

# KIC 010081993

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010081993-01	OBS	No	490.459776	186.602499	343.2	4.292	13.7	6.3	0.76	5041	1.93	0.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010081993-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_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.

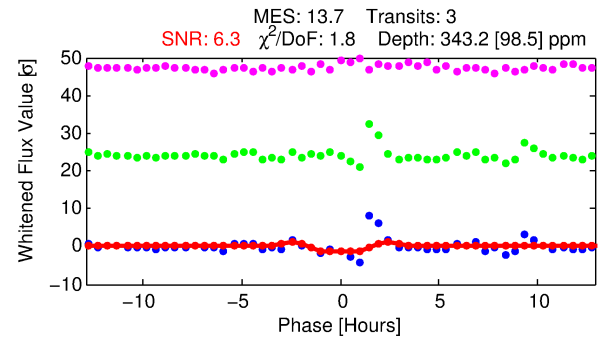
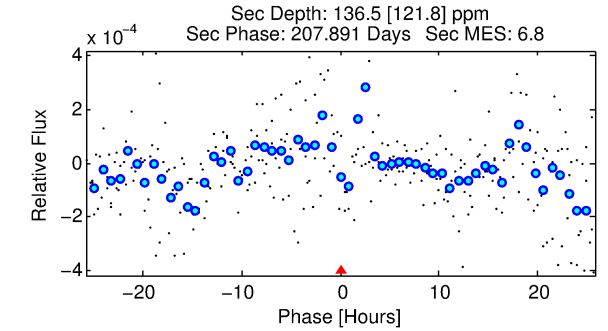
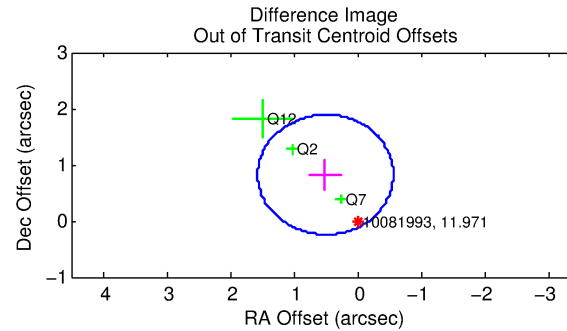
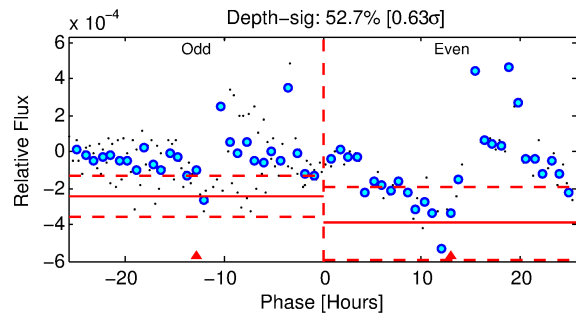
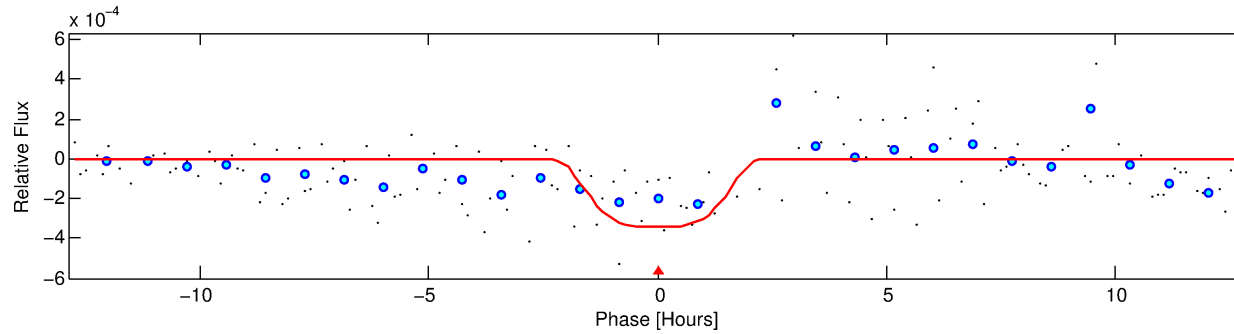
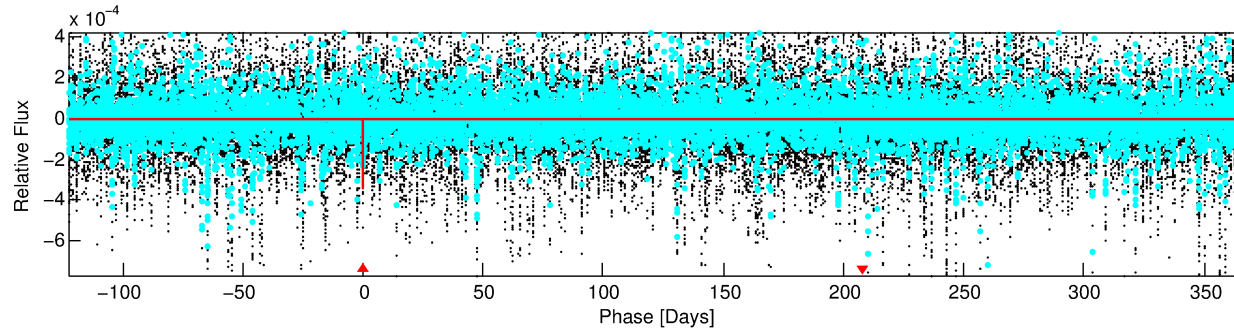
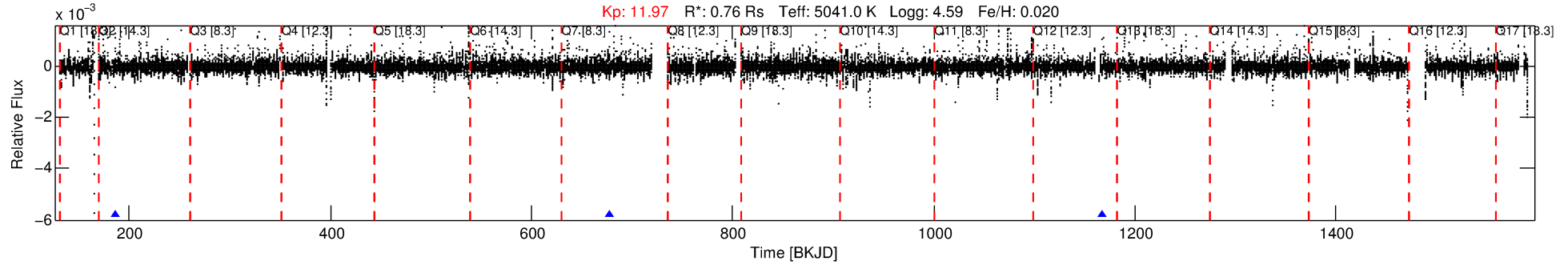
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010081993-01

No Significant Match Found

# DV One-Page Summary

KIC: 10081993 Candidate: 1 of 1 Period: 490.460 d



## DV Fit Results:

Period = 490.45978 [0.00896] d  
Epoch = 186.6025 [0.0106] BKJD  
Rp/R\* = 0.0232 [0.0042]  
a/R\* = 295.13 [99.71]  
b = 0.97 [0.02]  
Seff = 0.26 [0.03]  
Teq = 182 [5] K  
Rp = 1.93 [0.37] Re  
a = 1.1374 [0.0681] AU  
Ag = 26205.65 [25348.10] [1.03 $\sigma$ ]  
Teffp = 3574 [862] K [3.93 $\sigma$ ]

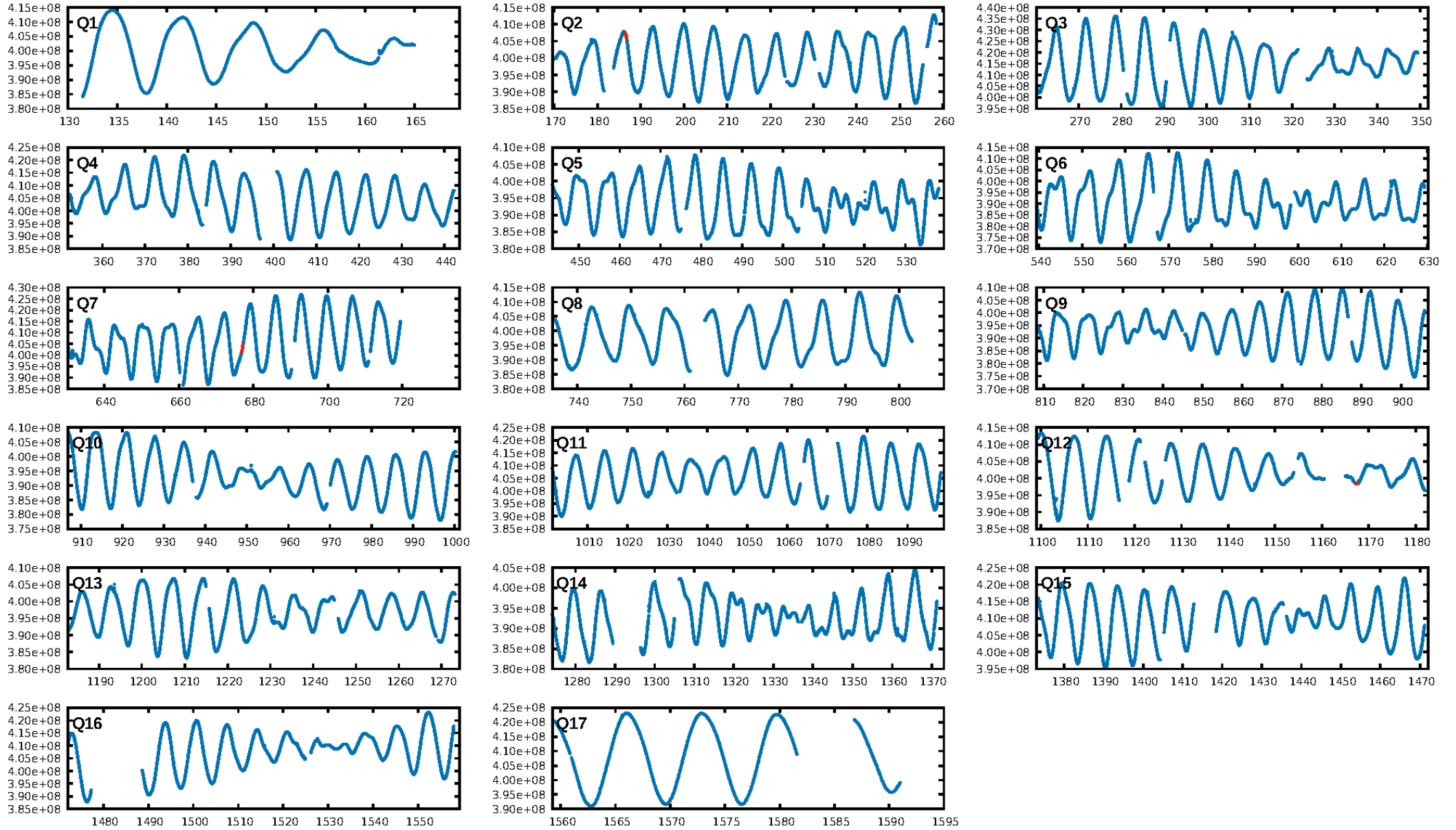
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 30.1%  
Bootstrap-pfa: 2.94e-10  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.8234  
Centroid-sig: 1.6%  
Centroid-so: 1.315 arcsec [1.86 $\sigma$ ]  
OotOffset-rm: 0.963 arcsec [2.71 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-rm: 1.297 arcsec [2.41 $\sigma$ ]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

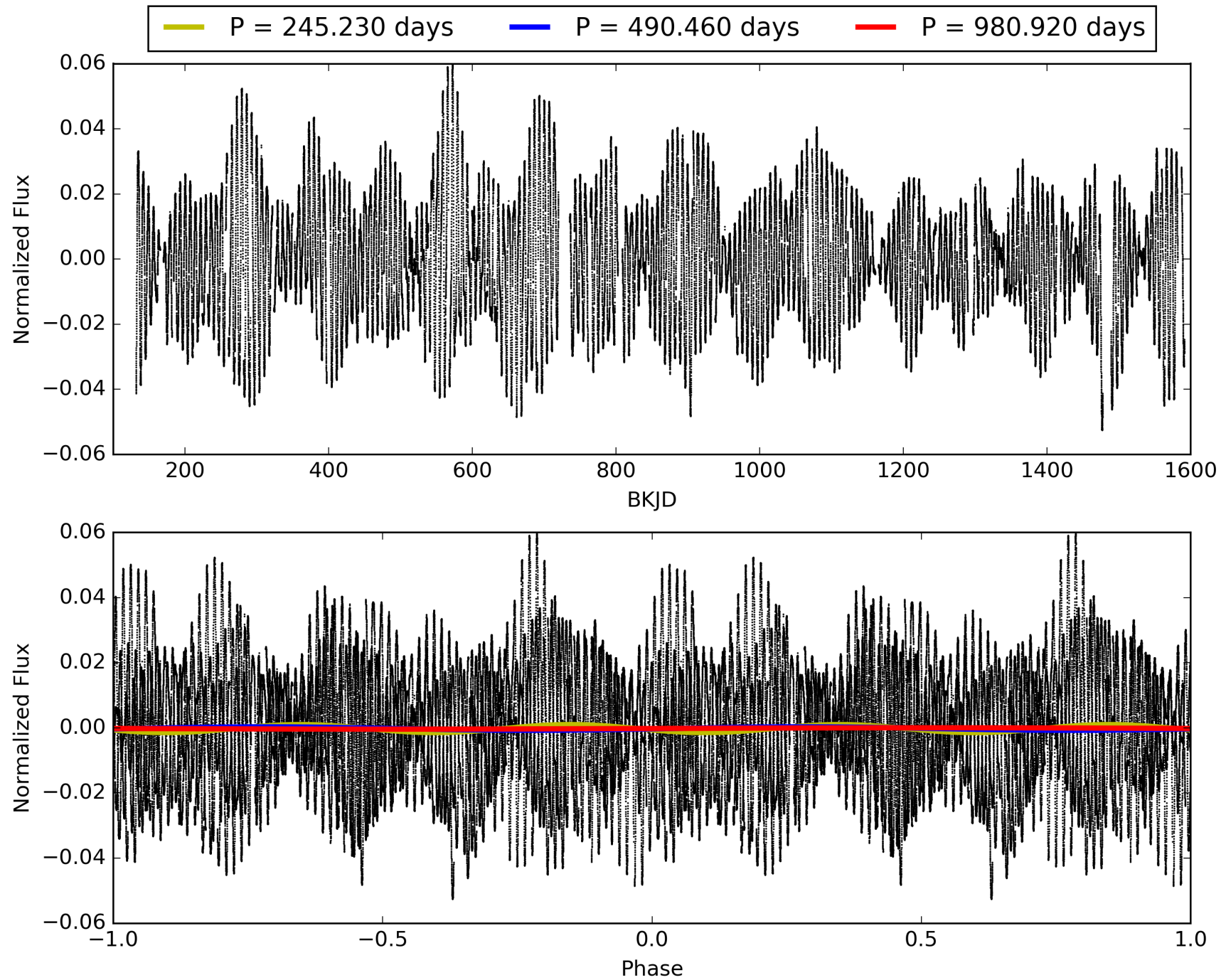
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:18:38 Z

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

# TCE 010081993-01, PDC Light Curves

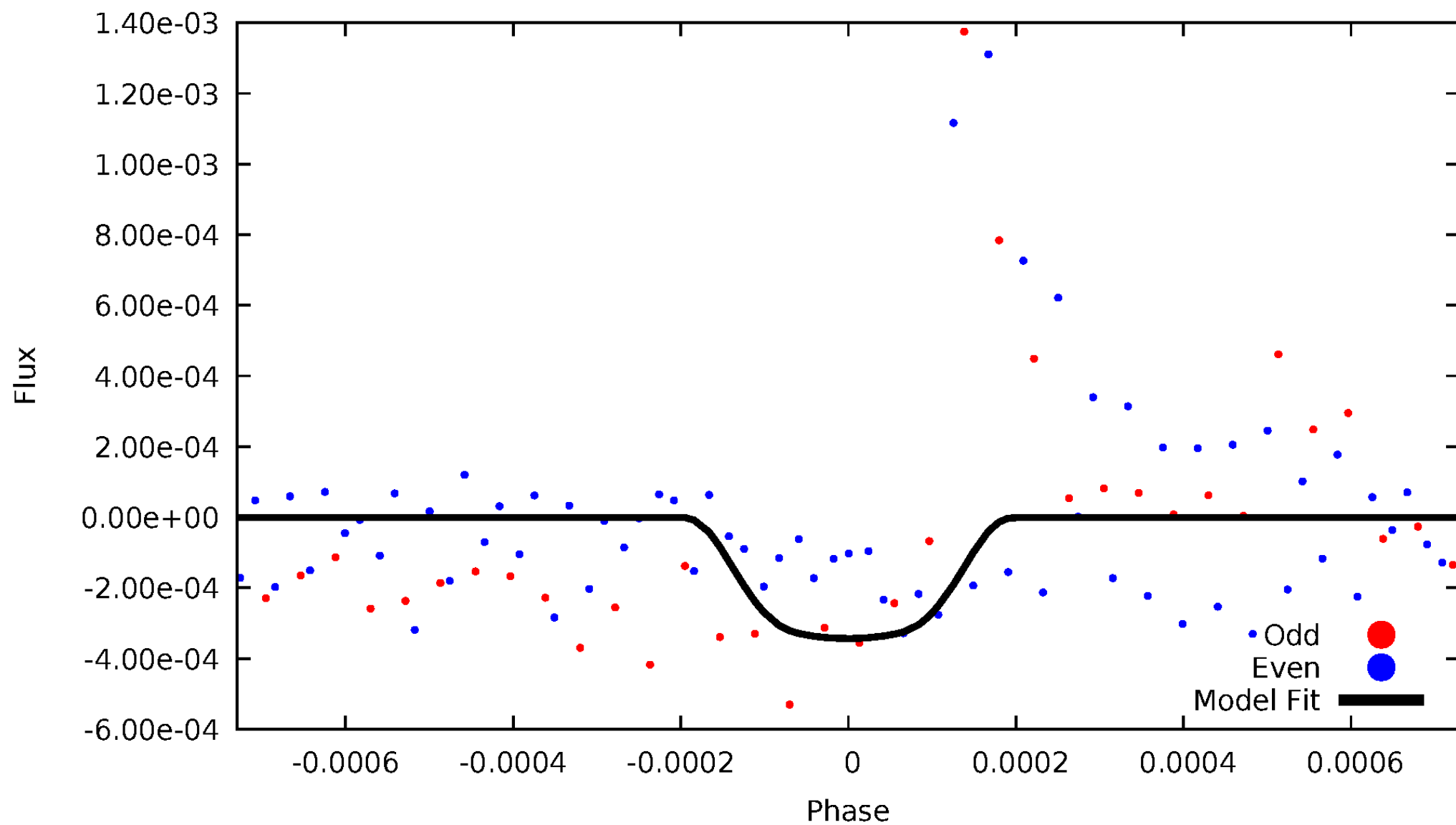


# TCE 010081993-01



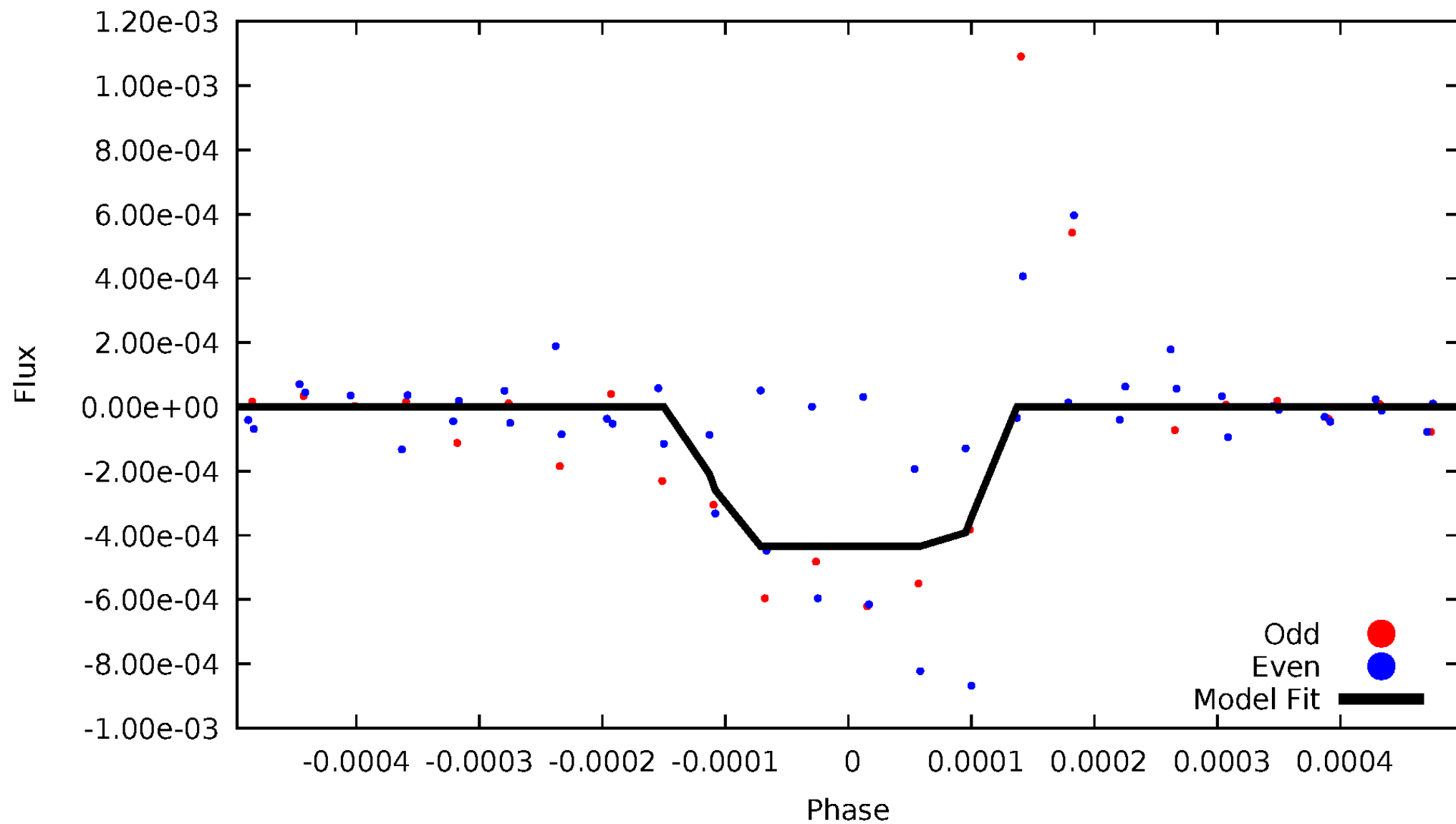
# DV Odd/Even

TCE 010081993-01



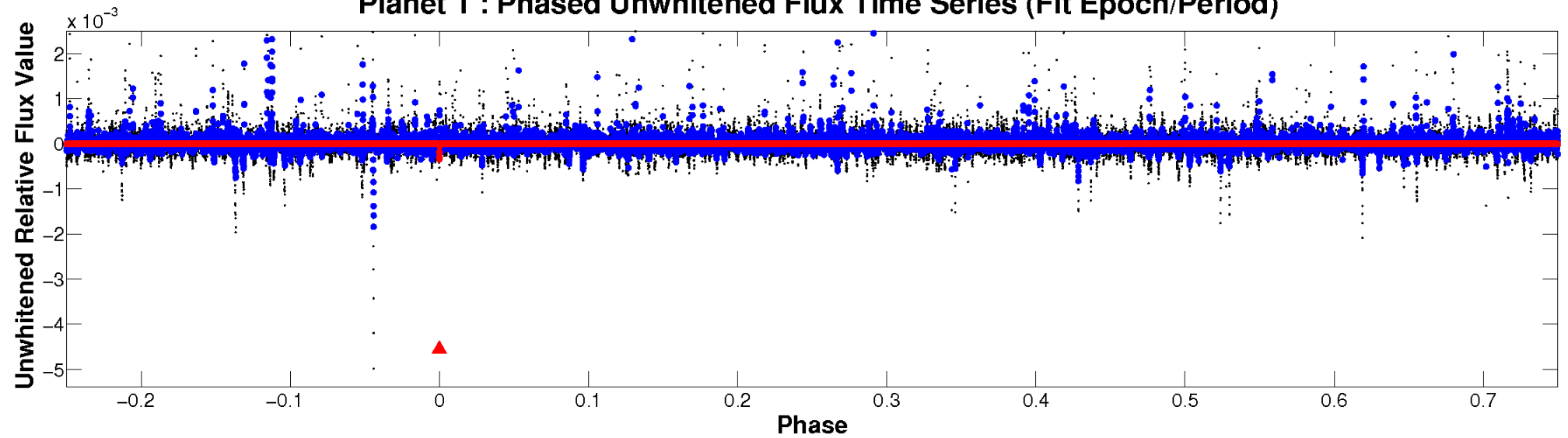
# ALT Odd/Even

TCE 010081993-01

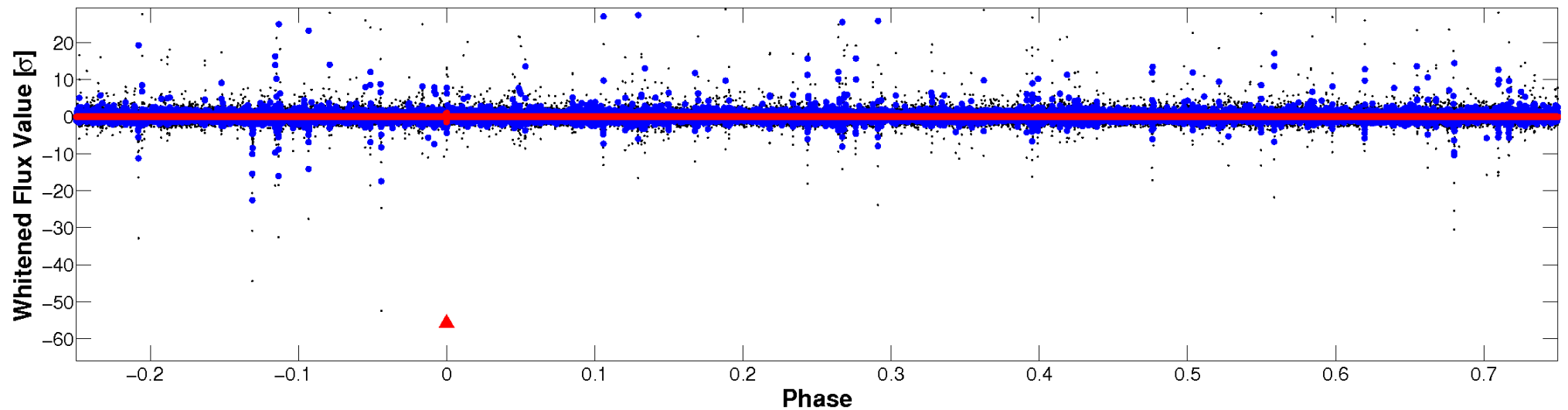


# Non-Whitened Vs. Whitened Light Curve

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

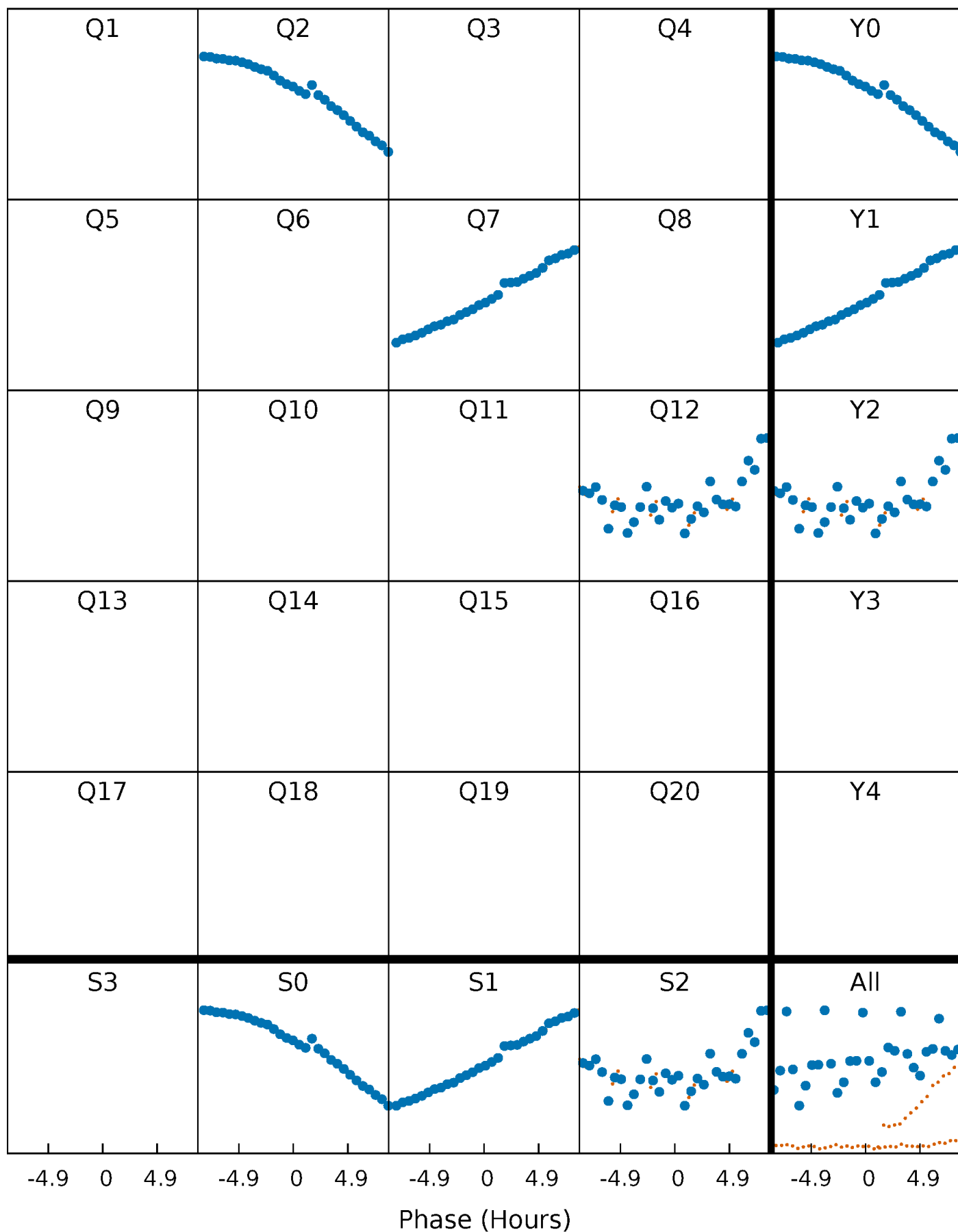


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

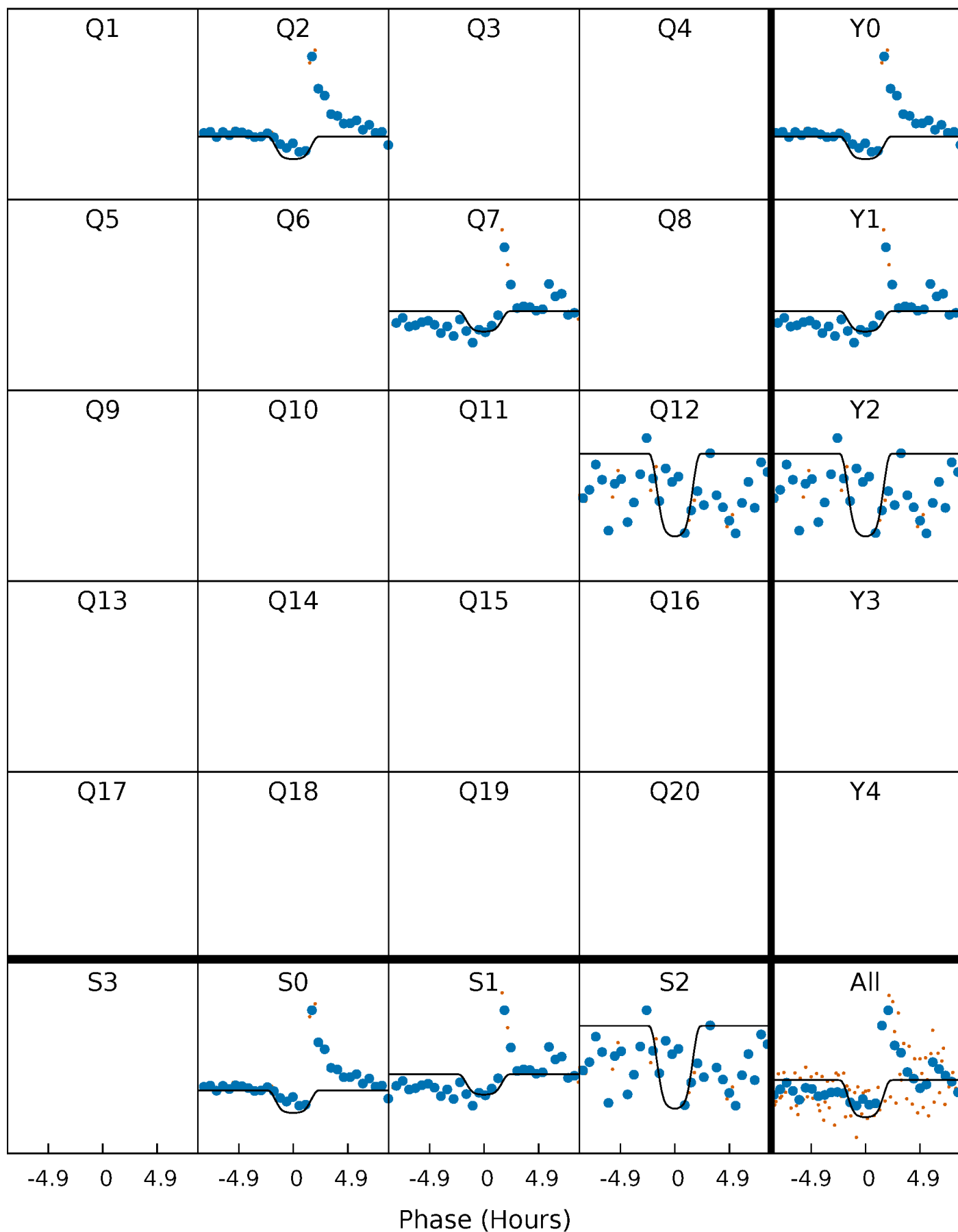
TCE 010081993-01 P=490.459776 Days  $T_0=186.602499$  (BKJD)





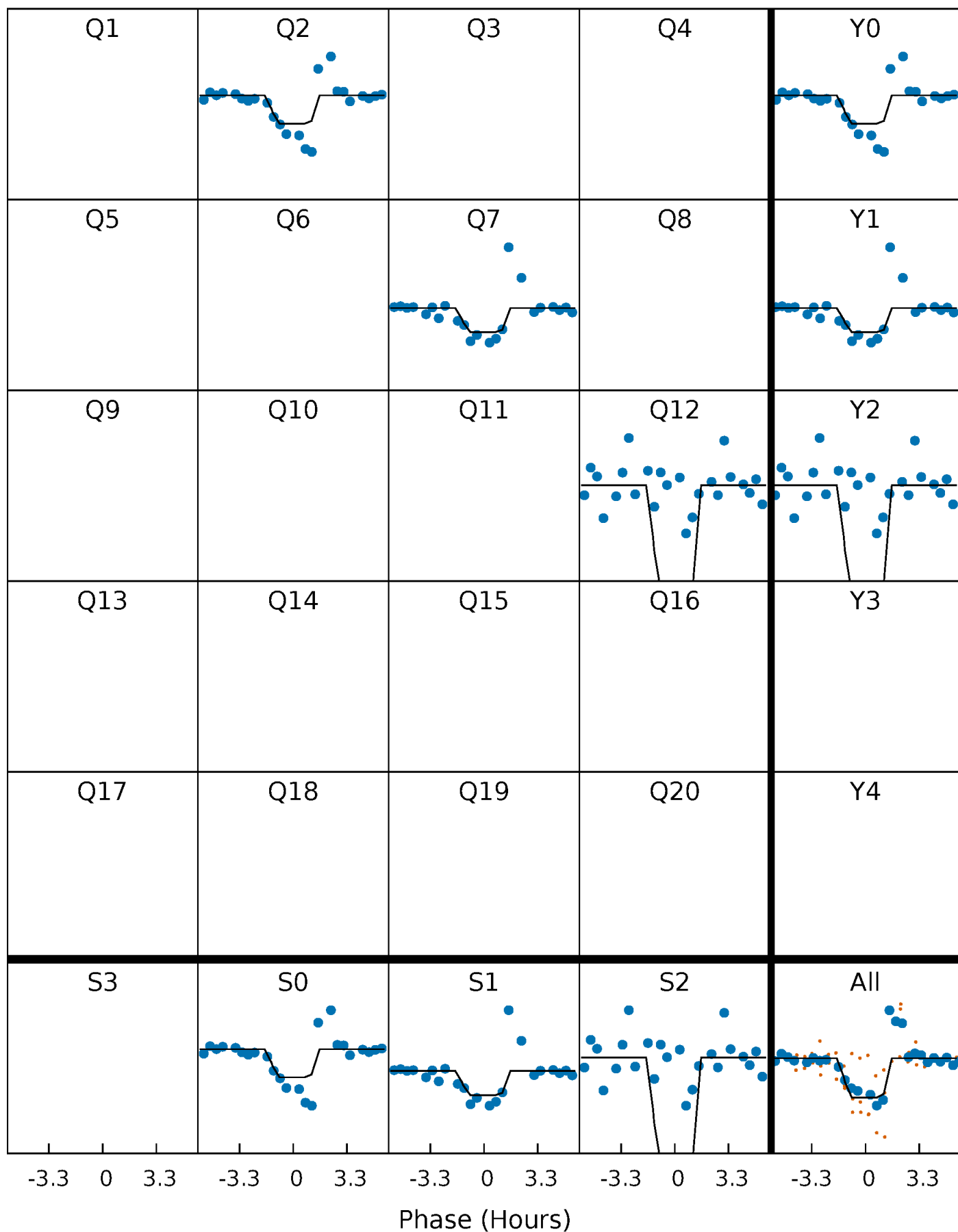
# DV Quarter-Phased Transit Curves

TCE 010081993-01 P=490.459776 Days  $T_0=186.602499$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

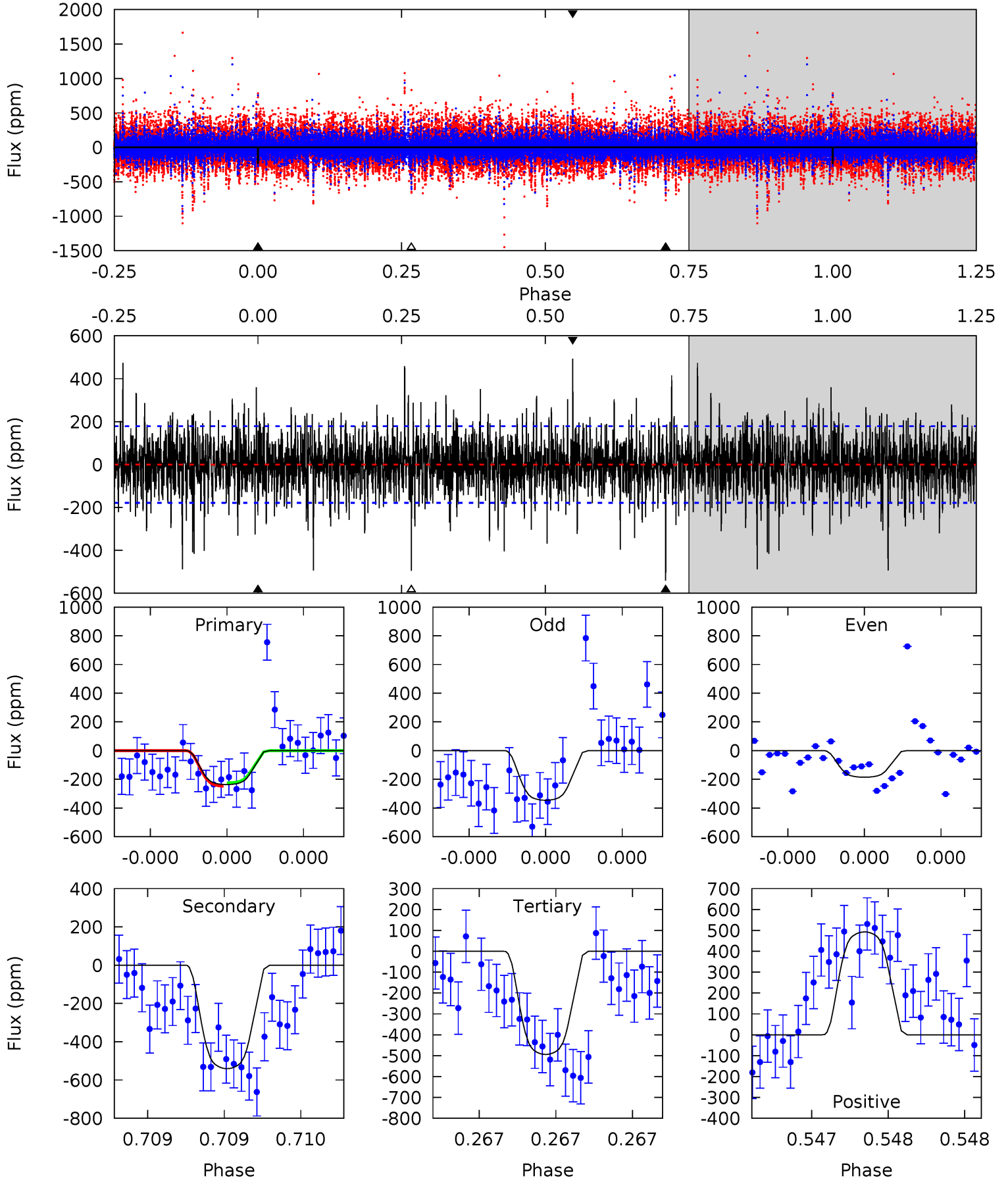
TCE 010081993-01 P=490.466741 Days  $T_0=186.594465$  (BKJD)



# DV Model-Shift Uniqueness Test

010081993-01, P = 490.459776 Days, E = 186.602499 Days

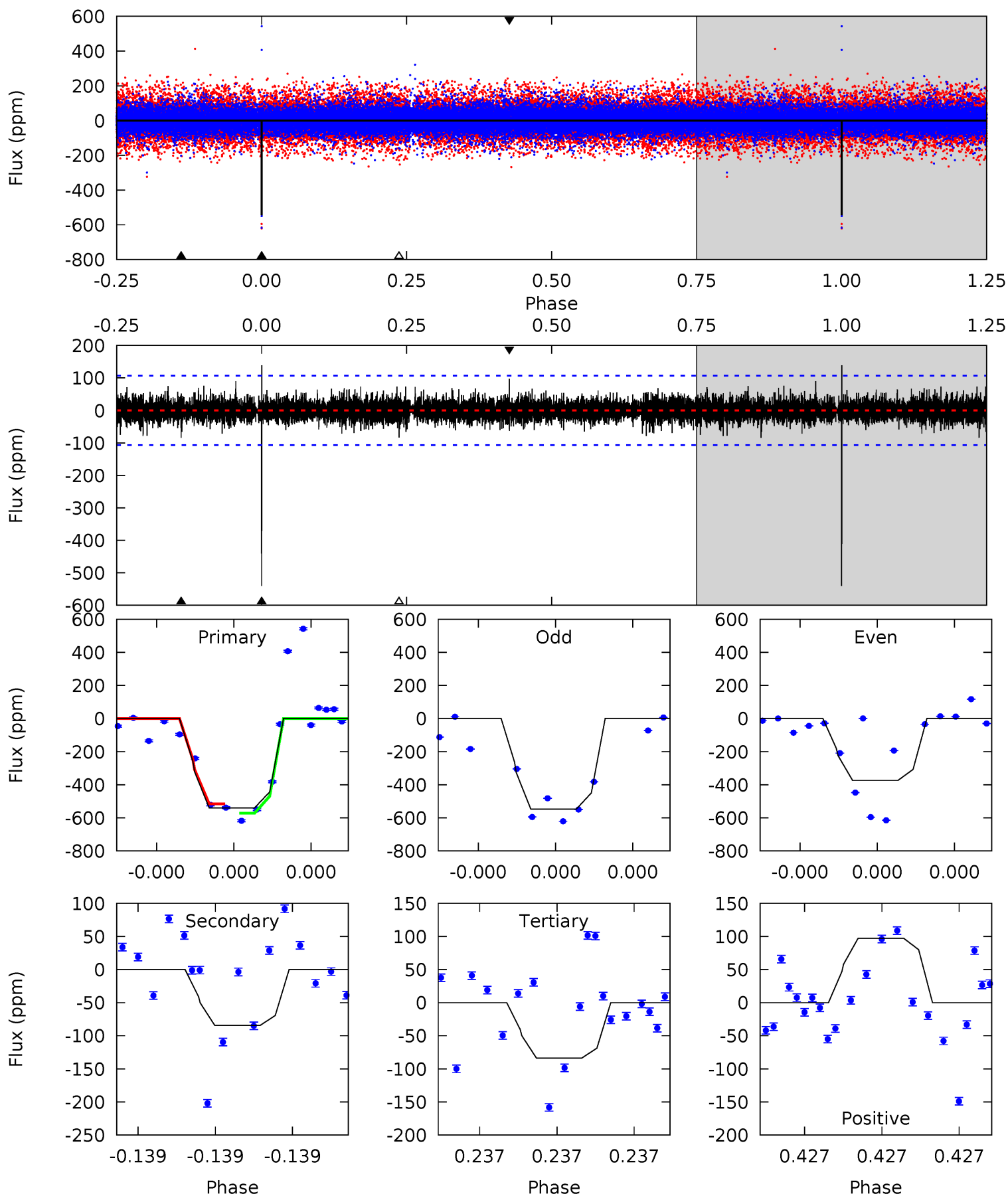
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.46	17.0	15.6	15.5	5.62	3.56	2.73	-8.10	-8.05	1.46	1.51	1.98	0.74	0.48	0.38



# Alt Model-Shift Uniqueness Test

010081993-01, P = 490.466741 Days, E = 186.594465 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
29.0	4.53	4.49	5.22	5.72	3.70	0.89	24.5	23.7	0.04	-0.69	4.98	0.78	0.20	1.46



### Stellar Parameters For KIC 010081993

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5041^{+80}_{-80}$	$4.589^{+0.018}_{-0.053}$	$0.020^{+0.150}_{-0.150}$	$0.759^{+0.050}_{-0.031}$	$0.815^{+0.036}_{-0.048}$	$2.628^{+0.266}_{-0.431}$
	+2%/-2%	+0%/-1%	+750%/-750%	+7%/-4%	+4%/-6%	+10%/-16%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010081993-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-541 \pm 32$	$1.95^{+0.36}_{-0.34}$	$255^{+6}_{-5}$	$5046^{+452}_{-369}$	$100247^{+46641}_{-29024}$
Alt.	$-84 \pm 19$	$1.75^{+0.35}_{-0.38}$	$256^{+5}_{-5}$	$3702^{+312}_{-249}$	$19496^{+12173}_{-6937}$

$T_{max}$  = 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

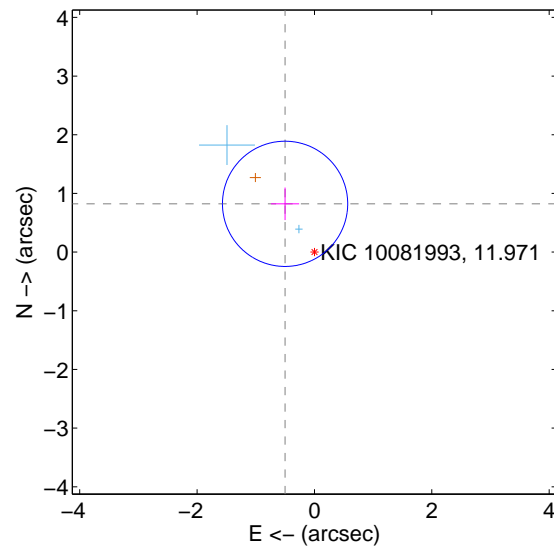
Supplemental centroid analysis for 010081993-01. **Kepler magnitude: 11.97.** Transit SNR 6.31

**There are 2 quarters with good PRF difference image offsets**

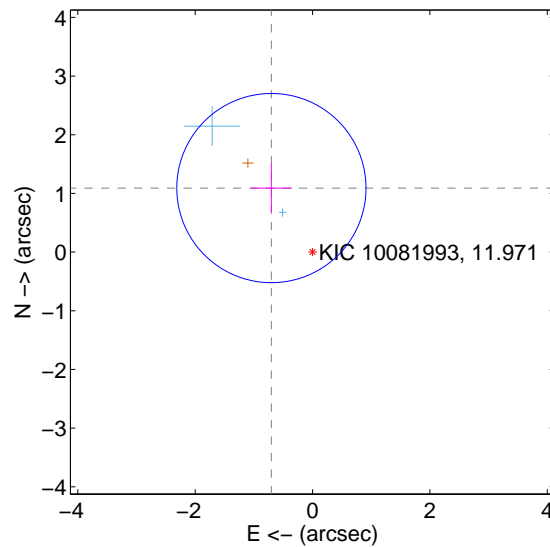
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.963 \pm 0.356$	2.71	$0.500 \pm 0.240$	$0.823 \pm 0.277$
PRF-fit source offset from KIC position	$1.297 \pm 0.537$	2.41	$0.701 \pm 0.351$	$1.091 \pm 0.418$
photometric centroid source offset	$1.32 \pm 0.71$	1.86	$0.23 \pm 0.76$	$1.30 \pm 0.71$

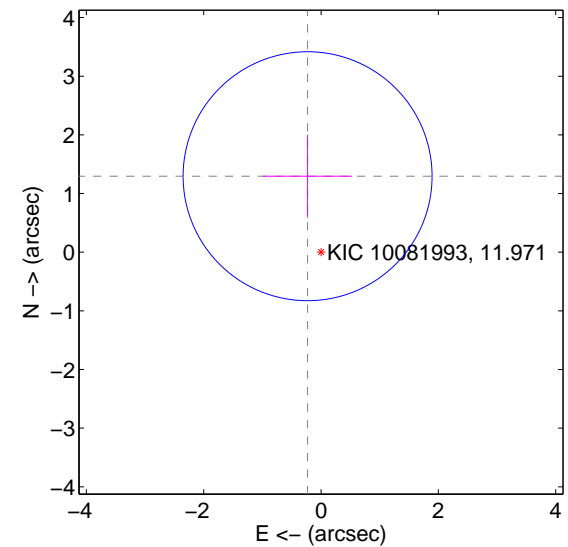
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

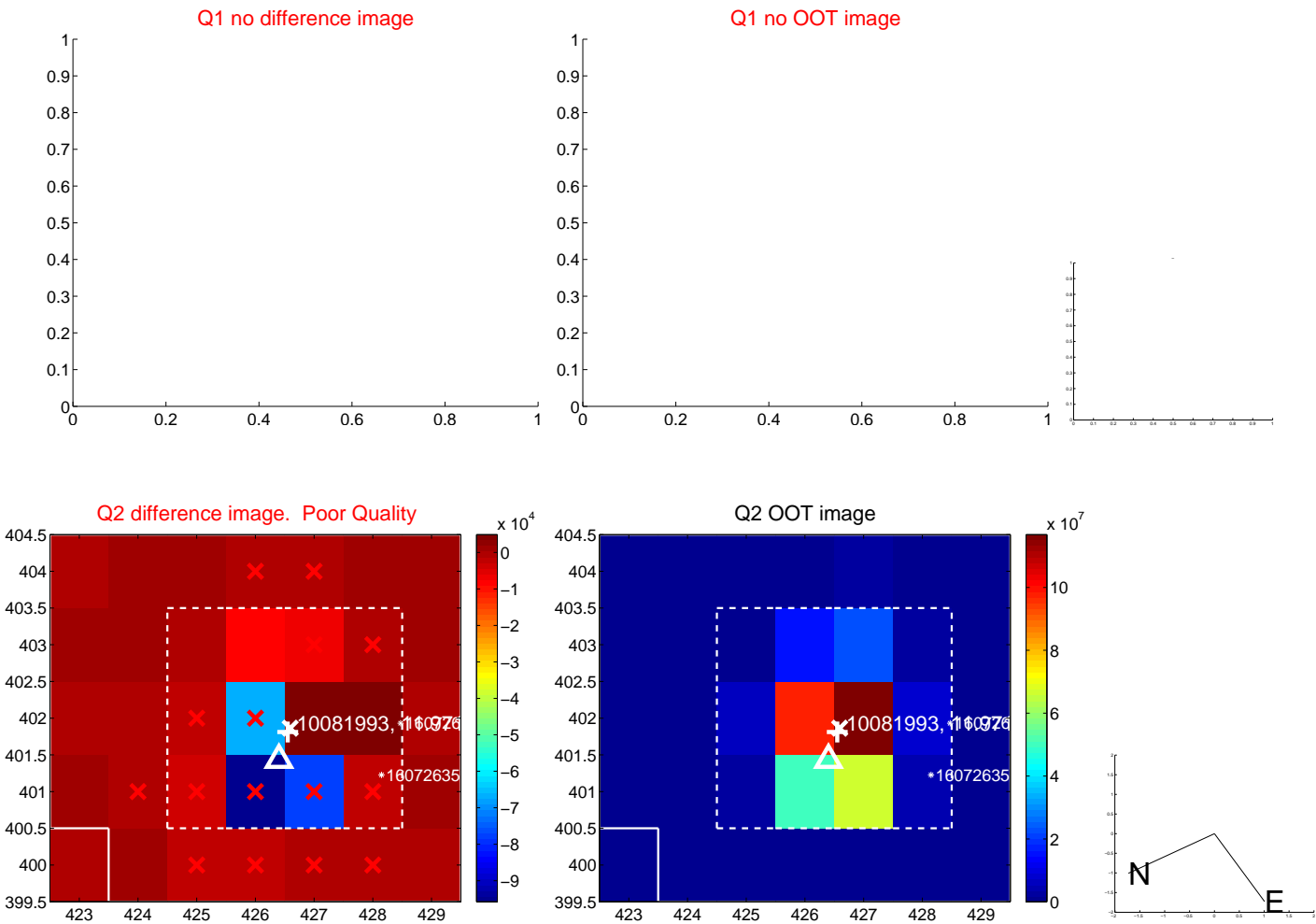


offset from photometric centroids

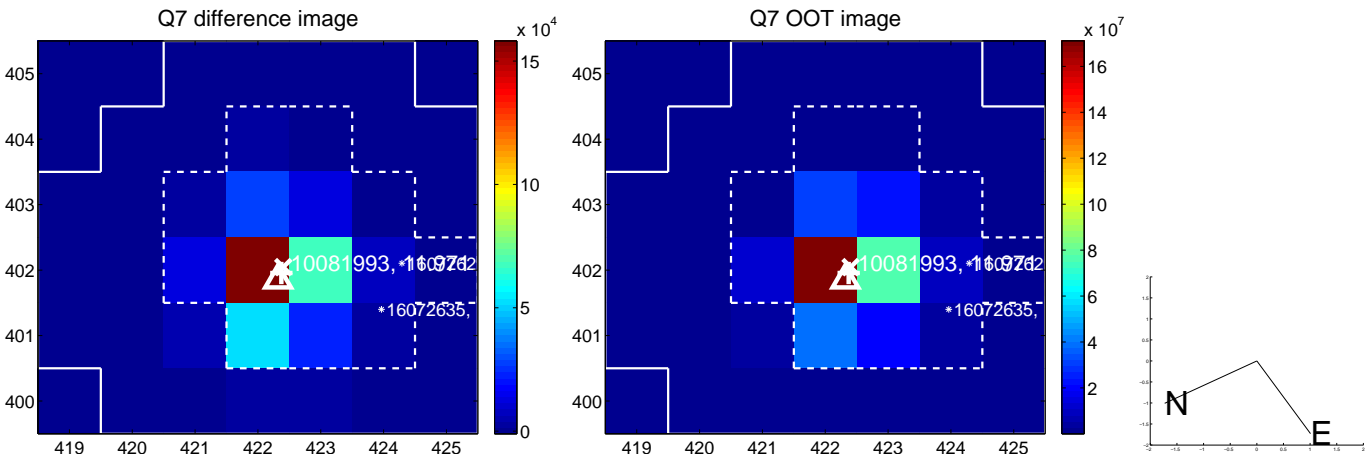


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

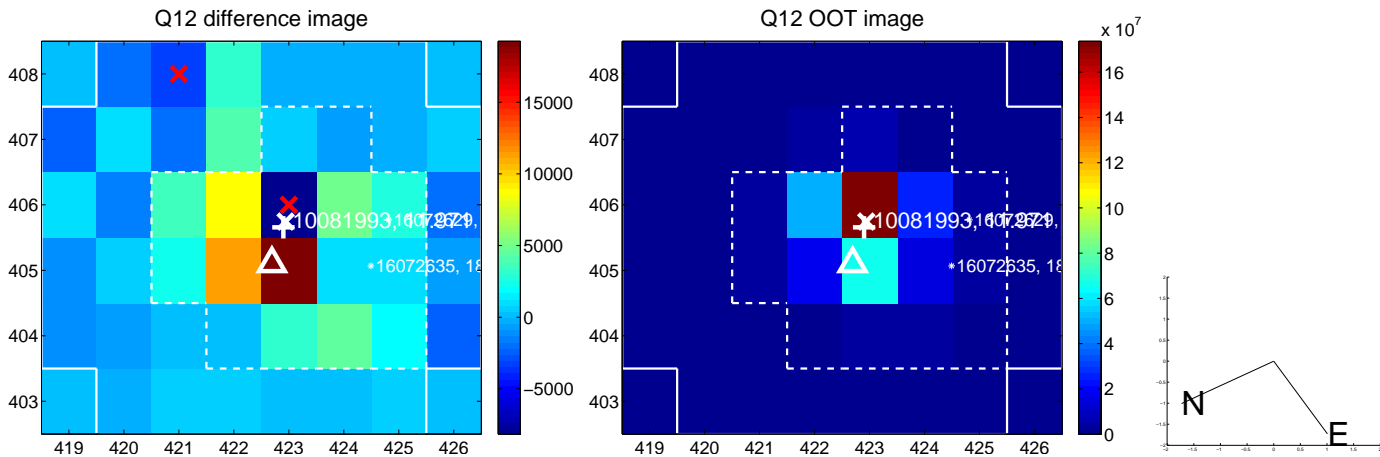
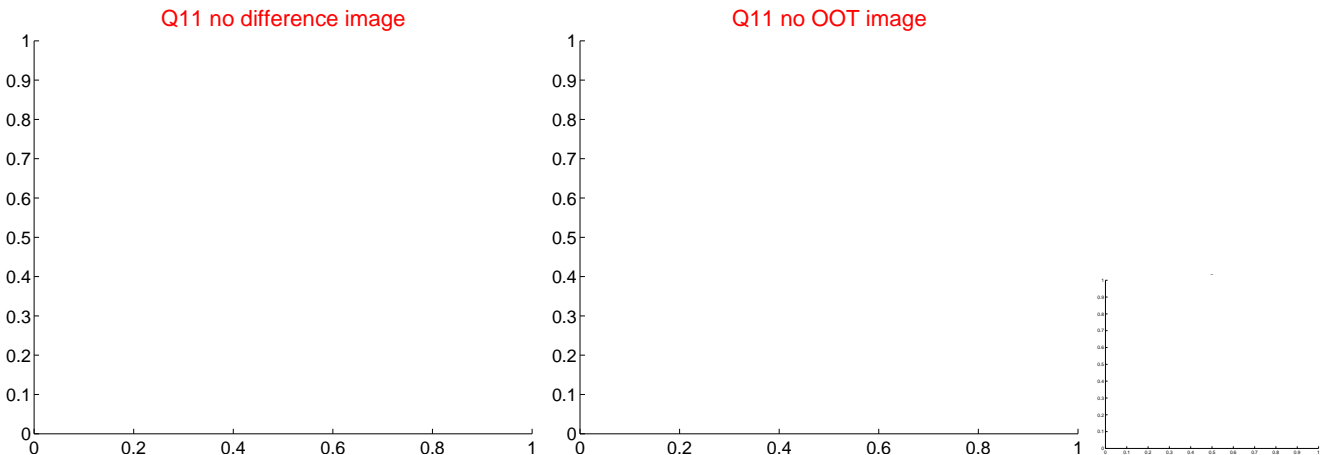
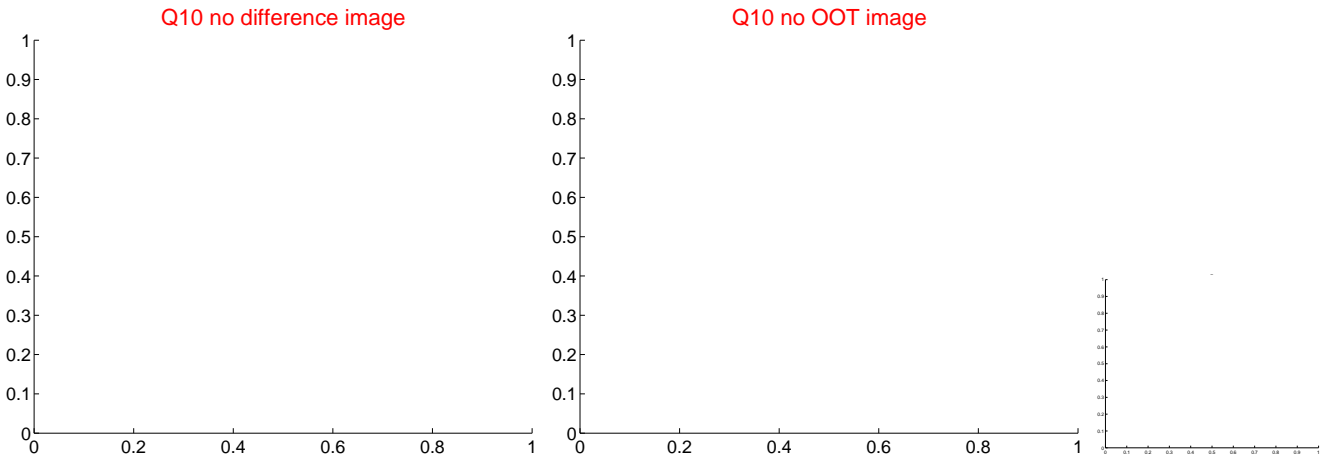
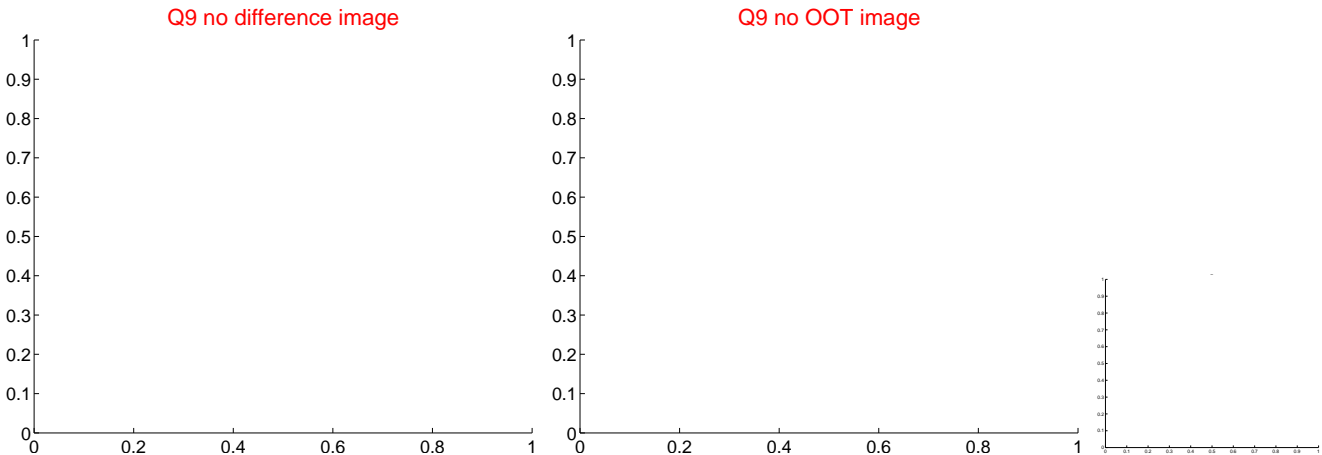


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





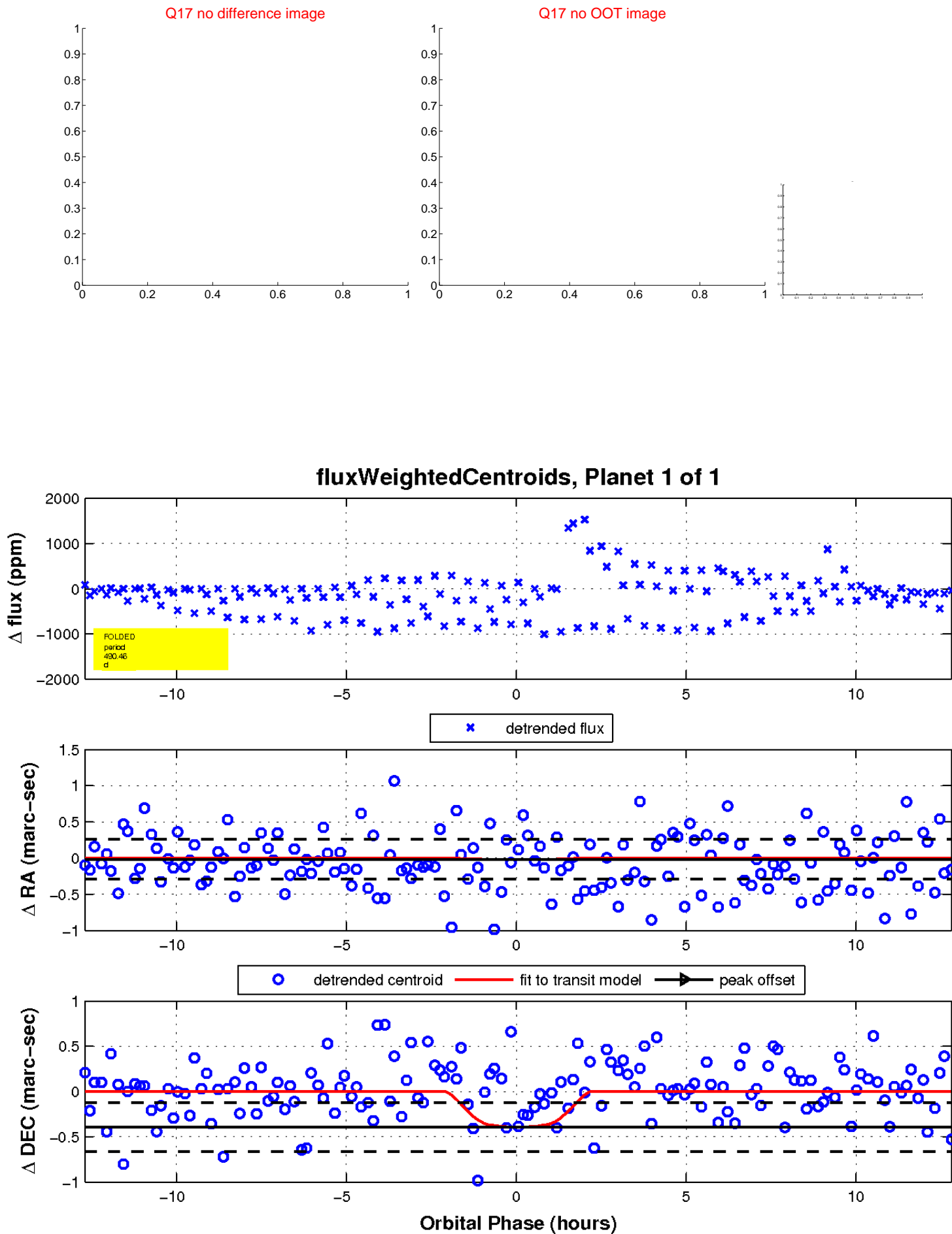
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

