

# KIC 008813701

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008813701-01	OBS	No	375.230590	173.140834	224.2	37.409	7.7	7.9	0.79	5687	1.22	0.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008813701-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

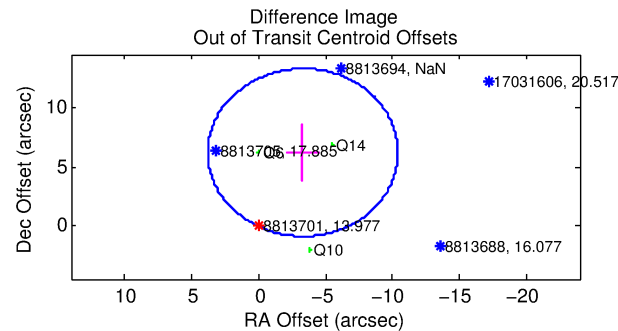
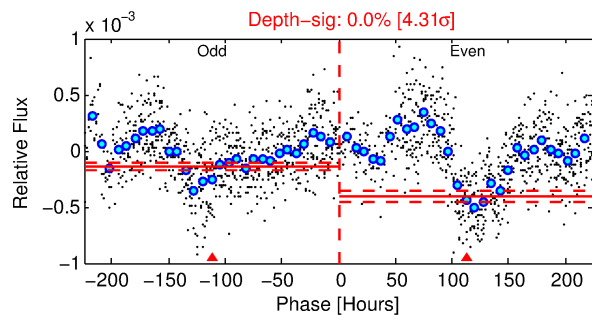
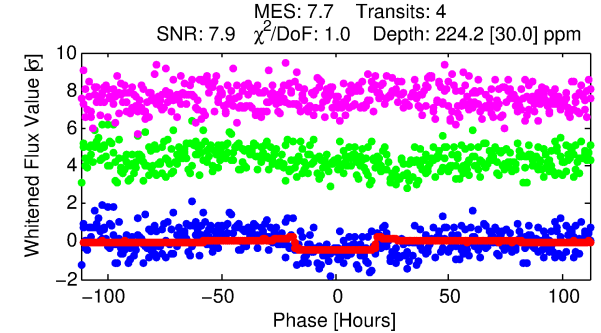
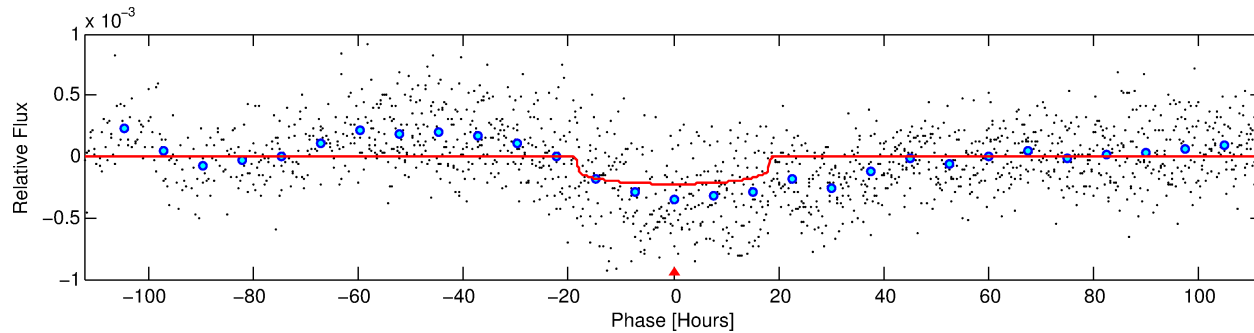
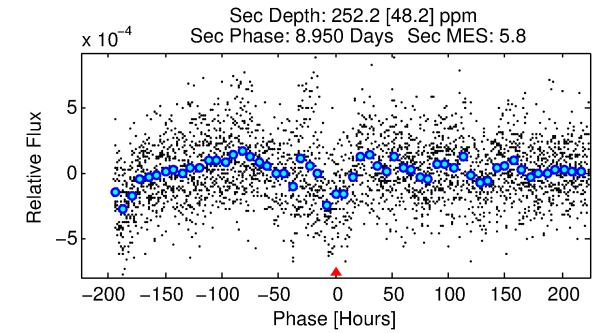
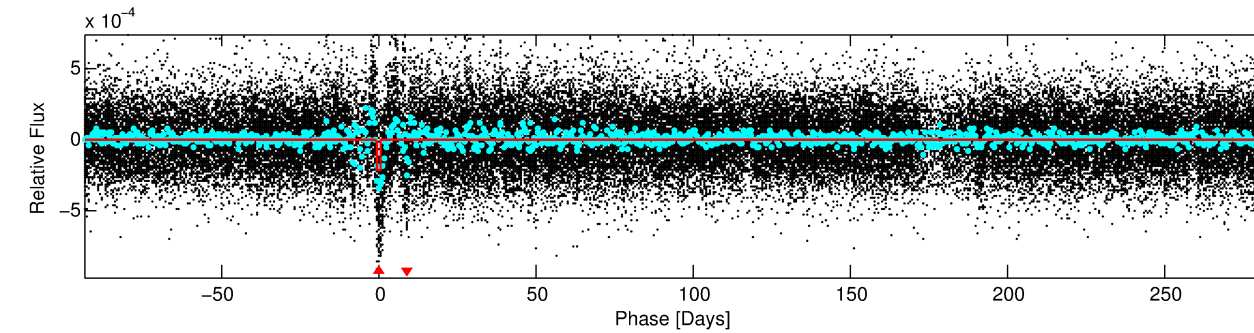
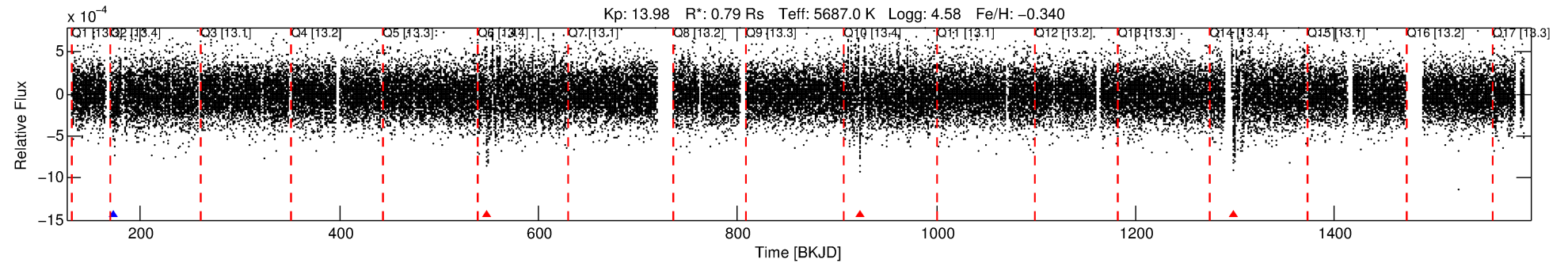
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008813701-01

No Significant Match Found

# DV One-Page Summary

KIC: 8813701 Candidate: 1 of 1 Period: 375.231 d



## DV Fit Results:

Period = 375.23059 [0.01557] d  
Epoch = 173.1408 [0.0281] BKJD  
Rp/R\* = 0.0142 [0.0036]  
a/R\* = 64.54 [71.62]  
b = 0.56 [1.34]  
Seff = 0.62 [0.19]  
Teff = 226 [18] K  
Rp = 1.22 [0.43] Re  
a = 0.9720 [0.1989] AU  
Ag = 87631.22 [54391.03] [1.61 $\sigma$ ]  
Teffp = 6017 [837] K [6.92 $\sigma$ ]

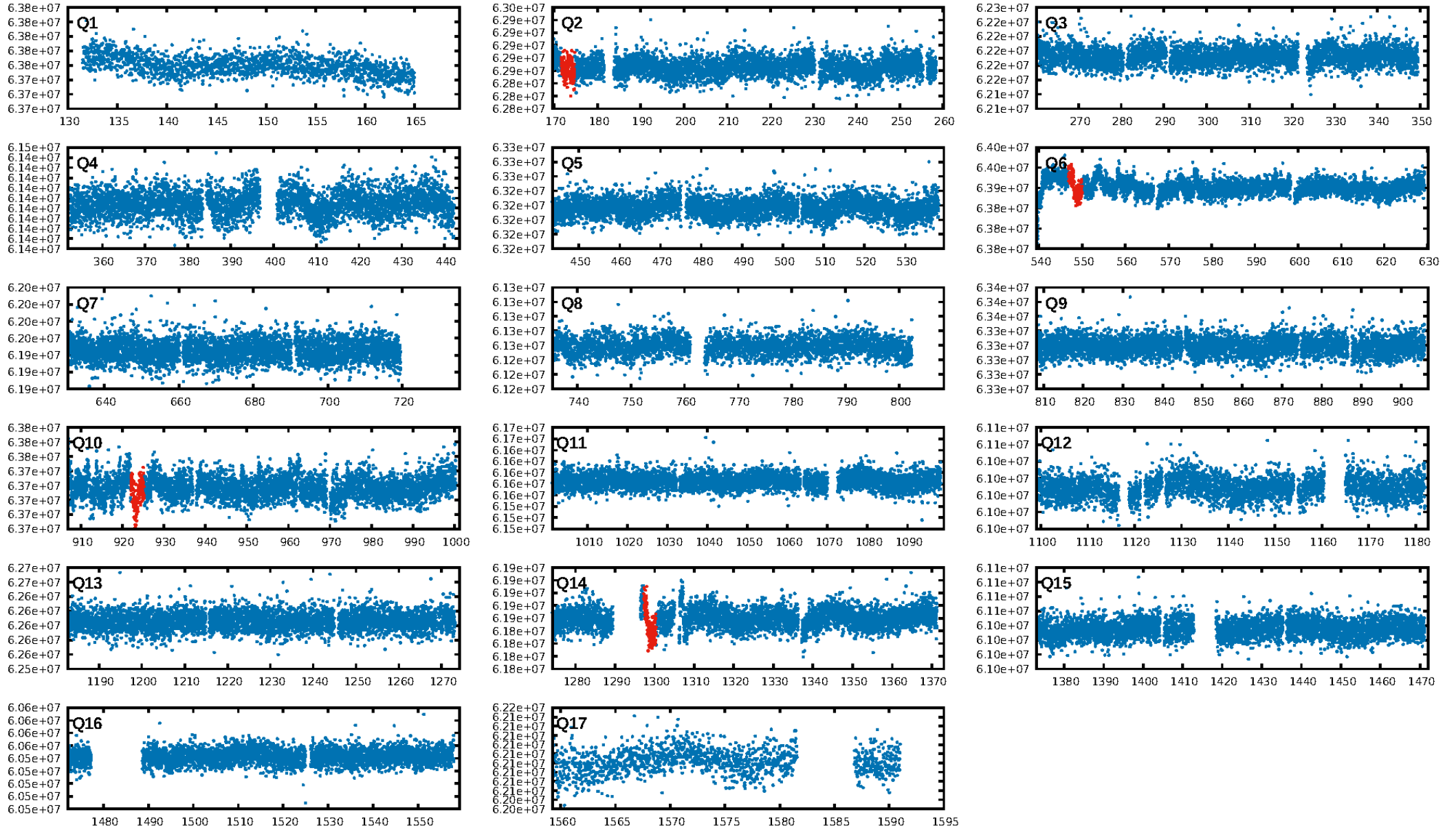
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 98.8%  
Bootstrap-pfa: 1.68e-09  
RollingBand-fgt: 0.25 [1/4]  
GhostDiagnostic-chr: 6.112  
Centroid-sig: 0.0%  
Centroid-so: 3.716 arcsec [3.12 $\sigma$ ]  
OotOffset-rm: 7.020 arcsec [2.97 $\sigma$ ]  
KicOffset-rm: 7.180 arcsec [2.63 $\sigma$ ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [4/4]

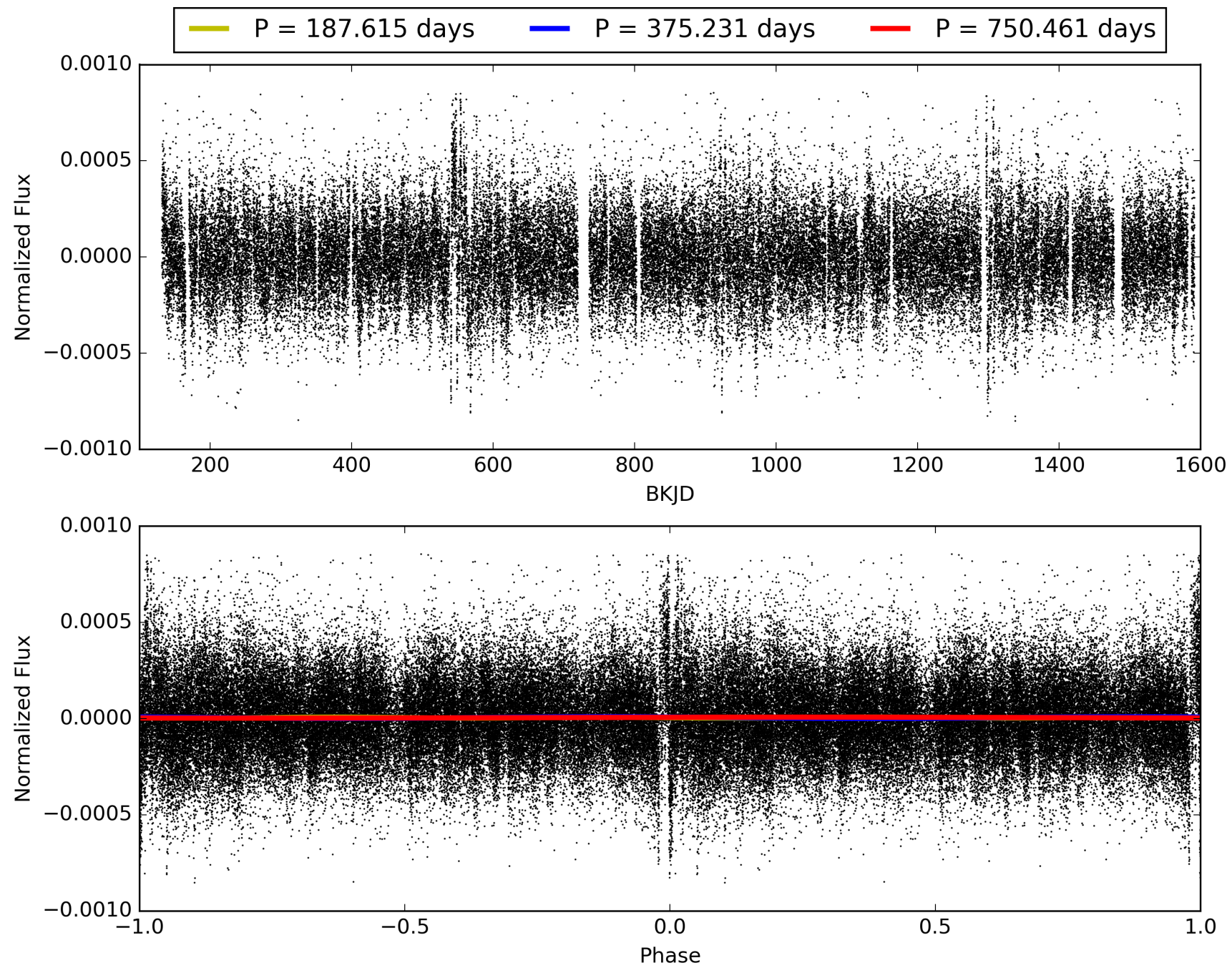
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:46:07 Z

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

# TCE 008813701-01, PDC Light Curves

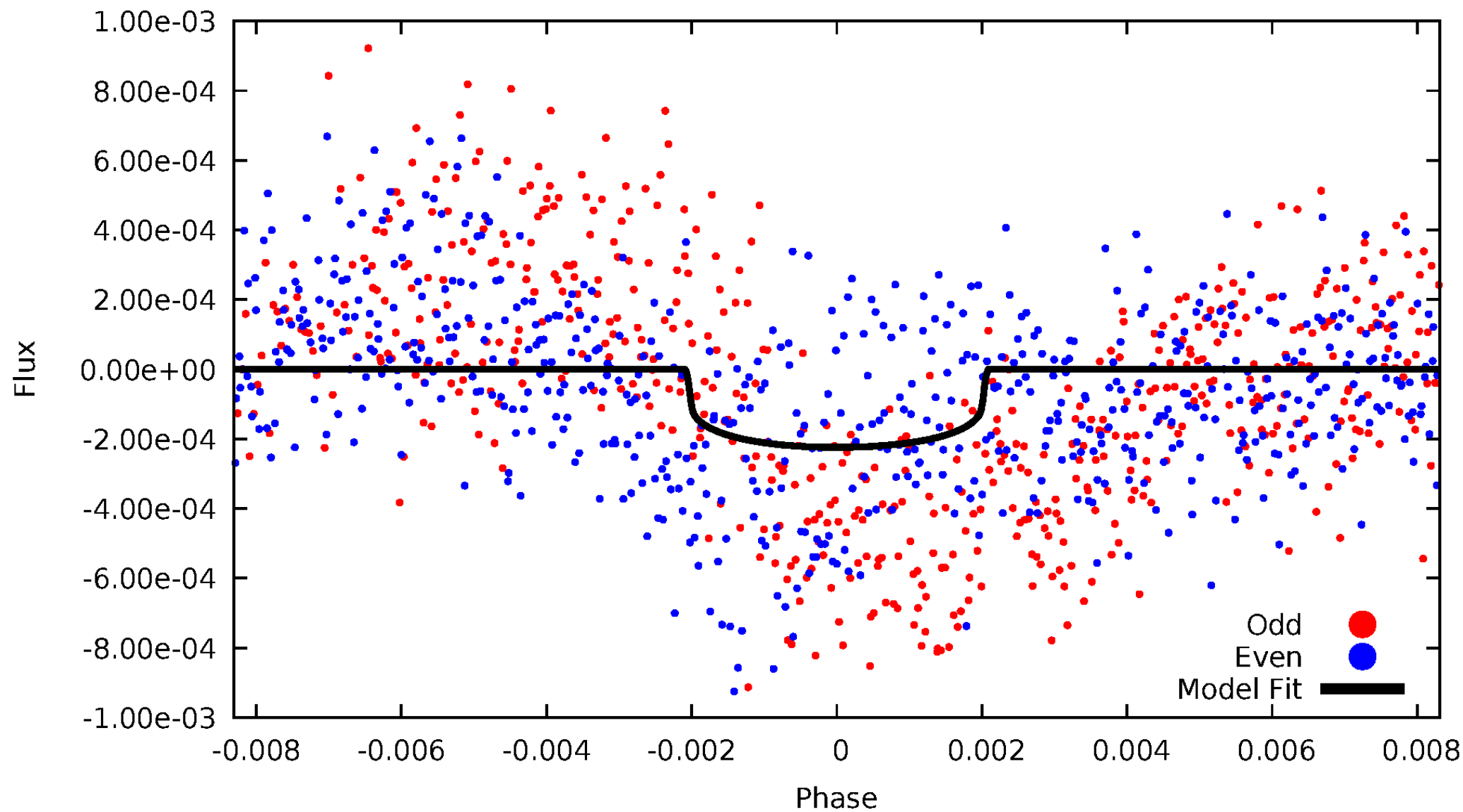


TCE 008813701-01



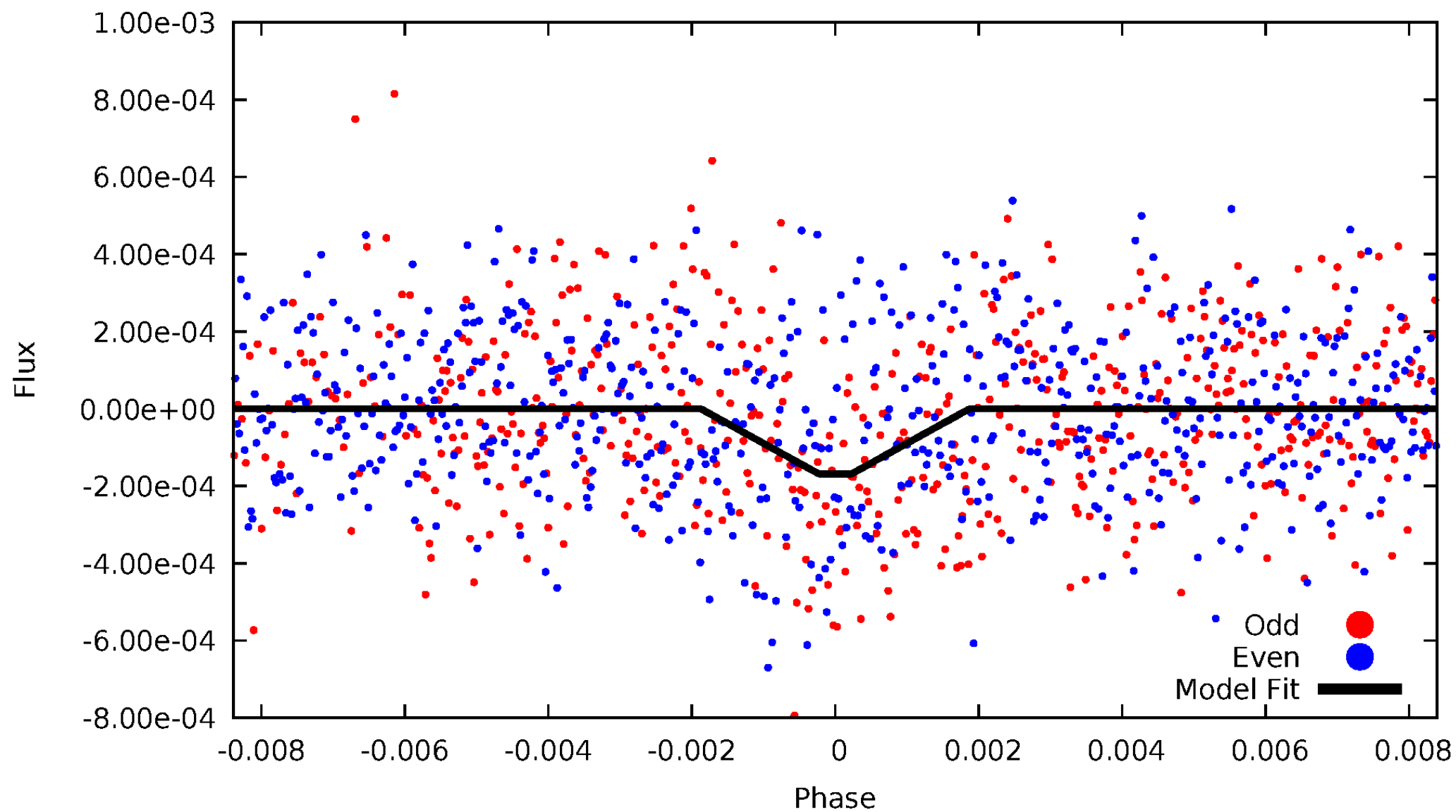
# DV Odd/Even

TCE 008813701-01



# ALT Odd/Even

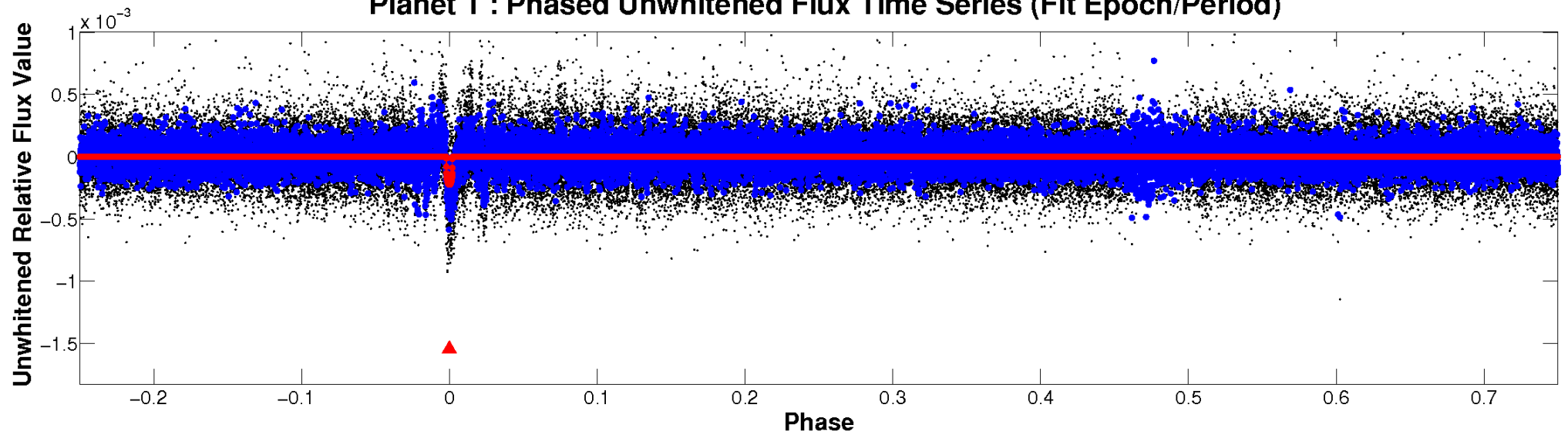
TCE 008813701-01



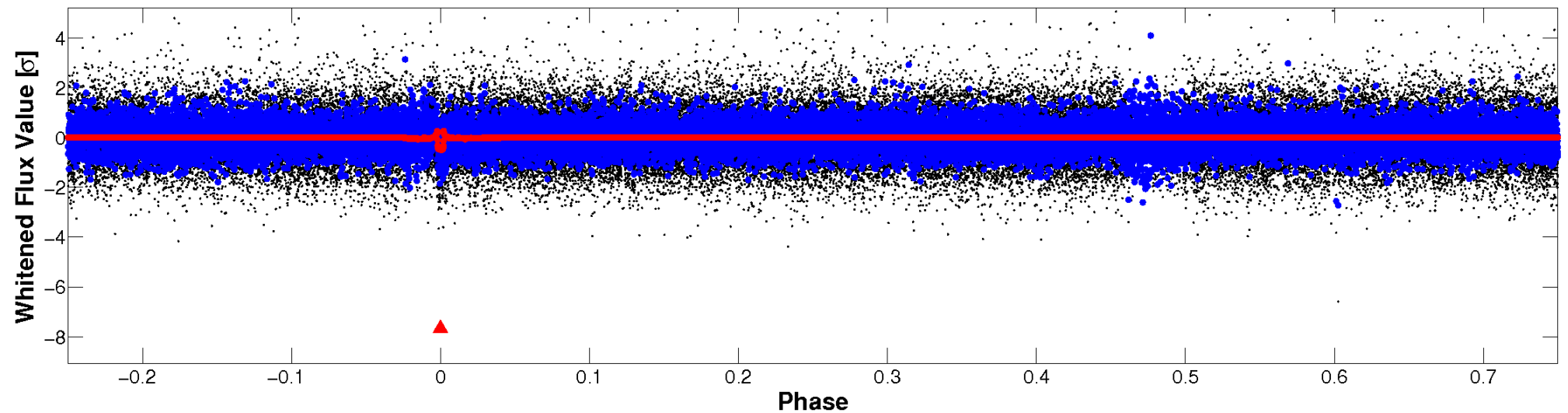


# Non-Whitened Vs. Whitened Light Curve

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

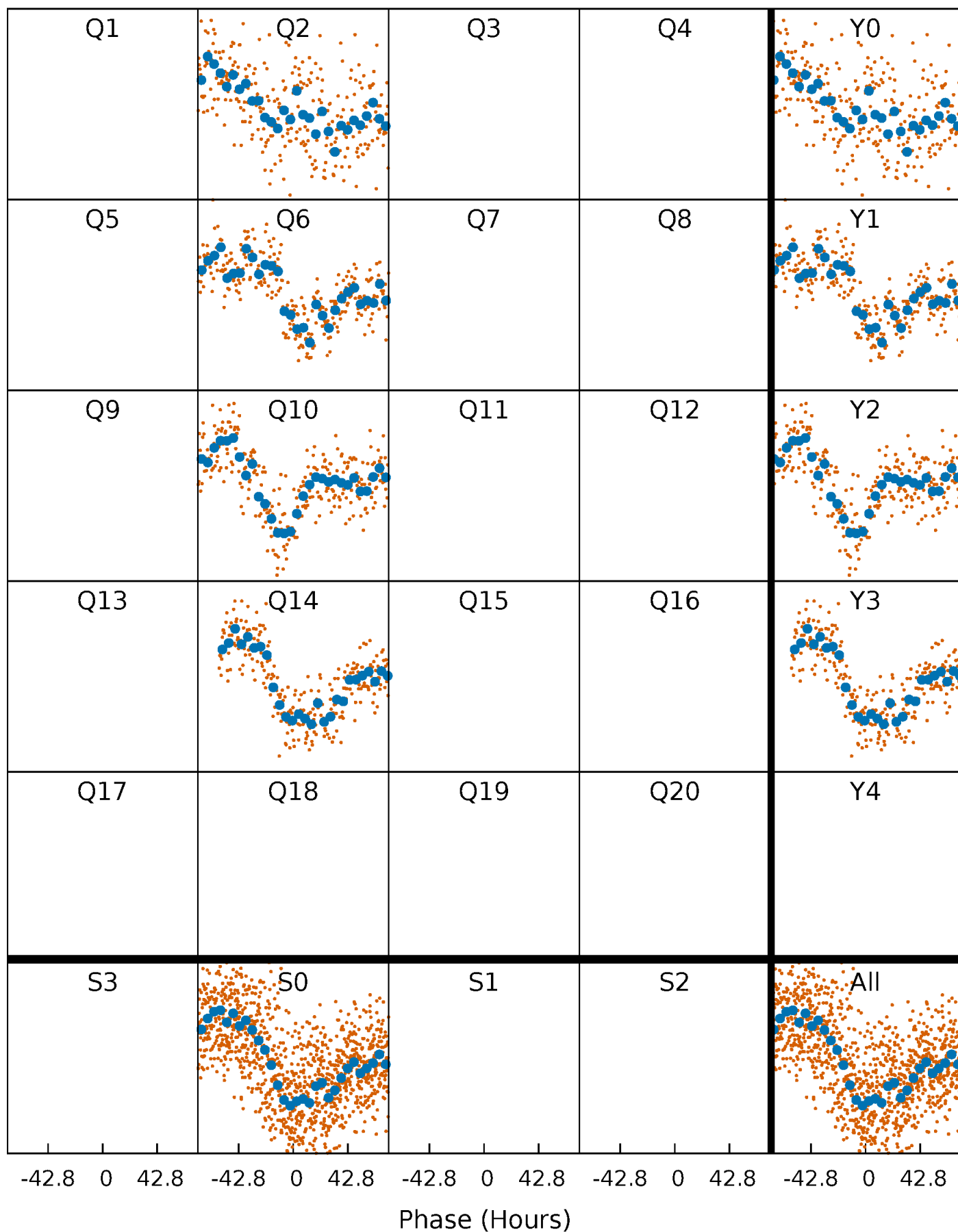


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

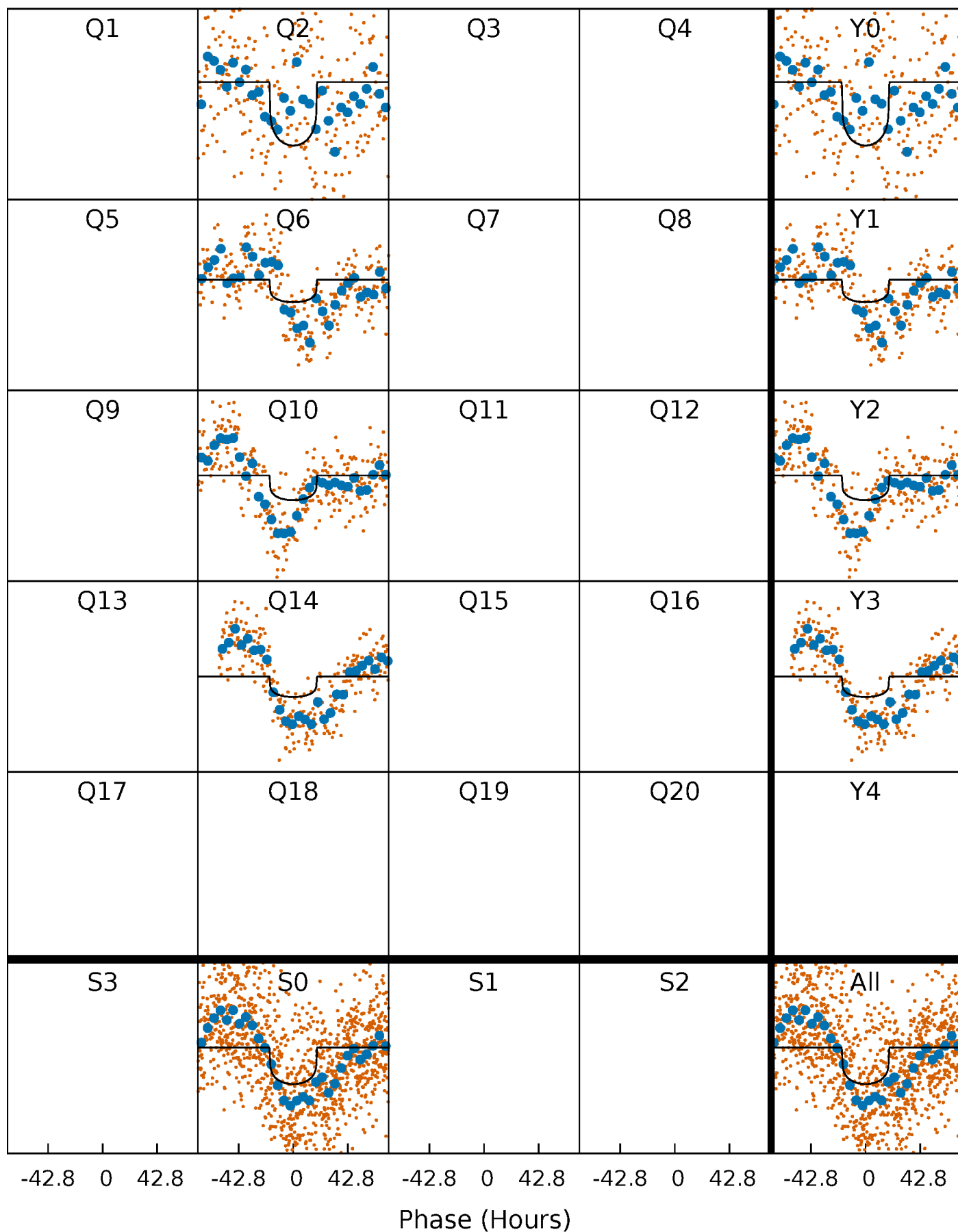
TCE 008813701-01 P=375.230590 Days  $T_0=173.140835$  (BKJD)





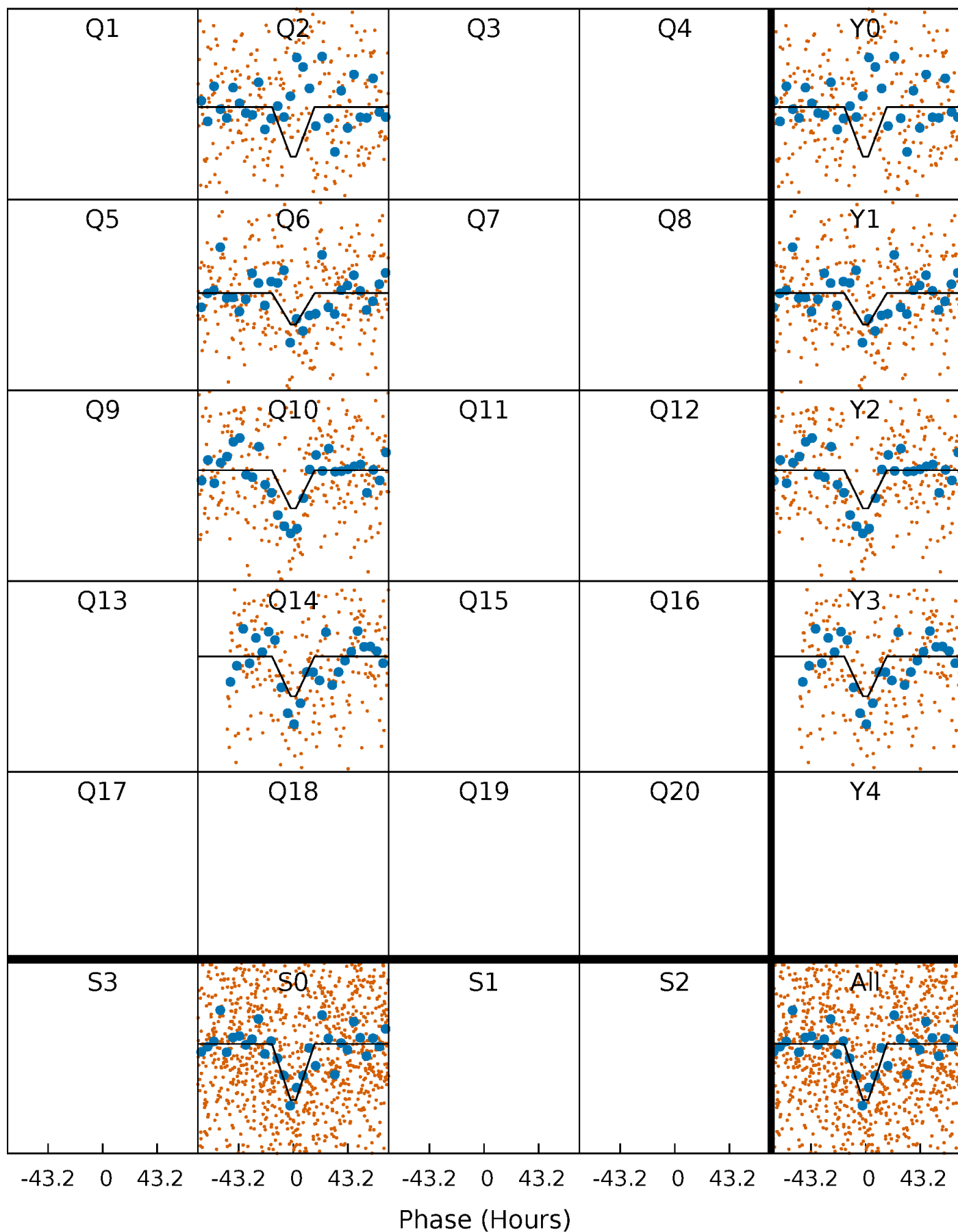
# DV Quarter-Phased Transit Curves

TCE 008813701-01 P=375.230590 Days  $T_0=173.140835$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

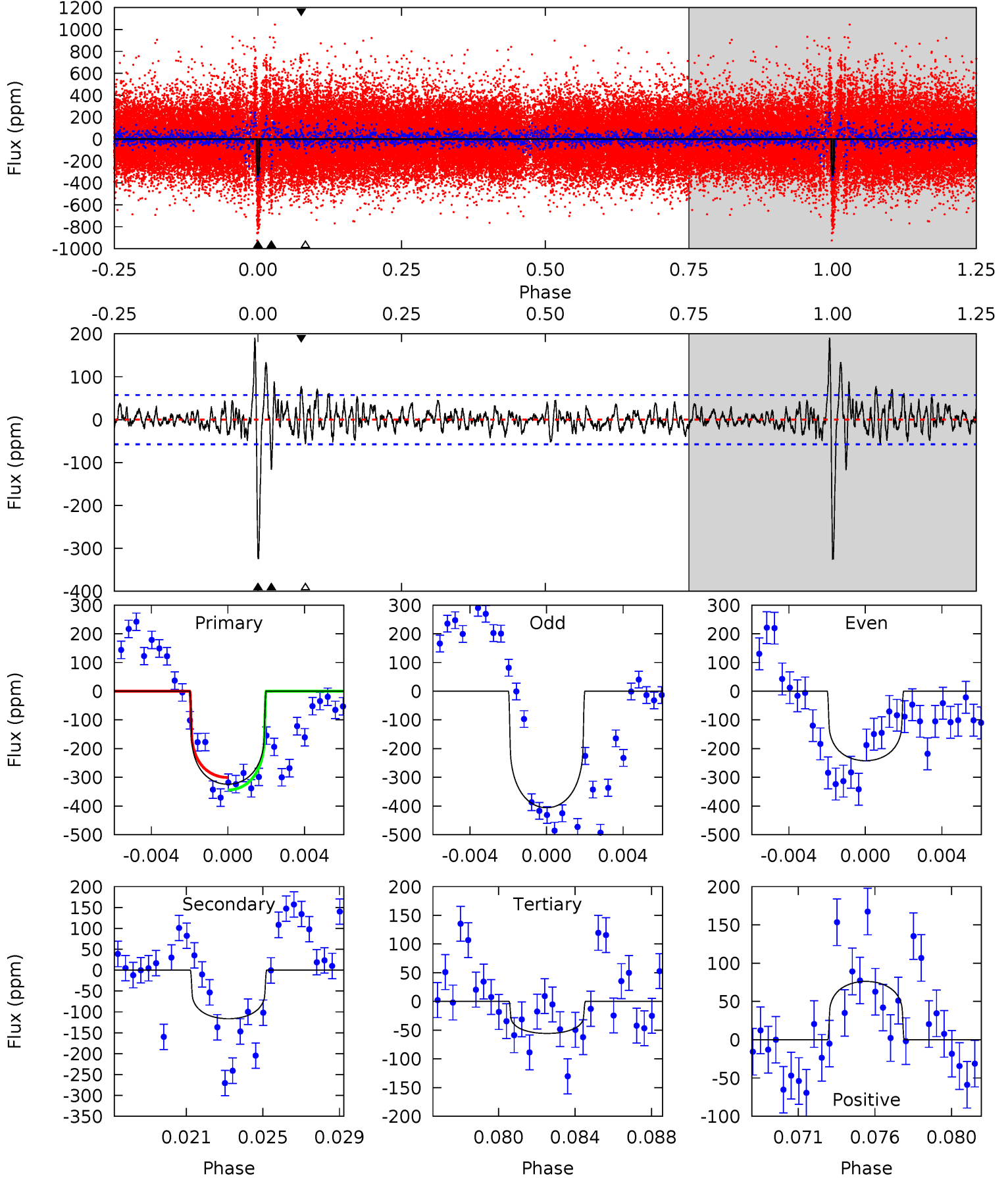
TCE 008813701-01 P=375.166973 Days  $T_0=173.087226$  (BKJD)



# DV Model-Shift Uniqueness Test

008813701-01, P = 375.230590 Days, E = 173.140835 Days

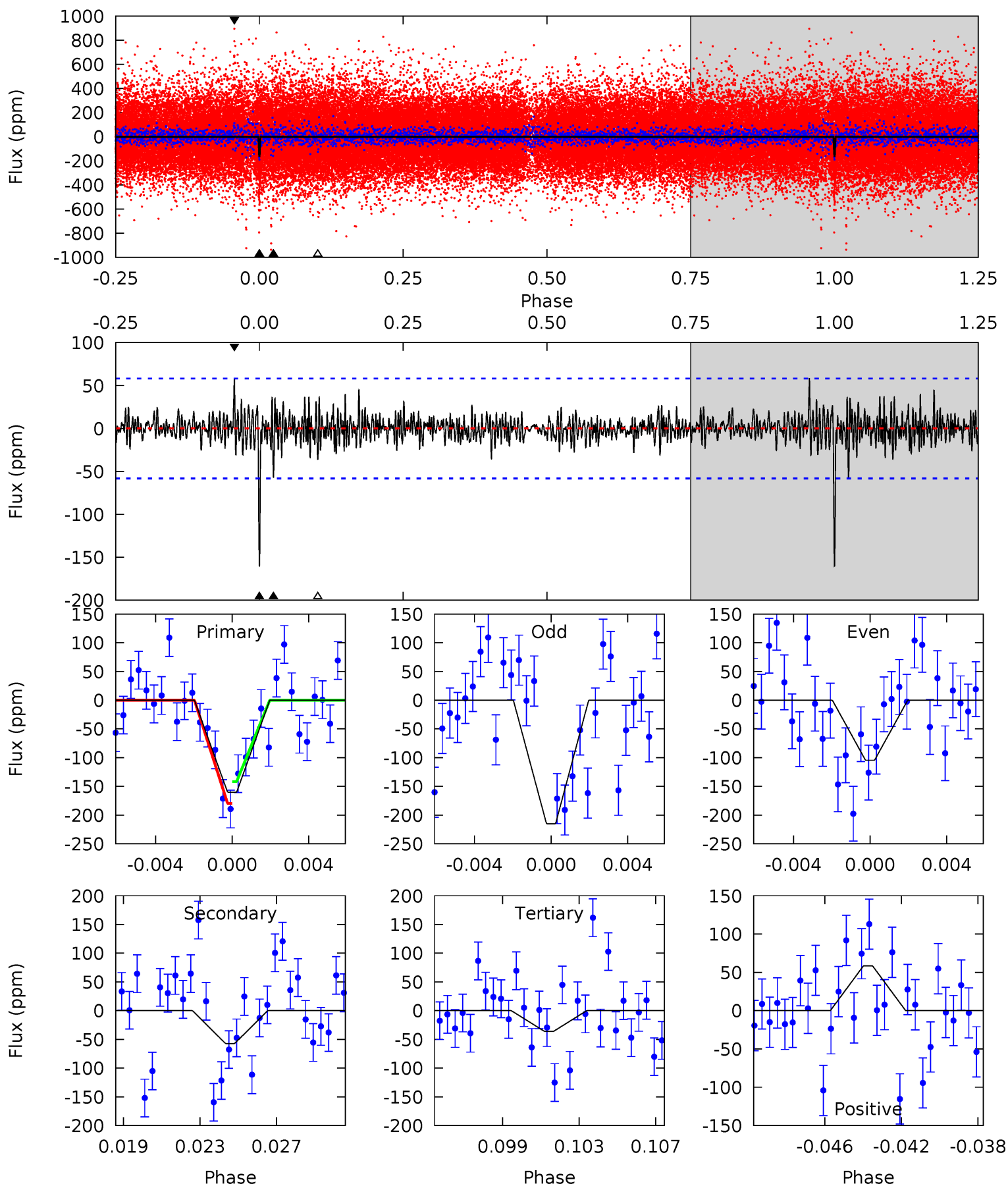
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.3	10.5	5.04	6.89	5.19	2.86	2.16	24.3	22.4	5.49	3.64	7.41	0.89	0.37	1.95



# Alt Model-Shift Uniqueness Test

008813701-01, P = 375.166973 Days, E = 173.087226 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
14.3	5.12	3.23	5.24	5.21	2.89	1.01	11.1	9.11	1.89	-0.12	4.96	0.74	0.27	1.69



### Stellar Parameters For KIC 008813701

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5687^{+152}_{-152}$	$4.582^{+0.040}_{-0.160}$	$-0.340^{+0.300}_{-0.300}$	$0.790^{+0.194}_{-0.065}$	$0.882^{+0.088}_{-0.107}$	$2.516^{+0.507}_{-1.116}$
	+3%/-3%	+1%/-3%	+88%/-88%	+25%/-8%	+10%/-12%	+20%/-44%
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 008813701-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-116 \pm 11$	$1.26^{+0.37}_{-0.32}$	$322^{+18}_{-13}$	$5011^{+728}_{-445}$	$37399^{+30054}_{-14607}$
Alt.	$-57 \pm 11$	$1.18^{+0.32}_{-0.35}$	$322^{+19}_{-12}$	$4522^{+688}_{-457}$	$21137^{+21608}_{-9073}$

$T_{\text{max}}$  = 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

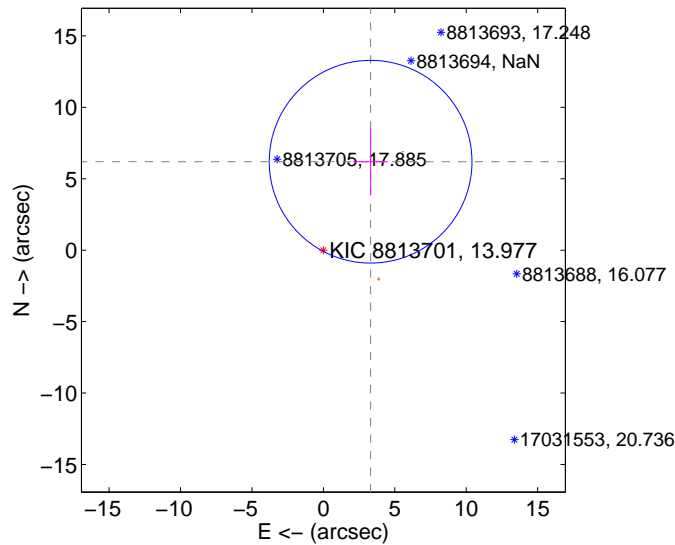
Supplemental centroid analysis for 008813701-01. Kepler magnitude: 13.98. Transit SNR 7.89

There are 0 quarters with good PRF difference image offsets

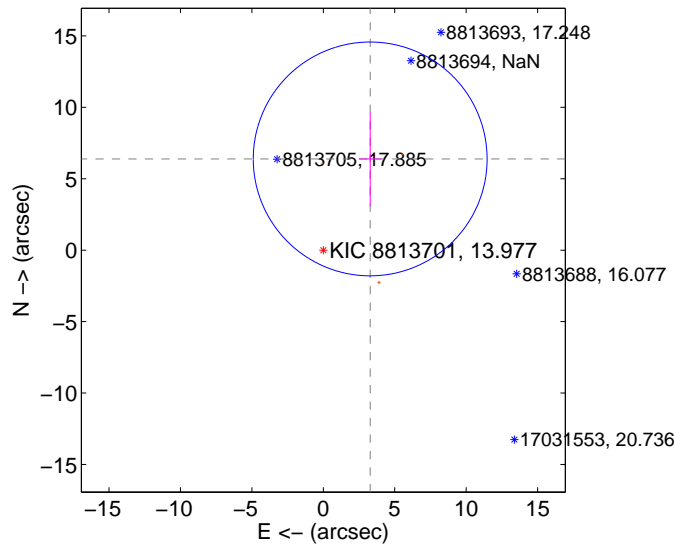
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.020 \pm 2.365$	2.97	$-3.307 \pm 1.214$	$6.192 \pm 2.332$
PRF-fit source offset from KIC position	$7.180 \pm 2.728$	2.63	$-3.281 \pm 0.794$	$6.387 \pm 3.264$
photometric centroid source offset	$3.72 \pm 1.19$	3.12	$0.39 \pm 1.27$	$3.70 \pm 1.19$

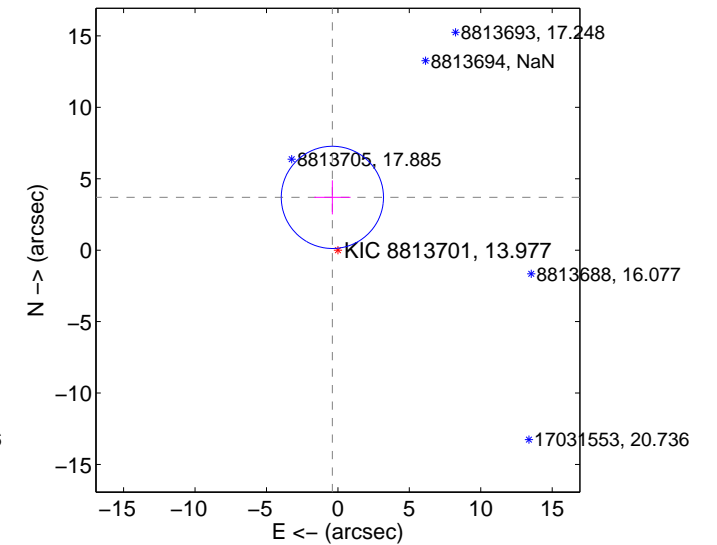
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



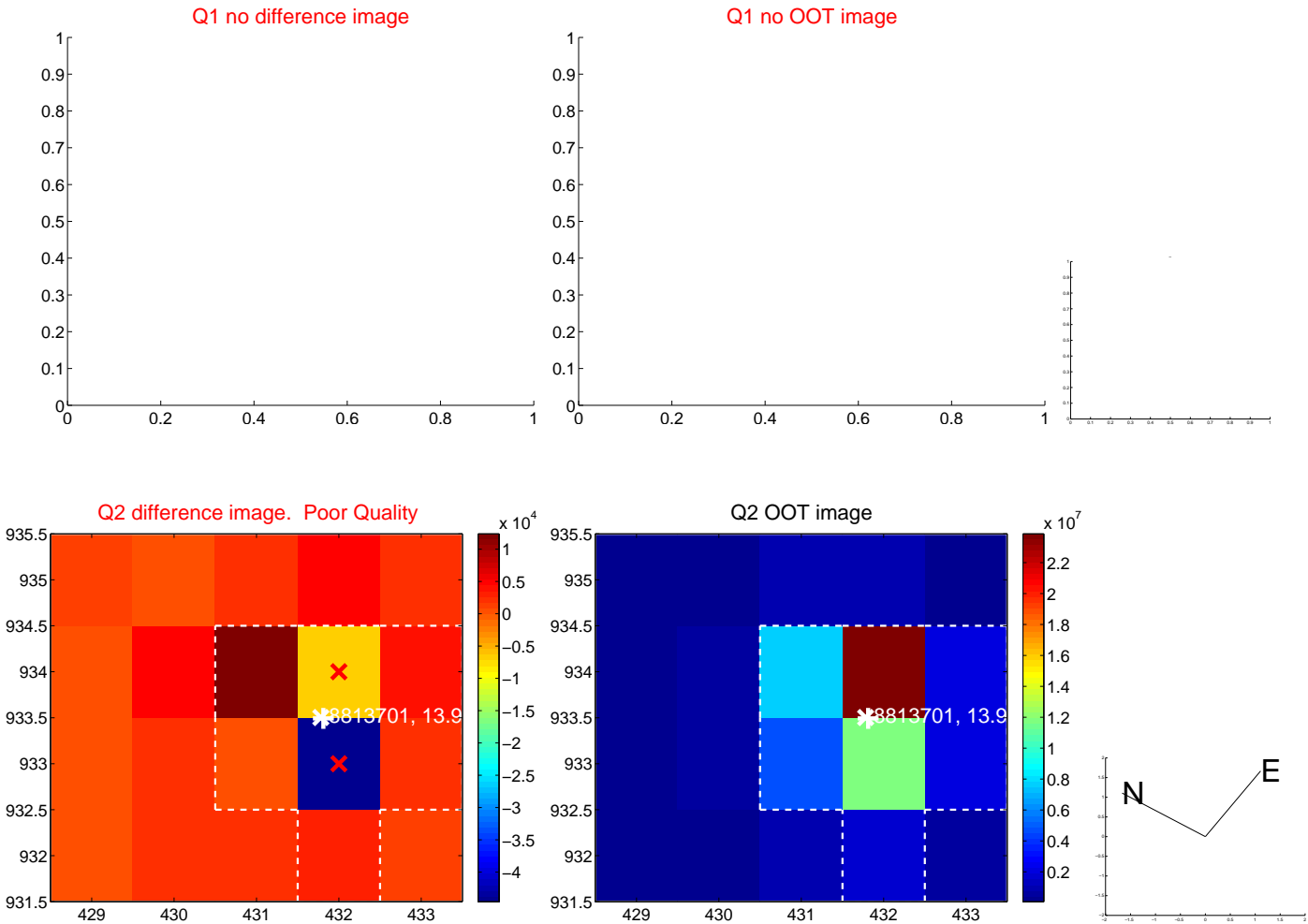
offset from photometric centroids



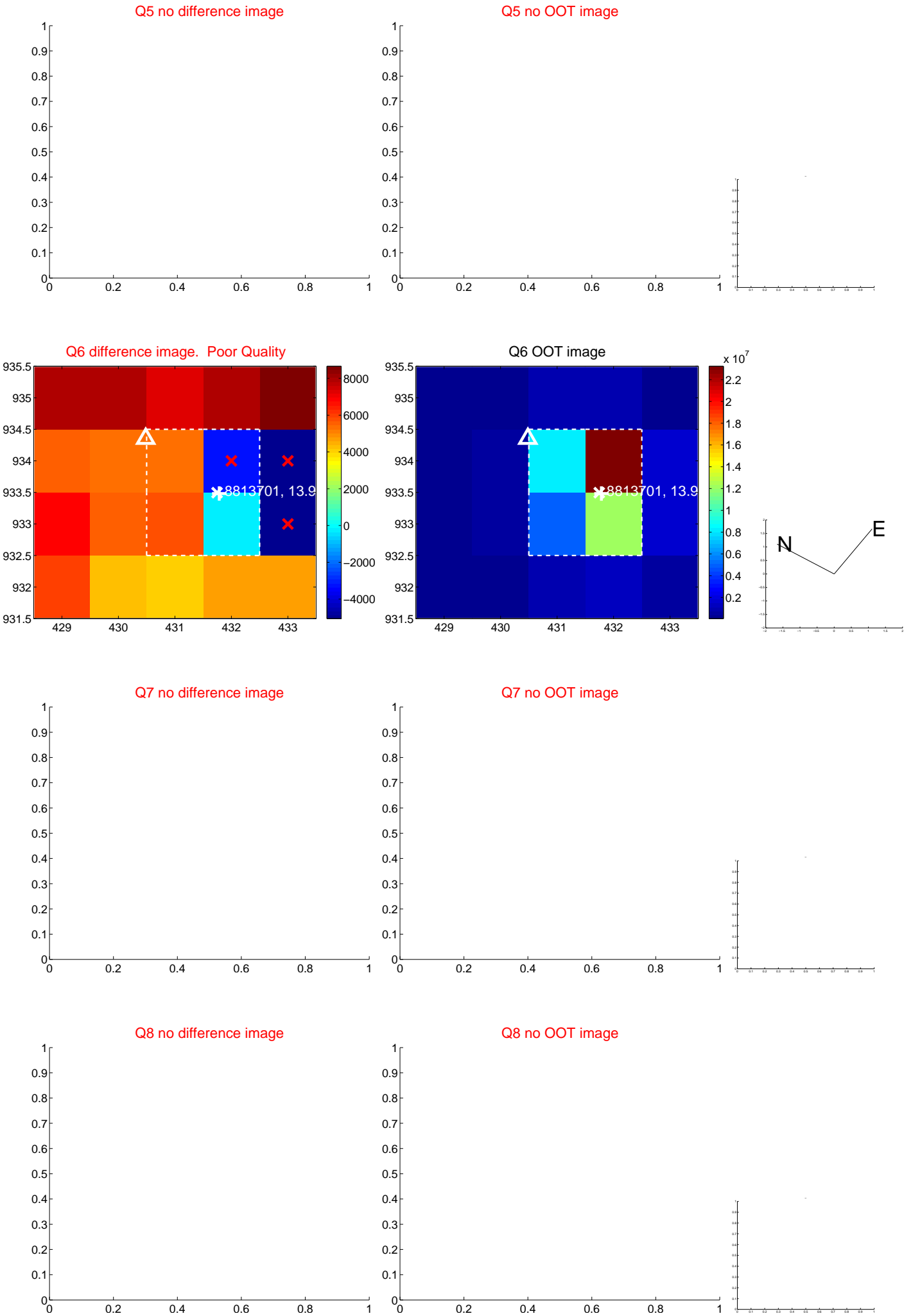
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



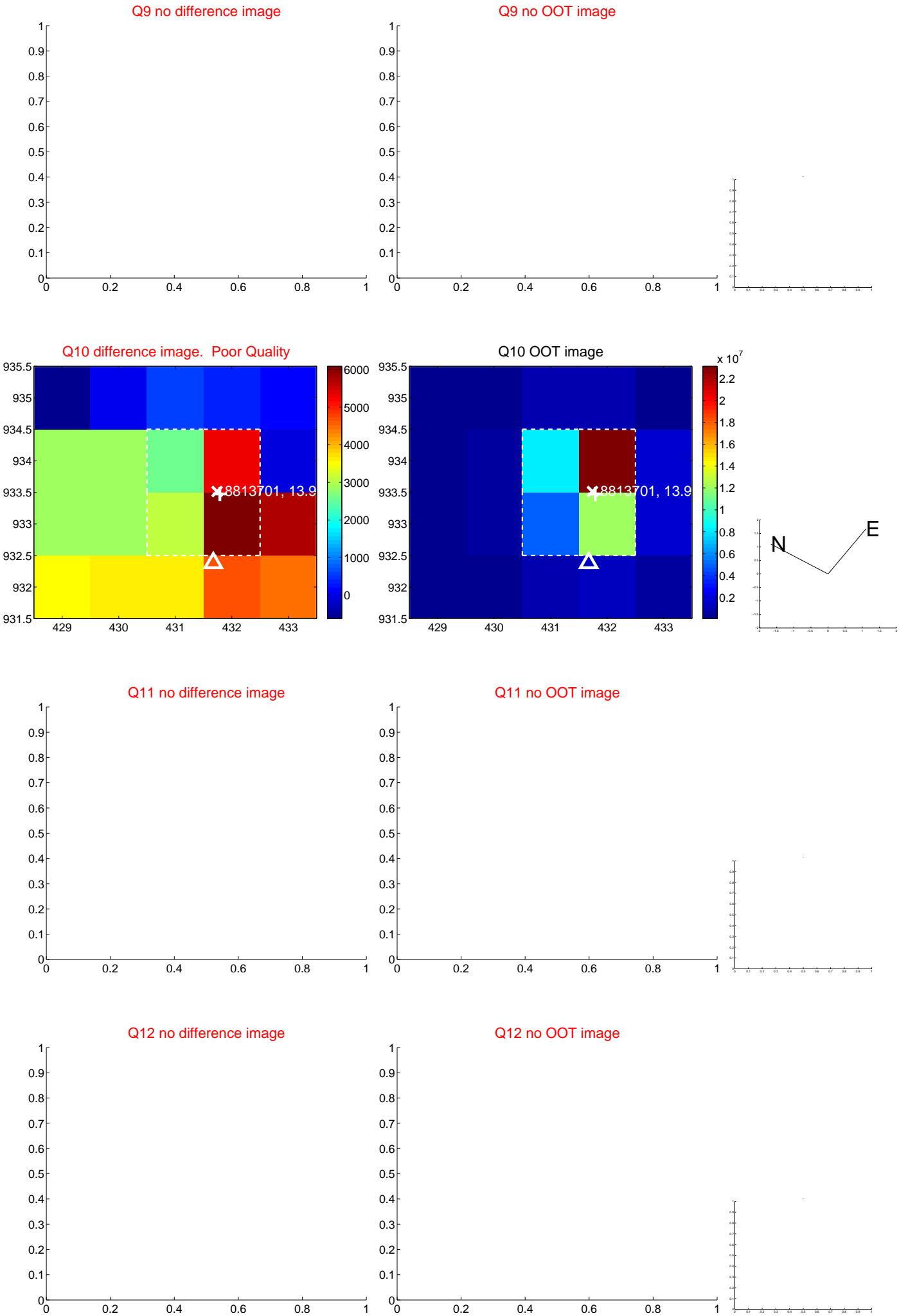
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



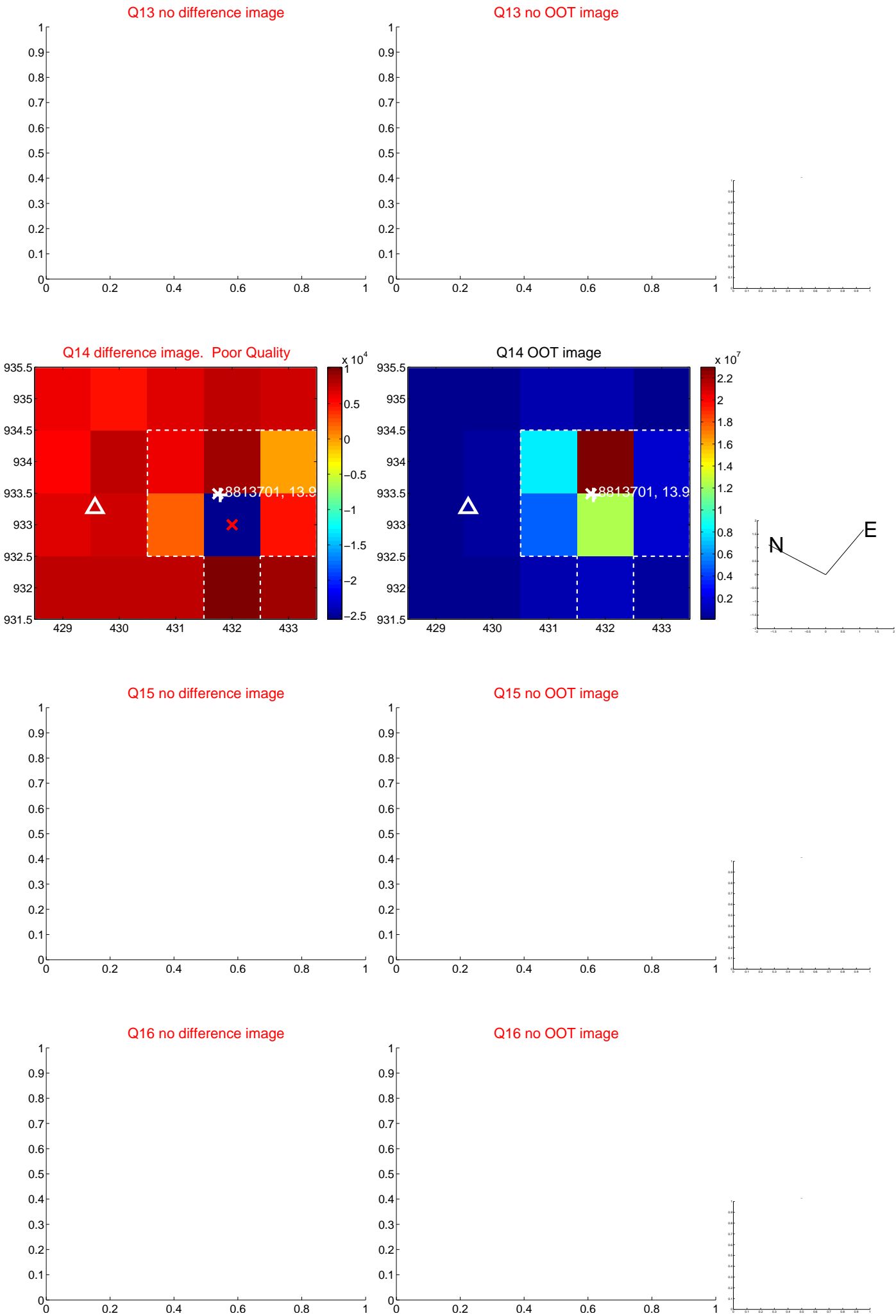
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



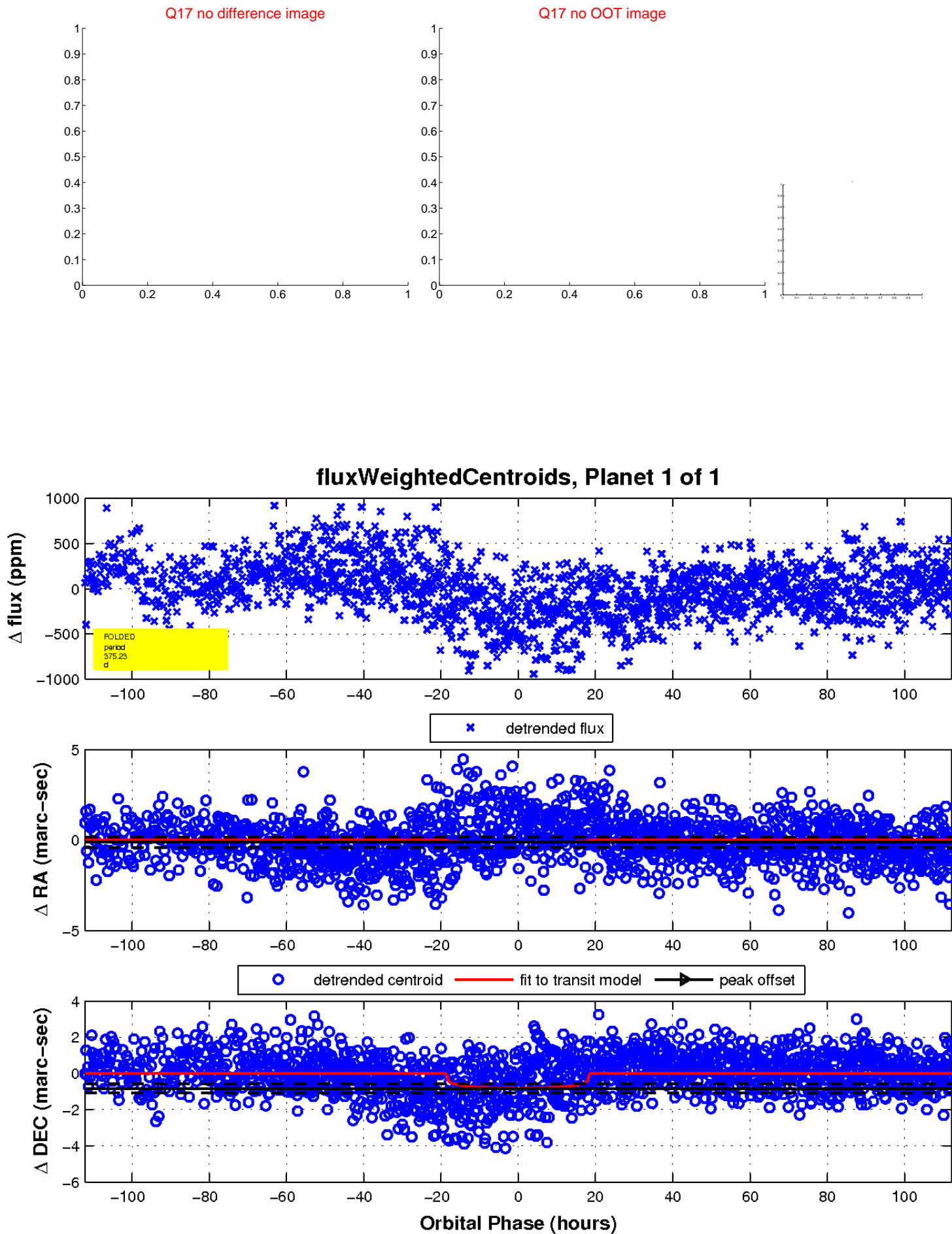
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

