

# KIC 011658996

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 011658996-01 | OBS      | No   | 0.726852      | 131.554275   | 341.5       | 2.832            | 13.2 | 14.6 | 2.07                        | 7262            | 4.44                   | 31091.69               |
| 011658996-02 | OBS      | No   | 0.726865      | 132.040378   | 397.1       | 2.142            | 12.6 | 16.0 | 2.07                        | 7262            | 4.79                   | 31091.00               |
| 011658996-03 | OBS      | No   | 0.726793      | 131.803440   | 165.5       | 3.559            | 10.5 | 7.2  | 2.07                        | 7262            | 2.71                   | 31095.10               |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011658996-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED   |
| 011658996-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED              |
| 011658996-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED |

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

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

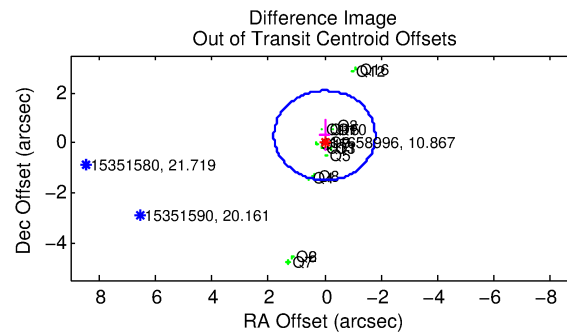
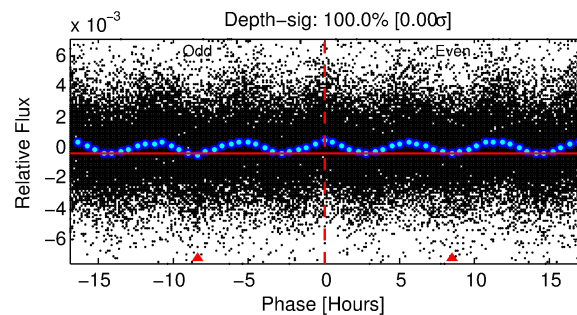
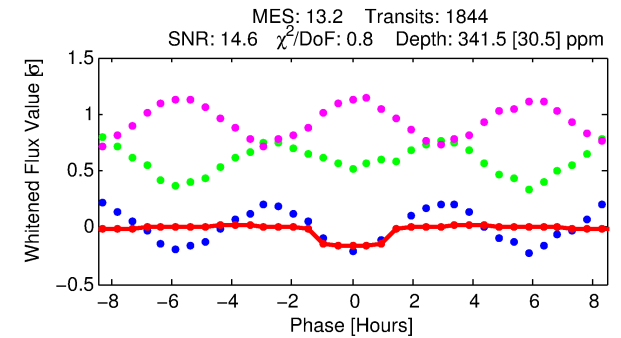
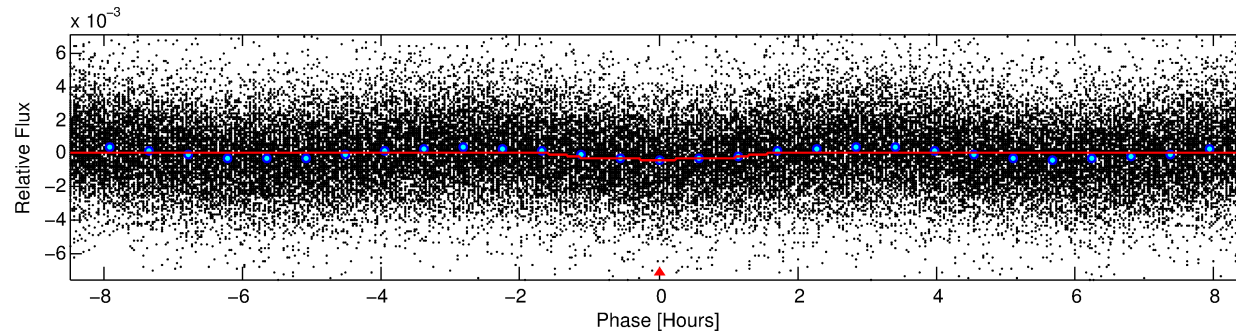
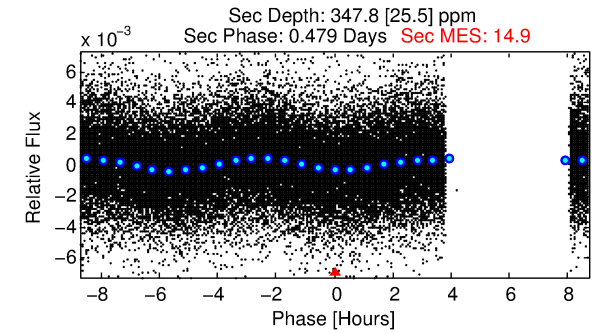
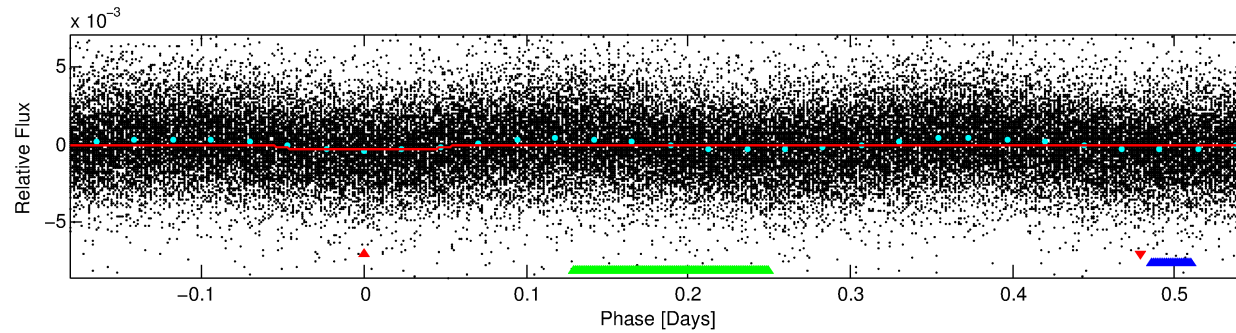
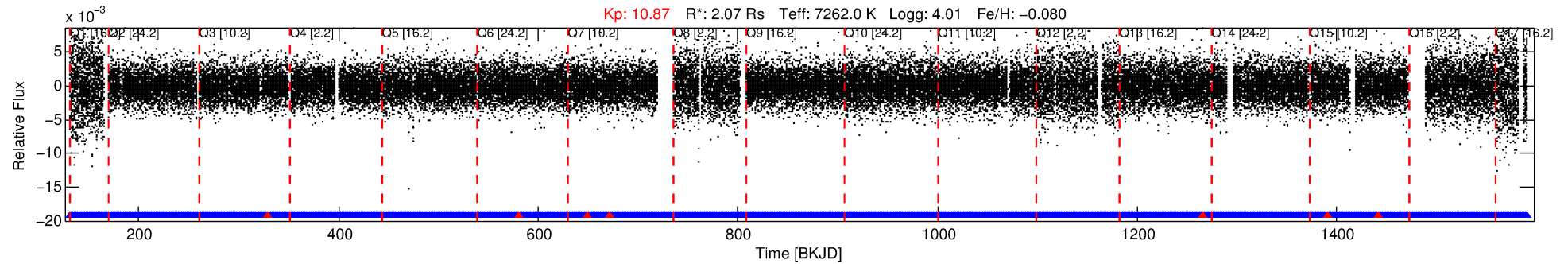
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011658996-01

No Significant Match Found

# DV One-Page Summary

KIC: 11658996 Candidate: 1 of 3 Period: 0.727 d



## DV Fit Results:

Period = 0.72685 [0.00001] d  
Epoch = 131.5543 [0.0021] BKJD  
Rp/R\* = 0.0196 [0.0031]  
a/R\* = 1.33 [0.53]  
b = 0.90 [0.19]  
Seff = 31091.69 [12597.52]  
Teq = 3386 [343] K  
Rp = 4.44 [1.42] Re  
a = 0.0185 [0.0045] AU  
Ag = 3.34 [1.61] [1.45σ]  
Teffp = 7076 [648] K [5.03σ]

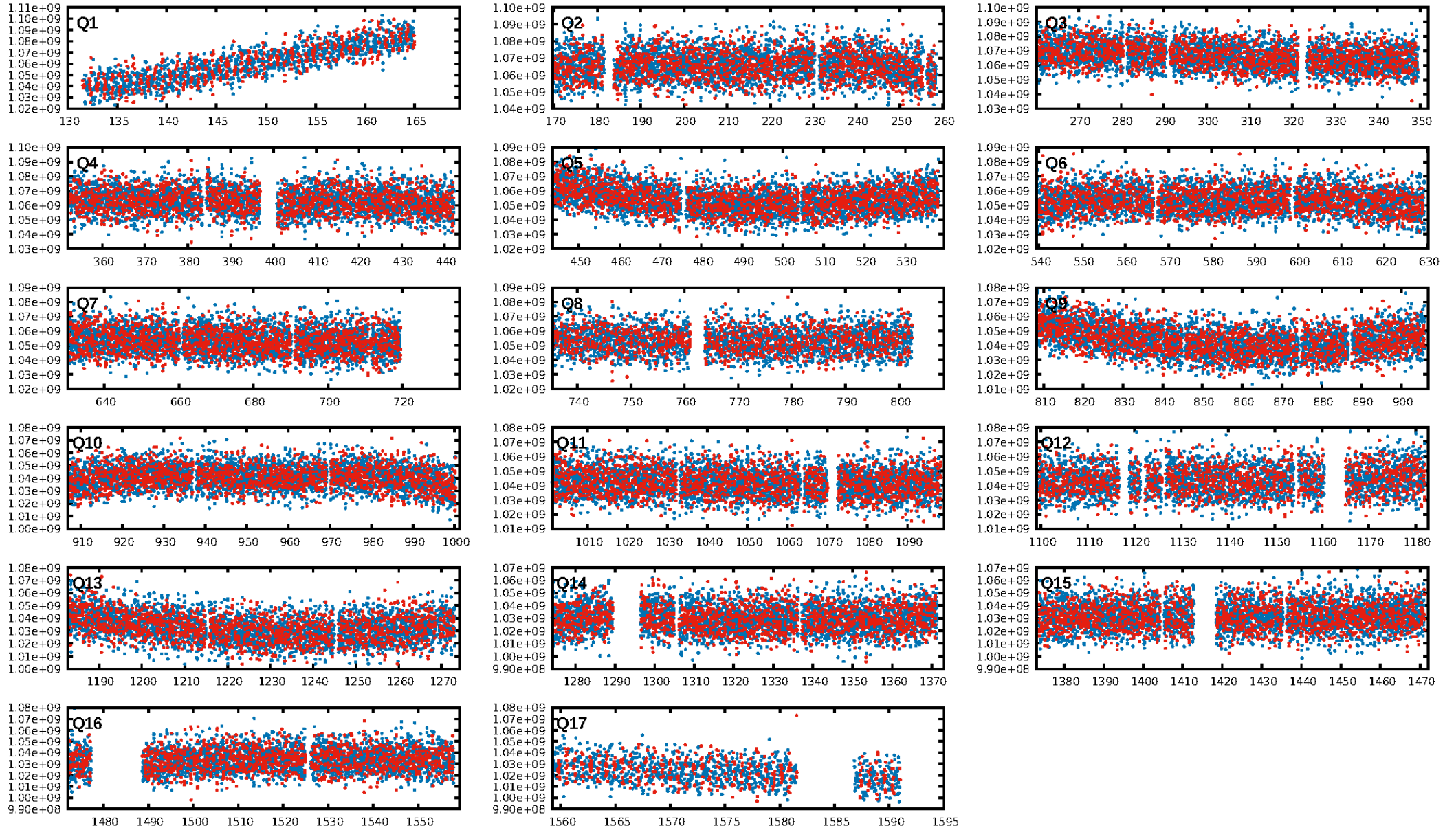
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1754/1761]  
GhostDiagnostic-chr: 1.05  
Centroid-sig: 0.0%  
Centroid-so: 0.503 arcsec [2.04σ]  
OotOffset-rm: 0.287 arcsec [0.48σ]  
KicOffset-rm: 0.243 arcsec [0.43σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:28:00 Z

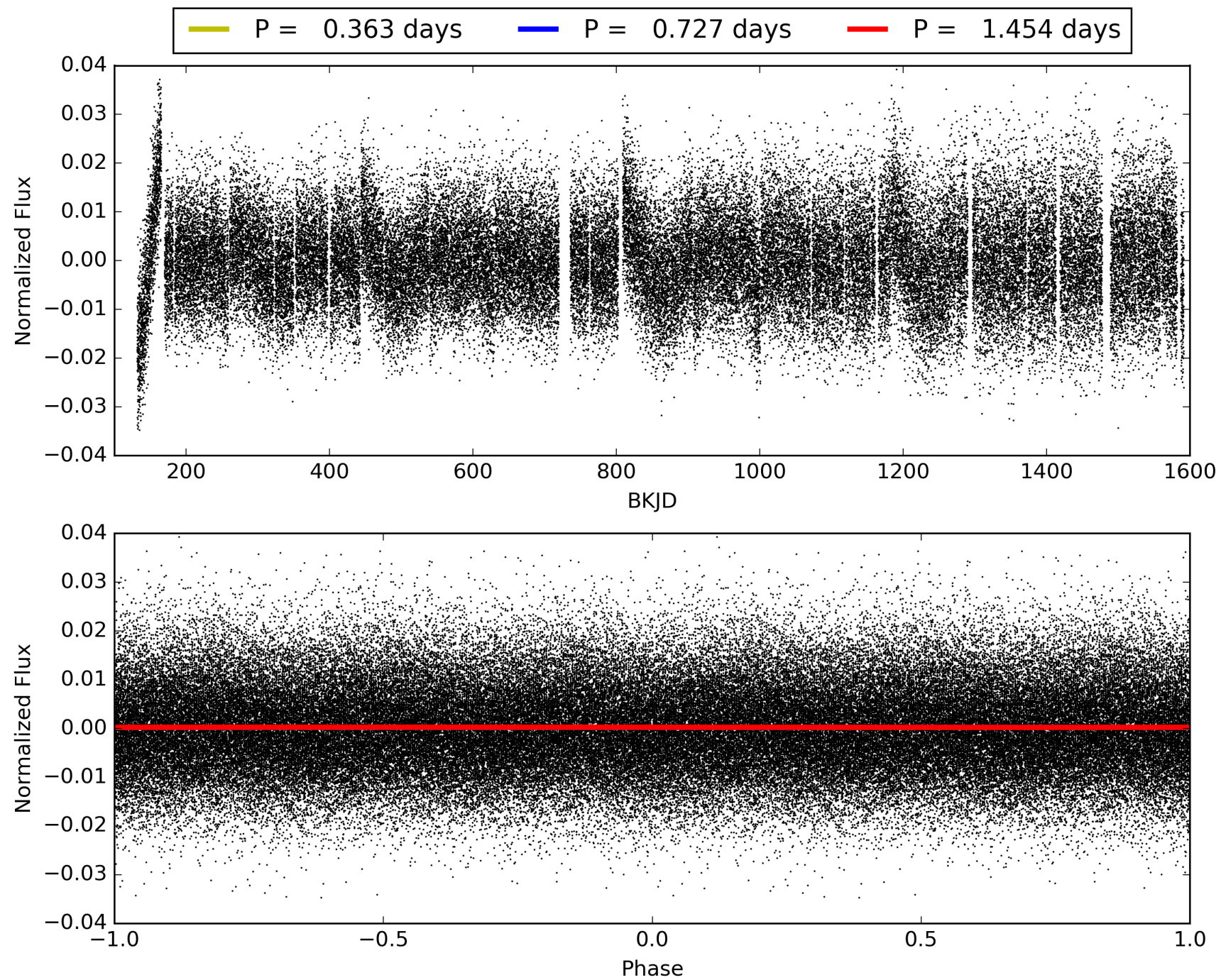
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011658996-01, PDC Light Curves





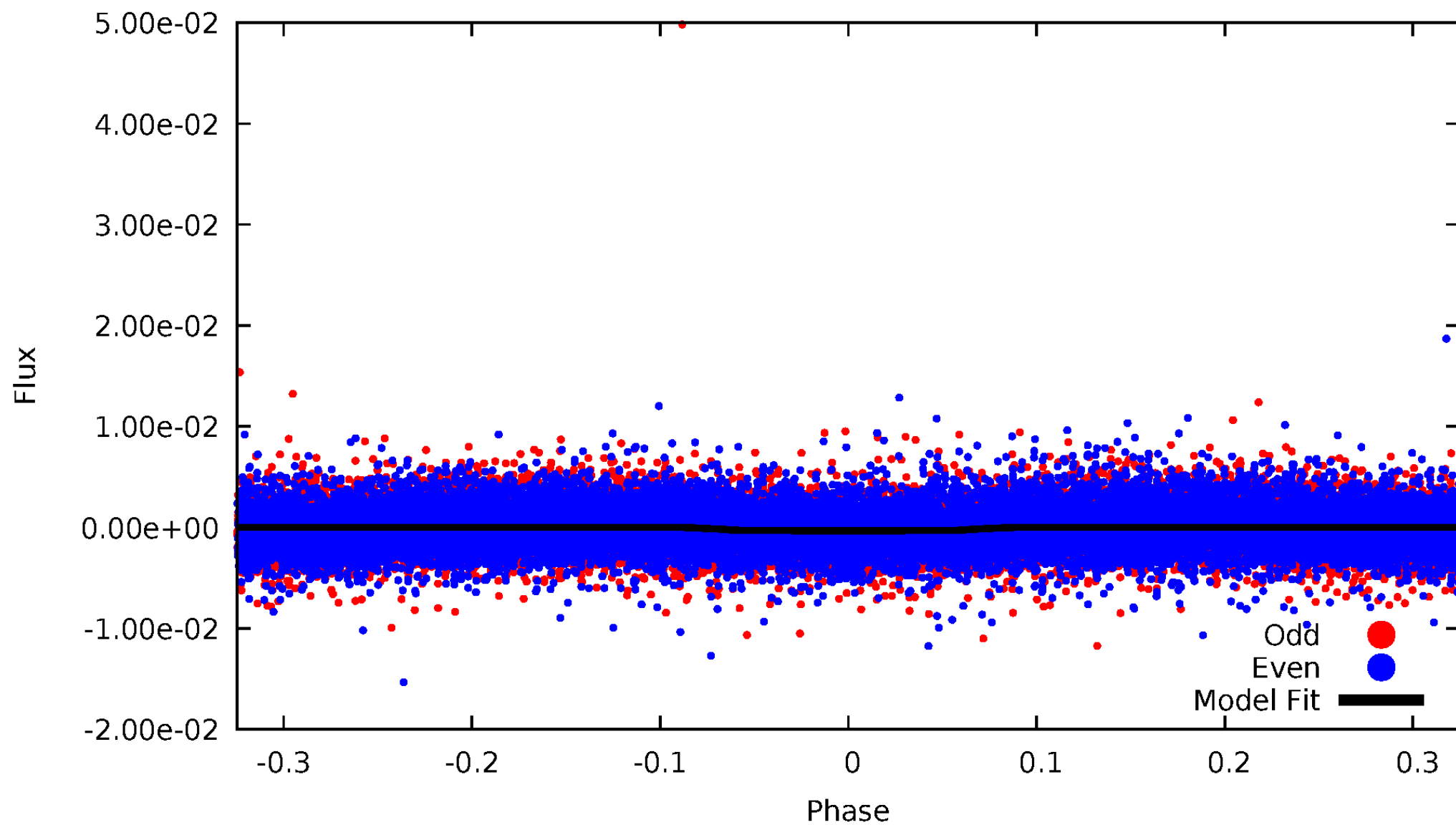
# TCE 011658996-01





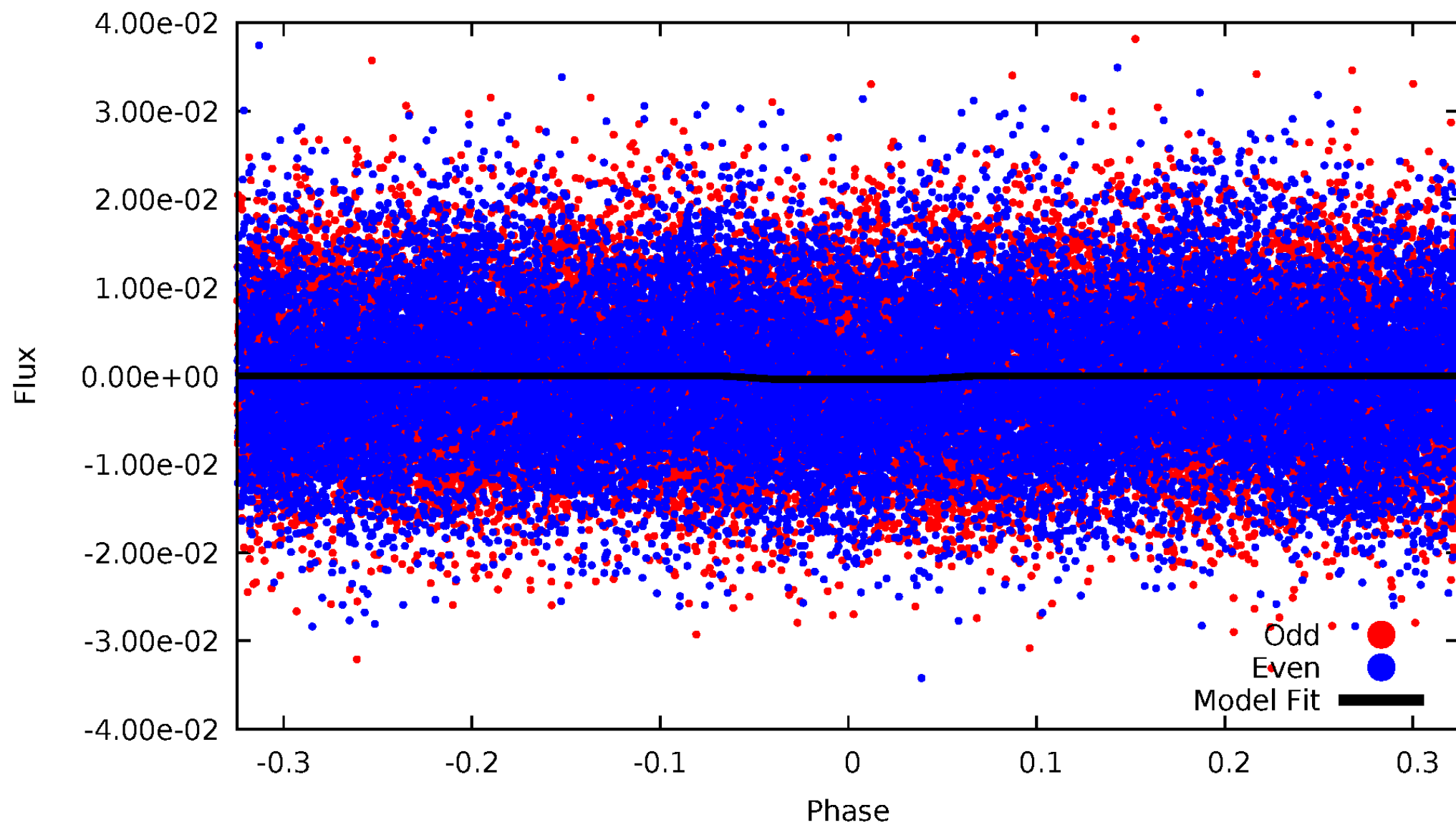
# DV Odd/Even

TCE 011658996-01

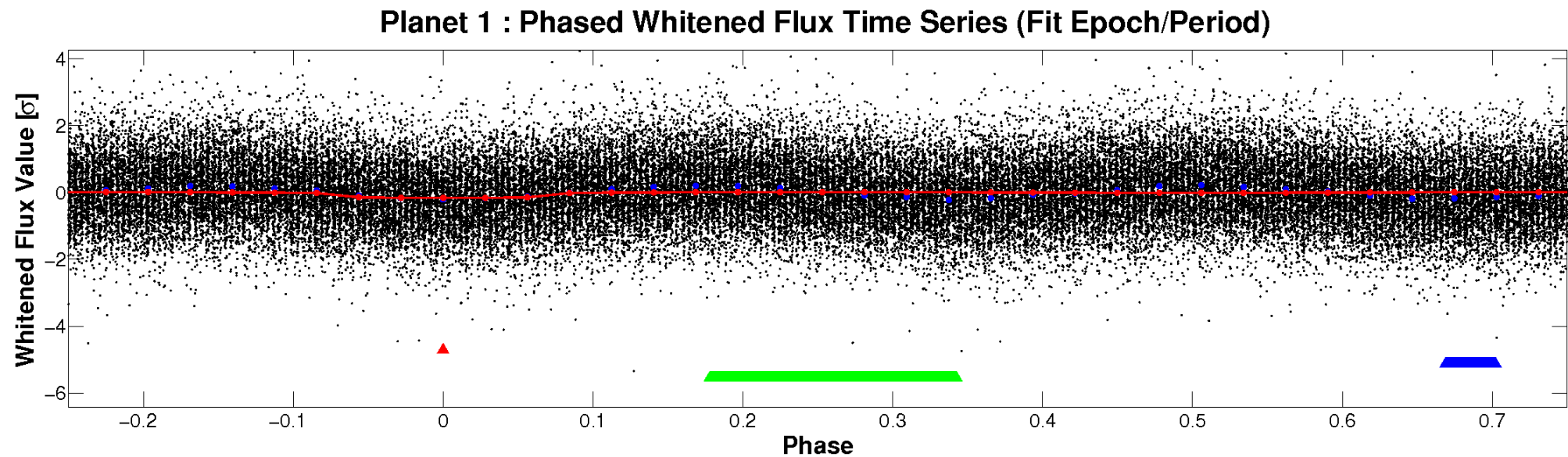
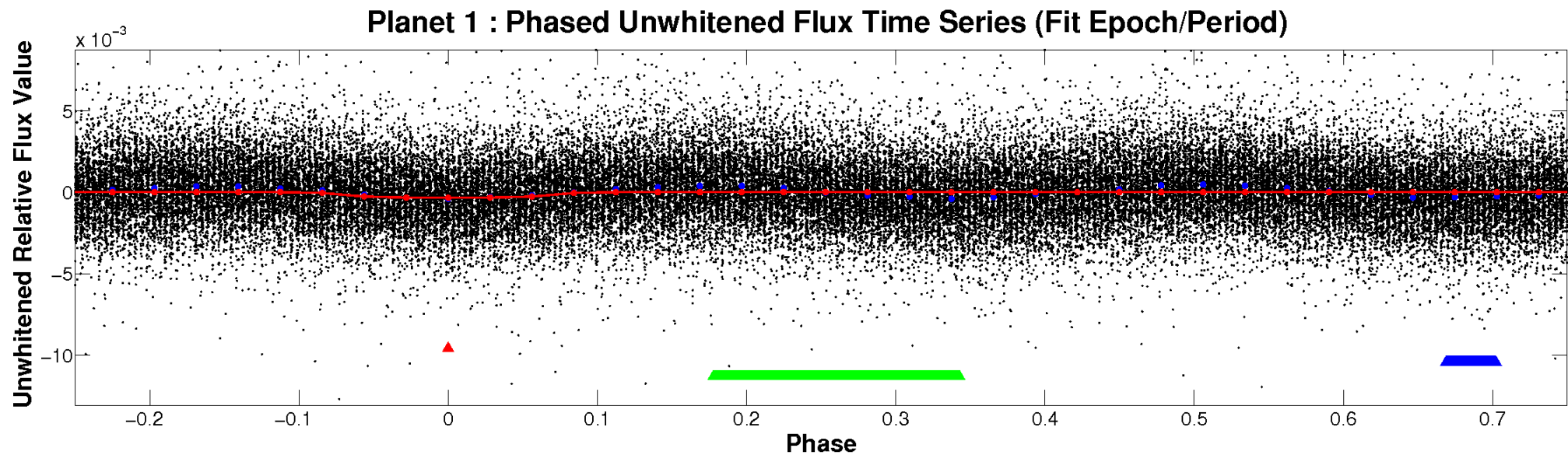


# ALT Odd/Even

TCE 011658996-01



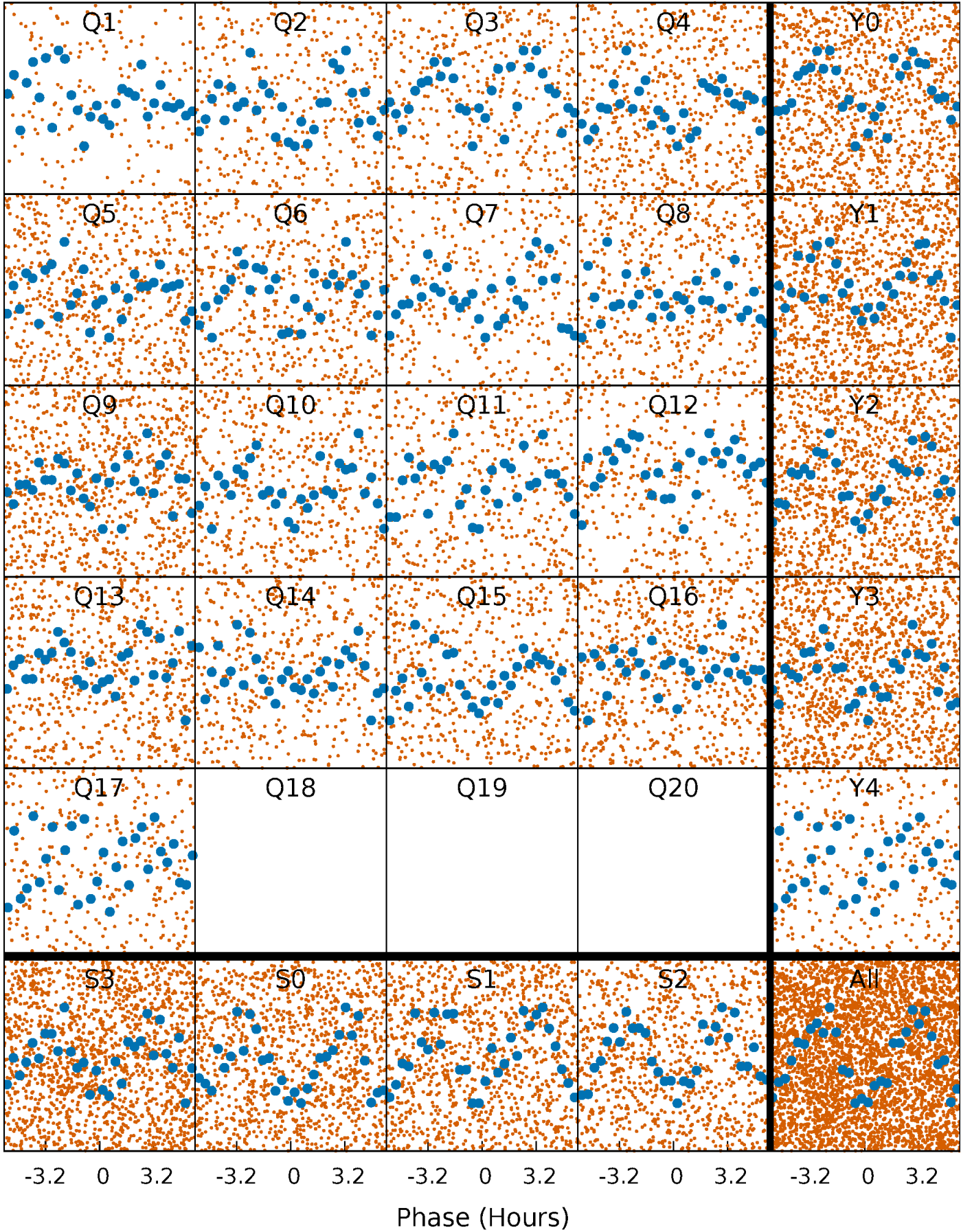
# Non-Whitened Vs. Whitened Light Curve





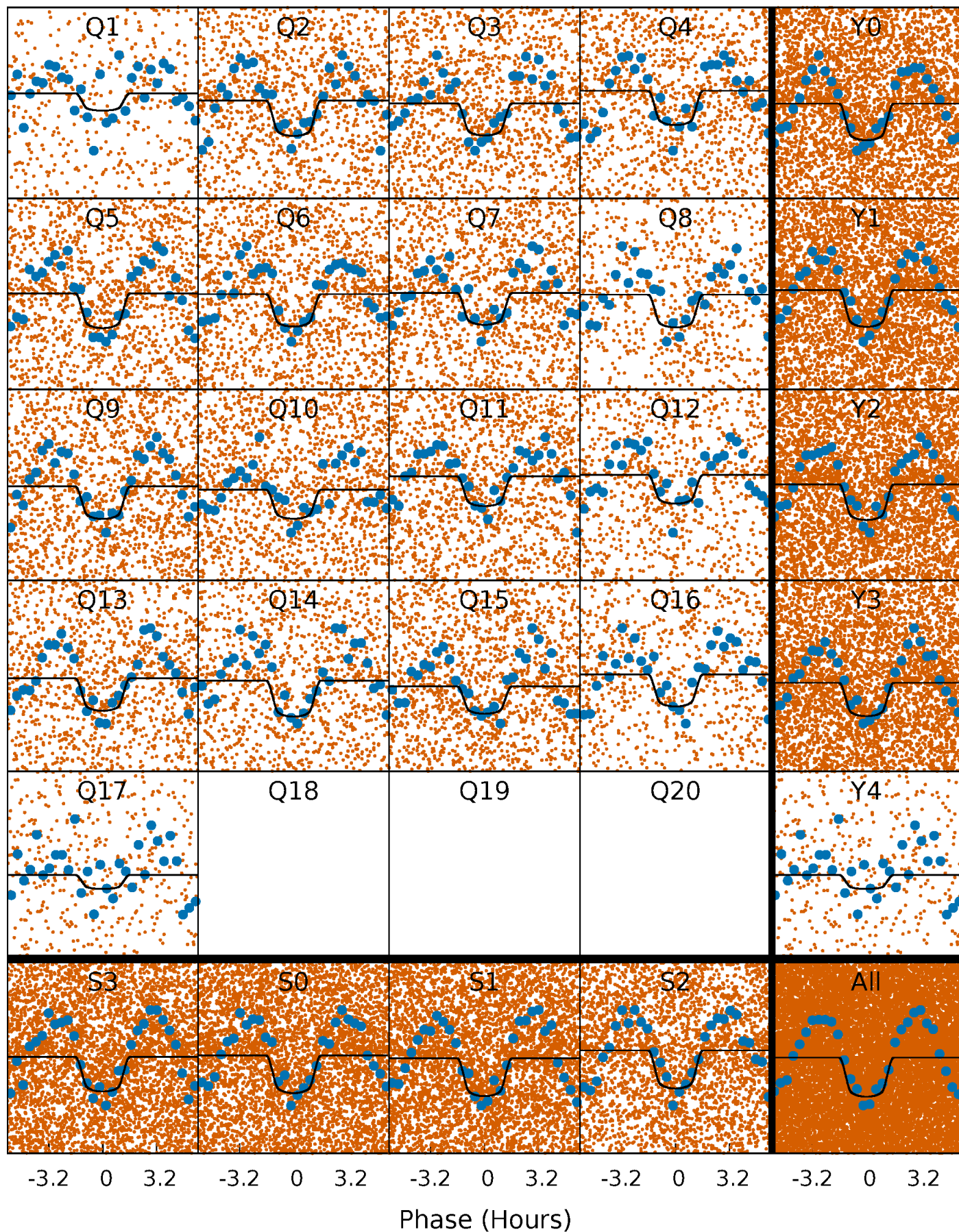
# PDC Quarter-Phased Transit Curves

TCE 011658996-01 P= 0.726852 Days  $T_0=131.554275$  (BKJD)



# DV Quarter-Phased Transit Curves

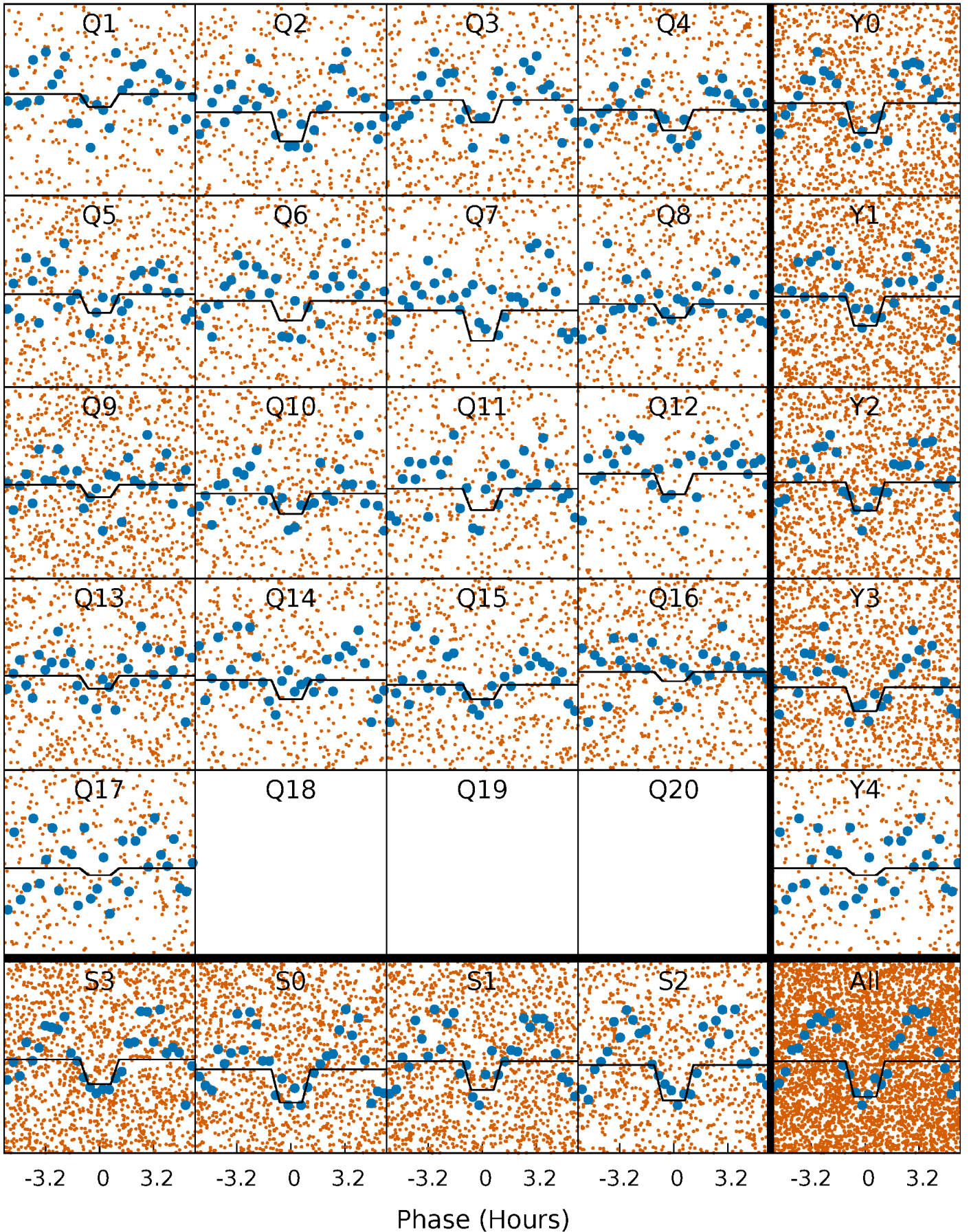
TCE 011658996-01 P= 0.726852 Days  $T_0=131.554275$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011658996-01 P= 0.726852 Days  $T_0=131.554275$  (BKJD)

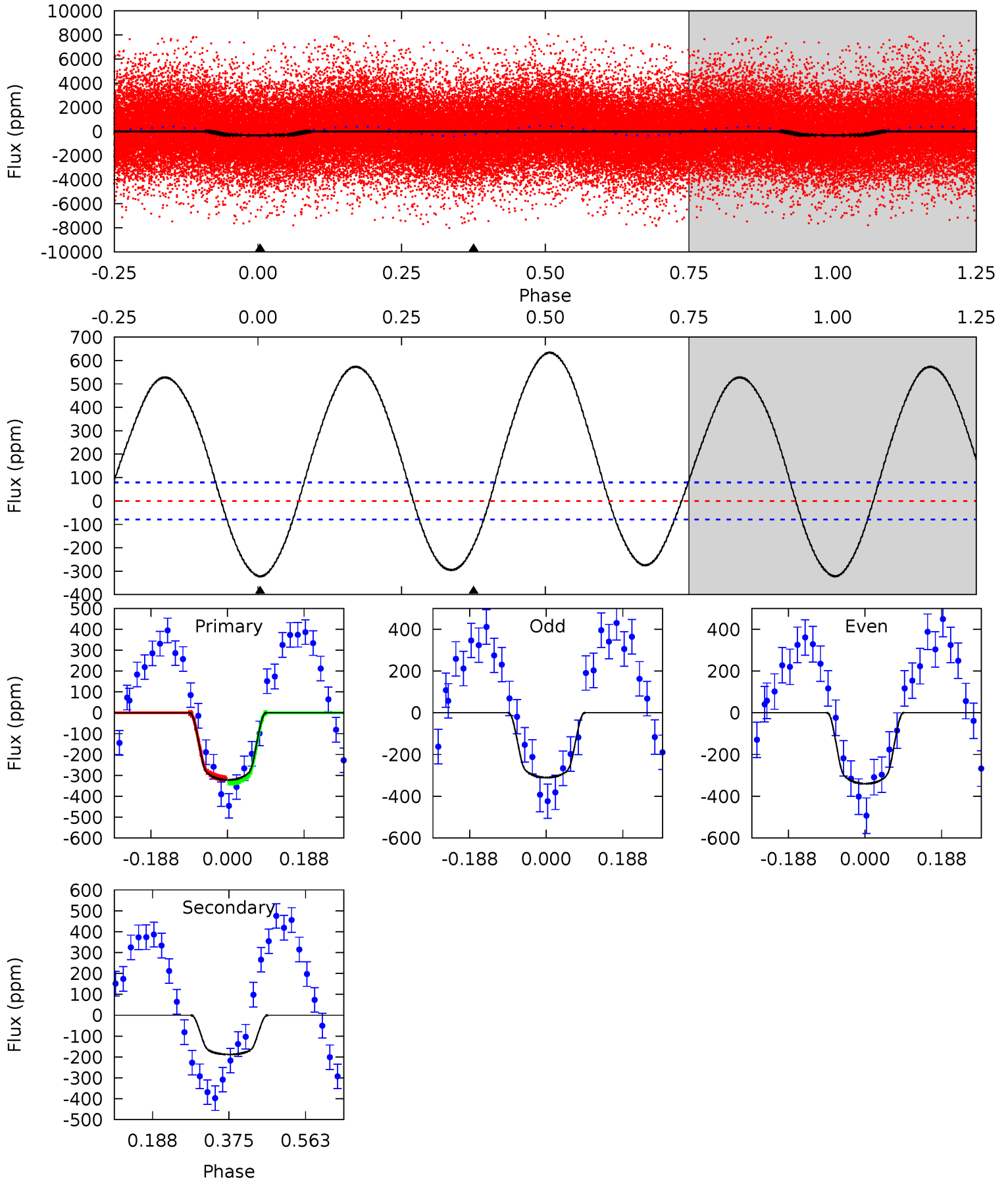




# DV Model-Shift Uniqueness Test

011658996-01, P = 0.726852 Days, E = 130.827423 Days

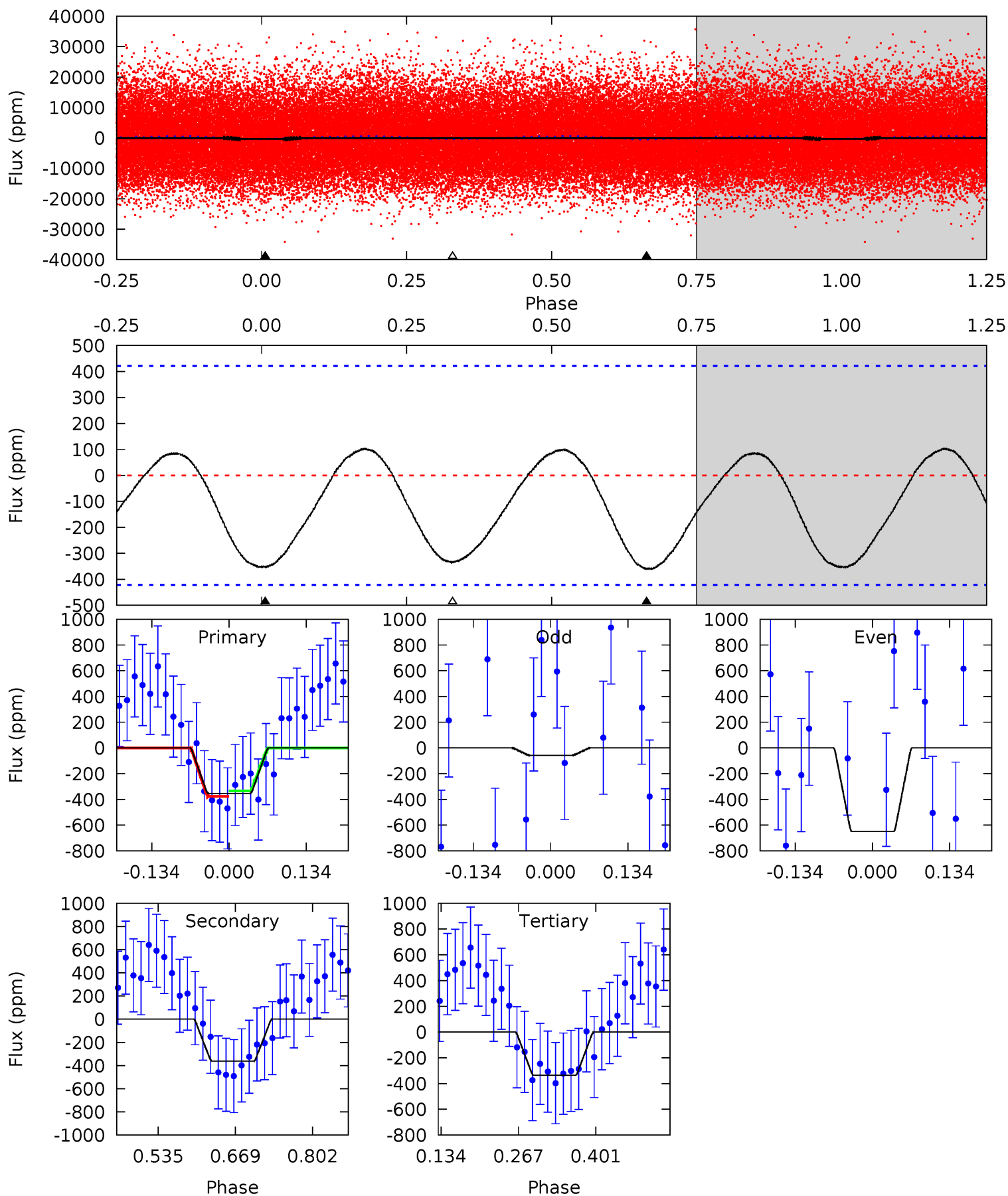
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 18.1 | 10.6 | 0   | 0   | 4.43            | 1.32            | 13.4             | 18.1    | 18.1    | 10.6    | 10.6    | 0.84    | 0.99 | 0.66  | 0.56 |



# Alt Model-Shift Uniqueness Test

011658996-01, P = 0.726852 Days, E = 130.827423 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  |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.79 | 3.86 | 3.59 | 0   | 4.50            | 1.50            | 1.66             | 0.20    | 3.79    | 0.28    | 3.86    | 3.16    | 1.08 | 0.22  | 0.22 |



### Stellar Parameters For KIC 011658996

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $7262^{+226}_{-327}$ | $4.012^{+0.203}_{-0.166}$ | $-0.080^{+0.250}_{-0.350}$ | $2.071^{+0.578}_{-0.578}$ | $1.605^{+0.212}_{-0.283}$ | $0.255^{+0.327}_{-0.116}$                 |
|        | +3%/-5%              | +5%/-4%                   | +312%/-438%                | +28%/-28%                 | +13%/-18%                 | +129%/-46%                                |
| Source | KIC0                 | 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 011658996-01 / KOI

| Detrend | Depth (ppm)   | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$ | $A_{\text{obs}}$          |
|---------|---------------|------------------------|----------------------|----------------------|---------------------------|
| DV      | $-188 \pm 18$ | $4.37^{+1.07}_{-0.88}$ | $4677^{+405}_{-383}$ | $5674^{+630}_{-475}$ | $1.843^{+1.010}_{-0.654}$ |
| Alt.    | $-361 \pm 94$ | $4.43^{+0.99}_{-1.01}$ | $4703^{+409}_{-382}$ | $6901^{+998}_{-863}$ | $3.441^{+2.408}_{-1.412}$ |

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



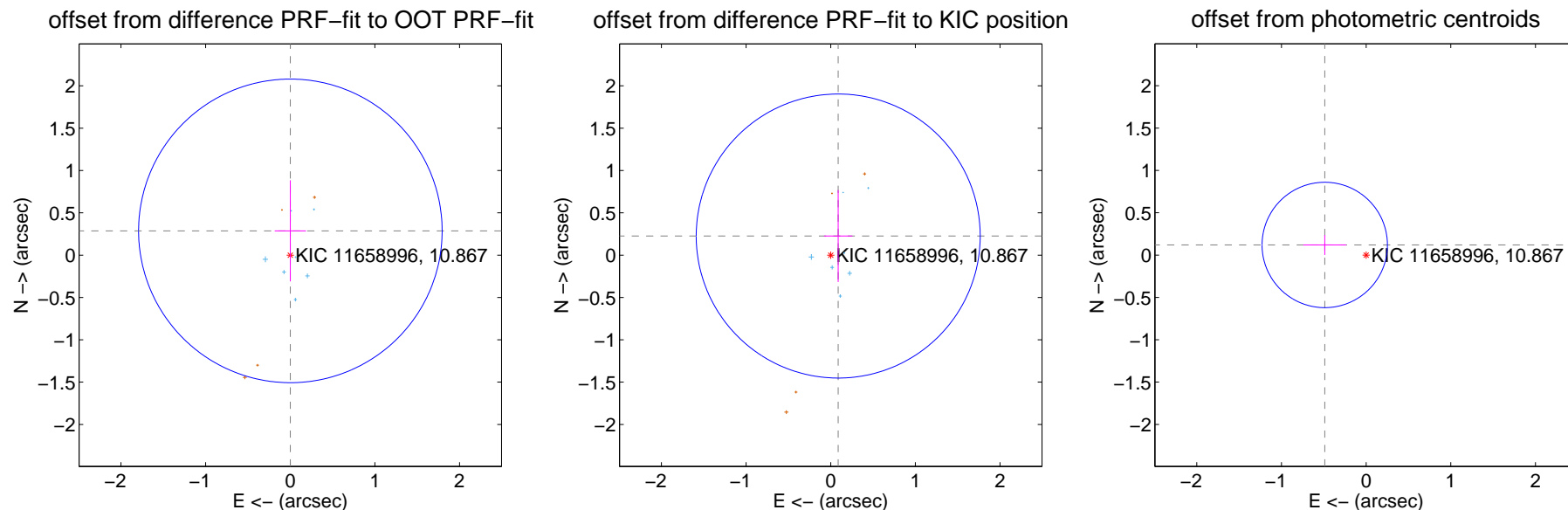
## DV Centroid Data

Supplemental centroid analysis for 011658996-01. **Kepler magnitude: 10.87.** Transit SNR 14.57

There are 12 quarters with good PRF difference image offsets

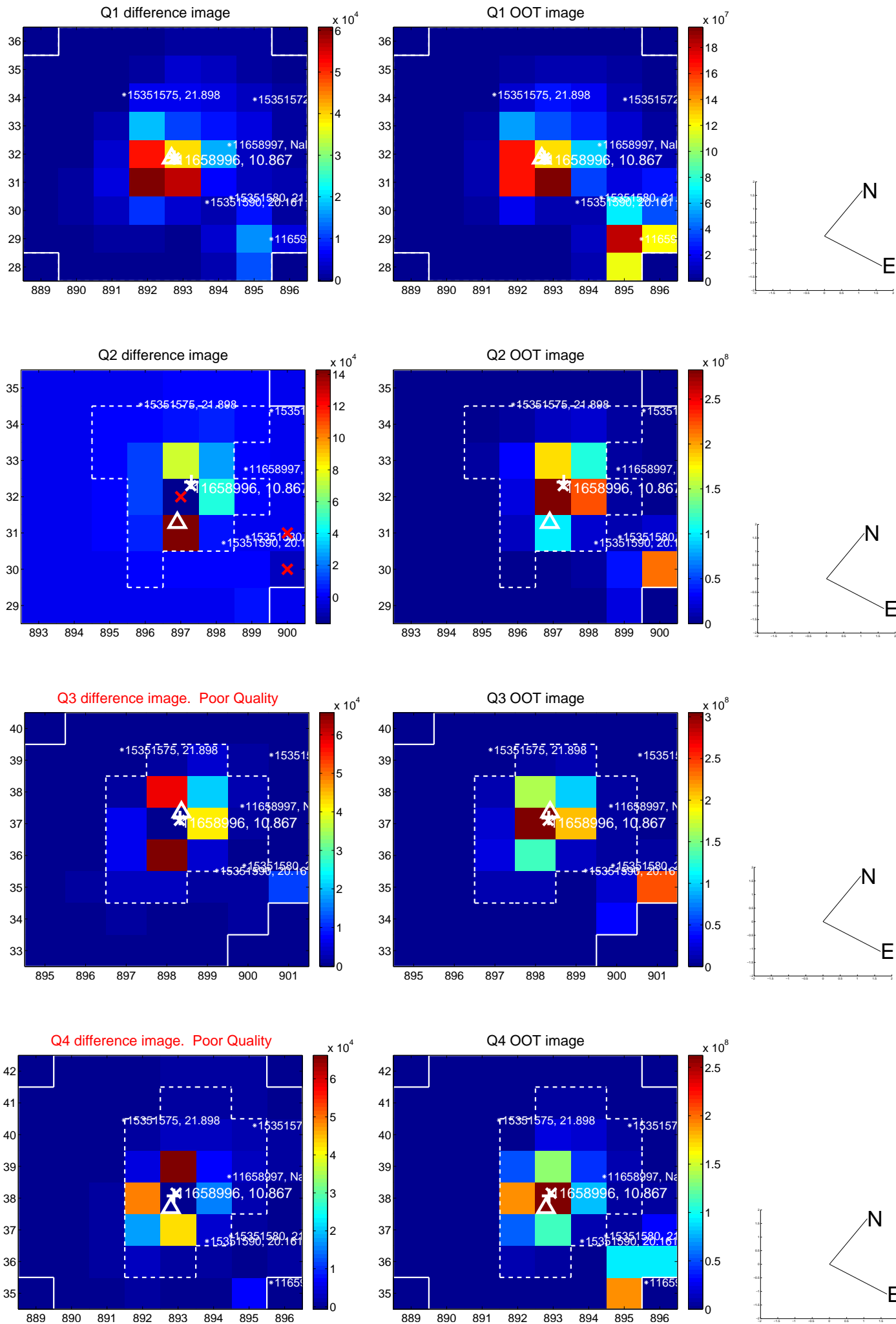
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.287 \pm 0.598$  | 0.48                | $-0.001 \pm 0.185$ | $0.287 \pm 0.597$ |
| PRF-fit source offset from KIC position | $0.243 \pm 0.559$  | 0.43                | $-0.088 \pm 0.167$ | $0.226 \pm 0.542$ |
| photometric centroid source offset      | $0.50 \pm 0.25$    | 2.04                | $0.49 \pm 0.25$    | $0.12 \pm 0.12$   |

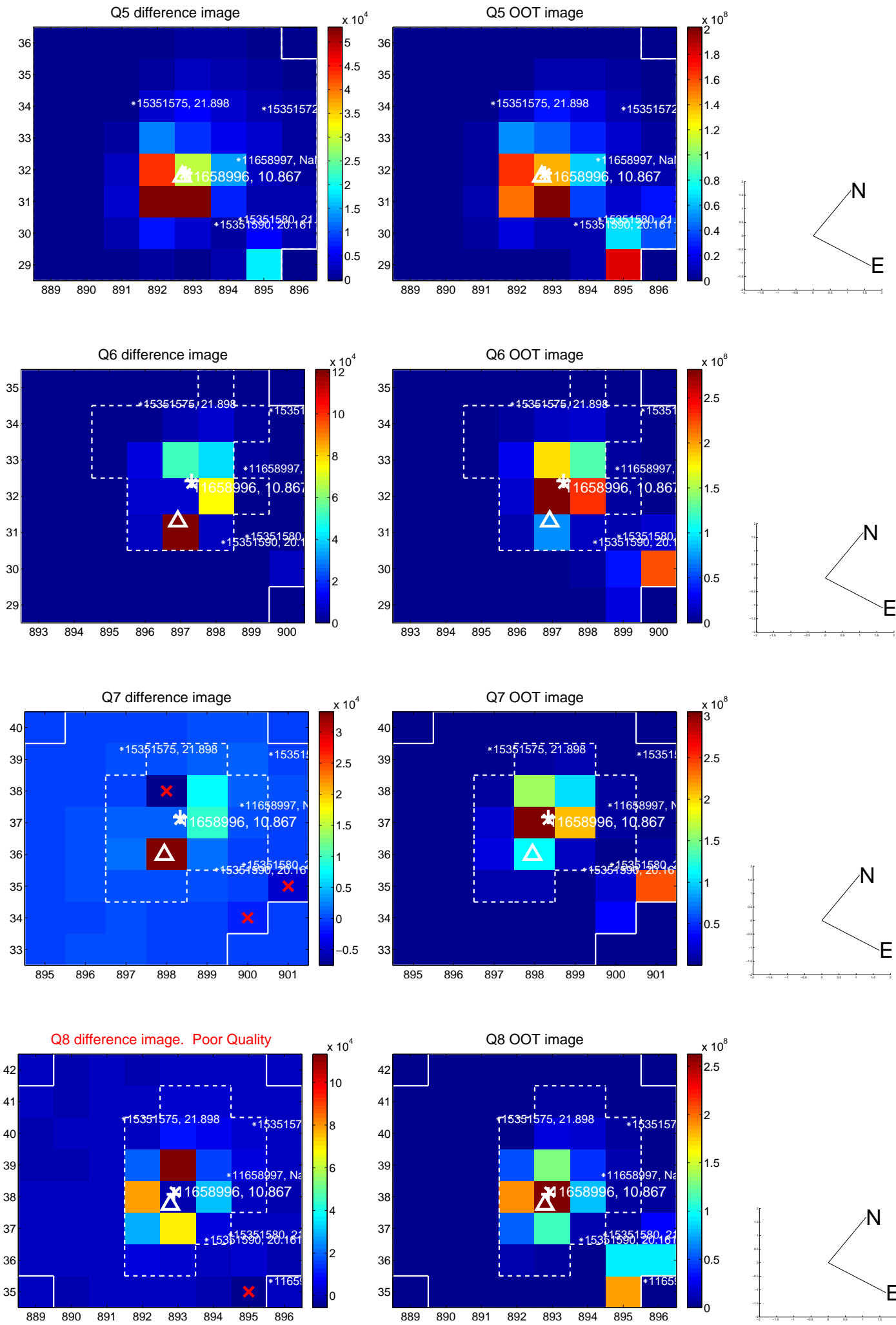


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

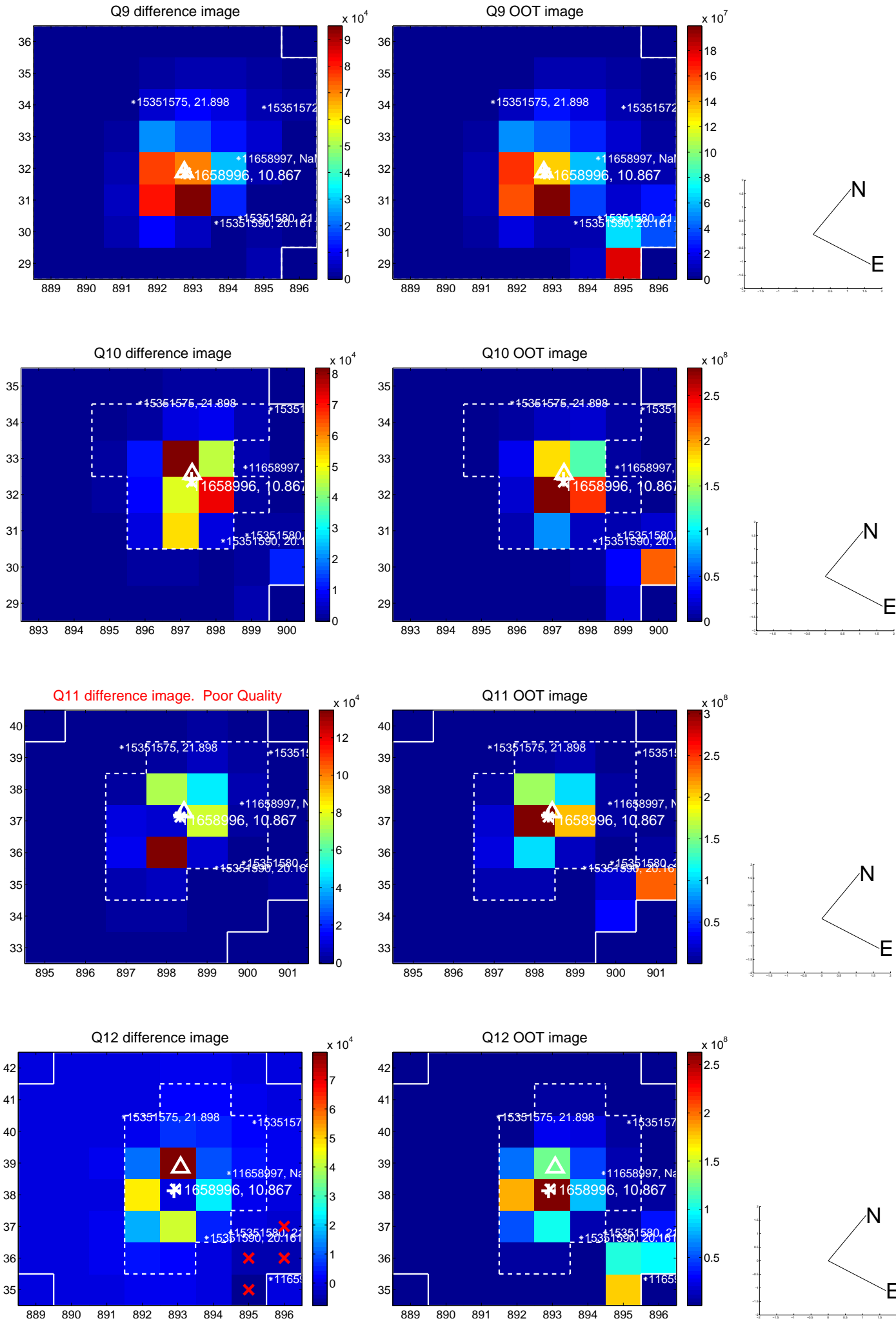


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

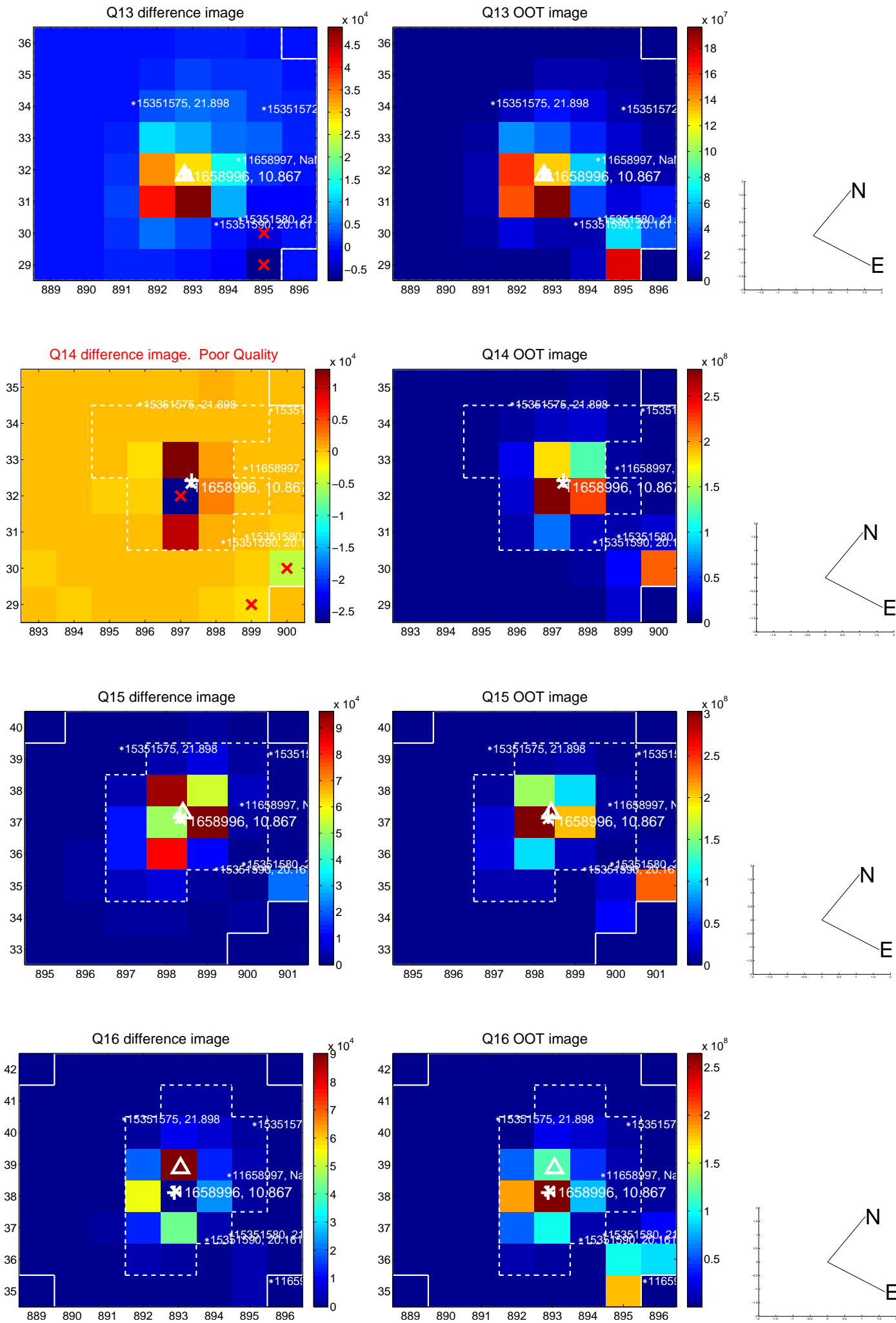




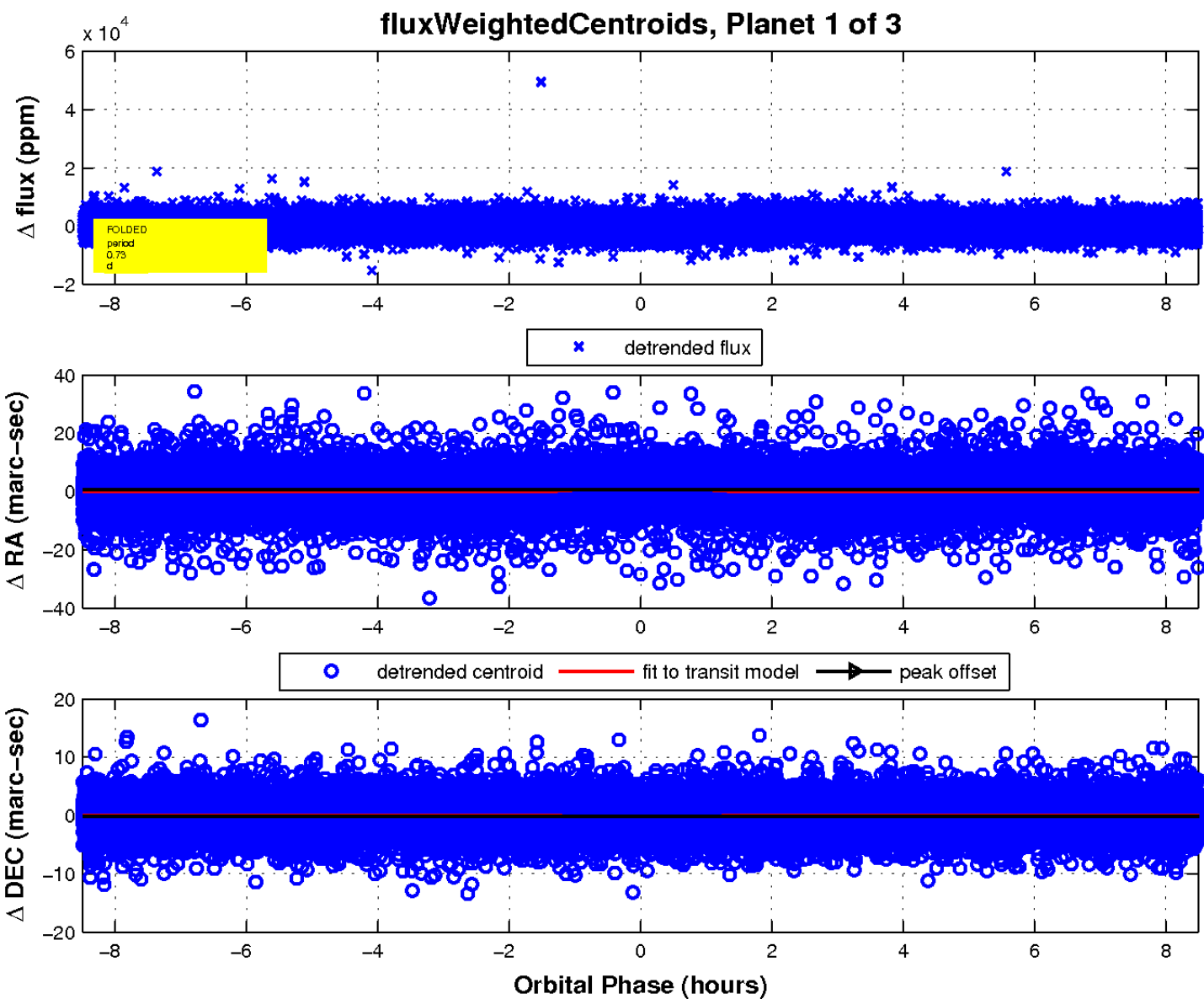
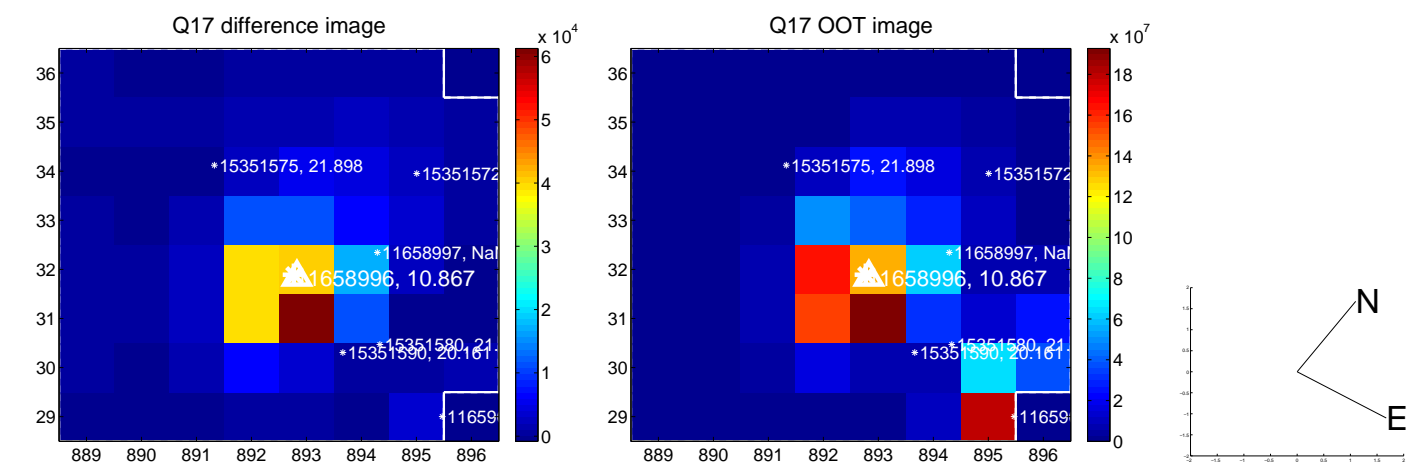
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

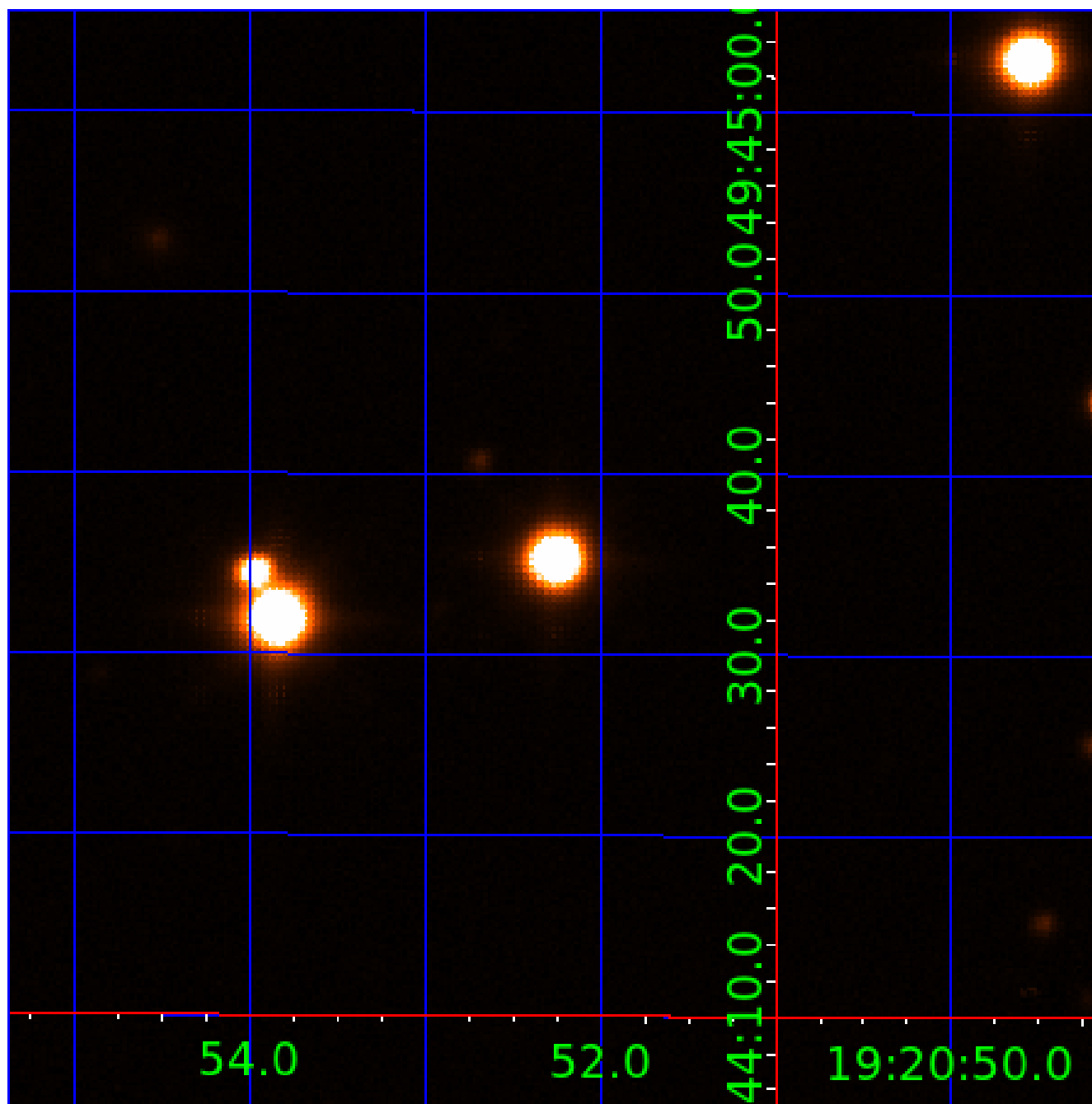


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011658996

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 011658996-01 | OBS      | No   | 0.726852      | 131.554275   | 341.5       | 2.832            | 13.2 | 14.6 | 2.07                        | 7262            | 4.44                   | 31091.69               |
| 011658996-02 | OBS      | No   | 0.726865      | 132.040378   | 397.1       | 2.142            | 12.6 | 16.0 | 2.07                        | 7262            | 4.79                   | 31091.00               |
| 011658996-03 | OBS      | No   | 0.726793      | 131.803440   | 165.5       | 3.559            | 10.5 | 7.2  | 2.07                        | 7262            | 2.71                   | 31095.10               |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011658996-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED   |
| 011658996-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED              |
| 011658996-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED |

**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.

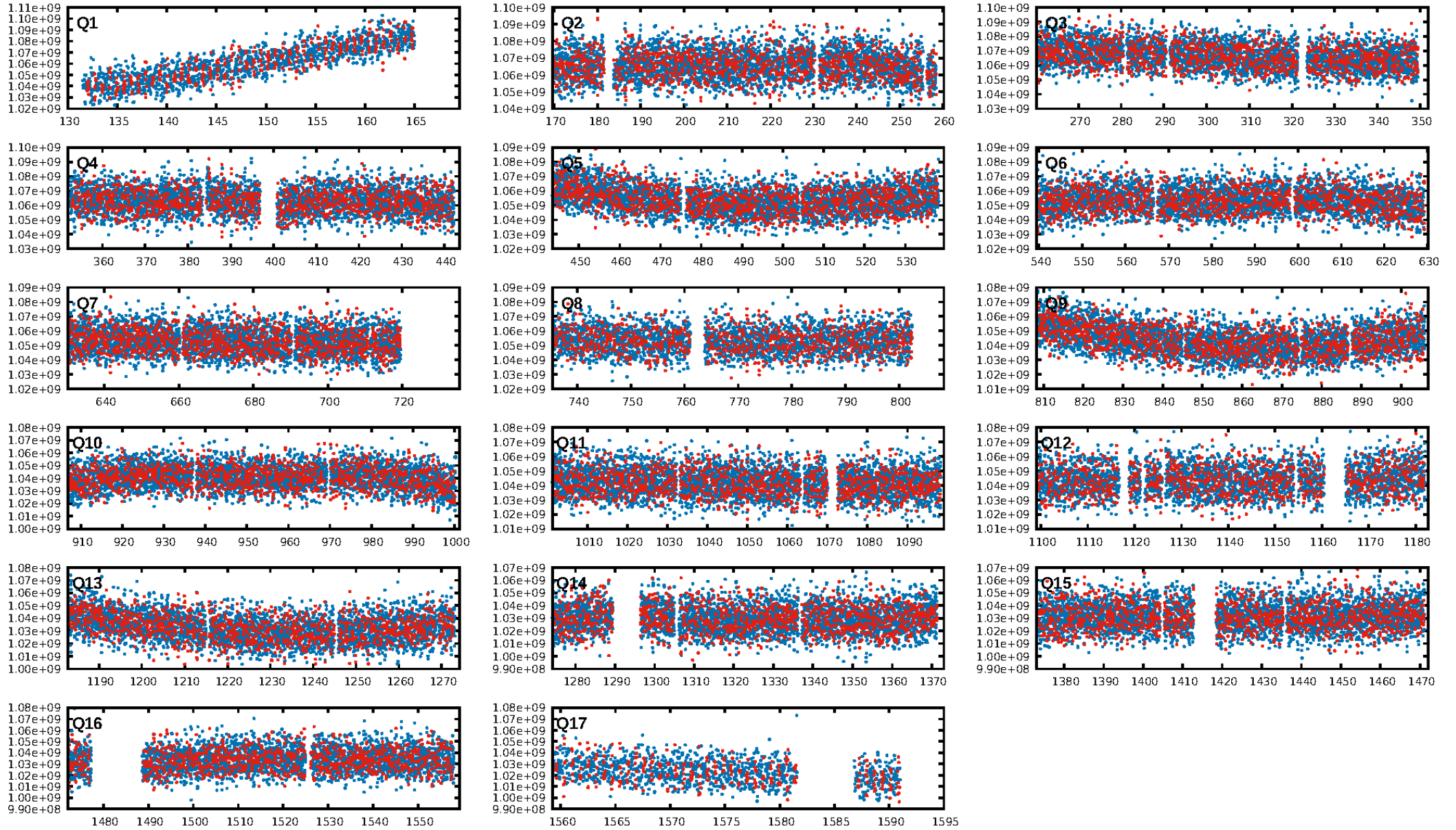
## Ephemeris Match Information For 011658996-02

No Significant Match Found

KIC: 11658996    Candidate: 2 of 3    Period: 0.727 d

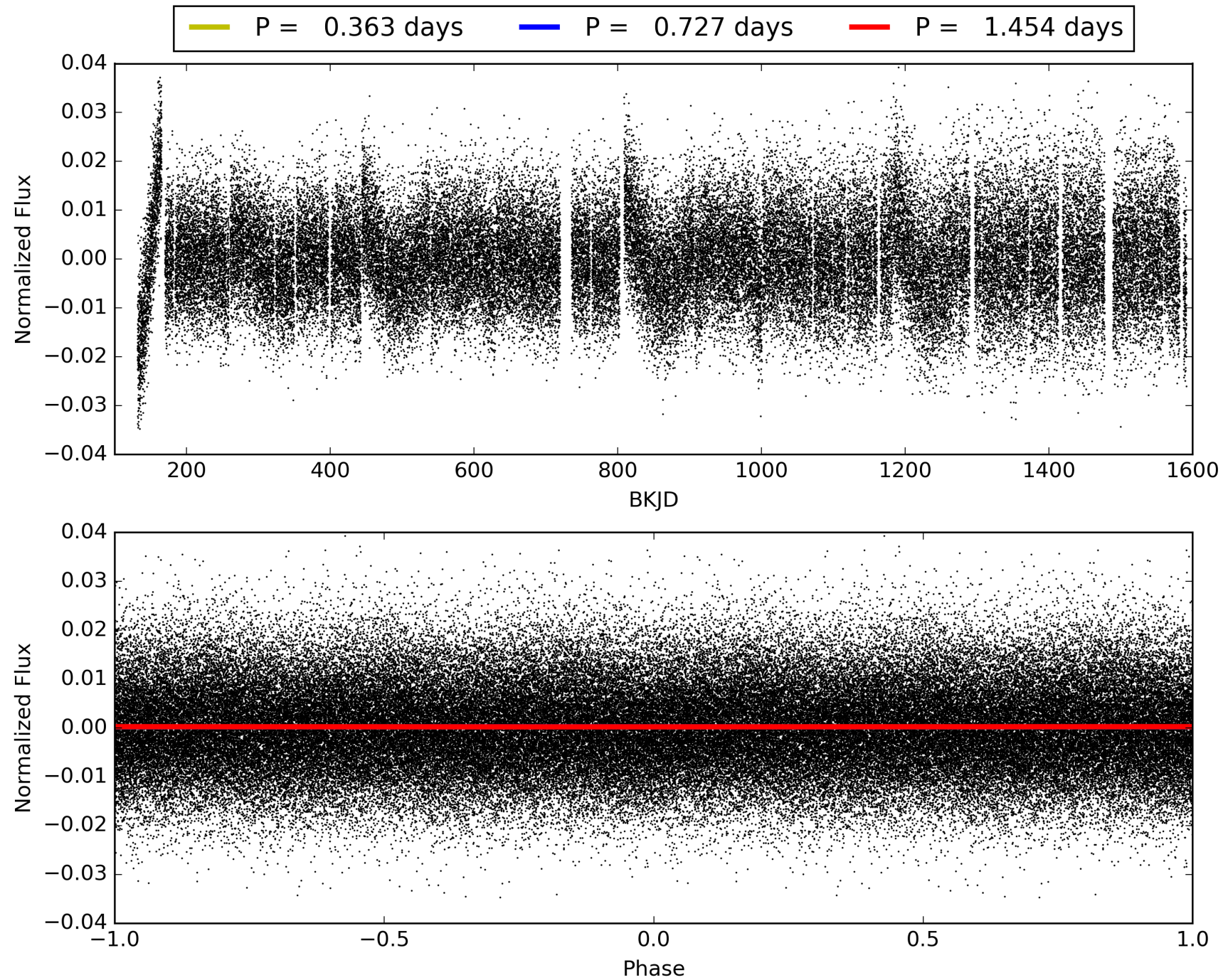


# TCE 011658996-02, PDC Light Curves





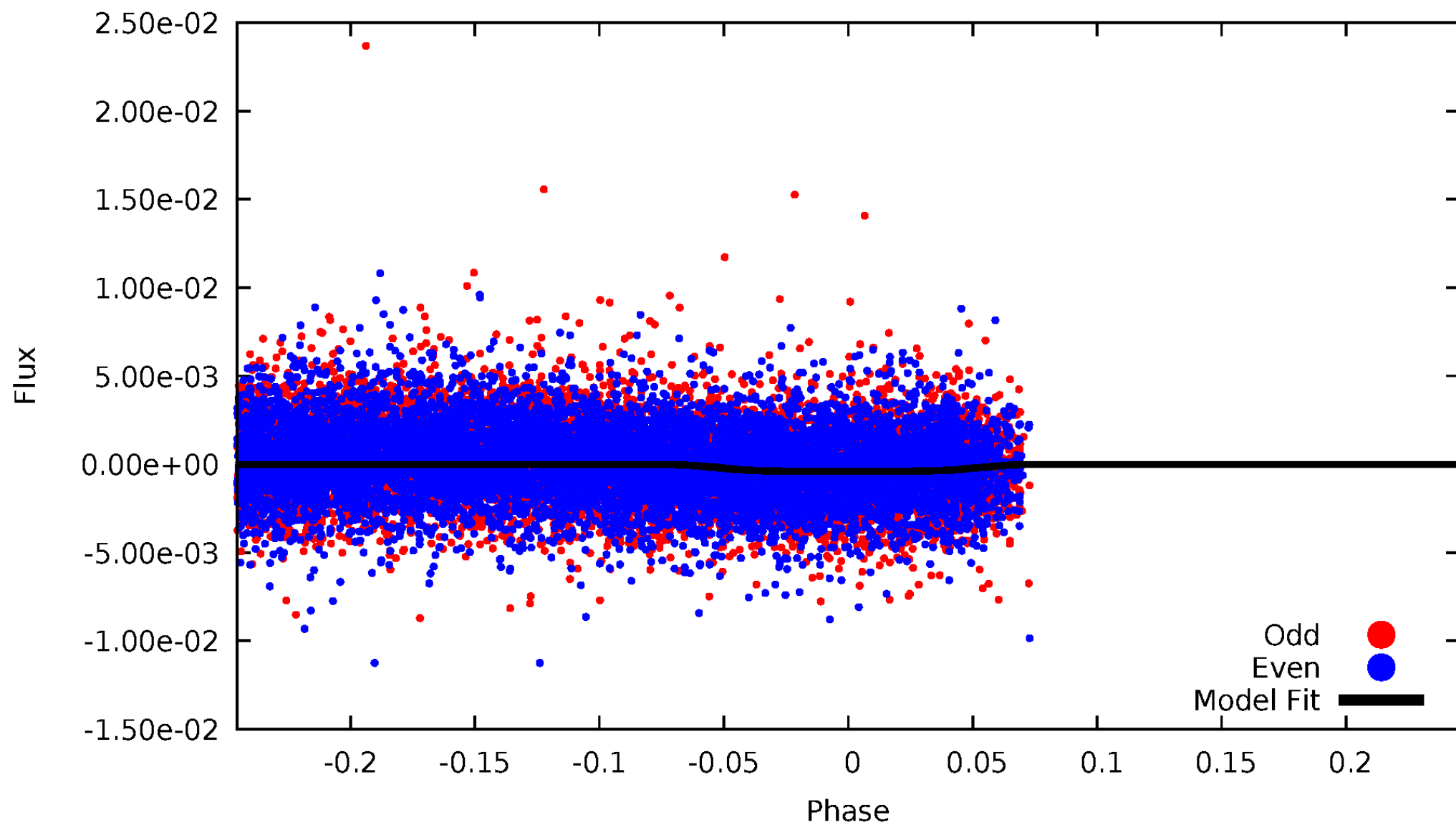
# TCE 011658996-02





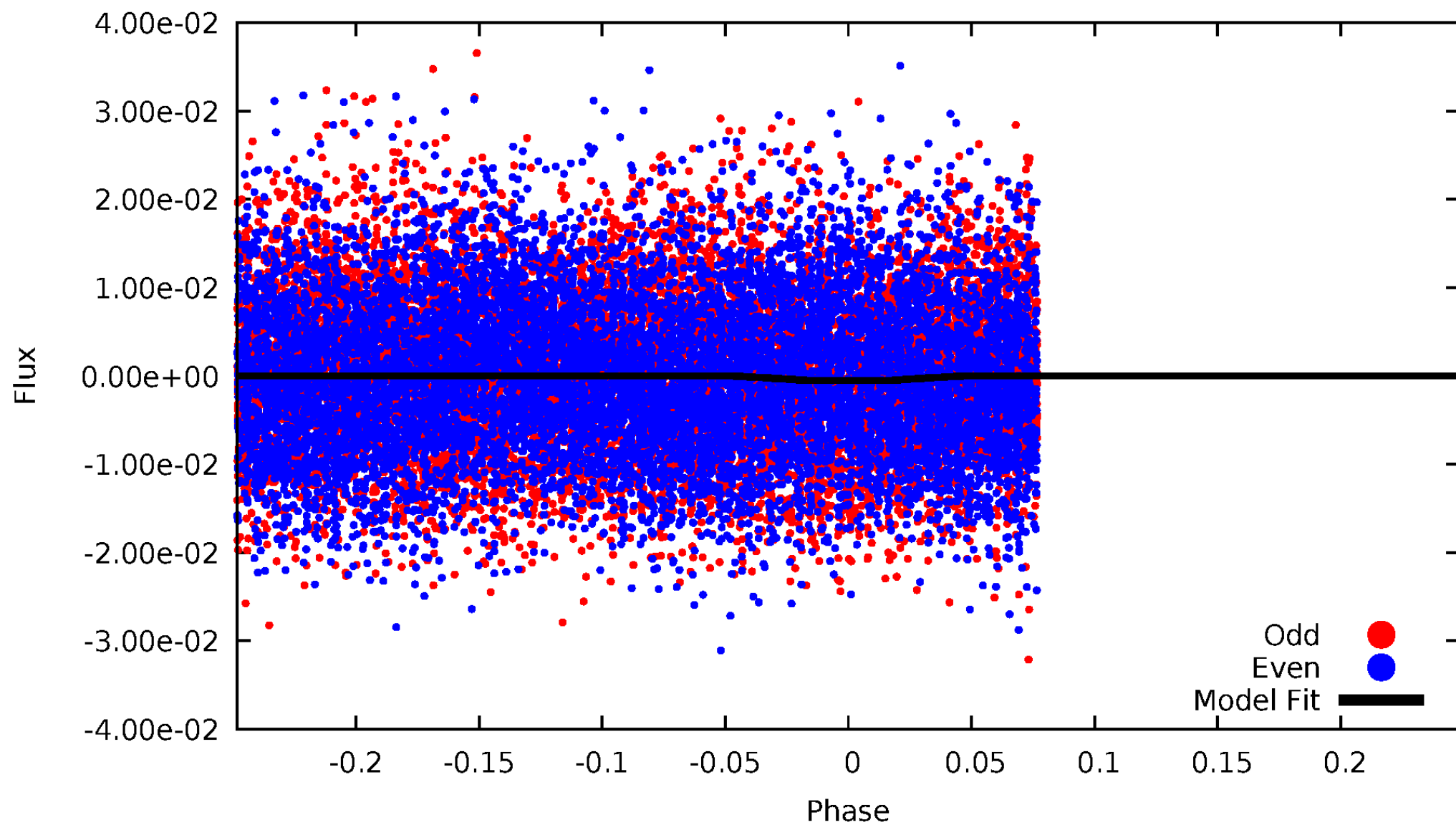
# DV Odd/Even

TCE 011658996-02



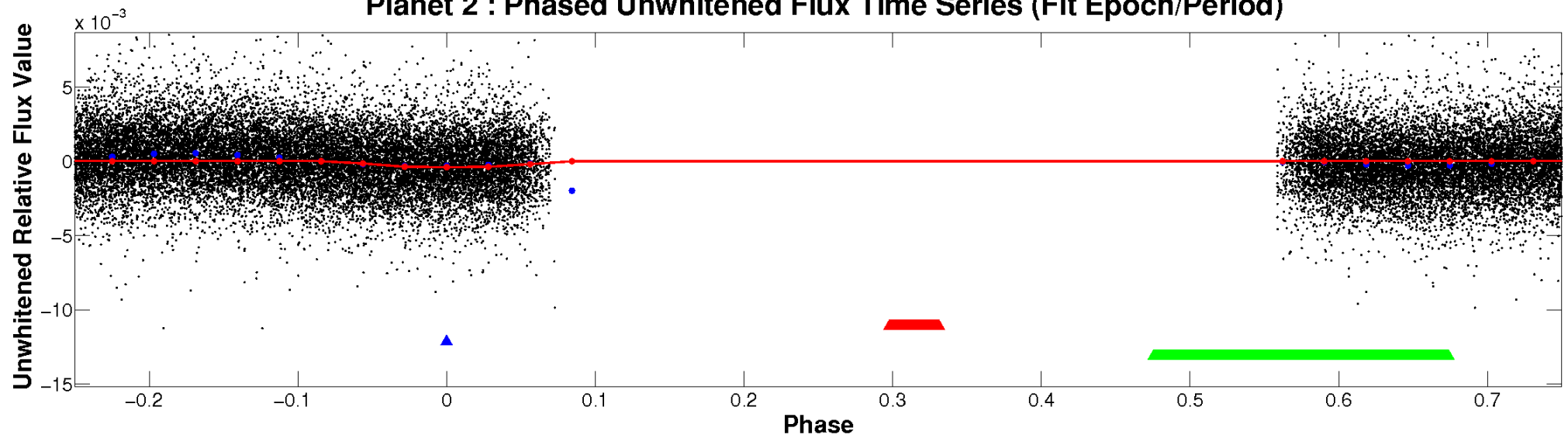
# ALT Odd/Even

TCE 011658996-02

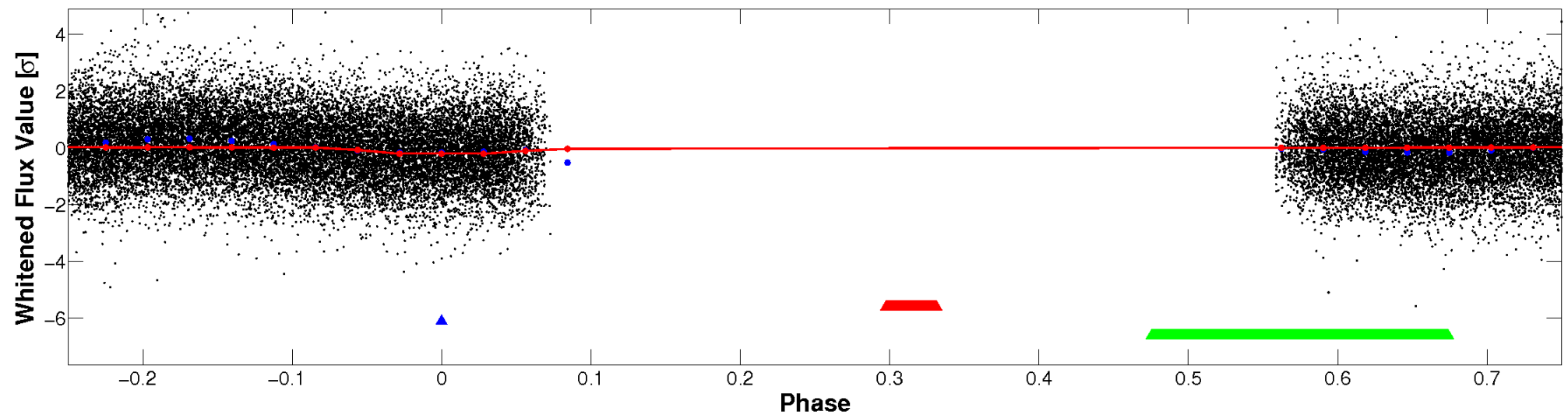


# Non-Whitened Vs. Whitened Light Curve

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

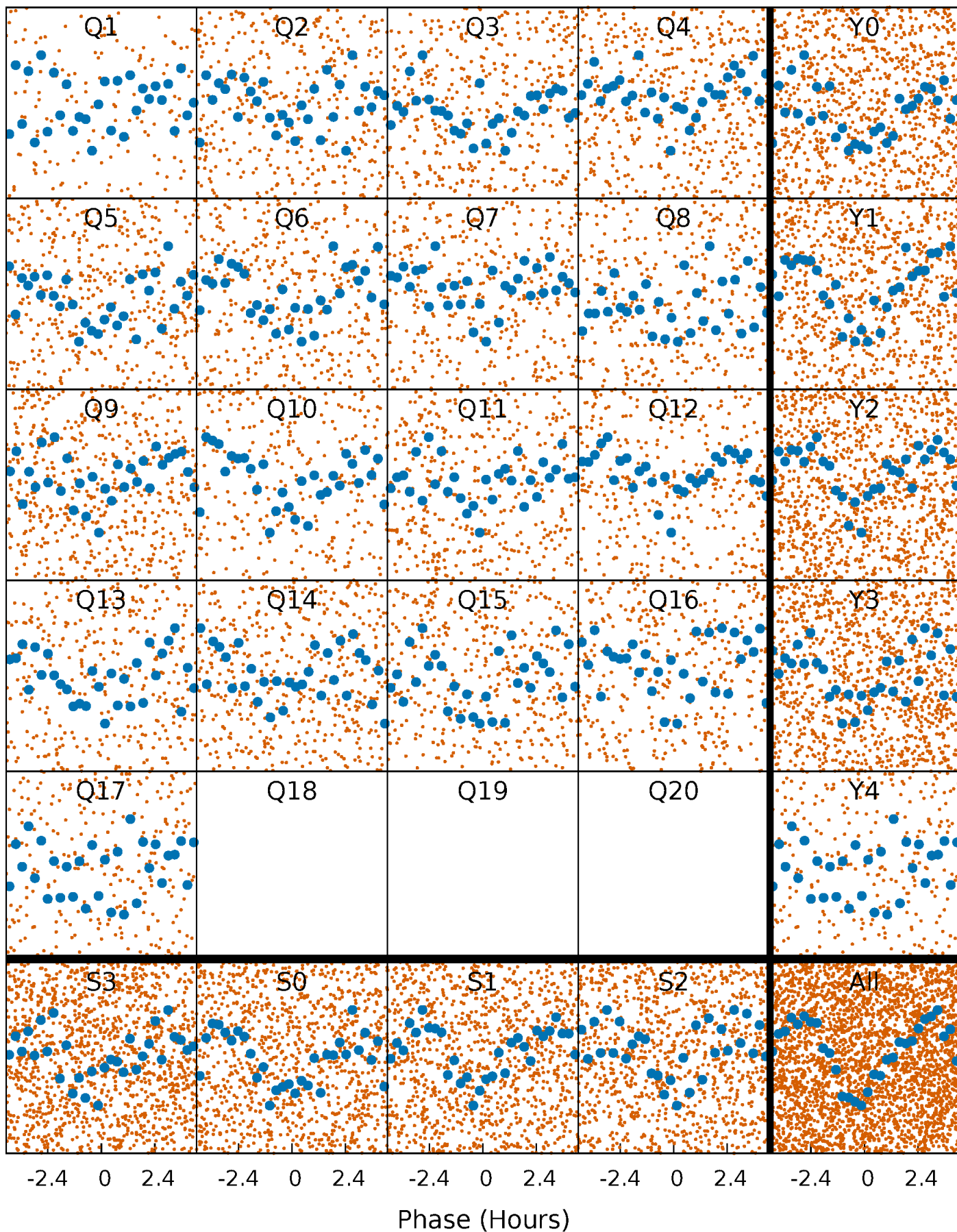


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

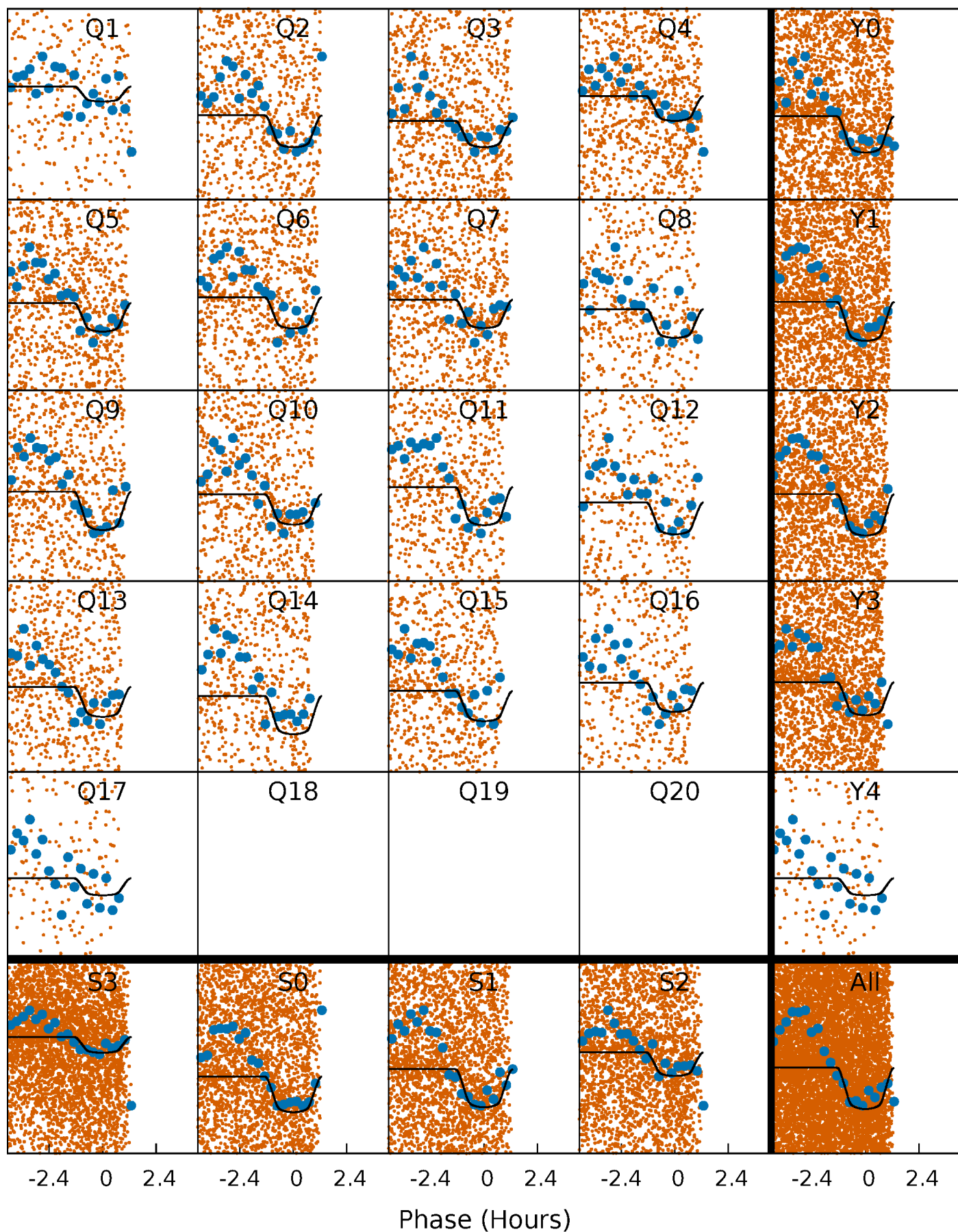
TCE 011658996-02   P= 0.726865 Days    $T_0=132.040378$  (BKJD)





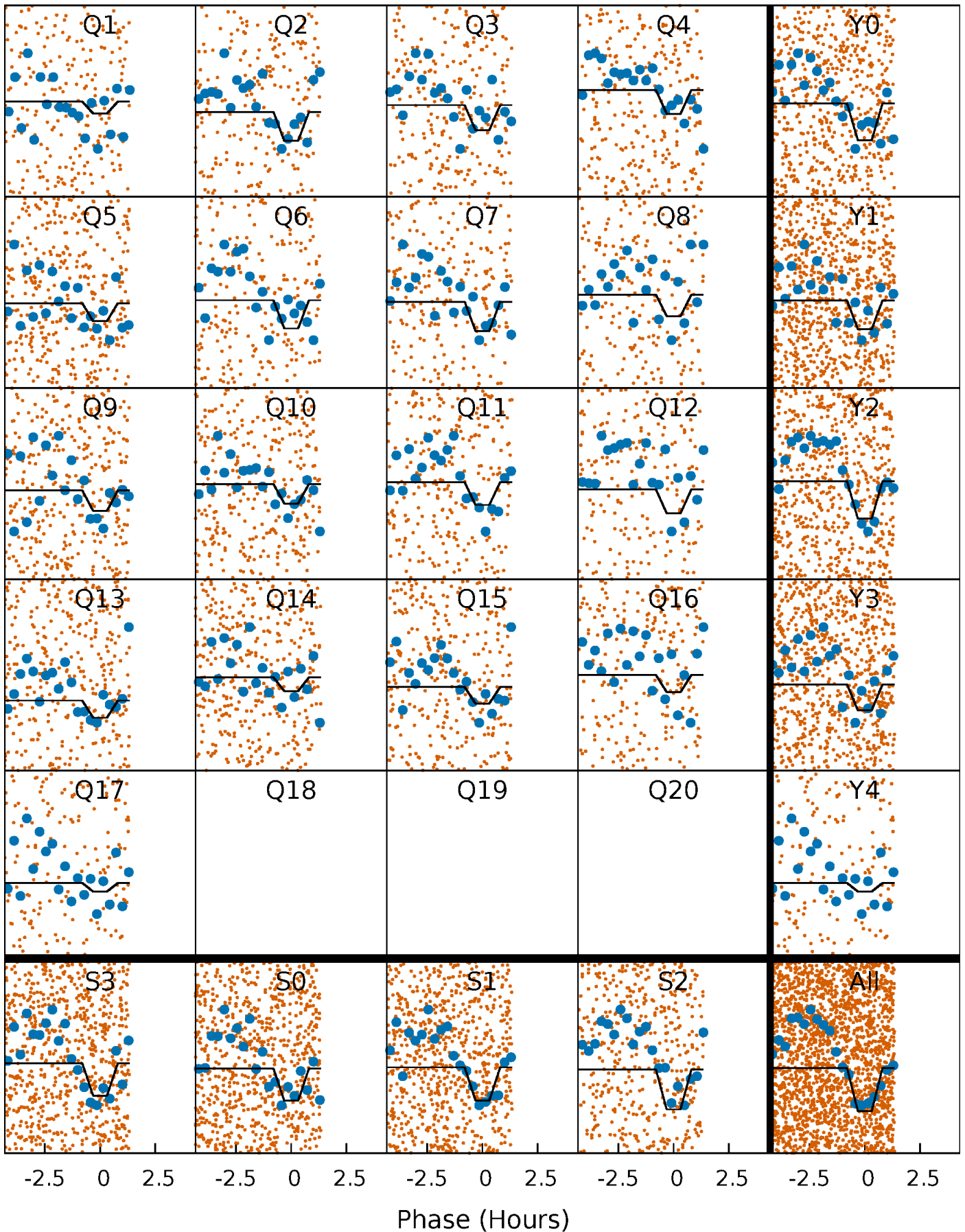
# DV Quarter-Phased Transit Curves

TCE 011658996-02   P= 0.726865 Days    $T_0=132.040378$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

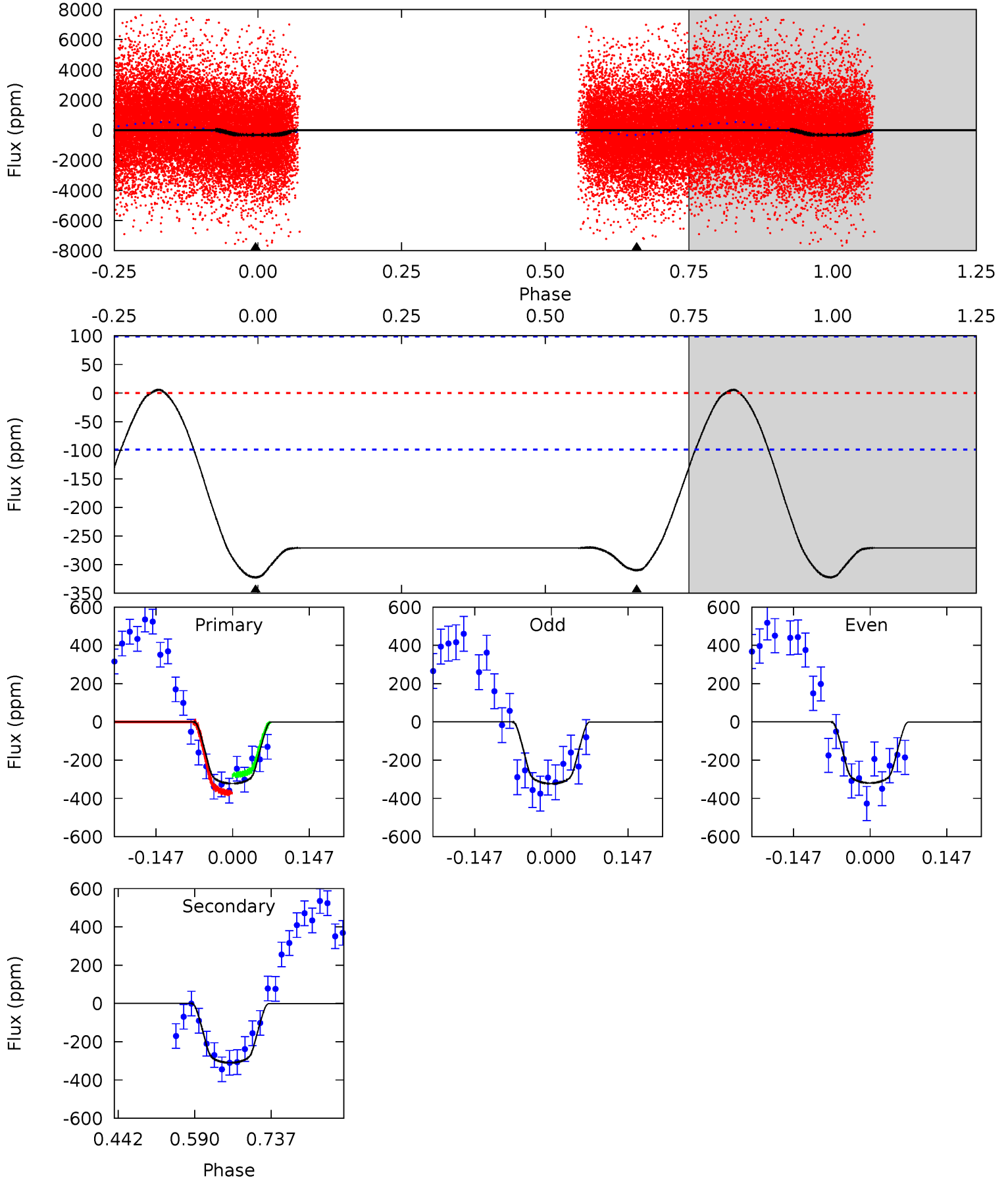
TCE 011658996-02     $P = 0.726852$  Days     $T_0 = 132.038141$  (BKJD)



# DV Model-Shift Uniqueness Test

011658996-02, P = 0.726865 Days, E = 131.313513 Days

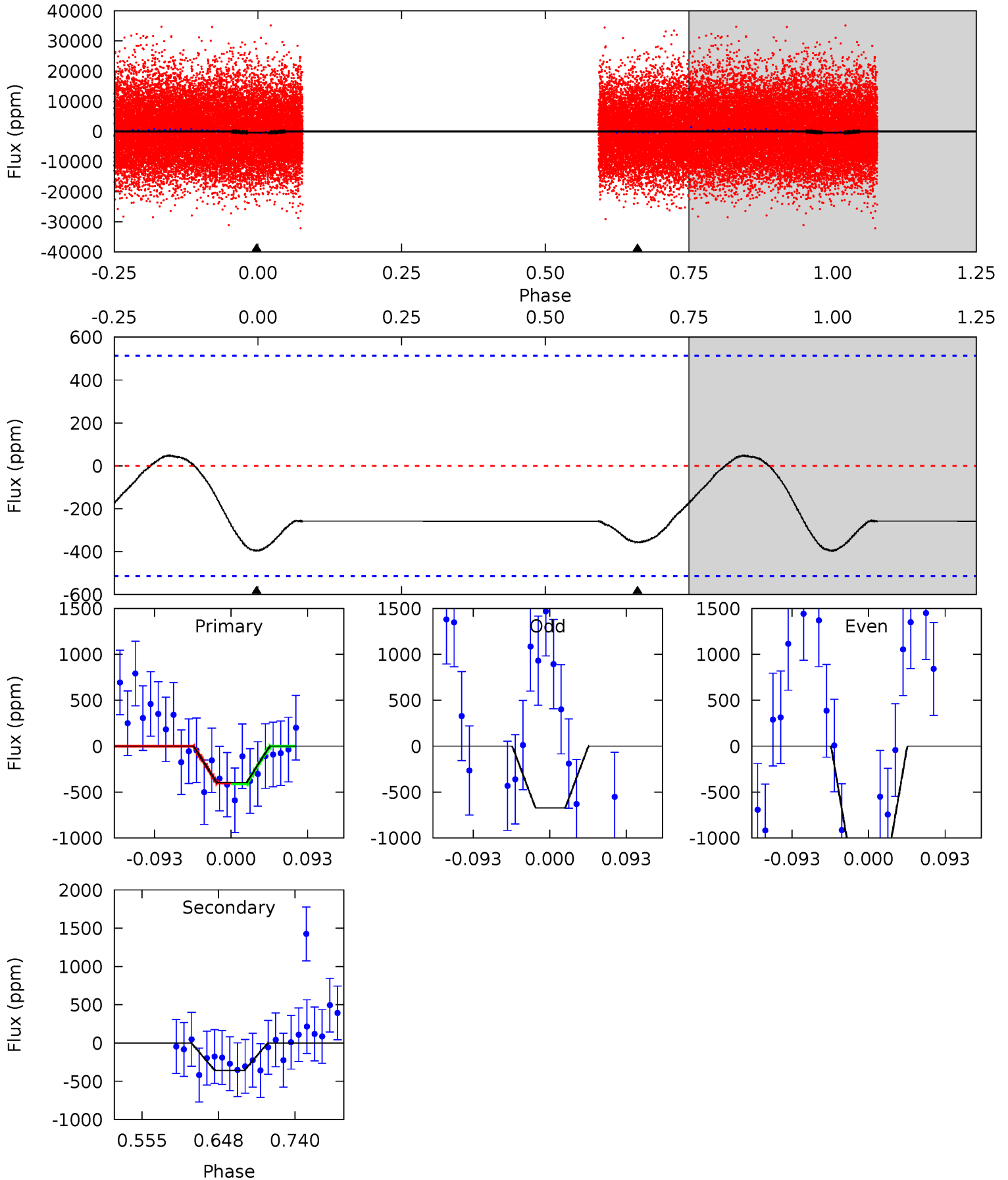
| Pri  | Sec  | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM  | Shape | TAT  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 14.6 | 14.1 | 0   | 0   | 4.48            | 1.45            | 0.24             | 14.6    | 14.6    | 14.1    | 14.1    | 0.08    | 1.00 | 0.02  | 2.33 |



# Alt Model-Shift Uniqueness Test

011658996-02, P = 0.726852 Days, E = 131.311289 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  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 3.54 | 3.19 | 0   | 0   | 4.58            | 1.68            | 0.54             | 3.54    | 3.54    | 3.19    | 3.19    | 3.68    | 0.64 | 0.11  | 0.05 |





### Stellar Parameters For KIC 011658996

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $7262^{+226}_{-327}$ | $4.012^{+0.203}_{-0.166}$ | $-0.080^{+0.250}_{-0.350}$ | $2.071^{+0.578}_{-0.578}$ | $1.605^{+0.212}_{-0.283}$ | $0.255^{+0.327}_{-0.116}$                 |
|        | +3%/-5%              | +5%/-4%                   | +312%/-438%                | +28%/-28%                 | +13%/-18%                 | +129%/-46%                                |
| Source | KIC0                 | 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 011658996-02 / KOI

| Detrend | Depth (ppm)    | $R_p (R_{\oplus})$     | $T_{max} (K)$        | $T_{obs} (K)$         | $A_{obs}$                 |
|---------|----------------|------------------------|----------------------|-----------------------|---------------------------|
| DV      | $-310 \pm 22$  | $4.73^{+1.35}_{-1.26}$ | $4723^{+369}_{-362}$ | $6318^{+1184}_{-719}$ | $2.590^{+2.272}_{-1.044}$ |
| Alt.    | $-358 \pm 112$ | $4.79^{+1.51}_{-1.26}$ | $4687^{+401}_{-370}$ | $6432^{+1332}_{-941}$ | $2.833^{+2.705}_{-1.395}$ |

$T_{max}$  = Theoretical Maximum Planetary Temperature  
 $T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)  
 $A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

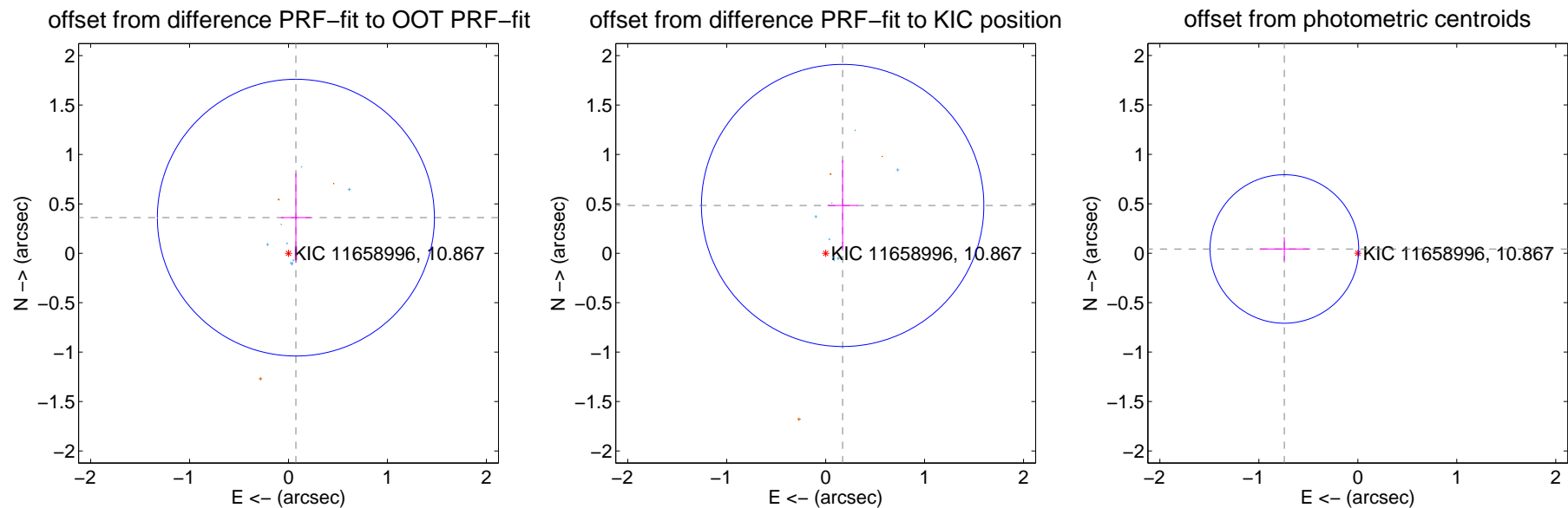
## DV Centroid Data

Supplemental centroid analysis for 011658996-02. **Kepler magnitude: 10.87.** Transit SNR 15.96

There are 10 quarters with good PRF difference image offsets

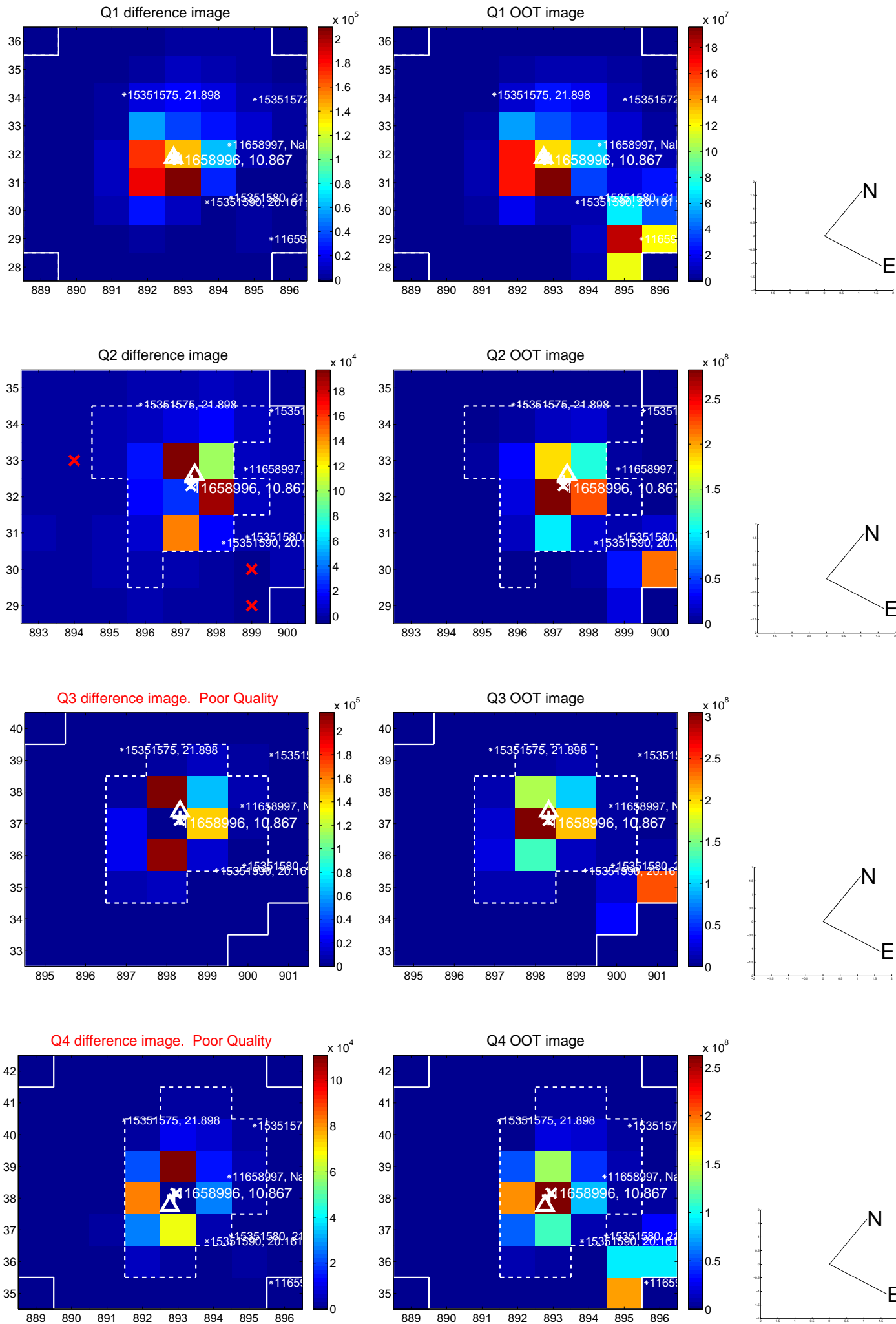
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec      |
|---|--------------------|---------------------|--------------------|-------------------|
| PRF-fit source offset from OOT          | $0.368 \pm 0.467$  | 0.79                | $-0.075 \pm 0.151$ | $0.361 \pm 0.450$ |
| PRF-fit source offset from KIC position | $0.513 \pm 0.476$  | 1.08                | $-0.172 \pm 0.153$ | $0.484 \pm 0.459$ |
| photometric centroid source offset      | $0.74 \pm 0.25$    | 2.97                | $0.74 \pm 0.25$    | $0.04 \pm 0.12$   |

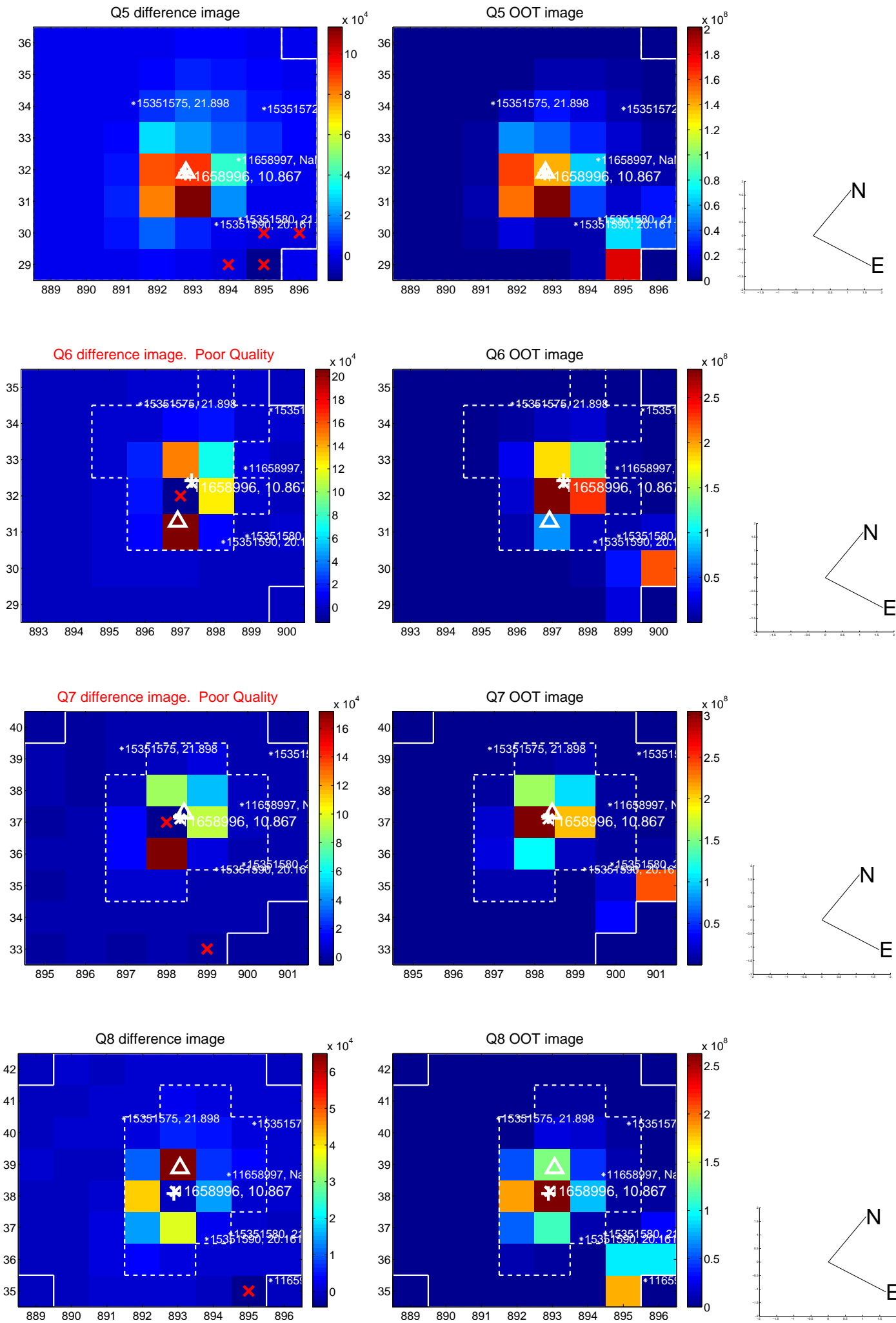


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

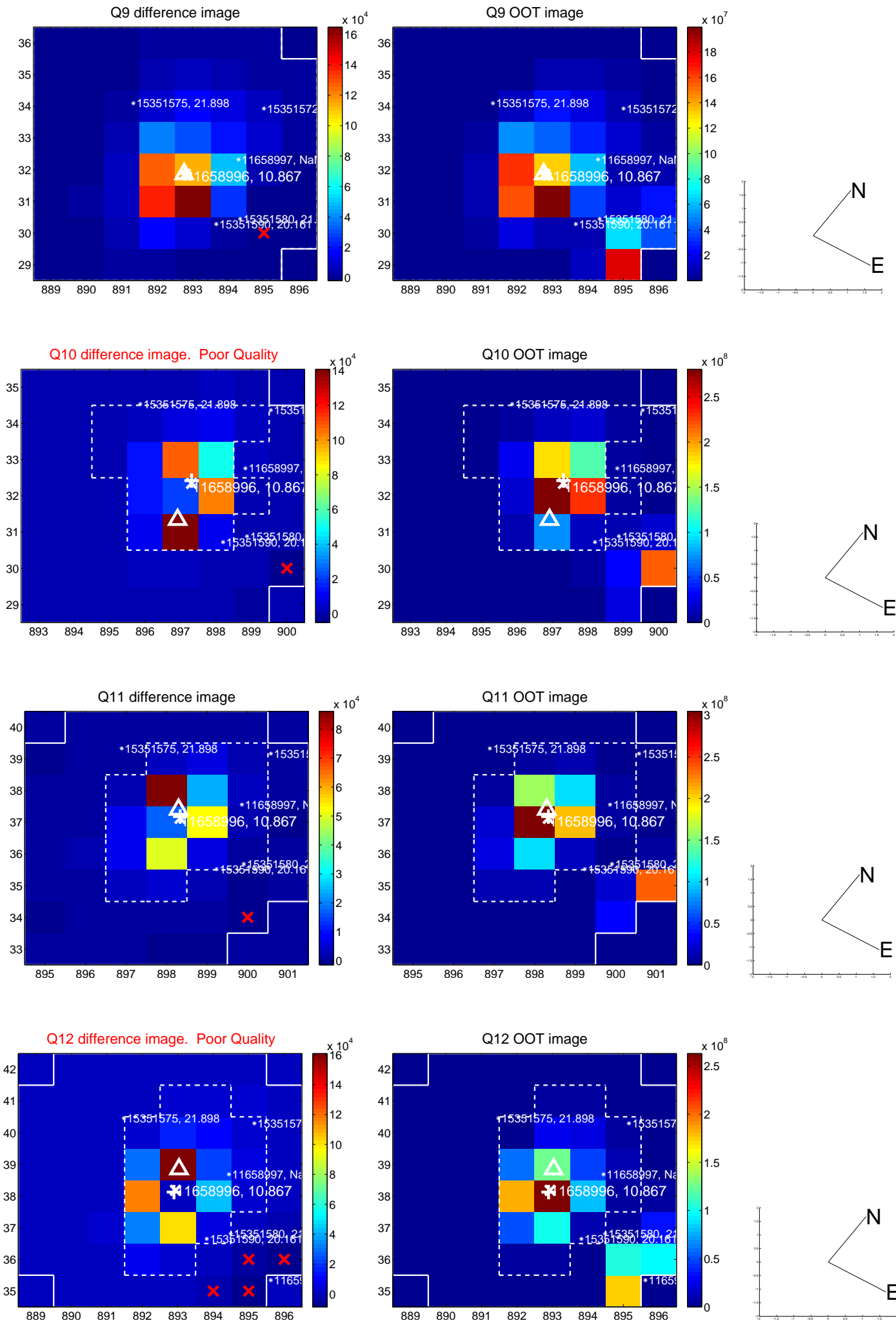
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

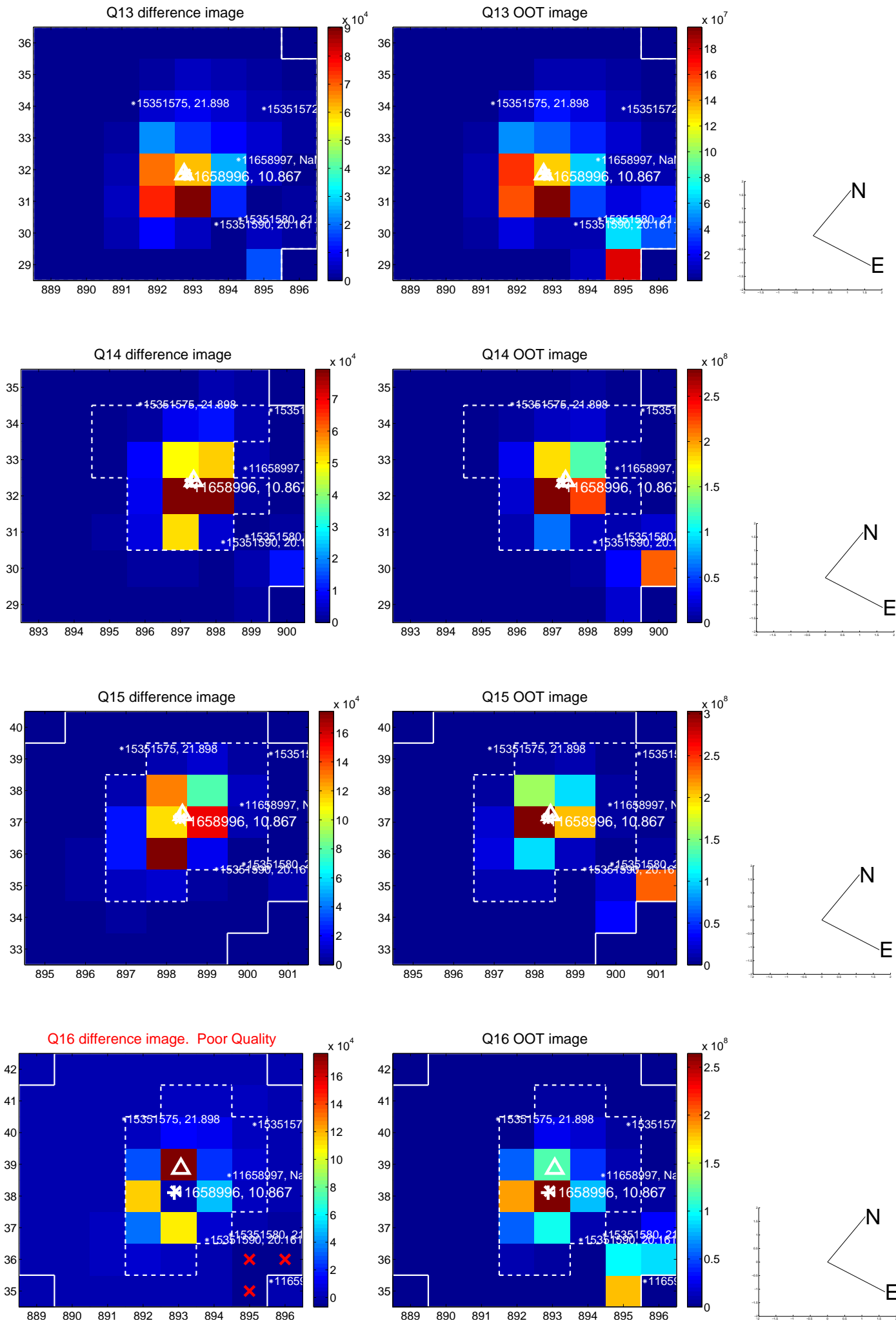


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

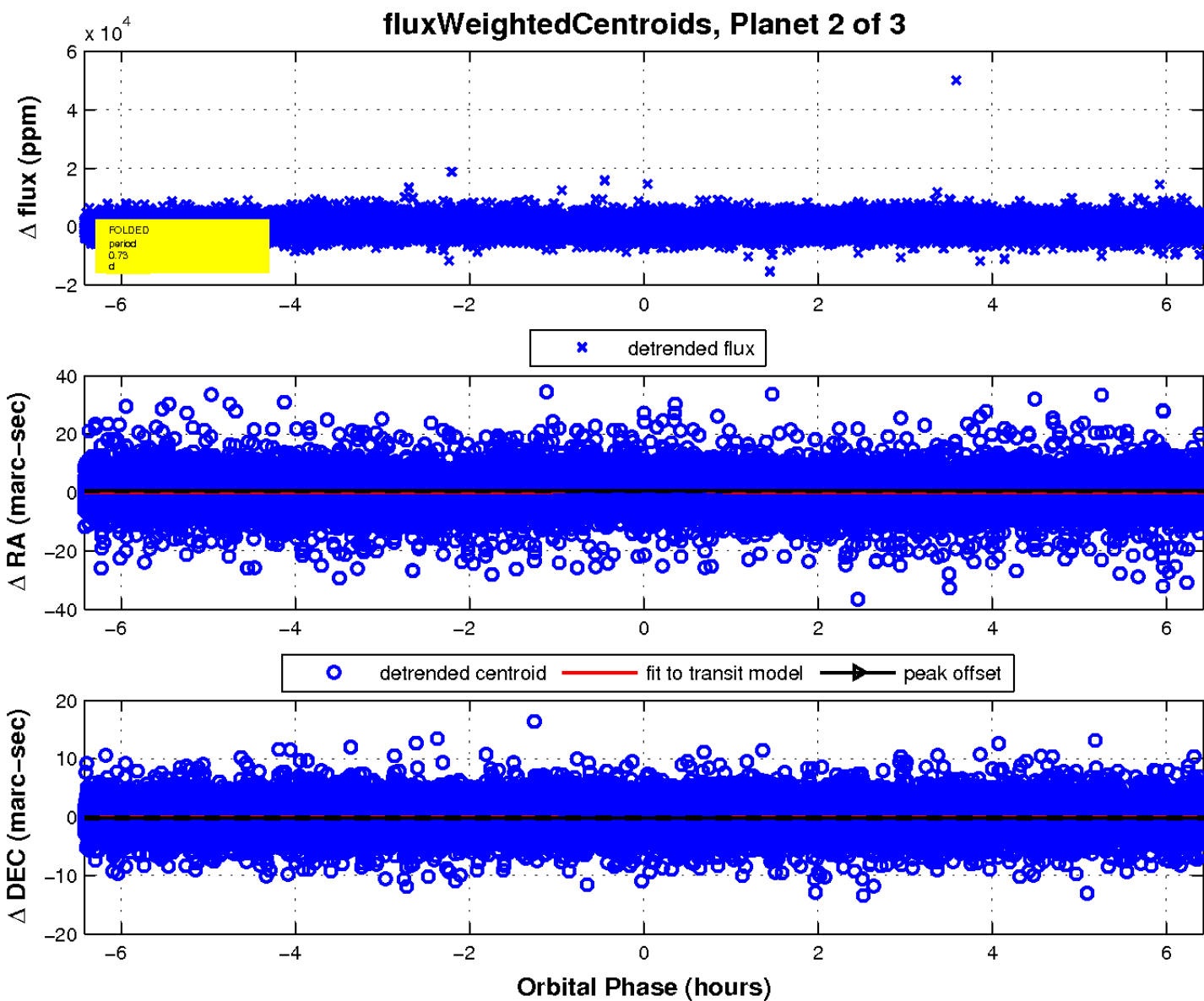
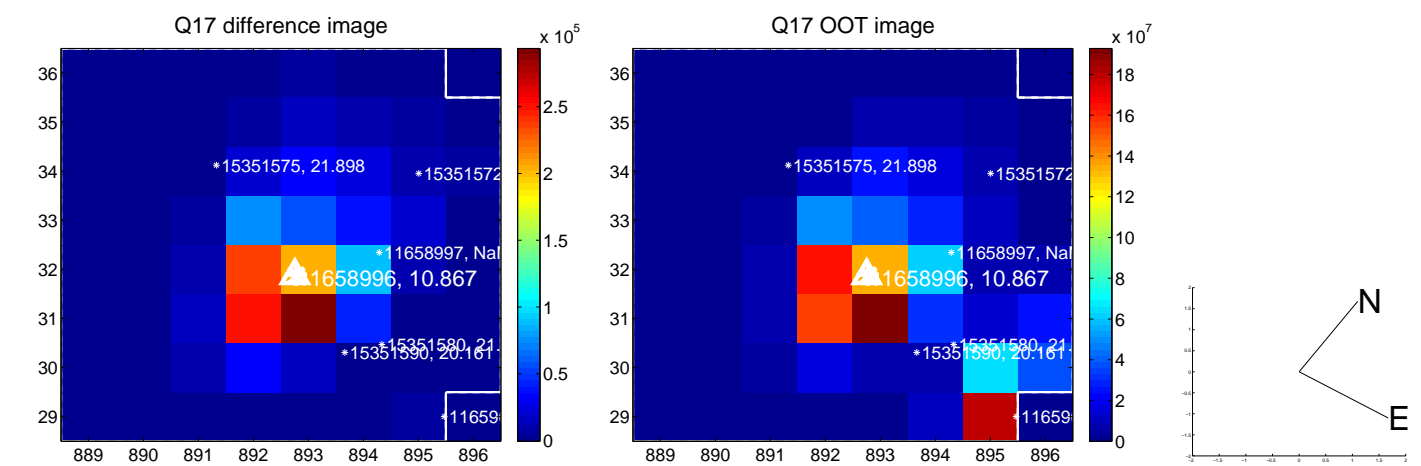




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

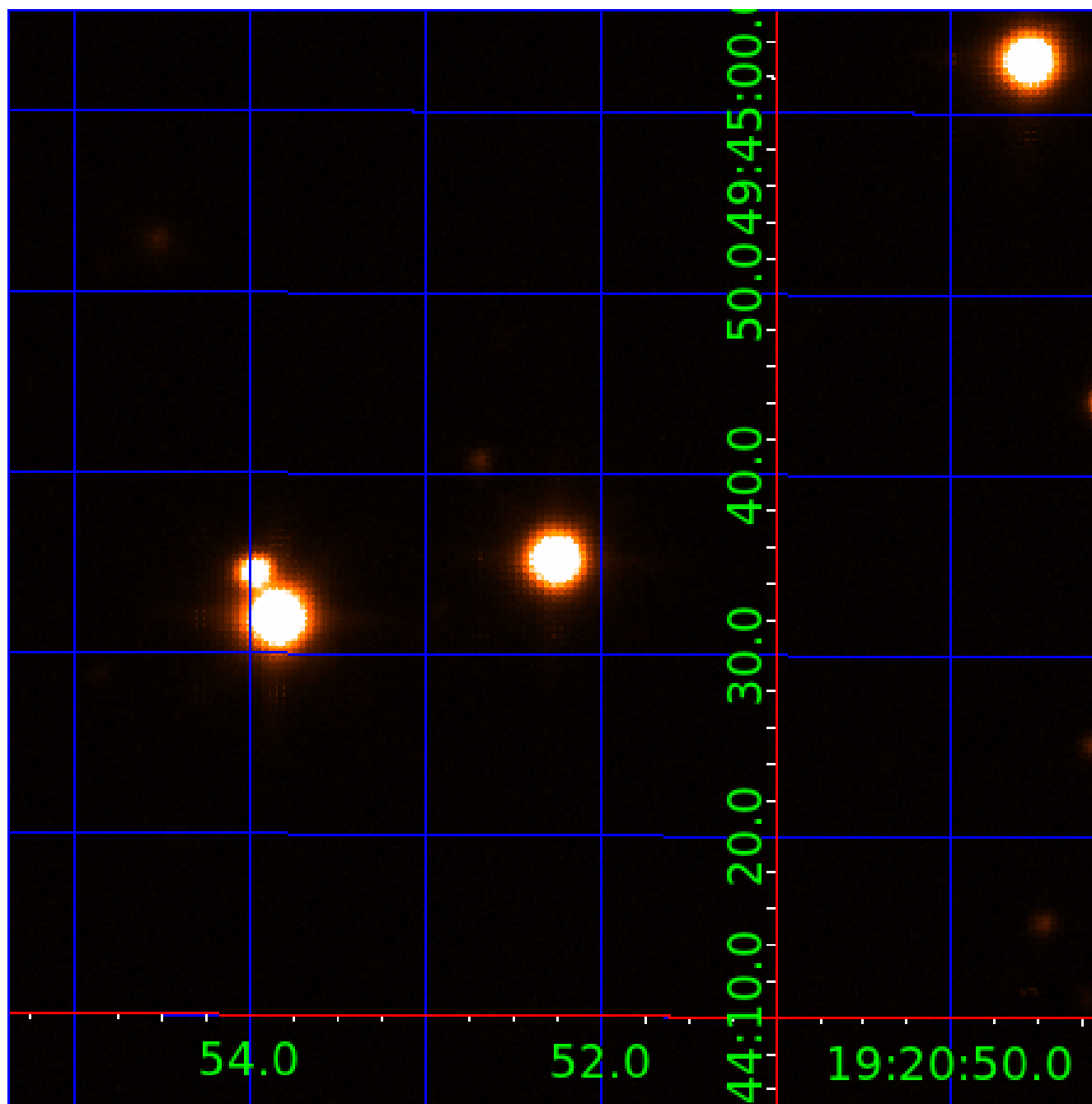


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011658996

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|------|------|-----------------------------|-----------------|------------------------|------------------------|
| 011658996-01 | OBS      | No   | 0.726852      | 131.554275   | 341.5       | 2.832            | 13.2 | 14.6 | 2.07                        | 7262            | 4.44                   | 31091.69               |
| 011658996-02 | OBS      | No   | 0.726865      | 132.040378   | 397.1       | 2.142            | 12.6 | 16.0 | 2.07                        | 7262            | 4.79                   | 31091.00               |
| 011658996-03 | OBS      | No   | 0.726793      | 131.803440   | 165.5       | 3.559            | 10.5 | 7.2  | 2.07                        | 7262            | 2.71                   | 31095.10               |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 011658996-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED   |
| 011658996-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED              |
| 011658996-03 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED |

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

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

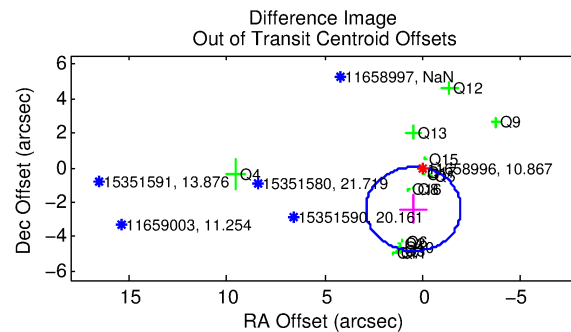
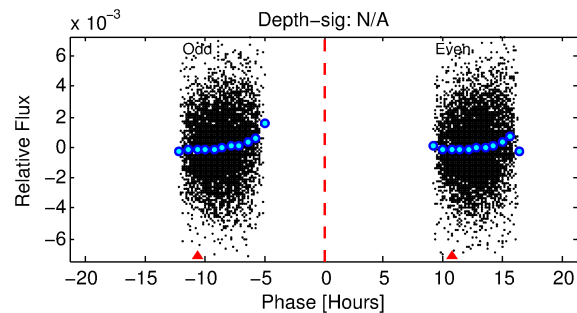
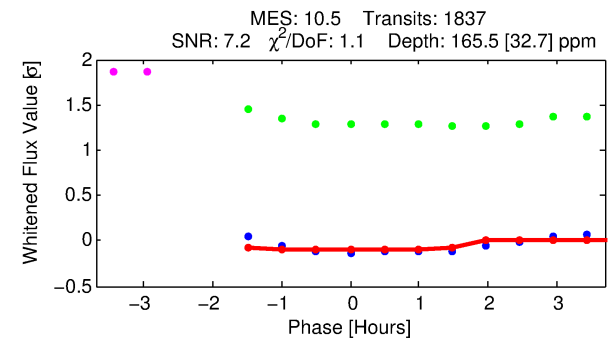
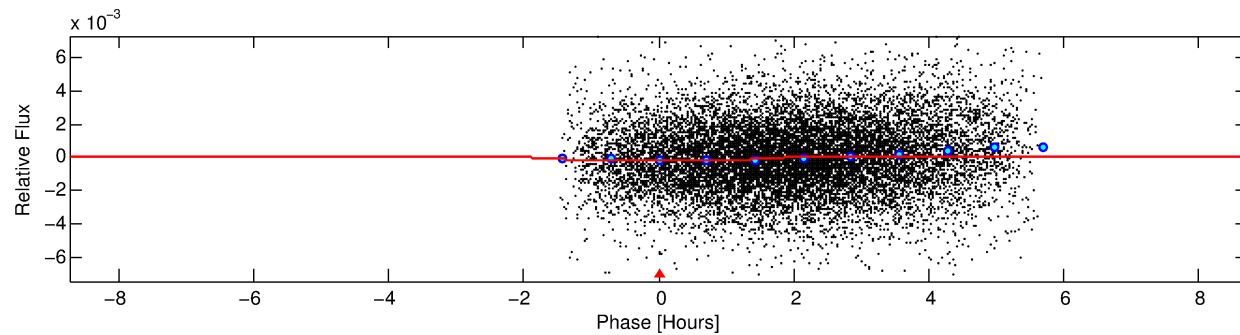
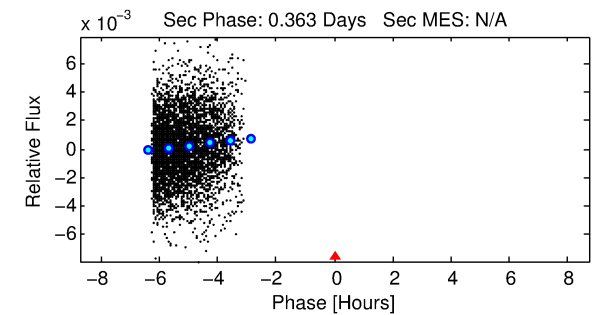
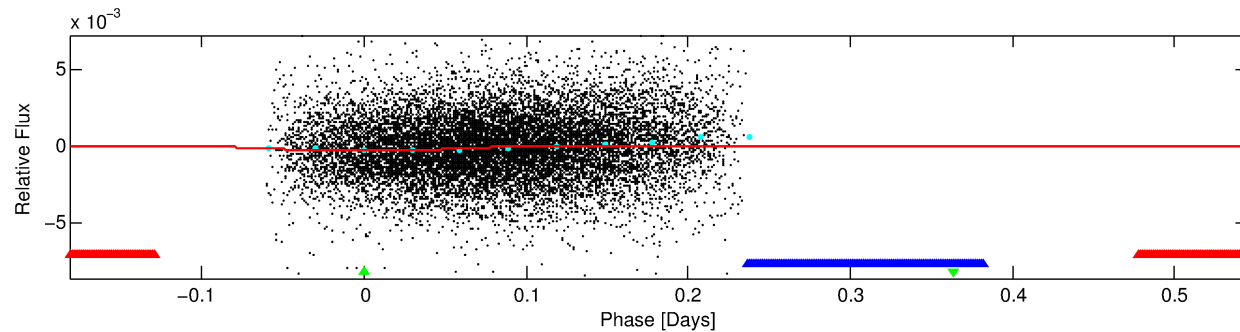
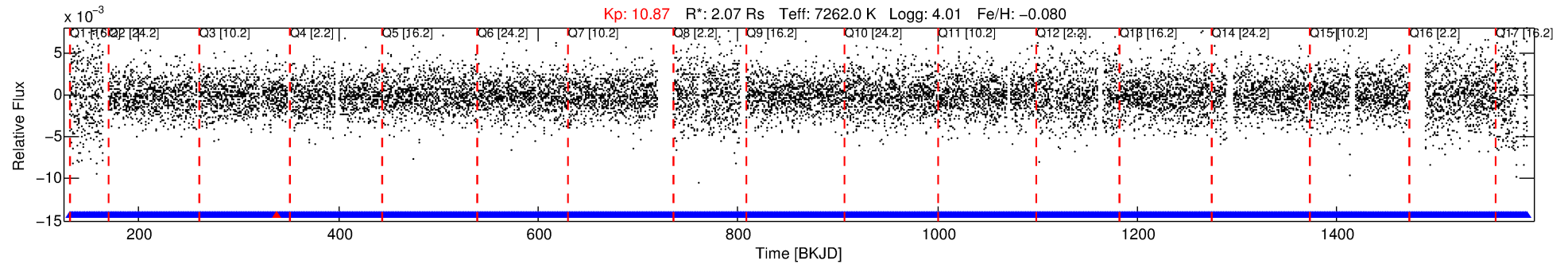
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011658996-03

No Significant Match Found

# DV One-Page Summary

KIC: 11658996 Candidate: 3 of 3 Period: 0.727 d



## DV Fit Results:

Period = 0.72679 [0.00001] d  
Epoch = 131.8034 [0.0198] BKJD  
Rp/R\* = 0.0120 [0.0204]  
a/R\* = 1.66 [10.60]  
b = 0.24 [38.93]  
Seff = 31095.10 [12598.91]  
Teq = 3386 [343] K  
Rp = 2.71 [4.66] Re  
a = 0.0185 [0.0045] AU

## DV Diagnostic Results:

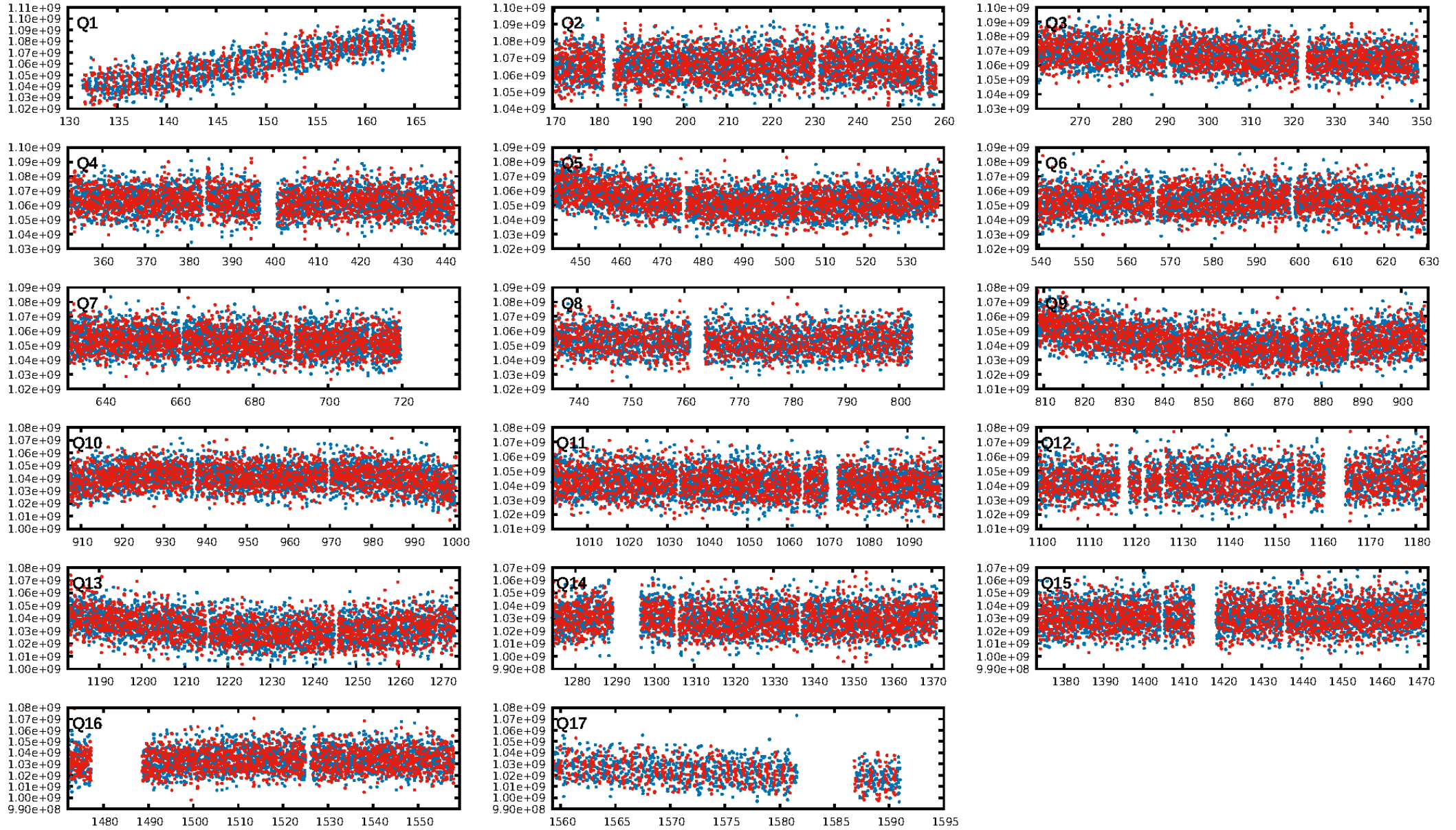
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1753/1754]  
GhostDiagnostic-chr: 1.42  
Centroid-sig: 0.0%  
Centroid-so: 0.307 arcsec [0.71σ]  
OotOffset-rm: 2.439 arcsec [3.01σ]  
KicOffset-rm: 2.779 arcsec [3.67σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.31 [5/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:28:22 Z

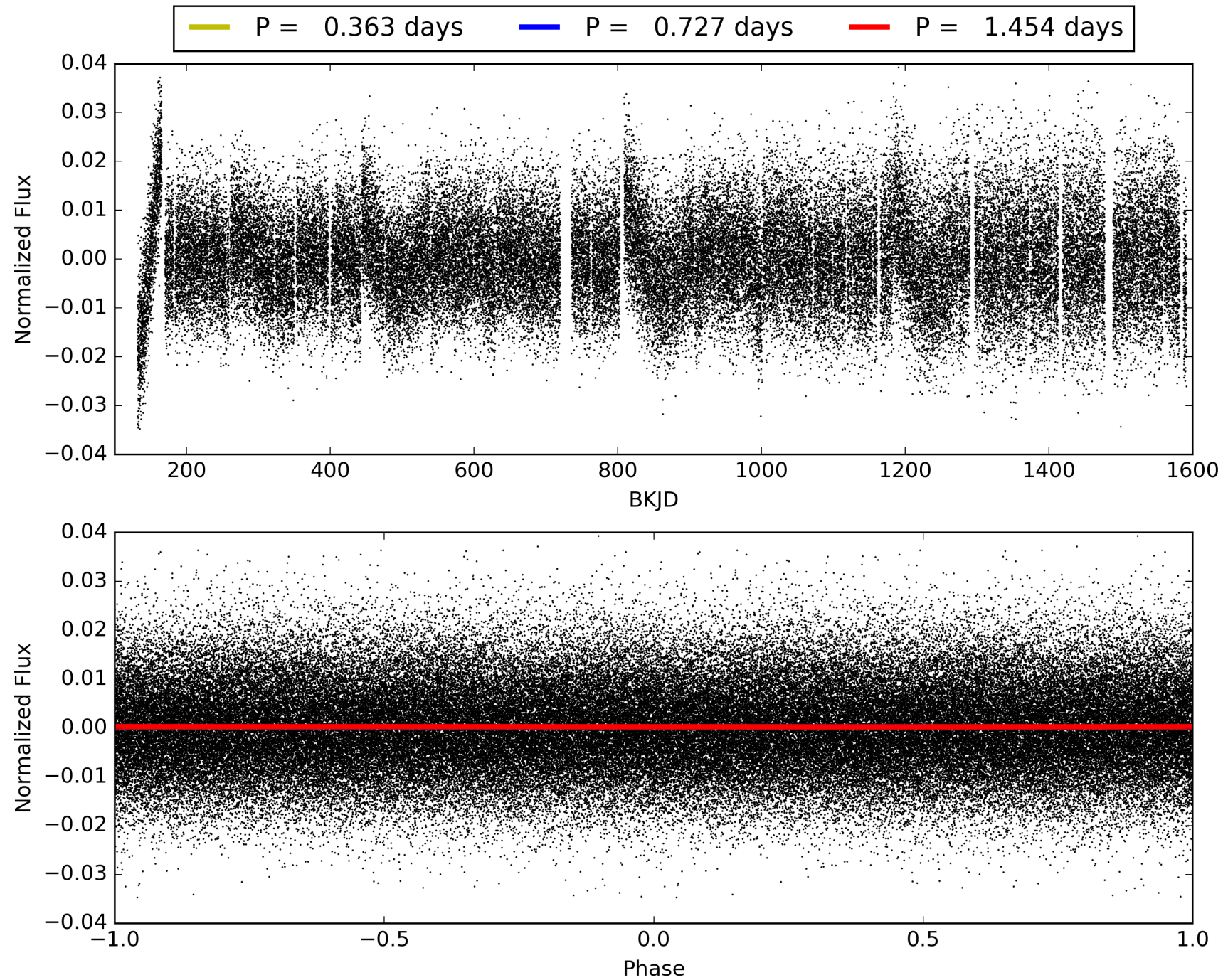
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011658996-03, PDC Light Curves

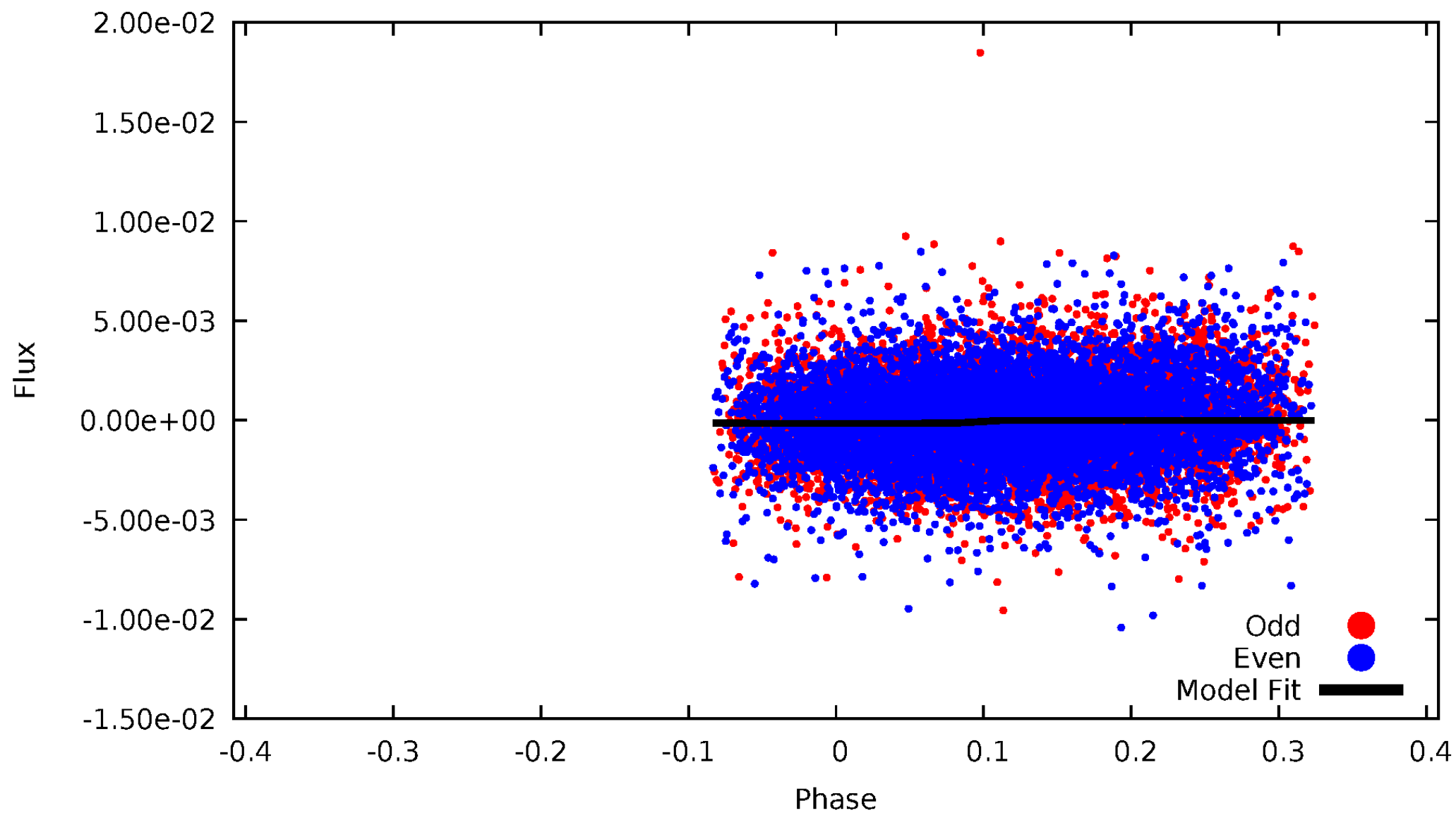


TCE 011658996-03



# DV Odd/Even

TCE 011658996-03





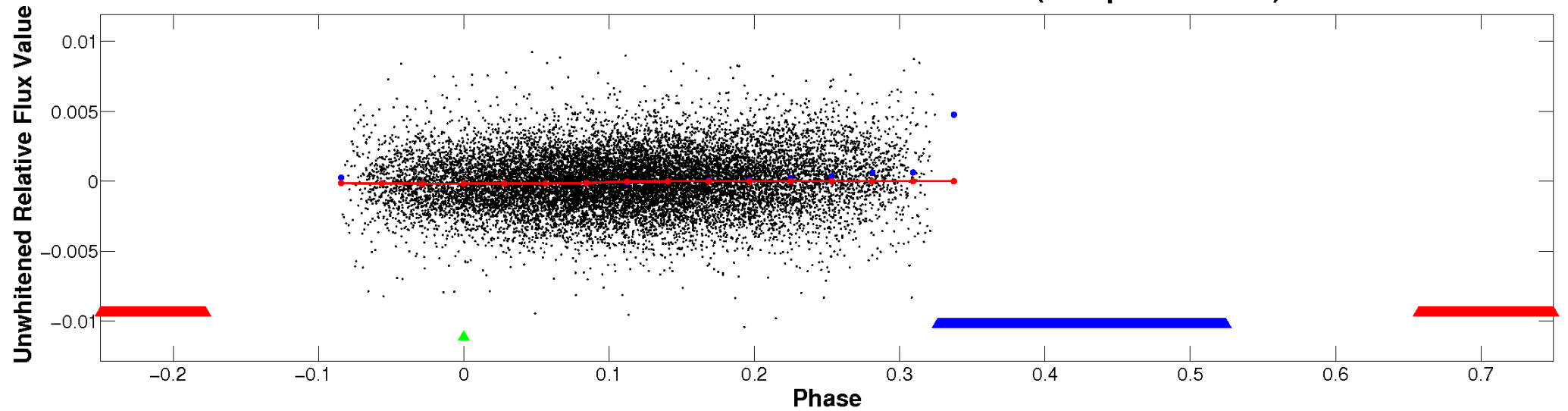
ALT Odd/Even

This plot does not exist for this TCE.

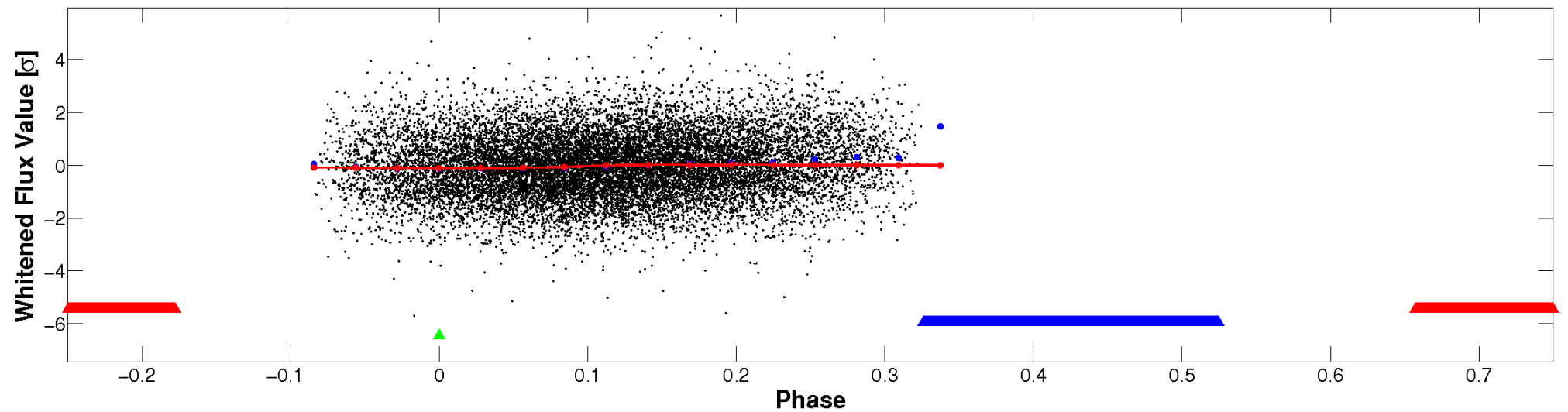


# Non-Whitened Vs. Whitened Light Curve

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

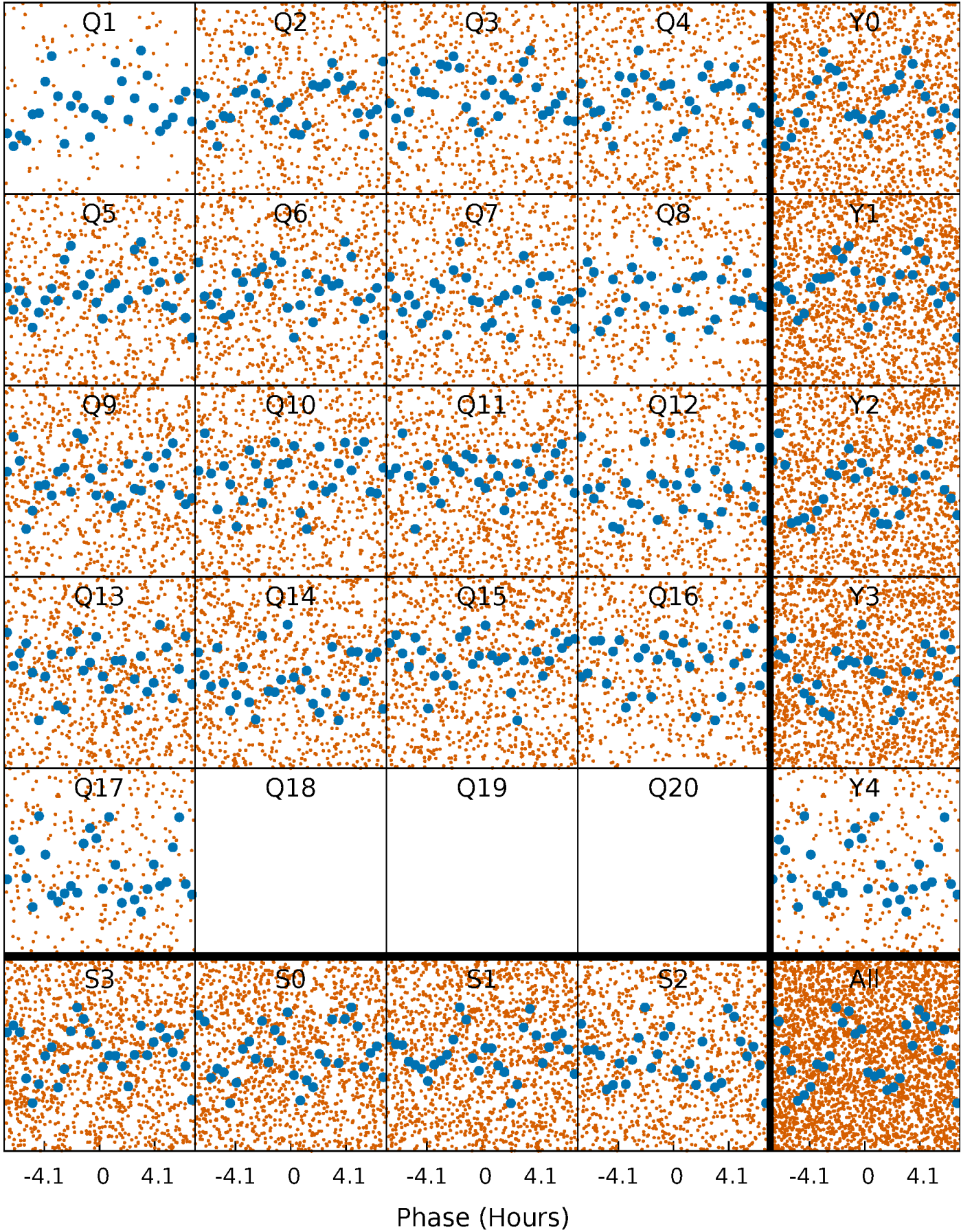


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



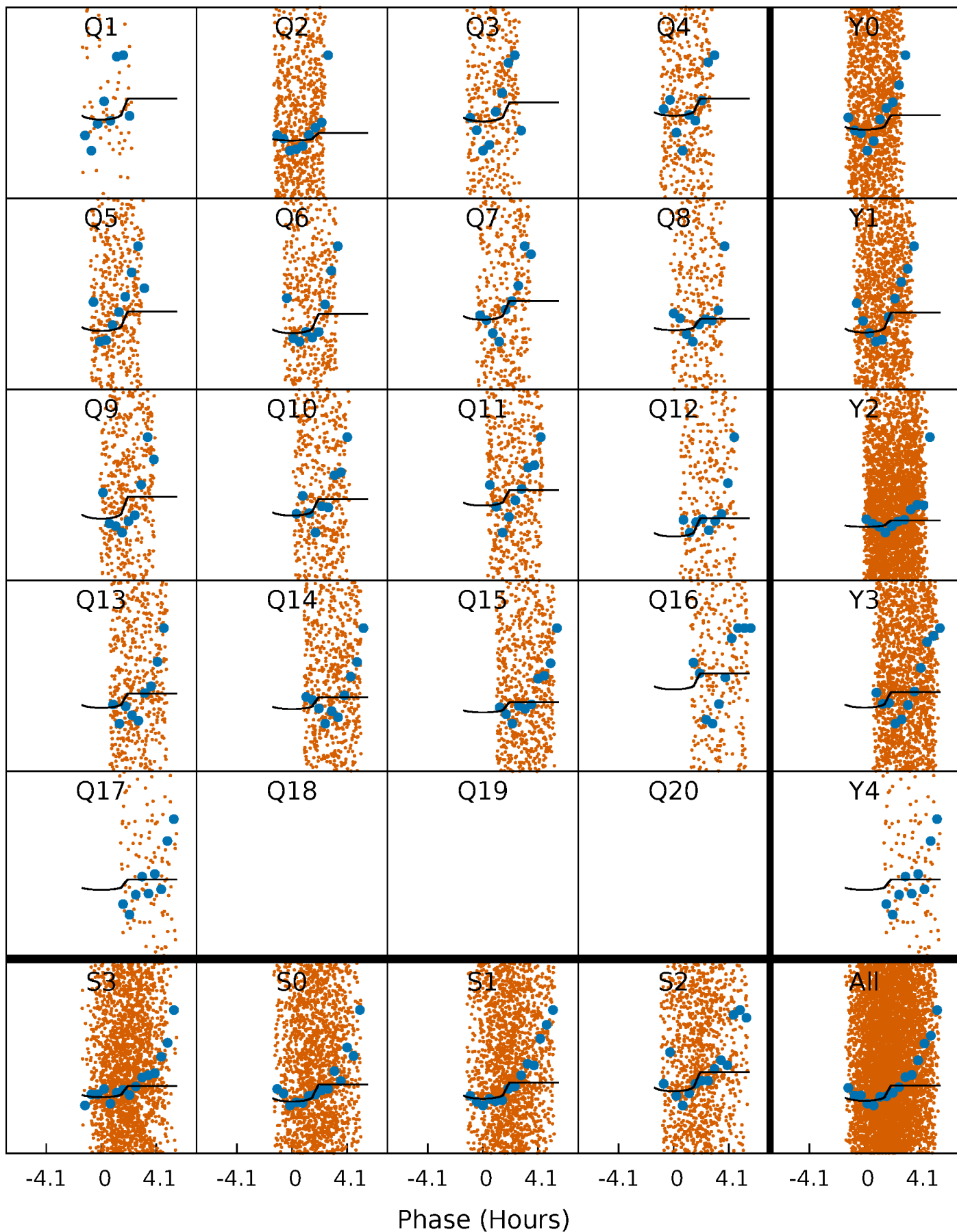
# PDC Quarter-Phased Transit Curves

TCE 011658996-03 P= 0.726793 Days  $T_0=131.803440$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011658996-03 P= 0.726793 Days  $T_0=131.803440$  (BKJD)

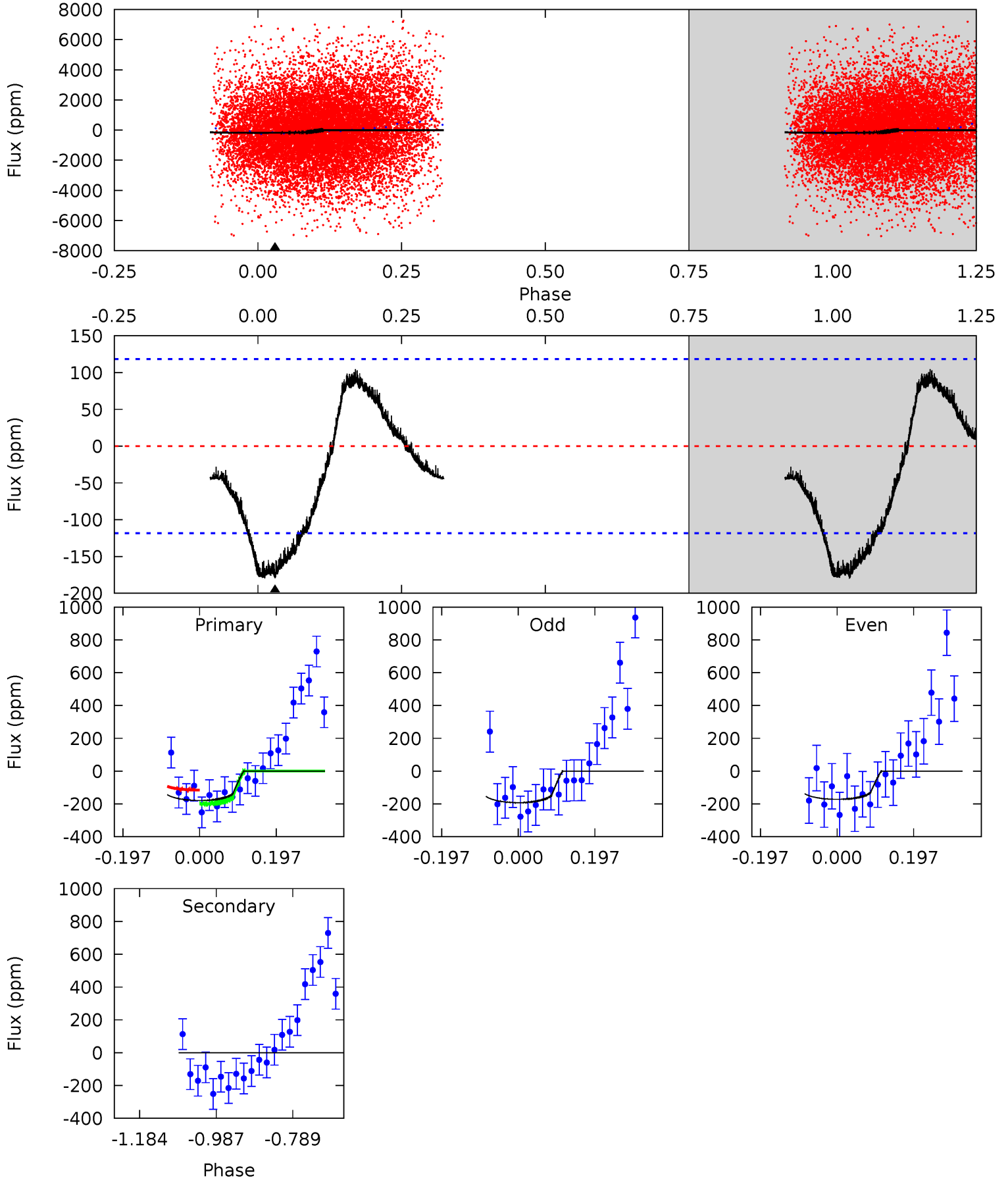


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

011658996-03, P = 0.726793 Days, E = 131.076647 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  |
|------|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.70 | 0   | 0   | 0   | 4.42            | 1.29            | 0.76             | 6.70    | 6.70    | 0       | 0       | 0.38    | 0.85 | 0.37  | 1.27 |





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 011658996

|        | $T_{\text{eff}} (K)$ | $\log(g)$                 | $[\text{Fe}/\text{H}]$     | $R (R_{\odot})$           | $M (M_{\odot})$           | $\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|--|
|        | $7262^{+226}_{-327}$ | $4.012^{+0.203}_{-0.166}$ | $-0.080^{+0.250}_{-0.350}$ | $2.071^{+0.578}_{-0.578}$ | $1.605^{+0.212}_{-0.283}$ | $0.255^{+0.327}_{-0.116}$                    |
|        | +3%/-5%              | +5%/-4%                   | +312%/-438%                | +28%/-28%                 | +13%/-18%                 | +129%/-46%                                   |
| Source | KIC0                 | 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 011658996-03 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$   | $A_{\text{obs}}$          |
|---------|-------------|------------------------|----------------------|------------------------|---------------------------|
| DV      | $0 \pm 27$  | $4.42^{+4.25}_{-2.96}$ | $4711^{+356}_{-347}$ | $-4095^{+7356}_{-848}$ | $0.007^{+0.374}_{-0.424}$ |
| Alt.    | N/A         | N/A                    | N/A                  | N/A                    | N/A                       |

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

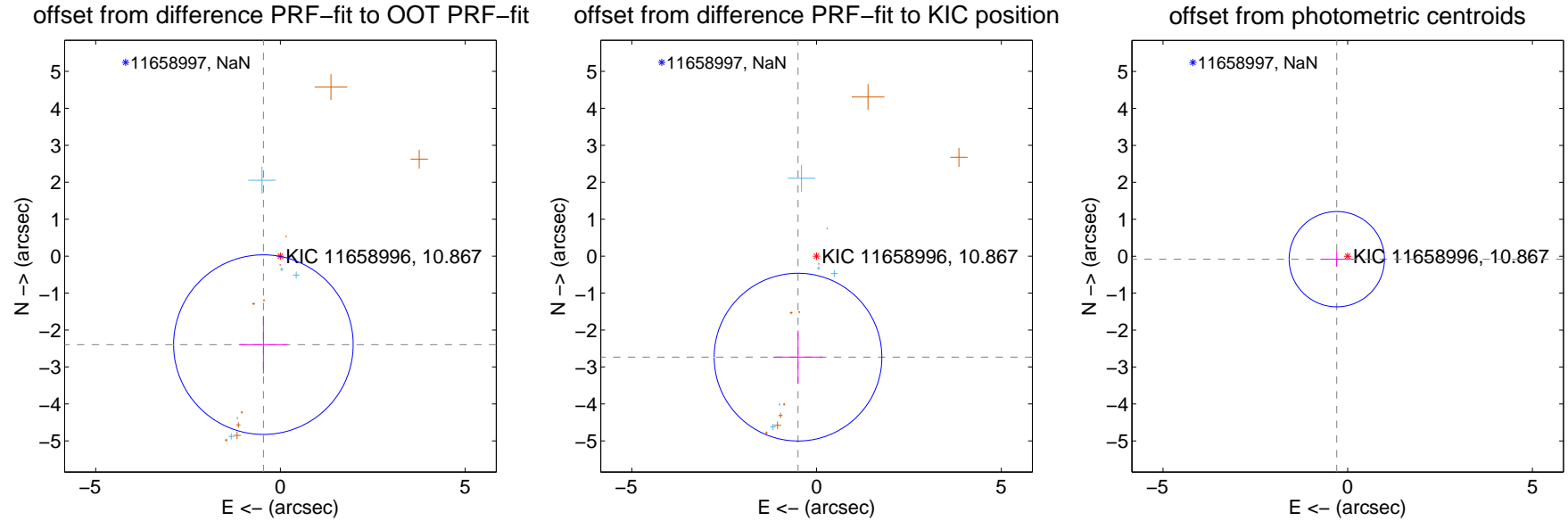
## DV Centroid Data

Supplemental centroid analysis for 011658996-03. **Kepler magnitude: 10.87.** Transit SNR 7.17

There are 5 quarters with good PRF difference image offsets

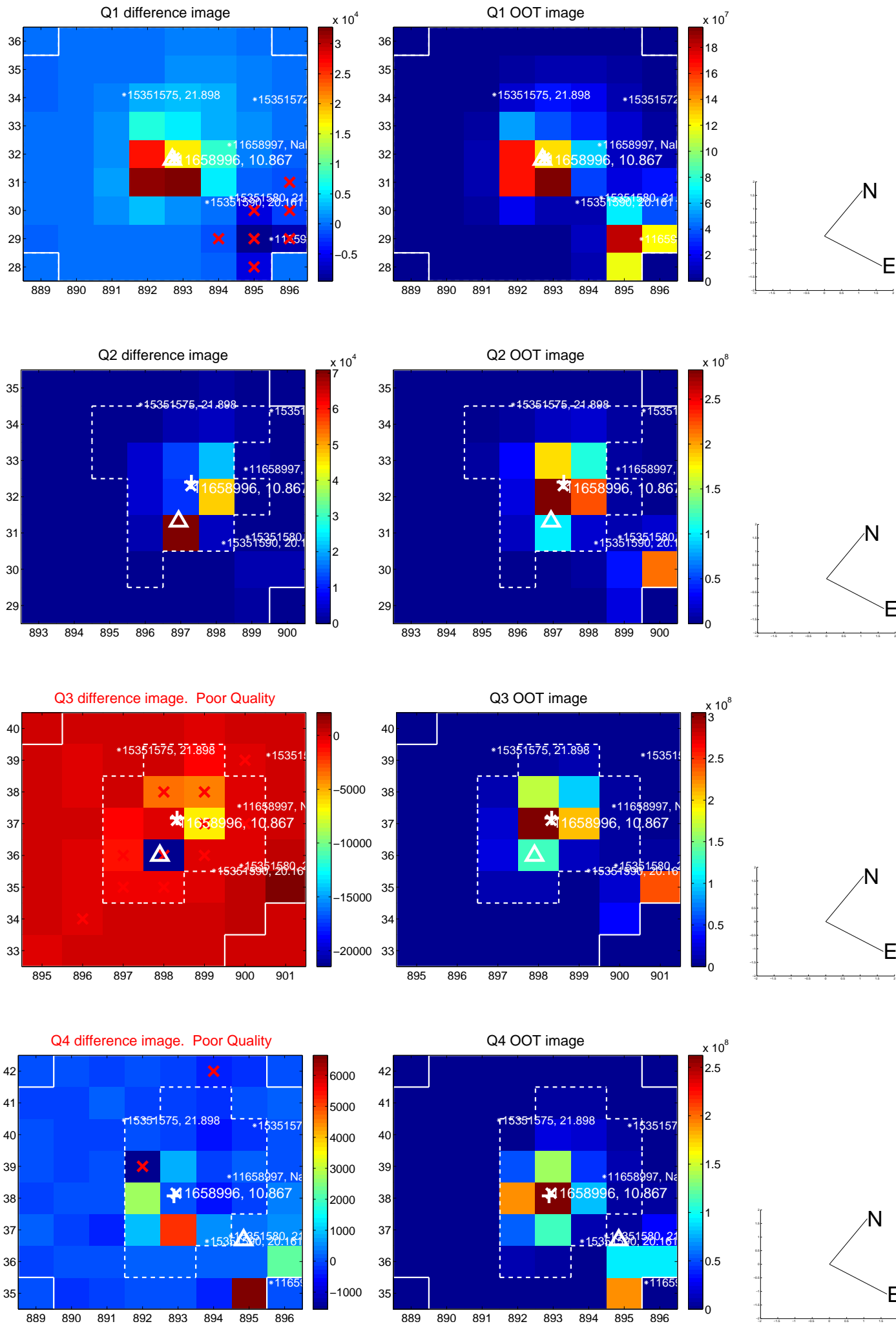
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

|   | Distance in arcsec                  | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec       |
|---|-------------------------------------|---------------------|-------------------|--------------------|
| PRF-fit source offset from OOT          | <b>2.439 <math>\pm</math> 0.810</b> | <b>3.01</b>         | 0.462 $\pm$ 0.650 | -2.395 $\pm$ 0.780 |
| PRF-fit source offset from KIC position | <b>2.779 <math>\pm</math> 0.757</b> | <b>3.67</b>         | 0.503 $\pm$ 0.675 | -2.733 $\pm$ 0.719 |
| photometric centroid source offset      | 0.31 $\pm$ 0.43                     | 0.71                | 0.30 $\pm$ 0.44   | -0.08 $\pm$ 0.21   |

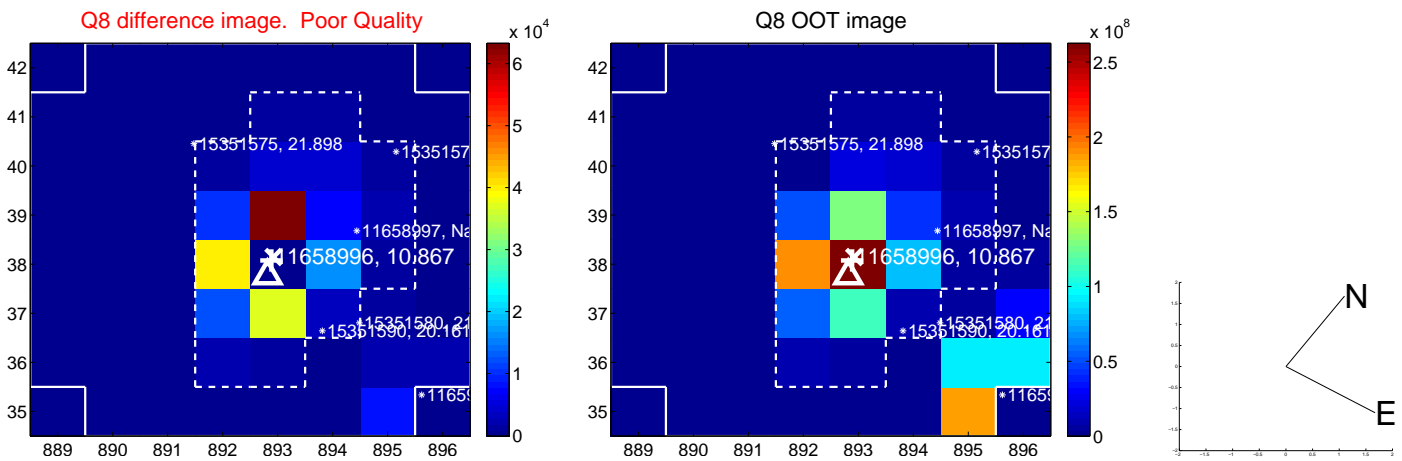
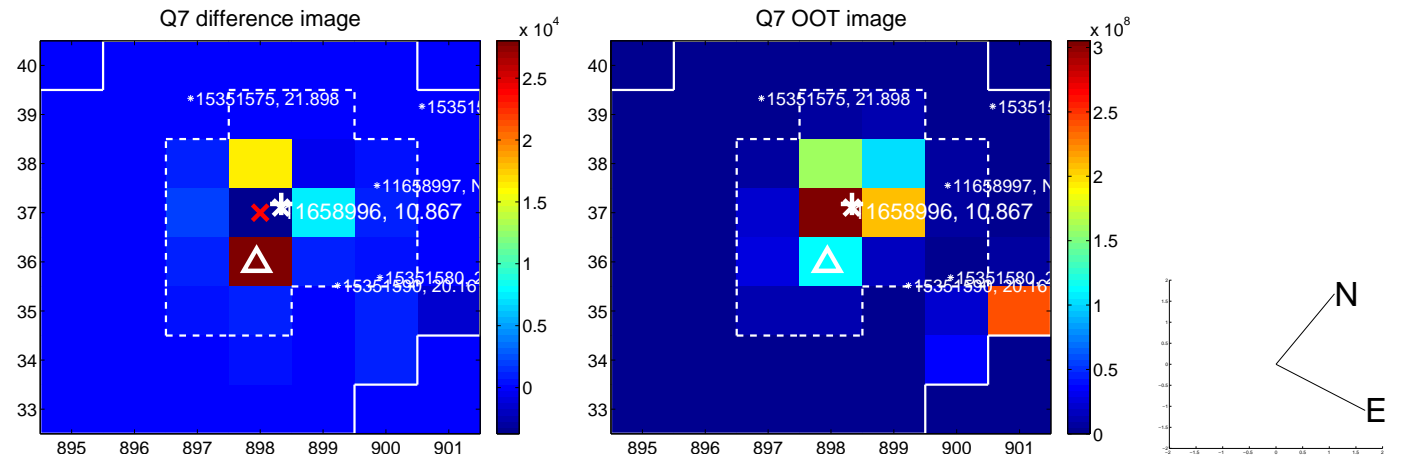
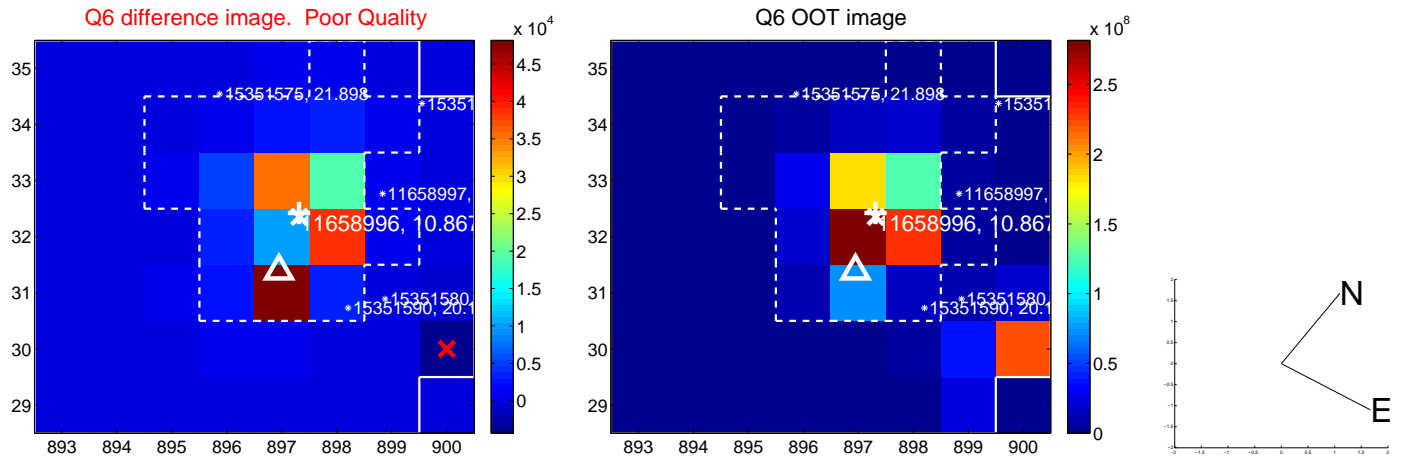
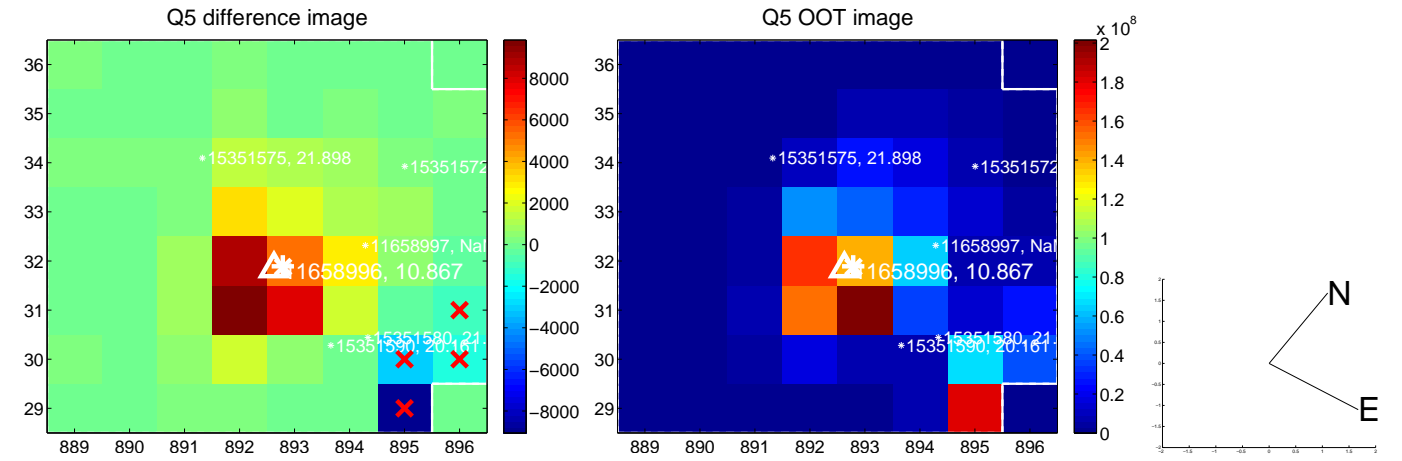


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

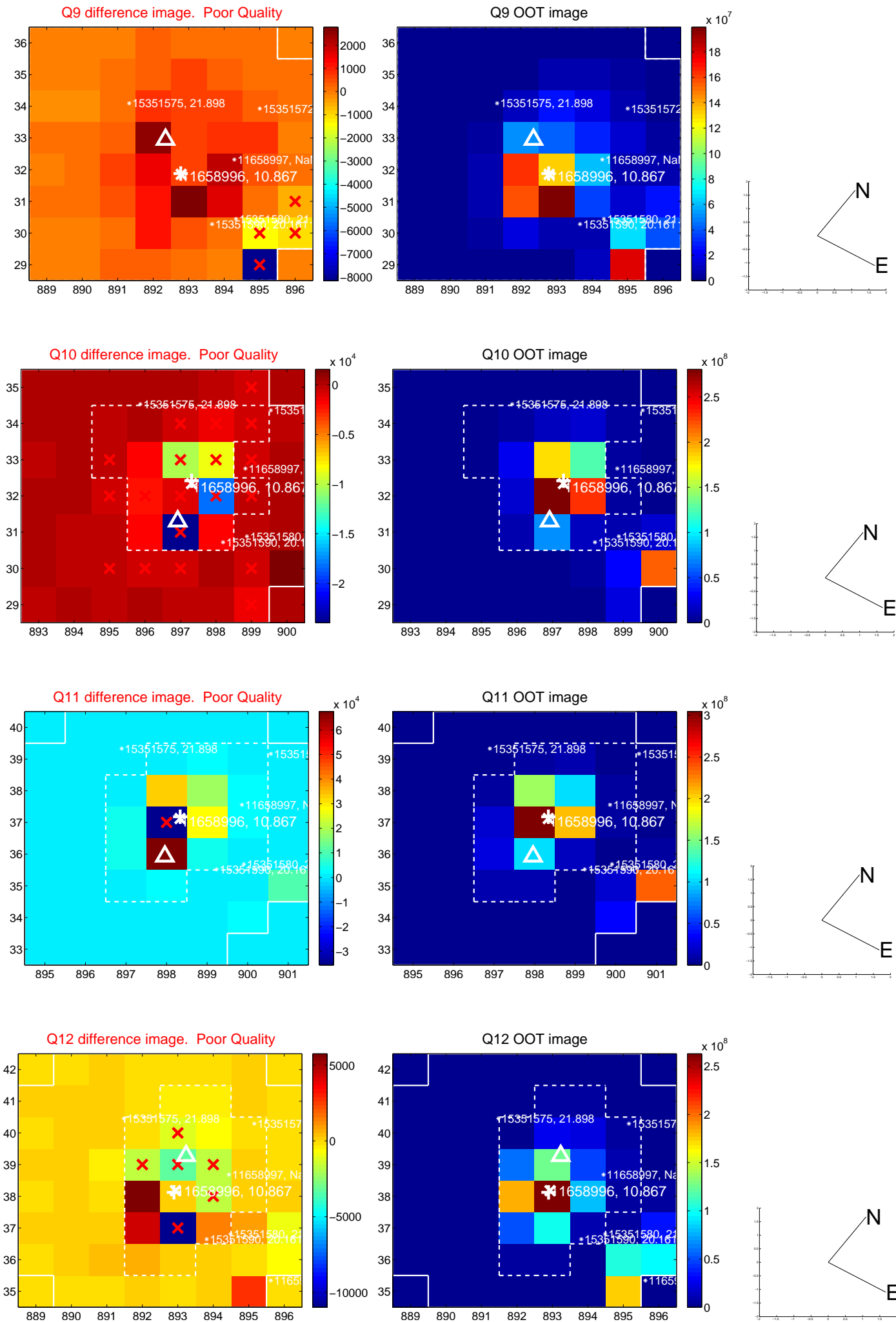


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

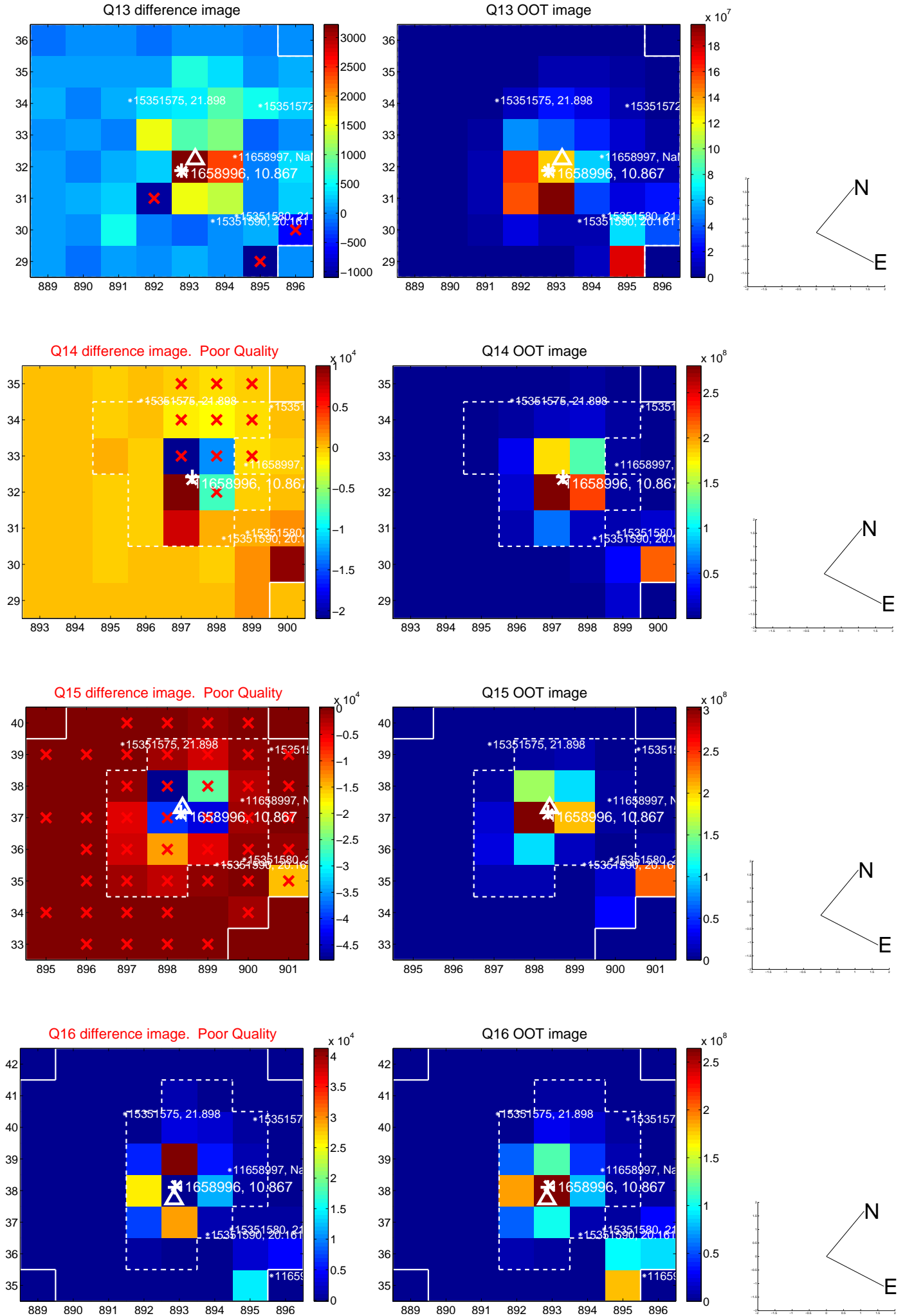




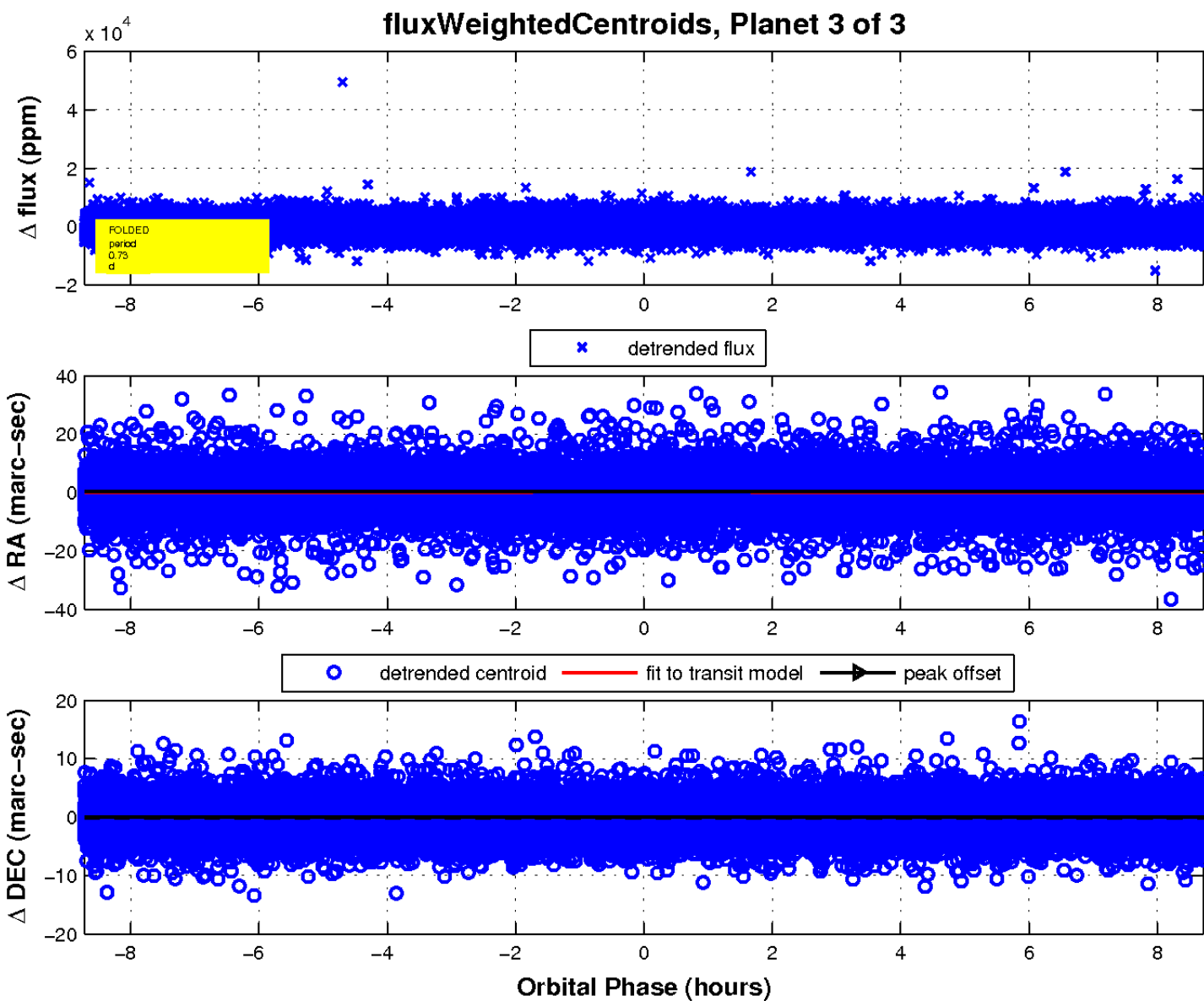
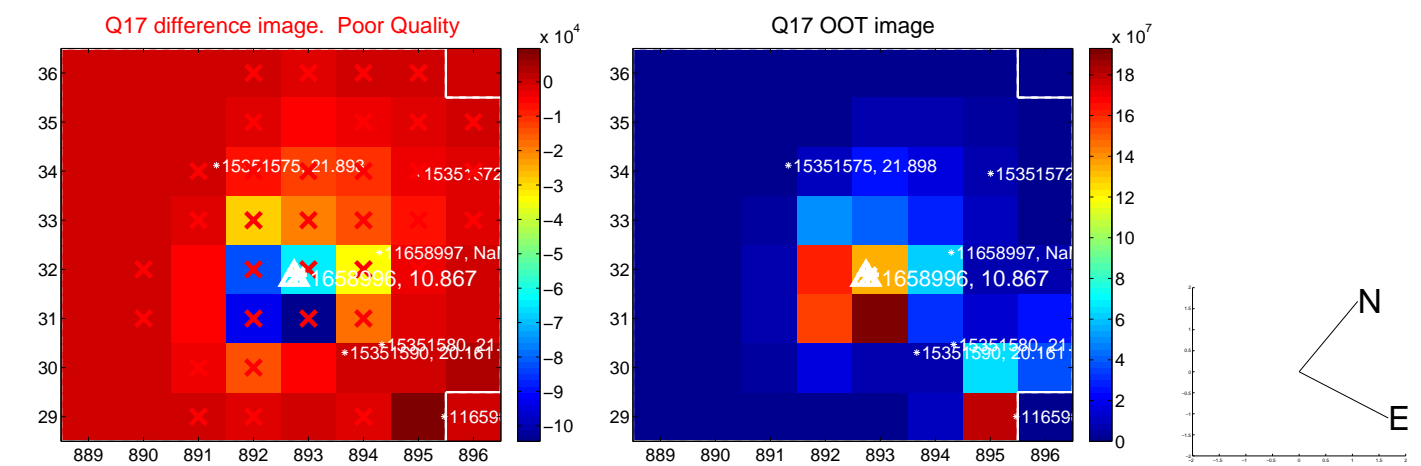
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

