

# KIC 010666012

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010666012-01	OBS	No	622.998730	300.896962	1473.4	15.239	11.5	5.9	0.96	5700	3.65	0.45

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010666012-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—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.

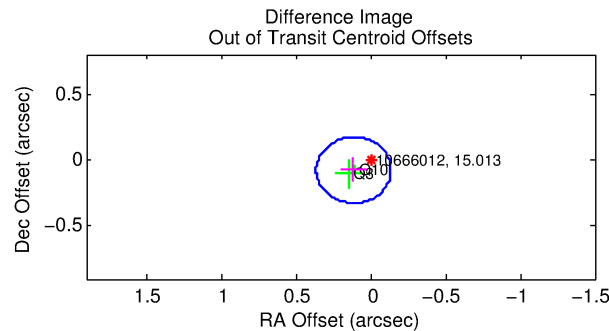
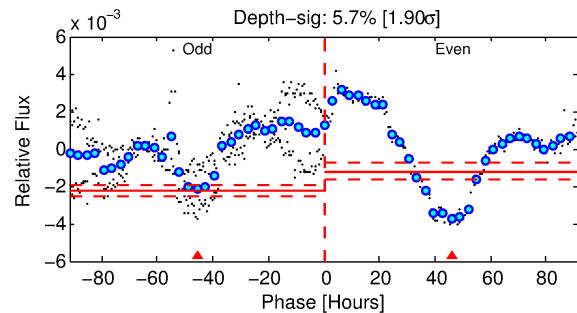
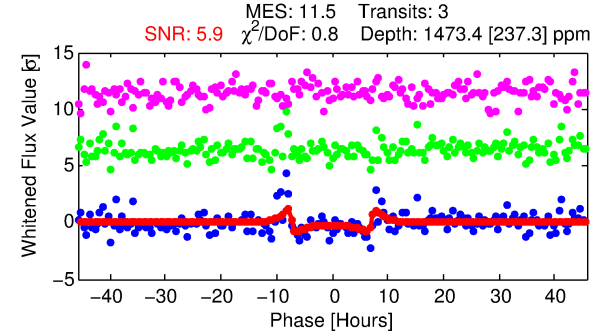
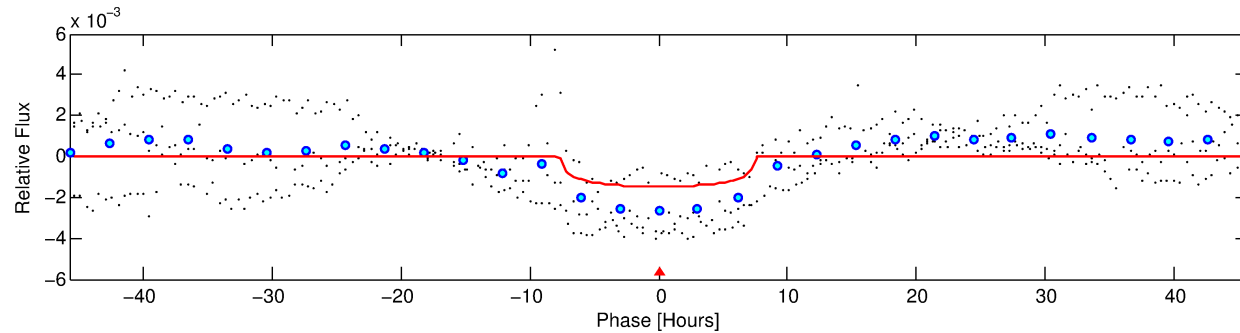
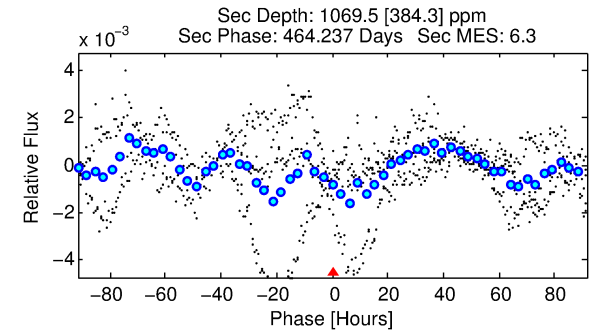
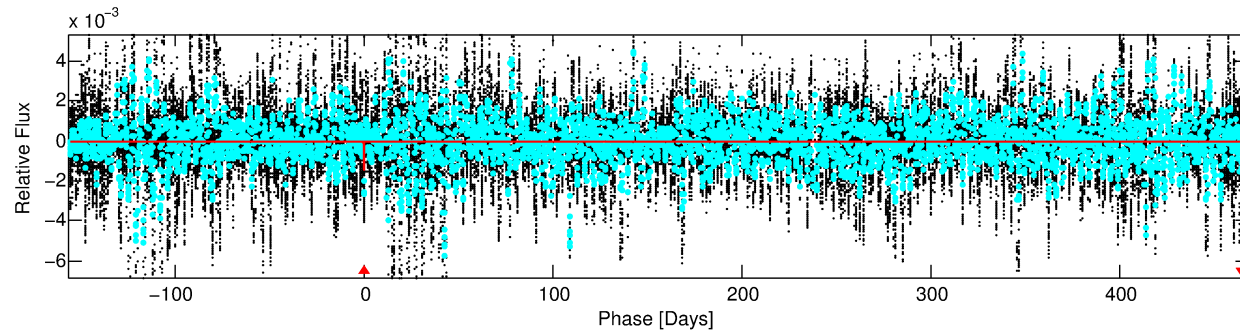
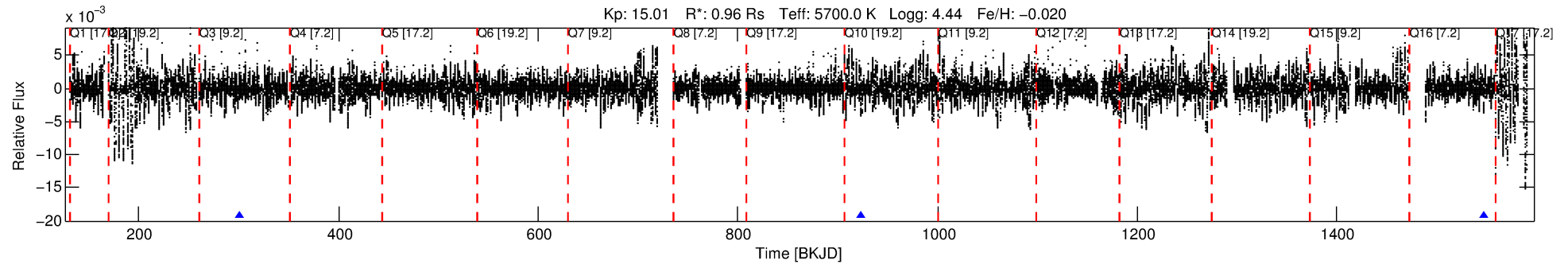
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010666012-01

No Significant Match Found

# DV One-Page Summary

KIC: 10666012 Candidate: 1 of 1 Period: 622.999 d



## DV Fit Results:

Period = 622.99873 [0.00684] d  
Epoch = 300.8970 [0.0091] BKJD  
Rp/R\* = 0.0347 [0.0070]  
a/R\* = 322.68 [231.93]  
b = 0.06 [12.60]  
Seff = 0.45 [0.16]  
Teq = 209 [18] K  
Rp = 3.65 [1.23] Re  
a = 1.3987 [0.3170] AU  
Ag = 86201.82 [54684.19] [1.58σ]  
Teffp = 5530 [766] K [6.95σ]

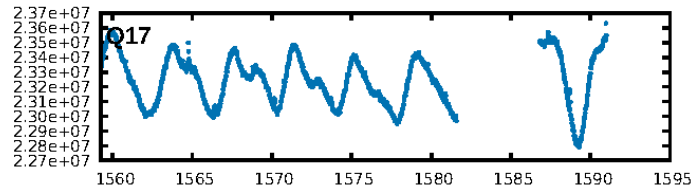
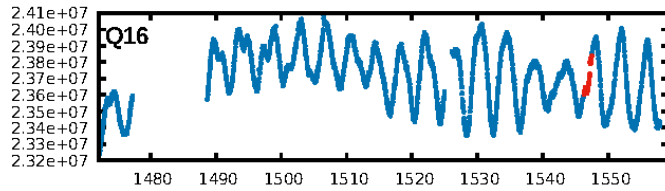
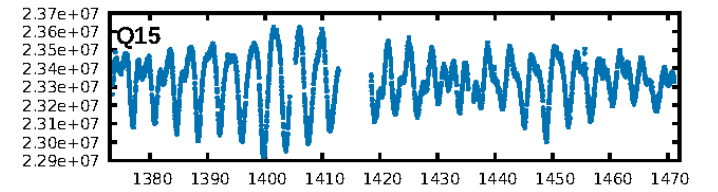
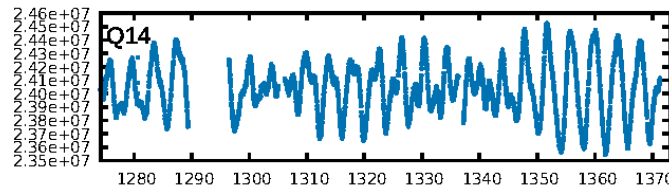
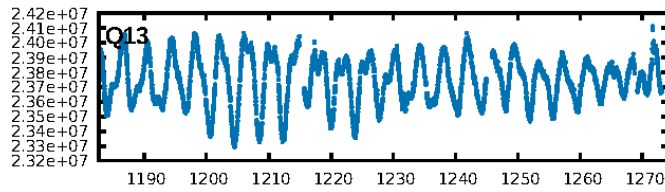
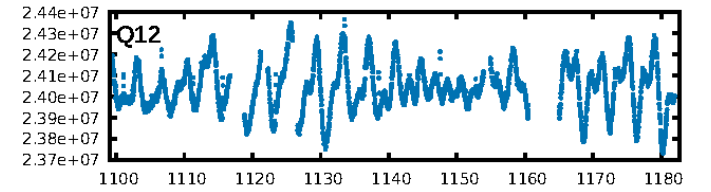
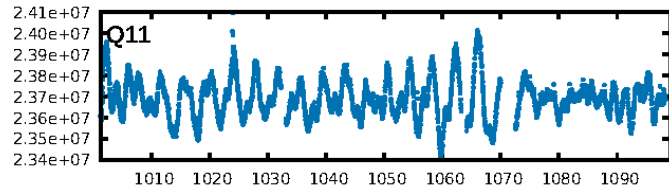
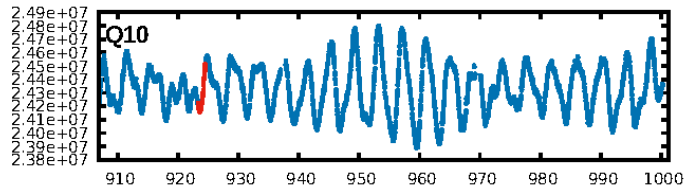
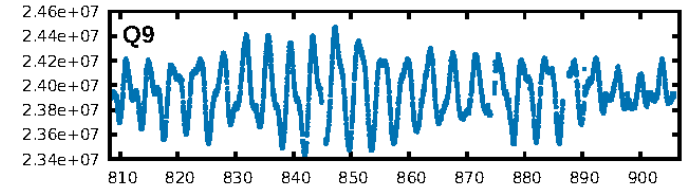
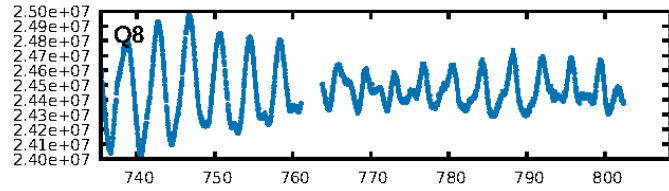
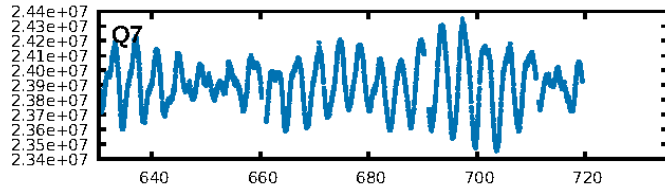
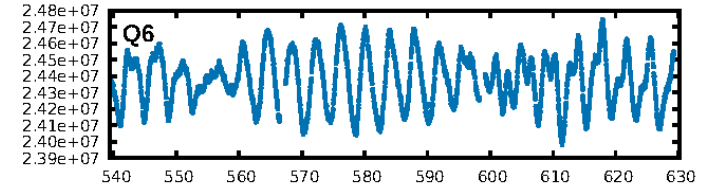
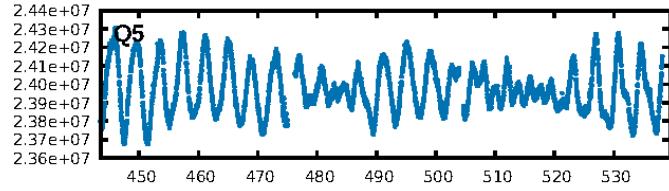
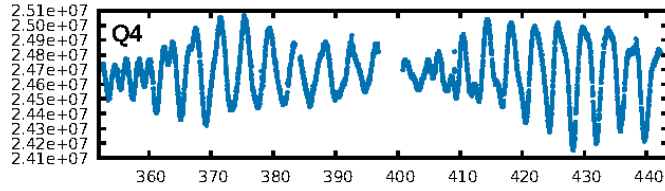
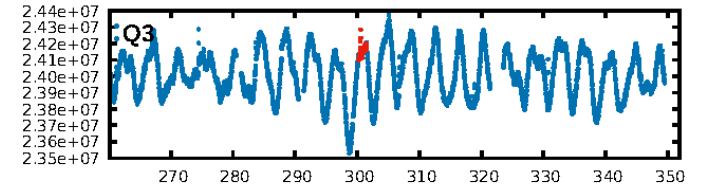
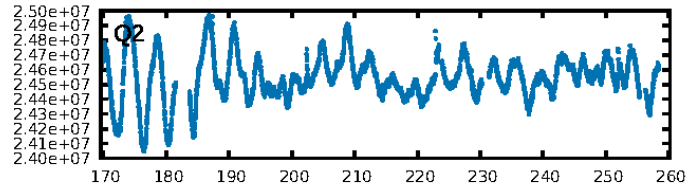
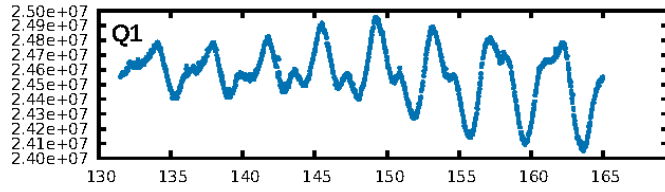
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 90.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 4.17e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.423  
Centroid-sig: 0.3%  
Centroid-so: 1.037 arcsec [2.31σ]  
OotOffset-rm: 0.136 arcsec [1.64σ]  
KicOffset-rm: 0.090 arcsec [1.05σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

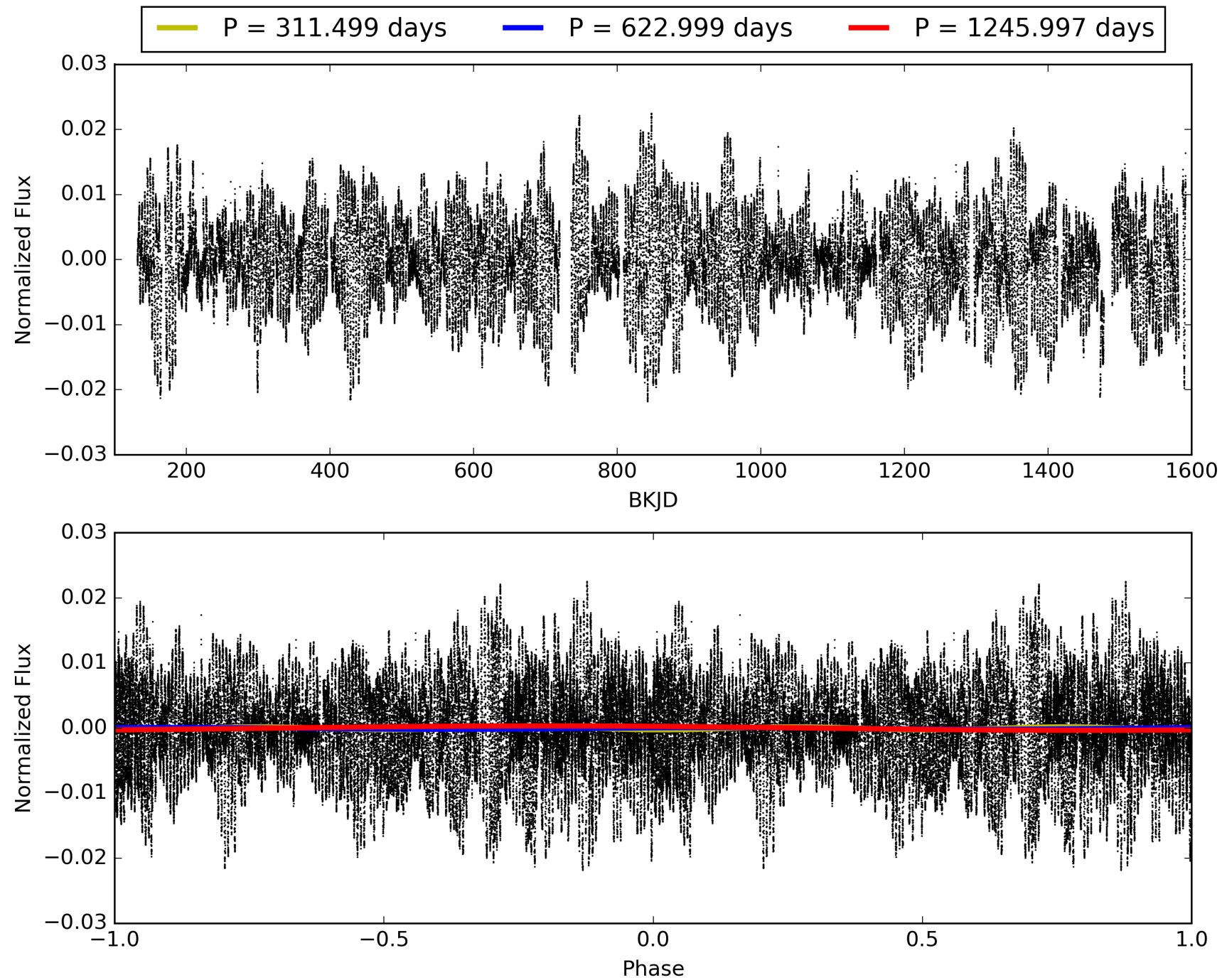
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:42:40 Z

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

# TCE 010666012-01, PDC Light Curves

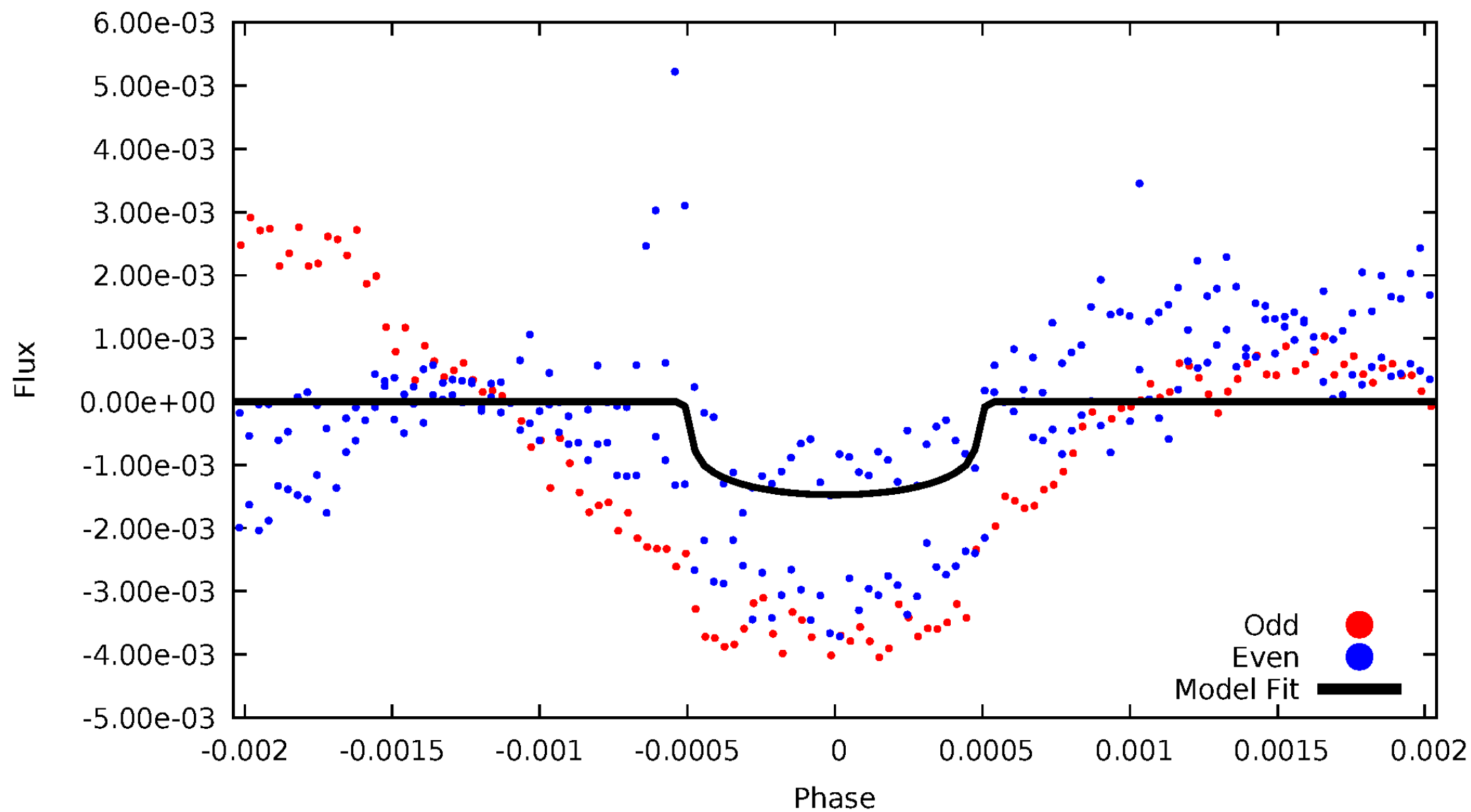


# TCE 010666012-01



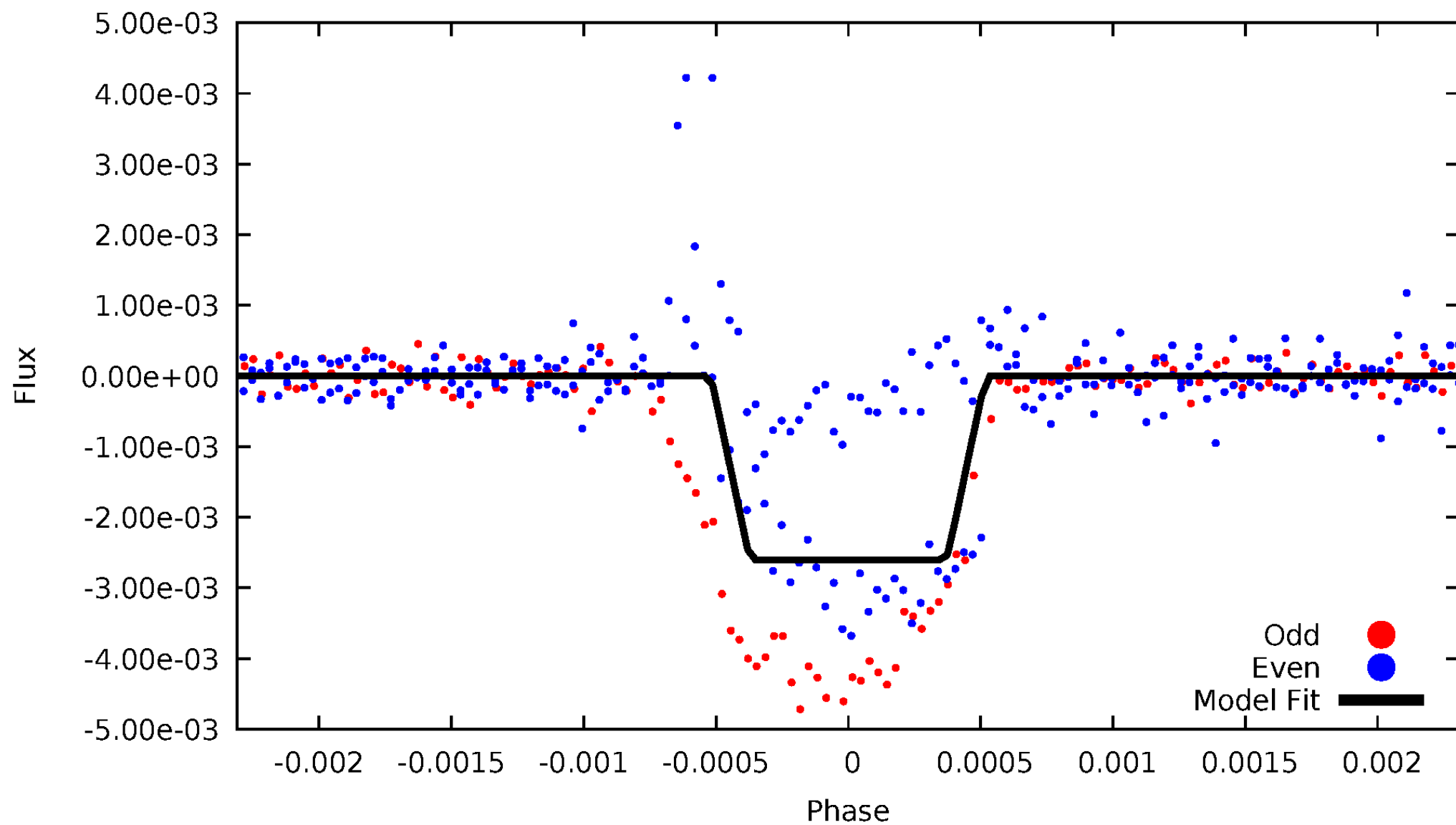
# DV Odd/Even

TCE 010666012-01



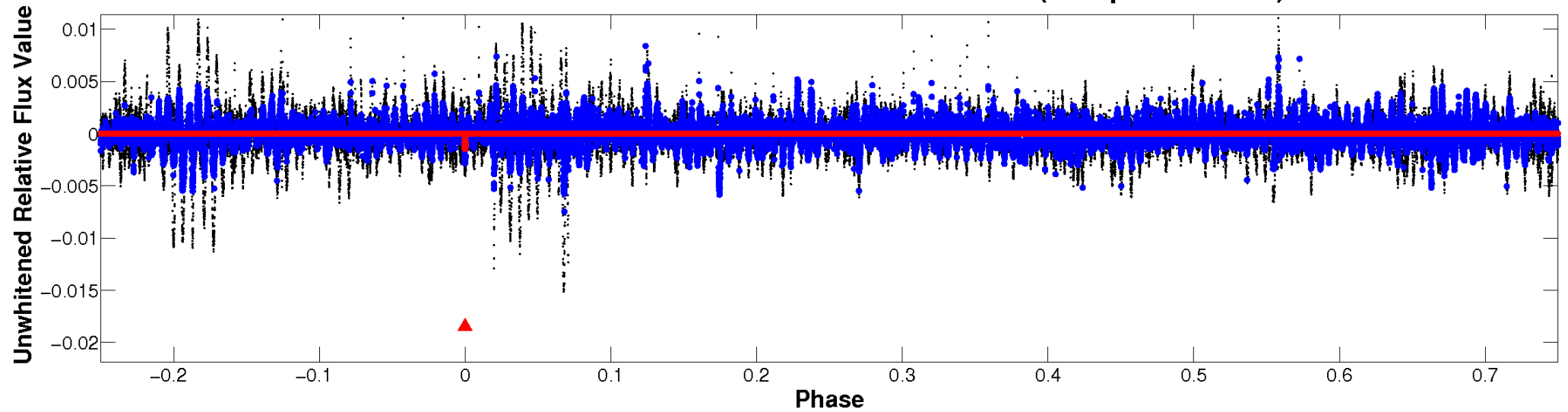
# ALT Odd/Even

TCE 010666012-01

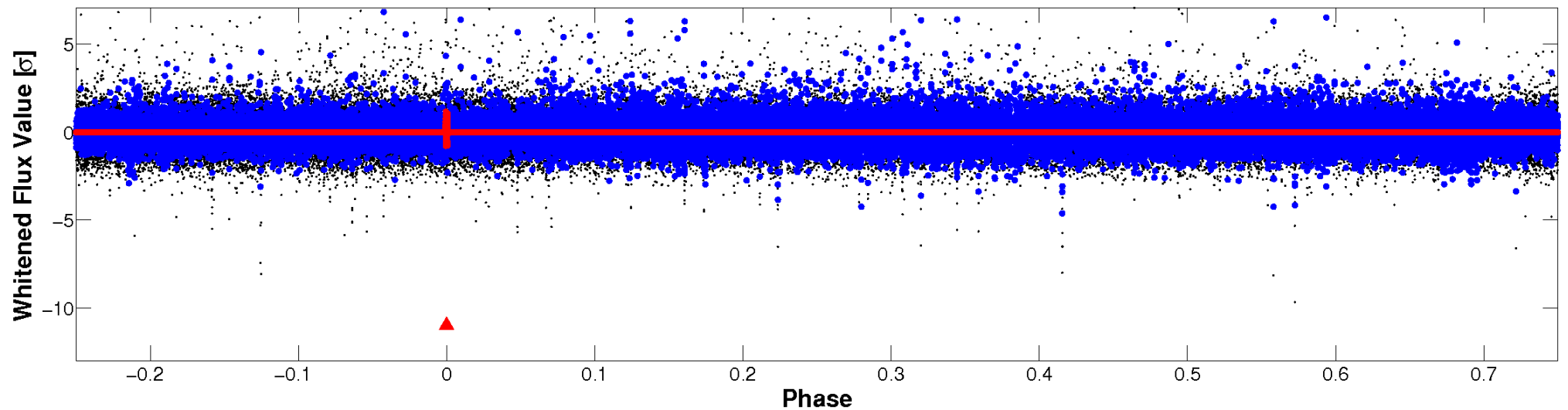


# Non-Whitened Vs. Whitened Light Curve

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



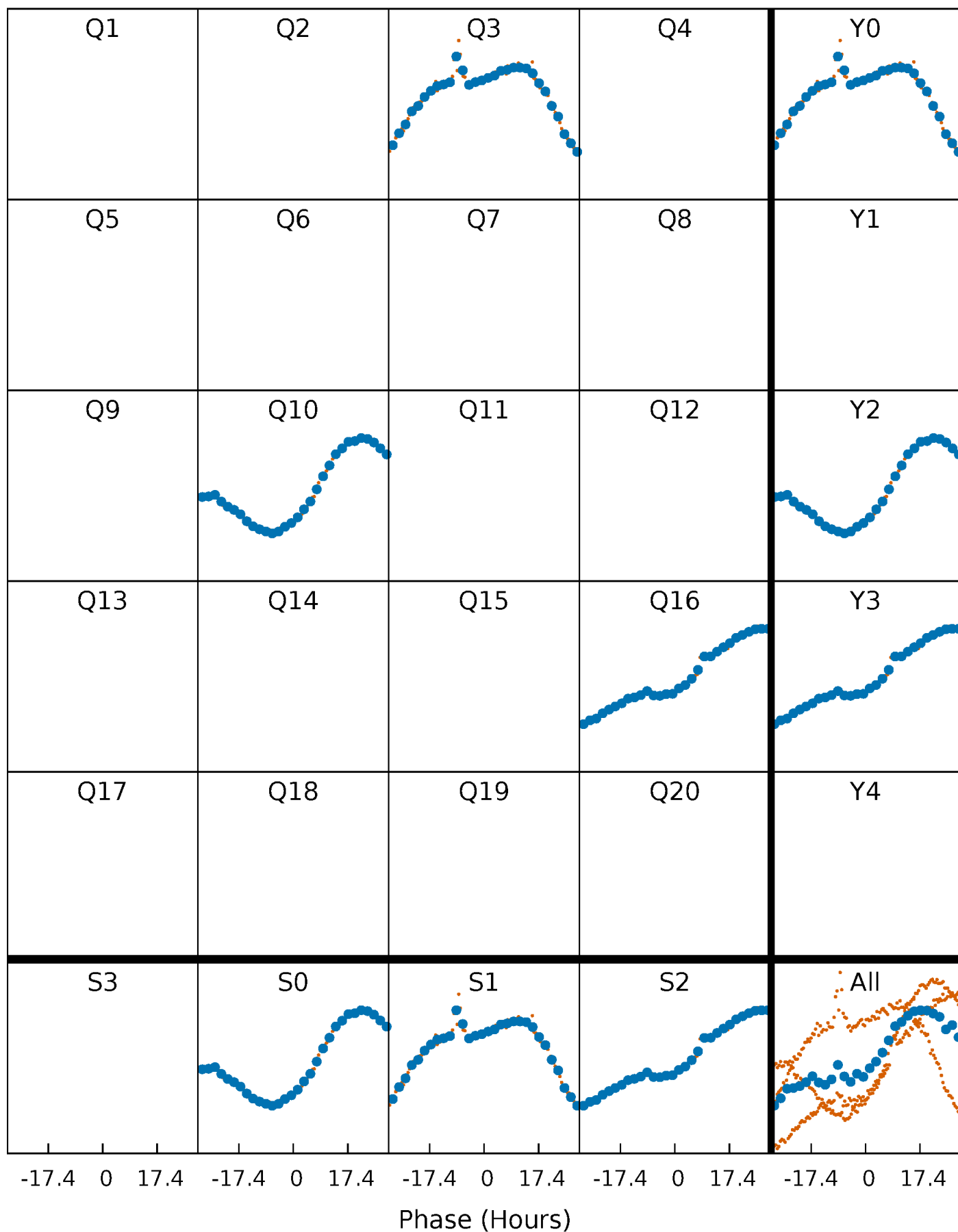
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

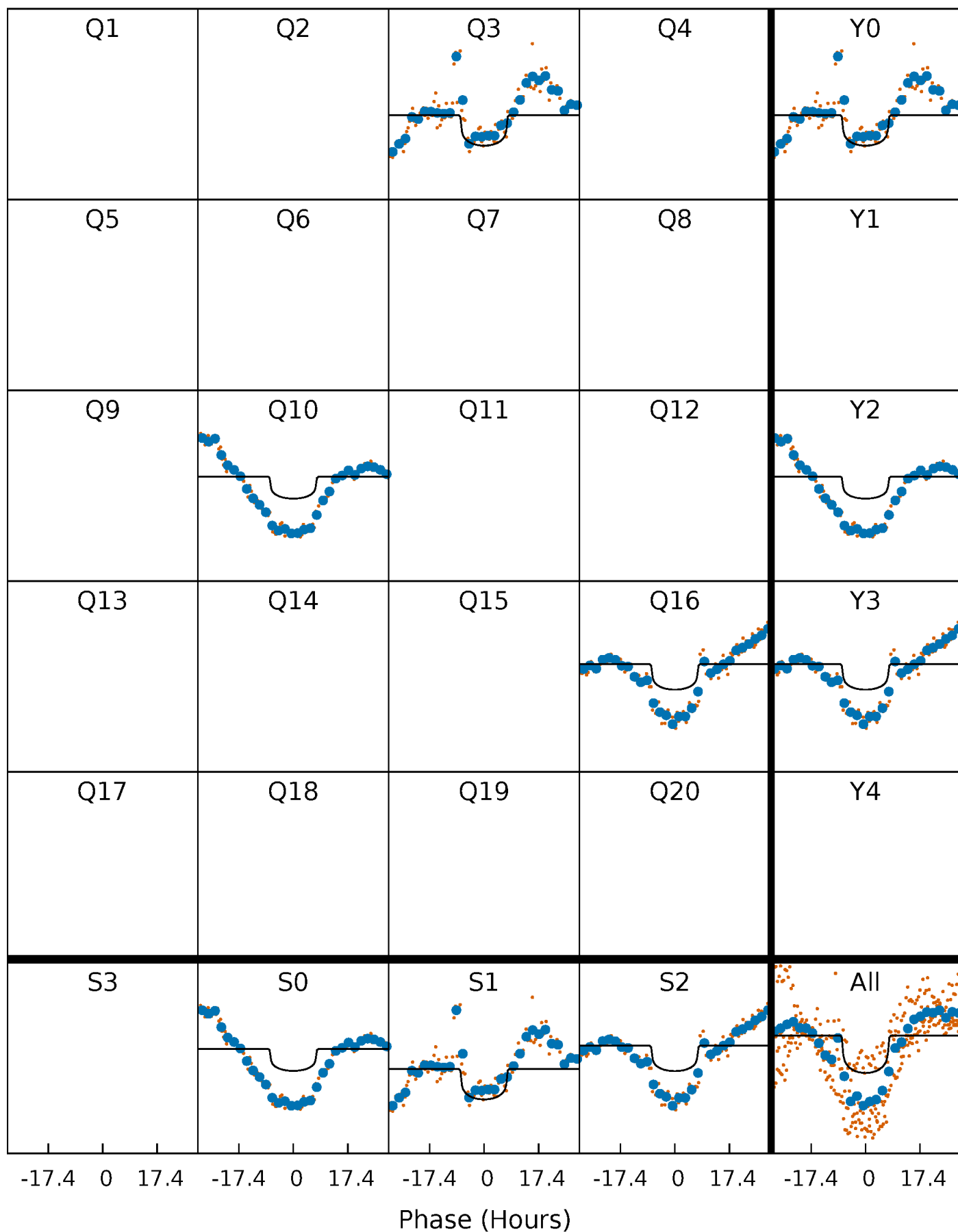
TCE 010666012-01 P=622.998730 Days  $T_0=300.896962$  (BKJD)





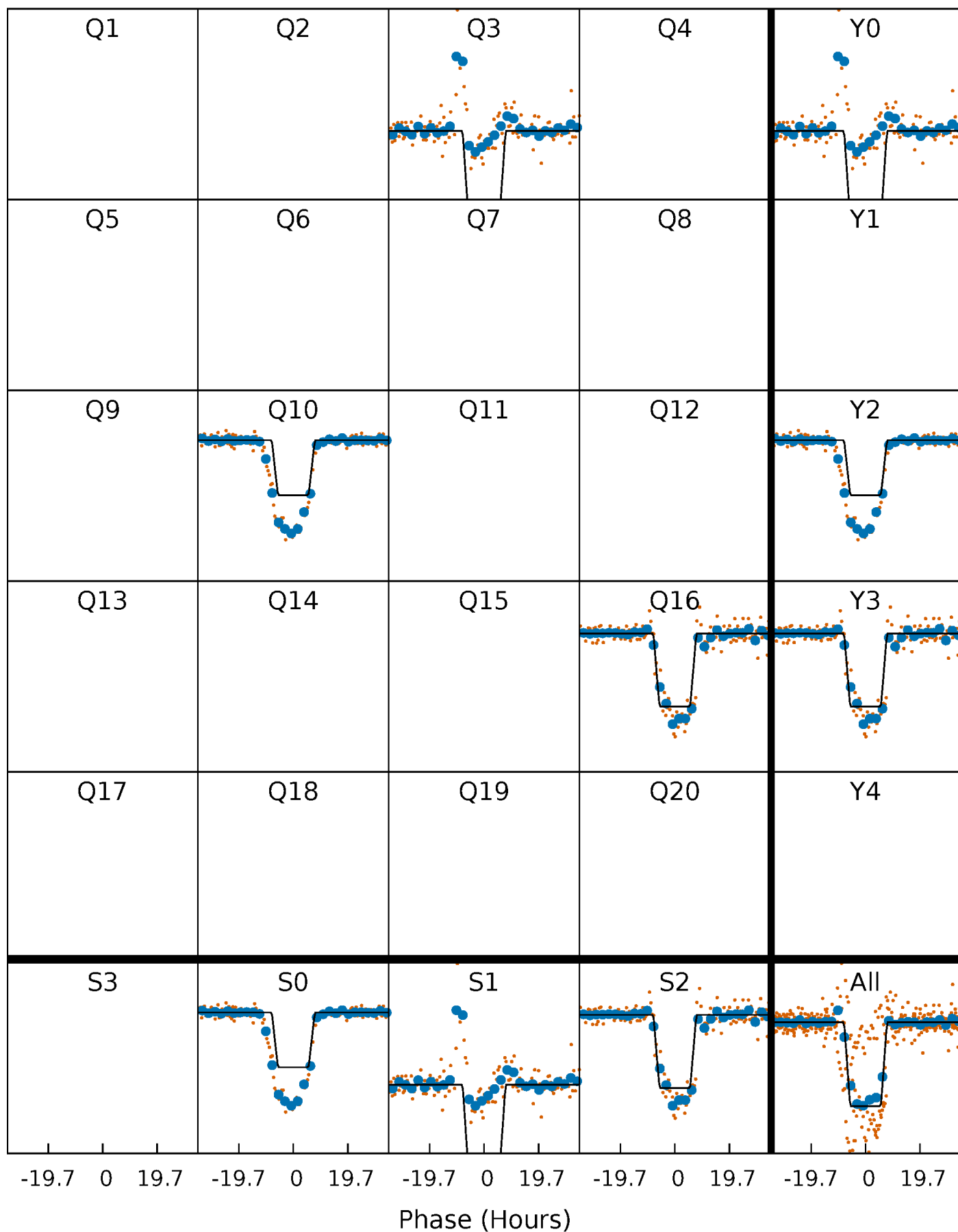
# DV Quarter-Phased Transit Curves

TCE 010666012-01 P=622.998730 Days  $T_0=300.896962$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

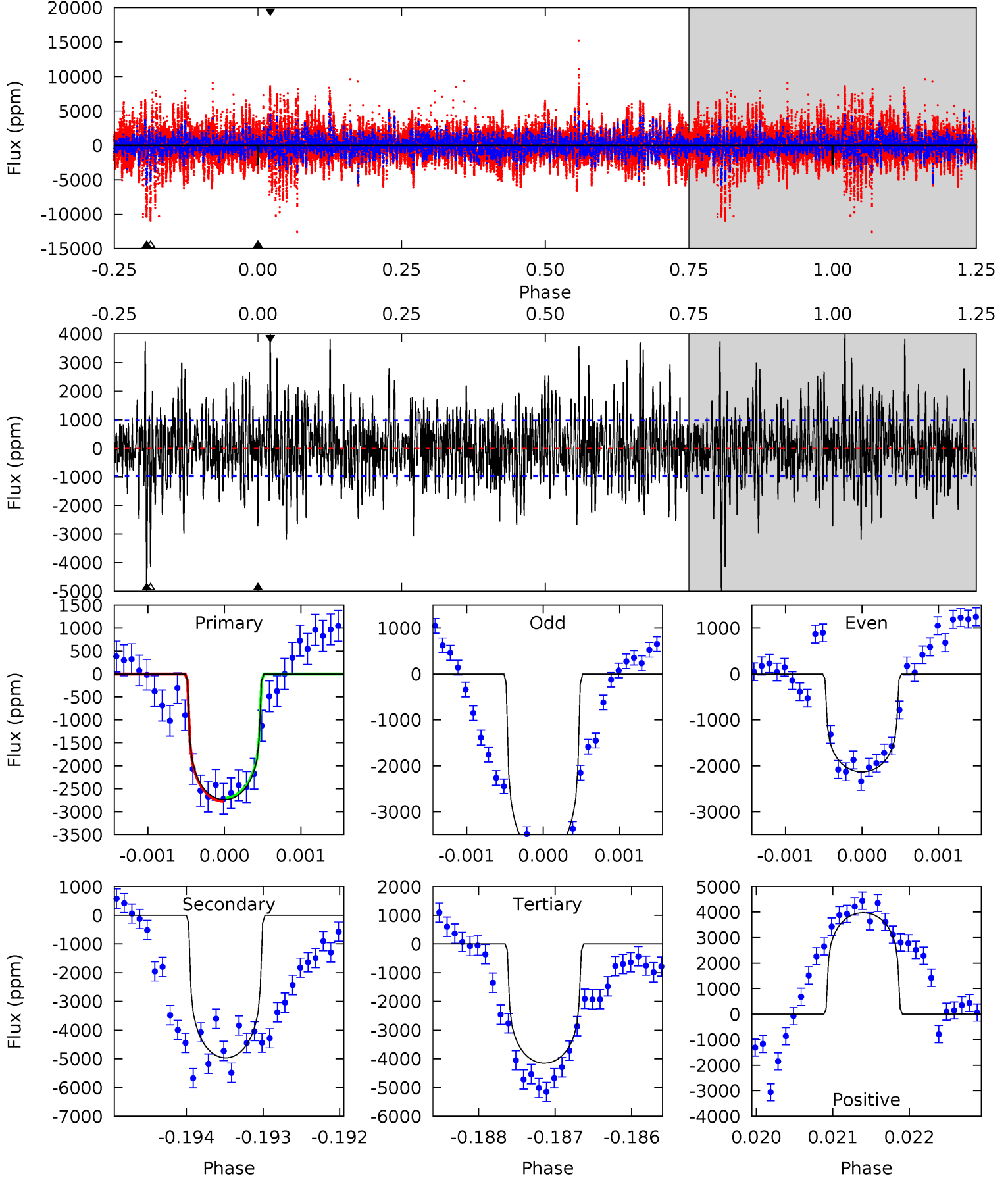
TCE 010666012-01 P=622.998811 Days  $T_0=300.900088$  (BKJD)



# DV Model-Shift Uniqueness Test

010666012-01, P = 622.998730 Days, E = 300.896962 Days

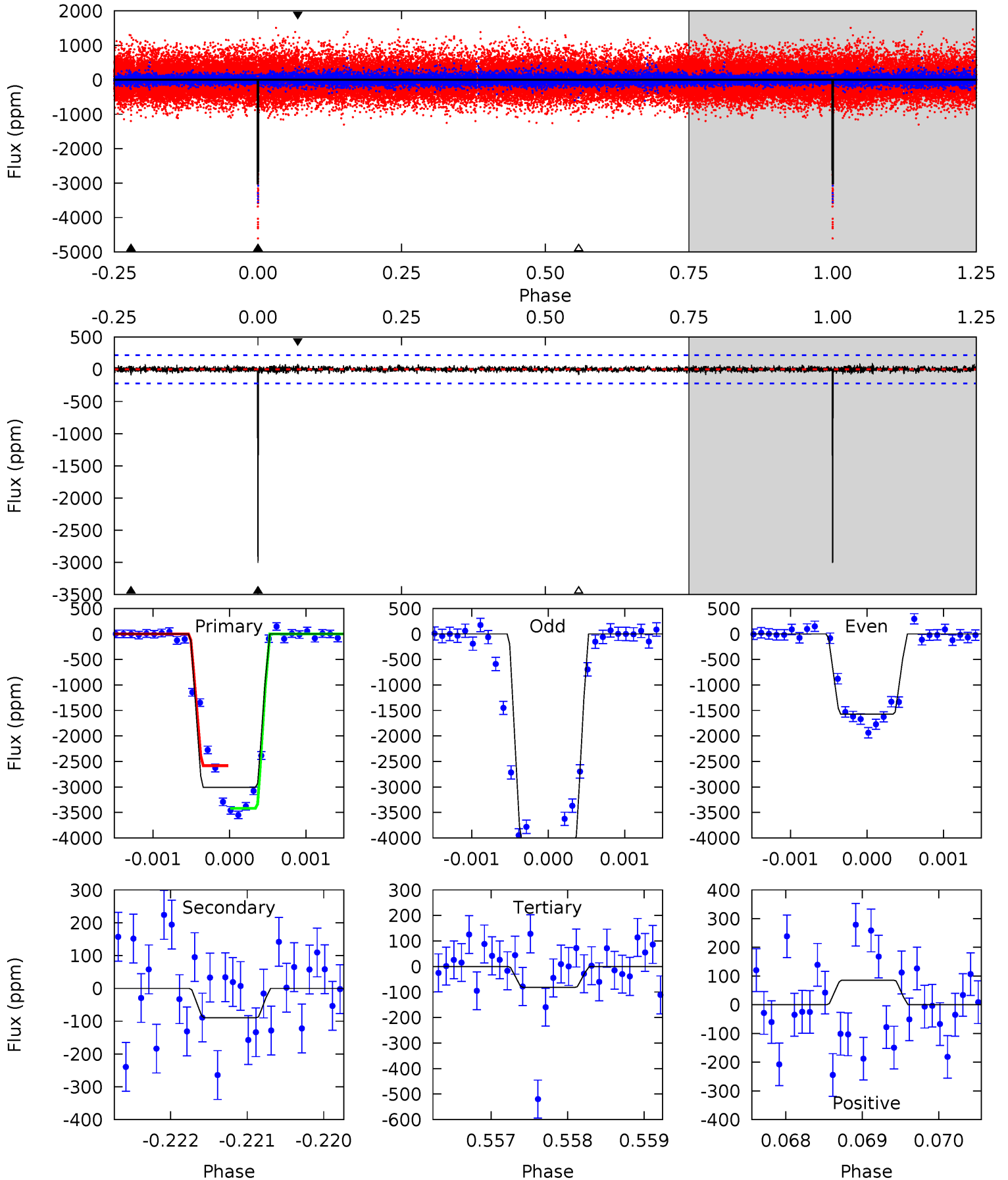
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	27.7	23.1	22.2	5.44	3.28	5.62	-7.88	-6.91	4.54	5.51	4.81	0.85	0.44	0.21



# Alt Model-Shift Uniqueness Test

010666012-01, P = 622.998811 Days, E = 300.900088 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
74.9	2.23	2.04	2.13	5.45	3.29	0.46	72.9	72.8	0.19	0.10	37.7	0.84	0.03	10.2



### Stellar Parameters For KIC 010666012

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5700^{+152}_{-169}$	$4.443^{+0.098}_{-0.182}$	$-0.020^{+0.250}_{-0.300}$	$0.964^{+0.258}_{-0.119}$	$0.940^{+0.115}_{-0.094}$	$1.477^{+0.609}_{-0.735}$
	+3%/-3%	+2%/-4%	+1250%/-1500%	+27%/-12%	+12%/-10%	+41%/-50%
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 010666012-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-4965 \pm 179$	$3.75^{+0.90}_{-0.85}$	$295^{+19}_{-16}$	$8373^{+1433}_{-905}$	$380452^{+248939}_{-129582}$
Alt.	$-89 \pm 40$	$5.53^{+1.04}_{-0.90}$	$294^{+20}_{-15}$	$3080^{+227}_{-259}$	$3077^{+2110}_{-1445}$

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

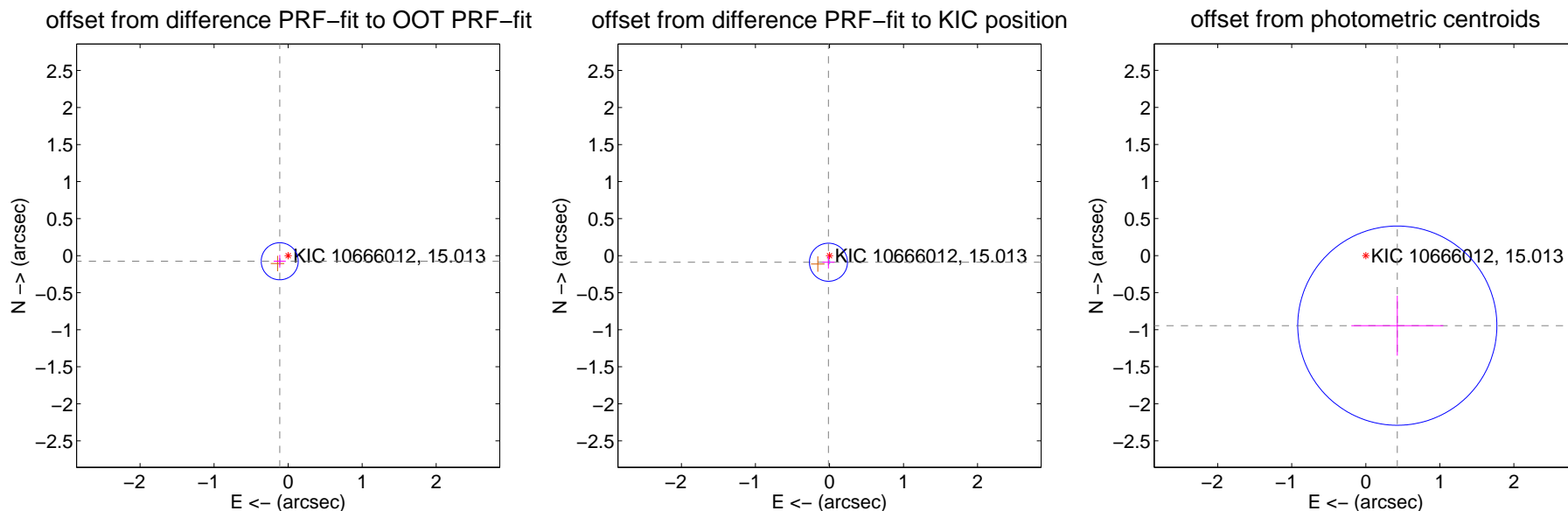
## DV Centroid Data

Supplemental centroid analysis for 010666012-01. Kepler magnitude: 15.01. Transit SNR 5.86

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.136 \pm 0.083$	1.64	$0.113 \pm 0.082$	$-0.076 \pm 0.086$
PRF-fit source offset from KIC position	$0.090 \pm 0.086$	1.05	$0.014 \pm 0.082$	$-0.089 \pm 0.086$
photometric centroid source offset	$1.04 \pm 0.45$	2.31	$-0.43 \pm 0.62$	$-0.95 \pm 0.40$



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



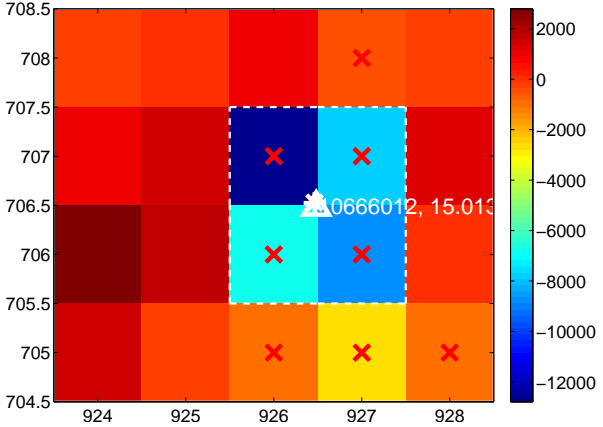
Q2 no difference image



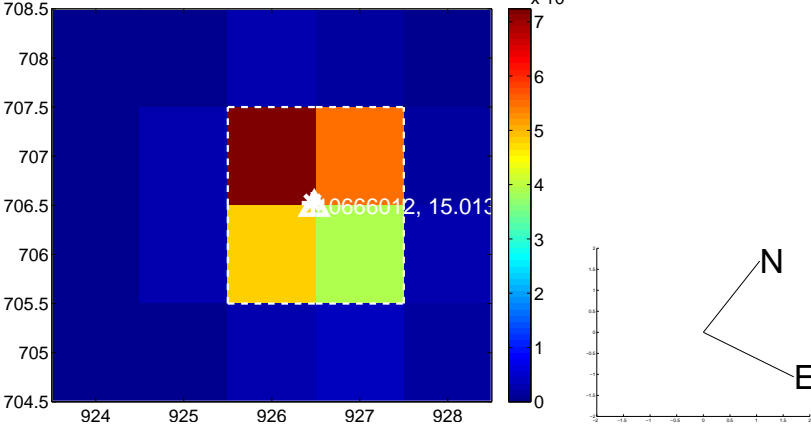
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image

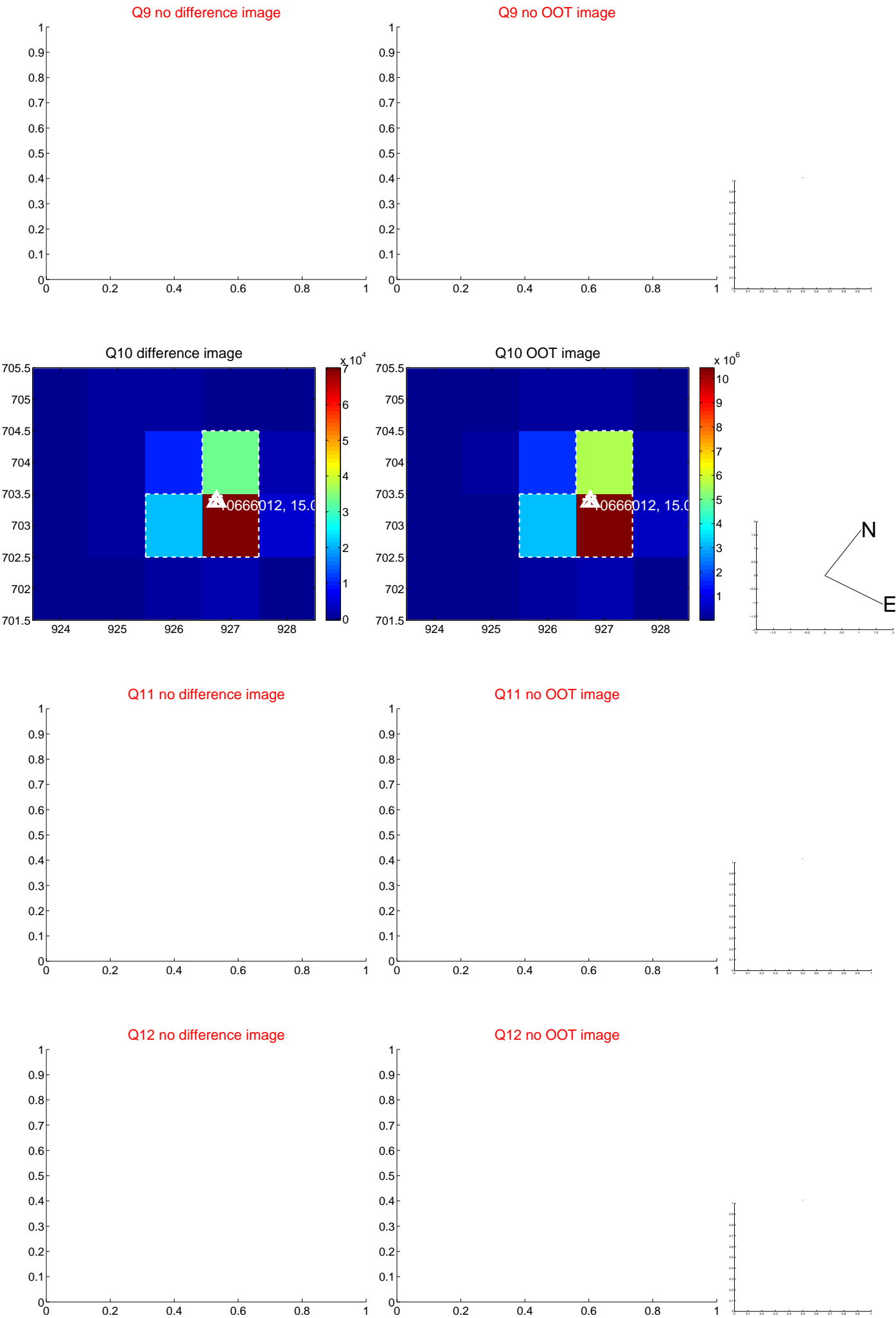




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



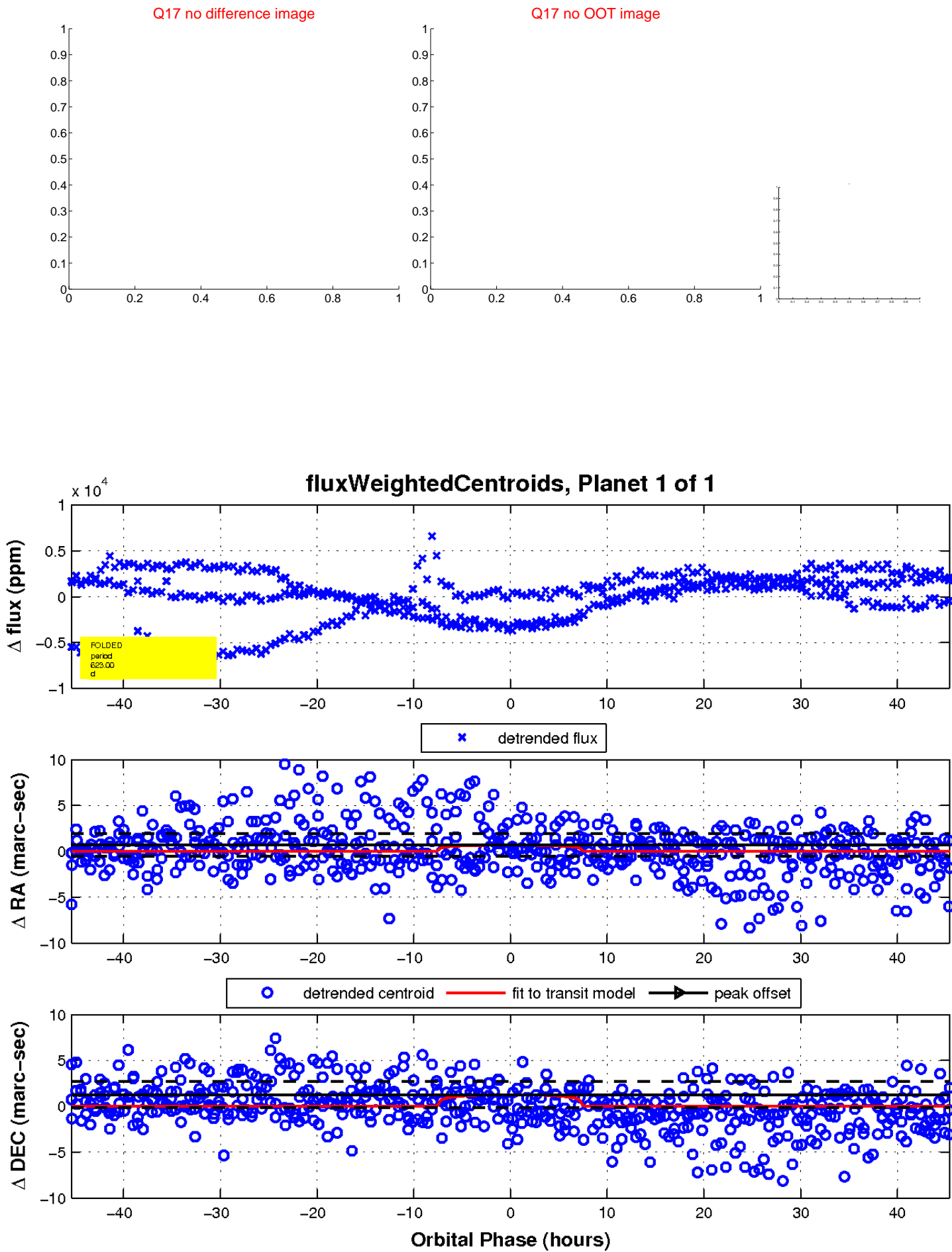
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

