

# KIC 009593633

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009593633-01	OBS	No	415.337285	342.513907	93.1	6.309	13.0	3.7	155.21	3694	138.14	1417.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009593633-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED

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

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

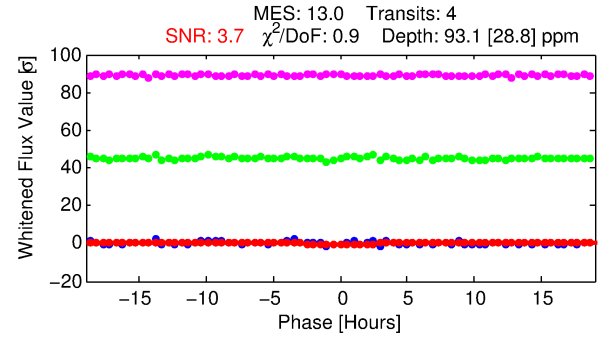
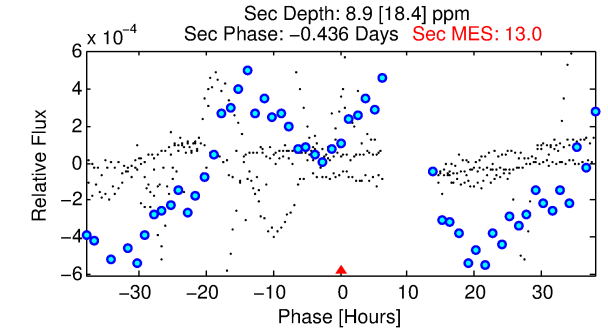
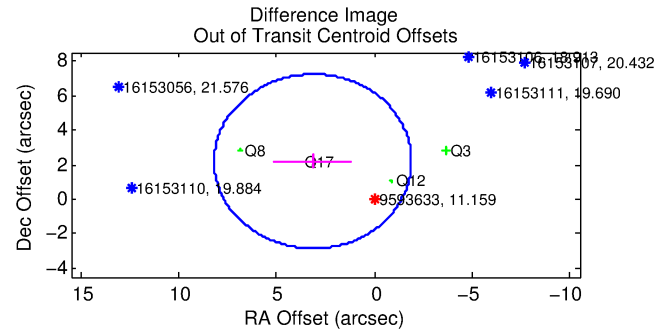
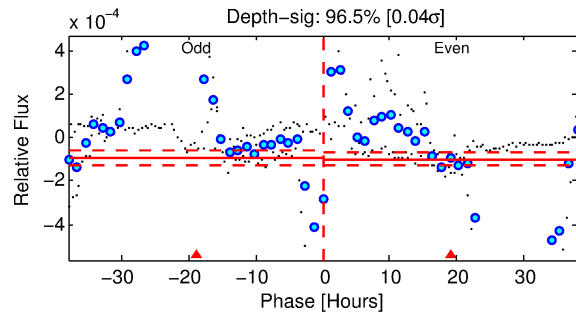
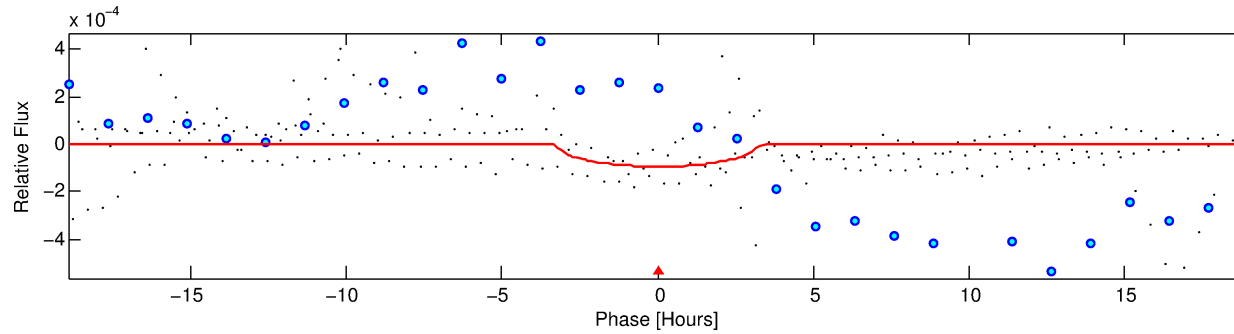
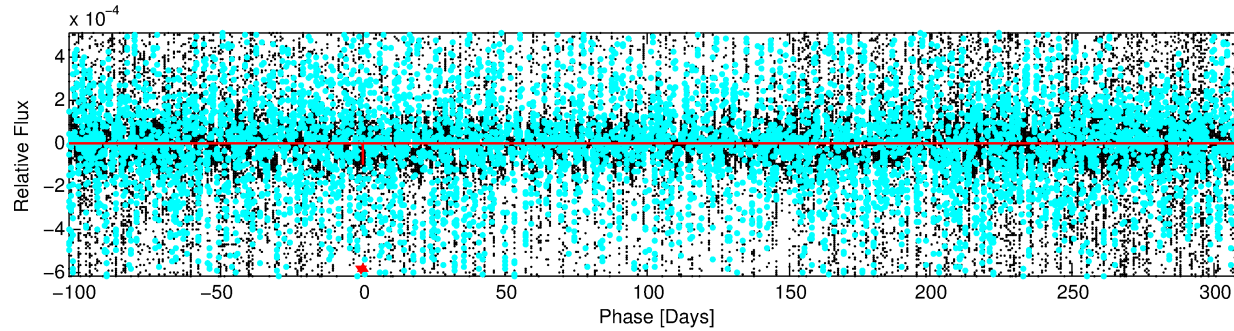
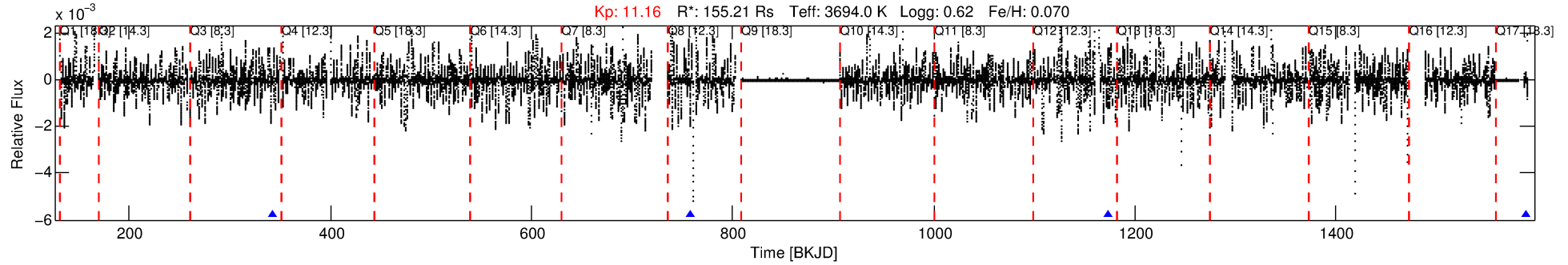
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009593633-01

No Significant Match Found

# DV One-Page Summary

KIC: 9593633 Candidate: 1 of 1 Period: 415.337 d



## DV Fit Results:

Period = 415.33728 [0.00569] d  
Epoch = 342.5139 [0.0116] BKJD  
Rp/R\* = 0.0082 [0.0049]  
a/R\* = 506.90 [692.33]  
b = 0.02 [59.54]  
Seff = 1417.81 [965.41]  
Teq = 1565 [266] K  
Rp = 138.14 [116.16] Re  
a = 1.6836 [0.8090] AU  
Ag = 0.73 [1.81] [-0.15 $\sigma$ ]  
Teff = 2235 [1333] K [0.49 $\sigma$ ]

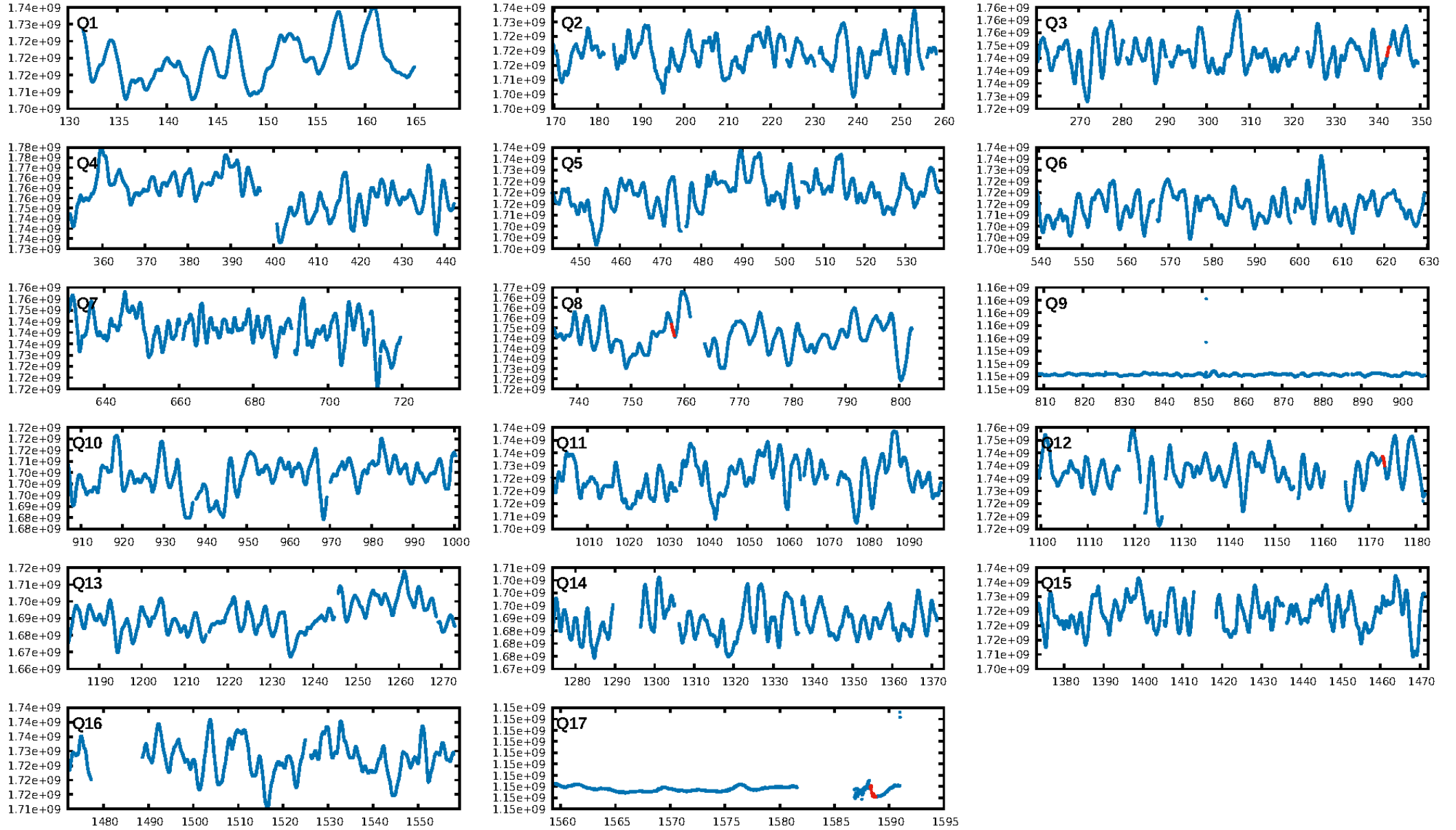
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 29.6%  
ModelChiSquareGof-sig: 99.4%  
Bootstrap-pfa: 1.06e-10  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.139  
Centroid-sig: 0.0%  
Centroid-so: 6.174 arcsec [2.25 $\sigma$ ]  
OotOffset-rm: 3.836 arcsec [2.28 $\sigma$ ]  
KicOffset-rm: 3.610 arcsec [2.23 $\sigma$ ]  
OotOffset-st: 0/1/2/1 [4]  
KicOffset-st: 0/1/2/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 1.00 [4/4]

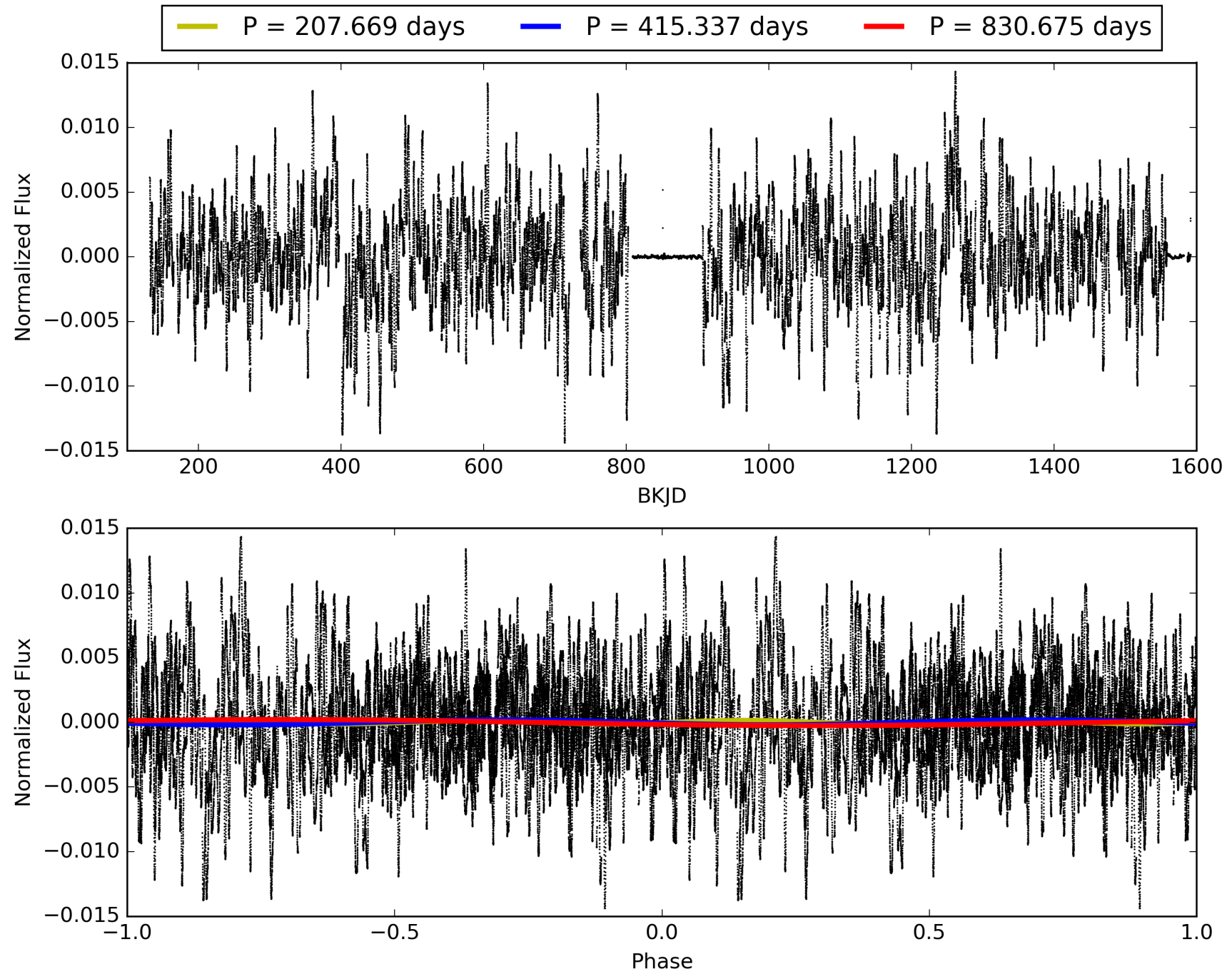
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:34:32 Z

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

# TCE 009593633-01, PDC Light Curves

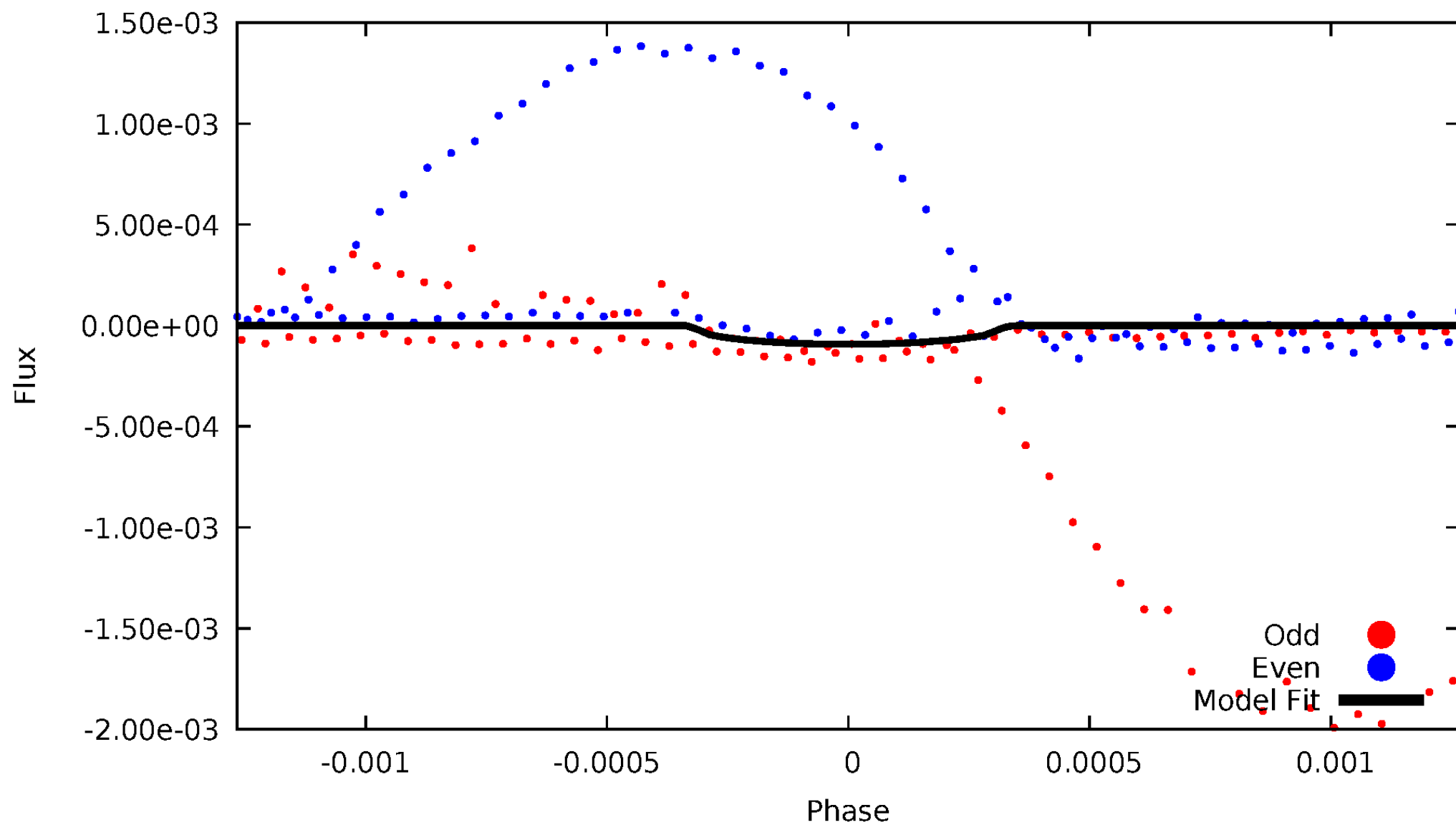


TCE 009593633-01



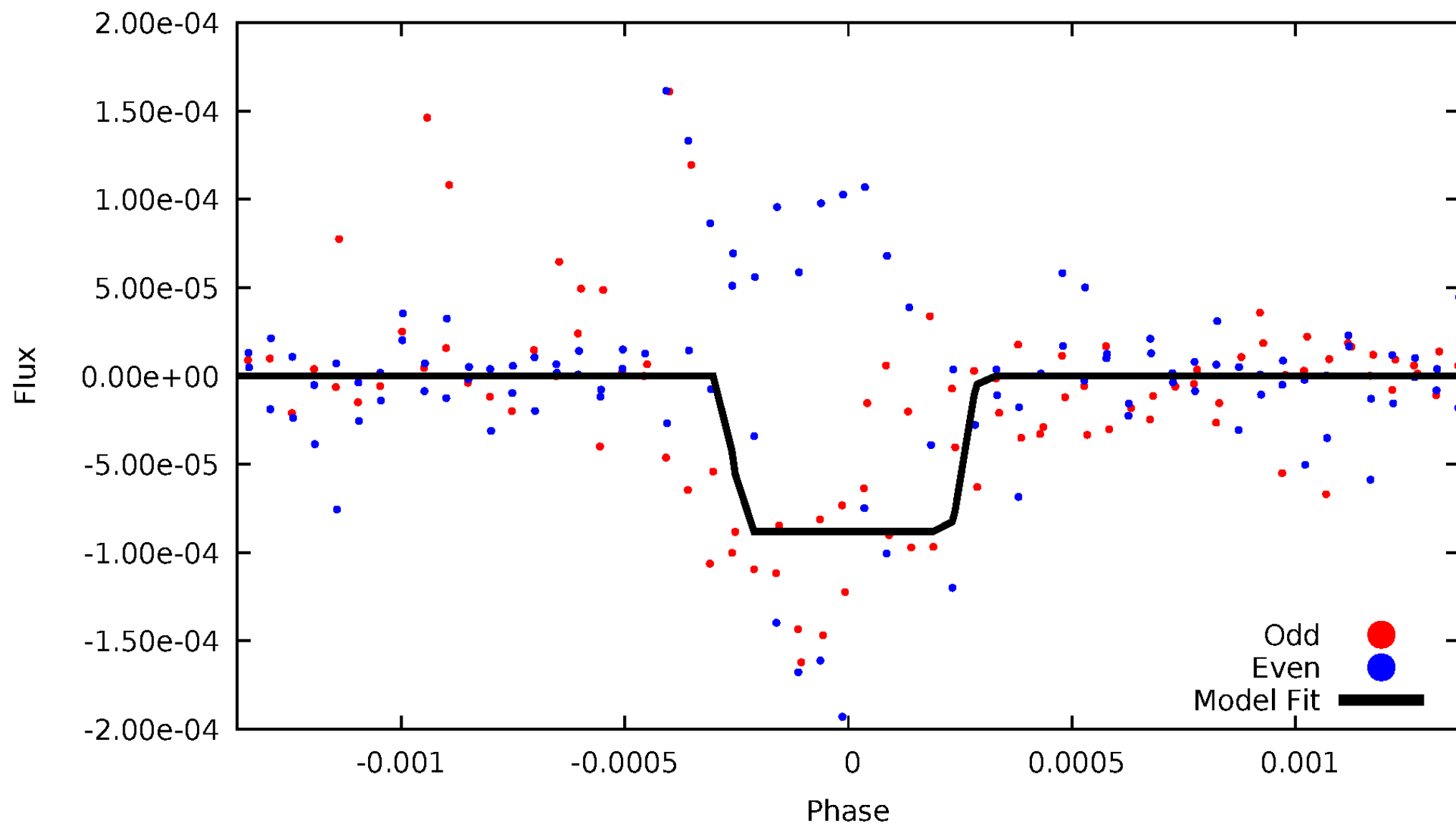
# DV Odd/Even

TCE 009593633-01



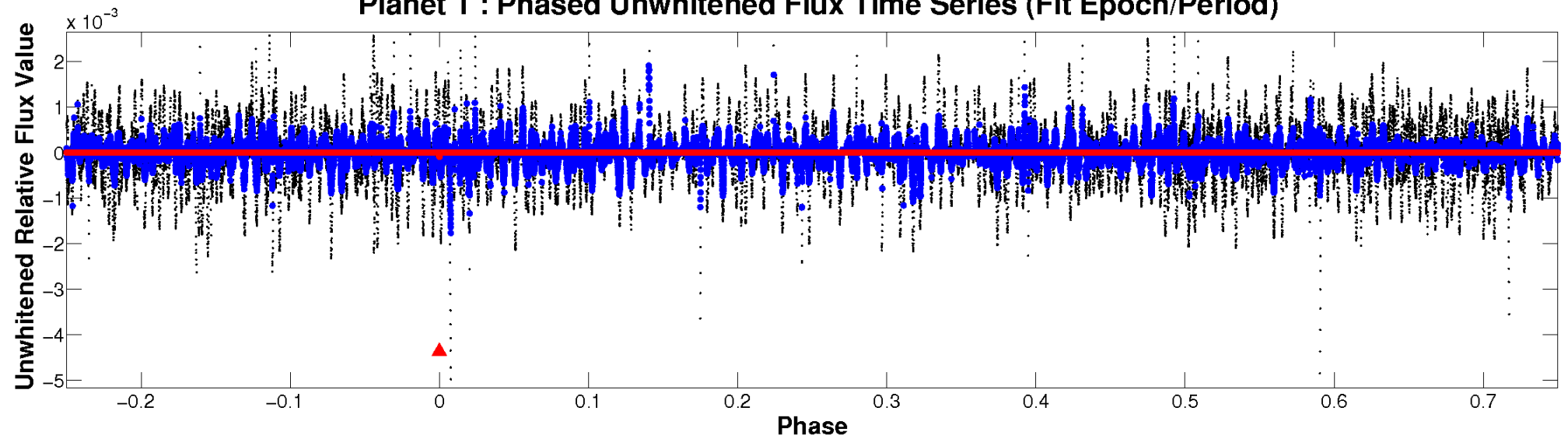
# ALT Odd/Even

TCE 009593633-01

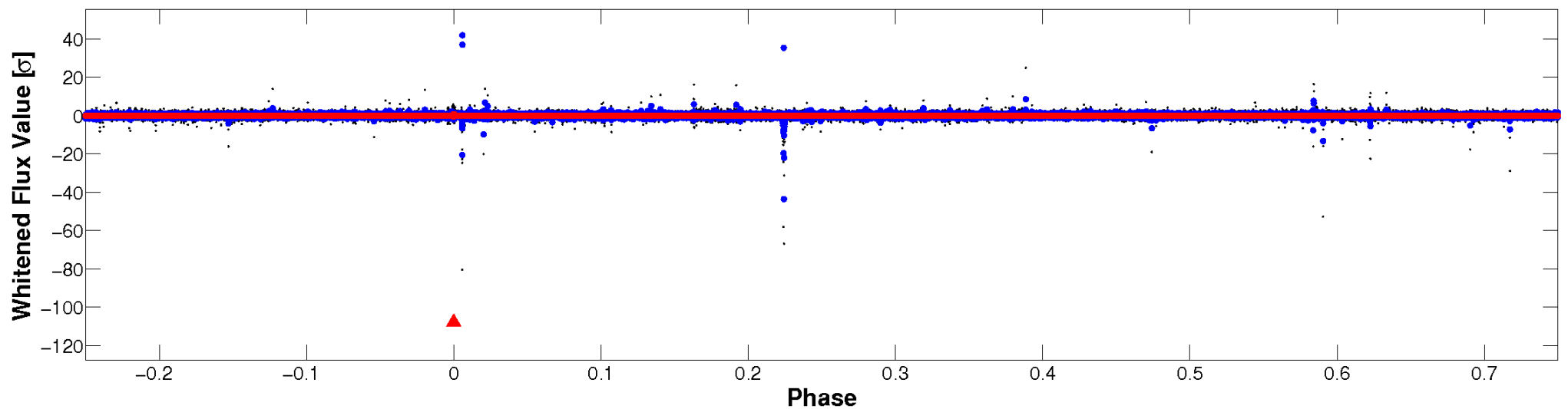


# Non-Whitened Vs. Whitened Light Curve

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

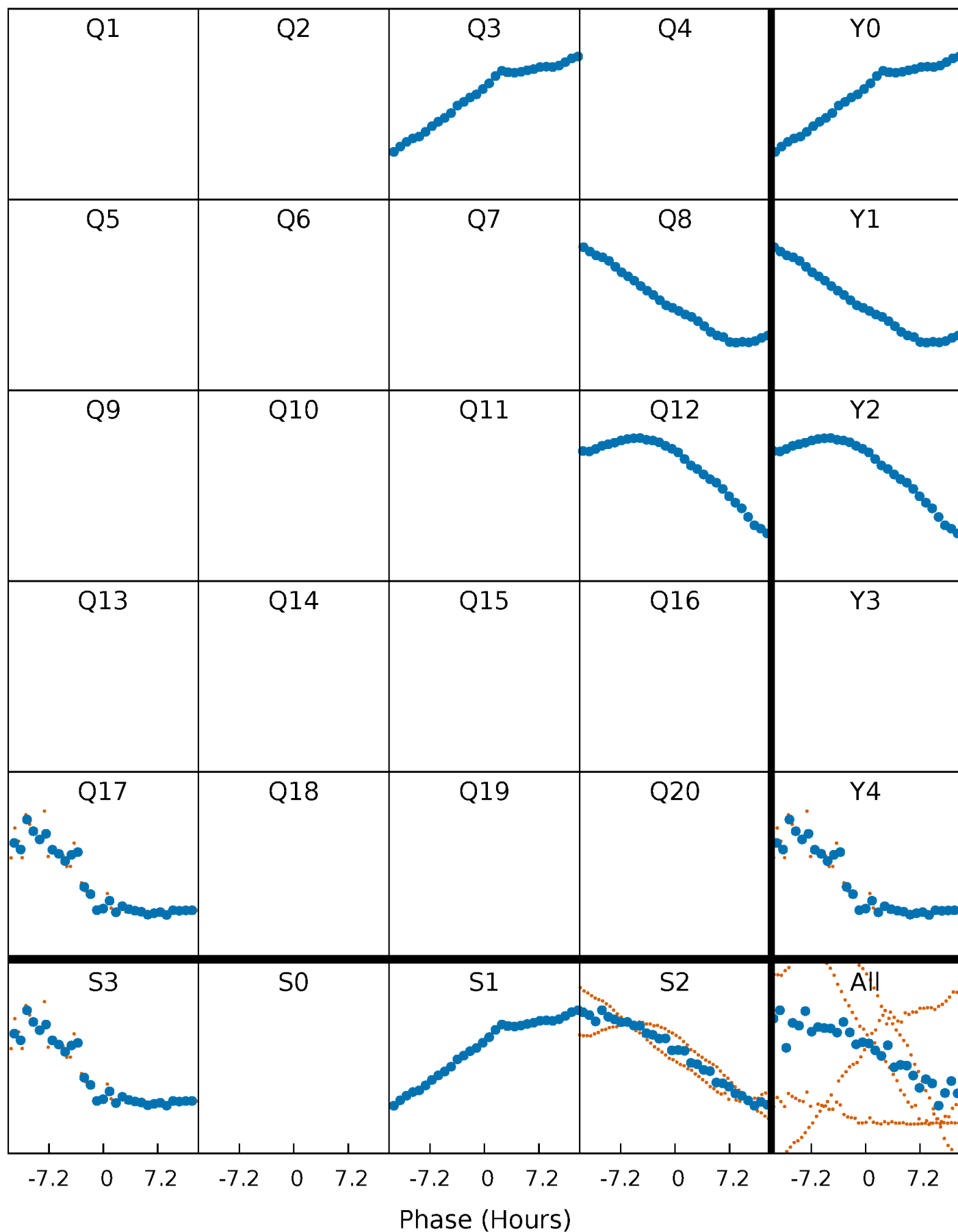


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

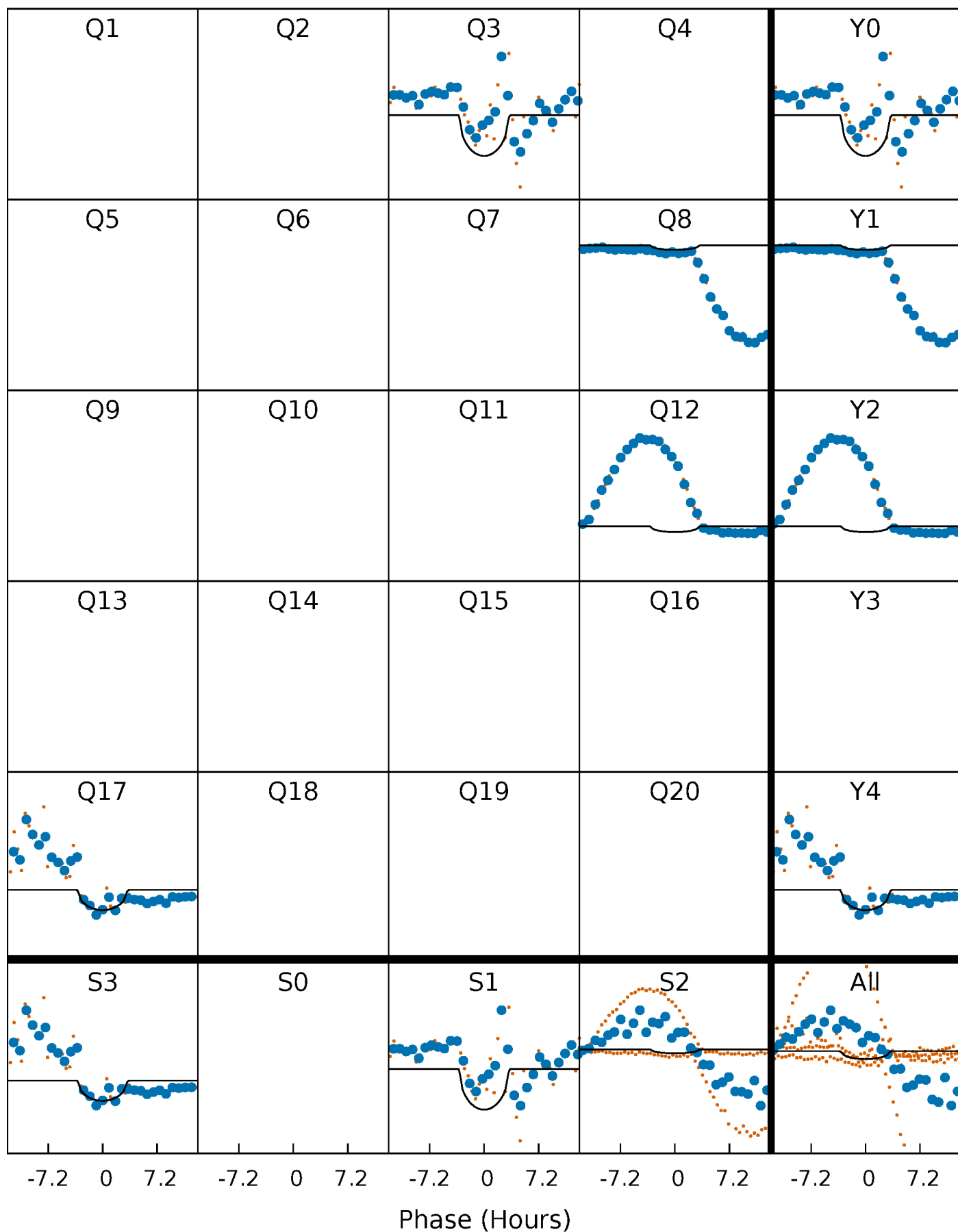
TCE 009593633-01 P=415.337285 Days  $T_0=342.513908$  (BKJD)





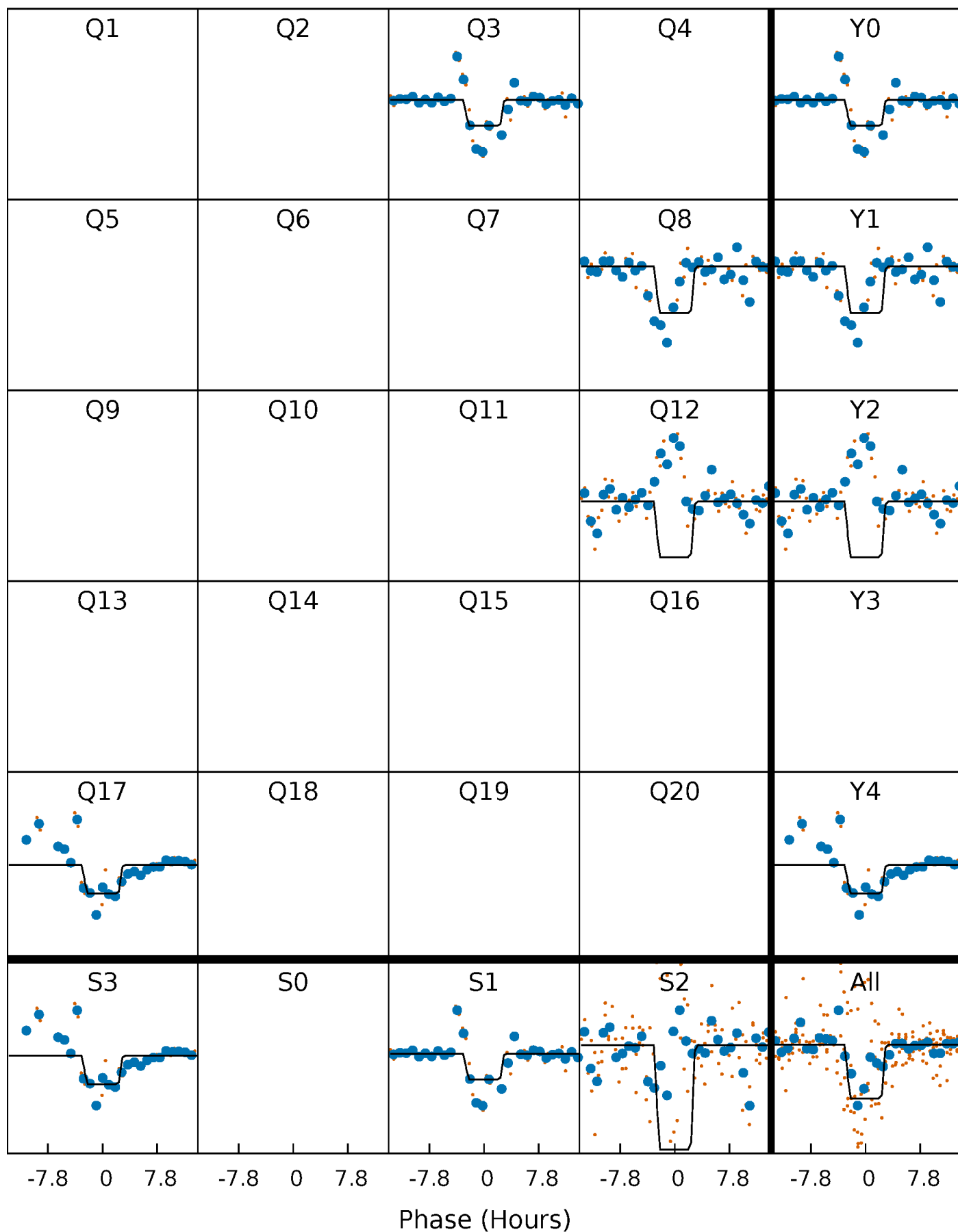
# DV Quarter-Phased Transit Curves

TCE 009593633-01 P=415.337285 Days  $T_0=342.513908$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

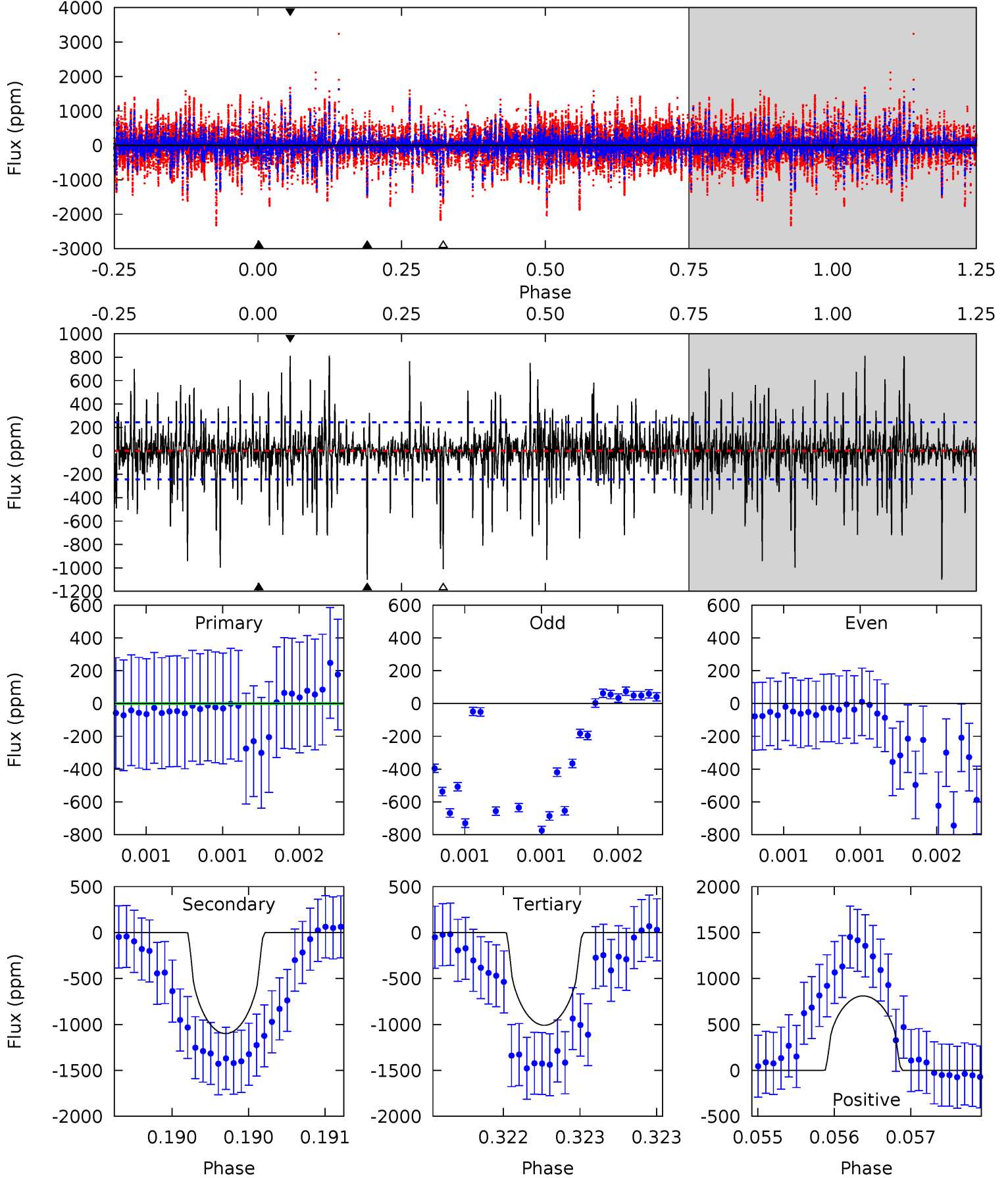
TCE 009593633-01 P=415.332540 Days  $T_0=342.533916$  (BKJD)



# DV Model-Shift Uniqueness Test

009593633-01, P = 415.337285 Days, E = 342.513908 Days

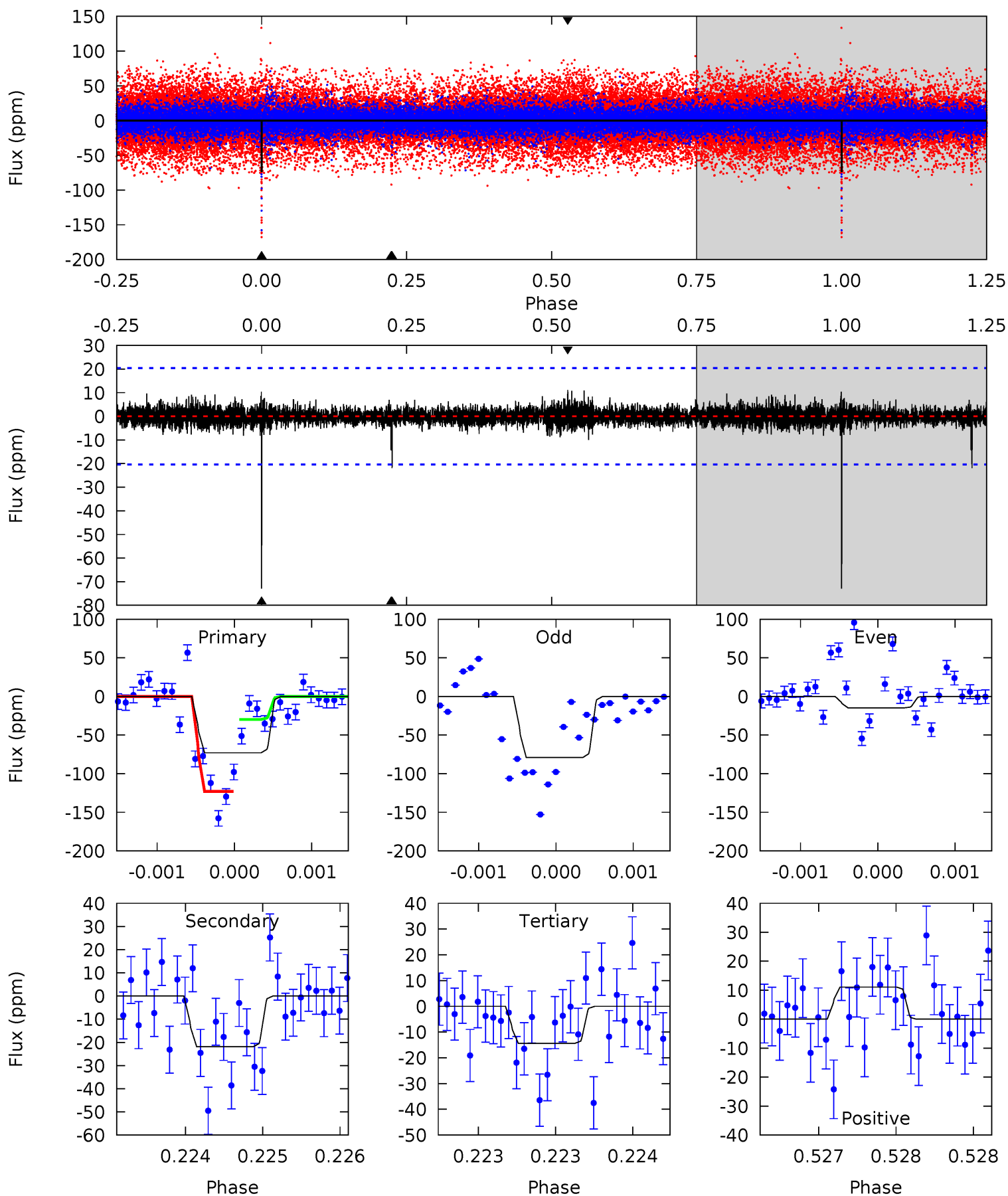
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.68	24.8	22.8	18.3	5.52	3.40	3.63	-21.1	-16.6	2.05	6.54	3.16	-4.10	0.42	0.60



# Alt Model-Shift Uniqueness Test

009593633-01, P = 415.332540 Days, E = 342.533916 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
19.8	5.95	3.92	3.02	5.56	3.46	0.58	15.9	16.8	2.04	2.93	9.55	0.68	0.13	12.7



### Stellar Parameters For KIC 009593633

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3694^{+80}_{-80}$	$0.623^{+0.357}_{-0.153}$	$0.070^{+0.200}_{-0.300}$	$155.205^{+21.623}_{-91.899}$	$3.686^{+0.074}_{-2.556}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+57%/-25%	+286%/-429%	+14%/-59%	+2%/-69%	+454%/-27%
Source	SPE14	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 009593633-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1100 \pm 44$	$124.70^{+92.87}_{-69.64}$	$2198^{+117}_{-257}$	$6571^{+4220}_{-1327}$	$102^{+403}_{-66}$
Alt.	$-22 \pm 4$	$152.32^{+91.96}_{-73.98}$	$2201^{+119}_{-256}$	$2842^{+689}_{-446}$	$1.307^{+3.896}_{-0.777}$

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

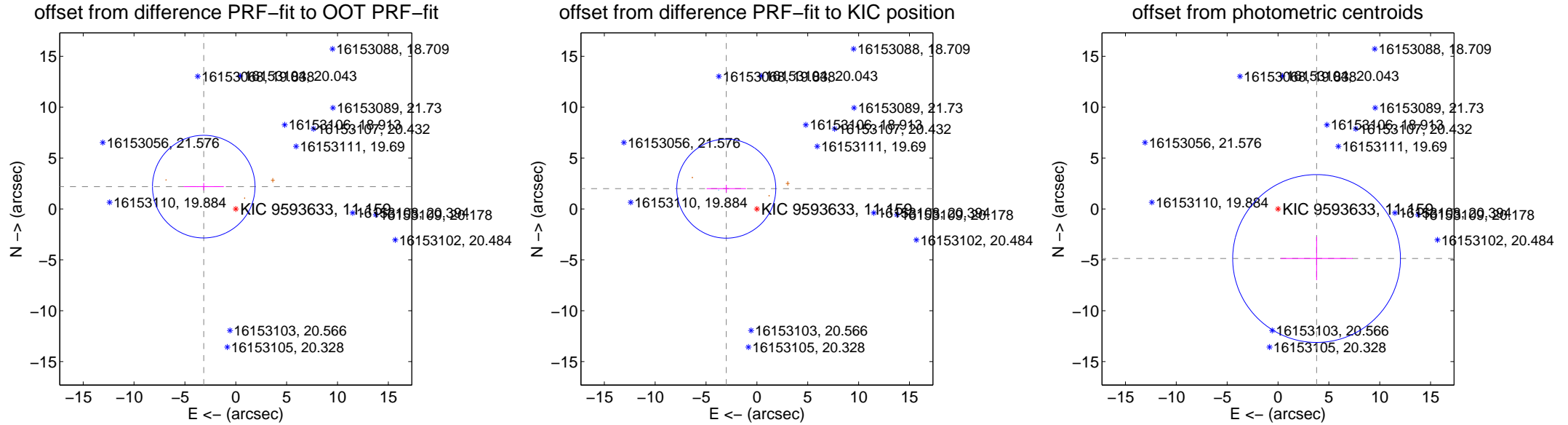
## DV Centroid Data

Supplemental centroid analysis for 009593633-01. **Kepler magnitude: 11.16.** Transit SNR 3.66

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

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.836 \pm 1.681$	2.28	$3.148 \pm 1.971$	$2.191 \pm 0.364$
PRF-fit source offset from KIC position	$3.610 \pm 1.622$	2.23	$3.009 \pm 1.930$	$1.995 \pm 0.377$
photometric centroid source offset	$6.17 \pm 2.75$	2.25	$-3.79 \pm 3.54$	$-4.87 \pm 2.13$



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.

Q1 no difference image



Q1 no OOT image



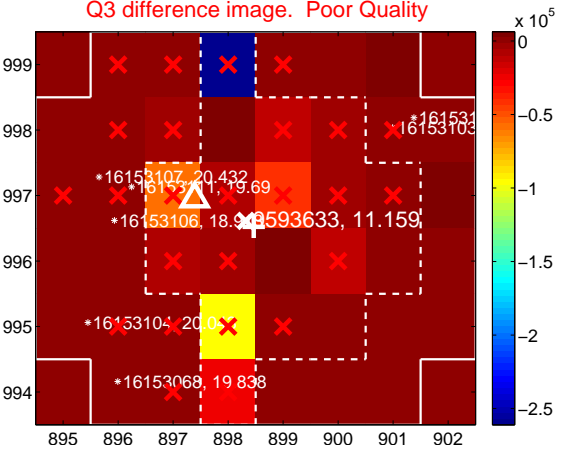
Q2 no difference image



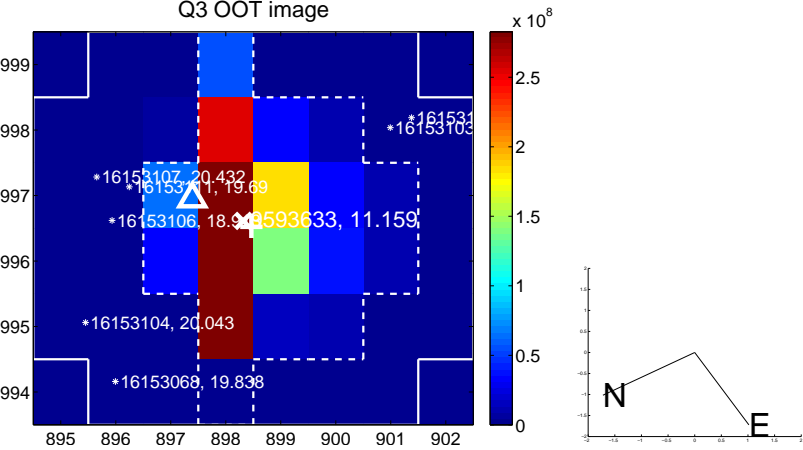
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



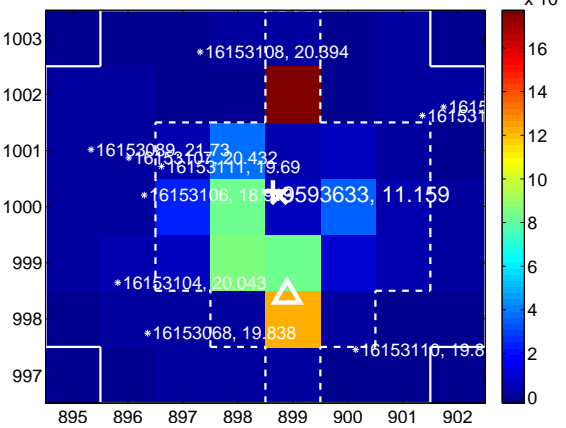
Q7 no difference image



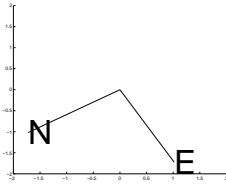
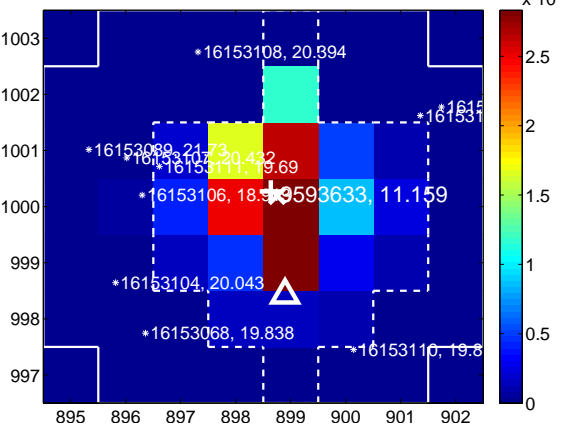
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 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



Q10 no difference image



Q10 no OOT image



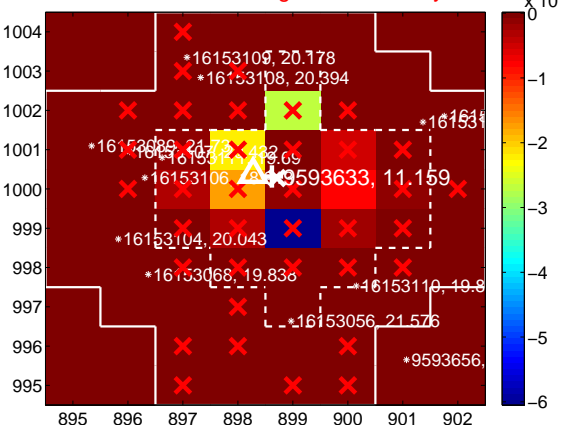
Q11 no difference image



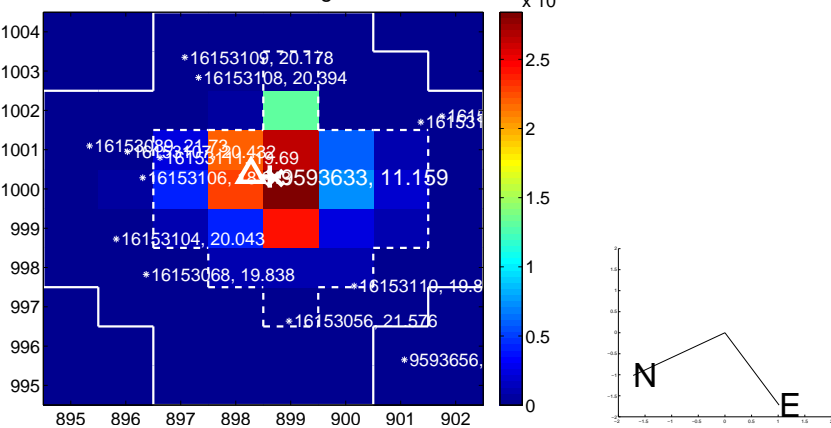
Q11 no OOT image



Q12 difference image. Poor Quality



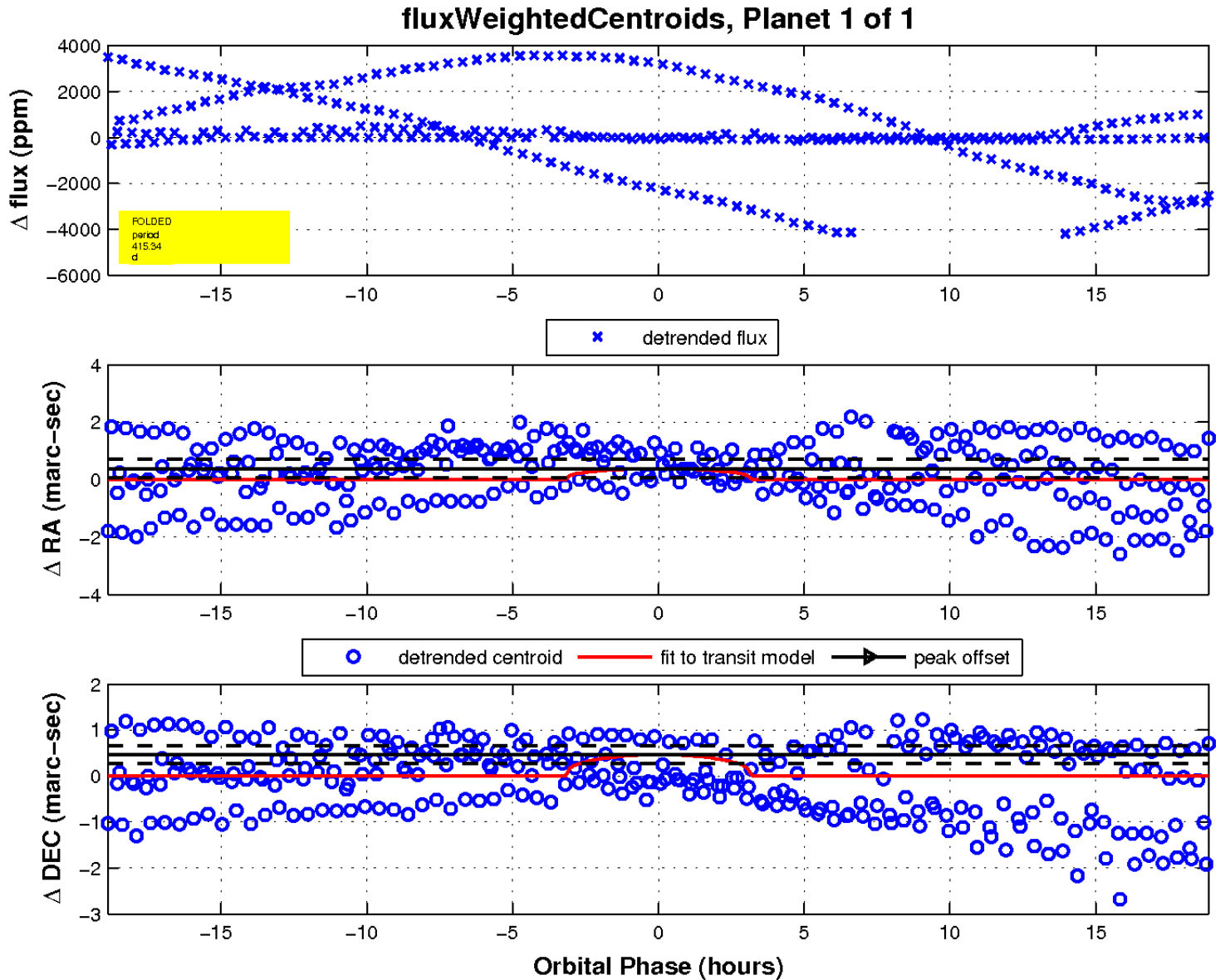
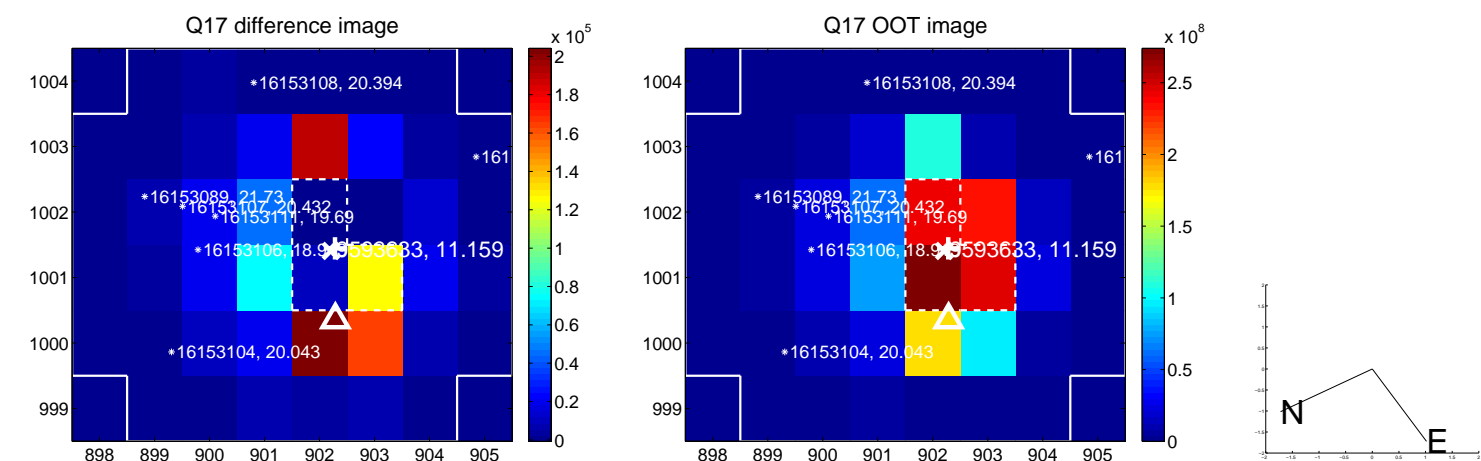
Q12 OOT image



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

