

# KIC 004348431

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004348431-01	OBS	No	360.038951	373.705169	859.2	14.271	7.8	7.7	0.70	4902	1.98	0.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004348431-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—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.

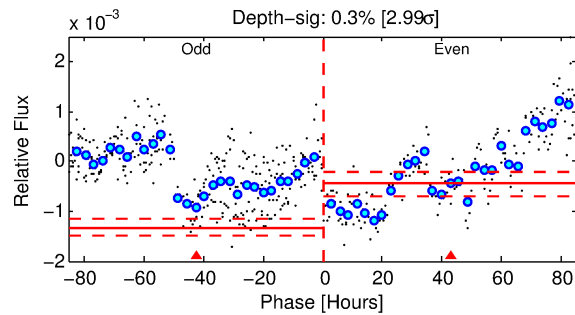
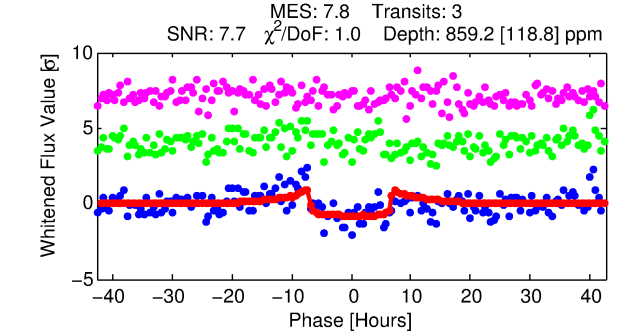
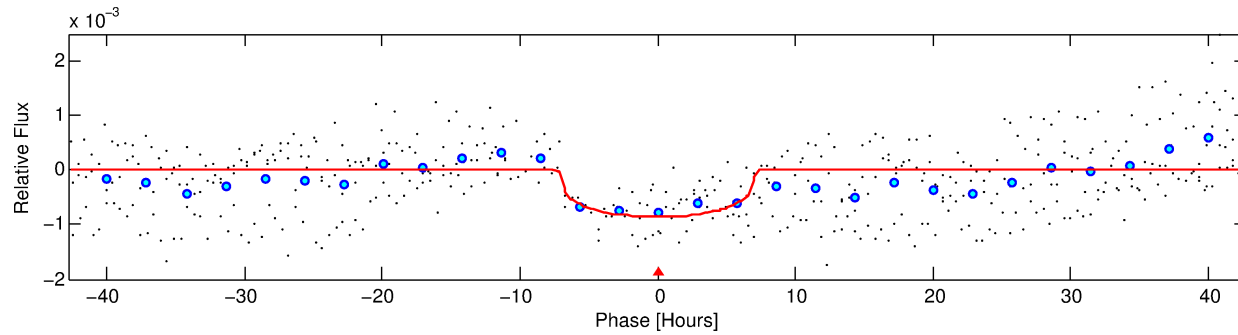
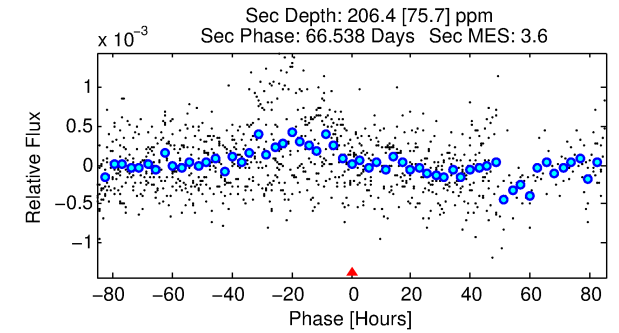
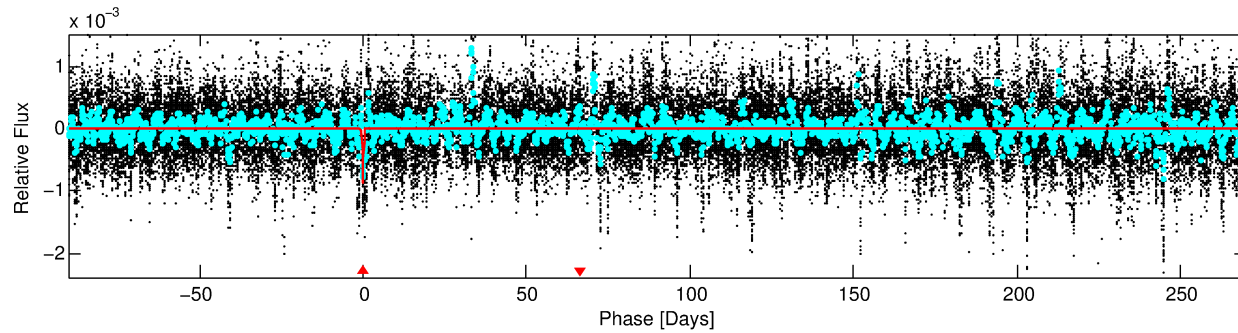
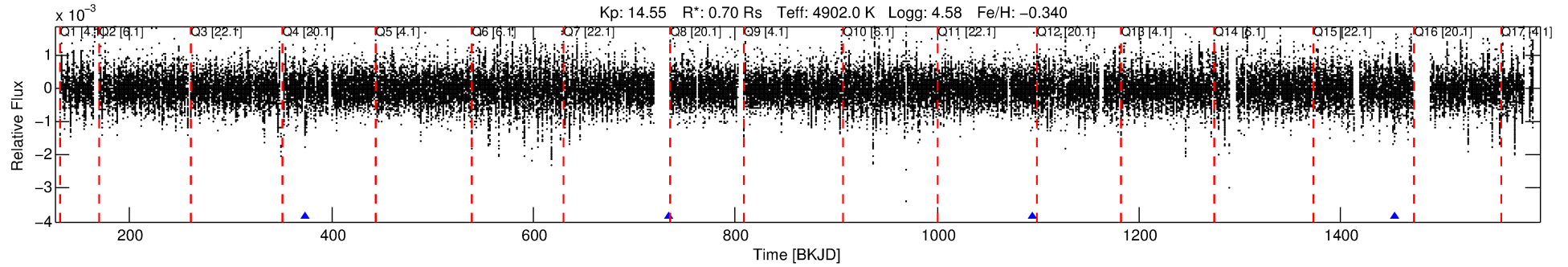
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004348431-01

No Significant Match Found

# DV One-Page Summary

KIC: 4348431 Candidate: 1 of 1 Period: 360.039 d



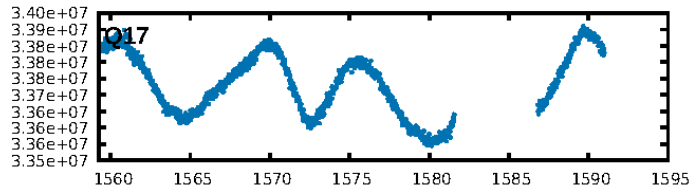
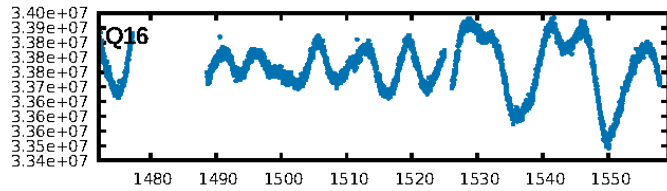
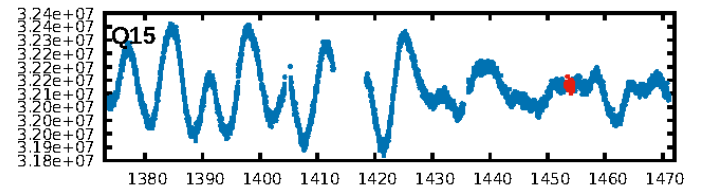
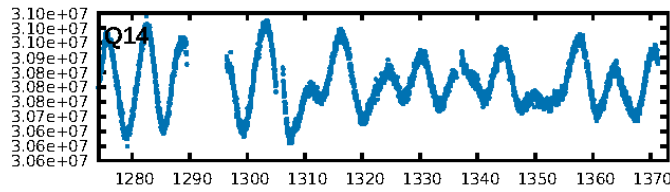
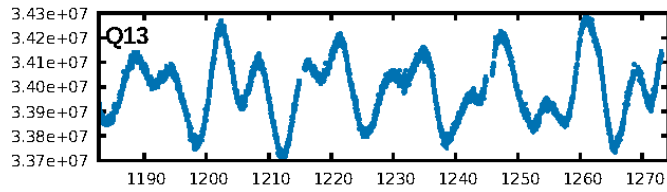
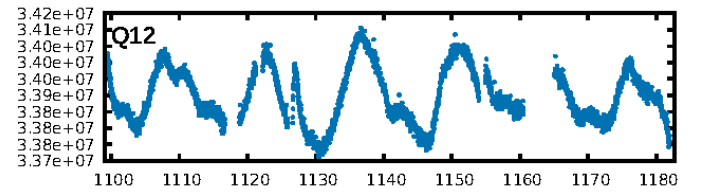
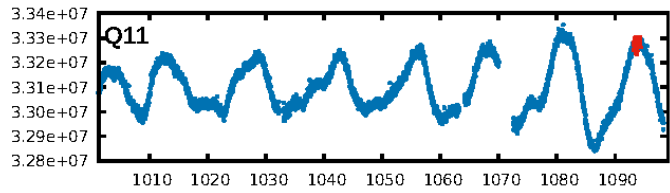
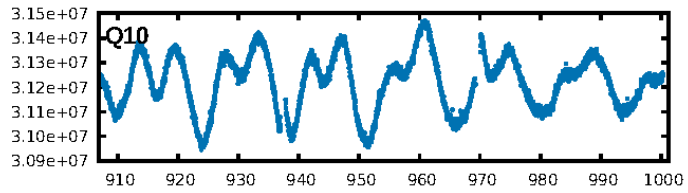
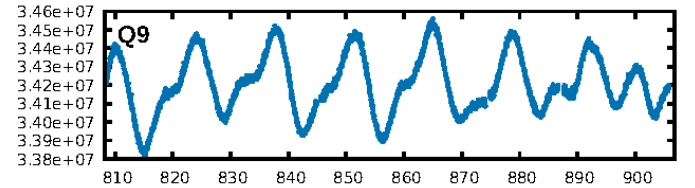
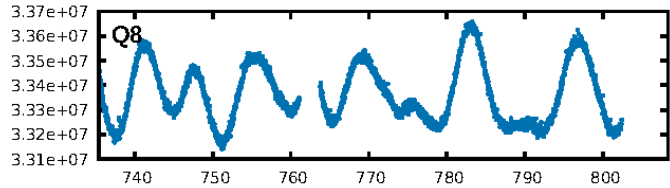
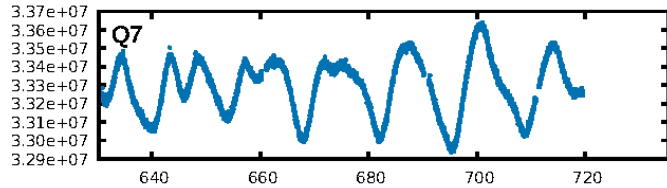
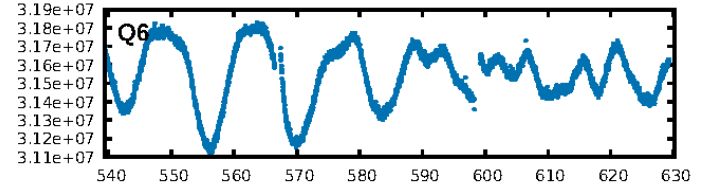
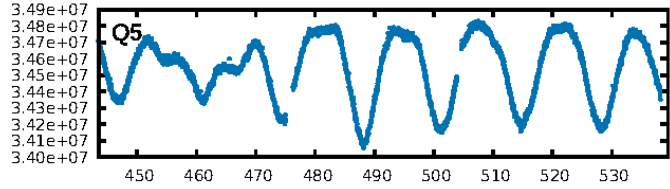
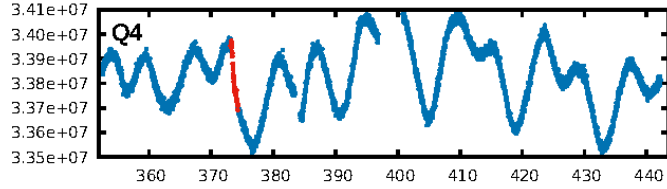
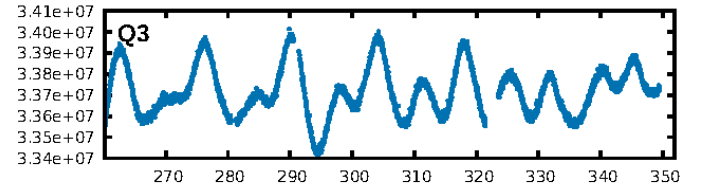
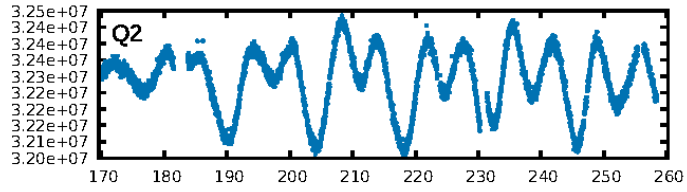
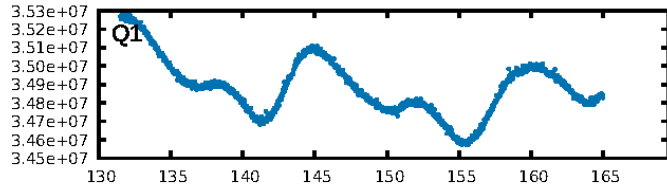
## DV Fit Results:

Period = 360.03895 [0.00628] d  
Epoch = 373.7052 [0.0115] BKJD  
Rp/R\* = 0.0260 [0.0239]  
a/R\* = 197.10 [624.74]  
b = 0.08 [38.43]  
Seff = 0.33 [0.06]  
Teq = 194 [8] K  
Rp = 1.98 [1.82] Re  
a = 0.8690 [0.0724] AU  
Ag = 21958.92 [41182.04] [0.53σ]  
Teffp = 3643 [1708] K [2.02σ]

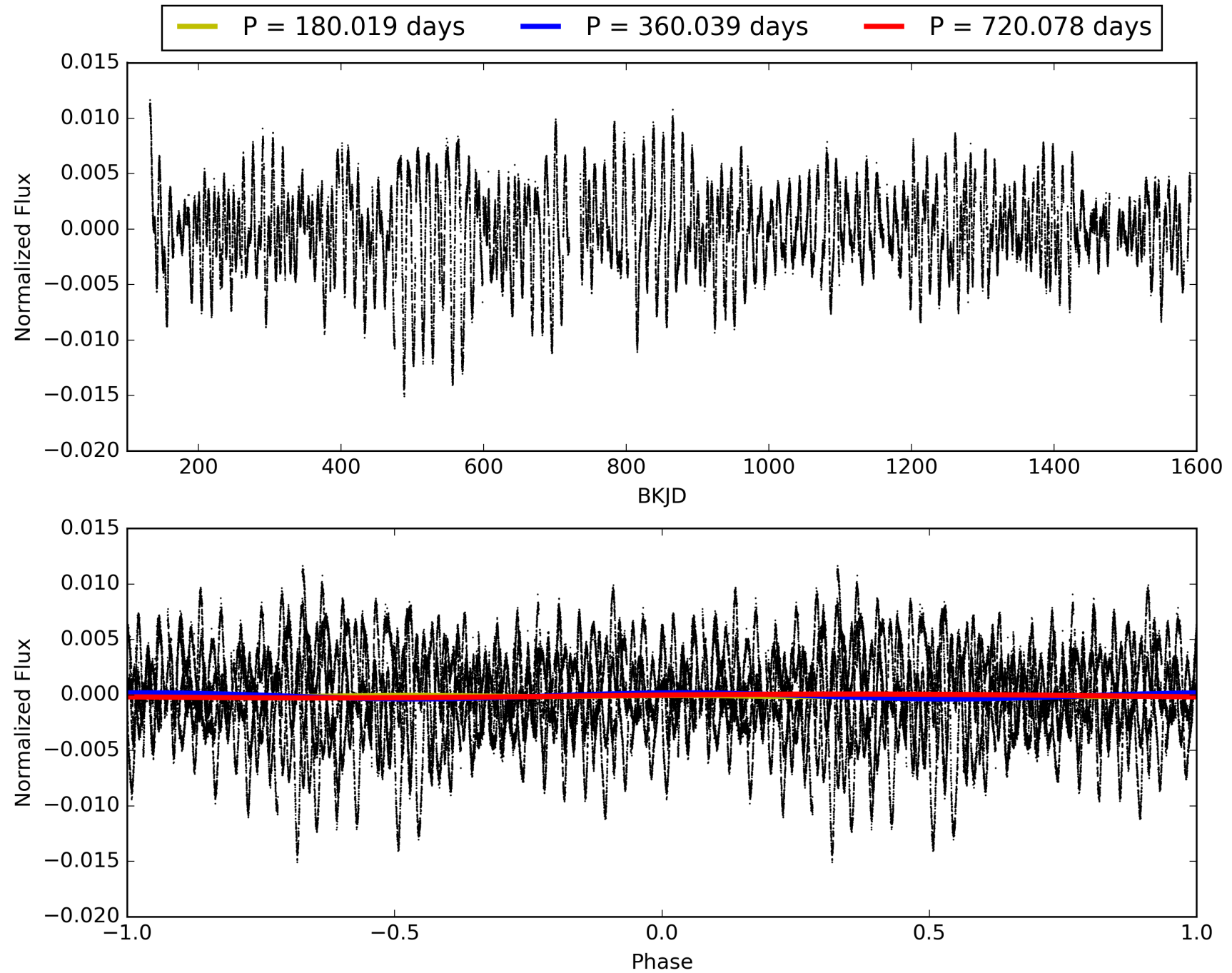
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 15.6%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 1.08e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.12  
Centroid-sig: 21.9%  
Centroid-so: 1.007 arcsec [1.46σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [1/1]

## TCE 004348431-01, PDC Light Curves

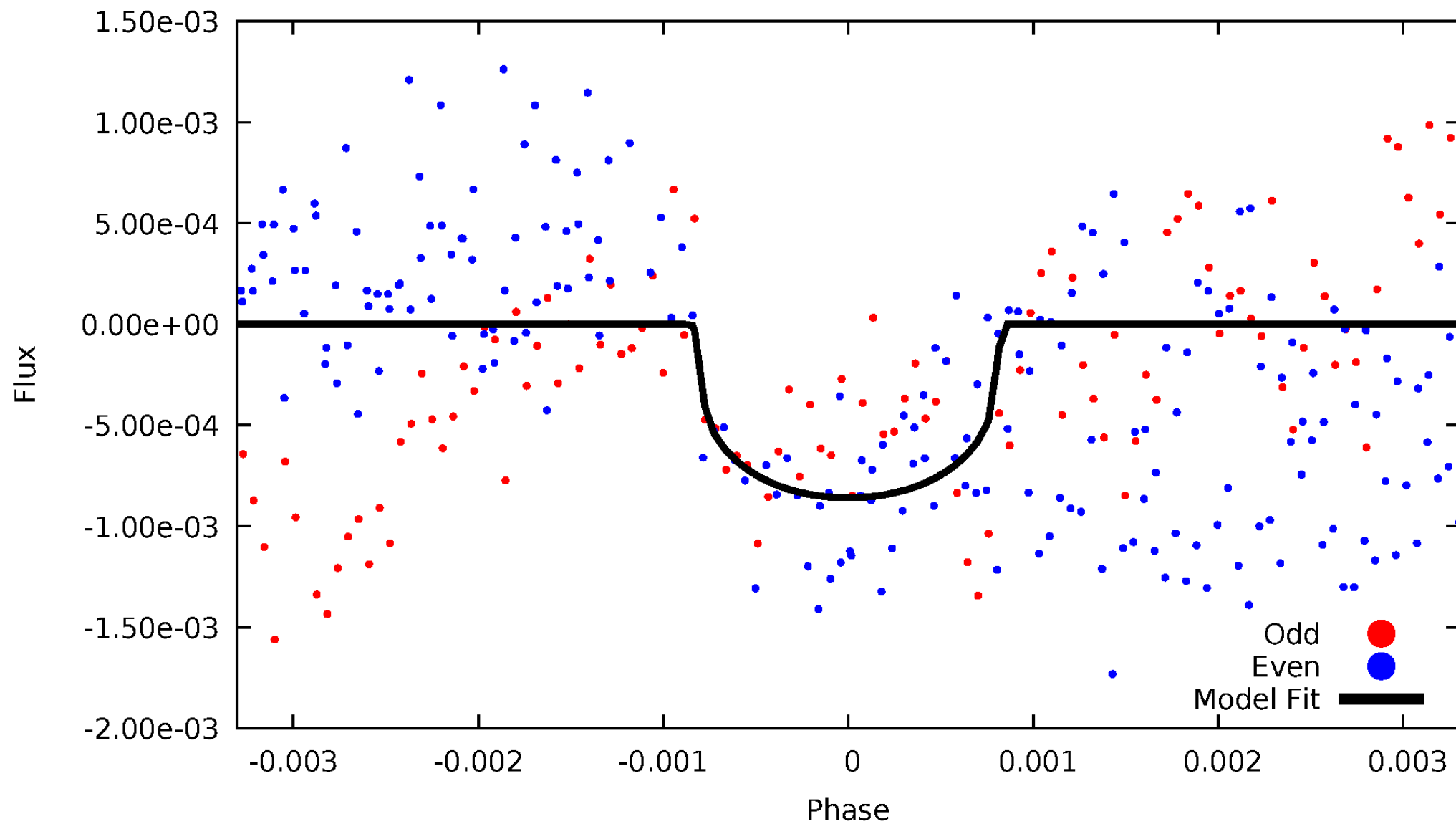


TCE 004348431-01



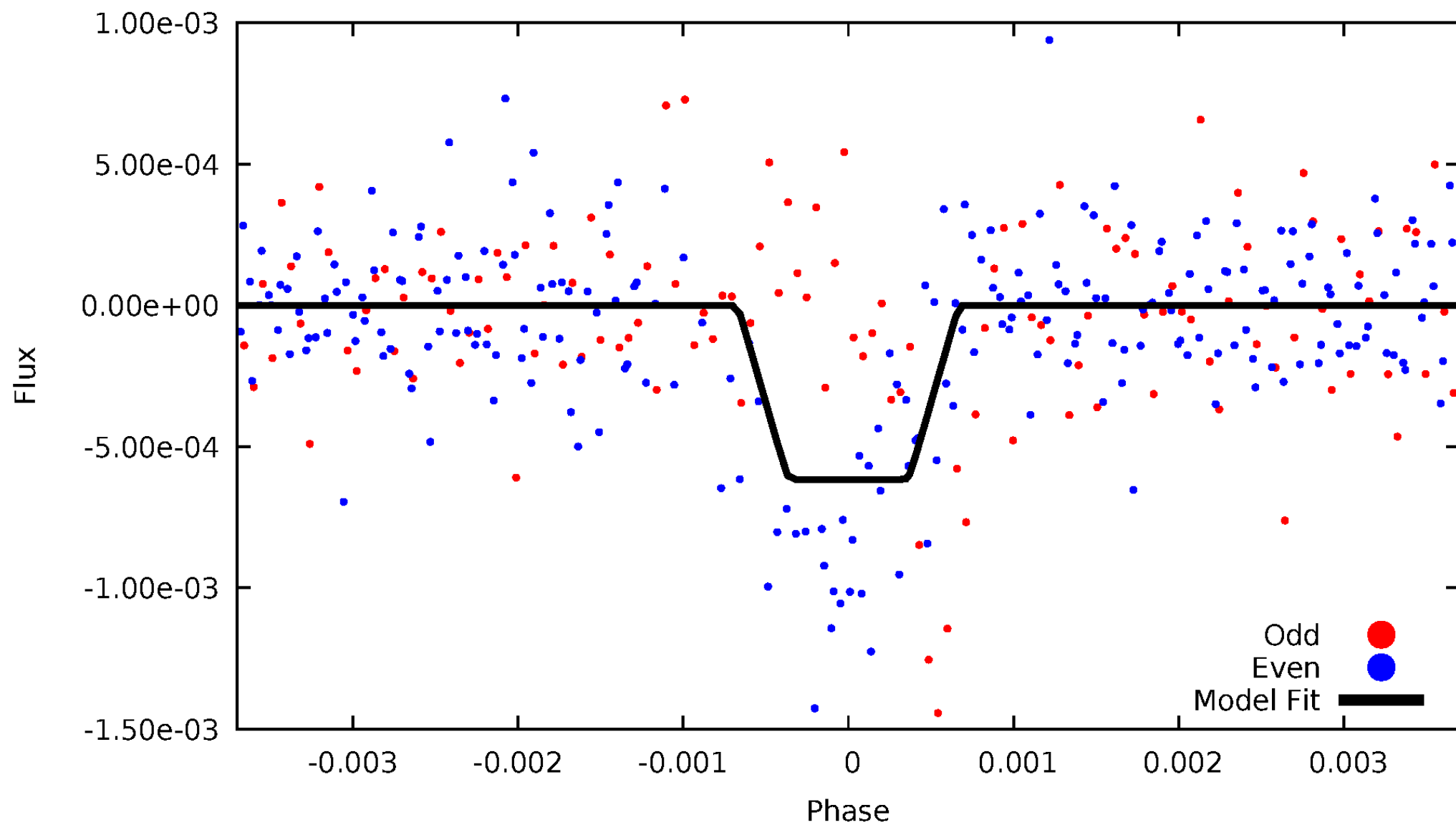
# DV Odd/Even

TCE 004348431-01



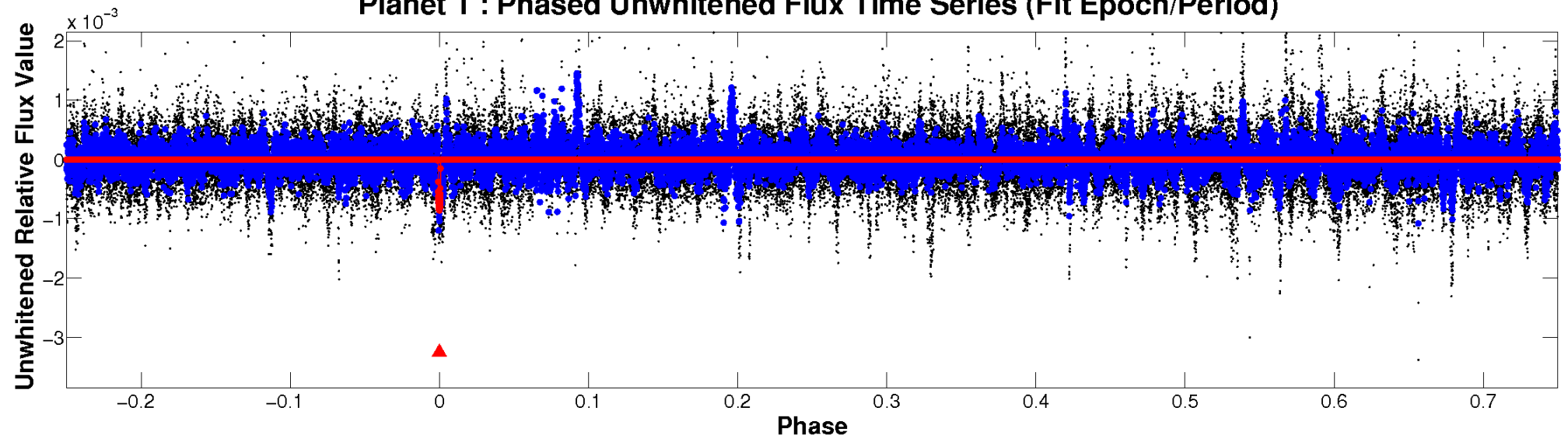
# ALT Odd/Even

TCE 004348431-01

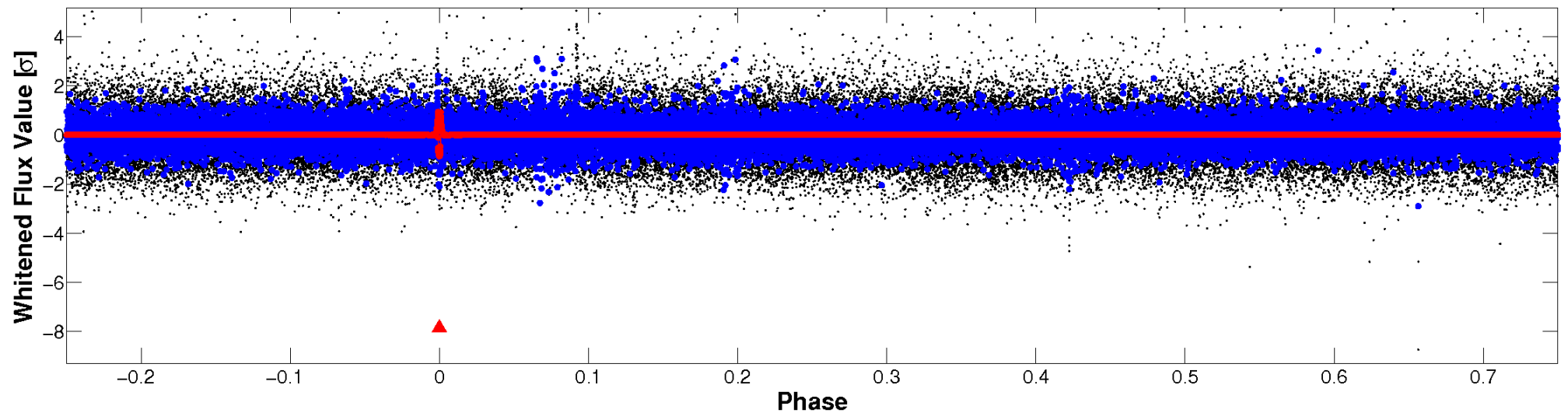


# Non-Whitened Vs. Whitened Light Curve

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

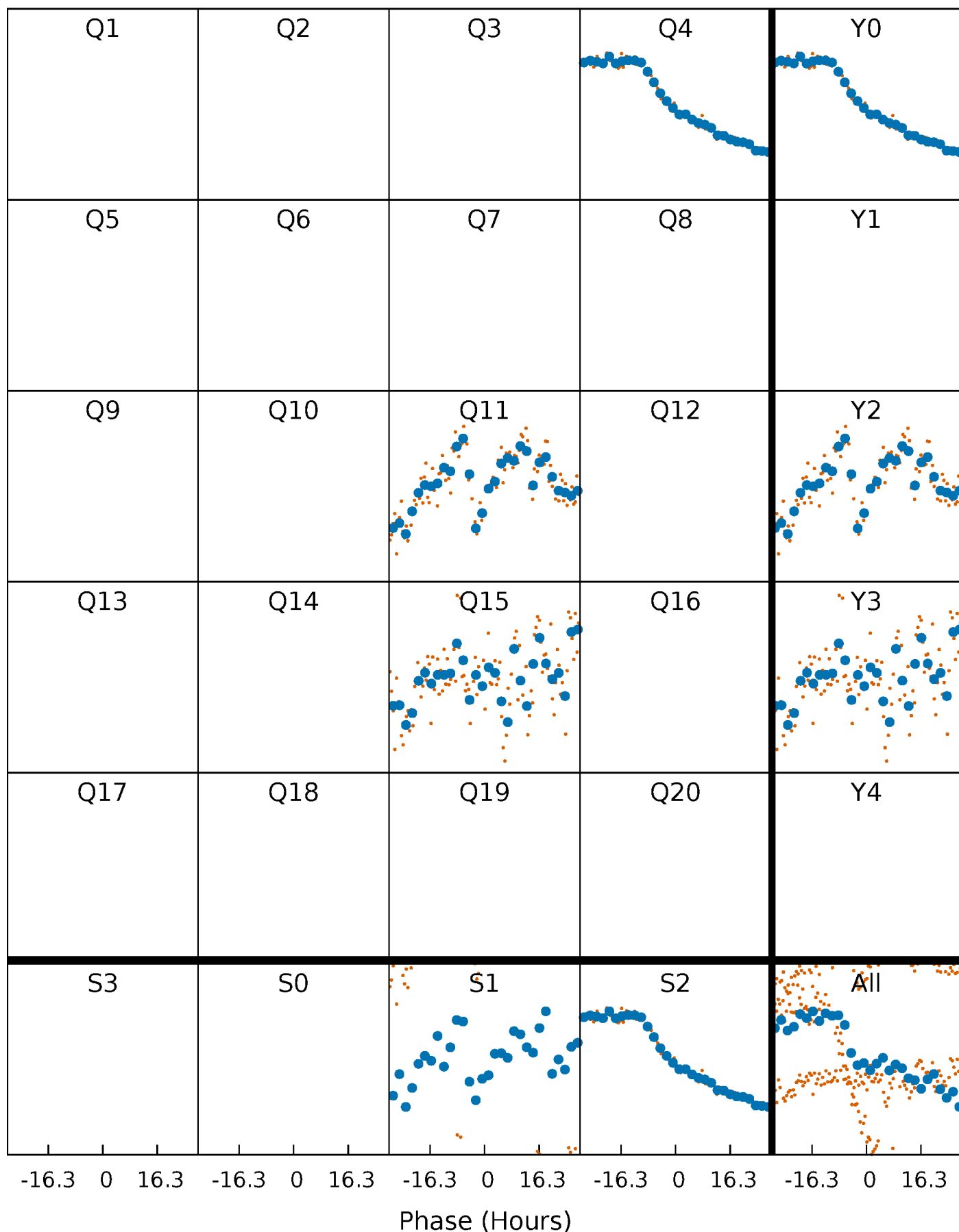


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

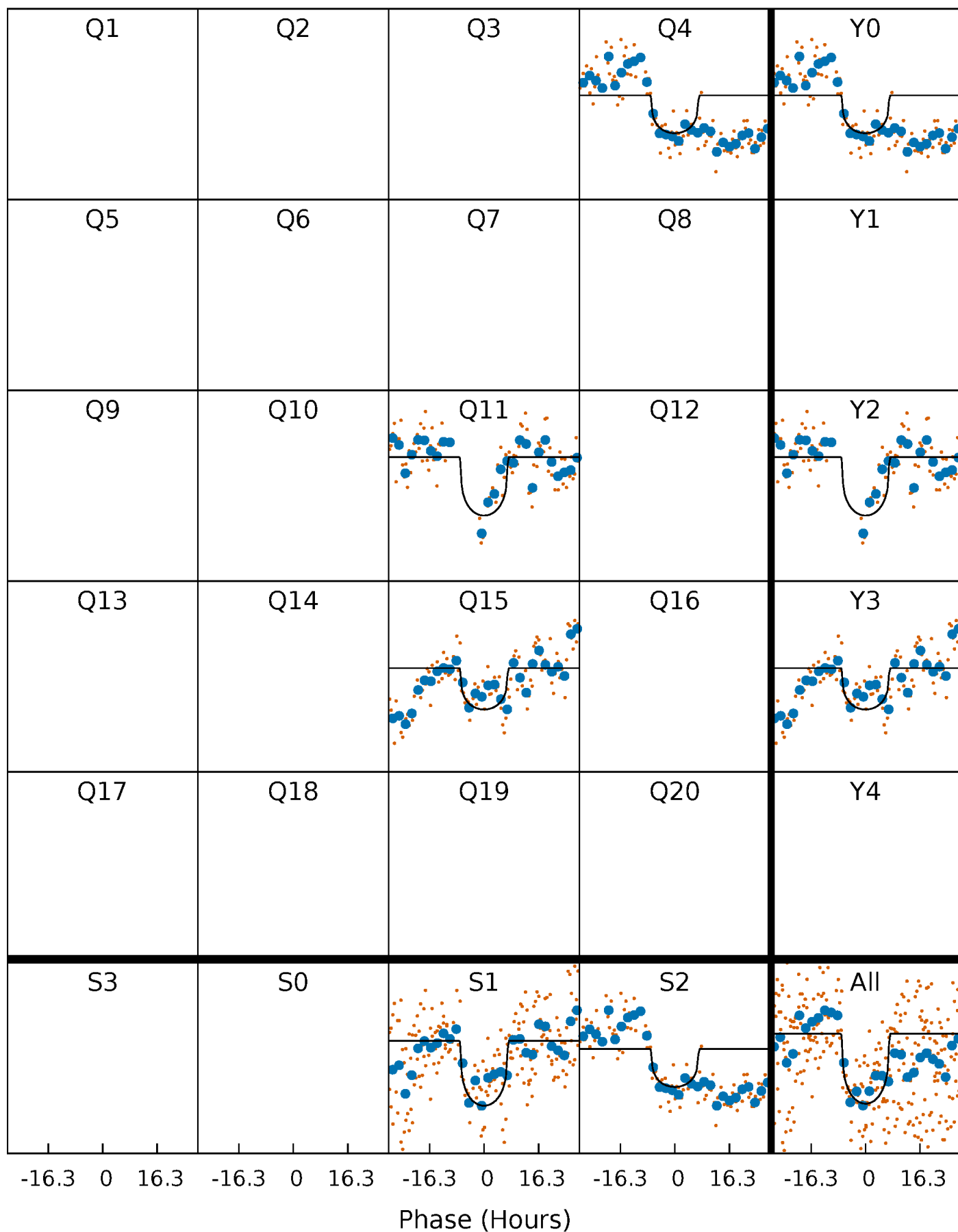
TCE 004348431-01 P=360.038951 Days  $T_0=373.705169$  (BKJD)





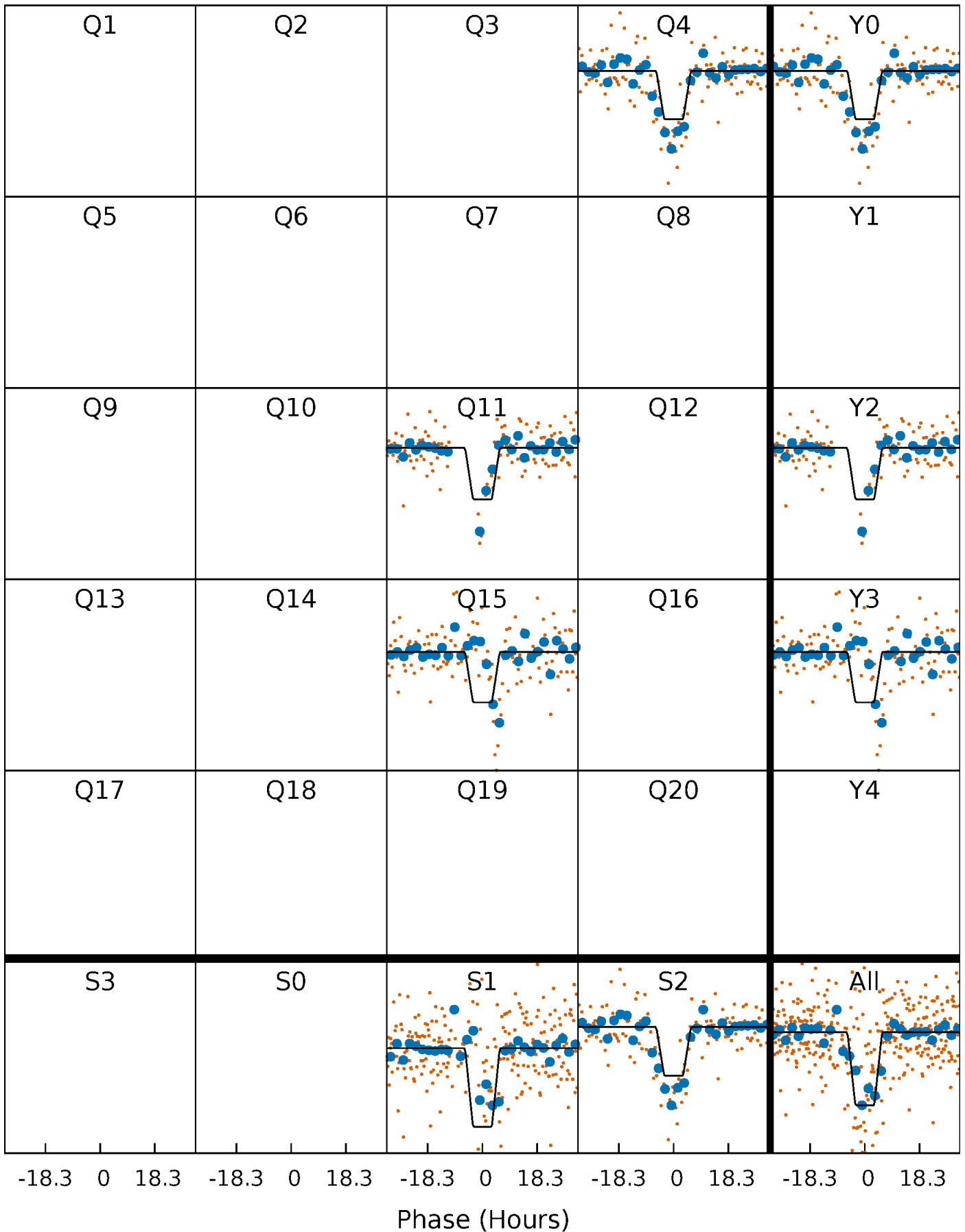
# DV Quarter-Phased Transit Curves

TCE 004348431-01 P=360.038951 Days  $T_0=373.705169$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

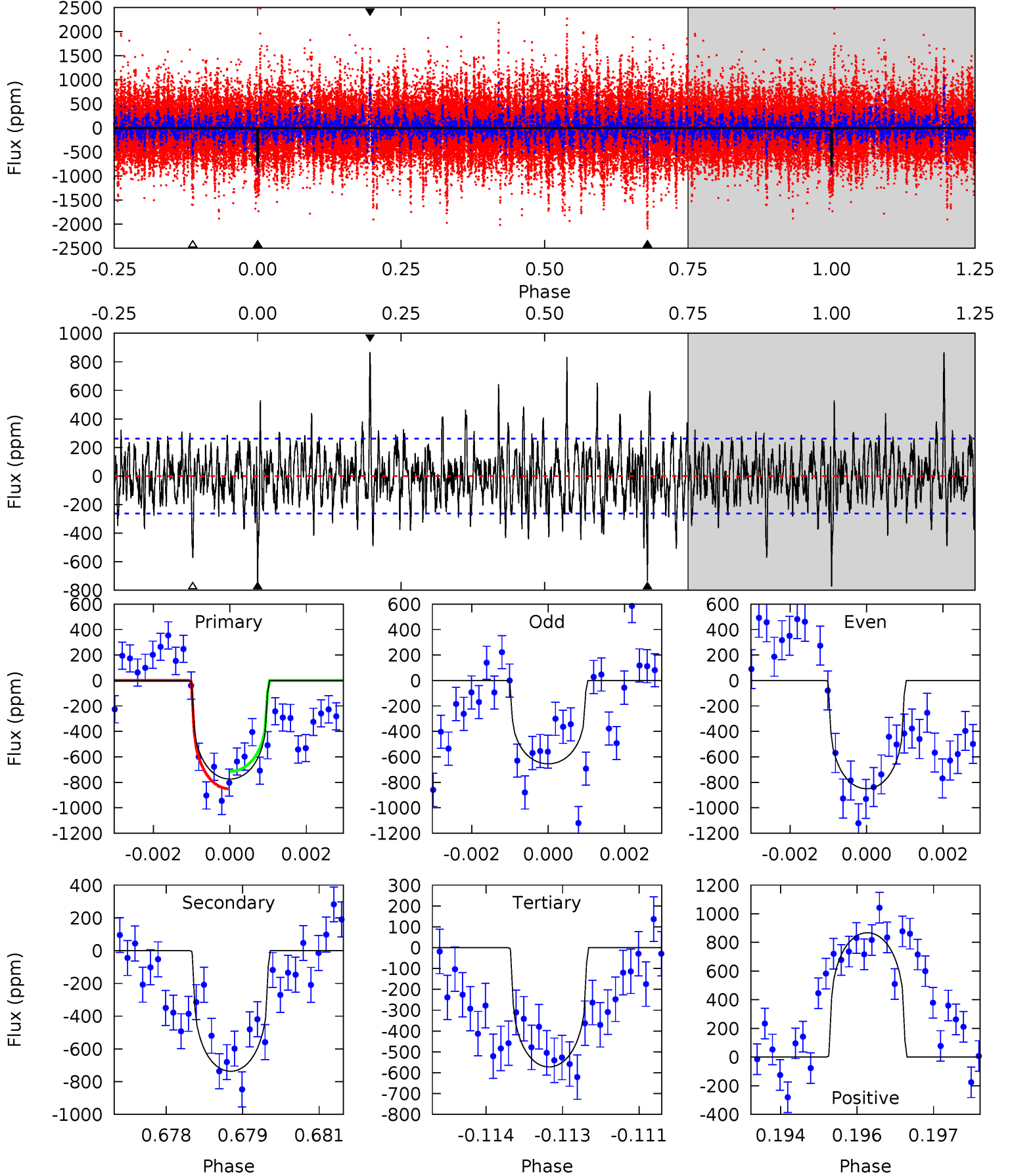
TCE 004348431-01 P=360.093817 Days  $T_0=373.597691$  (BKJD)



# DV Model-Shift Uniqueness Test

004348431-01,  $P = 360.038951$  Days,  $E = 13.666218$  Days

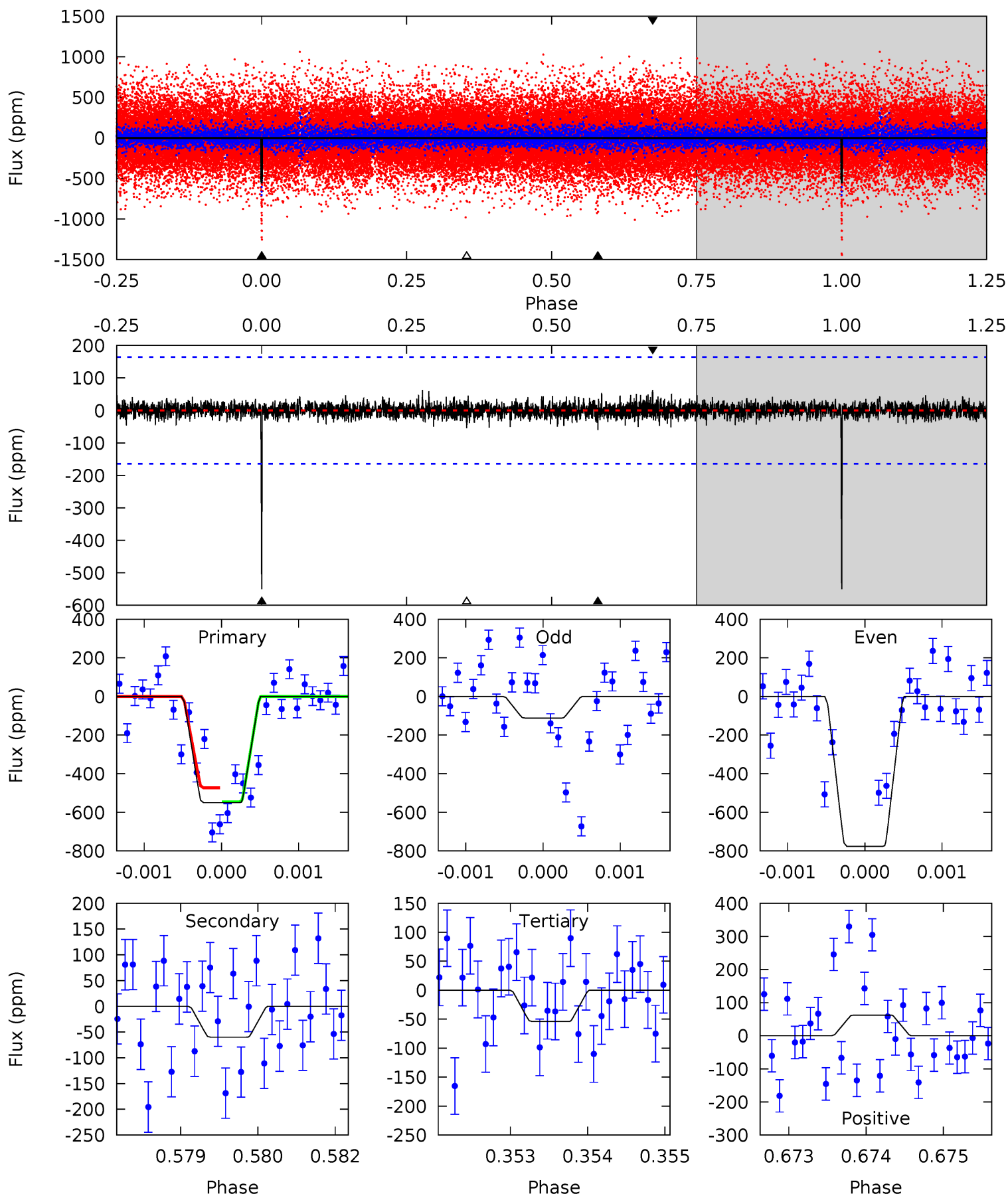
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	15.1	11.7	17.7	5.36	3.15	3.32	4.12	-1.91	3.35	-2.68	1.88	1.14	0.53	1.38



# Alt Model-Shift Uniqueness Test

004348431-01, P = 360.093817 Days, E = 13.503874 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
18.1	1.97	1.78	2.05	5.40	3.20	0.45	16.3	16.0	0.20	-0.08	10.7	0.87	0.10	1.17



### Stellar Parameters For KIC 004348431

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4902^{+146}_{-131}$	$4.582^{+0.066}_{-0.039}$	$-0.340^{+0.350}_{-0.300}$	$0.696^{+0.062}_{-0.069}$	$0.674^{+0.088}_{-0.047}$	$2.822^{+0.774}_{-0.457}$
	+3%/-3%	+1%/-1%	+103%/-88%	+9%/-10%	+13%/-7%	+27%/-16%
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 004348431-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-737 \pm 49$	$2.35^{+1.69}_{-1.43}$	$269^{+10}_{-9}$	$4659^{+2672}_{-870}$	$57018^{+319896}_{-38282}$
Alt.	$-60 \pm 30$	$2.17^{+1.65}_{-1.29}$	$270^{+9}_{-10}$	$3082^{+1051}_{-516}$	$4901^{+25660}_{-3632}$

$T_{\text{max}}$  = 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 004348431-01. Kepler magnitude: 14.55. Transit SNR 7.73

There are 0 quarters with good PRF difference image offsets

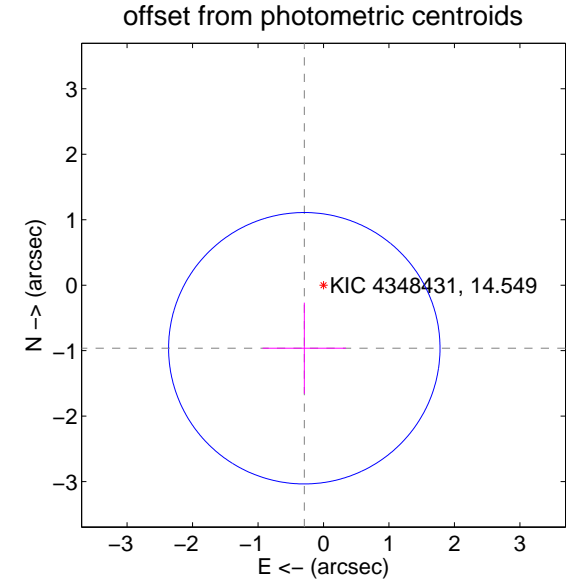
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$1.01 \pm 0.69$	1.46	$0.29 \pm 0.64$	$-0.96 \pm 0.70$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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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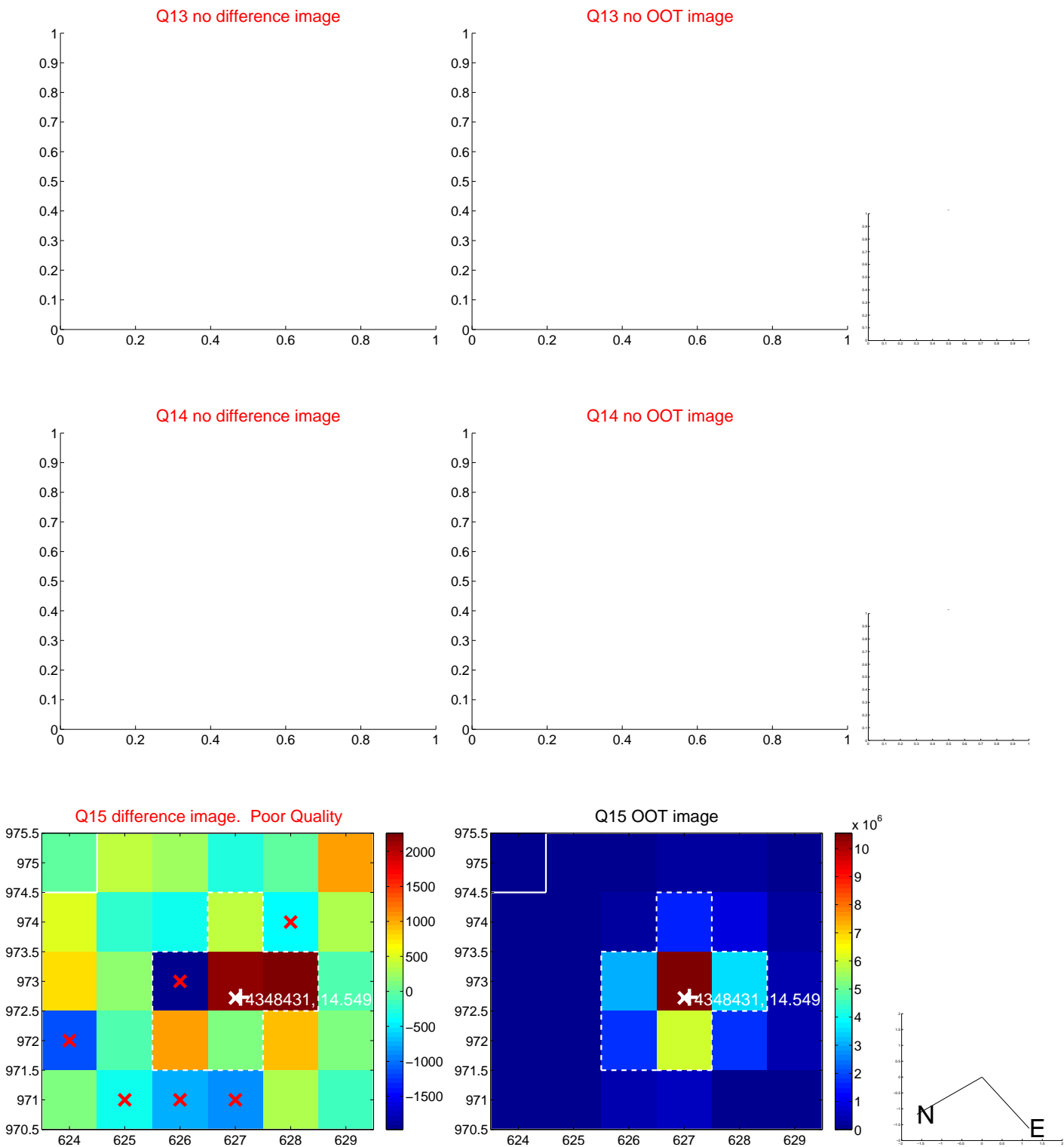




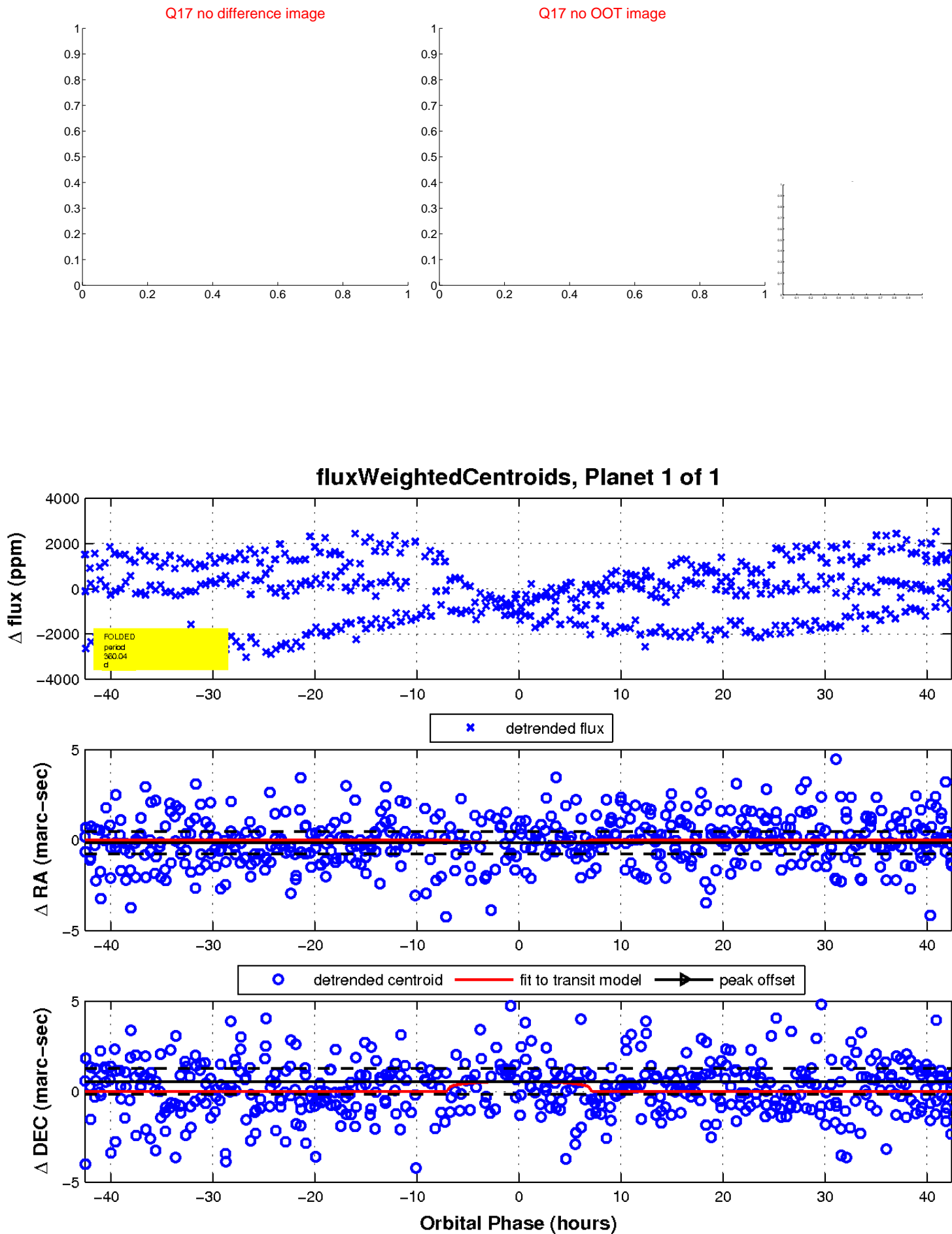
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.



# UKIRT Image

Declination

