

# KIC 009994771

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009994771-01	OBS	No	246.159494	147.185857	191.4	3.372	8.0	6.2	3.25	5193	5.60	9.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009994771-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—INCONSISTENT_TRANS—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

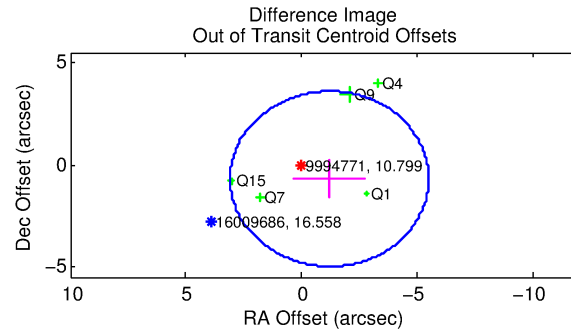
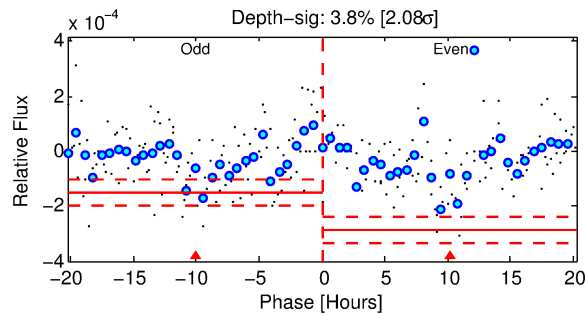
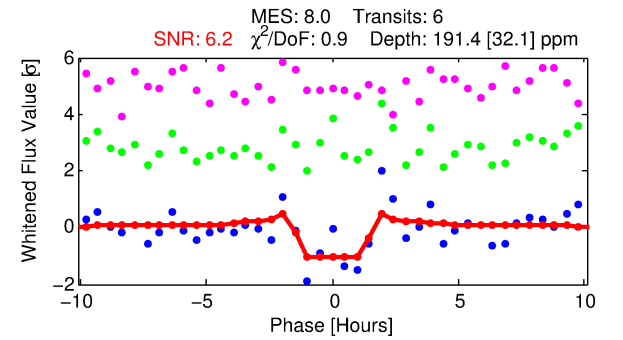
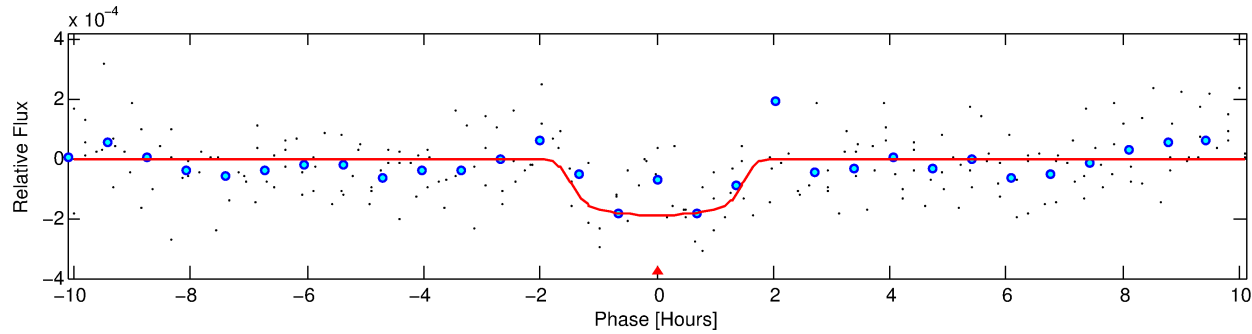
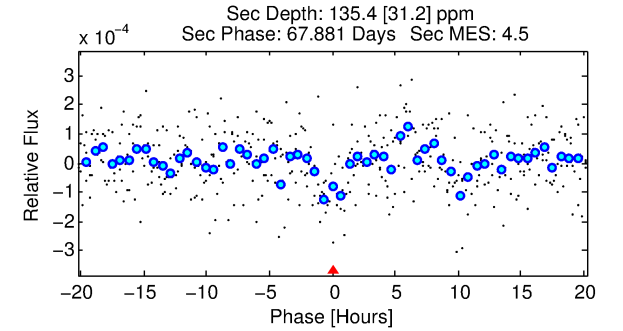
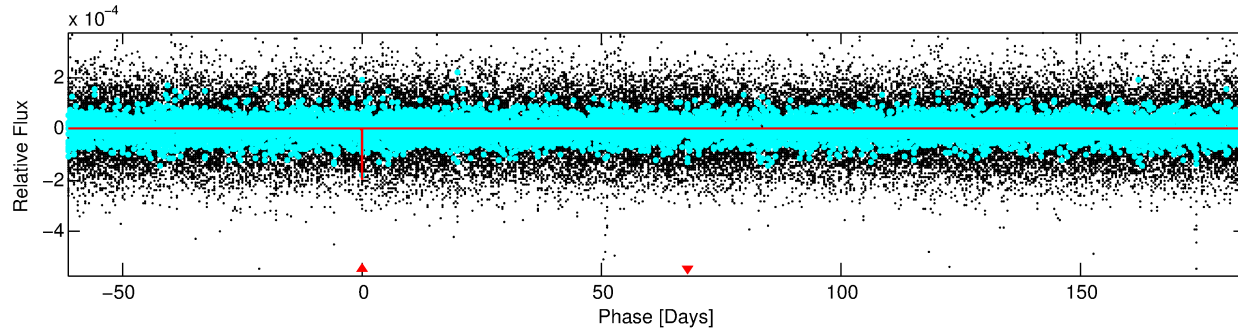
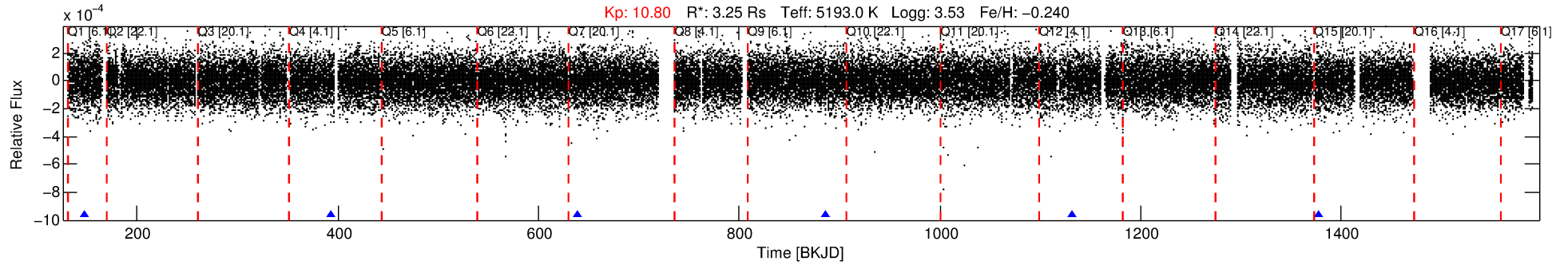
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009994771-01

No Significant Match Found

# DV One-Page Summary

KIC: 9994771 Candidate: 1 of 1 Period: 246.159 d



## DV Fit Results:

Period = 246.15949 [0.00200] d  
Epoch = 147.1859 [0.0064] BKJD  
 $R_p/R^* = 0.0158$  [0.0063]  
 $a/R^* = 232.25$  [390.41]  
 $b = 0.93$  [0.26]  
 $\text{Seff} = 9.69$  [2.68]  
 $T_{\text{eq}} = 450$  [31] K  
 $R_p = 5.60$  [2.53]  $R_e$   
 $a = 0.8430$  [0.1539] AU  
 $A_g = 1687.07$  [1469.01] [1.15σ]  
 $T_{\text{effp}} = 4458$  [926] K [4.33σ]

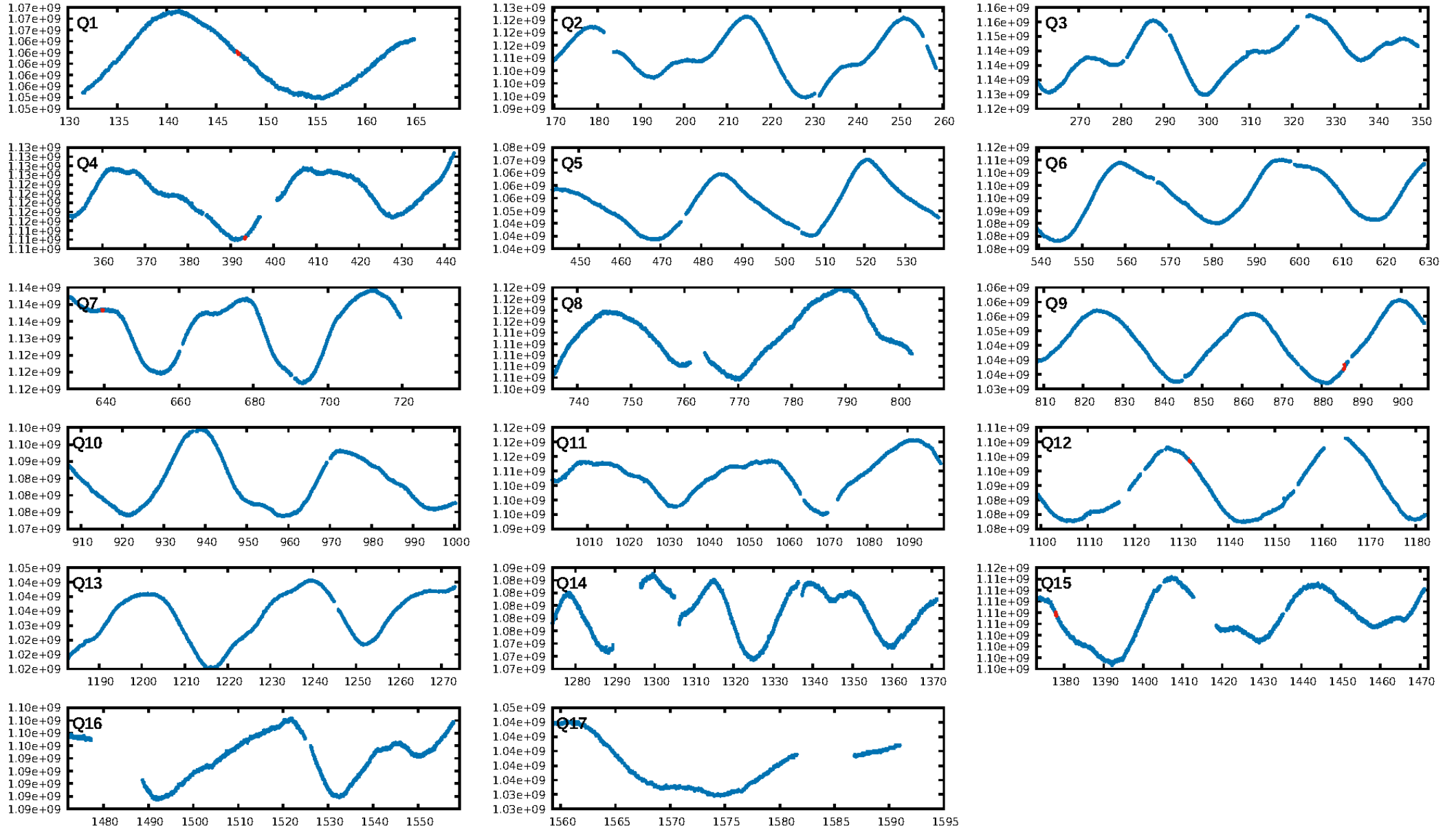
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 23.8%  
ModelChiSquareGof-sig: 97.1%  
Bootstrap-pfa: 2.68e-12  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.628  
Centroid-sig: 65.1%  
Centroid-so: 0.461 arcsec [0.47σ]  
OotOffset-rm: 1.394 arcsec [0.97σ]  
OotOffset-st: 0/2/1/2 [5]  
KicOffset-rm: 1.605 arcsec [1.34σ]  
KicOffset-st: 0/2/1/2 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 1.00 [6/6]

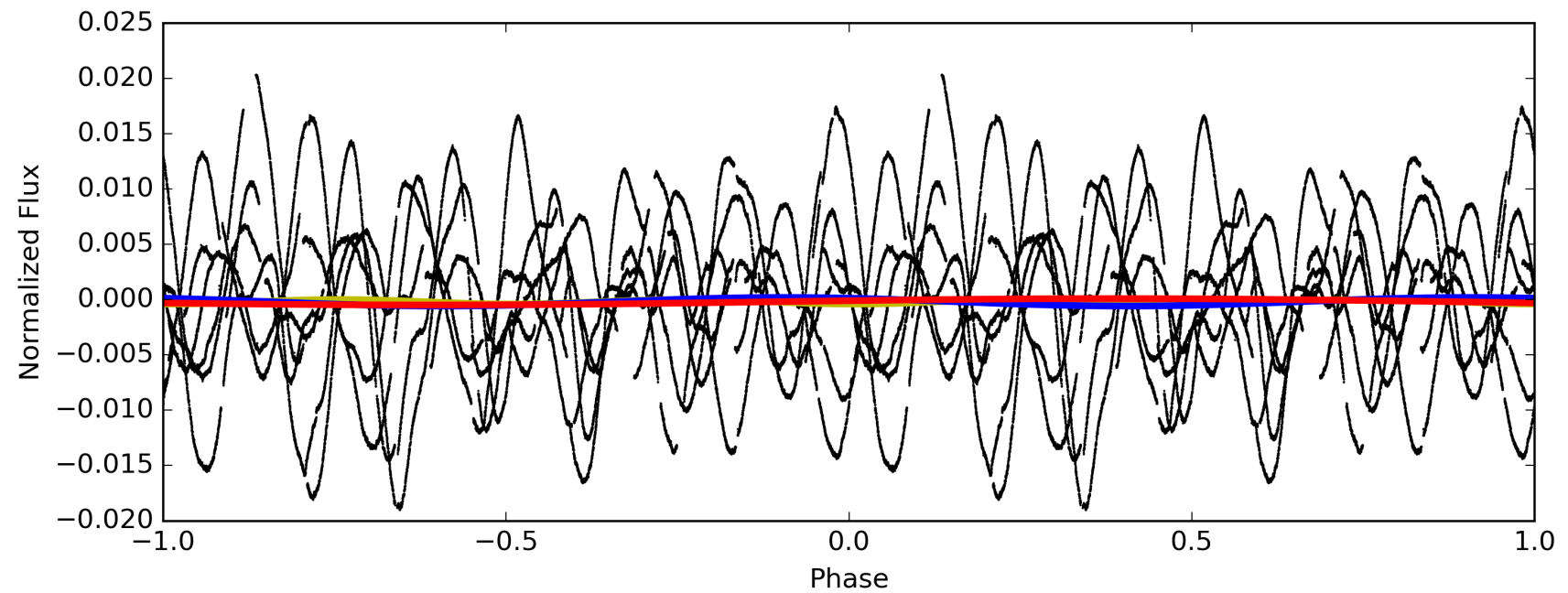
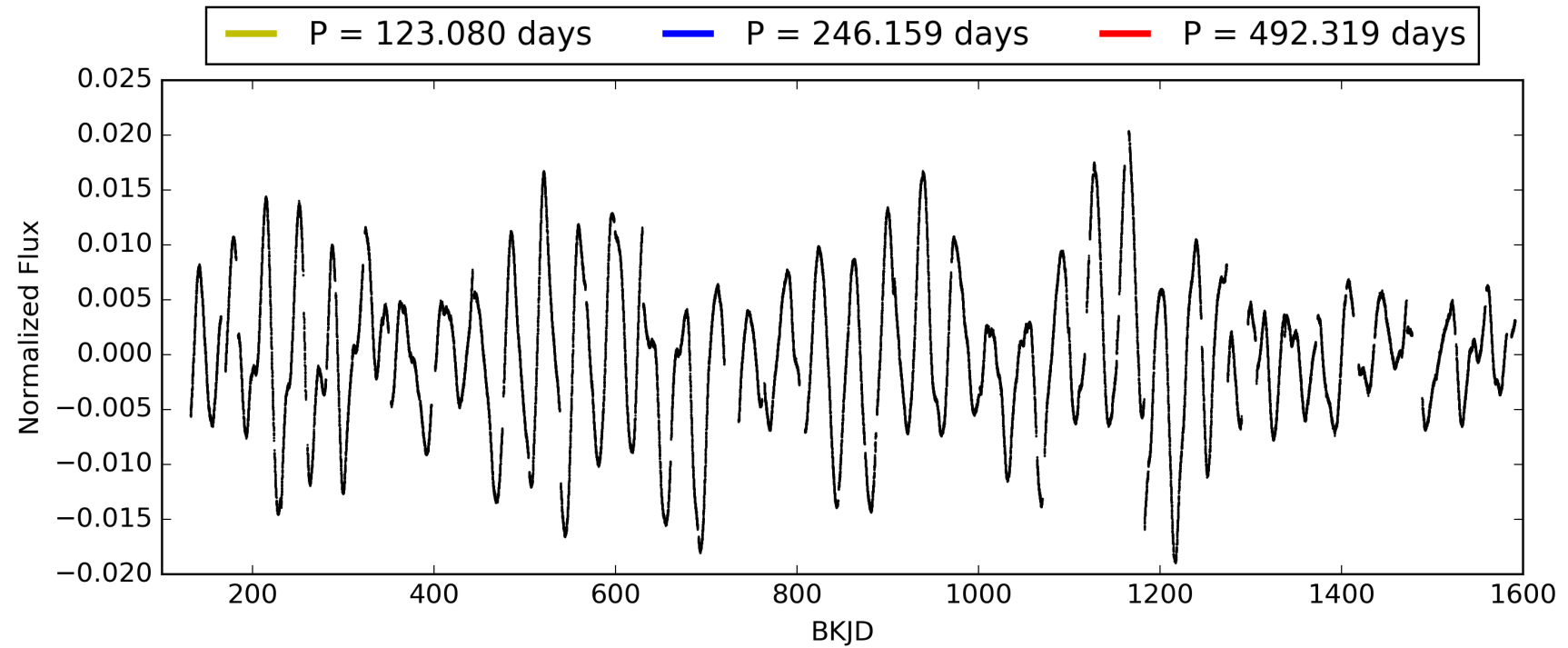
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:57:13 Z

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

# TCE 009994771-01, PDC Light Curves

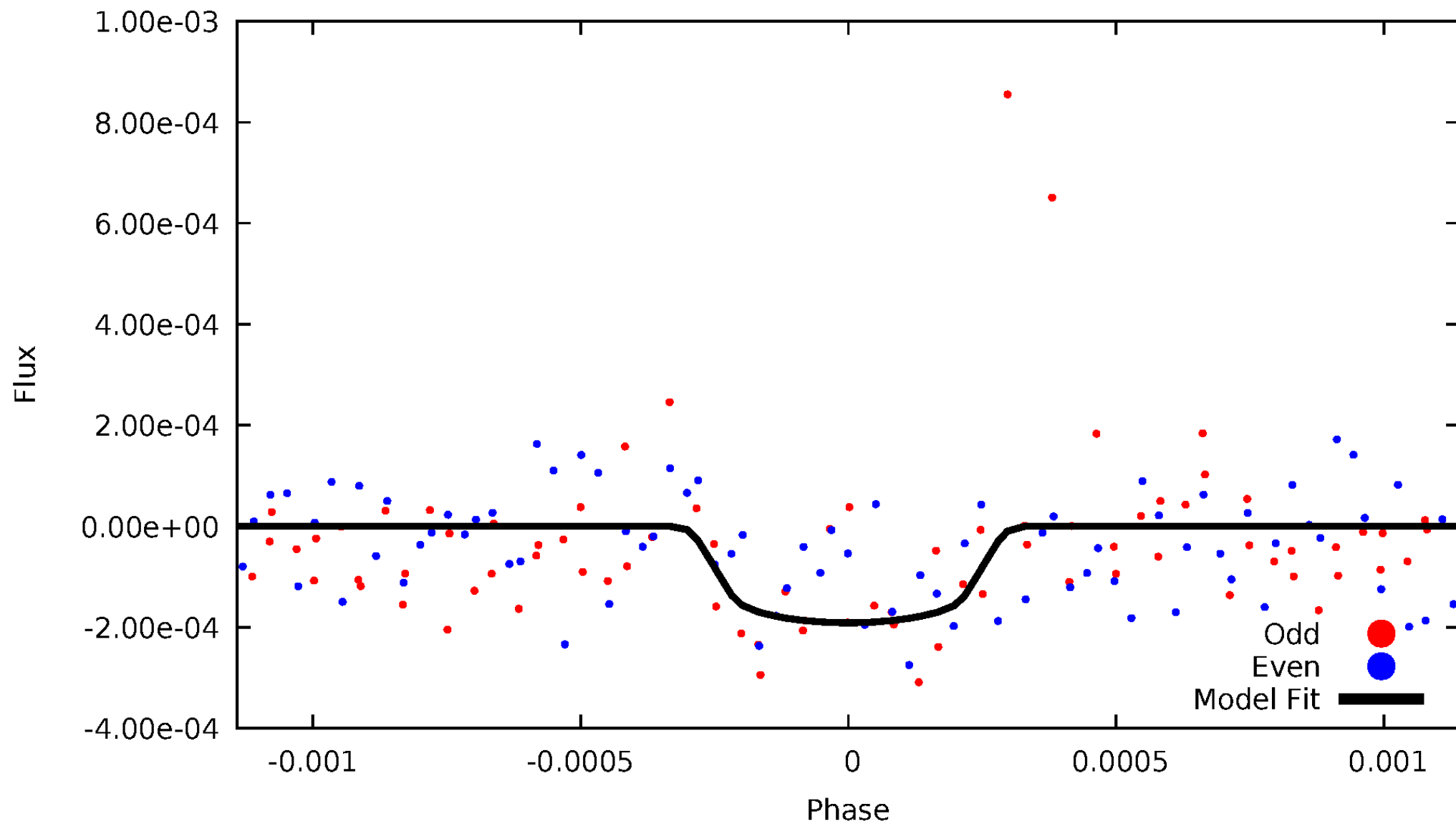


TCE 009994771-01



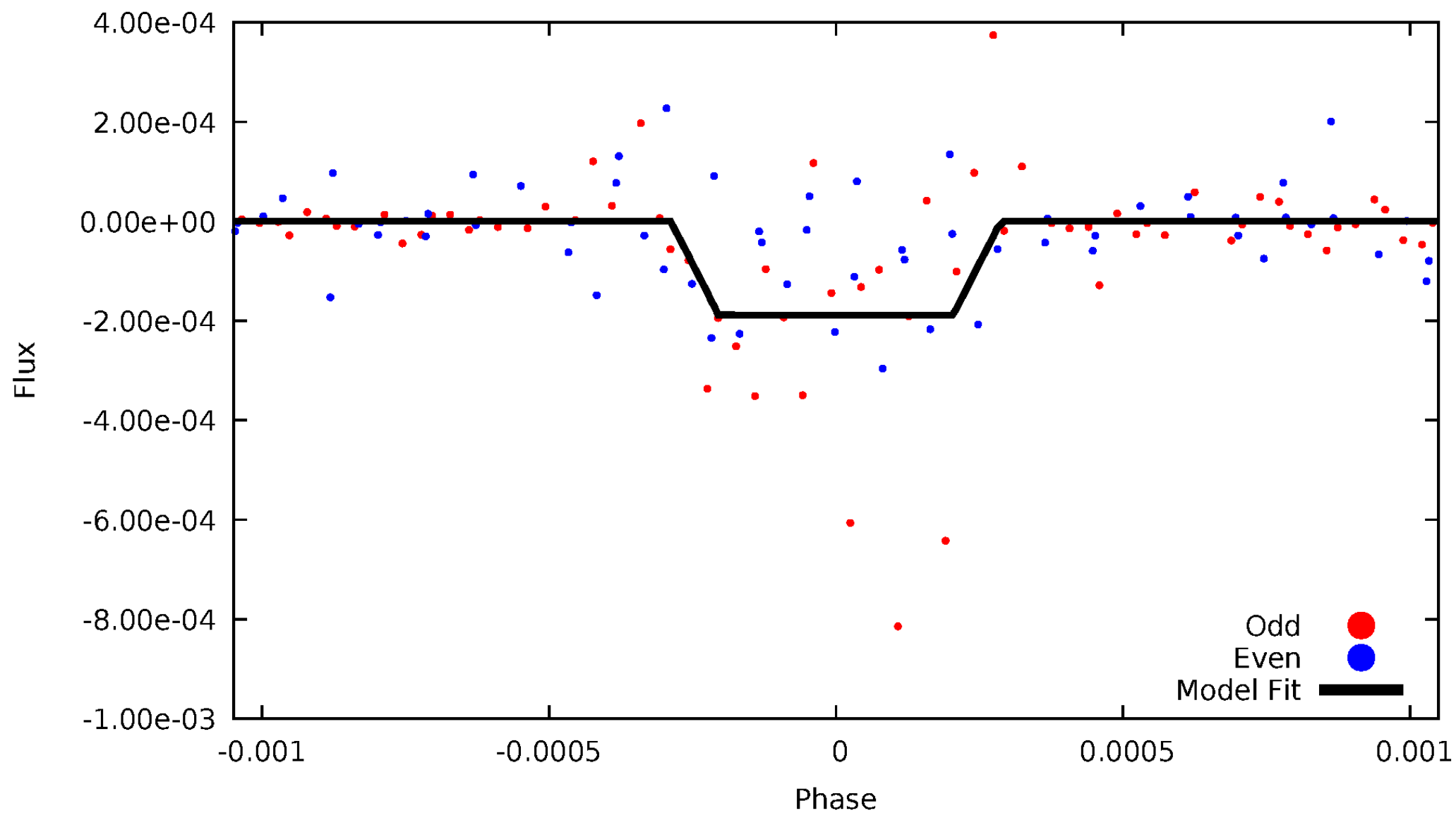
# DV Odd/Even

TCE 009994771-01

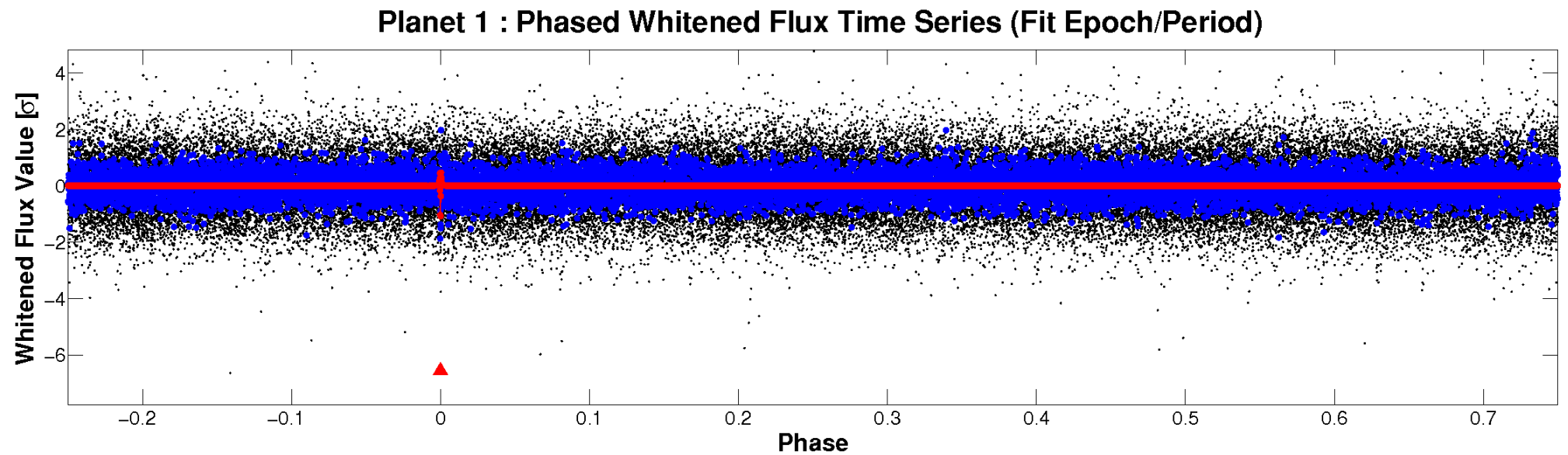
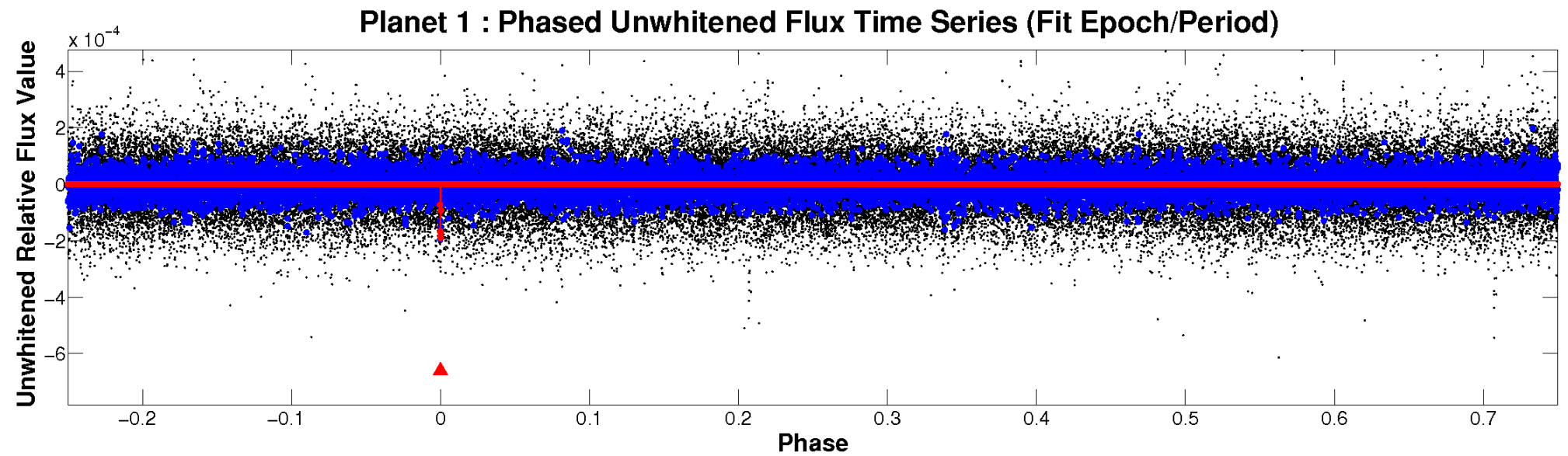


# ALT Odd/Even

TCE 009994771-01

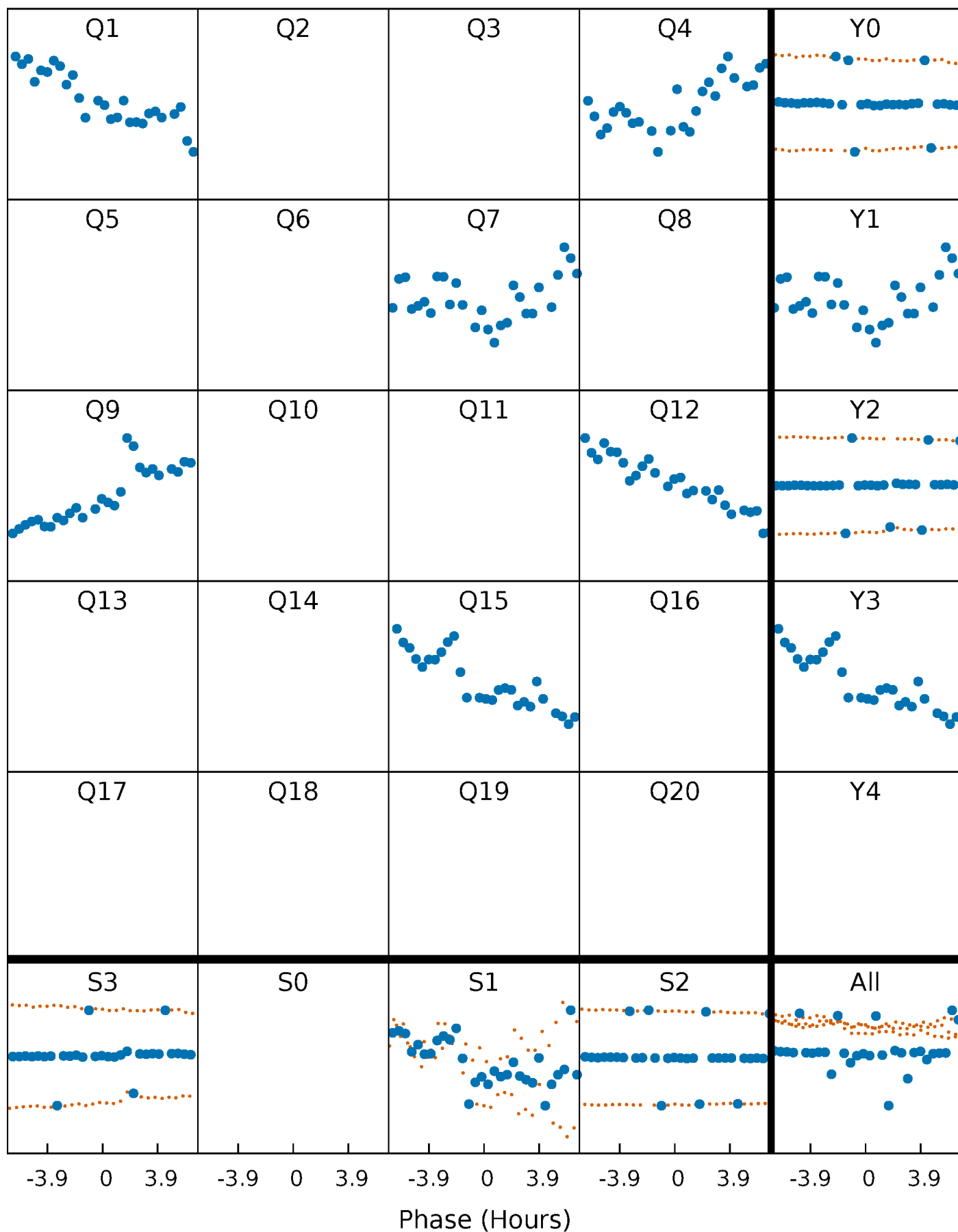


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

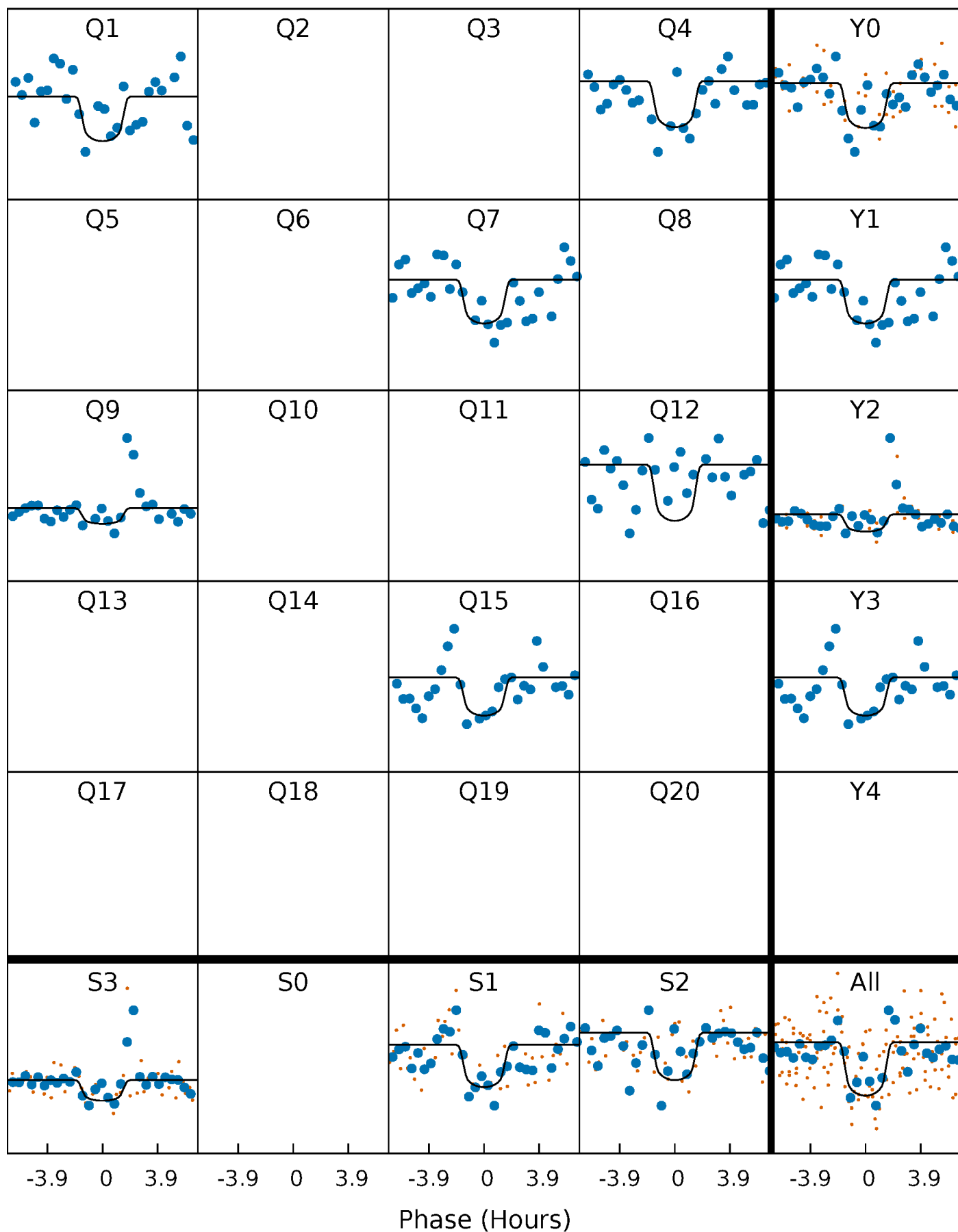
TCE 009994771-01 P=246.159494 Days  $T_0=147.185857$  (BKJD)





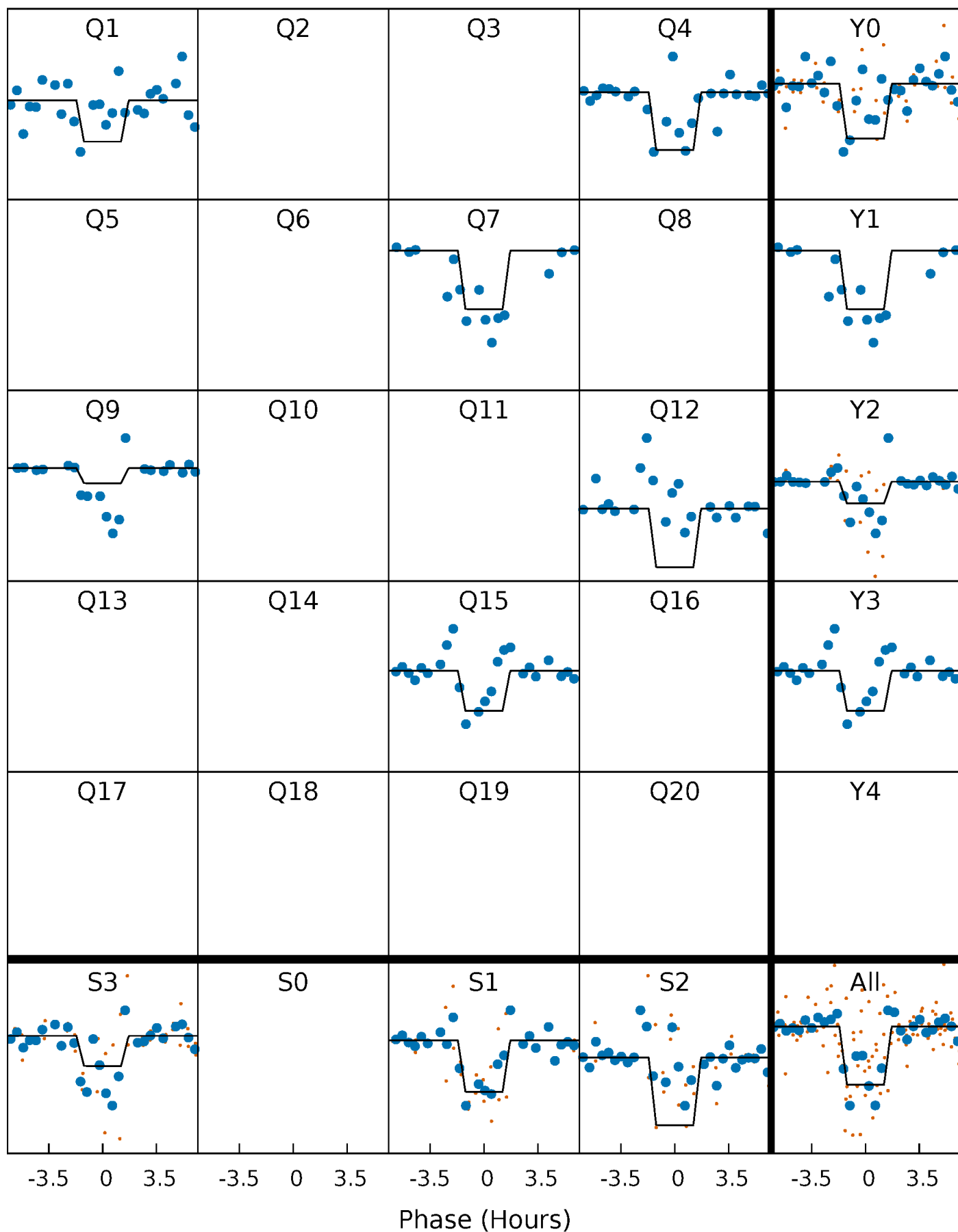
# DV Quarter-Phased Transit Curves

TCE 009994771-01 P=246.159494 Days  $T_0=147.185857$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

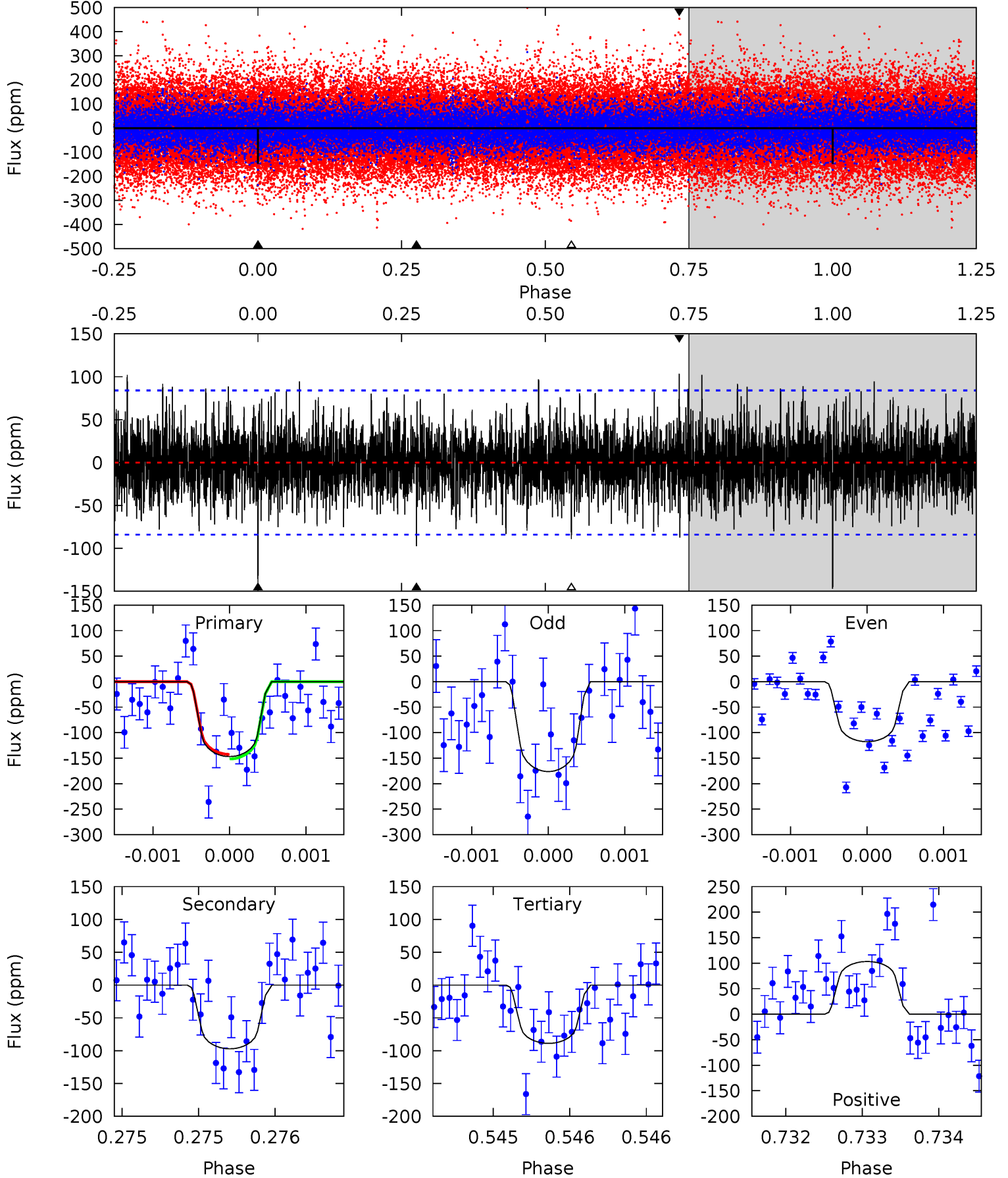
TCE 009994771-01 P=246.157325 Days  $T_0=147.198190$  (BKJD)



# DV Model-Shift Uniqueness Test

009994771-01, P = 246.159494 Days, E = 147.185857 Days

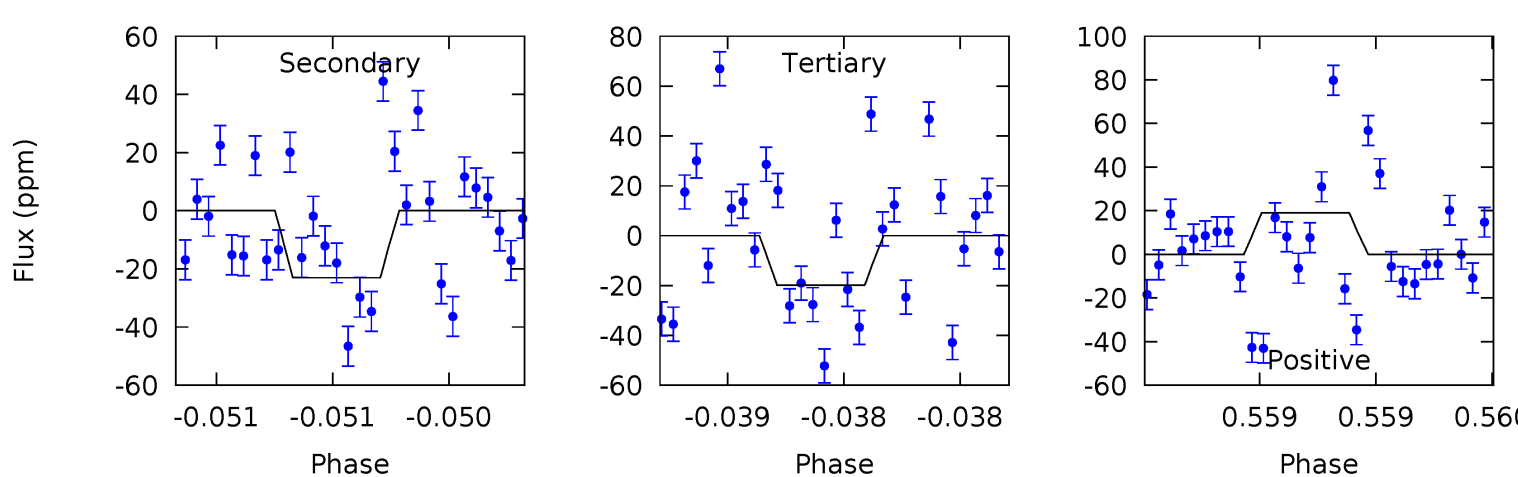
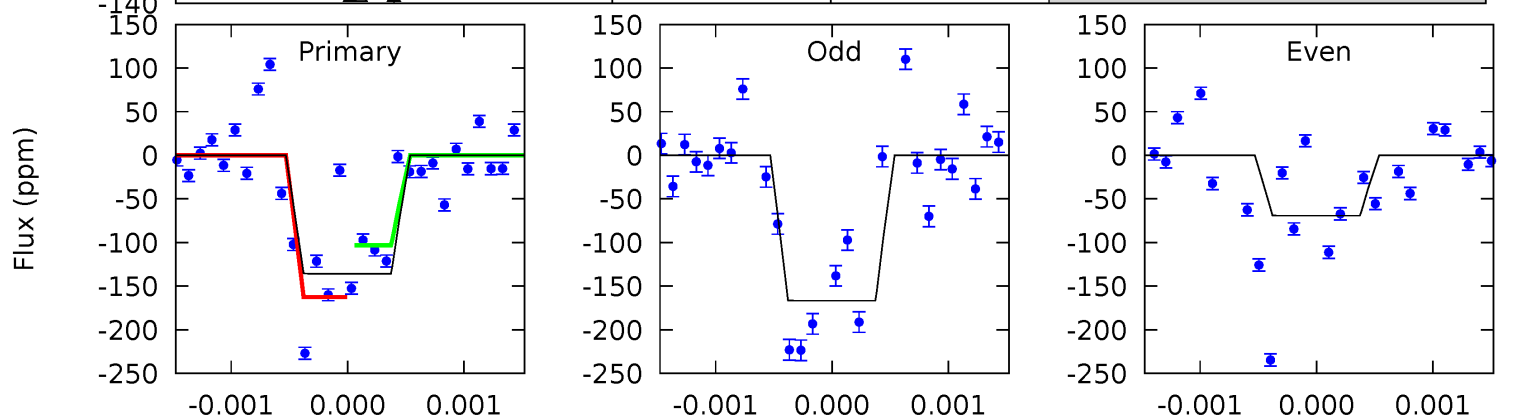
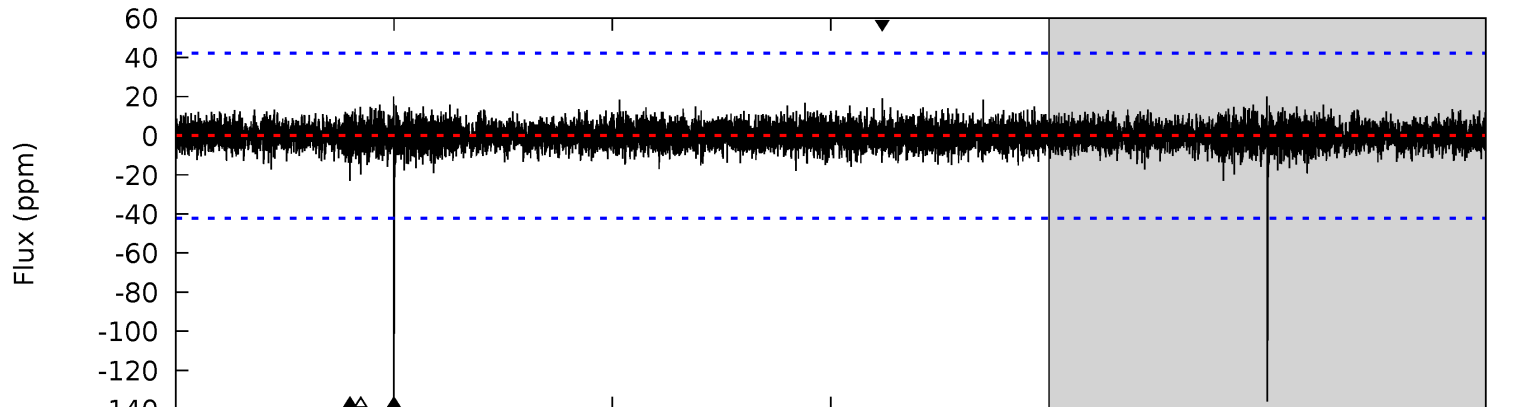
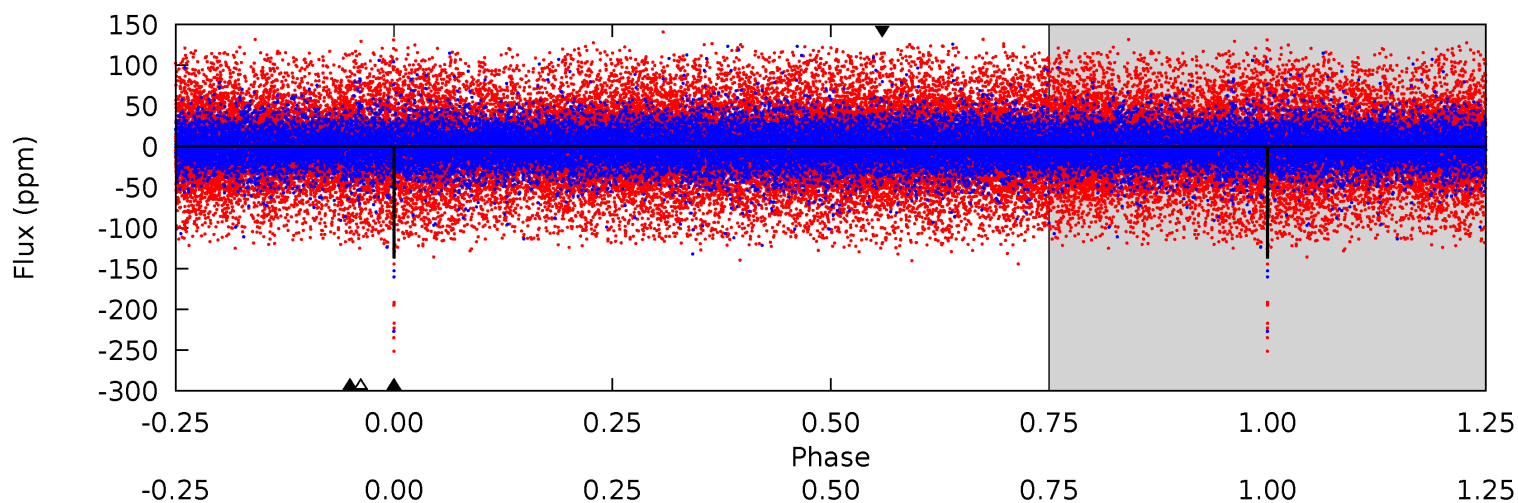
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.69	6.41	5.86	6.81	5.54	3.43	1.73	3.83	2.87	0.55	-0.41	1.93	0.89	0.41	0.30



# Alt Model-Shift Uniqueness Test

009994771-01, P = 246.157325 Days, E = 147.198190 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
17.9	3.04	2.63	2.52	5.56	3.46	0.59	15.3	15.4	0.41	0.52	6.66	1.57	0.13	3.99



### Stellar Parameters For KIC 009994771

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5193^{+62}_{-85}$	$3.534^{+0.148}_{-0.121}$	$-0.240^{+0.150}_{-0.150}$	$3.251^{+0.507}_{-0.697}$	$1.319^{+0.124}_{-0.290}$	$0.054^{+0.044}_{-0.018}$
	+1%/-2%	+4%/-3%	+62%/-62%	+16%/-21%	+9%/-22%	+82%/-33%
Source	SPE74	SPE74	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 009994771-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-97 \pm 15$	$5.45^{+2.33}_{-2.23}$	$627^{+29}_{-32}$	$4305^{+1044}_{-502}$	$1263^{+2229}_{-651}$
Alt.	$-23 \pm 8$	$4.82^{+2.24}_{-2.04}$	$629^{+29}_{-33}$	$3484^{+789}_{-412}$	$365^{+828}_{-208}$

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

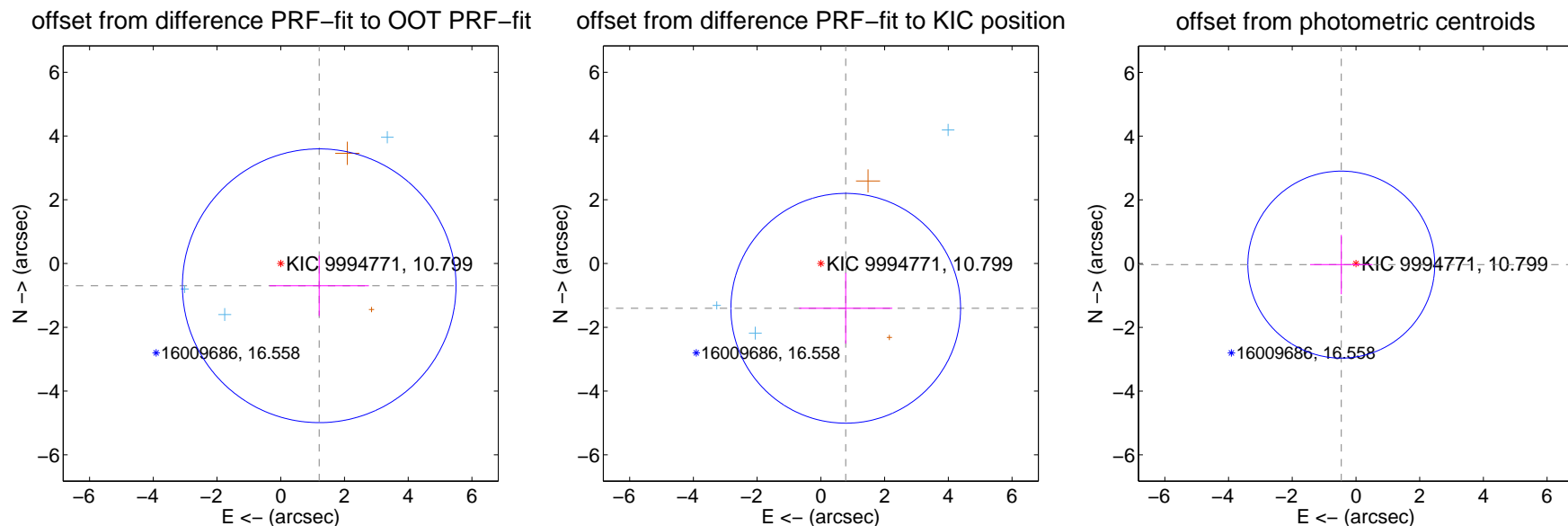
## DV Centroid Data

Supplemental centroid analysis for 009994771-01. **Kepler magnitude: 10.80.** Transit SNR 6.17

**There are 3 quarters with good PRF difference image offsets**

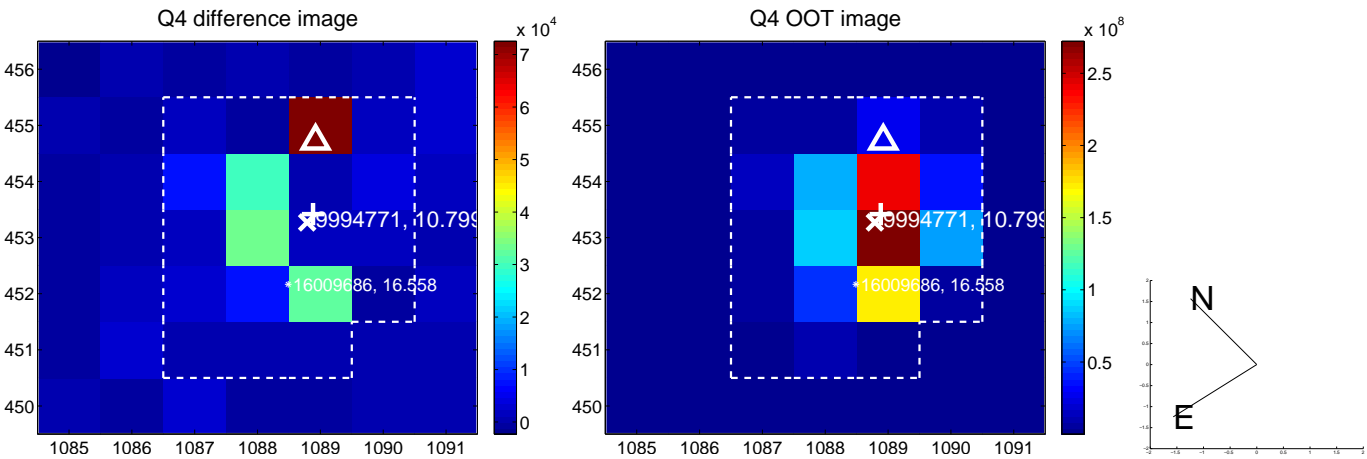
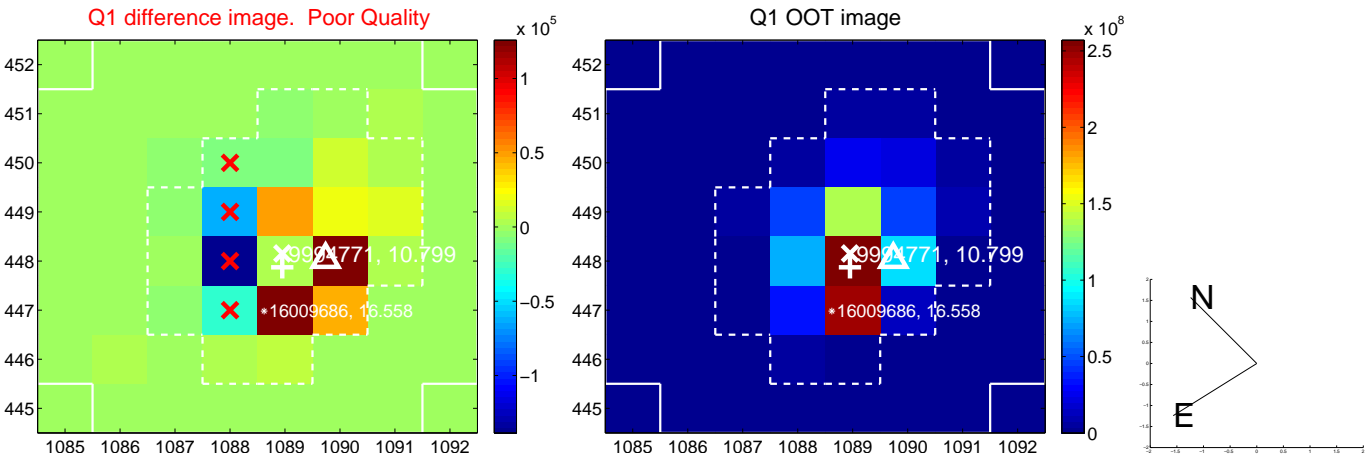
The direct PRF centroid is offset from the target star catalog position by about 0.57 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.394 \pm 1.431$	0.97	$-1.207 \pm 1.559$	$-0.697 \pm 0.944$
PRF-fit source offset from KIC position	$1.605 \pm 1.201$	1.34	$-0.781 \pm 1.463$	$-1.403 \pm 1.107$
photometric centroid source offset	$0.46 \pm 0.98$	0.47	$0.46 \pm 0.98$	$-0.03 \pm 0.93$

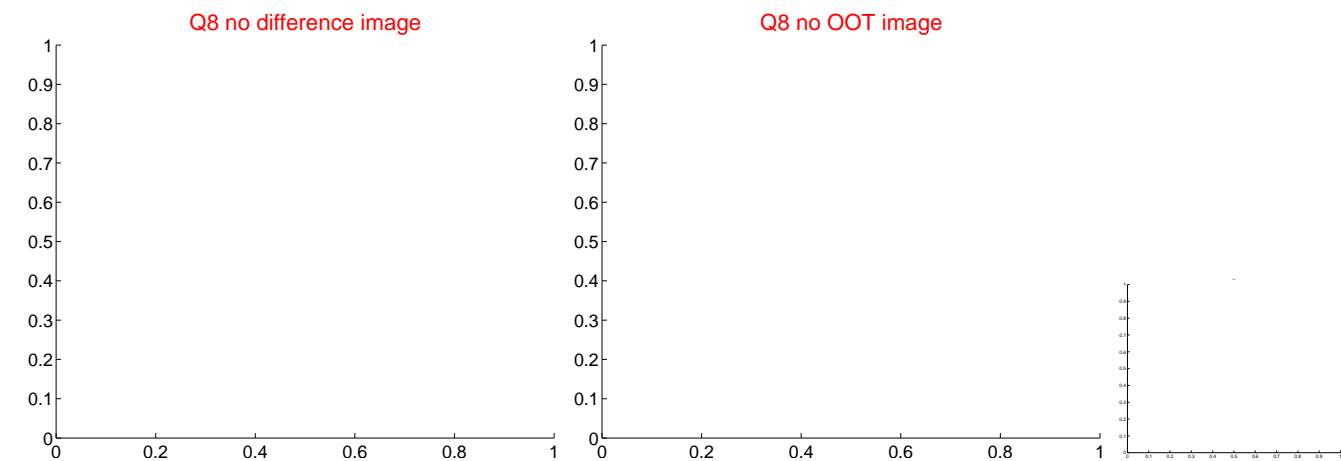
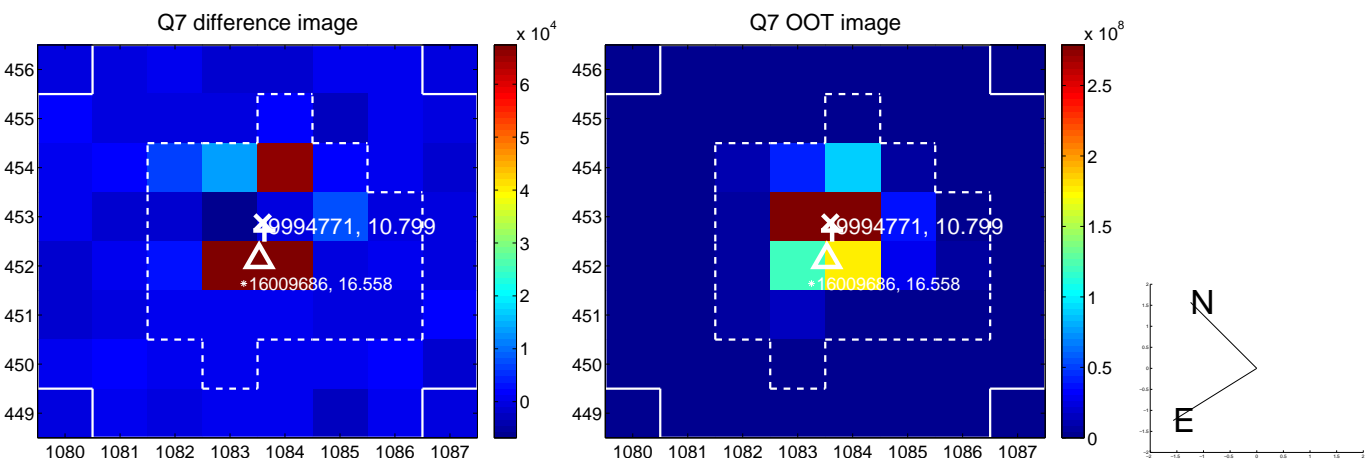
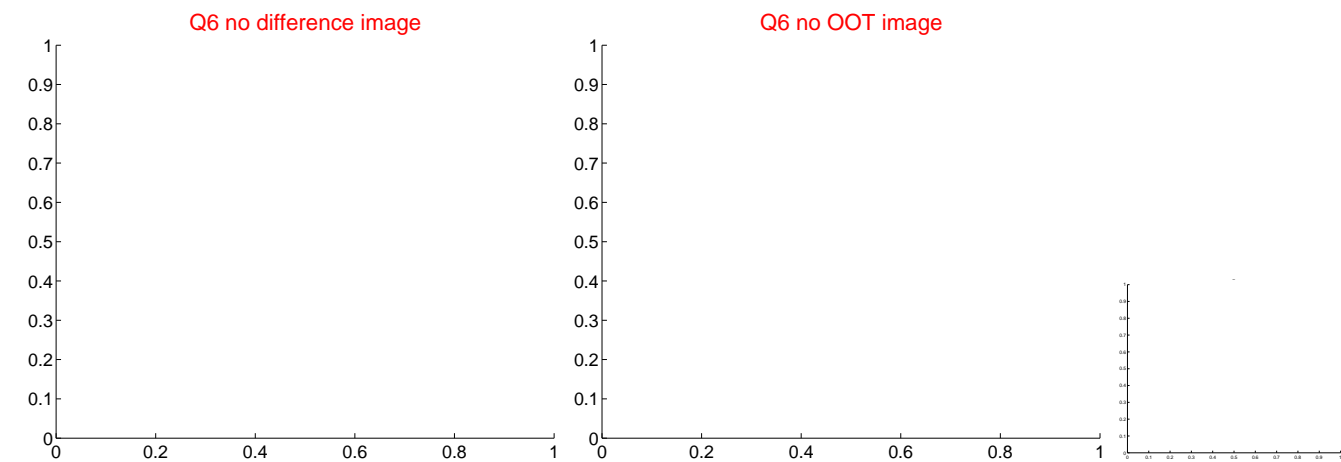
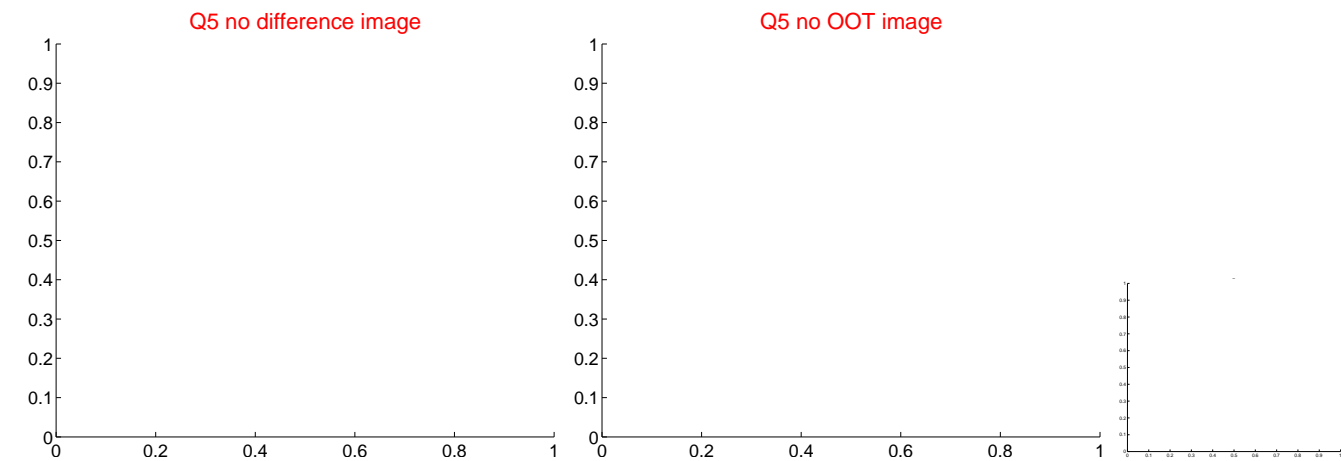


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

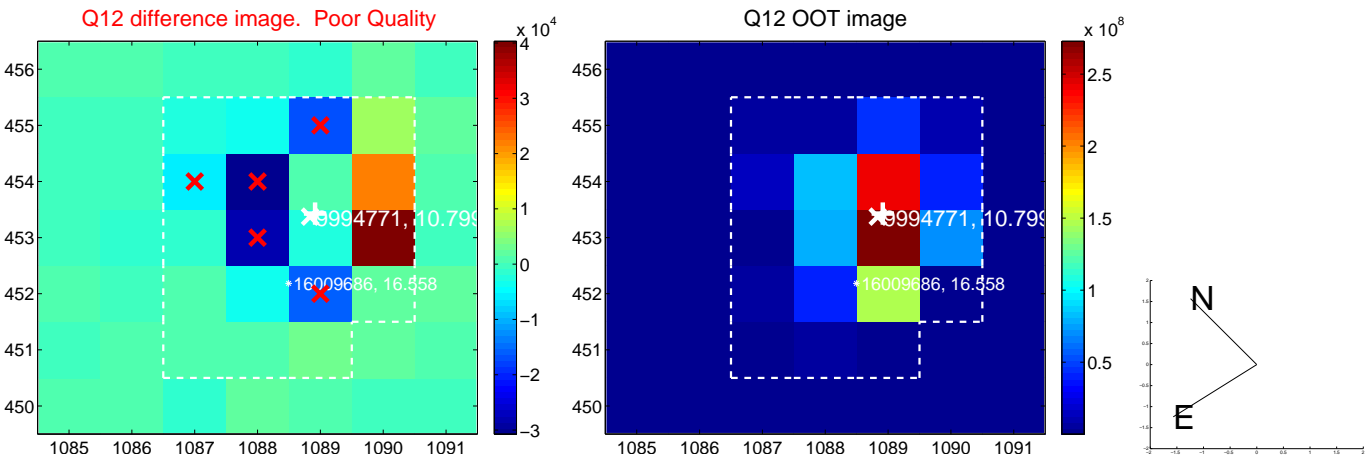
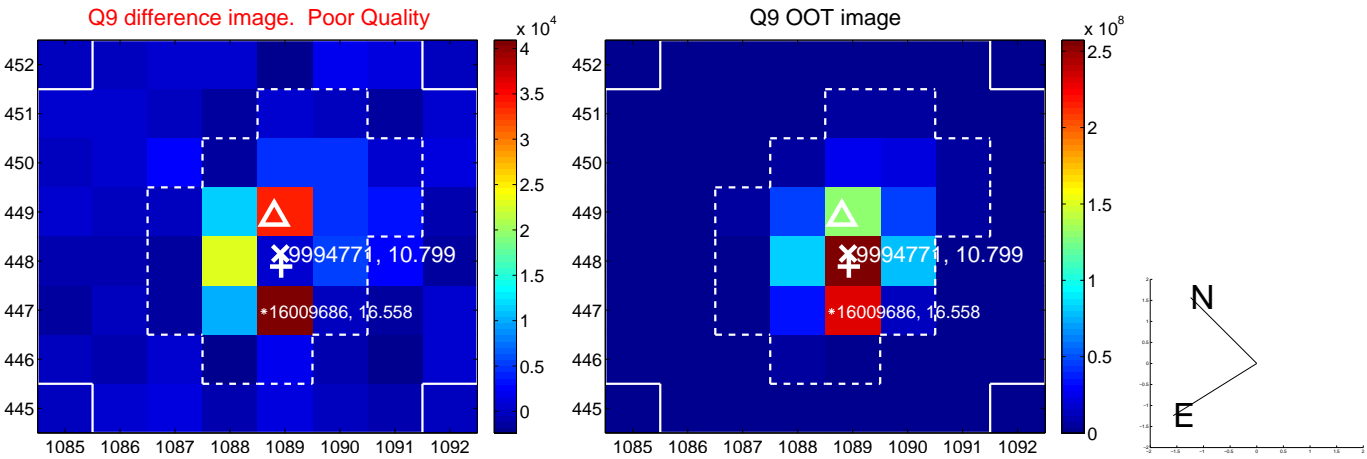


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

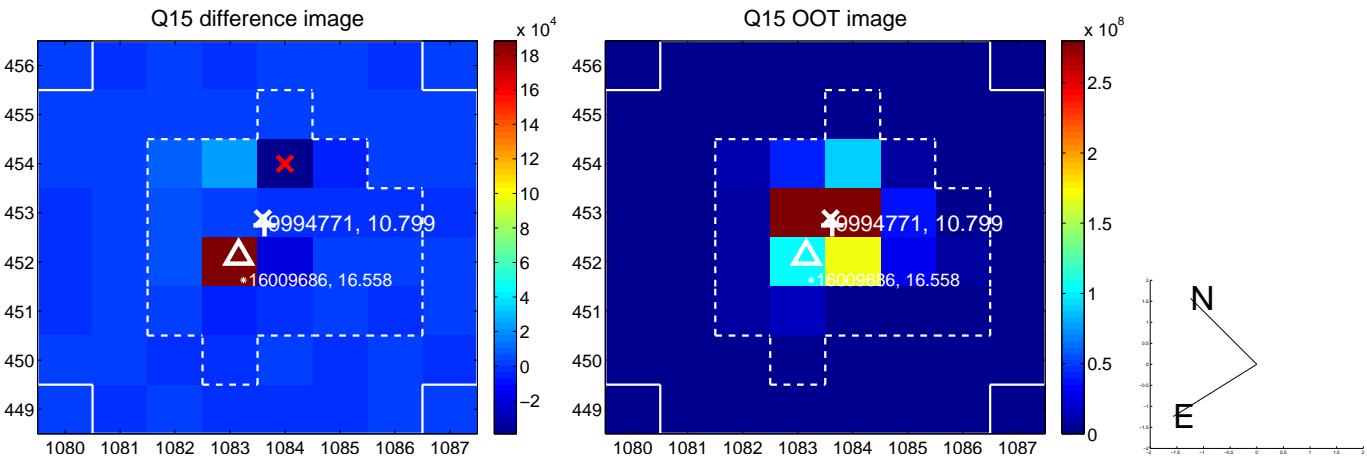




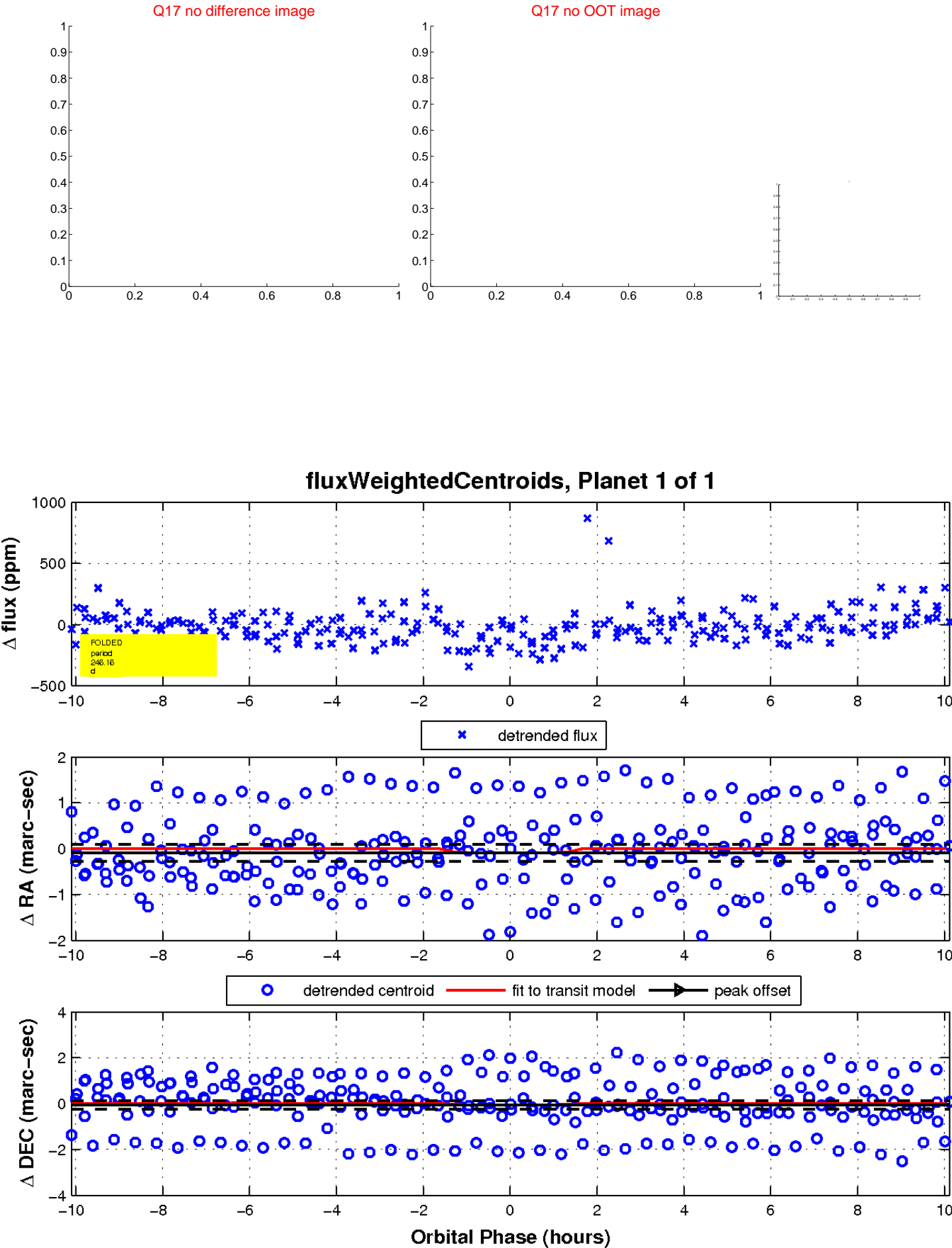
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

