

# KIC 009896610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009896610-01	OBS	No	3.730857	134.602101	20.2	20.836	7.8	7.4	1.00	6359	0.48	673.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009896610-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV

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

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

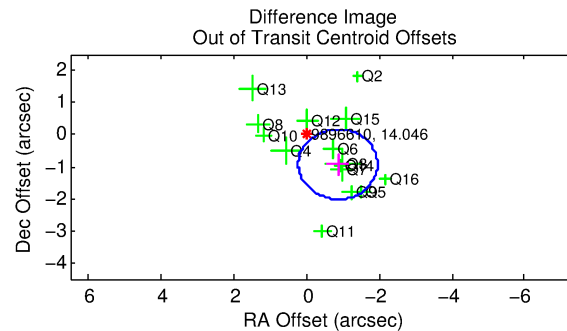
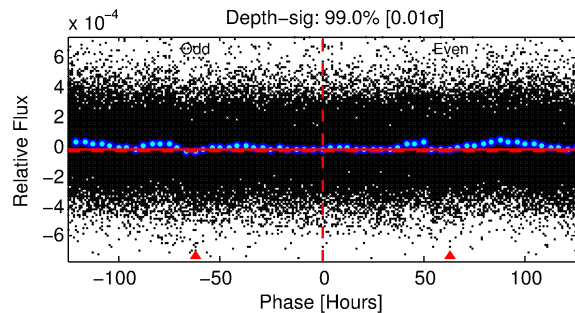
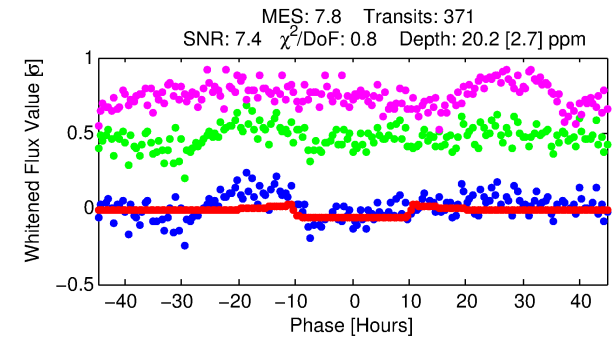
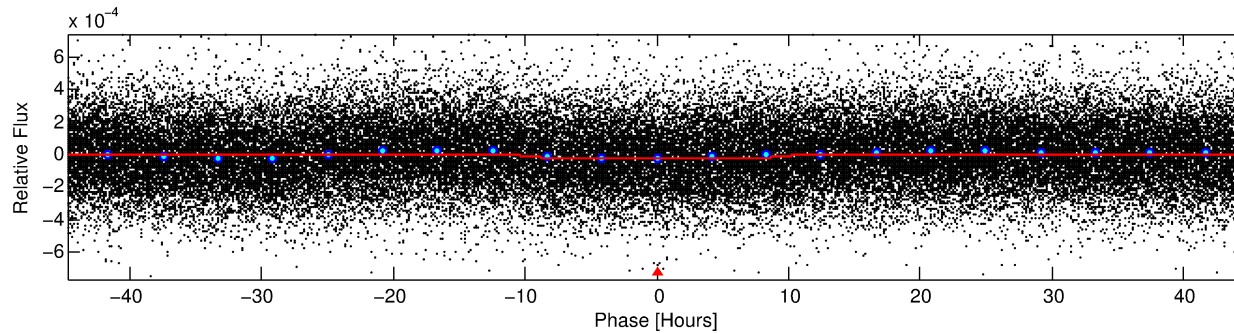
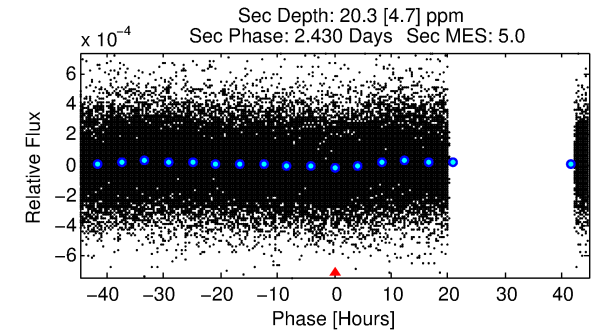
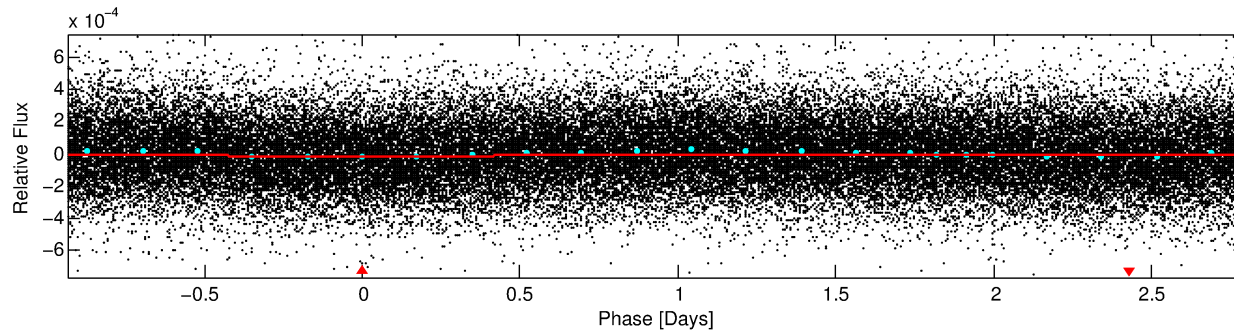
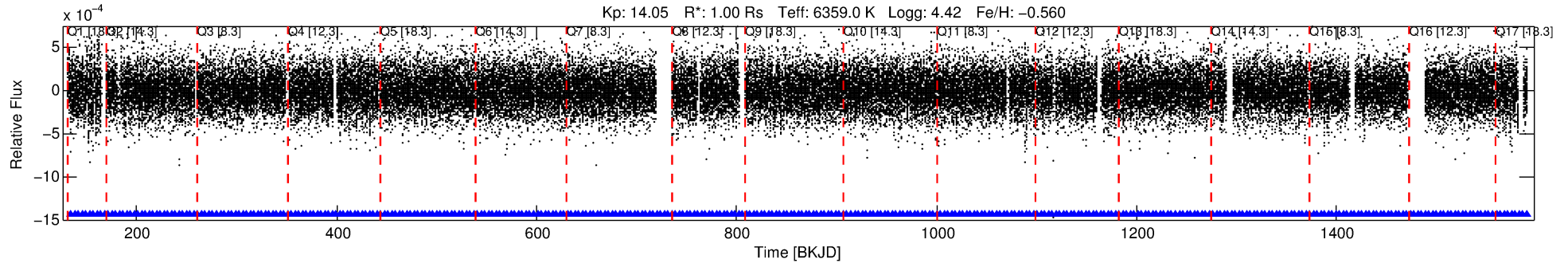
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009896610-01

No Significant Match Found

# DV One-Page Summary

KIC: 9896610 Candidate: 1 of 1 Period: 3.731 d



## DV Fit Results:

Period = 3.73086 [0.00009] d  
Epoch = 134.6021 [0.0165] BKJD  
Rp/R\* = 0.0045 [0.0018]  
a/R\* = 1.25 [1.00]  
b = 0.74 [1.31]  
Seff = 673.30 [244.61]  
Teff = 1299 [118] K  
Rp = 0.49 [0.24] Re  
a = 0.0465 [0.0110] AU  
Ag = 102.41 [90.66] [1.12σ]  
Teffp = 6389 [1323] K [3.83σ]

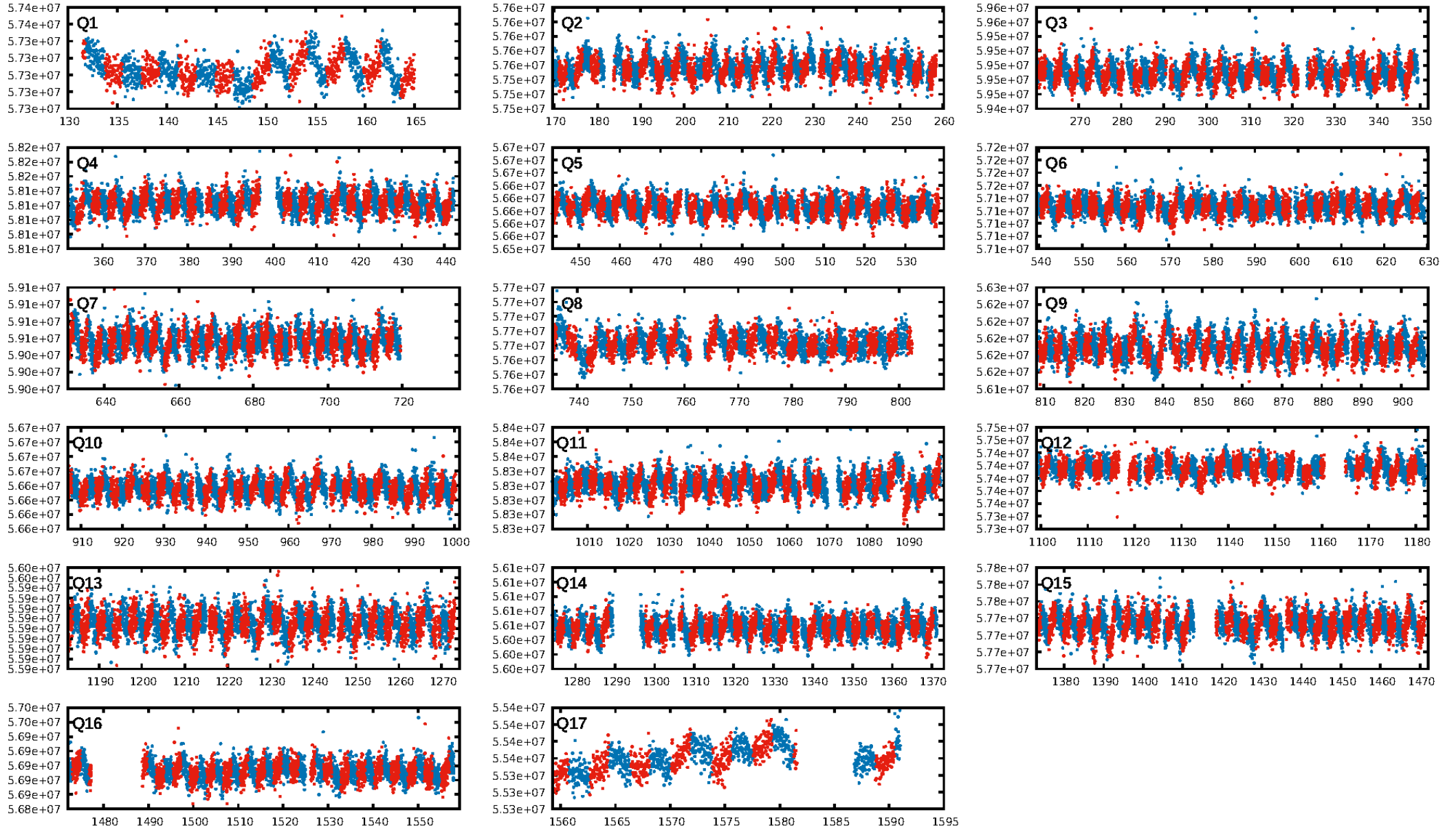
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.76e-18  
RollingBand-fgt: 1.00 [355/355]  
GhostDiagnostic-chr: 9.367  
Centroid-sig: 71.8%  
Centroid-so: 0.675 arcsec [0.54σ]  
OotOffset-rm: 1.267 arcsec [3.49σ]  
KicOffset-rm: 1.228 arcsec [3.20σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.93 [14/15]  
DiffImageOverlap-fno: 1.00 [17/17]

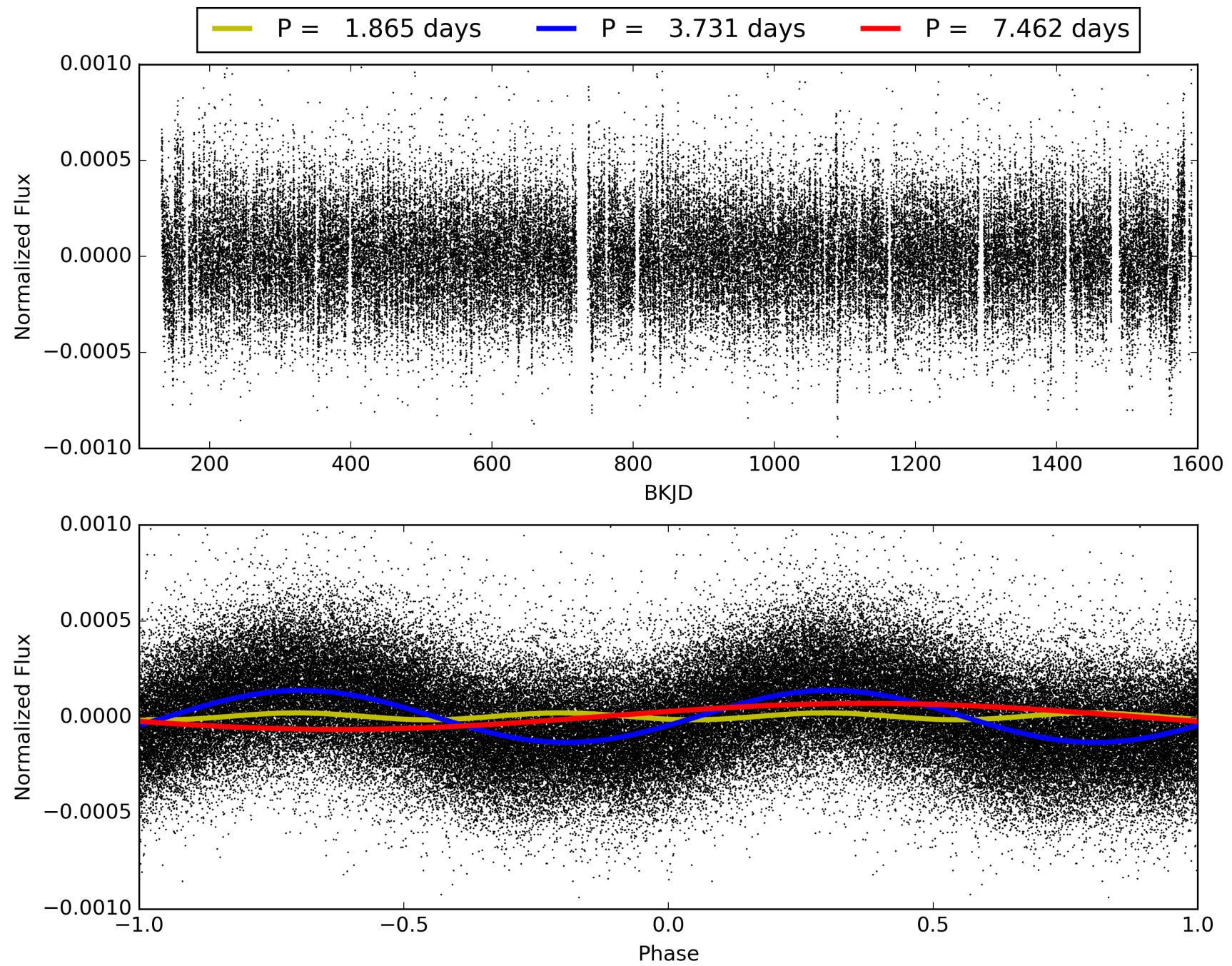
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:29:36 Z

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

# TCE 009896610-01, PDC Light Curves



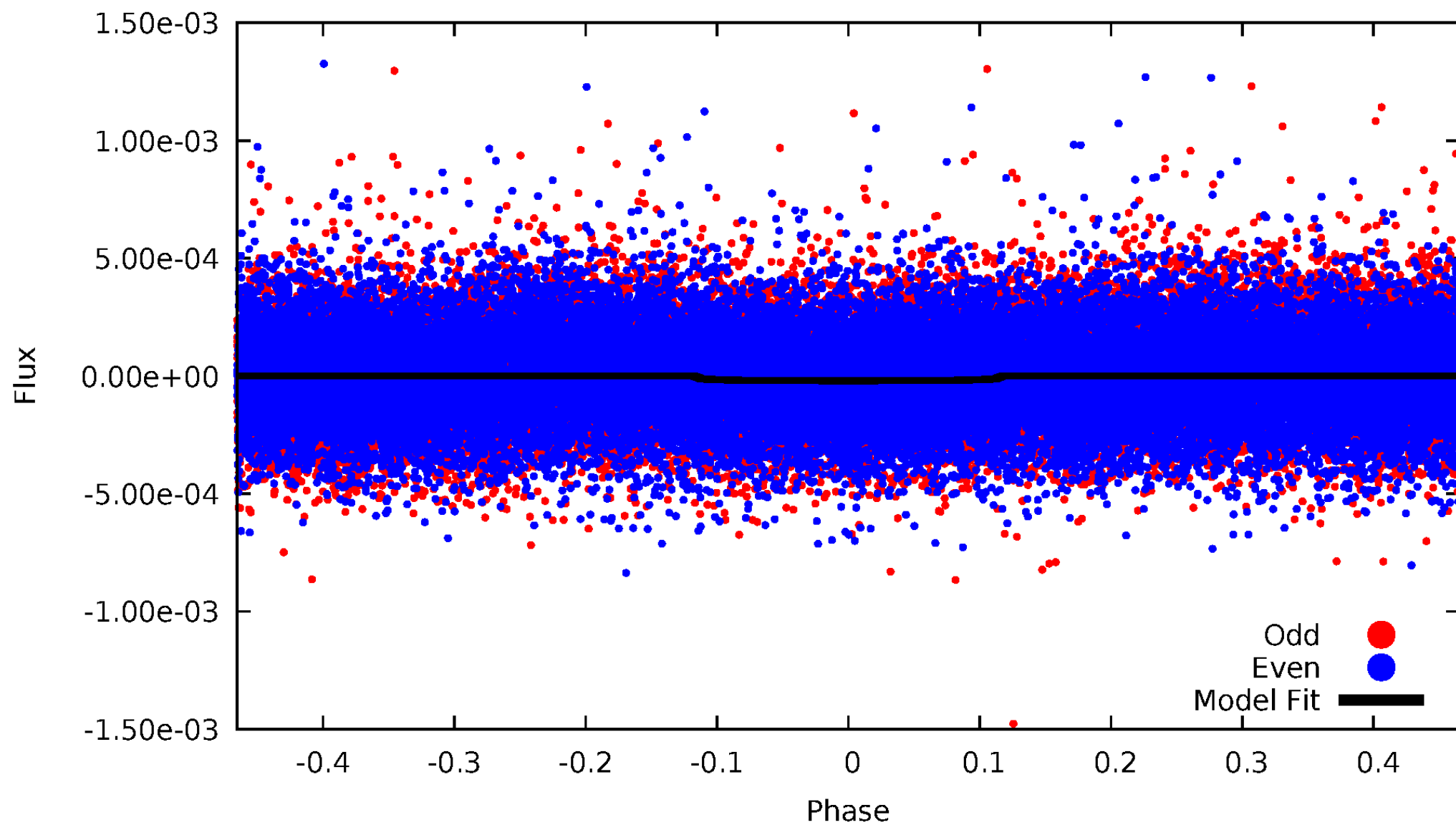
TCE 009896610-01





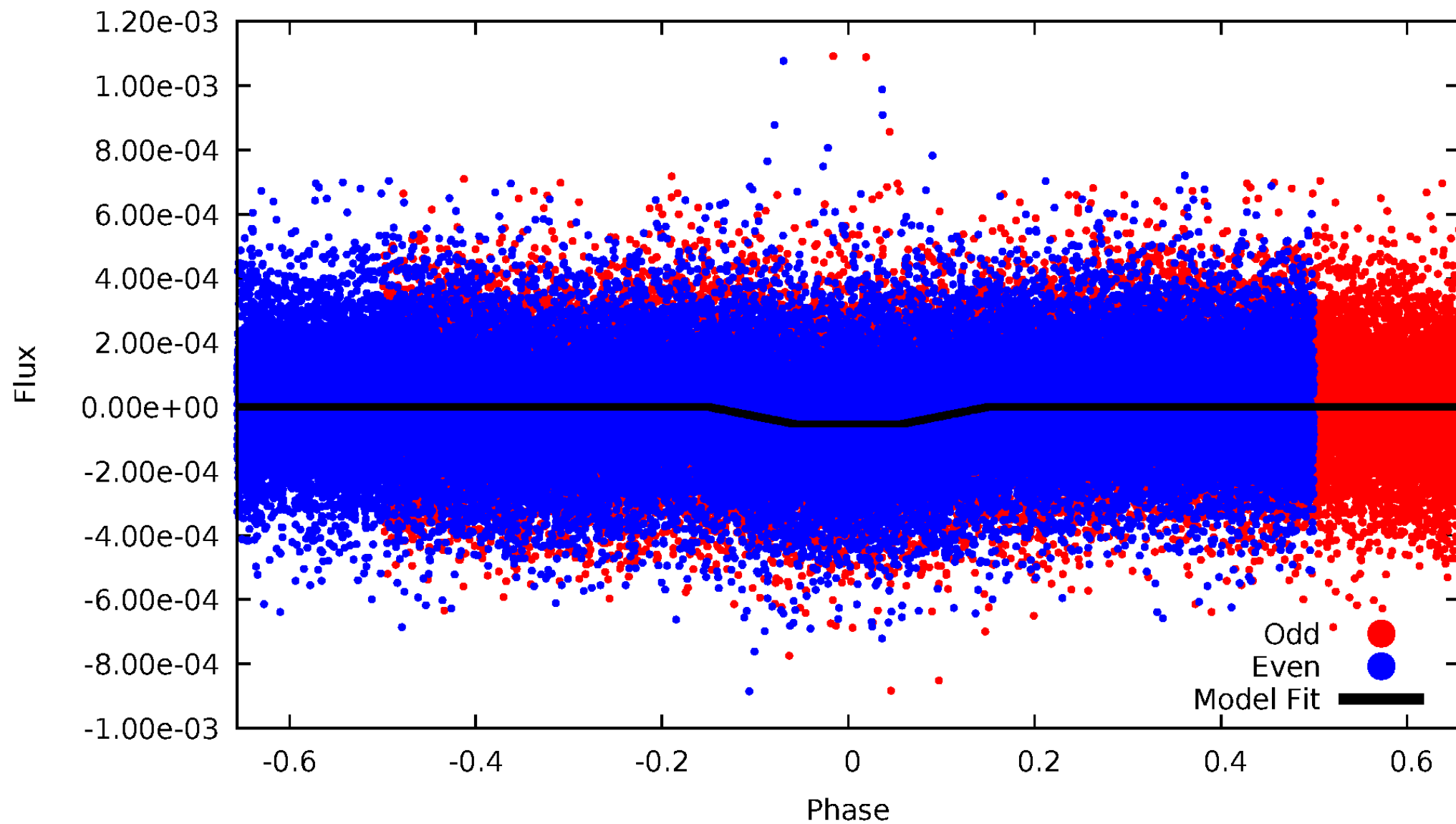
# DV Odd/Even

TCE 009896610-01

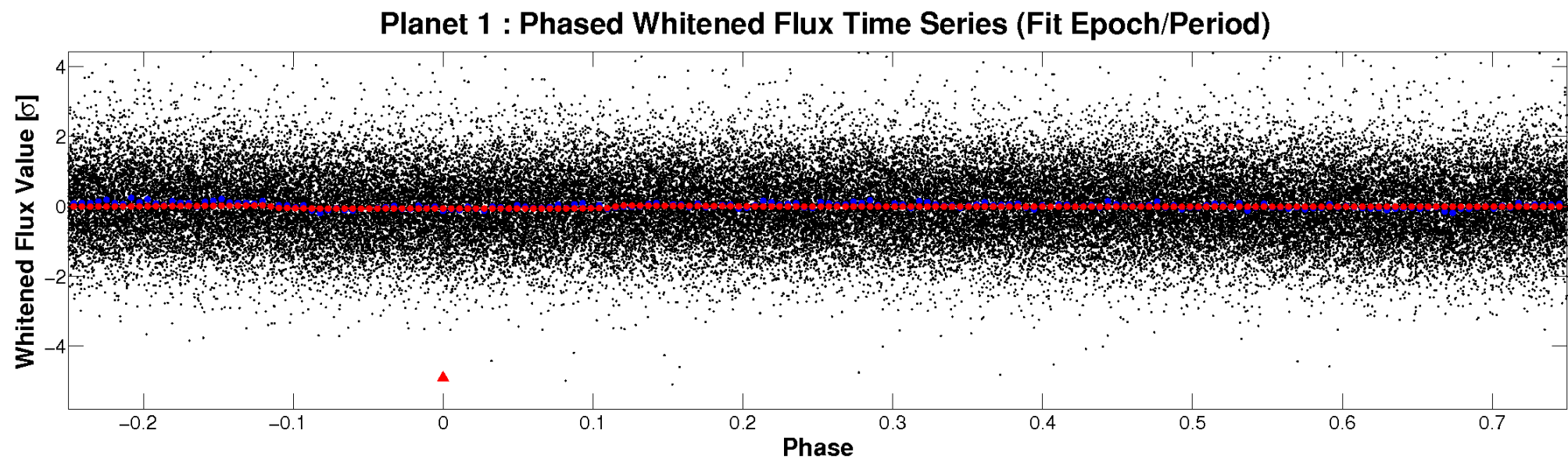
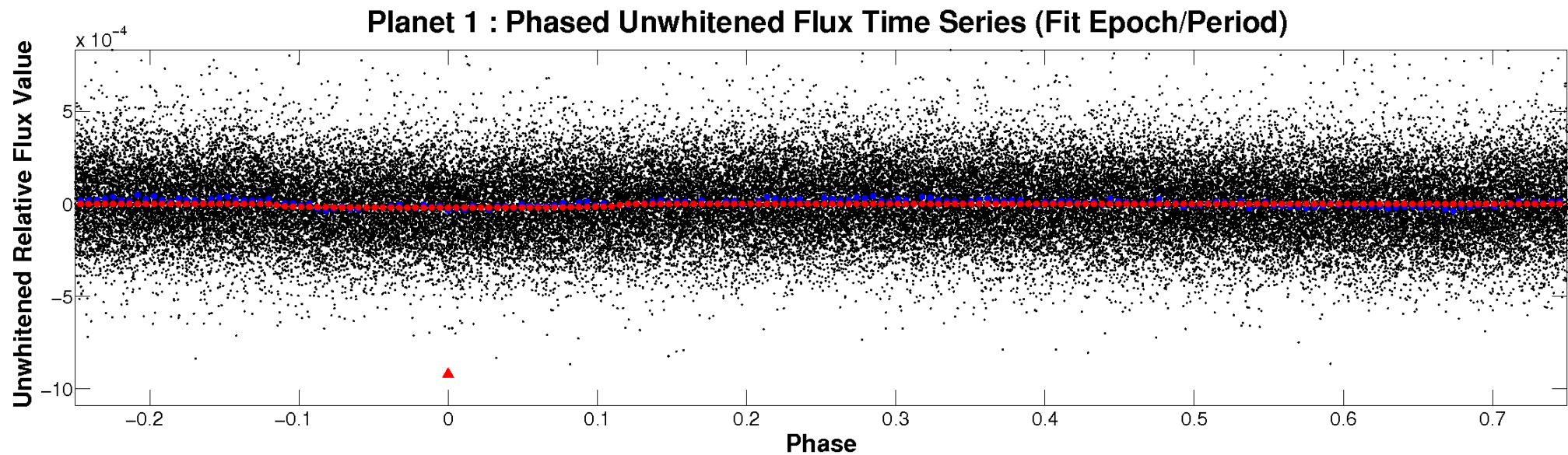


# ALT Odd/Even

TCE 009896610-01

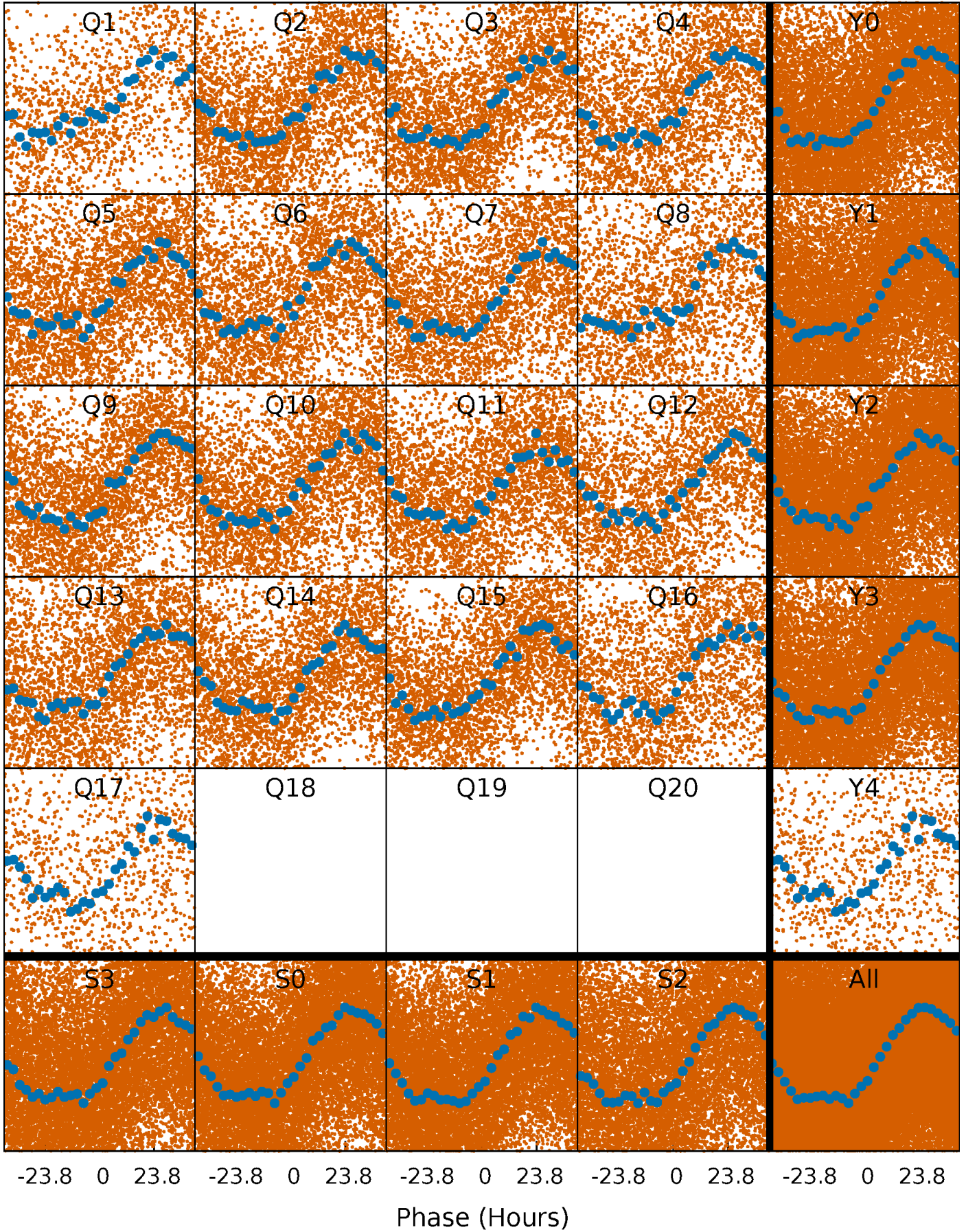


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

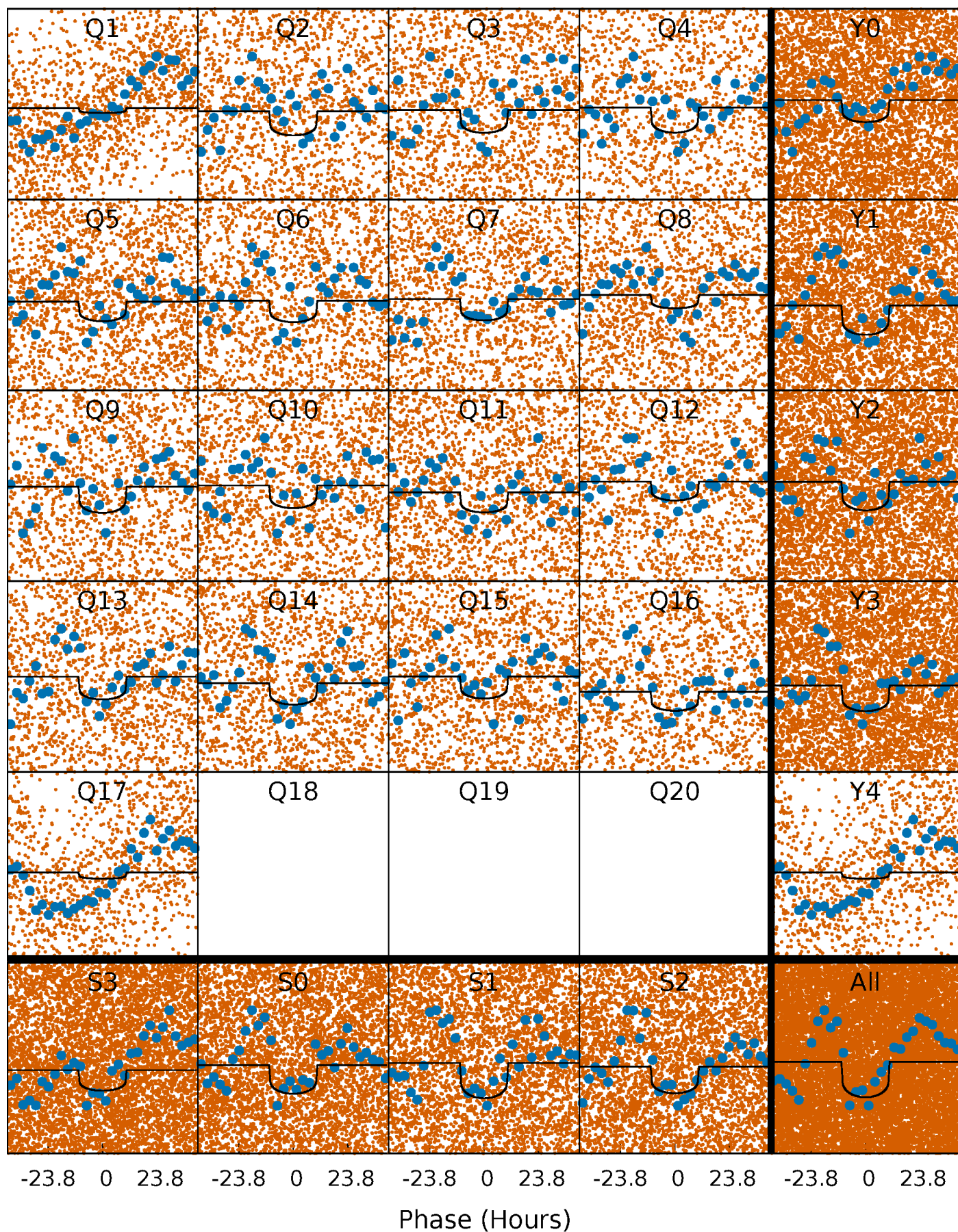
TCE 009896610-01 P= 3.730857 Days  $T_0=134.602101$  (BKJD)





# DV Quarter-Phased Transit Curves

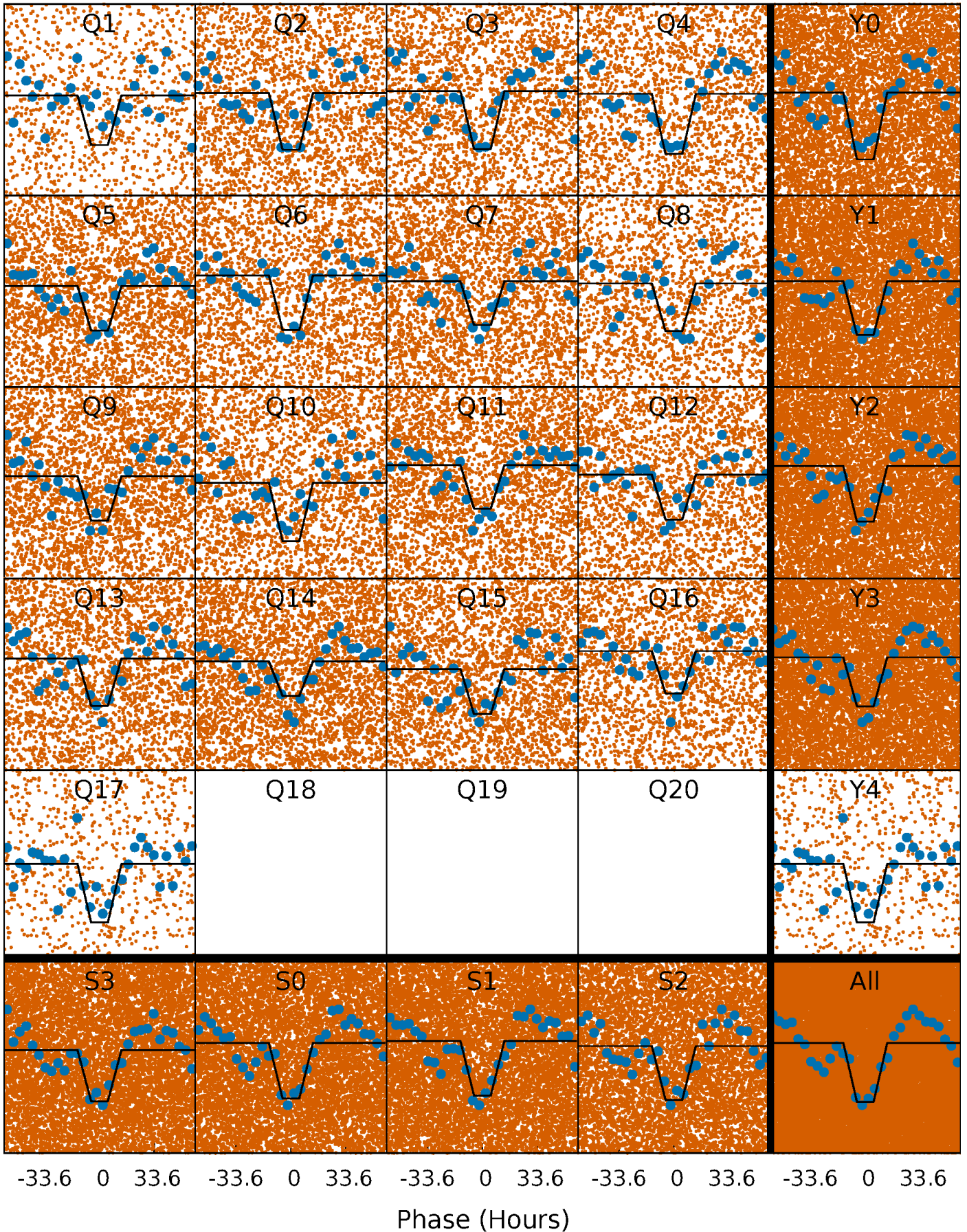
TCE 009896610-01 P= 3.730857 Days  $T_0=134.602101$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

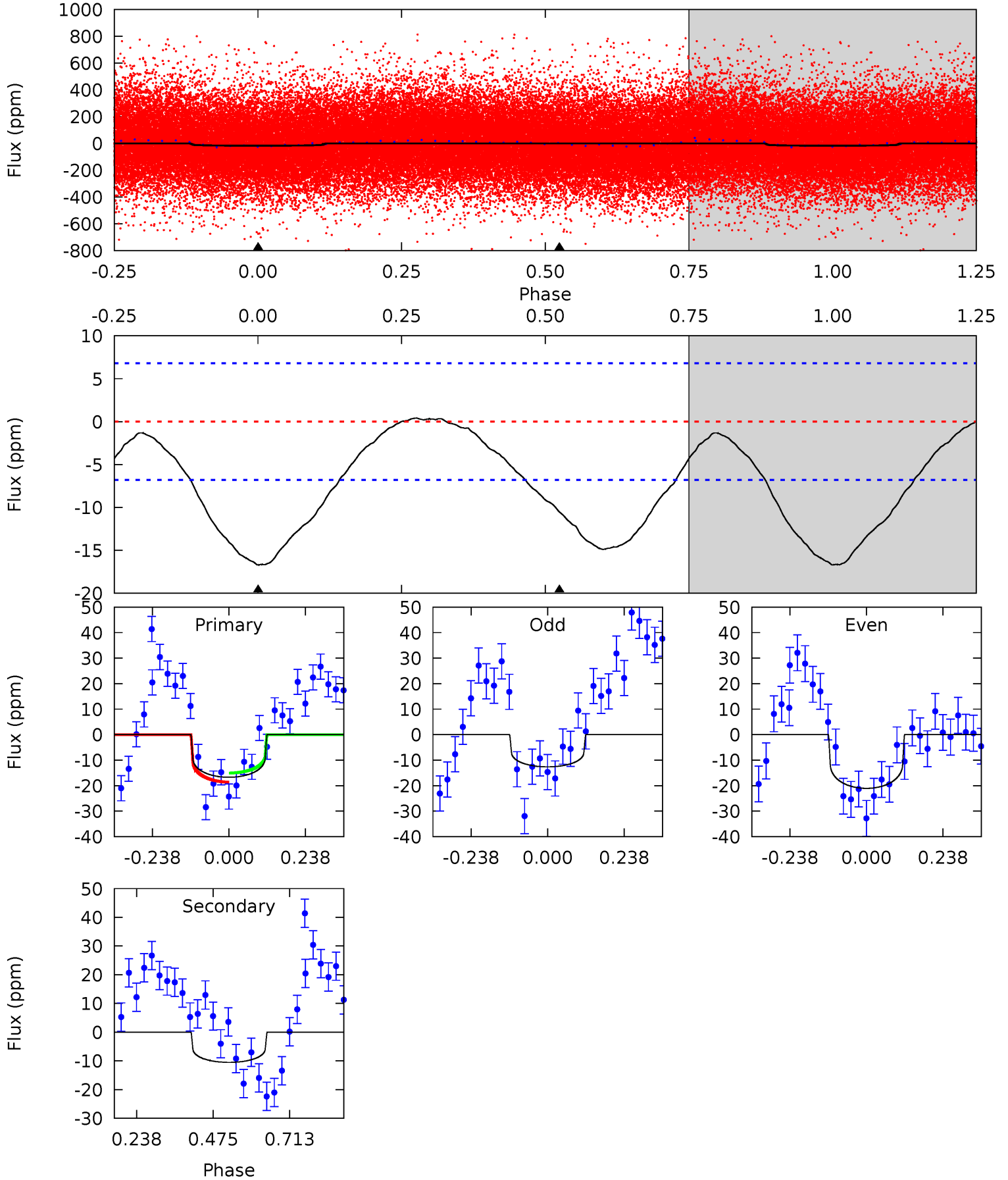
TCE 009896610-01 P= 3.730529 Days  $T_0=134.553165$  (BKJD)



# DV Model-Shift Uniqueness Test

009896610-01, P = 3.730857 Days, E = 130.871244 Days

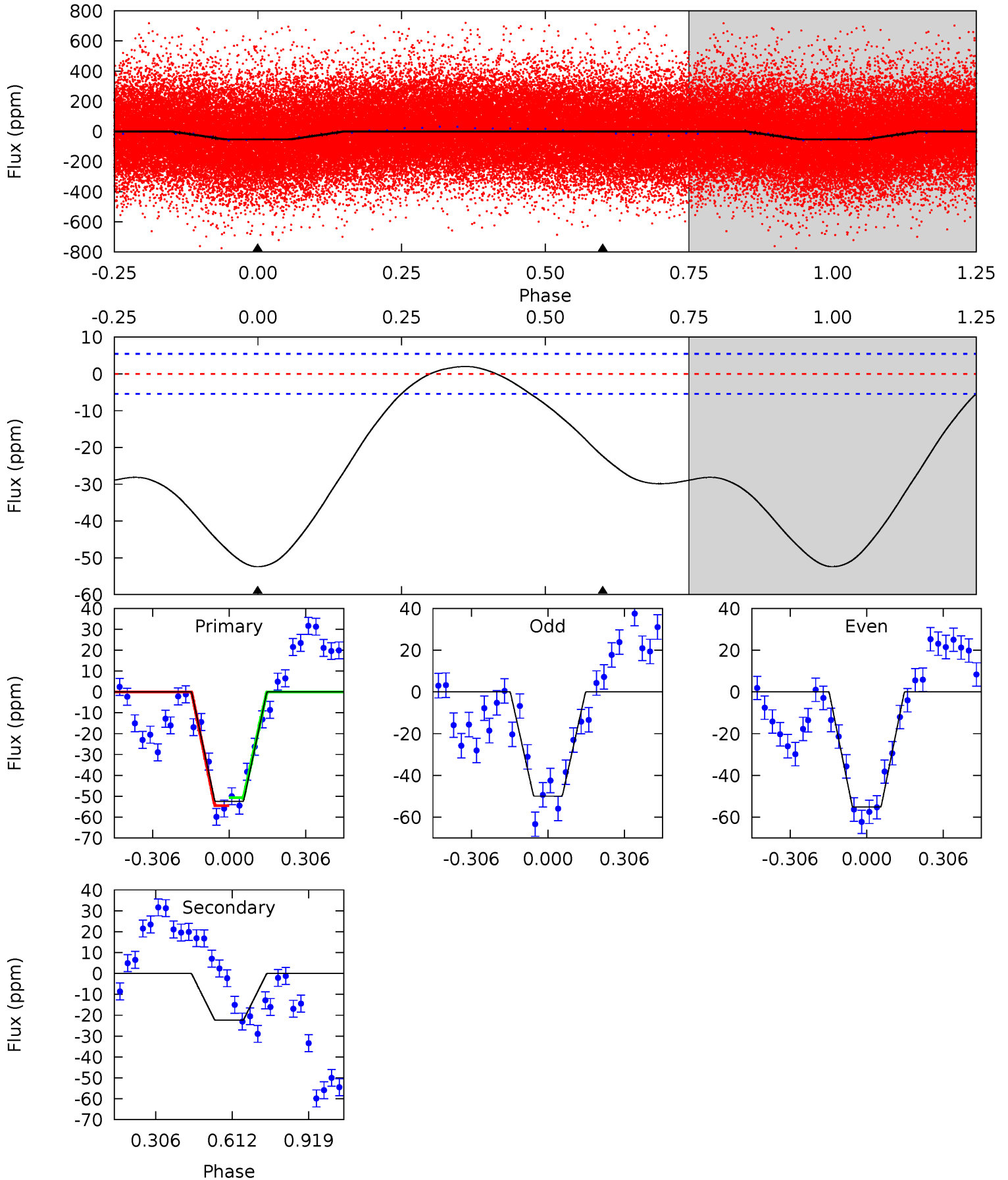
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	6.78	0	0	4.38	1.18	0.96	10.8	10.8	6.78	6.78	2.74	1.21	0.02	1.17



# Alt Model-Shift Uniqueness Test

009896610-01, P = 3.730529 Days, E = 130.822636 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
41.7	17.8	0	0	4.32	1.02	1.74	41.7	41.7	17.8	17.8	2.06	0.96	0.04	1.52





### Stellar Parameters For KIC 009896610

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6359^{+171}_{-209}$	$4.424^{+0.084}_{-0.182}$	$-0.560^{+0.300}_{-0.300}$	$0.996^{+0.286}_{-0.123}$	$0.959^{+0.118}_{-0.107}$	$1.370^{+0.576}_{-0.695}$
	+3%/-3%	+2%/-4%	+54%/-54%	+29%/-12%	+12%/-11%	+42%/-51%
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 009896610-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-11 \pm 2$	$0.50^{+0.21}_{-0.20}$	$1824^{+127}_{-93}$	$5374^{+1477}_{-722}$	$49^{+83}_{-24}$
Alt.	$-22 \pm 1$	$0.82^{+0.21}_{-0.21}$	$1831^{+123}_{-88}$	$5184^{+710}_{-489}$	$40^{+31}_{-15}$

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

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

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

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

## DV Centroid Data

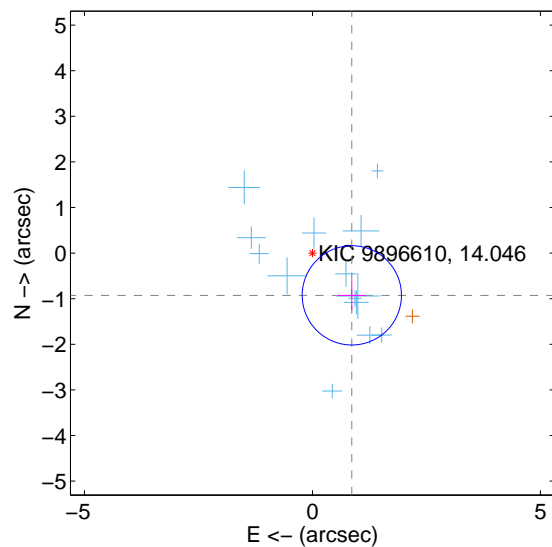
Supplemental centroid analysis for 009896610-01. Kepler magnitude: 14.05. Transit SNR 7.38

There are 14 quarters with good PRF difference image offsets

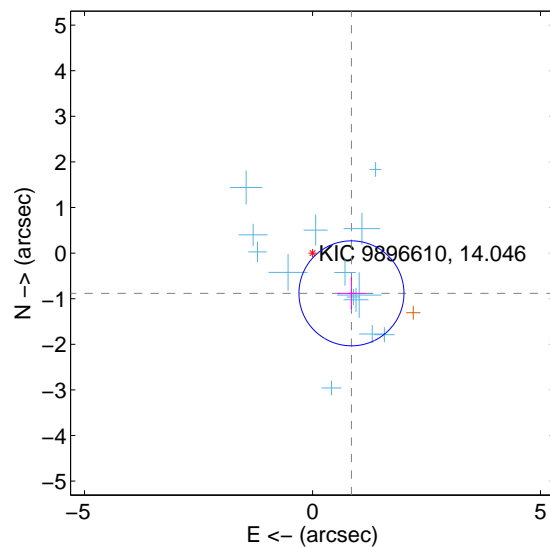
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.267 \pm 0.363$	3.49	$-0.863 \pm 0.305$	$-0.927 \pm 0.322$
PRF-fit source offset from KIC position	$1.228 \pm 0.384$	3.20	$-0.854 \pm 0.302$	$-0.882 \pm 0.352$
photometric centroid source offset	$0.67 \pm 1.25$	0.54	$0.26 \pm 1.12$	$0.62 \pm 1.27$

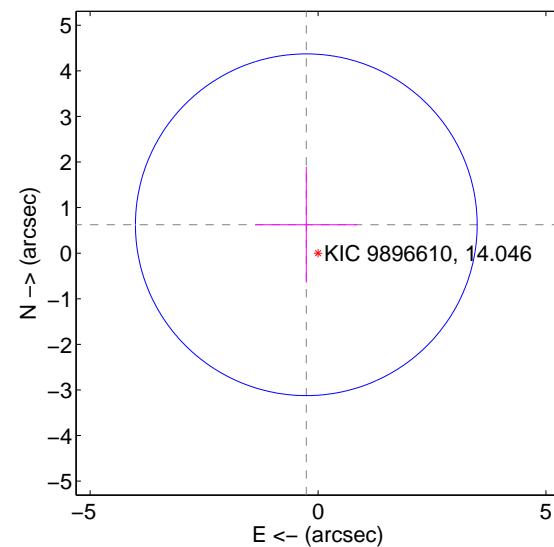
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

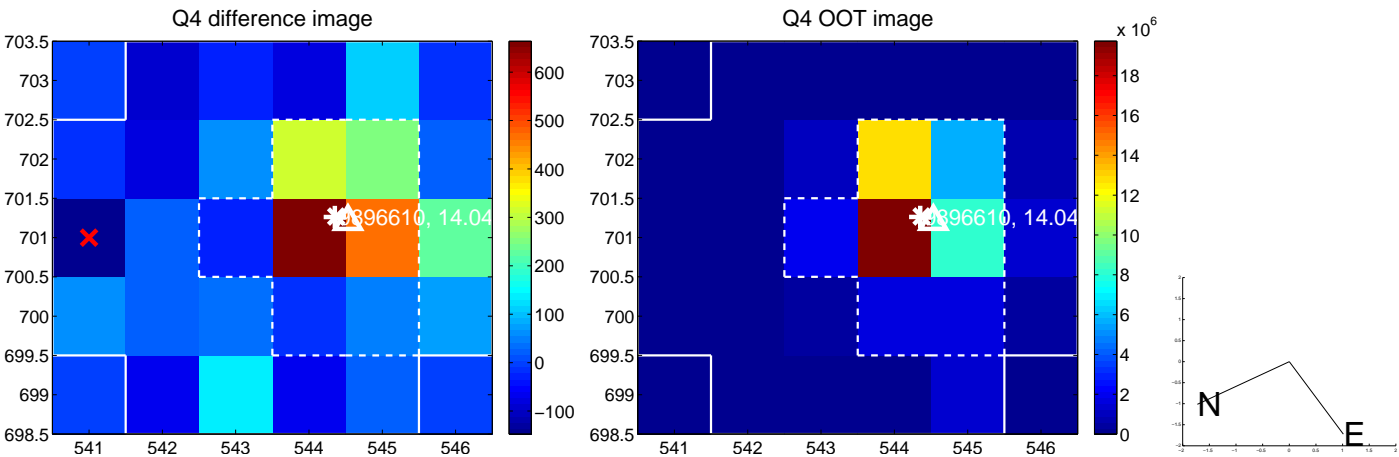
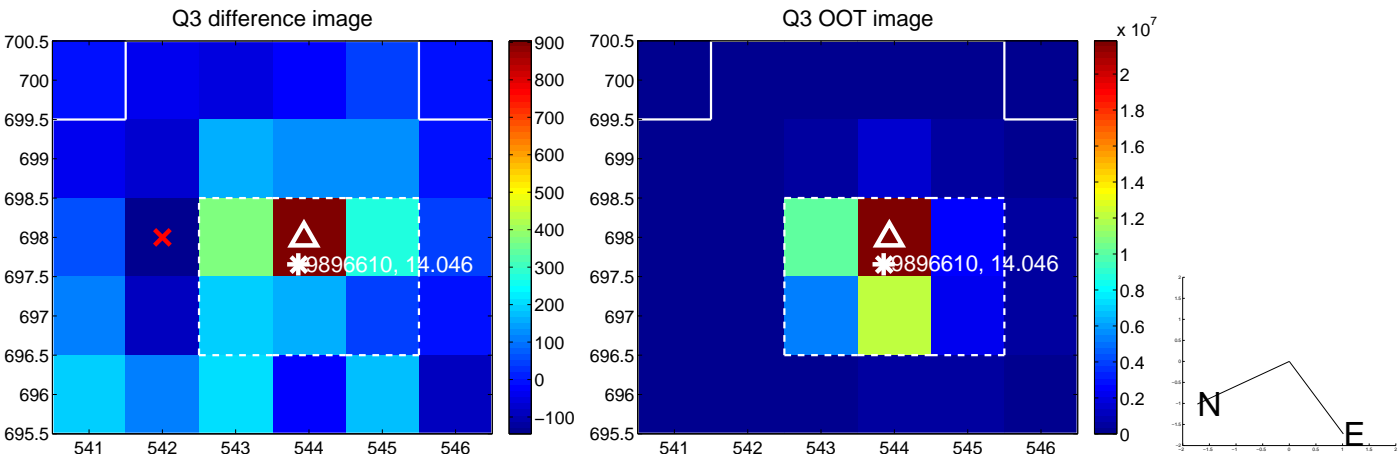
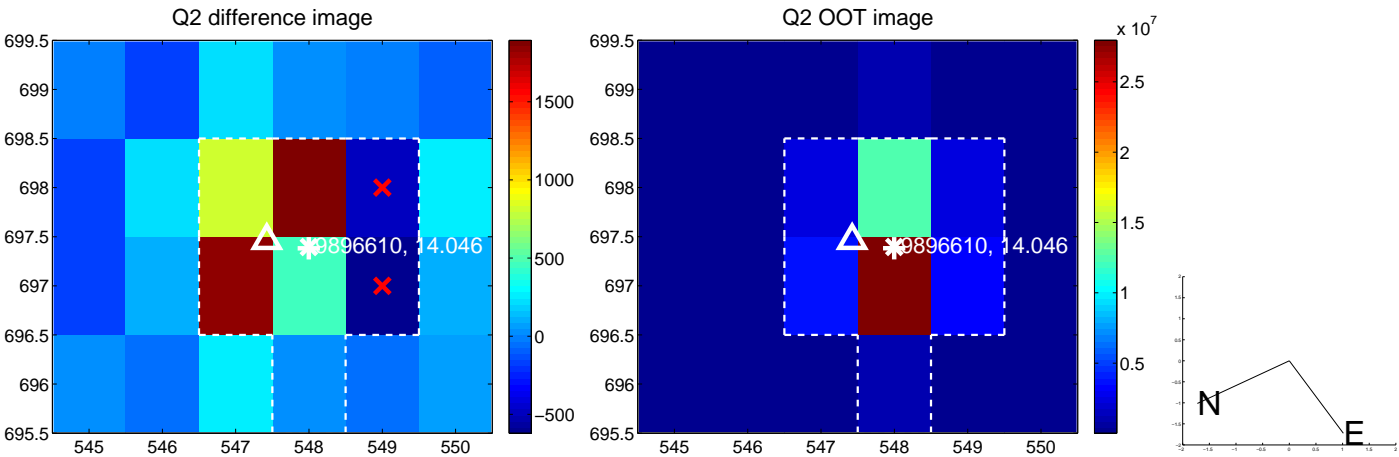
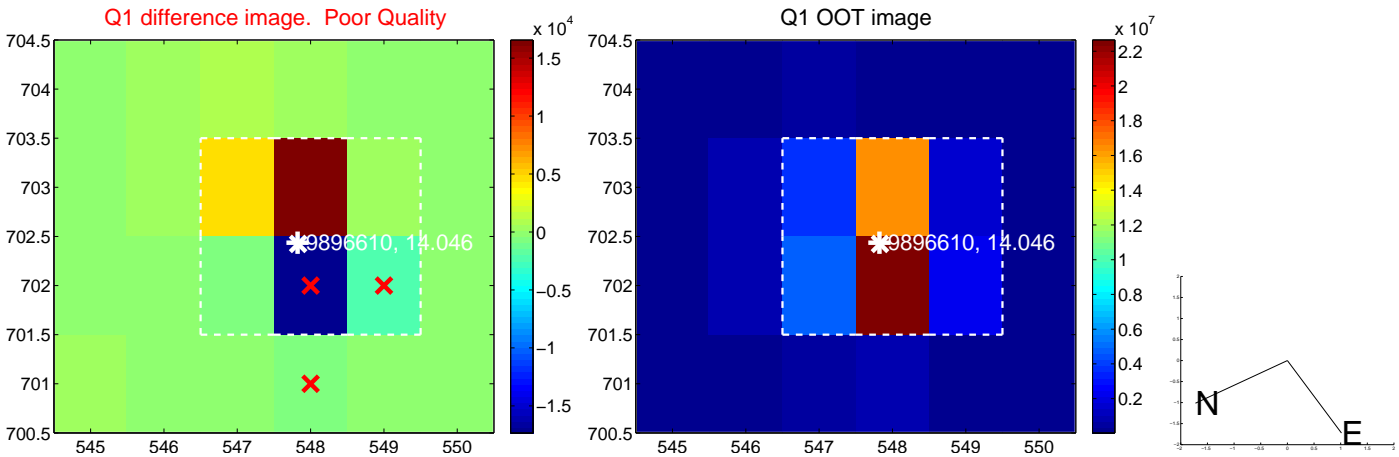


offset from photometric centroids

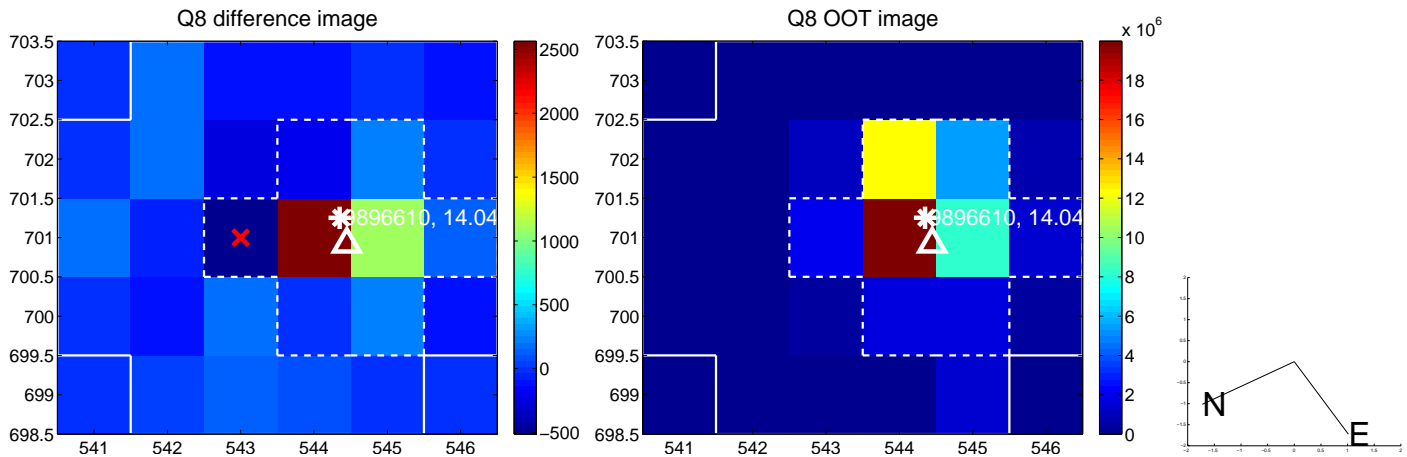
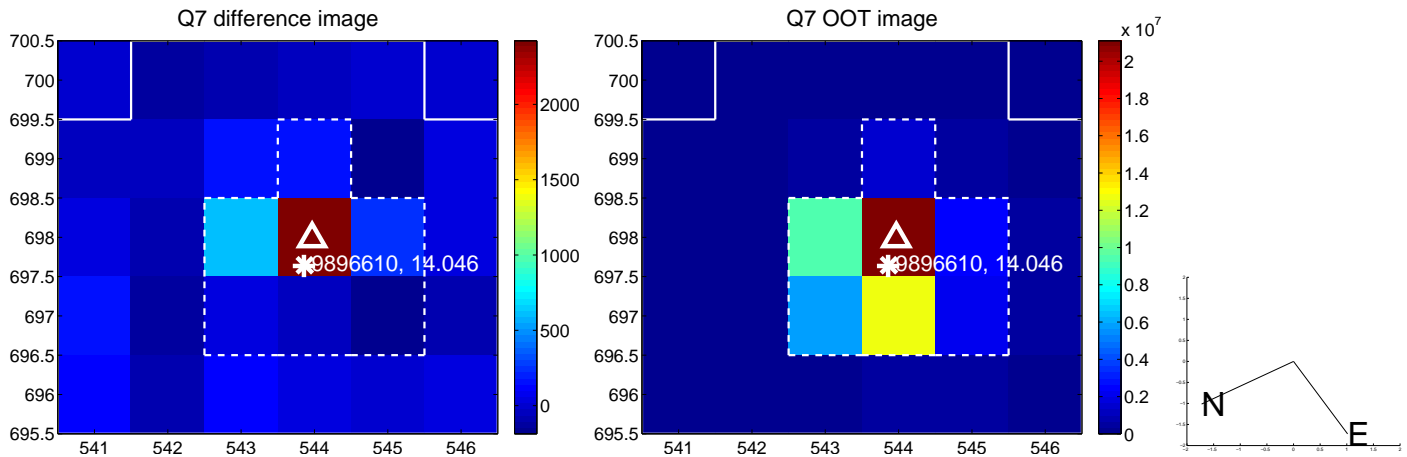
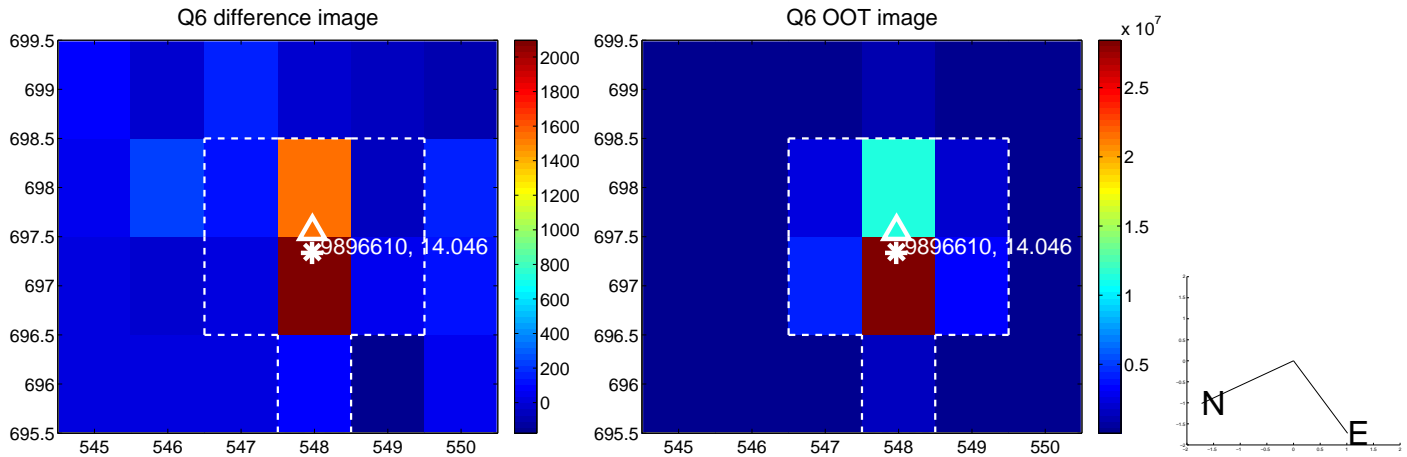
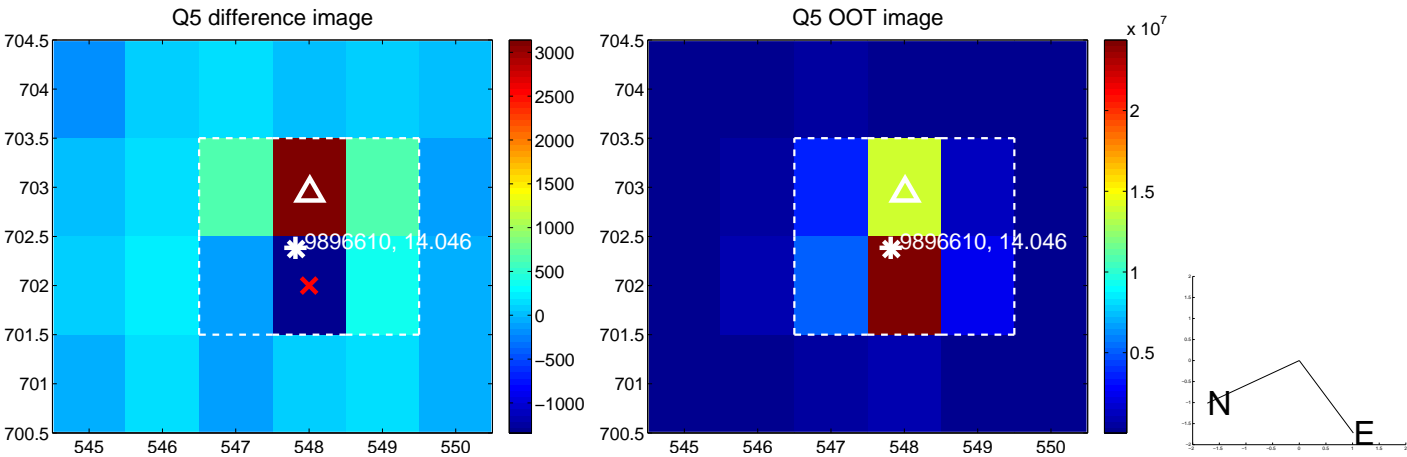


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

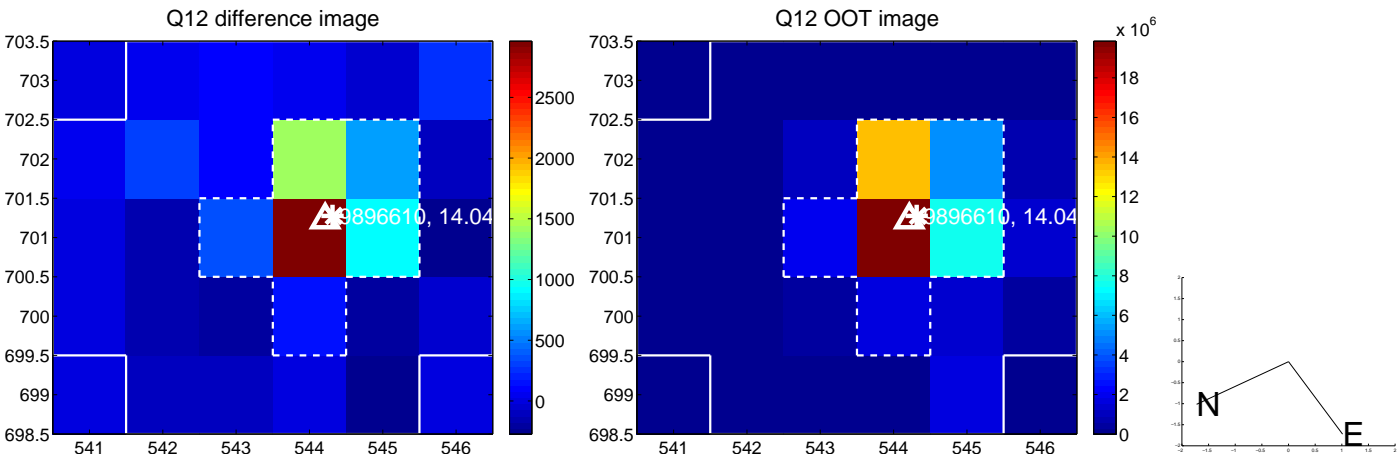
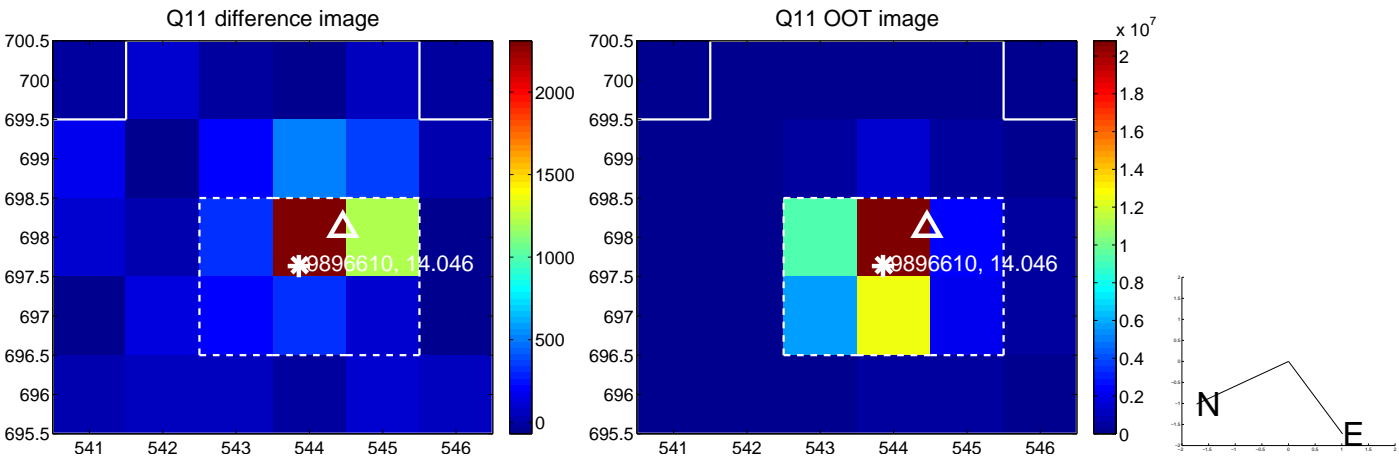
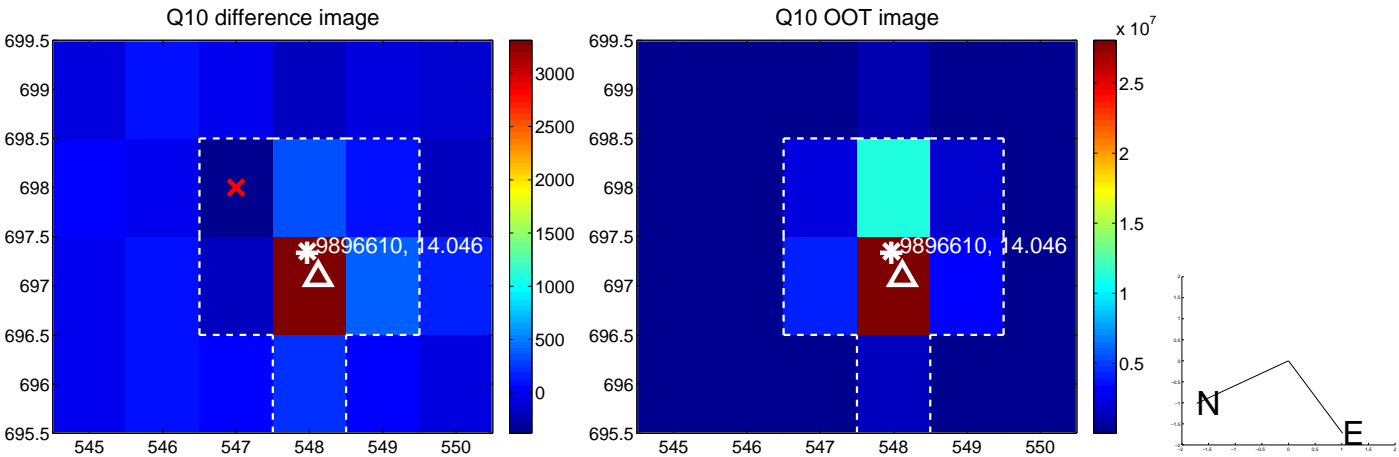
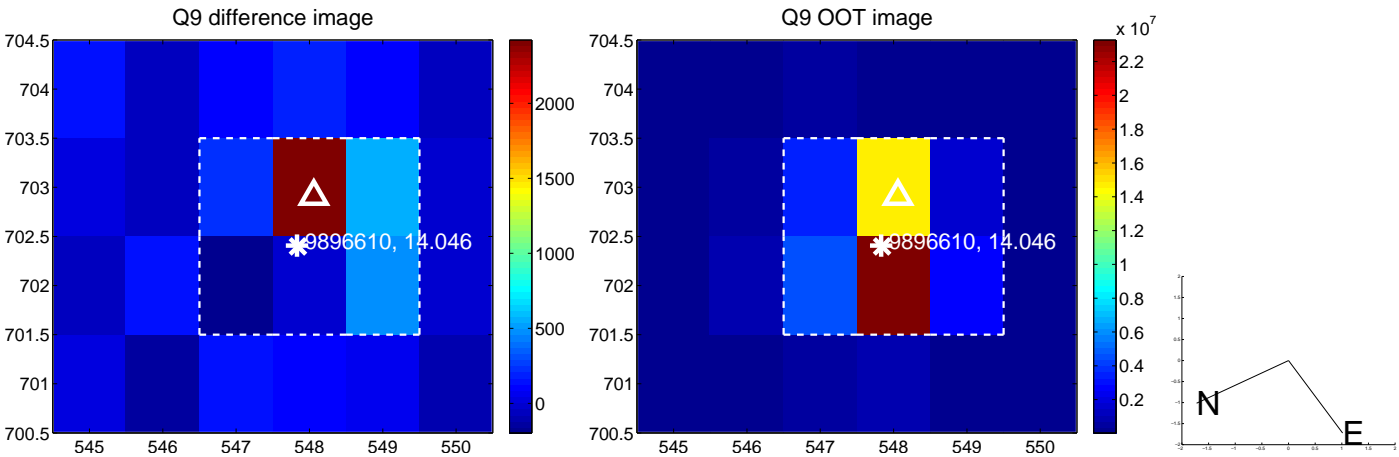


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

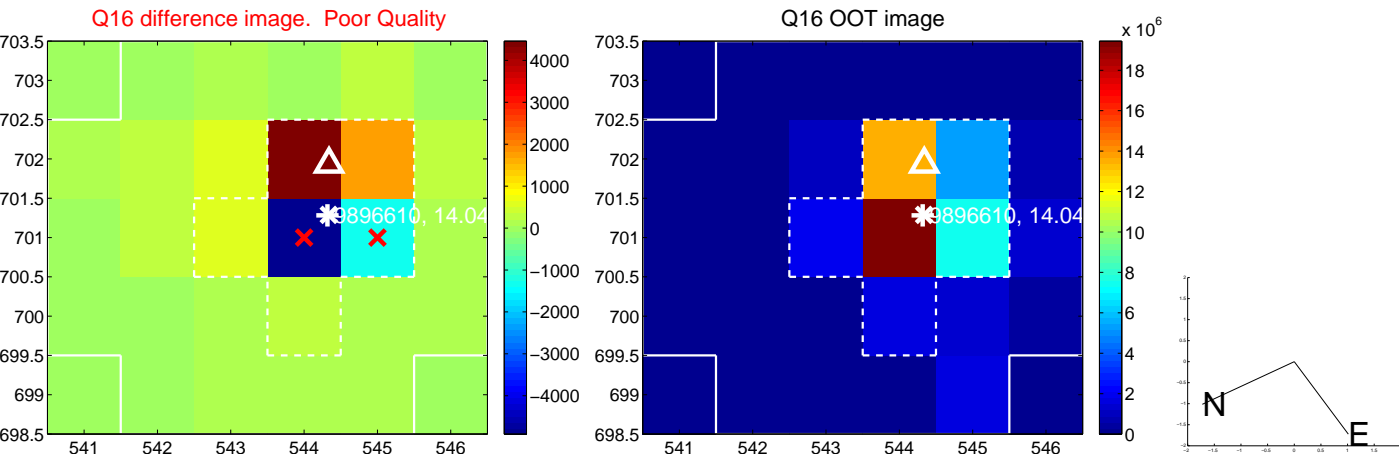
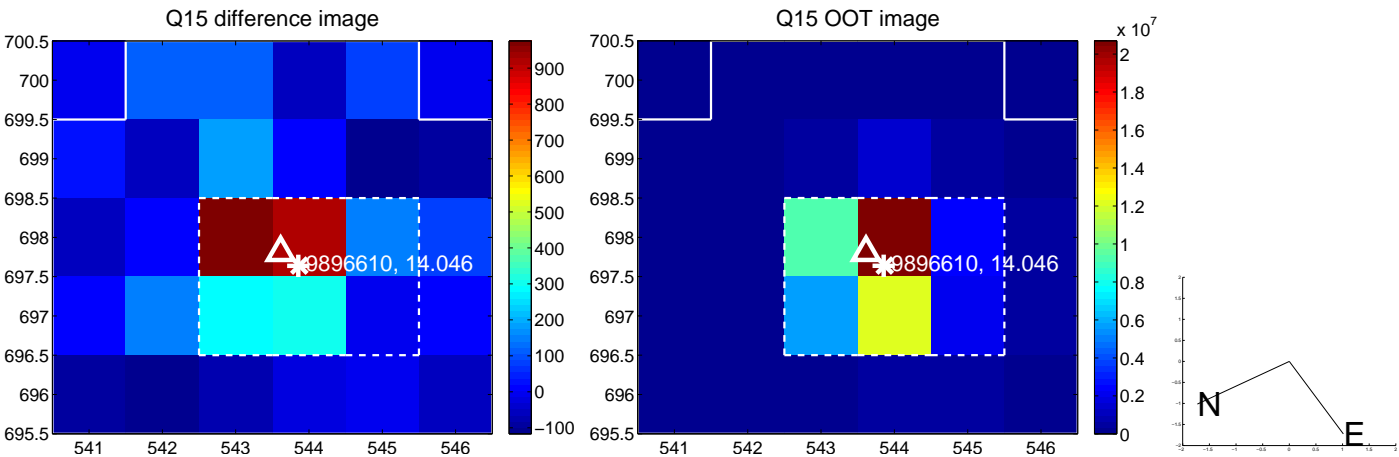
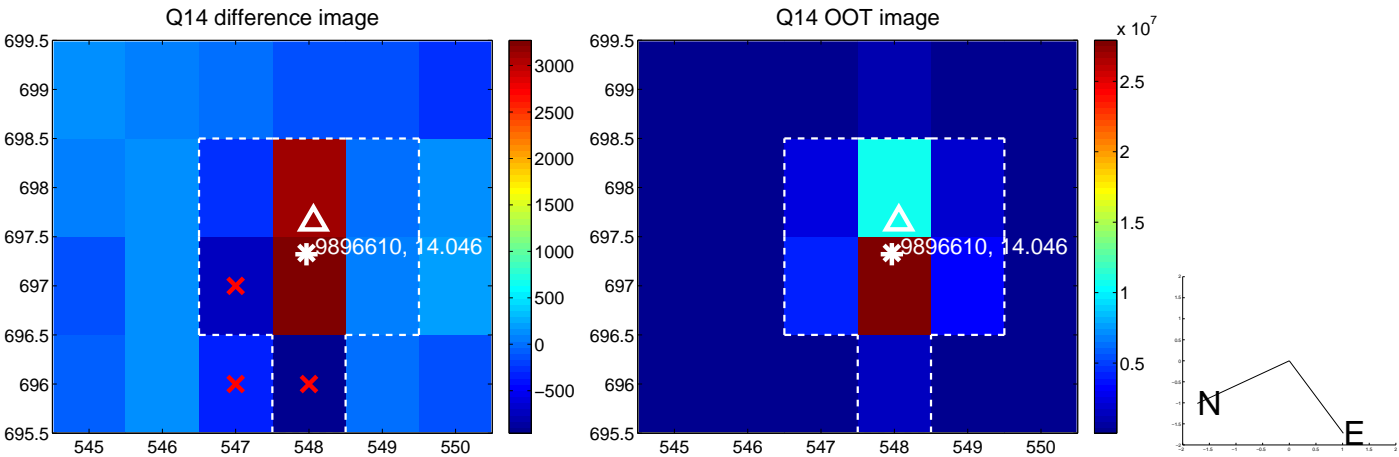
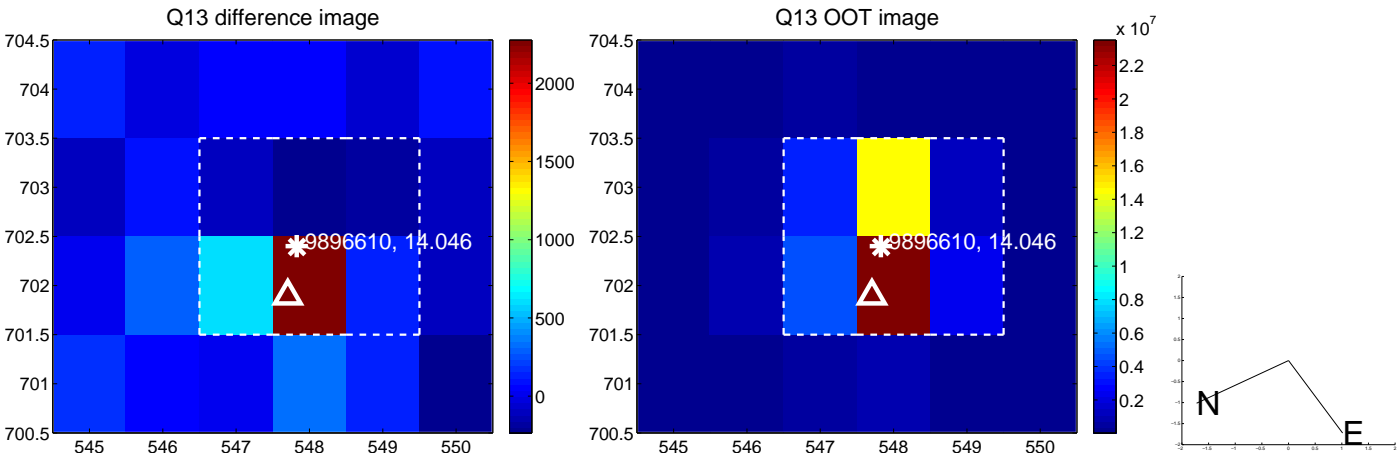




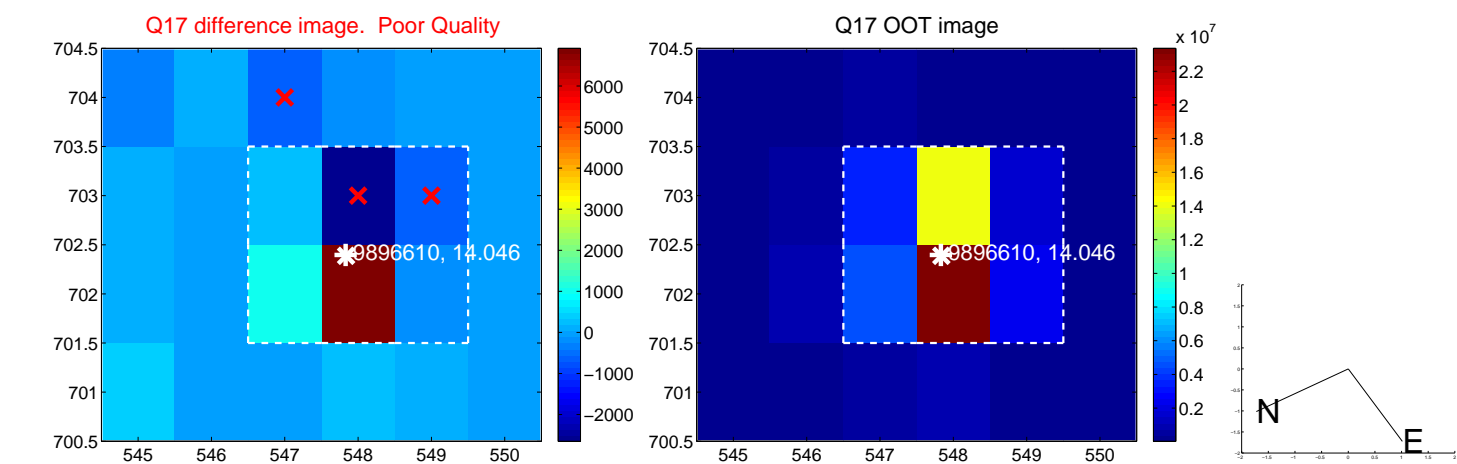
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



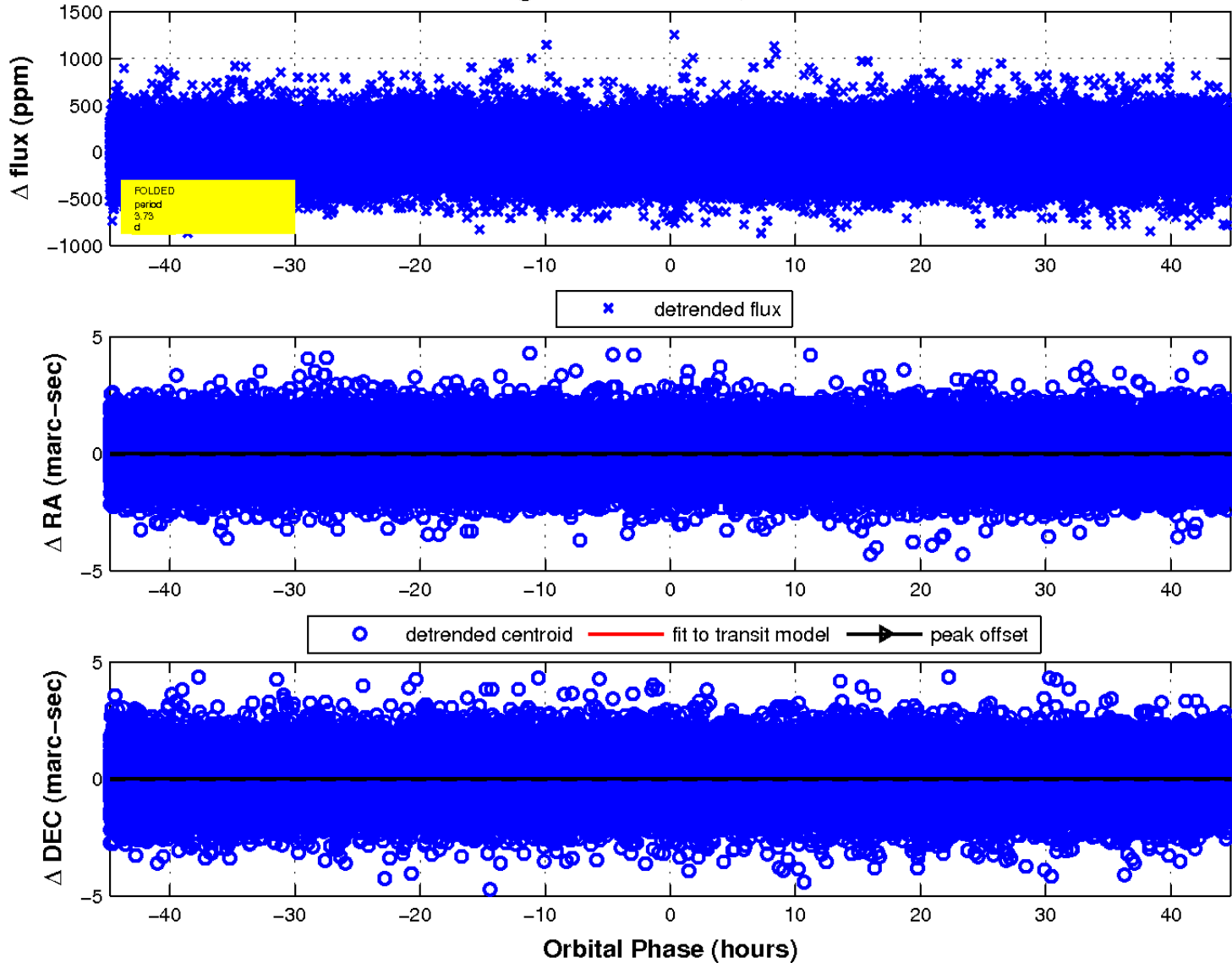
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

