

# KIC 010294608

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|---------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010294608-01 | OBS      | 7308.01 | 1.854495      | 132.490161   | 437233.9    | 2.500            | 33388.3 | -1.0 | 0.99                        | 5843            | 49.98                  | 1234.70                |
| 010294608-02 | OBS      | No      | 5.563481      | 134.106056   | 26696.5     | 15.000           | 6117.3  | -1.0 | 0.99                        | 5843            | 16.09                  | 285.36                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010294608-01 | OBS      | FP   | 0.00  | 0 | 1 | 0 | 0 | DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS |
| 010294608-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—RESIDUAL_TCE—CENT_NOFITS        |

**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.

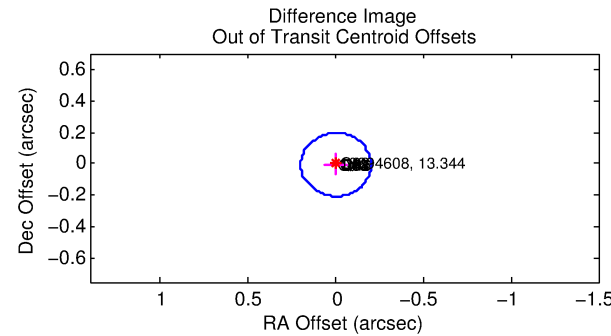
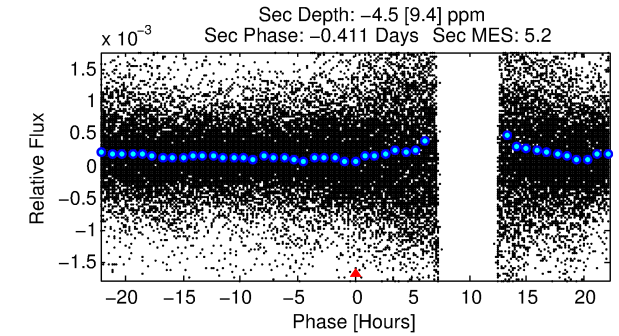
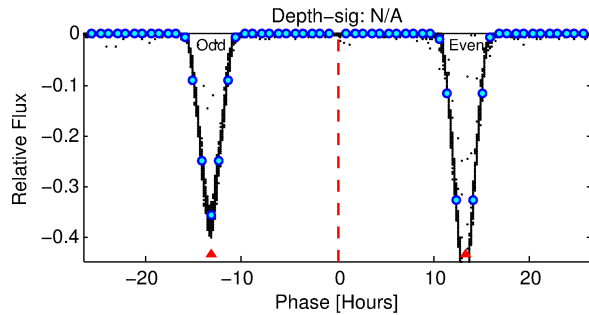
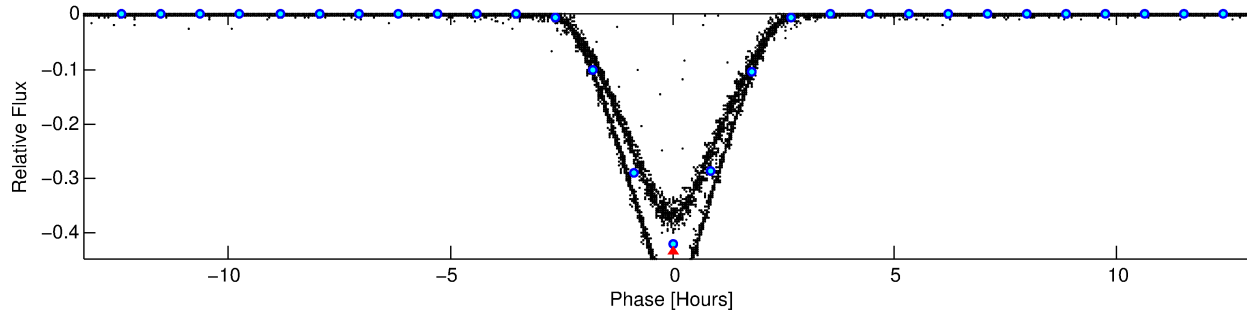
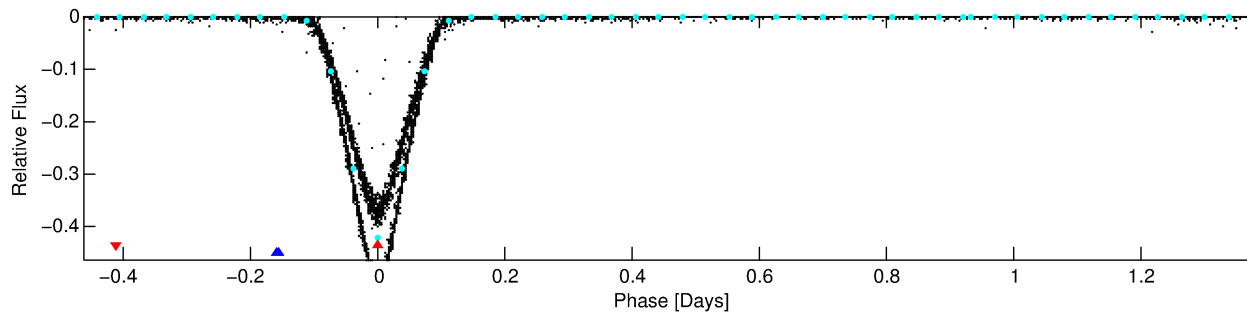
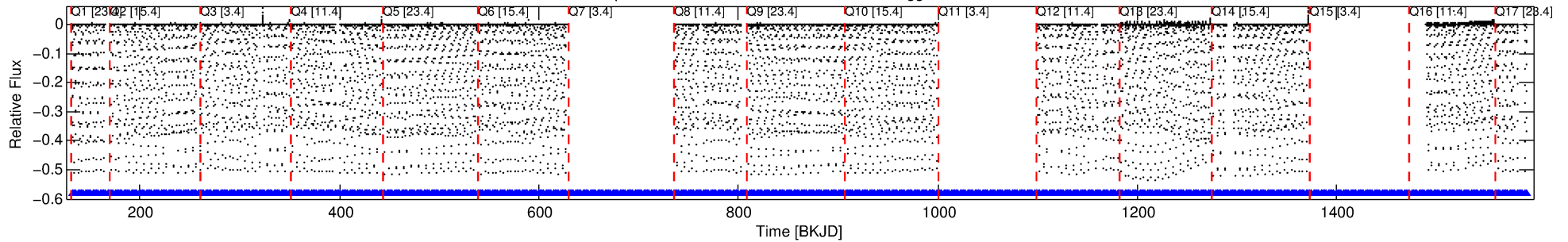
## Ephemeris Match Information For 010294608-01

No Significant Match Found

# DV One-Page Summary

KIC: 10294608 Candidate: 1 of 2 Period: 1.854 d  
KOI: K07308 Corr: No Ephemeris Match

Kp: 13.34 R\*: 0.99 Rs Teff: 5843.0 K Logg: 4.41 Fe/H: -0.180



## TPS TCE Results:

Period = 1.85450 d  
Epoch = 132.4902 BKJD

DV fit results are unavailable

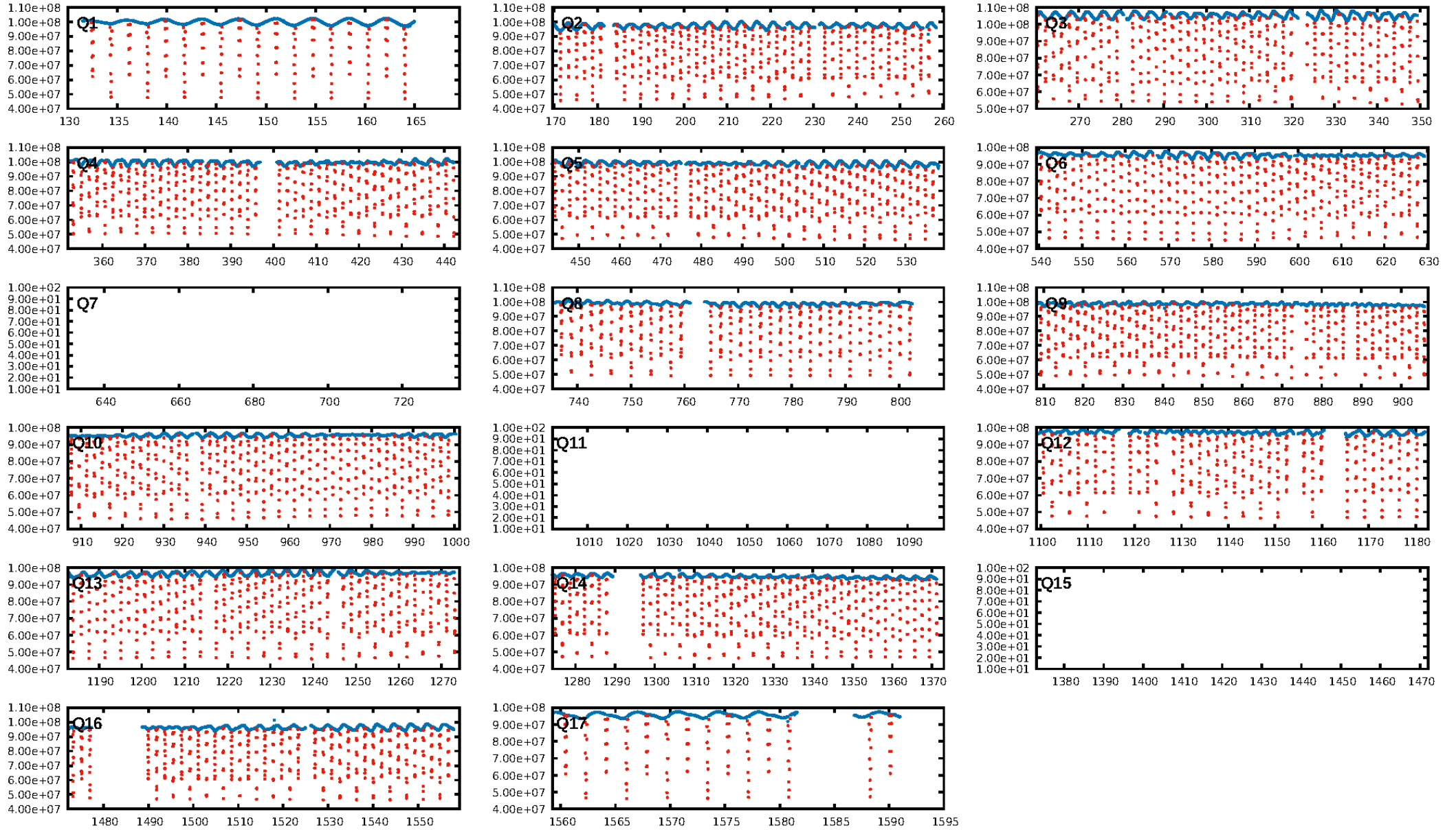
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.85s]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [541/541]  
GhostDiagnostic-chr: 0.8485  
Centroid-sig: N/A  
Centroid-so: 0.090 arcsec [284.83σ]  
OotOffset-rm: 0.006 arcsec [0.09σ]  
KicOffset-rm: 0.161 arcsec [2.33σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

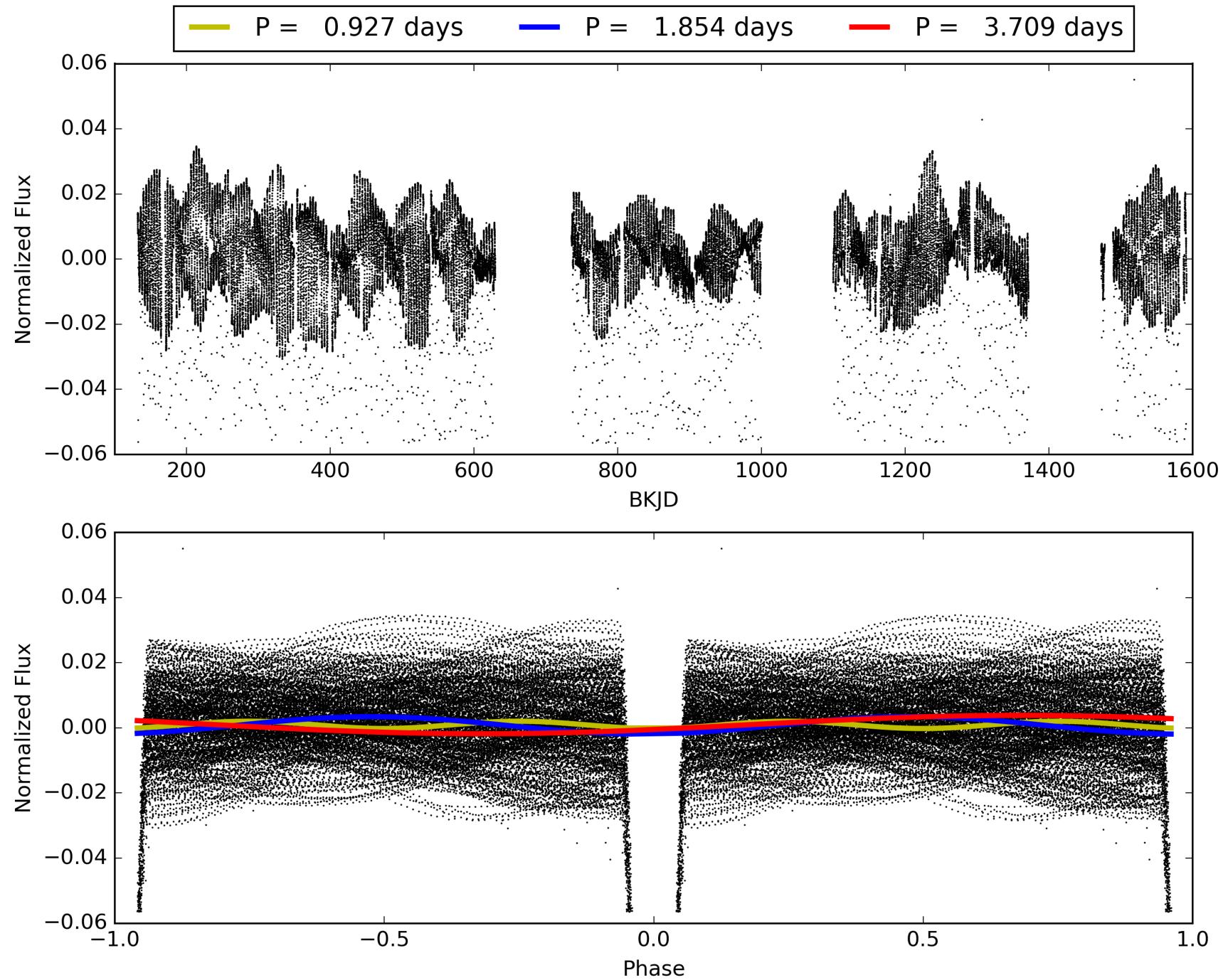
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:21:39 Z

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

# TCE 010294608-01, PDC Light Curves

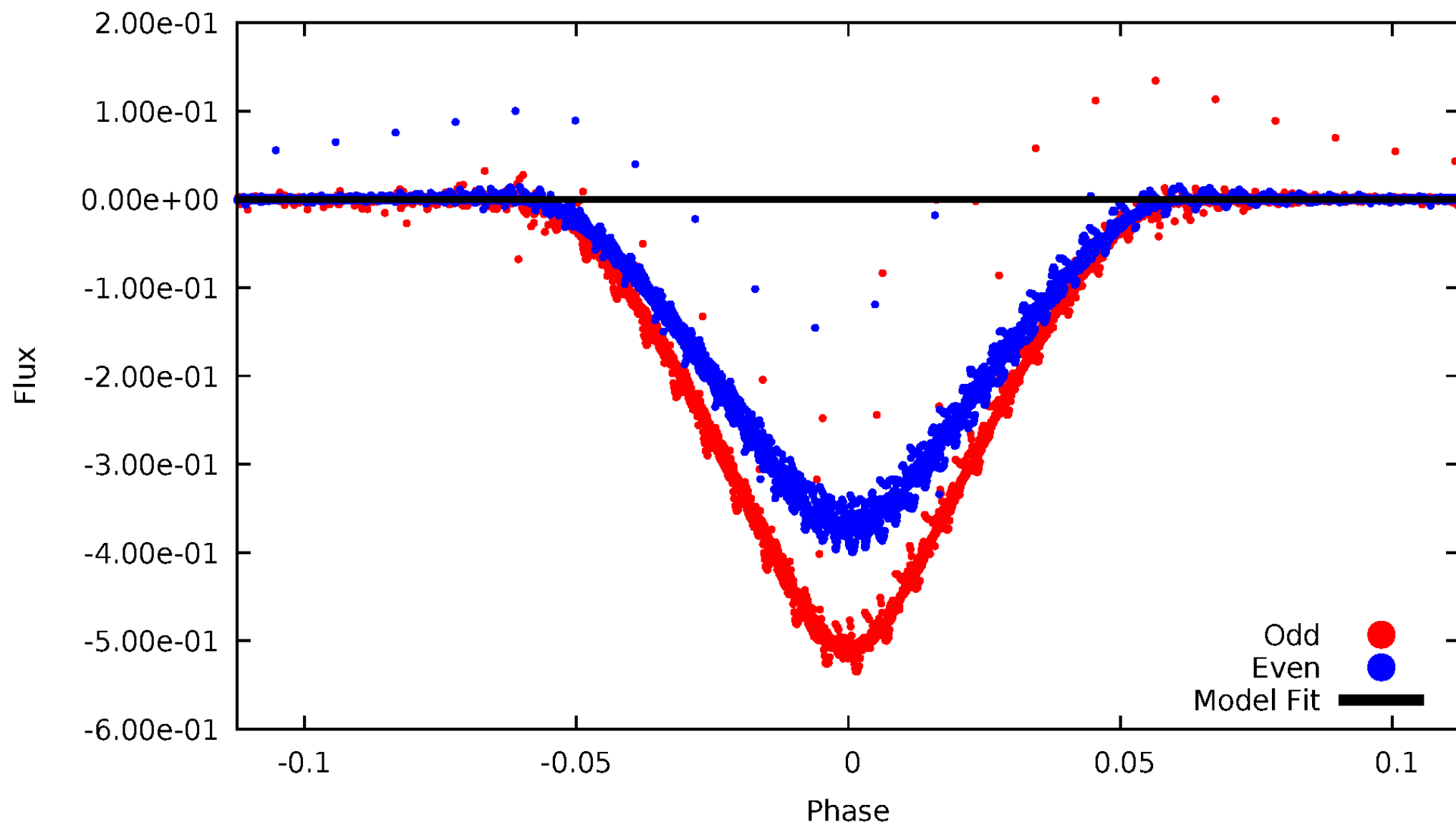


TCE 010294608-01



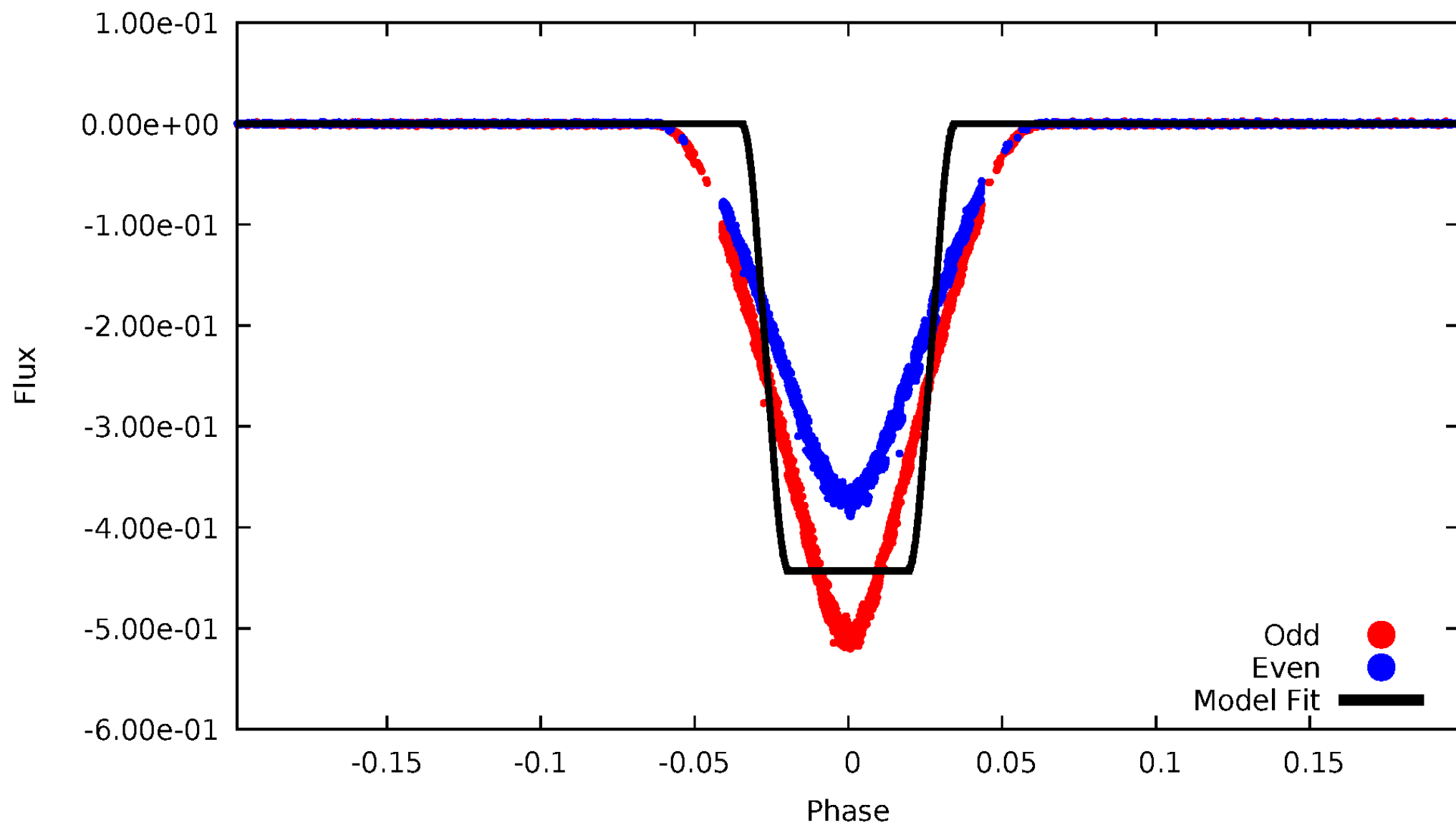
# DV Odd/Even

TCE 010294608-01



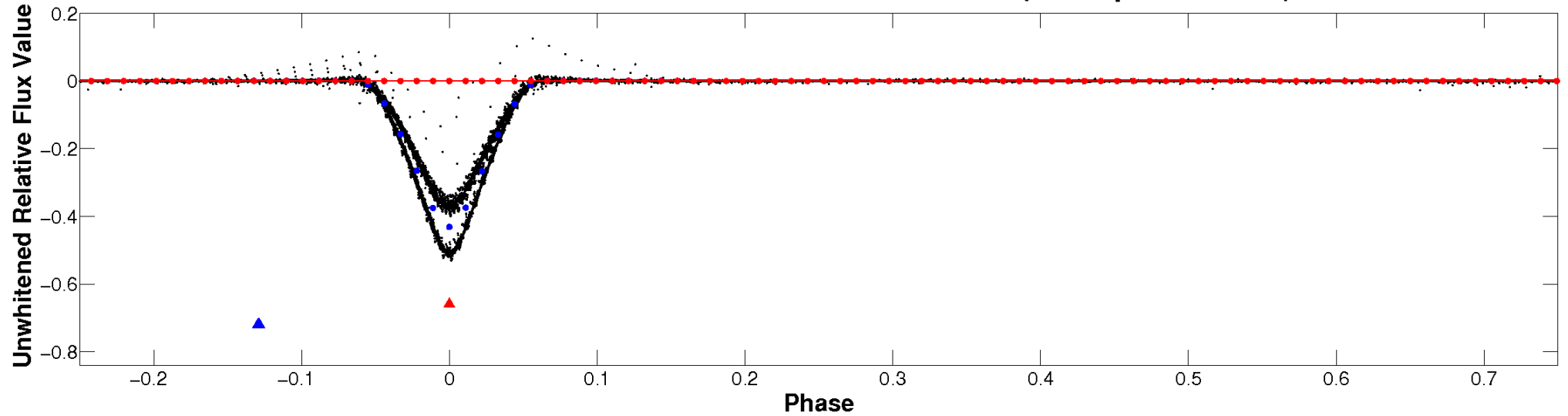
# ALT Odd/Even

TCE 010294608-01



# Non-Whitened Vs. Whitened Light Curve

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

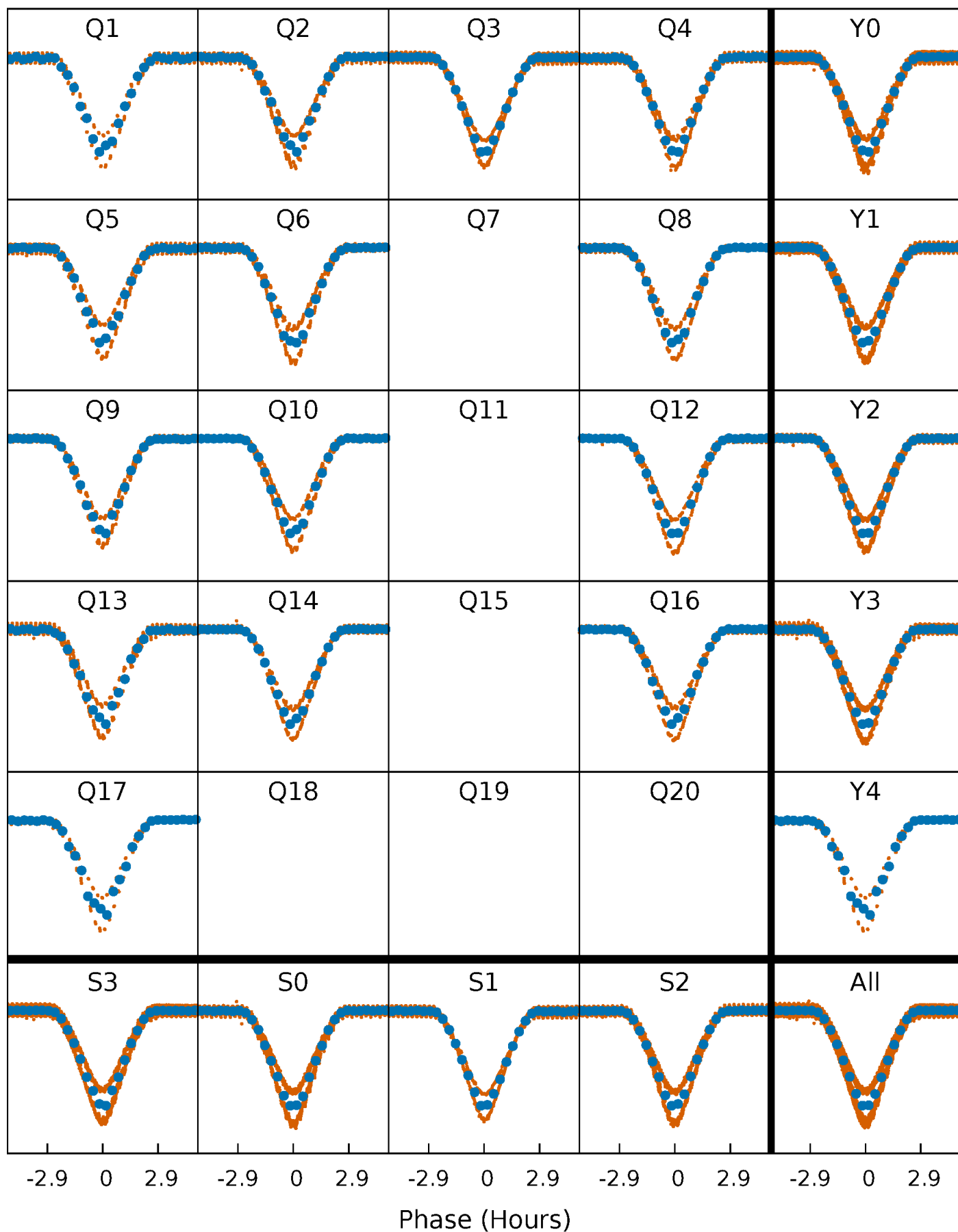


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

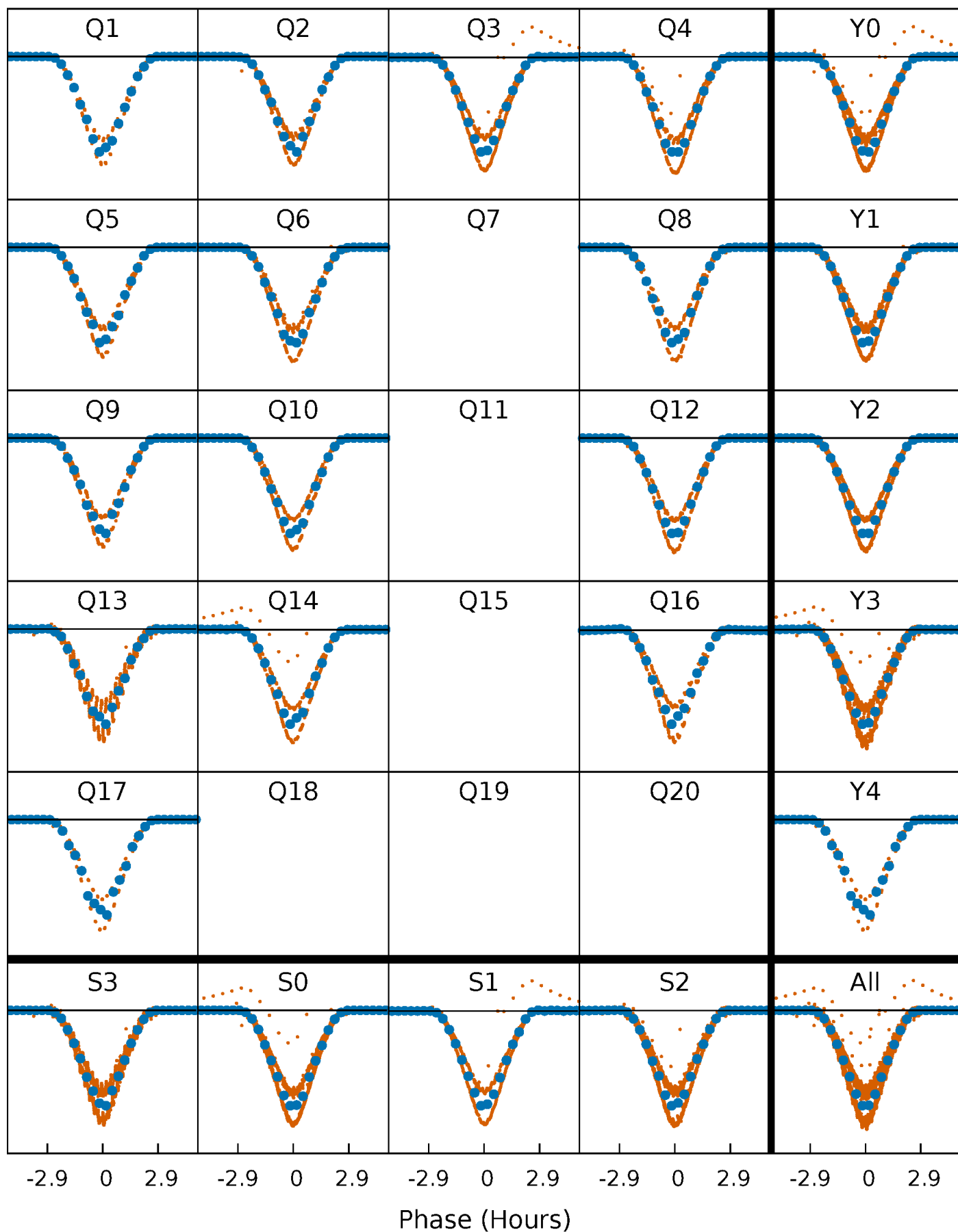
TCE 010294608-01 P= 1.854495 Days  $T_0=132.490161$  (BKJD)





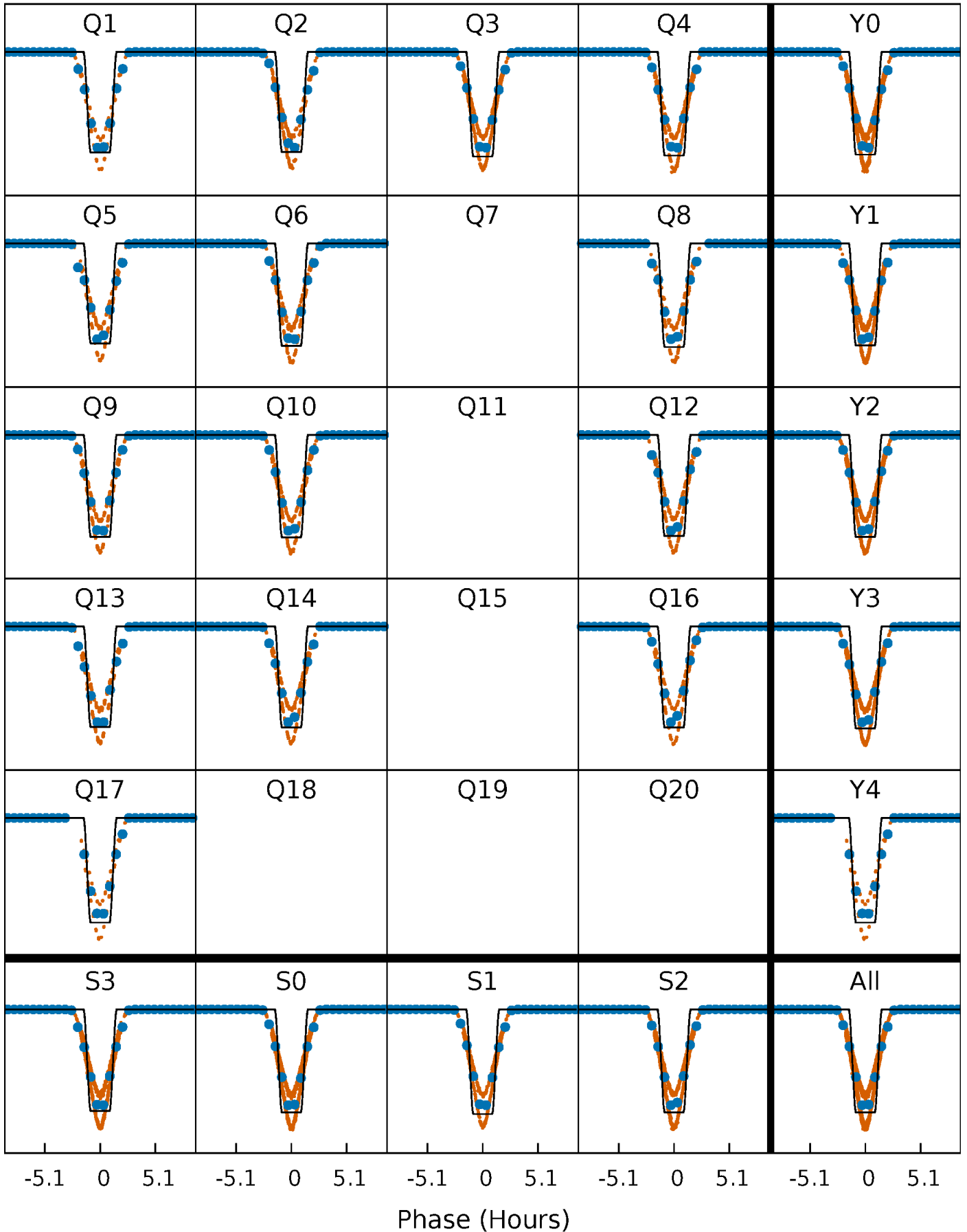
# DV Quarter-Phased Transit Curves

TCE 010294608-01 P= 1.854495 Days  $T_0=132.490161$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

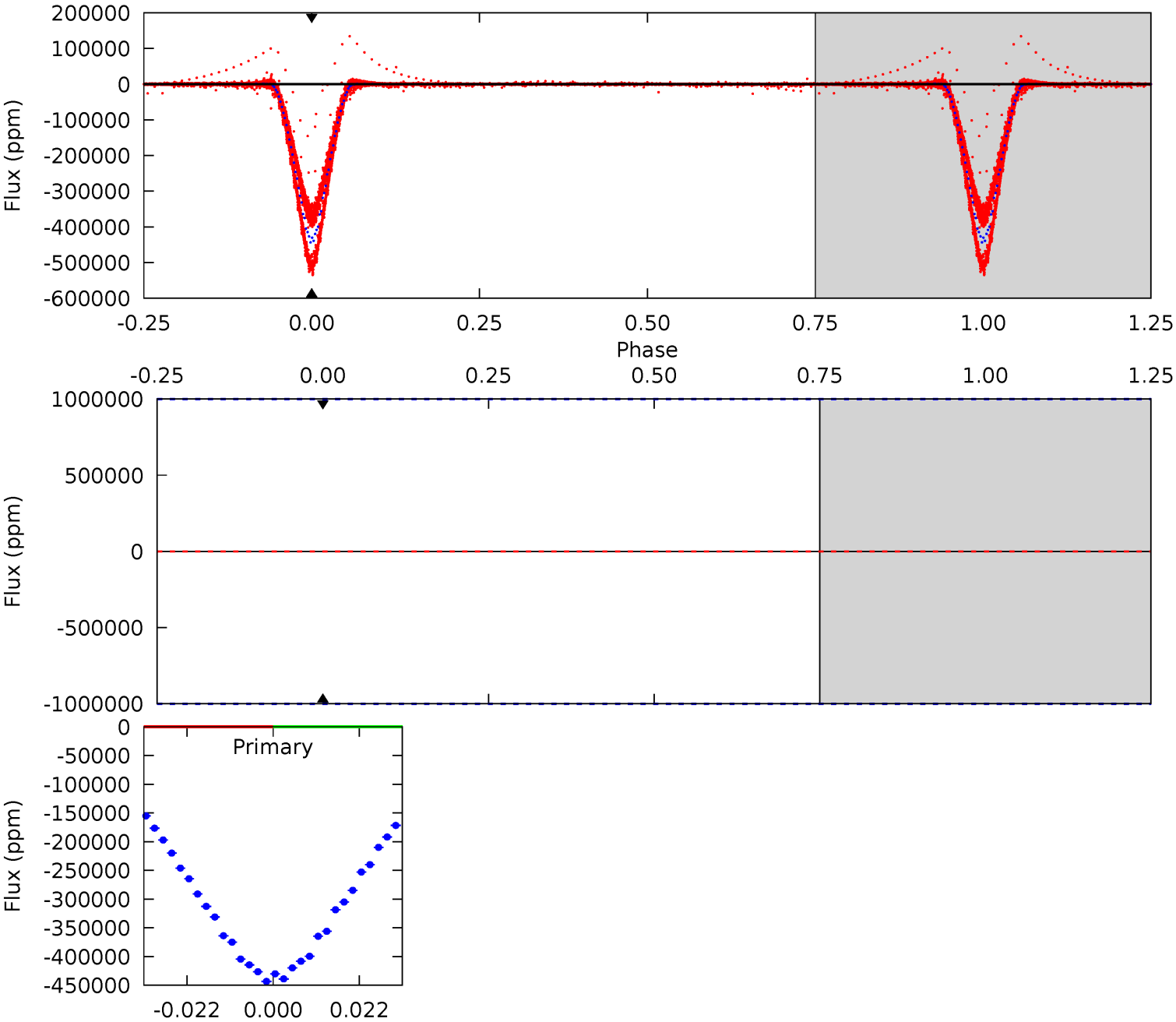
TCE 010294608-01 P= 1.854495 Days  $T_0=132.490320$  (BKJD)



# DV Model-Shift Uniqueness Test

010294608-01, P = 1.854495 Days, E = 130.635666 Days

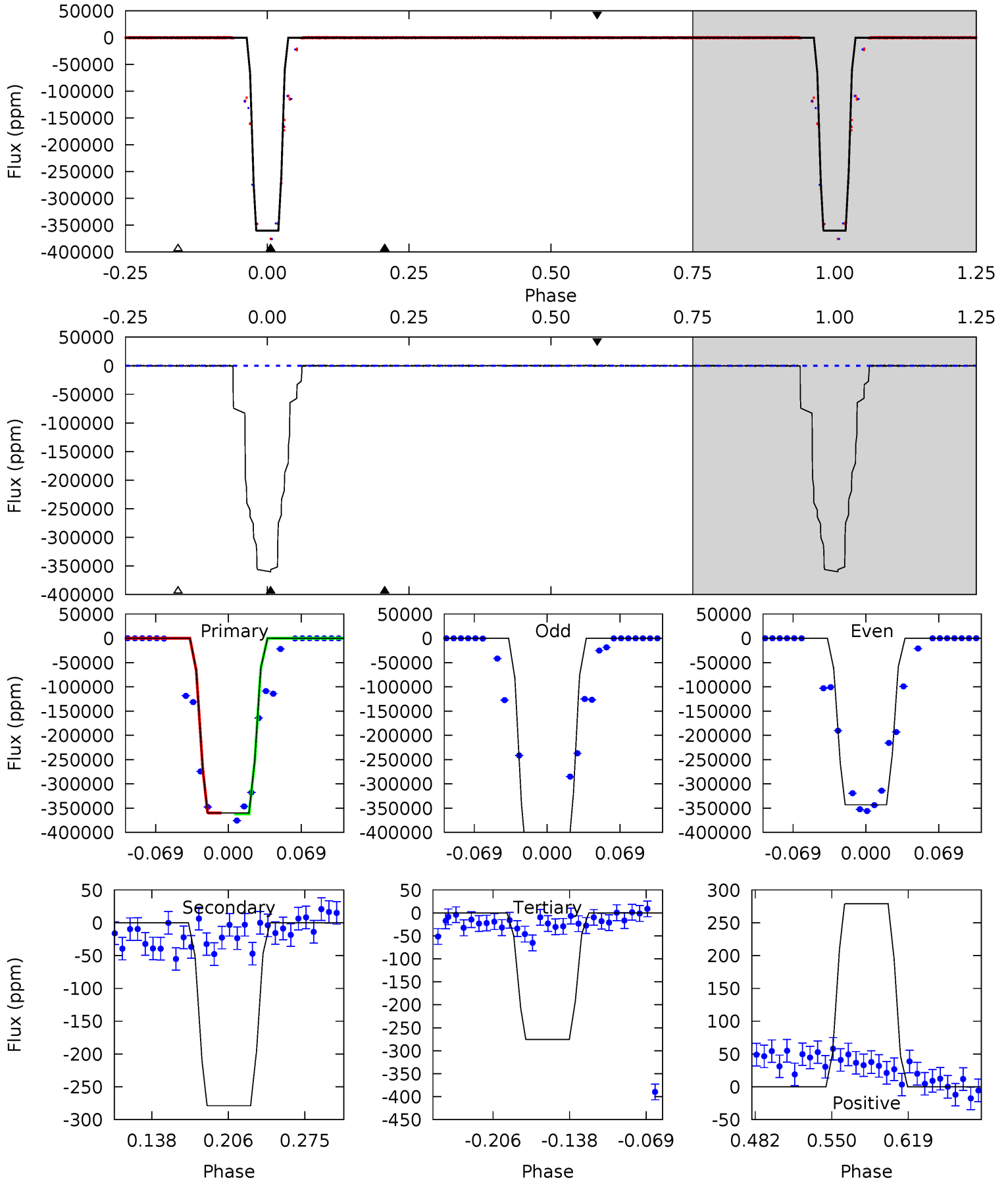
| Pri | Sec | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0   | 0   | 0   | 0   | 1.00            | 1.00            | 1.00             | 0       | 0       | 0       | 0       | 0       | 0   | 0     | 0   |



# Alt Model-Shift Uniqueness Test

010294608-01, P = 1.854495 Days, E = 130.635825 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 |
|------|------|------|------|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 5836 | 4.52 | 4.47 | 4.52 | 4.64            | 1.82            | 1.44             | 5831    | 5831    | 0.05    | -0.00   | 2830    | 0.94 | 0.00  | 0   |



### Stellar Parameters For KIC 010294608

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5843^{+140}_{-176}$ | $4.413^{+0.105}_{-0.180}$ | $-0.180^{+0.300}_{-0.300}$ | $0.990^{+0.274}_{-0.148}$ | $0.926^{+0.122}_{-0.099}$ | $1.346^{+0.699}_{-0.659}$                 |
|        | +2%/-3%              | +2%/-4%                   | +167%/-167%                | +28%/-15%                 | +13%/-11%                 | +52%/-49%                                 |
| 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 010294608-01 / KOI 7308.01

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$        | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$    | $A_{\text{obs}}$            |
|---------|-----------------|---------------------------|----------------------|-------------------------|-----------------------------|
| DV      | $0 \pm 1000000$ | $50.81^{+13.49}_{-11.17}$ | $2133^{+144}_{-117}$ | $-2334^{+7327}_{-2558}$ | $0.165^{+18.614}_{-16.817}$ |
| Alt.    | $-279 \pm 62$   | $73.01^{+15.98}_{-12.01}$ | $2131^{+157}_{-115}$ | $-2546^{+74}_{-99}$     | $0.023^{+0.012}_{-0.009}$   |

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

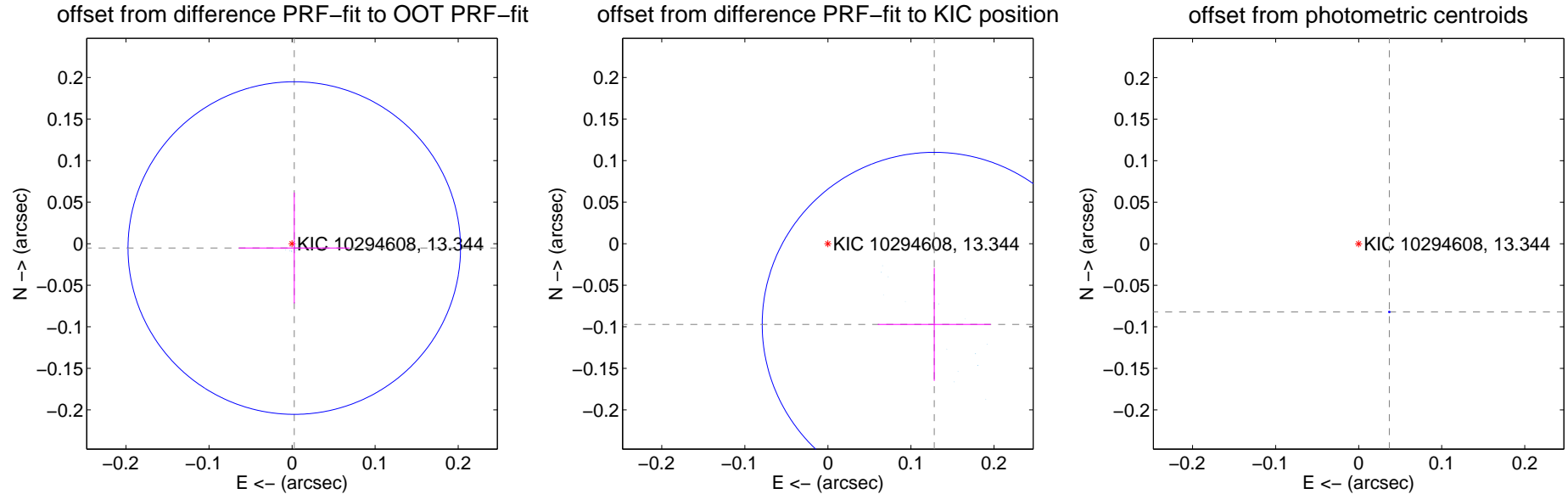
## DV Centroid Data

Supplemental centroid analysis for 010294608-01. Kepler magnitude: 13.34. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

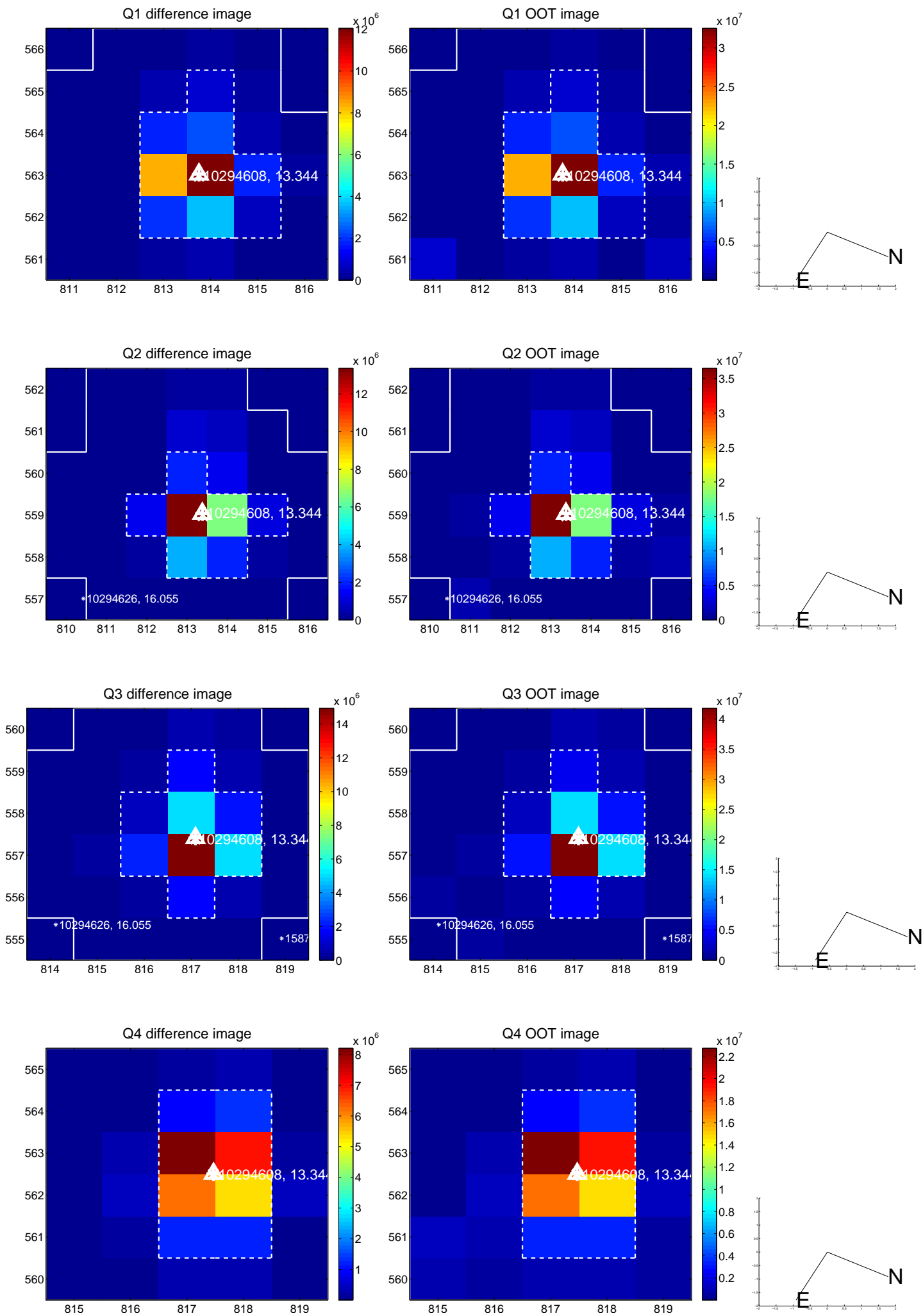
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.006 \pm 0.067$  | 0.09                | $-0.003 \pm 0.067$ | $-0.005 \pm 0.067$ |
| PRF-fit source offset from KIC position | $0.161 \pm 0.069$  | 2.33                | $-0.128 \pm 0.068$ | $-0.097 \pm 0.068$ |
| photometric centroid source offset      | $0.09 \pm 0.00$    | 284.83              | $-0.04 \pm 0.00$   | $-0.08 \pm 0.00$   |

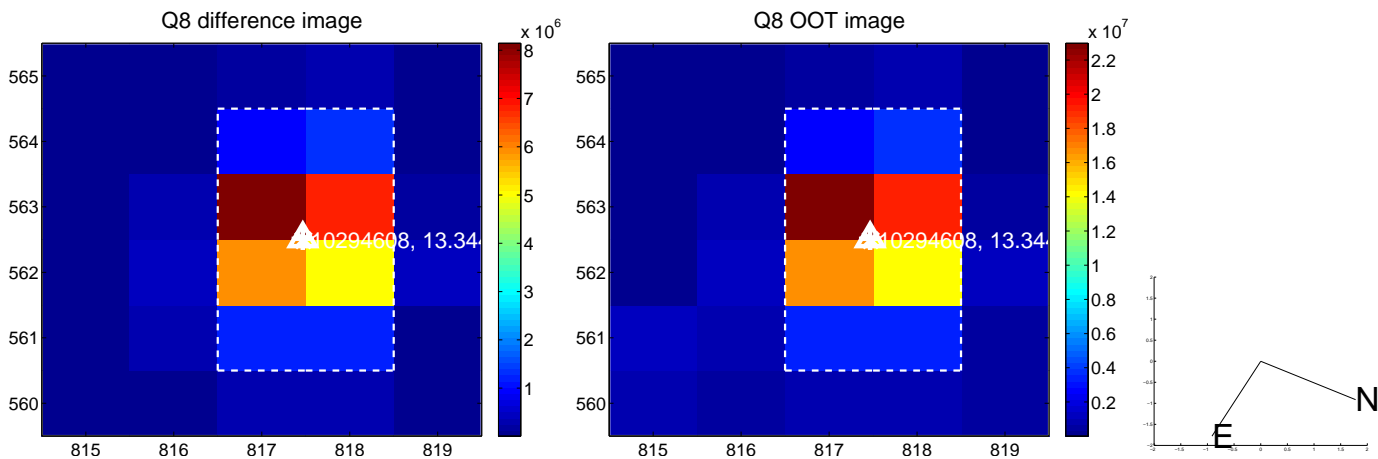
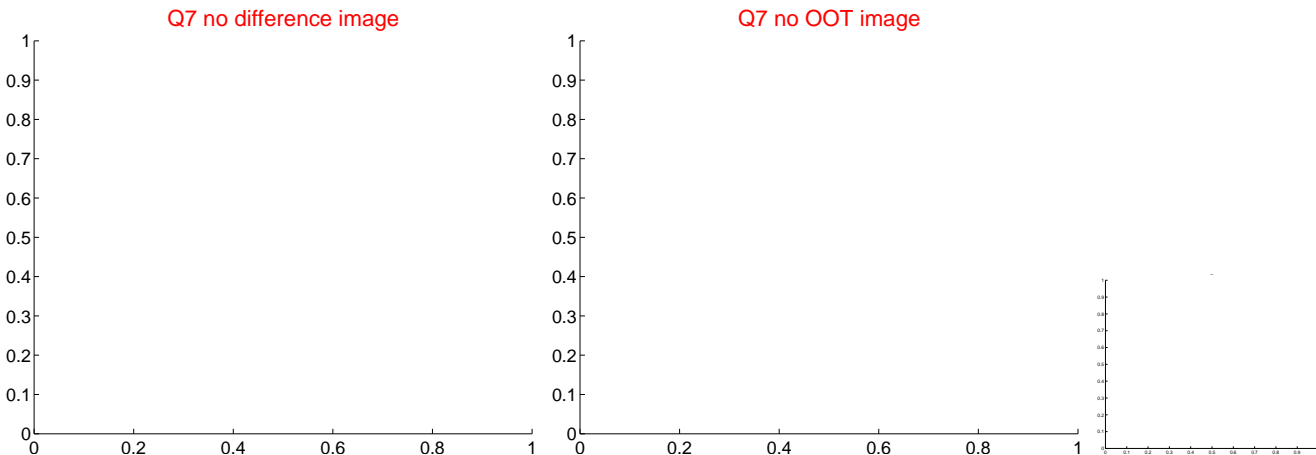
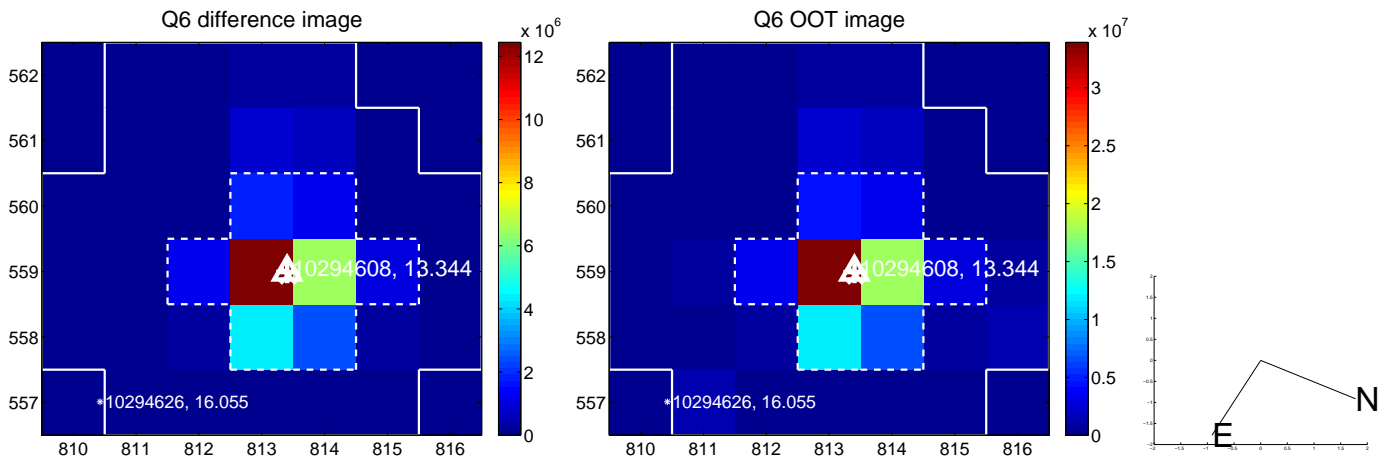
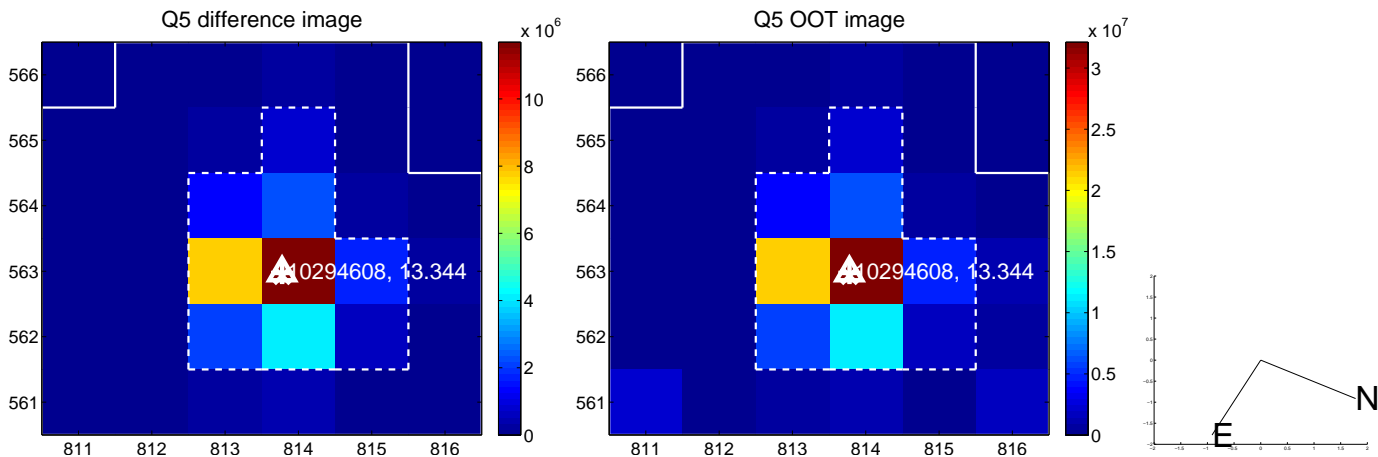


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

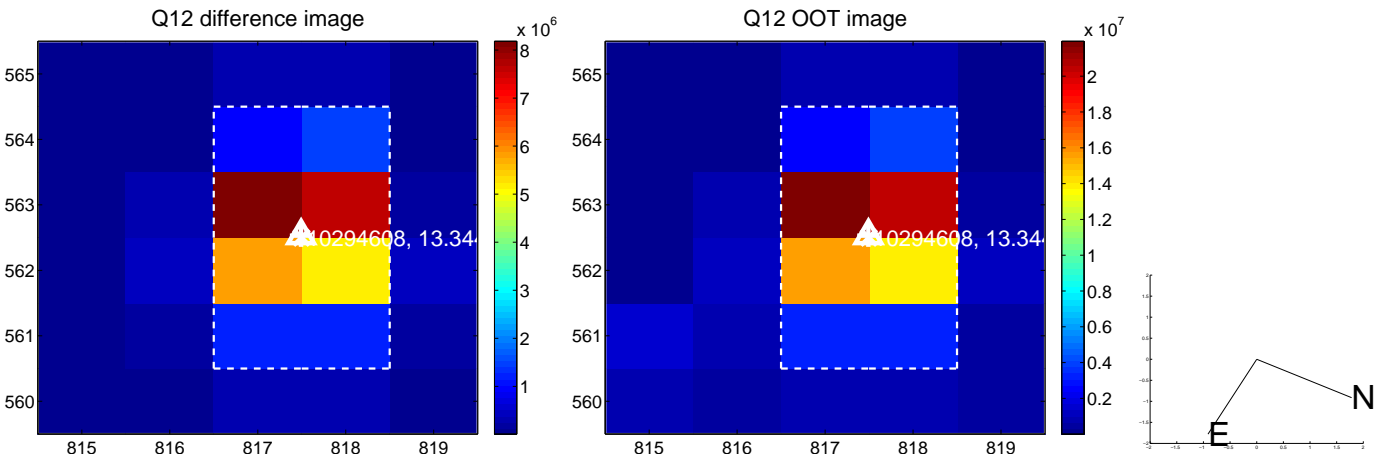
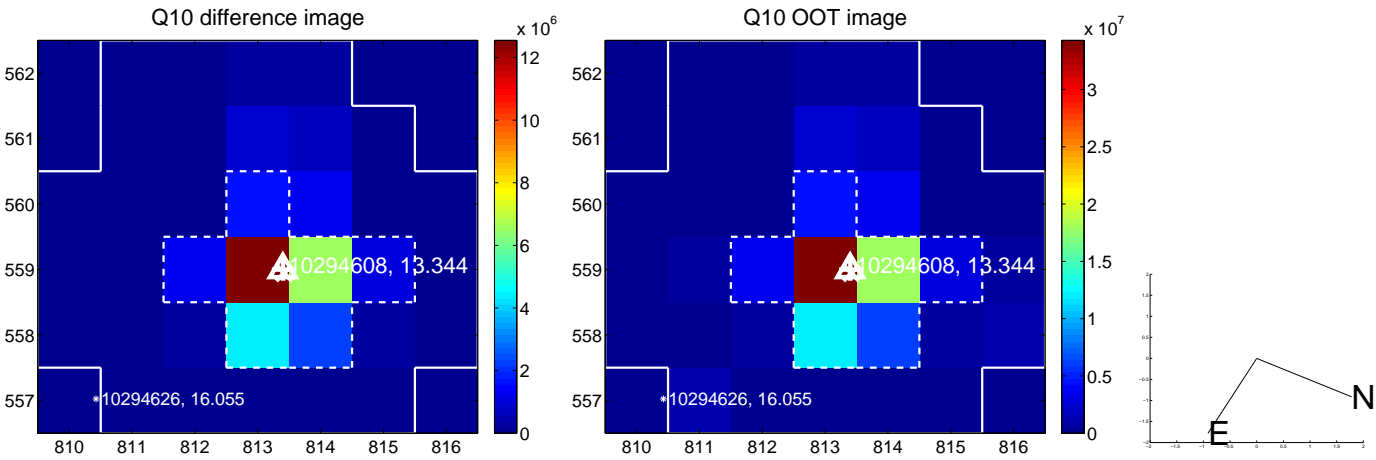
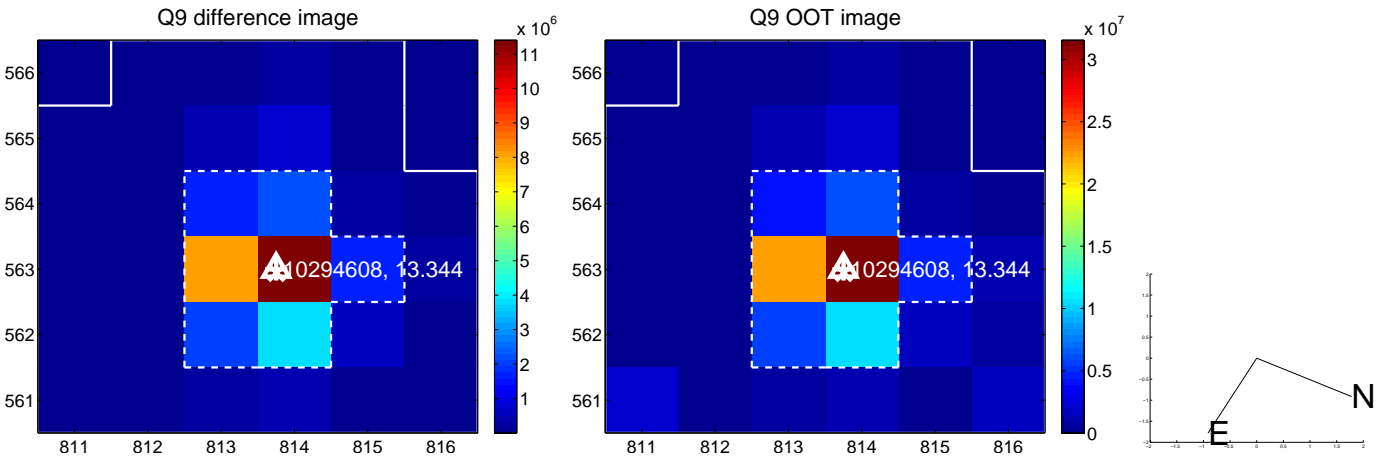


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

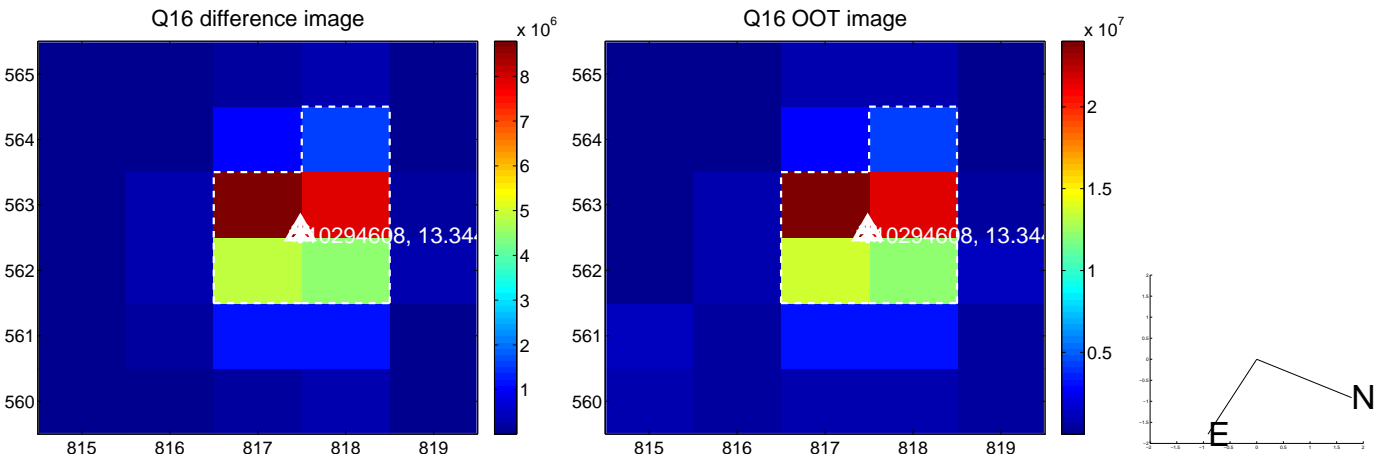
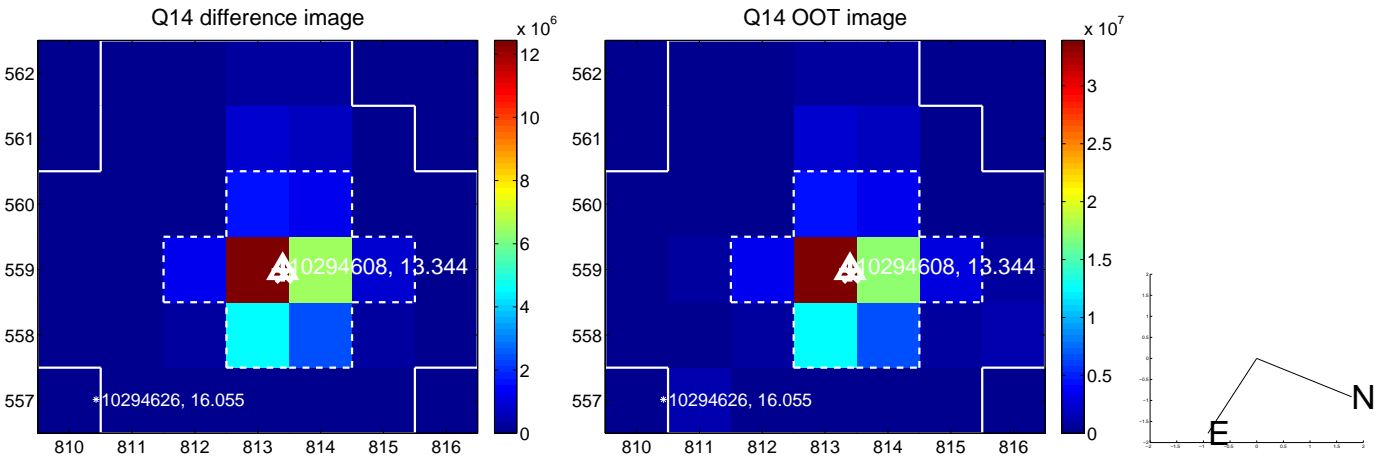
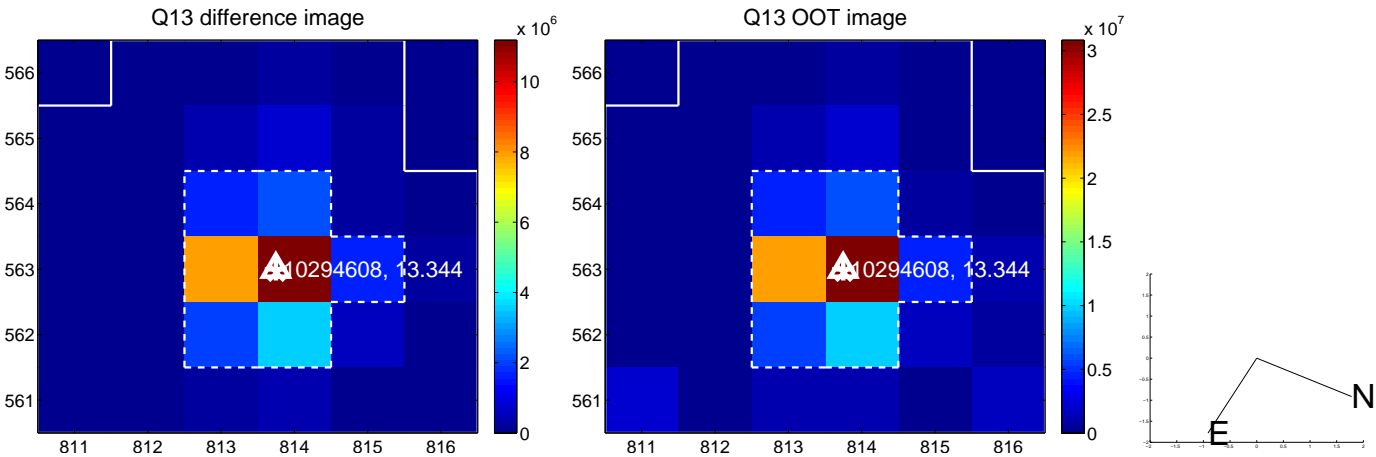




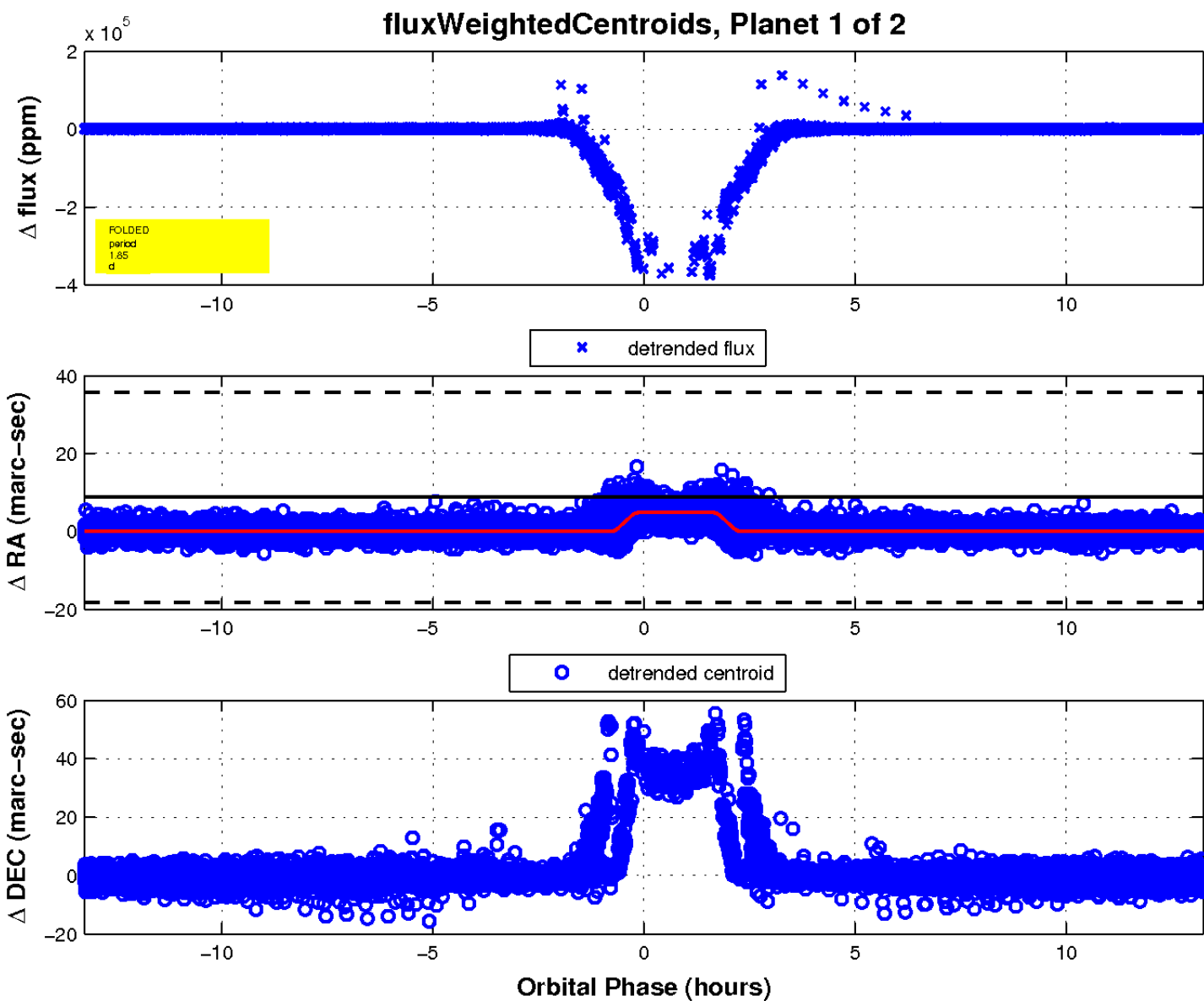
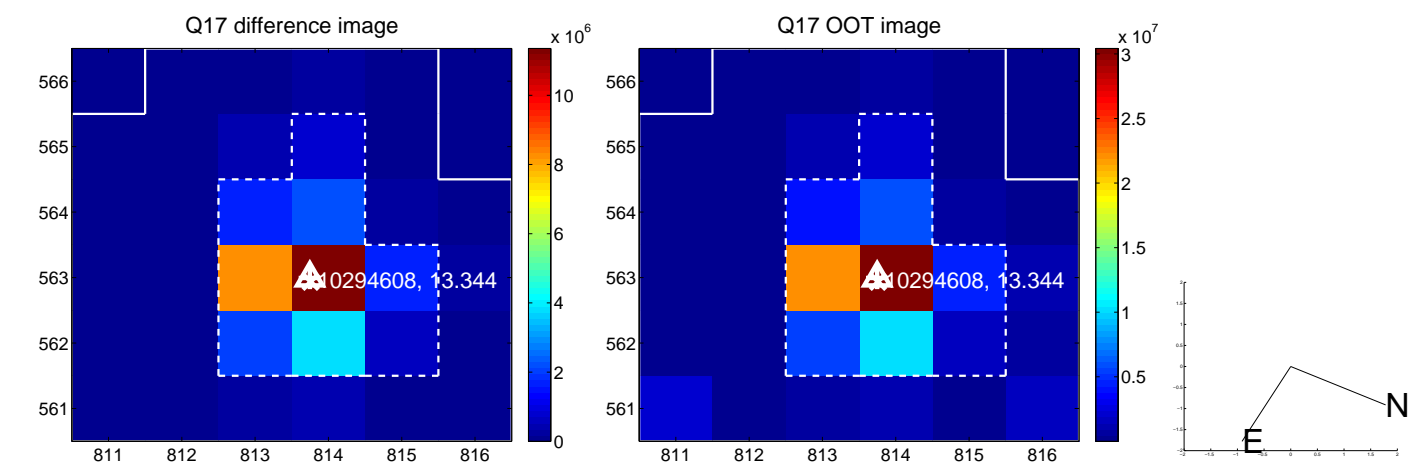
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

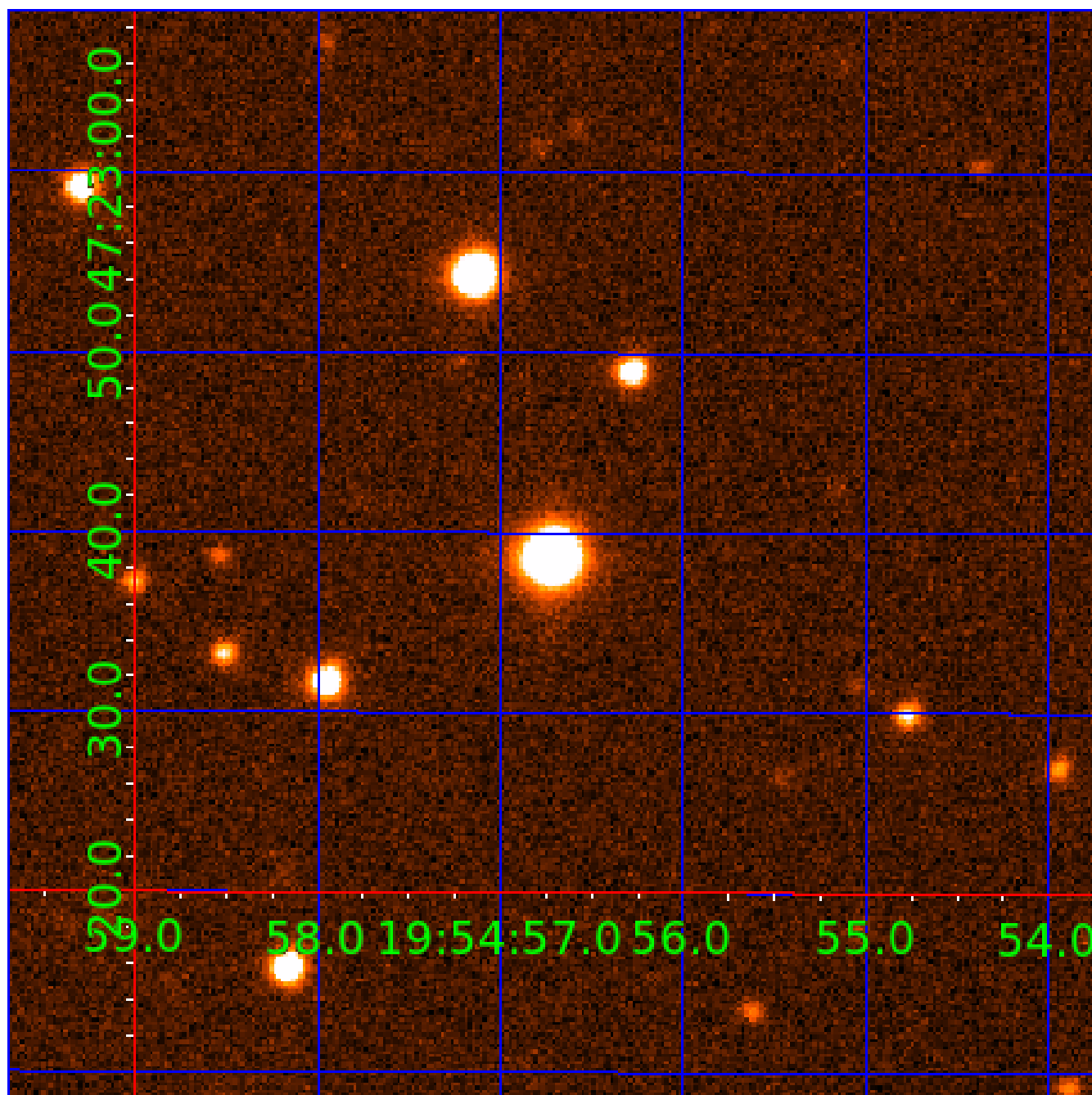


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010294608

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|---------|---------------|--------------|-------------|------------------|---------|------|-----------------------------|-----------------|------------------------|------------------------|
| 010294608-01 | OBS      | 7308.01 | 1.854495      | 132.490161   | 437233.9    | 2.500            | 33388.3 | -1.0 | 0.99                        | 5843            | 49.98                  | 1234.70                |
| 010294608-02 | OBS      | No      | 5.563481      | 134.106056   | 26696.5     | 15.000           | 6117.3  | -1.0 | 0.99                        | 5843            | 16.09                  | 285.36                 |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010294608-01 | OBS      | FP   | 0.00  | 0 | 1 | 0 | 0 | DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS |
| 010294608-02 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—RESIDUAL_TCE—CENT_NOFITS        |

**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.

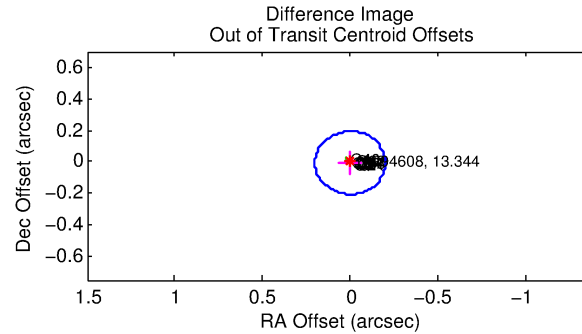
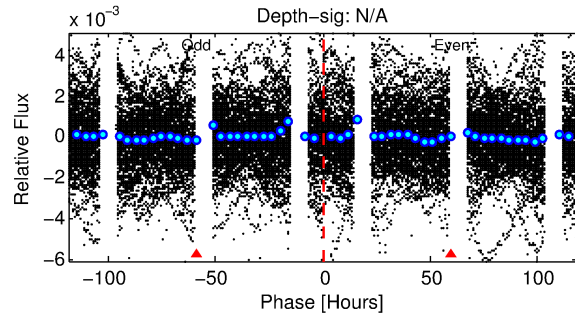
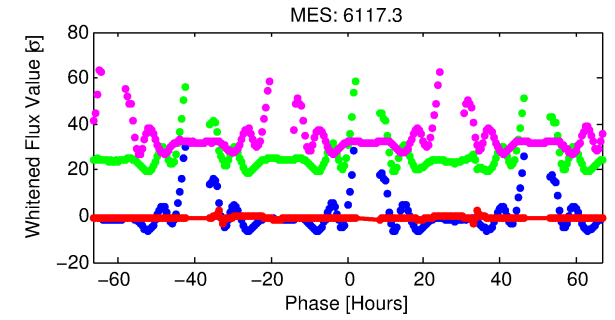
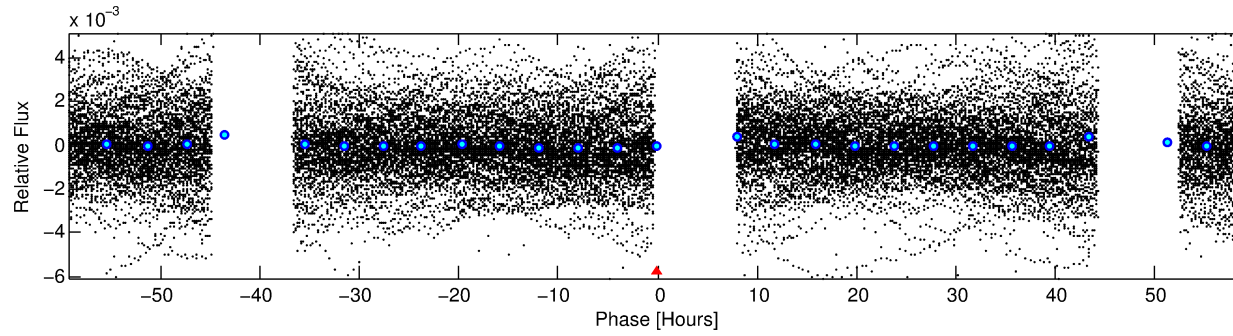
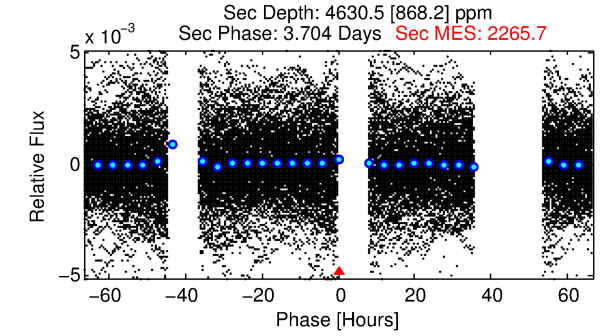
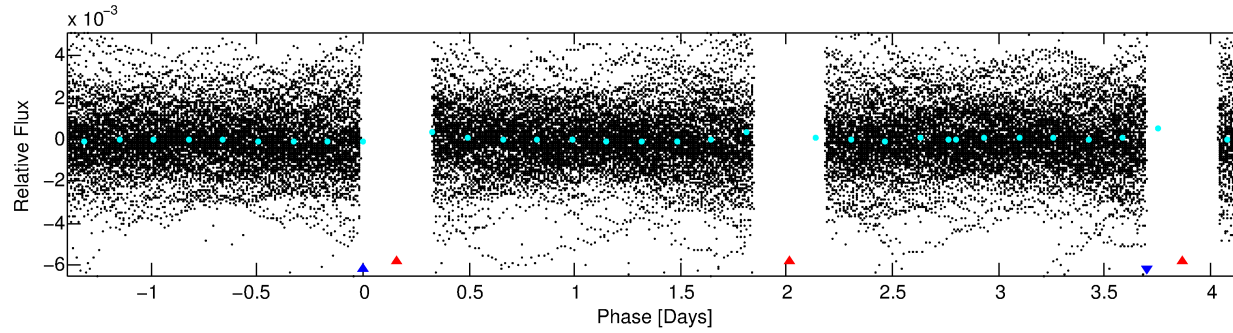
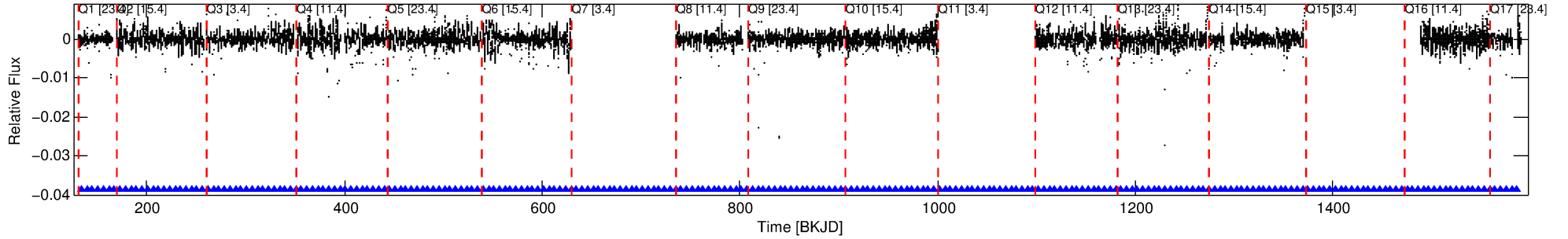
## Ephemeris Match Information For 010294608-02

No Significant Match Found

# DV One-Page Summary

KIC: 10294608 Candidate: 2 of 2 Period: 5.563 d  
KOI: K07308 Corr: No Ephemeris Match

Kp: 13.34 R\*: 0.99 Rs Teff: 5843.0 K Logg: 4.41 Fe/H: -0.180



TPS TCE Results:

Period = 5.56348 d  
Epoch = 134.1061 BKJD

DV fit results are unavailable

DV Diagnostic Results:

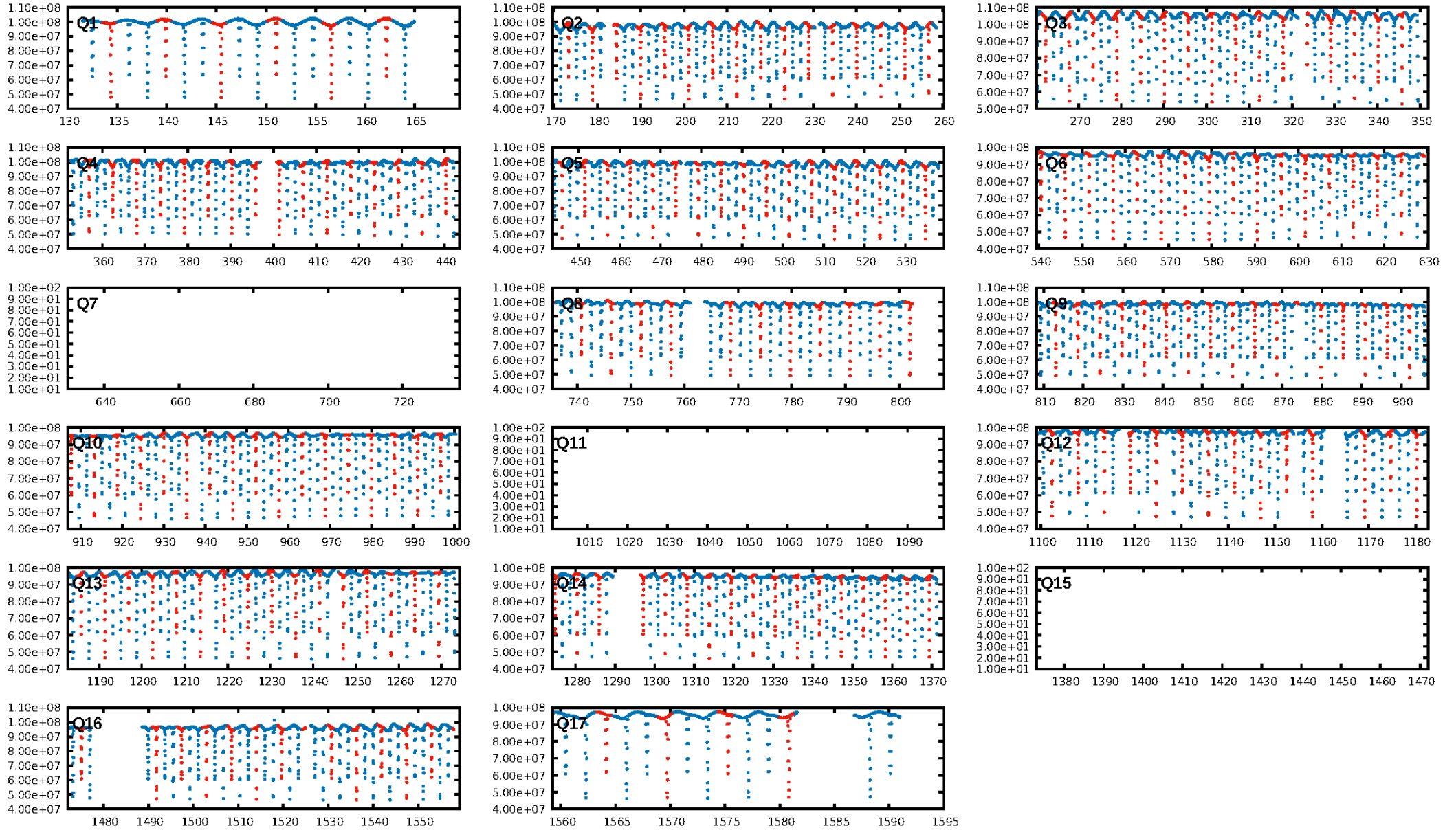
ShortPeriod-sig: 100.0% [5.85σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [187/187]  
GhostDiagnostic-chr: -1.772

Centroid-sig: N/A  
Centroid-so: 0.304 arcsec [4.24σ]  
OotOffset-rm: 0.006 arcsec [0.10σ]  
KicOffset-rm: 0.158 arcsec [2.26σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 0.00 [0/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 19:21:46 Z

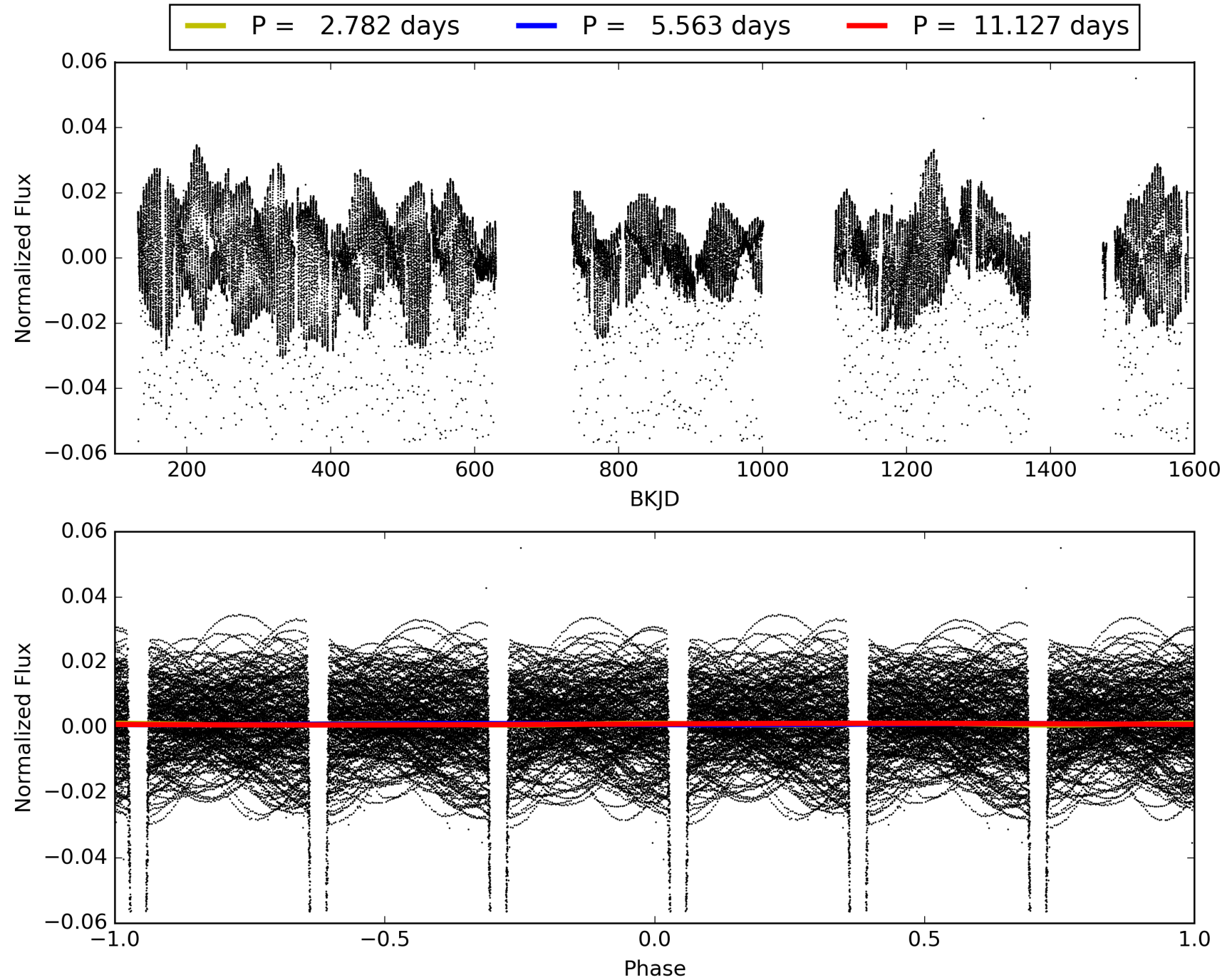
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010294608-02, PDC Light Curves





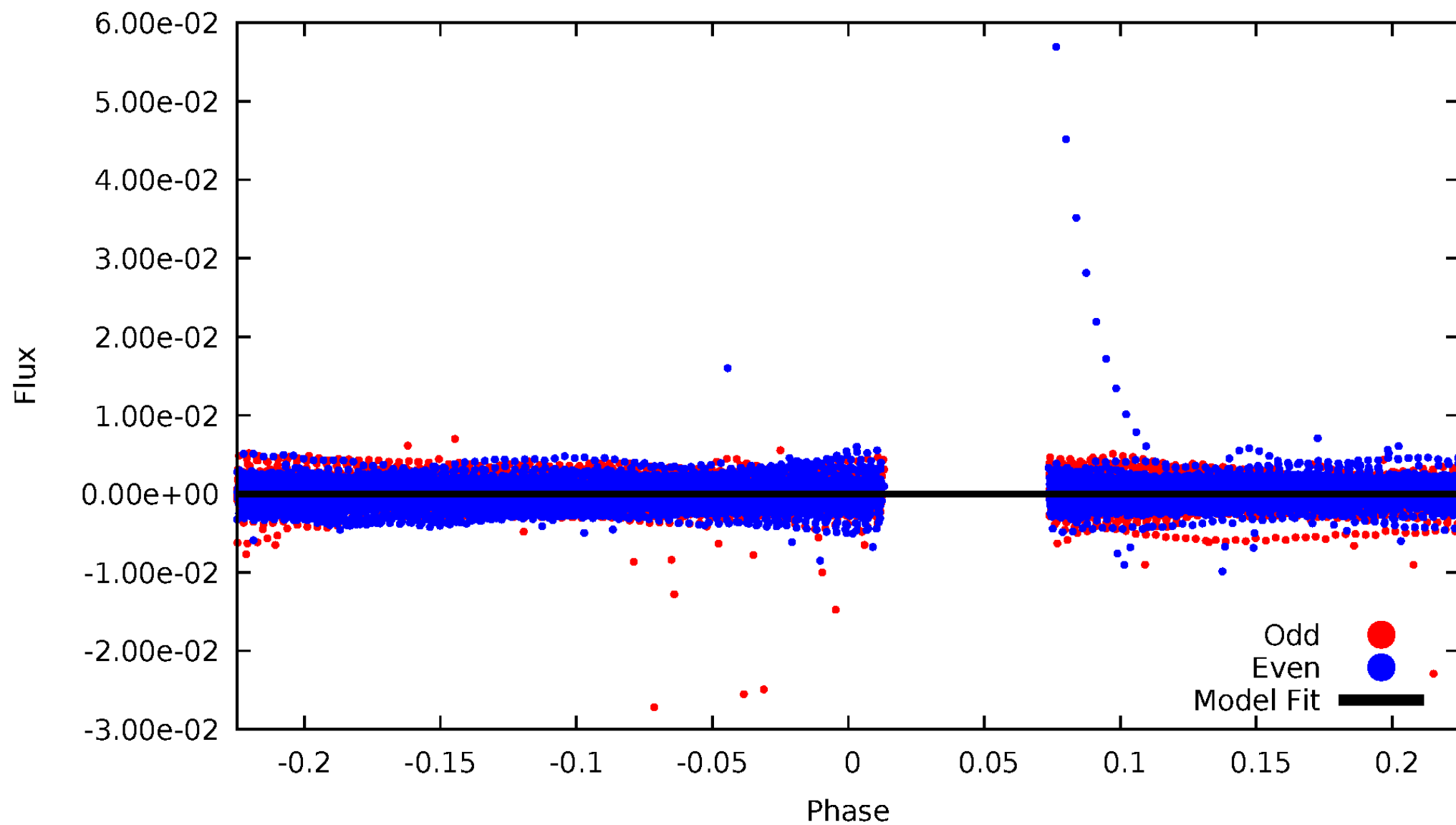
TCE 010294608-02





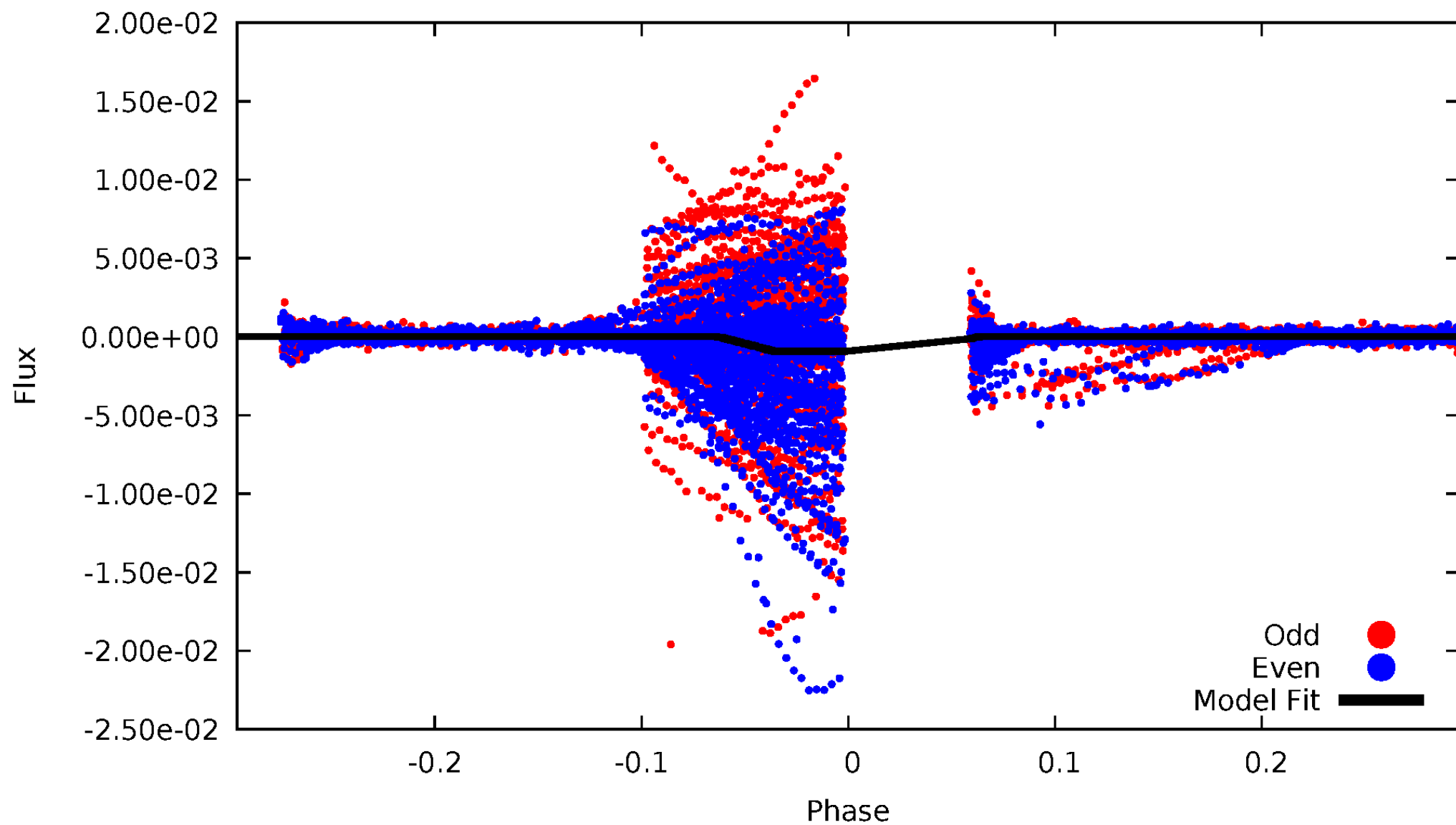
# DV Odd/Even

TCE 010294608-02



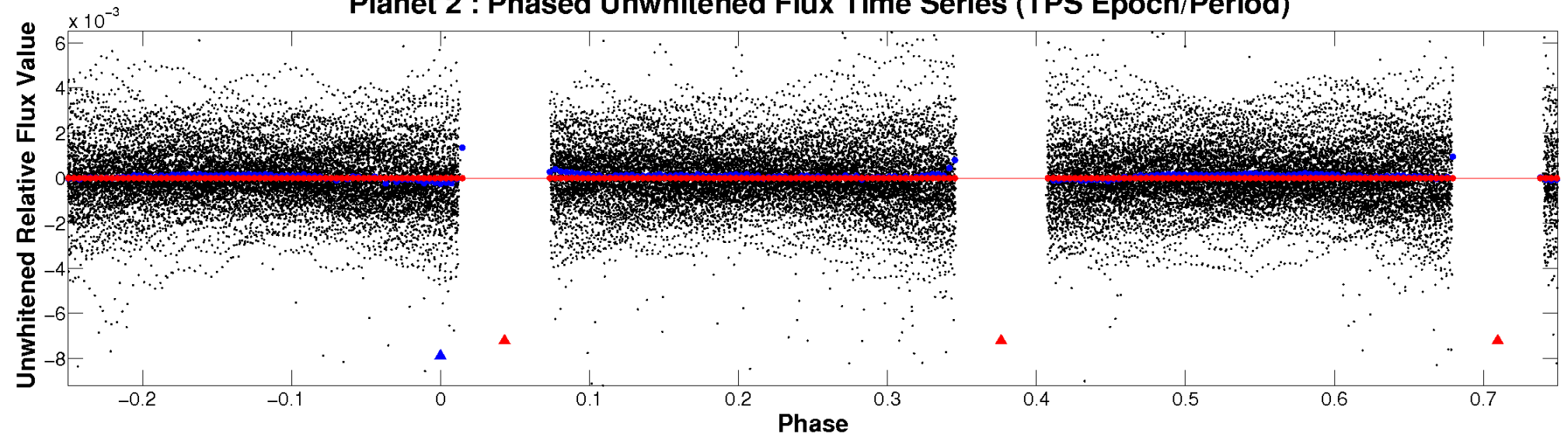
# ALT Odd/Even

TCE 010294608-02



# Non-Whitened Vs. Whitened Light Curve

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

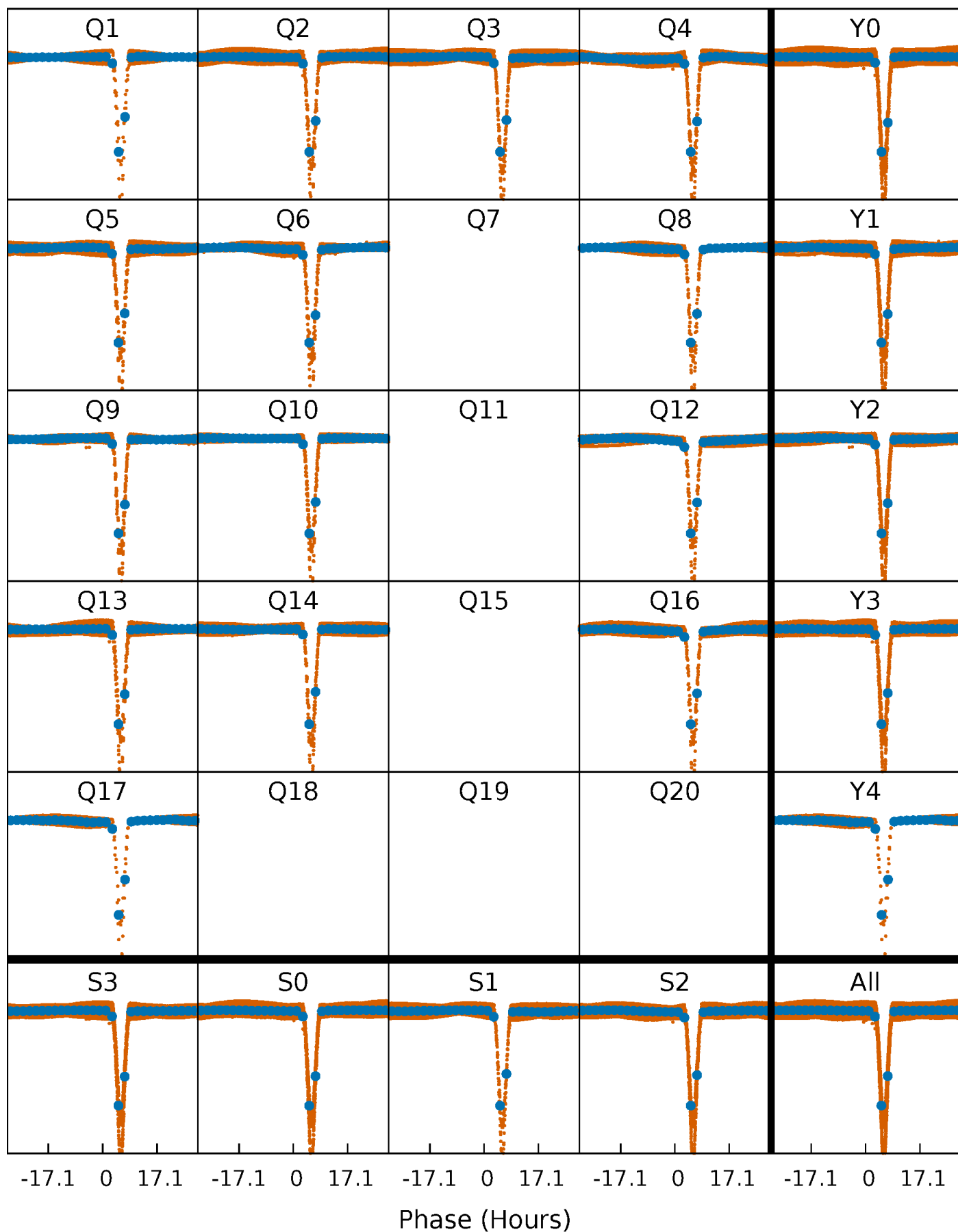


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



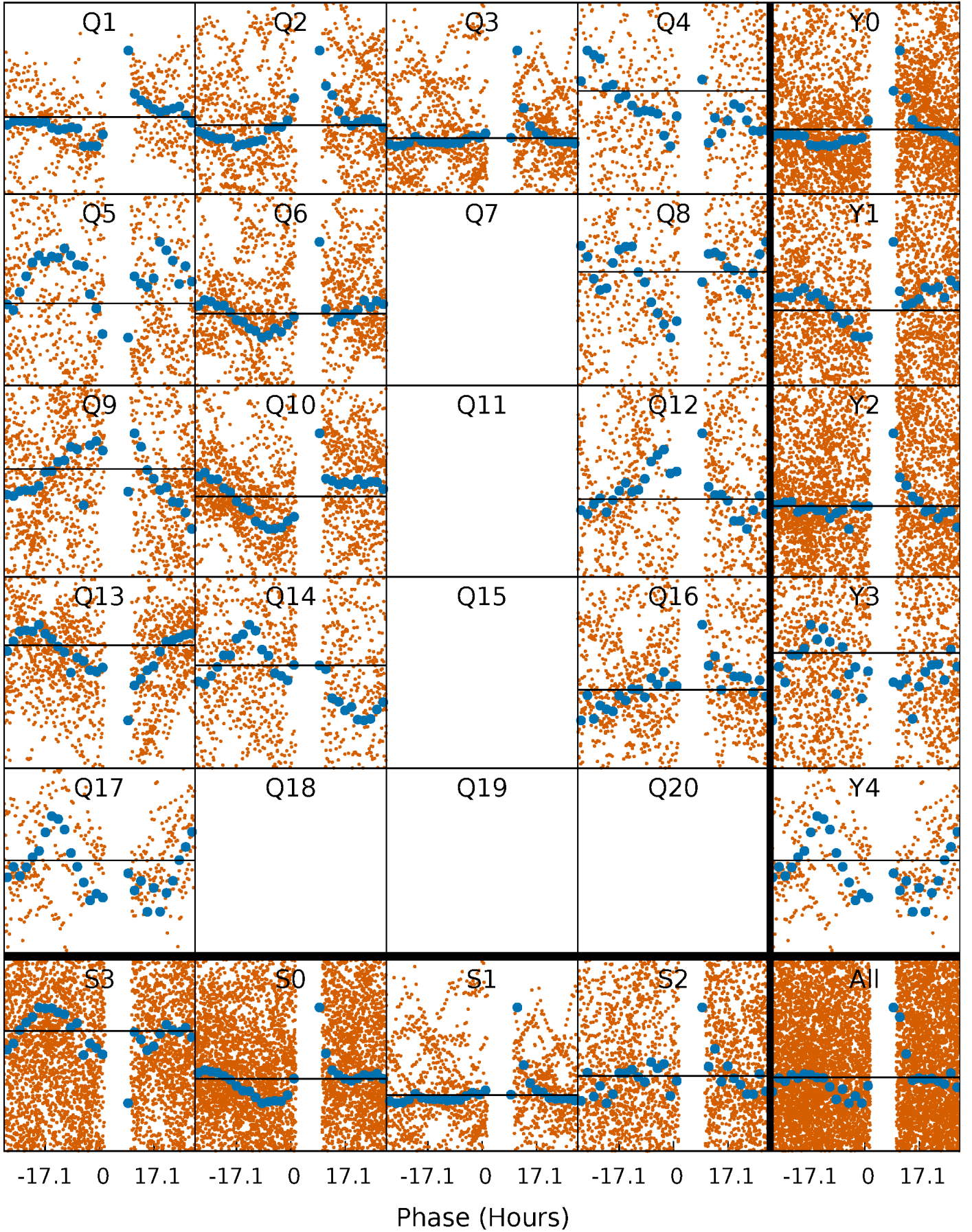
# PDC Quarter-Phased Transit Curves

TCE 010294608-02 P= 5.563481 Days  $T_0=134.106056$  (BKJD)



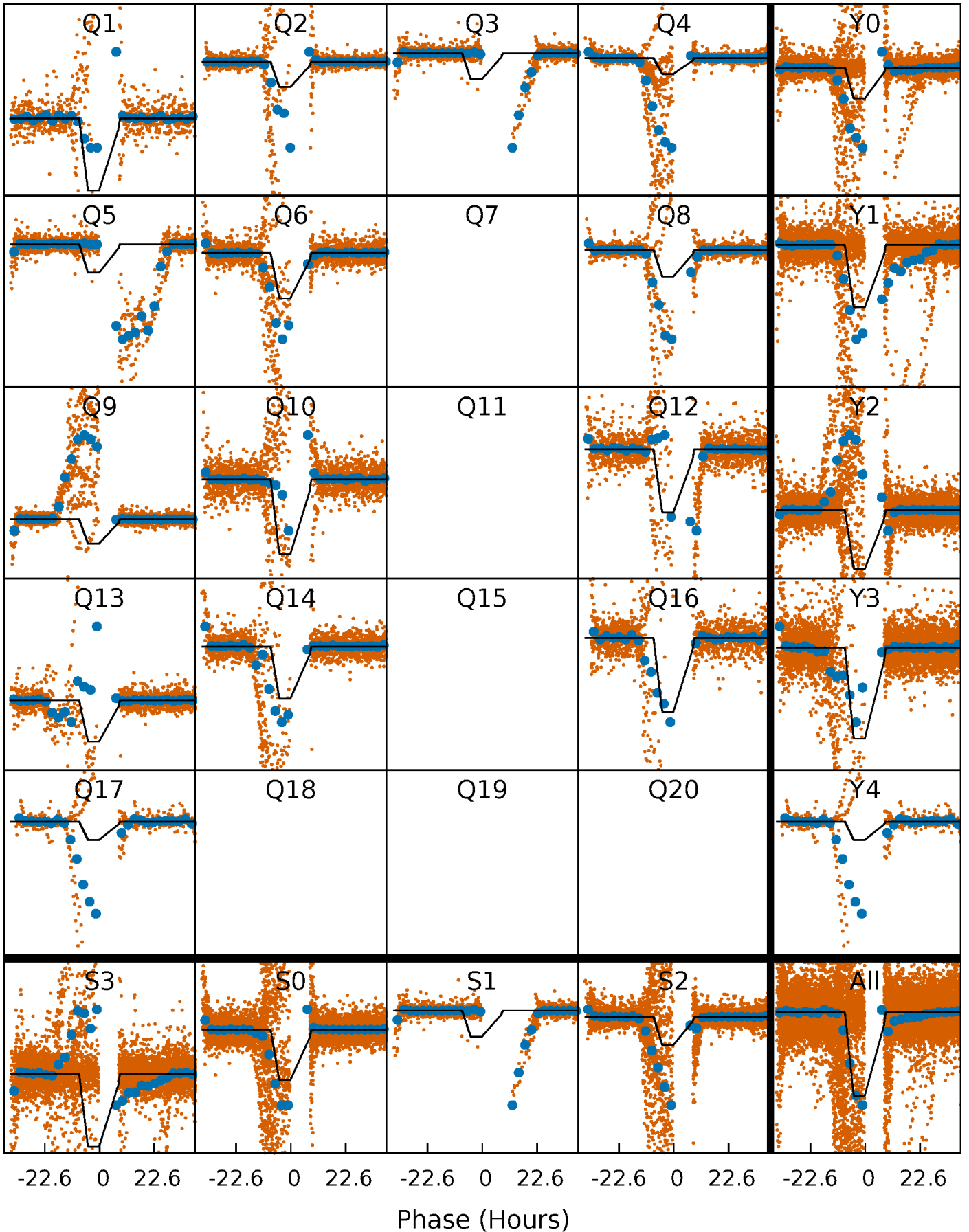
# DV Quarter-Phased Transit Curves

TCE 010294608-02   P= 5.563481 Days    $T_0=134.106056$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

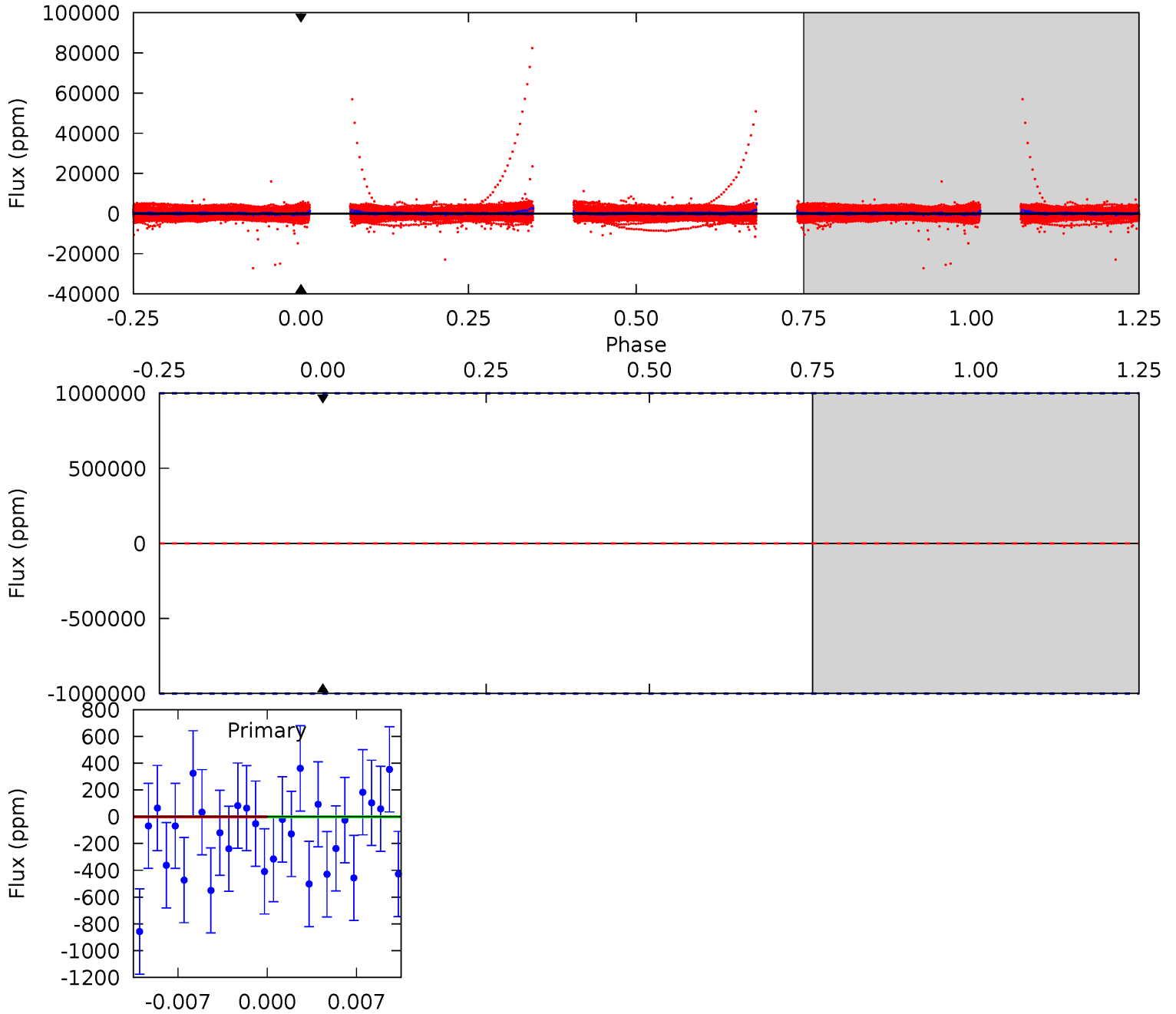
TCE 010294608-02 P= 5.563481 Days  $T_0=134.187637$  (BKJD)



# DV Model-Shift Uniqueness Test

010294608-02, P = 5.563481 Days, E = 128.542575 Days

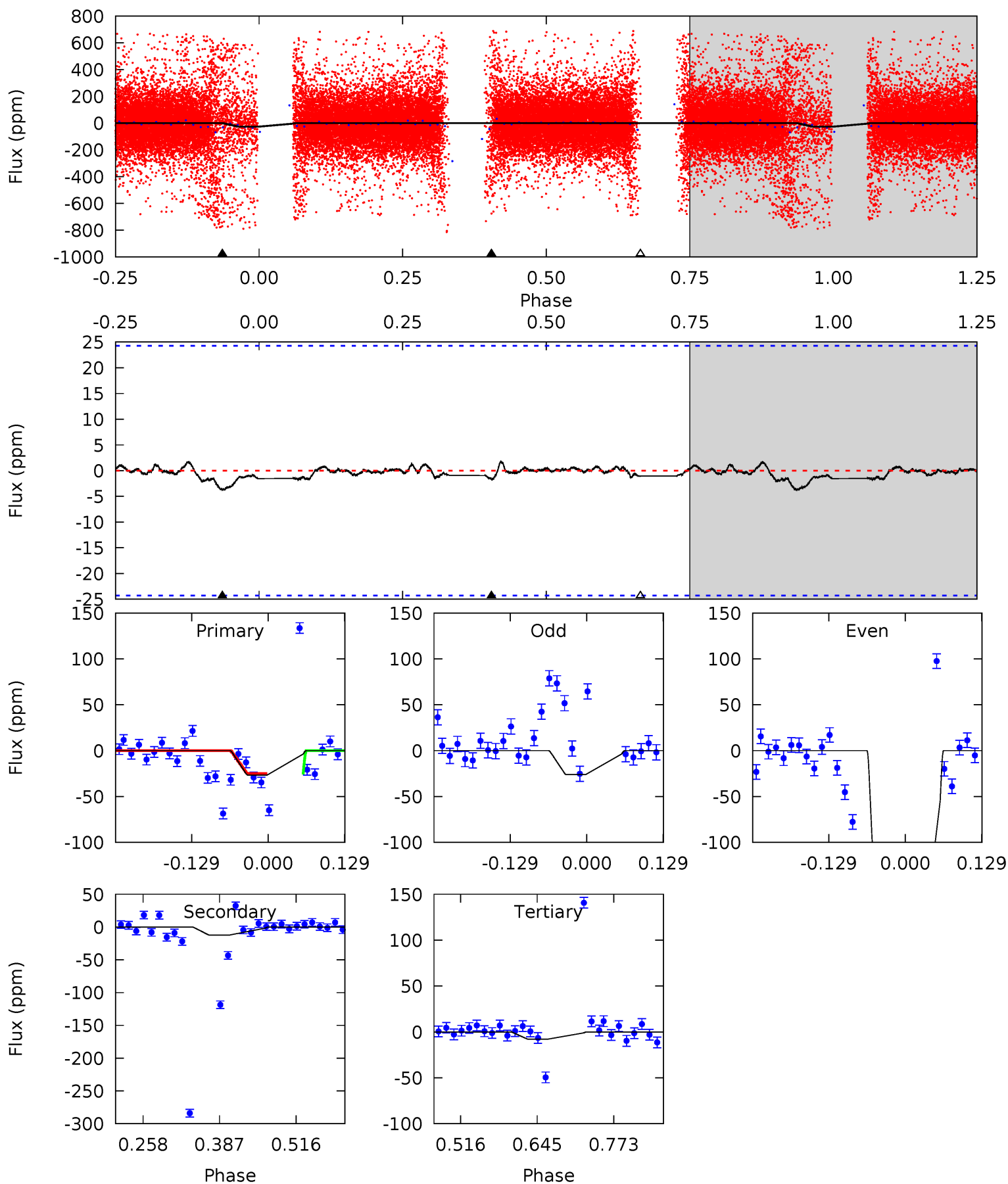
| Pri | Sec | Ter | Pos | FA <sub>1</sub> | FA <sub>2</sub> | F <sub>Red</sub> | Pri-Ter | Pri-Pos | Sec-Ter | Sec-Pos | Odd-Evn | DMM | Shape | TAT |
|-----|-----|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|-----|-------|-----|
| 0   | 0   | 0   | 0   | 1.00            | 1.00            | 1.00             | 0       | 0       | 0       | 0       | 0       | 0   | 0     | 0   |



# Alt Model-Shift Uniqueness Test

010294608-02, P = 5.563481 Days, E = 128.624156 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 |
|------|------|------|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|-----|
| 0.70 | 0.33 | 0.21 | 0   | 4.51            | 1.52            | 0.10             | 0.49    | 0.70    | 0.12    | 0.33    | 4.60    | 63.9 | 0.33  | 0   |





### Stellar Parameters For KIC 010294608

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                     | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|----------------------------|---------------------------|---------------------------|---|
|        | $5843^{+140}_{-176}$ | $4.413^{+0.105}_{-0.180}$ | $-0.180^{+0.300}_{-0.300}$ | $0.990^{+0.274}_{-0.148}$ | $0.926^{+0.122}_{-0.099}$ | $1.346^{+0.699}_{-0.659}$                 |
|        | +2%/-3%              | +2%/-4%                   | +167%/-167%                | +28%/-15%                 | +13%/-11%                 | +52%/-49%                                 |
| 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 010294608-02 / KOI

| Detrend | Depth (ppm)     | $R_p (R_{\oplus})$        | $T_{\text{max}} (K)$ | $T_{\text{obs}} (K)$     | $A_{\text{obs}}$                |
|---------|-----------------|---------------------------|----------------------|--------------------------|---------------------------------|
| DV      | $0 \pm 1000000$ | $18.51^{+10.86}_{-10.87}$ | $1473^{+98}_{-78}$   | $-3806^{+13521}_{-5174}$ | $-18.364^{+922.858}_{-759.325}$ |
| Alt.    | $-2 \pm 5$      | $8.71^{+8.82}_{-5.85}$    | $1476^{+98}_{-78}$   | $-2144^{+4184}_{-135}$   | $0.026^{+0.449}_{-0.125}$       |

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

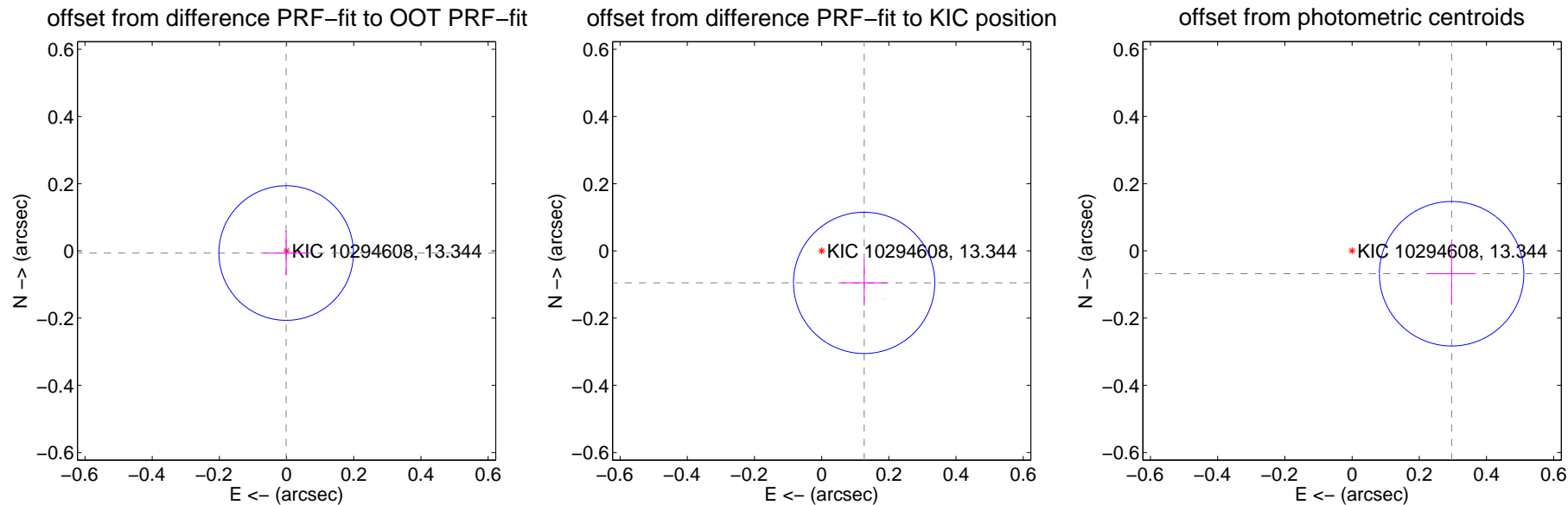
## DV Centroid Data

Supplemental centroid analysis for 010294608-02. Kepler magnitude: 13.34. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

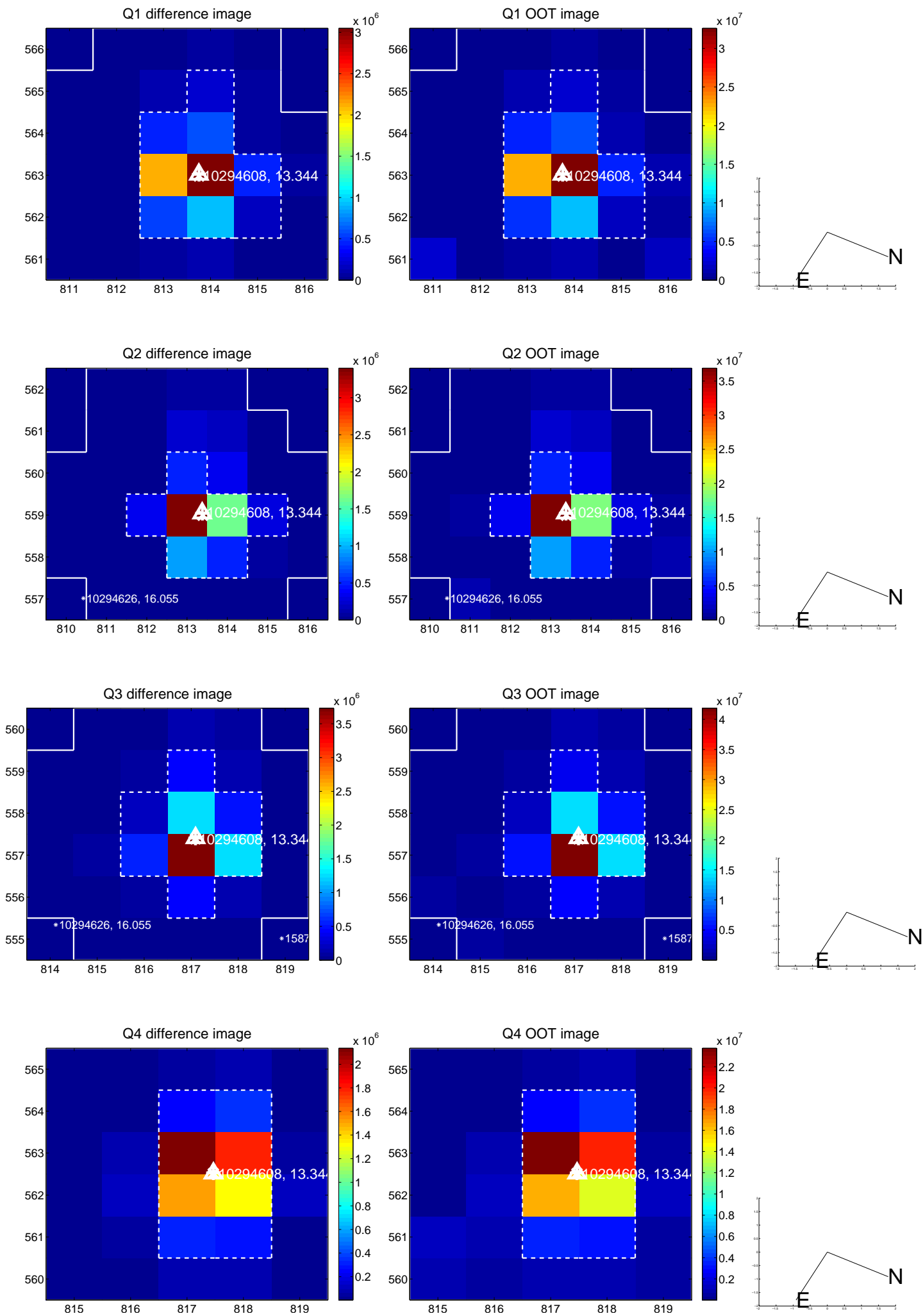
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA        | $\Delta$ Dec       |
|---|--------------------|---------------------|--------------------|--------------------|
| PRF-fit source offset from OOT          | $0.006 \pm 0.067$  | 0.10                | $0.001 \pm 0.067$  | $-0.006 \pm 0.067$ |
| PRF-fit source offset from KIC position | $0.158 \pm 0.070$  | 2.26                | $-0.126 \pm 0.069$ | $-0.095 \pm 0.068$ |
| photometric centroid source offset      | $0.30 \pm 0.07$    | 4.24                | $-0.30 \pm 0.07$   | $-0.07 \pm 0.09$   |

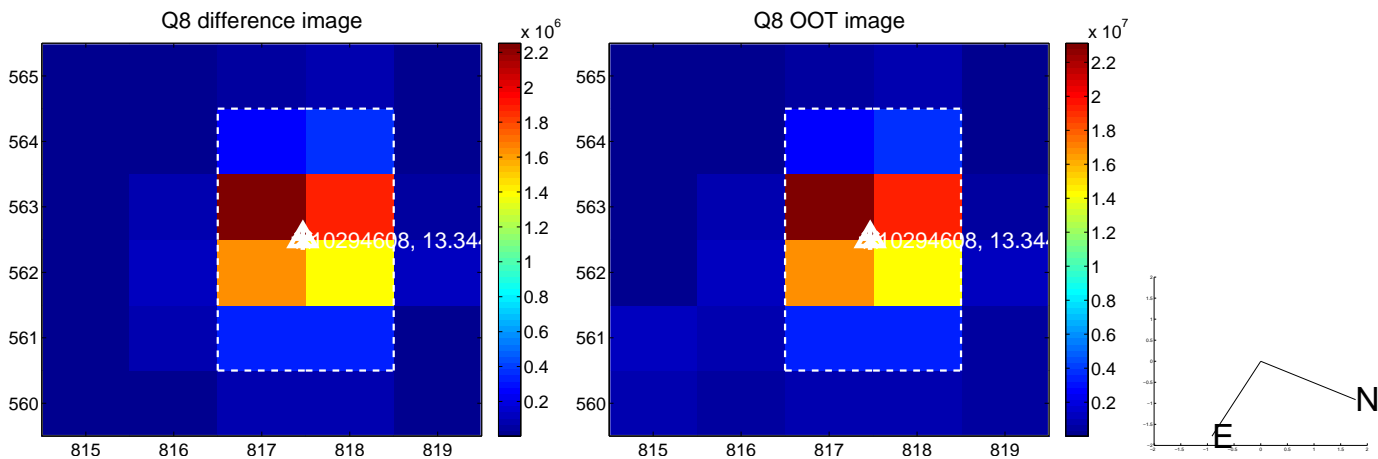
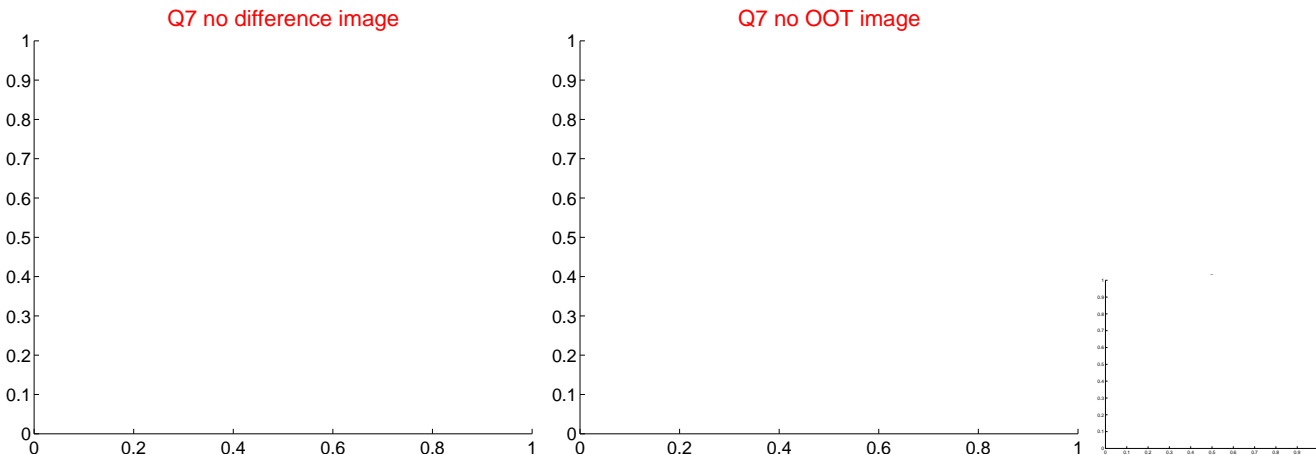
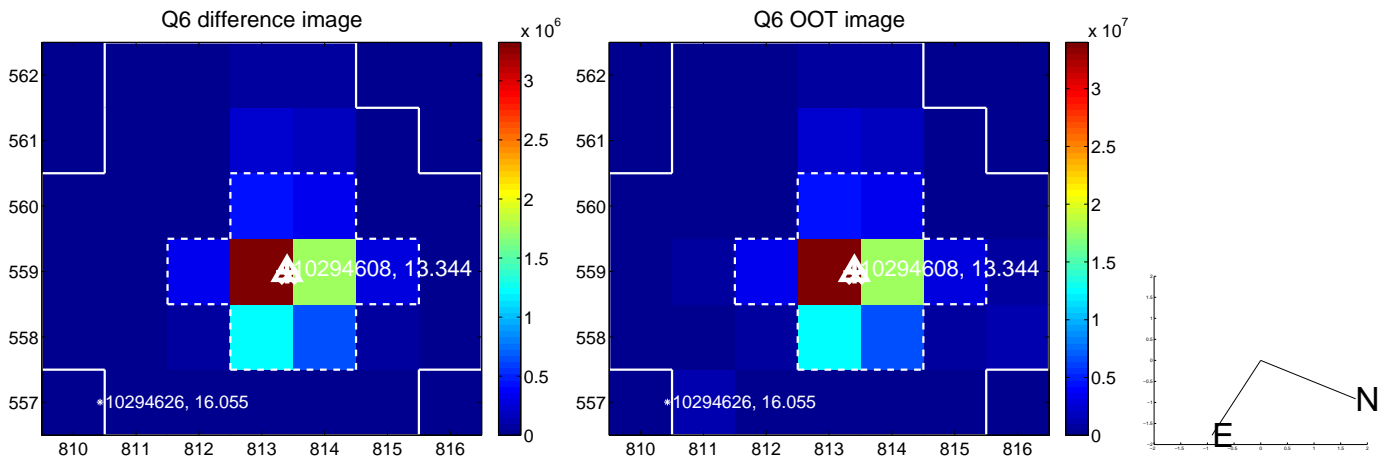
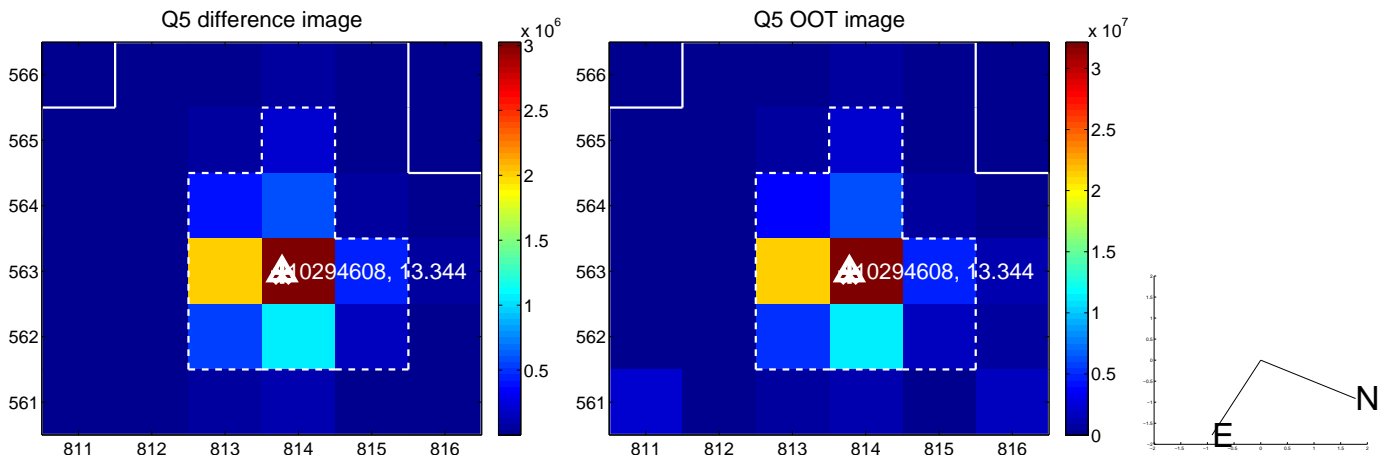


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

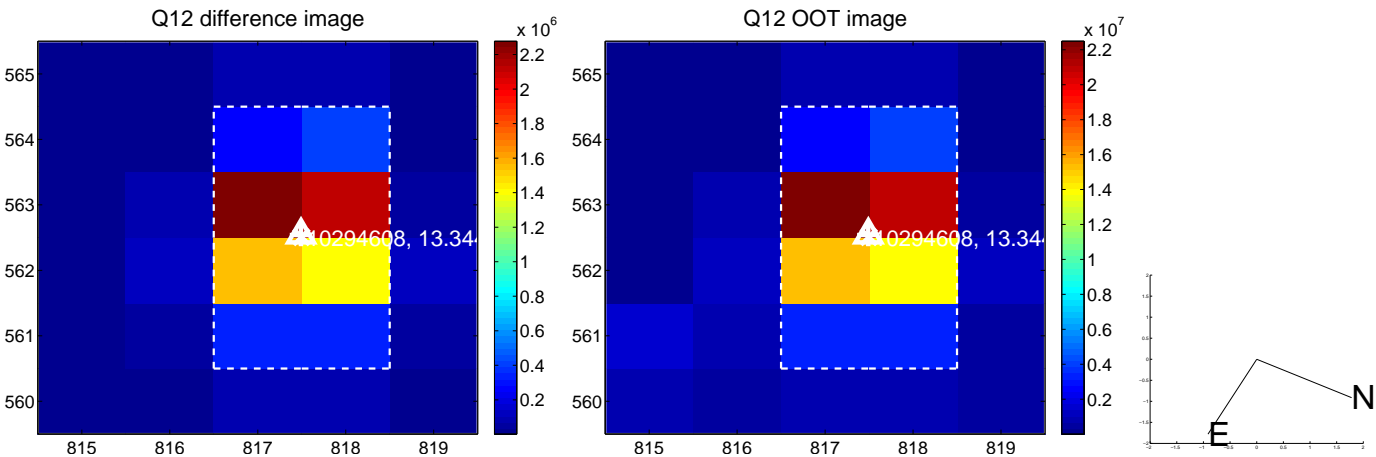
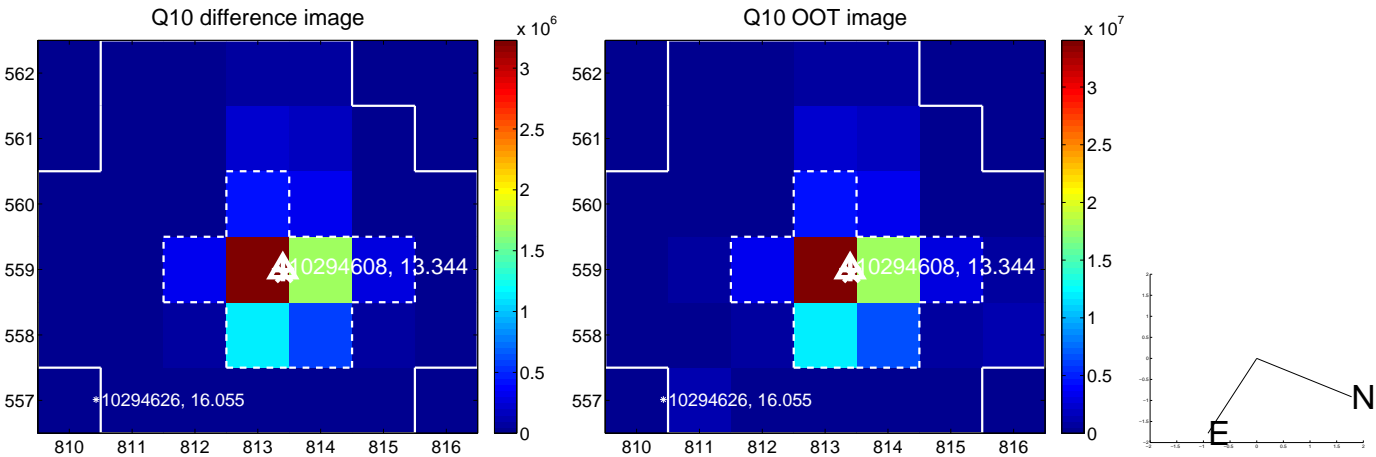
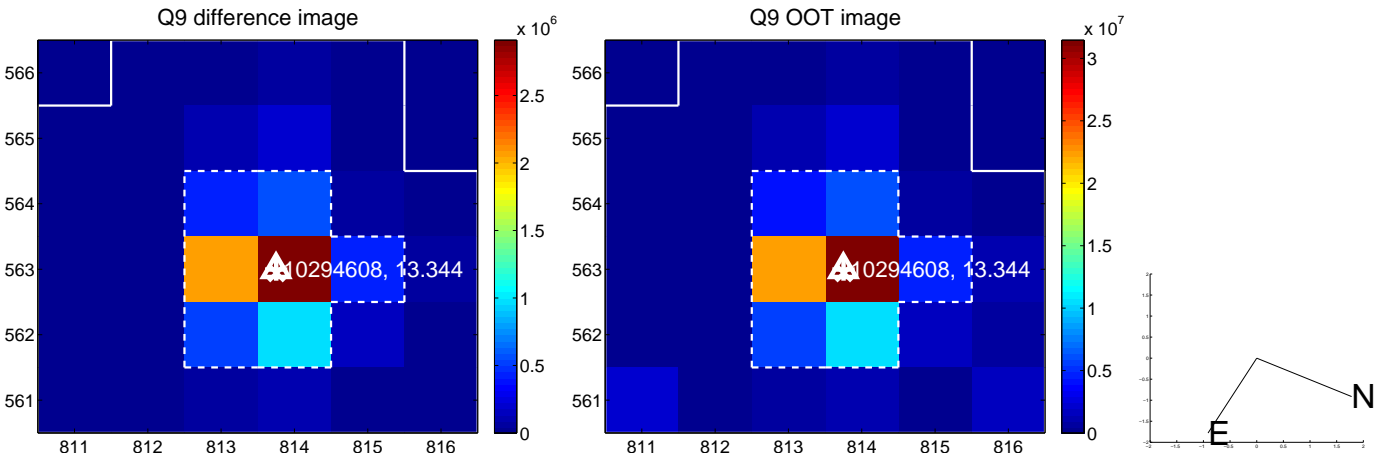
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



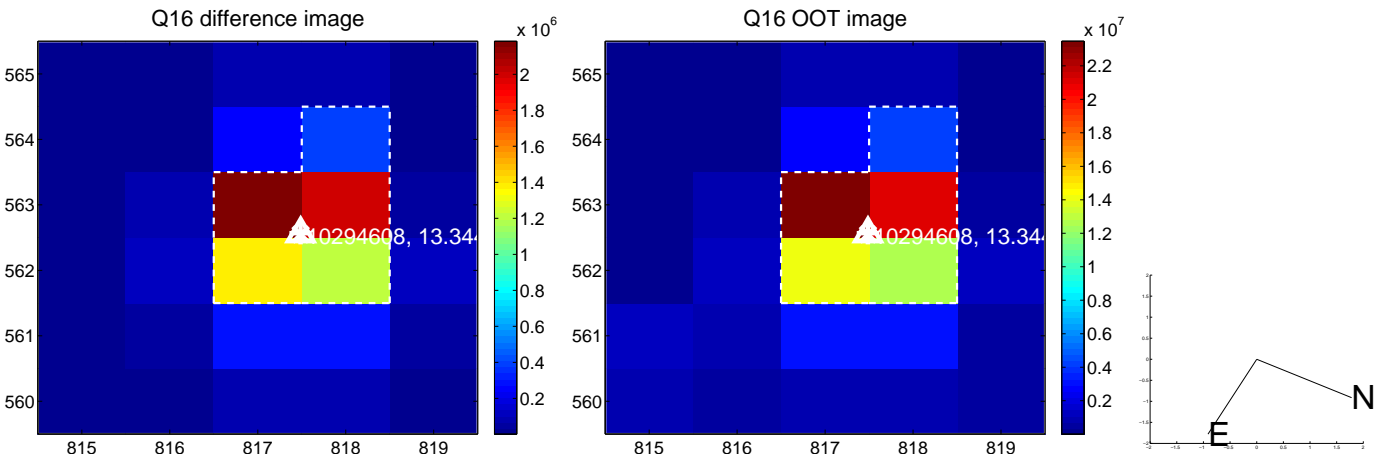
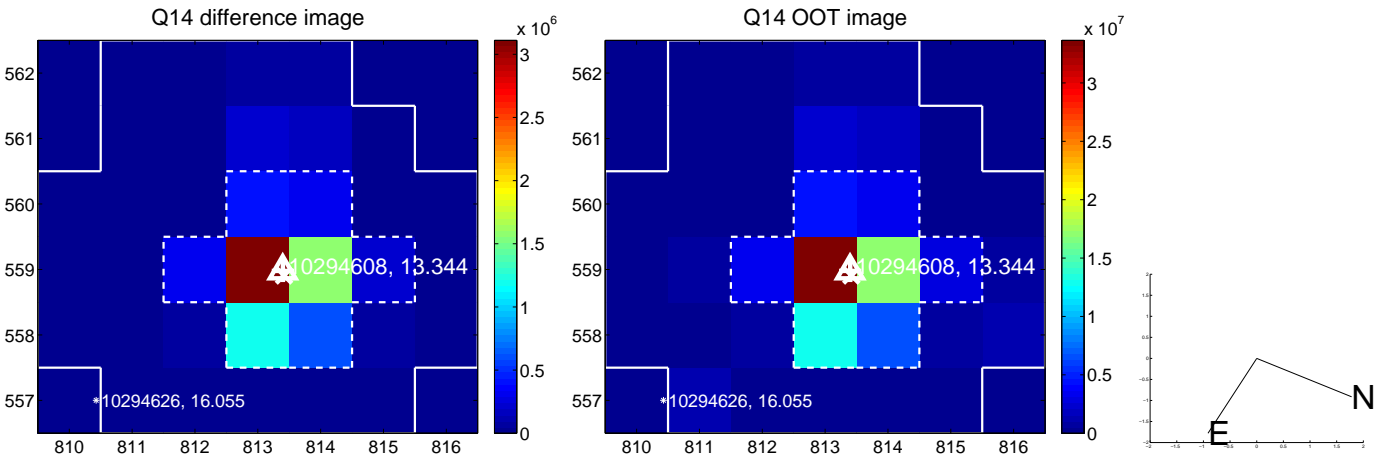
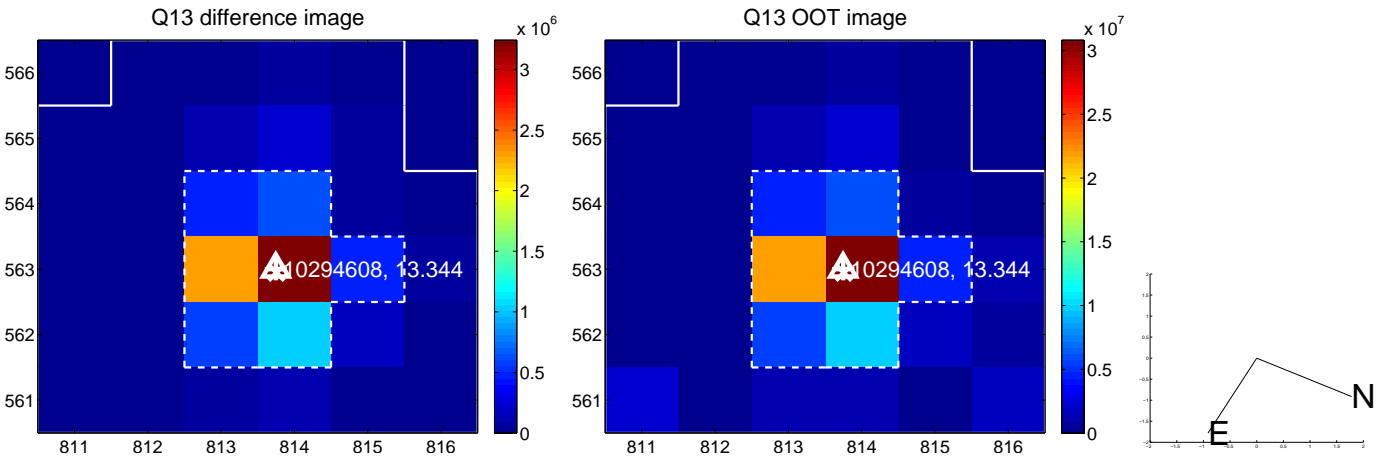
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



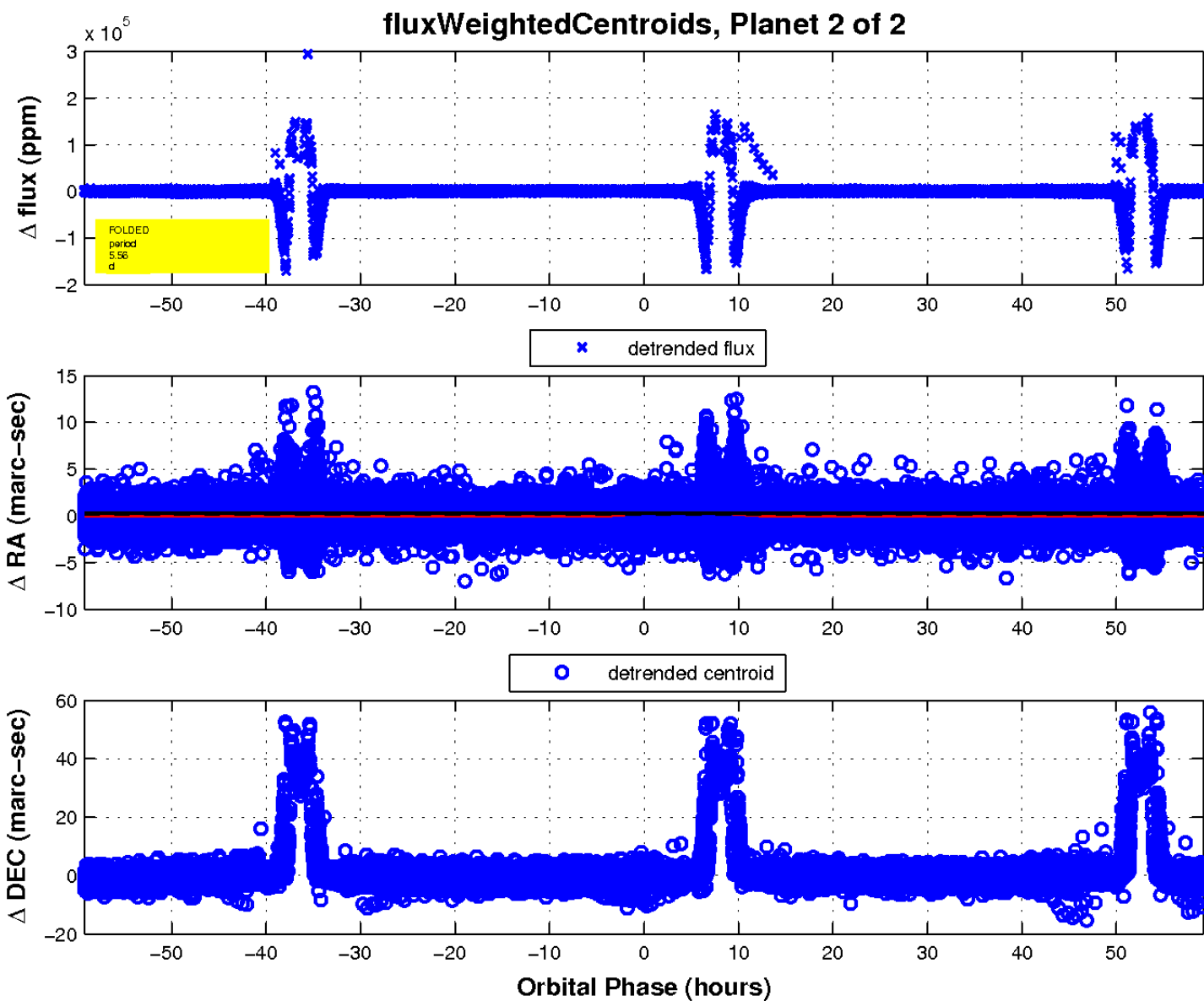
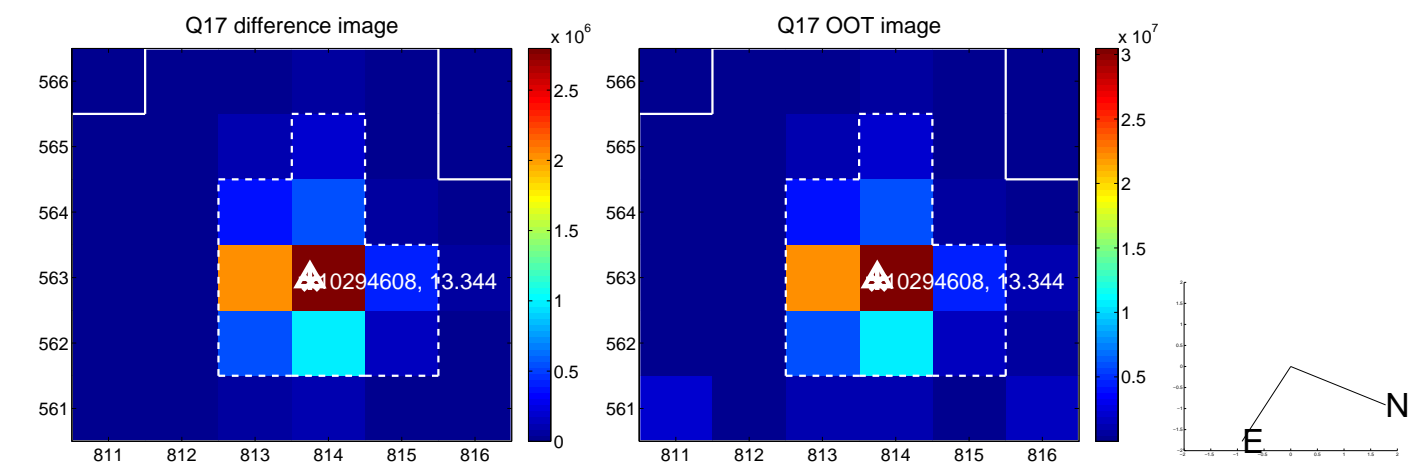
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

