

# KIC 006042423

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006042423-01	OBS	No	66.796101	168.389700	932.4	90.741	11.4	25.6	0.73	4825	4.45	3.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006042423-01	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

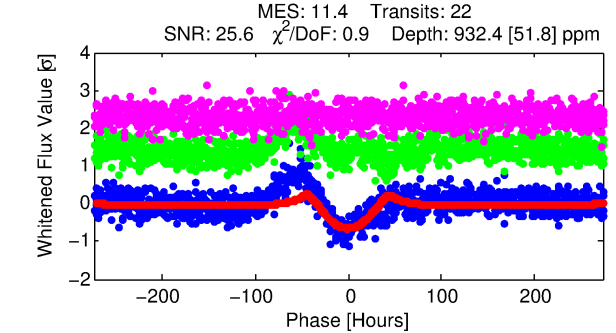
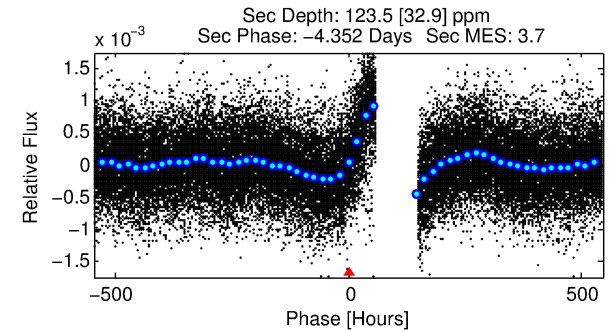
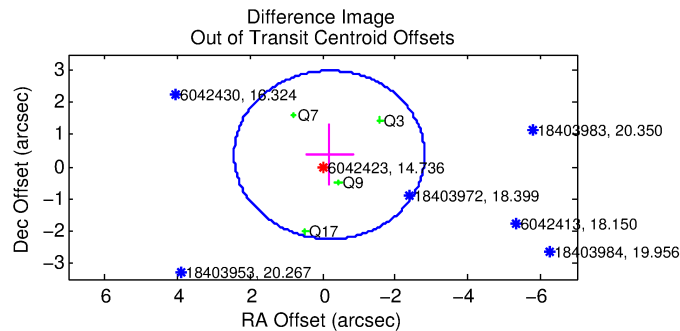
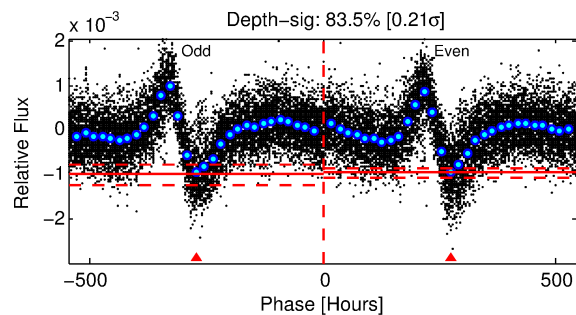
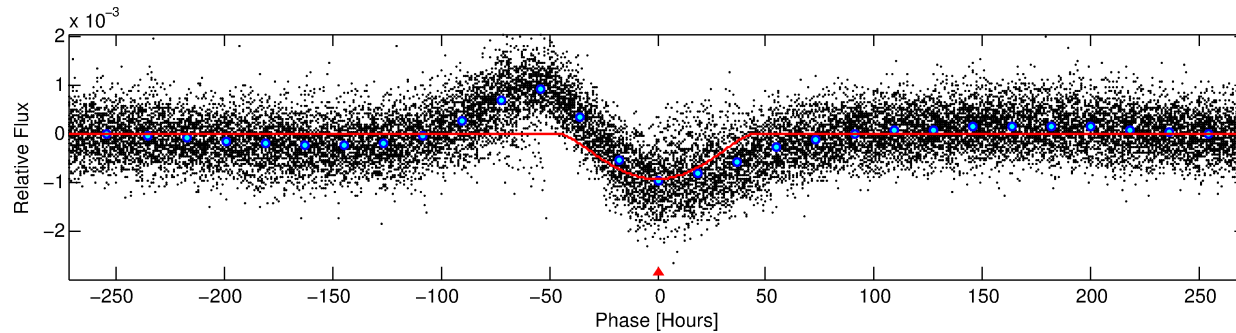
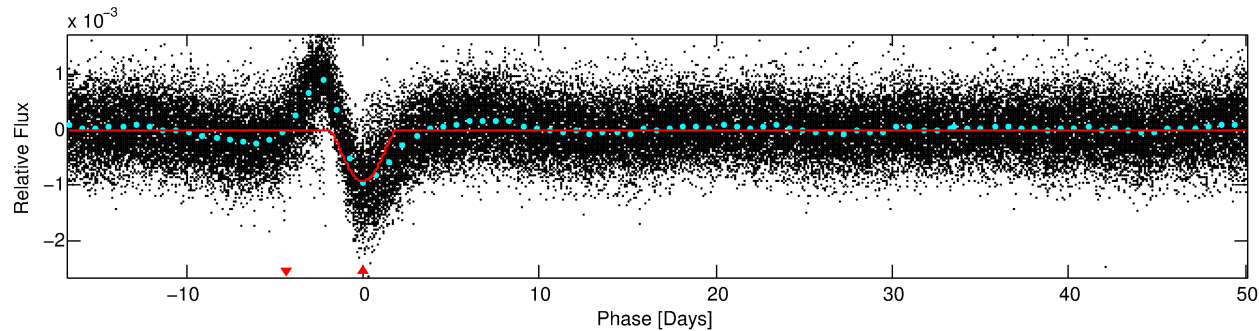
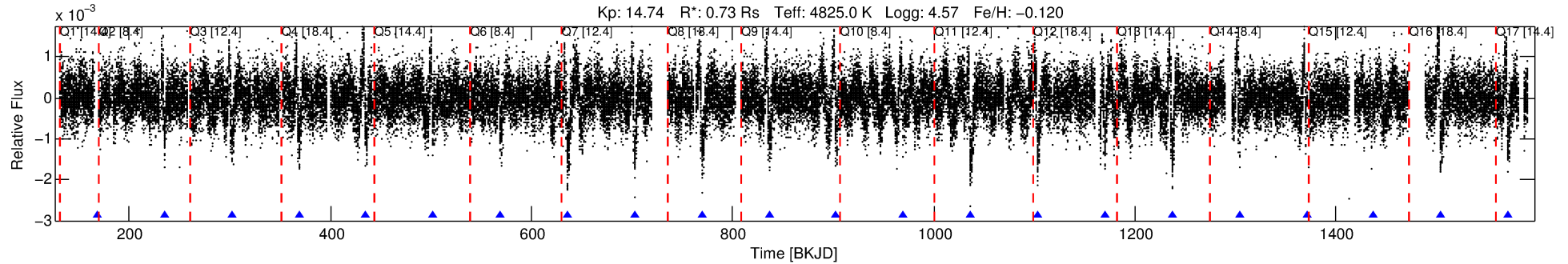
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006042423-01

No Significant Match Found

# DV One-Page Summary

KIC: 6042423 Candidate: 1 of 1 Period: 66.796 d



## DV Fit Results:

Period = 66.79610 [0.00495] d  
Epoch = 168.3897 [0.0609] BKJD  
Rp/R\* = 0.0562 [0.0387]  
a/R\* = 2.19 [0.25]  
b = 1.00 [0.06]  
Seff = 3.10 [0.52]  
Teq = 338 [14] K  
Rp = 4.45 [3.09] Re  
a = 0.2872 [0.0230] AU  
Ag = 282.65 [397.43] [0.71 $\sigma$ ]  
Teffp = 2146 [754] K [2.40 $\sigma$ ]

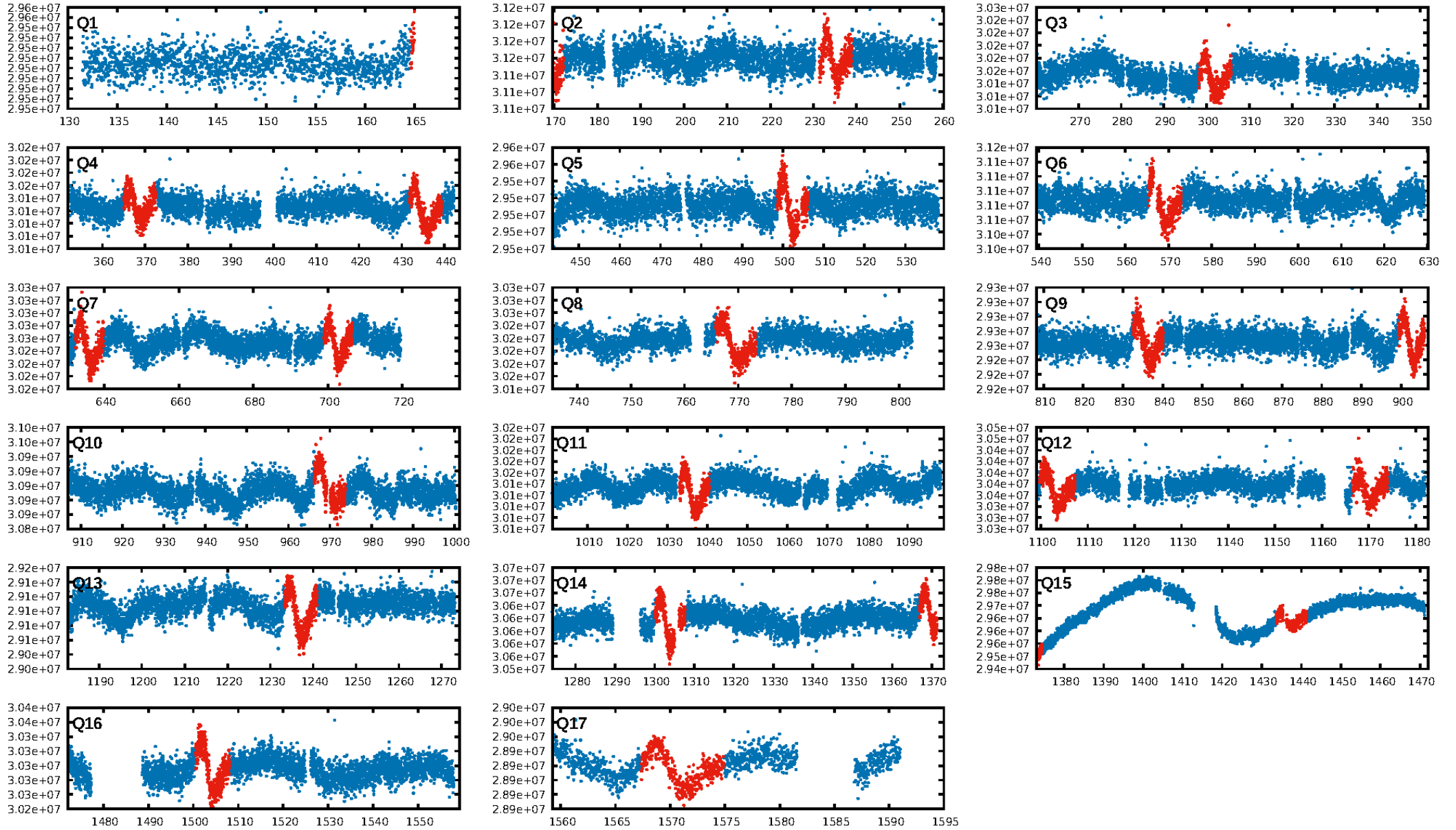
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.43e-28  
RollingBand-fgt: 1.00 [21/21]  
GhostDiagnostic-chr: 2.735  
Centroid-sig: 0.0%  
Centroid-so: 0.383 arcsec [3.11 $\sigma$ ]  
OotOffset-rm: 0.413 arcsec [0.47 $\sigma$ ]  
KicOffset-rm: 0.480 arcsec [0.54 $\sigma$ ]  
OotOffset-st: 0/2/0/2 [4]  
KicOffset-st: 0/2/0/2 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

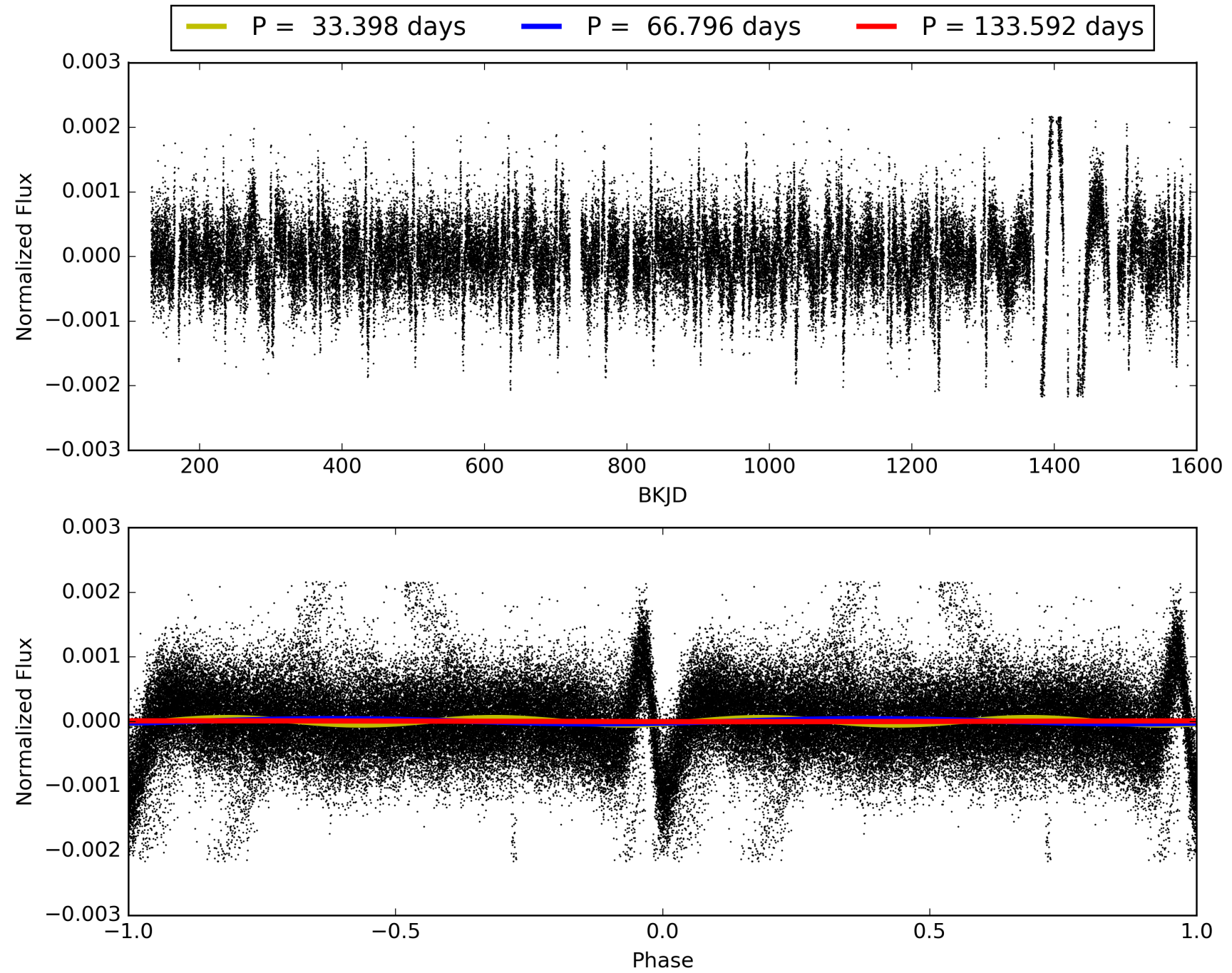
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:43:50 Z

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

# TCE 006042423-01, PDC Light Curves

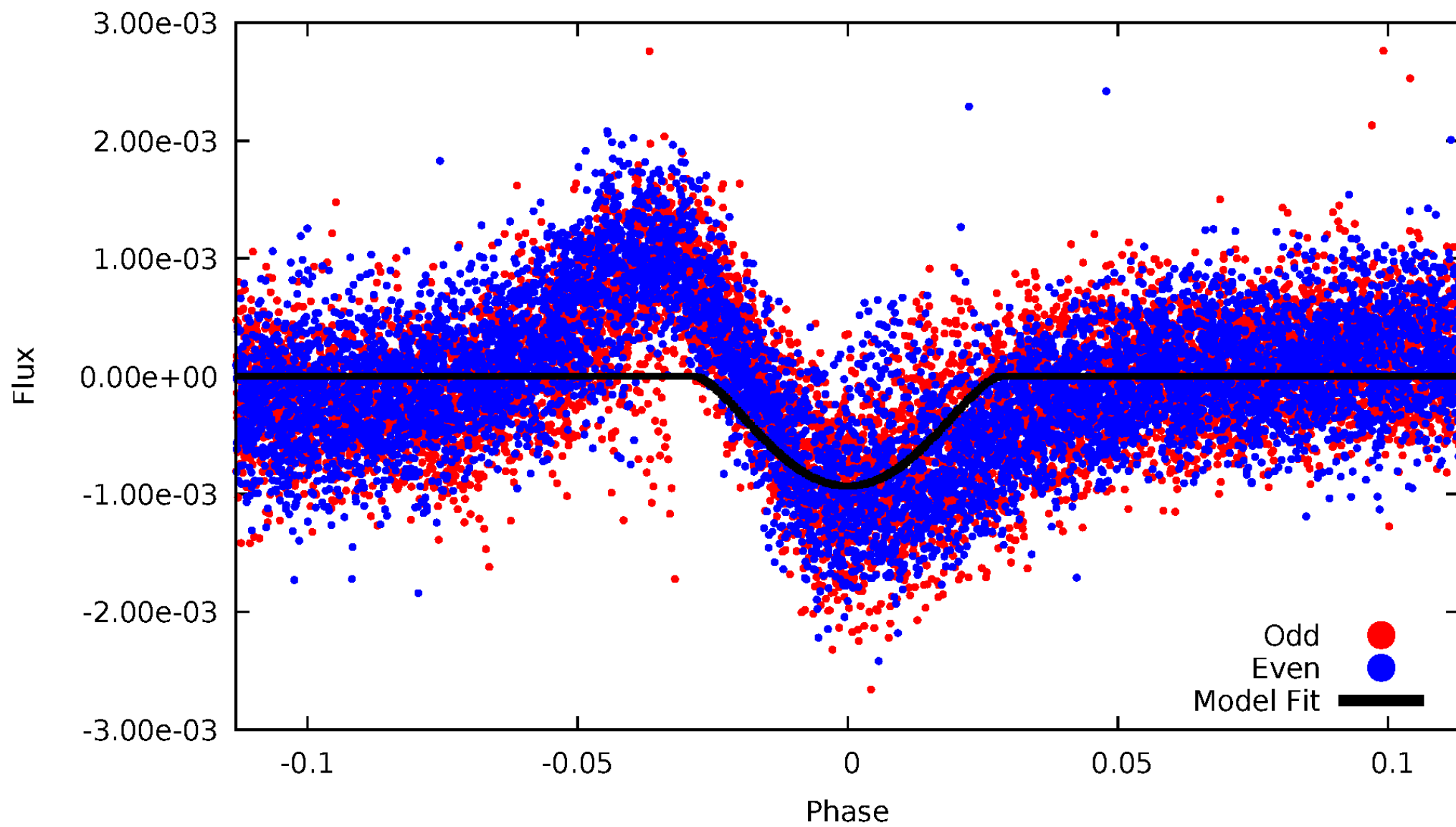


TCE 006042423-01



# DV Odd/Even

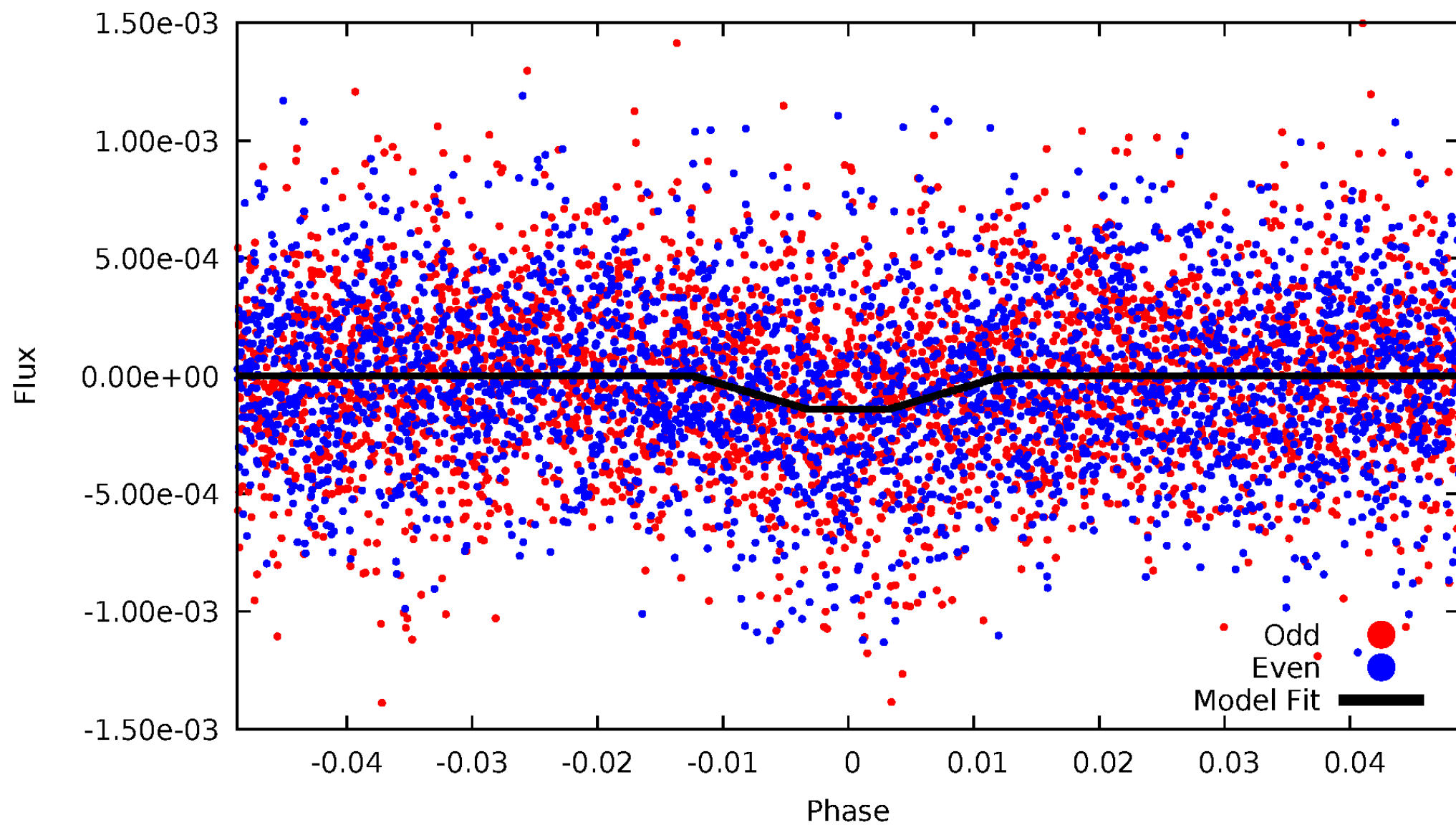
TCE 006042423-01





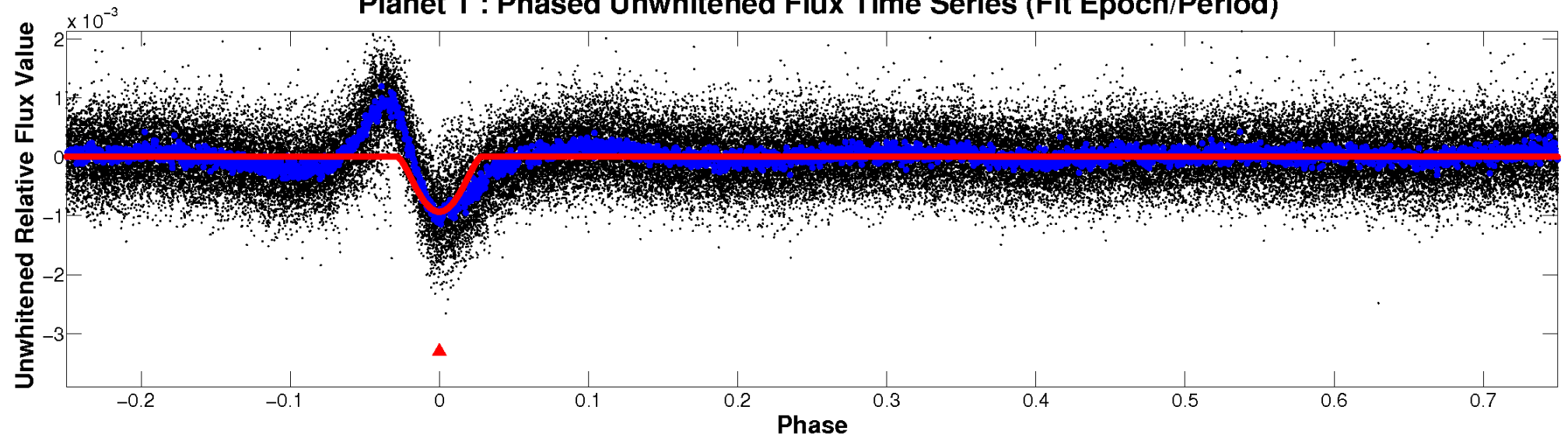
# ALT Odd/Even

TCE 006042423-01

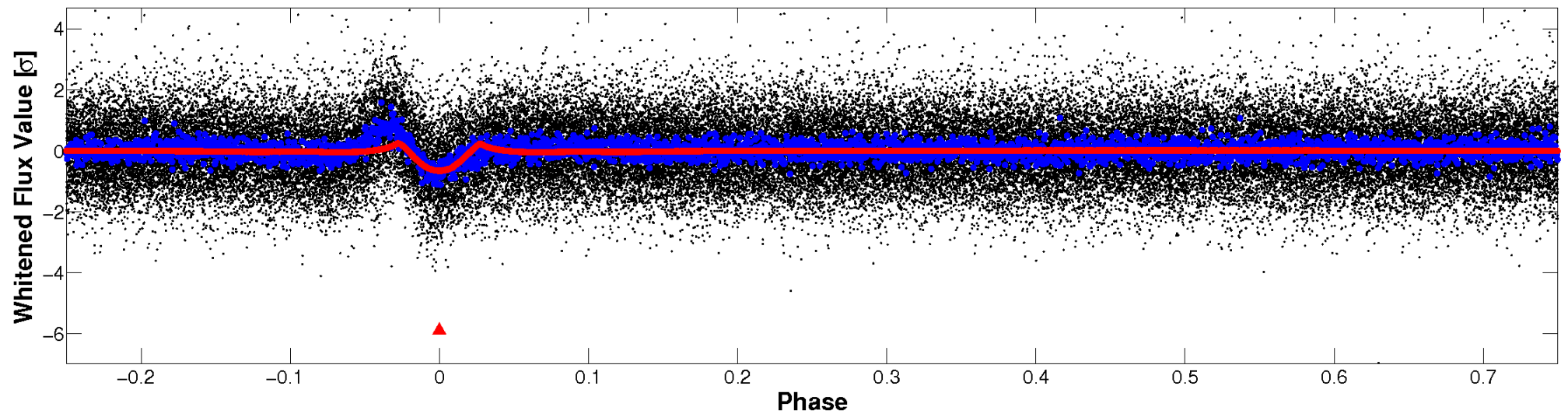


# Non-Whitened Vs. Whitened Light Curve

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

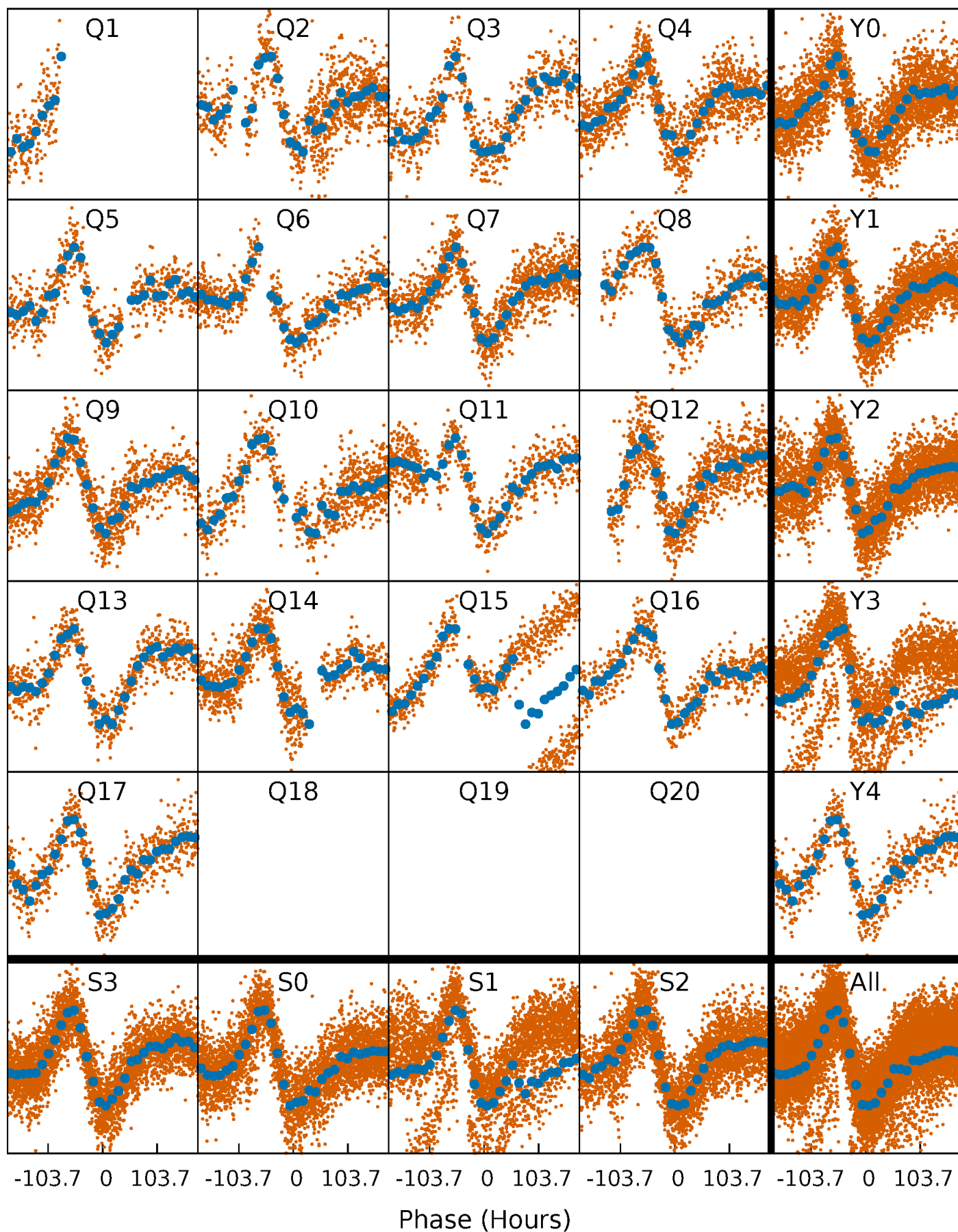


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

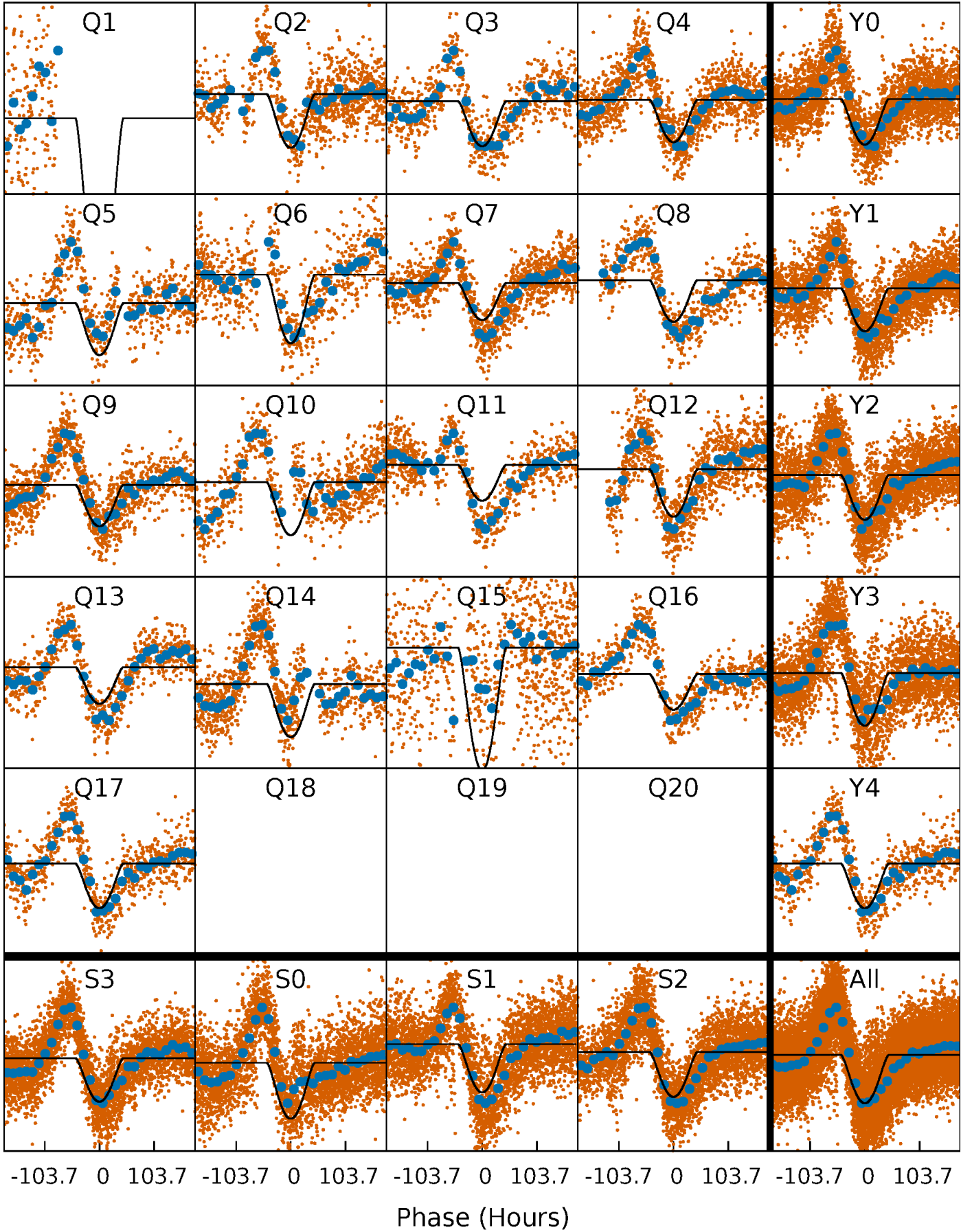
TCE 006042423-01 P= 66.796101 Days  $T_0=168.389700$  (BKJD)





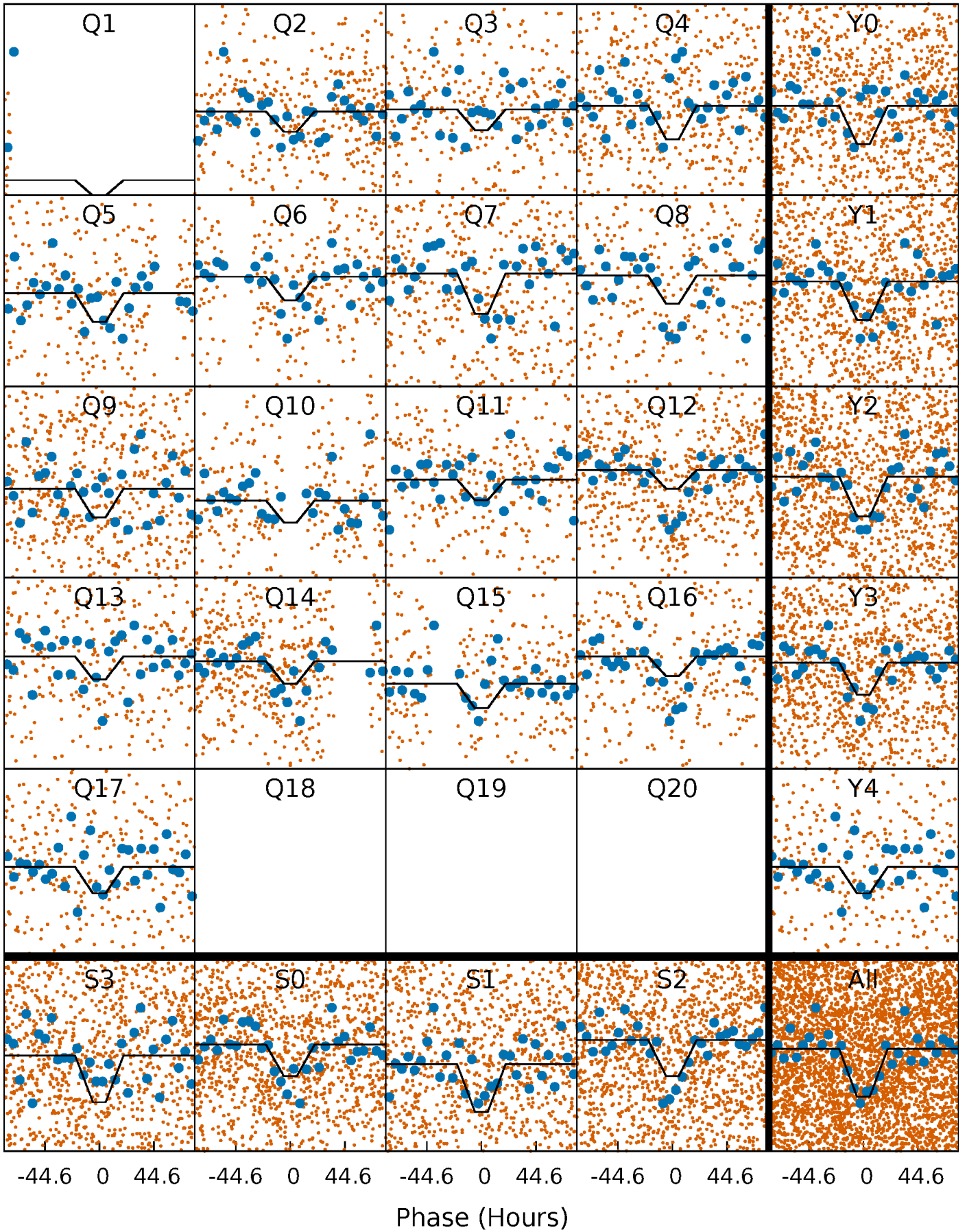
# DV Quarter-Phased Transit Curves

TCE 006042423-01 P= 66.796101 Days  $T_0=168.389700$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

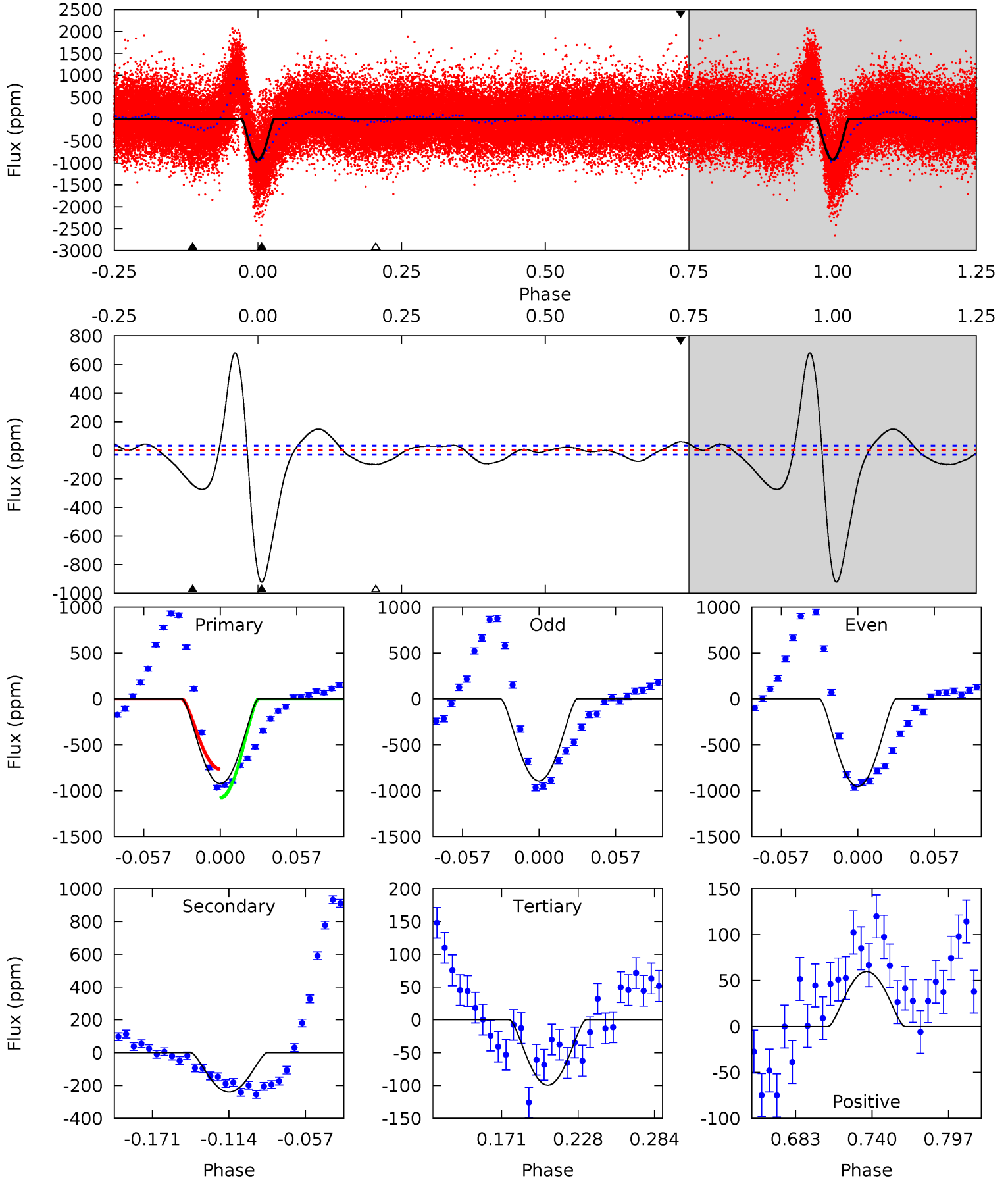
TCE 006042423-01 P= 66.793431 Days  $T_0=167.993241$  (BKJD)



# DV Model-Shift Uniqueness Test

006042423-01, P = 66.796101 Days, E = 101.593599 Days

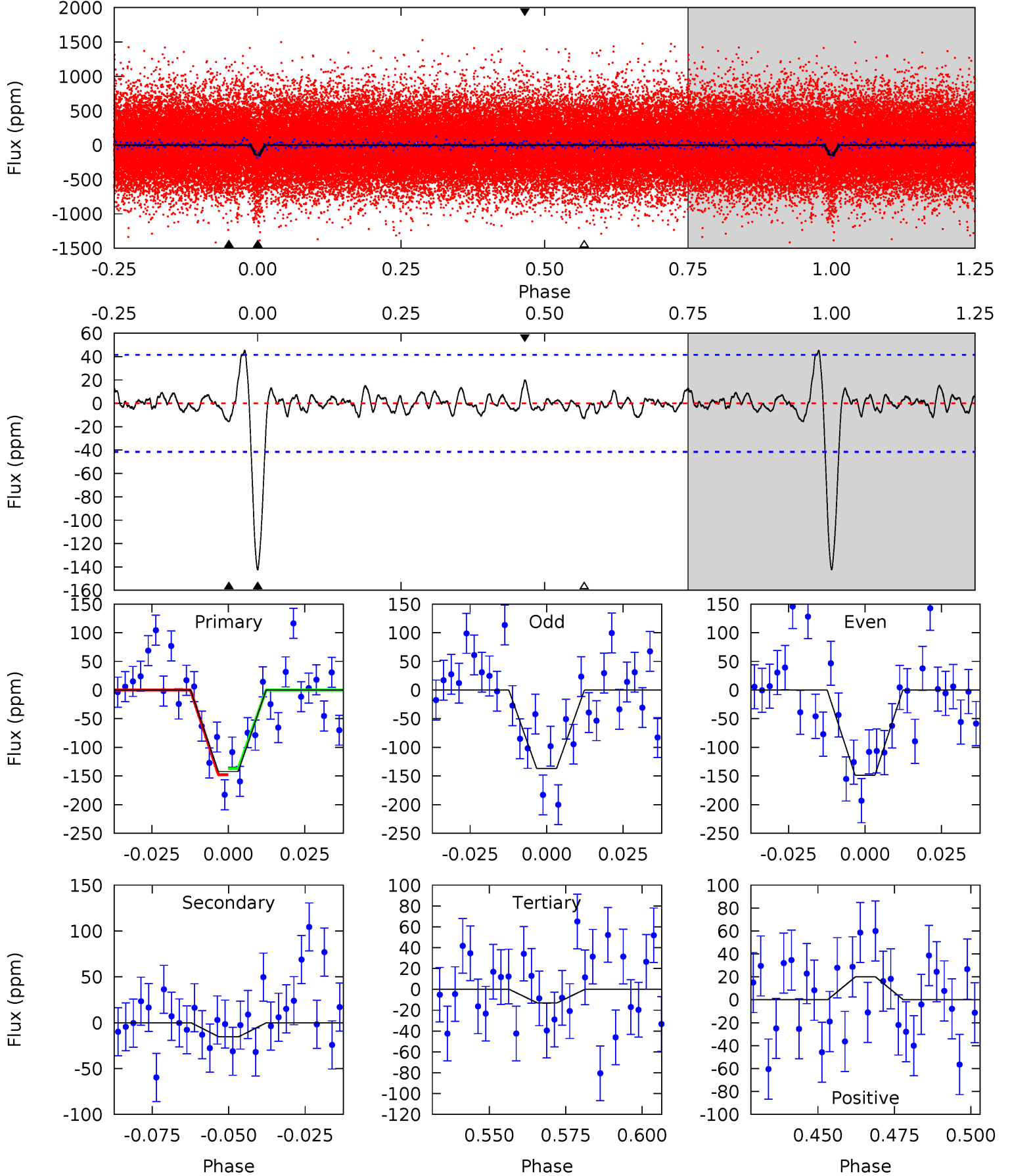
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
136.6	35.5	14.7	8.84	4.68	1.90	9.97	121.8	127.7	20.8	26.7	4.60	0.81	0.42	22.7



# Alt Model-Shift Uniqueness Test

006042423-01, P = 66.793431 Days, E = 101.199810 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
16.6	1.79	1.52	2.34	4.85	2.24	0.65	15.1	14.3	0.28	-0.55	0.67	1.31	0.24	0.61



### Stellar Parameters For KIC 006042423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4825^{+146}_{-131}$	$4.566^{+0.065}_{-0.035}$	$-0.120^{+0.300}_{-0.300}$	$0.726^{+0.056}_{-0.068}$	$0.709^{+0.081}_{-0.054}$	$2.610^{+0.705}_{-0.357}$
	+3%/-3%	+1%/-1%	+250%/-250%	+8%/-9%	+11%/-8%	+27%/-14%
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 006042423-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-240 \pm 7$	$4.84^{+2.89}_{-2.64}$	$471^{+15}_{-17}$	$3038^{+863}_{-363}$	$471^{+1808}_{-282}$
Alt.	$-15 \pm 9$	$2.53^{+2.22}_{-1.80}$	$472^{+16}_{-18}$	$2468^{+1050}_{-407}$	$100^{+1120}_{-81}$

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



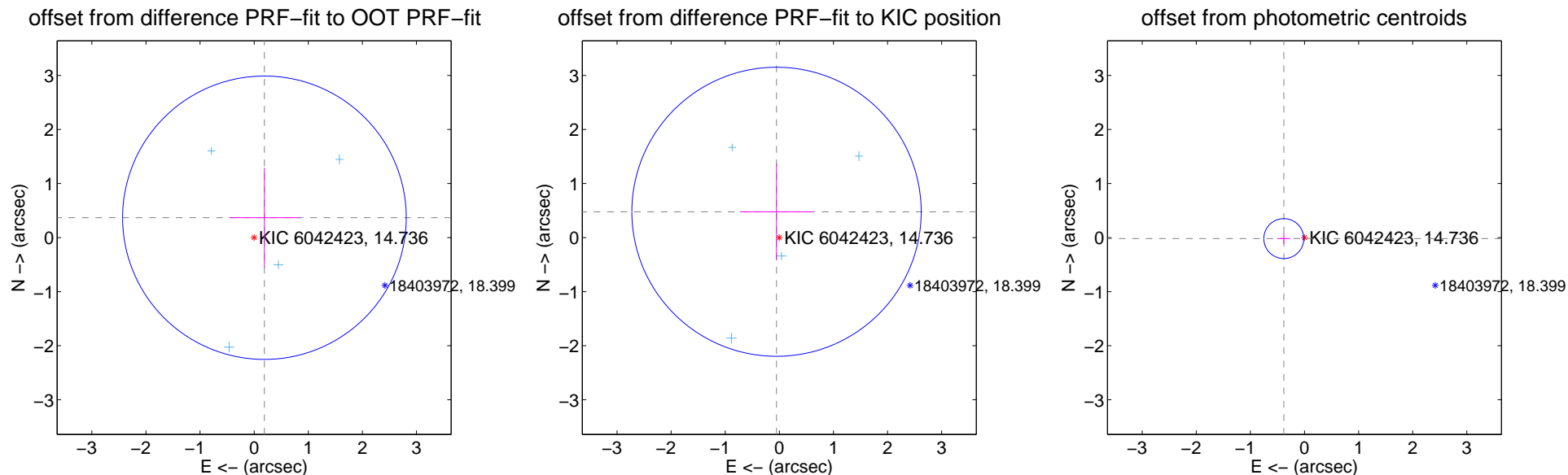
## DV Centroid Data

Supplemental centroid analysis for 006042423-01. Kepler magnitude: 14.74. Transit SNR 25.58

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.413 \pm 0.874$	0.47	$-0.190 \pm 0.652$	$0.367 \pm 0.924$
PRF-fit source offset from KIC position	$0.480 \pm 0.891$	0.54	$0.052 \pm 0.672$	$0.477 \pm 0.894$
photometric centroid source offset	$0.38 \pm 0.12$	3.11	$0.38 \pm 0.12$	$-0.02 \pm 0.10$



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.

Q1 no difference image



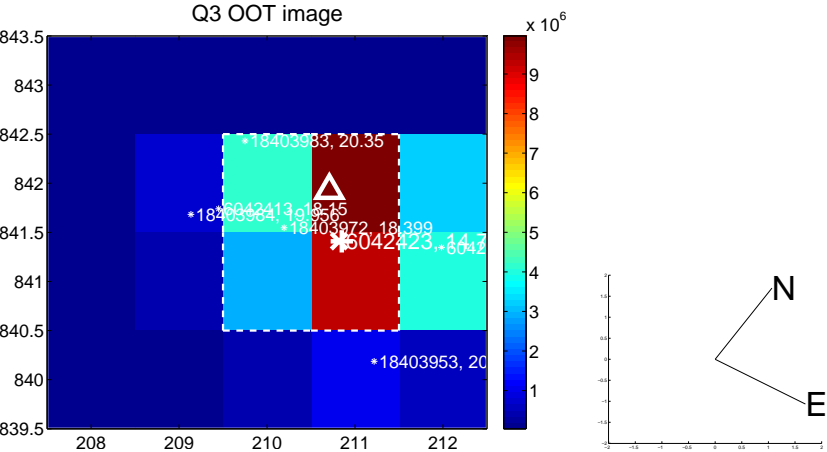
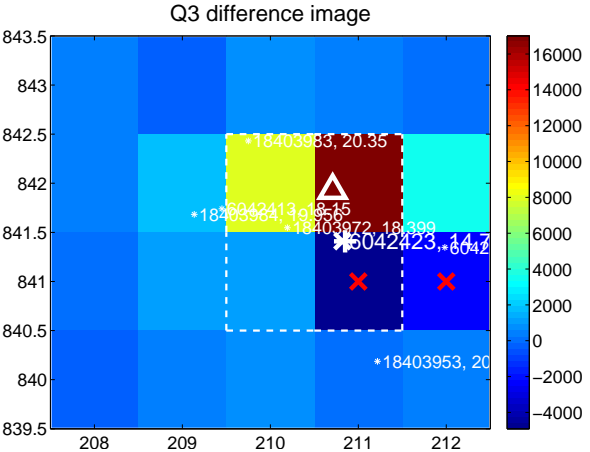
Q1 no OOT image



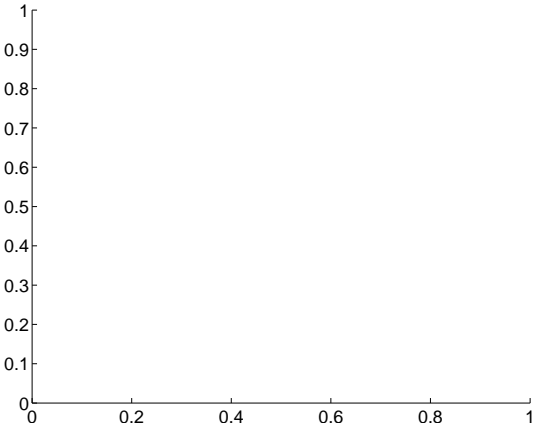
Q2 no difference image



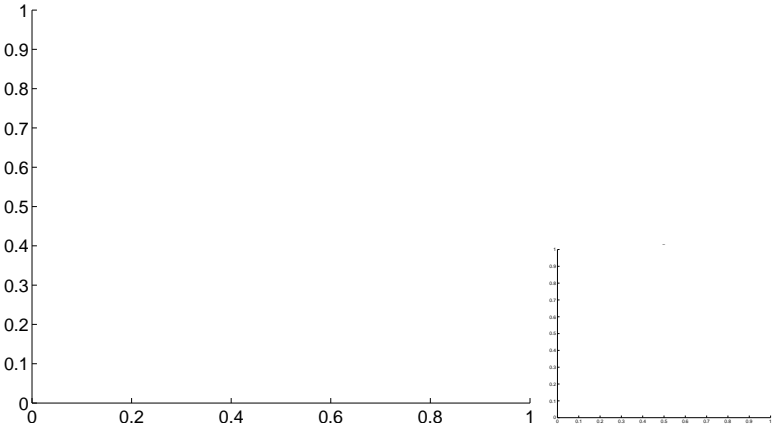
Q2 no OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



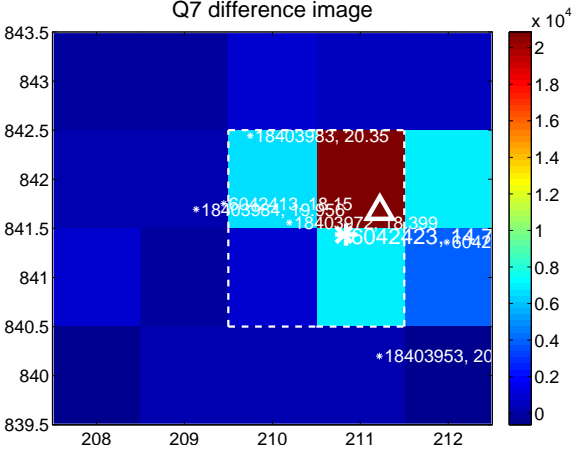
Q6 no difference image



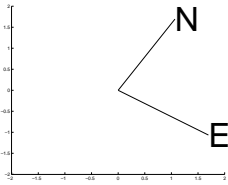
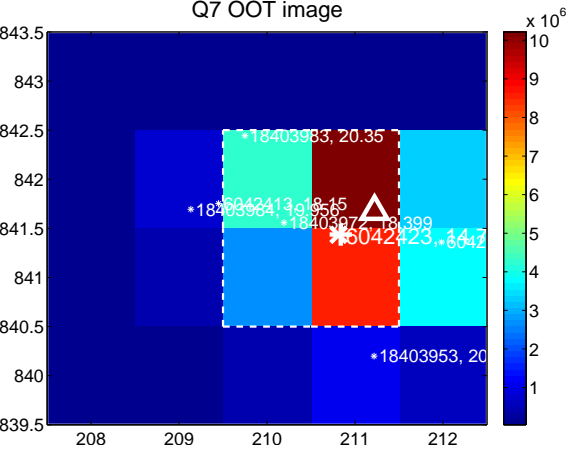
Q6 no OOT image



Q7 difference image



Q7 OOT image



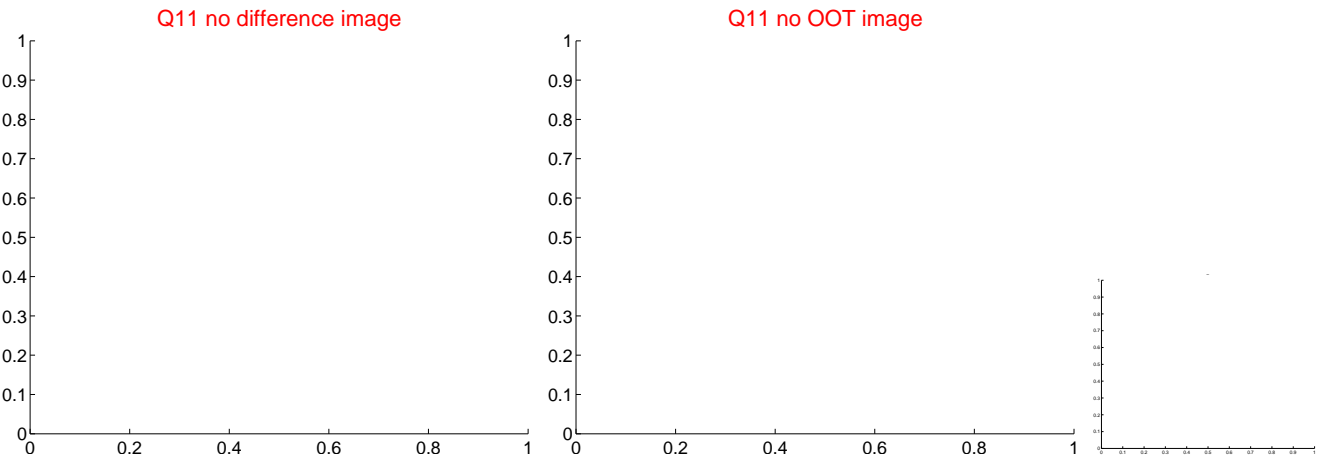
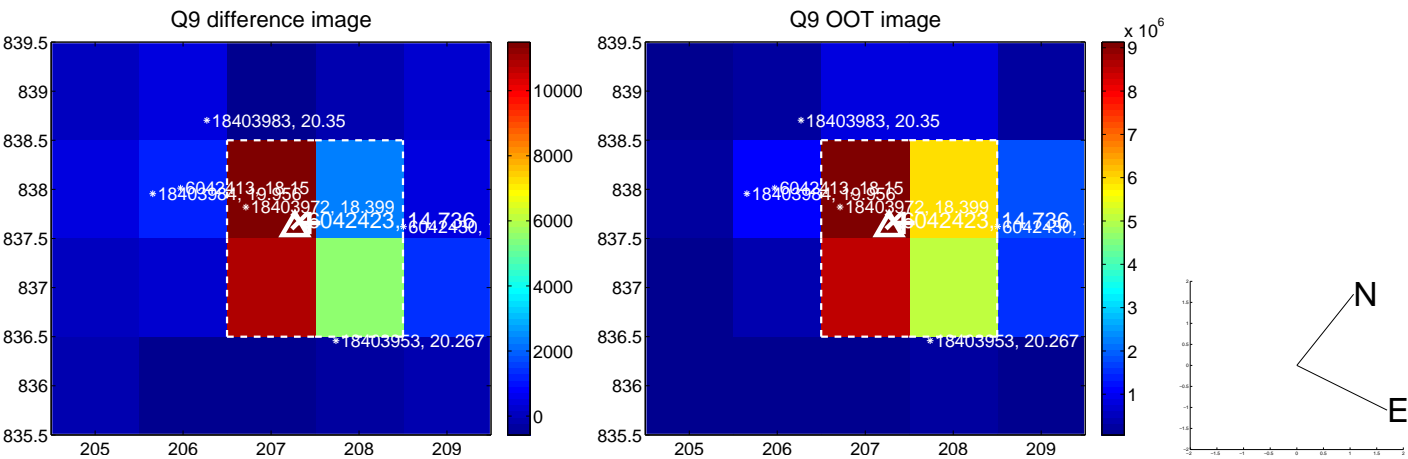
Q8 no difference image



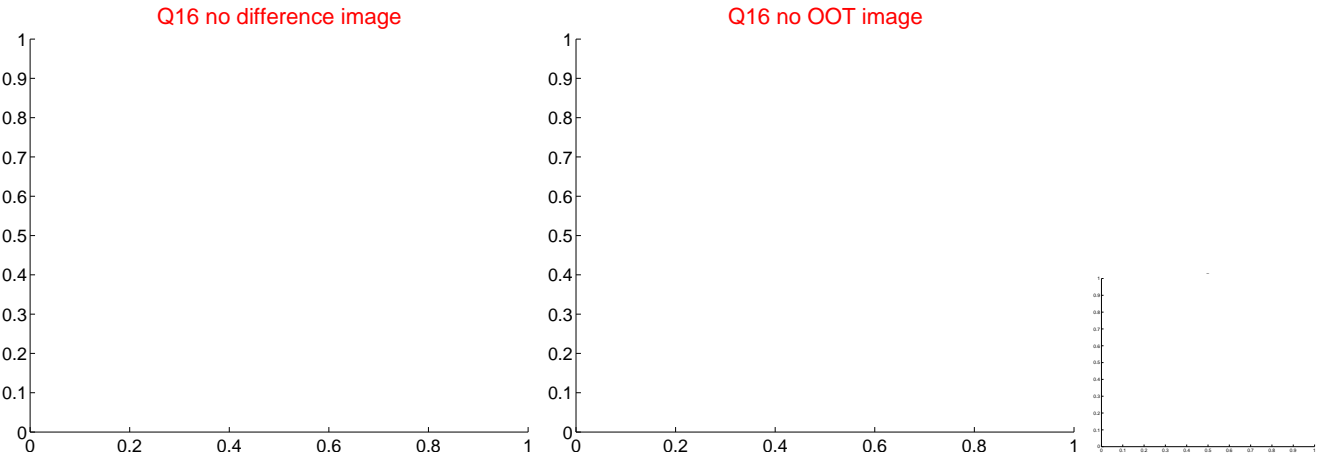
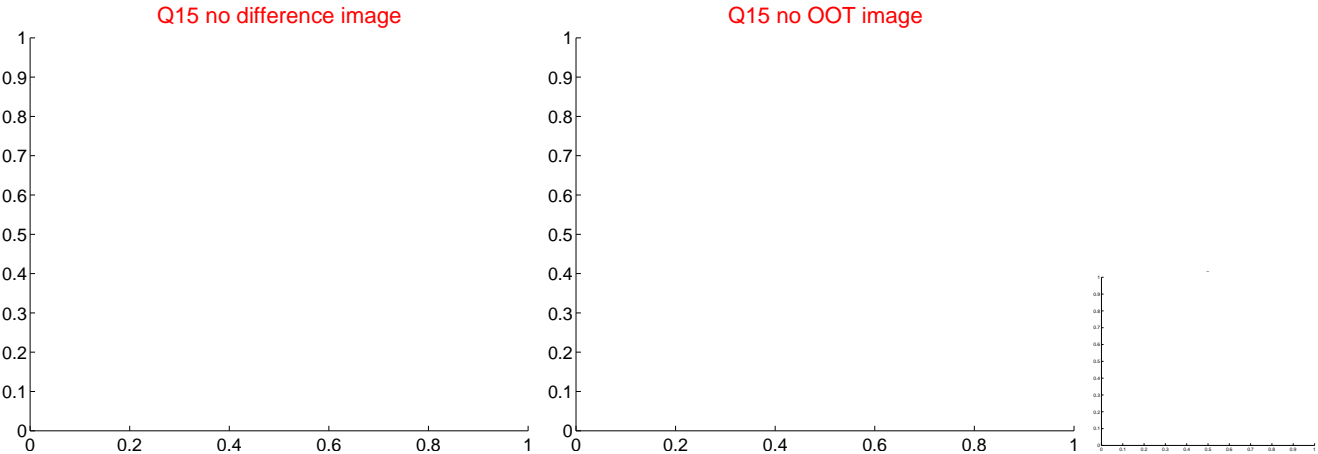
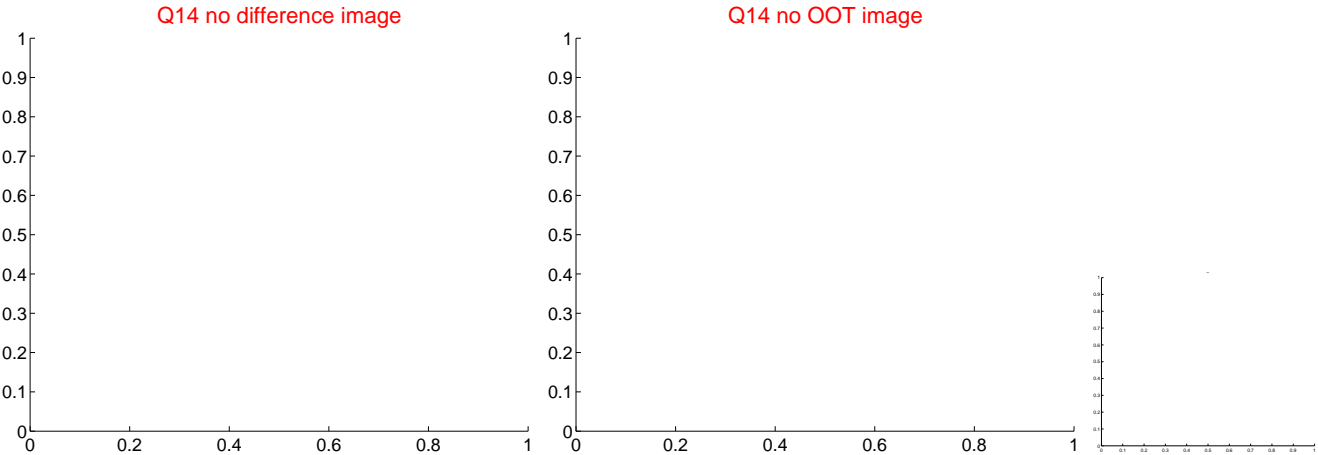
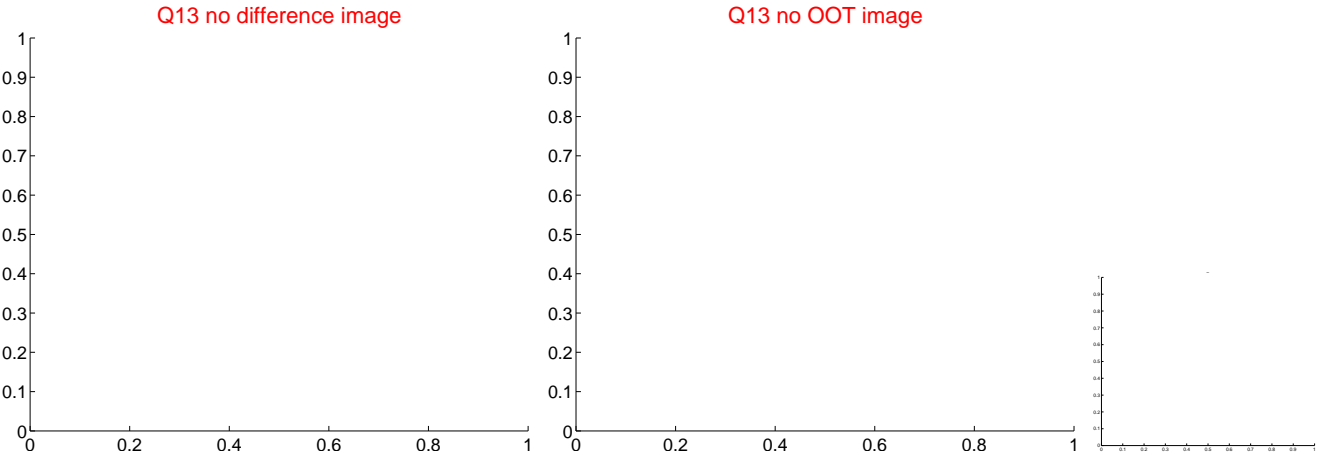
Q8 no OOT image



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

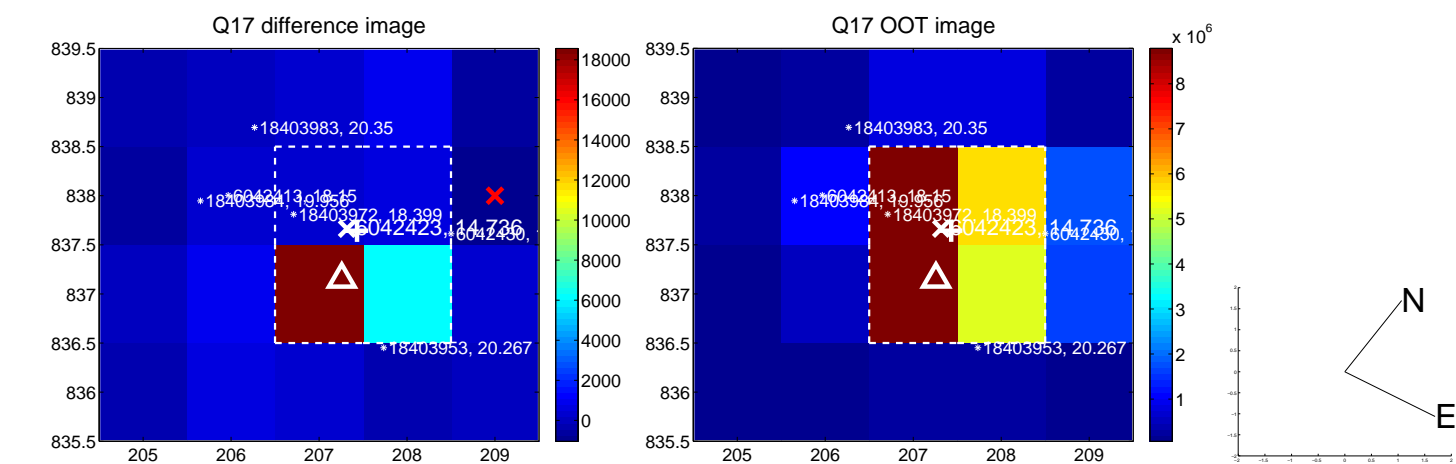


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

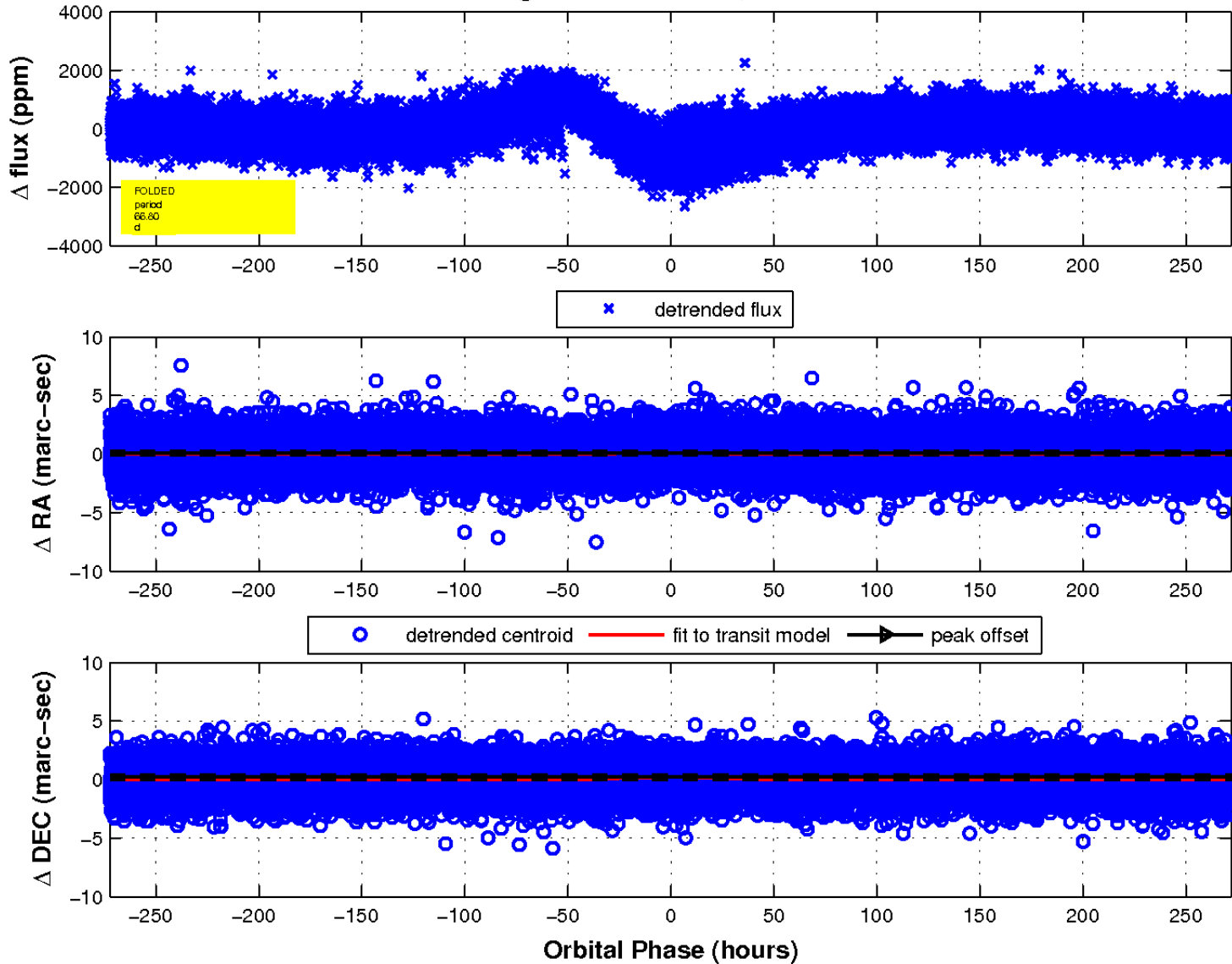




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



### fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

