

# KIC 008871216

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008871216-01	OBS	No	446.411307	406.704967	288.0	6.046	8.6	7.9	0.78	5788	1.47	0.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008871216-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL

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

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

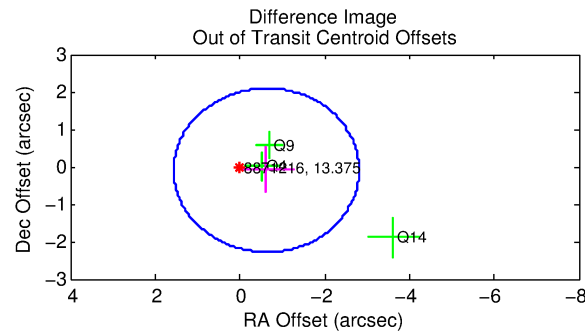
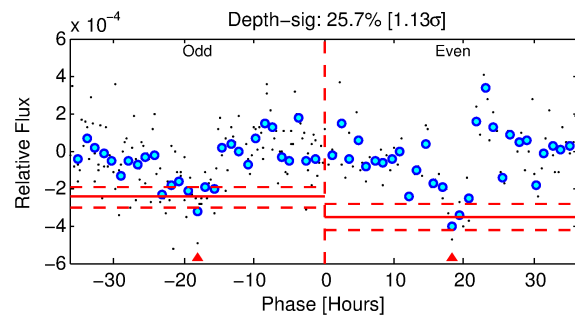
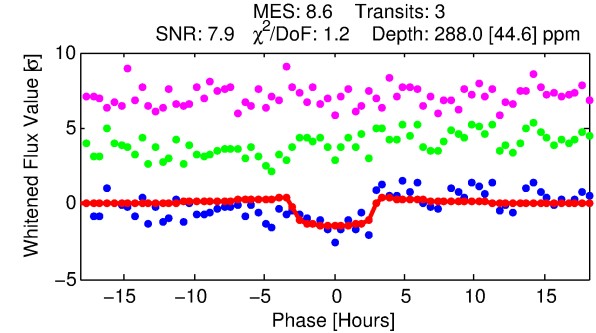
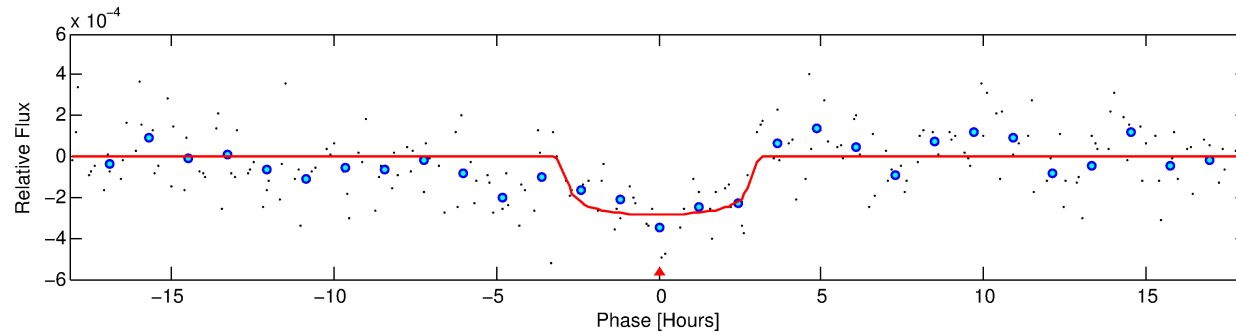
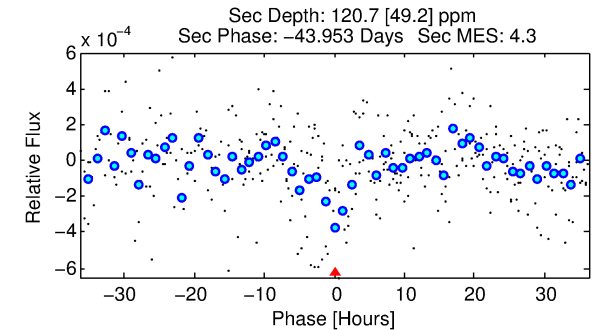
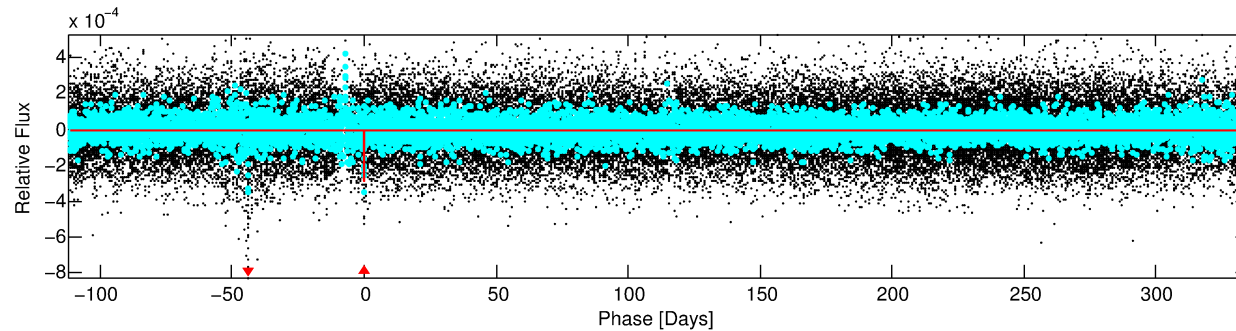
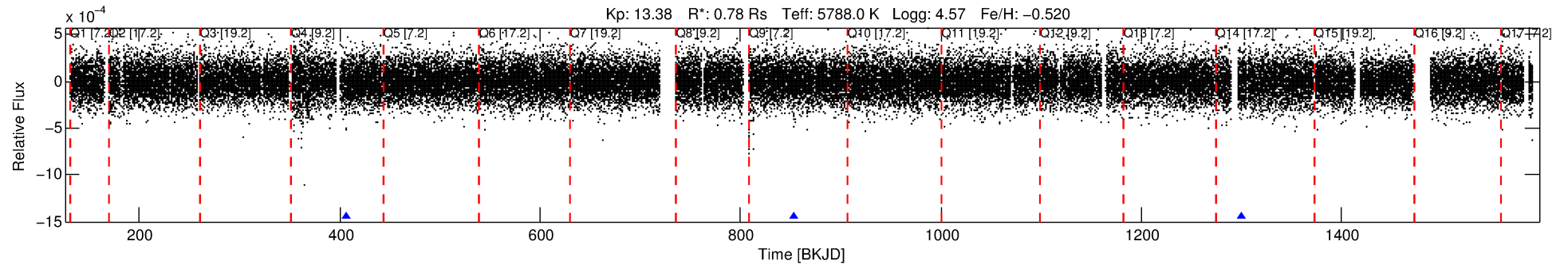
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008871216-01

No Significant Match Found

# DV One-Page Summary

KIC: 8871216 Candidate: 1 of 1 Period: 446.411 d



## DV Fit Results:

Period = 446.41131 [0.00911] d  
Epoch = 406.7050 [0.0112] BKJD  
Rp/R\* = 0.0173 [0.0085]  
a/R\* = 347.40 [820.66]  
b = 0.81 [1.01]  
Seff = 0.53 [0.17]  
Teq = 218 [17] K  
Rp = 1.47 [0.81] Re  
a = 1.0764 [0.2182] AU  
Ag = 35391.19 [39103.59] [0.91σ]  
Teffp = 4613 [1235] K [3.56σ]

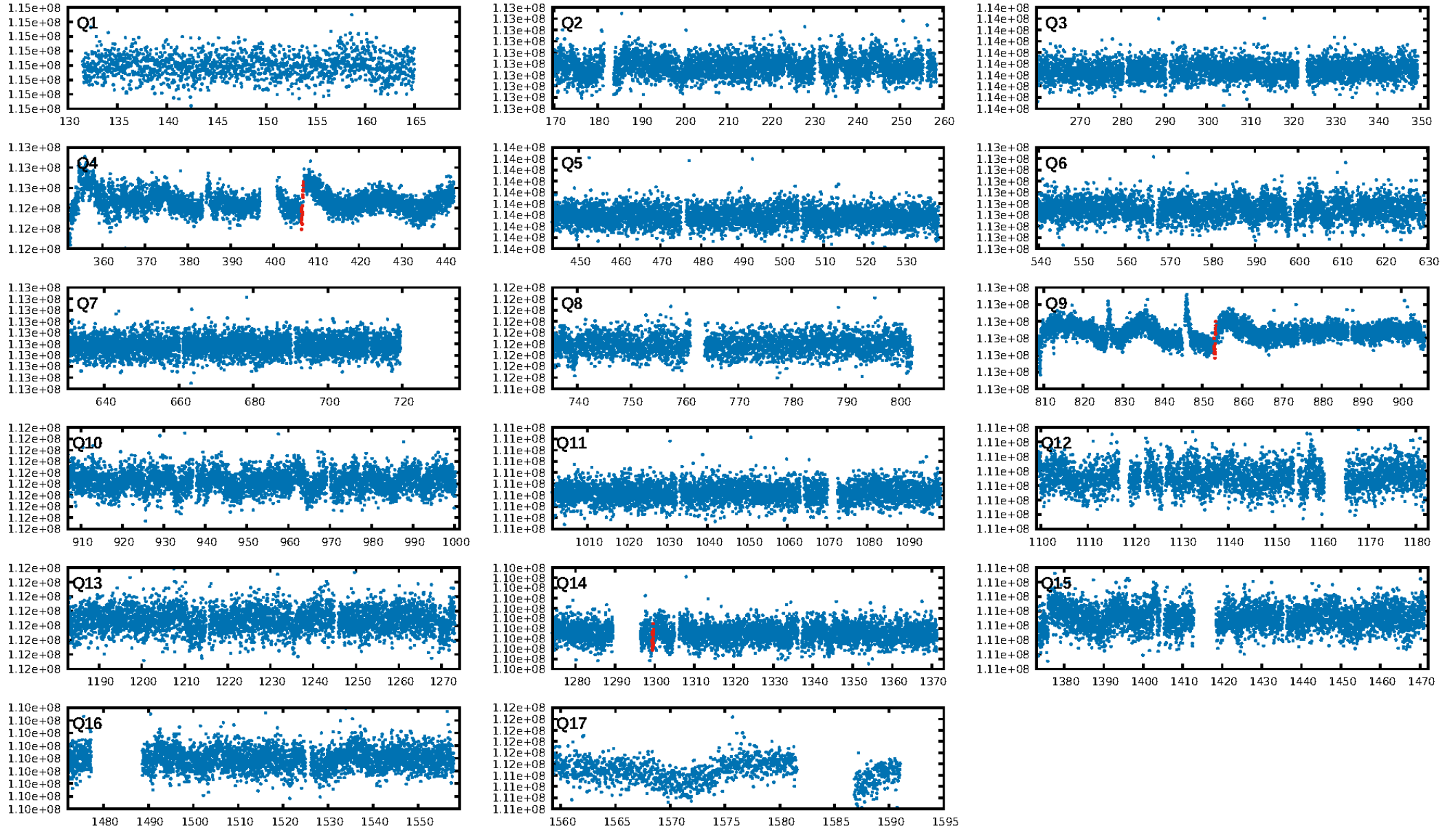
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 30.8%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: 2.51e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -26.67  
Centroid-sig: 27.2%  
Centroid-so: 1.431 arcsec [1.15σ]  
OotOffset-rm: 0.636 arcsec [0.87σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.743 arcsec [0.87σ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

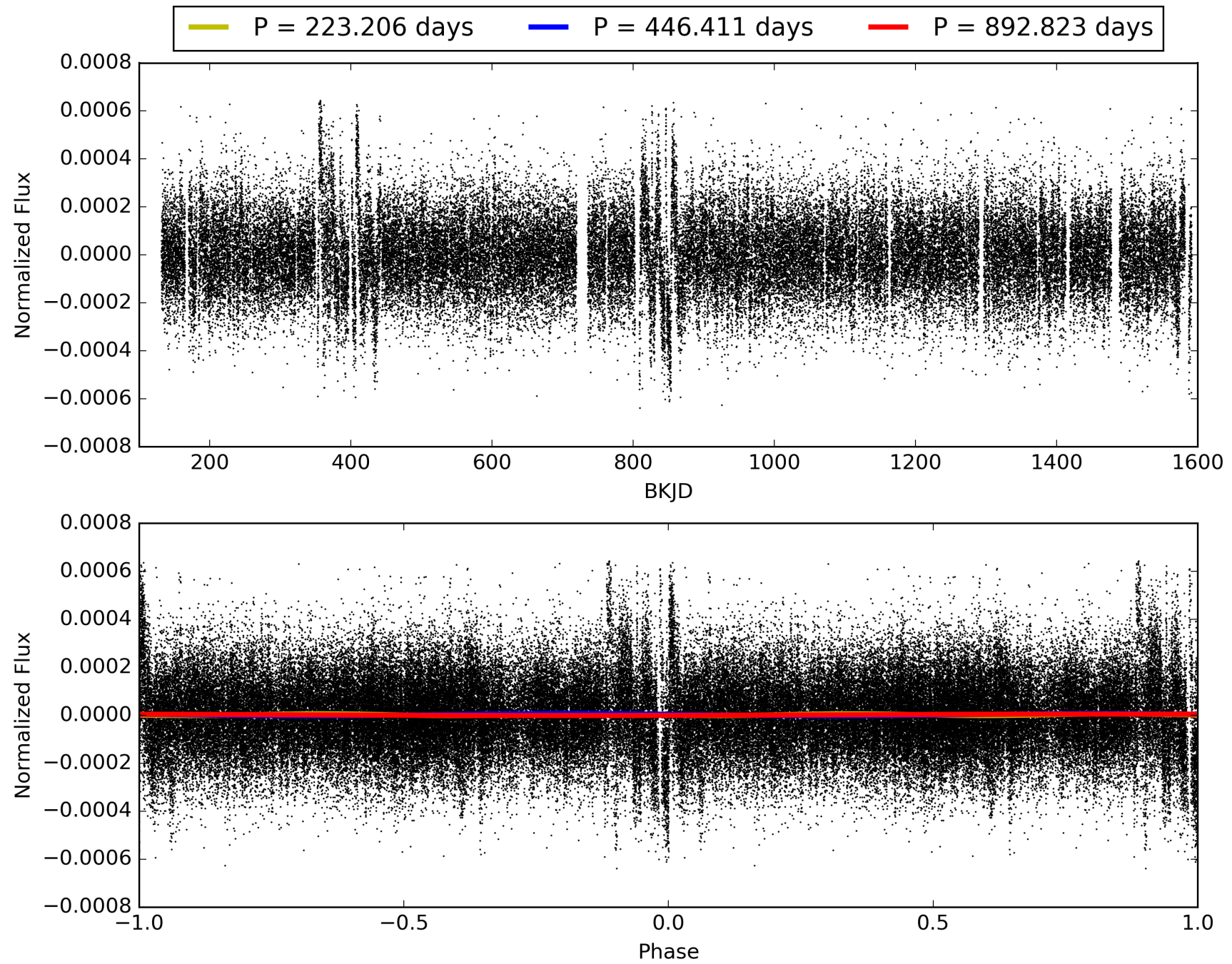
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:14:05 Z

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

# TCE 008871216-01, PDC Light Curves

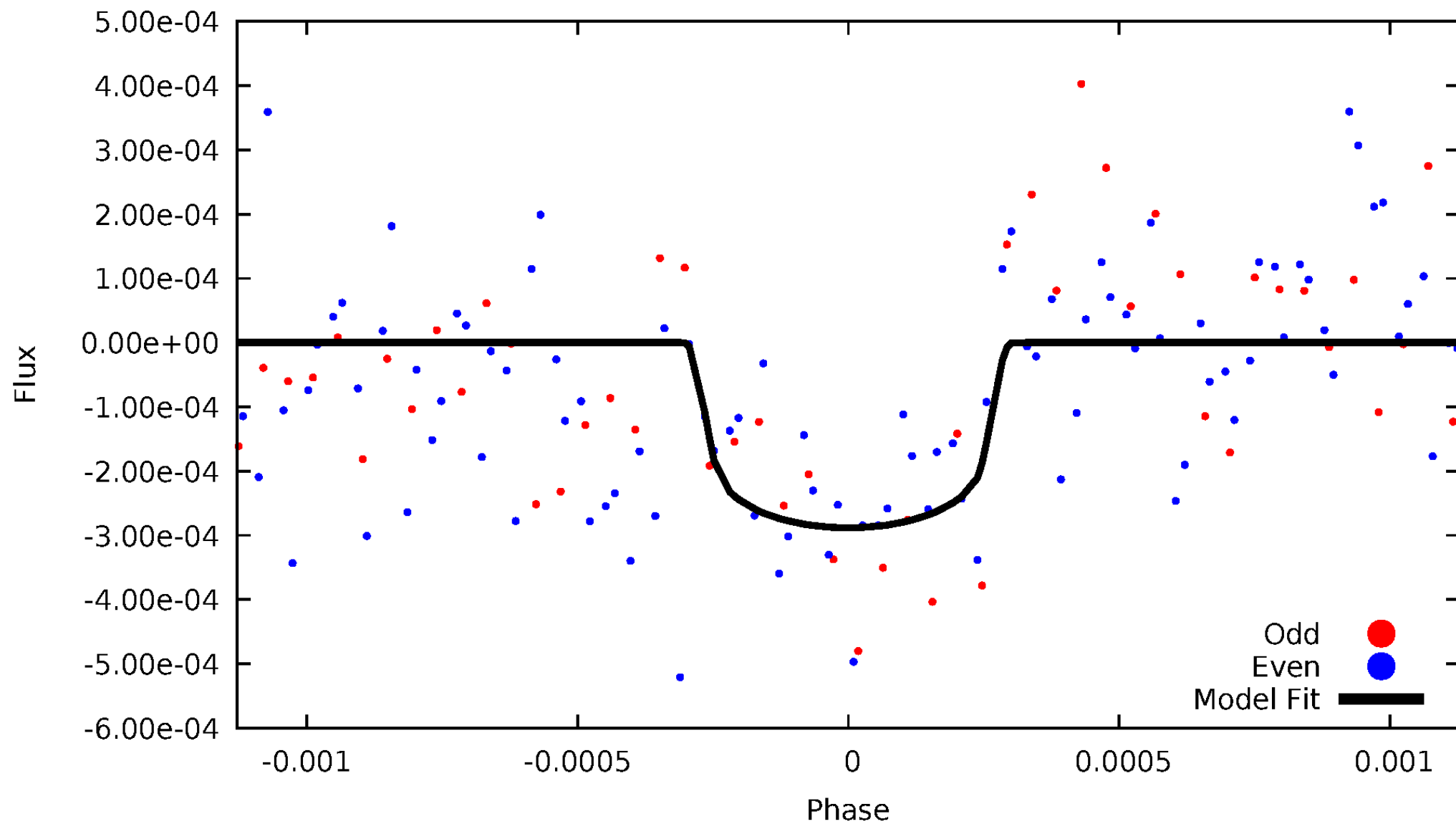


TCE 008871216-01



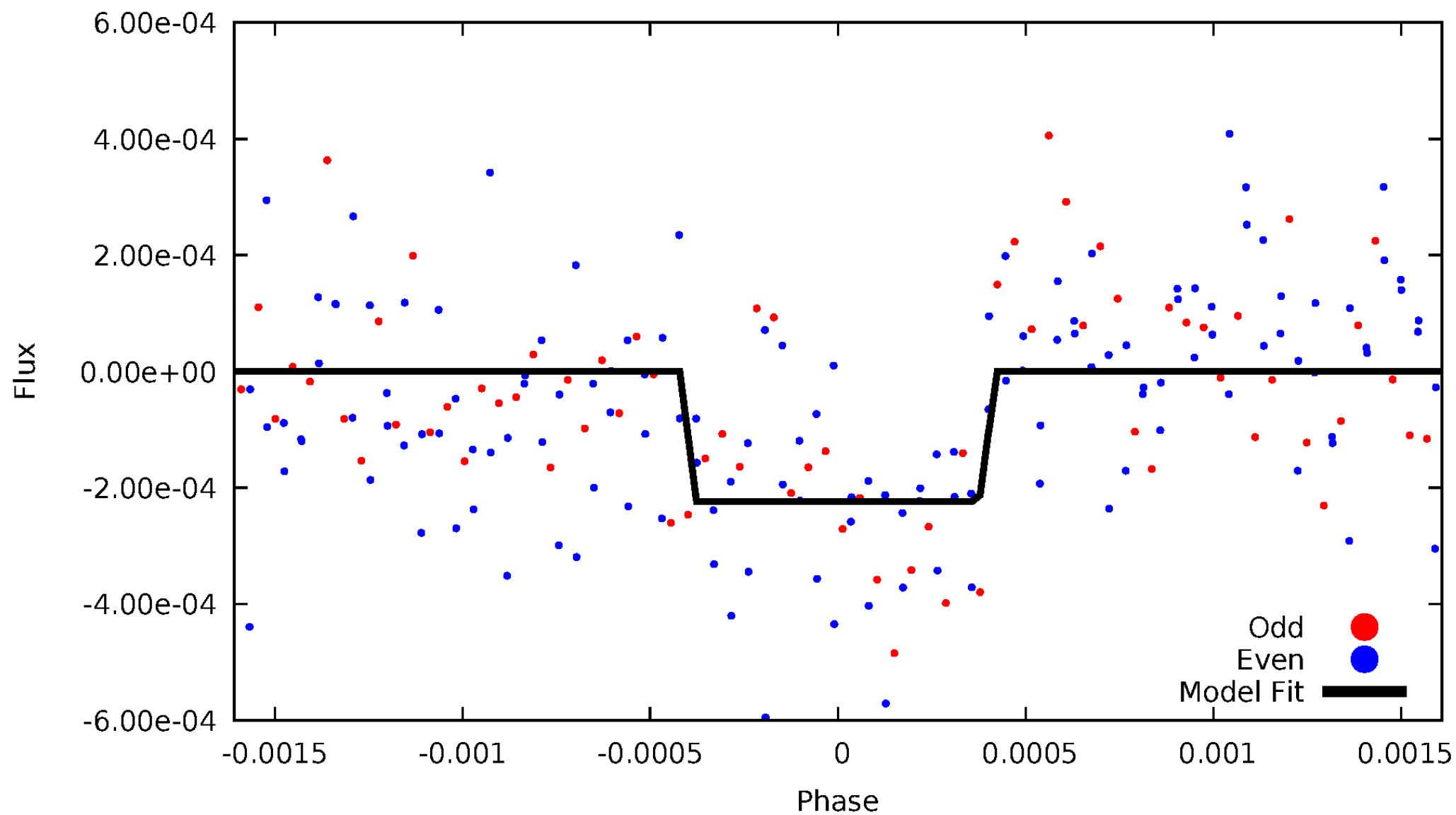
# DV Odd/Even

TCE 008871216-01

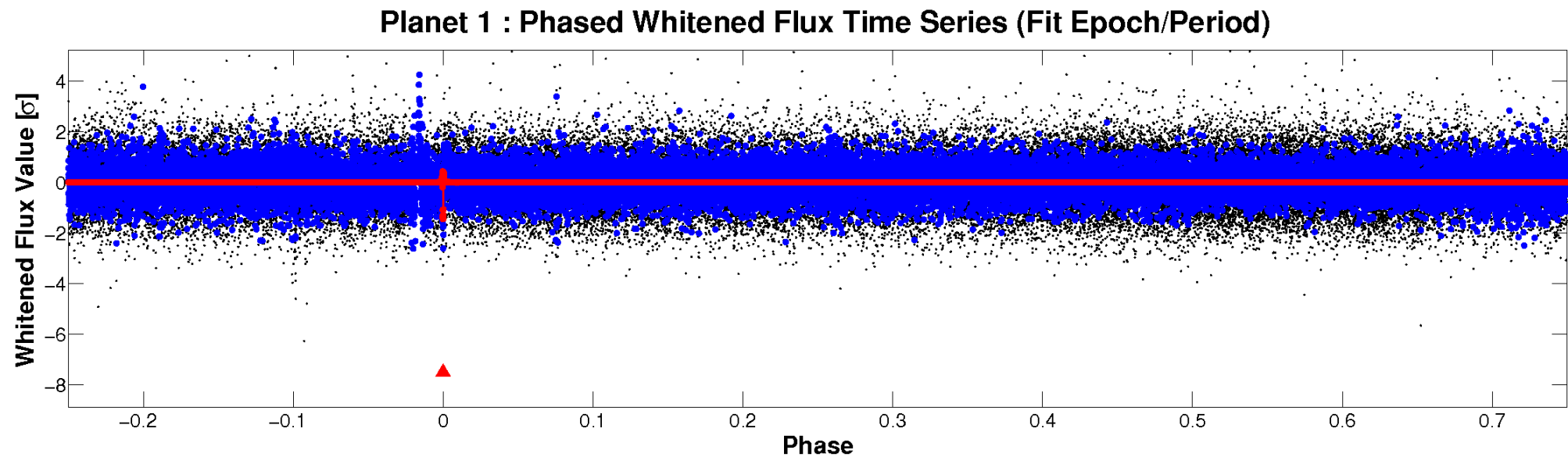
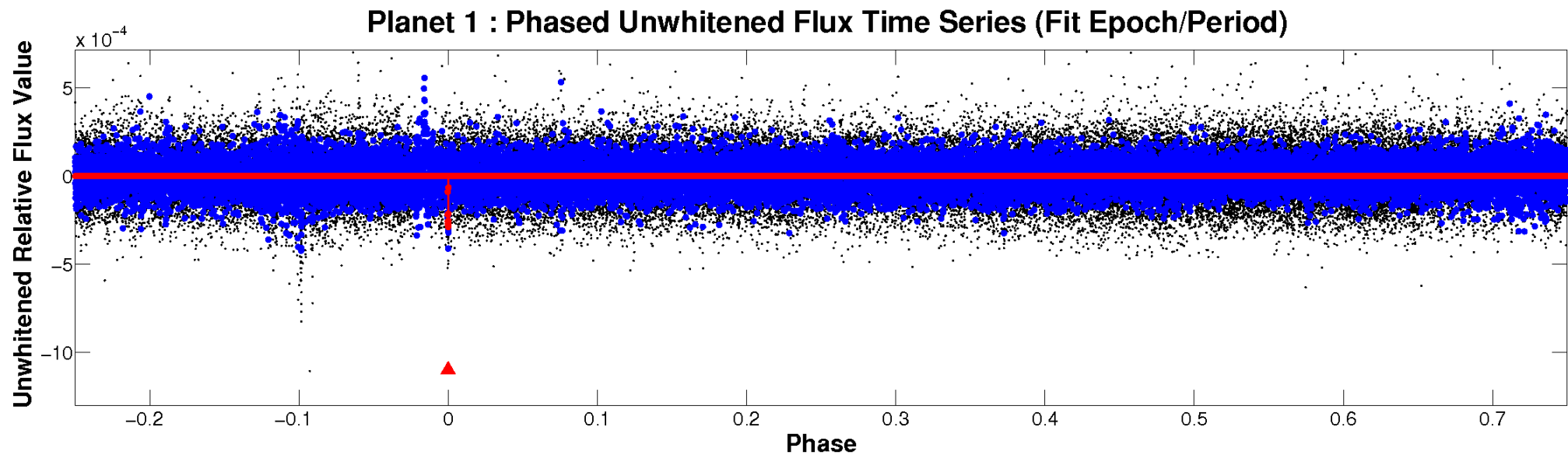


# ALT Odd/Even

TCE 008871216-01



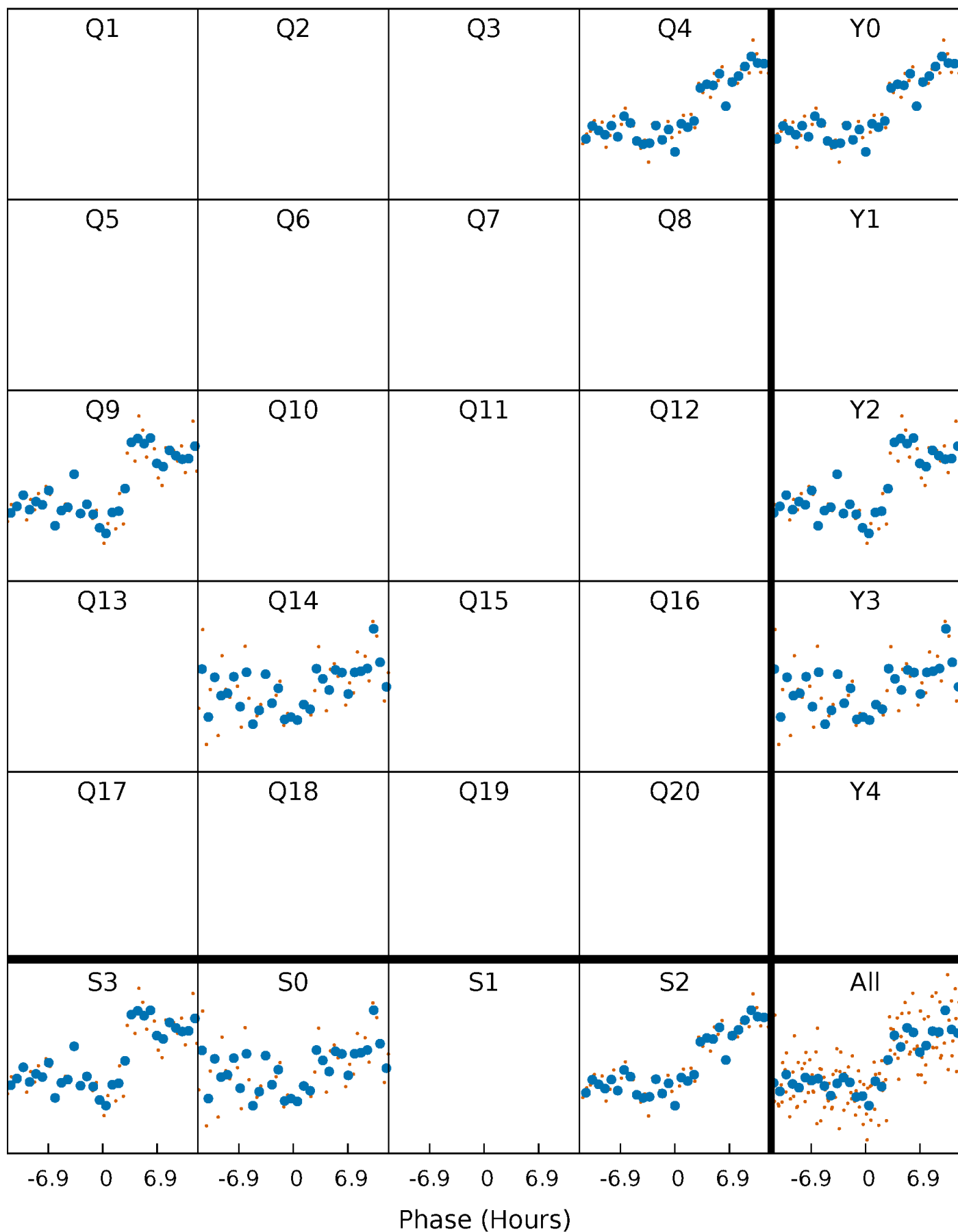
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

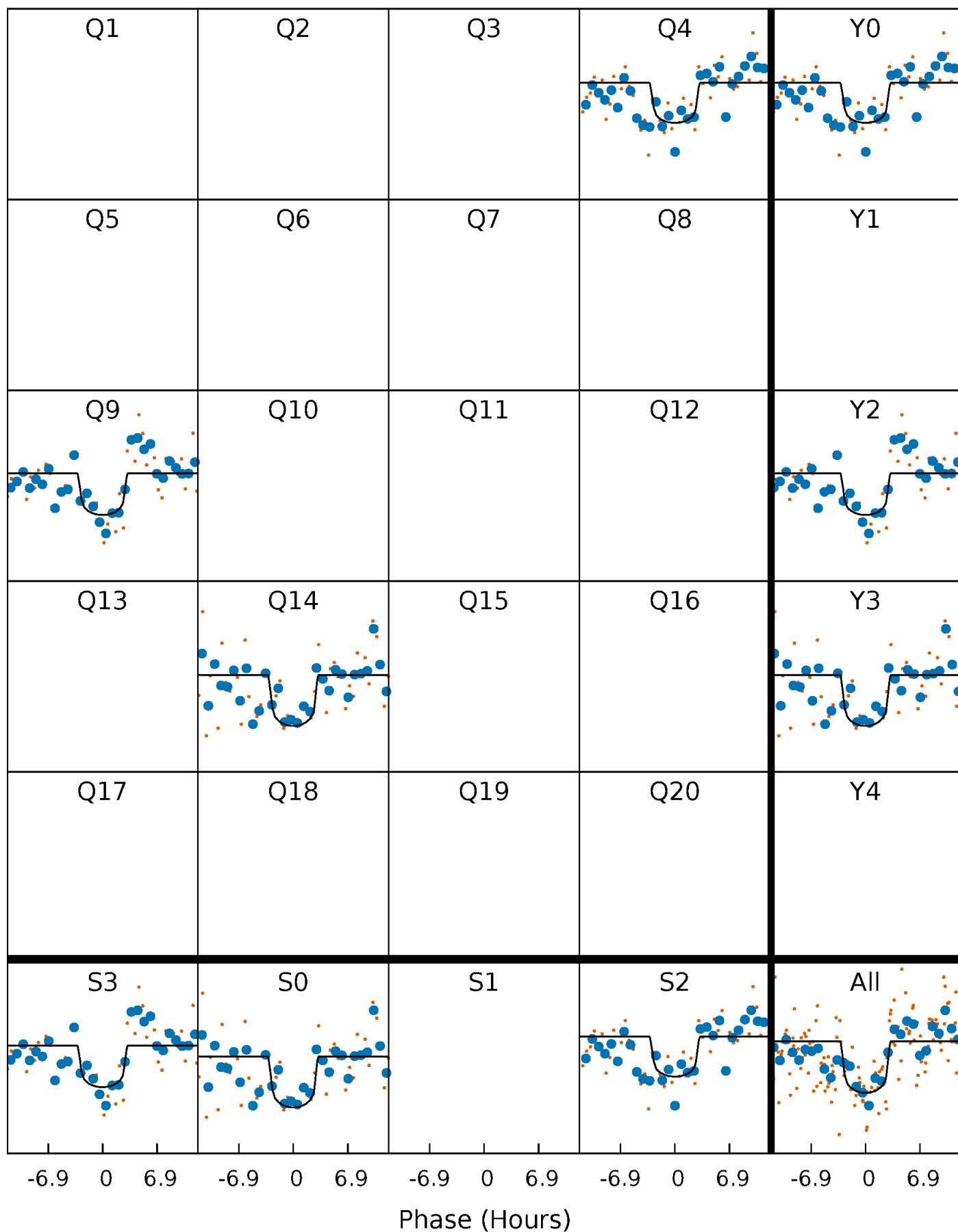
TCE 008871216-01 P=446.411307 Days  $T_0=406.704967$  (BKJD)





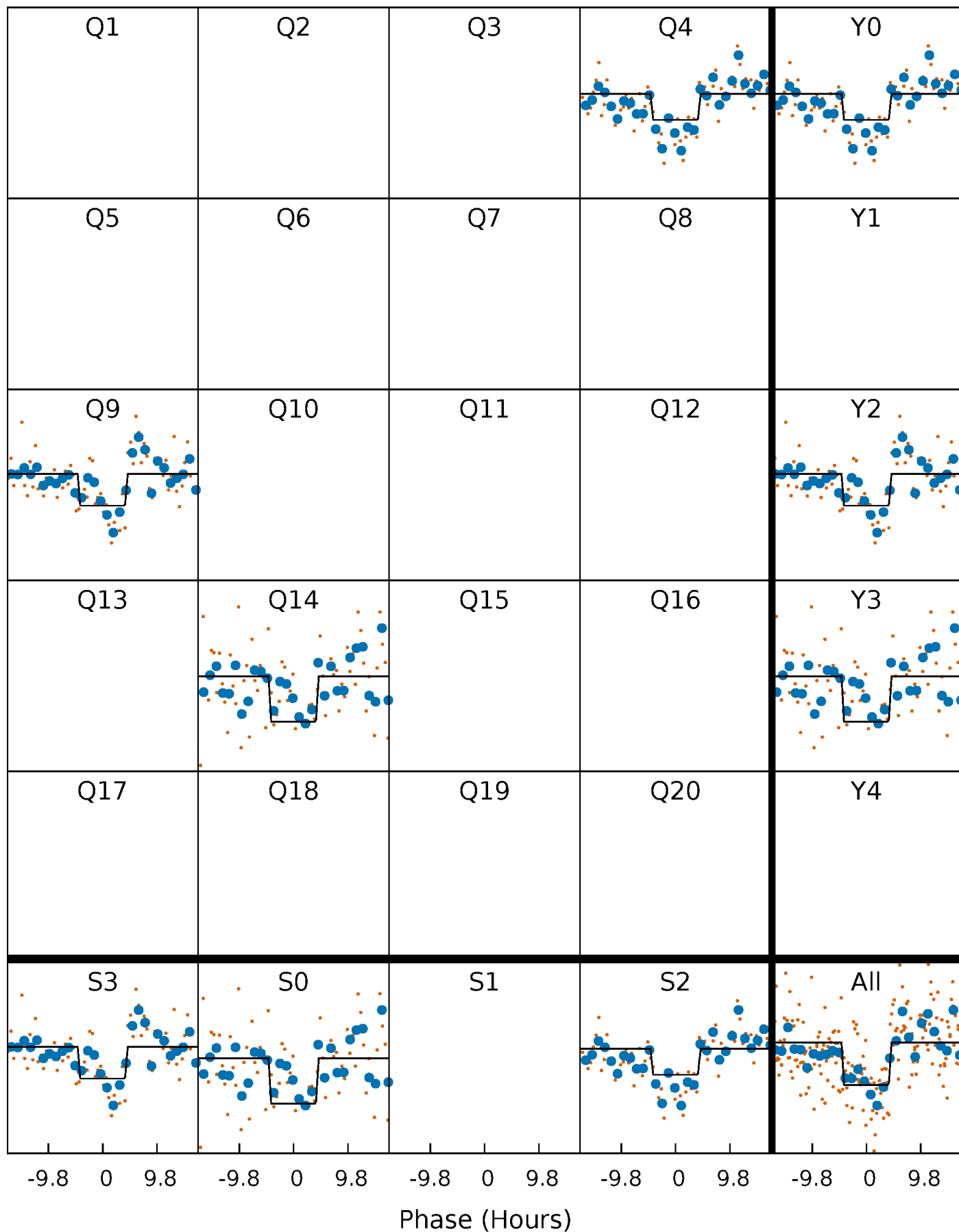
# DV Quarter-Phased Transit Curves

TCE 008871216-01 P=446.411307 Days  $T_0=406.704967$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

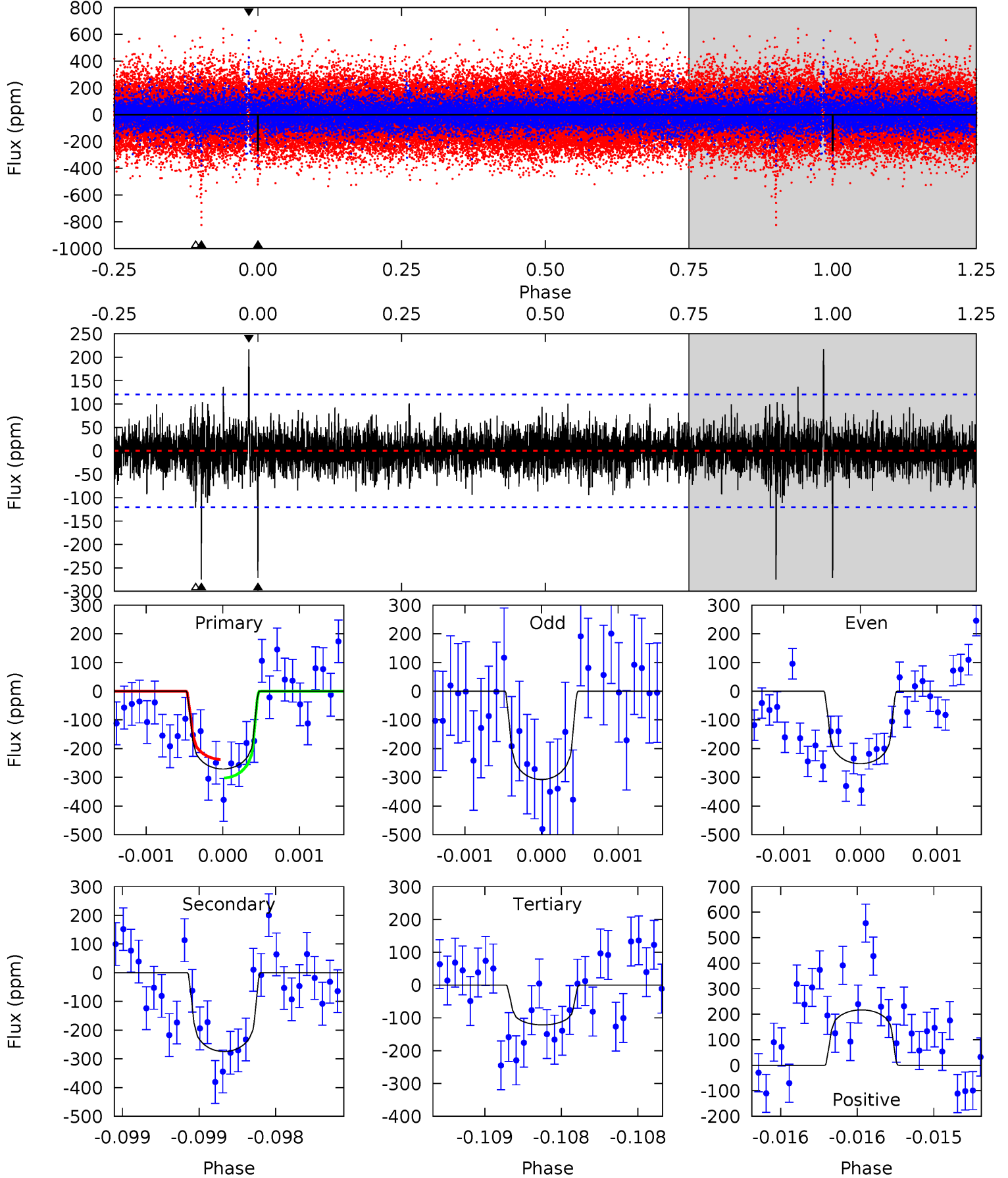
TCE 008871216-01 P=446.405174 Days  $T_0=406.652400$  (BKJD)



# DV Model-Shift Uniqueness Test

008871216-01, P = 446.411307 Days, E = 406.704967 Days

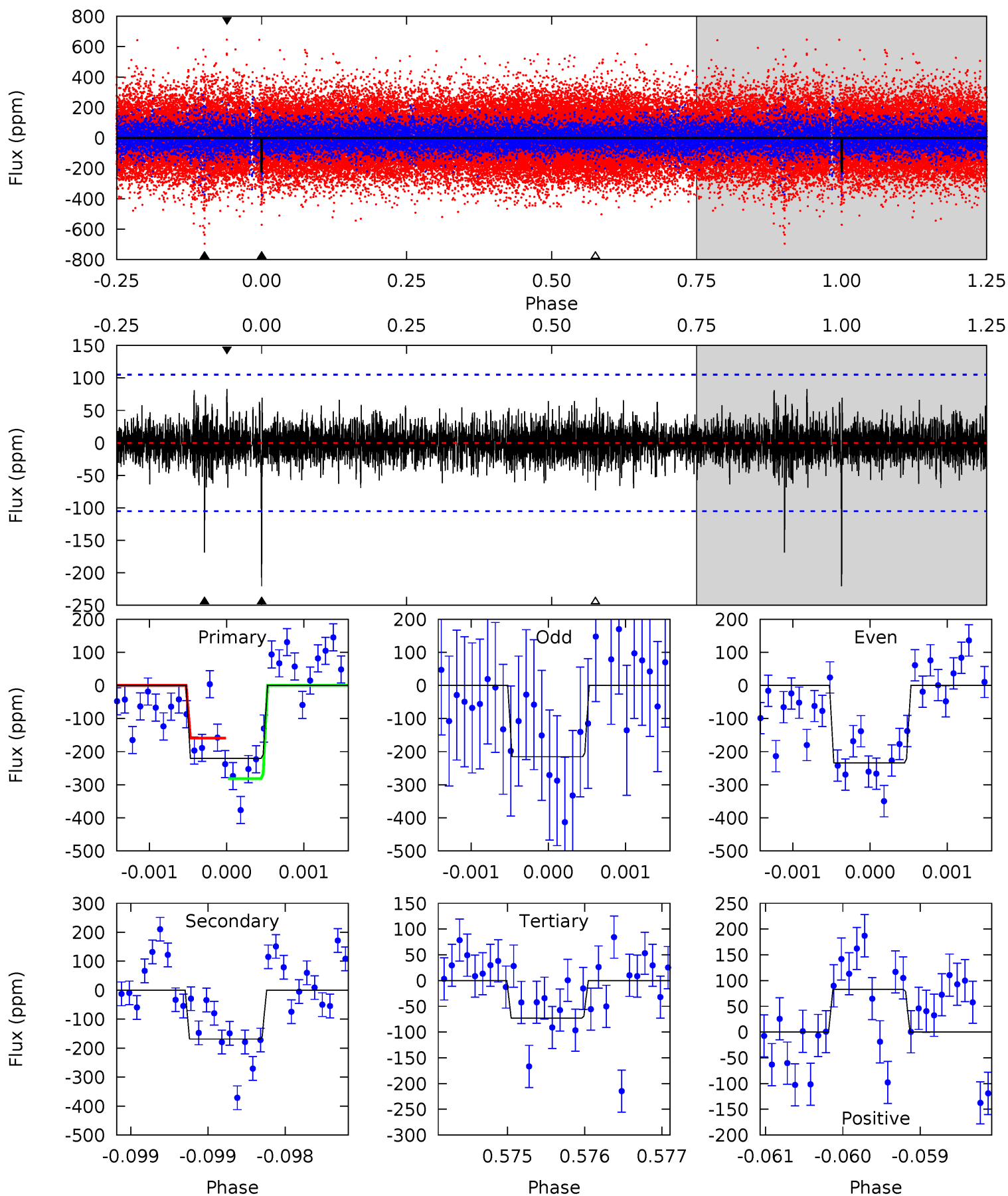
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	12.6	5.57	9.95	5.53	3.42	1.30	6.86	2.49	7.01	2.64	1.18	0.96	0.44	1.48



# Alt Model-Shift Uniqueness Test

008871216-01, P = 446.405174 Days, E = 406.652400 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
11.5	8.81	3.81	4.33	5.49	3.35	0.99	7.72	7.20	5.00	4.48	0.47	1.06	0.27	3.20



### Stellar Parameters For KIC 008871216

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5788^{+157}_{-157}$	$4.574^{+0.040}_{-0.160}$	$-0.520^{+0.300}_{-0.300}$	$0.781^{+0.189}_{-0.063}$	$0.835^{+0.086}_{-0.077}$	$2.467^{+0.516}_{-1.072}$
	+3%/-3%	+1%/-3%	+58%/-58%	+24%/-8%	+10%/-9%	+21%/-43%
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 008871216-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-274 \pm 22$	$1.58^{+0.74}_{-0.73}$	$310^{+17}_{-13}$	$5588^{+2318}_{-800}$	$68787^{+178990}_{-36387}$
Alt.	$-169 \pm 19$	$1.32^{+0.74}_{-0.64}$	$310^{+17}_{-13}$	$5427^{+2251}_{-916}$	$59948^{+165048}_{-35228}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

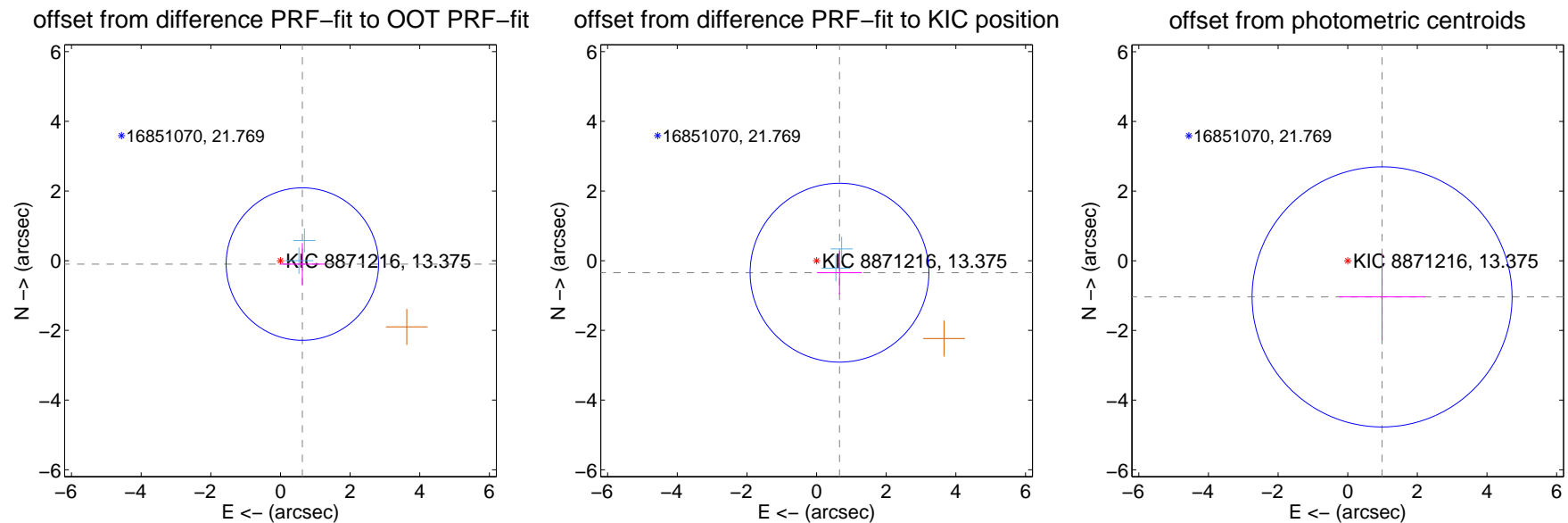
## DV Centroid Data

Supplemental centroid analysis for 008871216-01. Kepler magnitude: 13.38. Transit SNR 7.92

There are 2 quarters with good PRF difference image offsets

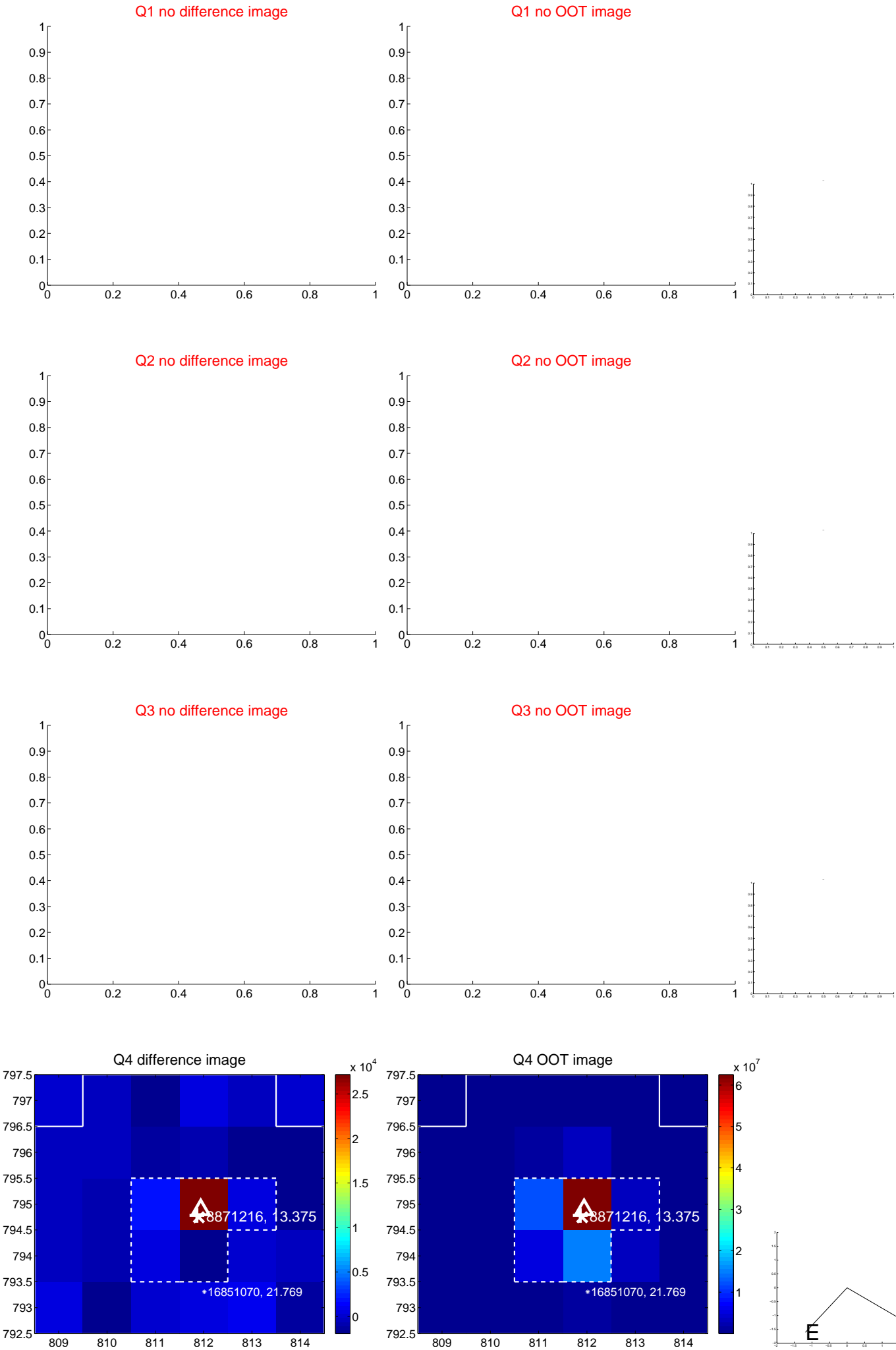
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.636 \pm 0.729$	0.87	$-0.629 \pm 0.650$	$-0.097 \pm 0.601$
PRF-fit source offset from KIC position	$0.743 \pm 0.855$	0.87	$-0.658 \pm 0.645$	$-0.344 \pm 0.626$
photometric centroid source offset	$1.43 \pm 1.24$	1.15	$-0.99 \pm 1.24$	$-1.04 \pm 1.25$



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.

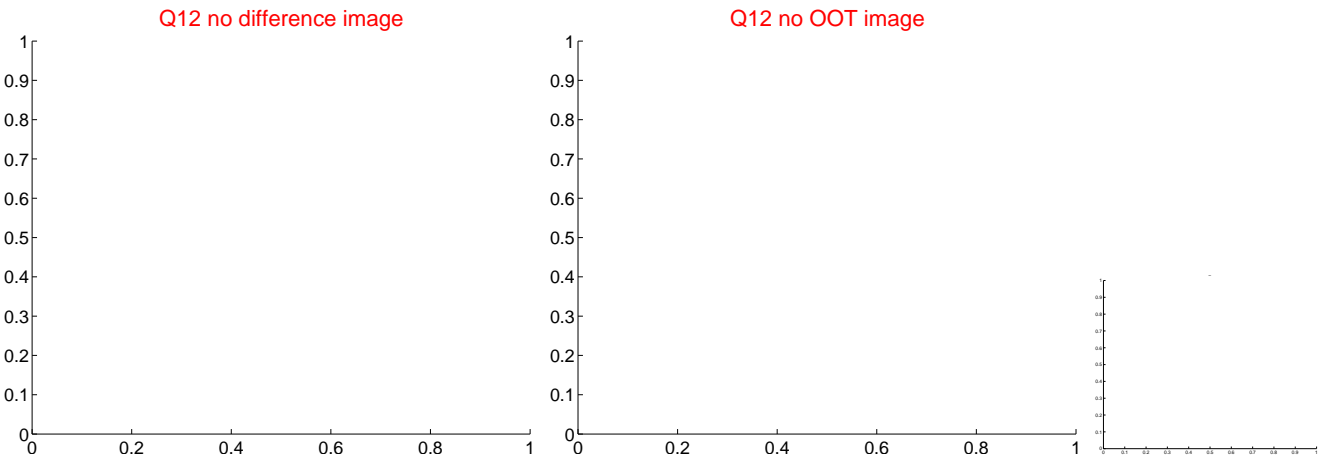
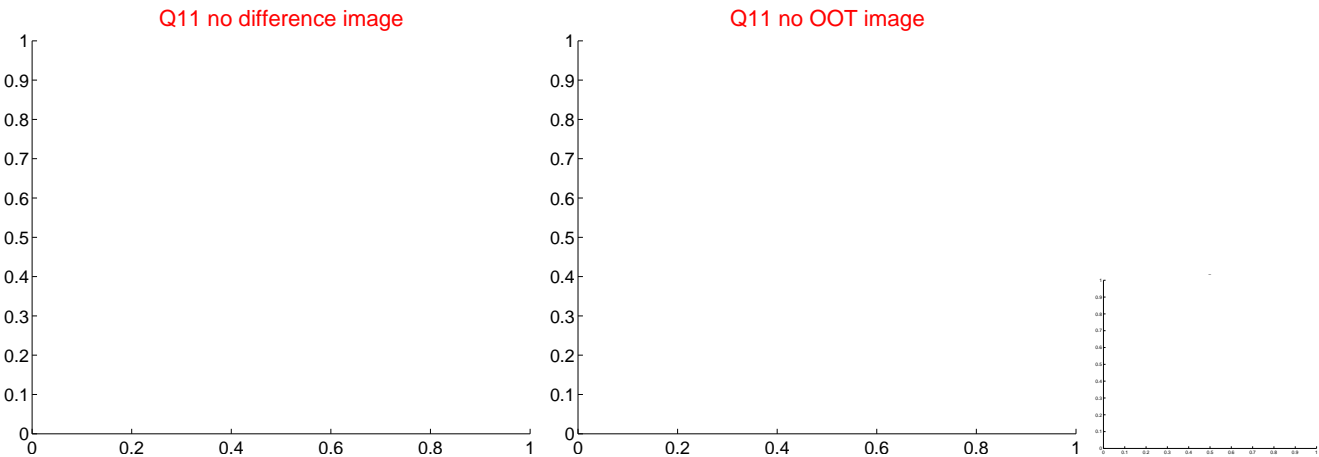
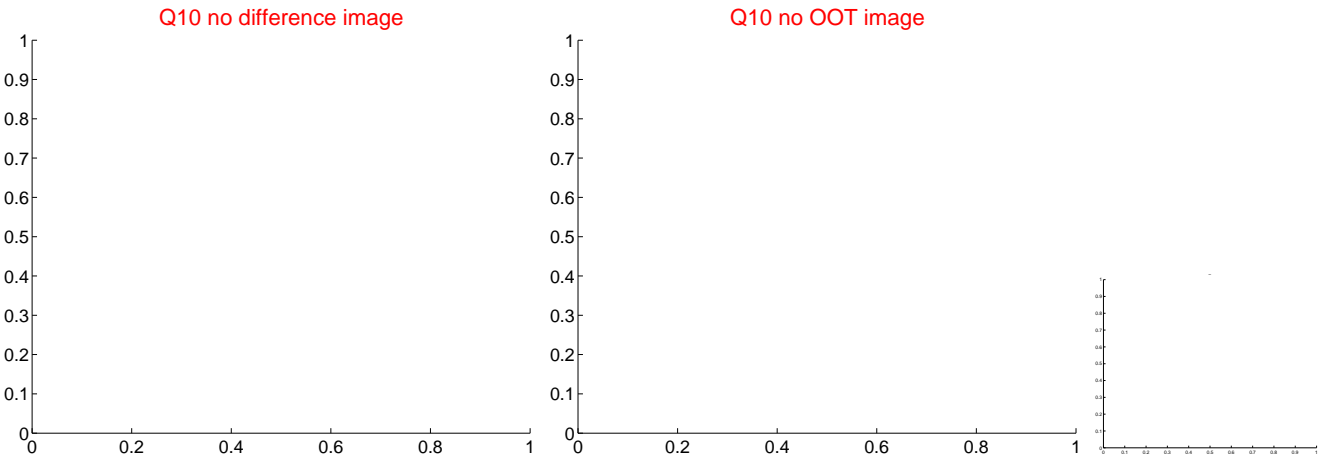
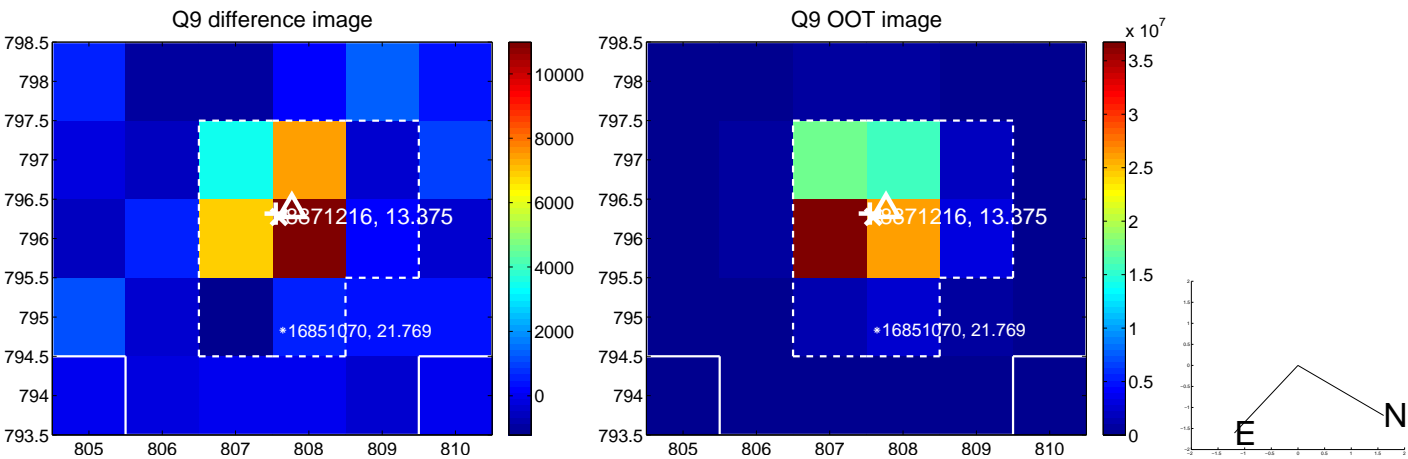




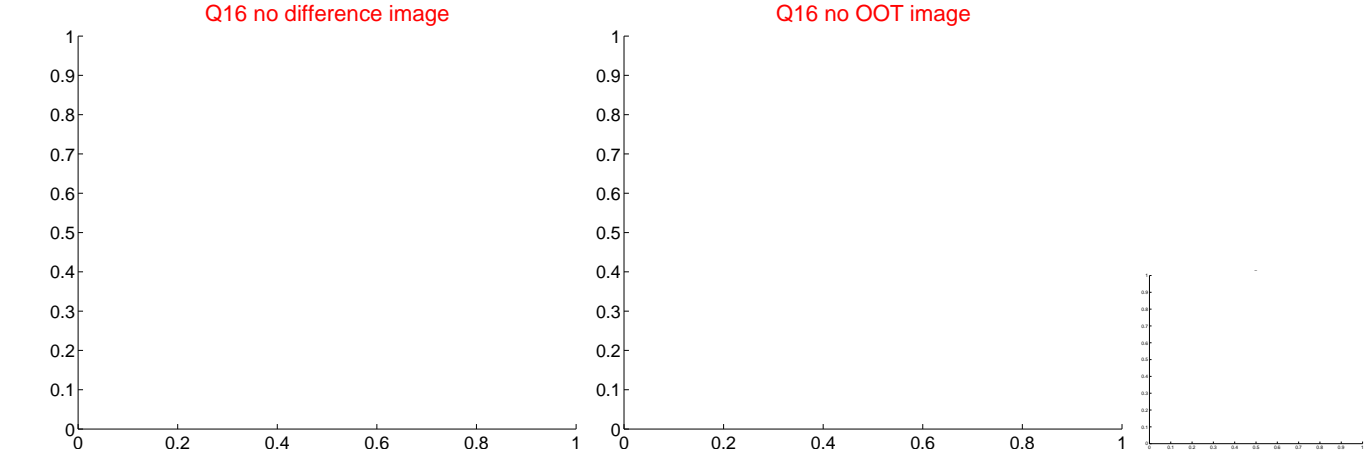
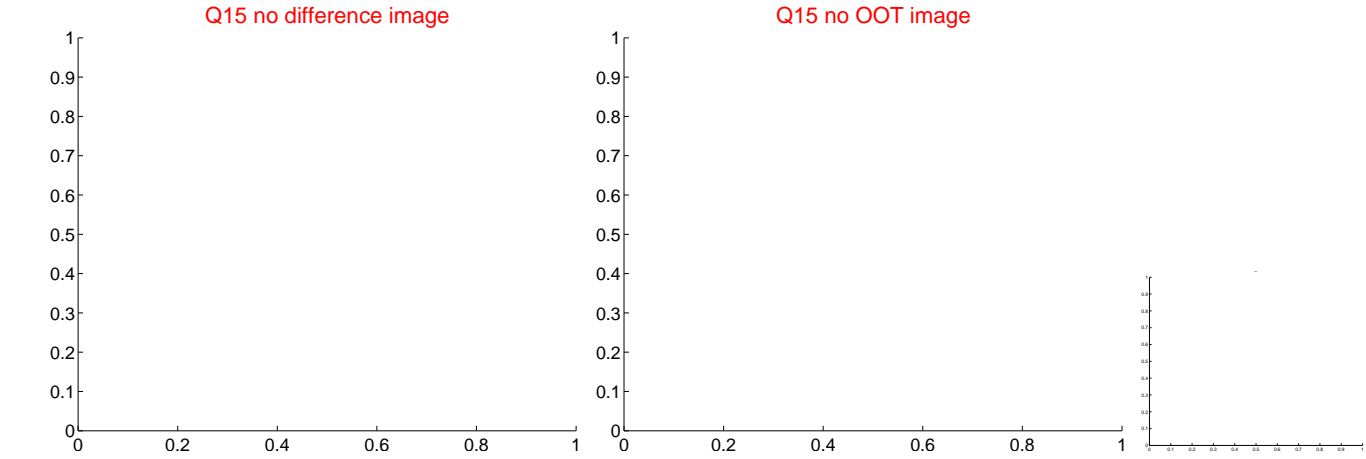
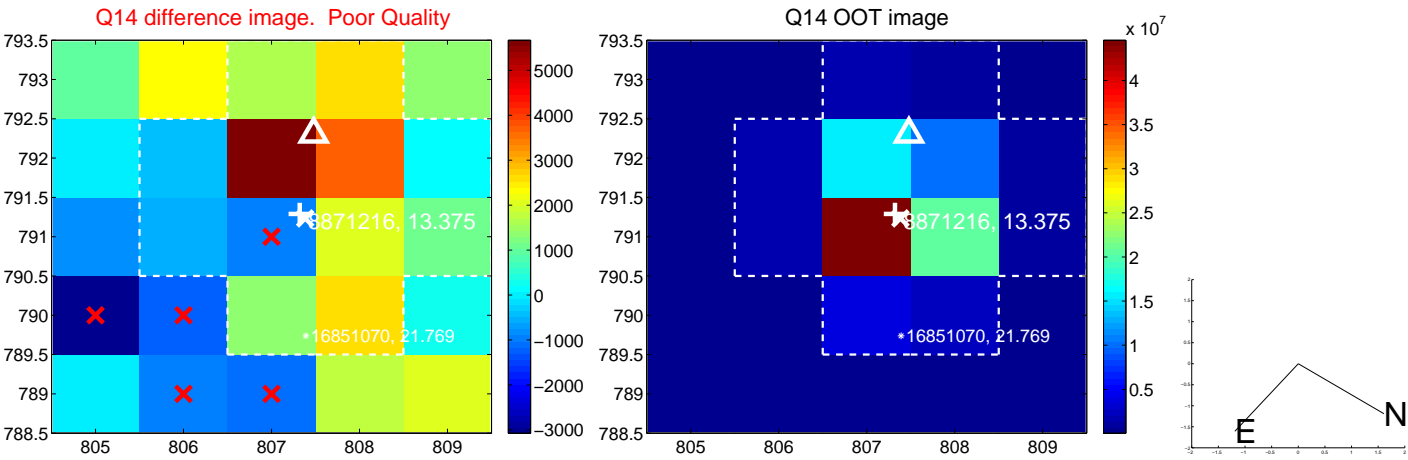
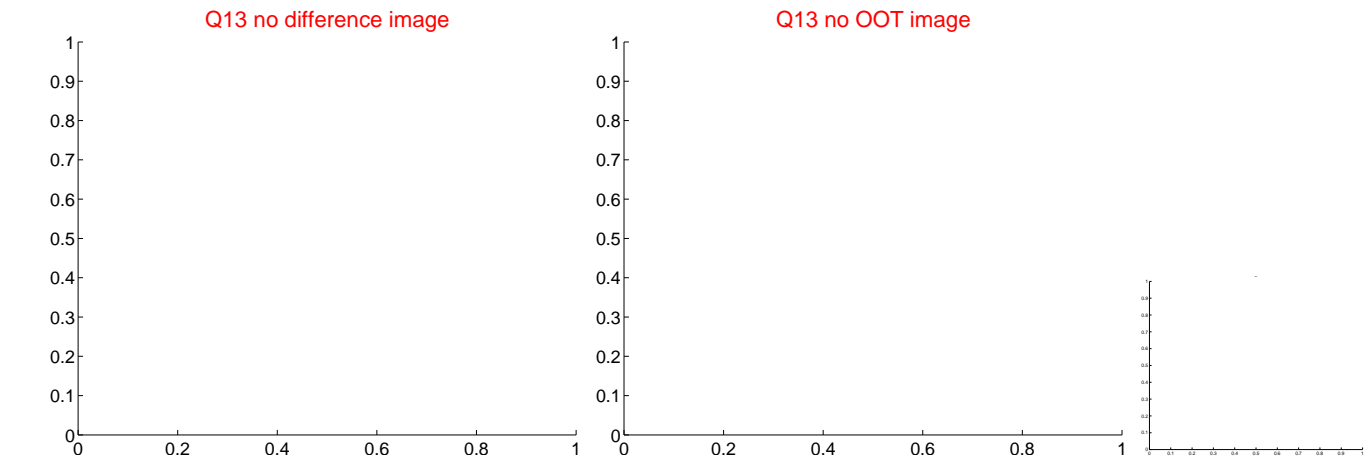
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



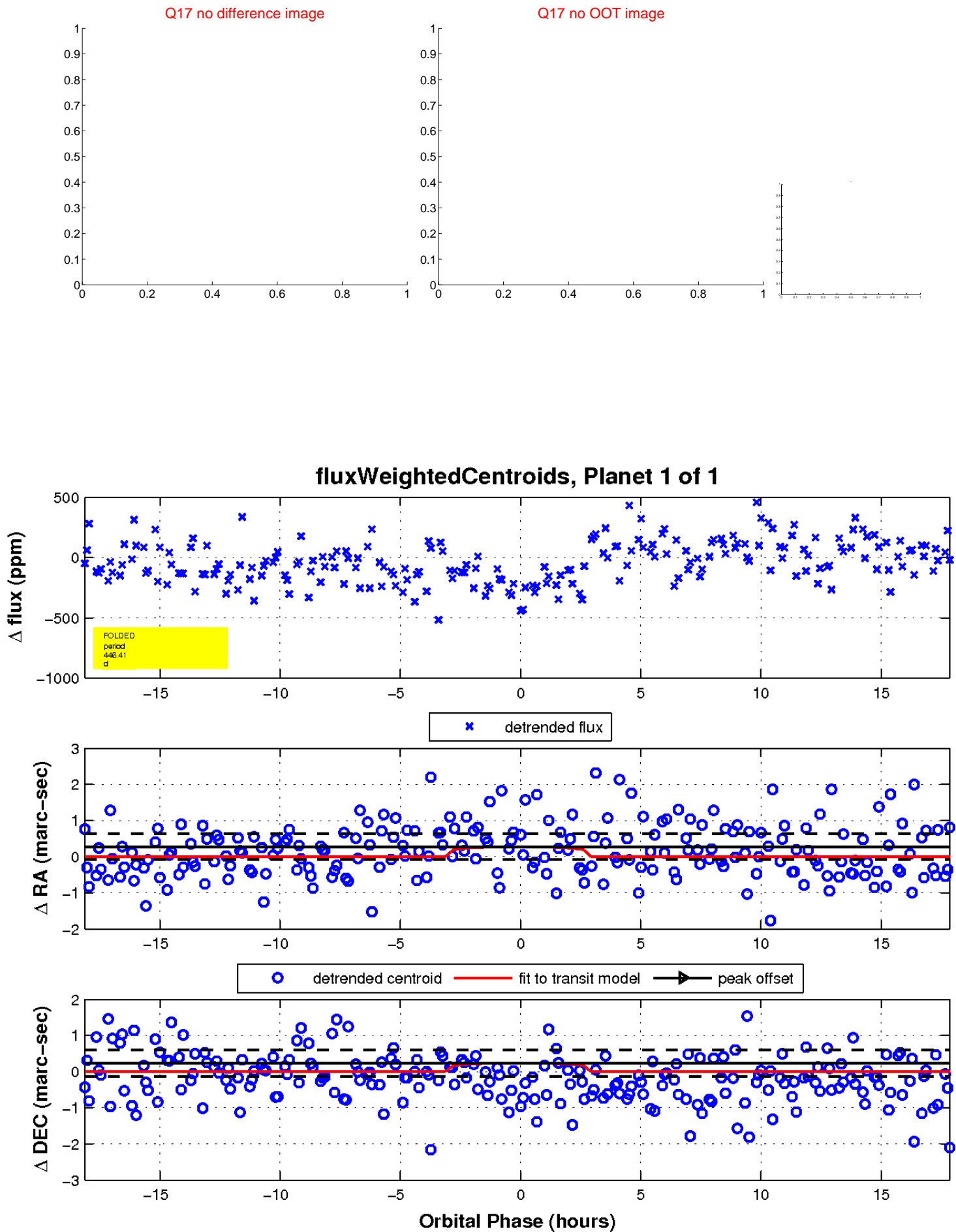
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

