

# KIC 006716981

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006716981-01	OBS	No	392.289949	338.508847	531.7	5.468	10.4	6.7	1.14	5929	2.82	1.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006716981-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS

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

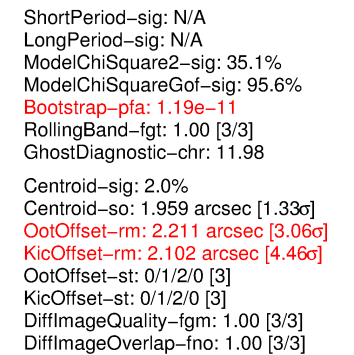
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 006716981-01

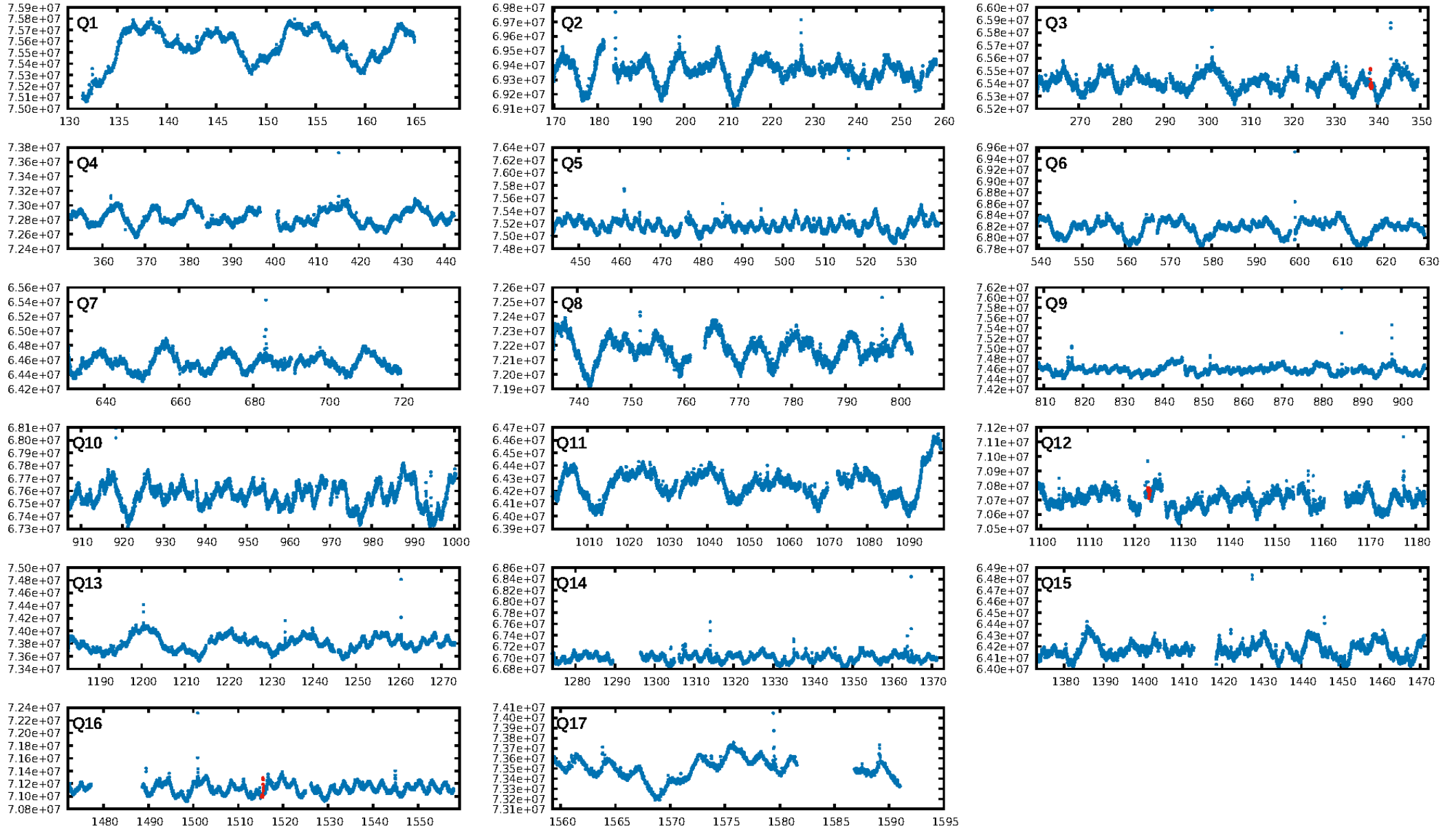
No Significant Match Found

## KIC: 6716981    Candidate: 1 of 1    Period: 392.290 d

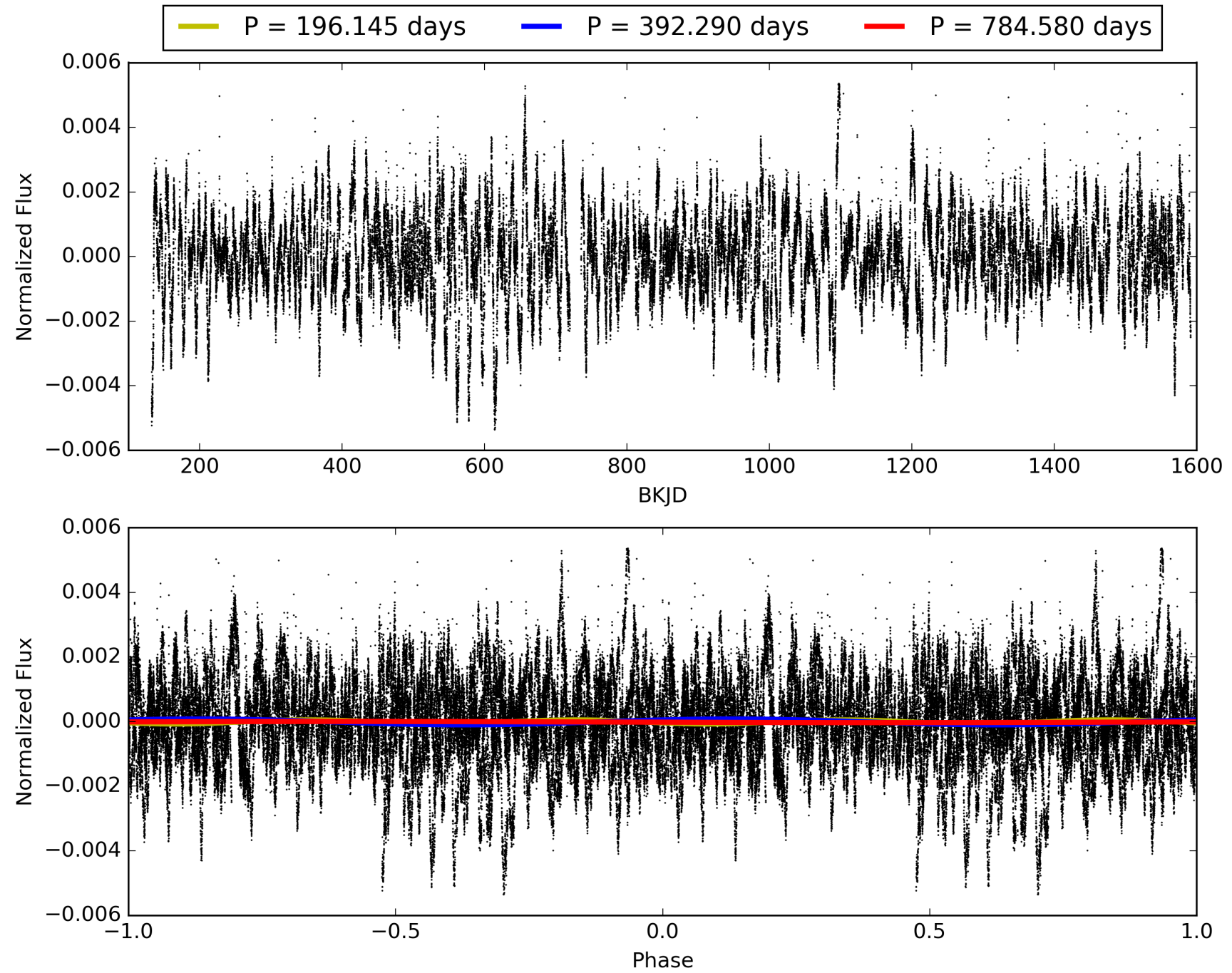


**This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center**

# TCE 006716981-01, PDC Light Curves

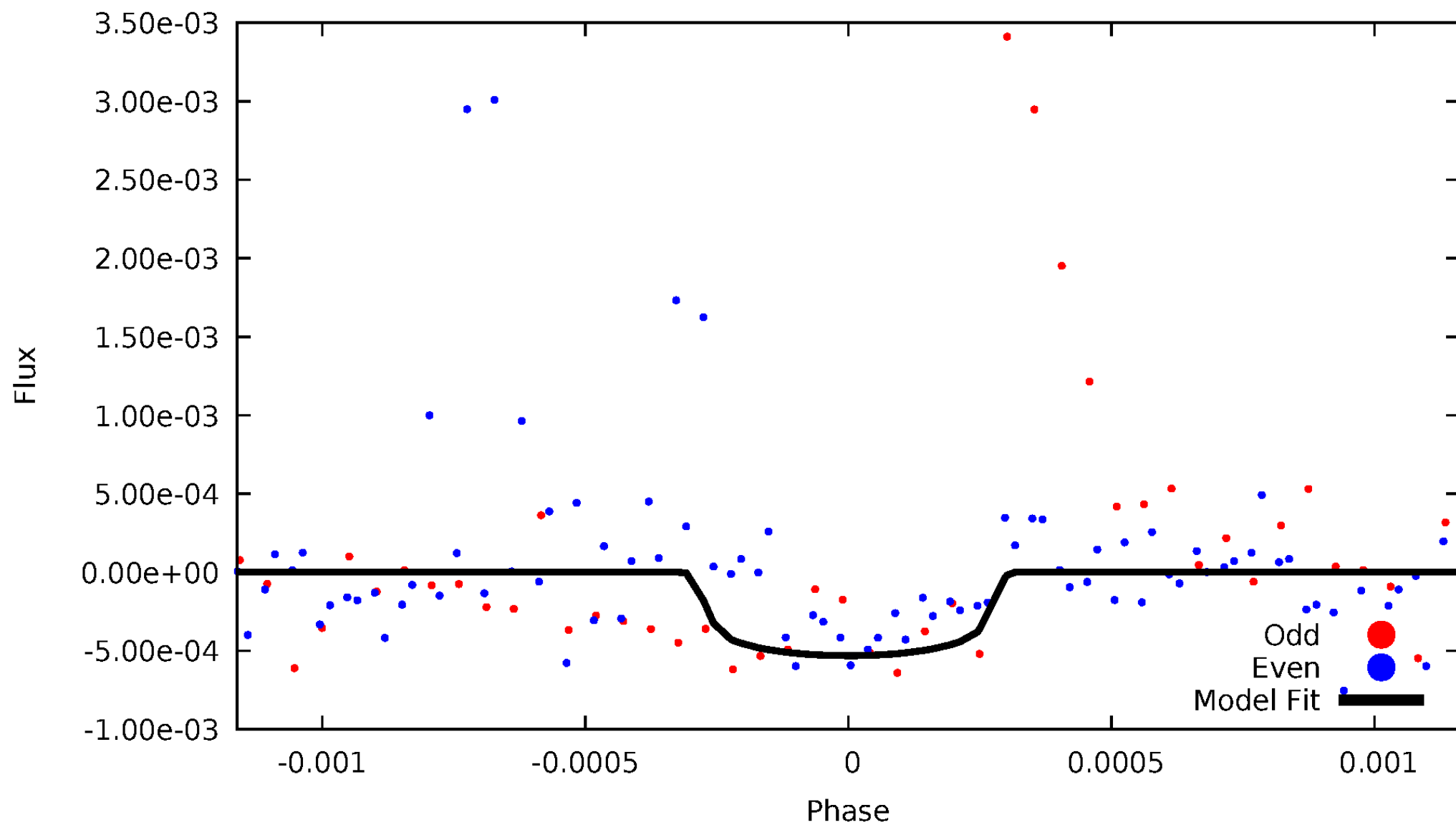


TCE 006716981-01



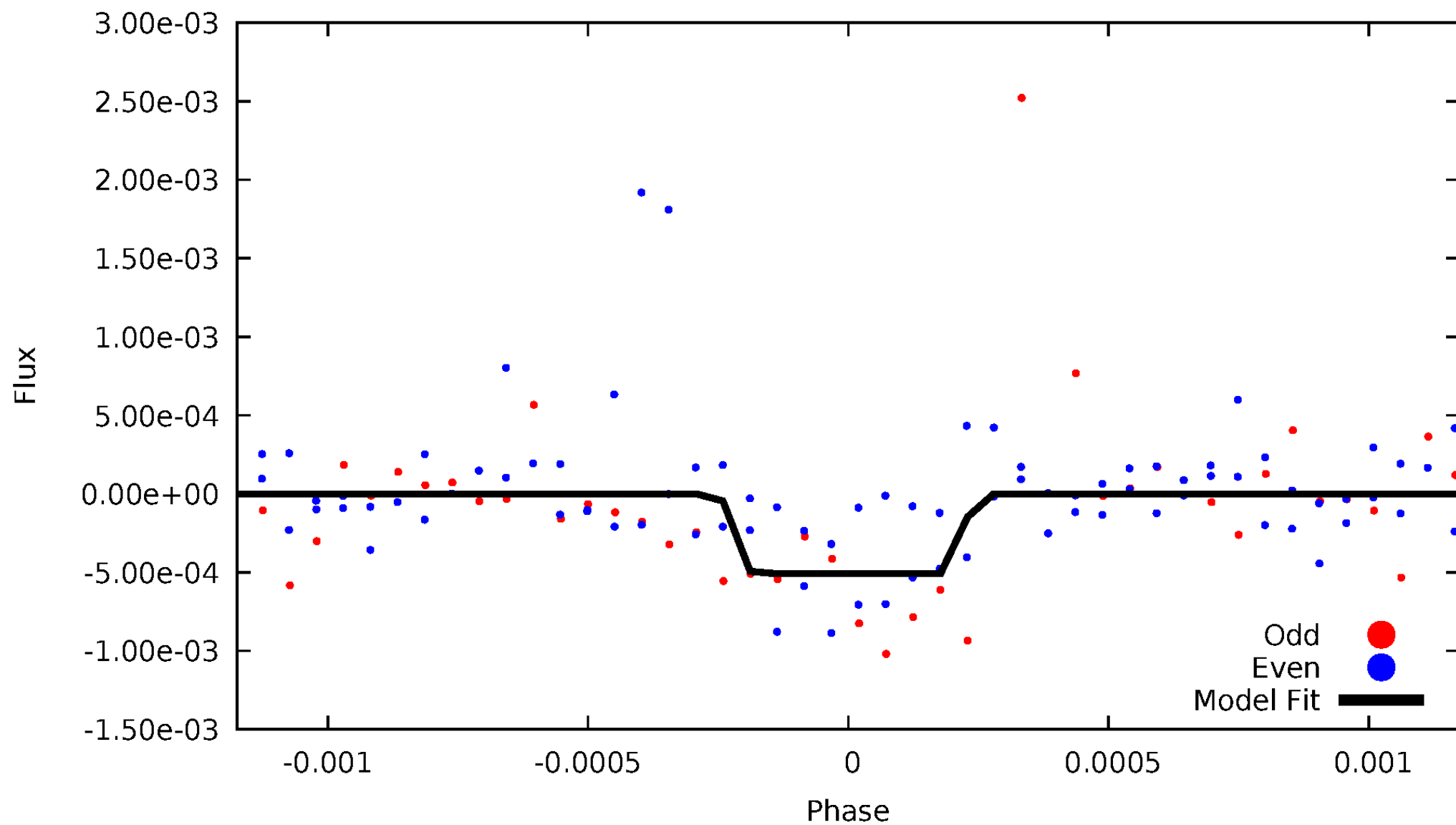
# DV Odd/Even

TCE 006716981-01

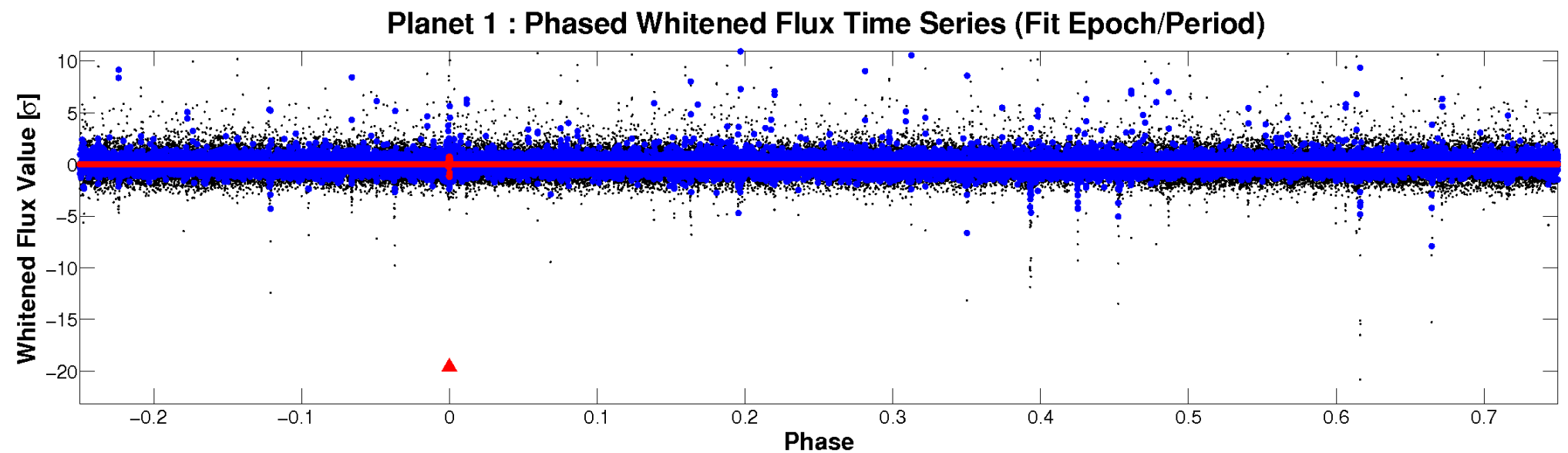
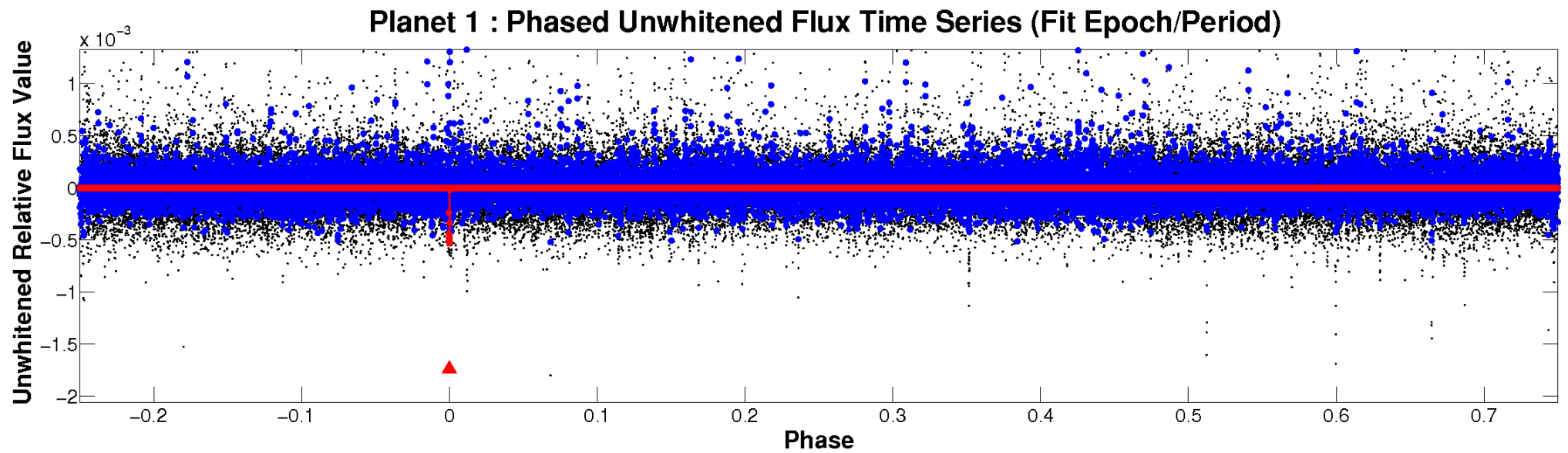


# ALT Odd/Even

TCE 006716981-01

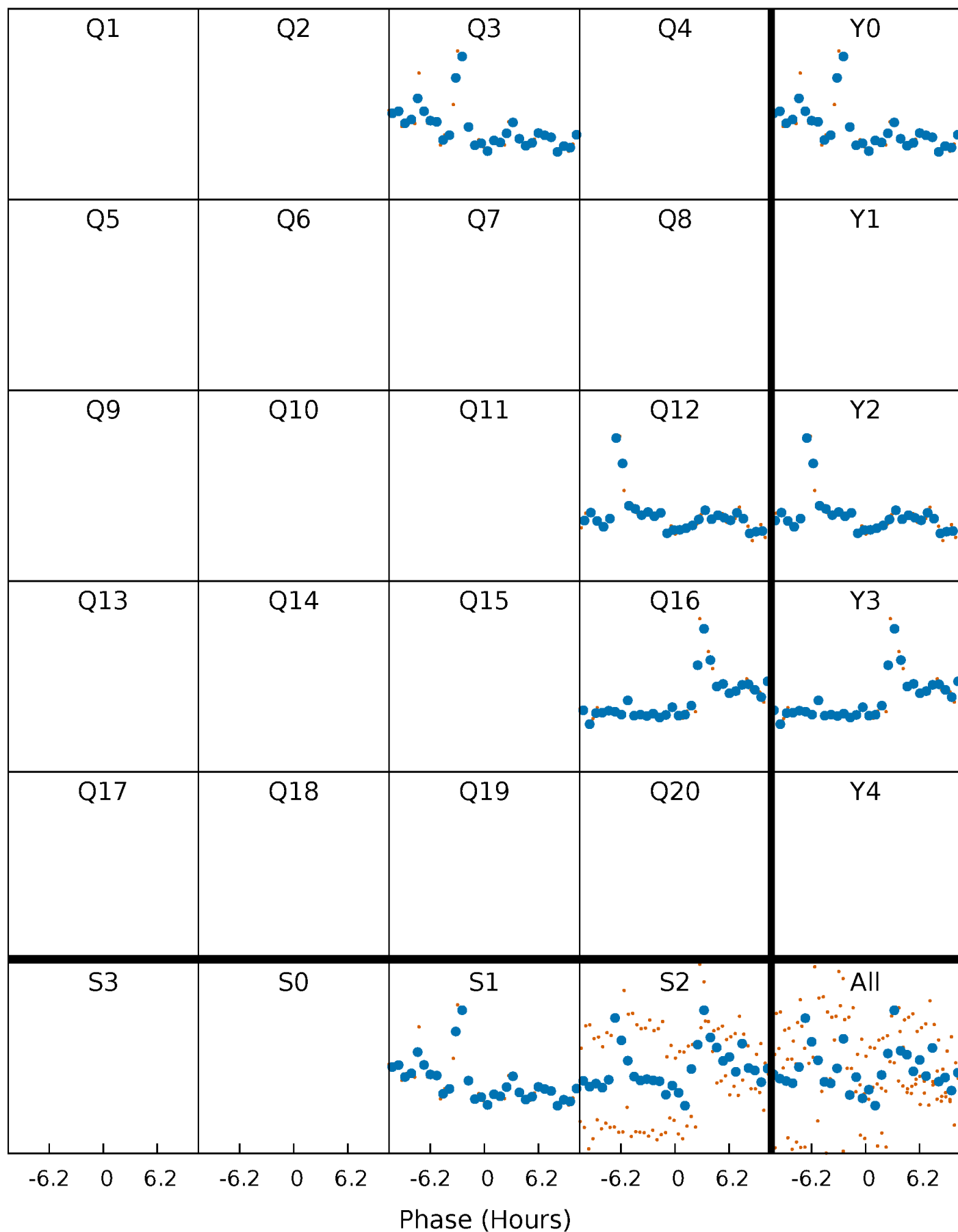


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

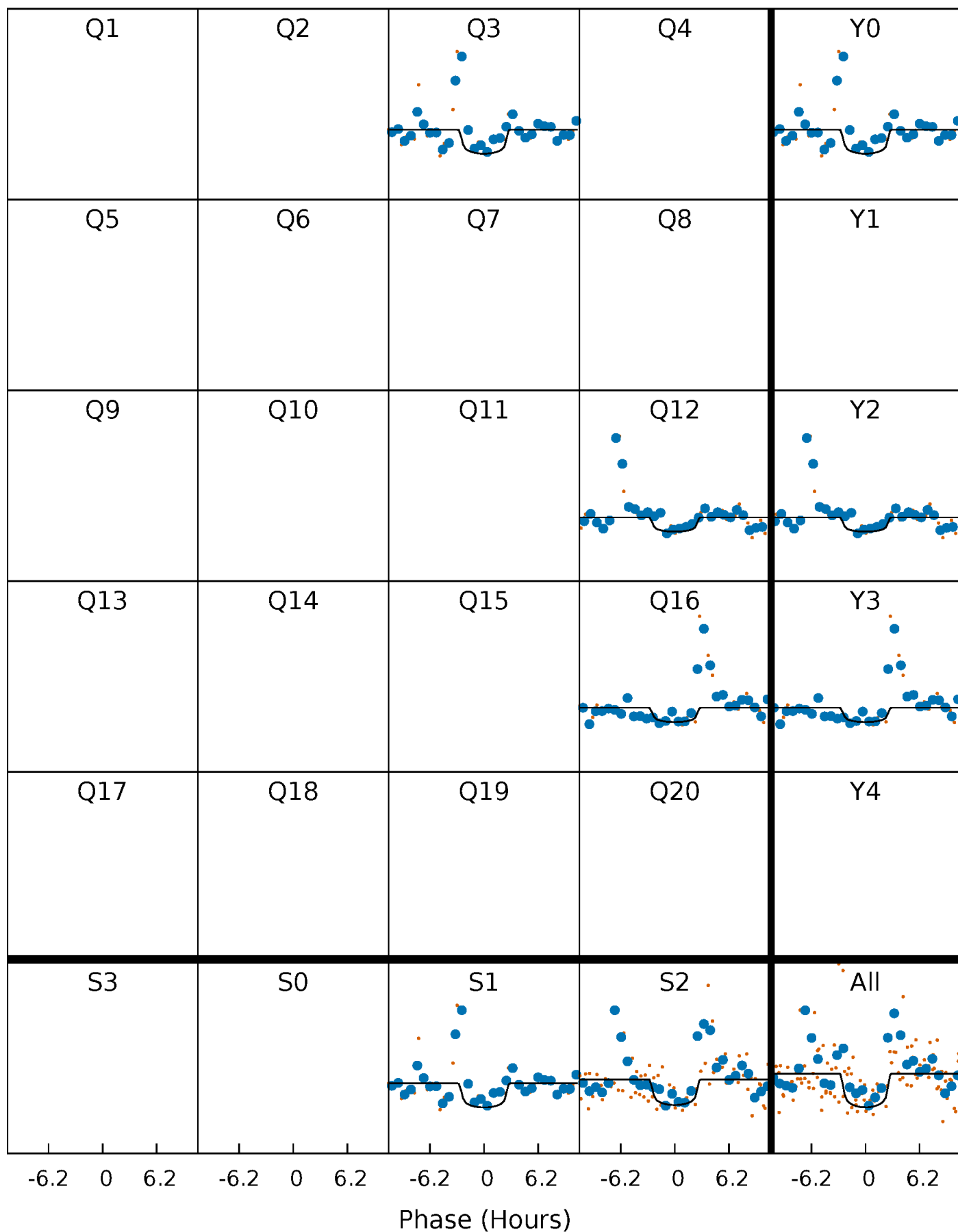
TCE 006716981-01 P=392.289949 Days  $T_0=338.508847$  (BKJD)





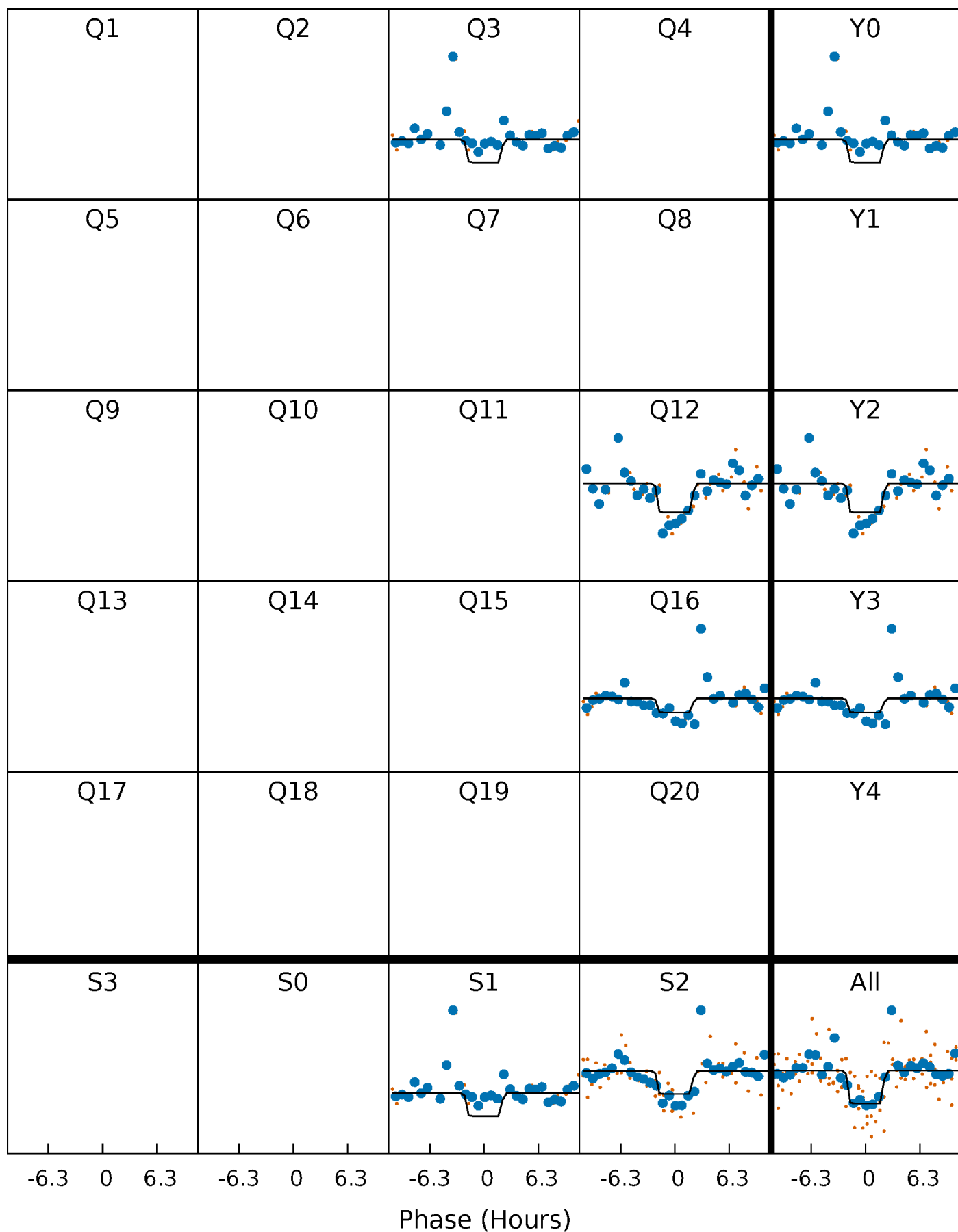
# DV Quarter-Phased Transit Curves

TCE 006716981-01 P=392.289949 Days  $T_0=338.508847$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

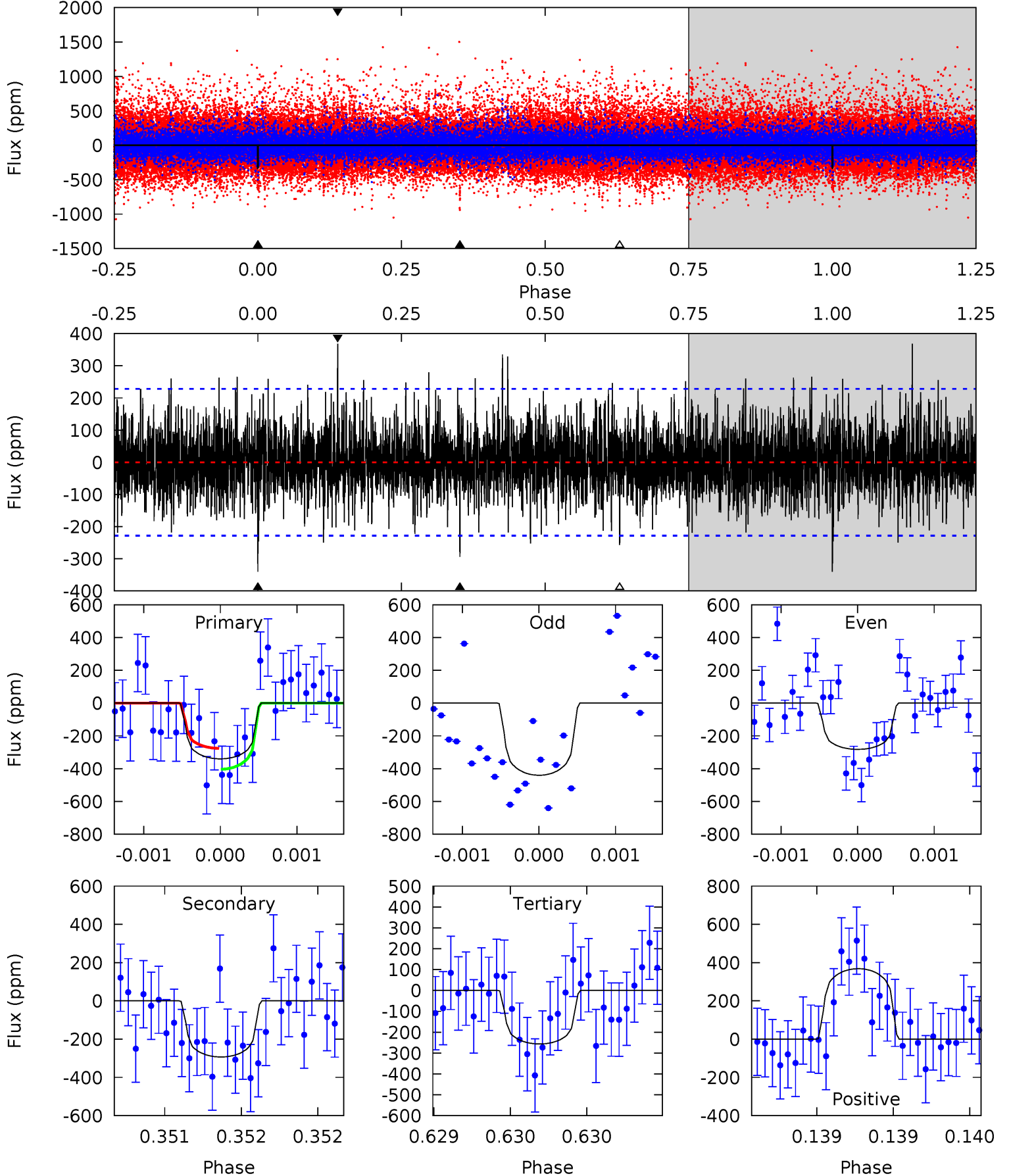
TCE 006716981-01 P=392.283485 Days  $T_0=338.536341$  (BKJD)



# DV Model-Shift Uniqueness Test

006716981-01, P = 392.289949 Days, E = 338.508847 Days

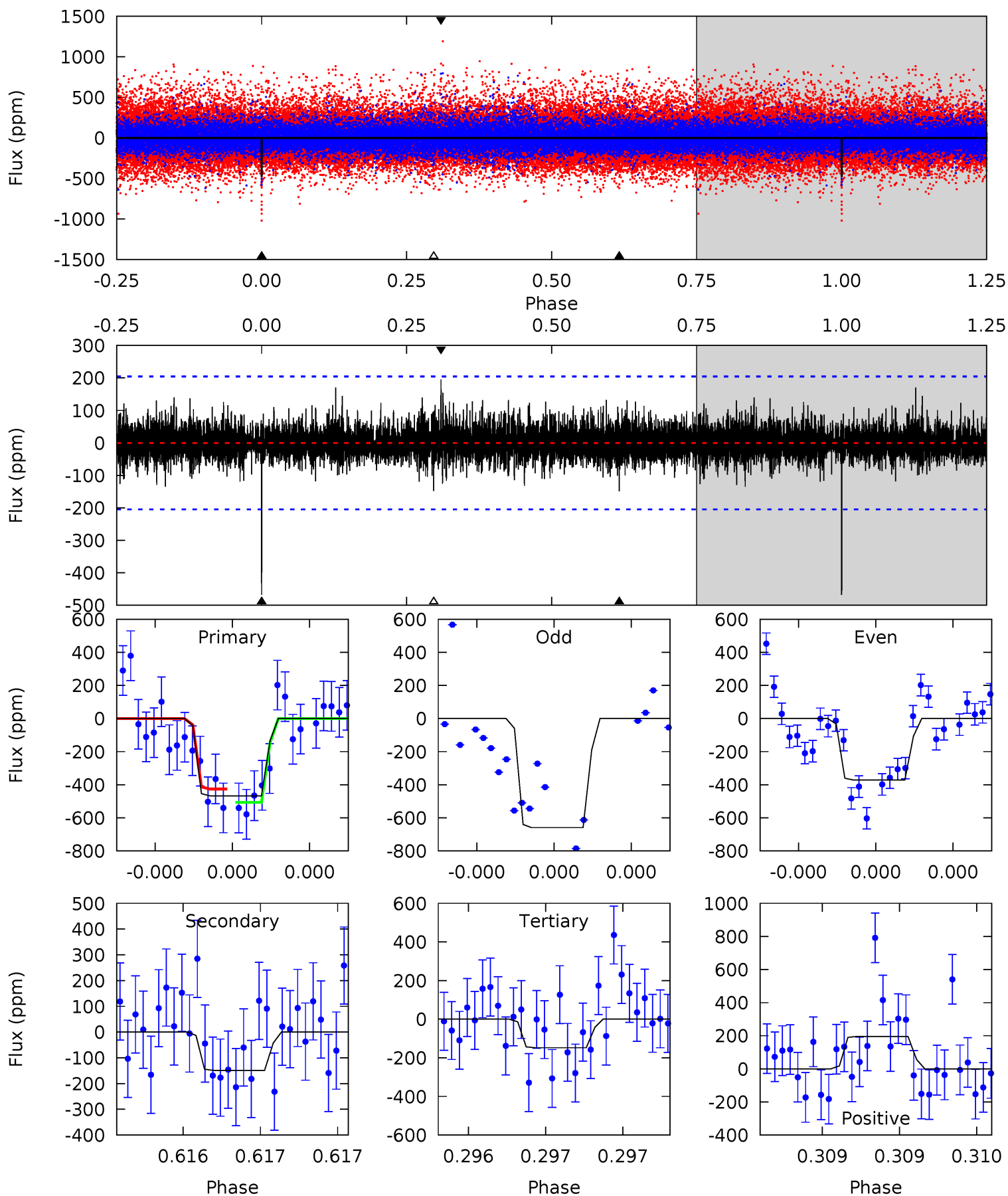
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.27	7.13	6.23	8.95	5.54	3.44	1.79	2.03	-0.68	0.89	-1.82	1.66	1.06	0.52	1.56



# Alt Model-Shift Uniqueness Test

006716981-01, P = 392.283485 Days, E = 338.536341 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
12.8	4.06	4.03	5.34	5.58	3.50	0.95	8.73	7.42	0.03	-1.28	3.61	0.76	0.30	1.11



### Stellar Parameters For KIC 006716981

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5929^{+160}_{-178}$	$4.303^{+0.180}_{-0.180}$	$-0.200^{+0.300}_{-0.300}$	$1.135^{+0.310}_{-0.225}$	$0.944^{+0.143}_{-0.095}$	$0.910^{+0.863}_{-0.448}$
	+3%/-3%	+4%/-4%	+150%/-150%	+27%/-20%	+15%/-10%	+95%/-49%
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 006716981-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-293 \pm 41$	$2.94^{+2.01}_{-1.56}$	$383^{+29}_{-25}$	$5112^{+2213}_{-941}$	$20137^{+64748}_{-13082}$
Alt.	$-149 \pm 37$	$2.94^{+1.84}_{-1.58}$	$384^{+28}_{-24}$	$4435^{+1773}_{-737}$	$9670^{+37155}_{-6193}$

$T_{max}$  = 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

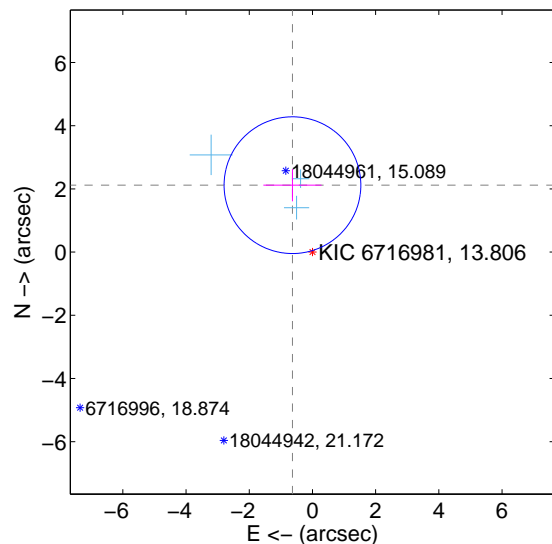
Supplemental centroid analysis for 006716981-01. Kepler magnitude: 13.81. Transit SNR 6.68

There are 3 quarters with good PRF difference image offsets

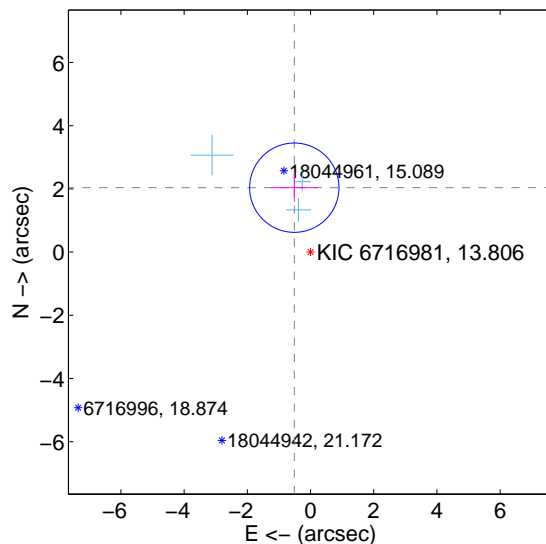
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	2.211 $\pm$ 0.721	3.06	0.632 $\pm$ 0.922	2.118 $\pm$ 0.511
PRF-fit source offset from KIC position	2.102 $\pm$ 0.471	4.46	0.514 $\pm$ 0.745	2.039 $\pm$ 0.448
photometric centroid source offset	1.96 $\pm$ 1.47	1.33	-0.01 $\pm$ 1.17	1.96 $\pm$ 1.47

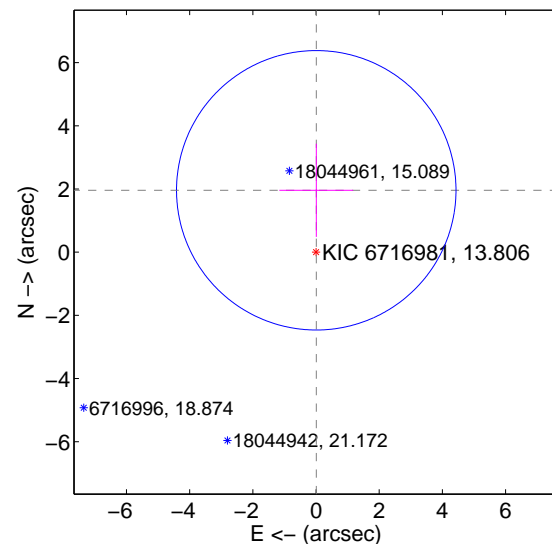
offset from difference PRF-fit to OOT PRF-fit



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

Q1 no difference image



Q1 no OOT image



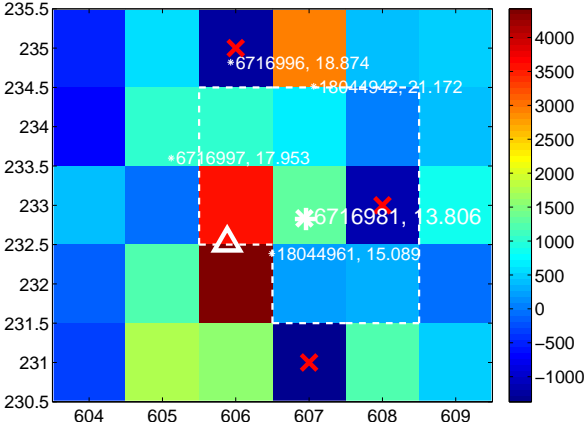
Q2 no difference image



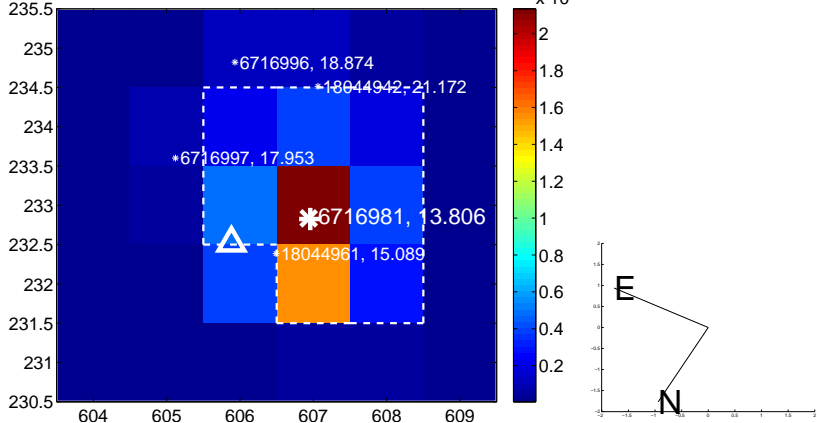
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



Q4 no OOT image

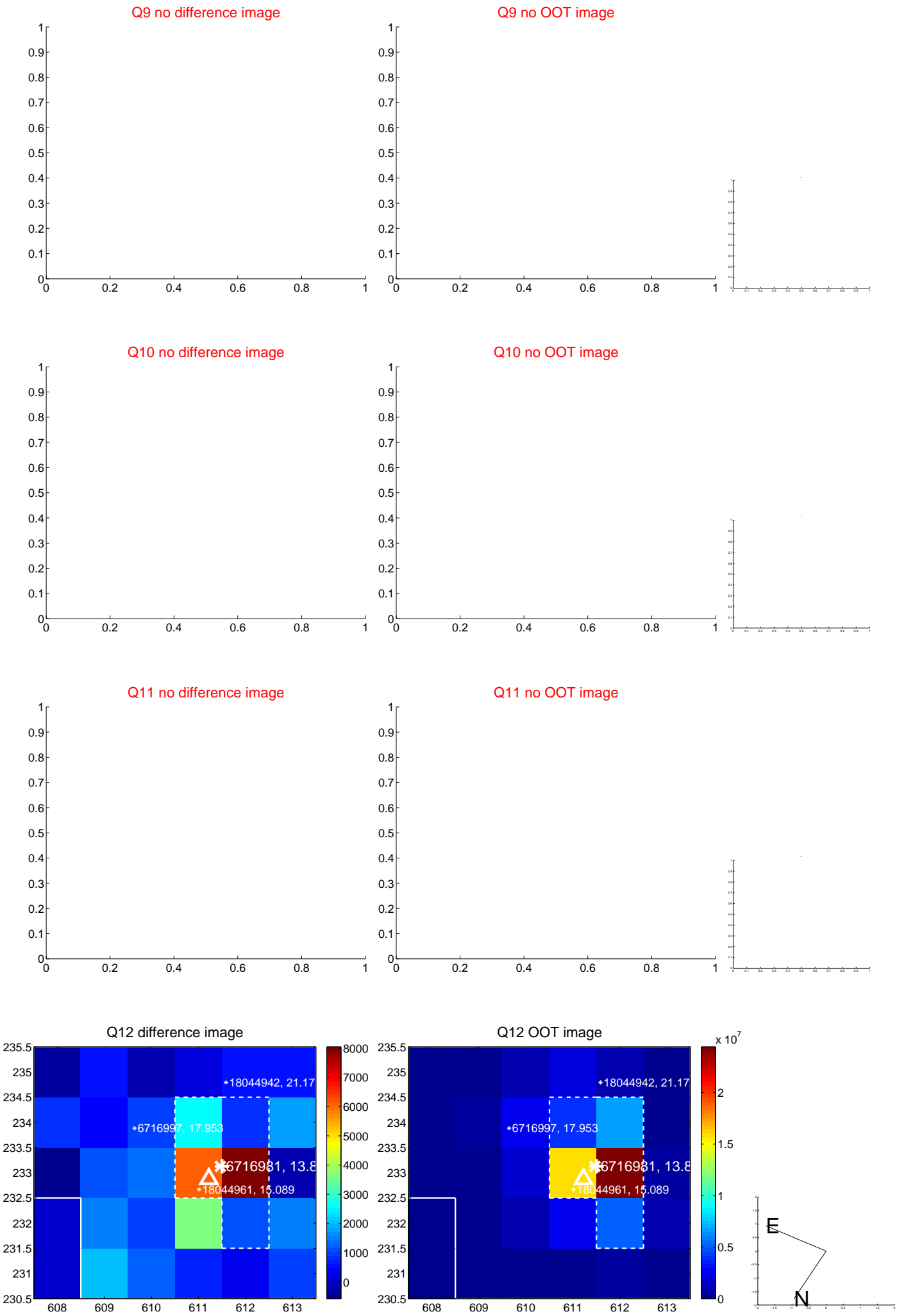


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

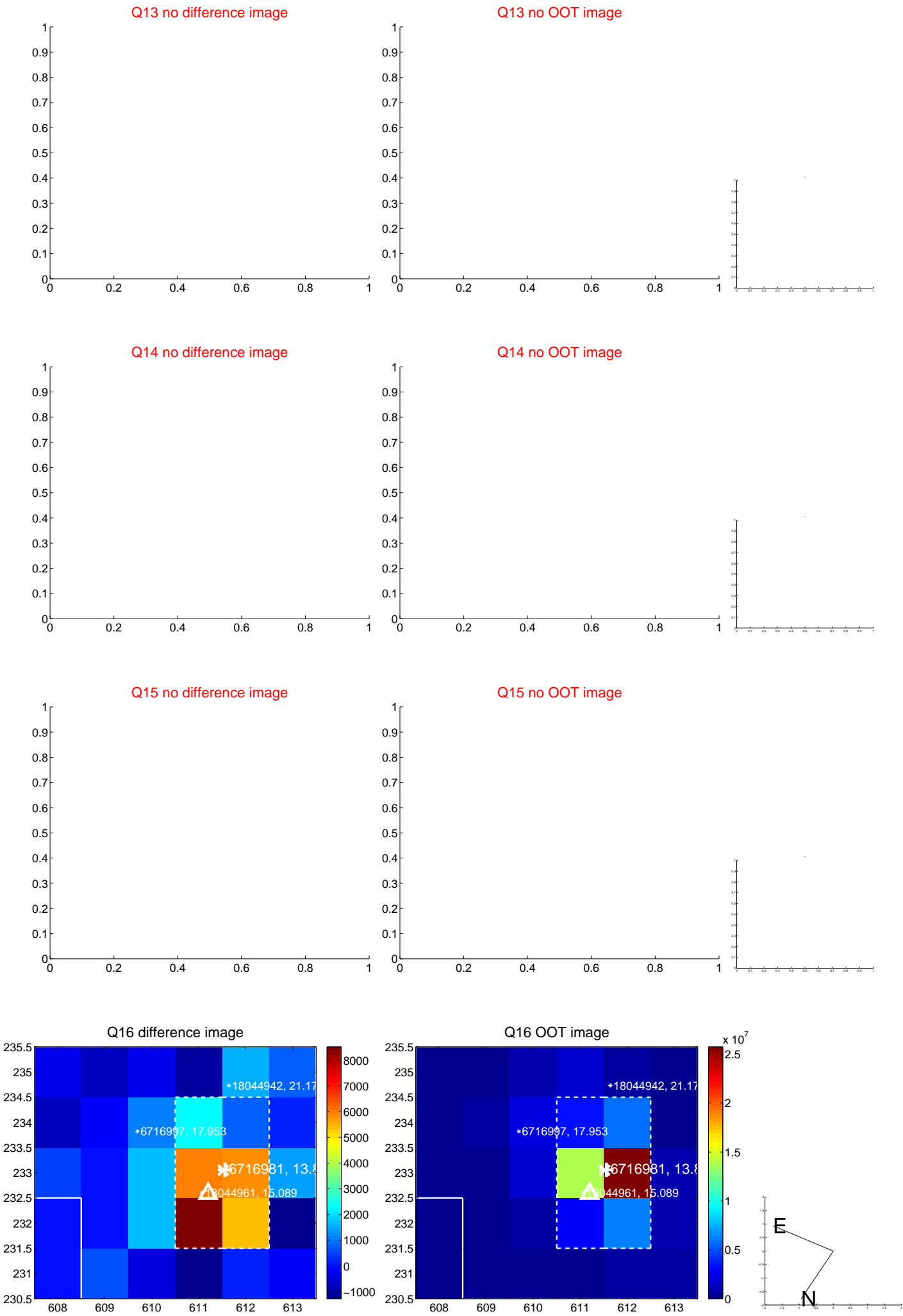




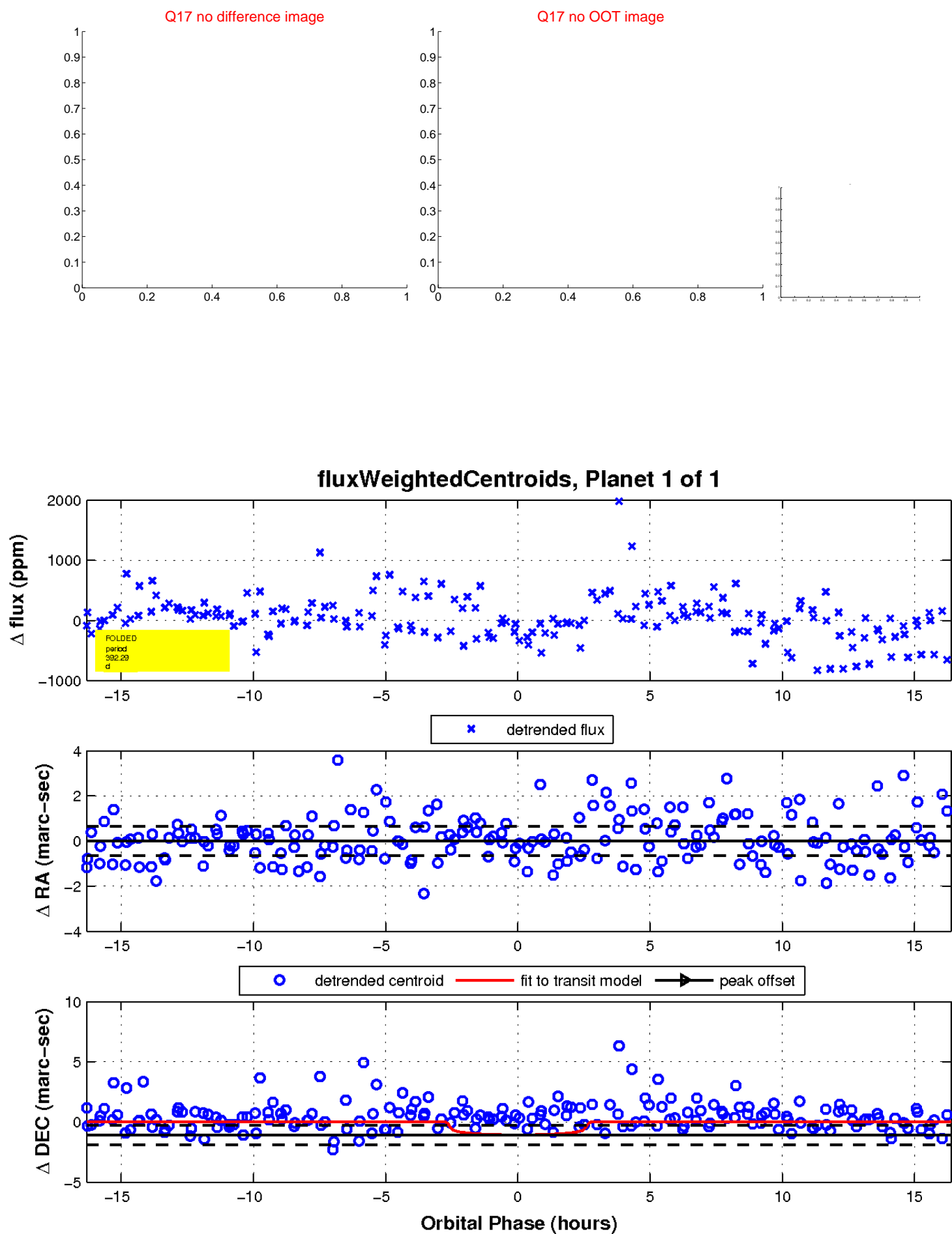
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

