

# KIC 008451486

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008451486-01	OBS	No	443.884997	193.564821	811.0	4.859	7.3	7.2	4.92	4784	16.77	9.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008451486-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—MOD_NONUNIQ_ALT

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

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

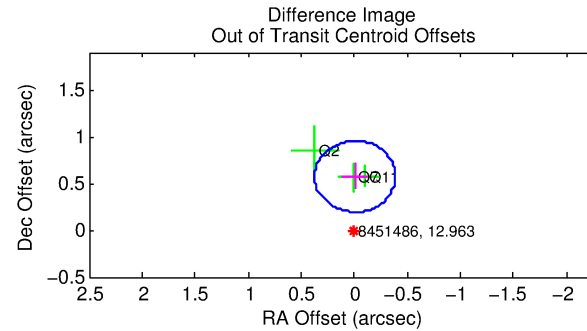
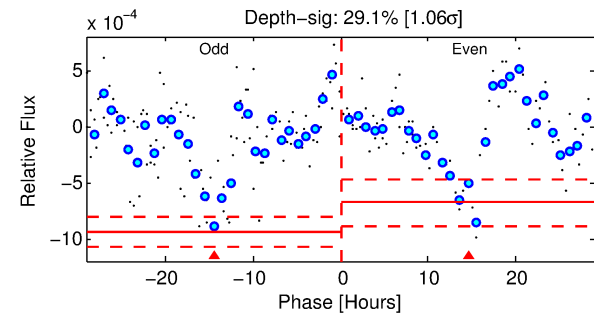
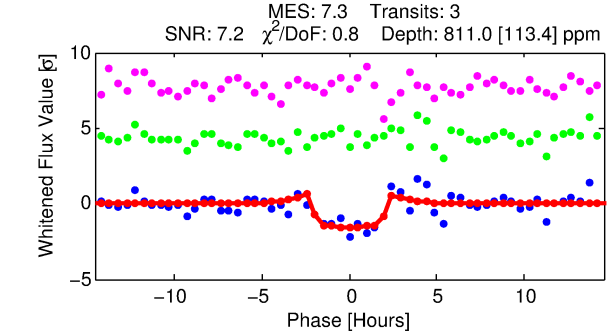
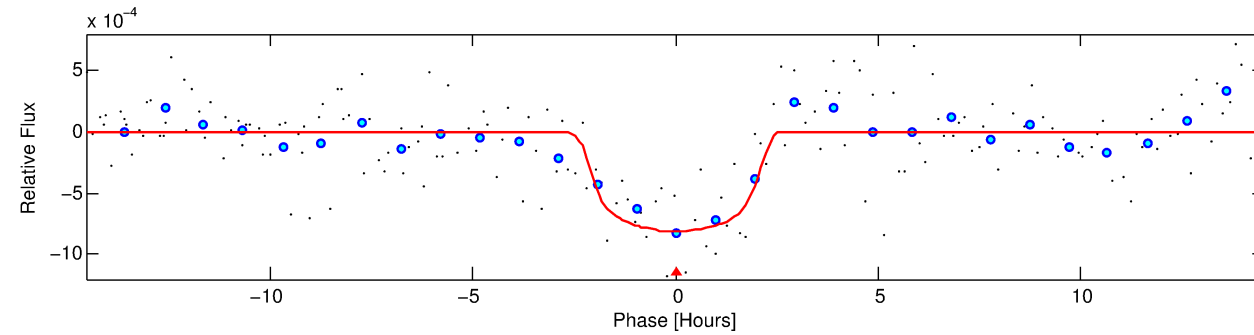
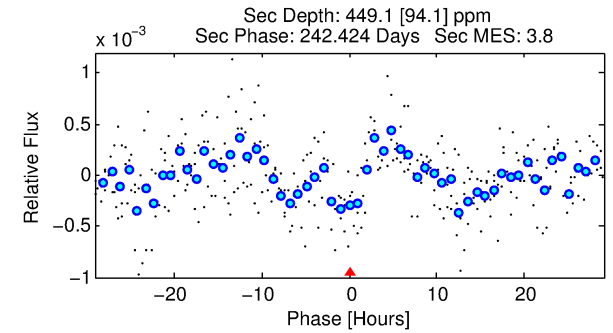
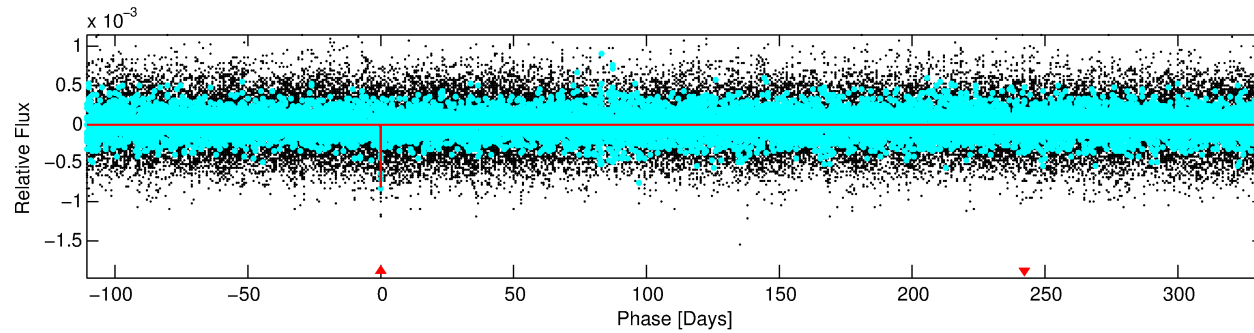
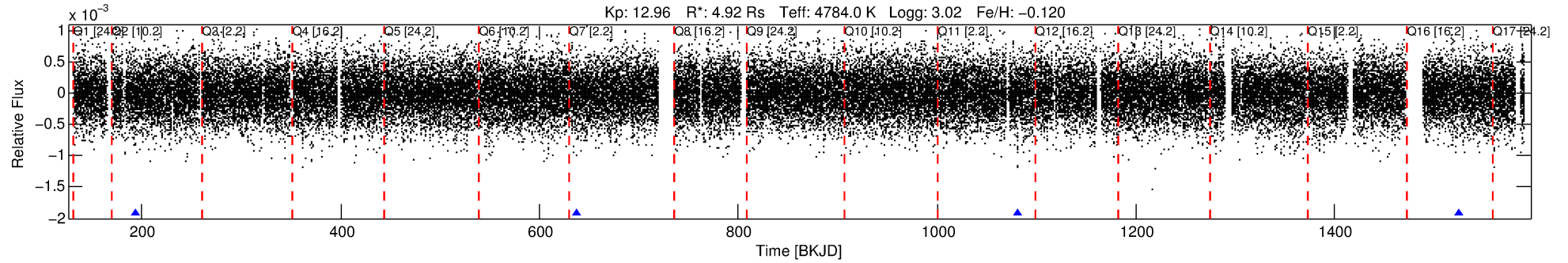
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008451486-01

No Significant Match Found

# DV One-Page Summary

KIC: 8451486 Candidate: 1 of 1 Period: 443.885 d



## DV Fit Results:

Period = 443.88500 [0.00528] d  
Epoch = 193.5648 [0.0069] BKJD  
Rp/R\* = 0.0313 [0.0052]  
a/R\* = 373.87 [192.84]  
b = 0.88 [0.13]  
Seff = 9.21 [1.26]  
Teq = 444 [15] K  
Rp = 16.77 [3.94] Re  
a = 1.1098 [0.1250] AU  
Ag = 1081.45 [444.70] [2.43 $\sigma$ ]  
Teffp = 3938 [393] K [8.89 $\sigma$ ]

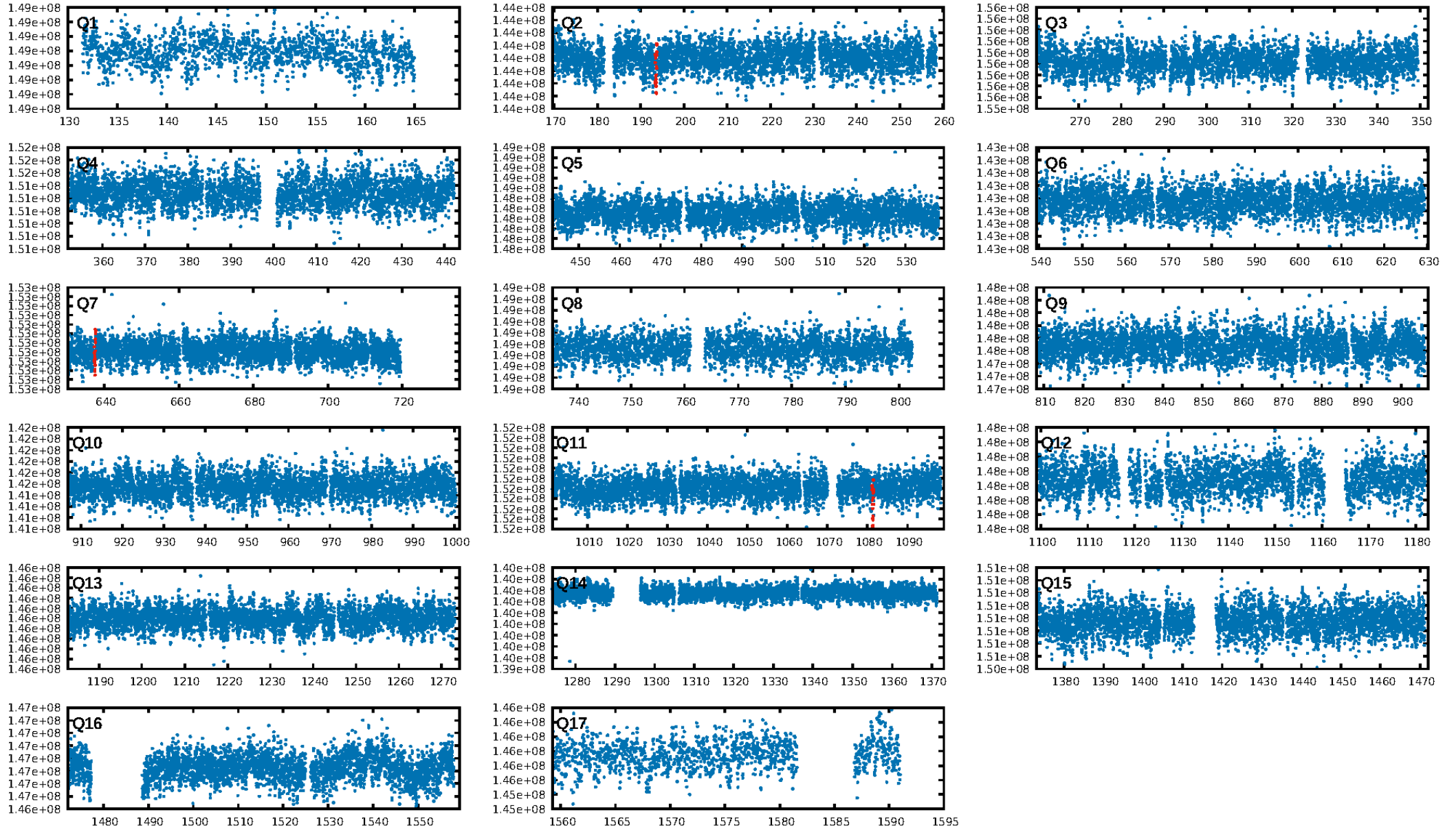
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 21.0%  
ModelChiSquareGof-sig: 92.9%  
**Bootstrap-pfa: 5.49e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.032  
Centroid-sig: 0.7%  
Centroid-so: 0.253 arcsec [0.45 $\sigma$ ]  
**OotOffset-rm: 0.574 arcsec [4.52 $\sigma$ ]**  
**KicOffset-rm: 0.571 arcsec [4.51 $\sigma$ ]**  
OotOffset-st: 1/2/0/0 [3]  
KicOffset-st: 1/2/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

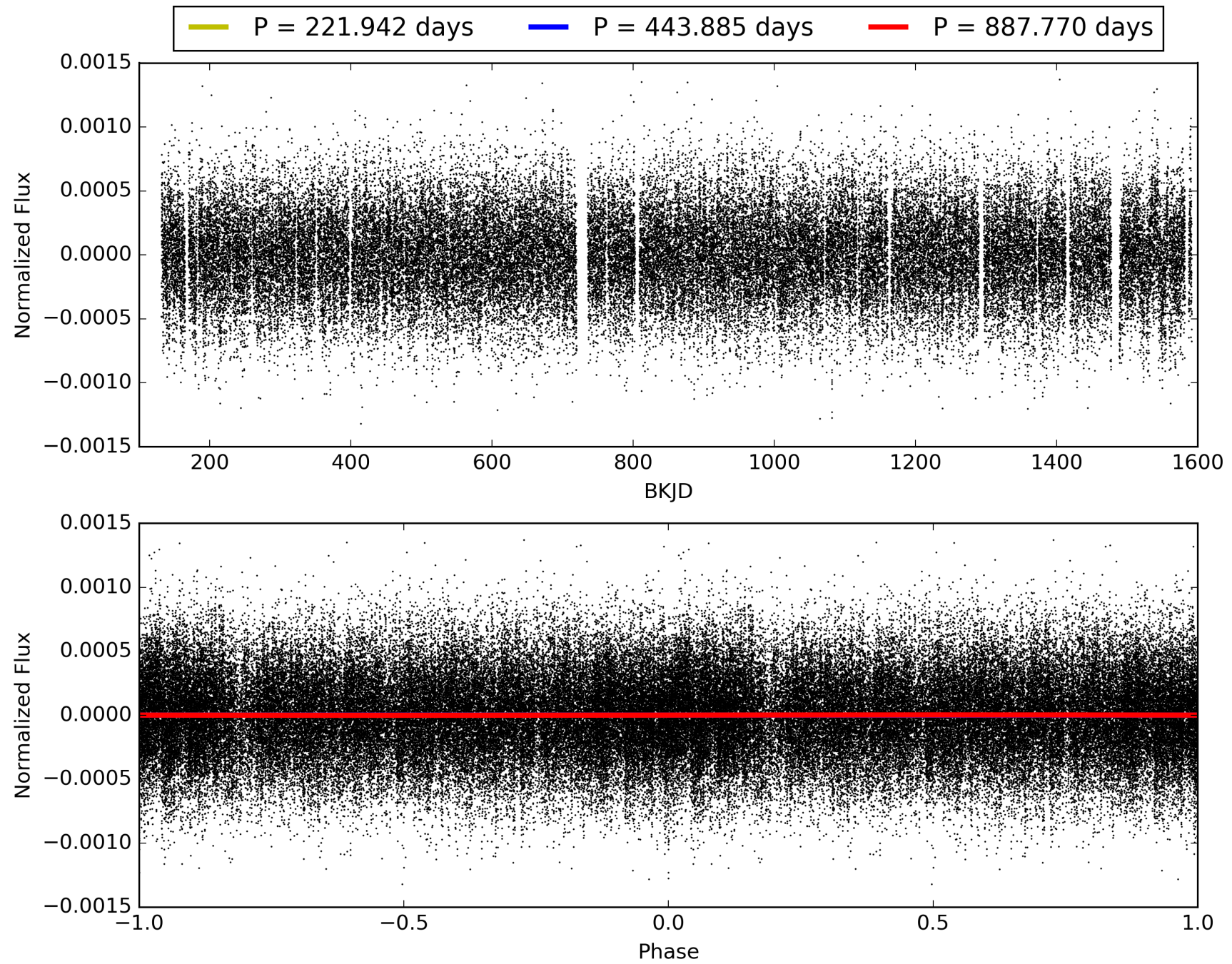
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:15:20 Z

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

# TCE 008451486-01, PDC Light Curves

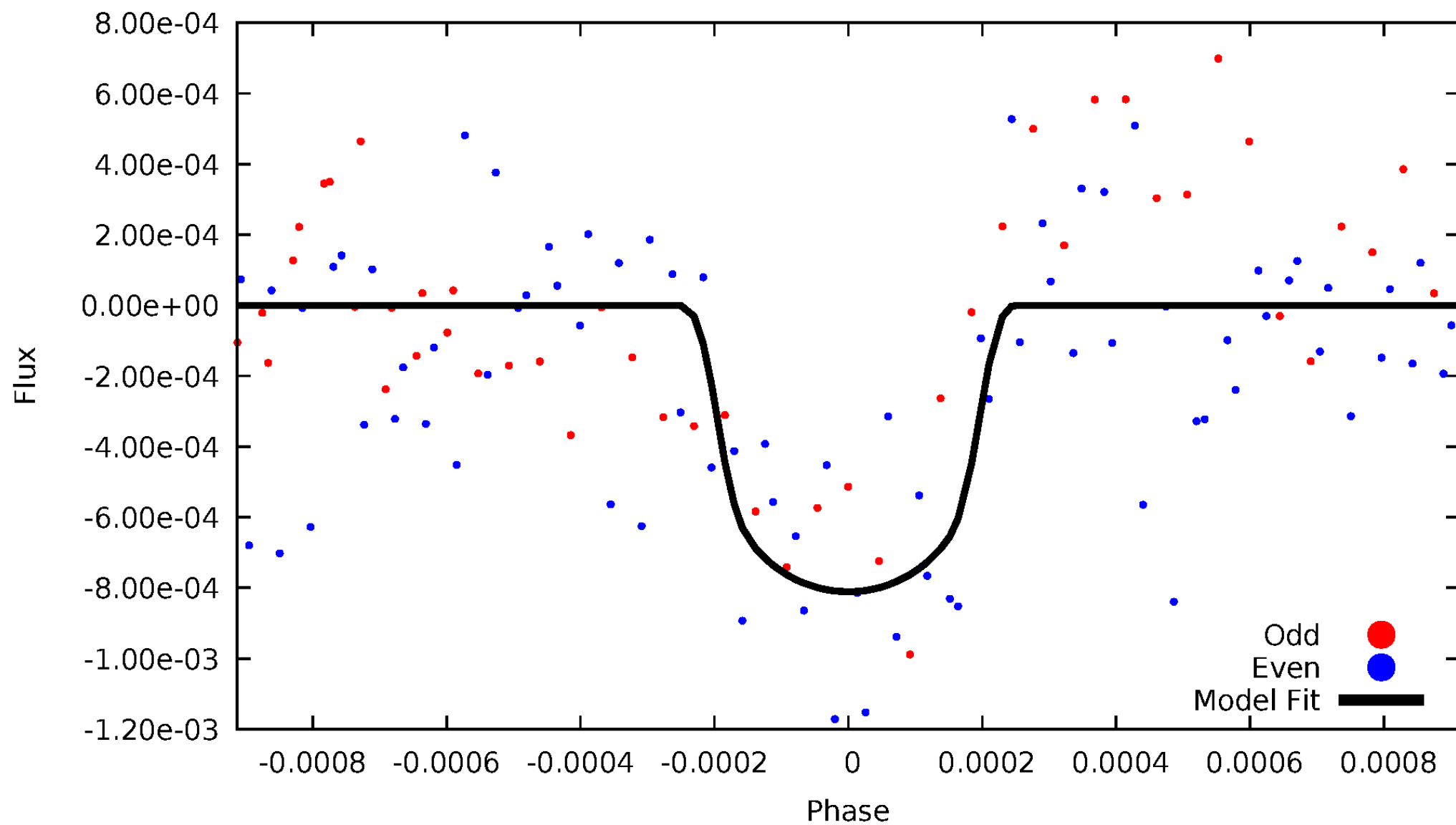


TCE 008451486-01



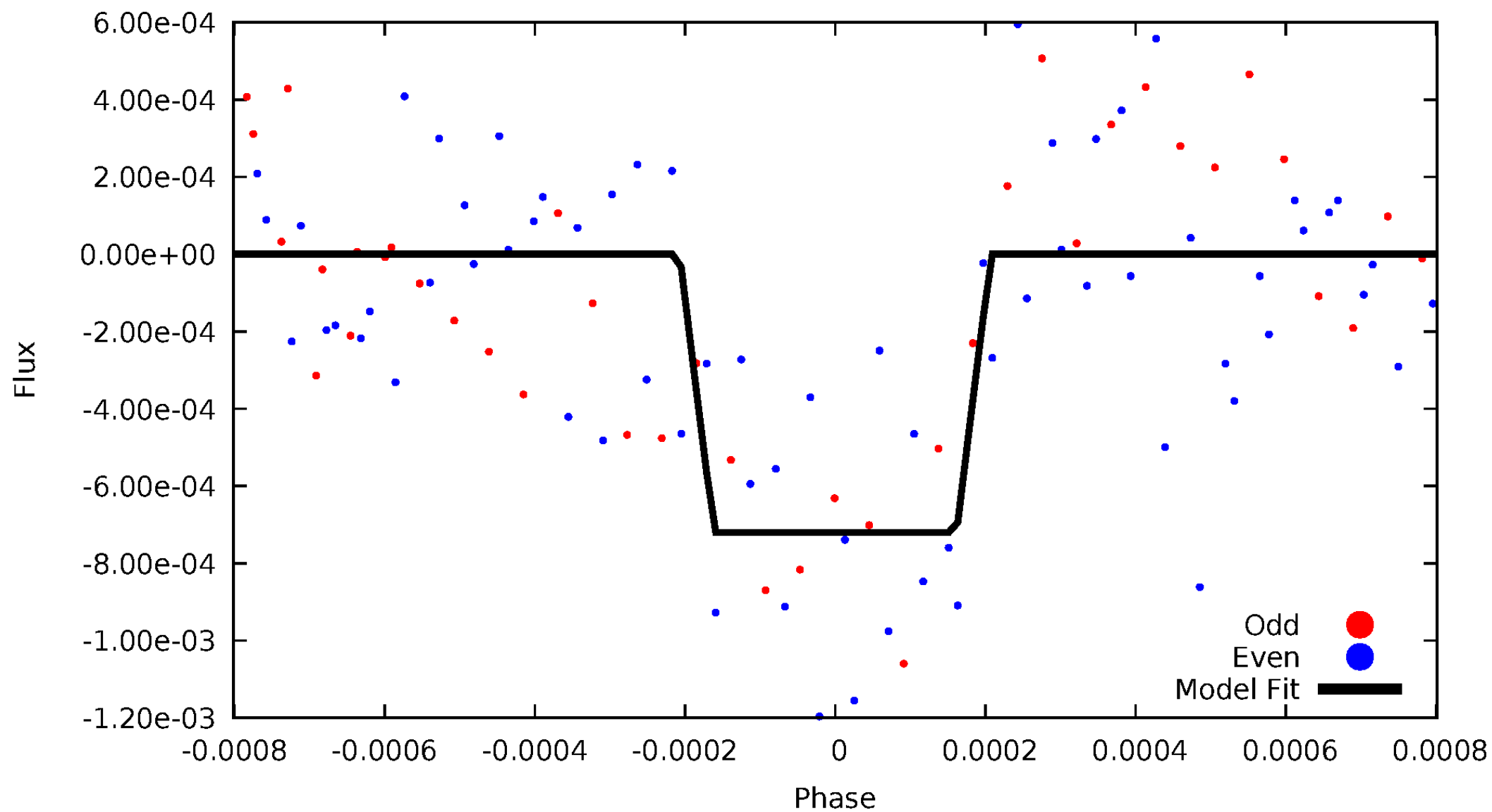
# DV Odd/Even

TCE 008451486-01

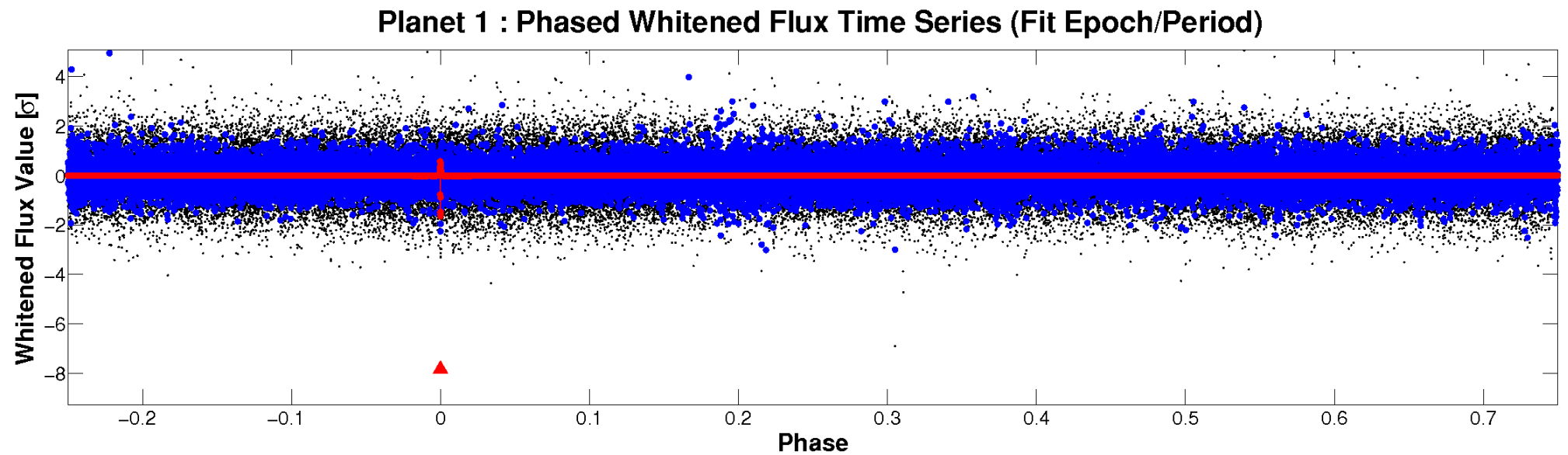
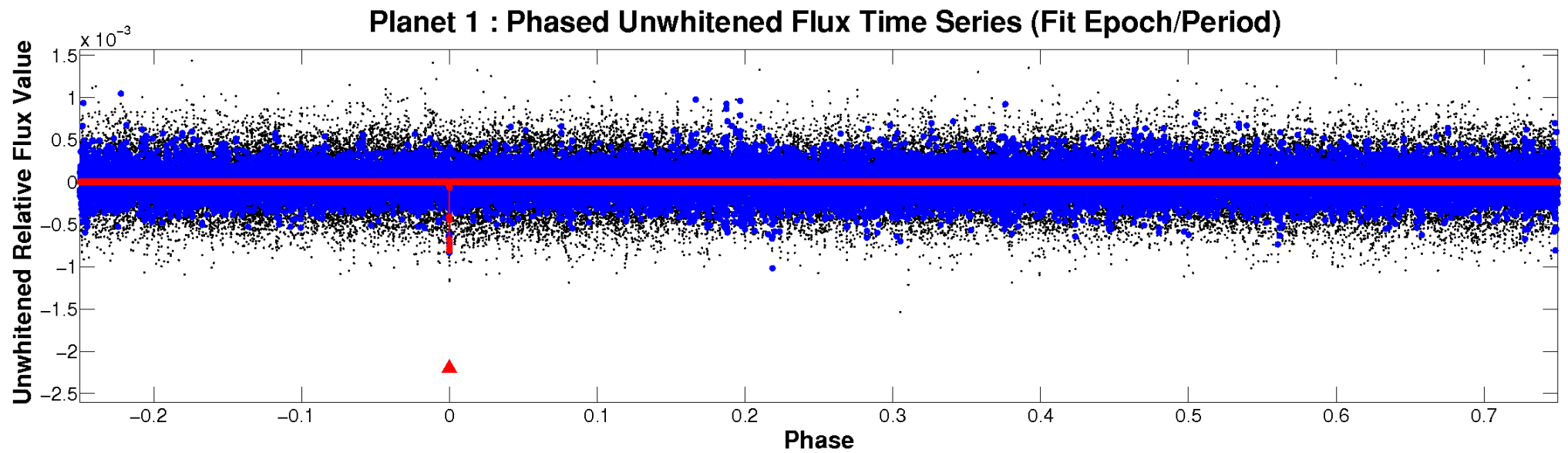


# ALT Odd/Even

TCE 008451486-01

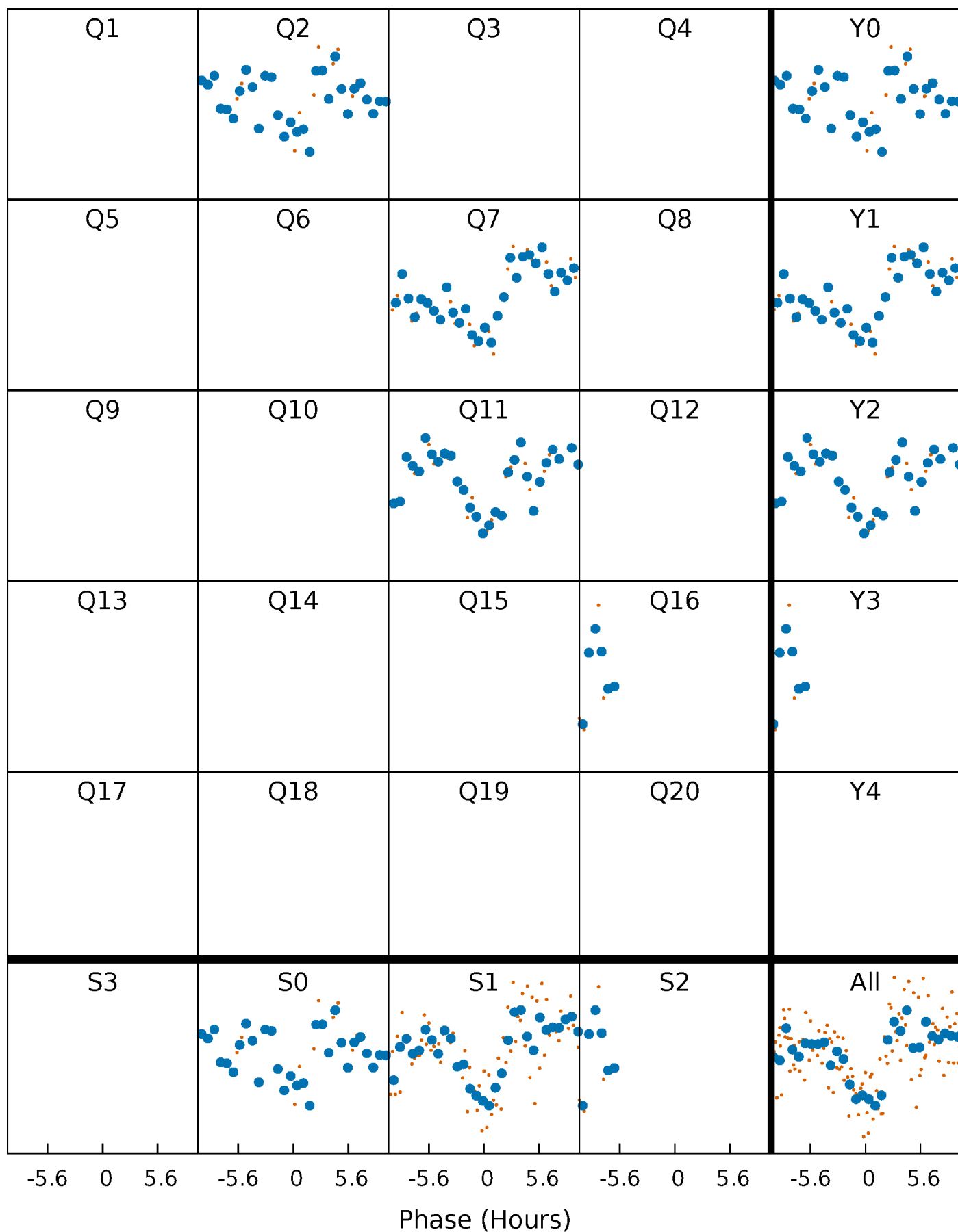


# Non-Whitened Vs. Whitened Light Curve



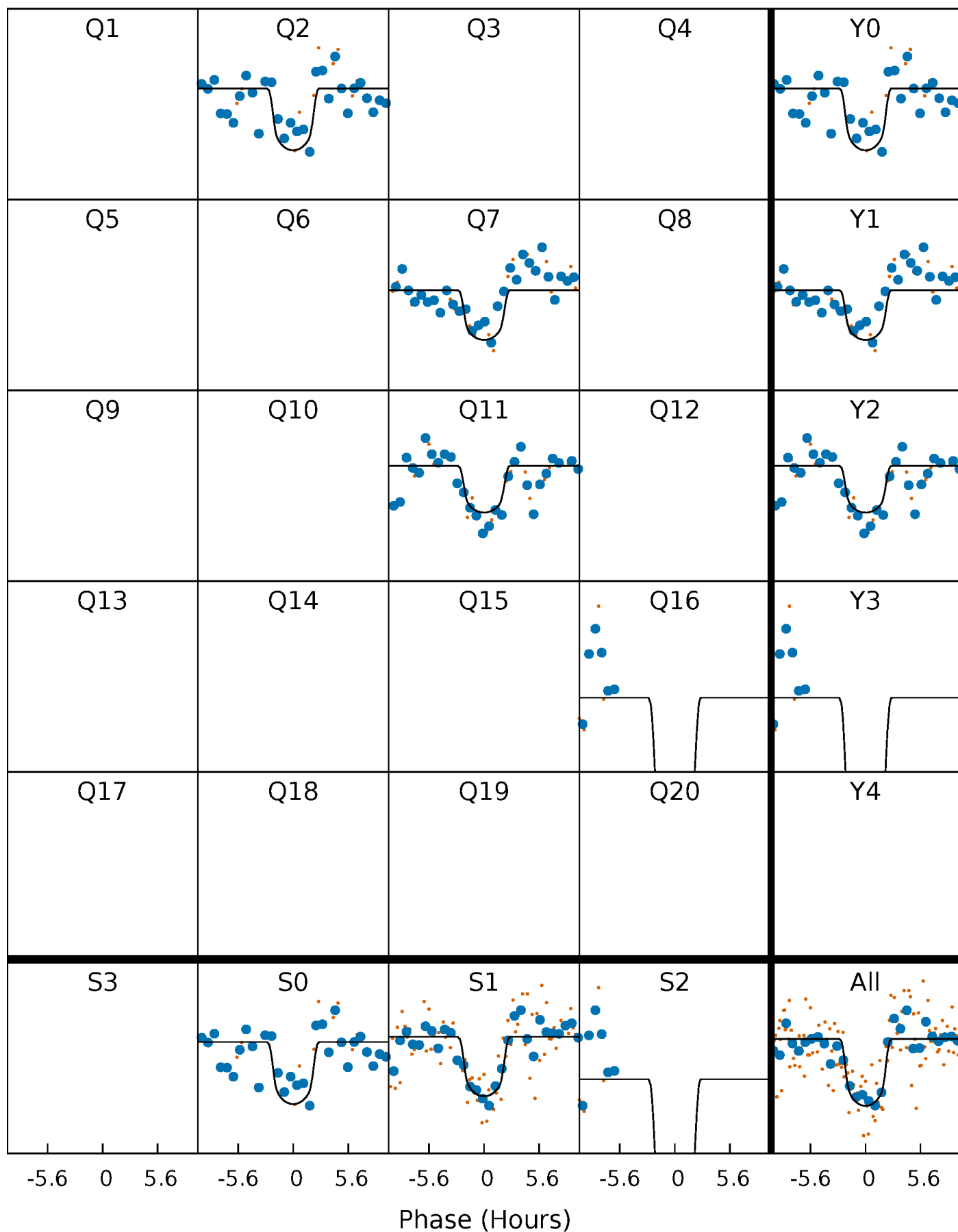
# PDC Quarter-Phased Transit Curves

TCE 008451486-01 P=443.884997 Days  $T_0=193.564821$  (BKJD)



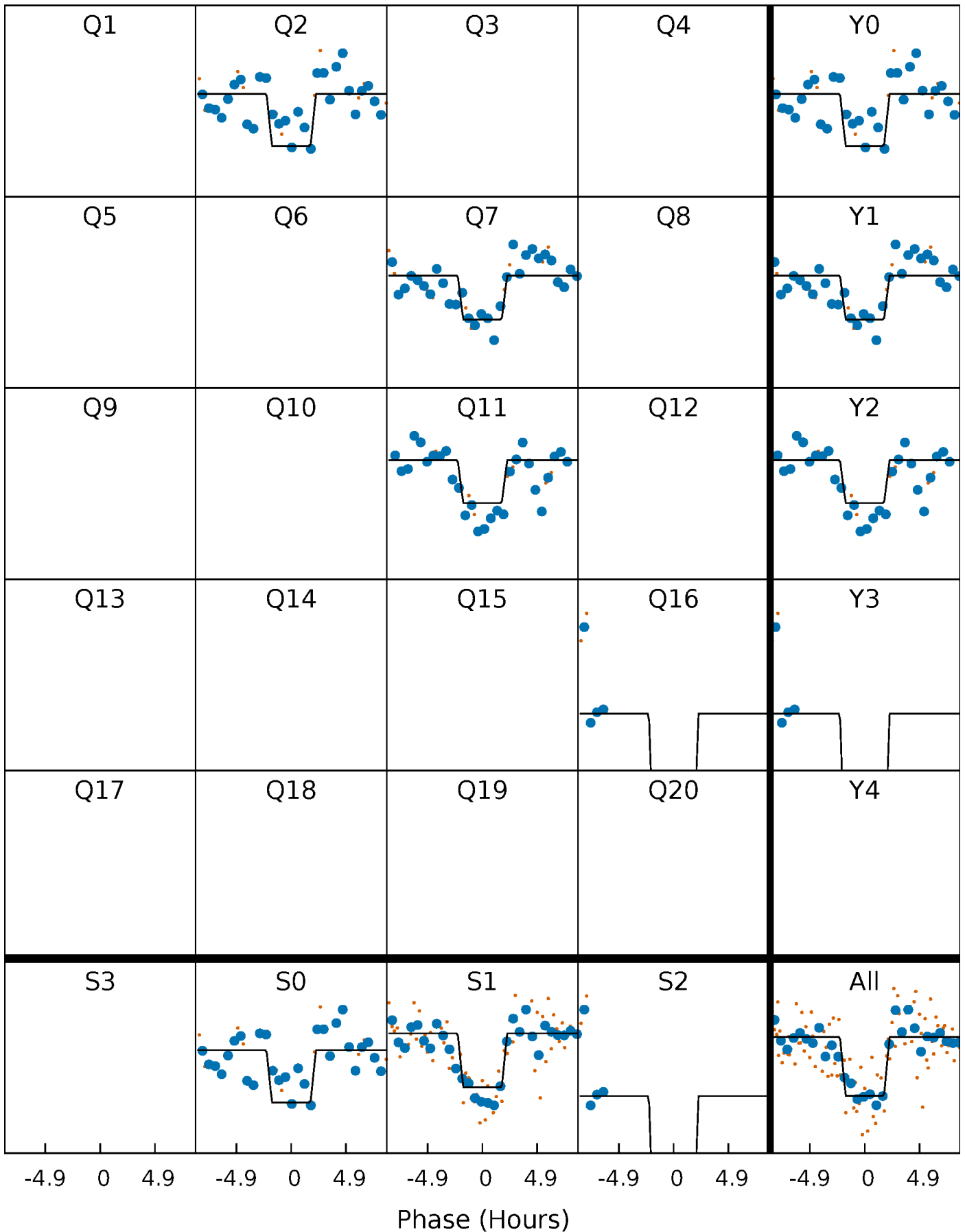
# DV Quarter-Phased Transit Curves

TCE 008451486-01 P=443.884997 Days  $T_0=193.564821$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

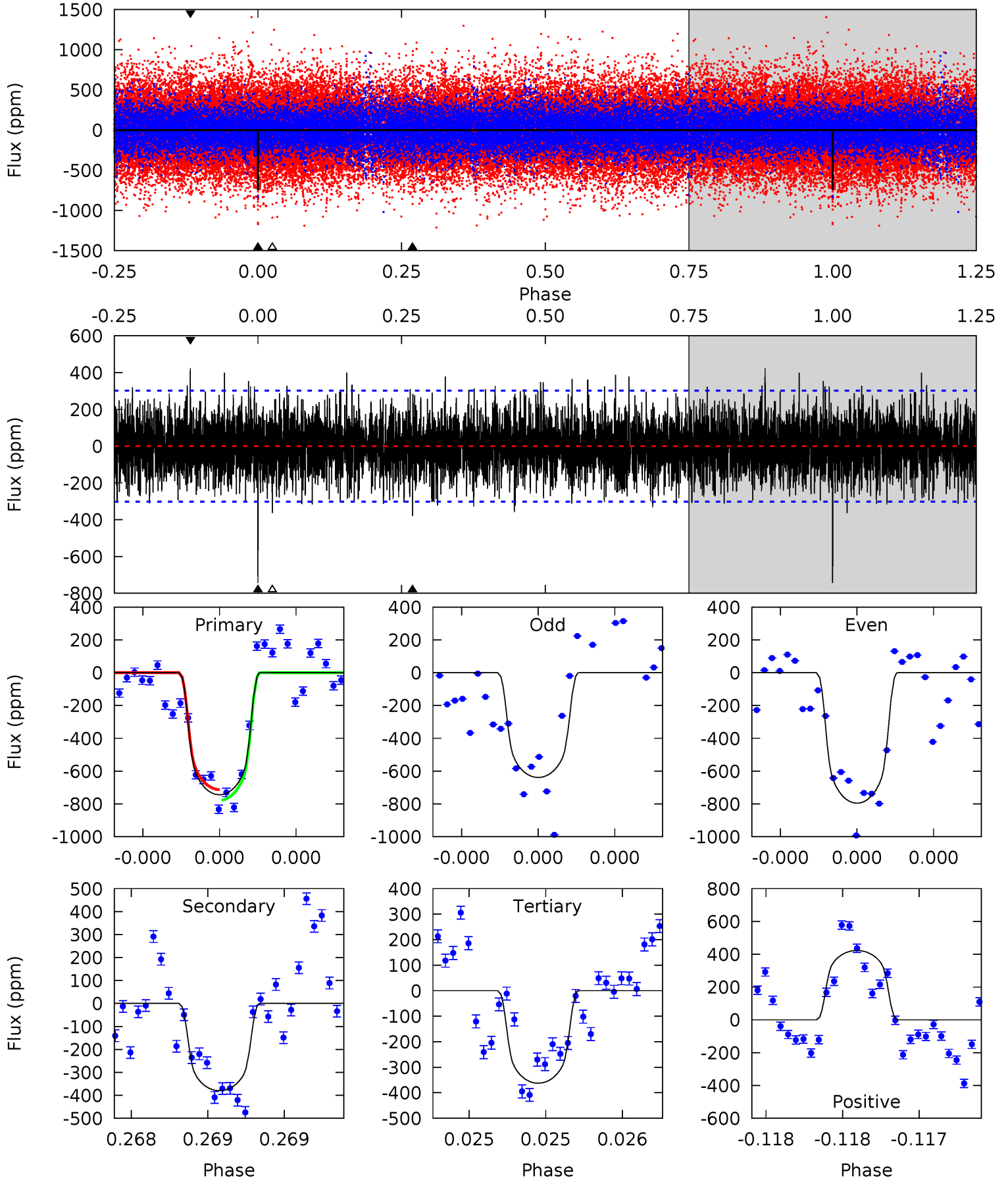
TCE 008451486-01 P=443.885035 Days  $T_0=193.565089$  (BKJD)



# DV Model-Shift Uniqueness Test

008451486-01, P = 443.884997 Days, E = 193.564821 Days

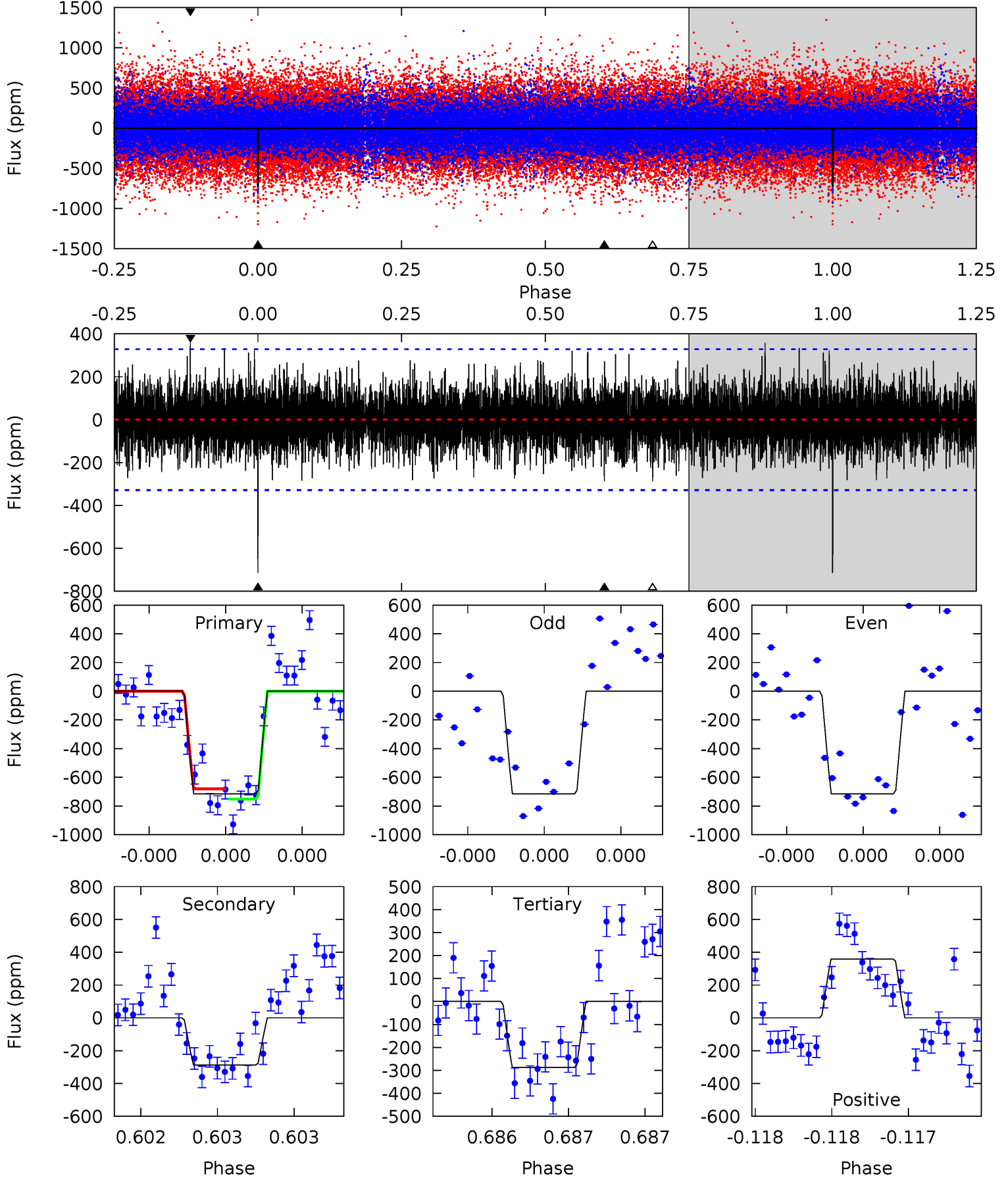
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	7.02	6.70	7.82	5.58	3.50	2.05	7.06	5.94	0.32	-0.80	1.37	1.16	0.36	0.59



# Alt Model-Shift Uniqueness Test

008451486-01, P = 443.885035 Days, E = 193.565089 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
12.2	4.92	4.92	6.14	5.62	3.55	1.50	7.32	6.10	0.00	-1.22	0.01	1.00	0.33	0.62



### Stellar Parameters For KIC 008451486

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4784^{+79}_{-43}$	$3.021^{+0.030}_{-0.027}$	$-0.120^{+0.150}_{-0.100}$	$4.915^{+0.813}_{-0.152}$	$0.925^{+0.322}_{-0.034}$	$0.011^{+0.001}_{-0.002}$
	+2%/-1%	+1%/-1%	+125%/-83%	+17%/-3%	+35%/-4%	+10%/-16%
Source	SPE74	AST9	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 008451486-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-380 \pm 54$	$16.69^{+3.05}_{-2.88}$	$621^{+13}_{-9}$	$4020^{+310}_{-228}$	$924^{+460}_{-258}$
Alt.	$-287 \pm 58$	$14.48^{+2.93}_{-3.08}$	$621^{+13}_{-9}$	$4020^{+366}_{-268}$	$927^{+567}_{-301}$

$T_{\text{max}}$  = 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

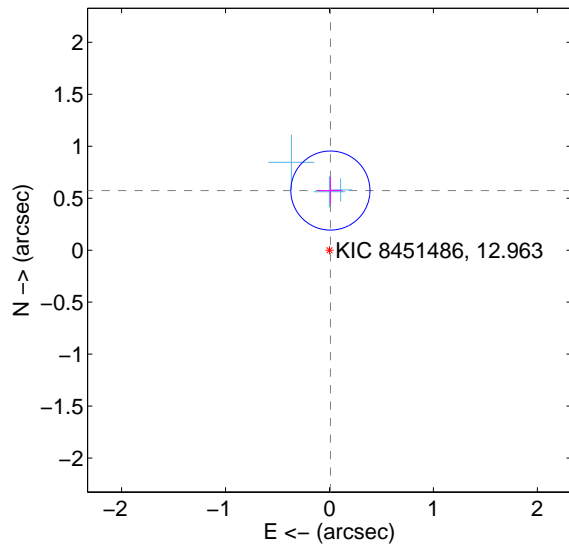
Supplemental centroid analysis for 008451486-01. Kepler magnitude: 12.96. Transit SNR 7.16

There are 3 quarters with good PRF difference image offsets

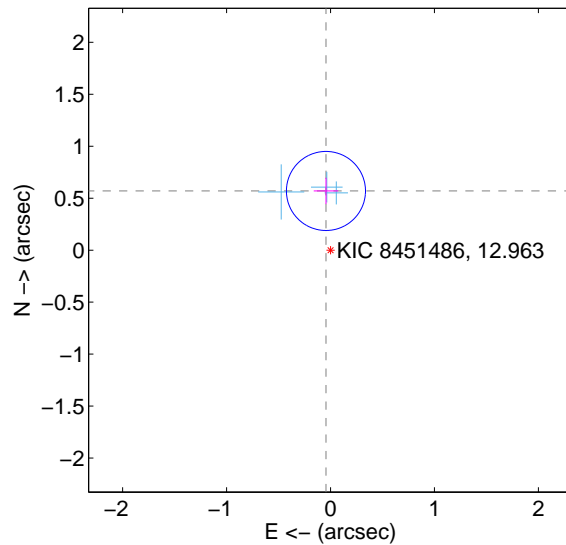
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.574 \pm 0.127$	4.52	$-0.009 \pm 0.118$	$0.573 \pm 0.127$
PRF-fit source offset from KIC position	$0.571 \pm 0.127$	4.51	$0.044 \pm 0.118$	$0.570 \pm 0.127$
photometric centroid source offset	$0.25 \pm 0.56$	0.45	$-0.20 \pm 0.49$	$-0.15 \pm 0.67$

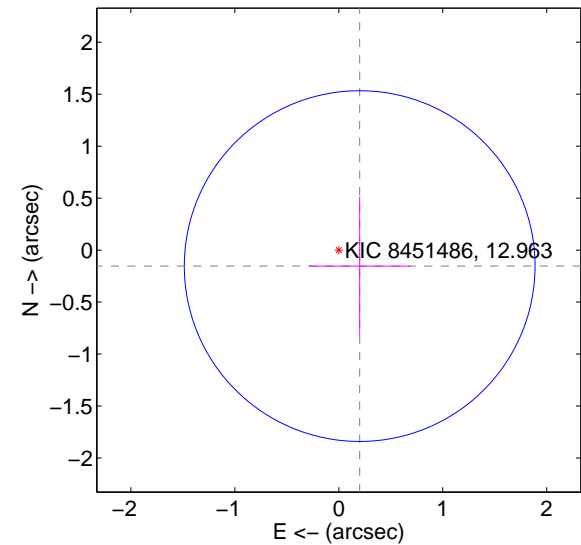
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



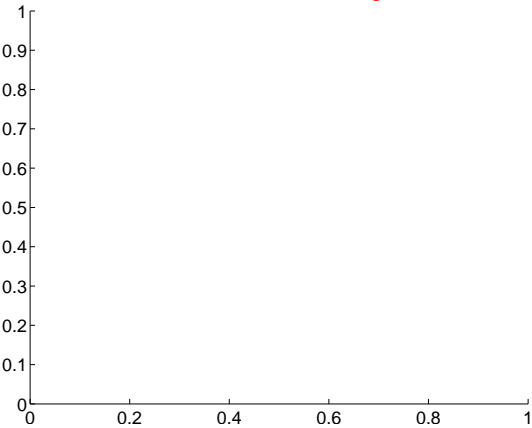
offset from photometric centroids



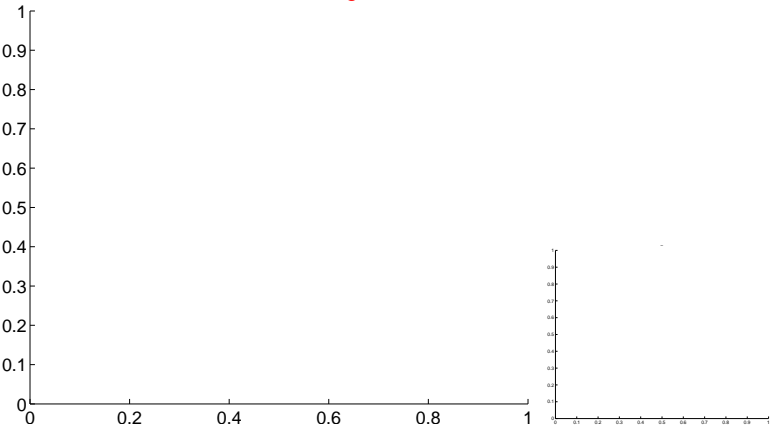
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

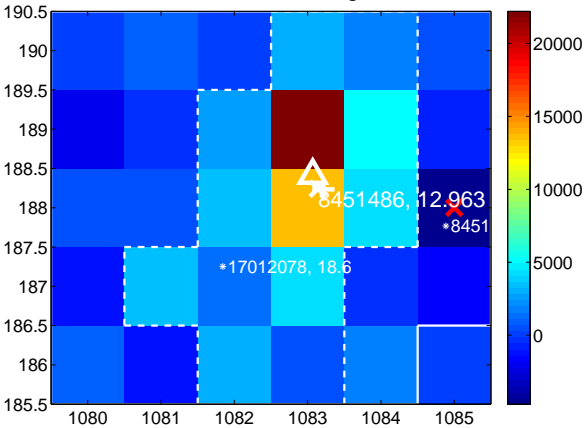
Q1 no difference image



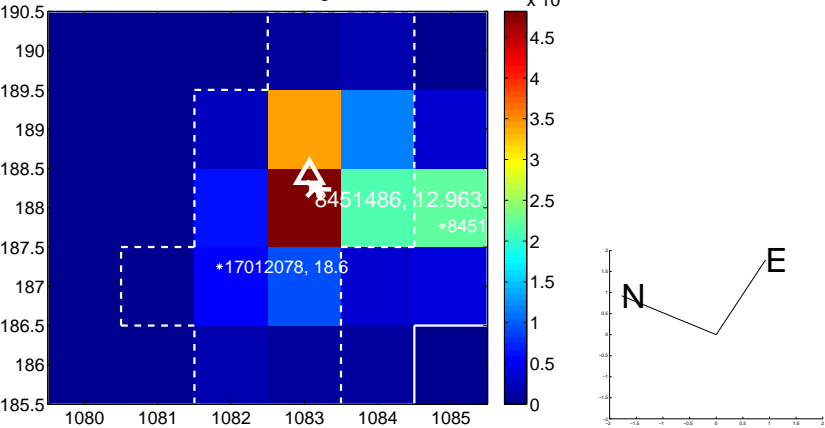
Q1 no OOT image



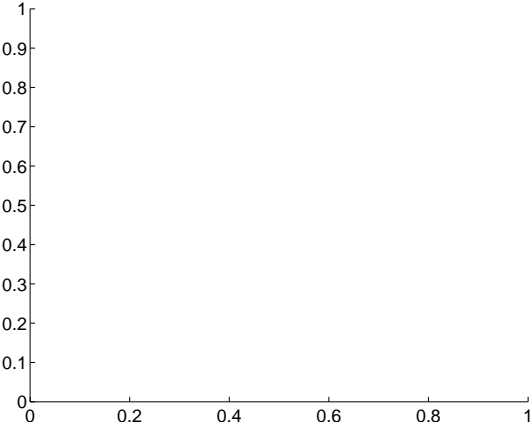
Q2 difference image



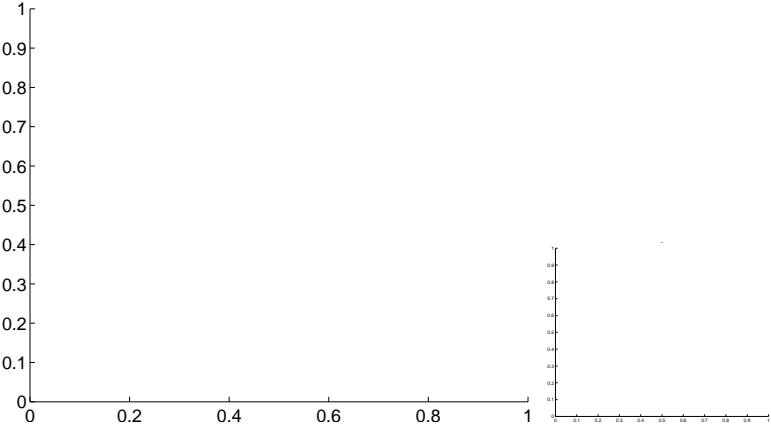
Q2 OOT image



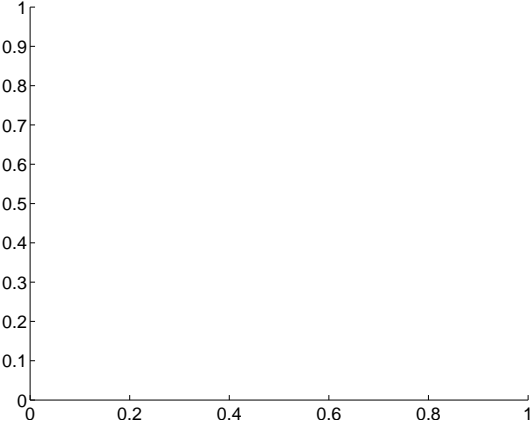
Q3 no difference image



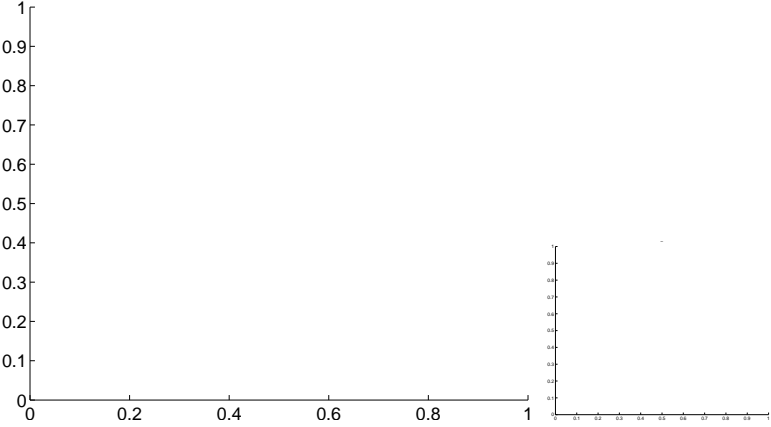
Q3 no OOT image



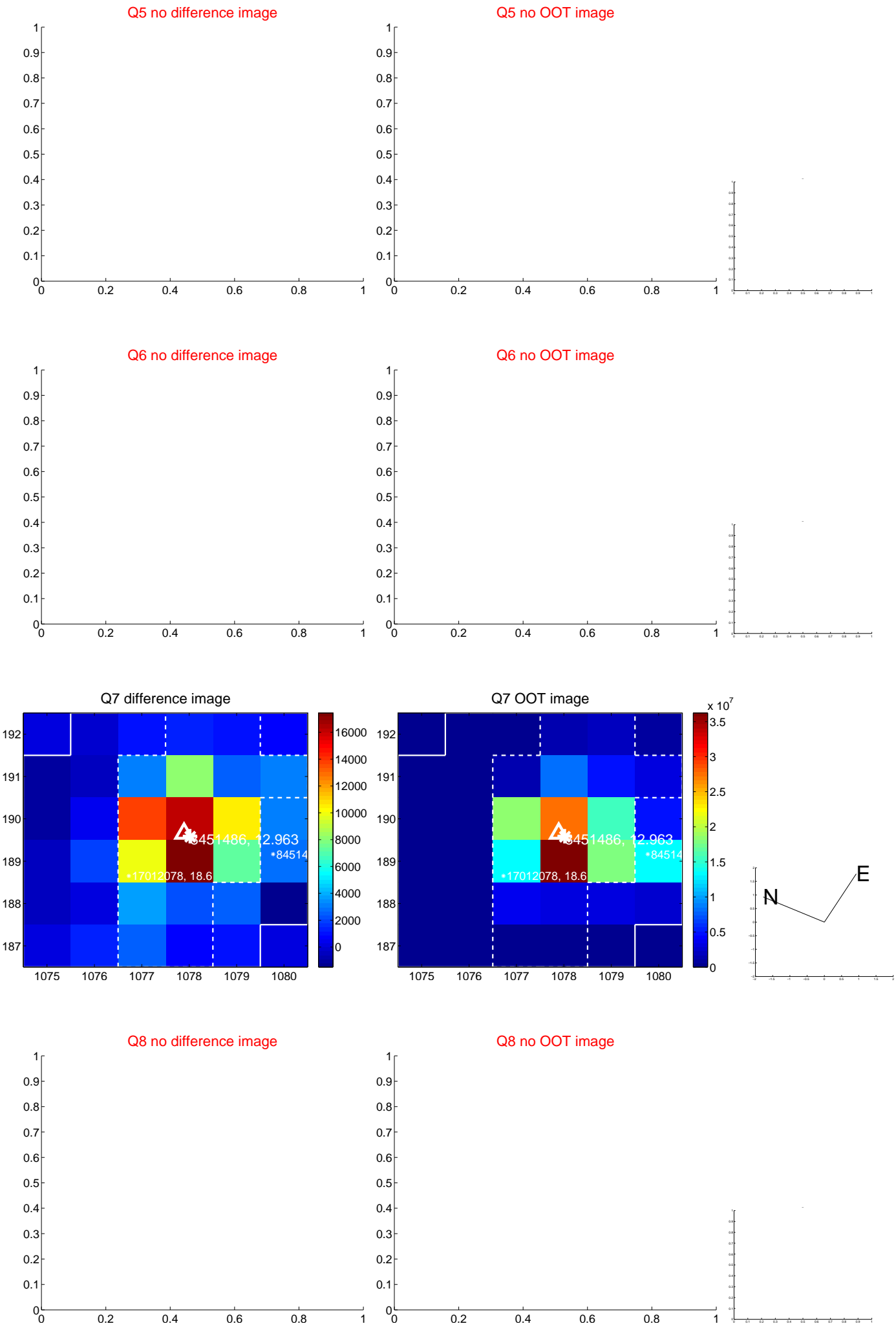
Q4 no difference image



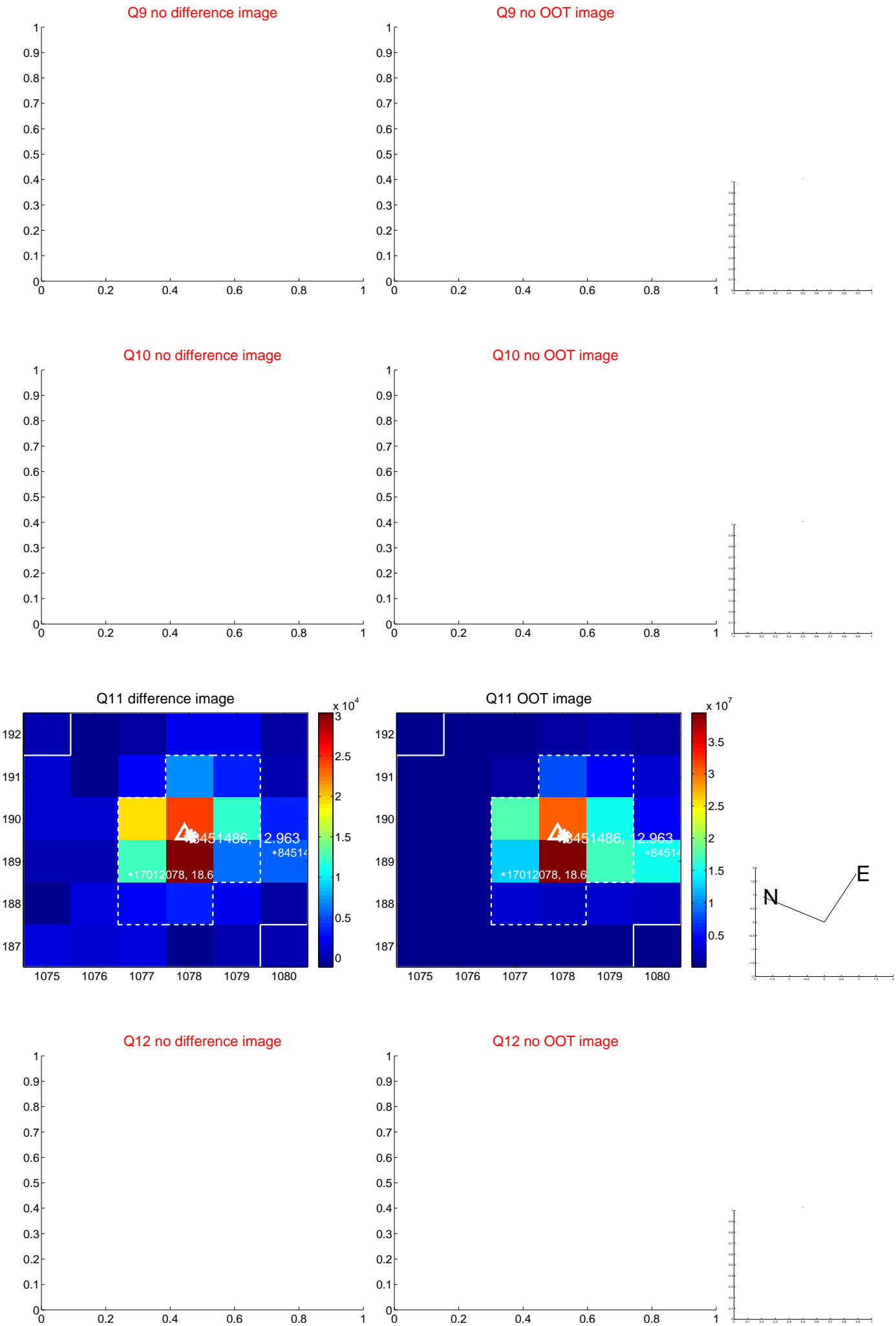
Q4 no OOT image



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



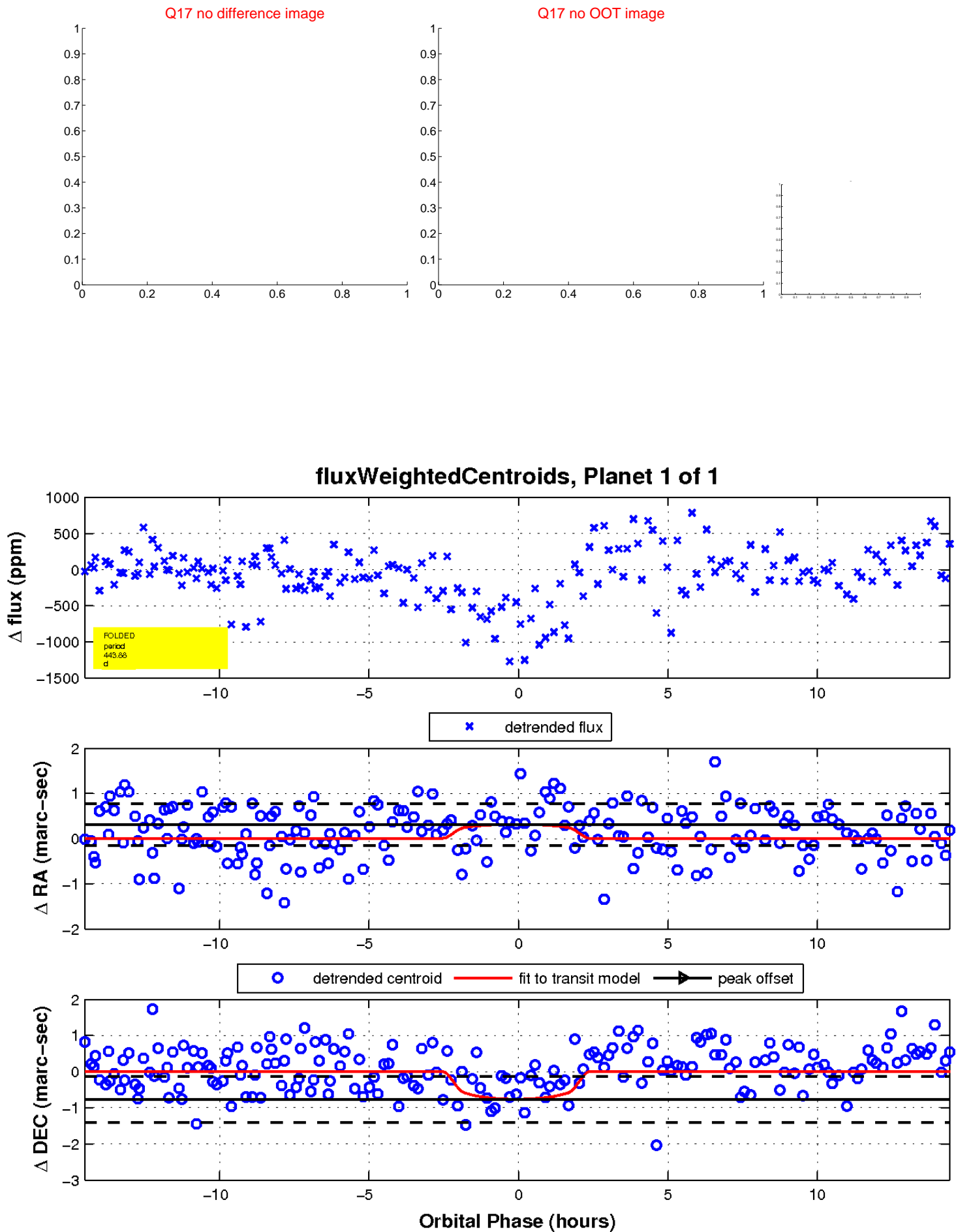
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

