

# KIC 008873674

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008873674-01	OBS	8278.01	172.280877	216.032540	318.4	12.438	7.6	8.5	0.87	5659	1.71	1.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008873674-01	OBS	FP	0.45	1	0	0	0	INDIV_TRANS_MARSHALL—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.

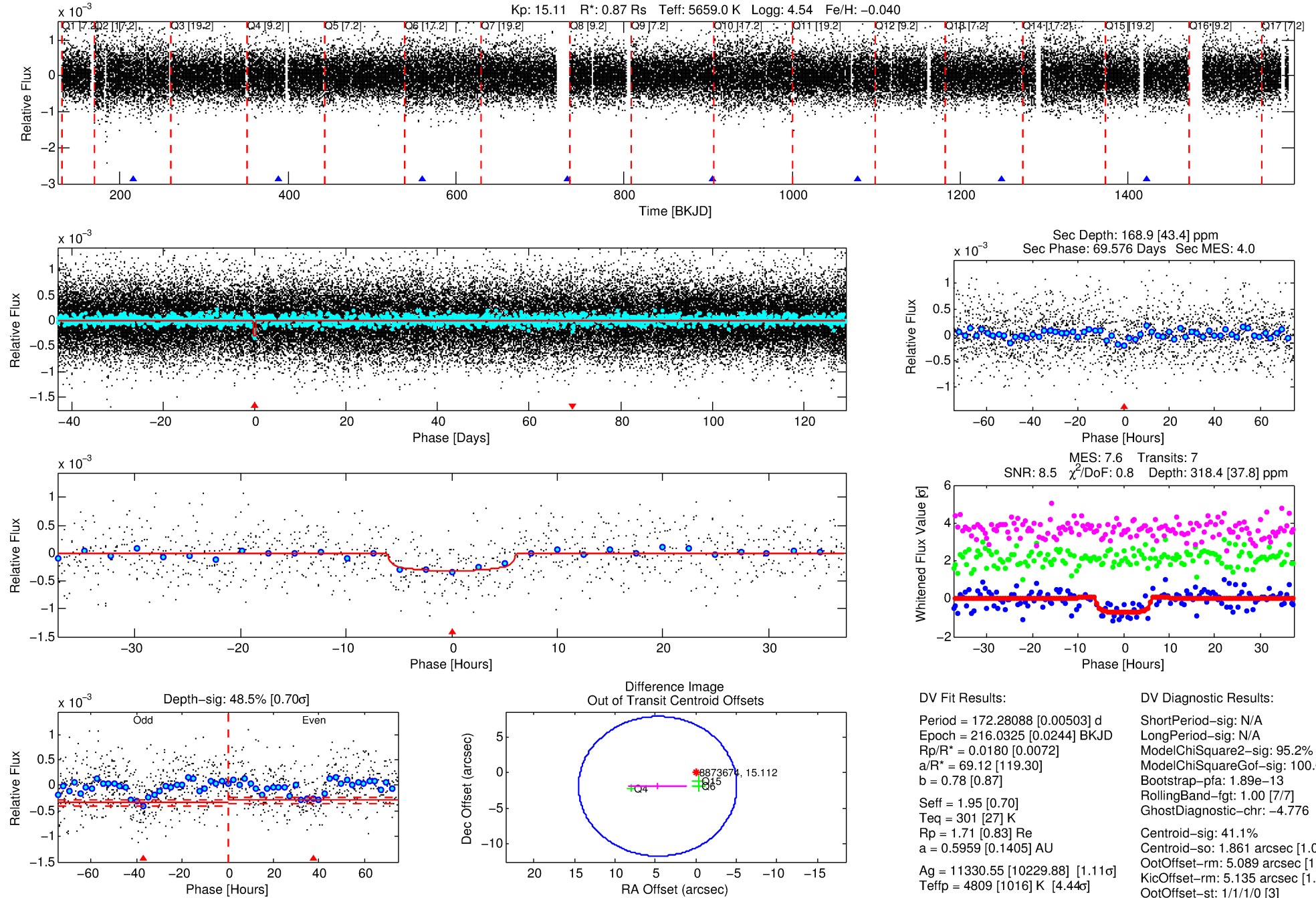
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008873674-01

No Significant Match Found

# DV One-Page Summary

KIC: 8873674 Candidate: 1 of 1 Period: 172.281 d



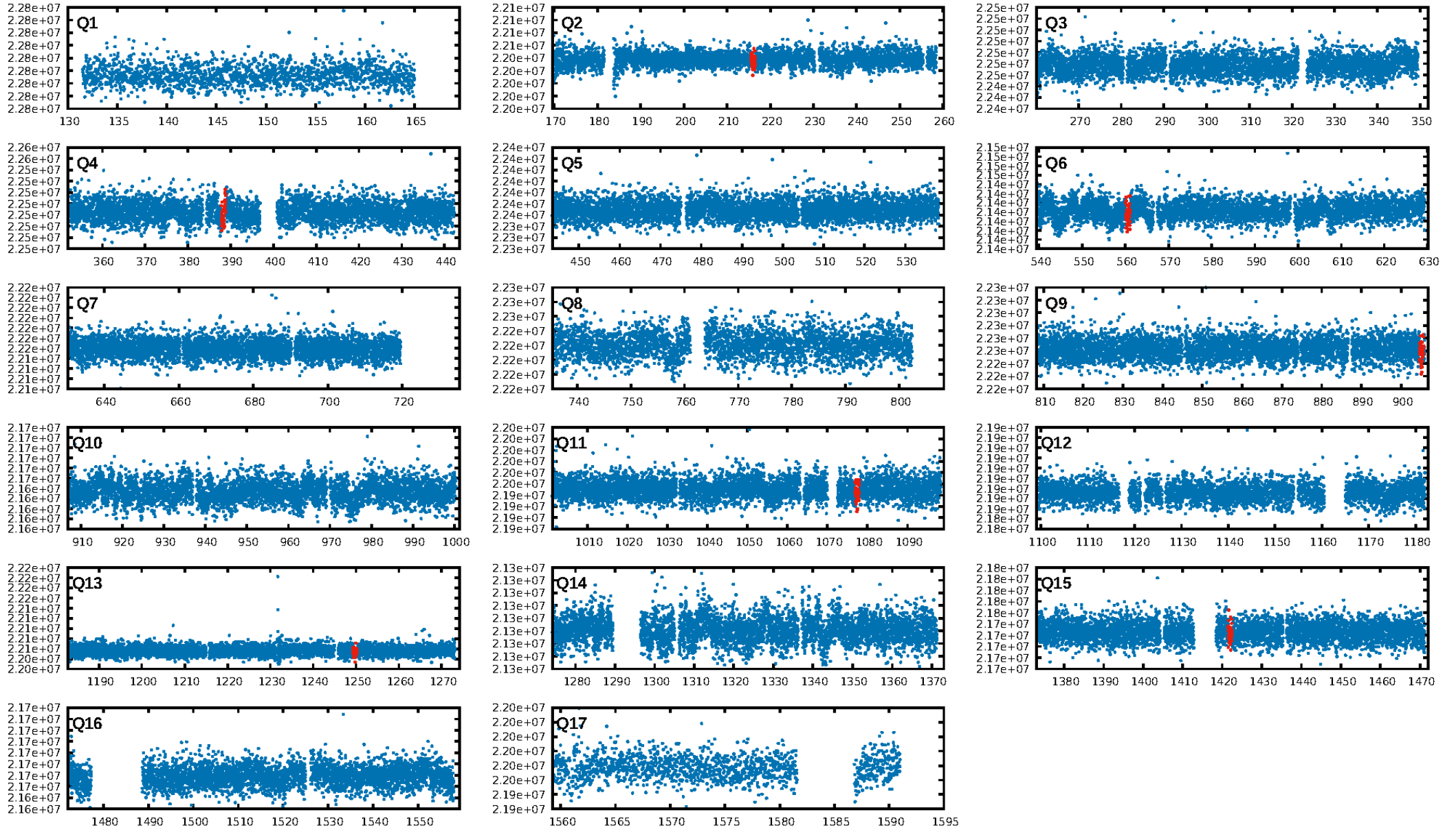
## DV Fit Results:

Period = 172.28088 [0.00503] d  
Epoch = 216.0325 [0.0244] BKJD  
Rp/R\* = 0.0180 [0.0072]  
a/R\* = 69.12 [119.30]  
b = 0.78 [0.87]  
Seff = 1.95 [0.70]  
Teq = 301 [27] K  
Rp = 1.71 [0.83] Re  
a = 0.5959 [0.1405] AU  
Ag = 11330.55 [10229.88] [1.11 $\sigma$ ]  
Teffp = 4809 [1016] K [4.44 $\sigma$ ]

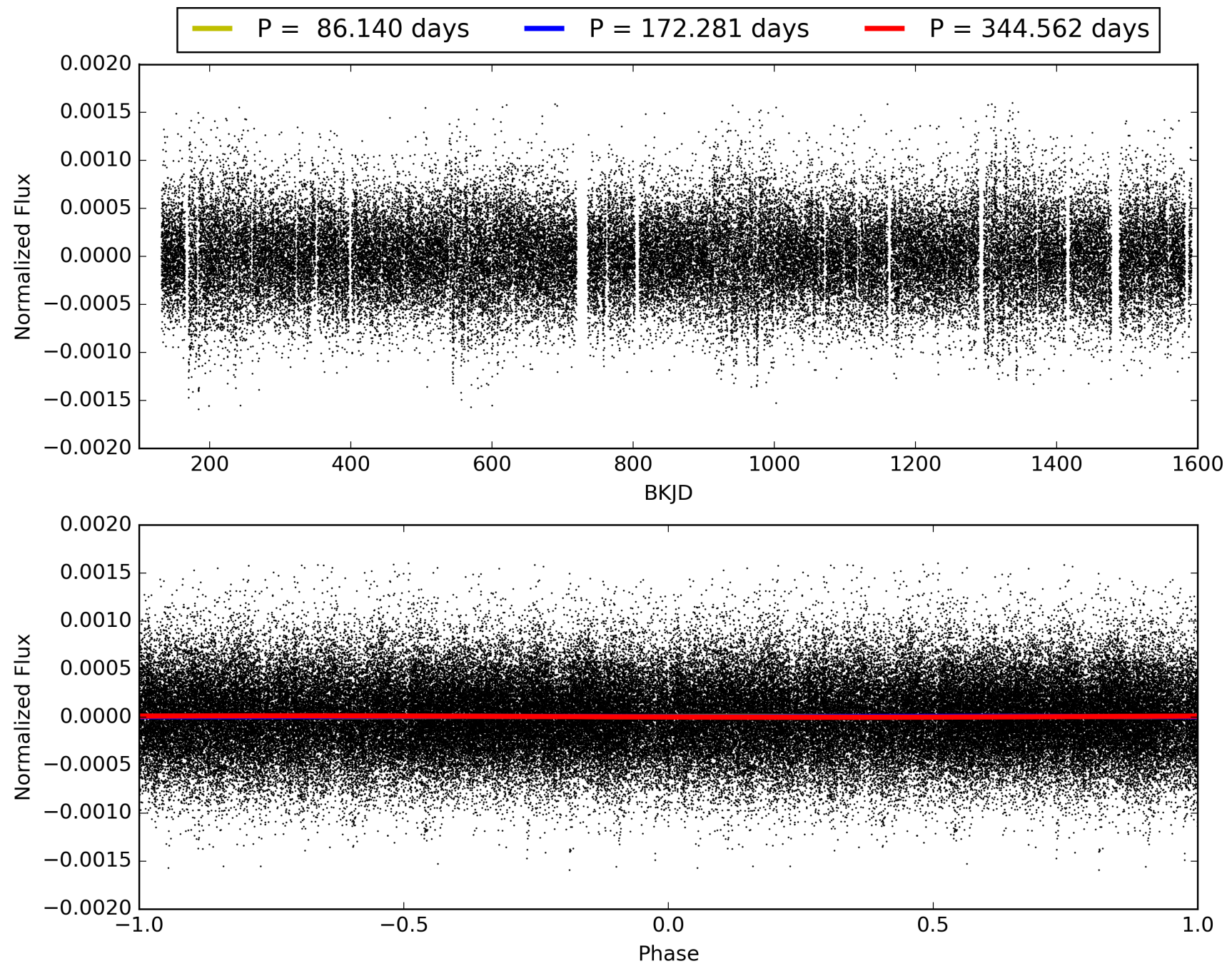
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.89e-13  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -4.776  
Centroid-sig: 41.1%  
Centroid-so: 1.861 arcsec [1.07 $\sigma$ ]  
OotOffset-rm: 5.089 arcsec [1.56 $\sigma$ ]  
KicOffset-rm: 5.135 arcsec [1.59 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [6/6]

# TCE 008873674-01, PDC Light Curves

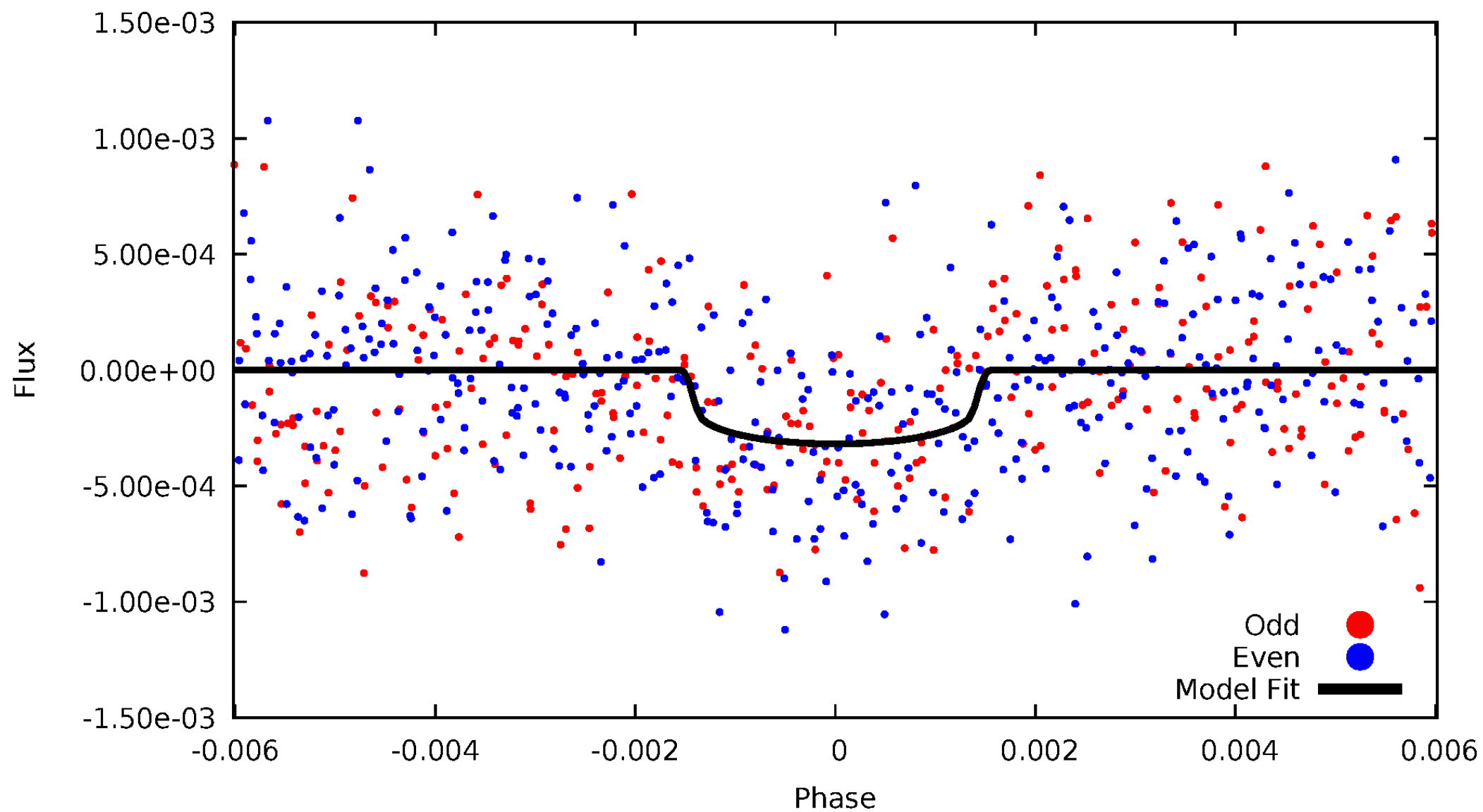


TCE 008873674-01



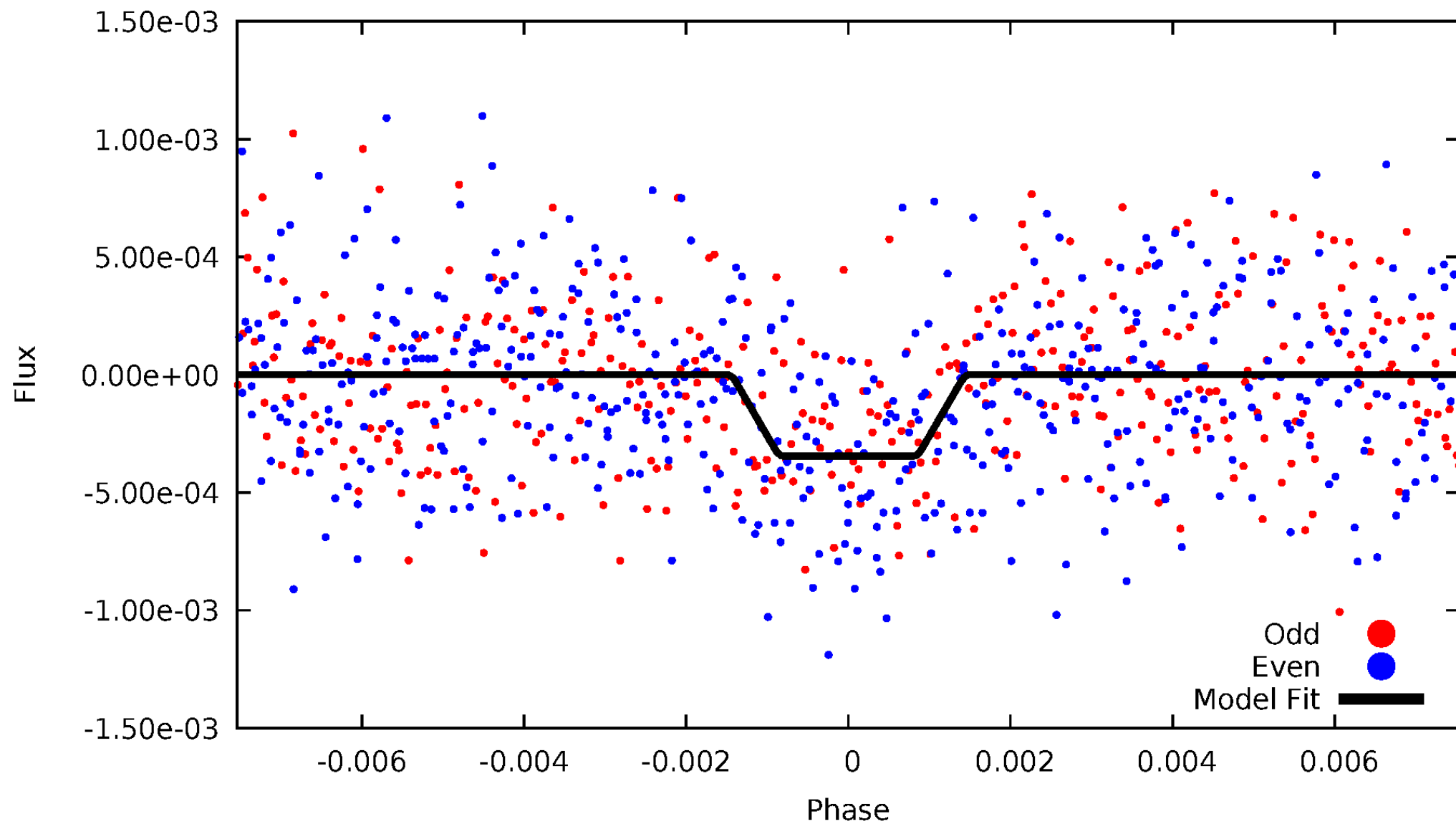
# DV Odd/Even

TCE 008873674-01



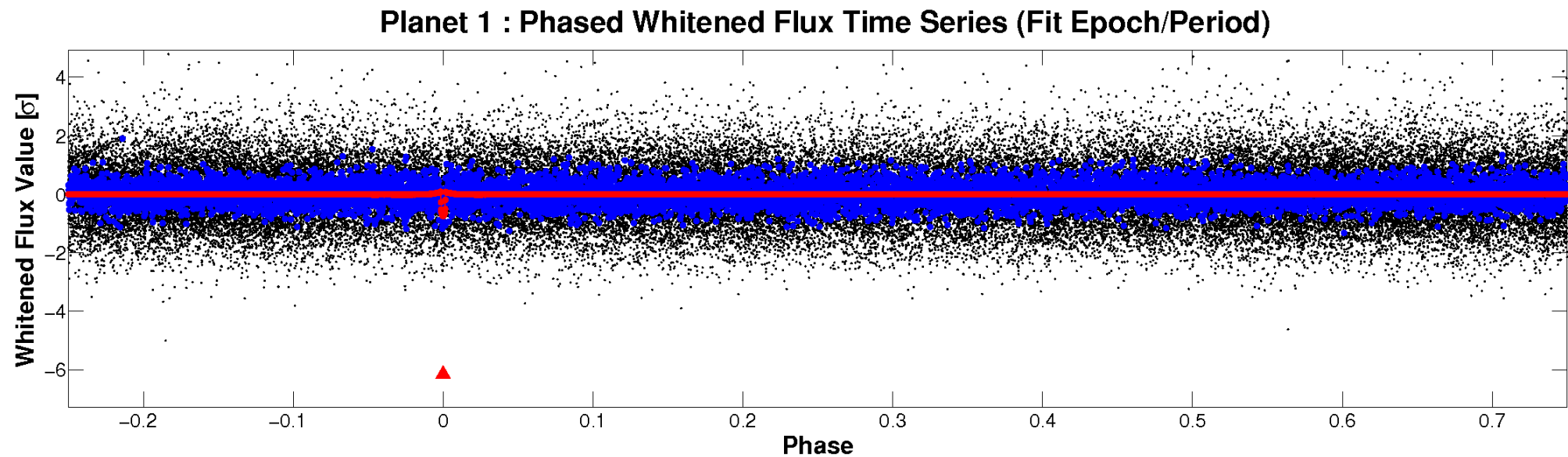
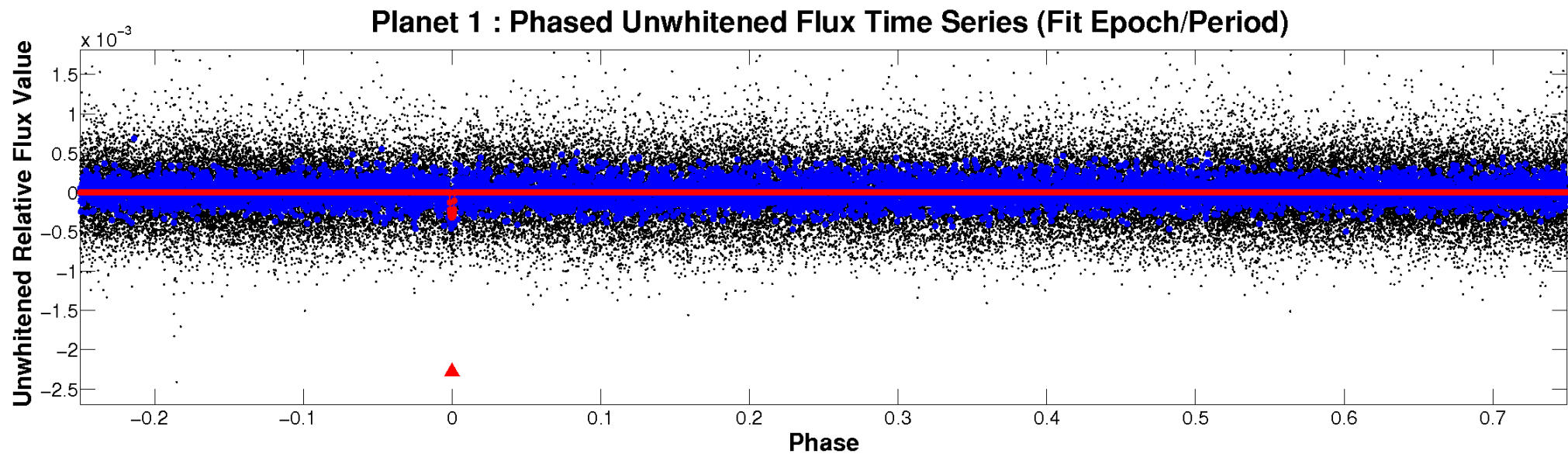
# ALT Odd/Even

TCE 008873674-01



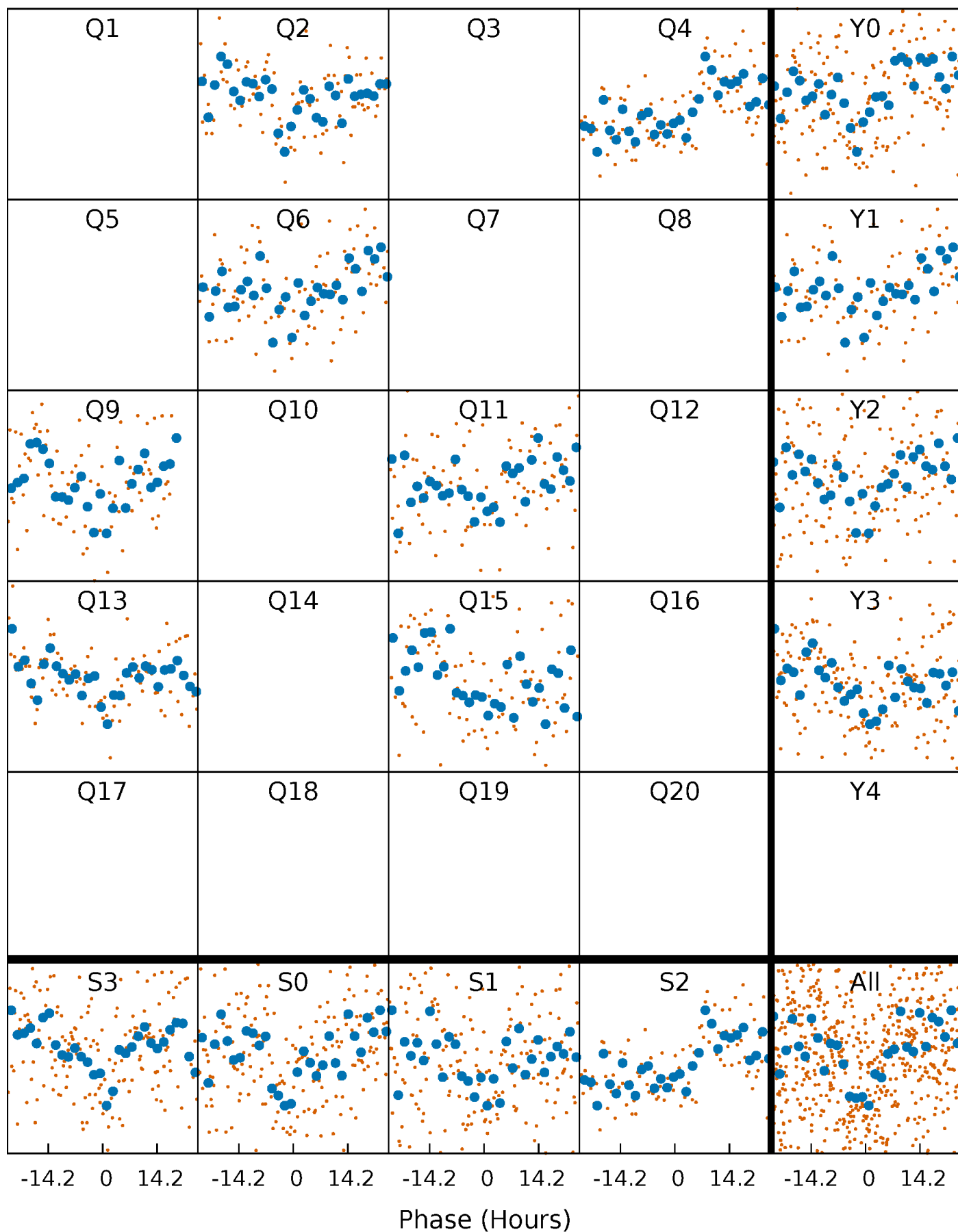


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 008873674-01 P=172.280877 Days  $T_0=216.032540$  (BKJD)





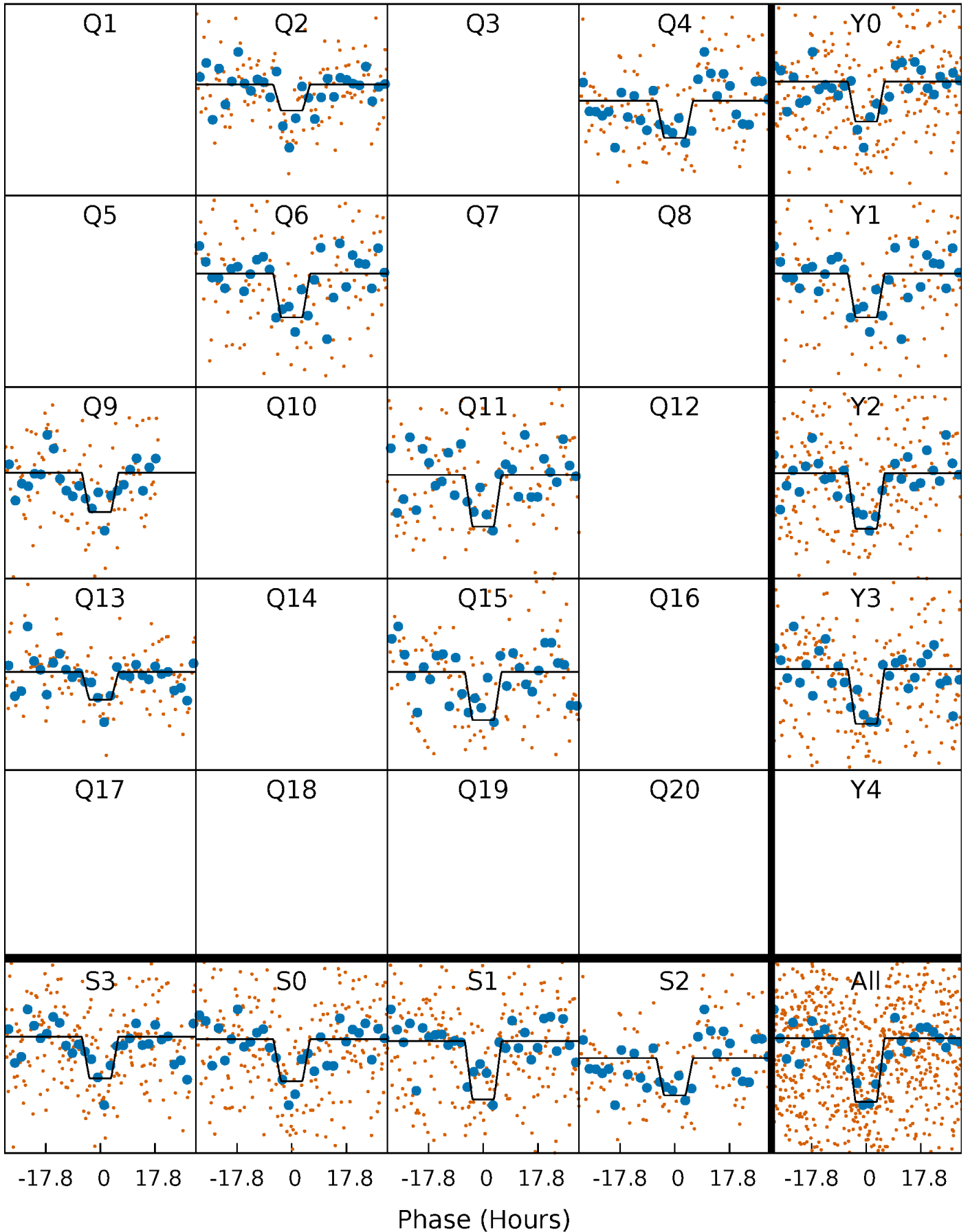
# DV Quarter-Phased Transit Curves

TCE 008873674-01 P=172.280877 Days  $T_0=216.032540$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

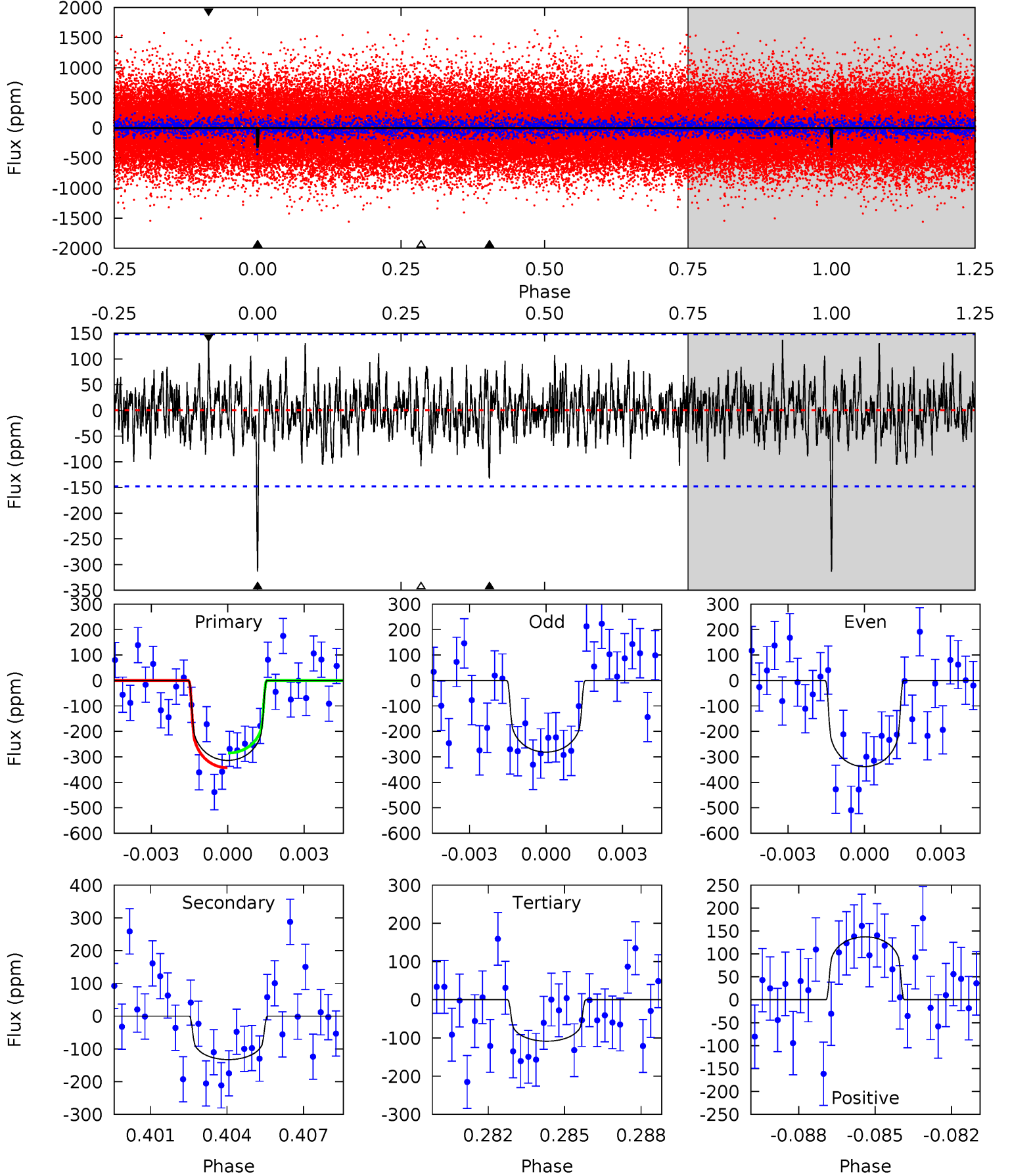
TCE 008873674-01 P=172.288967 Days  $T_0=215.987568$  (BKJD)



# DV Model-Shift Uniqueness Test

008873674-01,  $P = 172.280877$  Days,  $E = 43.751663$  Days

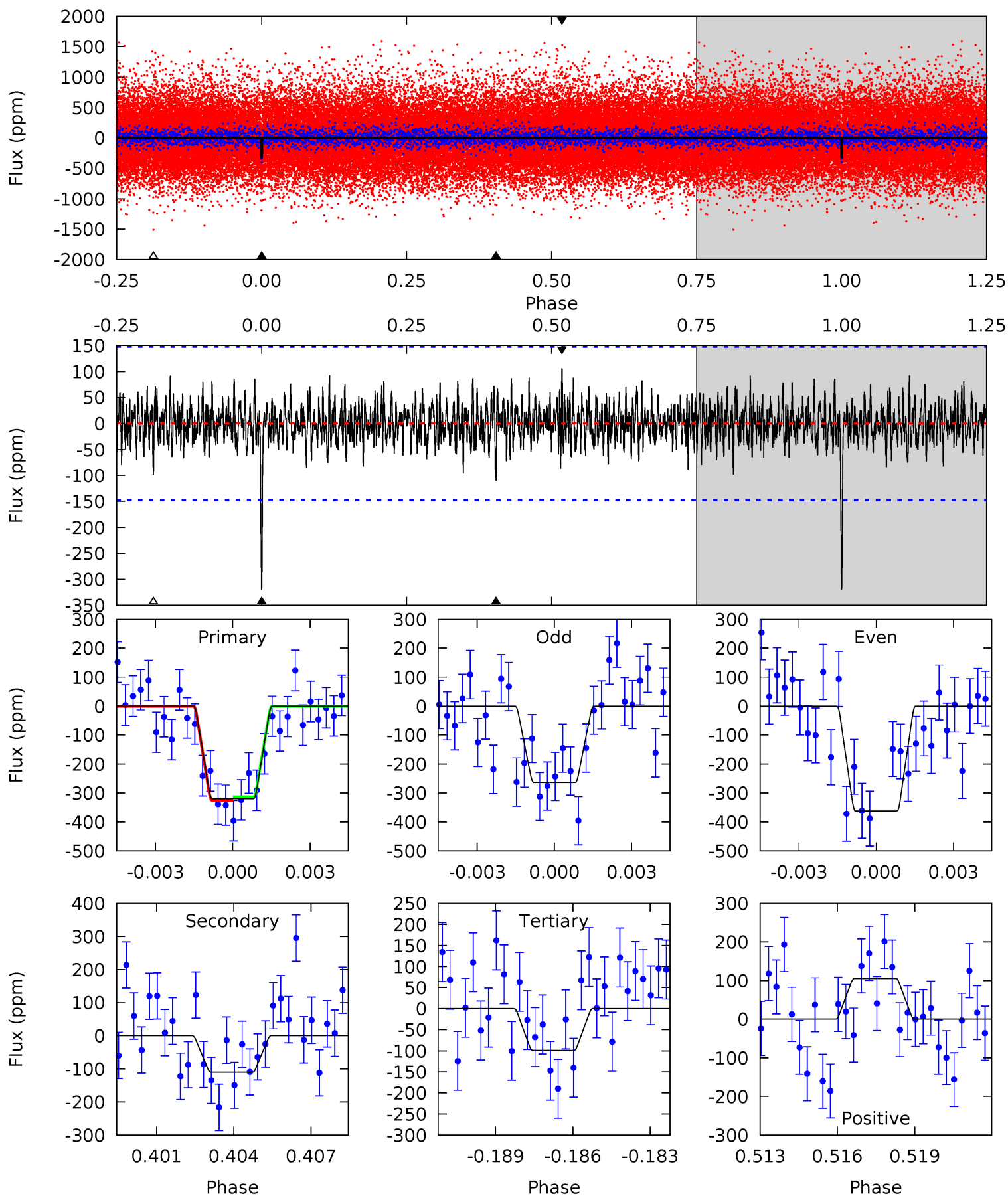
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	4.72	3.85	4.88	5.25	2.96	1.32	7.30	6.28	0.86	-0.16	1.01	0.97	0.30	1.03



# Alt Model-Shift Uniqueness Test

008873674-01, P = 172.288967 Days, E = 43.698601 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
11.4	3.93	3.50	3.75	5.26	2.97	1.09	7.87	7.62	0.43	0.18	1.75	0.99	0.25	0.21



### Stellar Parameters For KIC 008873674

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5659^{+152}_{-169}$	$4.538^{+0.034}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.869^{+0.246}_{-0.082}$	$0.950^{+0.094}_{-0.115}$	$2.040^{+0.475}_{-0.989}$
	+3%/-3%	+1%/-4%	+750%/-750%	+28%/-9%	+10%/-12%	+23%/-48%
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 008873674-01 / KOI 8278.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-133 \pm 28$	$1.82^{+0.82}_{-0.75}$	$431^{+29}_{-18}$	$4600^{+1216}_{-561}$	$7453^{+15091}_{-3961}$
Alt.	$-110 \pm 28$	$1.90^{+0.68}_{-0.73}$	$432^{+28}_{-20}$	$4399^{+982}_{-510}$	$5810^{+9794}_{-2935}$

$T_{max}$  = 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

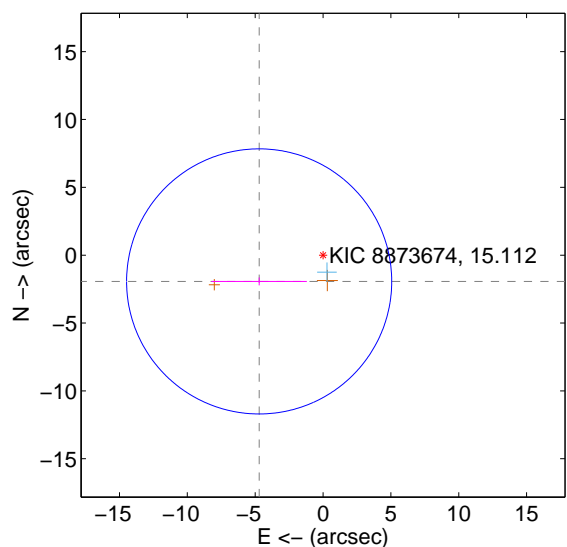
Supplemental centroid analysis for 008873674-01. Kepler magnitude: 15.11. Transit SNR 8.49

There are 1 quarters with good PRF difference image offsets

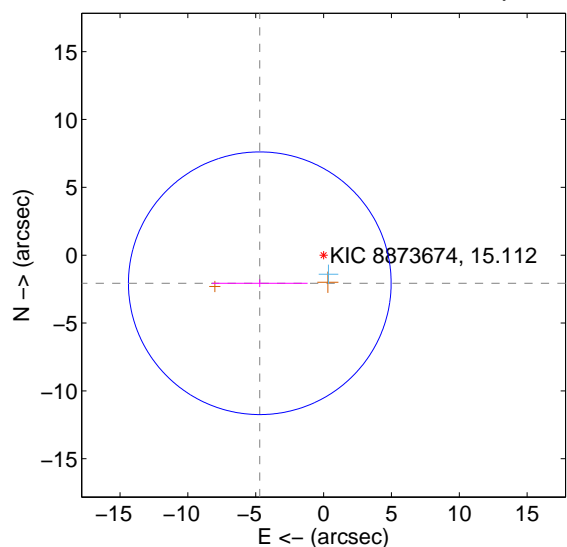
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.089 \pm 3.256$	1.56	$4.707 \pm 3.518$	$-1.933 \pm 0.288$
PRF-fit source offset from KIC position	$5.135 \pm 3.226$	1.59	$4.700 \pm 3.522$	$-2.069 \pm 0.281$
photometric centroid source offset	$1.86 \pm 1.73$	1.07	$-1.86 \pm 1.73$	$-0.09 \pm 1.90$

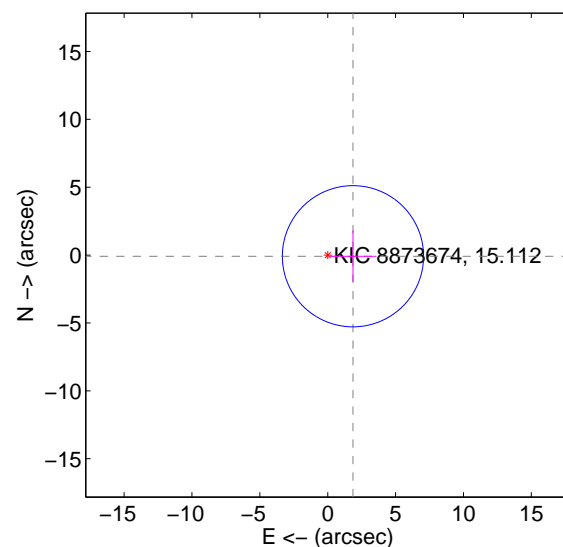
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



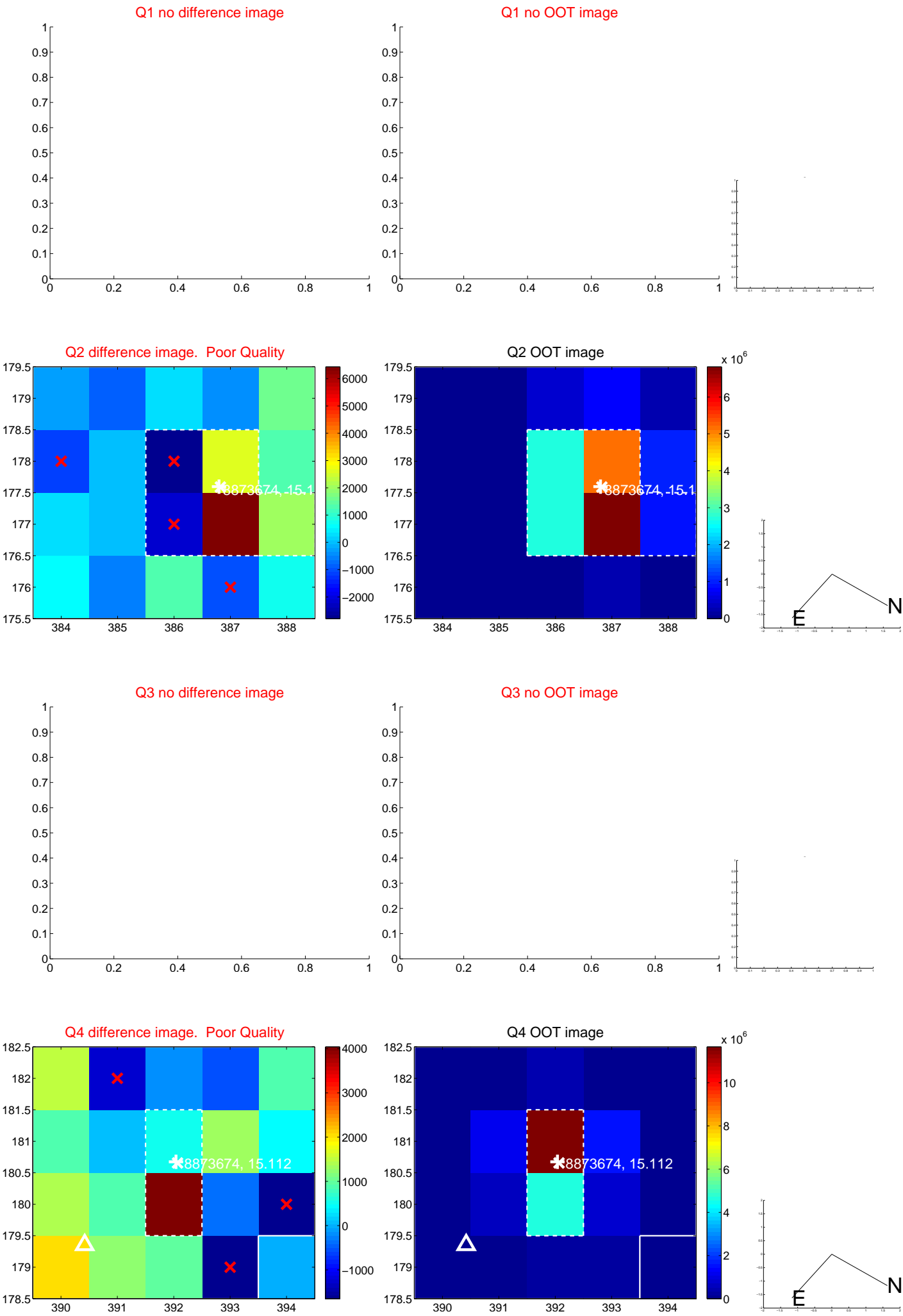
offset from photometric centroids



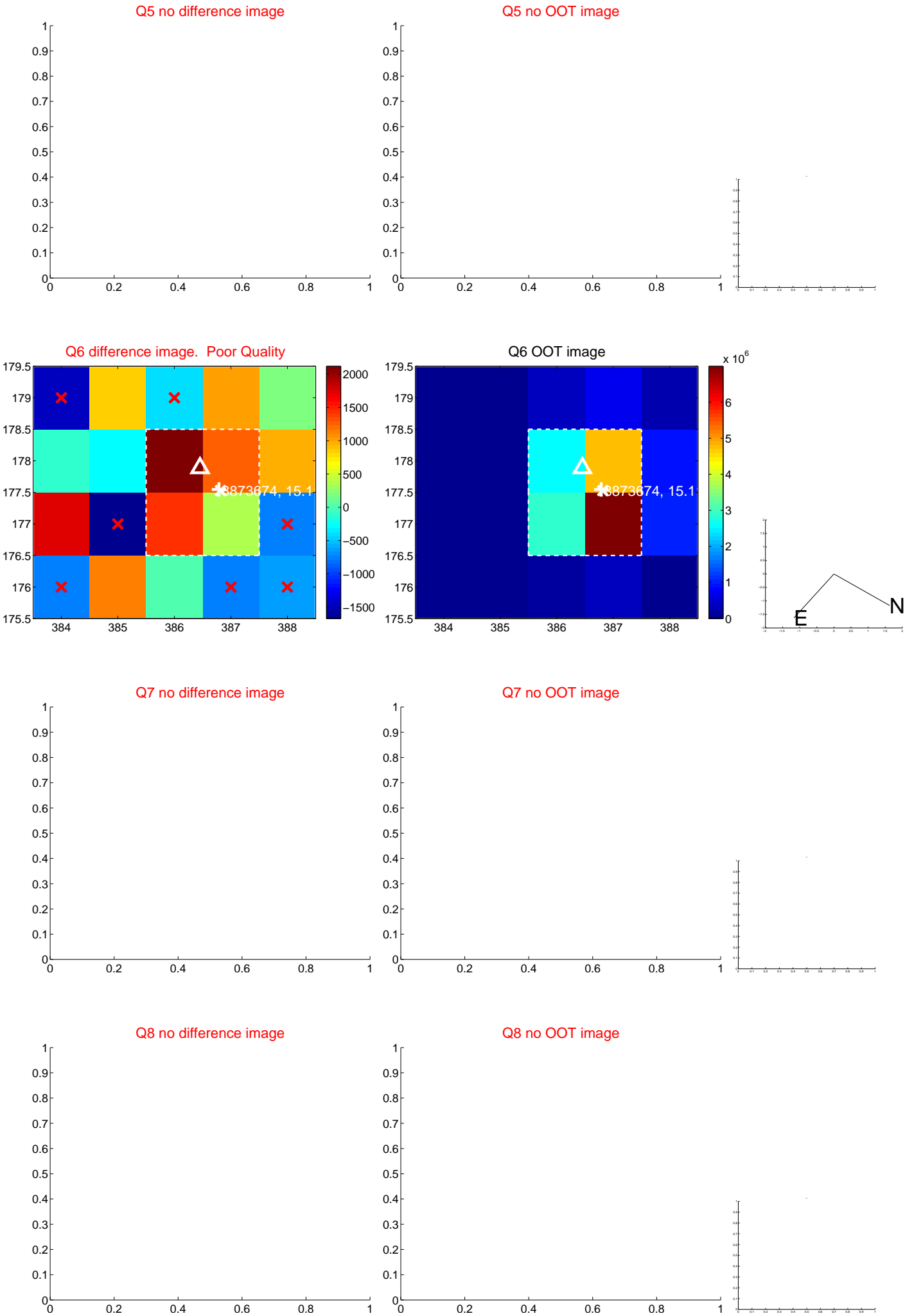
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



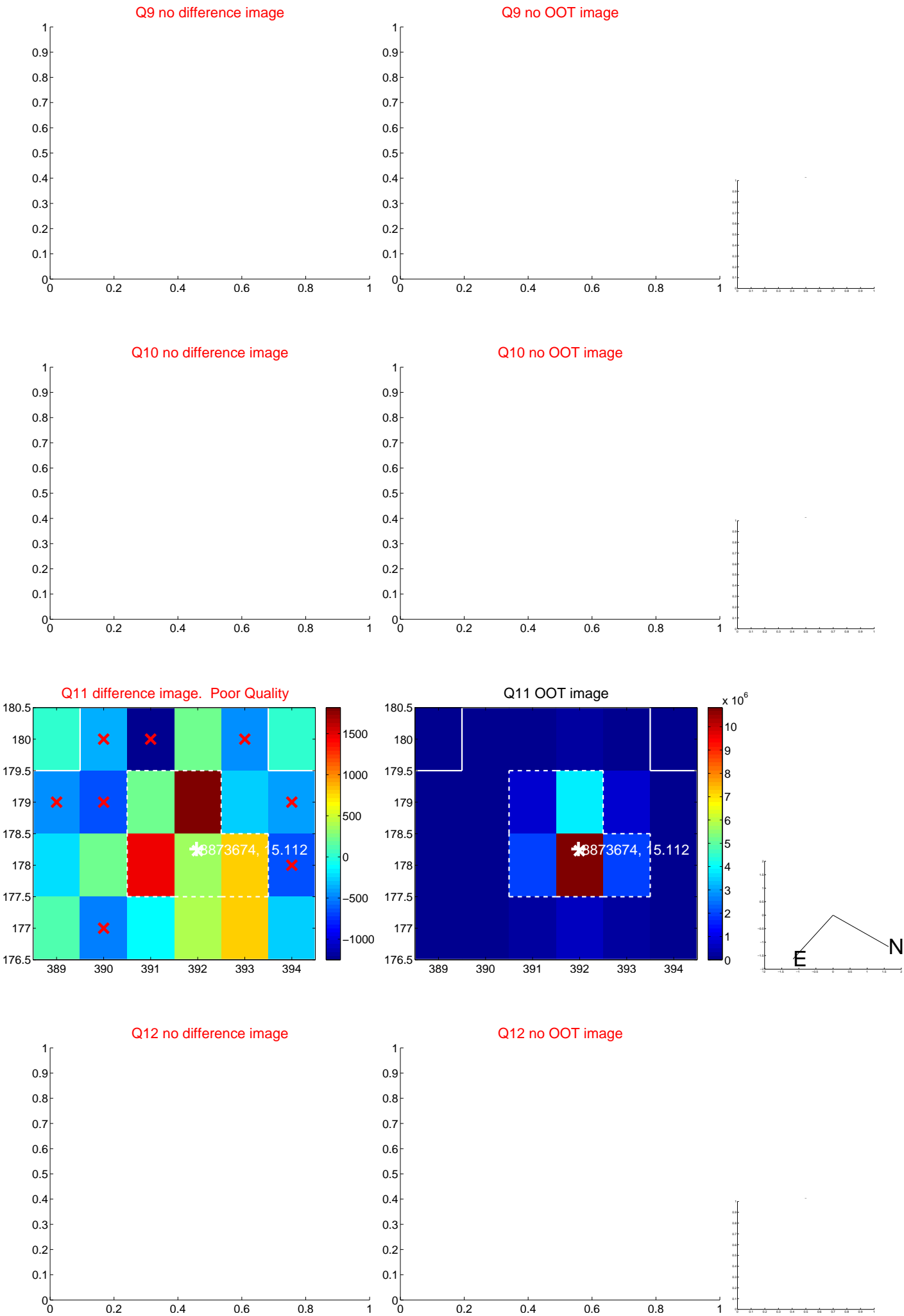
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



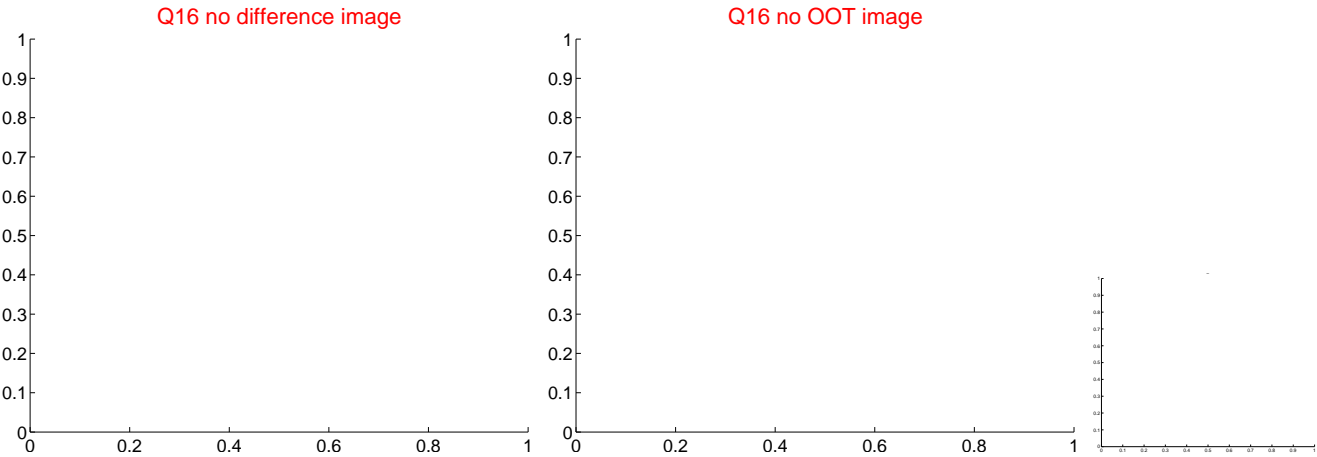
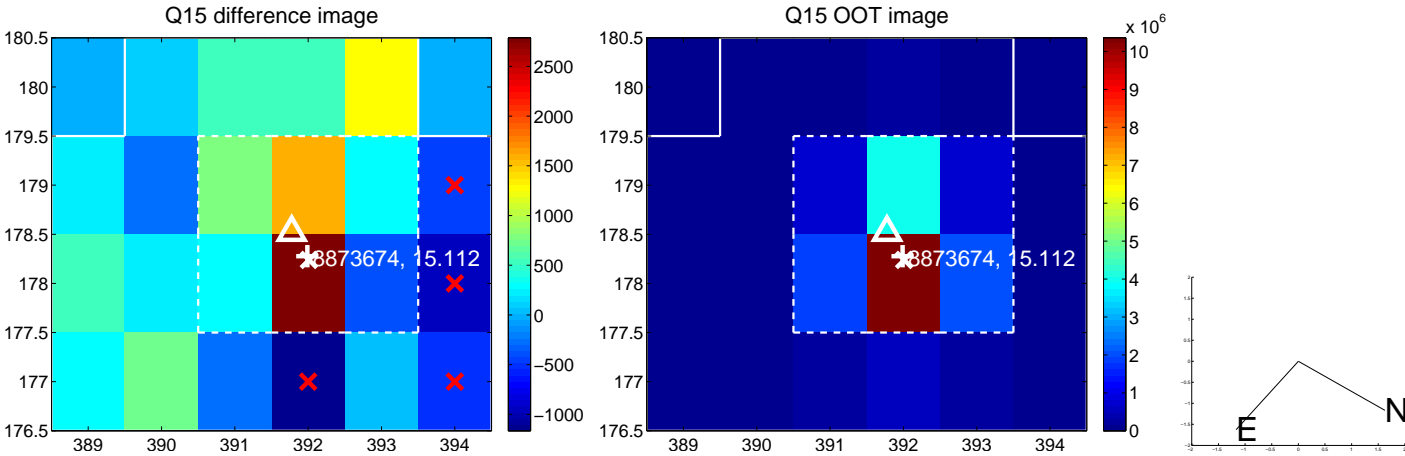
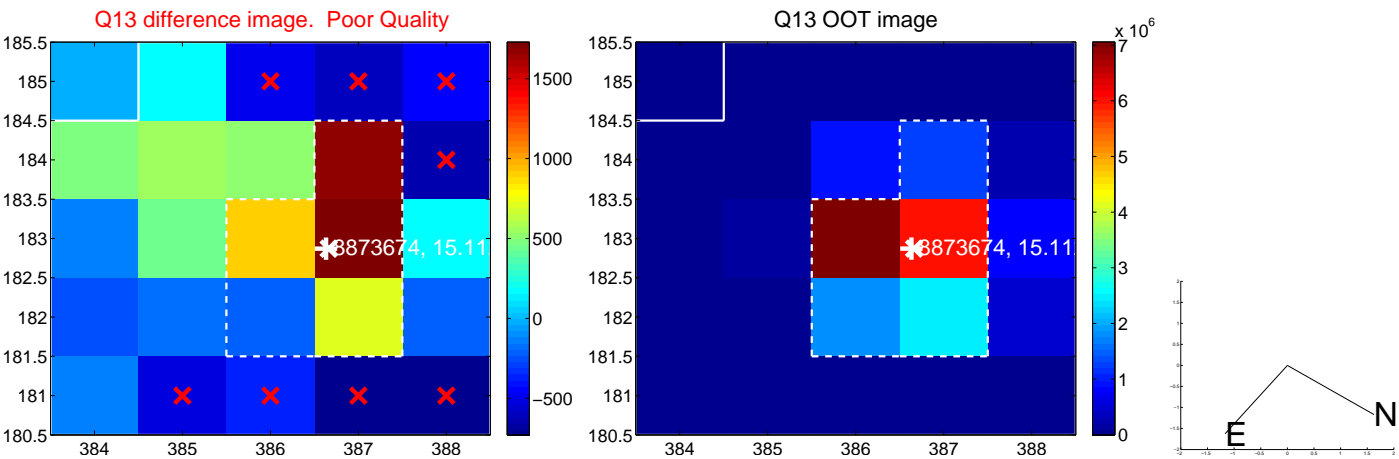
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



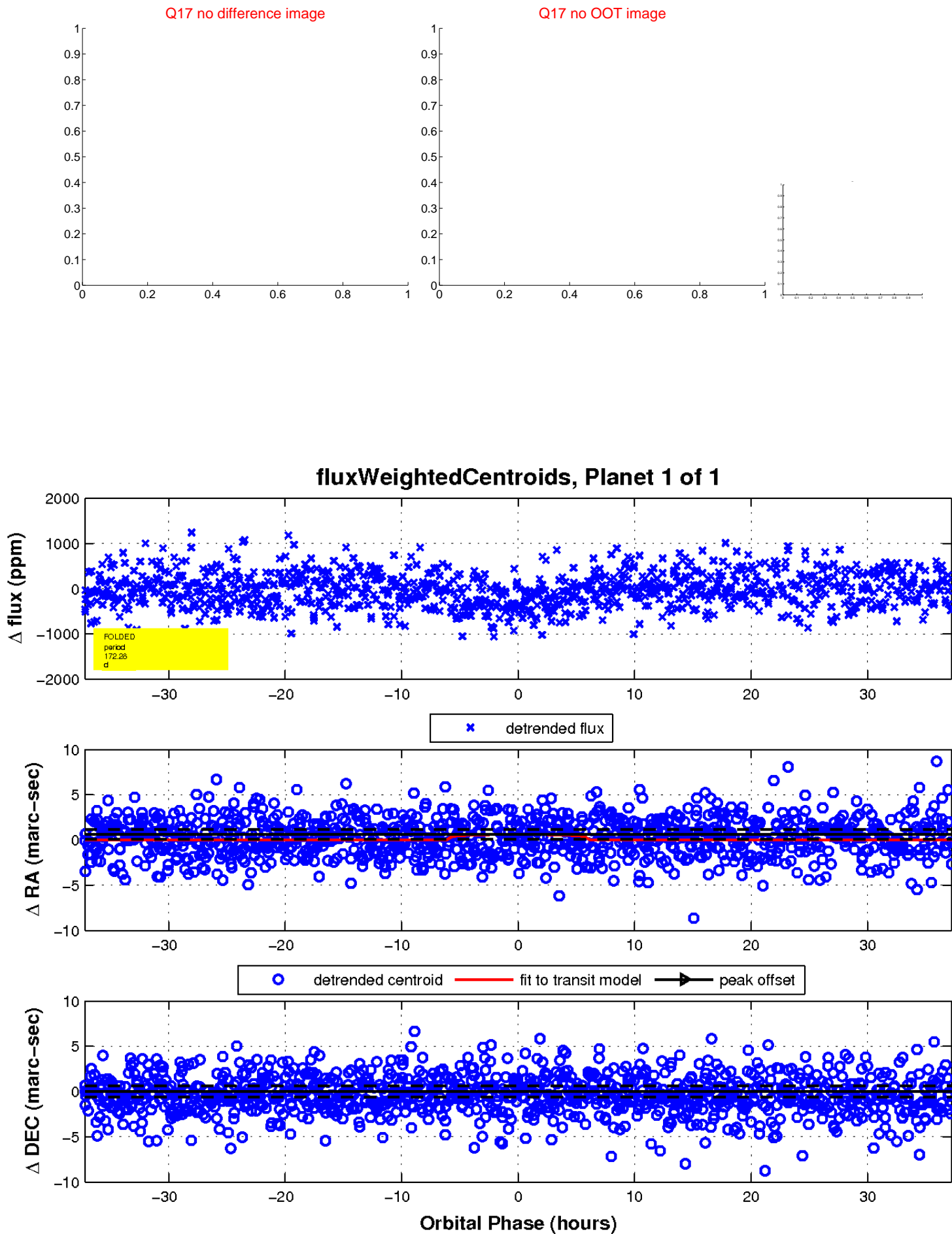
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

