

# KIC 006842682

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006842682-01	OBS	2649.01	7.561246	135.638874	173.3	2.945	13.3	13.8	0.90	5853	1.39	149.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006842682-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

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

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

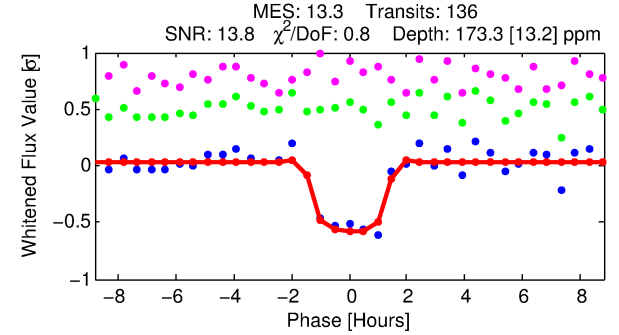
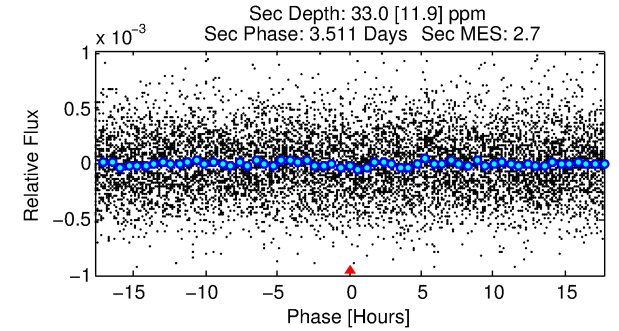
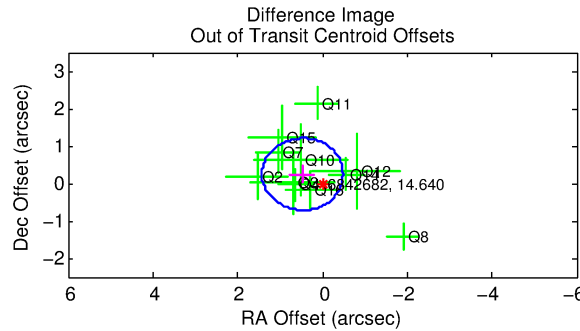
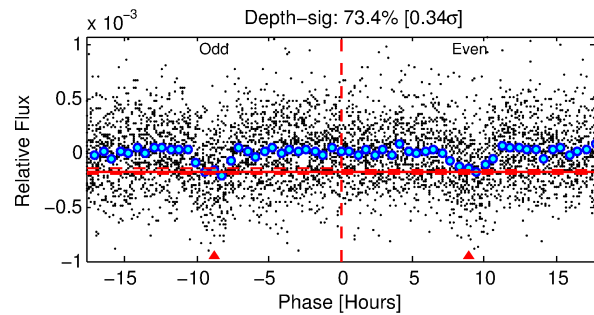
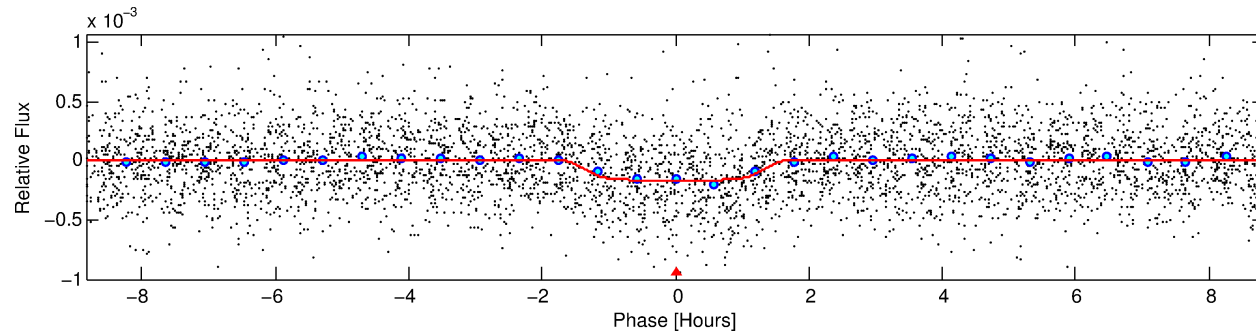
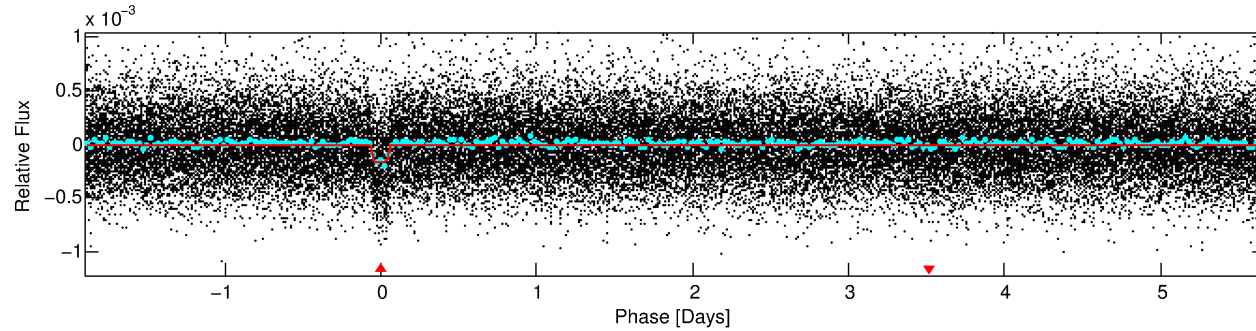
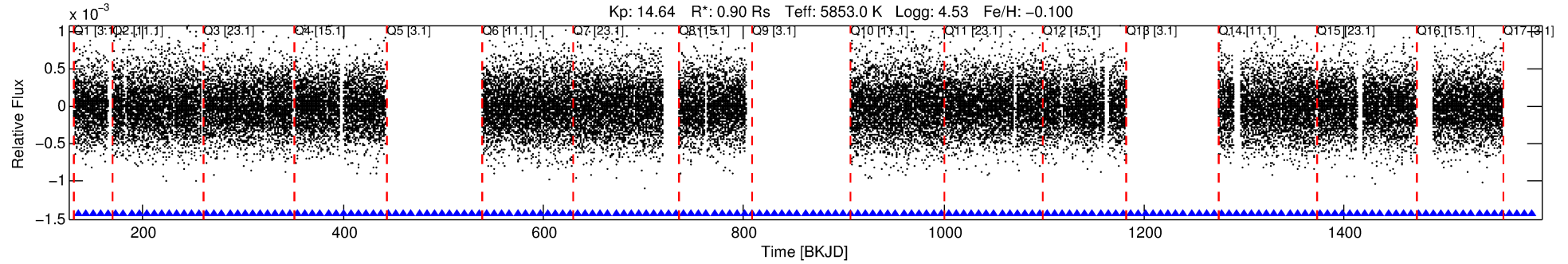
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006842682-01

No Significant Match Found

# DV One-Page Summary

KIC: 6842682 Candidate: 1 of 1 Period: 7.561 d  
KOI: K02649.01 Corr: 0.990



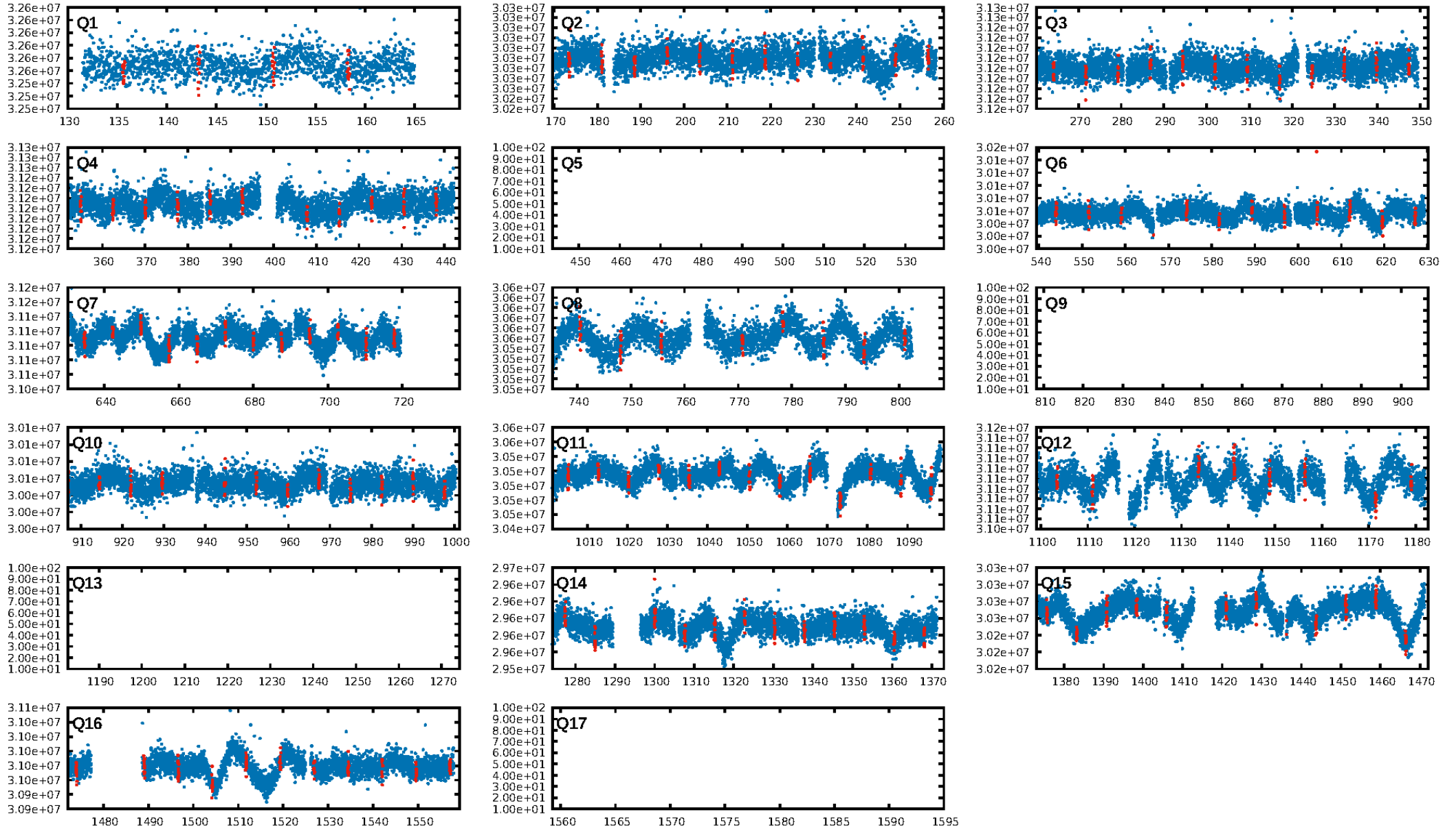
## DV Fit Results:

Period = 7.56125 [0.00004] d  
Epoch = 135.6389 [0.0039] BKJD  
Rp/R\* = 0.0143 [0.0064]  
a/R\* = 9.28 [20.36]  
b = 0.90 [0.48]  
Seff = 149.34 [54.82]  
Teq = 891 [82] K  
Rp = 1.39 [0.73] Re  
a = 0.0751 [0.0177] AU  
Ag = 52.61 [54.02] [0.96 $\sigma$ ]  
Teffp = 3712 [904] K [3.11 $\sigma$ ]

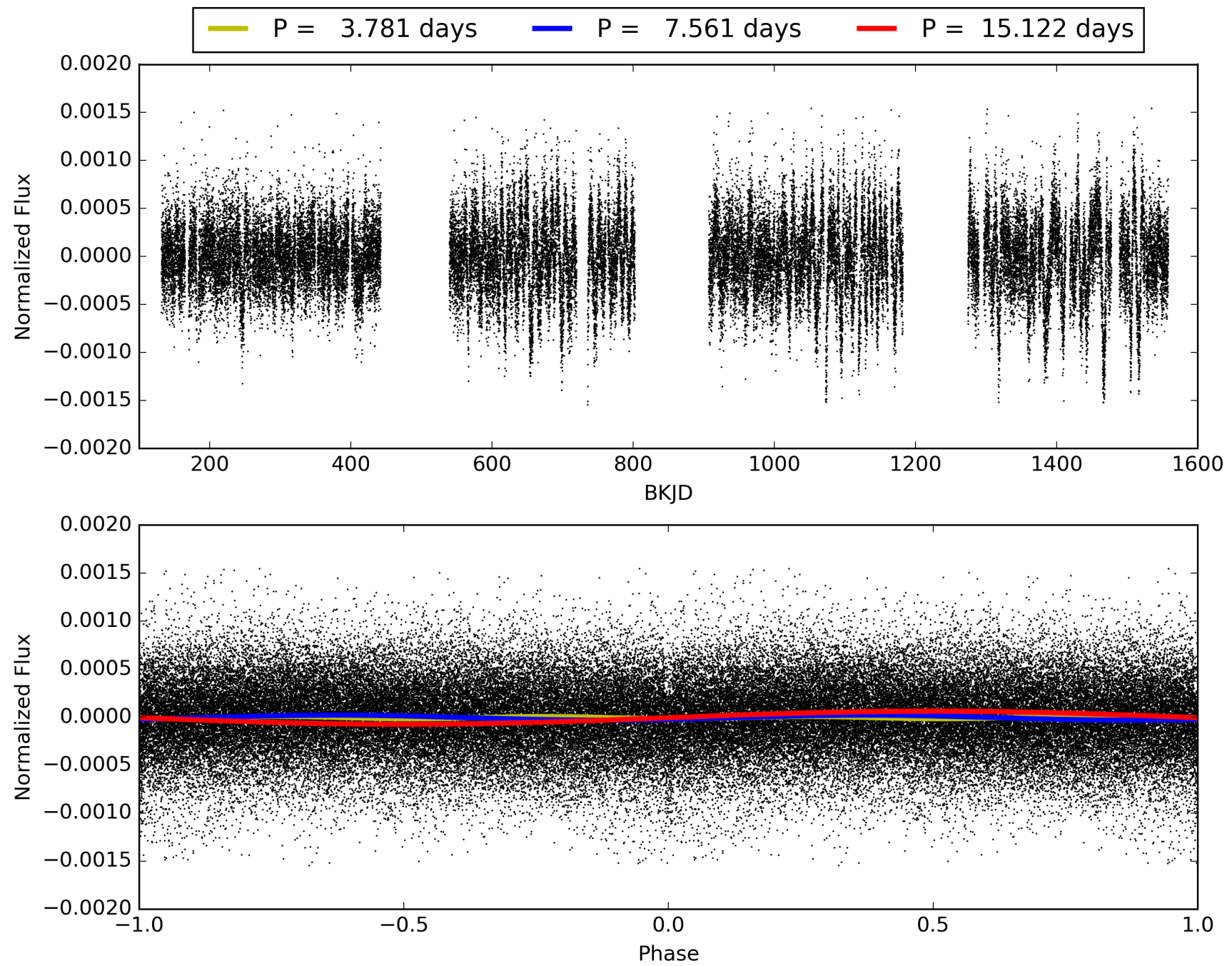
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.07e-40  
RollingBand-fgt: 1.00 [132/132]  
GhostDiagnostic-chr: -11.77  
Centroid-sig: 2.4%  
Centroid-so: 1.608 arcsec [1.52 $\sigma$ ]  
OotOffset-rm: 0.531 arcsec [1.66 $\sigma$ ]  
KicOffset-rm: 0.535 arcsec [1.71 $\sigma$ ]  
OotOffset-st: 3/4/4/0 [11]  
KicOffset-st: 3/4/4/0 [11]  
DiffImageQuality-fgm: 0.82 [9/11]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 006842682-01, PDC Light Curves

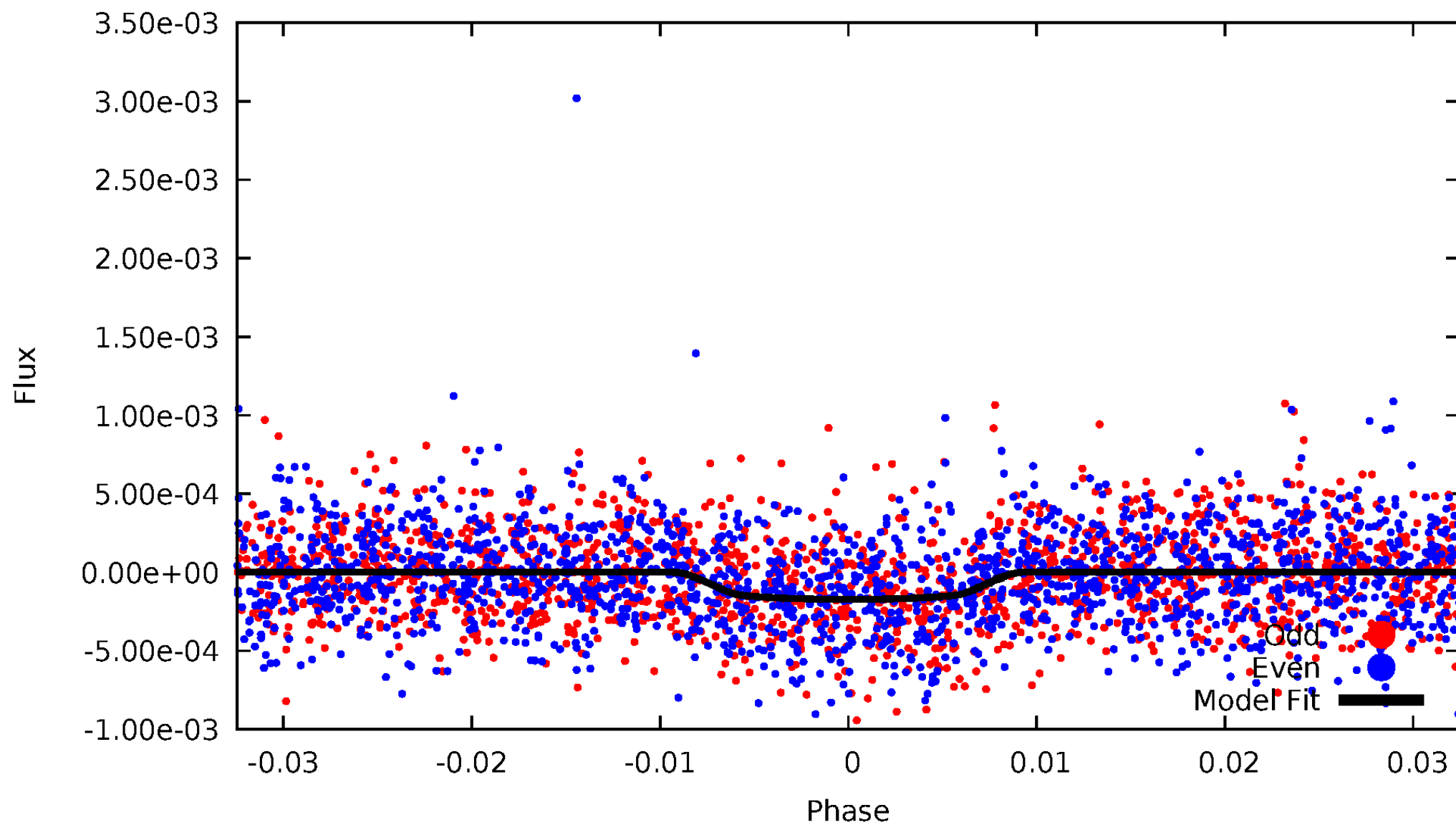


TCE 006842682-01



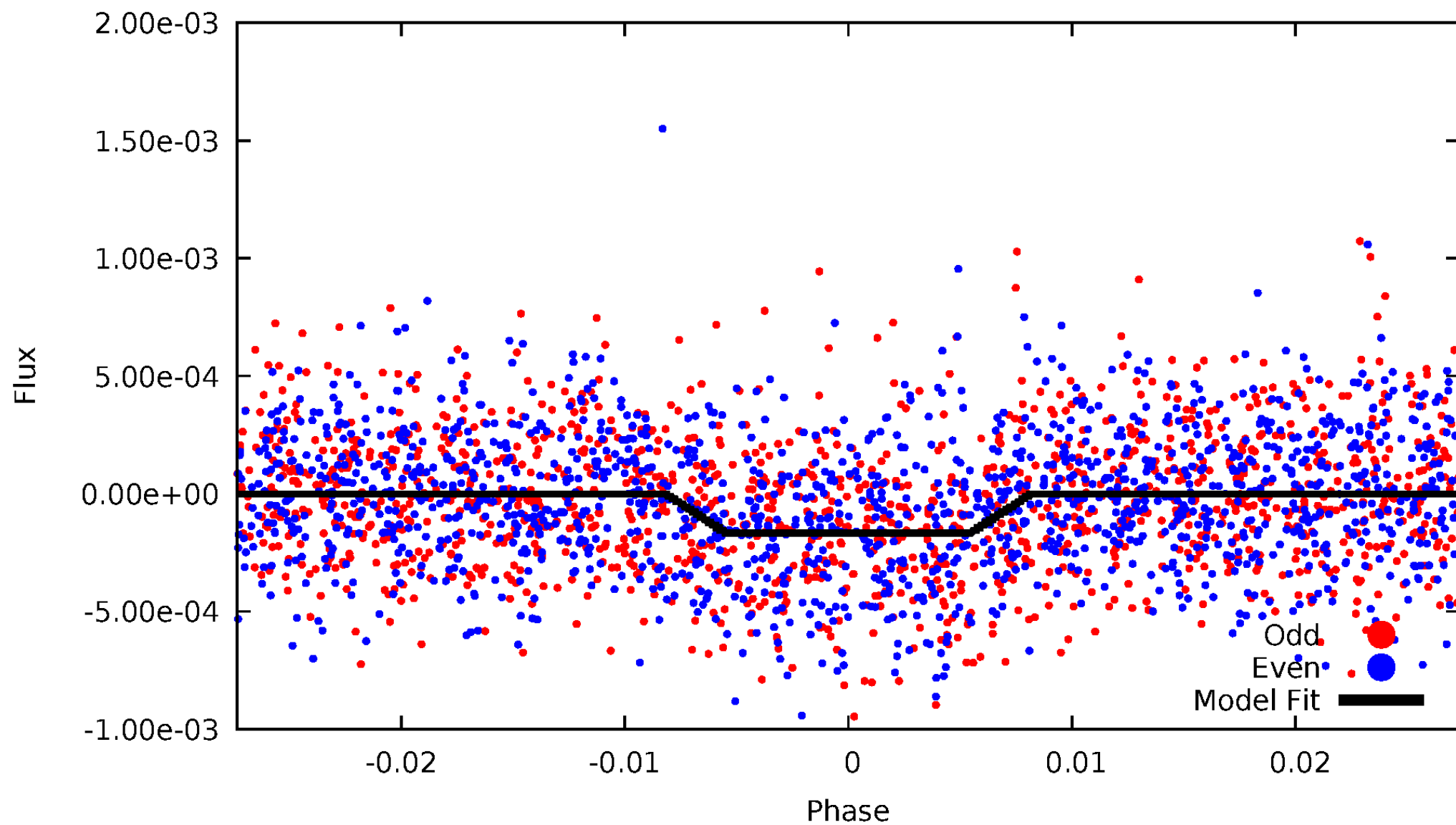
# DV Odd/Even

TCE 006842682-01



# ALT Odd/Even

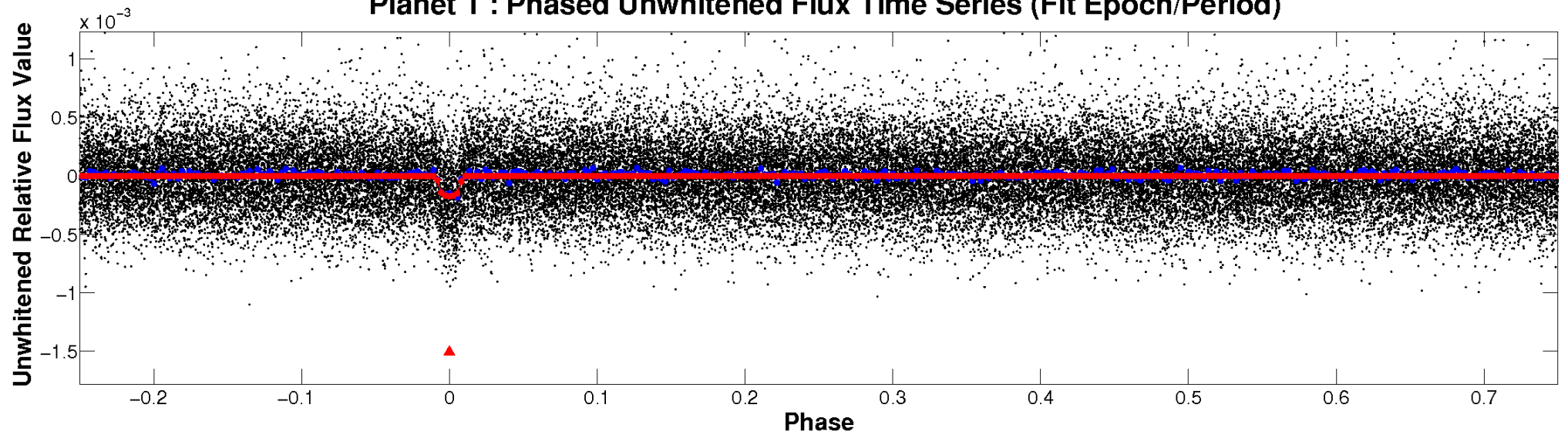
TCE 006842682-01



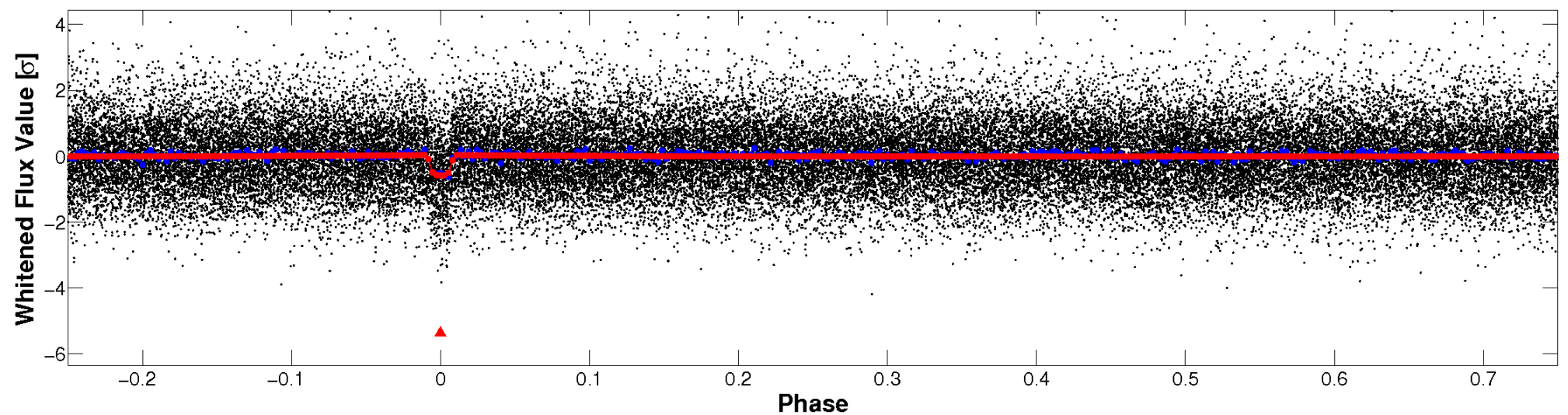


# Non-Whitened Vs. Whitened Light Curve

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

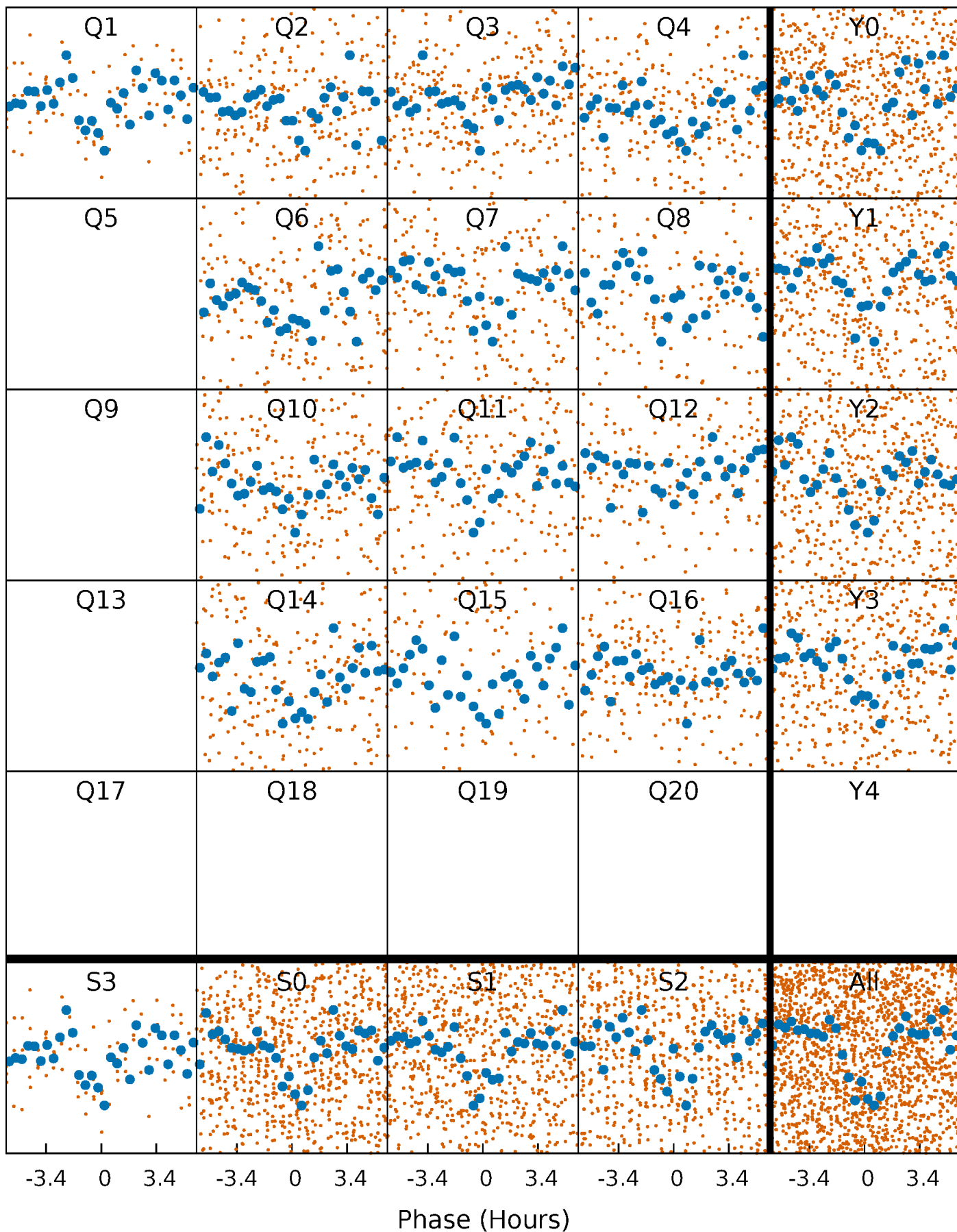


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

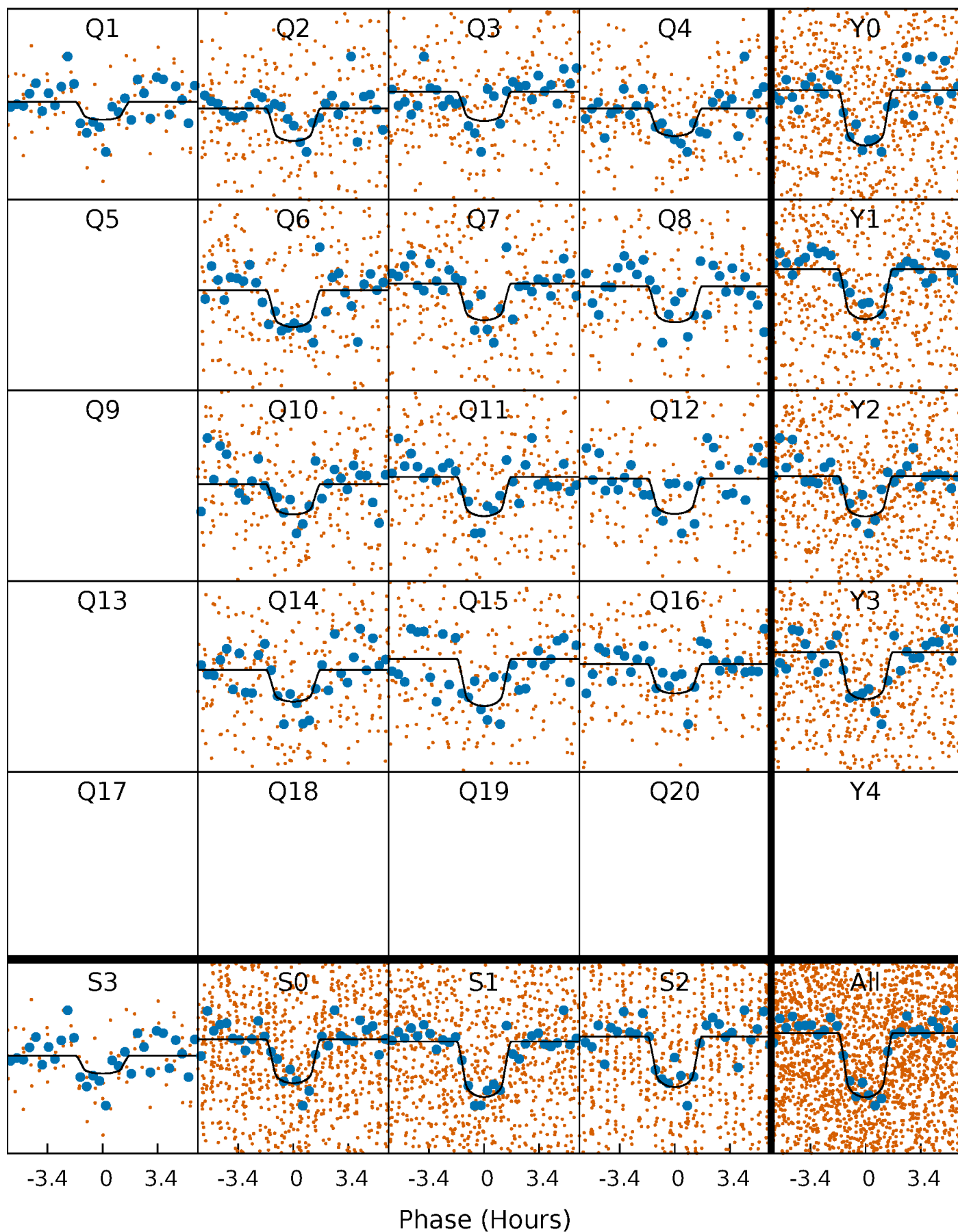
TCE 006842682-01 P= 7.561246 Days  $T_0=135.638874$  (BKJD)





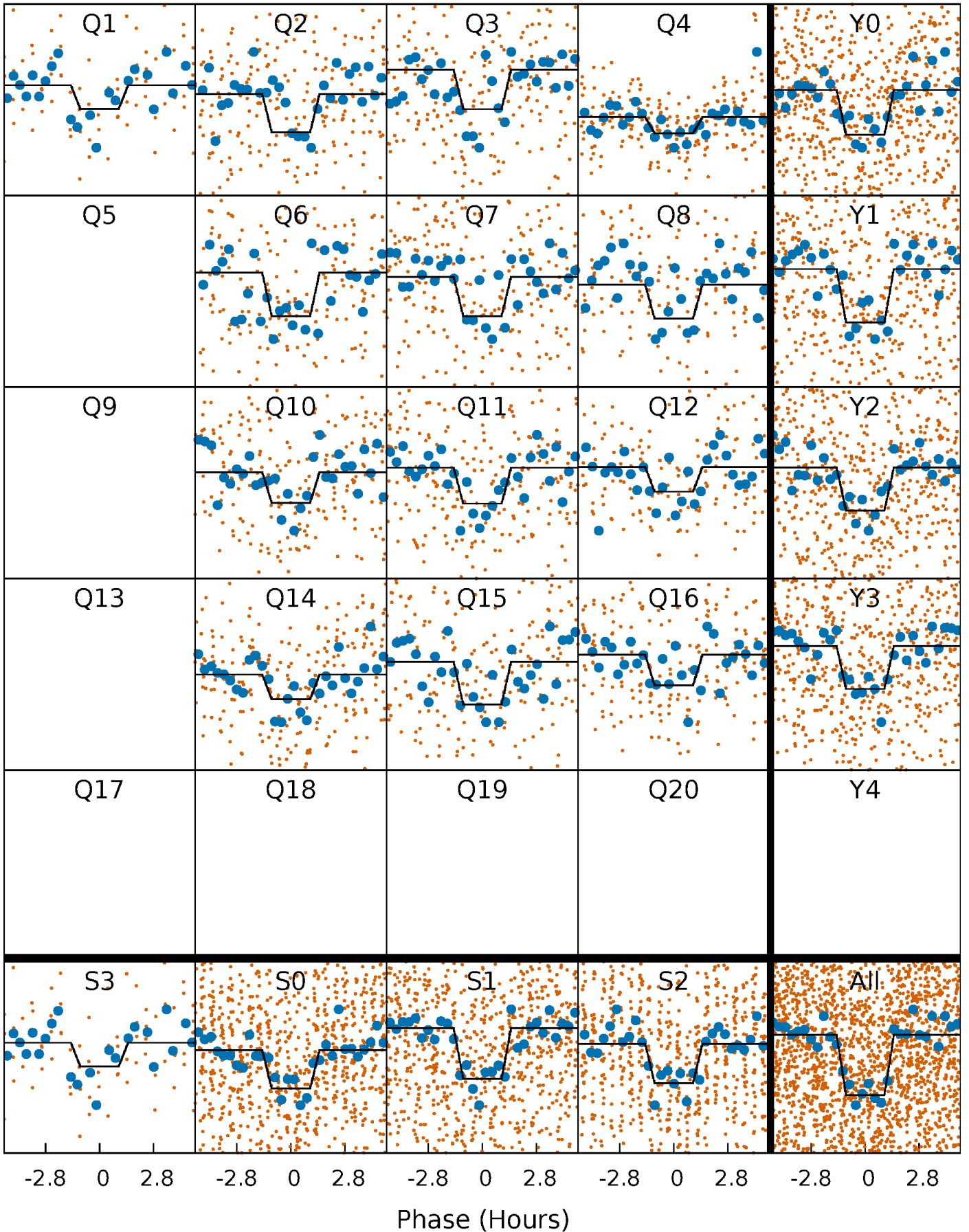
# DV Quarter-Phased Transit Curves

TCE 006842682-01 P= 7.561246 Days  $T_0=135.638874$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

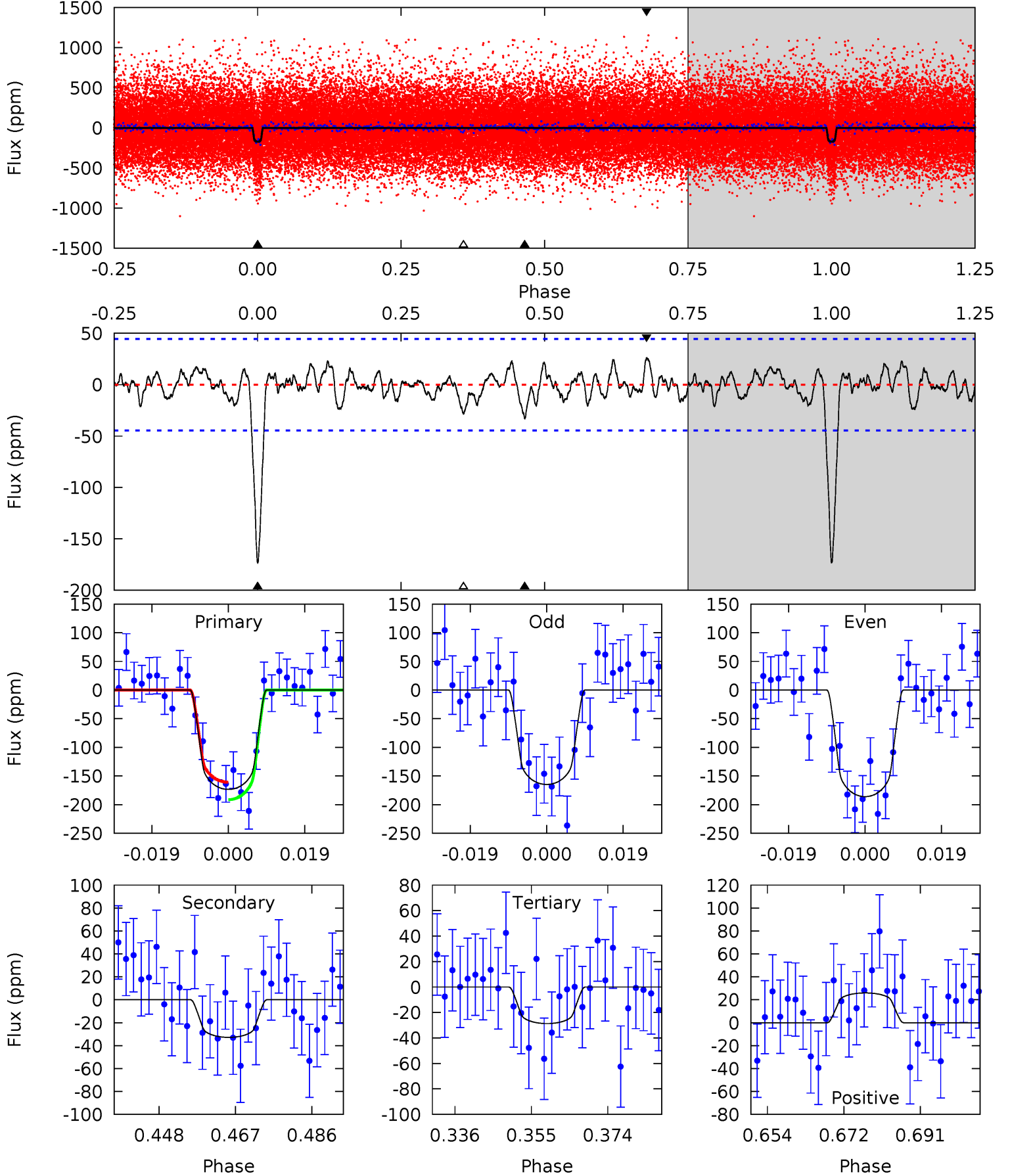
TCE 006842682-01 P= 7.561239 Days  $T_0=135.641502$  (BKJD)



# DV Model-Shift Uniqueness Test

006842682-01, P = 7.561246 Days, E = 128.077628 Days

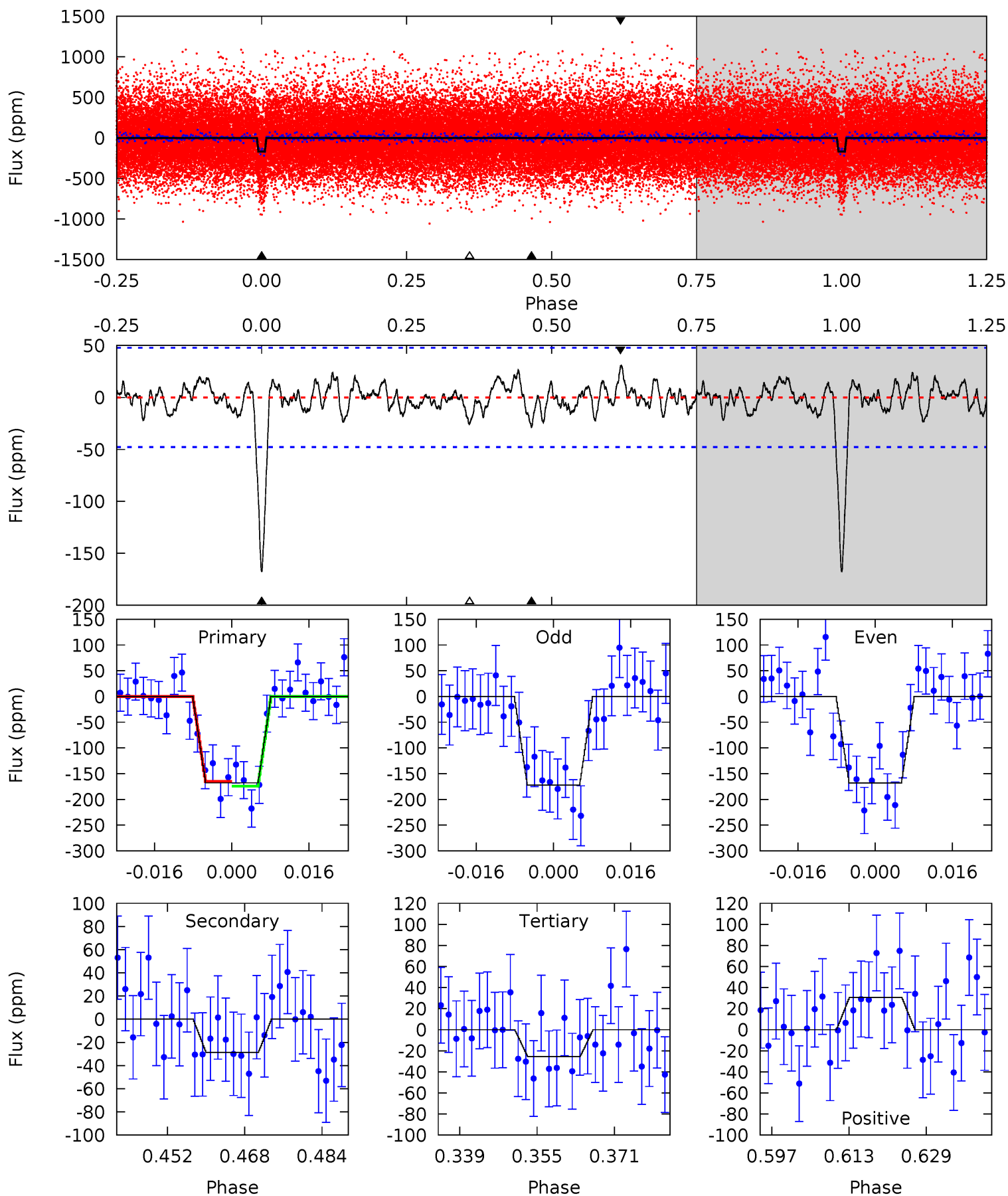
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	3.61	3.16	2.86	4.91	2.35	1.11	15.9	16.2	0.46	0.75	1.17	0.98	0.13	1.68



# Alt Model-Shift Uniqueness Test

006842682-01, P = 7.561239 Days, E = 128.080263 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
17.3	2.96	2.65	3.17	4.93	2.41	1.08	14.7	14.1	0.31	-0.21	0.21	1.00	0.15	0.46



### Stellar Parameters For KIC 006842682

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5853^{+146}_{-175}$	$4.529^{+0.048}_{-0.192}$	$-0.100^{+0.250}_{-0.300}$	$0.895^{+0.246}_{-0.082}$	$0.990^{+0.104}_{-0.127}$	$1.941^{+0.471}_{-0.971}$
	+2%/-3%	+1%/-4%	+250%/-300%	+27%/-9%	+11%/-13%	+24%/-50%
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 006842682-01 / KOI 2649.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-33 \pm 9$	$1.49^{+0.61}_{-0.63}$	$1273^{+72}_{-59}$	$3989^{+988}_{-469}$	$44^{+92}_{-22}$
Alt.	$-29 \pm 10$	$1.30^{+0.68}_{-0.63}$	$1269^{+78}_{-57}$	$4050^{+1198}_{-573}$	$51^{+137}_{-31}$

$T_{max}$  = 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

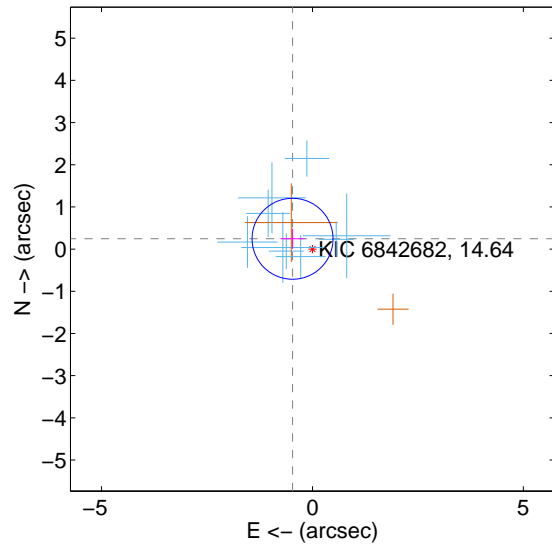
Supplemental centroid analysis for 006842682-01. Kepler magnitude: 14.64. Transit SNR 13.80

There are 9 quarters with good PRF difference image offsets

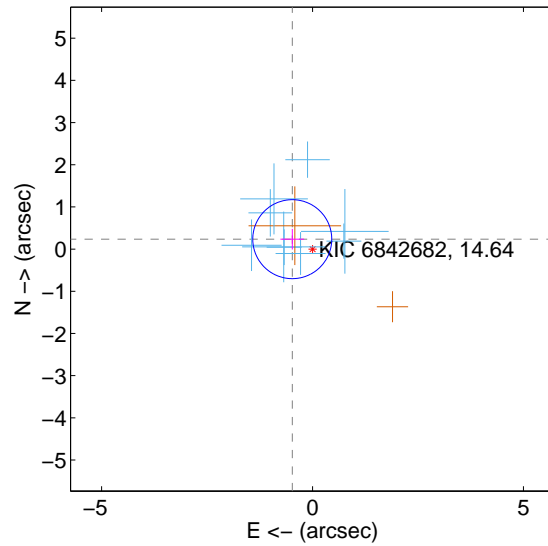
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.531 \pm 0.320$	1.66	$0.472 \pm 0.287$	$0.245 \pm 0.240$
PRF-fit source offset from KIC position	$0.535 \pm 0.312$	1.71	$0.480 \pm 0.282$	$0.235 \pm 0.244$
photometric centroid source offset	$1.61 \pm 1.06$	1.52	$0.95 \pm 0.95$	$1.30 \pm 1.11$

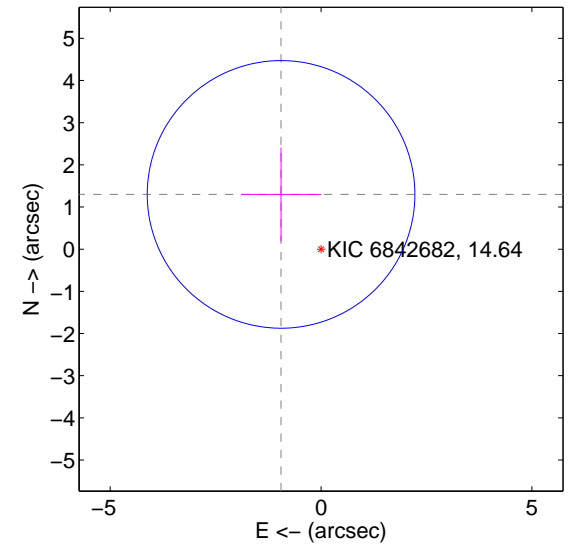
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

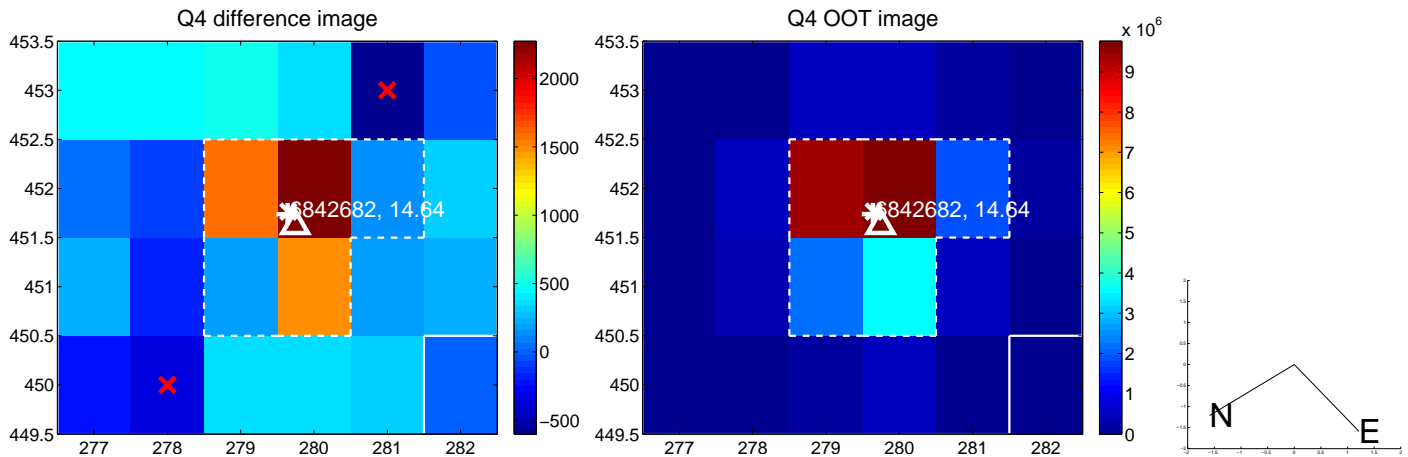
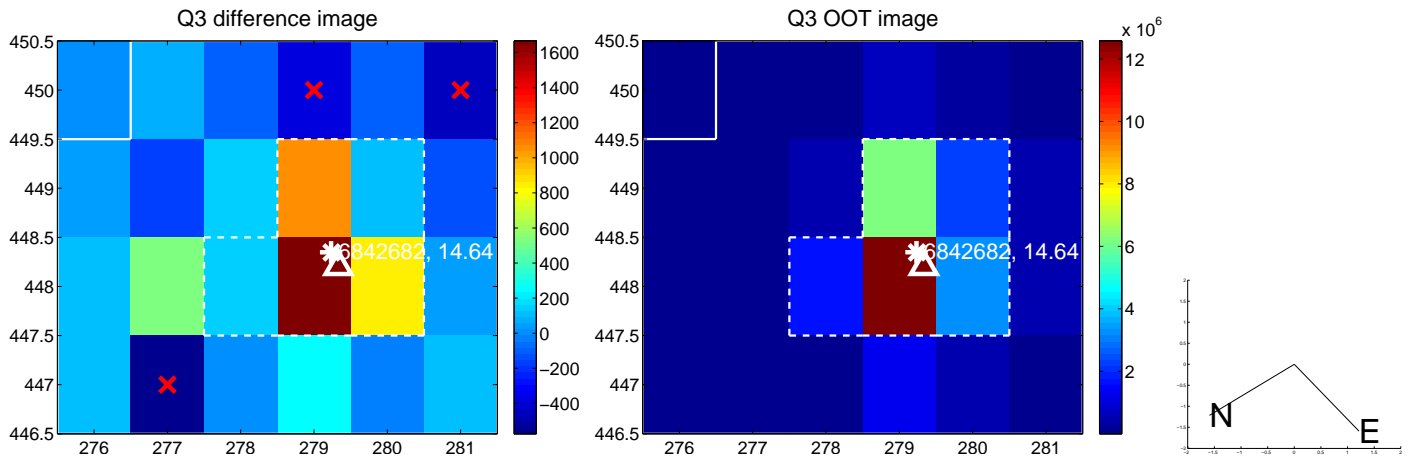
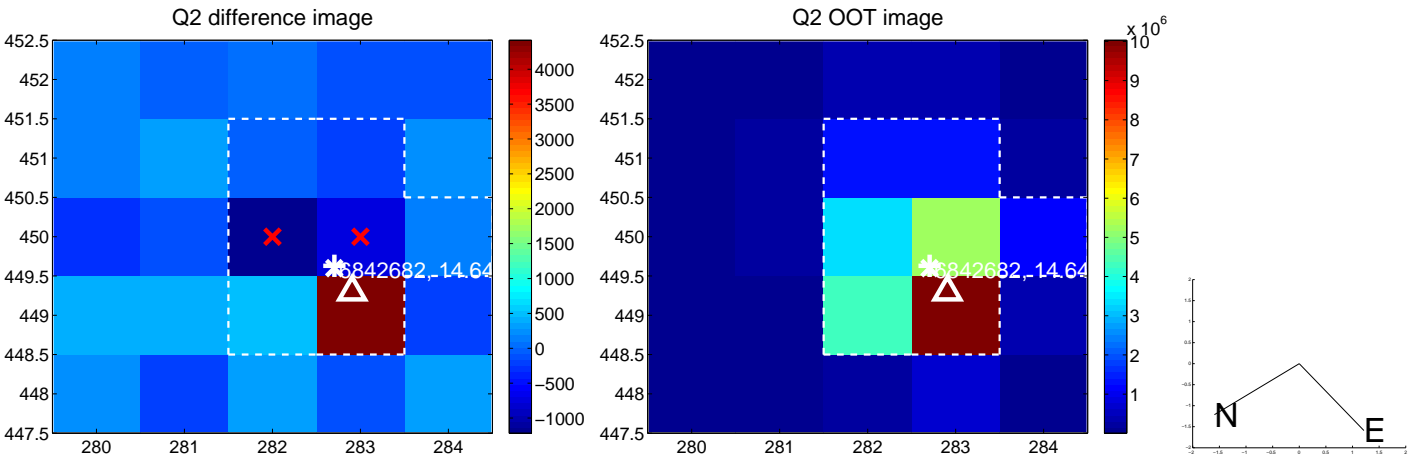
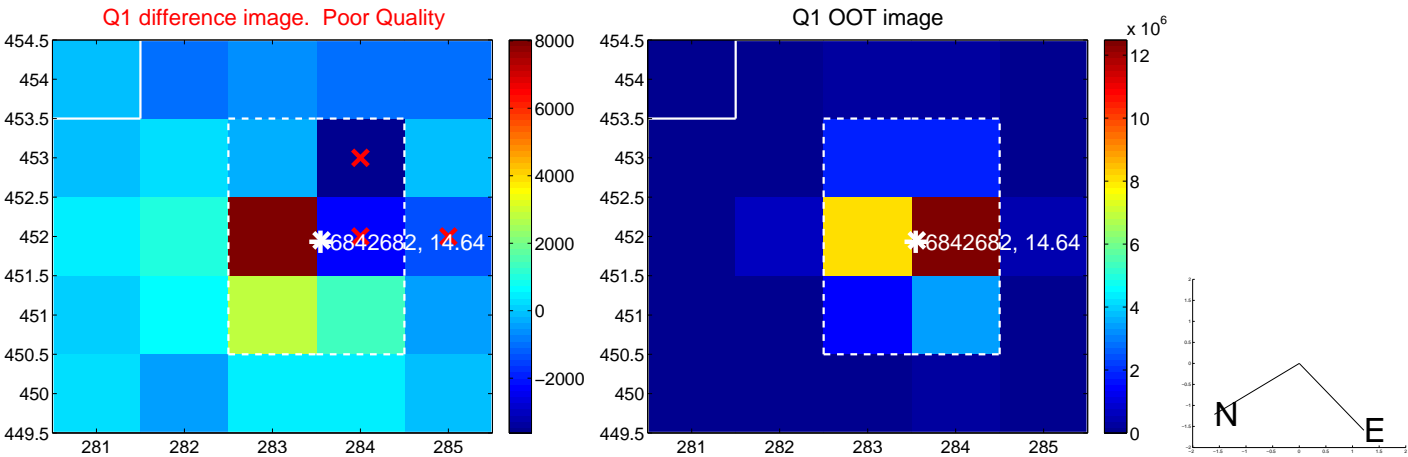


offset from photometric centroids

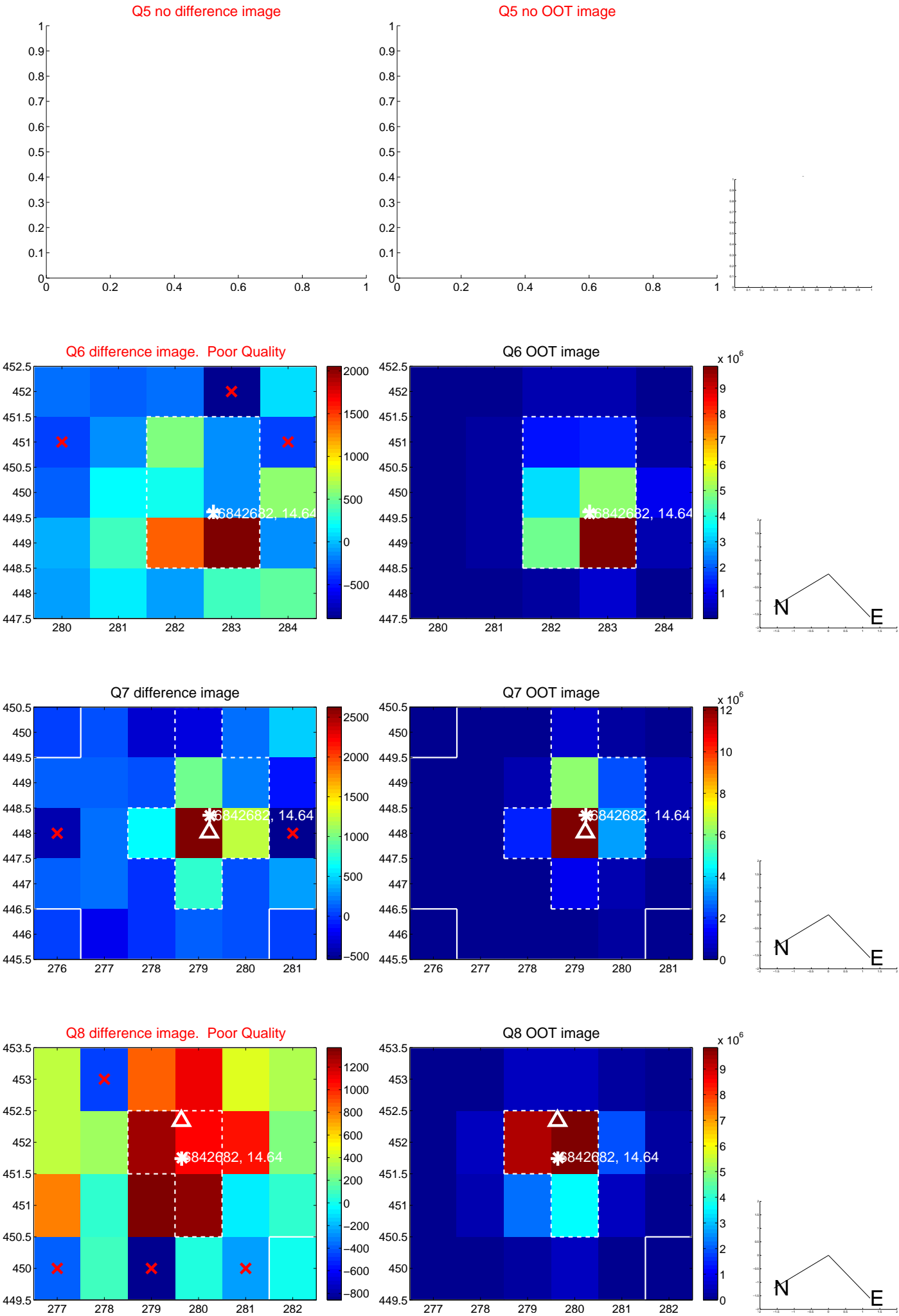


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

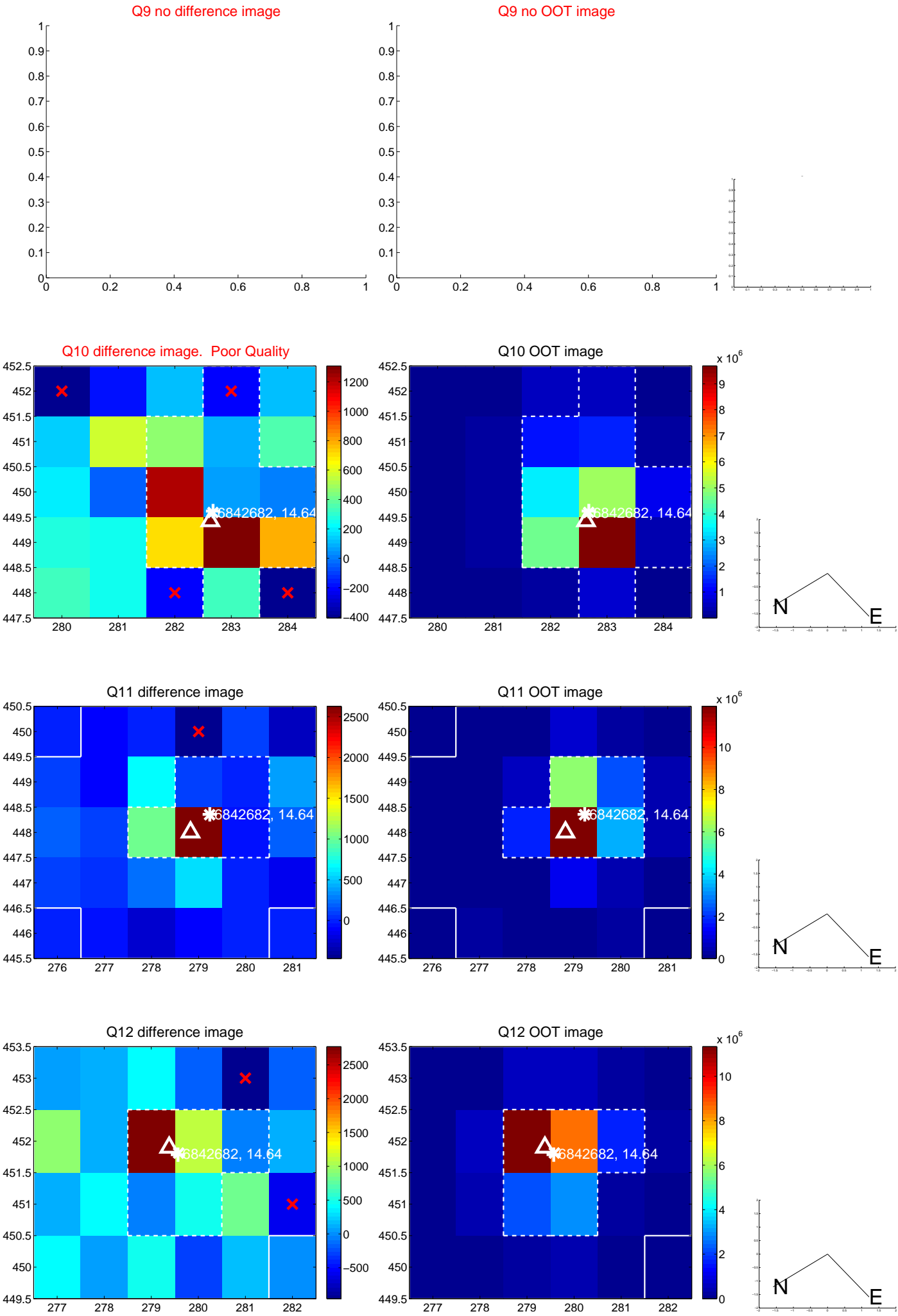
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



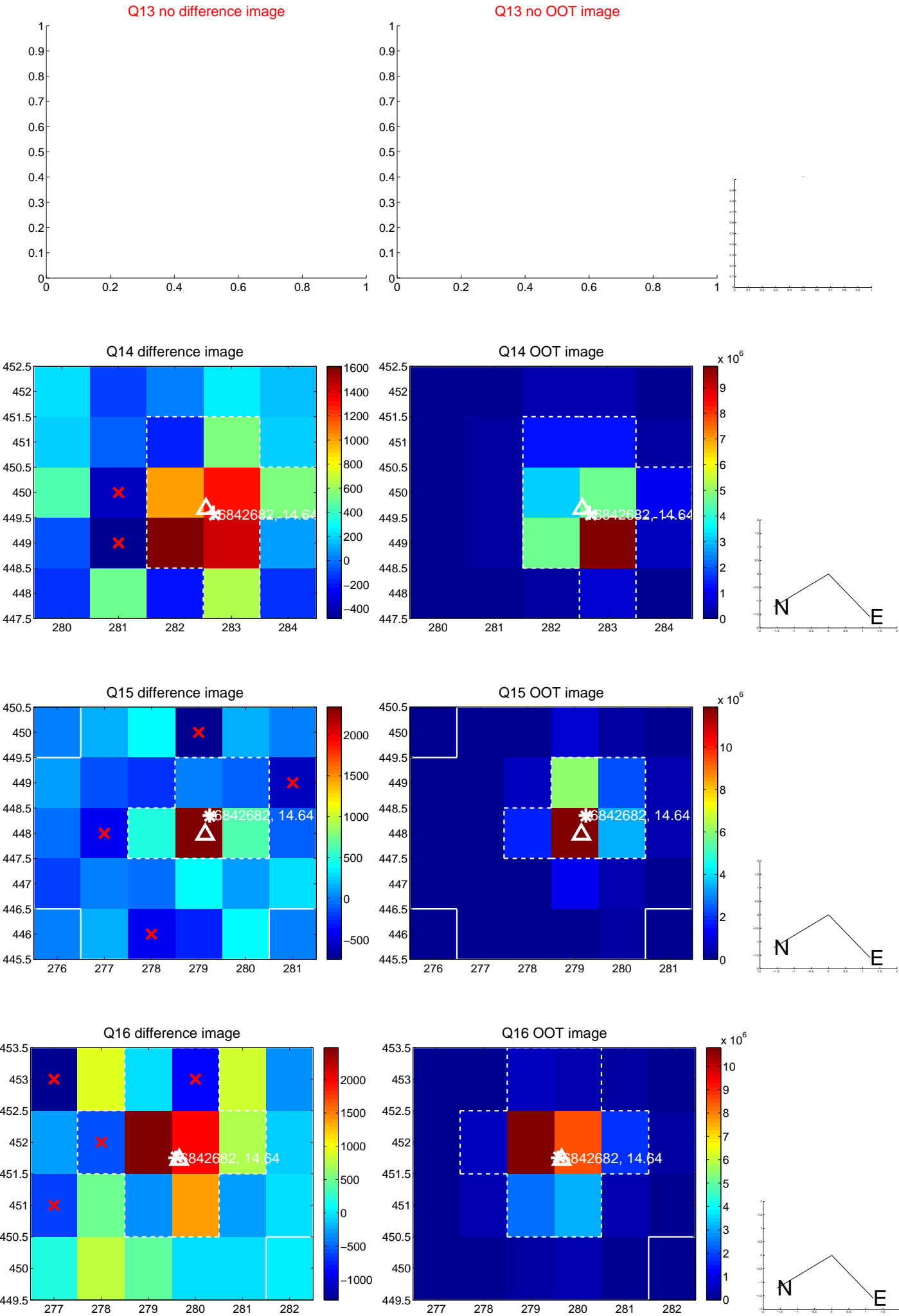
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

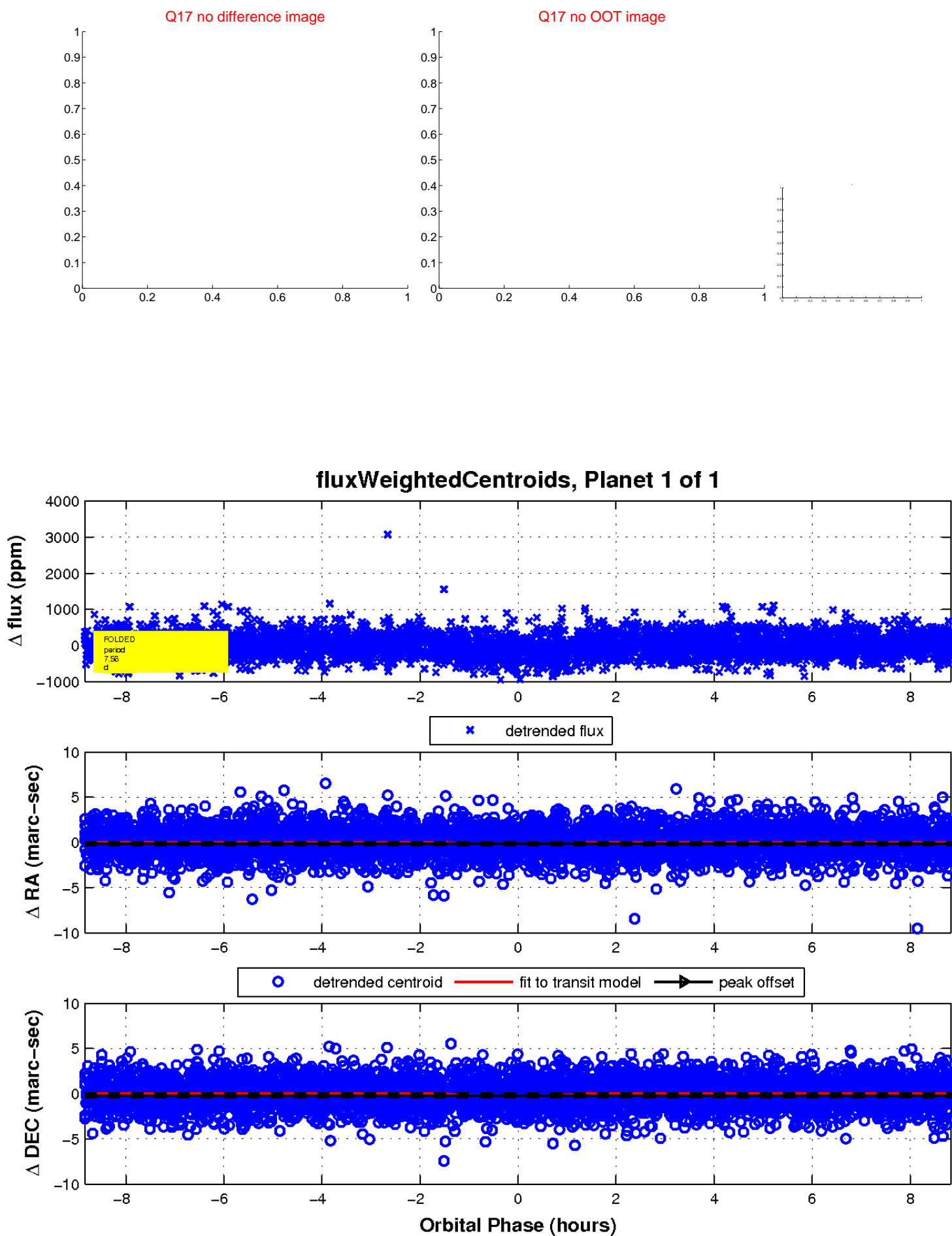


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

