

# KIC 012403119

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012403119-01	OBS	1478.01	76.136041	199.478288	2945.8	8.302	280.7	260.1	0.89	5591	5.20	6.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012403119-01	OBS	PC	0.96	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.

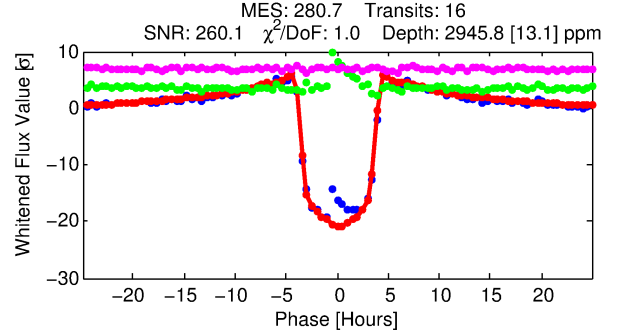
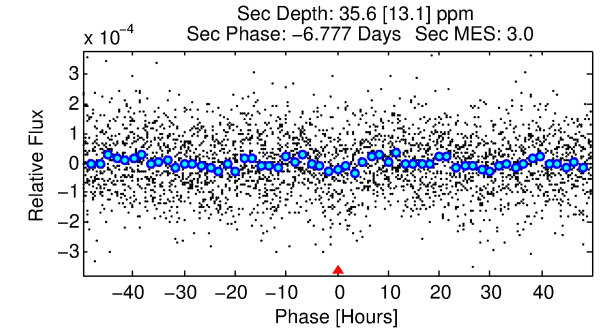
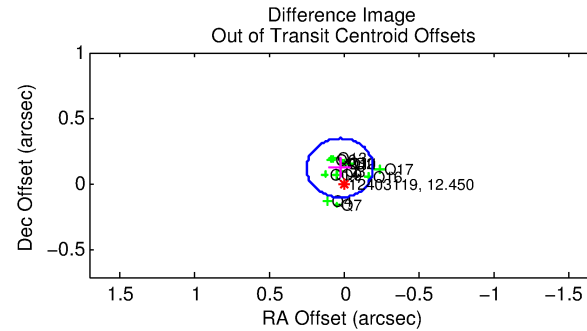
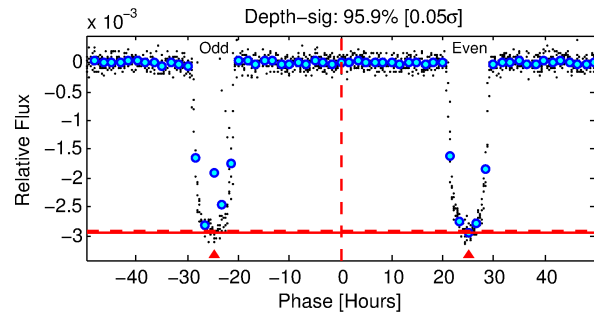
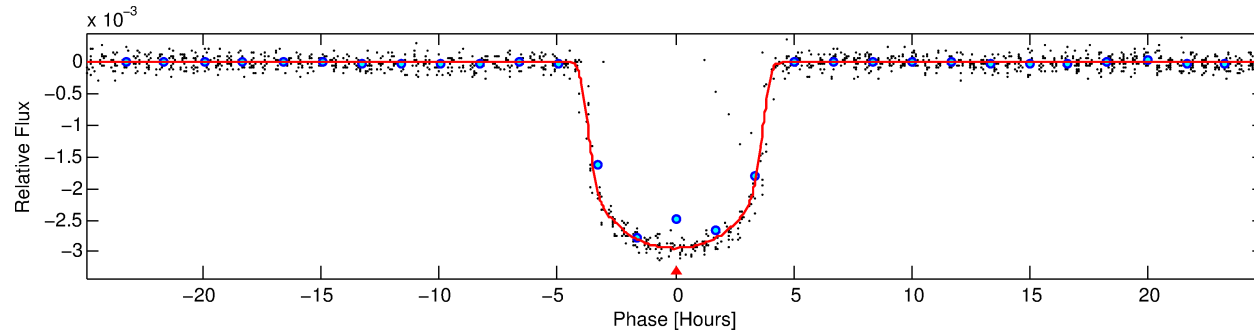
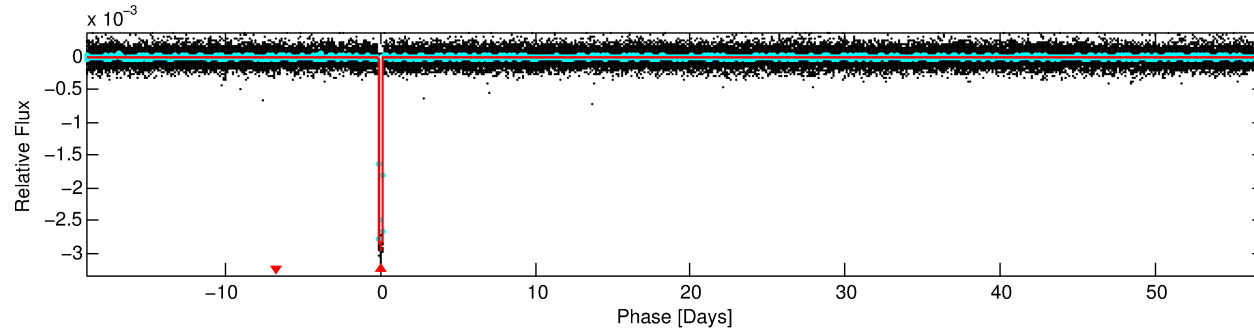
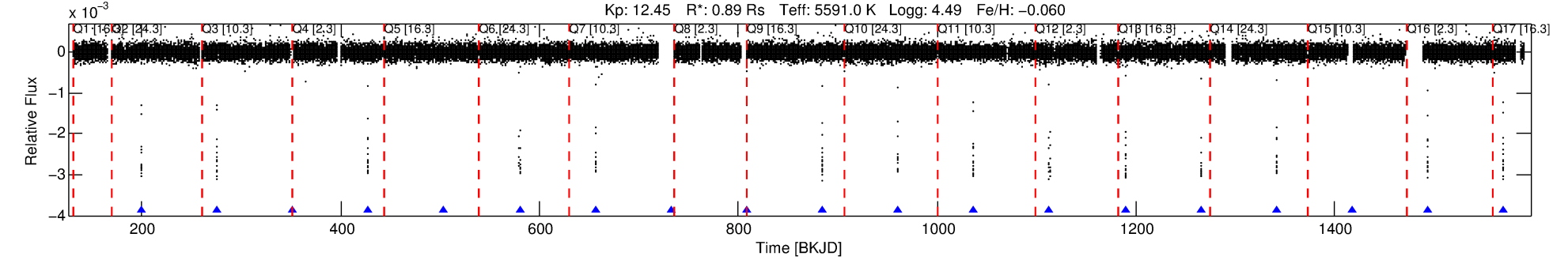
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012403119-01

No Significant Match Found

# DV One-Page Summary

KIC: 12403119 Candidate: 1 of 1 Period: 76.136 d  
KOI: K01478.01 Corr: 0.979



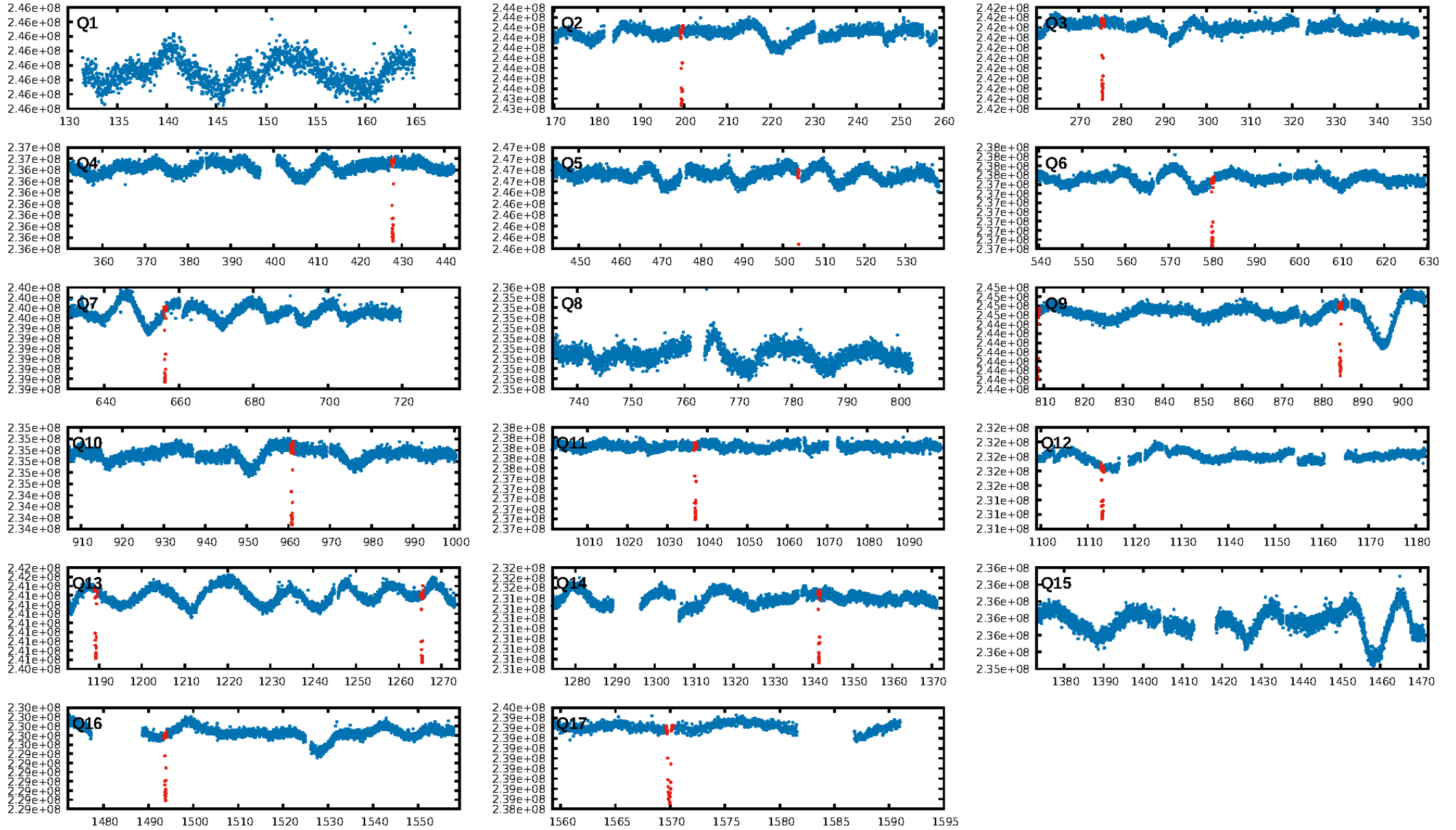
## DV Fit Results:

Period = 76.13604 [0.00006] d  
Epoch = 199.4783 [0.0006] BKJD  
Rp/R\* = 0.0534 [0.0005]  
a/R\* = 54.07 [1.84]  
b = 0.72 [0.02]  
Seff = 6.02 [1.14]  
Teff = 399 [19] K  
Rp = 5.20 [0.66] Re  
a = 0.3401 [0.0385] AU  
Ag = 83.77 [34.10] [2.43 $\sigma$ ]  
Teffp = 1868 [176] K [8.29 $\sigma$ ]

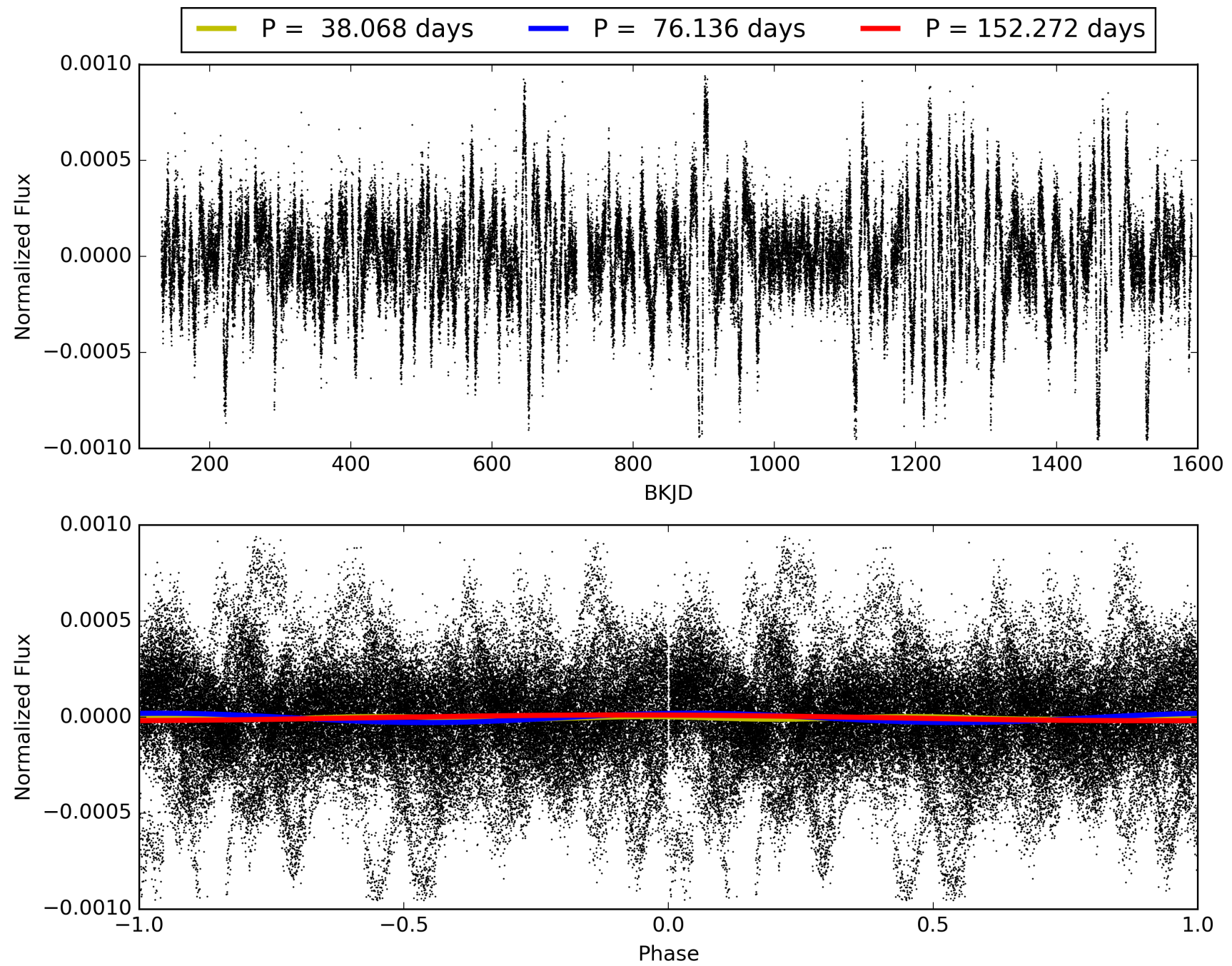
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 79.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [15/15]  
GhostDiagnostic-chr: 6.419  
Centroid-sig: 0.0%  
Centroid-so: 0.564 arcsec [13.26 $\sigma$ ]  
OotOffset-rm: 0.128 arcsec [1.72 $\sigma$ ]  
KicOffset-rm: 0.398 arcsec [5.43 $\sigma$ ]  
OotOffset-st: 4/3/2/3 [12]  
KicOffset-st: 4/3/2/3 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 1.00 [12/12]

# TCE 012403119-01, PDC Light Curves

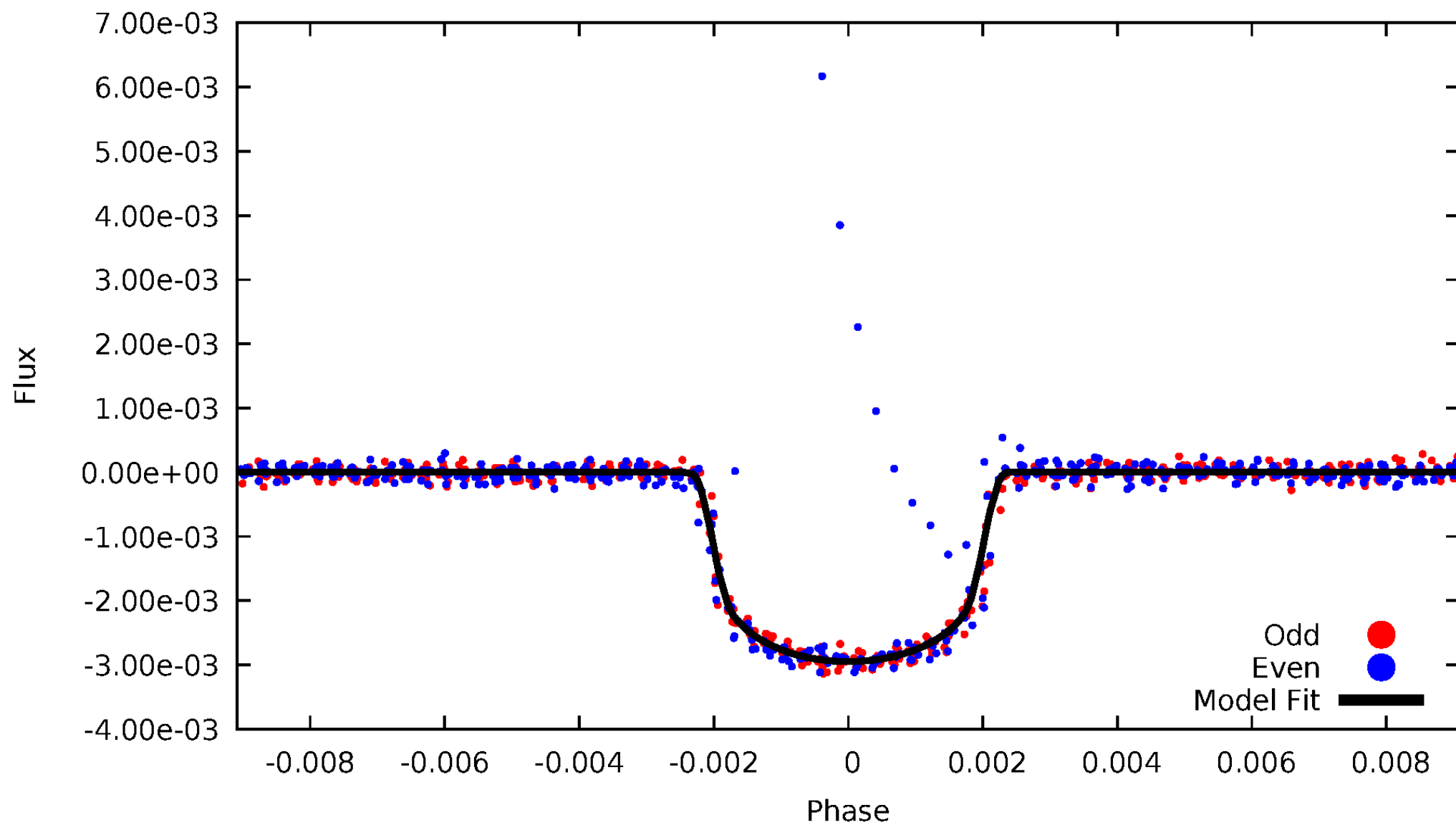


# TCE 012403119-01



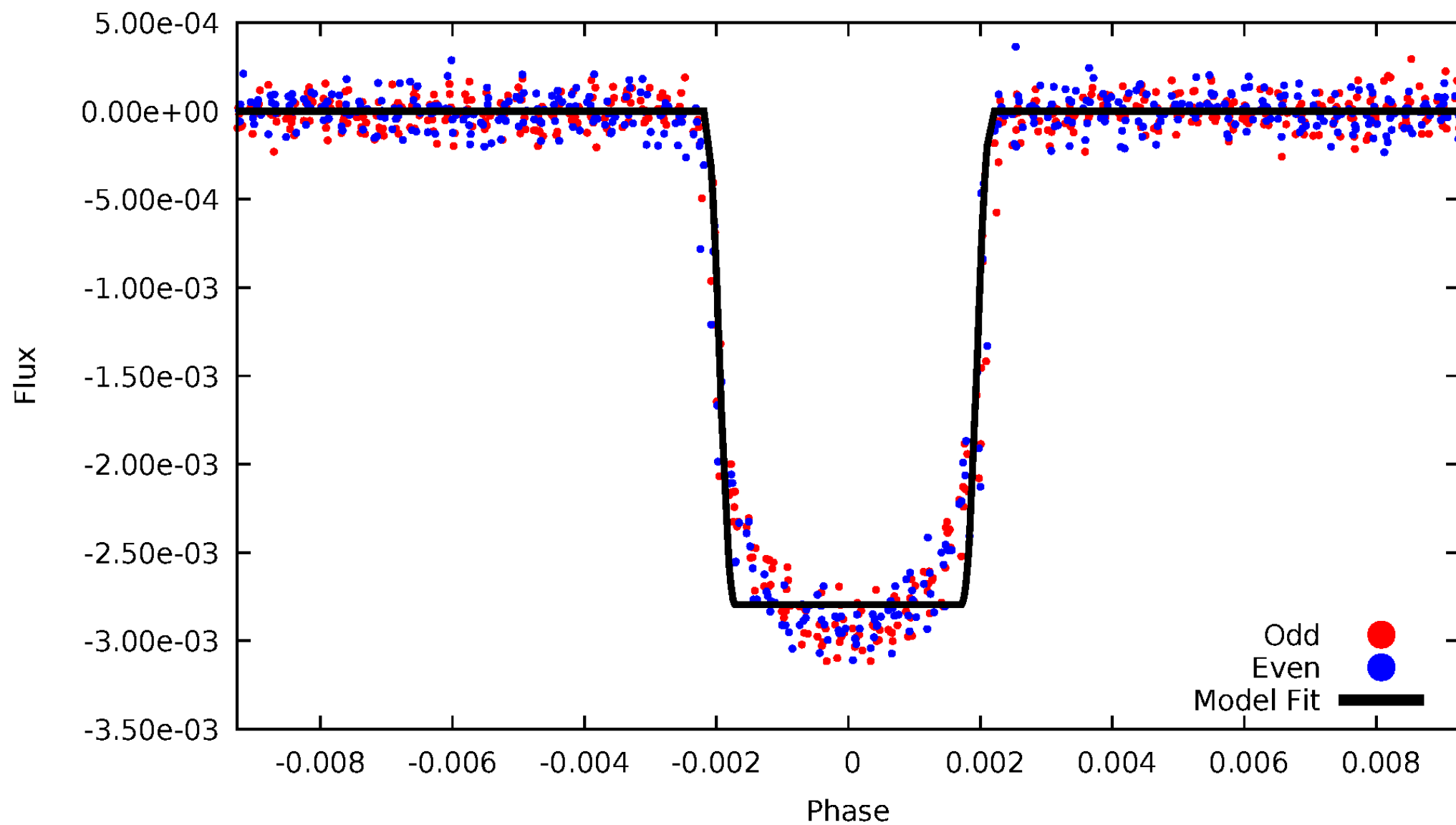
# DV Odd/Even

TCE 012403119-01



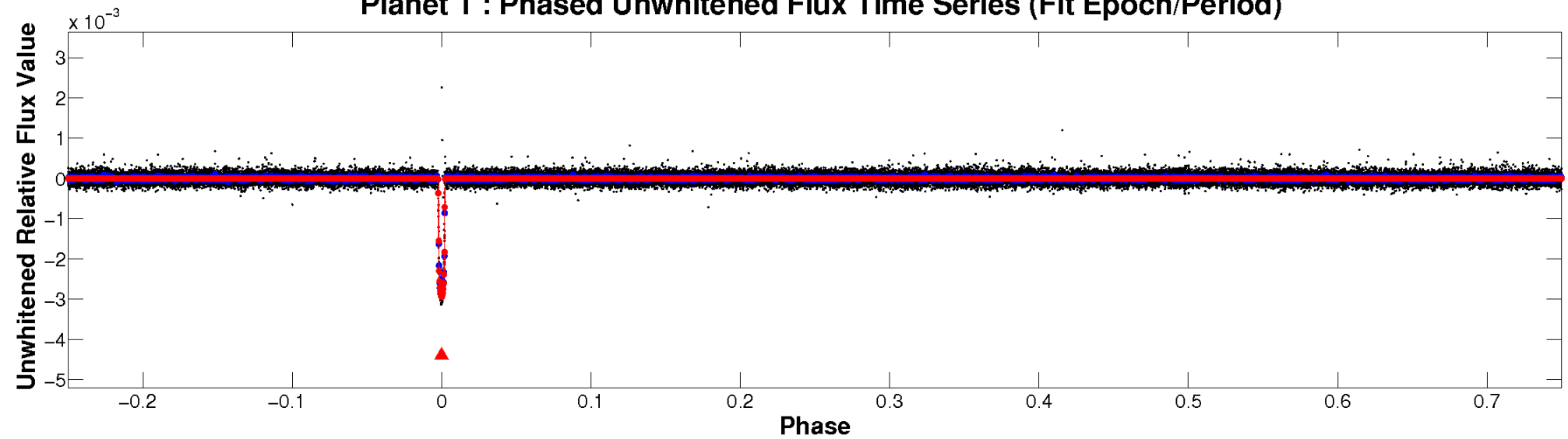
# ALT Odd/Even

TCE 012403119-01

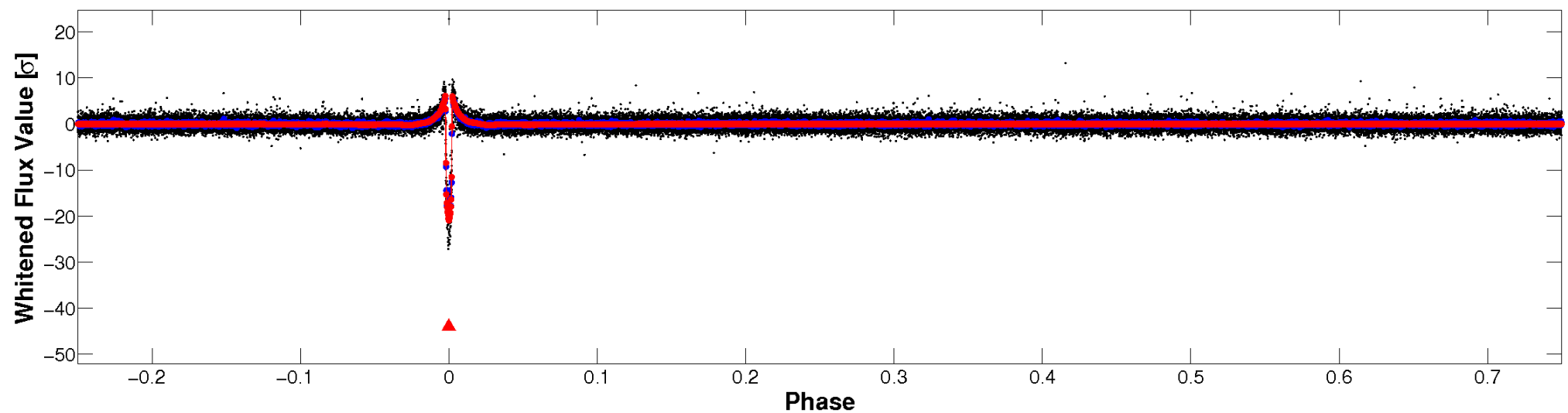


# Non-Whitened Vs. Whitened Light Curve

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

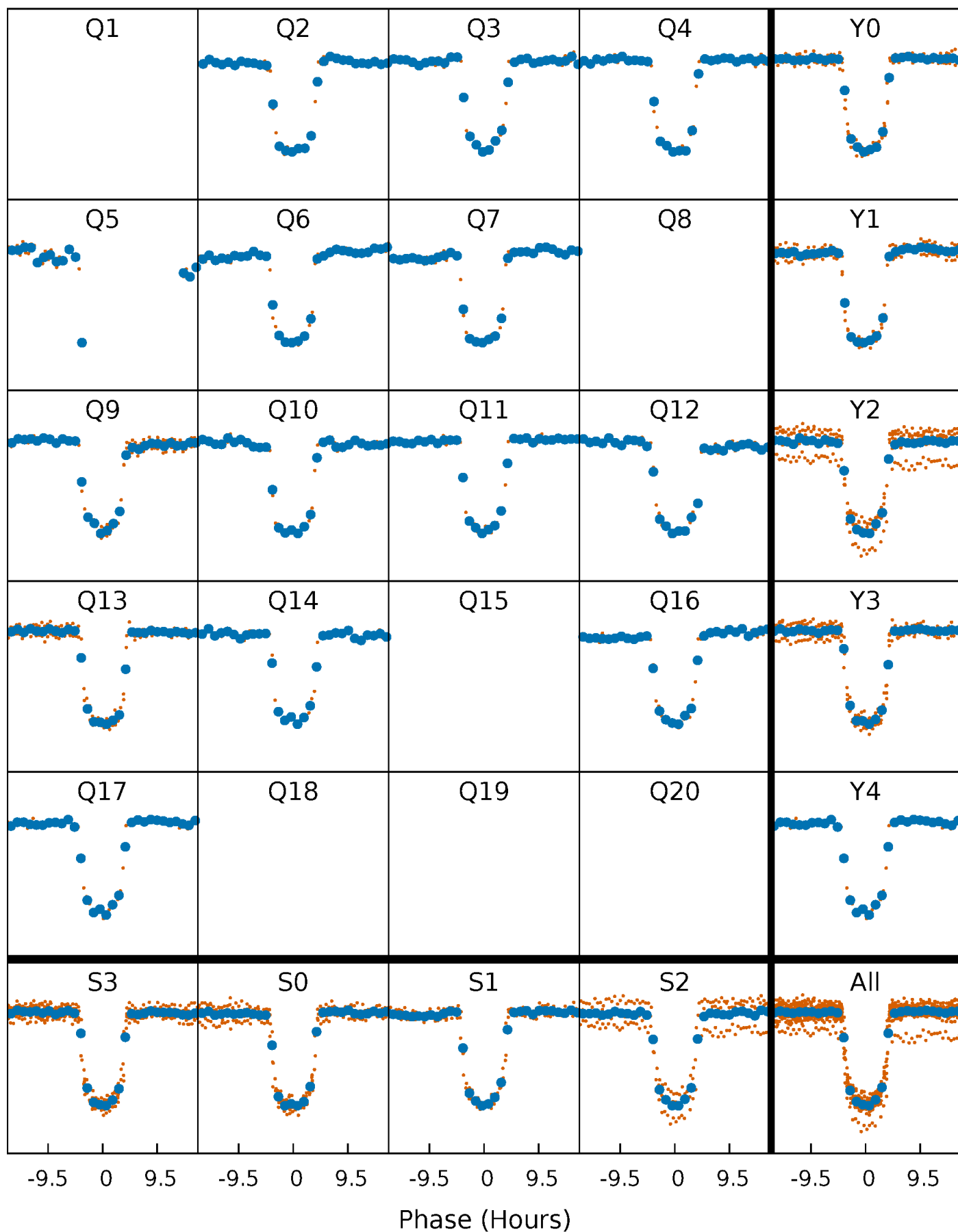


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

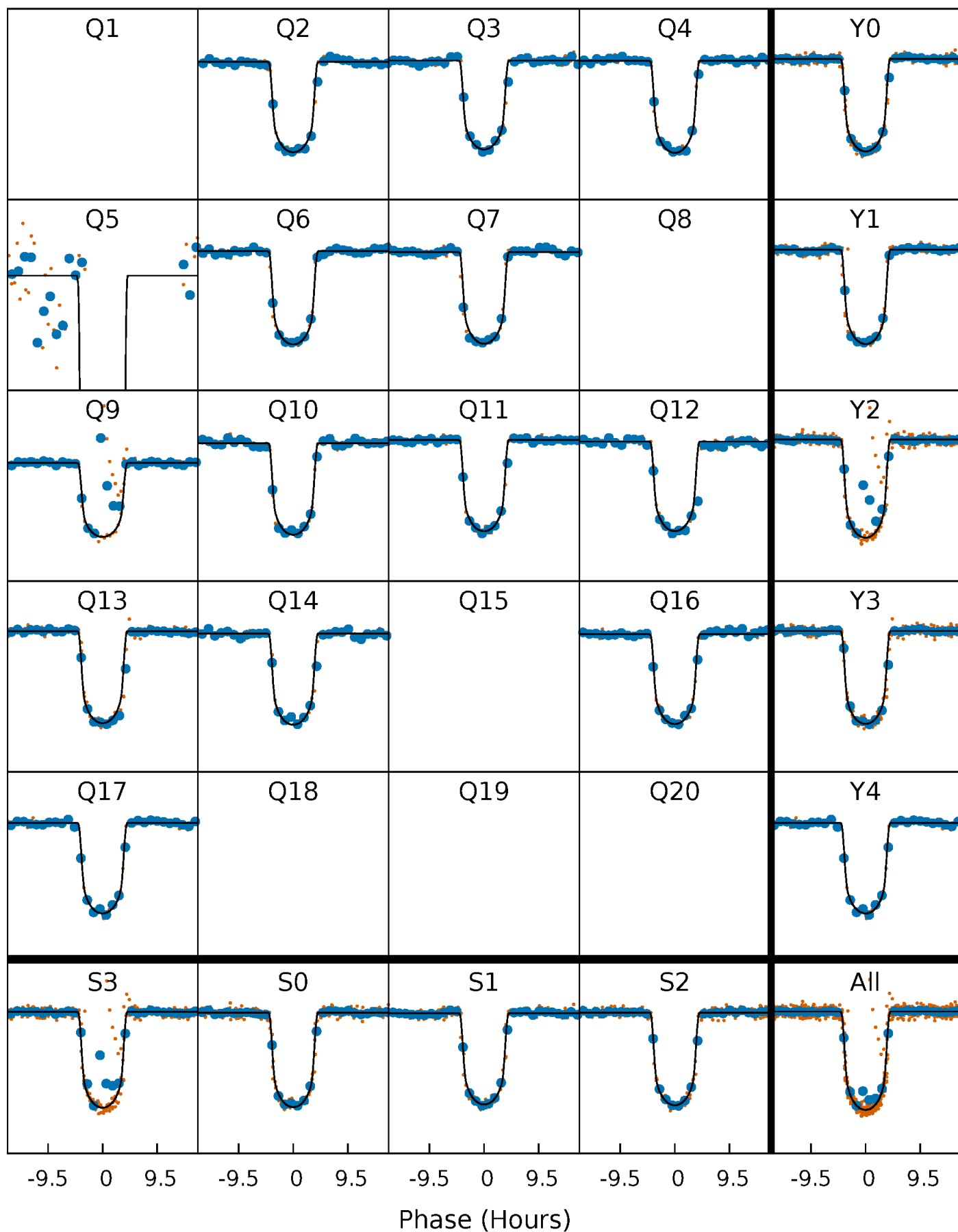
TCE 012403119-01 P= 76.136041 Days  $T_0=199.478288$  (BKJD)





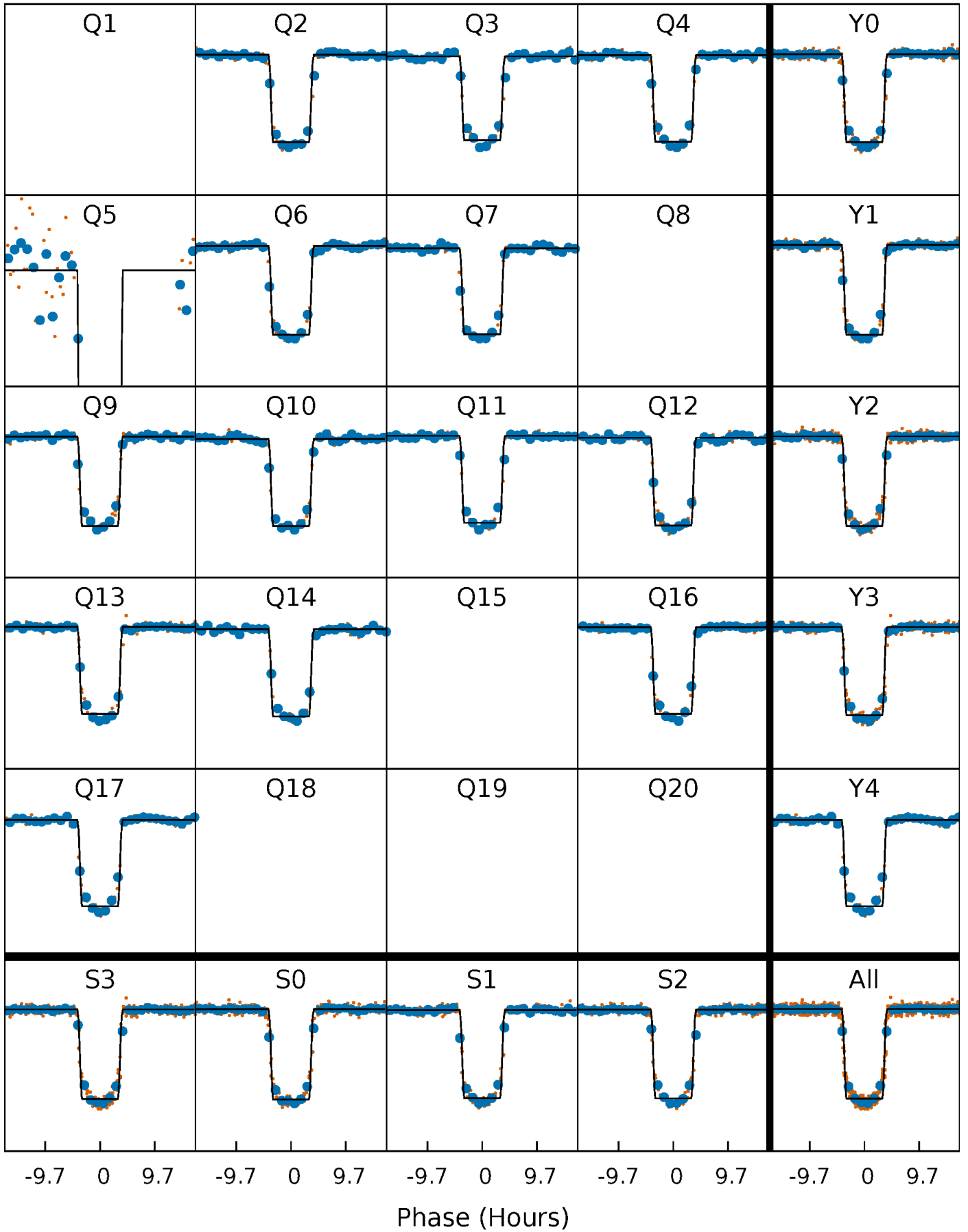
# DV Quarter-Phased Transit Curves

TCE 012403119-01 P= 76.136041 Days  $T_0=199.478288$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

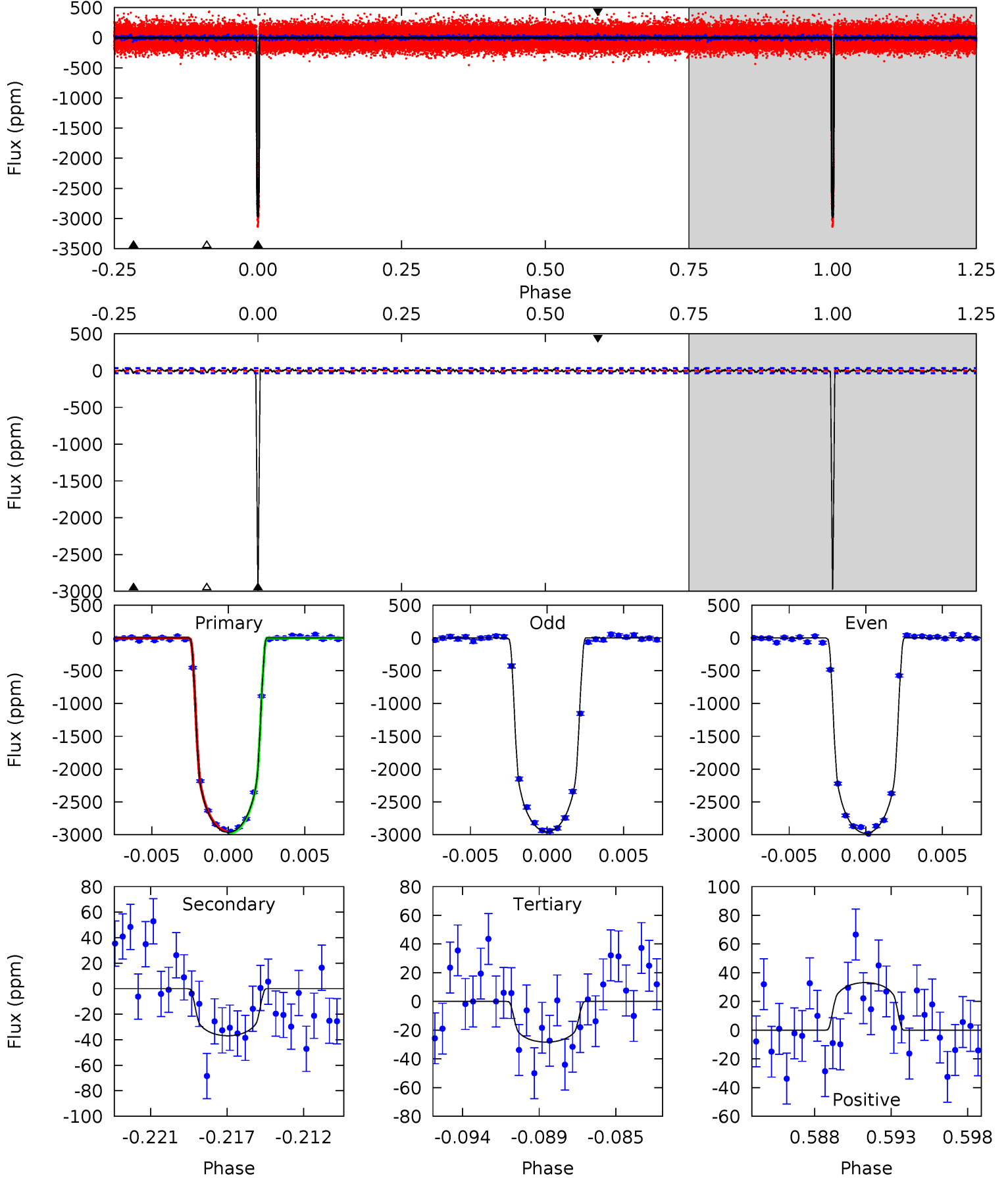
TCE 012403119-01 P= 76.136090 Days  $T_0=199.478929$  (BKJD)



# DV Model-Shift Uniqueness Test

012403119-01, P = 76.136041 Days, E = 123.342247 Days

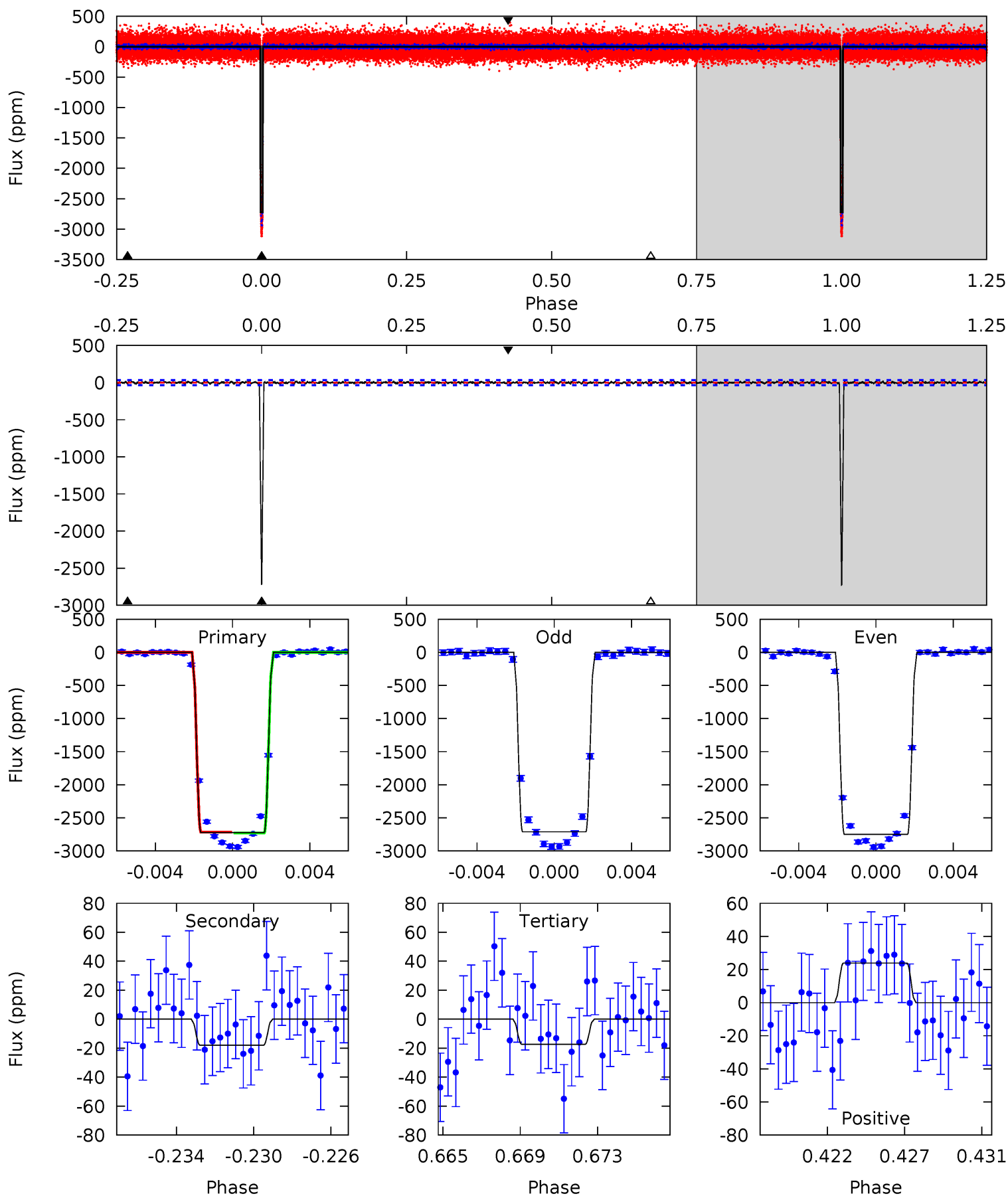
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
450.7	5.61	4.31	5.04	5.17	2.83	1.41	446.4	445.7	1.30	0.57	1.74	0.85	0.01	2.15



# Alt Model-Shift Uniqueness Test

012403119-01,  $P = 76.136090$  Days,  $E = 123.342839$  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
419.9	2.78	2.68	3.69	5.19	2.86	0.88	417.3	416.2	0.11	-0.91	2.97	1.00	0.01	1.11



### Stellar Parameters For KIC 012403119

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5591^{+111}_{-111}$	$4.494^{+0.053}_{-0.098}$	$-0.060^{+0.150}_{-0.150}$	$0.892^{+0.113}_{-0.057}$	$0.904^{+0.056}_{-0.056}$	$1.795^{+0.368}_{-0.526}$
	+2%/-2%	+1%/-2%	+250%/-250%	+13%/-6%	+6%/-6%	+21%/-29%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 012403119-01 / KOI 1478.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-37 \pm 7$	$5.20^{+0.37}_{-0.22}$	$560^{+20}_{-16}$	$2675^{+60}_{-77}$	$85^{+19}_{-18}$
Alt.	$-18 \pm 6$	$5.18^{+0.39}_{-0.25}$	$562^{+22}_{-18}$	$2452^{+97}_{-130}$	$42^{+16}_{-17}$

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

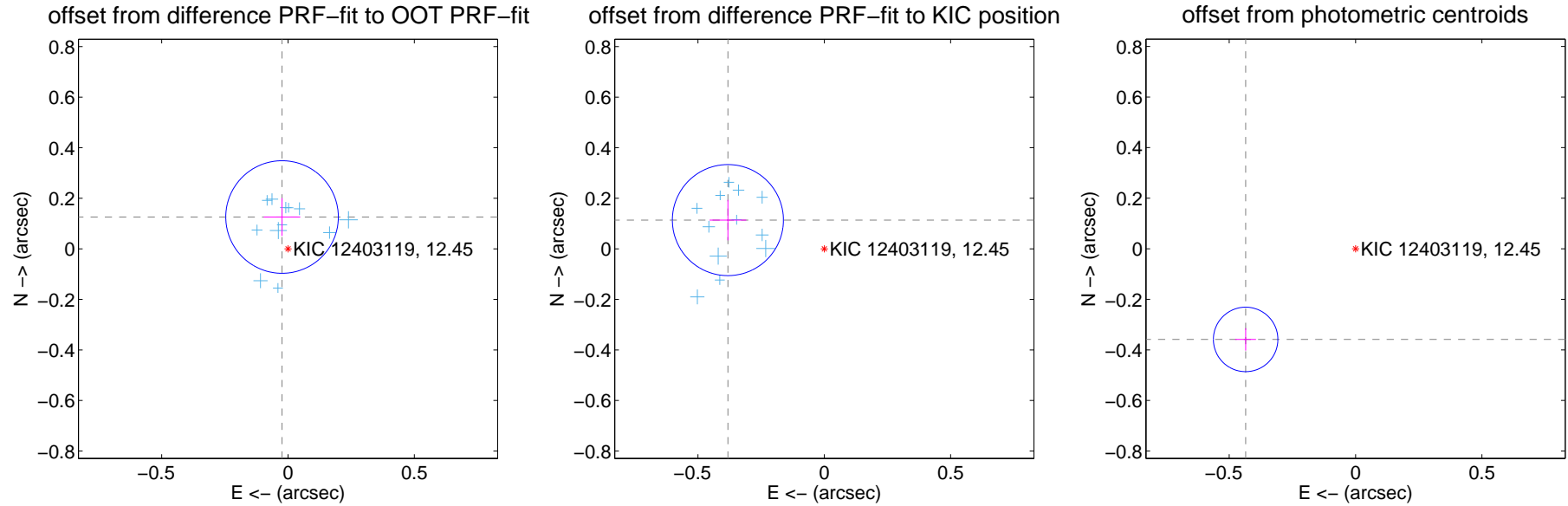
## DV Centroid Data

Supplemental centroid analysis for 012403119-01. Kepler magnitude: 12.45. Transit SNR 260.08

There are 12 quarters with good PRF difference image offsets

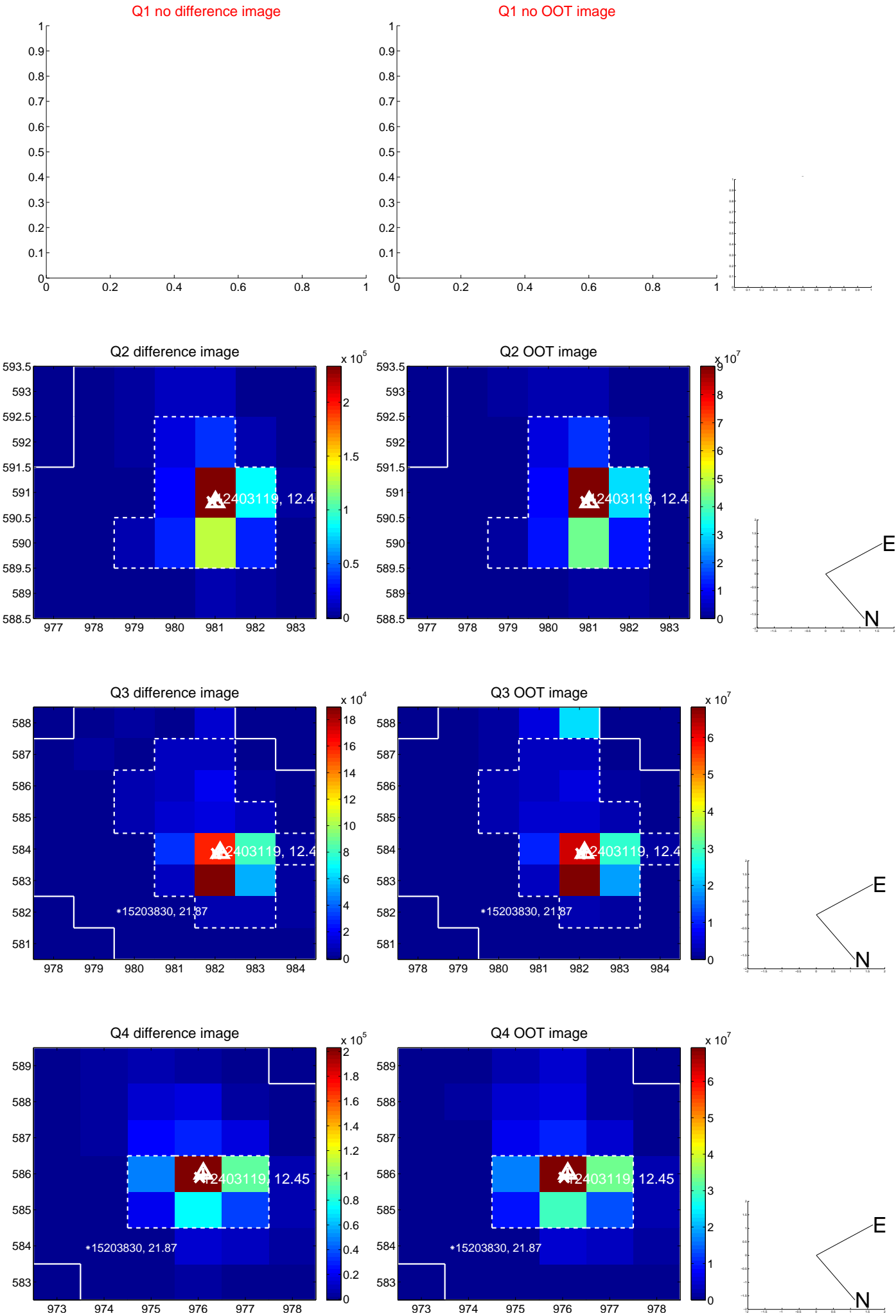
The direct PRF centroid is offset from the target star catalog position by about 0.48 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.128 \pm 0.074$	1.72	$0.024 \pm 0.072$	$0.126 \pm 0.075$
PRF-fit source offset from KIC position	<b><math>0.398 \pm 0.073</math></b>	<b>5.43</b>	$0.381 \pm 0.073$	$0.114 \pm 0.080$
photometric centroid source offset	<b><math>0.56 \pm 0.04</math></b>	<b>13.26</b>	$0.43 \pm 0.04$	$-0.36 \pm 0.04$



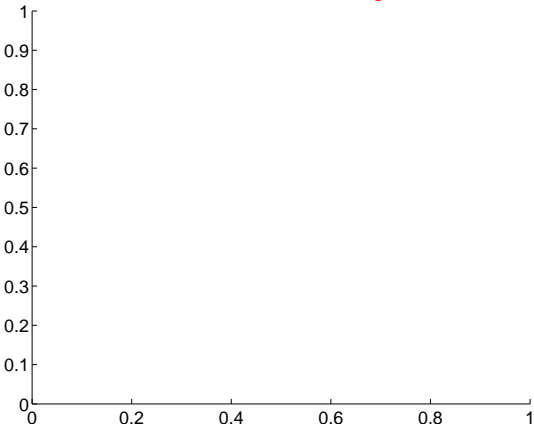
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

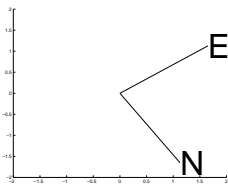
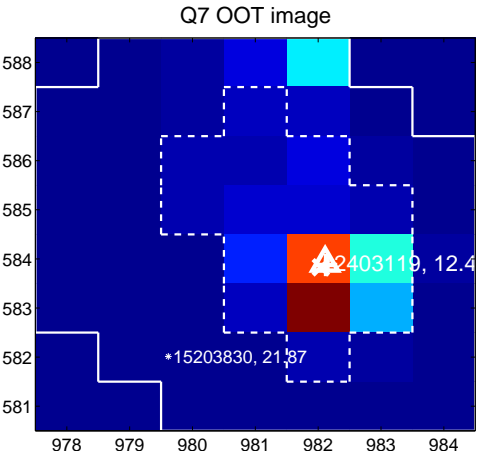
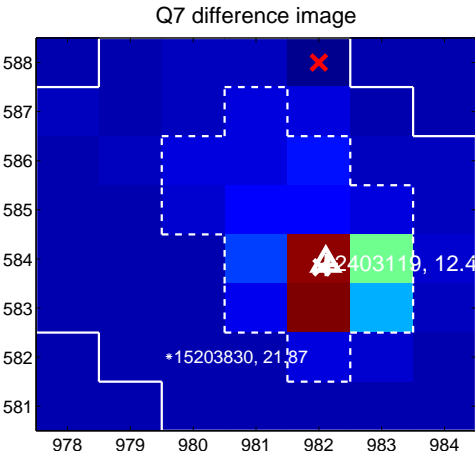
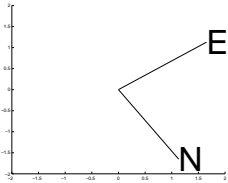
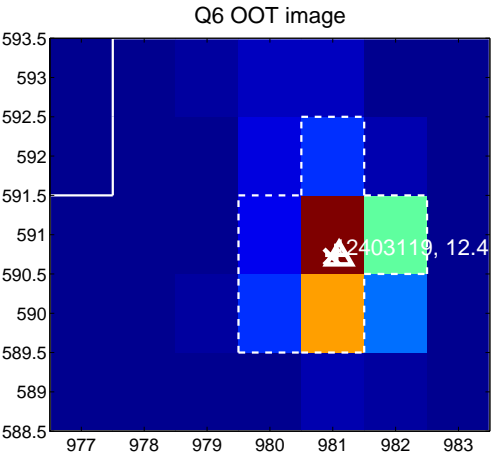
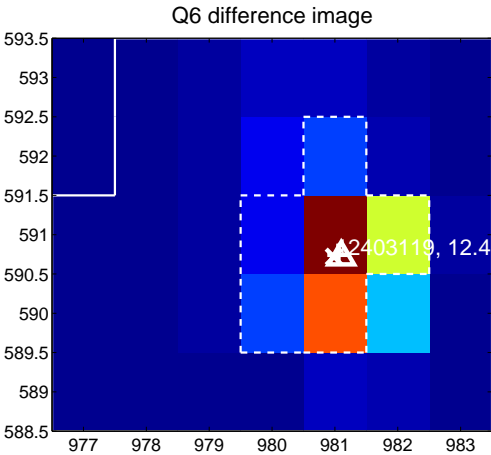
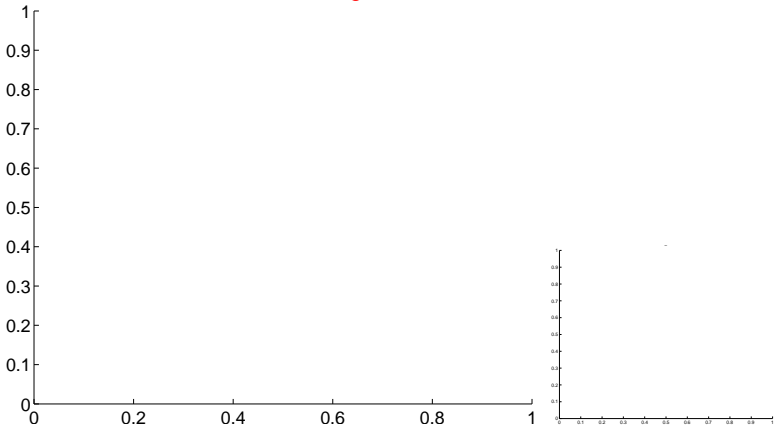


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

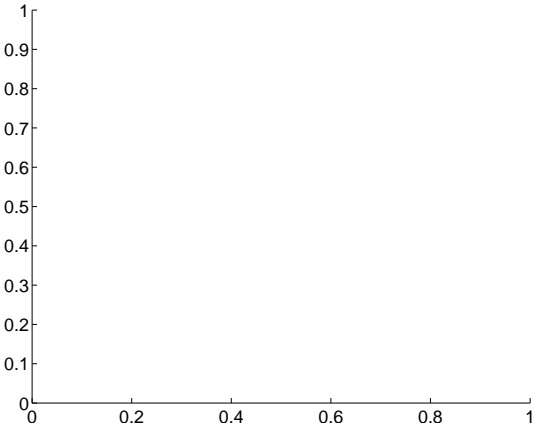
Q5 no difference image



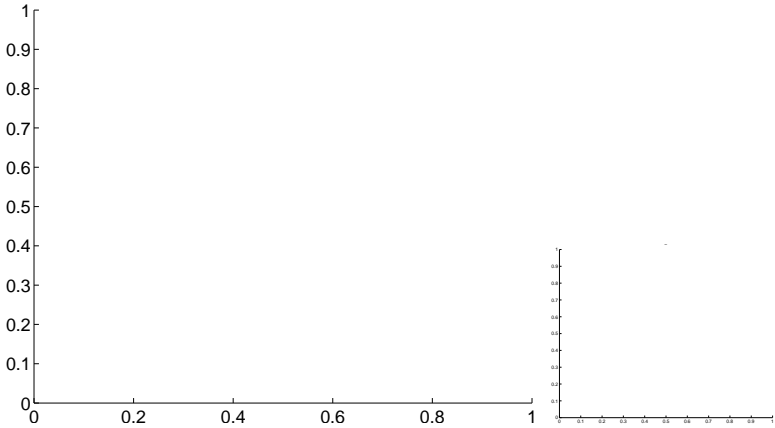
Q5 no OOT image



Q8 no difference image

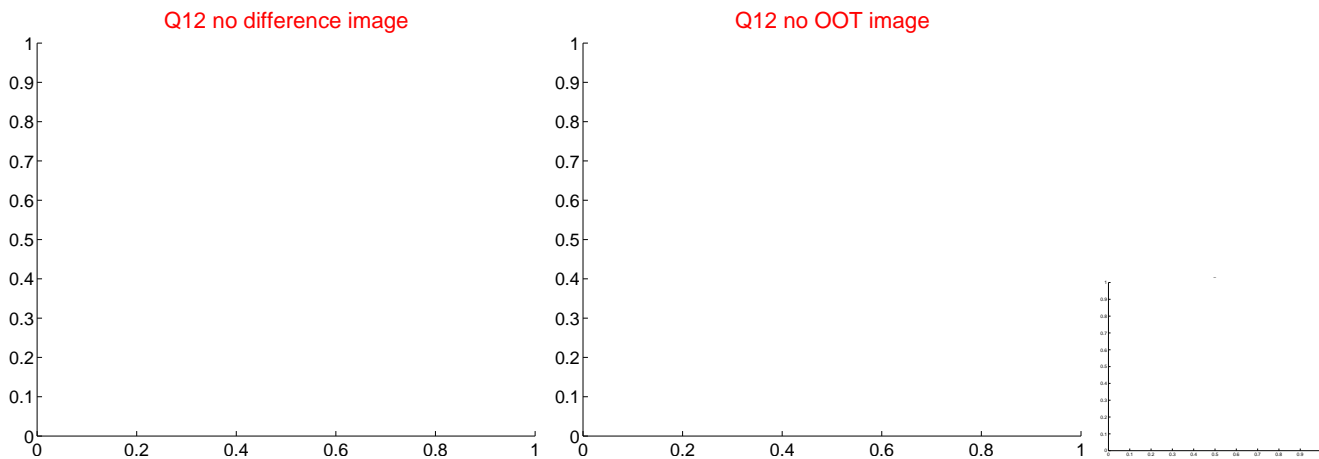
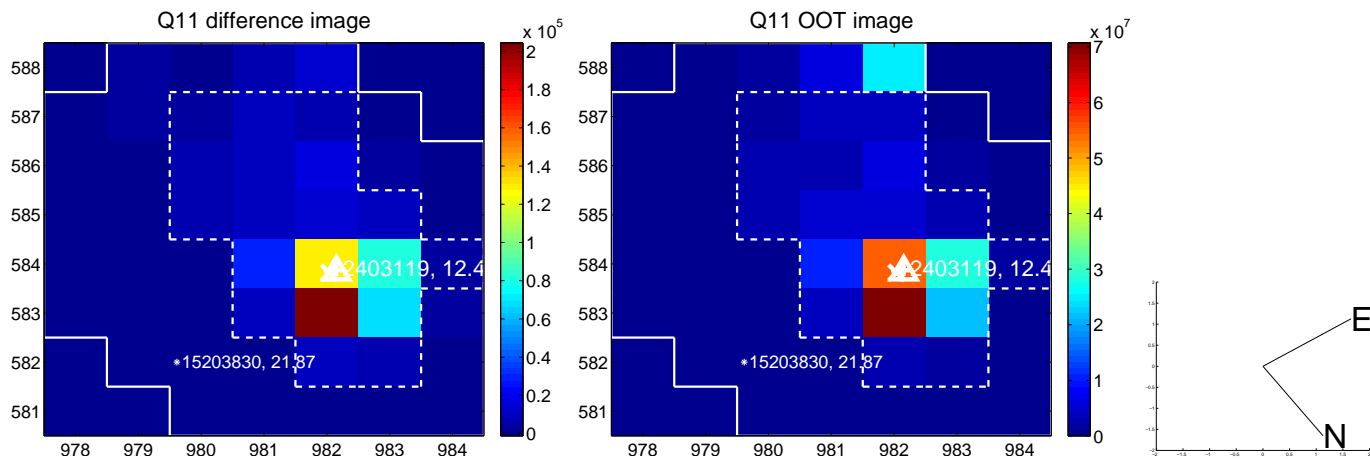
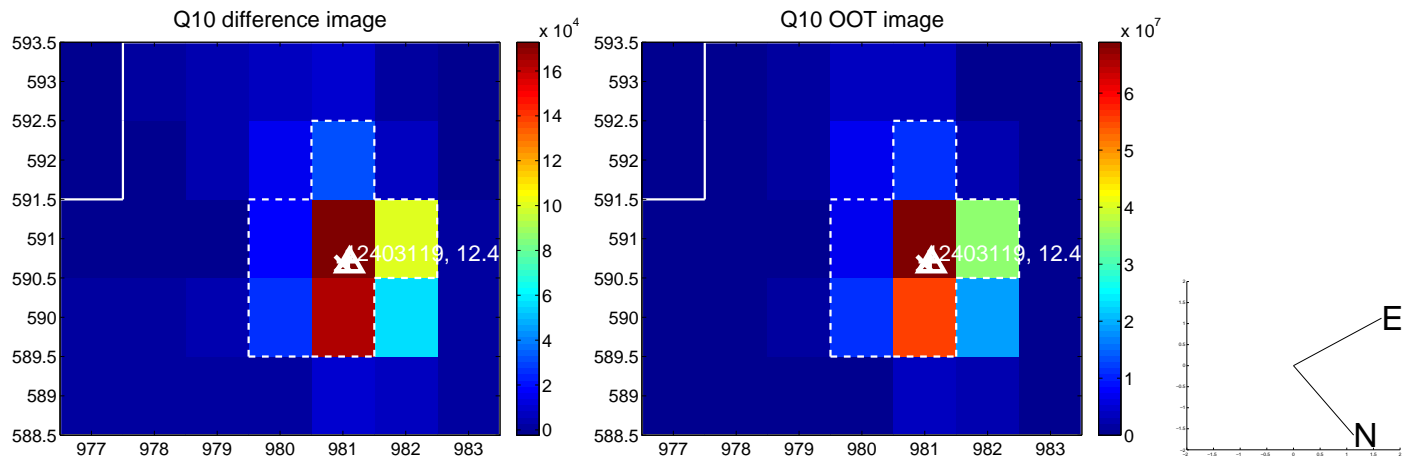
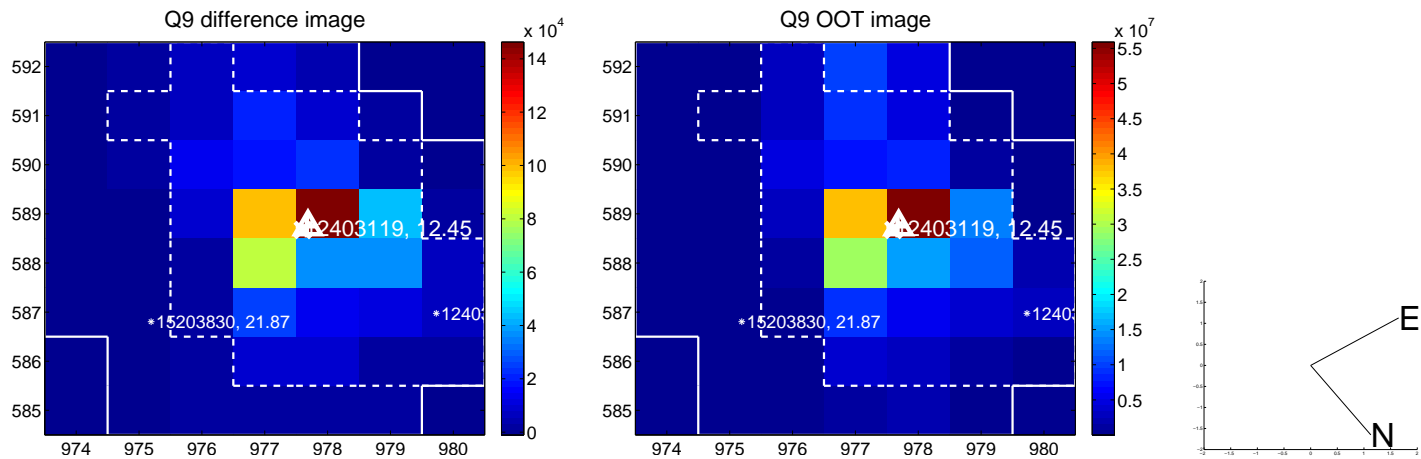


Q8 no OOT image

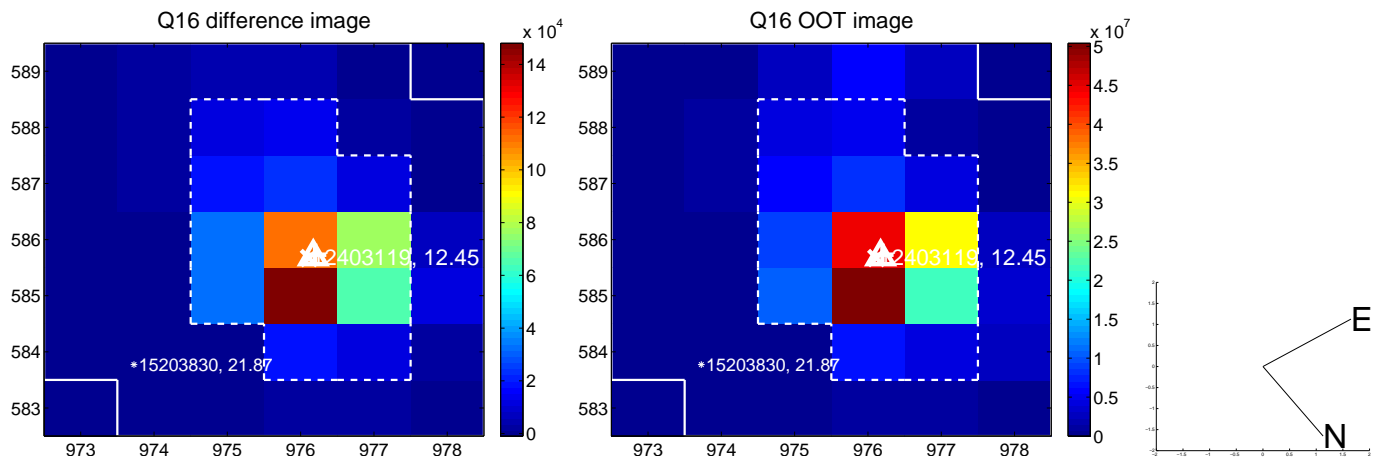
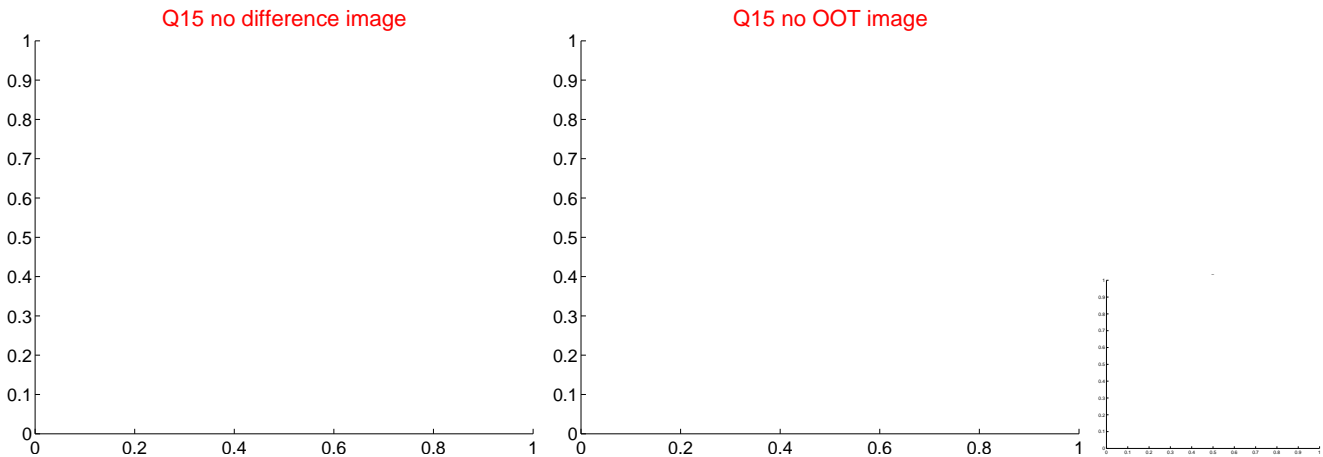
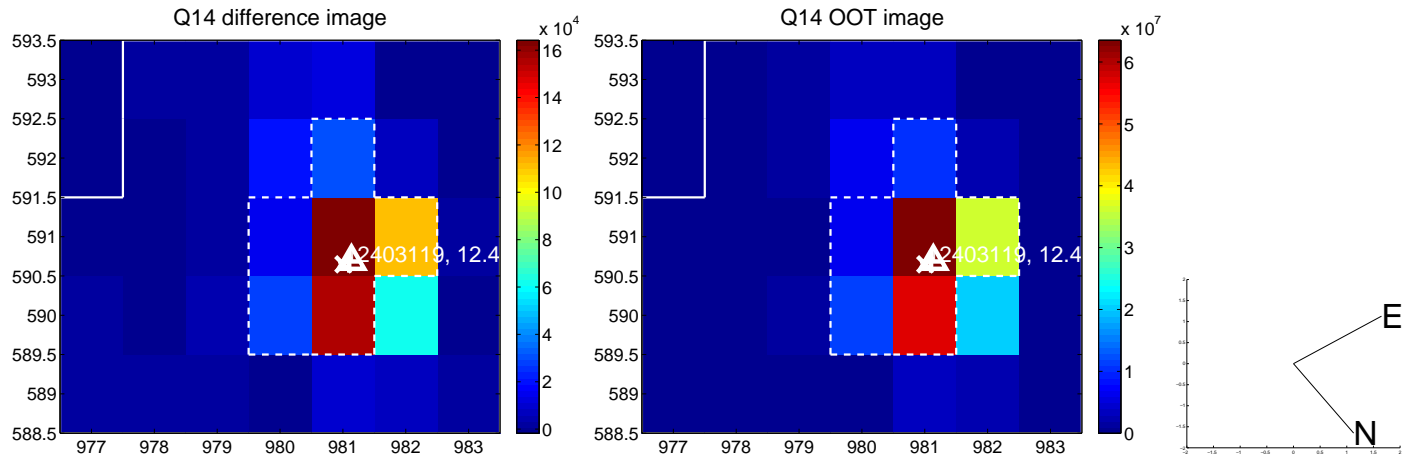
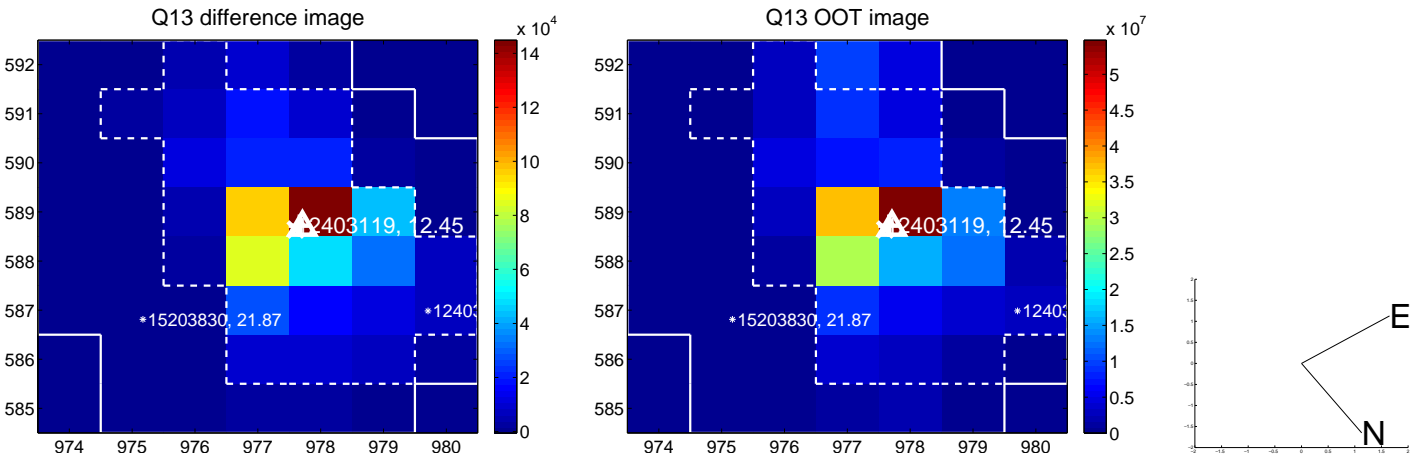




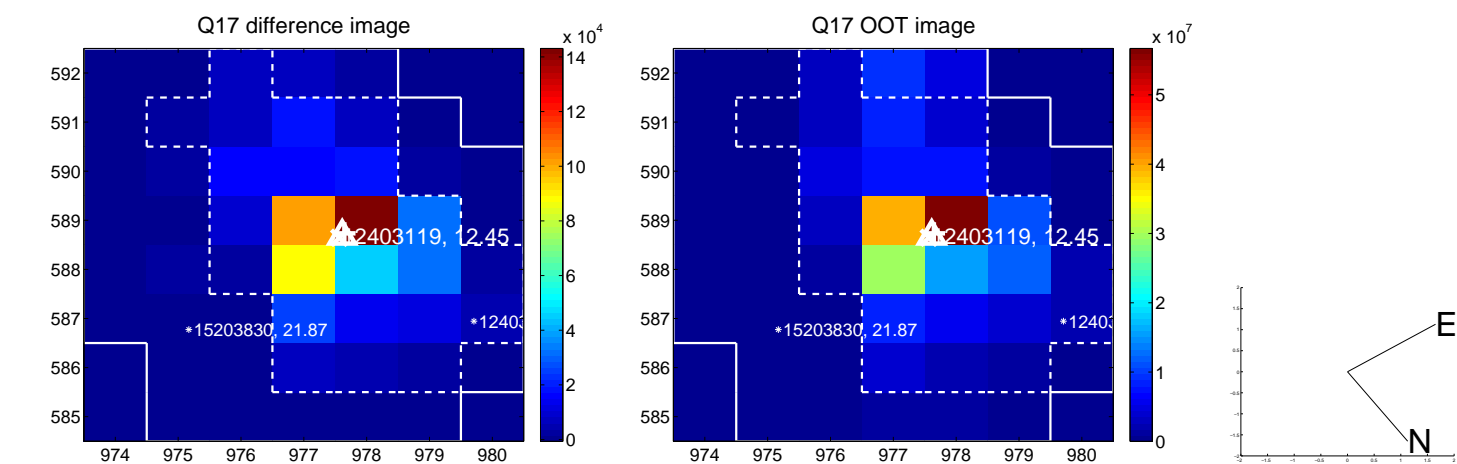
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



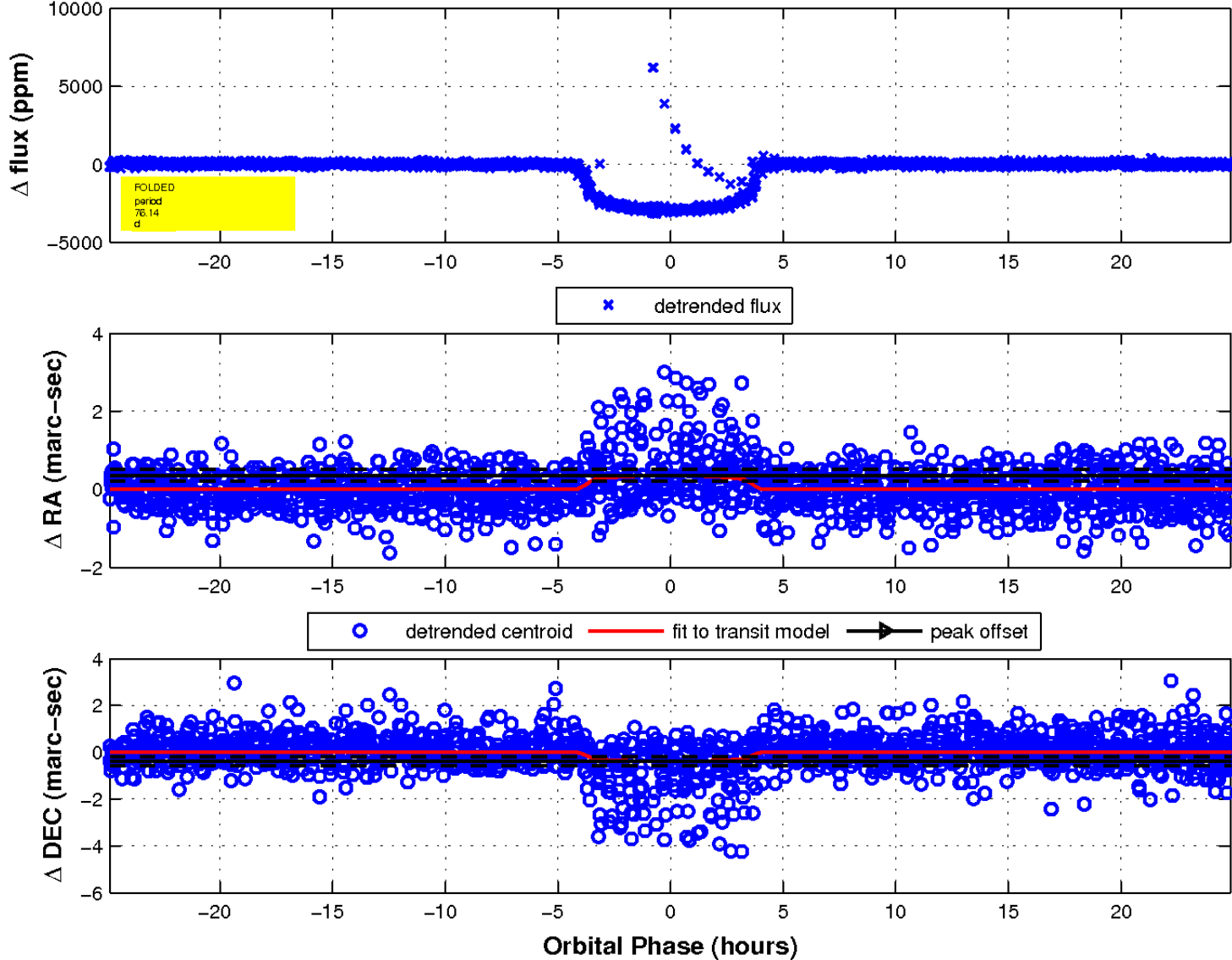
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

