

# KIC 009959126

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009959126-01	OBS	No	486.860770	603.940378	1210.5	5.452	14.3	8.0	0.88	5883	3.21	0.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009959126-01	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—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.

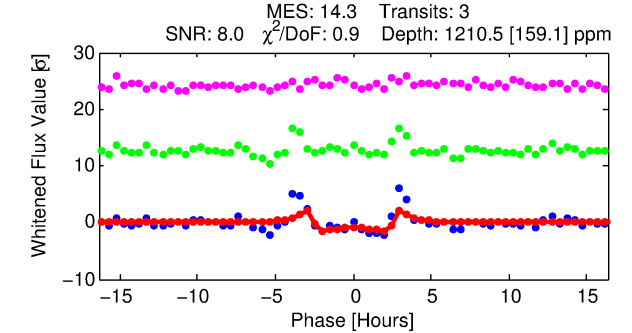
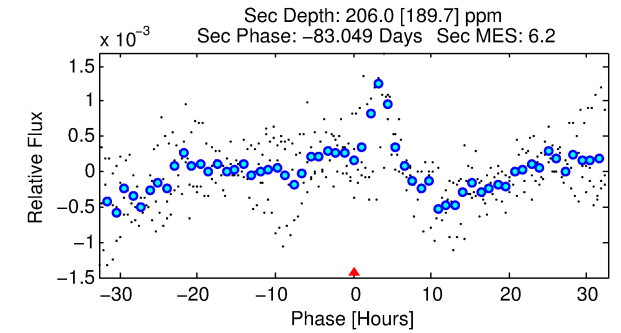
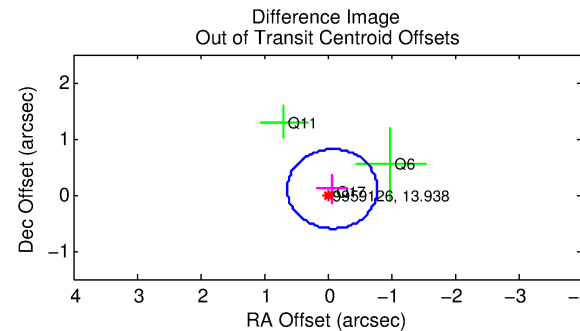
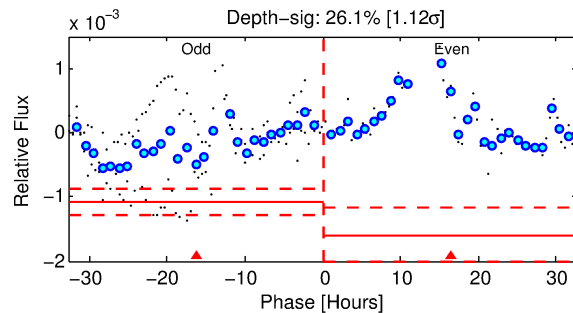
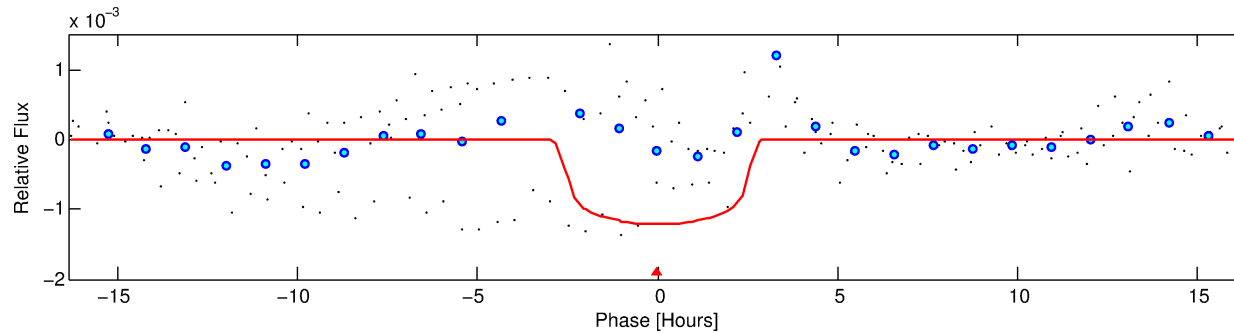
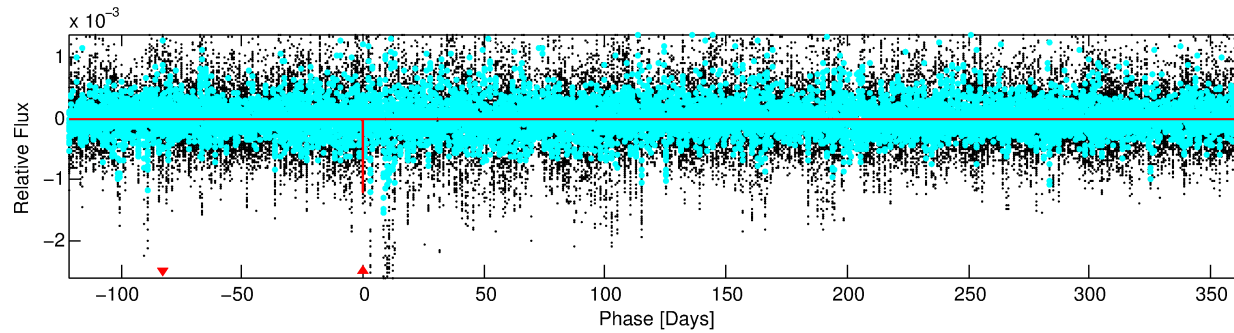
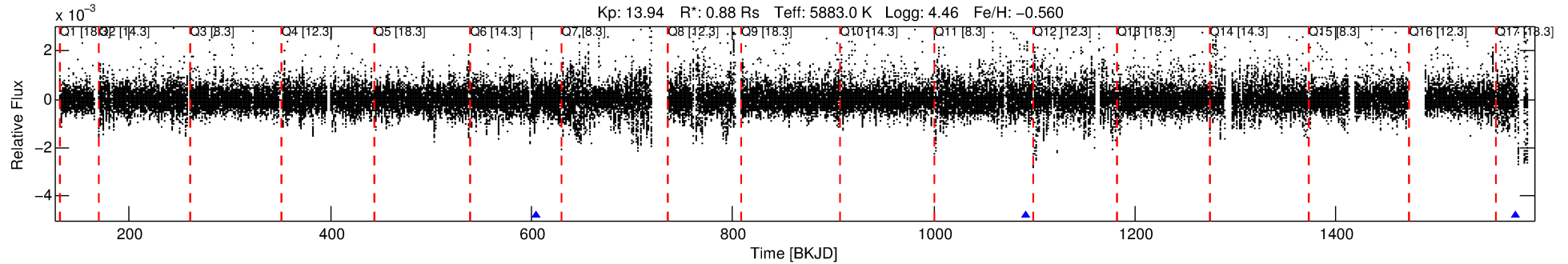
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009959126-01

No Significant Match Found

# DV One-Page Summary

KIC: 9959126 Candidate: 1 of 1 Period: 486.861 d



## DV Fit Results:

Period = 486.86077 [0.00338] d  
Epoch = 603.9404 [0.0047] BKJD  
Rp/R\* = 0.0335 [0.0078]  
a/R\* = 558.65 [570.45]  
b = 0.63 [0.98]  
Seff = 0.64 [0.21]  
Teq = 228 [18] K  
Rp = 3.21 [1.07] Re  
a = 1.1332 [0.2325] AU  
Ag = 14141.93 [15222.53] [0.93 $\sigma$ ]  
Teffp = 3850 [999] K [3.62 $\sigma$ ]

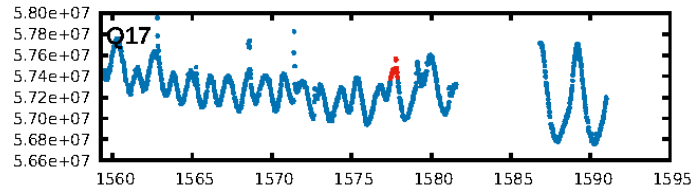
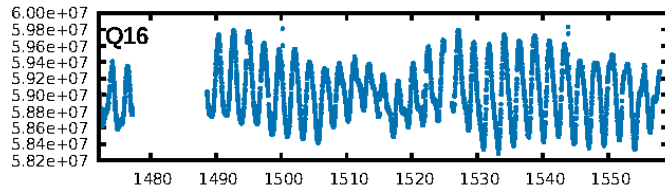
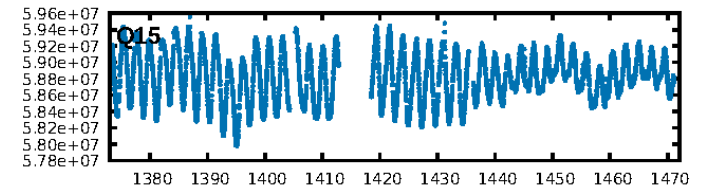
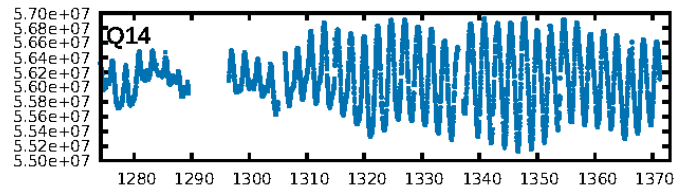
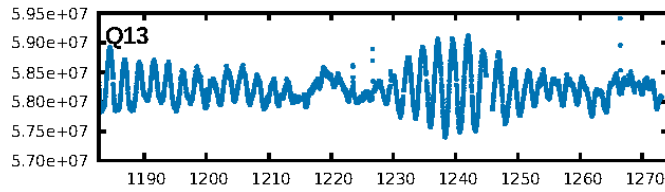
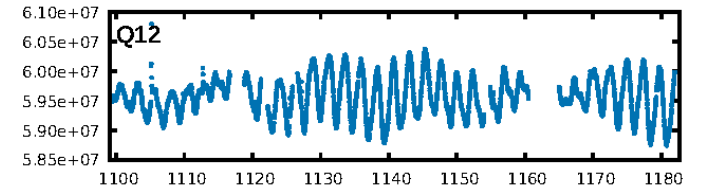
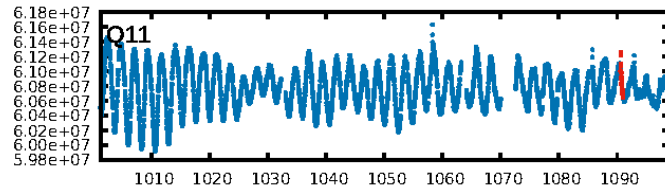
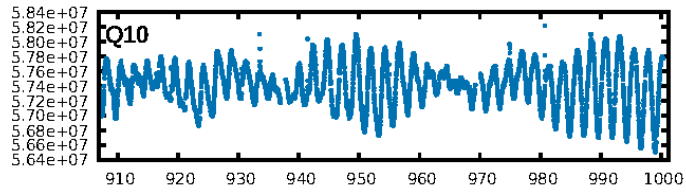
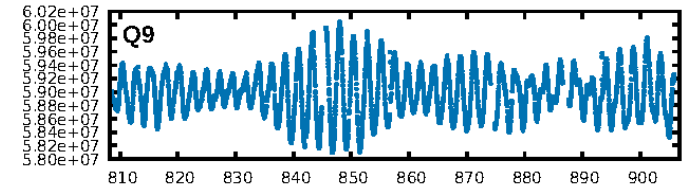
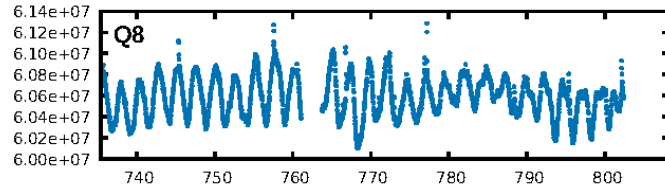
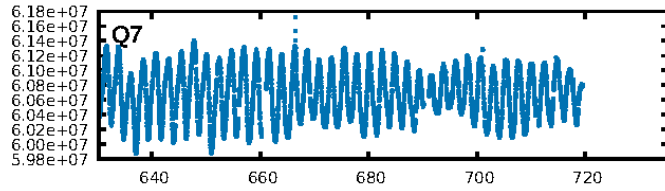
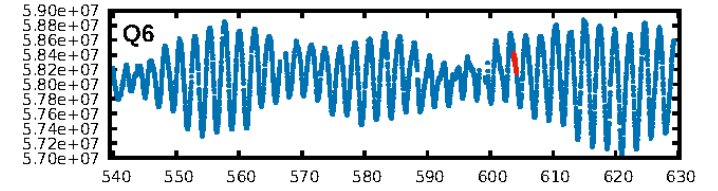
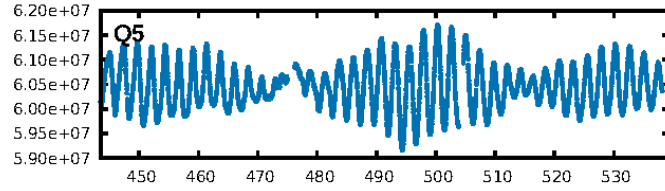
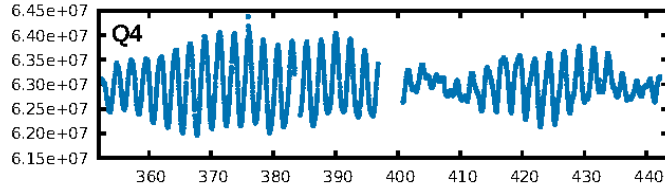
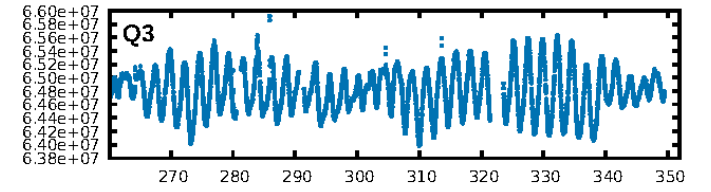
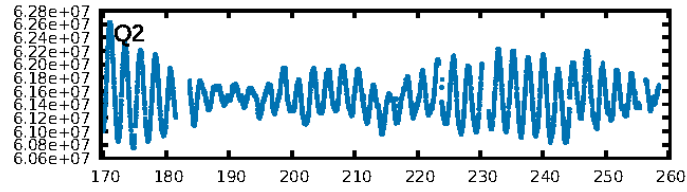
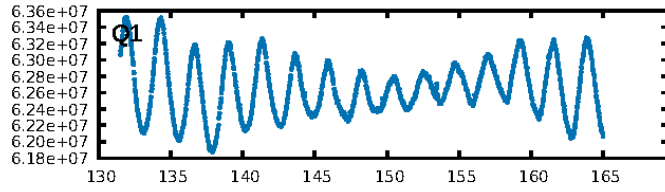
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 84.0%  
ModelChiSquareGof-sig: 97.7%  
**Bootstrap-pfa: 3.29e-12**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -3.204  
Centroid-sig: 81.3%  
Centroid-so: 0.040 arcsec [0.09 $\sigma$ ]  
OotOffset-rm: 0.128 arcsec [0.54 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-rm: 0.074 arcsec [0.12 $\sigma$ ]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

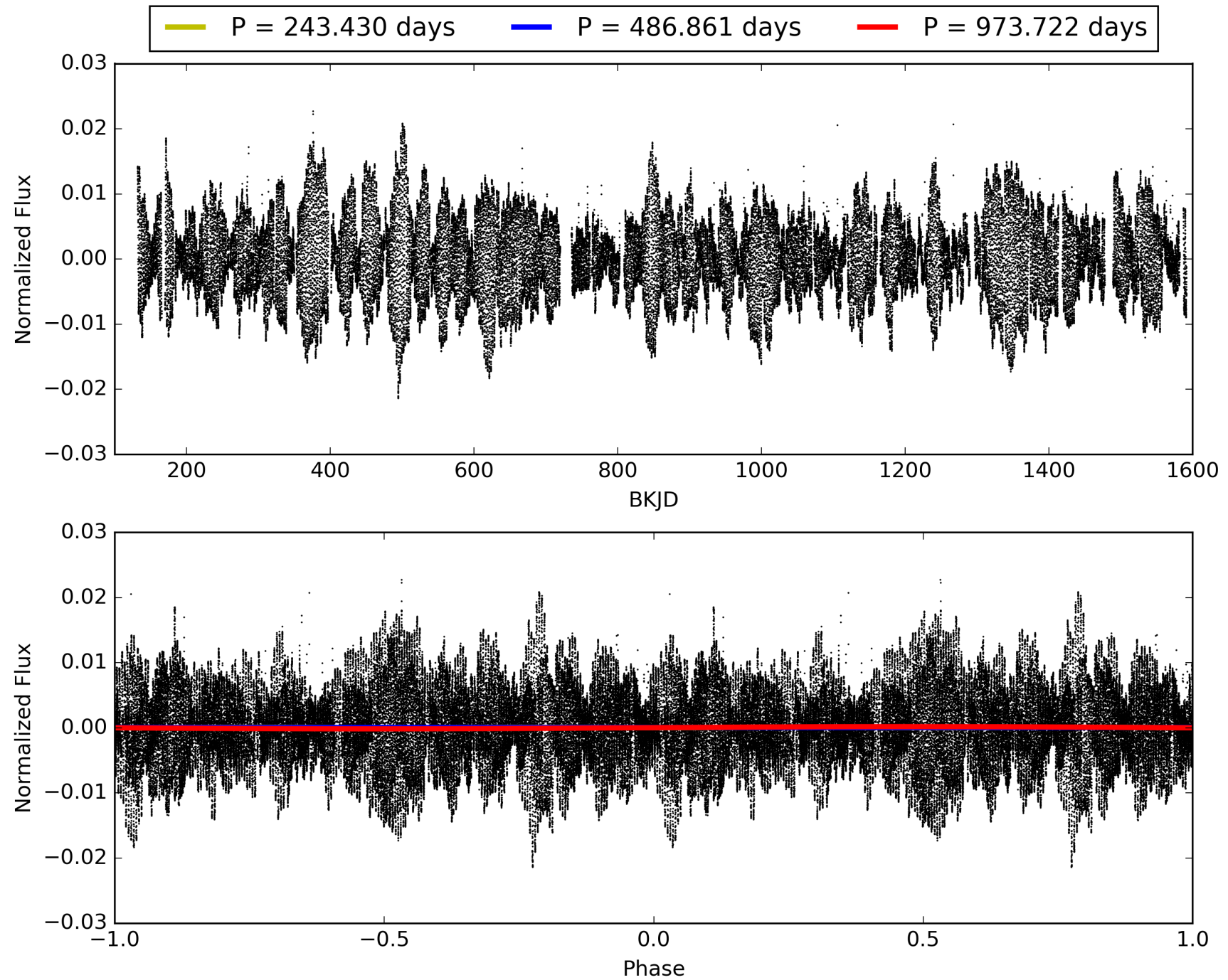
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 23:54:20 Z

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

# TCE 009959126-01, PDC Light Curves

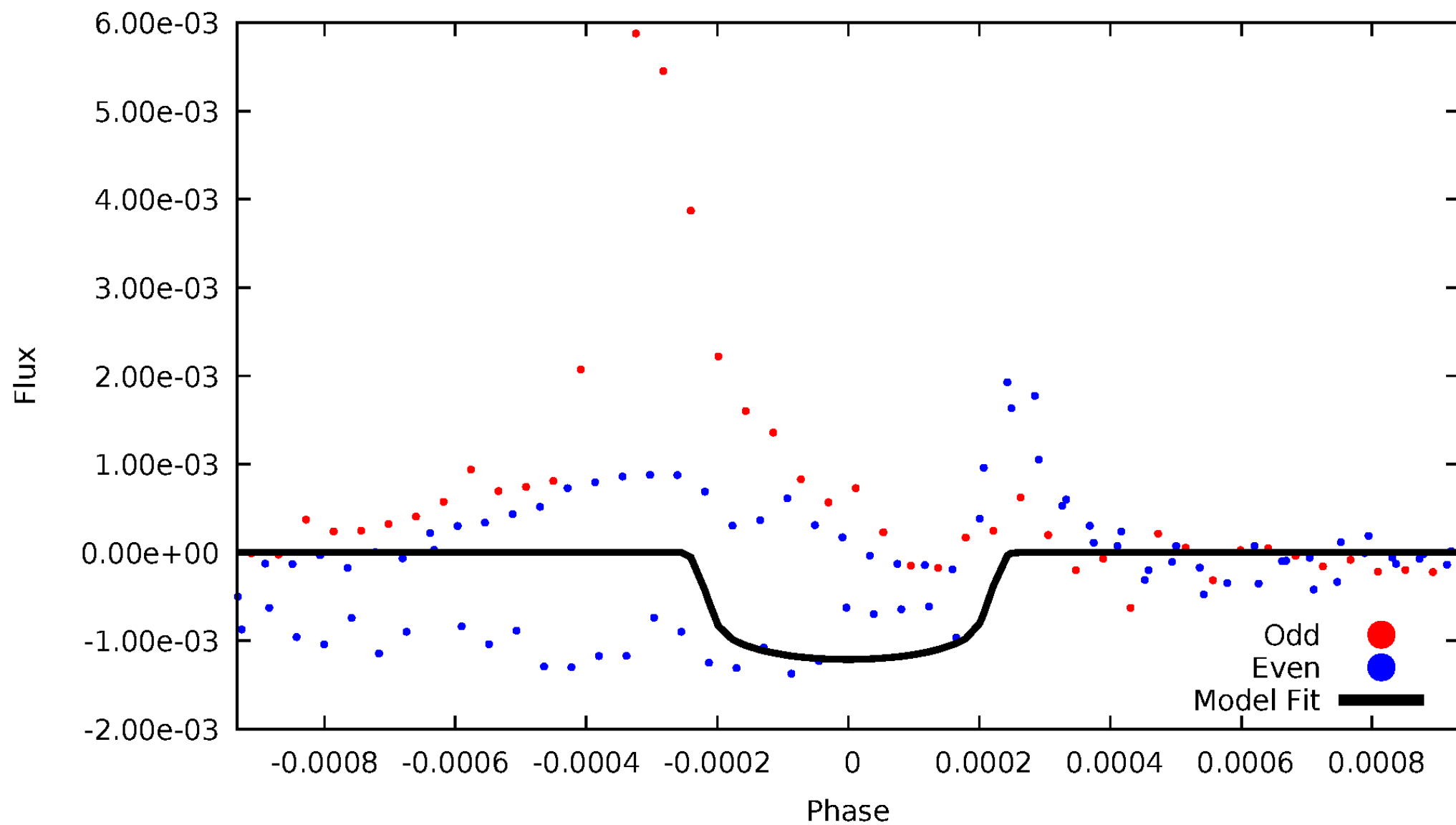


TCE 009959126-01



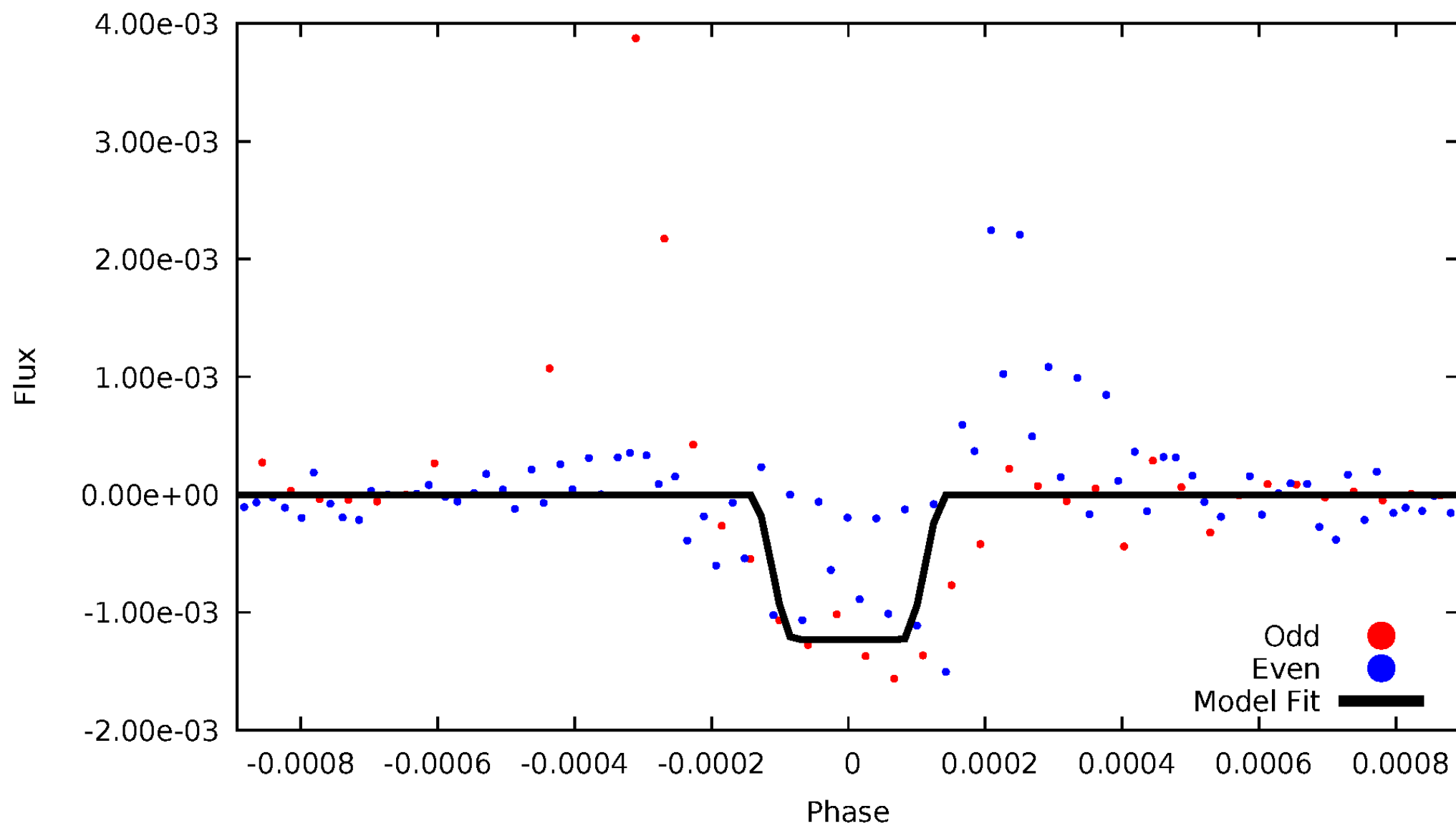
# DV Odd/Even

TCE 009959126-01



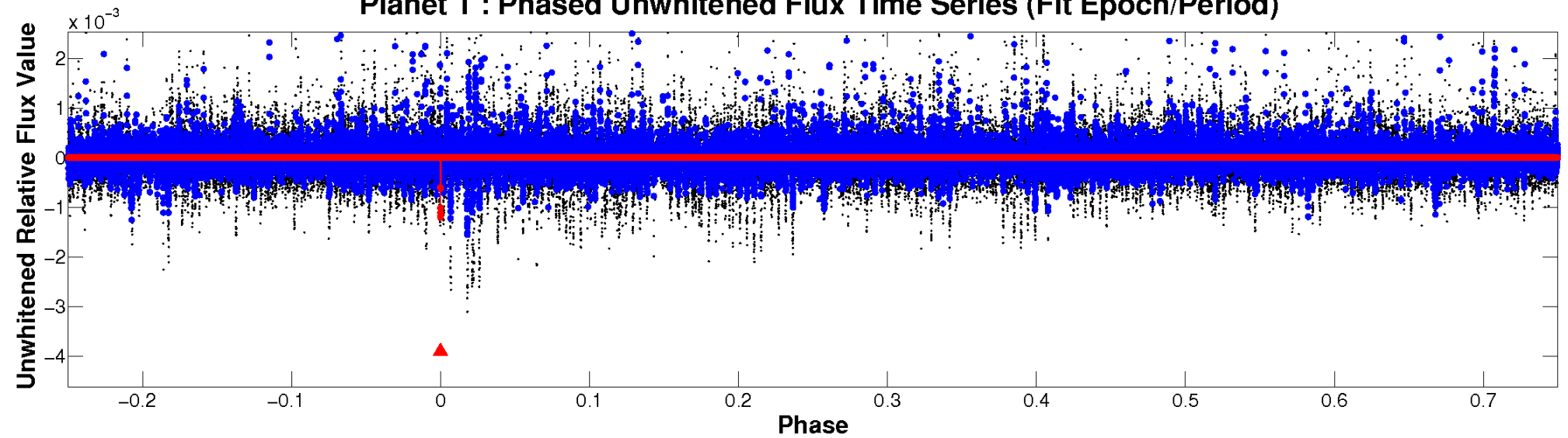
# ALT Odd/Even

TCE 009959126-01

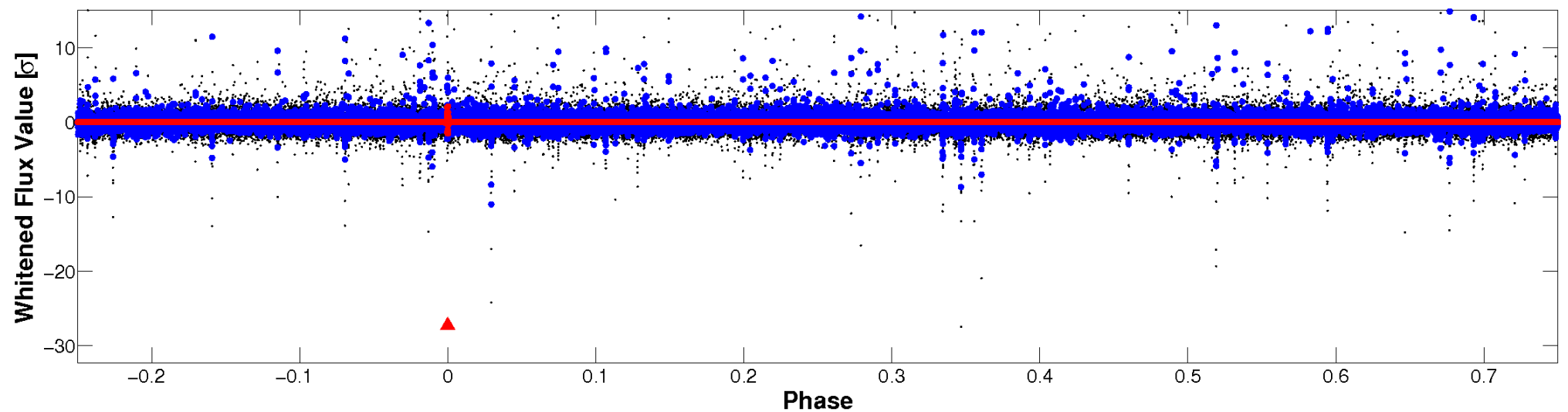


# Non-Whitened Vs. Whitened Light Curve

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

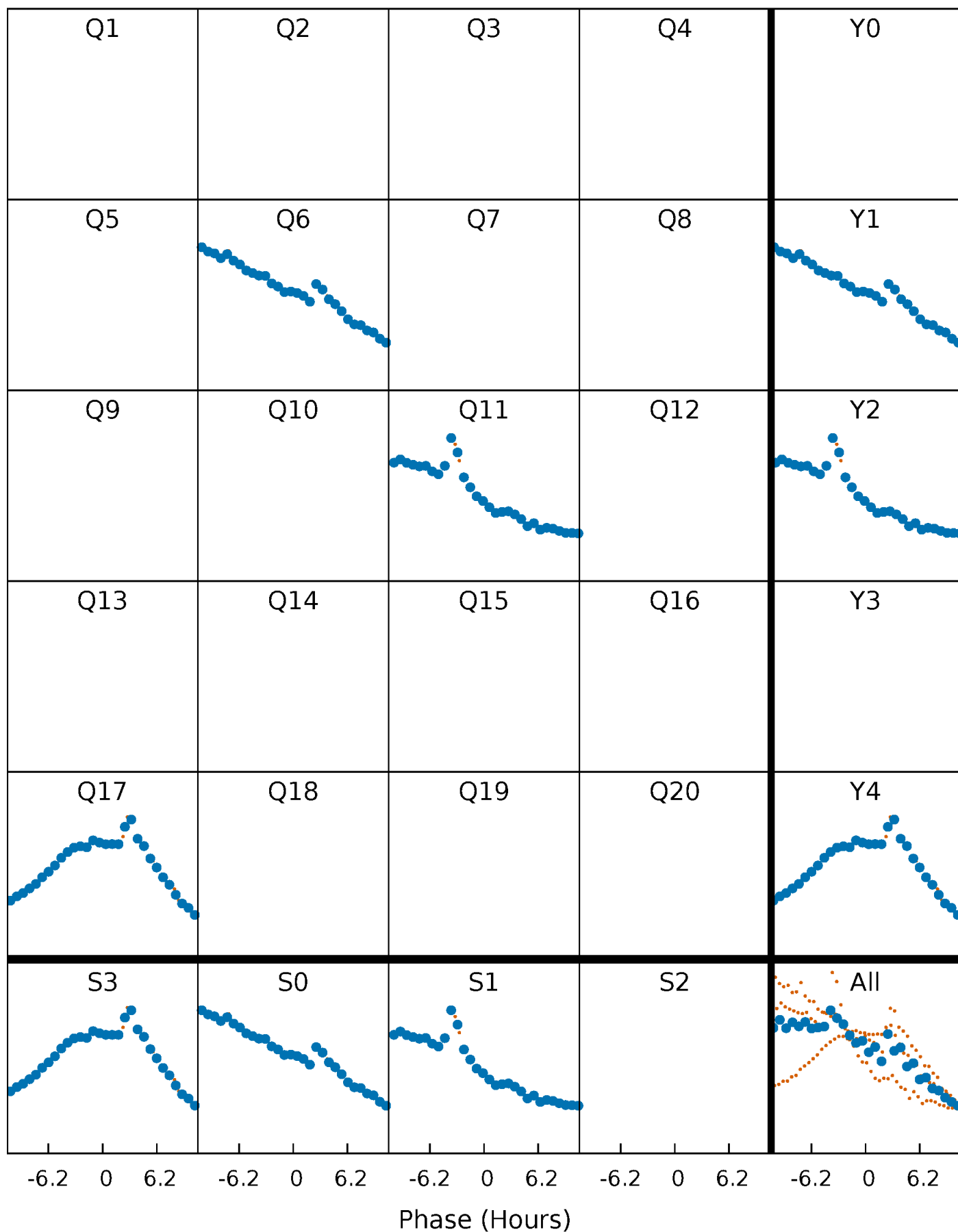


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

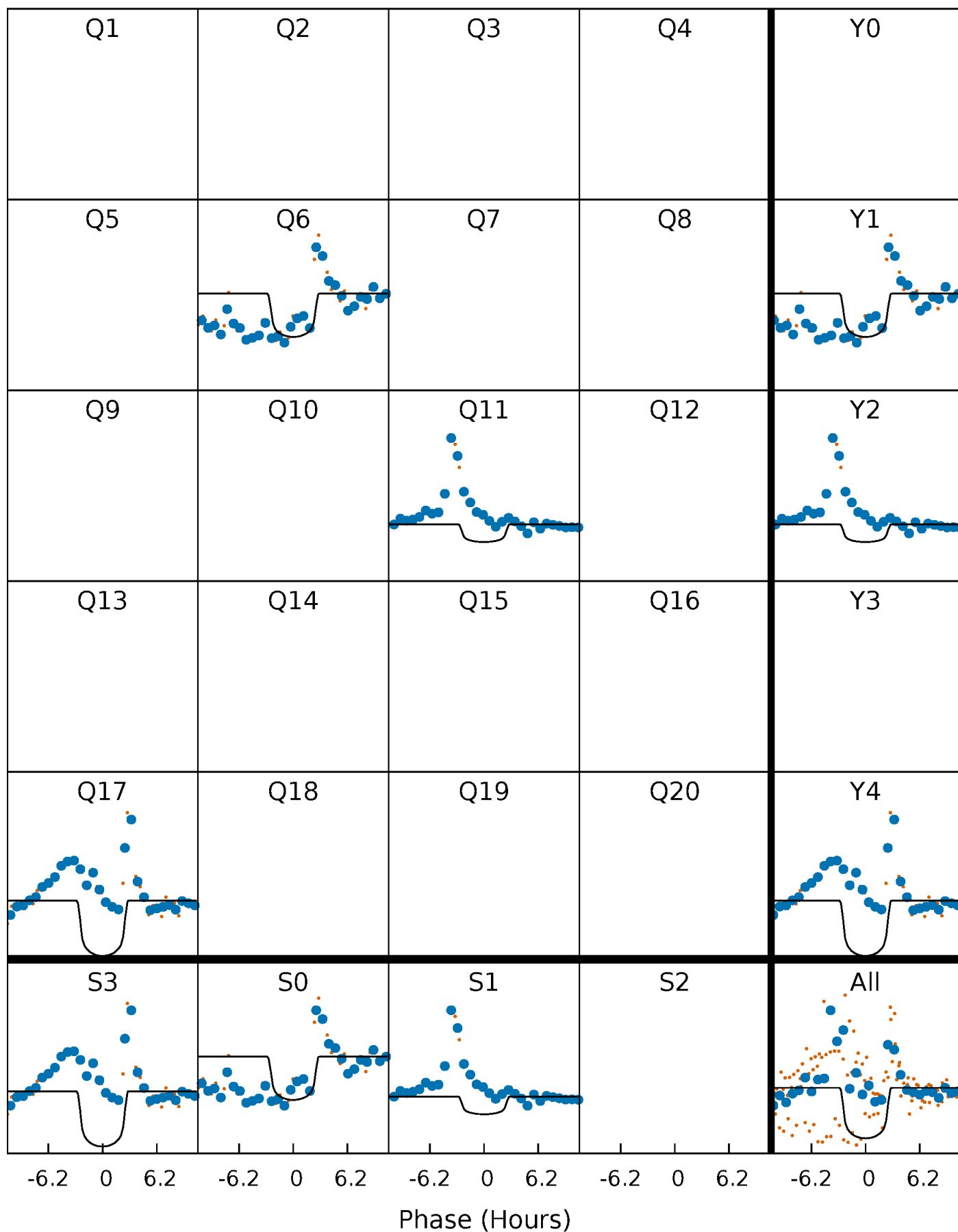
TCE 009959126-01 P=486.860770 Days  $T_0=603.940378$  (BKJD)





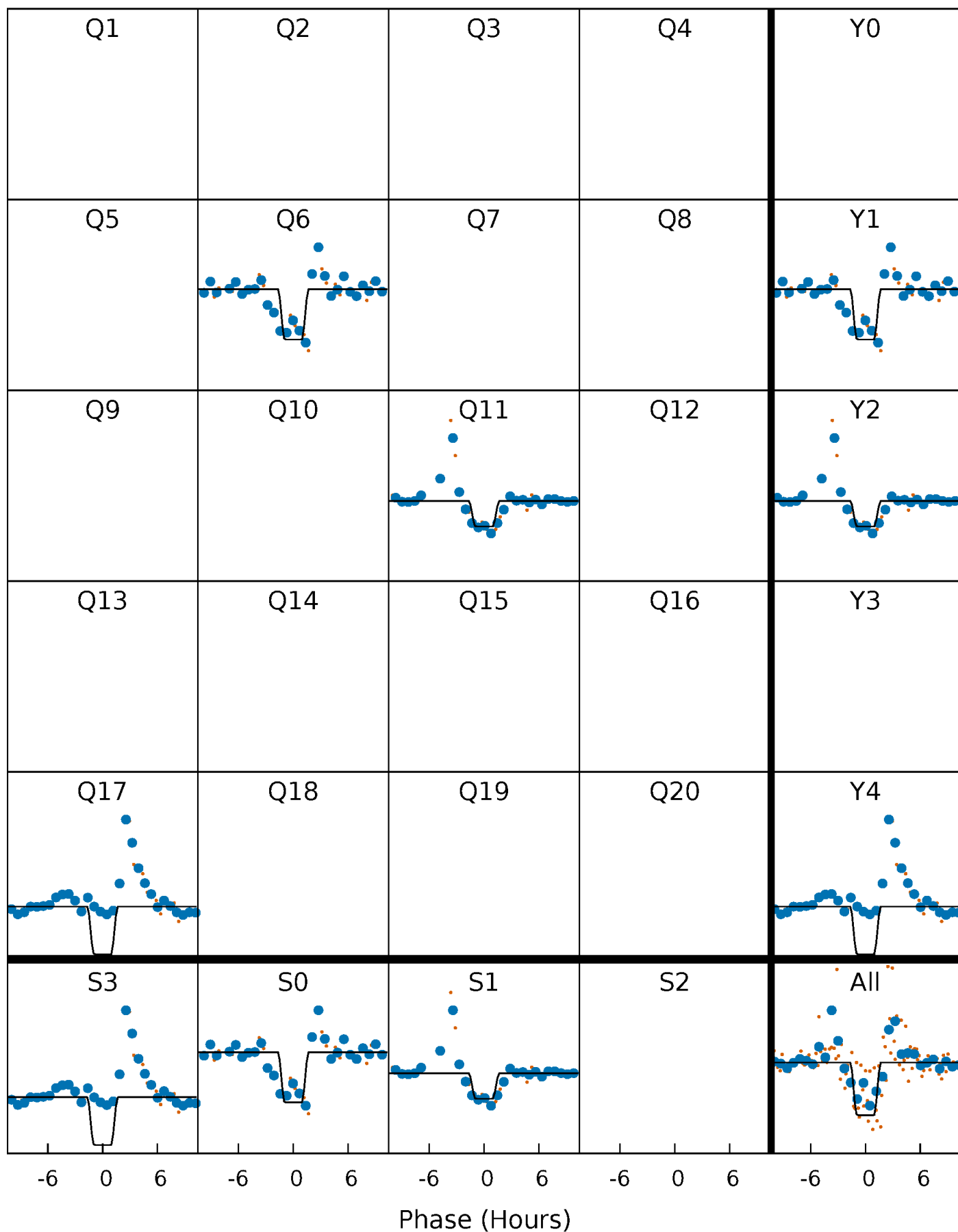
# DV Quarter-Phased Transit Curves

TCE 009959126-01 P=486.860770 Days  $T_0=603.940378$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

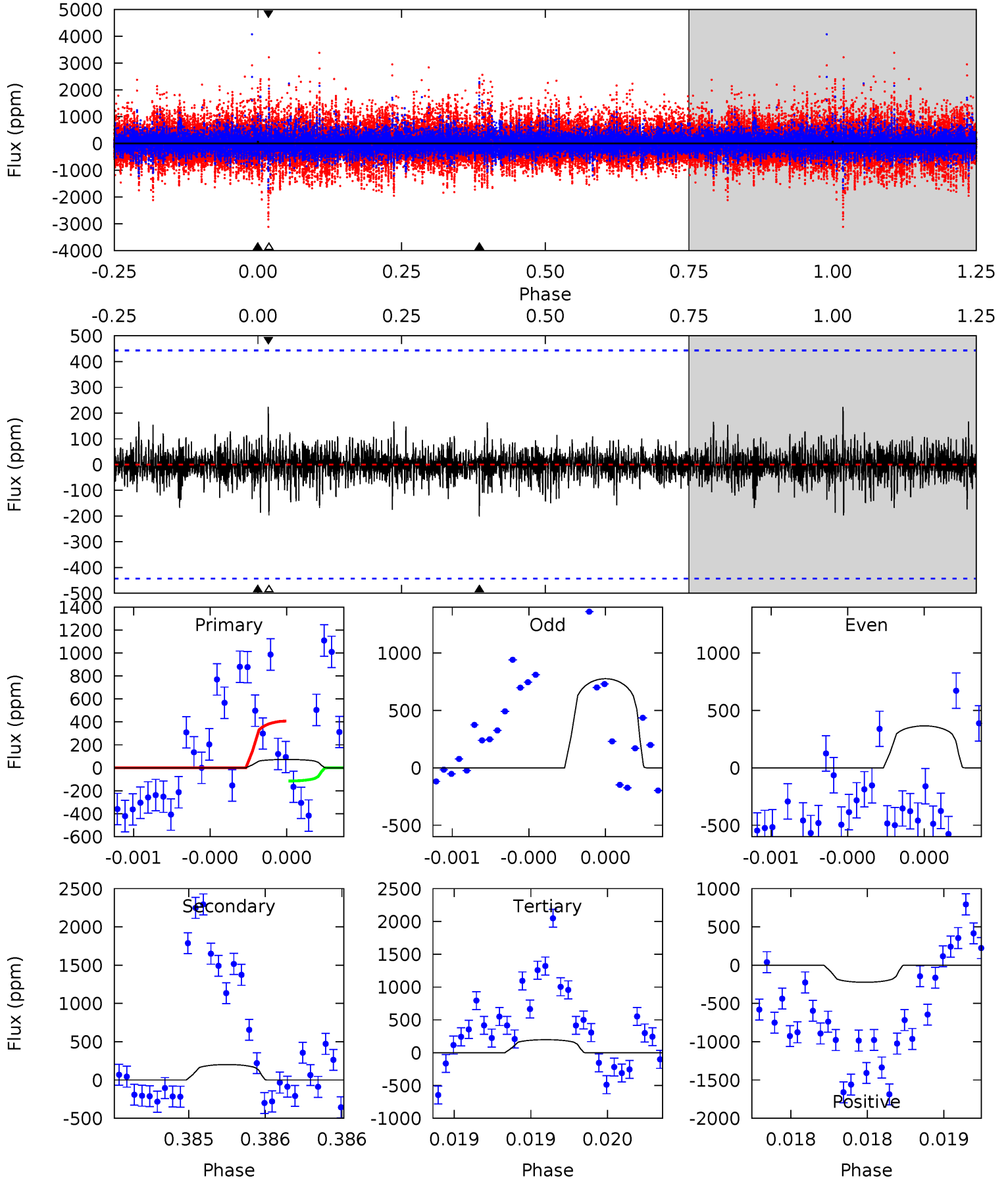
TCE 009959126-01 P=486.863623 Days  $T_0=603.951272$  (BKJD)



# DV Model-Shift Uniqueness Test

009959126-01, P = 486.860770 Days, E = 117.079608 Days

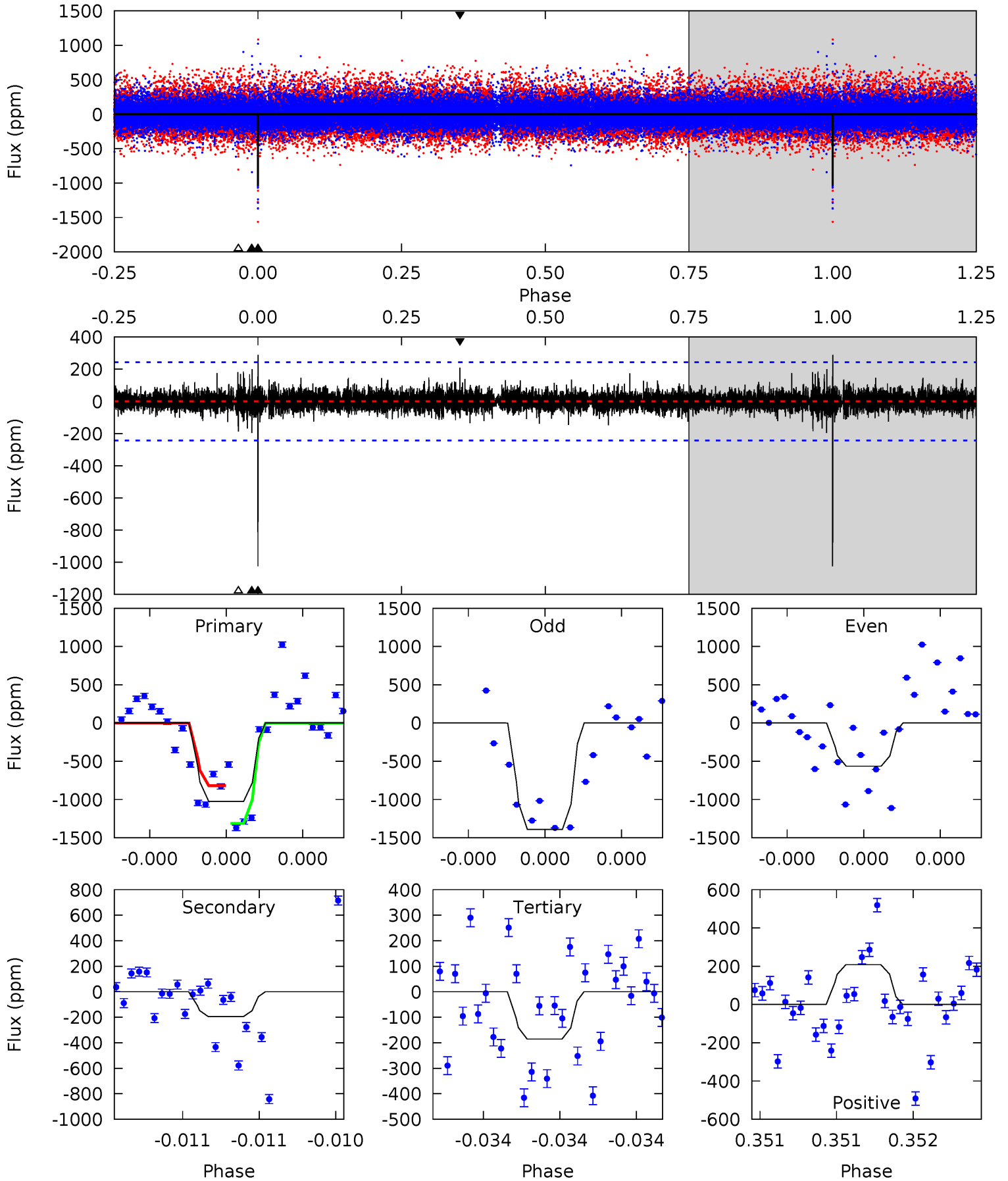
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.92	2.54	2.48	2.82	5.58	3.49	0.51	-1.57	-1.90	0.05	-0.28	2.28	0.07	0.53	1.80



# Alt Model-Shift Uniqueness Test

009959126-01, P = 486.863623 Days, E = 117.087649 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
23.8	4.54	4.32	4.85	5.67	3.62	0.77	19.5	19.0	0.22	-0.31	9.81	0.82	0.22	5.74



### Stellar Parameters For KIC 009959126

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5883^{+159}_{-159}$	$4.465^{+0.112}_{-0.168}$	$-0.560^{+0.300}_{-0.300}$	$0.877^{+0.210}_{-0.113}$	$0.818^{+0.096}_{-0.061}$	$1.711^{+0.719}_{-0.778}$
	+3%/-3%	+3%/-4%	+54%/-54%	+24%/-13%	+12%/-7%	+42%/-45%
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 009959126-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-202 \pm 79$	$3.26^{+0.86}_{-0.81}$	$320^{+20}_{-15}$	$4107^{+517}_{-445}$	$13347^{+11864}_{-6861}$
Alt.	$-195 \pm 43$	$3.40^{+0.95}_{-0.82}$	$321^{+20}_{-17}$	$4030^{+444}_{-336}$	$11684^{+9926}_{-4704}$

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

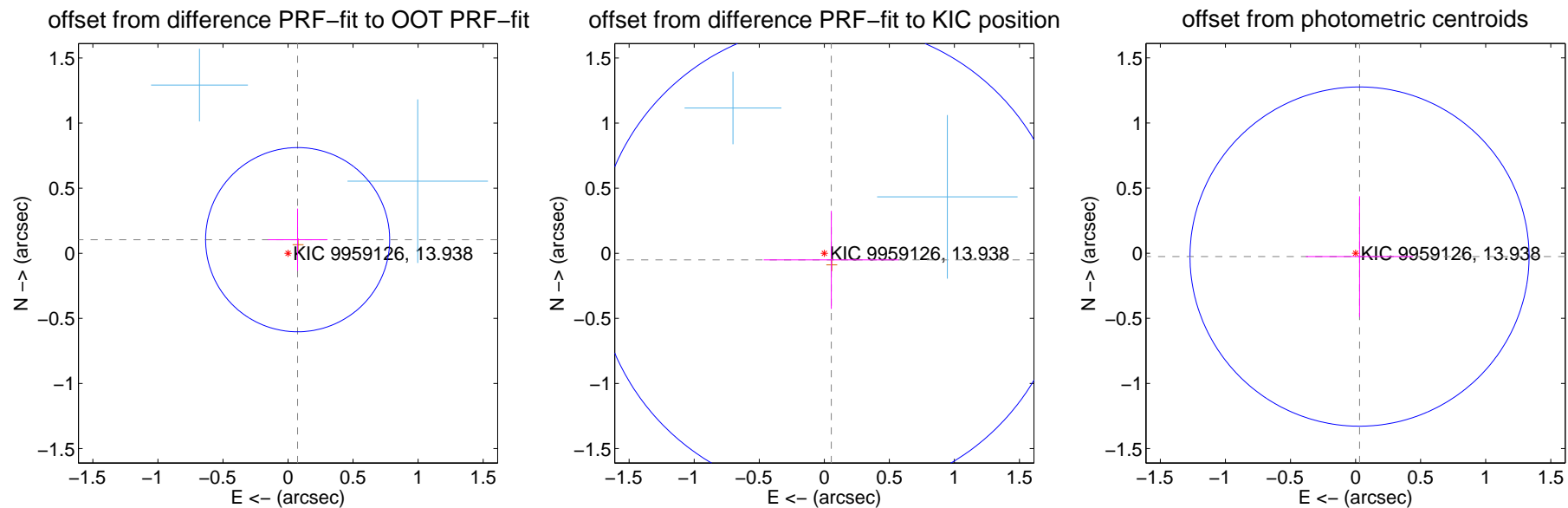
## DV Centroid Data

Supplemental centroid analysis for 009959126-01. Kepler magnitude: 13.94. Transit SNR 8.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.128 \pm 0.236$	0.54	$-0.074 \pm 0.229$	$0.104 \pm 0.239$
PRF-fit source offset from KIC position	$0.074 \pm 0.604$	0.12	$-0.053 \pm 0.520$	$-0.051 \pm 0.377$
photometric centroid source offset	$0.04 \pm 0.43$	0.09	$-0.03 \pm 0.41$	$-0.03 \pm 0.46$

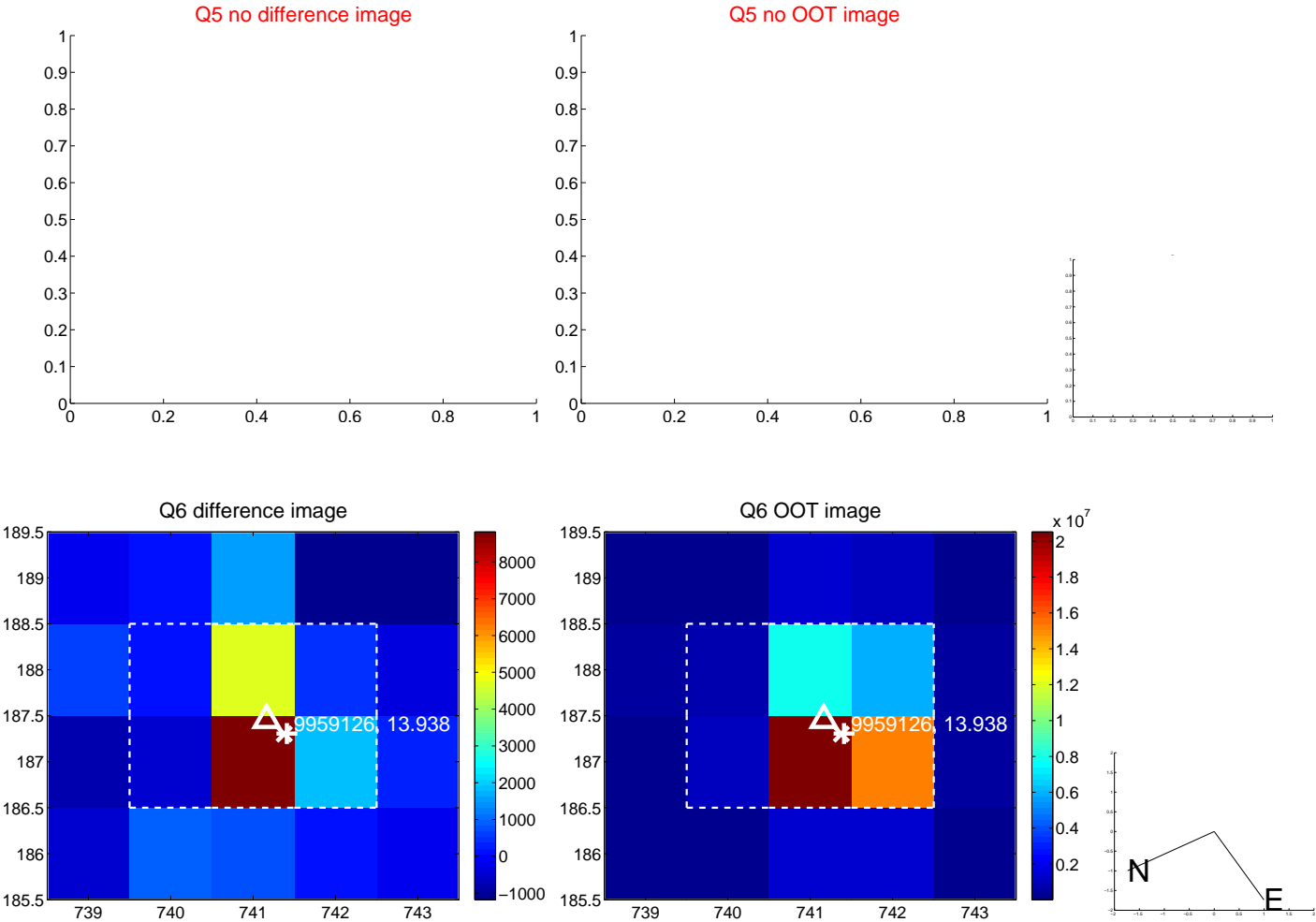


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

Q9 no difference image



Q9 no OOT image



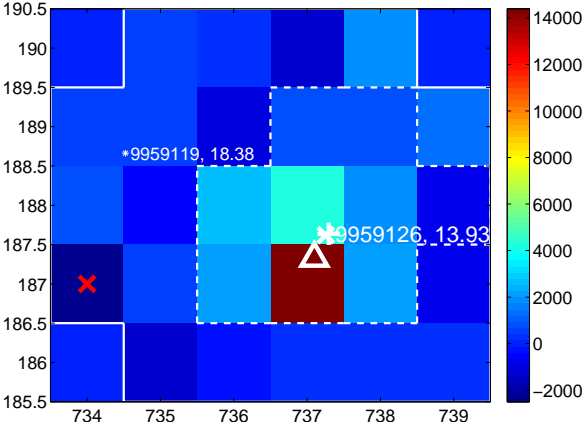
Q10 no difference image



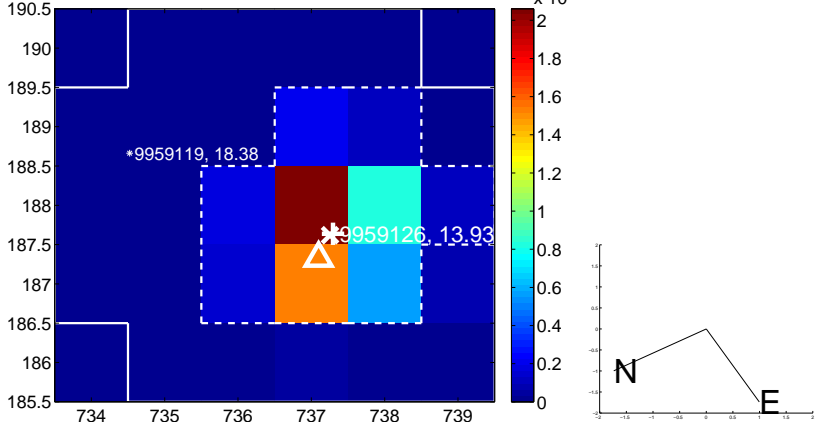
Q10 no OOT image



Q11 difference image



Q11 OOT image



Q12 no difference image



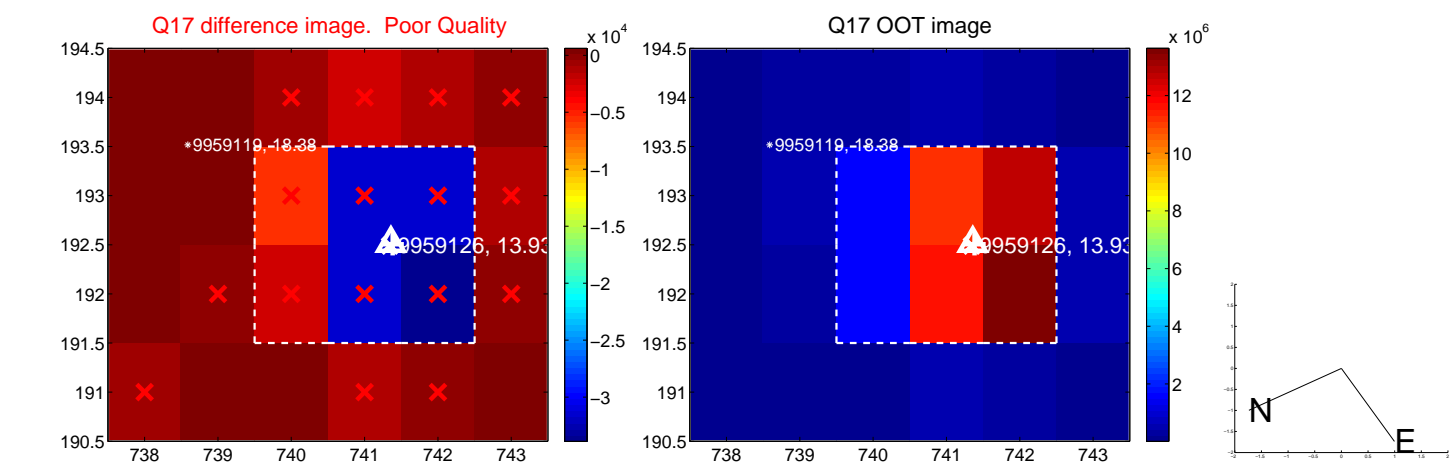
Q12 no OOT image



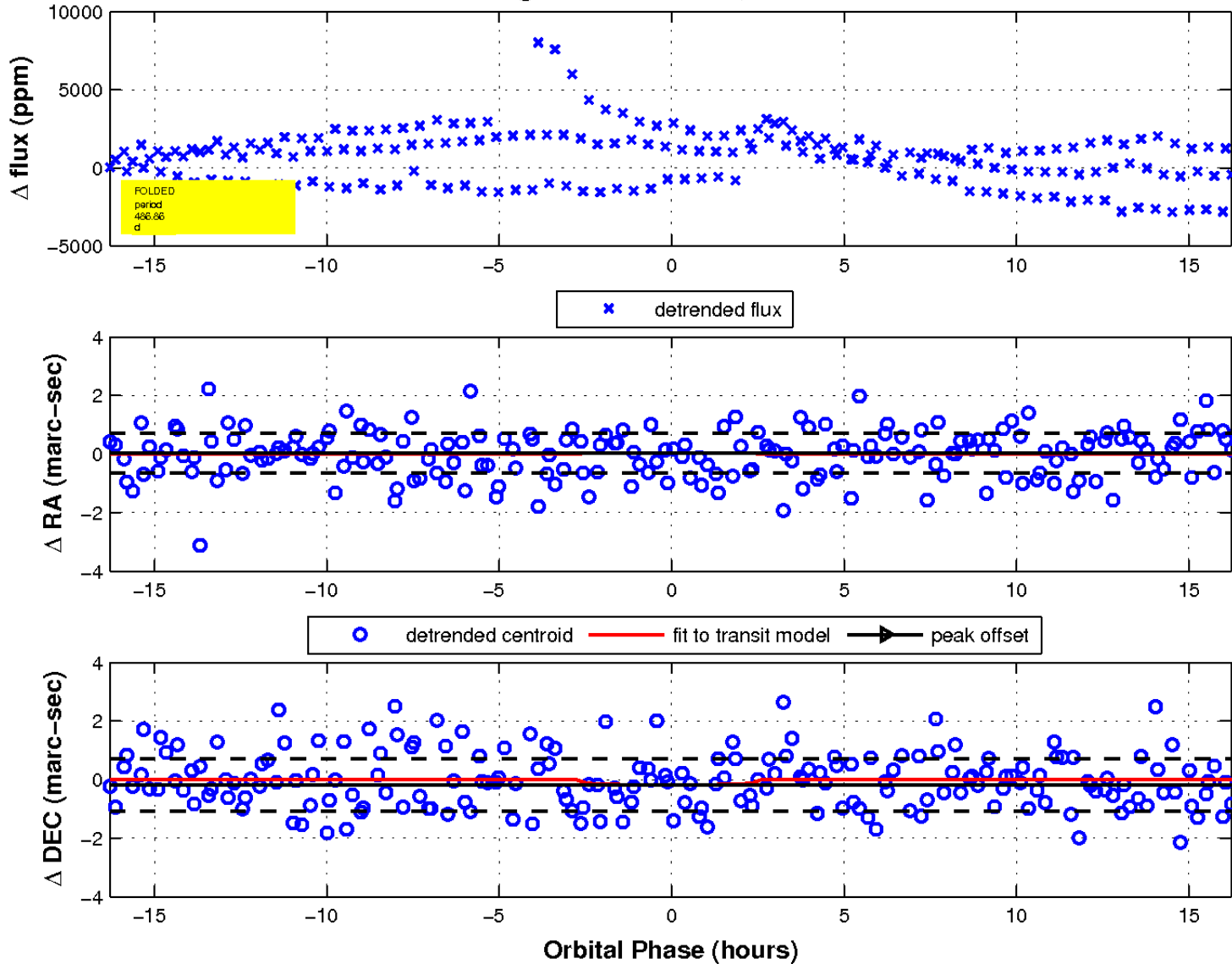
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

