

# KIC 008173686

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008173686-01	OBS	No	429.496808	480.644960	443.6	10.410	9.0	8.3	0.94	6025	2.27	0.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008173686-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE--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.

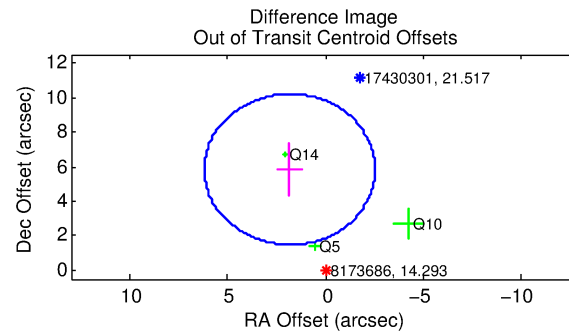
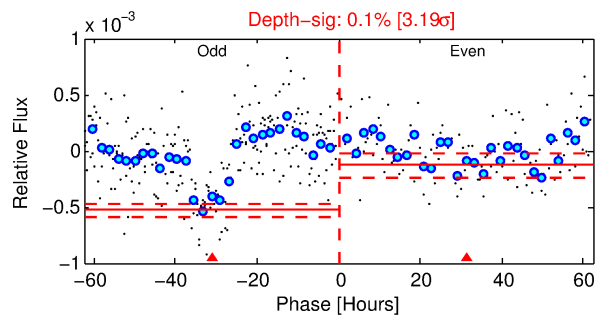
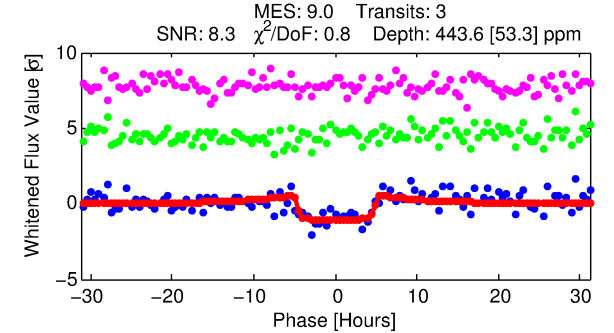
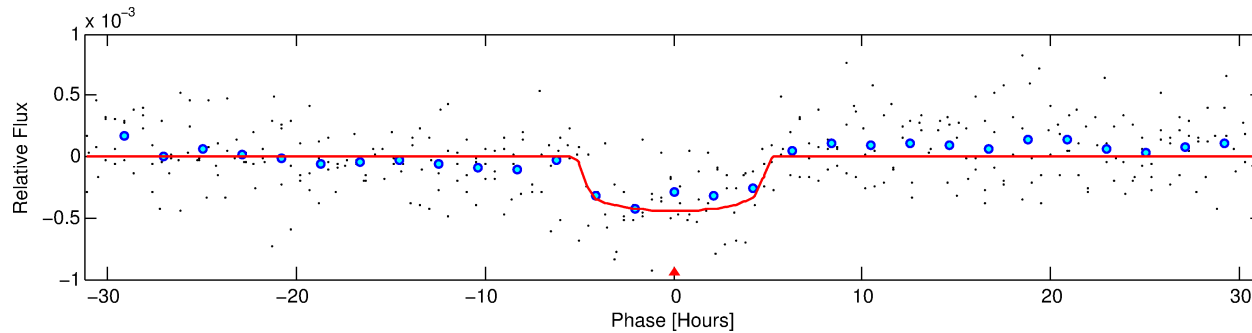
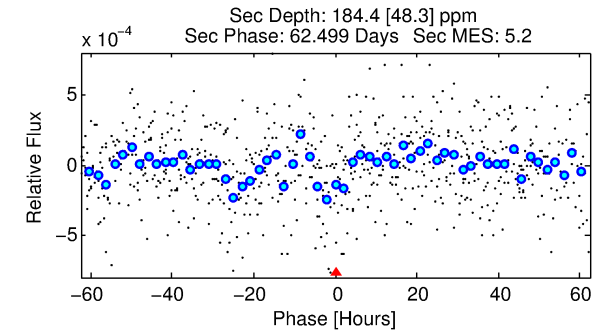
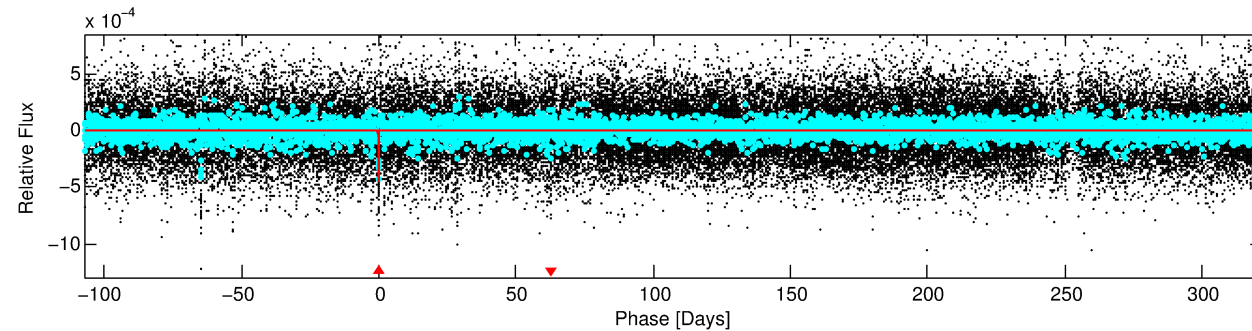
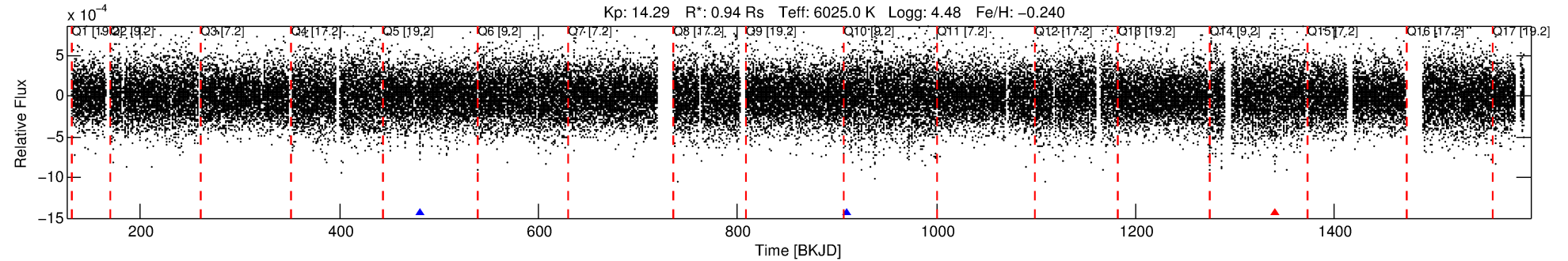
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008173686-01

No Significant Match Found

# DV One-Page Summary

KIC: 8173686 Candidate: 1 of 1 Period: 429.497 d



## DV Fit Results:

Period = 429.49681 [0.00983] d  
Epoch = 480.6450 [0.0118] BKJD  
Rp/R\* = 0.0220 [0.0035]  
a/R\* = 174.92 [128.33]  
b = 0.86 [0.23]  
Seff = 0.86 [0.34]  
Teq = 245 [24] K  
Rp = 2.27 [0.79] Re  
a = 1.1058 [0.2849] AU  
Ag = 24153.51 [13460.31] [1.79 $\sigma$ ]  
Teffp = 4731 [511] K [8.77 $\sigma$ ]

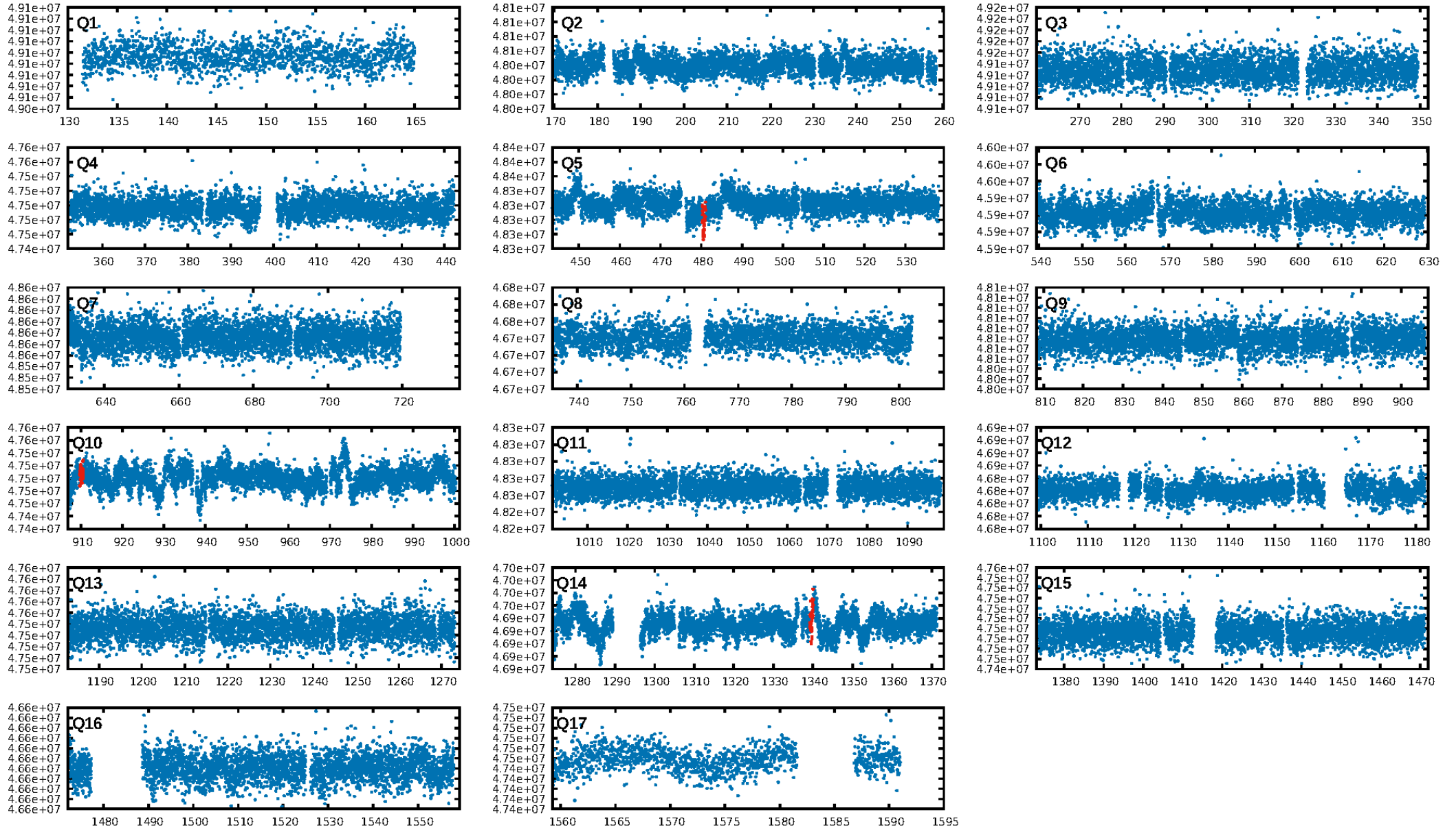
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 5.55e-12**  
**RollingBand-fgt: 0.67 [2/3]**  
GhostDiagnostic-chr: 1.984  
Centroid-sig: 0.3%  
Centroid-so: 2.686 arcsec [1.67 $\sigma$ ]  
**OotOffset-rm: 6.119 arcsec [4.21 $\sigma$ ]**  
**KicOffset-rm: 6.239 arcsec [3.65 $\sigma$ ]**  
OotOffset-st: 2/0/0/1 [3]  
KicOffset-st: 2/0/0/1 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

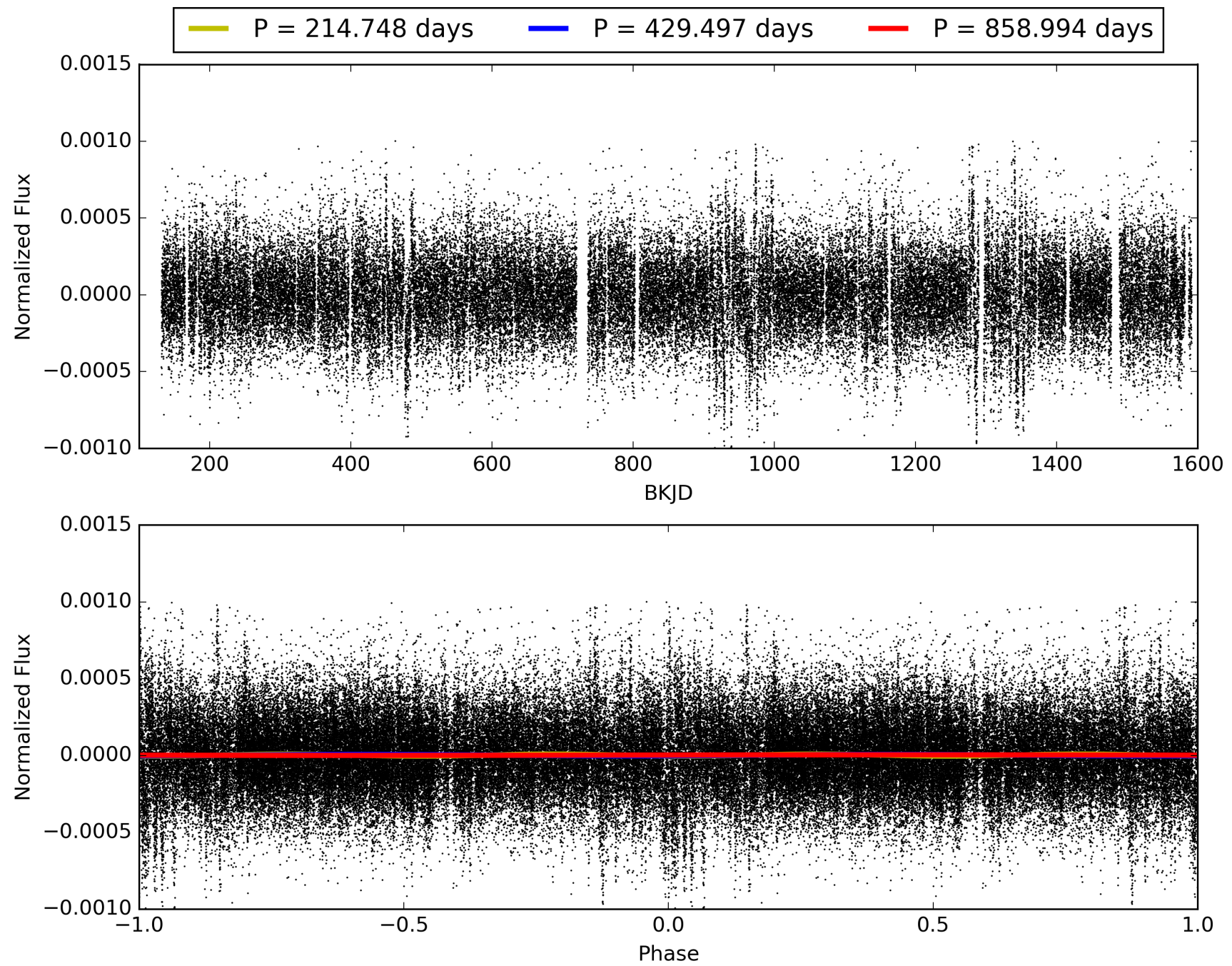
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:45:24 Z

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

# TCE 008173686-01, PDC Light Curves

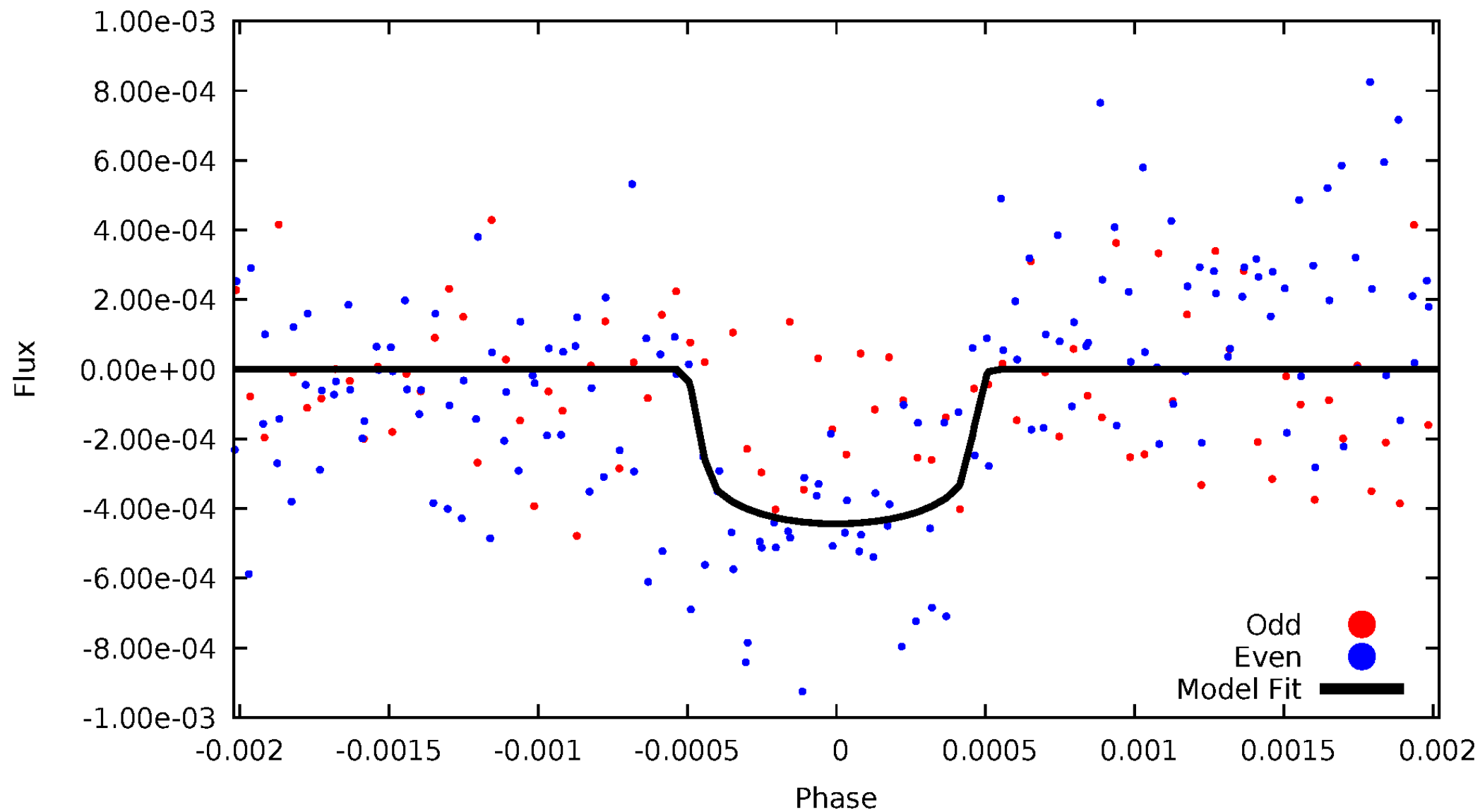


TCE 008173686-01



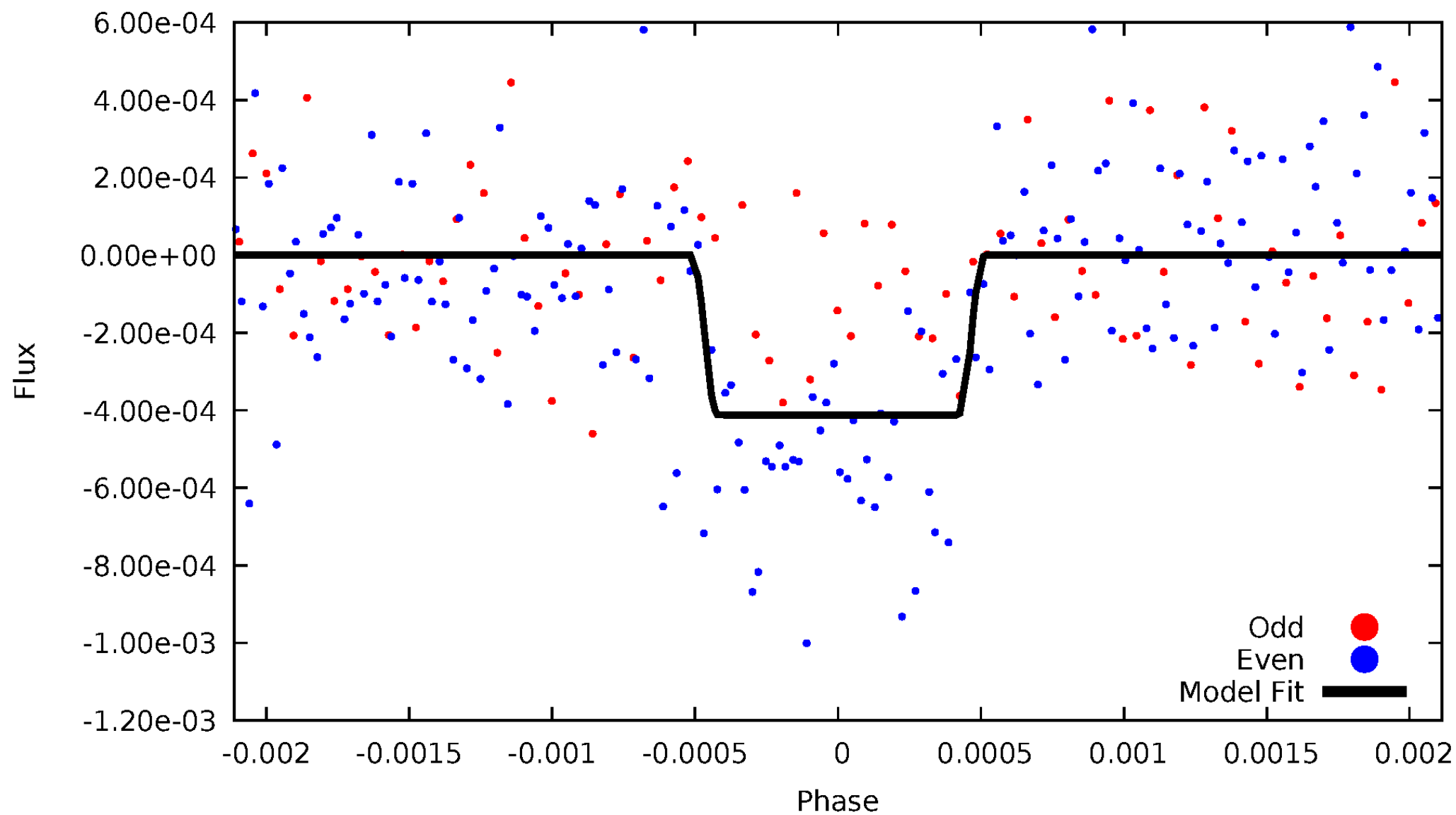
# DV Odd/Even

TCE 008173686-01



# ALT Odd/Even

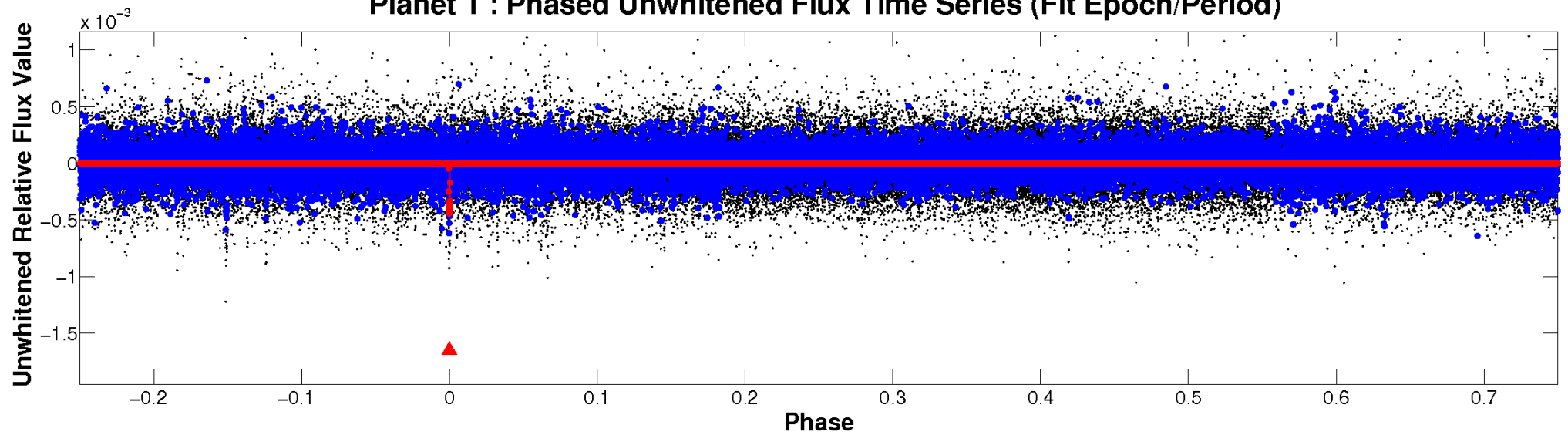
TCE 008173686-01



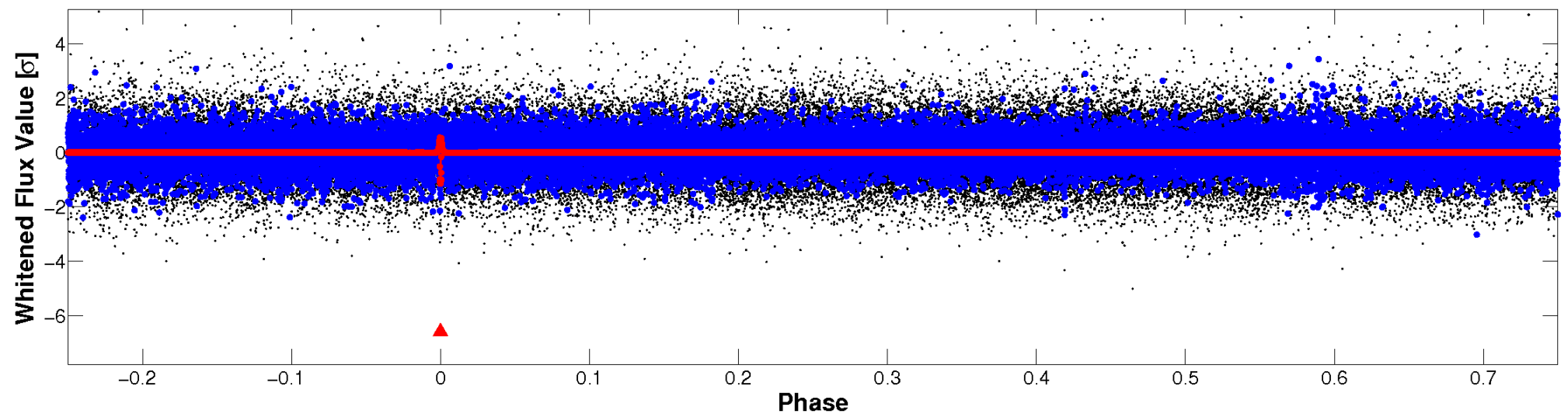


# Non-Whitened Vs. Whitened Light Curve

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

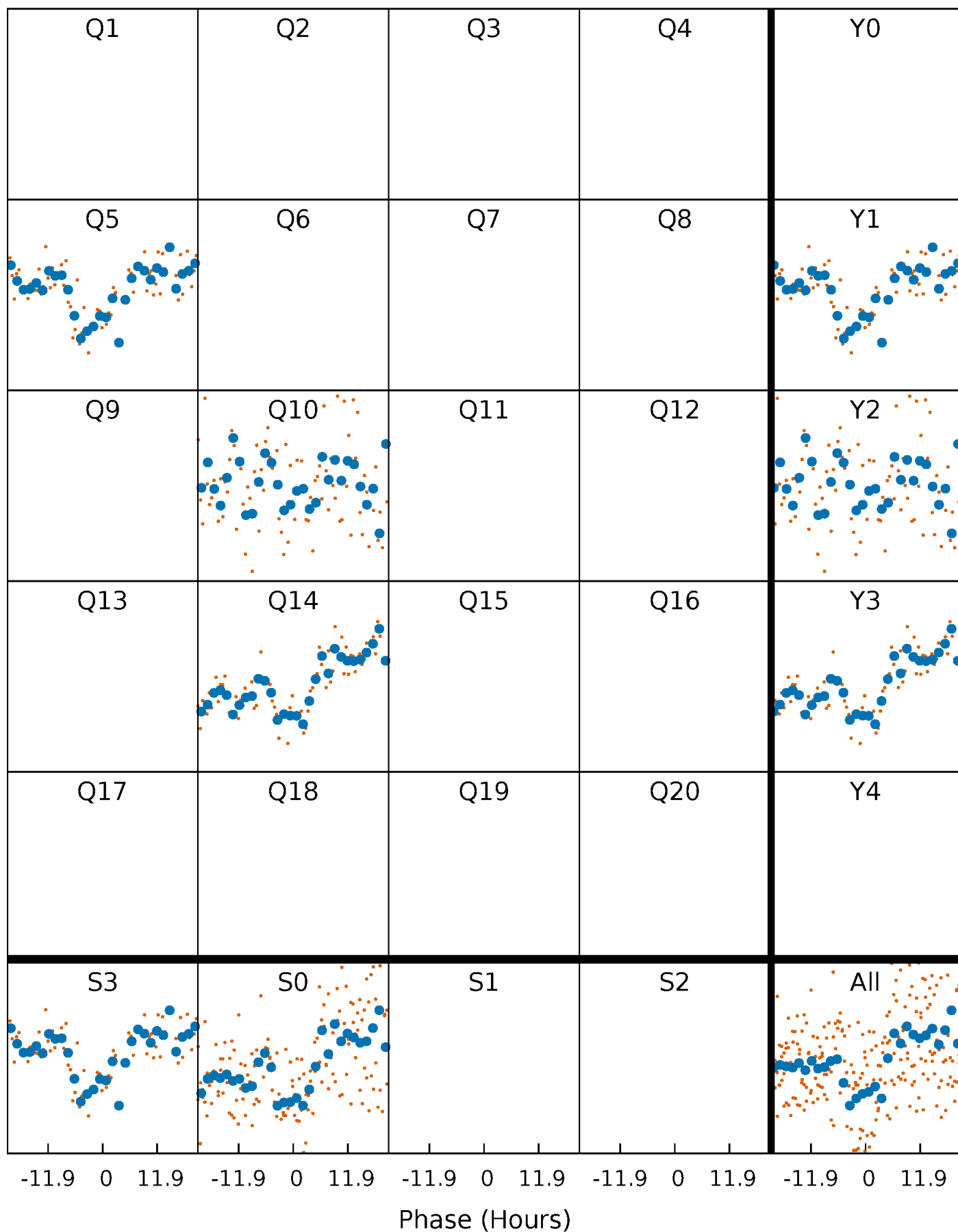


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

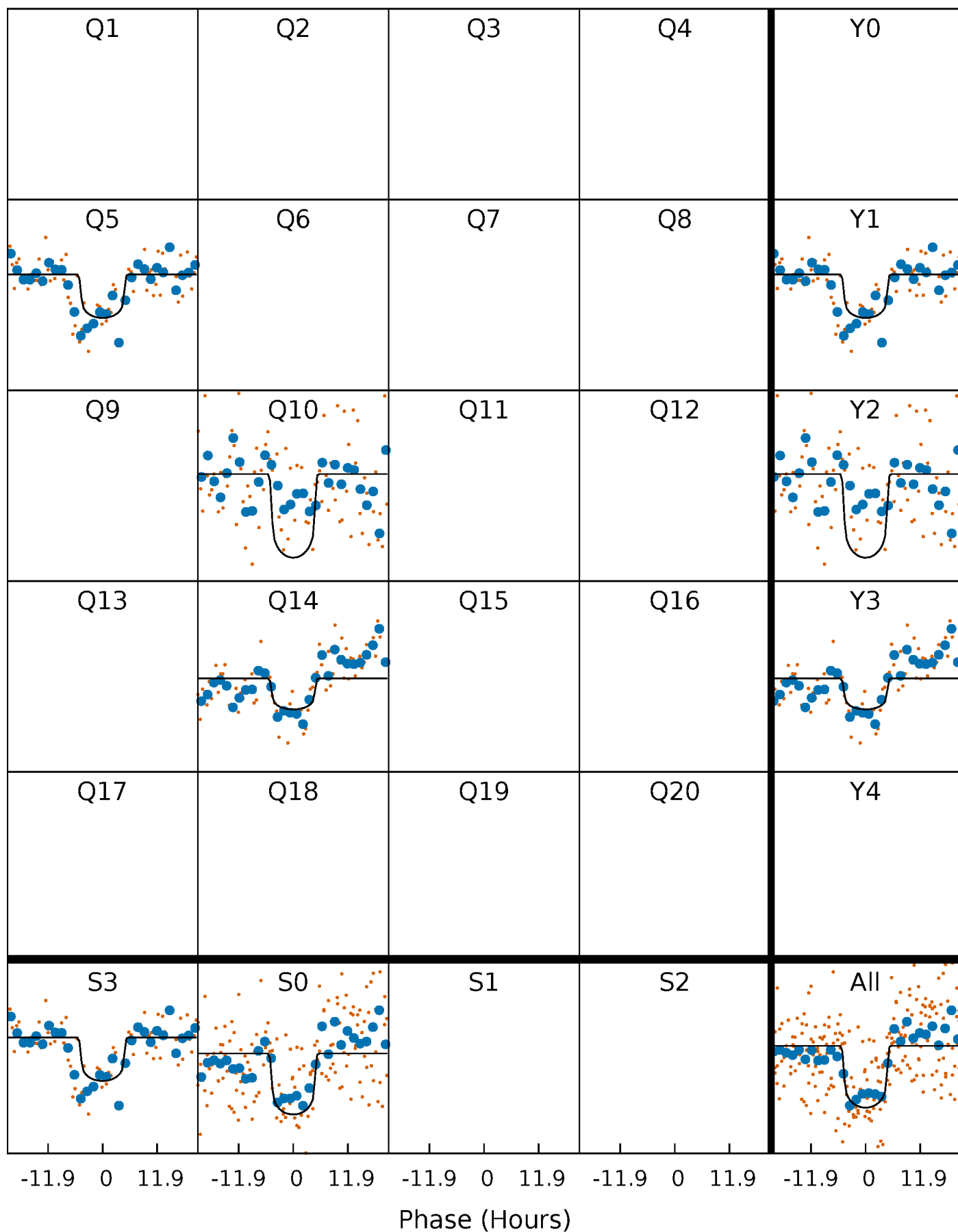
TCE 008173686-01     $P=429.496808$  Days     $T_0=480.644960$  (BKJD)





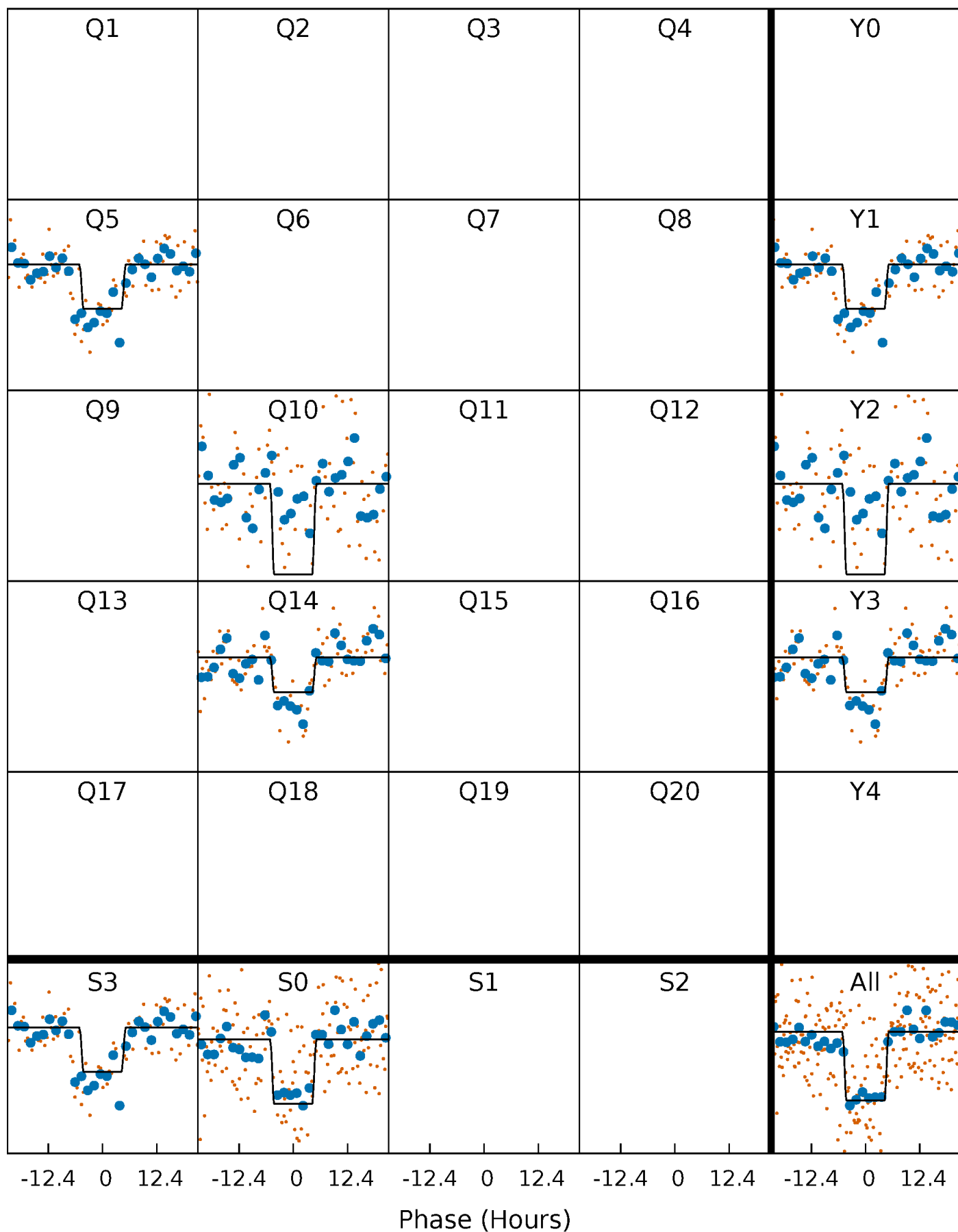
# DV Quarter-Phased Transit Curves

TCE 008173686-01     $P=429.496808$  Days     $T_0=480.644960$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

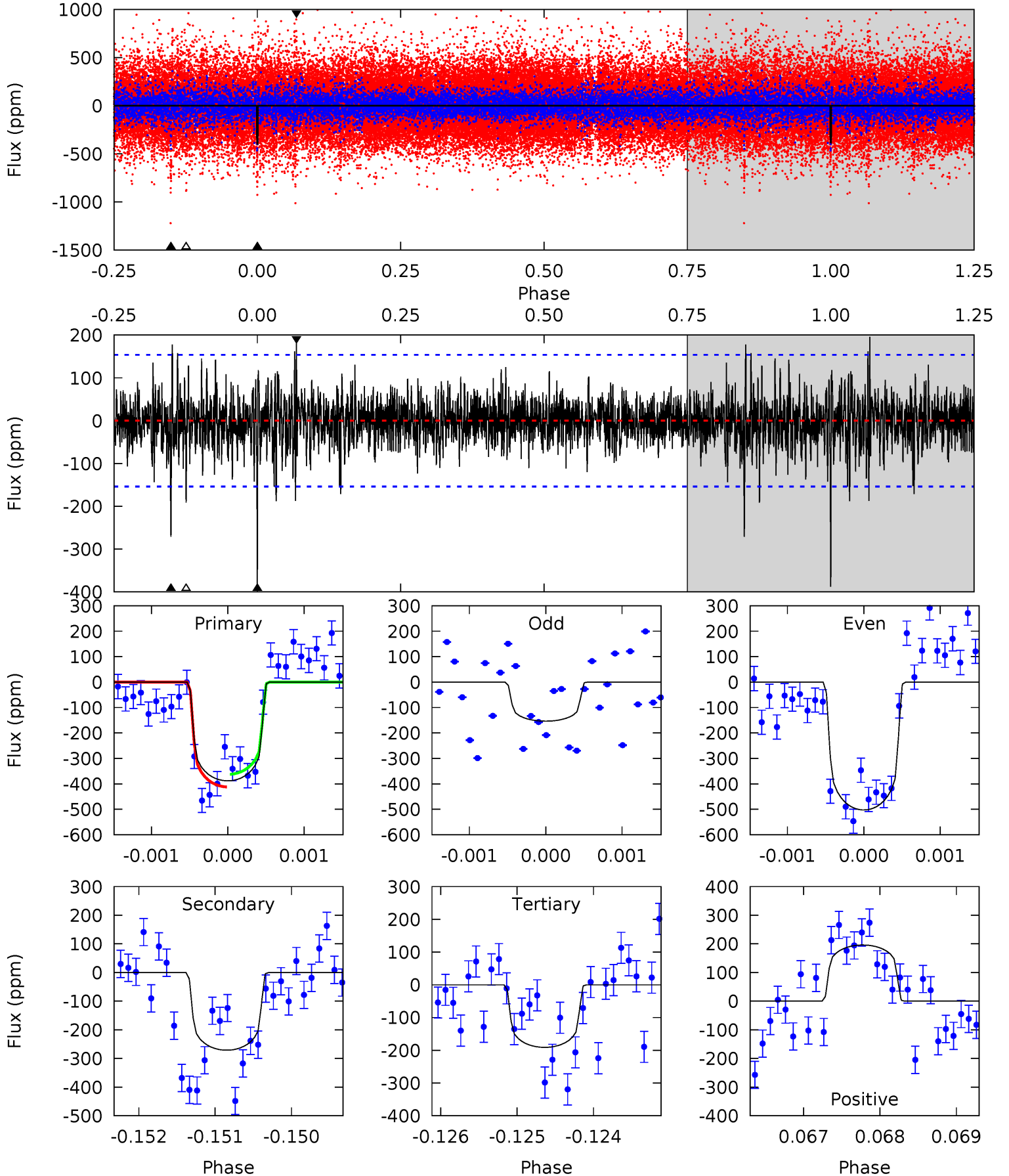
TCE 008173686-01 P=429.499809 Days  $T_0=480.636979$  (BKJD)



# DV Model-Shift Uniqueness Test

008173686-01,  $P = 429.496808$  Days,  $E = 51.148152$  Days

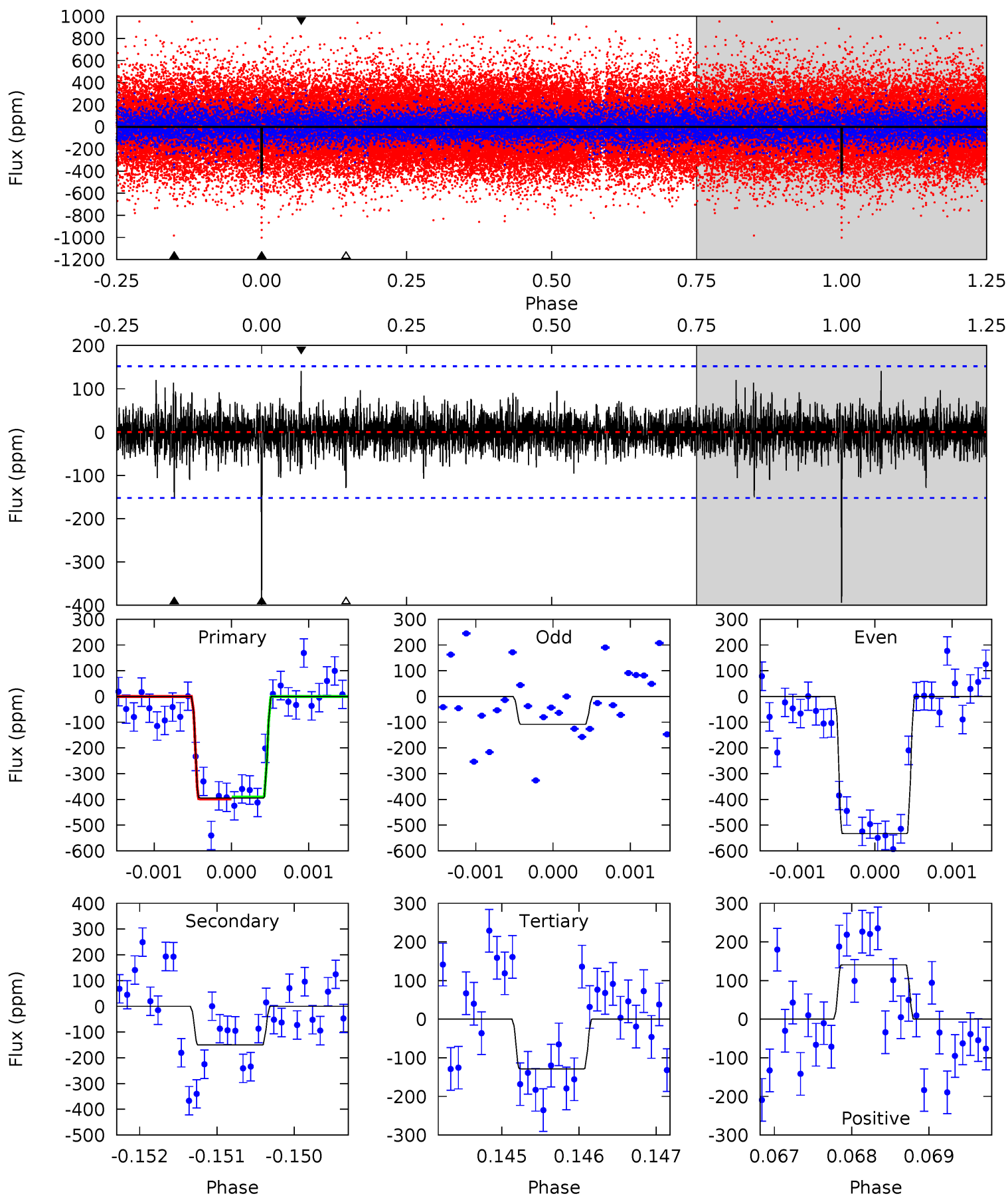
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	9.62	6.78	6.95	5.45	3.29	1.46	6.98	6.81	2.84	2.66	5.88	0.80	0.34	0.88



# Alt Model-Shift Uniqueness Test

008173686-01,  $P = 429.499809$  Days,  $E = 51.137170$  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
14.1	5.37	4.60	5.04	5.45	3.29	1.02	9.51	9.08	0.77	0.33	7.18	0.77	0.26	0.15



### Stellar Parameters For KIC 008173686

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6025^{+181}_{-181}$	$4.479^{+0.067}_{-0.202}$	$-0.240^{+0.300}_{-0.300}$	$0.943^{+0.291}_{-0.097}$	$0.978^{+0.130}_{-0.117}$	$1.642^{+0.469}_{-0.875}$
	+3%/-3%	+1%/-5%	+125%/-125%	+31%/-10%	+13%/-12%	+29%/-53%
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 008173686-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-271 \pm 28$	$2.33^{+0.54}_{-0.42}$	$348^{+25}_{-16}$	$5268^{+444}_{-379}$	$33227^{+15351}_{-11264}$
Alt.	$-150 \pm 28$	$2.18^{+0.50}_{-0.42}$	$349^{+26}_{-18}$	$4814^{+476}_{-390}$	$20958^{+11771}_{-7486}$

$T_{max}$  = 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

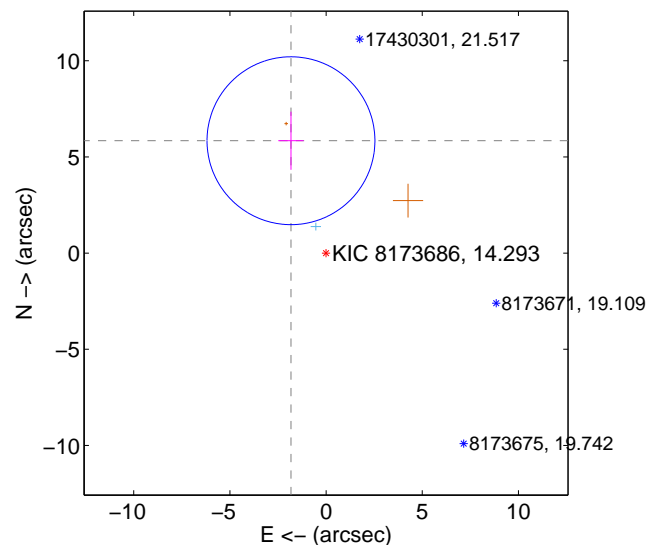
Supplemental centroid analysis for 008173686-01. Kepler magnitude: 14.29. Transit SNR 8.31

There are 1 quarters with good PRF difference image offsets

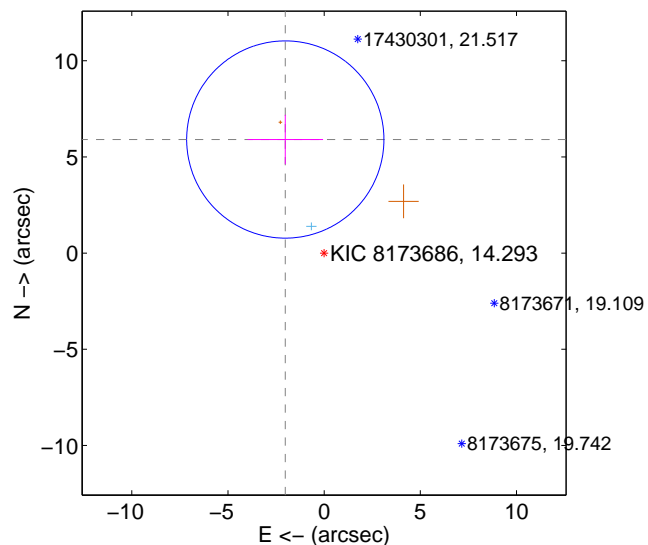
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.119 \pm 1.454$	4.21	$1.825 \pm 0.658$	$5.841 \pm 1.510$
PRF-fit source offset from KIC position	$6.239 \pm 1.708$	3.65	$2.019 \pm 1.960$	$5.903 \pm 1.287$
photometric centroid source offset	$2.69 \pm 1.61$	1.67	$-0.79 \pm 1.49$	$2.57 \pm 1.62$

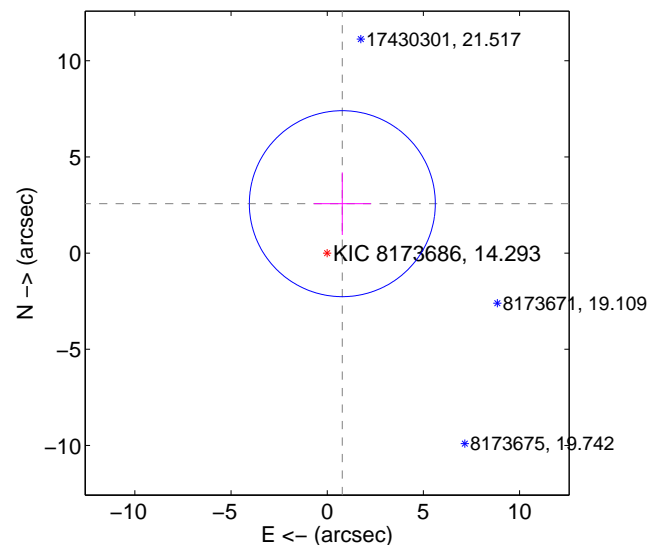
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



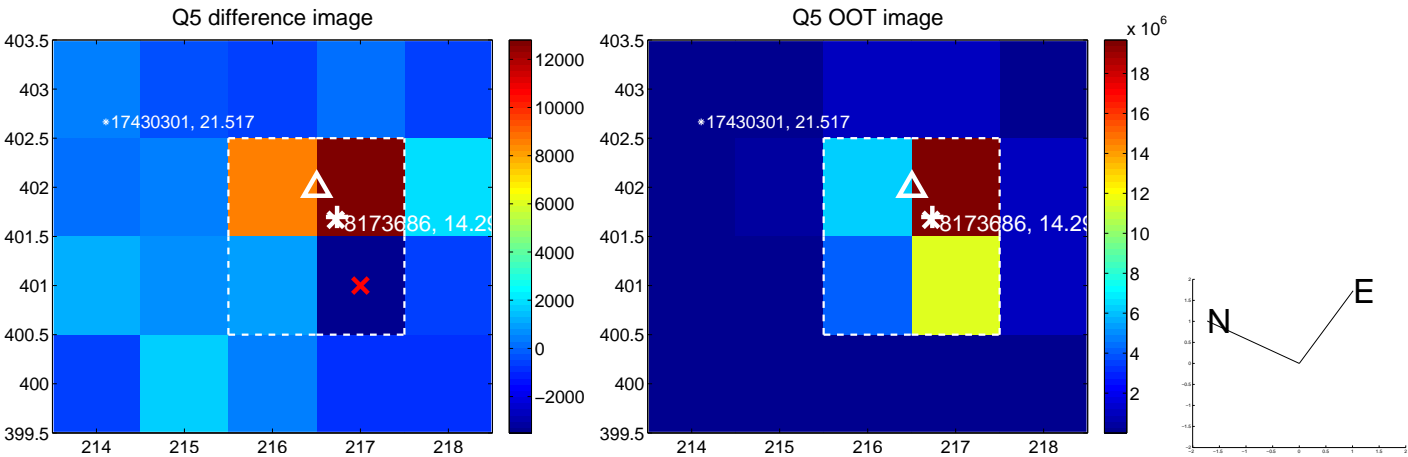
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

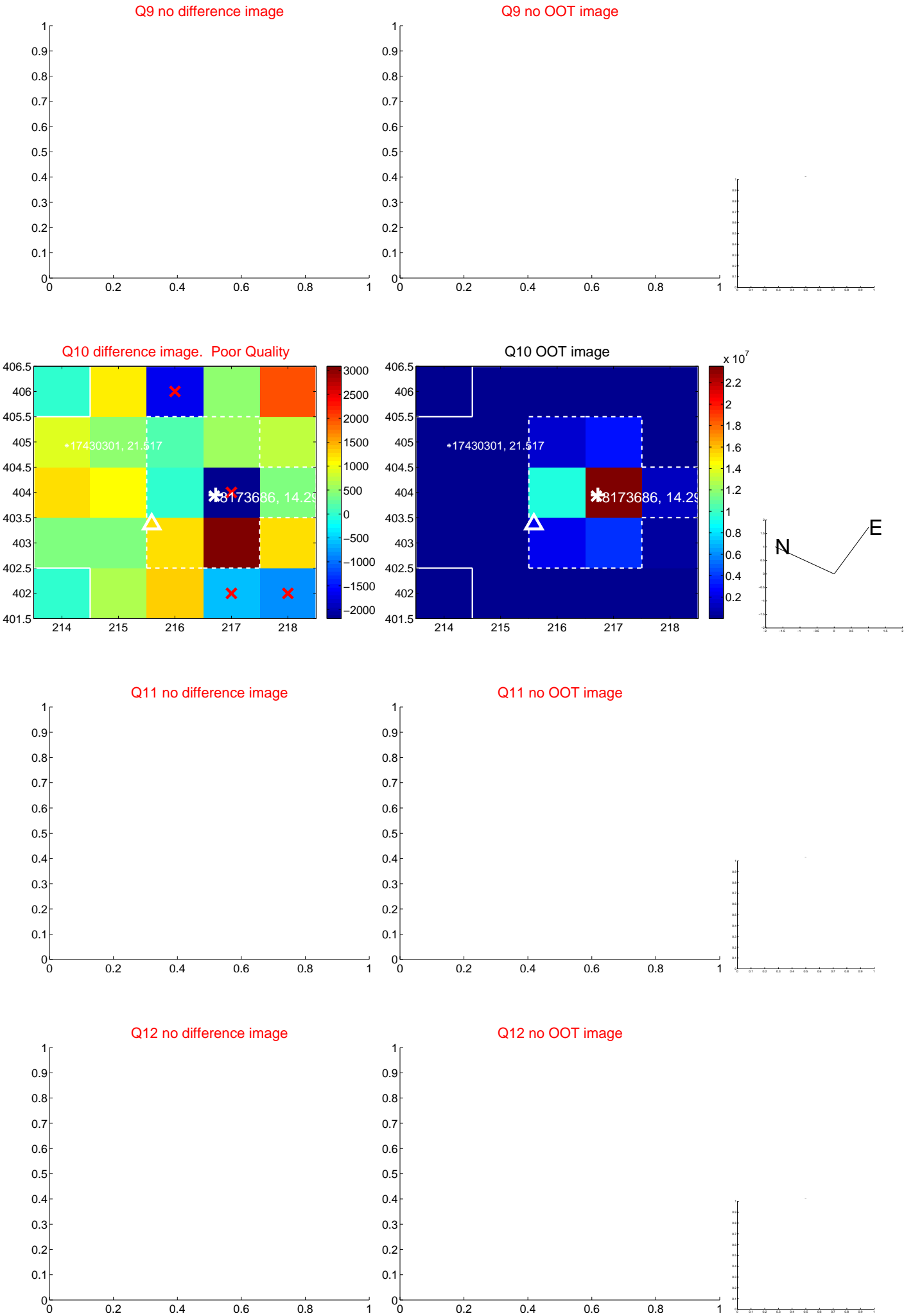




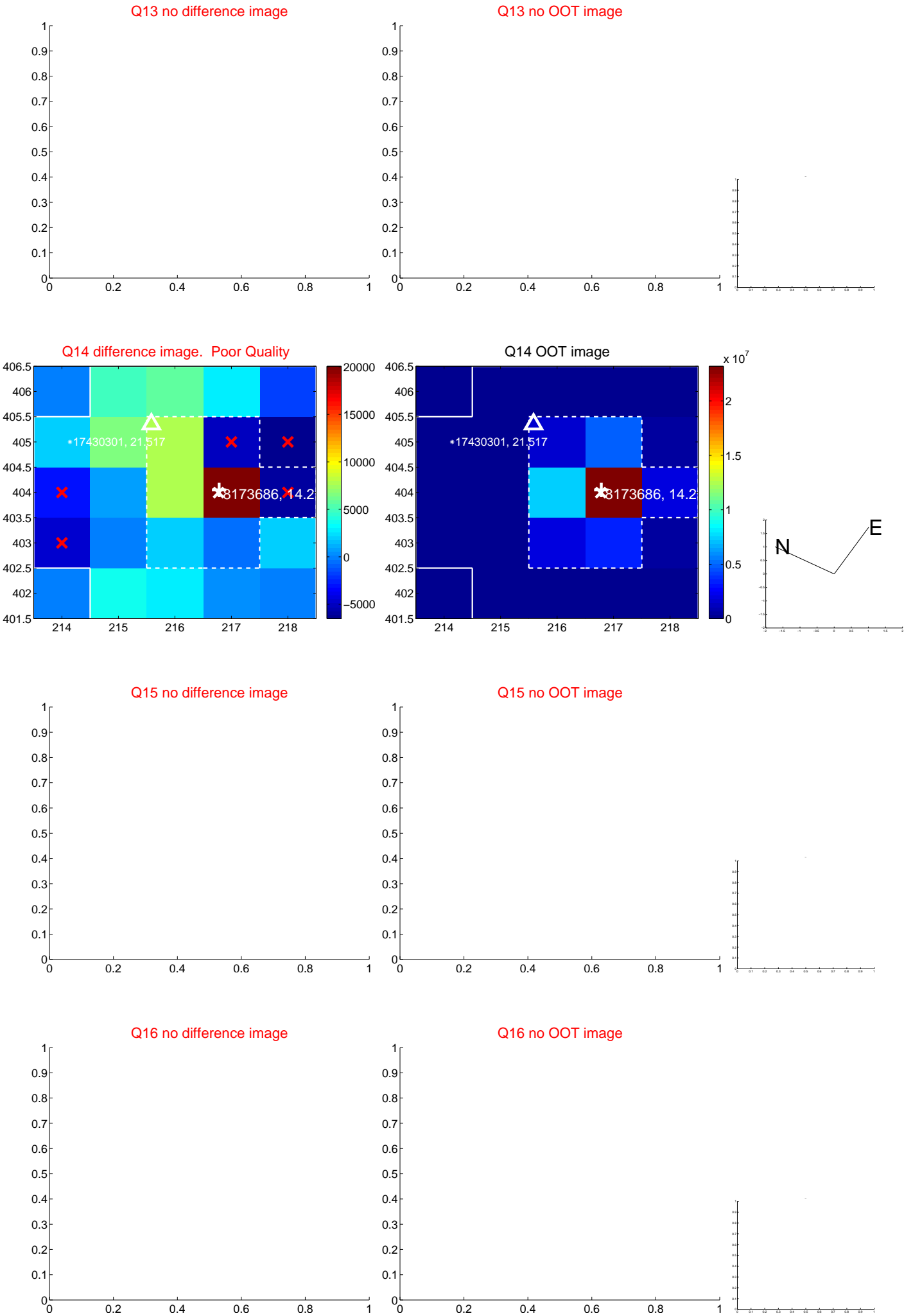
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



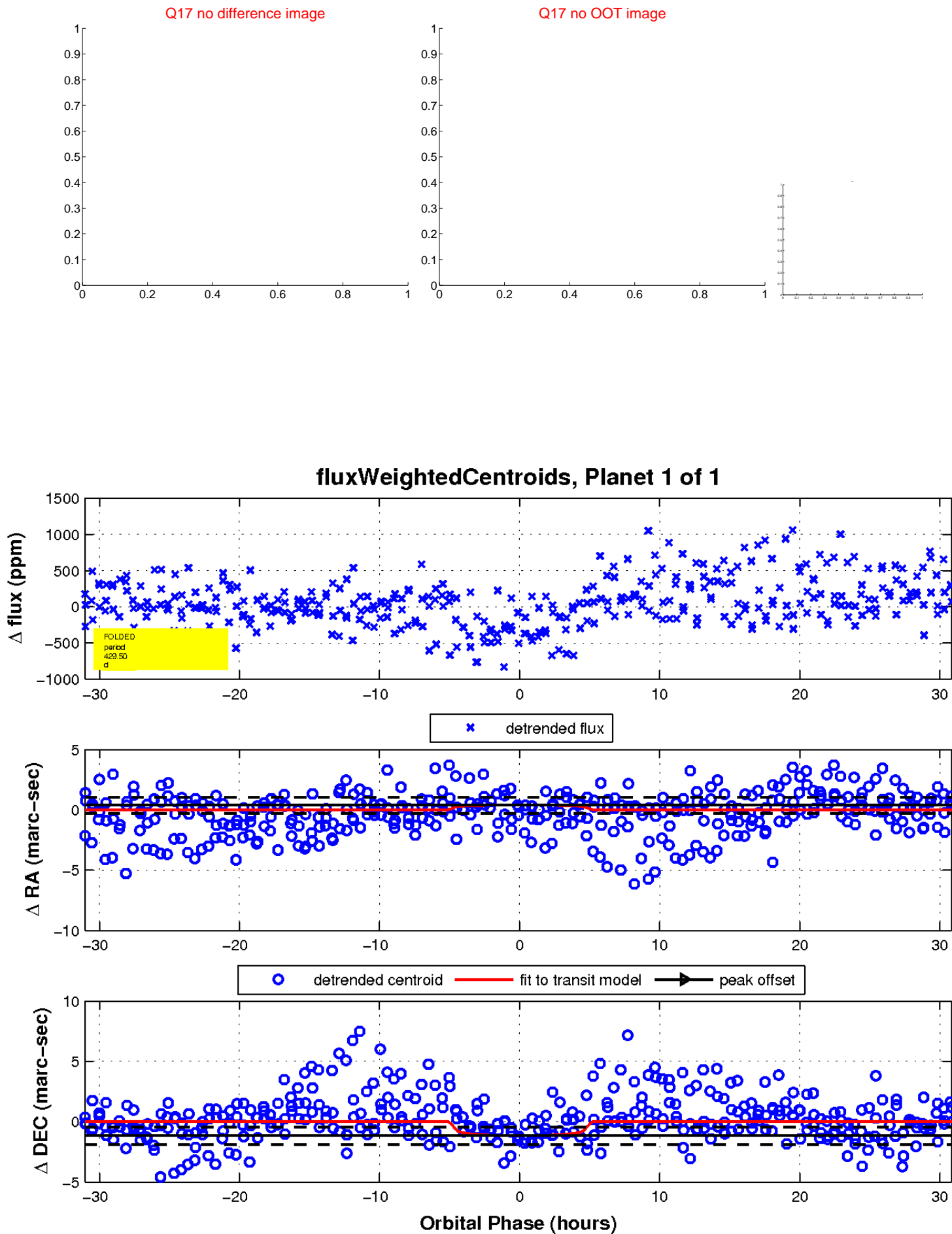
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



white ×: 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

Declination

