

# KIC 010273524

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010273524-01	OBS	No	419.629862	523.850360	422.4	22.314	8.2	9.9	1.00	6122	2.12	0.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010273524-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—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.

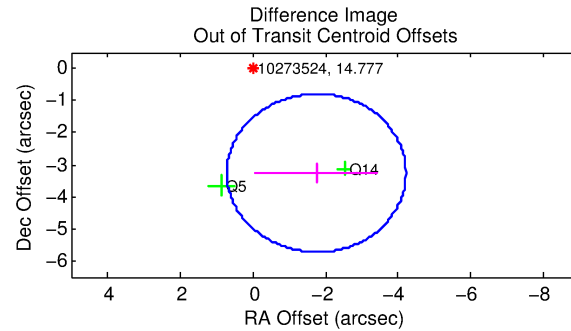
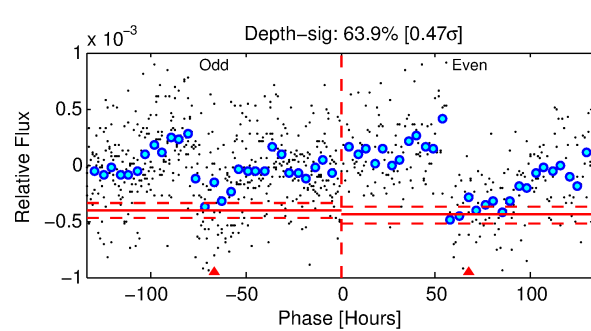
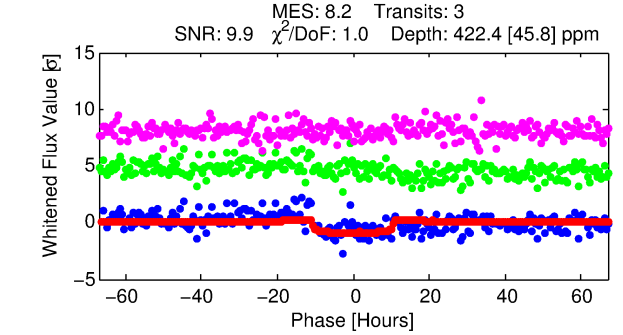
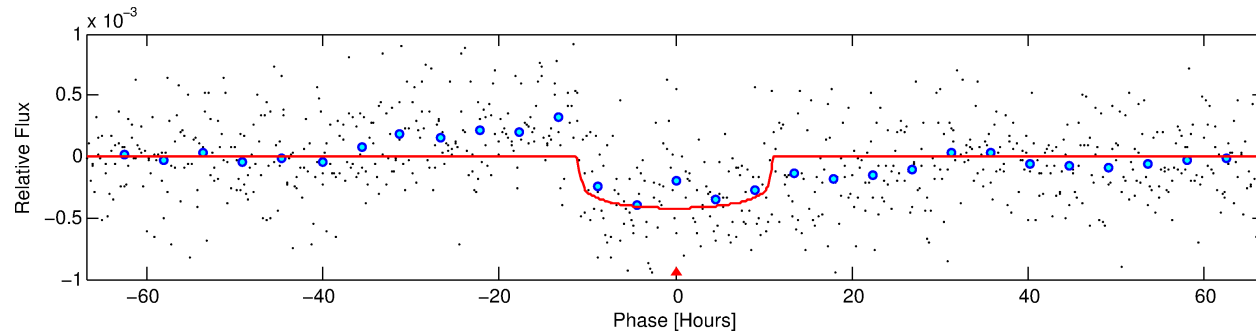
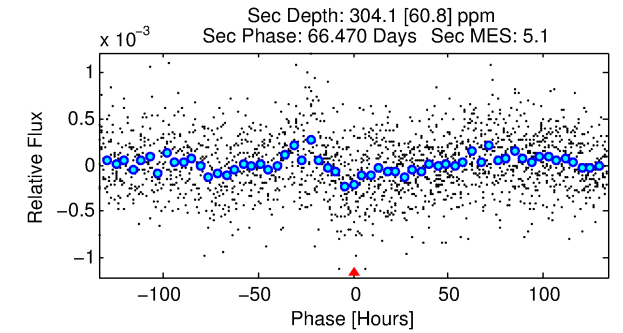
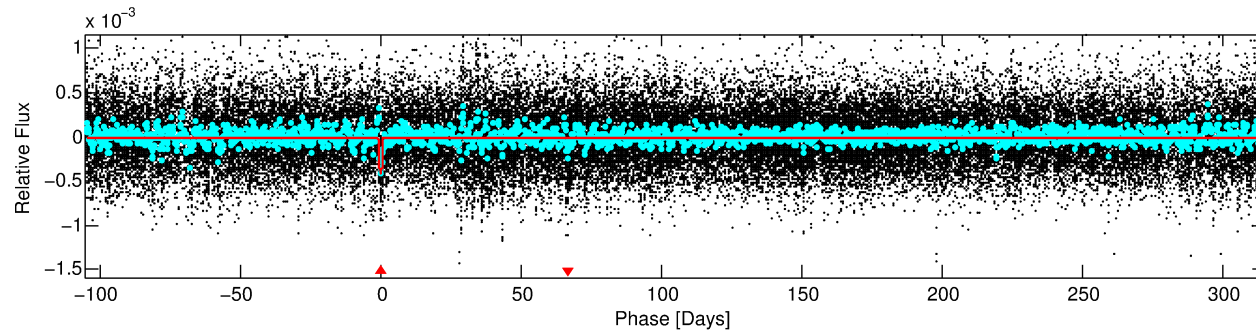
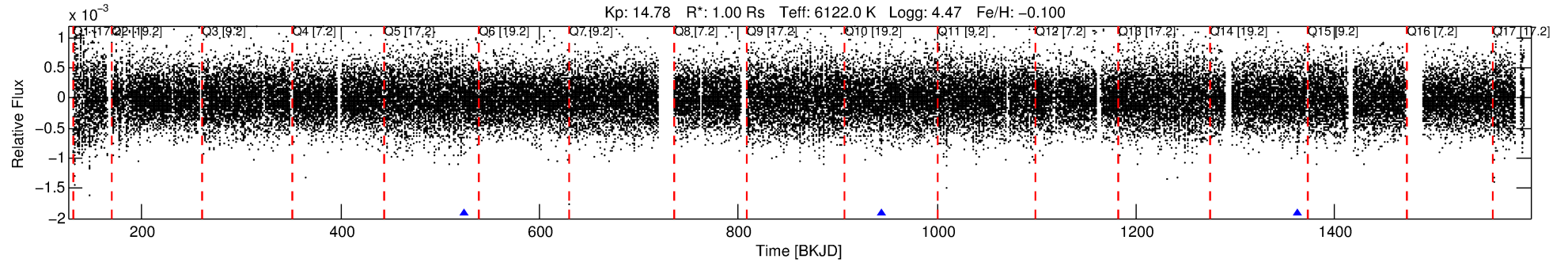
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010273524-01

No Significant Match Found

# DV One-Page Summary

KIC: 10273524 Candidate: 1 of 1 Period: 419.630 d



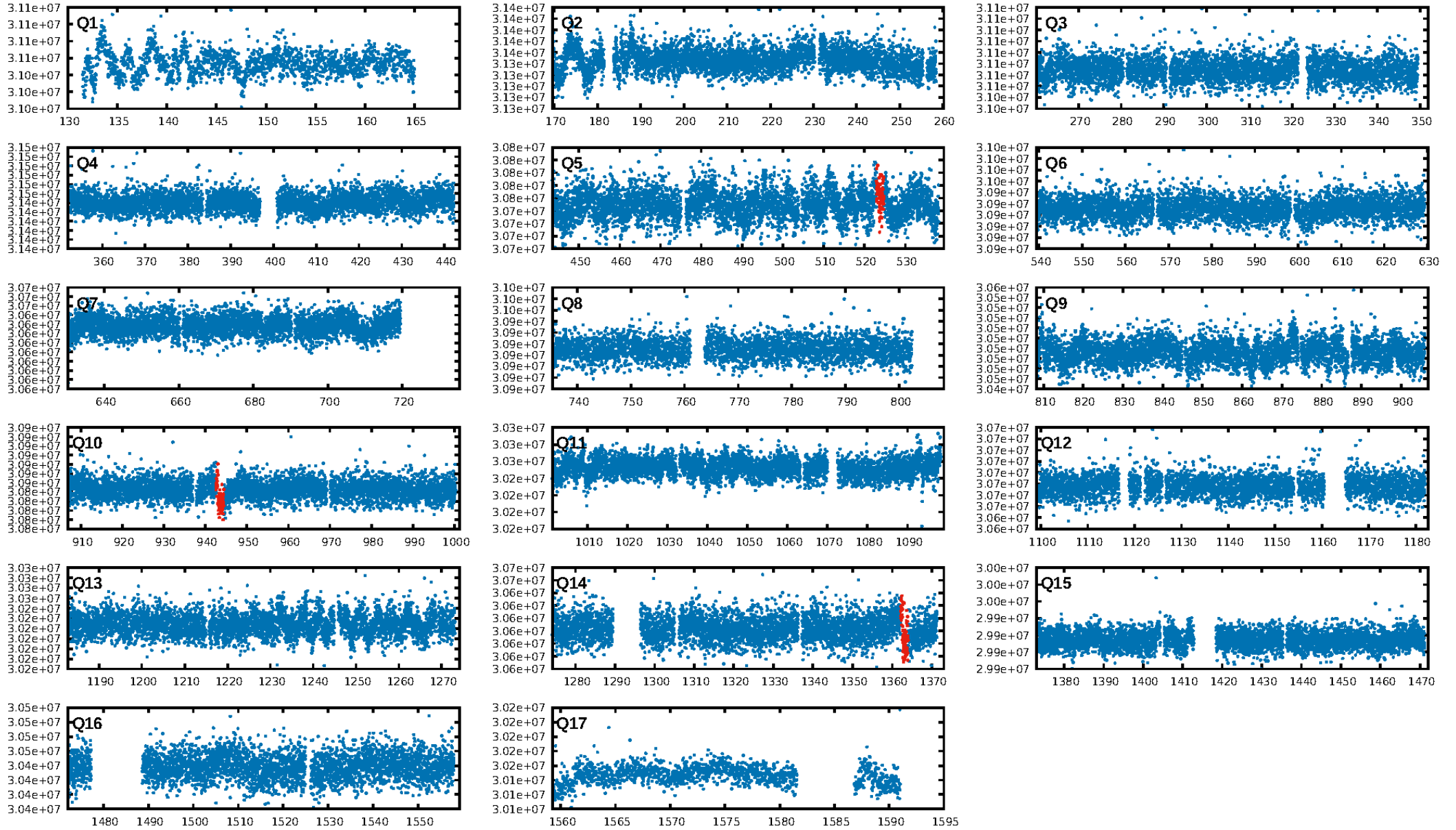
## DV Fit Results:

Period = 419.62986 [0.01709] d  
Epoch = 523.8504 [0.0238] BKJD  
Rp/R\* = 0.0195 [0.0074]  
a/R\* = 122.57 [226.40]  
b = 0.56 [2.29]  
Seff = 0.99 [0.41]  
Teq = 254 [26] K  
Rp = 2.12 [1.04] Re  
a = 1.1223 [0.2993] AU  
Ag = 46791.18 [41081.24] [1.14 $\sigma$ ]  
Teffp = 5786 [1154] K [4.79 $\sigma$ ]

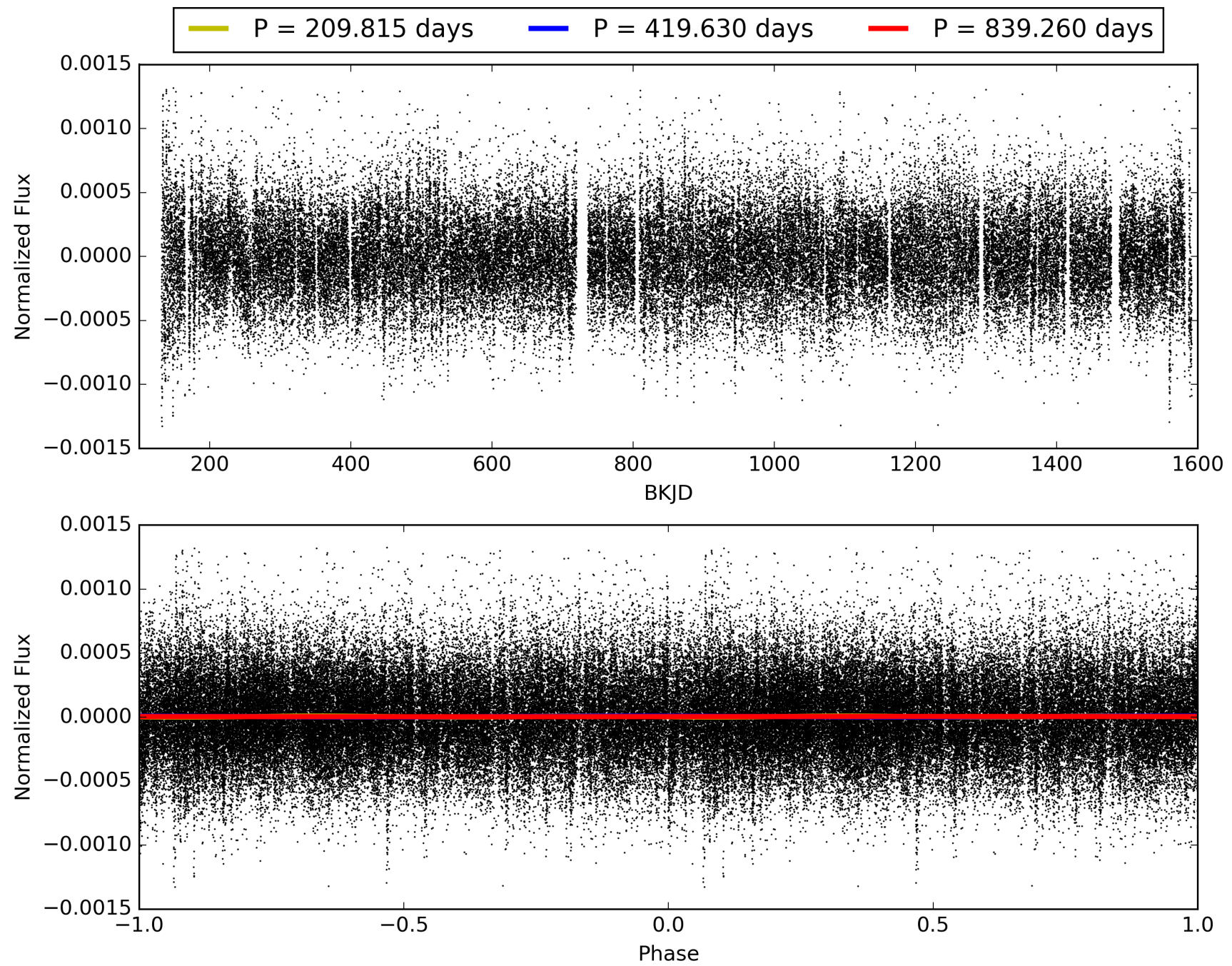
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 7.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.03e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -3.477  
Centroid-sig: 59.8%  
Centroid-so: 1.139 arcsec [0.79 $\sigma$ ]  
**OotOffset-rm: 3.704 arcsec [4.51 $\sigma$ ]**  
**KicOffset-rm: 3.876 arcsec [4.71 $\sigma$ ]**  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 010273524-01, PDC Light Curves

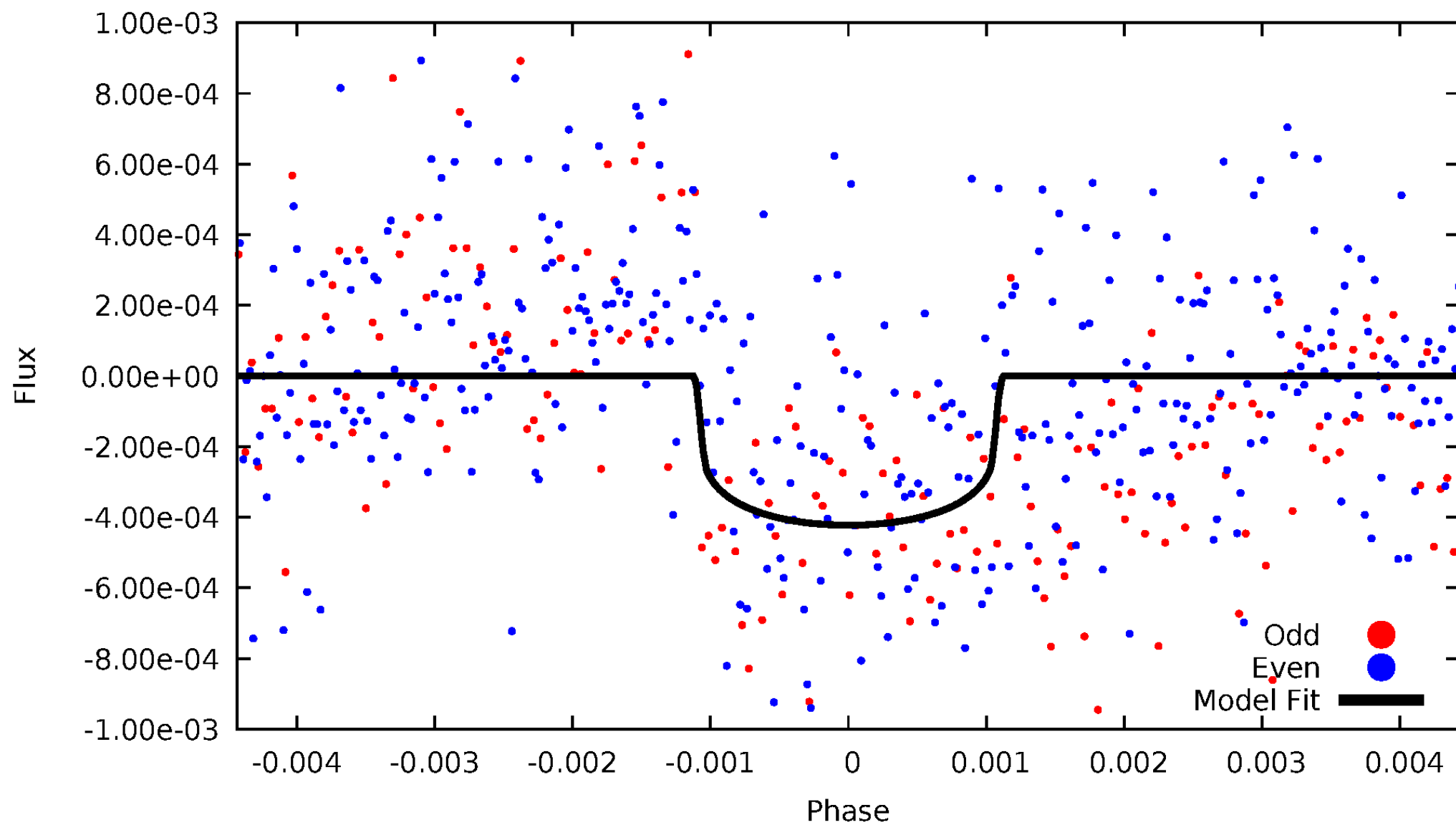


TCE 010273524-01



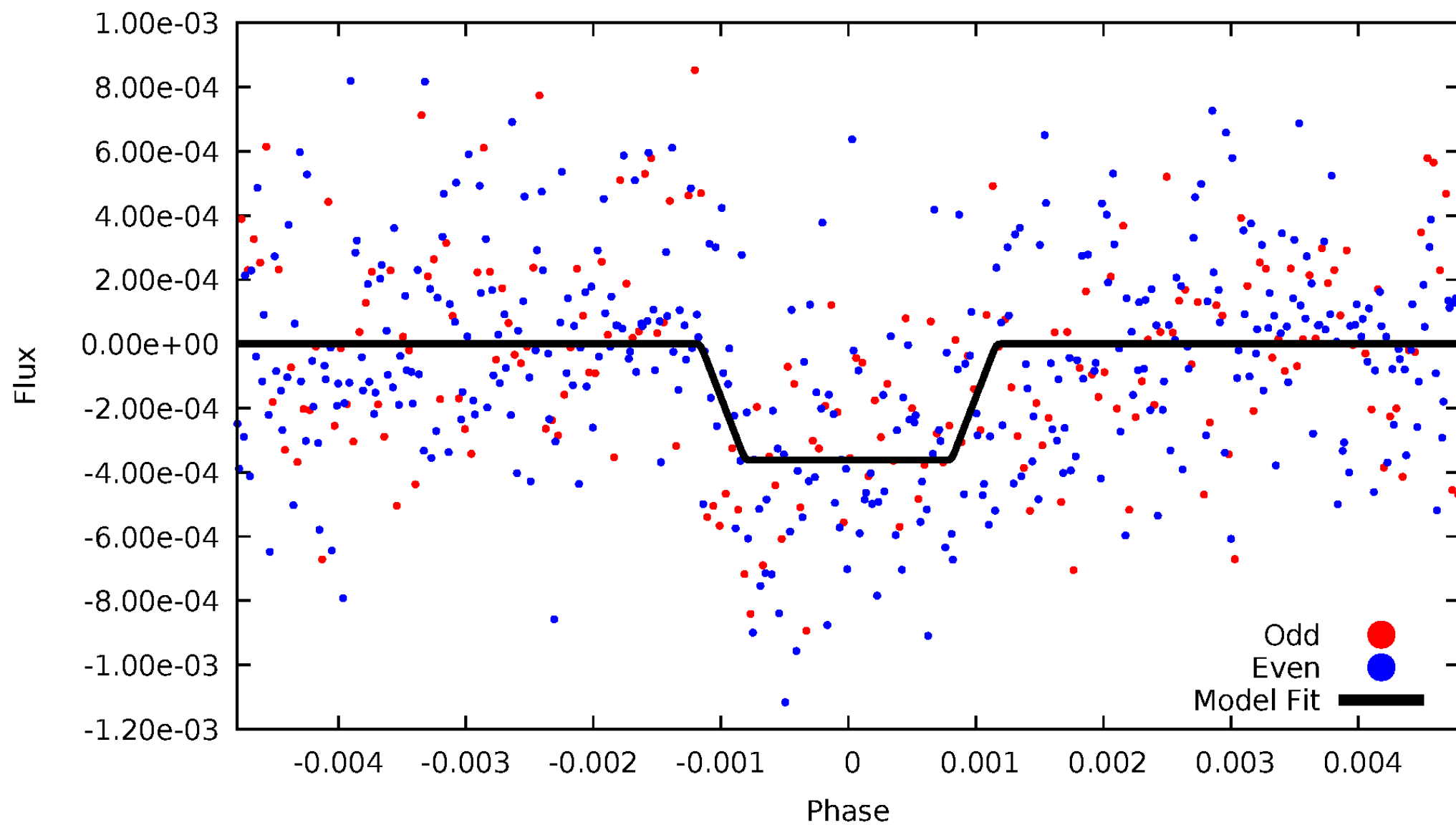
# DV Odd/Even

TCE 010273524-01



# ALT Odd/Even

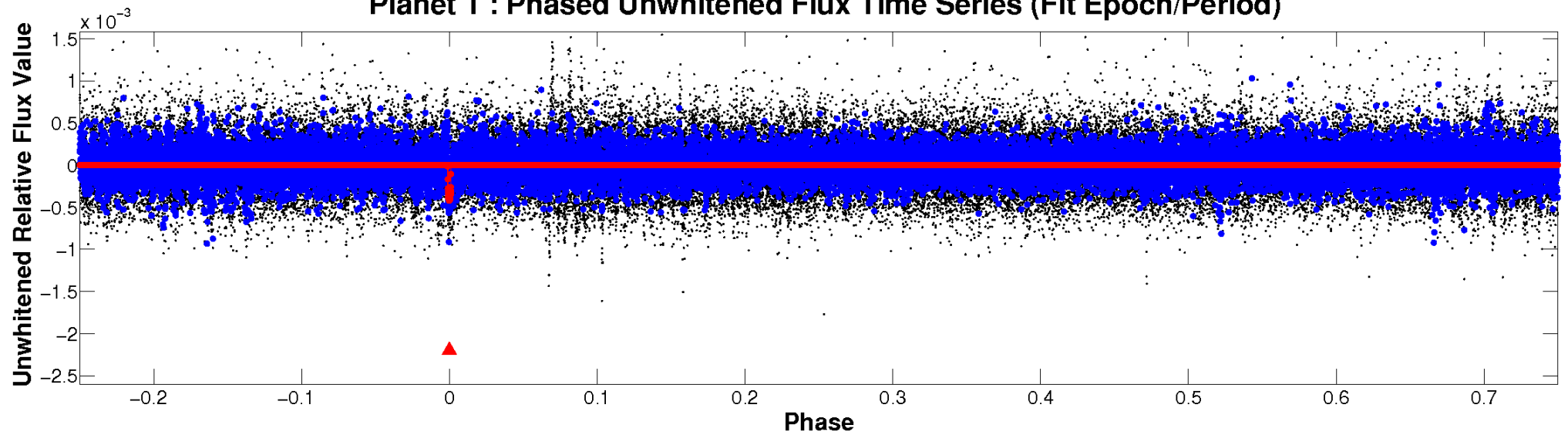
TCE 010273524-01



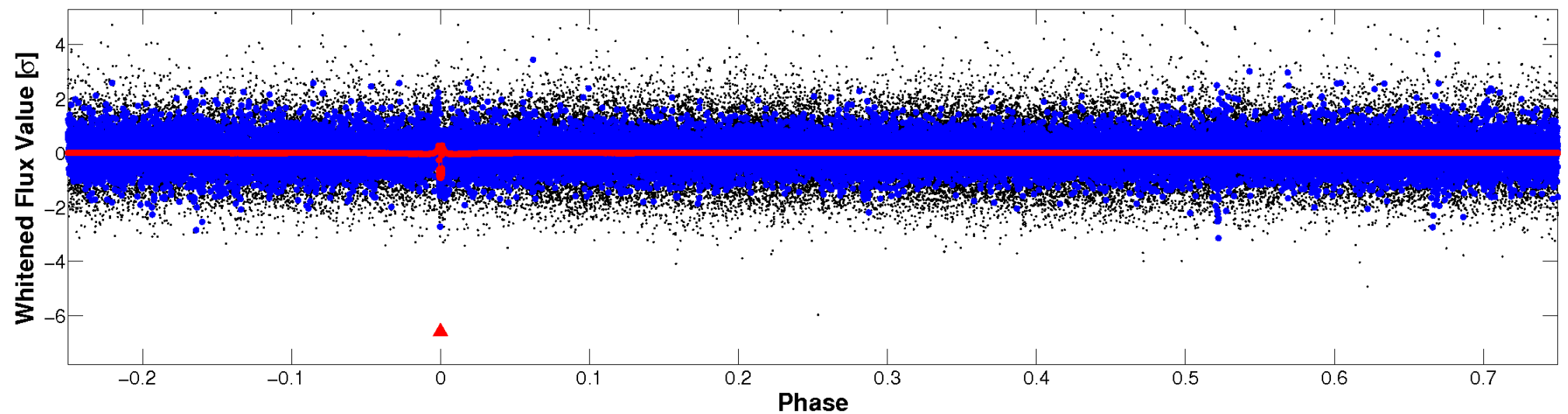


# Non-Whitened Vs. Whitened Light Curve

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

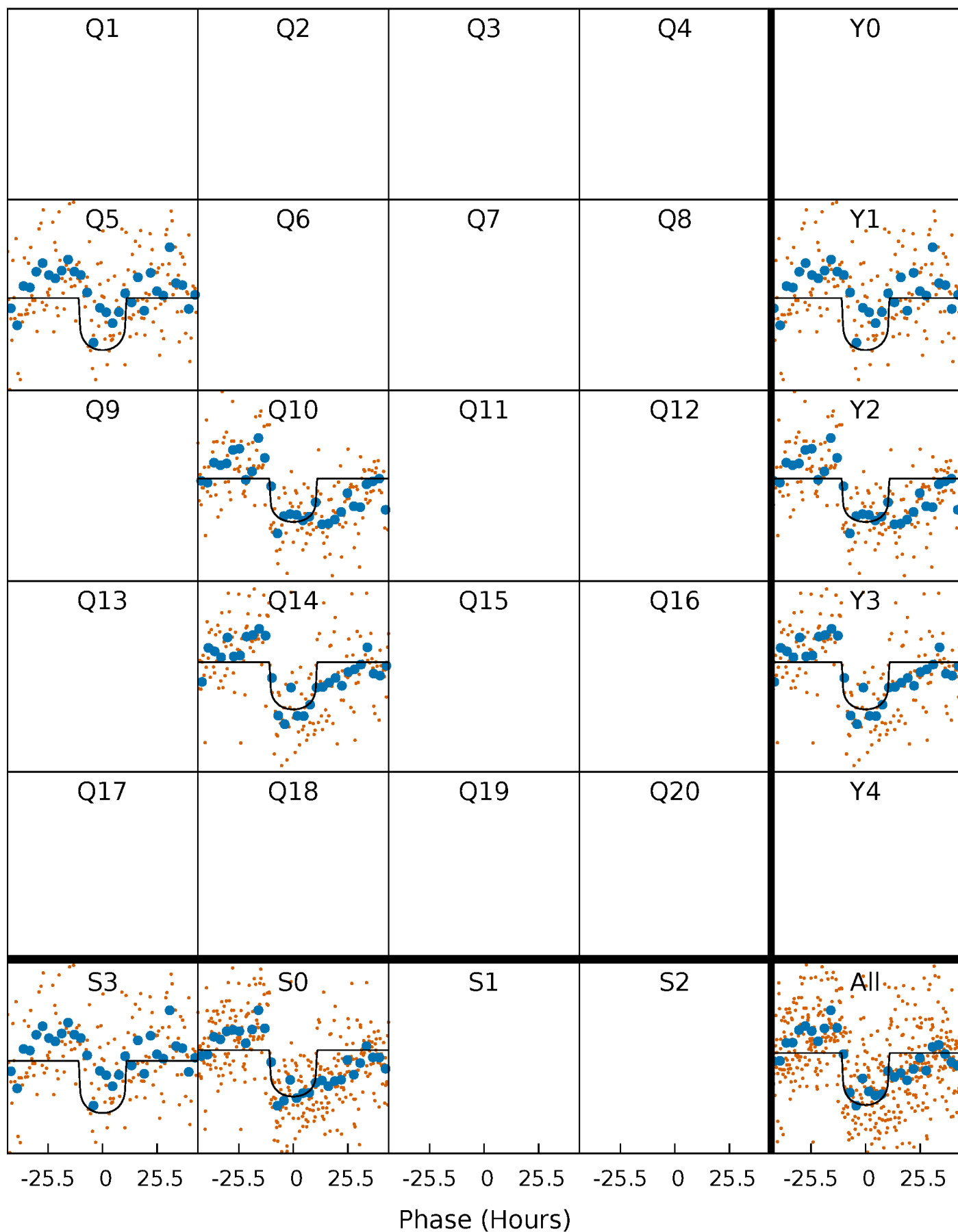
TCE 010273524-01 P=419.629862 Days  $T_0=523.850360$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 010273524-01     $P=419.629862$  Days     $T_0=523.850360$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

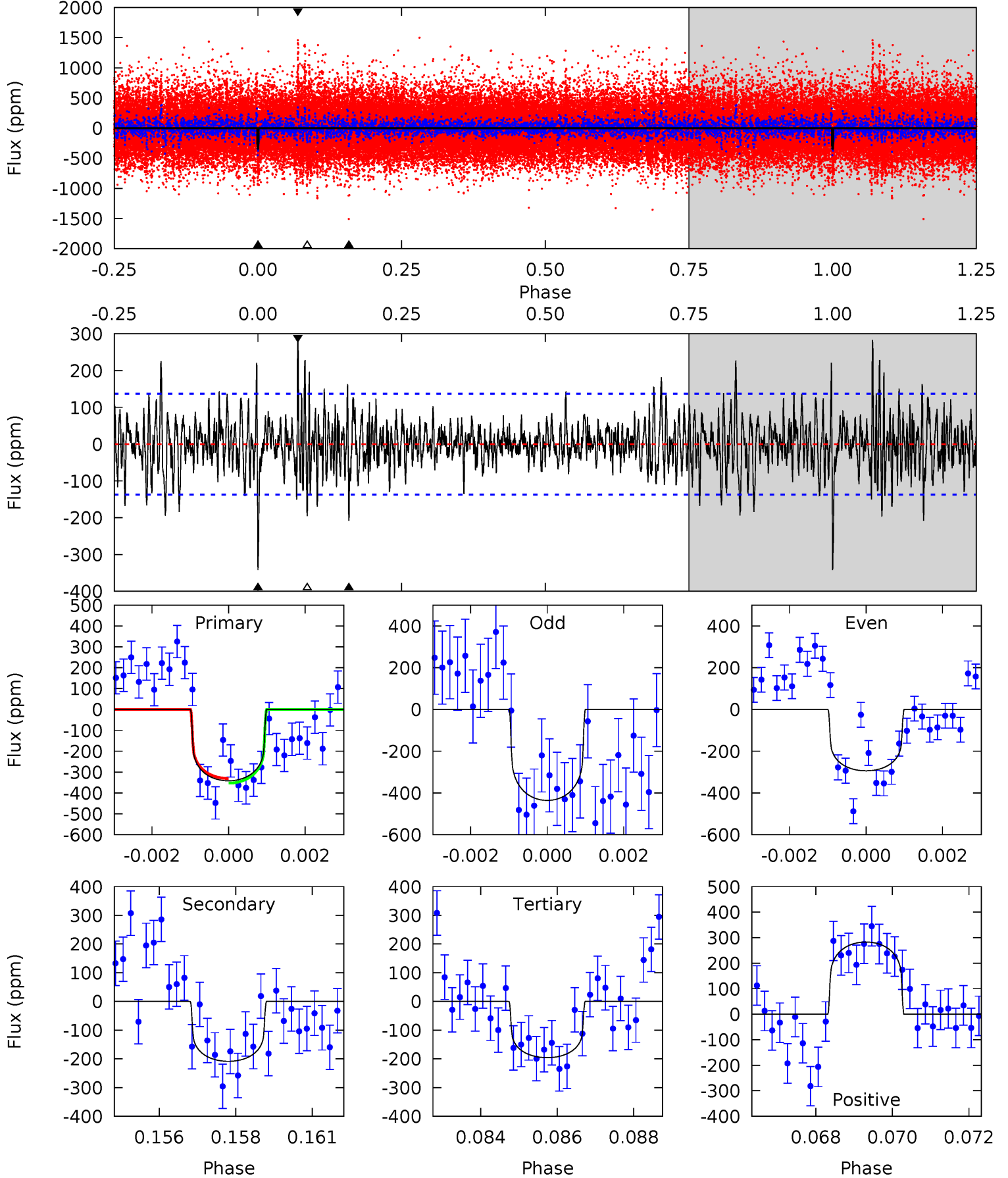
TCE 010273524-01     $P=419.555476$  Days     $T_0=523.943414$  (BKJD)



# DV Model-Shift Uniqueness Test

010273524-01, P = 419.629862 Days, E = 104.220498 Days

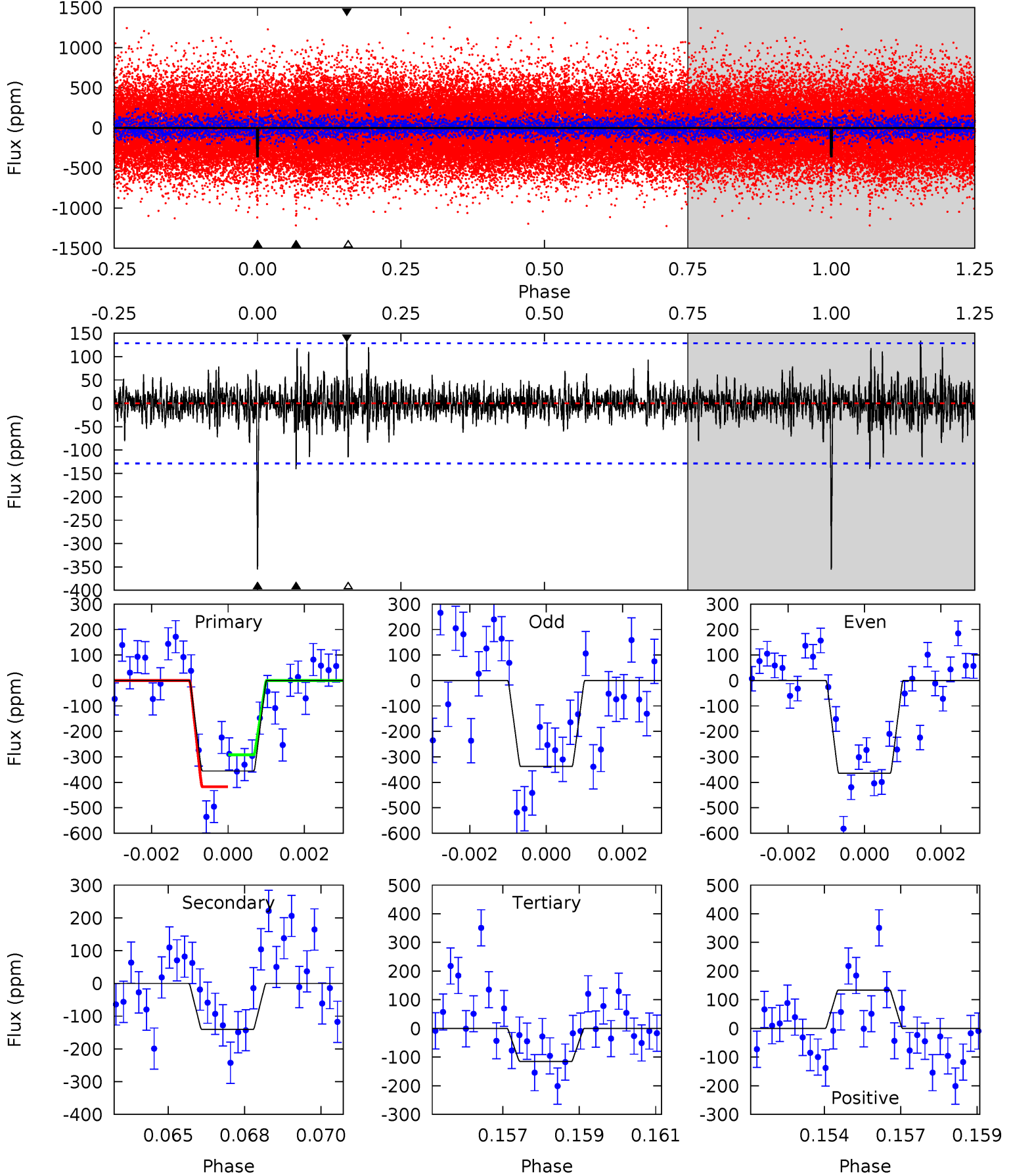
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.07	7.58	11.0	5.30	3.05	2.08	5.65	2.27	0.50	-2.88	2.58	0.79	0.45	0.43



# Alt Model-Shift Uniqueness Test

010273524-01, P = 419.555476 Days, E = 104.387938 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
14.6	5.79	4.75	5.51	5.30	3.04	0.99	9.89	9.13	1.04	0.28	0.51	1.05	0.27	2.58



### Stellar Parameters For KIC 010273524

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6122^{+171}_{-214}$	$4.471^{+0.054}_{-0.216}$	$-0.100^{+0.250}_{-0.350}$	$0.996^{+0.312}_{-0.104}$	$1.070^{+0.133}_{-0.148}$	$1.526^{+0.414}_{-0.780}$
	+3%/-3%	+1%/-5%	+250%/-350%	+31%/-10%	+12%/-14%	+27%/-51%
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 010273524-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-209 \pm 26$	$2.20^{+0.90}_{-0.83}$	$362^{+29}_{-17}$	$5303^{+1379}_{-658}$	$28199^{+46451}_{-13936}$
Alt.	$-140 \pm 24$	$2.16^{+0.85}_{-0.87}$	$362^{+28}_{-18}$	$4925^{+1385}_{-656}$	$20443^{+35256}_{-10405}$

$T_{max}$  = 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

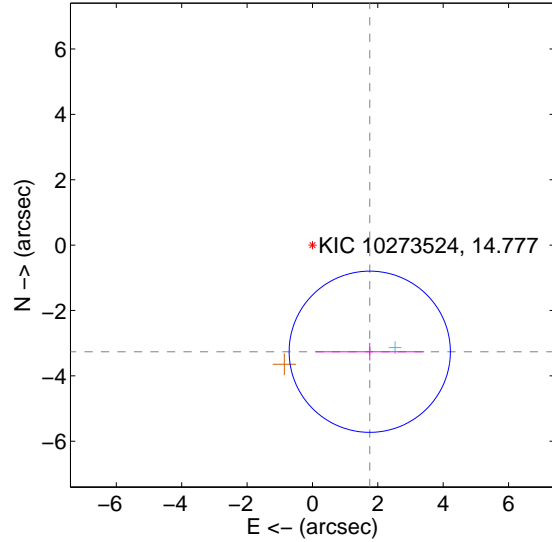
Supplemental centroid analysis for 010273524-01. Kepler magnitude: 14.78. Transit SNR 9.87

There are 1 quarters with good PRF difference image offsets

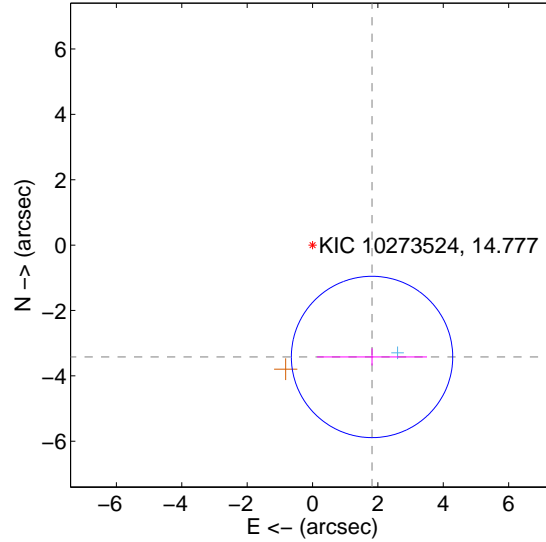
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.704 \pm 0.822$	4.51	$-1.753 \pm 1.663$	$-3.262 \pm 0.268$
PRF-fit source offset from KIC position	$3.876 \pm 0.823$	4.71	$-1.820 \pm 1.681$	$-3.422 \pm 0.262$
photometric centroid source offset	$1.14 \pm 1.43$	0.79	$1.14 \pm 1.43$	$0.02 \pm 1.26$

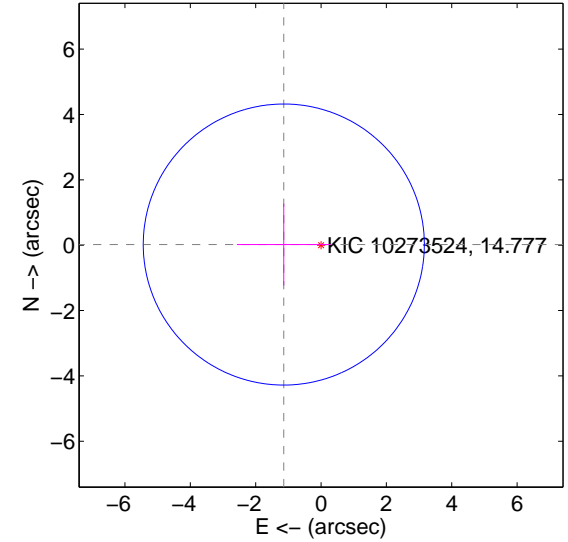
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



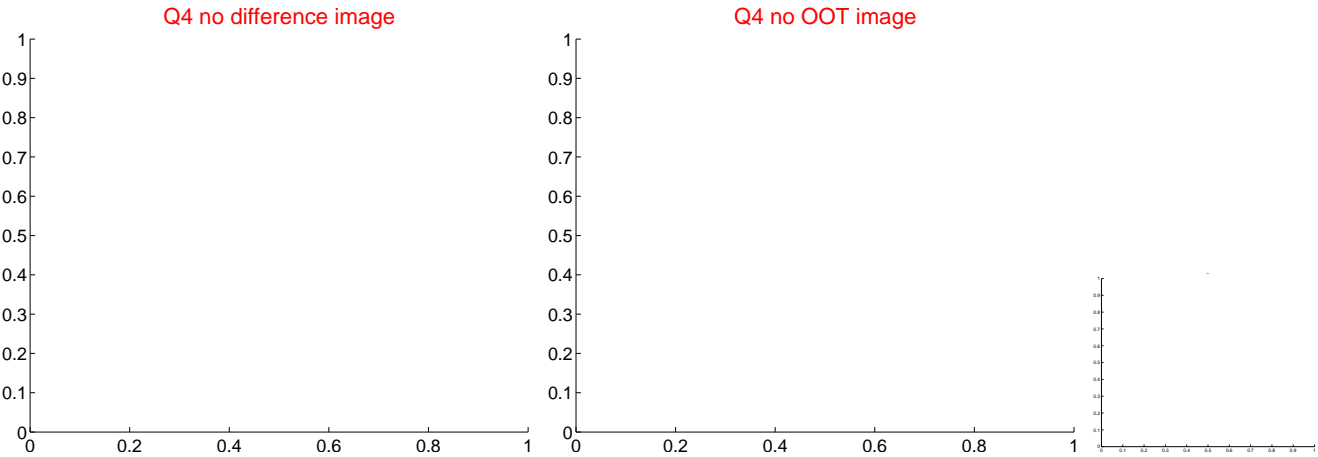
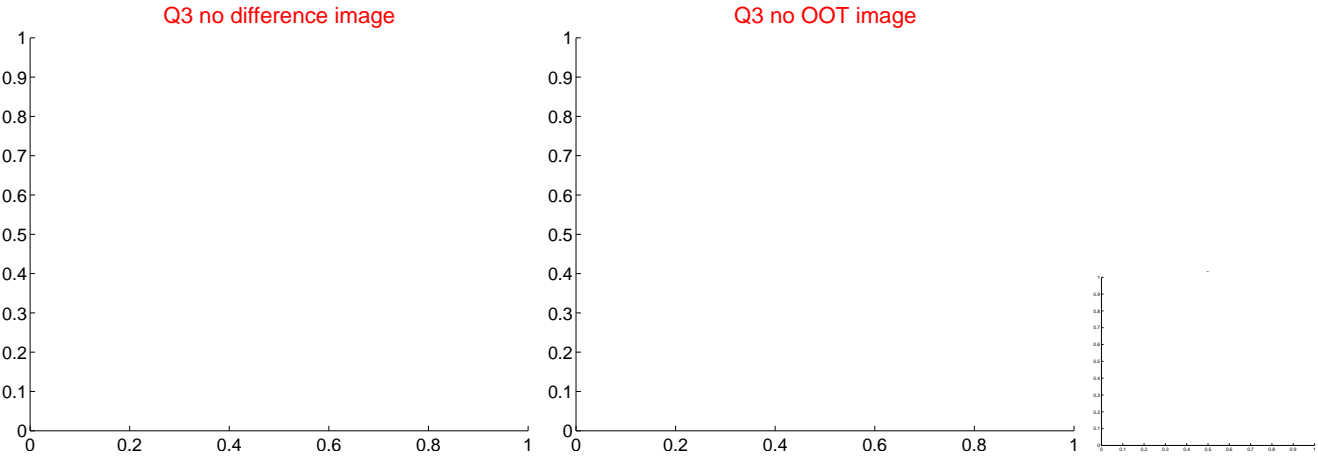
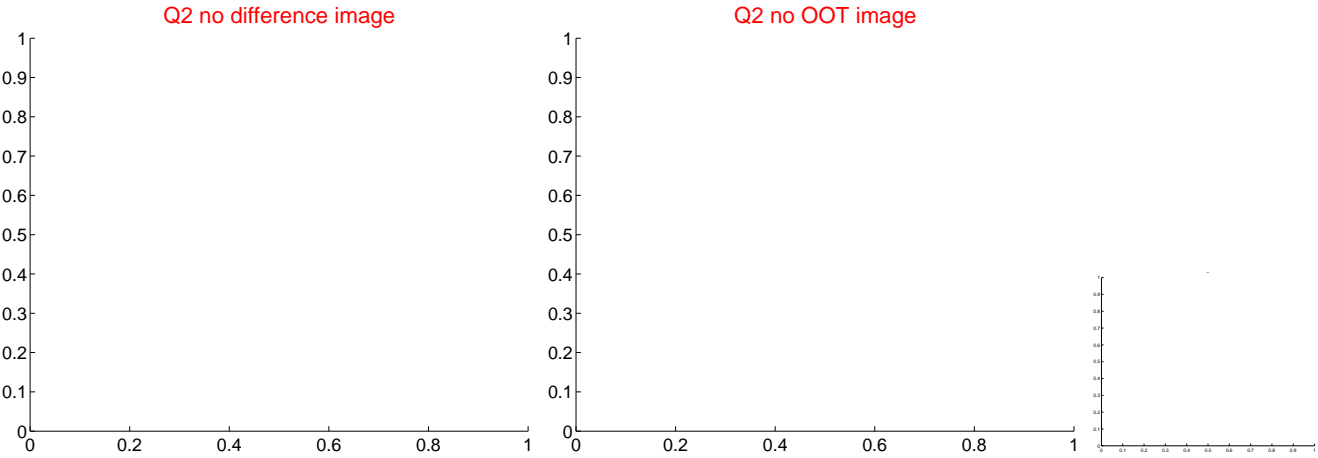
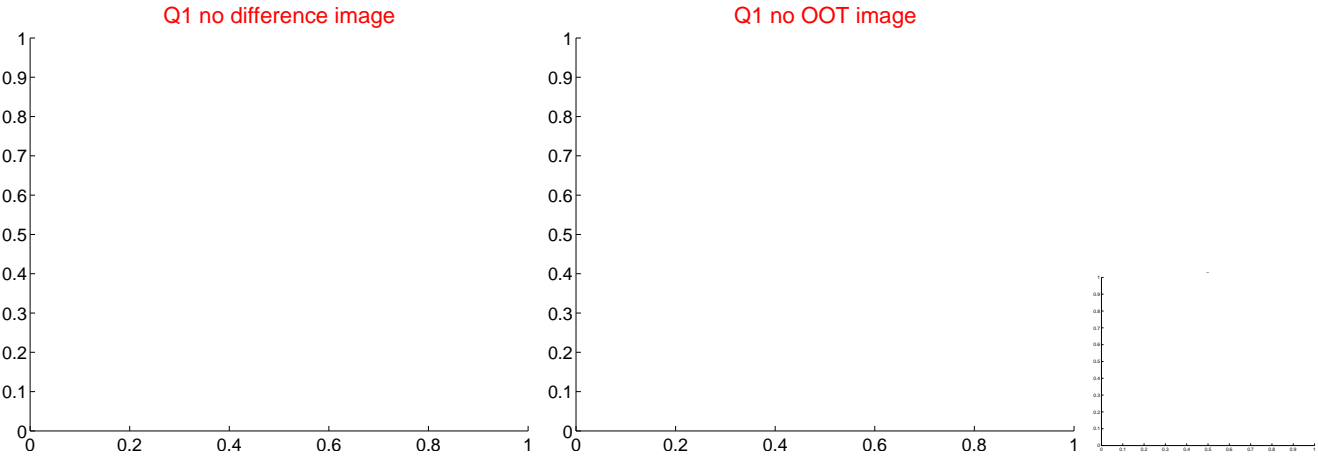
offset from photometric centroids



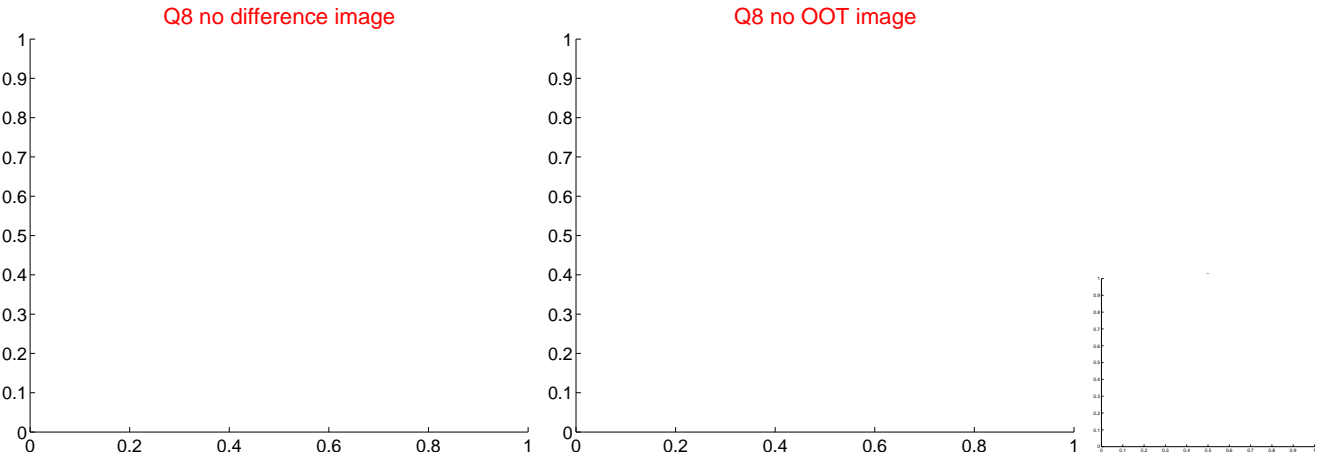
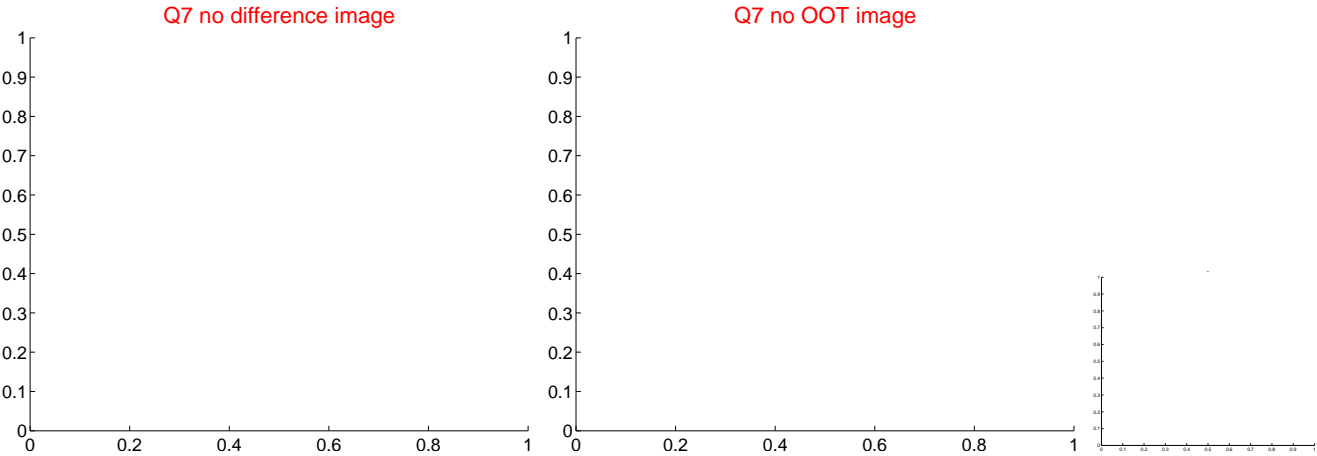
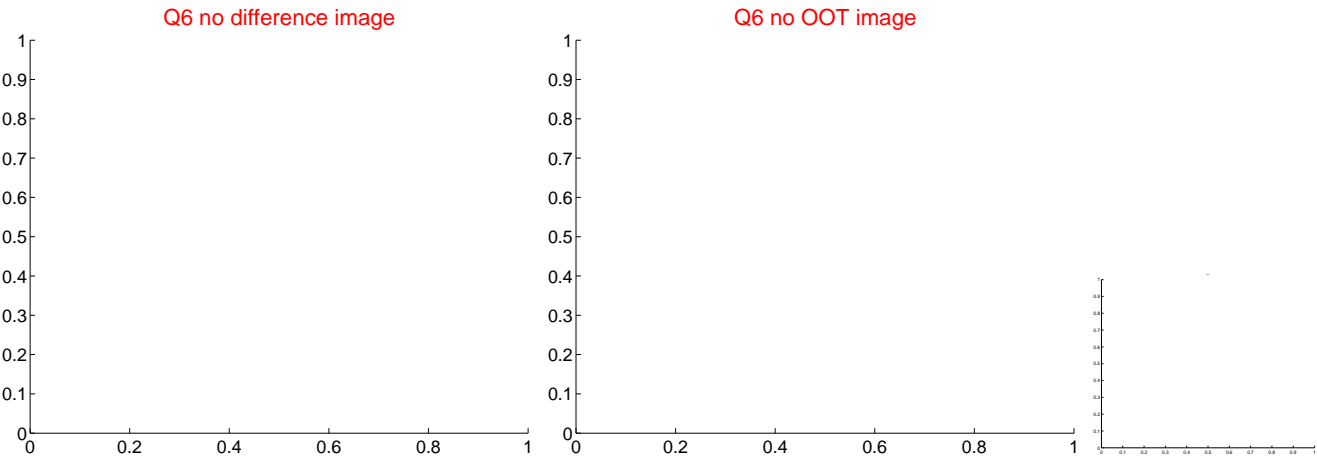
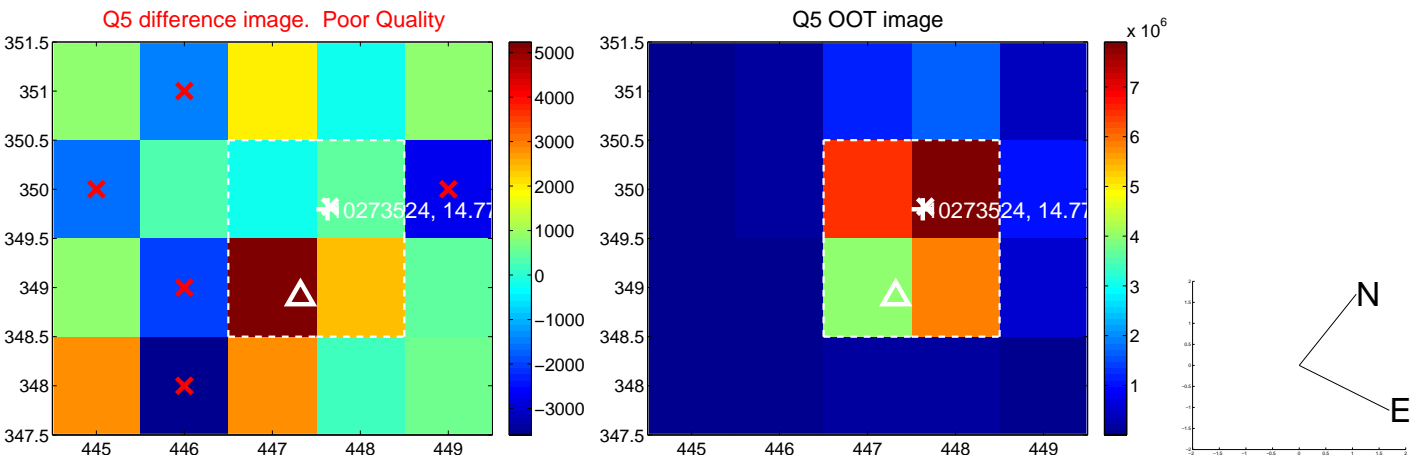
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



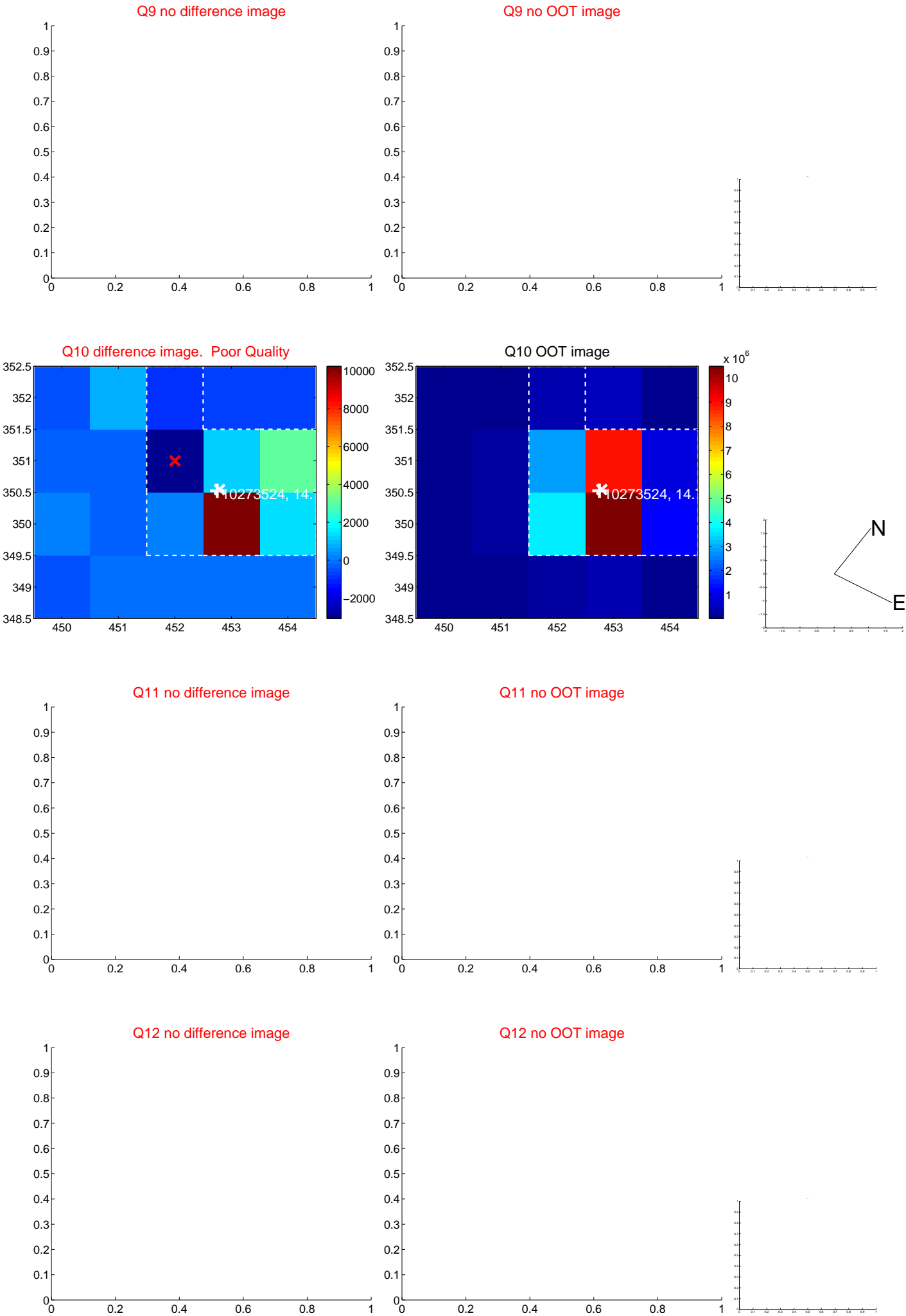
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

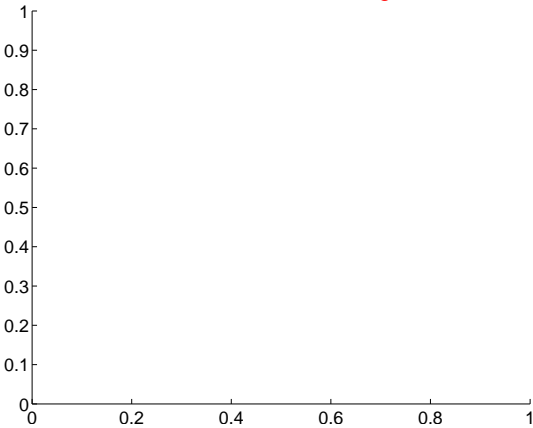


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

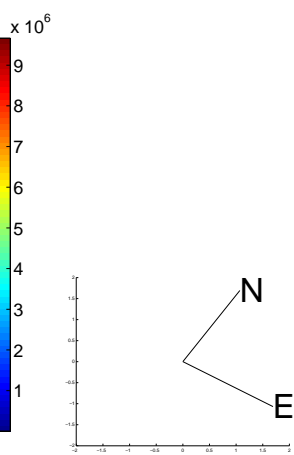
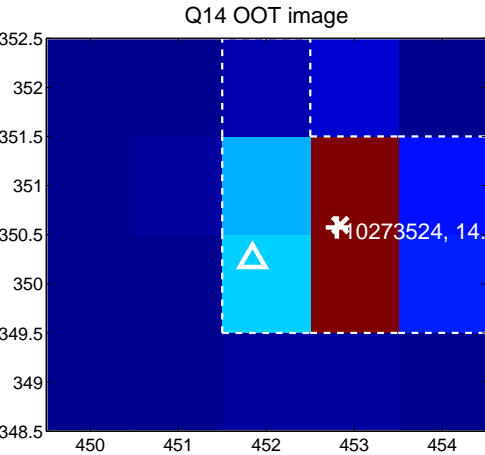
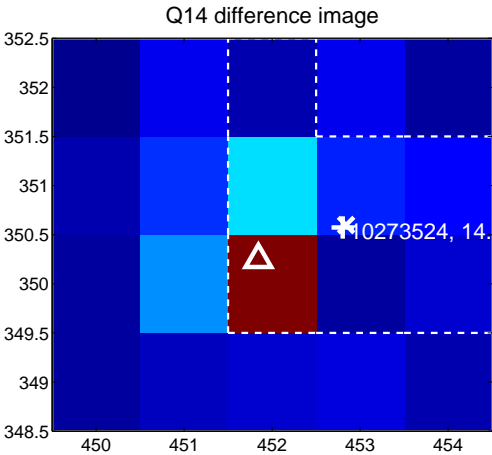
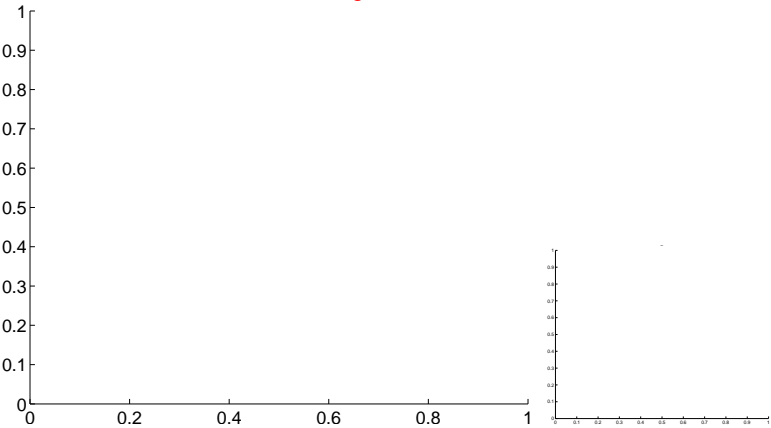


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

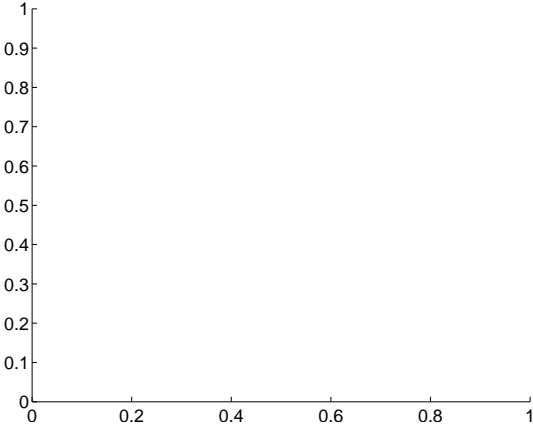
Q13 no difference image



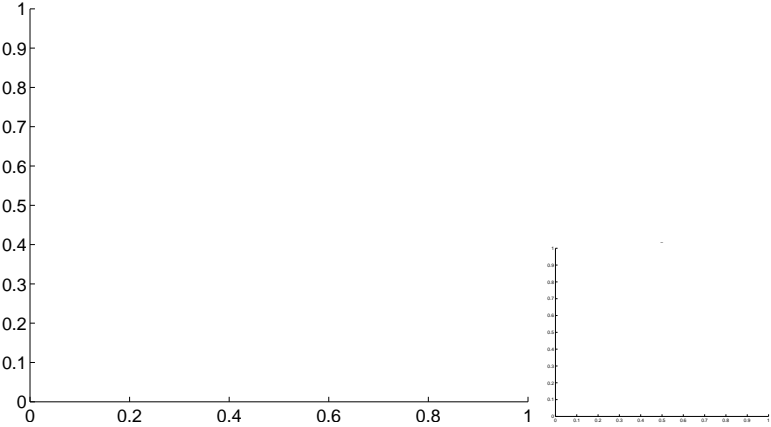
Q13 no OOT image



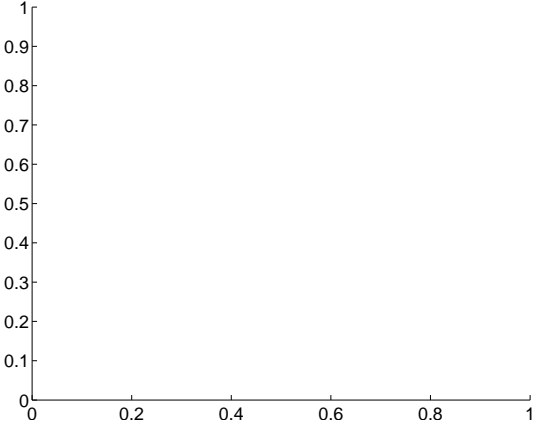
Q15 no difference image



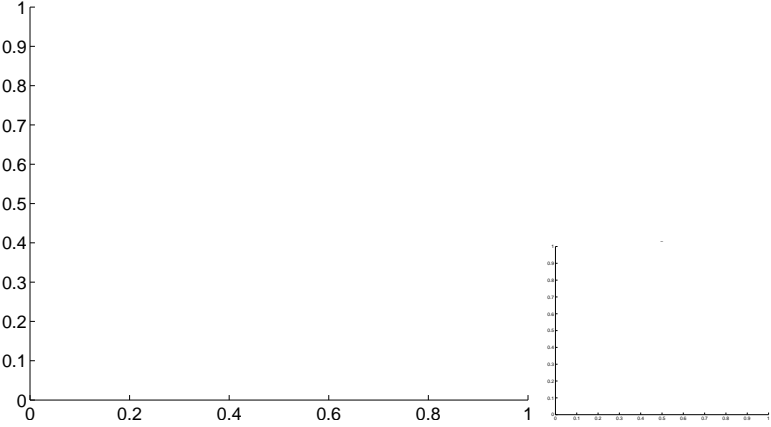
Q15 no OOT image



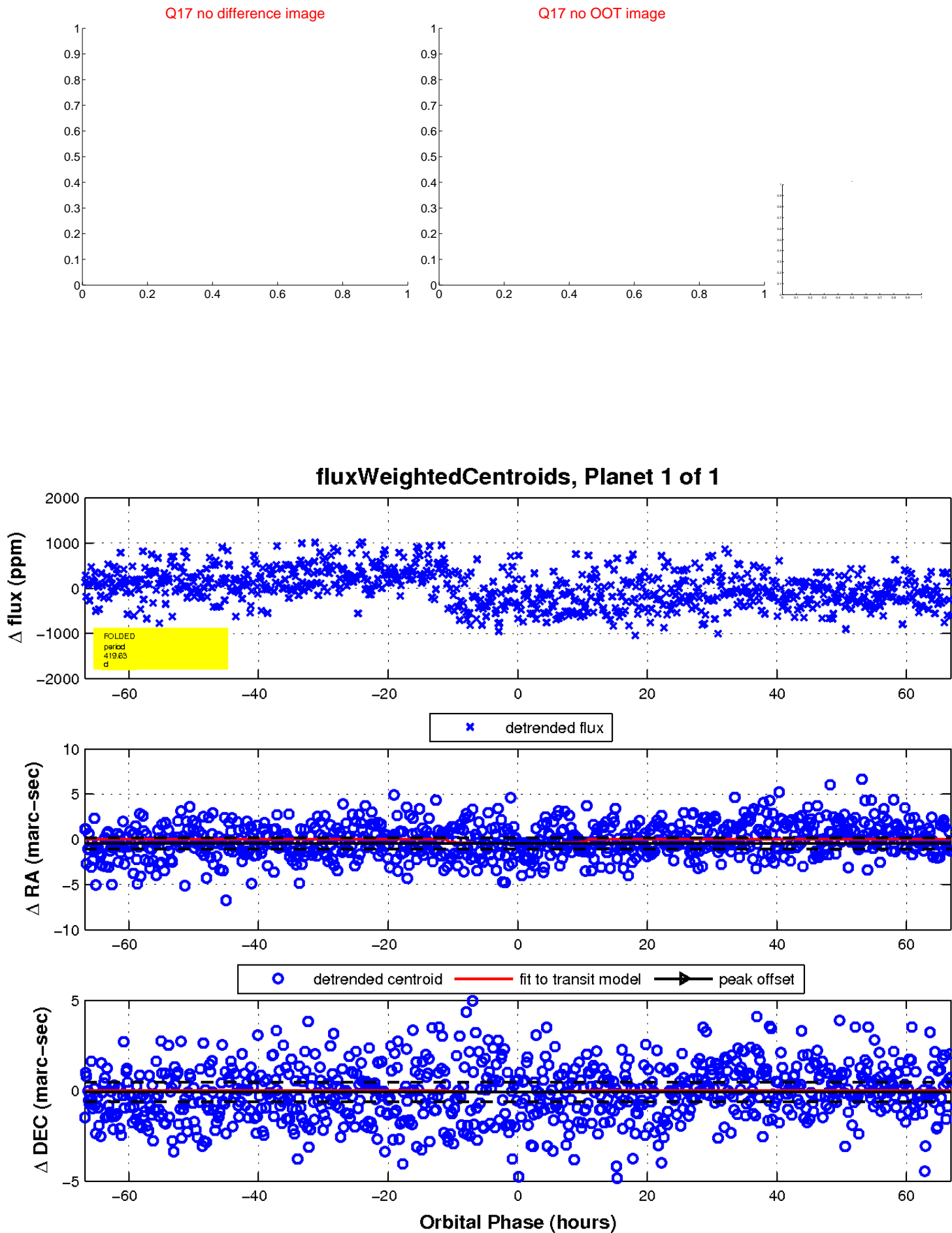
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

