

# KIC 007812167

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007812167-01	OBS	1482.01	17.794119	134.022741	591.8	4.407	30.6	21.3	1.04	6273	4.02	79.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007812167-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET—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 007812167-01

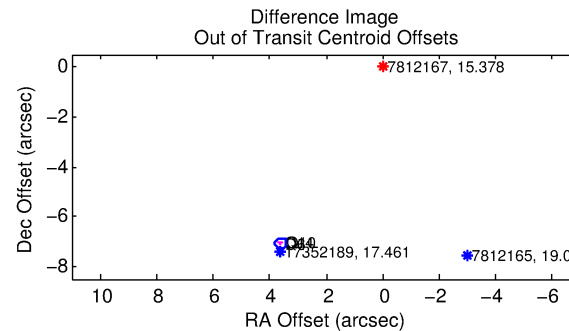
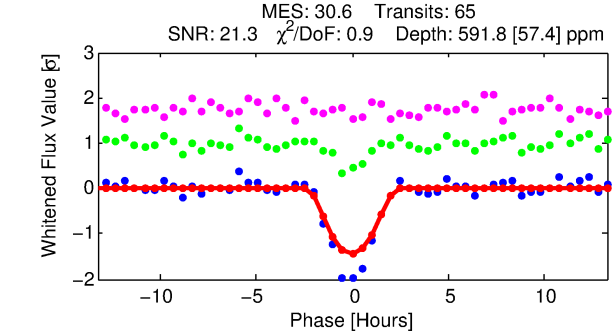
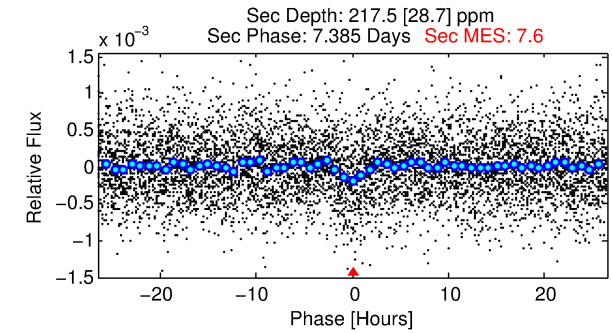
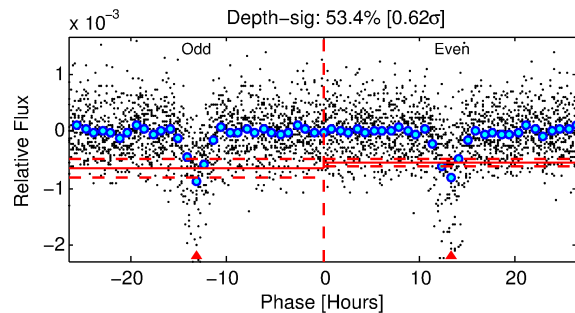
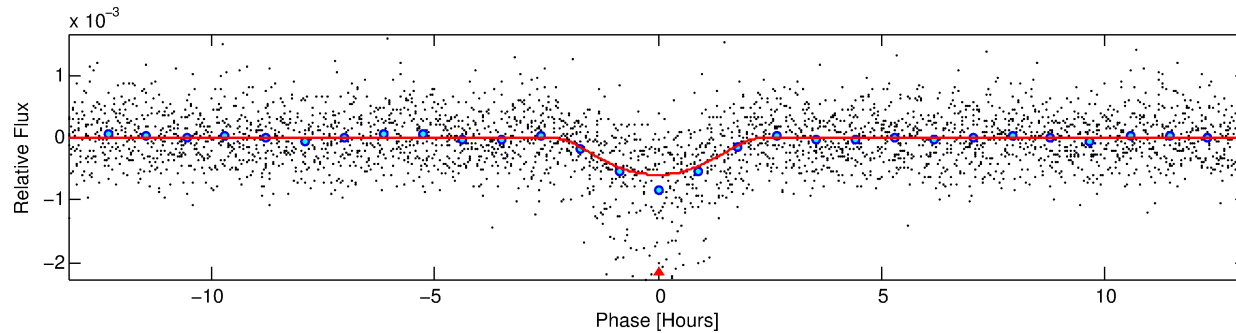
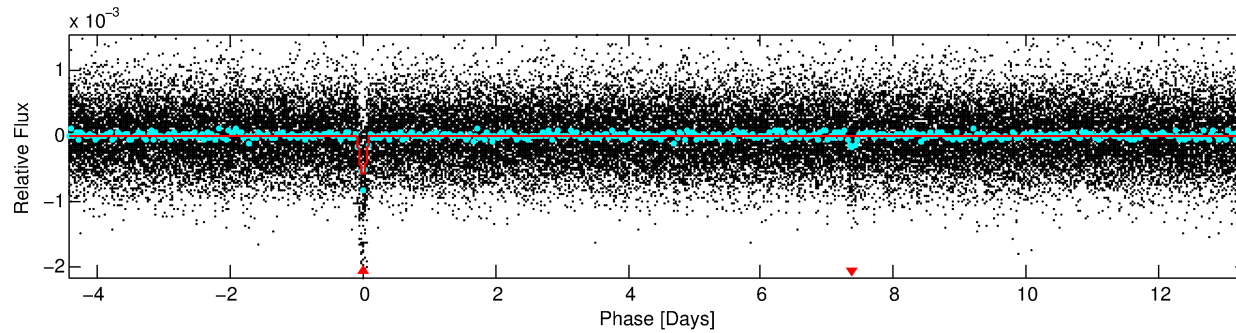
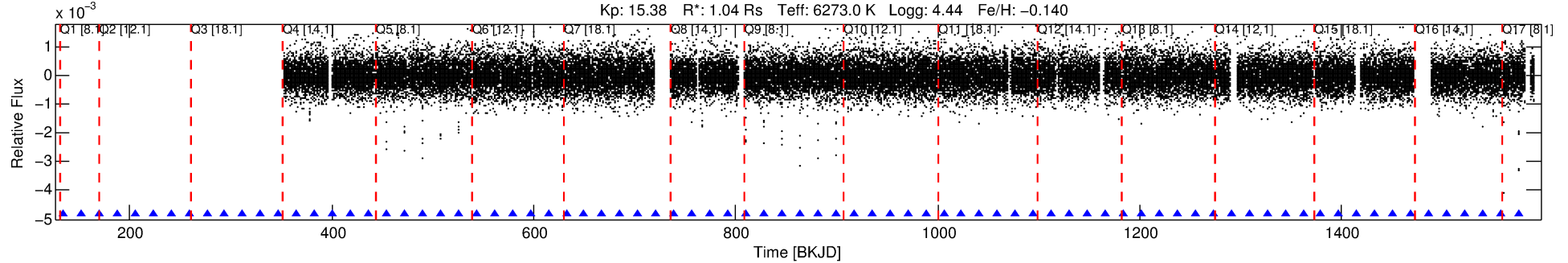
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007812167-01	7812167	007812175-01	7812175	1:1	9.4	0	-2	16.33	15.38	195.95	Direct-PRF	0	1.13	0.93

**Notes:**  $P_1:P_2$  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.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  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: 7812167 Candidate: 1 of 1 Period: 17.794 d  
KOI: K01482.01 Corr: 0.981

Kp: 15.38 R\*: 1.04 Rs Teff: 6273.0 K Logg: 4.44 Fe/H: -0.140



## DV Fit Results:

Period = 17.79412 [0.00013] d  
Epoch = 134.0227 [0.0065] BKJD  
Rp/R\* = 0.0353 [0.0298]  
a/R\* = 9.69 [2.98]  
b = 0.99 [0.05]  
Seff = 79.72 [35.04]  
Teq = 762 [84] K  
Rp = 4.02 [3.64] Re  
a = 0.1377 [0.0381] AU  
Ag = 140.16 [244.02] [0.57σ]  
Teff = 4053 [1724] K [1.91σ]

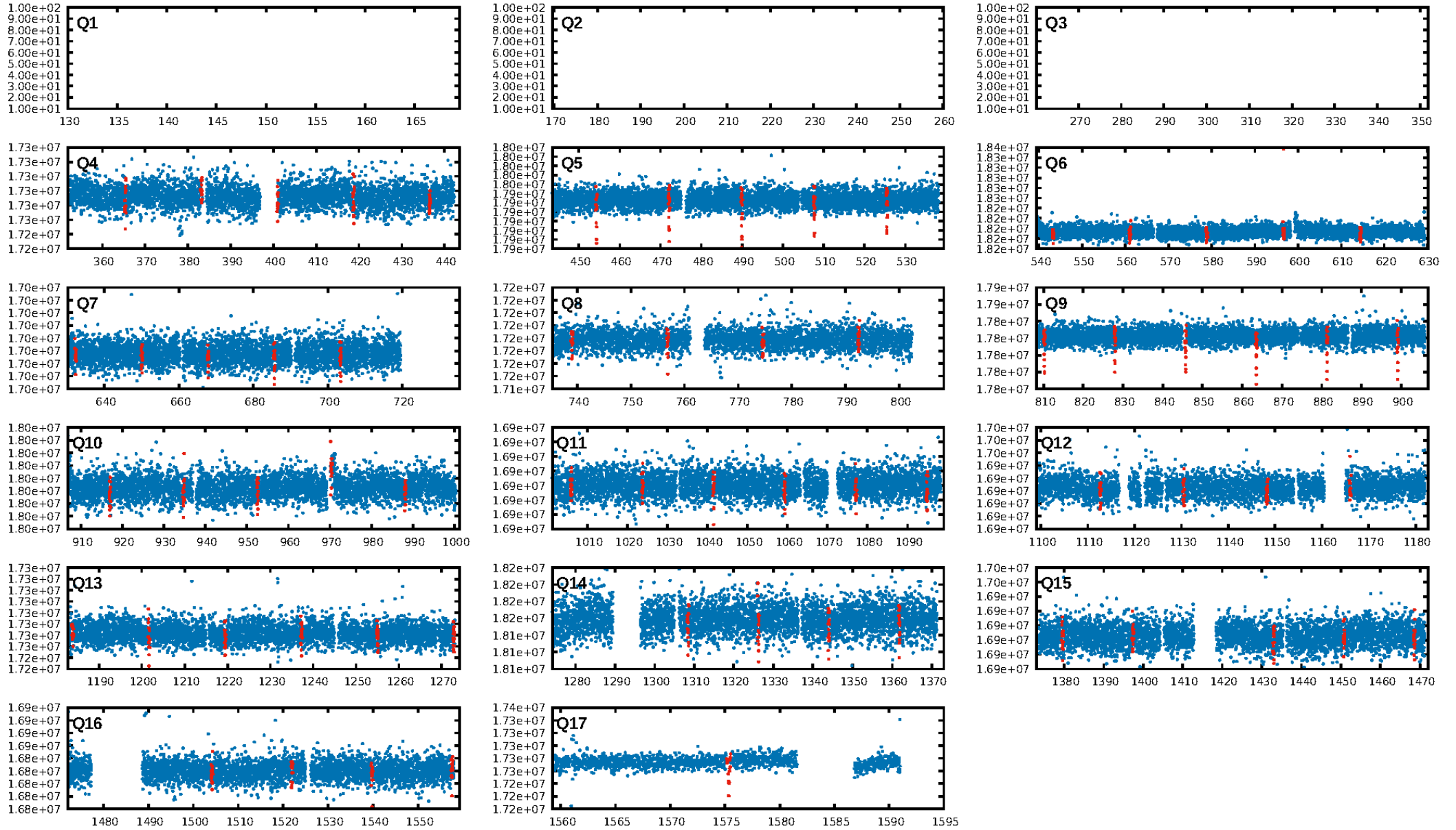
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 1.80e-204  
RollingBand-fgt: 1.00 [64/64]  
GhostDiagnostic-chr: -0.3952  
Centroid-sig: 0.0%  
Centroid-so: 54.119 arcsec [87.63σ]  
OotOffset-rm: 7.931 arcsec [117.06σ]  
KicOffset-rm: 8.534 arcsec [126.71σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [14/14]

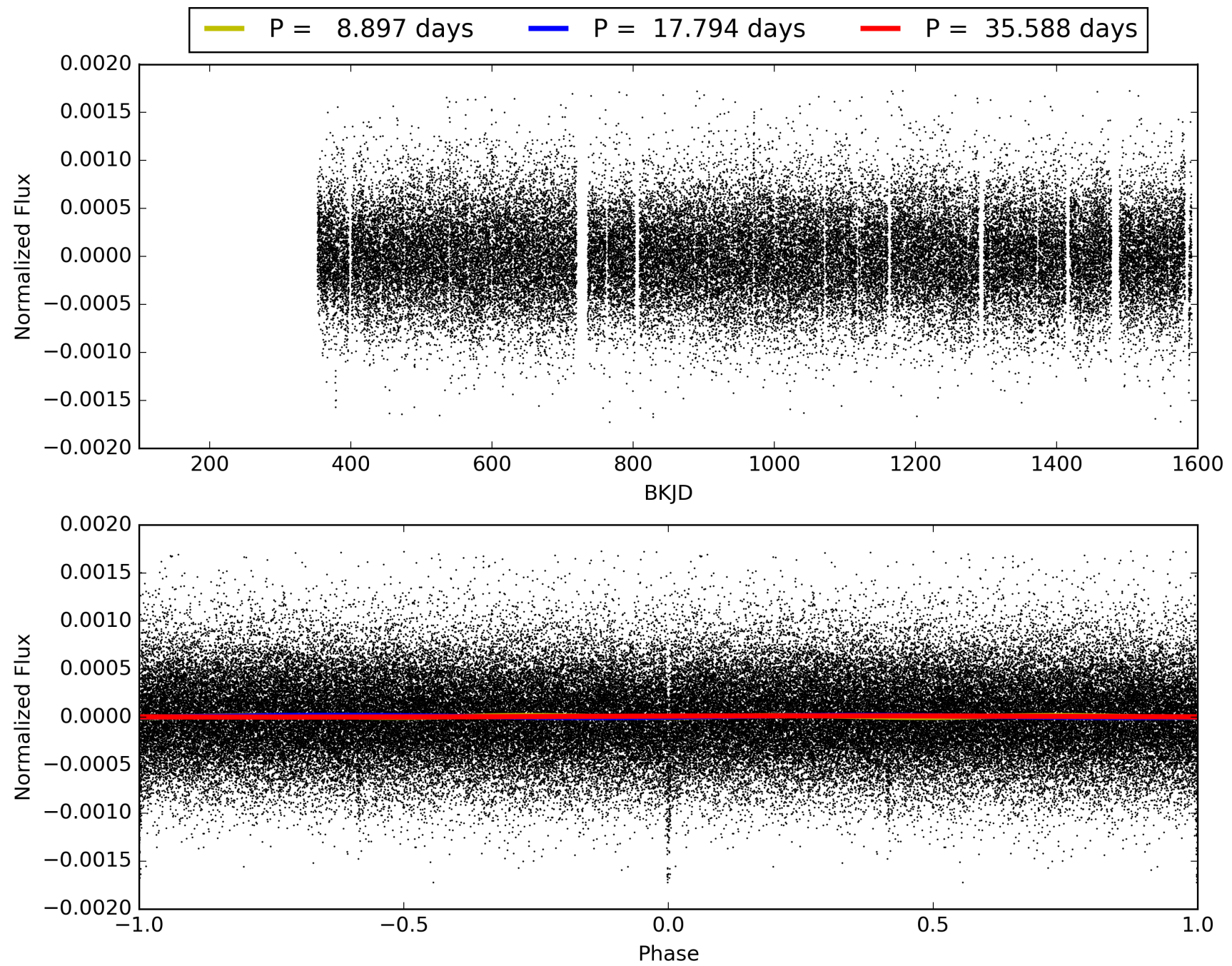
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:58:10 Z

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

# TCE 007812167-01, PDC Light Curves

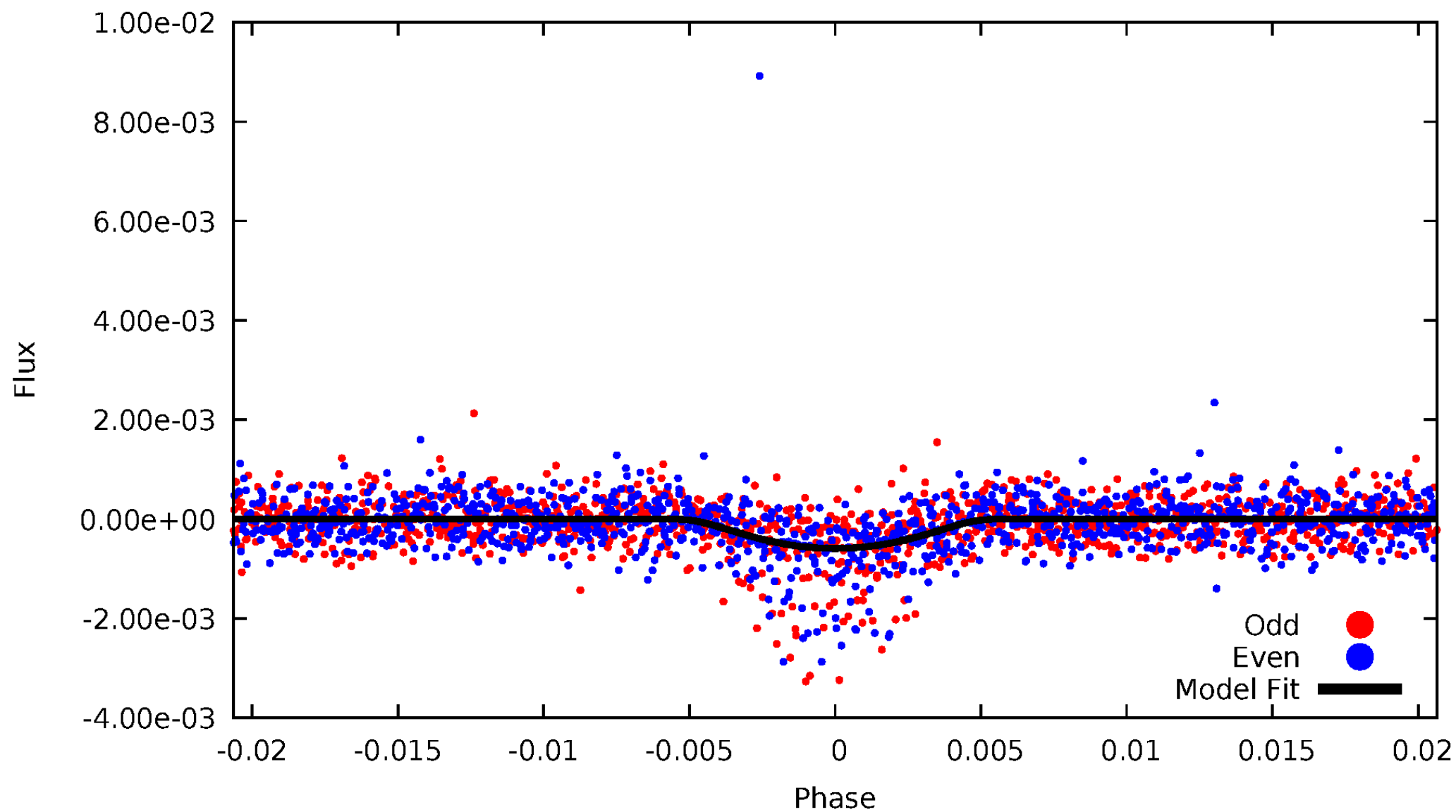


TCE 007812167-01



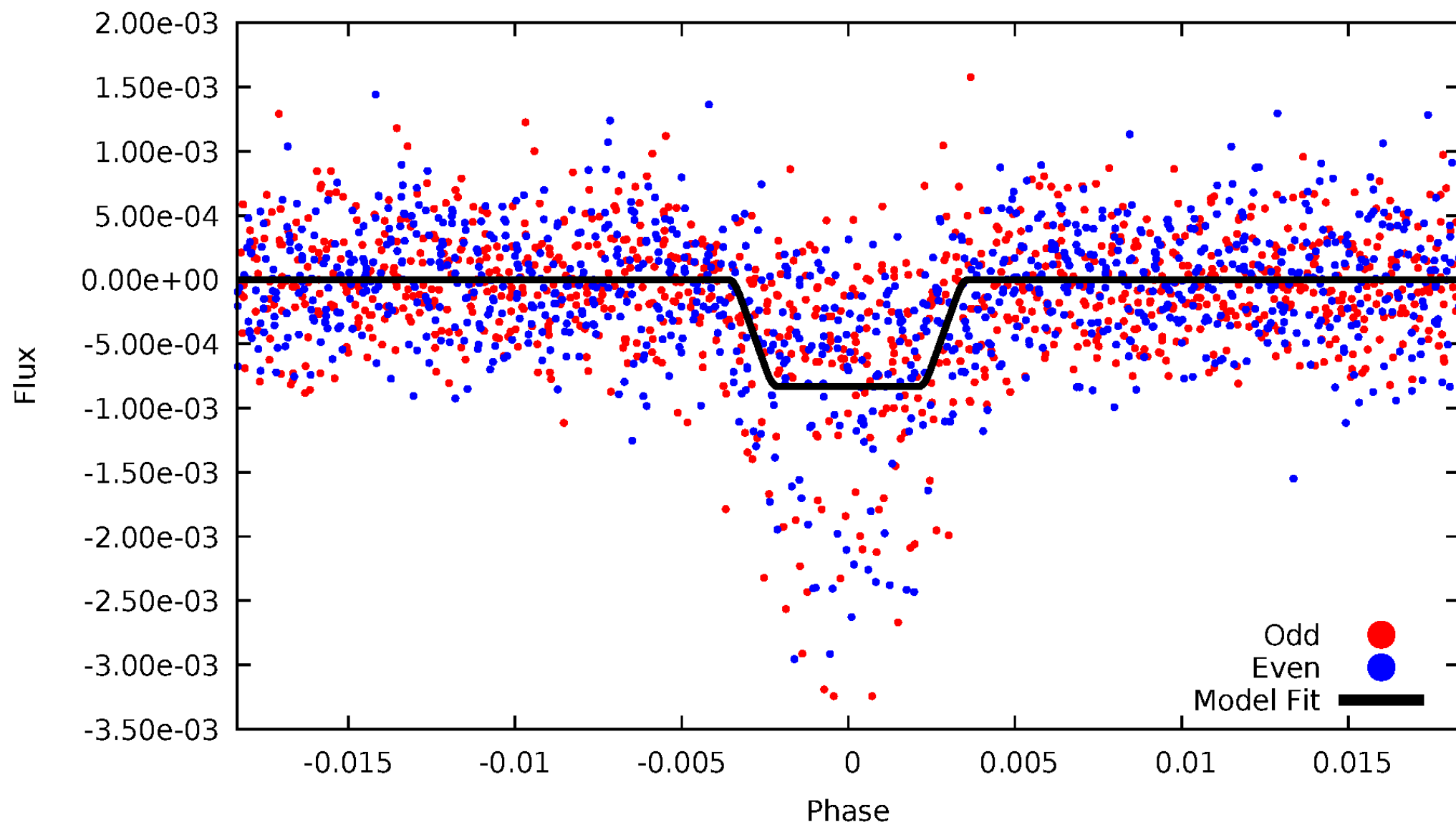
# DV Odd/Even

TCE 007812167-01



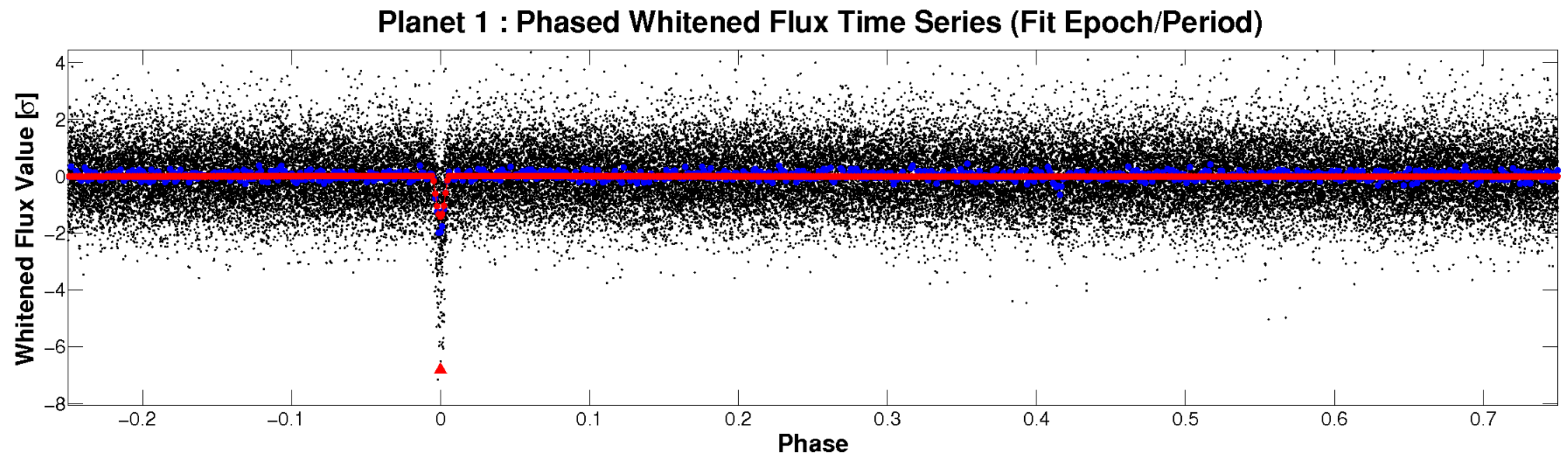
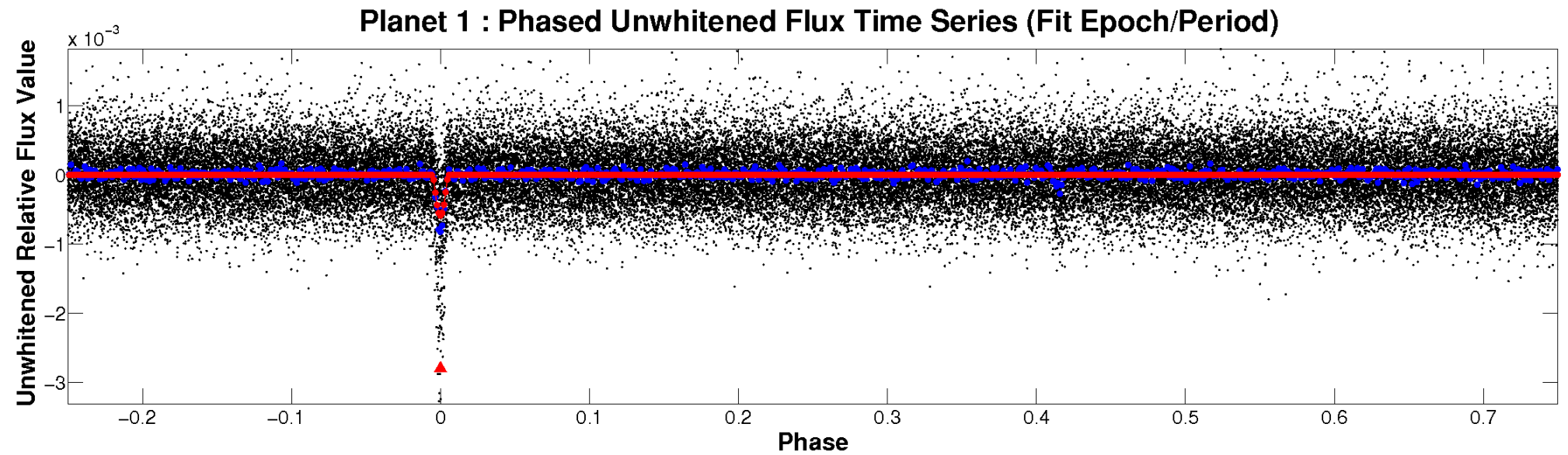
# ALT Odd/Even

TCE 007812167-01



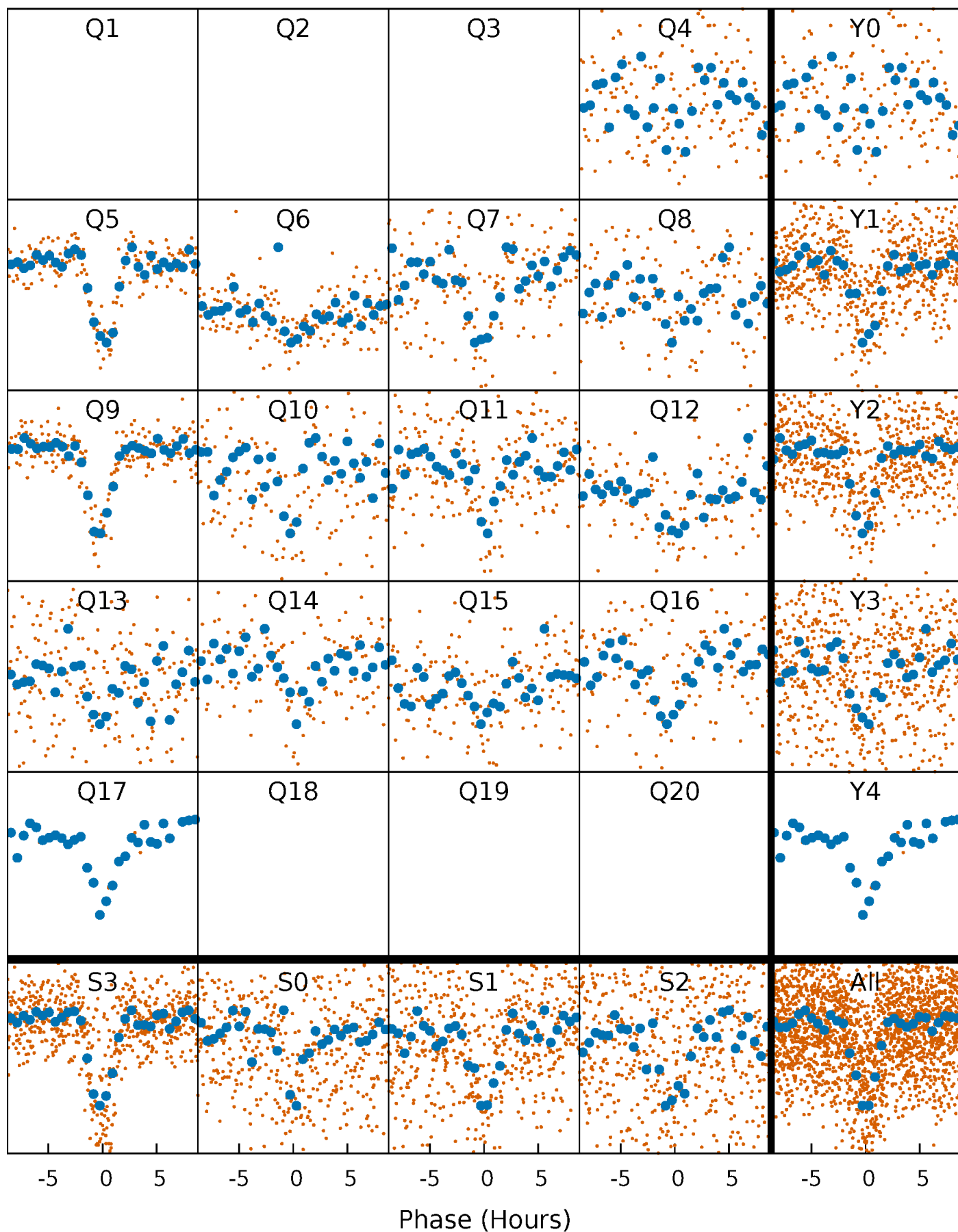


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

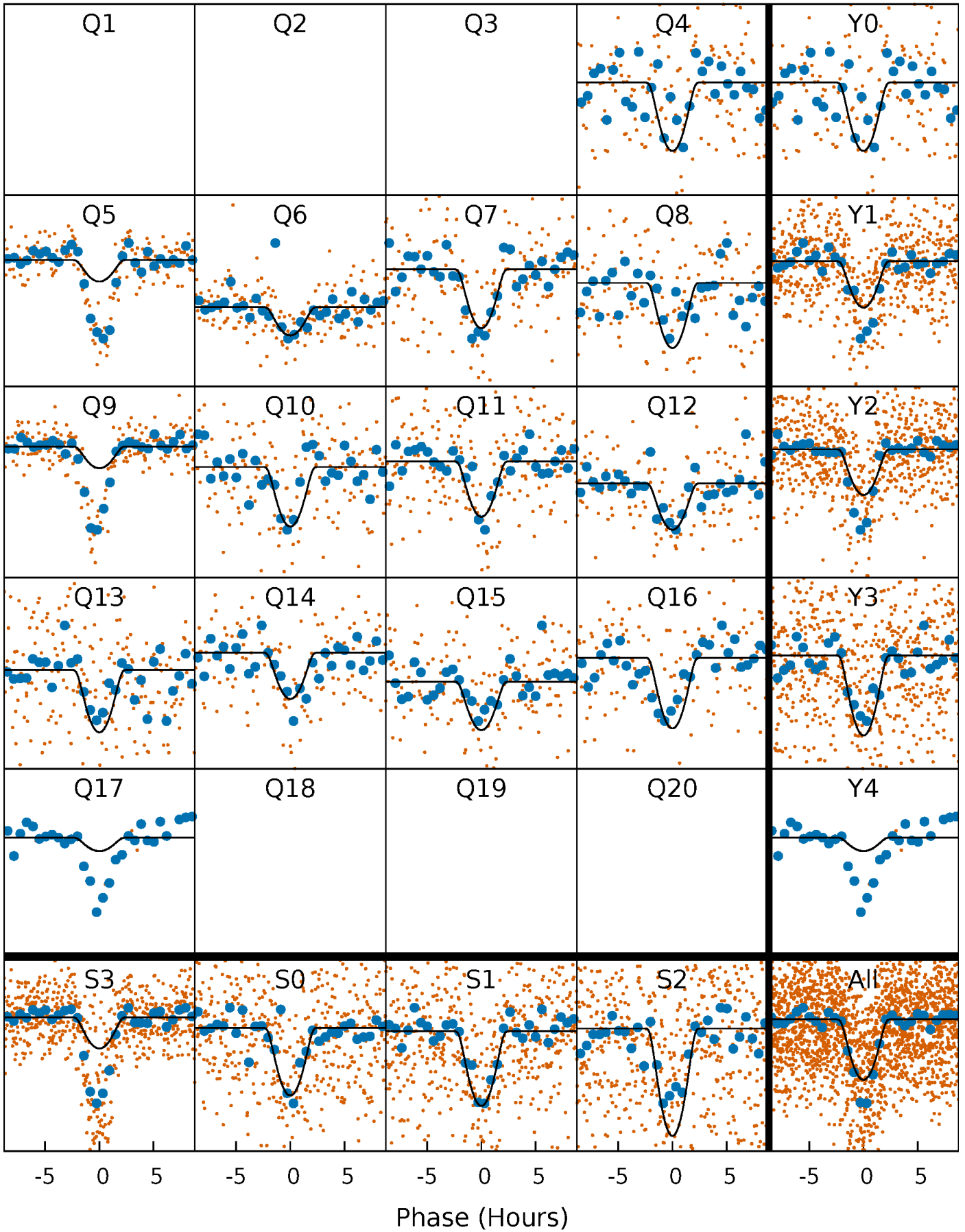
TCE 007812167-01 P= 17.794119 Days  $T_0=134.022741$  (BKJD)





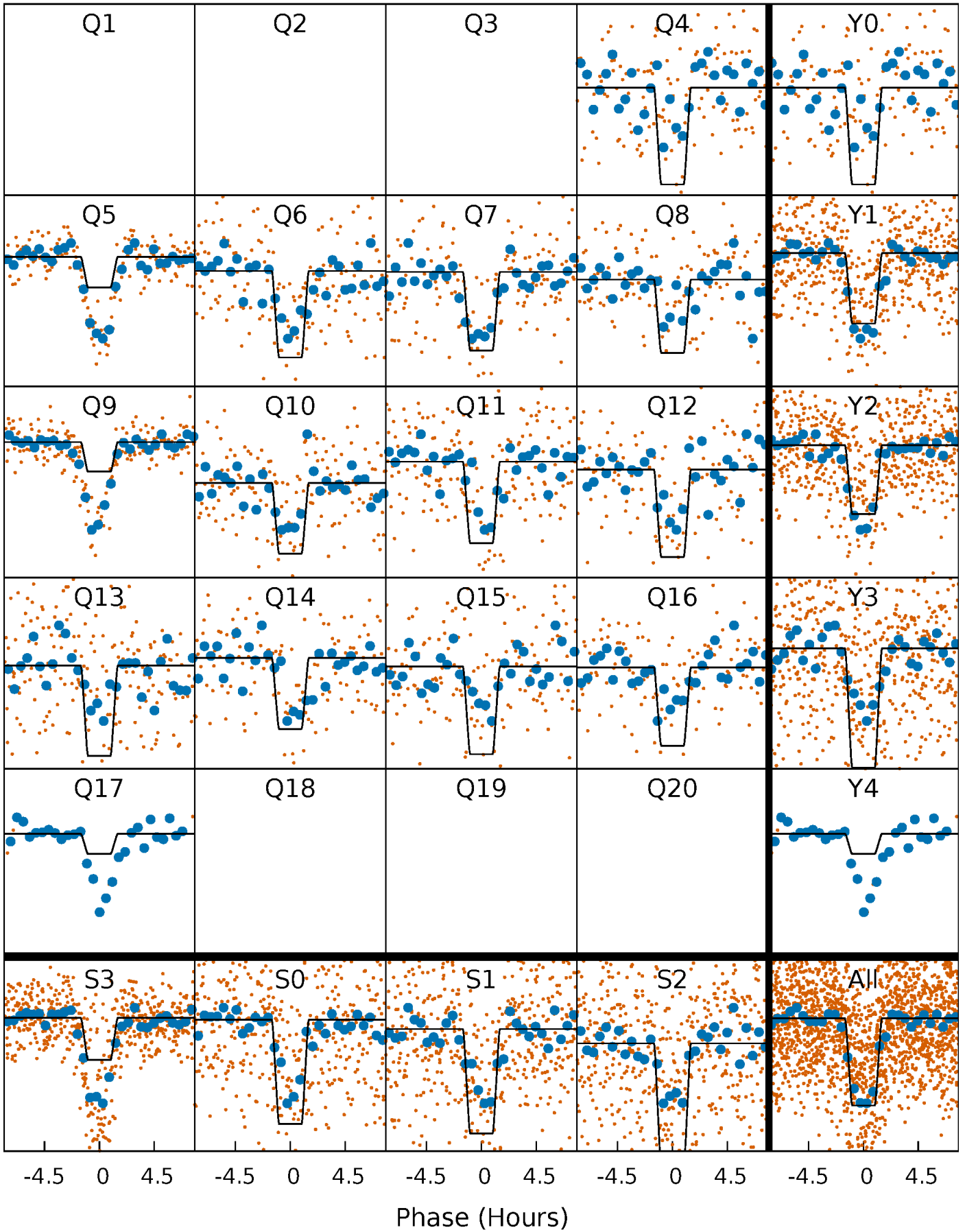
# DV Quarter-Phased Transit Curves

TCE 007812167-01 P= 17.794119 Days  $T_0=134.022741$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

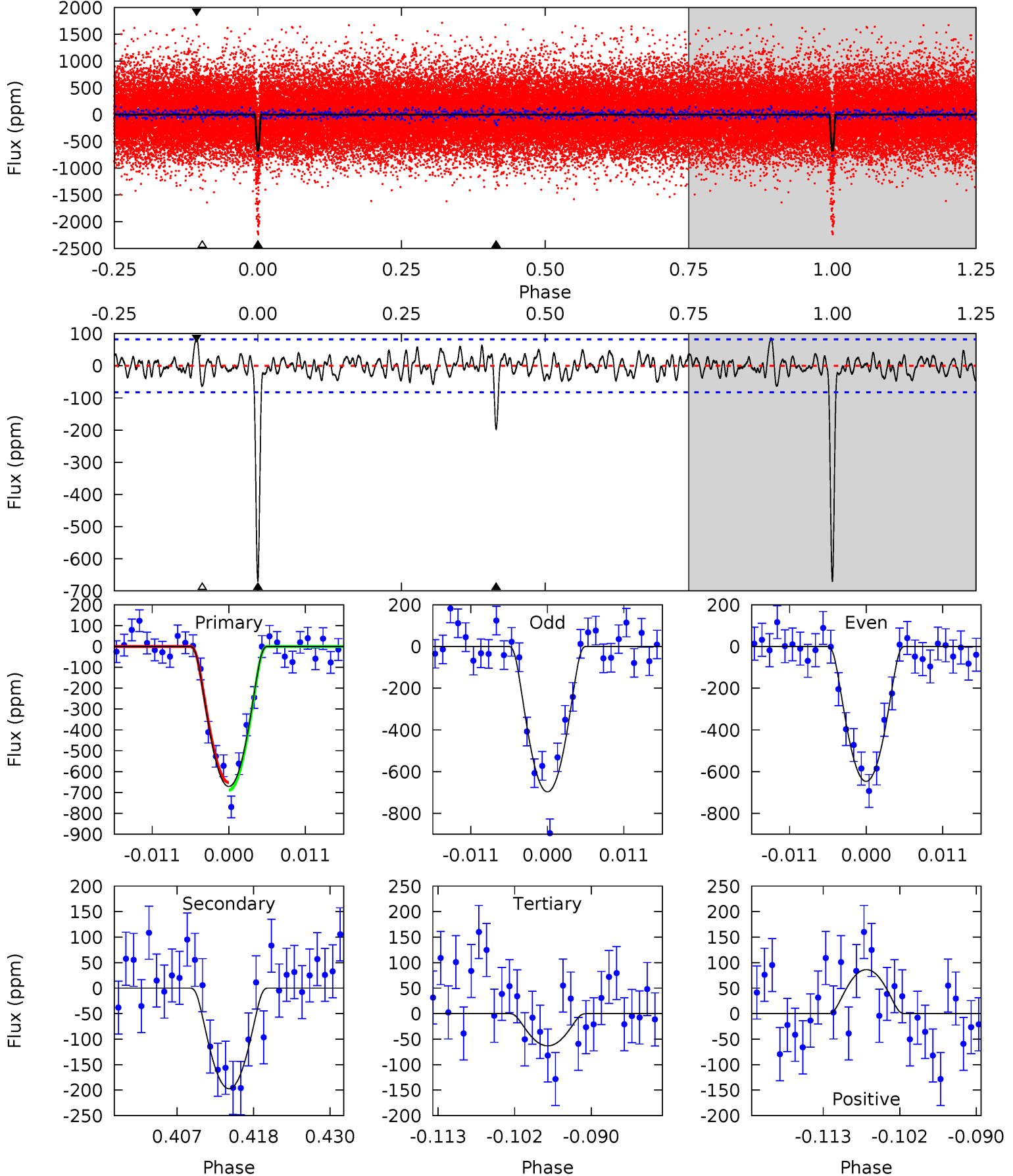
TCE 007812167-01 P= 17.793925 Days  $T_0=134.028259$  (BKJD)



# DV Model-Shift Uniqueness Test

007812167-01, P = 17.794119 Days, E = 134.022741 Days

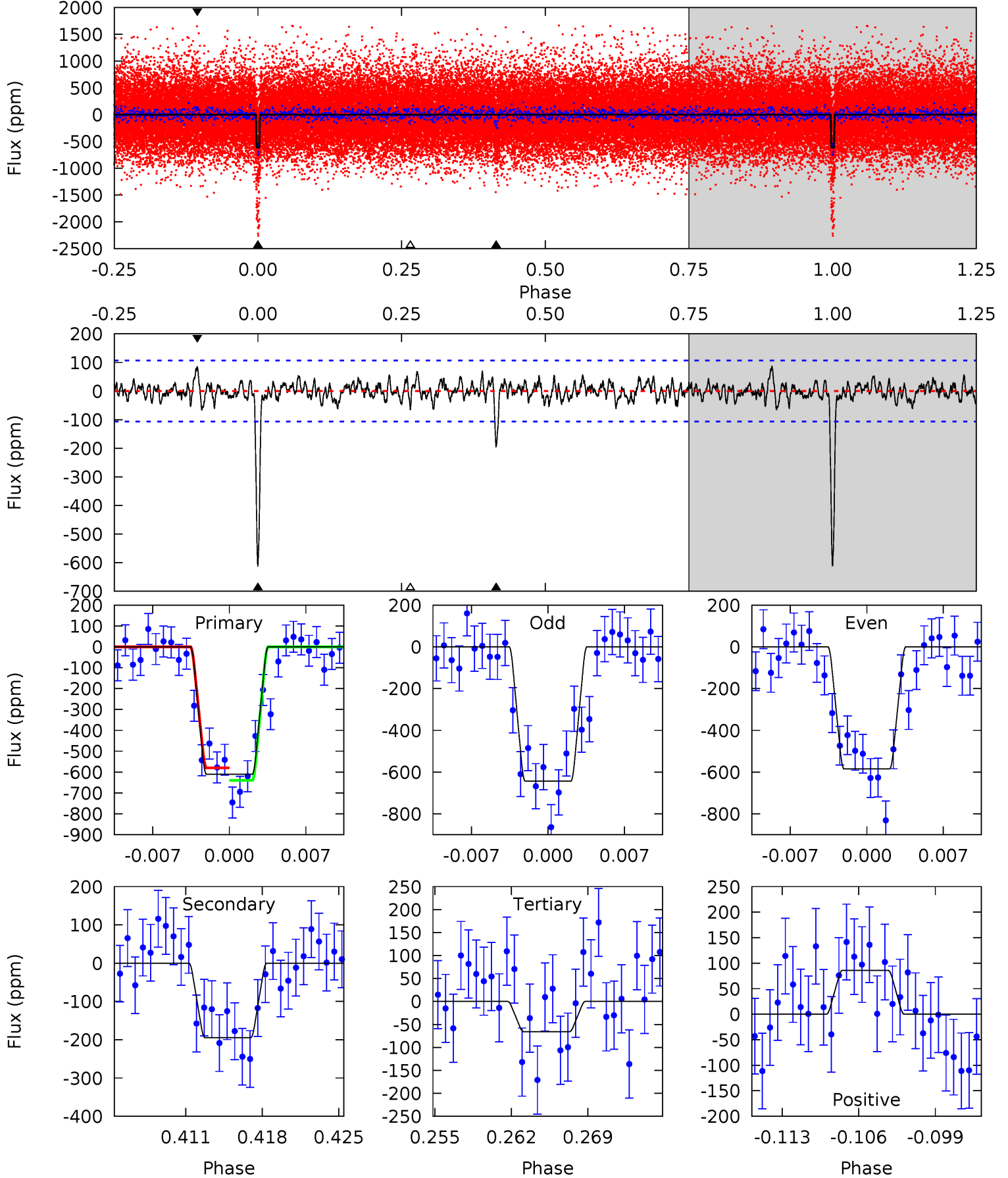
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.9	12.0	3.85	5.26	5.00	2.53	1.45	37.1	35.7	8.17	6.76	1.53	1.48	0.11	1.13



# Alt Model-Shift Uniqueness Test

007812167-01, P = 17.793925 Days, E = 134.028259 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
29.1	9.29	3.14	4.10	5.09	2.69	1.14	26.0	25.0	6.16	5.19	1.42	1.48	0.12	1.43



### Stellar Parameters For KIC 007812167

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6273^{+175}_{-263}$	$4.442^{+0.056}_{-0.224}$	$-0.140^{+0.250}_{-0.300}$	$1.044^{+0.339}_{-0.121}$	$1.099^{+0.154}_{-0.154}$	$1.359^{+0.418}_{-0.755}$
	+3%/-4%	+1%/-5%	+179%/-214%	+32%/-12%	+14%/-14%	+31%/-56%
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 007812167-01 / KOI 1482.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-197 \pm 16$	$4.83^{+3.29}_{-2.96}$	$1086^{+86}_{-60}$	$4014^{+1859}_{-629}$	$85^{+497}_{-55}$
Alt.	$-195 \pm 21$	$4.25^{+3.40}_{-2.60}$	$1089^{+84}_{-57}$	$4207^{+2099}_{-782}$	$112^{+602}_{-78}$

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



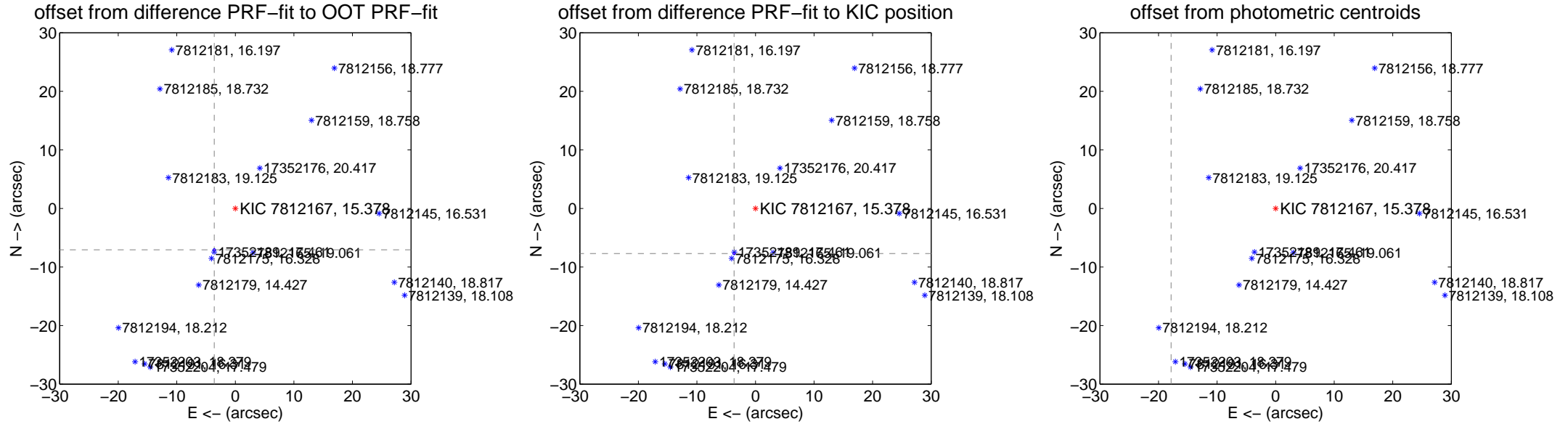
## DV Centroid Data

Supplemental centroid analysis for 007812167-01. Kepler magnitude: 15.38. Transit SNR 21.34

There are 3 quarters with good PRF difference image offsets

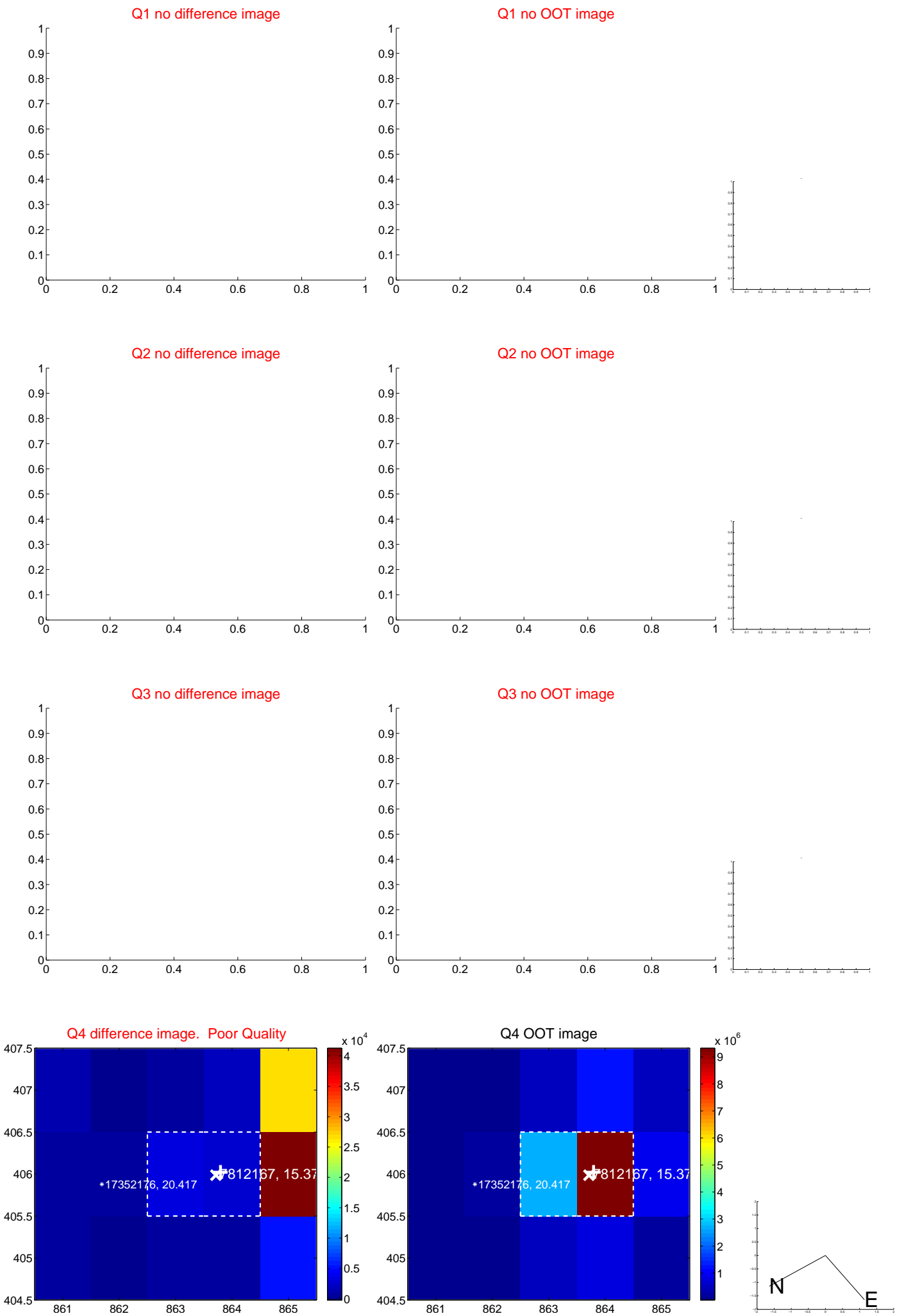
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	7.931 $\pm$ 0.068	117.06	3.597 $\pm$ 0.067	-7.068 $\pm$ 0.067
PRF-fit source offset from KIC position	8.534 $\pm$ 0.067	126.71	3.661 $\pm$ 0.067	-7.709 $\pm$ 0.067
photometric centroid source offset	54.12 $\pm$ 0.62	87.63	17.86 $\pm$ 0.58	-51.09 $\pm$ 0.62

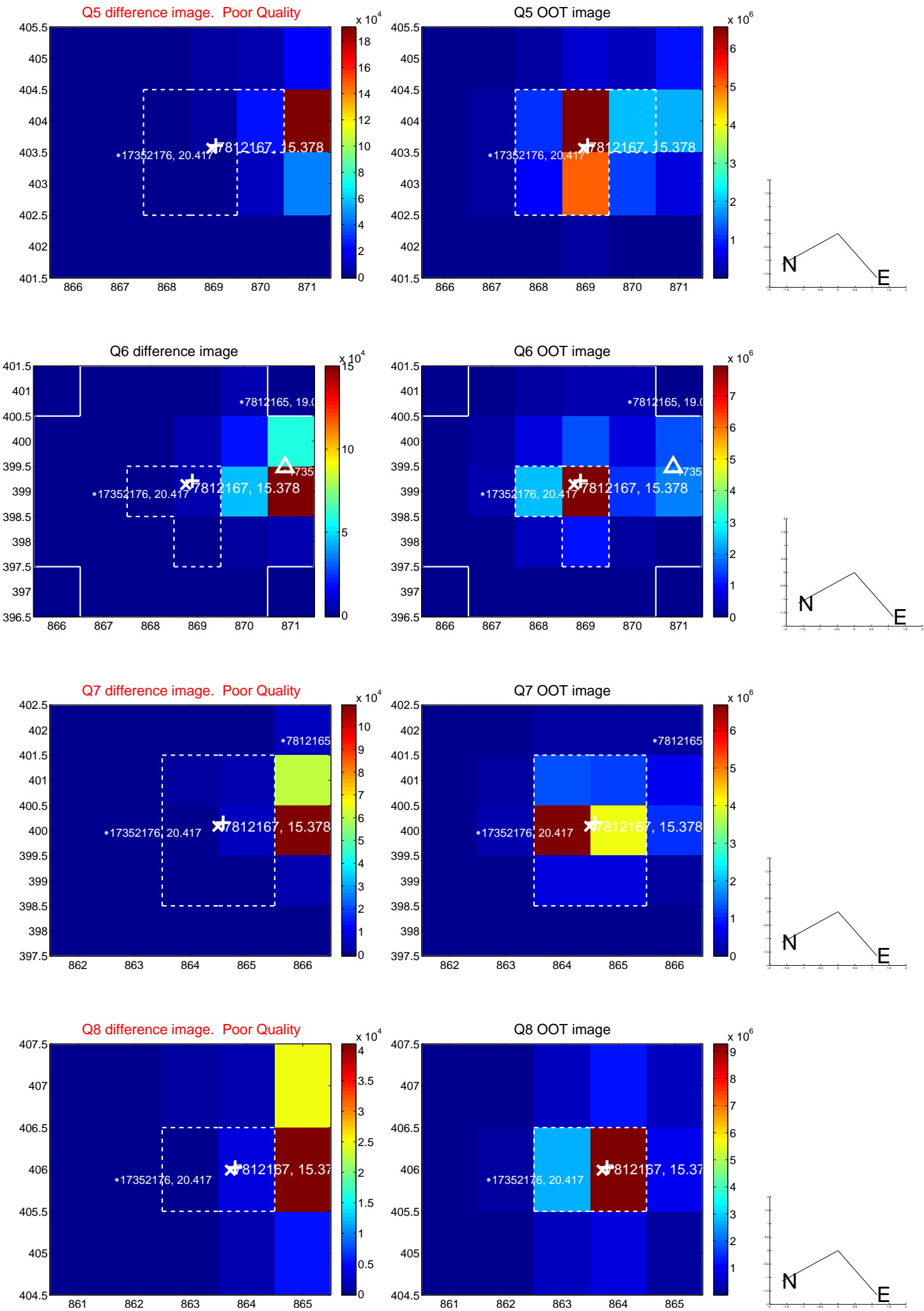


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

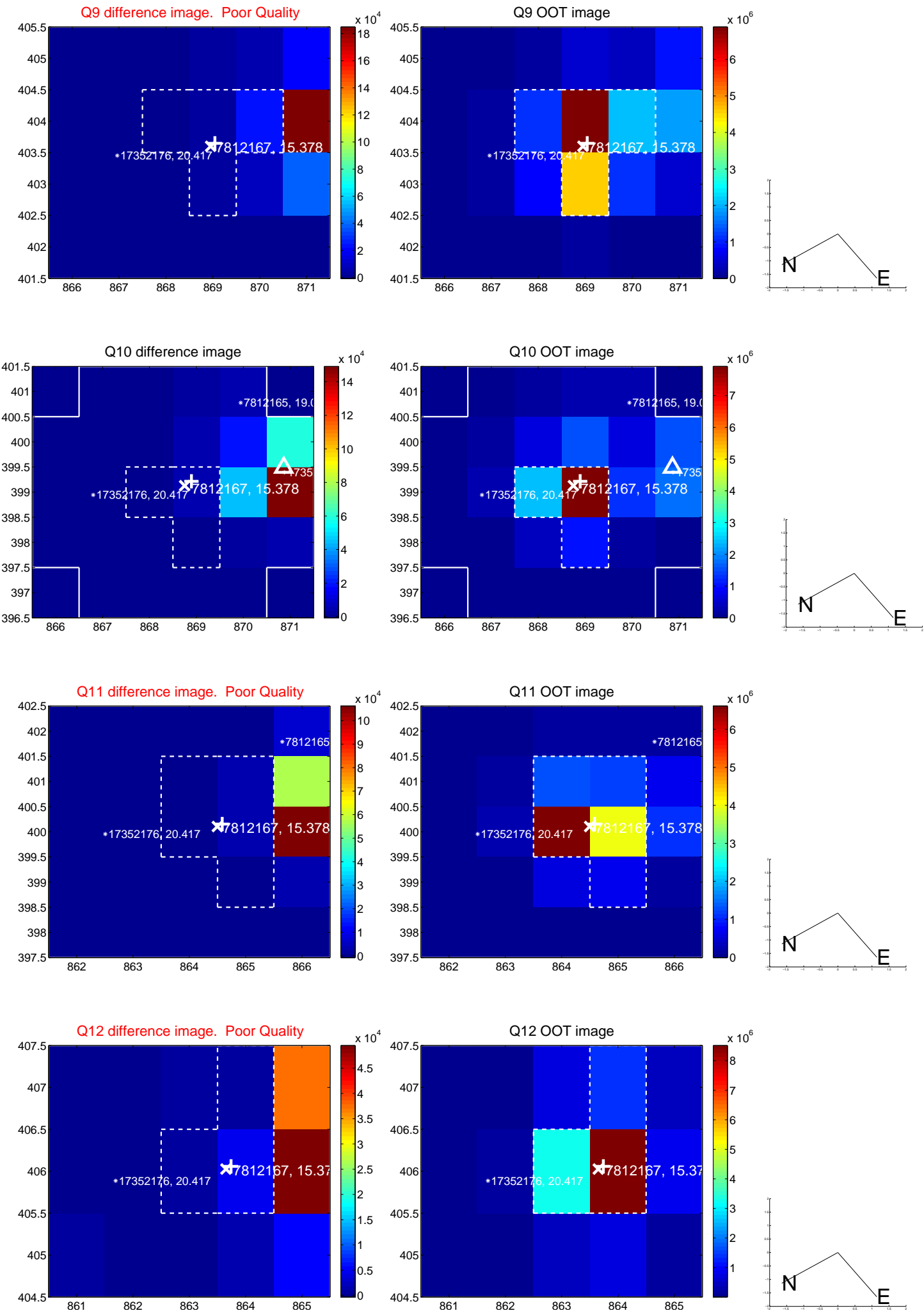
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



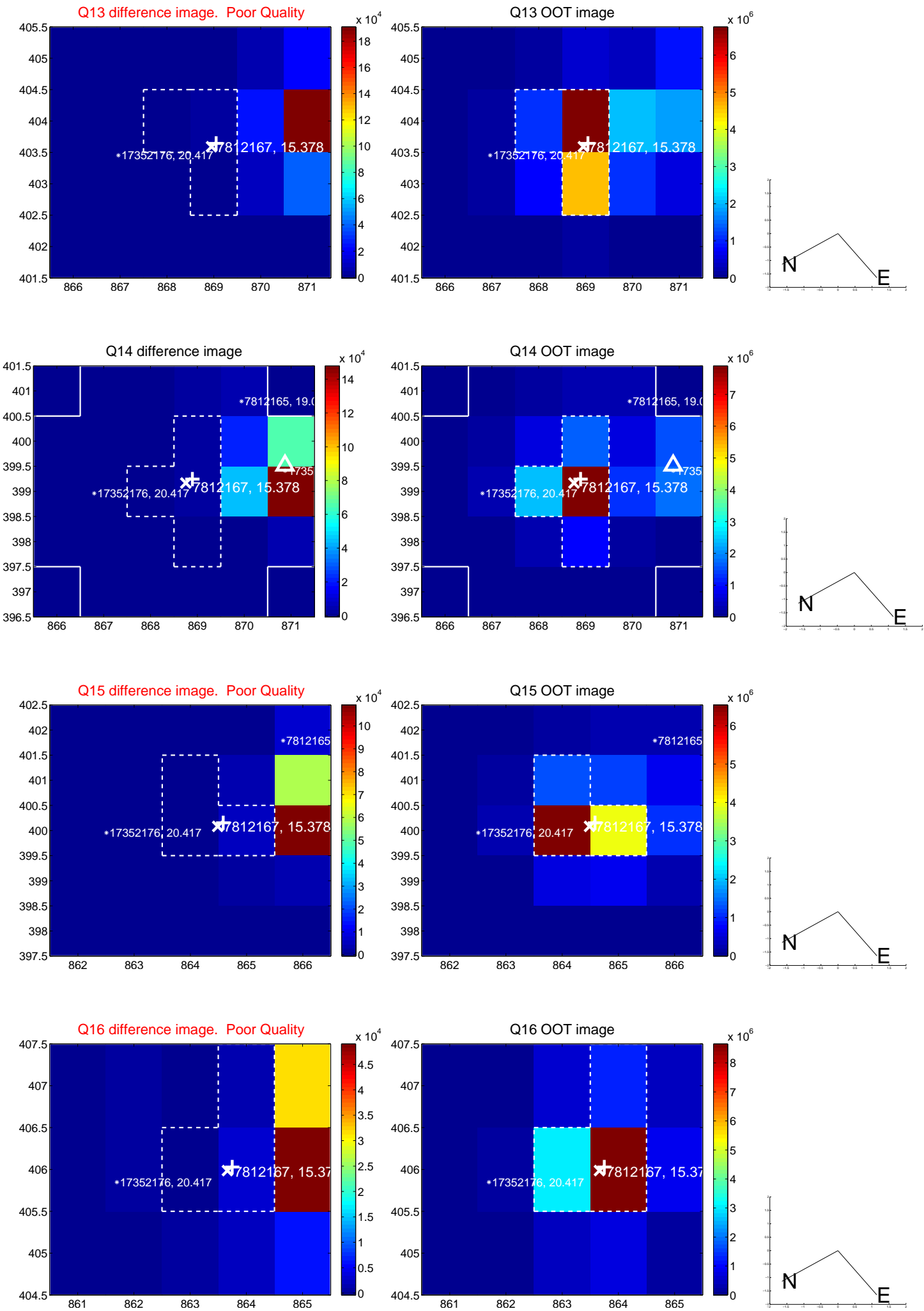
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

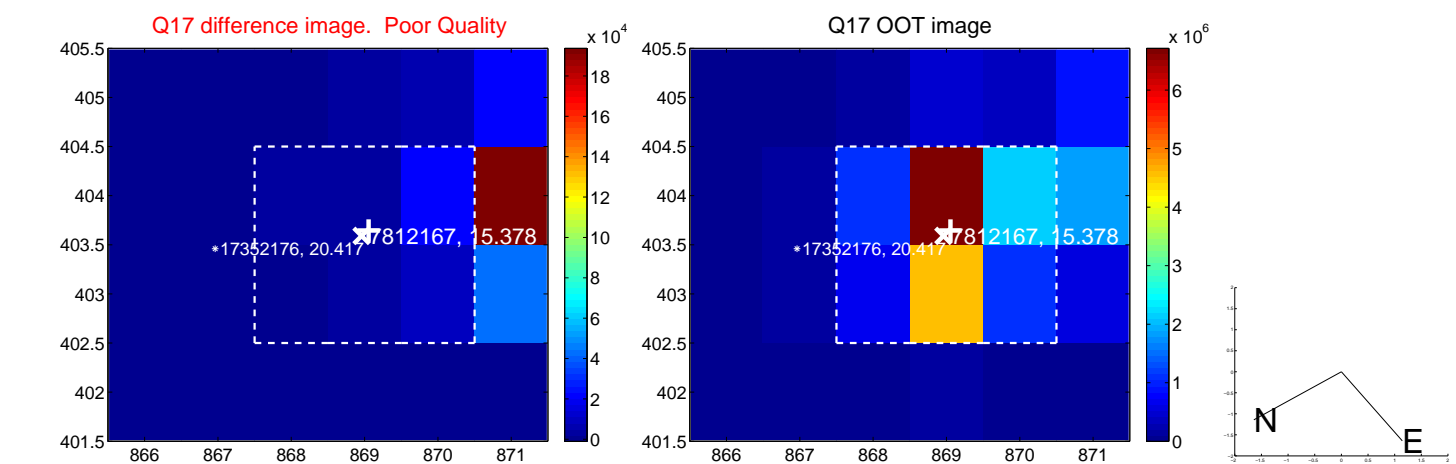


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

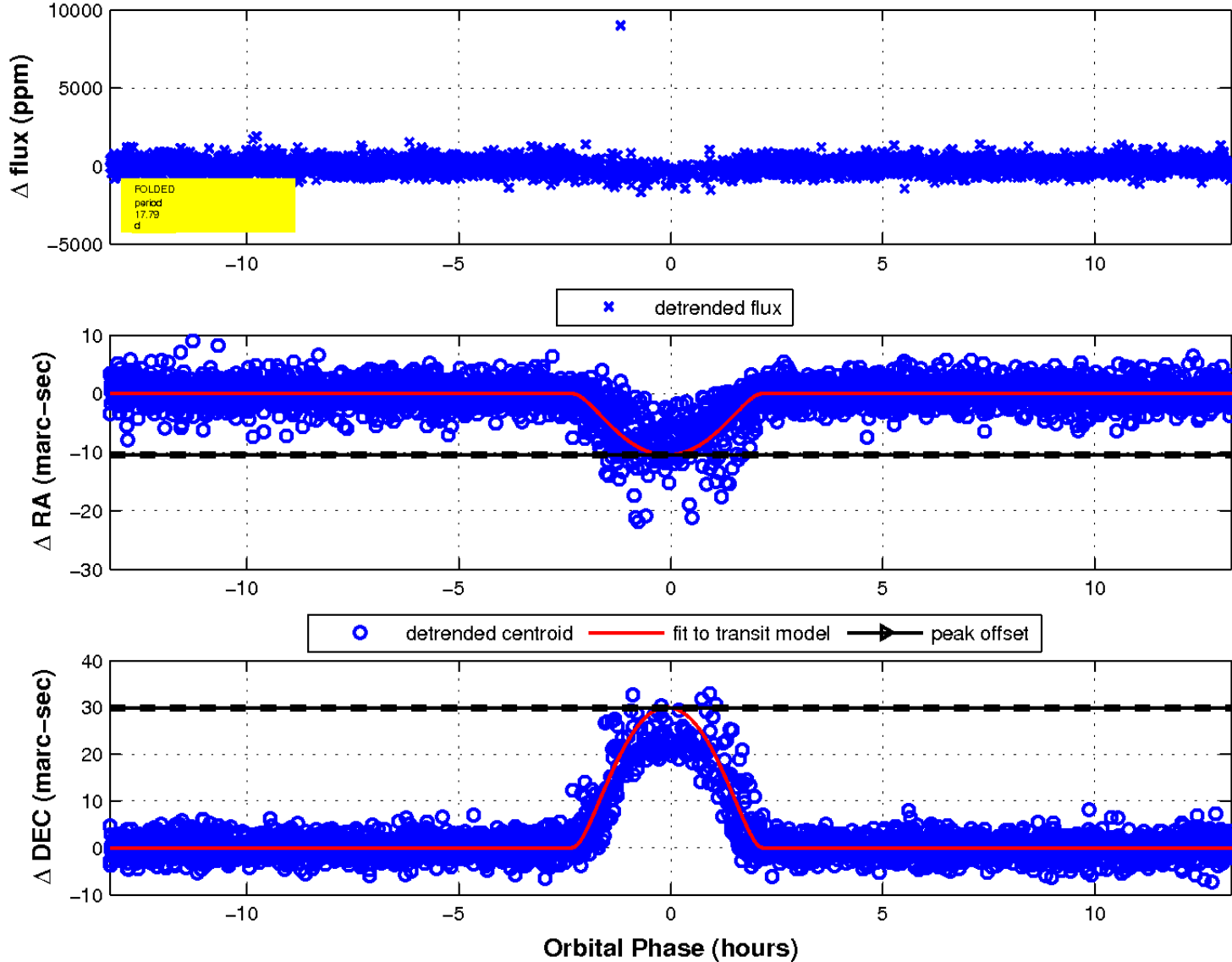




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

