

# KIC 003124511

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003124511-01	OBS	No	382.841934	345.296954	98.6	16.664	8.6	8.4	1.38	6102	1.60	2.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003124511-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED

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

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

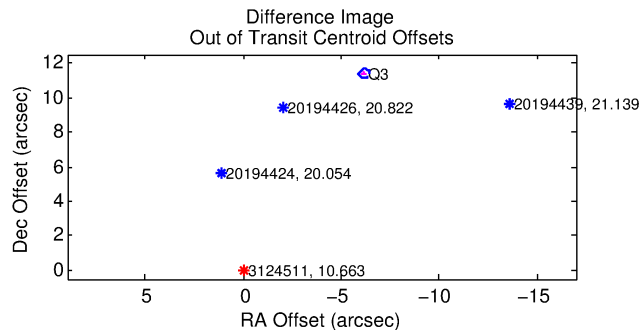
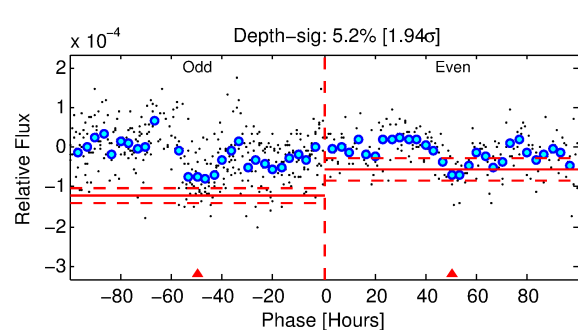
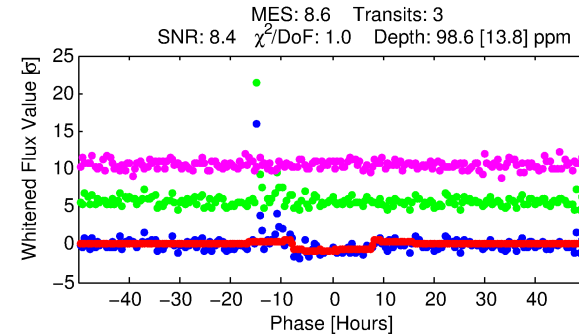
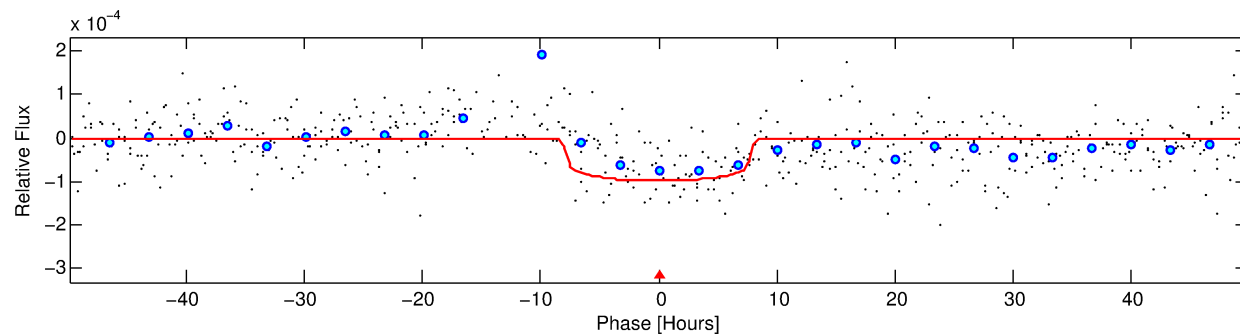
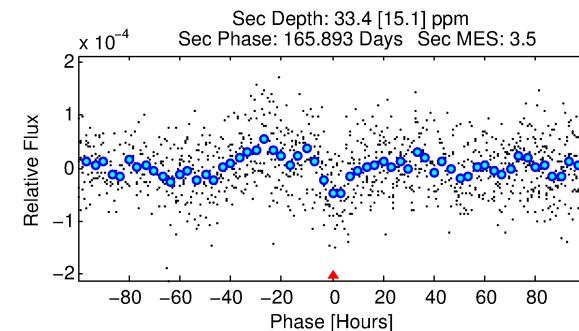
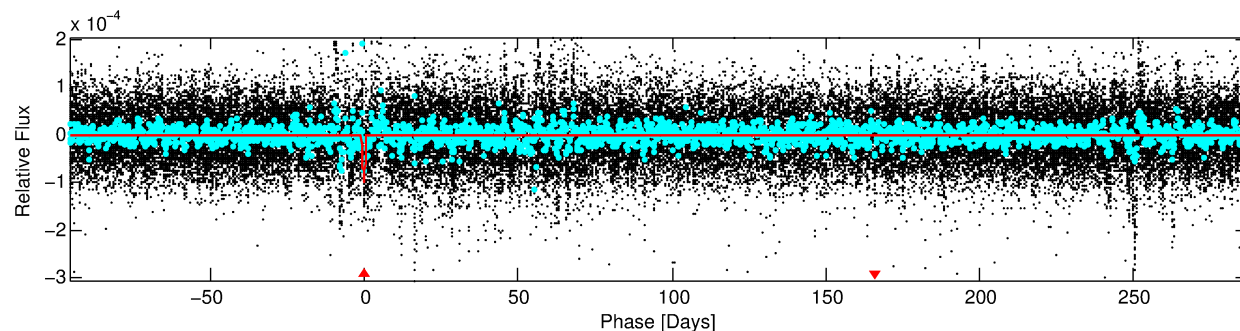
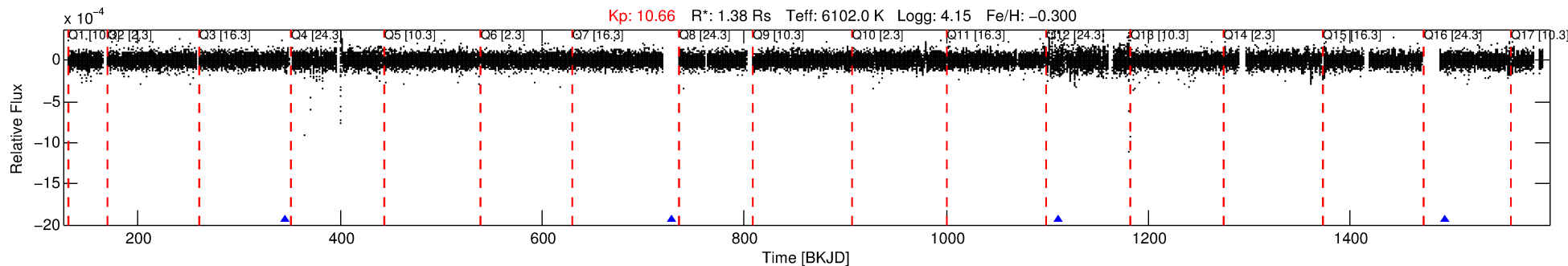
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003124511-01

No Significant Match Found

# DV One-Page Summary

KIC: 3124511 Candidate: 1 of 1 Period: 382.842 d



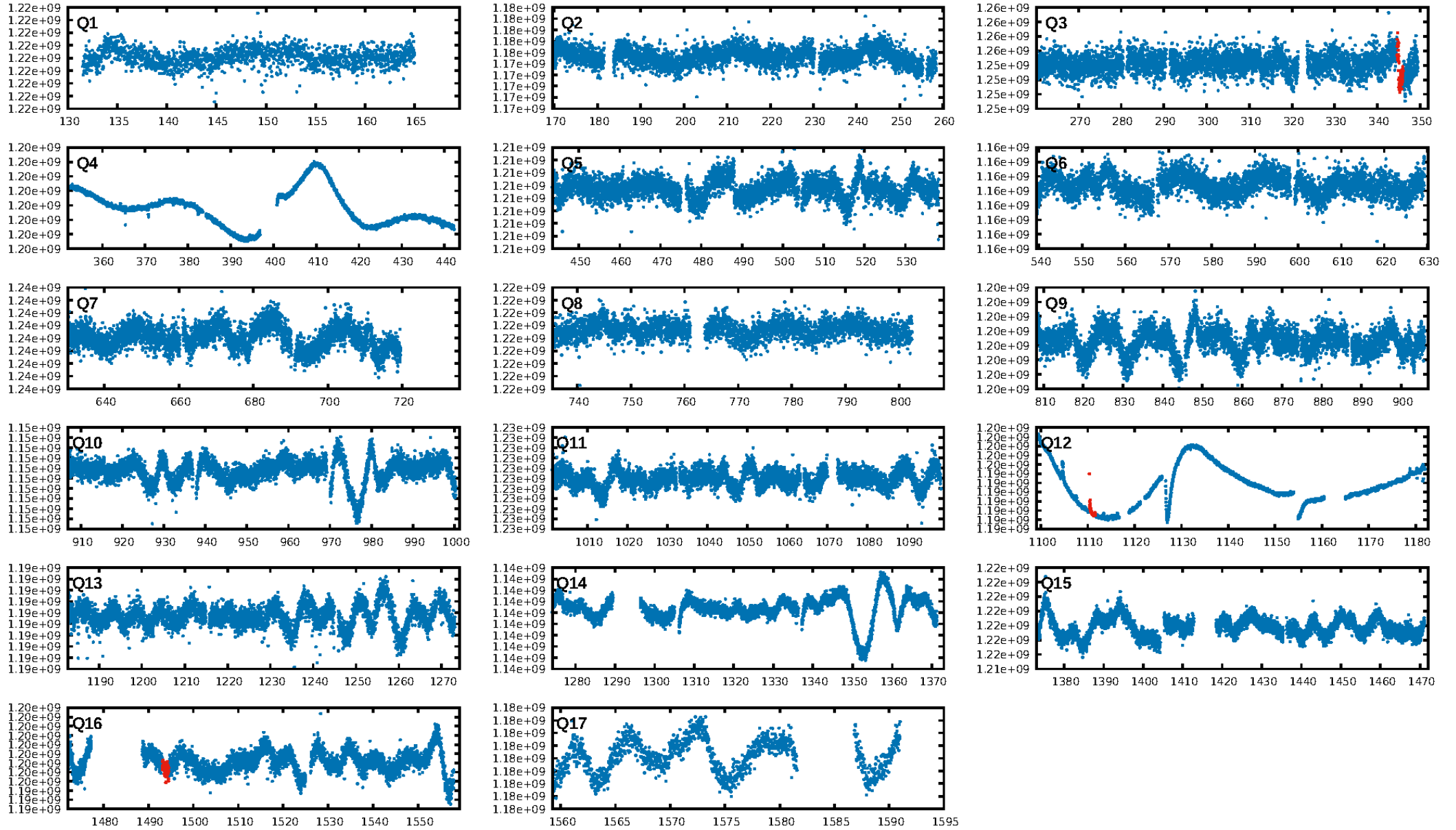
## DV Fit Results:

Period = 382.84193 [0.00782] d  
Epoch = 345.2970 [0.0170] BKJD  
 $R_p/R^* = 0.0106$  [0.0013]  
 $a/R^* = 82.96$  [42.18]  
 $b = 0.89$  [0.12]  
 $\text{Seff} = 2.24$  [0.93]  
 $T_{\text{eq}} = 312$  [32] K  
 $R_p = 1.60$  [0.46]  $R_e$   
 $a = 1.0266$  [0.2557] AU  
 $A_g = 7584.32$  [4926.38] [1.54σ]  
 $T_{\text{eff}} = 4502$  [590] K [7.09σ]

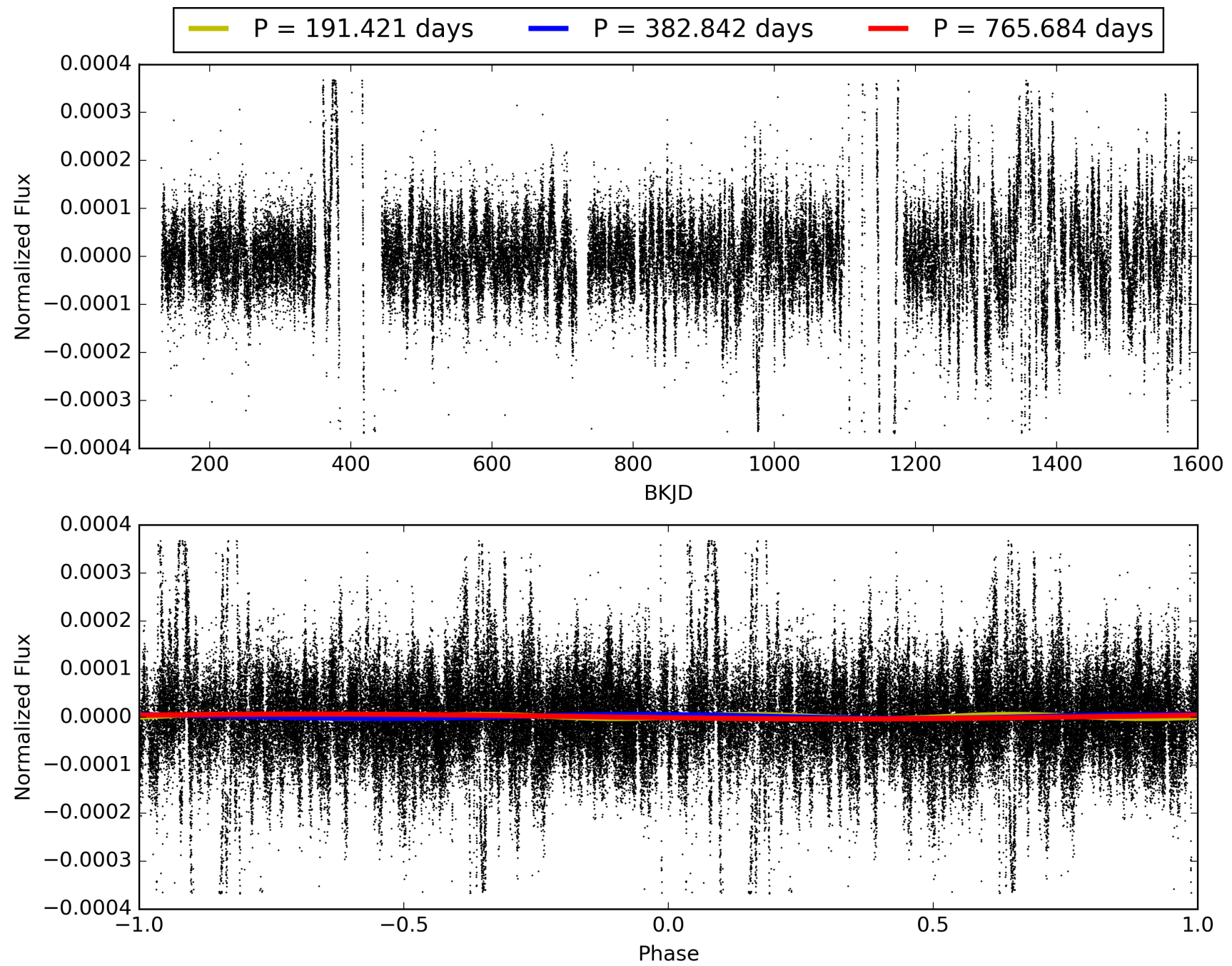
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 2.20e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.261  
Centroid-sig: 0.7%  
Centroid-so: 4.748 arcsec [1.93σ]  
**OotOffset-rm: 12.965 arcsec [150.39σ]**  
**KicOffset-rm: 12.809 arcsec [148.54σ]**  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 003124511-01, PDC Light Curves

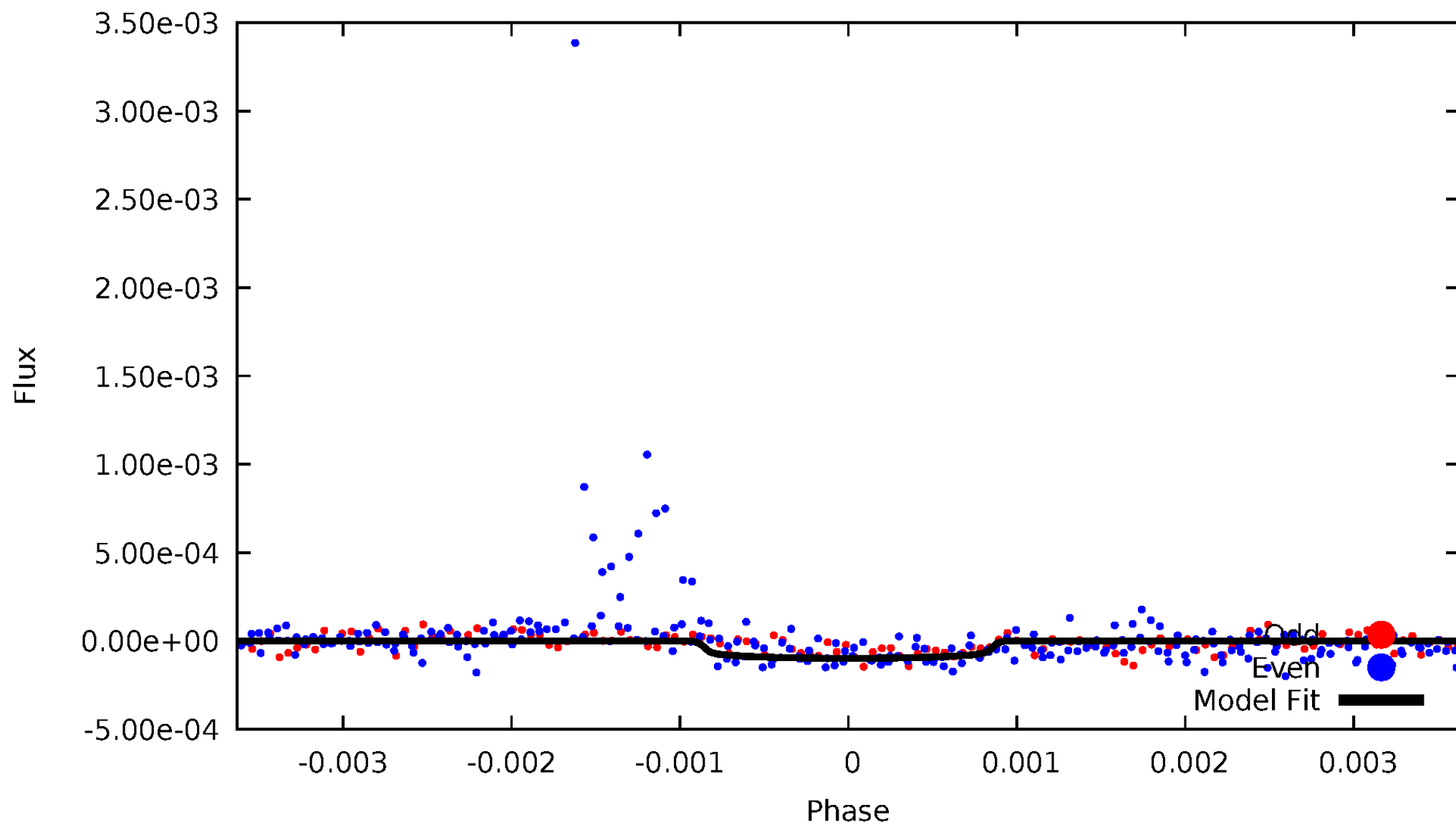


# TCE 003124511-01



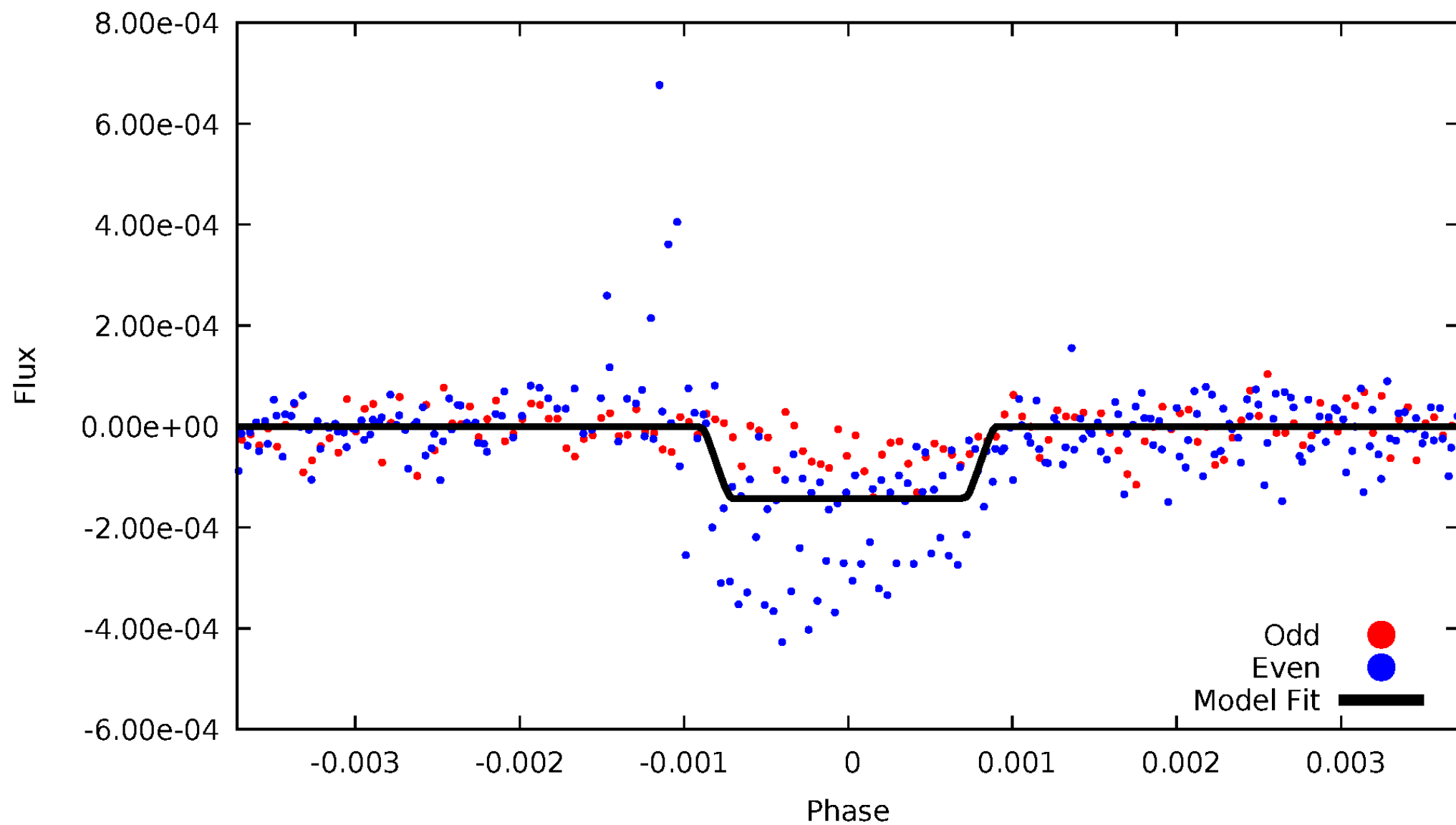
# DV Odd/Even

TCE 003124511-01



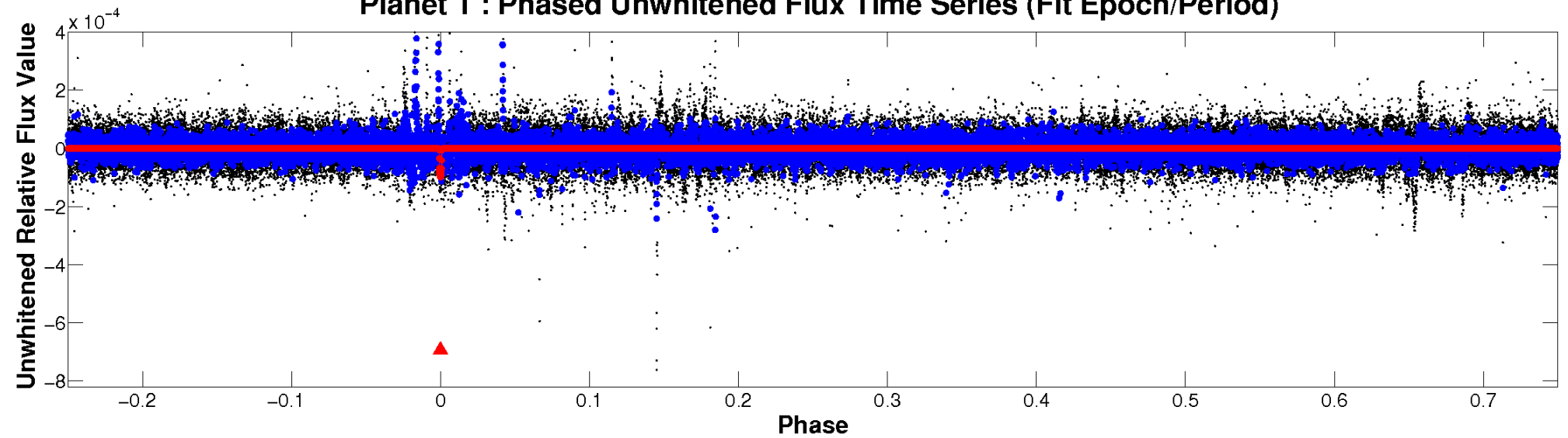
# ALT Odd/Even

TCE 003124511-01

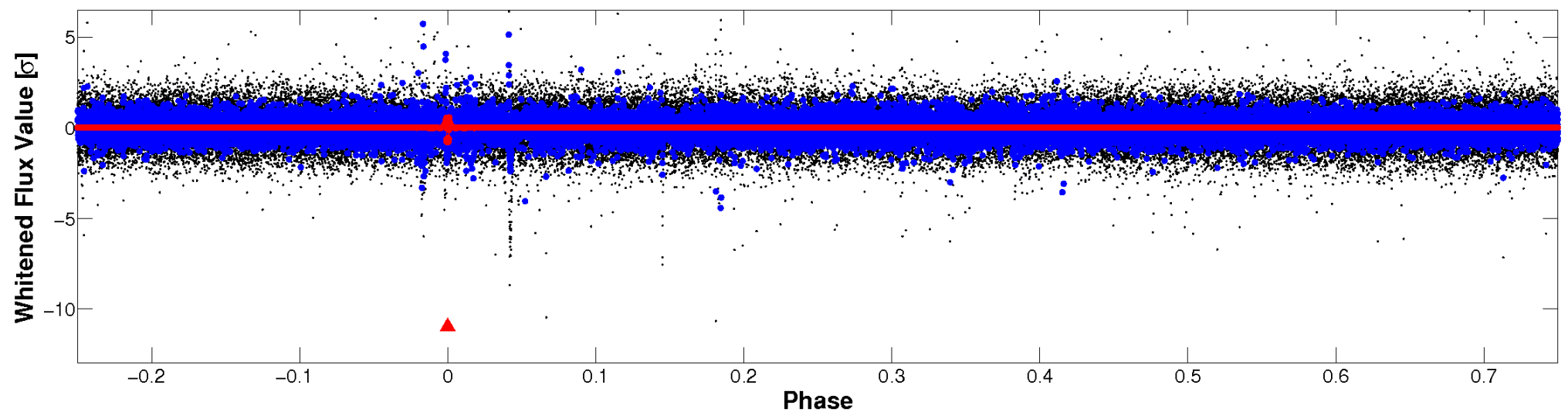


# Non-Whitened Vs. Whitened Light Curve

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

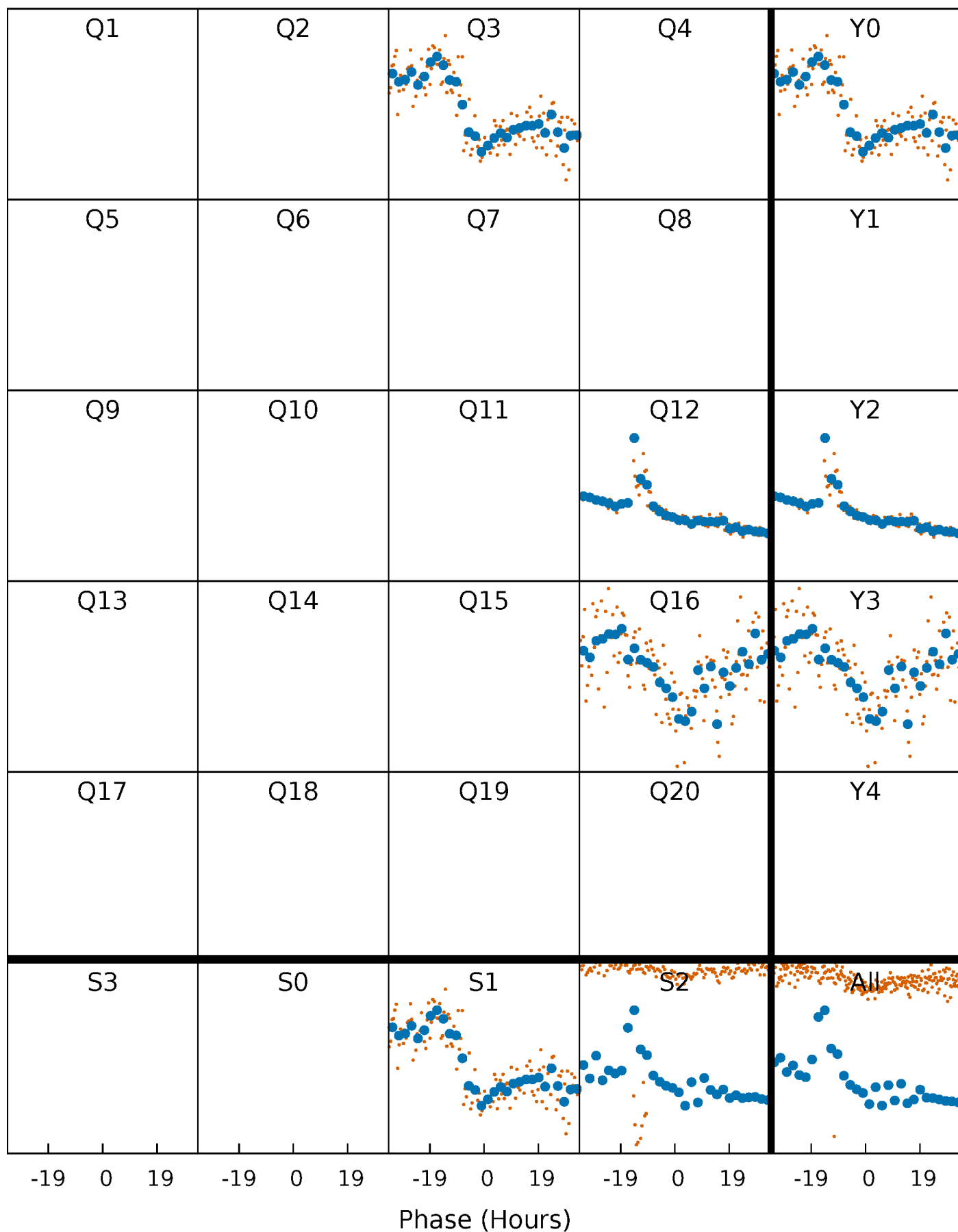


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

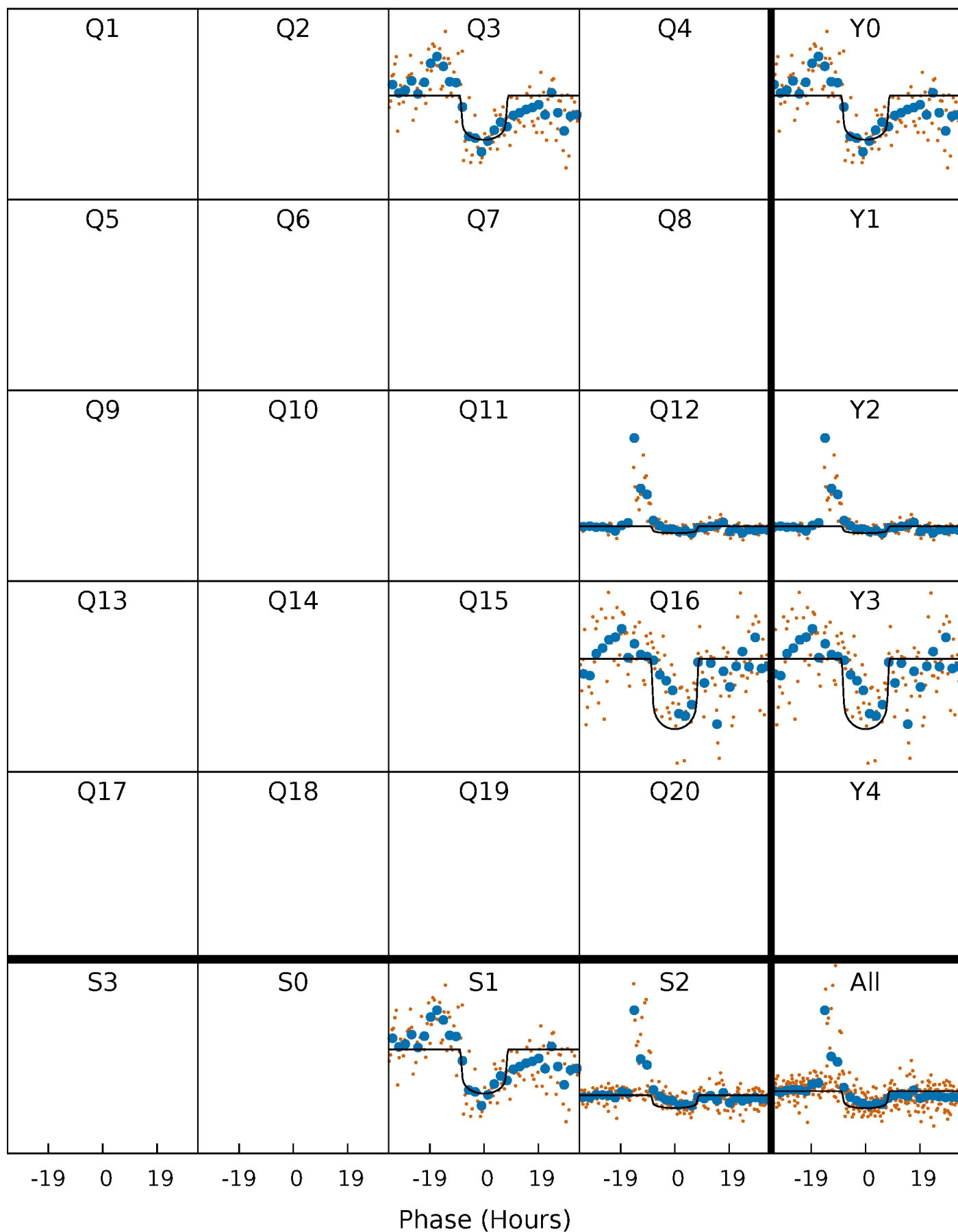
TCE 003124511-01 P=382.841934 Days  $T_0=345.296953$  (BKJD)





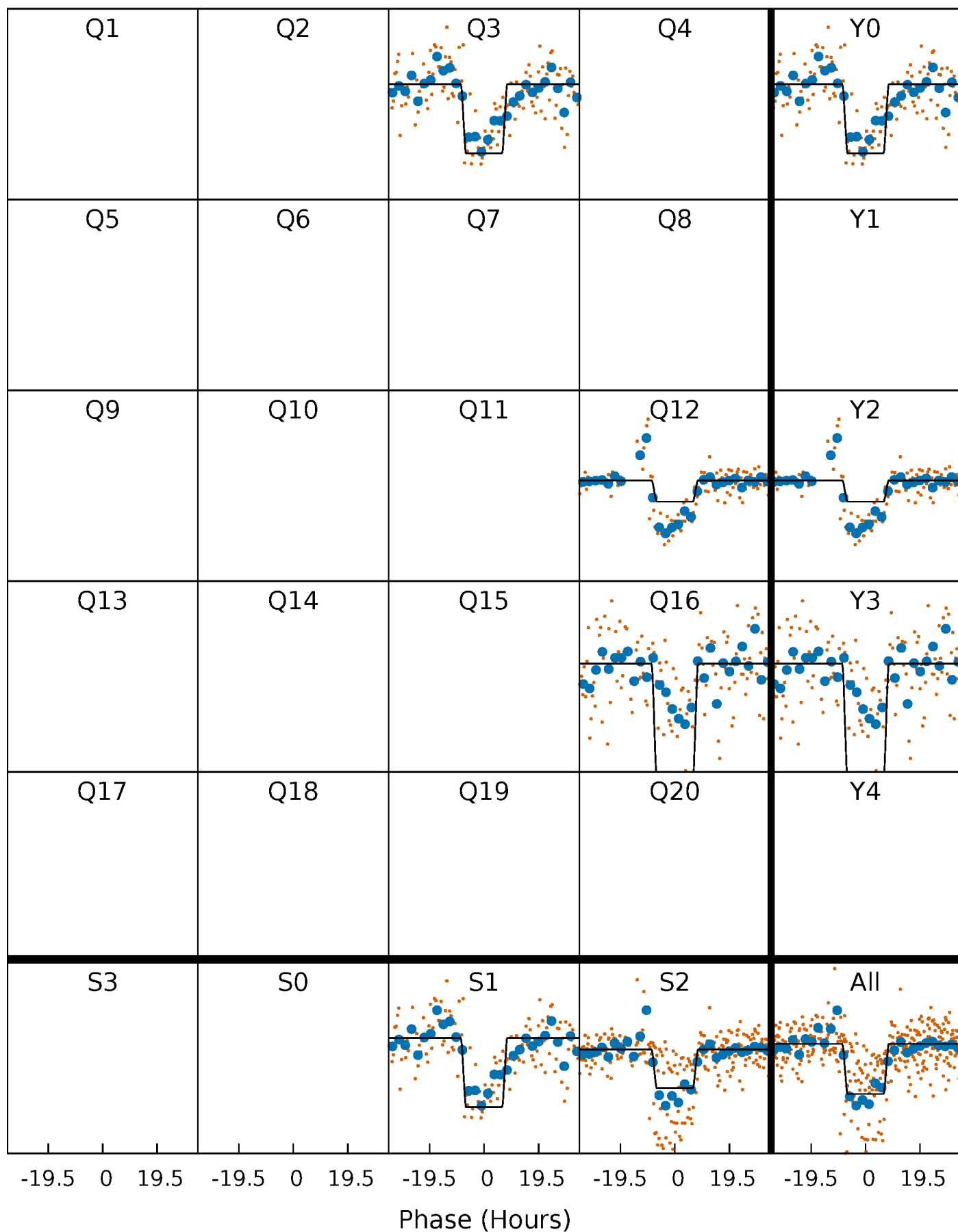
# DV Quarter-Phased Transit Curves

TCE 003124511-01 P=382.841934 Days  $T_0=345.296953$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

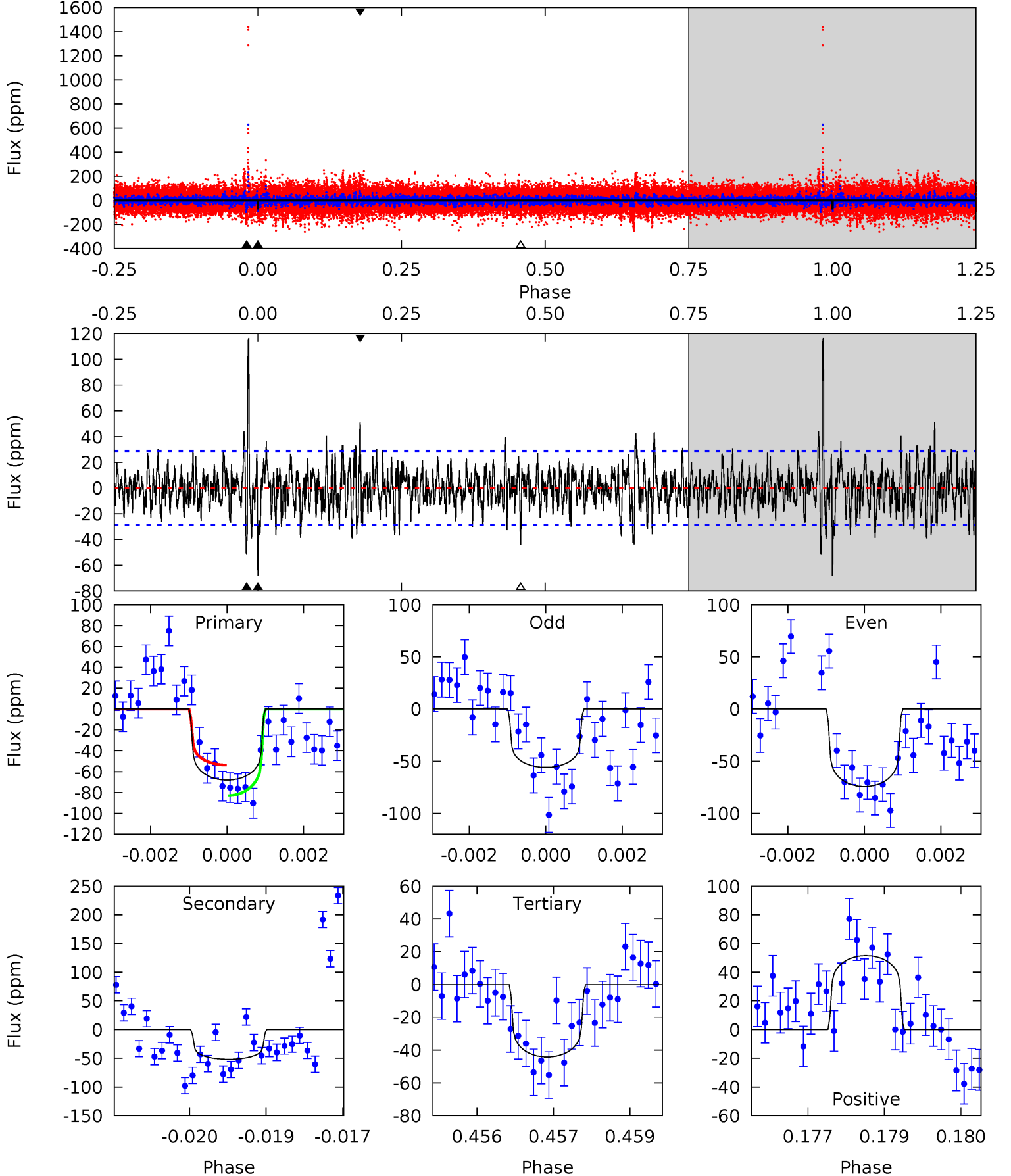
TCE 003124511-01 P=382.836369 Days  $T_0=345.290871$  (BKJD)



# DV Model-Shift Uniqueness Test

003124511-01, P = 382.841934 Days, E = 345.296953 Days

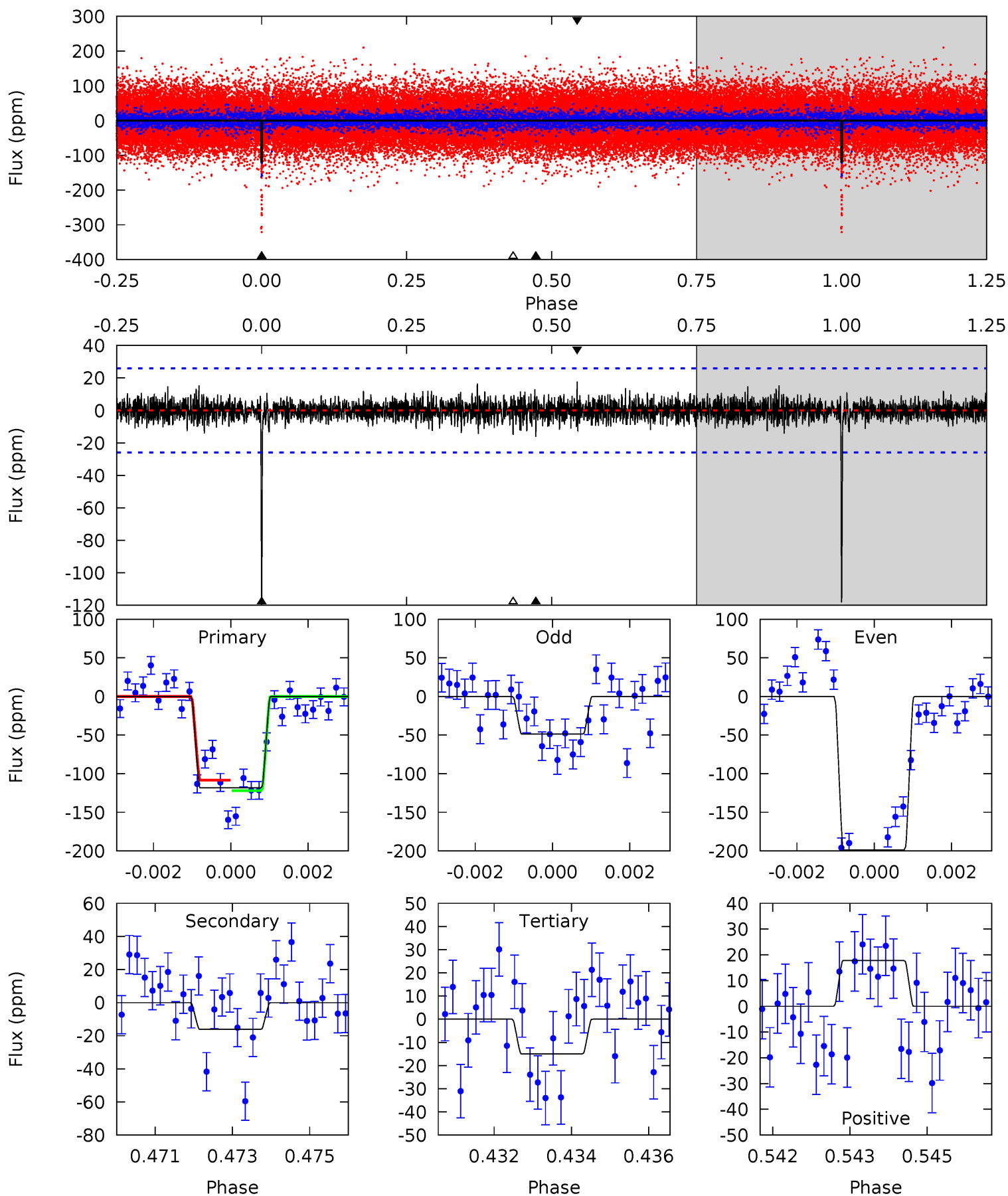
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	9.58	8.19	9.55	5.34	3.11	2.51	4.42	3.06	1.39	0.03	1.59	1.22	0.63	2.72



# Alt Model-Shift Uniqueness Test

003124511-01, P = 382.836369 Days, E = 345.290871 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
24.5	3.34	3.10	3.68	5.35	3.13	0.86	21.4	20.8	0.25	-0.33	15.6	1.41	0.13	1.39



### Stellar Parameters For KIC 003124511

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6102^{+164}_{-164}$	$4.152^{+0.234}_{-0.126}$	$-0.300^{+0.300}_{-0.300}$	$1.379^{+0.292}_{-0.357}$	$0.984^{+0.160}_{-0.120}$	$0.529^{+0.707}_{-0.193}$
	+3%/-3%	+6%/-3%	+100%/-100%	+21%/-26%	+16%/-12%	+134%/-37%
Source	PHO1	FLK73	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 003124511-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-52 \pm 5$	$1.57^{+0.28}_{-0.28}$	$434^{+27}_{-31}$	$5122^{+345}_{-297}$	$12330^{+5928}_{-3828}$
Alt.	$-16 \pm 5$	$1.76^{+0.30}_{-0.32}$	$431^{+25}_{-33}$	$3881^{+264}_{-276}$	$2966^{+1683}_{-1080}$

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

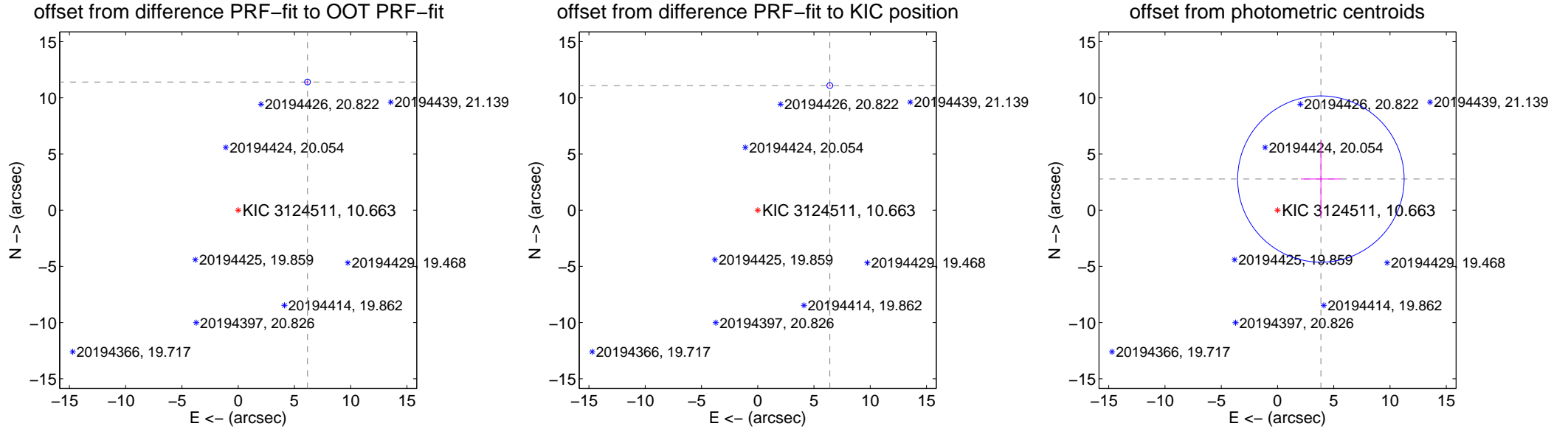
## DV Centroid Data

Supplemental centroid analysis for 003124511-01. **Kepler magnitude: 10.66.** Transit SNR 8.41

**There are 1 quarters with good PRF difference image offsets**

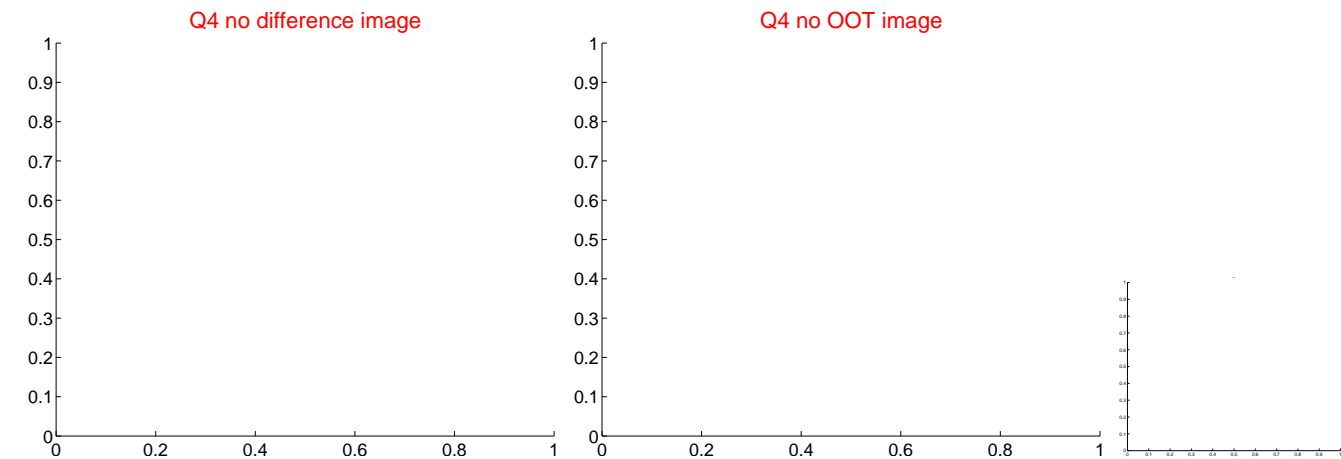
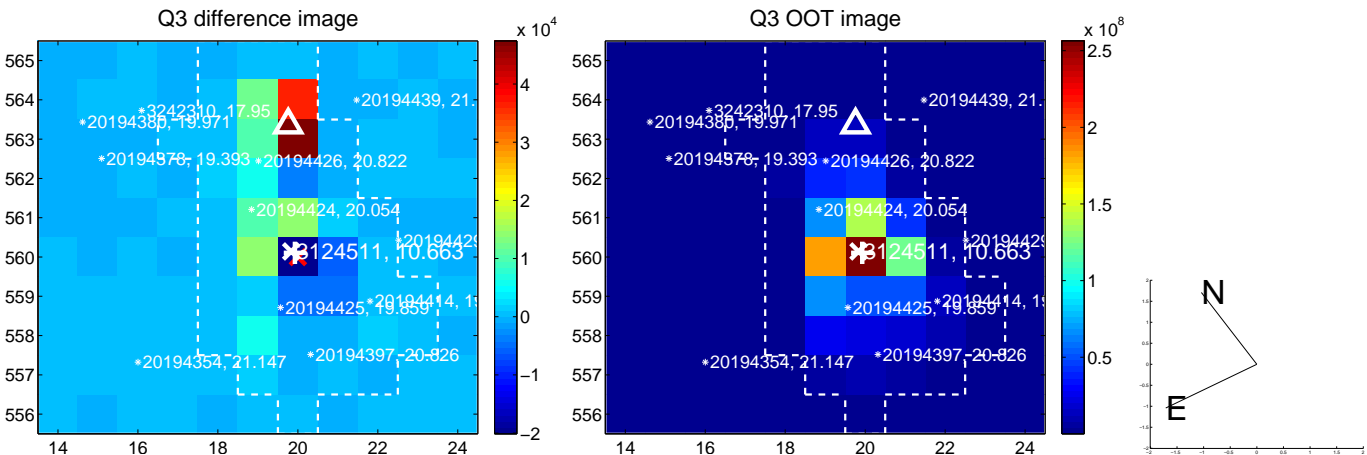
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>12.965 <math>\pm</math> 0.086</b>	<b>150.39</b>	-6.161 $\pm$ 0.087	11.407 $\pm$ 0.086
PRF-fit source offset from KIC position	<b>12.809 <math>\pm</math> 0.086</b>	<b>148.54</b>	-6.407 $\pm$ 0.087	11.092 $\pm$ 0.086
photometric centroid source offset	4.75 $\pm$ 2.47	1.93	-3.86 $\pm$ 1.77	2.77 $\pm$ 3.43



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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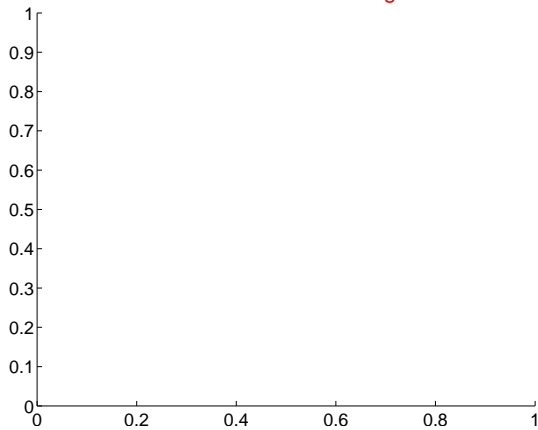


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

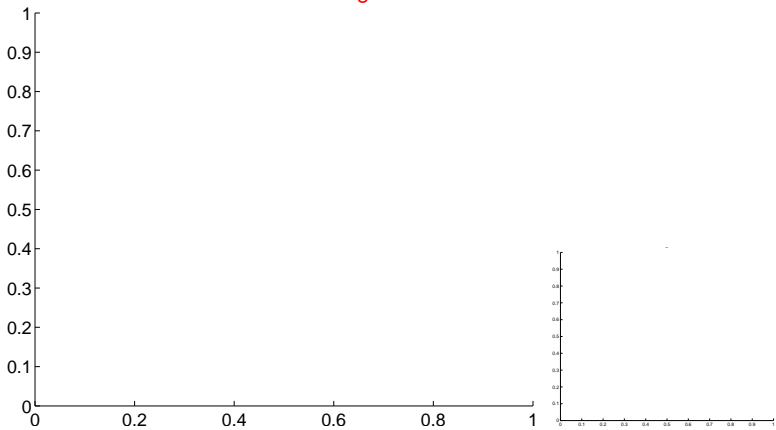


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

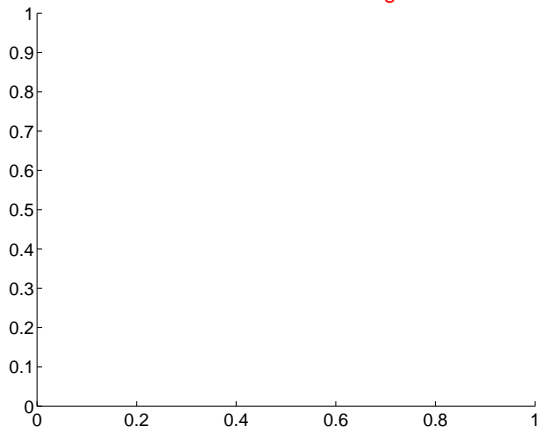
Q13 no difference image



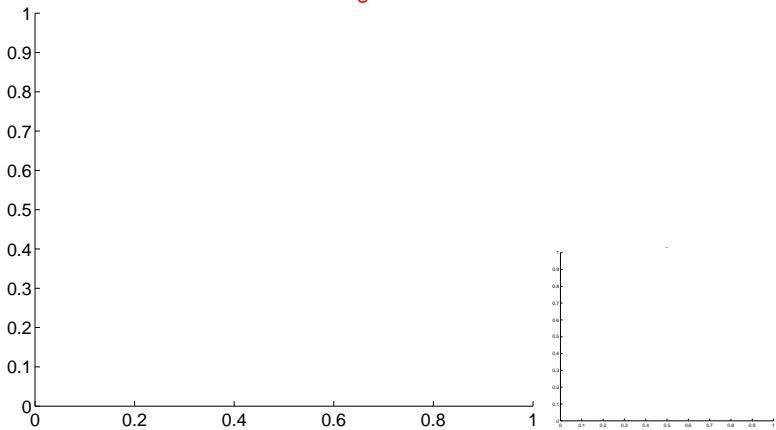
Q13 no OOT image



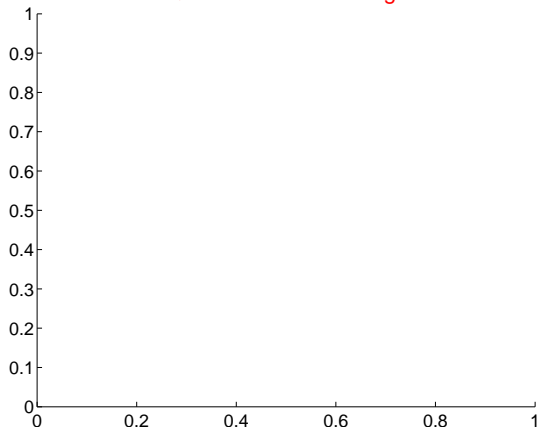
Q14 no difference image



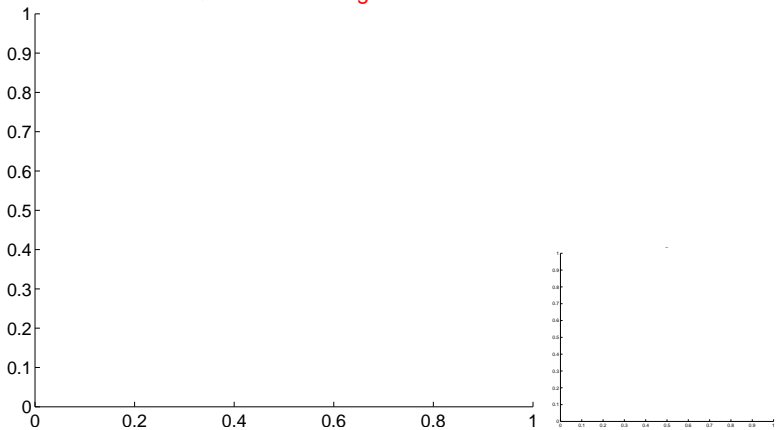
Q14 no OOT image



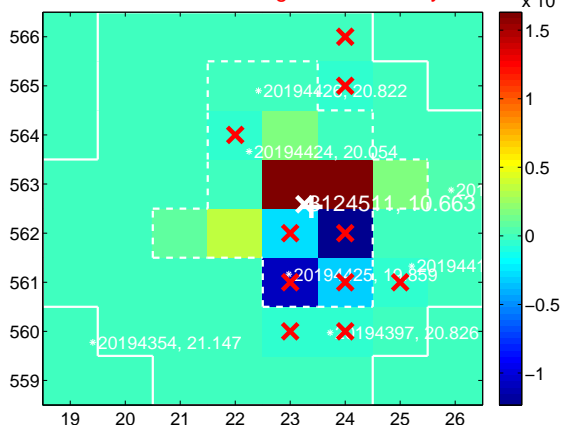
Q15 no difference image



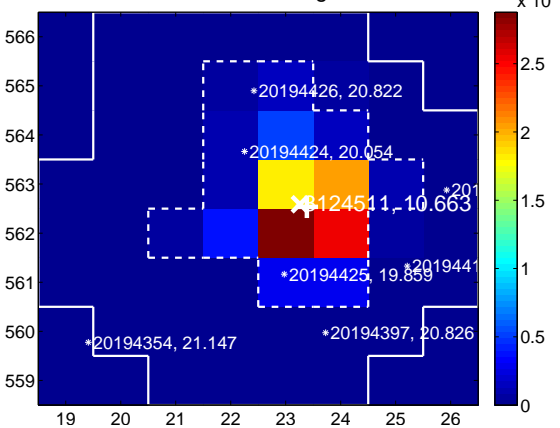
Q15 no OOT image



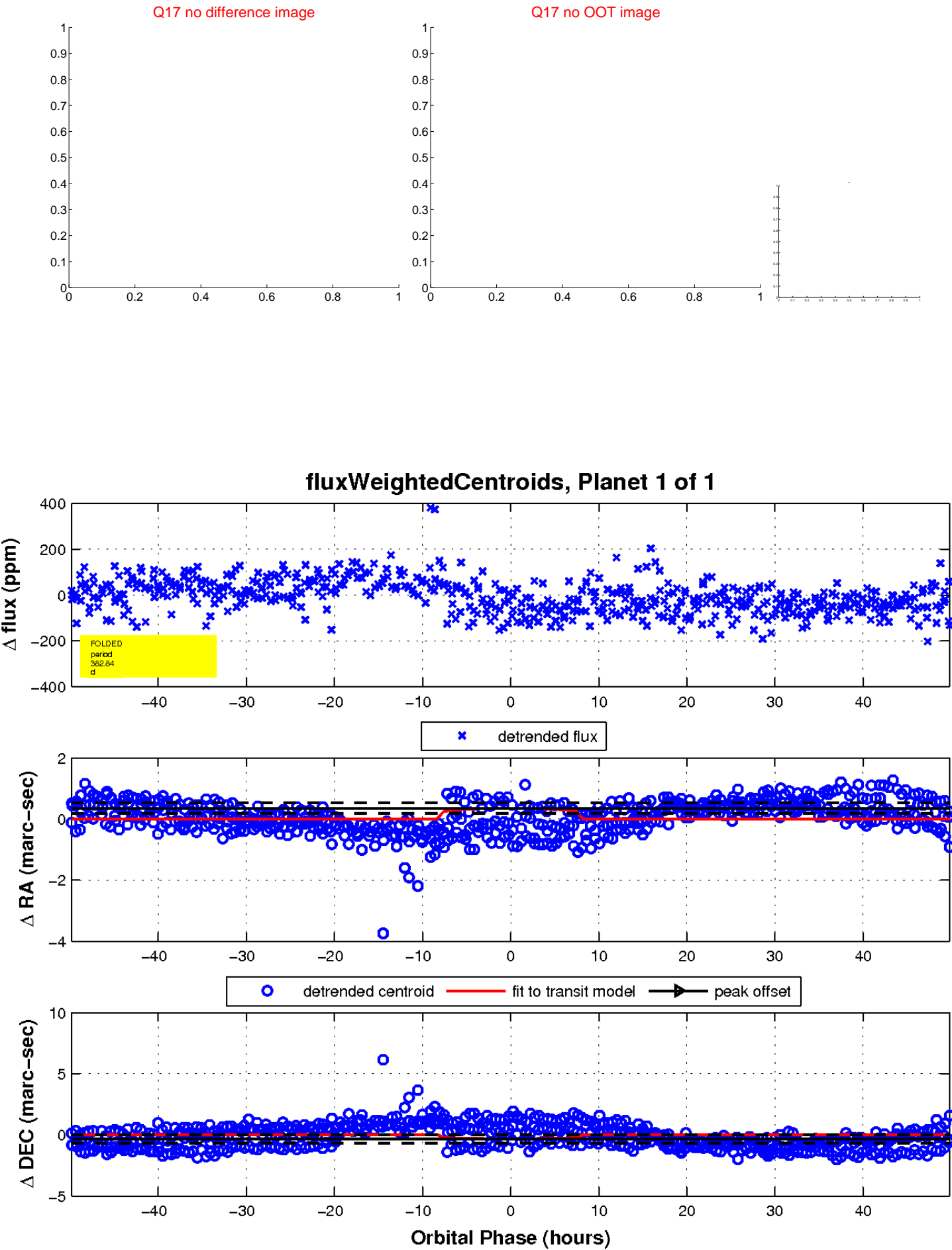
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

