

# KIC 009398184

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009398184-01	OBS	No	447.453402	336.922755	978.5	3.014	9.2	7.1	0.83	5533	2.88	0.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009398184-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—INCONSISTENT_TRANS—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.

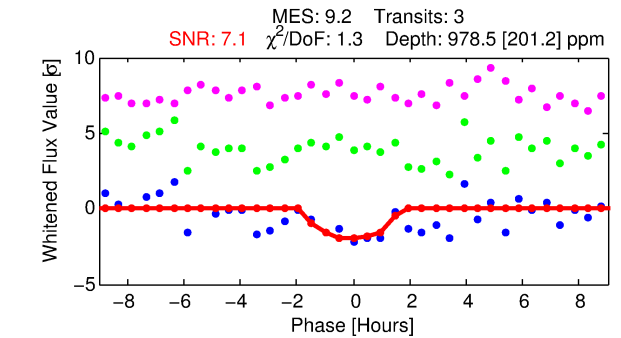
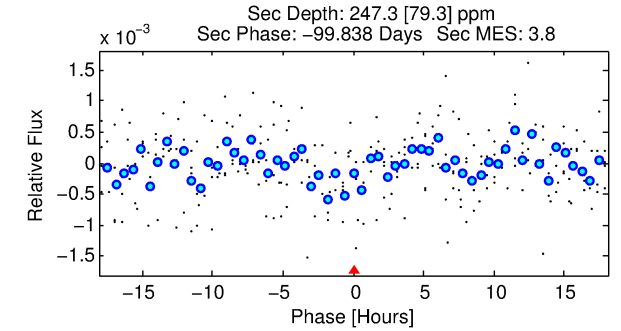
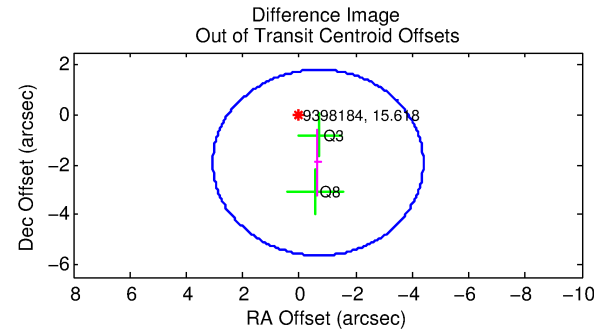
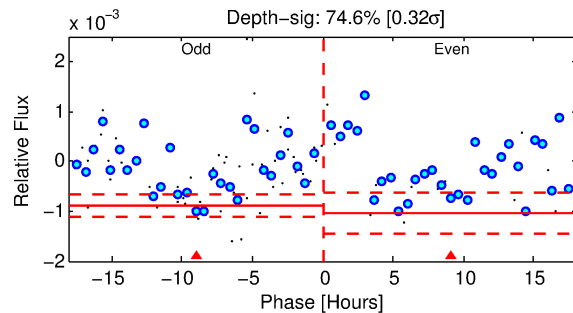
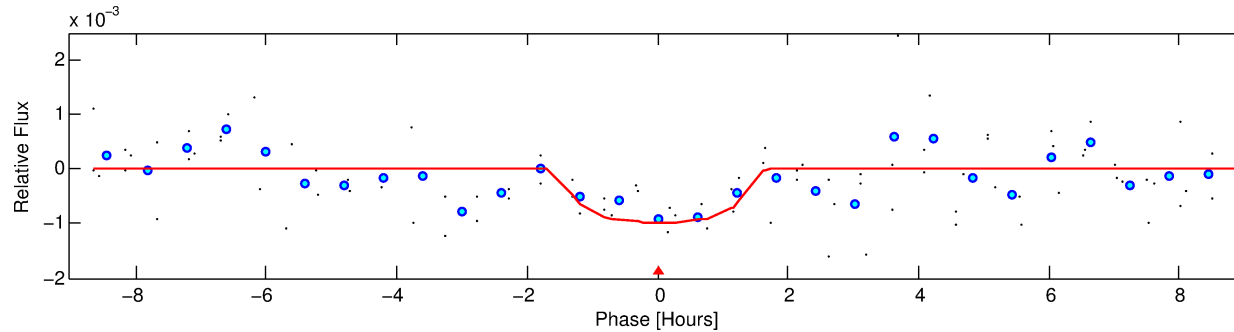
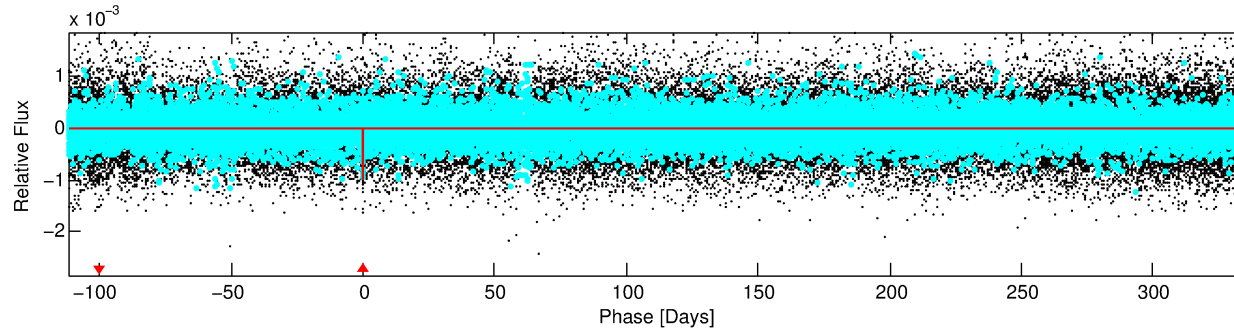
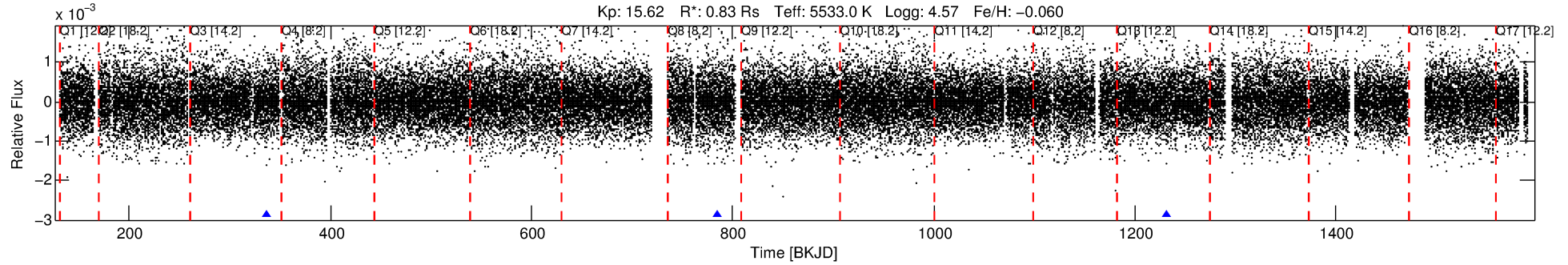
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009398184-01

No Significant Match Found

# DV One-Page Summary

KIC: 9398184 Candidate: 1 of 1 Period: 447.453 d



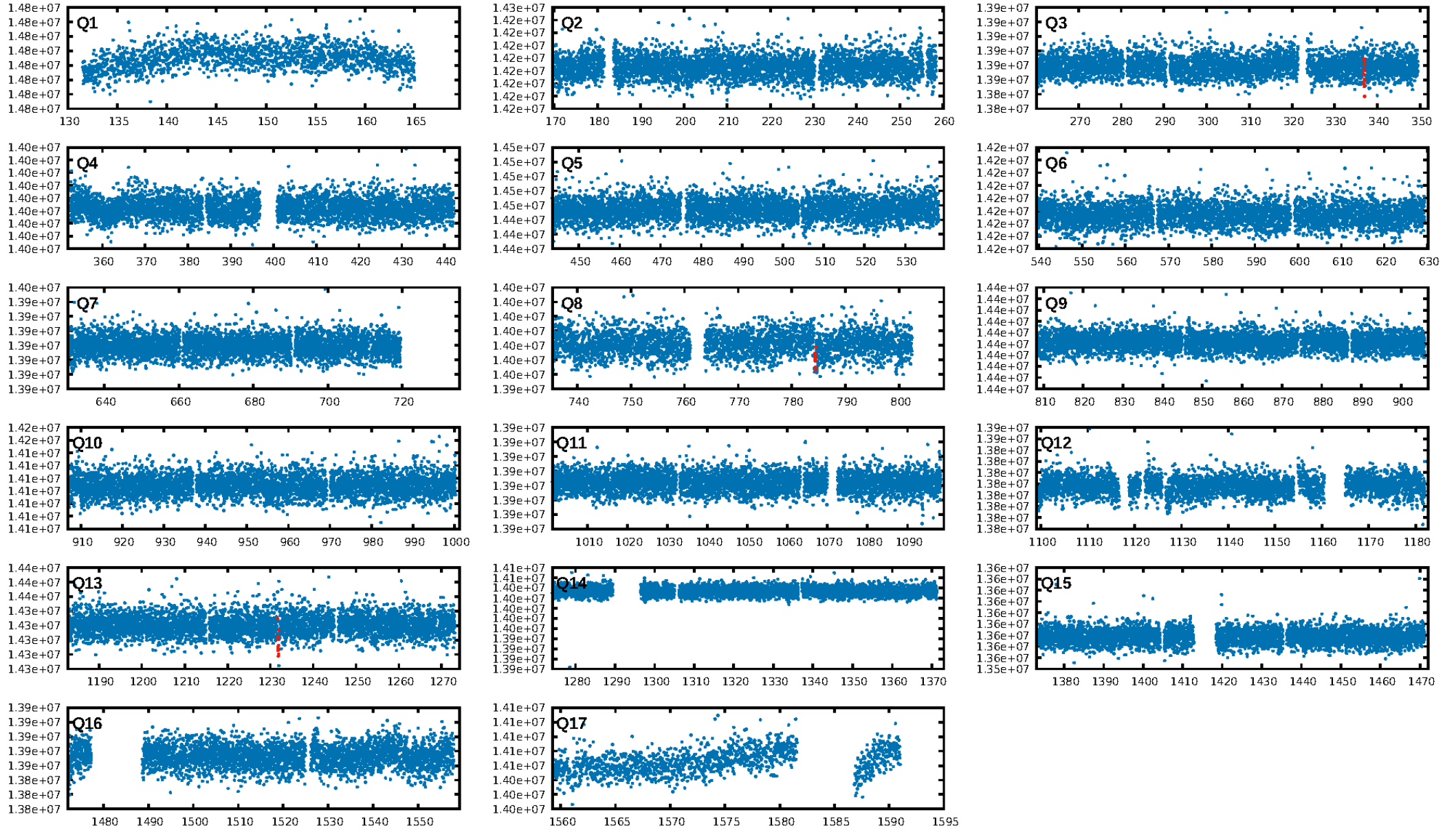
## DV Fit Results:

Period = 447.45340 [0.00880] d  
Epoch = 336.9228 [0.0121] BKJD  
Rp/R\* = 0.0320 [0.0398]  
a/R\* = 740.03 [3816.20]  
b = 0.80 [2.37]  
Seff = 0.46 [0.14]  
Teq = 210 [16] K  
Rp = 2.88 [3.65] Re  
a = 1.1148 [0.2139] AU  
Ag = 20366.15 [51444.83] [0.40 $\sigma$ ]  
Teffp = 3881 [2438] K [1.51 $\sigma$ ]

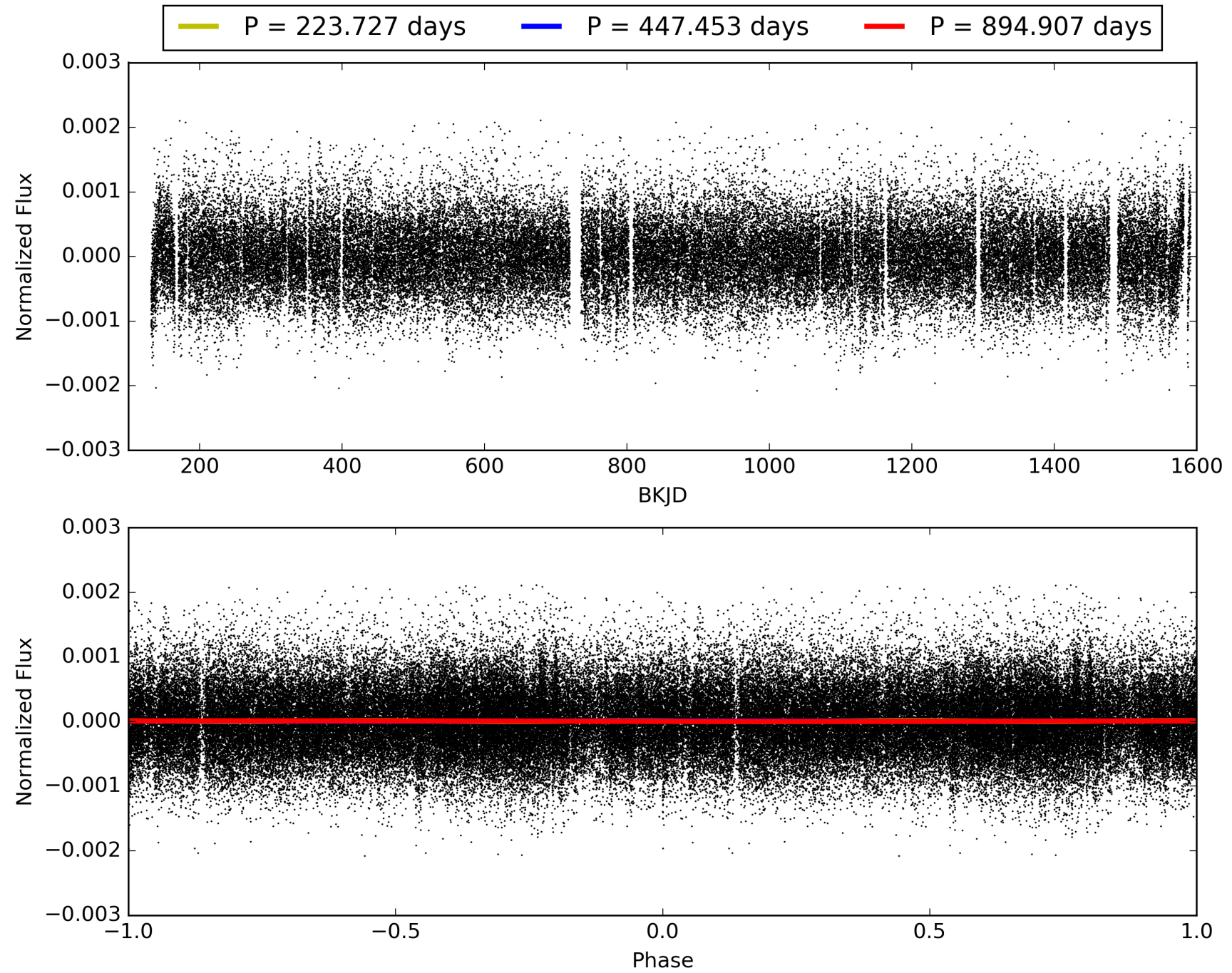
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 15.3%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: 2.20e-16  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.6626  
Centroid-sig: 38.9%  
Centroid-so: 1.425 arcsec [0.81 $\sigma$ ]  
OotOffset-rm: 2.033 arcsec [1.64 $\sigma$ ]  
KicOffset-rm: 1.948 arcsec [1.60 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 009398184-01, PDC Light Curves

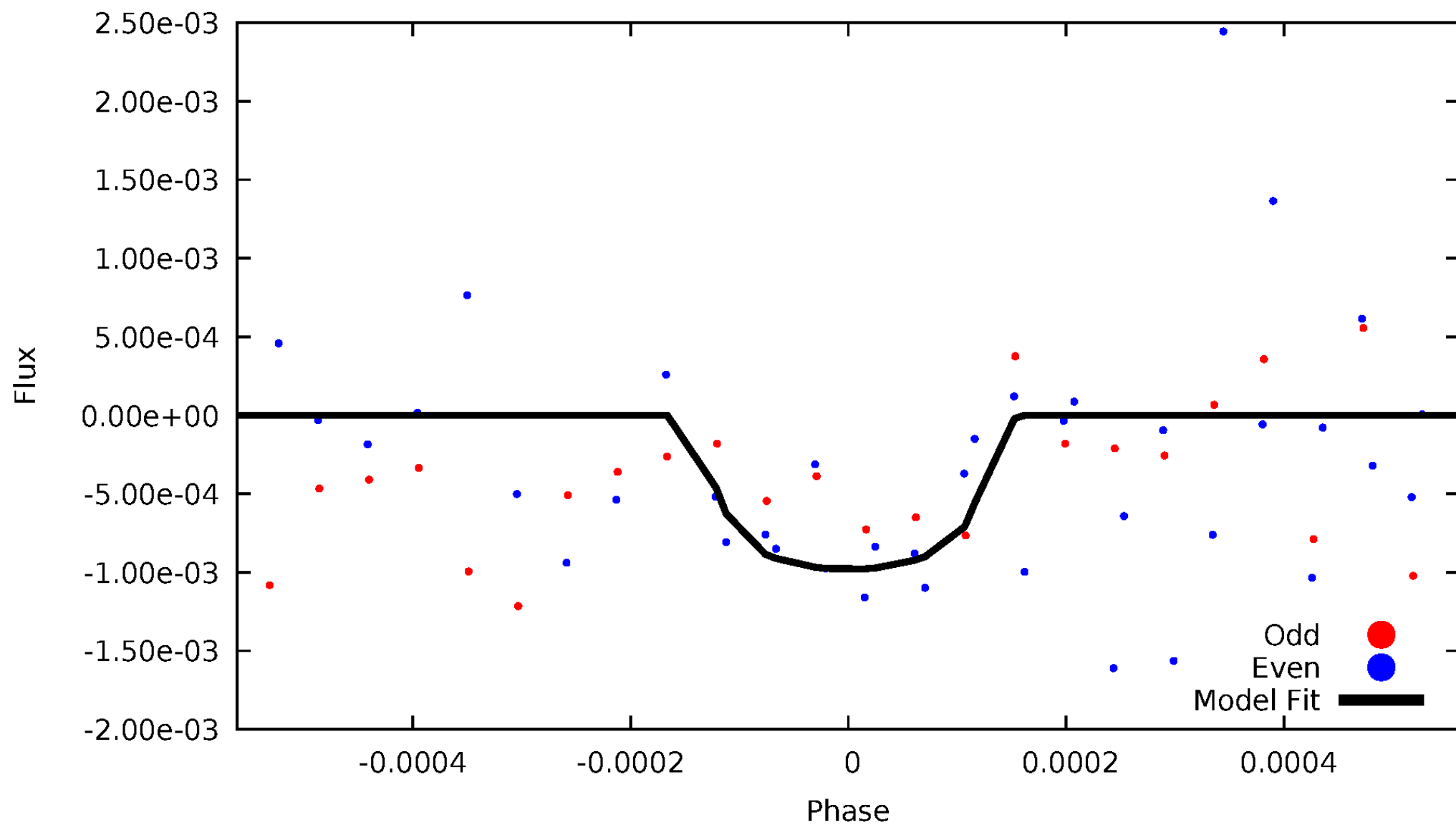


TCE 009398184-01



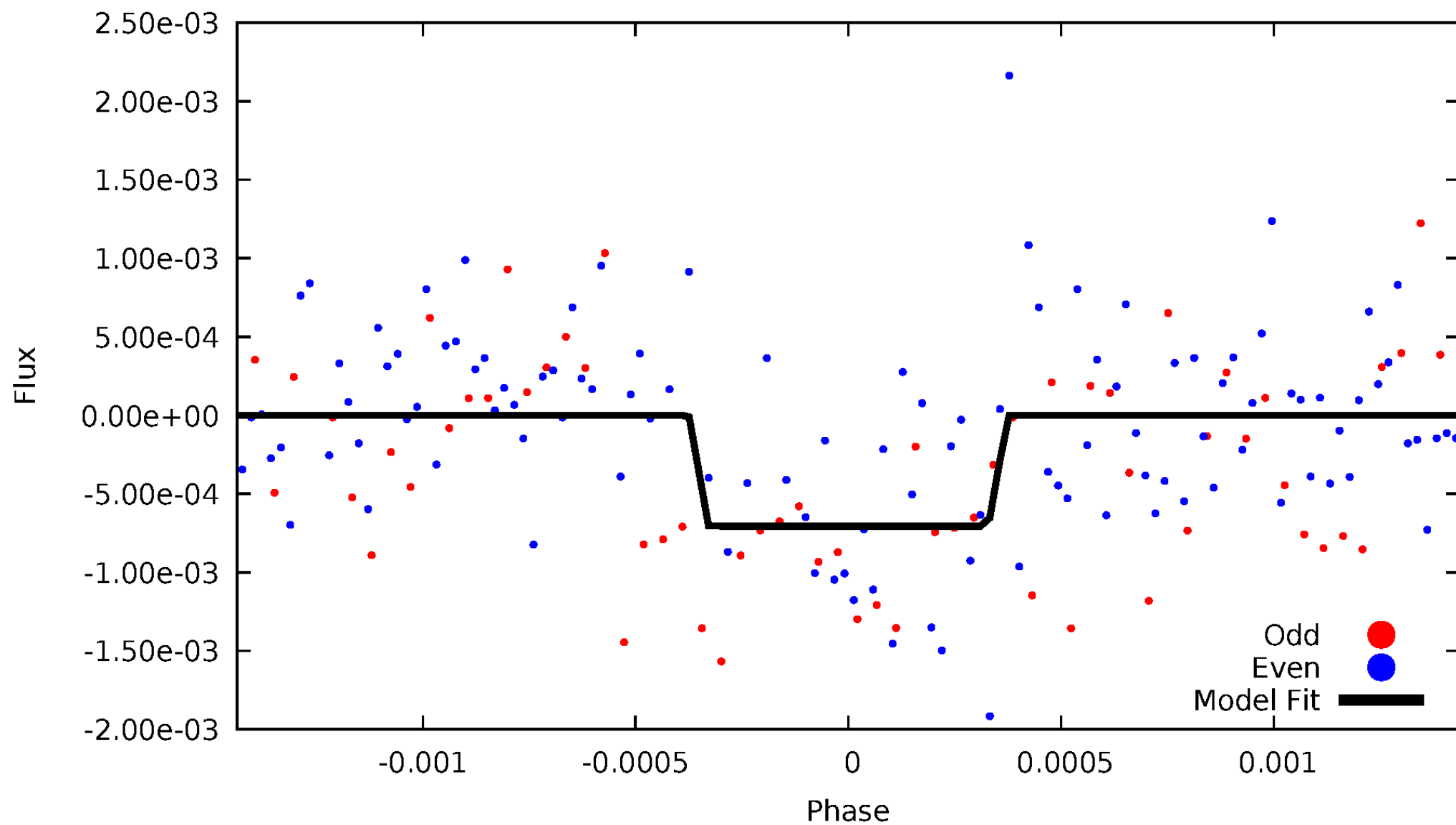
# DV Odd/Even

TCE 009398184-01

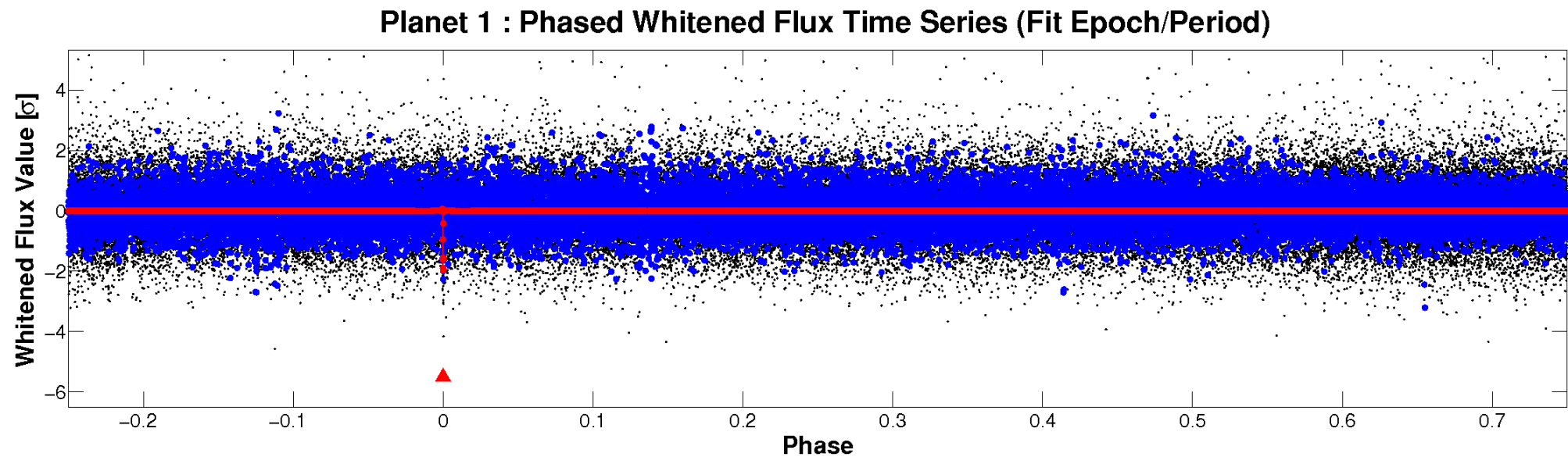
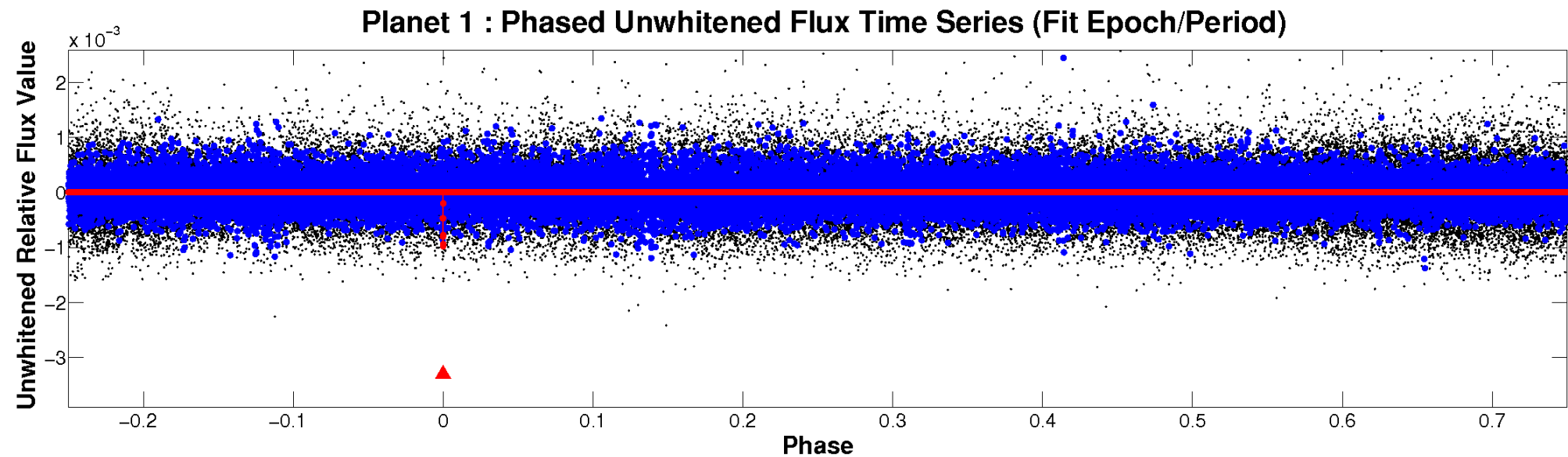


# ALT Odd/Even

TCE 009398184-01



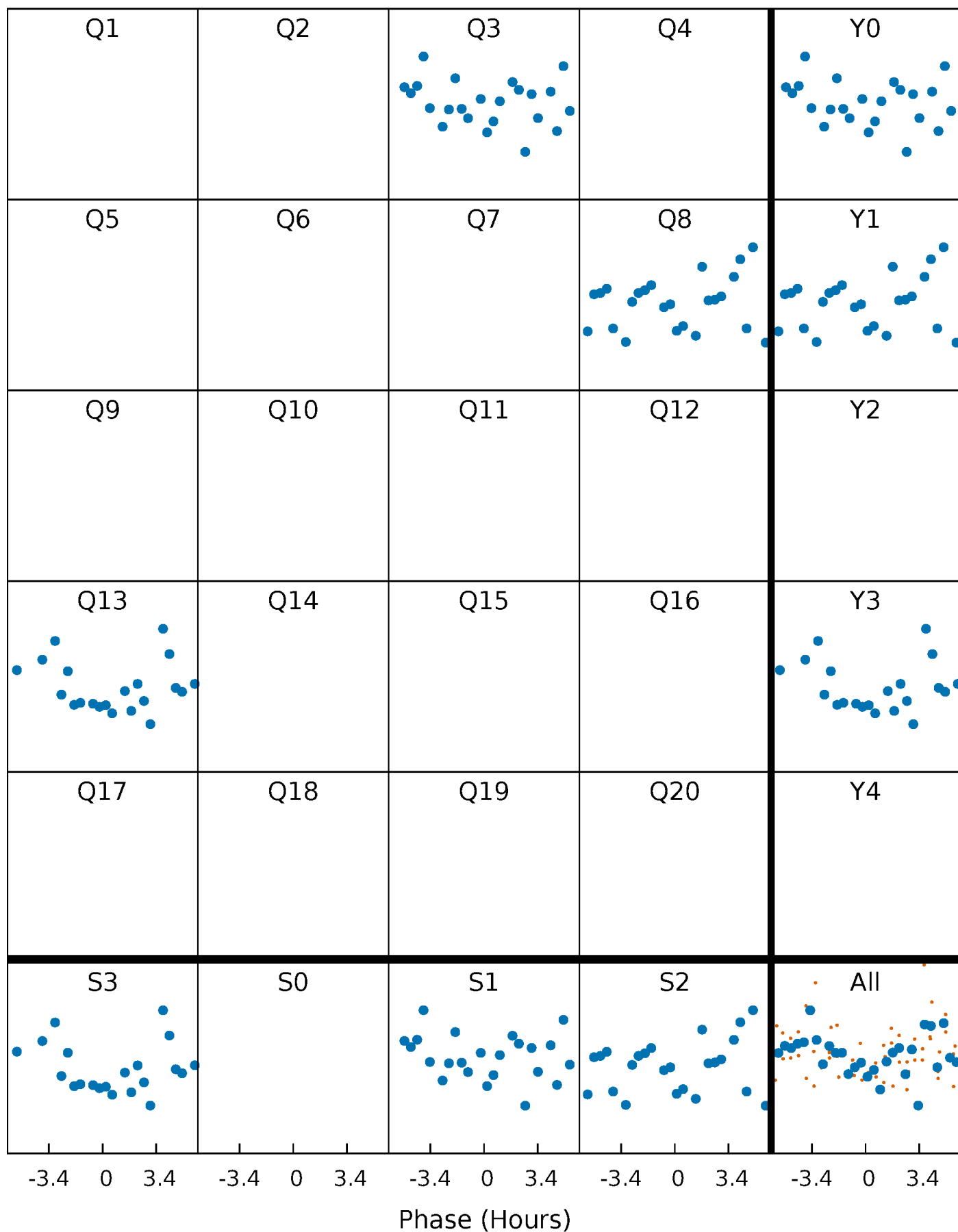
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

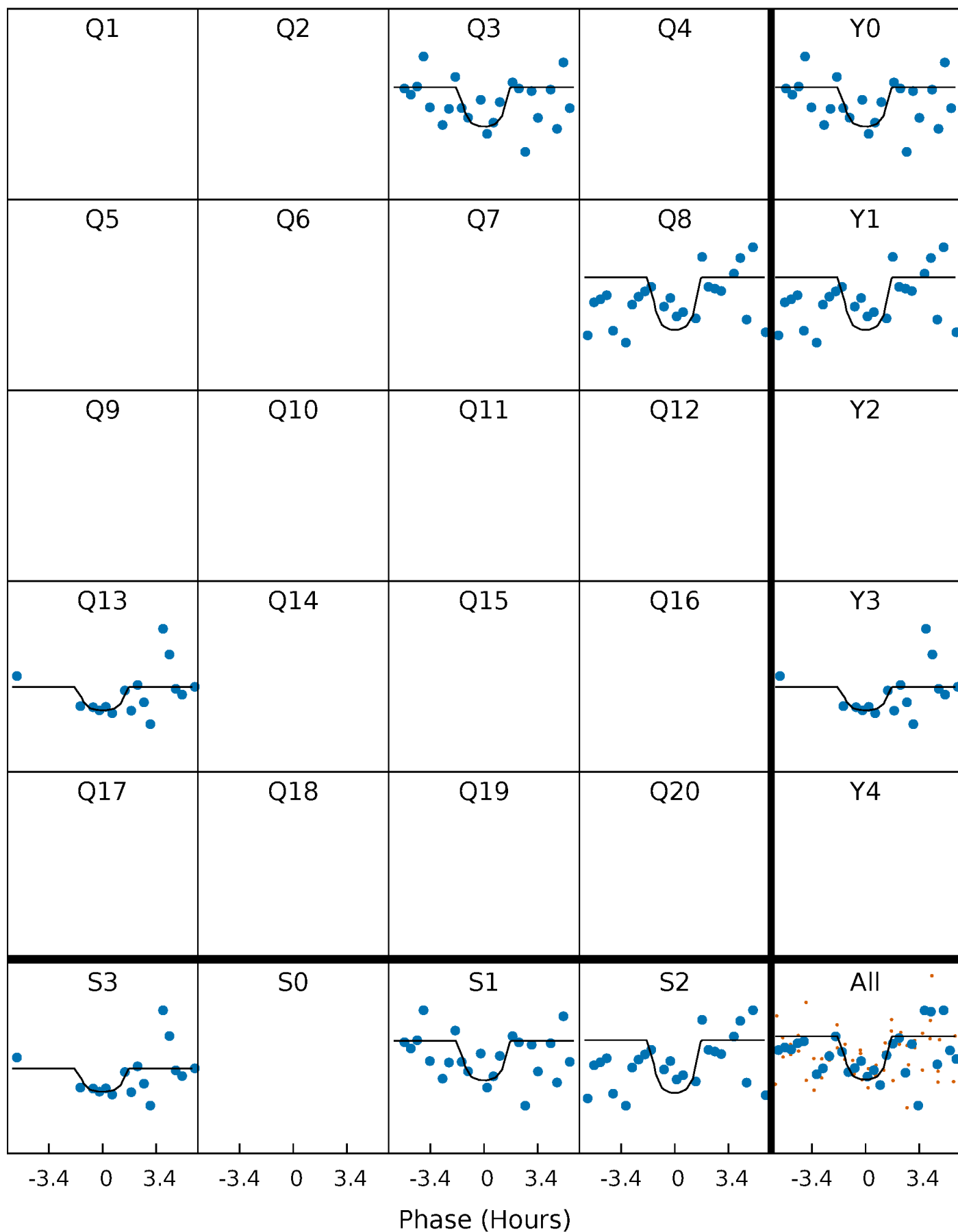
TCE 009398184-01 P=447.453402 Days  $T_0=336.922755$  (BKJD)





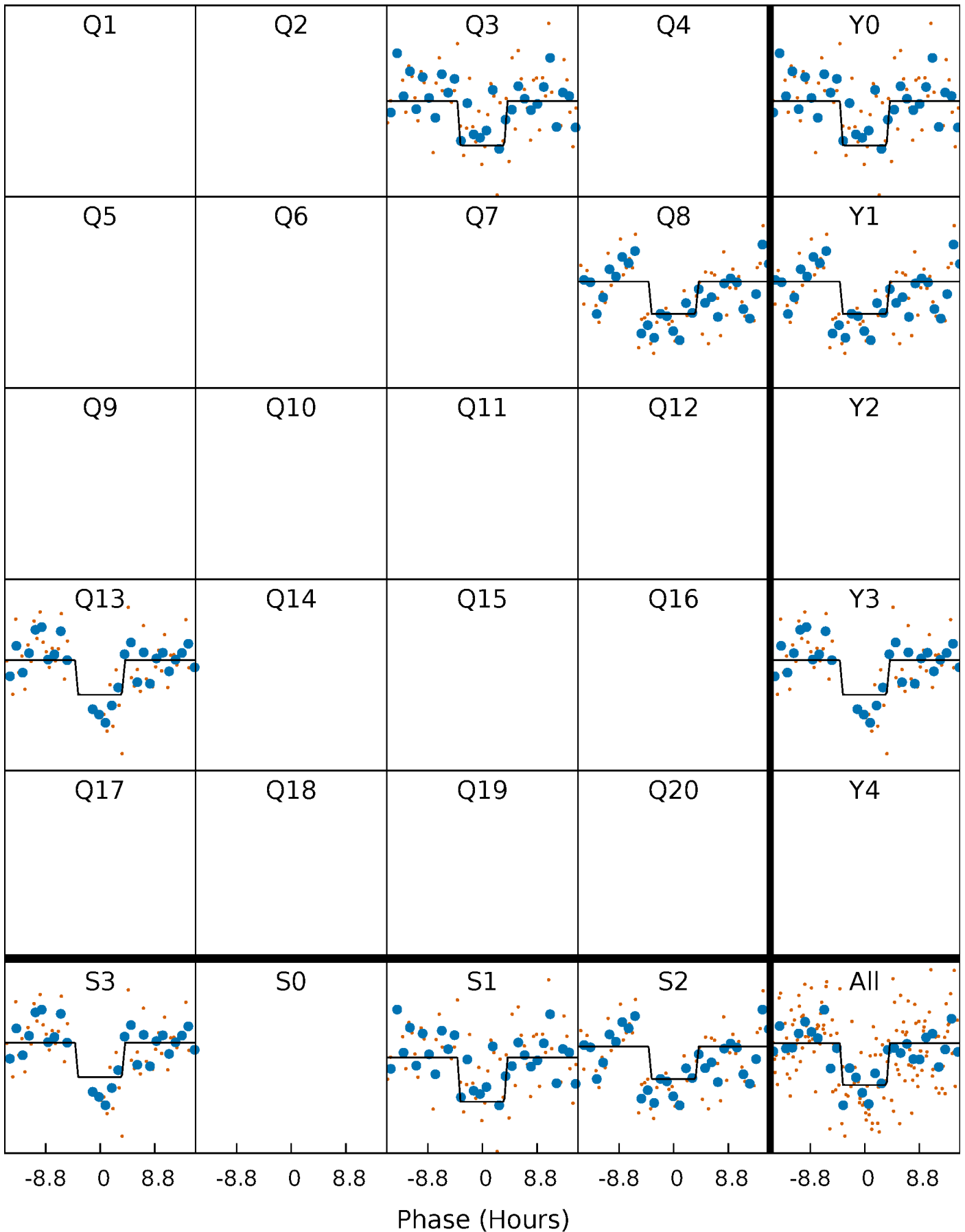
# DV Quarter-Phased Transit Curves

TCE 009398184-01   P=447.453402 Days    $T_0=336.922755$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

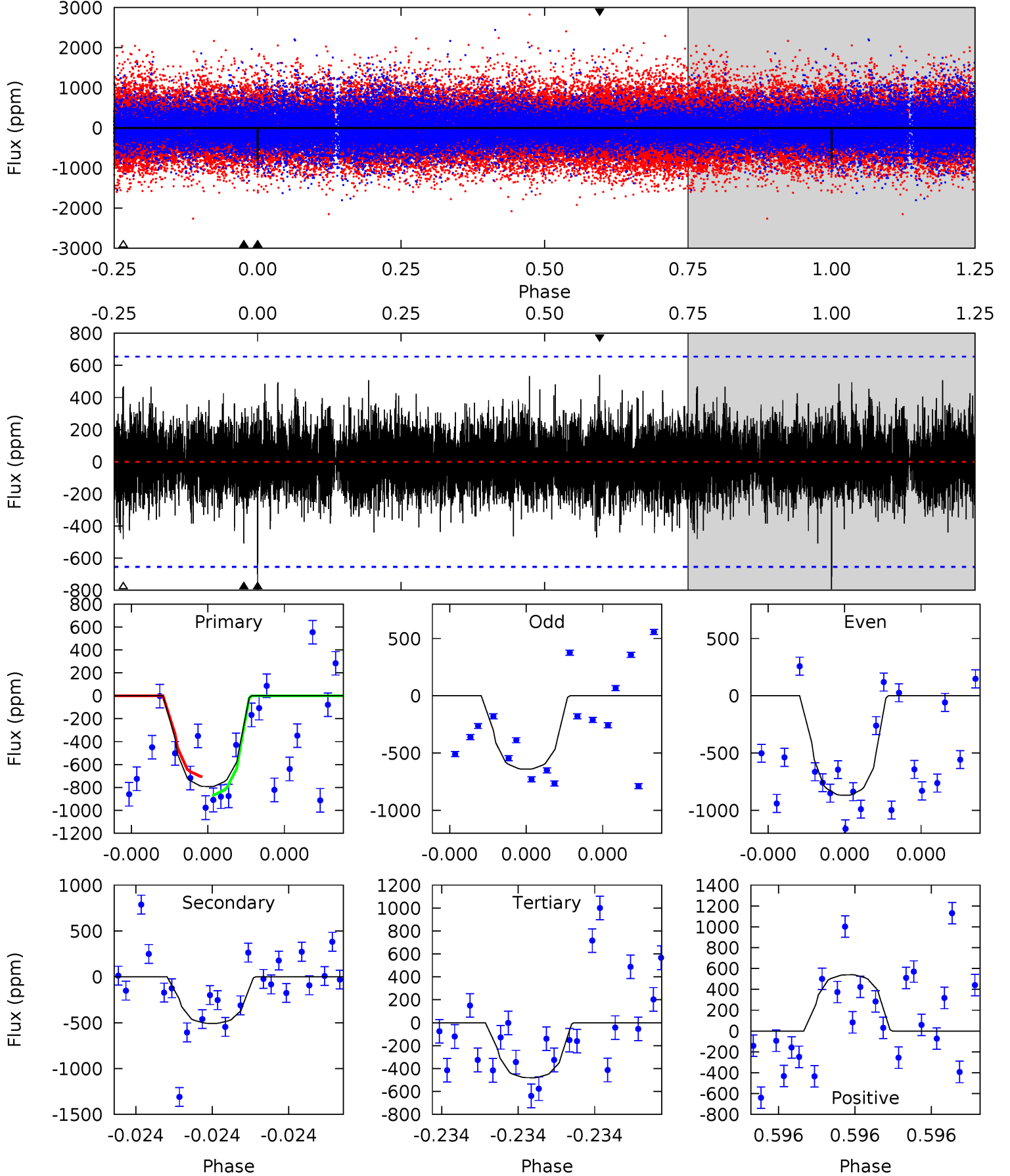
TCE 009398184-01 P=447.440474 Days  $T_0=336.933587$  (BKJD)



# DV Model-Shift Uniqueness Test

009398184-01, P = 447.453402 Days, E = 336.922755 Days

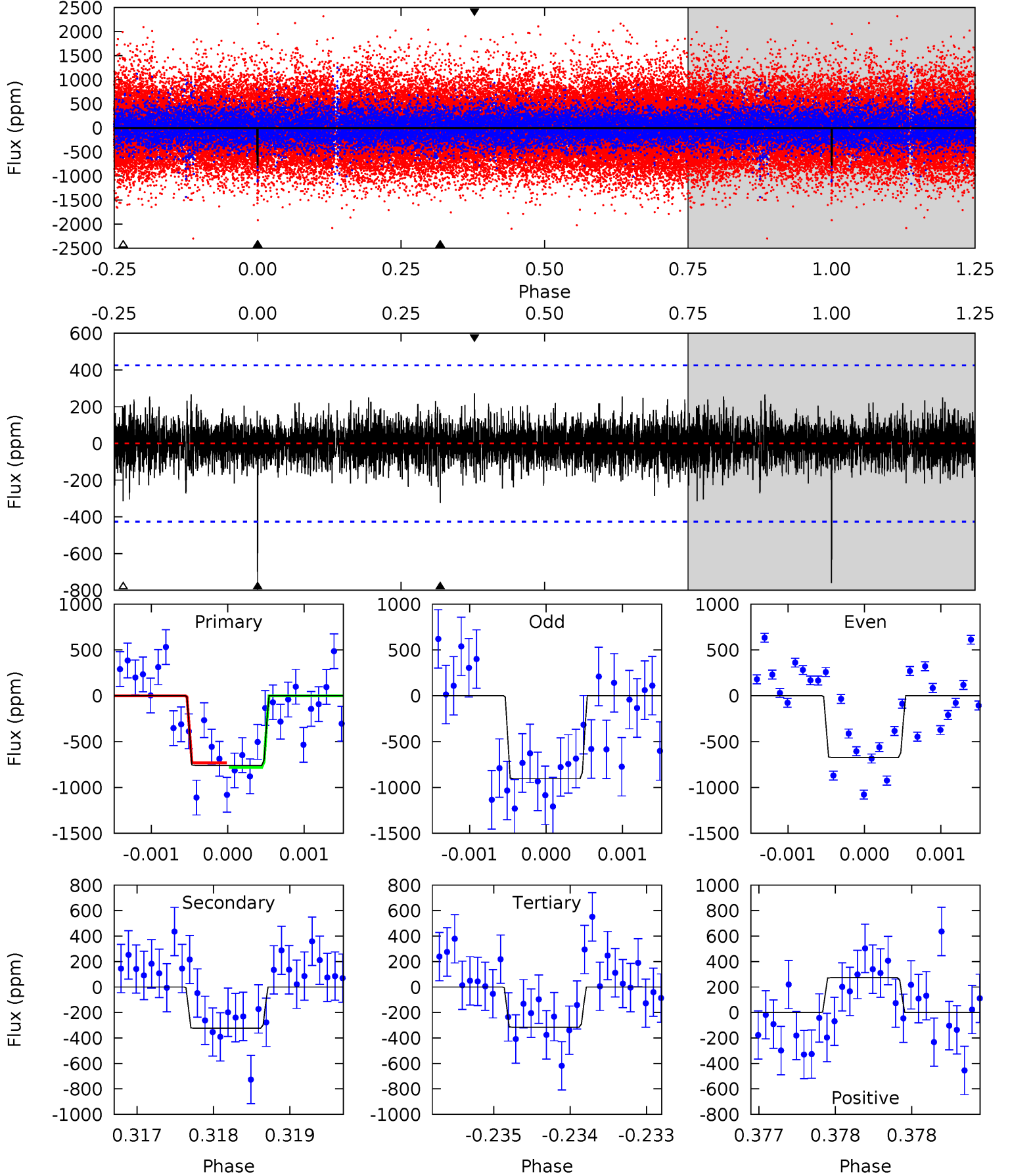
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.87	4.40	4.17	4.68	5.67	3.63	1.12	2.71	2.19	0.24	-0.28	0.94	1.01	0.41	0.69



# Alt Model-Shift Uniqueness Test

009398184-01, P = 447.440474 Days, E = 336.933587 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
9.84	4.18	4.08	3.53	5.51	3.39	0.93	5.75	6.31	0.10	0.65	1.45	0.88	0.26	0.31



### Stellar Parameters For KIC 009398184

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5533^{+149}_{-166}$	$4.569^{+0.036}_{-0.153}$	$-0.060^{+0.300}_{-0.300}$	$0.826^{+0.188}_{-0.063}$	$0.925^{+0.083}_{-0.111}$	$2.314^{+0.435}_{-0.980}$
	+3%/-3%	+1%/-3%	+500%/-500%	+23%/-8%	+9%/-12%	+19%/-42%
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 009398184-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-508 \pm 115$	$3.93^{+3.17}_{-2.48}$	$299^{+16}_{-13}$	$4242^{+2284}_{-795}$	$21486^{+127101}_{-14944}$
Alt.	$-323 \pm 77$	$3.59^{+3.35}_{-2.24}$	$299^{+17}_{-12}$	$4060^{+2079}_{-846}$	$16166^{+98488}_{-12032}$

$T_{\text{max}}$  = 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

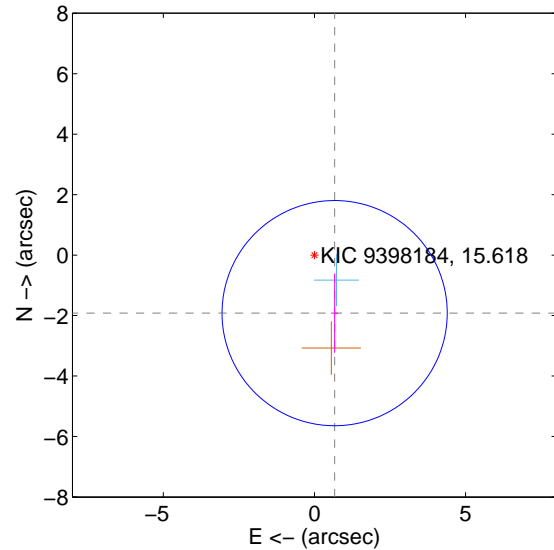
Supplemental centroid analysis for 009398184-01. Kepler magnitude: 15.62. Transit SNR 7.10

There are 1 quarters with good PRF difference image offsets

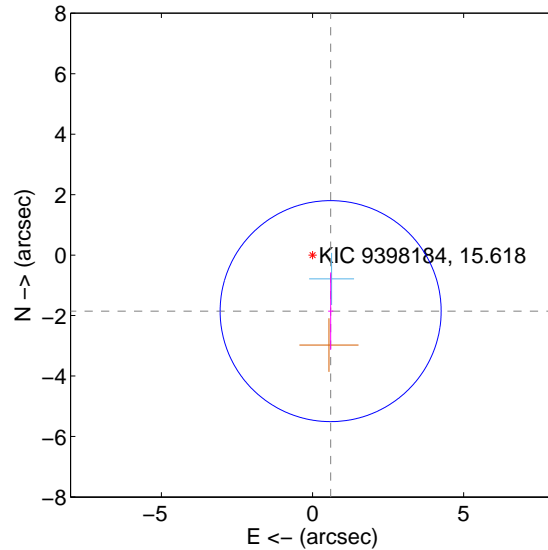
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.033 \pm 1.242$	1.64	$-0.668 \pm 0.117$	$-1.920 \pm 1.314$
PRF-fit source offset from KIC position	$1.948 \pm 1.219$	1.60	$-0.599 \pm 0.083$	$-1.854 \pm 1.280$
photometric centroid source offset	$1.43 \pm 1.75$	0.81	$0.12 \pm 2.14$	$-1.42 \pm 1.75$

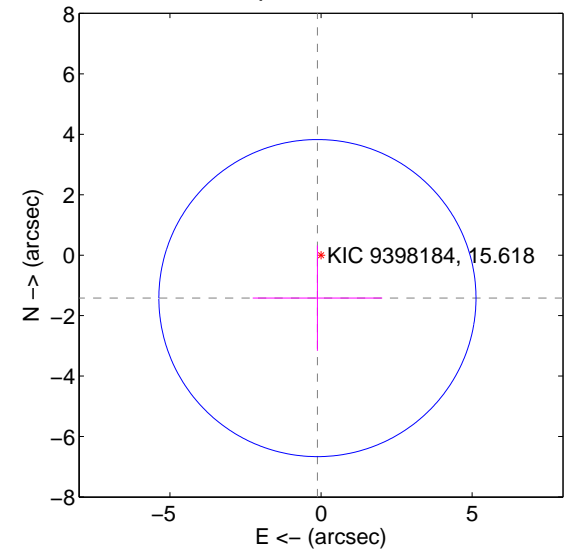
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

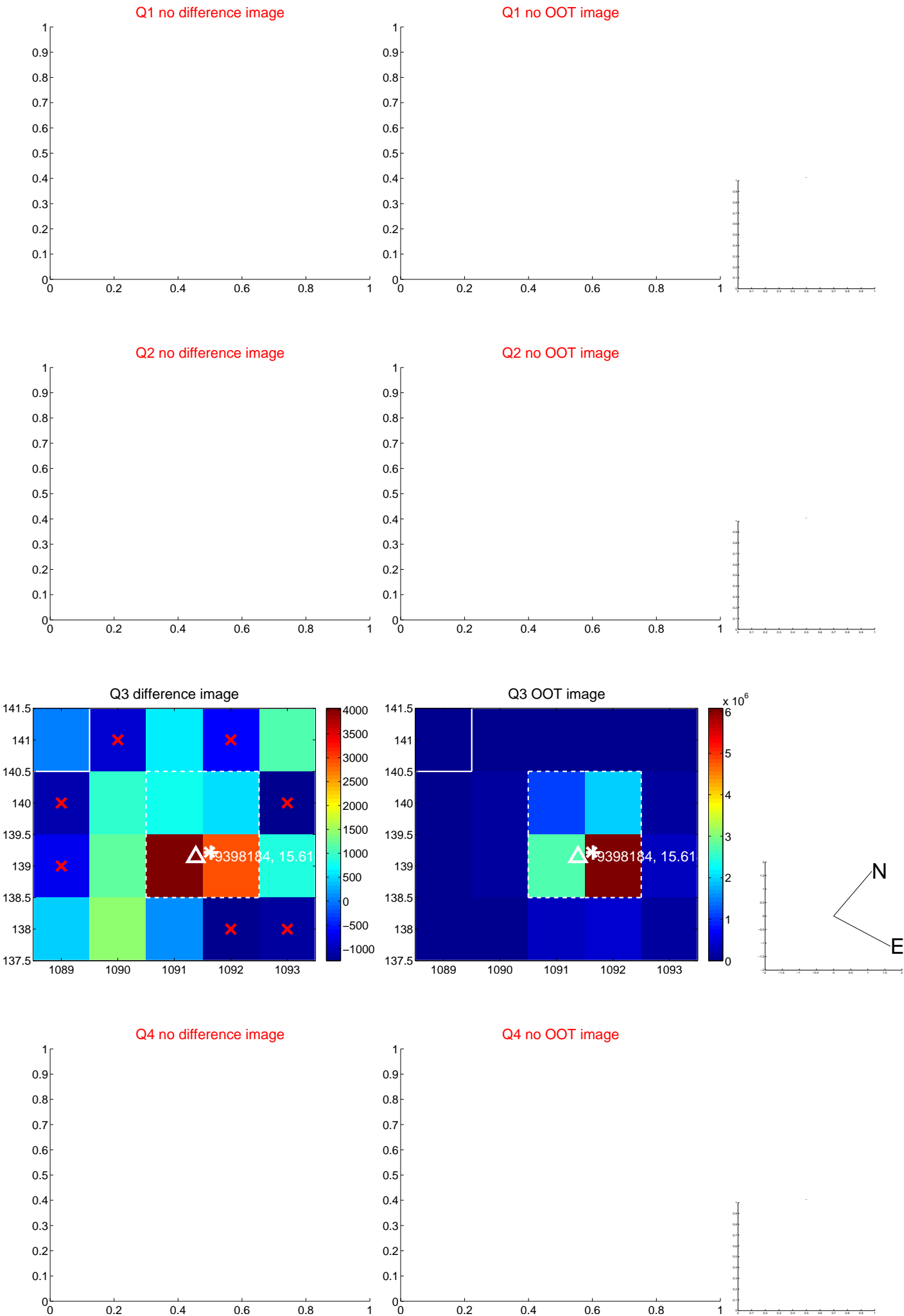


offset from photometric centroids



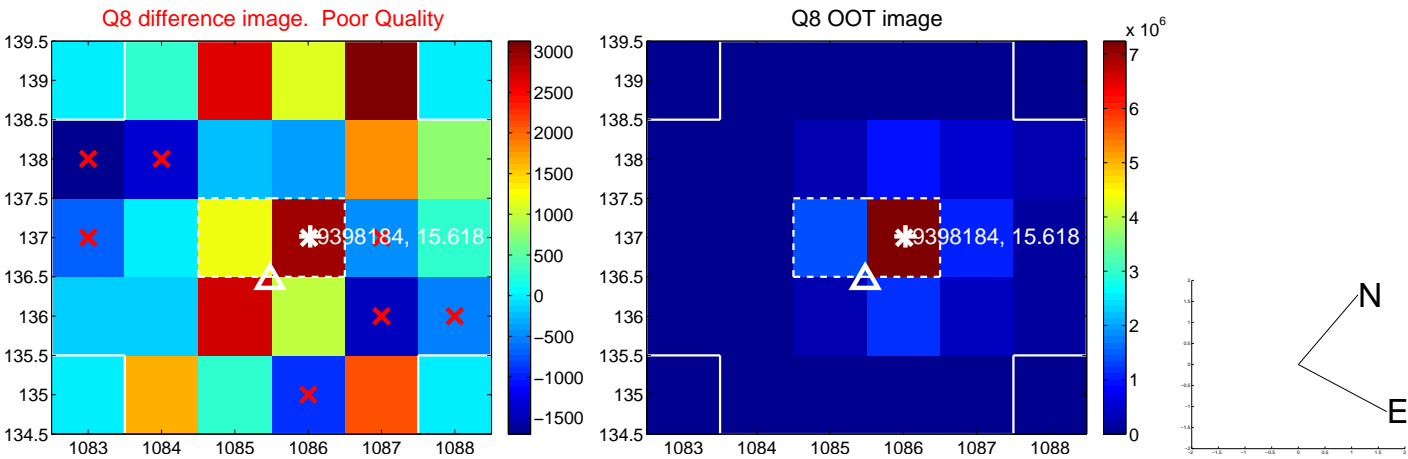
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



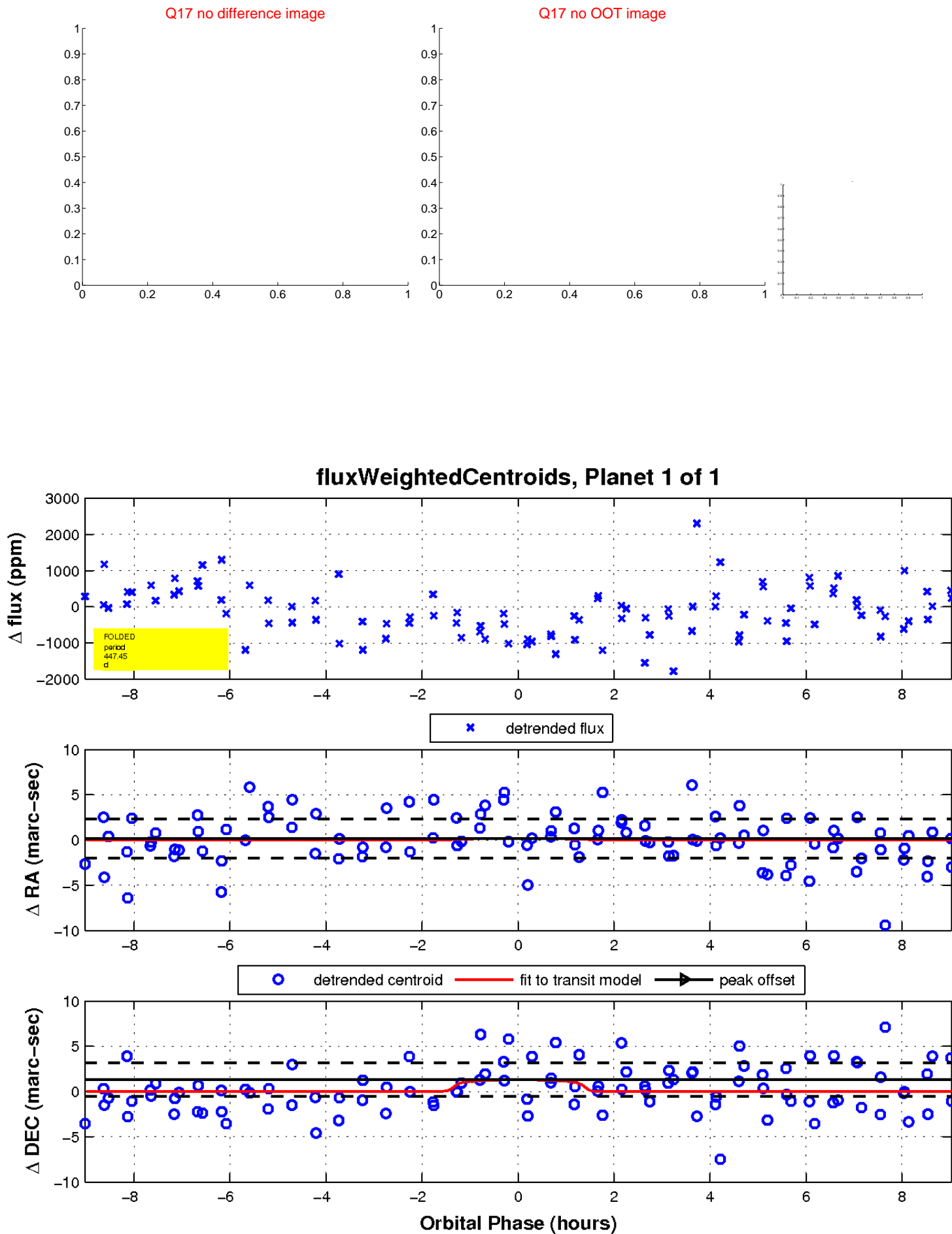
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : 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

