

# KIC 003648437

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003648437-01	OBS	1861.01	17.504394	135.749773	718.2	4.418	38.4	39.8	1.33	5815	3.96	108.95

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003648437-01	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.

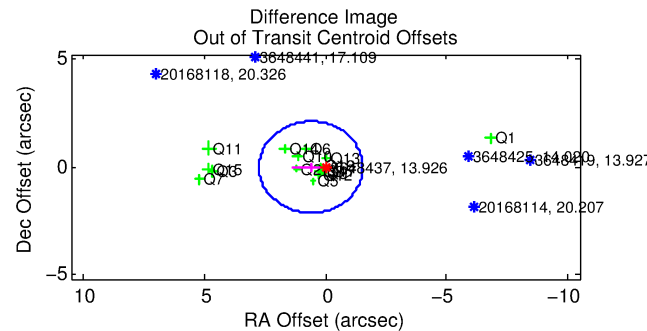
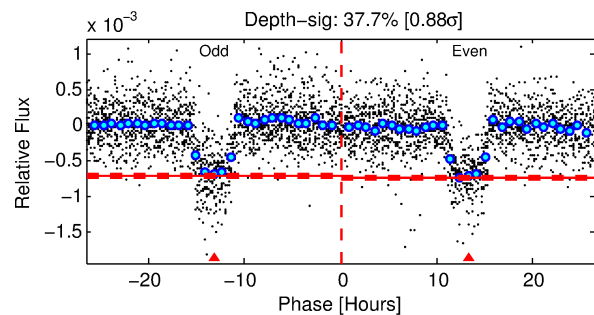
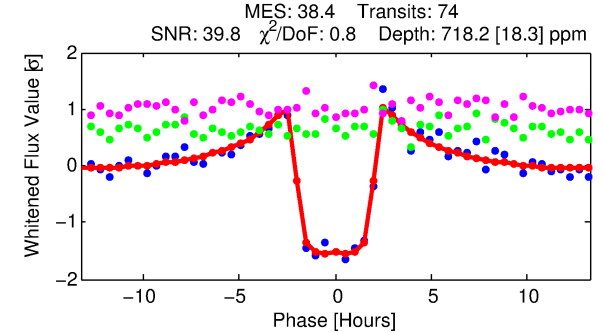
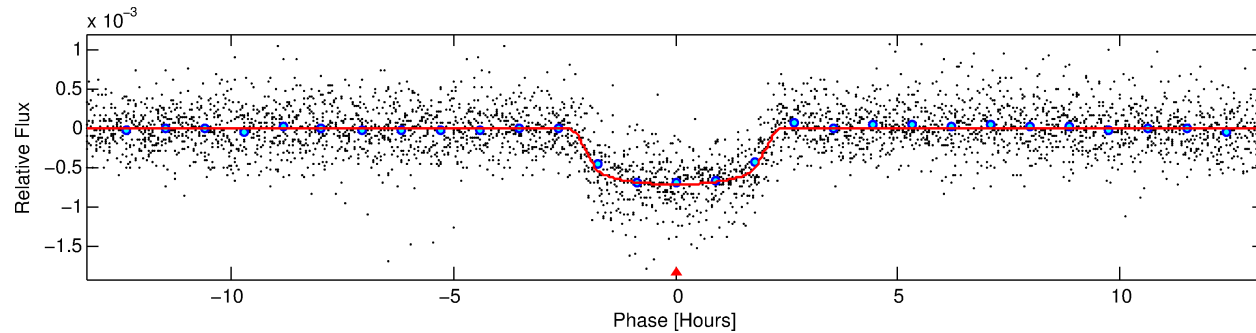
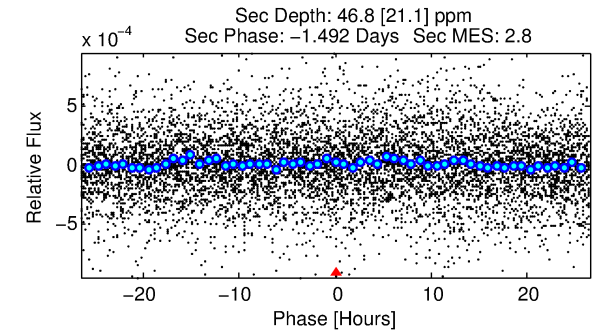
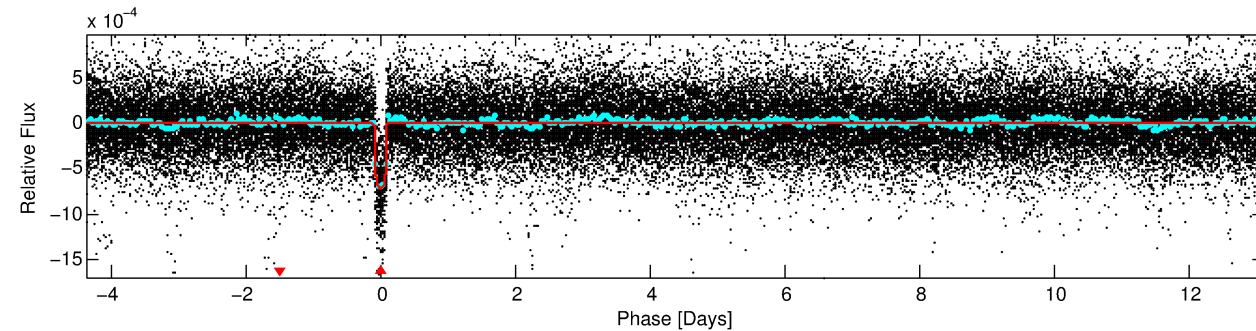
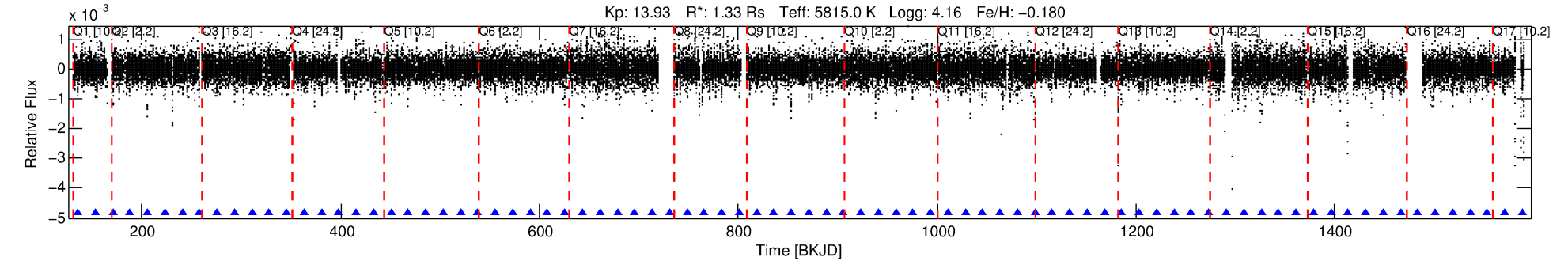
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003648437-01

No Significant Match Found

# DV One-Page Summary

KIC: 3648437 Candidate: 1 of 1 Period: 17.504 d  
KOI: K01861.01 Corr: 0.990



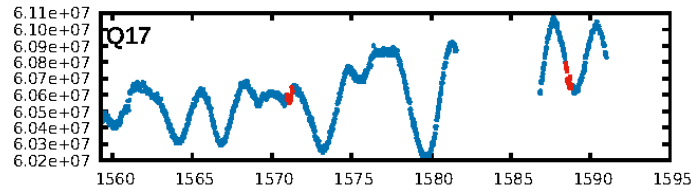
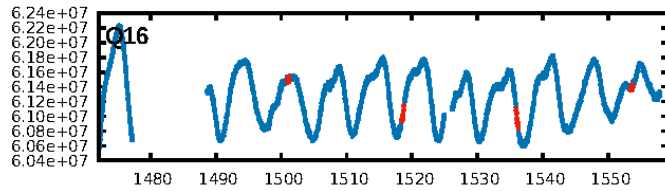
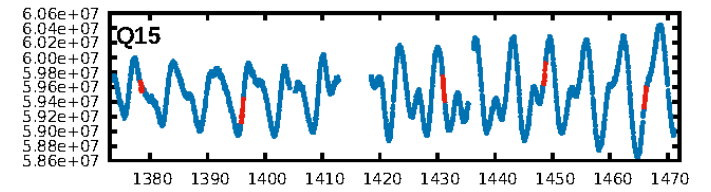
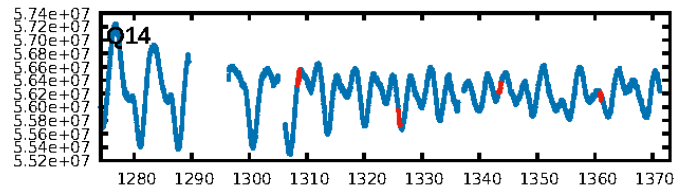
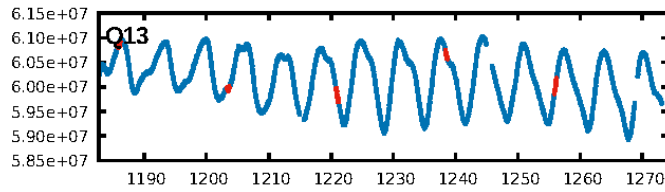
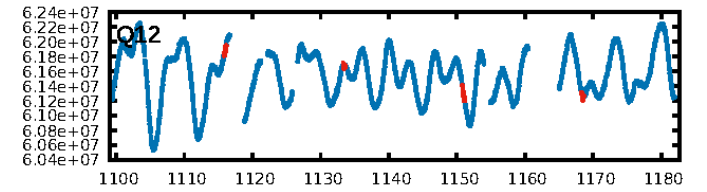
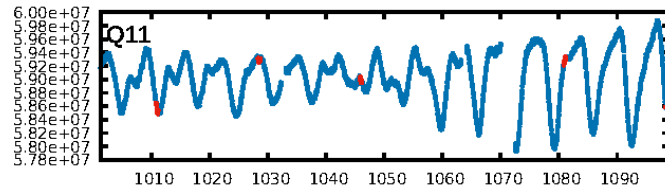
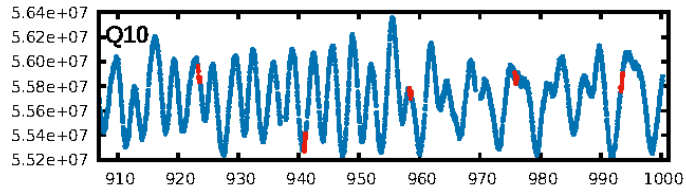
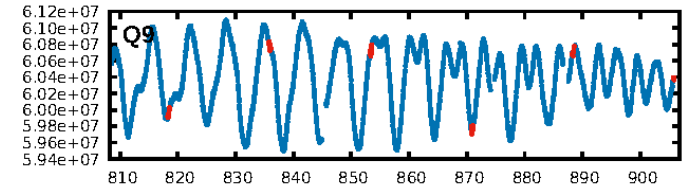
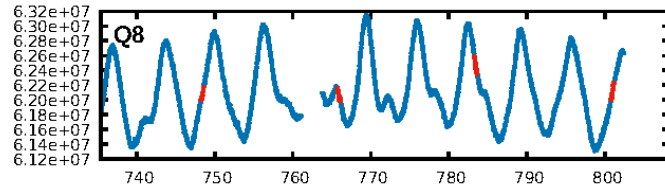
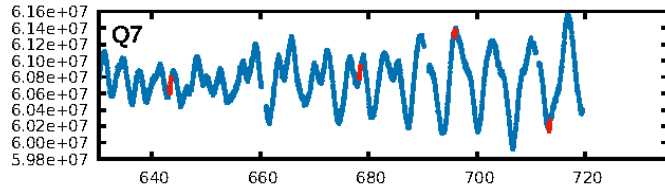
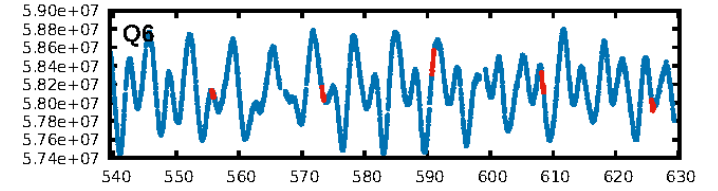
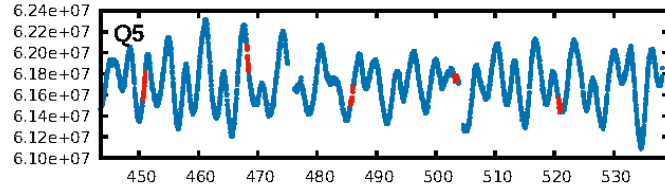
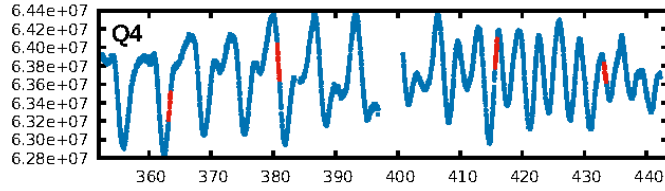
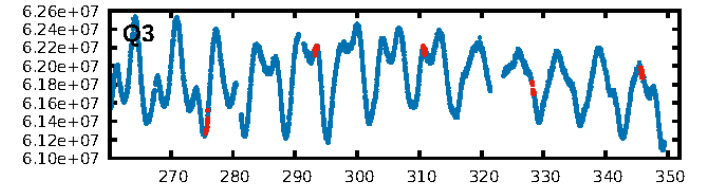
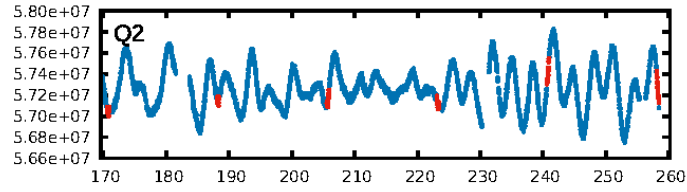
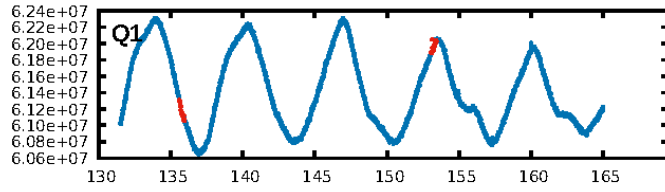
## DV Fit Results:

Period = 17.50439 [0.00003] d  
Epoch = 135.7498 [0.0016] BKJD  
Rp/R\* = 0.0273 [0.0022]  
a/R\* = 19.41 [7.13]  
b = 0.80 [0.17]  
Seff = 108.95 [37.50]  
Teff = 824 [71] K  
Rp = 3.96 [0.87] Re  
a = 0.1289 [0.0266] AU  
Ag = 27.32 [16.08] [1.64 $\sigma$ ]  
Teffp = 2912 [352] K [5.82 $\sigma$ ]

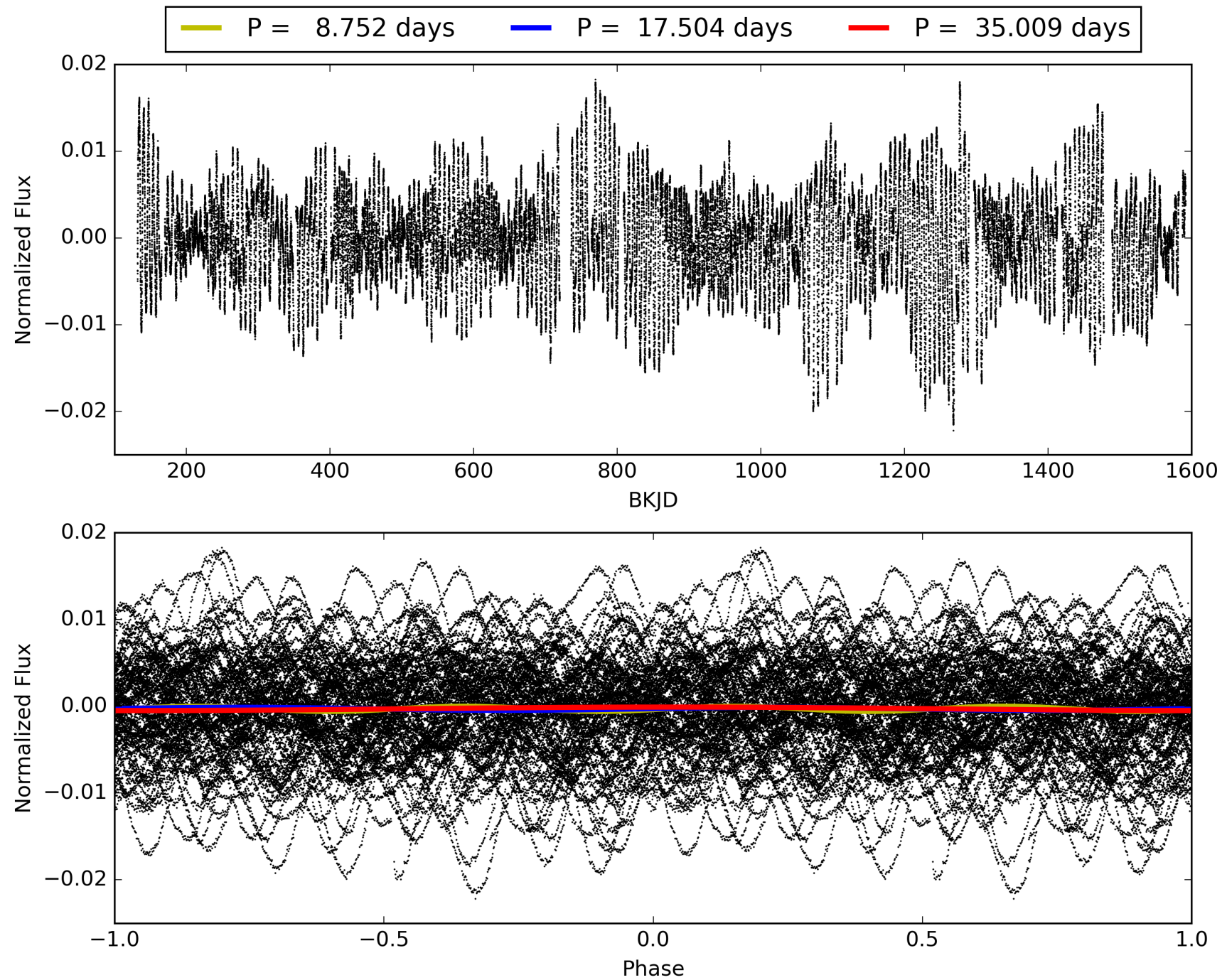
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.93e-293  
RollingBand-fgt: 1.00 [70/70]  
GhostDiagnostic-chr: 6.999  
Centroid-sig: 0.1%  
Centroid-so: 1.333 arcsec [3.20 $\sigma$ ]  
OotOffset-rm: 0.606 arcsec [0.85 $\sigma$ ]  
KicOffset-rm: 0.179 arcsec [0.43 $\sigma$ ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 003648437-01, PDC Light Curves

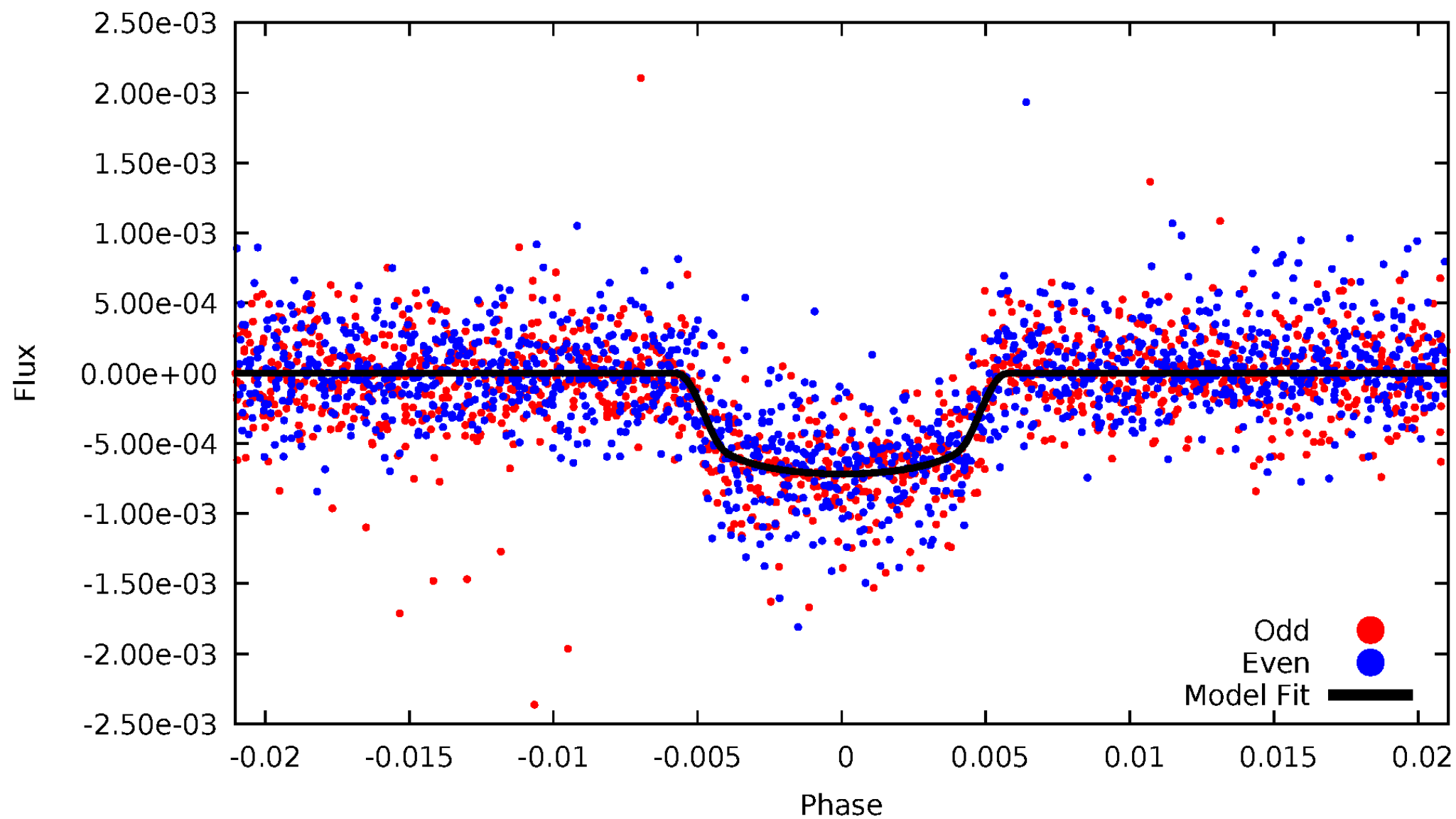


TCE 003648437-01



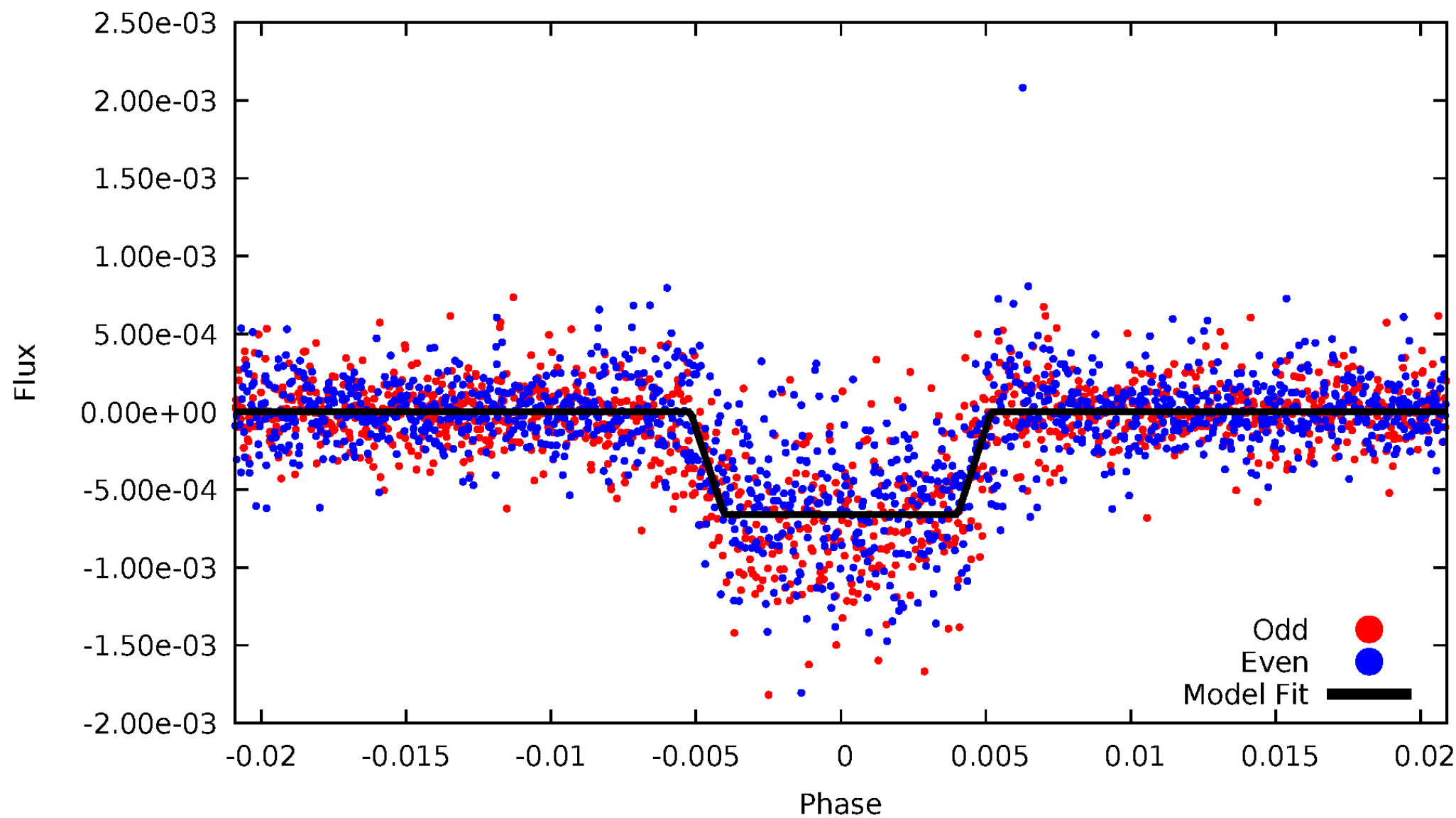
# DV Odd/Even

TCE 003648437-01



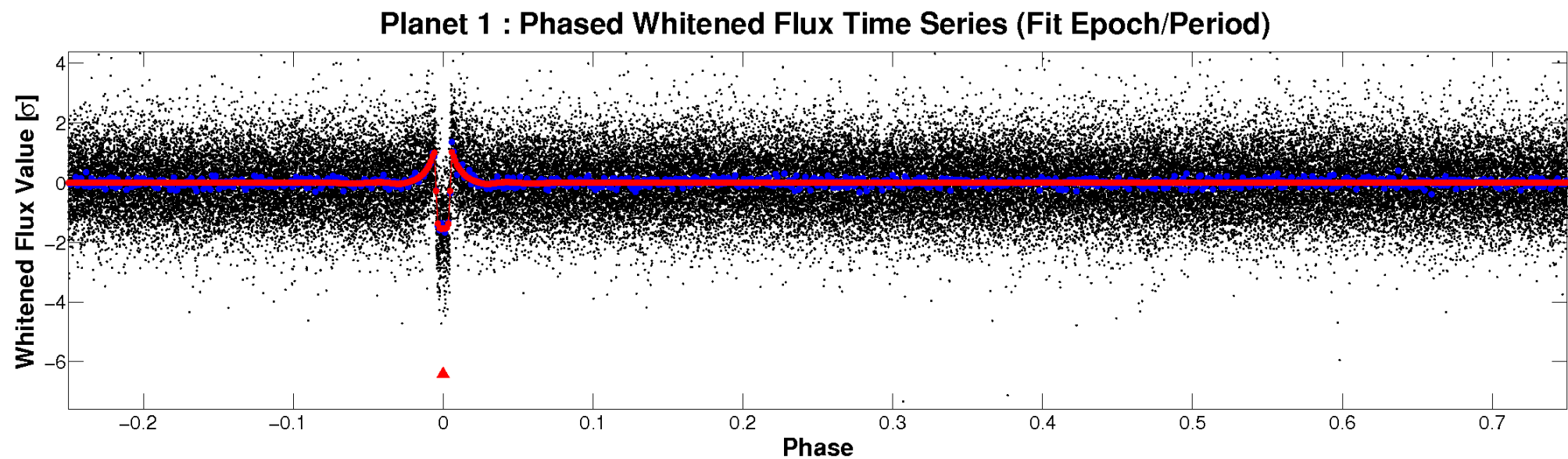
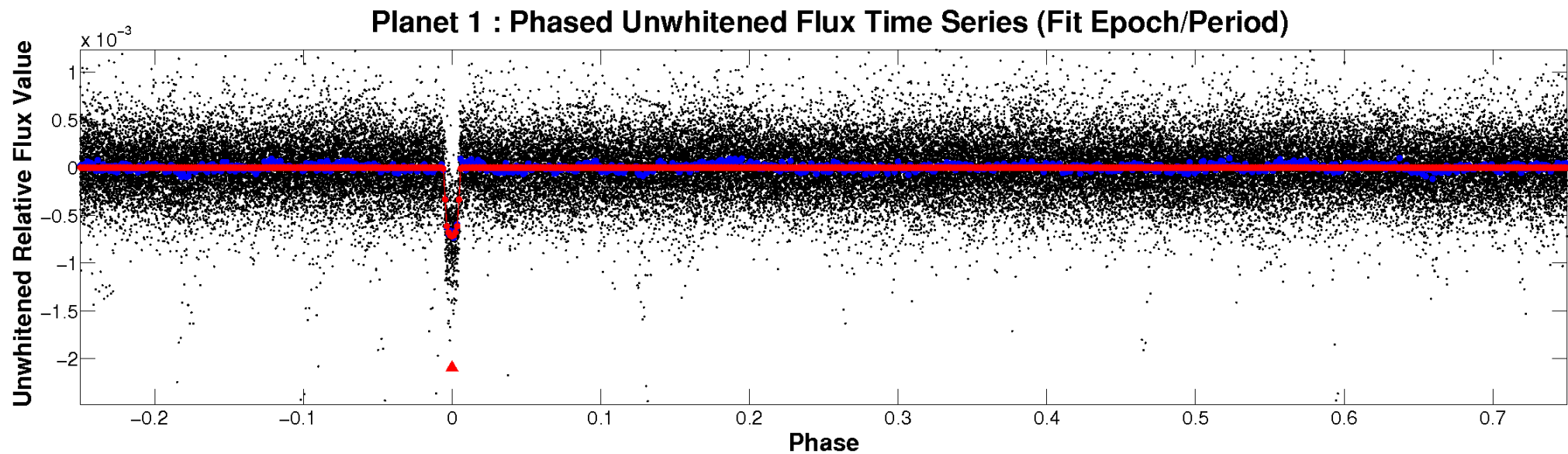
# ALT Odd/Even

TCE 003648437-01



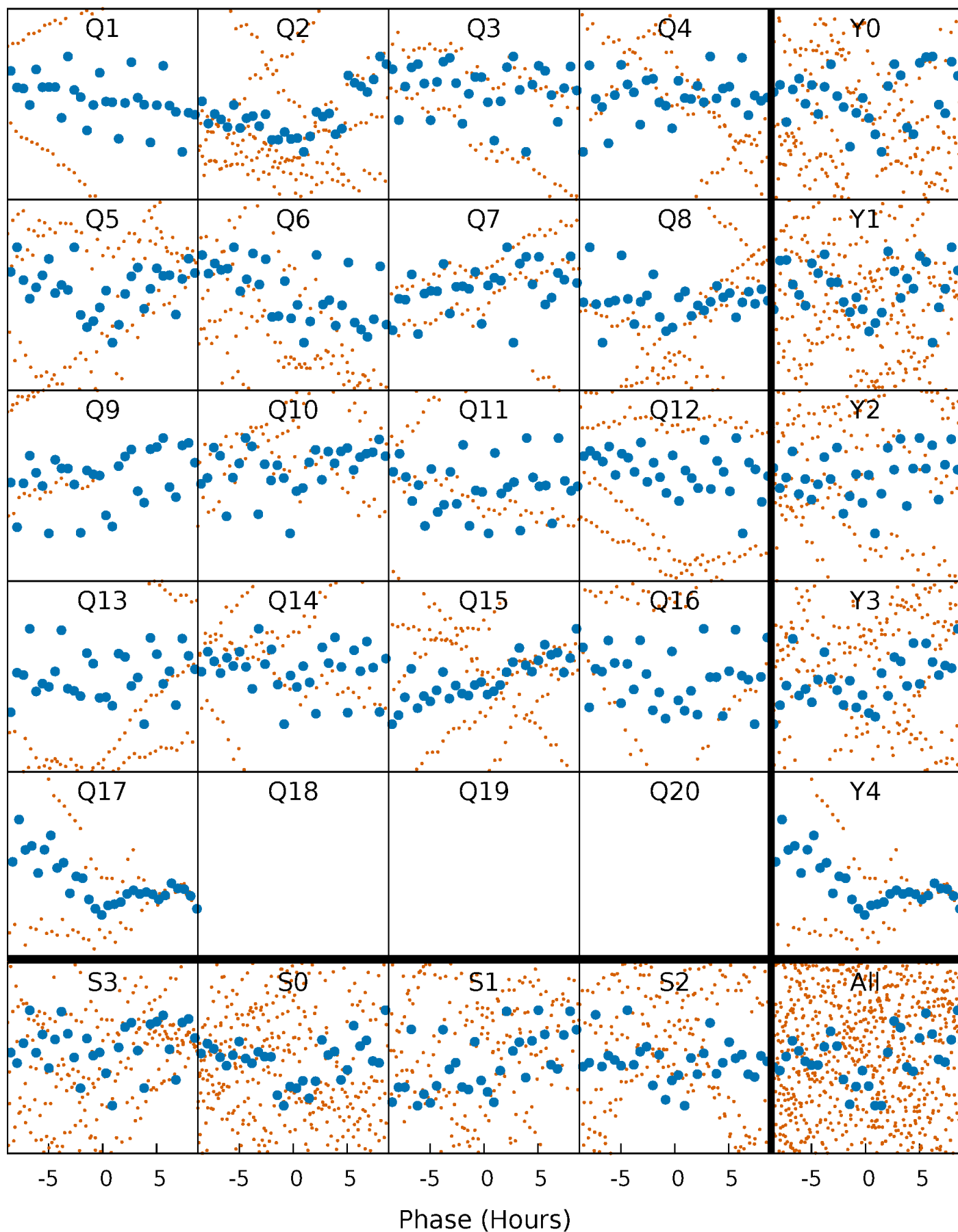


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

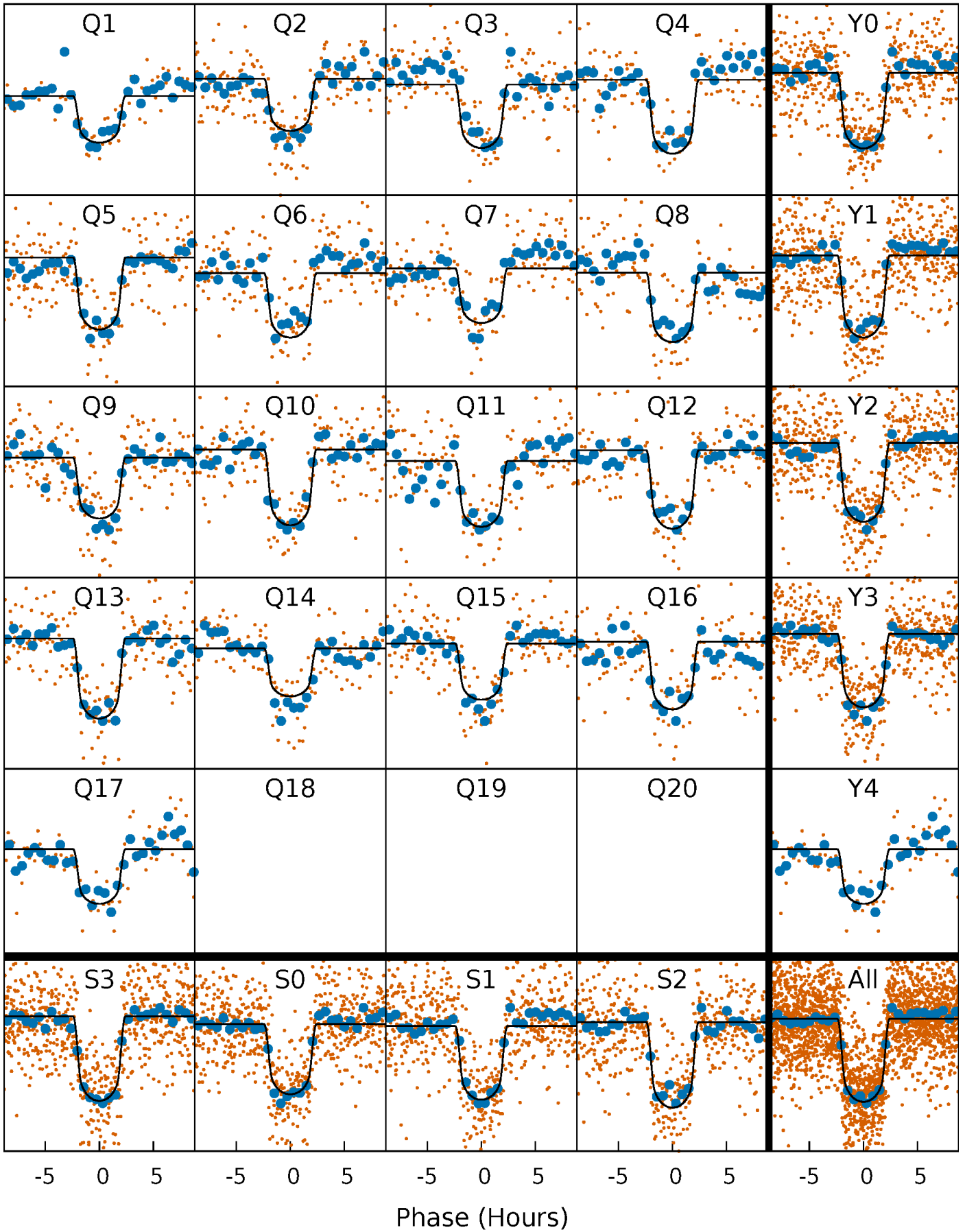
TCE 003648437-01 P= 17.504394 Days  $T_0=135.749774$  (BKJD)





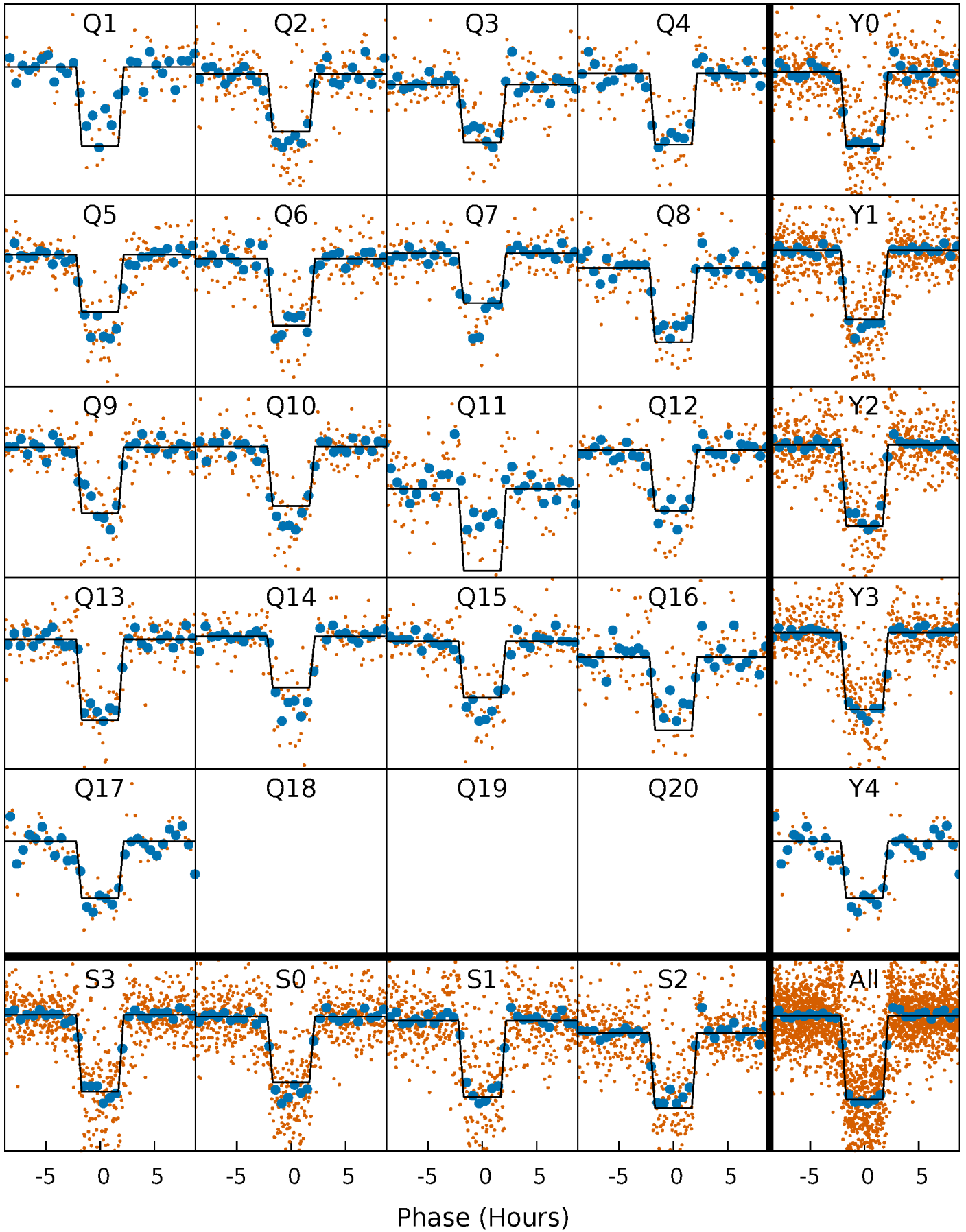
# DV Quarter-Phased Transit Curves

TCE 003648437-01 P= 17.504394 Days  $T_0=135.749774$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

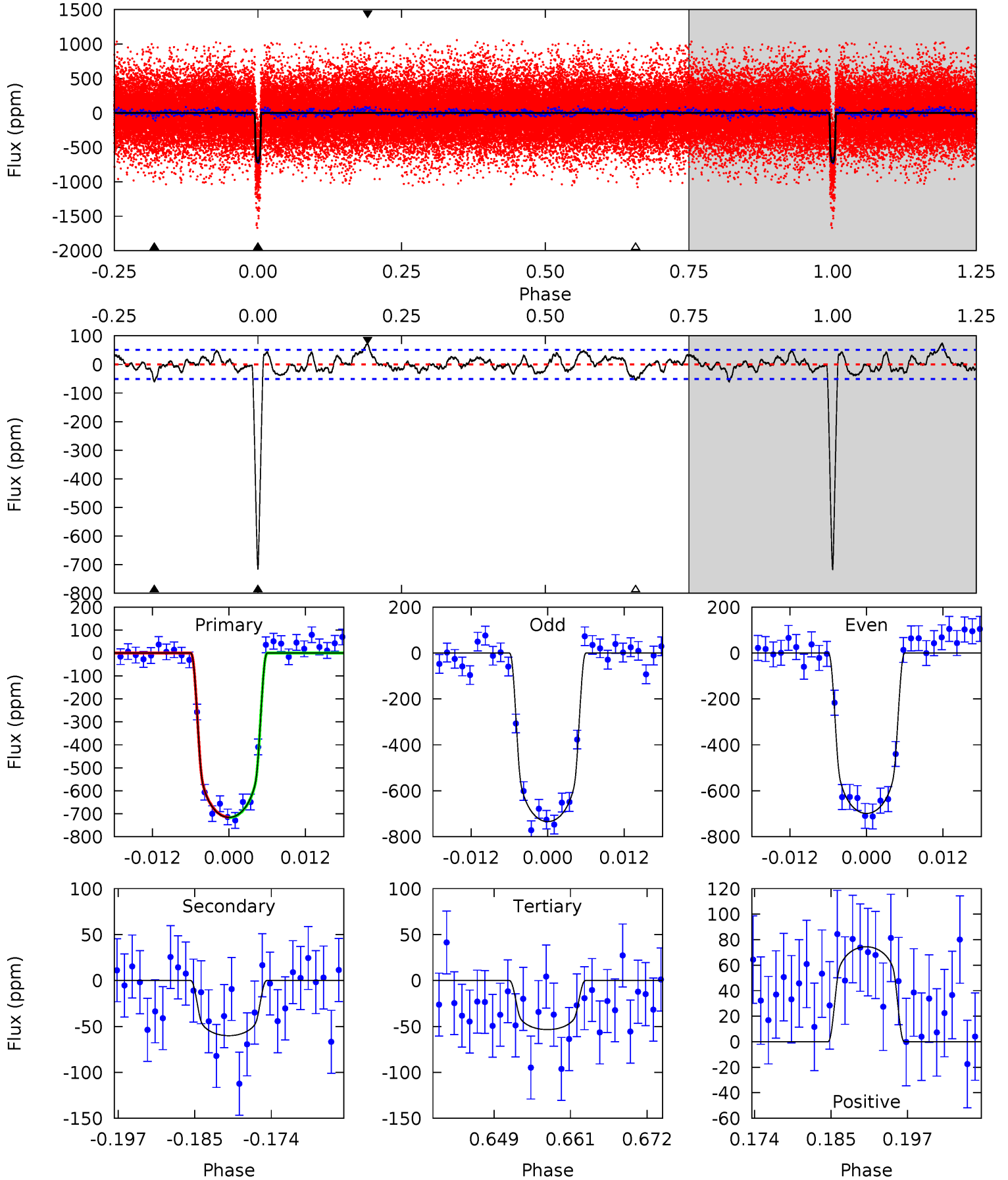
TCE 003648437-01 P= 17.504312 Days  $T_0=135.752771$  (BKJD)



# DV Model-Shift Uniqueness Test

003648437-01,  $P = 17.504394$  Days,  $E = 118.245380$  Days

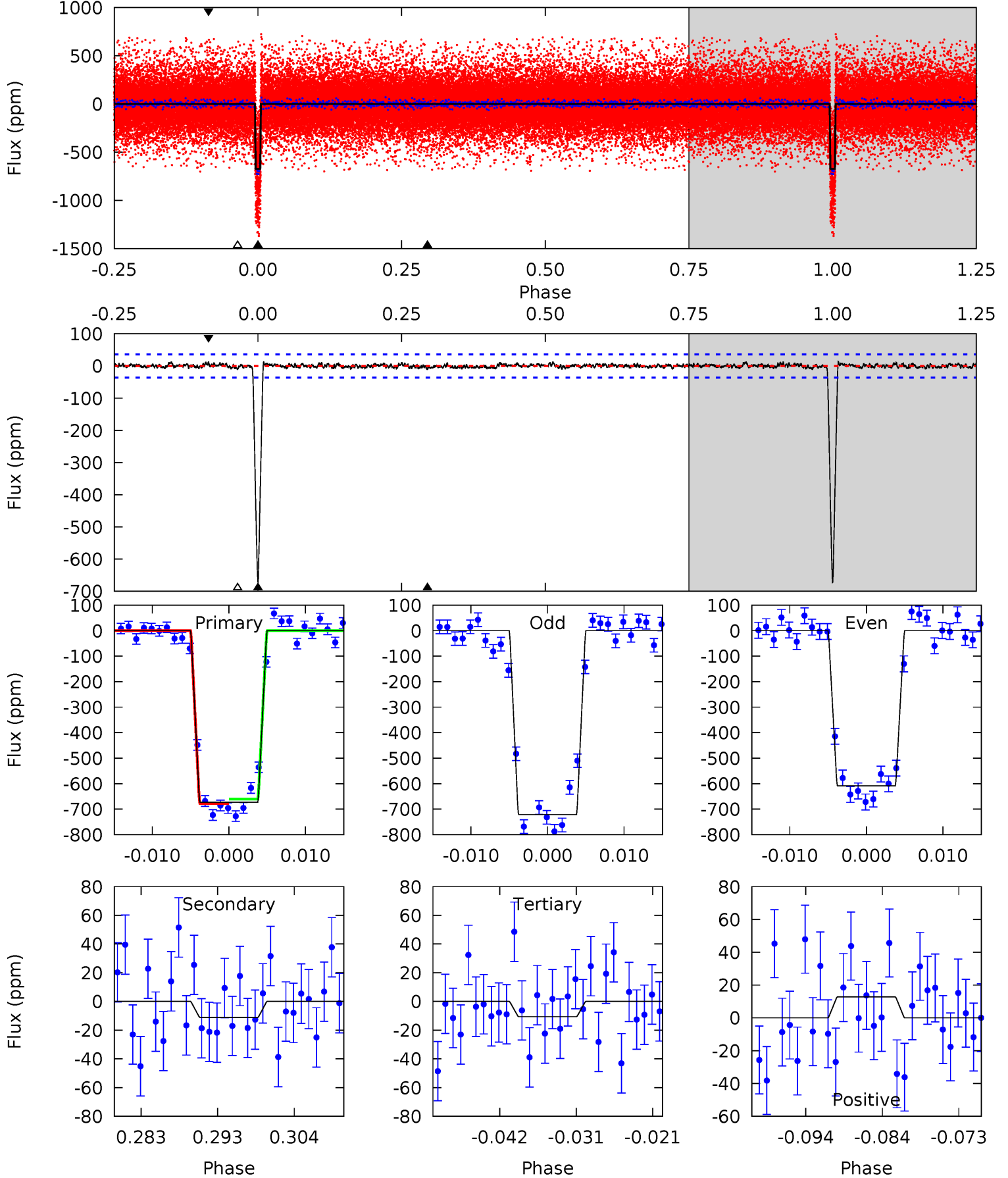
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.9	5.87	5.22	7.27	5.00	2.52	2.04	64.7	62.7	0.65	-1.40	1.75	1.01	0.09	0.10



# Alt Model-Shift Uniqueness Test

003648437-01, P = 17.504312 Days, E = 118.248459 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
93.8	1.55	1.48	1.78	5.02	2.56	0.55	92.3	92.0	0.07	-0.23	7.90	1.05	0.02	1.19



### Stellar Parameters For KIC 003648437

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5815^{+78}_{-78}$	$4.160^{+0.203}_{-0.101}$	$-0.180^{+0.150}_{-0.150}$	$1.329^{+0.197}_{-0.271}$	$0.933^{+0.074}_{-0.066}$	$0.560^{+0.563}_{-0.176}$
	+1%/-1%	+5%/-2%	+83%/-83%	+15%/-20%	+8%/-7%	+101%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 003648437-01 / KOI 1861.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-60 \pm 10$	$3.89^{+0.54}_{-0.56}$	$1144^{+52}_{-70}$	$3548^{+154}_{-129}$	$36^{+14}_{-10}$
Alt.	$-11 \pm 7$	$3.66^{+0.50}_{-0.52}$	$1144^{+51}_{-71}$	$2808^{+228}_{-364}$	$7.398^{+6.286}_{-4.820}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

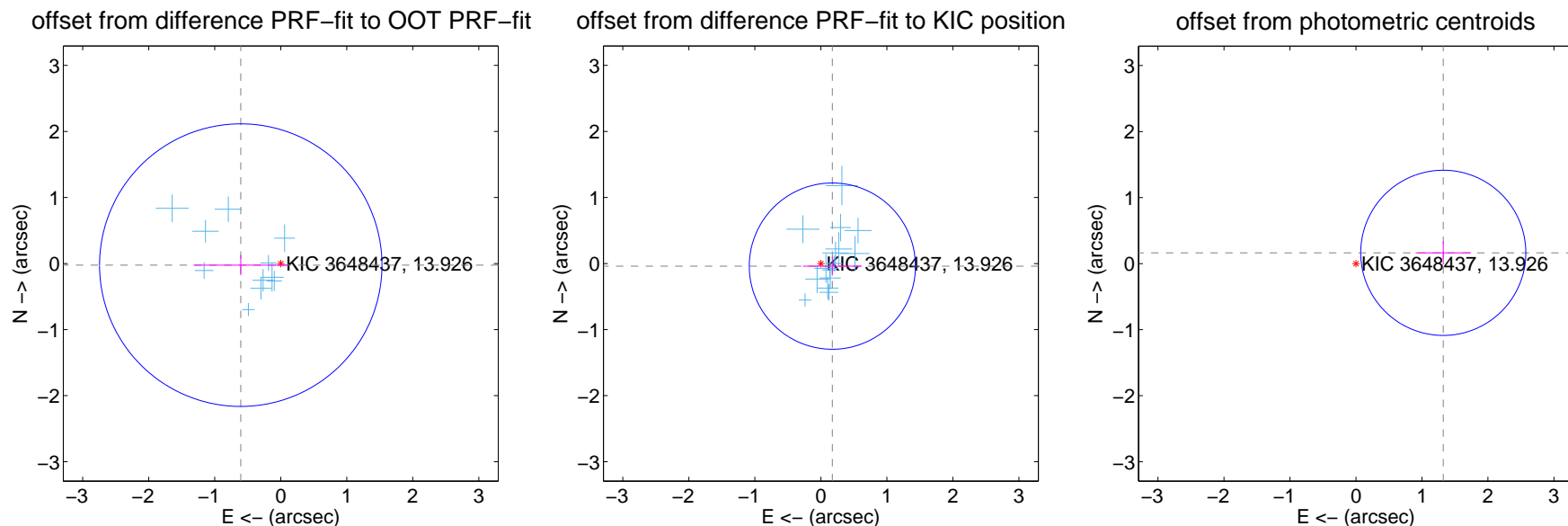
## DV Centroid Data

Supplemental centroid analysis for 003648437-01. Kepler magnitude: 13.93. Transit SNR 39.77

There are 15 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

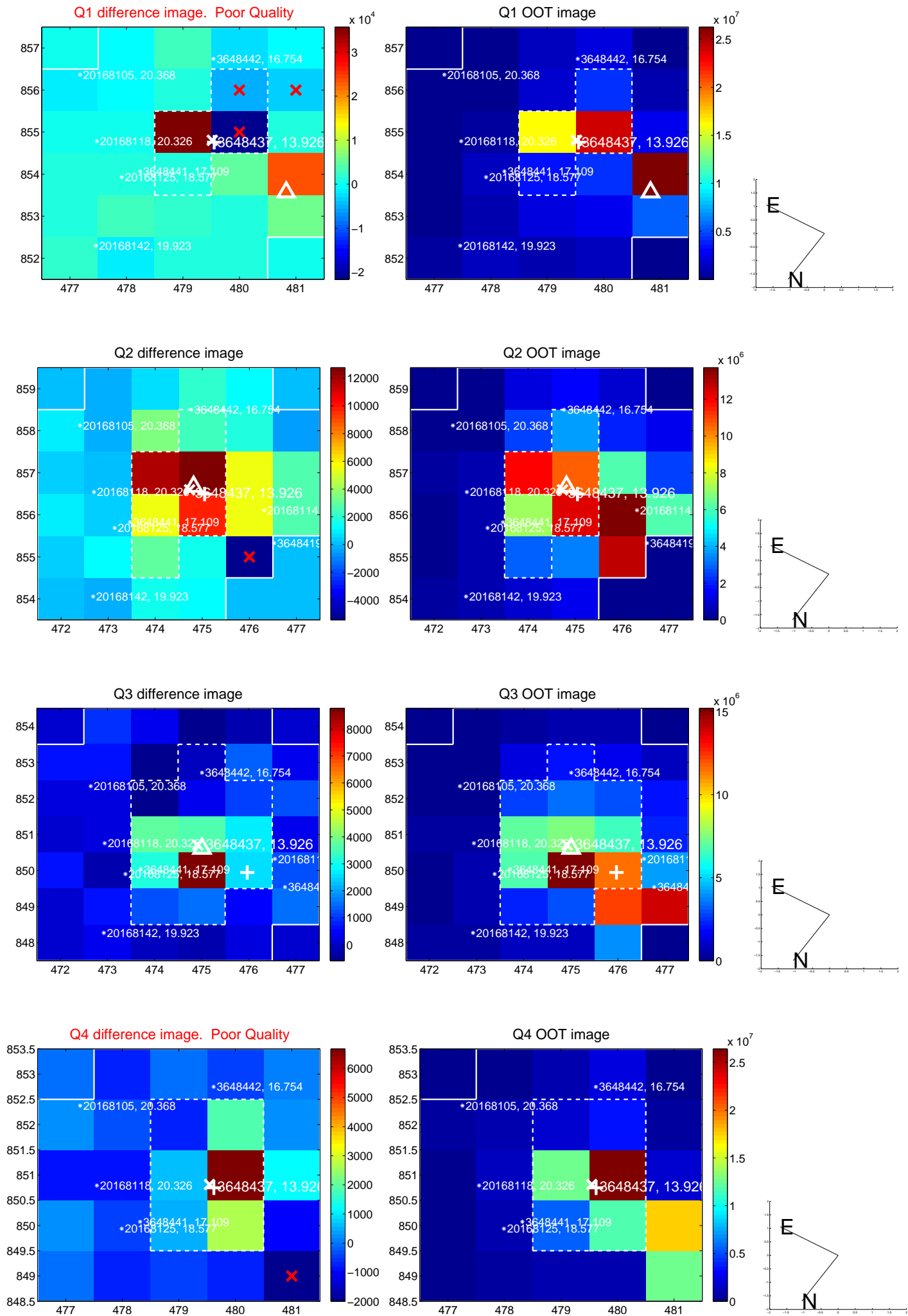
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.606 \pm 0.713$	0.85	$0.606 \pm 0.712$	$-0.024 \pm 0.152$
PRF-fit source offset from KIC position	$0.179 \pm 0.420$	0.43	$-0.174 \pm 0.449$	$-0.039 \pm 0.143$
photometric centroid source offset	$1.33 \pm 0.42$	3.20	$-1.32 \pm 0.42$	$0.16 \pm 0.17$



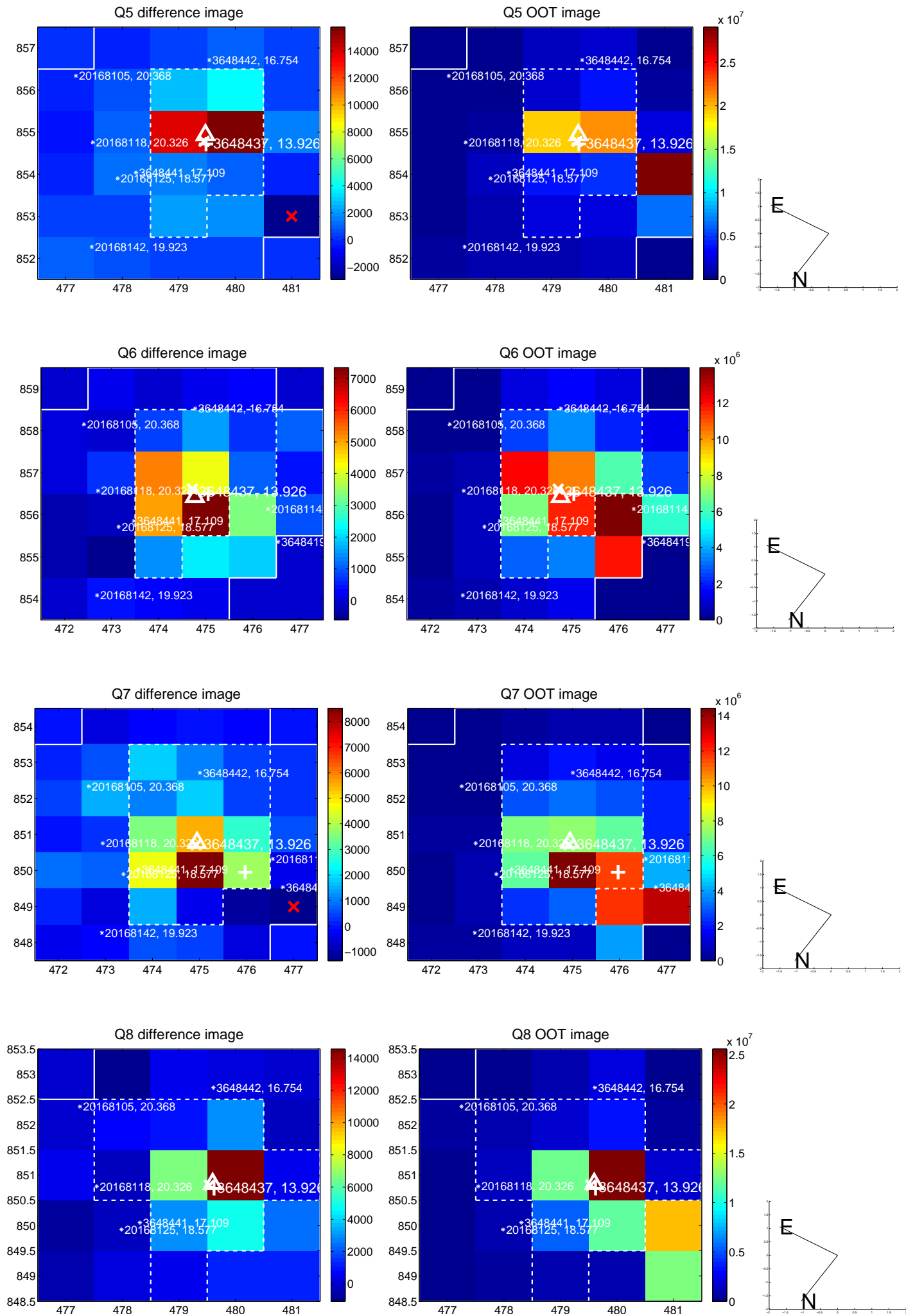
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



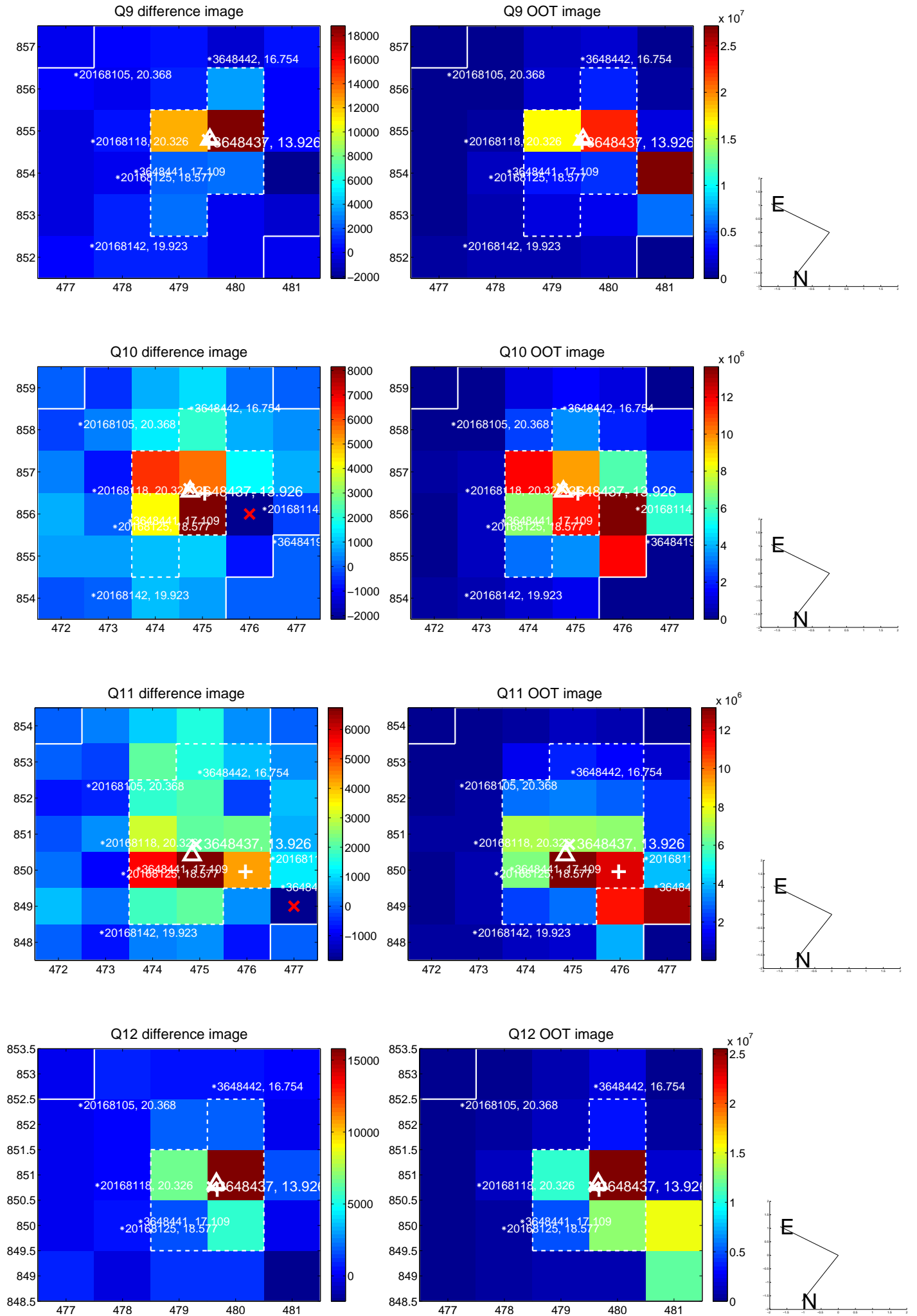
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



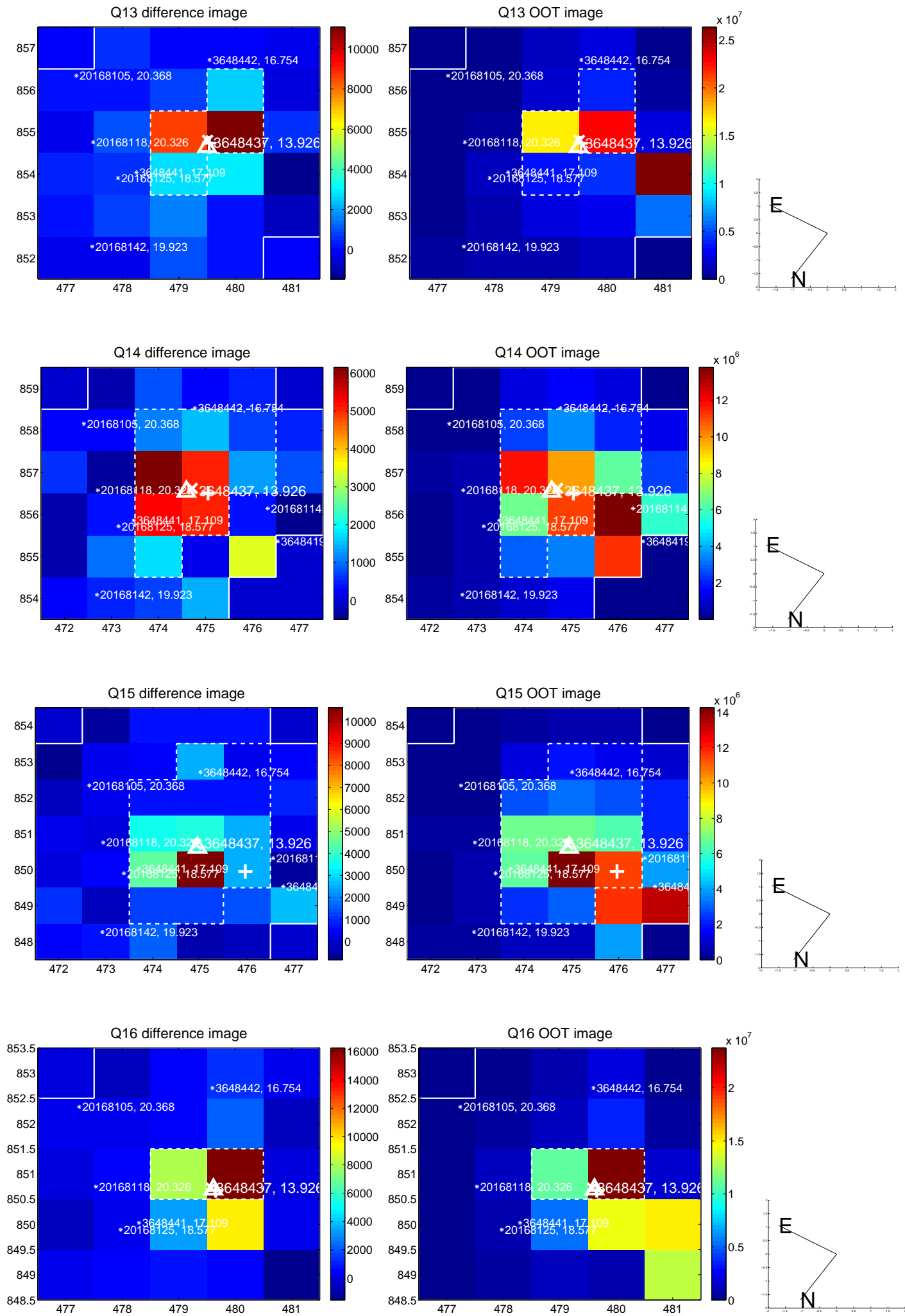
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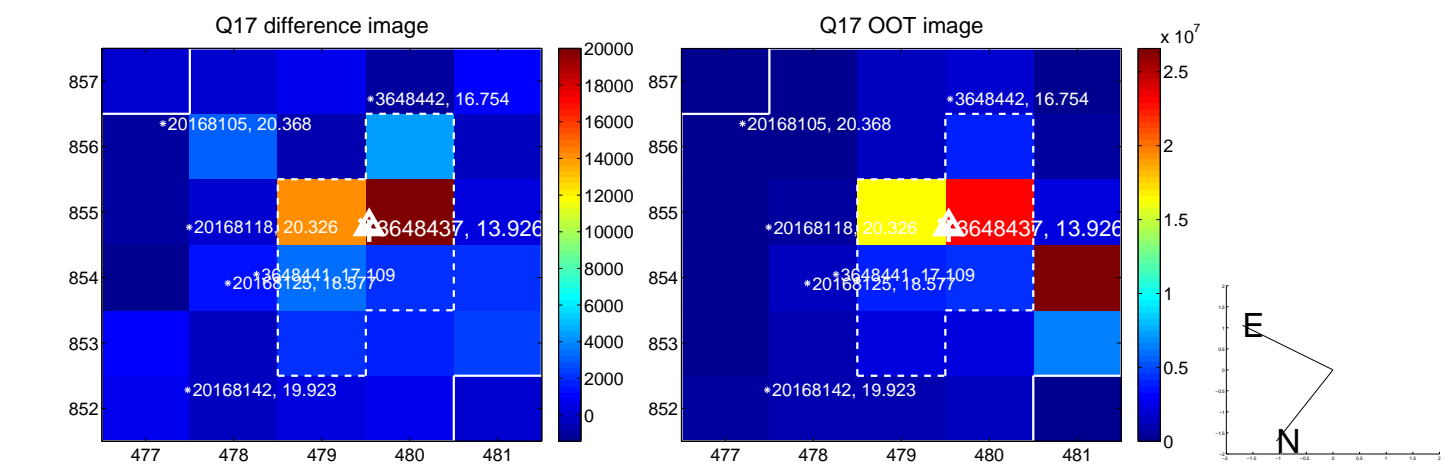
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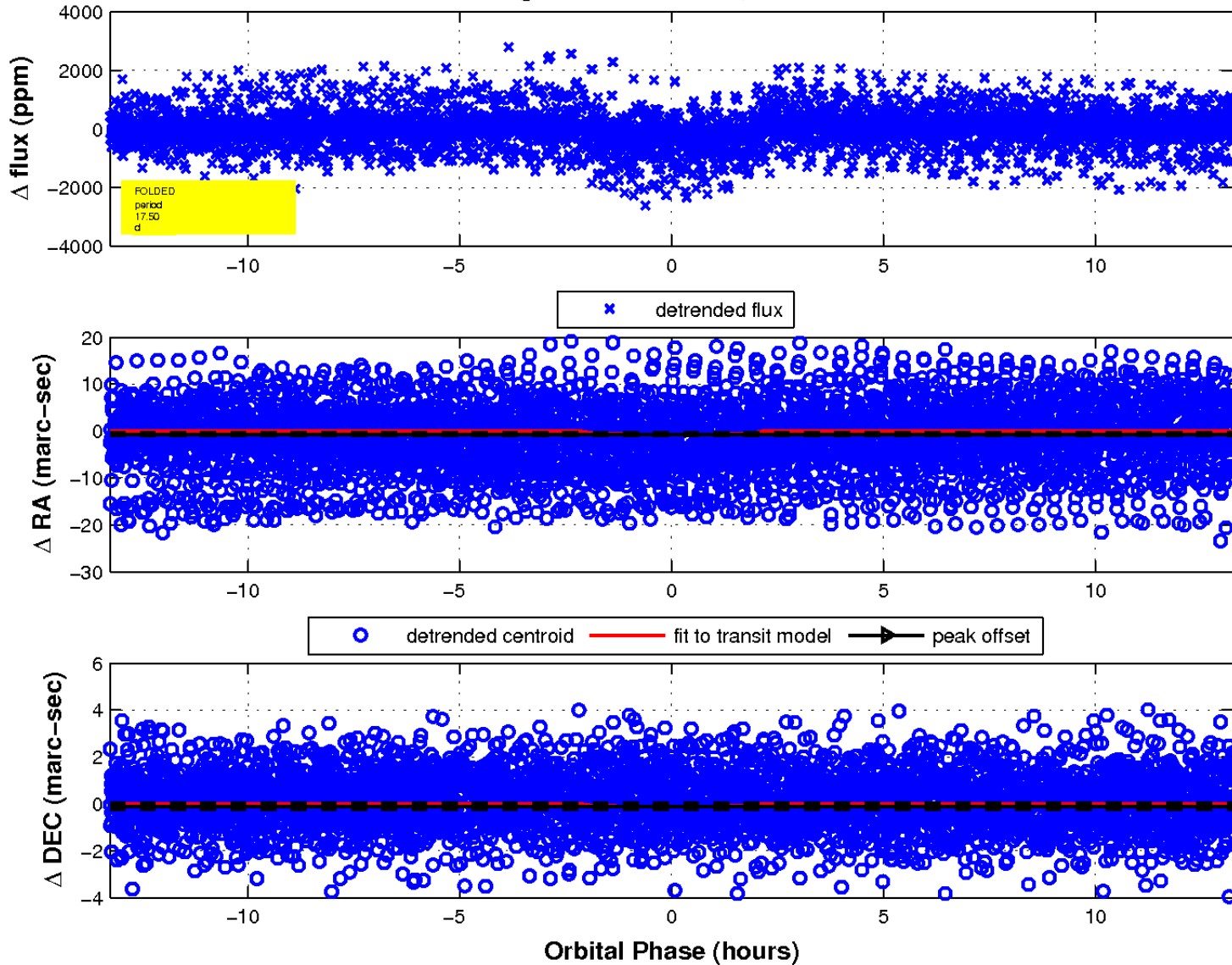
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

