

# KIC 010010312

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010010312-01	OBS	No	369.020327	499.839885	1696.9	23.054	9.0	10.3	1.06	6260	8.21	1.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010010312-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_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.

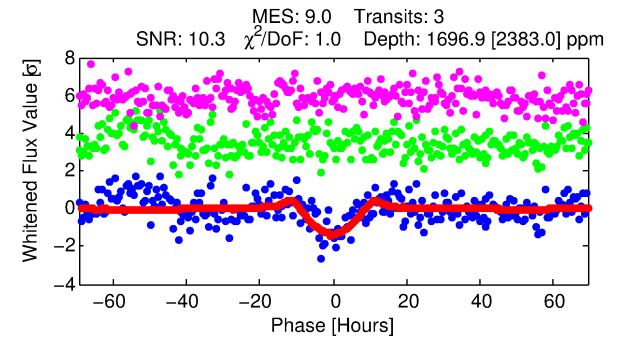
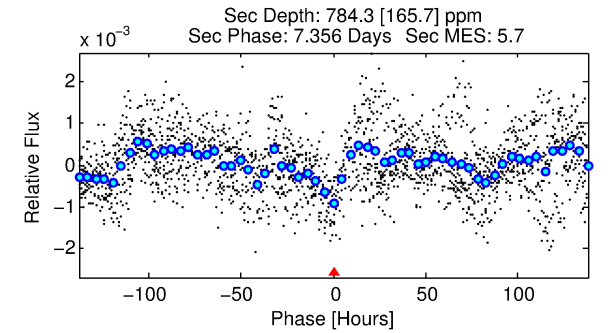
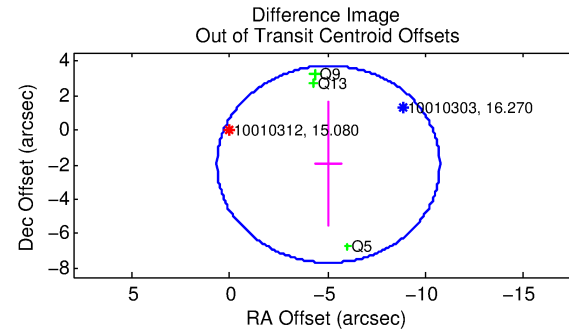
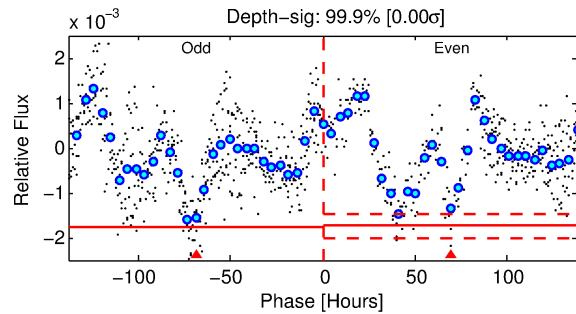
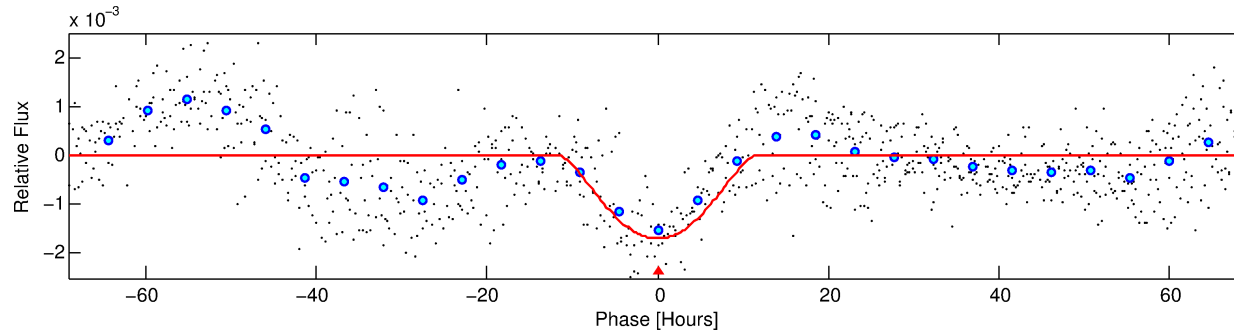
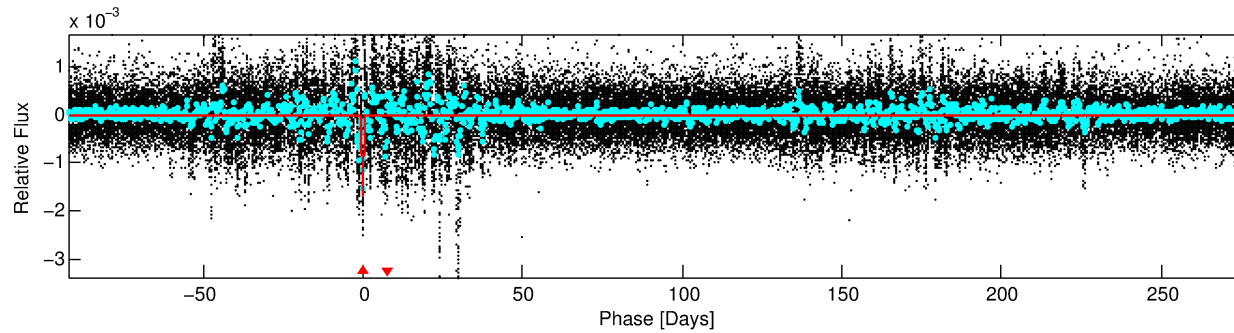
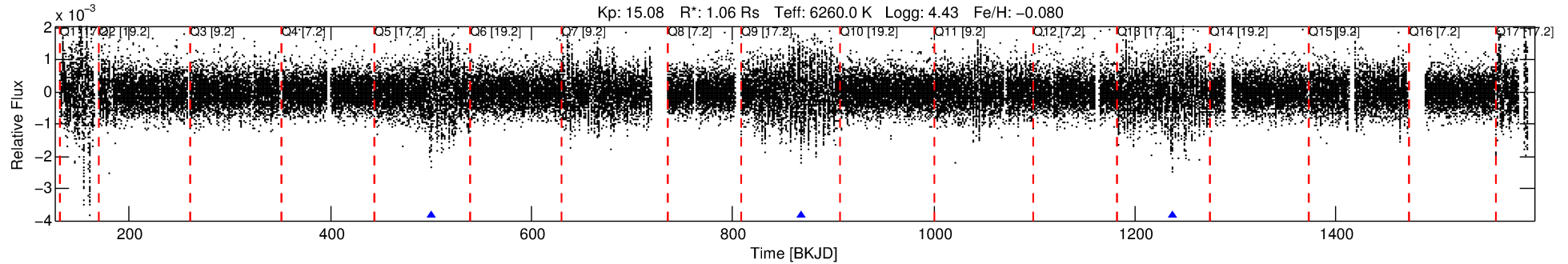
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010010312-01

No Significant Match Found

# DV One-Page Summary

KIC: 10010312 Candidate: 1 of 1 Period: 369.020 d



## DV Fit Results:

Period = 369.02033 [0.02465] d  
Epoch = 499.8399 [0.0303] BKJD  
Rp/R\* = 0.0707 [0.1342]  
a/R\* = 46.81 [19.74]  
b = 1.00 [0.13]  
Seff = 1.42 [0.59]  
Teq = 279 [29] K  
Rp = 8.21 [15.78] Re  
a = 1.0449 [0.2797] AU  
Ag = 6996.94 [26729.08] [0.26σ]  
Teff = 3939 [3744] K [0.98σ]

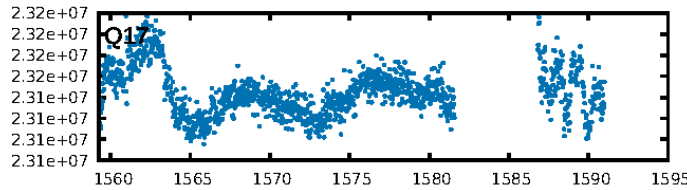
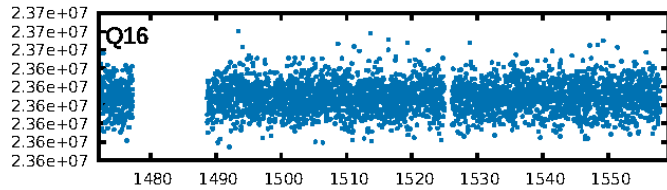
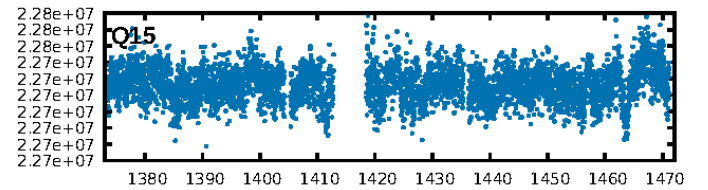
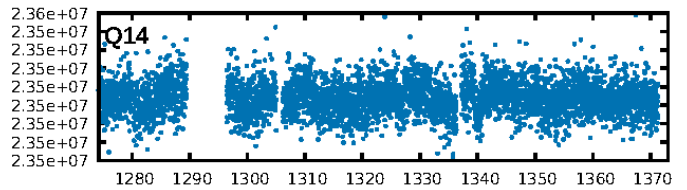
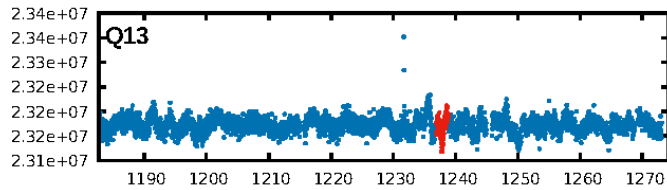
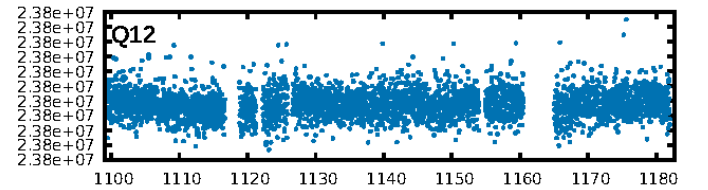
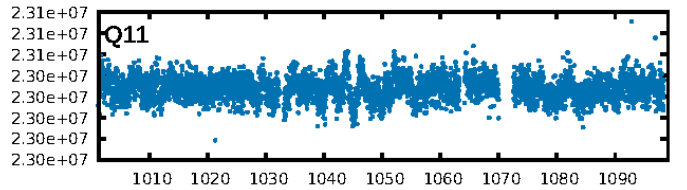
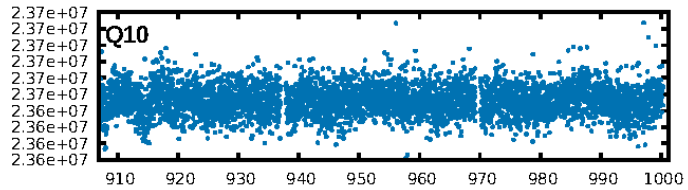
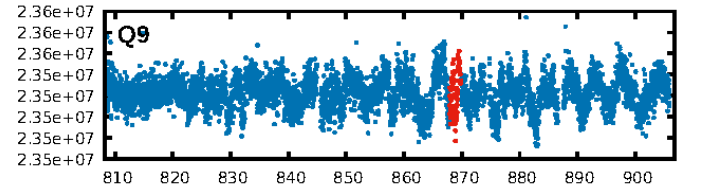
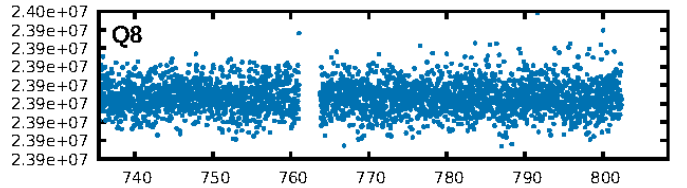
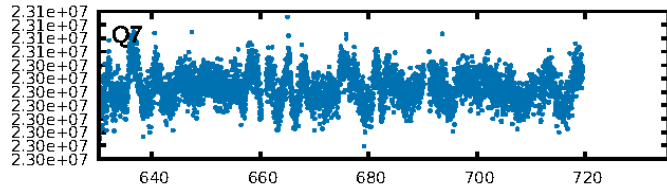
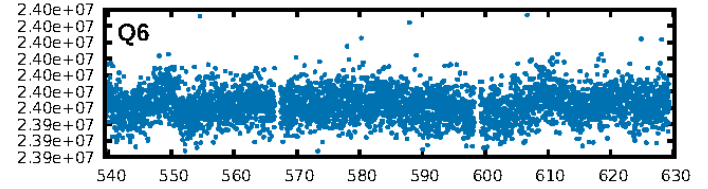
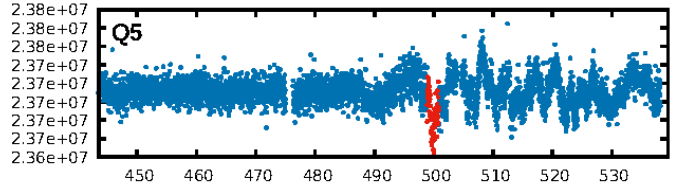
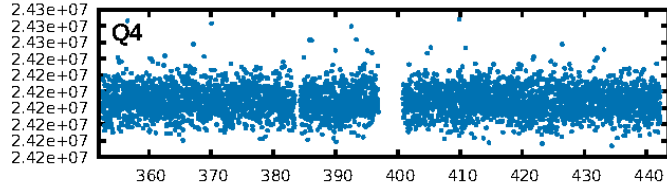
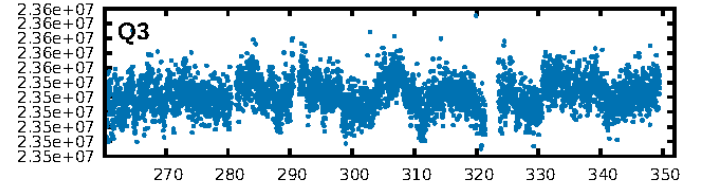
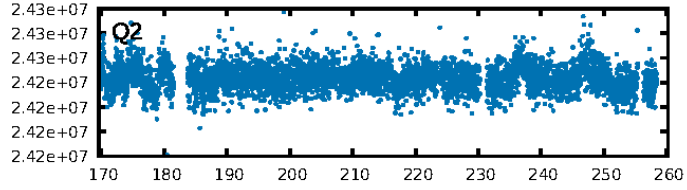
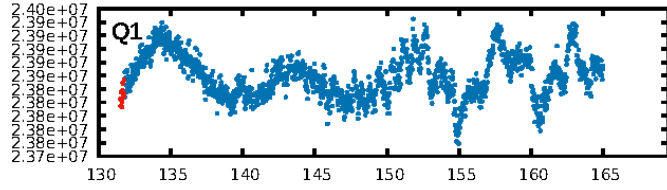
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 80.5%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 5.57e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.199  
Centroid-sig: 0.0%  
**Centroid-so: 5.357 arcsec [3.05σ]**  
OotOffset-rm: 5.422 arcsec [2.85σ]  
**KicOffset-rm: 5.539 arcsec [3.81σ]**  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

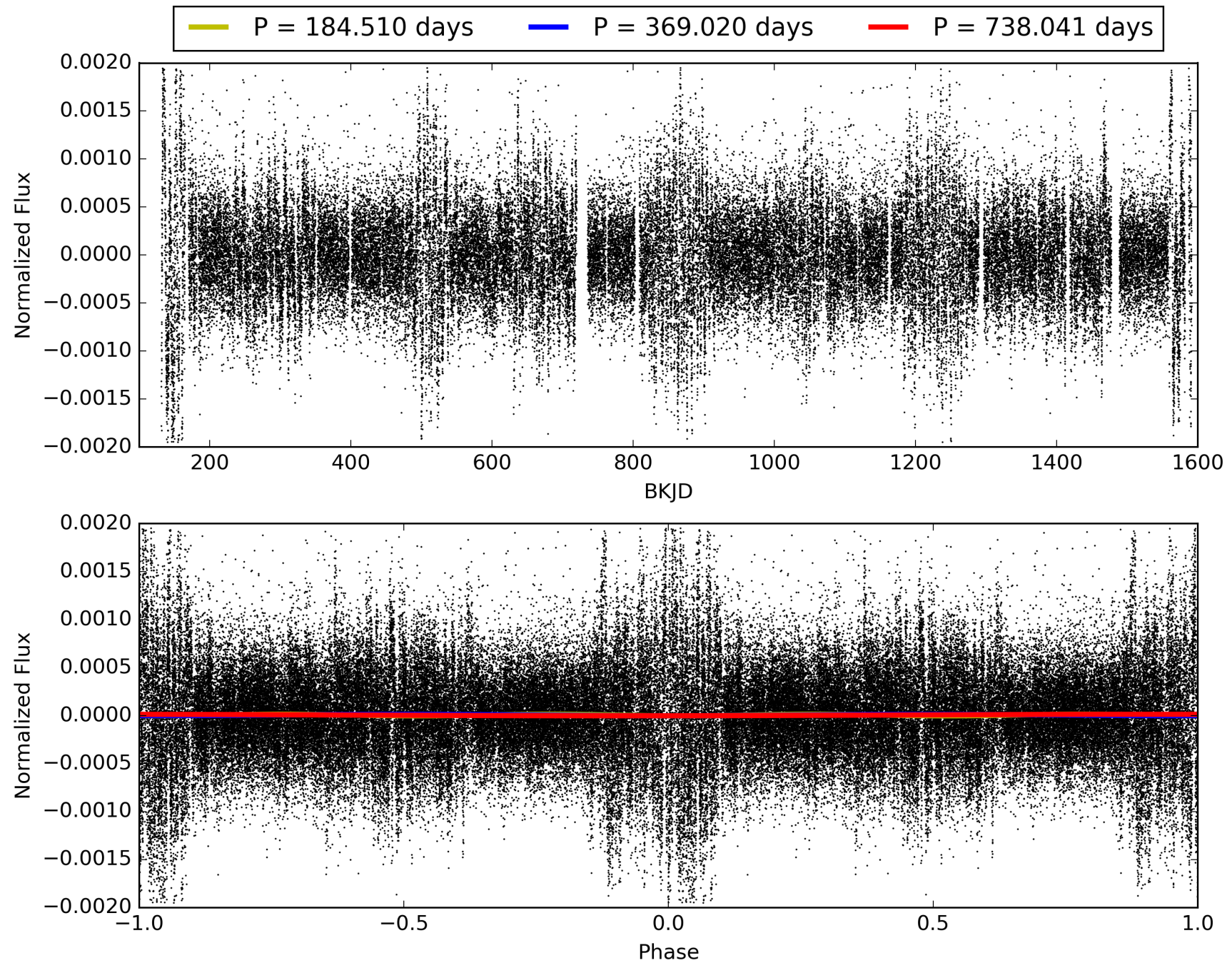
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:15:04 Z

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

## TCE 010010312-01, PDC Light Curves

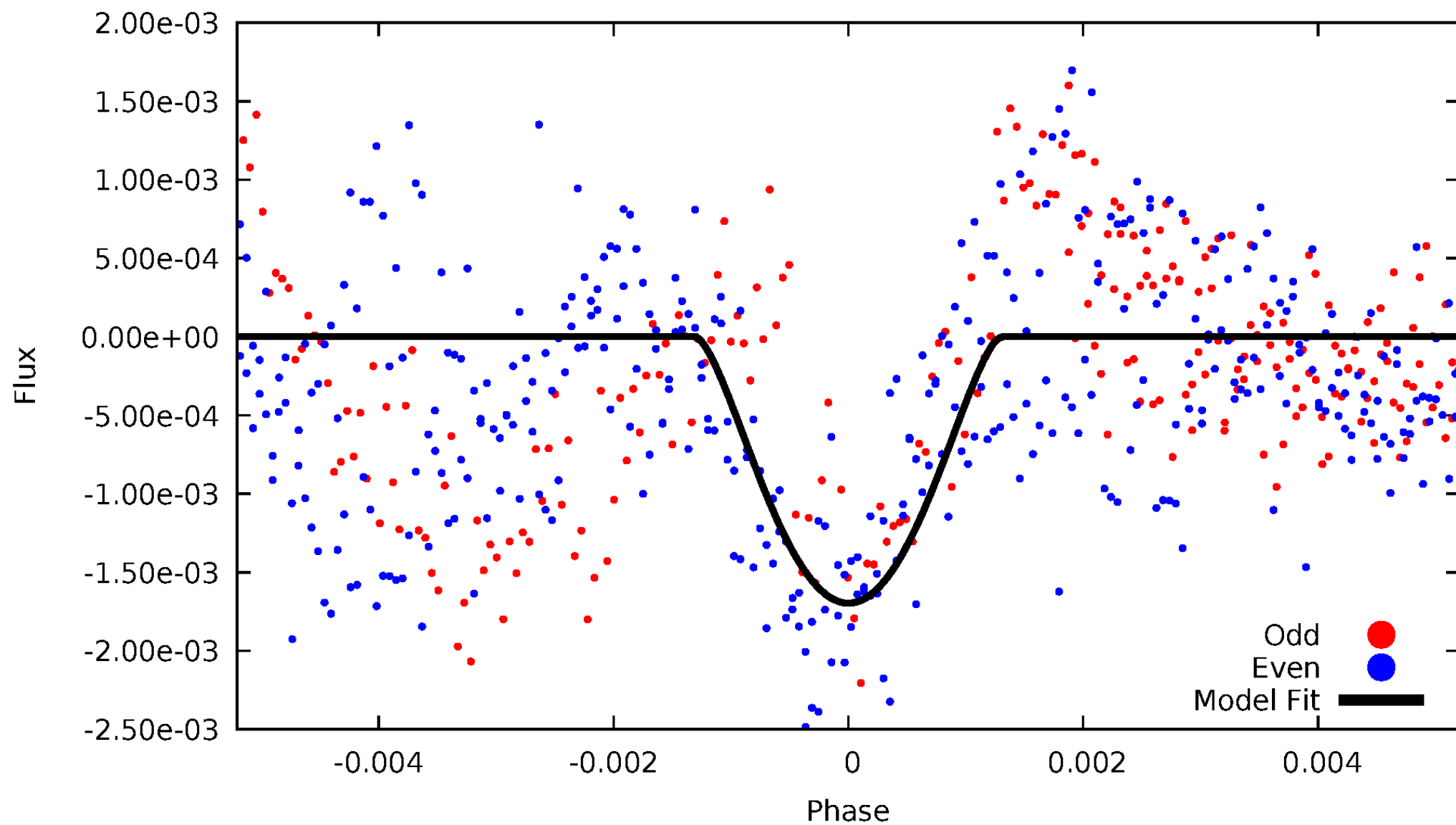


# TCE 010010312-01



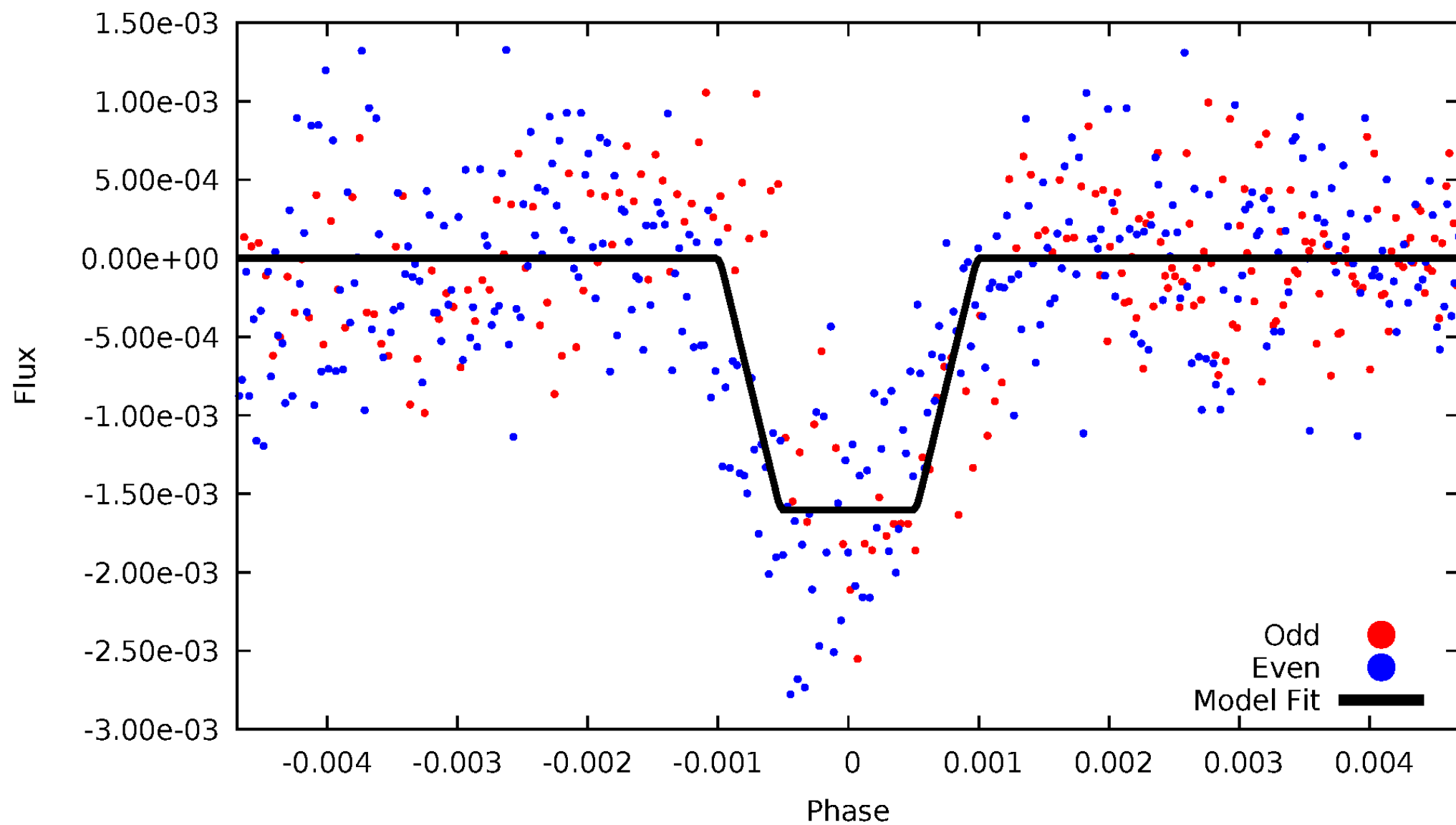
# DV Odd/Even

TCE 010010312-01



# ALT Odd/Even

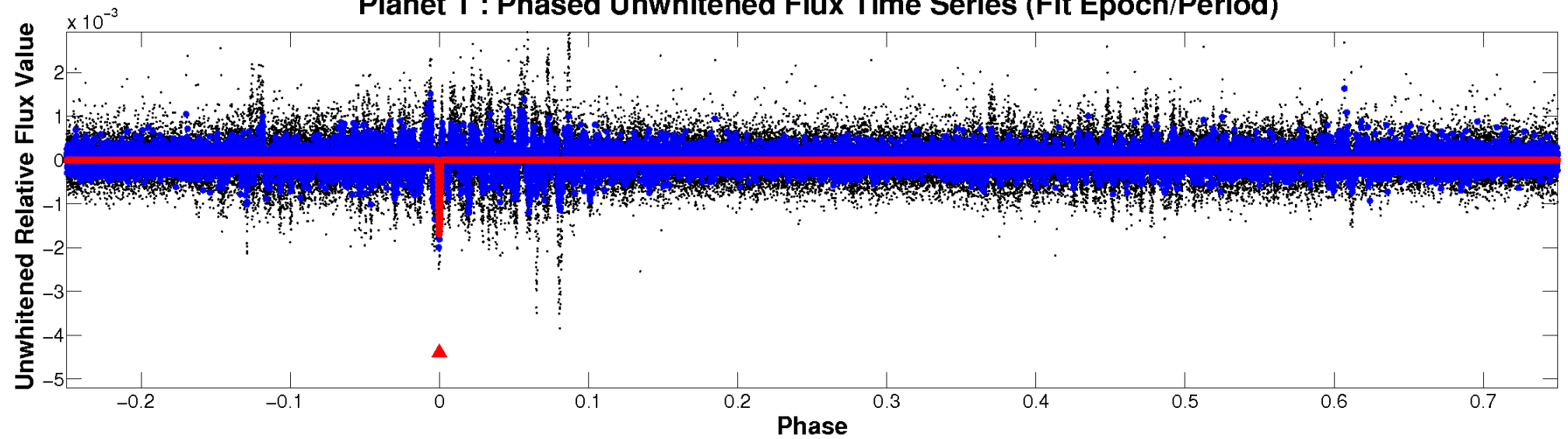
TCE 010010312-01



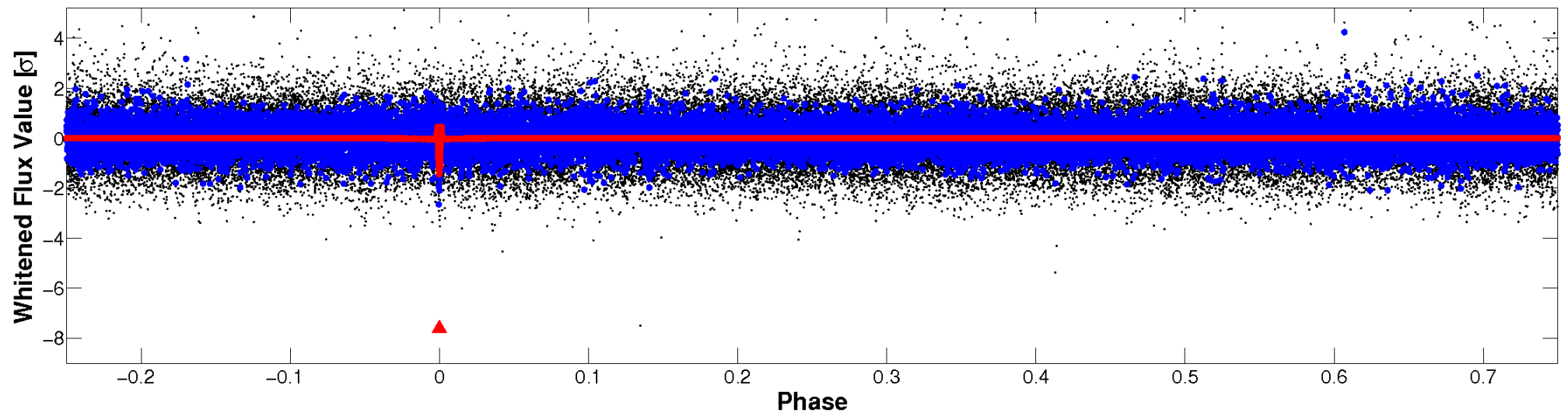


# Non-Whitened Vs. Whitened Light Curve

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

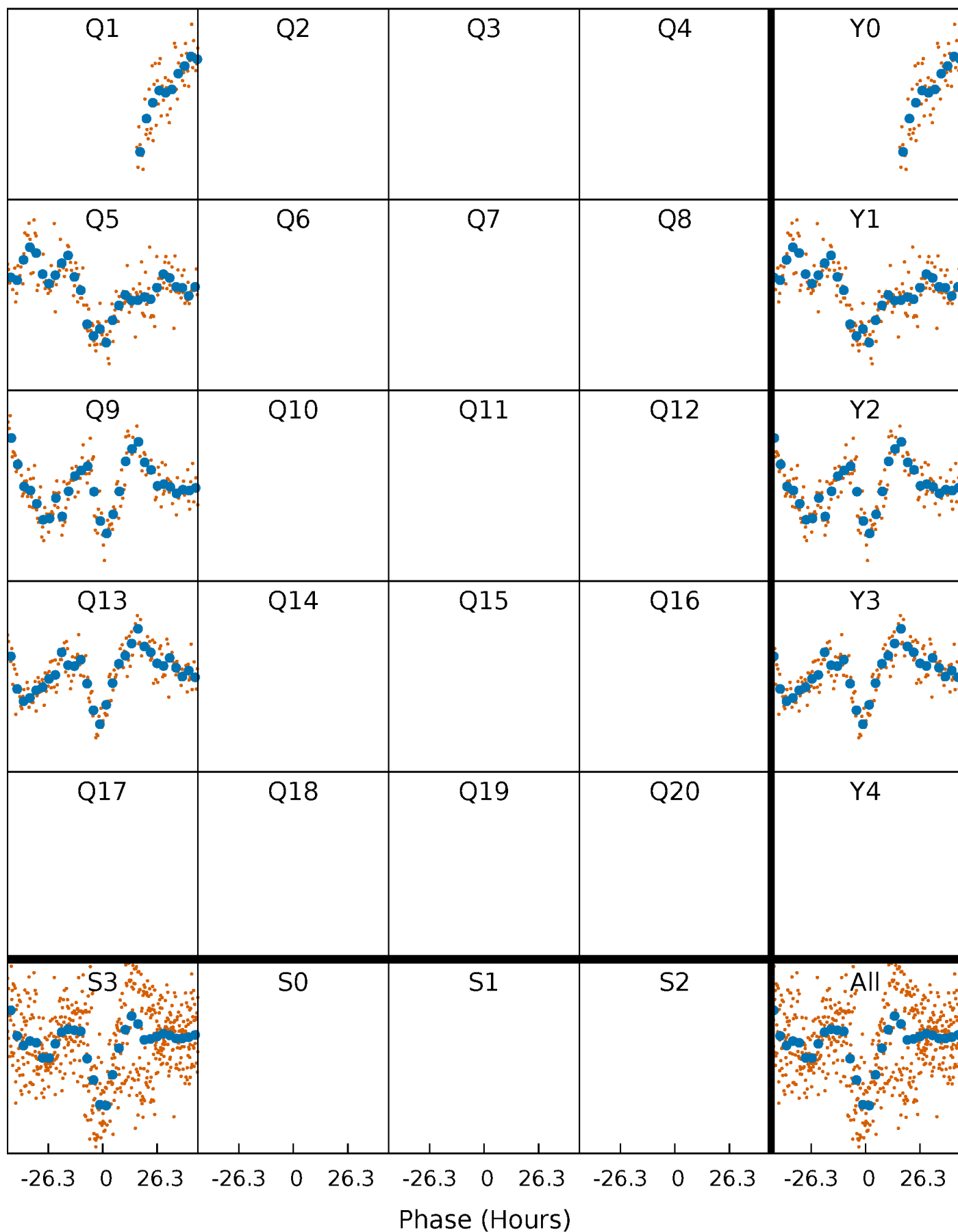


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

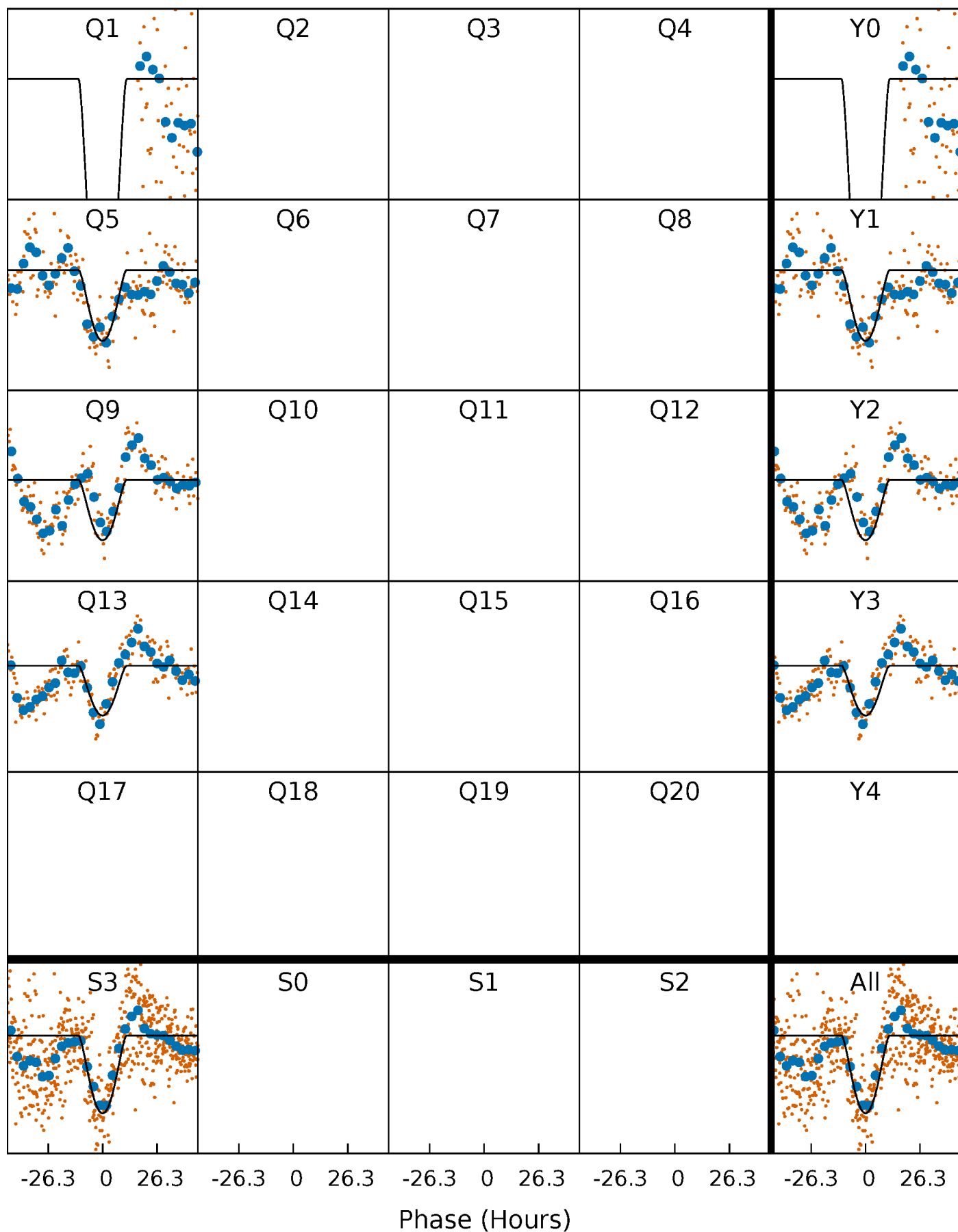
TCE 010010312-01 P=369.020327 Days  $T_0=499.839885$  (BKJD)





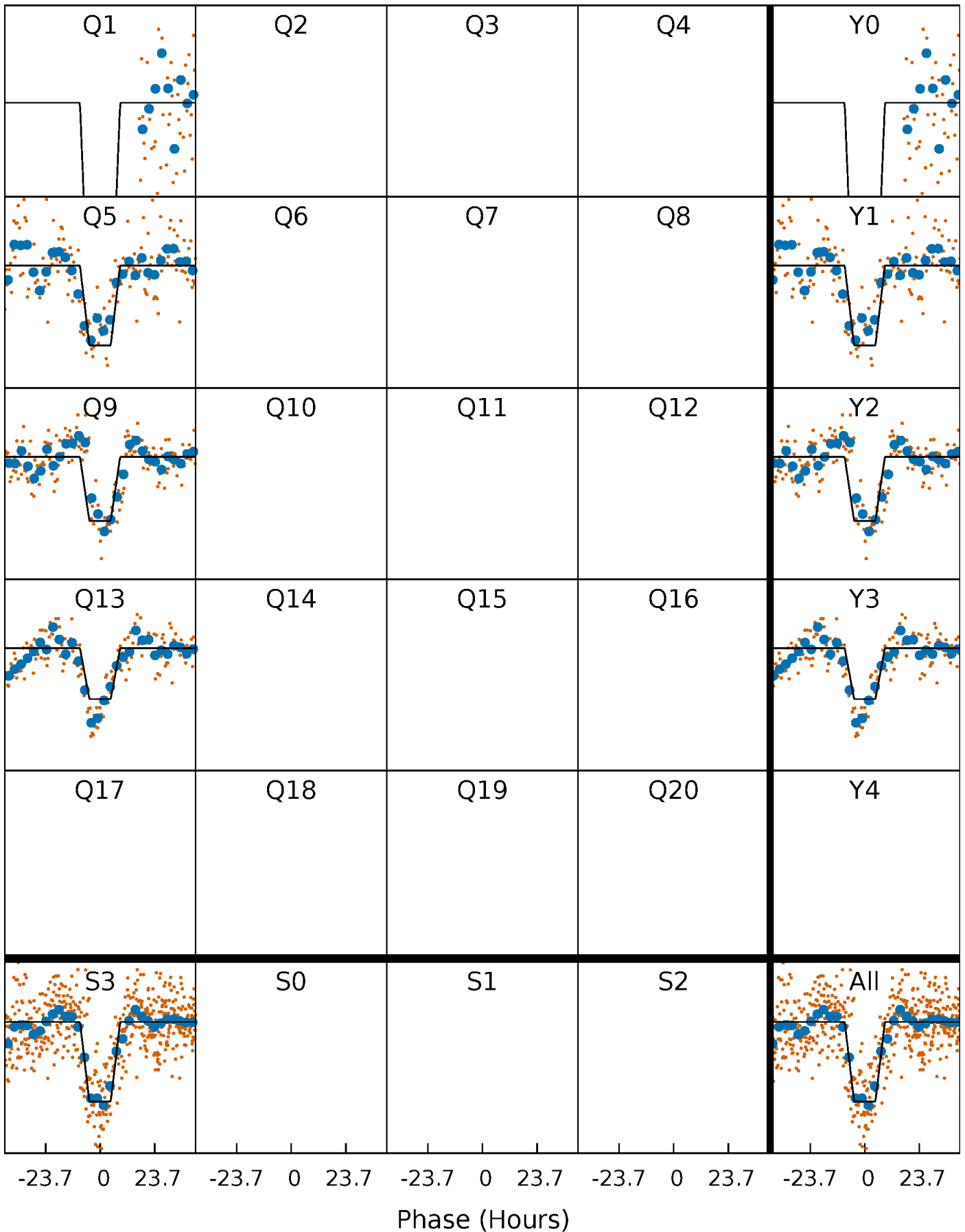
# DV Quarter-Phased Transit Curves

TCE 010010312-01 P=369.020327 Days  $T_0=499.839885$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

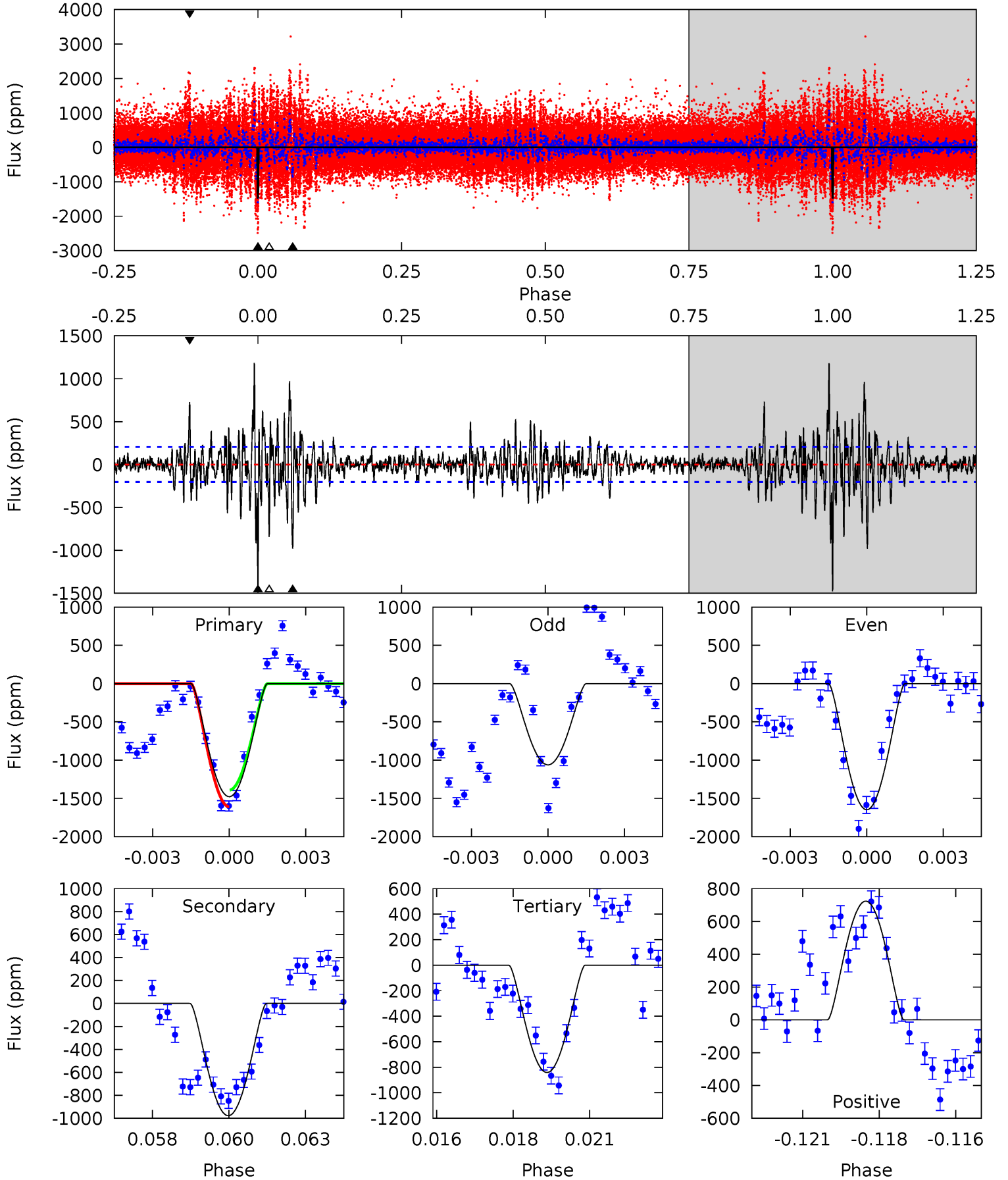
TCE 010010312-01 P=369.036905 Days  $T_0=499.836205$  (BKJD)



# DV Model-Shift Uniqueness Test

010010312-01, P = 369.020327 Days, E = 130.819558 Days

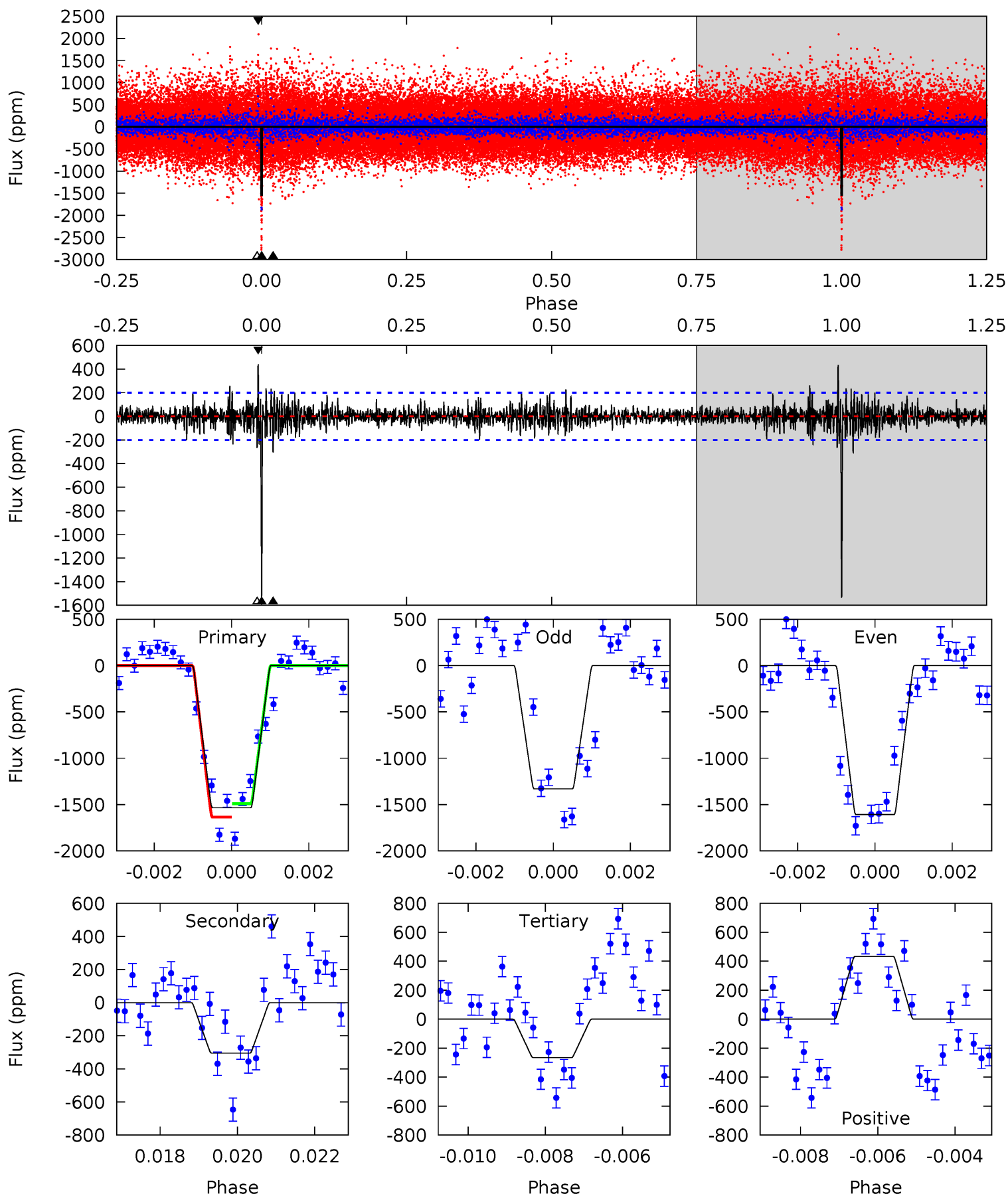
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.3	25.3	21.8	18.7	5.28	3.01	4.42	16.5	19.5	3.53	6.58	6.96	0.93	0.44	2.81



# Alt Model-Shift Uniqueness Test

010010312-01, P = 369.036905 Days, E = 130.799300 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
40.9	8.13	7.07	11.5	5.33	3.09	1.52	33.8	29.3	1.06	-3.40	3.47	1.14	0.22	1.93



### Stellar Parameters For KIC 010010312

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6260^{+168}_{-224}$	$4.433^{+0.054}_{-0.216}$	$-0.080^{+0.250}_{-0.300}$	$1.063^{+0.335}_{-0.134}$	$1.118^{+0.159}_{-0.145}$	$1.310^{+0.372}_{-0.686}$
	+3%/-4%	+1%/-5%	+312%/-375%	+32%/-13%	+14%/-13%	+28%/-52%
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 010010312-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-978 \pm 39$	$15.58^{+13.35}_{-10.37}$	$398^{+34}_{-20}$	$3568^{+1874}_{-605}$	$2415^{+19759}_{-1704}$
Alt.	$-305 \pm 38$	$13.42^{+13.39}_{-9.18}$	$398^{+31}_{-21}$	$3154^{+1417}_{-567}$	$1004^{+8835}_{-763}$

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

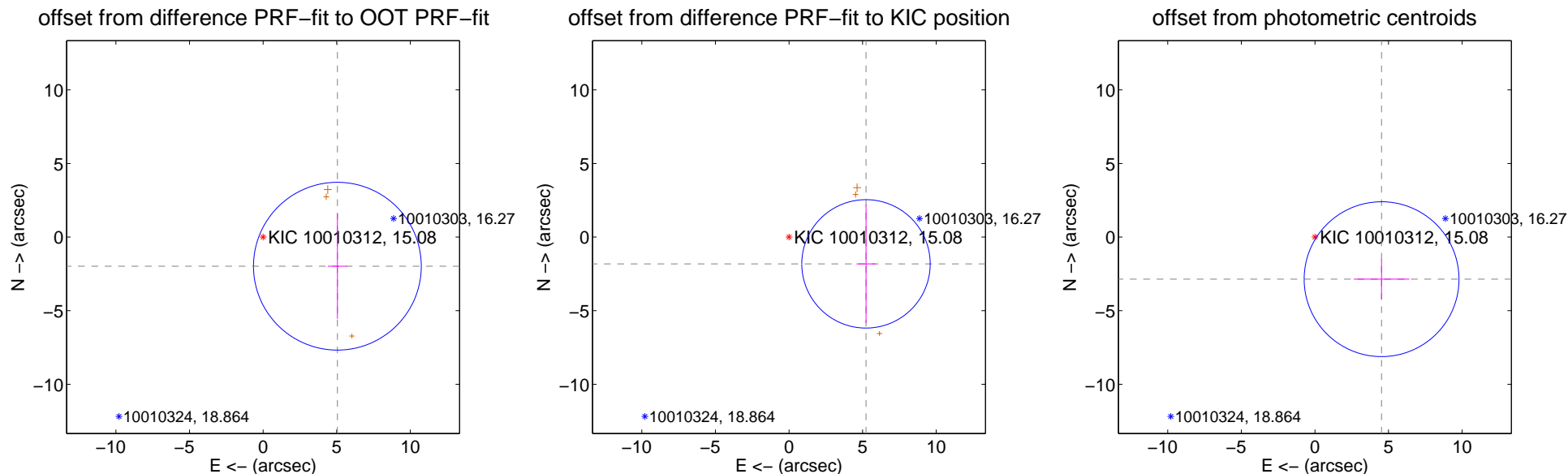
## DV Centroid Data

Supplemental centroid analysis for 010010312-01. Kepler magnitude: 15.08. Transit SNR 10.31

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.422 \pm 1.900$	2.85	$-5.048 \pm 0.647$	$-1.979 \pm 3.568$
PRF-fit source offset from KIC position	$5.539 \pm 1.454$	3.81	$-5.231 \pm 0.644$	$-1.821 \pm 4.019$
photometric centroid source offset	$5.36 \pm 1.75$	3.05	$-4.53 \pm 1.88$	$-2.86 \pm 1.37$



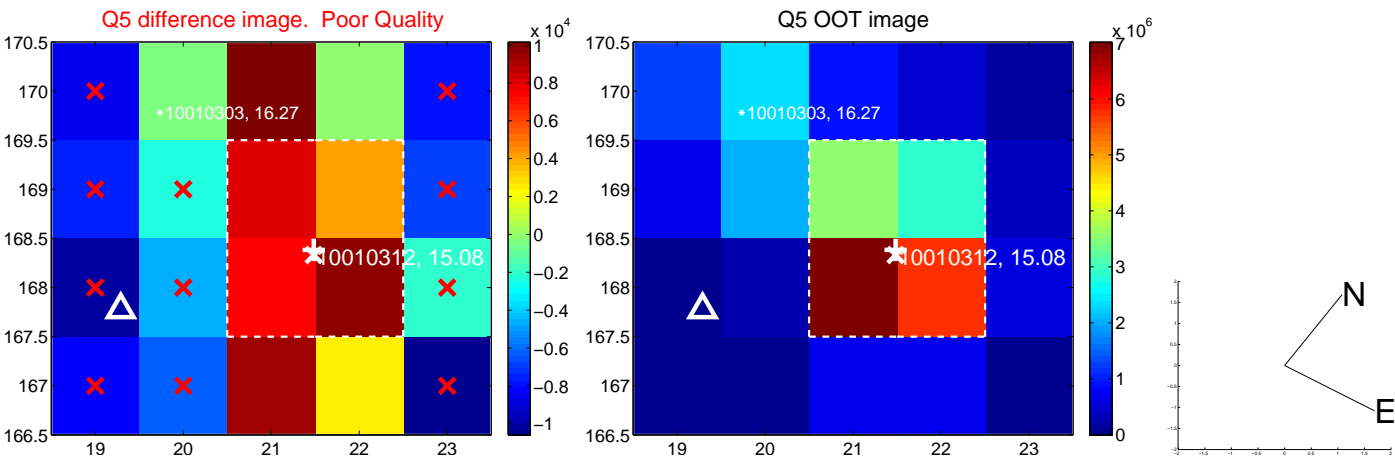
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.



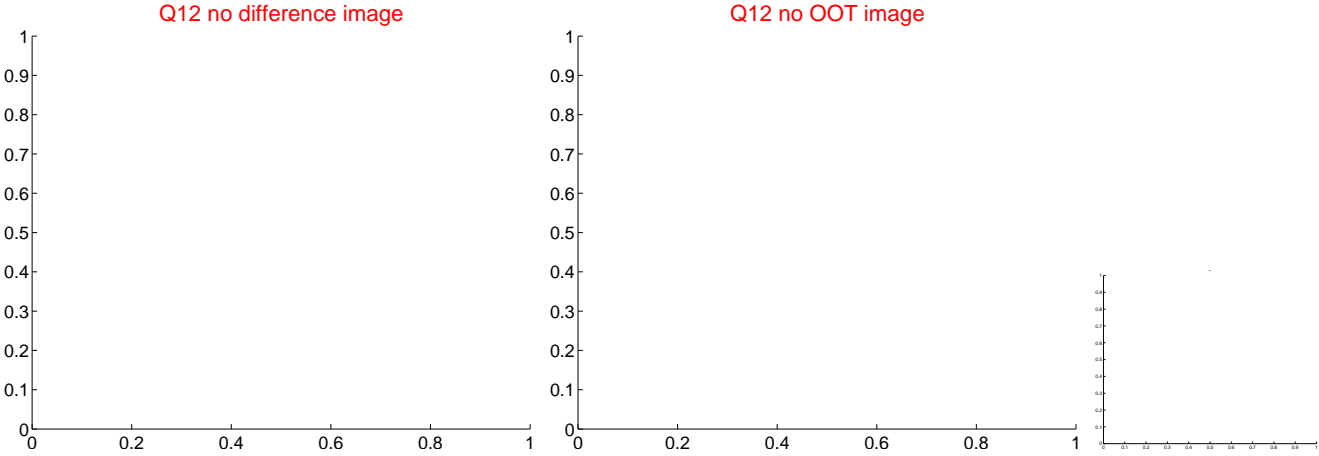
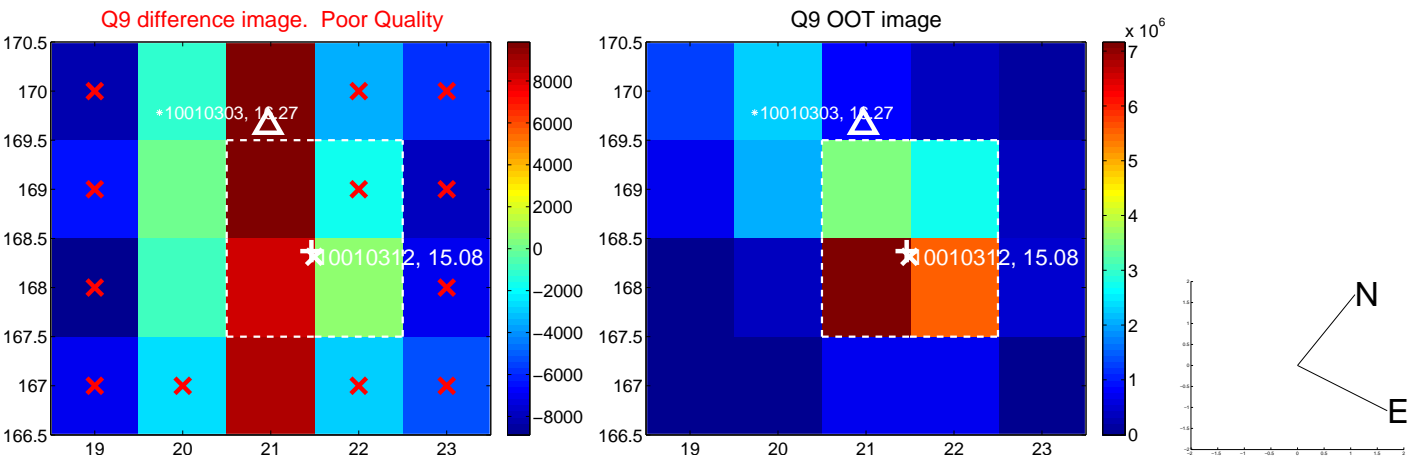
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



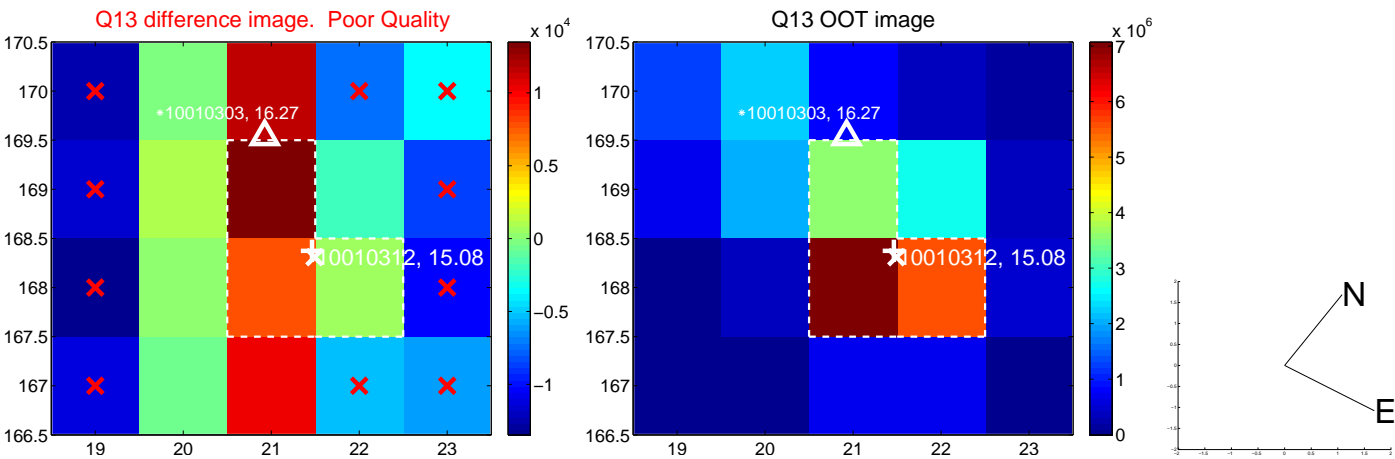
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



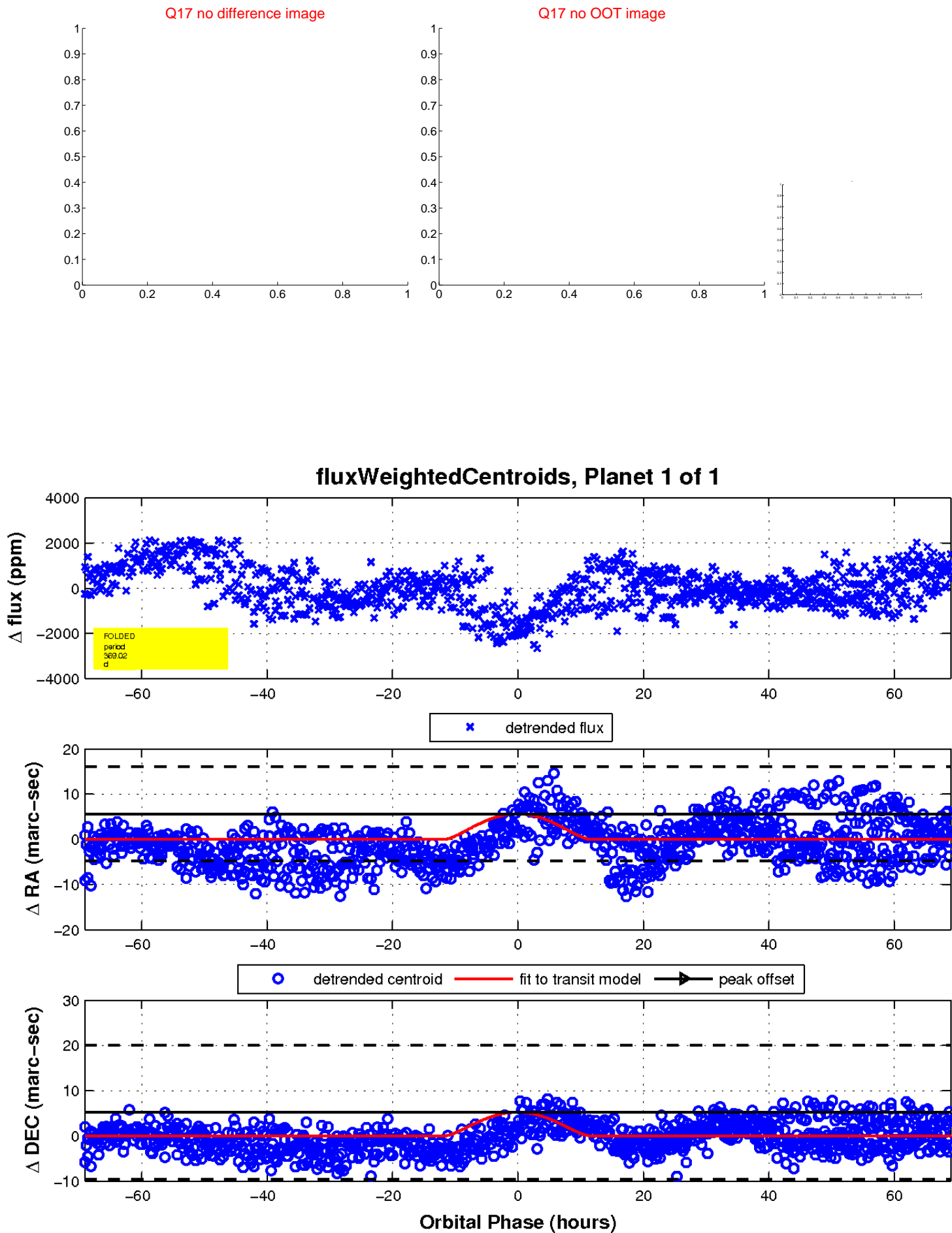
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

