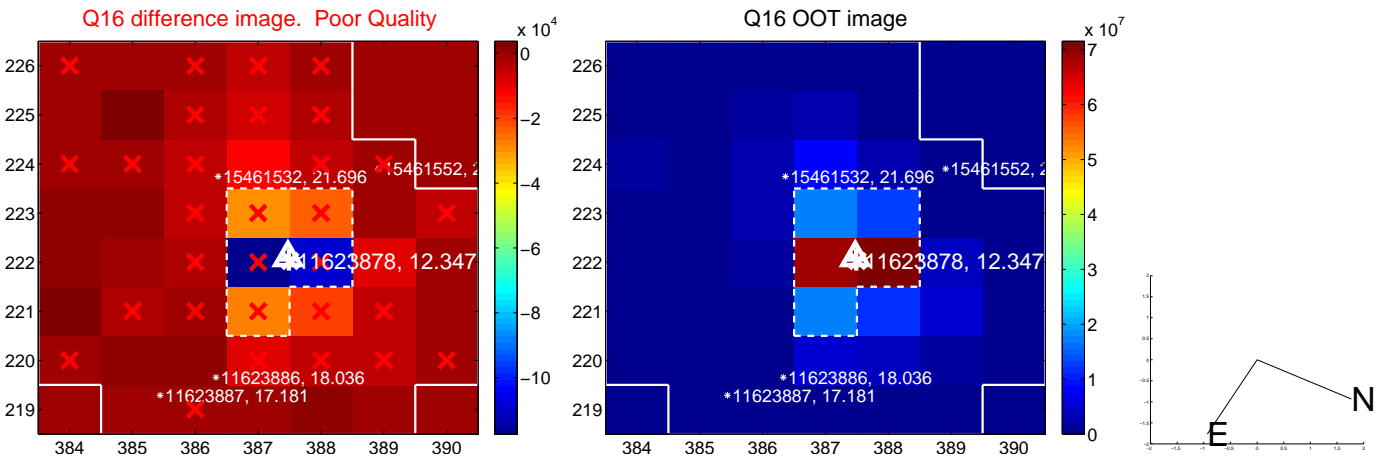
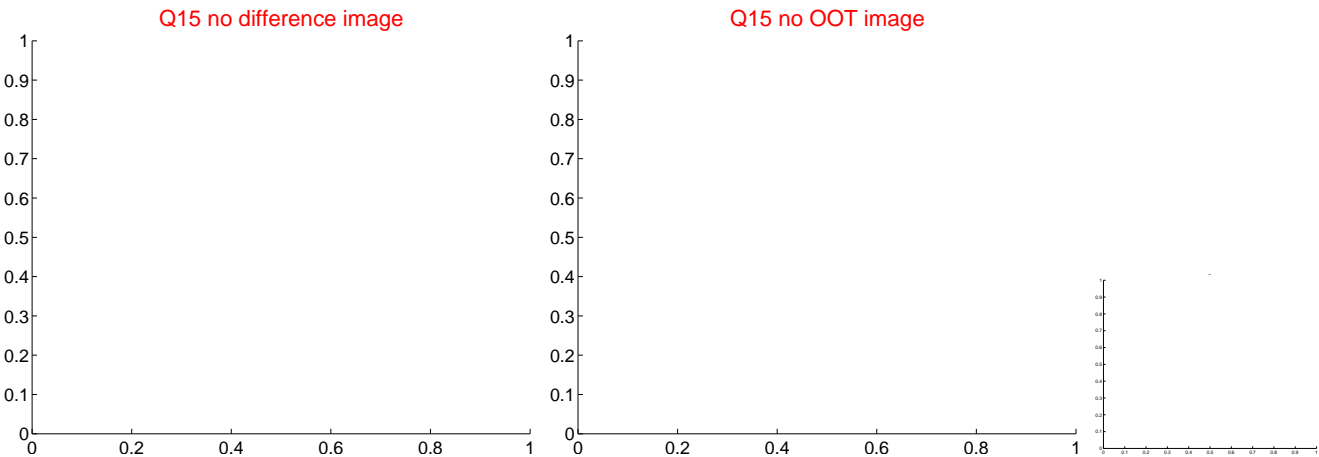
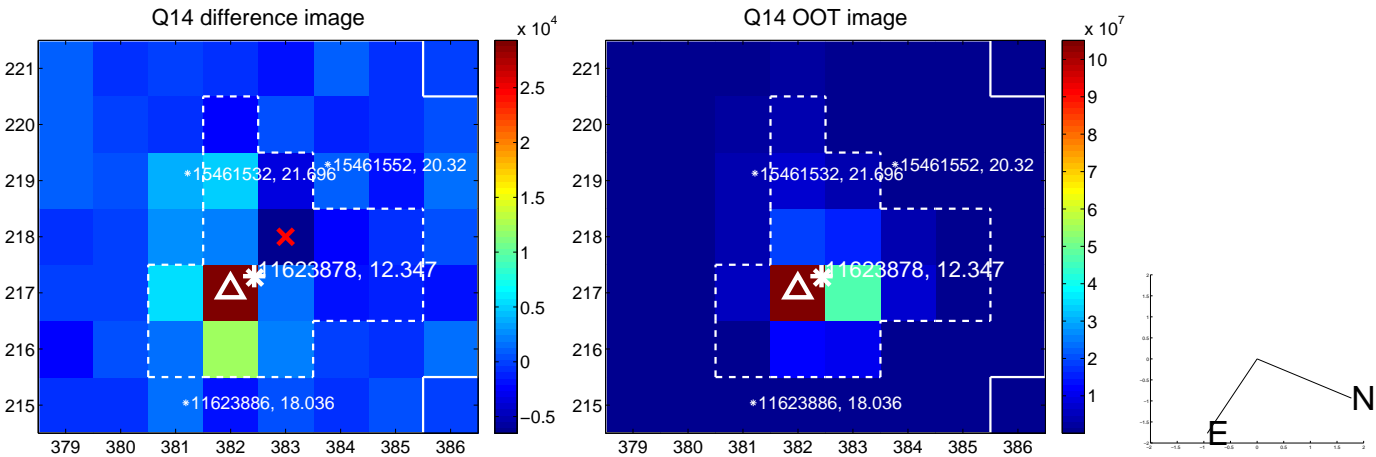
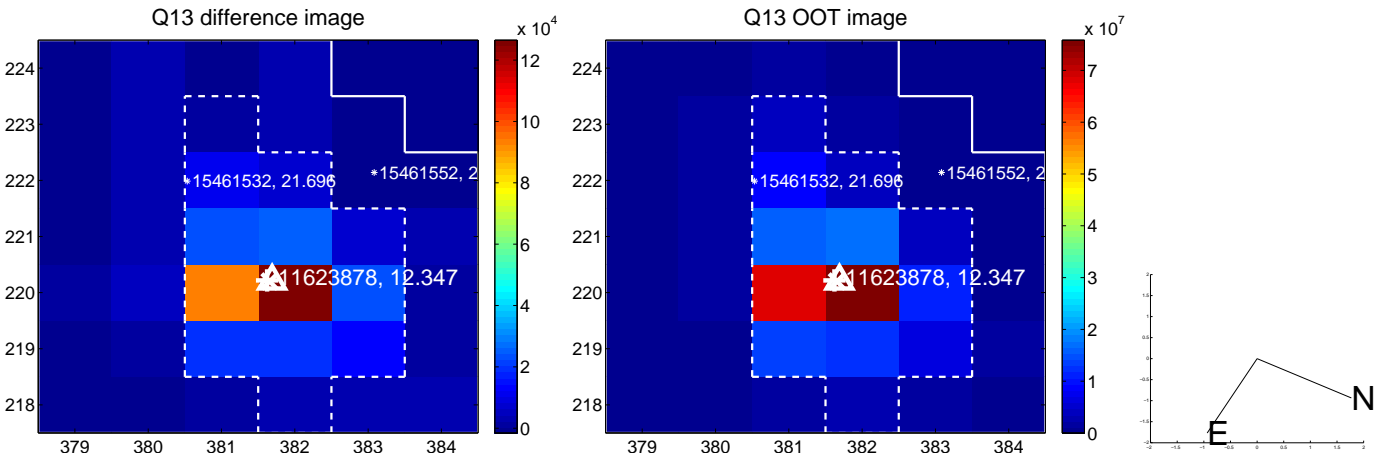
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



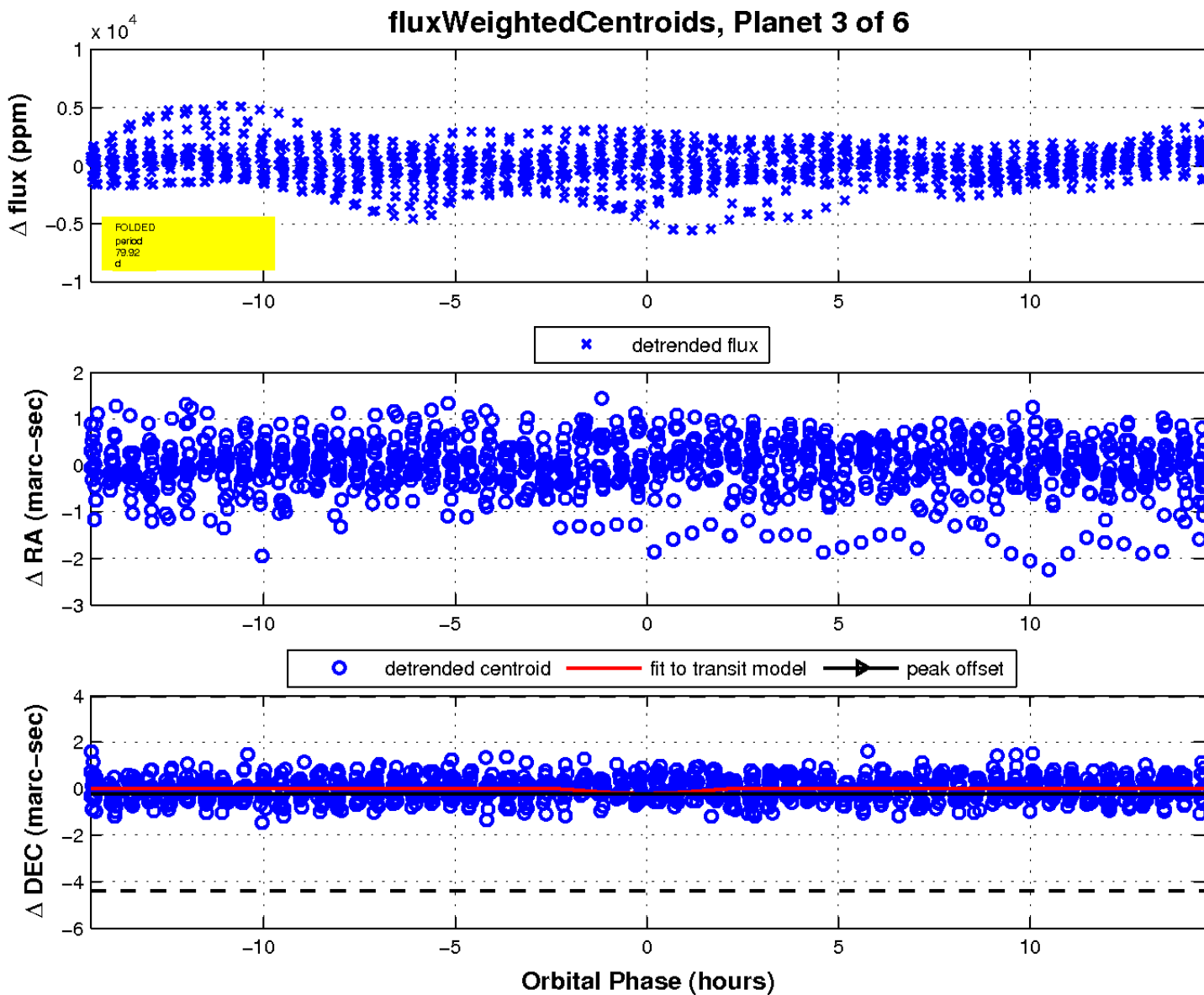
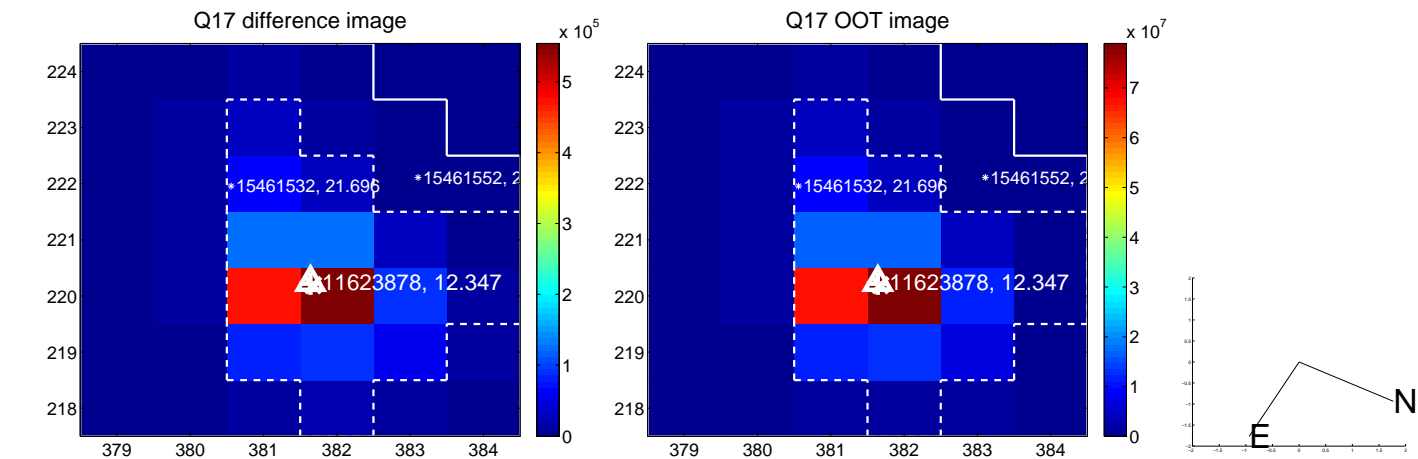
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

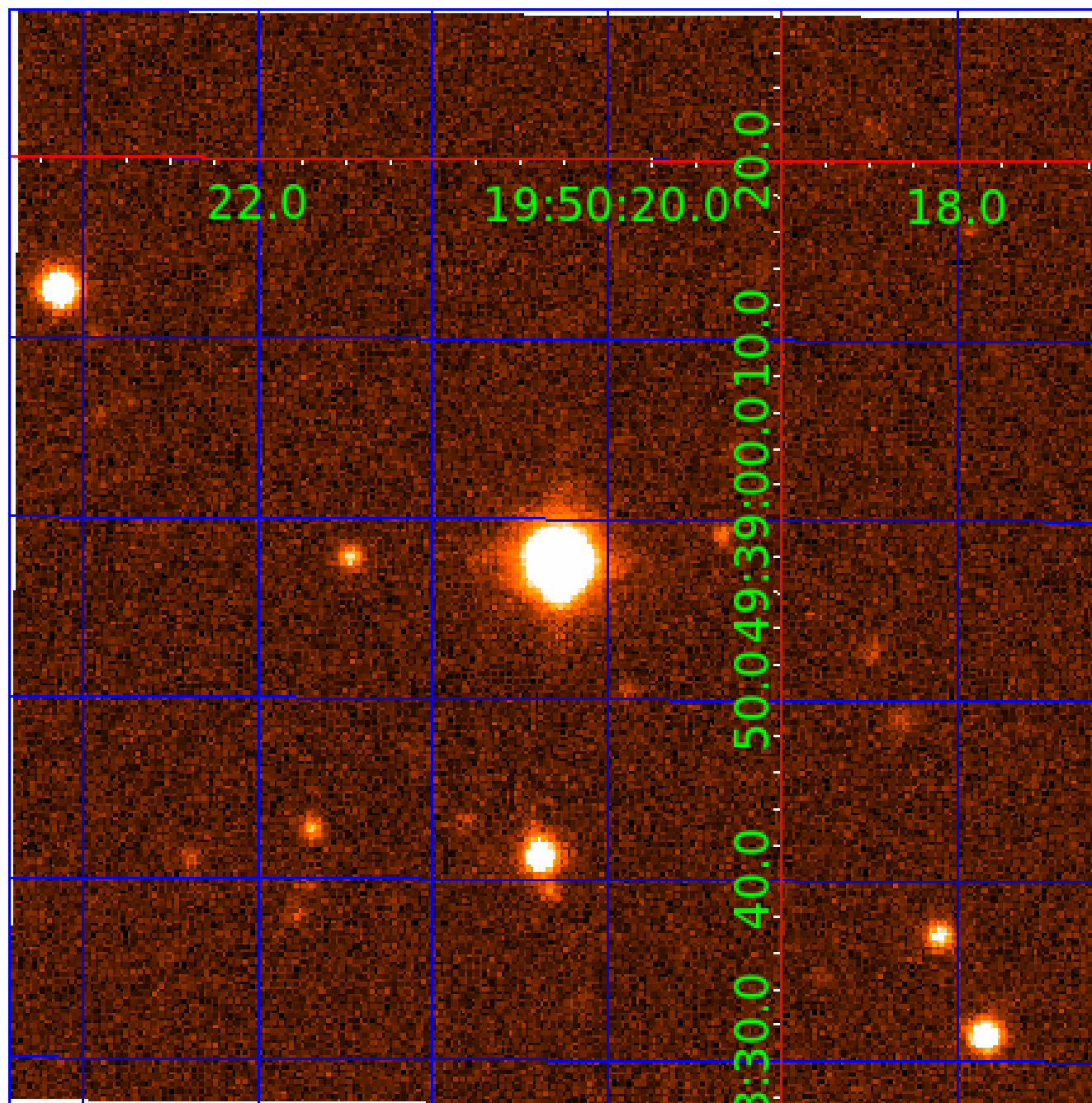


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST |

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

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

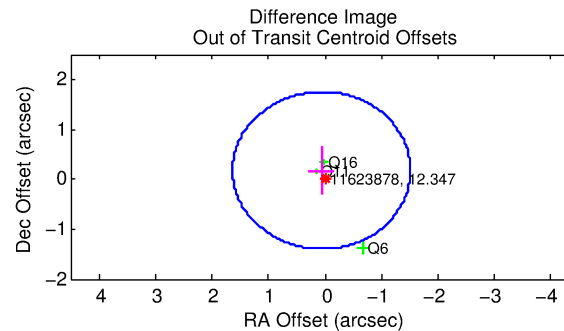
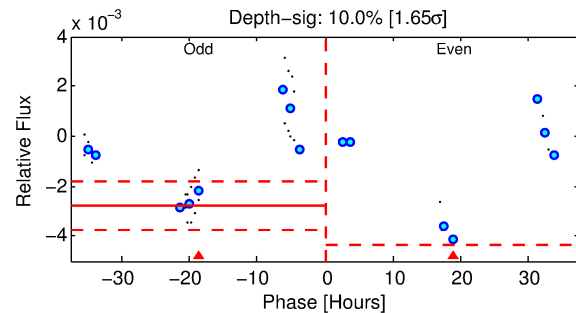
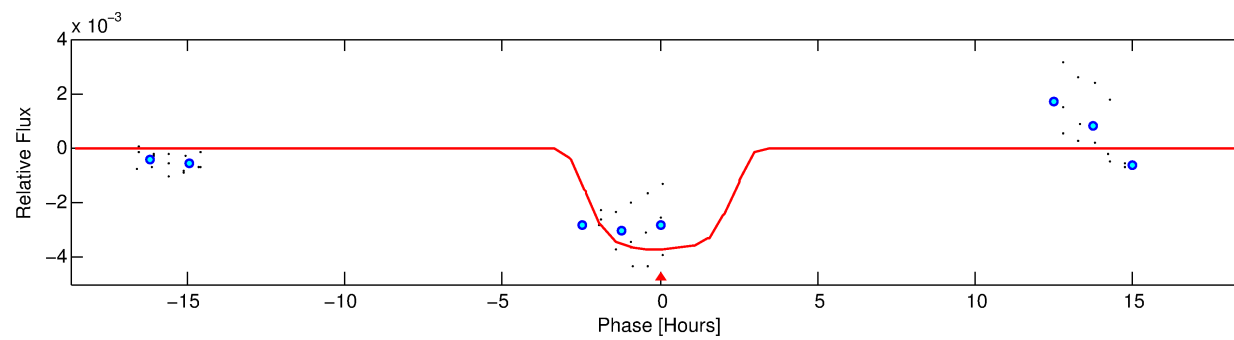
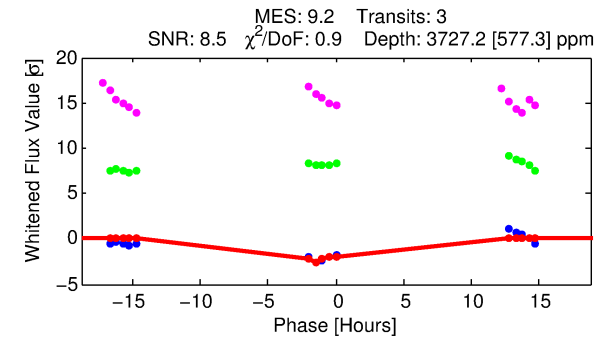
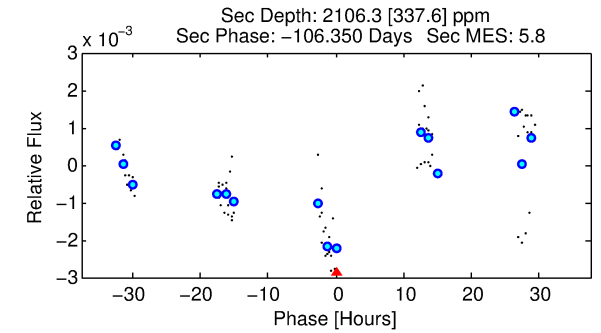
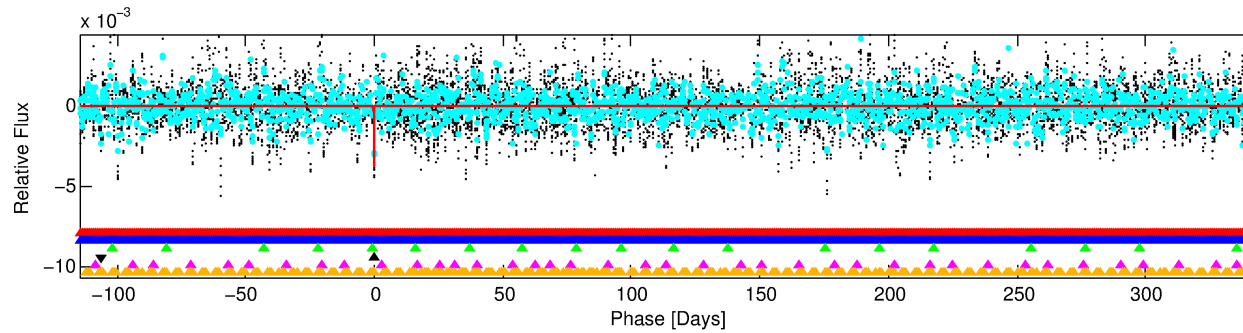
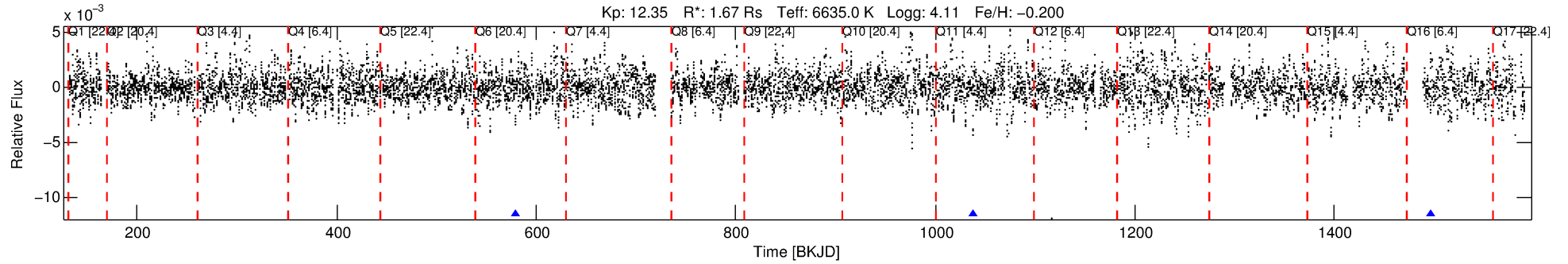
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011623878-04

No Significant Match Found

# DV One-Page Summary

KIC: 11623878 Candidate: 4 of 6 Period: 458.507 d



## DV Fit Results:

Period = 458.50677 [0.01449] d  
Epoch = 578.9667 [0.0539] BKJD  
Rp/R\* = 0.0650 [0.0120]  
a/R\* = 326.72 [253.49]  
b = 0.89 [0.17]  
Seff = 2.98 [1.22]  
Teq = 335 [34] K  
Rp = 11.83 [3.97] Re  
a = 1.2717 [0.3207] AU  
Ag = 13400.26 [7467.17] [1.79σ]  
Teffp = 5573 [589] K [8.88σ]

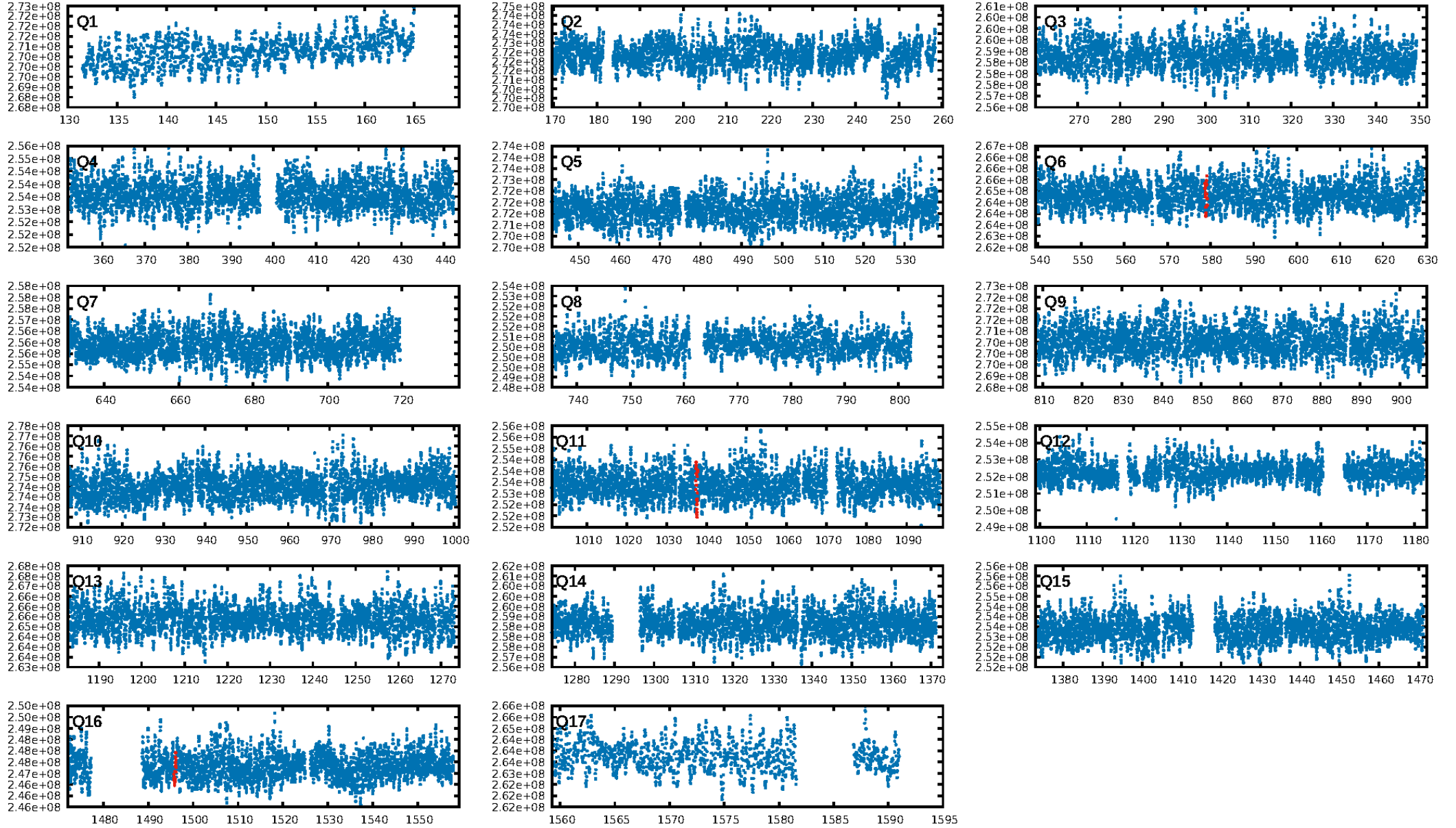
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1147.81σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.8754**  
Centroid-sig: N/A  
Centroid-so: 0.231 arcsec [2.94σ]  
OotOffset-rm: 0.185 arcsec [0.35σ]  
KicOffset-rm: 0.072 arcsec [0.20σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

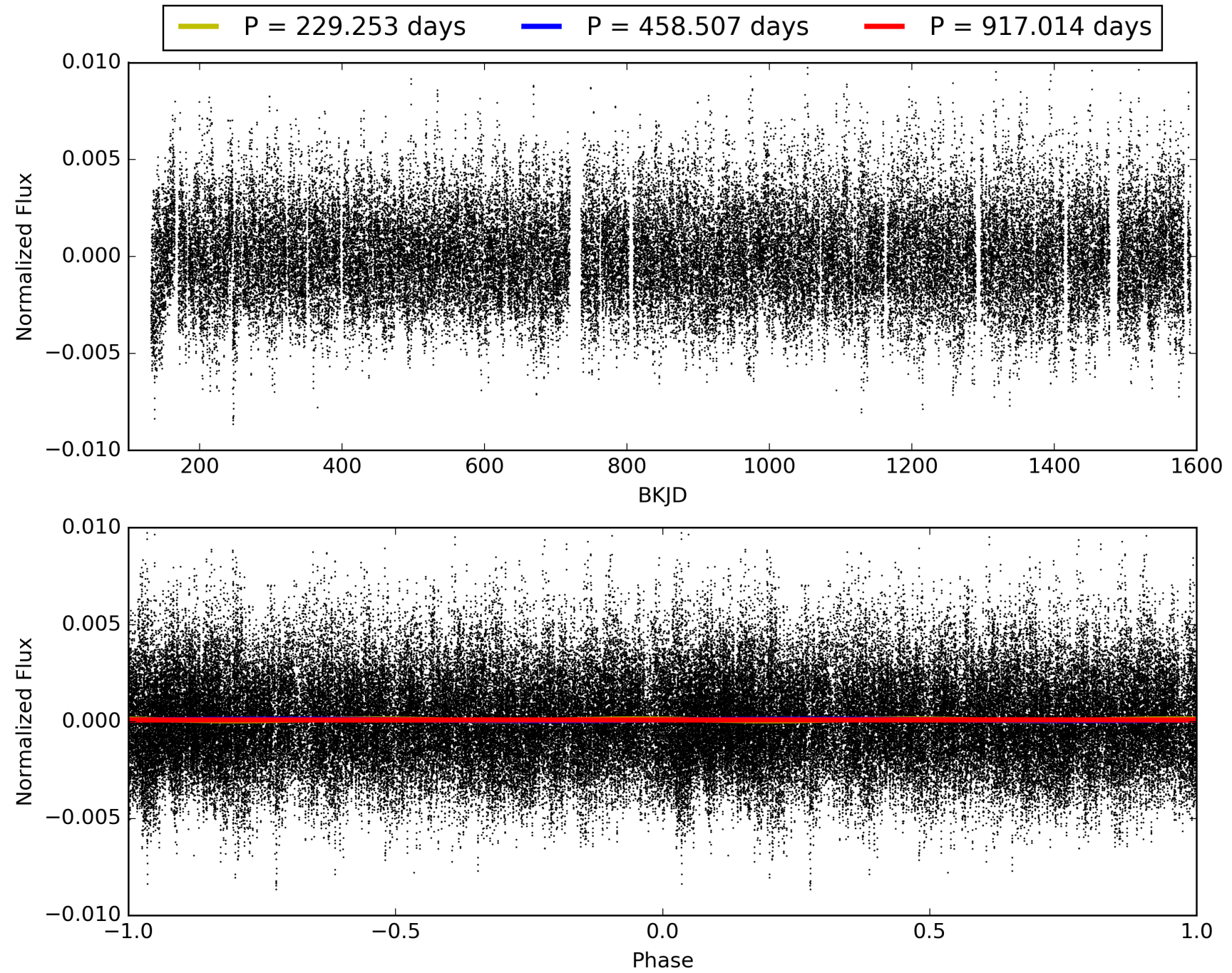
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:14:13 Z

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

# TCE 011623878-04, PDC Light Curves

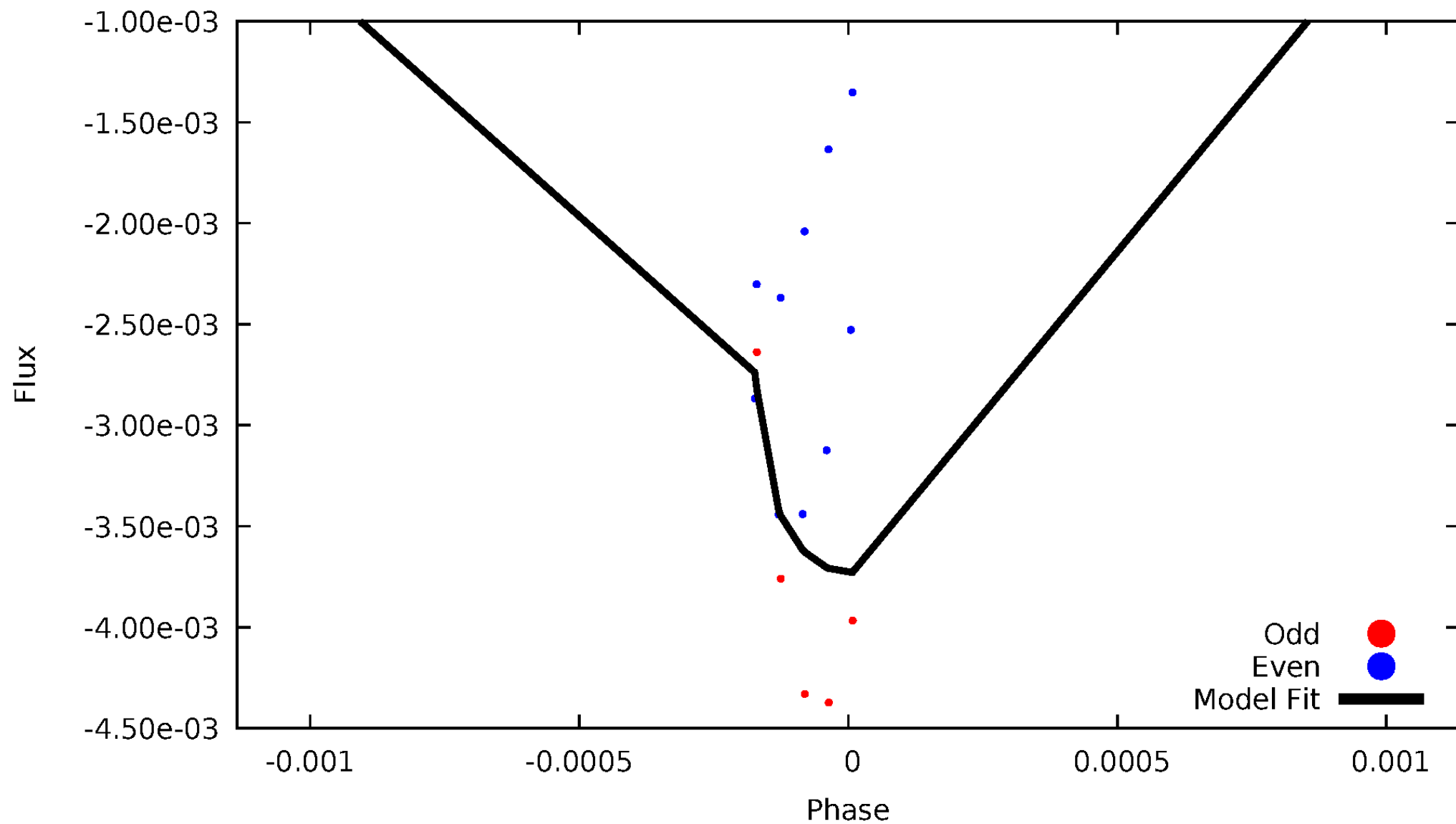


TCE 011623878-04



# DV Odd/Even

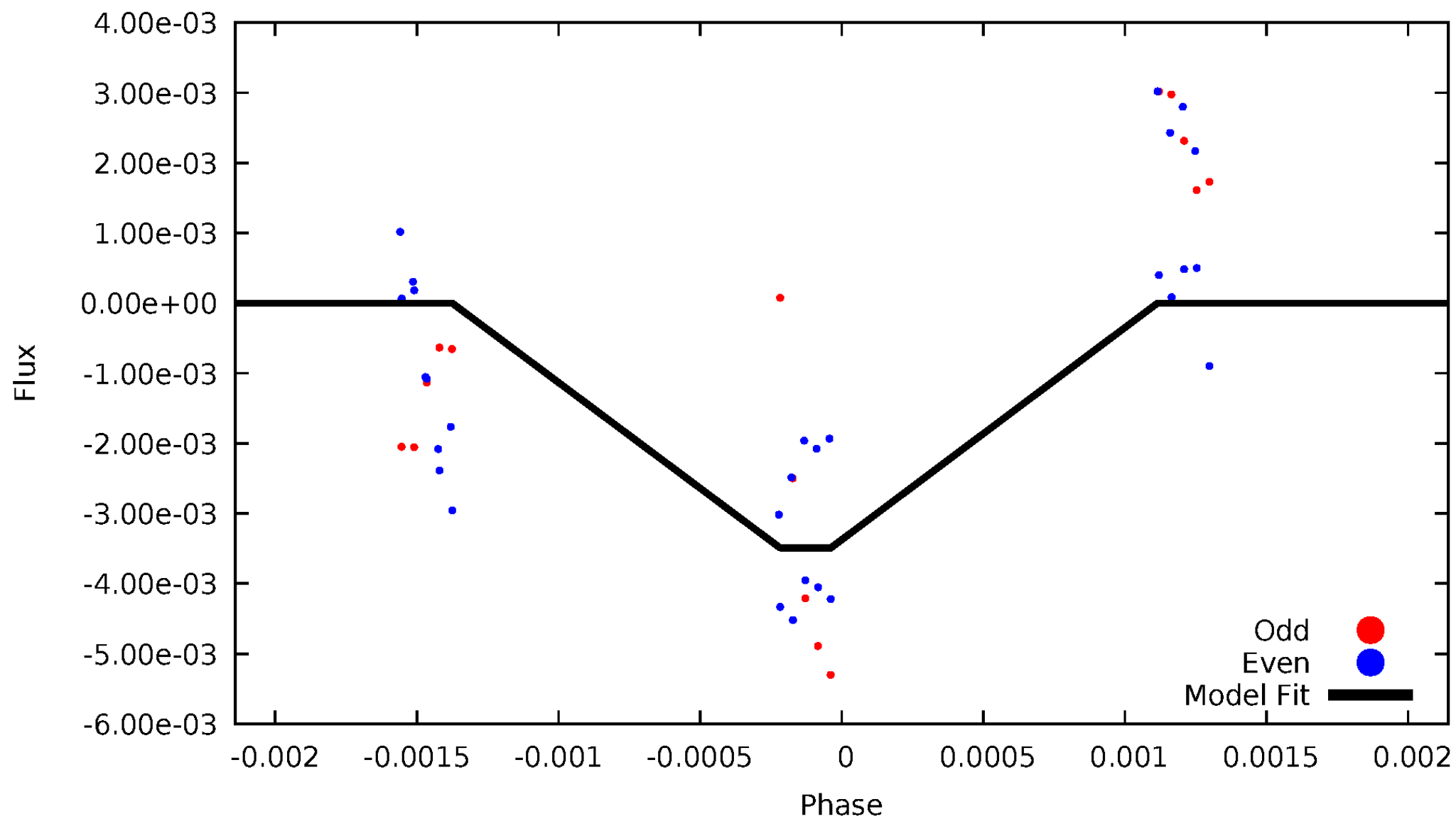
TCE 011623878-04





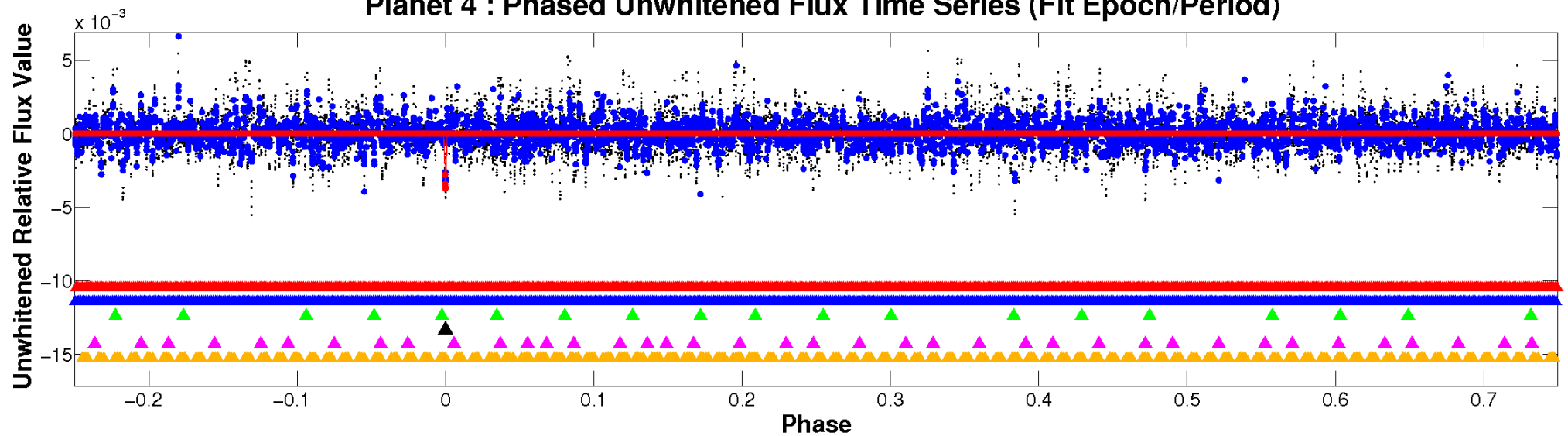
# ALT Odd/Even

TCE 011623878-04

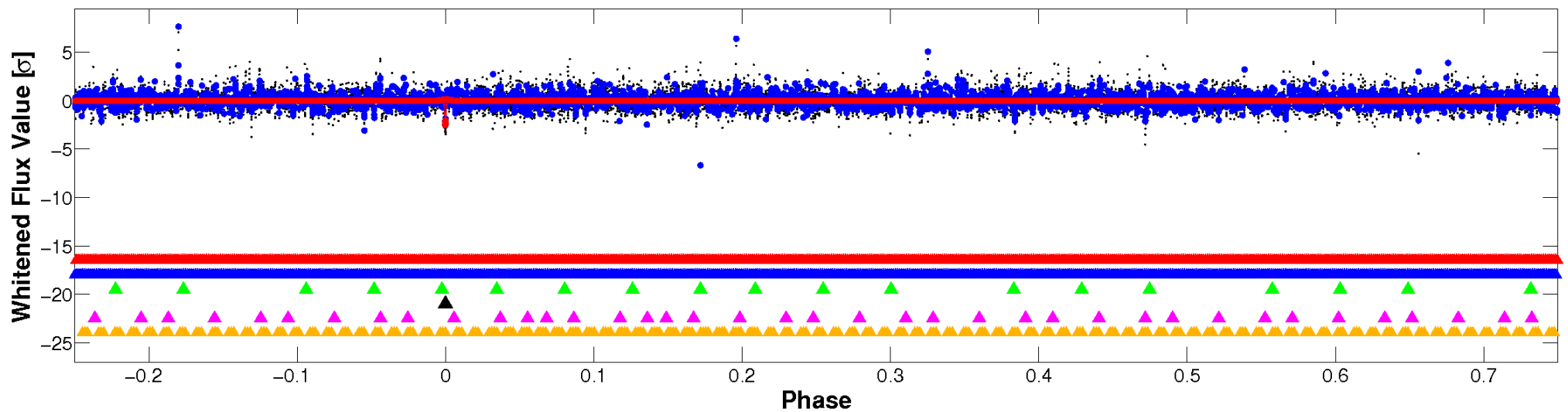


# Non-Whitened Vs. Whitened Light Curve

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

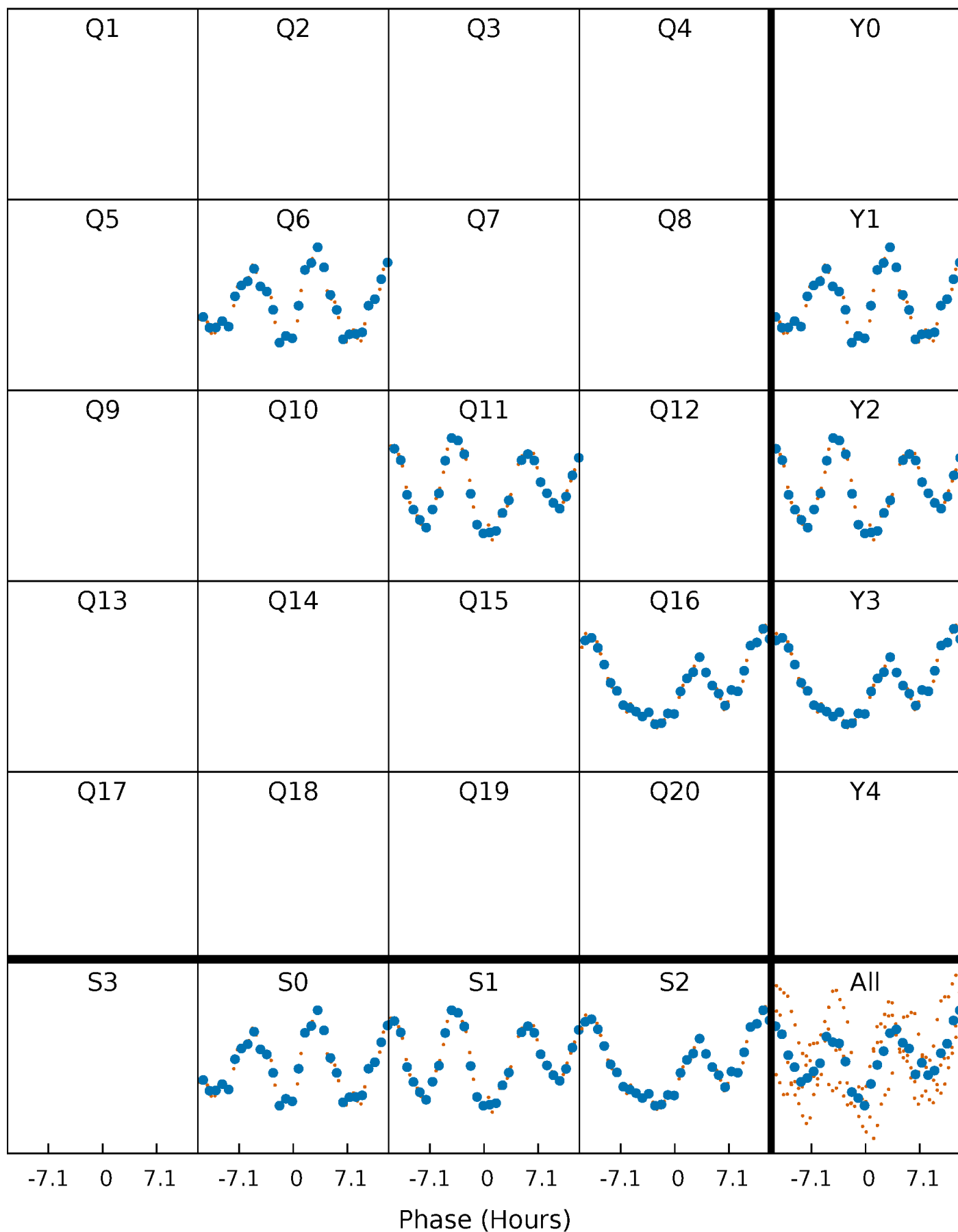


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



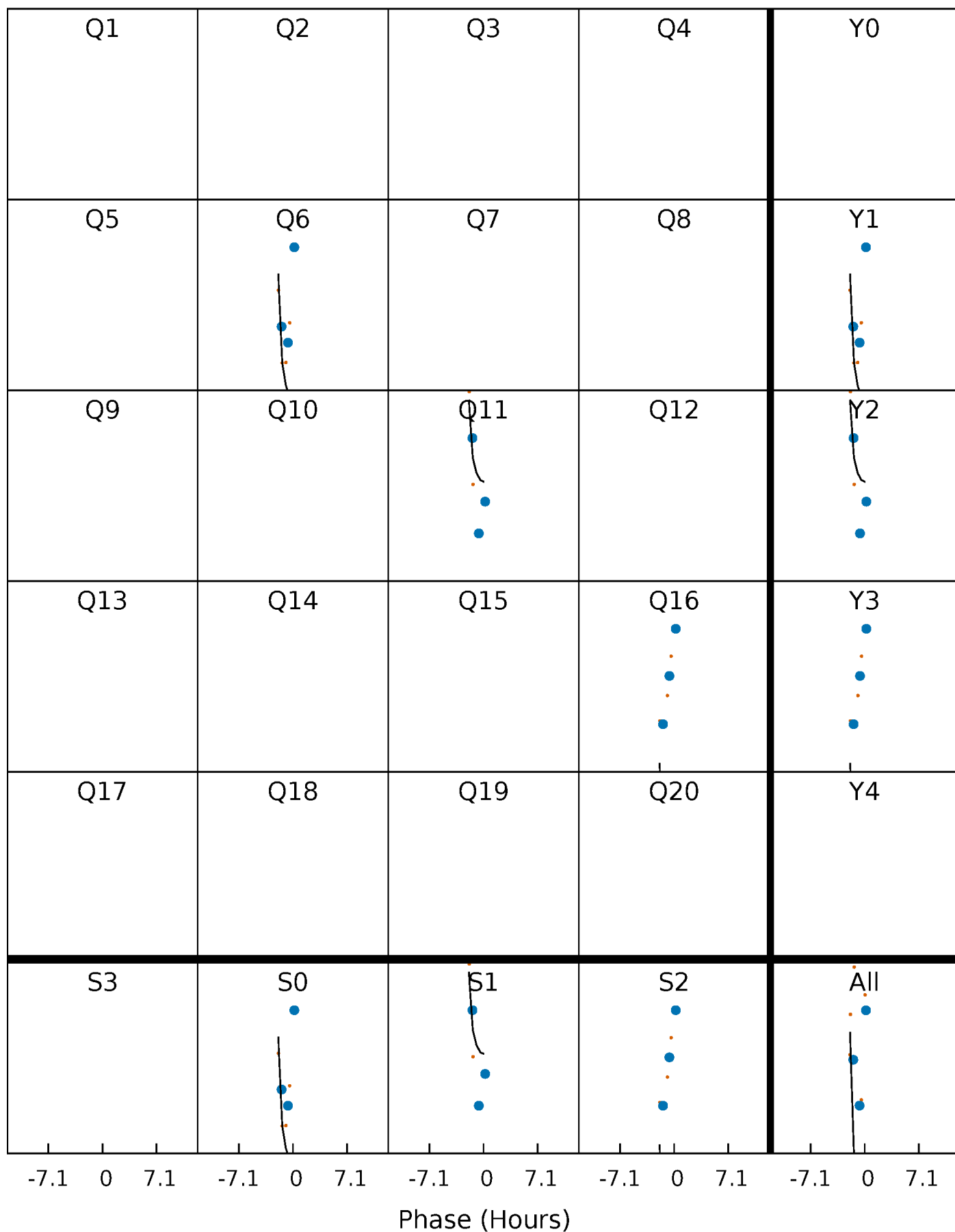
# PDC Quarter-Phased Transit Curves

TCE 011623878-04 P=458.506766 Days  $T_0=578.966686$  (BKJD)



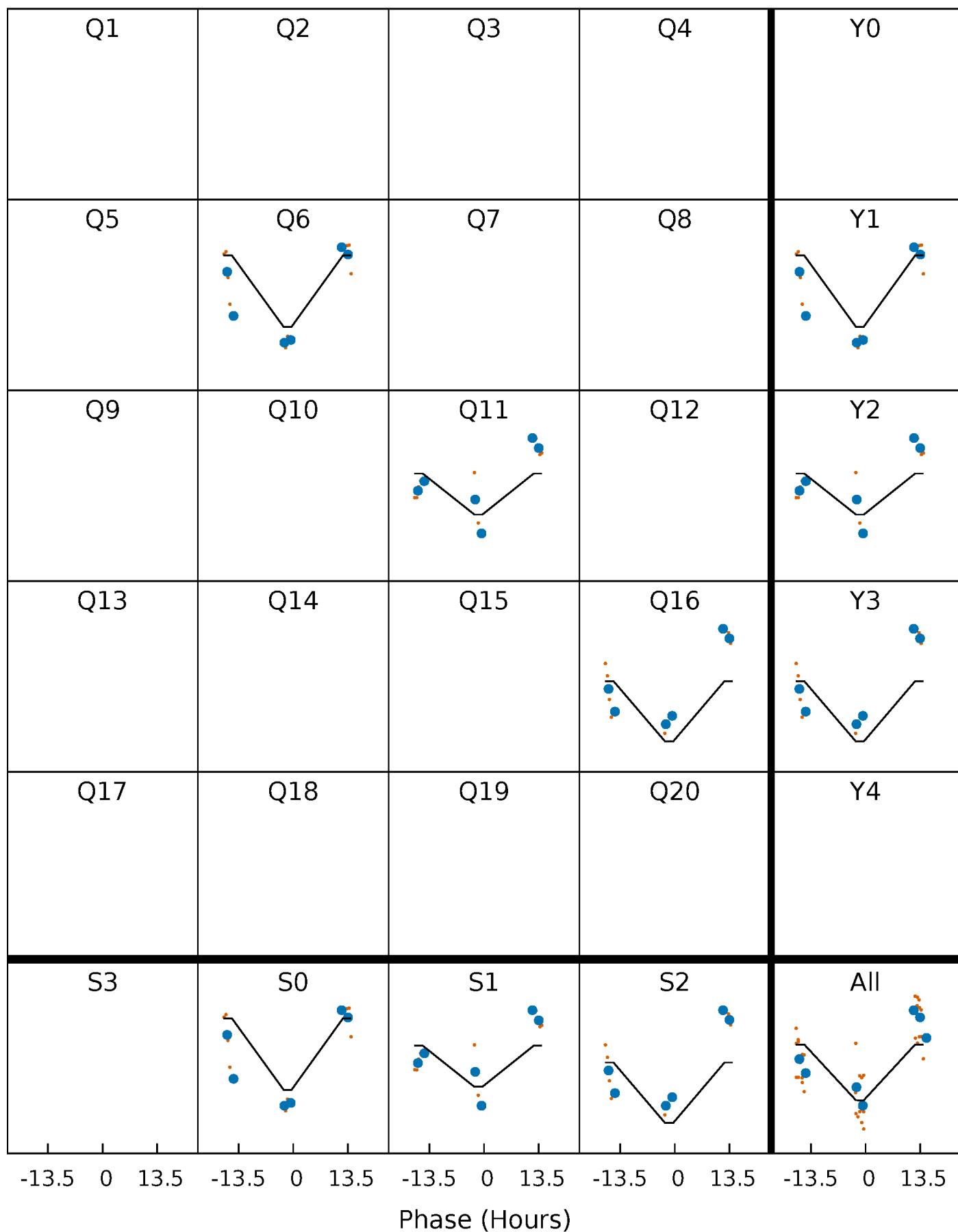
# DV Quarter-Phased Transit Curves

TCE 011623878-04 P=458.506766 Days  $T_0=578.966686$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

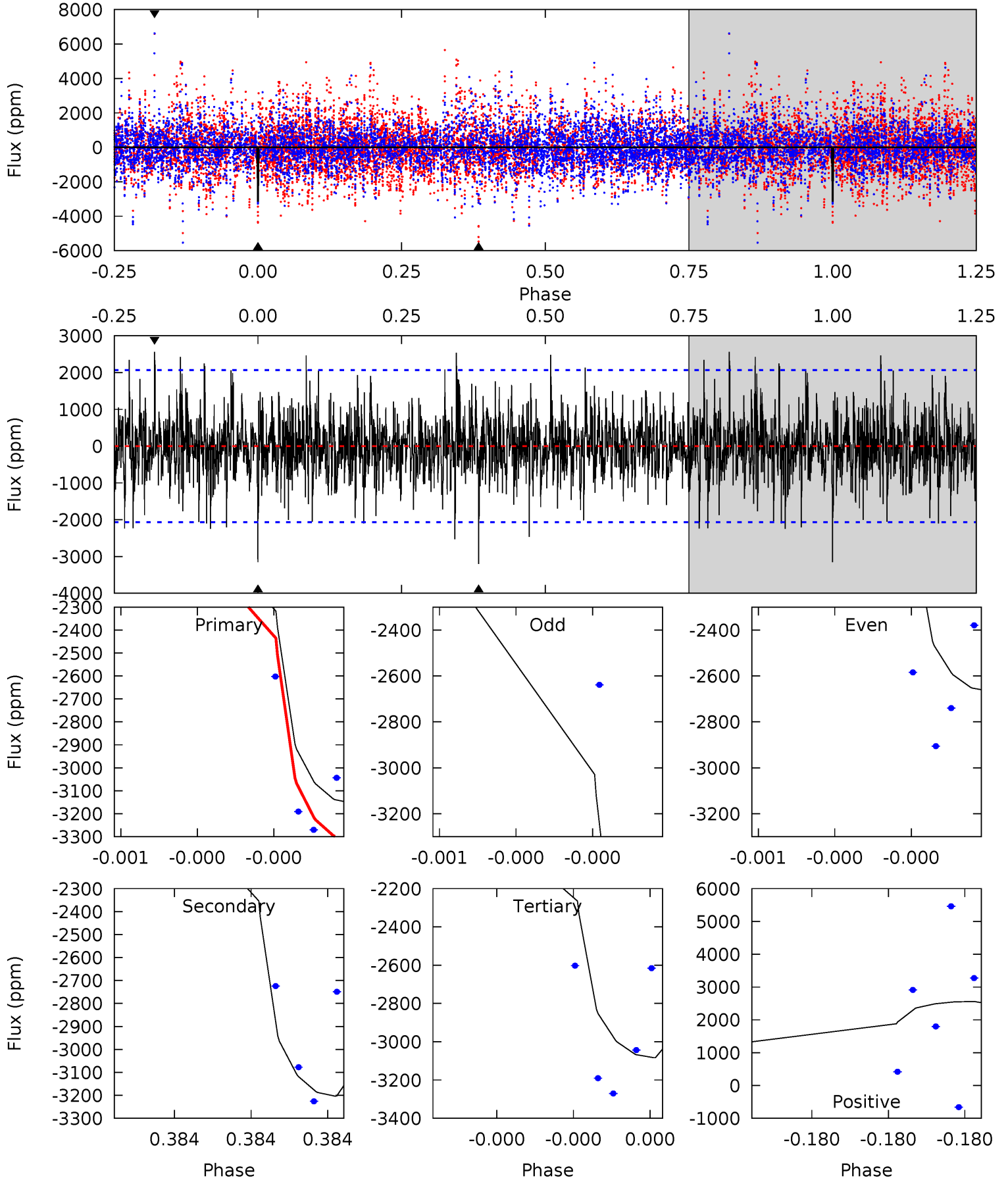
TCE 011623878-04 P=458.508653 Days  $T_0=578.986514$  (BKJD)



# DV Model-Shift Uniqueness Test

011623878-04, P = 458.506766 Days, E = 120.459920 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 8.76 | 8.90 | 8.56 | 7.11 | 5.75            | 3.75            | 1.81             | 0.20    | 1.65    | 0.33    | 1.79    | 1.91    | 0.96 | 0.44  | 0.70 |

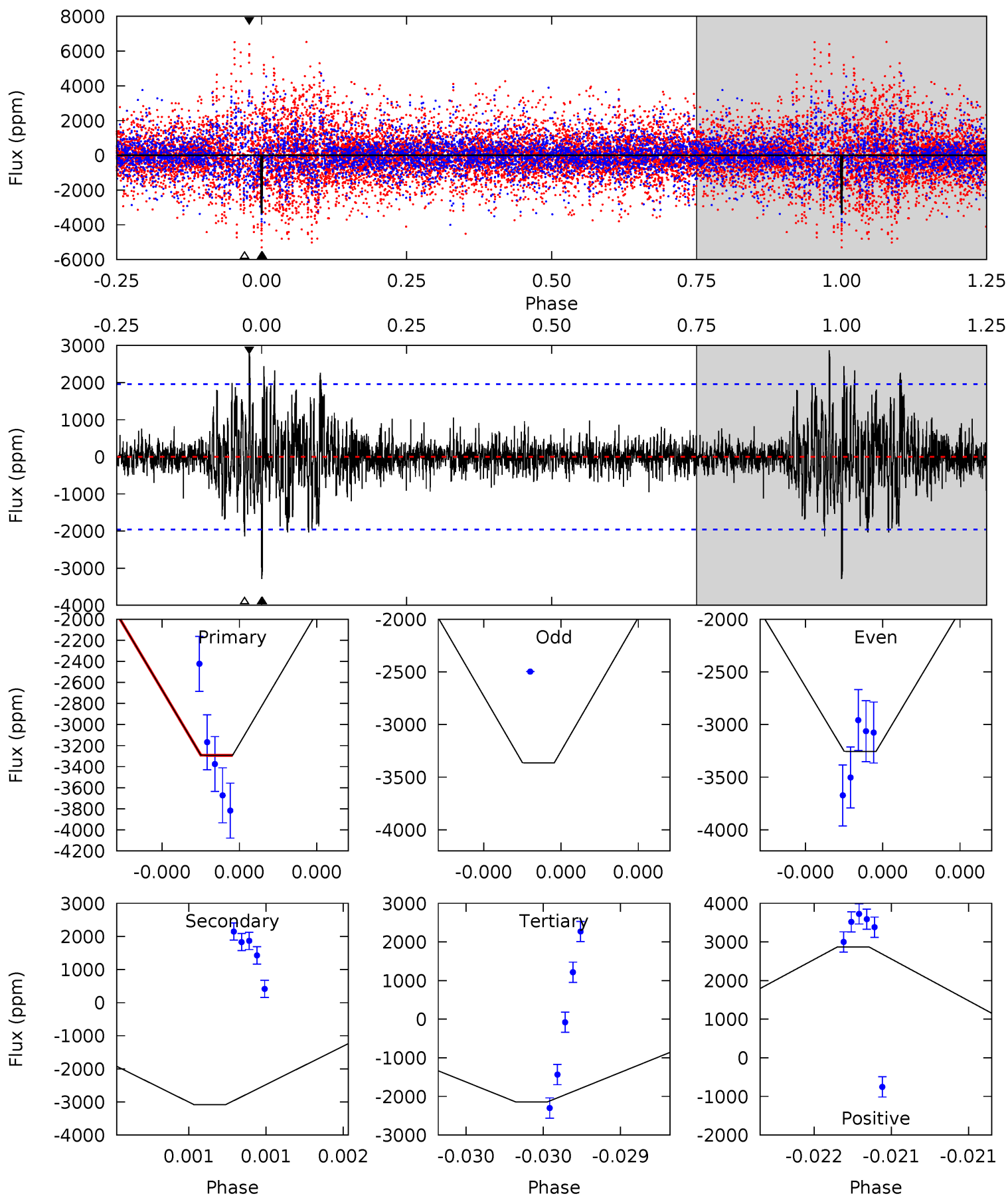




# Alt Model-Shift Uniqueness Test

011623878-04, P = 458.508653 Days, E = 120.477861 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 9.41 | 8.81 | 6.12 | 8.21 | 5.60            | 3.52            | 1.36             | 3.29    | 1.20    | 2.69    | 0.61    | 0.14    | 0   | 0.47  | 0   |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                 |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                |
| 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 011623878-04 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$      | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$          |
|---------|-----------------|-------------------------|----------------------|----------------------|---------------------------|
| DV      | $-3203 \pm 360$ | $11.70^{+3.02}_{-2.56}$ | $469^{+36}_{-36}$    | $6177^{+739}_{-534}$ | $20810^{+13239}_{-7546}$  |
| Alt.    | $-3084 \pm 350$ | $10.43^{+3.05}_{-2.41}$ | $466^{+34}_{-35}$    | $6454^{+843}_{-665}$ | $25439^{+15751}_{-10638}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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

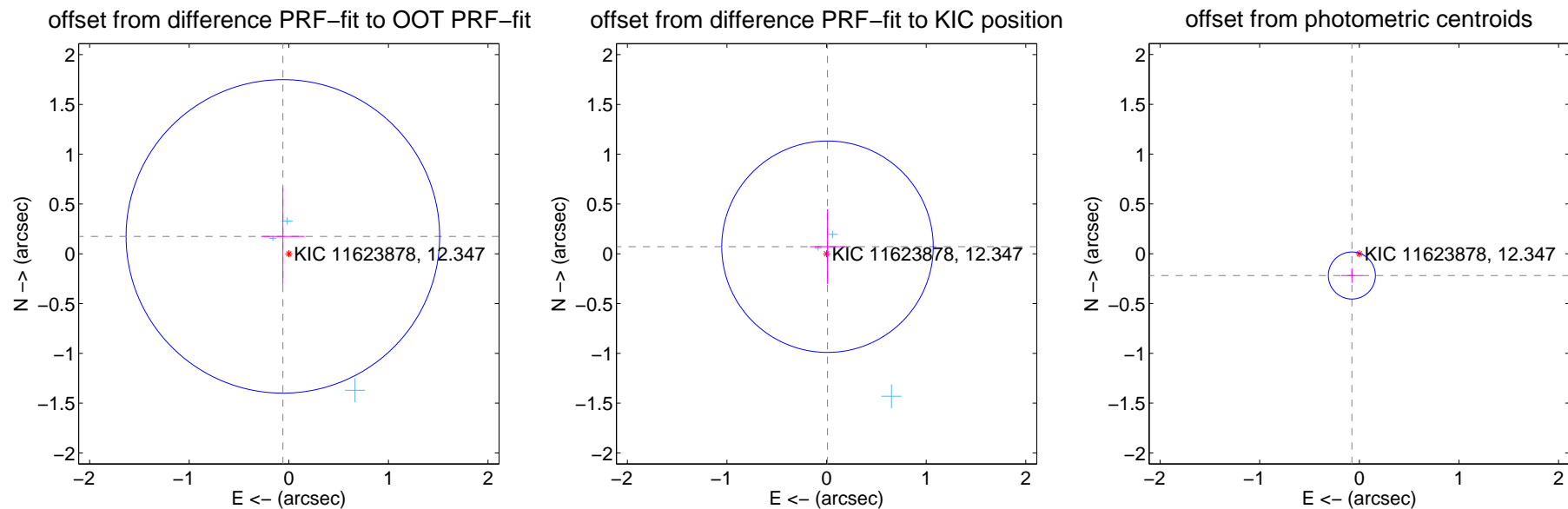
## DV Centroid Data

Supplemental centroid analysis for 011623878-04. Kepler magnitude: 12.35. Transit SNR 8.49

There are 3 quarters with good PRF difference image offsets

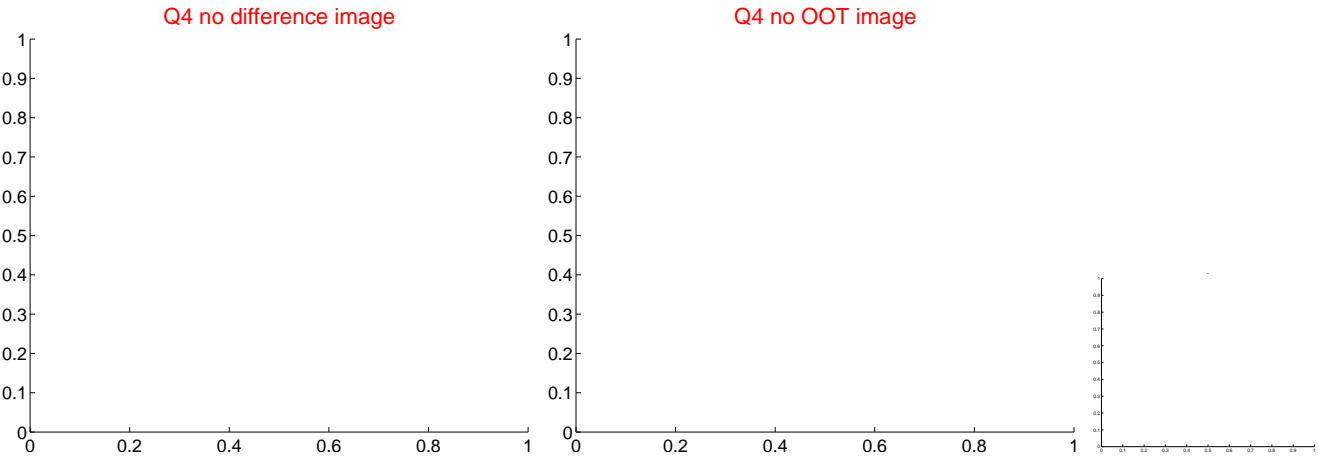
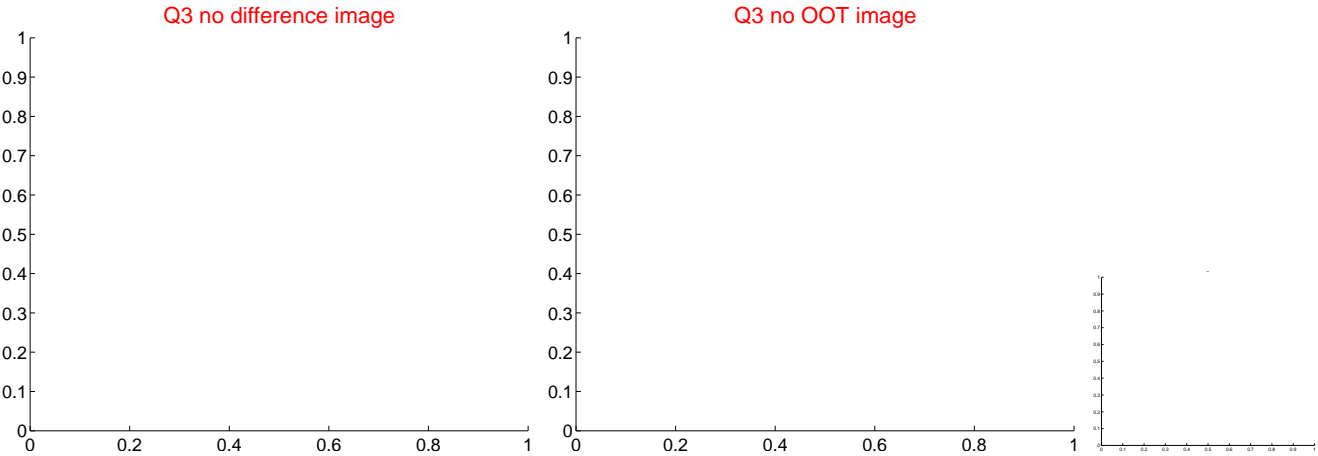
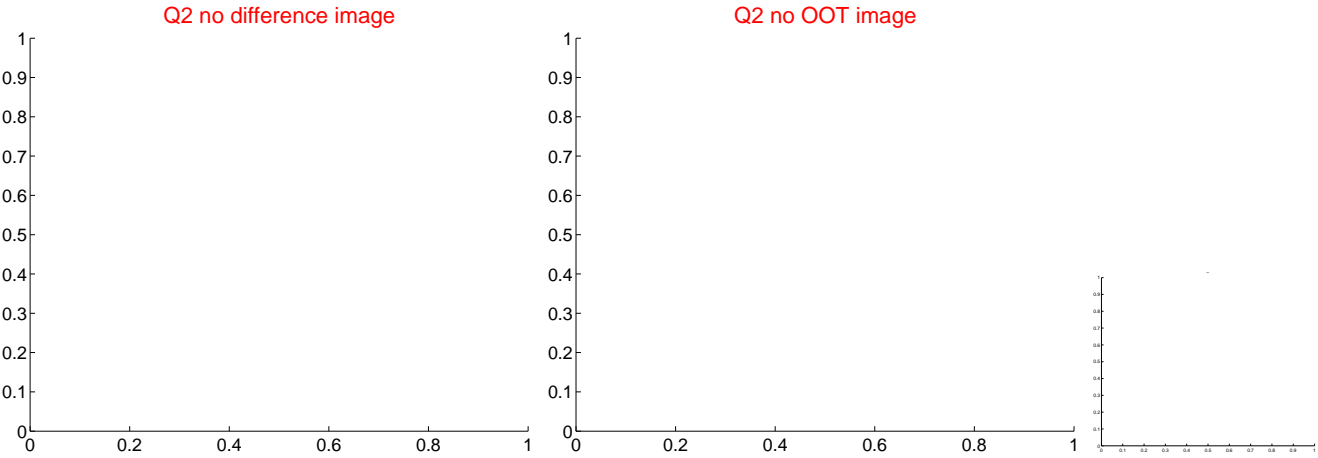
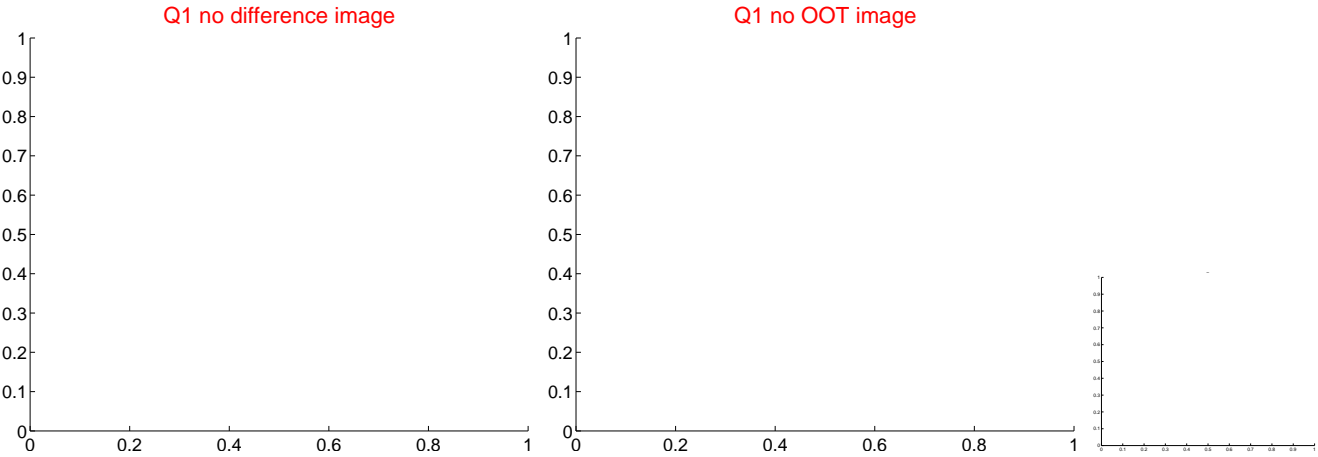
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.185 \pm 0.525$  | 0.35                | $0.060 \pm 0.217$  | $0.175 \pm 0.485$ |
| PRF-fit source offset from KIC position | $0.072 \pm 0.354$  | 0.20                | $-0.009 \pm 0.177$ | $0.071 \pm 0.376$ |
| photometric centroid source offset      | $0.23 \pm 0.08$    | 2.94                | $0.07 \pm 0.11$    | $-0.22 \pm 0.07$  |

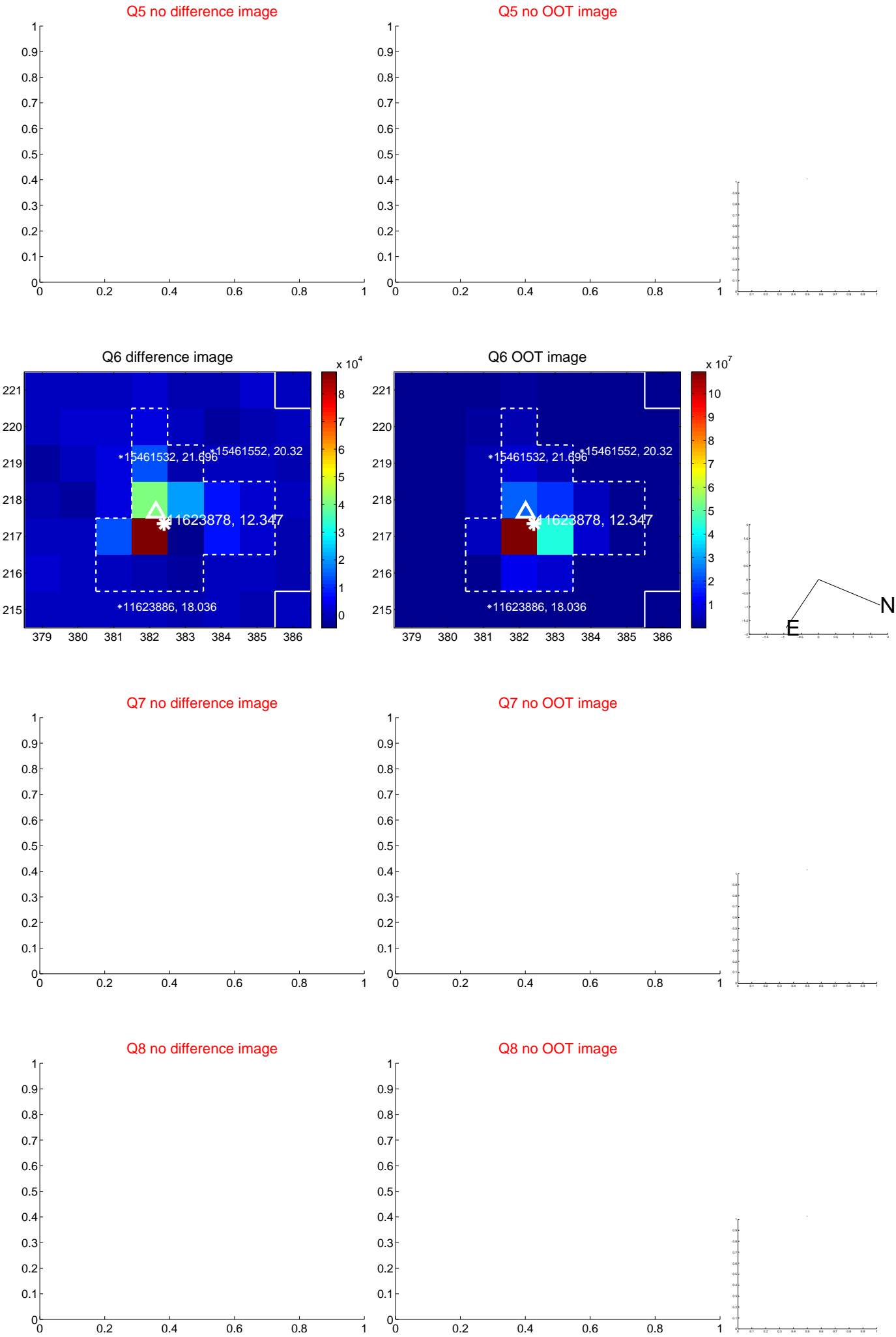


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

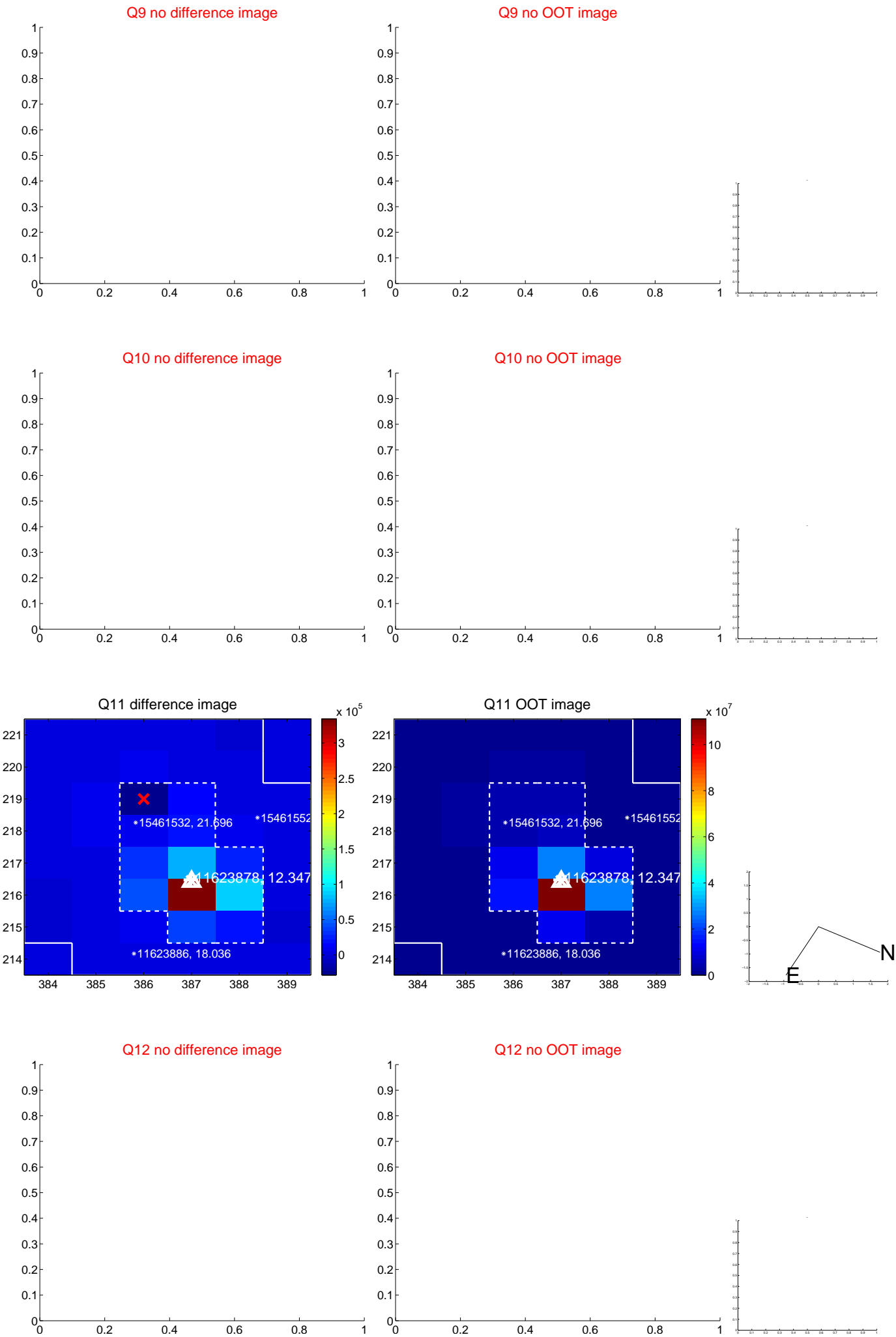
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

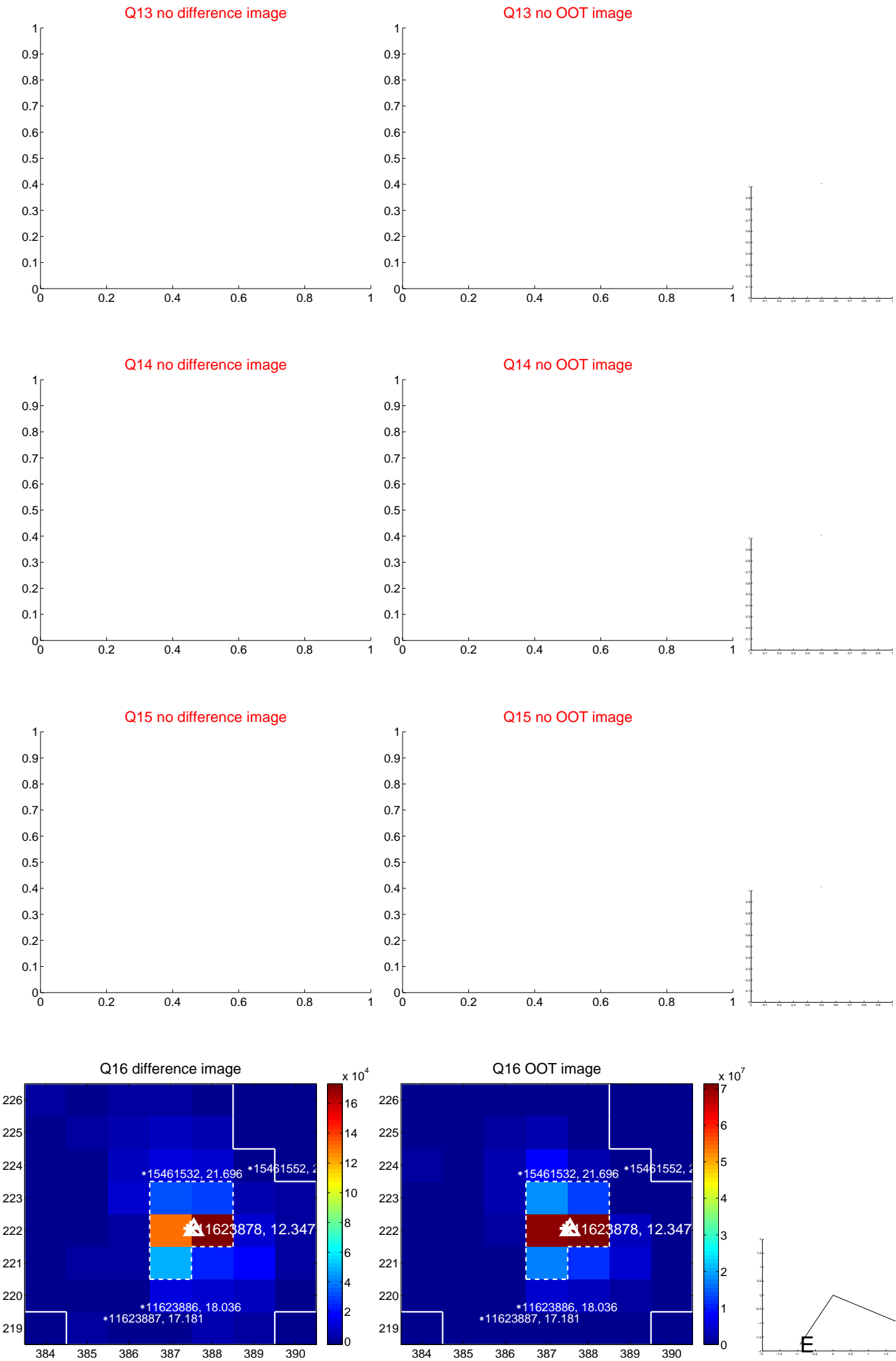


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

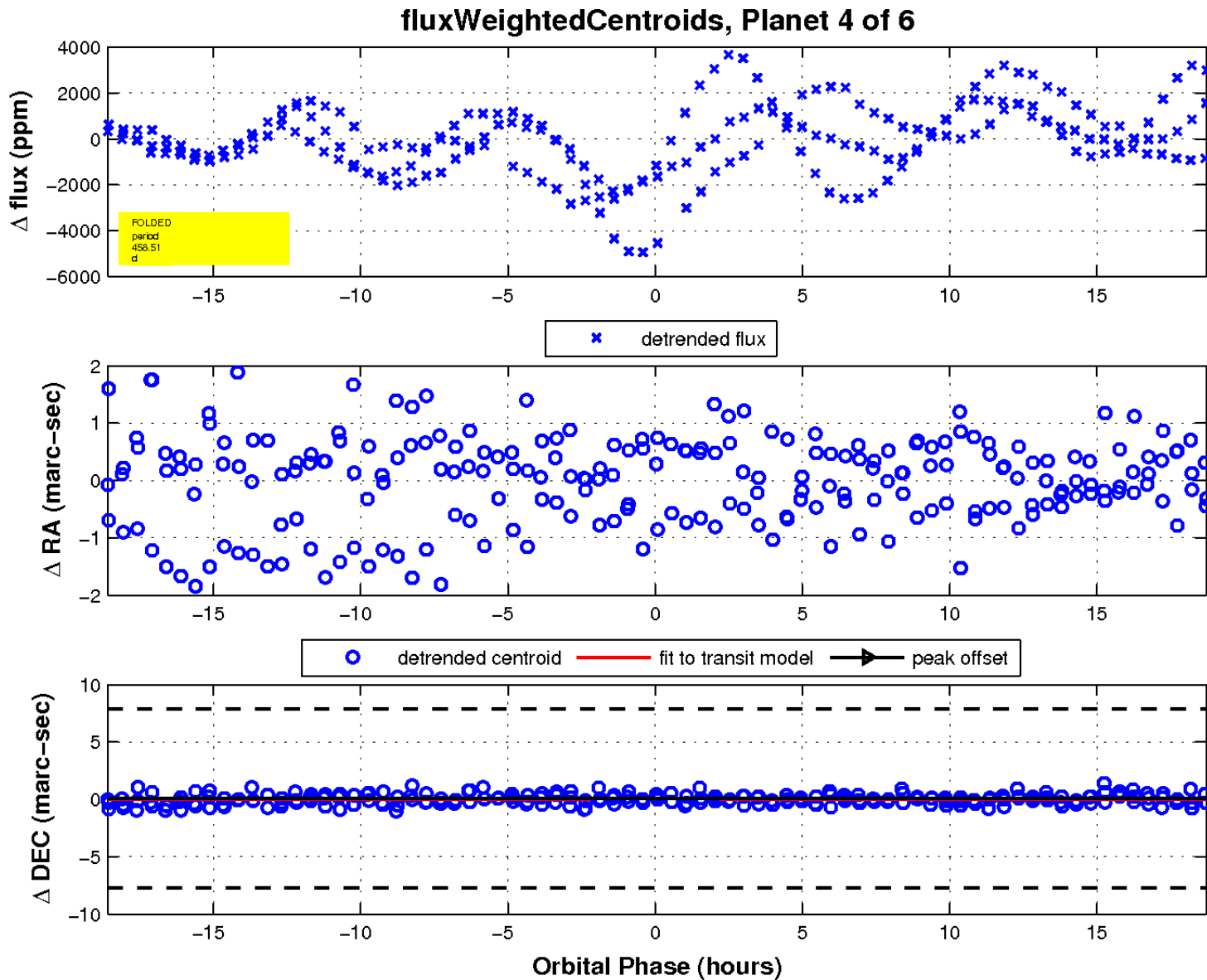
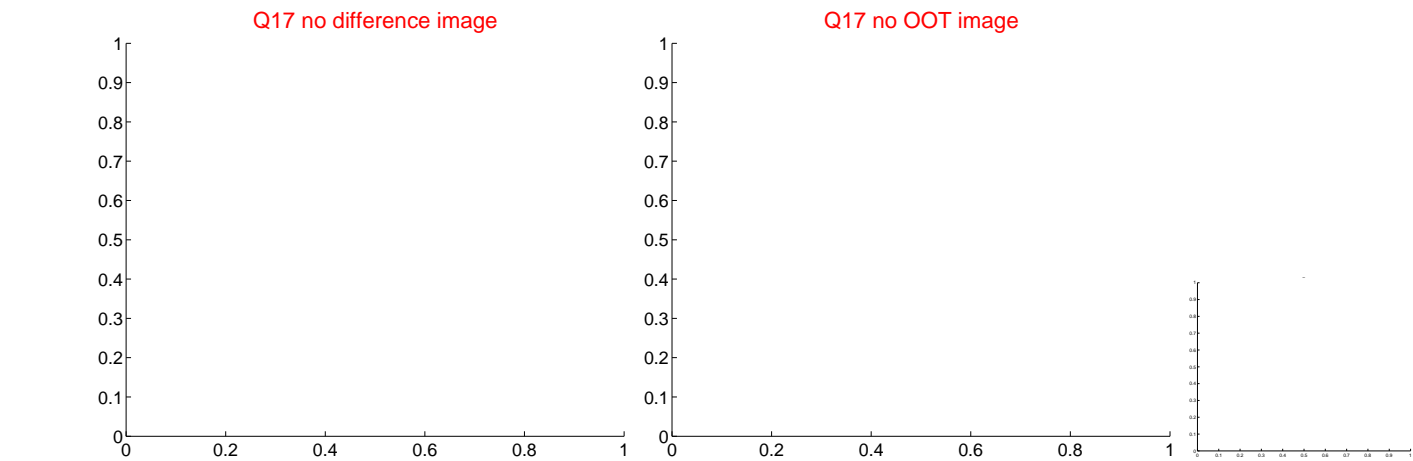




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

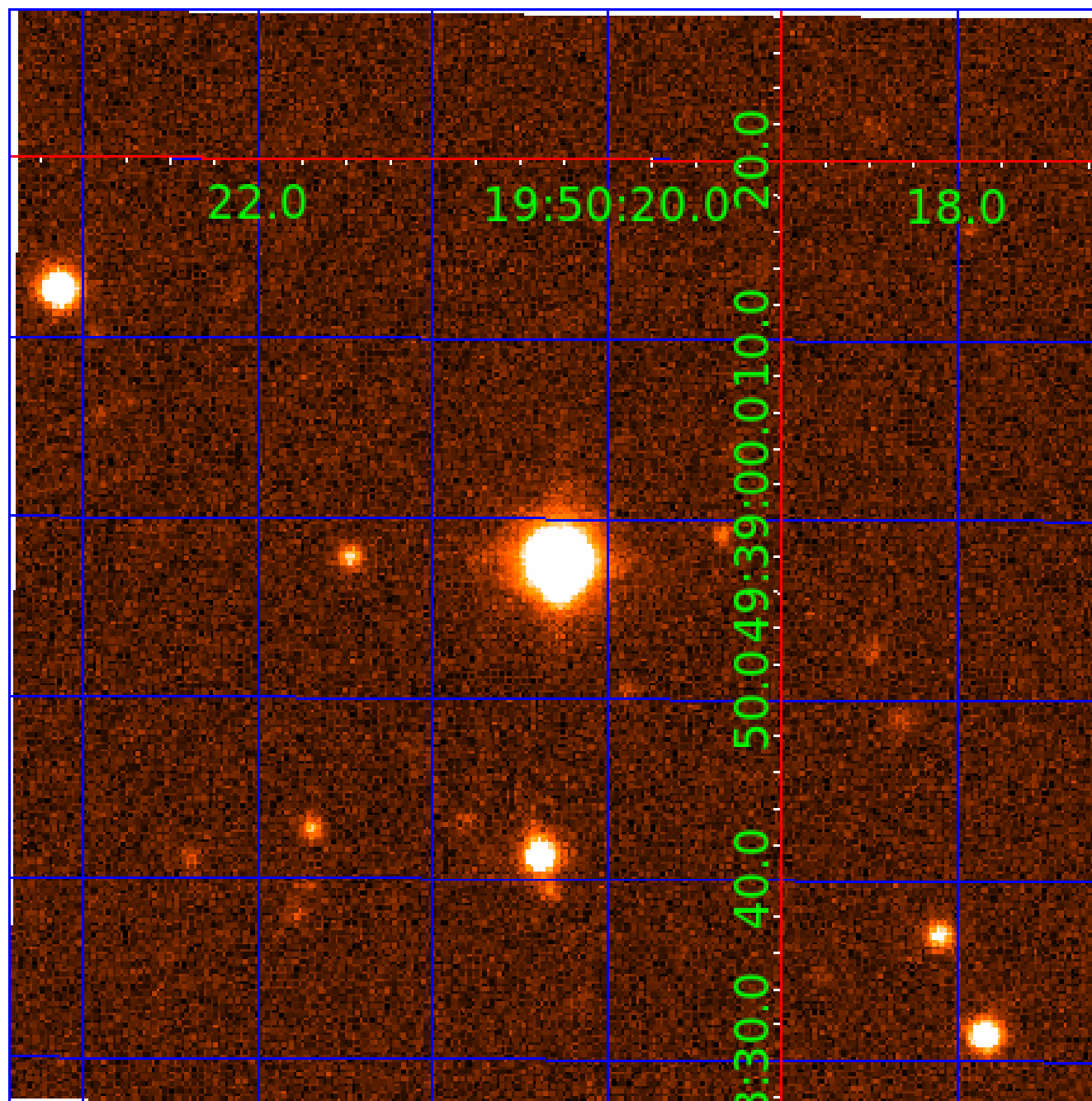


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST |

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

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

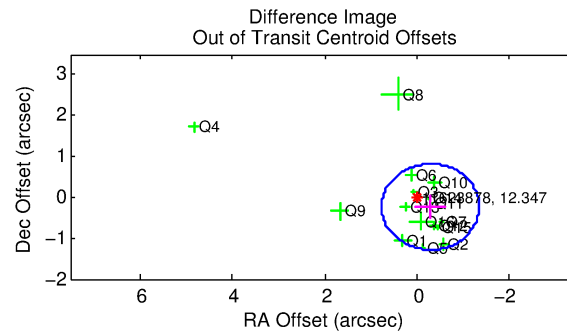
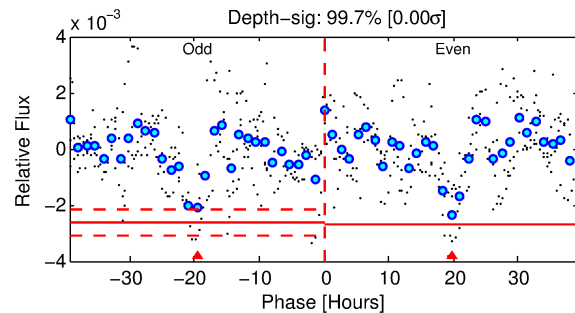
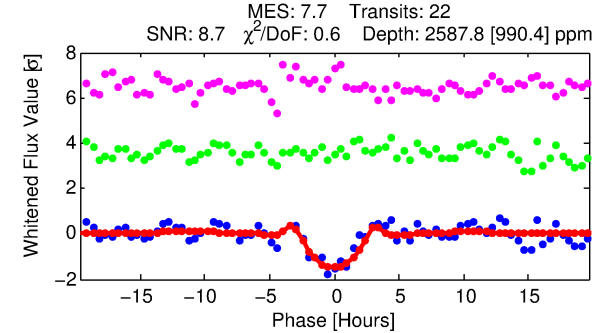
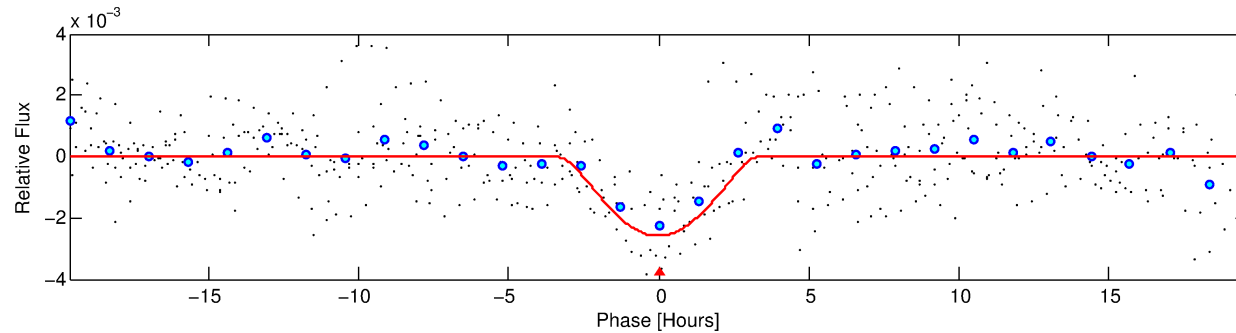
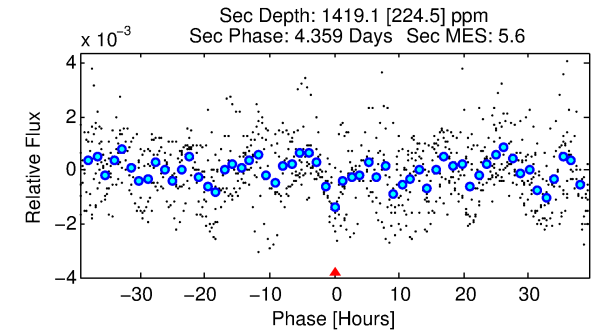
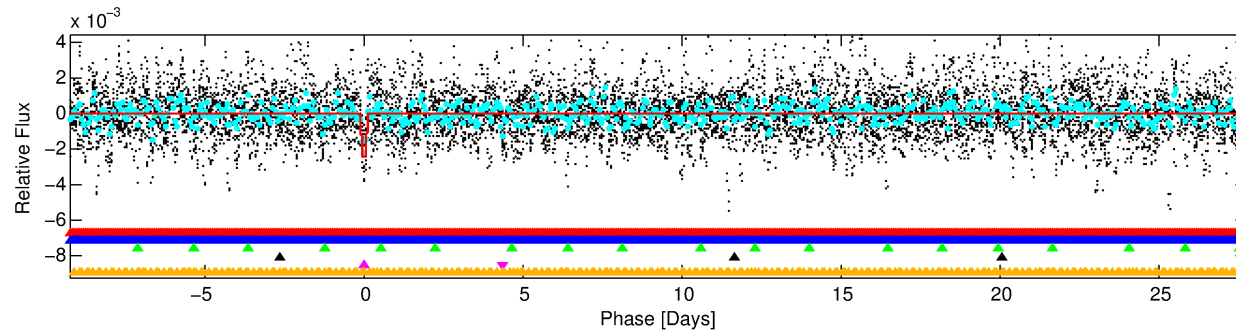
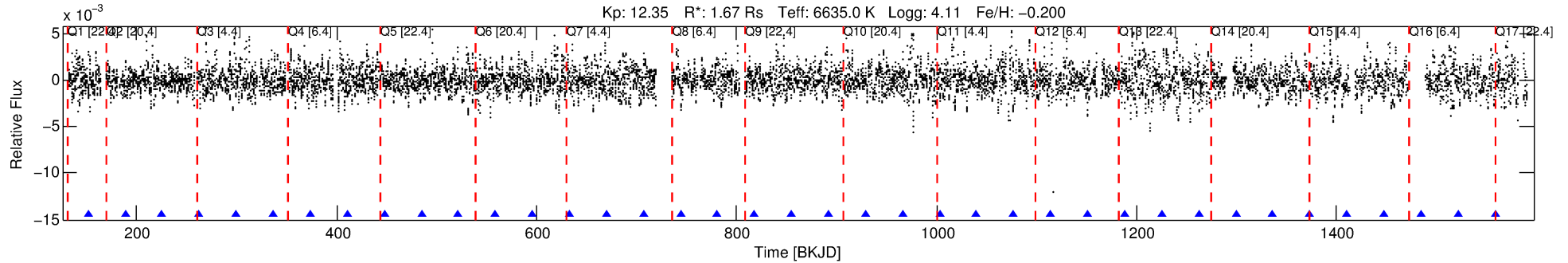
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011623878-05

No Significant Match Found

# DV One-Page Summary

KIC: 11623878 Candidate: 5 of 6 Period: 37.017 d



## DV Fit Results:

Period = 37.01742 [0.00056] d  
Epoch = 151.7129 [0.0092] BKJD  
Rp/R\* = 0.0853 [0.1184]  
a/R\* = 18.22 [5.13]  
b = 1.00 [0.19]  
Seff = 85.41 [34.82]  
Teq = 775 [79] K  
Rp = 15.51 [21.96] Re  
a = 0.2375 [0.0599] AU  
Ag = 183.04 [513.64] [0.35σ]  
Teffp = 4408 [3067] K [1.18σ]

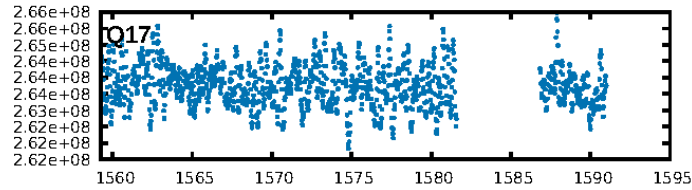
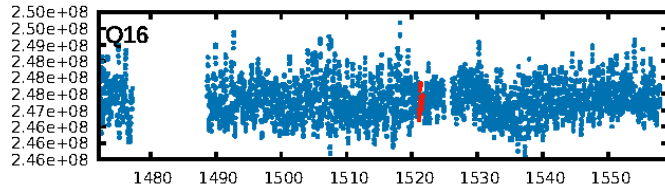
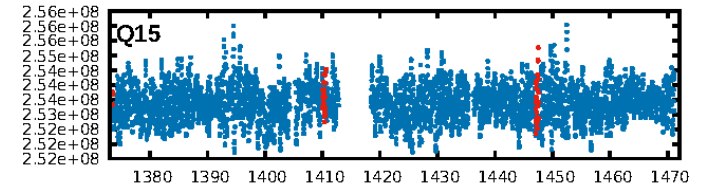
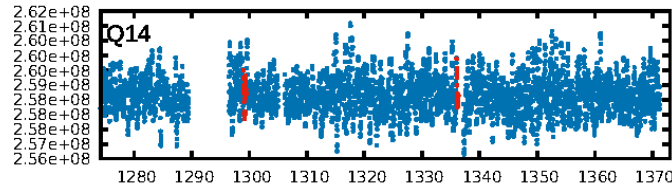
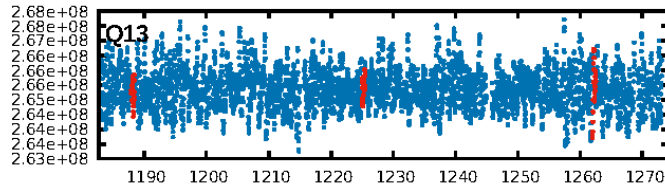
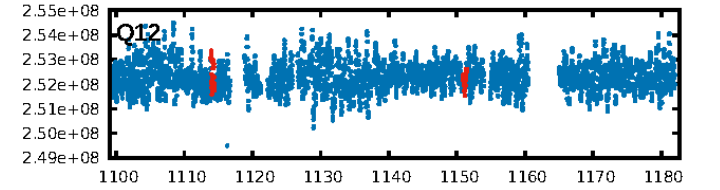
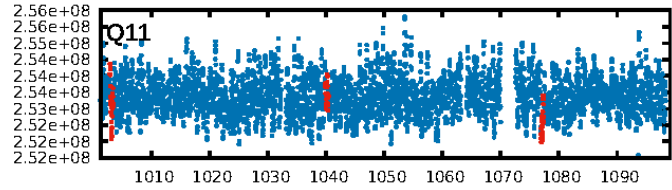
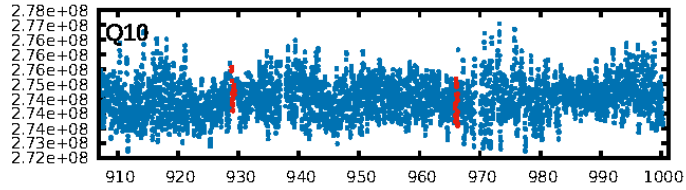
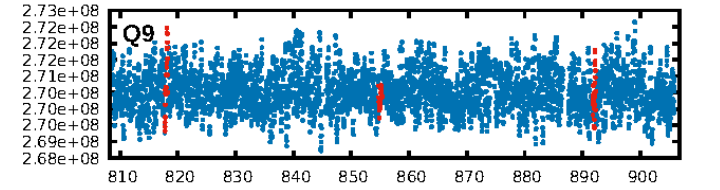
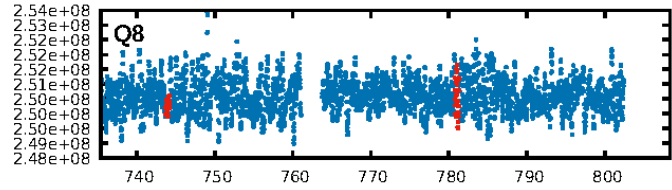
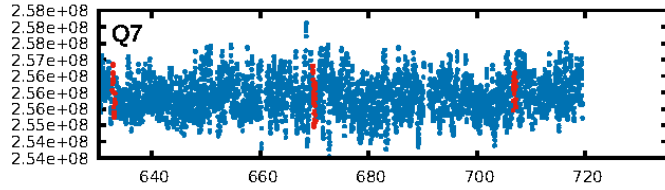
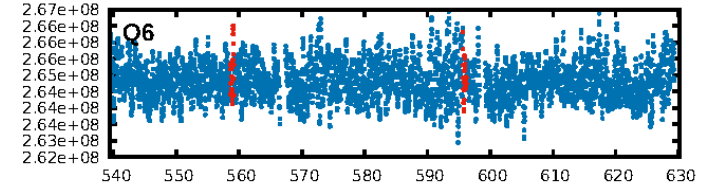
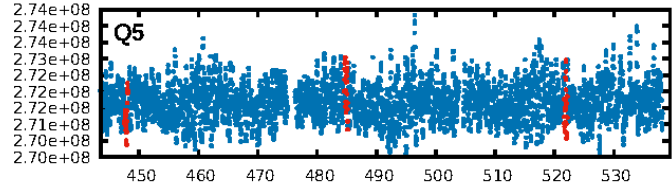
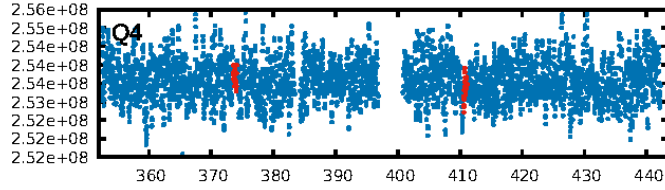
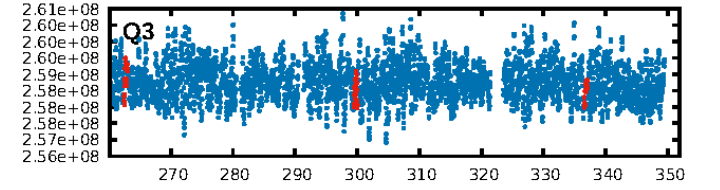
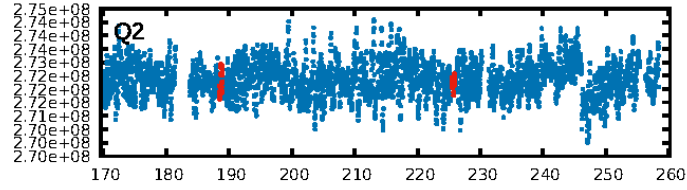
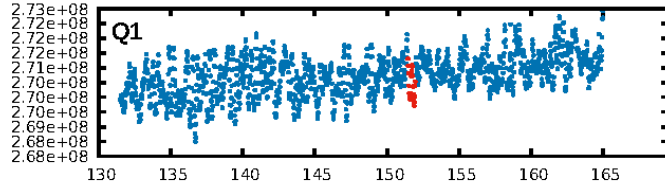
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.49σ]  
LongPeriod-sig: 100.0% [126.11σ]  
ModelChiSquare2-sig: 77.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [21/21]  
GhostDiagnostic-chr: 0.5902  
Centroid-sig: N/A  
Centroid-so: 0.237 arcsec [6.19σ]  
OotOffset-rm: 0.368 arcsec [1.05σ]  
KicOffset-rm: 0.502 arcsec [1.47σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.62 [10/16]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:14:16 Z

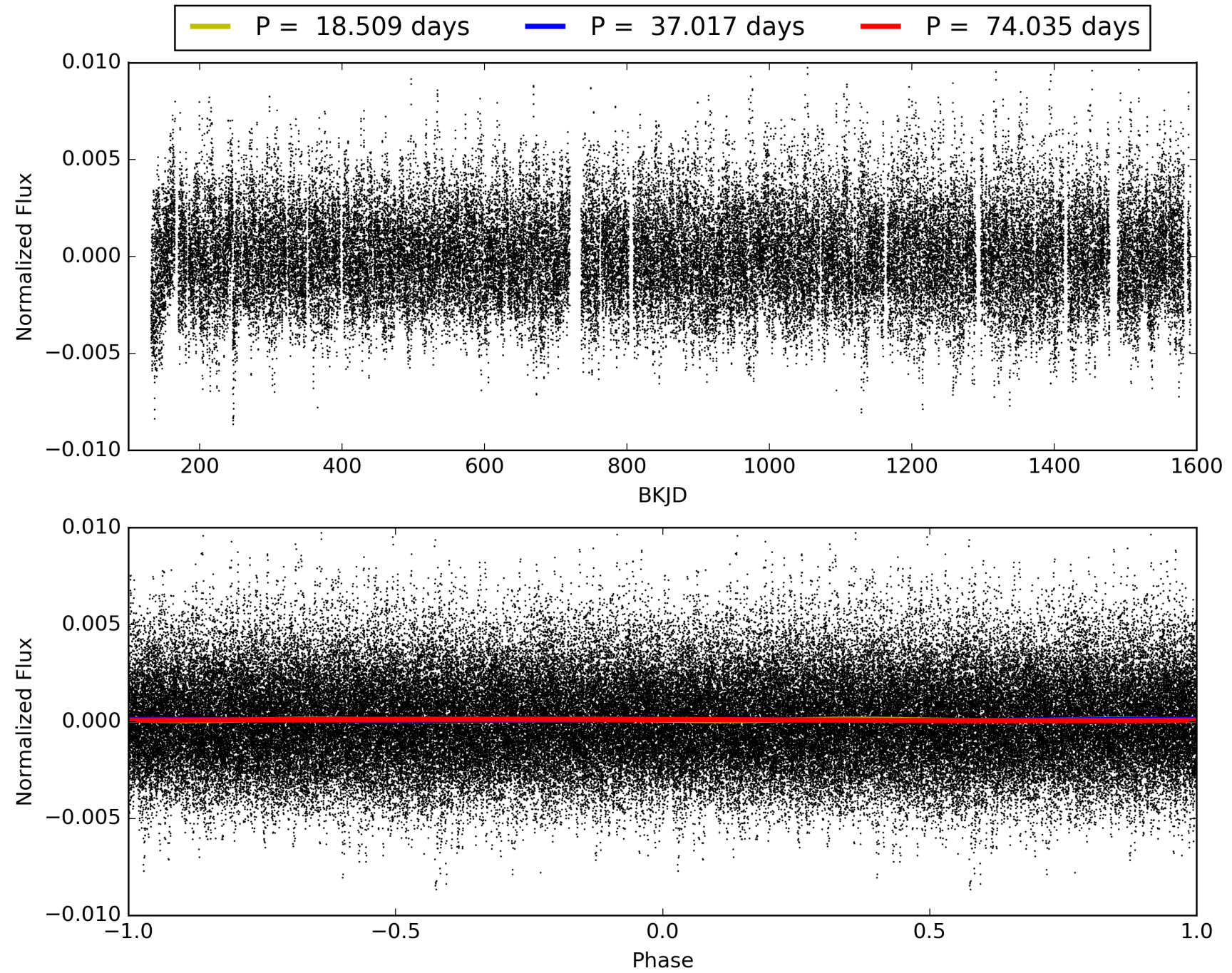
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011623878-05, PDC Light Curves



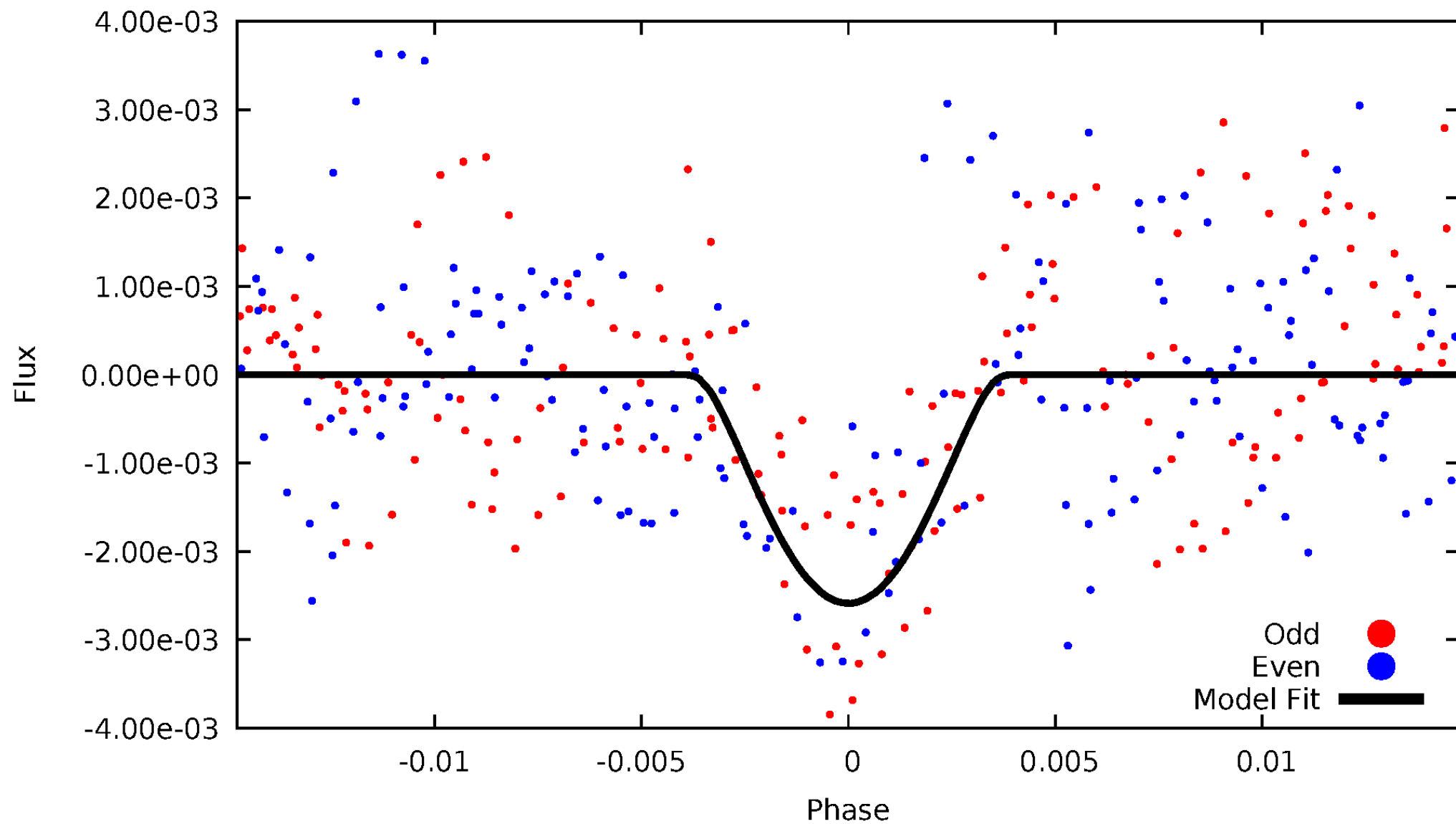


TCE 011623878-05



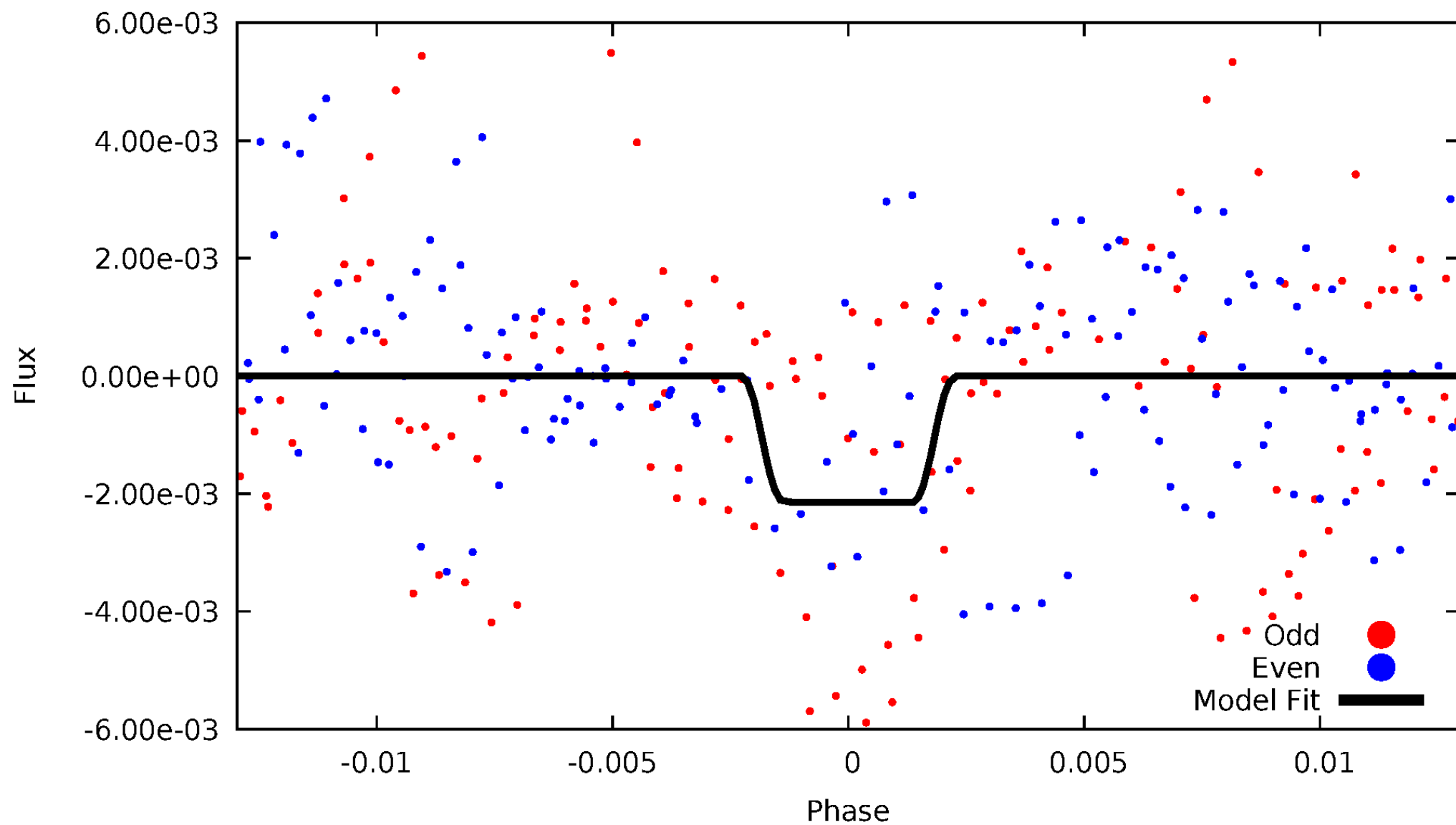
# DV Odd/Even

TCE 011623878-05

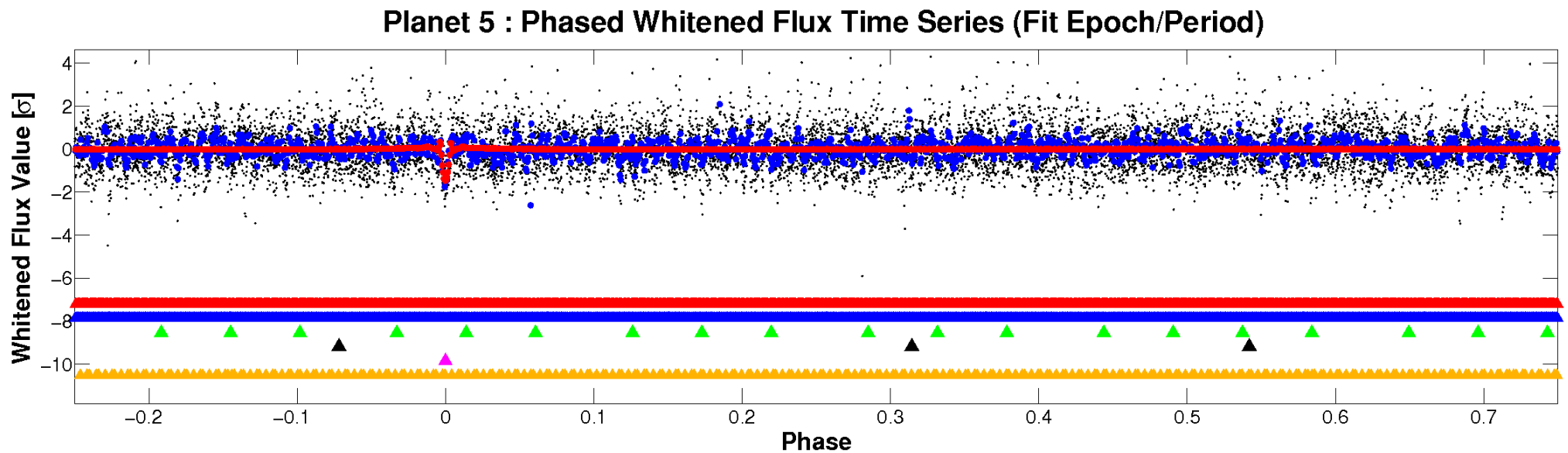
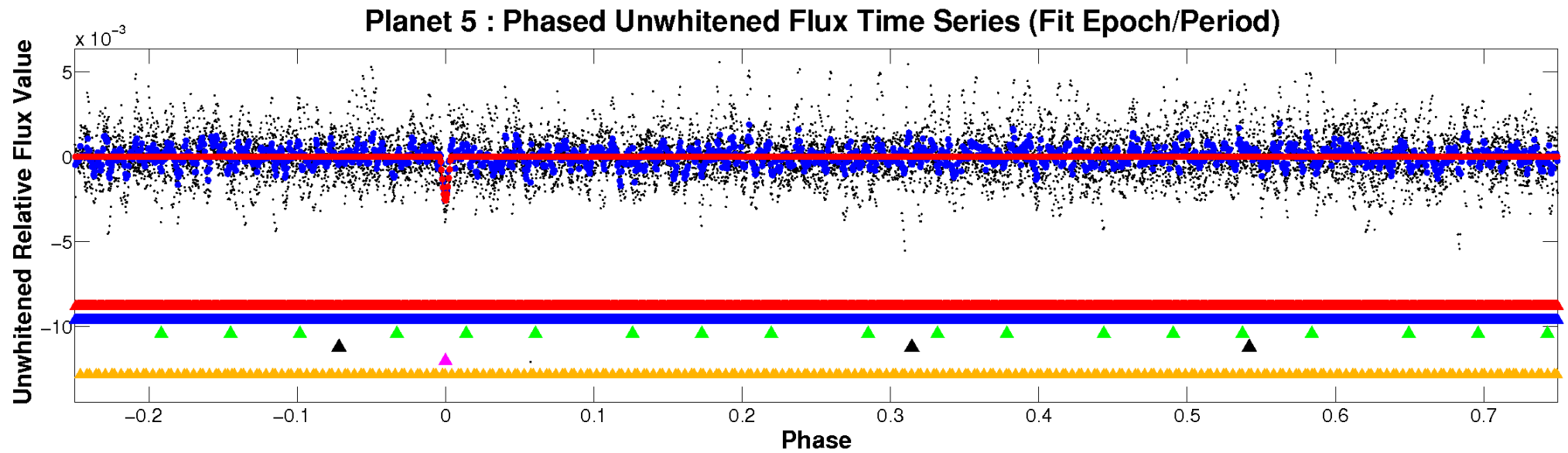


# ALT Odd/Even

TCE 011623878-05

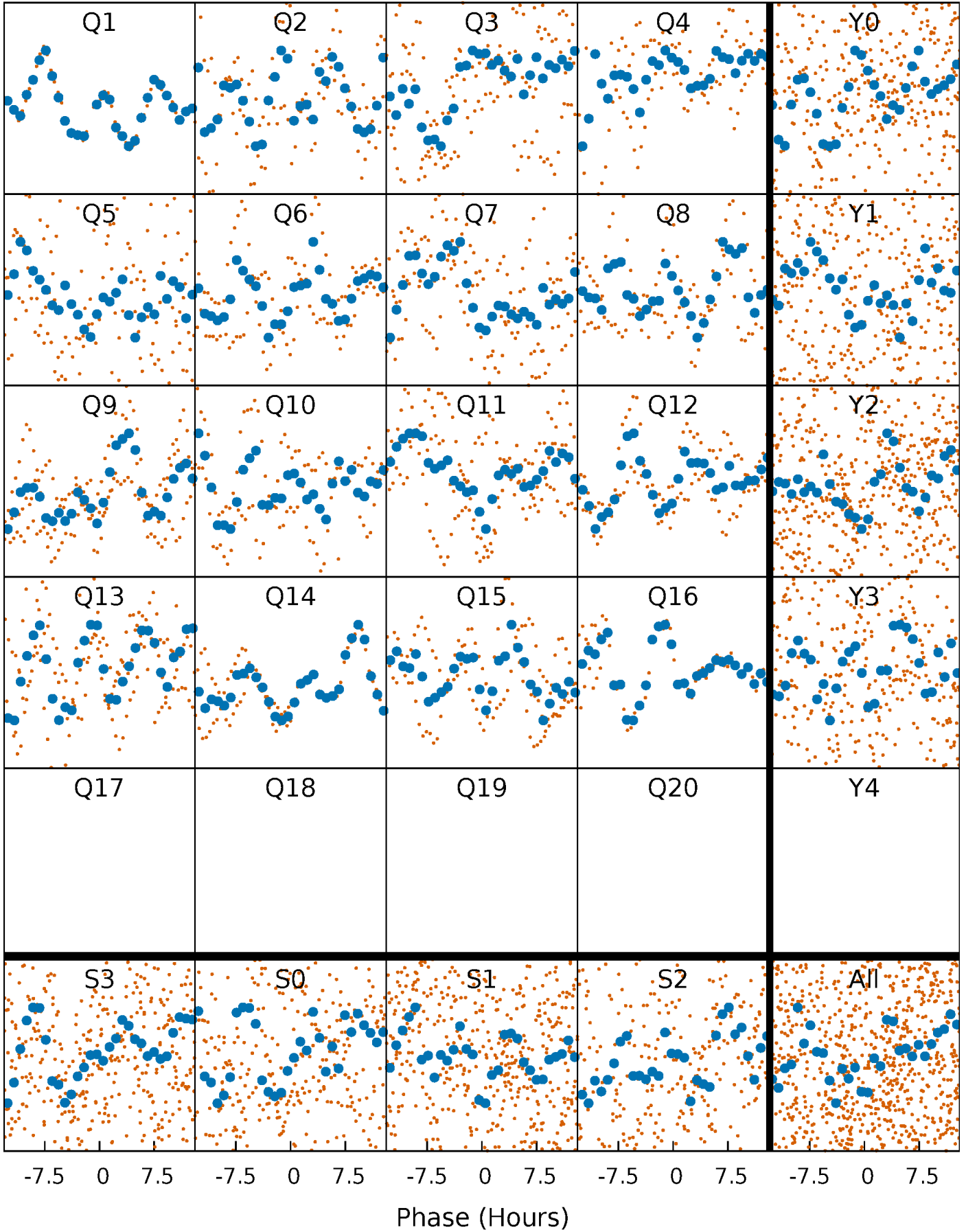


# Non-Whitened Vs. Whitened Light Curve



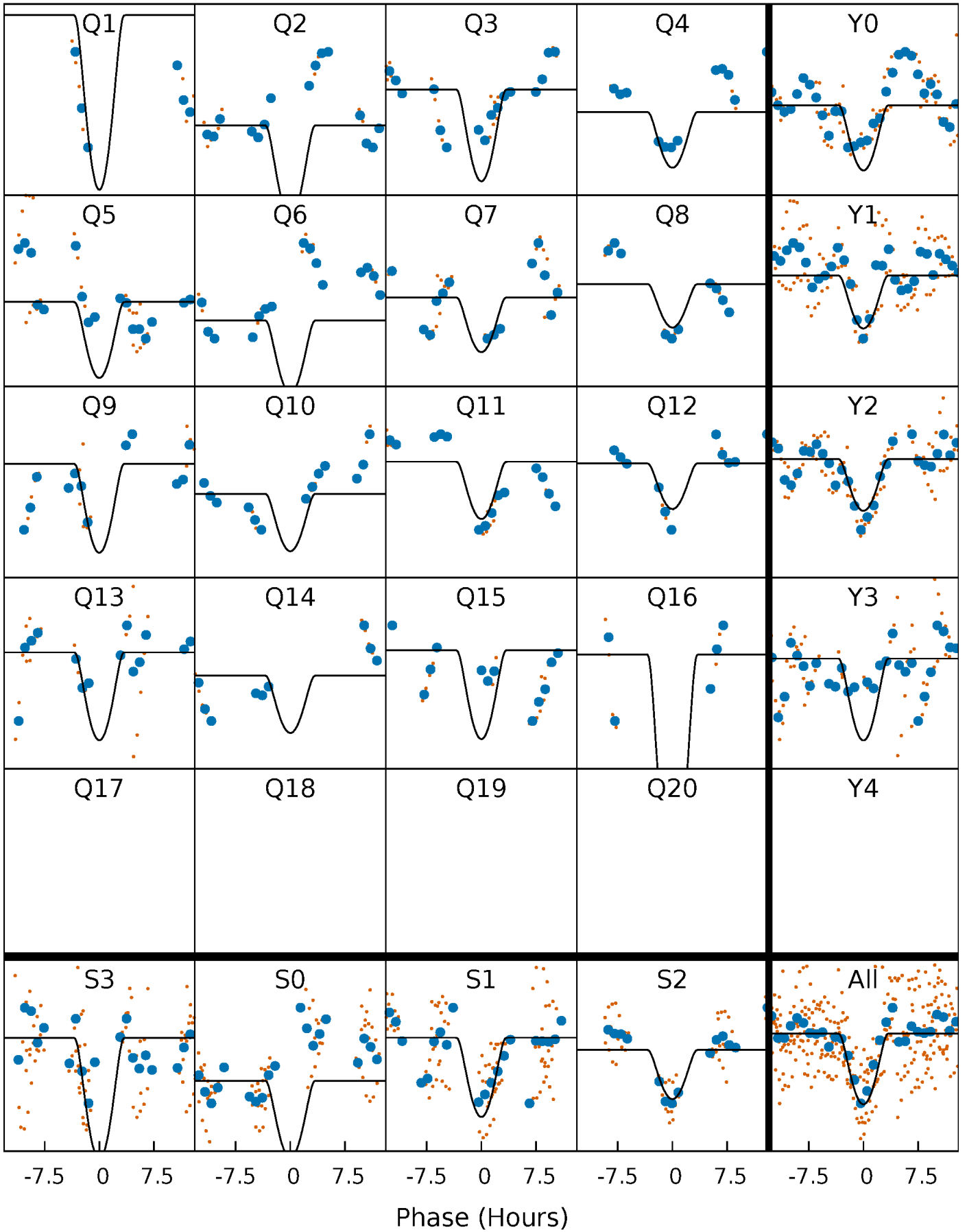
# PDC Quarter-Phased Transit Curves

TCE 011623878-05     $P = 37.017418$  Days     $T_0 = 151.712897$  (BKJD)



# DV Quarter-Phased Transit Curves

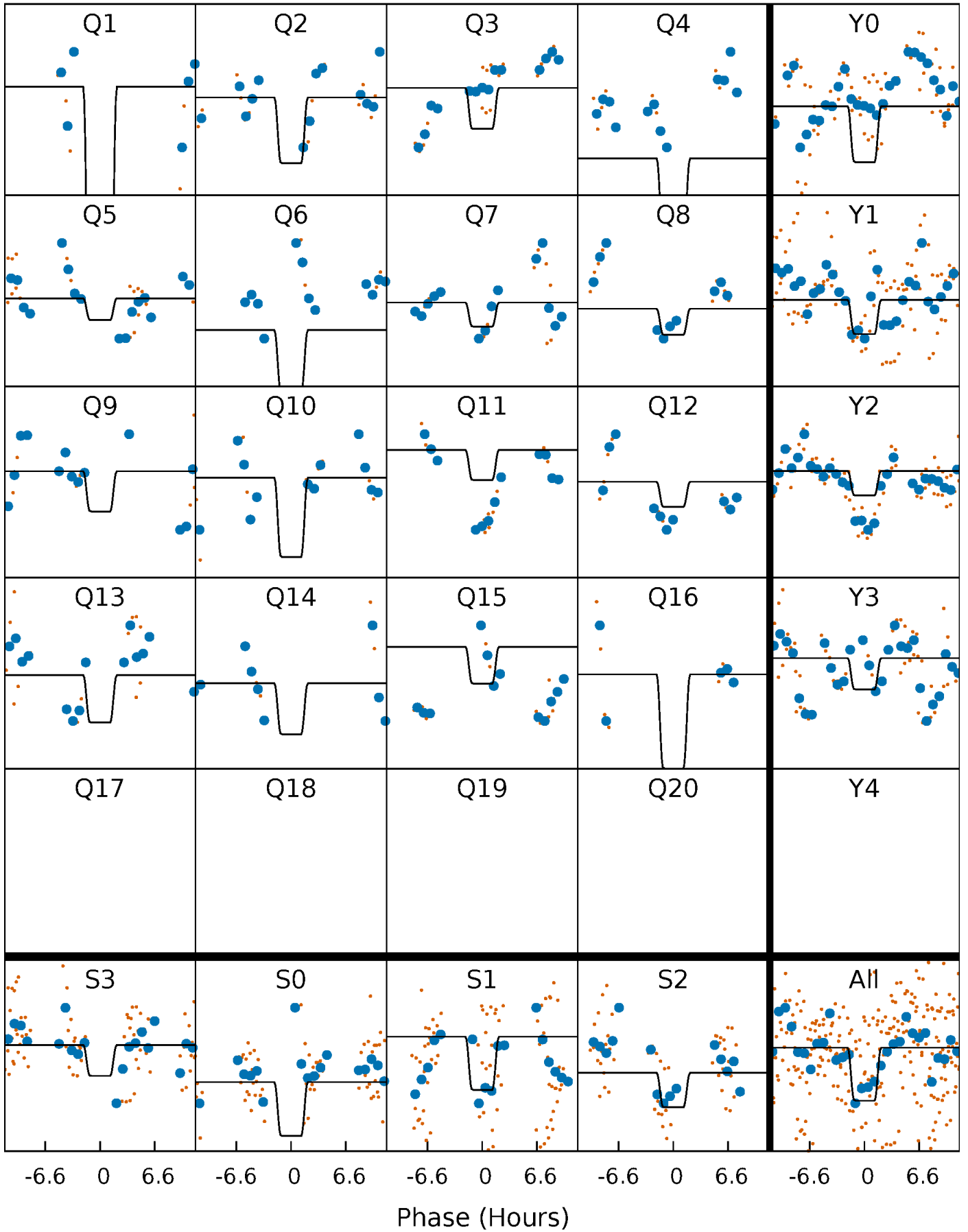
TCE 011623878-05   P= 37.017418 Days    $T_0=151.712897$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

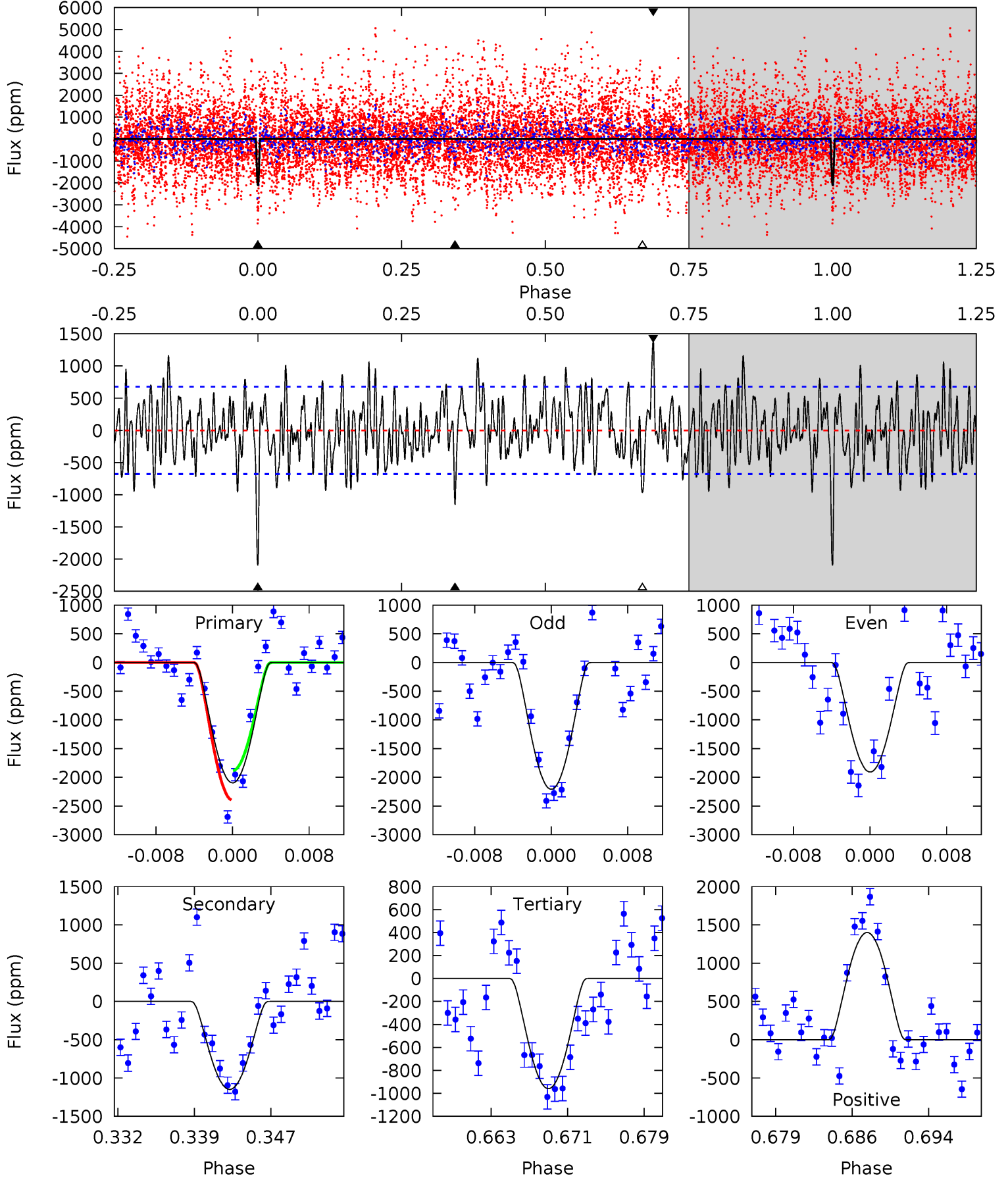
TCE 011623878-05     $P = 37.015947$  Days     $T_0 = 151.768915$  (BKJD)



# DV Model-Shift Uniqueness Test

011623878-05, P = 37.017418 Days, E = 114.695479 Days

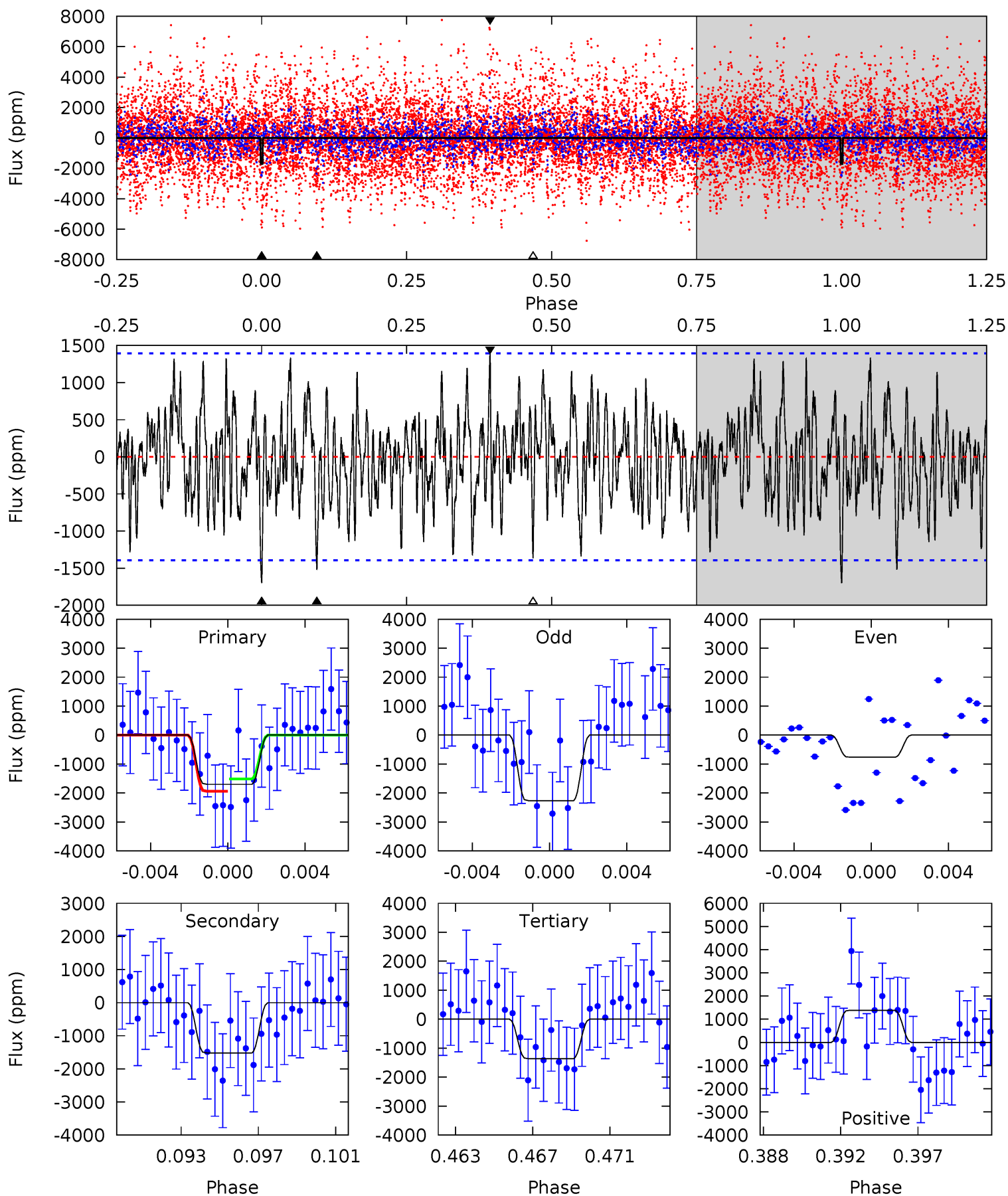
| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 15.7 | 8.59 | 7.18 | 10.5 | 5.08            | 2.66            | 2.96             | 8.51    | 5.21    | 1.42    | -1.88   | 1.09    | 0.31 | 0.40  | 1.92 |



# Alt Model-Shift Uniqueness Test

011623878-05,  $P = 37.015947$  Days,  $E = 114.752968$  Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.32 | 5.65 | 5.07 | 5.14 | 5.18            | 2.85            | 1.88             | 1.25    | 1.17    | 0.58    | 0.51    | 2.65    | 1.11 | 0.45  | 0.79 |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                    |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                   |
| 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 011623878-05 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$        | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$  | $A_{\text{obs}}$     |
|---------|-----------------|---------------------------|----------------------|-----------------------|----------------------|
| DV      | $-1149 \pm 134$ | $21.68^{+17.71}_{-14.20}$ | $1081^{+81}_{-87}$   | $3874^{+2062}_{-706}$ | $75^{+555}_{-52}$    |
| Alt.    | $-1520 \pm 269$ | $17.50^{+17.64}_{-12.09}$ | $1081^{+78}_{-81}$   | $4362^{+3087}_{-916}$ | $151^{+1391}_{-114}$ |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

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

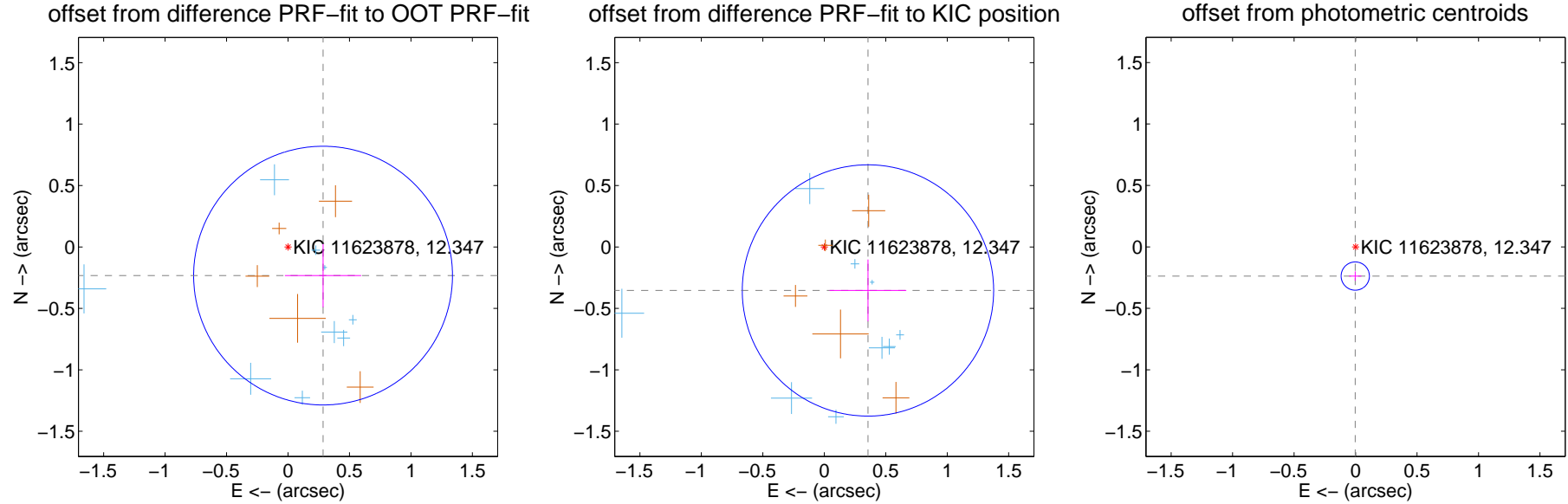
## DV Centroid Data

Supplemental centroid analysis for 011623878-05. Kepler magnitude: 12.35. Transit SNR 8.67

There are 10 quarters with good PRF difference image offsets

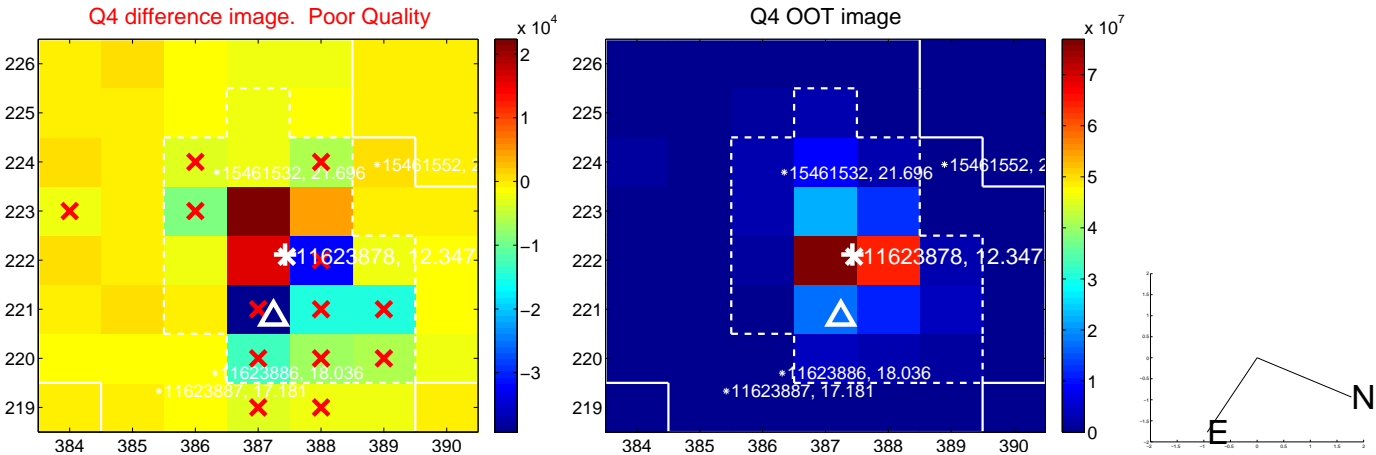
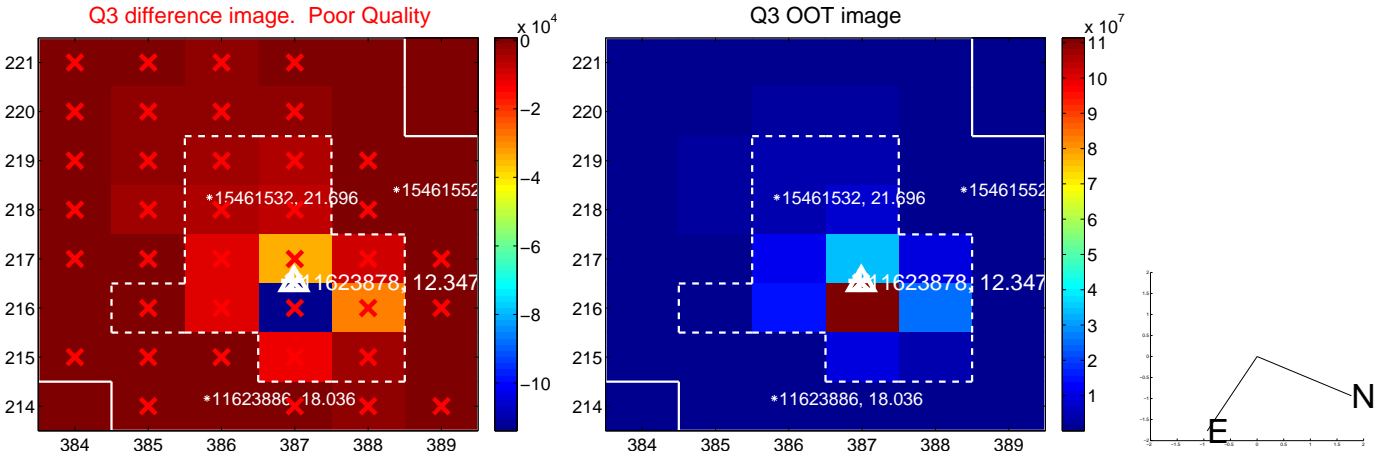
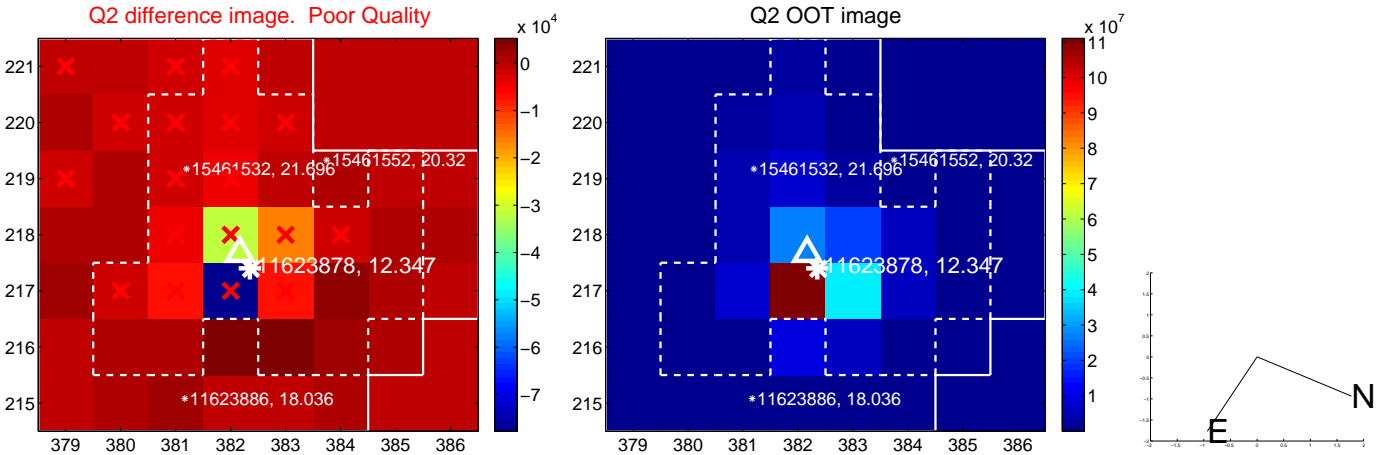
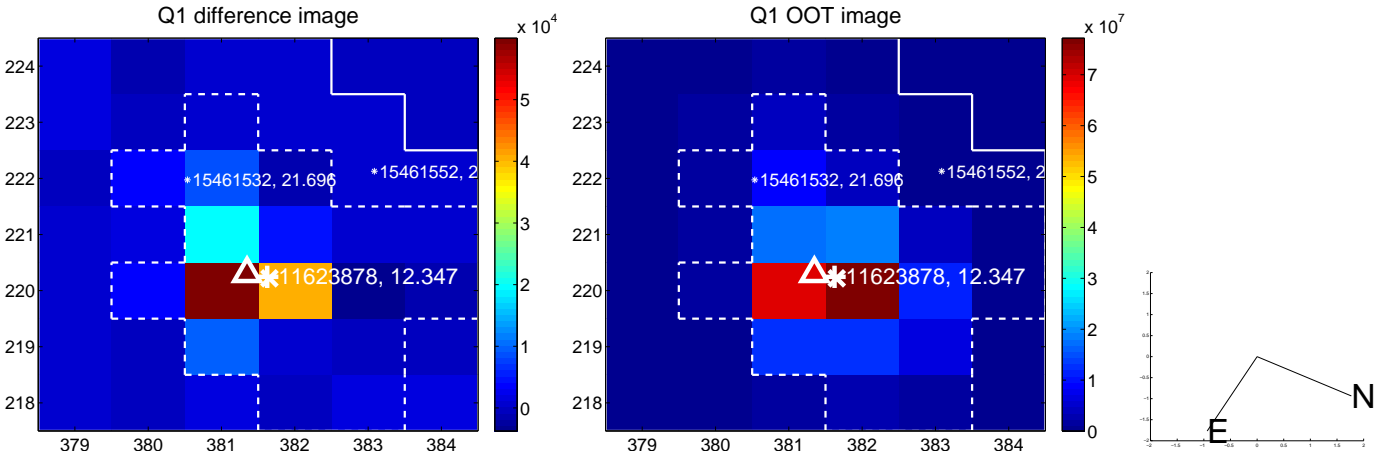
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.368 \pm 0.351$  | 1.05                | $-0.285 \pm 0.310$ | $-0.233 \pm 0.257$ |
| PRF-fit source offset from KIC position | $0.502 \pm 0.341$  | 1.47                | $-0.355 \pm 0.312$ | $-0.354 \pm 0.252$ |
| photometric centroid source offset      | $0.24 \pm 0.04$    | 6.19                | $0.00 \pm 0.05$    | $-0.24 \pm 0.04$   |



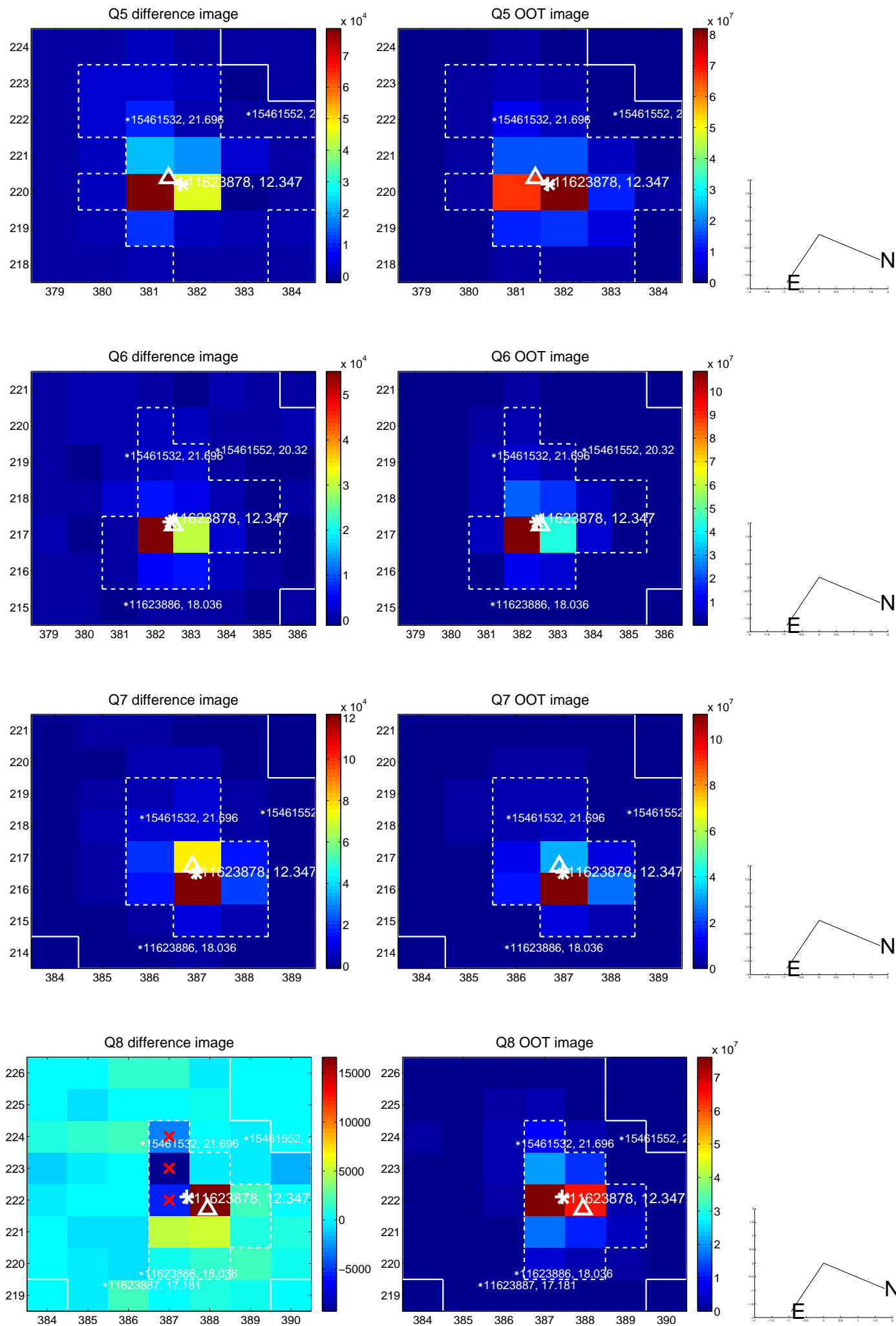
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

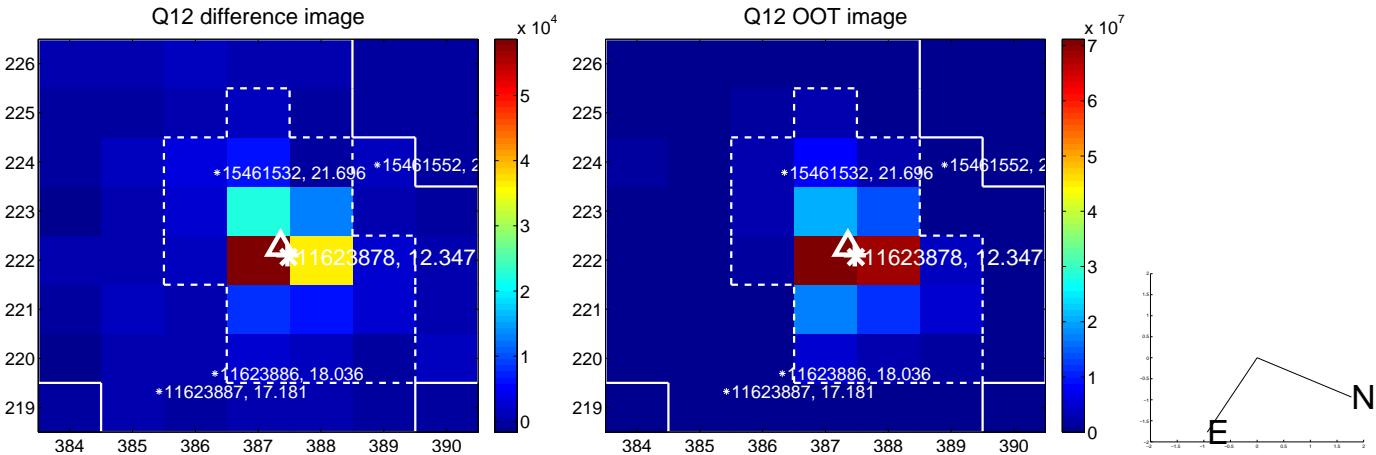
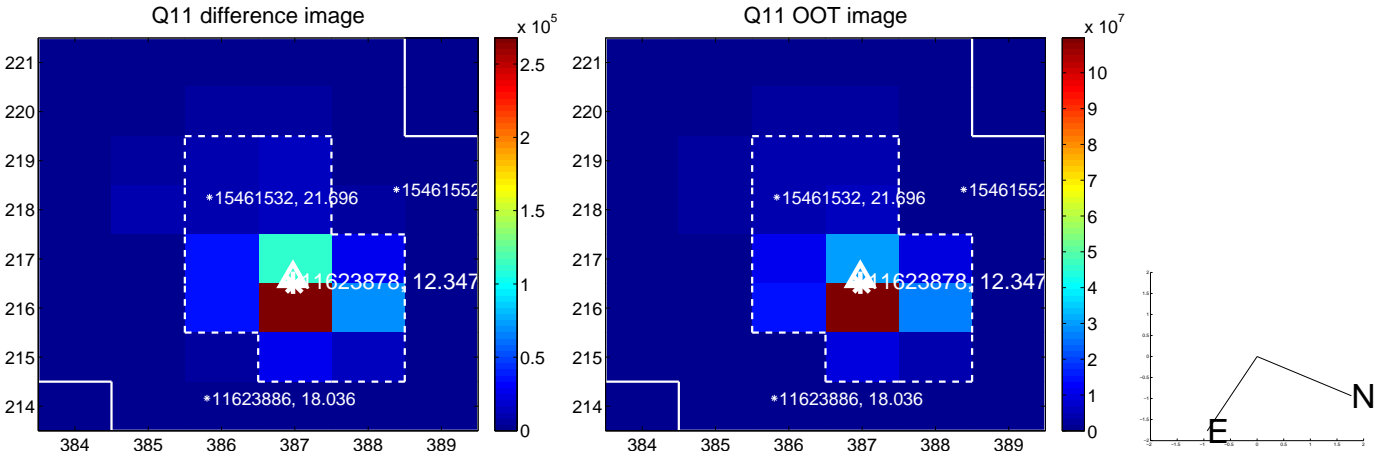
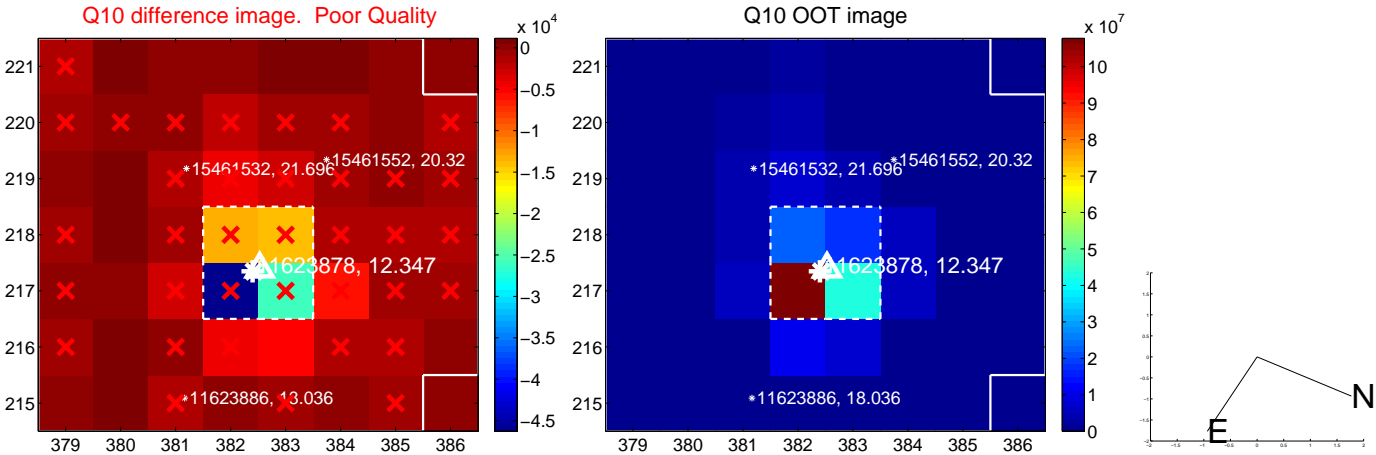
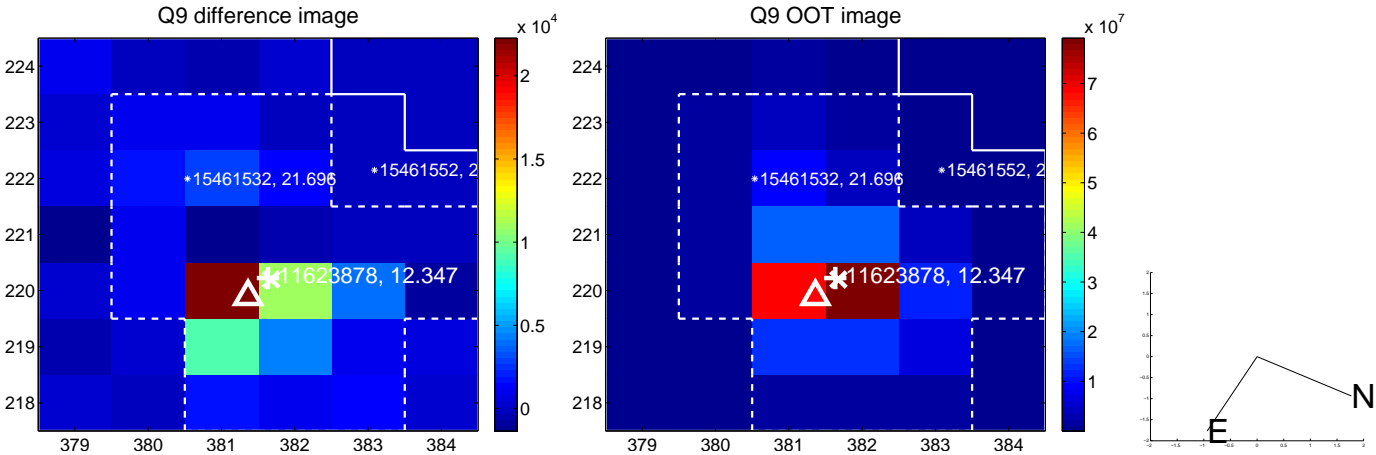




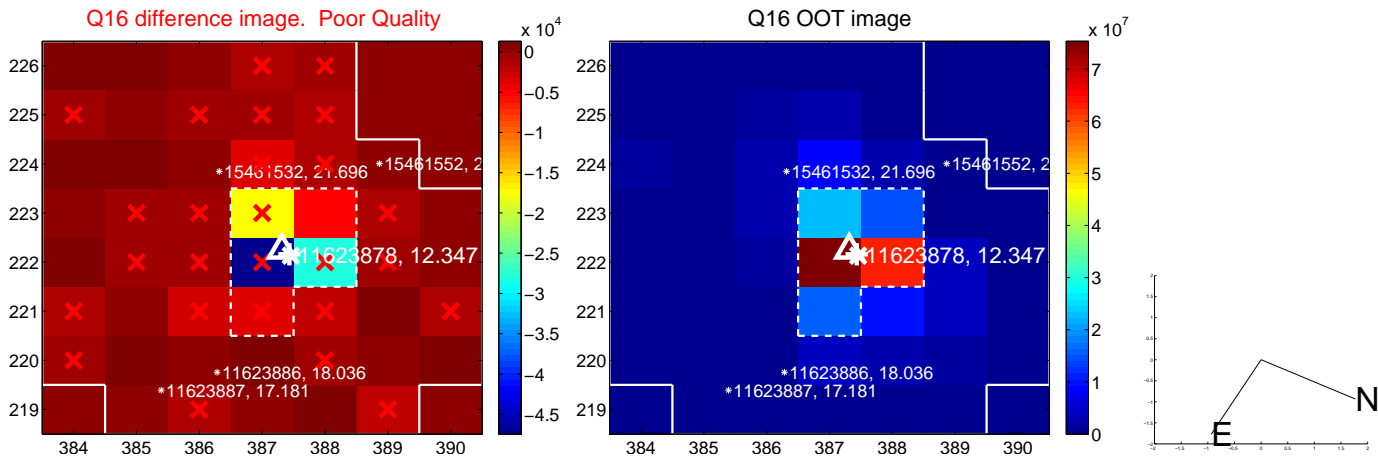
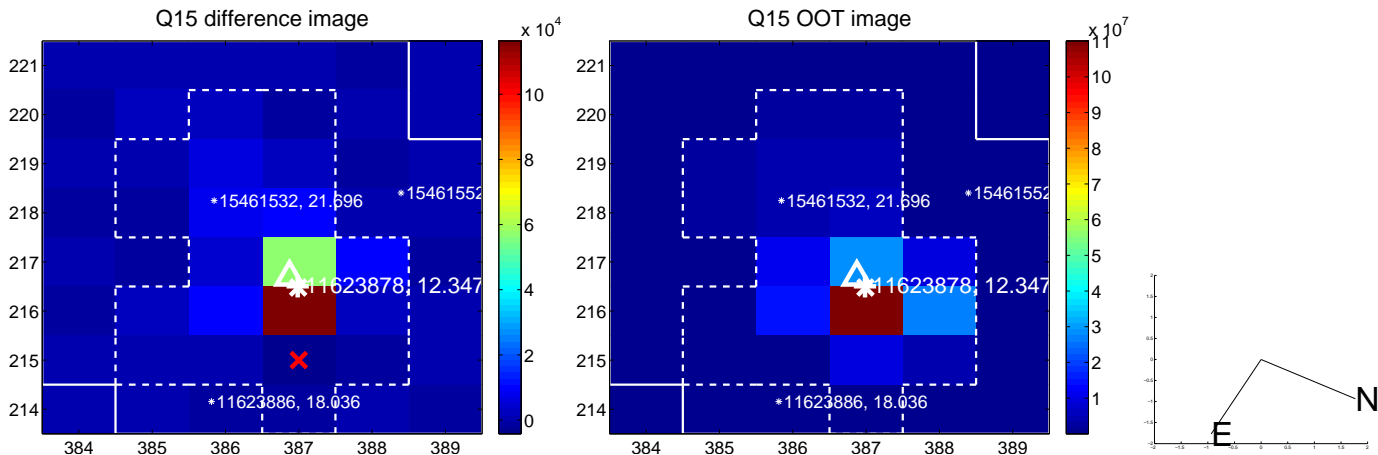
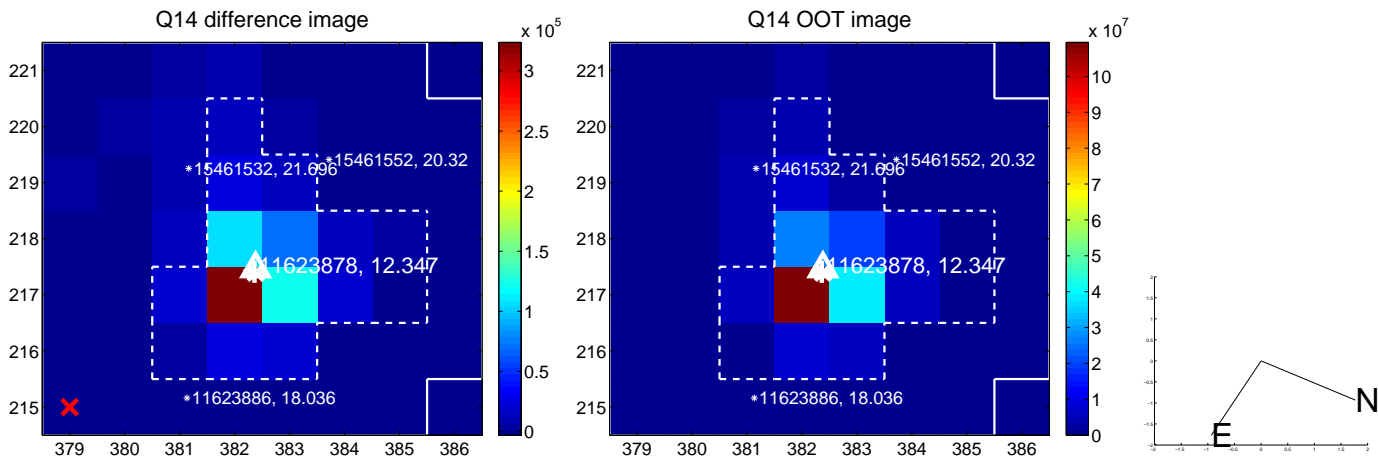
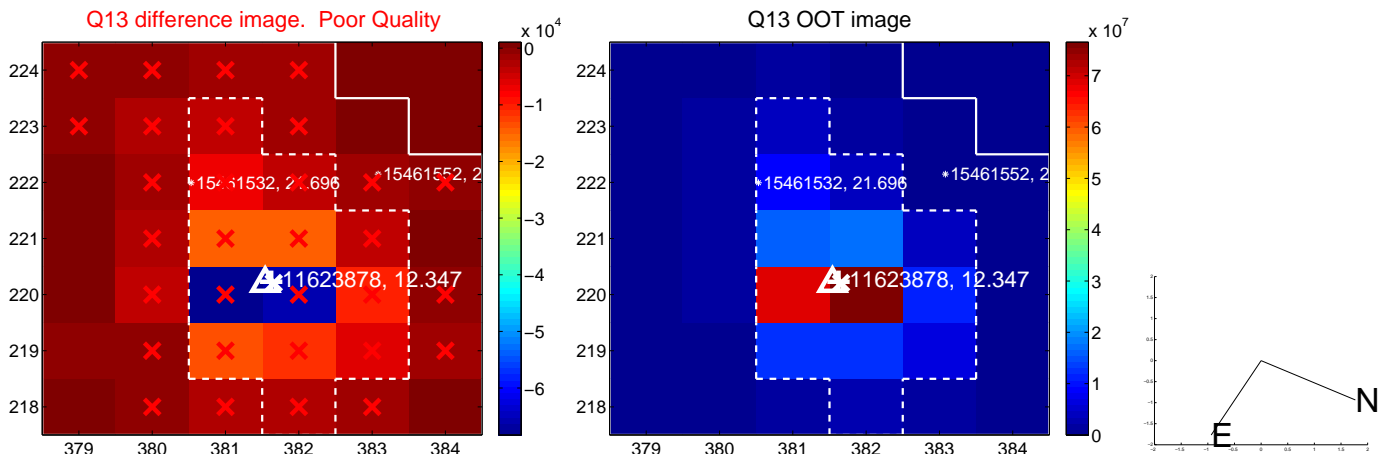
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



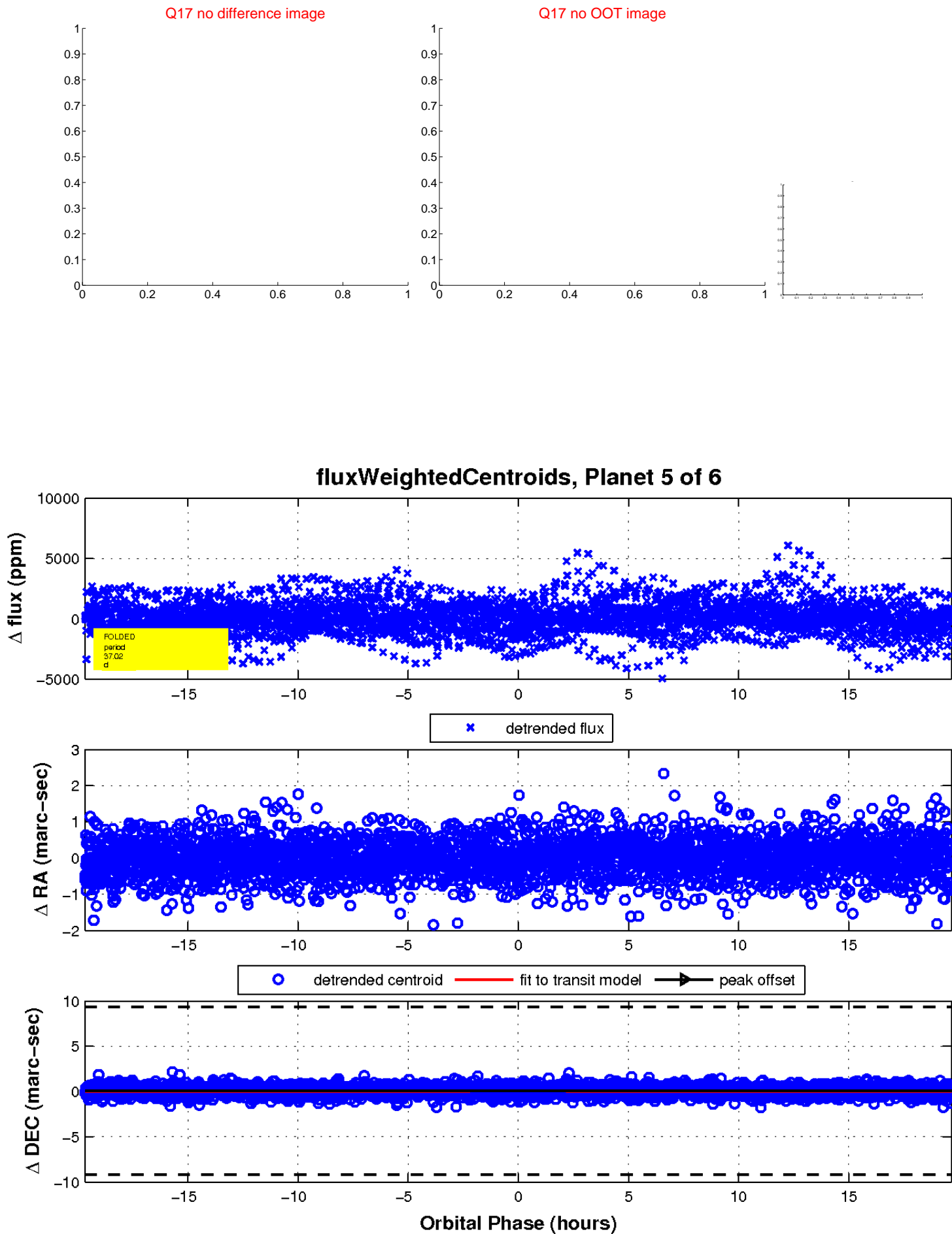
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

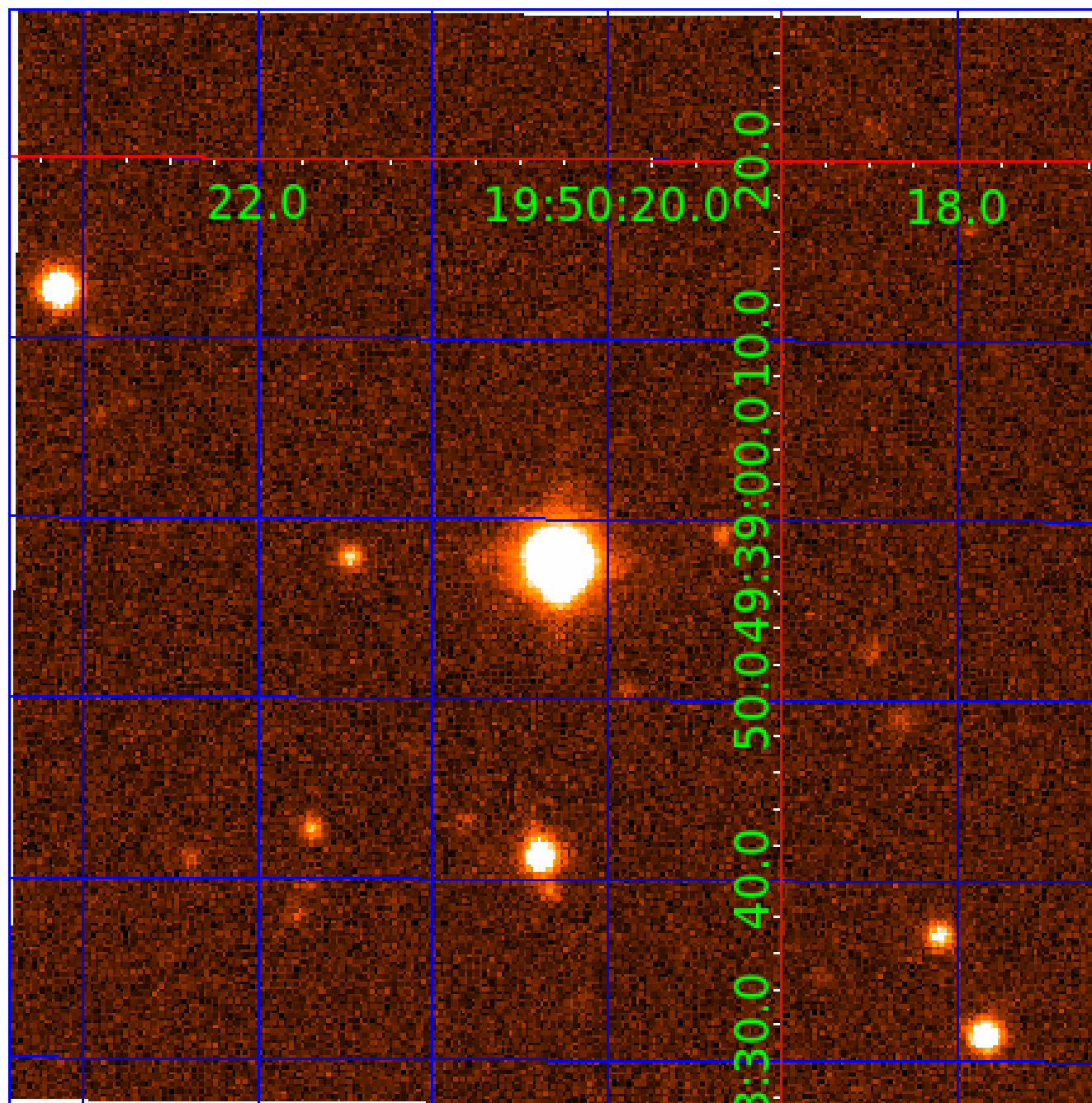


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011623878

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|-----|-----------------------------|-----------------|------------------------|------------------------|
| 011623878-01 | OBS      | No   | 0.611333      | 131.624700   | 30.0        | 1.986            | 9.2  | 5.1 | 1.67                        | 6635            | 1.06                   | 20308.18               |
| 011623878-02 | OBS      | No   | 0.611347      | 131.830892   | 76.1        | 2.175            | 10.5 | 9.0 | 1.67                        | 6635            | 1.70                   | 20307.56               |
| 011623878-03 | OBS      | No   | 79.916019     | 136.317242   | 2767.6      | 4.861            | 8.6  | 6.8 | 1.67                        | 6635            | 15.78                  | 30.61                  |
| 011623878-04 | OBS      | No   | 458.506766    | 578.966686   | 3727.2      | 6.248            | 9.2  | 8.5 | 1.67                        | 6635            | 11.83                  | 2.98                   |
| 011623878-05 | OBS      | No   | 37.017418     | 151.712897   | 2587.8      | 6.559            | 7.7  | 8.7 | 1.67                        | 6635            | 15.51                  | 85.41                  |
| 011623878-06 | OBS      | No   | 5.029872      | 136.323181   | 978.3       | 8.504            | 8.8  | 9.9 | 1.67                        | 6635            | 9.54                   | 1222.64                |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011623878-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT                                  |
| 011623878-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—SAME_NTL_PERIOD   |
| 011623878-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES                   |
| 011623878-04 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—LPP_ALT—MOD_TER_DV—MOD_POS_ALT                              |
| 011623878-05 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT        |
| 011623878-06 | OBS      | FP   | 0.00  | 1 | 0 | 1 | 0 | INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

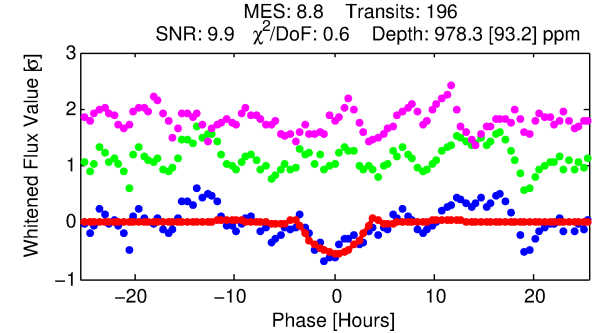
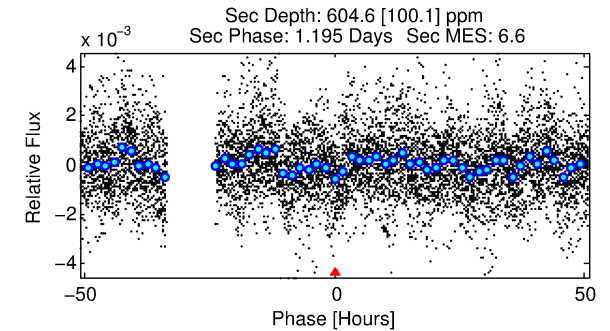
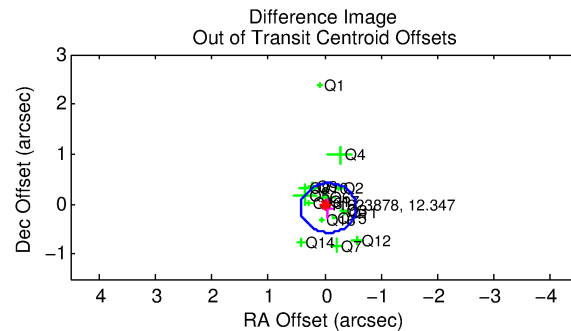
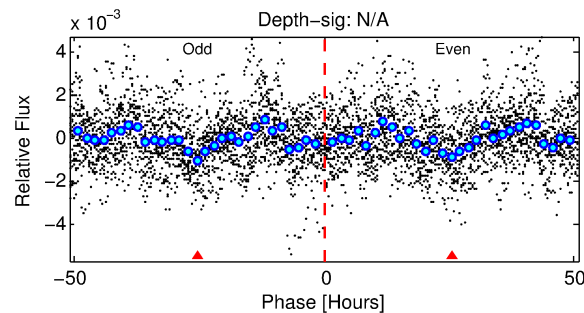
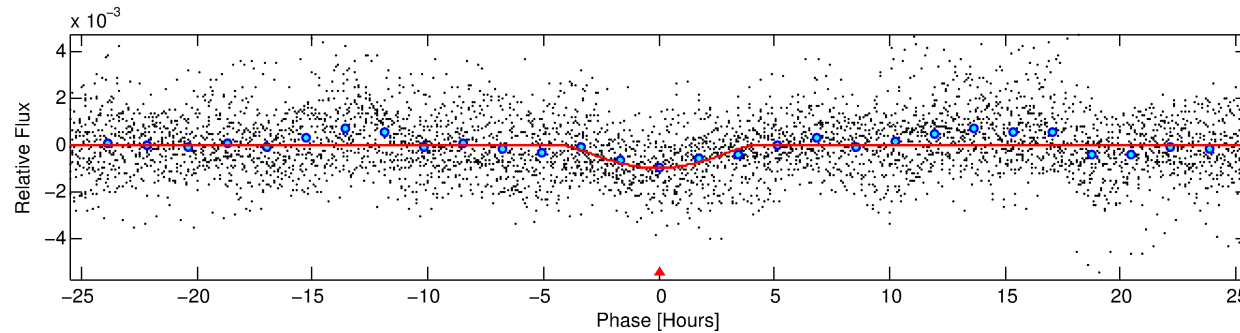
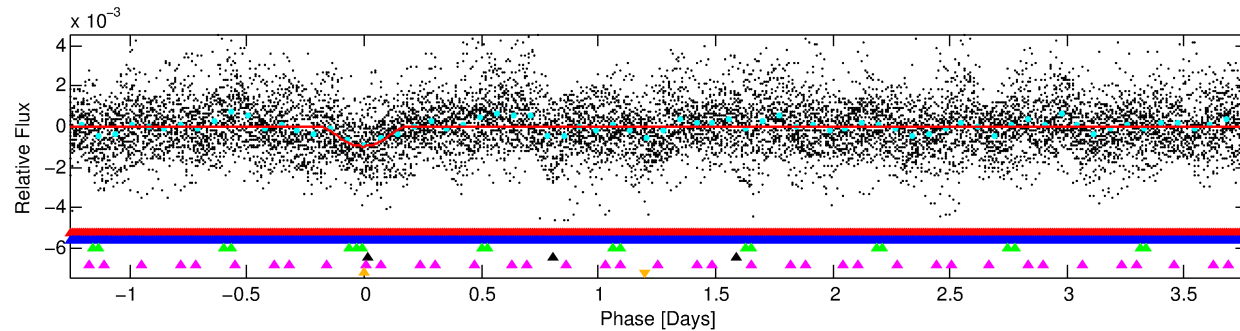
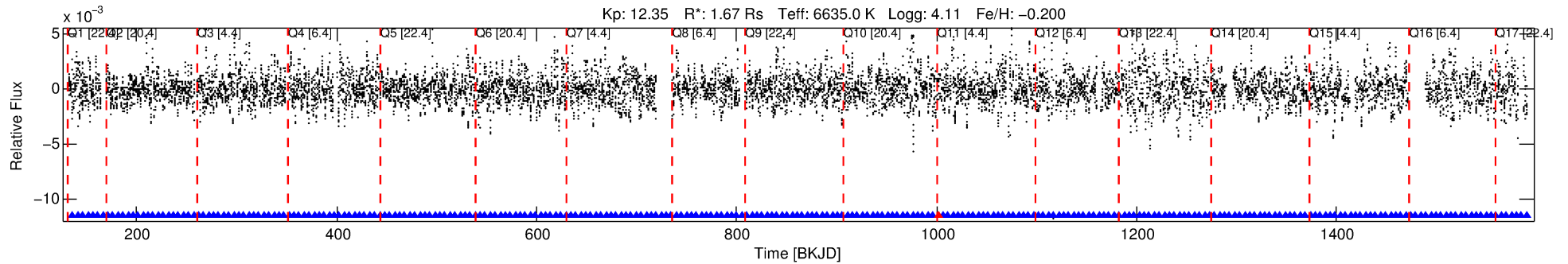
## Ephemeris Match Information For 011623878-06

No Significant Match Found



# DV One-Page Summary

KIC: 11623878 Candidate: 6 of 6 Period: 5.030 d



## DV Fit Results:

Period = 5.02987 [0.00009] d  
Epoch = 136.3232 [0.0122] BKJD  
Rp/R\* = 0.0525 [0.0663]  
a/R\* = 1.82 [0.32]  
b = 1.00 [0.10]  
Seff = 1222.64 [498.50]  
Teq = 1508 [154] K  
Rp = 9.54 [12.35] Re  
a = 0.0628 [0.0158] AU  
Ag = 14.41 [36.91] [0.36σ]  
Teffp = 4542 [2880] K [1.05σ]

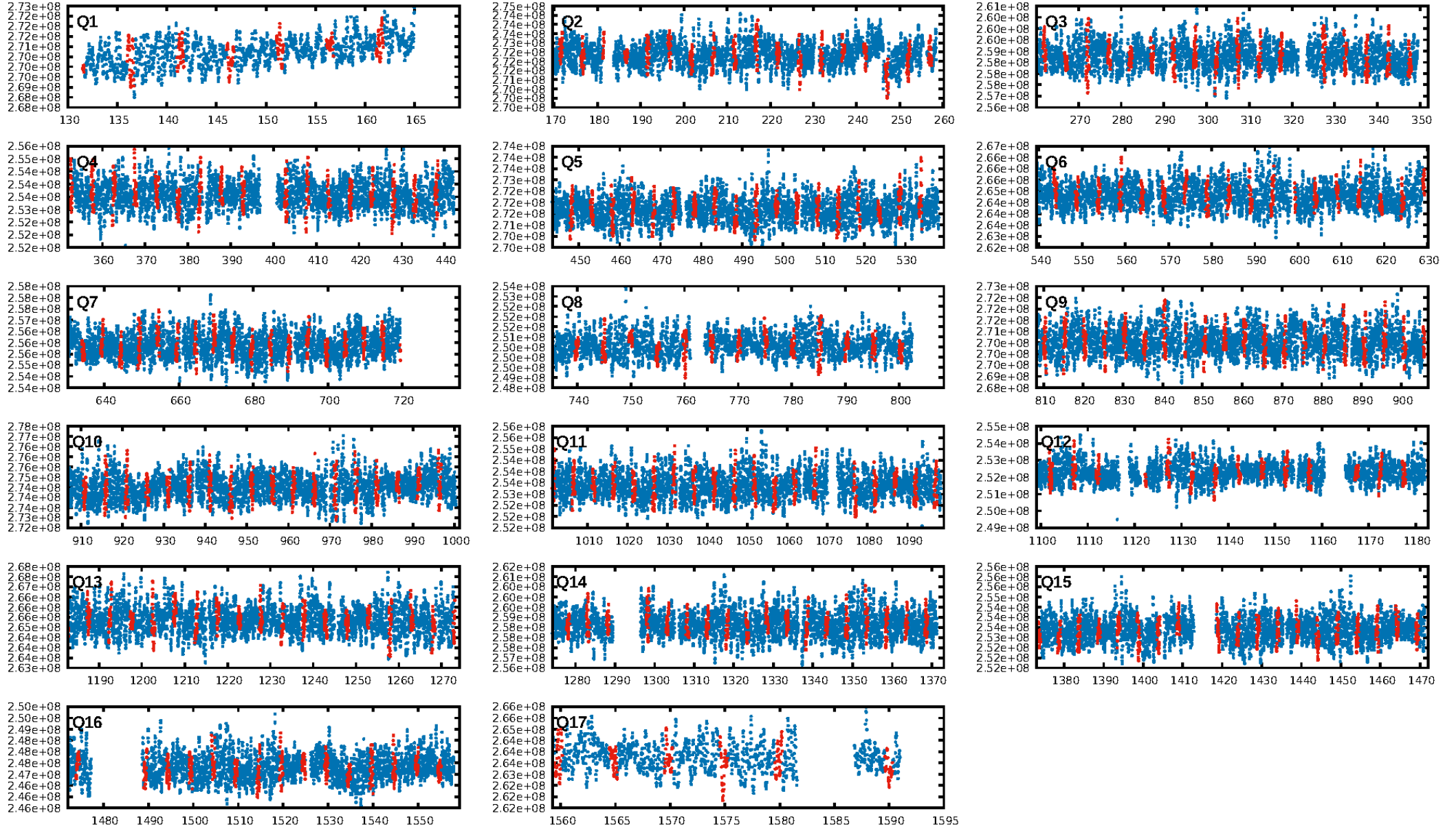
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.08σ]  
LongPeriod-sig: 100.0% [71.49σ]  
ModelChiSquare2-sig: 39.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [188/189]  
GhostDiagnostic-chr: 0.1173  
Centroid-sig: N/A  
Centroid-so: 0.206 arcsec [6.21σ]  
OotOffset-rm: 0.099 arcsec [0.60σ]  
KicOffset-rm: 0.229 arcsec [1.26σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.76 [13/17]  
DiffImageOverlap-fno: 0.00 [0/17]

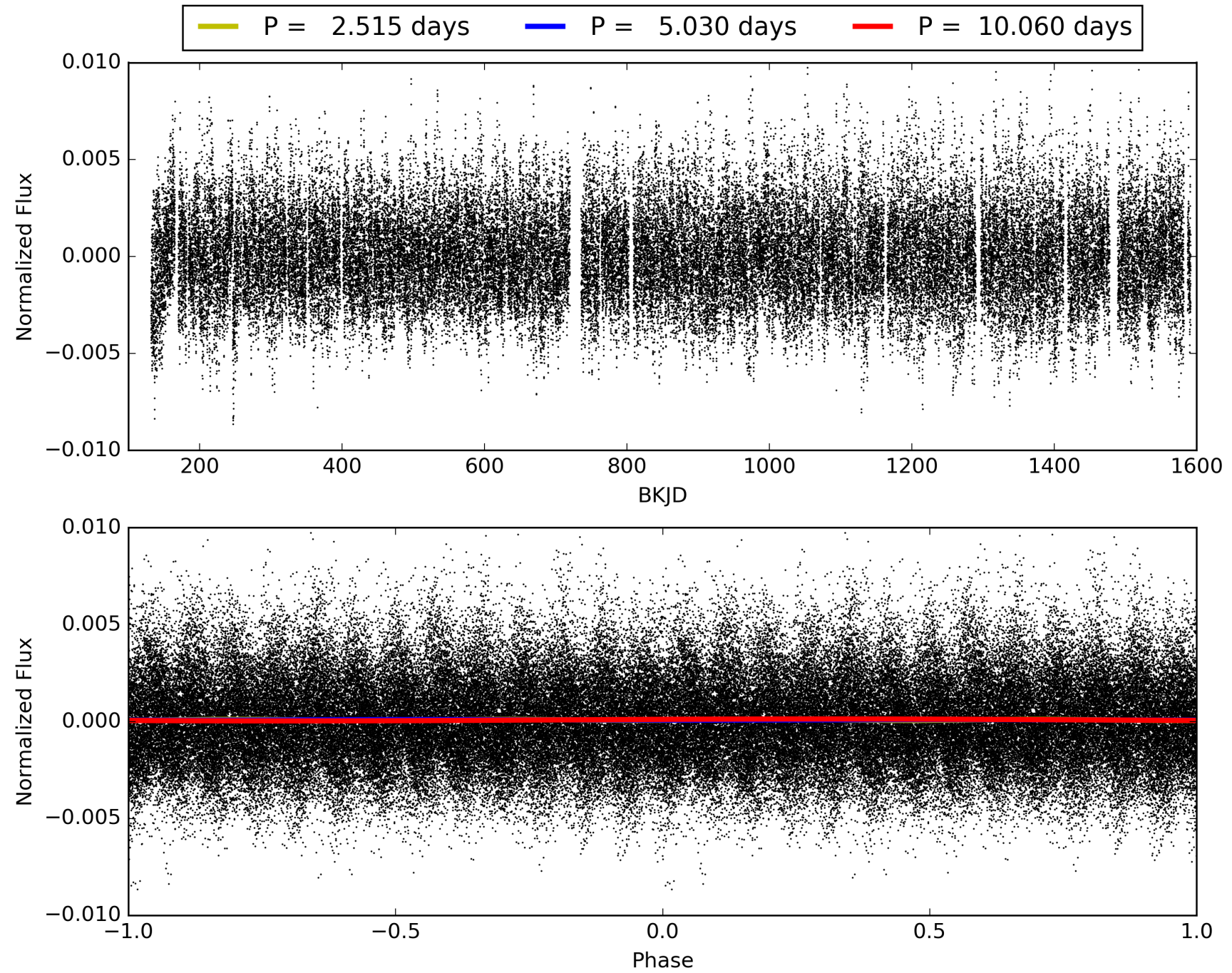
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:14:21 Z

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

# TCE 011623878-06, PDC Light Curves



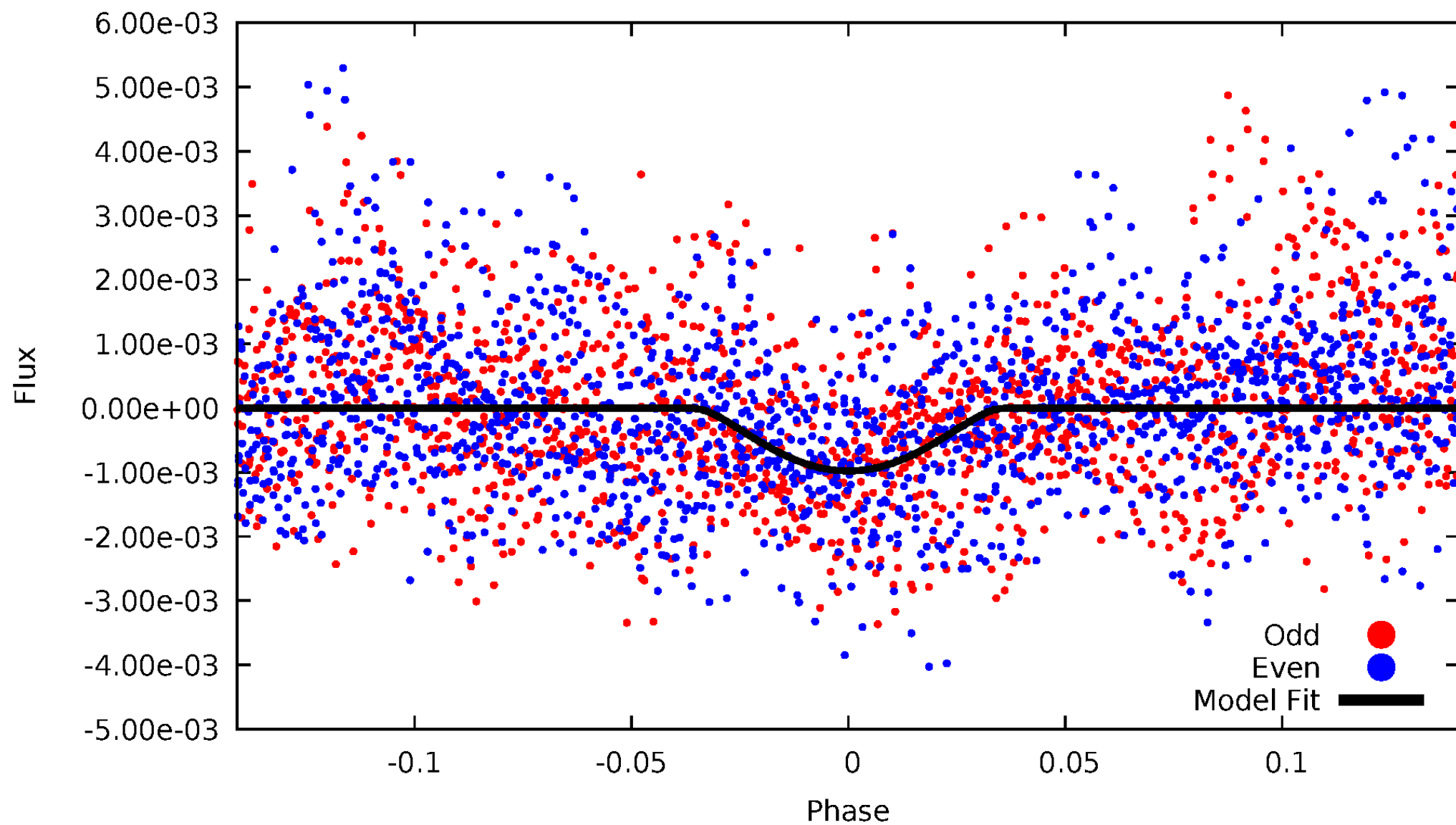
TCE 011623878-06





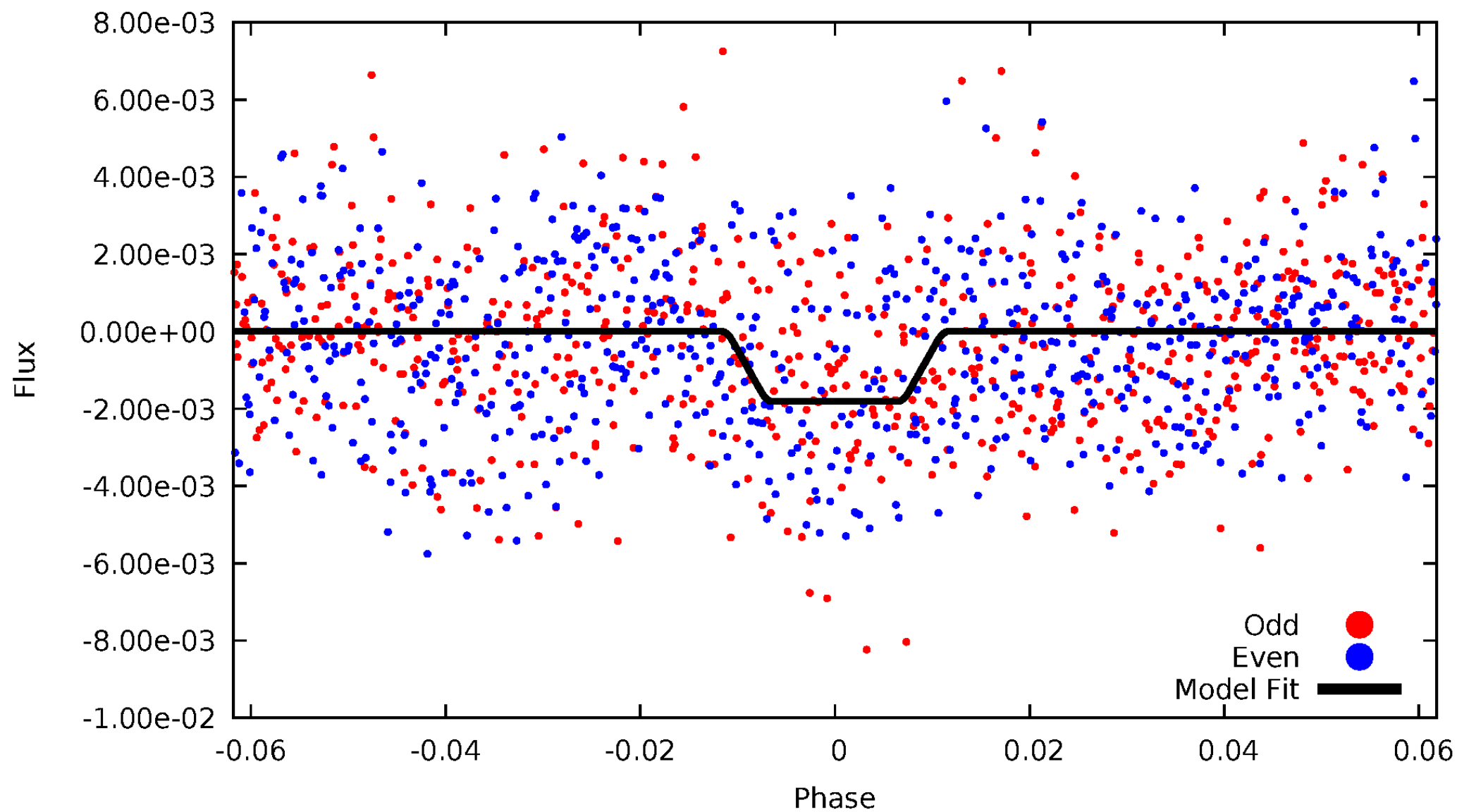
# DV Odd/Even

TCE 011623878-06



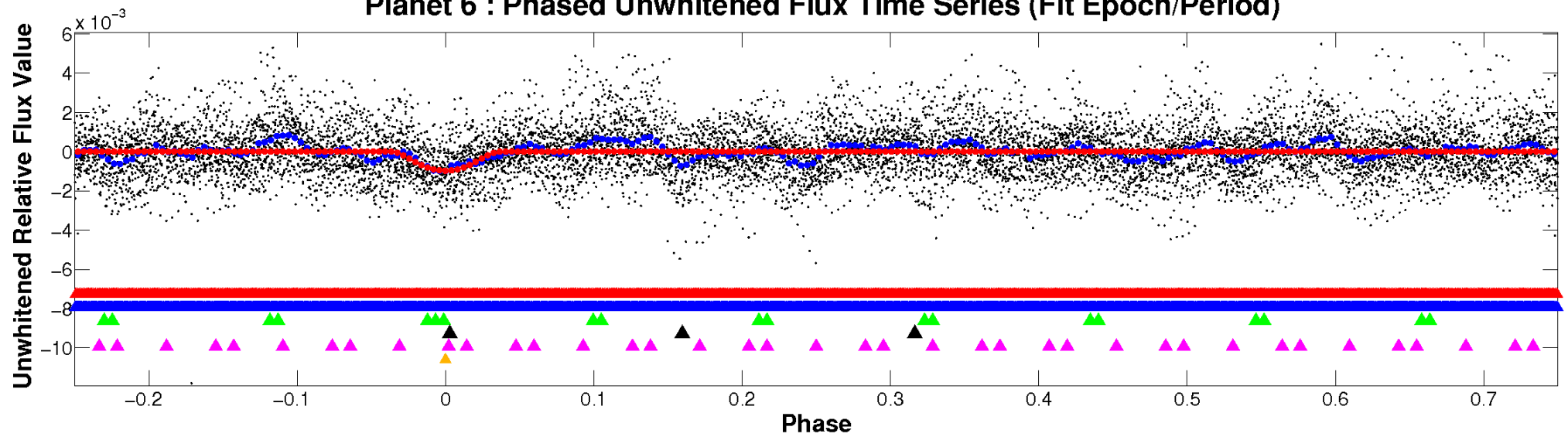
# ALT Odd/Even

TCE 011623878-06

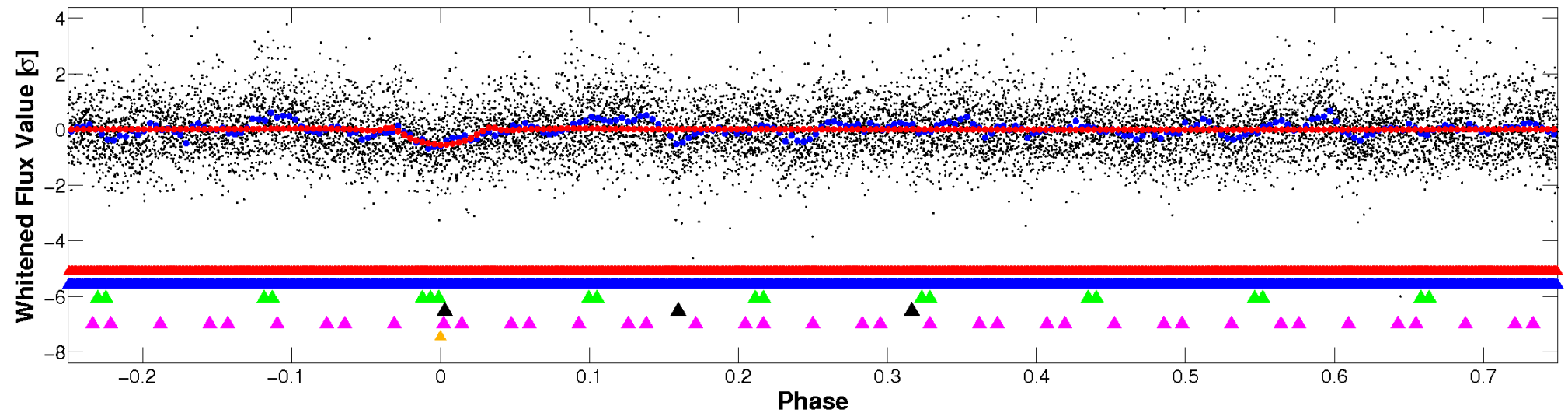


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



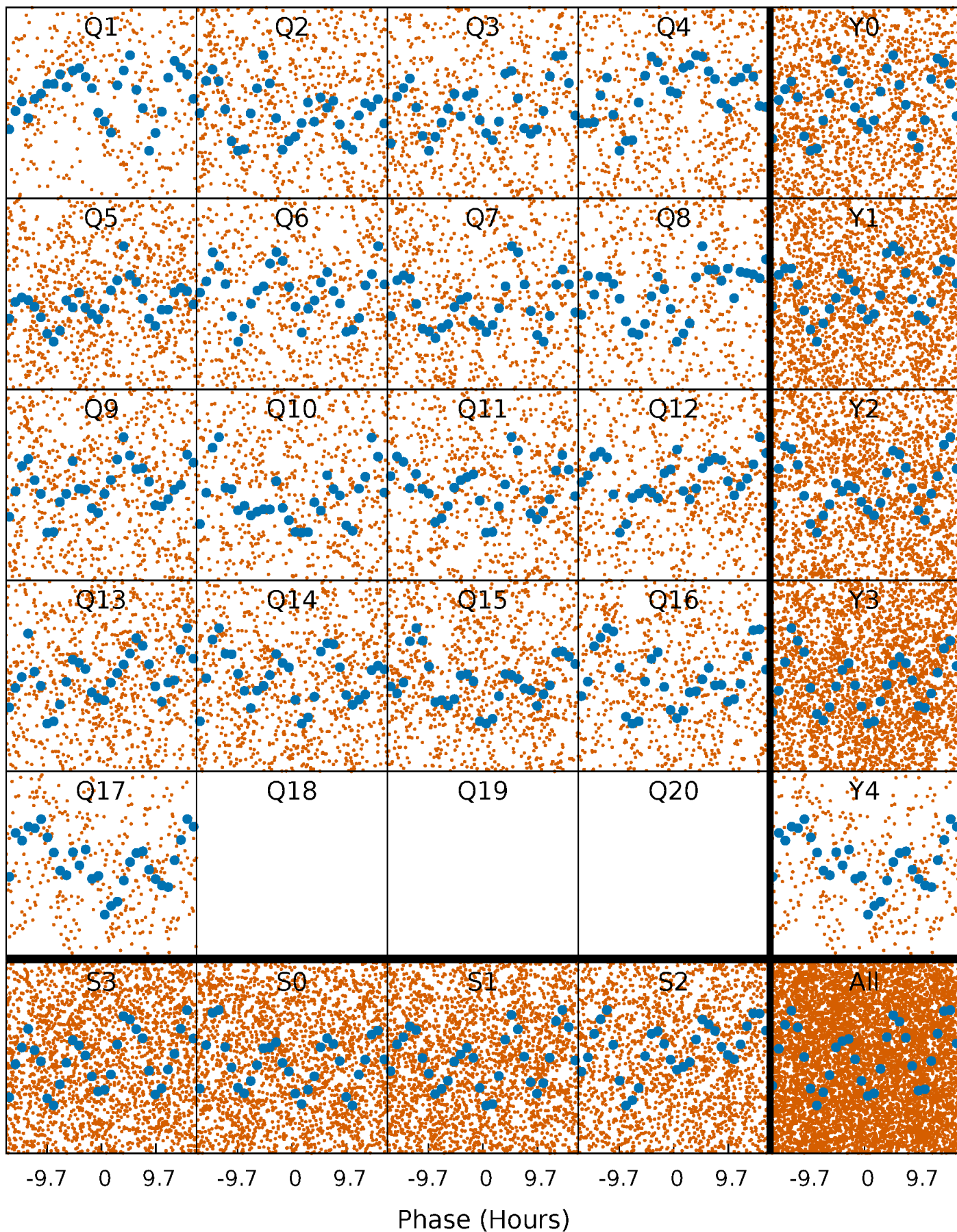
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





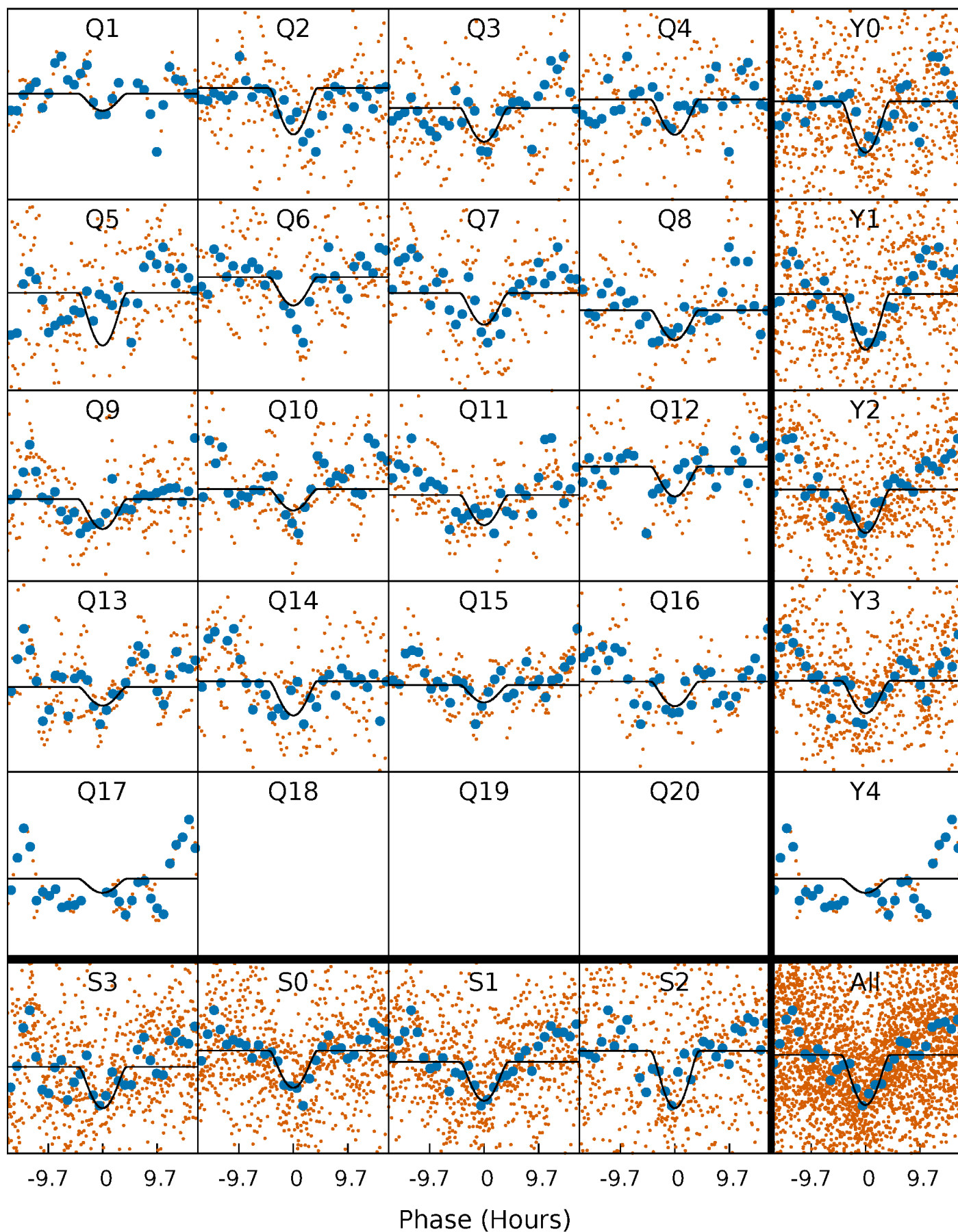
# PDC Quarter-Phased Transit Curves

TCE 011623878-06 P= 5.029872 Days  $T_0=136.323181$  (BKJD)



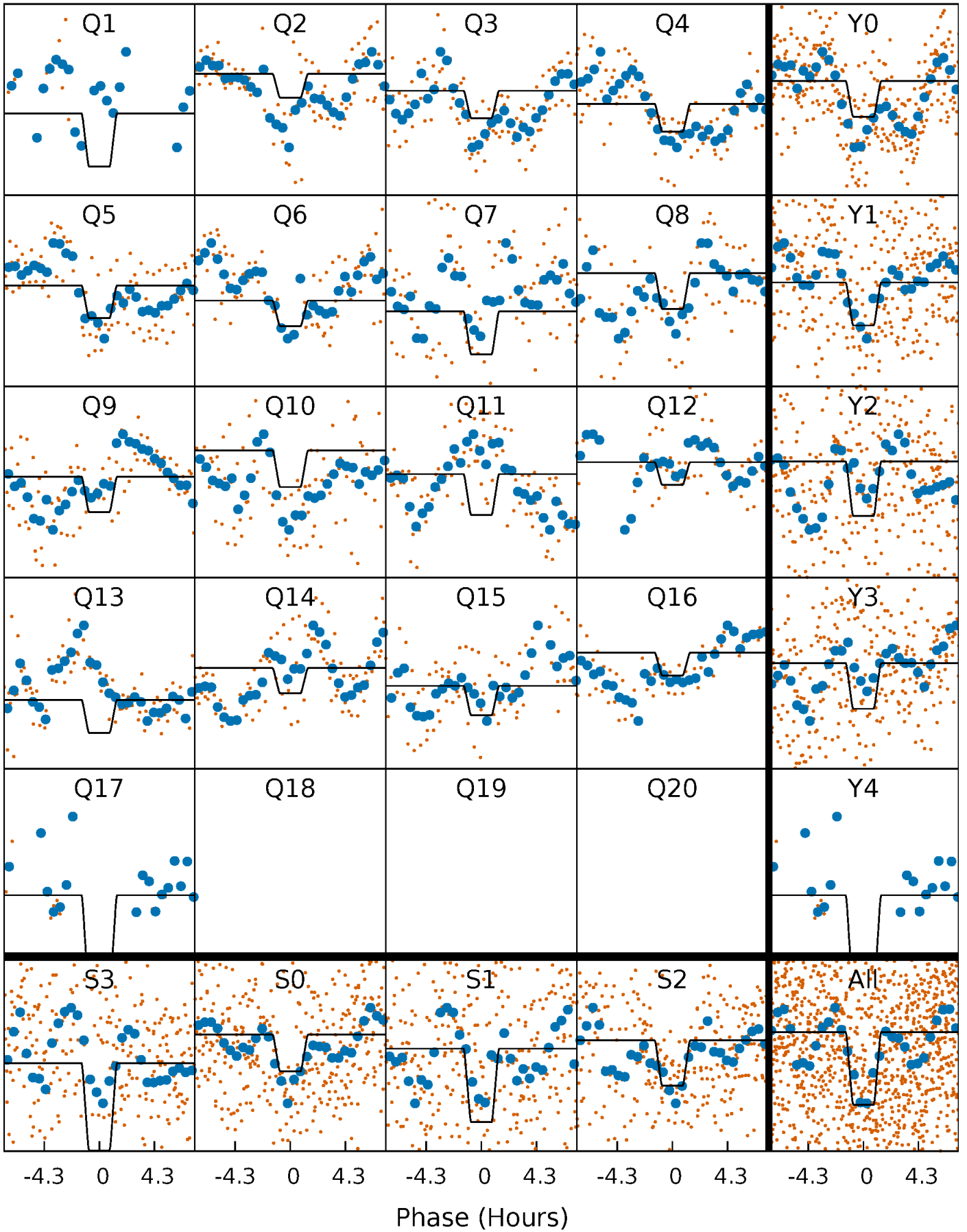
# DV Quarter-Phased Transit Curves

TCE 011623878-06 P= 5.029872 Days  $T_0=136.323181$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

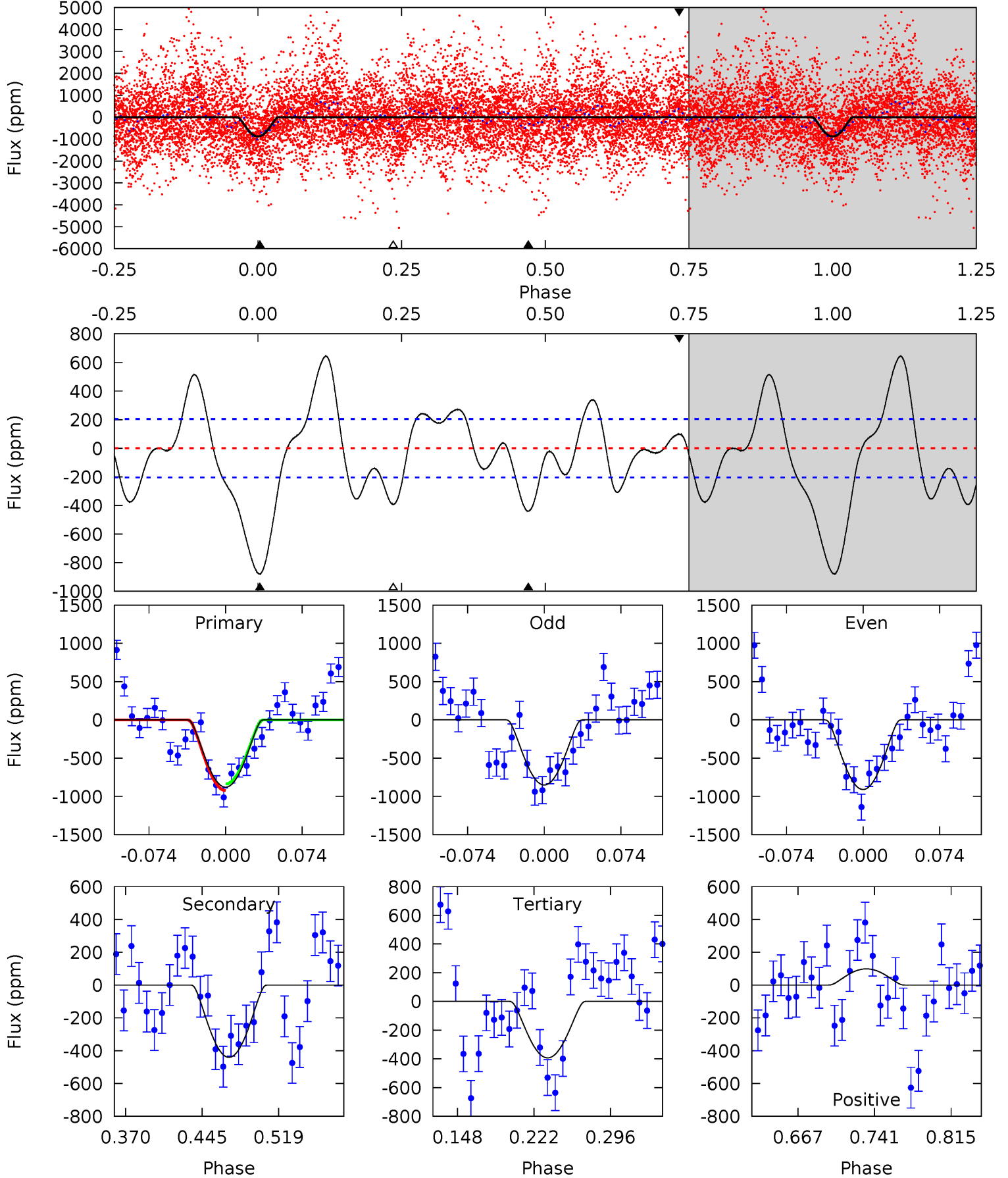
TCE 011623878-06 P= 5.029511 Days  $T_0=136.338914$  (BKJD)



# DV Model-Shift Uniqueness Test

011623878-06, P = 5.029872 Days, E = 131.293309 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 19.9 | 9.96 | 8.88 | 2.23 | 4.63            | 1.79            | 5.67             | 11.0    | 17.6    | 1.08    | 7.73    | 0.67    | 1.17 | 0.42  | 0.97 |

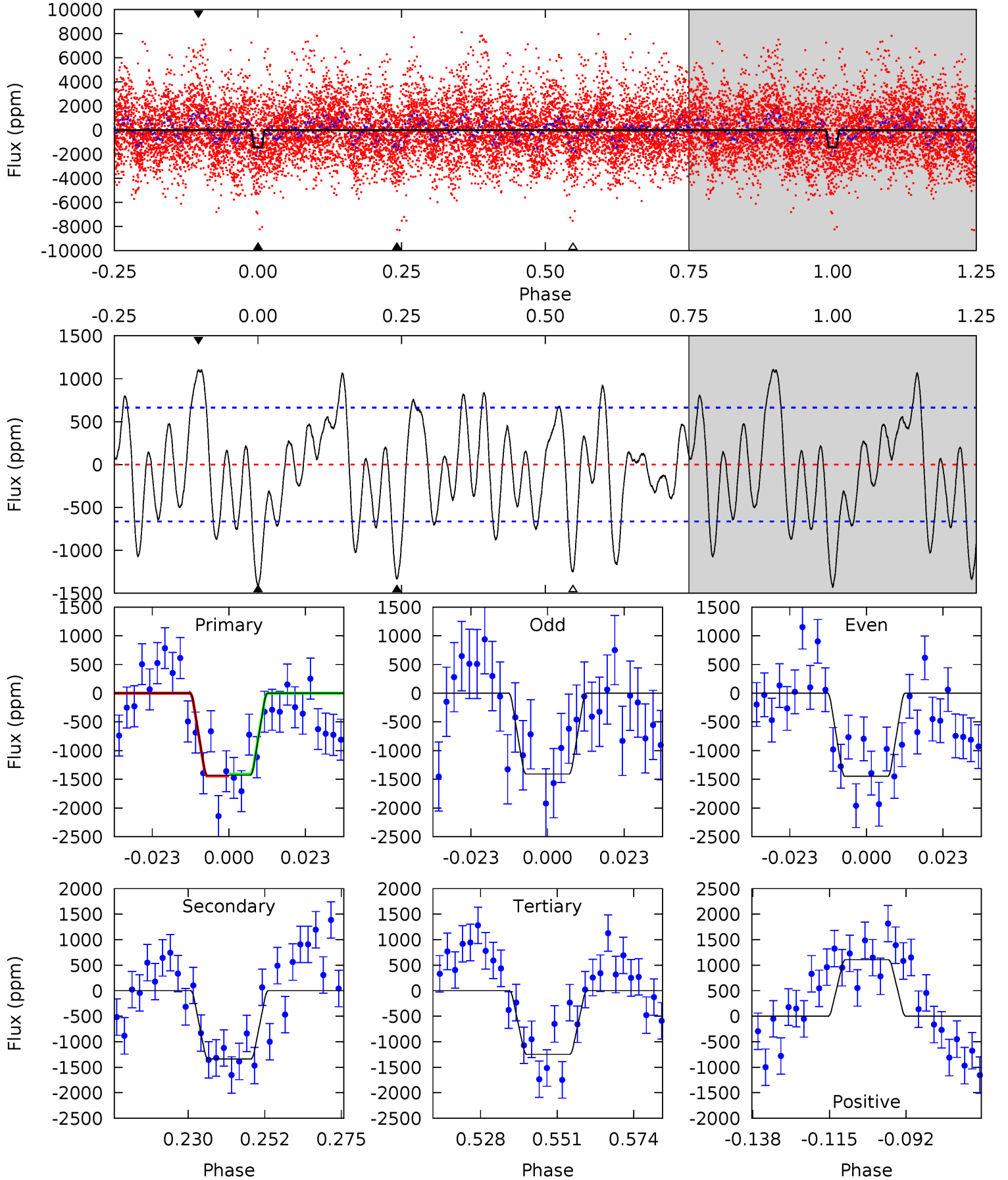




# Alt Model-Shift Uniqueness Test

011623878-06, P = 5.029511 Days, E = 131.309403 Days

| Pri  | Sec  | Ter  | Pos  | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 10.5 | 9.80 | 9.16 | 8.11 | 4.86            | 2.27            | 3.74             | 1.32    | 2.37    | 0.64    | 1.69    | 0.15    | 0.83 | 0.44  | 0.12 |



### Stellar Parameters For KIC 011623878

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R$ ( $R_{\odot}$ )       | $M$ ( $M_{\odot}$ )       | $p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ ) |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $6635^{+150}_{-217}$ | $4.110^{+0.220}_{-0.180}$ | $-0.200^{+0.250}_{-0.300}$ | $1.666^{+0.468}_{-0.468}$ | $1.313^{+0.165}_{-0.248}$ | $0.400^{+0.562}_{-0.189}$                     |
|        | +2%/-3%              | +5%/-4%                   | +125%/-150%                | +28%/-28%                 | +13%/-19%                 | +141%/-47%                                    |
| 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 011623878-06 / KOI

| Detrend | Depth (ppm)     | $R_p$ ( $R_{\oplus}$ )   | $T_{\text{max}}$ (K) | $T_{\text{obs}}$ (K)   | $A_{\text{obs}}$           |
|---------|-----------------|--------------------------|----------------------|------------------------|----------------------------|
| DV      | $-441 \pm 44$   | $12.49^{+11.61}_{-8.47}$ | $2106^{+158}_{-174}$ | $3921^{+2378}_{-821}$  | $6.010^{+52.478}_{-4.339}$ |
| Alt.    | $-1337 \pm 136$ | $11.58^{+11.85}_{-7.46}$ | $2106^{+165}_{-169}$ | $4920^{+3825}_{-1076}$ | $20^{+152}_{-15}$          |

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = 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  $A_{\text{obs}} \gg 1.0$



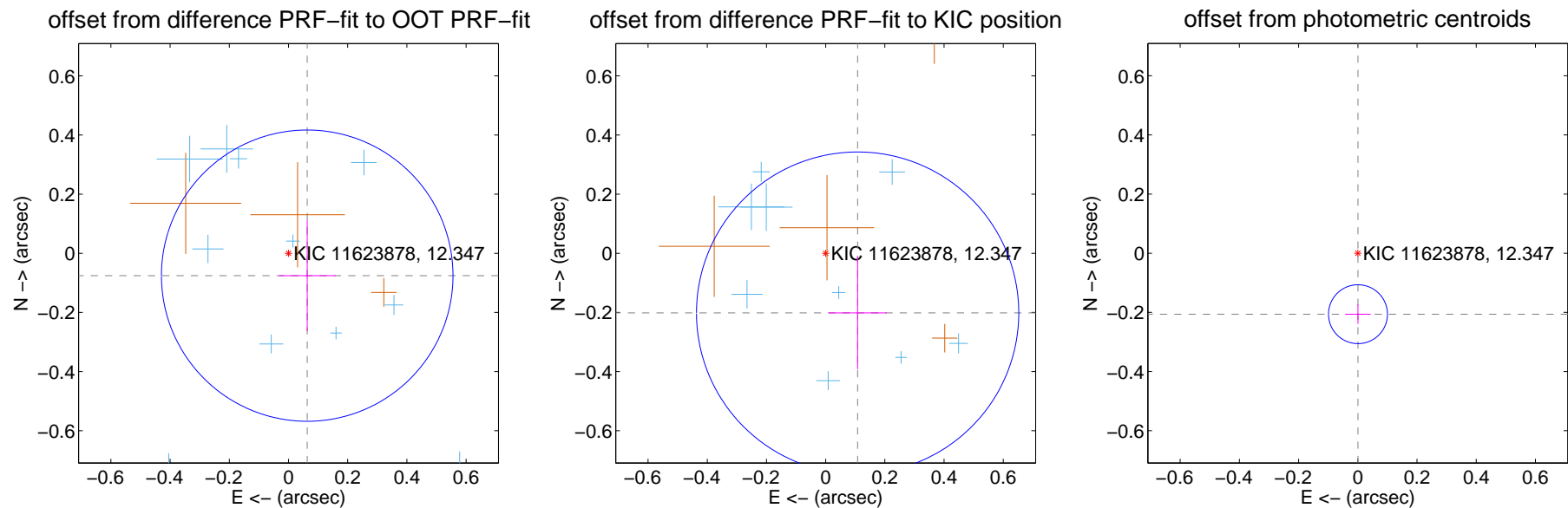
## DV Centroid Data

Supplemental centroid analysis for 011623878-06. Kepler magnitude: 12.35. Transit SNR 9.86

There are 13 quarters with good PRF difference image offsets

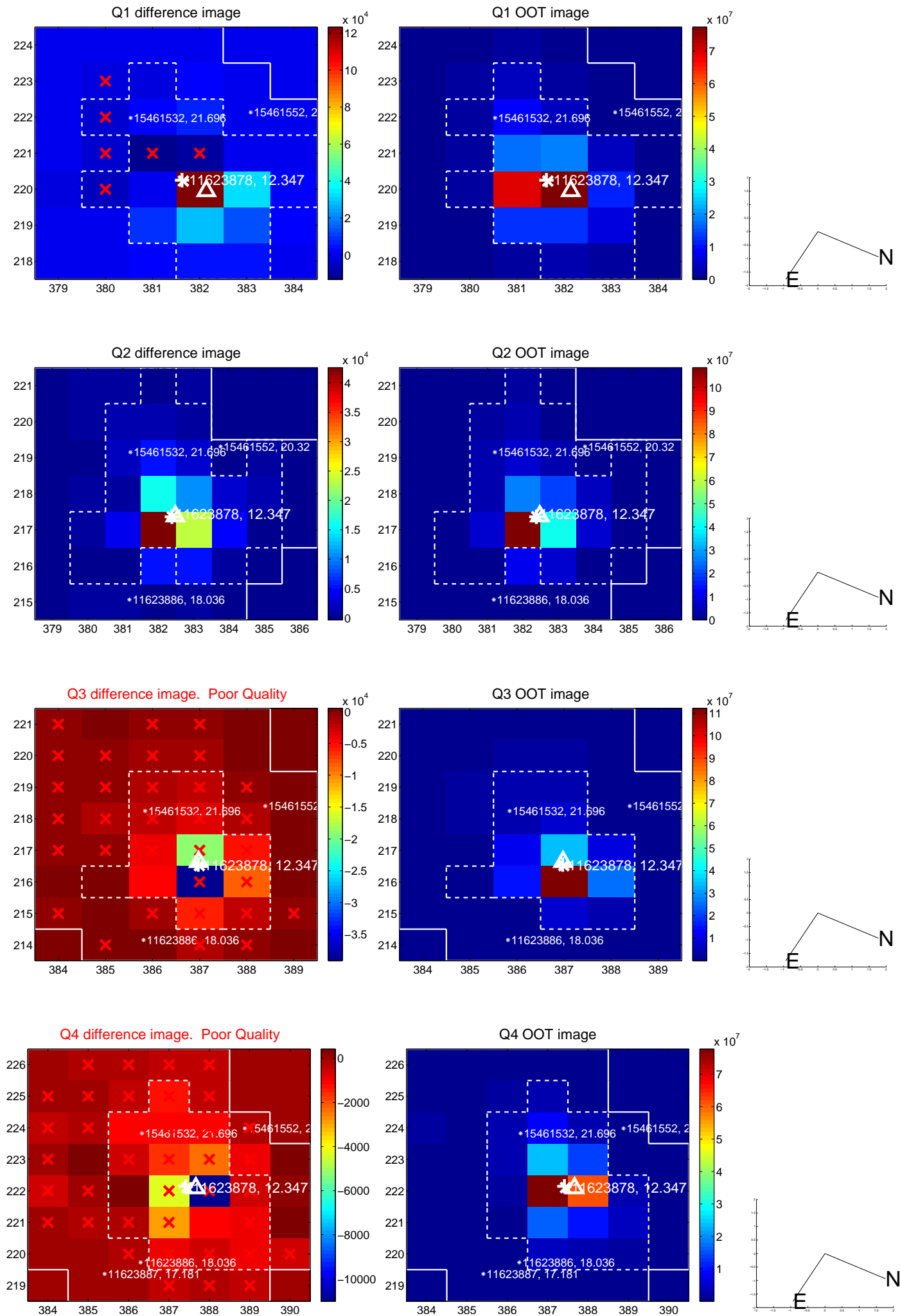
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.099 \pm 0.164$  | 0.60                | $-0.063 \pm 0.096$ | $-0.076 \pm 0.188$ |
| PRF-fit source offset from KIC position | $0.229 \pm 0.181$  | 1.26                | $-0.108 \pm 0.099$ | $-0.202 \pm 0.191$ |
| photometric centroid source offset      | $0.21 \pm 0.03$    | 6.21                | $-0.00 \pm 0.04$   | $-0.21 \pm 0.03$   |

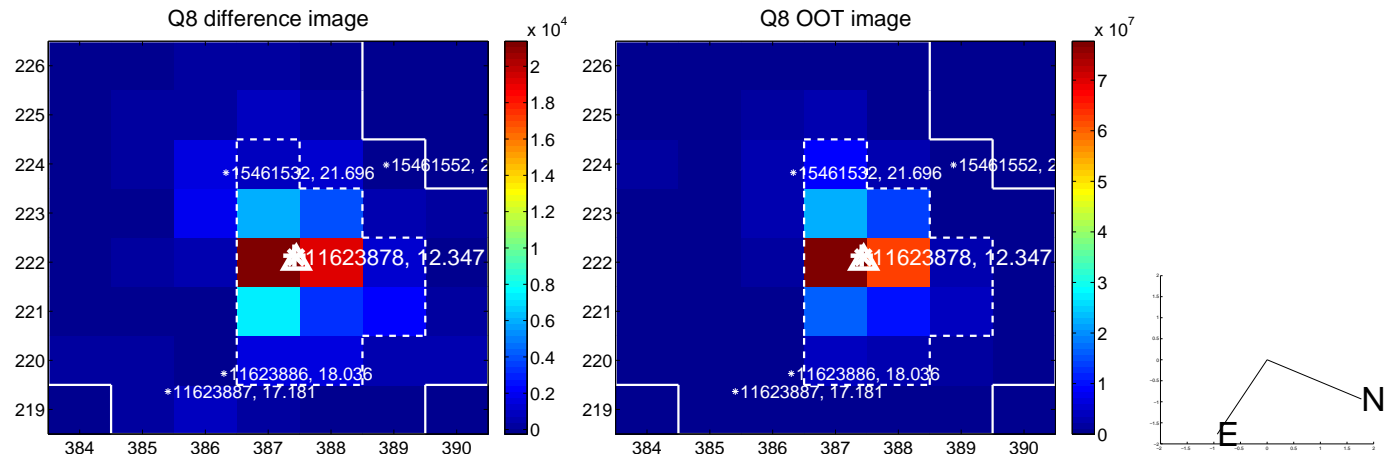
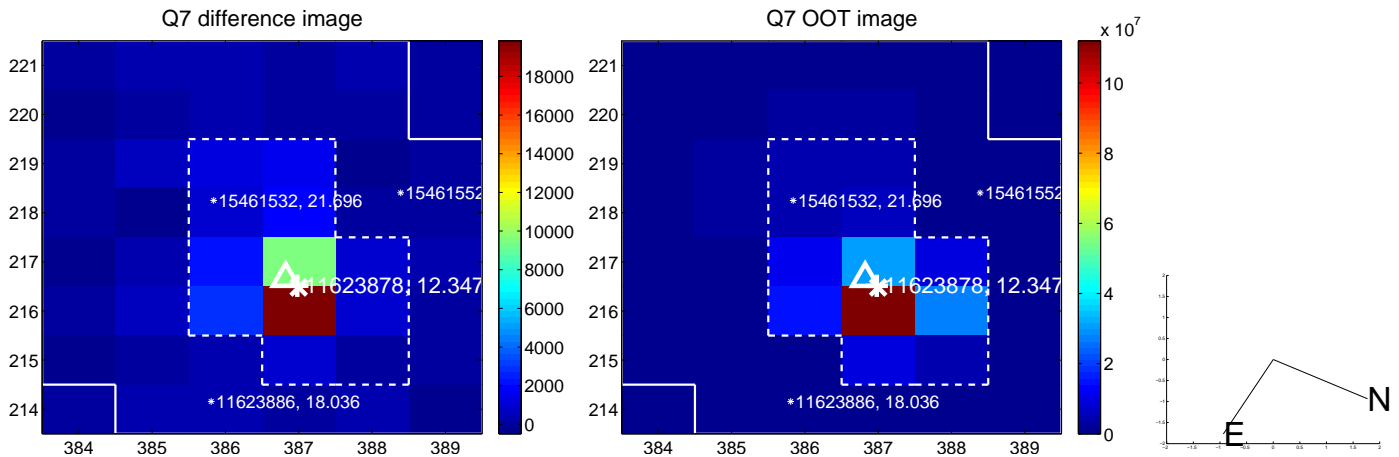
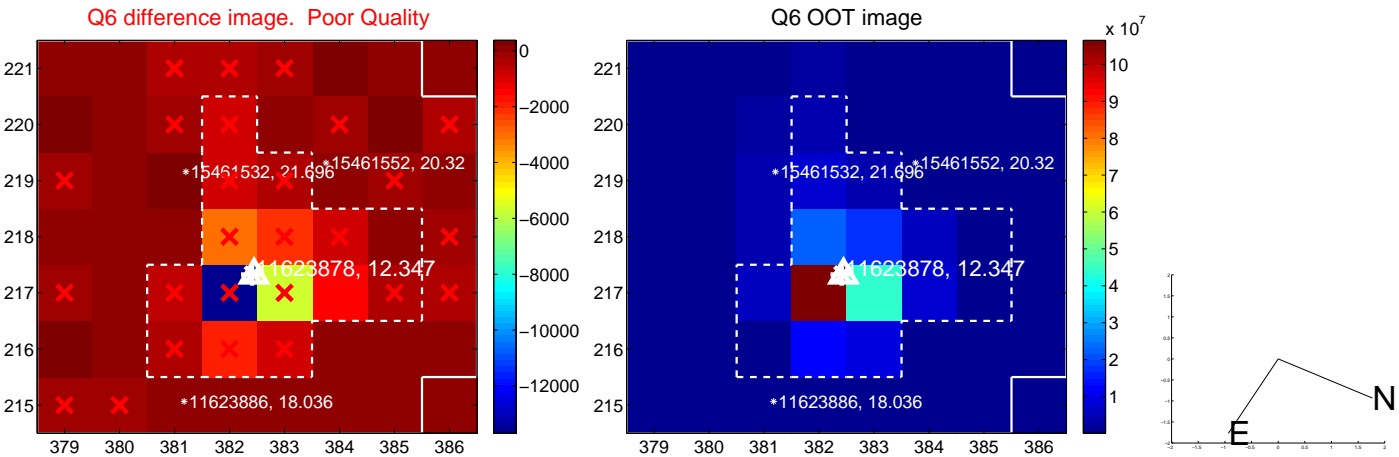
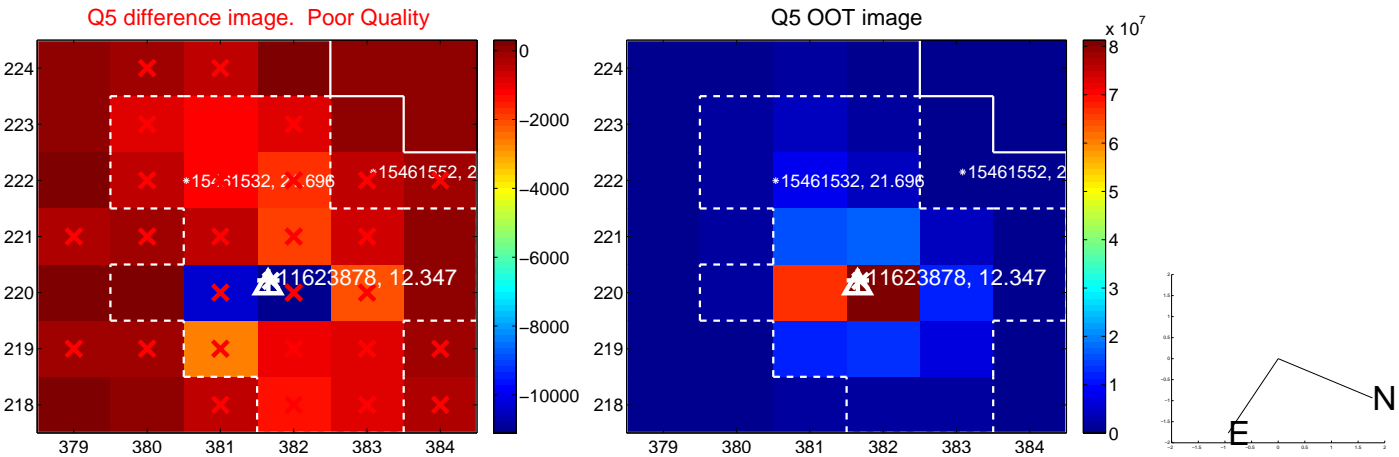


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

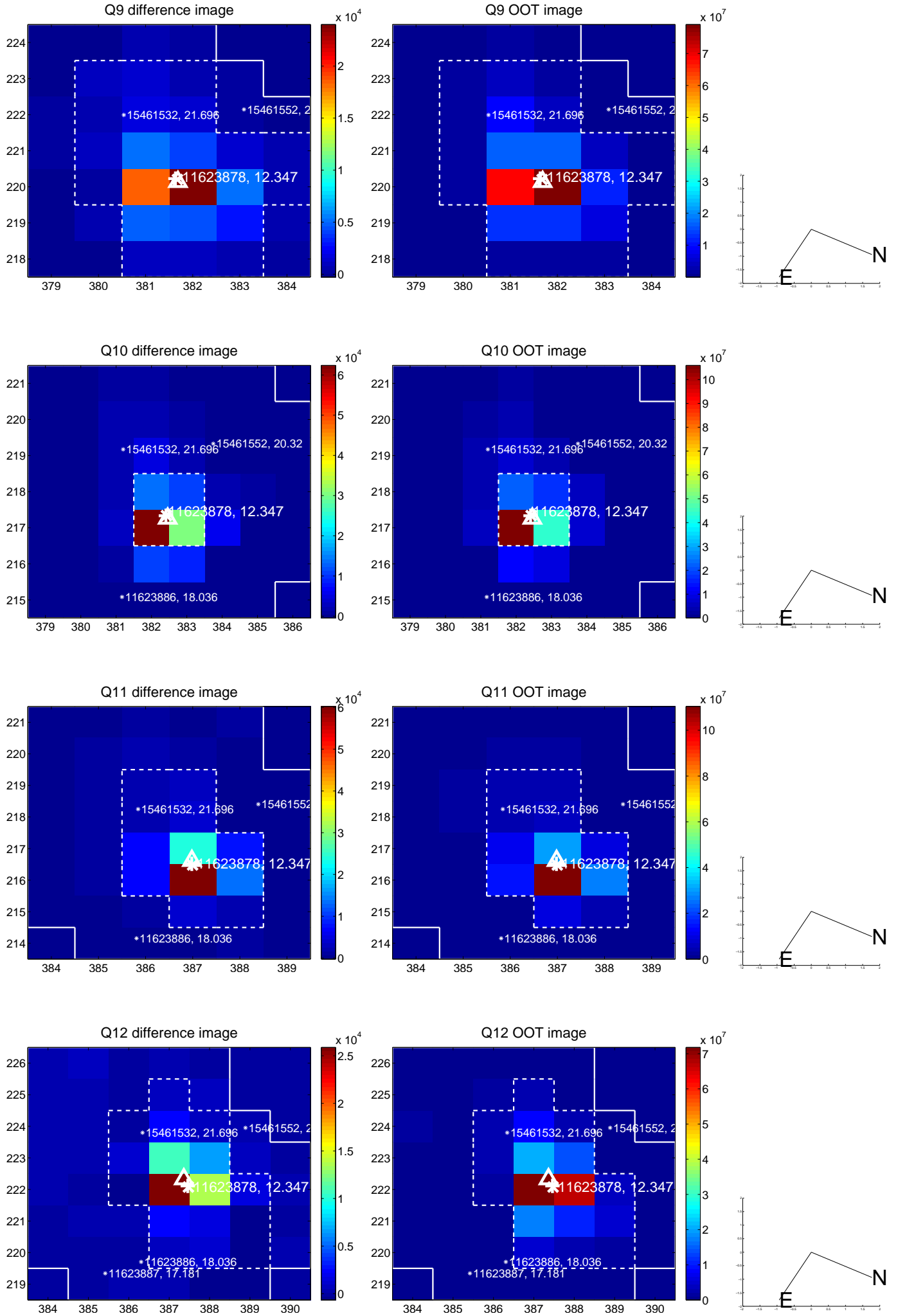
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



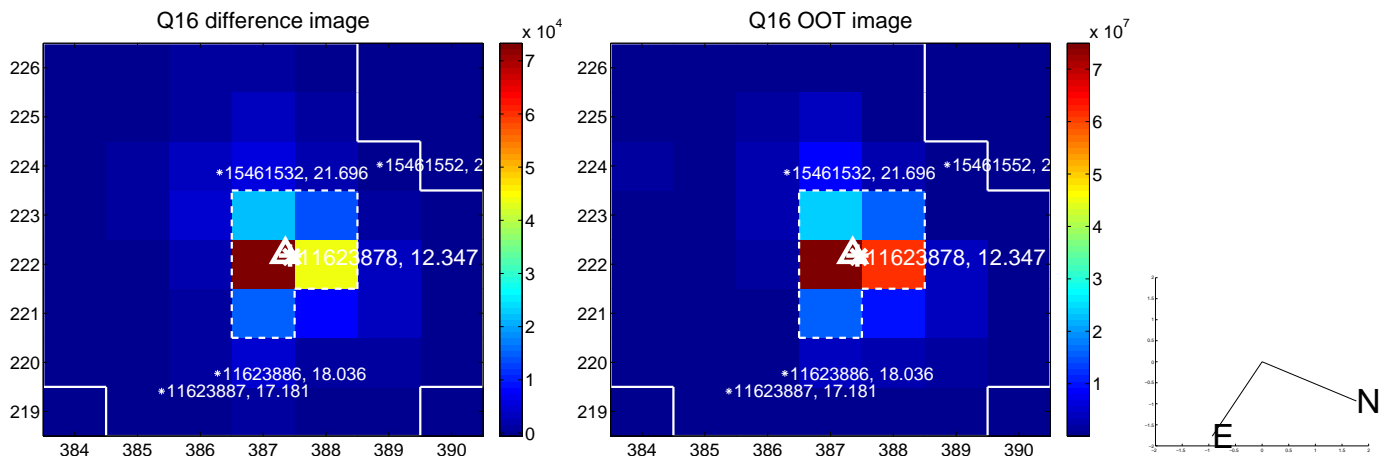
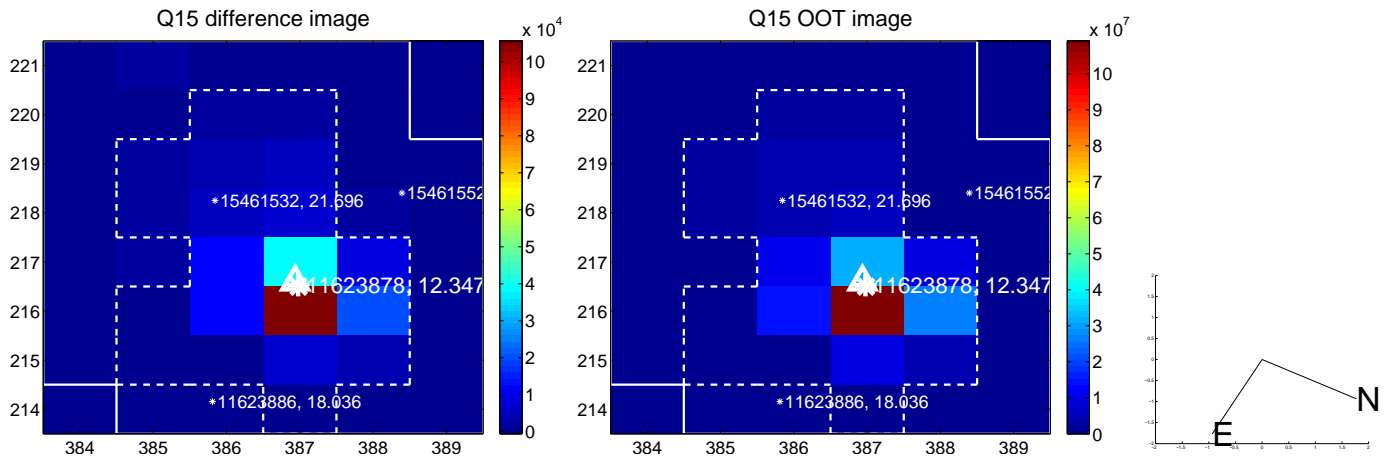
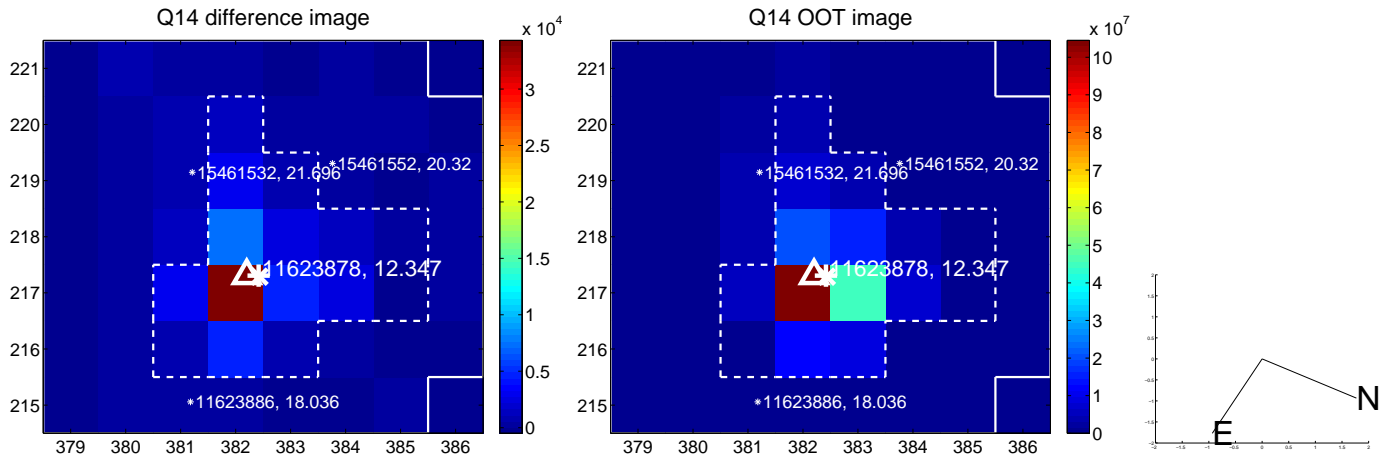
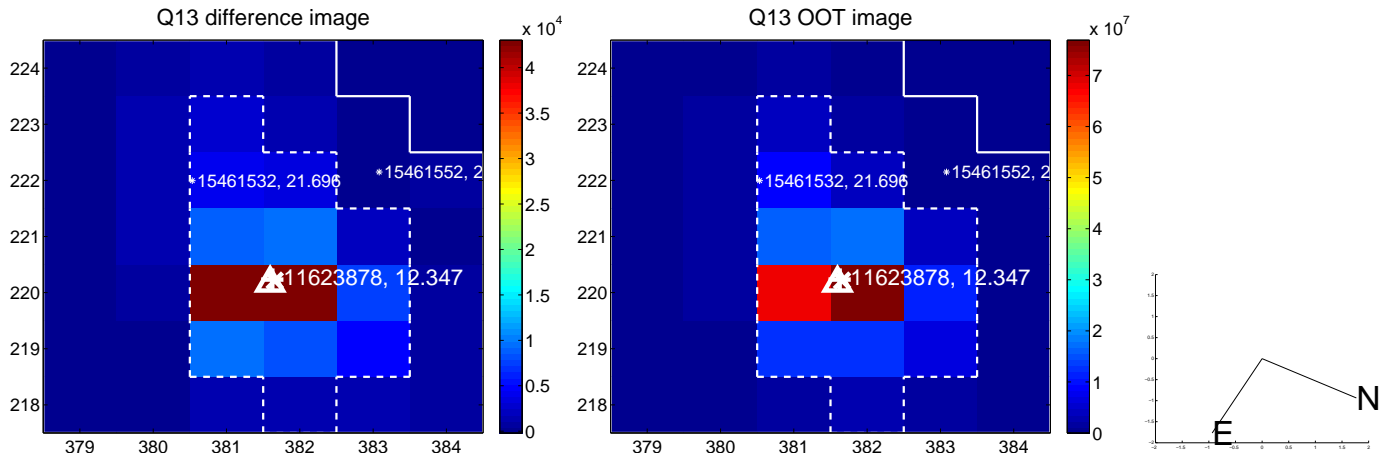
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



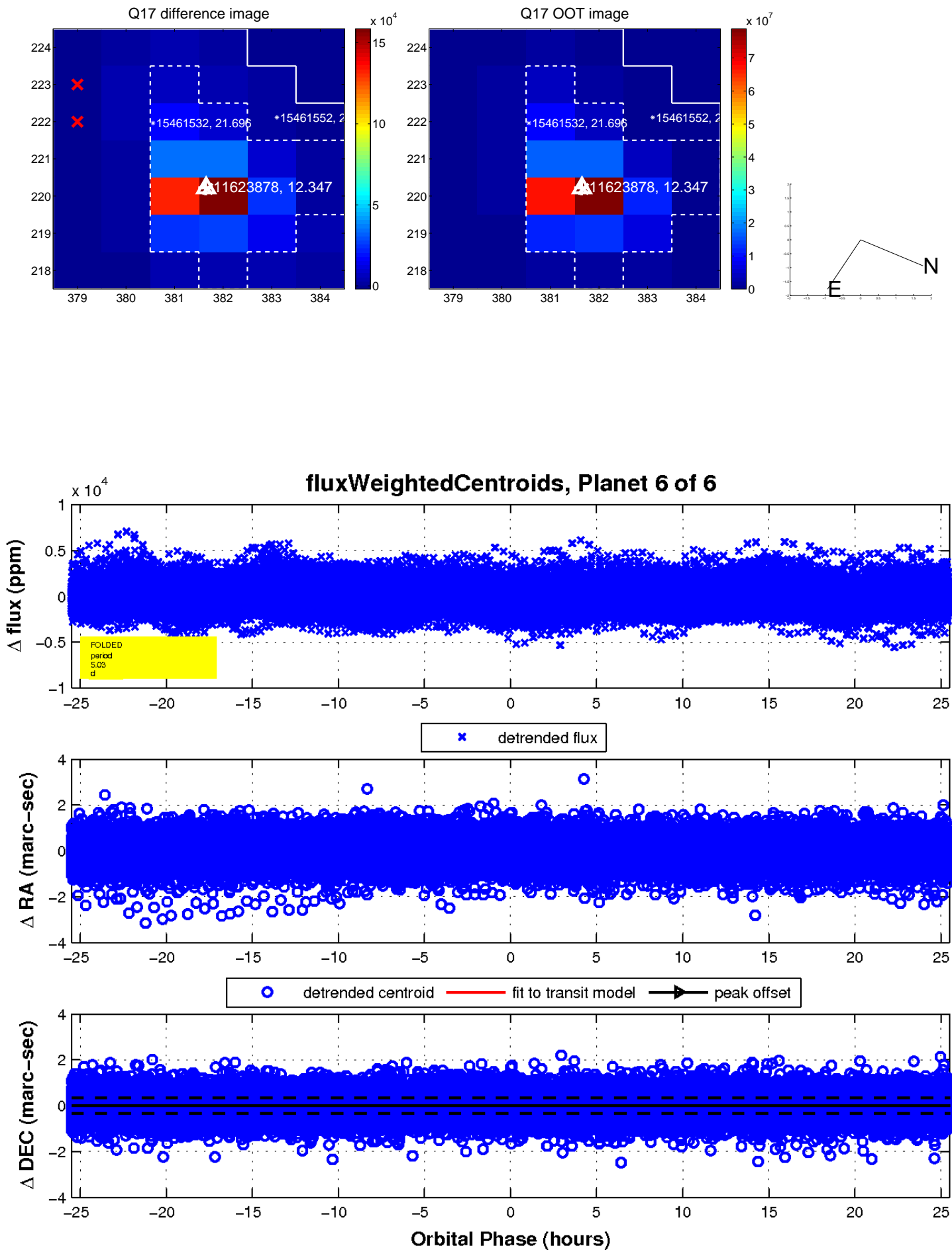
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

