

# KIC 008812059

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008812059-01	OBS	No	374.663787	172.378521	389.4	28.453	8.0	9.0	1.11	5611	2.51	1.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008812059-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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

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

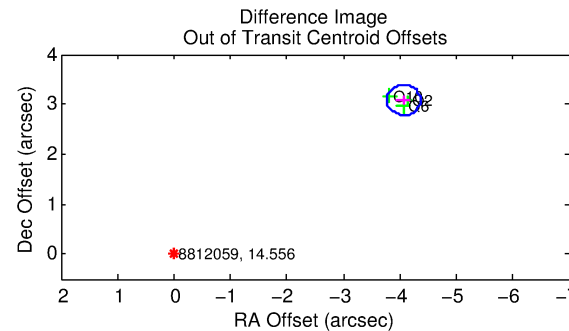
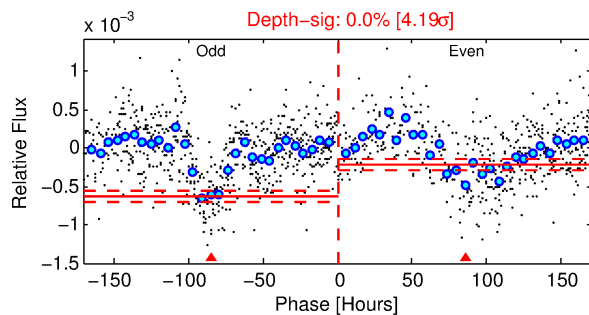
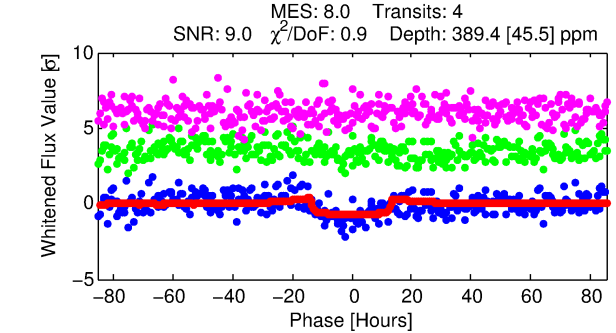
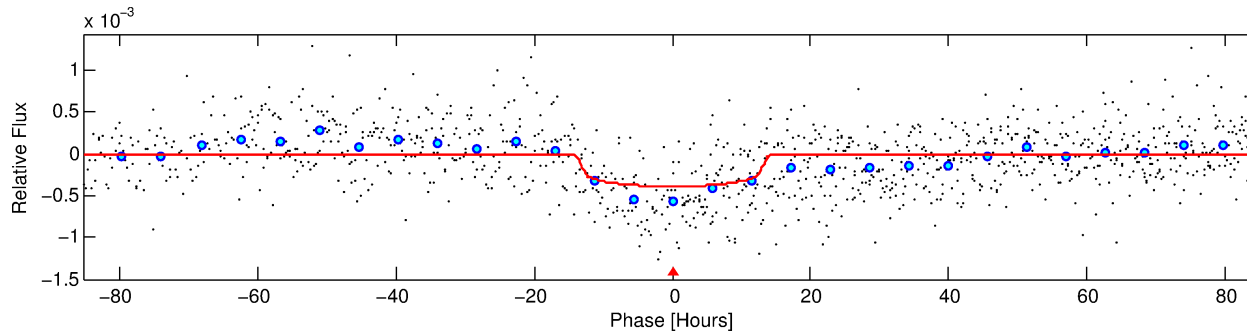
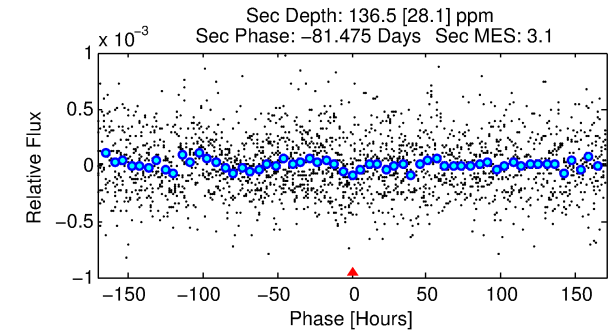
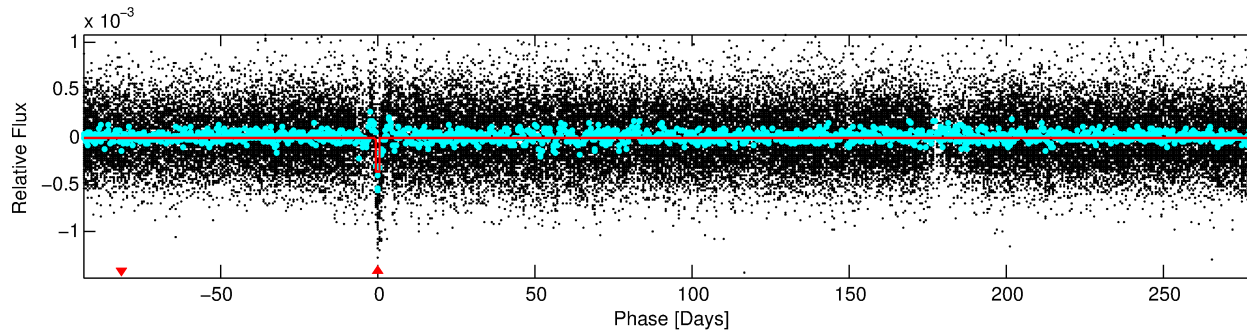
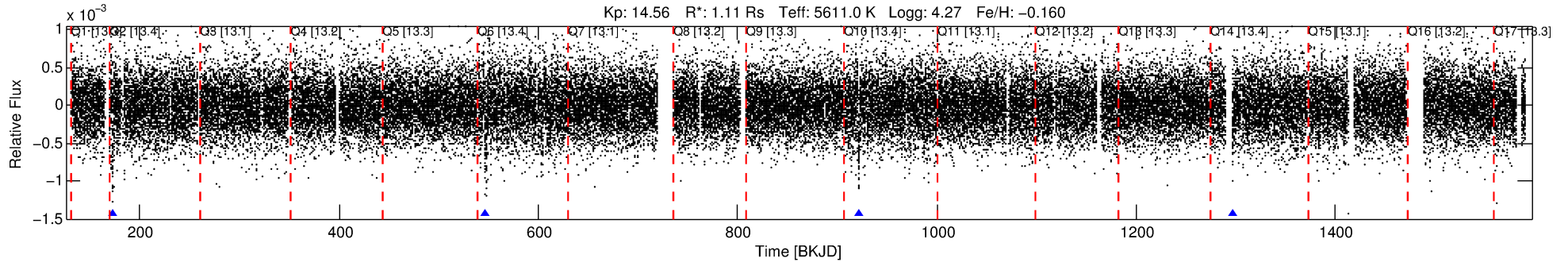
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008812059-01

No Significant Match Found

# DV One-Page Summary

KIC: 8812059 Candidate: 1 of 1 Period: 374.664 d



## DV Fit Results:

Period = 374.66379 [0.01865] d  
Epoch = 172.3785 [0.0298] BKJD  
Rp/R\* = 0.0206 [0.0027]  
a/R\* = 57.41 [29.81]  
b = 0.85 [0.18]  
Seff = 1.19 [0.51]  
Teq = 266 [29] K  
Rp = 2.51 [0.86] Re  
a = 0.9625 [0.2665] AU  
Ag = 11067.76 [5931.56] [1.87σ]  
Teffp = 4223 [373] K [10.58σ]

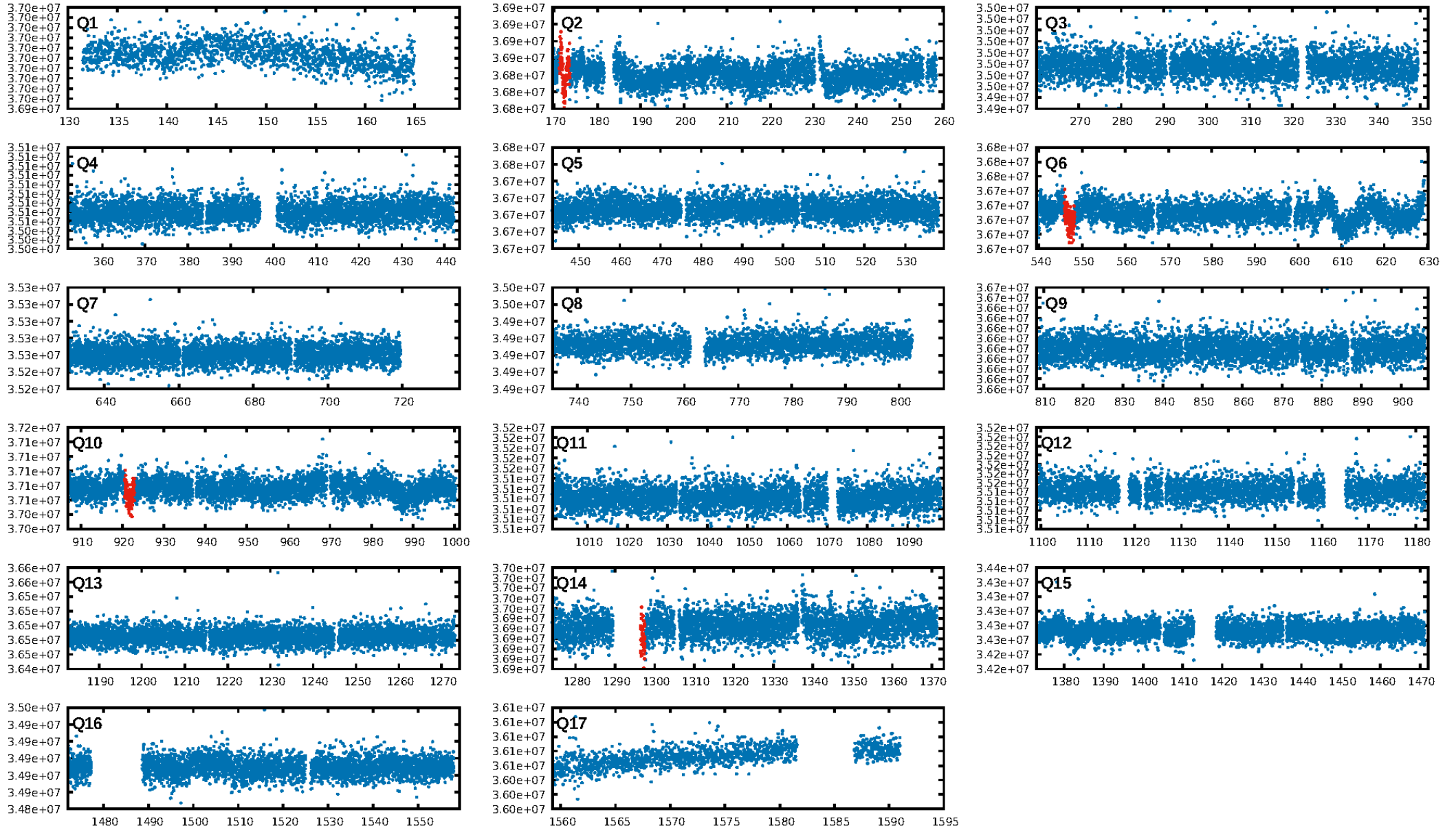
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.06e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.2125  
Centroid-sig: 0.0%  
Centroid-so: 8.518 arcsec [5.19σ]  
OotOffset-rm: 5.102 arcsec [50.55σ]  
KicOffset-rm: 5.091 arcsec [55.29σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

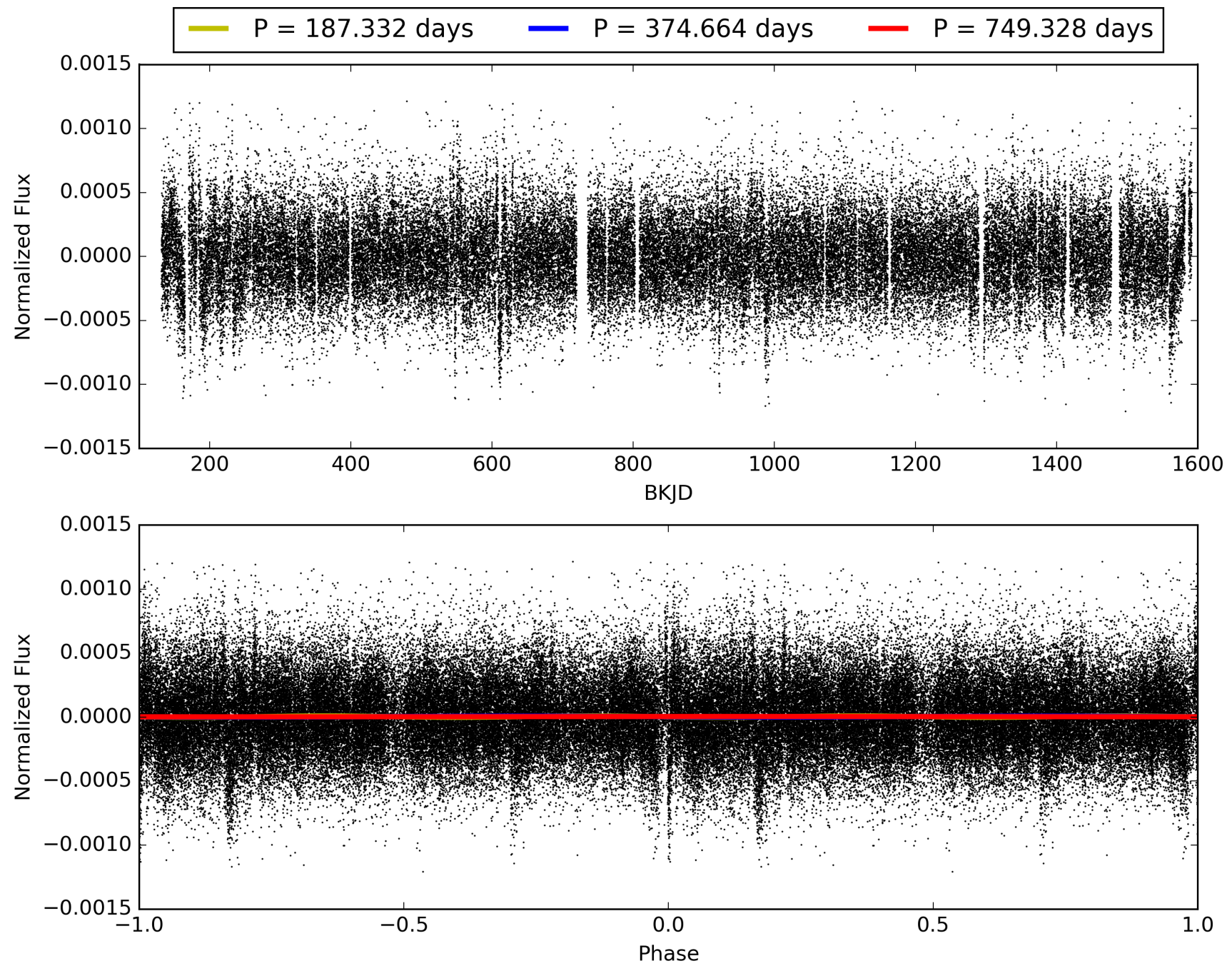
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:55:23 Z

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

# TCE 008812059-01, PDC Light Curves

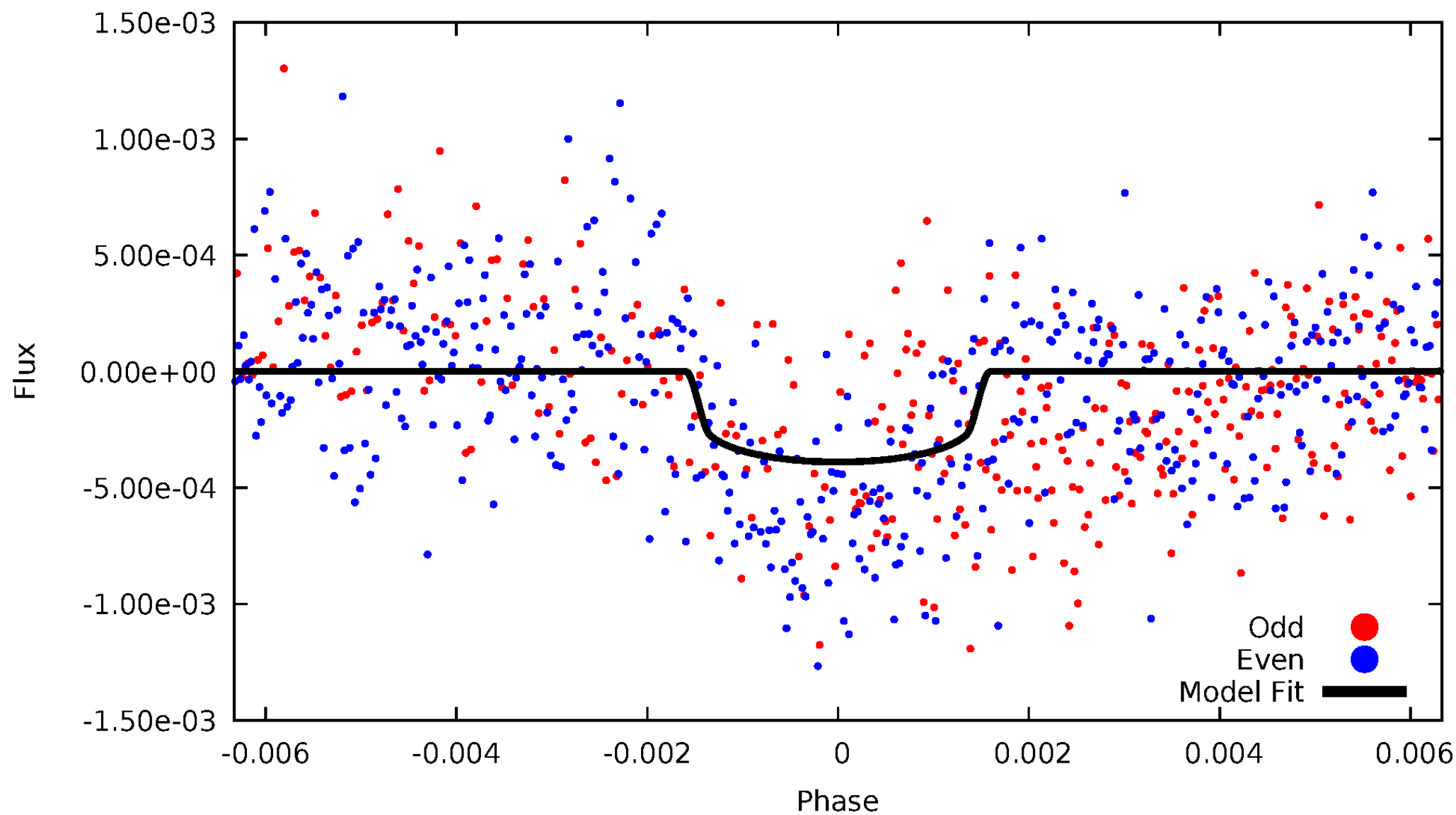


TCE 008812059-01



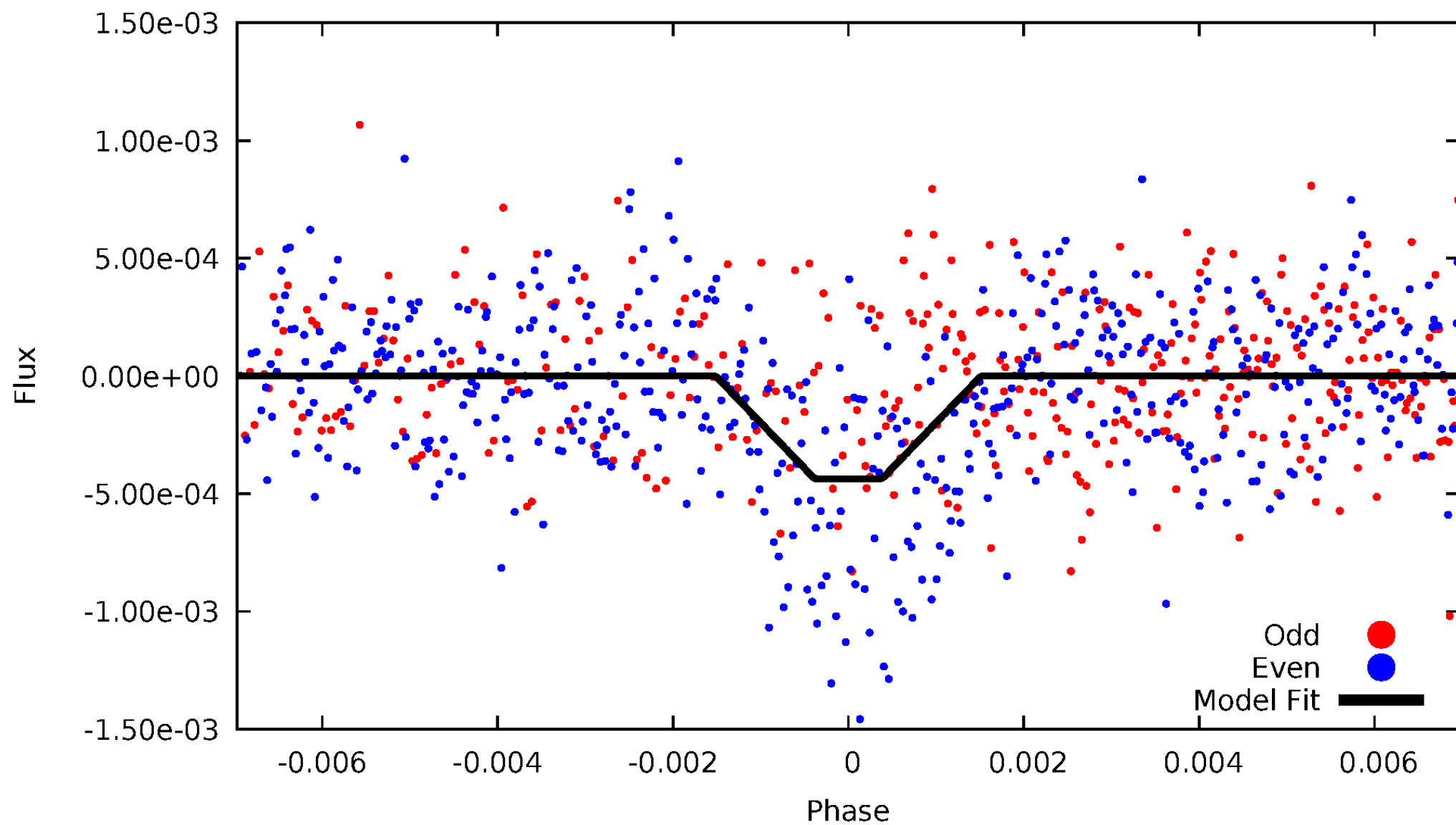
# DV Odd/Even

TCE 008812059-01



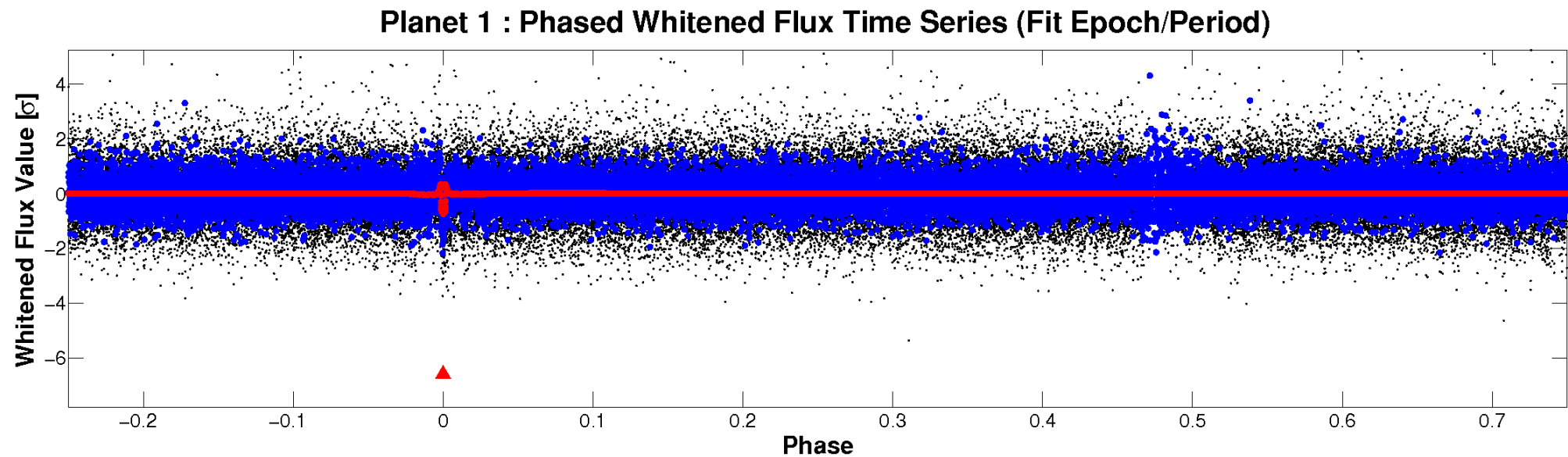
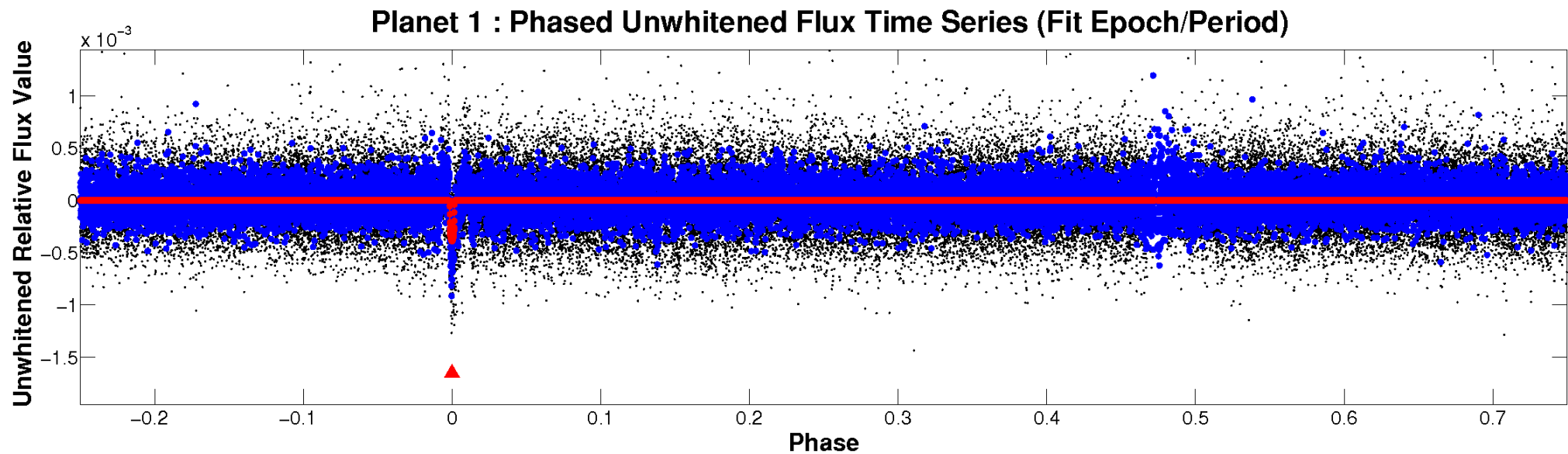
# ALT Odd/Even

TCE 008812059-01



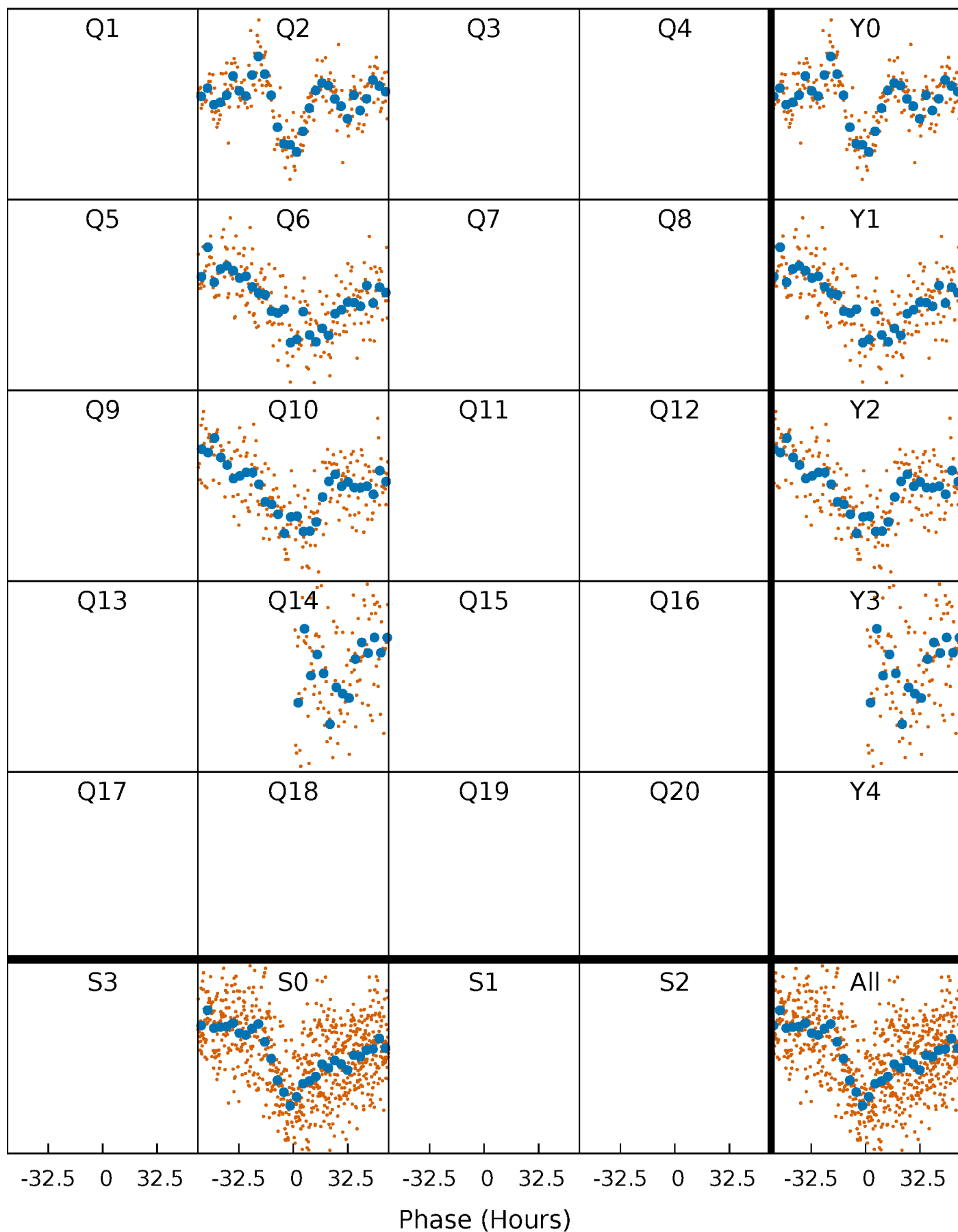


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

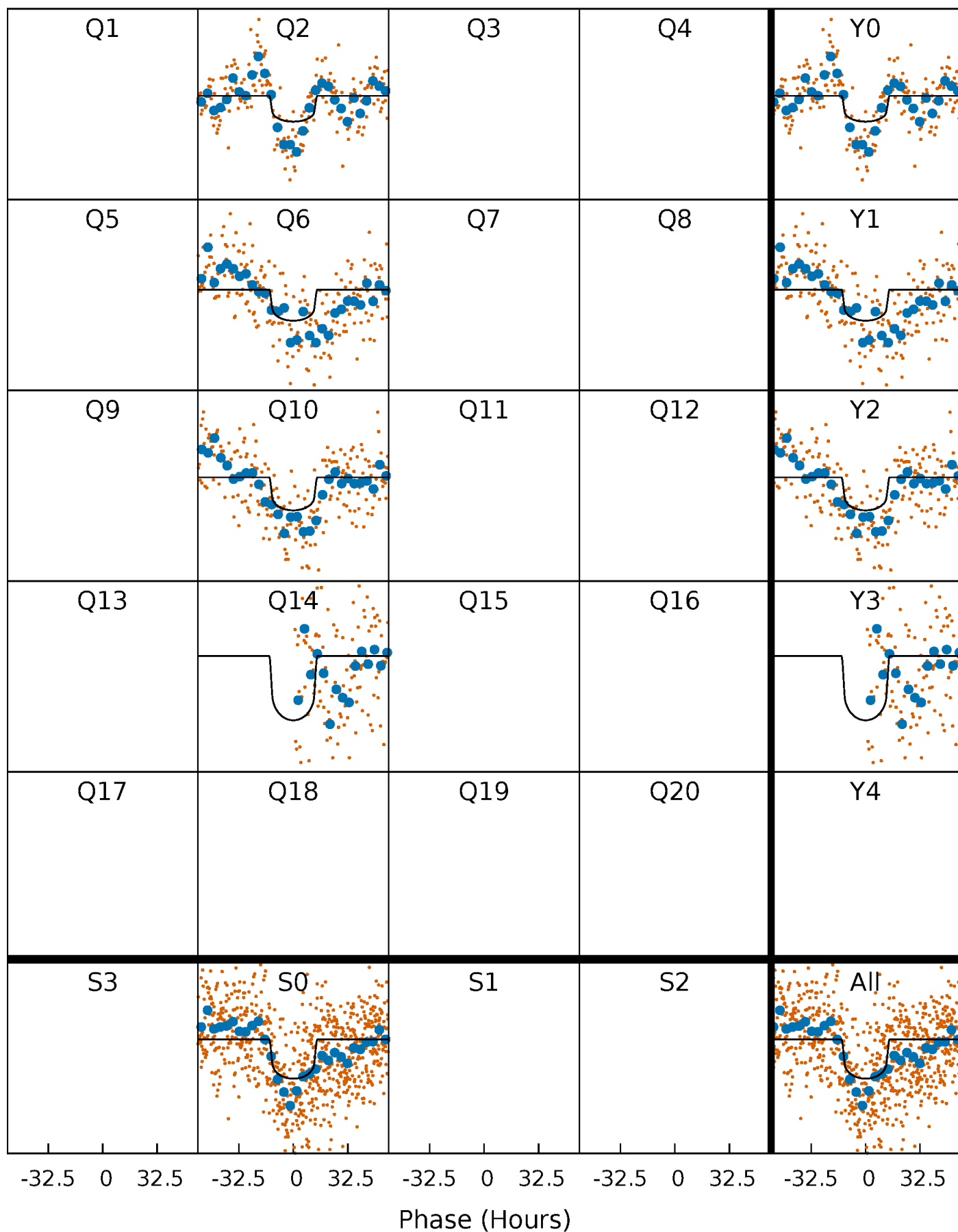
TCE 008812059-01 P=374.663787 Days  $T_0=172.378521$  (BKJD)





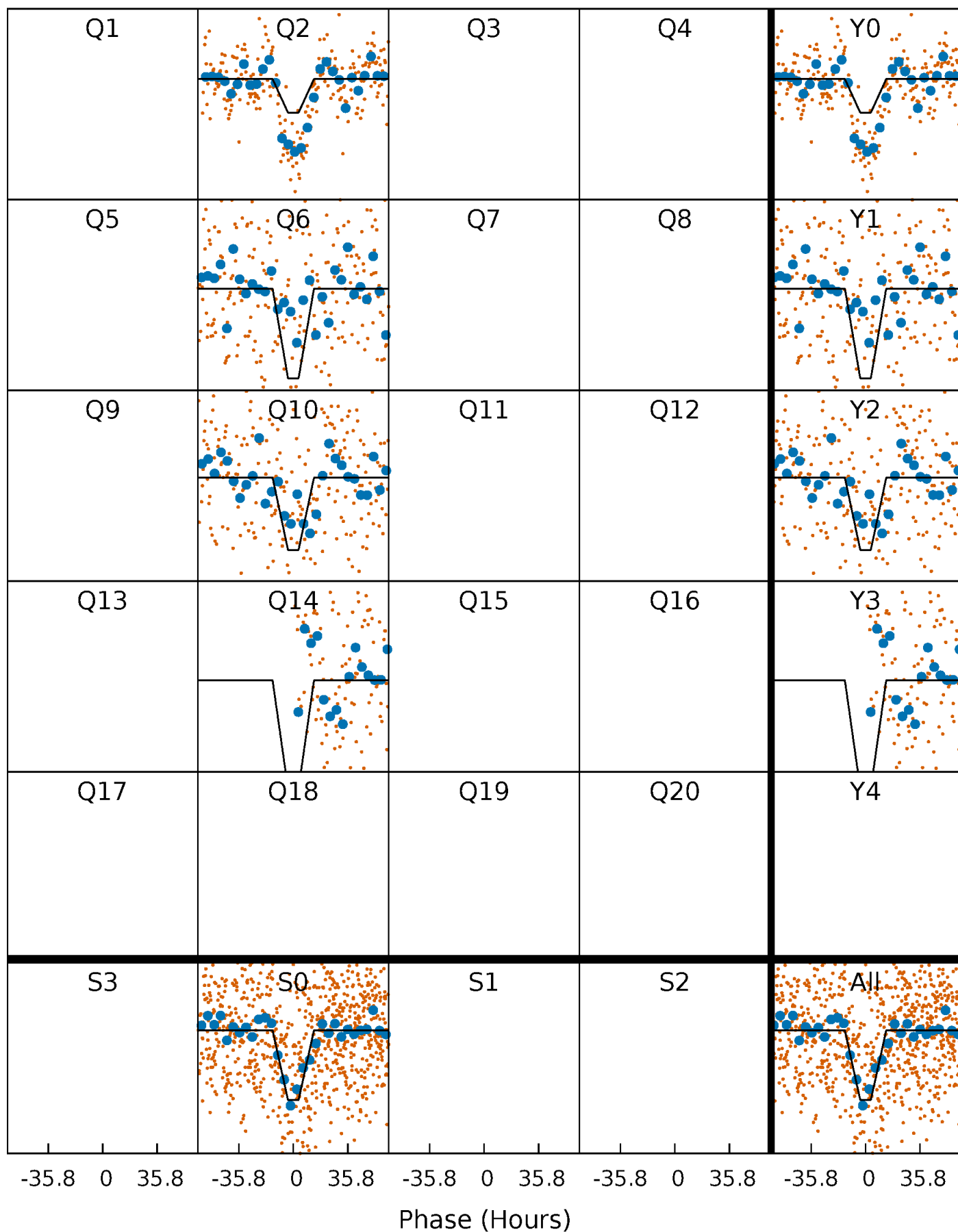
# DV Quarter-Phased Transit Curves

TCE 008812059-01 P=374.663787 Days  $T_0=172.378521$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

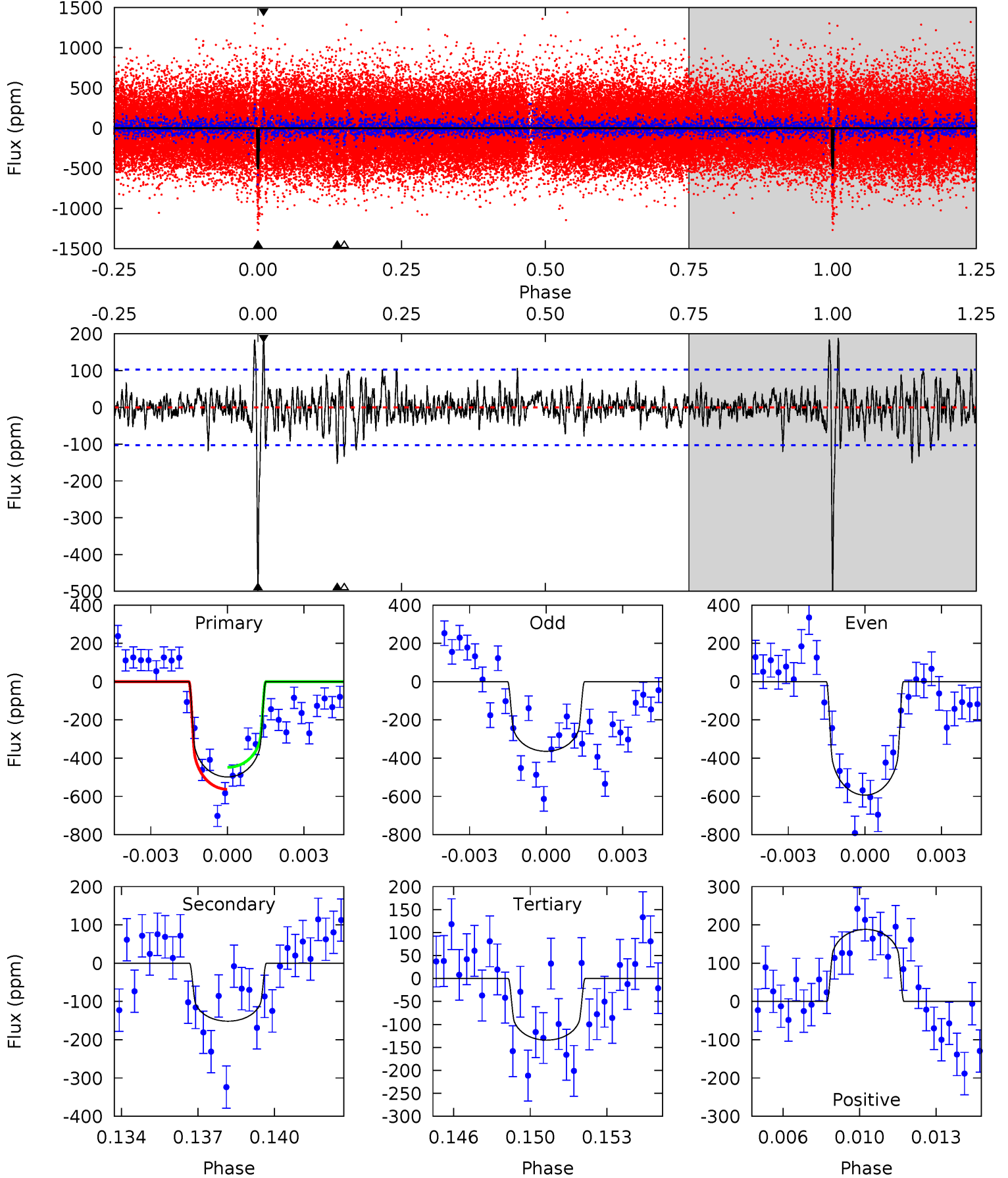
TCE 008812059-01 P=374.703812 Days  $T_0=172.249386$  (BKJD)



# DV Model-Shift Uniqueness Test

008812059-01, P = 374.663787 Days, E = 172.378521 Days

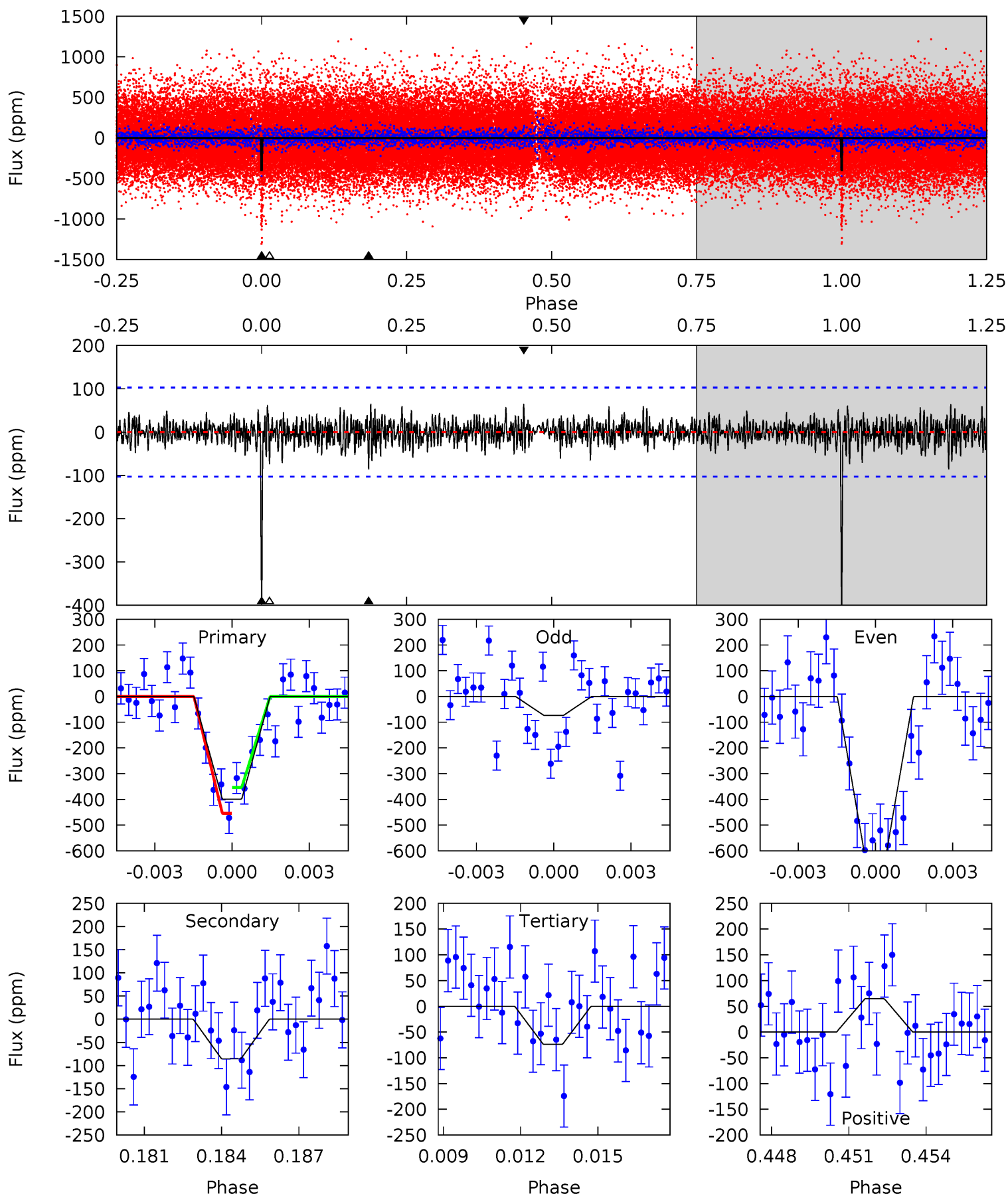
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.4	7.72	6.84	9.59	5.24	2.95	1.73	18.5	15.8	0.89	-1.87	5.78	0.82	0.27	2.91



# Alt Model-Shift Uniqueness Test

008812059-01, P = 374.703812 Days, E = 172.249386 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
20.4	4.37	3.76	3.31	5.25	2.96	1.04	16.6	17.1	0.61	1.07	14.3	1.72	0.14	2.55



### Stellar Parameters For KIC 008812059

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5611^{+152}_{-152}$	$4.272^{+0.235}_{-0.212}$	$-0.160^{+0.300}_{-0.250}$	$1.114^{+0.351}_{-0.287}$	$0.848^{+0.123}_{-0.076}$	$0.863^{+1.251}_{-0.479}$
	+3%/-3%	+6%/-5%	+188%/-156%	+32%/-26%	+15%/-9%	+145%/-56%
Source	PHO1	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 008812059-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-152 \pm 20$	$2.49^{+0.64}_{-0.50}$	$370^{+33}_{-28}$	$4496^{+327}_{-272}$	$12397^{+7101}_{-4371}$
Alt.	$-86 \pm 20$	$2.52^{+0.63}_{-0.46}$	$372^{+34}_{-30}$	$4043^{+276}_{-258}$	$6896^{+3978}_{-2696}$

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

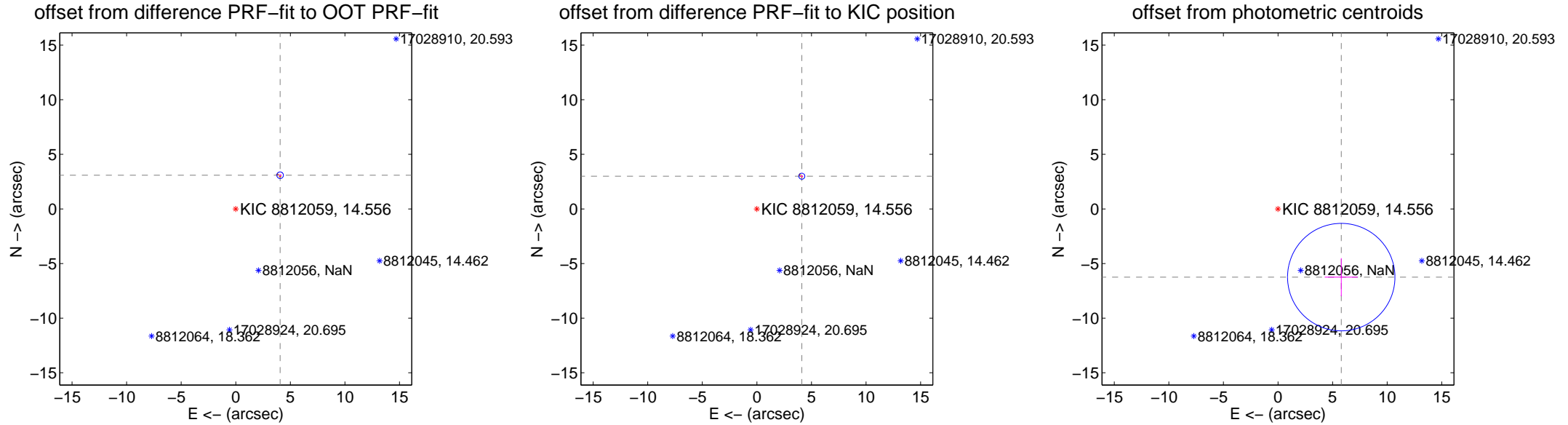
## DV Centroid Data

Supplemental centroid analysis for 008812059-01. Kepler magnitude: 14.56. Transit SNR 9.00

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

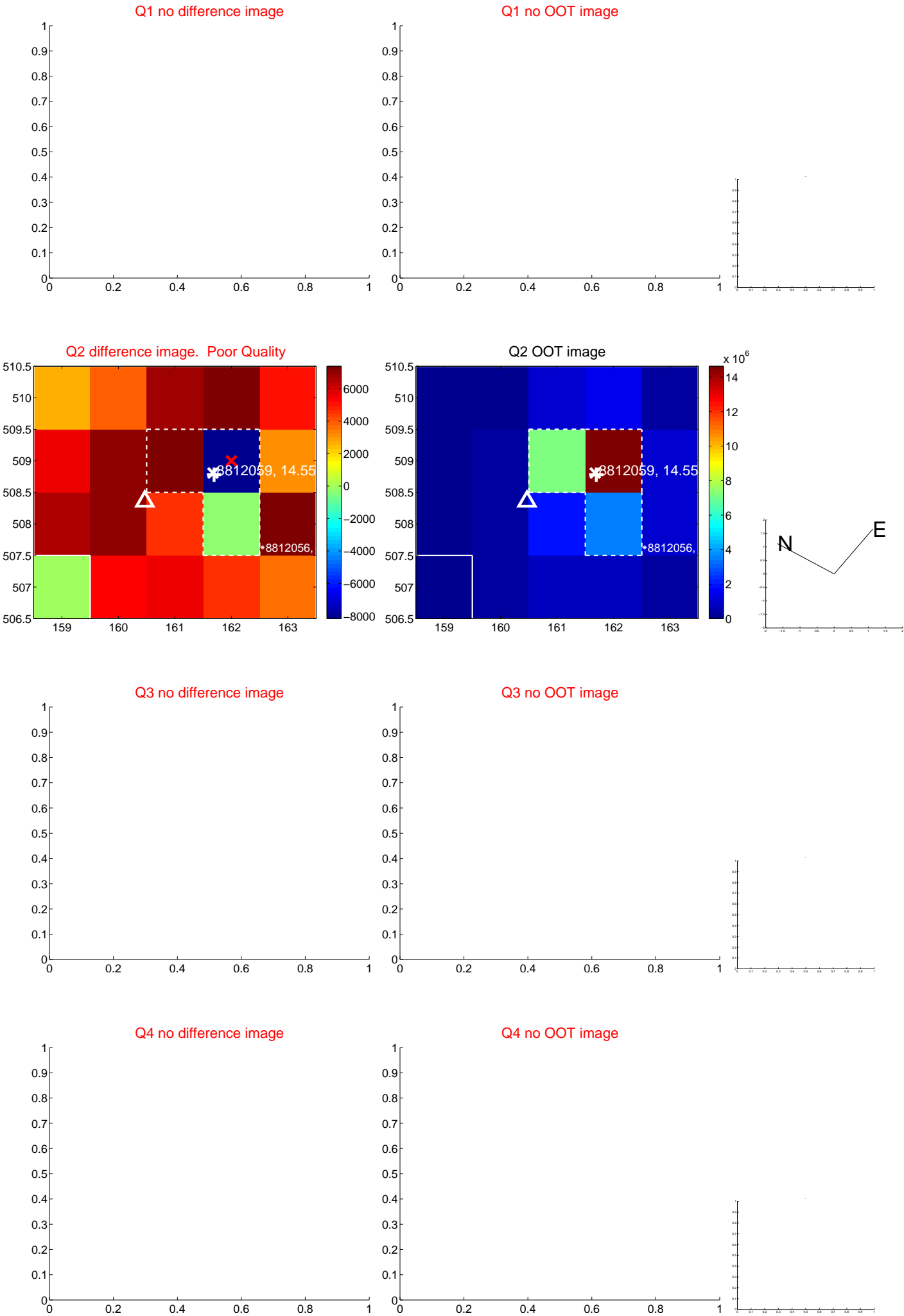
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.102 \pm 0.101$	50.55	$-4.063 \pm 0.111$	$3.087 \pm 0.082$
PRF-fit source offset from KIC position	$5.091 \pm 0.092$	55.29	$-4.116 \pm 0.097$	$2.996 \pm 0.083$
photometric centroid source offset	$8.52 \pm 1.64$	5.19	$-5.79 \pm 1.52$	$-6.24 \pm 1.74$



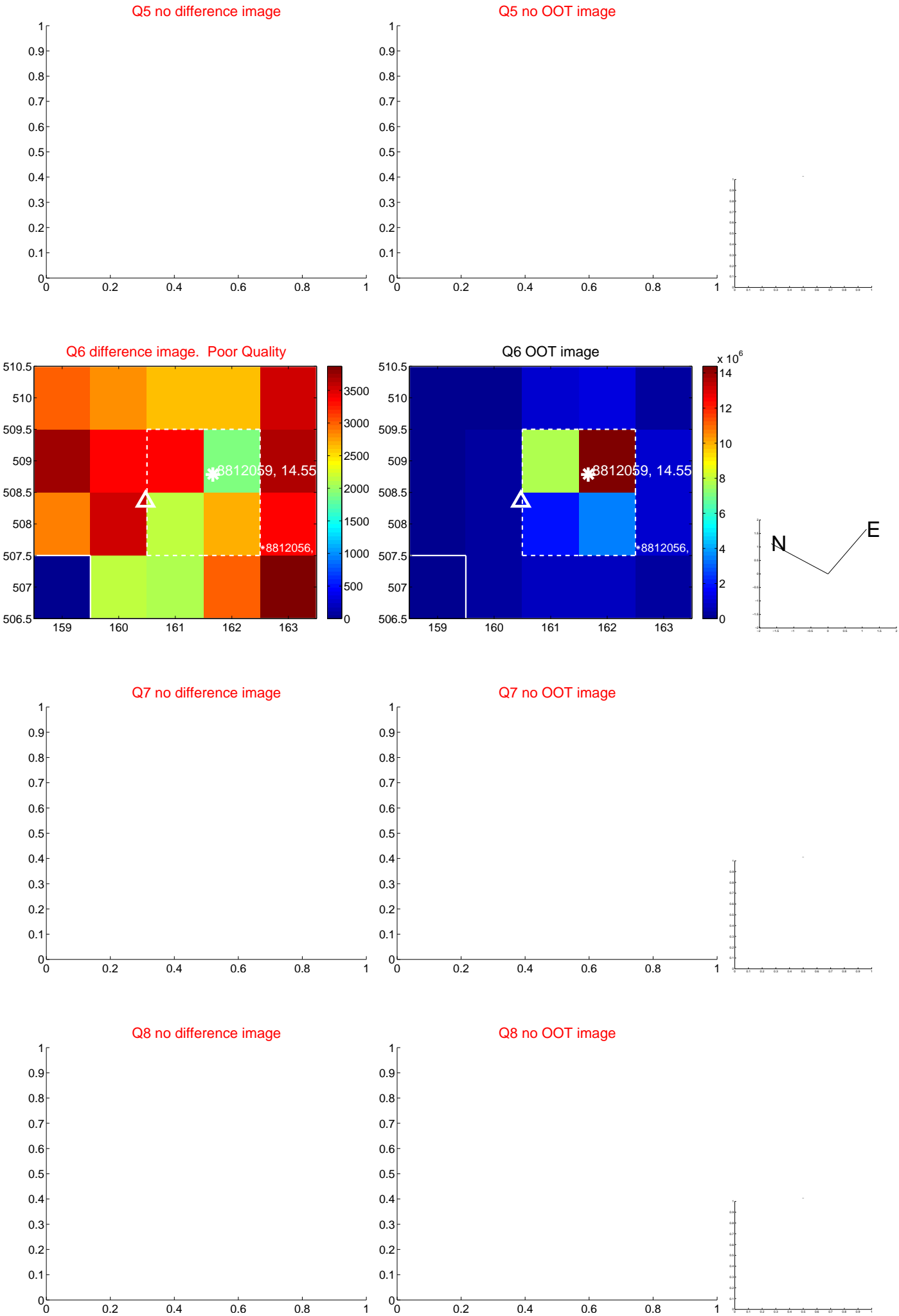
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



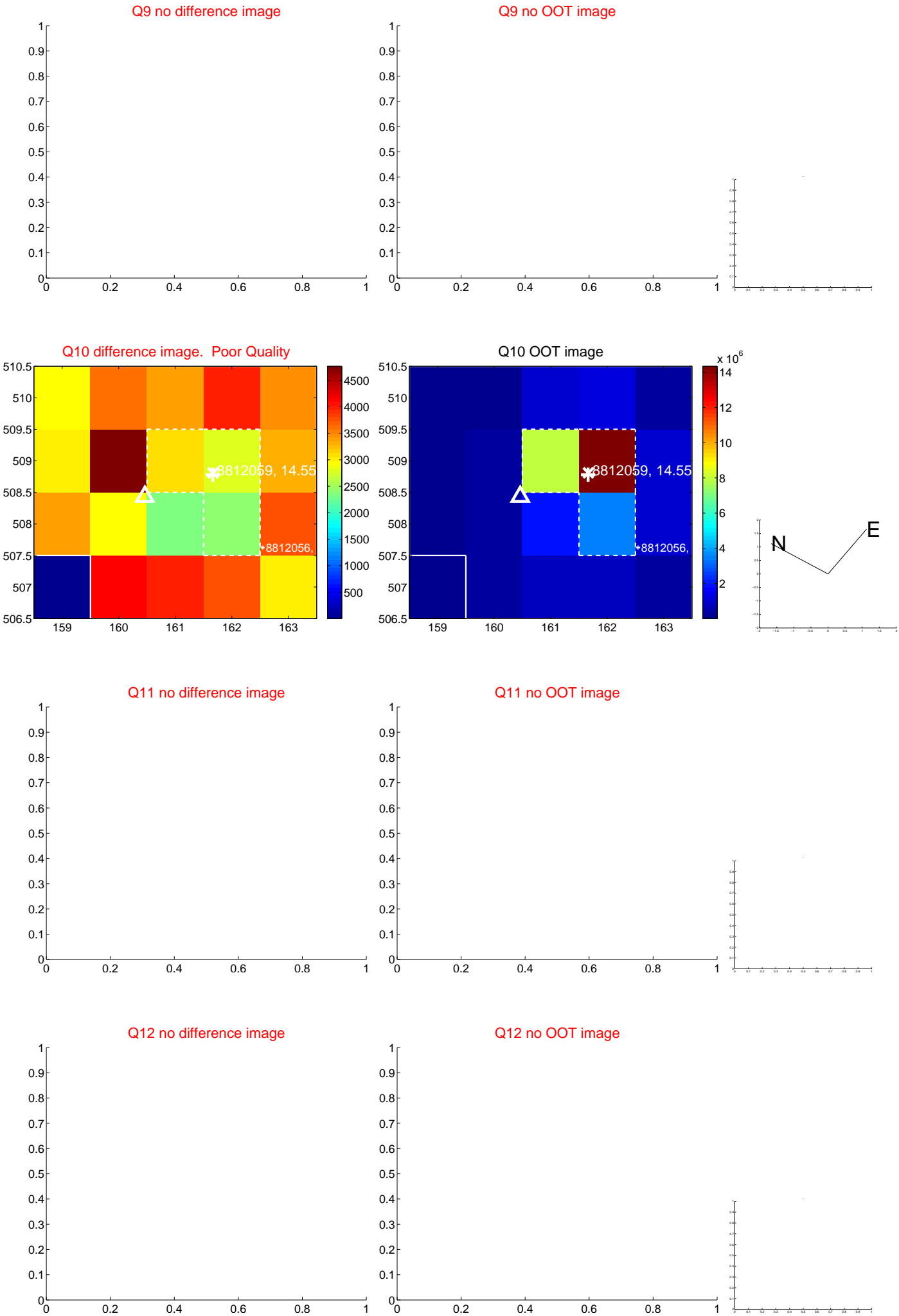
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



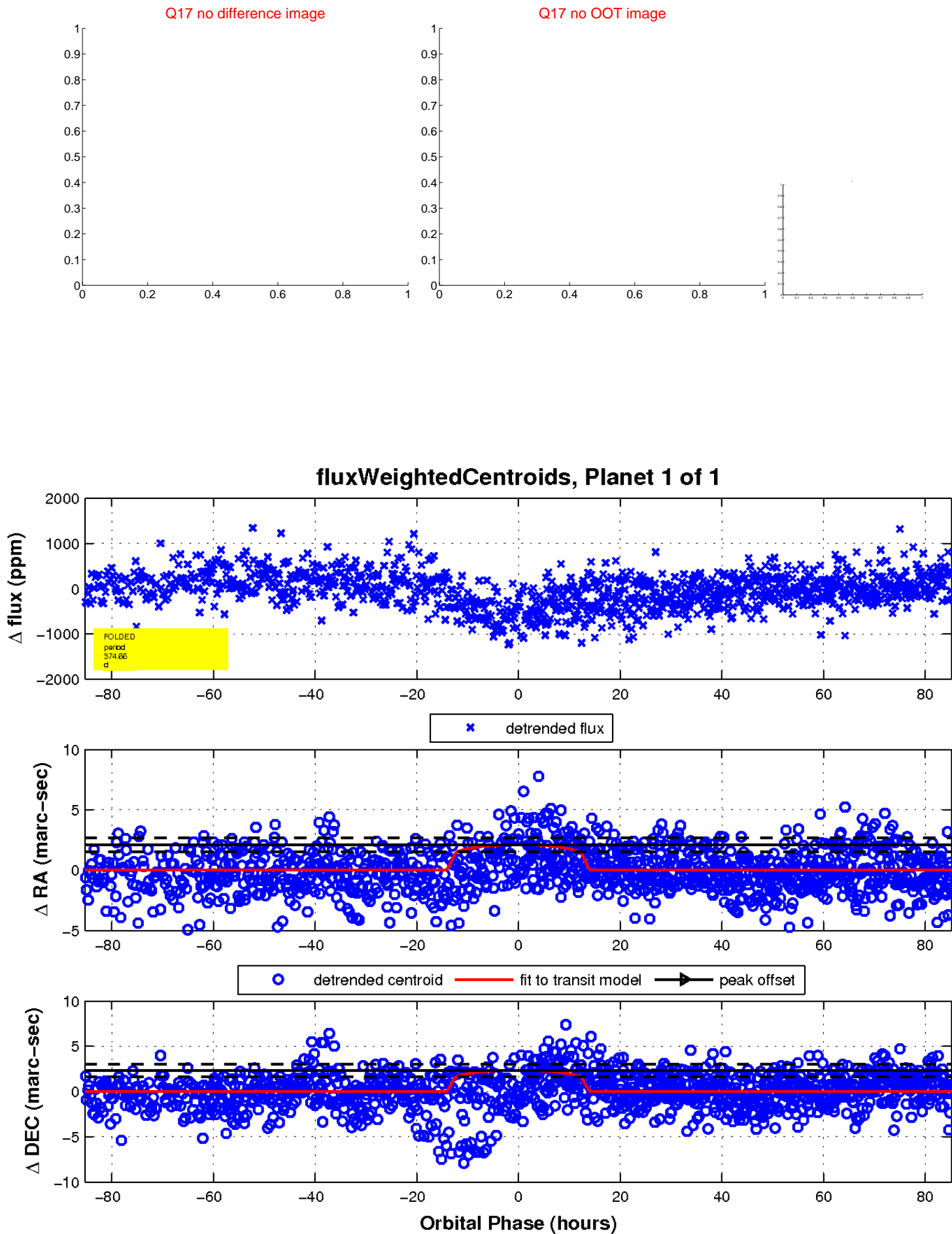
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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.



UKIRT Image

Declination

