

# KIC 008330778

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008330778-01	OBS	No	357.103125	218.653726	453.0	4.398	7.3	8.3	2.08	7863	4.74	10.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008330778-01	OBS	FP	0.01	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

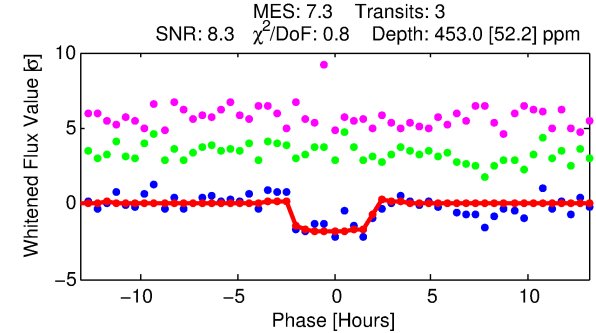
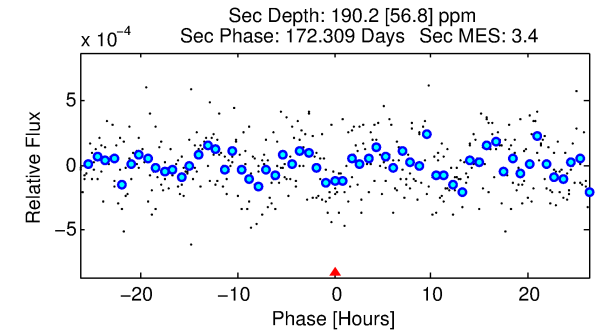
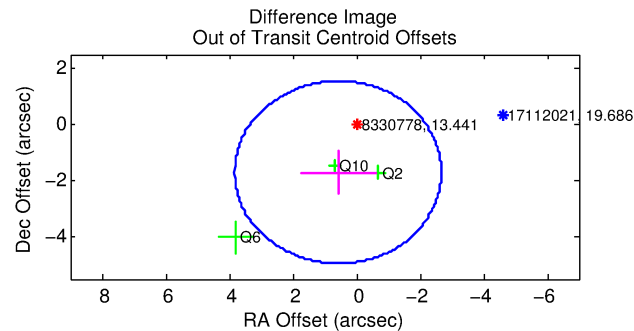
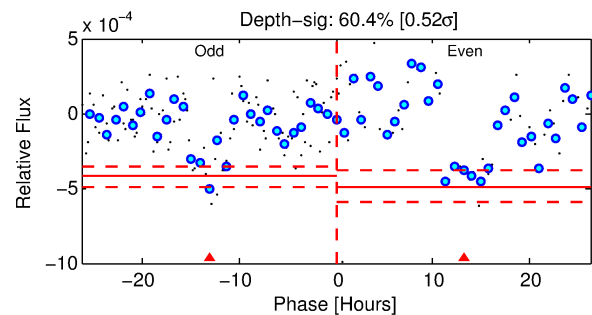
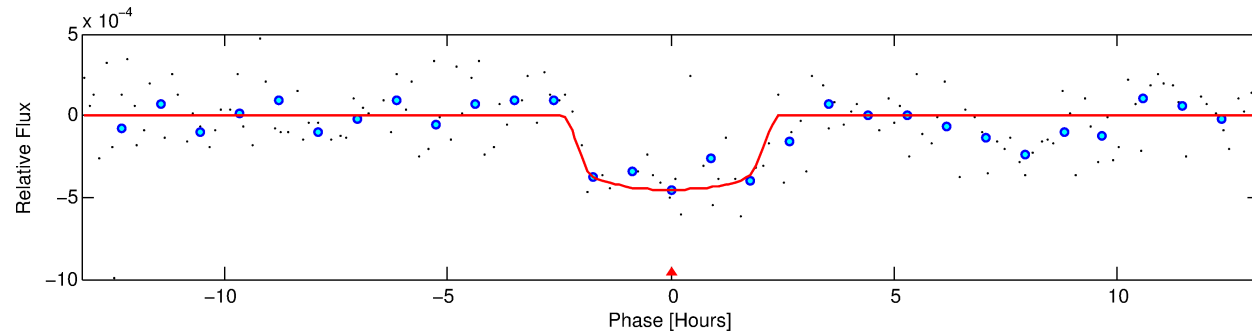
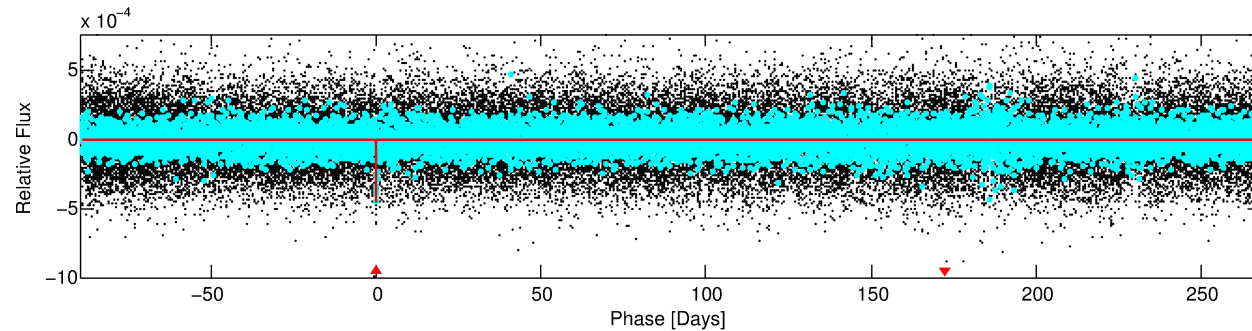
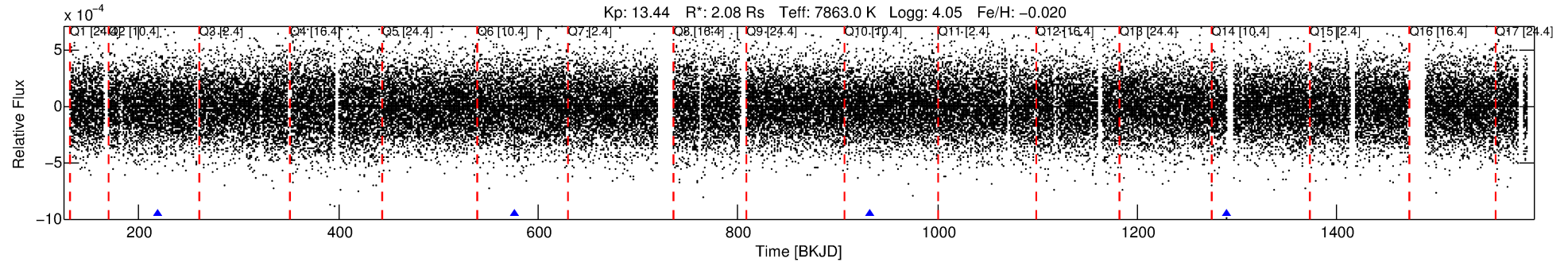
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008330778-01

No Significant Match Found

# DV One-Page Summary

KIC: 8330778 Candidate: 1 of 1 Period: 357.103 d



## DV Fit Results:

Period = 357.10313 [0.00499] d  
Epoch = 218.6537 [0.0080] BKJD  
Rp/R\* = 0.0208 [0.0118]  
a/R\* = 469.70 [1631.40]  
b = 0.68 [2.71]  
Seff = 10.43 [3.53]  
Teq = 458 [39] K  
Rp = 4.74 [2.93] Re  
a = 1.1944 [0.2445] AU  
Ag = 6646.64 [8053.78] [0.83 $\sigma$ ]  
Teffp = 6397 [1898] K [3.13 $\sigma$ ]

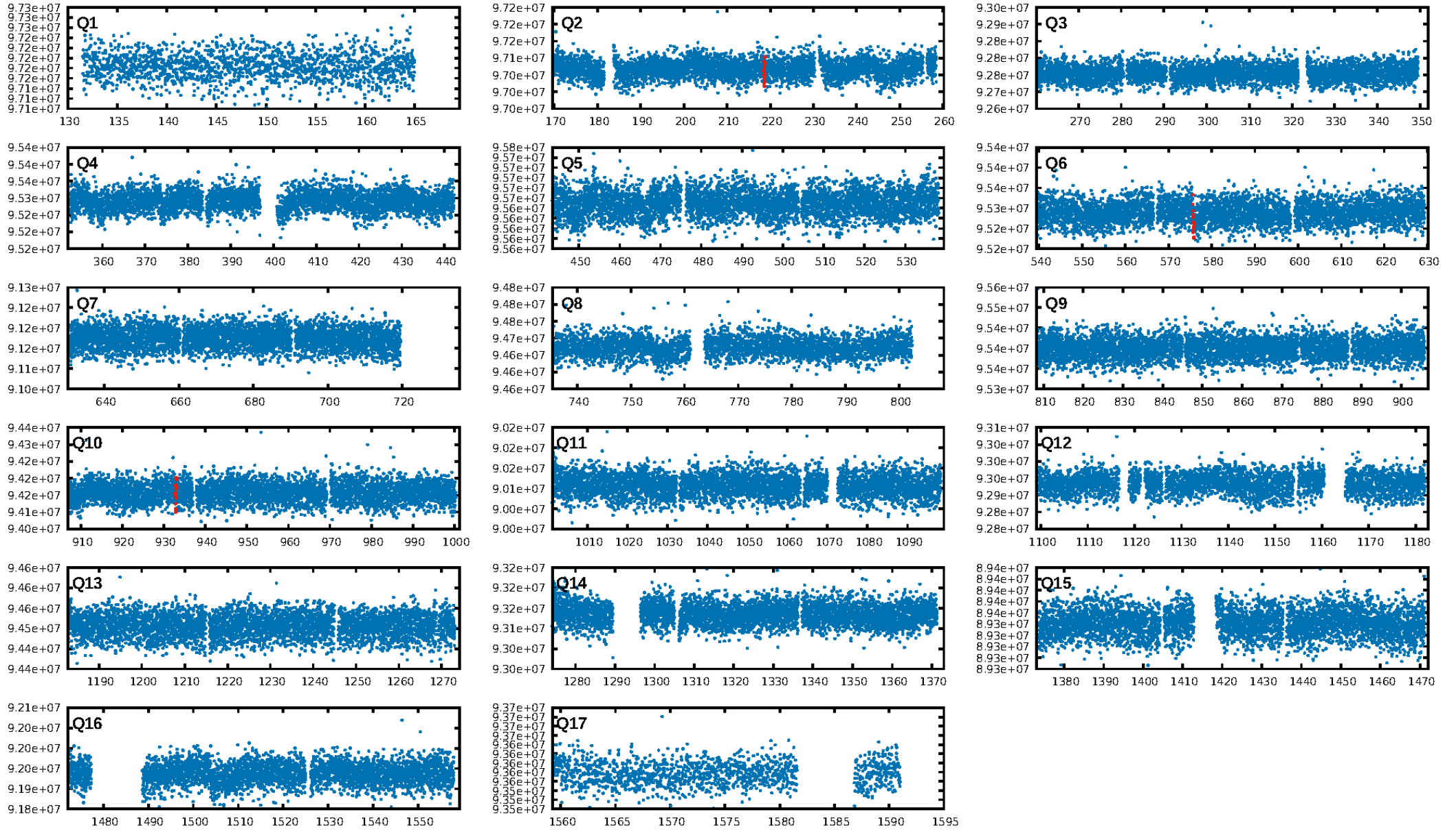
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 62.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.81e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.637  
Centroid-sig: 37.6%  
Centroid-so: 0.824 arcsec [0.57 $\sigma$ ]  
OotOffset-rm: 1.796 arcsec [1.66 $\sigma$ ]  
KicOffset-rm: 1.654 arcsec [1.88 $\sigma$ ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

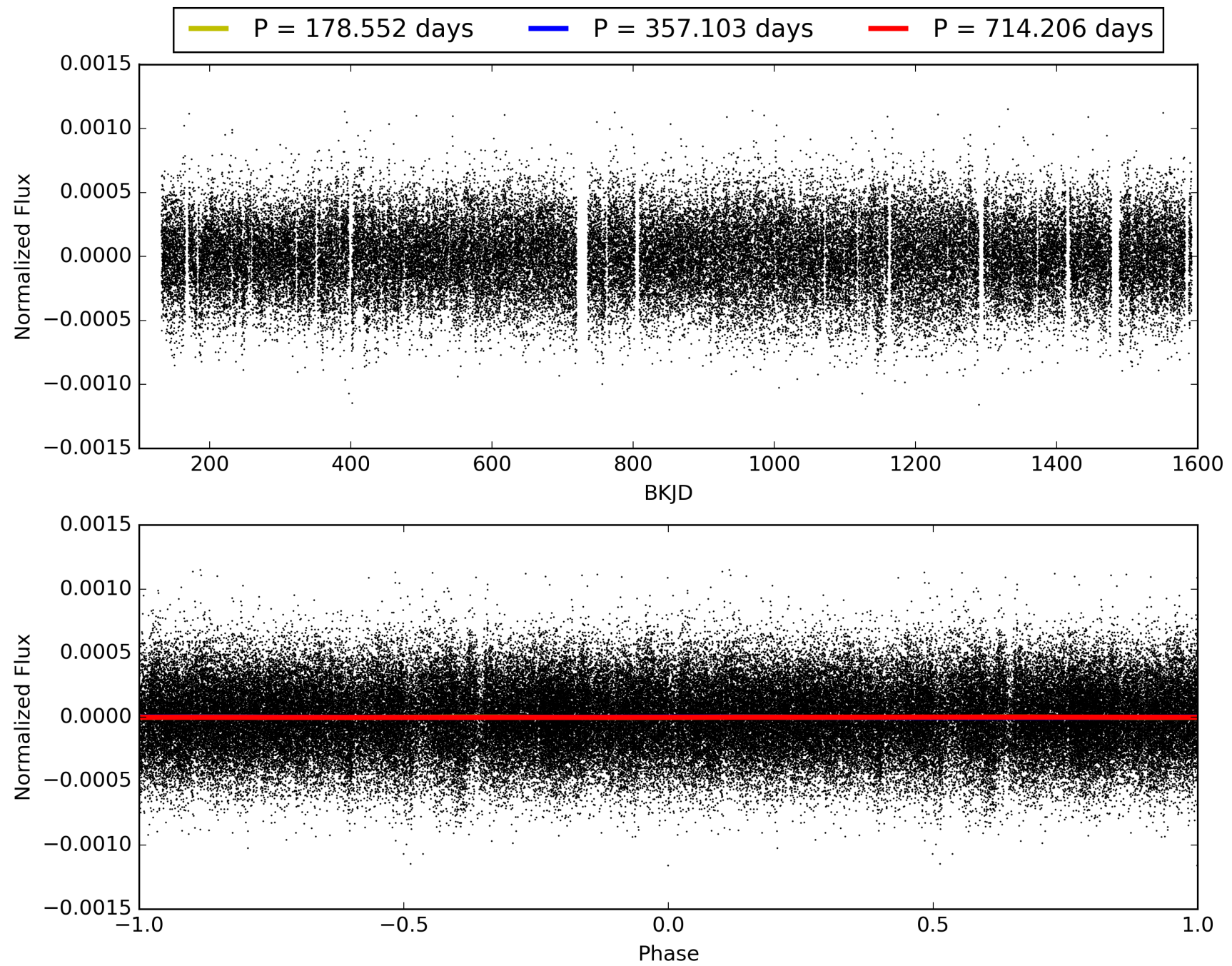
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:52:10 Z

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

# TCE 008330778-01, PDC Light Curves

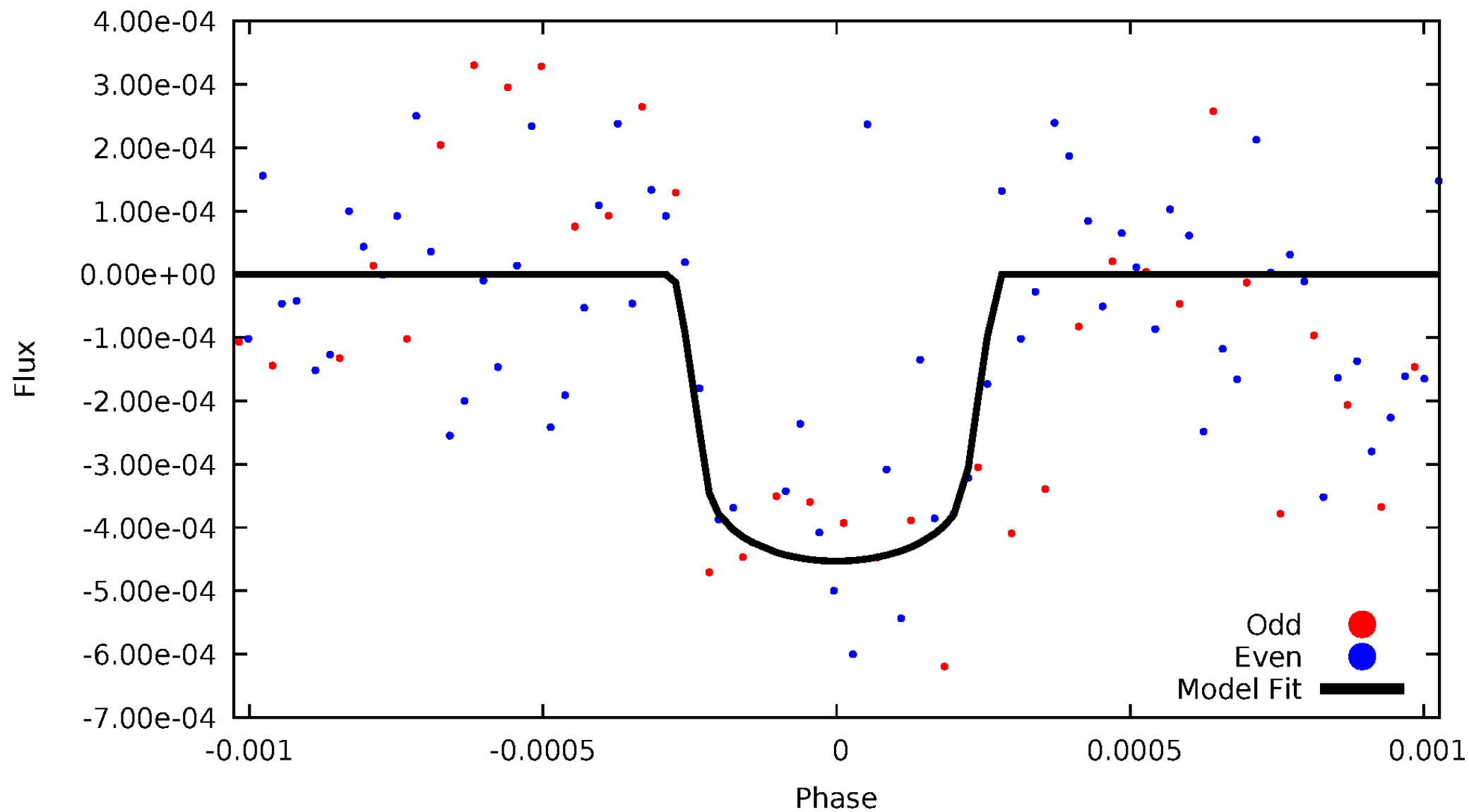


TCE 008330778-01



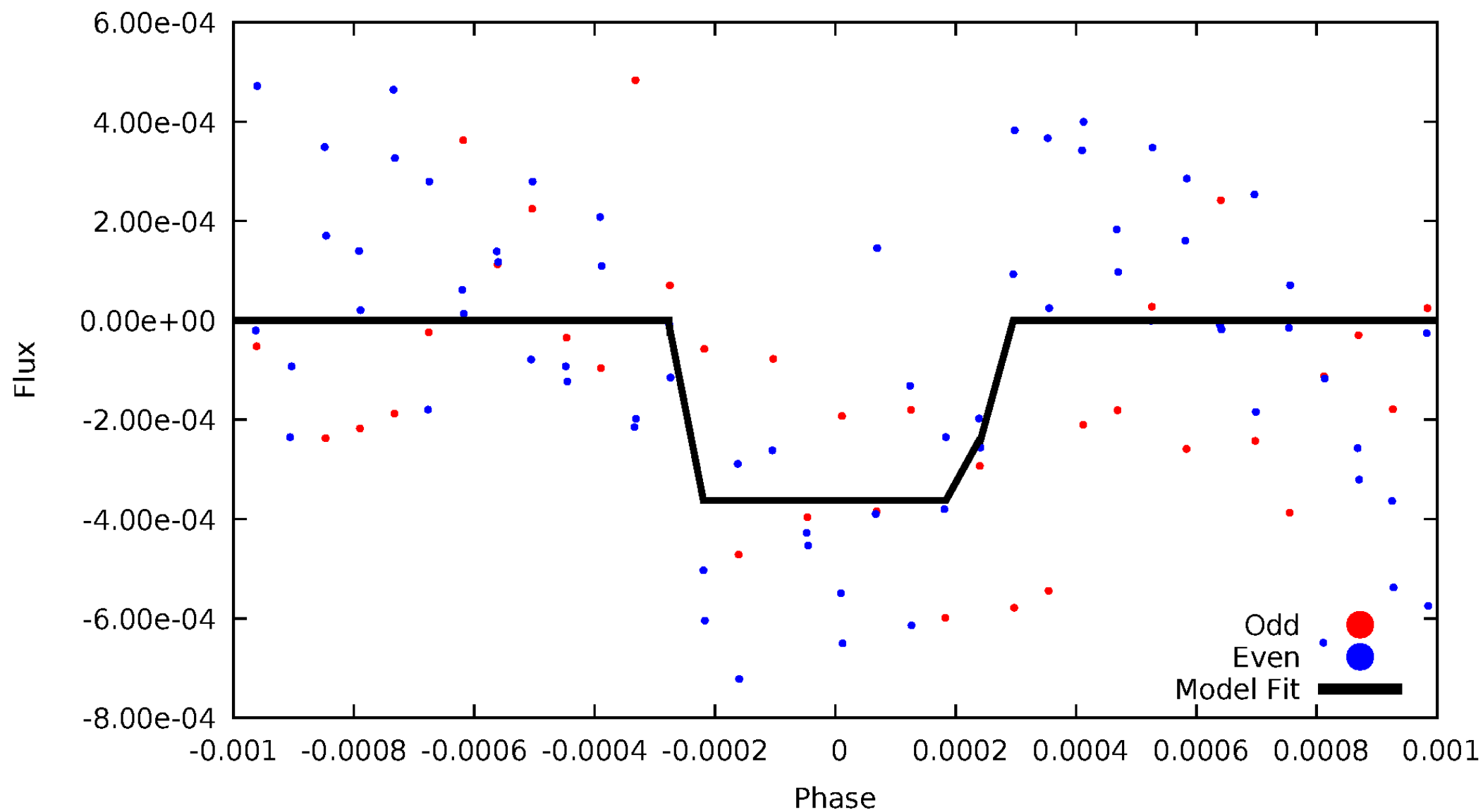
# DV Odd/Even

TCE 008330778-01



# ALT Odd/Even

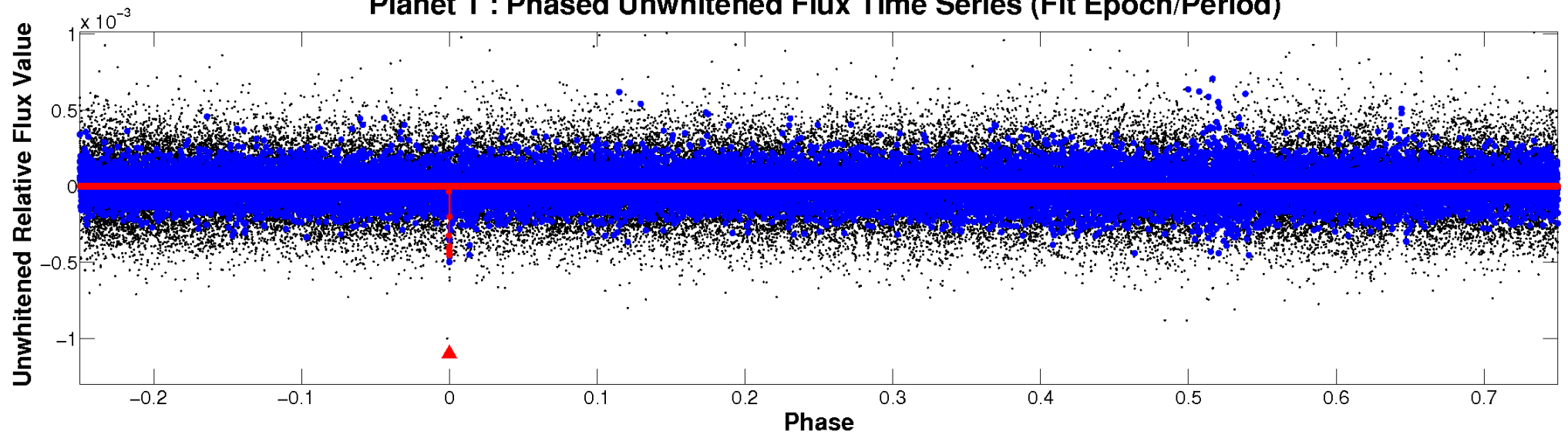
TCE 008330778-01



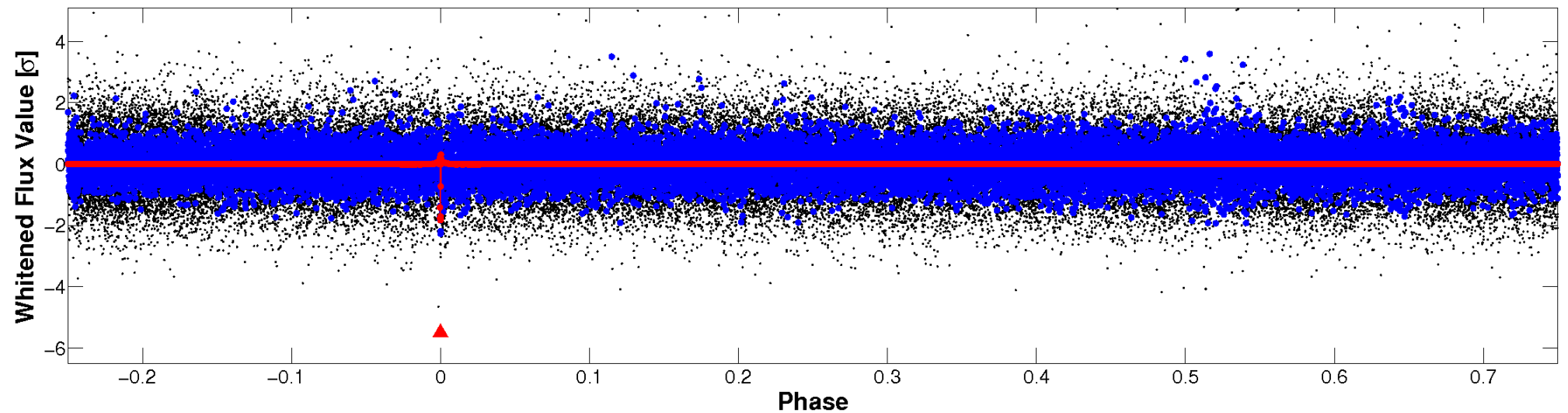


# Non-Whitened Vs. Whitened Light Curve

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

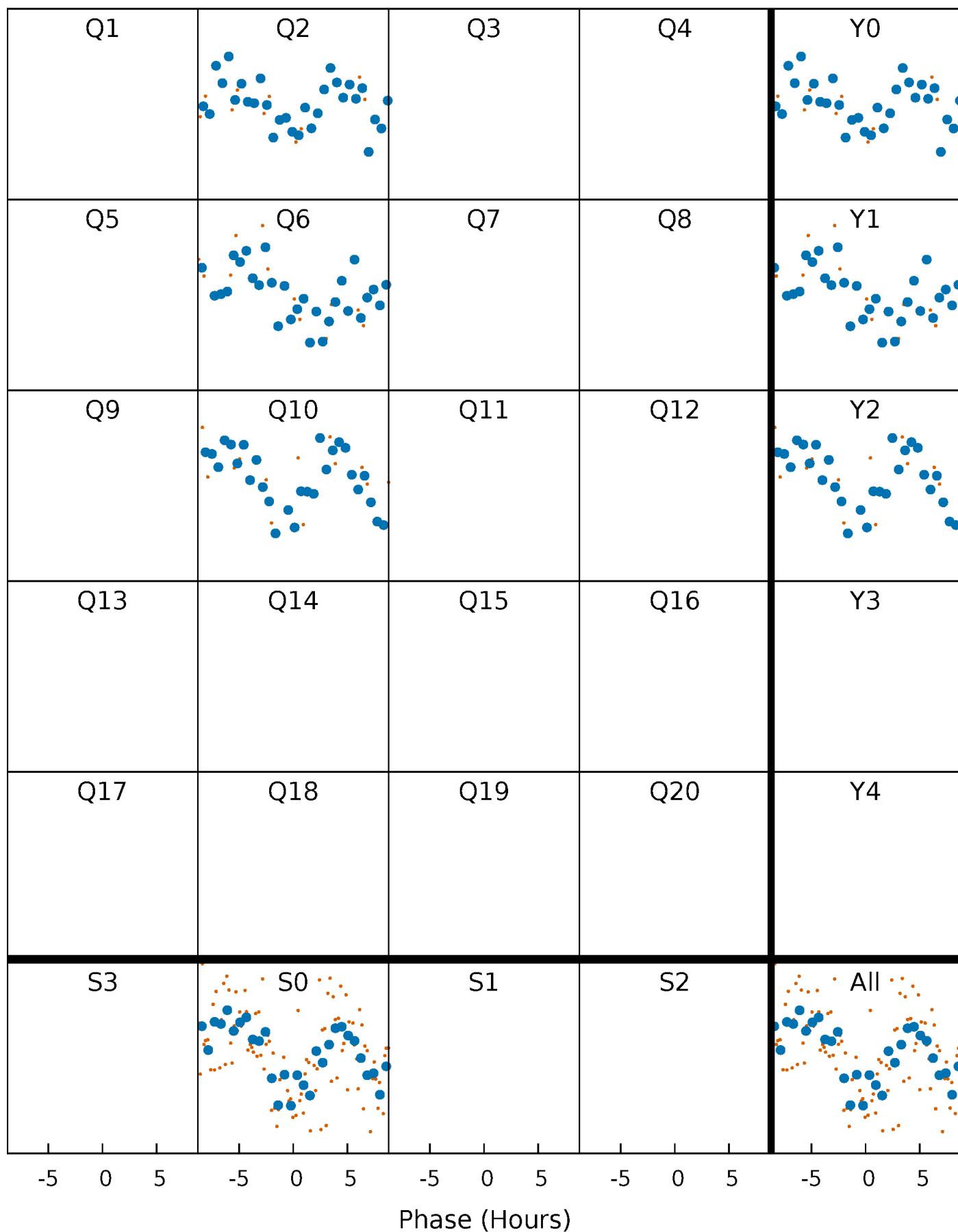


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

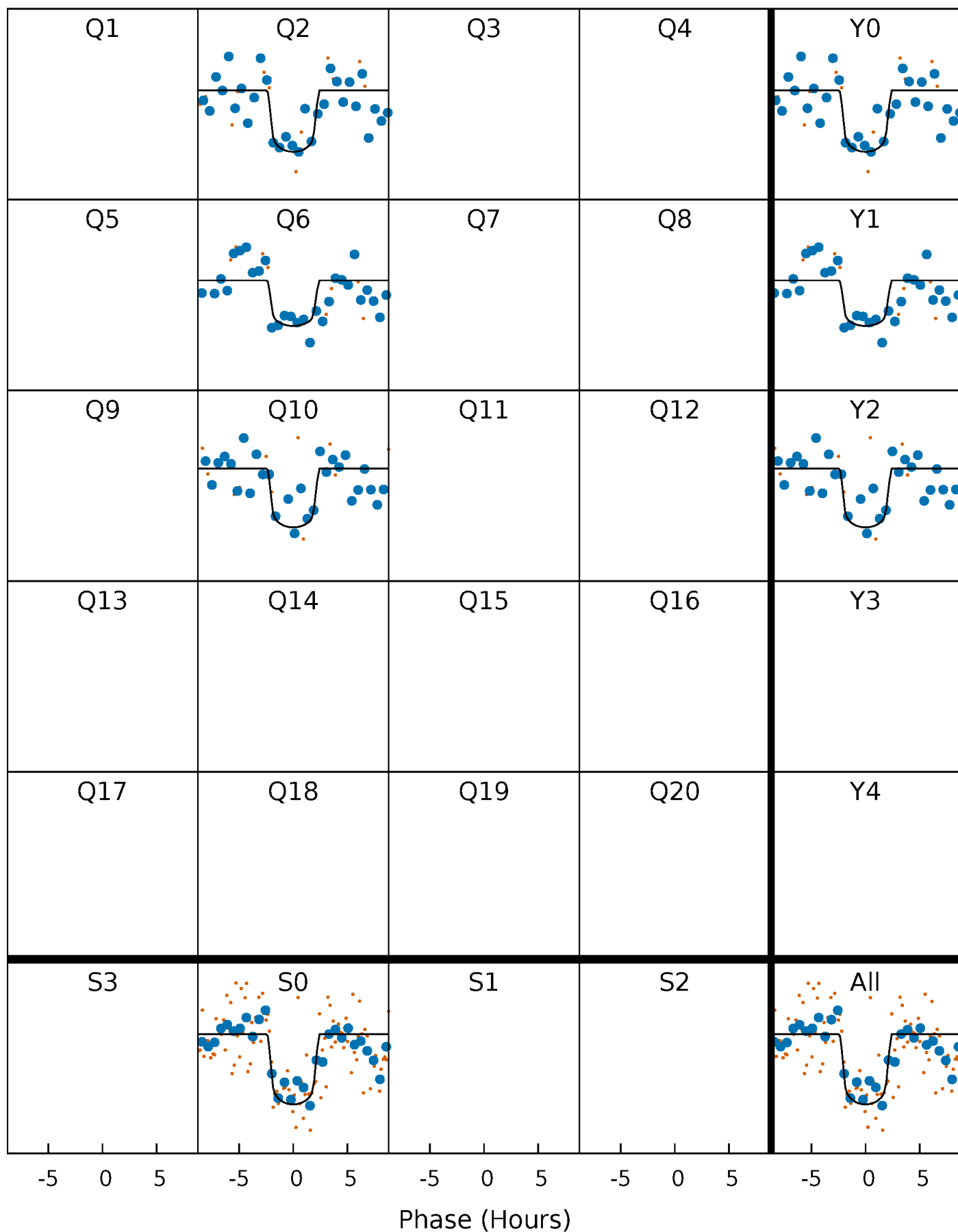
TCE 008330778-01 P=357.103125 Days  $T_0=218.653726$  (BKJD)





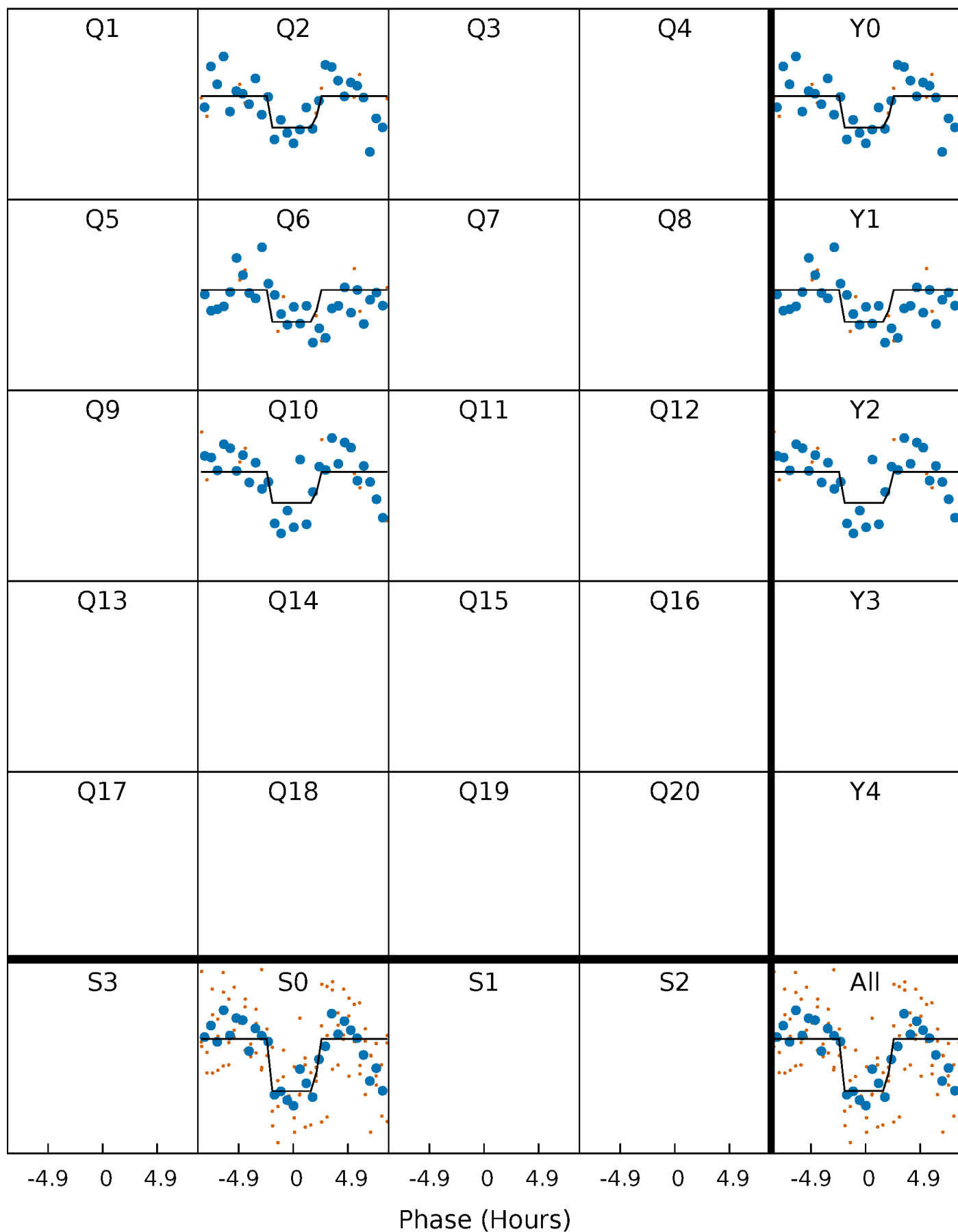
# DV Quarter-Phased Transit Curves

TCE 008330778-01 P=357.103125 Days  $T_0=218.653726$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

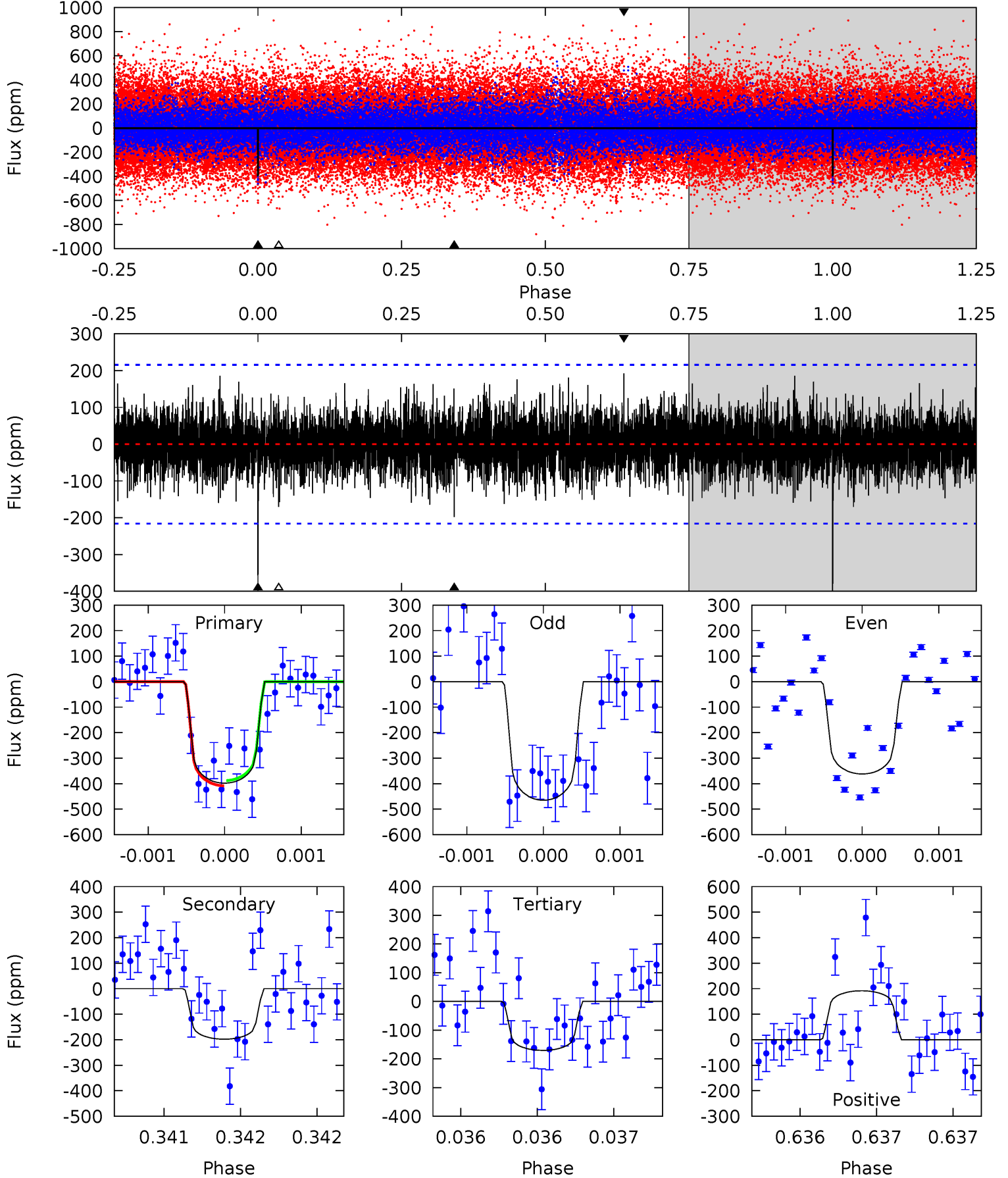
TCE 008330778-01 P=357.096895 Days  $T_0=218.660266$  (BKJD)



# DV Model-Shift Uniqueness Test

008330778-01, P = 357.103125 Days, E = 218.653726 Days

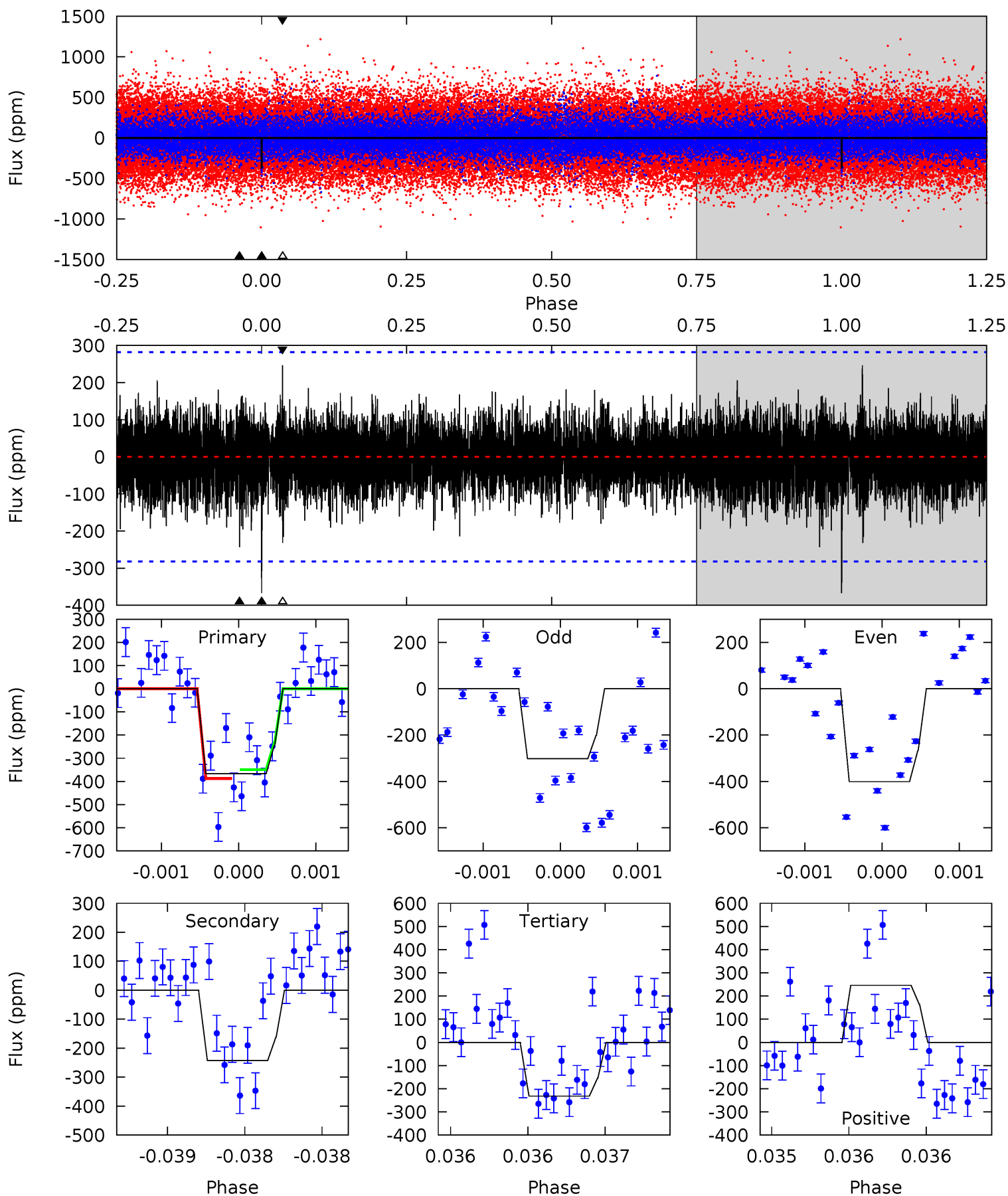
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	5.10	4.39	4.94	5.56	3.46	1.30	5.86	5.31	0.71	0.16	1.26	0.99	0.33	0.26



# Alt Model-Shift Uniqueness Test

008330778-01, P = 357.096895 Days, E = 218.660266 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
7.24	4.79	4.58	4.86	5.57	3.47	1.17	2.66	2.38	0.21	-0.06	0.93	1.02	0.40	0.38



### Stellar Parameters For KIC 008330778

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7863^{+216}_{-324}$	$4.051^{+0.160}_{-0.160}$	$-0.020^{+0.200}_{-0.350}$	$2.084^{+0.461}_{-0.512}$	$1.783^{+0.147}_{-0.319}$	$0.277^{+0.260}_{-0.115}$
	+3%/-4%	+4%/-4%	+1000%/-1750%	+22%/-25%	+8%/-18%	+94%/-41%
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 008330778-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-198 \pm 39$	$4.72^{+2.73}_{-2.43}$	$641^{+40}_{-43}$	$6263^{+3501}_{-1184}$	$6698^{+22325}_{-3977}$
Alt.	$-243 \pm 51$	$4.36^{+2.85}_{-2.44}$	$640^{+42}_{-42}$	$6810^{+5433}_{-1419}$	$9173^{+44359}_{-5710}$

$T_{max}$  = 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

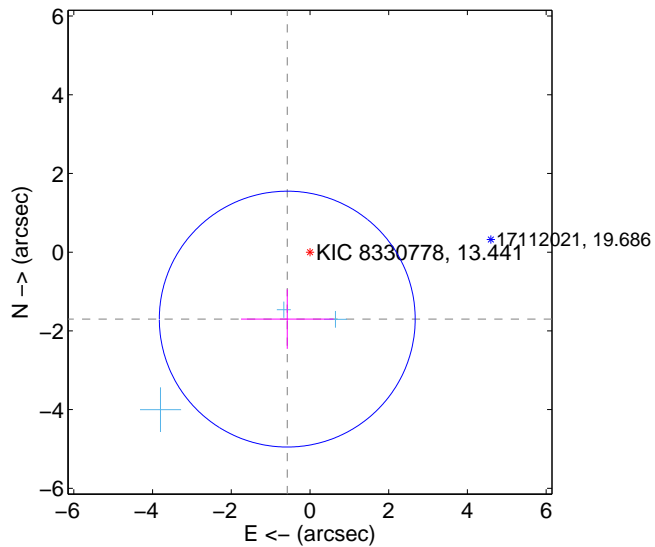
Supplemental centroid analysis for 008330778-01. Kepler magnitude: 13.44. Transit SNR 8.27

There are 3 quarters with good PRF difference image offsets

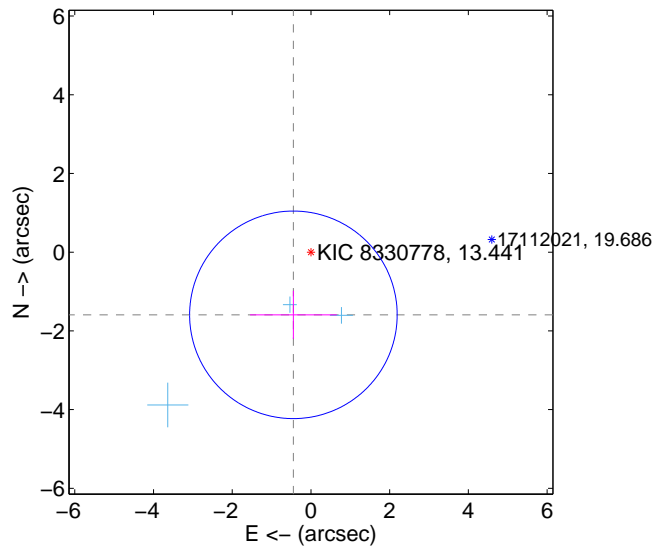
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.796 \pm 1.083$	1.66	$0.577 \pm 1.175$	$-1.701 \pm 0.757$
PRF-fit source offset from KIC position	$1.654 \pm 0.879$	1.88	$0.446 \pm 1.101$	$-1.592 \pm 0.613$
photometric centroid source offset	$0.82 \pm 1.43$	0.57	$-0.16 \pm 1.43$	$0.81 \pm 1.43$

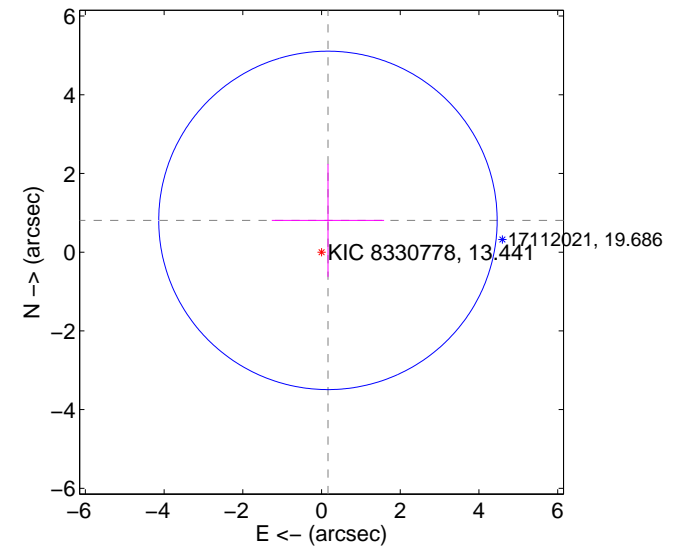
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

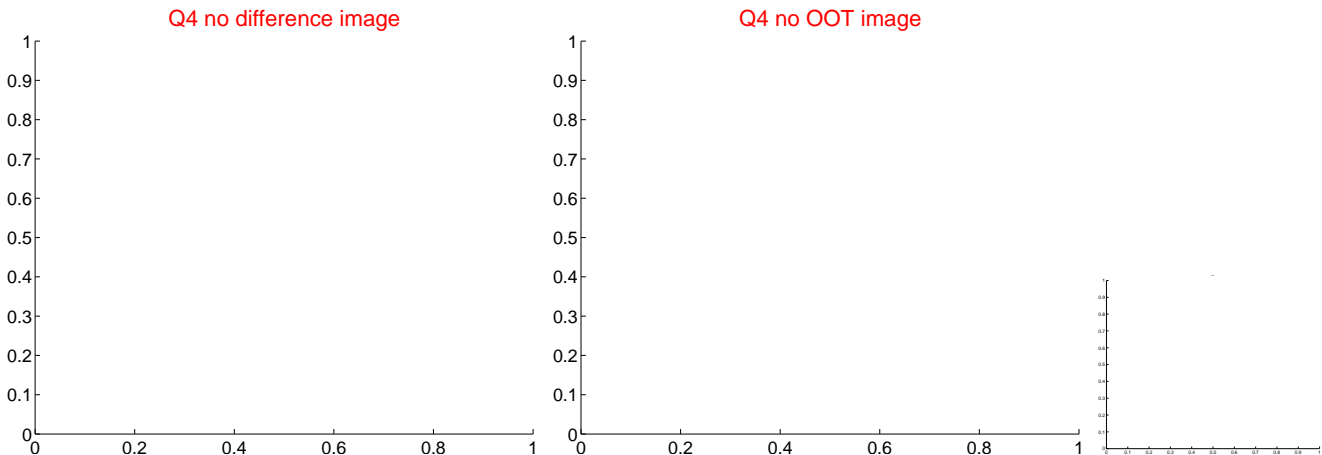
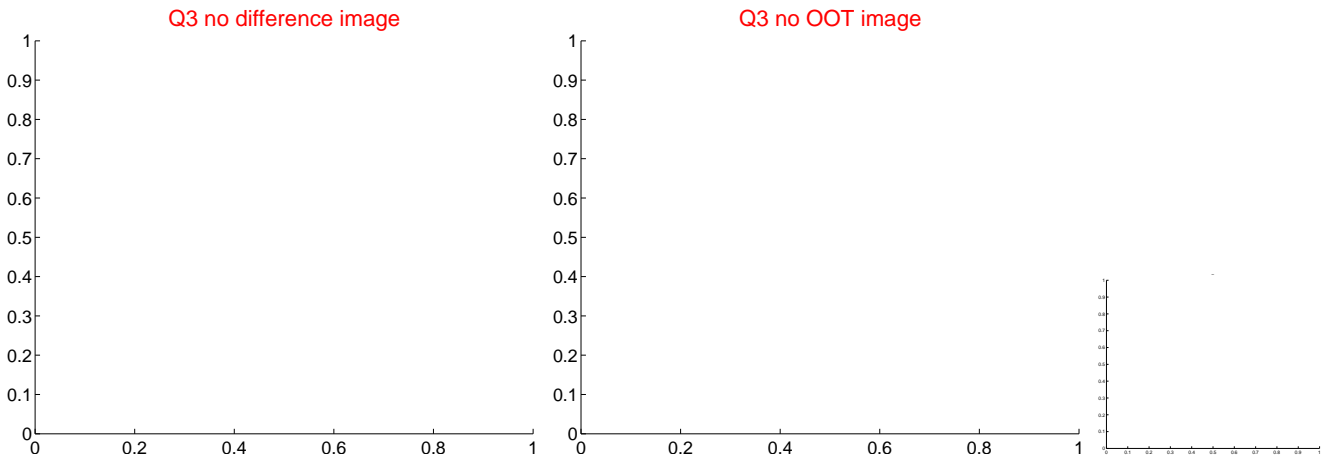
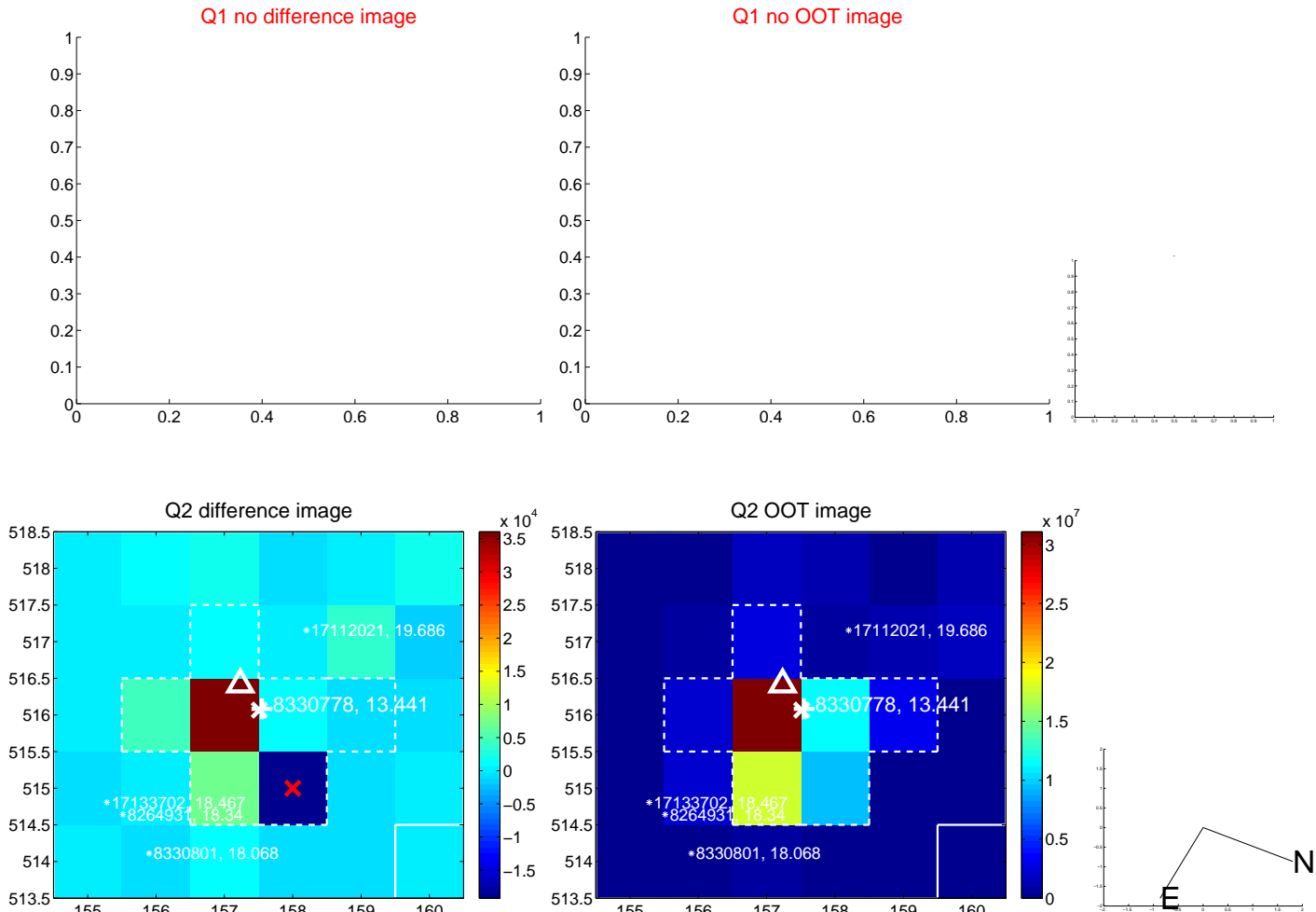


offset from photometric centroids



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.

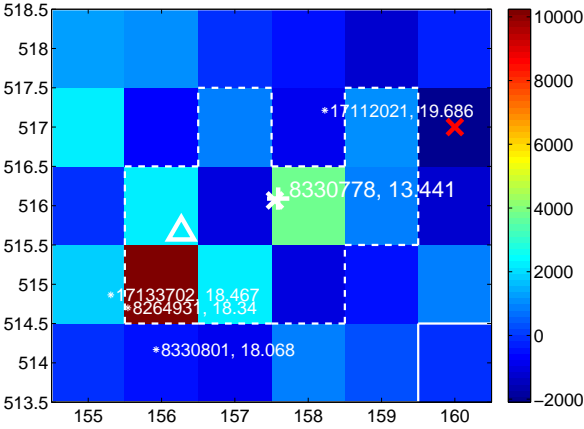
Q5 no difference image



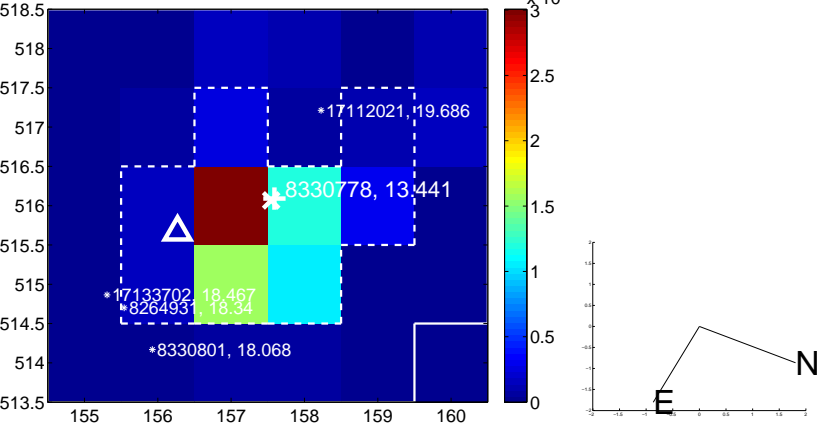
Q5 no OOT image



Q6 difference image



Q6 OOT image



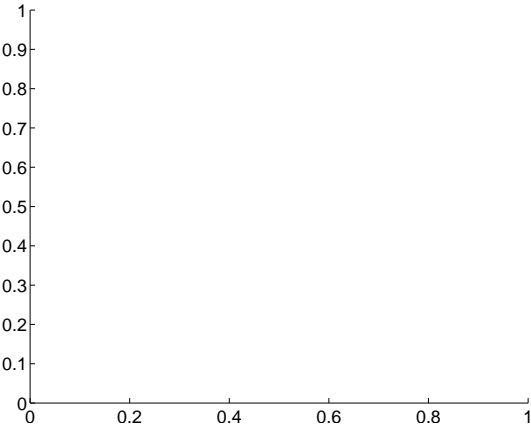
Q7 no difference image



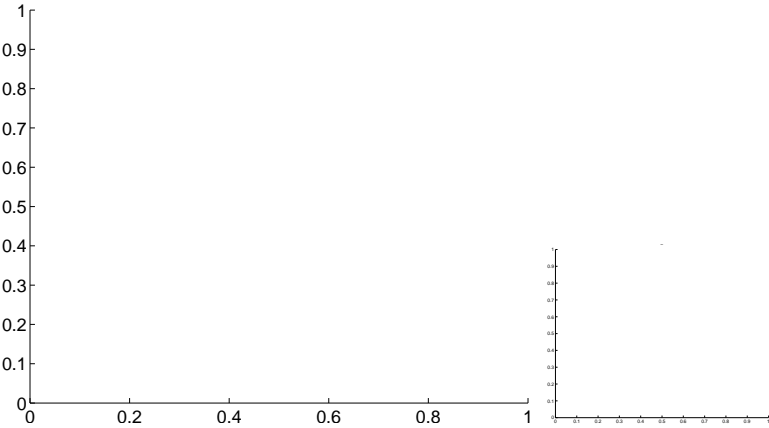
Q7 no OOT image



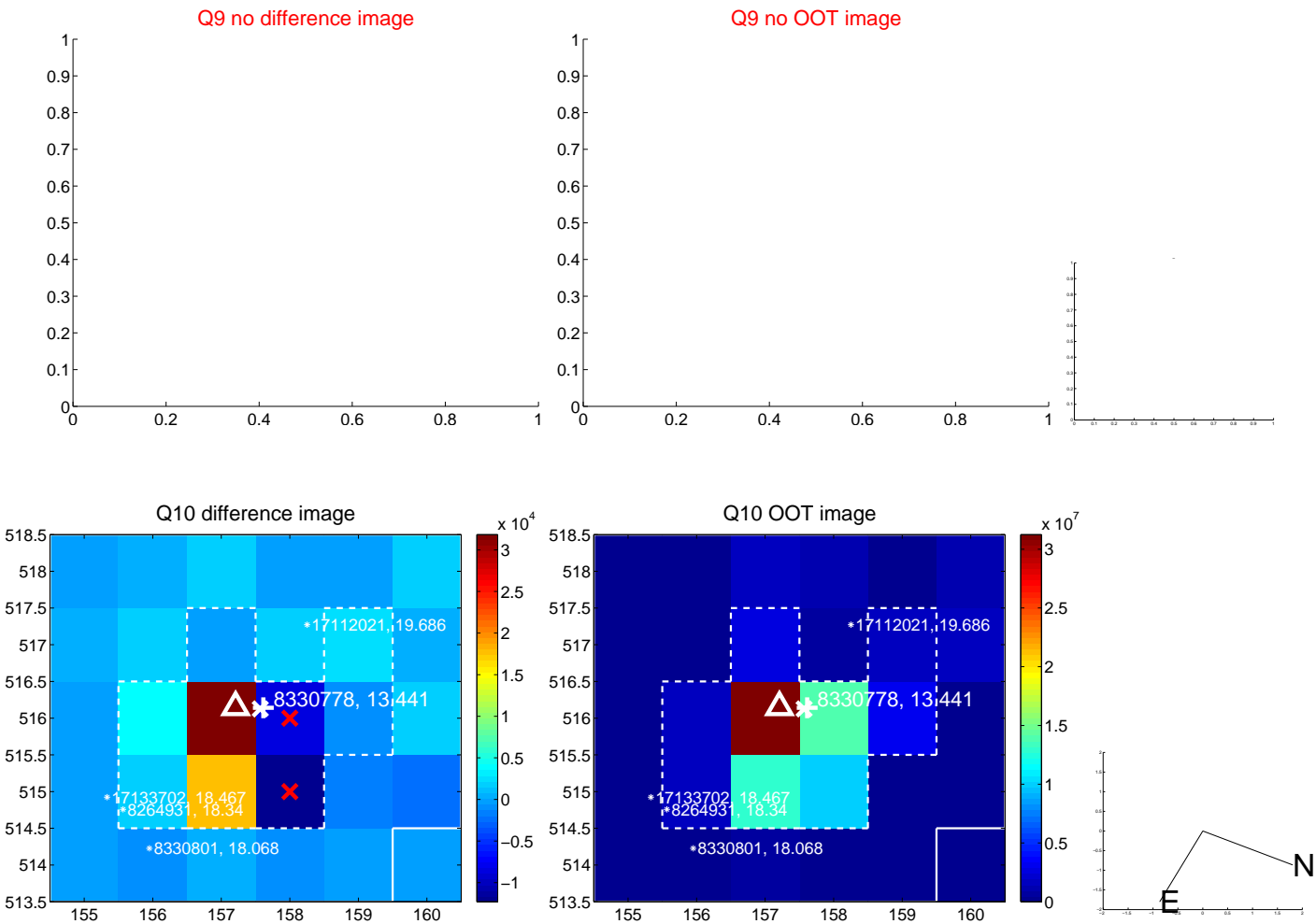
Q8 no difference image



Q8 no OOT image



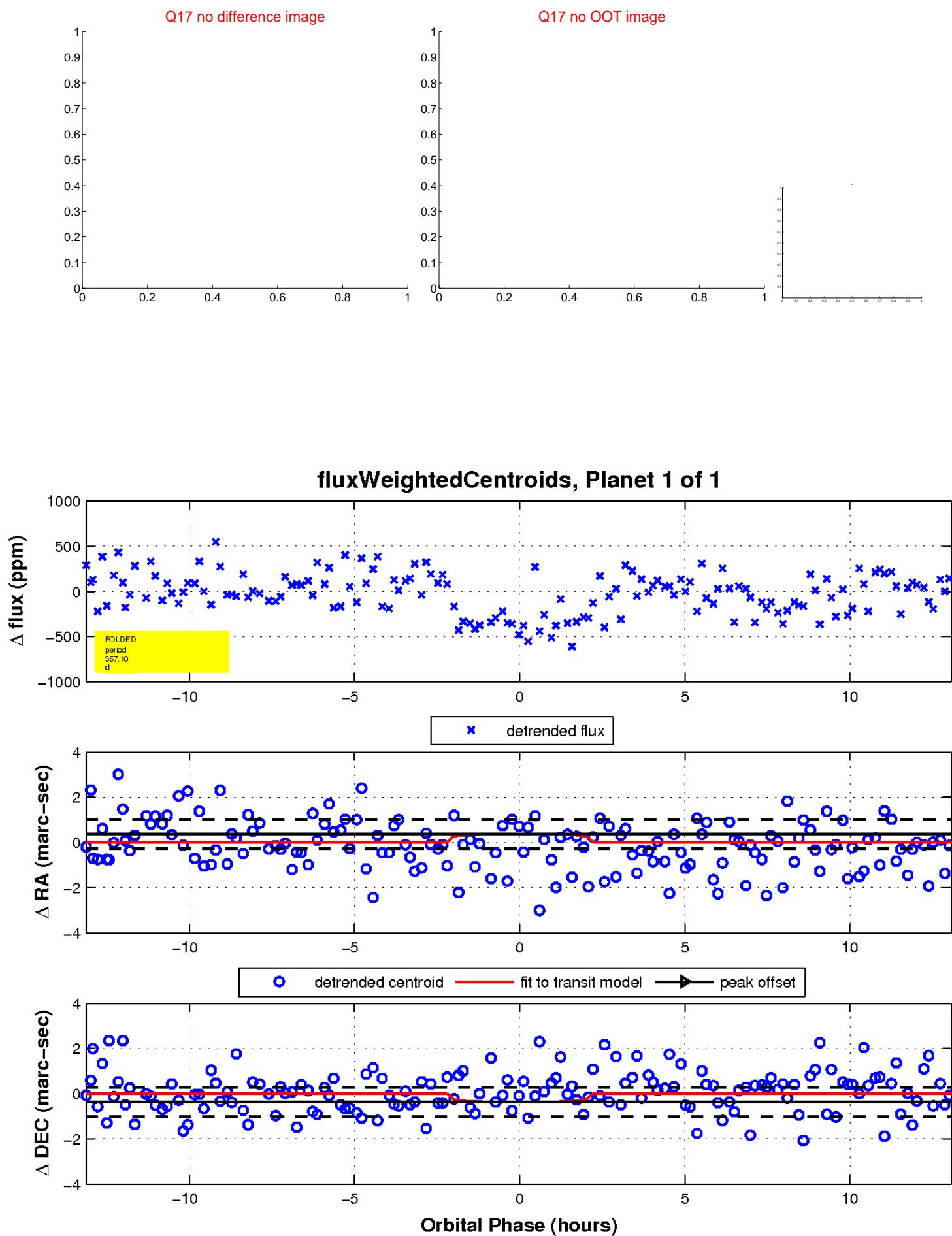
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



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

