

# KIC 007777365

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
007777365-01	OBS	6916.01	0.885140	131.867593	140.3	3.871	7.6	9.4	0.82	5392	1.10	1792.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007777365-01	OBS	FP	0.00	0	0	1	1	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.

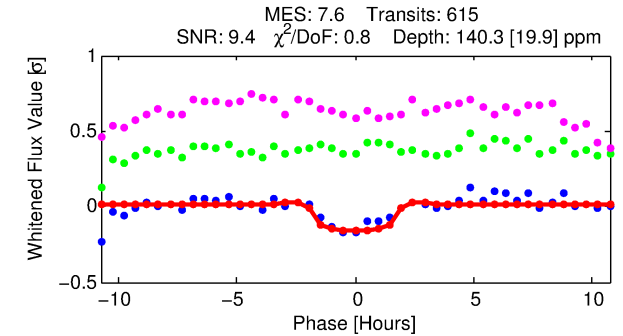
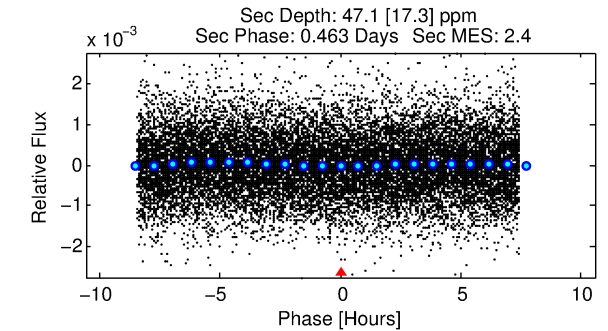
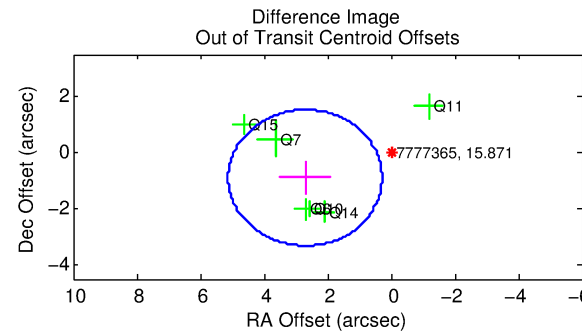
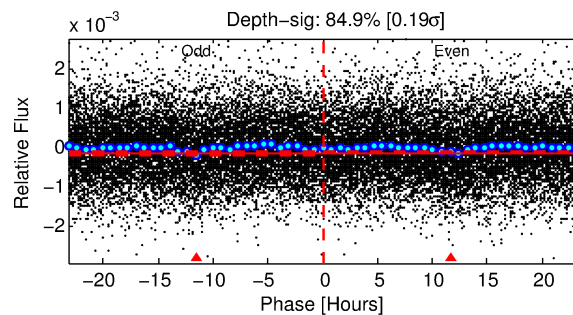
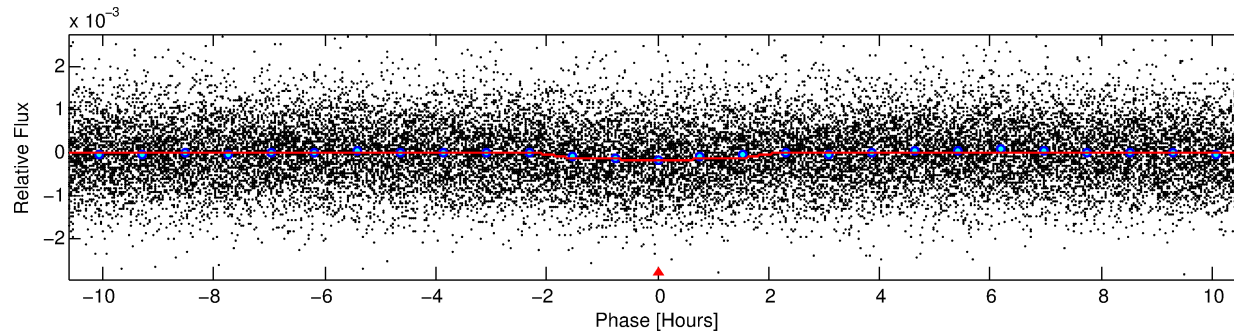
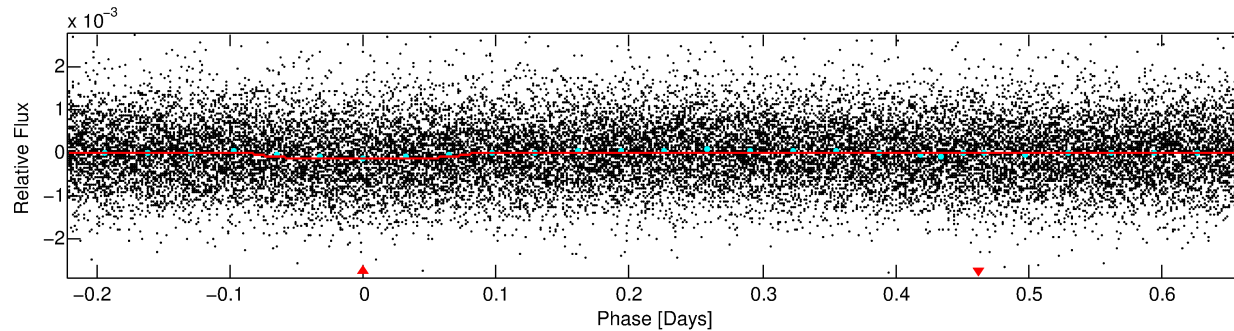
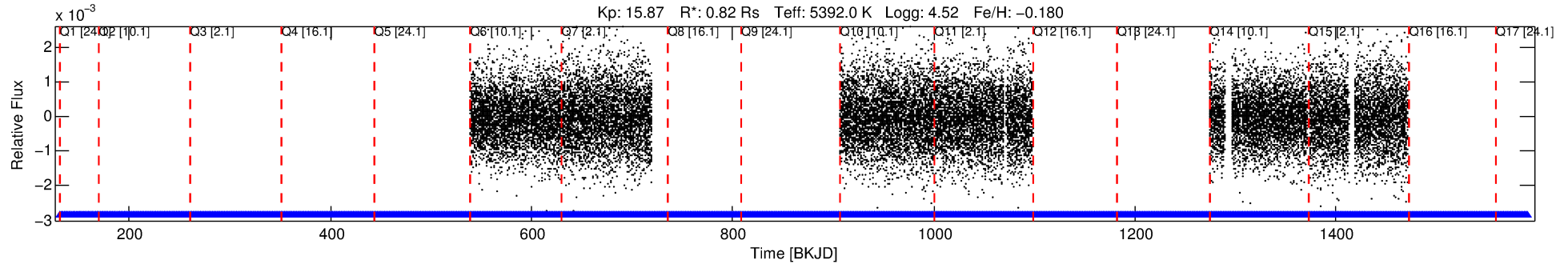
## Ephemeris Match Information For 007777365-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
007777365-01	7777365	007777443-pri	7777443	1:1	74.7	-17	-6	11.91	15.87	2735.70	Direct-PRF	0	1.64	0.85

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol 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. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 7777365 Candidate: 1 of 1 Period: 0.885 d  
KOI: K06916.01 Corr: 0.920



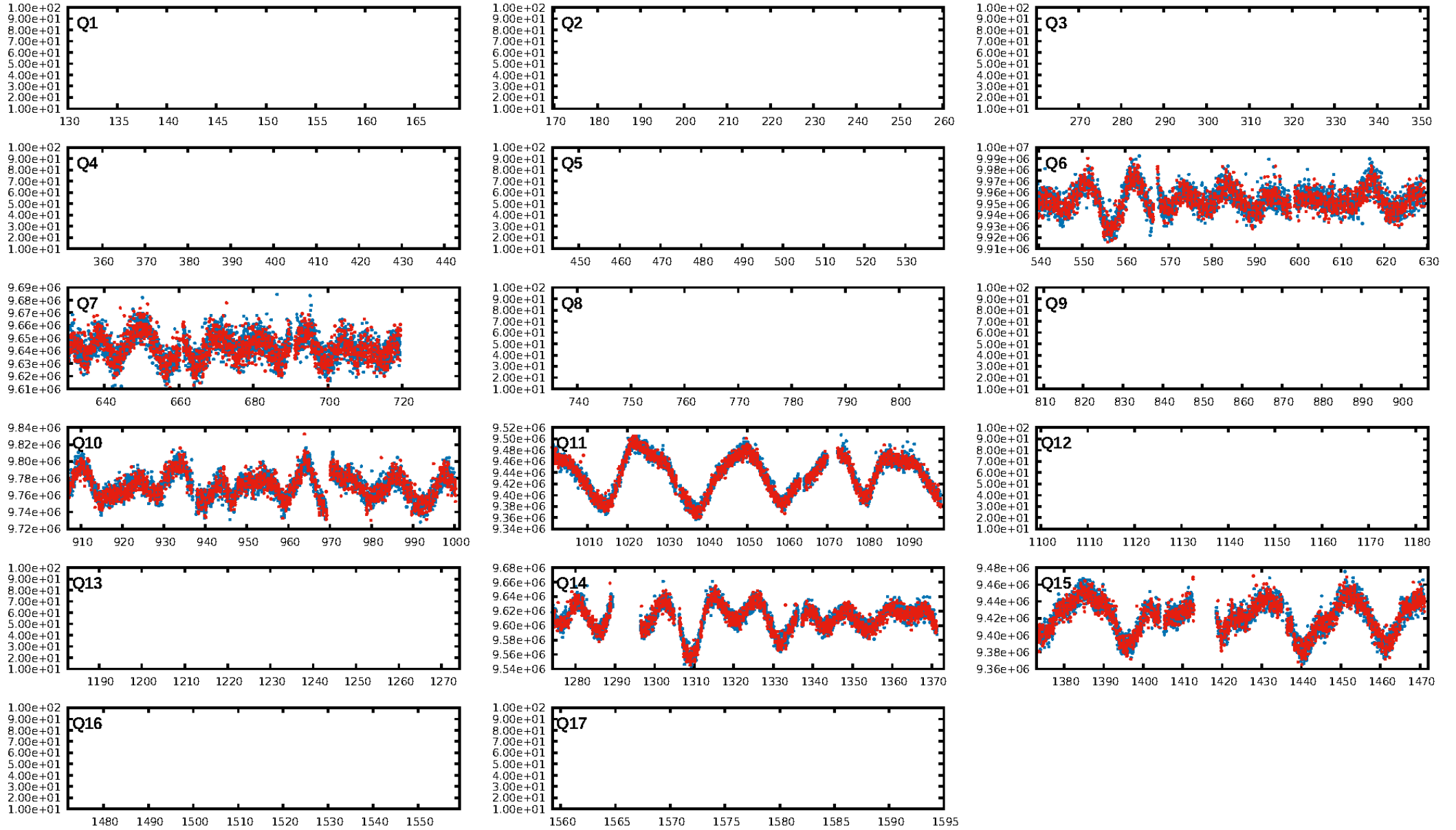
## DV Fit Results:

Period = 0.88514 [0.00001] d  
Epoch = 131.8676 [0.0044] BKJD  
Rp/R\* = 0.0123 [0.0111]  
a/R\* = 1.36 [2.35]  
b = 0.83 [1.48]  
Seff = 1792.26 [455.41]  
Teq = 1659 [105] K  
Rp = 1.10 [1.01] Re  
a = 0.0168 [0.0025] AU  
Ag = 6.10 [11.32] [0.45 $\sigma$ ]  
Teff = 4031 [1863] K [1.27 $\sigma$ ]

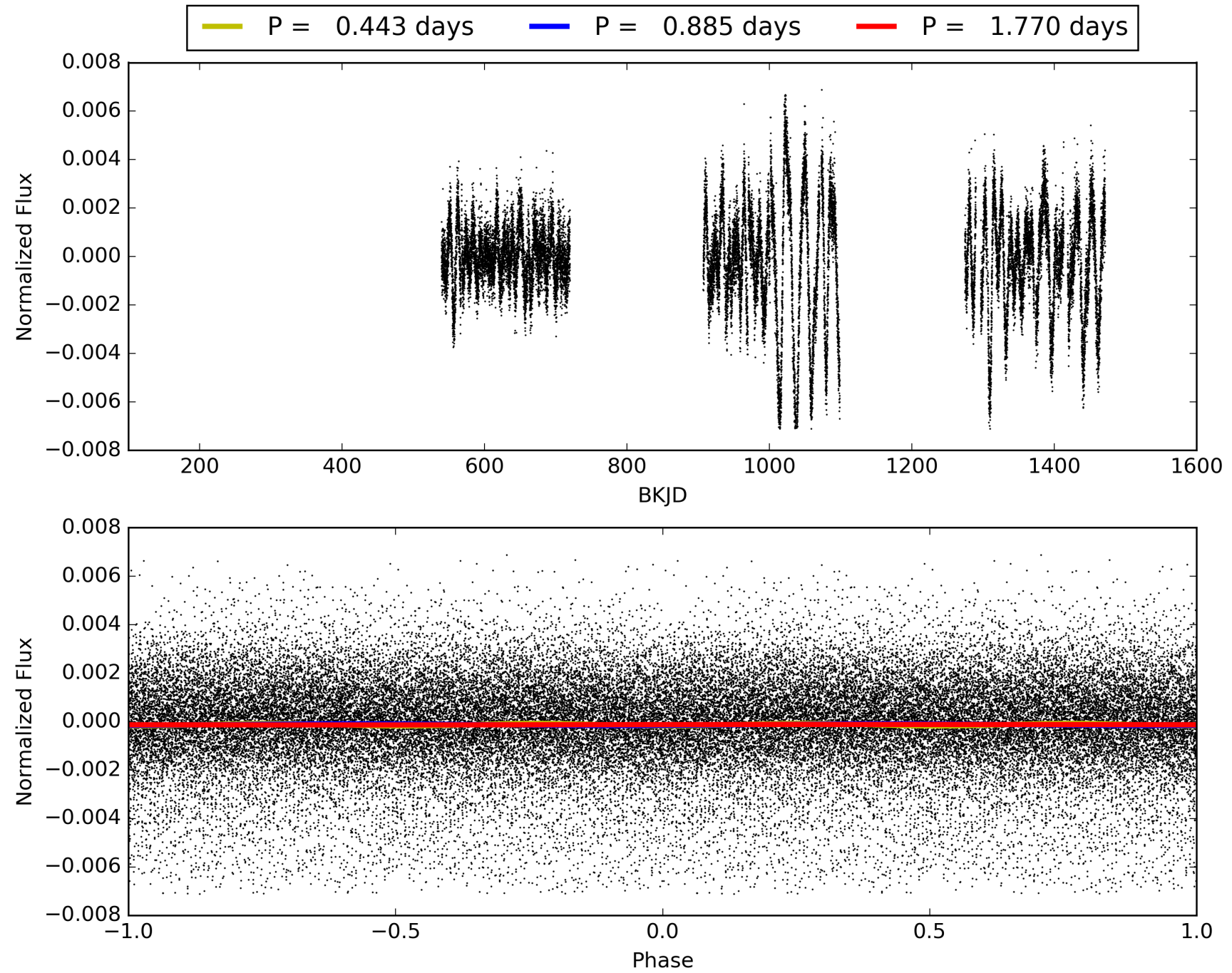
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.71e-10**  
RollingBand-fgt: 1.00 [615/615]  
**GhostDiagnostic-chr: 0.2147**  
Centroid-sig: 0.3%  
Centroid-so: 2.542 arcsec [2.39 $\sigma$ ]  
**OotOffset-rm: 2.848 arcsec [3.53 $\sigma$ ]**  
**KicOffset-rm: 3.002 arcsec [3.71 $\sigma$ ]**  
OotOffset-st: 3/3/0/0 [6]  
KicOffset-st: 3/3/0/0 [6]  
DiffImageQuality-fgm: 0.00 [0/6]  
DiffImageOverlap-fno: 1.00 [6/6]

# TCE 007777365-01, PDC Light Curves

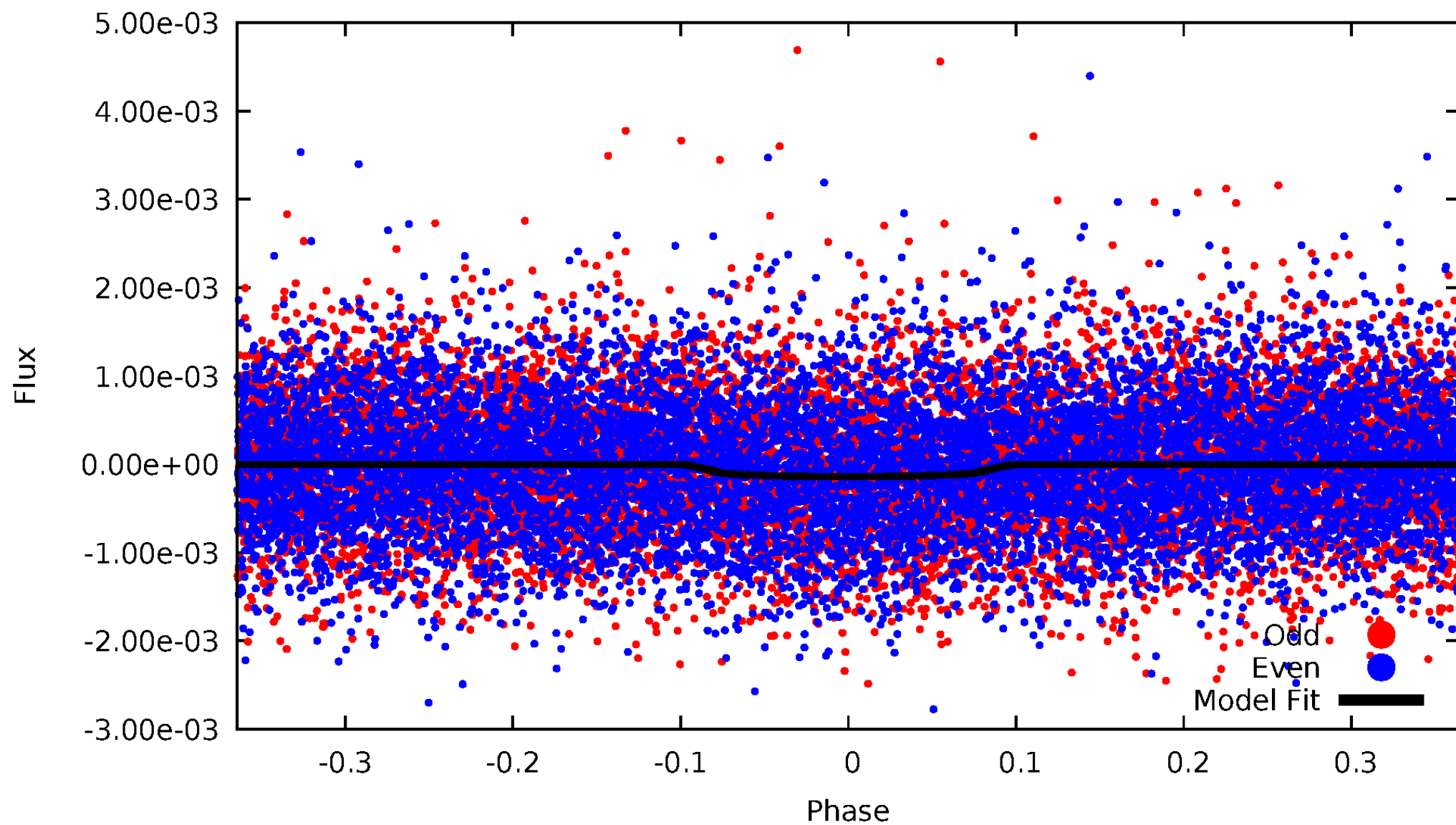


TCE 007777365-01



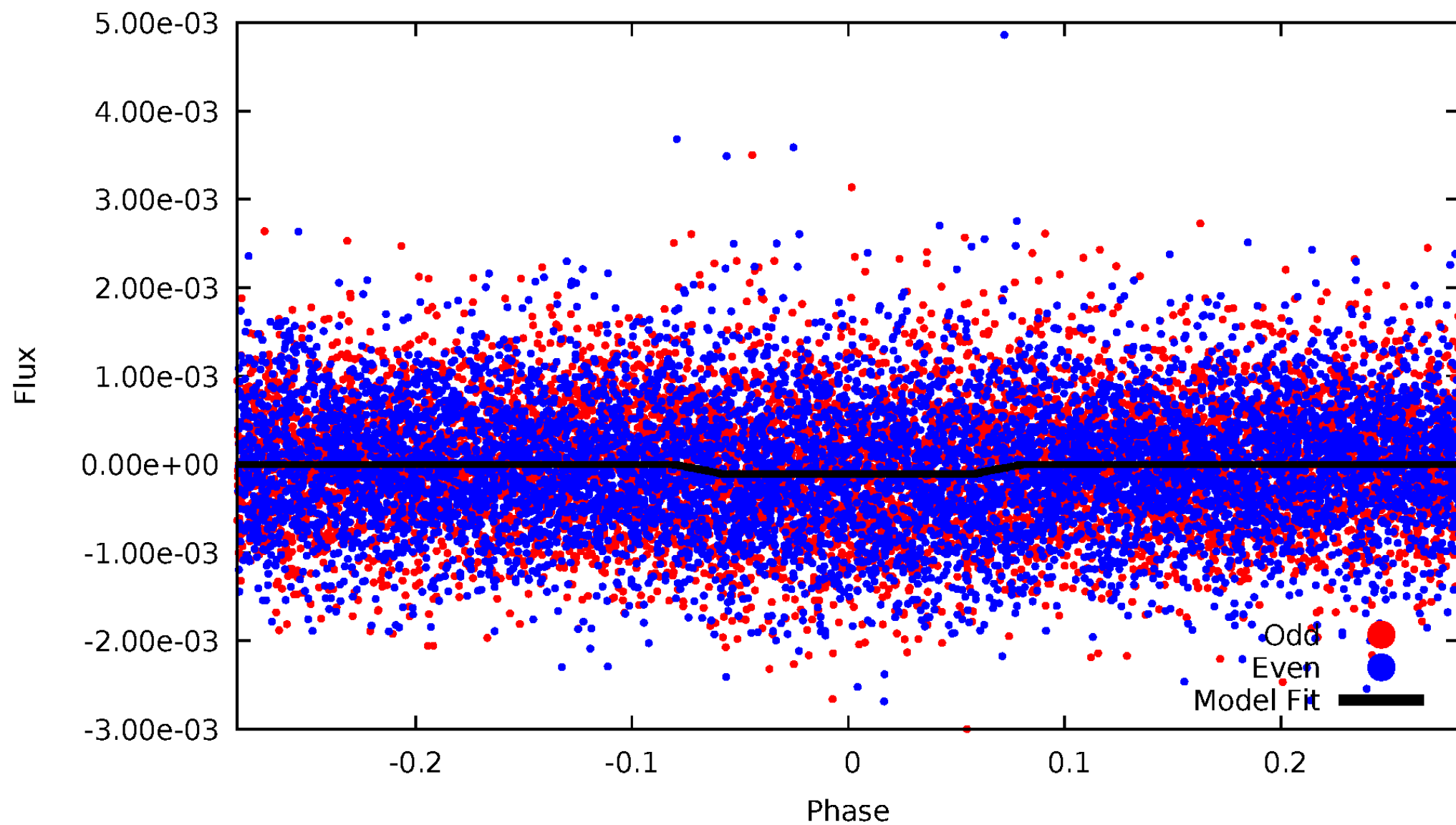
# DV Odd/Even

TCE 007777365-01



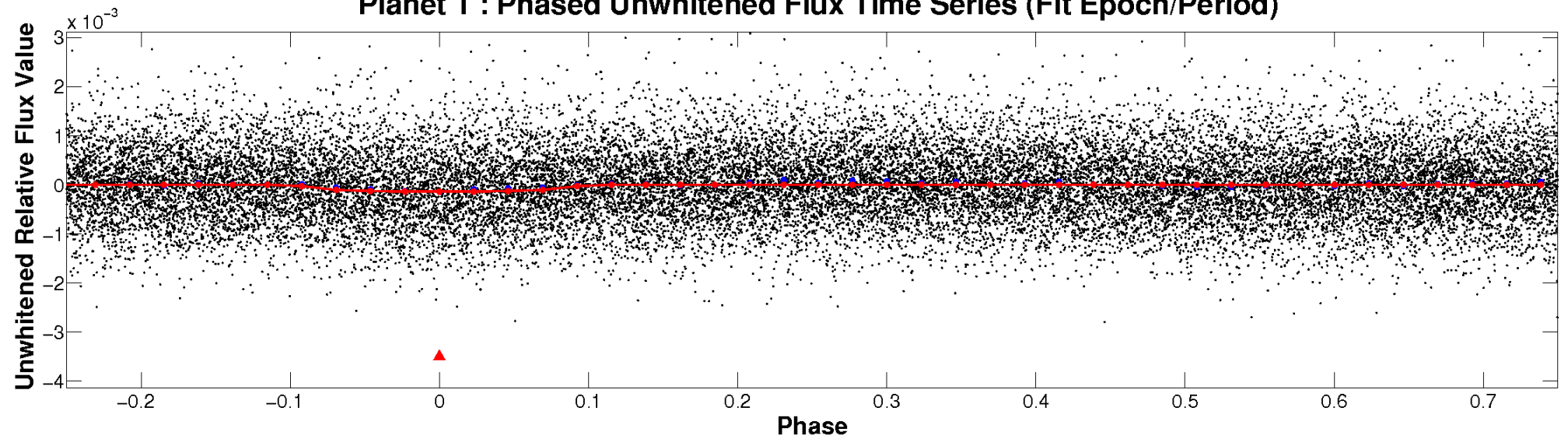
# ALT Odd/Even

TCE 007777365-01

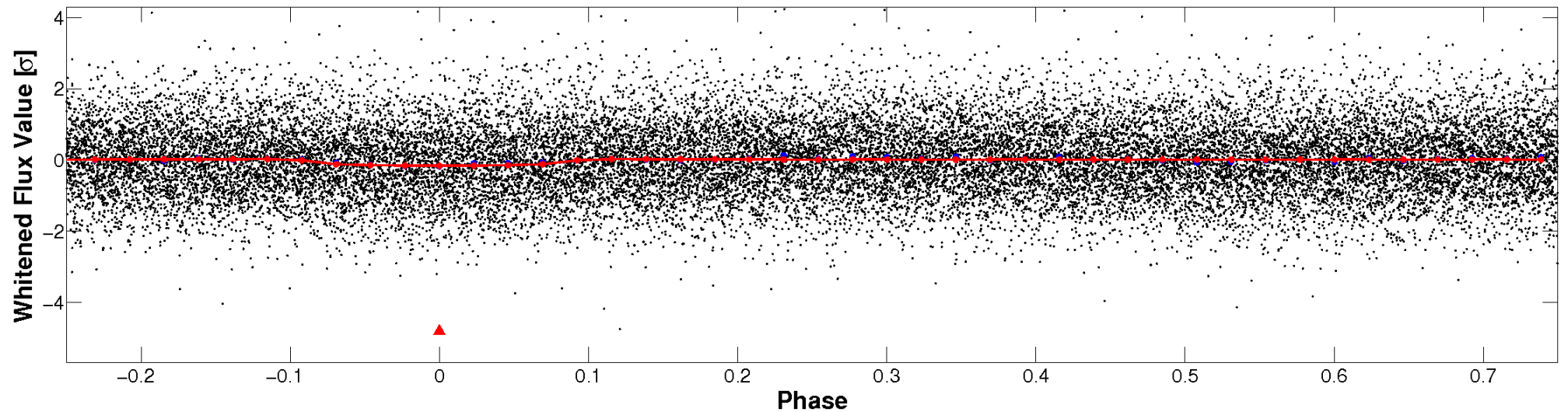


# Non-Whitened Vs. Whitened Light Curve

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

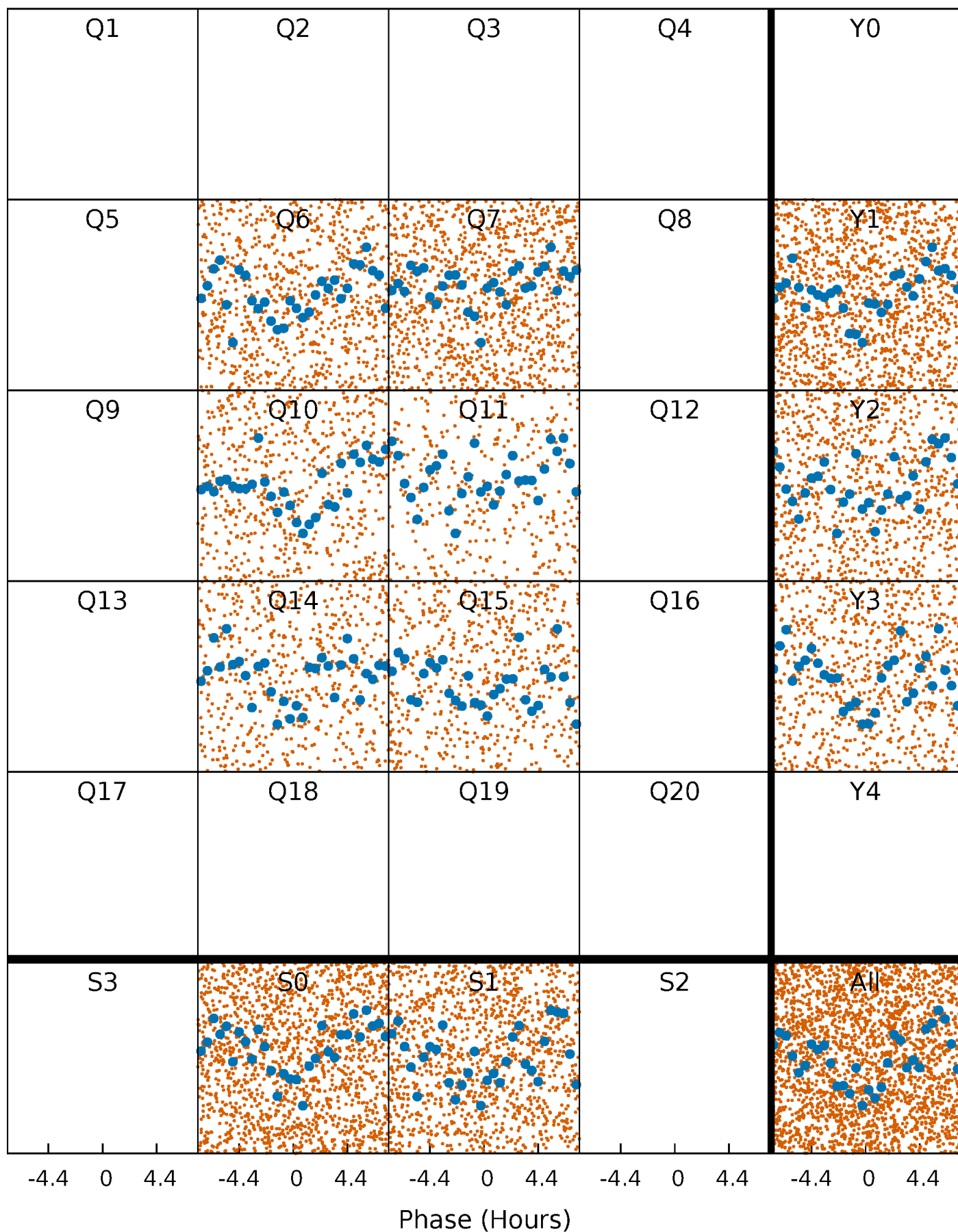


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



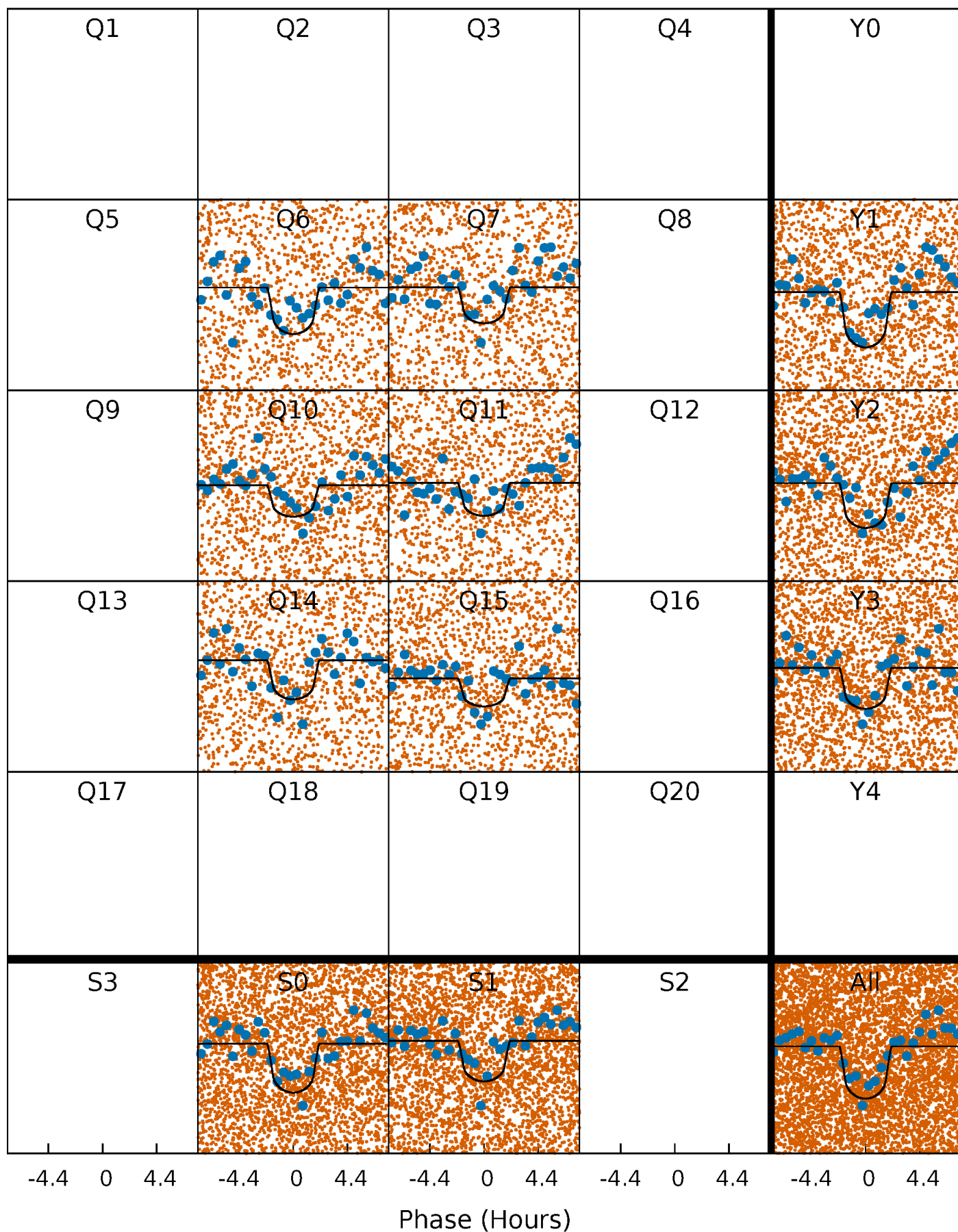
# PDC Quarter-Phased Transit Curves

TCE 007777365-01 P= 0.885140 Days  $T_0=131.867593$  (BKJD)



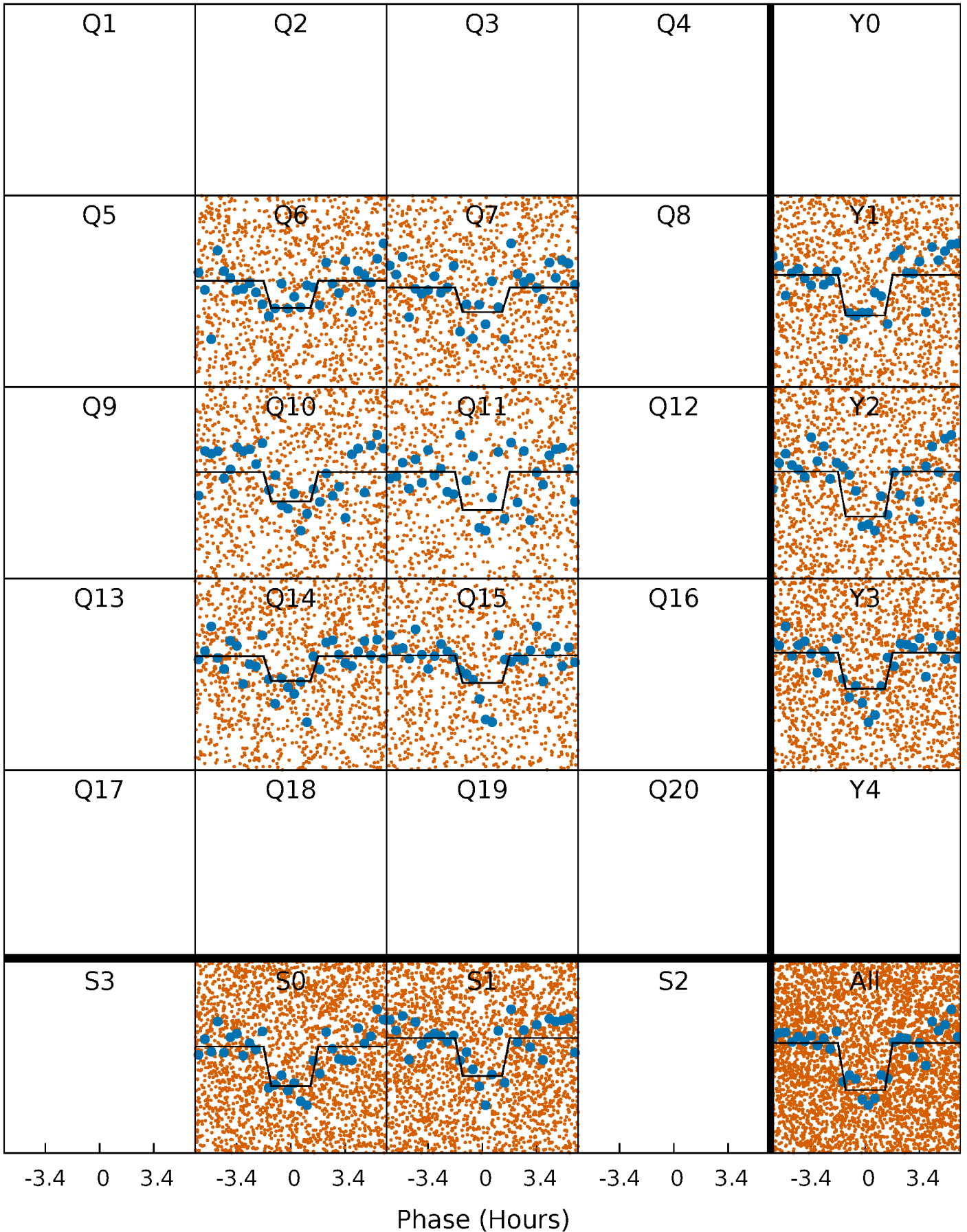
# DV Quarter-Phased Transit Curves

TCE 007777365-01 P= 0.885140 Days  $T_0=131.867593$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

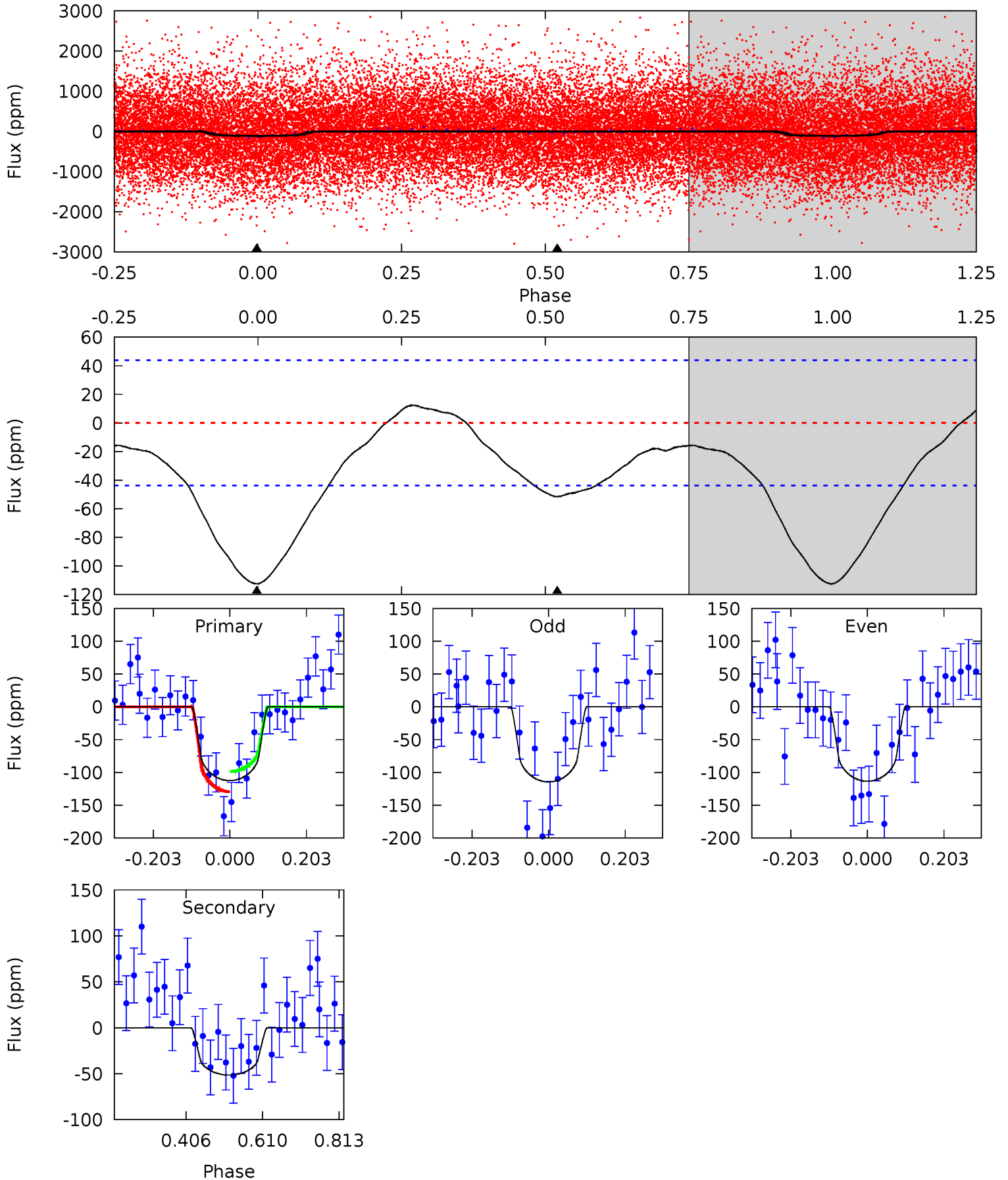
TCE 007777365-01 P= 0.885110 Days  $T_0=131.892360$  (BKJD)



# DV Model-Shift Uniqueness Test

007777365-01, P = 0.885140 Days, E = 131.867593 Days

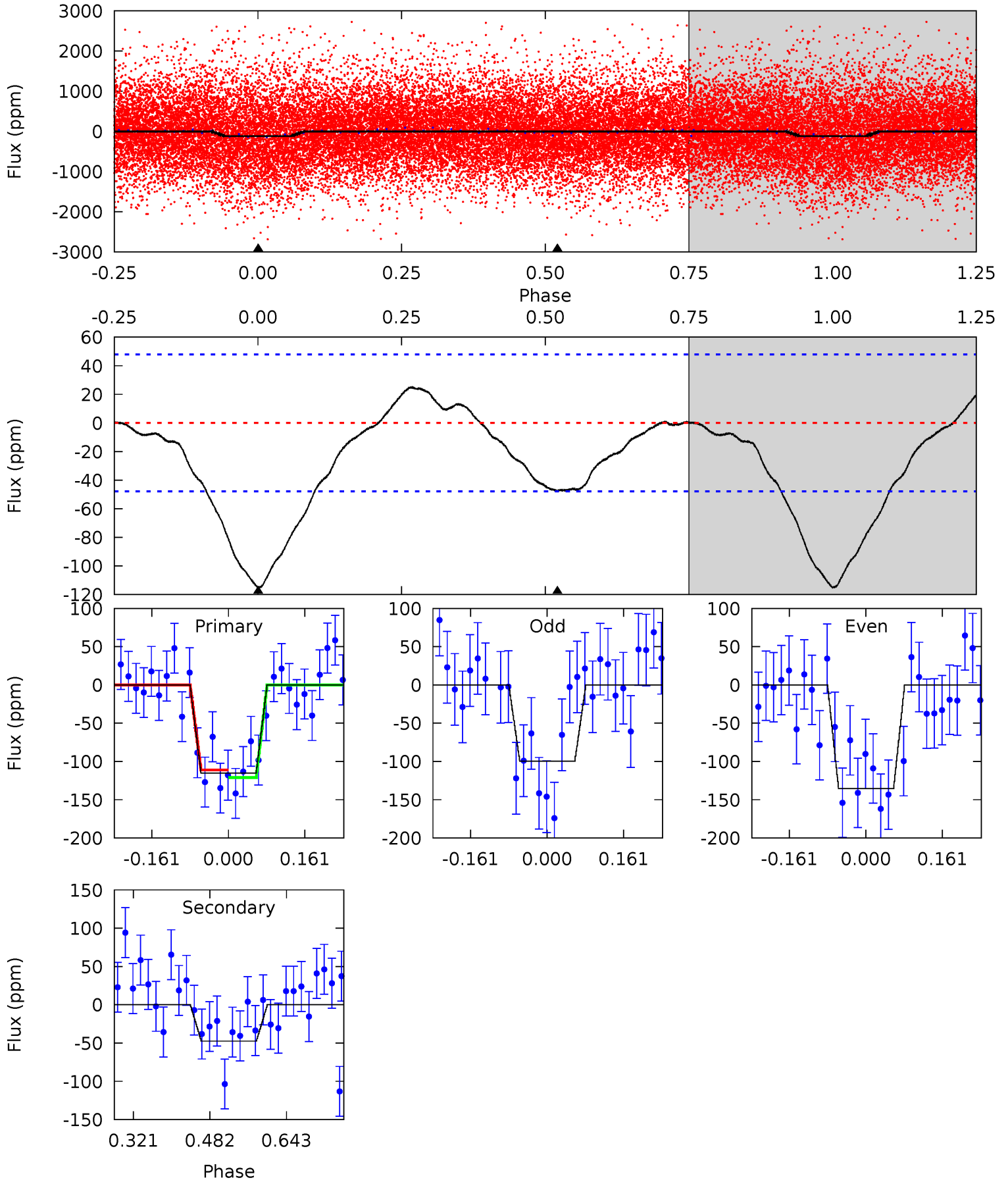
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	5.19	0	0	4.41	1.27	1.23	11.3	11.3	5.19	5.19	0.06	0.93	0.10	1.55



# Alt Model-Shift Uniqueness Test

007777365-01, P = 0.885110 Days, E = 131.892360 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
10.7	4.44	0	0	4.46	1.40	1.01	10.7	10.7	4.44	4.44	1.67	1.00	0.18	0.46



### Stellar Parameters For KIC 007777365

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5392^{+185}_{-185}$	$4.521^{+0.067}_{-0.114}$	$-0.180^{+0.300}_{-0.300}$	$0.819^{+0.151}_{-0.088}$	$0.814^{+0.104}_{-0.070}$	$2.084^{+0.598}_{-0.734}$
	+3%/-3%	+1%/-3%	+167%/-167%	+18%/-11%	+13%/-9%	+29%/-35%
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 007777365-01 / KOI 6916.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-51 \pm 10$	$1.33^{+0.87}_{-0.80}$	$2335^{+131}_{-103}$	$4021^{+1890}_{-732}$	$4.449^{+24.252}_{-2.869}$
Alt.	$-48 \pm 11$	$1.15^{+0.94}_{-0.72}$	$2335^{+124}_{-105}$	$4138^{+2227}_{-835}$	$5.594^{+32.218}_{-3.978}$

$T_{max}$  = 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

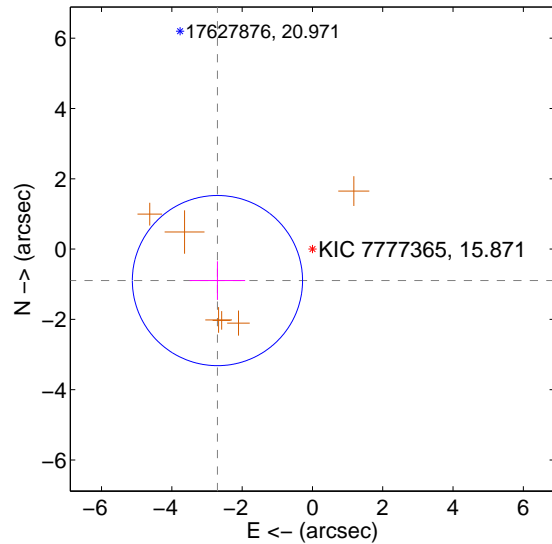
Supplemental centroid analysis for 007777365-01. Kepler magnitude: 15.87. Transit SNR 9.41

There are 0 quarters with good PRF difference image offsets

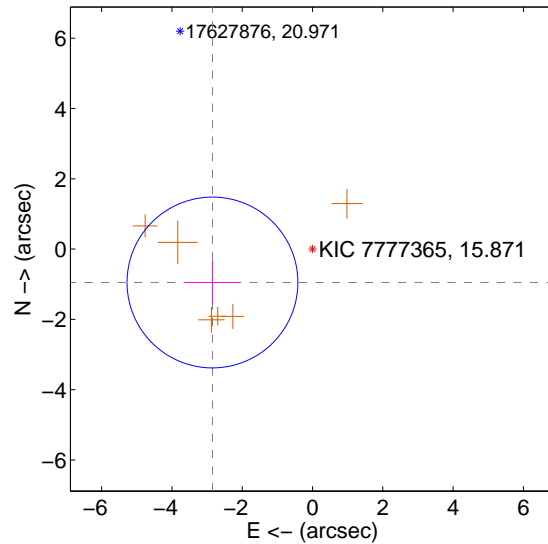
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.848 \pm 0.807$	3.53	$2.703 \pm 0.789$	$-0.896 \pm 0.549$
PRF-fit source offset from KIC position	$3.002 \pm 0.810$	3.71	$2.847 \pm 0.767$	$-0.950 \pm 0.625$
photometric centroid source offset	$2.54 \pm 1.07$	2.39	$2.14 \pm 1.00$	$1.38 \pm 1.21$

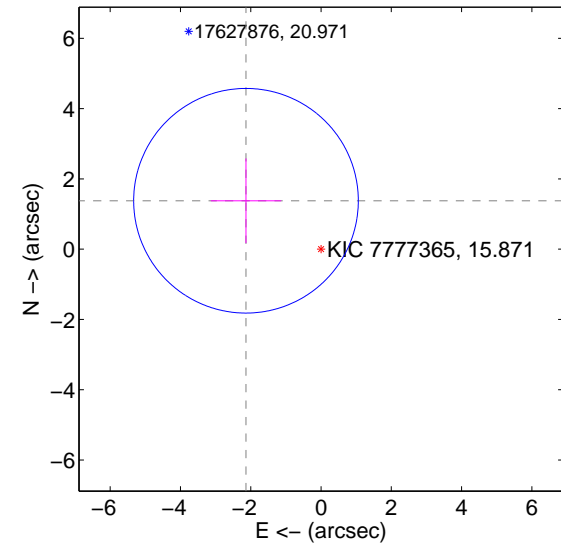
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

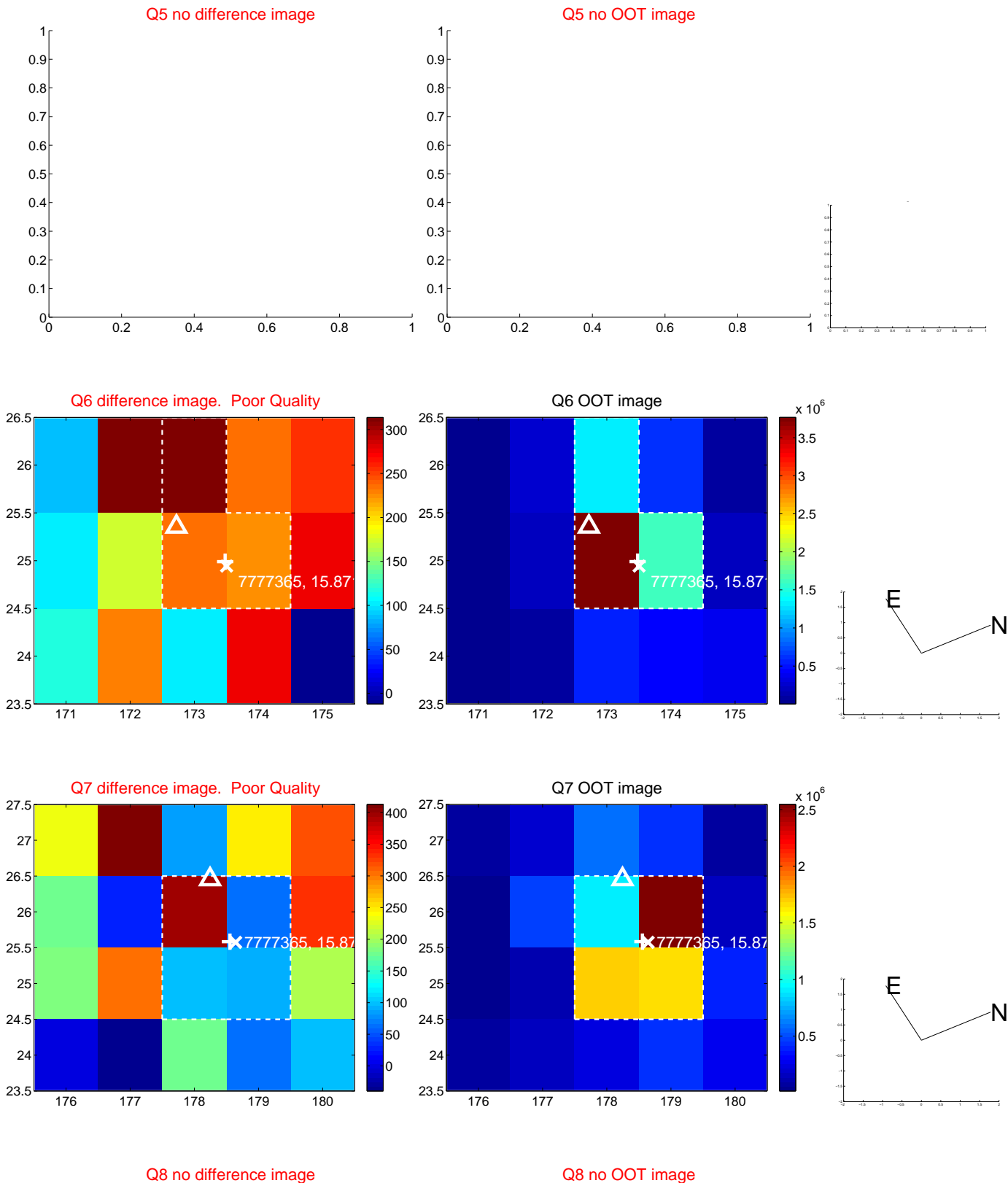


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

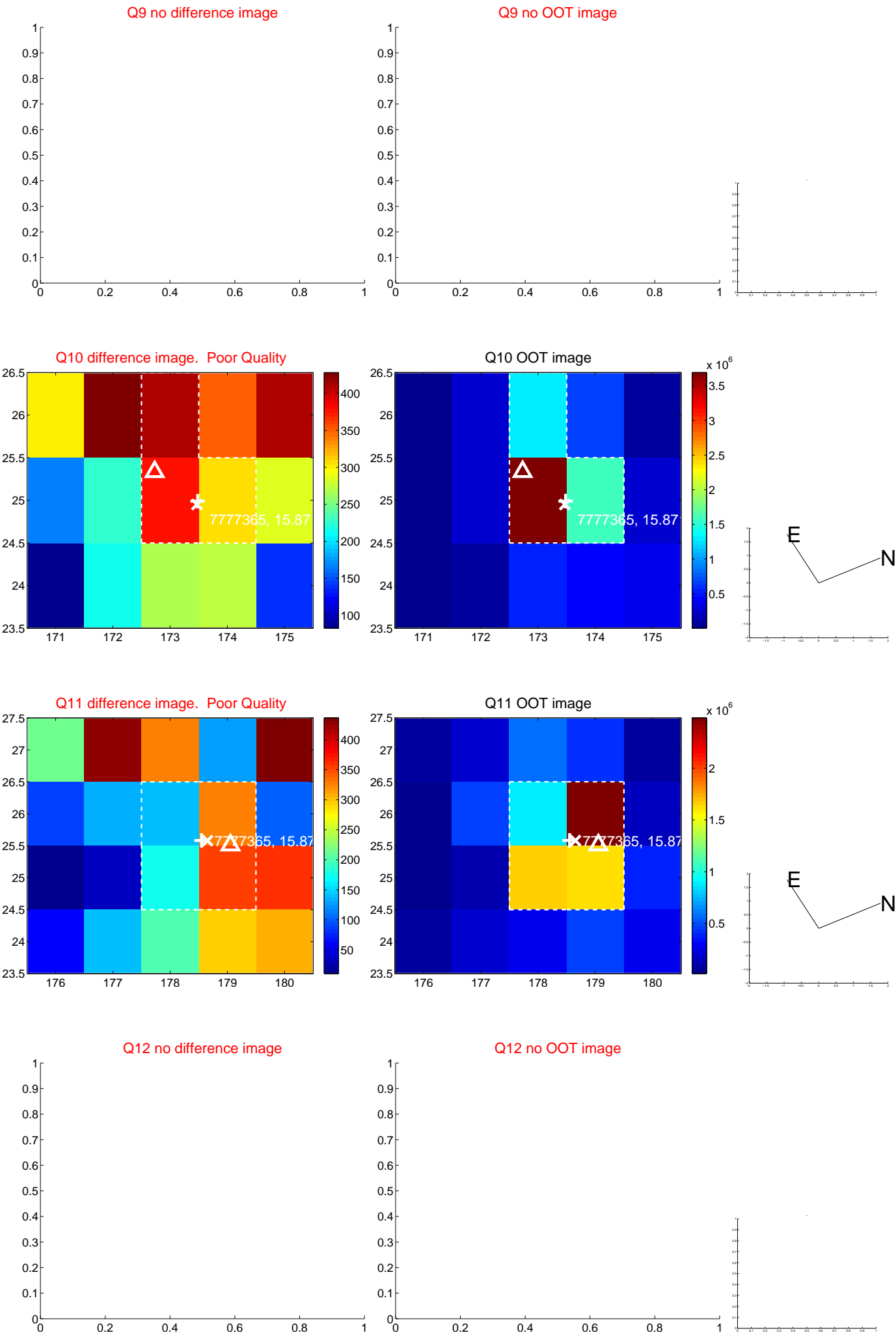
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



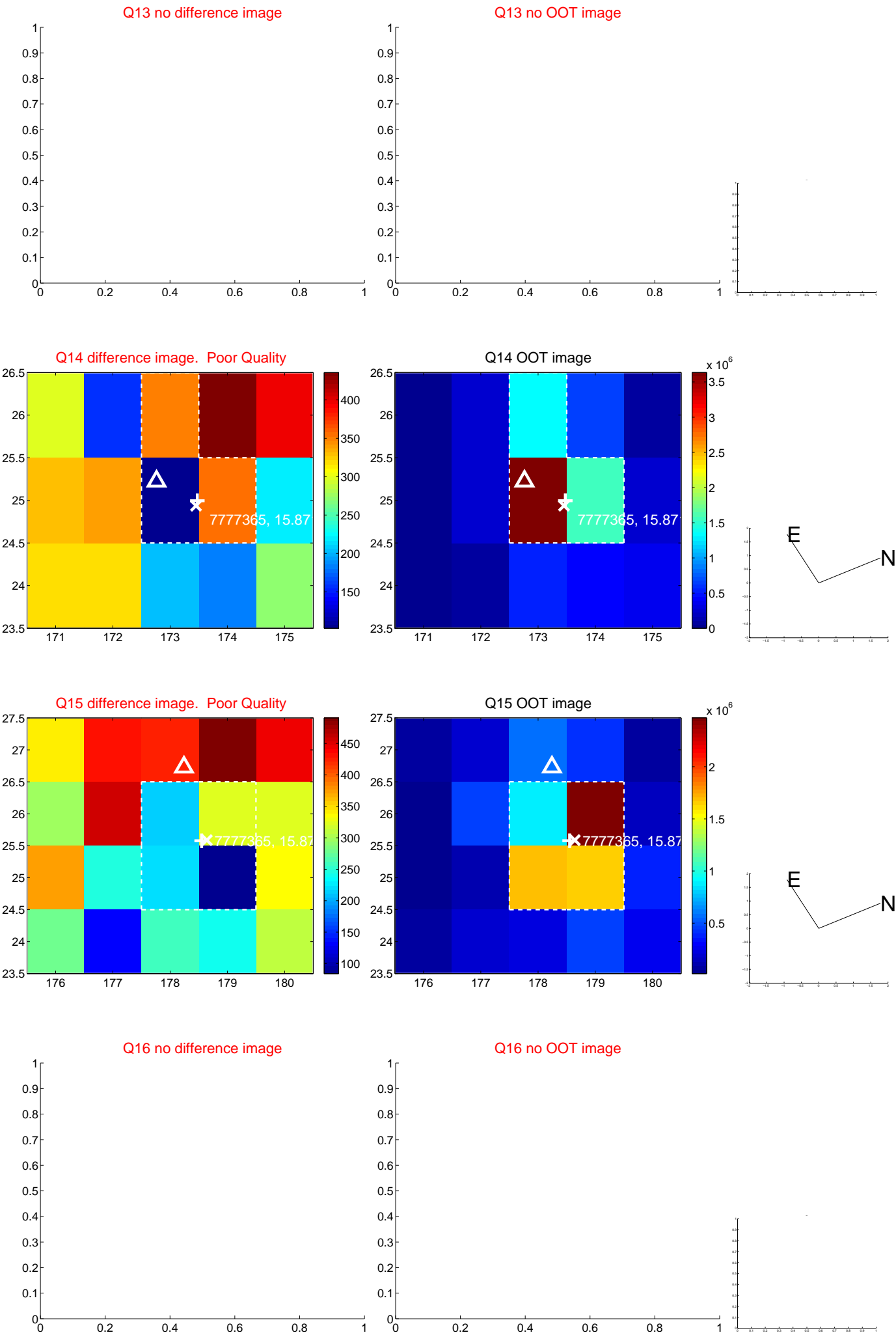
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



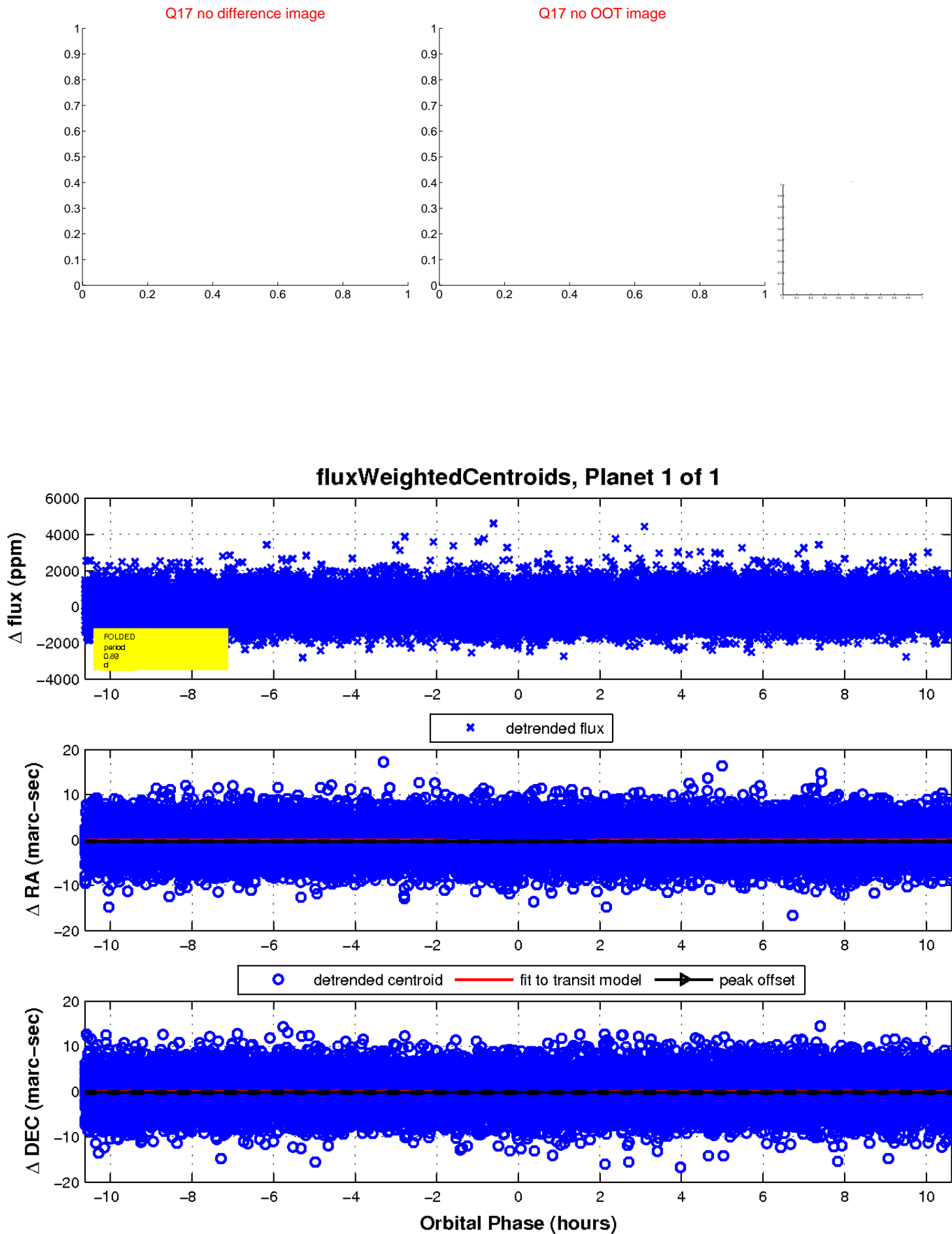
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

