

# KIC 008240170

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240170-01	OBS	No	369.378237	234.934221	794.1	17.325	8.0	8.1	1.01	6296	3.18	1.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240170-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—ALL_TRANS_CHASES—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.

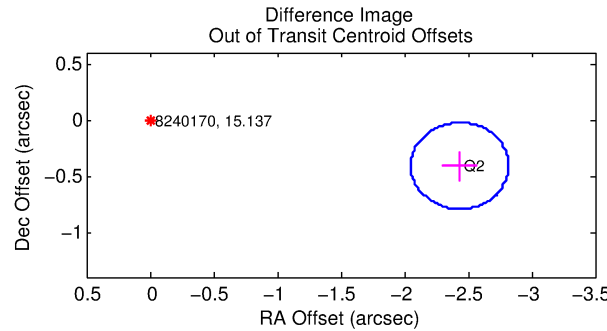
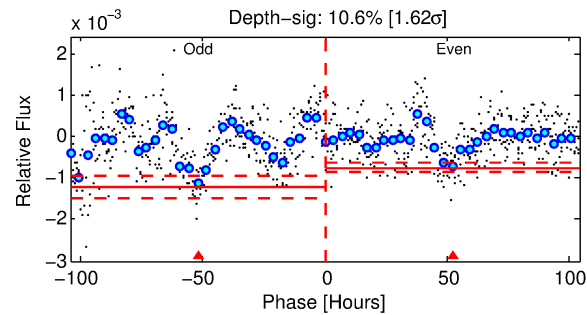
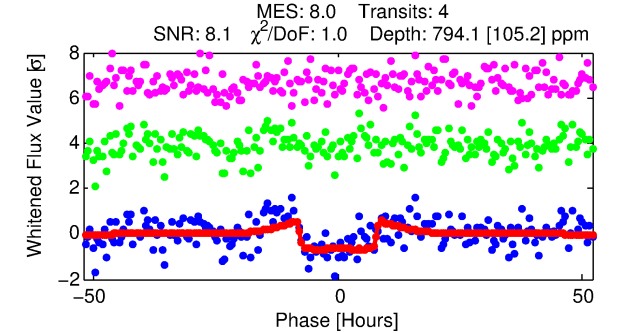
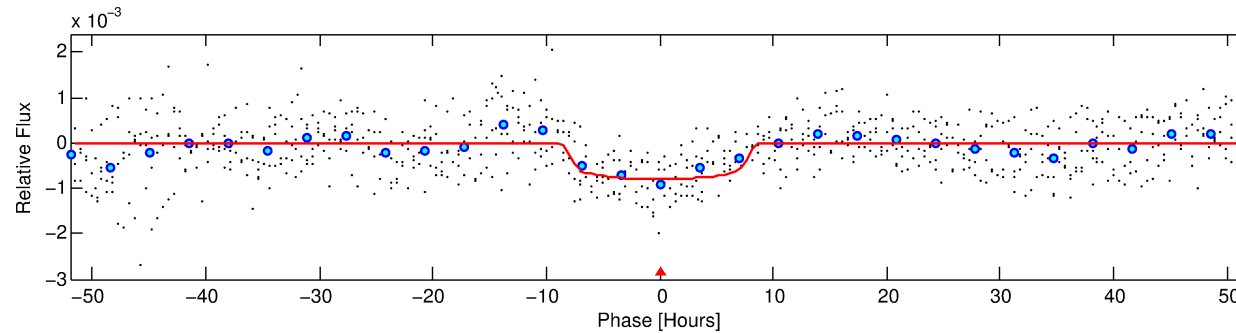
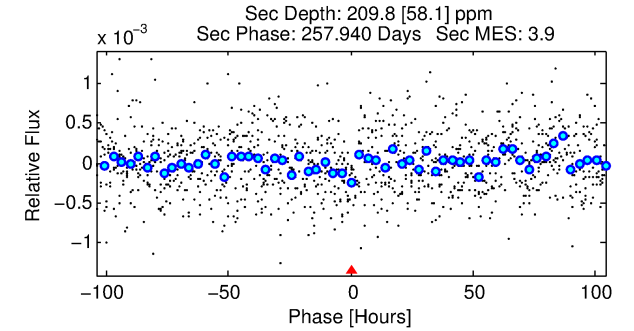
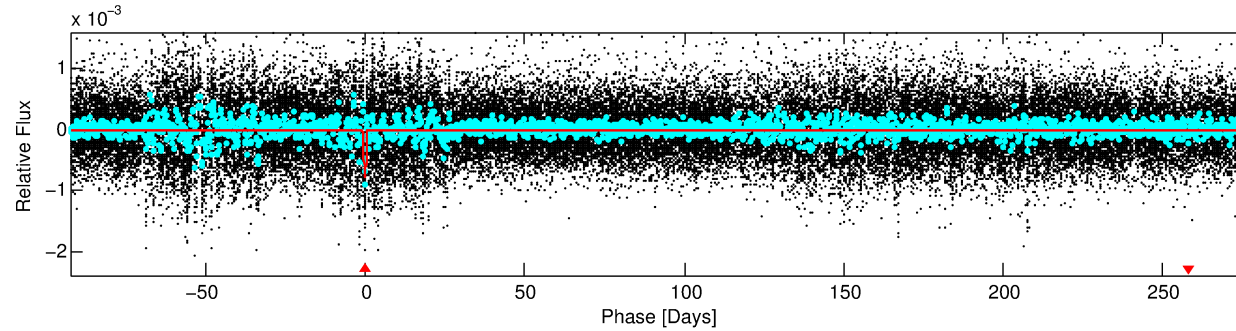
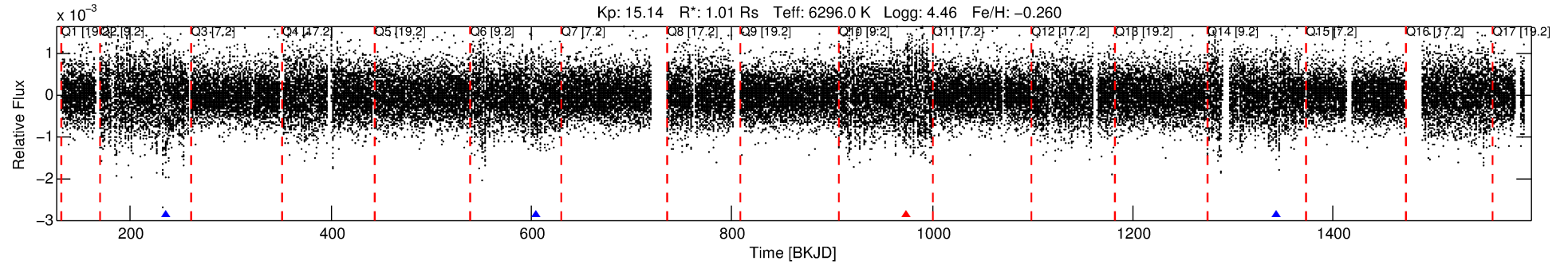
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008240170-01

No Significant Match Found

# DV One-Page Summary

KIC: 8240170 Candidate: 1 of 1 Period: 369.378 d



## DV Fit Results:

Period = 369.37824 [0.01025] d  
Epoch = 234.9342 [0.0200] BKJD  
Rp/R\* = 0.0290 [0.0030]  
a/R\* = 98.11 [37.71]  
b = 0.83 [0.14]  
Seff = 1.35 [0.56]  
Teq = 275 [28] K  
Rp = 3.18 [1.04] Re  
a = 1.0290 [0.2727] AU  
Ag = 12066.41 [6302.10] [1.91σ]  
Teff = 4450 [415] K [10.03σ]

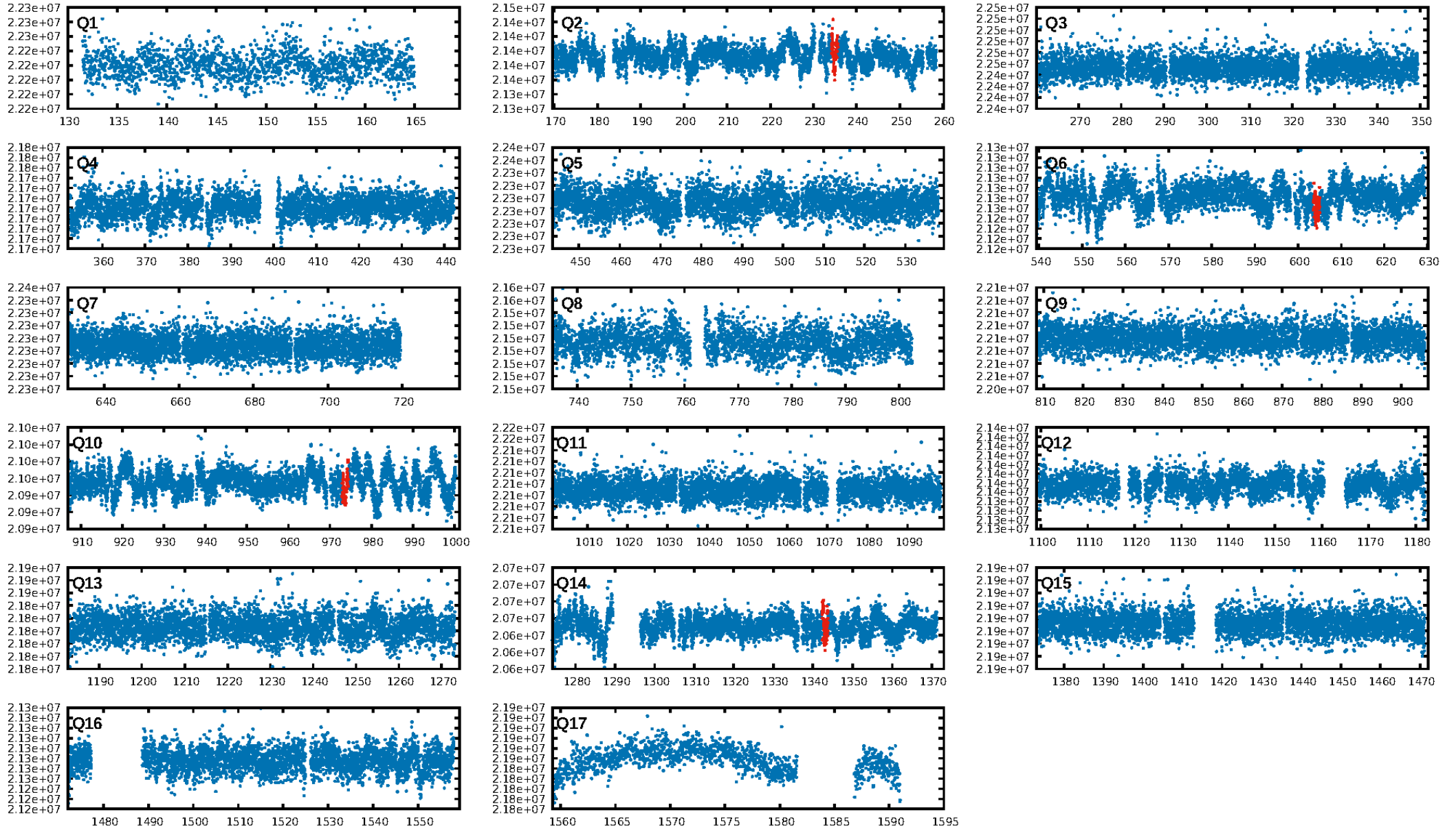
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 39.3%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 4.96e-10  
RollingBand-fgt: 0.75 [3/4]  
GhostDiagnostic-chr: 2.549  
Centroid-sig: 0.0%  
Centroid-so: 7.032 arcsec [2.83σ]  
OotOffset-rm: 2.468 arcsec [19.22σ]  
KicOffset-rm: 2.621 arcsec [20.43σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [4/4]

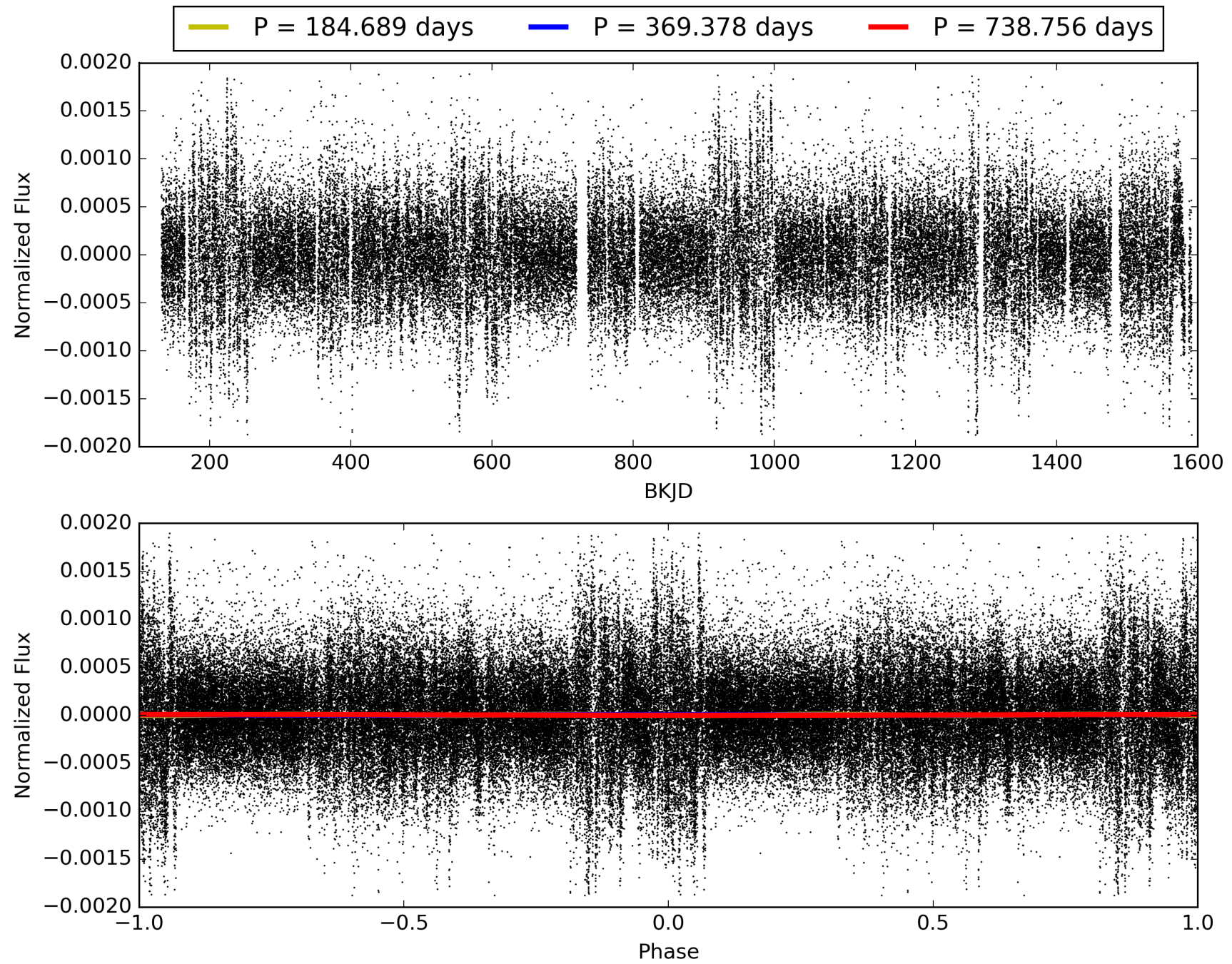
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:17:05 Z

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

# TCE 008240170-01, PDC Light Curves

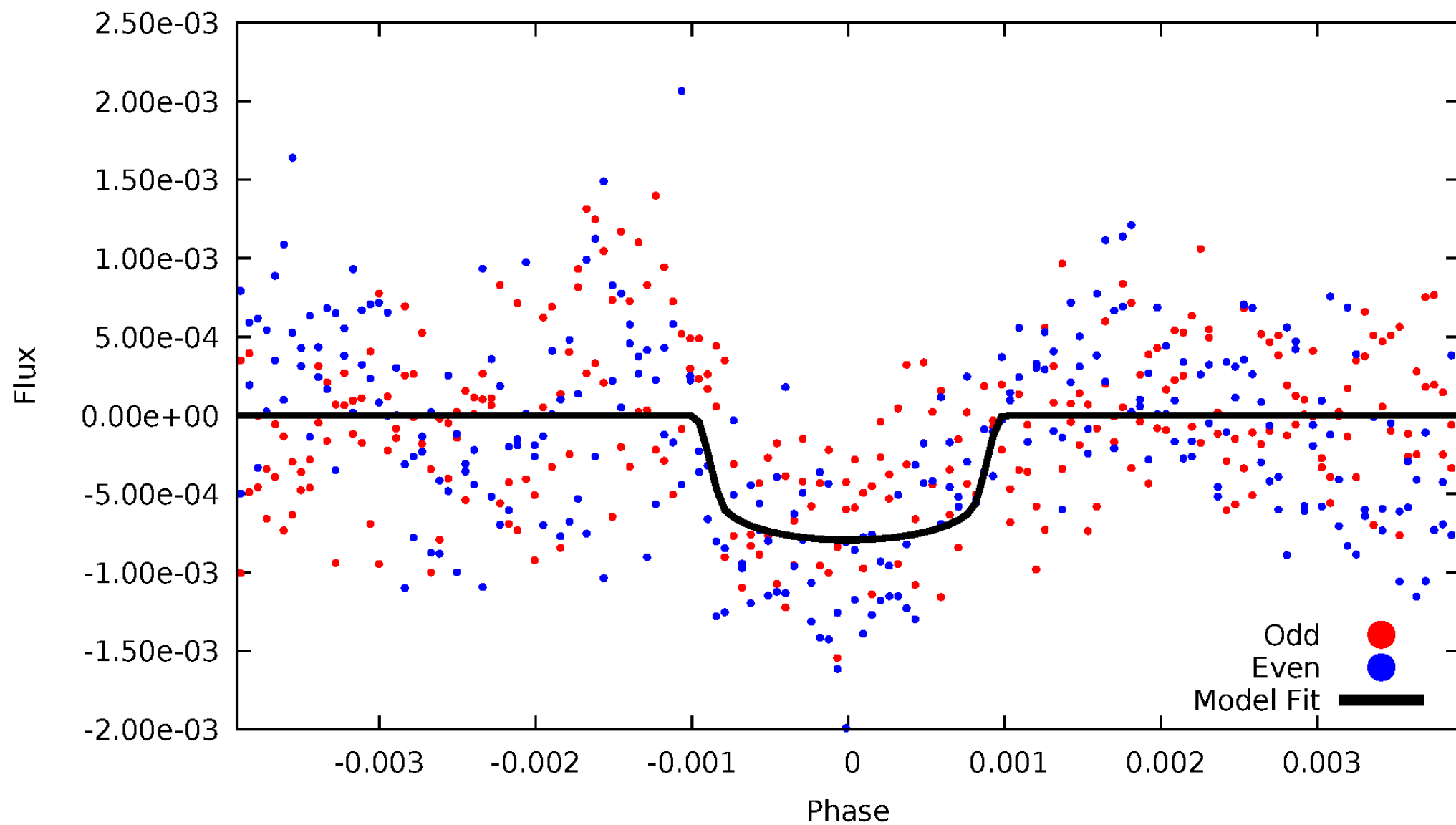


TCE 008240170-01



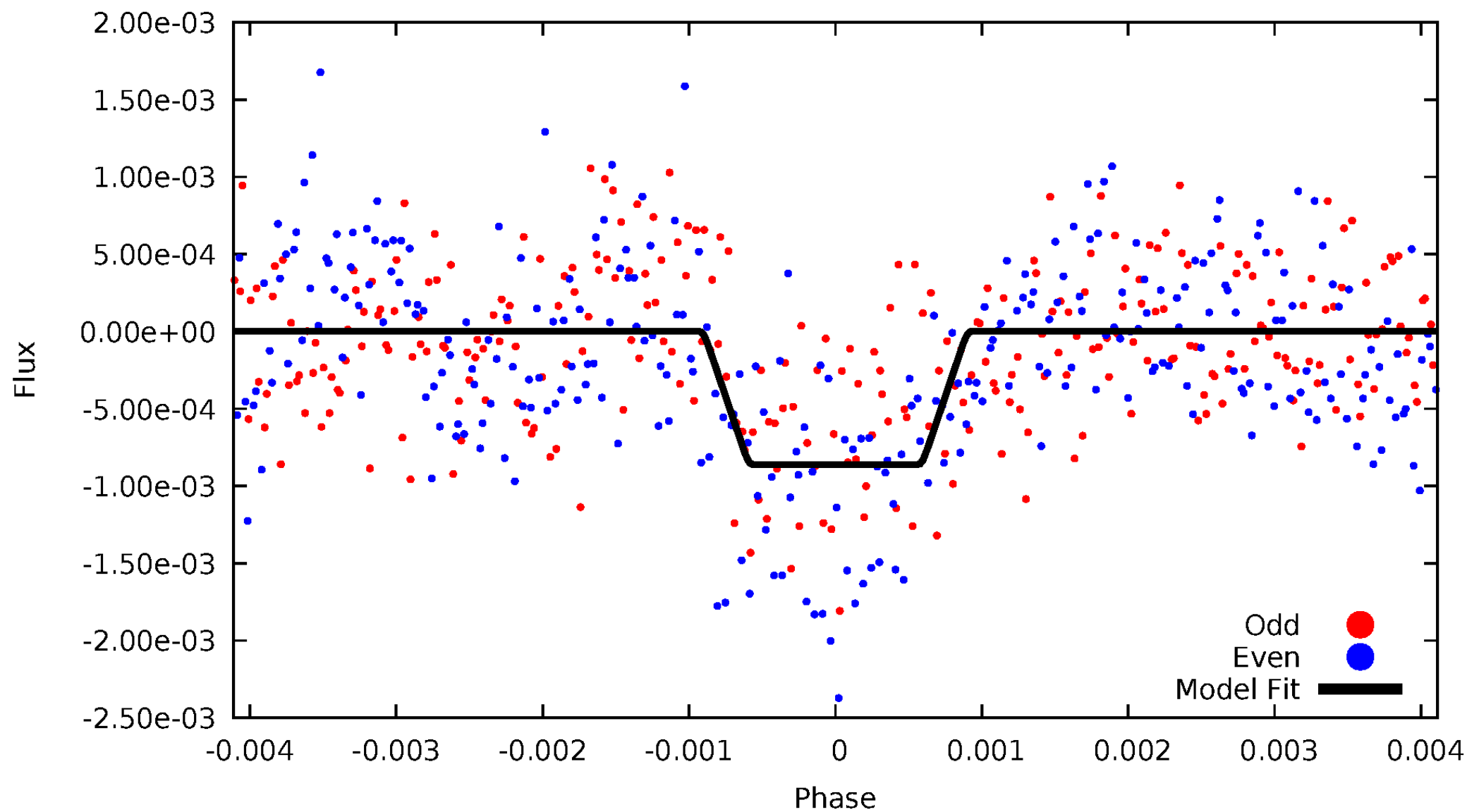
# DV Odd/Even

TCE 008240170-01



# ALT Odd/Even

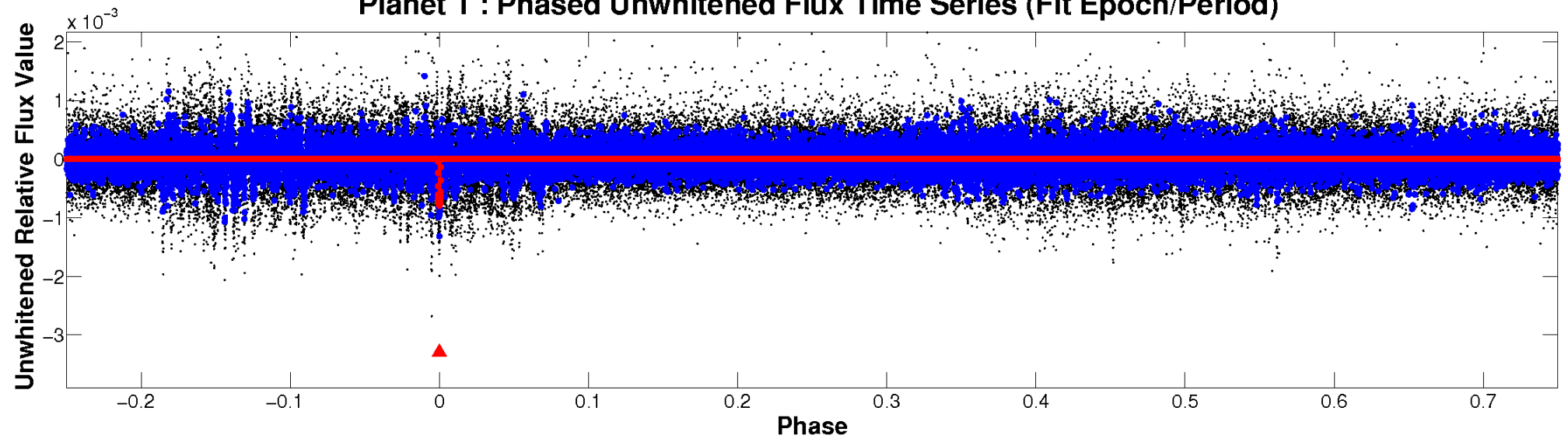
TCE 008240170-01



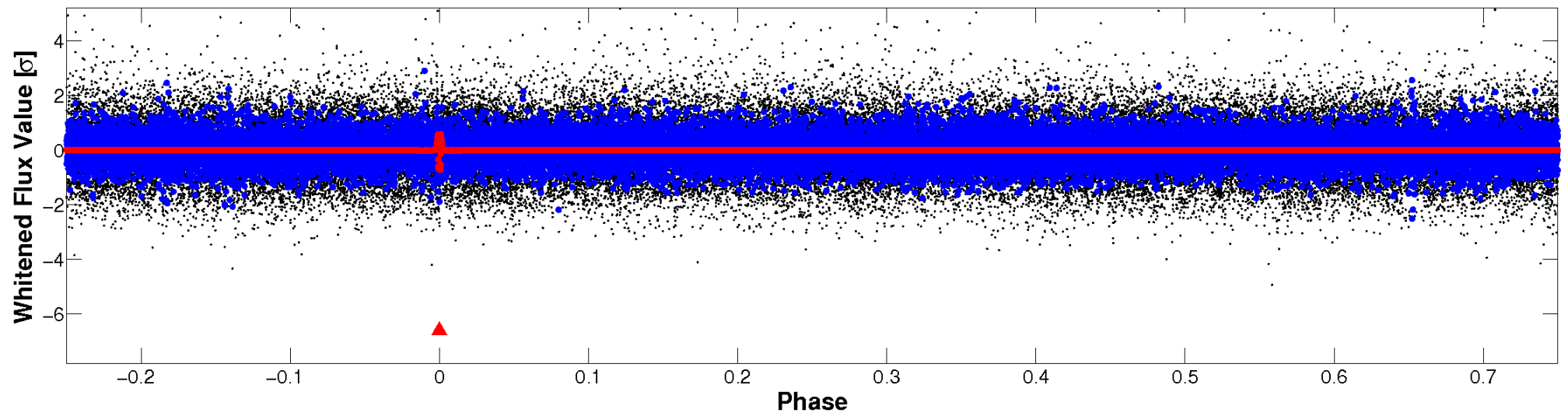


# Non-Whitened Vs. Whitened Light Curve

**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

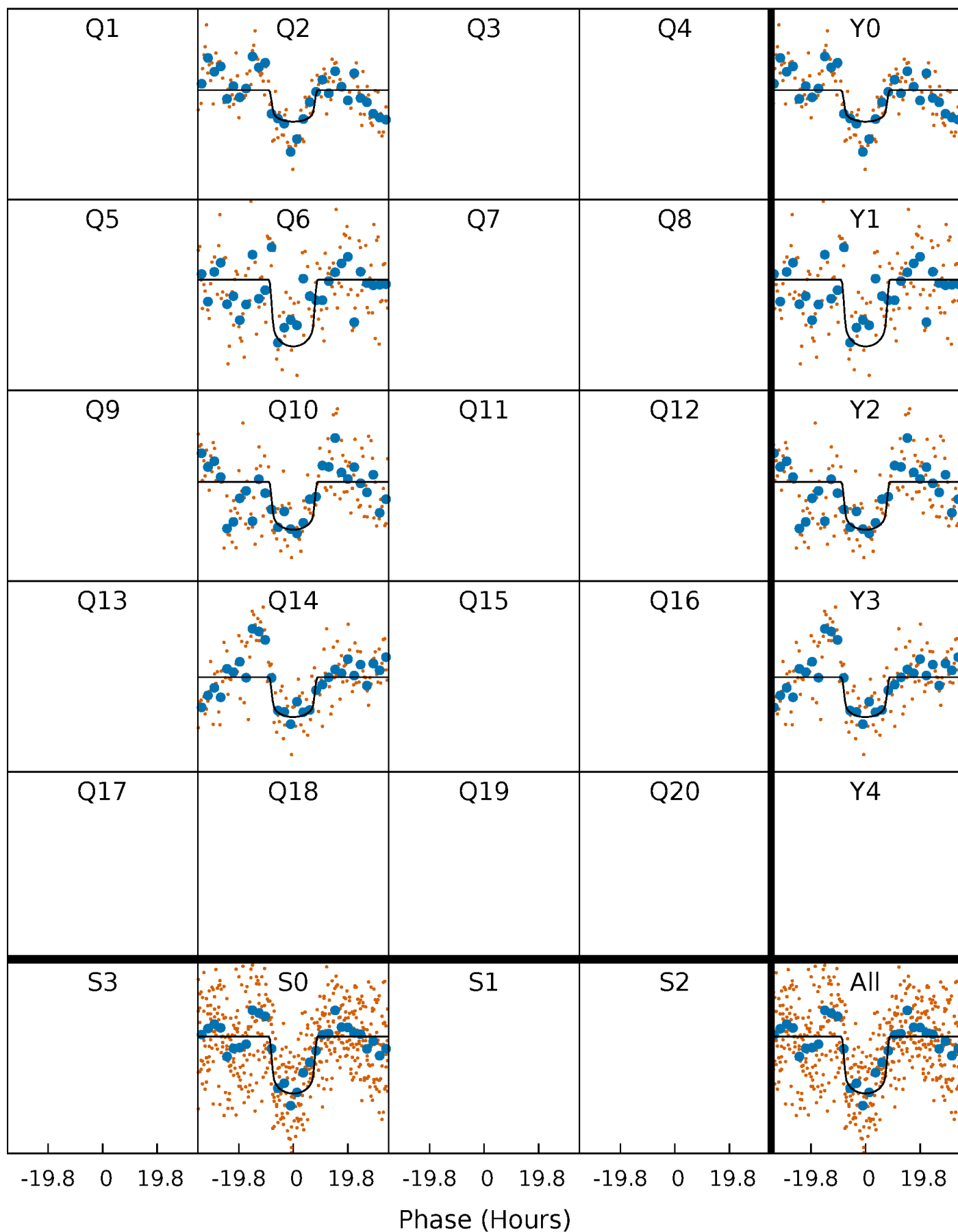
TCE 008240170-01 P=369.378237 Days  $T_0=234.934221$  (BKJD)





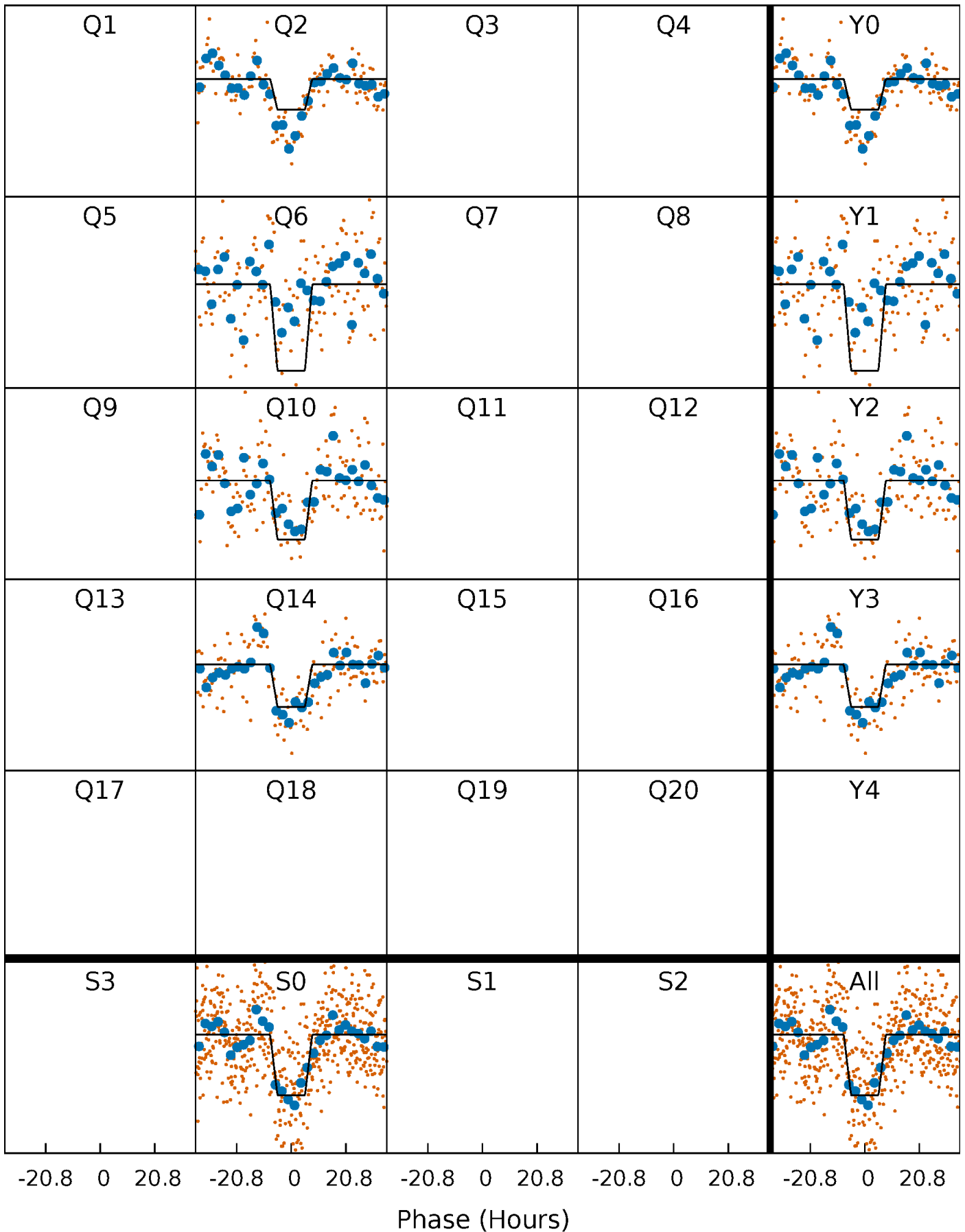
# DV Quarter-Phased Transit Curves

TCE 008240170-01 P=369.378237 Days  $T_0=234.934221$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

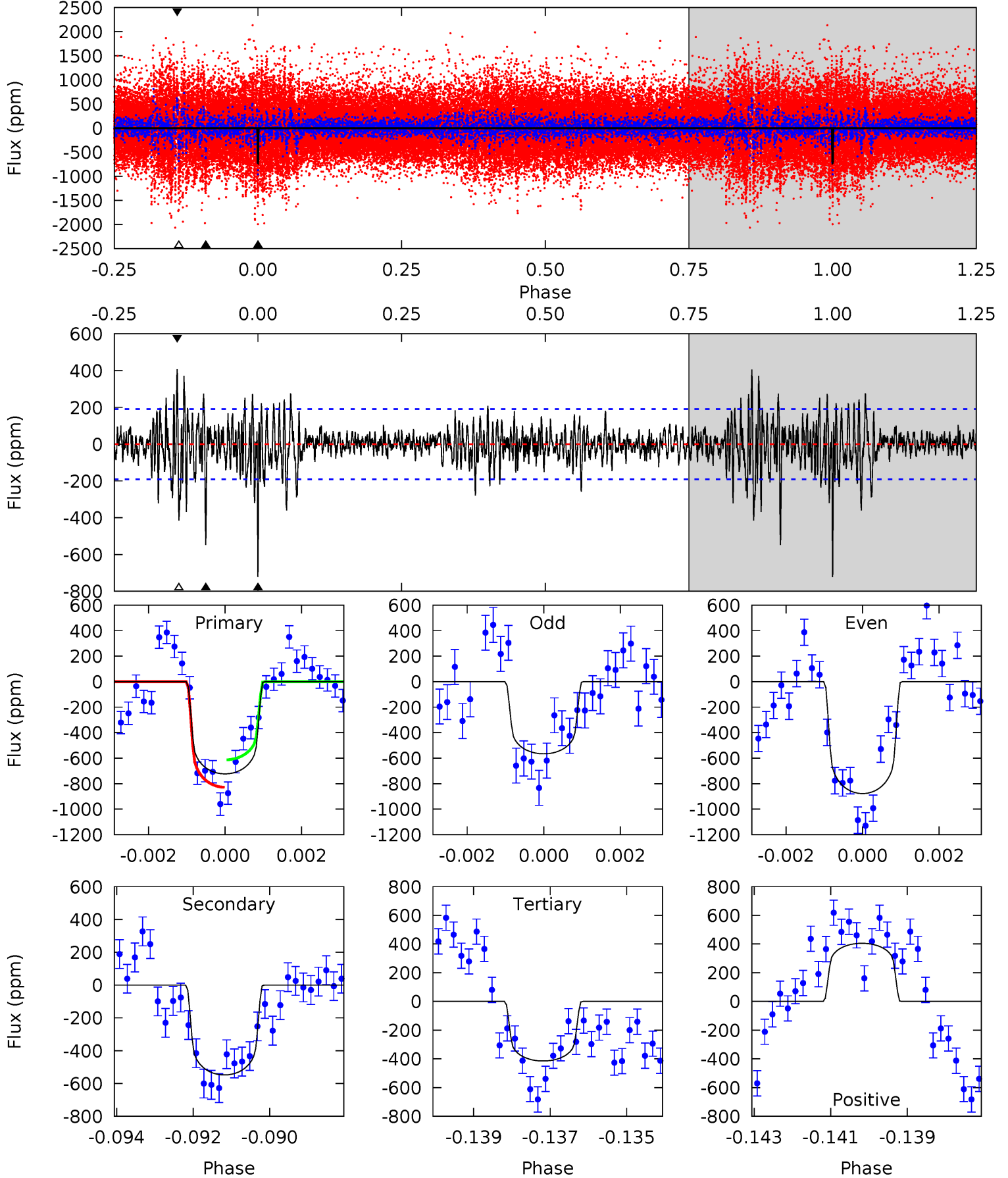
TCE 008240170-01 P=369.370653 Days  $T_0=234.920122$  (BKJD)



# DV Model-Shift Uniqueness Test

008240170-01, P = 369.378237 Days, E = 234.934221 Days

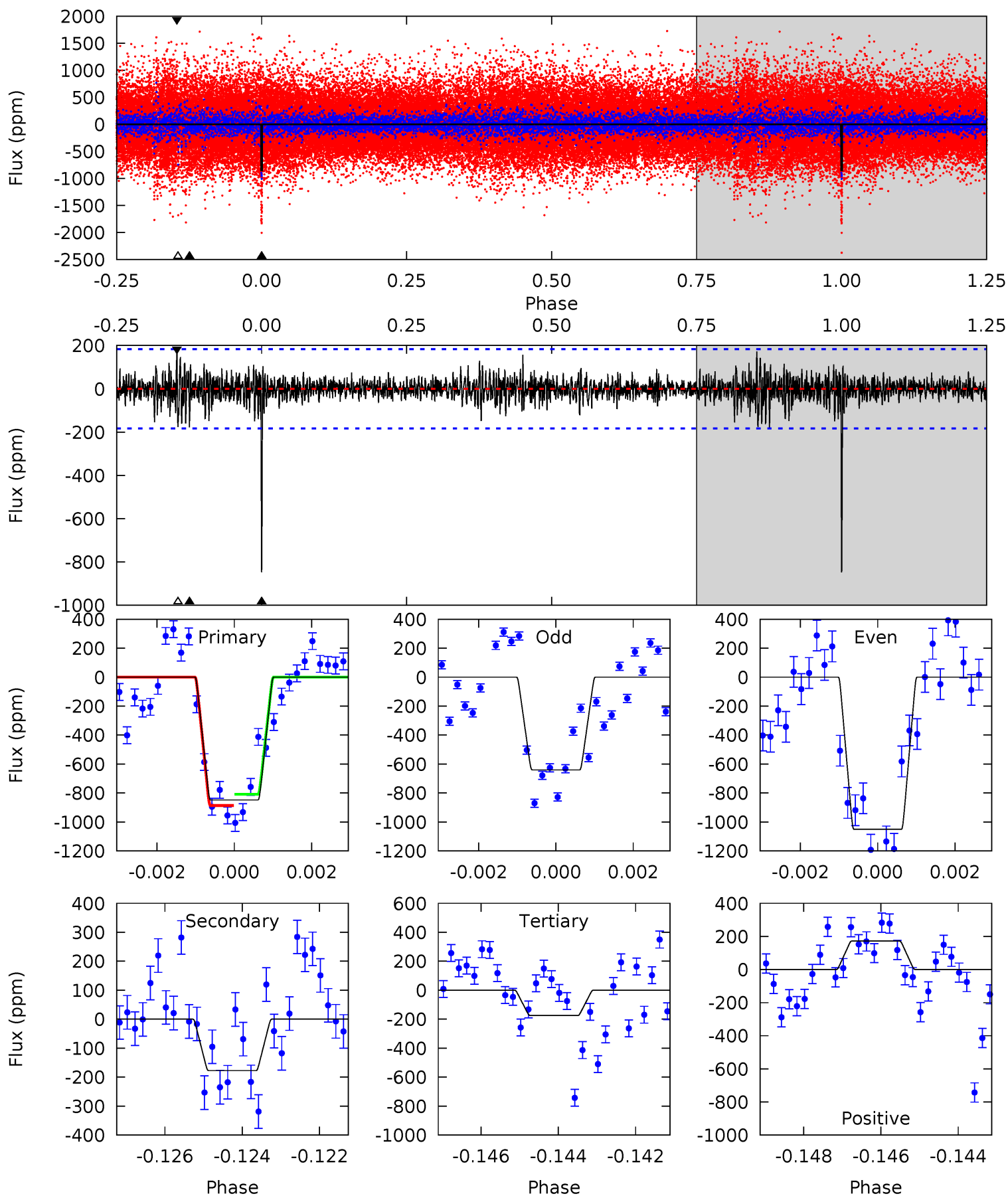
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.2	15.3	11.6	11.3	5.33	3.09	2.35	8.61	8.88	3.72	3.99	4.35	0.99	0.36	3.01



# Alt Model-Shift Uniqueness Test

008240170-01, P = 369.370653 Days, E = 234.920122 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
24.7	5.17	5.08	5.02	5.34	3.12	1.10	19.6	19.7	0.08	0.15	5.97	1.03	0.17	1.14



### Stellar Parameters For KIC 008240170

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6296^{+175}_{-219}$	$4.460^{+0.054}_{-0.216}$	$-0.260^{+0.250}_{-0.350}$	$1.006^{+0.312}_{-0.112}$	$1.066^{+0.144}_{-0.144}$	$1.473^{+0.445}_{-0.812}$
	+3%/-3%	+1%/-5%	+96%/-135%	+31%/-11%	+14%/-14%	+30%/-55%
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 008240170-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-548 \pm 36$	$3.32^{+0.64}_{-0.46}$	$392^{+30}_{-20}$	$5649^{+372}_{-291}$	$28423^{+9437}_{-8042}$
Alt.	$-178 \pm 34$	$3.34^{+0.59}_{-0.45}$	$392^{+29}_{-20}$	$4441^{+287}_{-251}$	$8895^{+3549}_{-2580}$

$T_{max}$  = 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

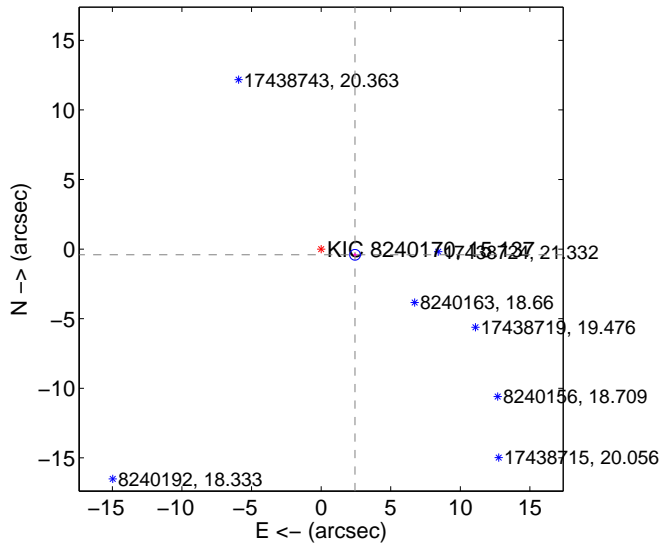
Supplemental centroid analysis for 008240170-01. Kepler magnitude: 15.14. Transit SNR 8.13

There are 0 quarters with good PRF difference image offsets

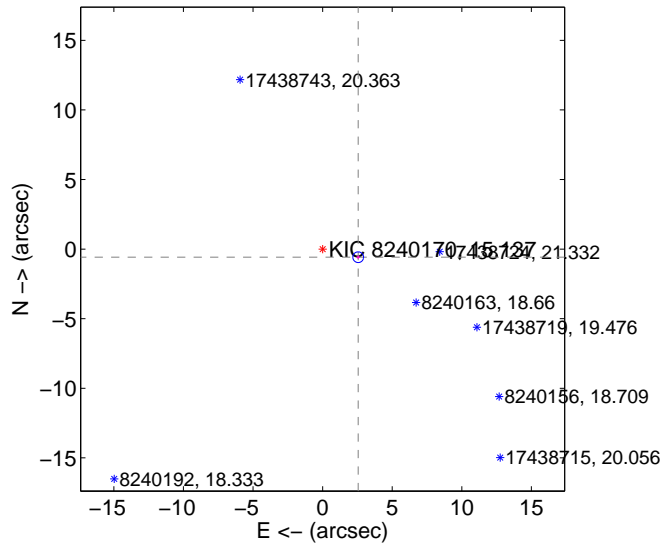
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.468 \pm 0.128$	19.22	$-2.434 \pm 0.129$	$-0.410 \pm 0.124$
PRF-fit source offset from KIC position	$2.621 \pm 0.128$	20.43	$-2.556 \pm 0.129$	$-0.582 \pm 0.124$
photometric centroid source offset	$7.03 \pm 2.49$	2.83	$6.65 \pm 2.46$	$-2.29 \pm 2.66$

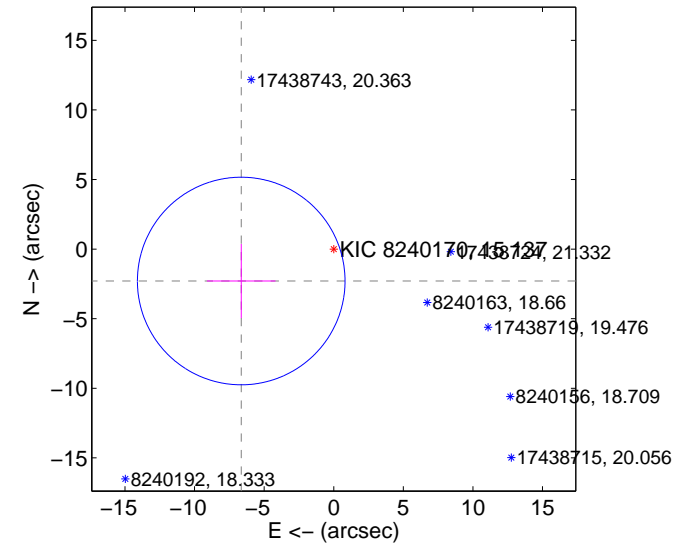
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



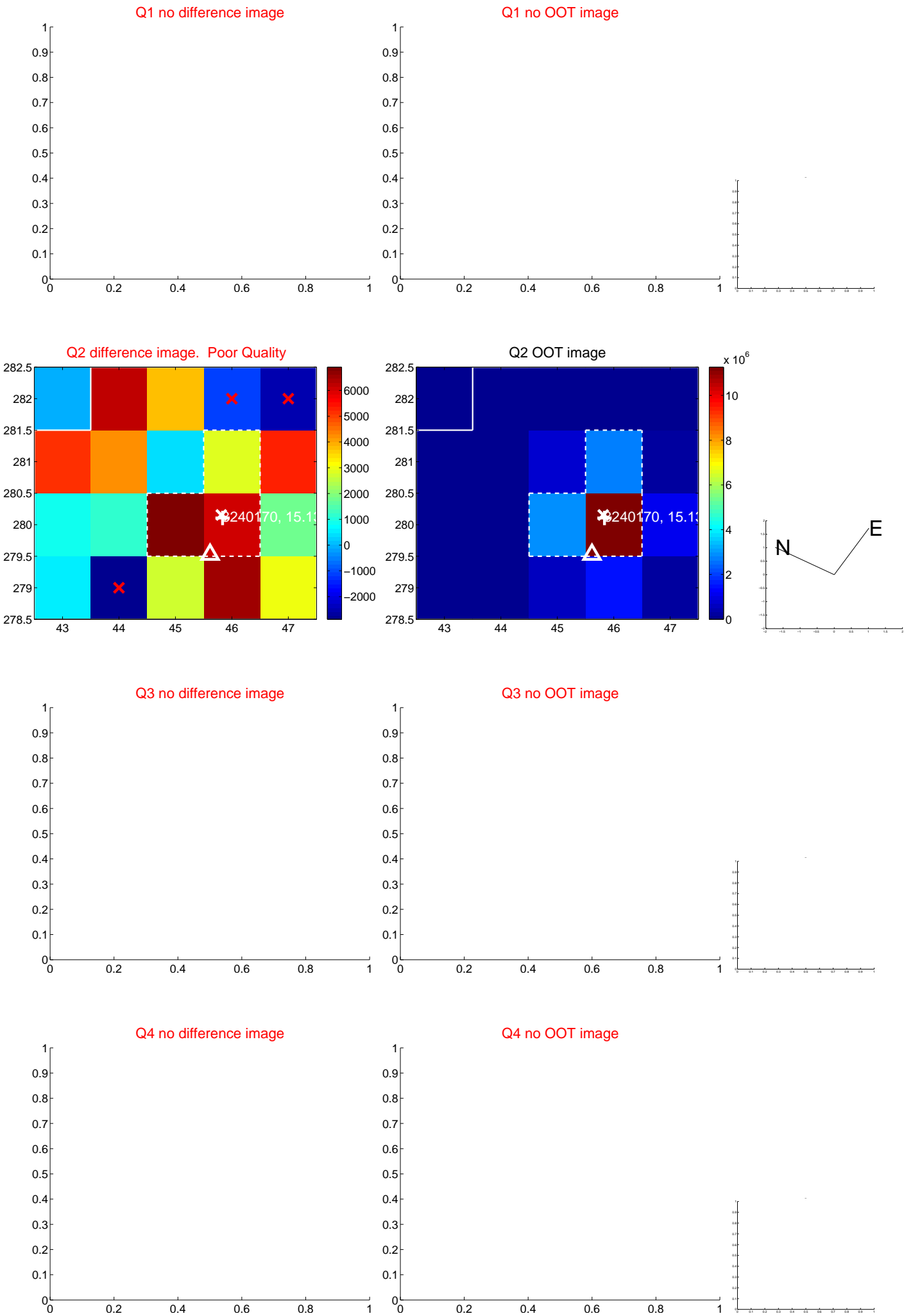
offset from photometric centroids



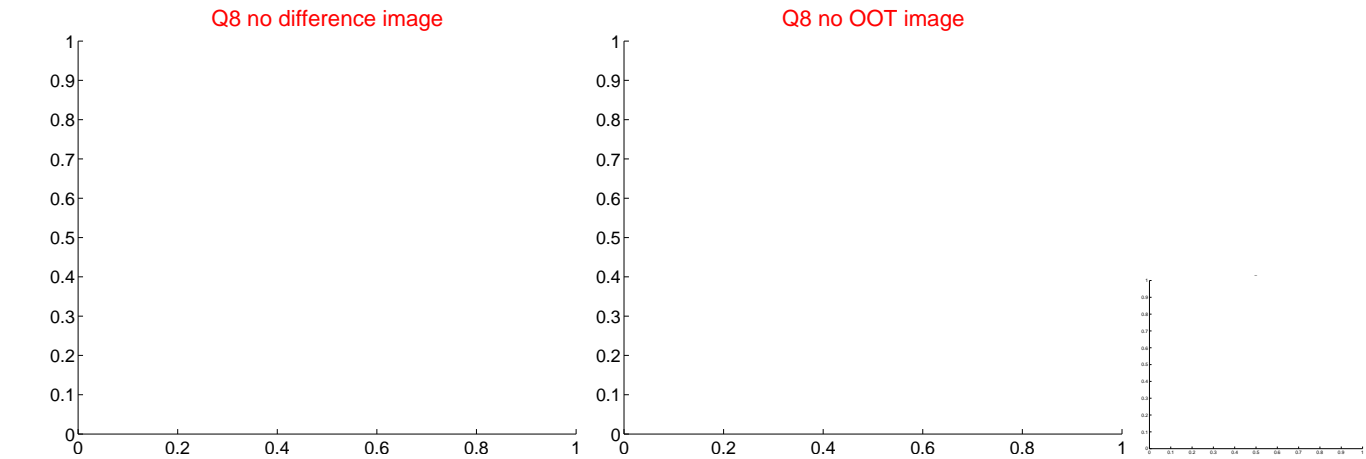
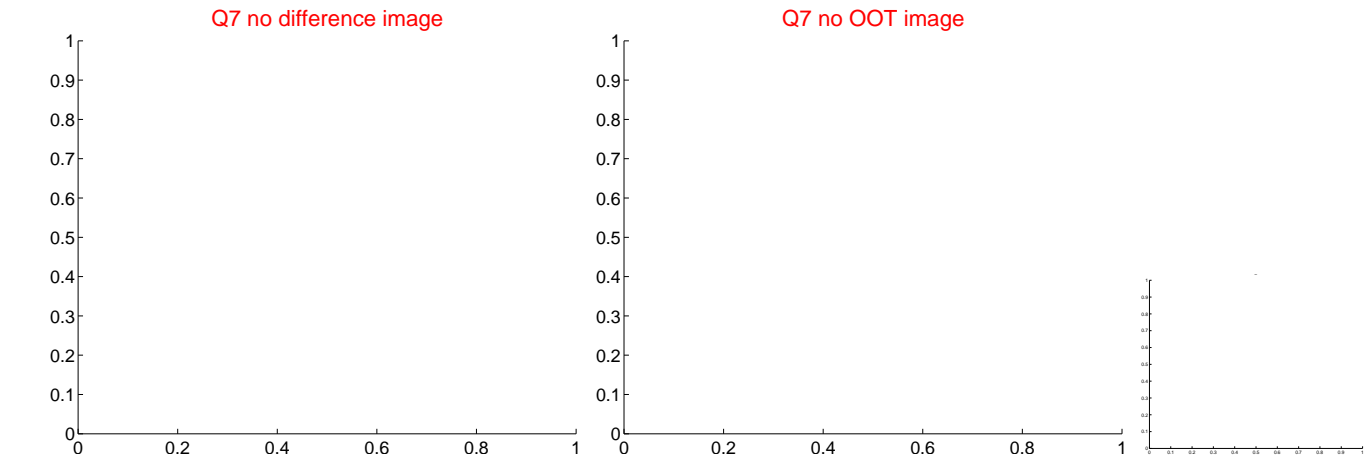
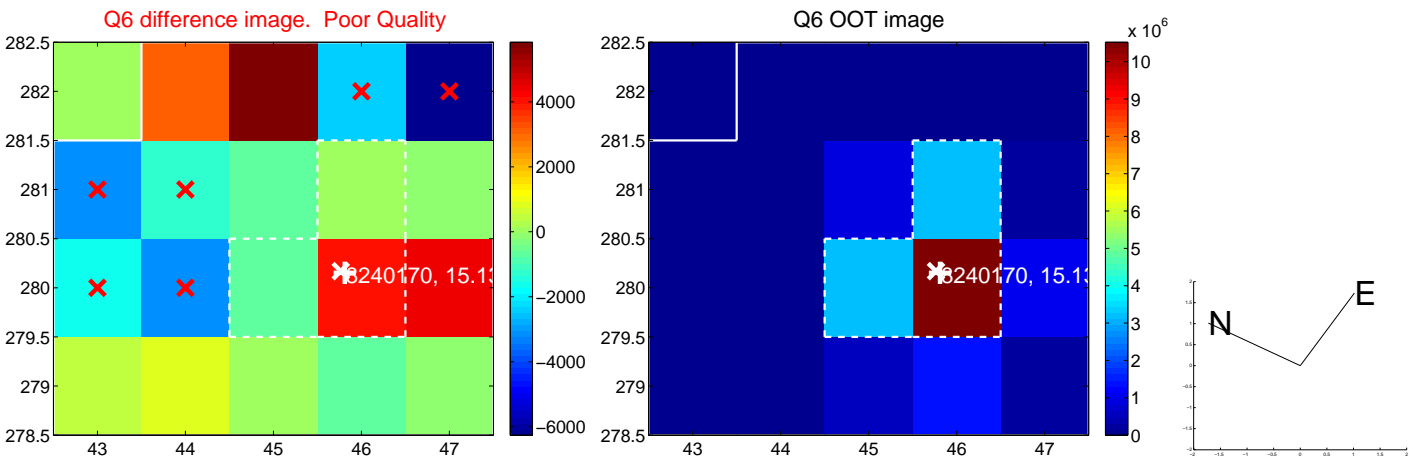
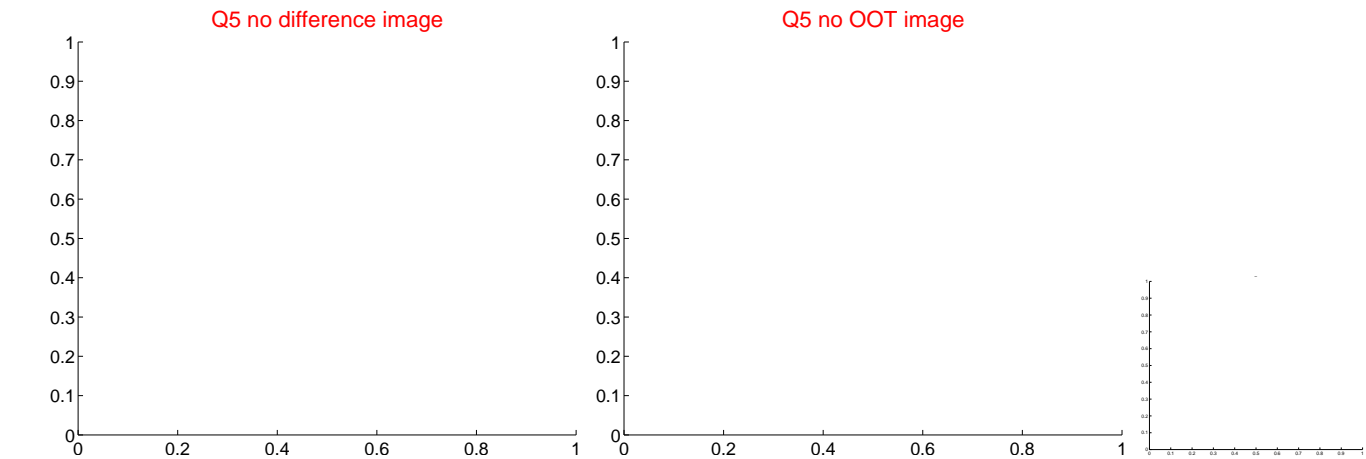
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



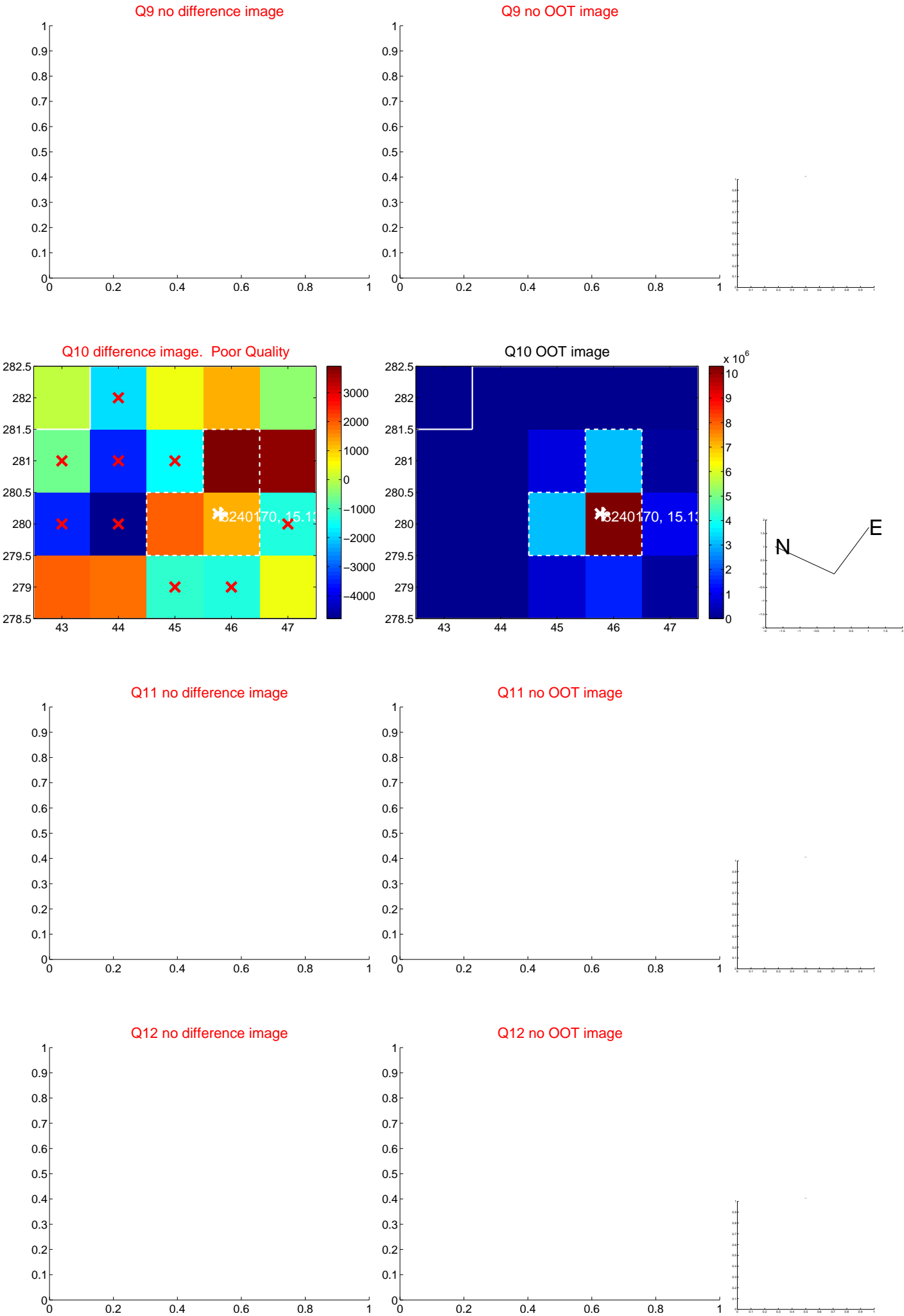
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



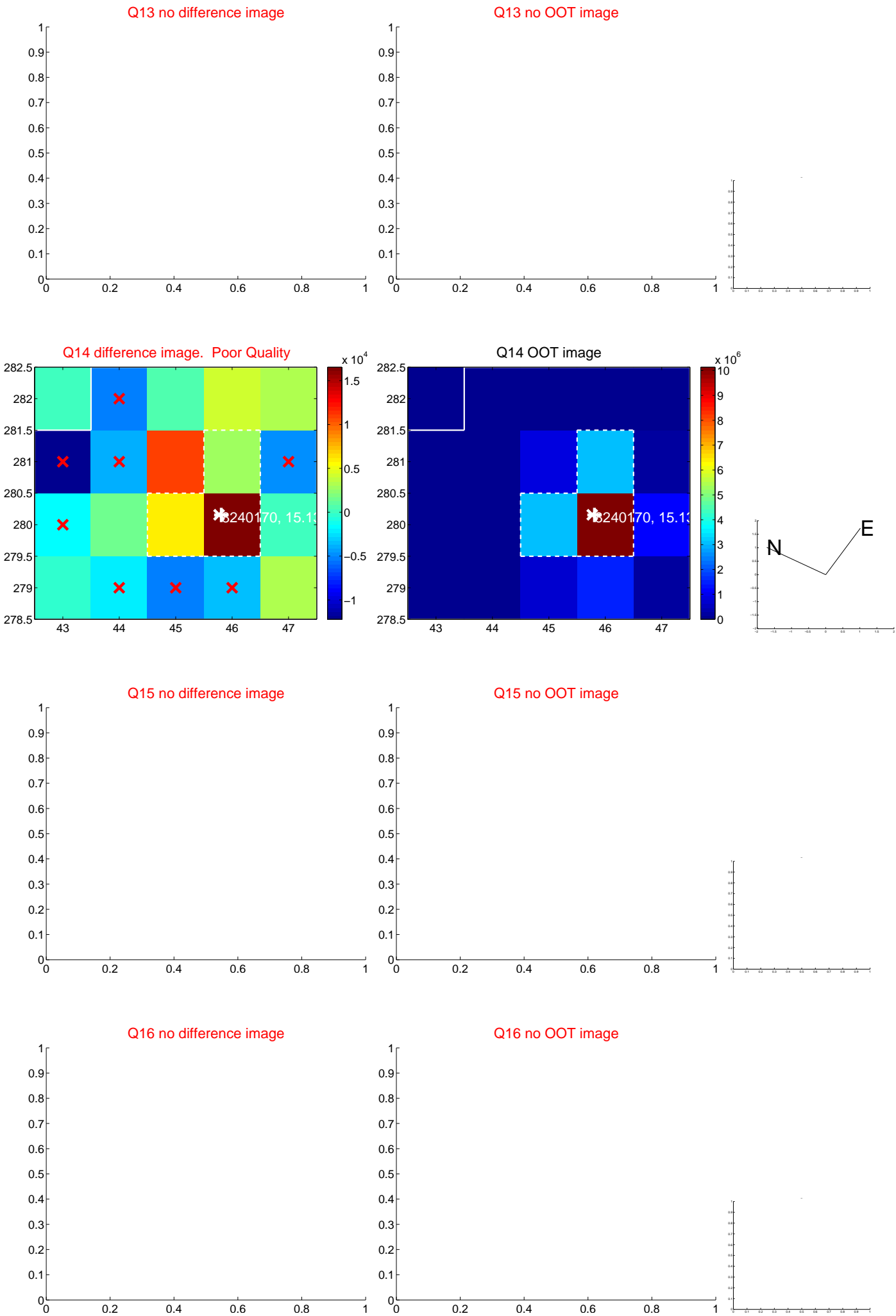
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



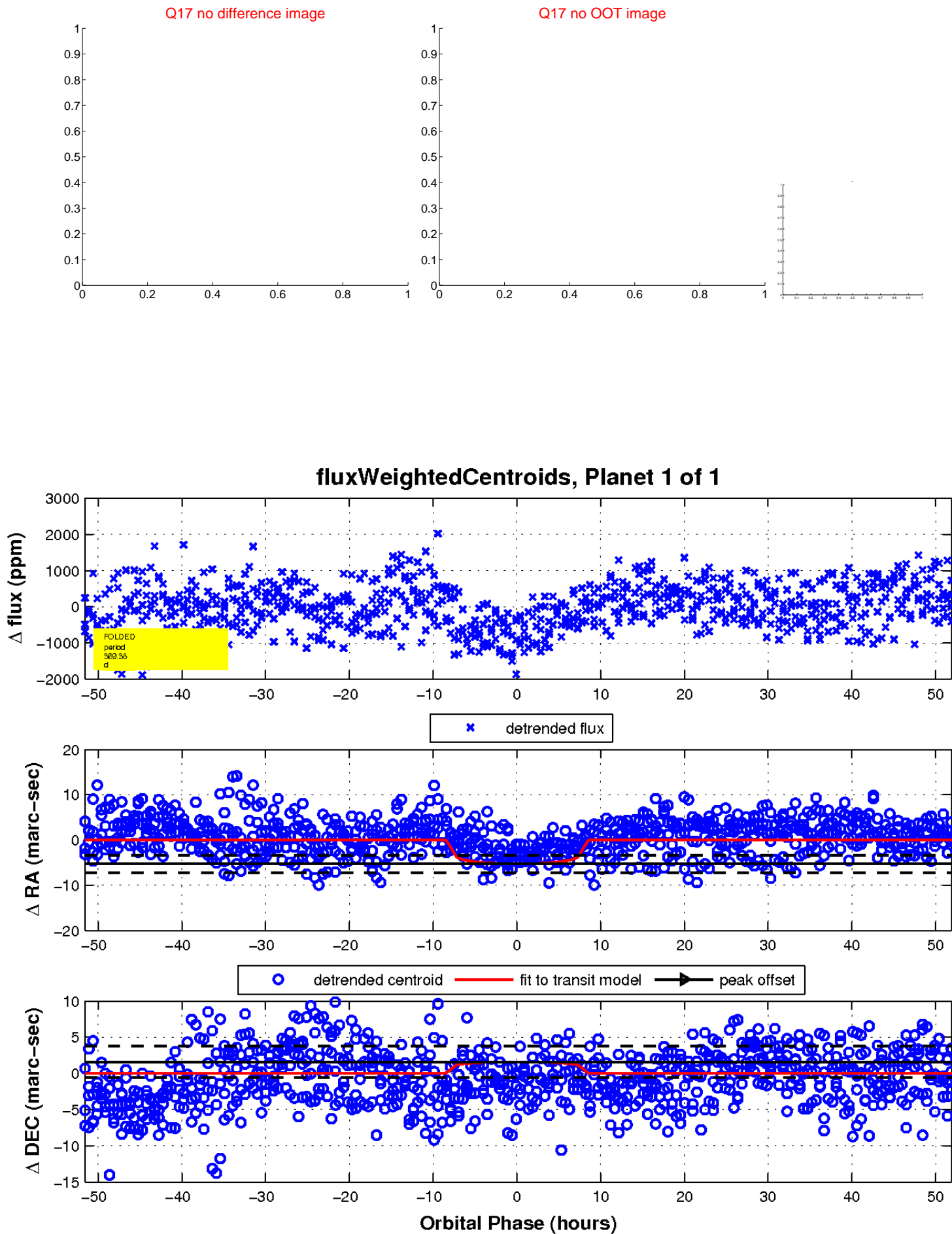
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

