

# KIC 009899623

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009899623-01	OBS	7975.01	1.332537	132.060505	88.3	4.465	9.7	10.2	1.04	6184	1.16	2354.32

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009899623-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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.

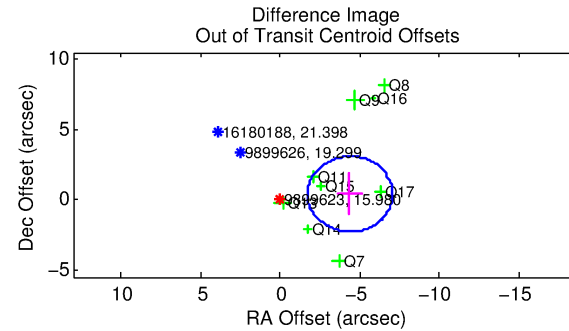
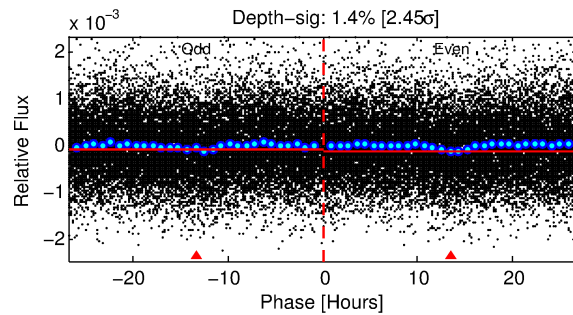
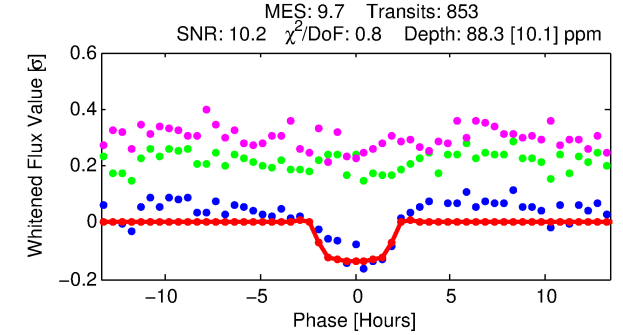
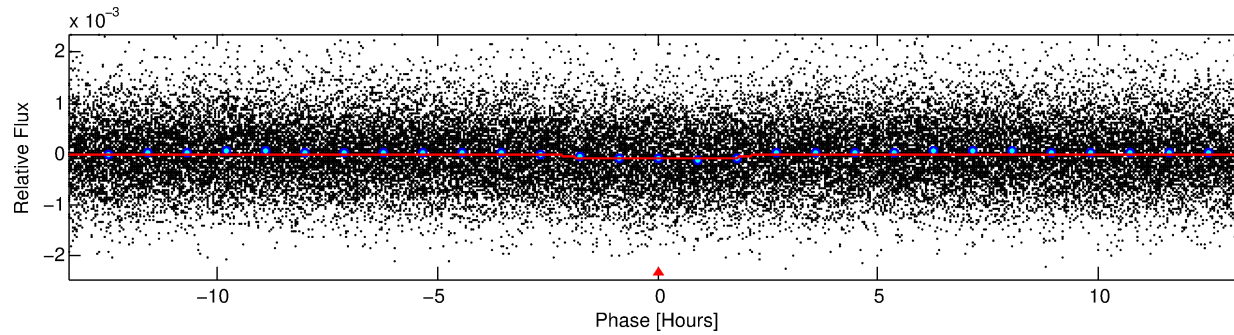
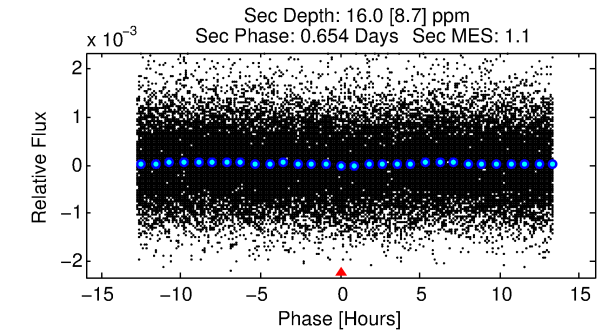
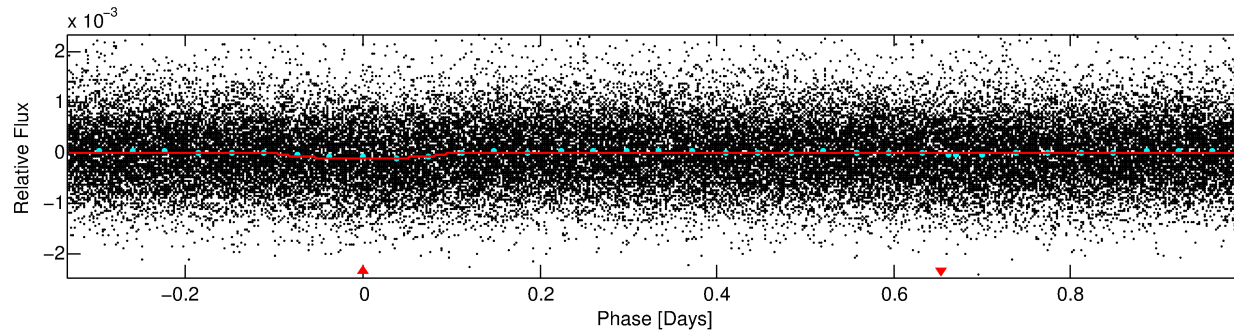
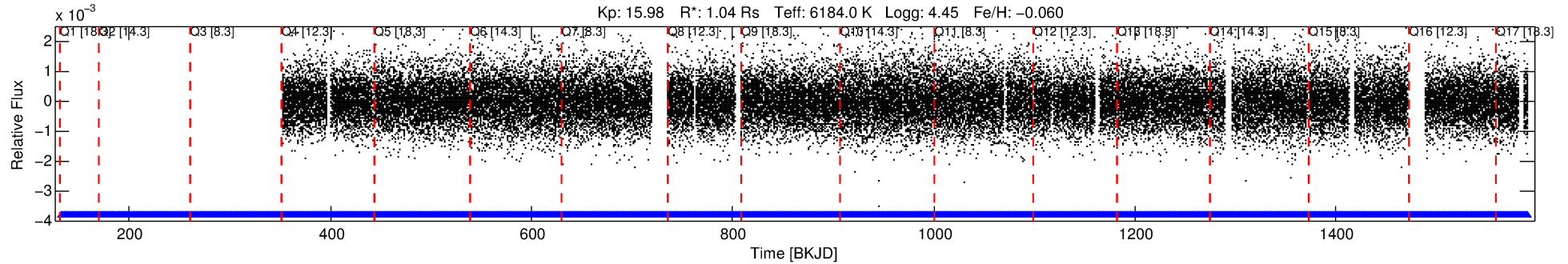
## Ephemeris Match Information For 009899623-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009899623-01	9899623	BR-Cyg-pri	9899416	1:1	183.1	-45	12	10.03	15.98	7600.80	Direct-PRF	0	1.64	0.79

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9899623 Candidate: 1 of 1 Period: 1.333 d



## DV Fit Results:

Period = 1.33254 [0.00001] d  
Epoch = 132.0605 [0.0054] BKJD  
Rp/R\* = 0.0103 [0.0041]  
a/R\* = 1.36 [1.37]  
b = 0.92 [0.39]  
Seff = 2354.32 [978.91]  
Teq = 1776 [185] K  
Rp = 1.16 [0.59] Re  
a = 0.0245 [0.0064] AU  
Ag = 3.90 [4.07] [0.71σ]  
Teffp = 3858 [952] K [2.15σ]

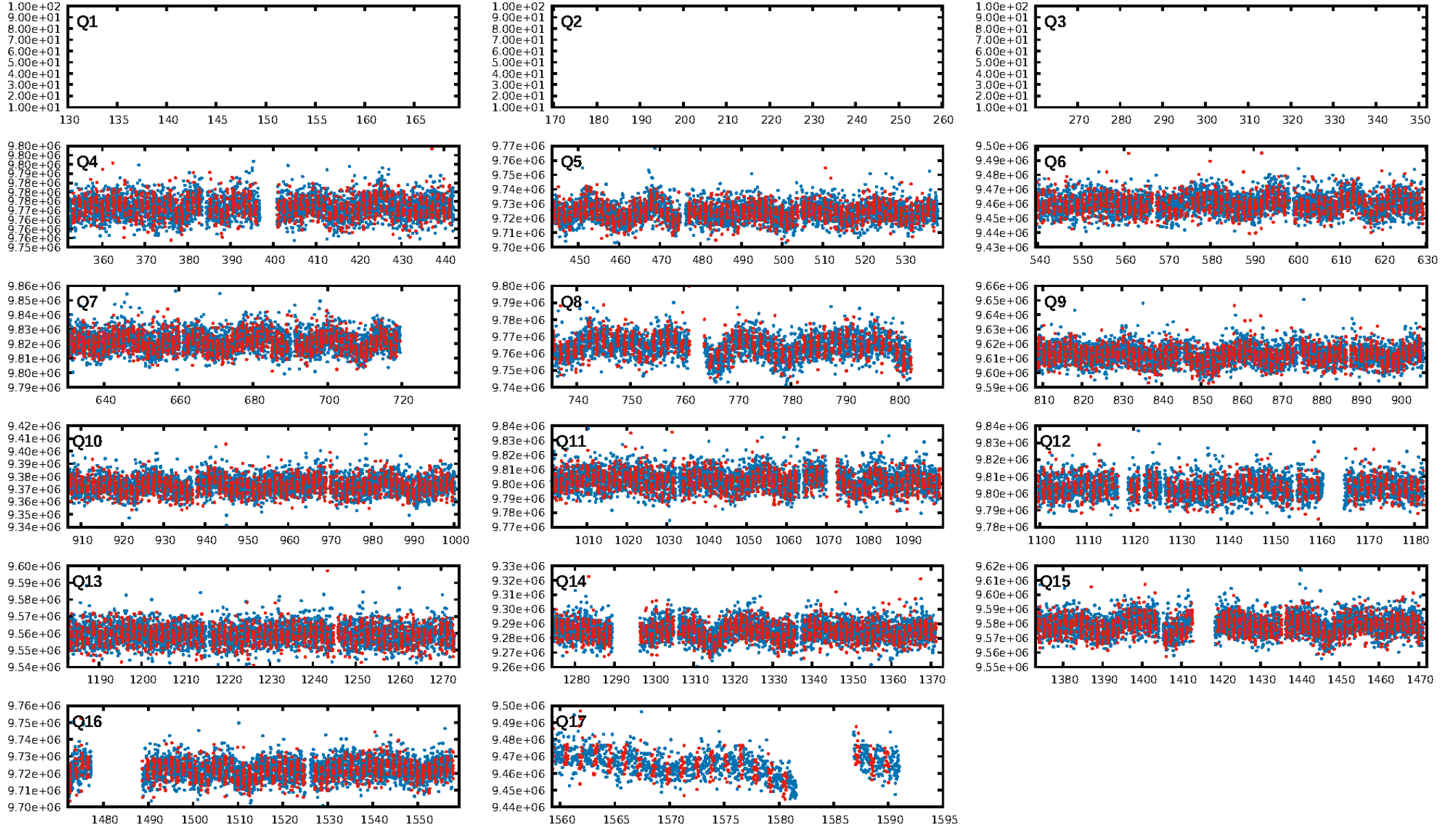
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.20e-25  
RollingBand-fgt: 1.00 [833/833]  
**GhostDiagnostic-chr: -0.01285**  
Centroid-sig: 1.0%  
Centroid-so: 2.957 arcsec [2.13σ]  
**OotOffset-rm: 4.424 arcsec [4.95σ]**  
**KicOffset-rm: 4.412 arcsec [5.68σ]**  
OotOffset-st: 1/3/2/3 [9]  
KicOffset-st: 1/3/2/3 [9]  
DiffImageQuality-fgm: 0.00 [0/9]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:33:13 Z

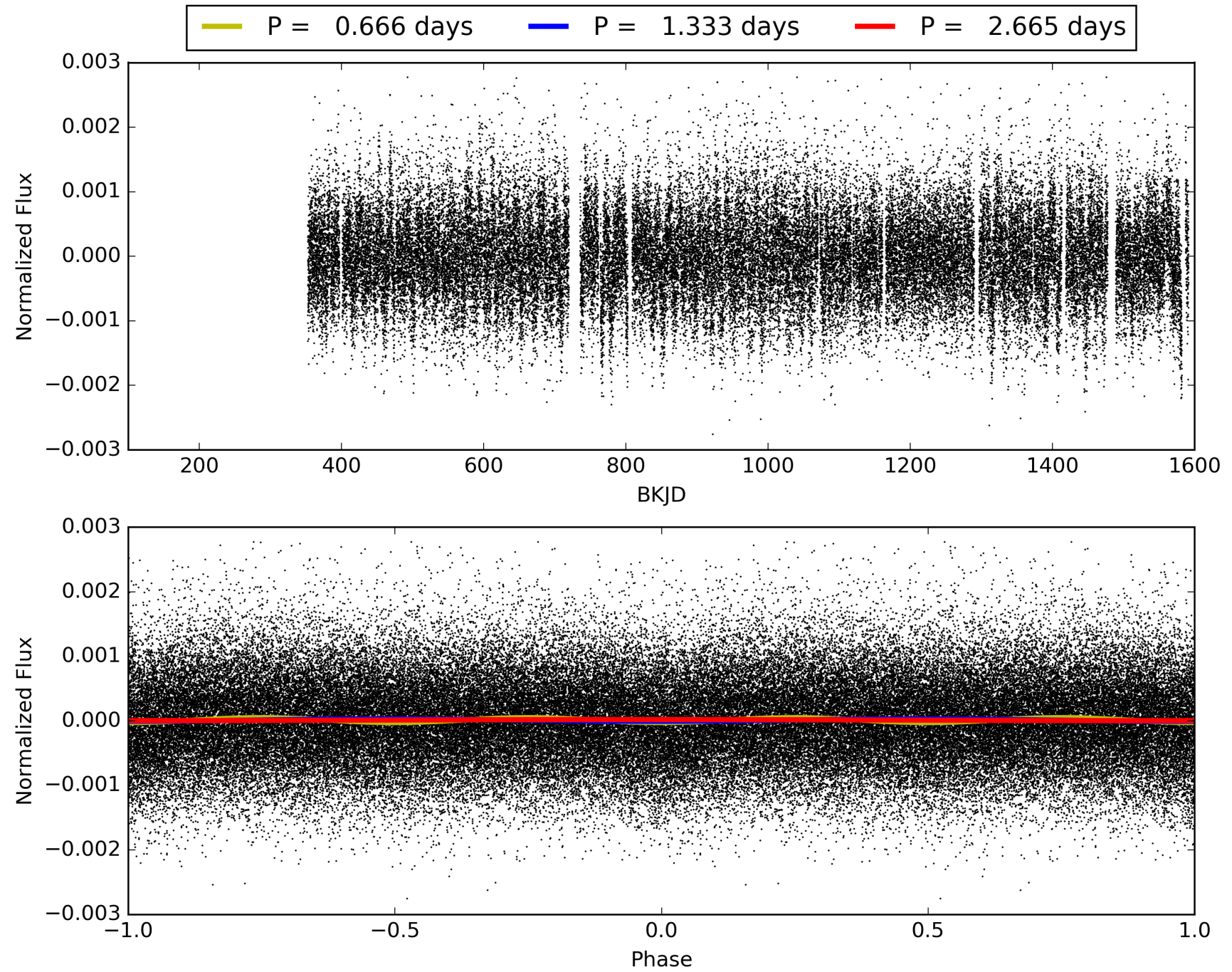
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009899623-01, PDC Light Curves



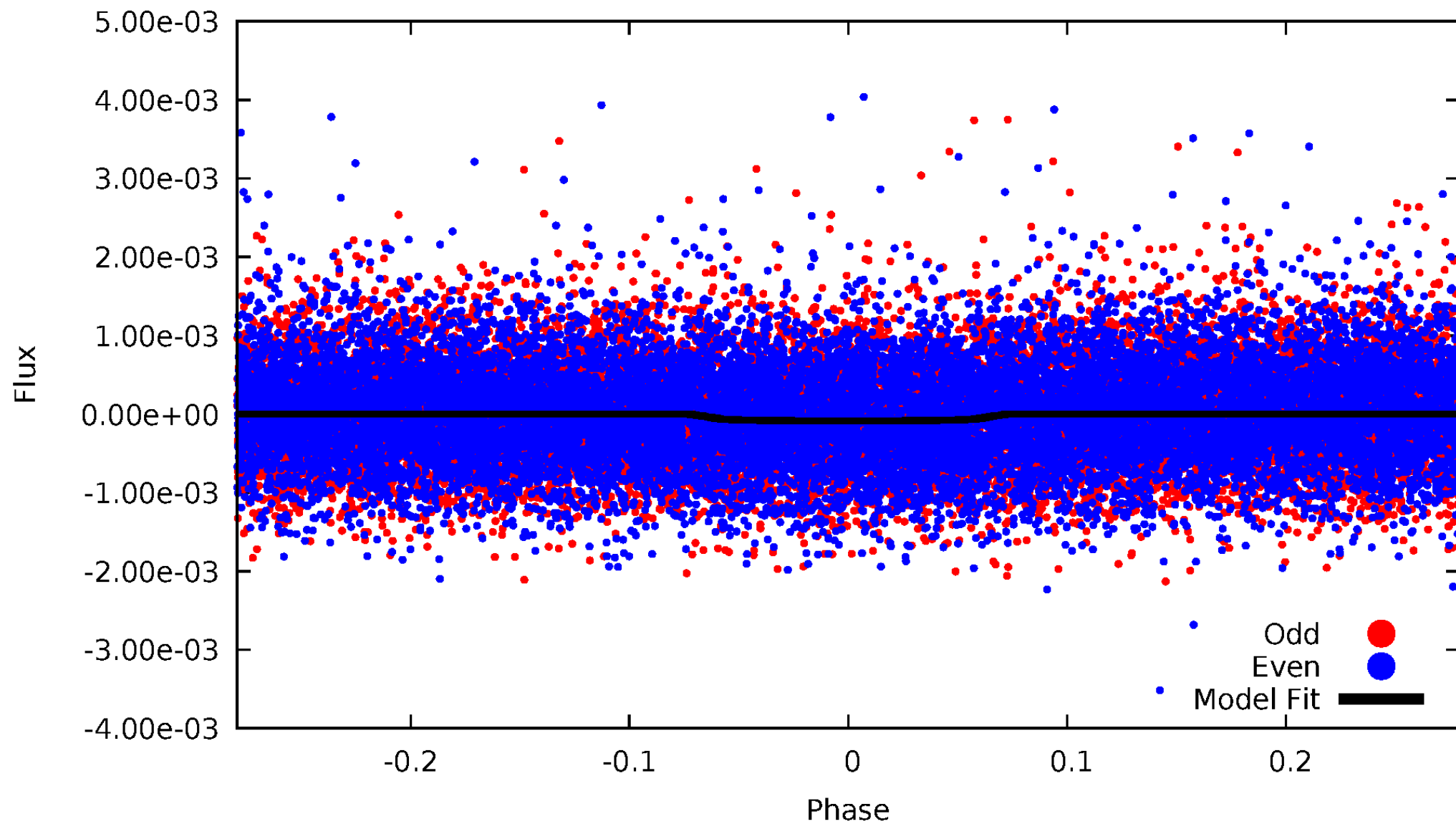


# TCE 009899623-01



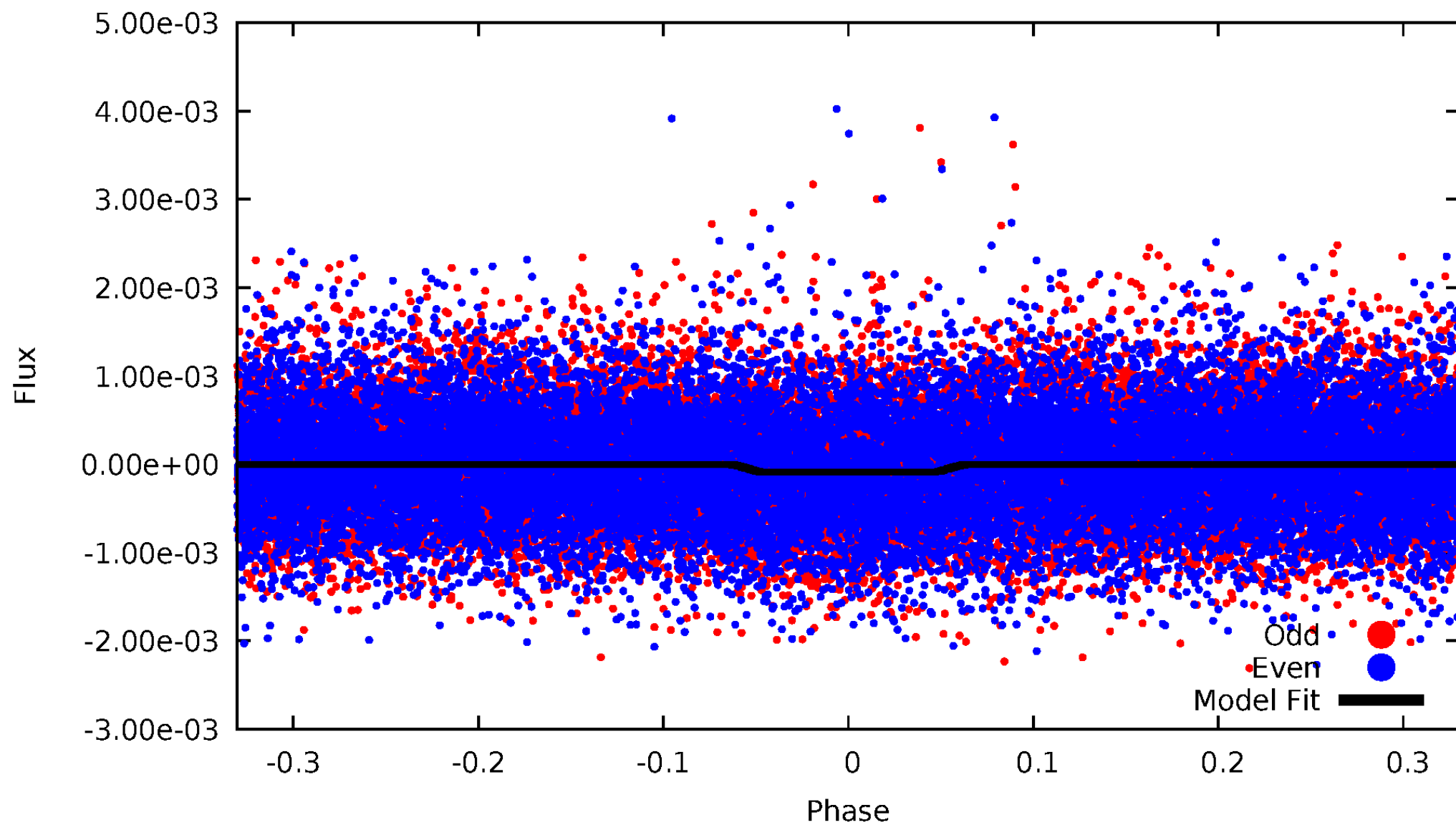
# DV Odd/Even

TCE 009899623-01

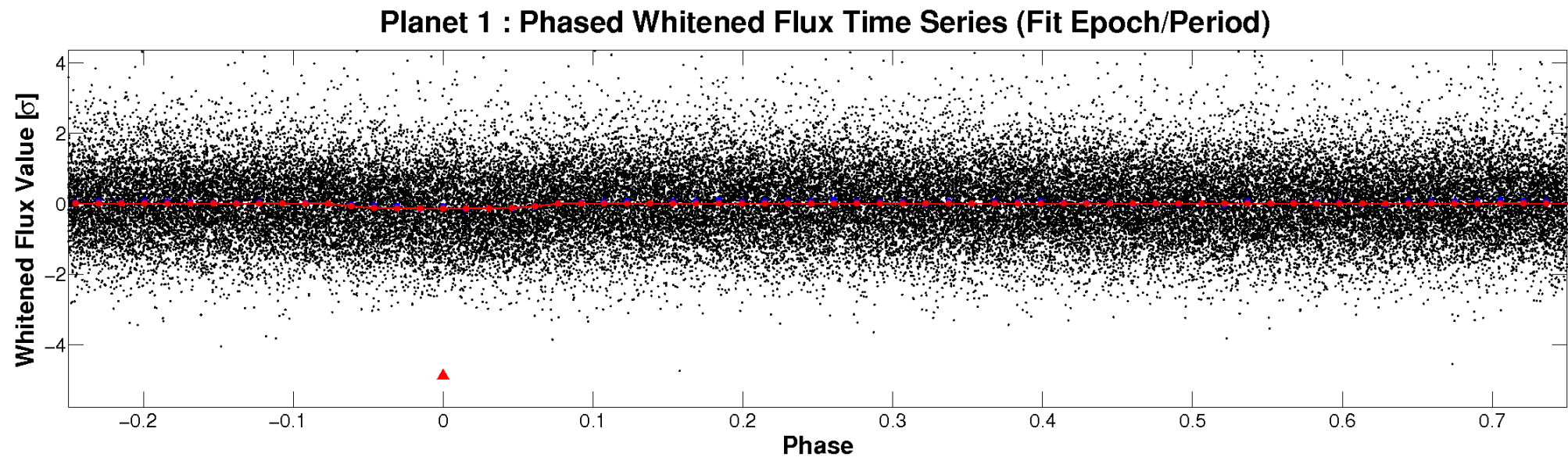
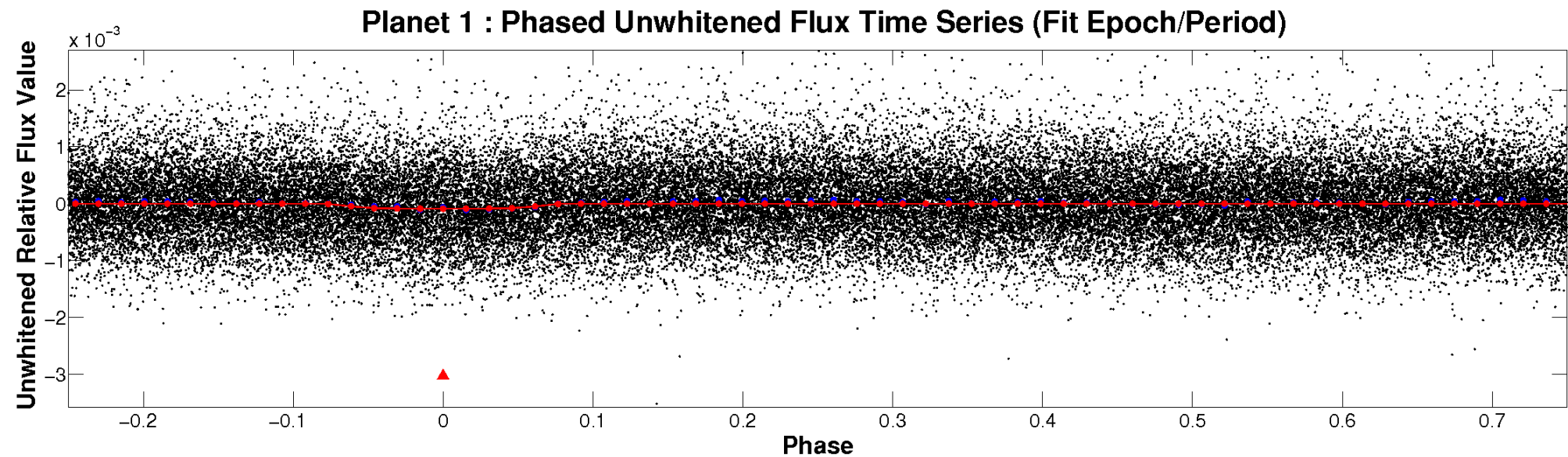


# ALT Odd/Even

TCE 009899623-01



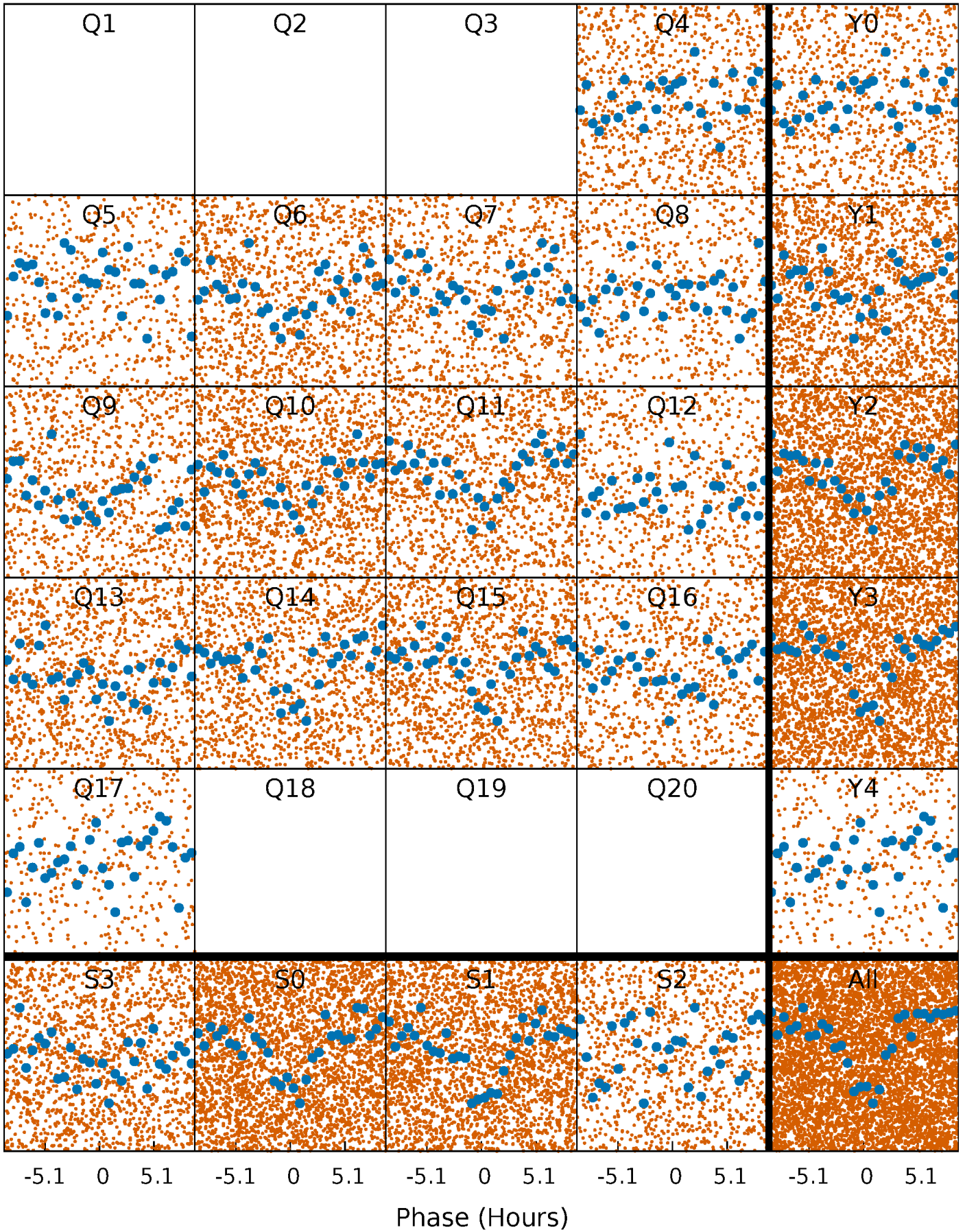
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

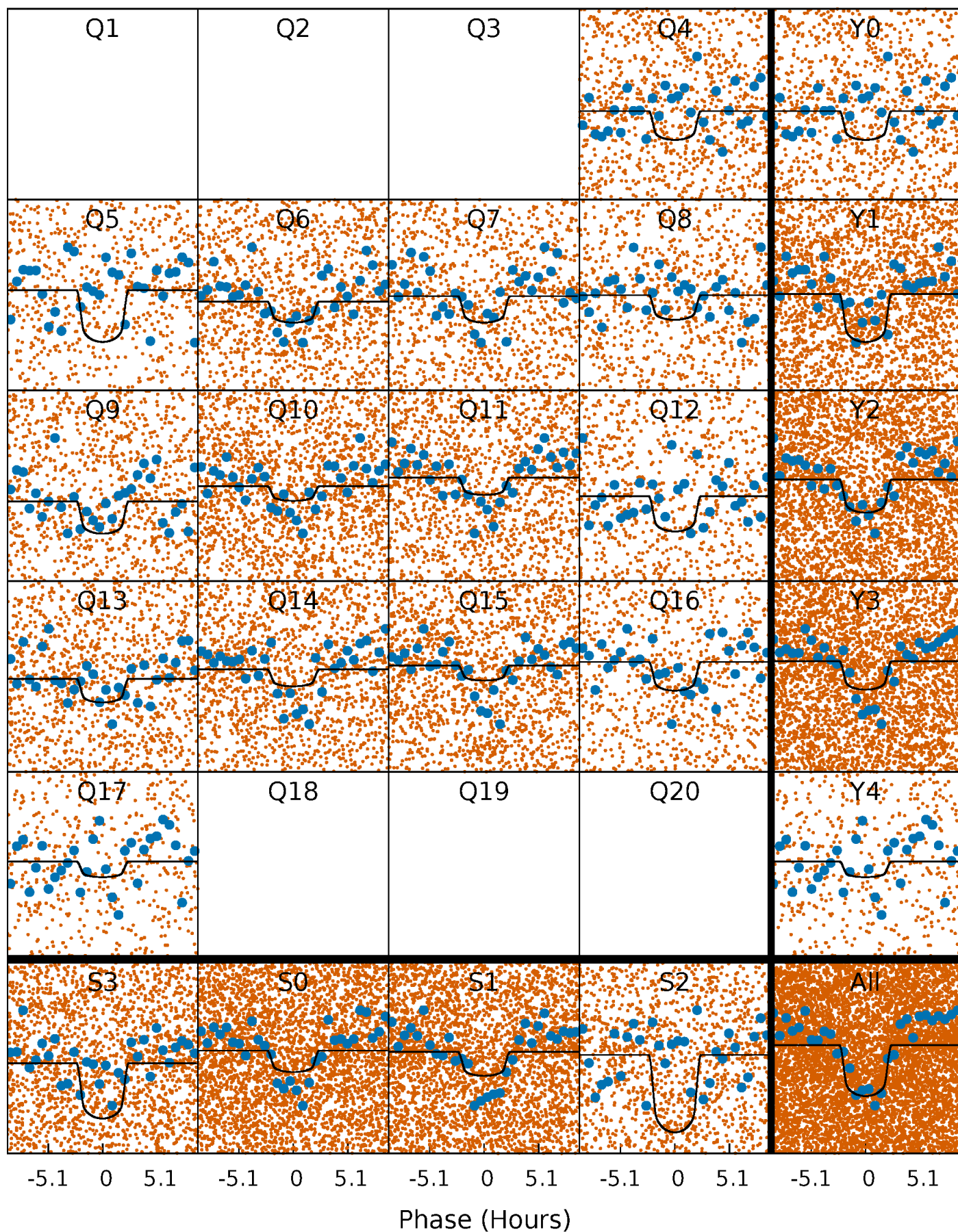
TCE 009899623-01 P= 1.332537 Days  $T_0=132.060505$  (BKJD)





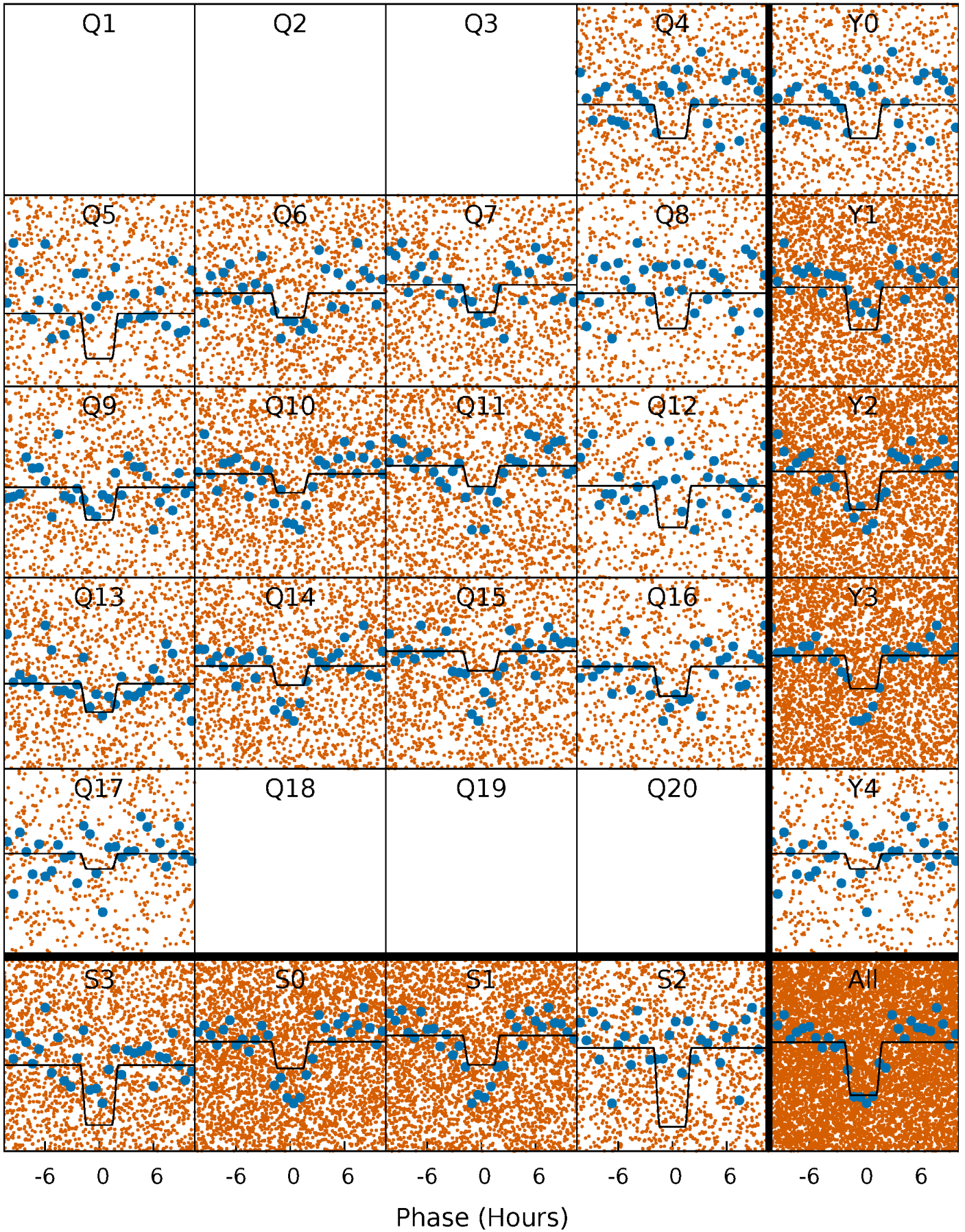
# DV Quarter-Phased Transit Curves

TCE 009899623-01   P= 1.332537 Days    $T_0=132.060505$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009899623-01 P= 1.332617 Days  $T_0=132.011637$  (BKJD)

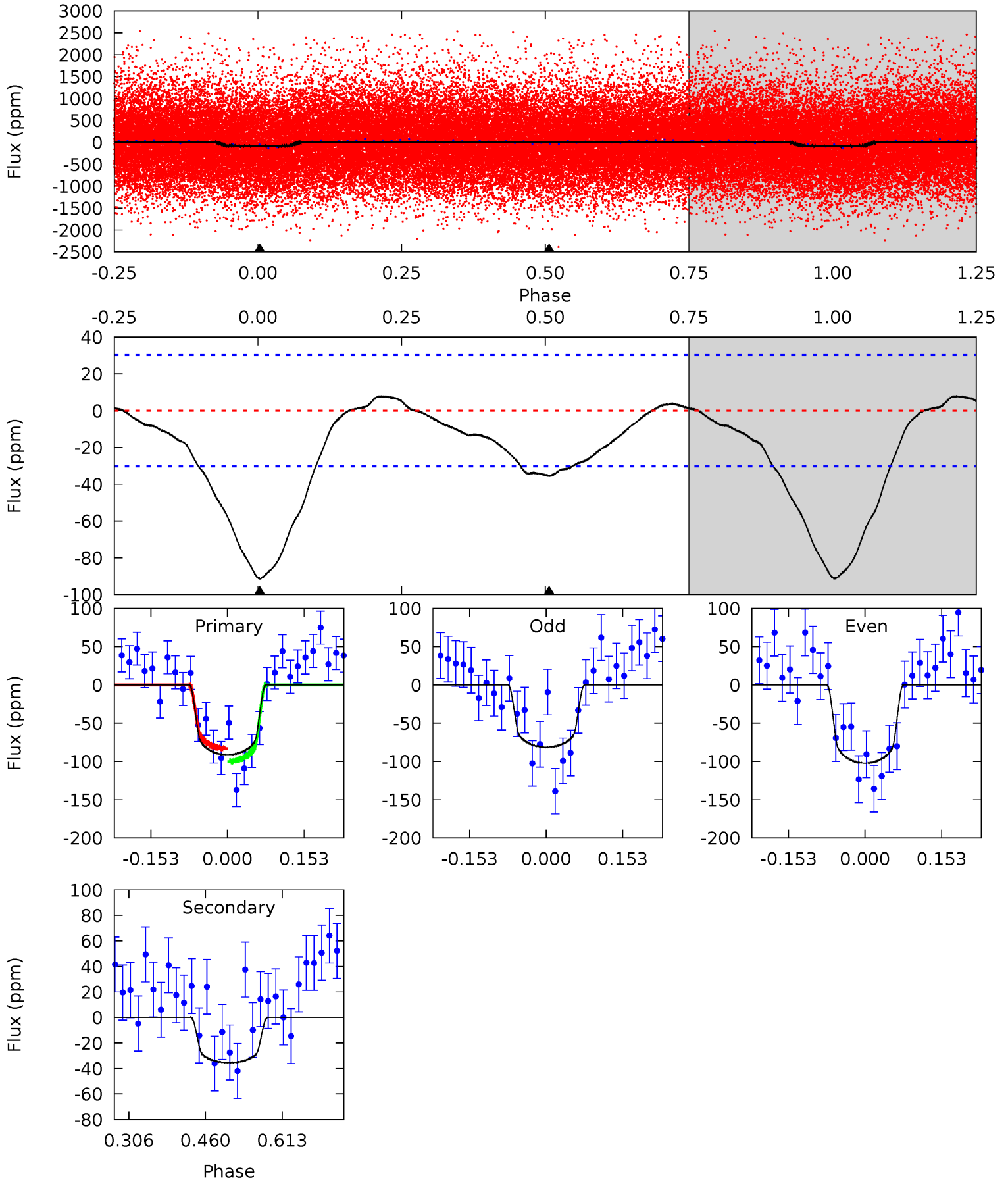




# DV Model-Shift Uniqueness Test

009899623-01, P = 1.332537 Days, E = 132.060505 Days

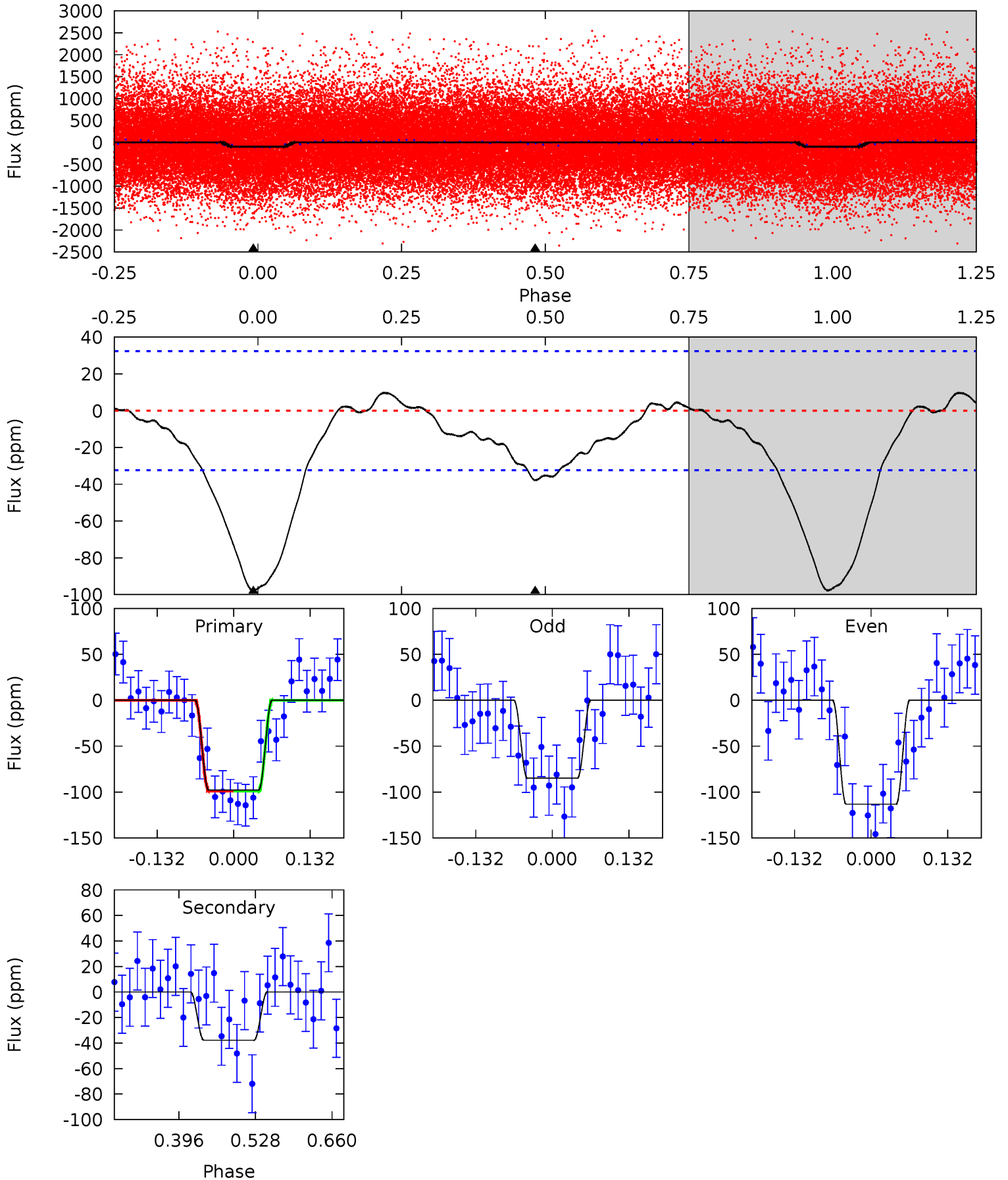
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	5.24	0	0	4.47	1.43	0.83	13.5	13.5	5.24	5.24	1.55	1.07	0.08	1.25



# Alt Model-Shift Uniqueness Test

009899623-01, P = 1.332617 Days, E = 132.011637 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
13.6	5.27	0	0	4.51	1.51	0.90	13.6	13.6	5.27	5.27	1.97	1.06	0.09	0.01





### Stellar Parameters For KIC 009899623

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6184^{+193}_{-257}$	$4.448^{+0.052}_{-0.208}$	$-0.060^{+0.250}_{-0.300}$	$1.038^{+0.324}_{-0.130}$	$1.100^{+0.151}_{-0.151}$	$1.387^{+0.380}_{-0.717}$
	+3%/-4%	+1%/-5%	+417%/-500%	+31%/-13%	+14%/-14%	+27%/-52%
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 009899623-01 / KOI 7975.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-35 \pm 7$	$1.24^{+0.54}_{-0.52}$	$2545^{+188}_{-143}$	$4758^{+1388}_{-638}$	$7.622^{+14.306}_{-4.077}$
Alt.	$-38 \pm 7$	$1.15^{+0.51}_{-0.50}$	$2541^{+182}_{-130}$	$4976^{+1455}_{-721}$	$9.161^{+19.206}_{-4.935}$

$T_{\text{max}}$  = 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

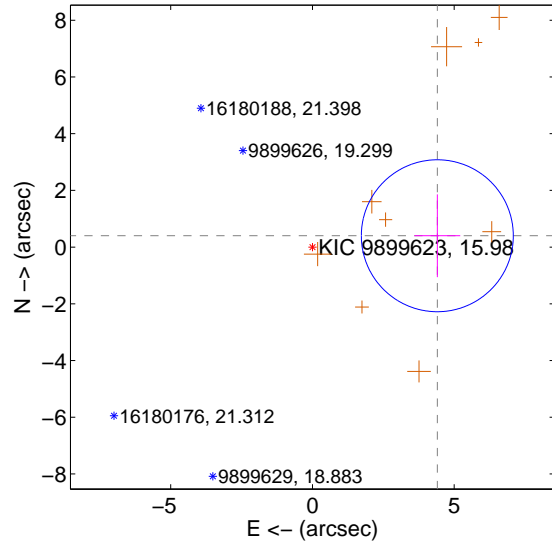
Supplemental centroid analysis for 009899623-01. Kepler magnitude: 15.98. Transit SNR 10.17

There are 0 quarters with good PRF difference image offsets

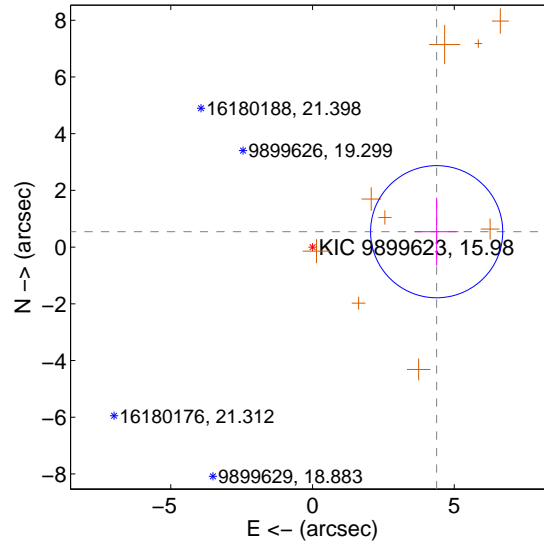
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	4.424 $\pm$ 0.893	4.95	-4.405 $\pm$ 0.807	0.400 $\pm$ 1.461
PRF-fit source offset from KIC position	4.412 $\pm$ 0.777	5.68	-4.379 $\pm$ 0.769	0.543 $\pm$ 1.196
photometric centroid source offset	2.96 $\pm$ 1.39	2.13	-2.68 $\pm$ 1.37	1.25 $\pm$ 1.47

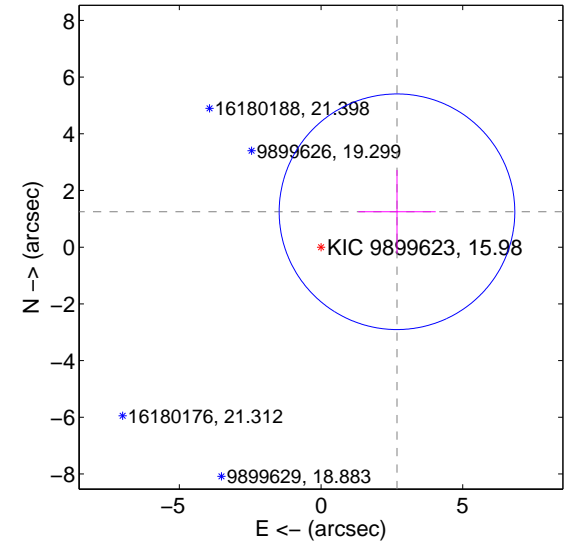
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

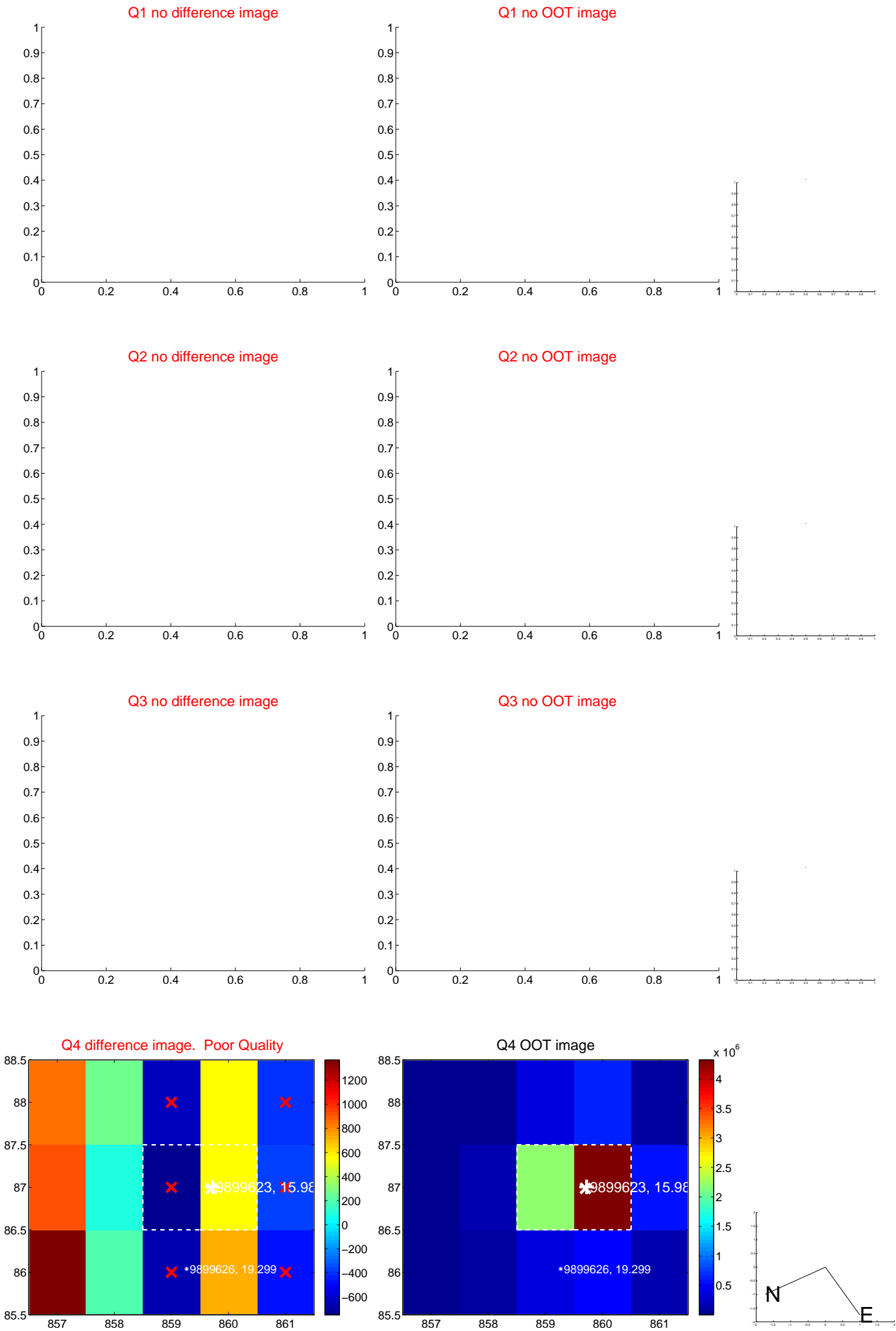


offset from photometric centroids

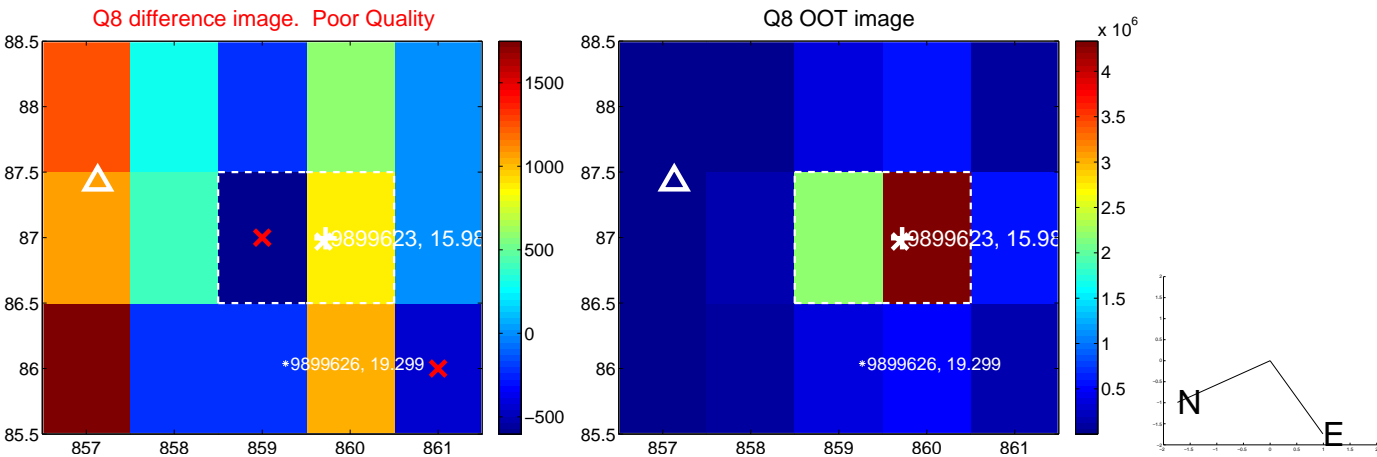
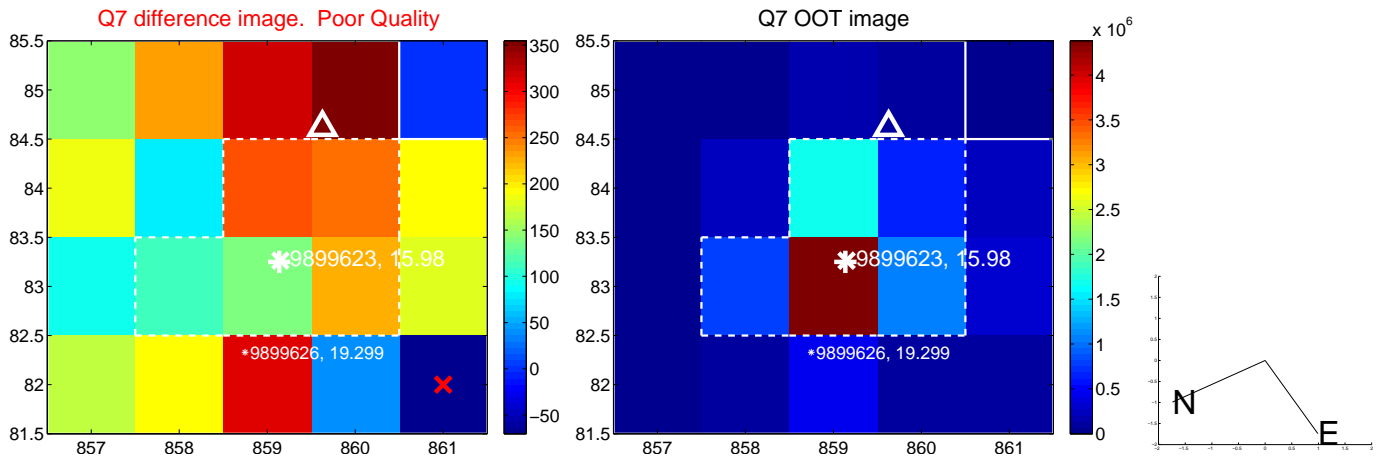
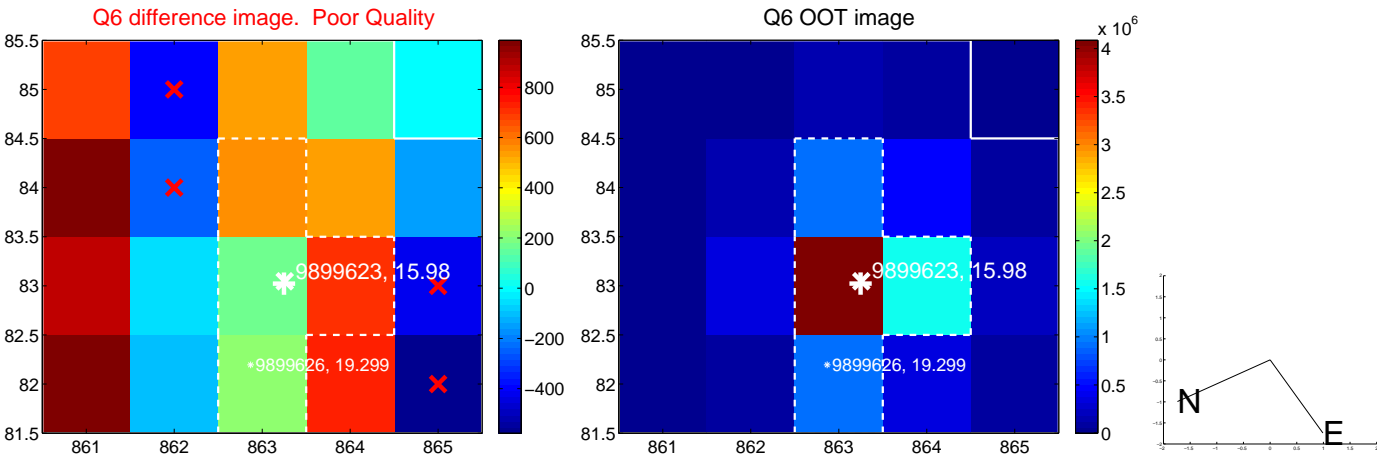
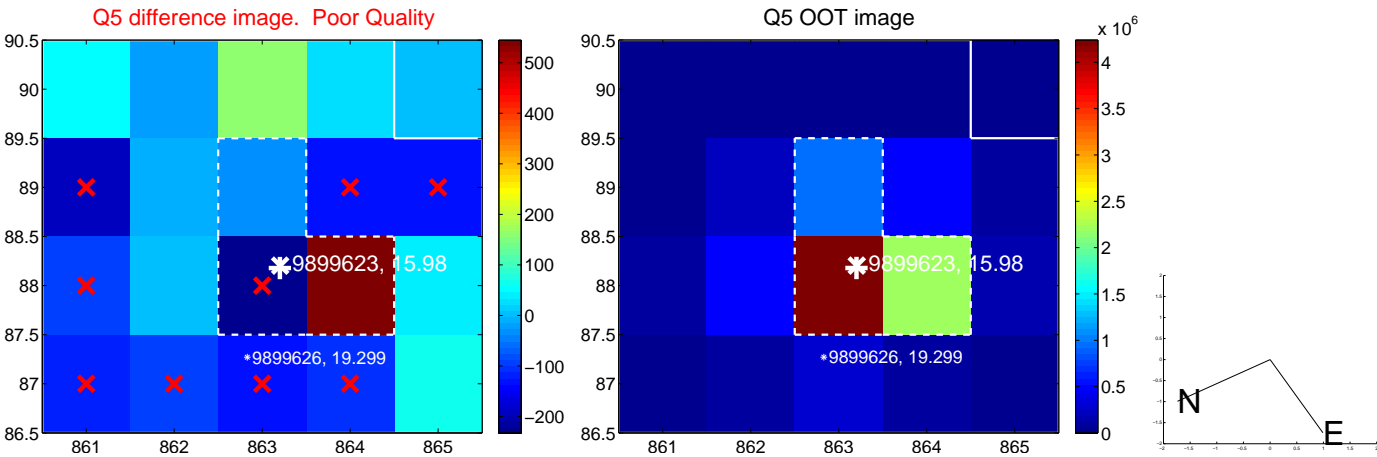


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

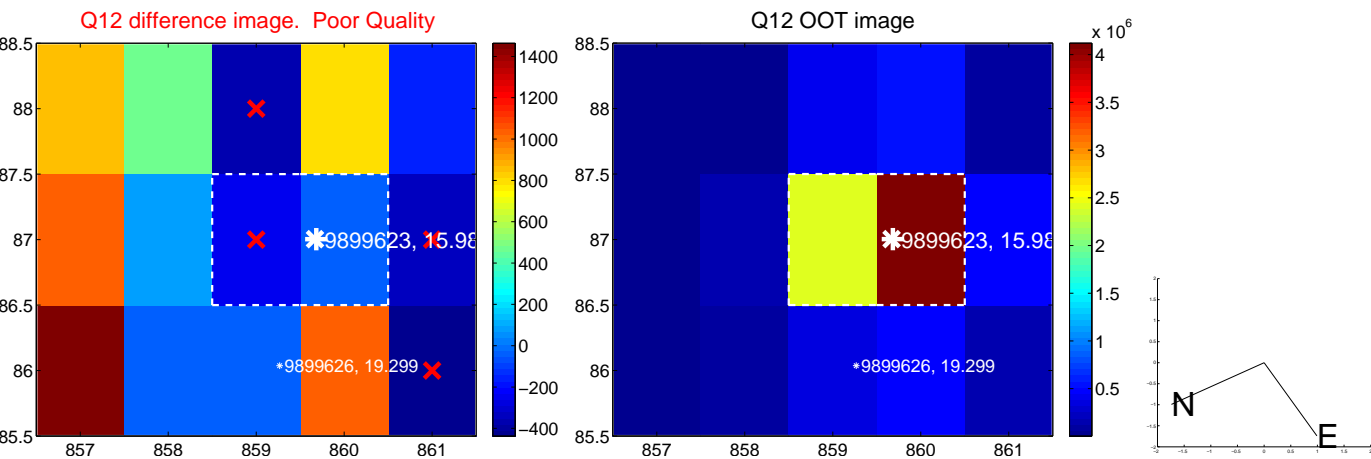
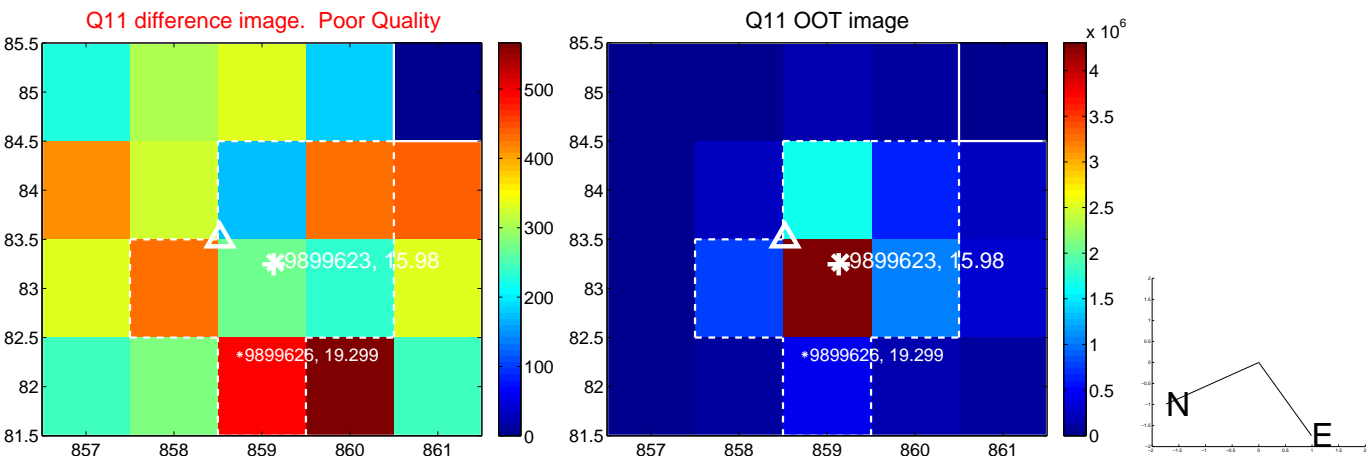
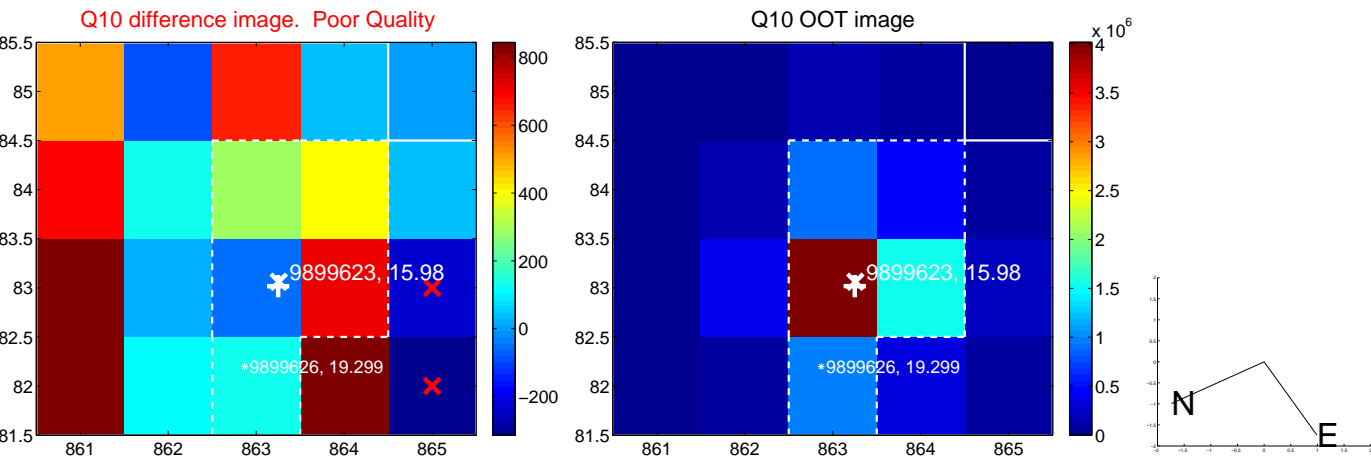
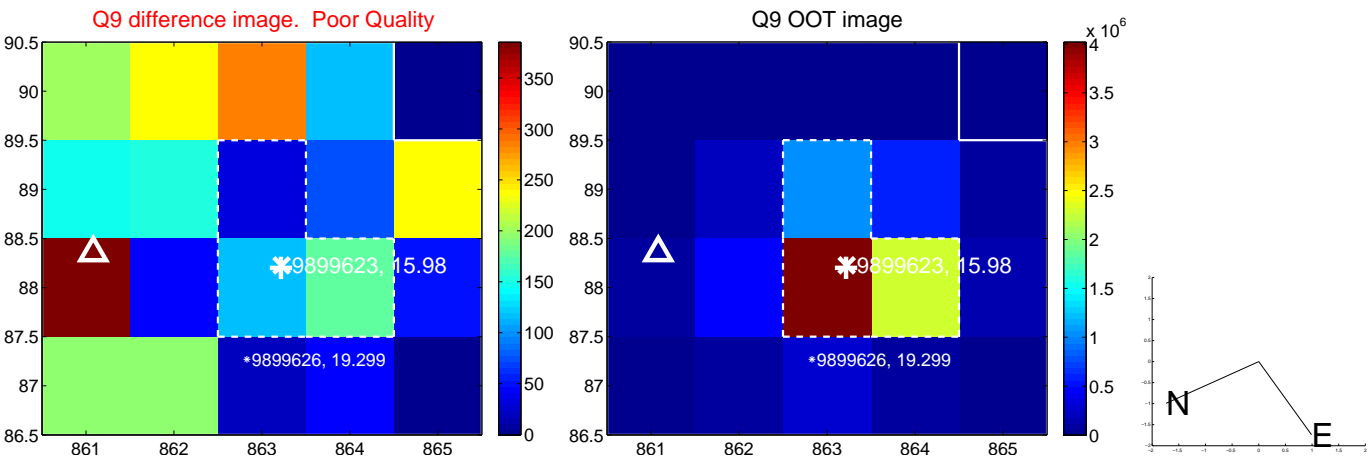


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

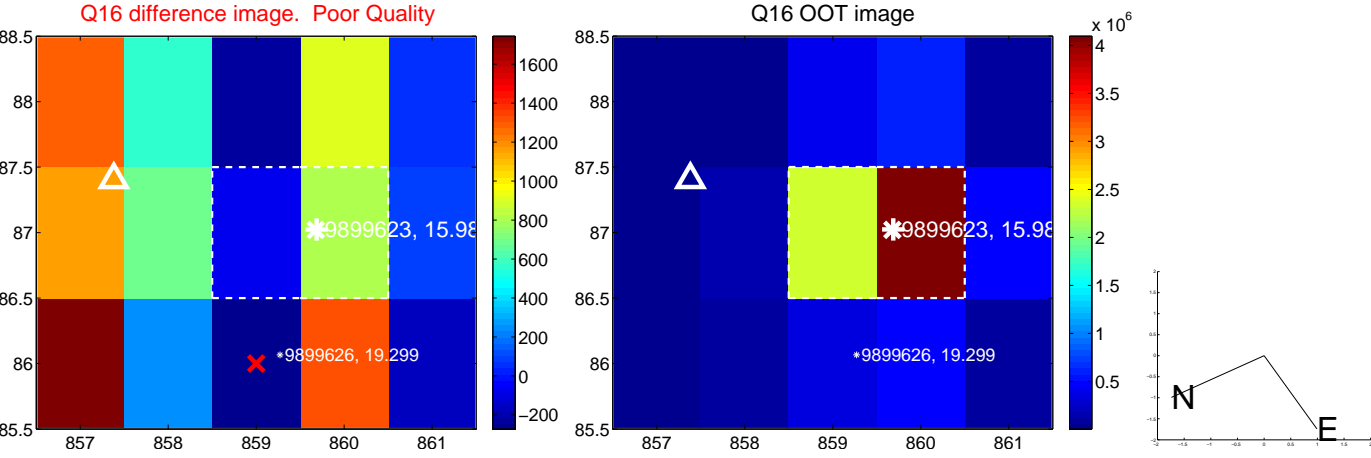
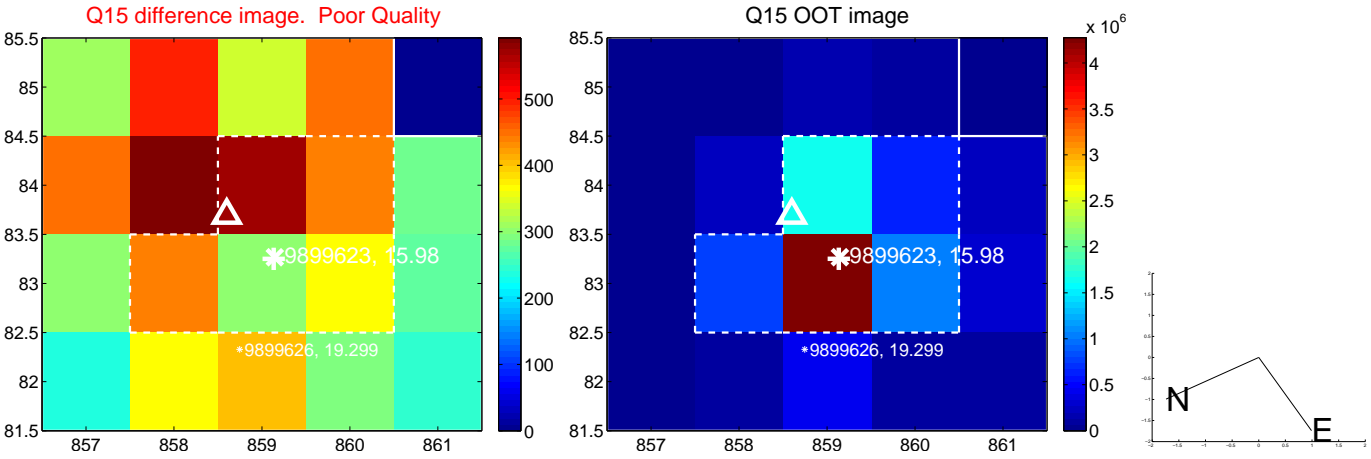
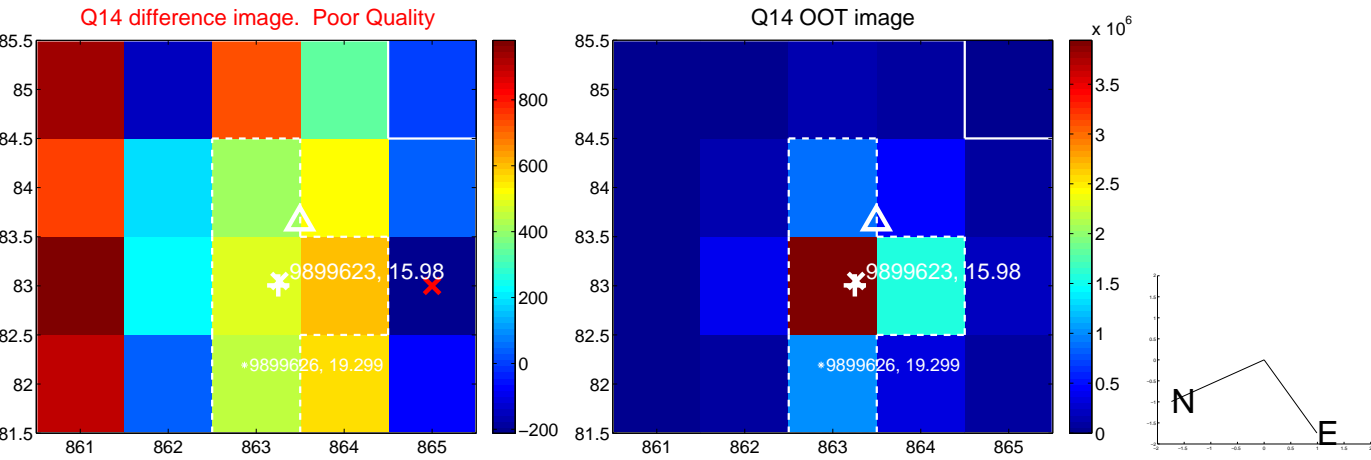
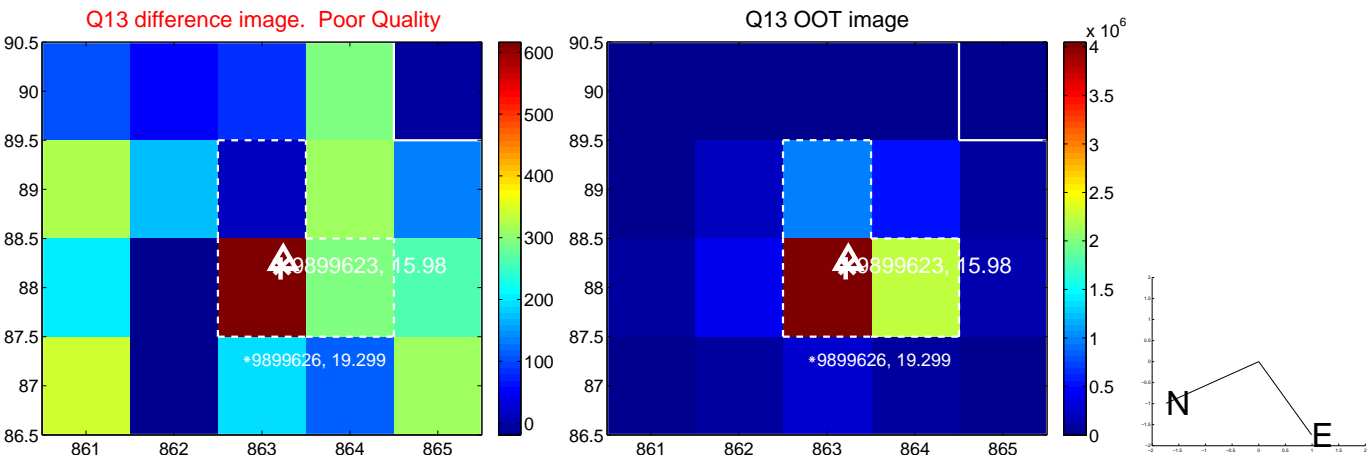




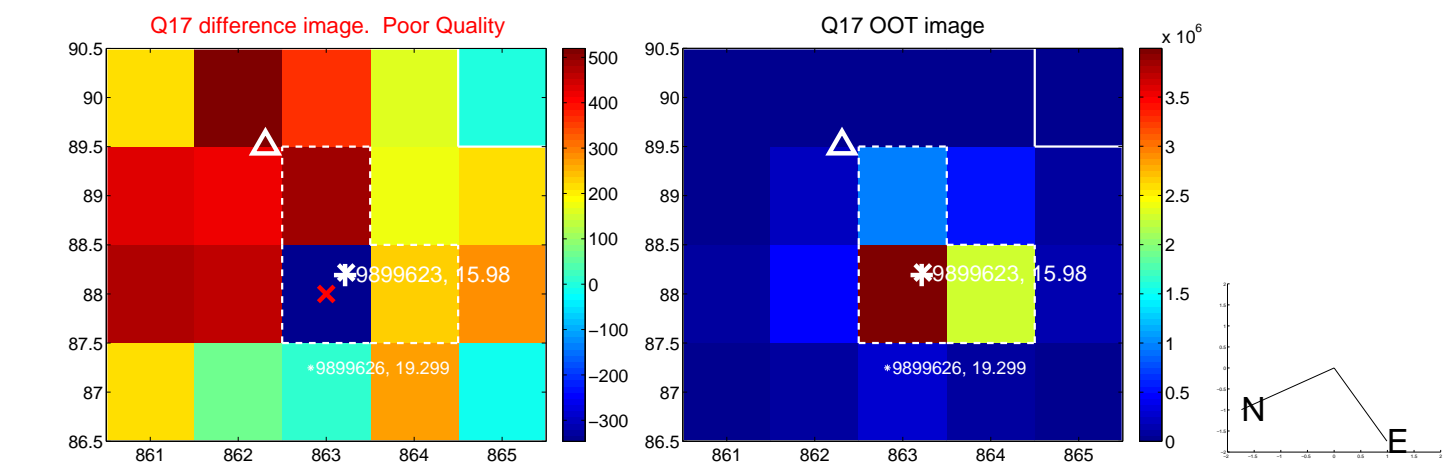
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



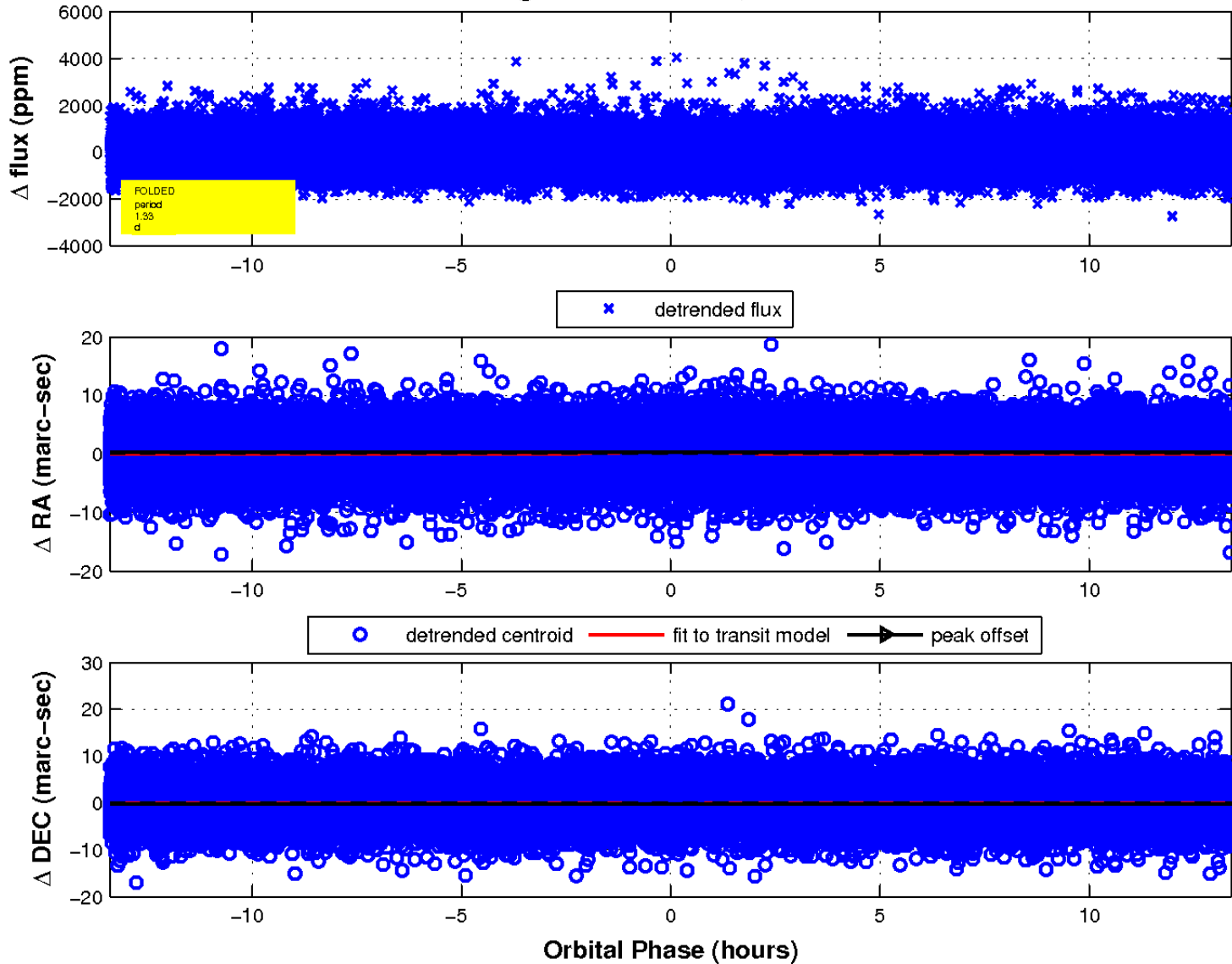
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

