

# KIC 008748659

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008748659-01	OBS	No	375.075827	174.172602	2845.2	61.876	10.9	16.6	0.82	5561	8.28	0.59

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008748659-01	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_MARSHALL_SKYE—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST—EPHEM_MATCH

**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.

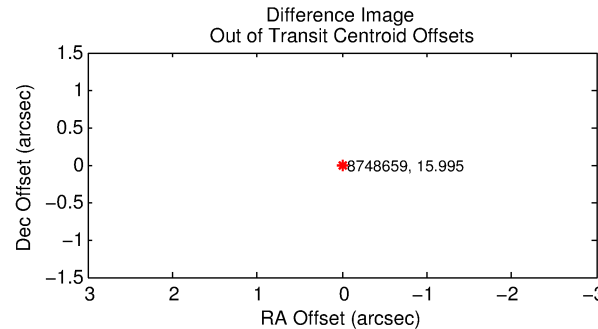
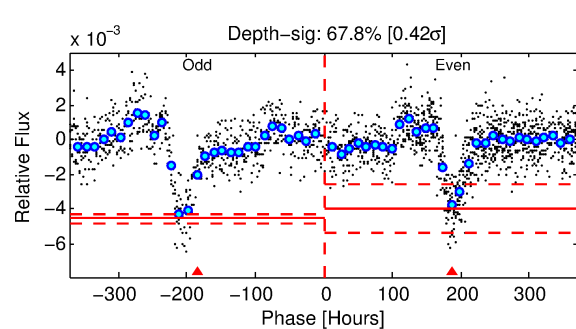
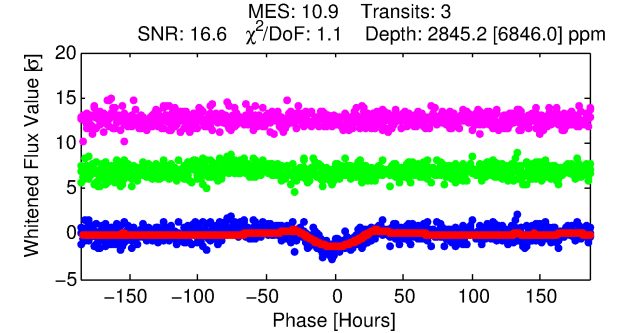
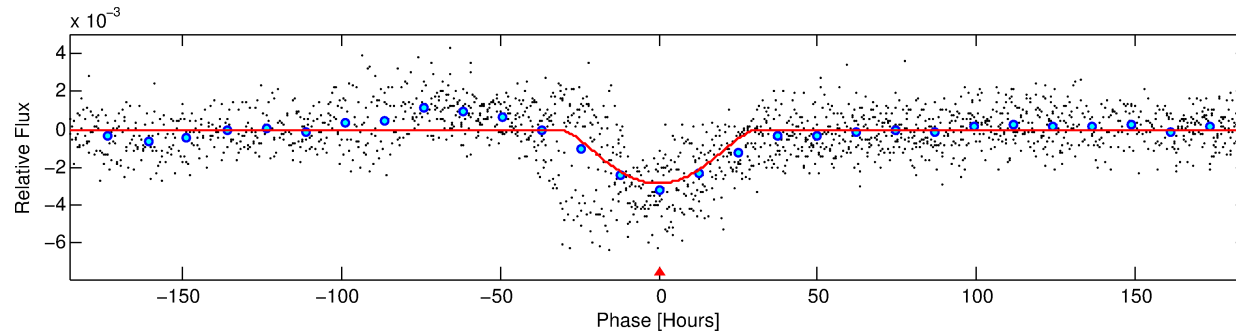
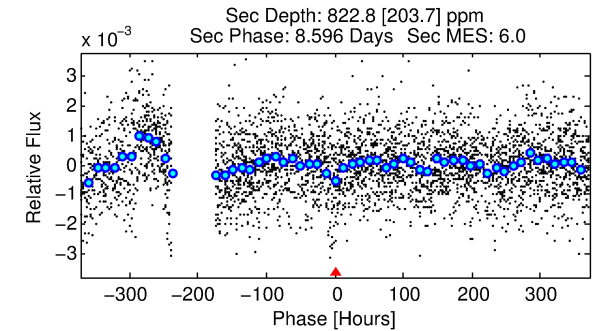
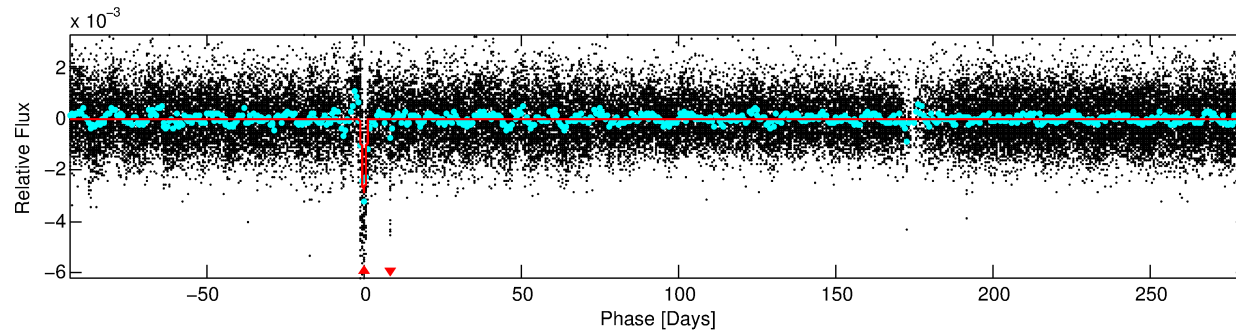
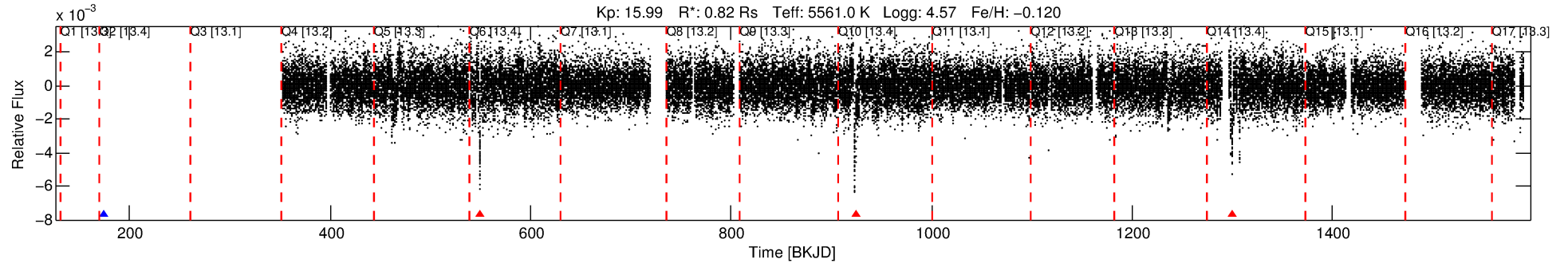
## Ephemeris Match Information For 008748659-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008748659-01	8748659	008684335-01	8684335	1:1	75.7	1	-20	10.21	16.00	0.33	Direct-PRF	0	3.11	2.86

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 8748659 Candidate: 1 of 1 Period: 375.076 d



## DV Fit Results:

Period = 375.07583 [0.04680] d  
Epoch = 174.1726 [0.1028] BKJD  
Rp/R\* = 0.0927 [0.1513]  
a/R\* = 20.43 [6.64]  
b = 1.00 [0.36]  
Seff = 0.59 [0.18]  
Teq = 223 [18] K  
Rp = 8.28 [13.66] Re  
a = 0.9869 [0.1985] AU  
Ag = 6435.34 [21146.06] [0.30σ]  
Teffp = 3093 [2533] K [1.13σ]

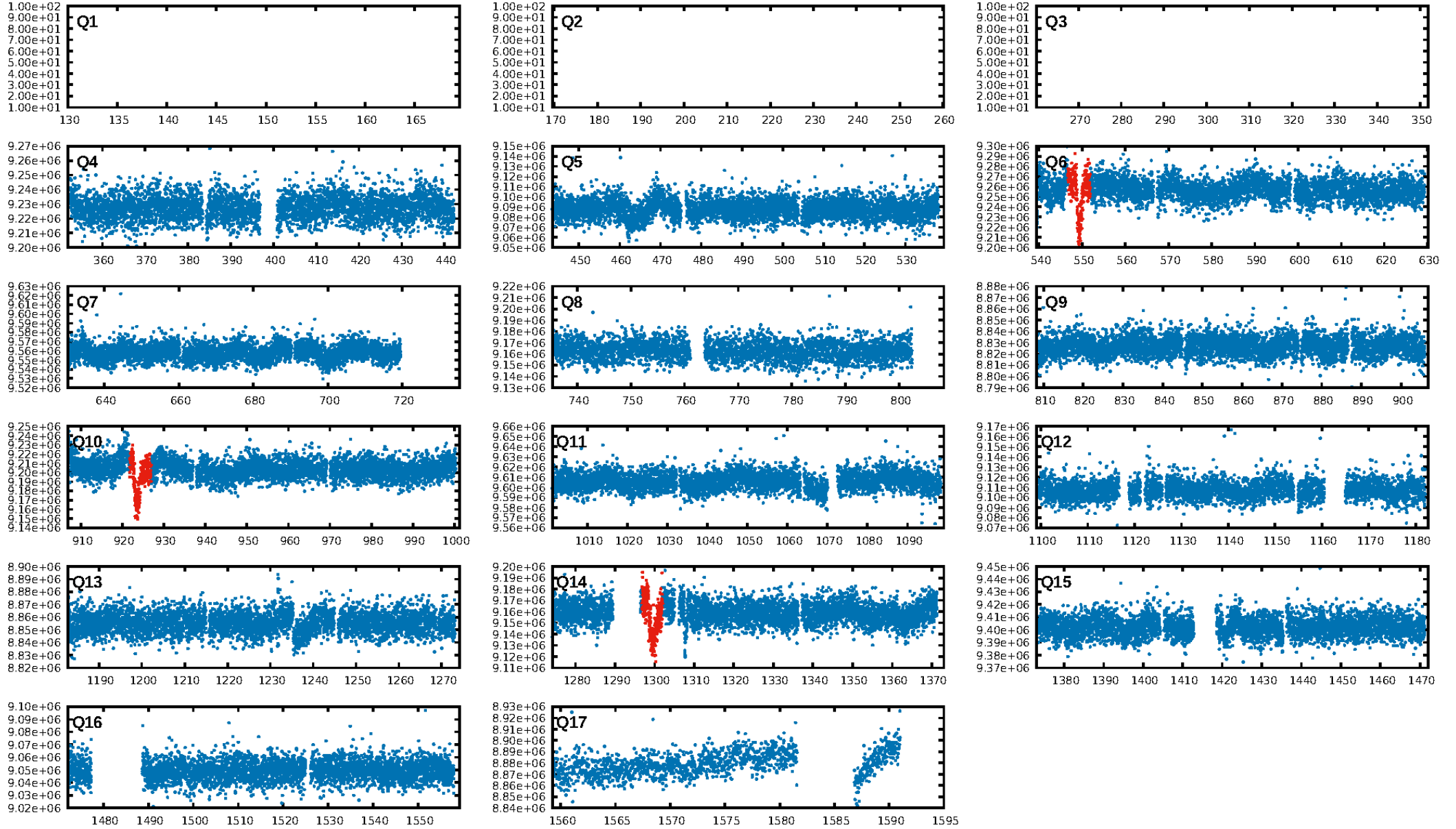
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 81.0%  
Bootstrap-pfa: 2.94e-23  
RollingBand-fgt: 0.00 [0/3]  
GhostDiagnostic-chr: 0.09625  
Centroid-sig: 0.0%  
Centroid-so: 3.740 arcsec [13.78σ]  
OotOffset-rm: N/A  
KicOffset-rm: 2.488 arcsec [0.91σ]  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 2/0/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

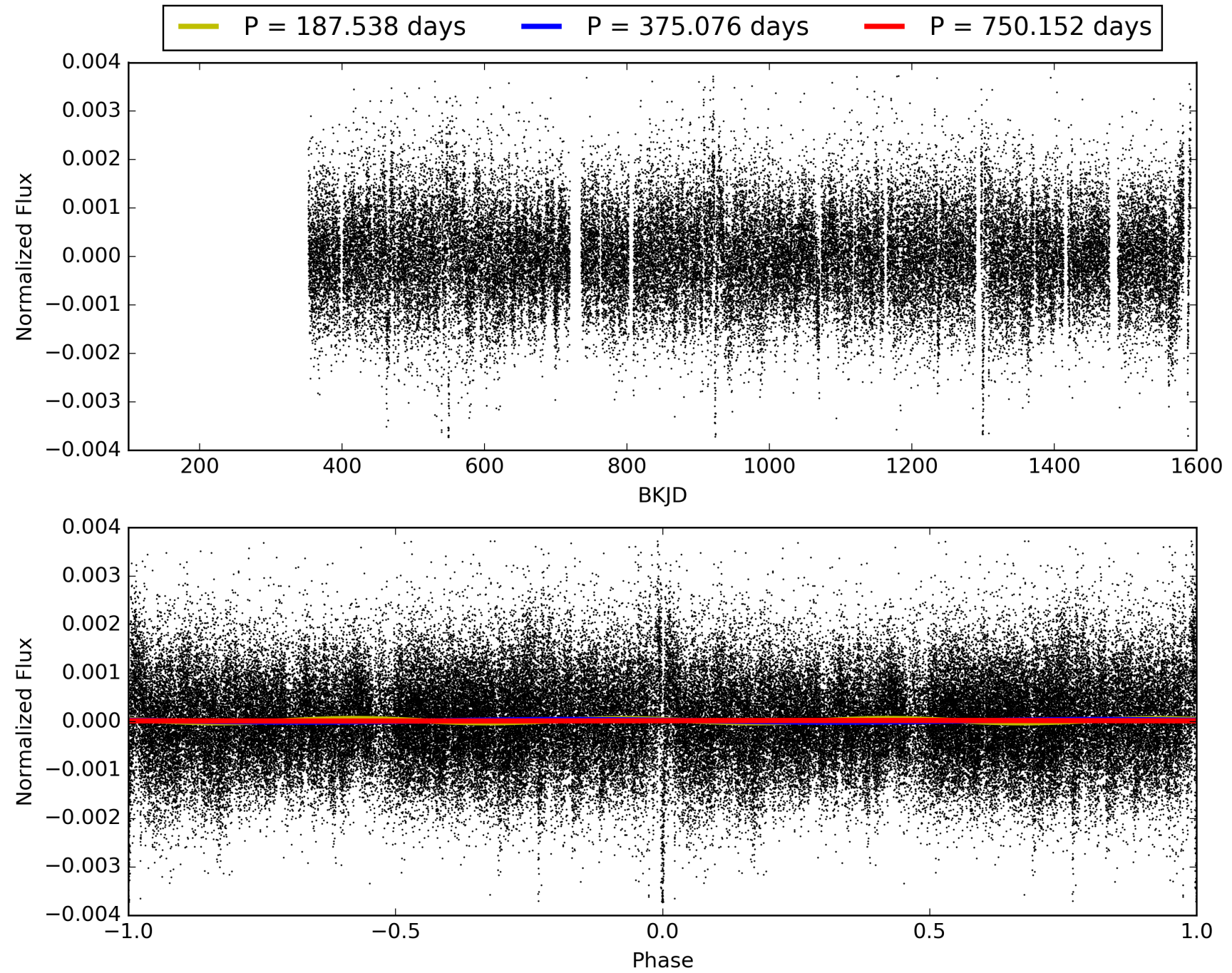
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:11:43 Z

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

# TCE 008748659-01, PDC Light Curves

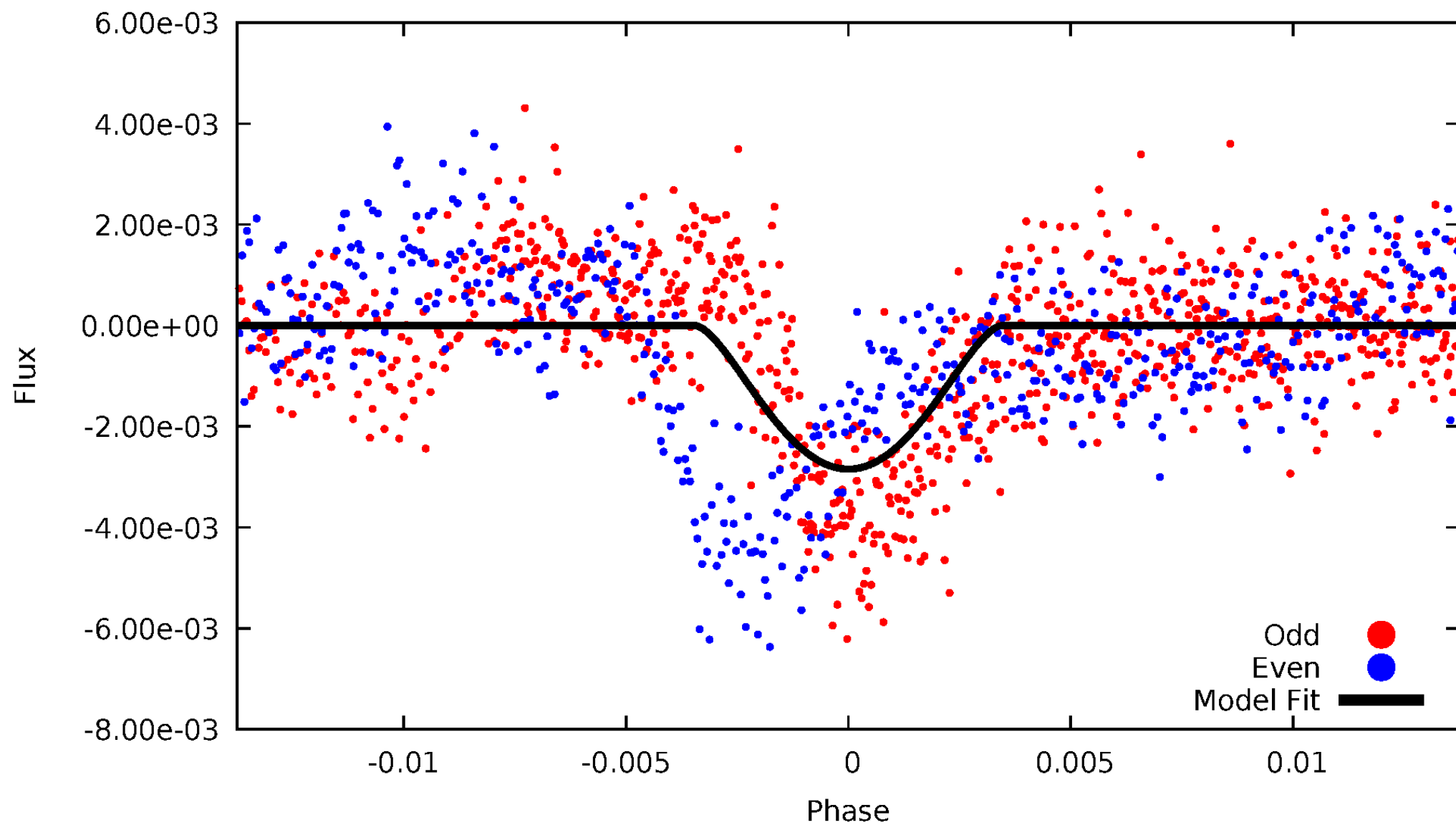


TCE 008748659-01



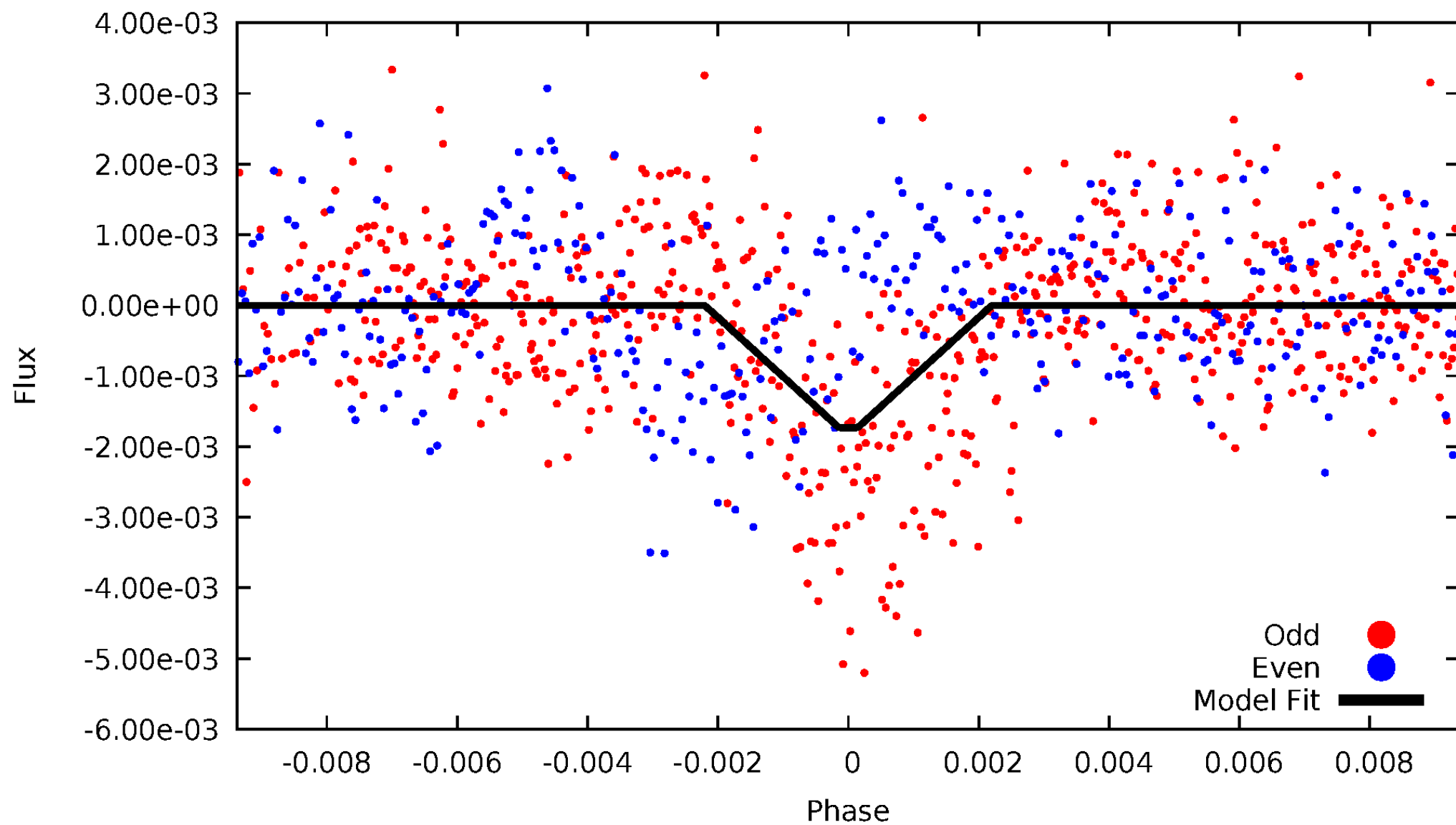
# DV Odd/Even

TCE 008748659-01



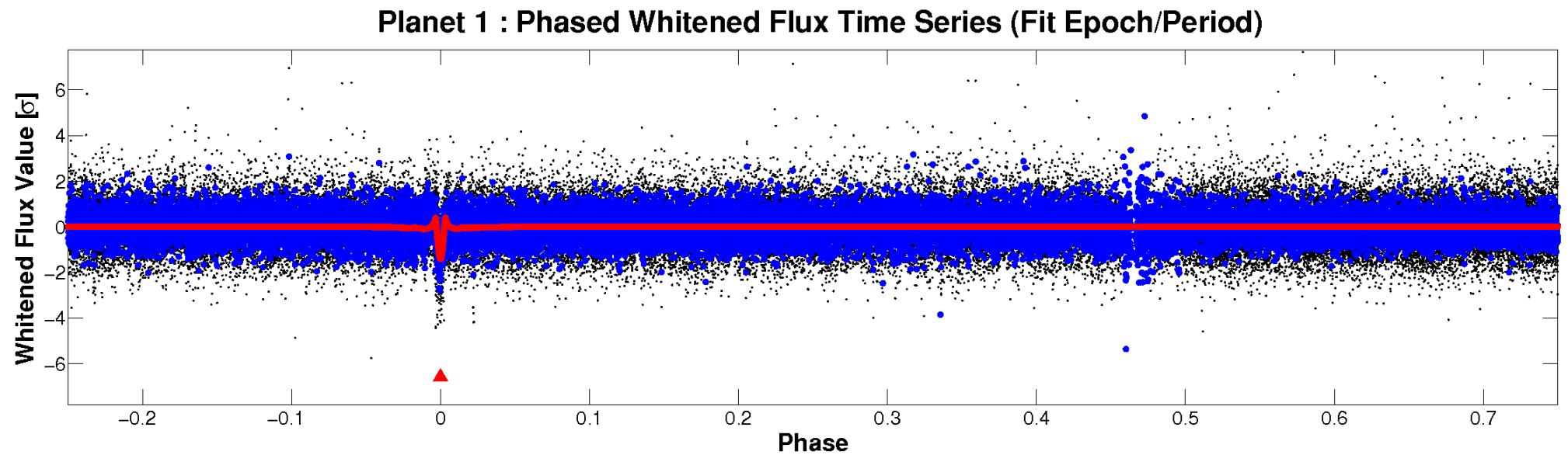
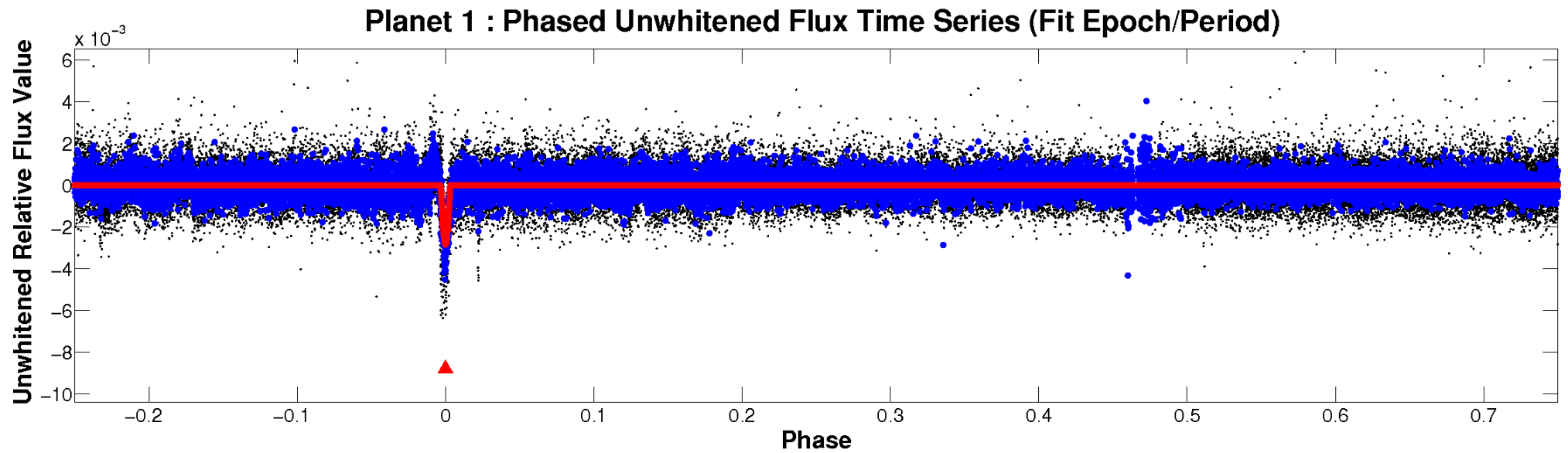
# ALT Odd/Even

TCE 008748659-01



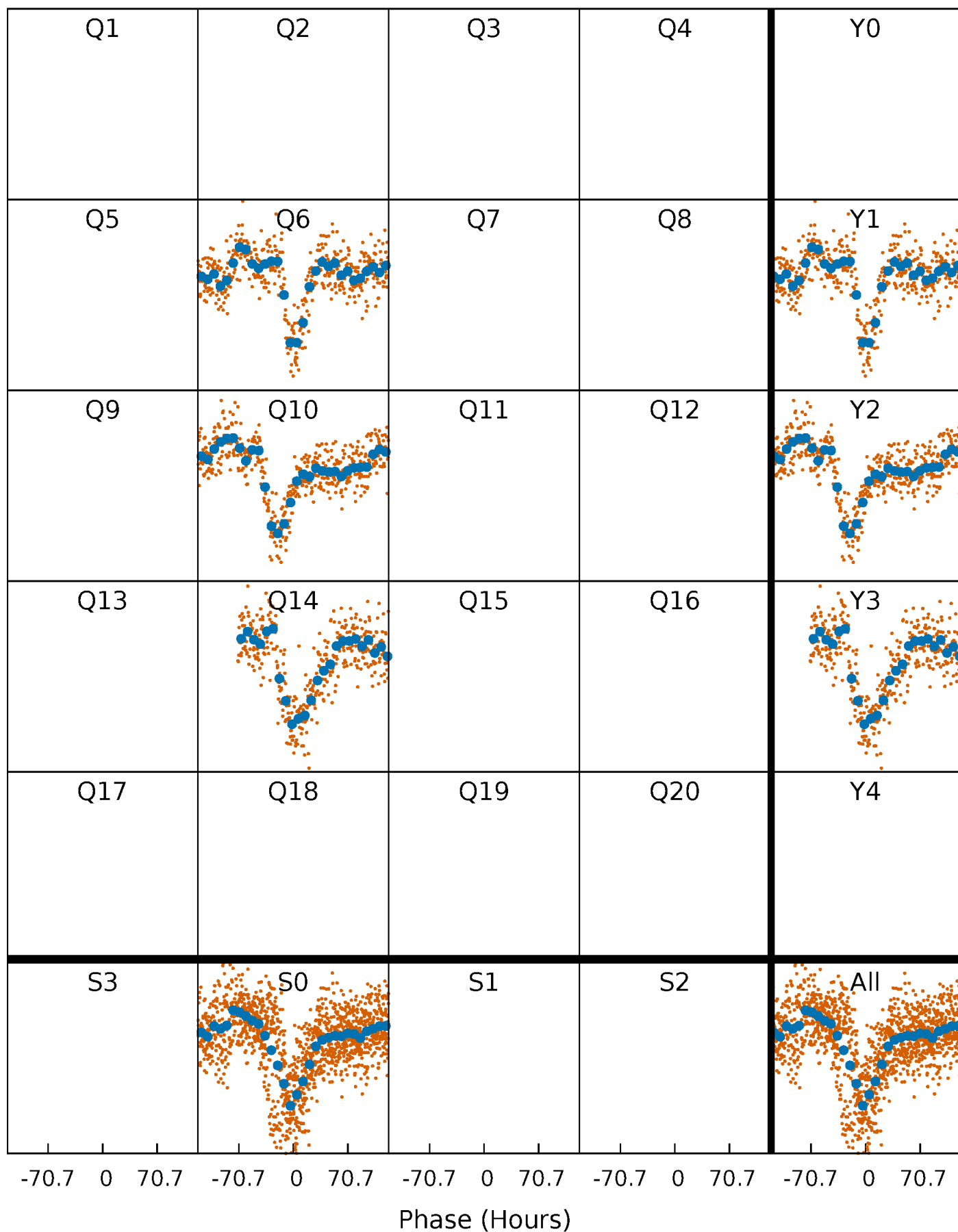


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

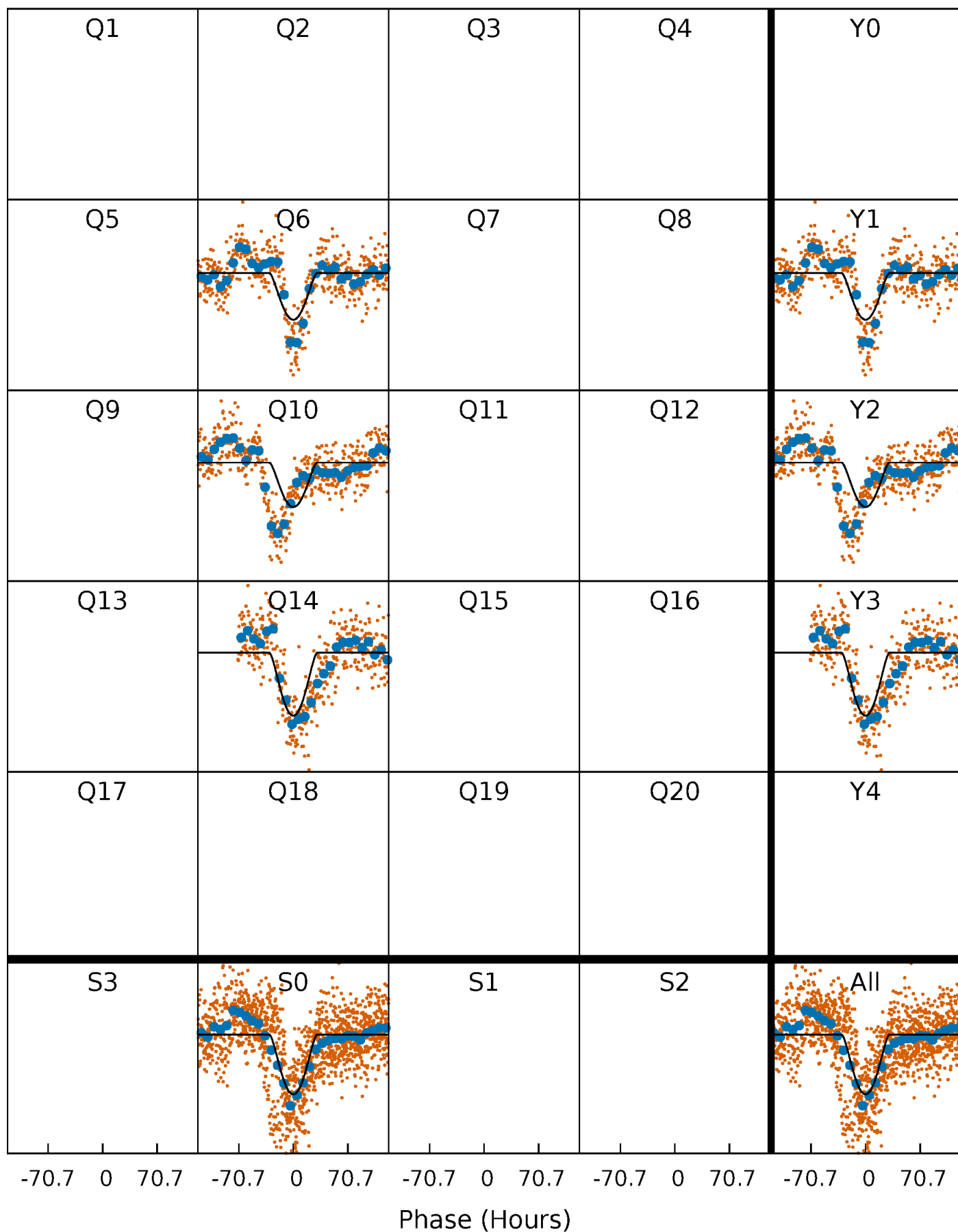
TCE 008748659-01 P=375.075827 Days  $T_0=174.172602$  (BKJD)





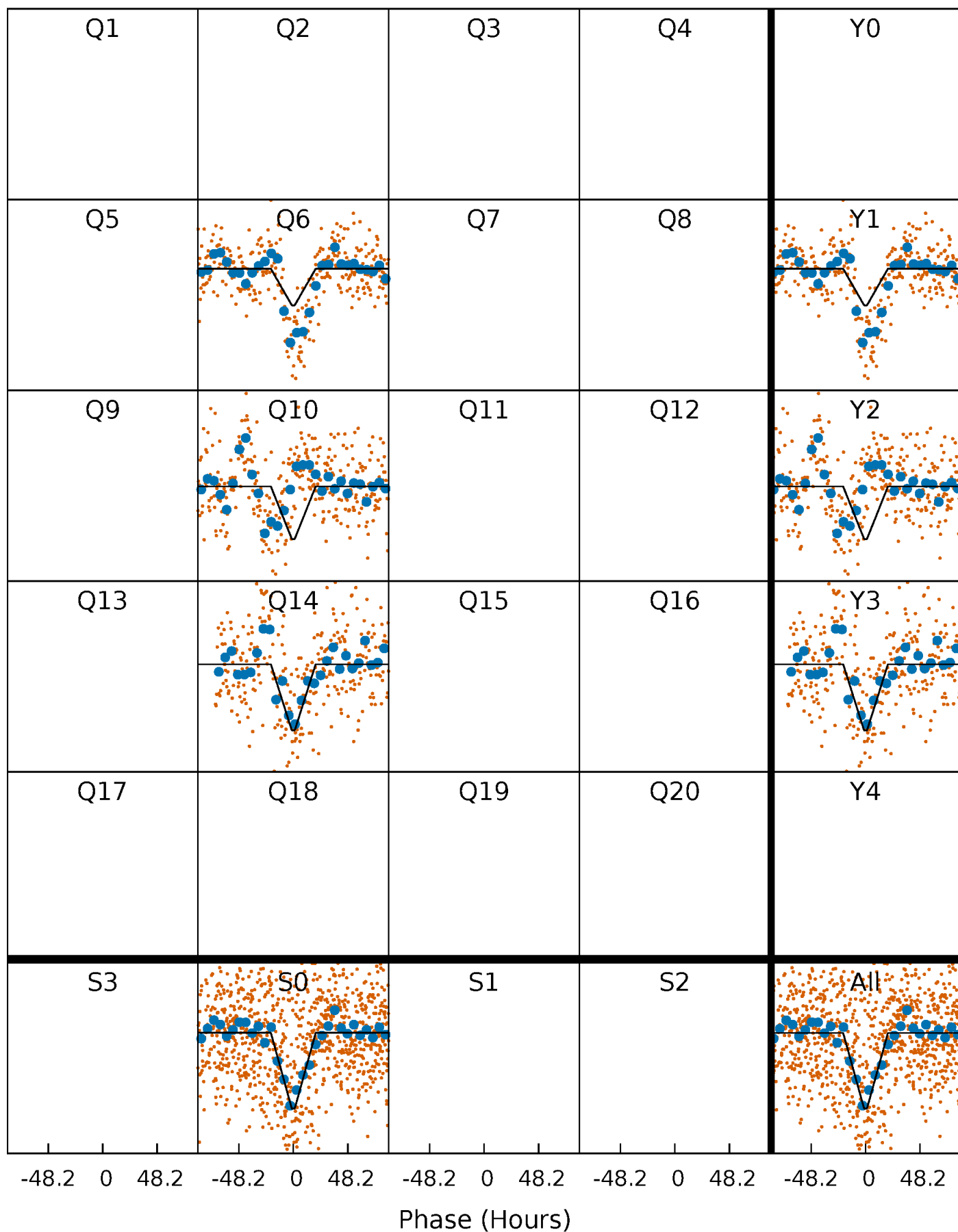
# DV Quarter-Phased Transit Curves

TCE 008748659-01 P=375.075827 Days  $T_0=174.172602$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

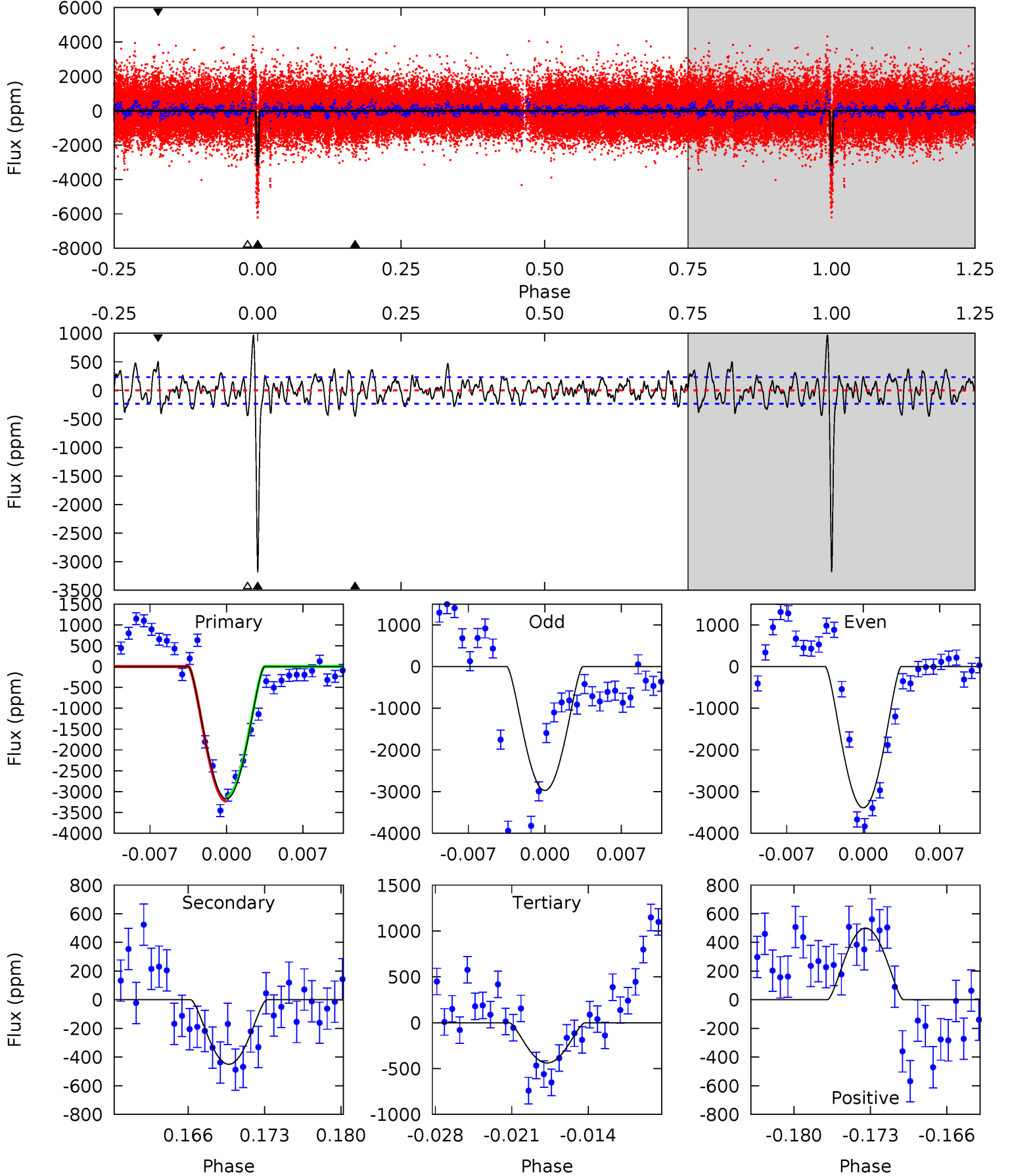
TCE 008748659-01 P=375.064805 Days  $T_0=174.080814$  (BKJD)



# DV Model-Shift Uniqueness Test

008748659-01,  $P = 375.075827$  Days,  $E = 174.172602$  Days

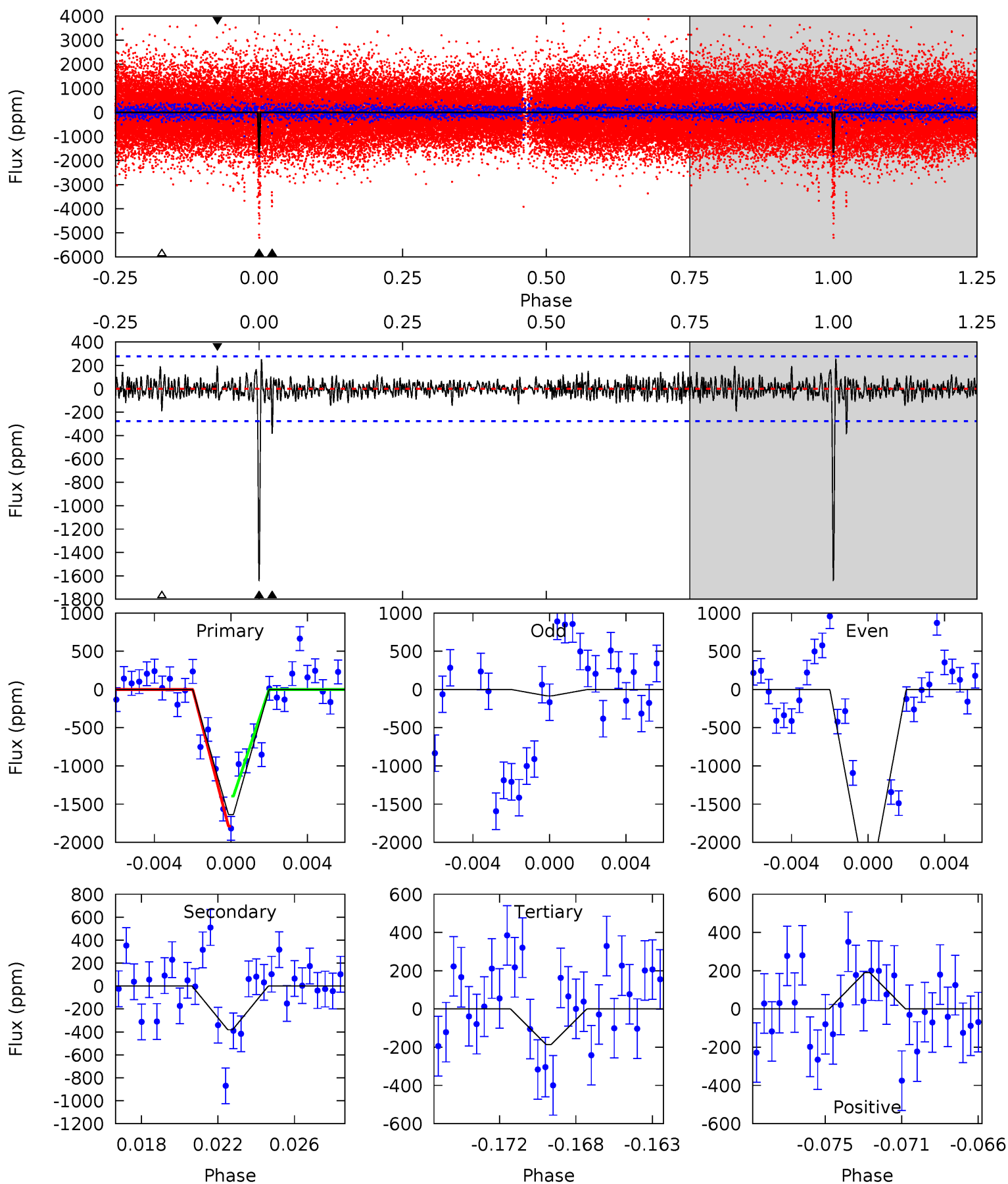
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.3	9.84	9.60	10.9	5.10	2.70	3.57	59.7	58.4	0.24	-1.09	4.44	0.99	0.23	1.28



# Alt Model-Shift Uniqueness Test

008748659-01, P = 375.064805 Days, E = 174.080814 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
30.6	7.13	3.48	3.56	5.18	2.85	0.97	27.1	27.1	3.64	3.57	21.8	1.14	0.13	3.67



### Stellar Parameters For KIC 008748659

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5561^{+182}_{-182}$	$4.572^{+0.038}_{-0.152}$	$-0.120^{+0.300}_{-0.300}$	$0.818^{+0.201}_{-0.067}$	$0.915^{+0.091}_{-0.112}$	$2.358^{+0.380}_{-1.066}$
	+3%/-3%	+1%/-3%	+250%/-250%	+25%/-8%	+10%/-12%	+16%/-45%
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 008748659-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-450 \pm 46$	$13.21^{+12.04}_{-8.72}$	$318^{+18}_{-14}$	$2868^{+1040}_{-440}$	$1321^{+9921}_{-956}$
Alt.	$-381 \pm 53$	$10.82^{+12.03}_{-7.26}$	$318^{+19}_{-15}$	$2943^{+1211}_{-511}$	$1797^{+13470}_{-1411}$

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

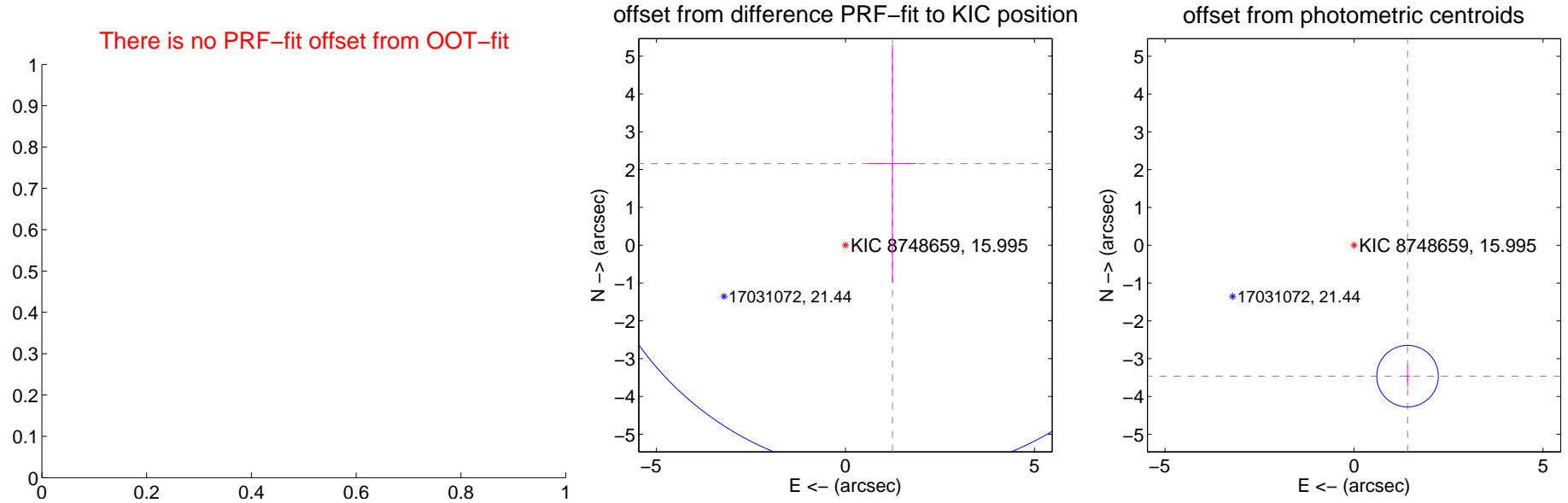
## DV Centroid Data

Supplemental centroid analysis for 008748659-01. Kepler magnitude: 15.99. Transit SNR 16.58

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$2.488 \pm 2.747$	0.91	$-1.243 \pm 0.630$	$2.155 \pm 3.150$
photometric centroid source offset	$3.74 \pm 0.27$	13.78	$-1.42 \pm 0.06$	$-3.46 \pm 0.29$



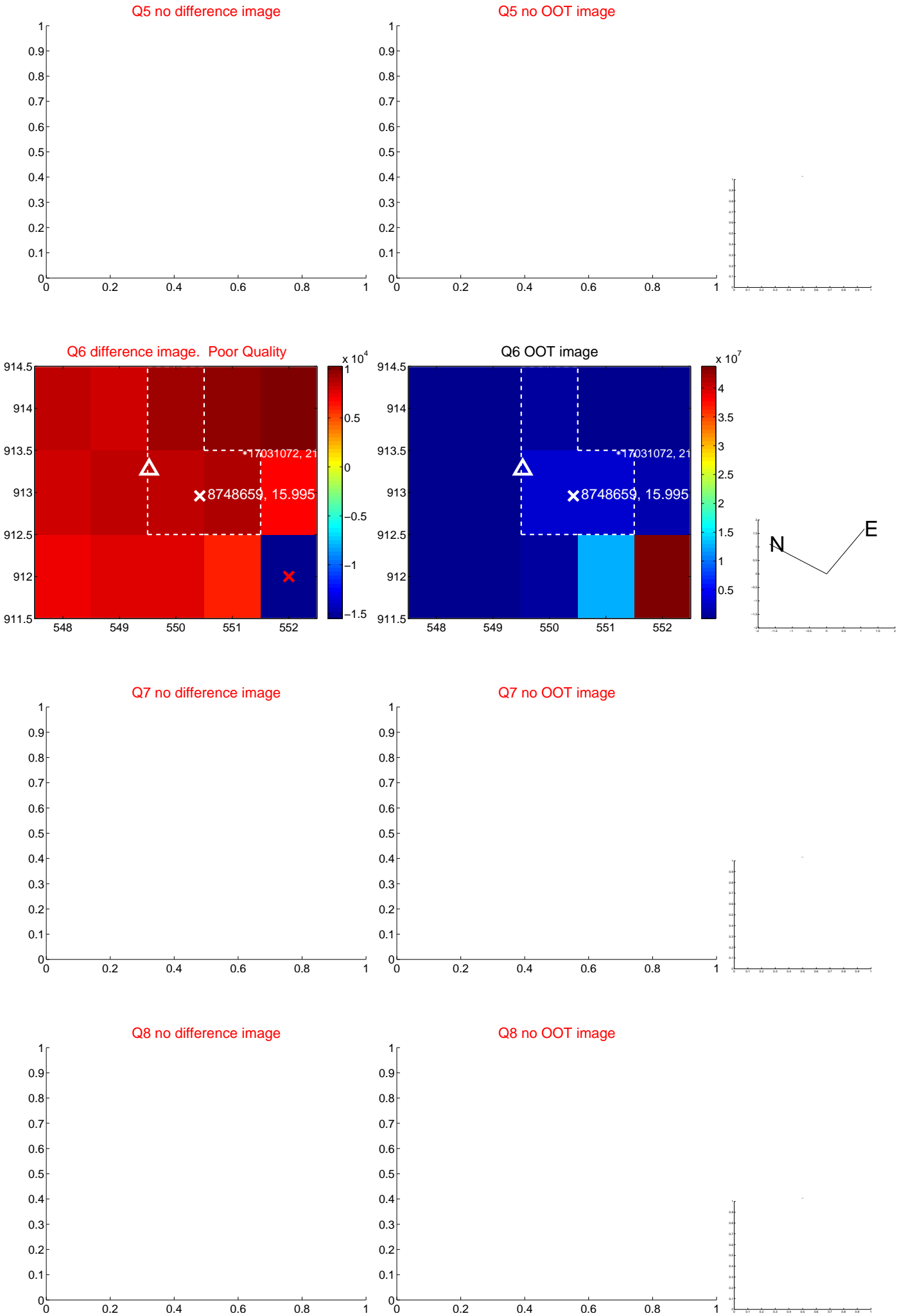
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



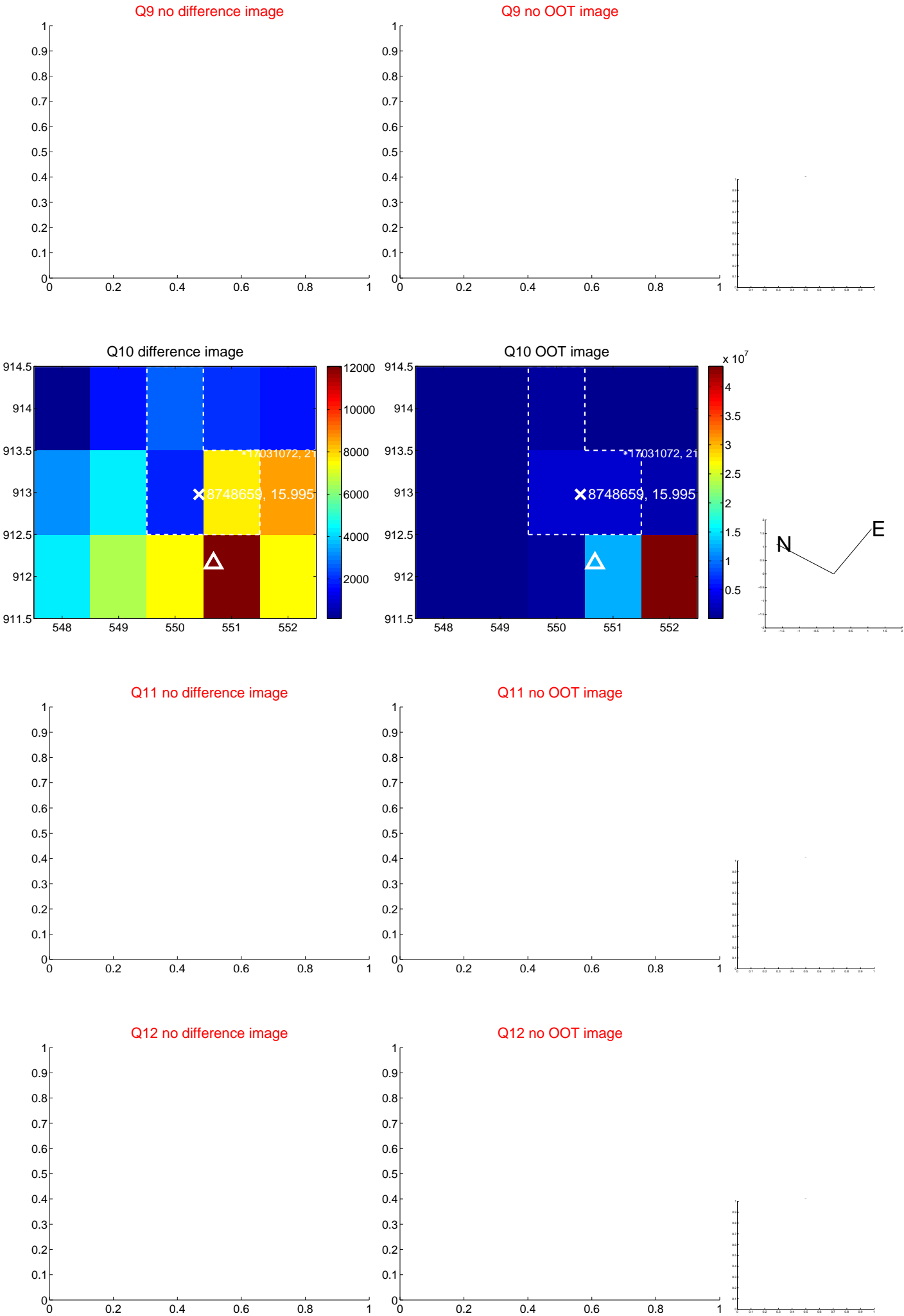
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



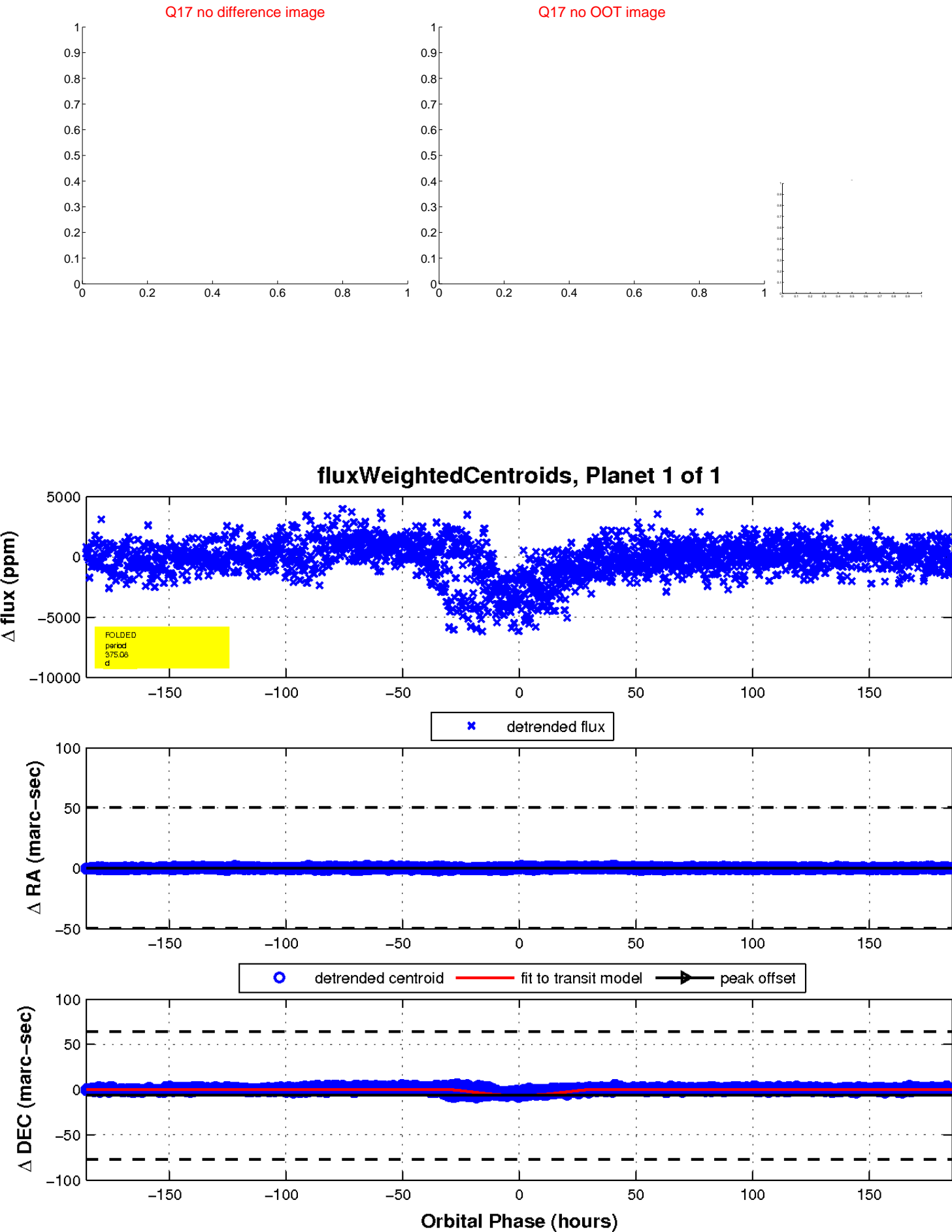
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

