

# KIC 004989382

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004989382-01	OBS	No	356.525498	204.333999	93.4	17.918	7.9	7.6	1.65	5670	1.67	2.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004989382-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

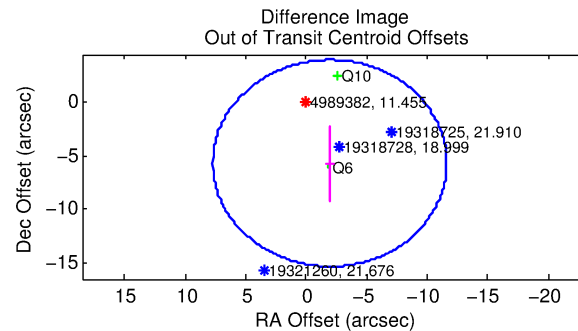
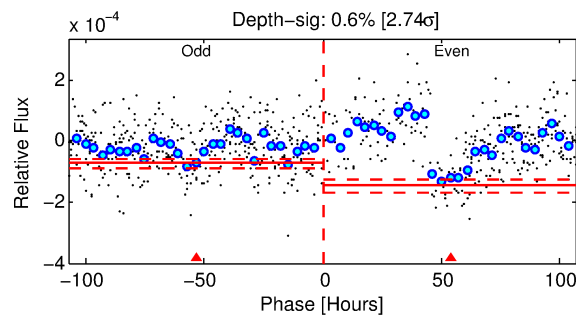
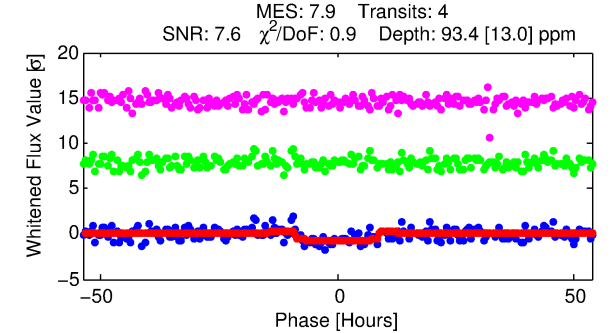
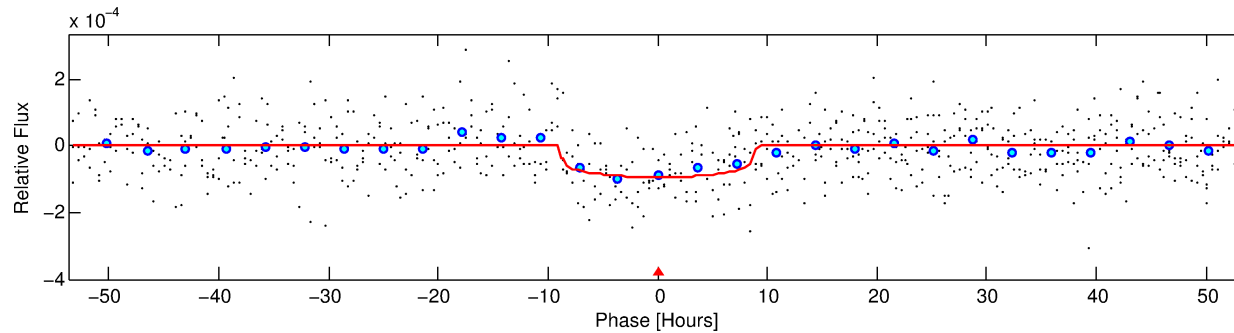
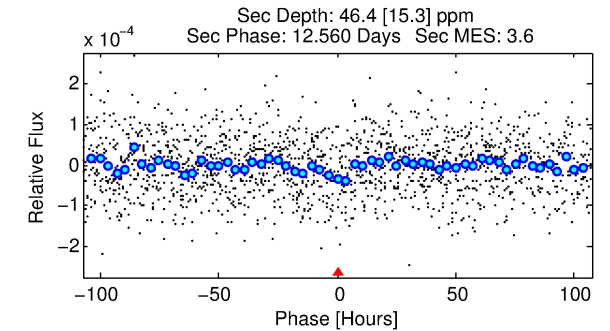
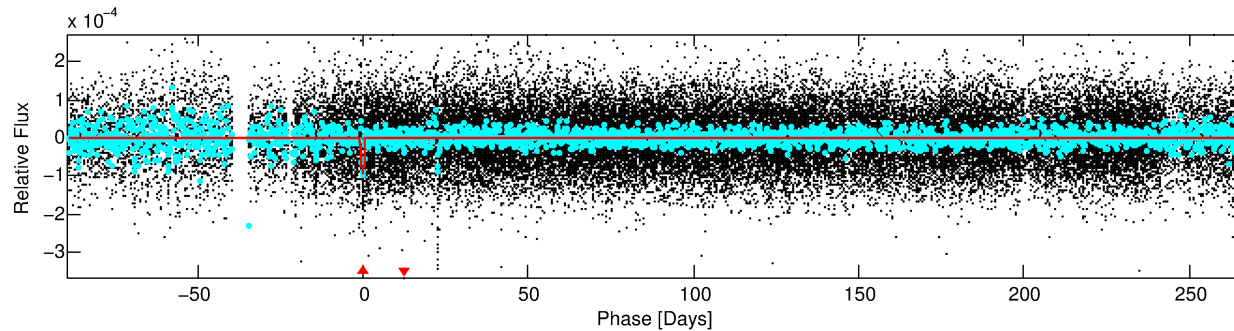
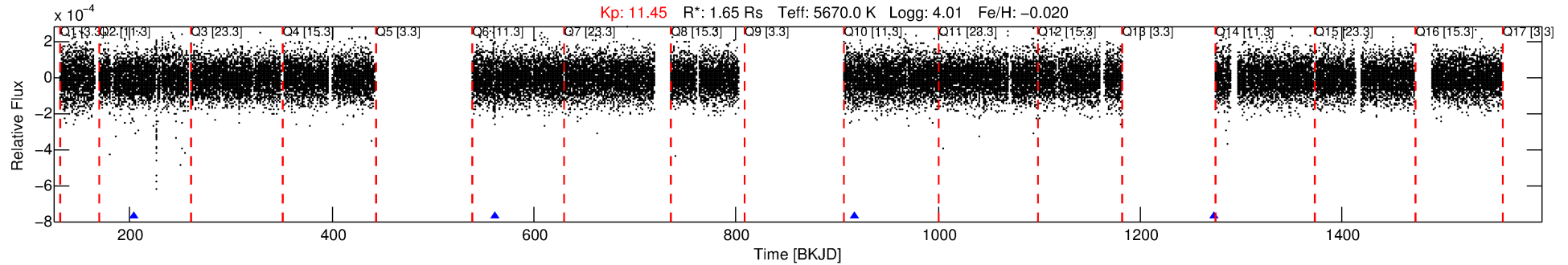
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004989382-01

No Significant Match Found

# DV One-Page Summary

KIC: 4989382 Candidate: 1 of 1 Period: 356.525 d



## DV Fit Results:

Period = 356.52550 [0.01239] d  
Epoch = 204.3340 [0.0200] BKJD  
Rp/R\* = 0.0093 [0.0054]  
a/R\* = 118.34 [294.99]  
b = 0.64 [2.29]  
Seff = 2.57 [1.35]  
Teq = 323 [42] K  
Rp = 1.67 [1.09] Re  
a = 0.9910 [0.3079] AU  
Ag = 8951.92 [11720.10] [0.76σ]  
Teffp = 4854 [1467] K [3.09σ]

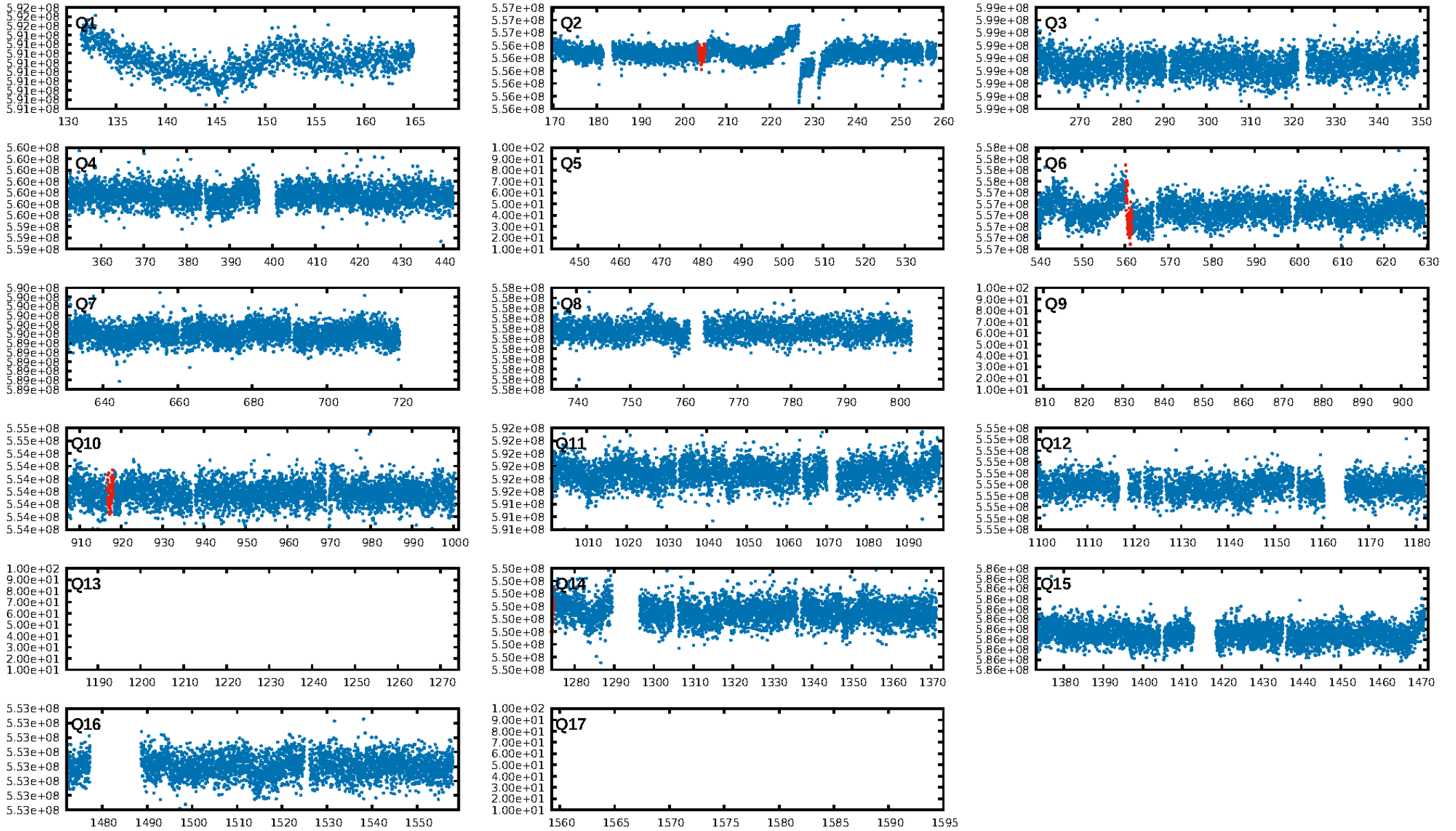
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.79e-12**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 39.69  
Centroid-sig: 17.9%  
Centroid-so: 2.276 arcsec [1.00σ]  
OotOffset-rm: 5.998 arcsec [1.86σ]  
KicOffset-rm: 5.945 arcsec [1.53σ]  
OotOffset-st: 2/0/0/0 [2]  
KicOffset-st: 2/0/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

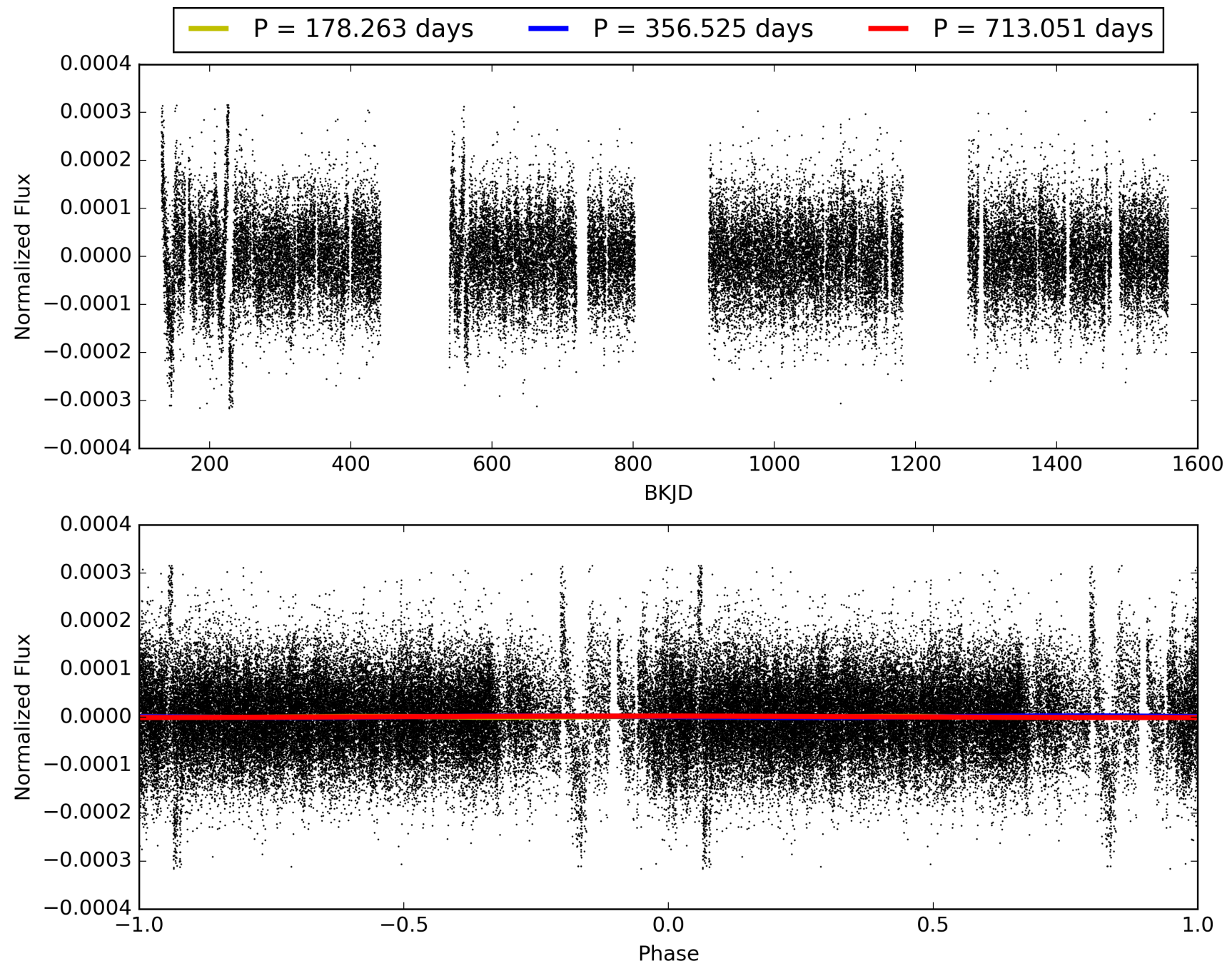
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:02:16 Z

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

# TCE 004989382-01, PDC Light Curves

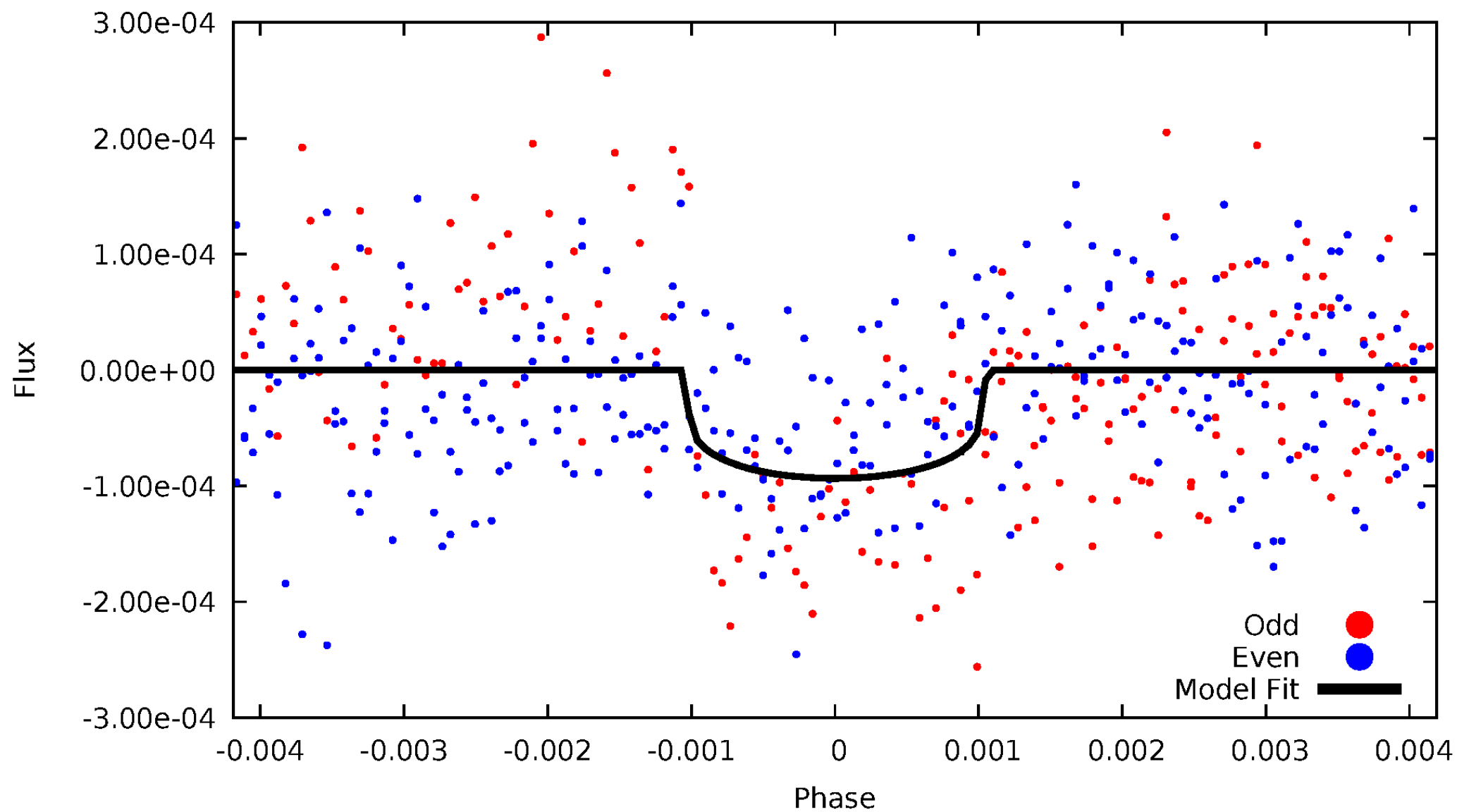


TCE 004989382-01



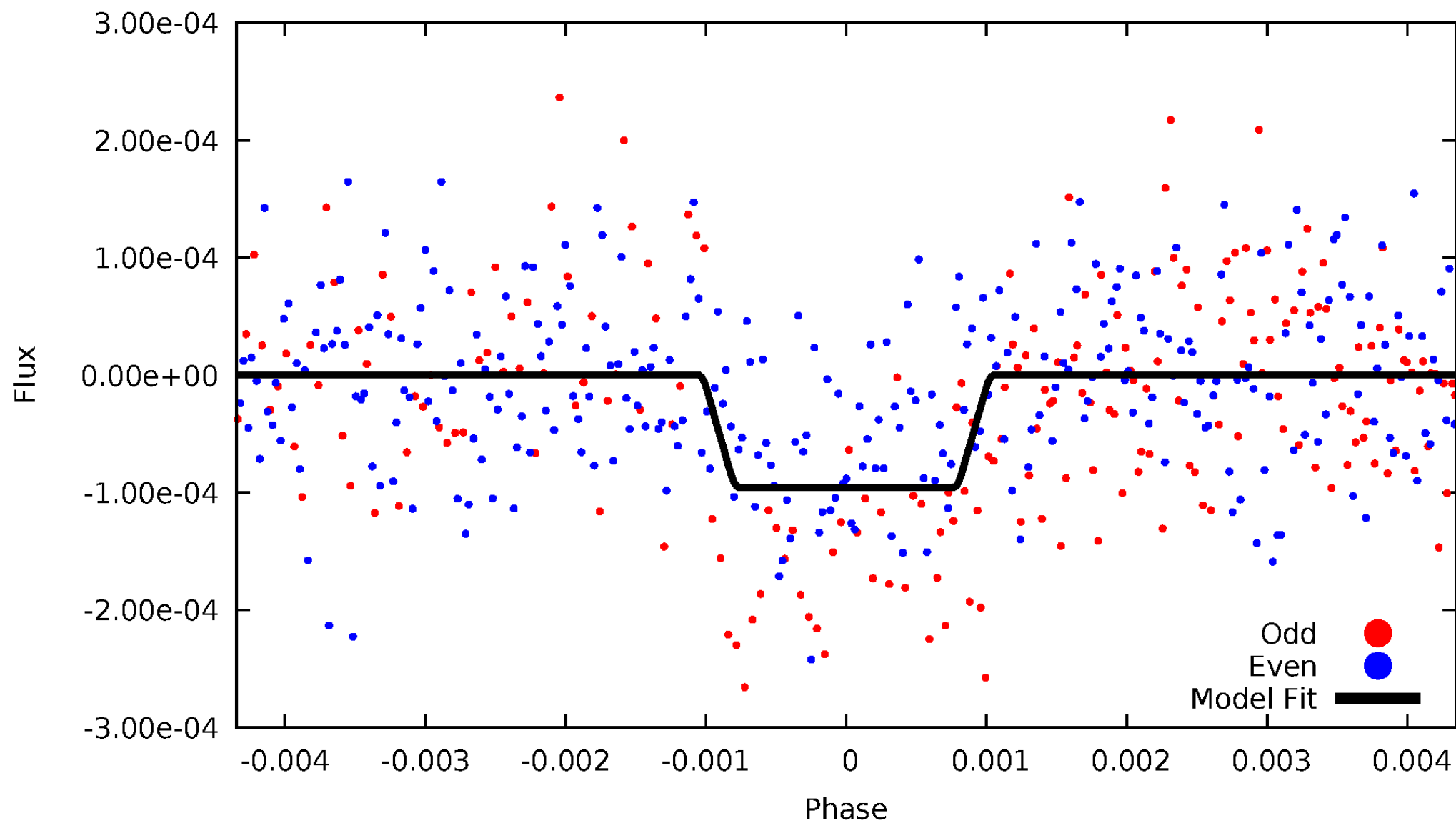
# DV Odd/Even

TCE 004989382-01

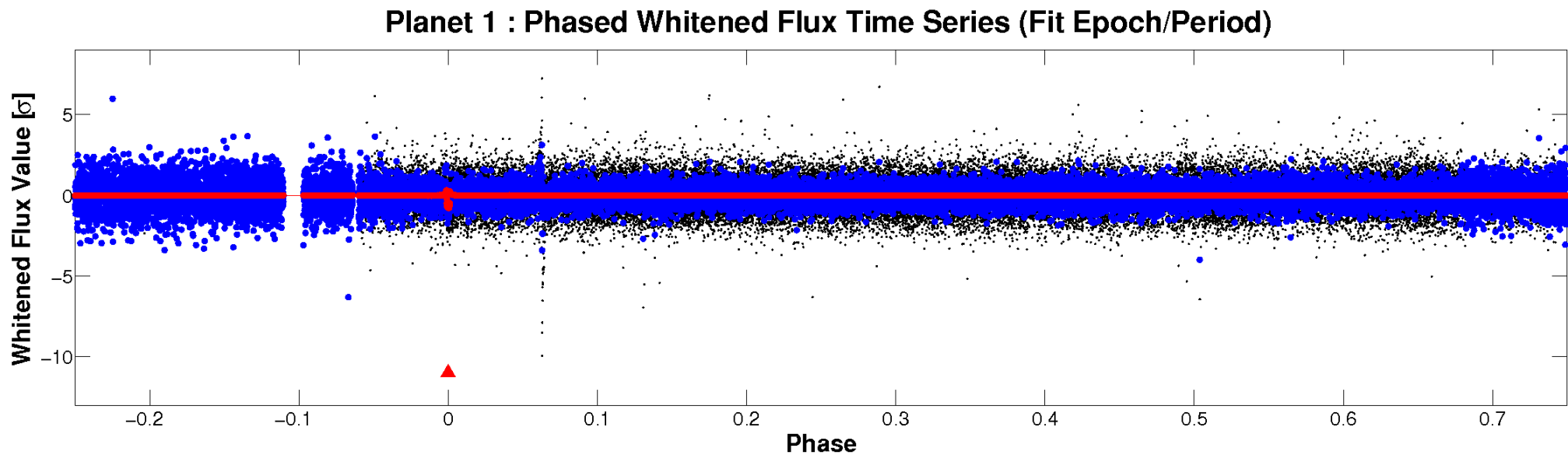
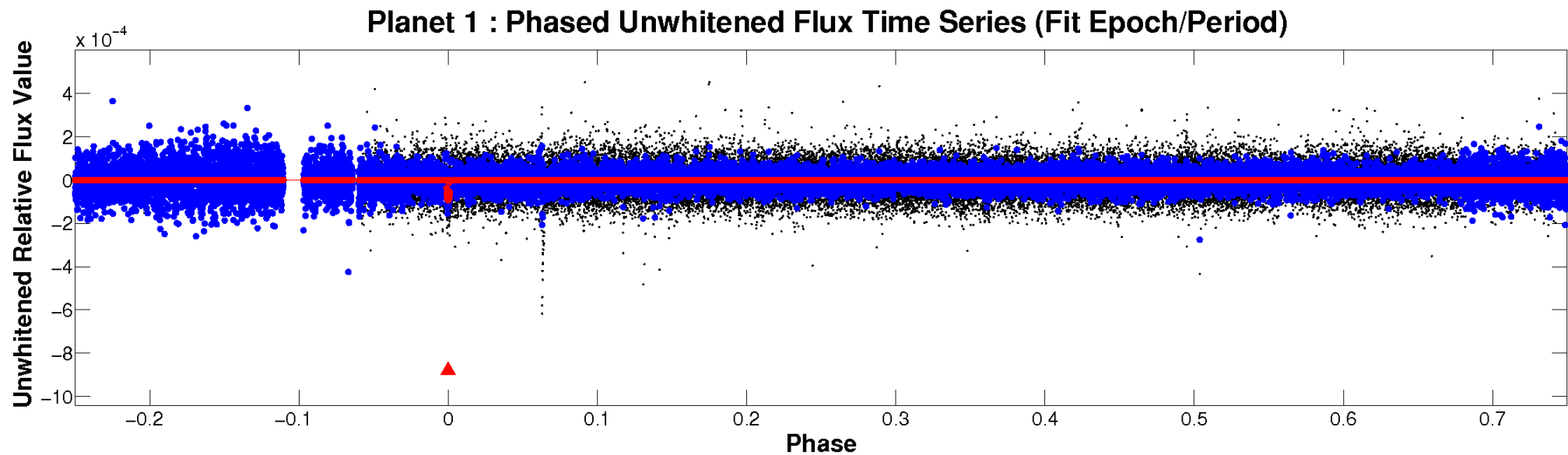


# ALT Odd/Even

TCE 004989382-01

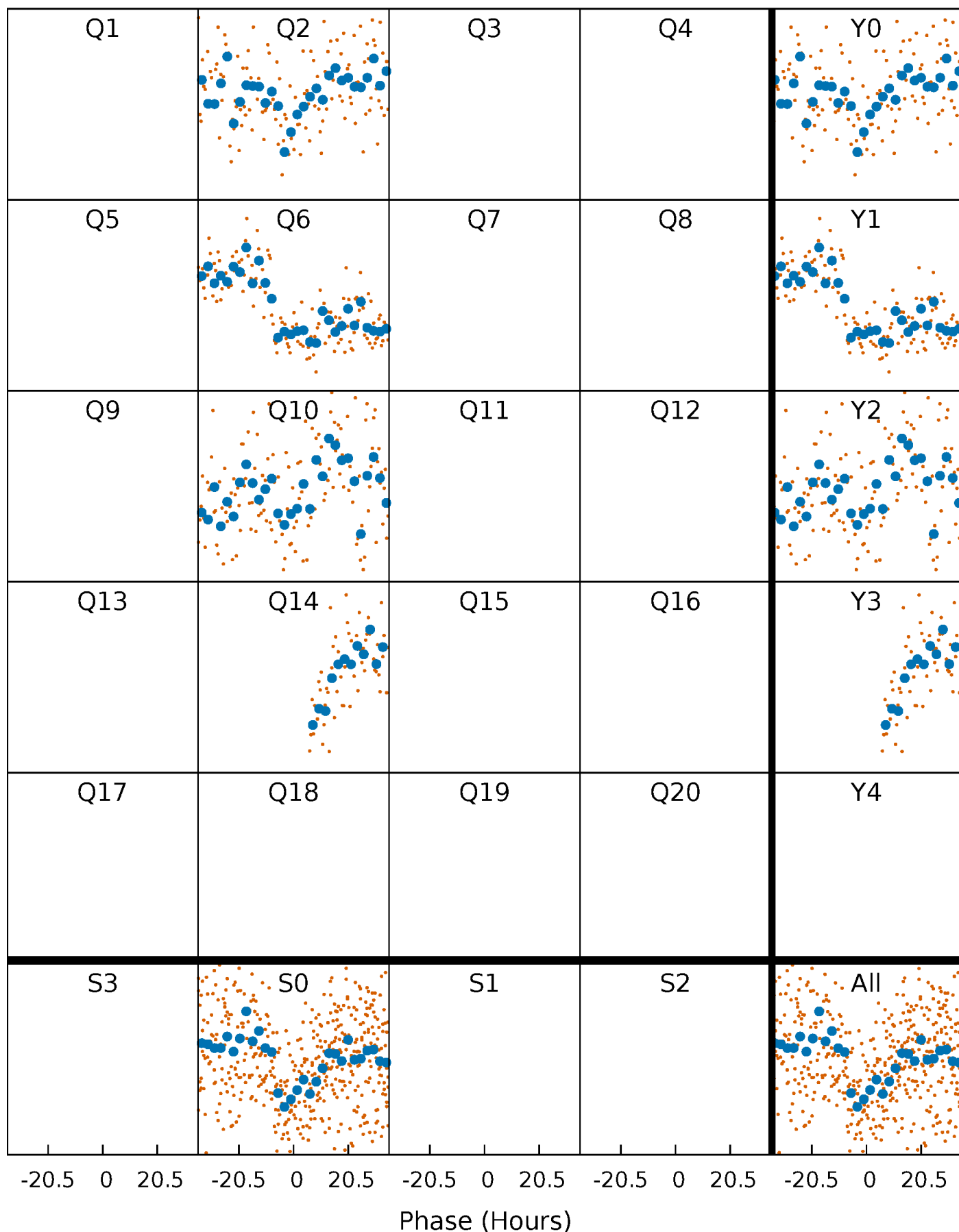


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

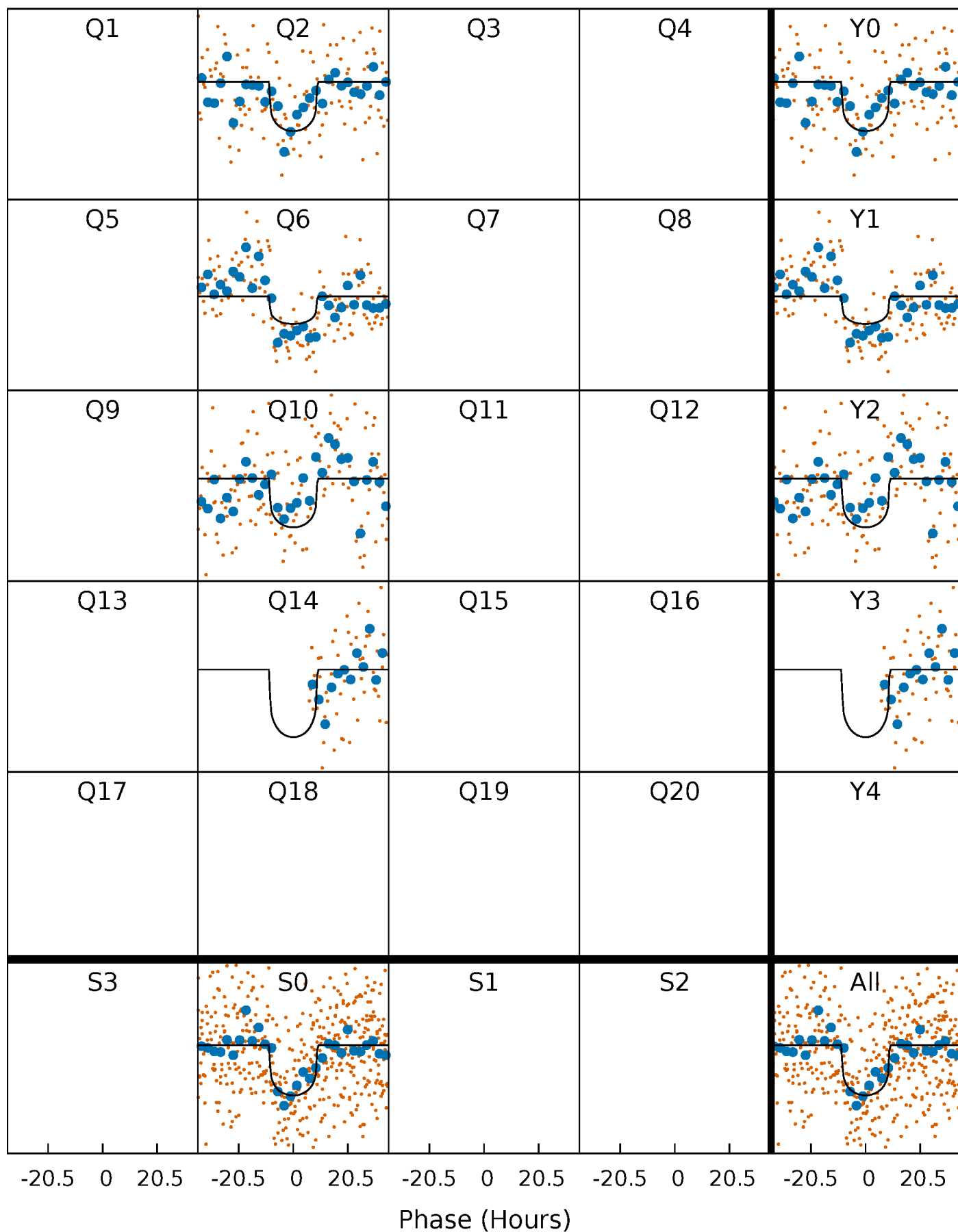
TCE 004989382-01 P=356.525498 Days  $T_0=204.333999$  (BKJD)





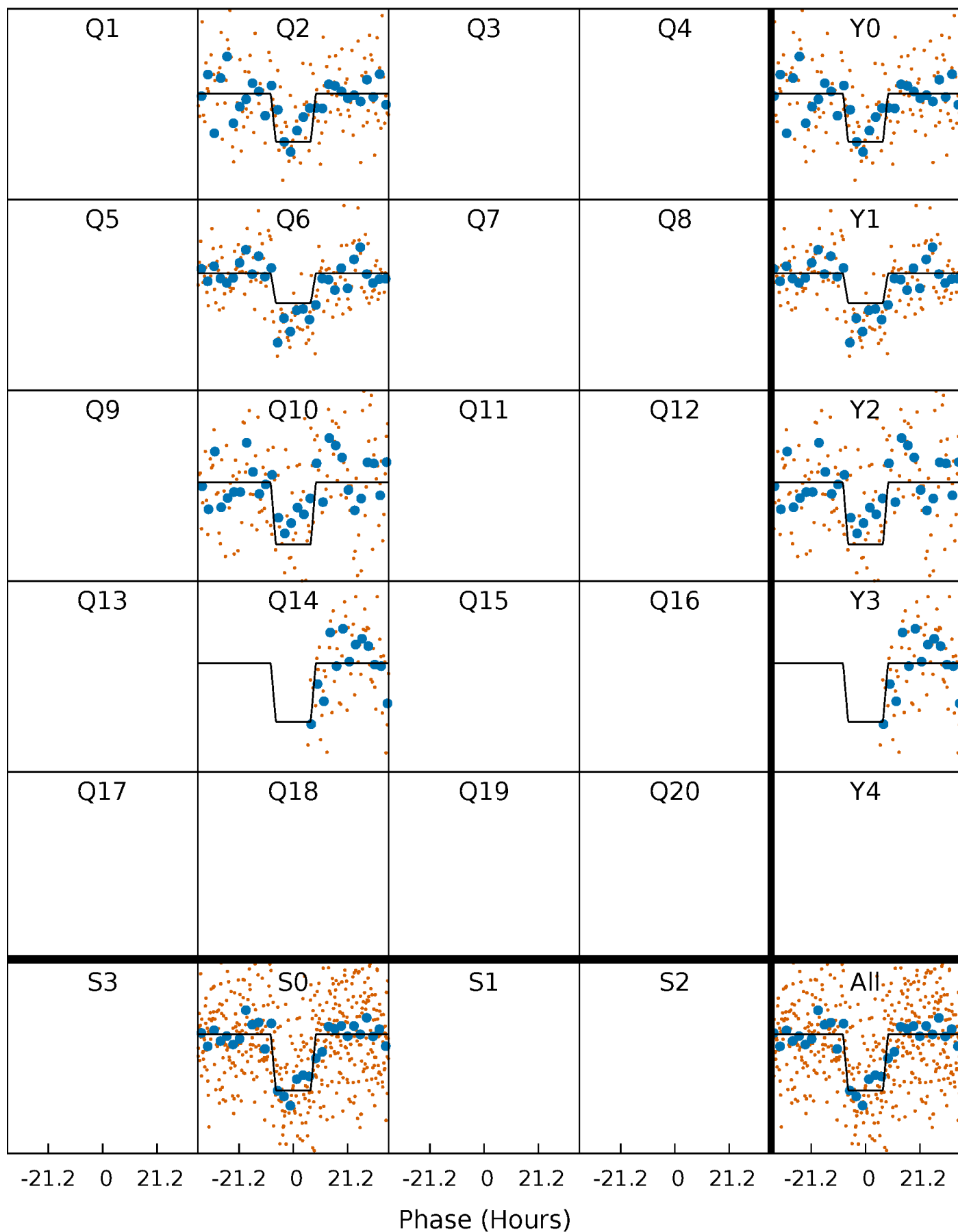
# DV Quarter-Phased Transit Curves

TCE 004989382-01 P=356.525498 Days  $T_0=204.333999$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

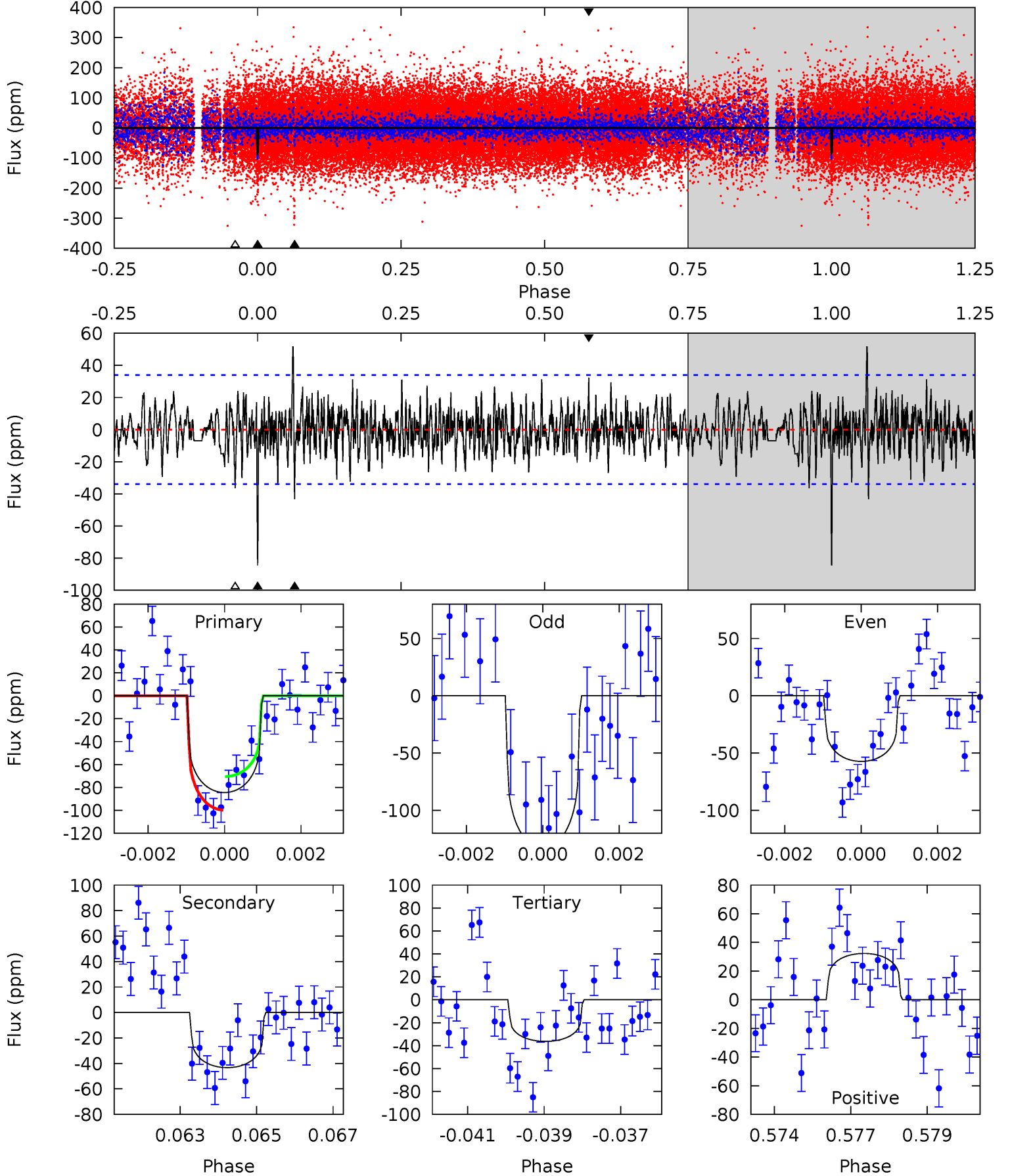
TCE 004989382-01 P=356.531566 Days  $T_0=204.326681$  (BKJD)



# DV Model-Shift Uniqueness Test

004989382-01,  $P = 356.525498$  Days,  $E = 204.333999$  Days

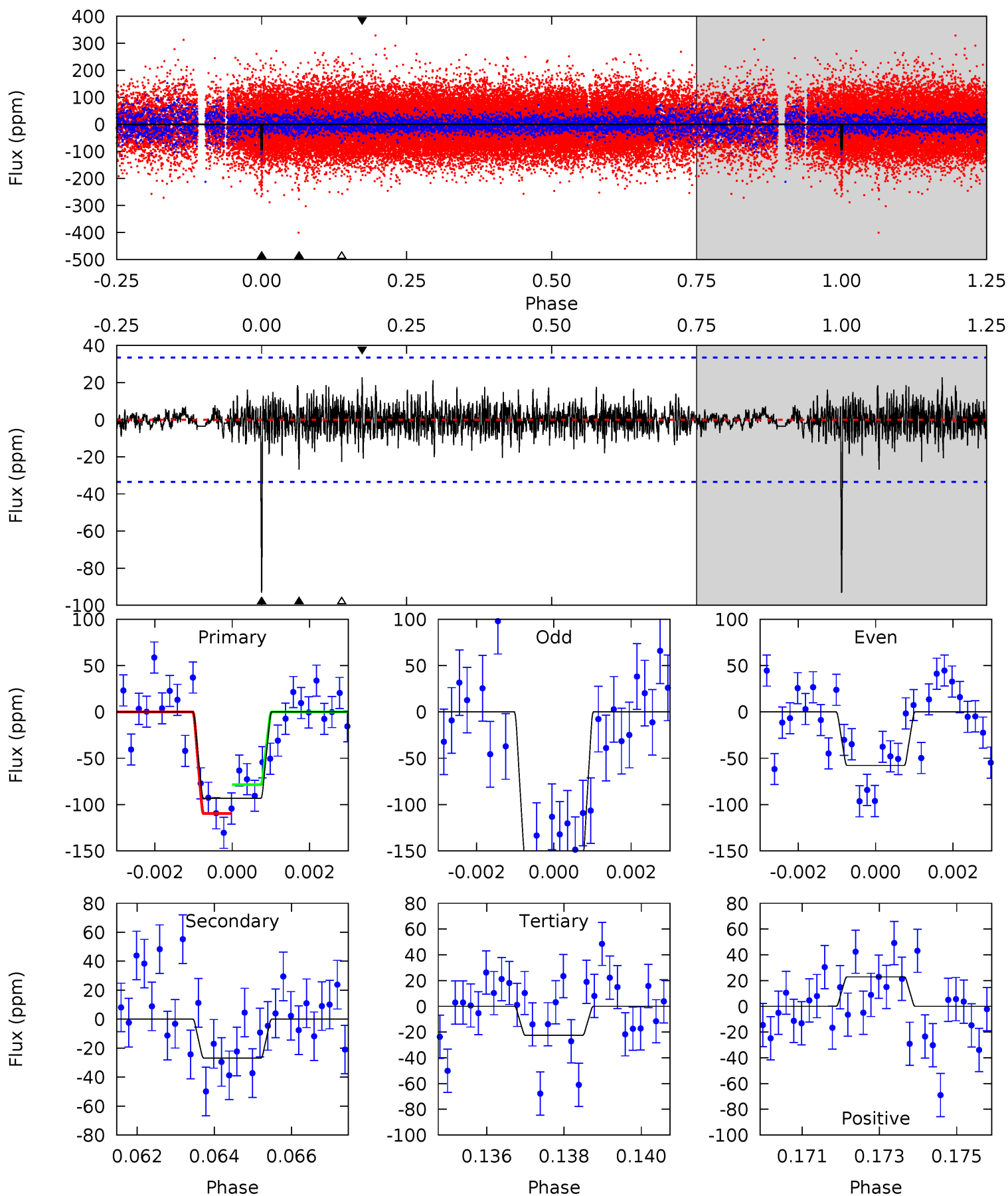
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	6.78	5.68	5.06	5.31	3.07	1.61	7.53	8.15	1.09	1.72	5.73	1.24	0.38	2.28



# Alt Model-Shift Uniqueness Test

004989382-01,  $P = 356.531566$  Days,  $E = 204.326681$  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
14.8	4.26	3.59	3.63	5.32	3.08	0.93	11.2	11.2	0.67	0.63	7.61	1.13	0.20	2.46



### Stellar Parameters For KIC 004989382

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5670^{+156}_{-127}$	$4.012^{+0.308}_{-0.103}$	$-0.020^{+0.300}_{-0.250}$	$1.650^{+0.333}_{-0.499}$	$1.020^{+0.134}_{-0.121}$	$0.320^{+0.625}_{-0.111}$
	+3%/-2%	+8%/-3%	+1500%/-1250%	+20%/-30%	+13%/-12%	+195%/-35%
Source	PHO1	FLK73	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 004989382-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-43 \pm 6$	$1.57^{+0.98}_{-0.80}$	$443^{+27}_{-41}$	$4851^{+1928}_{-761}$	$9558^{+31183}_{-5886}$
Alt.	$-27 \pm 6$	$1.72^{+0.97}_{-0.87}$	$444^{+27}_{-39}$	$4280^{+1432}_{-647}$	$4901^{+15703}_{-3008}$

$T_{\text{max}}$  = 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

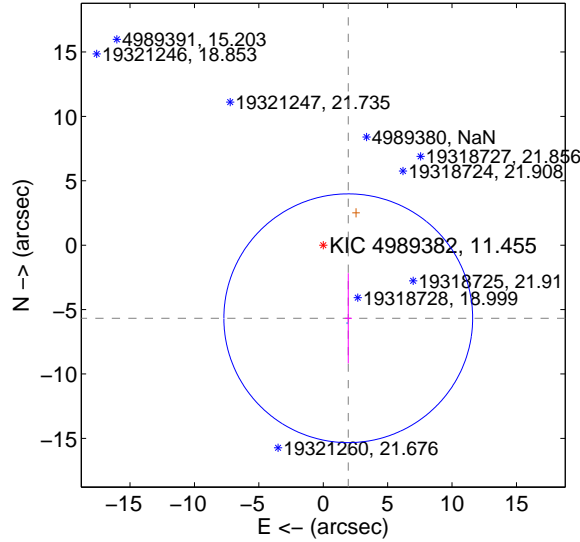
Supplemental centroid analysis for 004989382-01. **Kepler magnitude: 11.46.** Transit SNR 7.59

**There are 1 quarters with good PRF difference image offsets**

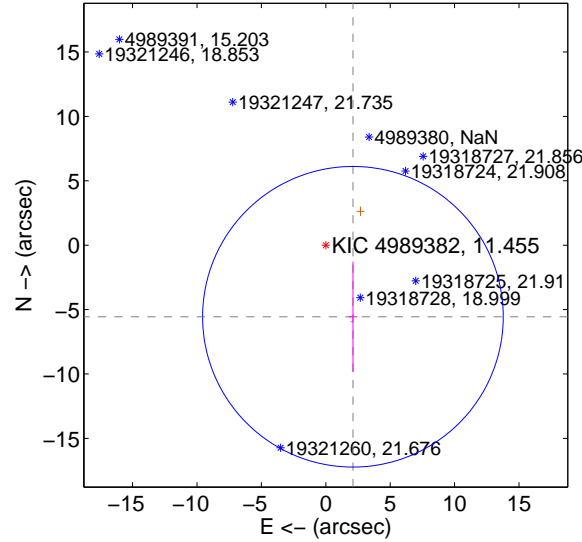
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.998 \pm 3.219$	1.86	$-1.943 \pm 0.284$	$-5.674 \pm 3.497$
PRF-fit source offset from KIC position	$5.945 \pm 3.890$	1.53	$-2.107 \pm 0.335$	$-5.559 \pm 4.285$
photometric centroid source offset	$2.28 \pm 2.27$	1.00	$1.21 \pm 2.47$	$-1.93 \pm 2.18$

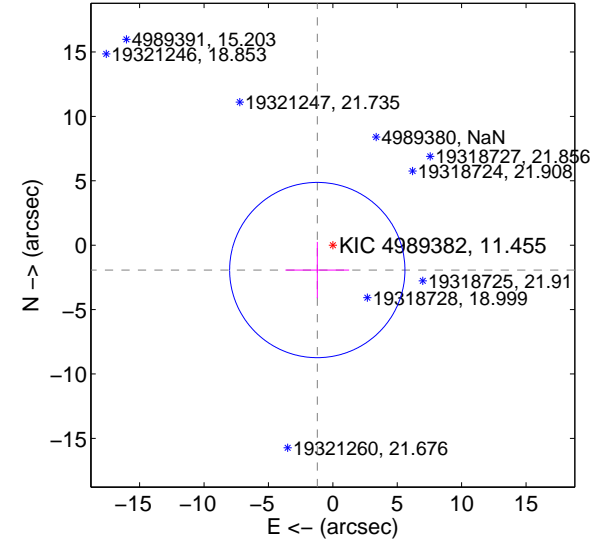
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

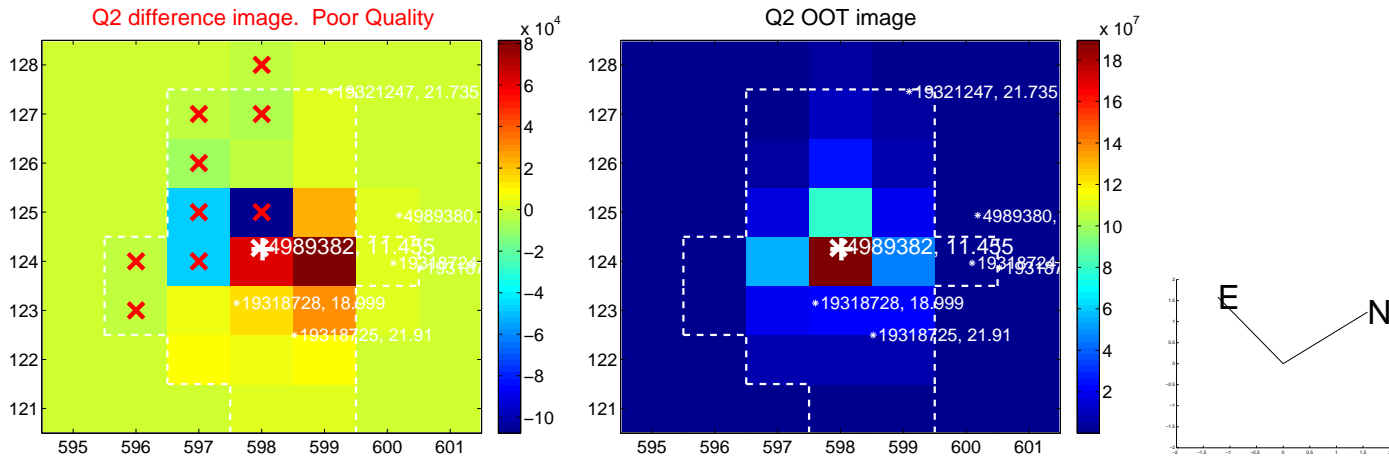


offset from photometric centroids



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.

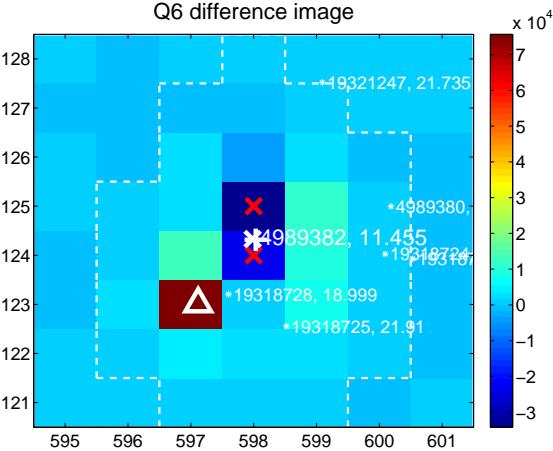
Q5 no difference image



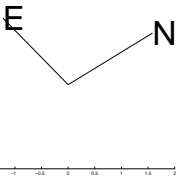
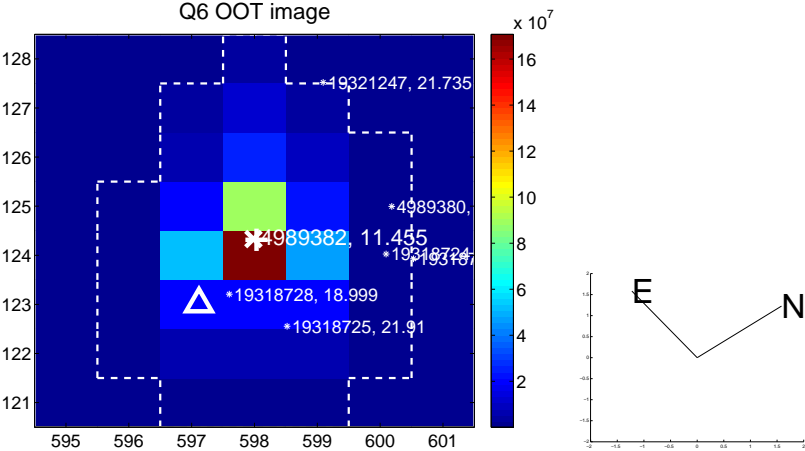
Q5 no OOT image



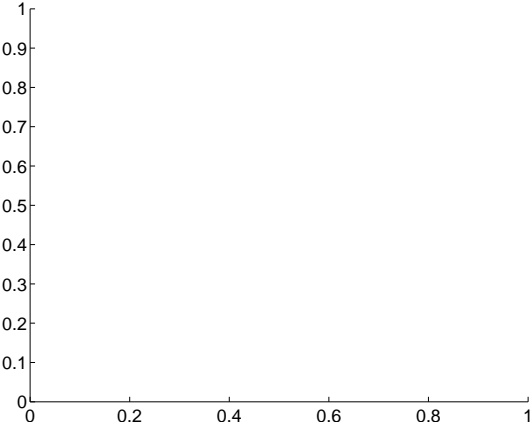
Q6 difference image



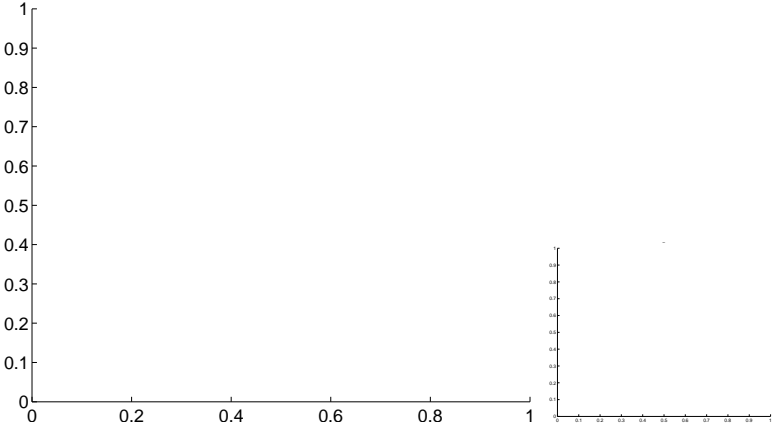
Q6 OOT image



Q7 no difference image



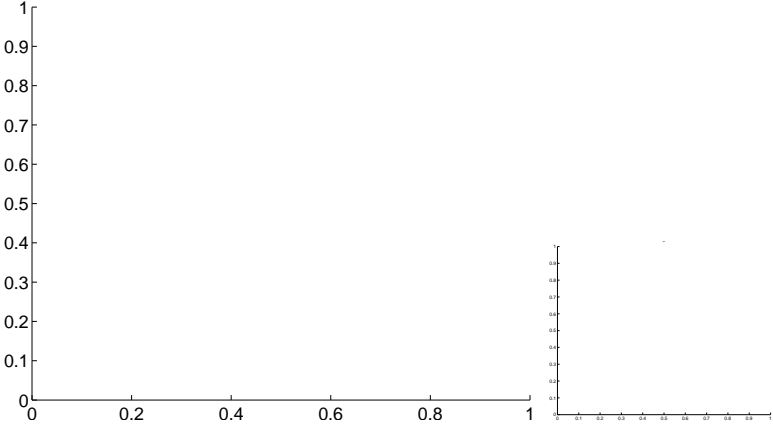
Q7 no OOT image



Q8 no difference image



Q8 no OOT image





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

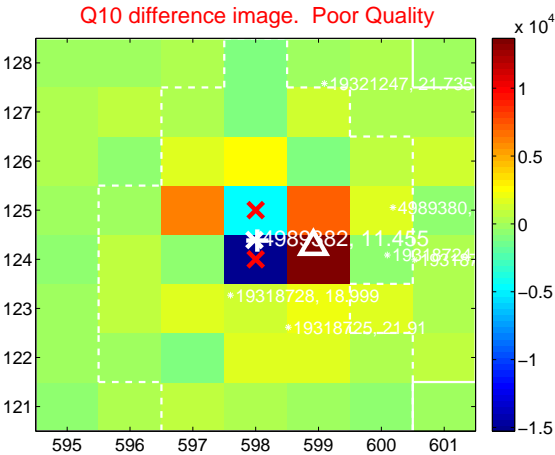
Q9 no difference image



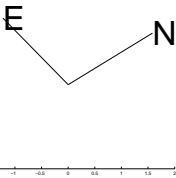
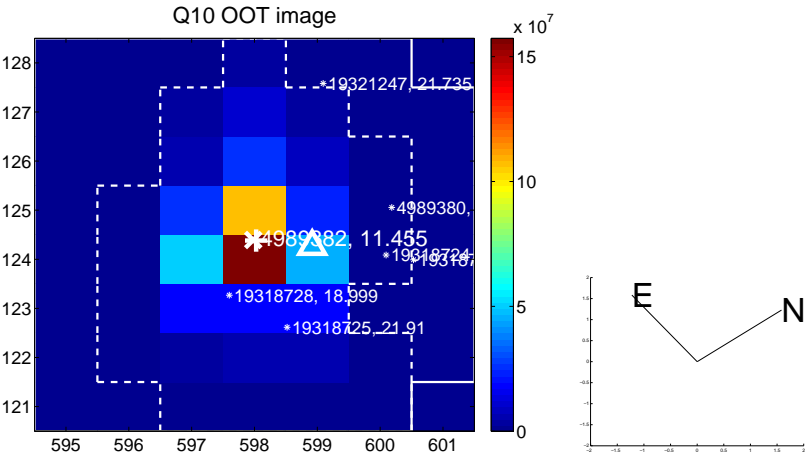
Q9 no OOT image



Q10 difference image. Poor Quality



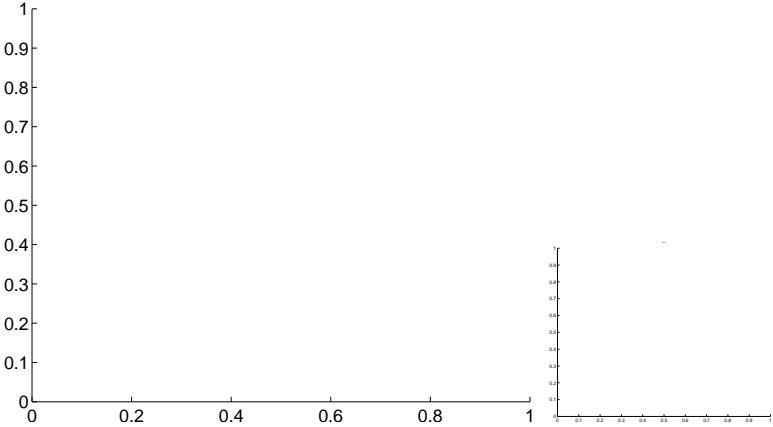
Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



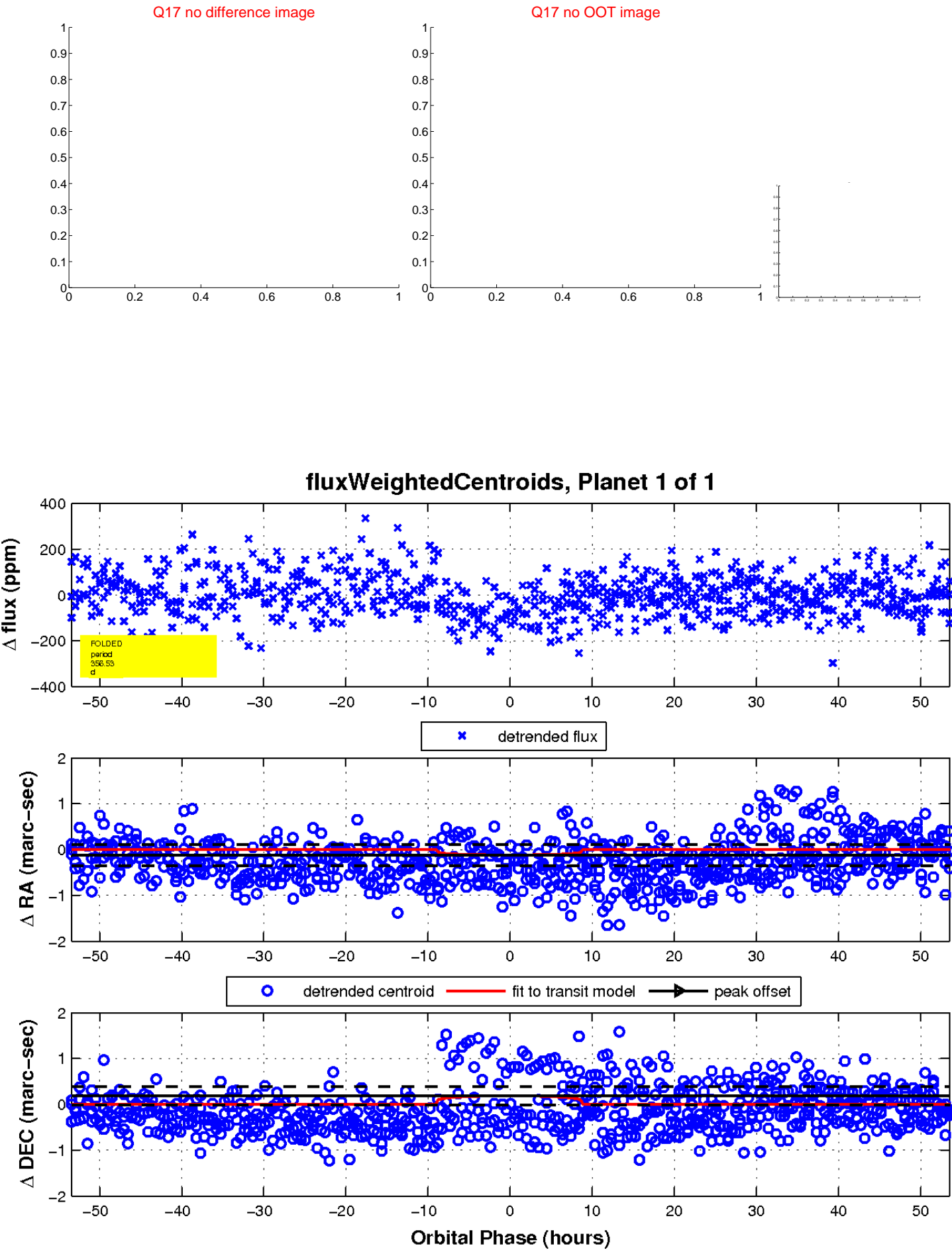
Q12 no OOT image



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.



UKIRT Image

