

# KIC 010680424

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010680424-01	OBS	7361.01	0.926235	131.725612	340.3	1.474	7.7	7.9	0.59	4494	1.32	503.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010680424-01	OBS	PC	1.00	0	0	0	0	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.

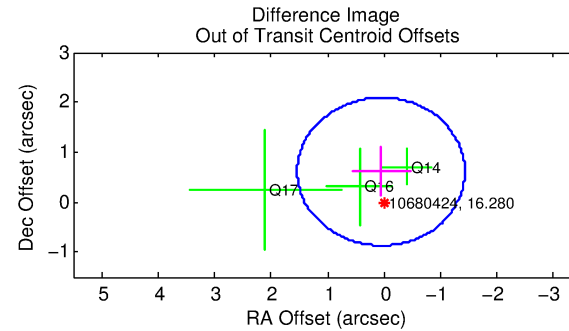
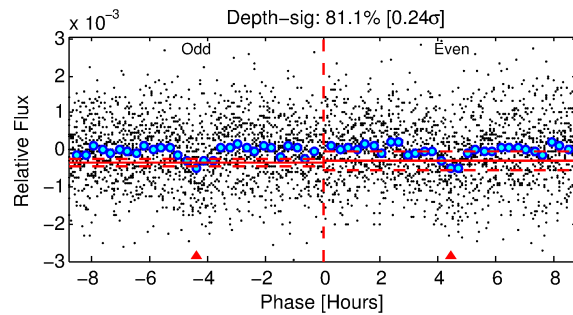
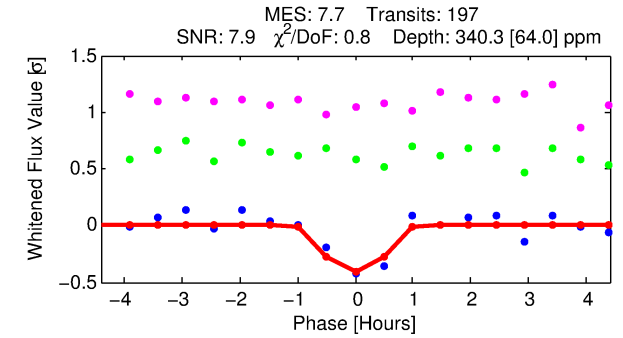
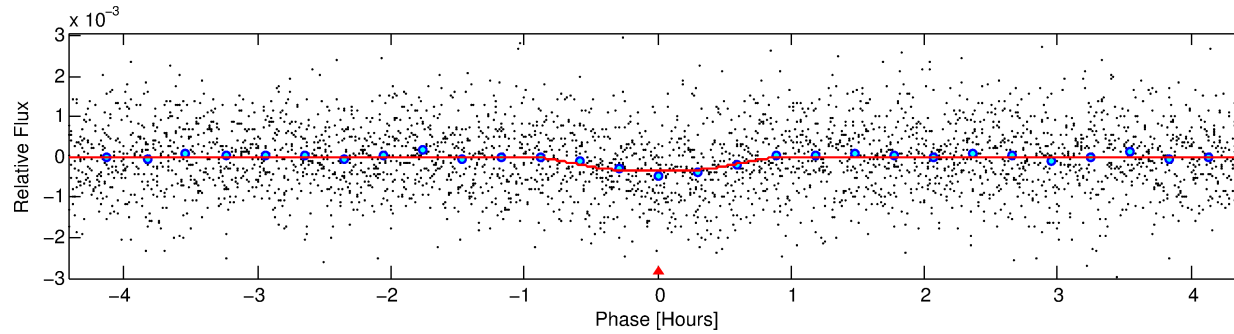
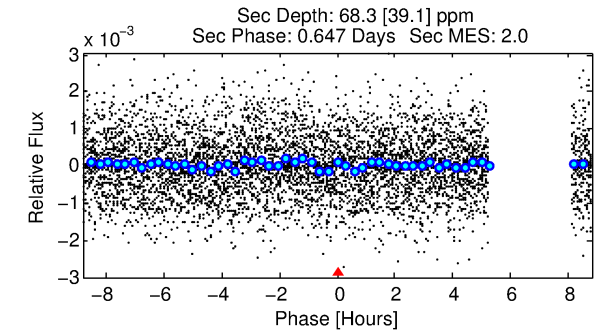
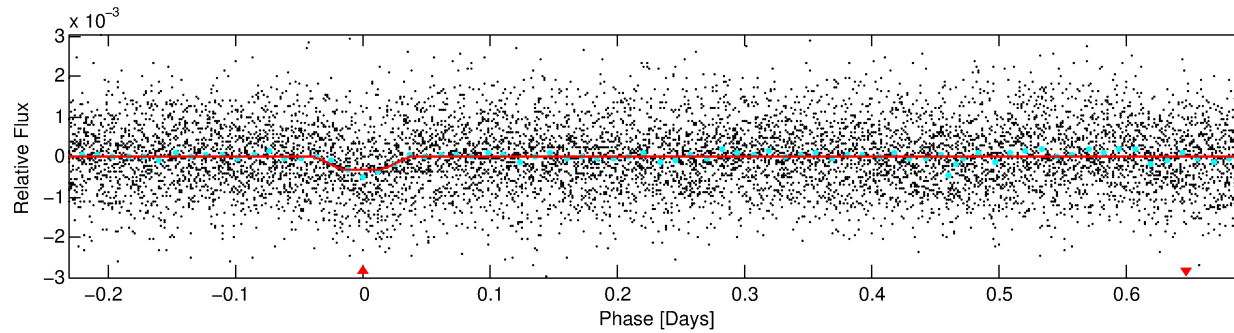
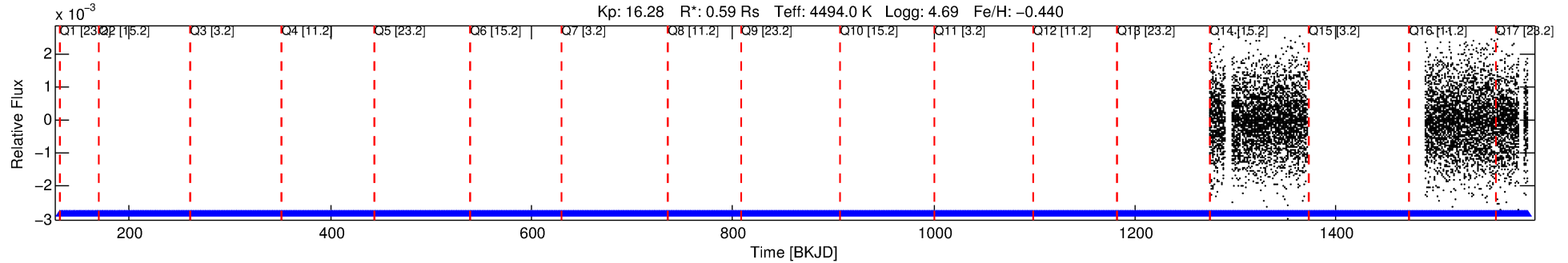
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010680424-01

No Significant Match Found

# DV One-Page Summary

KIC: 10680424 Candidate: 1 of 1 Period: 0.926 d  
KOI: K07361.01 Corr: 0.920



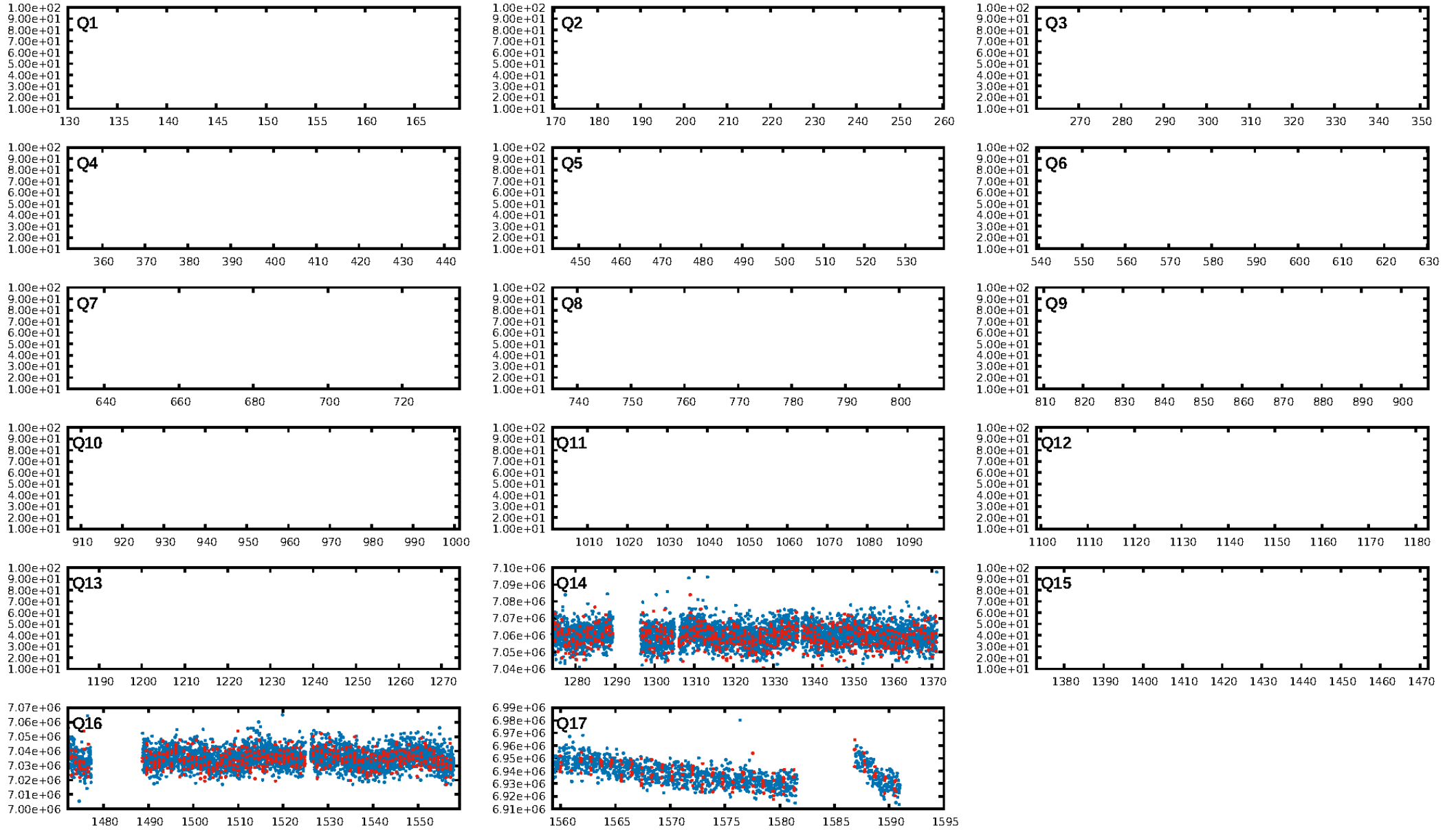
## DV Fit Results:

Period = 0.92623 [0.00001] d  
Epoch = 131.7256 [0.0029] BKJD  
Rp/R\* = 0.0206 [0.0279]  
a/R\* = 2.58 [11.15]  
b = 0.89 [1.25]  
Seff = 503.72 [89.82]  
Teq = 1208 [54] K  
Rp = 1.33 [1.81] Re  
a = 0.0159 [0.0013] AU  
Ag = 5.42 [15.07] [0.29σ]  
Teffp = 2850 [1981] K [0.83σ]

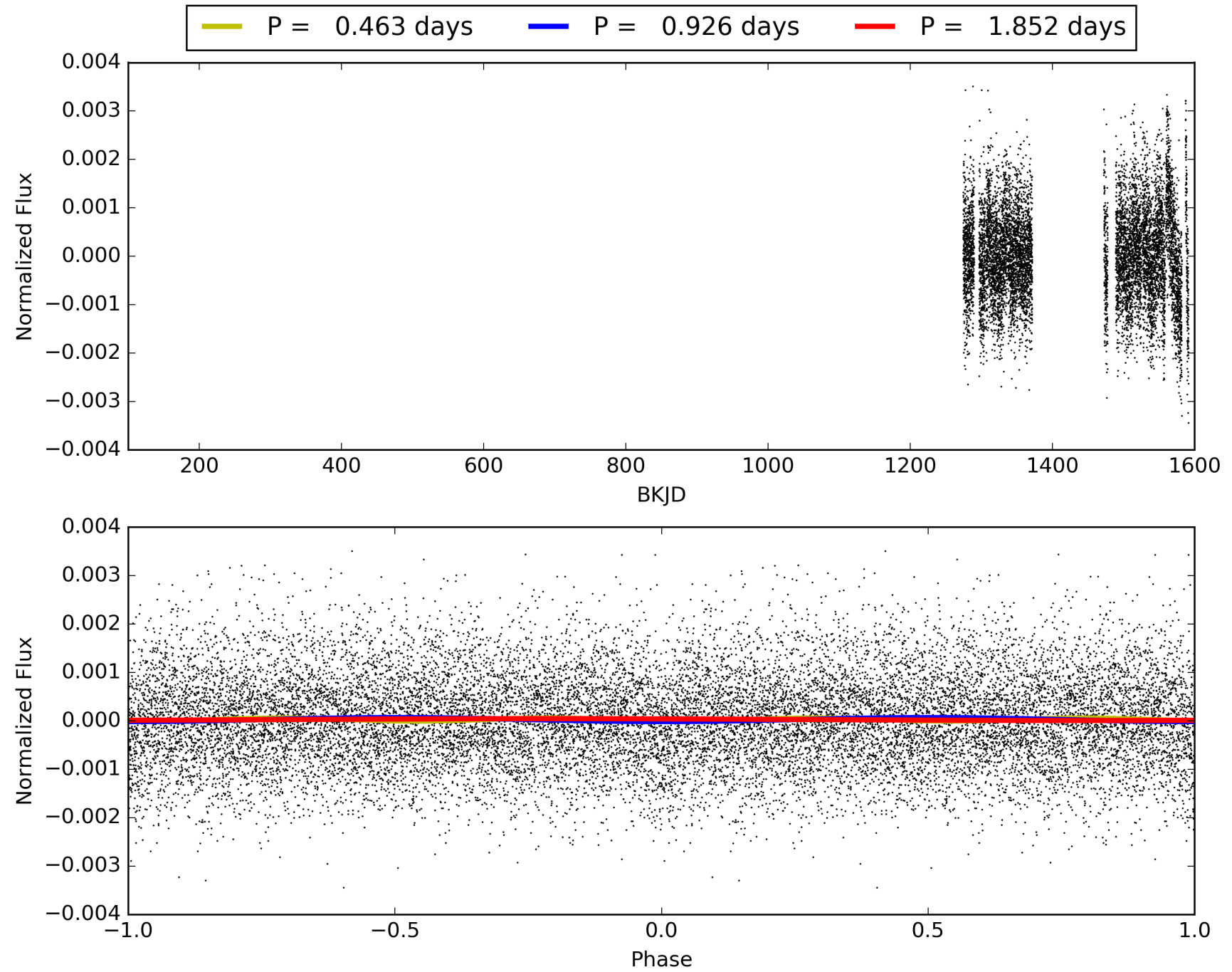
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.91e-15  
RollingBand-fgt: 1.00 [169/169]  
**GhostDiagnostic-chr: 0.7776**  
Centroid-sig: N/A  
Centroid-so: 1.131 arcsec [0.55σ]  
OotOffset-rm: 0.612 arcsec [1.24σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.589 arcsec [1.19σ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 010680424-01, PDC Light Curves

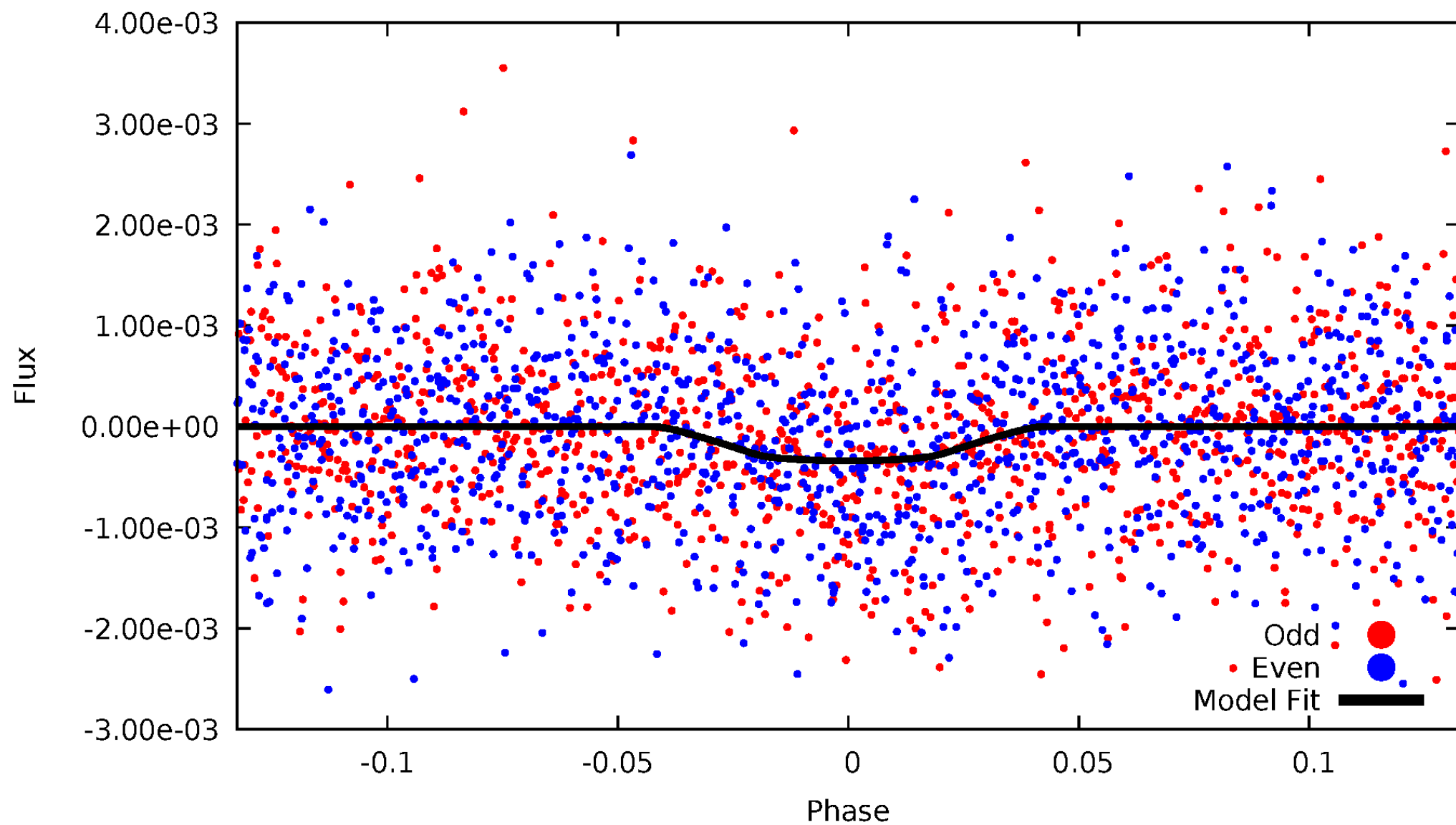


# TCE 010680424-01



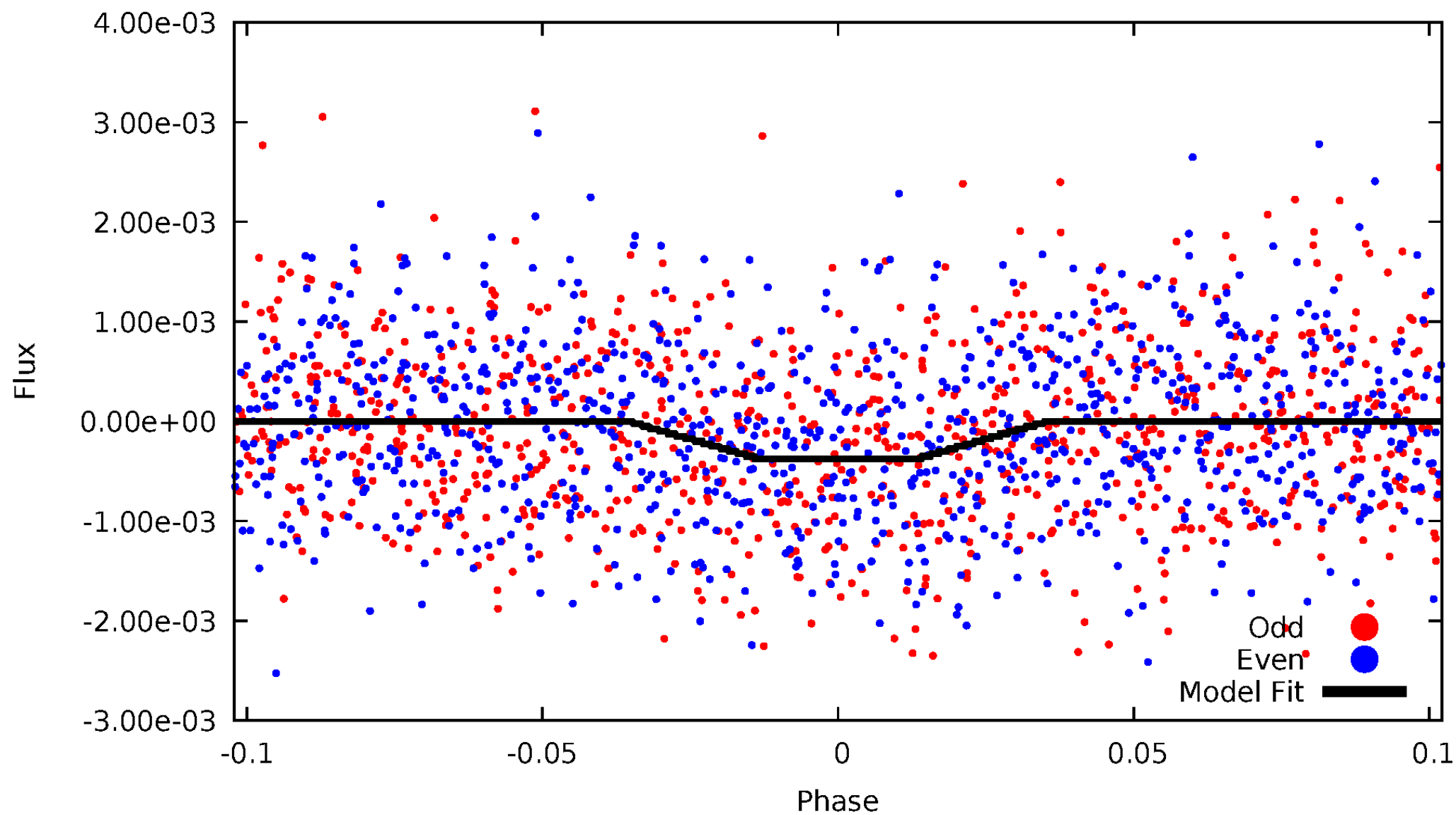
# DV Odd/Even

TCE 010680424-01



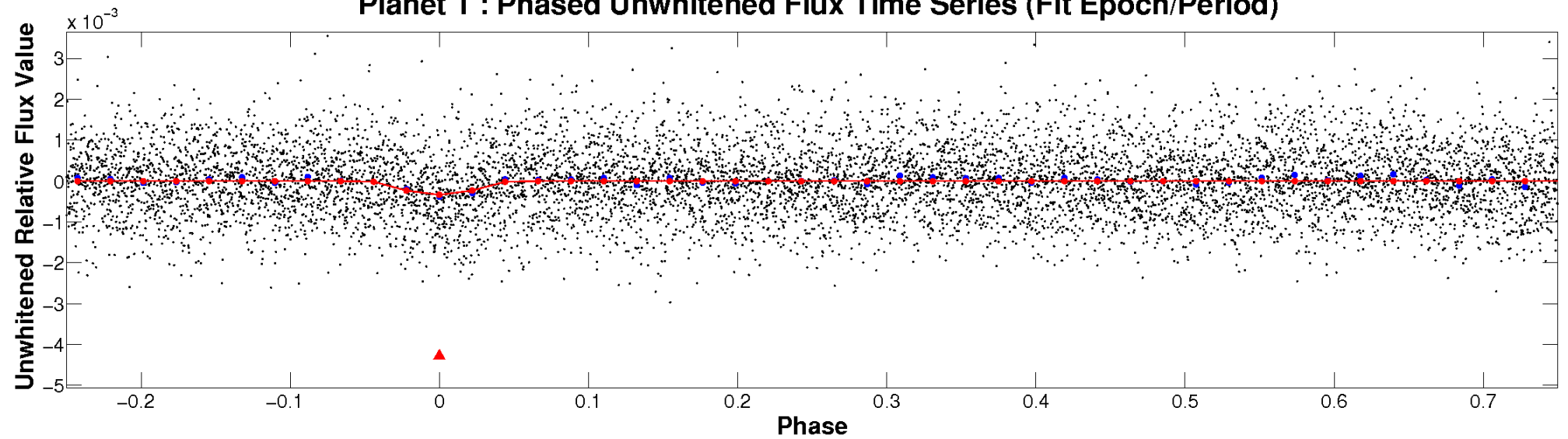
# ALT Odd/Even

TCE 010680424-01

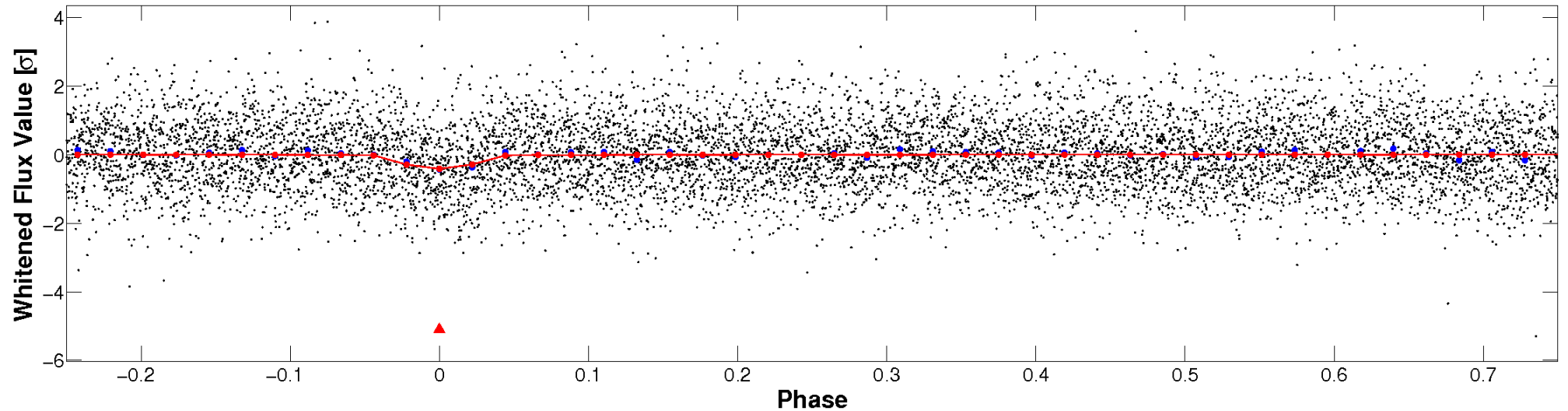


# Non-Whitened Vs. Whitened Light Curve

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

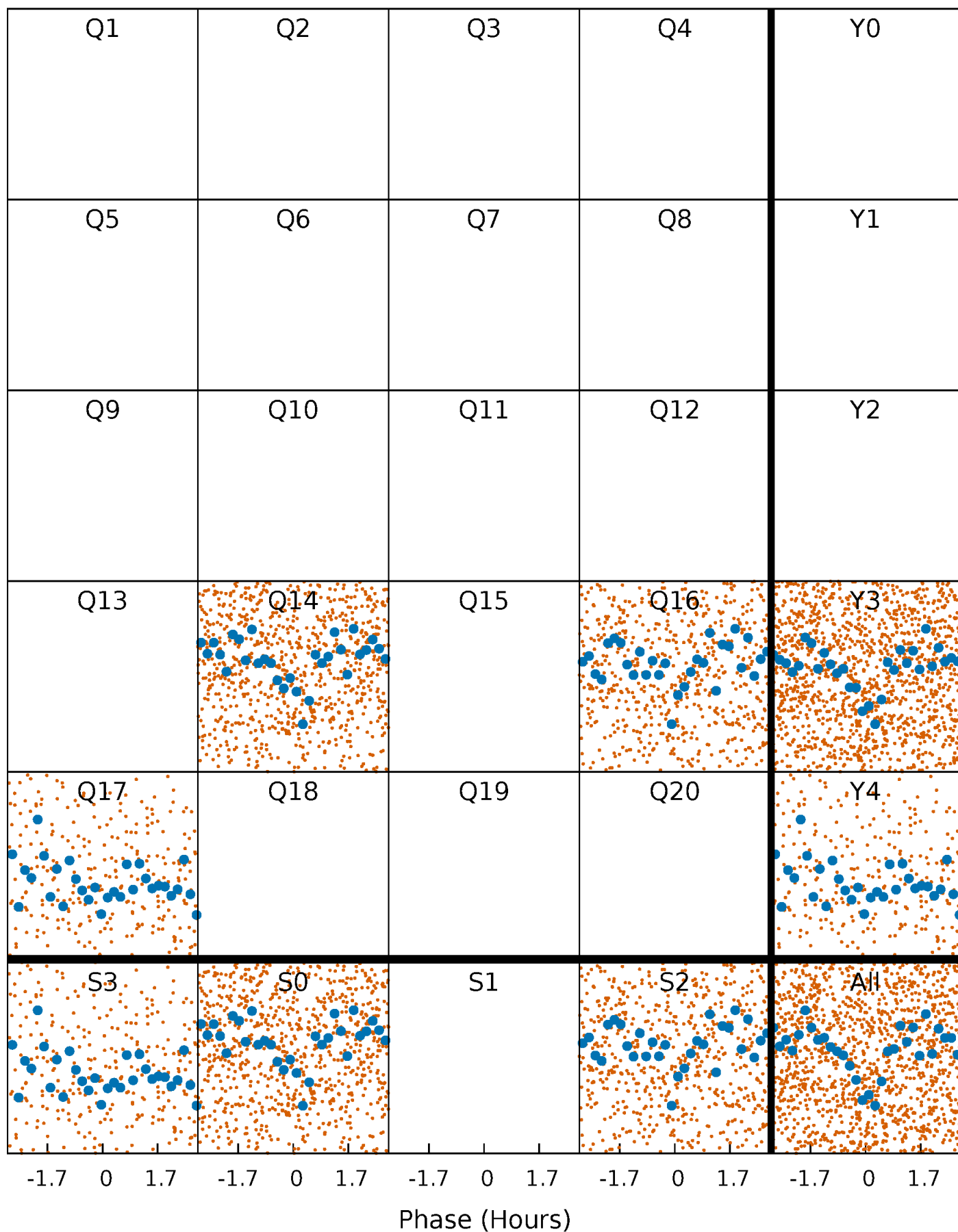


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

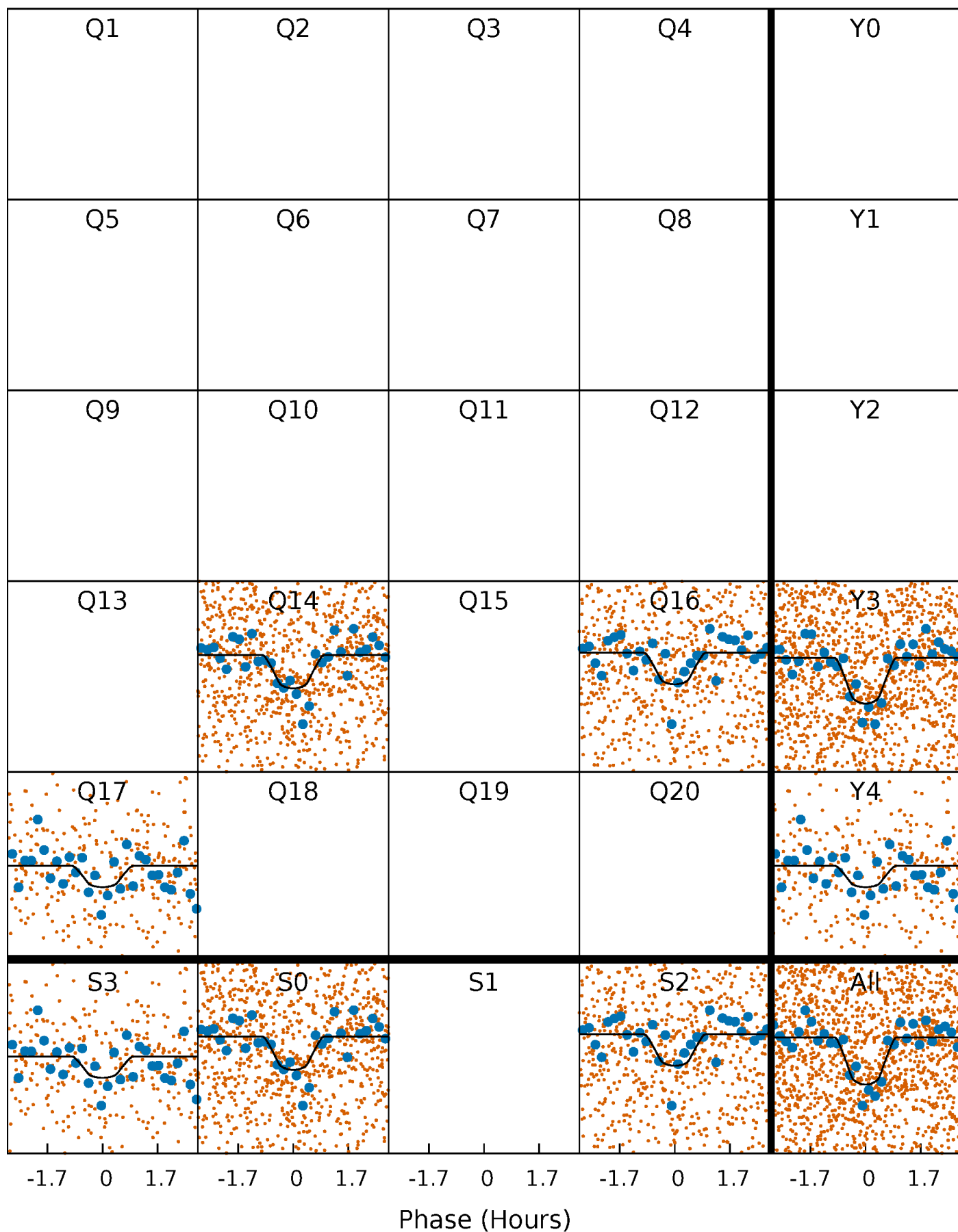
TCE 010680424-01   P= 0.926235 Days    $T_0=131.725612$  (BKJD)





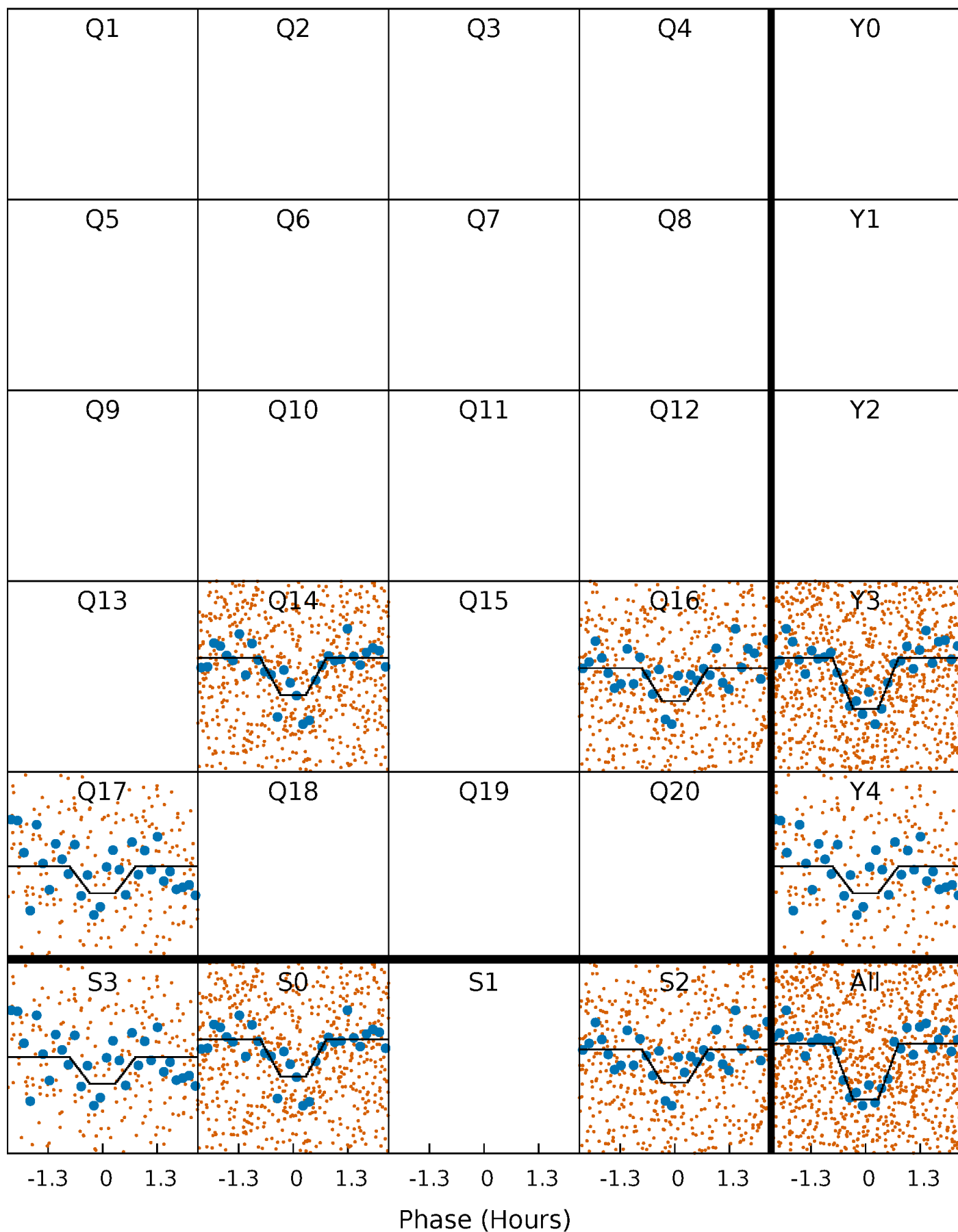
# DV Quarter-Phased Transit Curves

TCE 010680424-01   P= 0.926235 Days    $T_0=131.725612$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

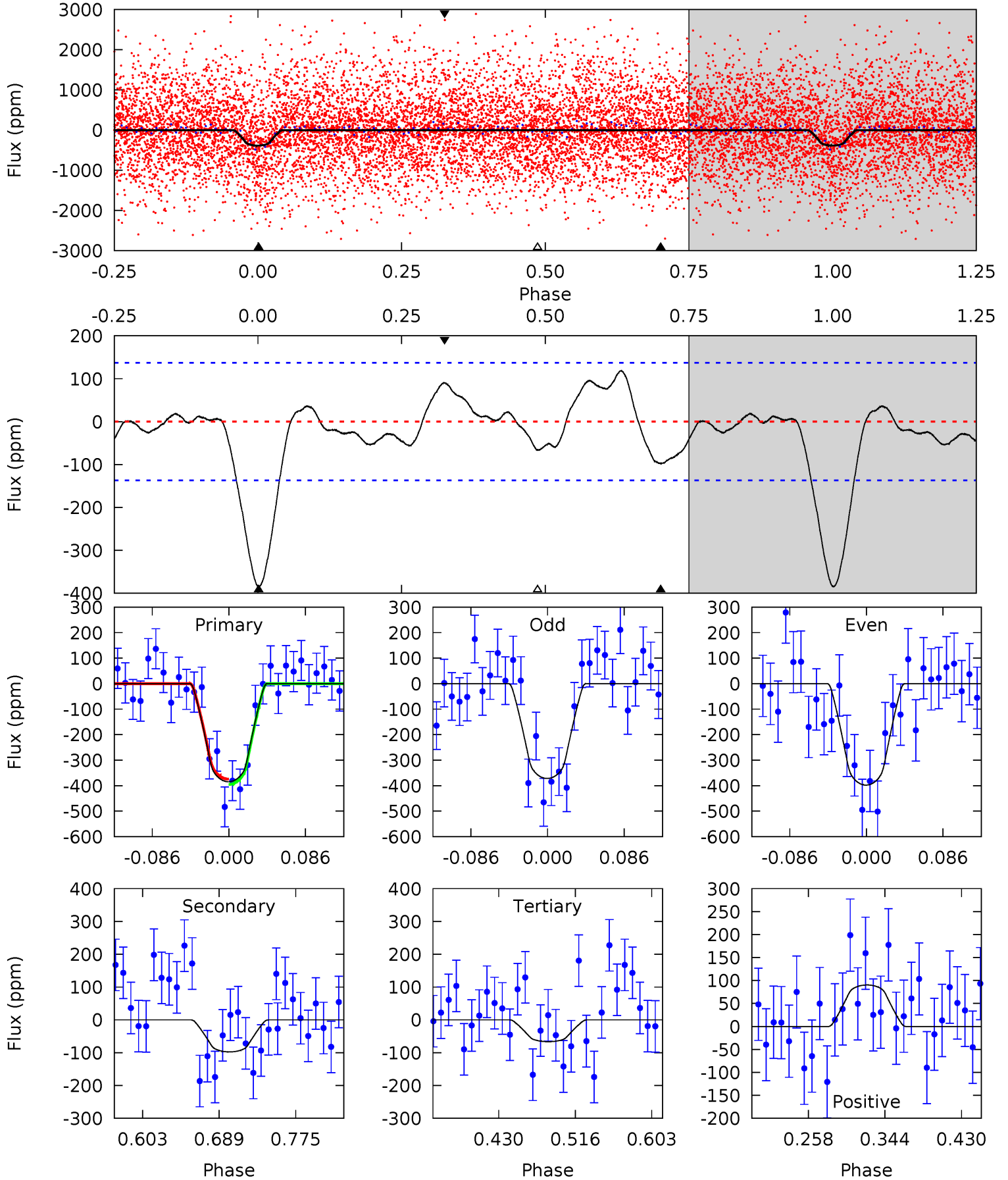
TCE 010680424-01 P= 0.926246 Days  $T_0=131.711907$  (BKJD)



# DV Model-Shift Uniqueness Test

010680424-01, P = 0.926235 Days, E = 131.725612 Days

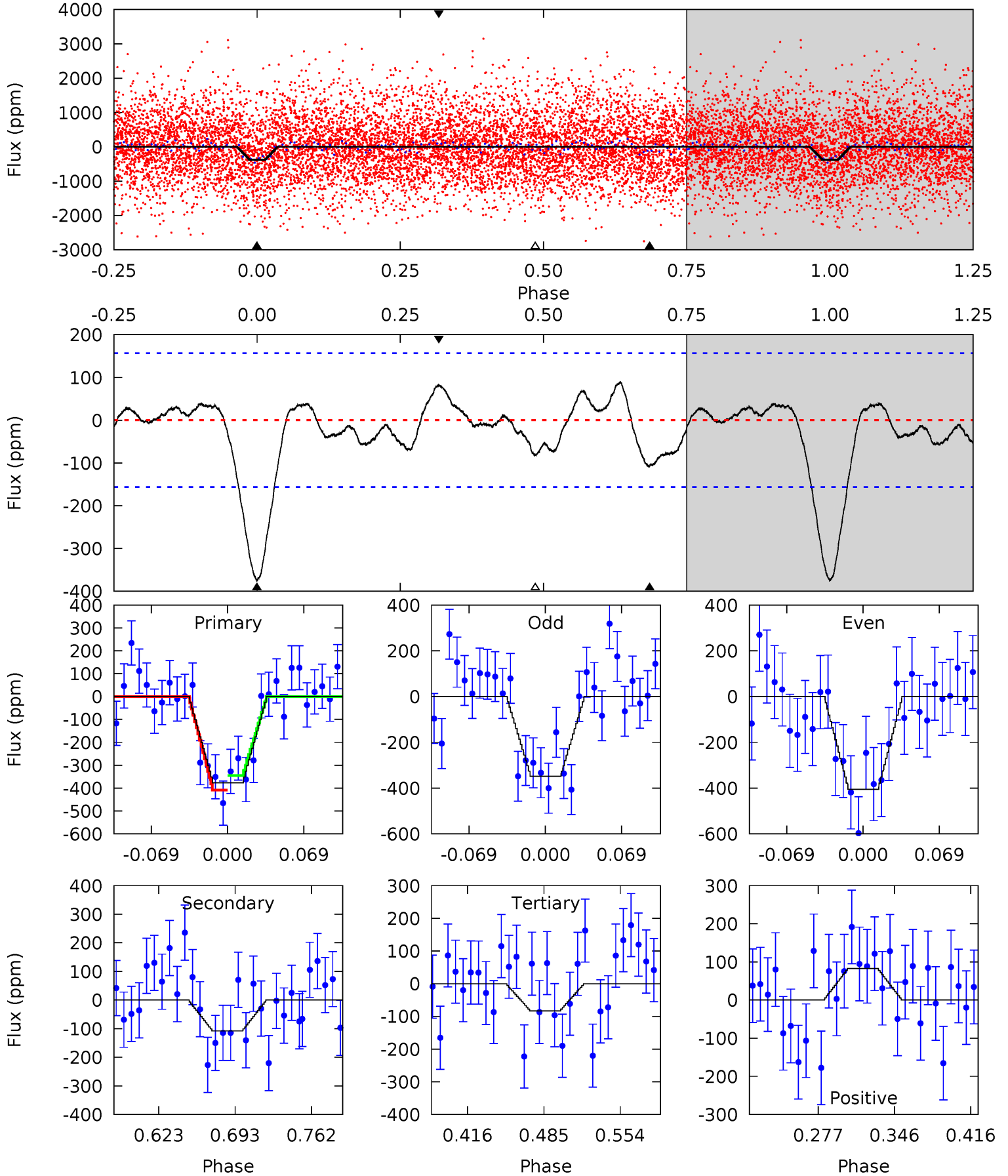
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	3.28	2.23	3.03	4.60	1.72	1.46	10.7	9.88	1.05	0.25	0.44	0.97	0.24	0.35



# Alt Model-Shift Uniqueness Test

010680424-01, P = 0.926246 Days, E = 131.711907 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
11.2	3.20	2.46	2.46	4.64	1.82	1.12	8.71	8.71	0.74	0.74	0.85	0.90	0.19	0.94



### Stellar Parameters For KIC 010680424

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4494^{+161}_{-161}$	$4.692^{+0.032}_{-0.052}$	$-0.440^{+0.300}_{-0.300}$	$0.591^{+0.062}_{-0.047}$	$0.632^{+0.060}_{-0.060}$	$4.315^{+0.683}_{-0.853}$
	+4%/-4%	+1%/-1%	+68%/-68%	+10%/-8%	+9%/-9%	+16%/-20%
Source	KIC0	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 010680424-01 / KOI 7361.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-98 \pm 30$	$1.97^{+1.77}_{-1.28}$	$1698^{+71}_{-65}$	$3068^{+1322}_{-591}$	$3.616^{+26.502}_{-2.657}$
Alt.	$-108 \pm 34$	$1.82^{+1.57}_{-1.18}$	$1703^{+67}_{-69}$	$3162^{+1341}_{-561}$	$4.160^{+27.503}_{-2.948}$

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

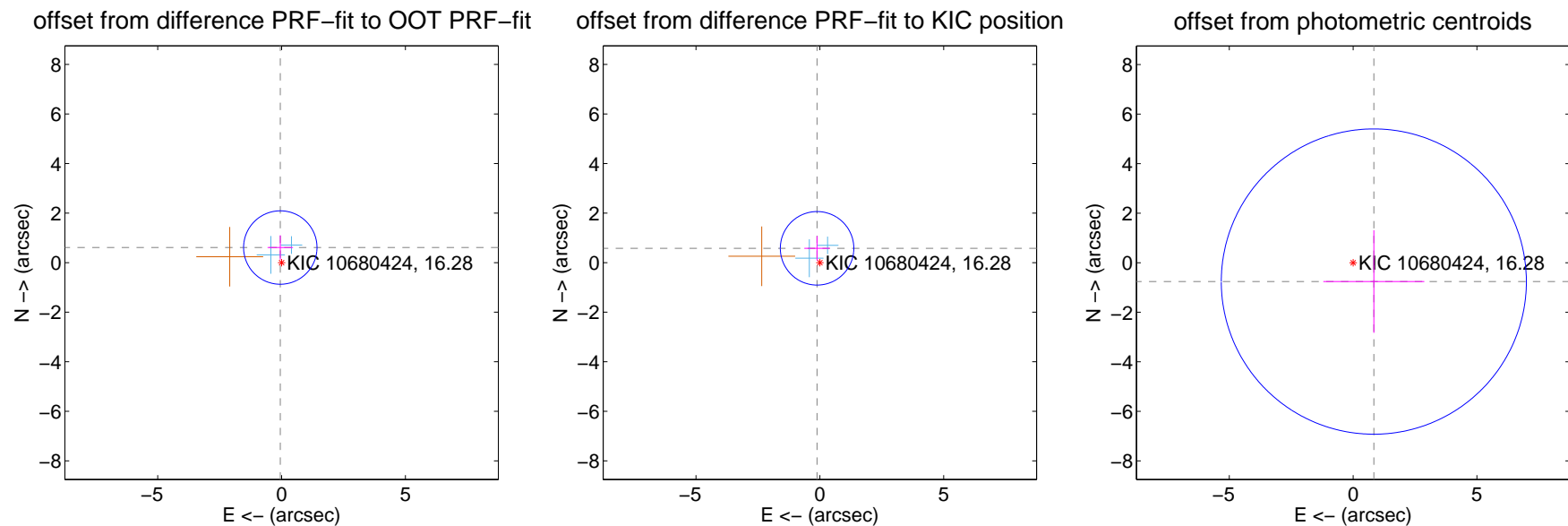
## DV Centroid Data

Supplemental centroid analysis for 010680424-01. Kepler magnitude: 16.28. Transit SNR 7.94

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.612 \pm 0.494$	1.24	$0.052 \pm 0.514$	$0.610 \pm 0.494$
PRF-fit source offset from KIC position	$0.589 \pm 0.495$	1.19	$0.112 \pm 0.514$	$0.578 \pm 0.494$
photometric centroid source offset	$1.13 \pm 2.05$	0.55	$-0.84 \pm 2.04$	$-0.76 \pm 2.07$



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.



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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.

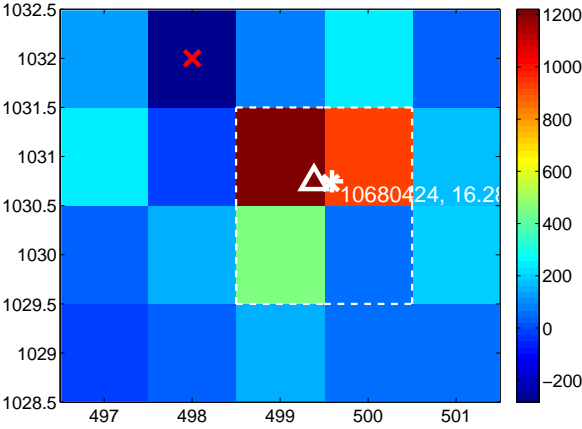
Q13 no difference image



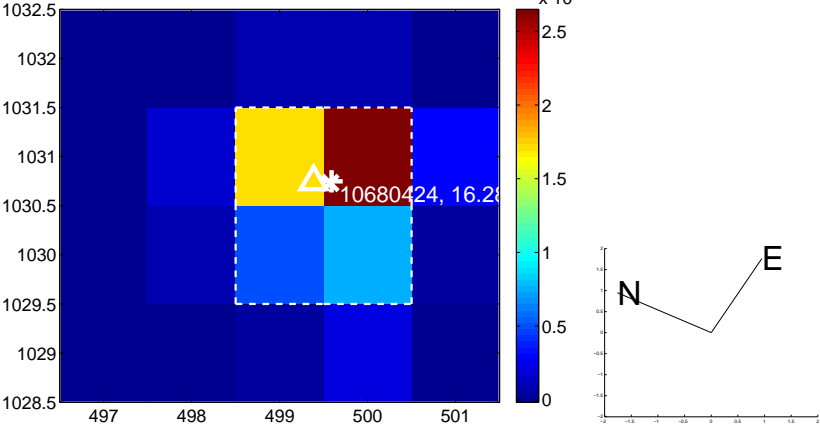
Q13 no OOT image



Q14 difference image



Q14 OOT image



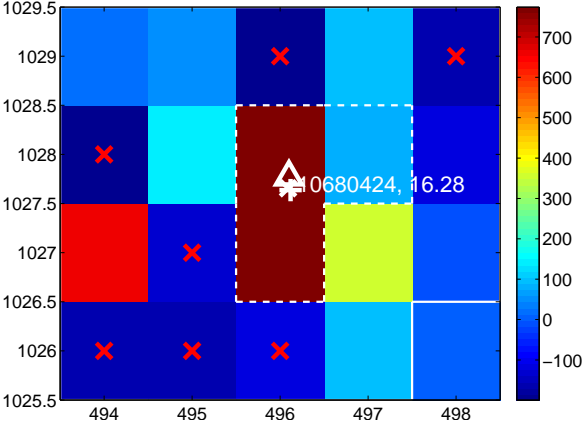
Q15 no difference image



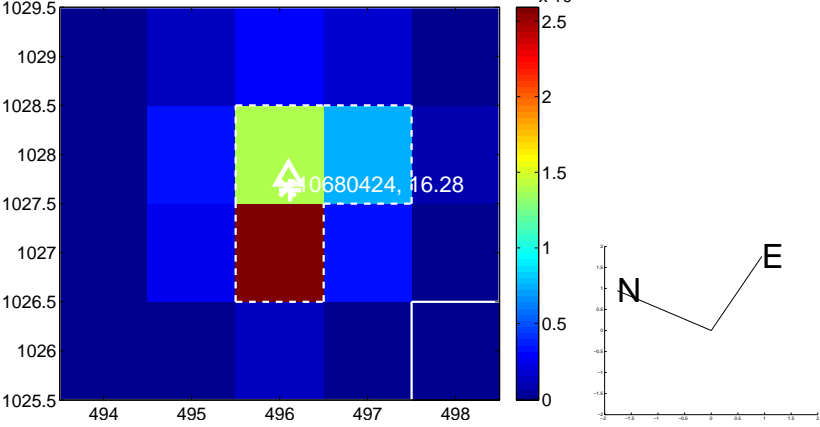
Q15 no OOT image



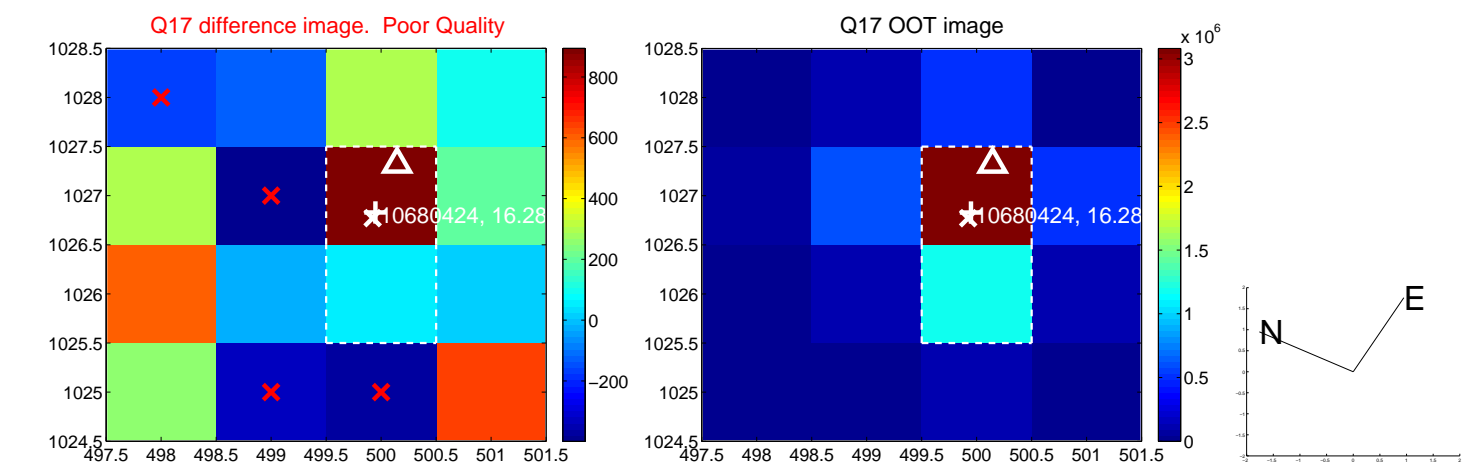
Q16 difference image



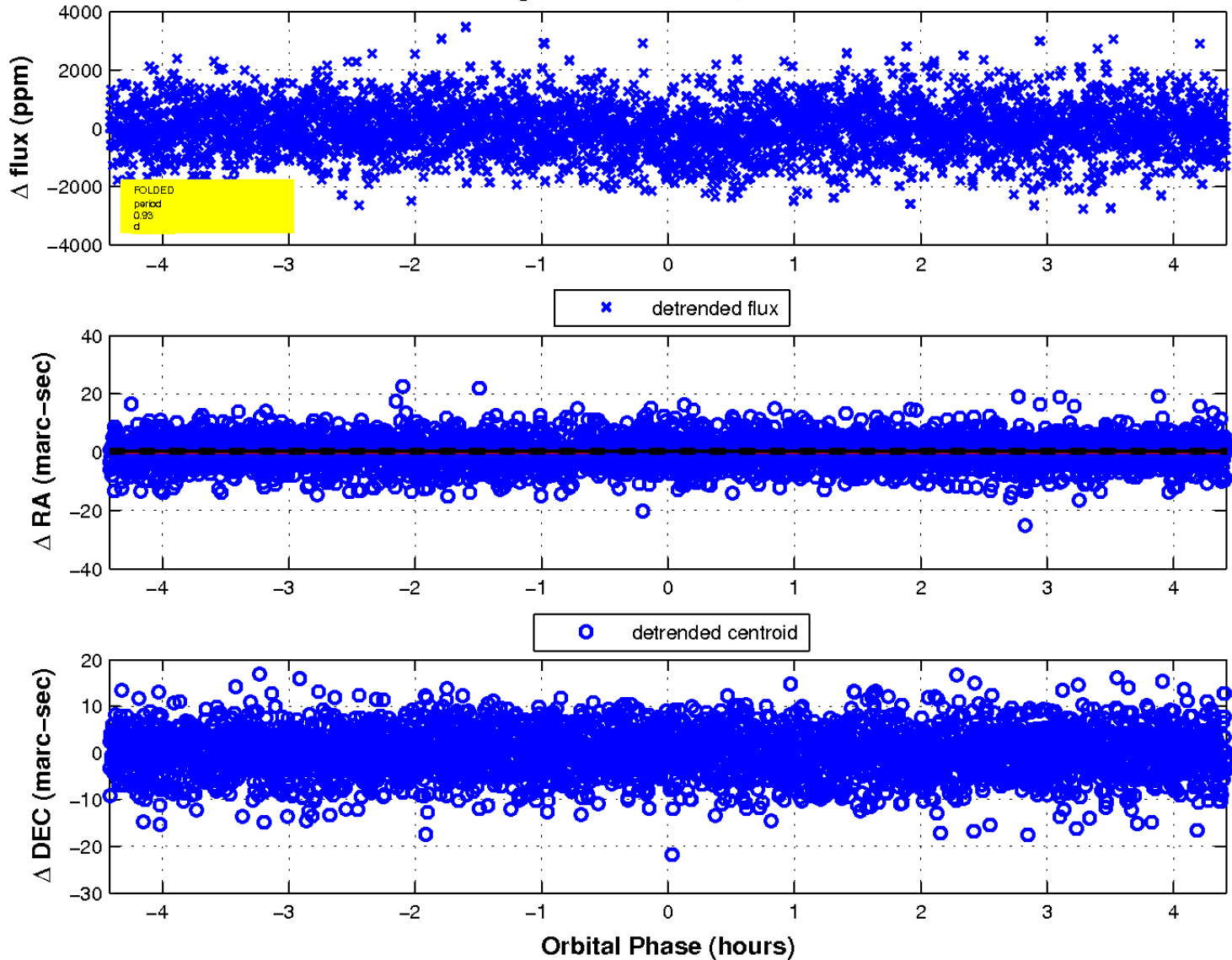
Q16 OOT image



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

