

# KIC 009897364

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009897364-01	OBS	4189.01	64.272813	186.734103	1152.2	12.119	19.3	21.1	1.30	6341	5.21	22.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009897364-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

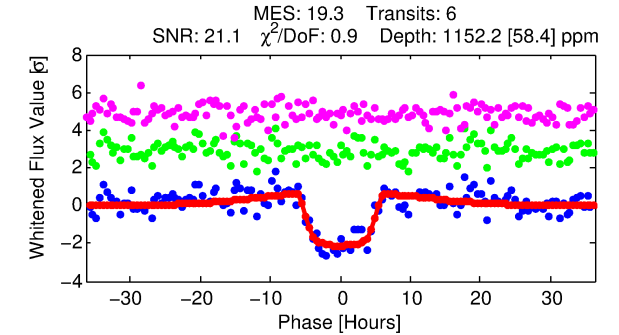
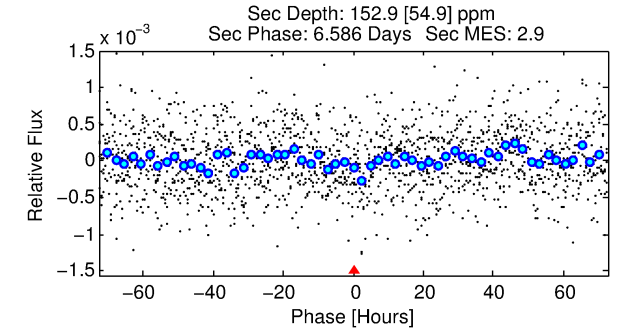
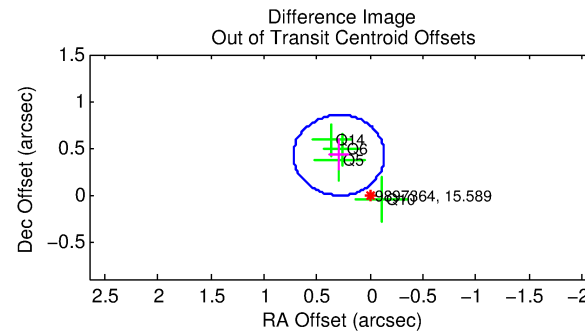
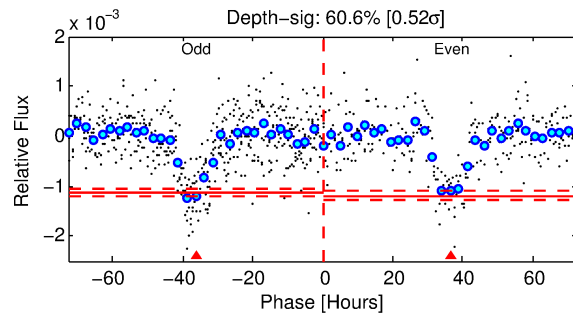
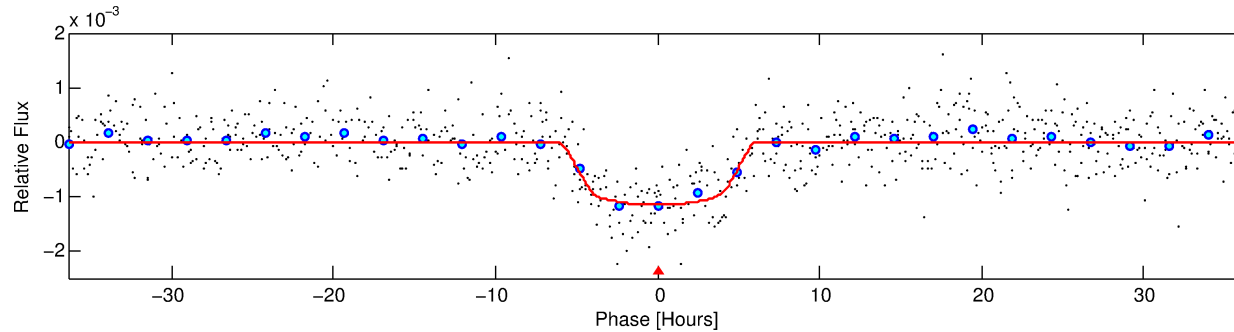
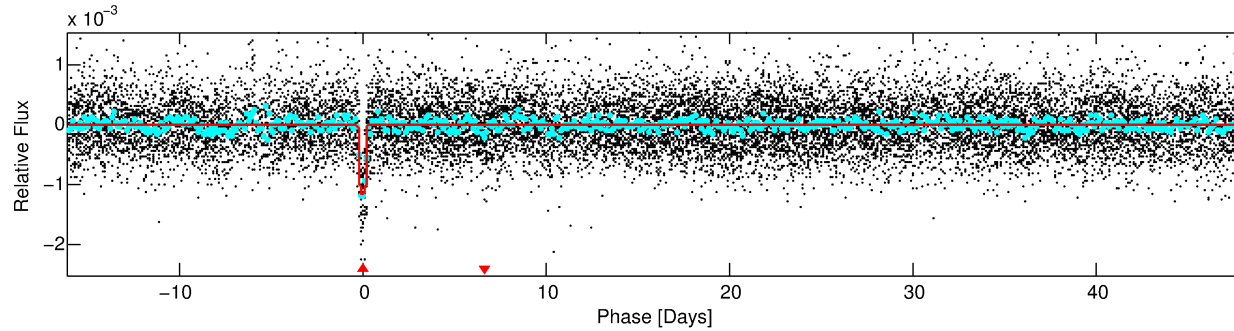
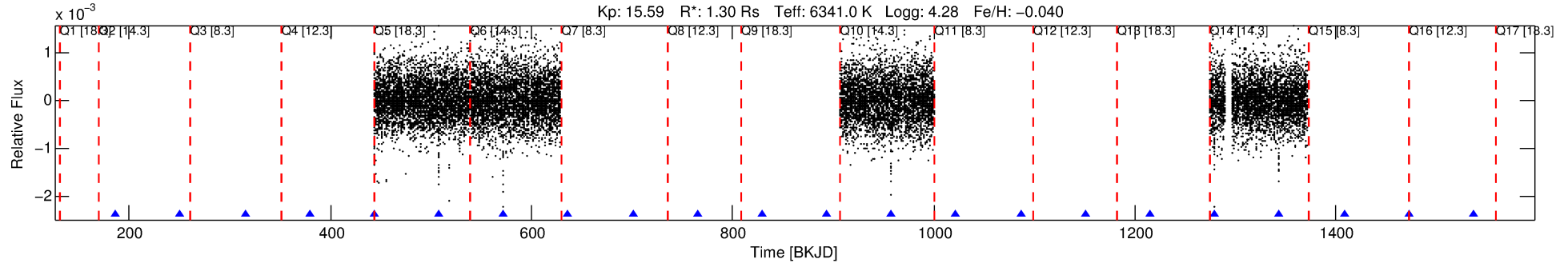
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009897364-01

No Significant Match Found

# DV One-Page Summary

KIC: 9897364 Candidate: 1 of 1 Period: 64.273 d  
KOI: K04189.01 Corr: 0.897



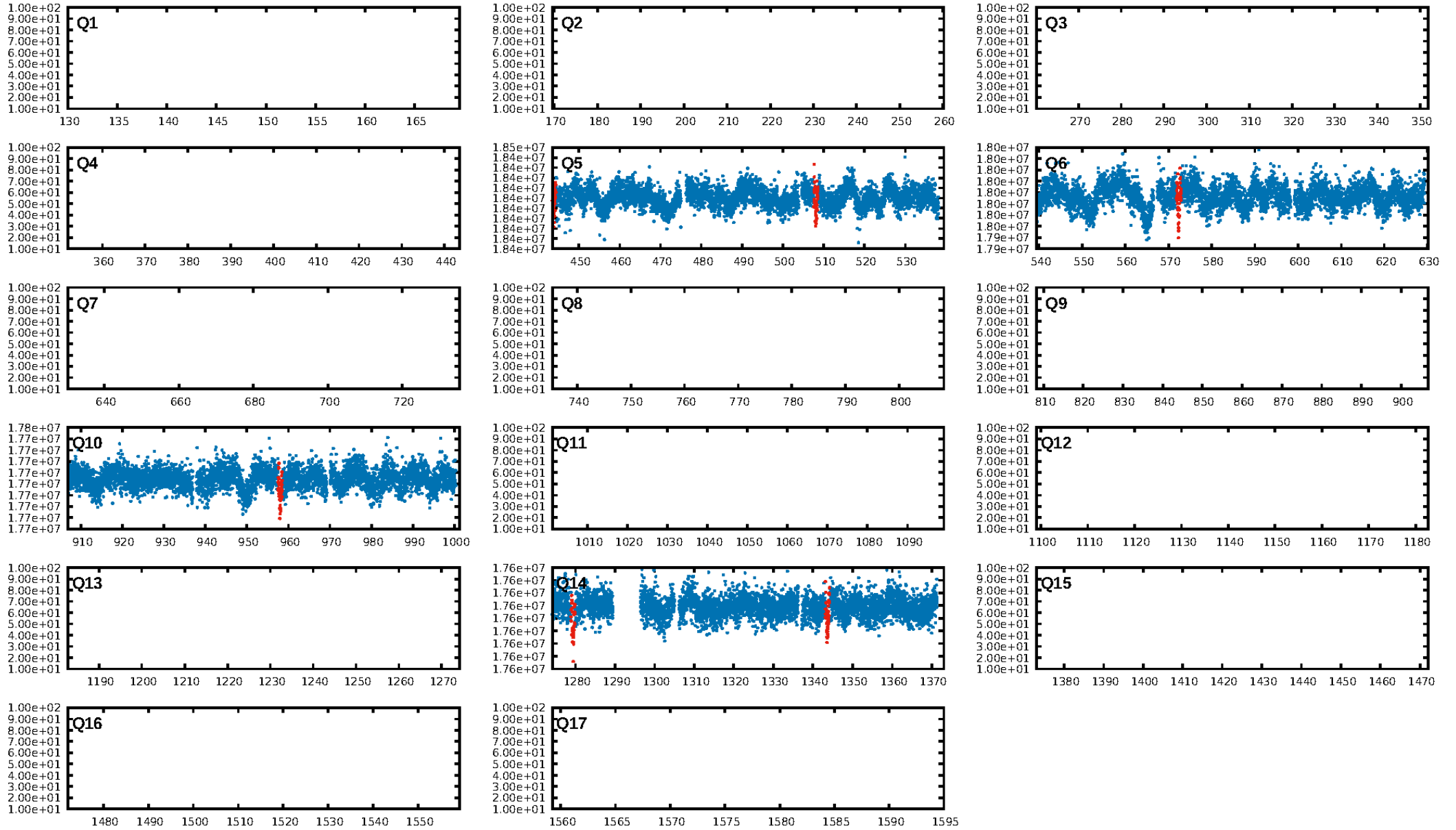
## DV Fit Results:

Period = 64.27281 [0.00092] d  
Epoch = 186.7341 [0.0106] BKJD  
Rp/R\* = 0.0368 [0.0015]  
a/R\* = 20.25 [2.99]  
b = 0.91 [0.03]  
Seff = 22.35 [9.03]  
Teq = 554 [56] K  
Rp = 5.21 [1.72] Re  
a = 0.3307 [0.0878] AU  
Ag = 338.43 [177.72] [1.90 $\sigma$ ]  
Teffp = 3677 [367] K [8.41 $\sigma$ ]

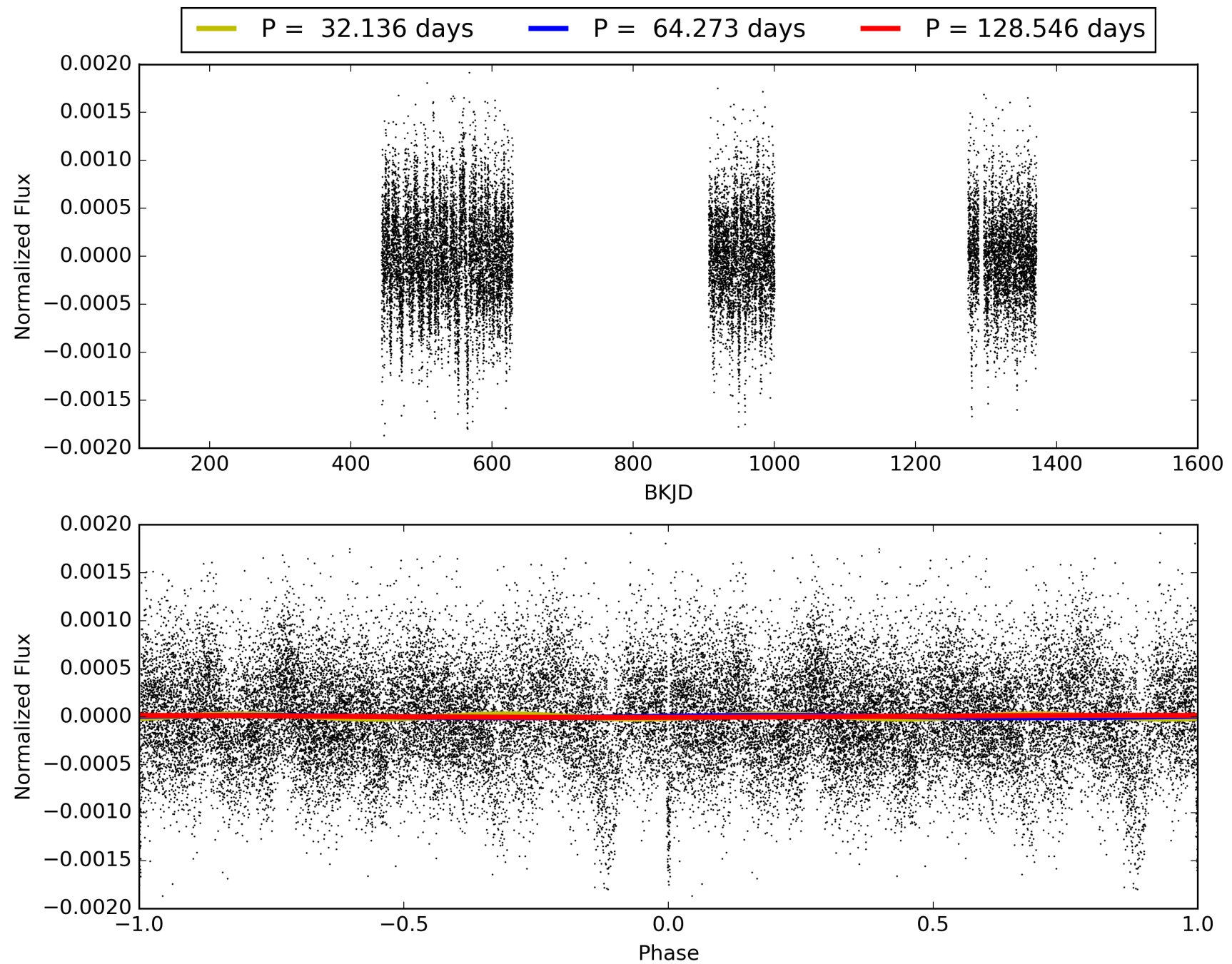
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 14.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.16e-94  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 2.567  
Centroid-sig: 63.8%  
Centroid-so: 0.239 arcsec [0.43 $\sigma$ ]  
OotOffset-rm: 0.514 arcsec [3.59 $\sigma$ ]  
KicOffset-rm: 0.476 arcsec [3.14 $\sigma$ ]  
OotOffset-st: 3/0/0/1 [4]  
KicOffset-st: 3/0/0/1 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

# TCE 009897364-01, PDC Light Curves

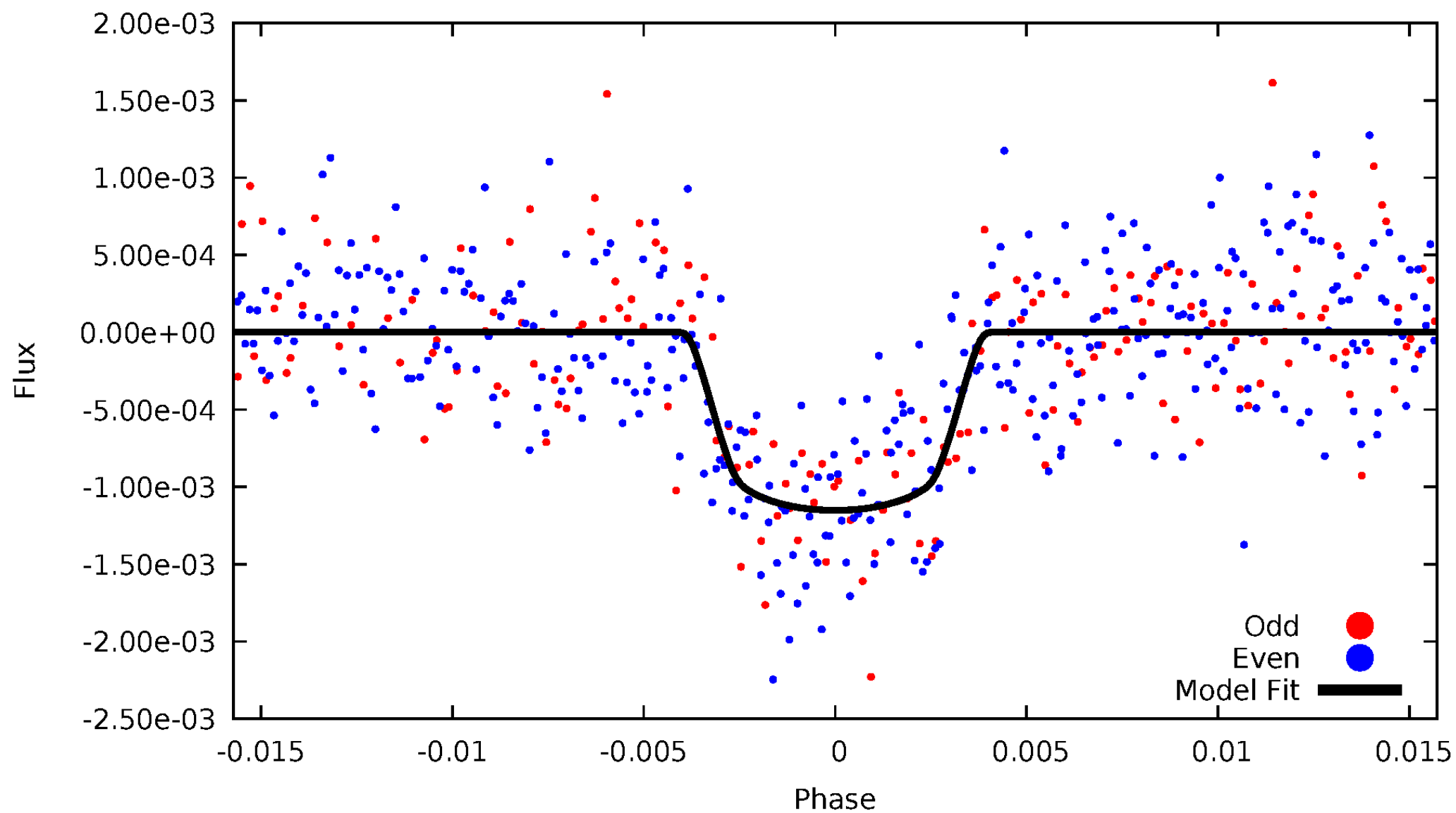


TCE 009897364-01



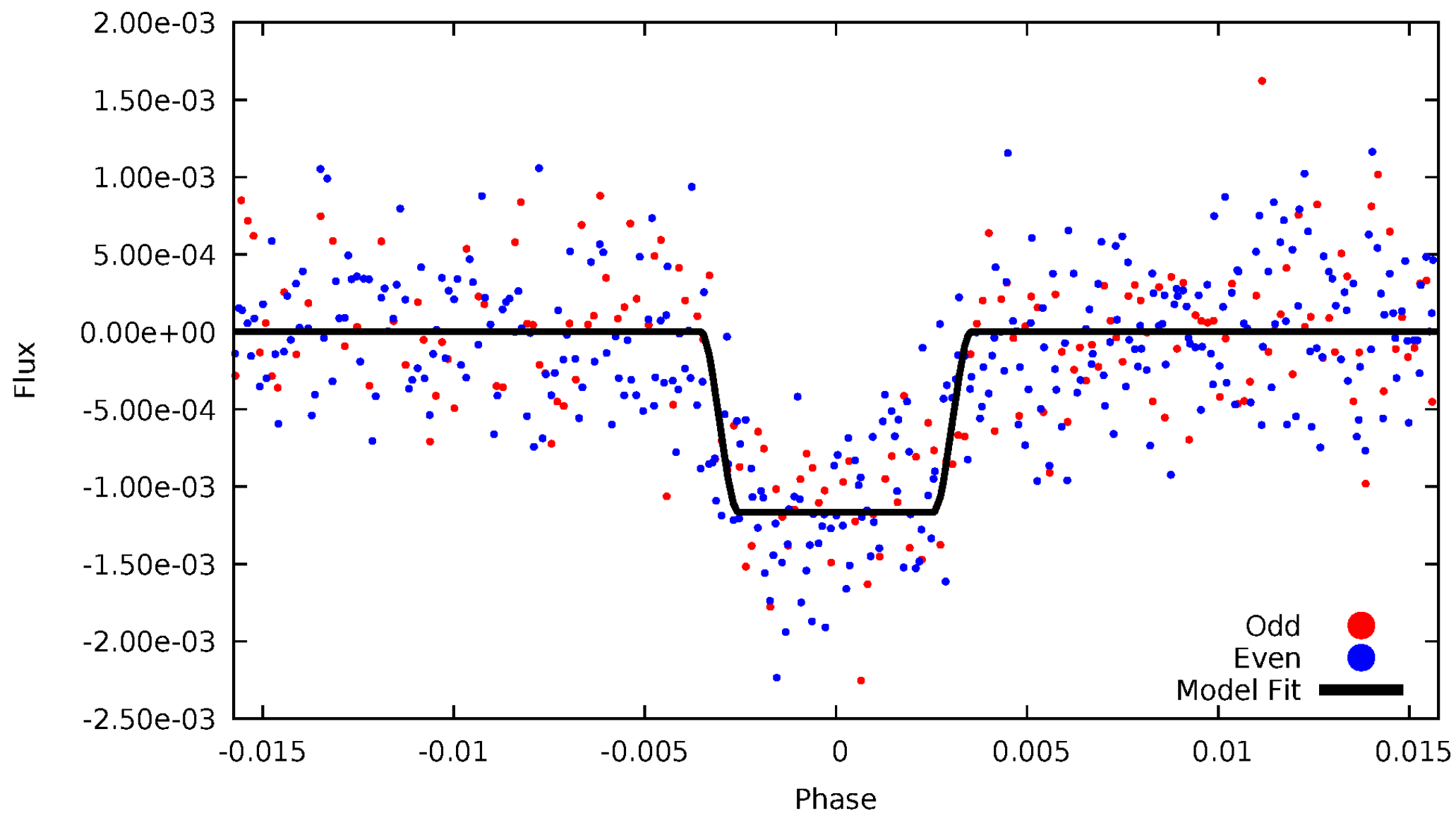
# DV Odd/Even

TCE 009897364-01



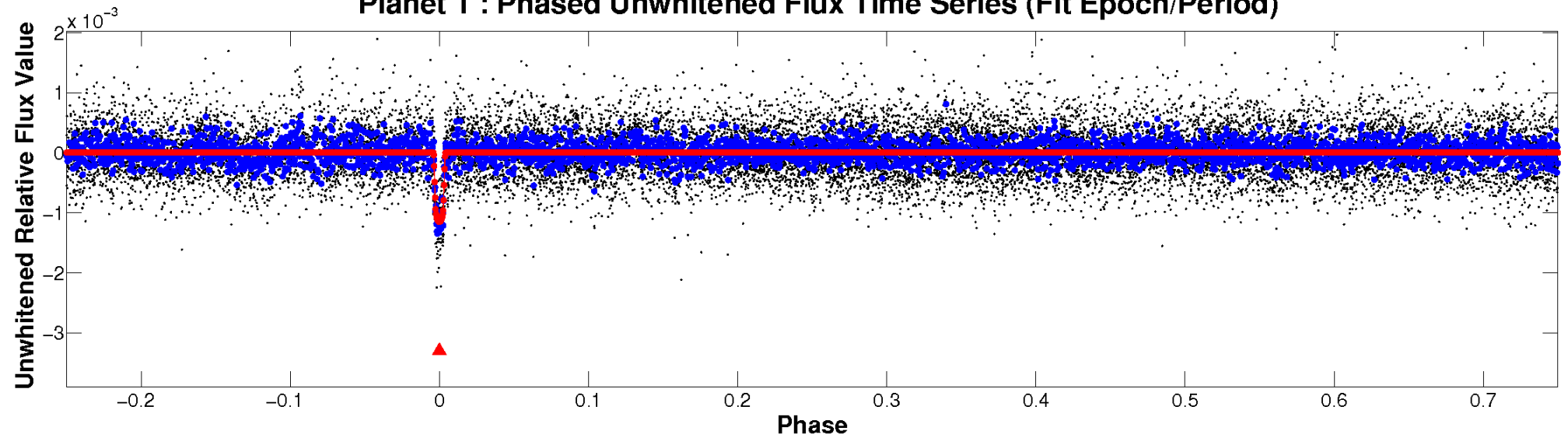
# ALT Odd/Even

TCE 009897364-01

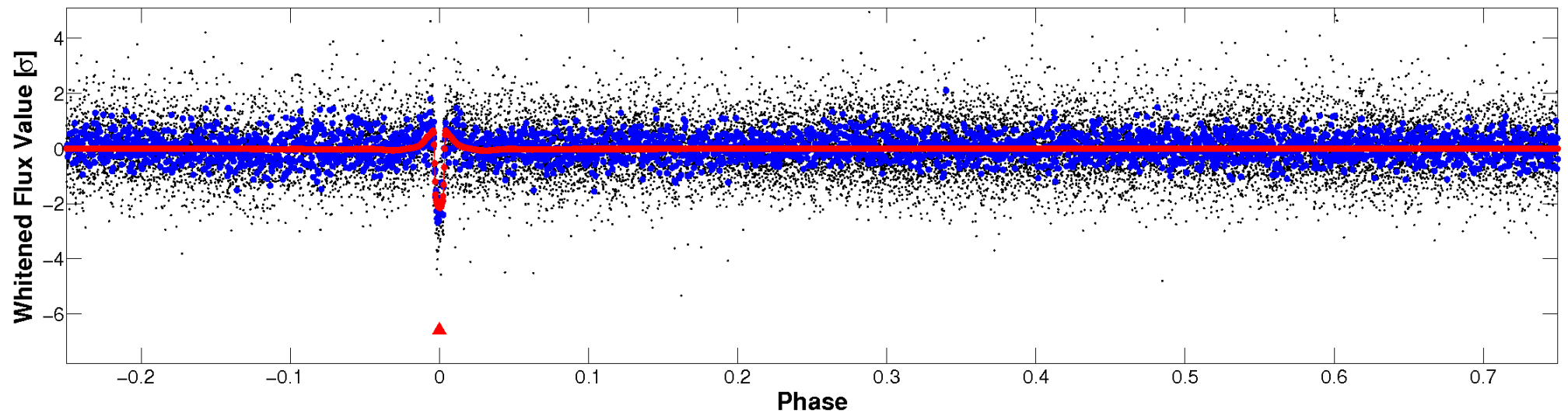


# Non-Whitened Vs. Whitened Light Curve

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

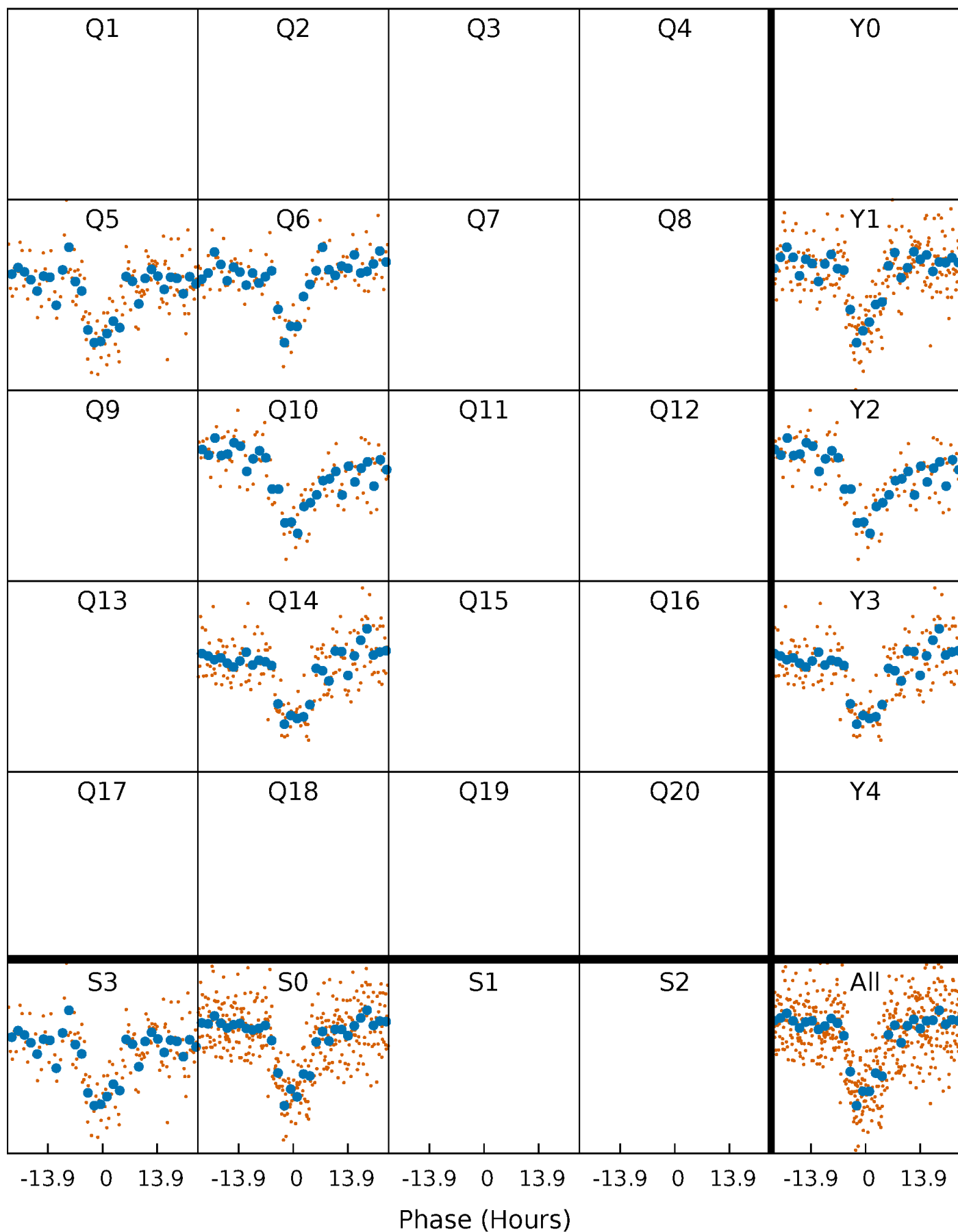


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

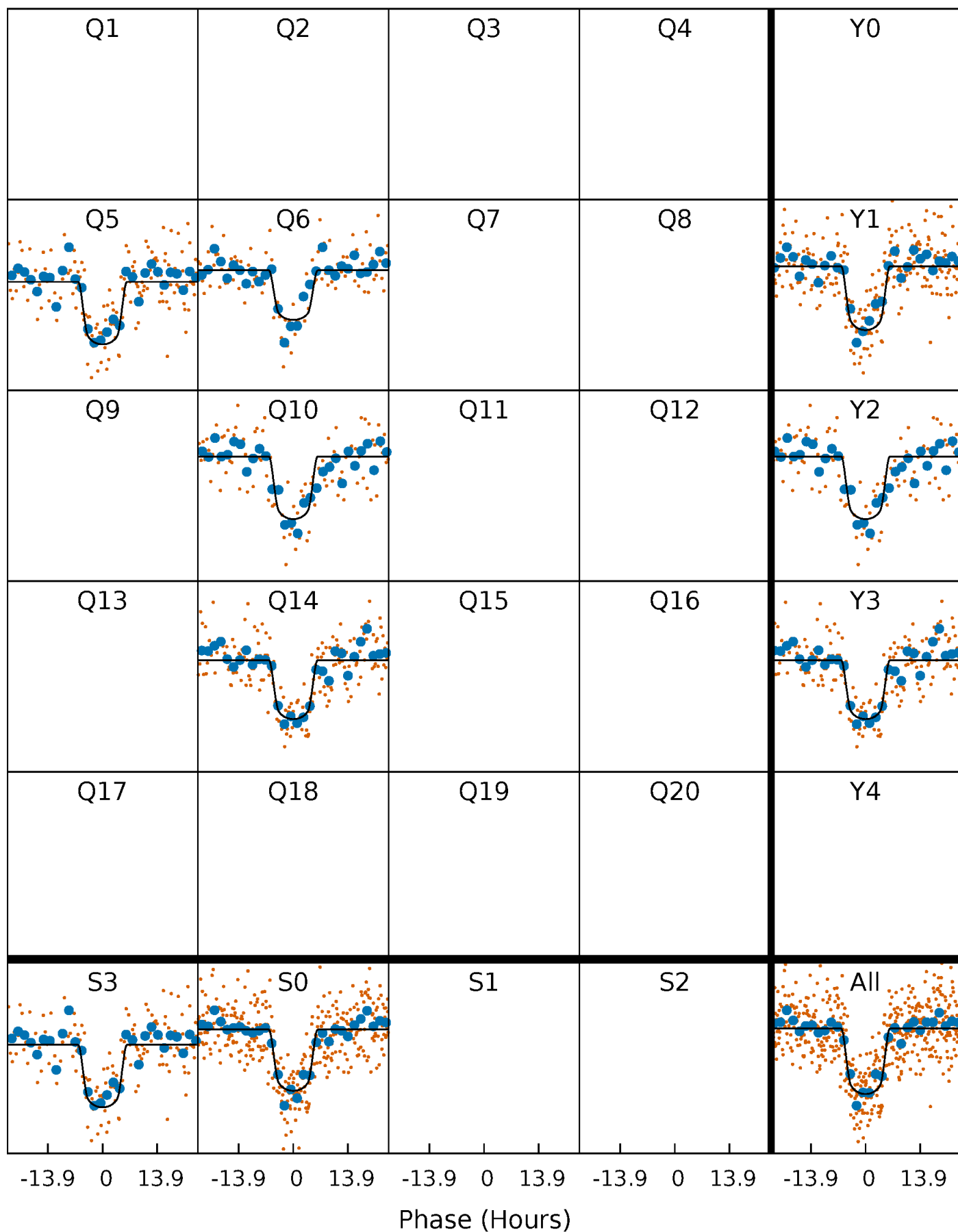
TCE 009897364-01     $P = 64.272813$  Days     $T_0 = 186.734103$  (BKJD)





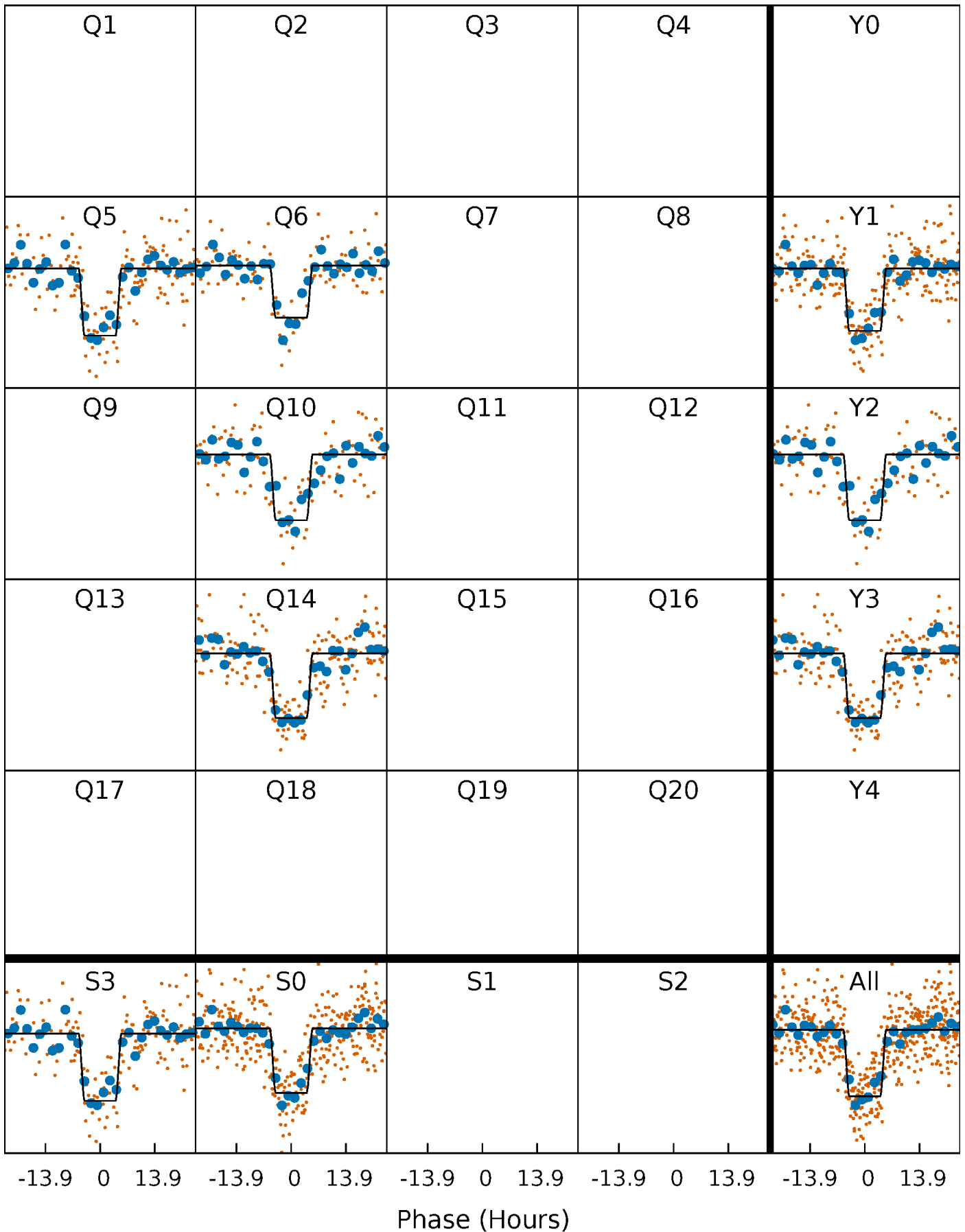
# DV Quarter-Phased Transit Curves

TCE 009897364-01   P= 64.272813 Days    $T_0=186.734103$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

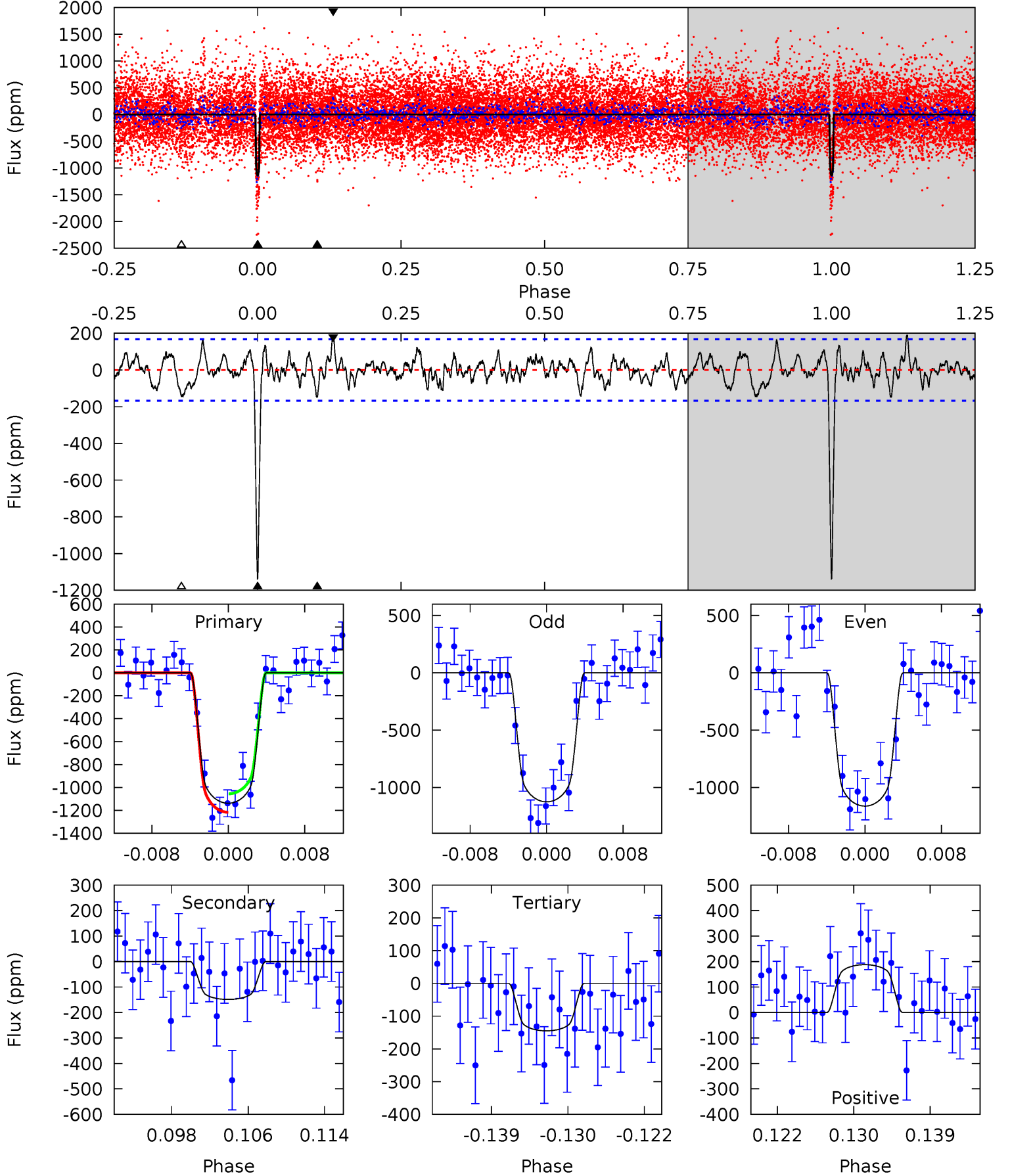
TCE 009897364-01     $P = 64.274853$  Days     $T_0 = 186.717144$  (BKJD)



# DV Model-Shift Uniqueness Test

009897364-01,  $P = 64.272813$  Days,  $E = 186.734103$  Days

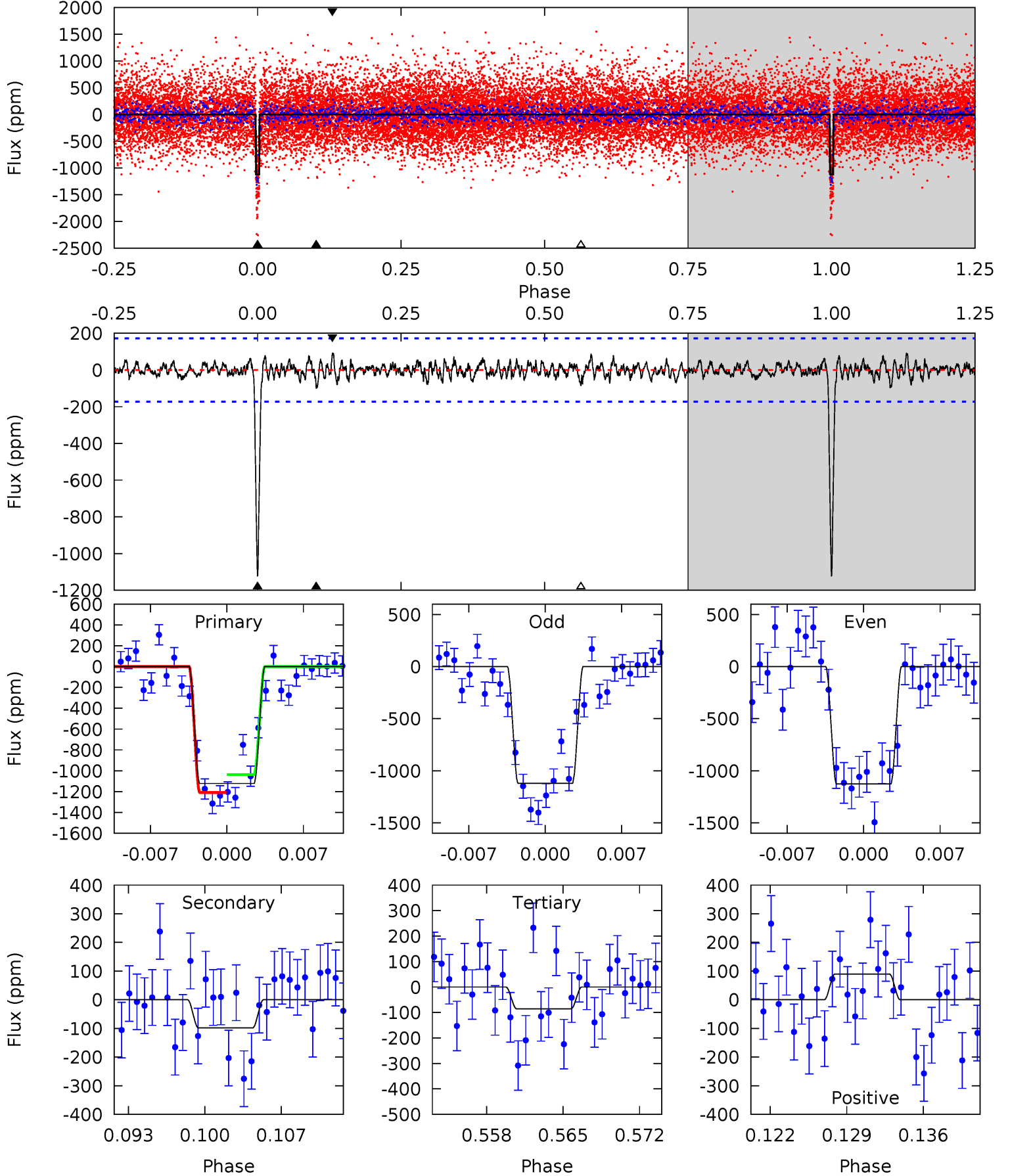
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.5	4.51	4.39	5.69	5.07	2.65	1.59	30.1	28.8	0.12	-1.18	0.54	0.95	0.14	2.44



# Alt Model-Shift Uniqueness Test

009897364-01, P = 64.274853 Days, E = 186.717144 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
33.1	2.90	2.54	2.66	5.09	2.69	0.86	30.6	30.5	0.36	0.25	0.09	1.00	0.07	2.56



### Stellar Parameters For KIC 009897364

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6341^{+177}_{-243}$	$4.278^{+0.132}_{-0.198}$	$-0.040^{+0.250}_{-0.300}$	$1.299^{+0.424}_{-0.228}$	$1.165^{+0.181}_{-0.164}$	$0.749^{+0.464}_{-0.382}$
	+3%/-4%	+3%/-5%	+625%/-750%	+33%/-18%	+16%/-14%	+62%/-51%
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 009897364-01 / KOI 4189.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-149 \pm 33$	$5.20^{+0.99}_{-0.59}$	$774^{+64}_{-45}$	$3961^{+186}_{-201}$	$313^{+117}_{-95}$
Alt.	$-98 \pm 34$	$4.89^{+0.79}_{-0.58}$	$778^{+63}_{-51}$	$3781^{+235}_{-274}$	$239^{+104}_{-94}$

$T_{\text{max}}$  = 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

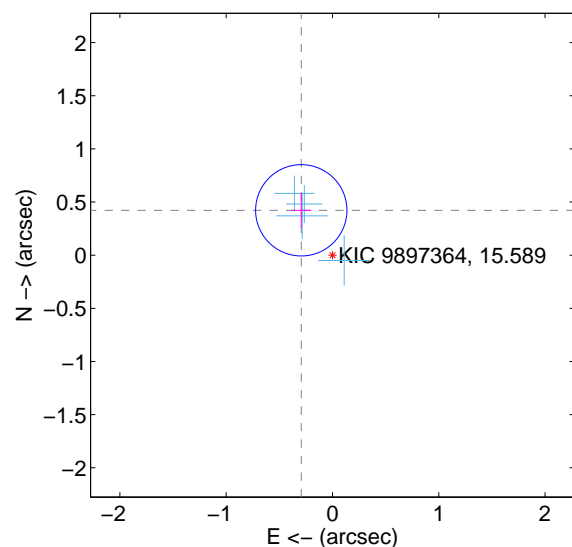
Supplemental centroid analysis for 009897364-01. Kepler magnitude: 15.59. Transit SNR 21.12

There are 4 quarters with good PRF difference image offsets

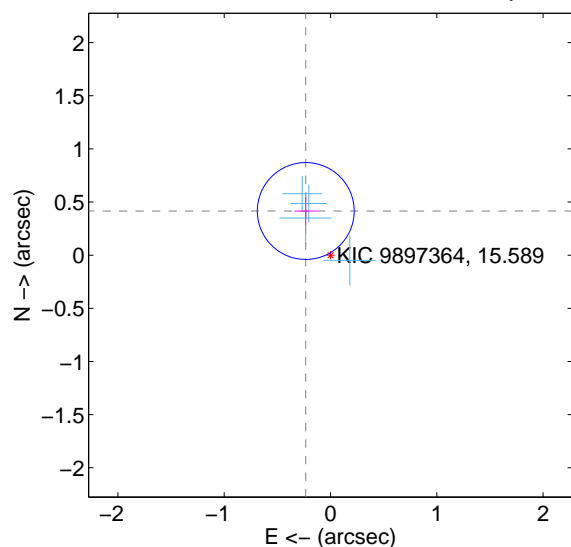
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>0.514 <math>\pm</math> 0.143</b>	<b>3.59</b>	0.293 $\pm$ 0.094	0.422 $\pm$ 0.162
PRF-fit source offset from KIC position	<b>0.476 <math>\pm</math> 0.152</b>	<b>3.14</b>	0.233 $\pm$ 0.106	0.415 $\pm$ 0.130
photometric centroid source offset	0.24 $\pm$ 0.55	0.43	-0.19 $\pm$ 0.53	0.14 $\pm$ 0.59

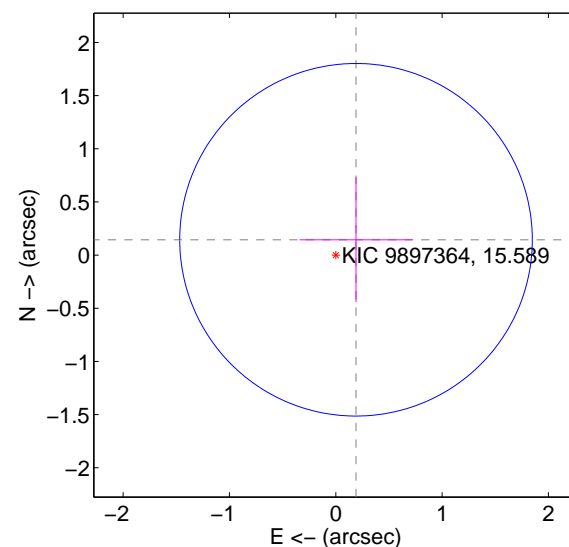
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

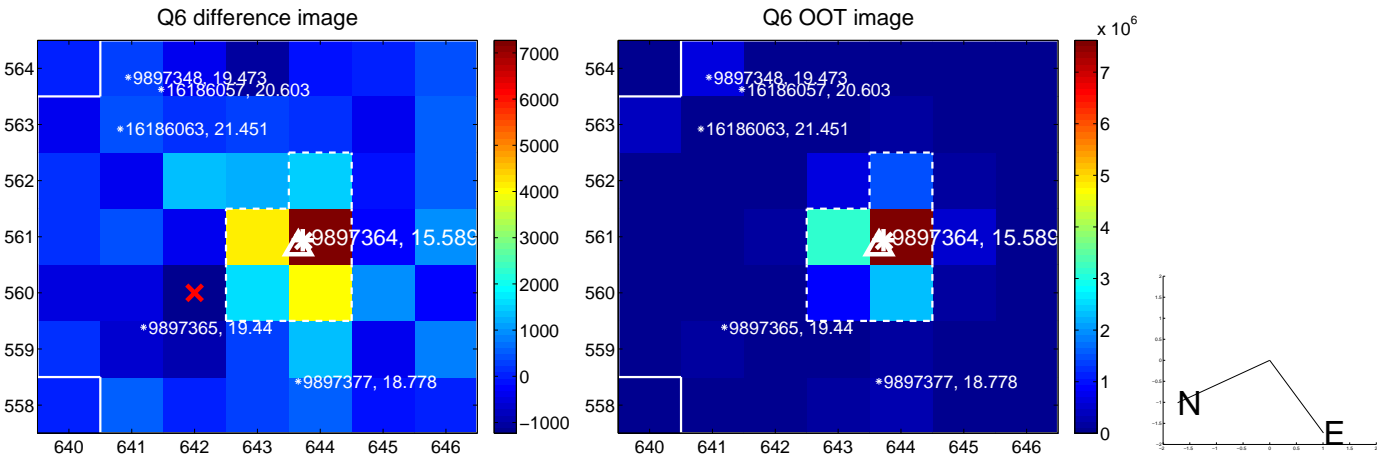
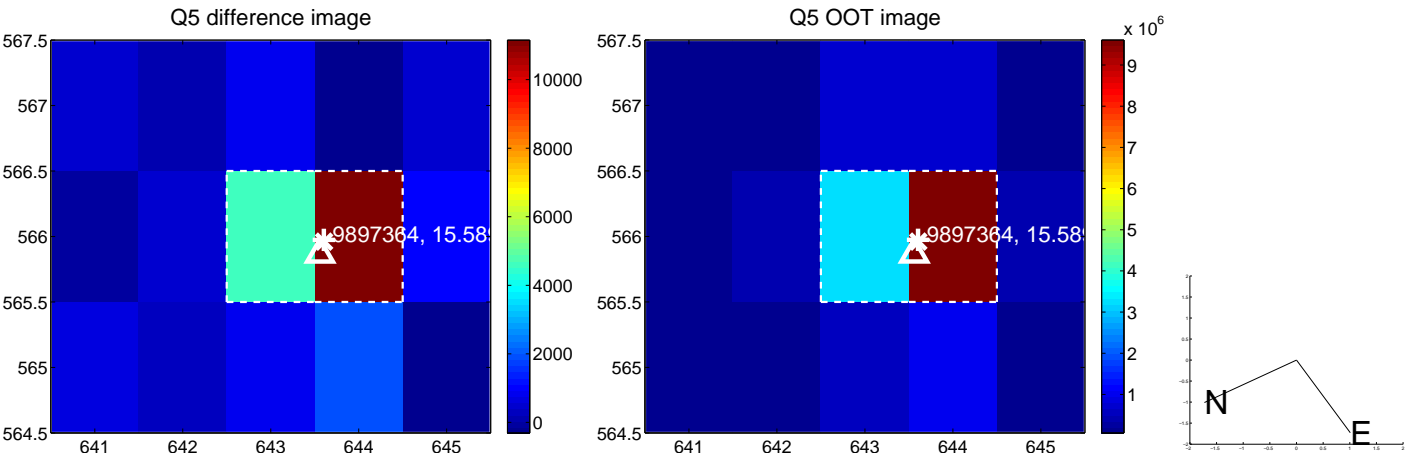


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

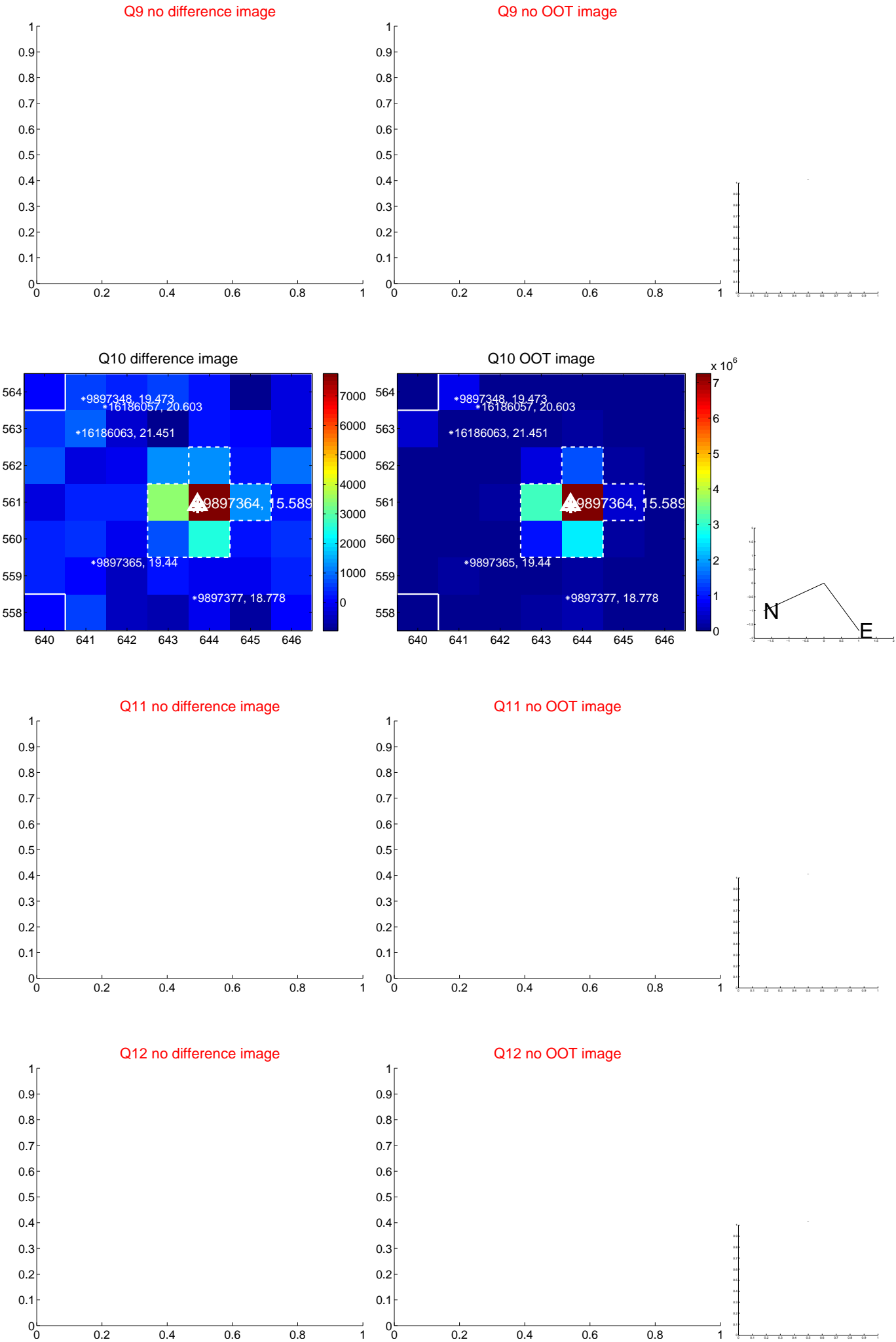


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

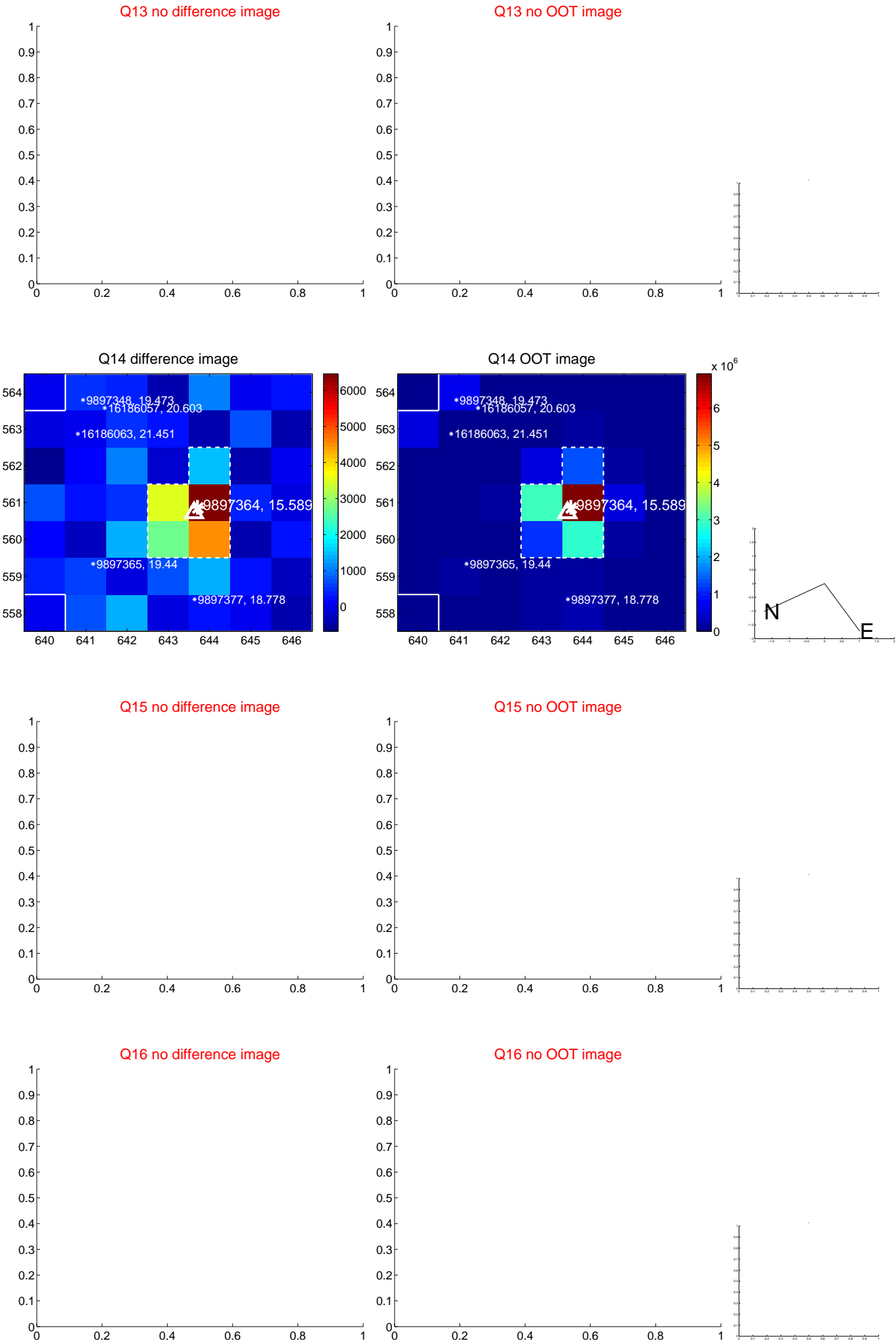




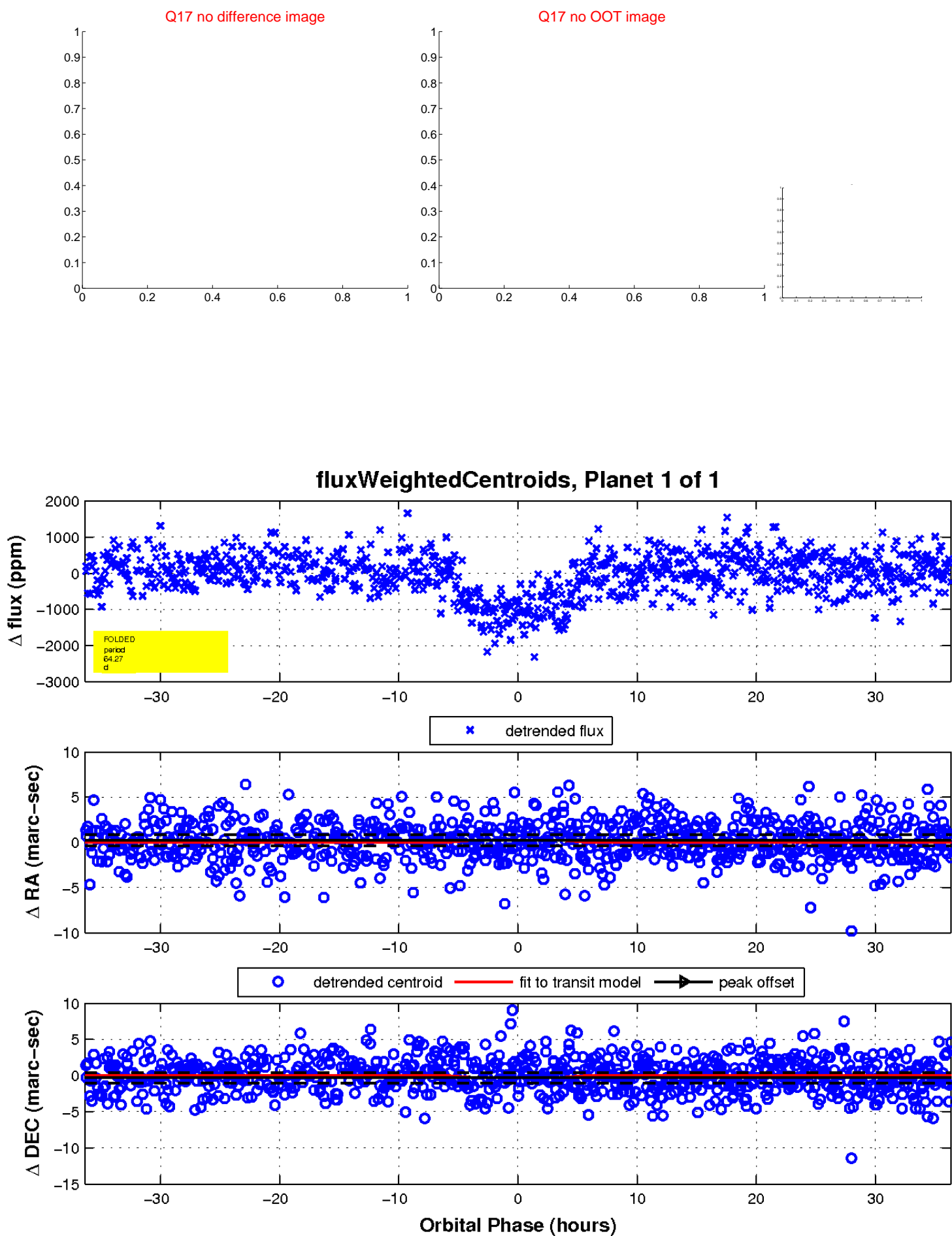
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

