

# KIC 009723838

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009723838-01	OBS	No	17.583892	137.141060	57.6	20.709	8.9	9.6	1.30	6482	1.05	133.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009723838-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV

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

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

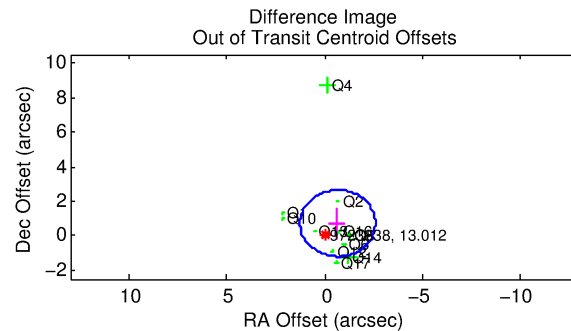
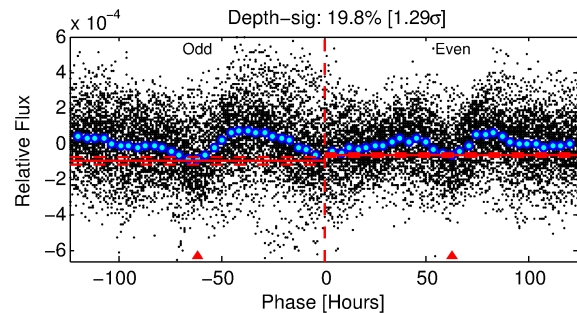
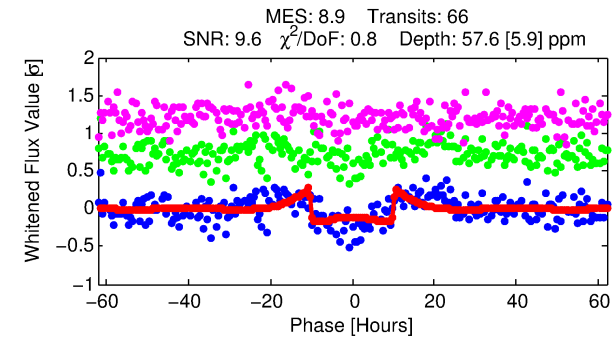
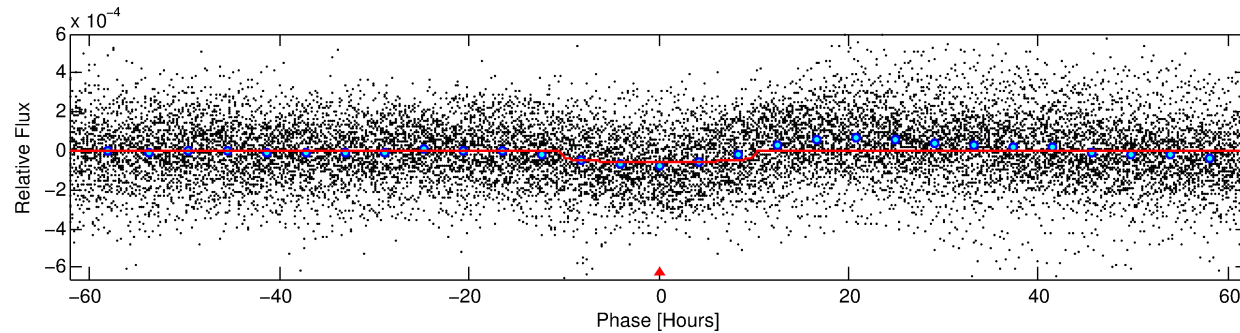
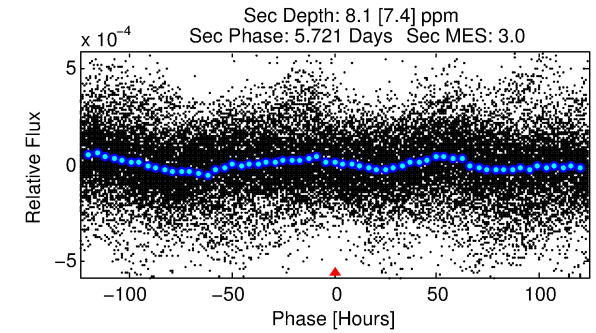
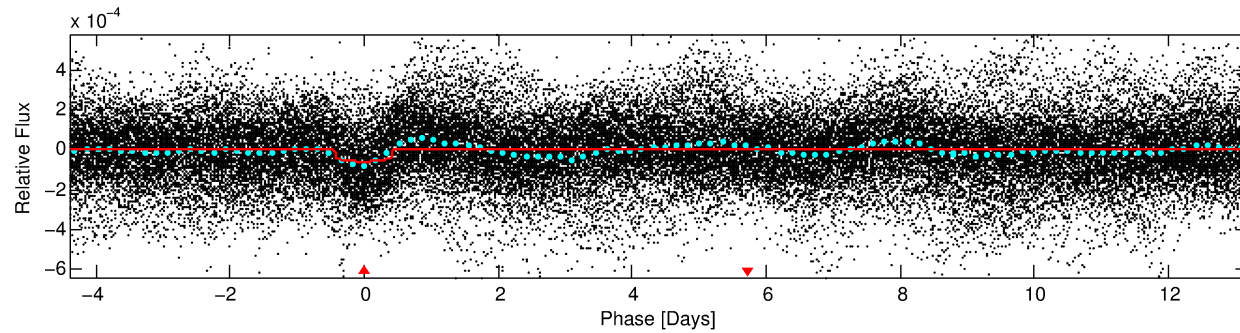
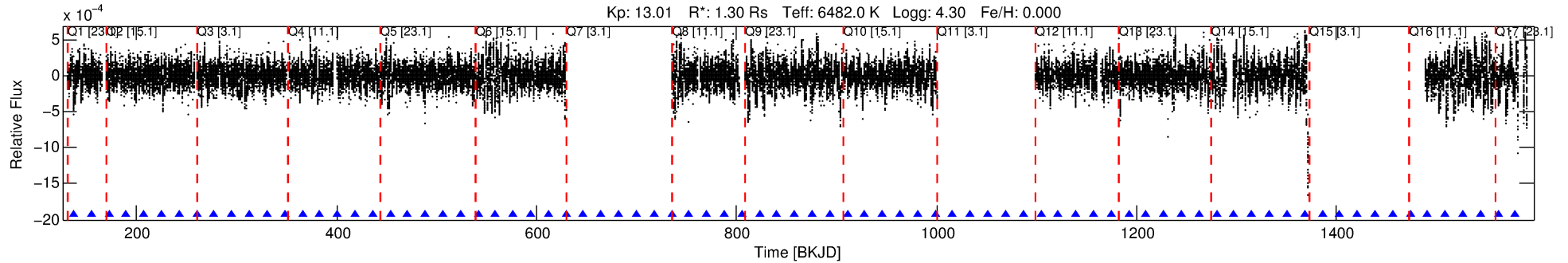
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009723838-01

No Significant Match Found

# DV One-Page Summary

KIC: 9723838 Candidate: 1 of 1 Period: 17.584 d



## DV Fit Results:

Period = 17.58389 [0.00020] d  
Epoch = 137.1411 [0.0091] BKJD  
Rp/R\* = 0.0074 [0.0010]  
a/R\* = 4.98 [2.99]  
b = 0.66 [0.53]  
Seff = 133.18 [54.93]  
Teff = 866 [89] K  
Rp = 1.05 [0.38] Re  
a = 0.1418 [0.0389] AU  
Ag = 81.35 [83.29] [0.96σ]  
Teffp = 4022 [967] K [3.25σ]

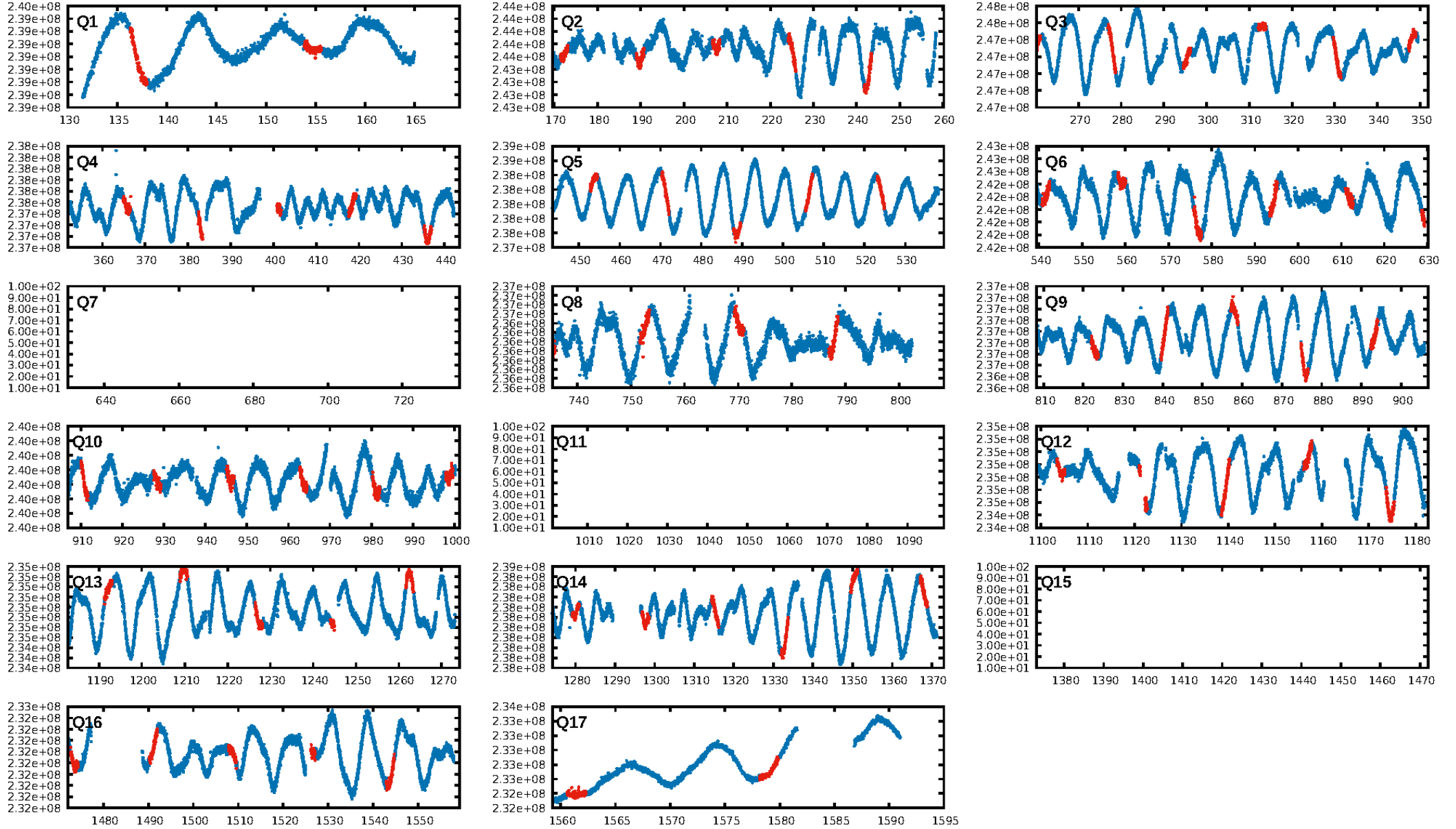
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.10e-19  
RollingBand-fgt: 1.00 [62/62]  
GhostDiagnostic-chr: 1.29  
Centroid-sig: 35.7%  
Centroid-so: 0.509 arcsec [0.70σ]  
OotOffset-rm: 0.979 arcsec [1.53σ]  
OotOffset-st: 4/0/4/3 [11]  
KicOffset-rm: 1.094 arcsec [1.91σ]  
KicOffset-st: 4/0/4/3 [11]  
DiffImageQuality-fgm: 0.82 [9/11]  
DiffImageOverlap-fno: 1.00 [14/14]

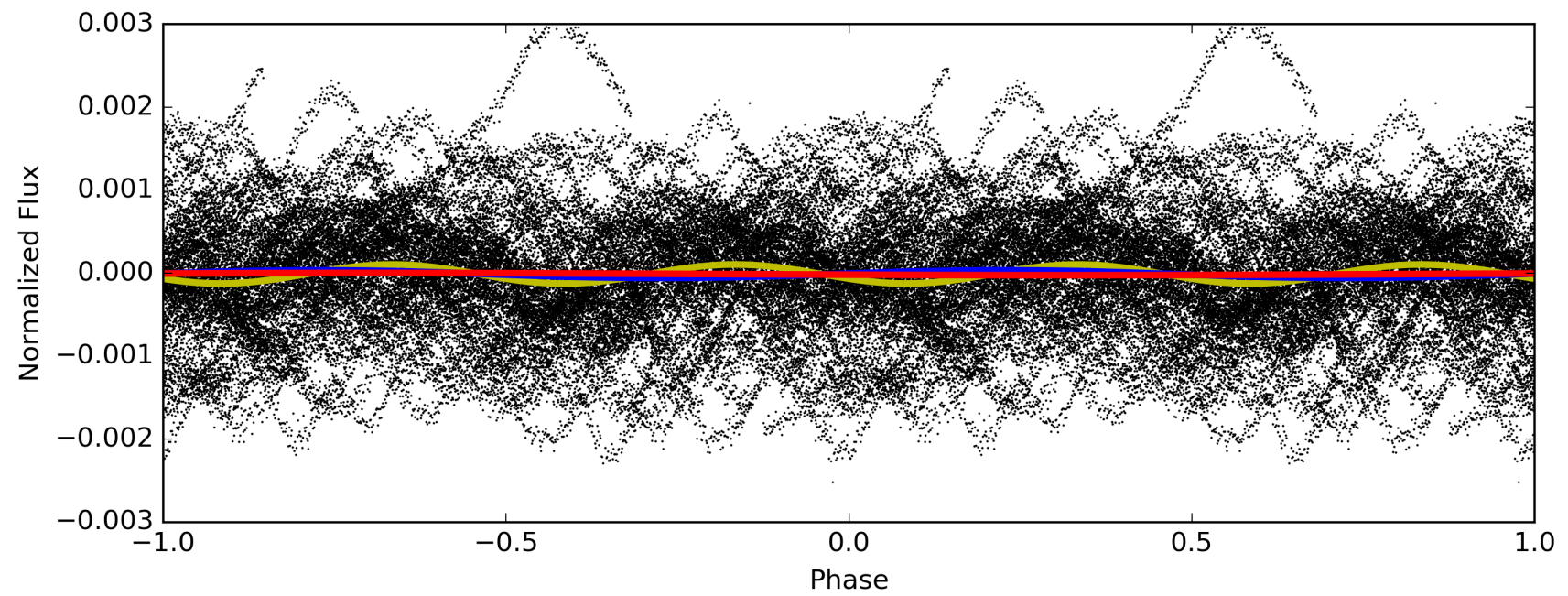
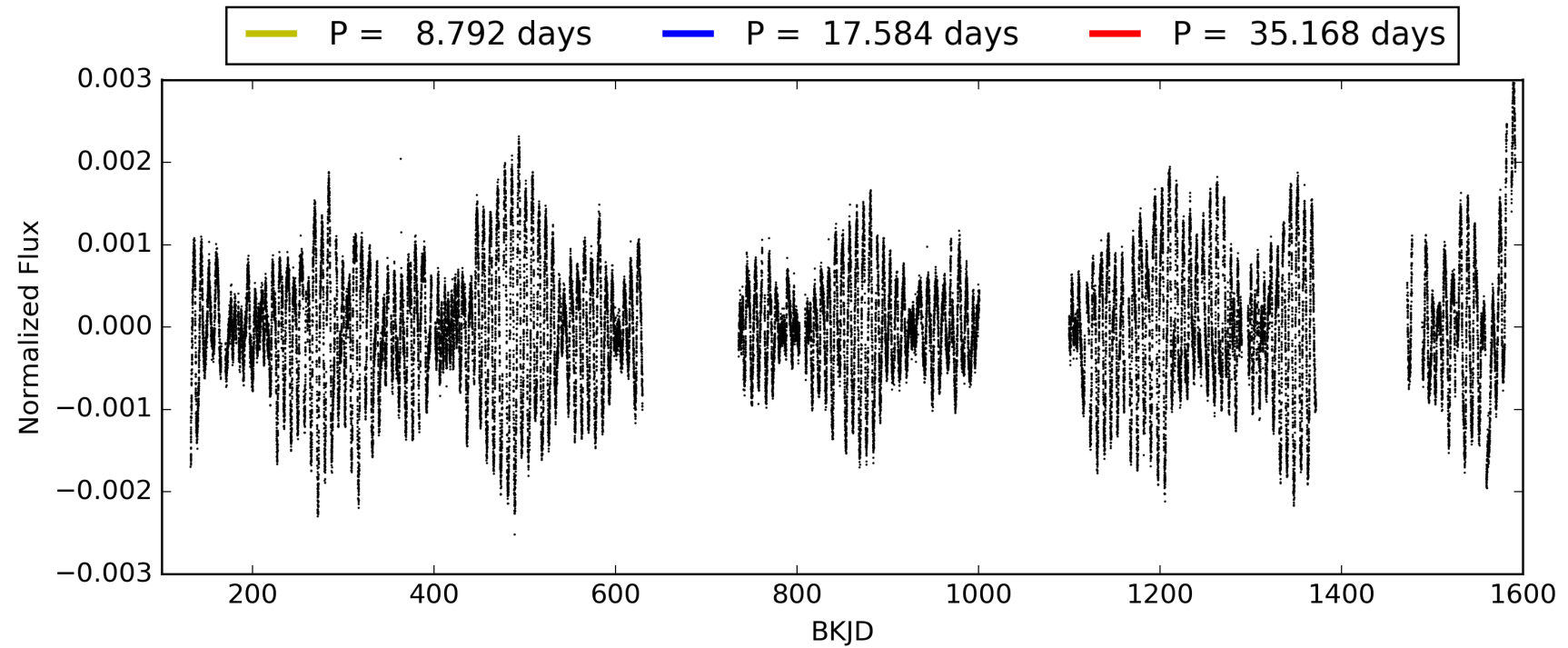
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:33:18 Z

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

# TCE 009723838-01, PDC Light Curves

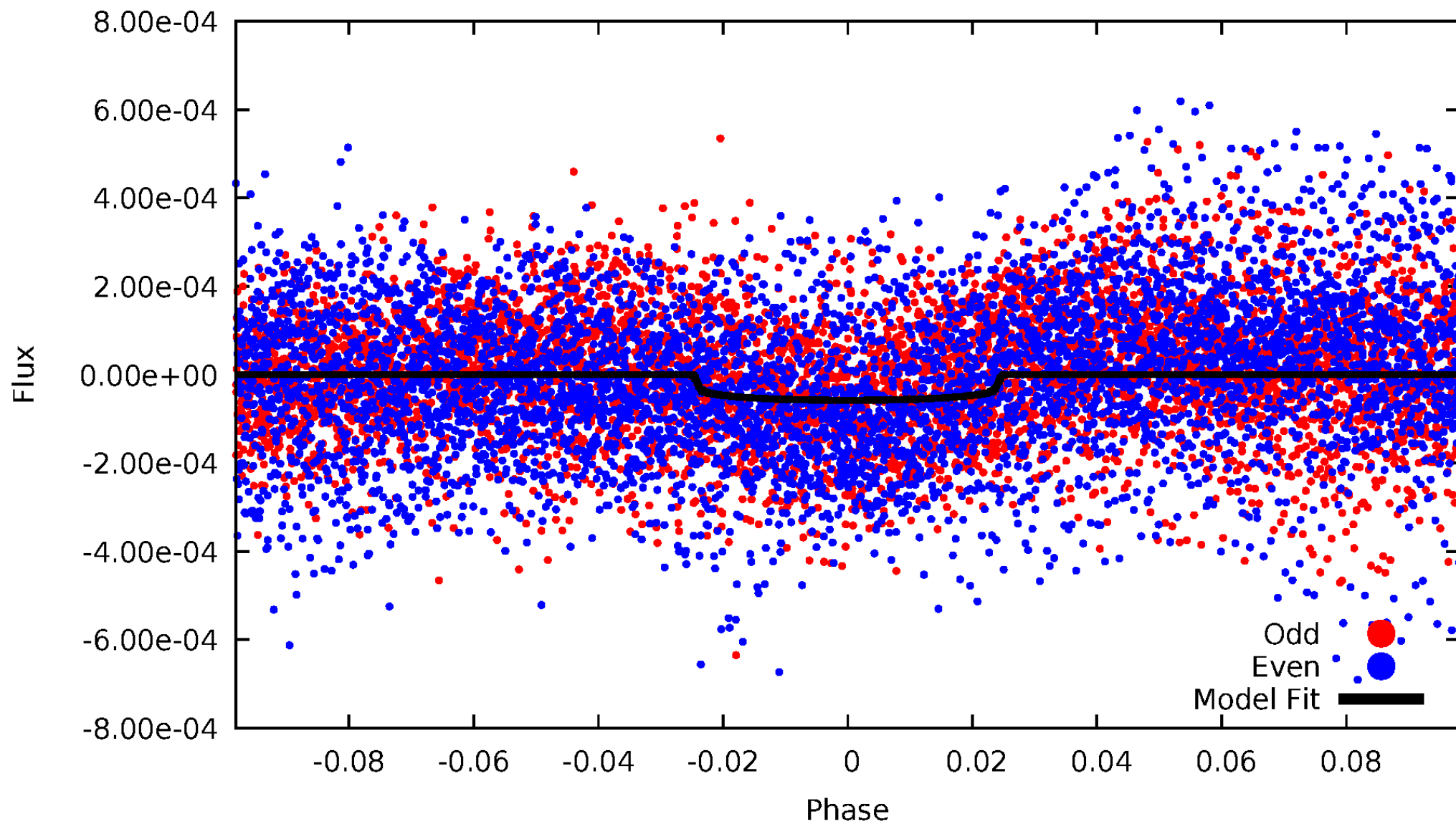


TCE 009723838-01



# DV Odd/Even

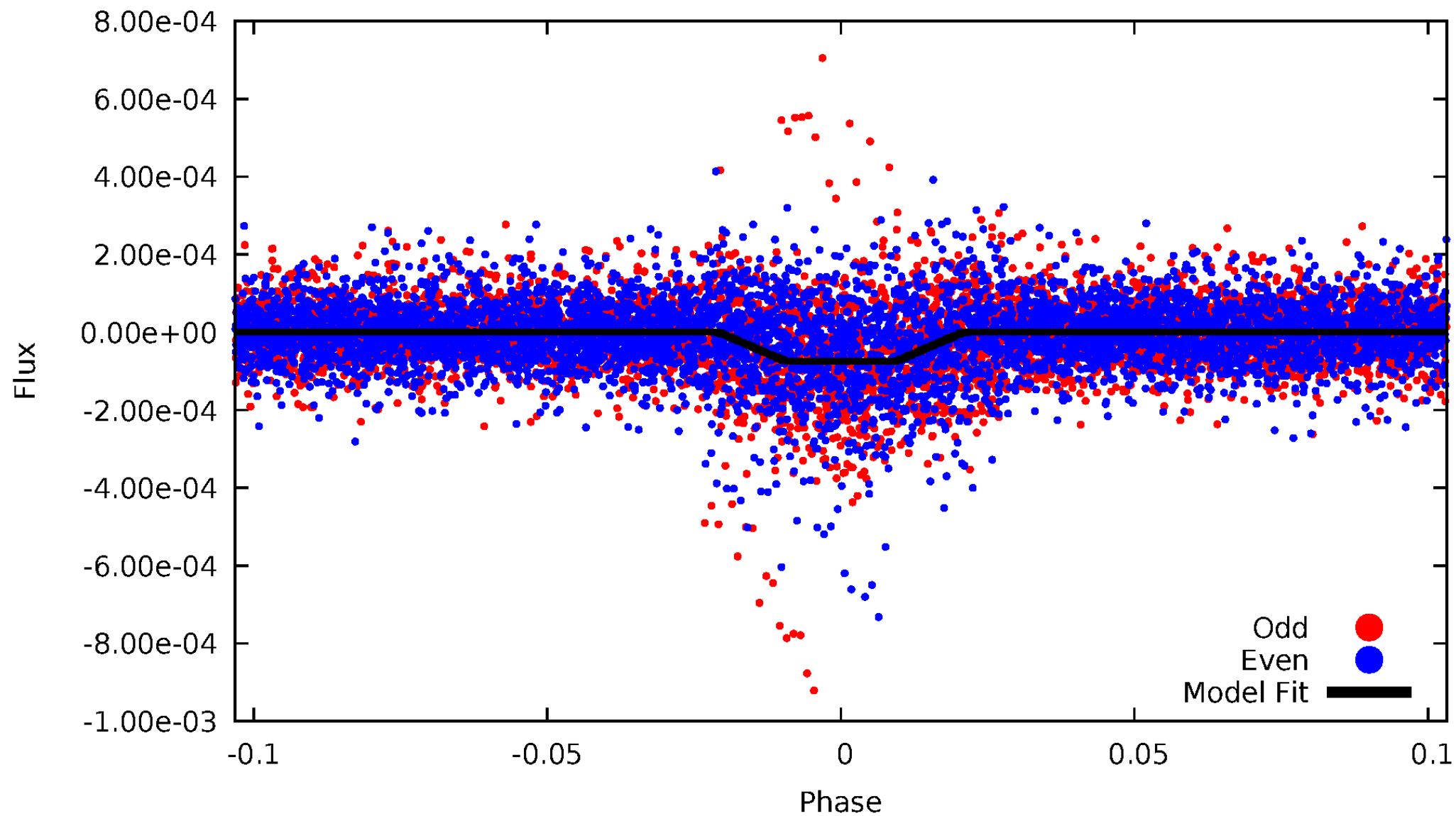
TCE 009723838-01





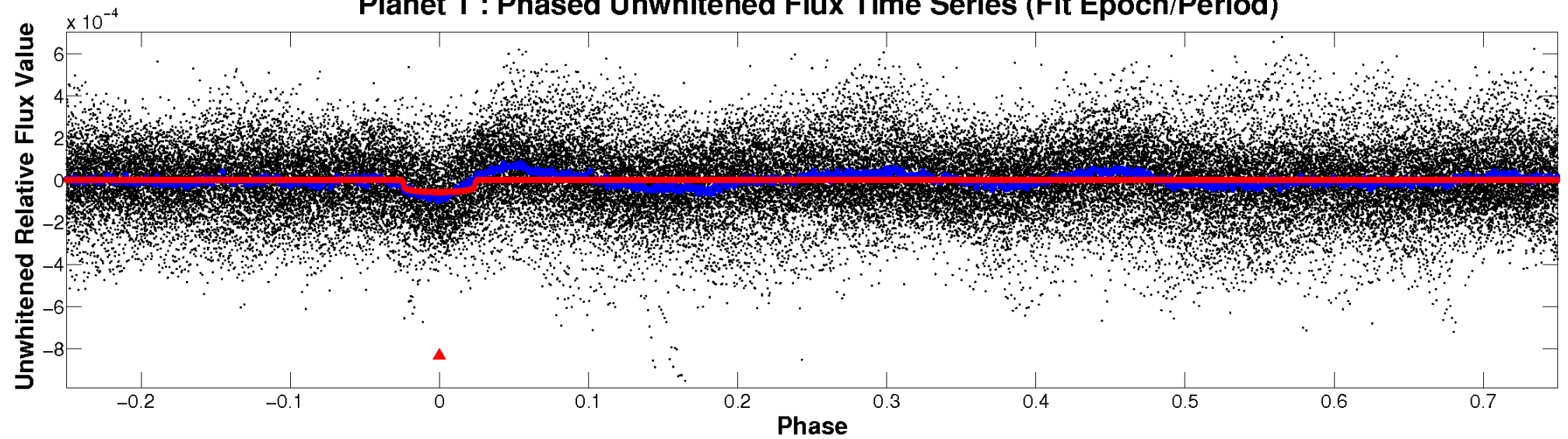
# ALT Odd/Even

TCE 009723838-01

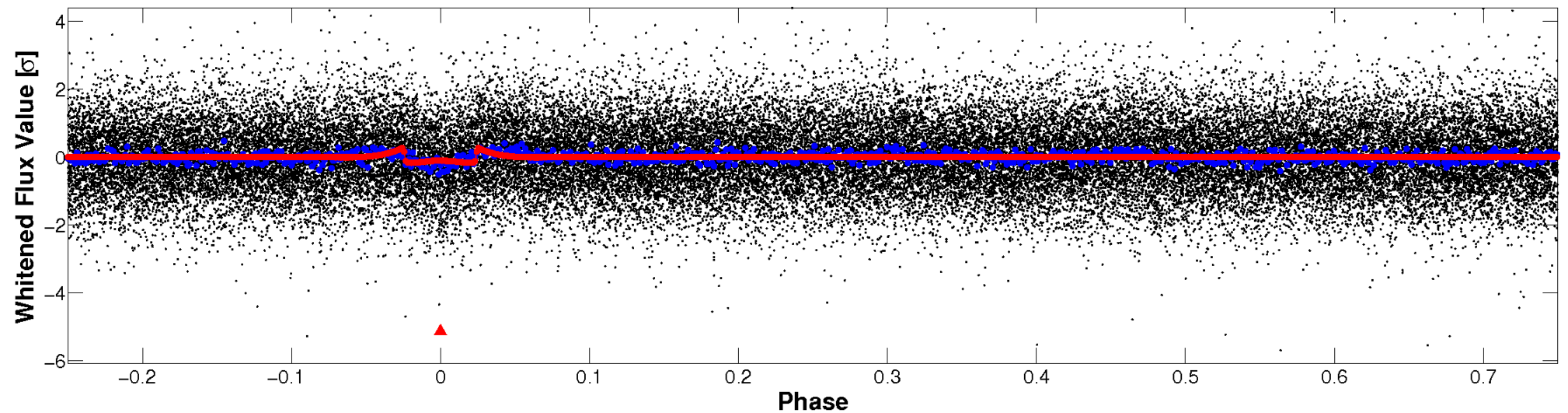


# Non-Whitened Vs. Whitened Light Curve

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

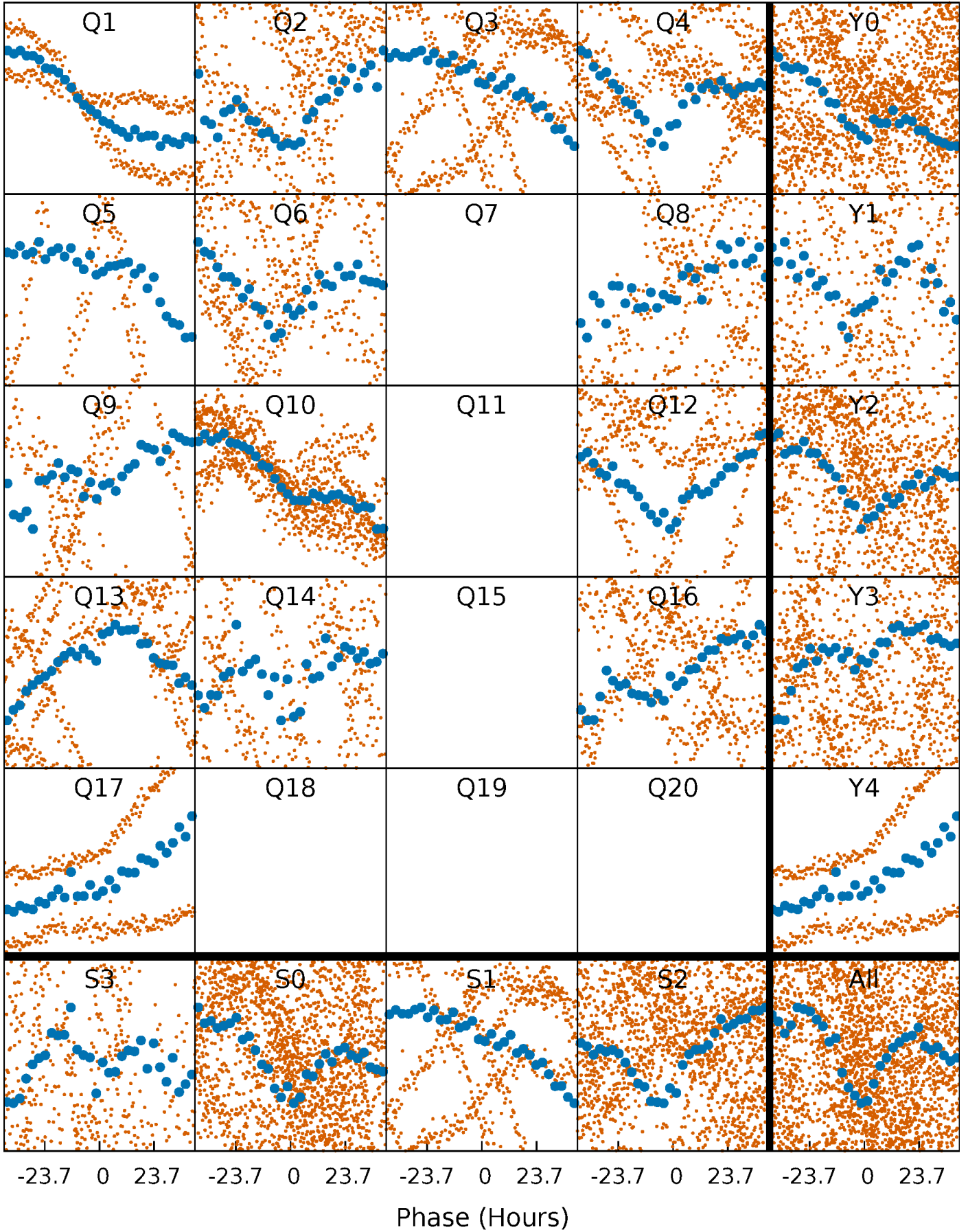


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

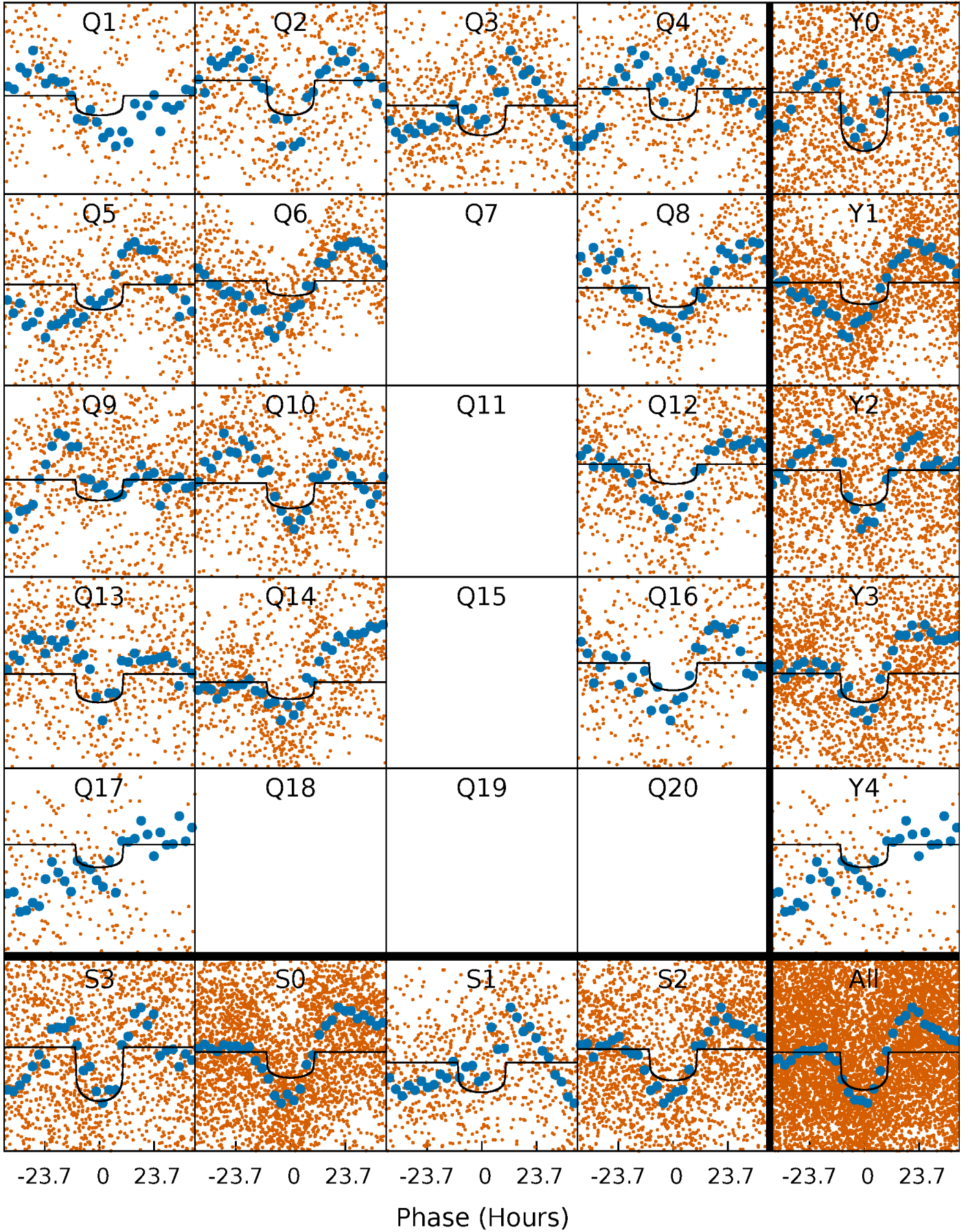
TCE 009723838-01 P= 17.583892 Days  $T_0=137.141060$  (BKJD)





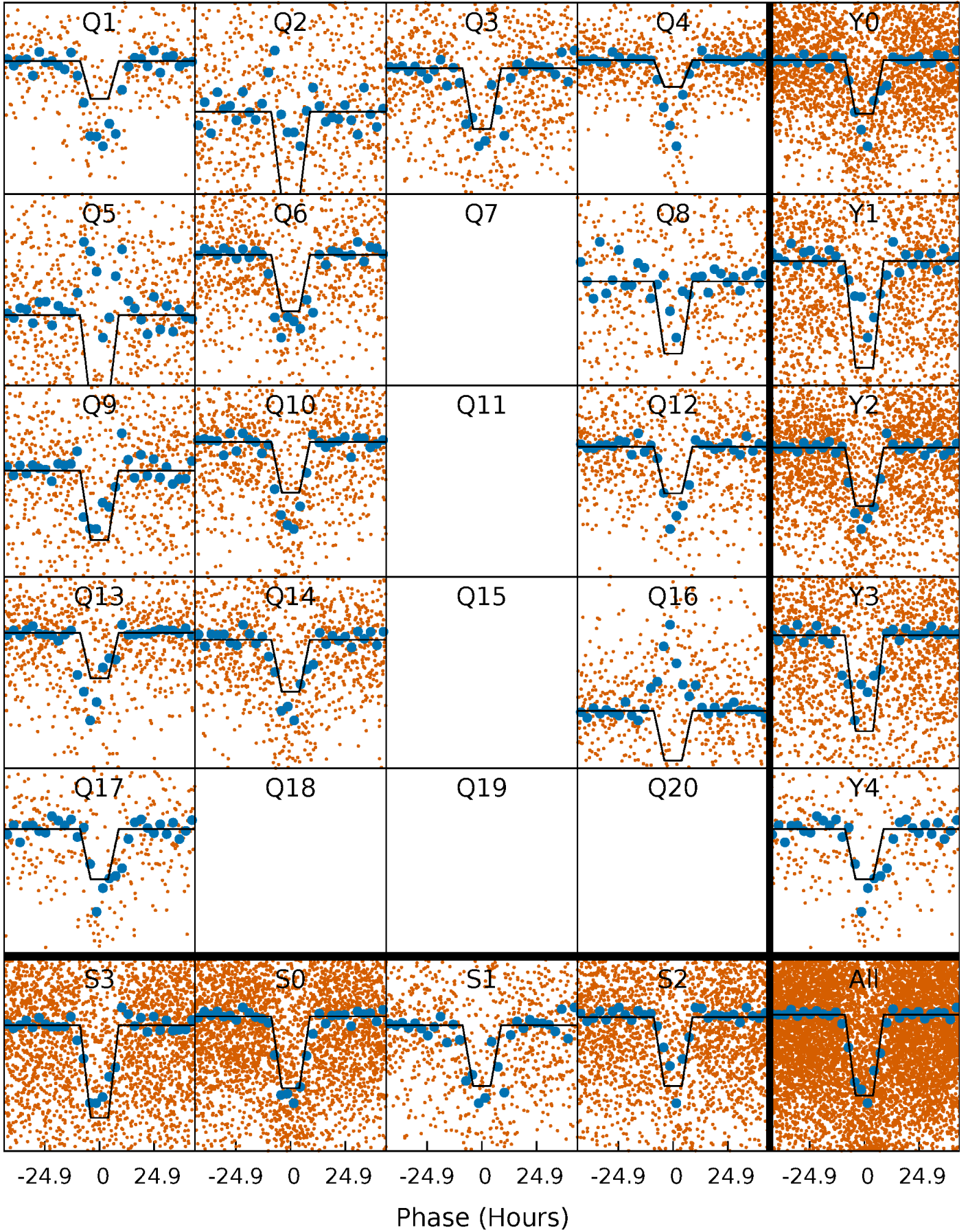
# DV Quarter-Phased Transit Curves

TCE 009723838-01 P= 17.583892 Days  $T_0=137.141060$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

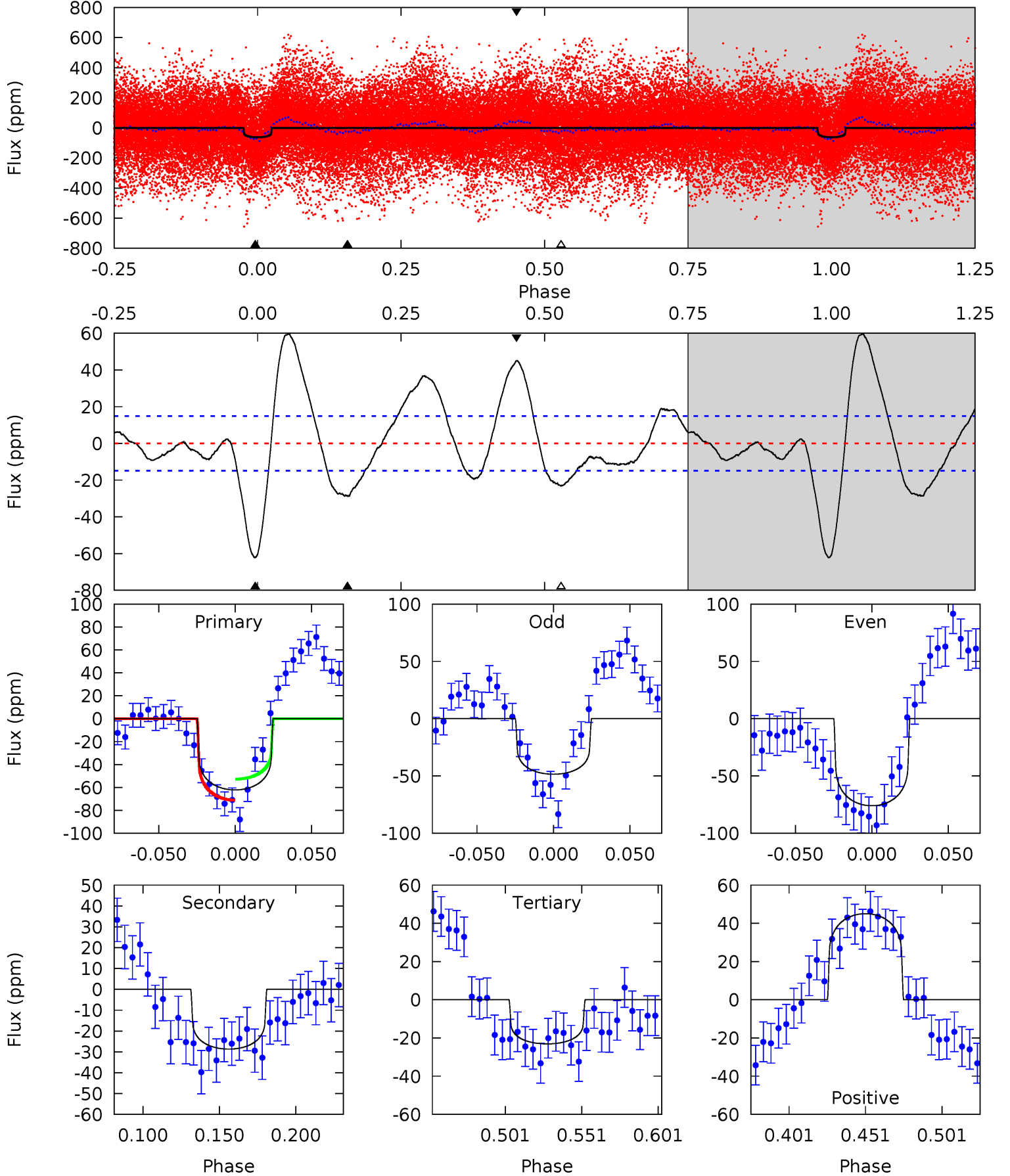
TCE 009723838-01 P= 17.585234 Days  $T_0=137.088008$  (BKJD)



# DV Model-Shift Uniqueness Test

009723838-01, P = 17.583892 Days, E = 119.557168 Days

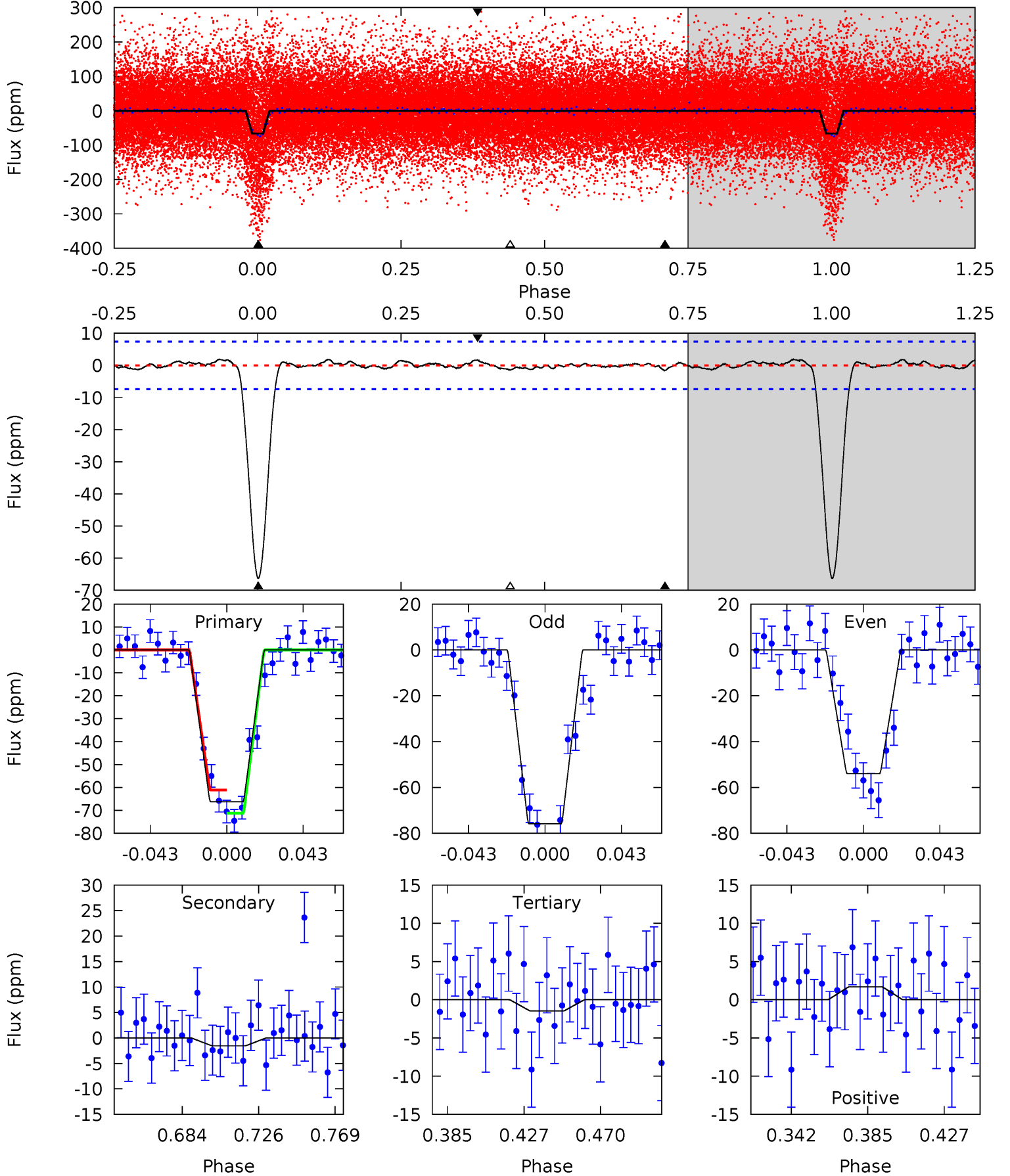
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	9.07	7.30	14.2	4.71	1.96	6.17	12.3	5.41	1.76	-5.17	4.34	0.89	0.49	2.94



# Alt Model-Shift Uniqueness Test

009723838-01, P = 17.585234 Days, E = 119.502774 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
42.4	0.98	0.94	1.08	4.74	2.03	0.47	41.5	41.3	0.04	-0.09	7.00	1.58	0.03	3.25





### Stellar Parameters For KIC 009723838

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6482^{+180}_{-248}$	$4.299^{+0.108}_{-0.201}$	$0.000^{+0.250}_{-0.300}$	$1.301^{+0.443}_{-0.221}$	$1.229^{+0.202}_{-0.165}$	$0.786^{+0.397}_{-0.421}$
	+3%/-4%	+3%/-5%	+inf%/-inf%	+34%/-17%	+16%/-13%	+51%/-54%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 009723838-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-29 \pm 3$	$1.07^{+0.23}_{-0.17}$	$1219^{+102}_{-71}$	$5500^{+454}_{-359}$	$269^{+118}_{-82}$
Alt.	$-2 \pm 2$	$1.24^{+0.25}_{-0.18}$	$1215^{+93}_{-72}$	$3066^{+407}_{-5132}$	$10^{+13}_{-11}$

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



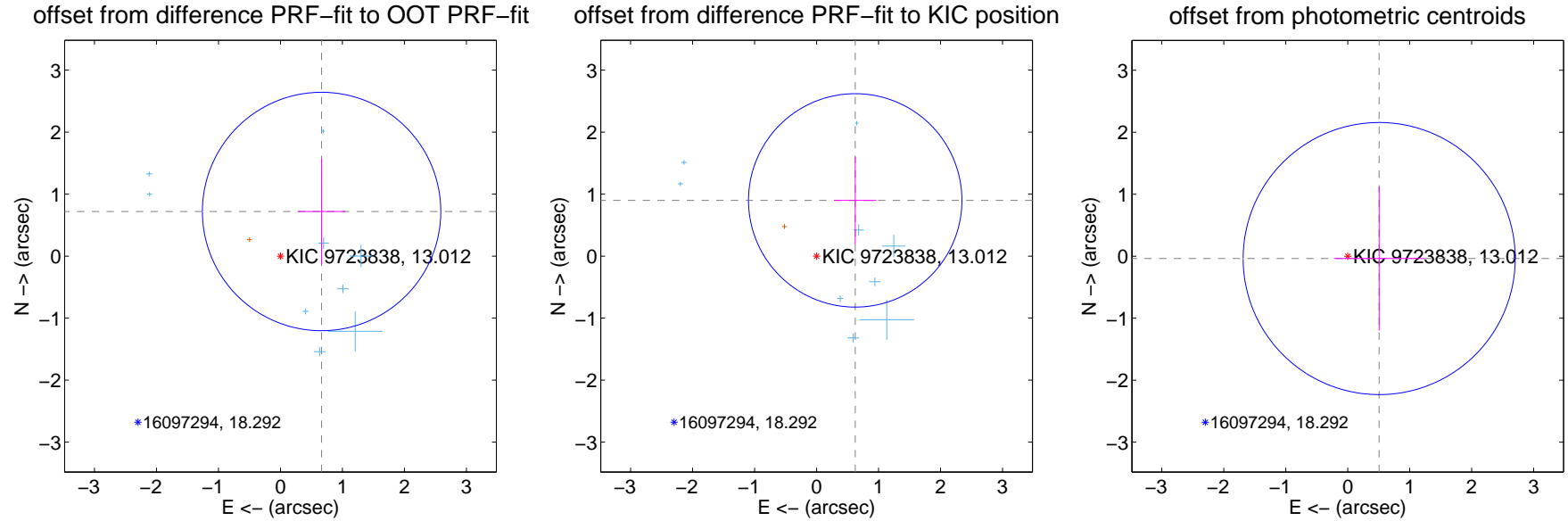
## DV Centroid Data

Supplemental centroid analysis for 009723838-01. Kepler magnitude: 13.01. Transit SNR 9.59

There are 9 quarters with good PRF difference image offsets

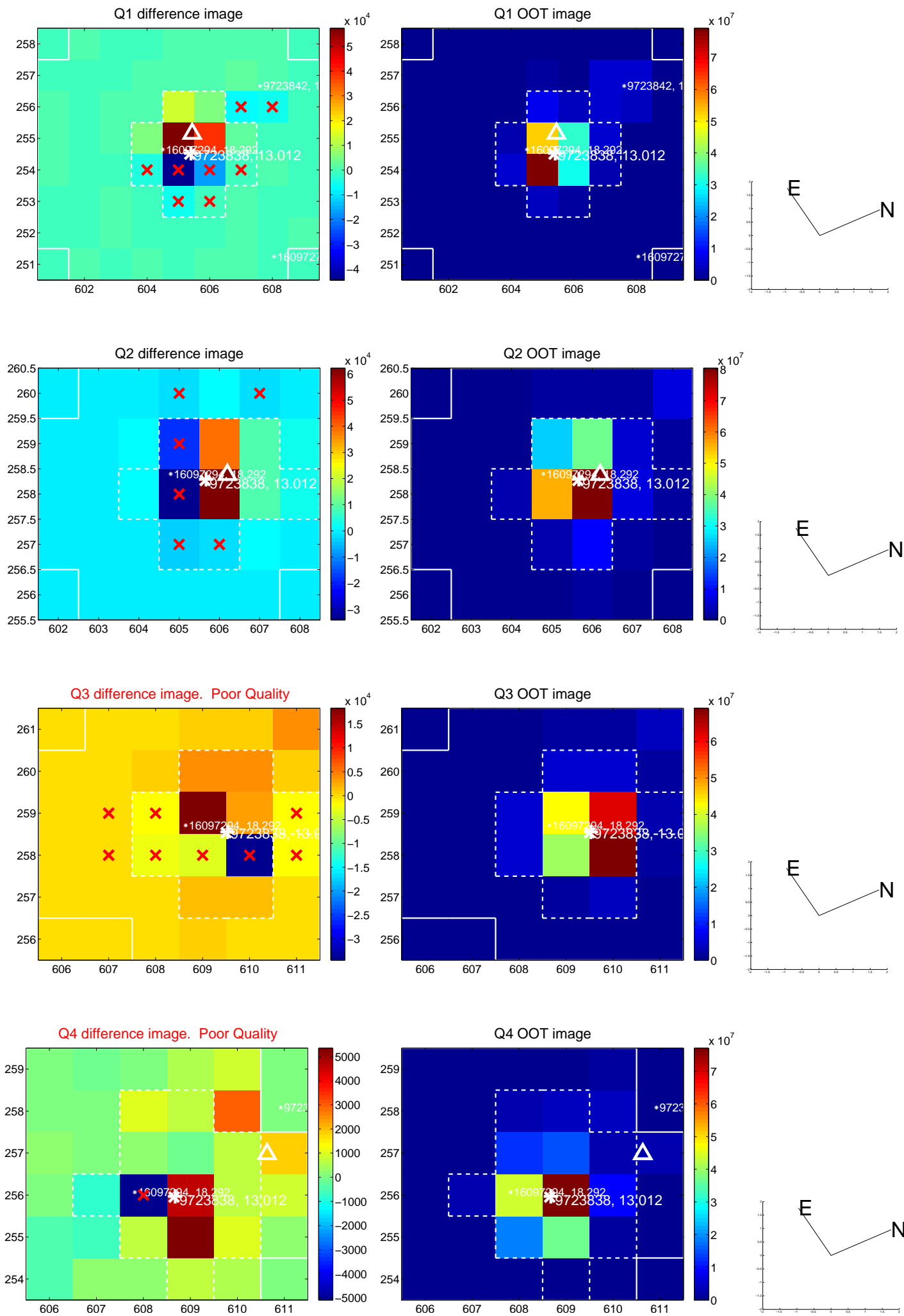
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.979 \pm 0.641$	1.53	$-0.664 \pm 0.387$	$0.720 \pm 0.854$
PRF-fit source offset from KIC position	$1.094 \pm 0.574$	1.91	$-0.623 \pm 0.343$	$0.899 \pm 0.706$
photometric centroid source offset	$0.51 \pm 0.73$	0.70	$-0.51 \pm 0.73$	$-0.04 \pm 1.16$

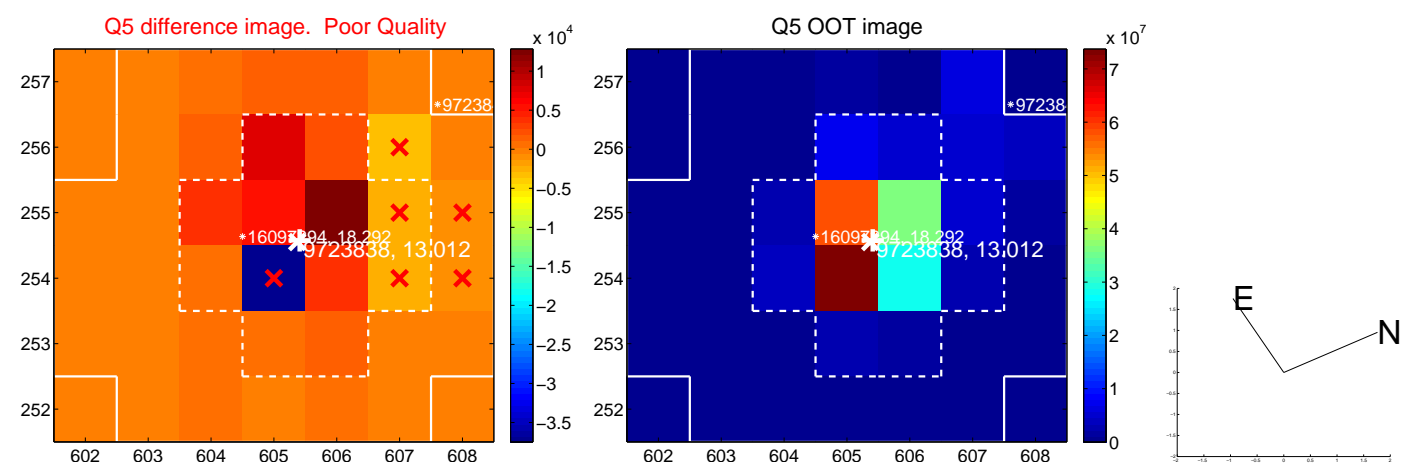


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

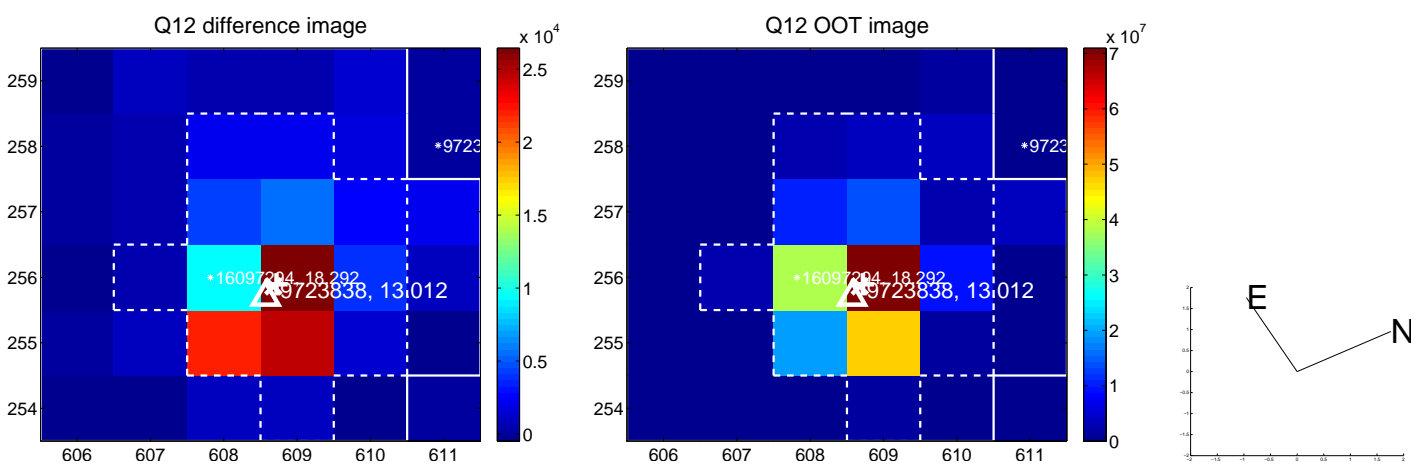
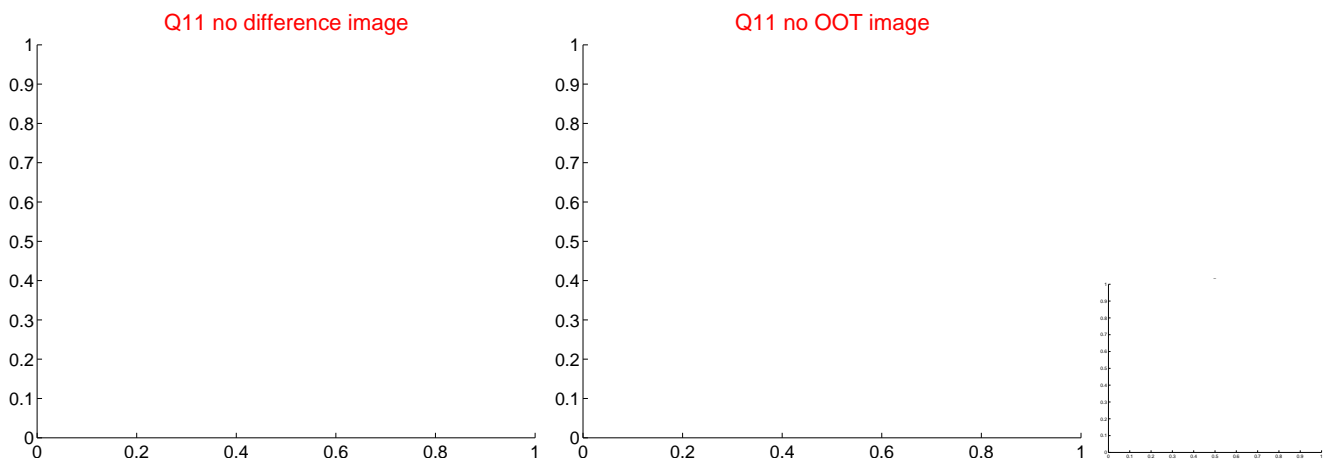
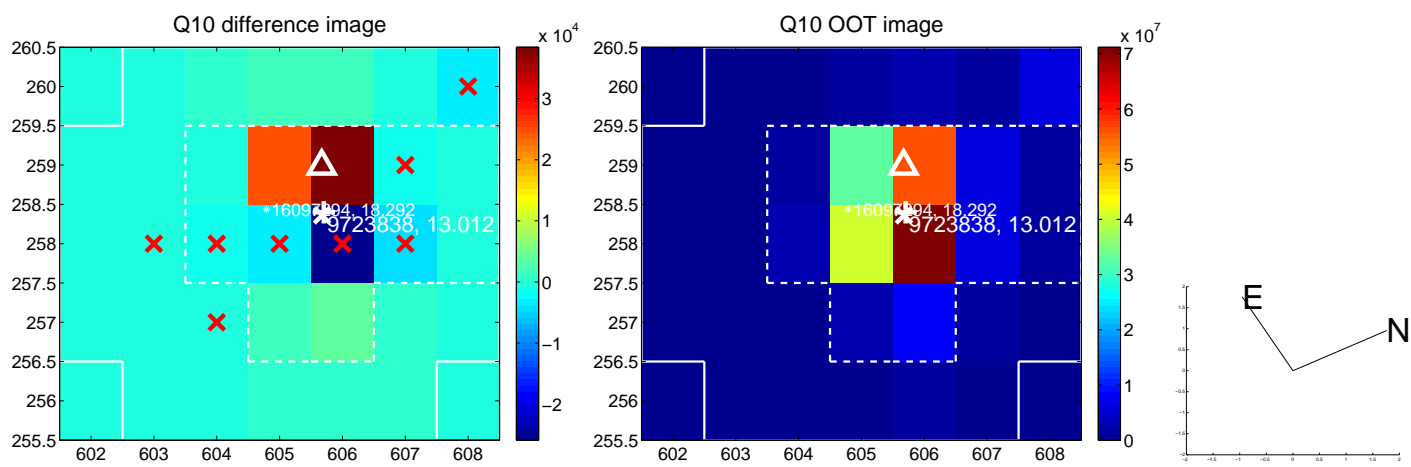
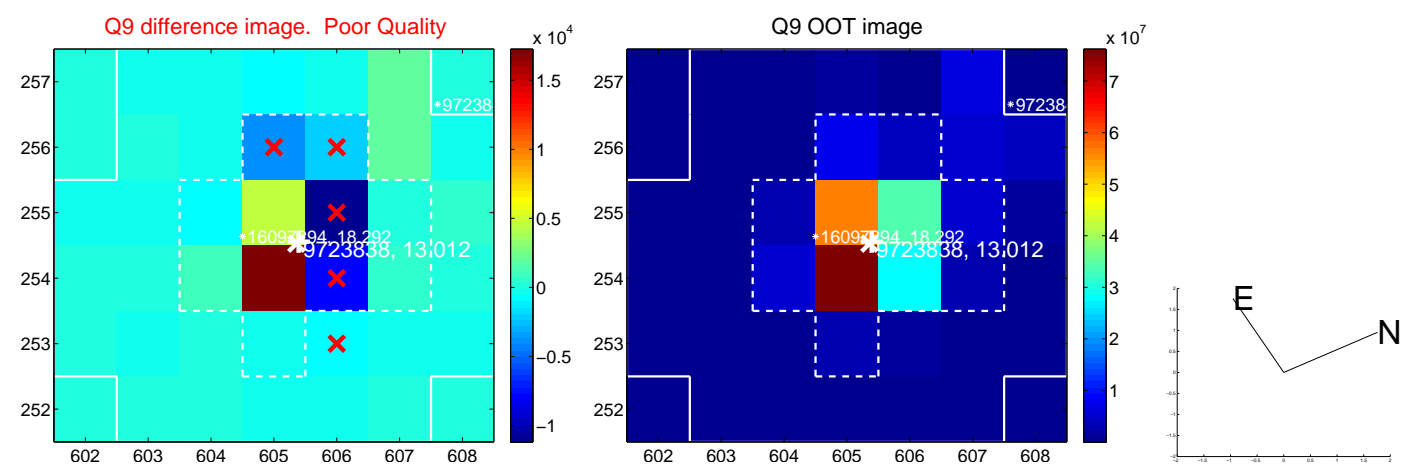
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



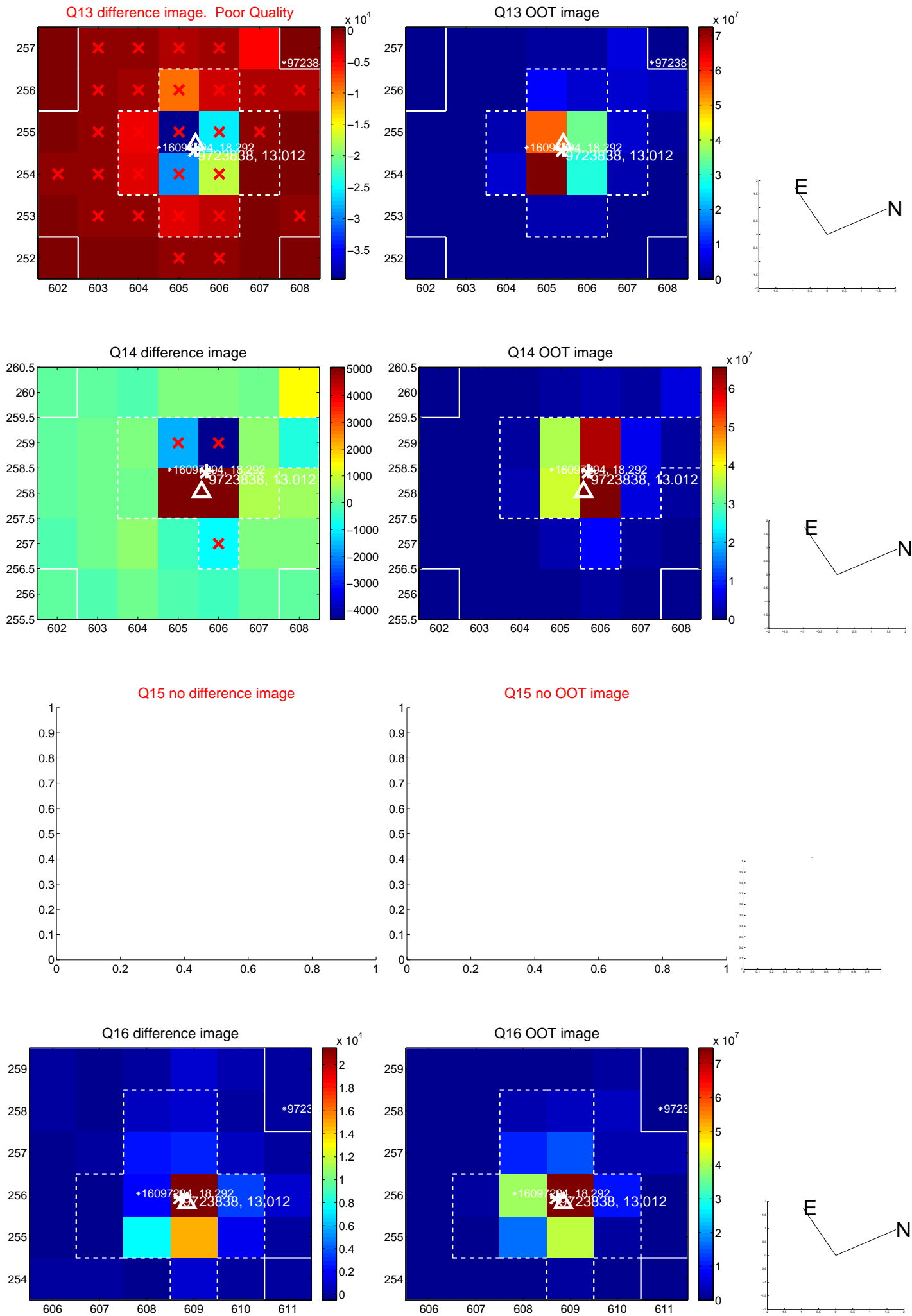
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

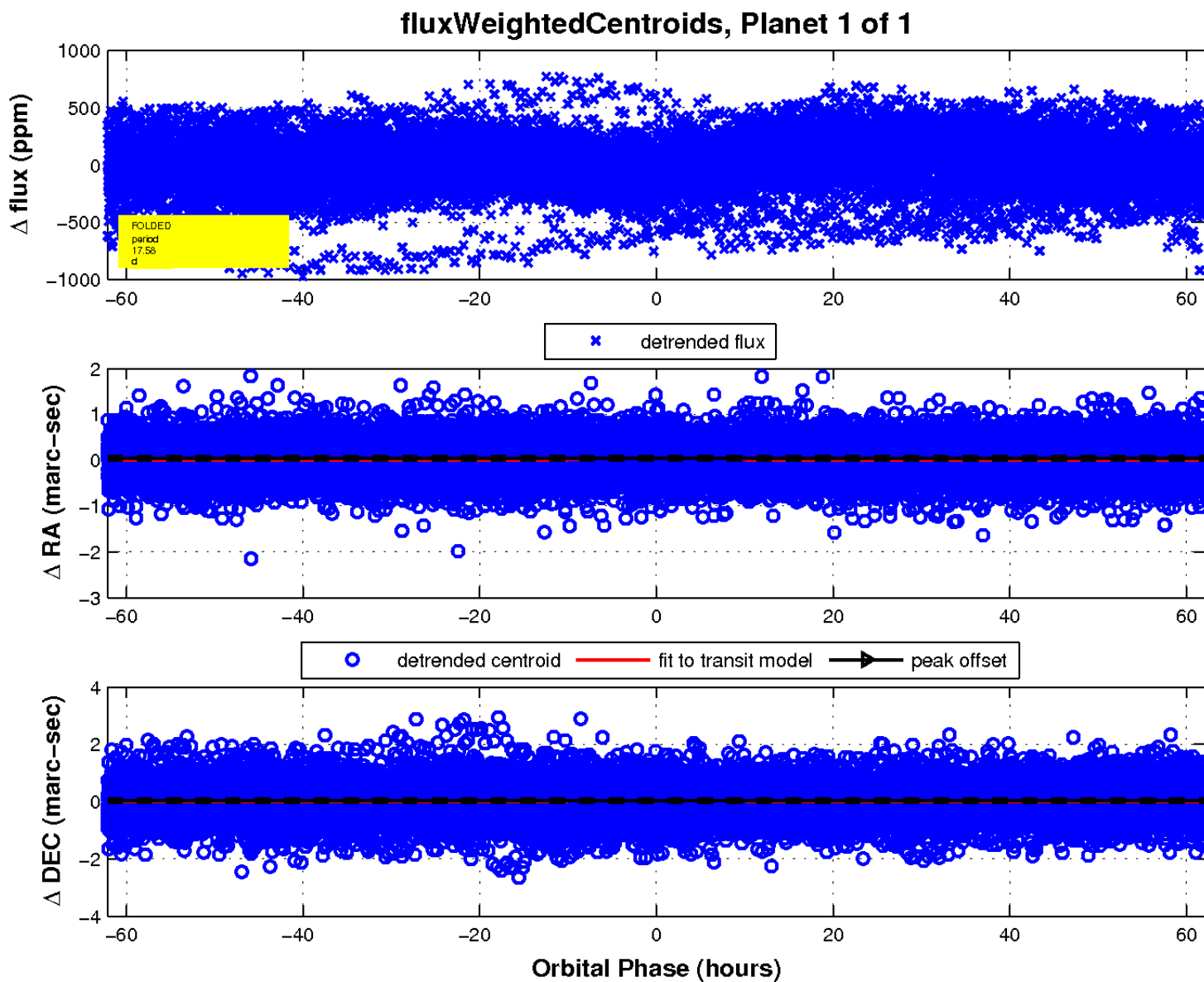
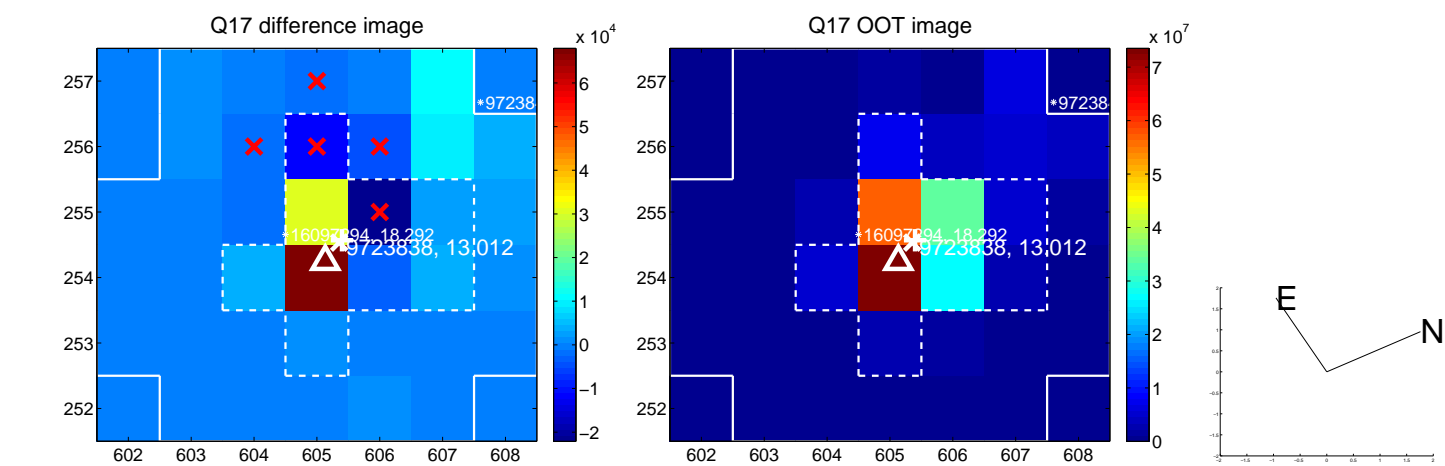


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

