

# KIC 009973855

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009973855-01	OBS	1966.01	2.956010	134.062621	74.2	2.775	28.6	32.2	0.92	5668	0.98	509.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009973855-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET

**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.

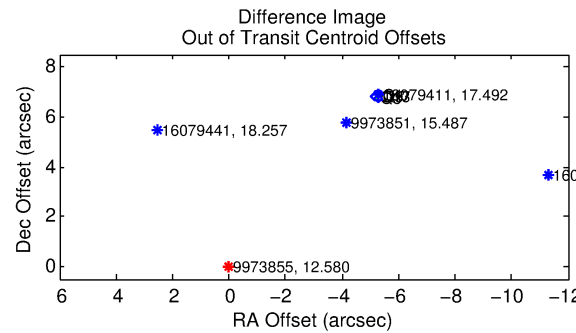
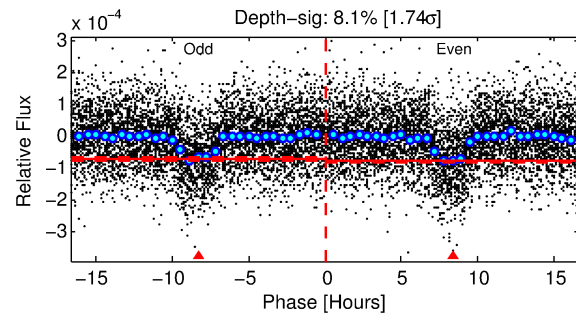
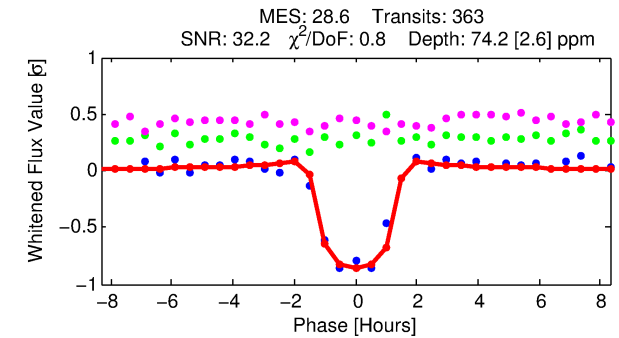
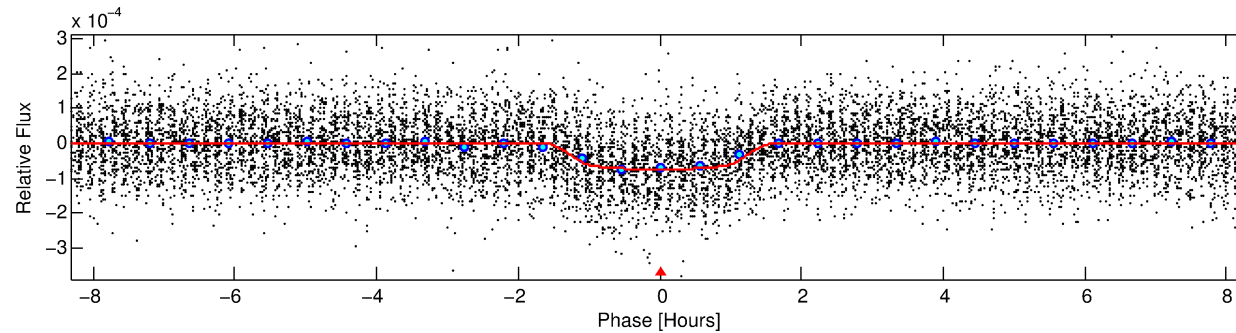
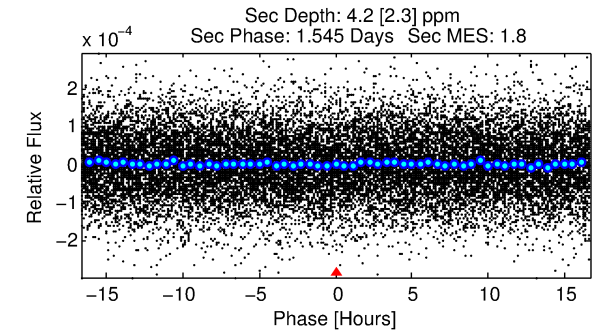
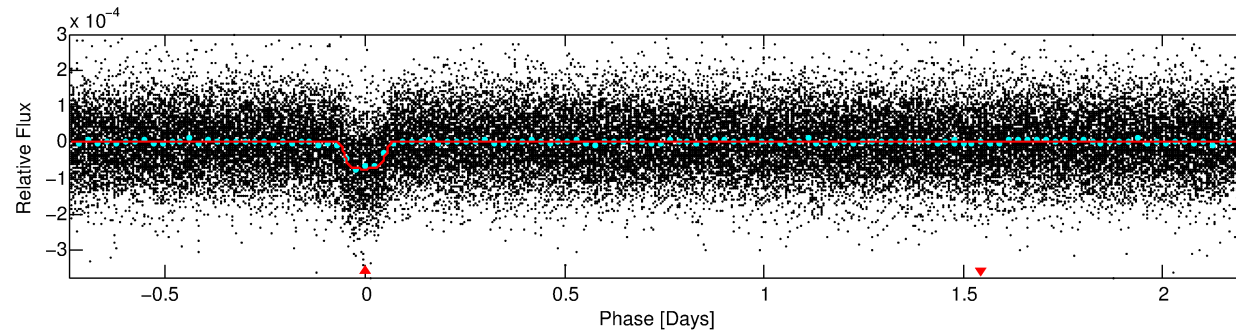
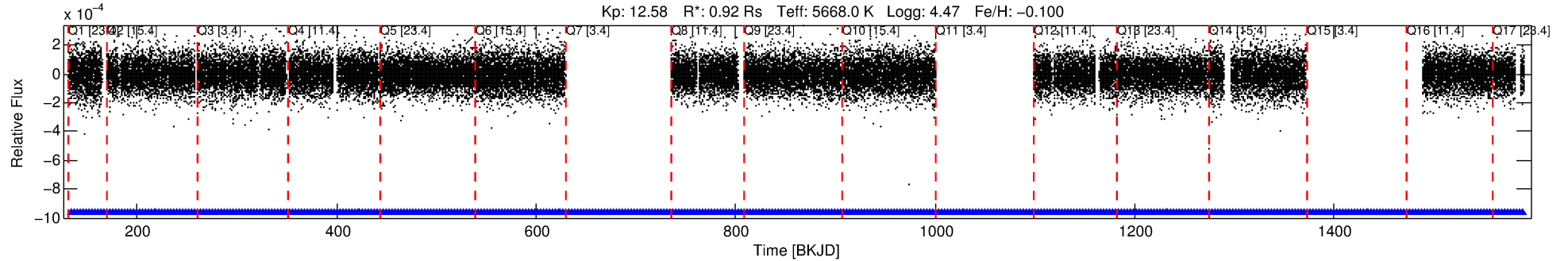
## Ephemeris Match Information For 009973855-01

No Significant Match Found

# DV One-Page Summary

KIC: 9973855 Candidate: 1 of 1 Period: 2.956 d  
KOI: K01966.01 Corr: 0.982

Kp: 12.58 R\*: 0.92 Rs Teff: 5668.0 K Logg: 4.47 Fe/H: -0.100



## DV Fit Results:

Period = 2.95601 [0.00001] d  
Epoch = 134.0626 [0.0013] BKJD  
Rp/R\* = 0.0098 [0.0016]  
a/R\* = 3.27 [2.41]  
b = 0.93 [0.11]  
Seff = 509.26 [180.99]  
Teq = 1211 [108] K  
Rp = 0.98 [0.30] Re  
a = 0.0390 [0.0088] AU  
Ag = 3.65 [2.60] [1.02σ]  
Teffp = 2589 [418] K [3.20σ]

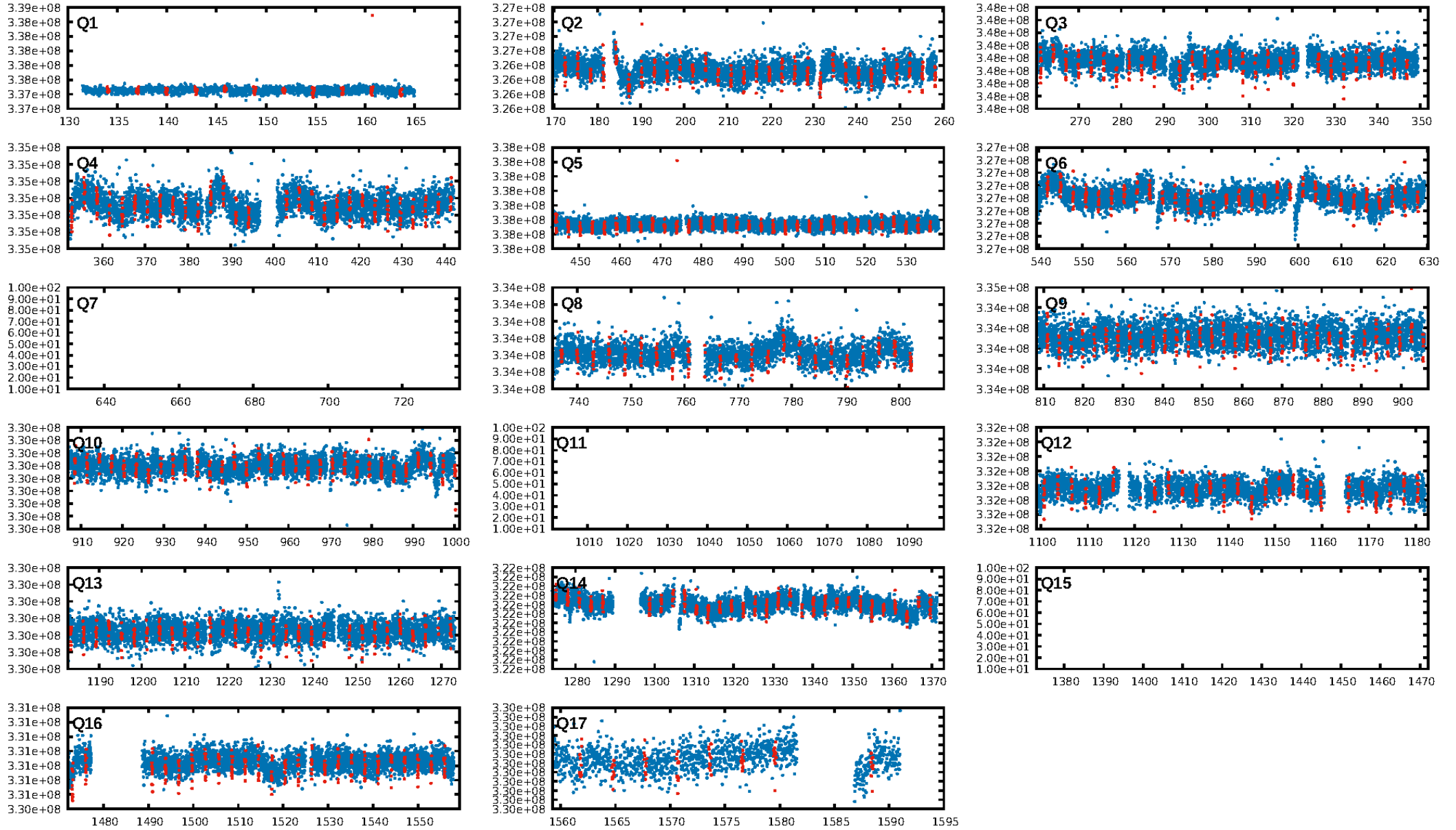
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.80e-172  
RollingBand-fgt: 1.00 [344/344]  
GhostDiagnostic-chr: -0.5565  
Centroid-sig: 0.0%  
Centroid-so: 56.432 arcsec [140.36σ]  
OotOffset-rm: 8.616 arcsec [125.48σ]  
KicOffset-rm: 8.712 arcsec [120.12σ]  
OotOffset-st: 0/1/0/5 [6]  
KicOffset-st: 0/1/0/5 [6]  
DiffImageQuality-fgm: 1.00 [6/6]  
DiffImageOverlap-fno: 1.00 [14/14]

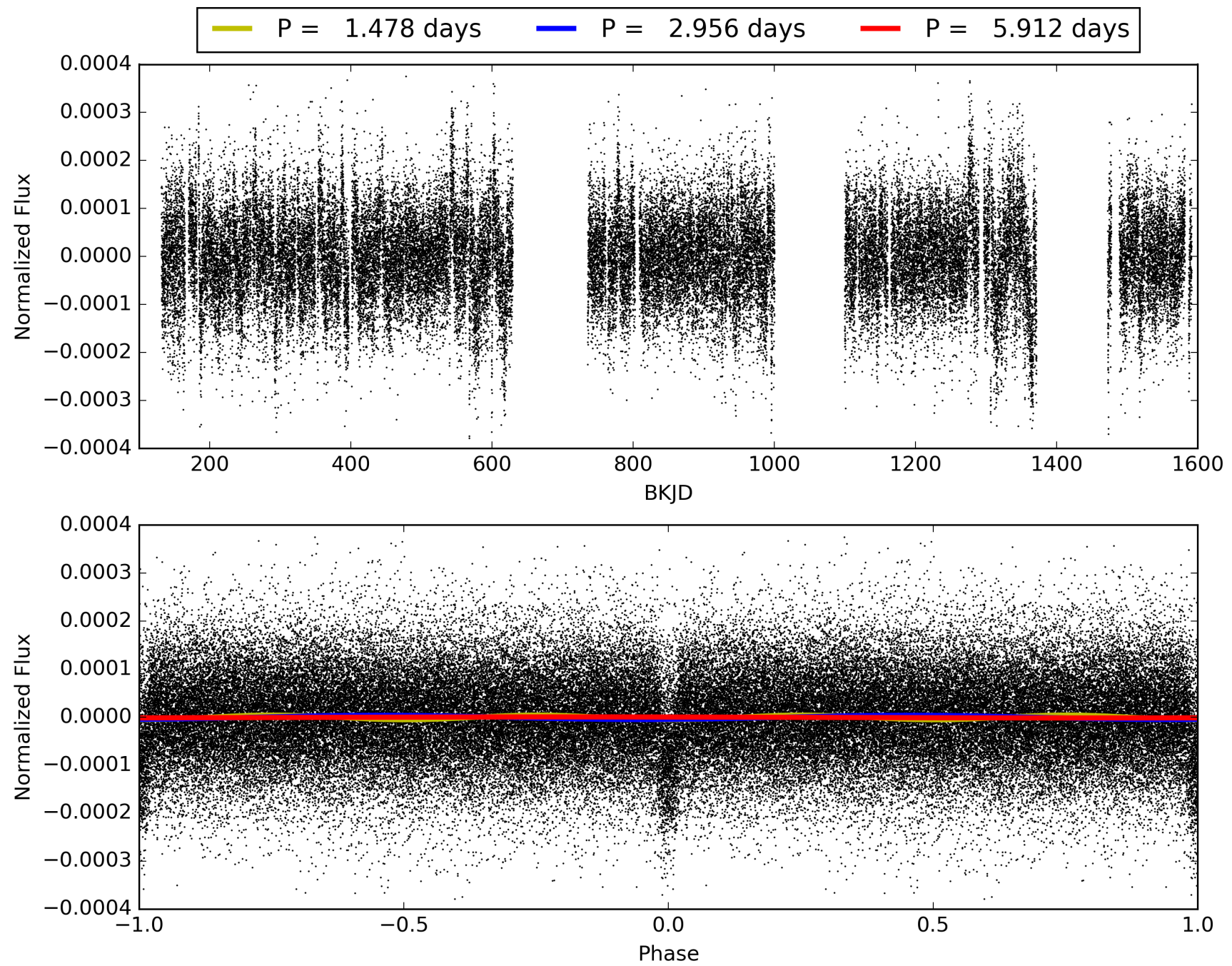
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:15:56 Z

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

# TCE 009973855-01, PDC Light Curves

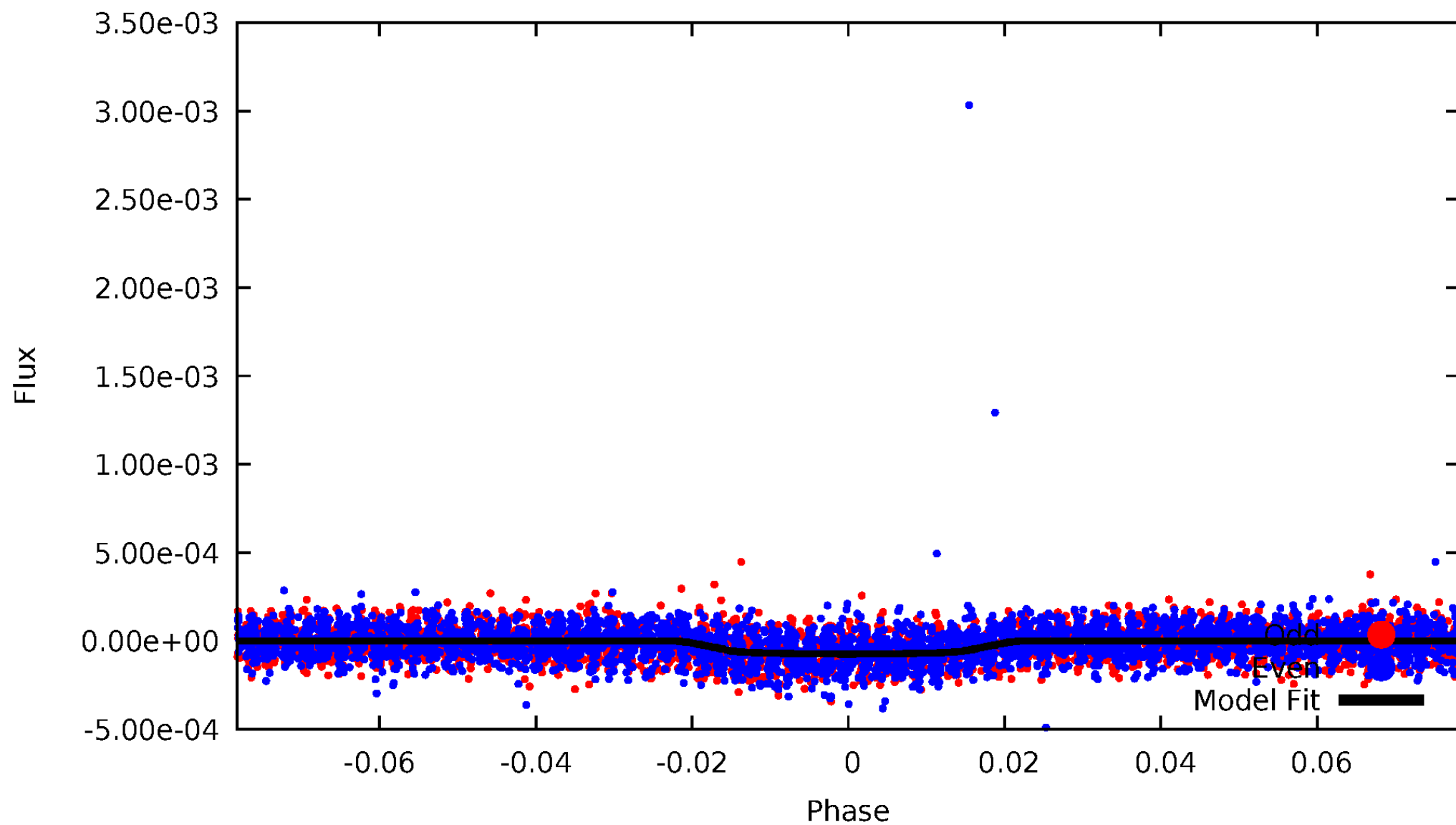


TCE 009973855-01



# DV Odd/Even

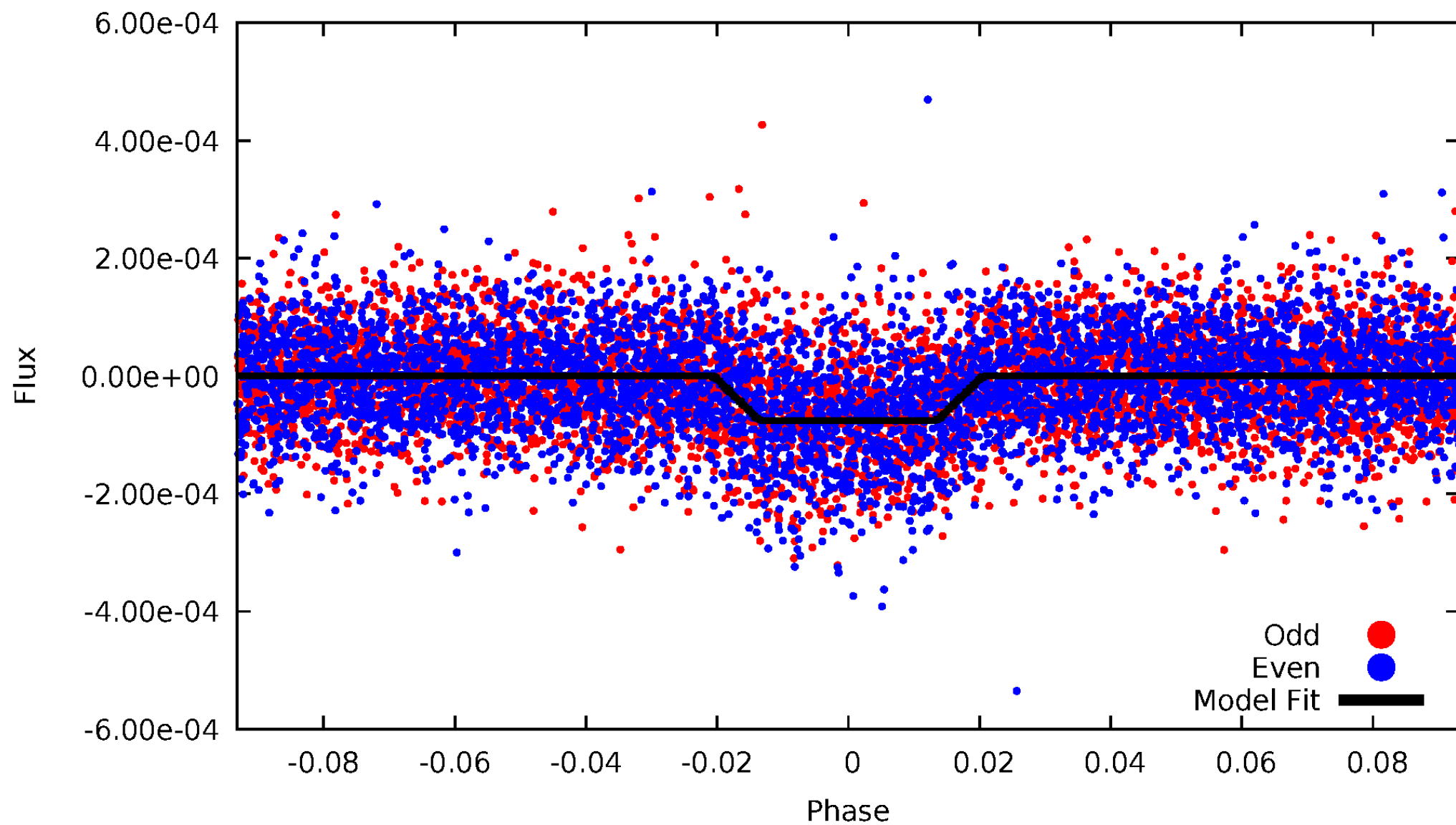
TCE 009973855-01





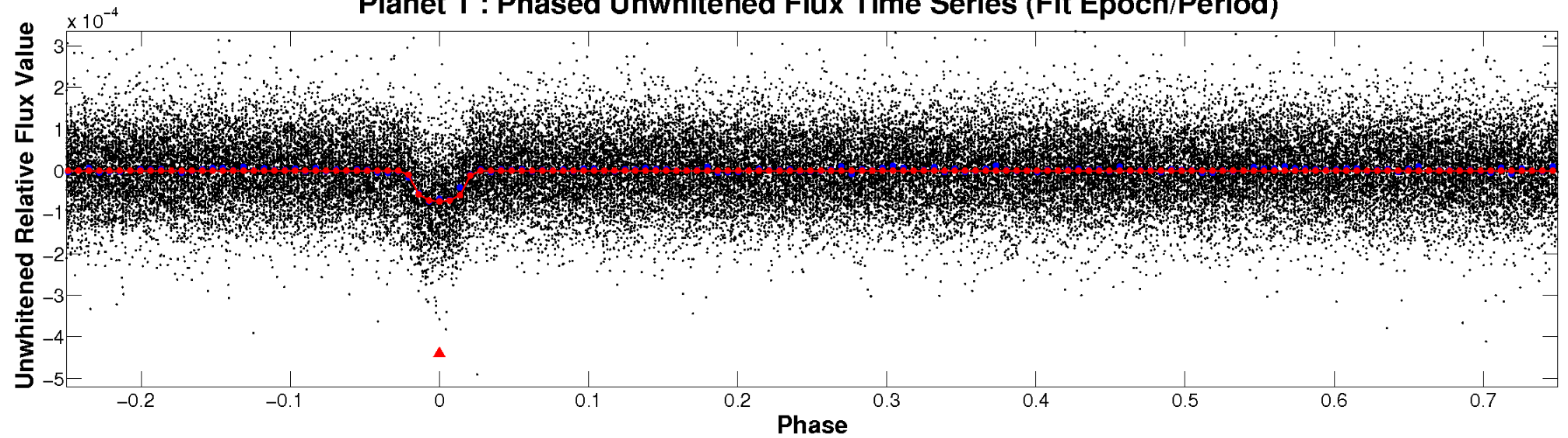
# ALT Odd/Even

TCE 009973855-01

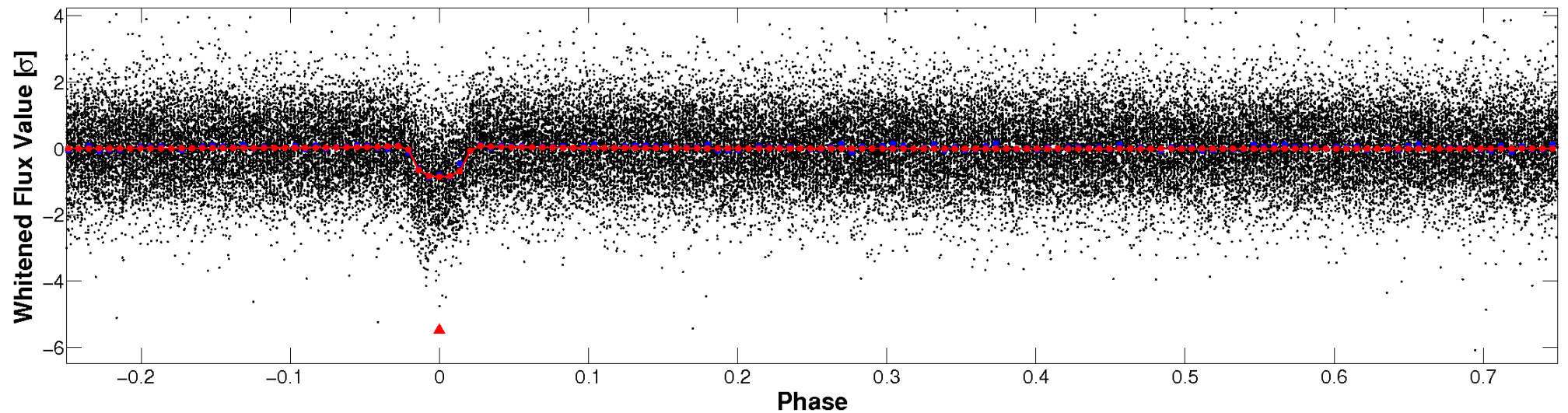


# Non-Whitened Vs. Whitened Light Curve

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

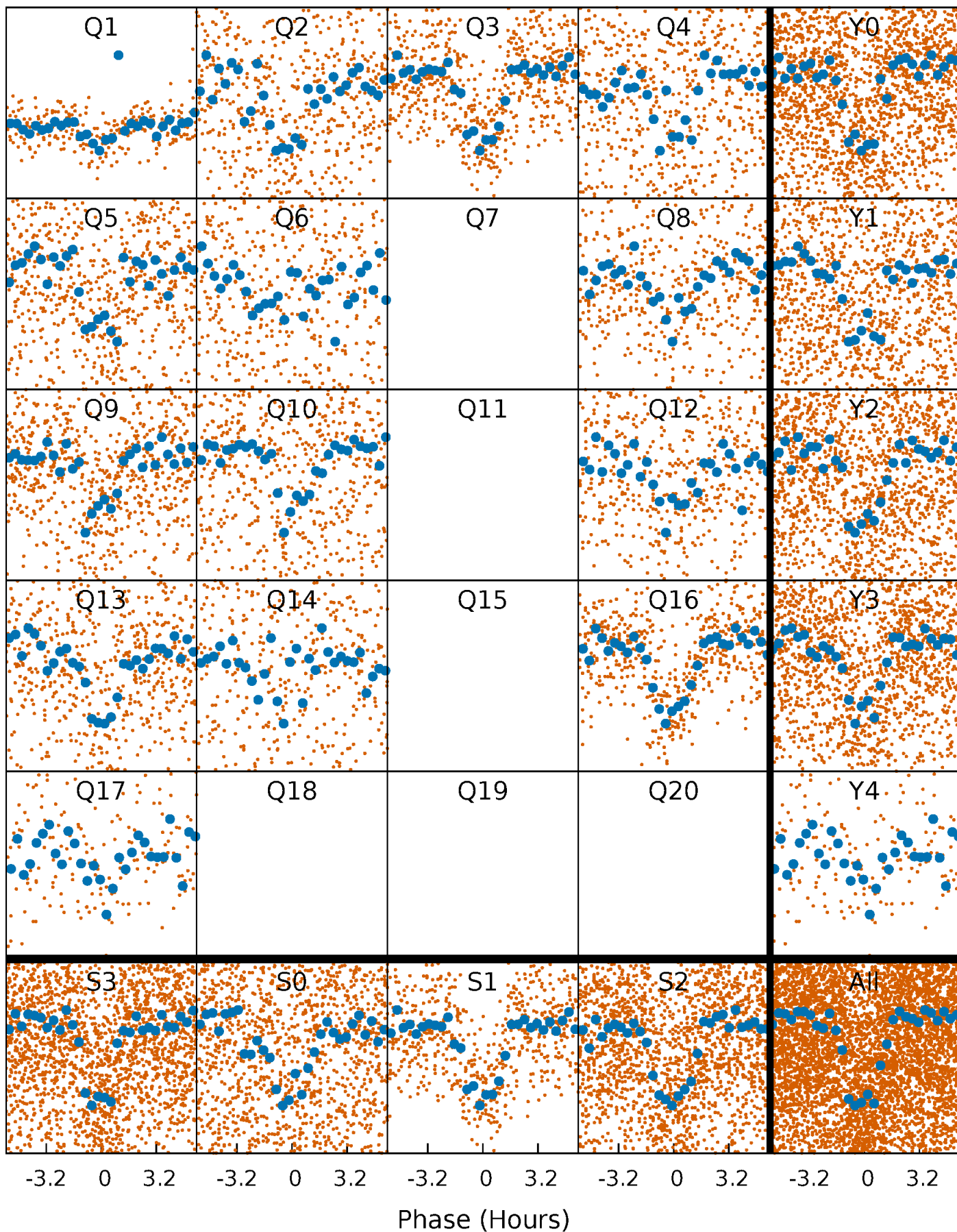


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

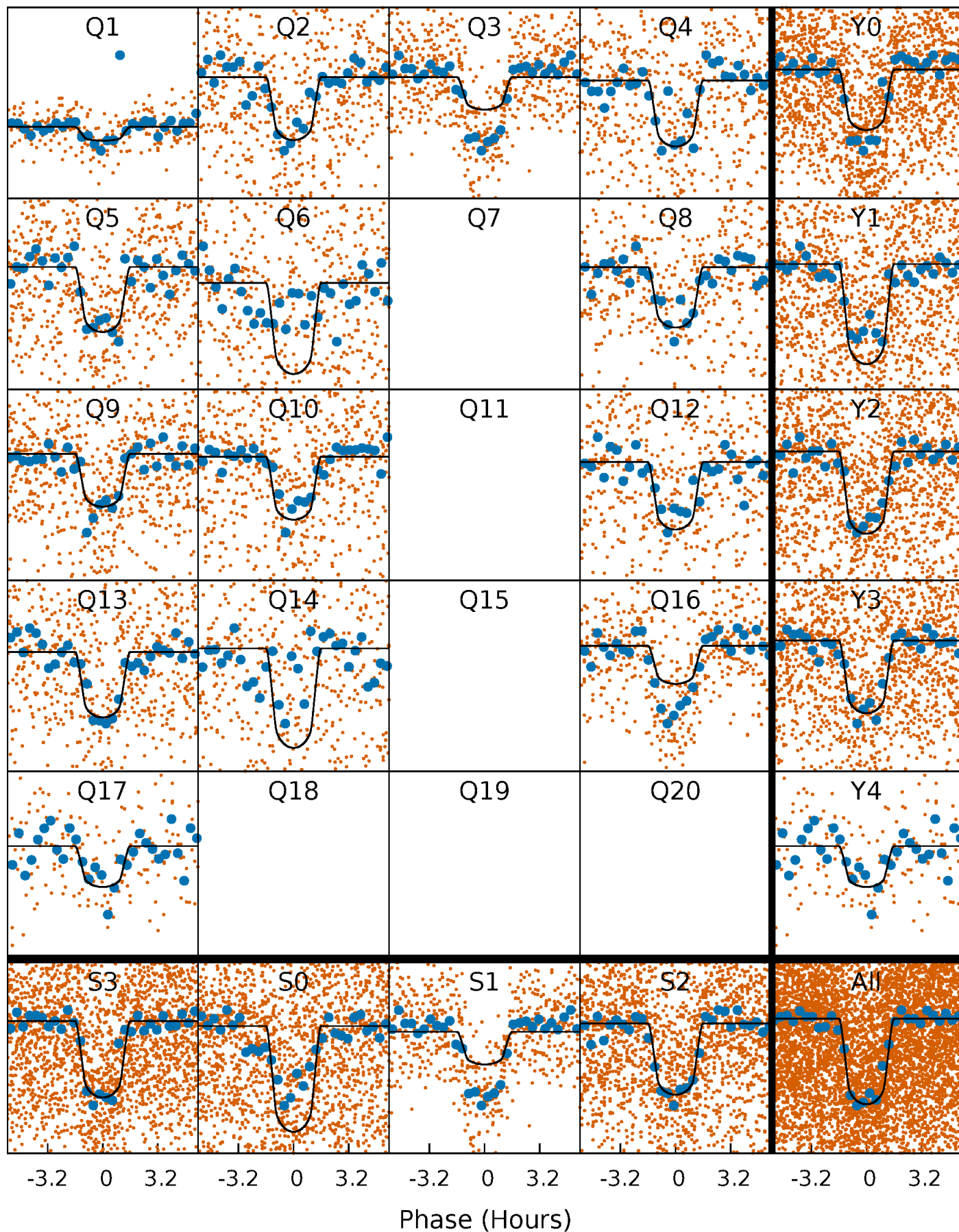
TCE 009973855-01 P= 2.956010 Days  $T_0=134.062621$  (BKJD)





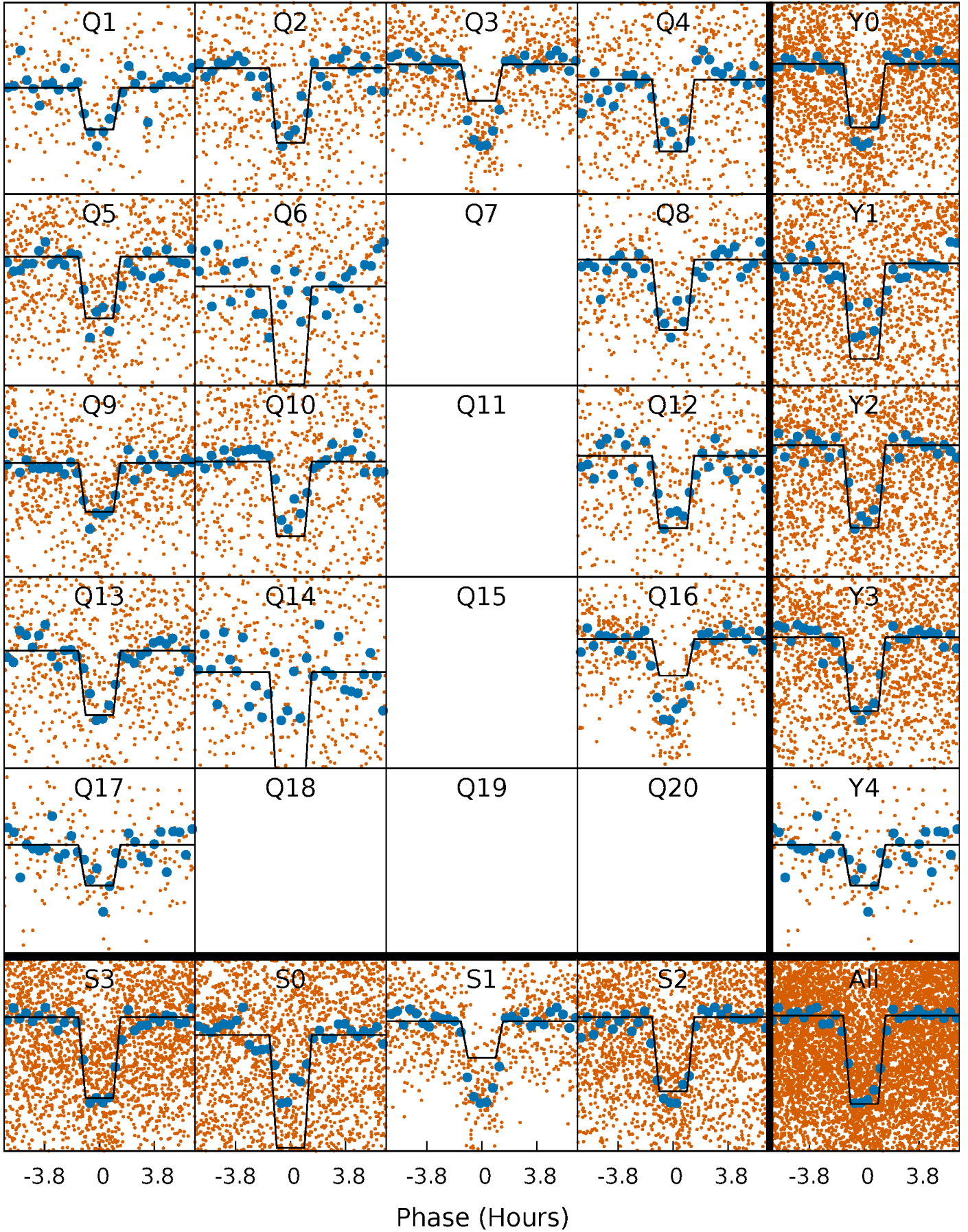
# DV Quarter-Phased Transit Curves

TCE 009973855-01 P= 2.956010 Days  $T_0=134.062621$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

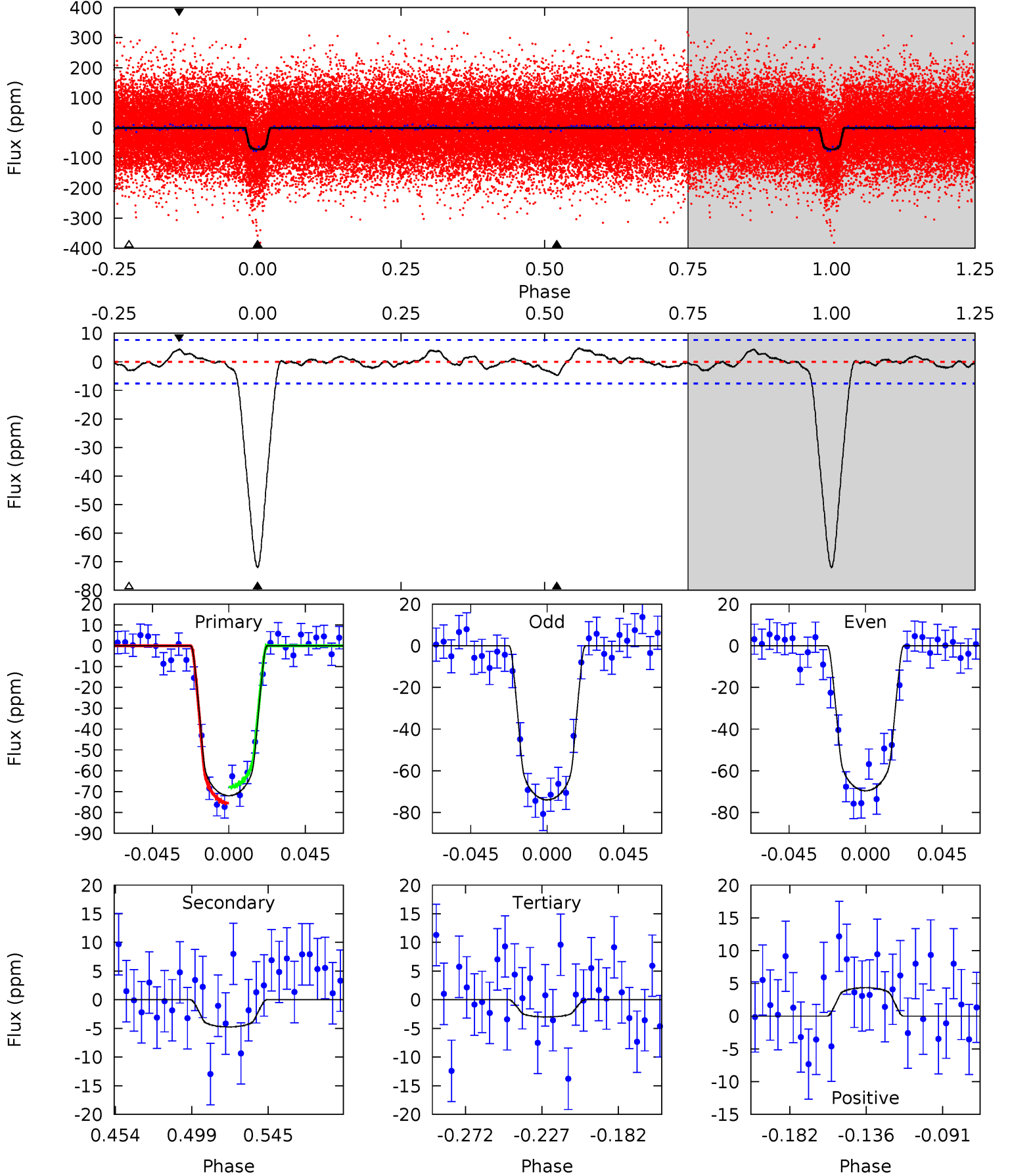
TCE 009973855-01 P= 2.956015 Days  $T_0=134.060222$  (BKJD)



# DV Model-Shift Uniqueness Test

009973855-01, P = 2.956010 Days, E = 131.106611 Days

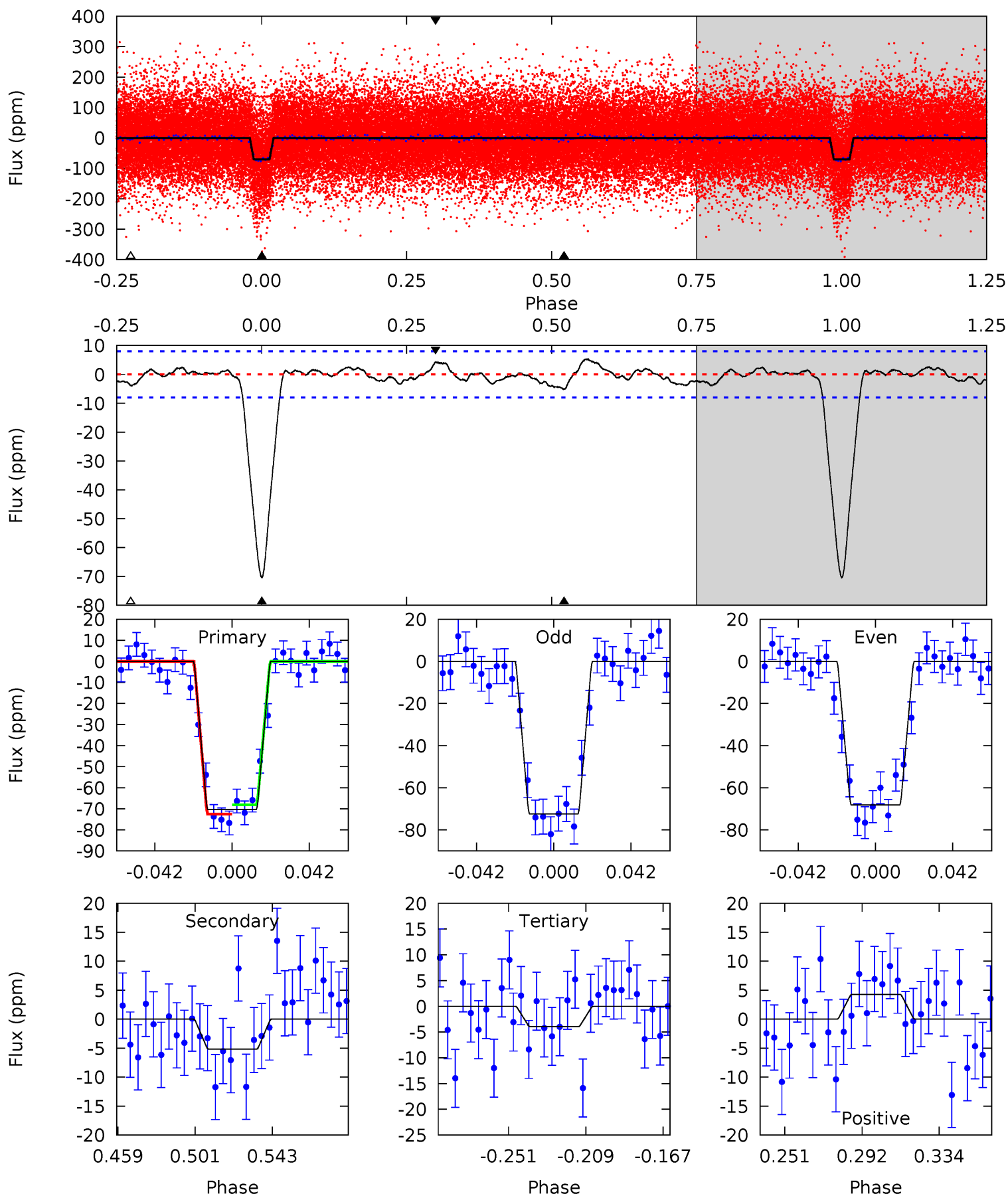
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
44.5	2.93	1.85	2.69	4.73	2.00	0.99	42.7	41.8	1.08	0.24	1.34	1.00	0.06	2.38



# Alt Model-Shift Uniqueness Test

009973855-01, P = 2.956015 Days, E = 131.104207 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	3.05	2.34	2.52	4.74	2.04	1.08	39.3	39.2	0.71	0.53	1.23	1.03	0.07	1.32





### Stellar Parameters For KIC 009973855

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5668^{+169}_{-186}$	$4.472^{+0.078}_{-0.182}$	$-0.100^{+0.300}_{-0.300}$	$0.916^{+0.242}_{-0.104}$	$0.908^{+0.115}_{-0.094}$	$1.663^{+0.548}_{-0.809}$
	+3%/-3%	+2%/-4%	+300%/-300%	+26%/-11%	+13%/-10%	+33%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009973855-01 / KOI 1966.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 2$	$1.02^{+0.20}_{-0.18}$	$1716^{+107}_{-83}$	$3190^{+273}_{-238}$	$3.823^{+2.511}_{-1.564}$
Alt.	$-5 \pm 2$	$0.90^{+0.20}_{-0.18}$	$1713^{+111}_{-93}$	$3355^{+338}_{-295}$	$5.142^{+3.933}_{-2.332}$

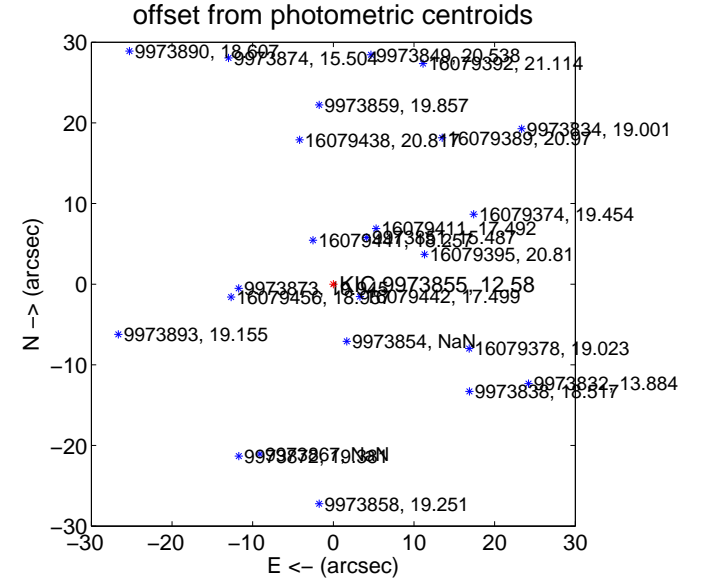
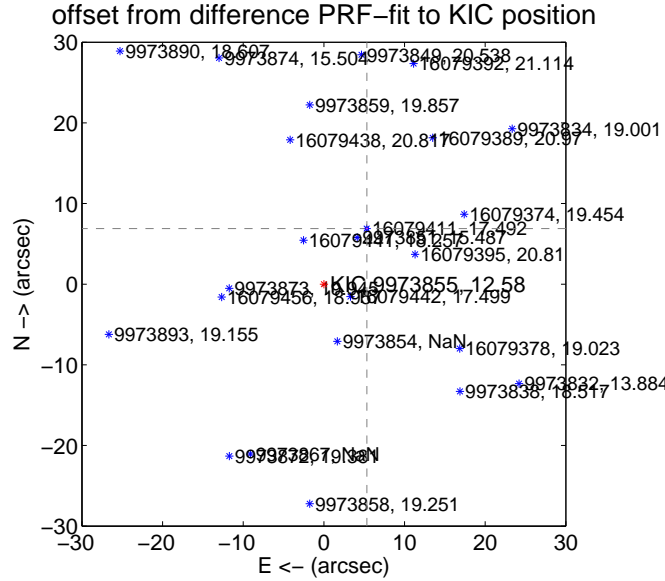
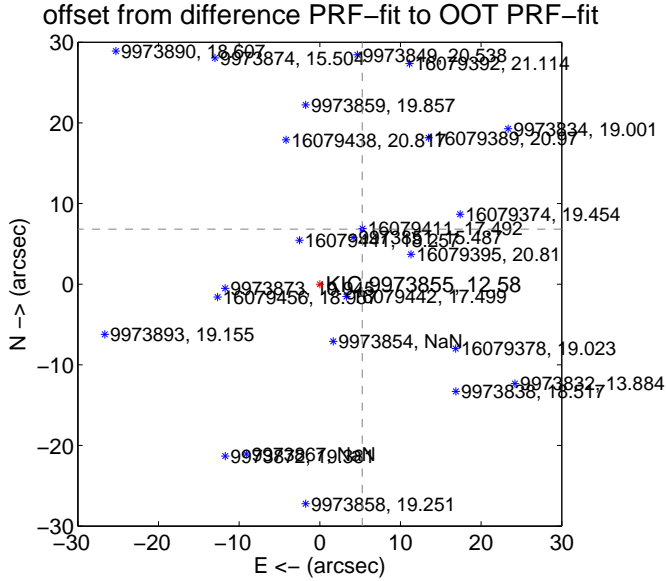
$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

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

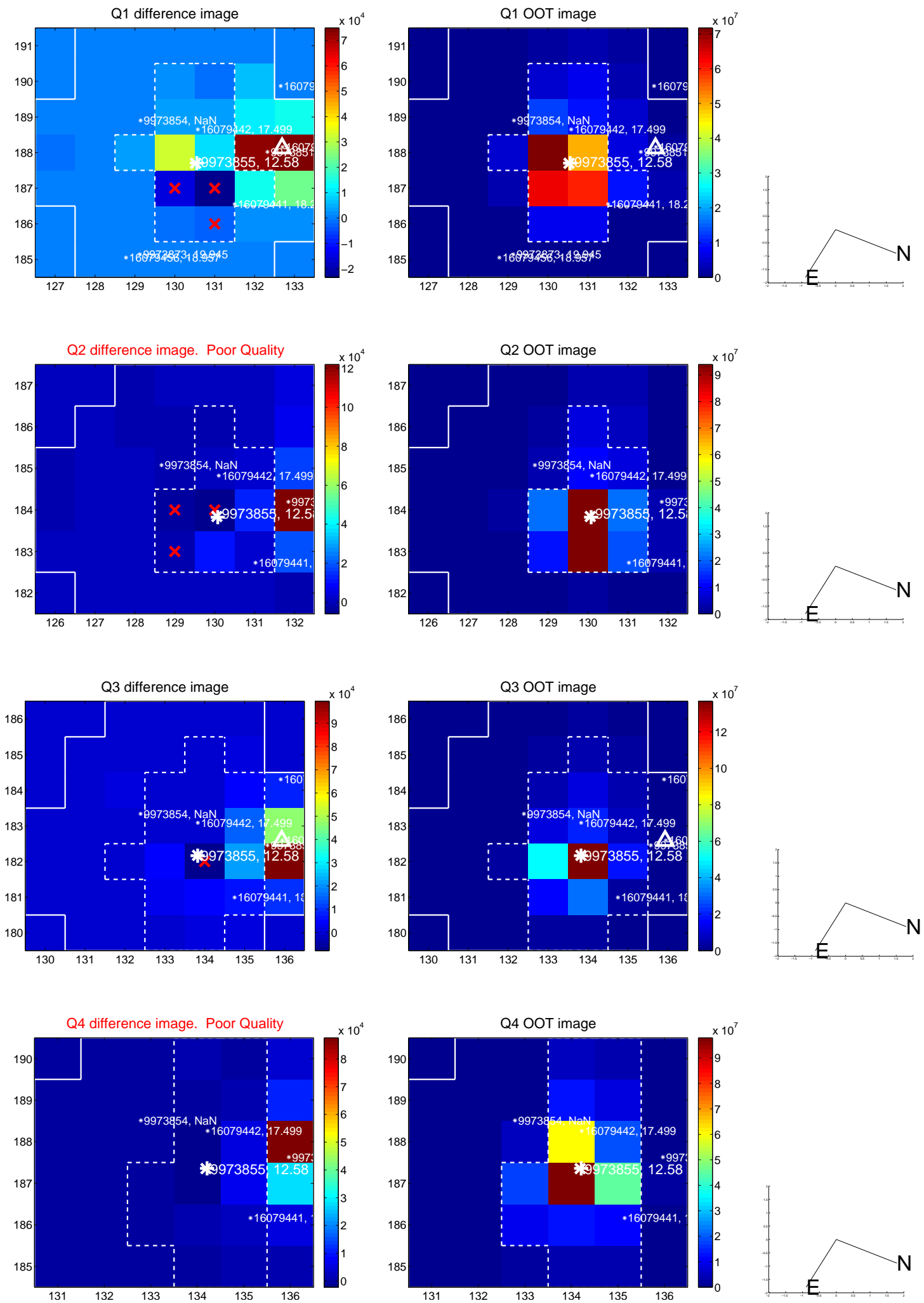
Supplemental centroid analysis for 009973855-01. Kepler magnitude: 12.58. Transit SNR 32.16  
 There are 6 quarters with good PRF difference image offsets  
 The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	8.616 $\pm$ 0.069	125.48	-5.257 $\pm$ 0.067	6.826 $\pm$ 0.069
PRF-fit source offset from KIC position	8.712 $\pm$ 0.073	120.12	-5.331 $\pm$ 0.070	6.891 $\pm$ 0.070
photometric centroid source offset	56.43 $\pm$ 0.40	140.36	-33.74 $\pm$ 0.40	45.23 $\pm$ 0.40

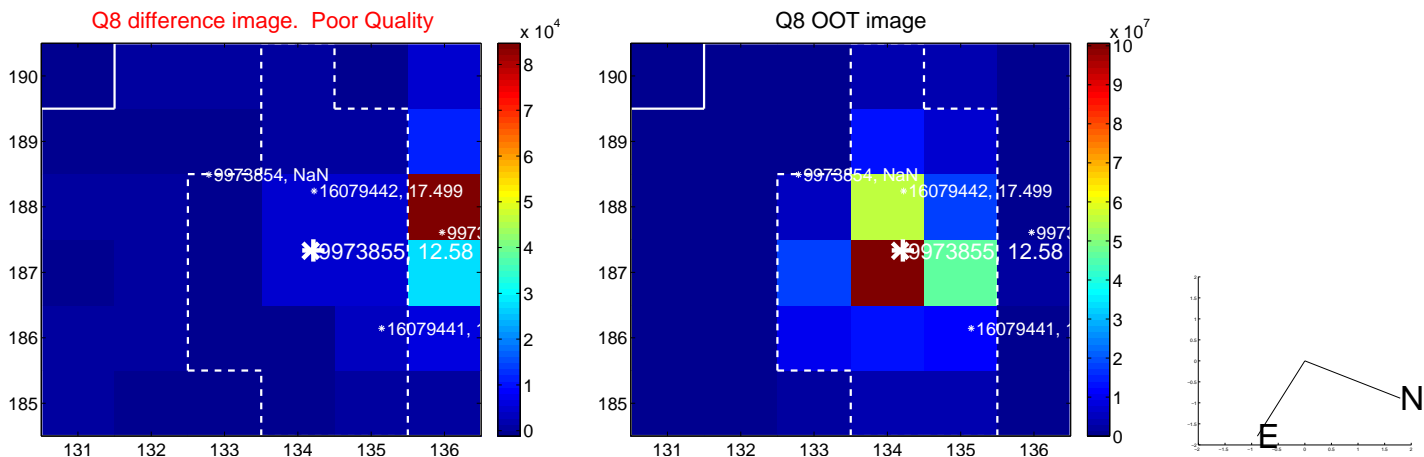
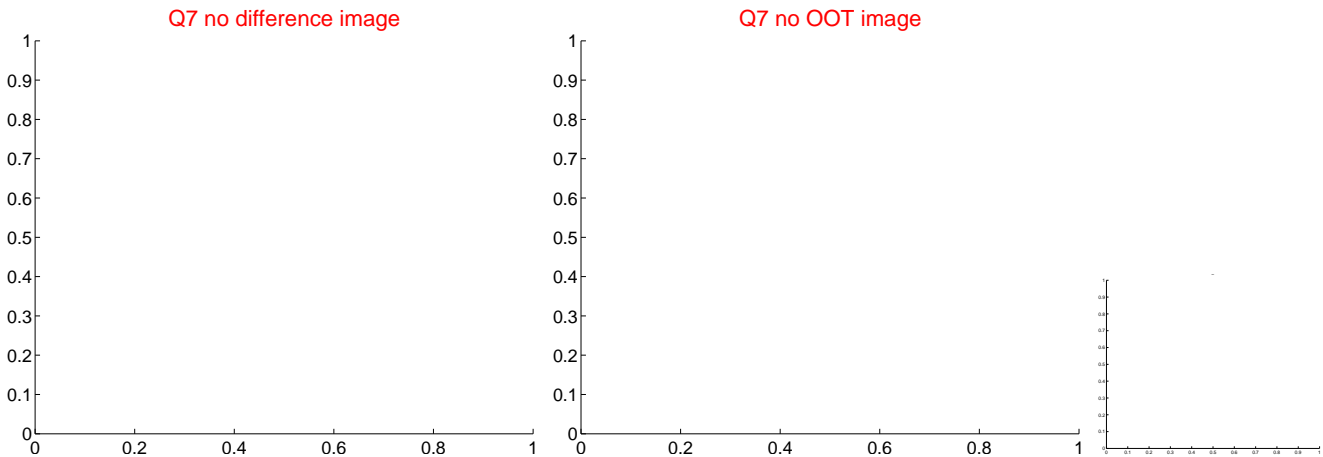
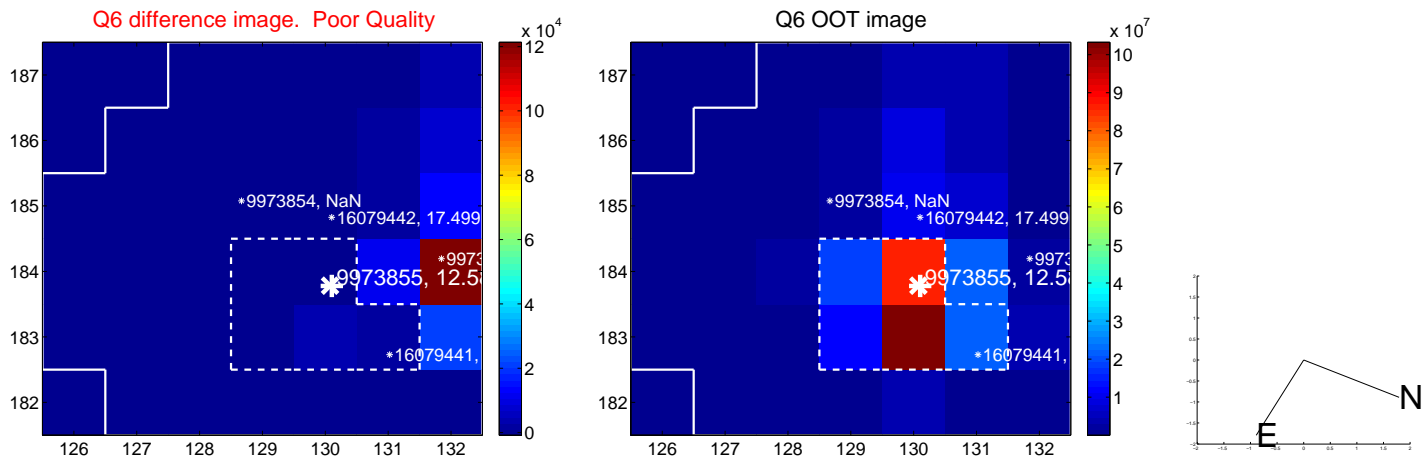
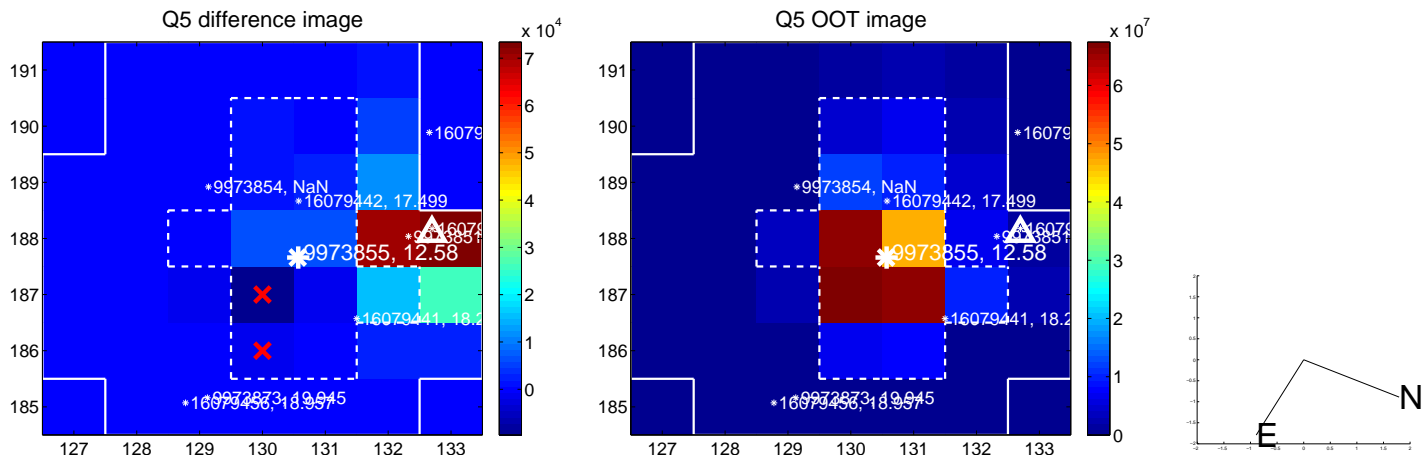


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

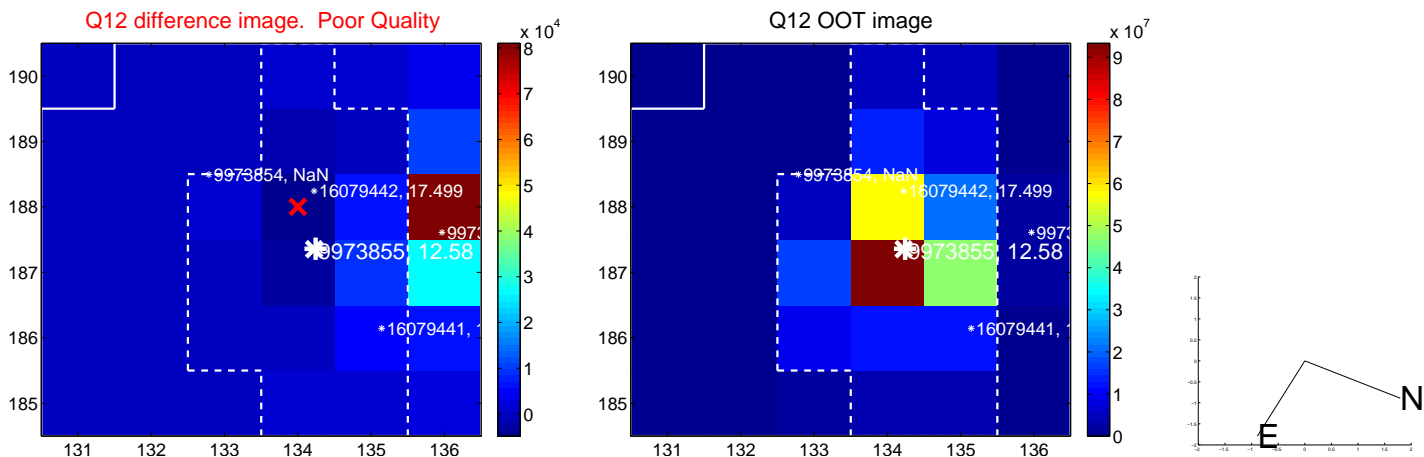
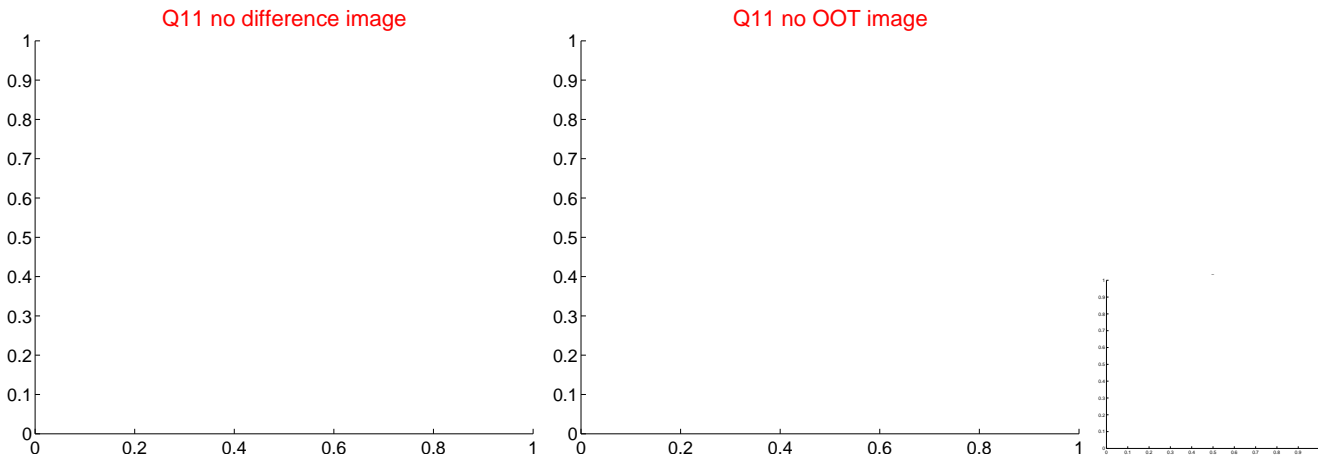
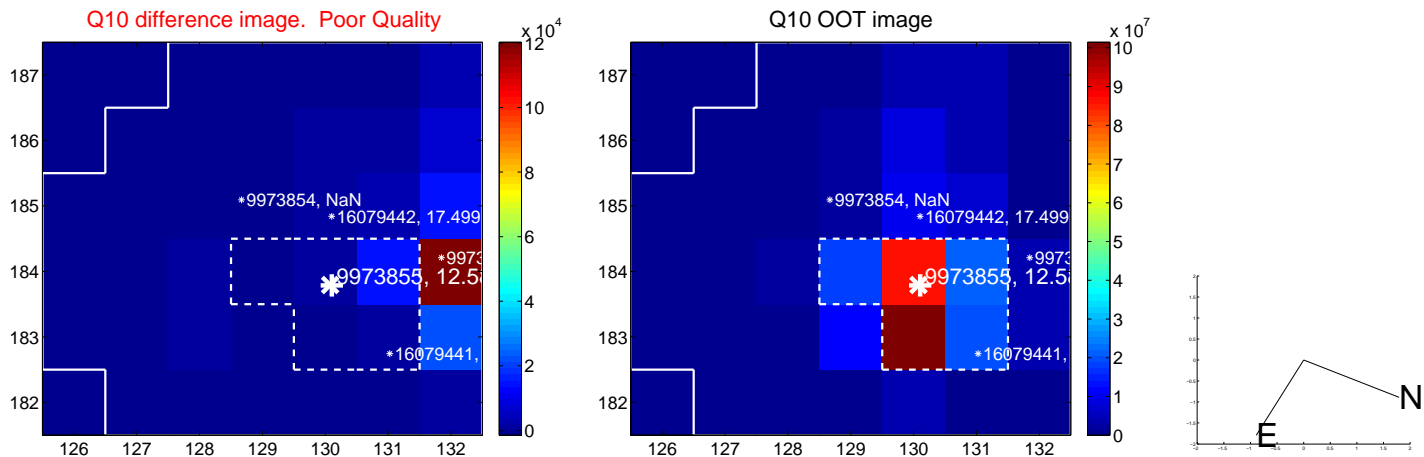
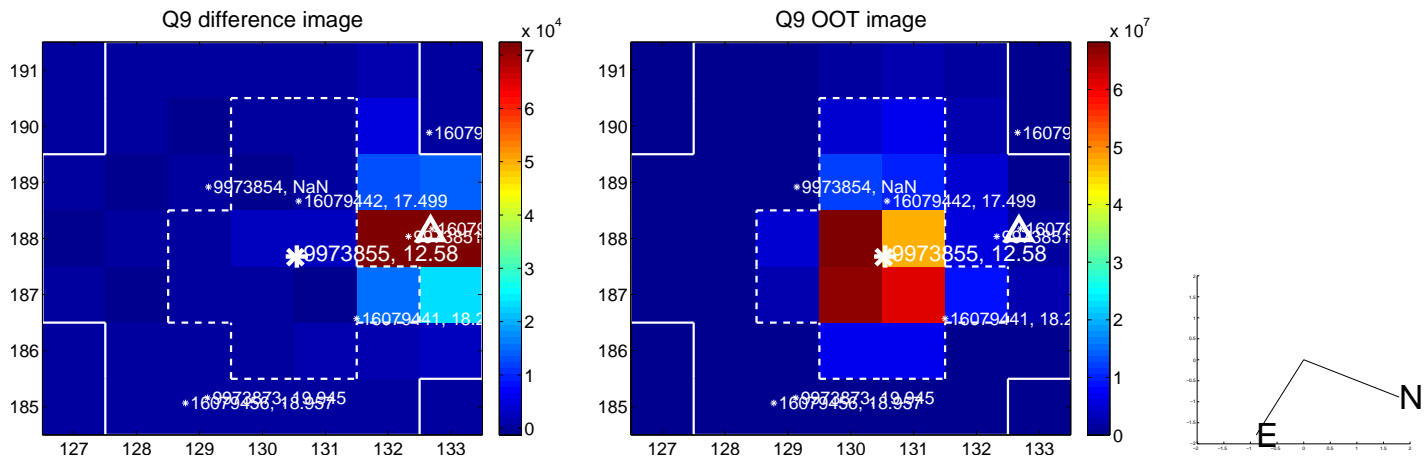


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

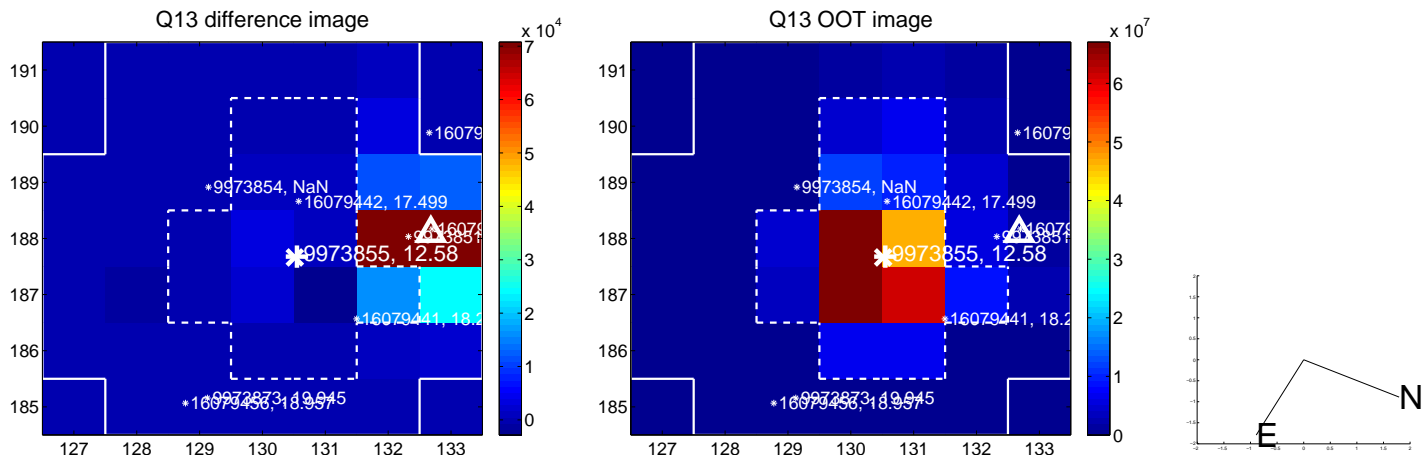




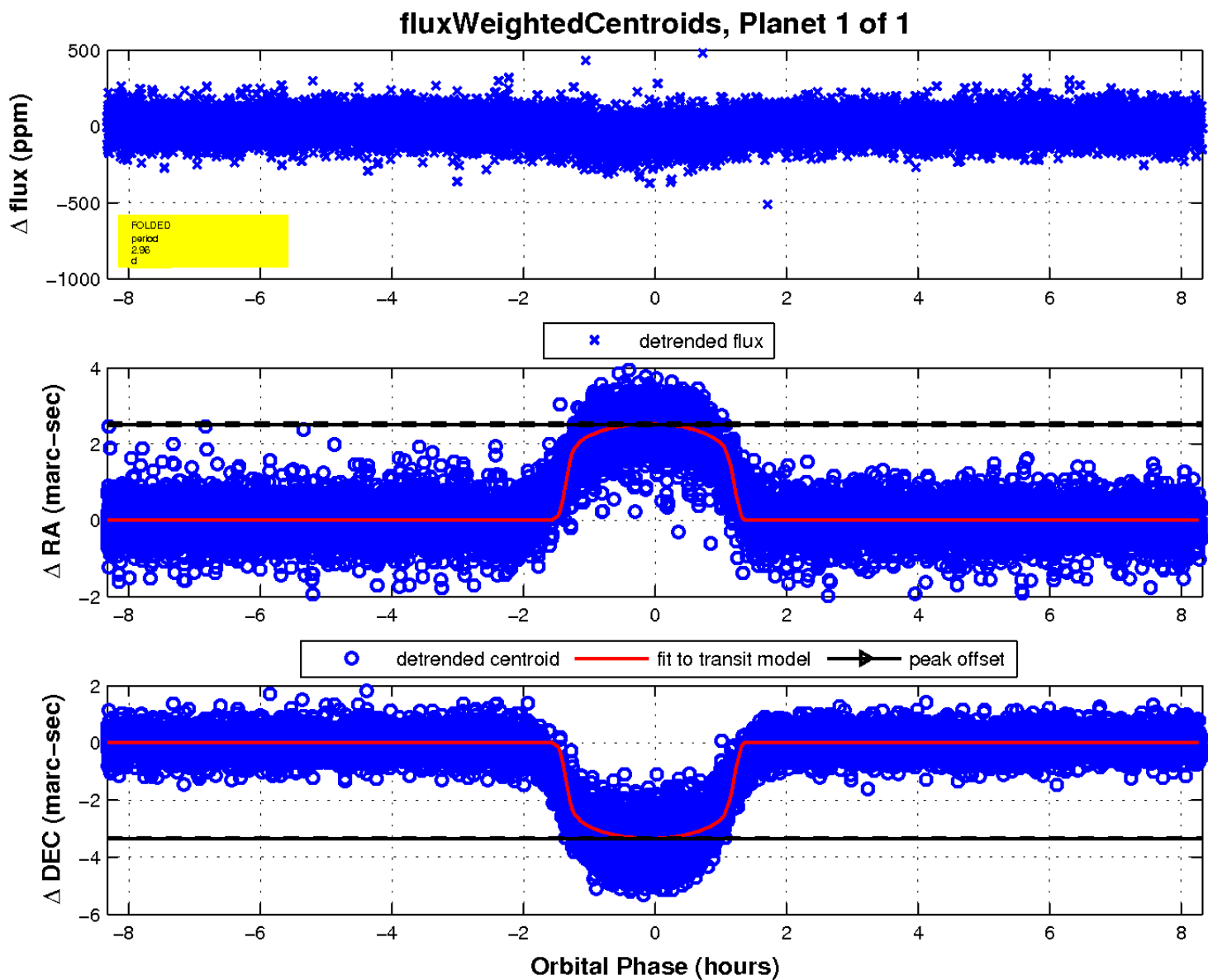
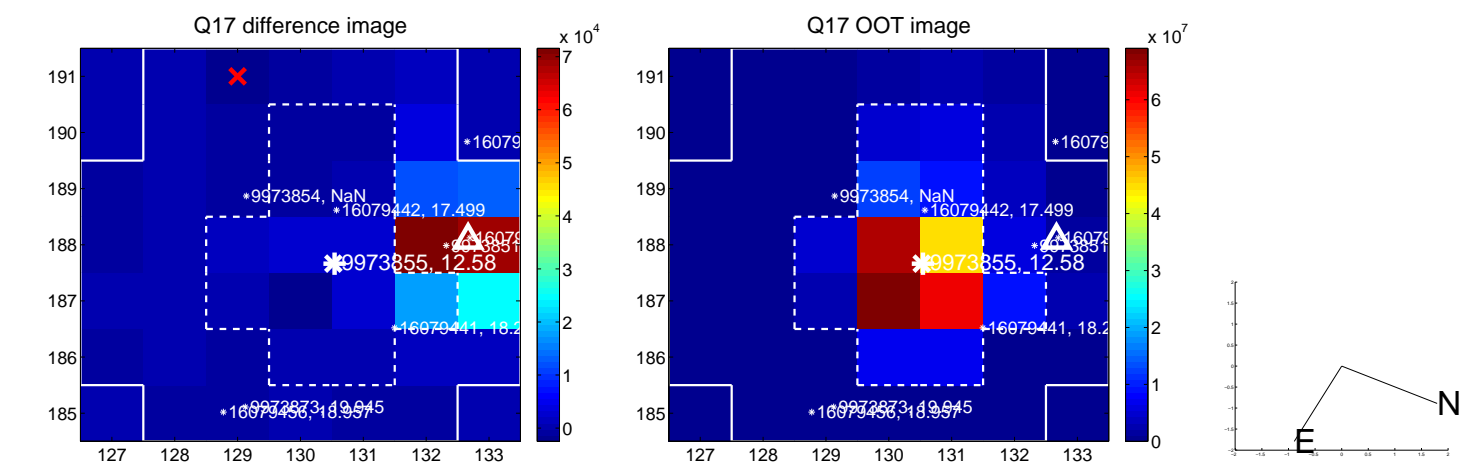
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.



UKIRT Image

