

# KIC 009593528

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009593528-01	OBS	3939.01	1.886793	132.291004	1278.8	1.008	16.9	22.1	1.25	6296	5.29	2450.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009593528-01	OBS	PC	1.00	0	0	0	0	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.

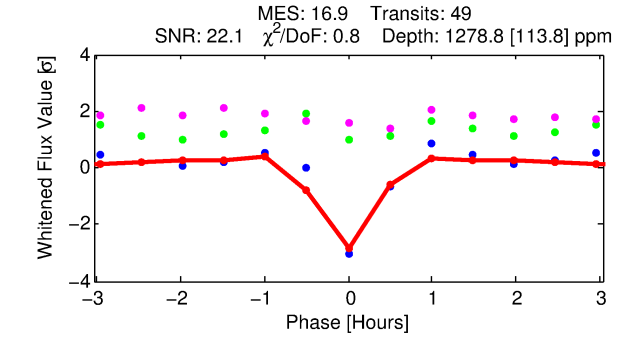
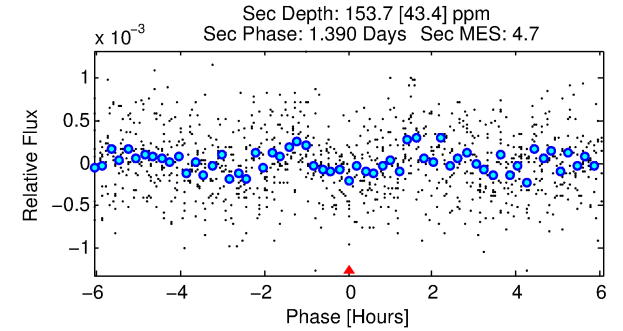
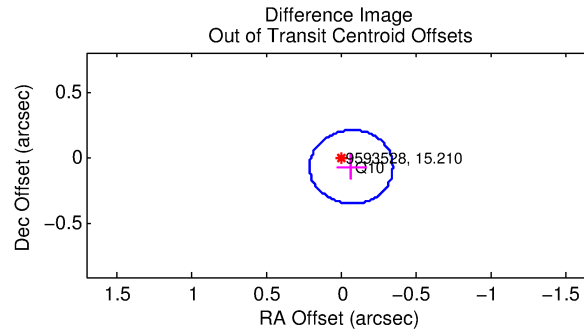
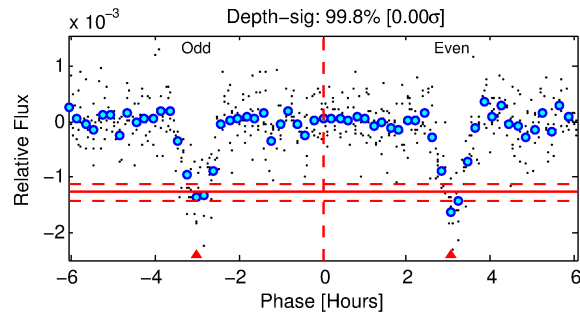
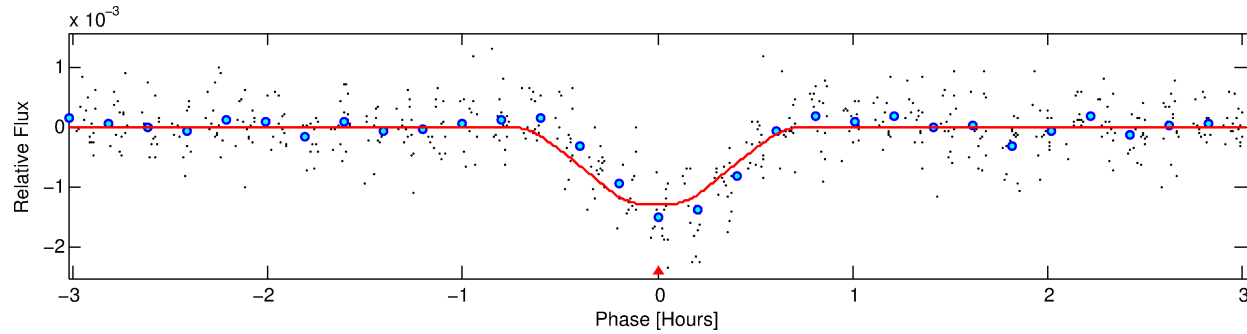
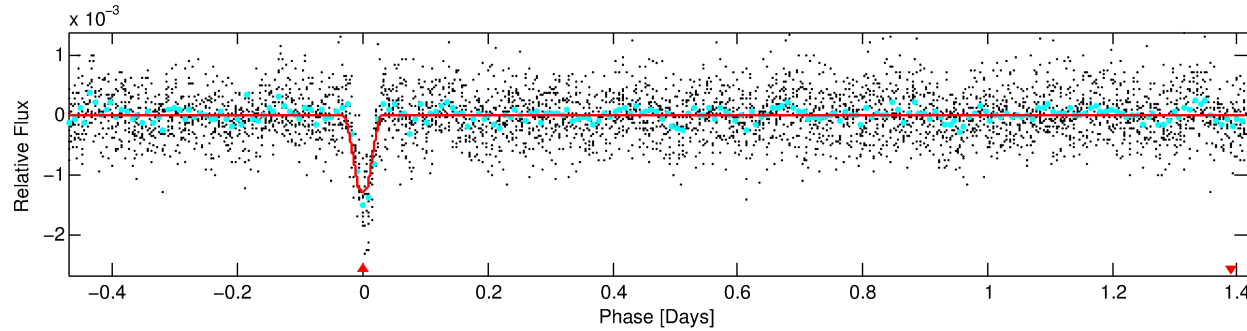
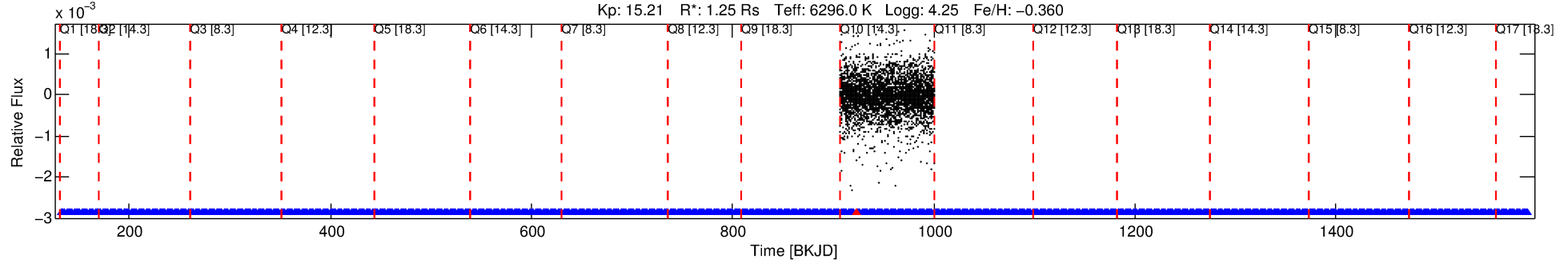
## Ephemeris Match Information For 009593528-01

No Significant Match Found

# DV One-Page Summary

KIC: 9593528 Candidate: 1 of 1 Period: 1.887 d  
KOI: K03939 Corr: No Ephemeris Match

Kp: 15.21 R\*: 1.25 Rs Teff: 6296.0 K Logg: 4.25 Fe/H: -0.360



## DV Fit Results:

Period = 1.88679 [0.00000] d  
Epoch = 132.2910 [0.0007] BKJD  
Rp/R\* = 0.0388 [0.0065]  
a/R\* = 7.47 [5.58]  
b = 0.90 [0.17]  
Seff = 2450.36 [928.23]  
Teff = 1794 [170] K  
Rp = 5.29 [1.80] Re  
a = 0.0299 [0.0073] AU  
Ag = 2.71 [1.51] [1.13σ]  
Teffp = 3558 [412] K [3.96σ]

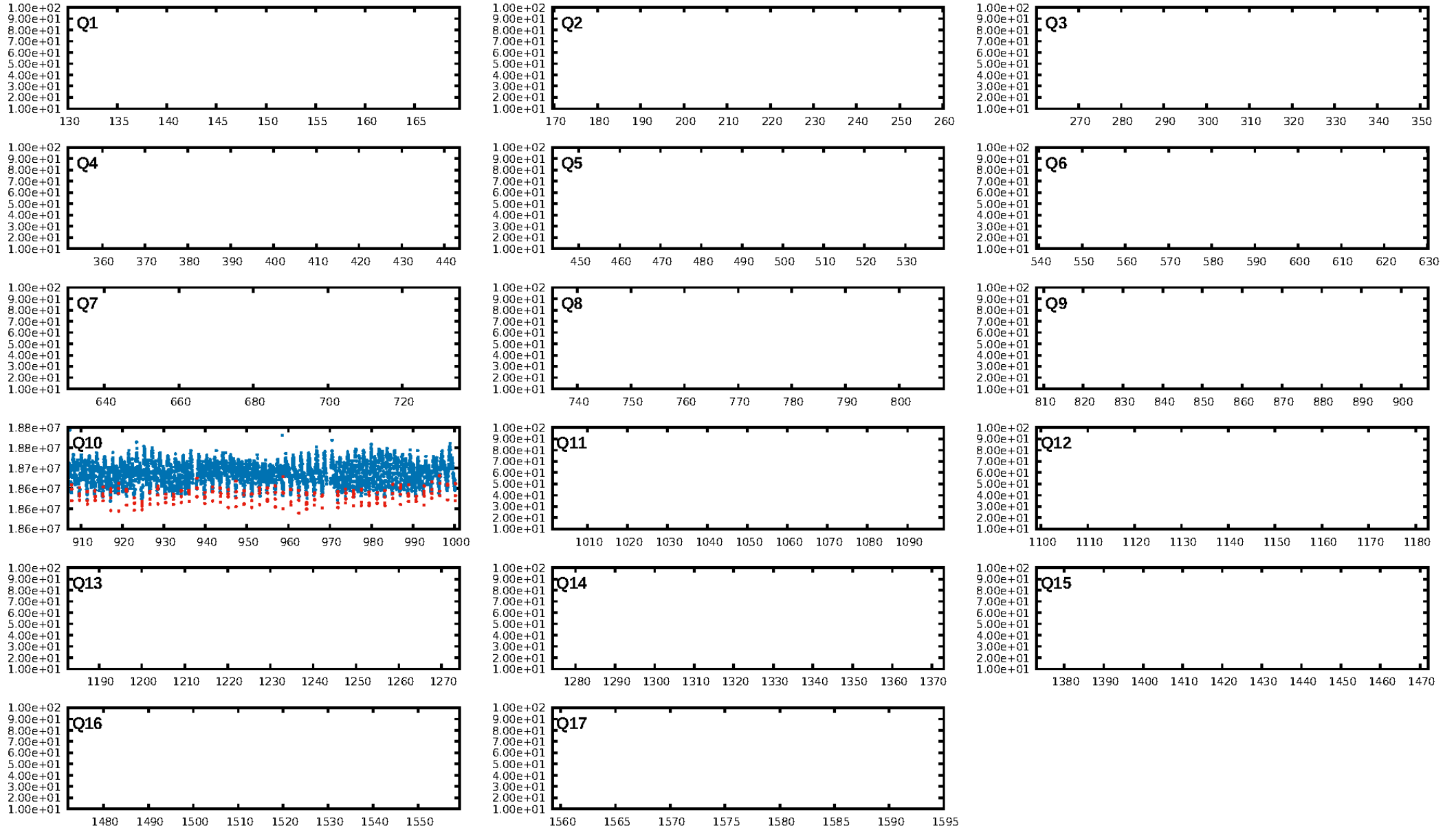
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.67e-64  
RollingBand-fgt: 0.98 [48/49]  
GhostDiagnostic-chr: 8.219  
Centroid-sig: 0.0%  
Centroid-so: 1.363 arcsec [2.37σ]  
OotOffset-rm: 0.099 arcsec [1.06σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-rm: 0.512 arcsec [5.60σ]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

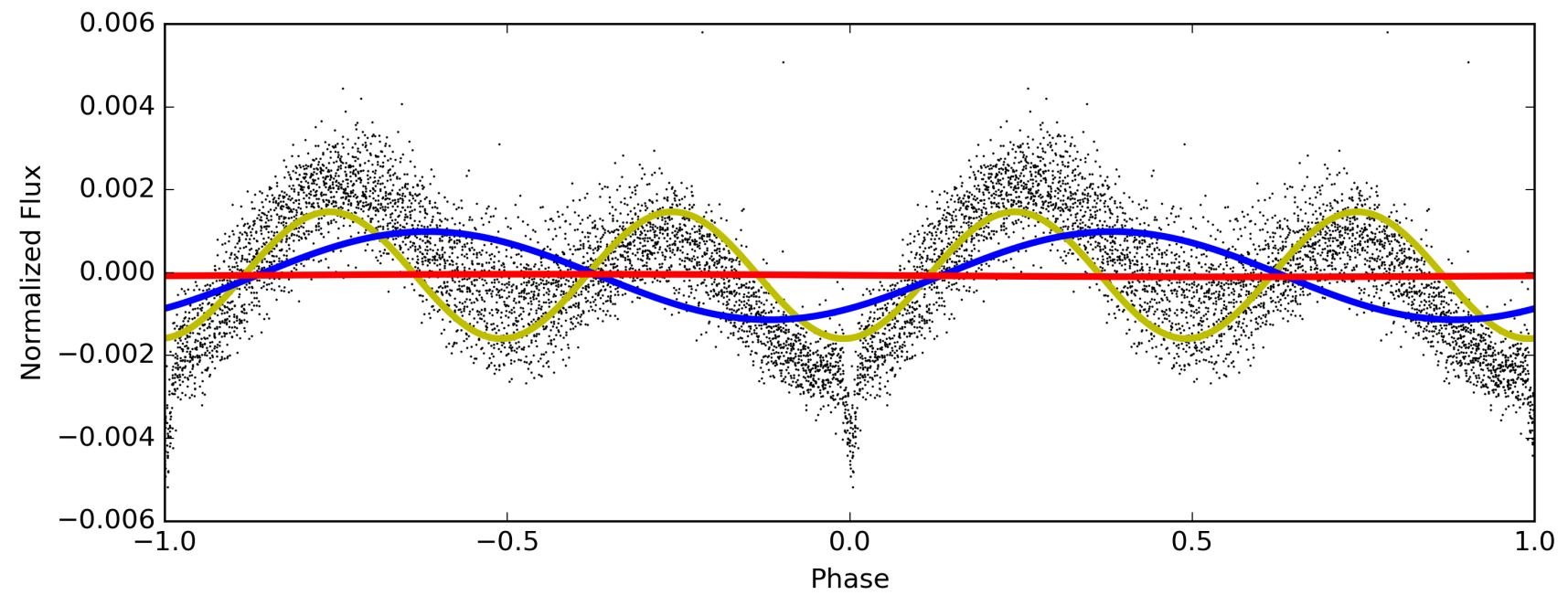
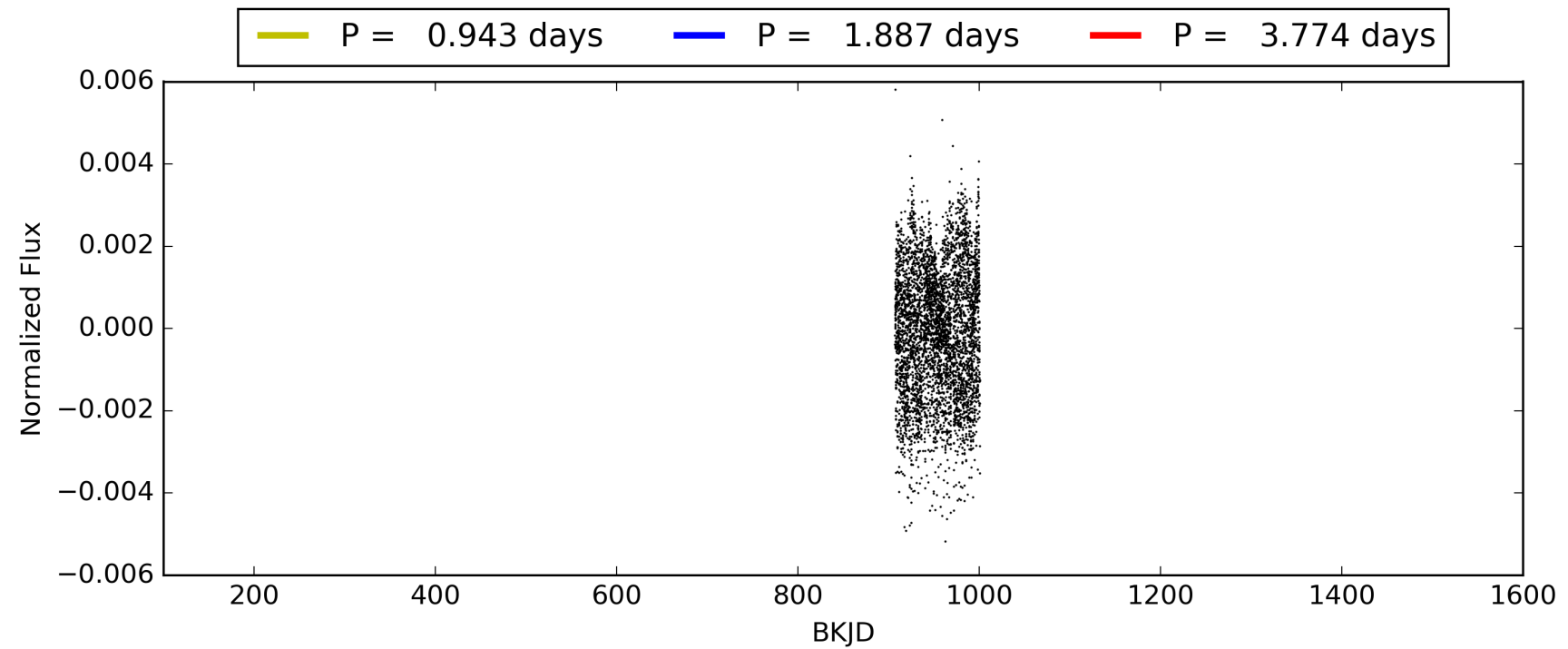
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:18:28 Z

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

# TCE 009593528-01, PDC Light Curves

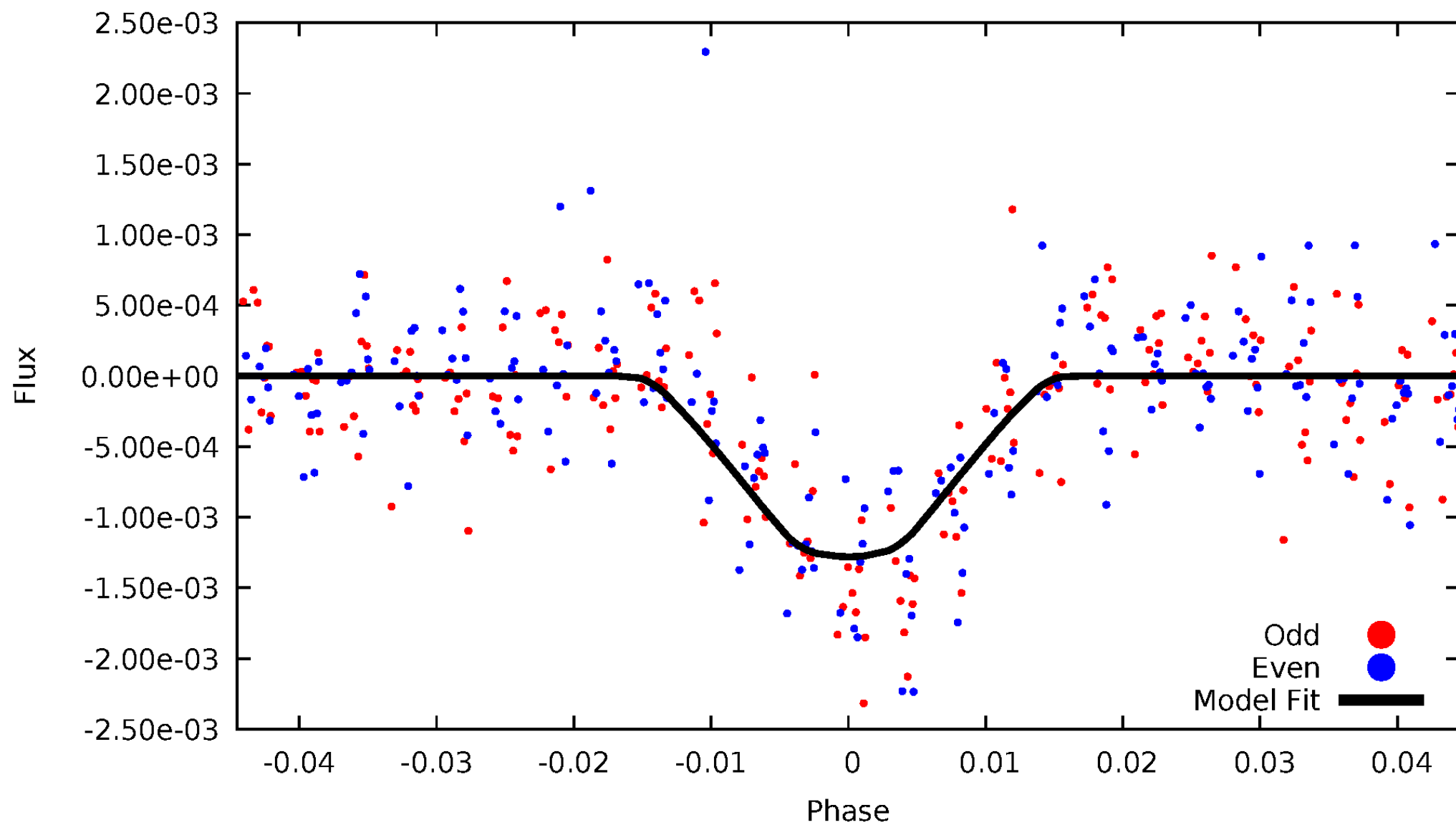


TCE 009593528-01



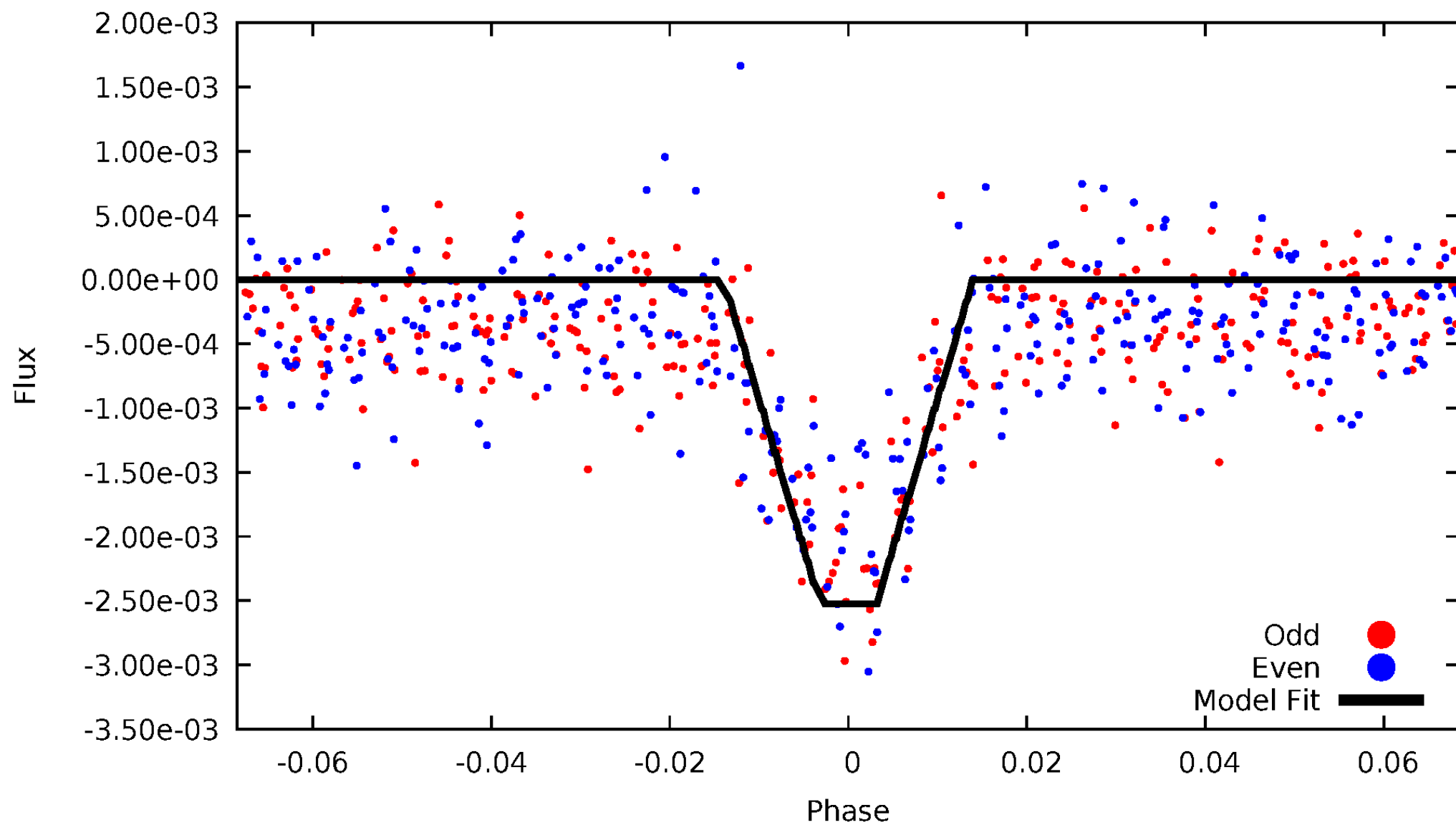
# DV Odd/Even

TCE 009593528-01



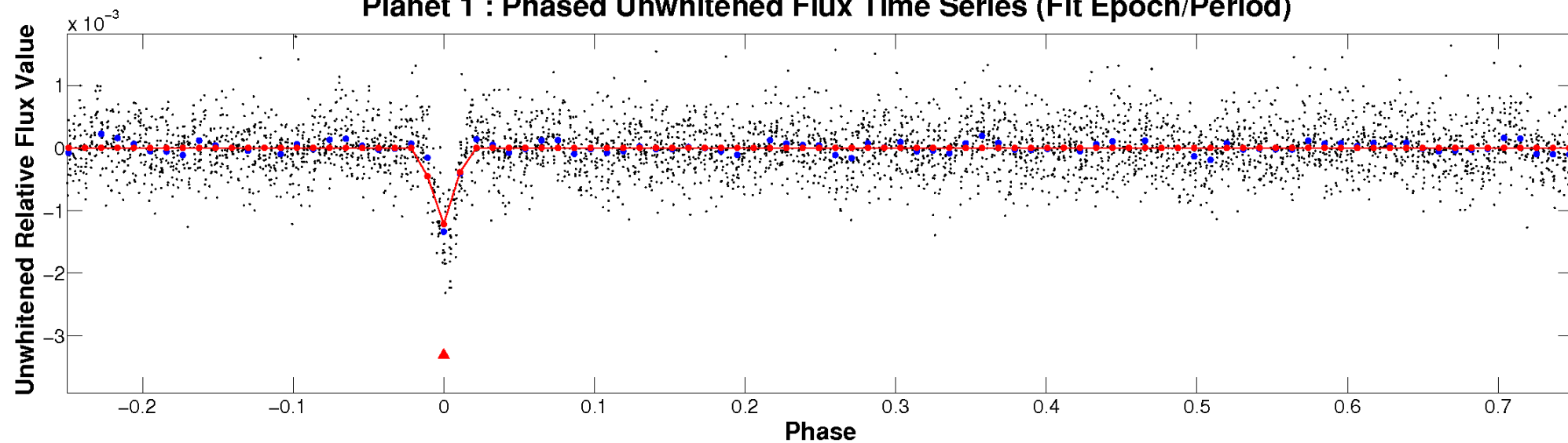
# ALT Odd/Even

TCE 009593528-01

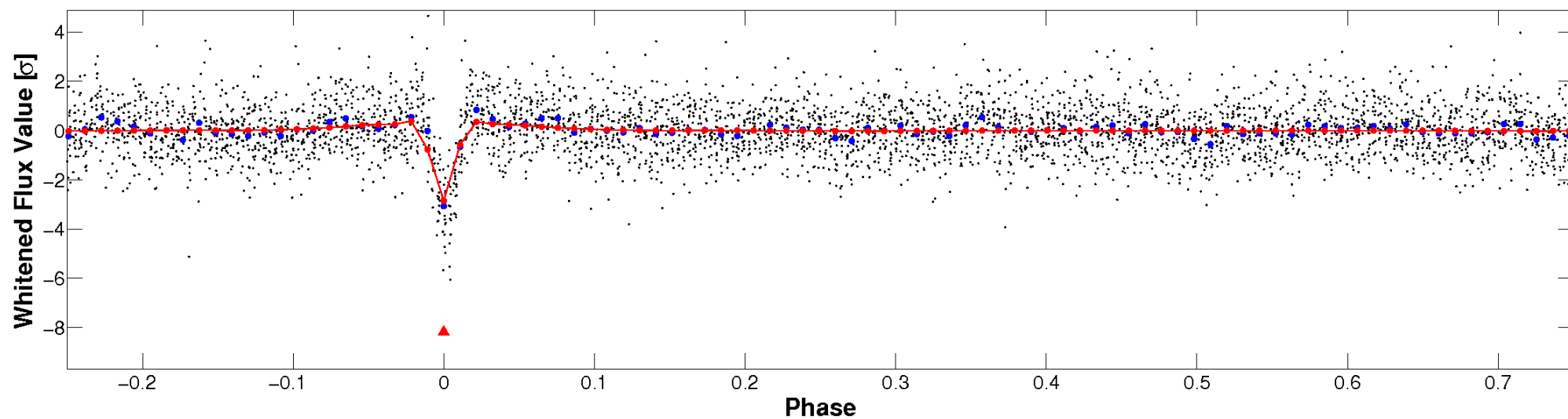


# Non-Whitened Vs. Whitened Light Curve

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

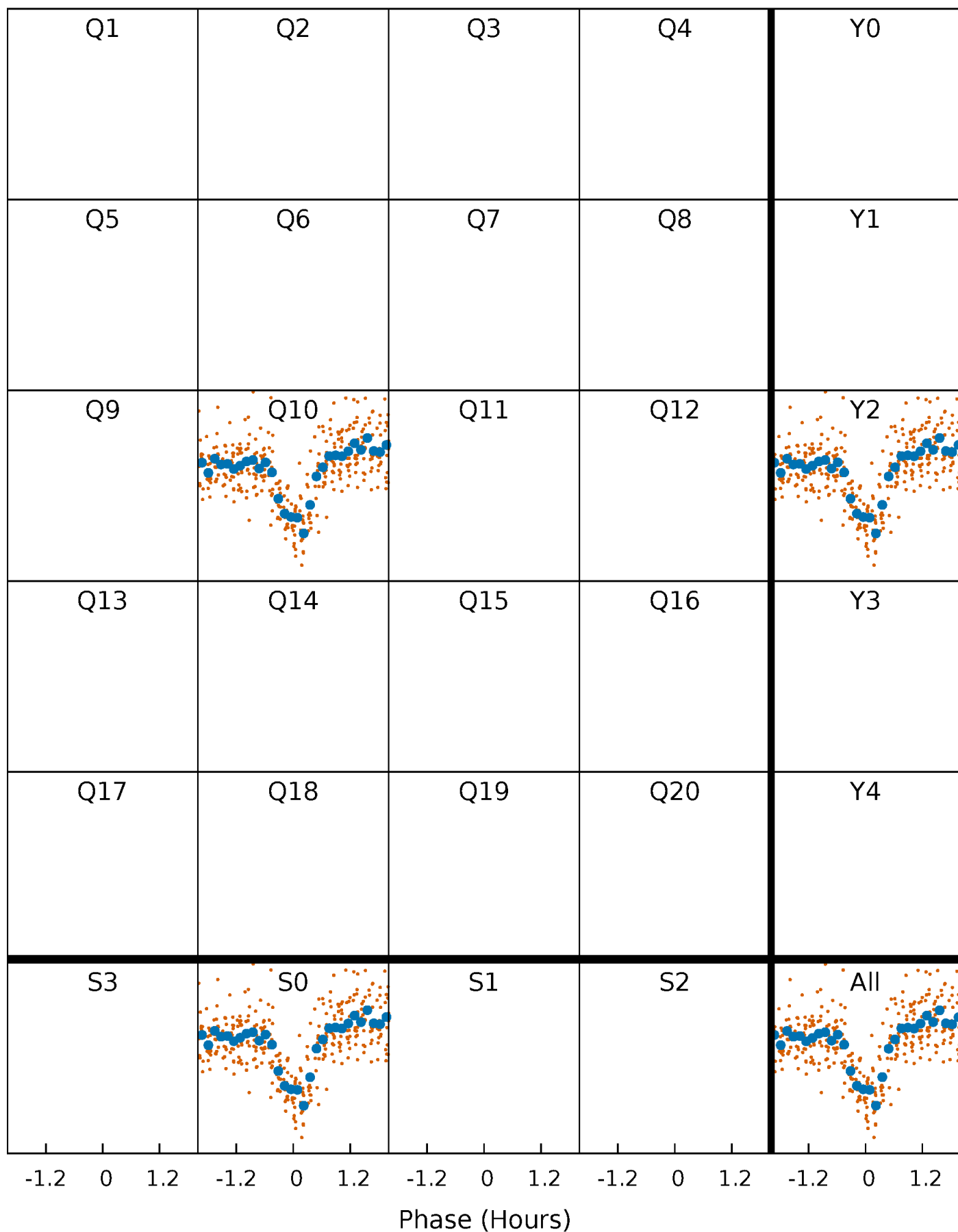


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

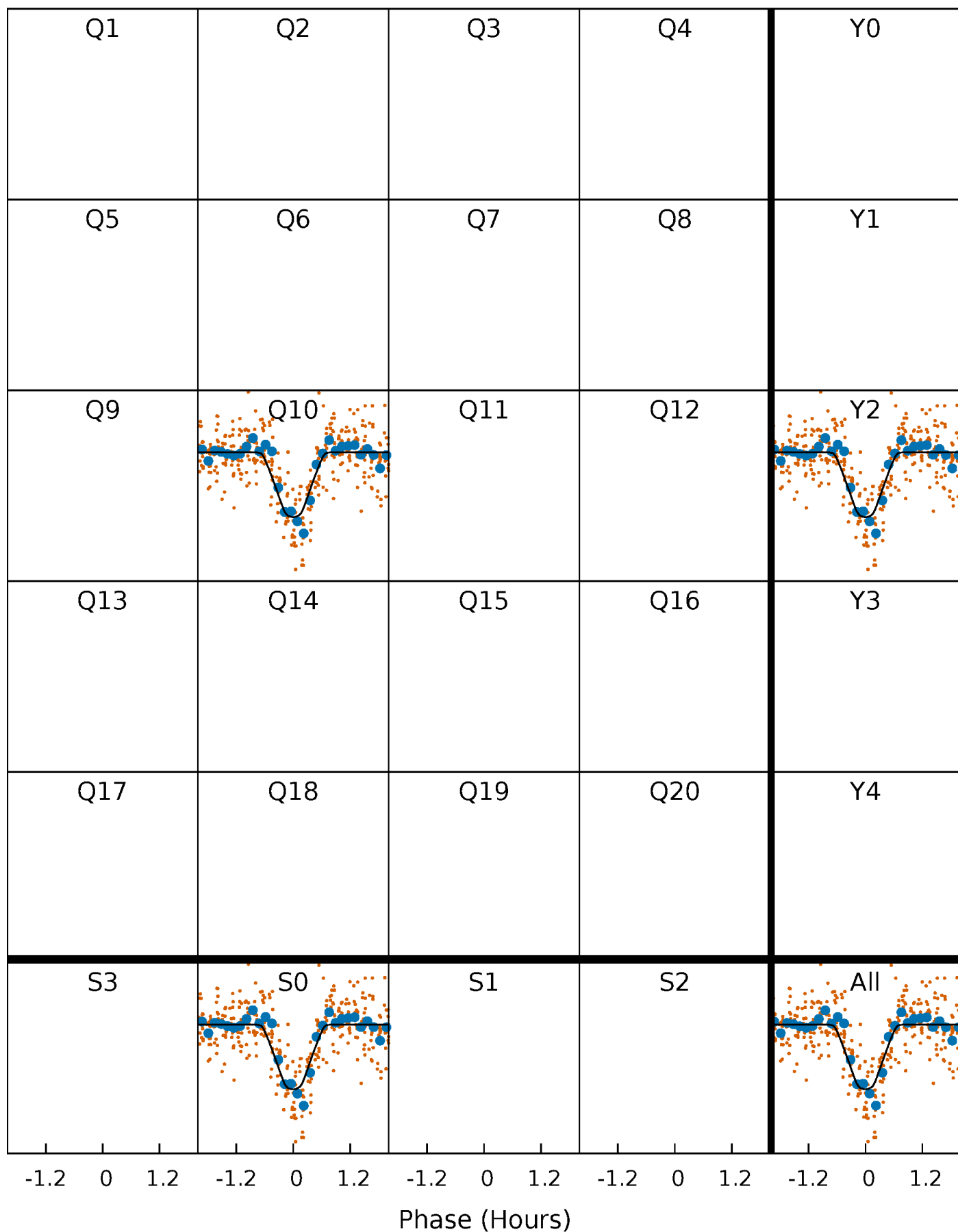
TCE 009593528-01   P= 1.886793 Days    $T_0=132.291003$  (BKJD)





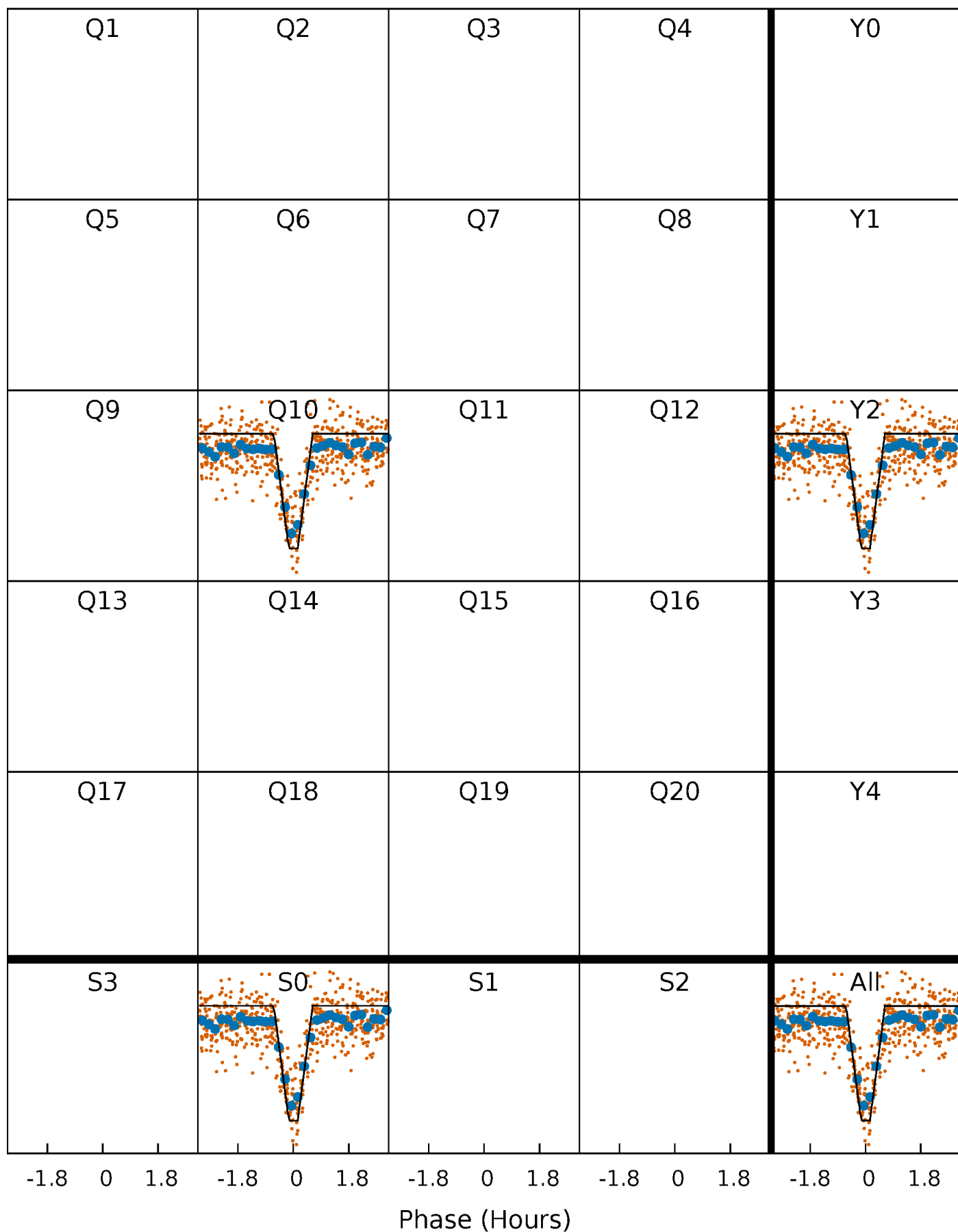
# DV Quarter-Phased Transit Curves

TCE 009593528-01 P= 1.886793 Days  $T_0=132.291003$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

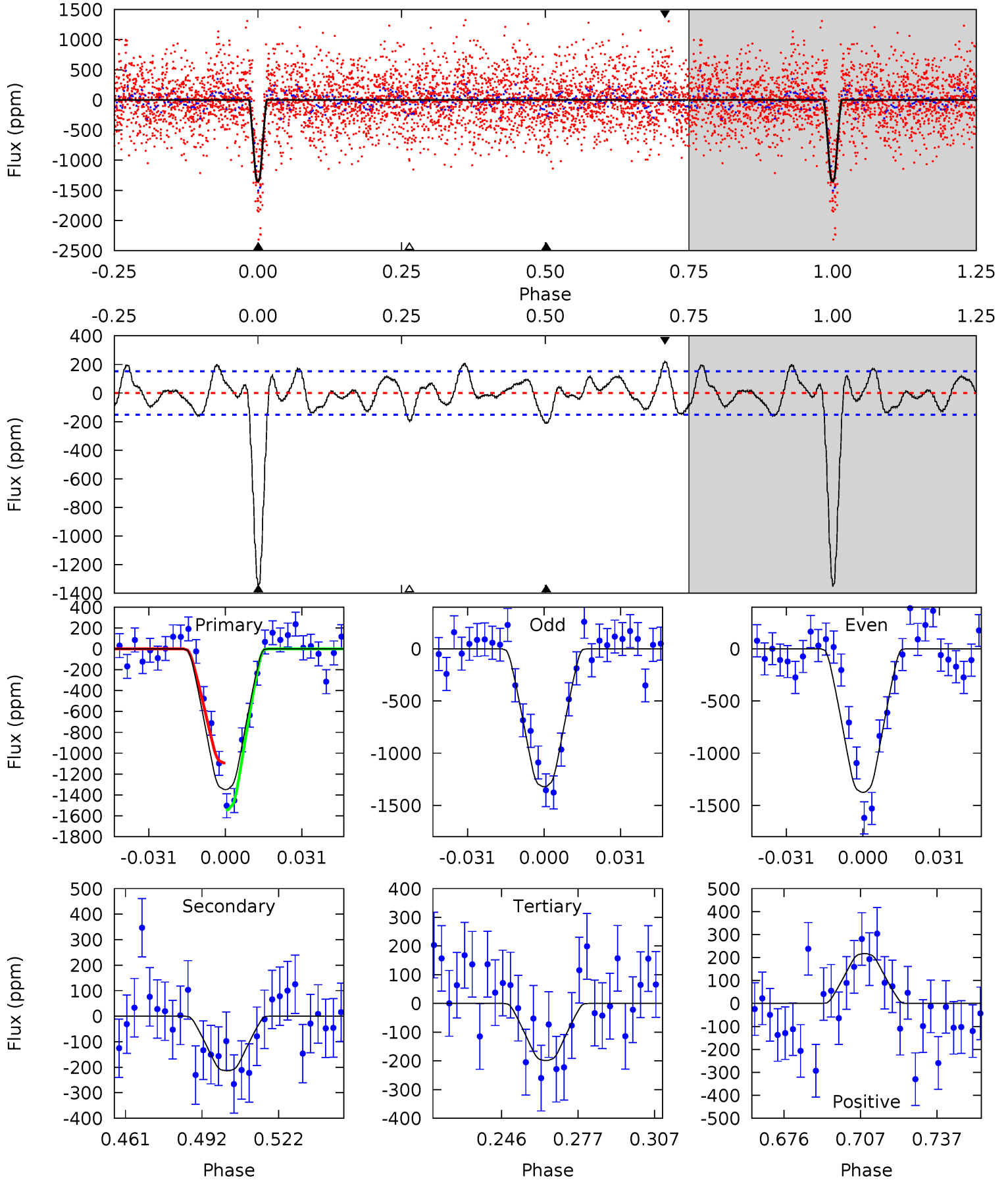
TCE 009593528-01 P= 1.886806 Days  $T_0=132.288590$  (BKJD)



# DV Model-Shift Uniqueness Test

009593528-01, P = 1.886793 Days, E = 132.291003 Days

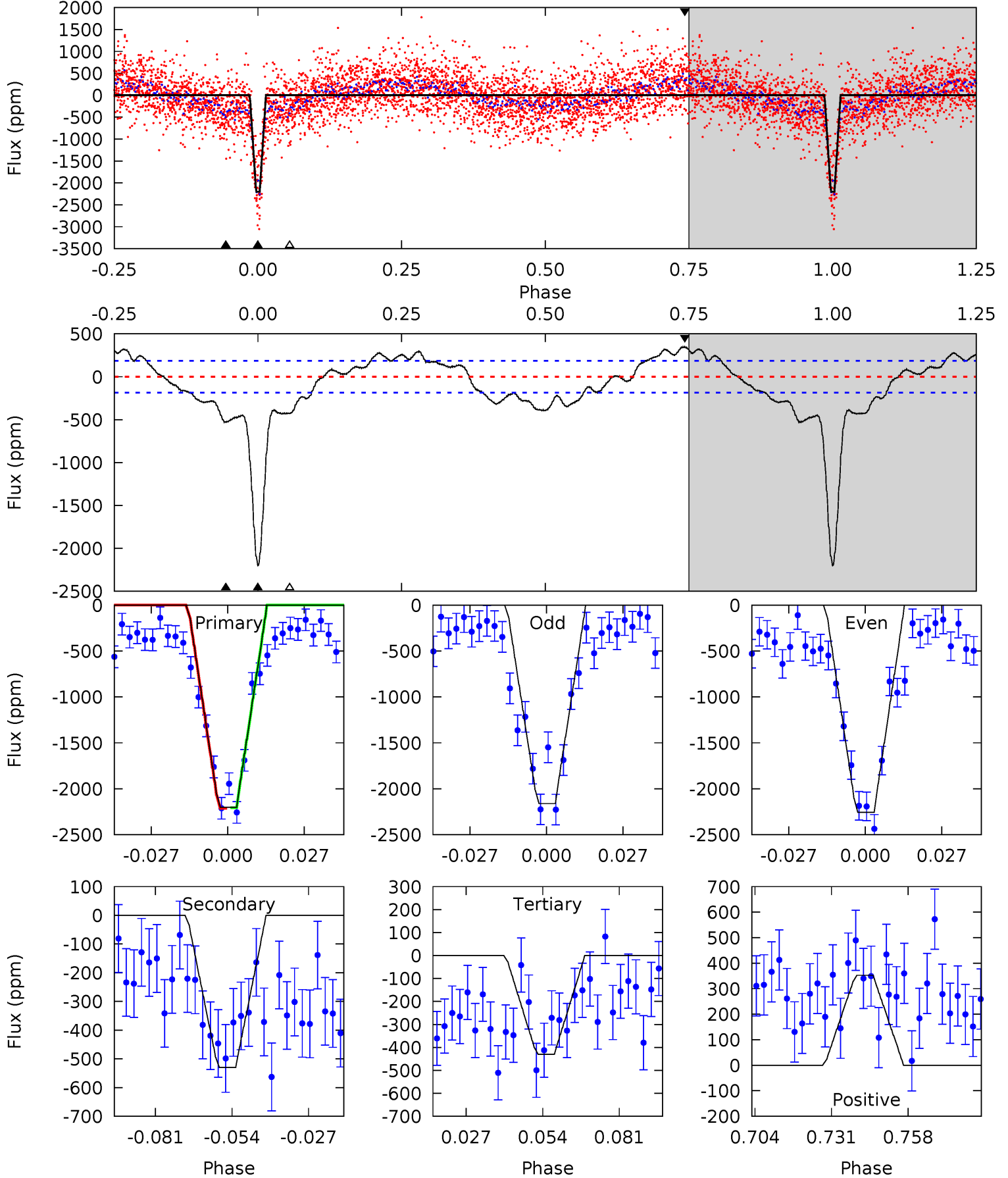
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.8	6.79	6.32	6.90	4.81	2.16	2.71	36.5	35.9	0.48	-0.10	0.86	1.00	0.14	7.22



# Alt Model-Shift Uniqueness Test

009593528-01, P = 1.886806 Days, E = 132.288590 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
57.1	13.7	11.1	9.14	4.83	2.21	5.87	46.0	48.0	2.60	4.61	1.24	0.98	0.14	0.11



### Stellar Parameters For KIC 009593528

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6296^{+198}_{-242}$	$4.247^{+0.185}_{-0.185}$	$-0.360^{+0.300}_{-0.300}$	$1.249^{+0.371}_{-0.278}$	$1.005^{+0.157}_{-0.114}$	$0.726^{+0.703}_{-0.356}$
	+3%/-4%	+4%/-4%	+83%/-83%	+30%/-22%	+16%/-11%	+97%/-49%
Source	KIC0	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 009593528-01 / KOI 3939.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-214 \pm 31$	$5.20^{+1.33}_{-1.03}$	$2490^{+209}_{-182}$	$4073^{+336}_{-290}$	$3.790^{+2.356}_{-1.320}$
Alt.	$-530 \pm 39$	$6.89^{+1.48}_{-1.22}$	$2503^{+197}_{-177}$	$4391^{+289}_{-233}$	$5.522^{+2.670}_{-1.752}$

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

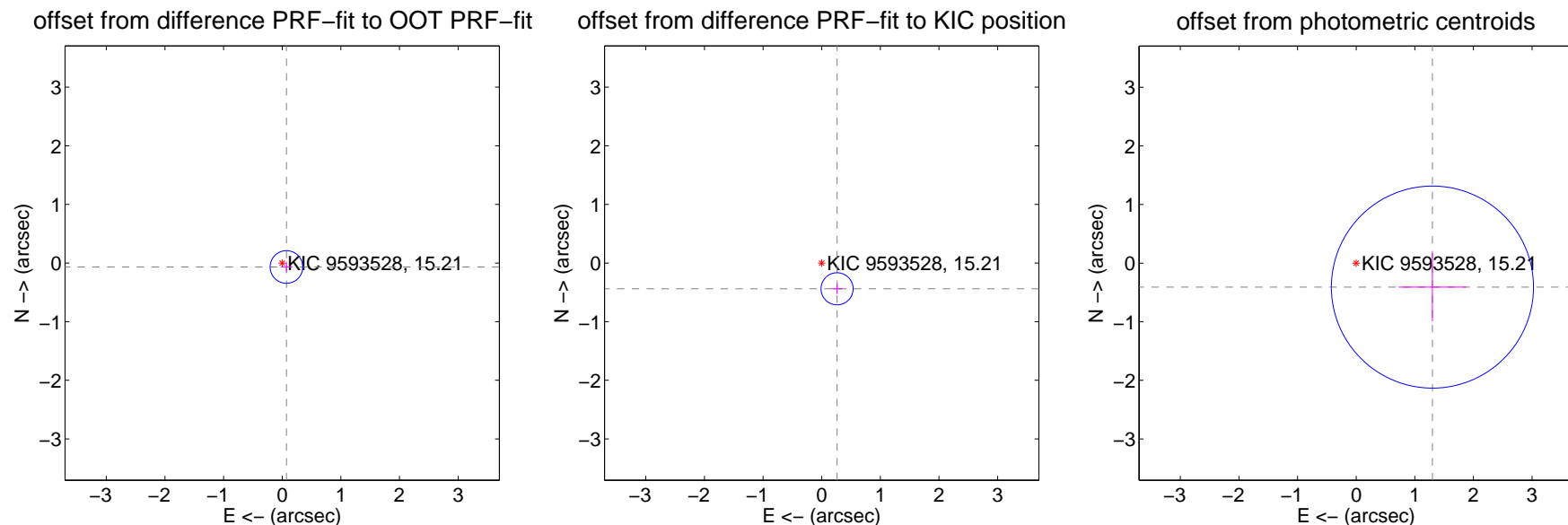
## DV Centroid Data

Supplemental centroid analysis for 009593528-01. Kepler magnitude: 15.21. Transit SNR 22.14

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.099 \pm 0.093$	1.06	$-0.072 \pm 0.095$	$-0.067 \pm 0.090$
PRF-fit source offset from KIC position	<b><math>0.512 \pm 0.091</math></b>	<b>5.60</b>	$-0.262 \pm 0.095$	$-0.439 \pm 0.090$
photometric centroid source offset	$1.36 \pm 0.57$	2.37	$-1.30 \pm 0.57$	$-0.41 \pm 0.58$



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.



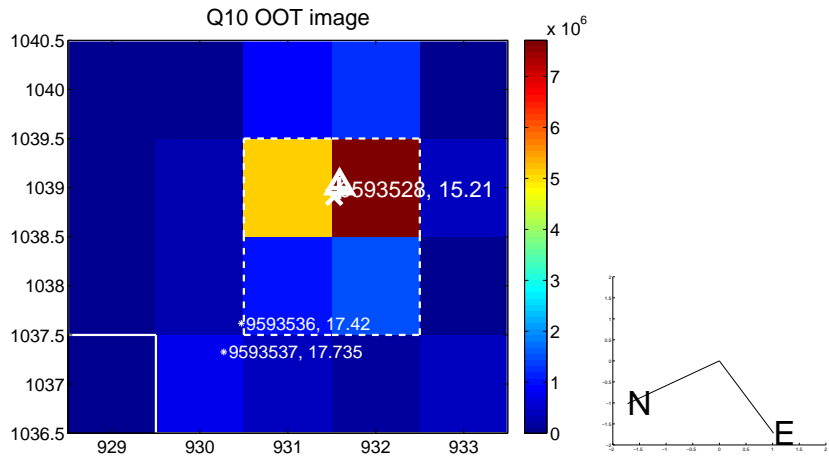
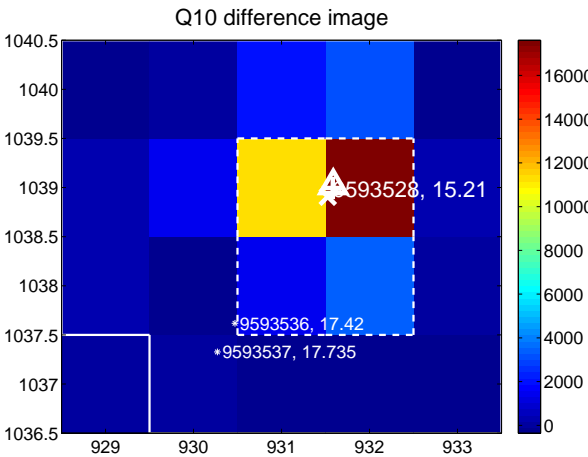


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

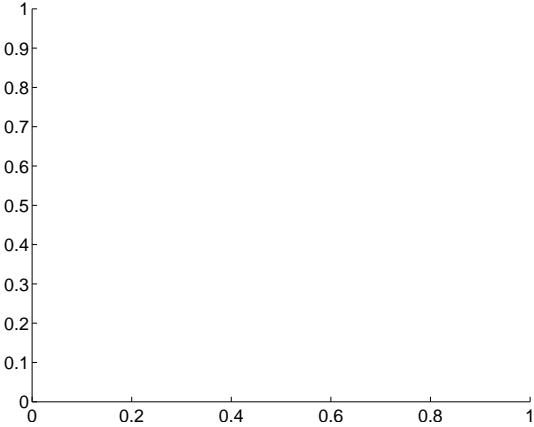
Q9 no difference image



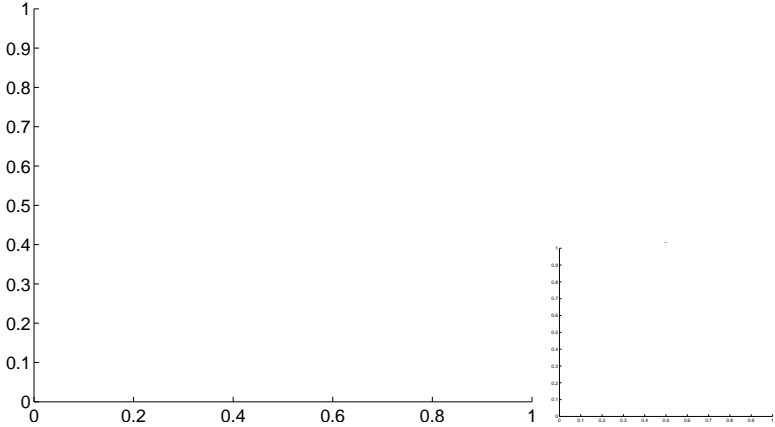
Q9 no OOT image



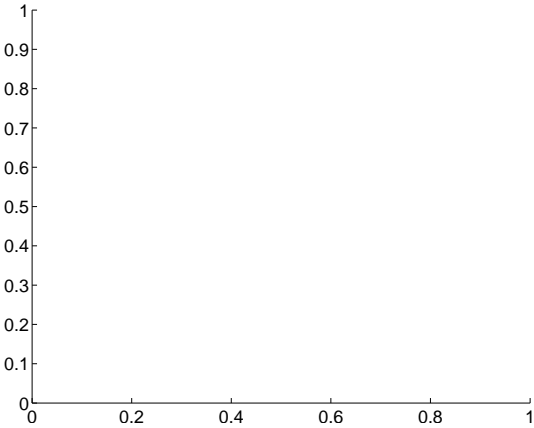
Q11 no difference image



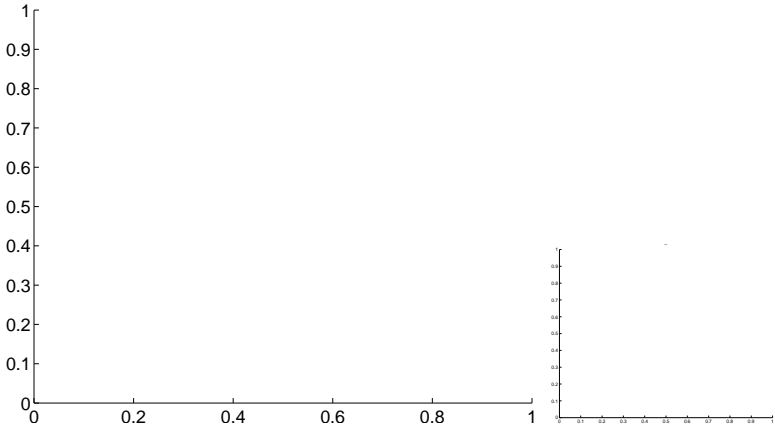
Q11 no OOT image



Q12 no difference image



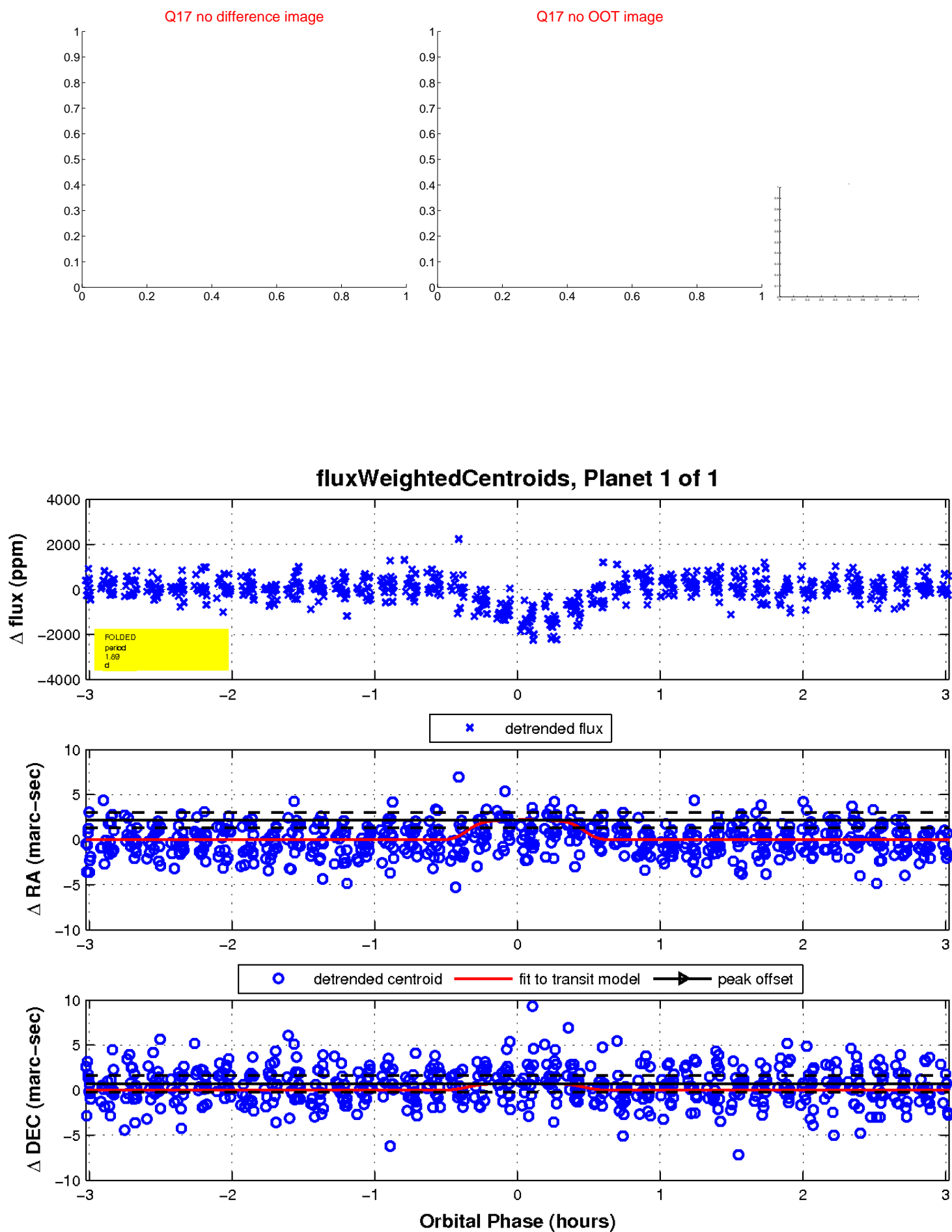
Q12 no OOT image



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

