

# KIC 009178003

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009178003-01	OBS	No	0.839362	131.709555	20.3	10.072	7.4	11.5	1.74	5942	1.15	10581.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009178003-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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.

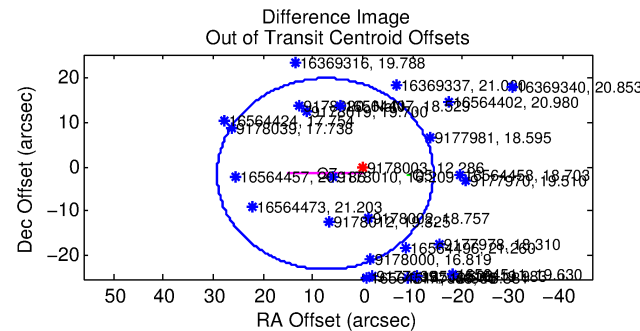
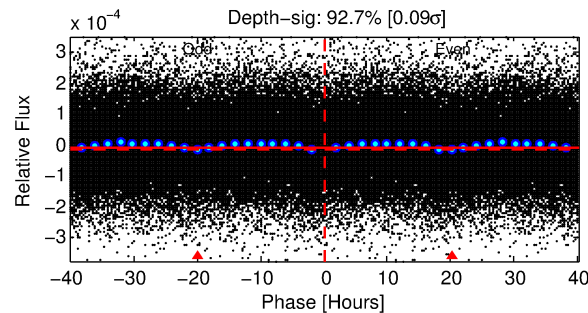
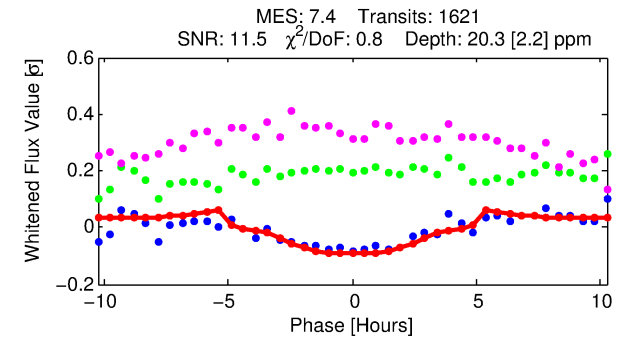
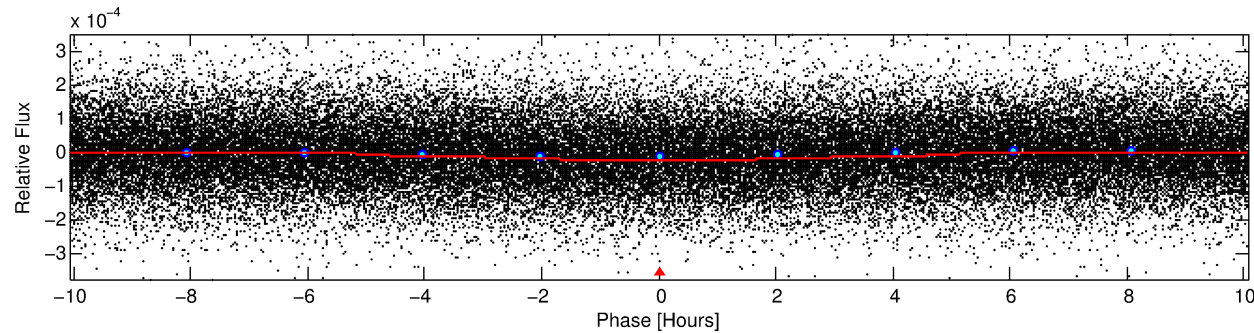
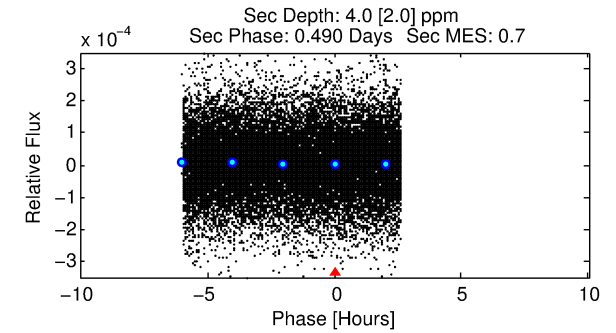
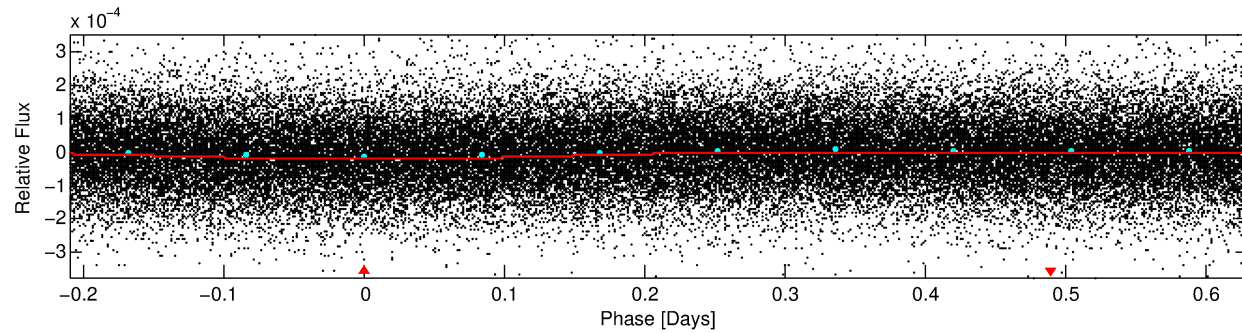
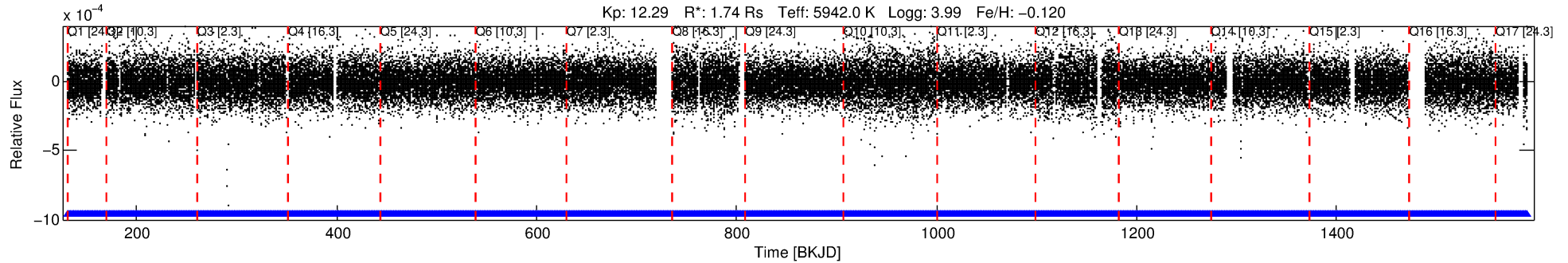
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009178003-01

No Significant Match Found

# DV One-Page Summary

KIC: 9178003 Candidate: 1 of 1 Period: 0.839 d



## DV Fit Results:

Period = 0.83936 [0.00001] d  
Epoch = 131.7096 [0.0051] BKJD  
Rp/R\* = 0.0061 [0.0004]  
a/R\* = 1.00 [0.00]  
b = 0.99 [0.00]  
Seff = 10581.77 [5302.09]  
Teq = 2586 [324] K  
Rp = 1.15 [0.38] Re  
a = 0.0179 [0.0055] AU  
Ag = 0.53 [0.37] [-1.27σ]  
Teffp = 3406 [445] K [1.49σ]

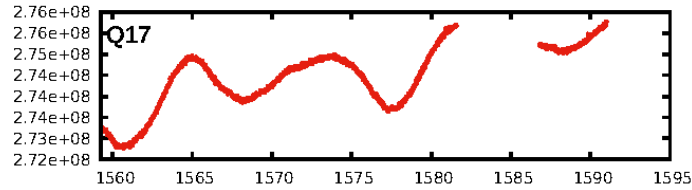
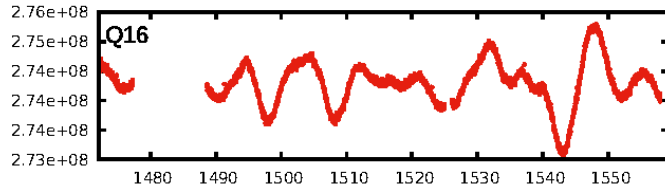
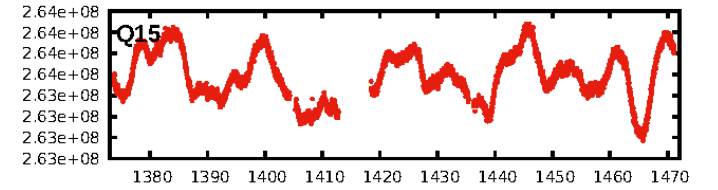
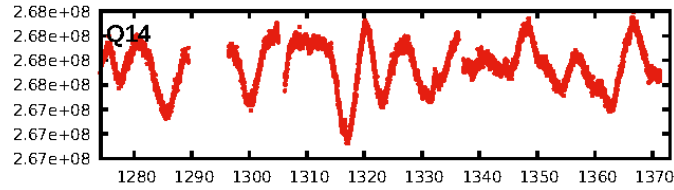
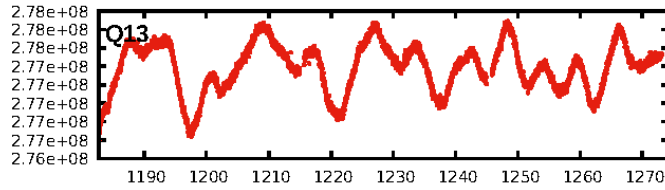
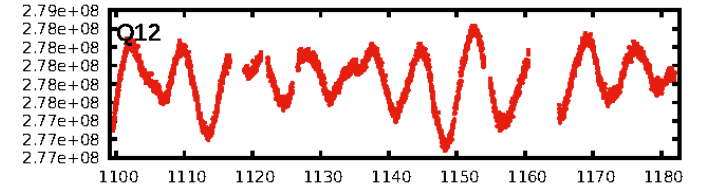
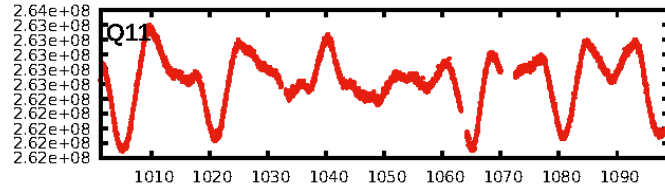
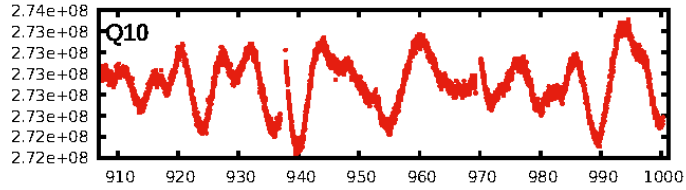
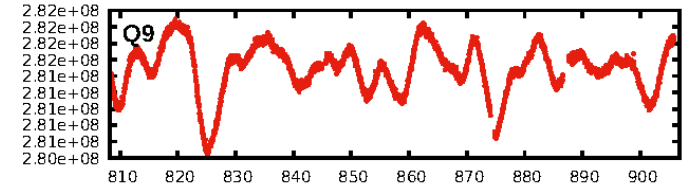
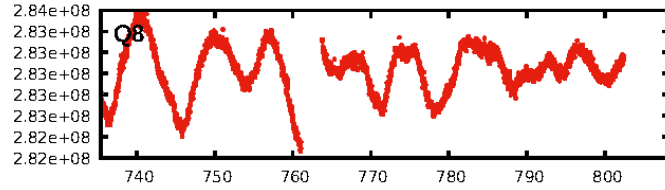
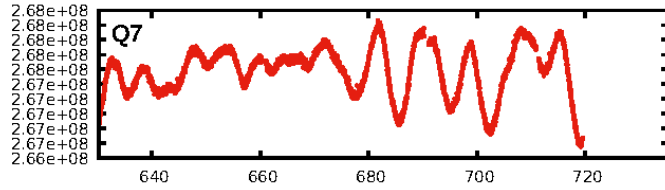
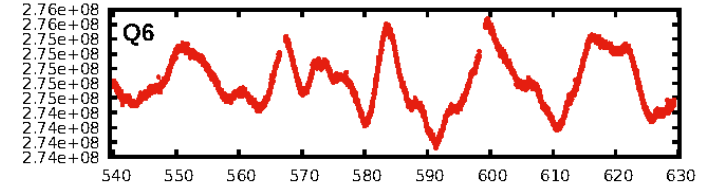
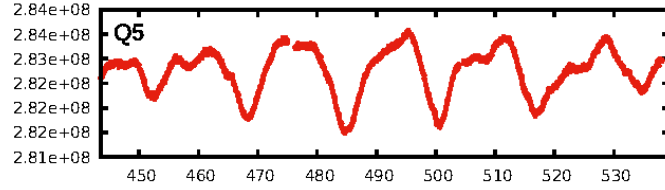
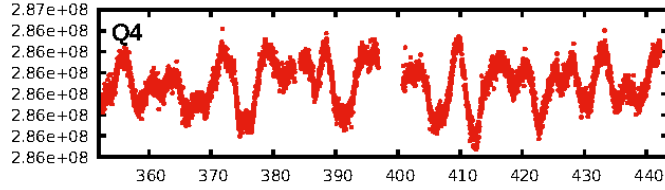
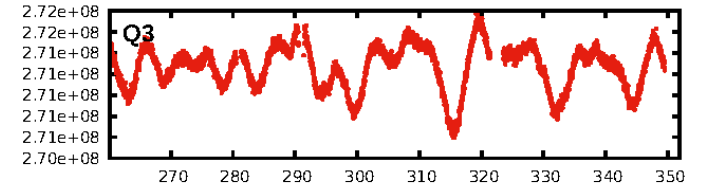
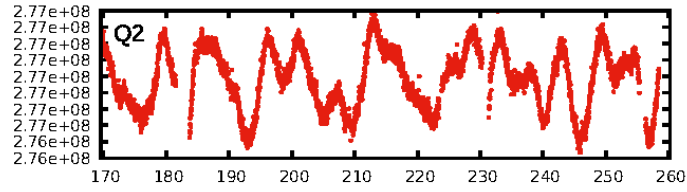
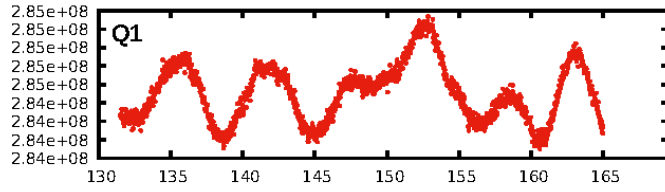
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1549/1549]  
GhostDiagnostic-chr: 2.263  
Centroid-sig: 0.3%  
Centroid-so: 1.087 arcsec [2.12σ]  
OotOffset-rm: 7.642 arcsec [1.06σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-rm: 7.748 arcsec [1.07σ]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [17/17]

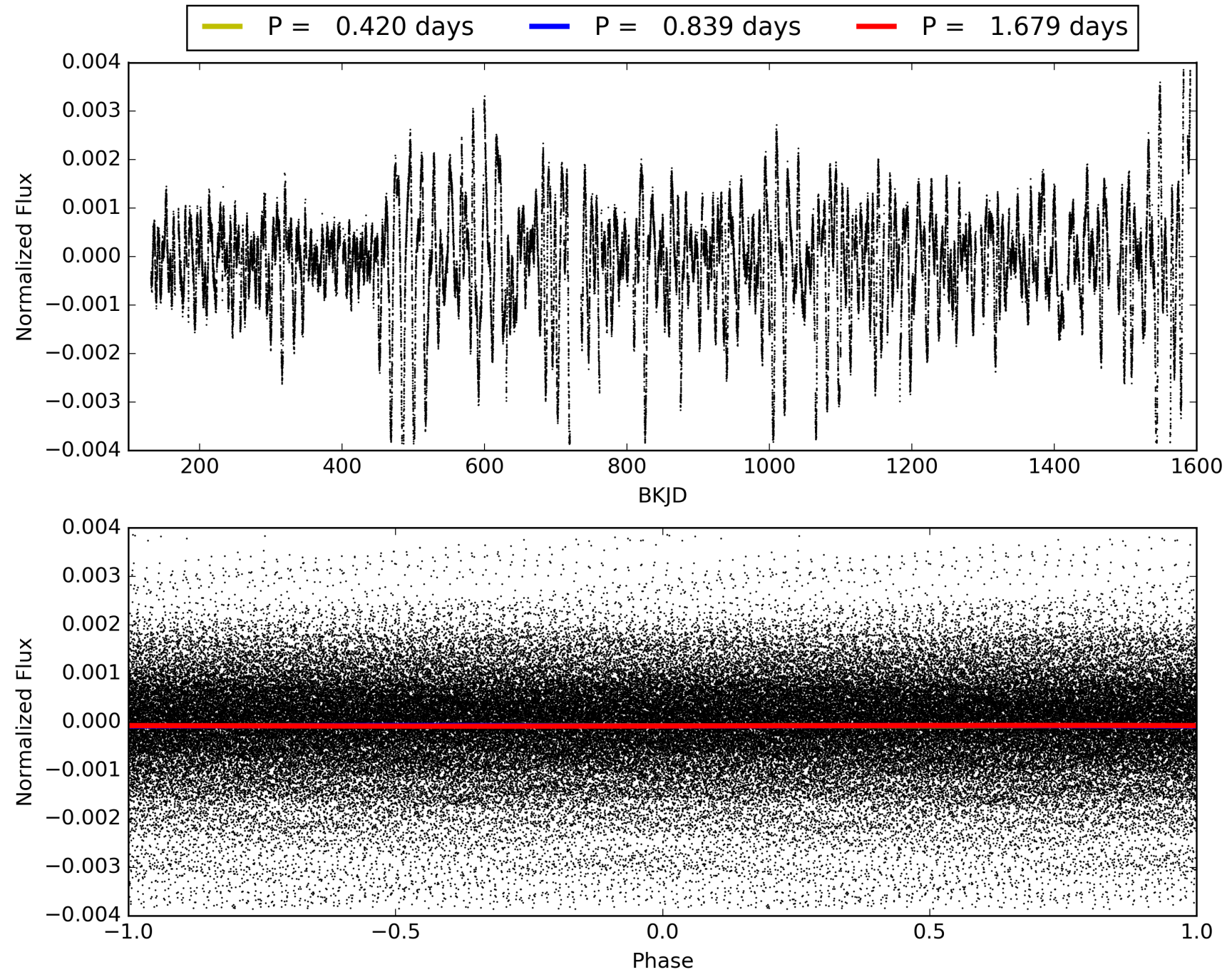
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:38:22 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009178003-01, PDC Light Curves

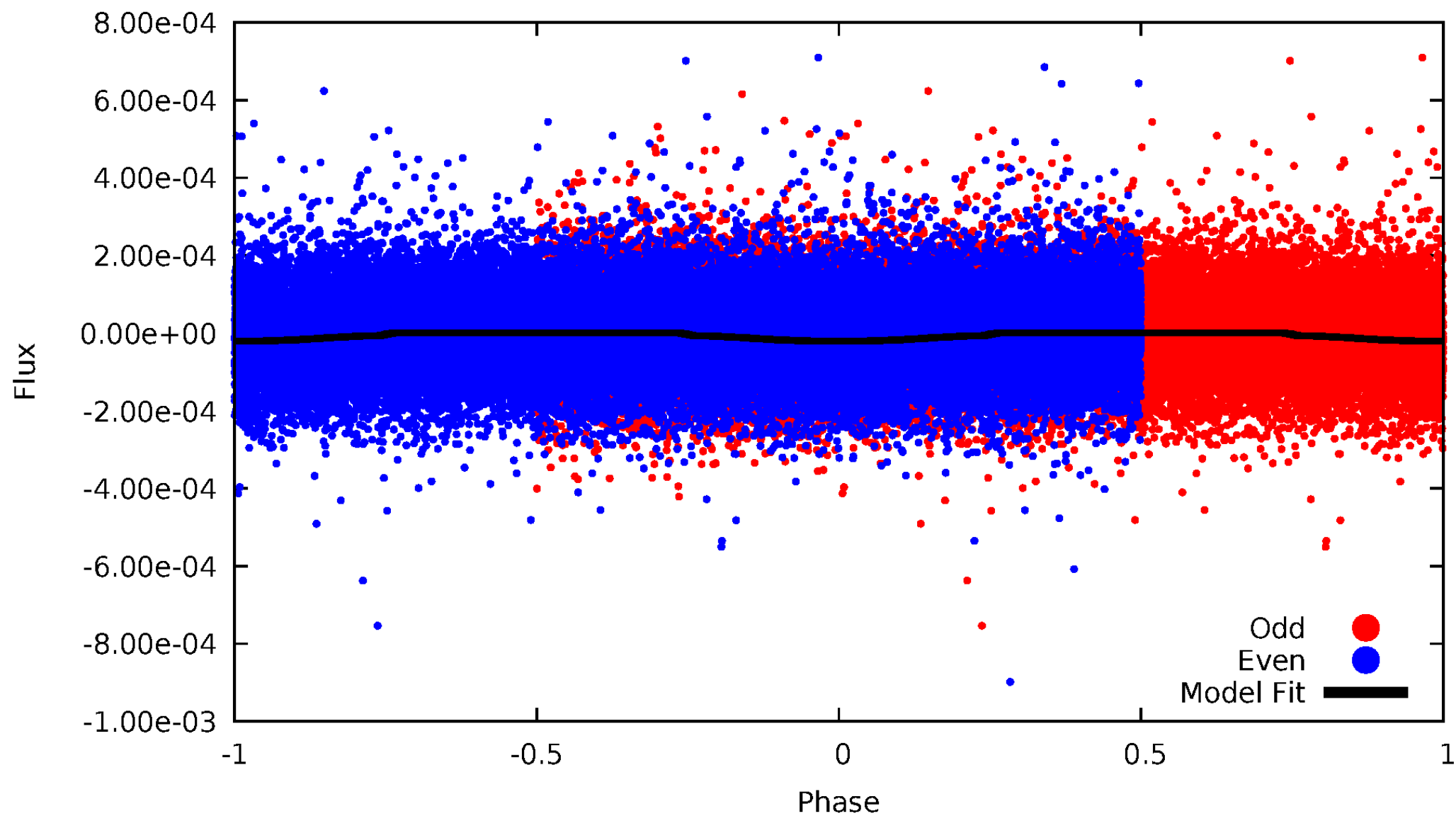


TCE 009178003-01



# DV Odd/Even

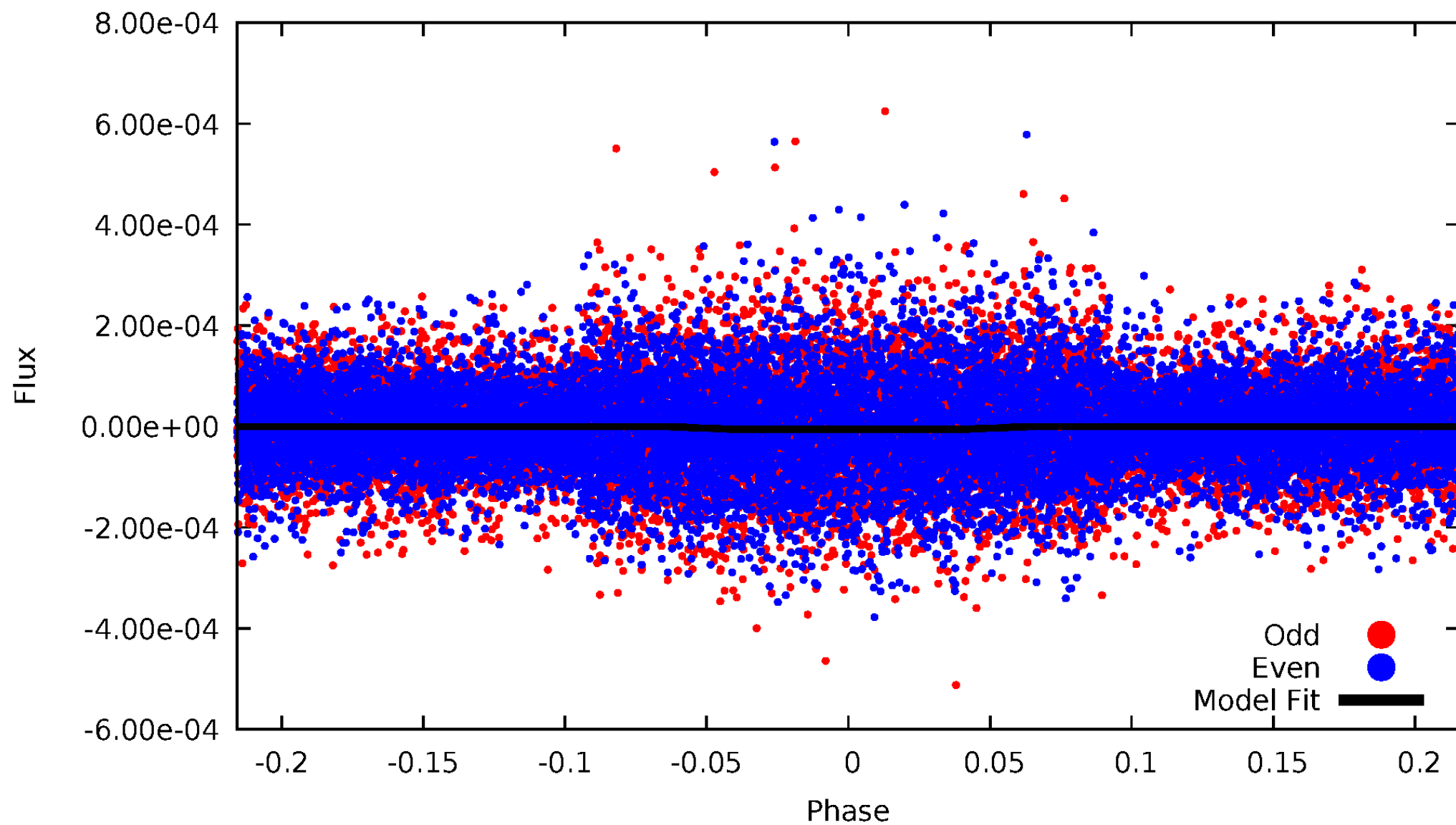
TCE 009178003-01





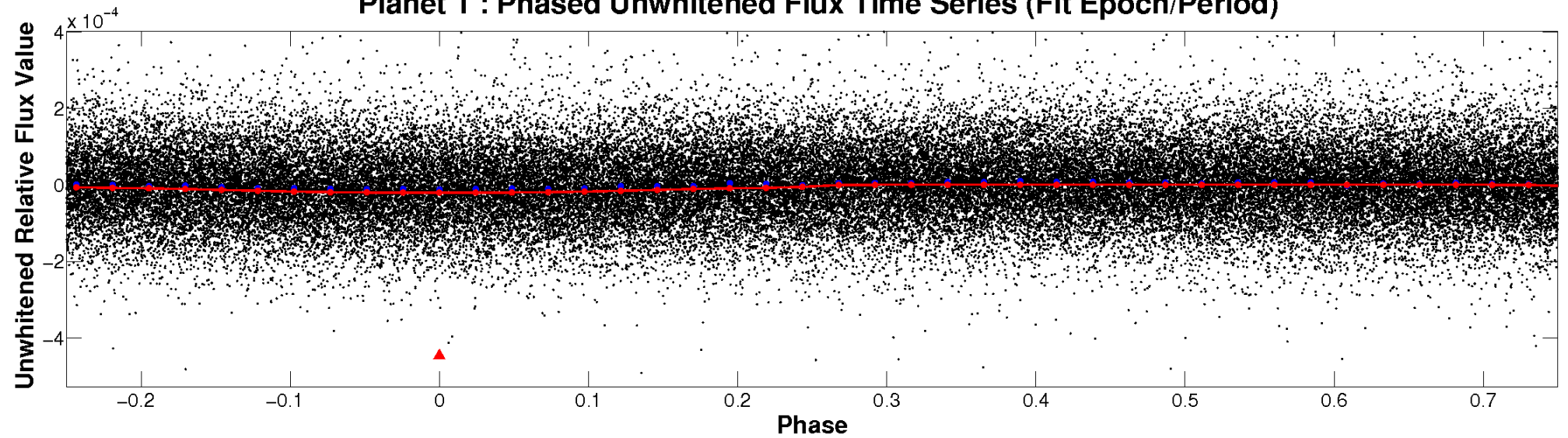
# ALT Odd/Even

TCE 009178003-01

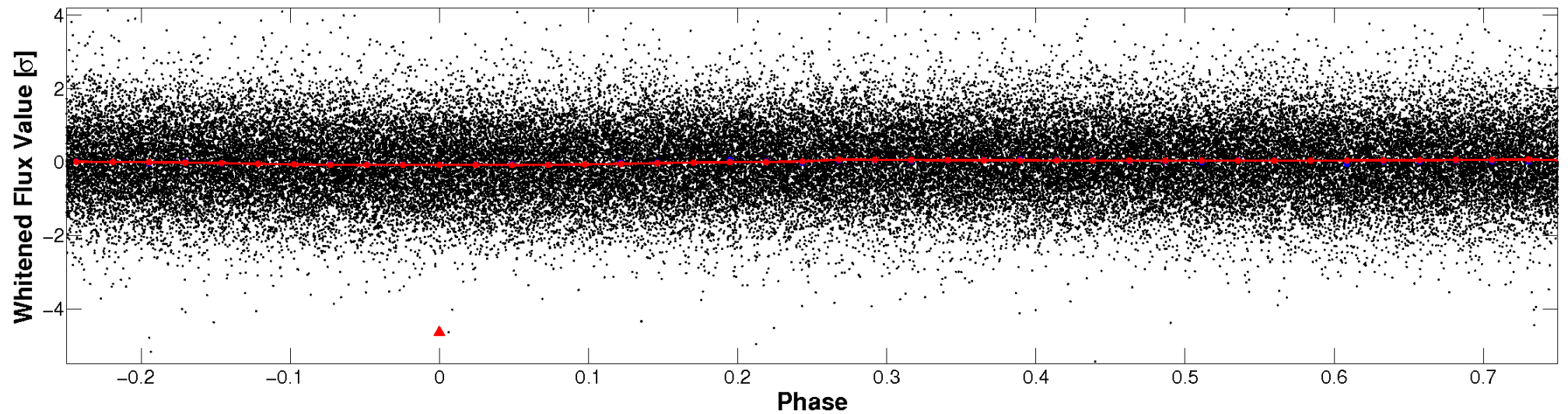


# Non-Whitened Vs. Whitened Light Curve

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

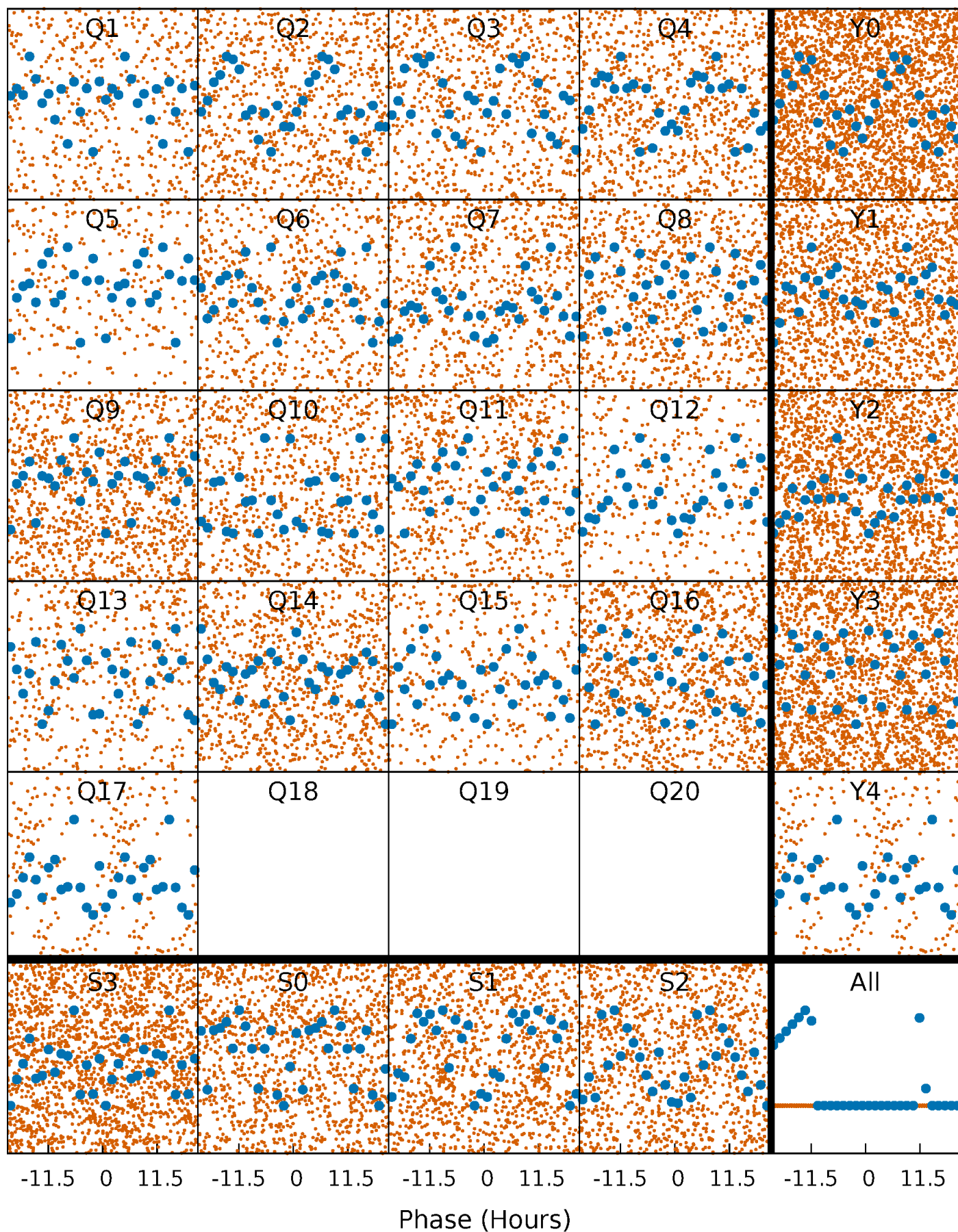


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

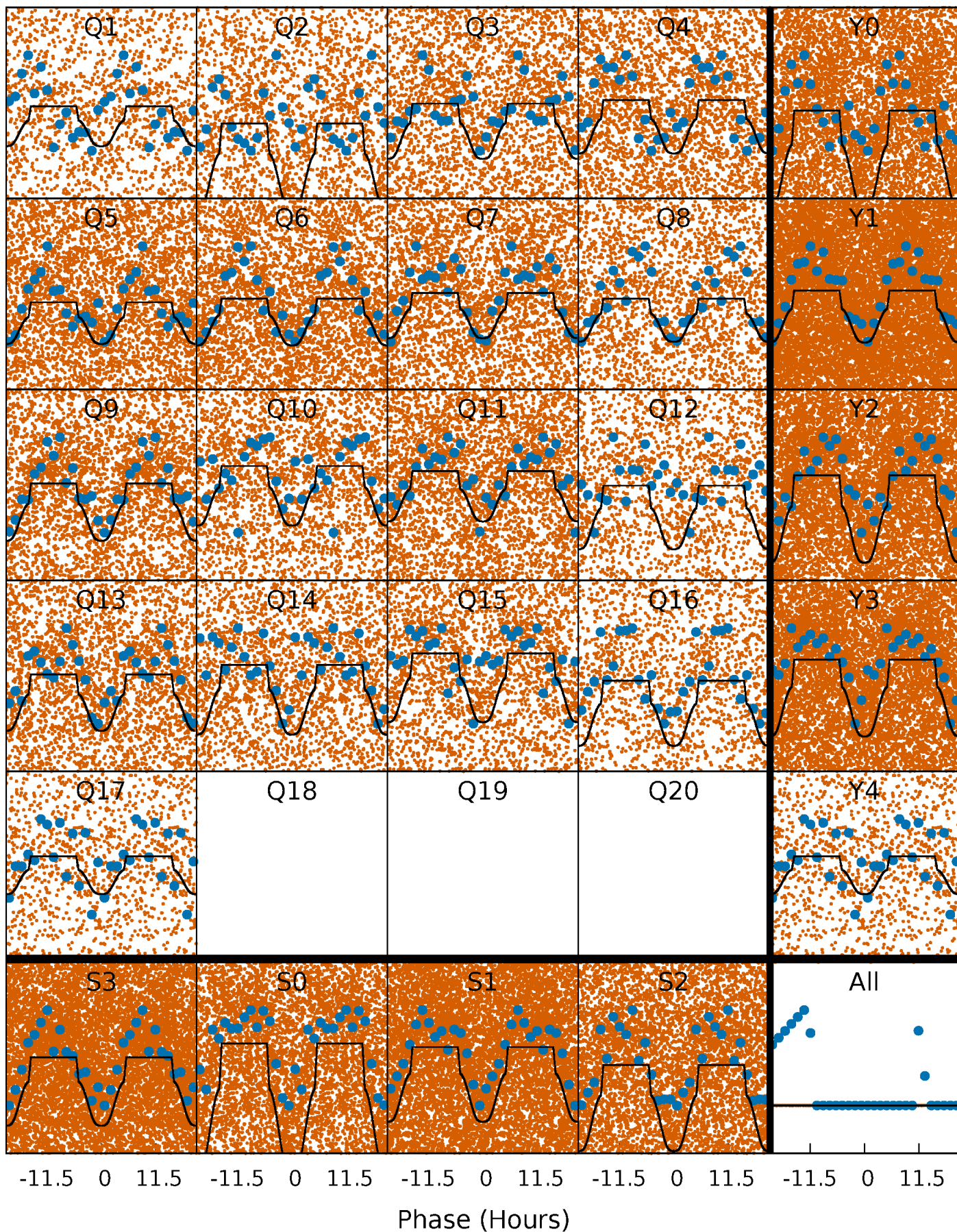
TCE 009178003-01 P= 0.839362 Days  $T_0=131.709554$  (BKJD)





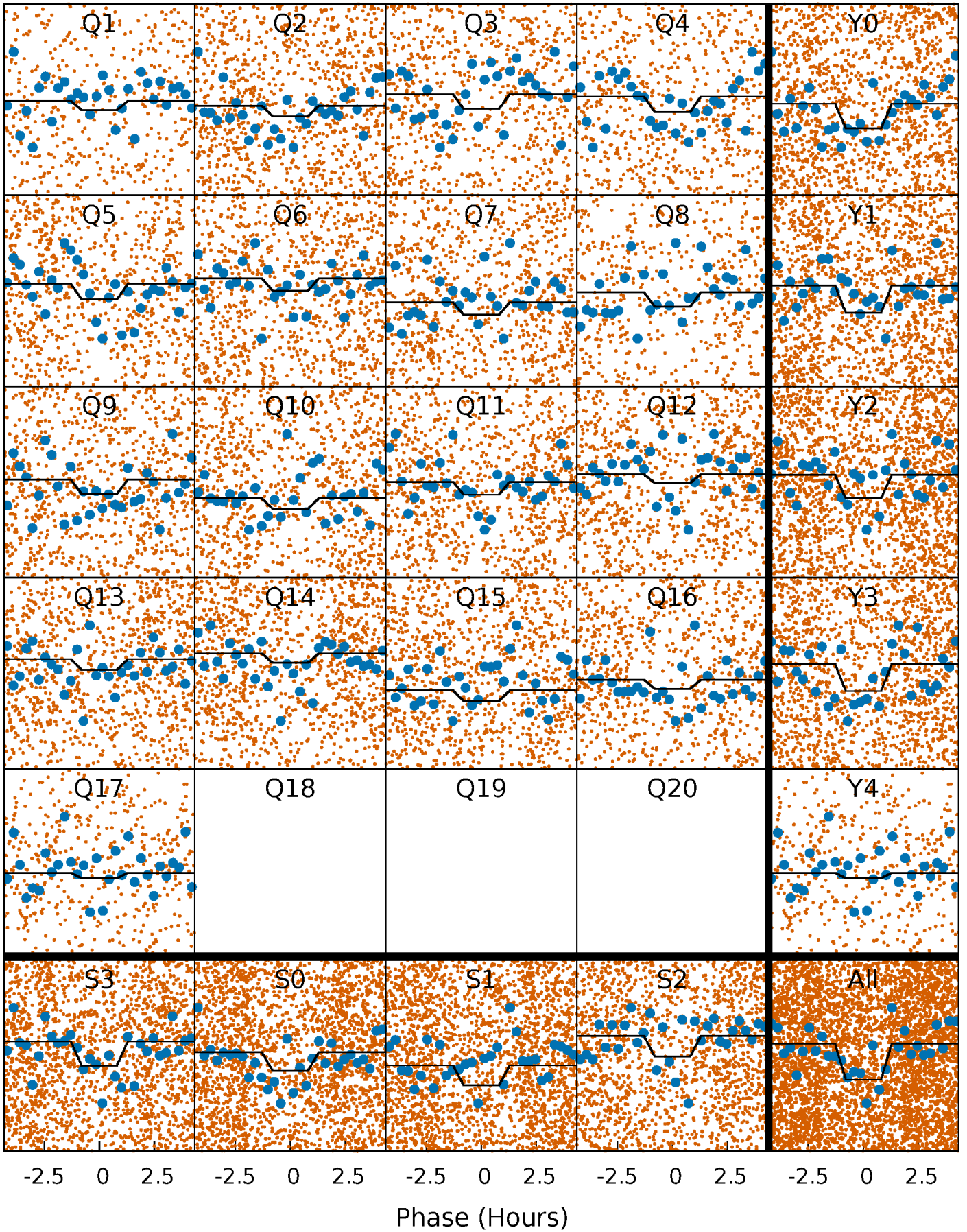
# DV Quarter-Phased Transit Curves

TCE 009178003-01   P= 0.839362 Days    $T_0=131.709554$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009178003-01 P= 0.839281 Days  $T_0=131.777865$  (BKJD)

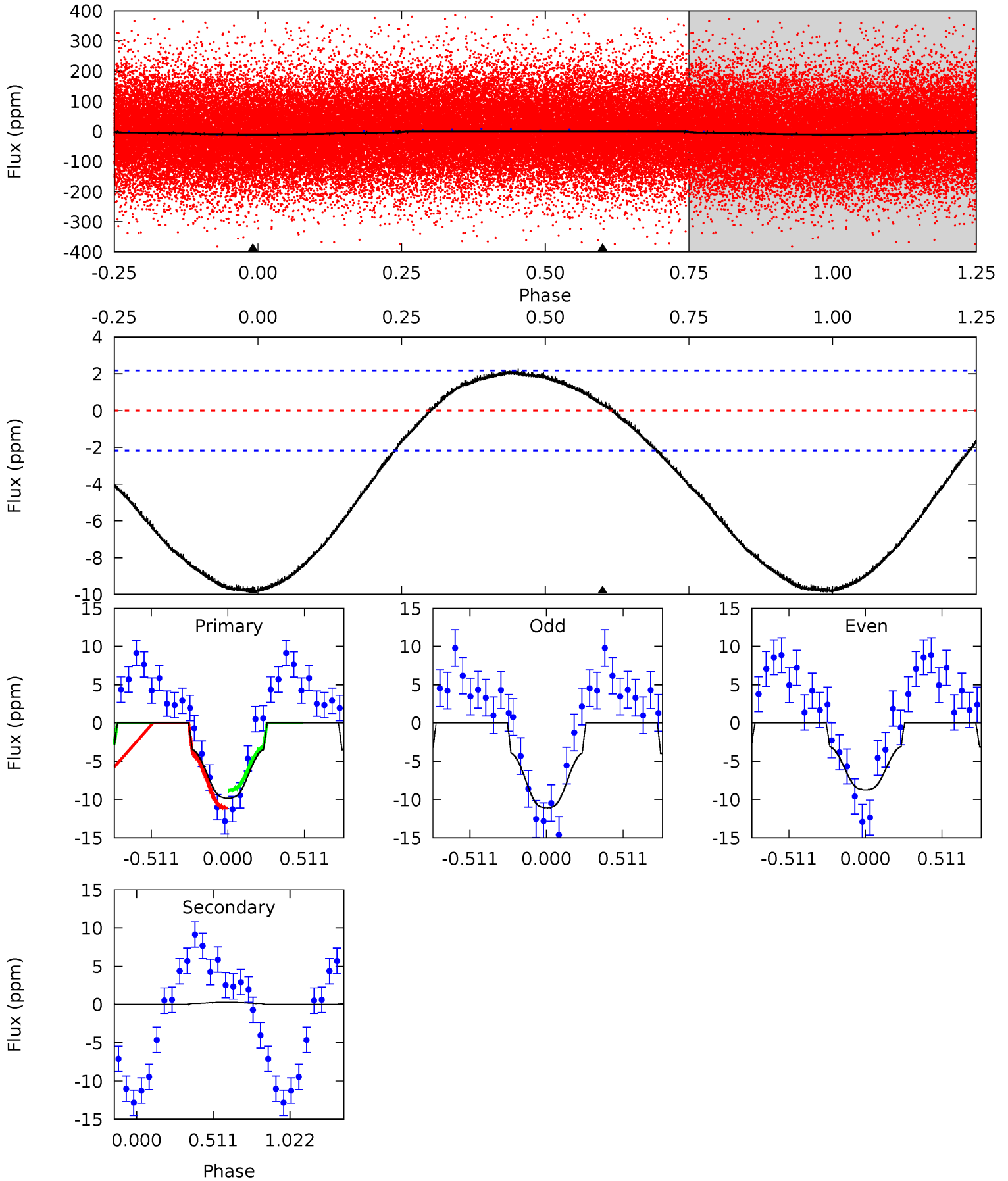




# DV Model-Shift Uniqueness Test

009178003-01, P = 0.839362 Days, E = 130.870192 Days

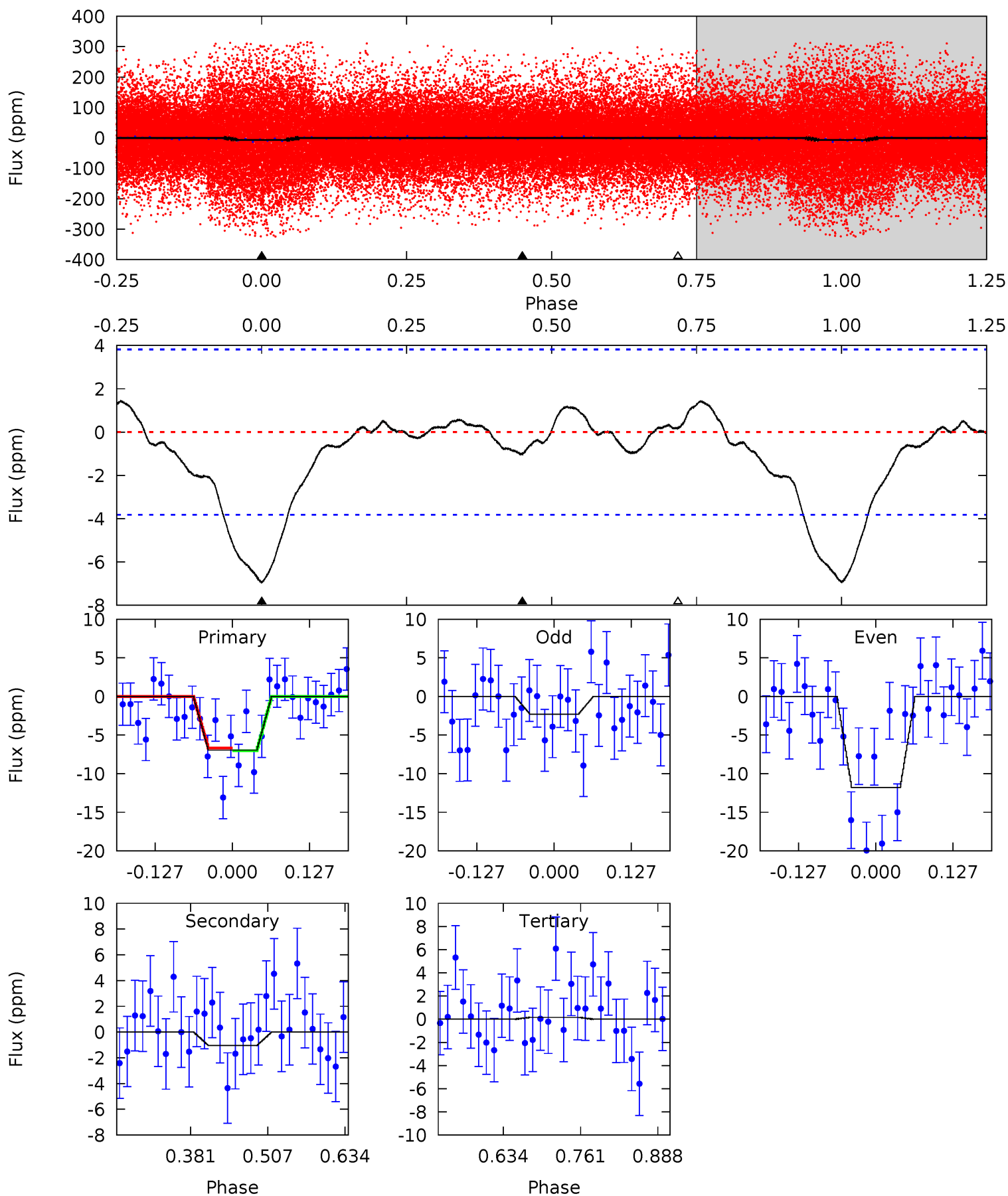
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	-0.56	0	0	4.21	0.66	1.73	19.0	19.0	-0.56	-0.56	2.28	0.77	0.19	2.28



# Alt Model-Shift Uniqueness Test

009178003-01, P = 0.839281 Days, E = 130.938584 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
8.22	1.23	-0.18	0	4.51	1.53	0.73	8.39	8.22	1.41	1.23	5.65	0.83	0.17	0.21





### Stellar Parameters For KIC 009178003

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5942^{+164}_{-164}$	$3.991^{+0.285}_{-0.095}$	$-0.120^{+0.300}_{-0.250}$	$1.741^{+0.350}_{-0.569}$	$1.082^{+0.174}_{-0.156}$	$0.289^{+0.499}_{-0.100}$
	+3%/-3%	+7%/-2%	+250%/-208%	+20%/-33%	+16%/-14%	+173%/-35%
Source	PHO1	FLK73	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 009178003-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1$	$1.11^{+0.17}_{-0.20}$	$3559^{+215}_{-330}$	$-3487^{+217}_{-172}$	$-0.045^{+0.075}_{-0.088}$
Alt.	$-1 \pm 1$	$0.44^{+0.09}_{-0.10}$	$3541^{+207}_{-283}$	$3879^{+650}_{-6494}$	$0.972^{+1.028}_{-0.717}$

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

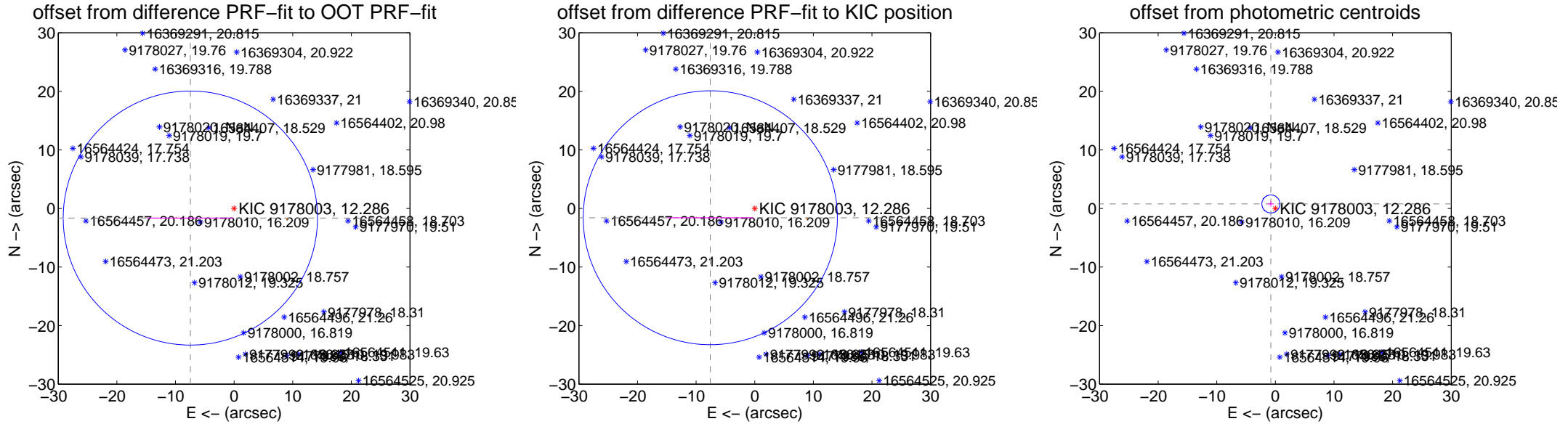
## DV Centroid Data

Supplemental centroid analysis for 009178003-01. Kepler magnitude: 12.29. Transit SNR 11.55

There are 0 quarters with good PRF difference image offsets

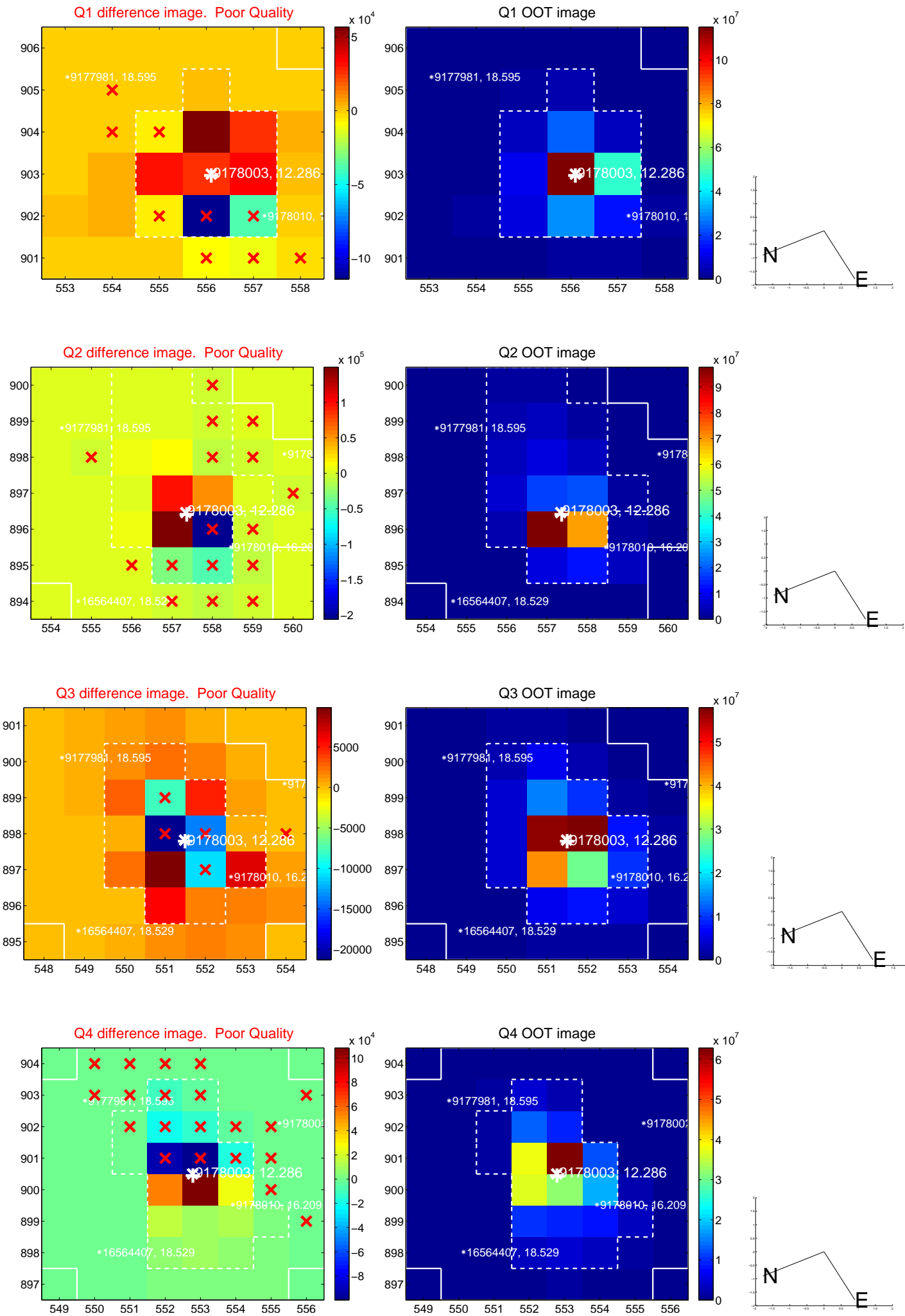
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.642 \pm 7.230$	1.06	$7.463 \pm 7.402$	$-1.642 \pm 0.176$
PRF-fit source offset from KIC position	$7.748 \pm 7.226$	1.07	$7.583 \pm 7.384$	$-1.590 \pm 0.133$
photometric centroid source offset	$1.09 \pm 0.51$	2.12	$0.77 \pm 0.55$	$0.77 \pm 0.47$

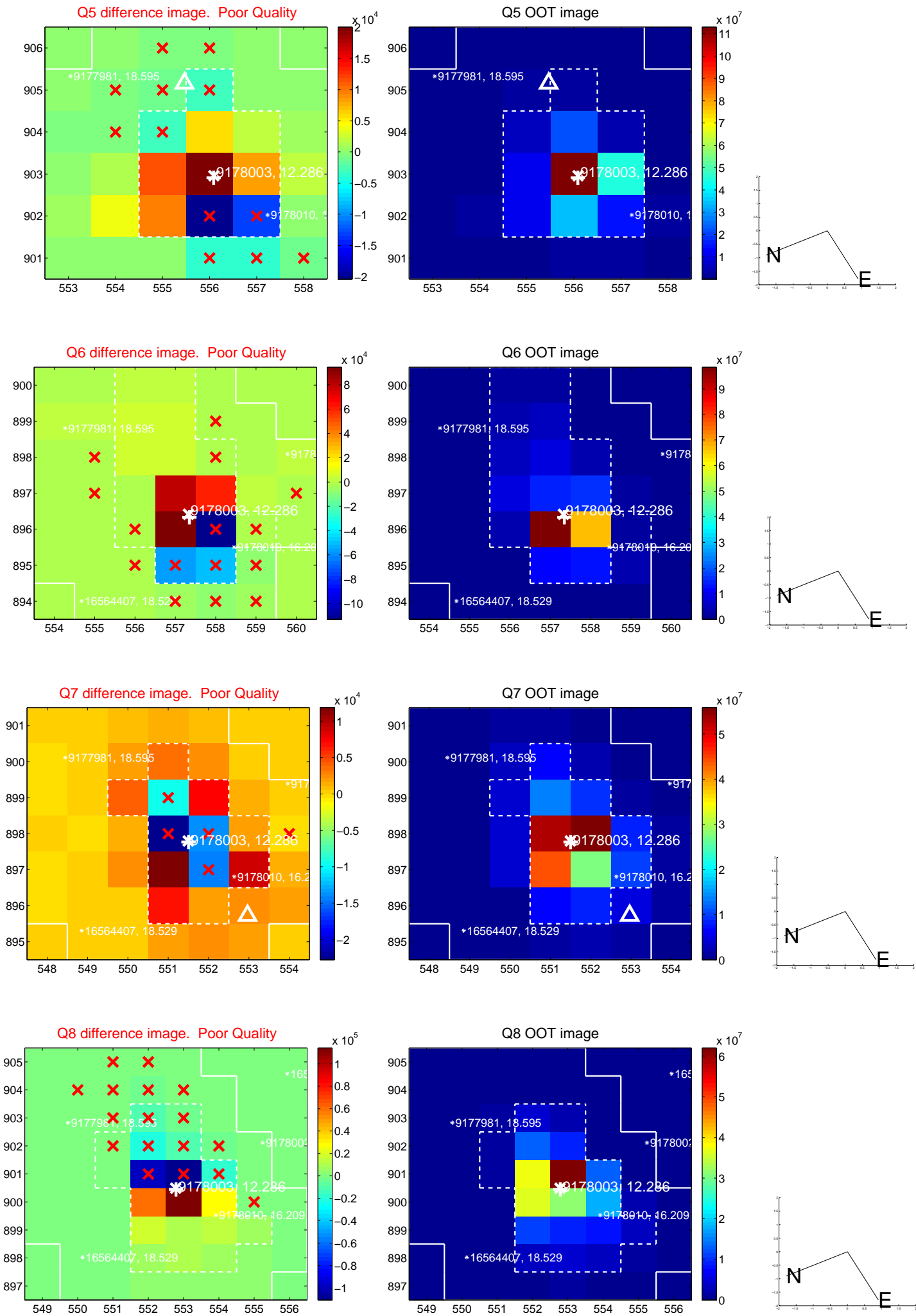


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 are from the UKIRT catalog.

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

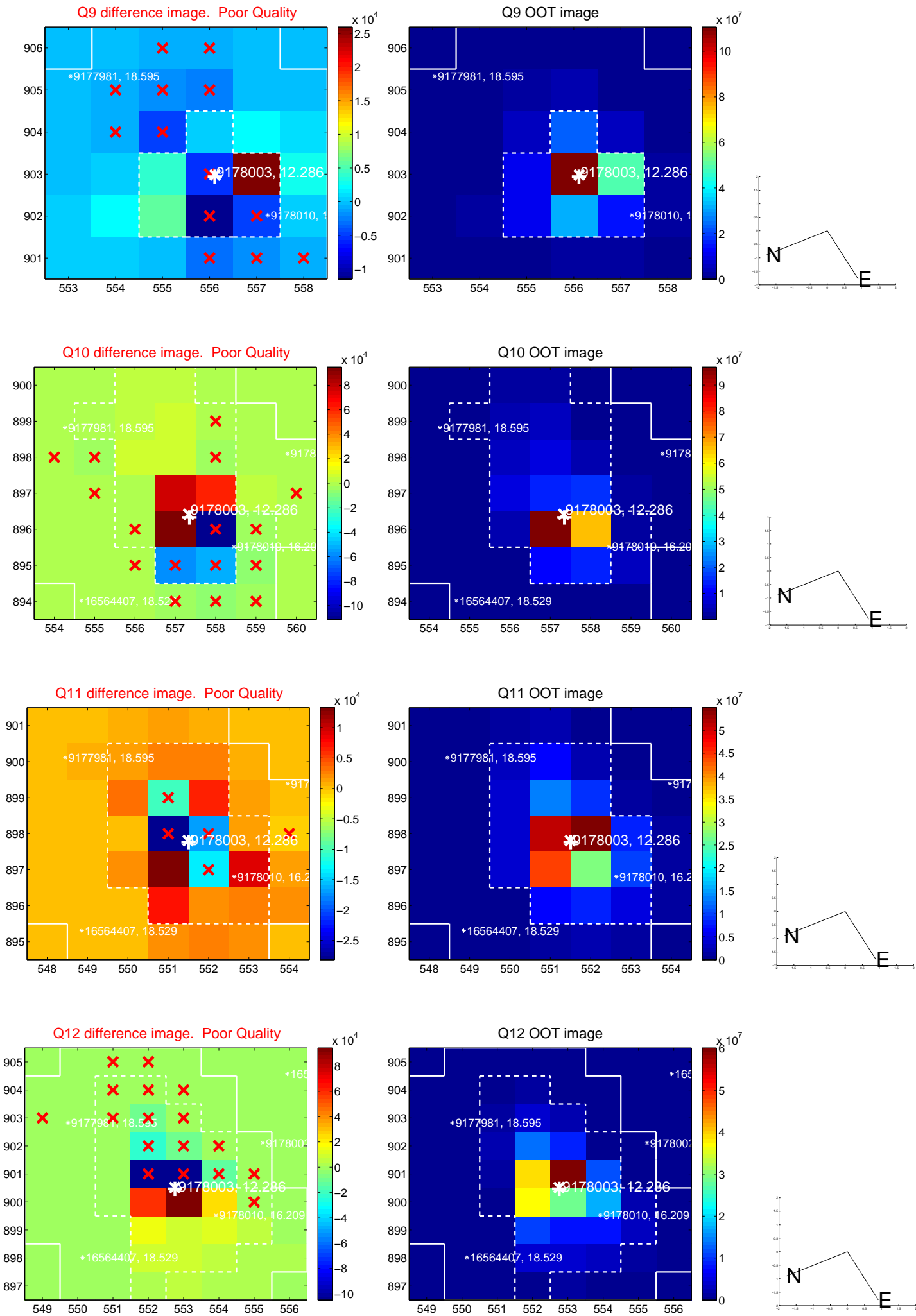


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

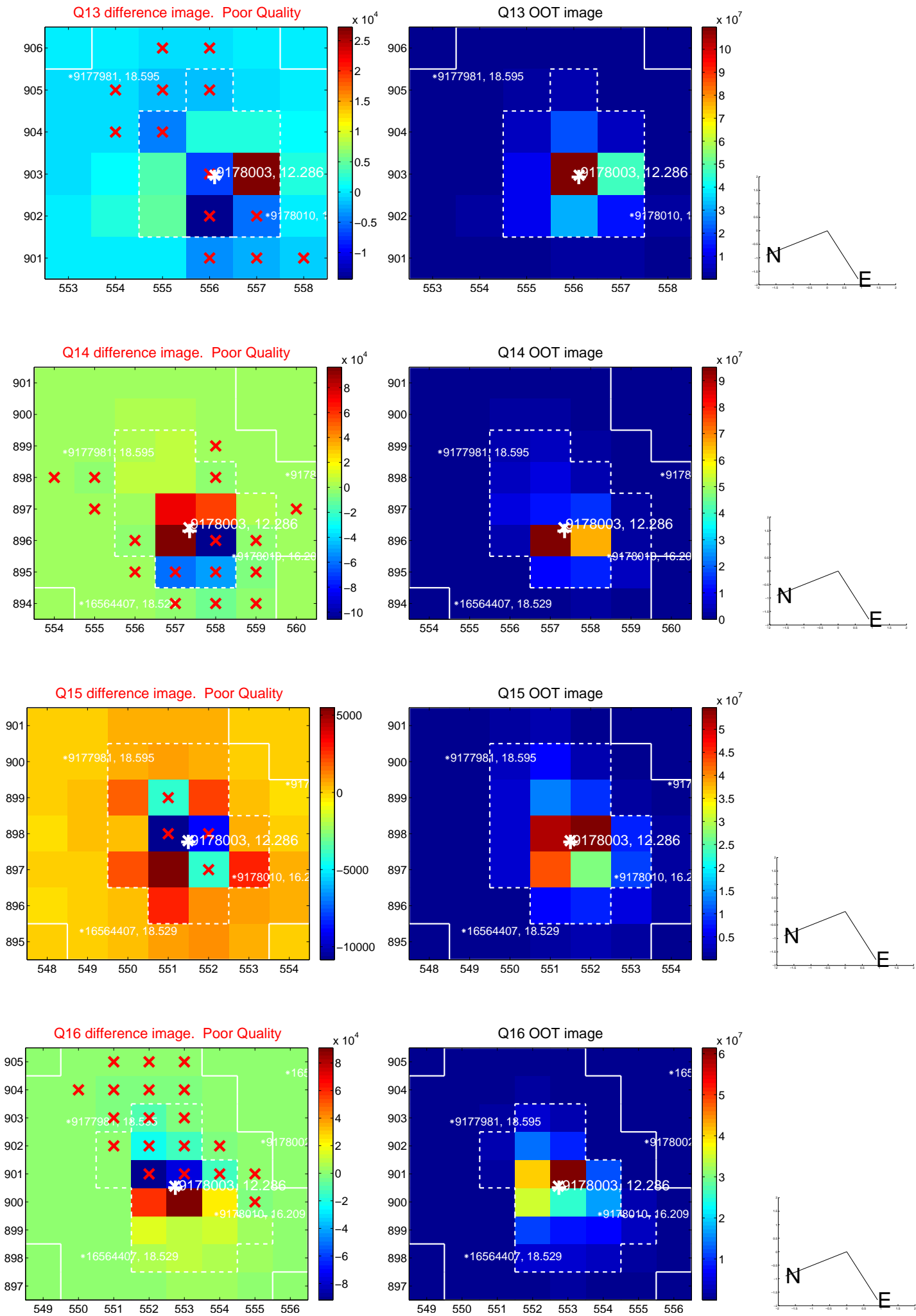




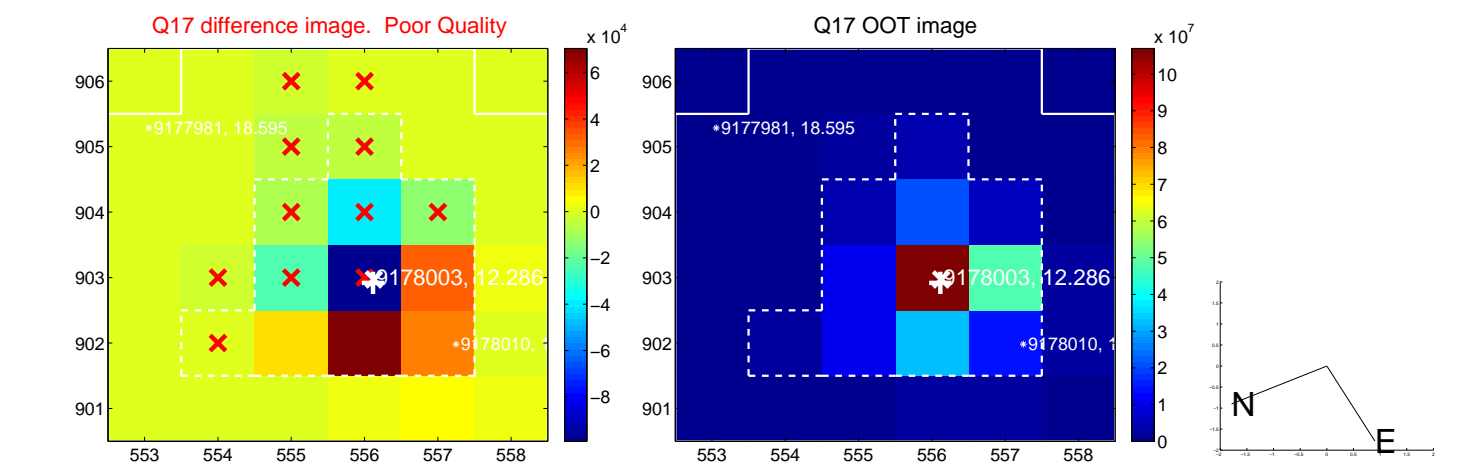
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



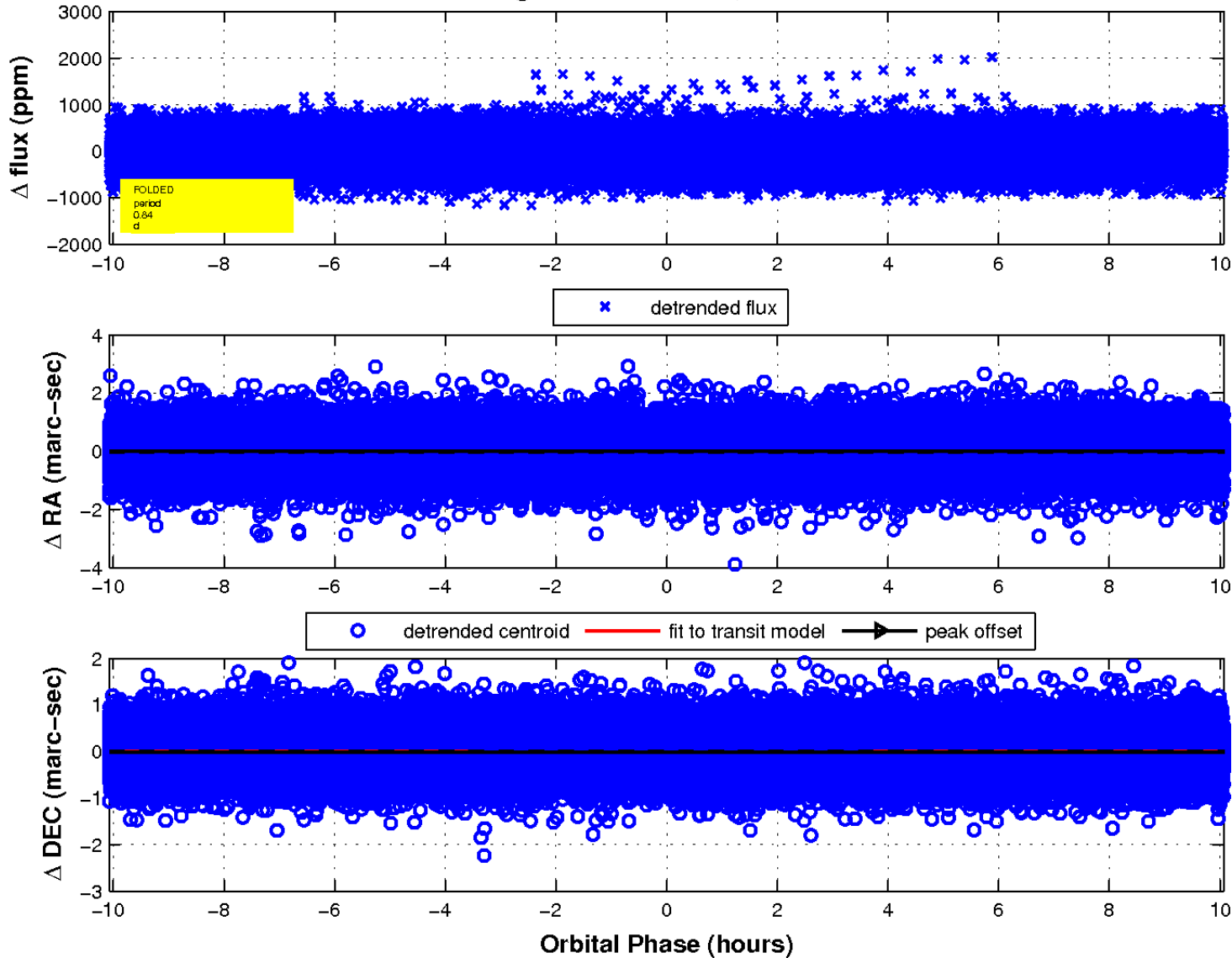
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

