

# KIC 010156332

## 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) | $R_p$ ( $R_{\oplus}$ ) | $S_p$ ( $S_{\oplus}$ ) |
|--------------|----------|------|---------------|--------------|-------------|------------------|-----|-----|-----------------------------|-----------------|------------------------|------------------------|
| 010156332-01 | OBS      | No   | 1.646605      | 132.045733   | 1.9         | 13.487           | 8.2 | 1.7 | 1.79                        | 8572            | 0.25                   | 13577.62               |

## Robovetter Results

| TCE          | Run Type | Disp | Score | N | S | C | E | Comments   |
|--------------|----------|------|-------|---|---|---|---|--|
| 010156332-01 | OBS      | FP   | 0.00  | 1 | 0 | 0 | 0 | LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS |

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

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

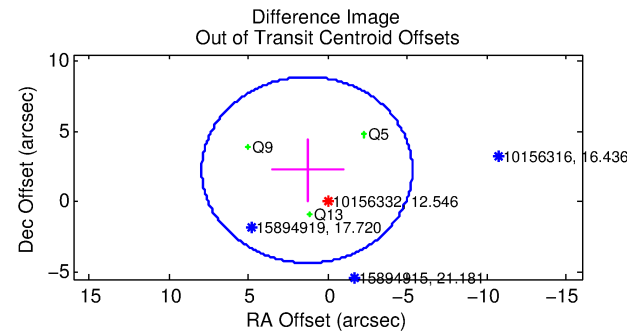
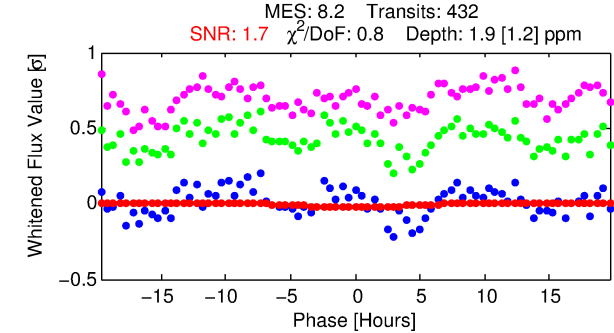
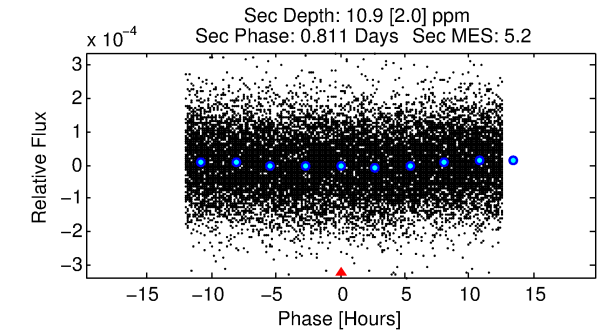
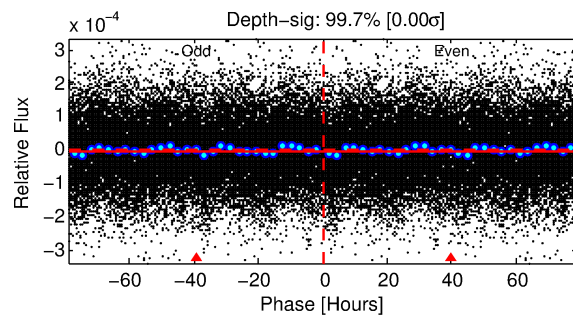
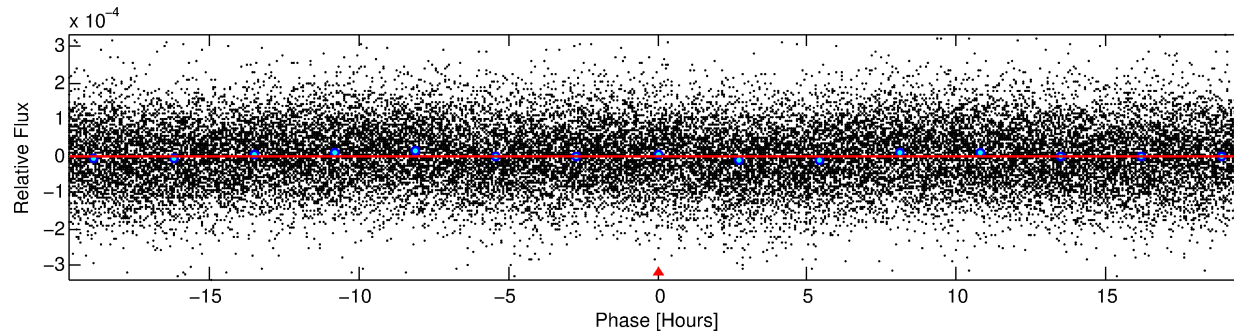
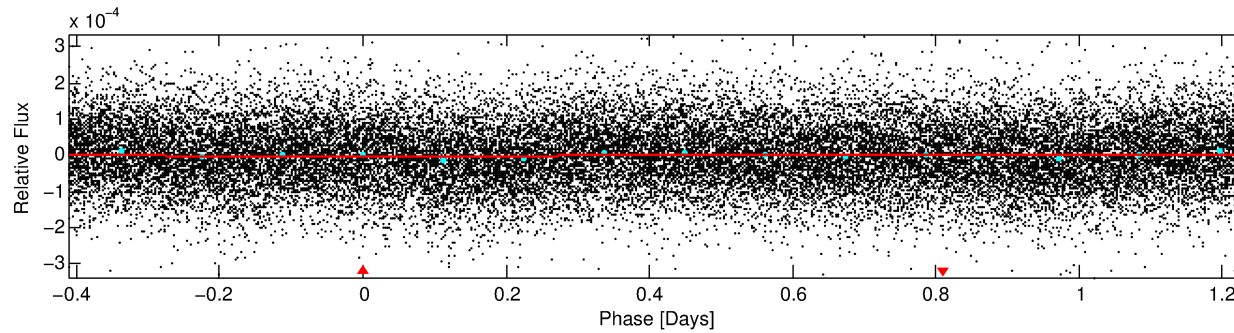
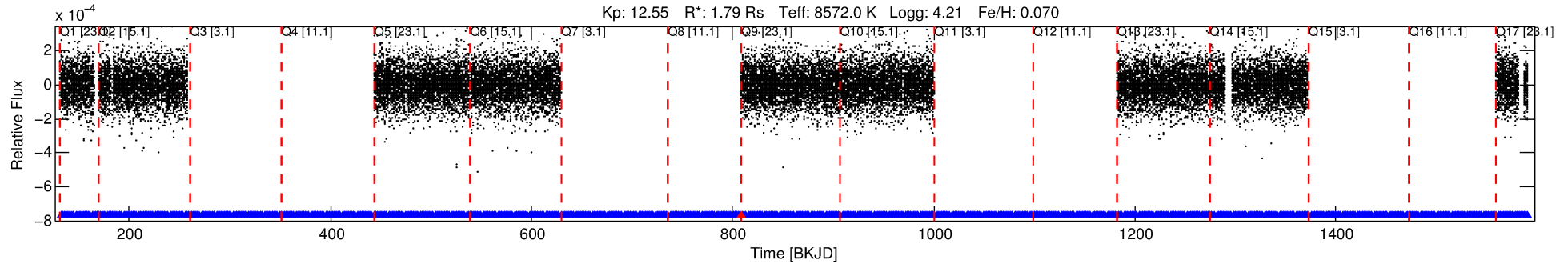
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010156332-01

No Significant Match Found

# DV One-Page Summary

KIC: 10156332 Candidate: 1 of 1 Period: 1.647 d



## DV Fit Results:

Period = 1.64661 [0.00020] d  
Epoch = 132.0457 [0.0588] BKJD  
Rp/R\* = 0.0013 [0.0058]  
a/R\* = 1.14 [7.24]  
b = 0.02 [1379.20]  
Seff = 13577.62 [5119.88]  
Teq = 2753 [259] K  
Rp = 0.25 [1.13] Re  
a = 0.0338 [0.0074] AU  
Ag = 110.43 [1000.47] [0.11σ]  
Teffp = 13796 [31233] K [0.35σ]

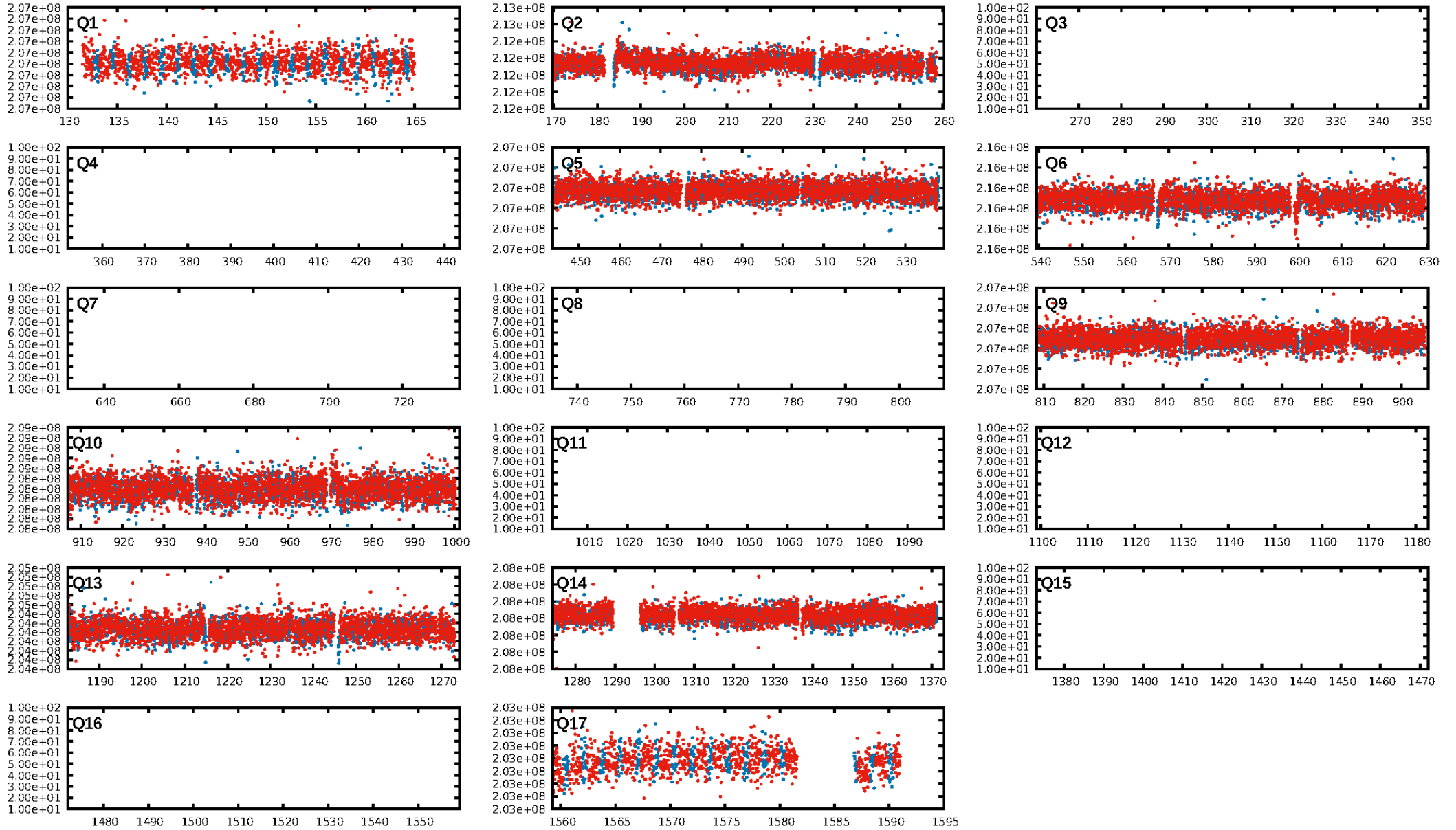
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [393/394]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 2.606 arcsec [1.18σ]  
KicOffset-rm: 2.680 arcsec [1.20σ]  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [9/9]

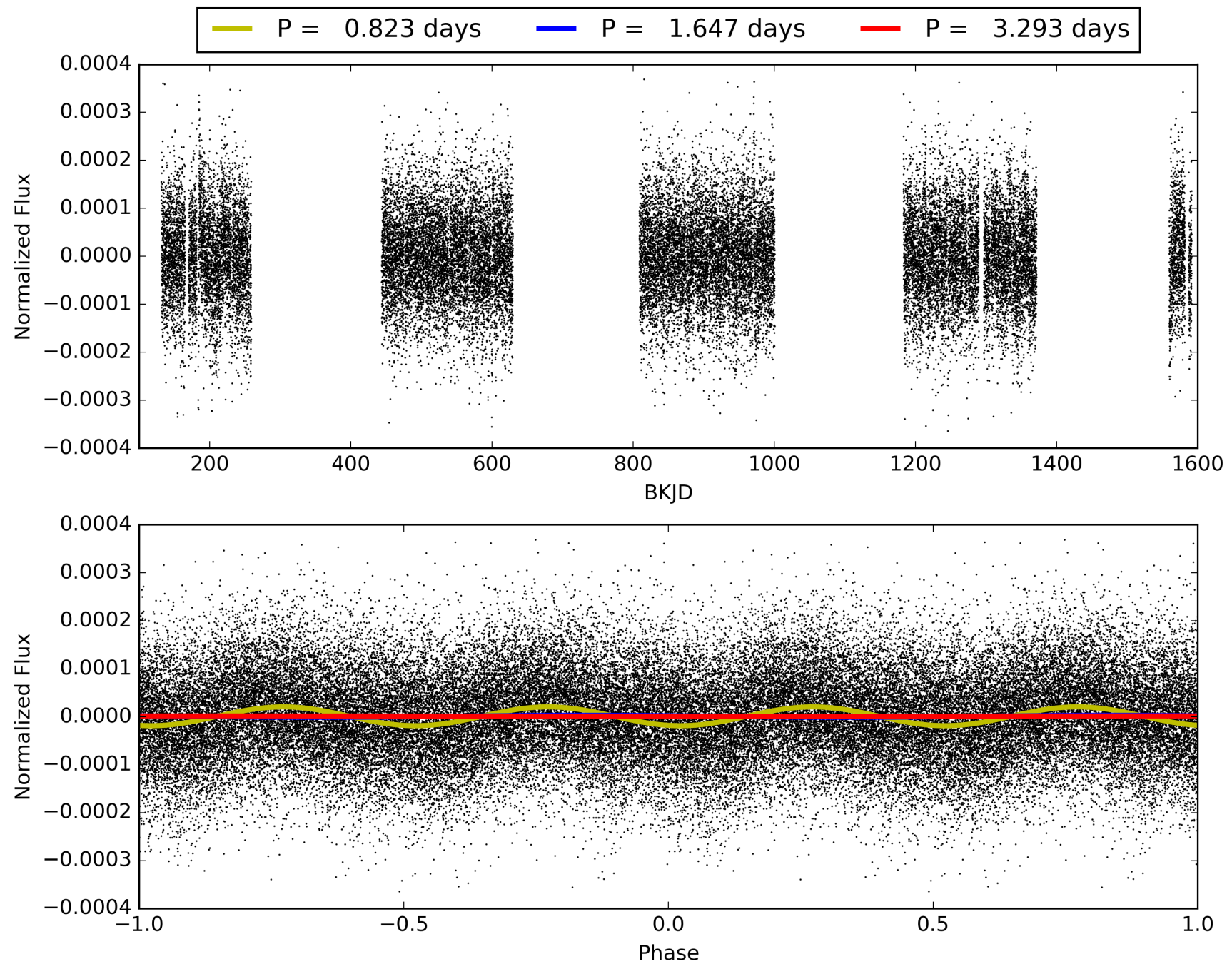
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:24:49 Z

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

# TCE 010156332-01, PDC Light Curves

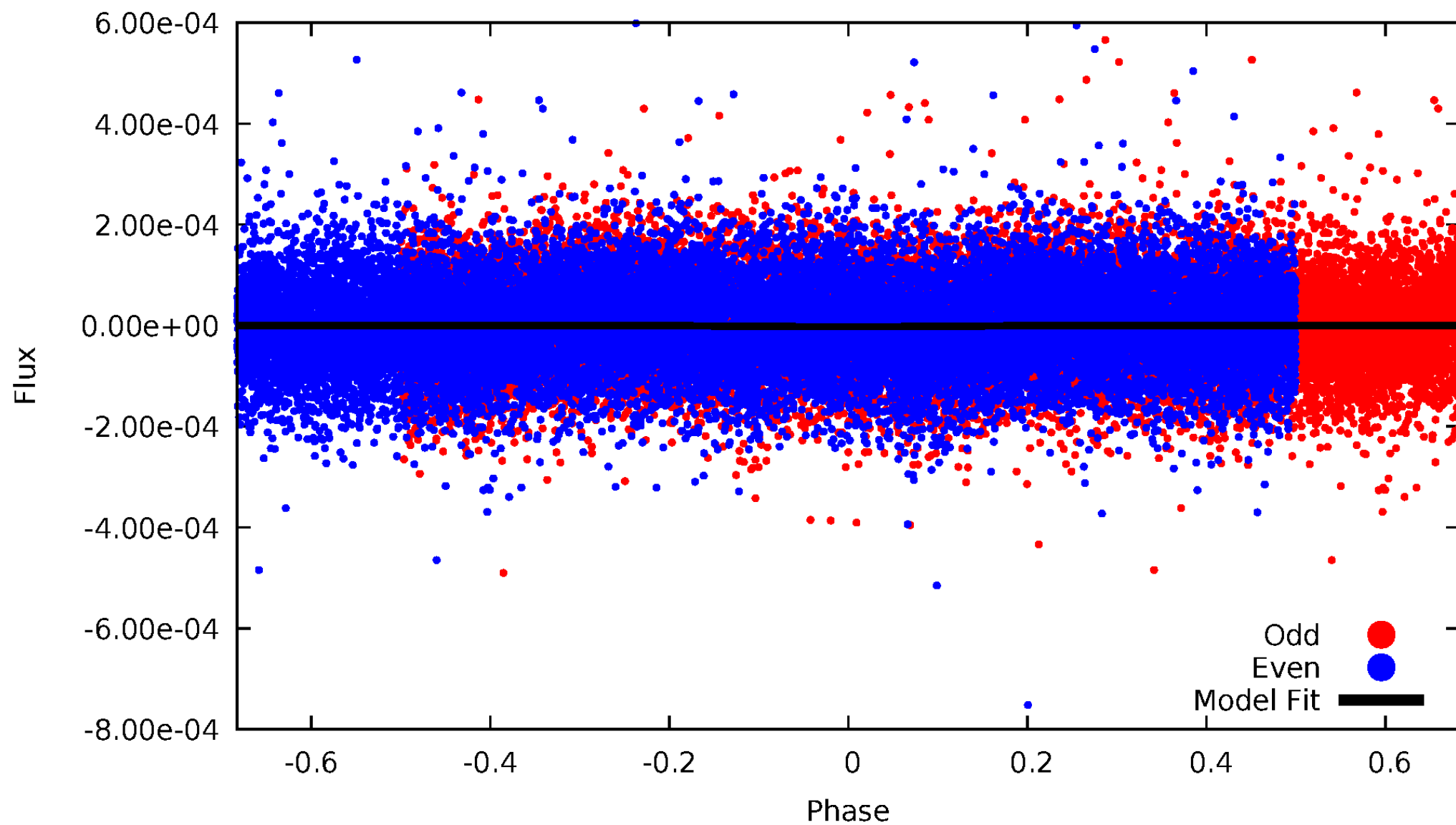


# TCE 010156332-01



# DV Odd/Even

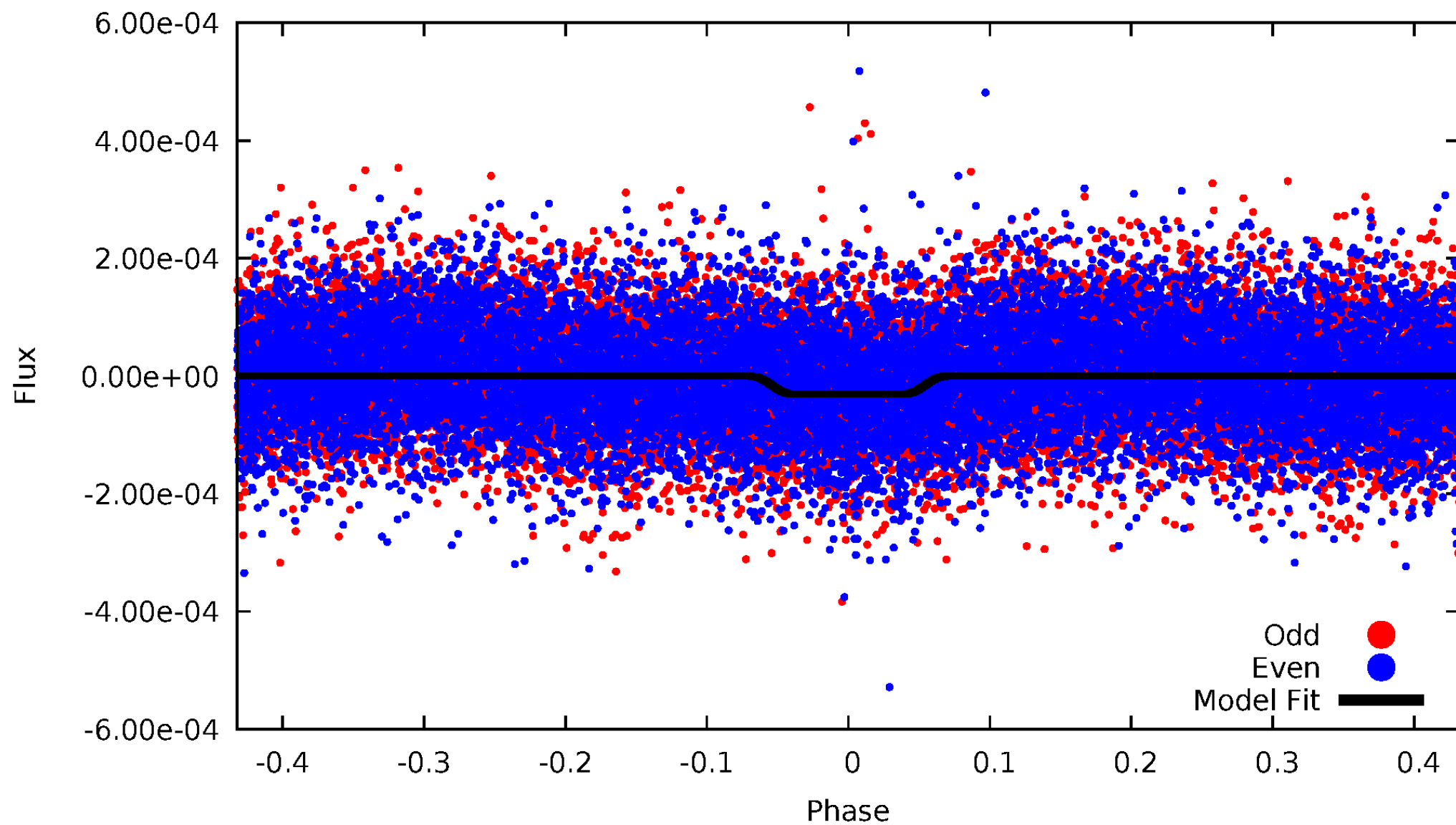
TCE 010156332-01





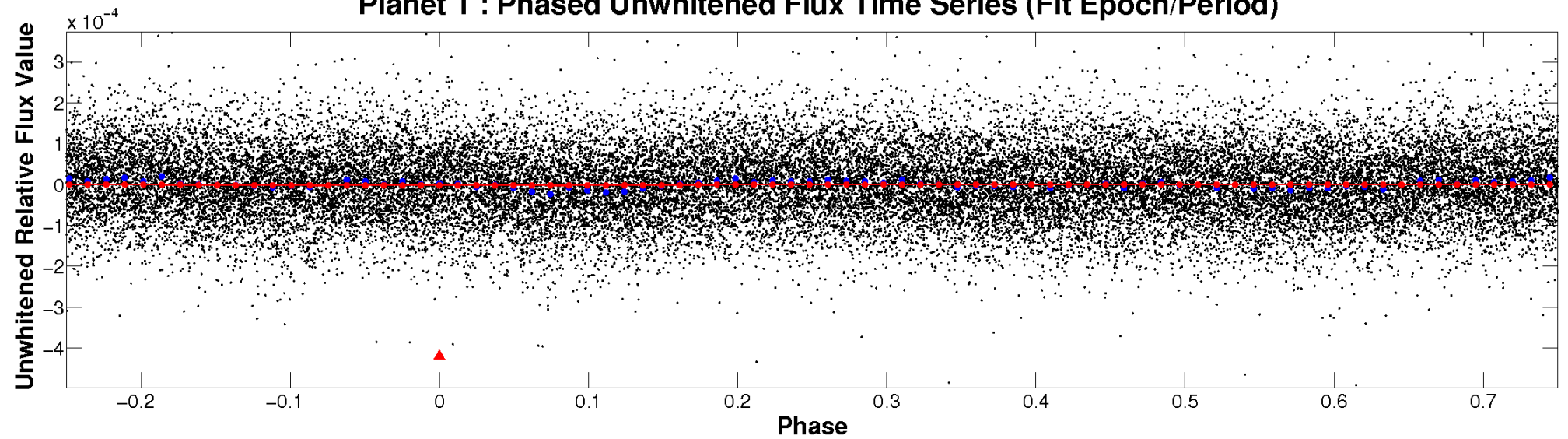
# ALT Odd/Even

TCE 010156332-01

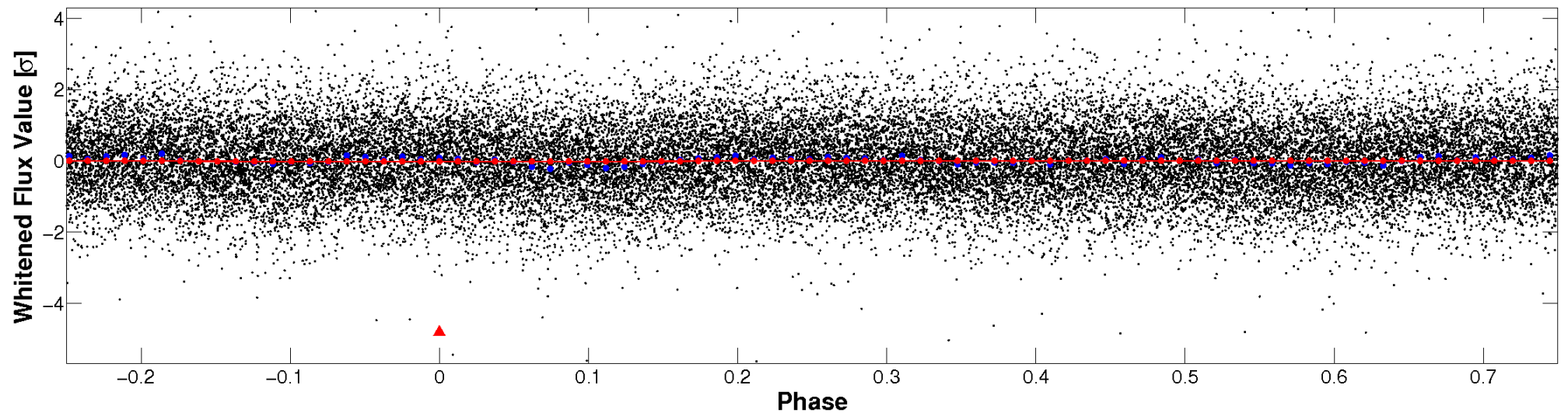


# Non-Whitened Vs. Whitened Light Curve

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

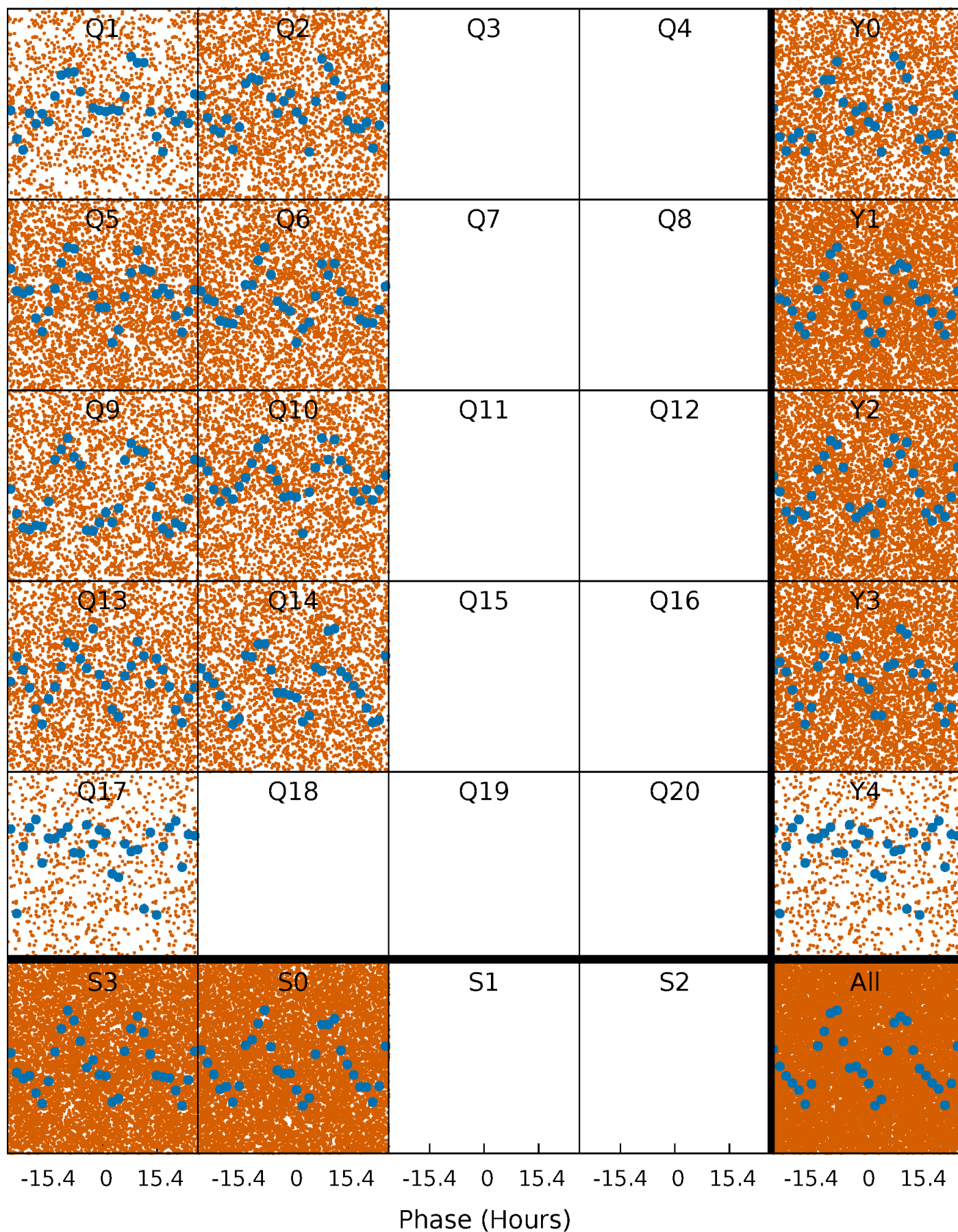


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

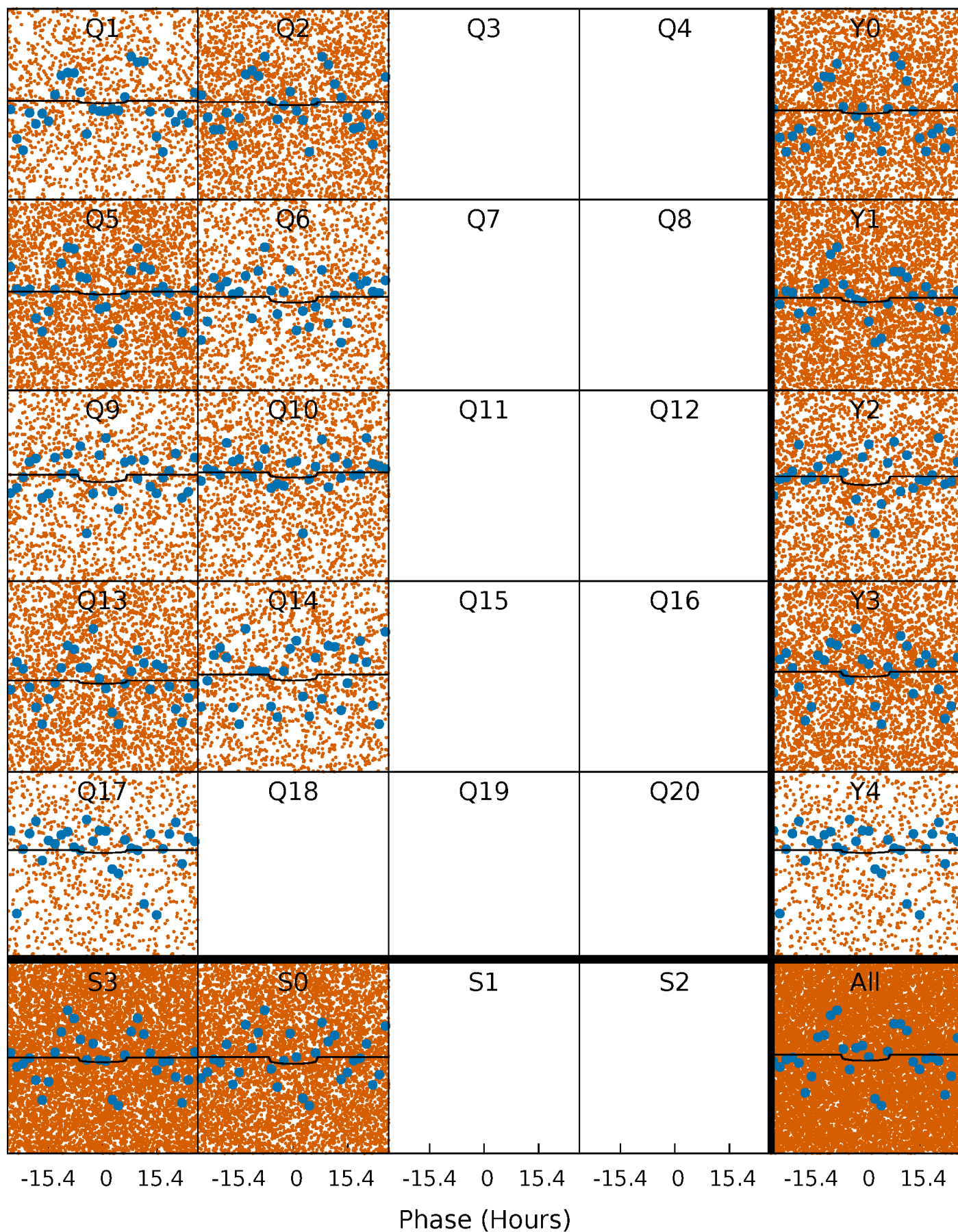
TCE 010156332-01 P= 1.646605 Days  $T_0=132.045733$  (BKJD)





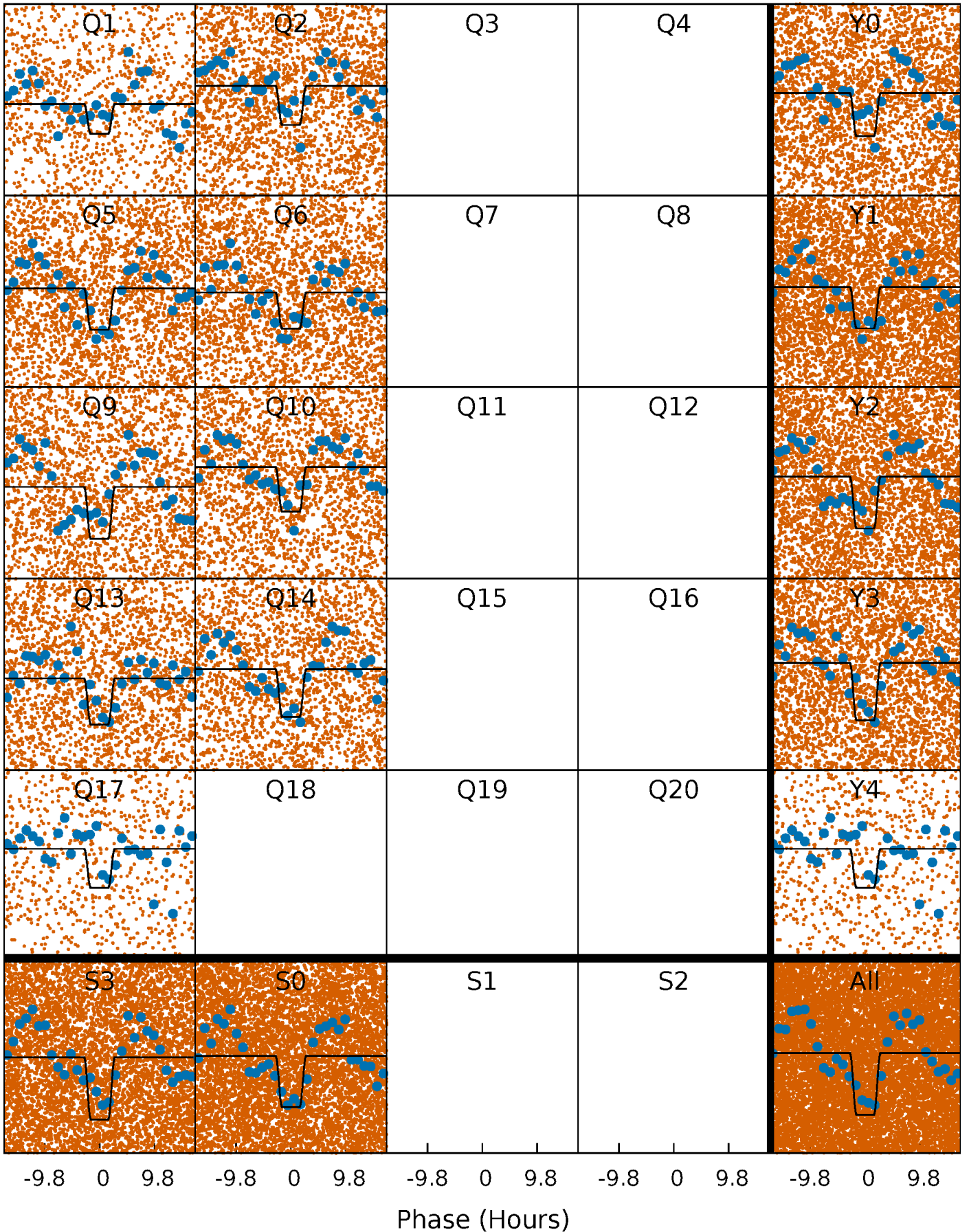
# DV Quarter-Phased Transit Curves

TCE 010156332-01 P= 1.646605 Days  $T_0=132.045733$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

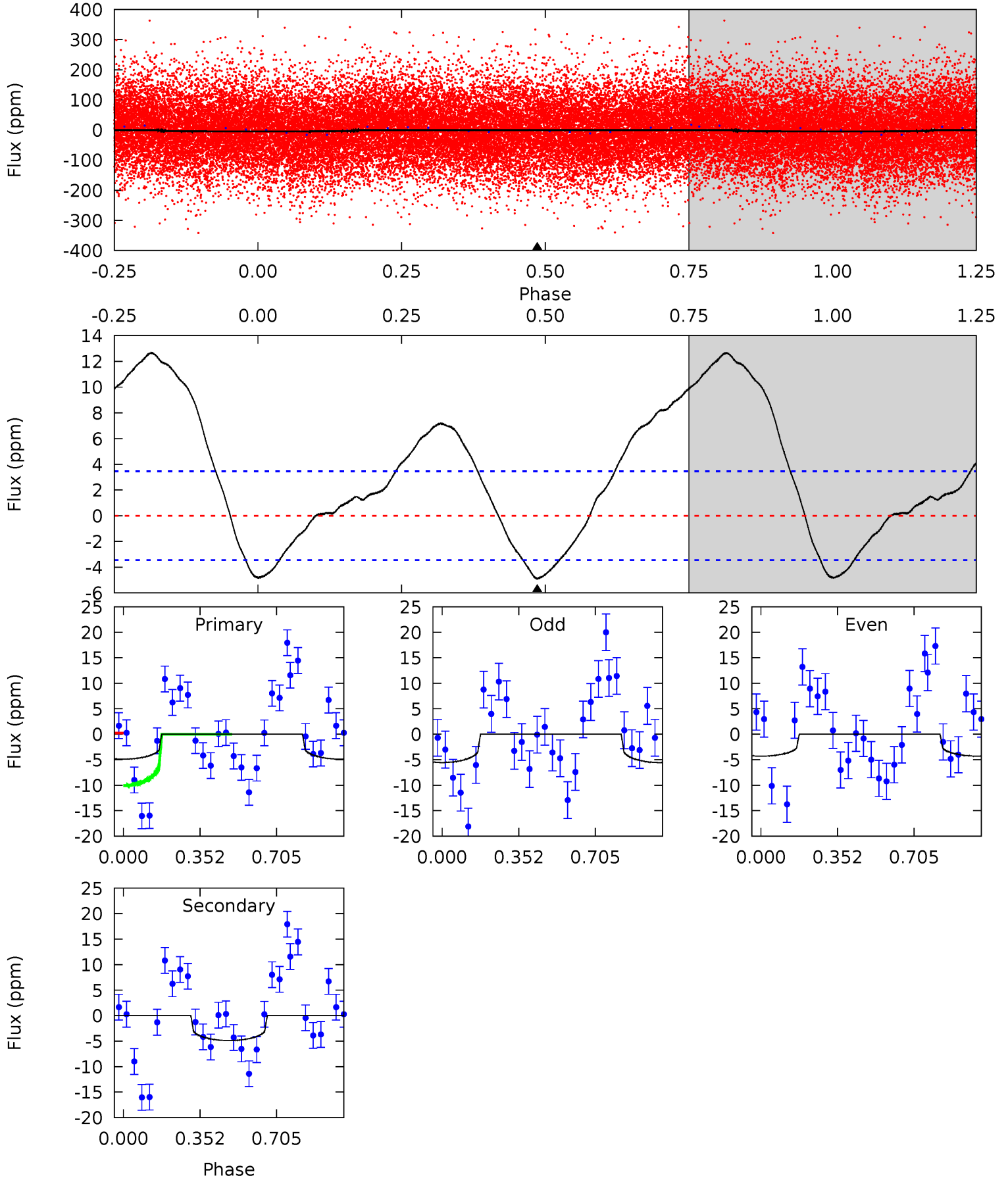
TCE 010156332-01 P= 1.646573 Days  $T_0=132.168748$  (BKJD)



# DV Model-Shift Uniqueness Test

010156332-01, P = 1.646605 Days, E = 130.399128 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  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 6.08 | 6.08 | 0   | 0   | 4.29            | 0.93            | 6.58             | 6.08    | 6.08    | 6.08    | 6.08    | 0.78    | 0.84 | 0.72  | 6.13 |

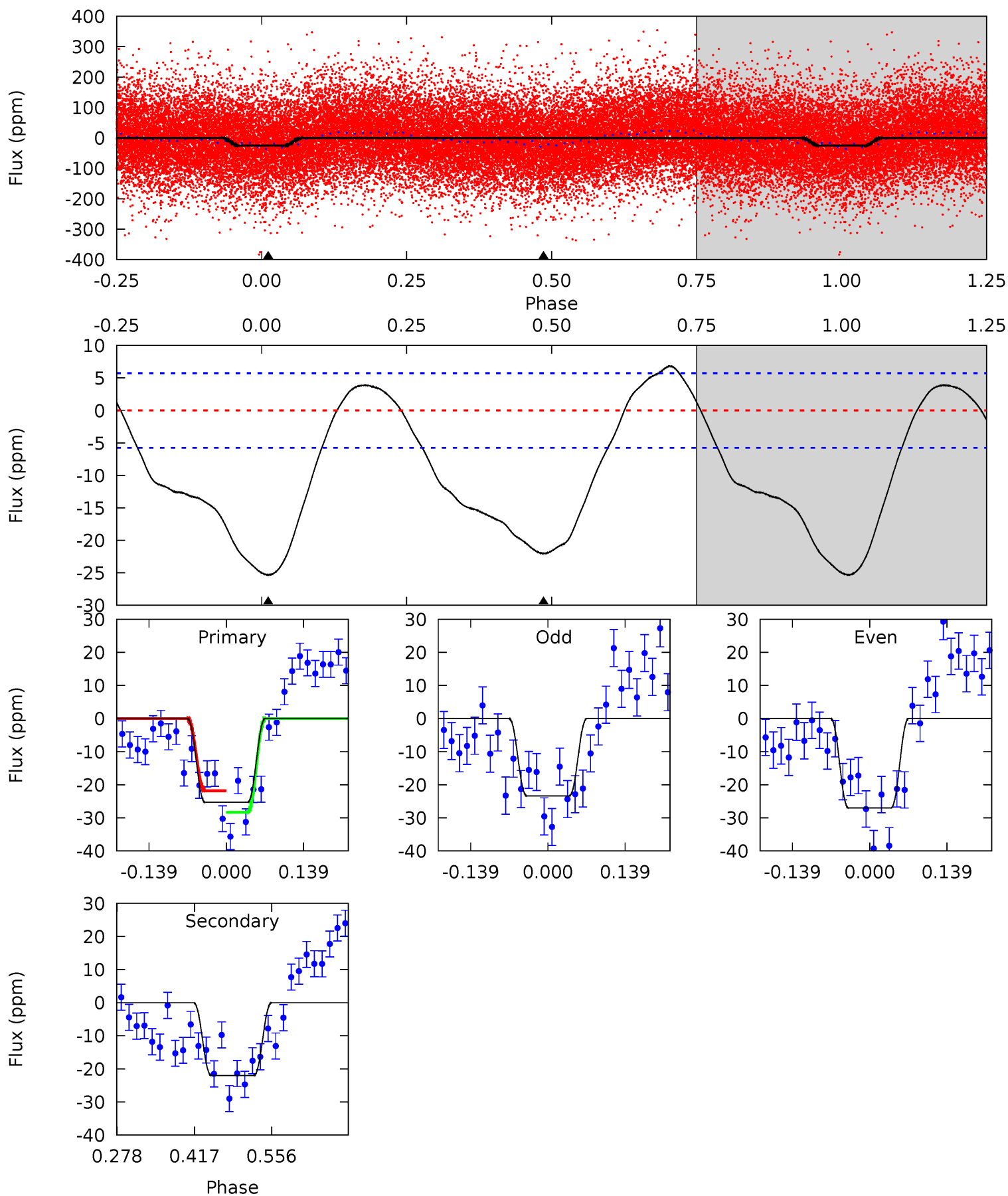




# Alt Model-Shift Uniqueness Test

010156332-01, P = 1.646573 Days, E = 130.522175 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  |
|------|------|-----|-----|-----------------|-----------------|------------------|---------|---------|---------|---------|---------|------|-------|------|
| 19.8 | 17.2 | 0   | 0   | 4.50            | 1.48            | 5.41             | 19.8    | 19.8    | 17.2    | 17.2    | 1.42    | 0.98 | 0.21  | 2.53 |





### Stellar Parameters For KIC 010156332

|        | $T_{\text{eff}}(K)$  | $\log(g)$                 | [Fe/H]                    | $R (R_{\odot})$           | $M(M_{\odot})$            | $p_{\star} (\text{g}\cdot\text{cm}^{-3})$ |
|--------|----------------------|---------------------------|---------------------------|---------------------------|---------------------------|---|
|        | $8572^{+236}_{-406}$ | $4.211^{+0.078}_{-0.182}$ | $0.070^{+0.150}_{-0.600}$ | $1.793^{+0.452}_{-0.301}$ | $1.907^{+0.361}_{-0.361}$ | $0.467^{+0.201}_{-0.228}$                 |
|        | +3%/-5%              | +2%/-4%                   | +214%/-857%               | +25%/-17%                 | +19%/-19%                 | +43%/-49%                                 |
| 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 010156332-01 / KOI

| Detrend | Depth (ppm) | $R_p (R_{\oplus})$     | $T_{max} (K)$        | $T_{obs} (K)$          | $A_{obs}$                  |
|---------|-------------|------------------------|----------------------|------------------------|----------------------------|
| DV      | $-5 \pm 1$  | $0.90^{+0.96}_{-0.63}$ | $3901^{+263}_{-233}$ | $5737^{+6438}_{-1775}$ | $3.678^{+35.973}_{-2.795}$ |
| Alt.    | $-22 \pm 1$ | $1.30^{+1.11}_{-0.79}$ | $3899^{+260}_{-224}$ | $6938^{+7023}_{-1903}$ | $7.935^{+45.997}_{-5.636}$ |

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

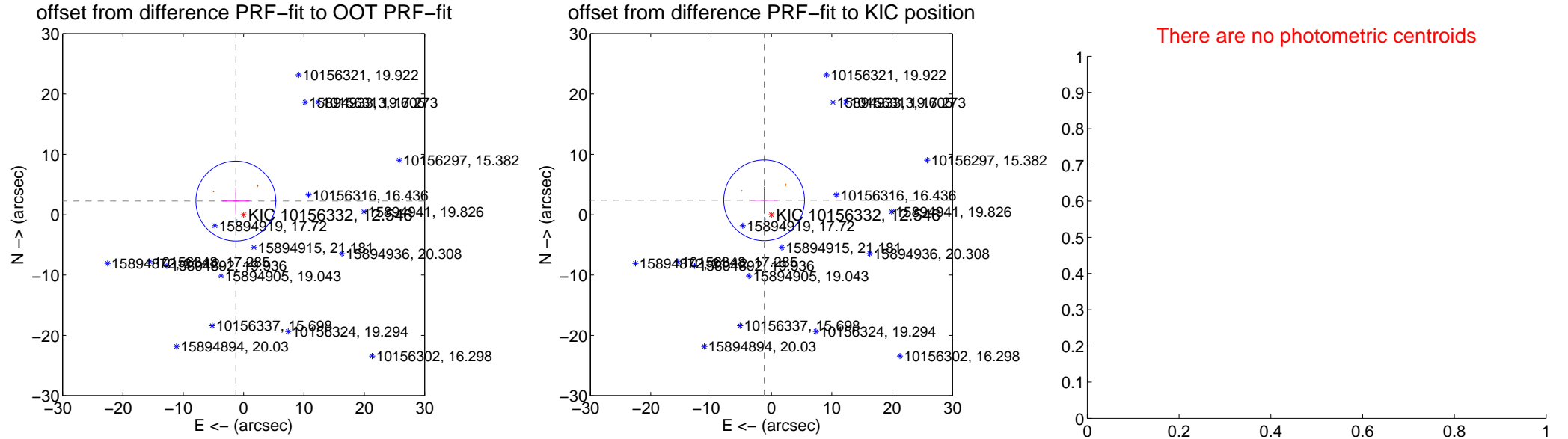
## DV Centroid Data

Supplemental centroid analysis for 010156332-01. Kepler magnitude: 12.55. Transit SNR 1.69

There are 1 quarters with good PRF difference image offsets

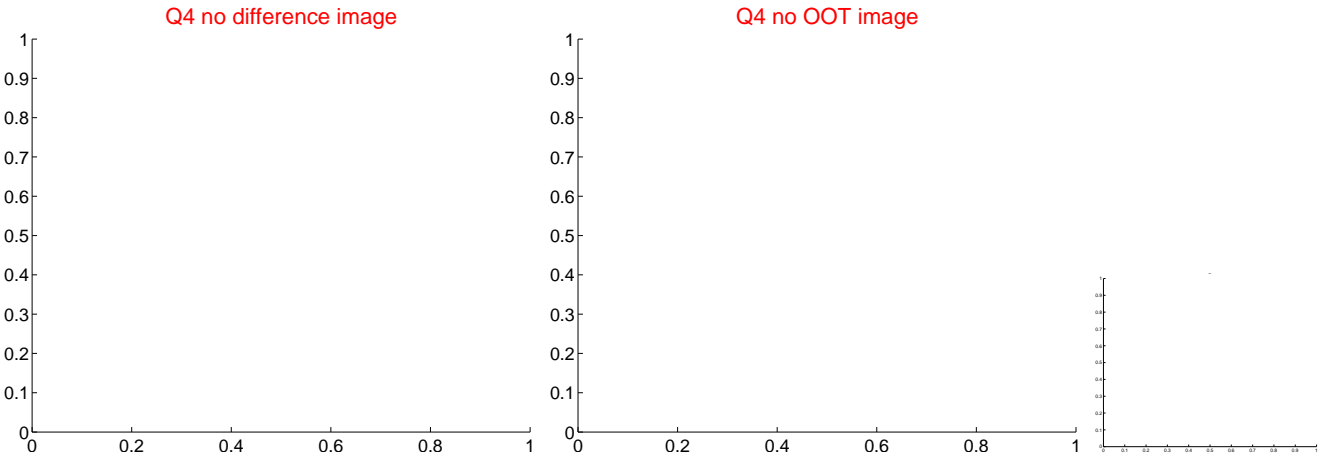
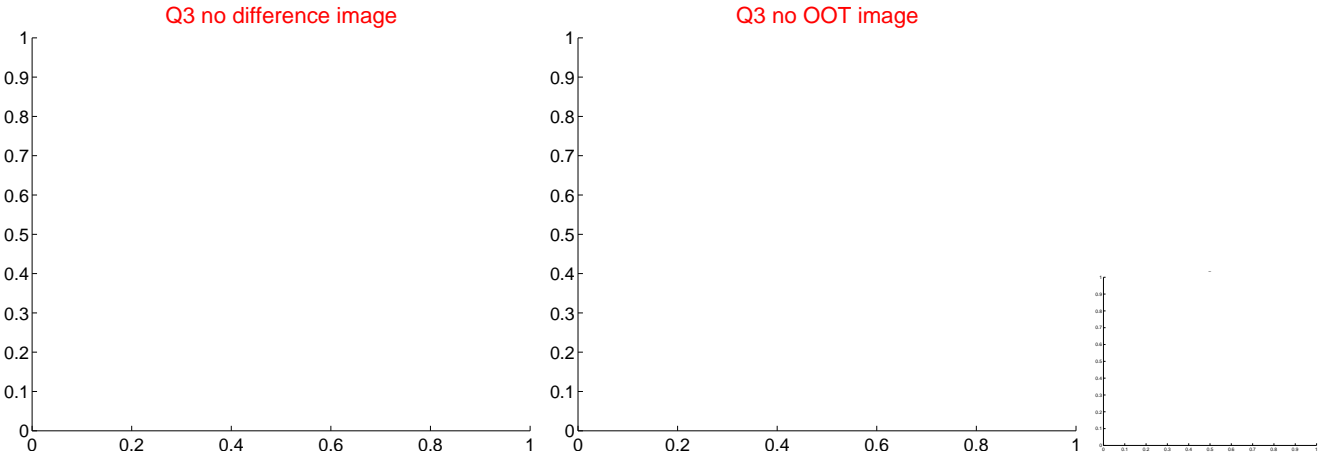
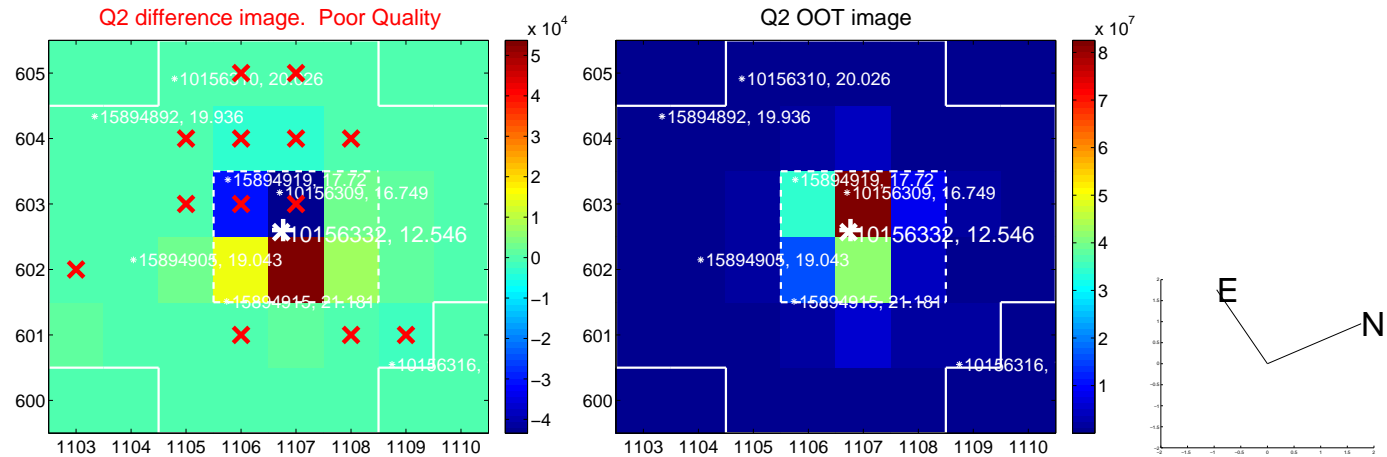
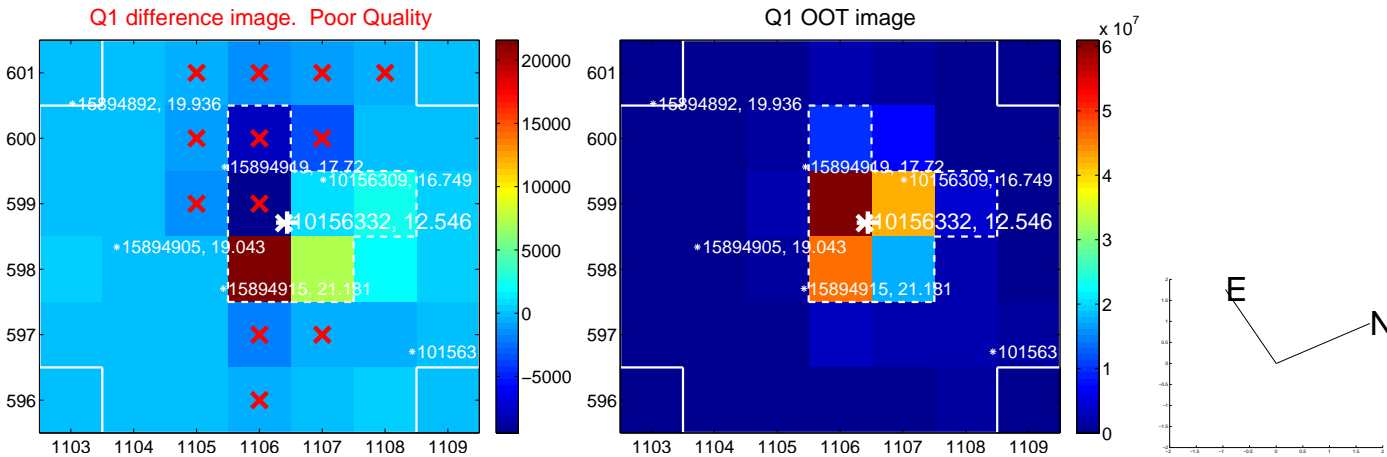
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

|   | Distance in arcsec | Distance / $\sigma$ | $\Delta$ RA       | $\Delta$ Dec      |
|---|--------------------|---------------------|-------------------|-------------------|
| PRF-fit source offset from OOT          | $2.606 \pm 2.206$  | 1.18                | $1.287 \pm 2.241$ | $2.267 \pm 2.195$ |
| PRF-fit source offset from KIC position | $2.680 \pm 2.230$  | 1.20                | $1.204 \pm 2.247$ | $2.394 \pm 2.226$ |
| photometric centroid source offset      | —                  | —                   | —                 | —                 |

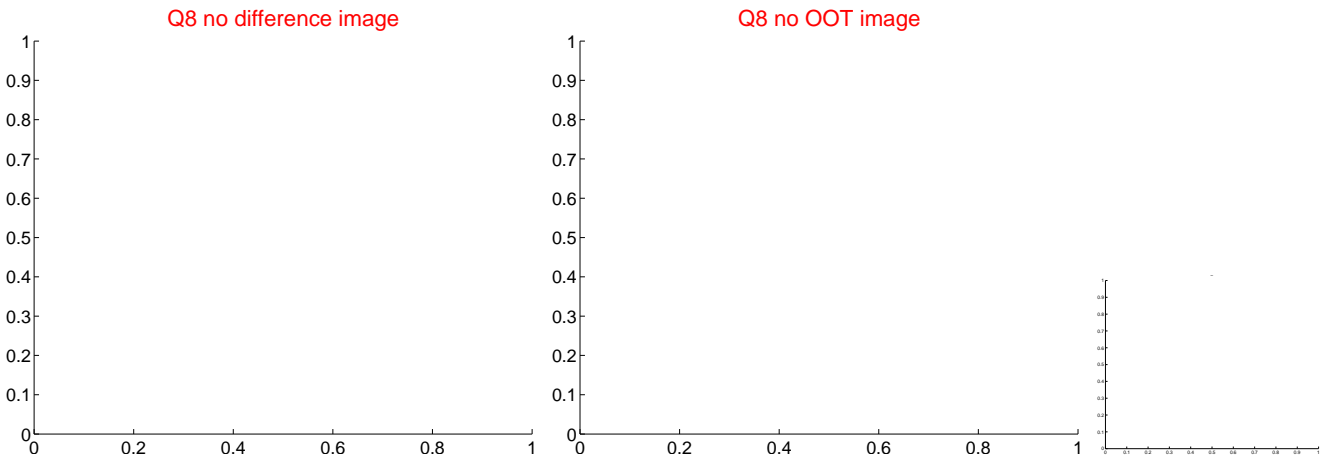
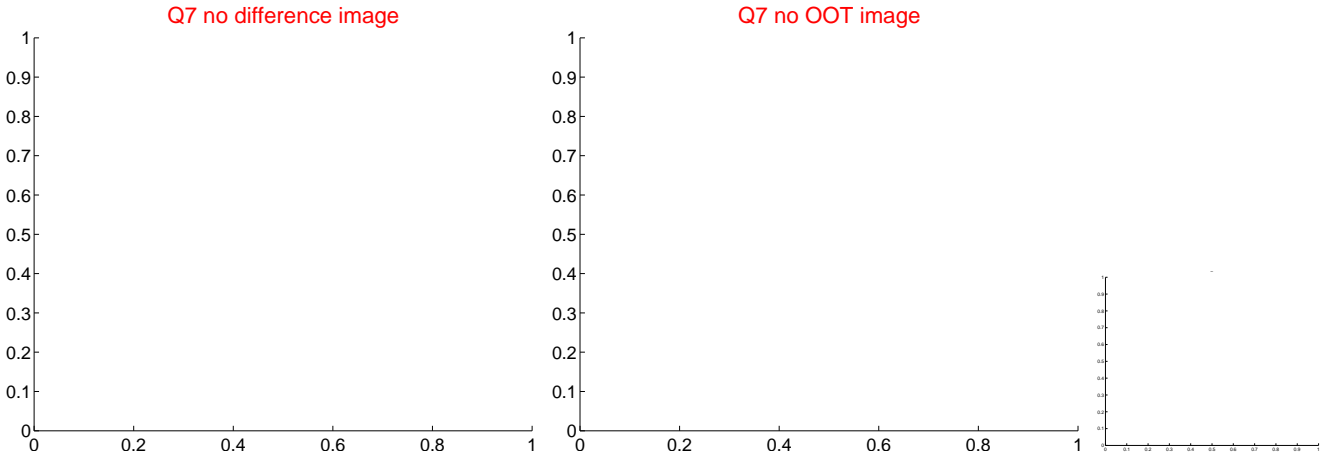
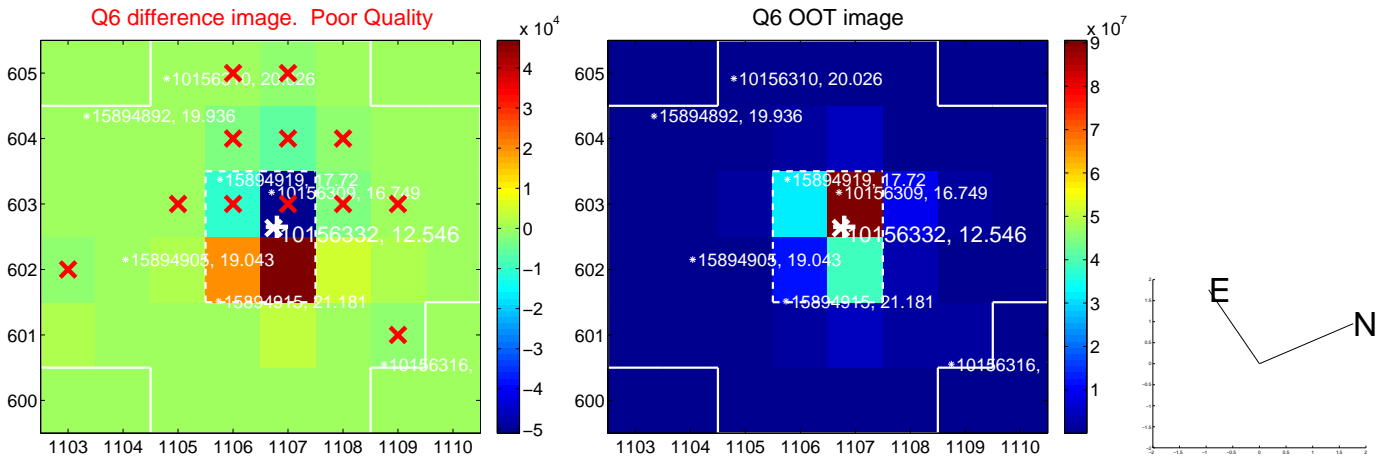
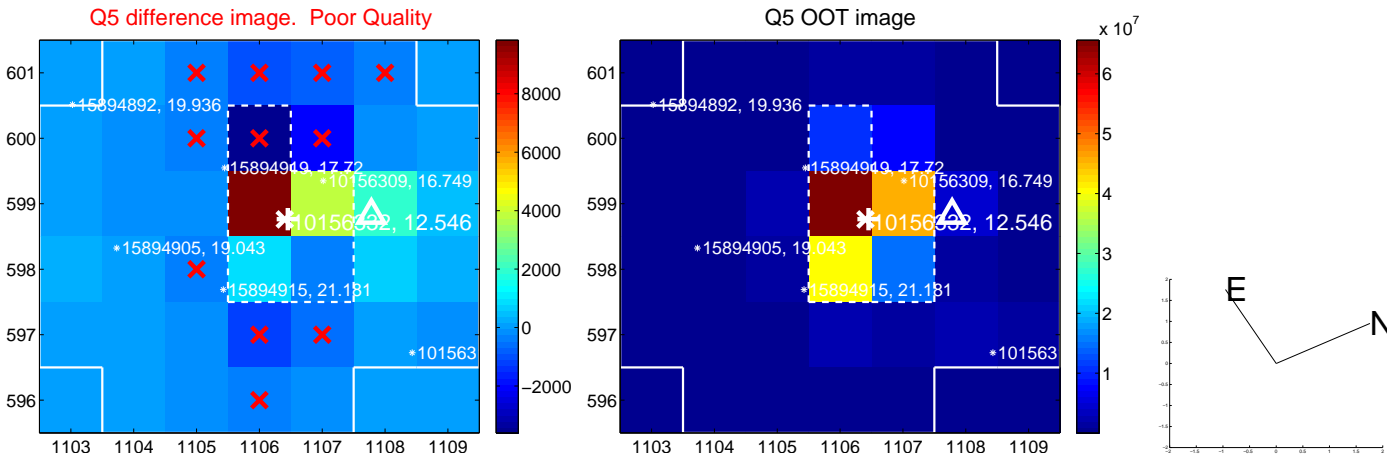


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

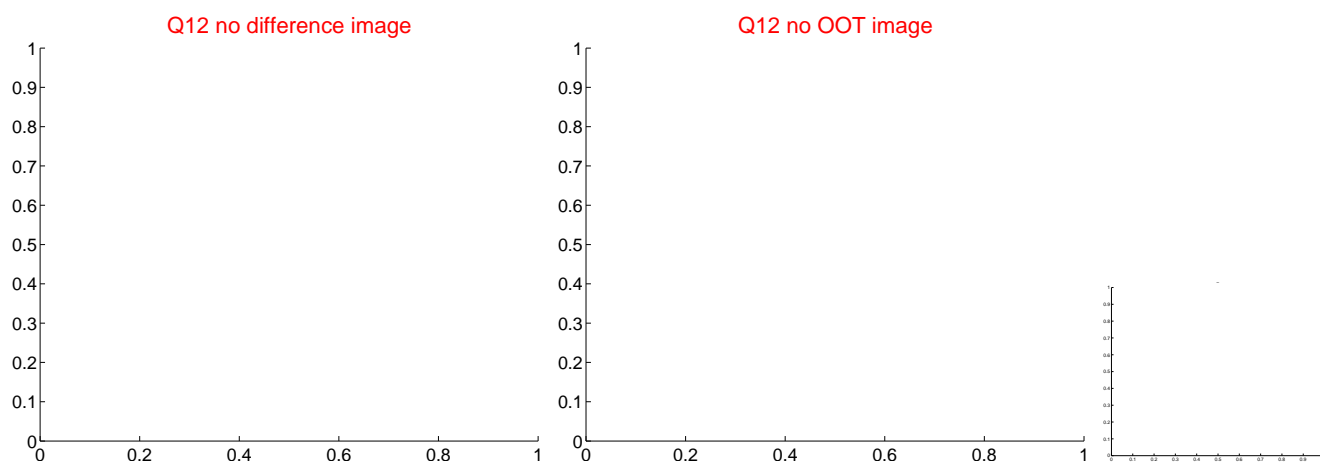
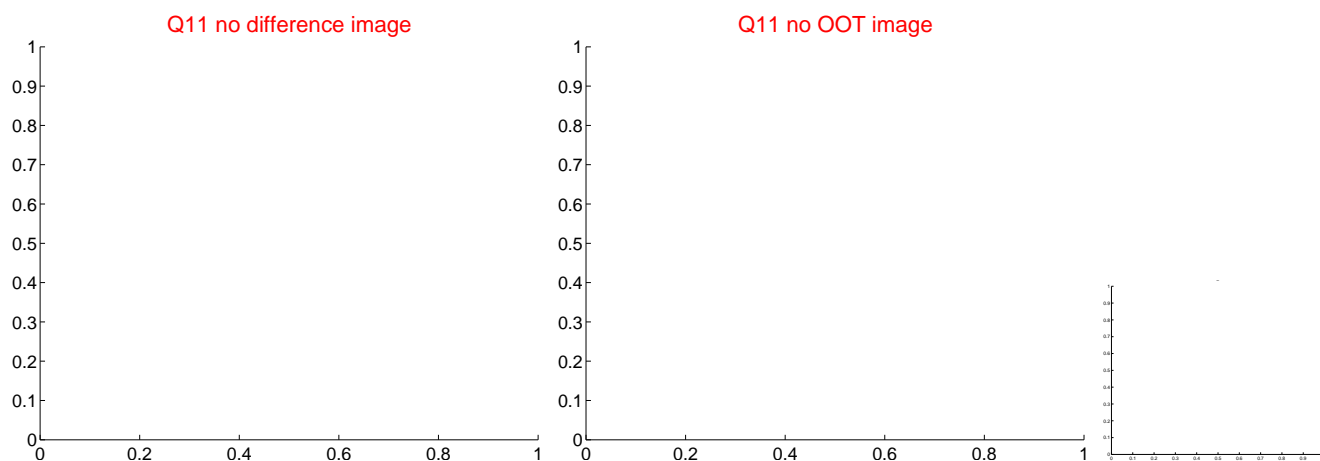
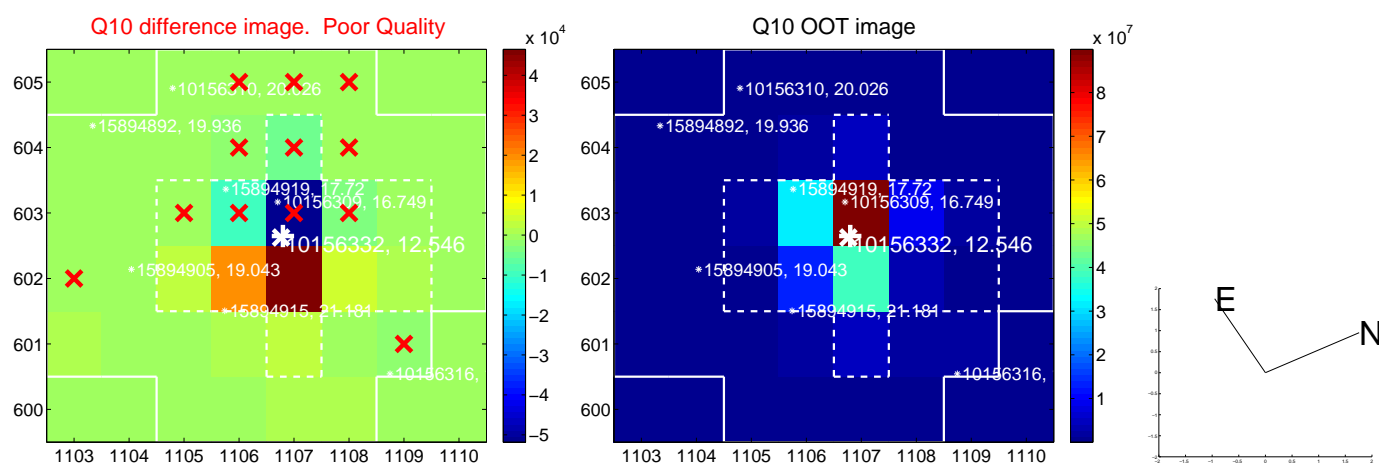
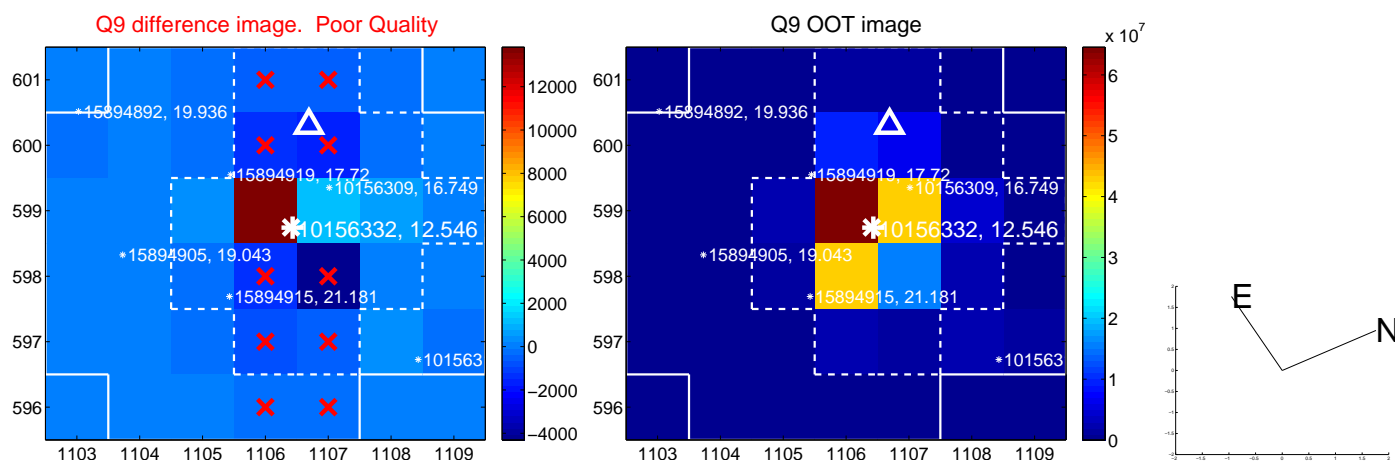


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

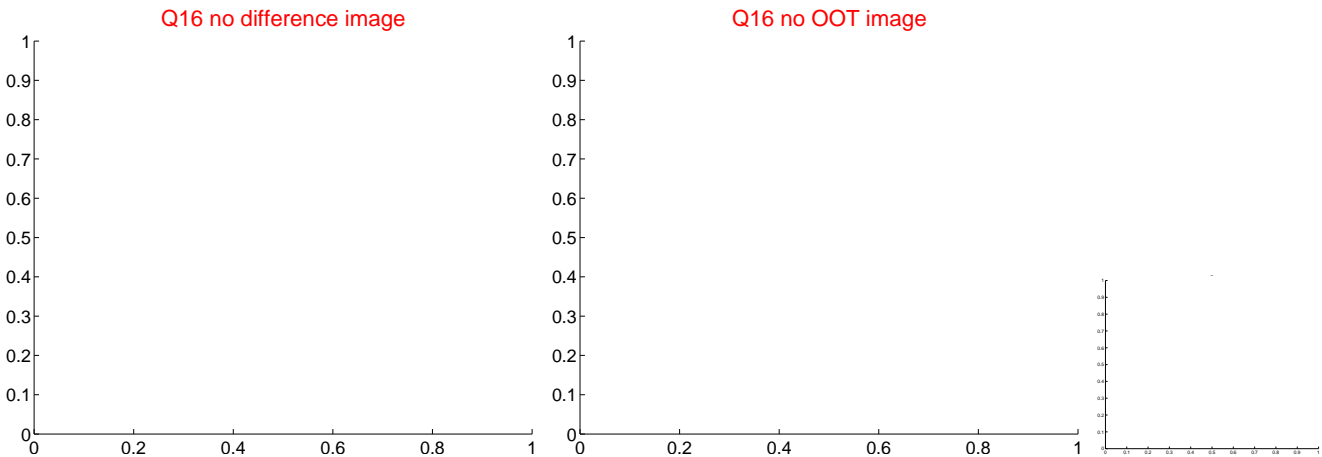
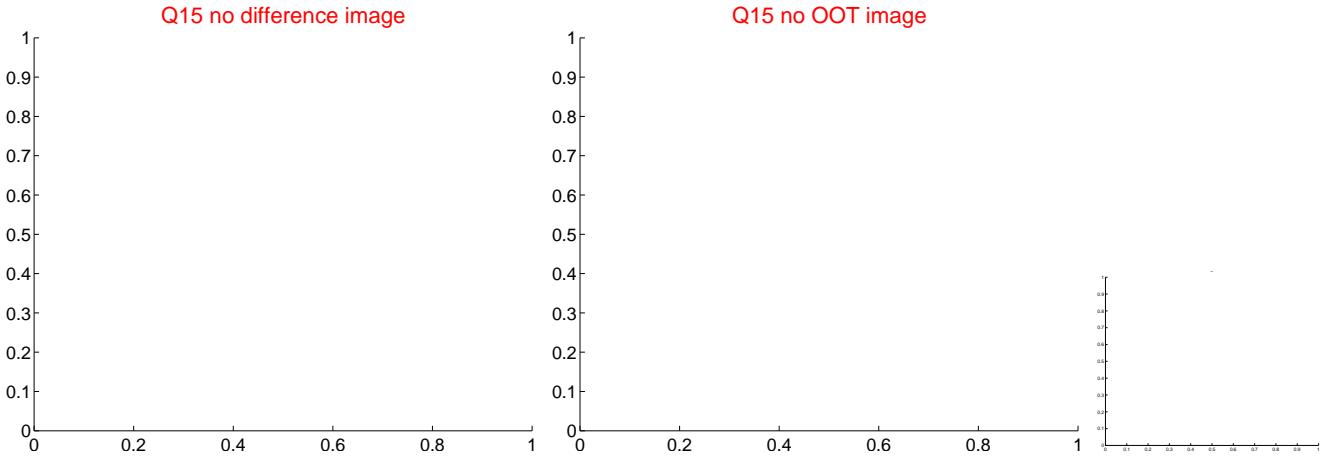
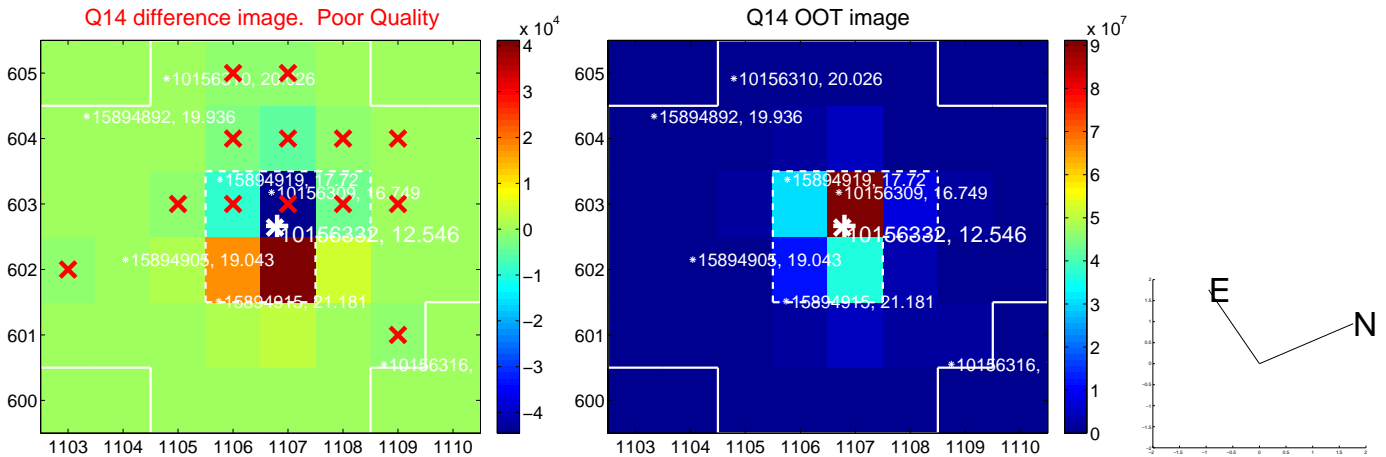
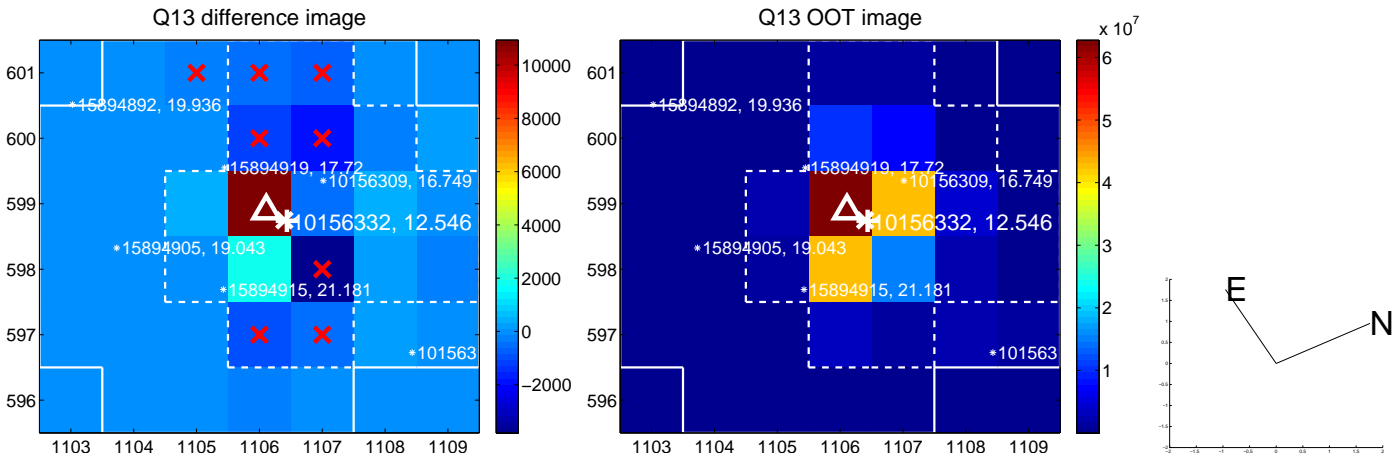




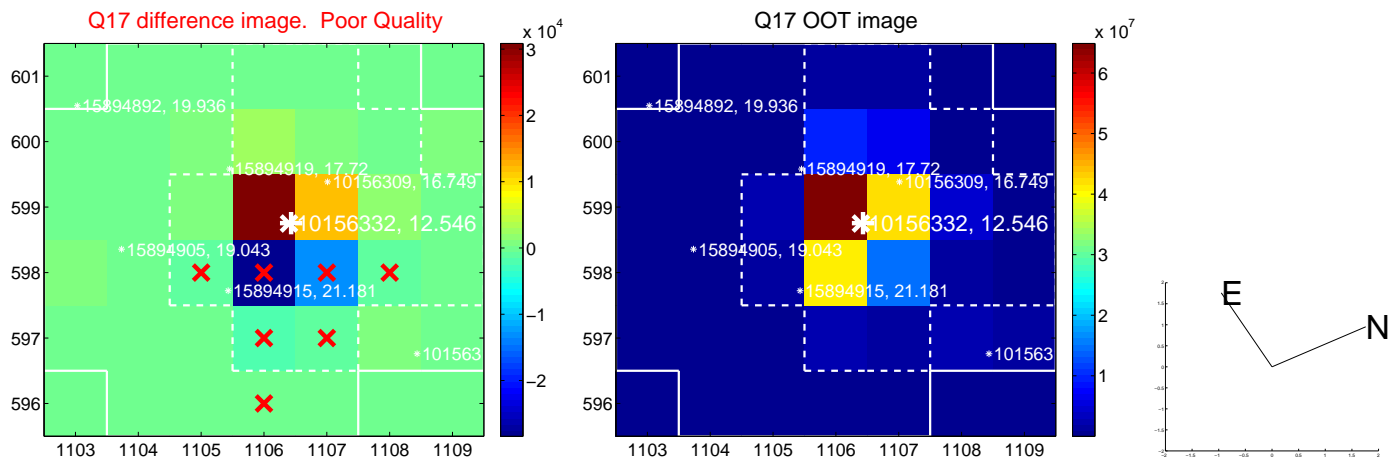
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



folded centroid time series figure for this object.

This astronomical image shows a field of stars against a dark background. A coordinate grid is overlaid, with the x-axis representing Right Ascension (labeled from 19.0 to 14.0) and the y-axis representing Declination (labeled from 40.0 to 60.0). A prominent red crosshair is centered on the image, indicating a specific point of interest. Several bright stars are visible, with the most intense ones appearing as white or yellowish points of light. The grid lines are blue, and the axis labels are in green.

Declination