

# KIC 007420017

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007420017-01	OBS	No	104.983841	148.486259	616.0	3.230	7.2	7.5	0.64	4457	2.14	1.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007420017-01	OBS	FP	0.01	1	0	0	0	MOD_NONUNIQ_ALT—MOD_POS_ALT—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.

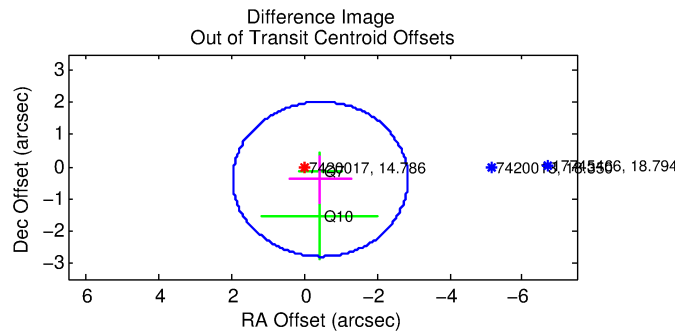
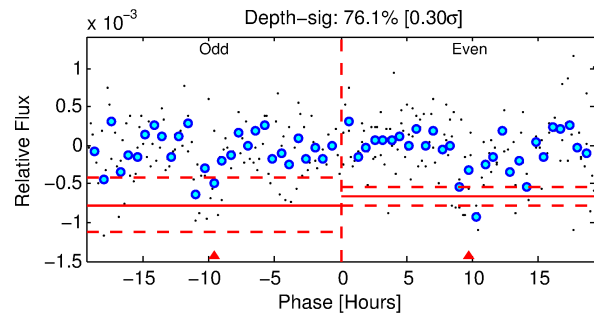
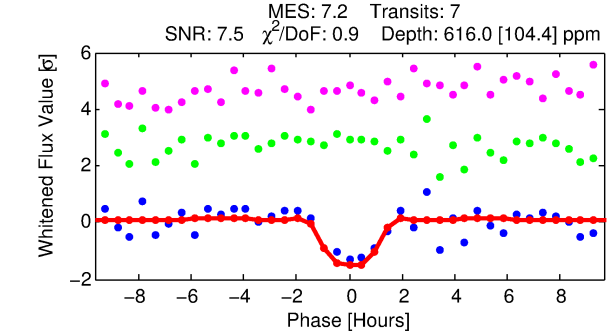
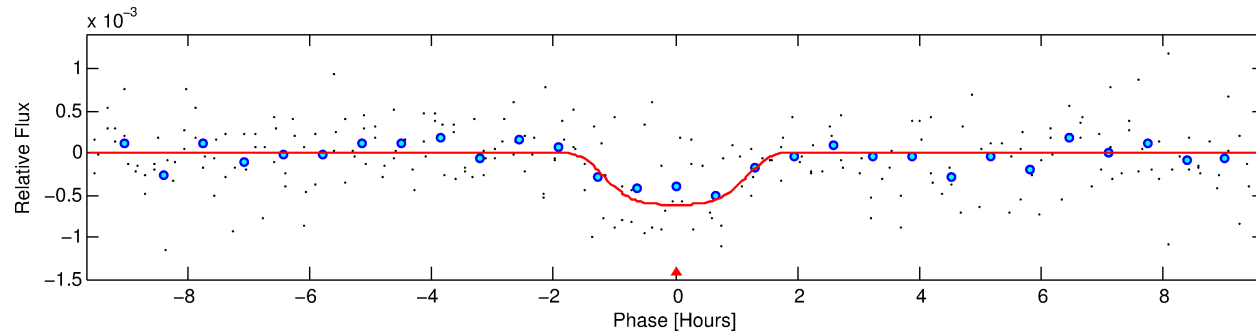
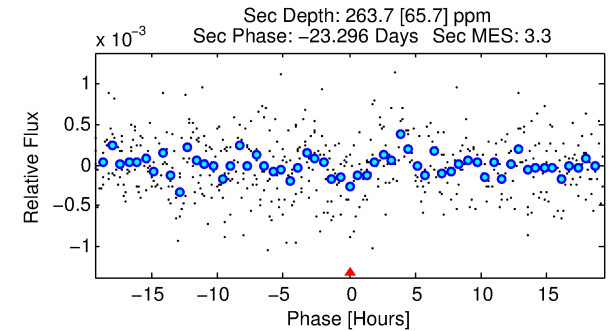
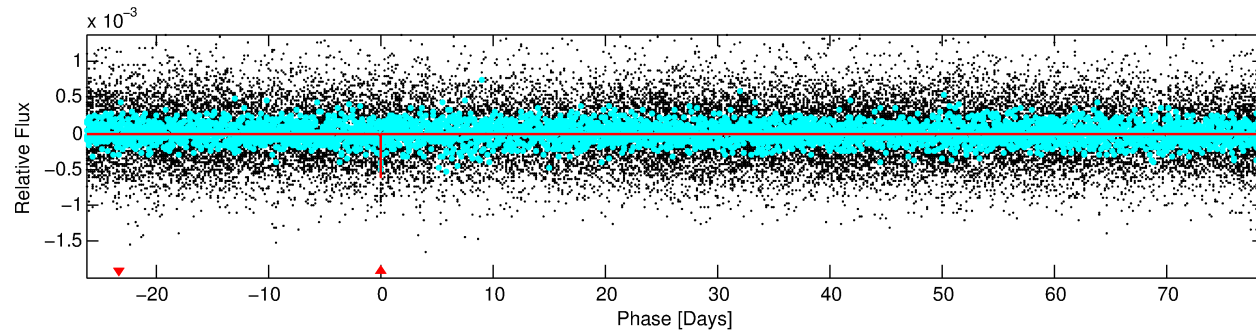
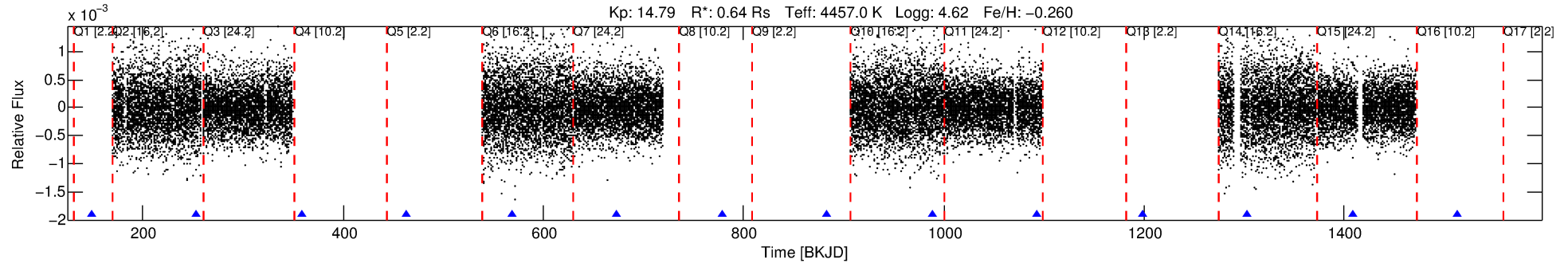
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007420017-01

No Significant Match Found

# DV One-Page Summary

KIC: 7420017 Candidate: 1 of 1 Period: 104.984 d



## DV Fit Results:

Period = 104.98384 [0.00143] d  
Epoch = 148.4863 [0.0122] BKJD  
Rp/R\* = 0.0307 [0.0051]  
a/R\* = 96.03 [42.40]  
b = 0.96 [0.04]  
Seff = 1.04 [0.18]  
Teff = 258 [11] K  
Rp = 2.14 [0.40] Re  
a = 0.3726 [0.0273] AU  
Ag = 4381.78 [1869.93] [2.34 $\sigma$ ]  
Teffp = 3242 [355] K [8.41 $\sigma$ ]

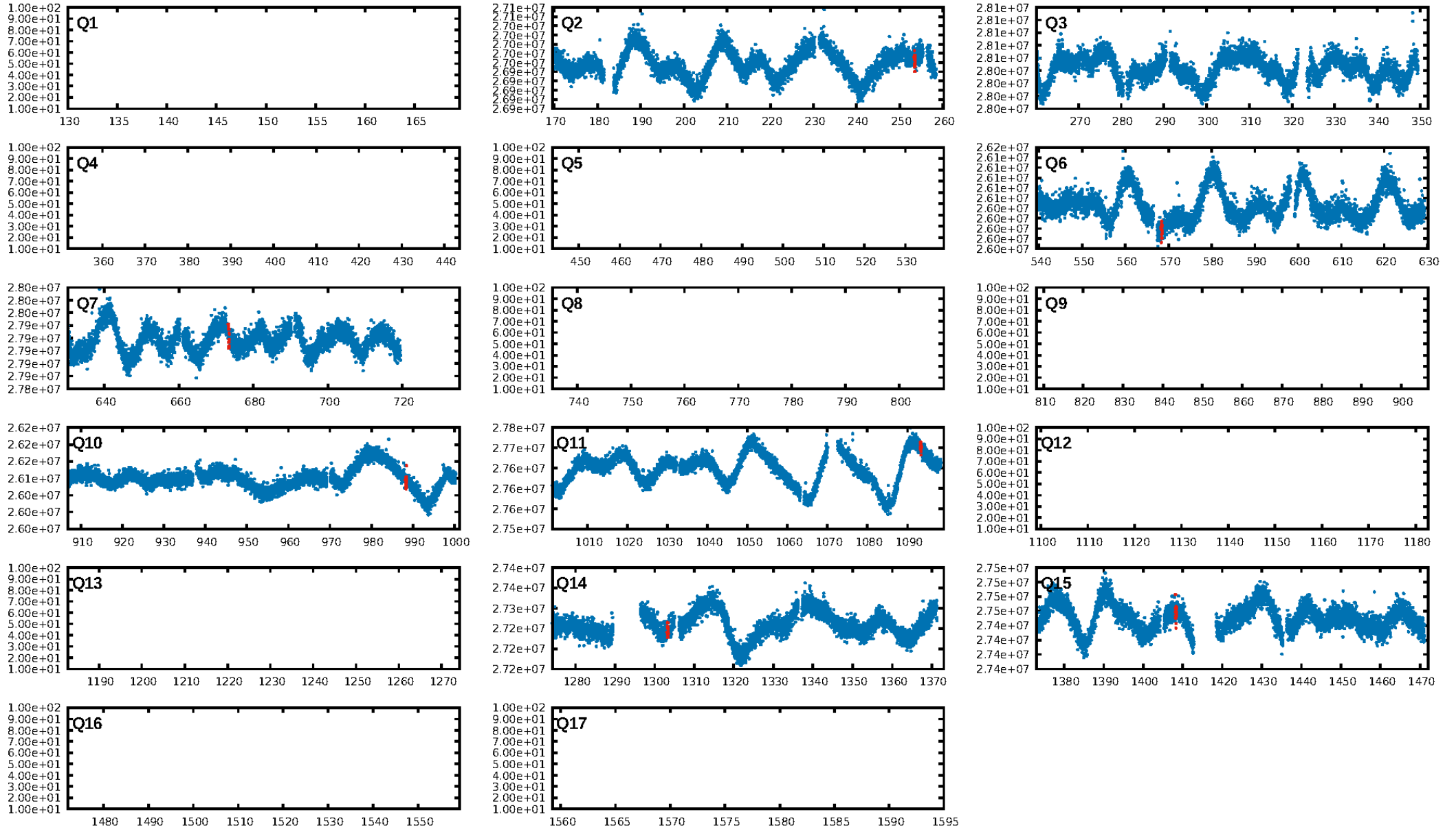
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 12.8%  
ModelChiSquareGof-sig: 98.4%  
**Bootstrap-pfa: 2.19e-12**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -2.58  
Centroid-sig: 58.3%  
Centroid-so: 0.738 arcsec [0.39 $\sigma$ ]  
OotOffset-rm: 0.591 arcsec [0.74 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-rm: 0.615 arcsec [0.73 $\sigma$ ]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [5/5]

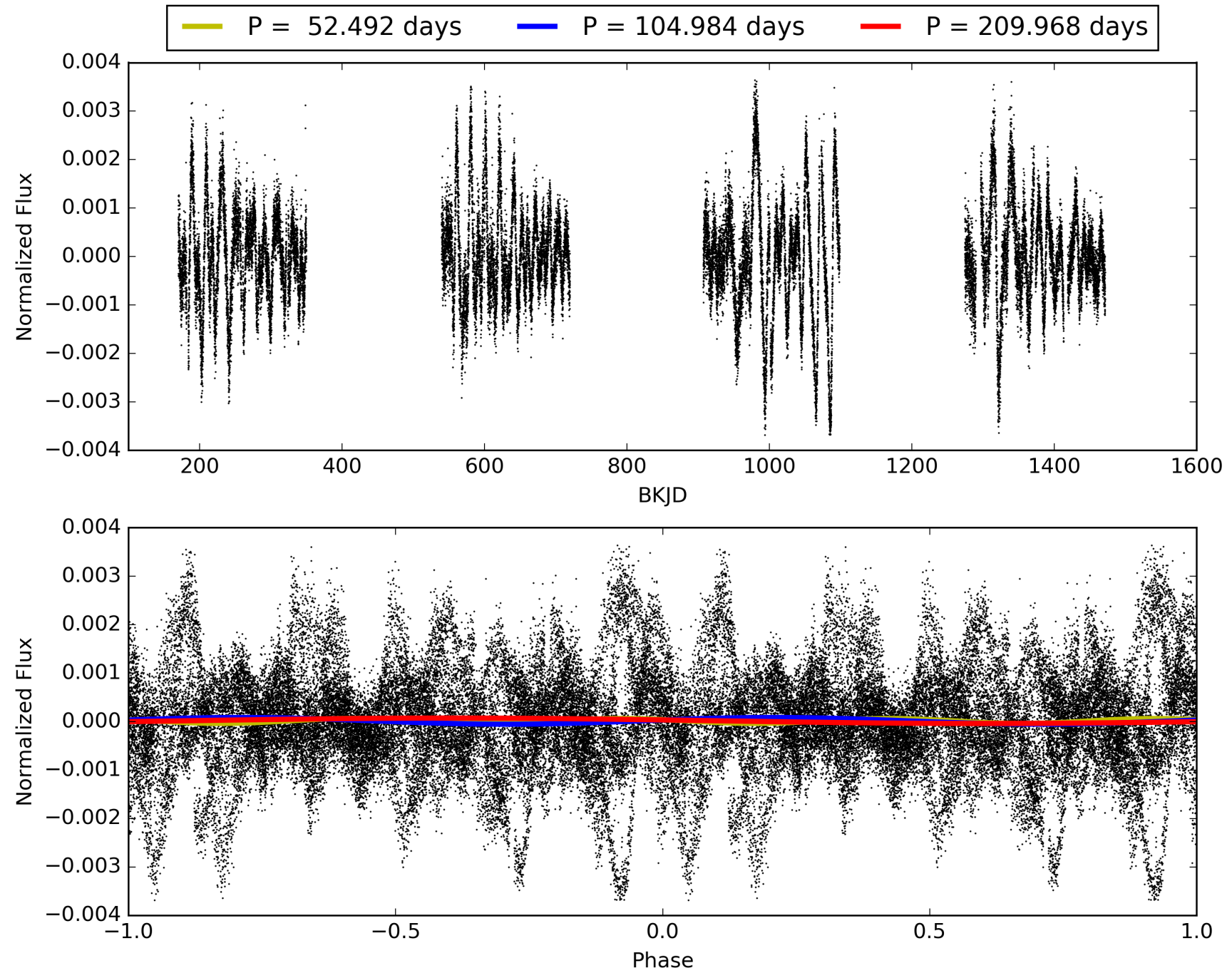
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:14:19 Z

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

# TCE 007420017-01, PDC Light Curves

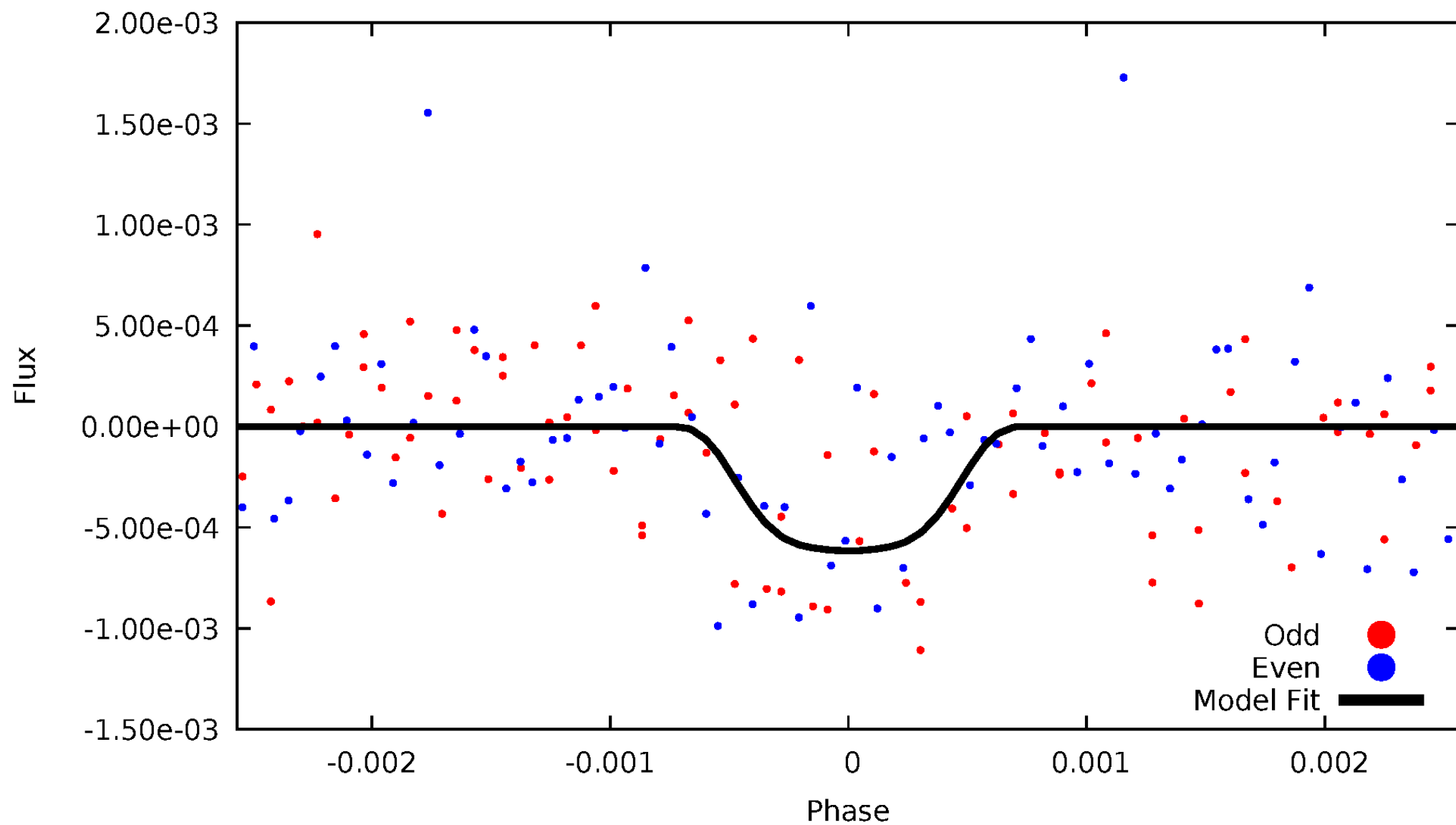


TCE 007420017-01



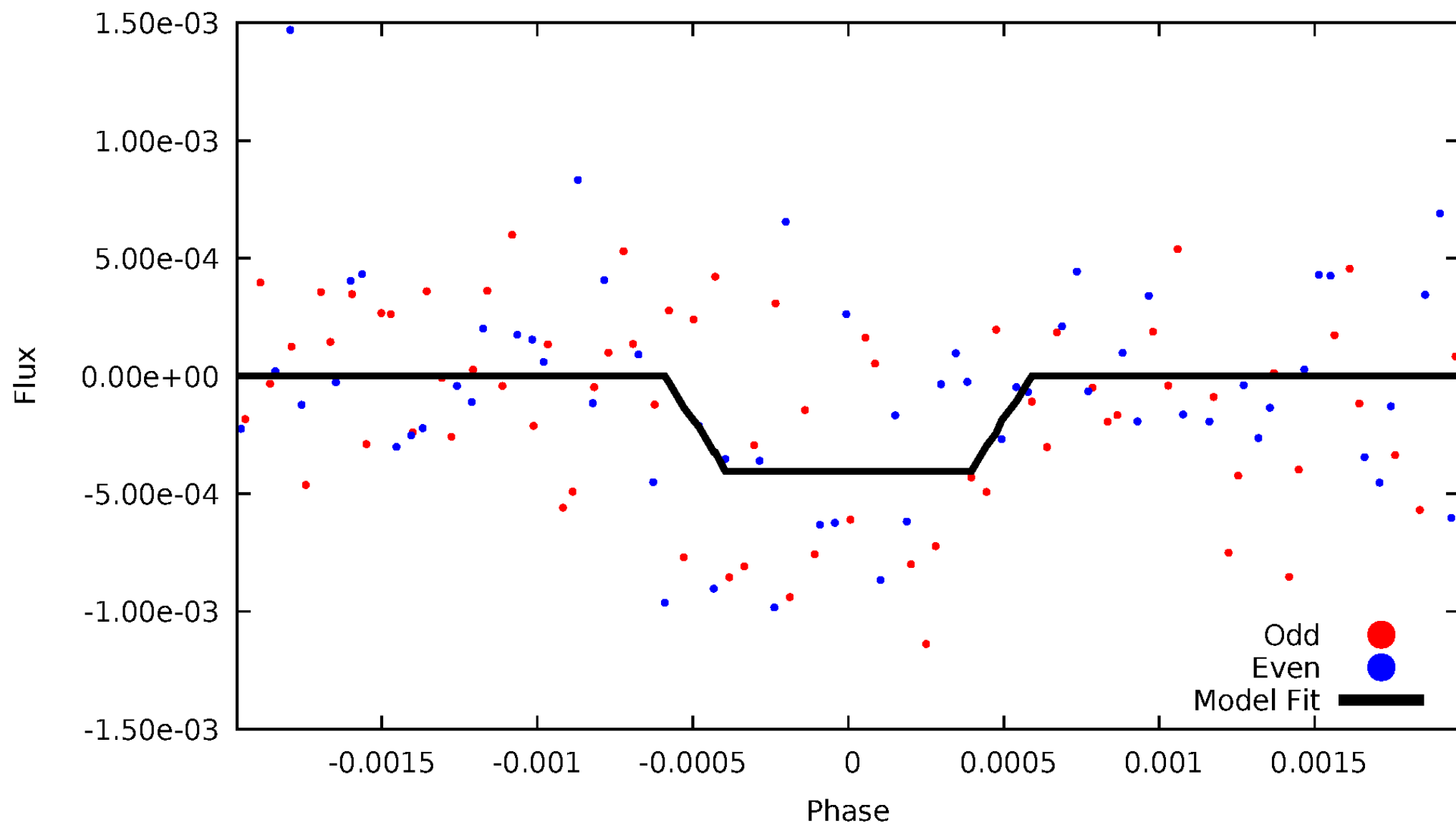
# DV Odd/Even

TCE 007420017-01

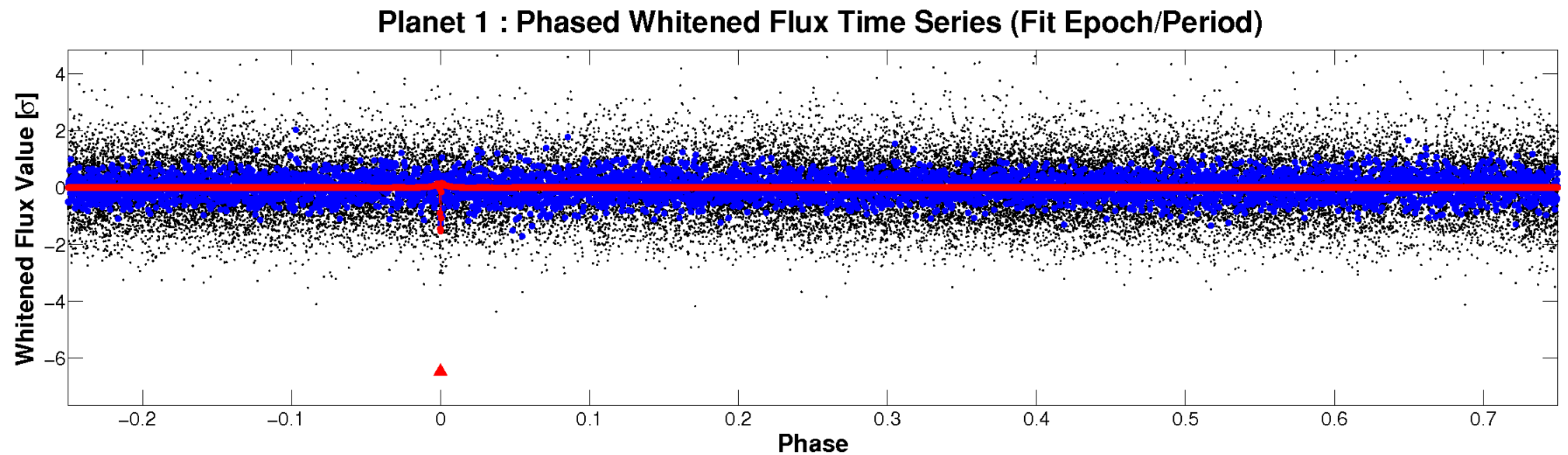
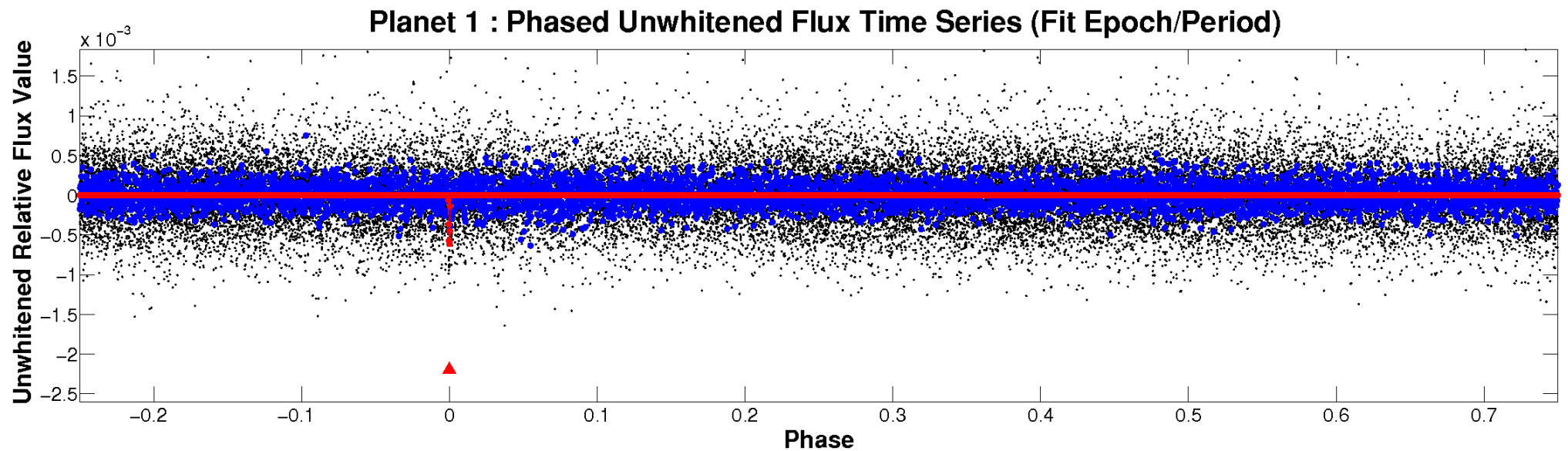


# ALT Odd/Even

TCE 007420017-01

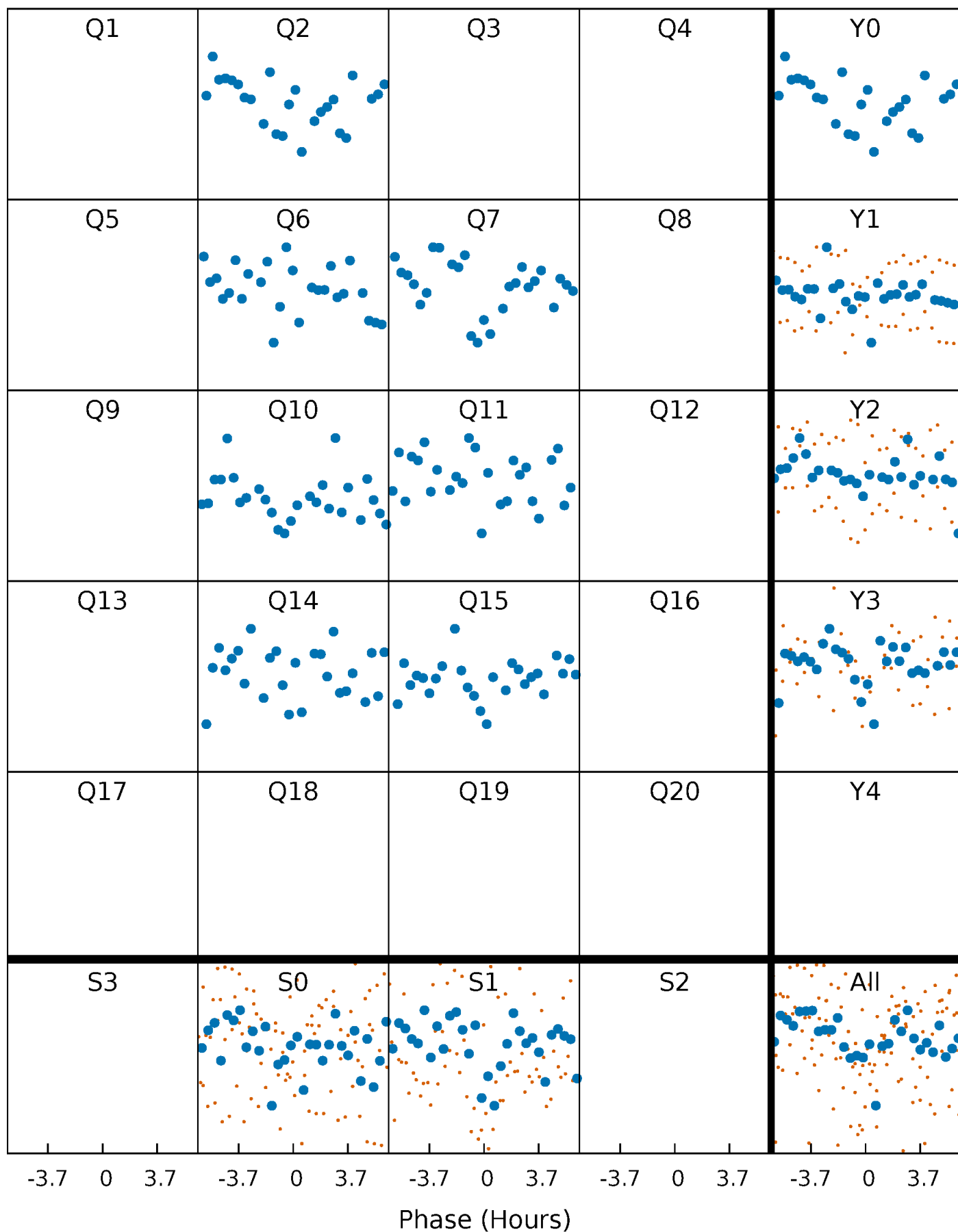


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

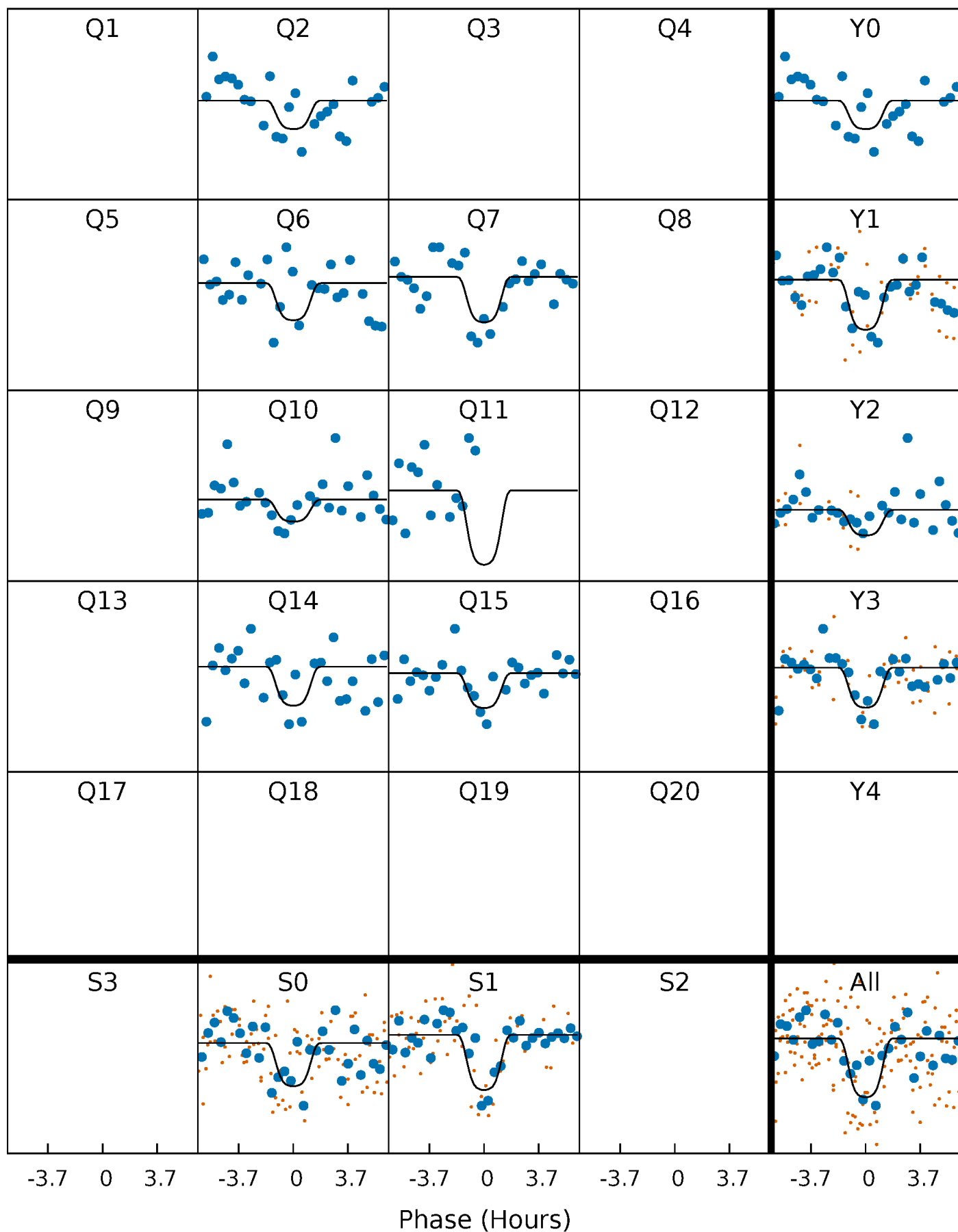
TCE 007420017-01 P=104.983841 Days  $T_0=148.486259$  (BKJD)





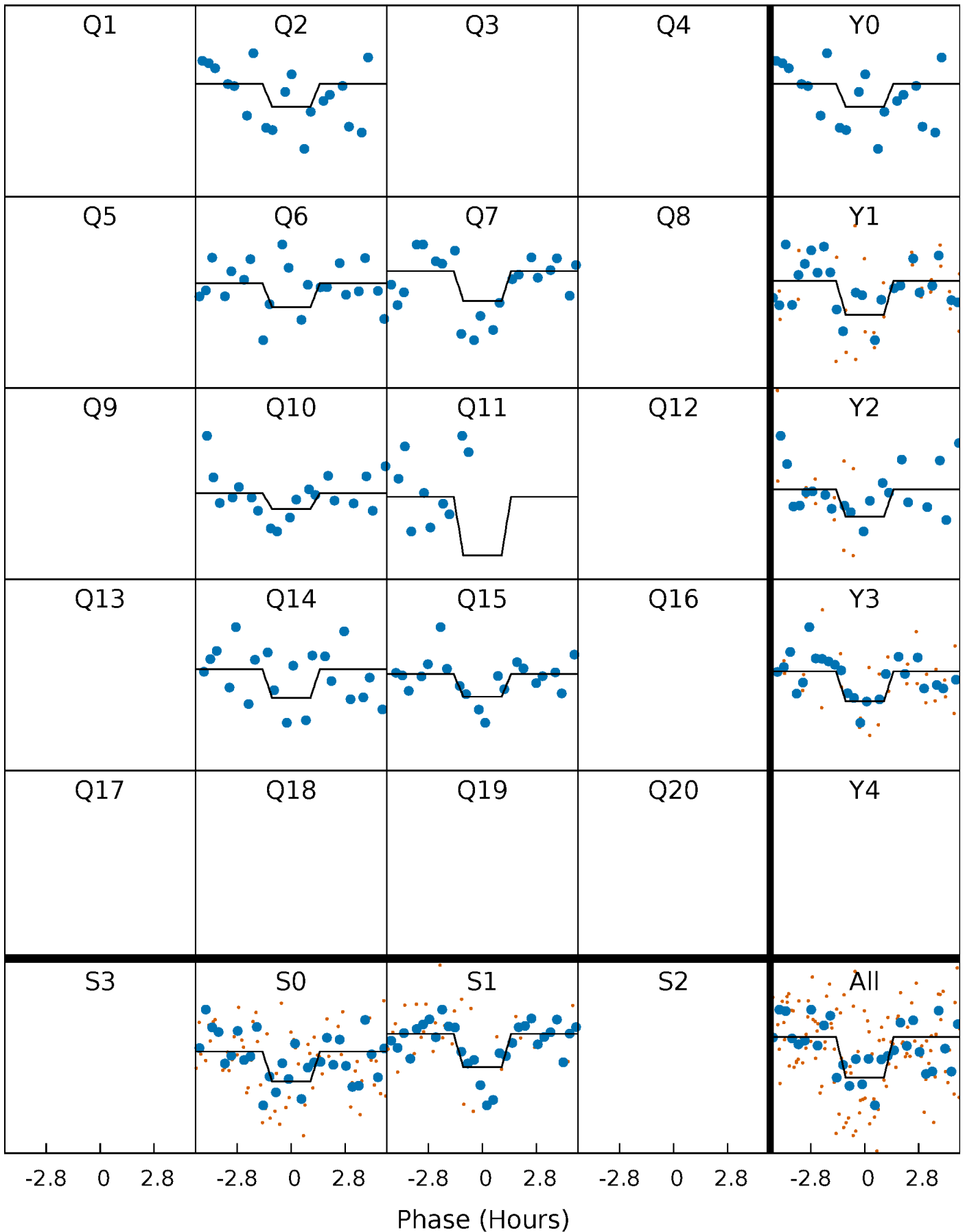
# DV Quarter-Phased Transit Curves

TCE 007420017-01 P=104.983841 Days  $T_0=148.486259$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

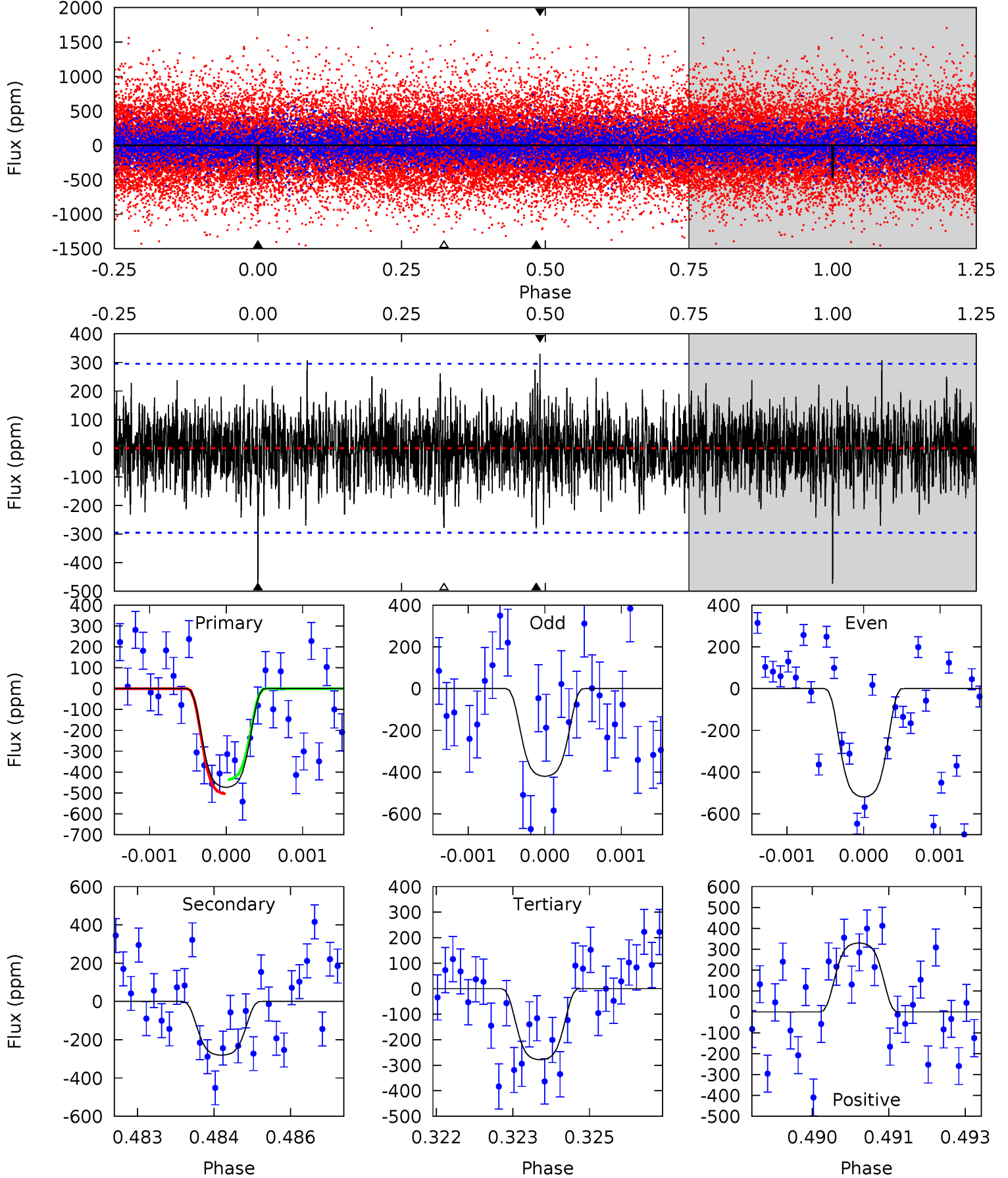
TCE 007420017-01 P=104.983514 Days  $T_0=148.492102$  (BKJD)



# DV Model-Shift Uniqueness Test

007420017-01, P = 104.983841 Days, E = 148.486259 Days

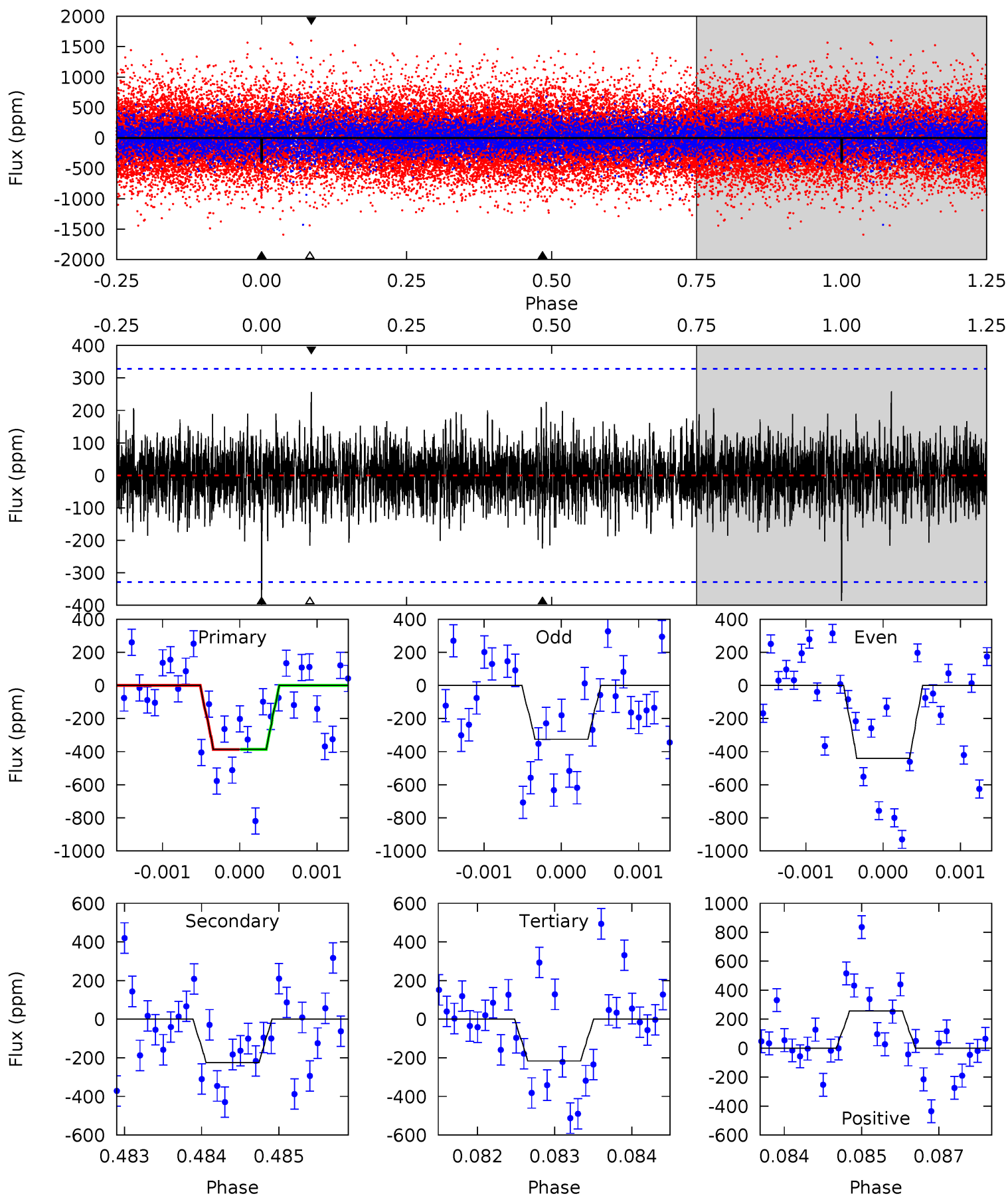
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.63	5.12	5.08	6.02	5.39	3.19	1.48	3.55	2.61	0.04	-0.90	0.91	0.68	0.41	0.62



# Alt Model-Shift Uniqueness Test

007420017-01, P = 104.983514 Days, E = 148.492102 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
6.39	3.72	3.58	4.24	5.43	3.25	1.05	2.82	2.15	0.14	-0.52	0.96	0.67	0.40	0.00



### Stellar Parameters For KIC 007420017

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4457^{+159}_{-159}$	$4.622^{+0.056}_{-0.024}$	$-0.260^{+0.300}_{-0.300}$	$0.640^{+0.051}_{-0.057}$	$0.627^{+0.076}_{-0.051}$	$3.364^{+0.776}_{-0.435}$
	+4%/-4%	+1%/-1%	+115%/-115%	+8%/-9%	+12%/-8%	+23%/-13%
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 007420017-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-281 \pm 55$	$2.12^{+0.39}_{-0.35}$	$357^{+14}_{-13}$	$3605^{+253}_{-225}$	$4825^{+2349}_{-1503}$
Alt.	$-225 \pm 61$	$1.40^{+0.34}_{-0.36}$	$357^{+15}_{-13}$	$3996^{+516}_{-403}$	$8707^{+7941}_{-3603}$

$T_{max}$  = 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

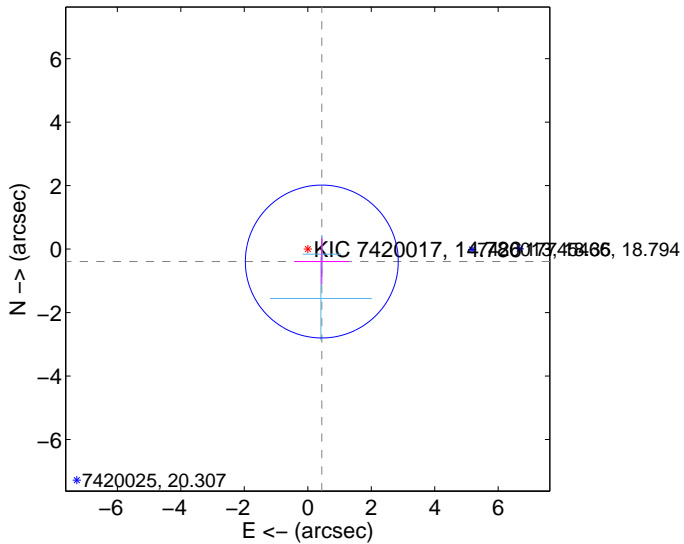
Supplemental centroid analysis for 007420017-01. Kepler magnitude: 14.79. Transit SNR 7.47

There are 2 quarters with good PRF difference image offsets

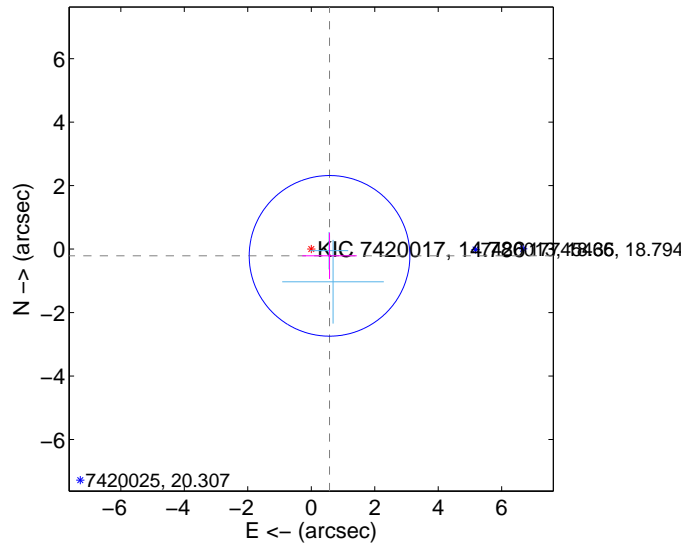
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.591 \pm 0.803$	0.74	$-0.442 \pm 0.859$	$-0.392 \pm 0.726$
PRF-fit source offset from KIC position	$0.615 \pm 0.844$	0.73	$-0.576 \pm 0.859$	$-0.213 \pm 0.726$
photometric centroid source offset	$0.74 \pm 1.87$	0.39	$-0.62 \pm 1.77$	$-0.40 \pm 2.10$

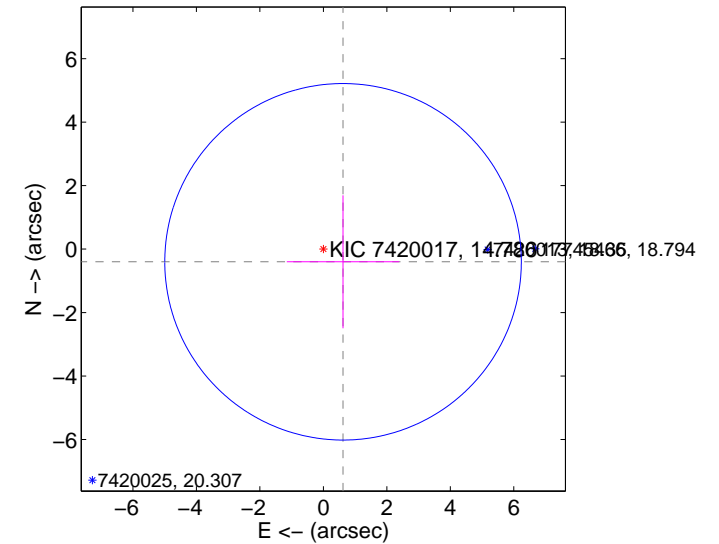
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

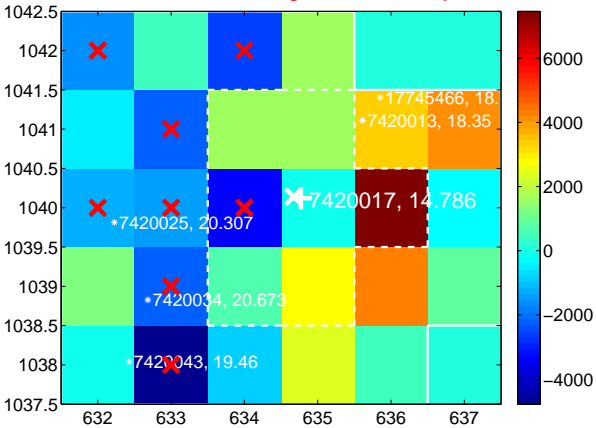
Q1 no difference image



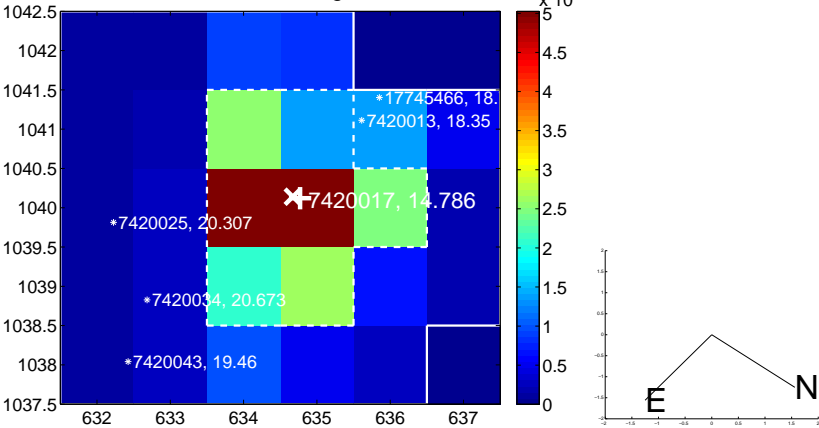
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



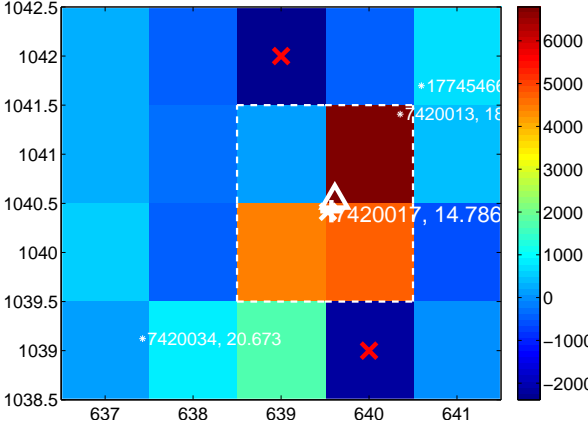
Q6 no difference image



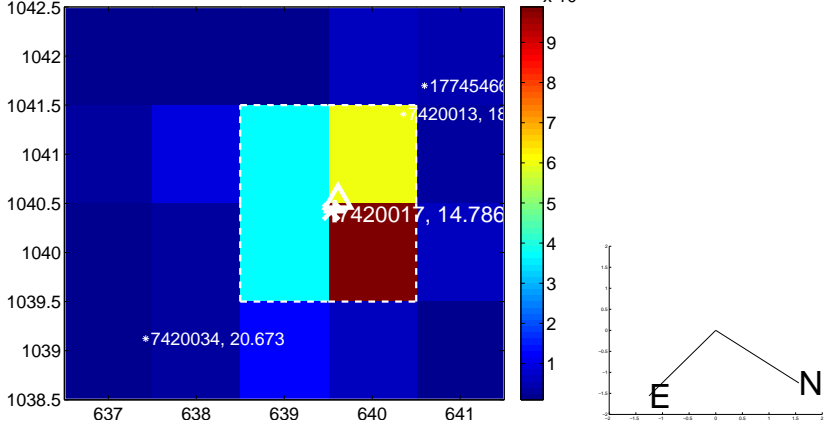
Q6 no OOT image



Q7 difference image



Q7 OOT image



Q8 no difference image



Q8 no OOT image



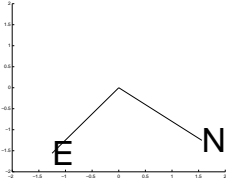
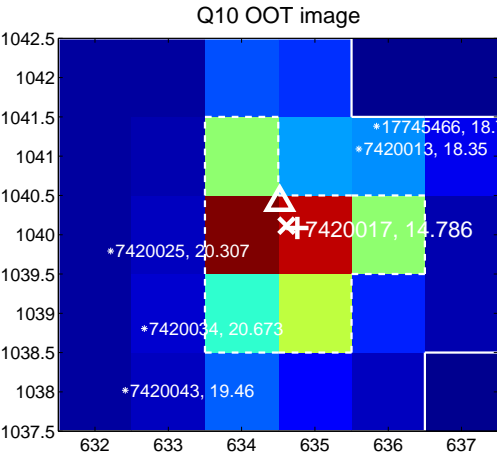
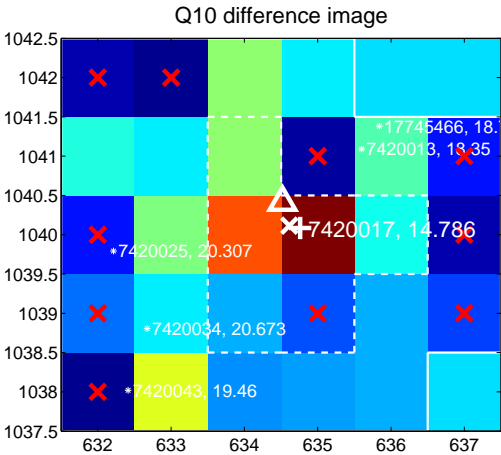


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

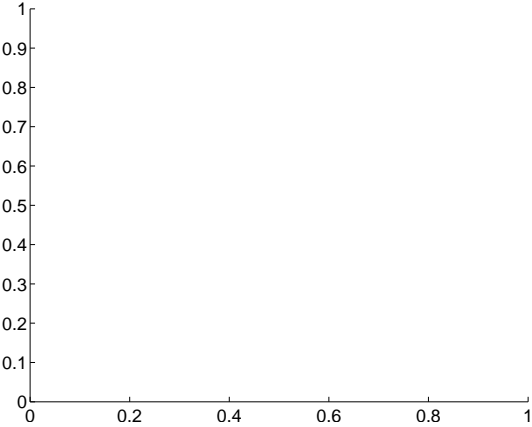
Q9 no difference image



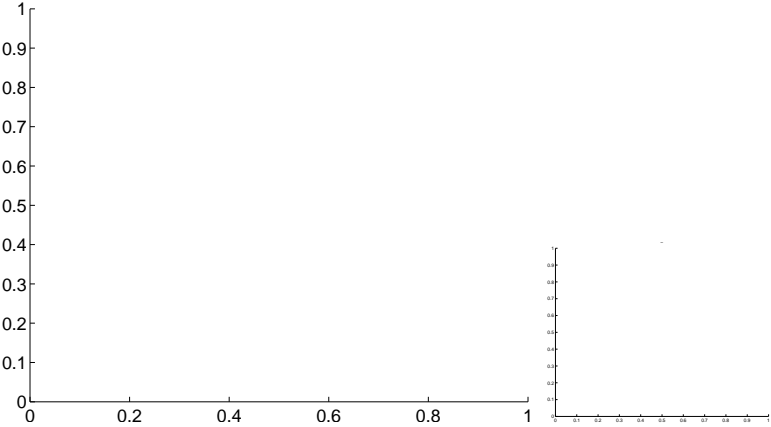
Q9 no OOT image



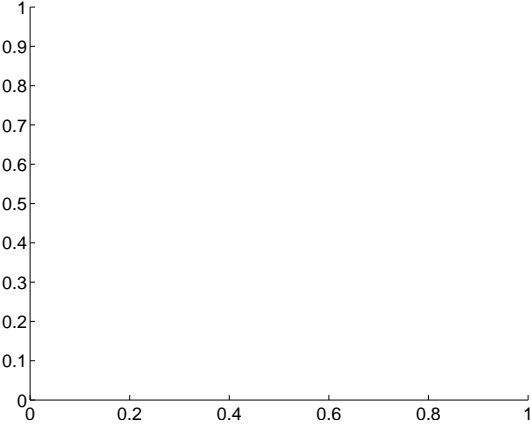
Q11 no difference image



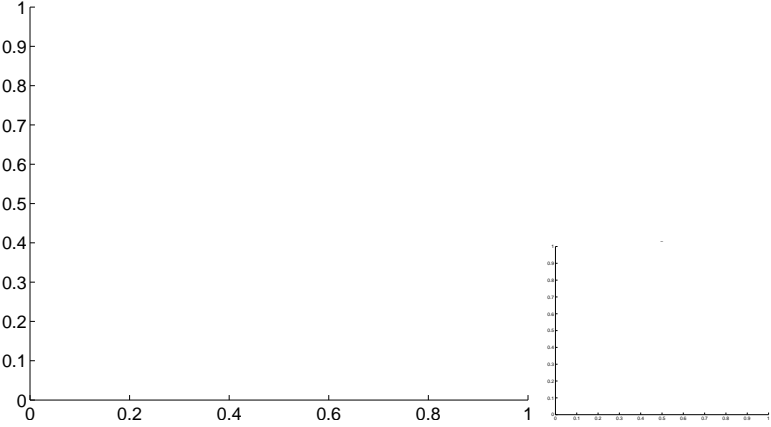
Q11 no OOT image



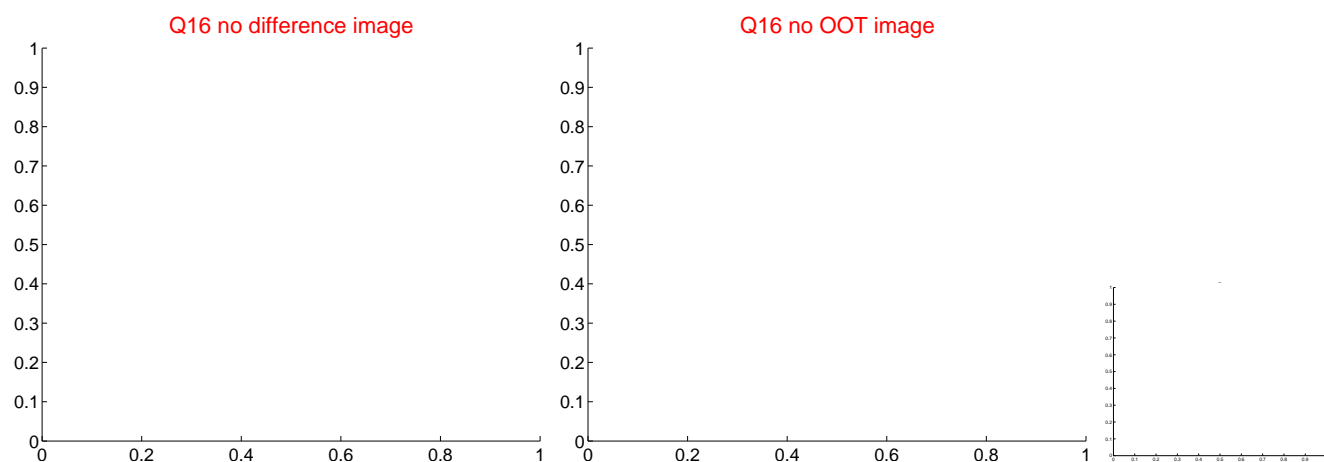
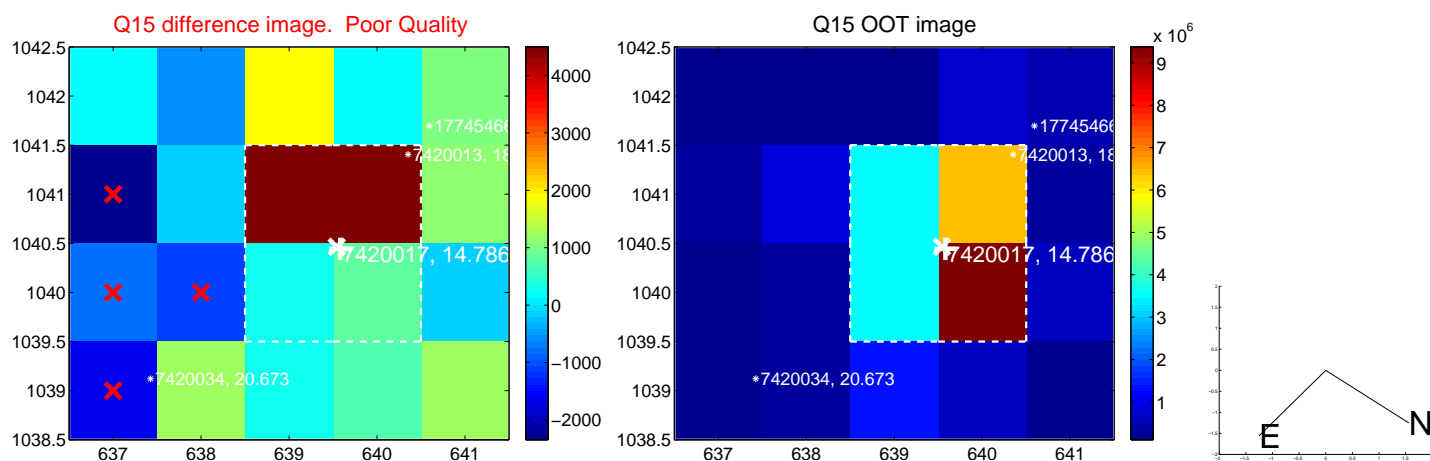
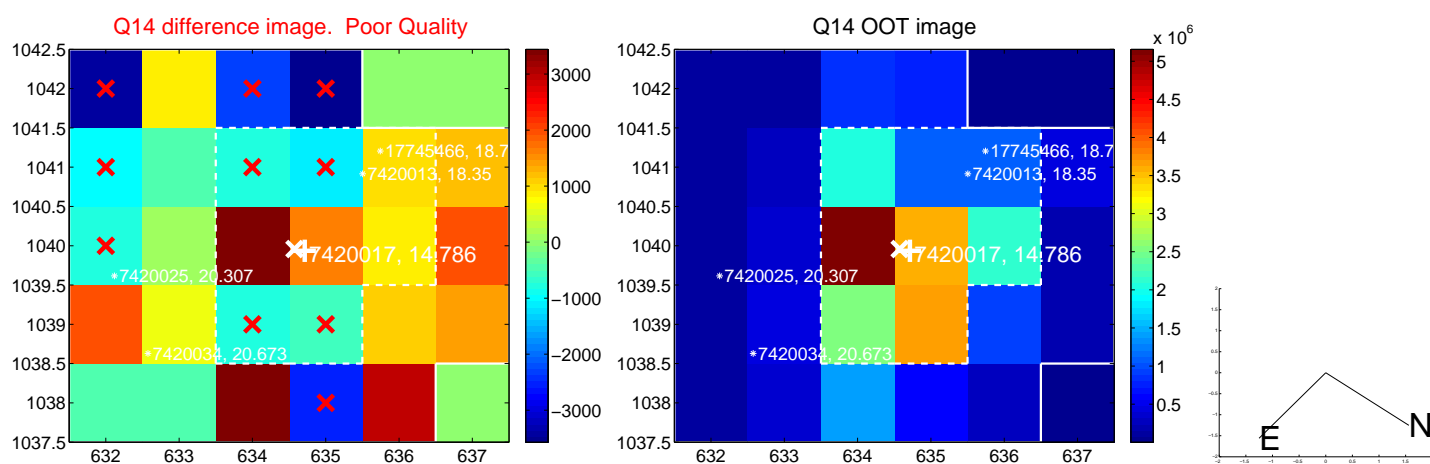
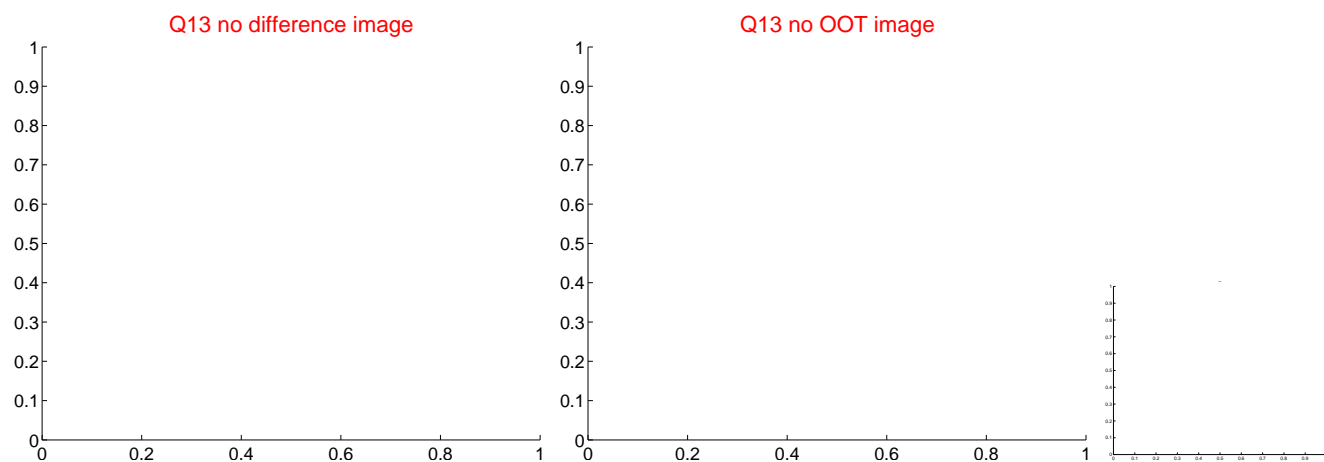
Q12 no difference image



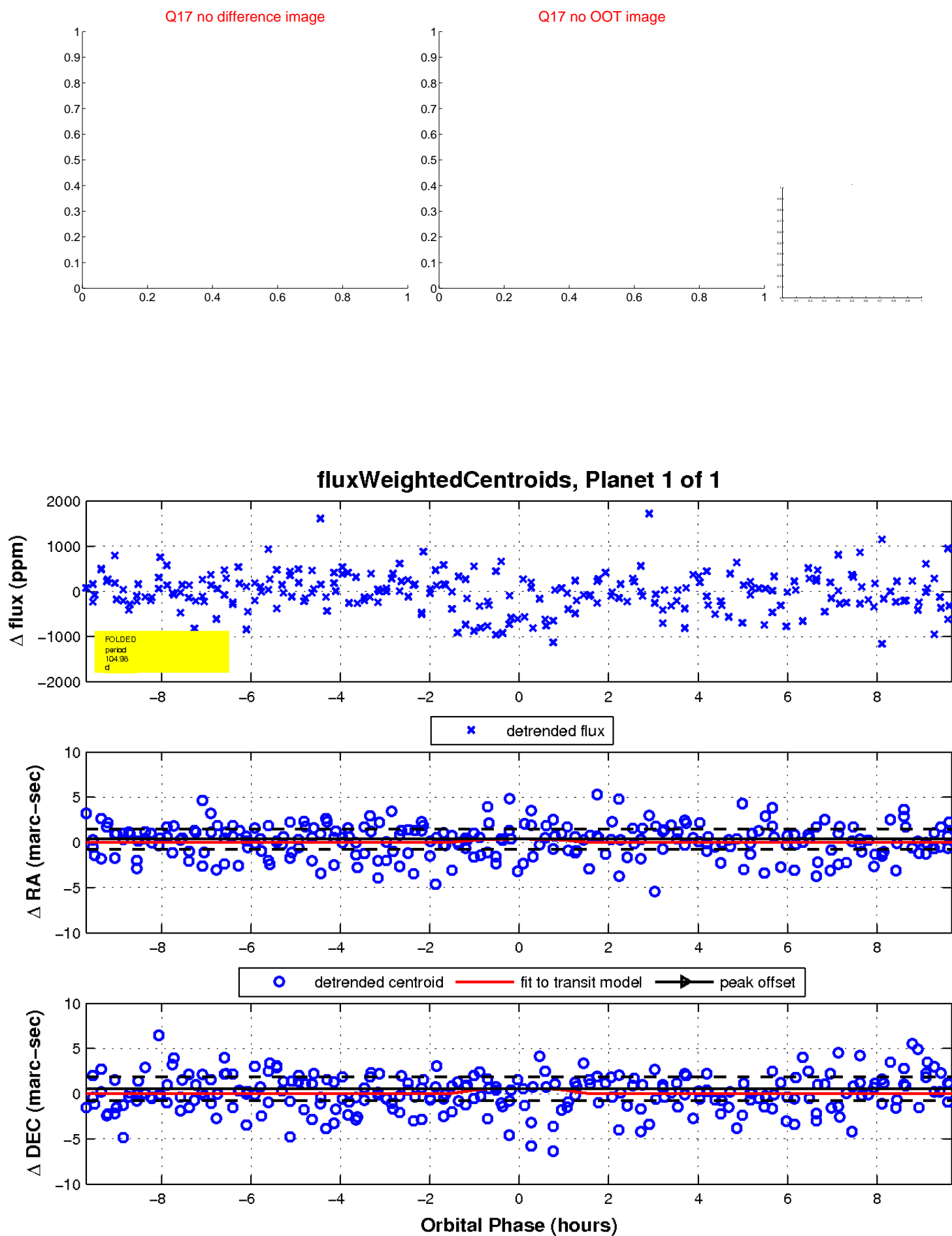
Q12 no OOT image



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.



UKIRT Image

Declination

