

# KIC 009394723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009394723-01	OBS	No	368.005955	182.372040	2590.4	17.879	7.4	7.3	0.78	5319	7.66	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009394723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—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.

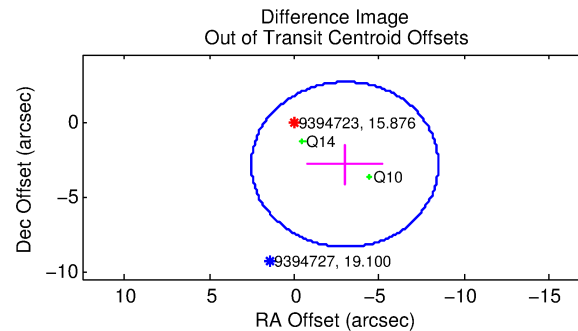
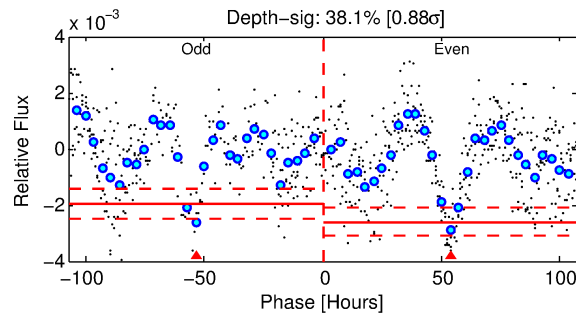
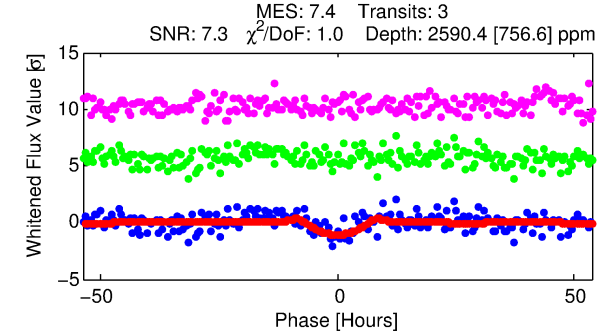
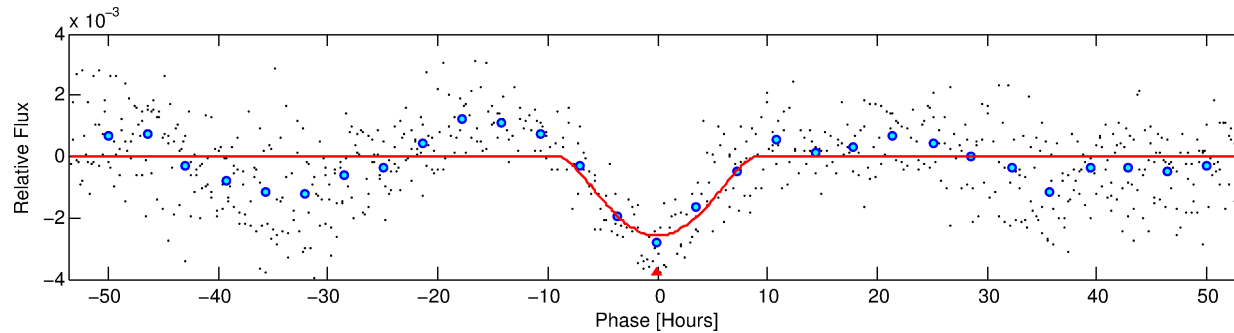
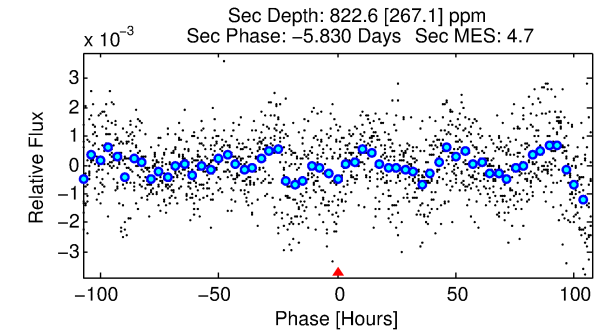
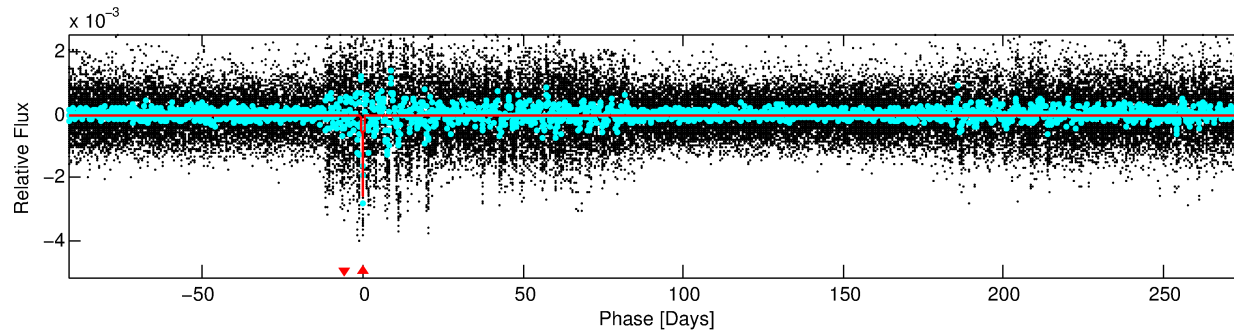
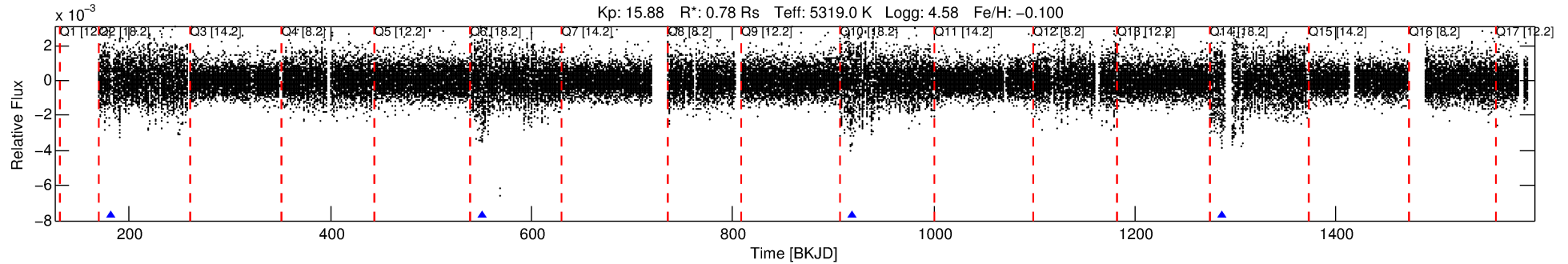
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009394723-01

No Significant Match Found

# DV One-Page Summary

KIC: 9394723 Candidate: 1 of 1 Period: 368.006 d



## DV Fit Results:

Period = 368.00595 [0.02816] d  
Epoch = 182.3720 [0.0552] BKJD  
Rp/R\* = 0.0898 [0.2507]  
a/R\* = 68.16 [37.77]  
b = 1.00 [0.34]  
Seff = 0.49 [0.11]  
Teq = 213 [12] K  
Rp = 7.66 [21.43] Re  
a = 0.9508 [0.1323] AU  
Ag = 6967.86 [38991.87] [0.18σ]  
Teffp = 3006 [4204] K [0.66σ]

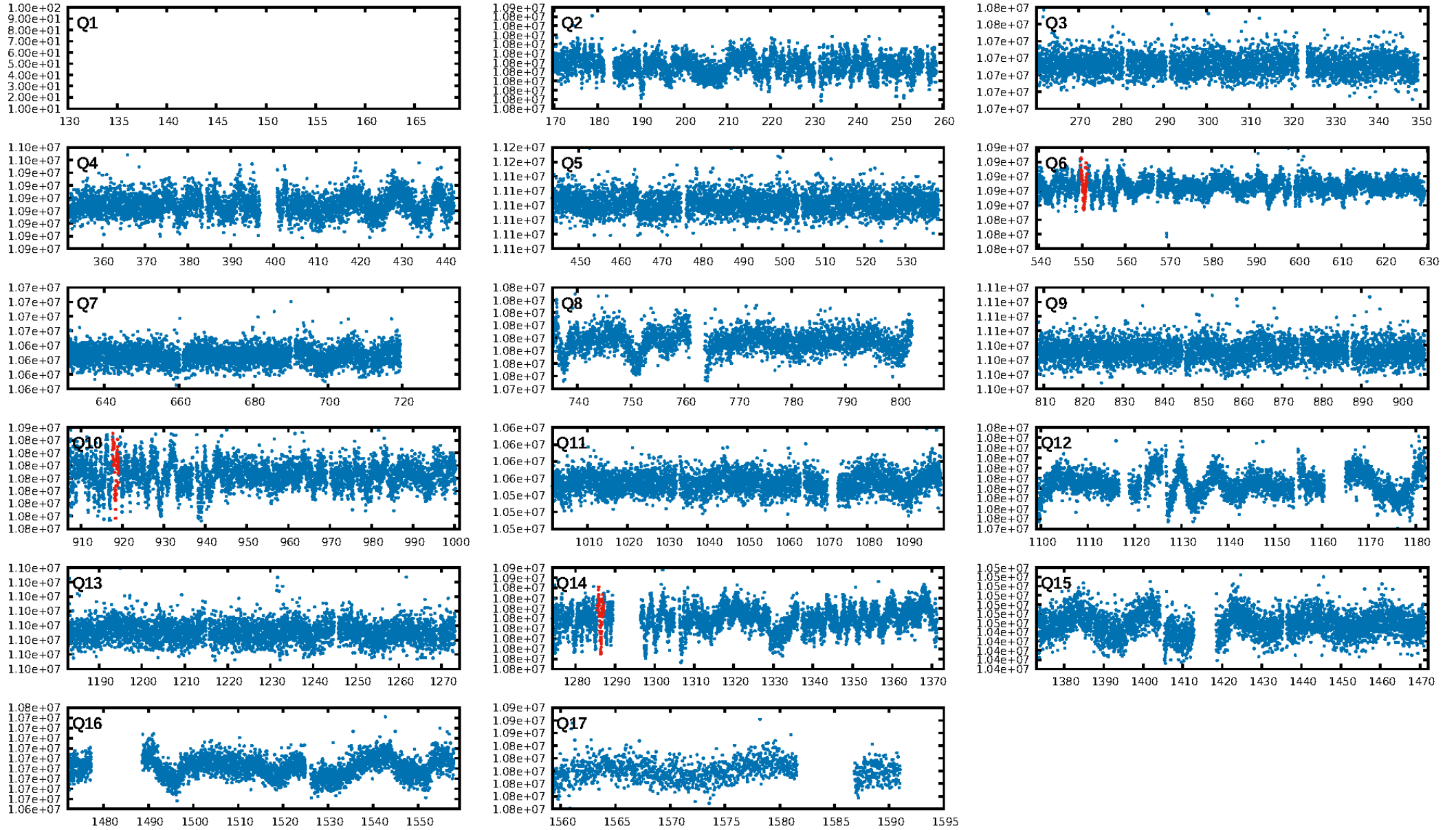
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 92.5%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 4.96e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.7763  
**Centroid-sig: 0.0%**  
**Centroid-so: 7.250 arcsec [3.75σ]**  
OotOffset-rm: 4.141 arcsec [2.25σ]  
KicOffset-rm: 4.353 arcsec [2.00σ]  
OotOffset-st: 2/0/0/0 [2]  
KicOffset-st: 2/0/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

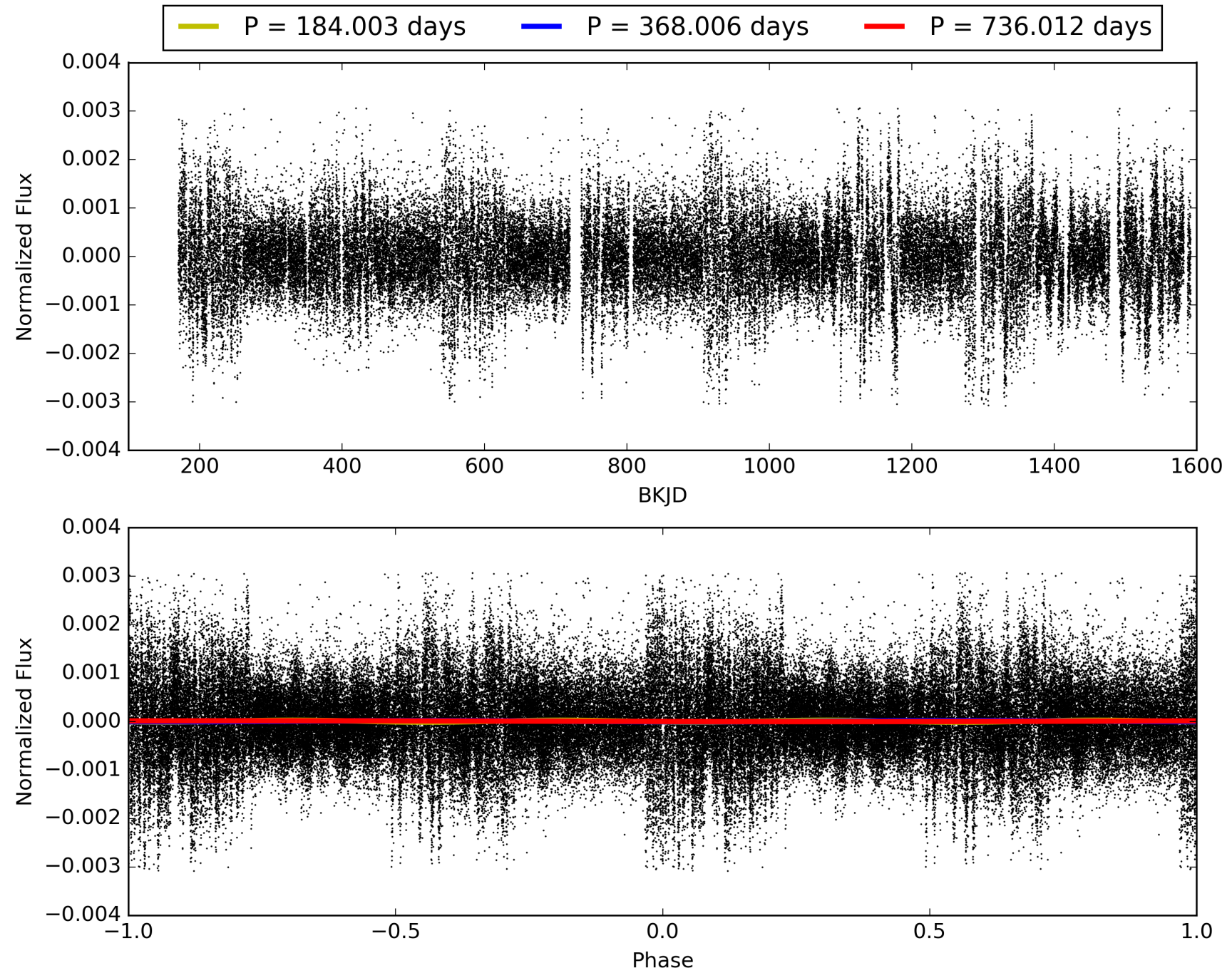
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:44:29 Z

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

# TCE 009394723-01, PDC Light Curves

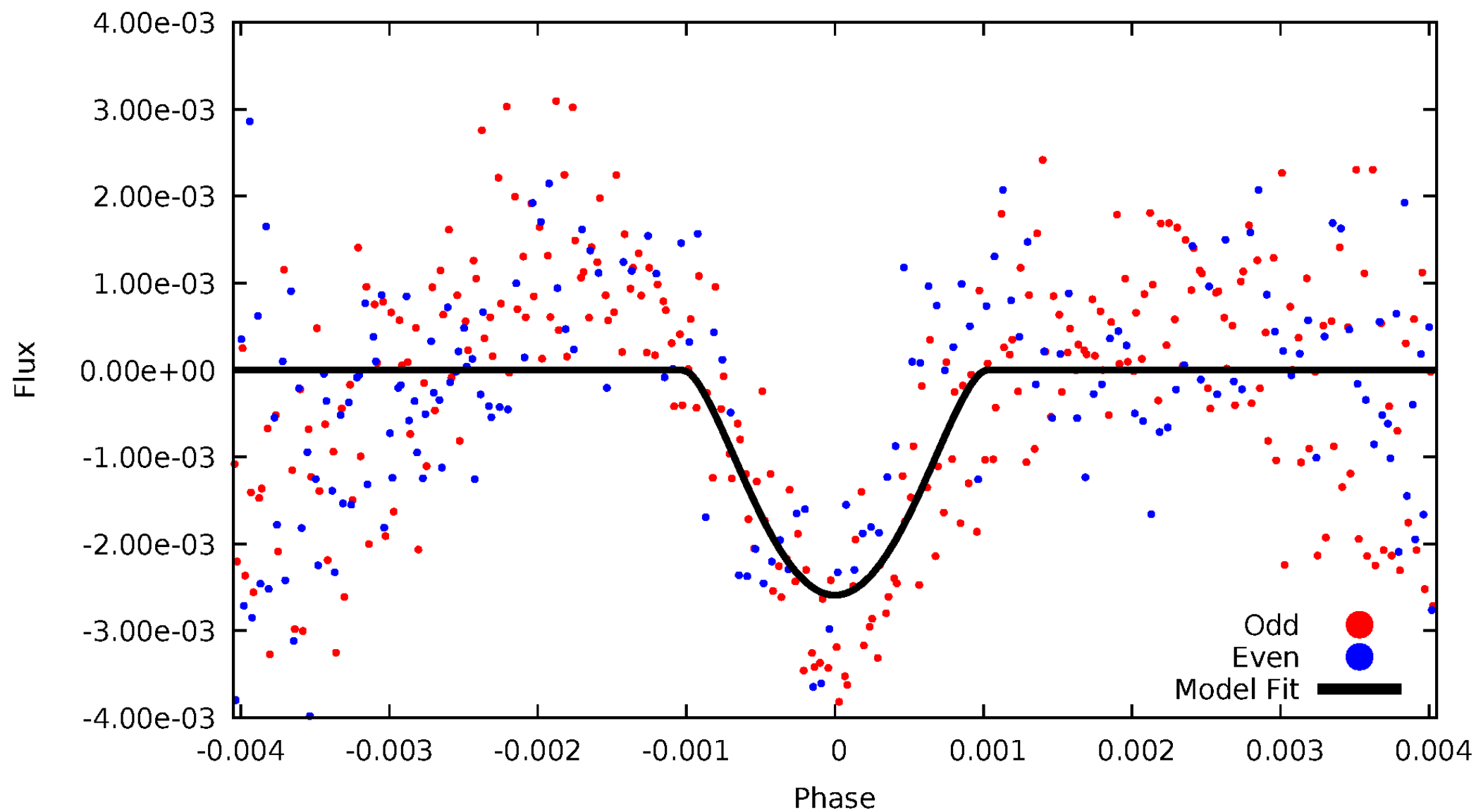


TCE 009394723-01



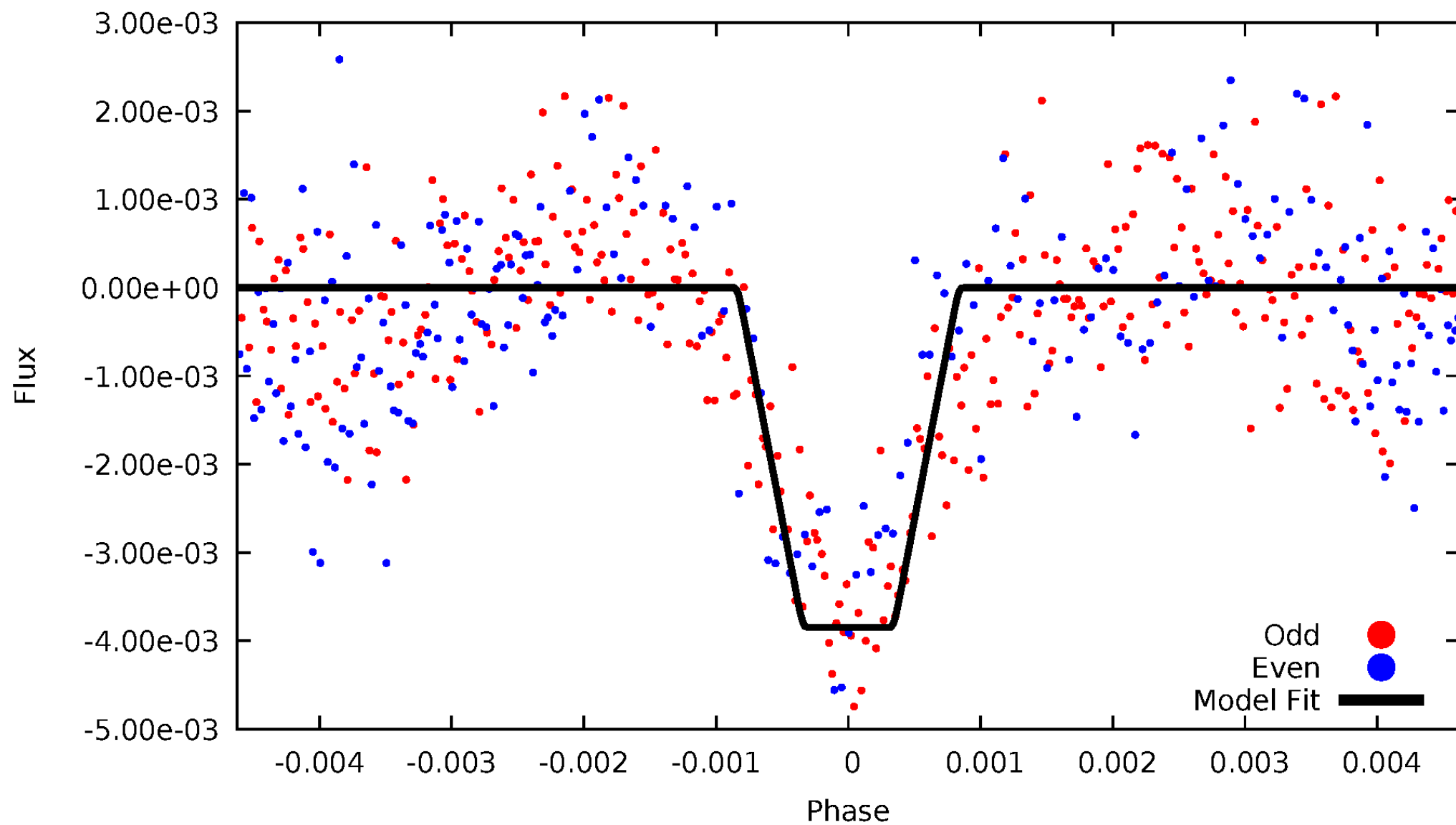
# DV Odd/Even

TCE 009394723-01



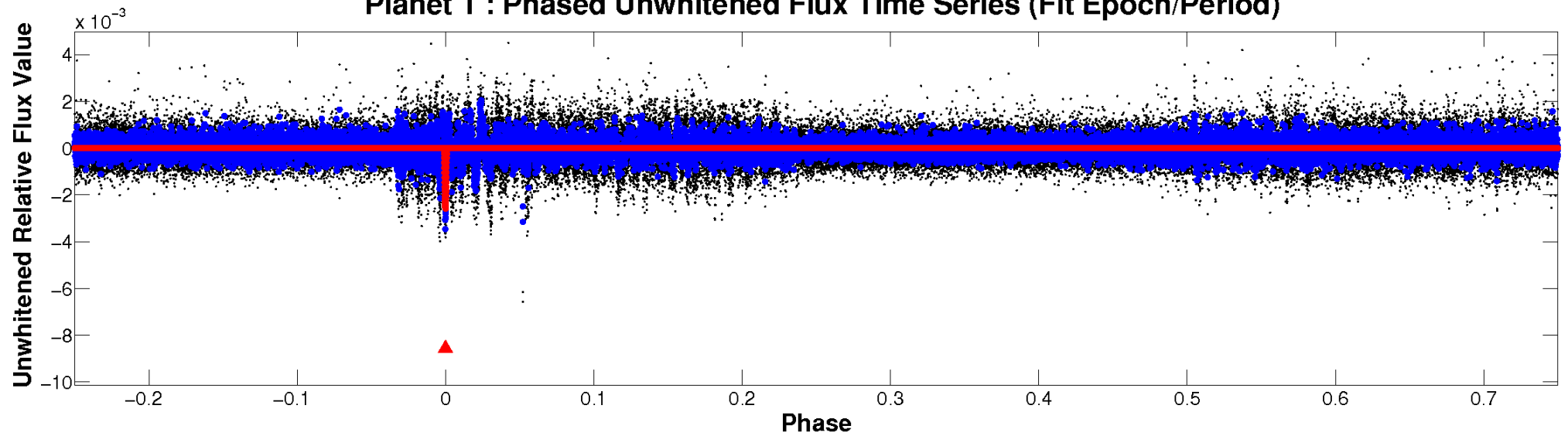
# ALT Odd/Even

TCE 009394723-01

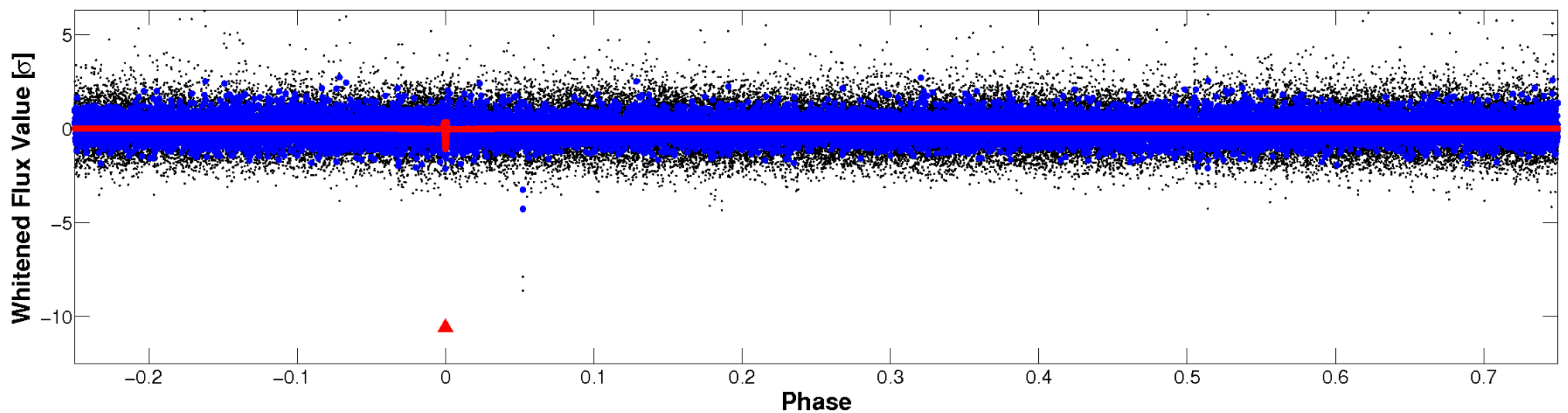


# Non-Whitened Vs. Whitened Light Curve

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



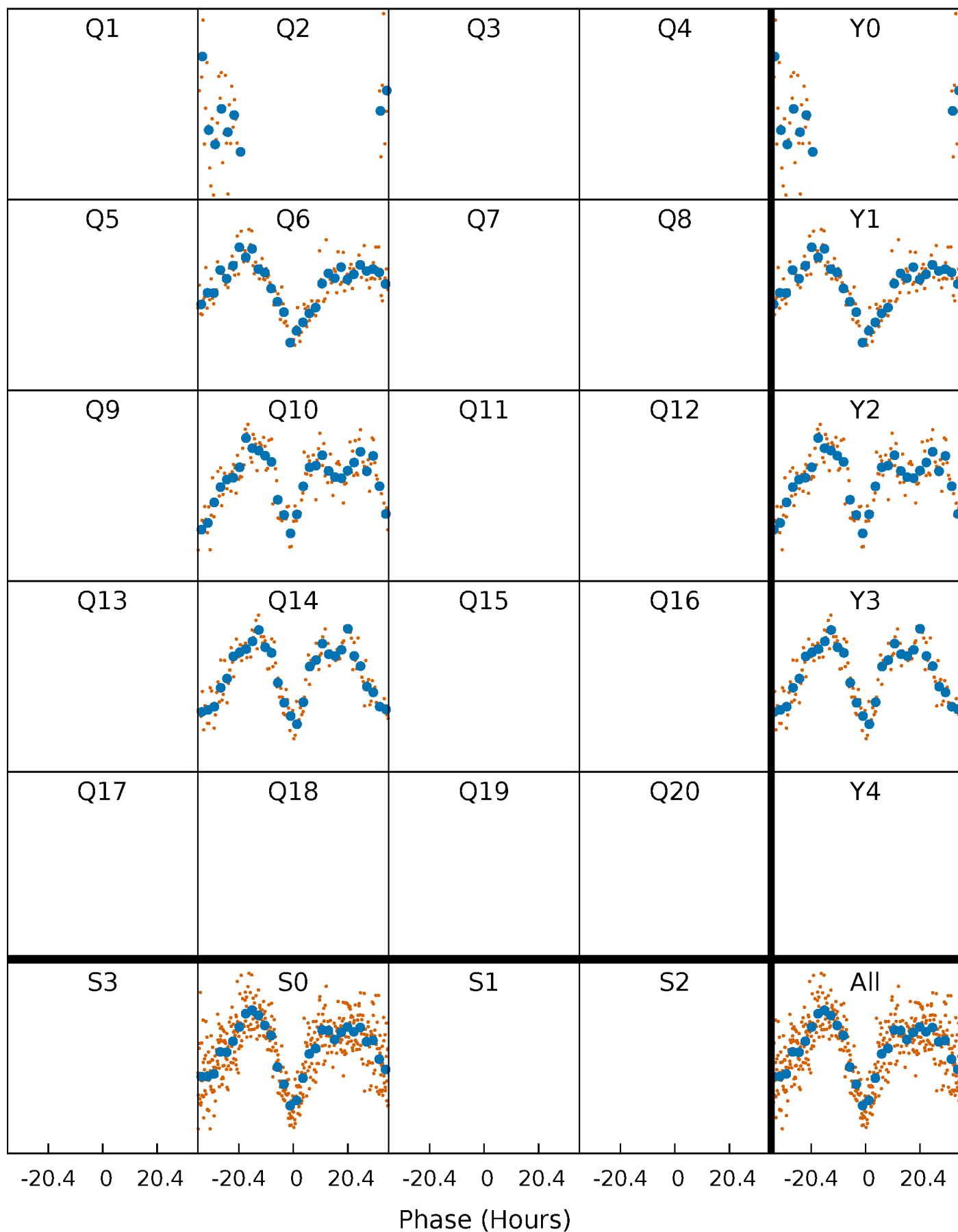
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

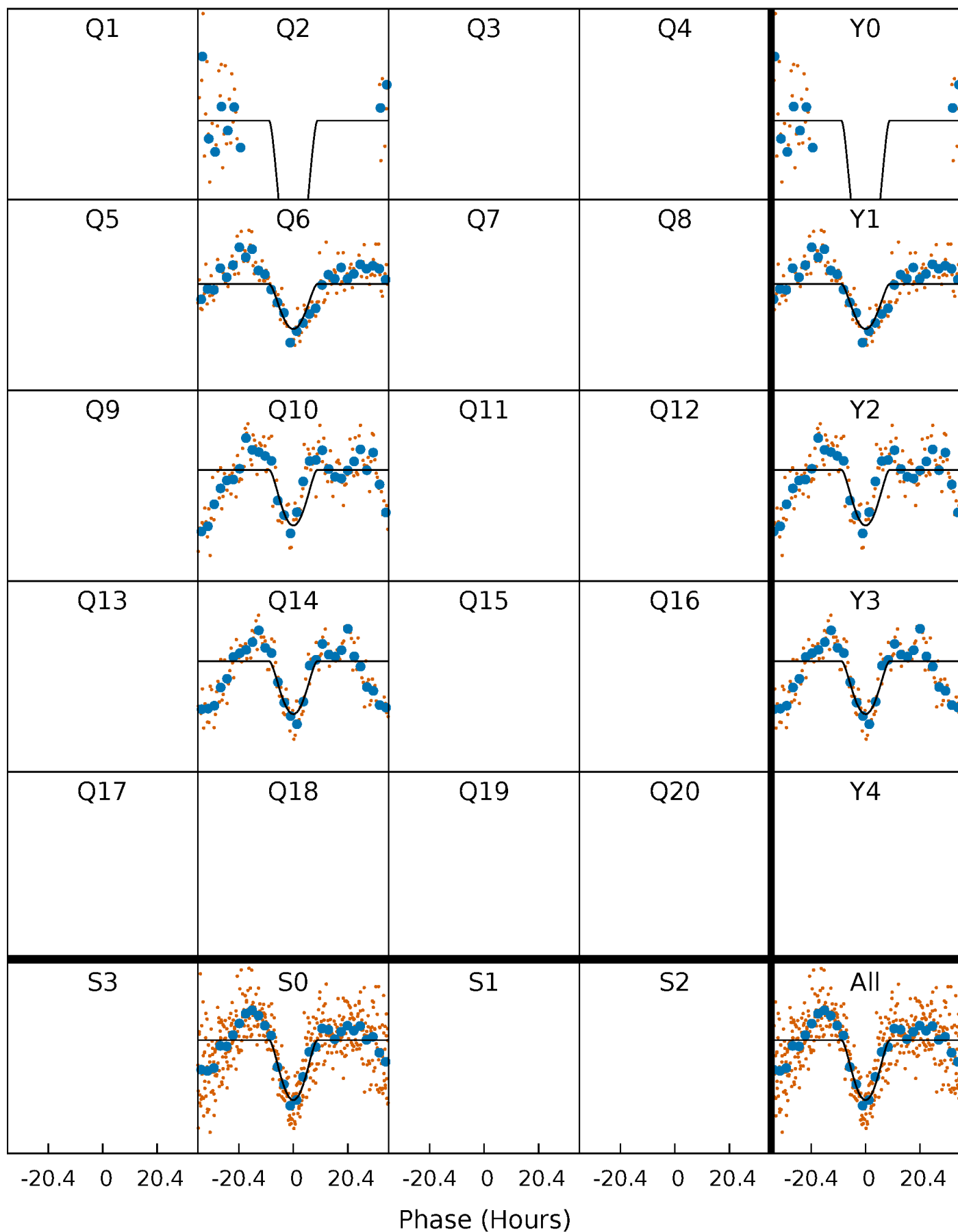
TCE 009394723-01 P=368.005955 Days  $T_0=182.372040$  (BKJD)





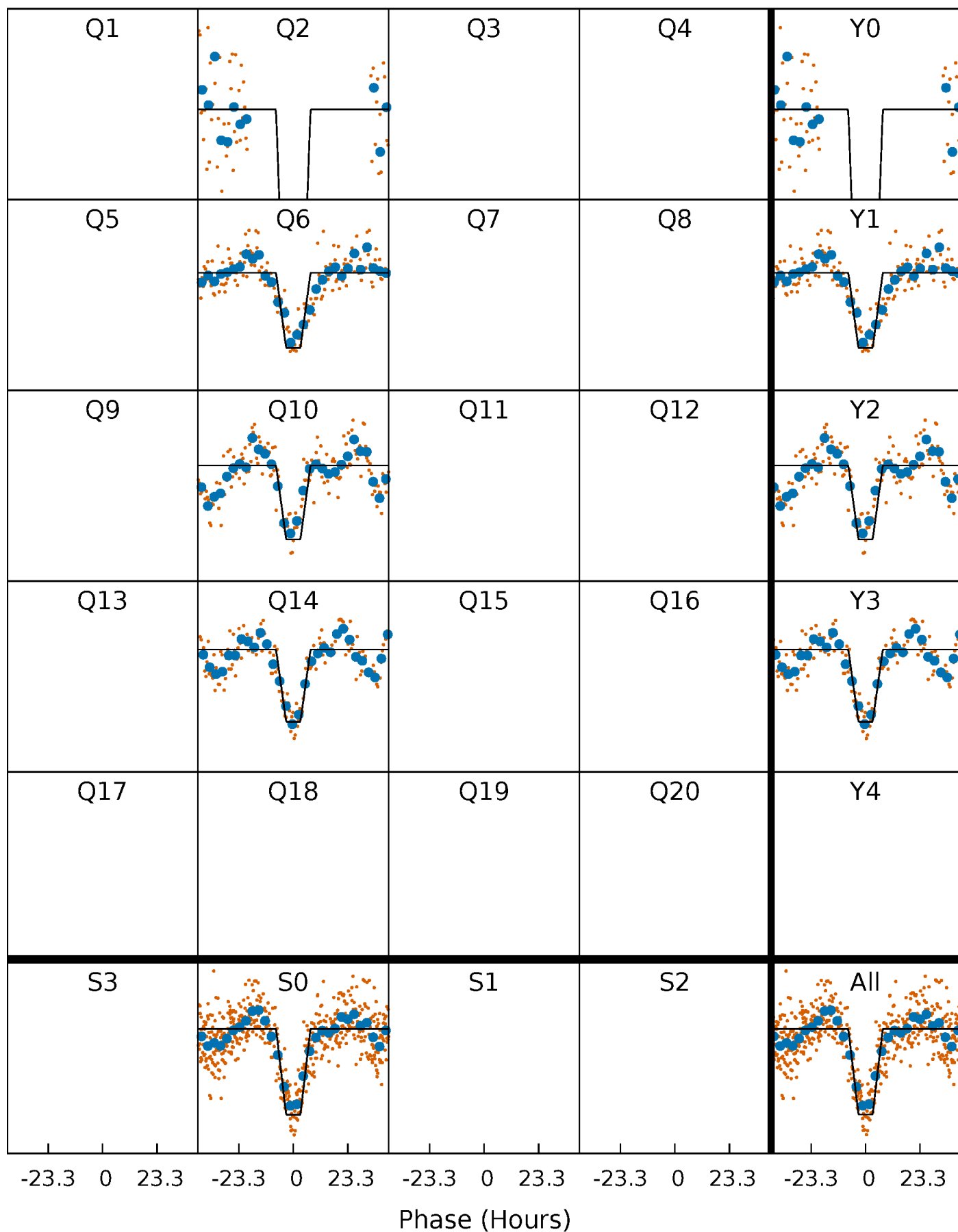
# DV Quarter-Phased Transit Curves

TCE 009394723-01 P=368.005955 Days  $T_0=182.372040$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

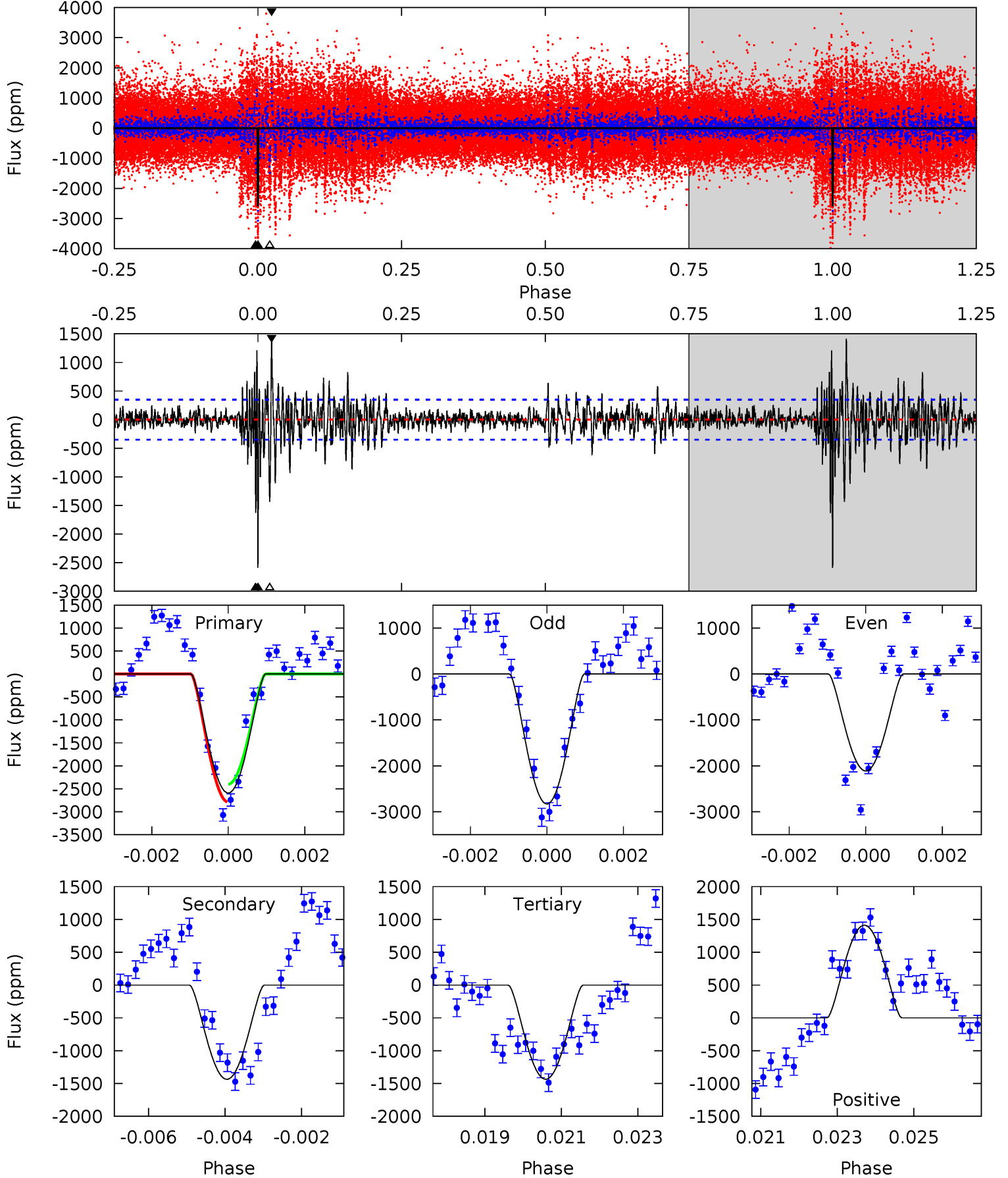
TCE 009394723-01 P=368.015227 Days  $T_0=182.338736$  (BKJD)



# DV Model-Shift Uniqueness Test

009394723-01, P = 368.005955 Days, E = 182.372040 Days

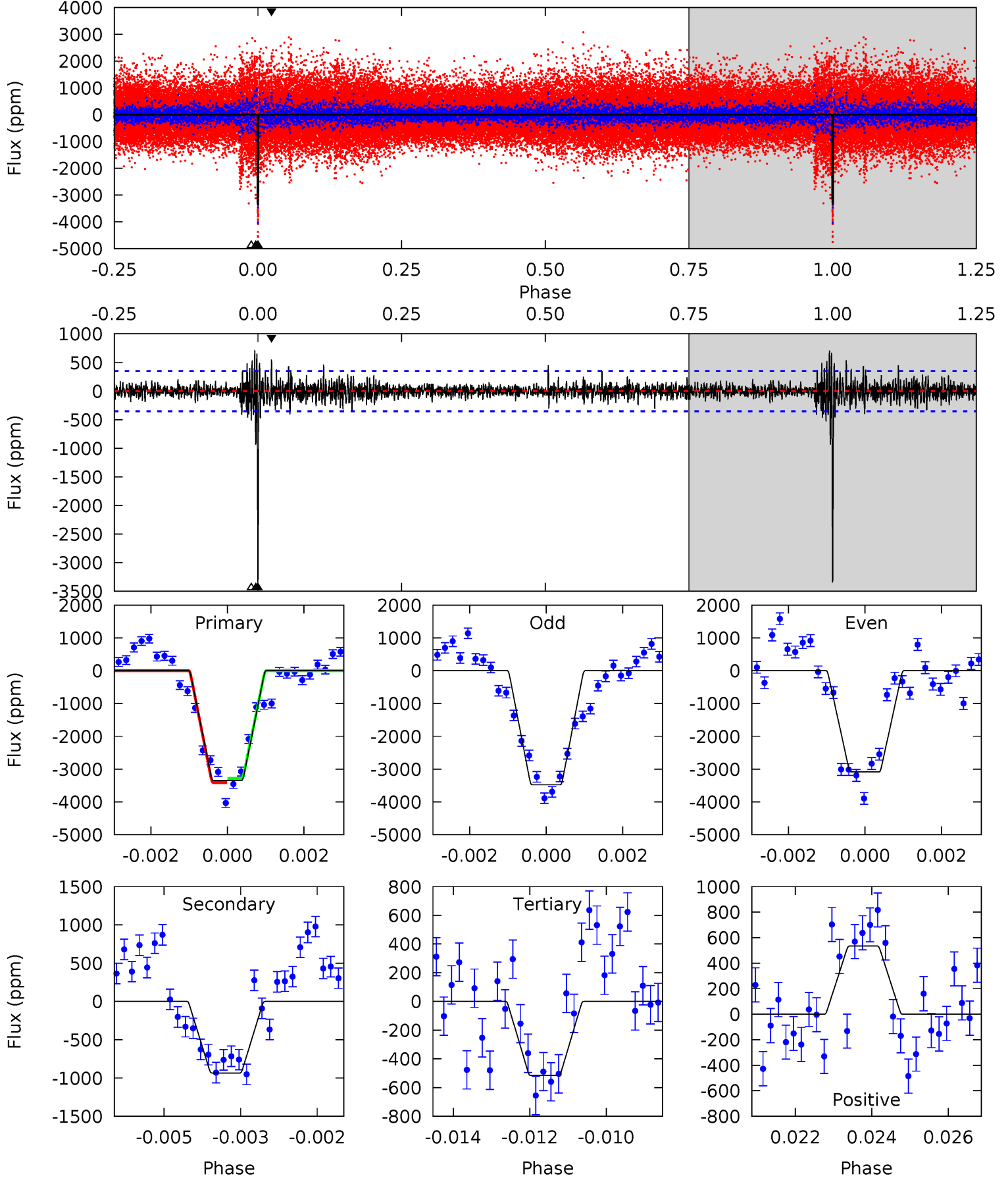
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.3	21.8	21.8	21.4	5.32	3.08	3.17	17.5	17.9	0.01	0.38	5.13	0.97	0.35	2.92



# Alt Model-Shift Uniqueness Test

009394723-01, P = 368.015227 Days, E = 182.338736 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
50.8	14.2	7.82	8.10	5.36	3.14	1.50	42.9	42.7	6.35	6.07	2.82	1.01	0.17	0.97



### Stellar Parameters For KIC 009394723

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5319^{+159}_{-159}$	$4.579^{+0.038}_{-0.105}$	$-0.100^{+0.300}_{-0.300}$	$0.782^{+0.133}_{-0.071}$	$0.850^{+0.078}_{-0.094}$	$2.498^{+0.451}_{-0.802}$
	+3%/-3%	+1%/-2%	+300%/-300%	+17%/-9%	+9%/-11%	+18%/-32%
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 009394723-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1436 \pm 66$	$18.48^{+17.15}_{-12.65}$	$301^{+12}_{-12}$	$2957^{+1220}_{-491}$	$2138^{+17950}_{-1571}$
Alt.	$-934 \pm 66$	$15.88^{+18.49}_{-10.85}$	$301^{+14}_{-11}$	$2871^{+1240}_{-495}$	$1905^{+15956}_{-1512}$

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

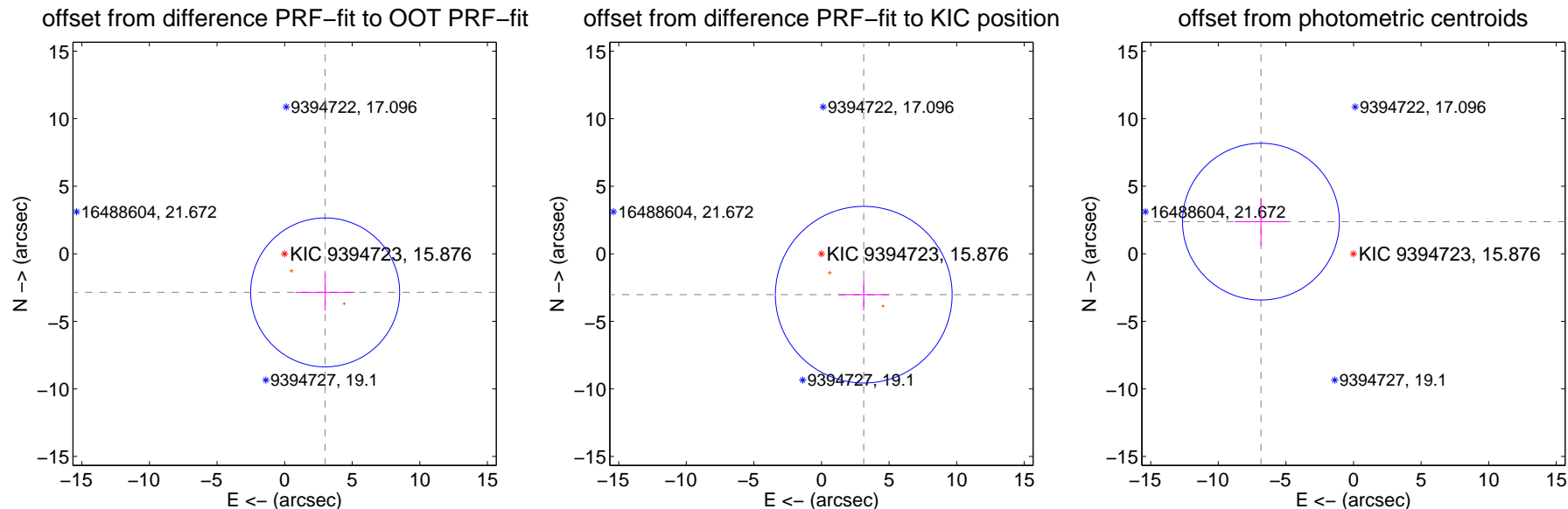
## DV Centroid Data

Supplemental centroid analysis for 009394723-01. Kepler magnitude: 15.88. Transit SNR 7.29

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.141 \pm 1.837$	2.25	$-2.997 \pm 2.191$	$-2.858 \pm 1.346$
PRF-fit source offset from KIC position	$4.353 \pm 2.179$	2.00	$-3.127 \pm 1.888$	$-3.029 \pm 1.185$
photometric centroid source offset	$7.25 \pm 1.93$	3.75	$6.85 \pm 1.95$	$2.38 \pm 1.77$



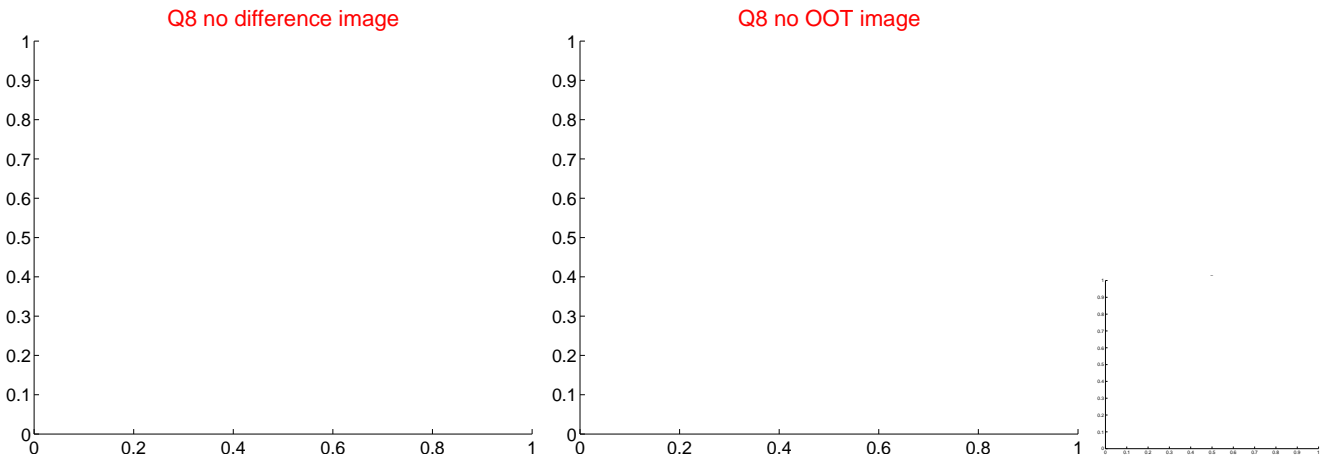
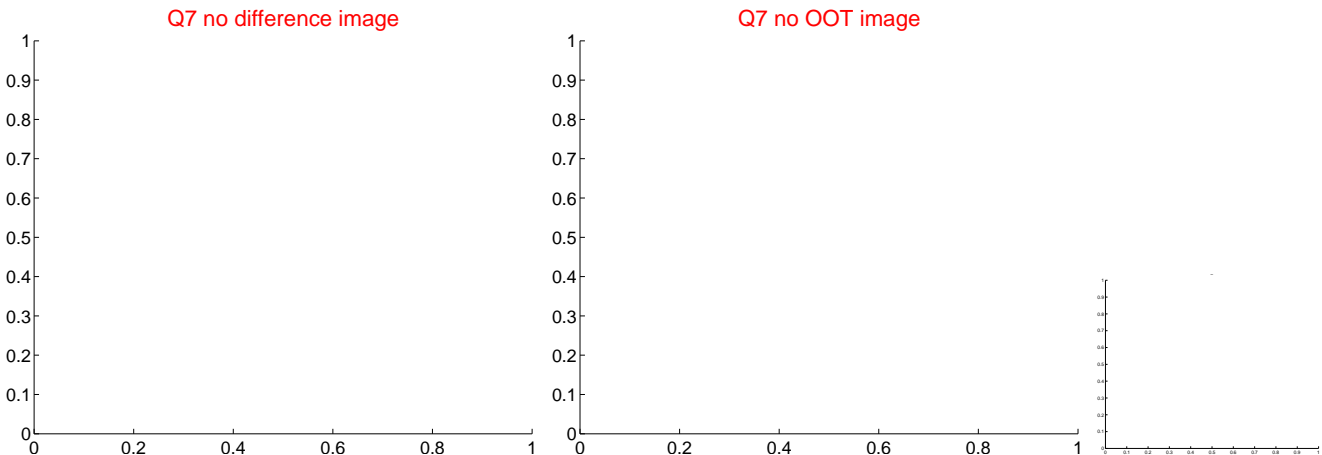
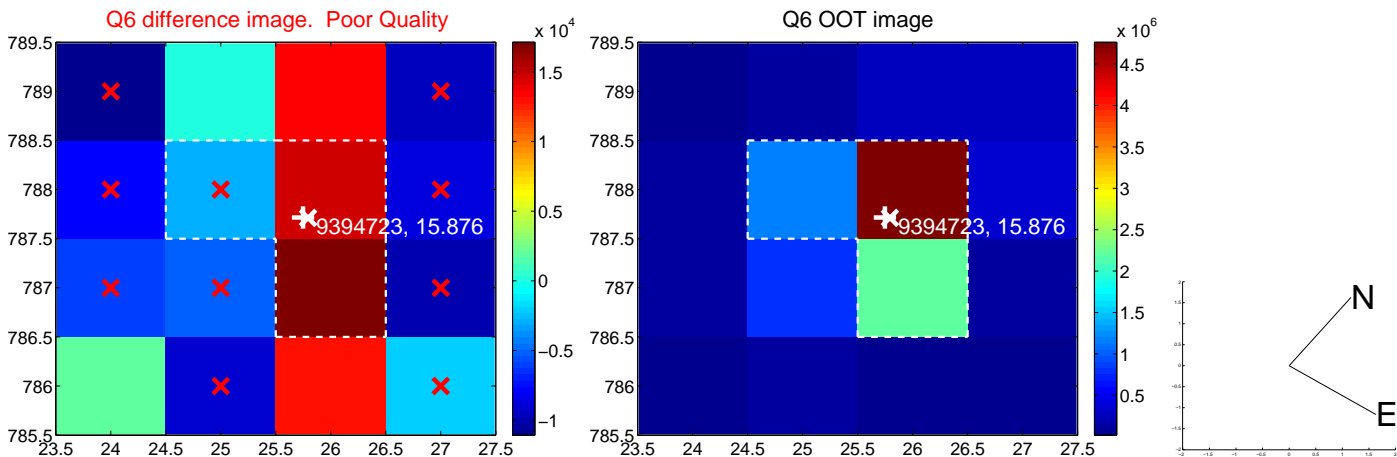
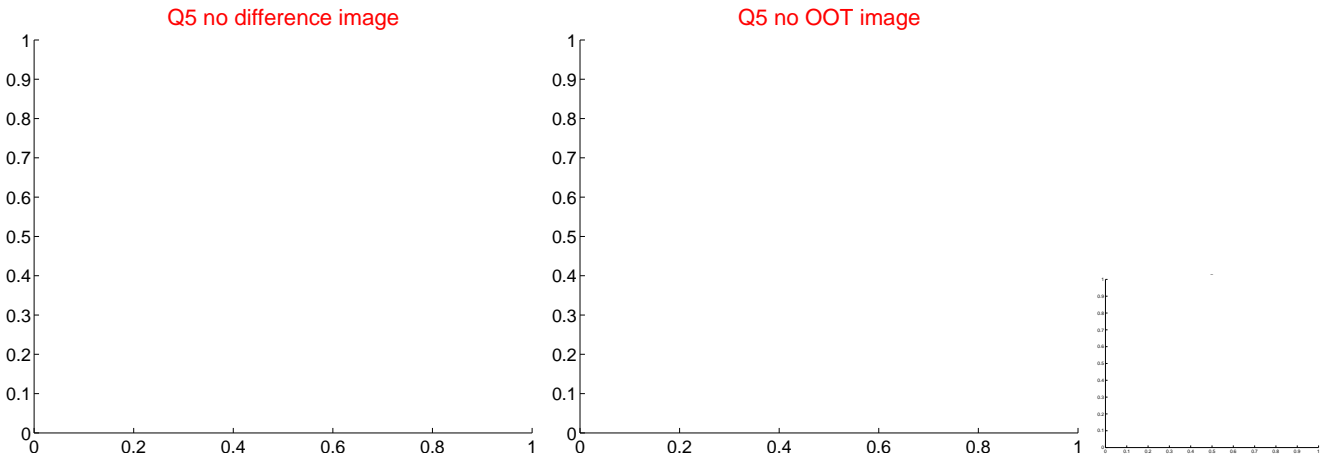
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

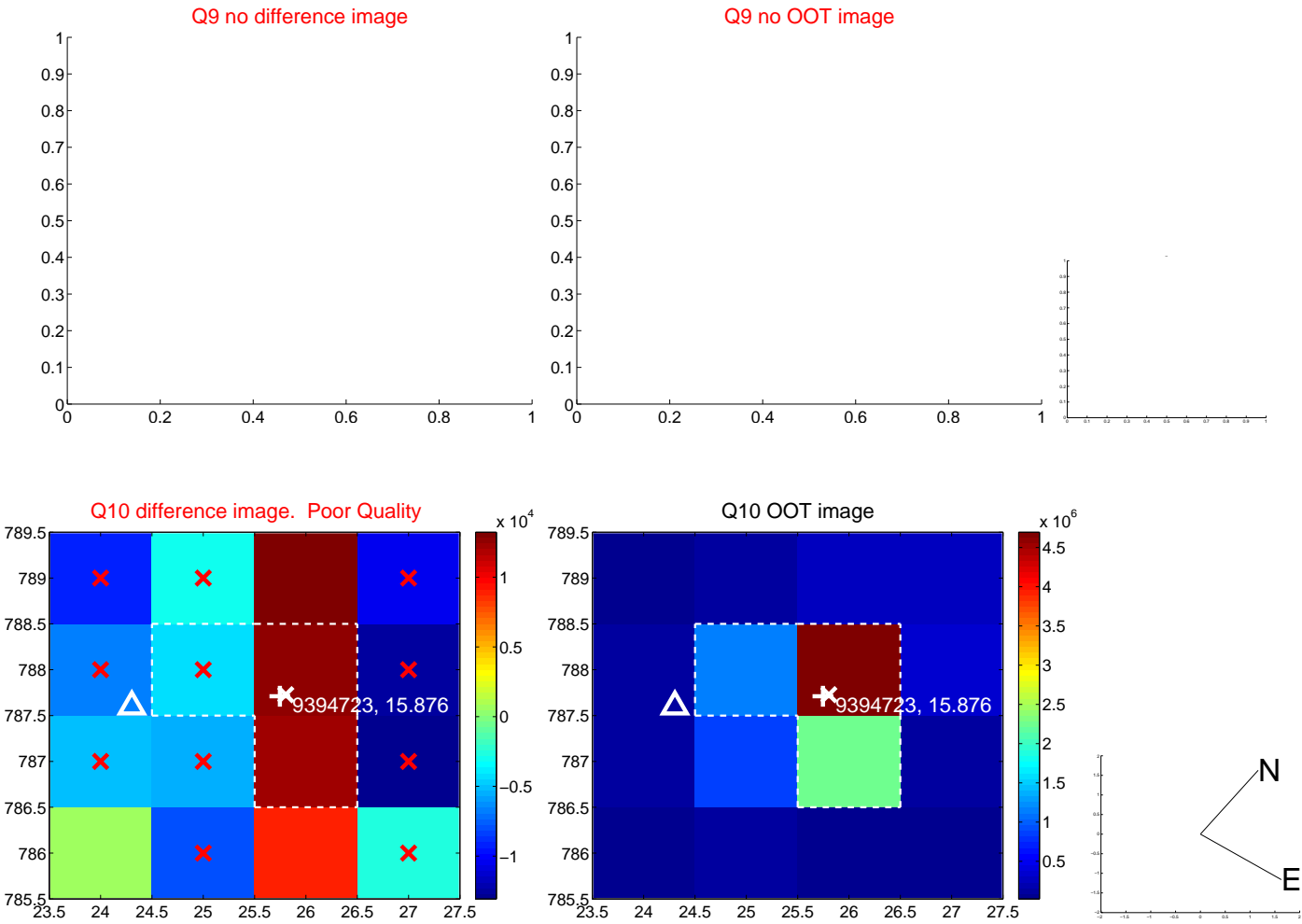




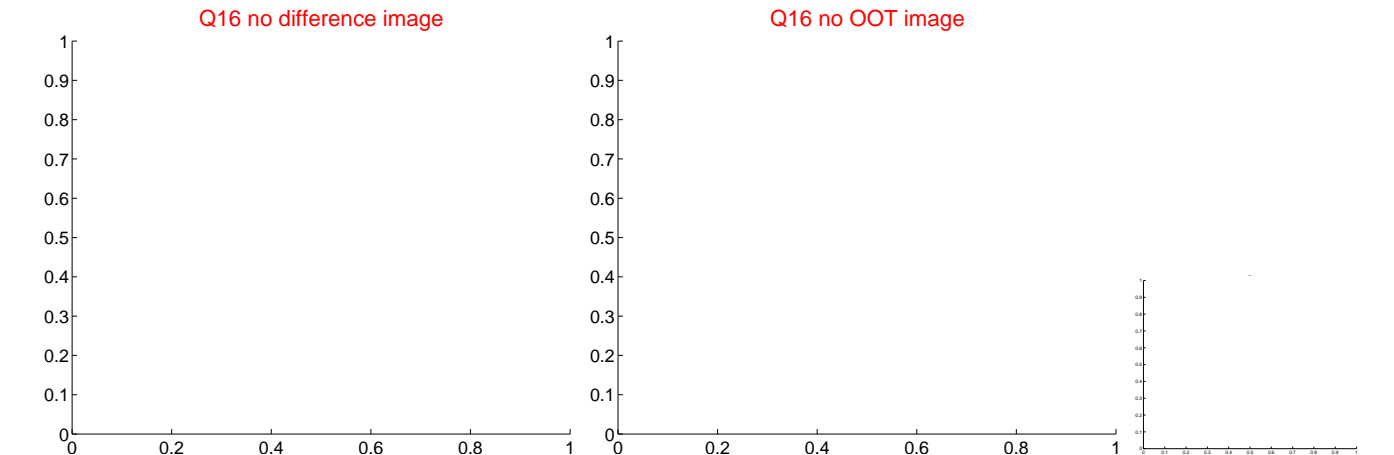
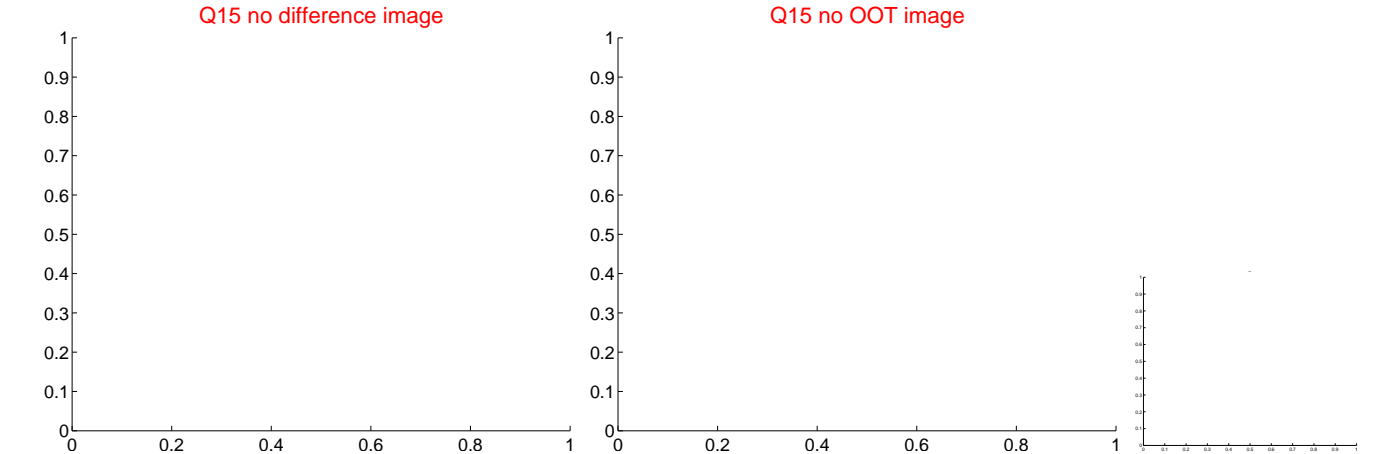
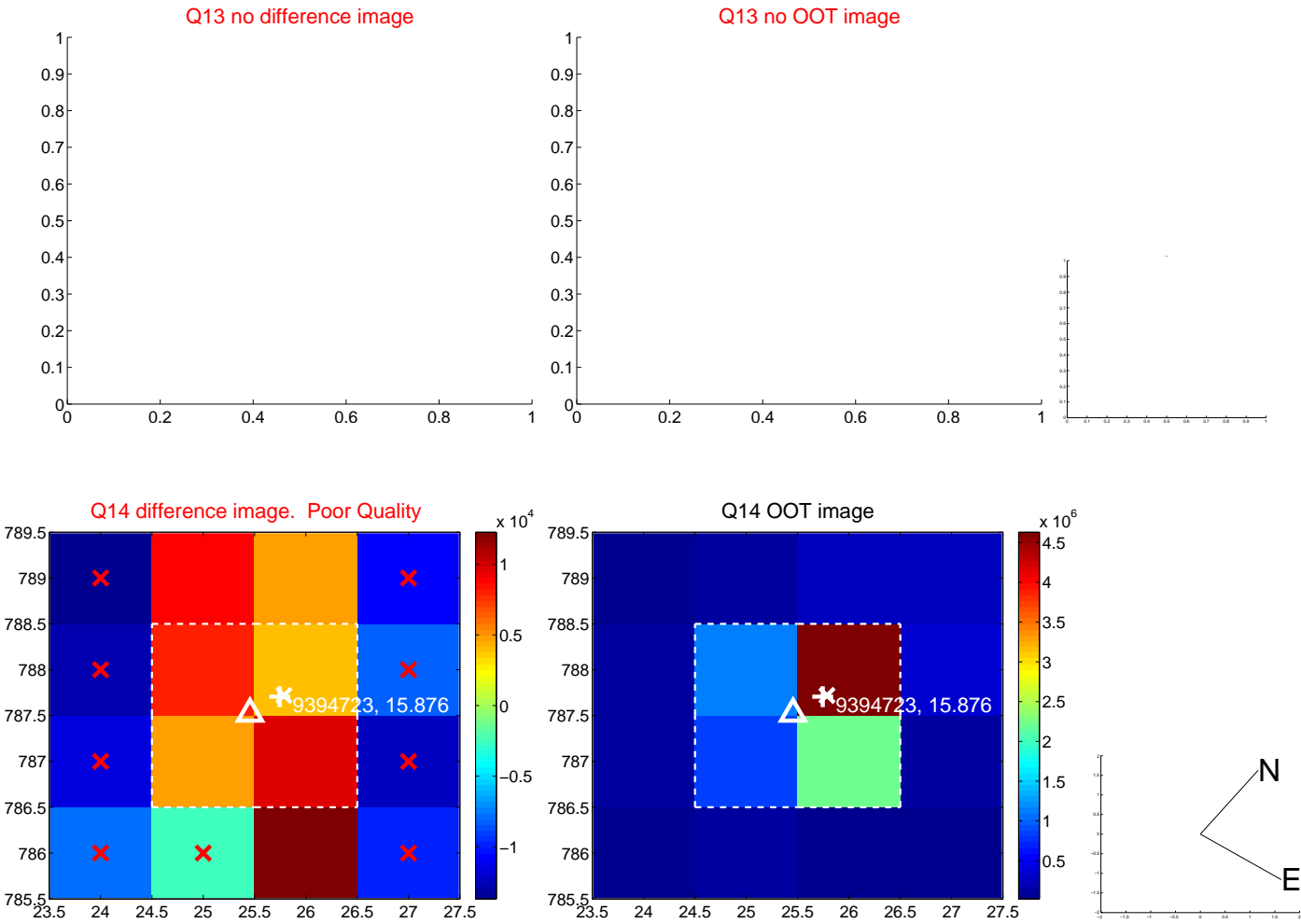
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



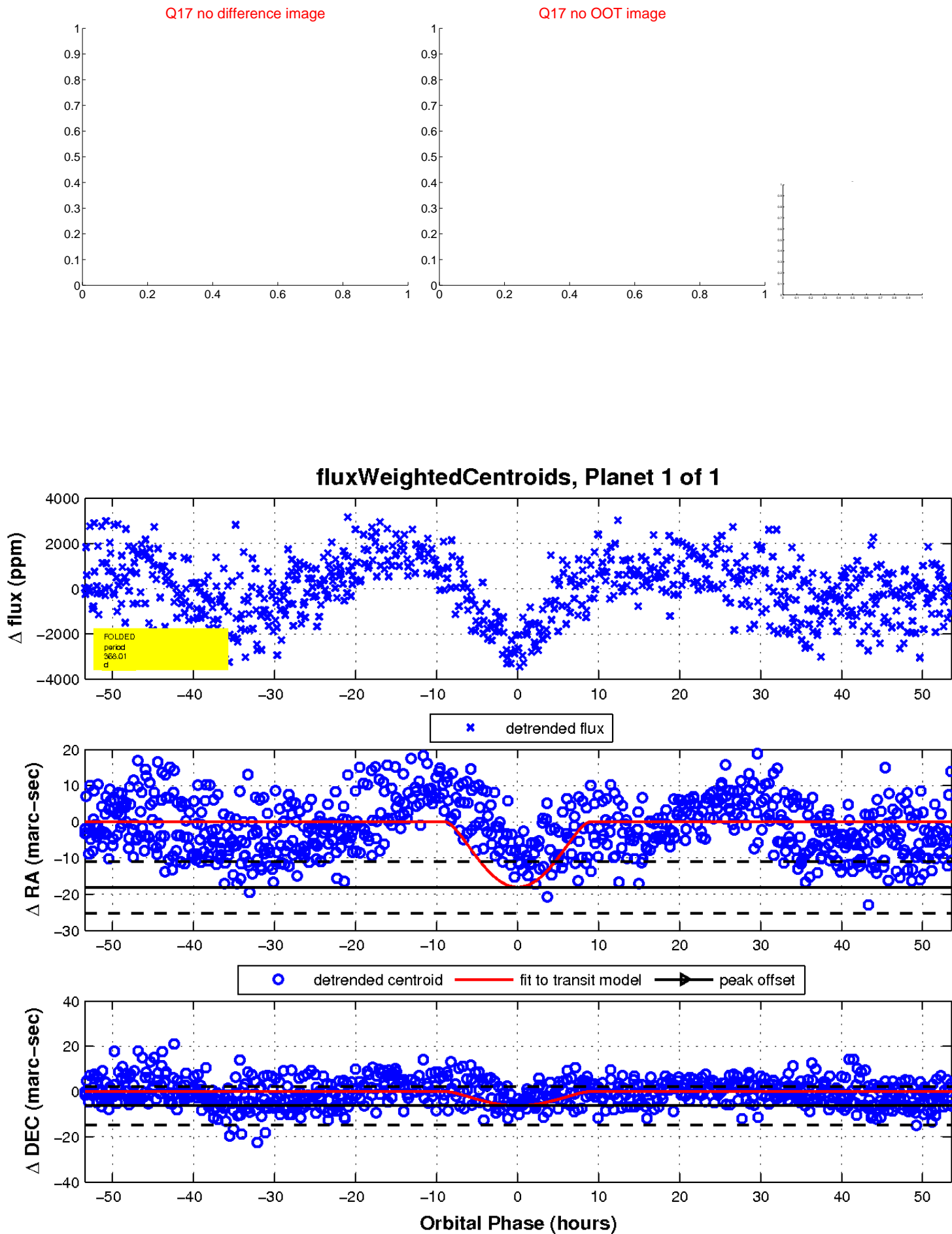
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

