

# KIC 003542117

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003542117-01	OBS	4987.01	12.575351	143.105935	703.8	3.938	9.1	9.3	0.39	3552	1.24	3.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003542117-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

**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 003542117-01

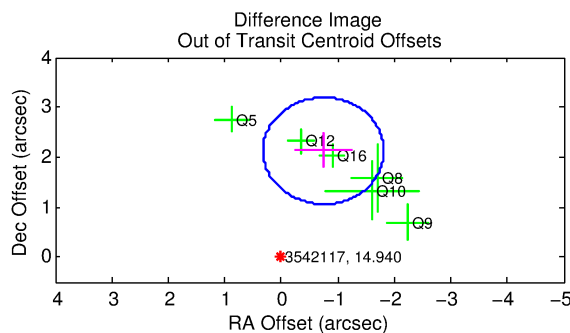
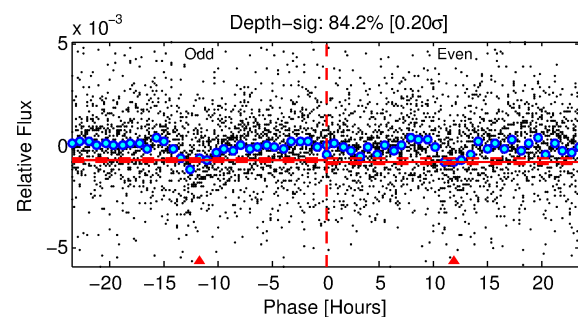
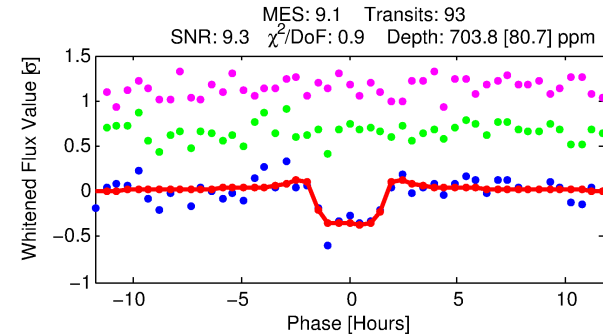
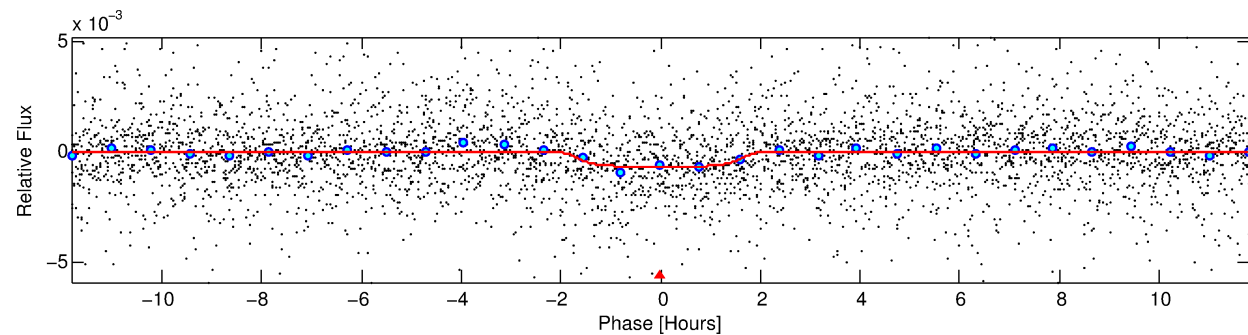
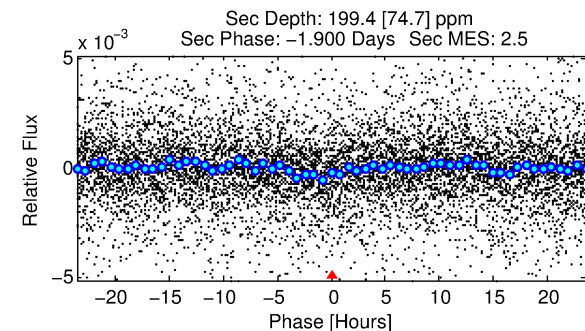
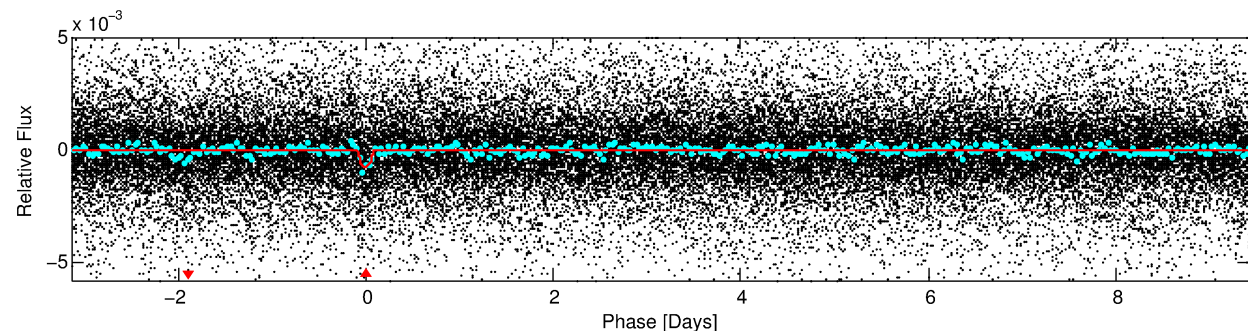
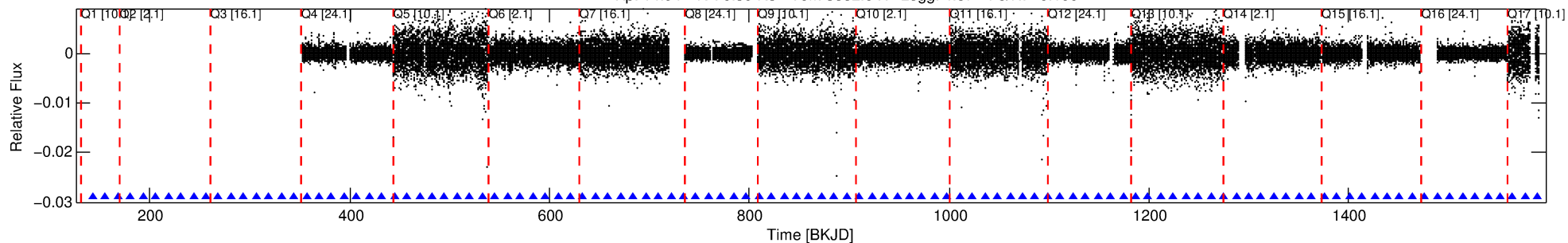
No Significant Match Found

# DV One-Page Summary

KIC: 3542117 Candidate: 1 of 1 Period: 12.575 d

KOI: K04987.01 Corr: 0.902

Kp: 14.94 R\*: 0.39 Rs Teff: 3552.0 K Logg: 4.87 Fe/H: -0.100



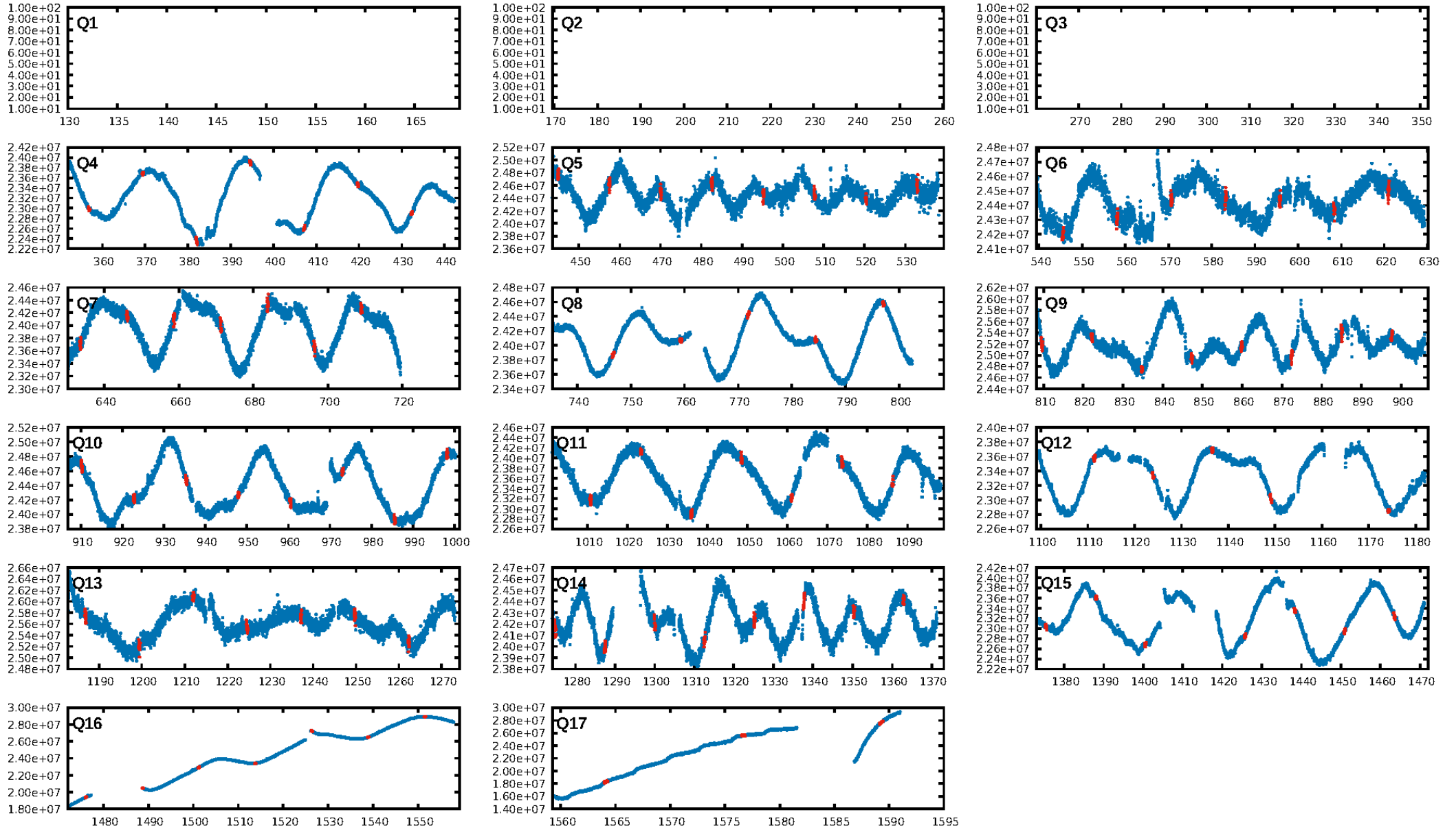
## DV Fit Results:

Period = 12.57535 [0.00011] d  
Epoch = 143.1059 [0.0079] BKJD  
Rp/R\* = 0.0292 [0.0044]  
a/R\* = 11.84 [6.43]  
b = 0.91 [0.11]  
Seff = 3.50 [0.45]  
Teq = 349 [11] K  
Rp = 1.23 [0.23] Re  
a = 0.0781 [0.0065] AU  
Ag = 439.24 [215.37] [2.03σ]  
Teffp = 2468 [300] K [7.06σ]

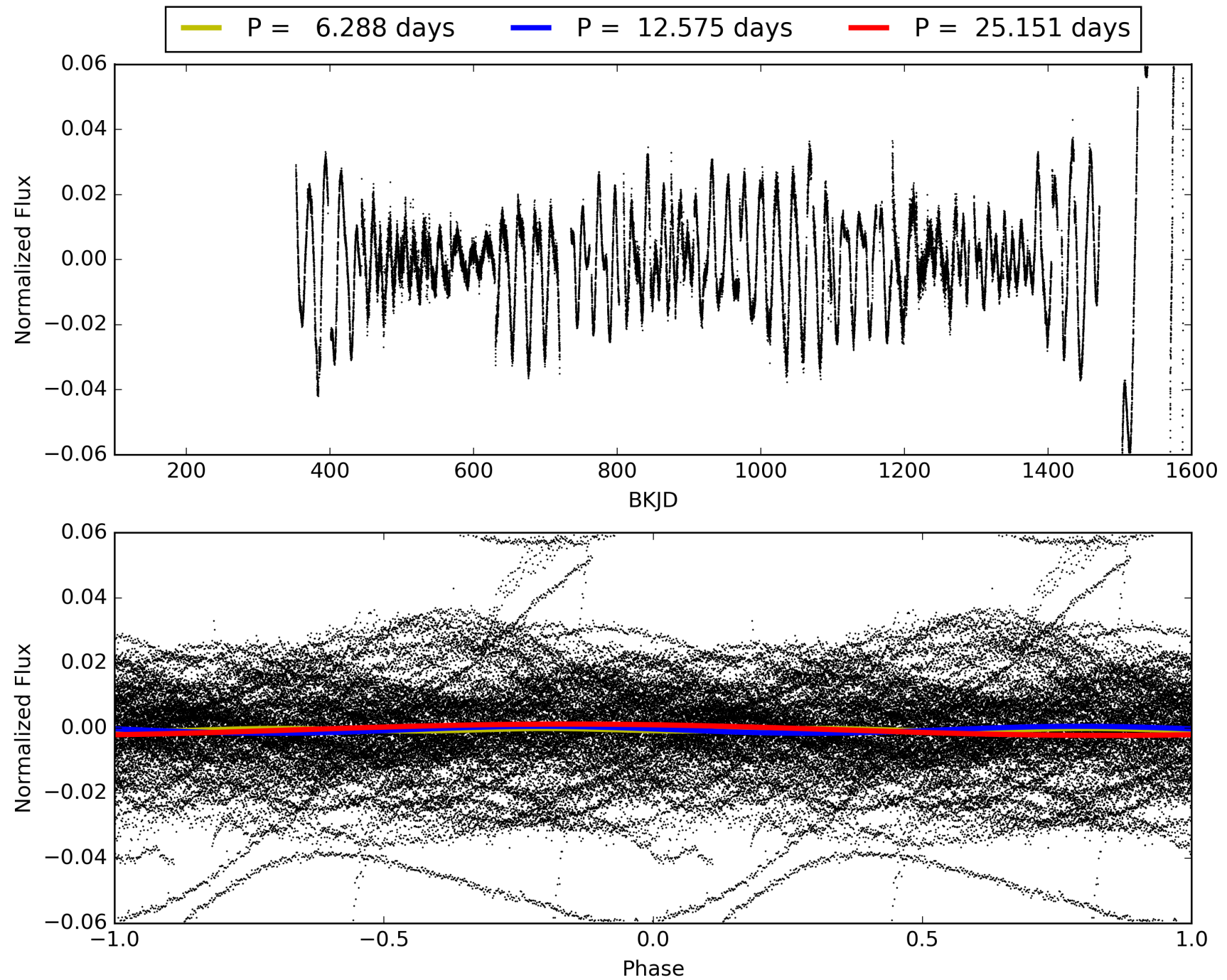
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.55e-16  
RollingBand-fgt: 1.00 [90/90]  
GhostDiagnostic-chr: -0.4803  
Centroid-sig: 3.1%  
Centroid-so: 3.970 arcsec [46.15σ]  
OotOffset-rm: 2.253 arcsec [6.32σ]  
KicOffset-rm: 3.922 arcsec [7.30σ]  
OotOffset-st: 1/0/3/2 [6]  
KicOffset-st: 1/1/3/2 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 003542117-01, PDC Light Curves

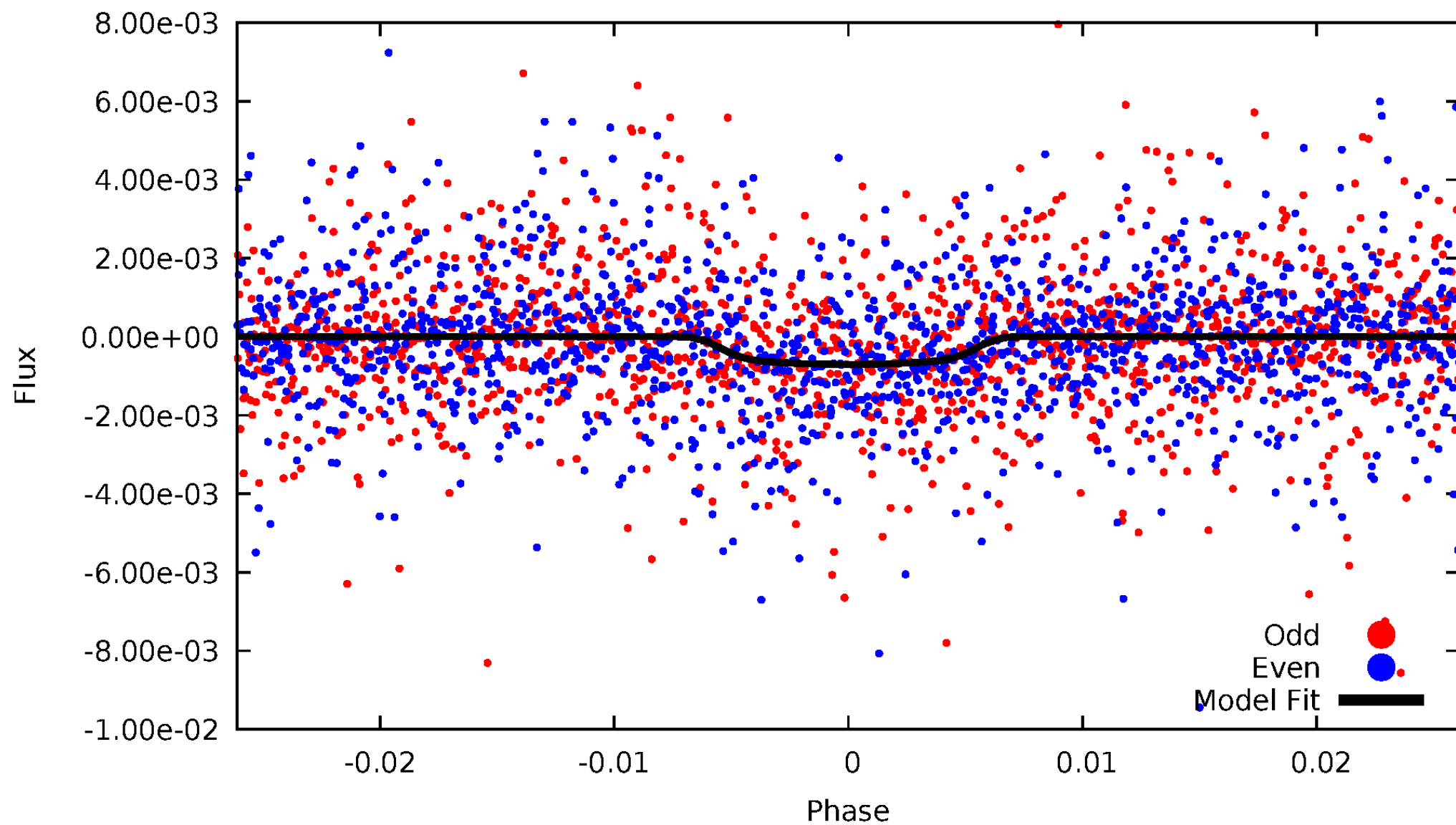


TCE 003542117-01



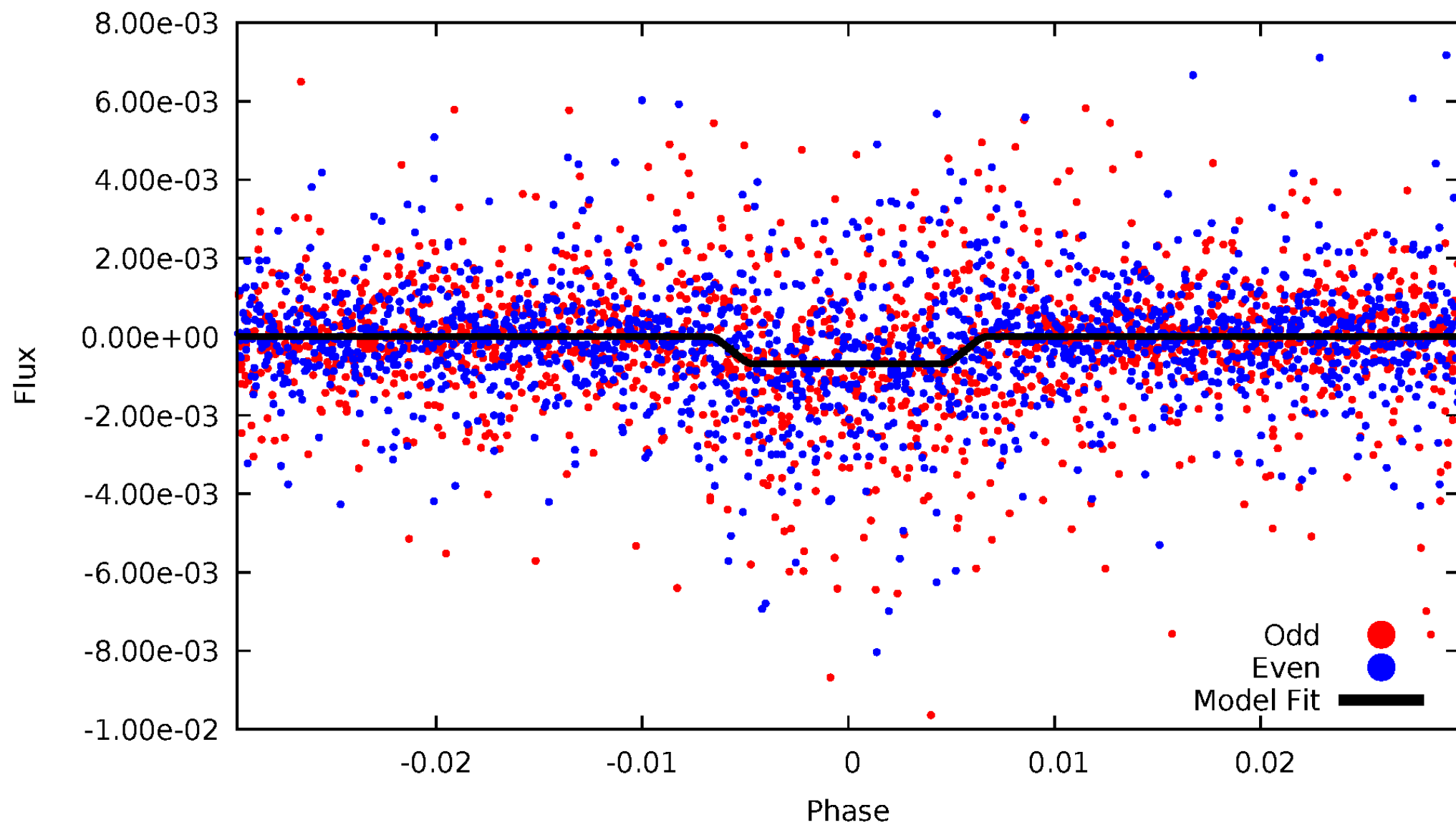
DV Odd/Even

TCE 003542117-01



# ALT Odd/Even

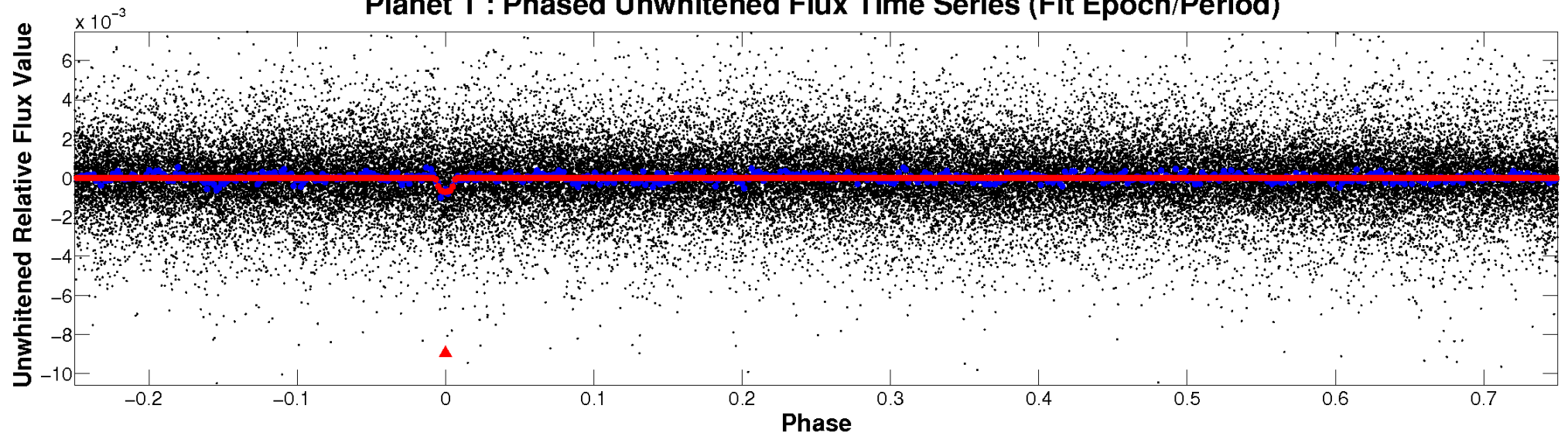
TCE 003542117-01



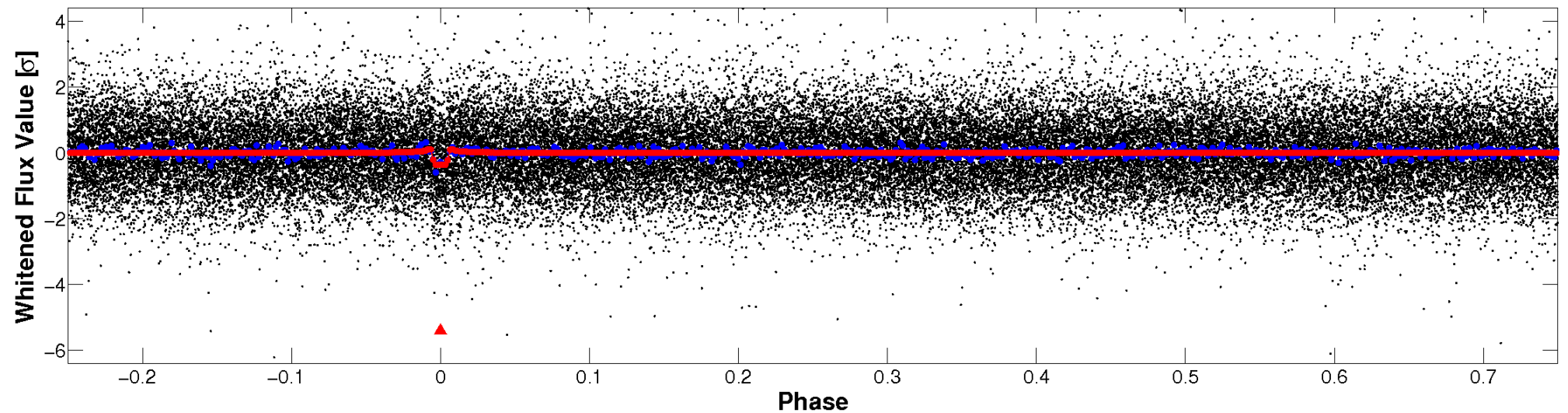


# Non-Whitened Vs. Whitened Light Curve

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

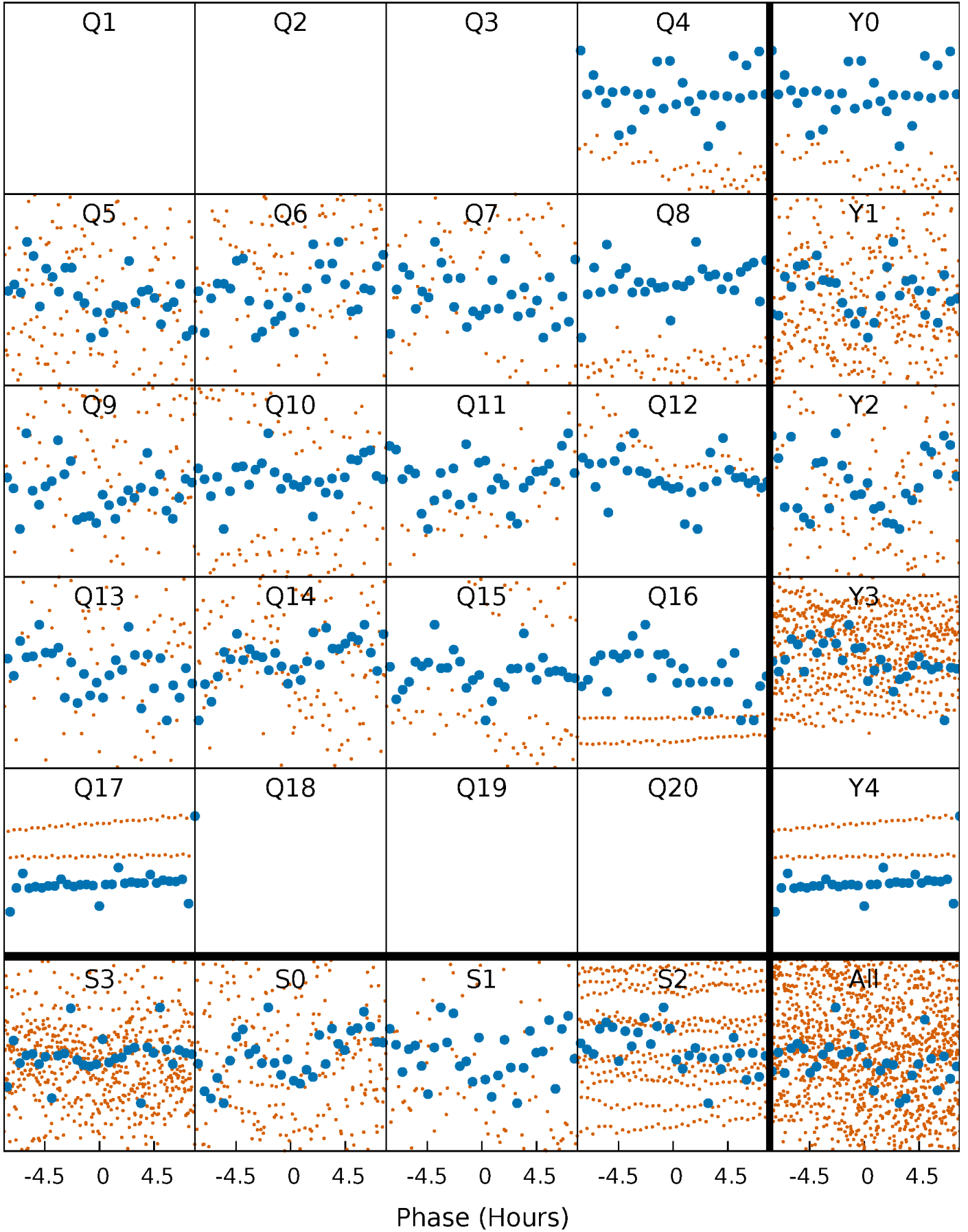


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

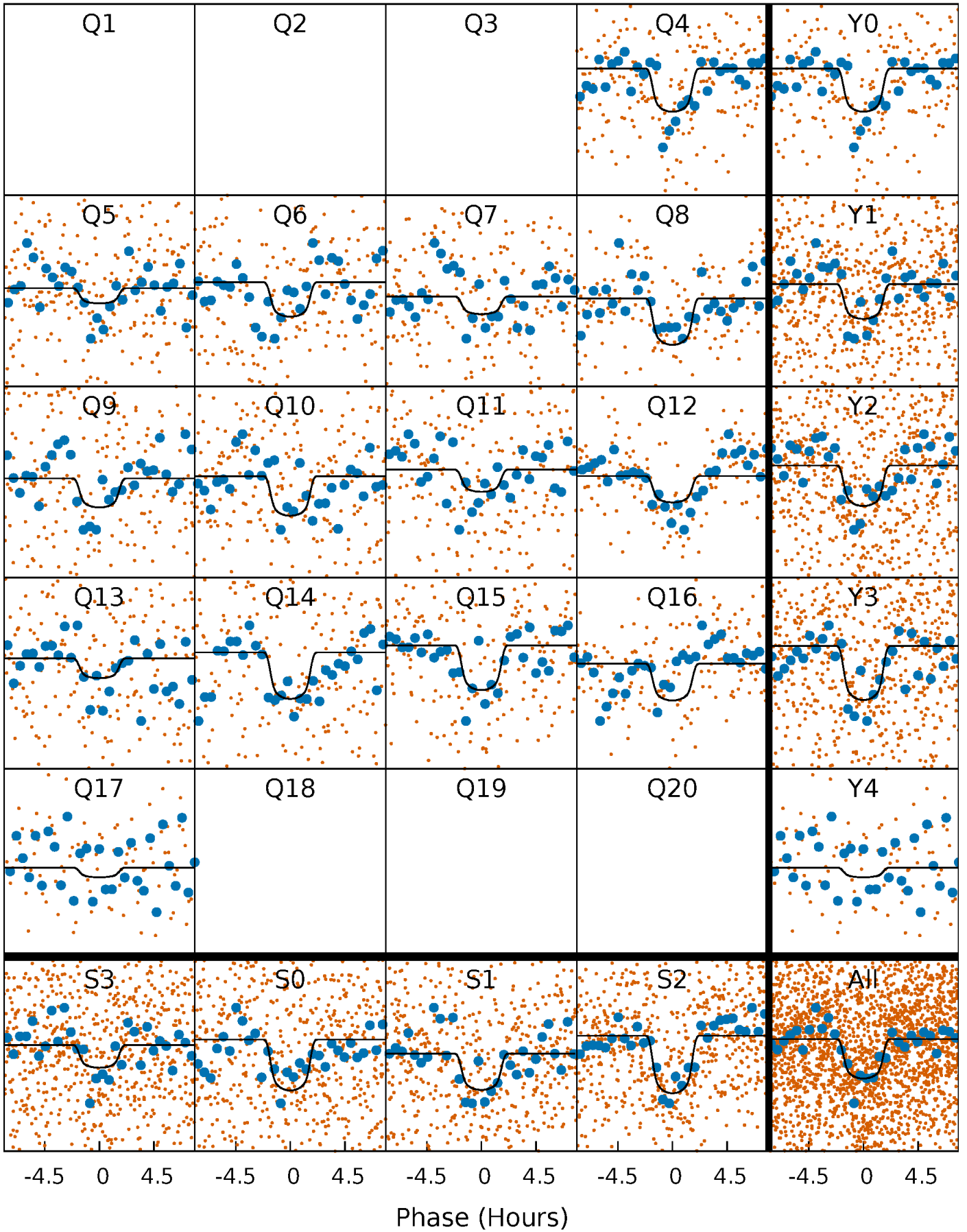
TCE 003542117-01 P= 12.575351 Days  $T_0=143.105935$  (BKJD)





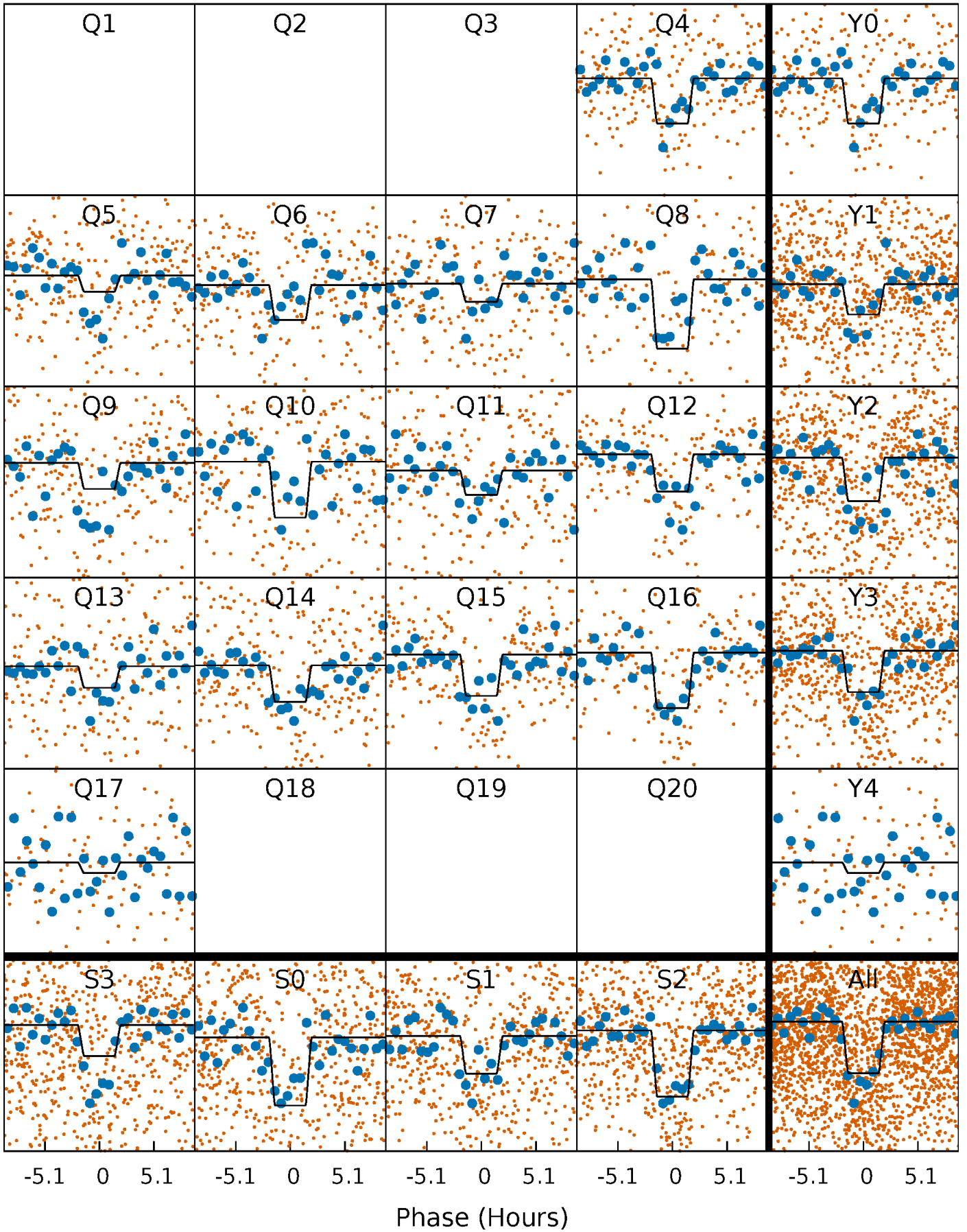
# DV Quarter-Phased Transit Curves

TCE 003542117-01 P= 12.575351 Days  $T_0=143.105935$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

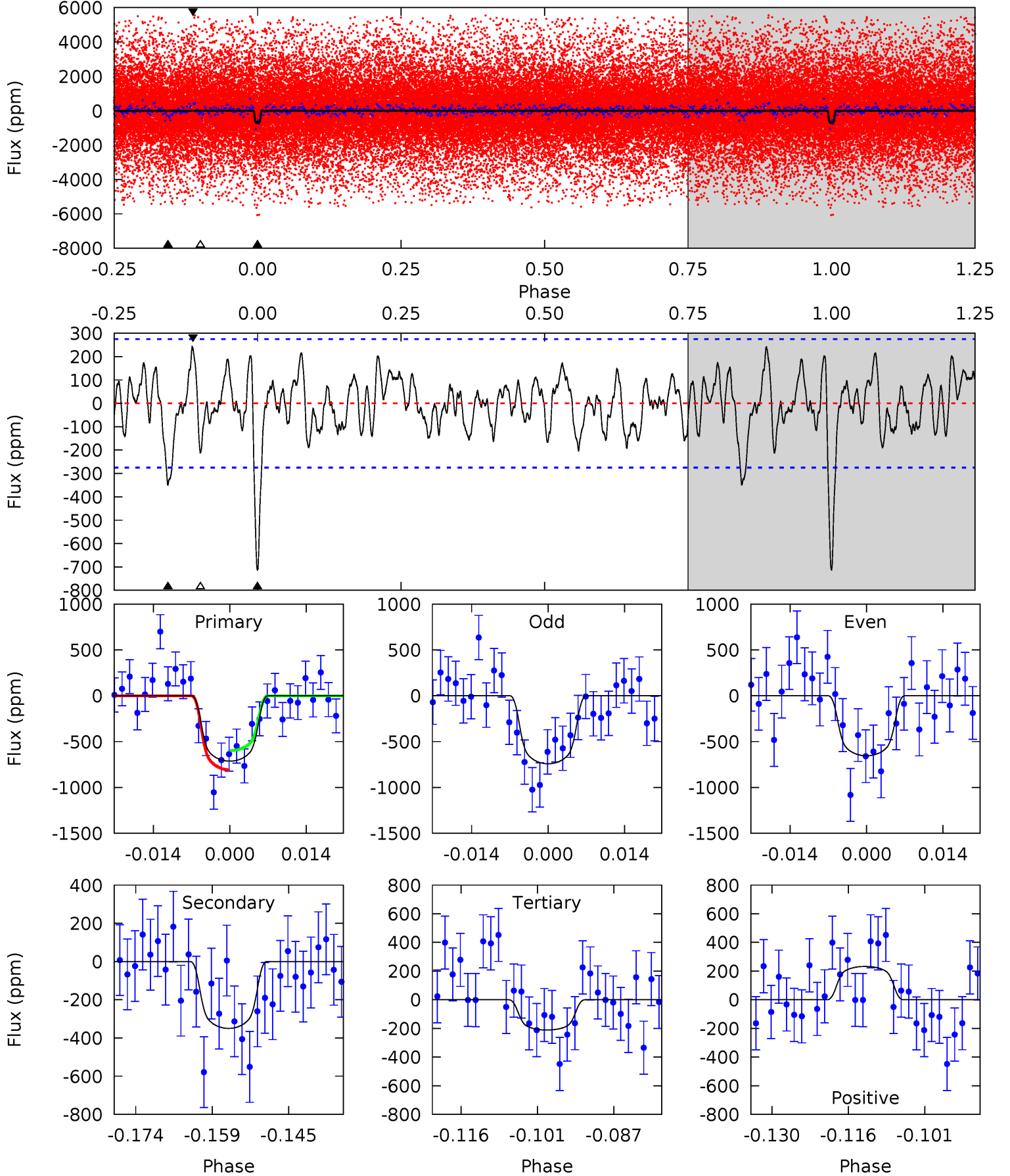
TCE 003542117-01 P= 12.575233 Days  $T_0=143.115135$  (BKJD)



# DV Model-Shift Uniqueness Test

003542117-01, P = 12.575351 Days, E = 143.105935 Days

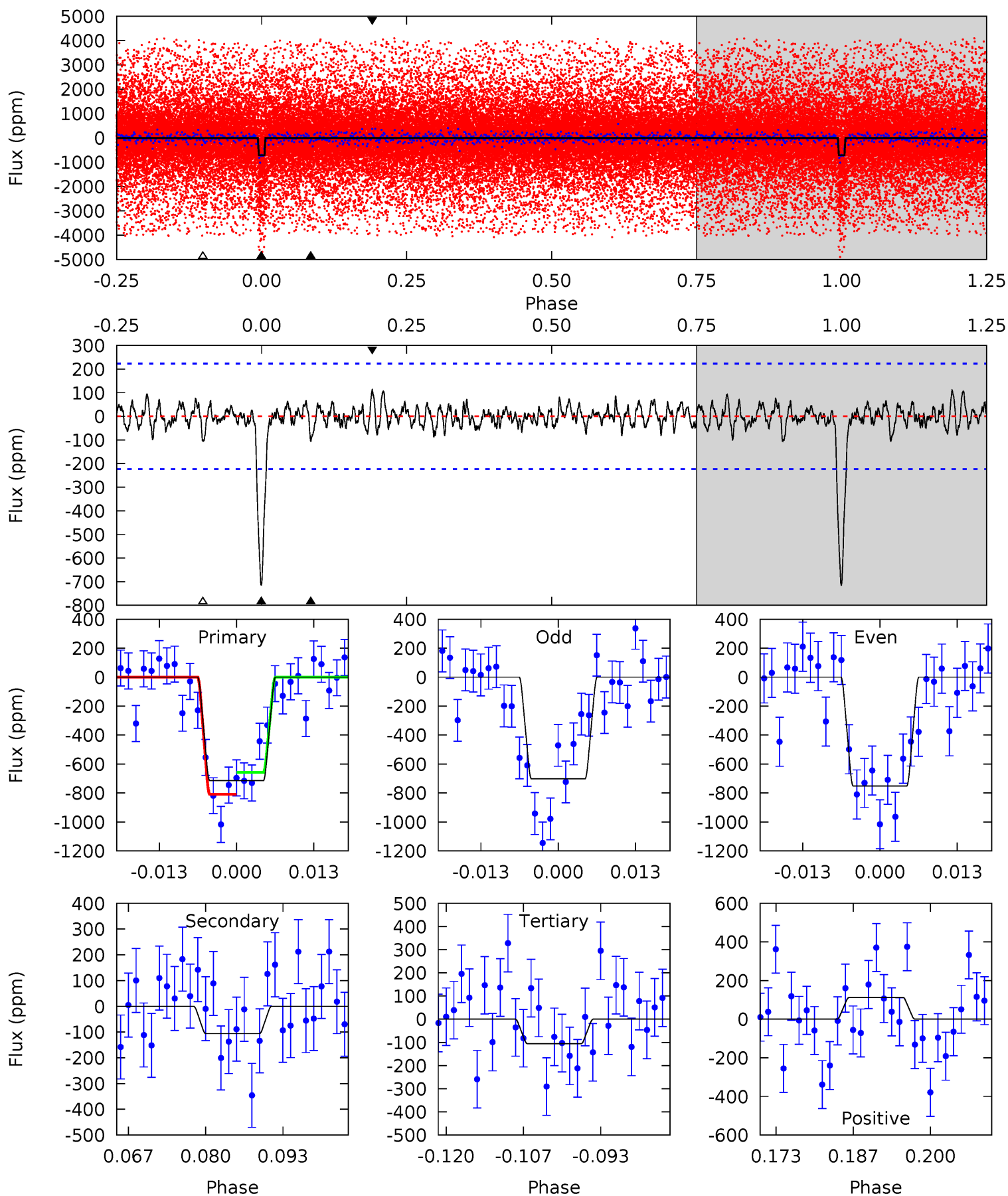
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	6.30	3.81	4.19	4.95	2.45	1.60	9.03	8.65	2.49	2.11	0.80	1.07	0.25	1.90



# Alt Model-Shift Uniqueness Test

003542117-01,  $P = 12.575233$  Days,  $E = 143.115135$  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
15.9	2.36	2.35	2.51	4.97	2.47	0.77	13.6	13.4	0.01	-0.15	0.55	1.02	0.14	1.71



### Stellar Parameters For KIC 003542117

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3552^{+57}_{-71}$	$4.867^{+0.045}_{-0.040}$	$-0.100^{+0.100}_{-0.100}$	$0.387^{+0.040}_{-0.044}$	$0.406^{+0.042}_{-0.052}$	$9.848^{+2.518}_{-1.674}$
	+2%/-2%	+1%/-1%	+100%/-100%	+10%/-11%	+10%/-13%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003542117-01 / KOI 4987.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-350 \pm 56$	$1.25^{+0.18}_{-0.21}$	$487^{+12}_{-14}$	$3090^{+185}_{-143}$	$772^{+337}_{-217}$
Alt.	$-106 \pm 45$	$1.12^{+0.20}_{-0.19}$	$487^{+12}_{-13}$	$2693^{+199}_{-213}$	$285^{+181}_{-138}$

$T_{max}$  = 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

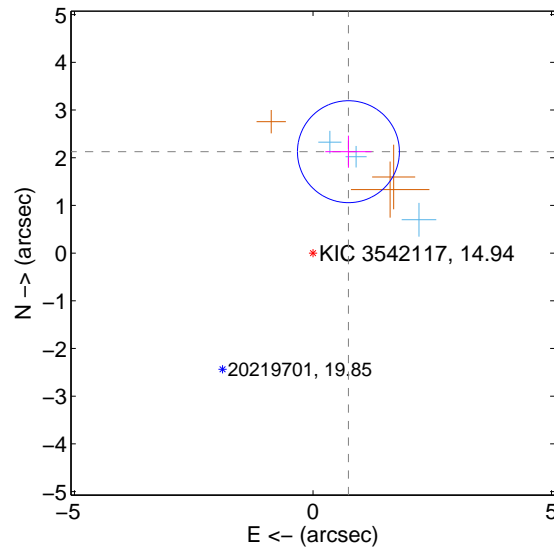
Supplemental centroid analysis for 003542117-01. Kepler magnitude: 14.94. Transit SNR 9.34

There are 4 quarters with good PRF difference image offsets

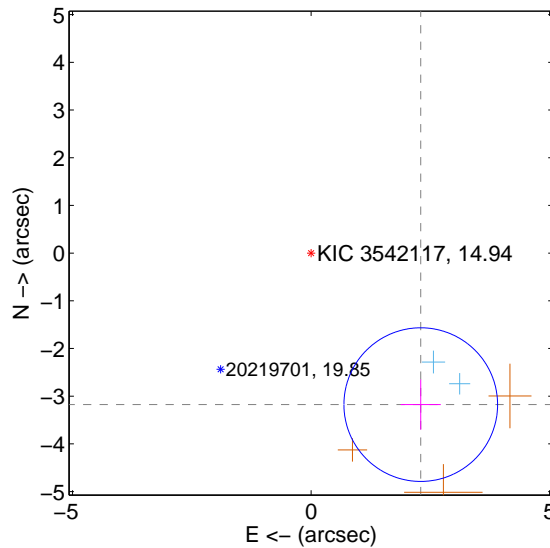
The OOT PRF centroid is offset from the target star catalog position by about 5.25 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.253 \pm 0.356$	6.32	$-0.743 \pm 0.485$	$2.126 \pm 0.337$
PRF-fit source offset from KIC position	$3.922 \pm 0.537$	7.30	$-2.300 \pm 0.420$	$-3.177 \pm 0.526$
photometric centroid source offset	$3.97 \pm 0.09$	46.15	$-1.26 \pm 0.06$	$-3.77 \pm 0.09$

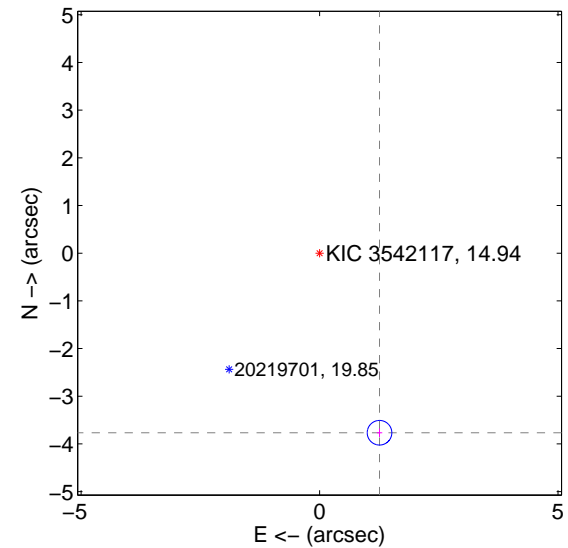
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



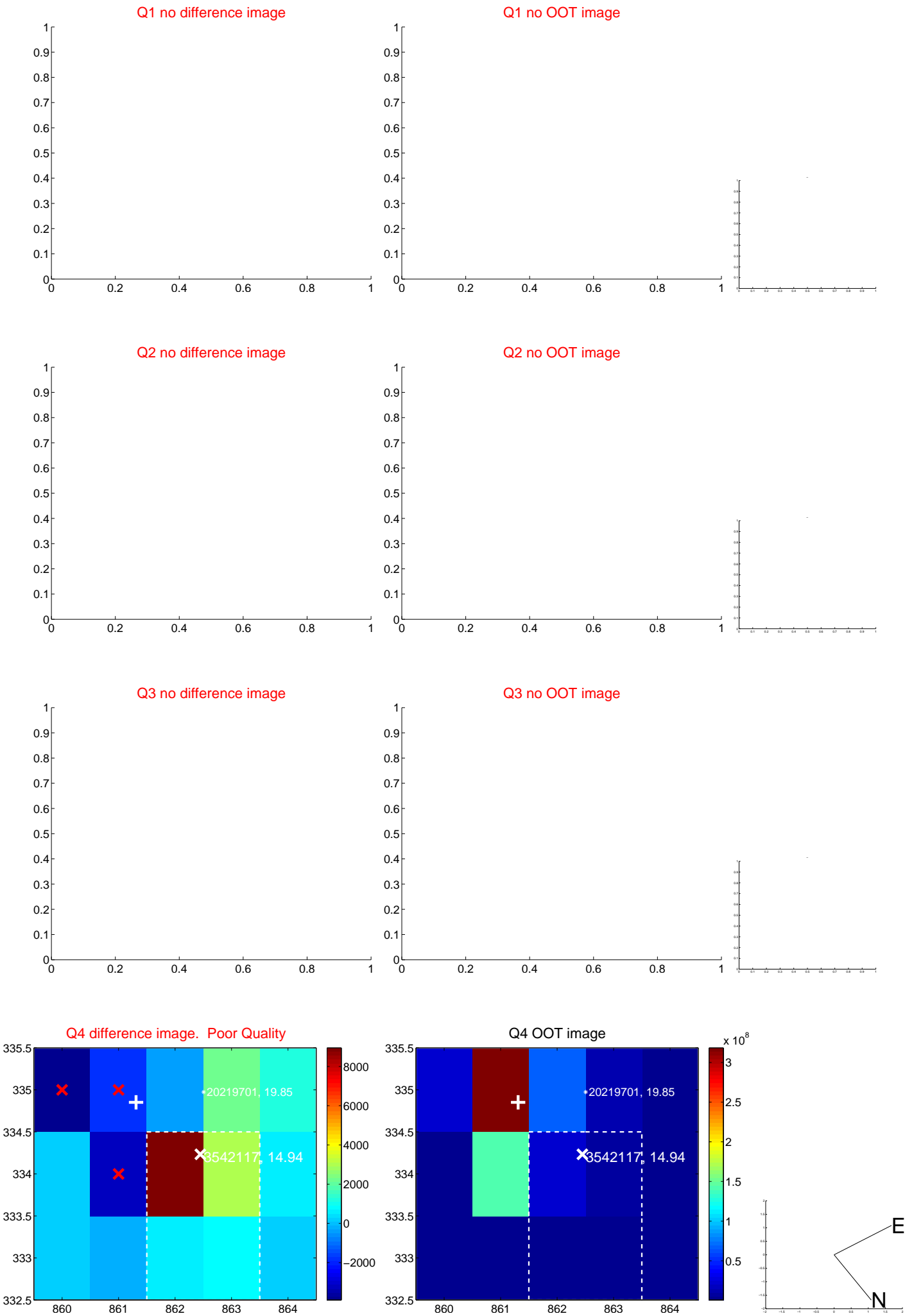
offset from photometric centroids



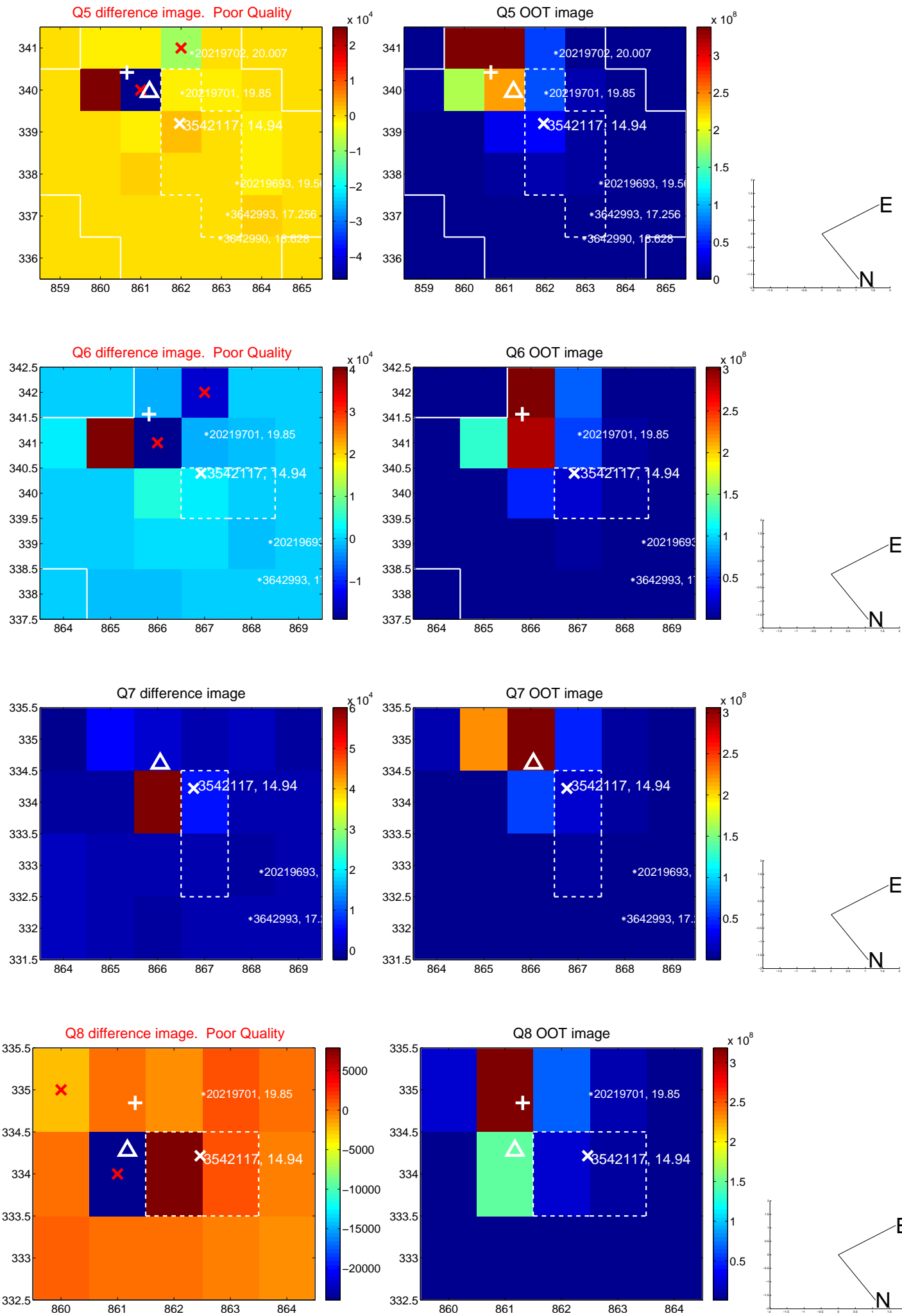
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



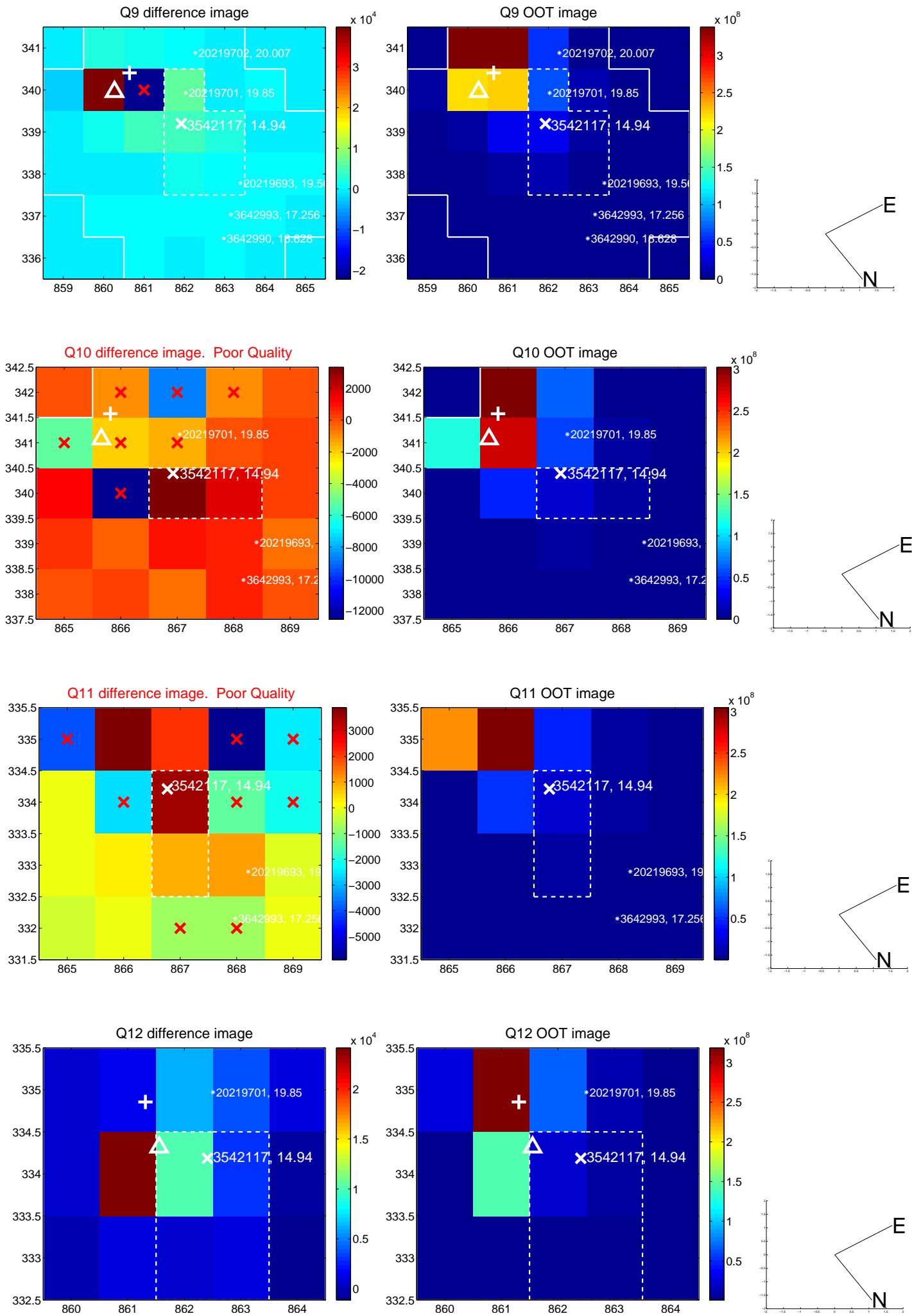
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



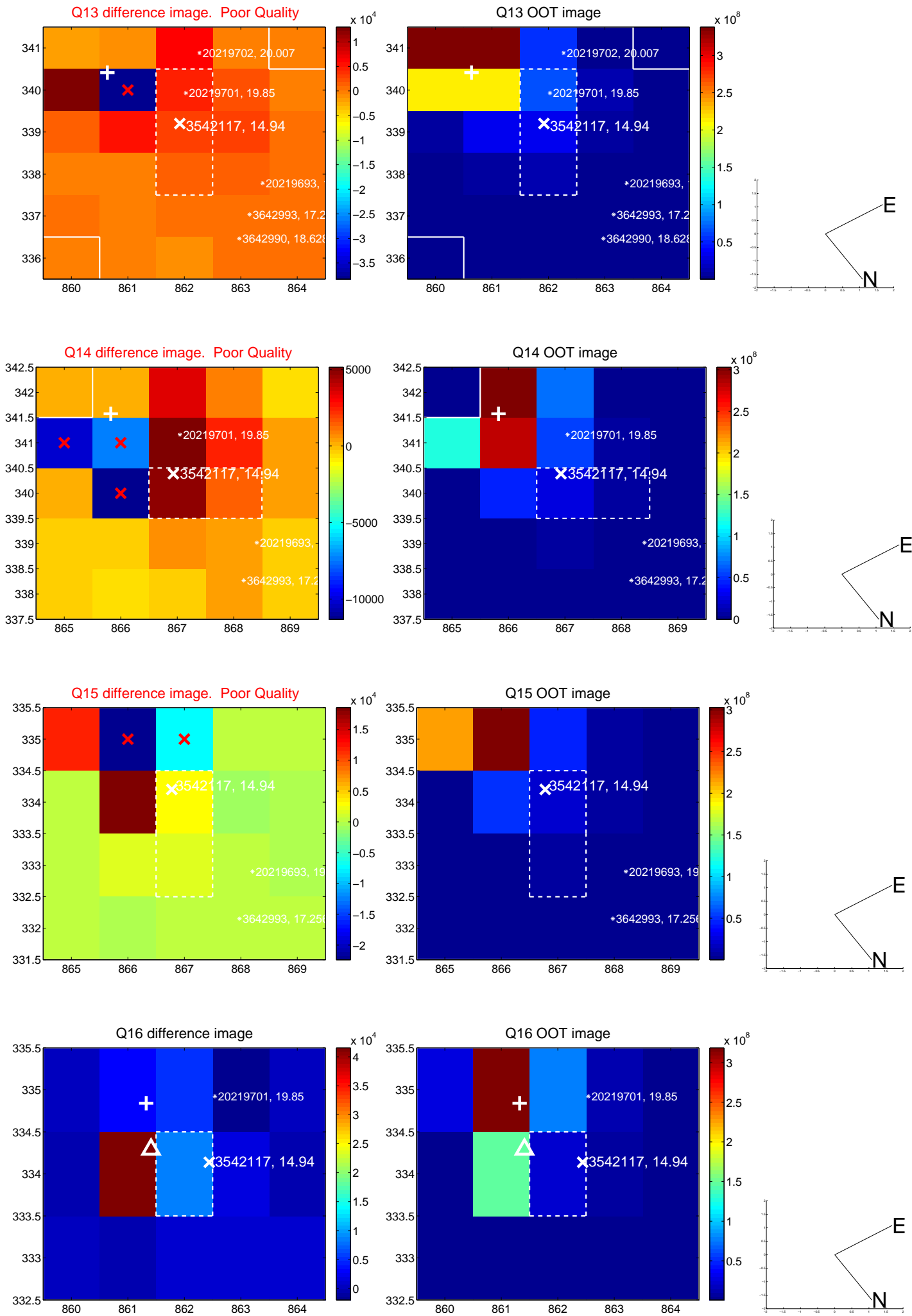
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



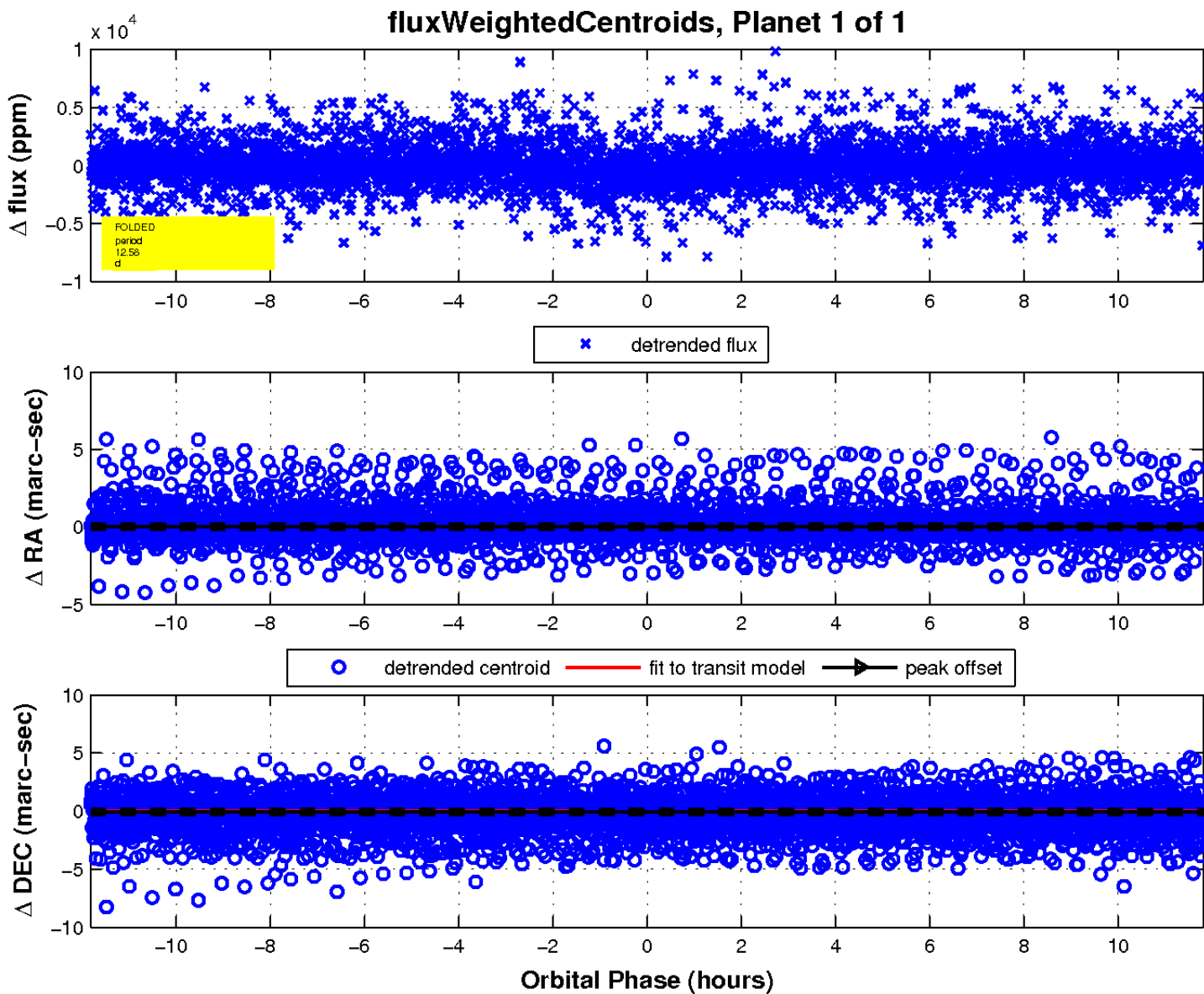
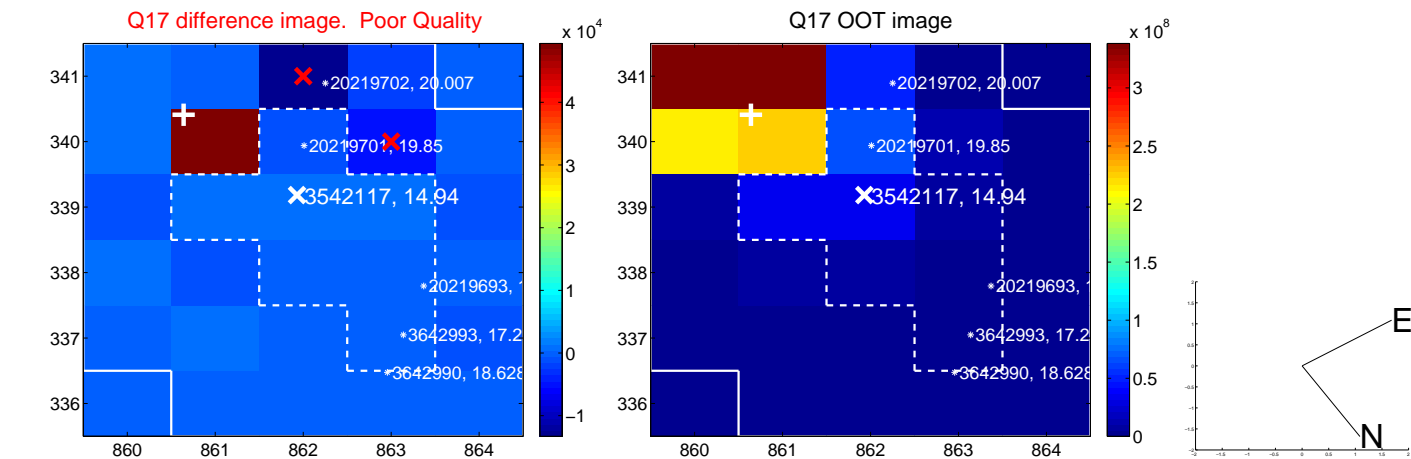
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

