

# KIC 005181817

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005181817-01	OBS	0642.01	4.350449	132.277528	180.8	1.808	35.5	36.1	0.88	5978	1.39	332.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005181817-01	OBS	FP	0.00	0	0	1	1	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 005181817-01

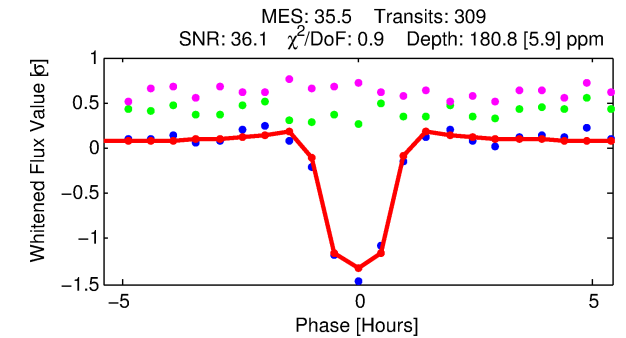
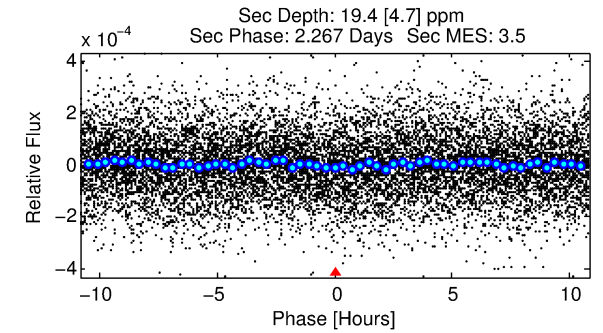
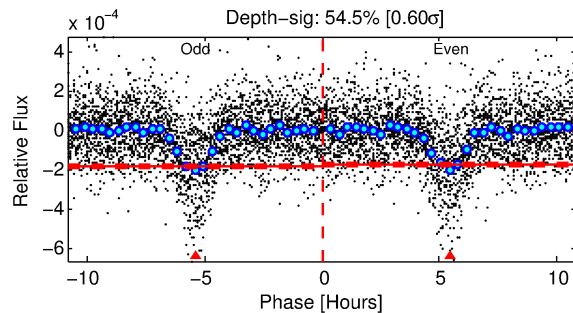
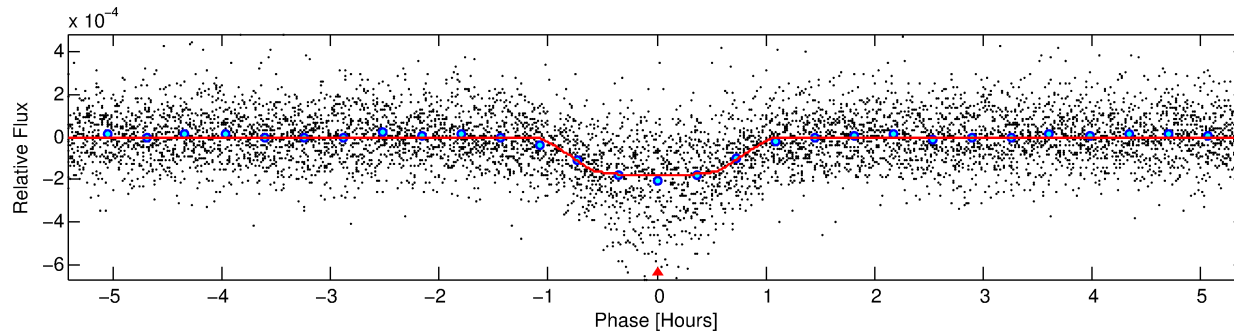
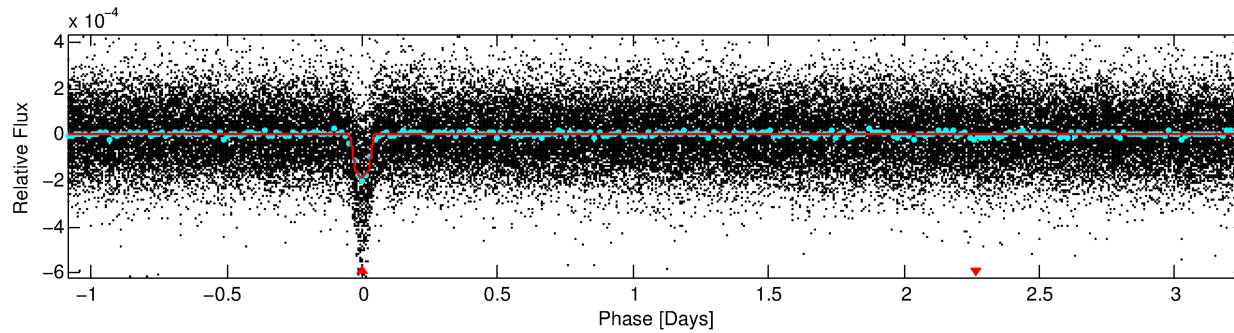
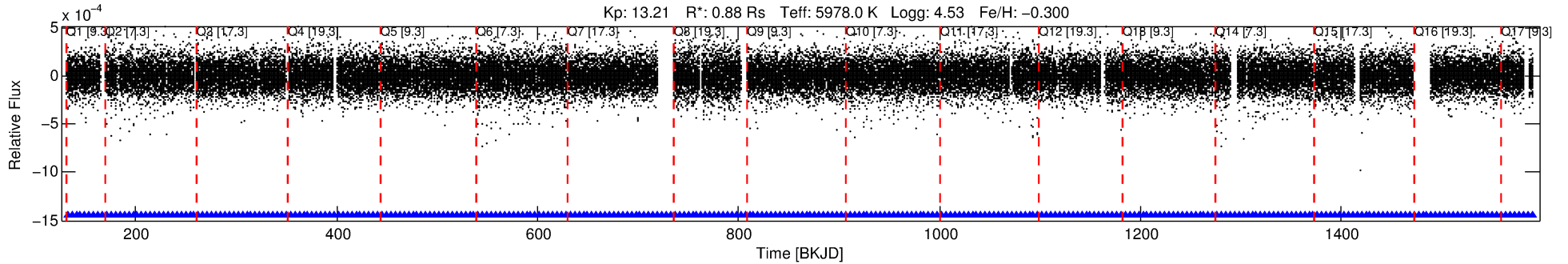
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
005181817-01	5181817	3638.01	5181804	1:1	9.9	0	-2	15.93	13.21	298.83	Direct-PRF	0	0.13	0.22

**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: 5181817 Candidate: 1 of 1 Period: 4.350 d  
KOI: K00642.01 Corr: 0.968

Kp: 13.21 R\*: 0.88 Rs Teff: 5978.0 K Logg: 4.53 Fe/H: -0.300



## DV Fit Results:

Period = 4.35045 [0.00001] d  
Epoch = 132.2775 [0.0009] BKJD  
Rp/R\* = 0.0146 [0.0024]  
a/R\* = 8.63 [7.24]  
b = 0.90 [0.18]  
Seff = 332.21 [128.95]  
Teq = 1089 [106] K  
Rp = 1.39 [0.47] Re  
a = 0.0514 [0.0129] AU  
Ag = 14.60 [8.02] [1.70σ]  
Teffp = 3290 [348] K [6.05σ]

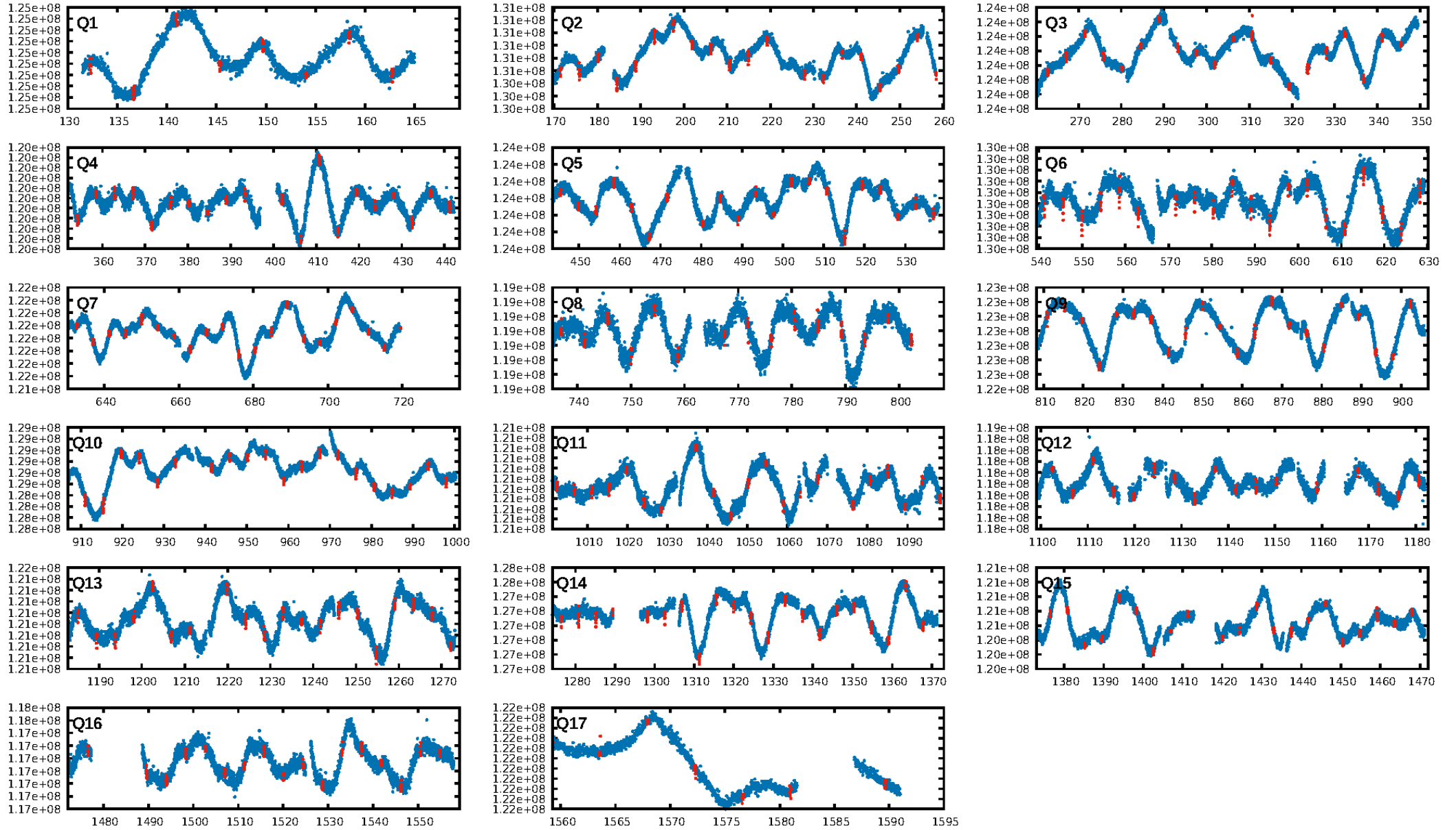
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.14e-267  
RollingBand-fgt: 1.00 [294/294]  
GhostDiagnostic-chr: -0.2544  
Centroid-sig: 0.0%  
Centroid-so: 95.526 arcsec [292.26σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

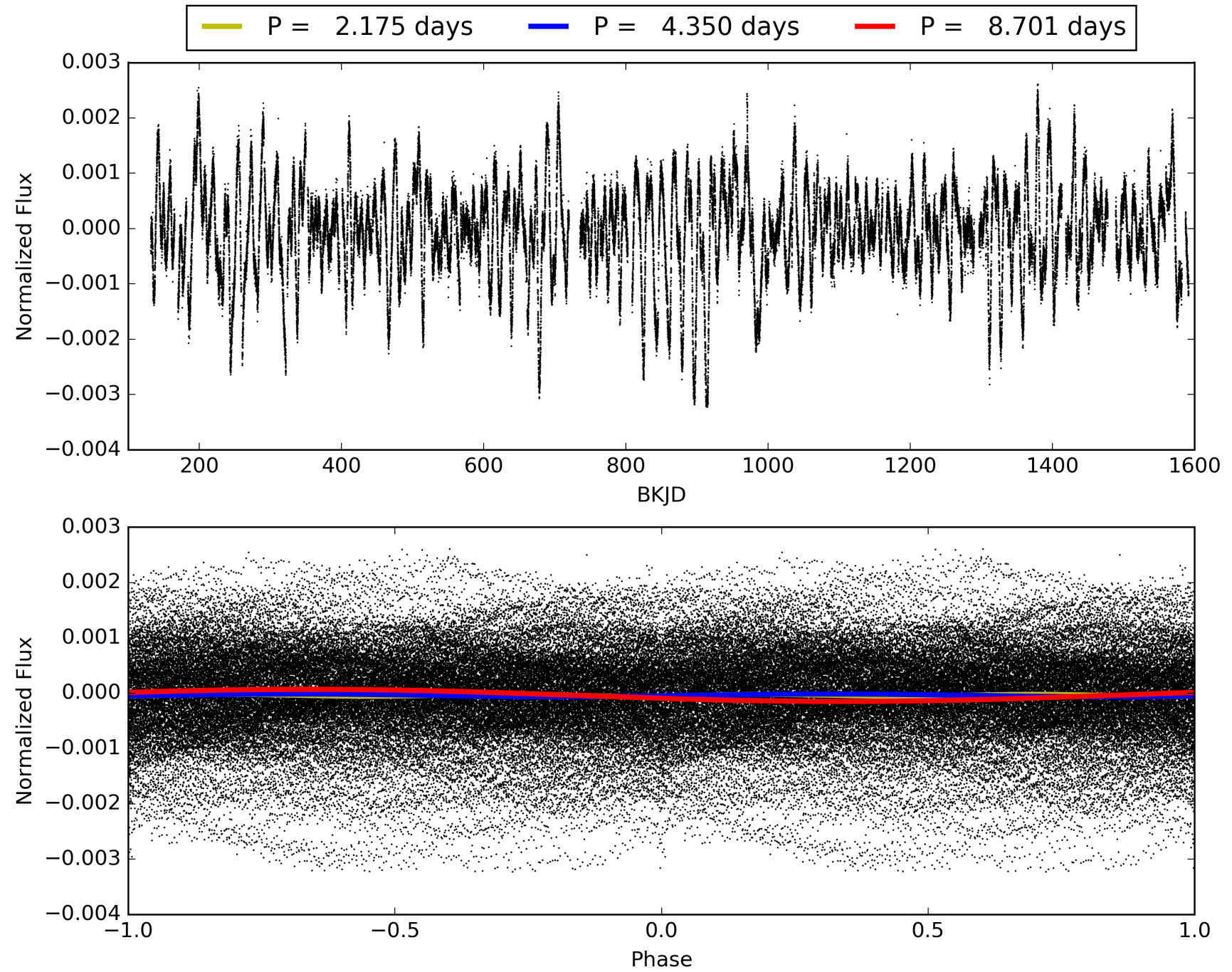
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:15:12 Z

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

# TCE 005181817-01, PDC Light Curves

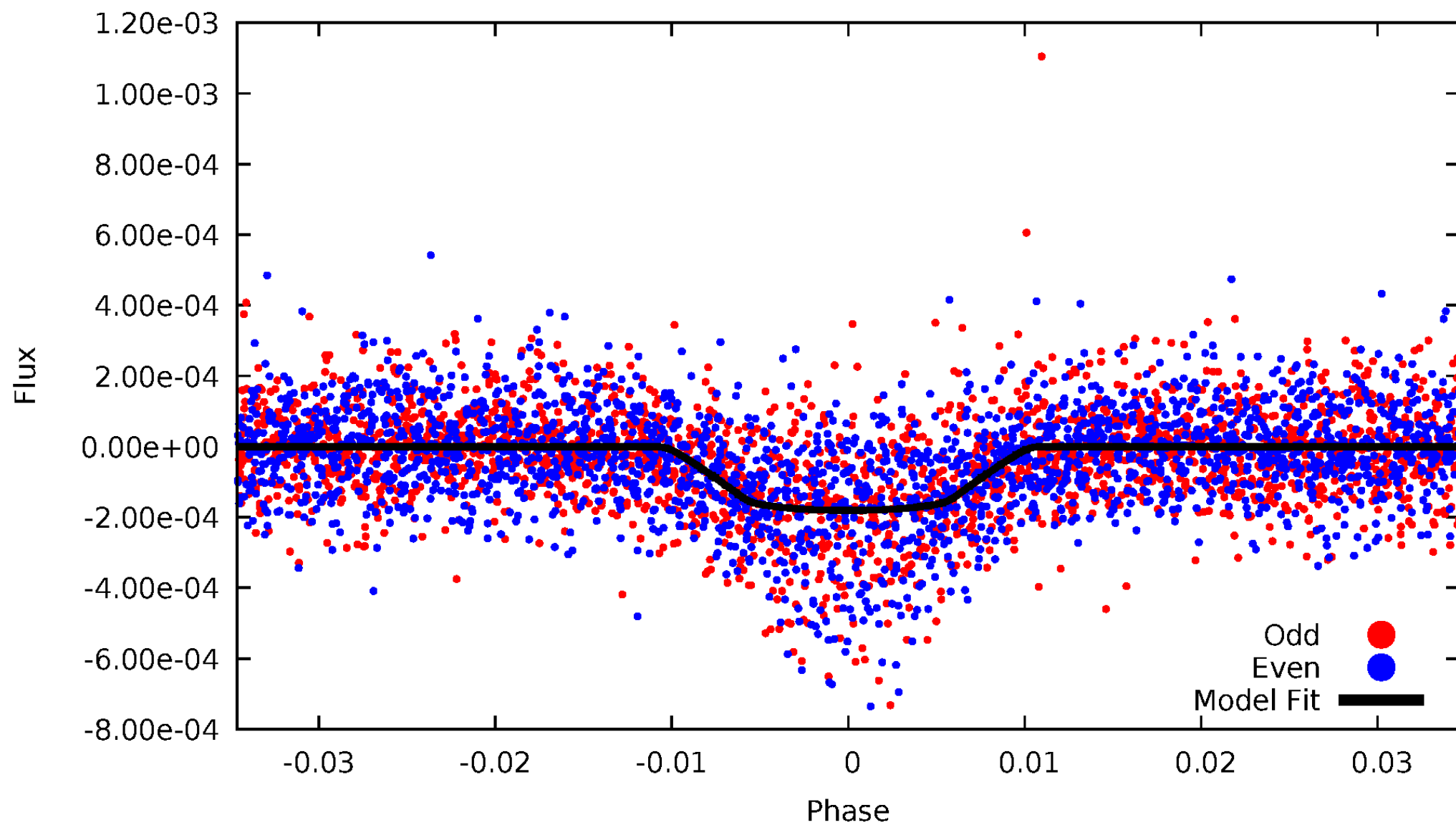


# TCE 005181817-01



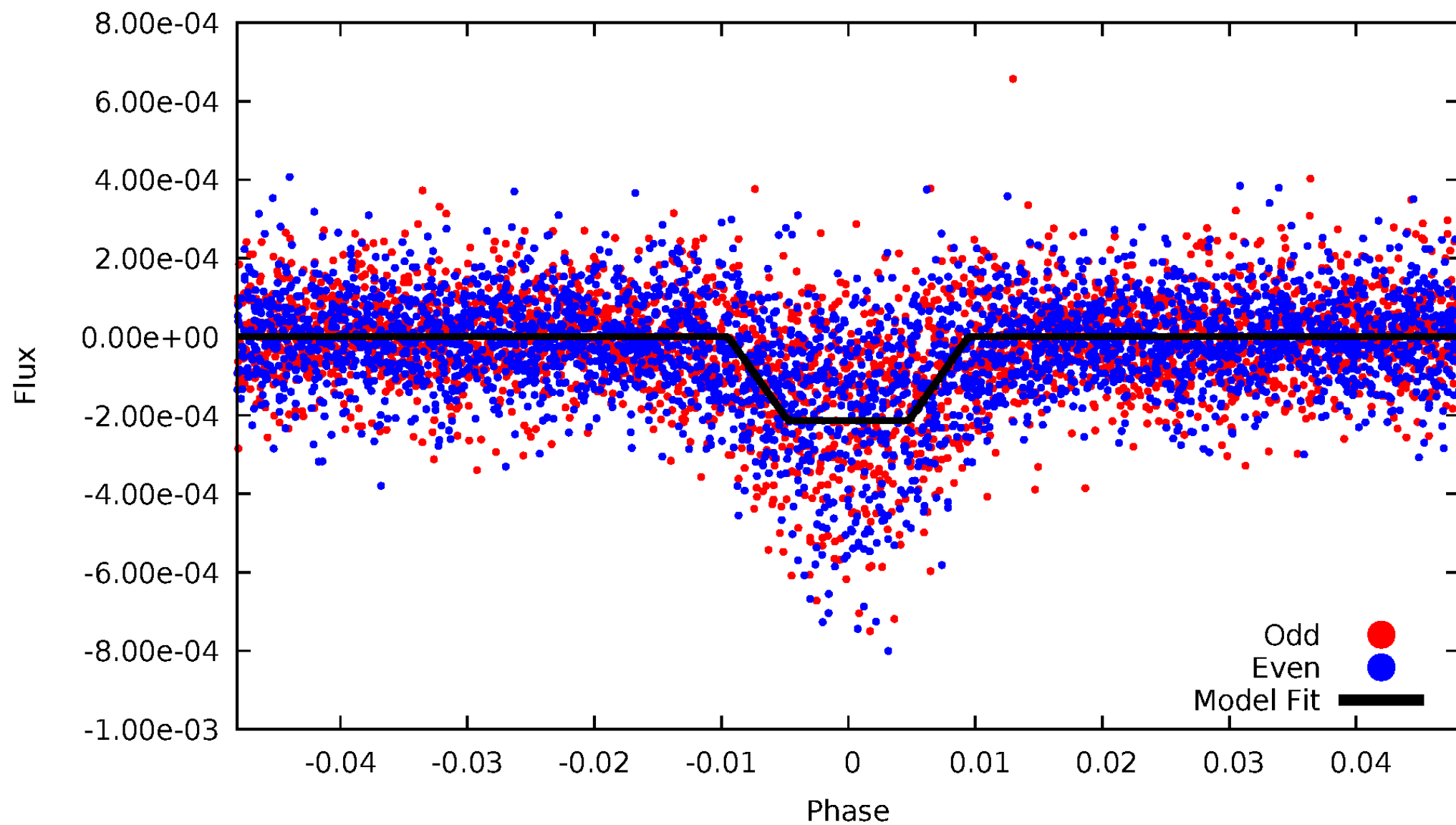
# DV Odd/Even

TCE 005181817-01



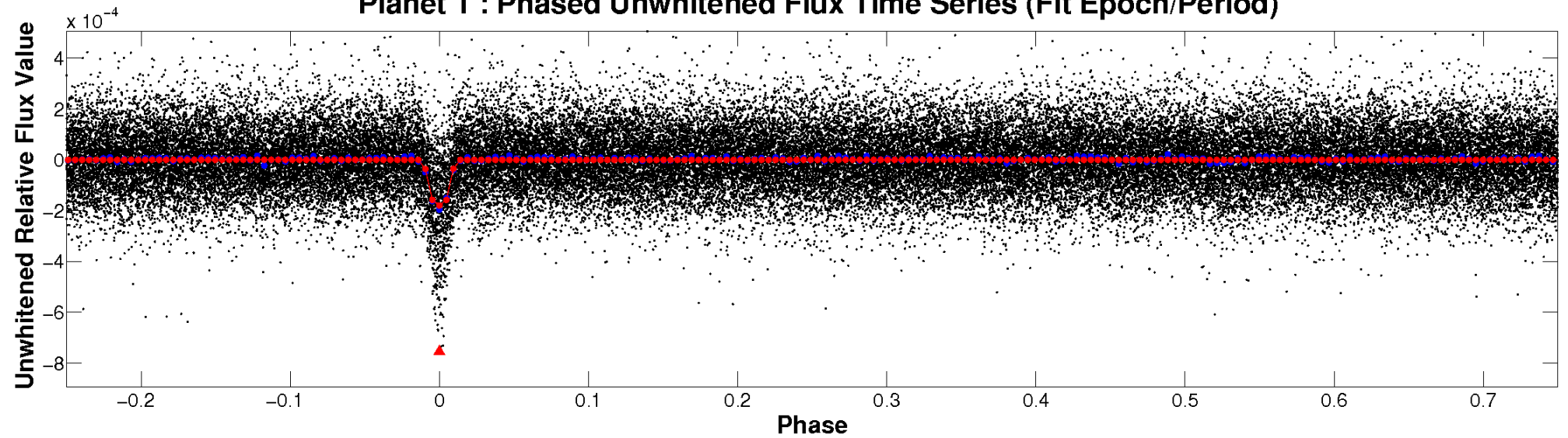
# ALT Odd/Even

TCE 005181817-01

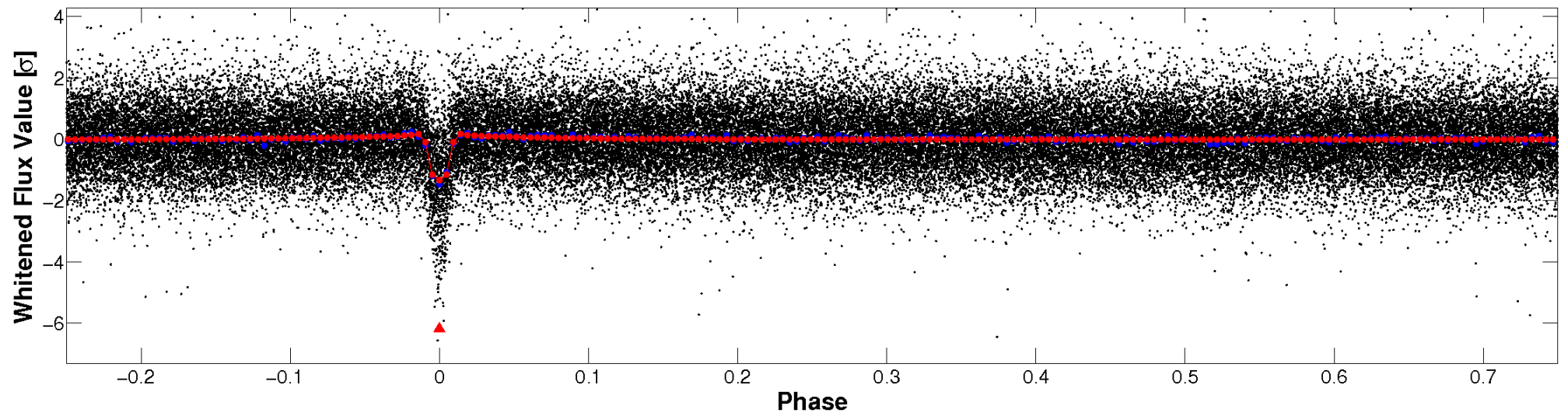


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

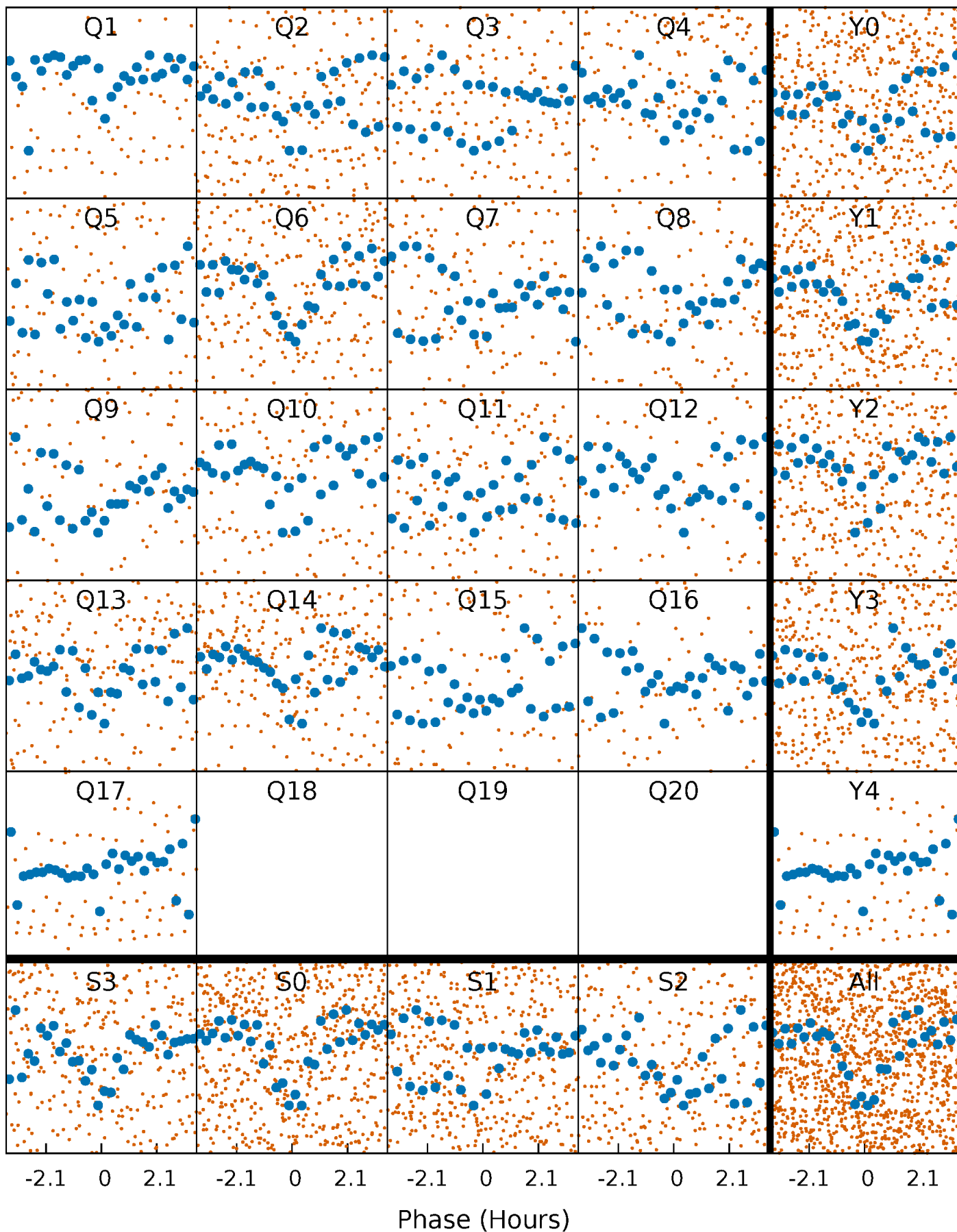


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



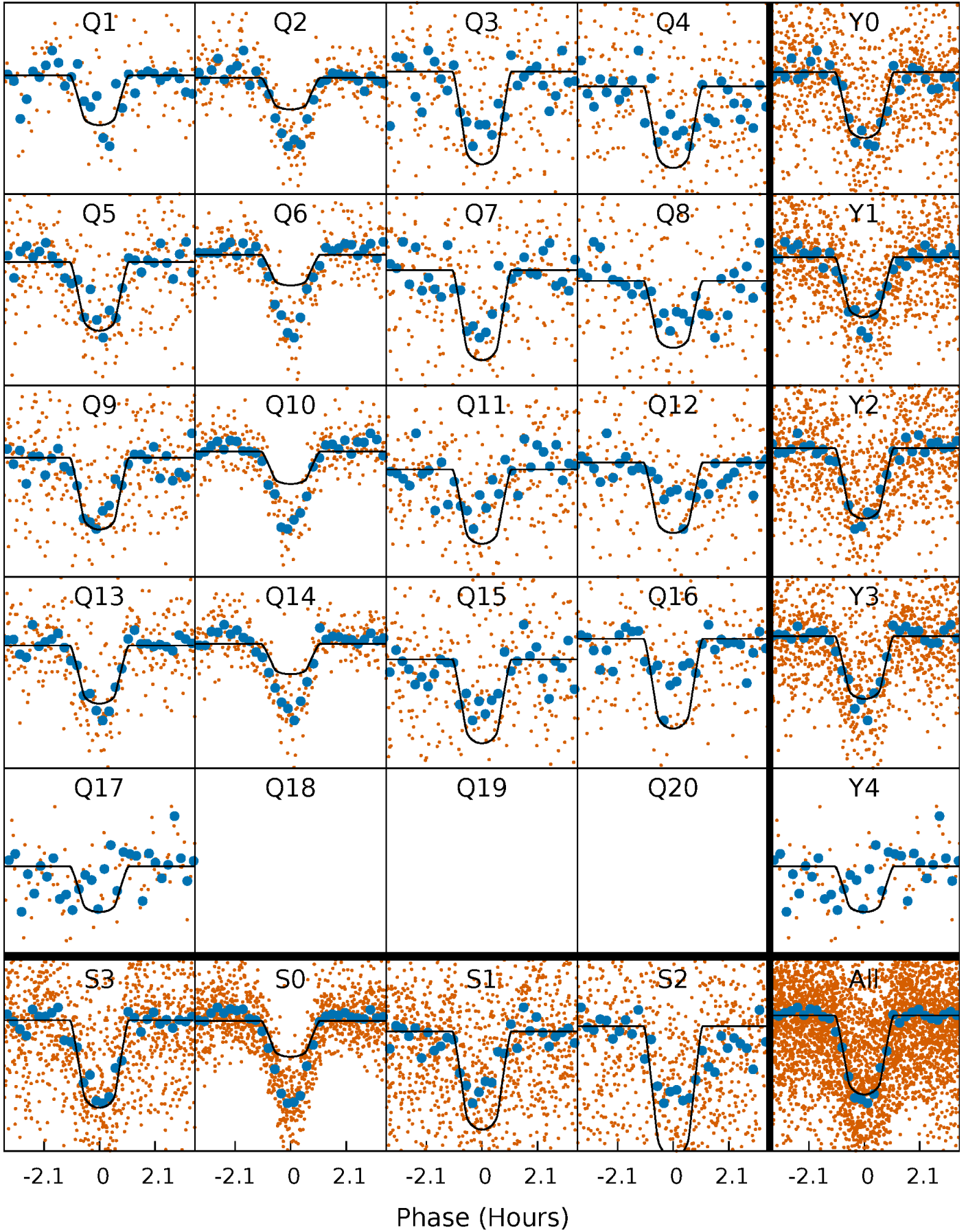
# PDC Quarter-Phased Transit Curves

TCE 005181817-01 P= 4.350449 Days  $T_0=132.277528$  (BKJD)



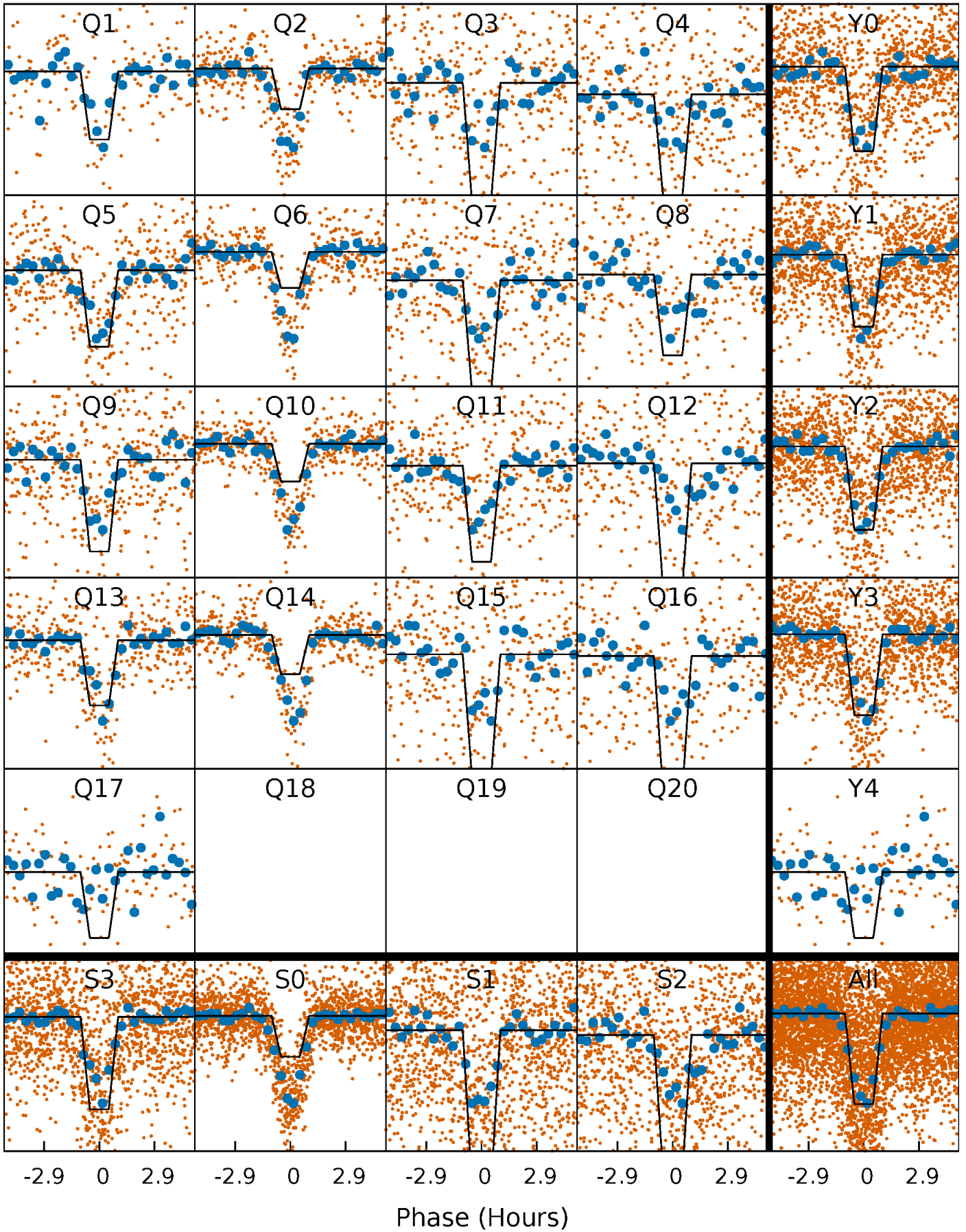
# DV Quarter-Phased Transit Curves

TCE 005181817-01 P= 4.350449 Days  $T_0=132.277528$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

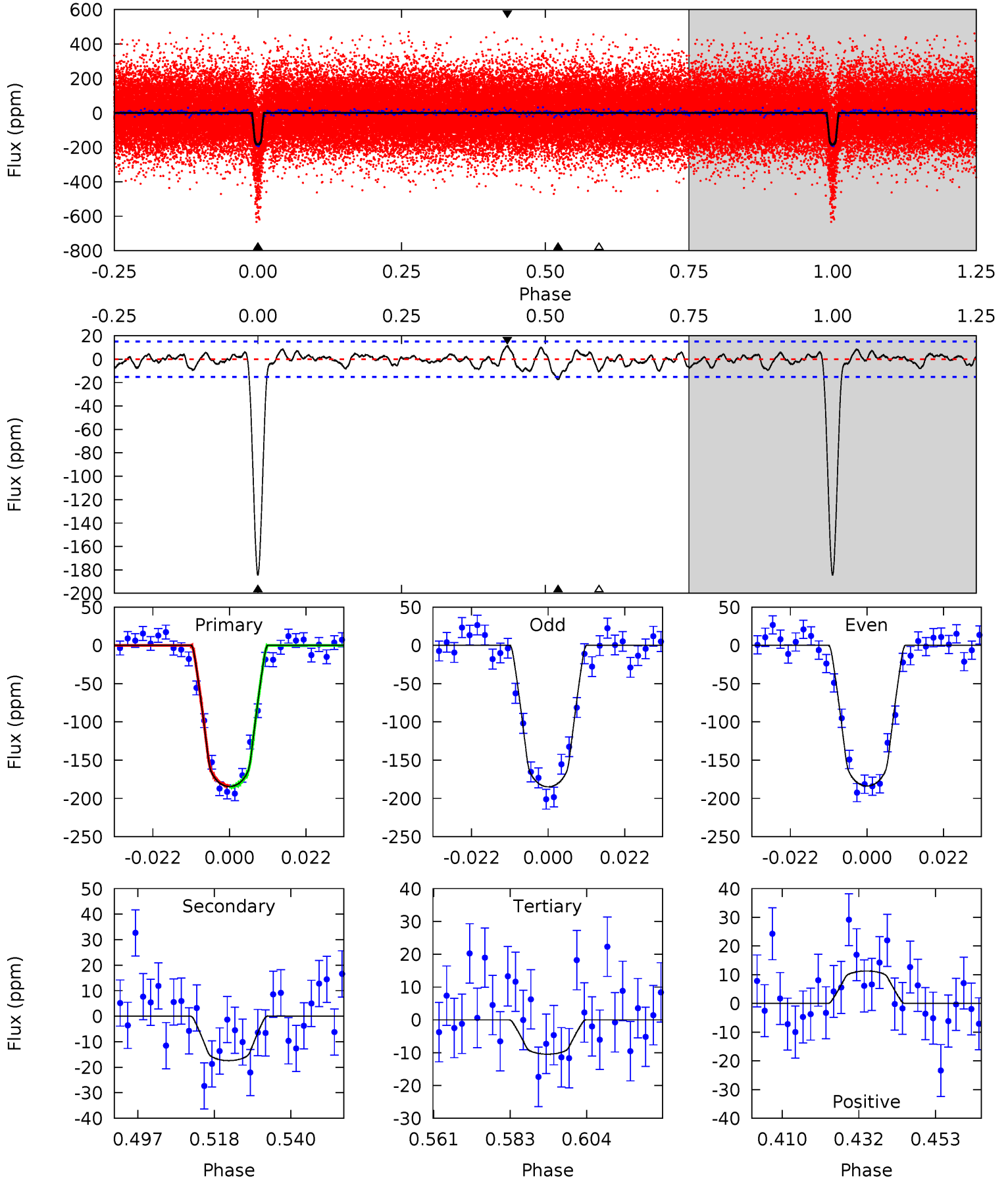
TCE 005181817-01 P= 4.350384 Days  $T_0=132.286717$  (BKJD)



# DV Model-Shift Uniqueness Test

005181817-01, P = 4.350449 Days, E = 127.927079 Days

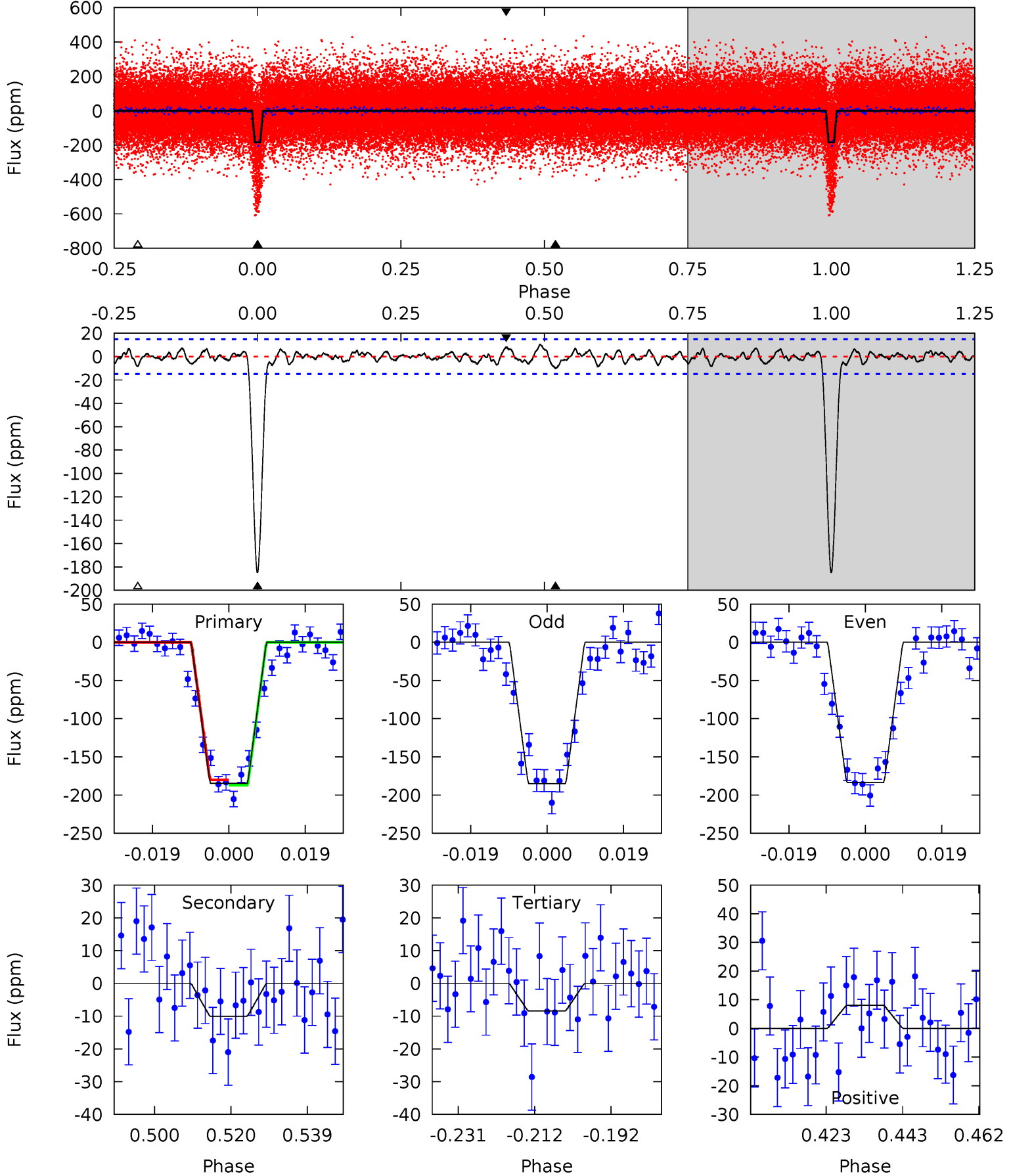
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.2	5.59	3.36	3.63	4.88	2.30	1.32	55.9	55.6	2.23	1.96	0.17	1.16	0.06	0.26



# Alt Model-Shift Uniqueness Test

005181817-01, P = 4.350384 Days, E = 127.936333 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
61.0	3.31	2.78	2.65	4.90	2.34	1.10	58.2	58.3	0.53	0.65	0.28	1.25	0.05	1.14



### Stellar Parameters For KIC 005181817

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5978^{+143}_{-179}$	$4.534^{+0.048}_{-0.204}$	$-0.300^{+0.300}_{-0.300}$	$0.876^{+0.257}_{-0.086}$	$0.958^{+0.106}_{-0.118}$	$2.006^{+0.498}_{-1.015}$
	+2%/-3%	+1%/-4%	+100%/-100%	+29%/-10%	+11%/-12%	+25%/-51%
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 005181817-01 / KOI 0642.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-17 \pm 3$	$1.45^{+0.33}_{-0.27}$	$1554^{+115}_{-67}$	$3644^{+244}_{-254}$	$12^{+6}_{-4}$
Alt.	$-10 \pm 3$	$1.46^{+0.32}_{-0.27}$	$1549^{+108}_{-63}$	$3290^{+239}_{-217}$	$6.627^{+3.596}_{-2.704}$

$T_{\text{max}}$  = 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

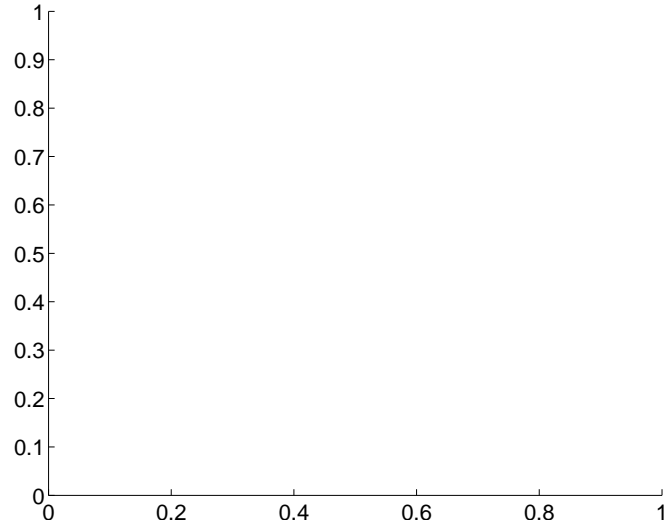
Supplemental centroid analysis for 005181817-01. Kepler magnitude: 13.21. Transit SNR 36.13

There are 0 quarters with good PRF difference image offsets

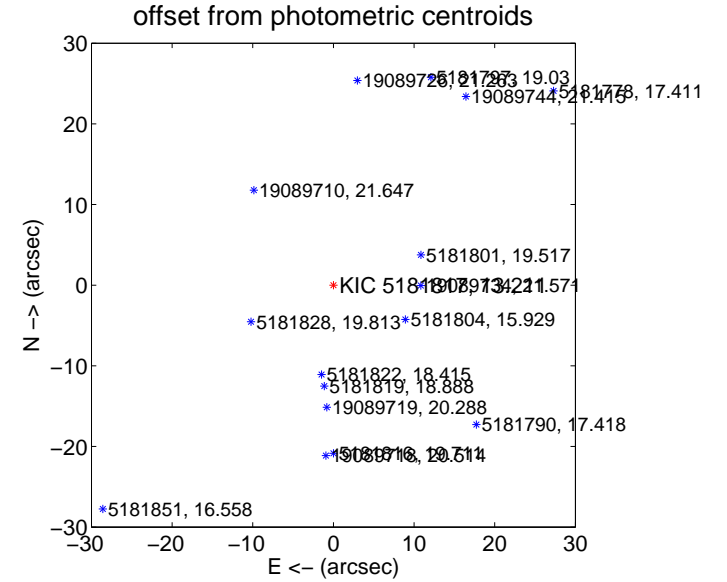
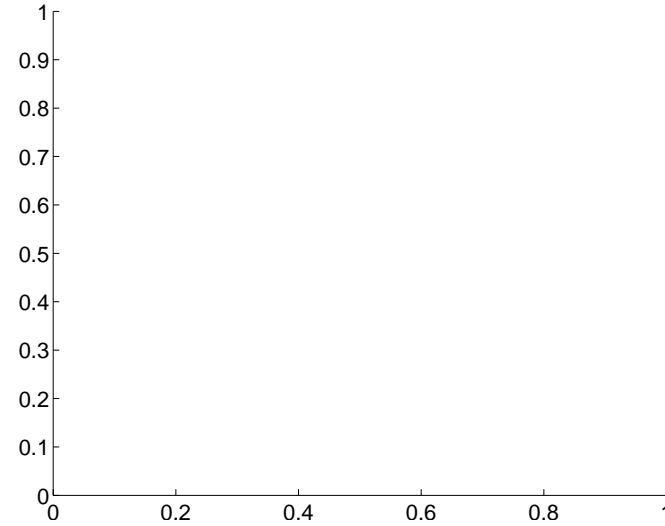
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$95.54 \pm 0.33$	$292.25$	$-88.57 \pm 0.34$	$-35.81 \pm 0.26$

There is no PRF-fit offset from OOT-fit

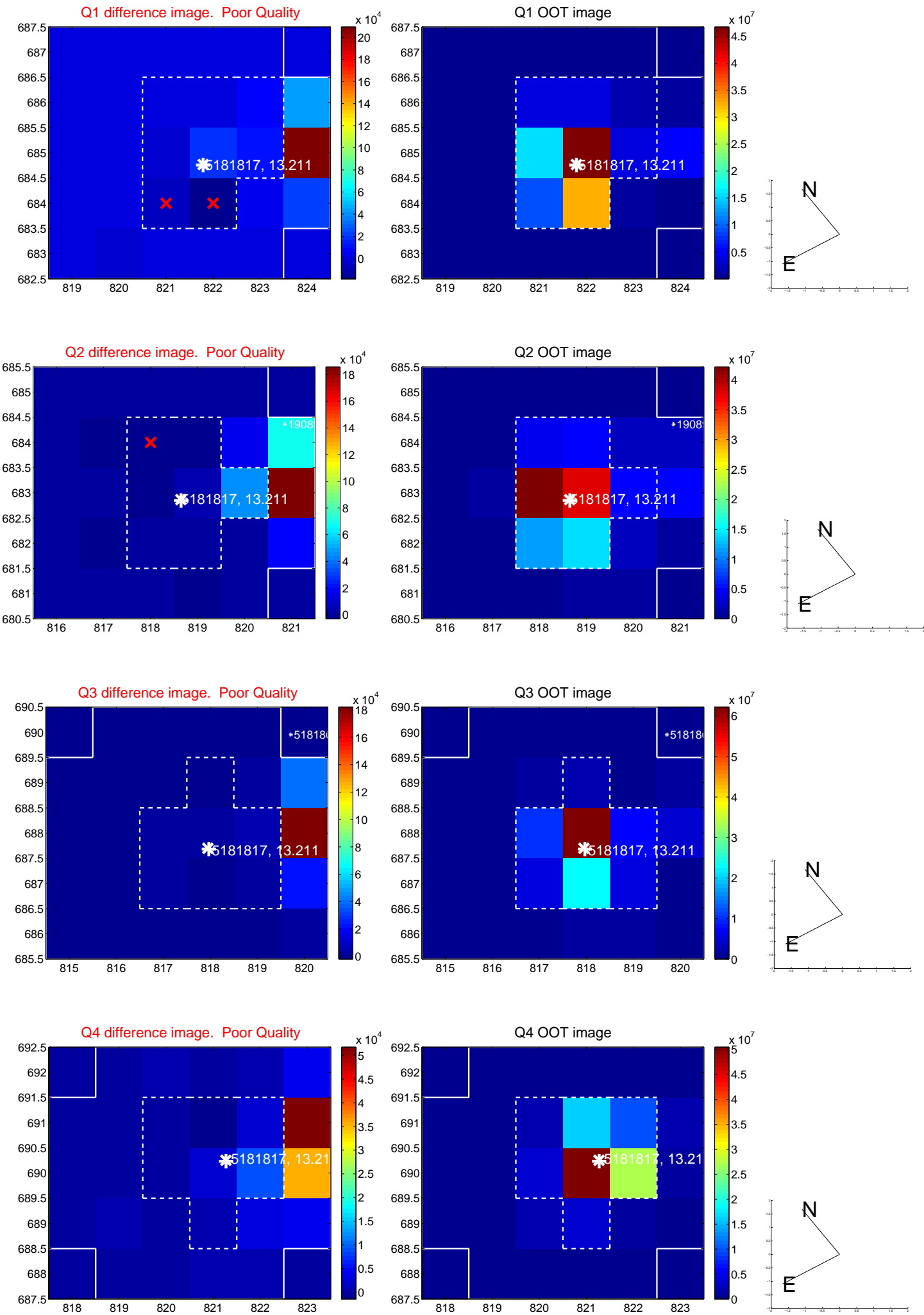


There is no PRF-fit offset from KIC

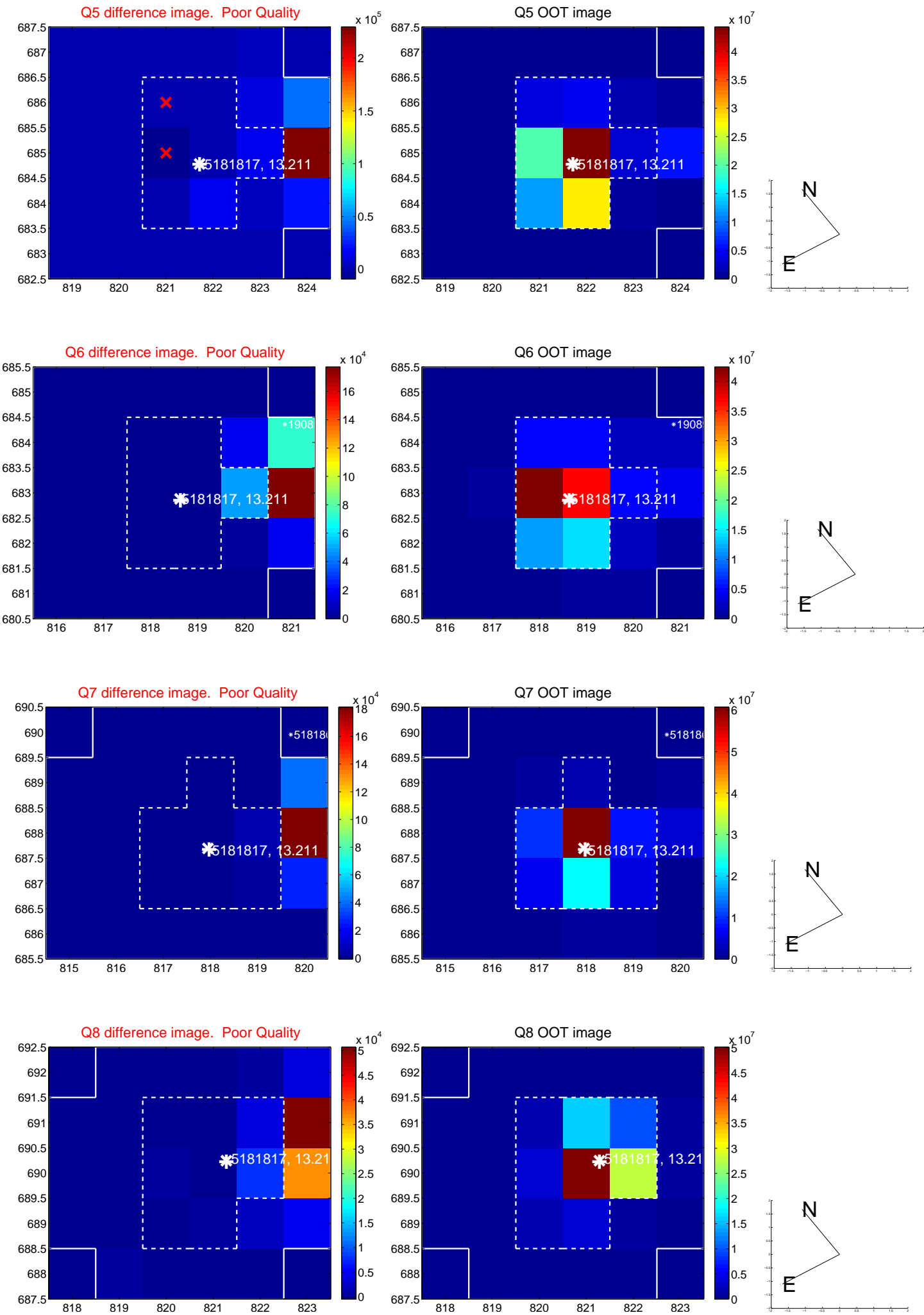


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

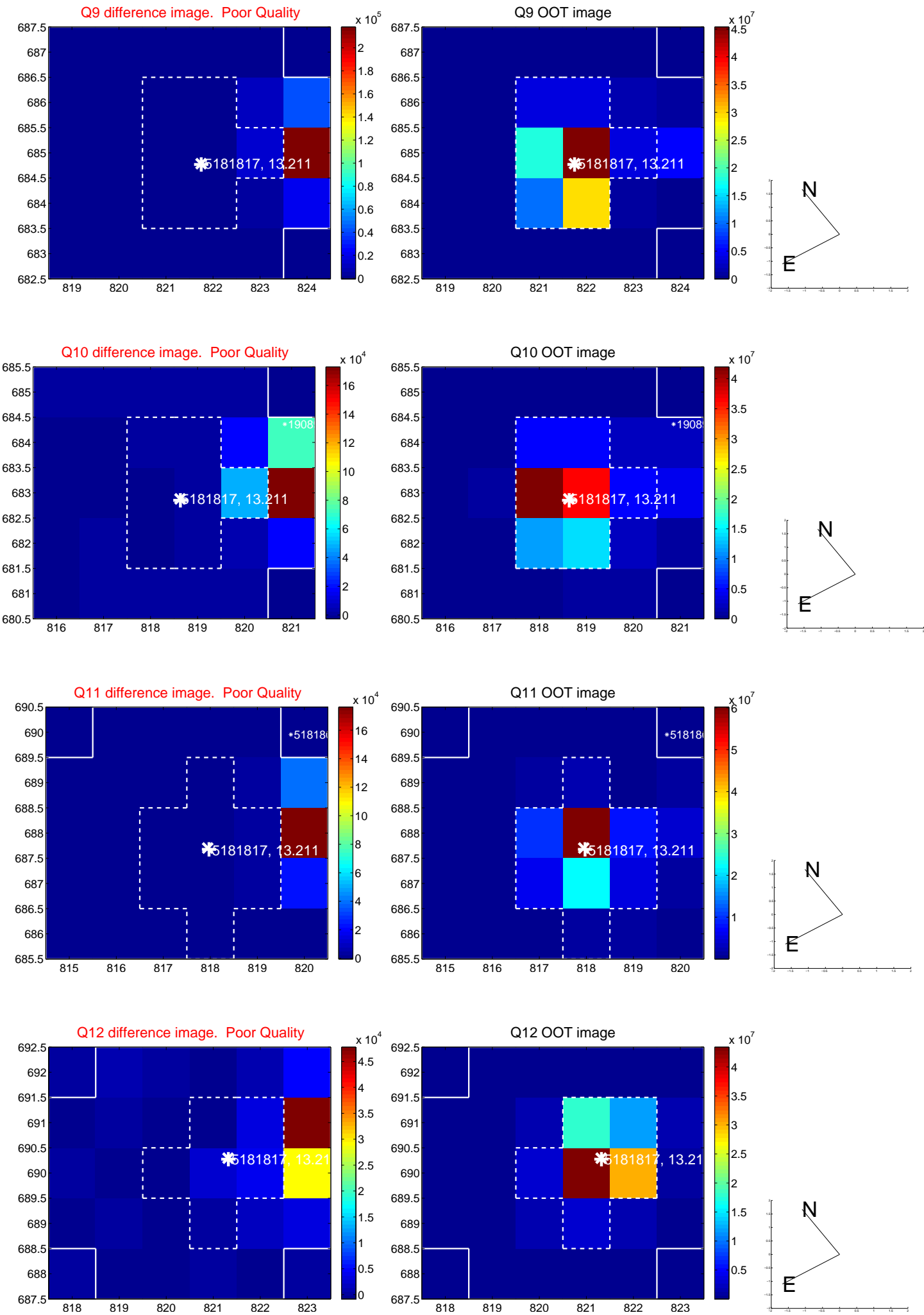
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



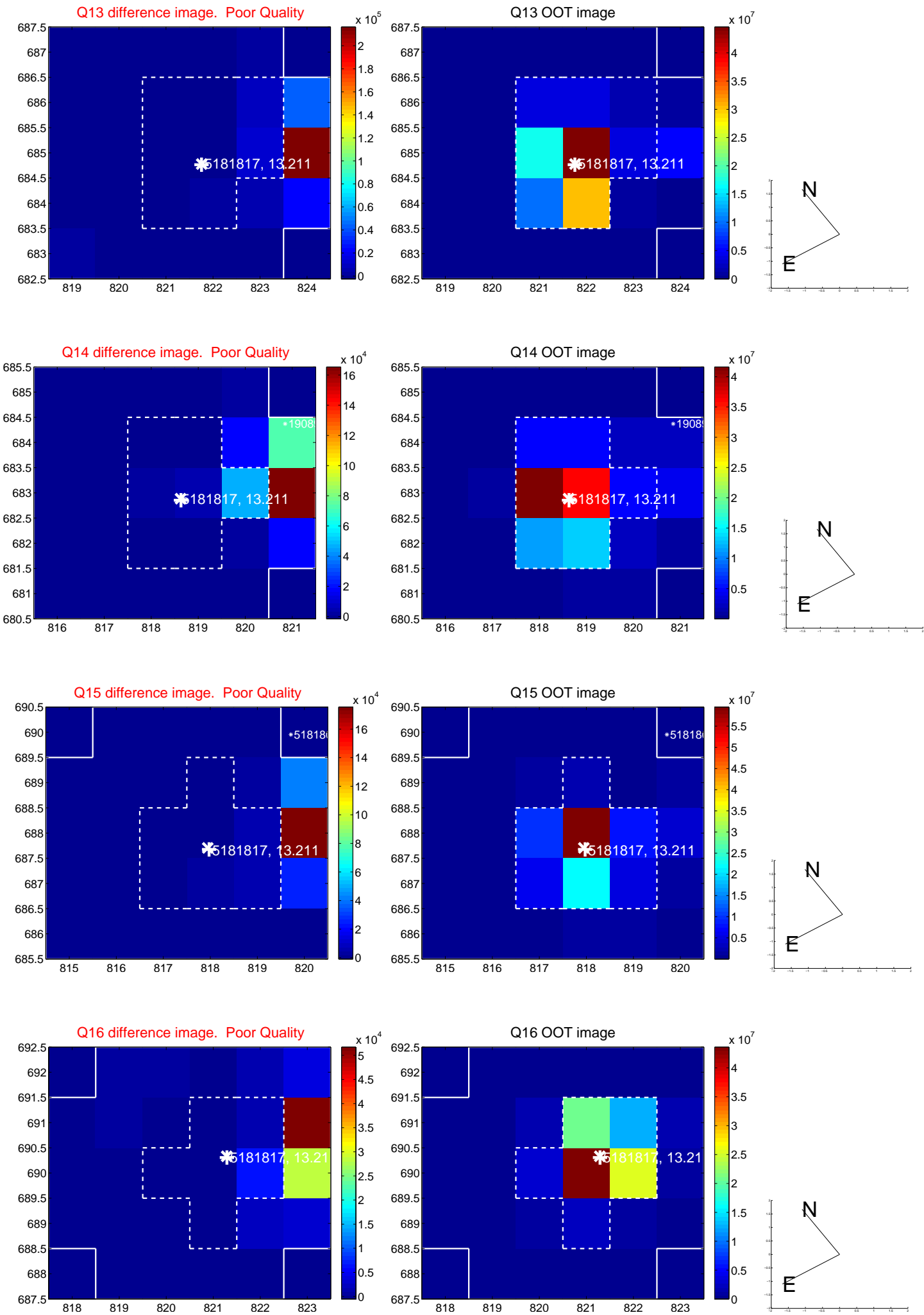
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



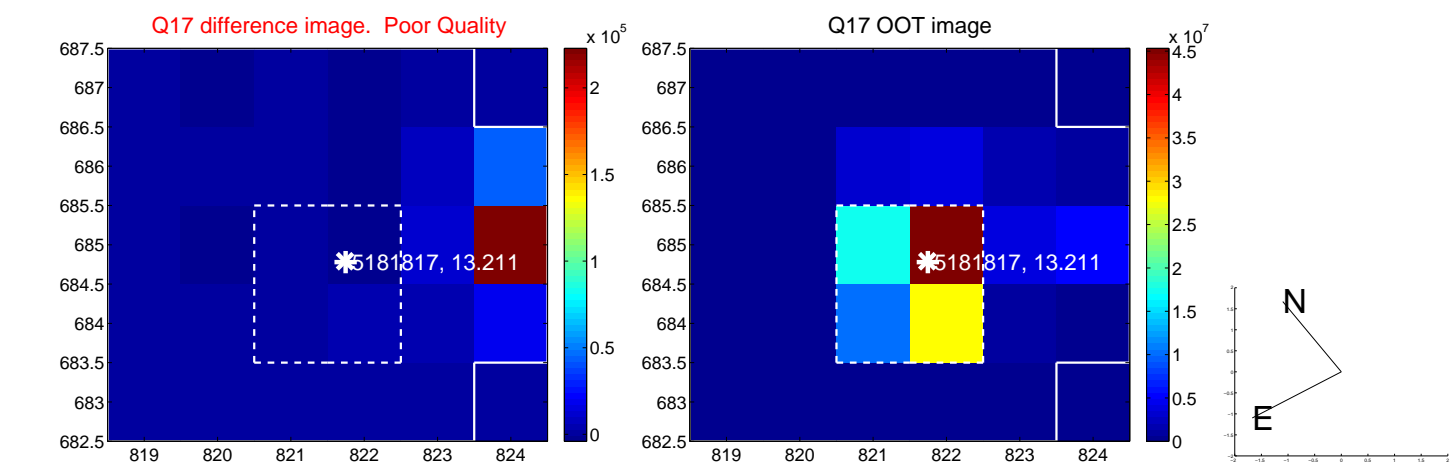
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



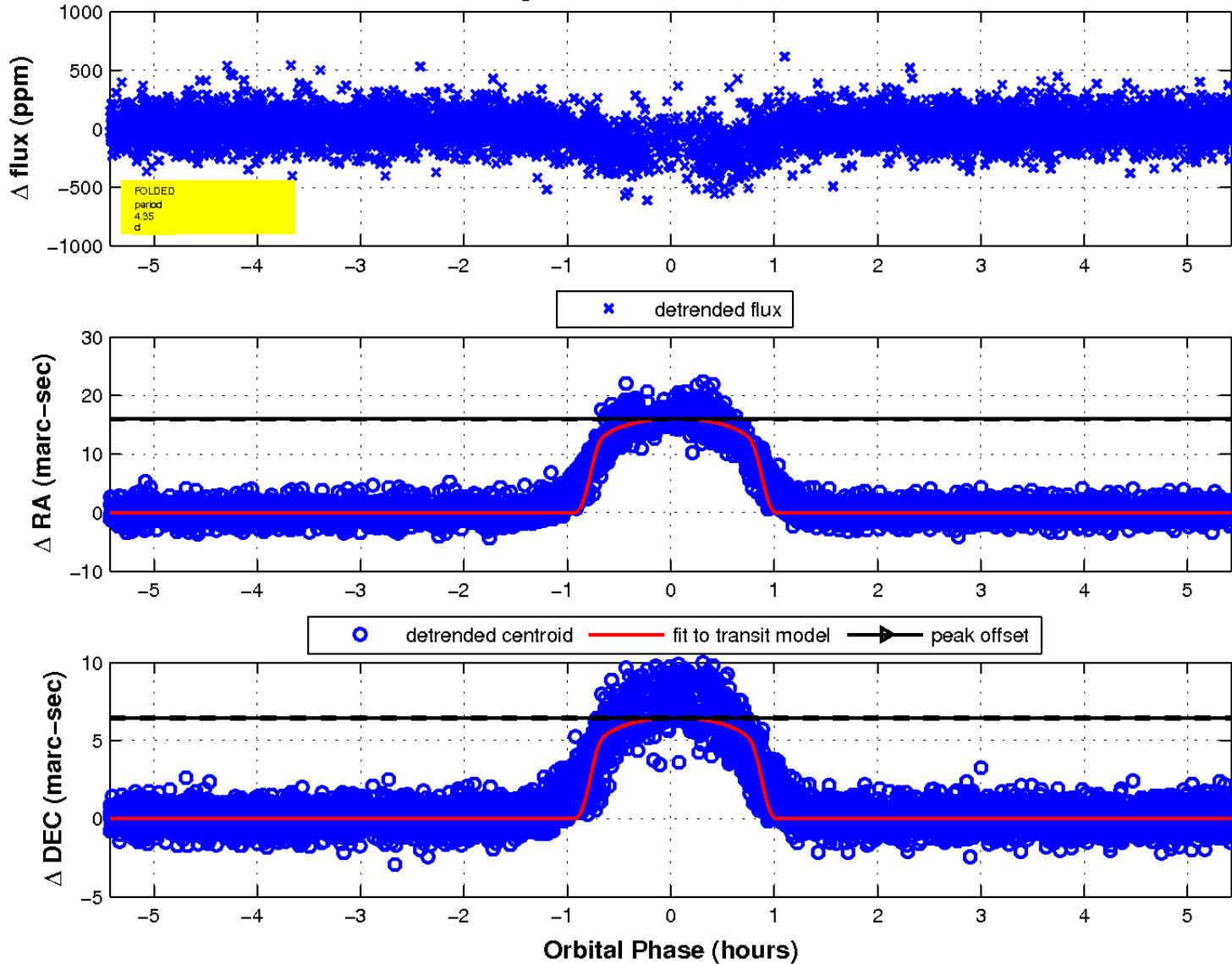
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

