

# KIC 008240915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240915-01	OBS	No	368.176236	234.536909	1728.2	19.664	7.6	10.5	0.90	6290	4.07	1.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240915-01	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—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.

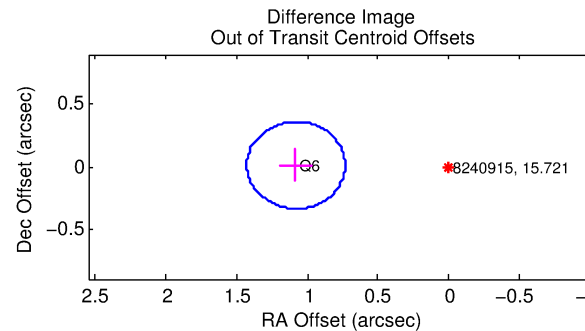
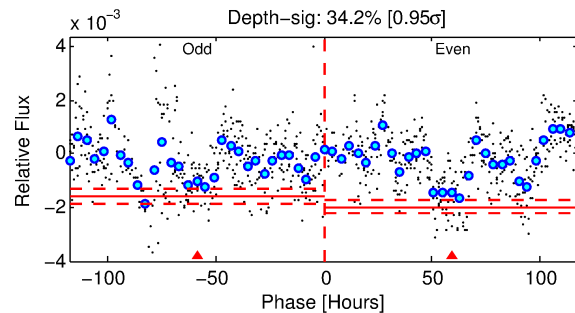
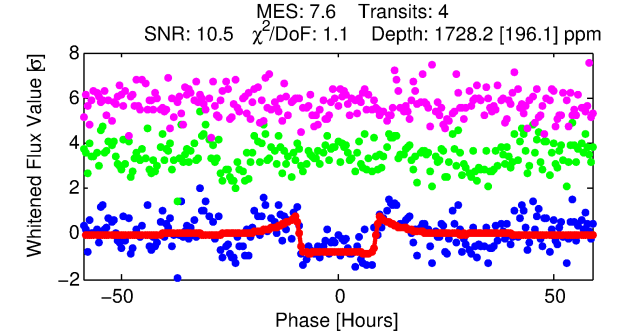
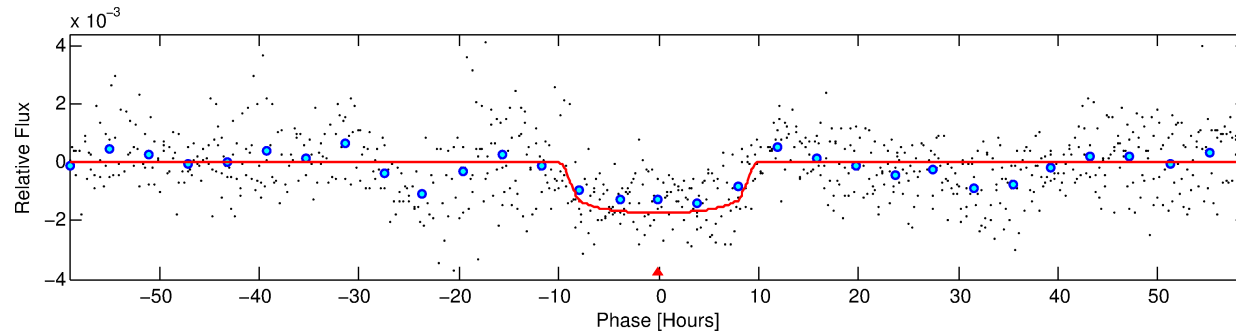
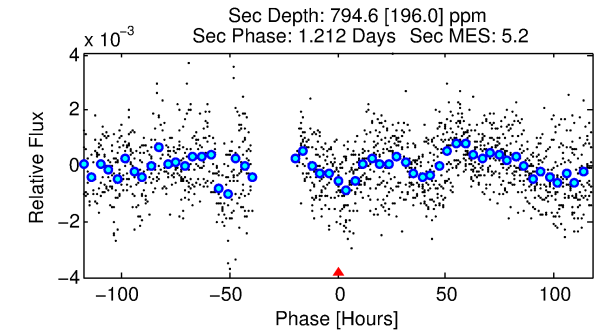
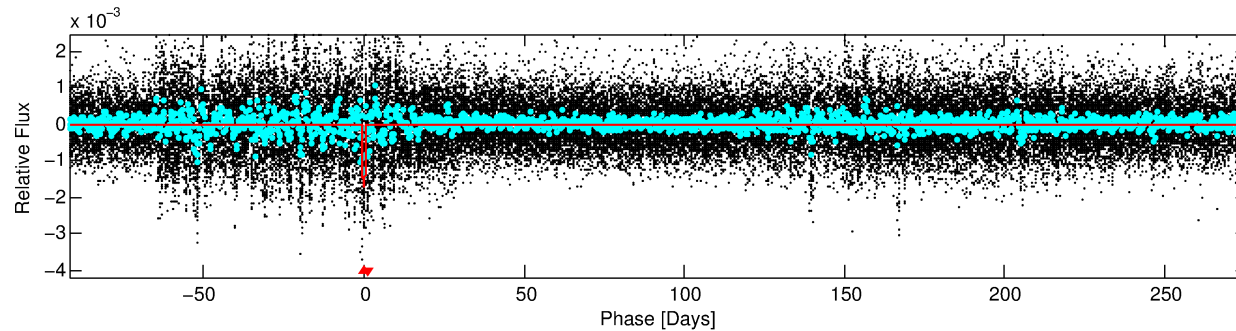
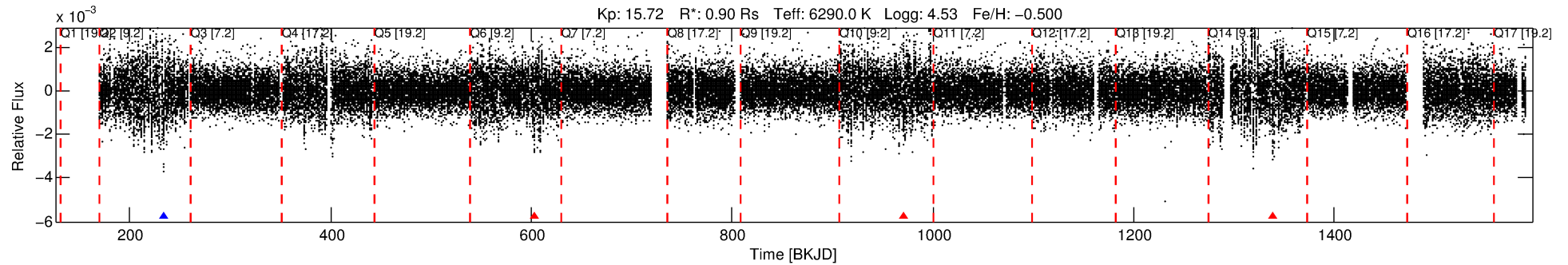
## Ephemeris Match Information For 008240915-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\prime$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008240915-01	8240915	008374321-02	8374321	1:1	1354.0	-340	3	15.48	15.72	1.68	Col-Anomaly	1	1.03	4.25

**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: 8240915 Candidate: 1 of 1 Period: 368.176 d



## DV Fit Results:

Period = 368.17624 [0.00924] d  
Epoch = 234.5369 [0.0170] BKJD  
Rp/R\* = 0.0415 [0.0034]  
a/R\* = 101.37 [28.17]  
b = 0.76 [0.15]  
Seff = 1.13 [0.48]  
Teq = 263 [28] K  
Rp = 4.07 [1.28] Re  
a = 1.0021 [0.2648] AU  
Ag = 26509.02 [13091.42] [2.02σ]  
Teffp = 5182 [432] K [11.36σ]

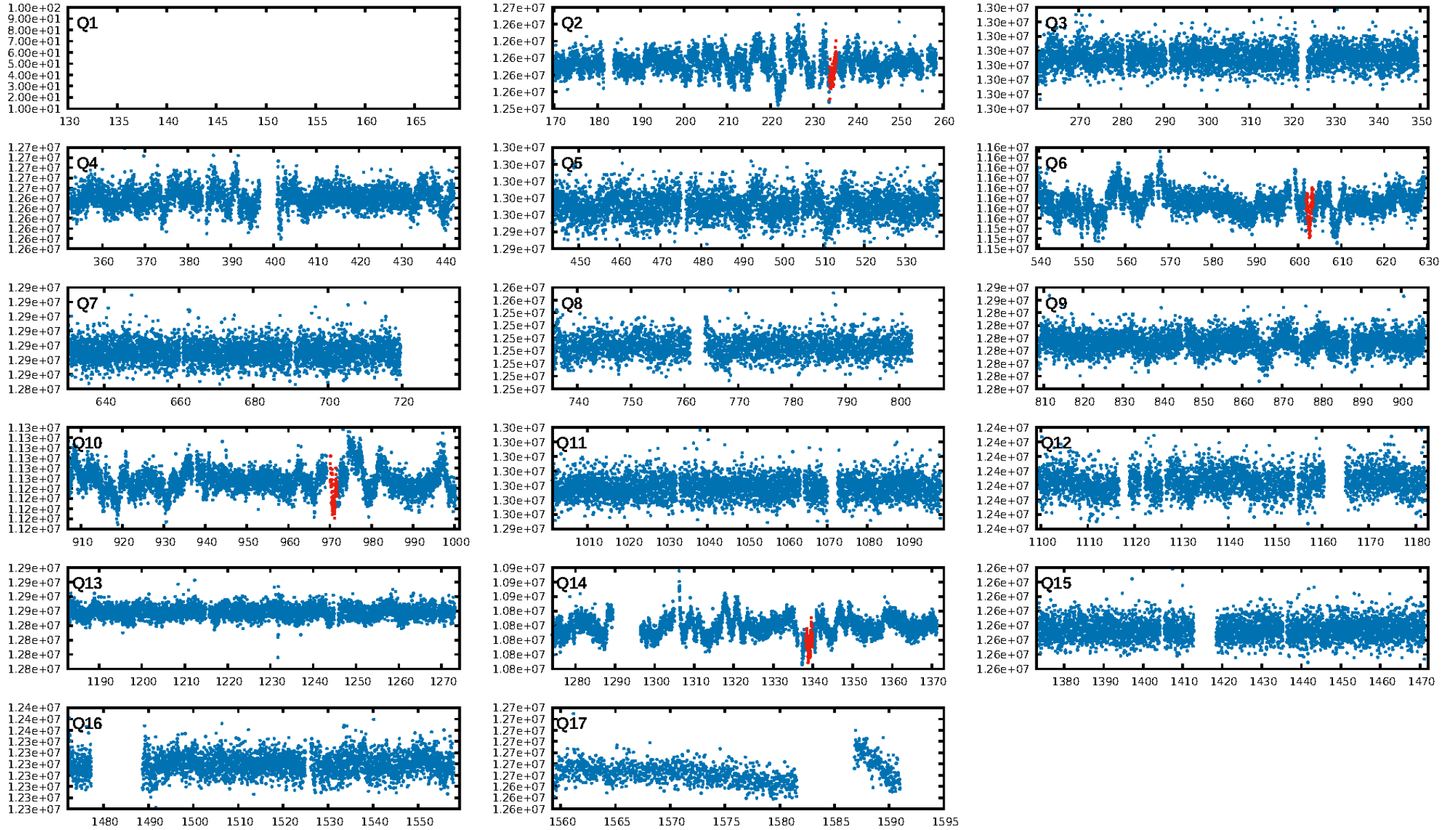
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 45.1%  
ModelChiSquareGof-sig: 99.1%  
Bootstrap-pfa: 3.46e-09  
RollingBand-fgt: 0.25 [1/4]  
GhostDiagnostic-chr: 0.9842  
Centroid-sig: 0.0%  
Centroid-so: 4.140 arcsec [2.67σ]  
OotOffset-rm: 1.081 arcsec [9.32σ]  
KicOffset-rm: 1.313 arcsec [11.31σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

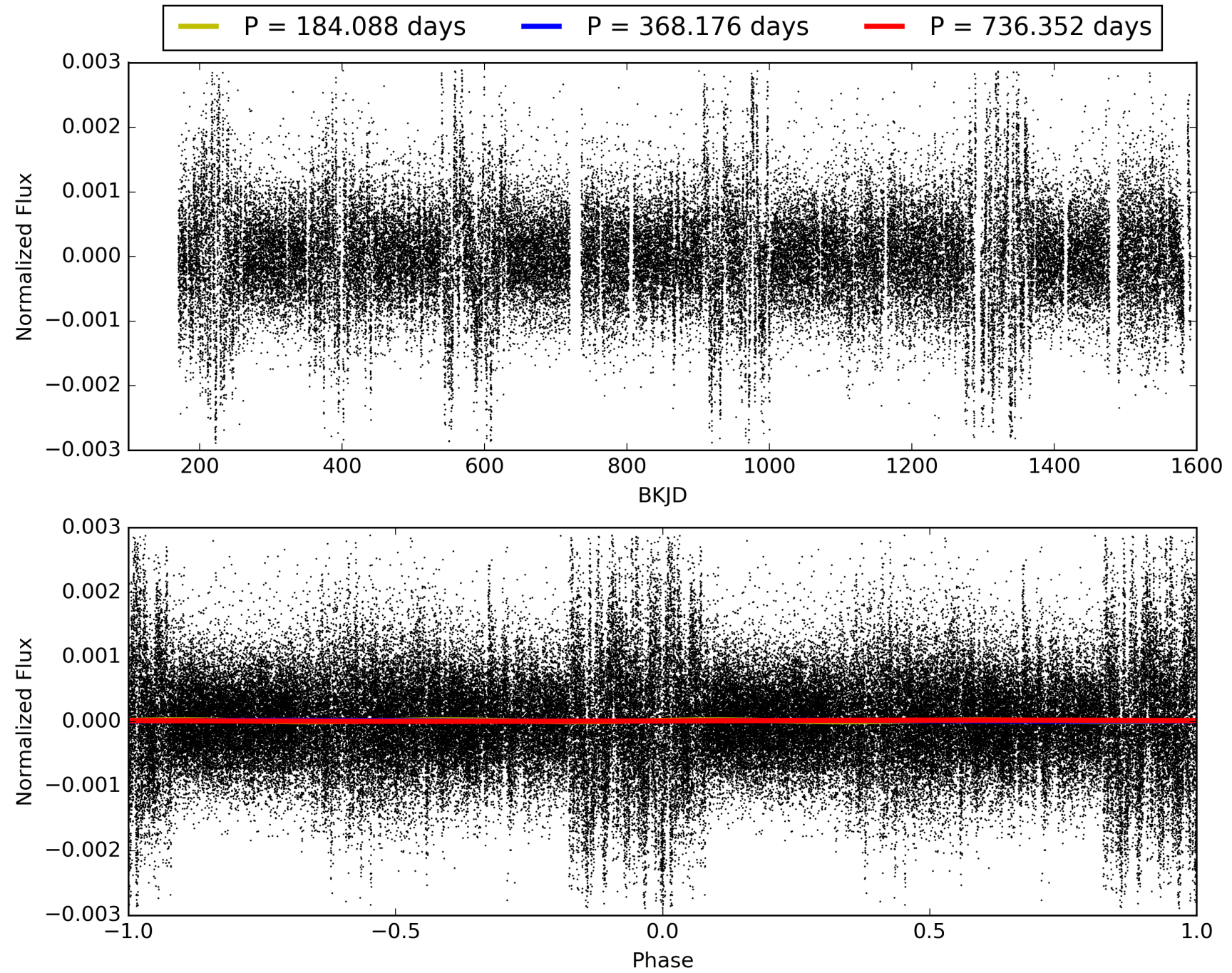
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:58:27 Z

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

# TCE 008240915-01, PDC Light Curves

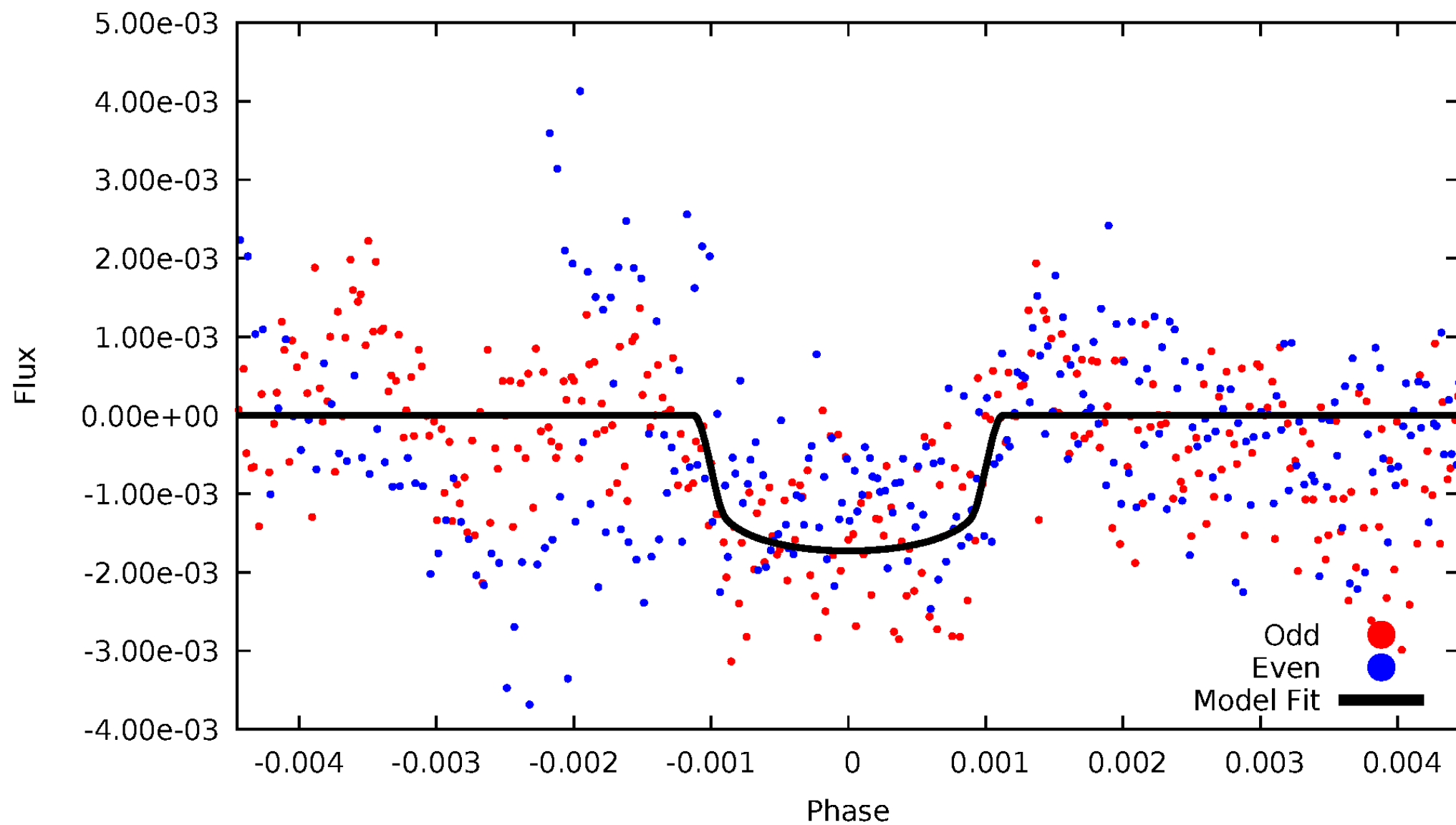


TCE 008240915-01



# DV Odd/Even

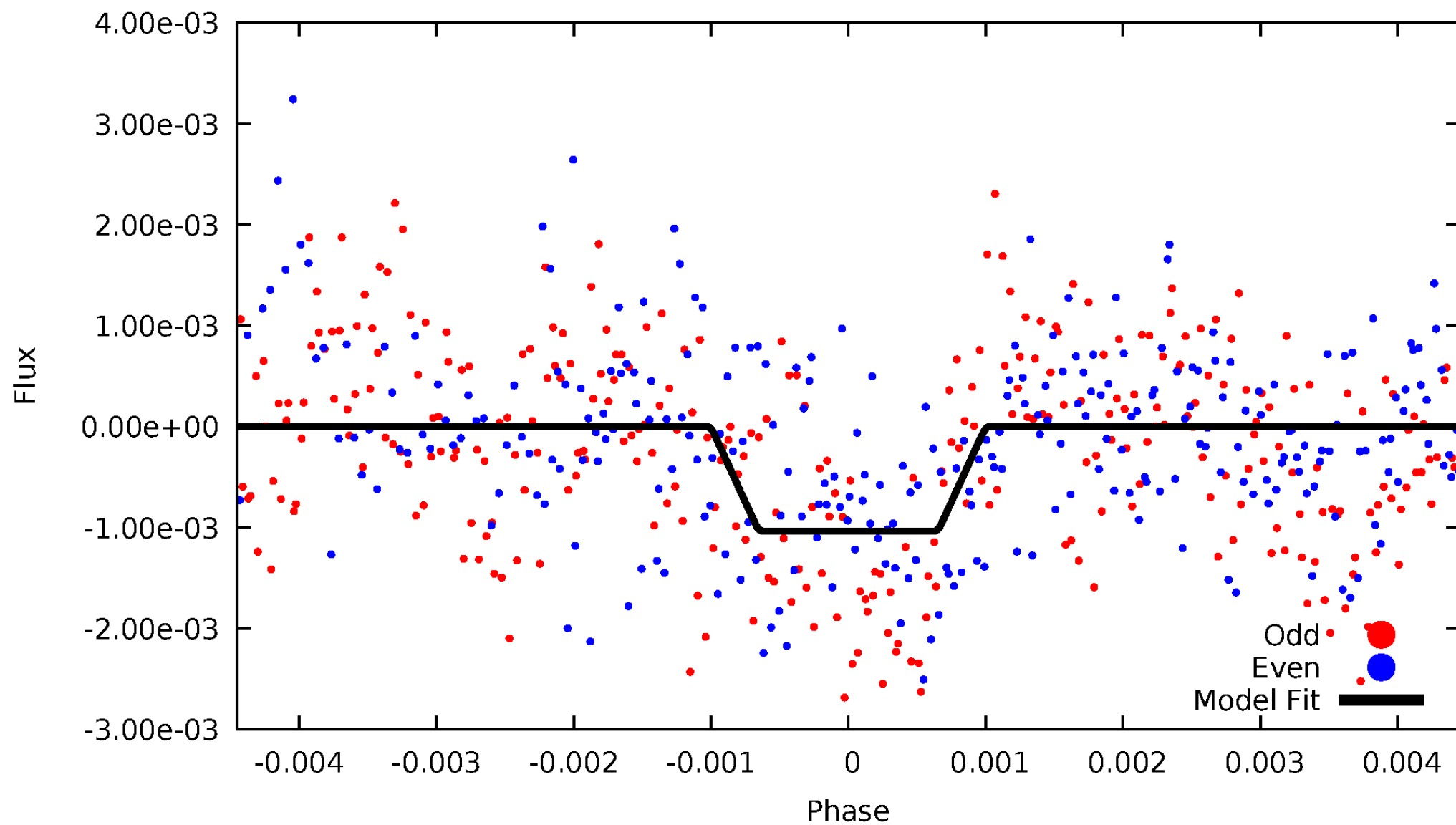
TCE 008240915-01





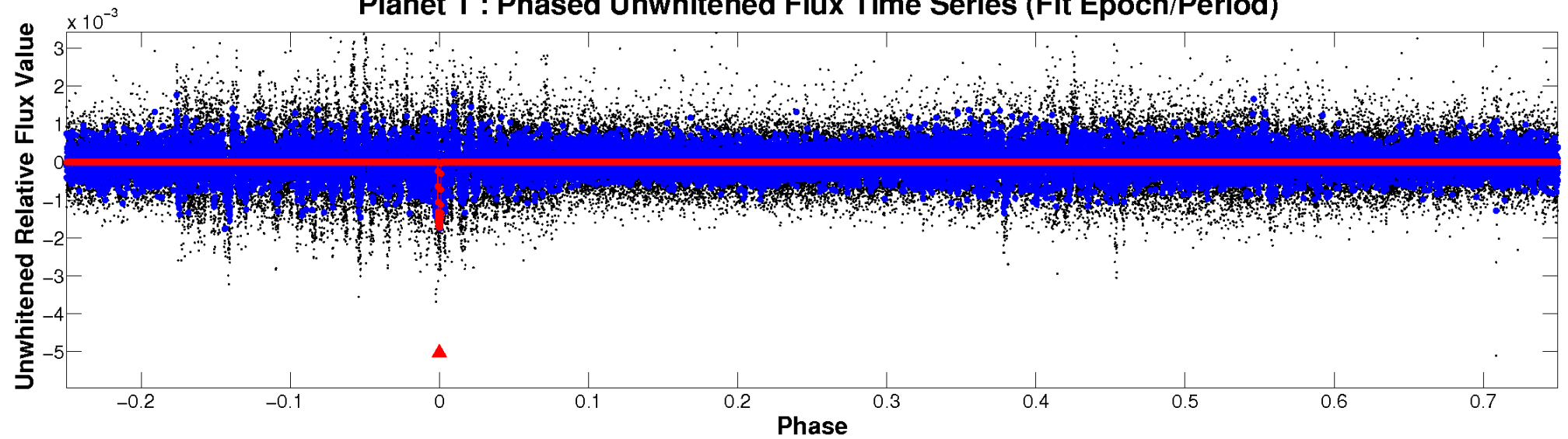
# ALT Odd/Even

TCE 008240915-01

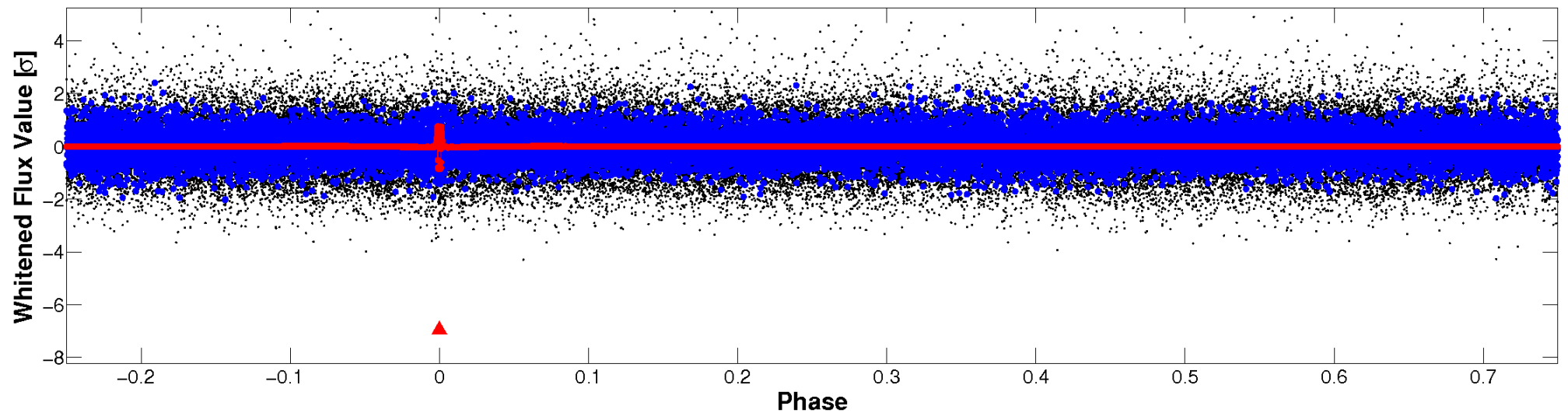


# Non-Whitened Vs. Whitened Light Curve

**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

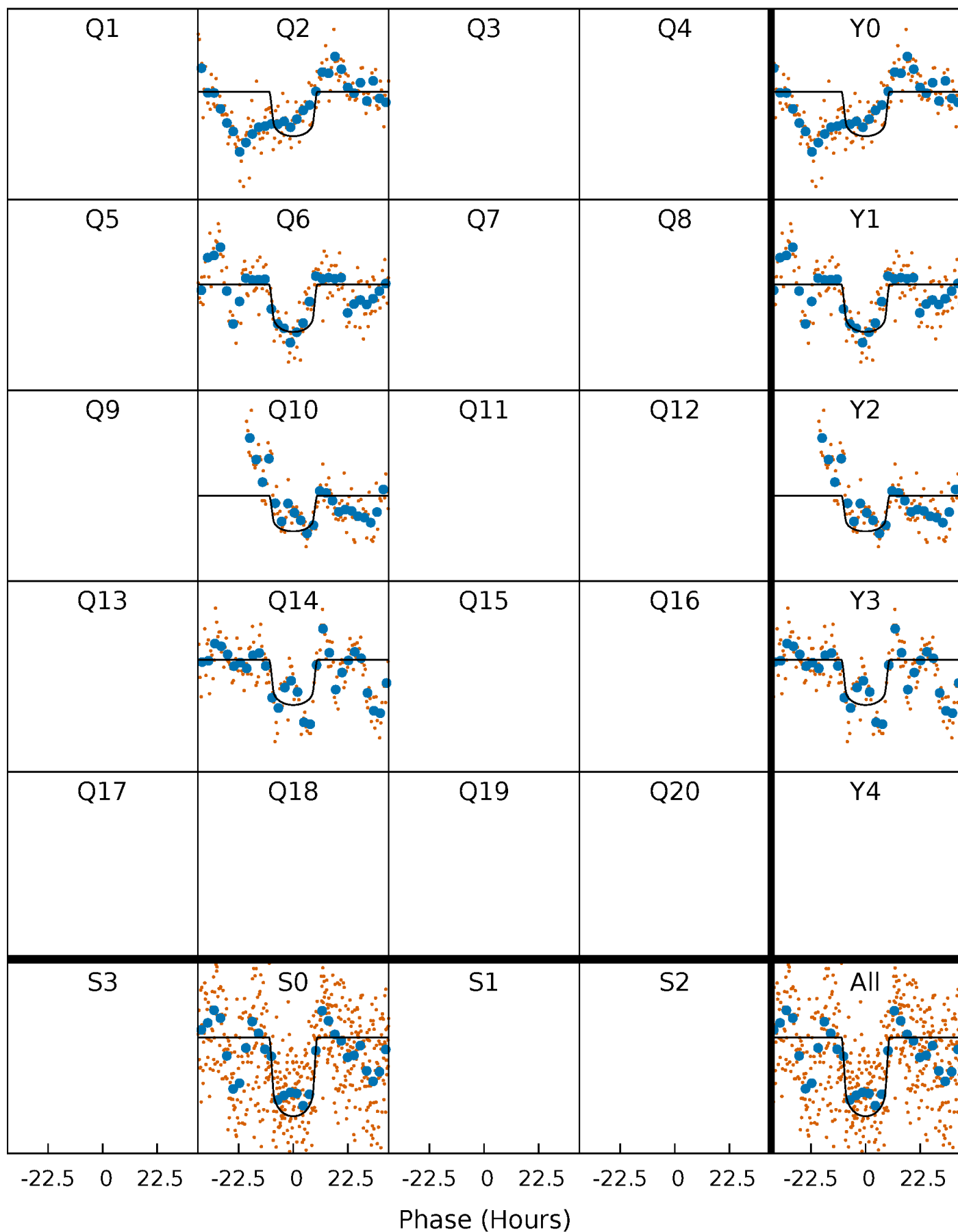
TCE 008240915-01 P=368.176236 Days  $T_0=234.536909$  (BKJD)





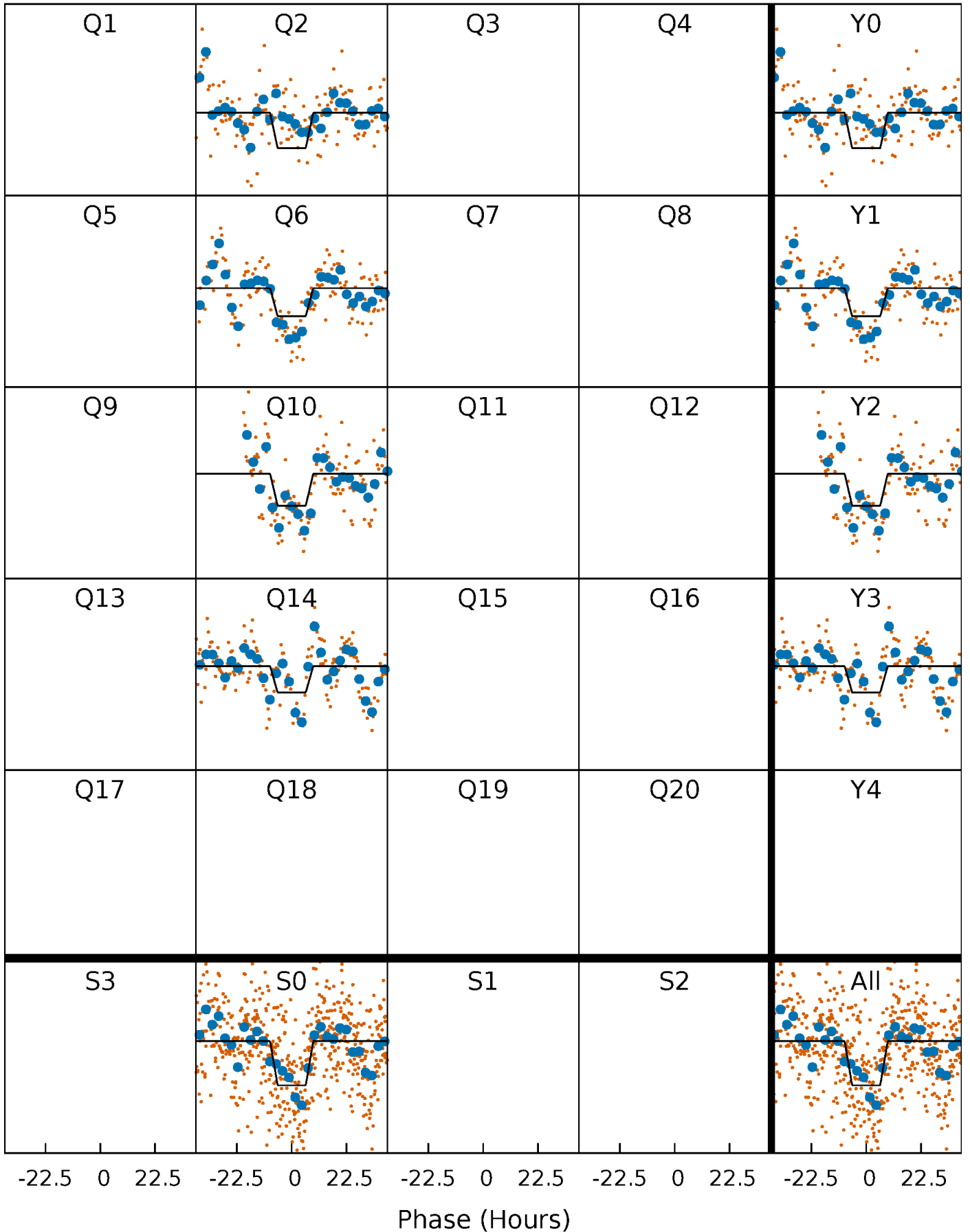
# DV Quarter-Phased Transit Curves

TCE 008240915-01 P=368.176236 Days  $T_0=234.536909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

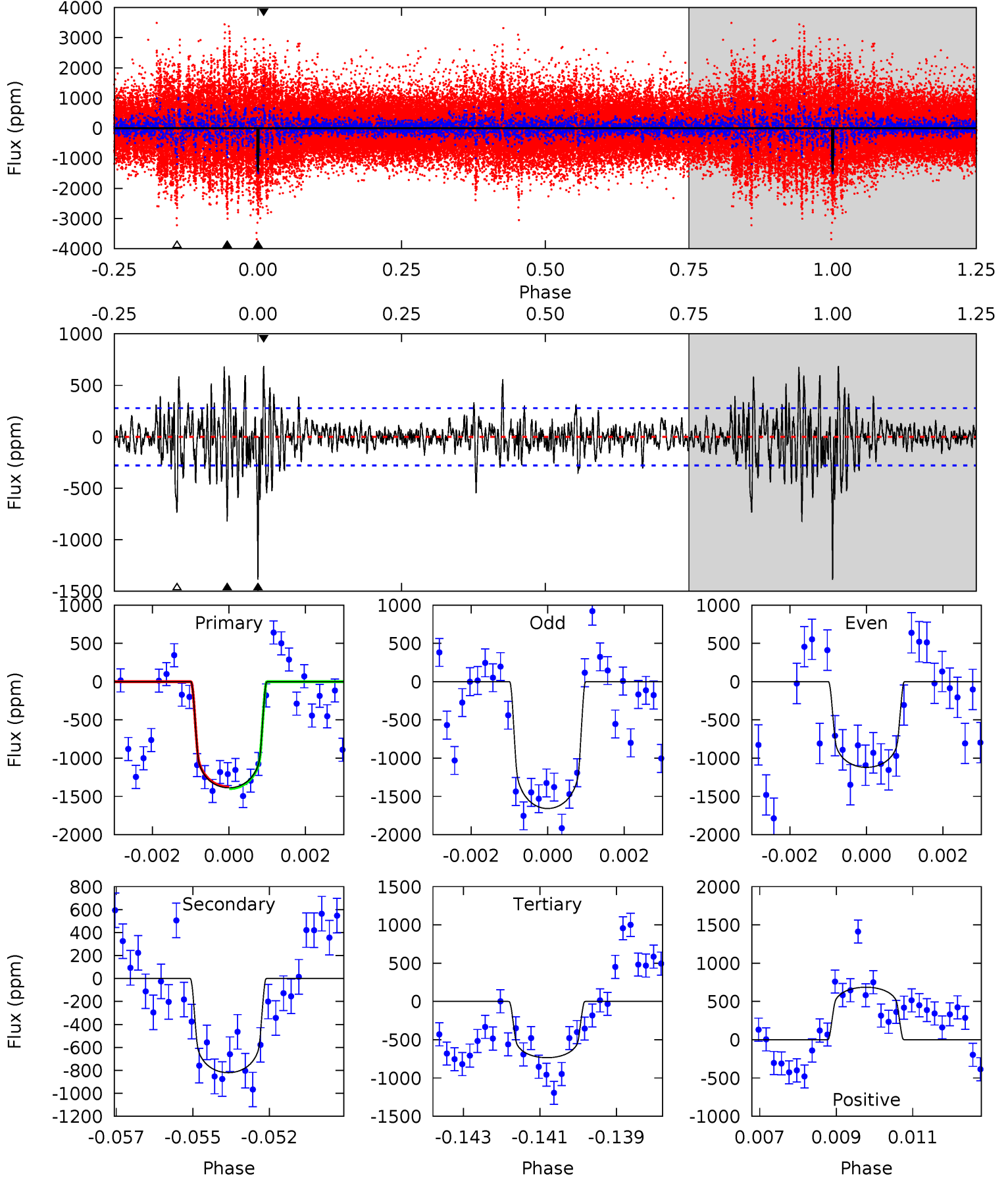
TCE 008240915-01 P=368.267241 Days  $T_0=234.374046$  (BKJD)



# DV Model-Shift Uniqueness Test

008240915-01, P = 368.176236 Days, E = 234.536909 Days

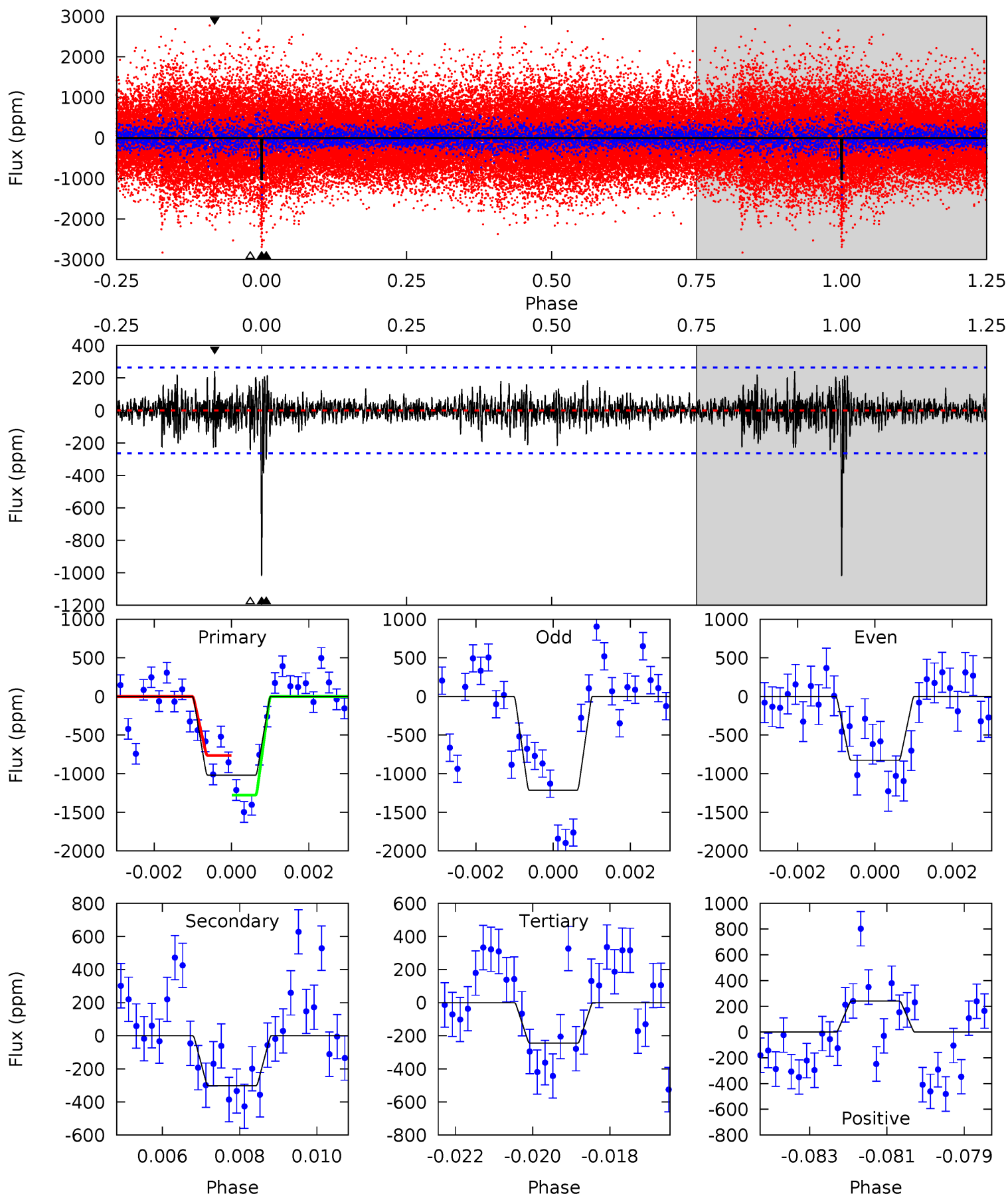
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	15.6	14.0	13.1	5.30	3.05	2.92	12.4	13.4	1.63	2.56	5.10	1.02	0.33	0.21



# Alt Model-Shift Uniqueness Test

008240915-01, P = 368.267241 Days, E = 234.374046 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
20.5	6.07	4.92	4.83	5.33	3.09	1.15	15.6	15.7	1.14	1.24	3.89	0.89	0.19	5.16



### Stellar Parameters For KIC 008240915

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6290^{+175}_{-241}$	$4.527^{+0.039}_{-0.221}$	$-0.500^{+0.300}_{-0.300}$	$0.898^{+0.273}_{-0.091}$	$0.990^{+0.114}_{-0.139}$	$1.925^{+0.404}_{-1.031}$
	+3%/-4%	+1%/-5%	+60%/-60%	+30%/-10%	+12%/-14%	+21%/-54%
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 008240915-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-820 \pm 52$	$4.25^{+0.73}_{-0.53}$	$376^{+27}_{-19}$	$5244^{+277}_{-249}$	$24186^{+7164}_{-6175}$
Alt.	$-301 \pm 50$	$3.33^{+0.62}_{-0.44}$	$376^{+30}_{-20}$	$4717^{+312}_{-287}$	$14384^{+5316}_{-4756}$

$T_{\text{max}}$  = 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

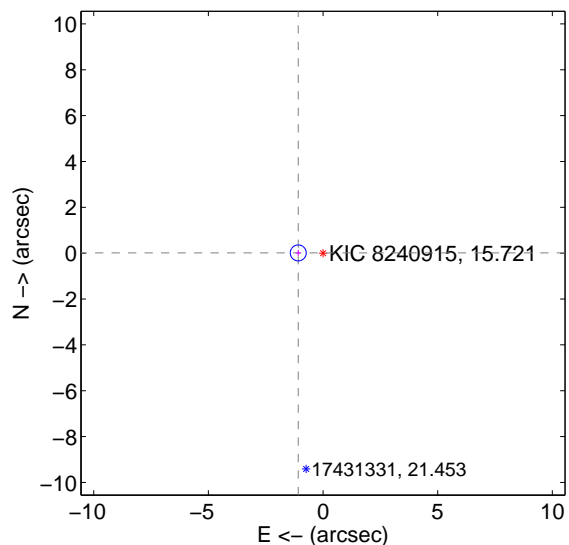
Supplemental centroid analysis for 008240915-01. Kepler magnitude: 15.72. Transit SNR 10.47

There are 1 quarters with good PRF difference image offsets

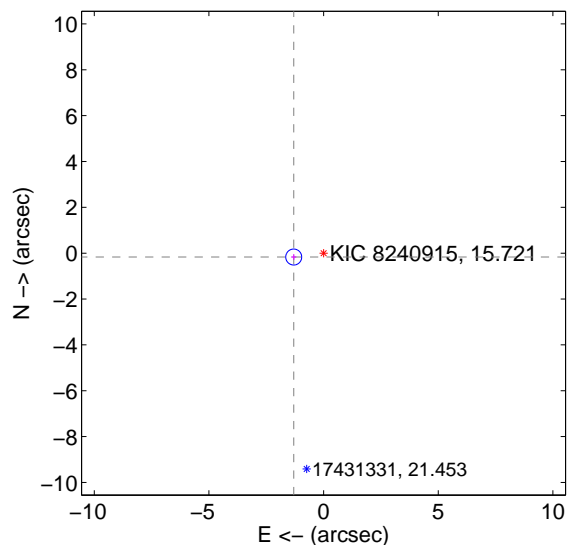
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.081 \pm 0.116$	9.32	$1.081 \pm 0.116$	$0.011 \pm 0.127$
PRF-fit source offset from KIC position	$1.313 \pm 0.116$	11.31	$1.303 \pm 0.116$	$-0.168 \pm 0.127$
photometric centroid source offset	$4.14 \pm 1.55$	2.67	$-1.38 \pm 1.45$	$3.90 \pm 1.56$

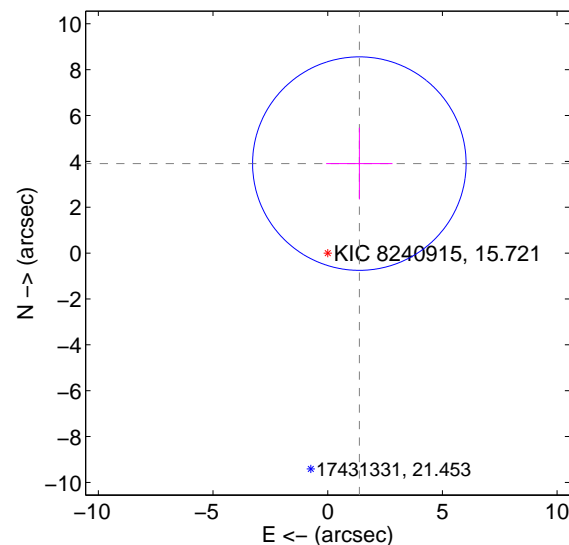
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



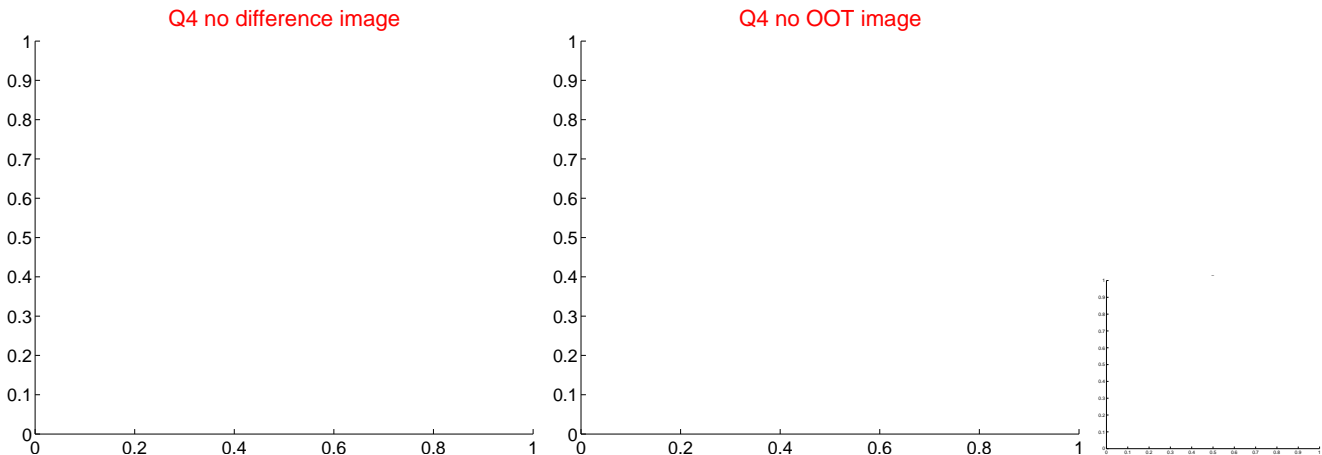
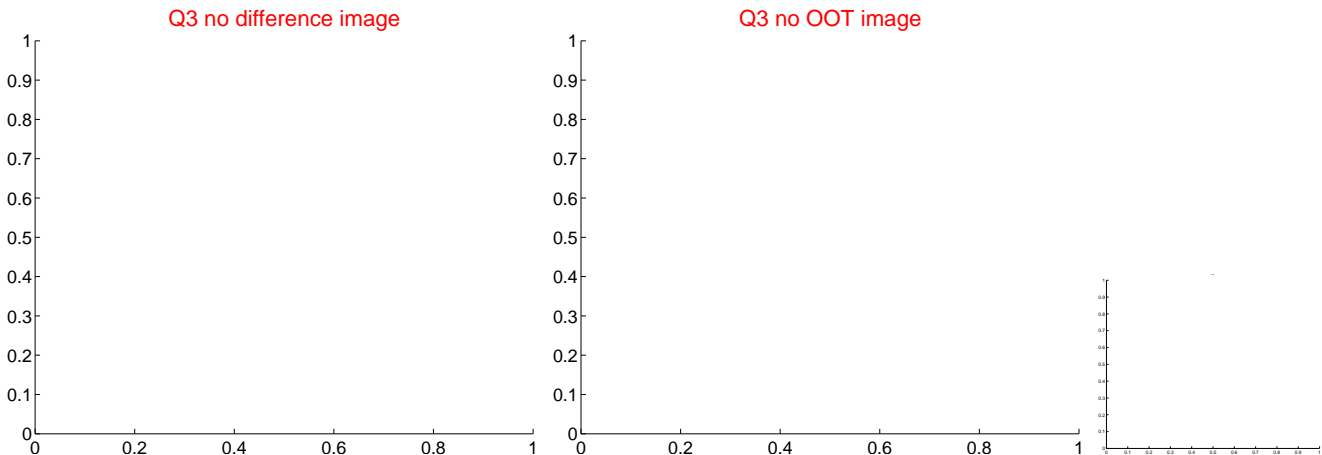
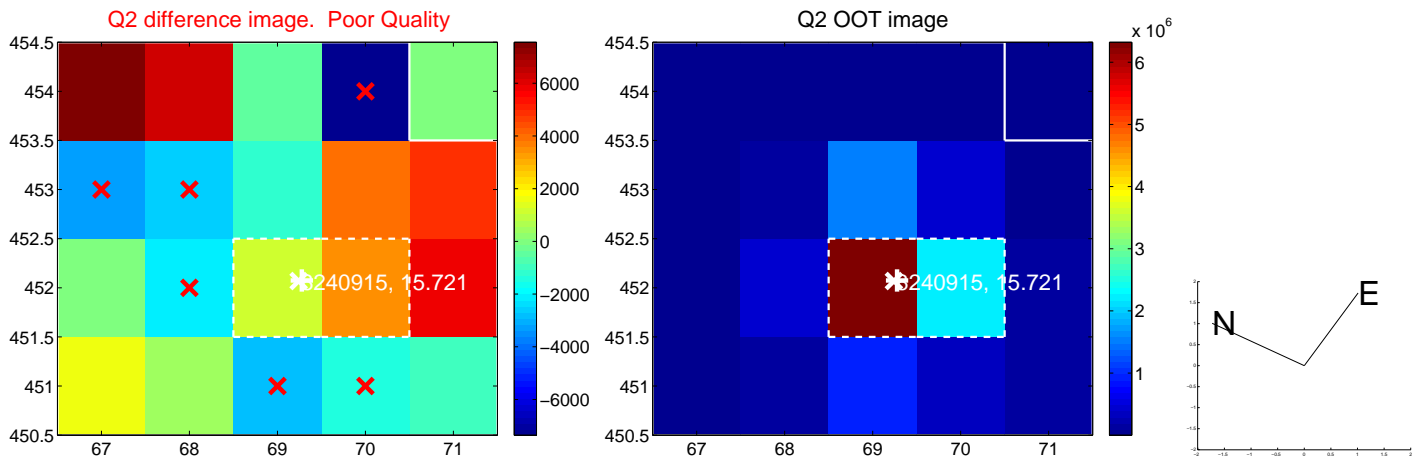
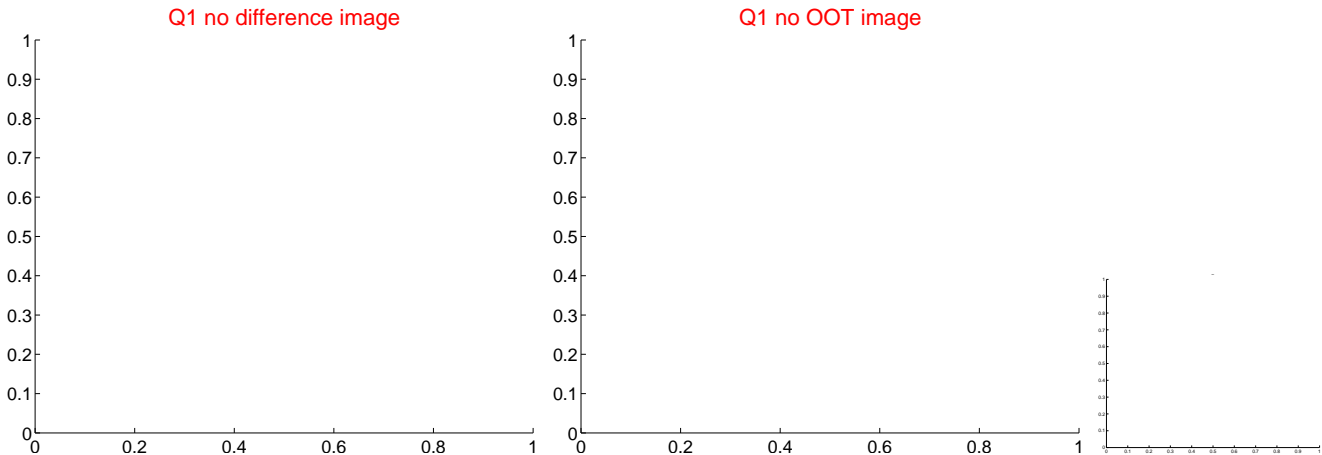
offset from photometric centroids



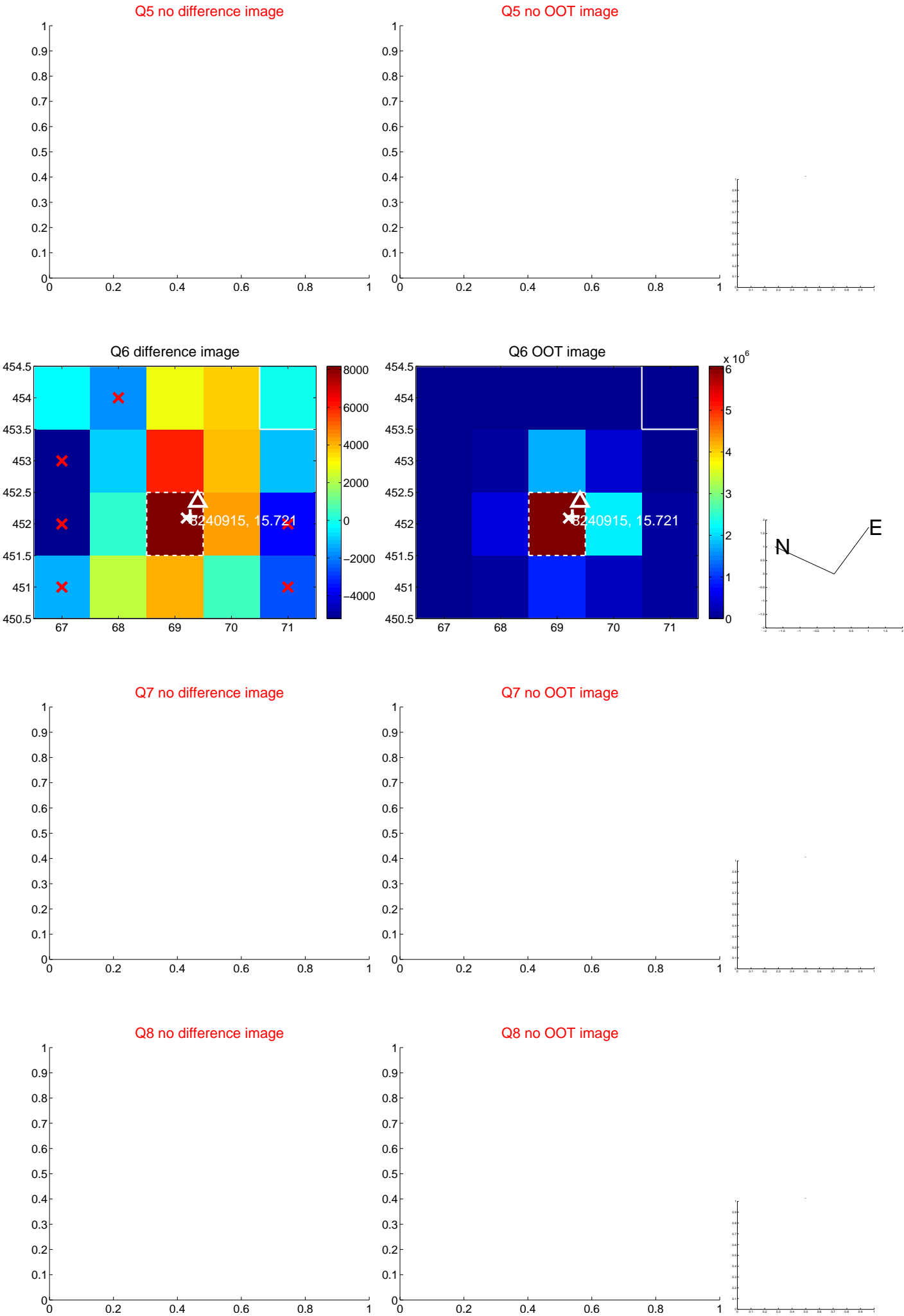
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



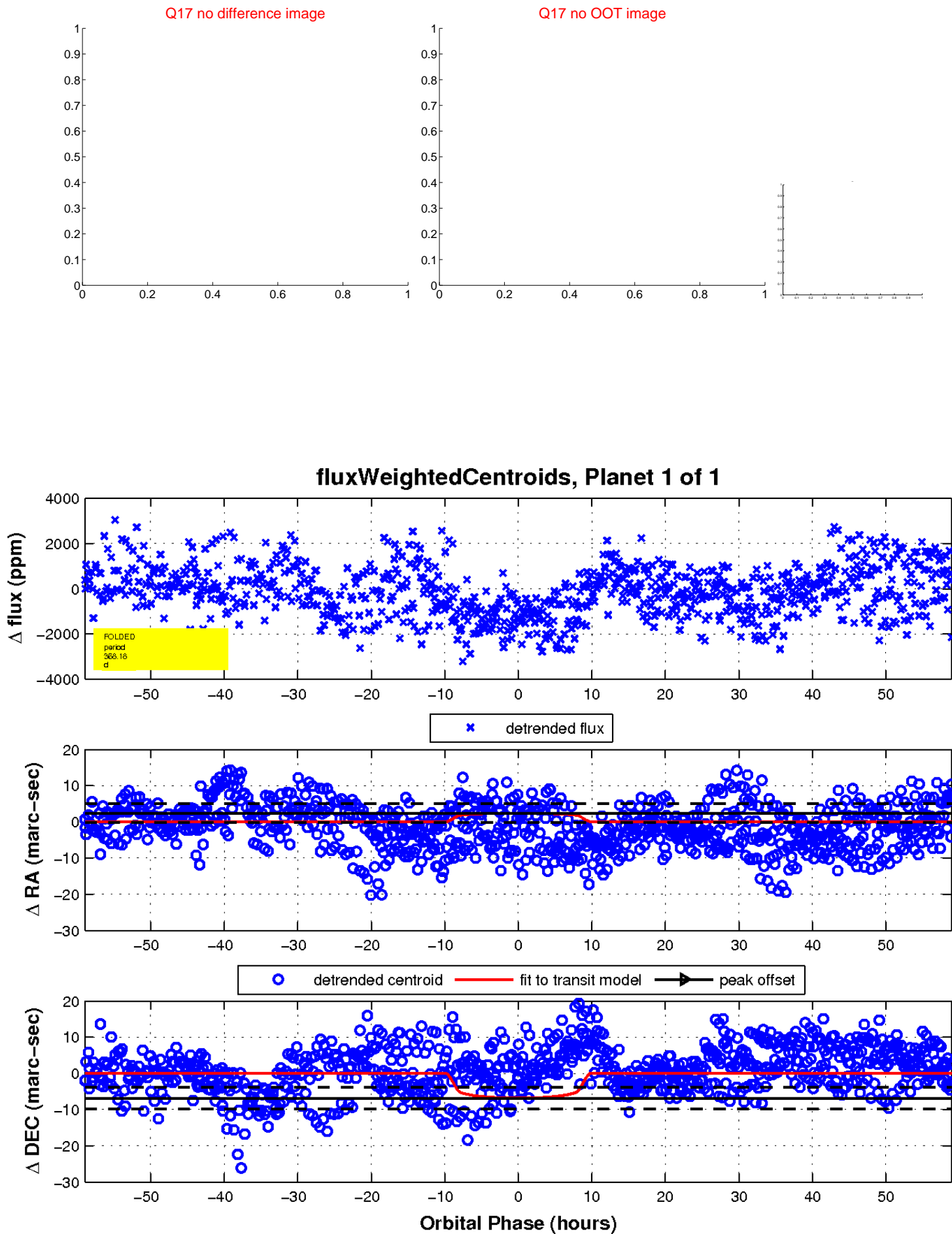
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

