

# KIC 004824987

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004824987-01	OBS	No	355.850722	373.531164	1174.8	6.274	8.5	6.4	0.80	5359	2.88	0.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004824987-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—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.

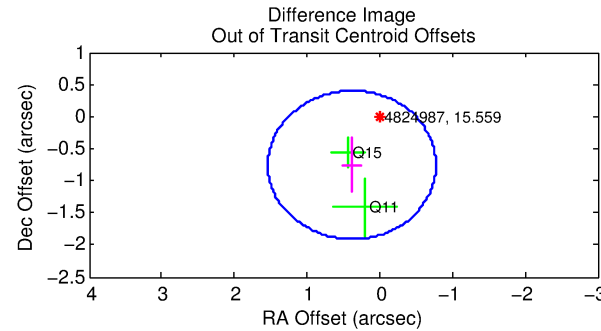
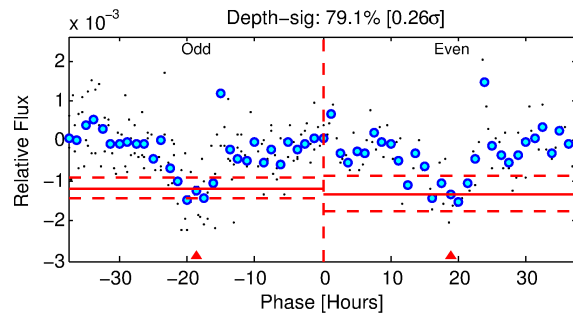
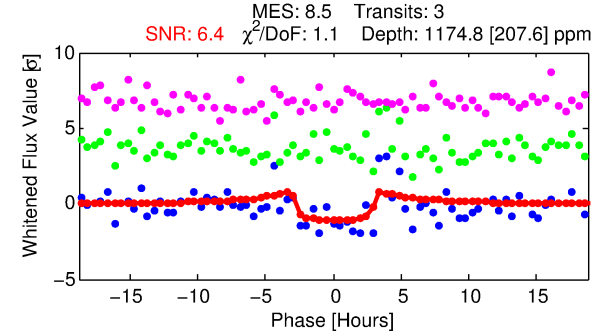
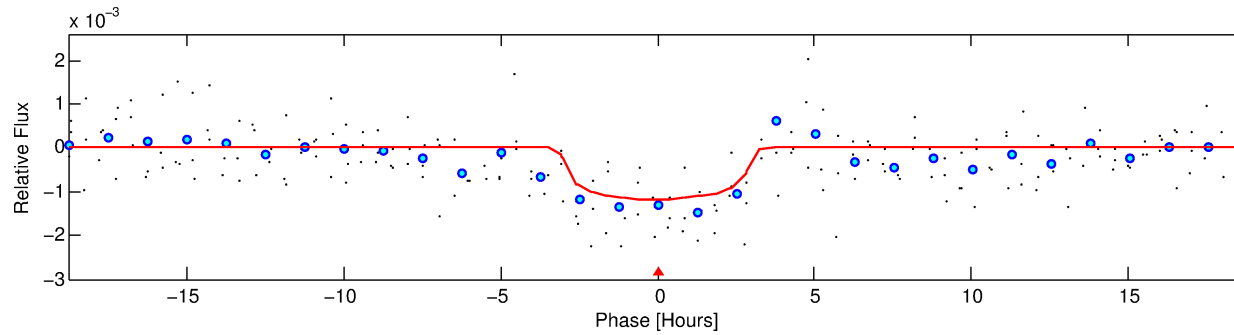
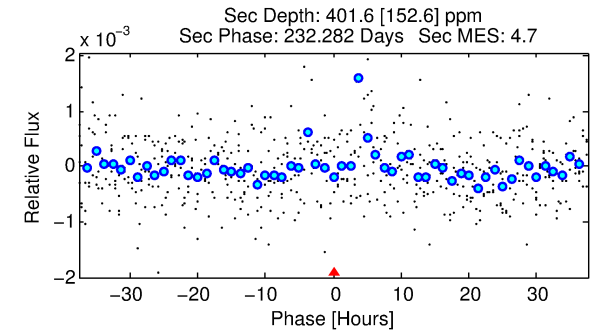
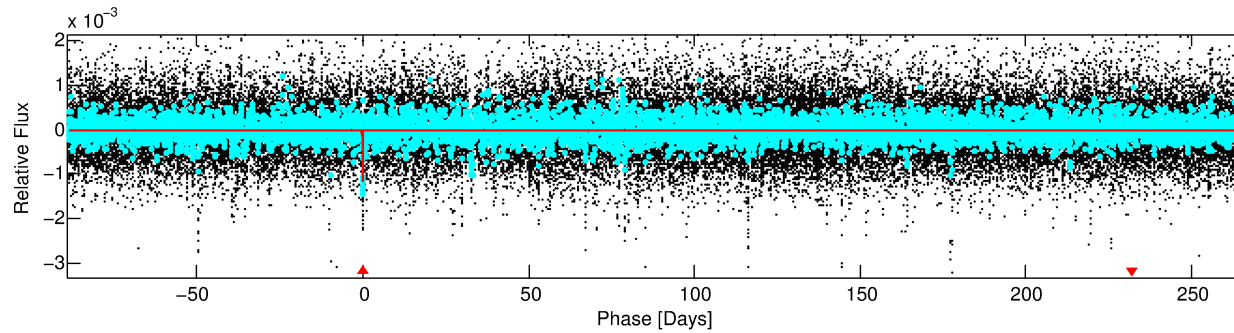
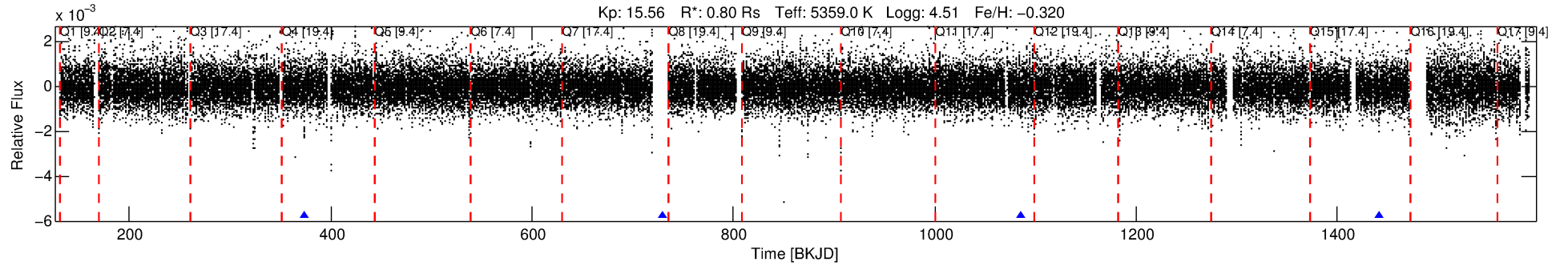
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004824987-01

No Significant Match Found

# DV One-Page Summary

KIC: 4824987 Candidate: 1 of 1 Period: 355.851 d



## DV Fit Results:

Period = 355.85072 [0.00540] d  
Epoch = 373.5312 [0.0124] BKJD  
Rp/R\* = 0.0331 [0.0292]  
a/R\* = 343.16 [1192.73]  
b = 0.66 [2.97]  
Seff = 0.59 [0.12]  
Teq = 223 [11] K  
Rp = 2.88 [2.58] Re  
a = 0.8957 [0.1043] AU  
Ag = 21353.21 [38719.14] [0.55σ]  
Teffp = 4168 [1885] K [2.09σ]

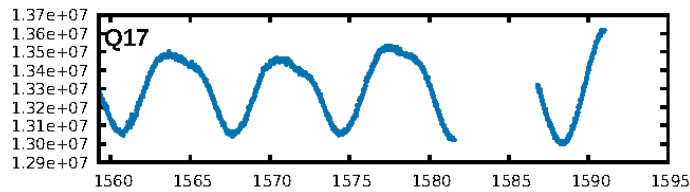
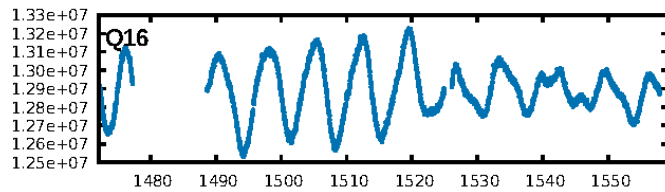
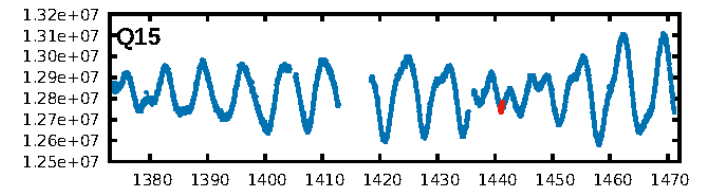
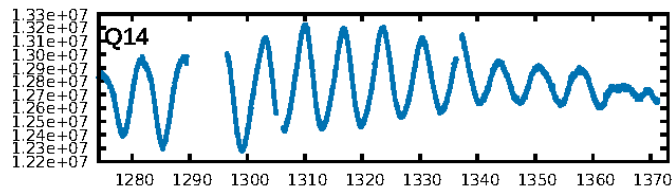
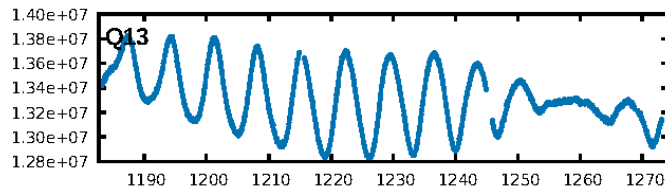
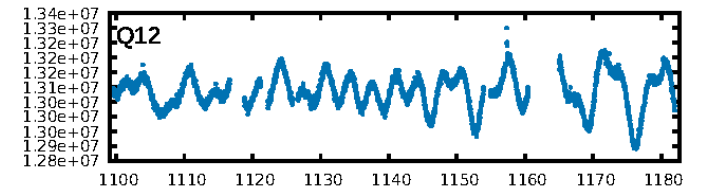
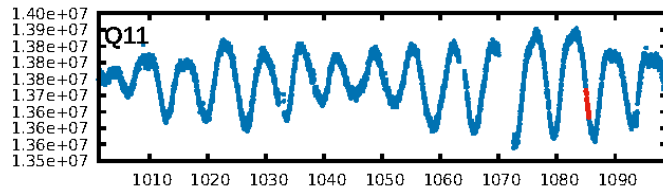
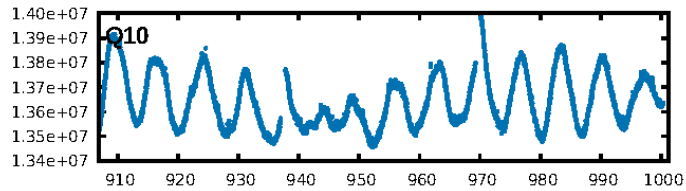
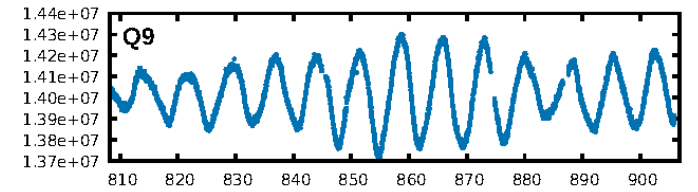
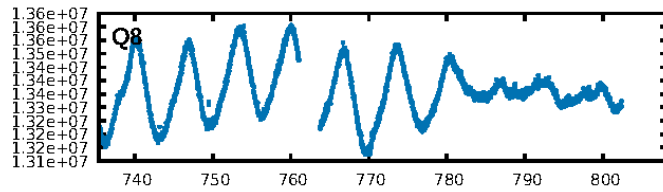
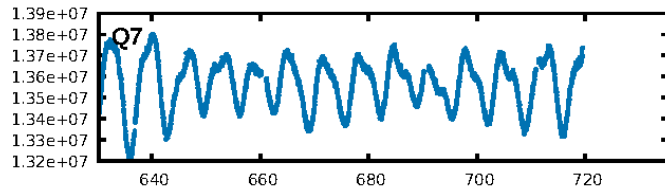
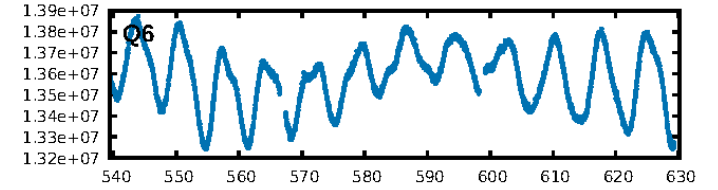
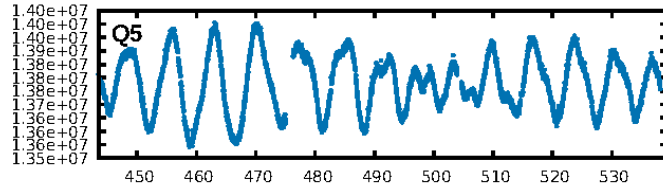
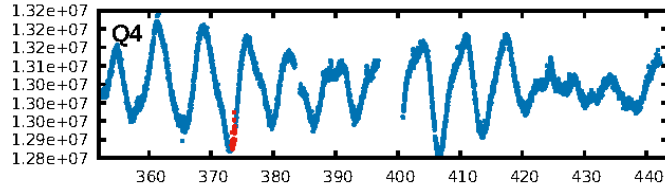
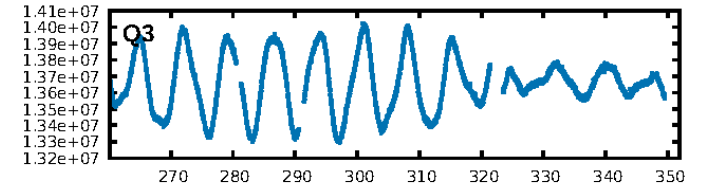
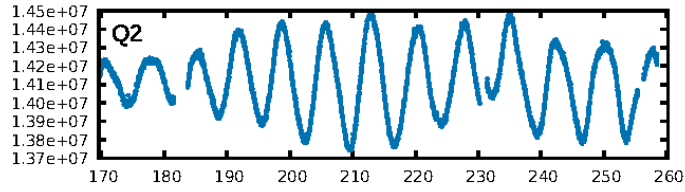
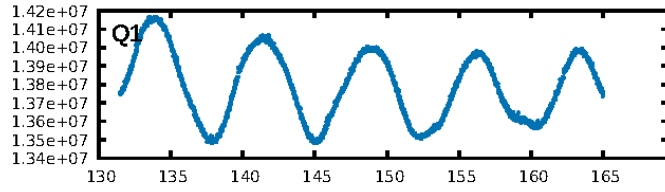
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.6%  
ModelChiSquareGof-sig: 93.7%  
**Bootstrap-pfa: 5.43e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.739  
Centroid-sig: 5.6%  
Centroid-so: 2.159 arcsec [1.72σ]  
OotOffset-rm: 0.848 arcsec [2.20σ]  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-rm: 0.811 arcsec [2.48σ]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

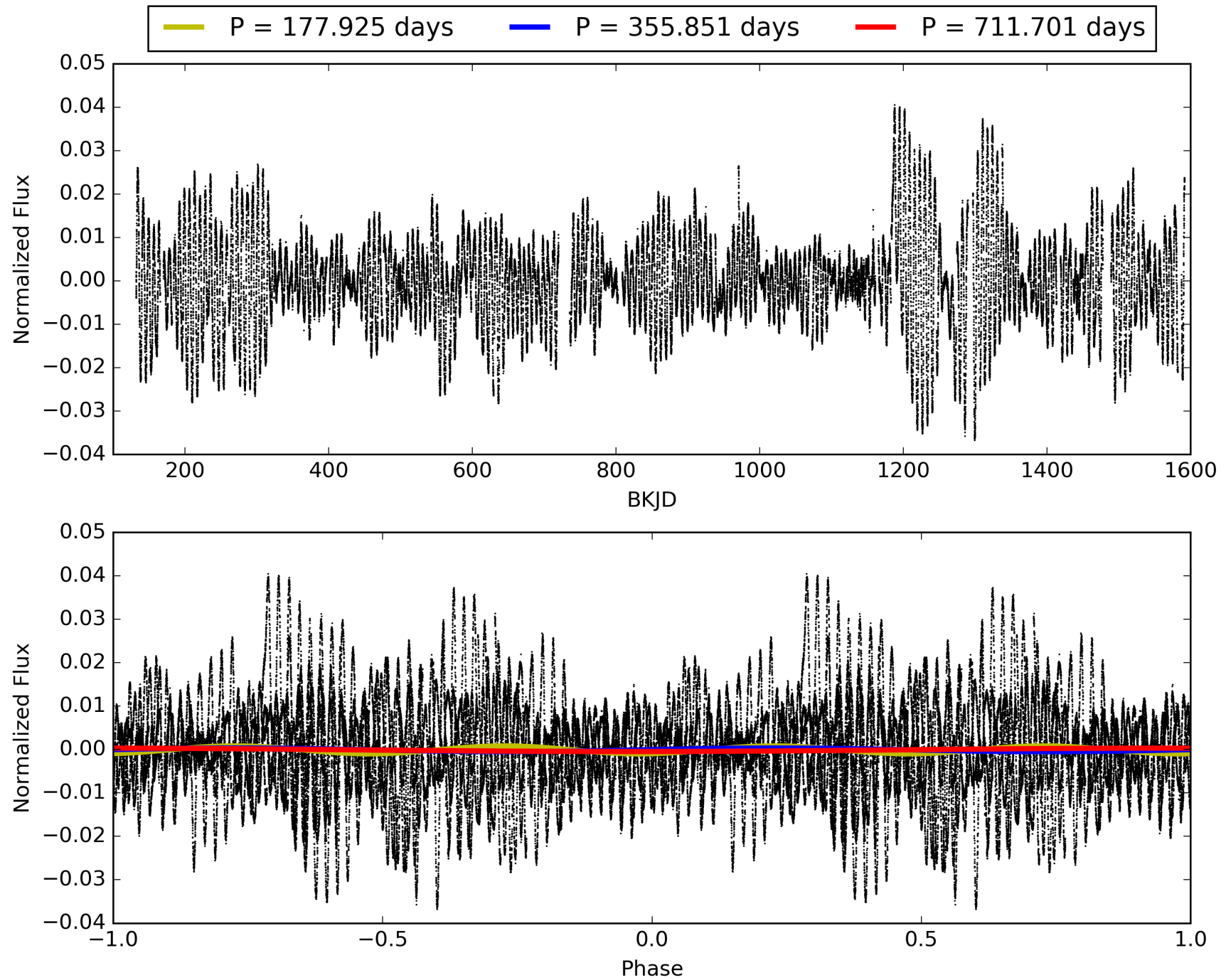
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:52:04 Z

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

# TCE 004824987-01, PDC Light Curves

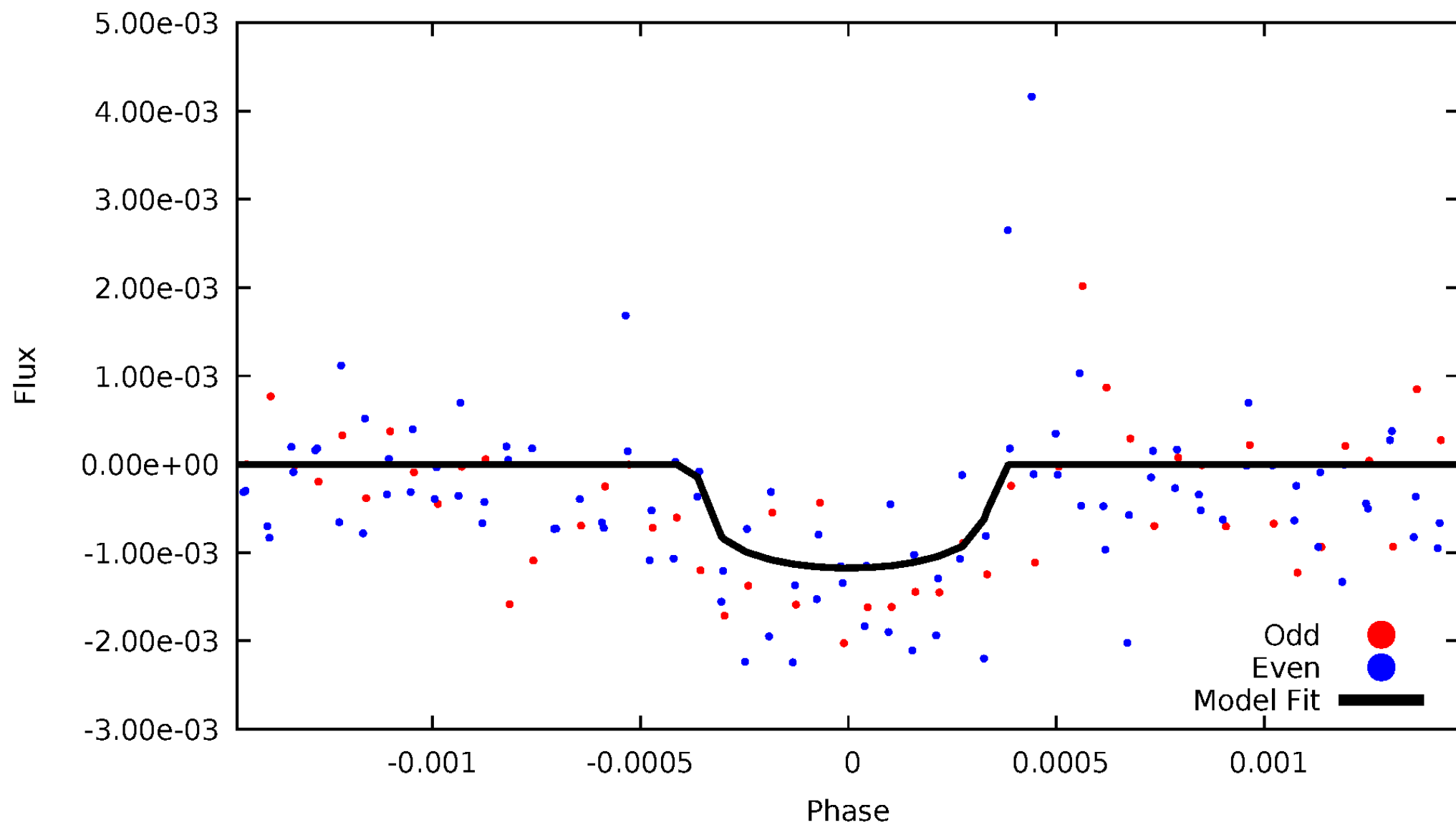


TCE 004824987-01



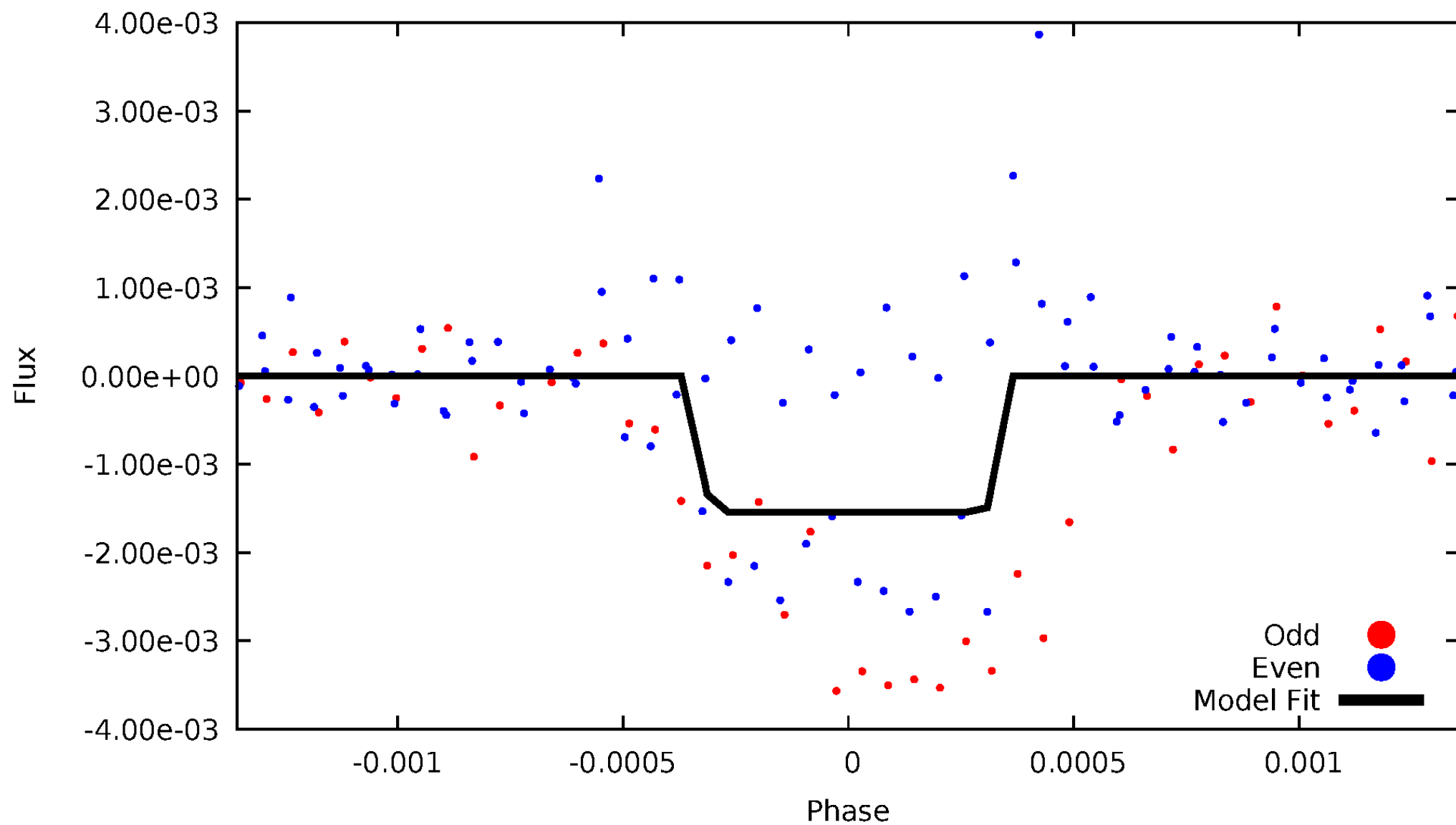
# DV Odd/Even

TCE 004824987-01



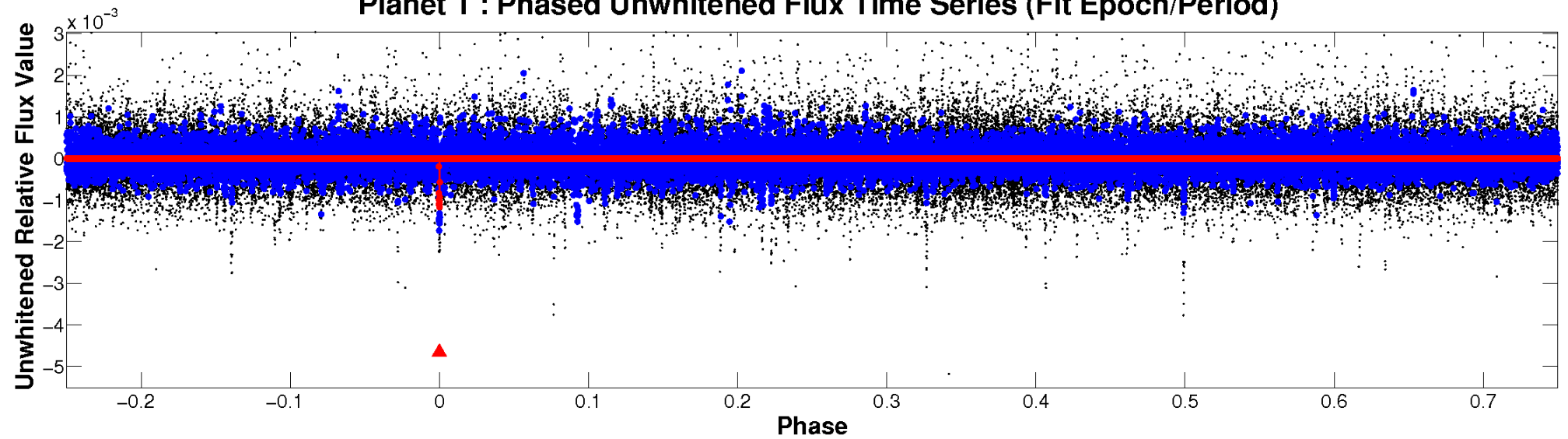
# ALT Odd/Even

TCE 004824987-01

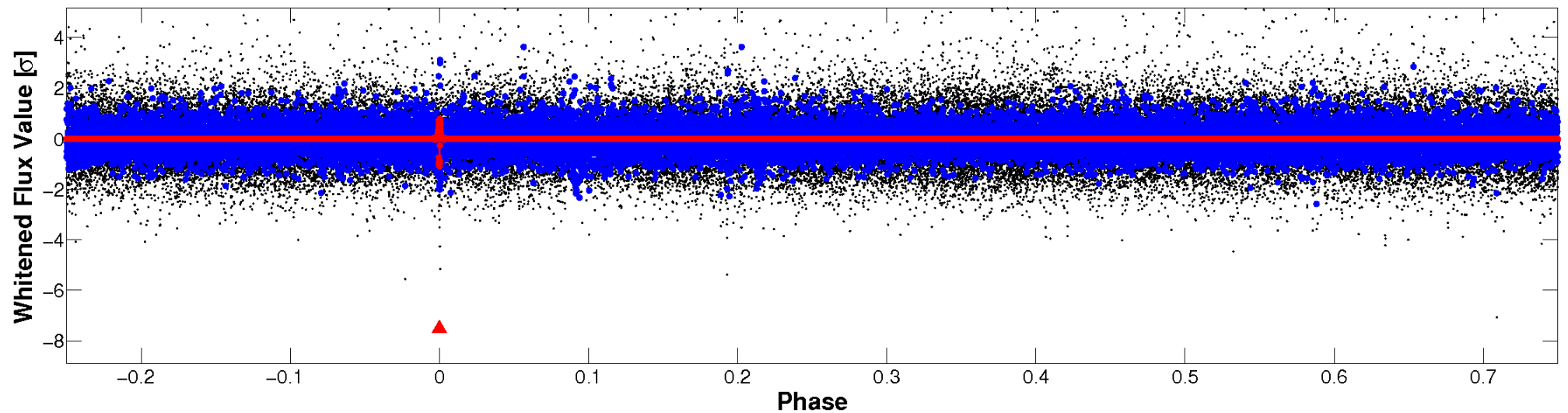


# Non-Whitened Vs. Whitened Light Curve

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

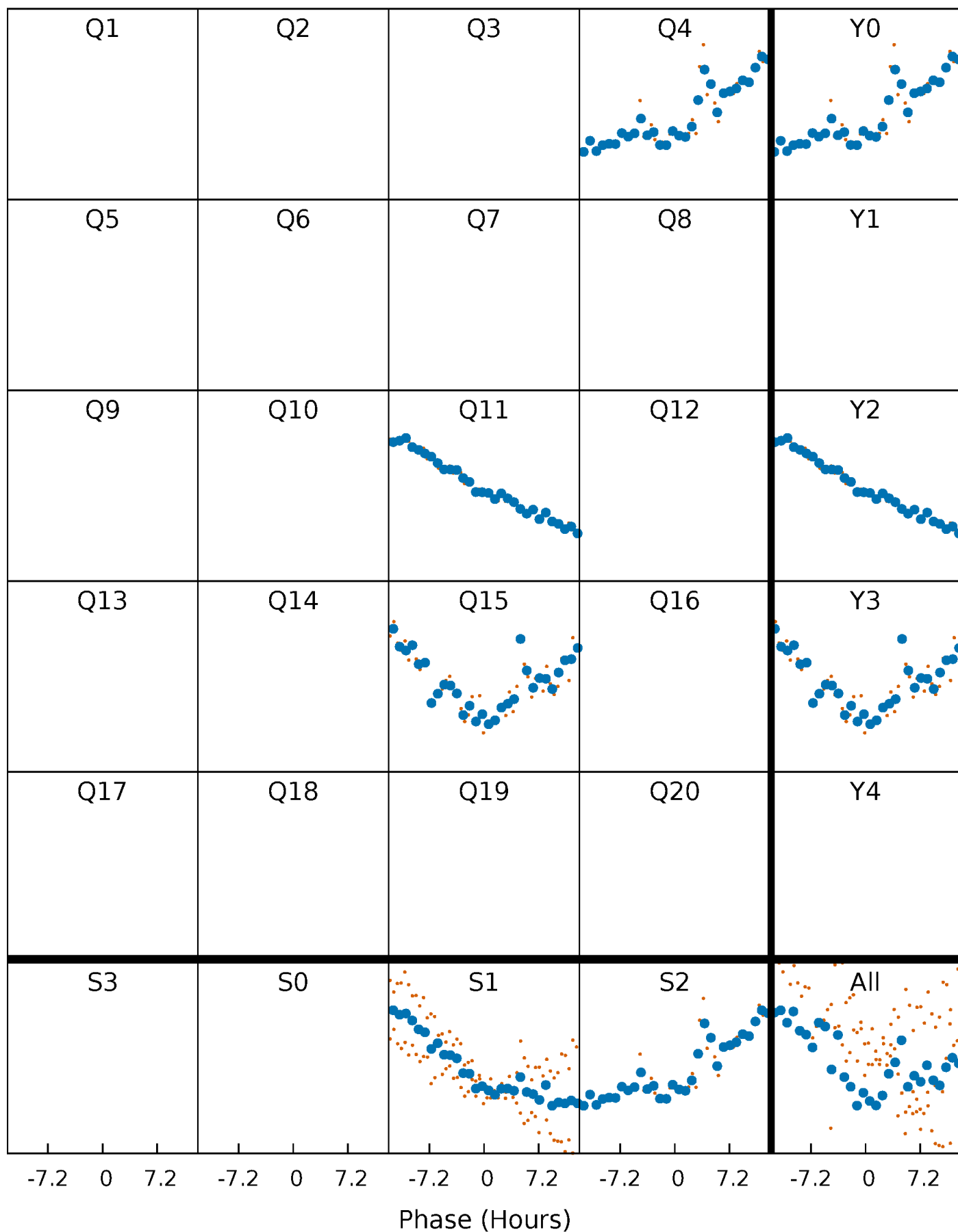


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

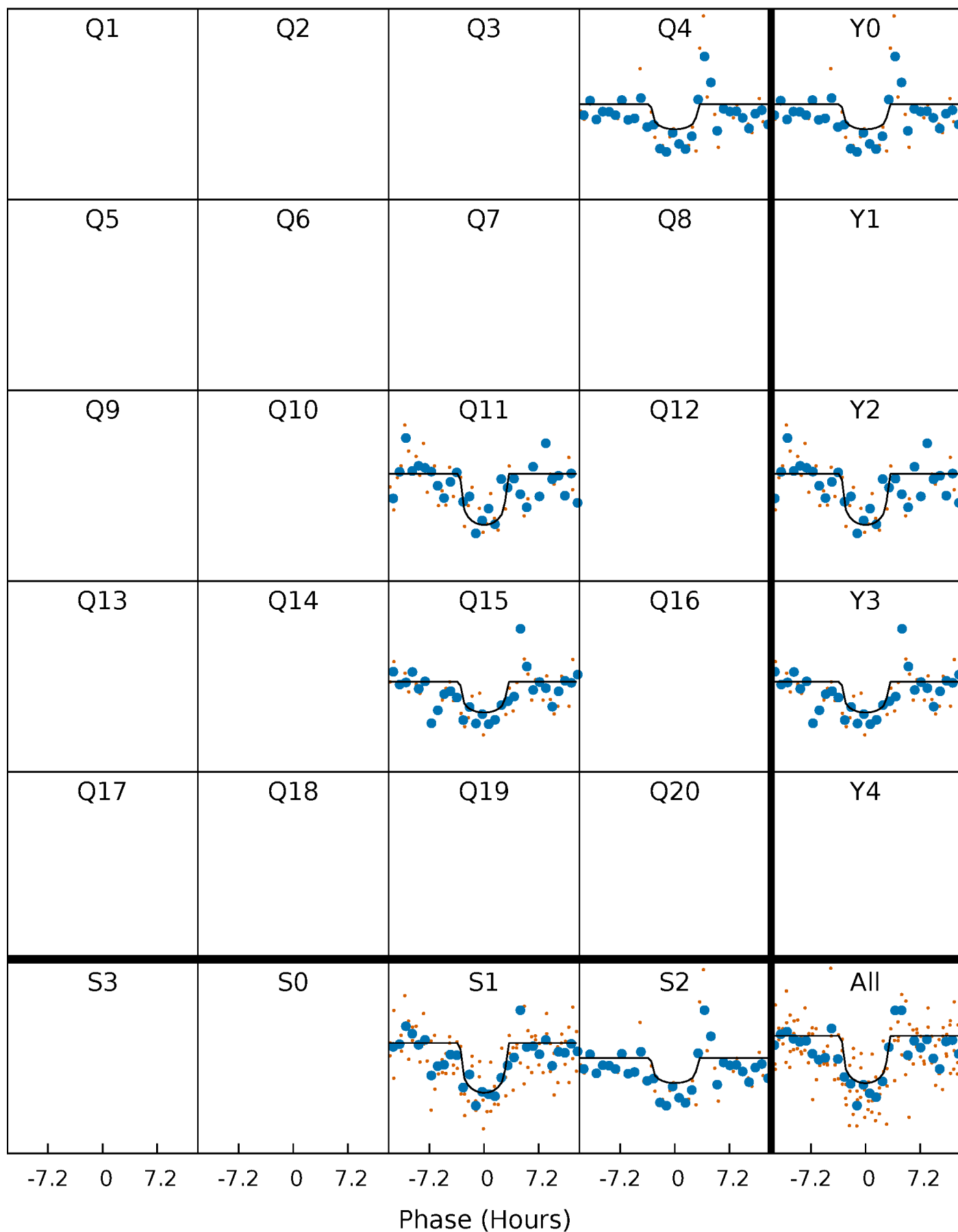
TCE 004824987-01 P=355.850722 Days  $T_0=373.531164$  (BKJD)





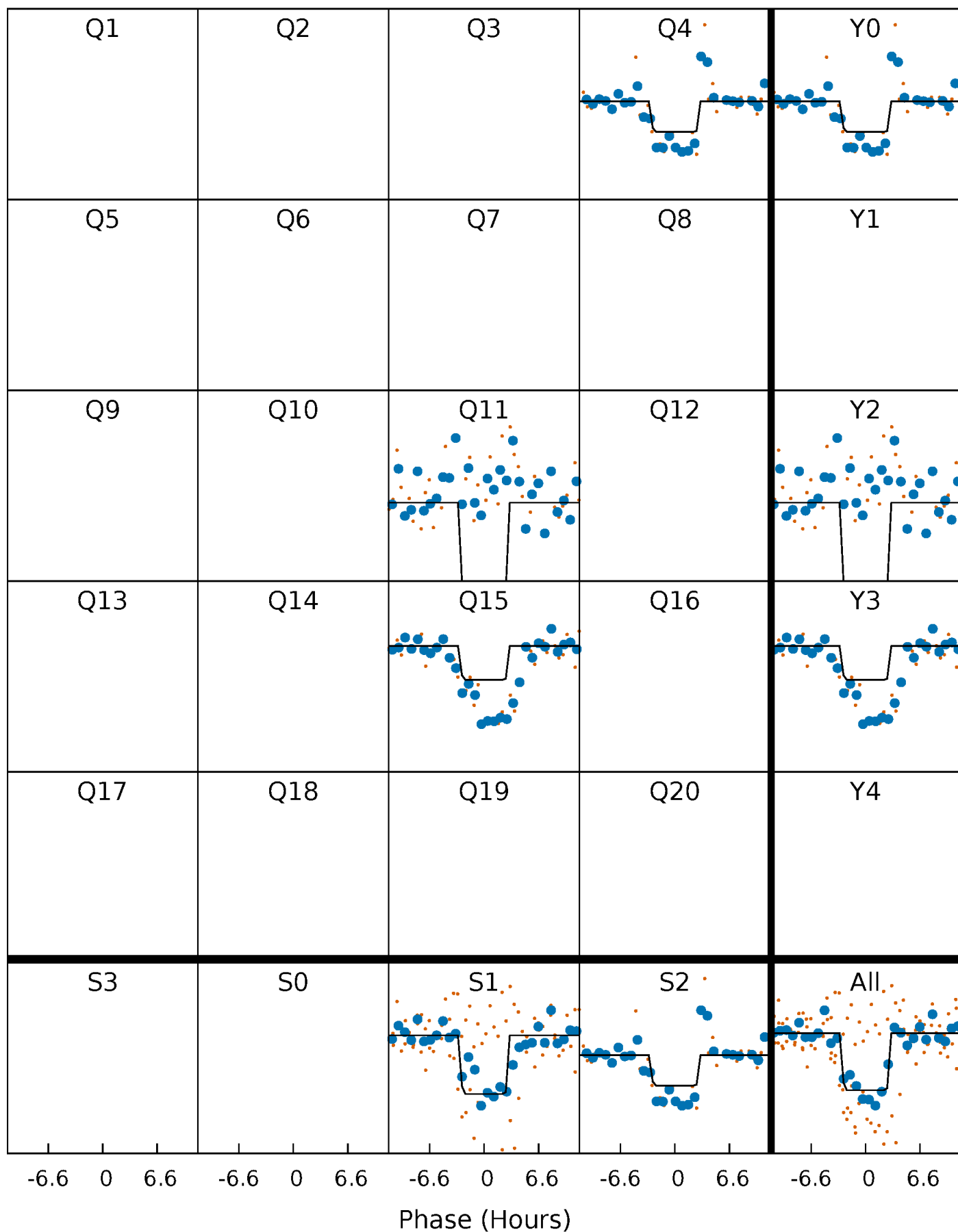
# DV Quarter-Phased Transit Curves

TCE 004824987-01 P=355.850722 Days  $T_0=373.531164$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

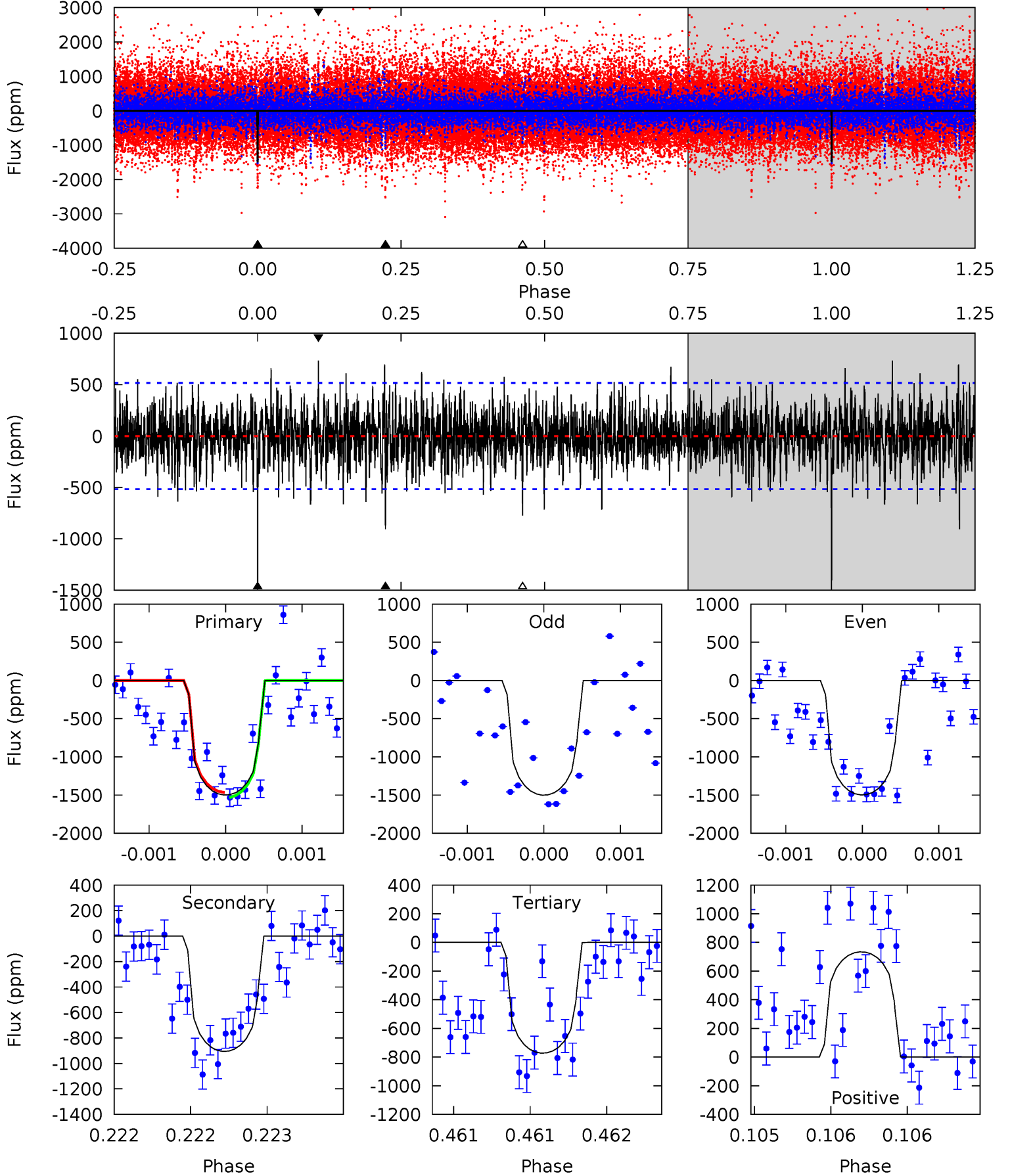
TCE 004824987-01 P=355.850447 Days  $T_0=373.537553$  (BKJD)



# DV Model-Shift Uniqueness Test

004824987-01,  $P = 355.850722$  Days,  $E = 17.680442$  Days

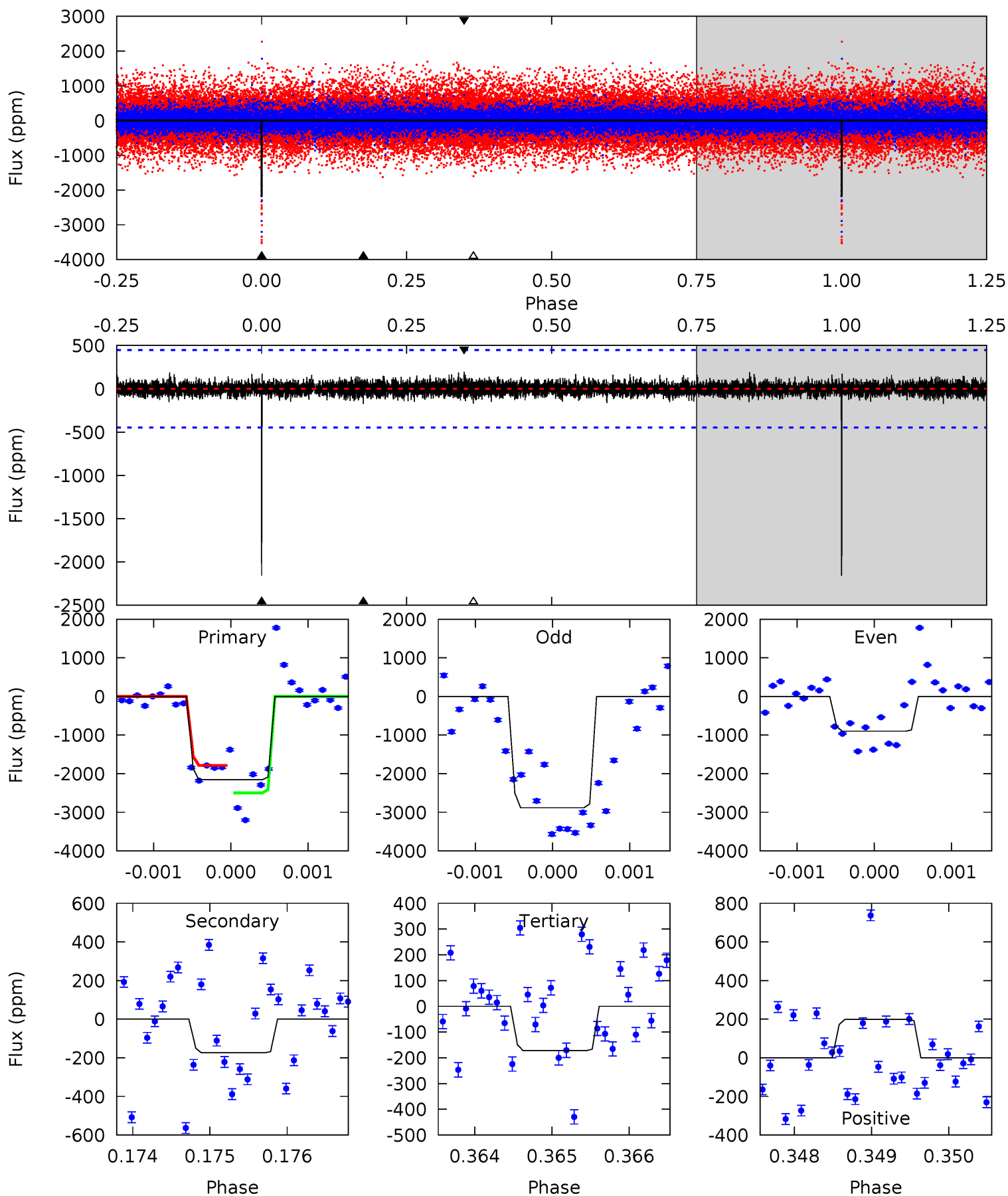
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	9.64	8.23	7.82	5.50	3.37	1.96	7.73	8.14	1.42	1.83	0.02	1.00	0.33	0.36



# Alt Model-Shift Uniqueness Test

004824987-01,  $P = 355.850447$  Days,  $E = 17.687106$  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
26.7	2.15	2.13	2.45	5.53	3.41	0.53	24.5	24.2	0.02	-0.31	13.3	0.72	0.08	0



### Stellar Parameters For KIC 004824987

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5359^{+159}_{-159}$	$4.514^{+0.090}_{-0.090}$	$-0.320^{+0.350}_{-0.300}$	$0.797^{+0.112}_{-0.092}$	$0.758^{+0.110}_{-0.055}$	$2.107^{+0.827}_{-0.592}$
	+3%/-3%	+2%/-2%	+109%/-94%	+14%/-12%	+15%/-7%	+39%/-28%
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 004824987-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-906 \pm 94$	$3.19^{+2.48}_{-1.96}$	$312^{+14}_{-13}$	$4918^{+3099}_{-944}$	$40216^{+227890}_{-27841}$
Alt.	$-174 \pm 81$	$3.79^{+2.27}_{-2.09}$	$311^{+13}_{-13}$	$3410^{+1069}_{-563}$	$5211^{+19821}_{-3726}$

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

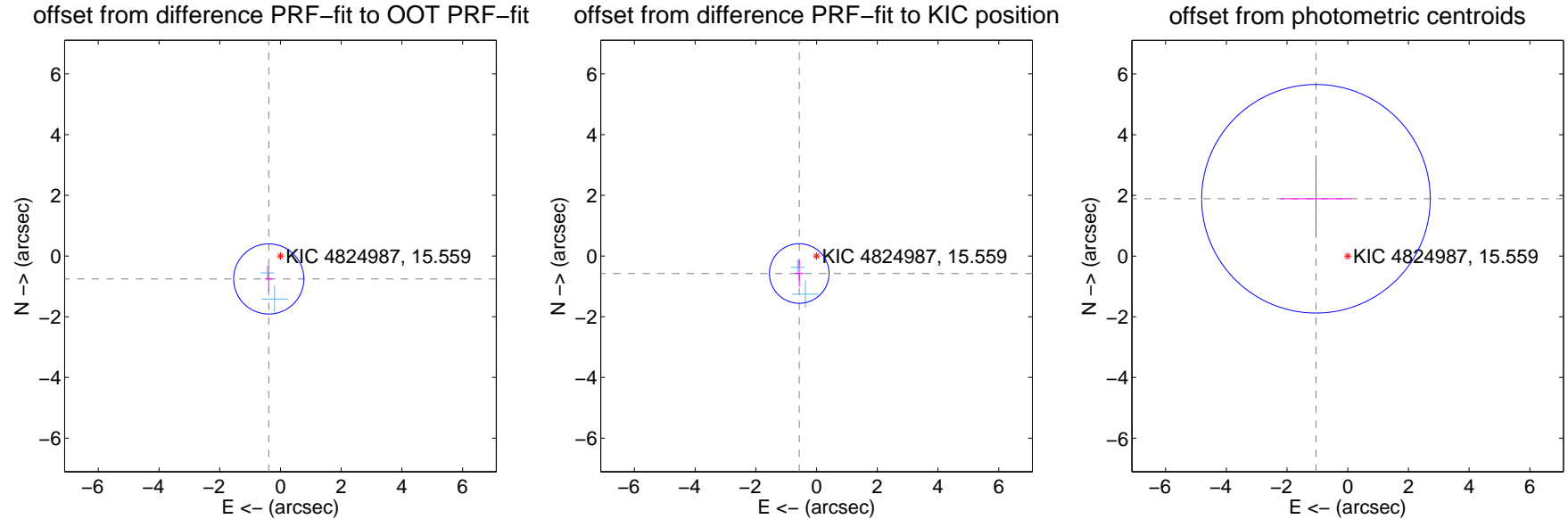
## DV Centroid Data

Supplemental centroid analysis for 004824987-01. Kepler magnitude: 15.56. Transit SNR 6.44

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.848 \pm 0.385$	2.20	$0.385 \pm 0.132$	$-0.756 \pm 0.427$
PRF-fit source offset from KIC position	$0.811 \pm 0.327$	2.48	$0.571 \pm 0.138$	$-0.576 \pm 0.440$
photometric centroid source offset	$2.16 \pm 1.26$	1.72	$1.05 \pm 1.17$	$1.89 \pm 1.28$



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.





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

Q9 no difference image



Q9 no OOT image



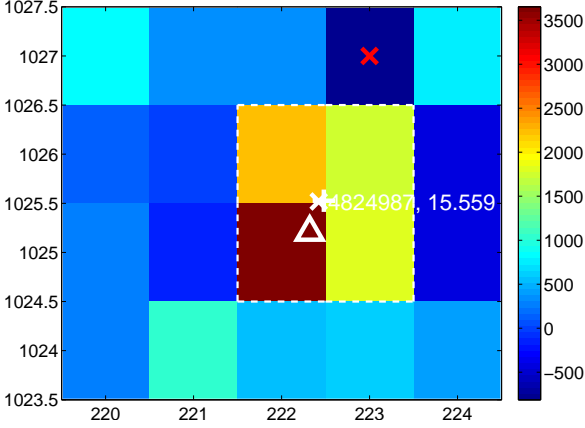
Q10 no difference image



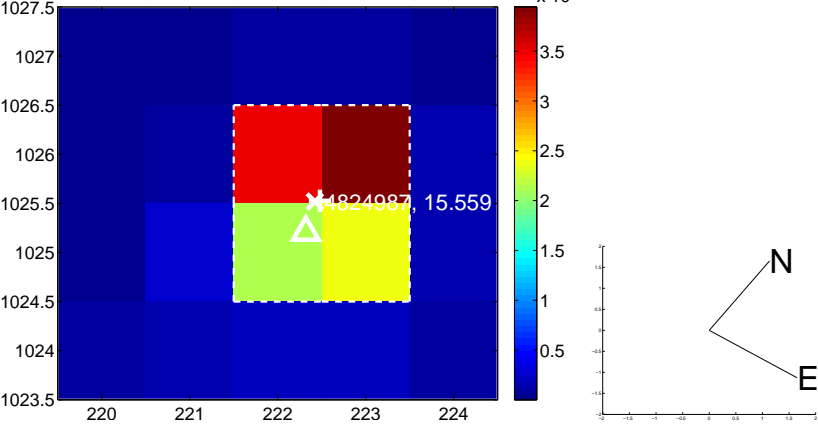
Q10 no OOT image



Q11 difference image



Q11 OOT image



Q12 no difference image



Q12 no OOT image



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



Q13 no OOT image



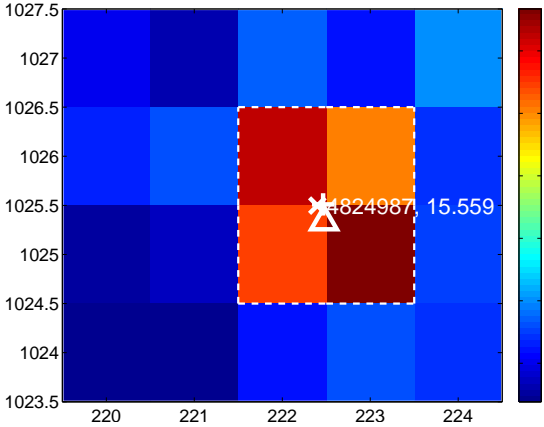
Q14 no difference image



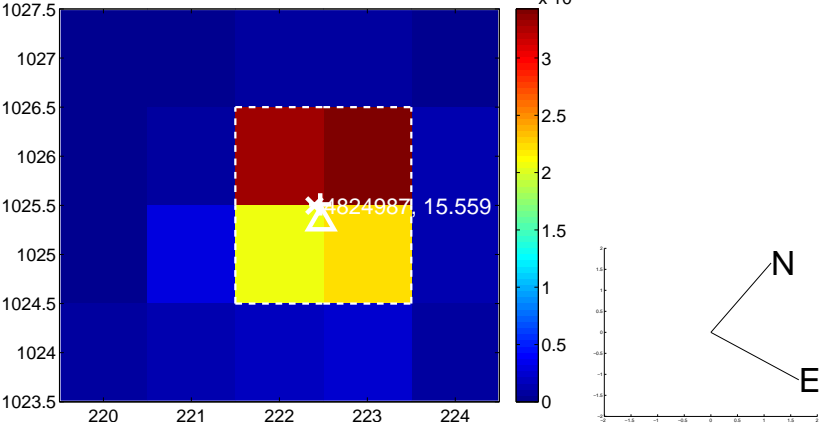
Q14 no OOT image



Q15 difference image



Q15 OOT image



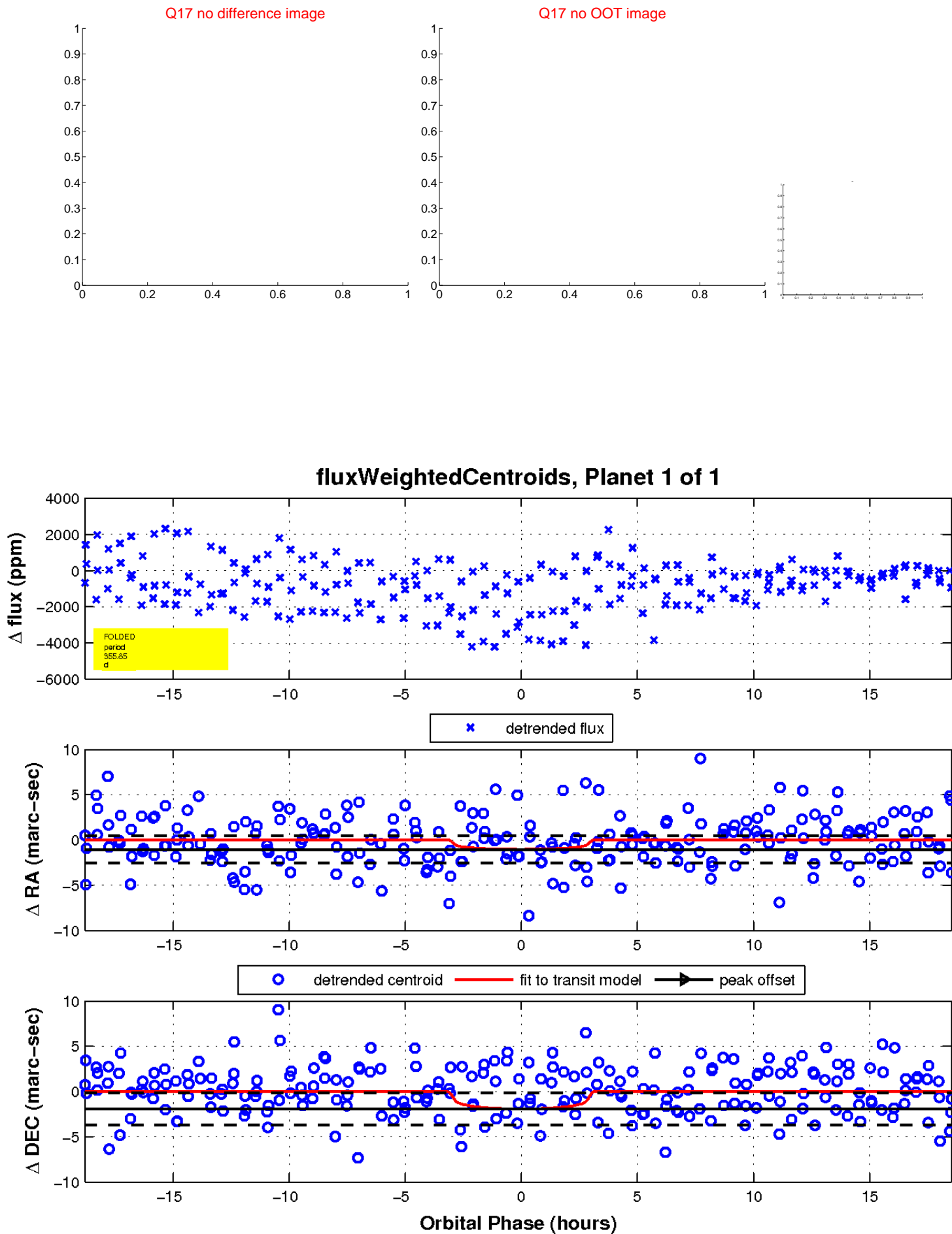
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

