

# KIC 012017411

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012017411-01	OBS	No	349.724499	182.858887	646.6	4.951	8.7	9.9	0.95	5776	2.66	0.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012017411-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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.

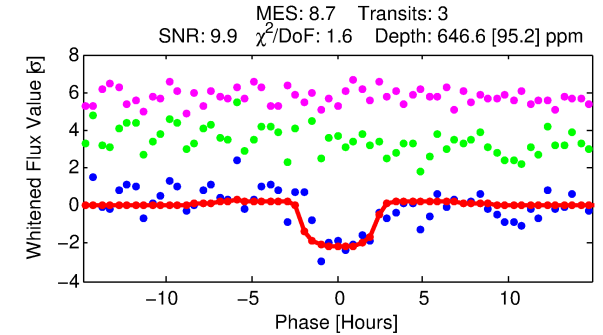
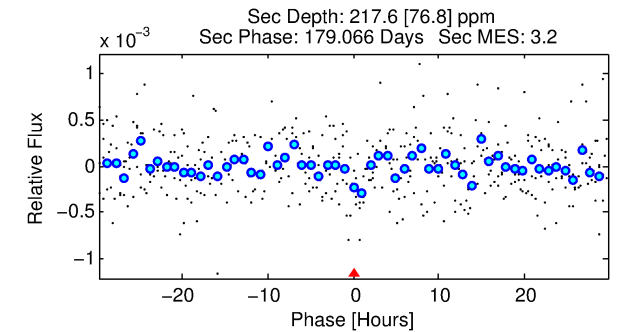
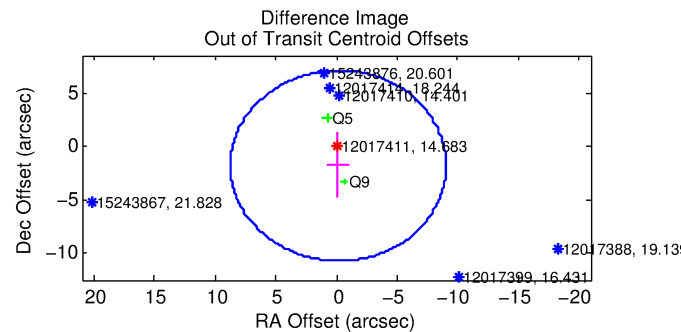
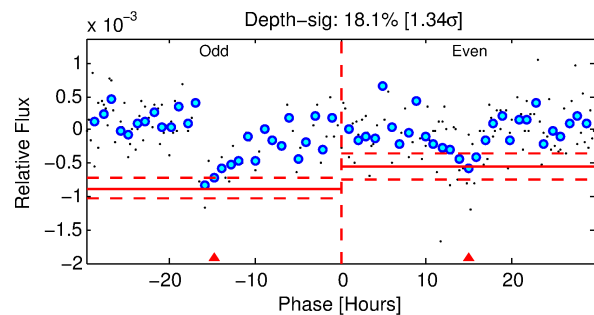
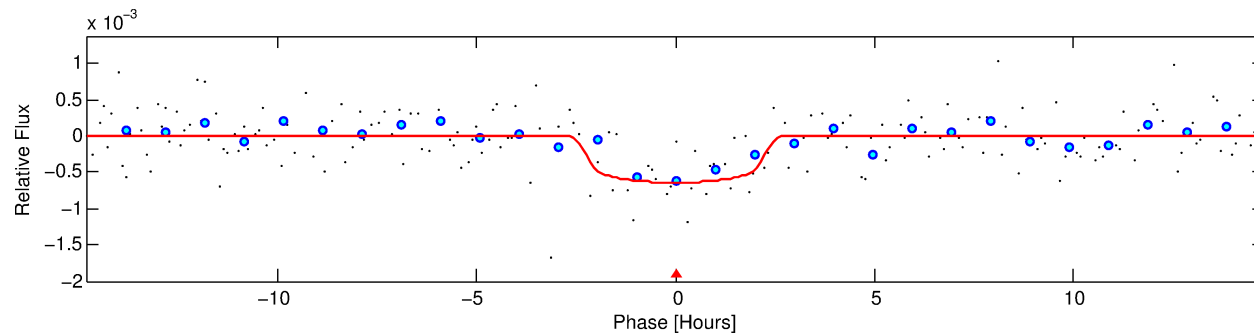
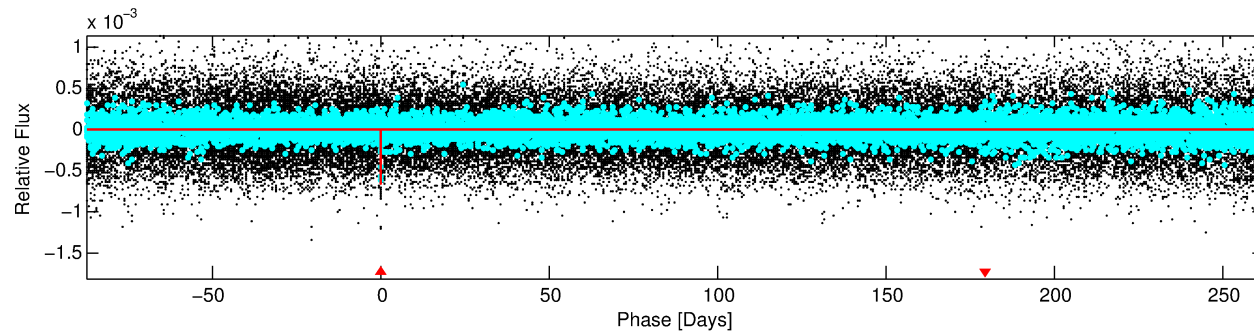
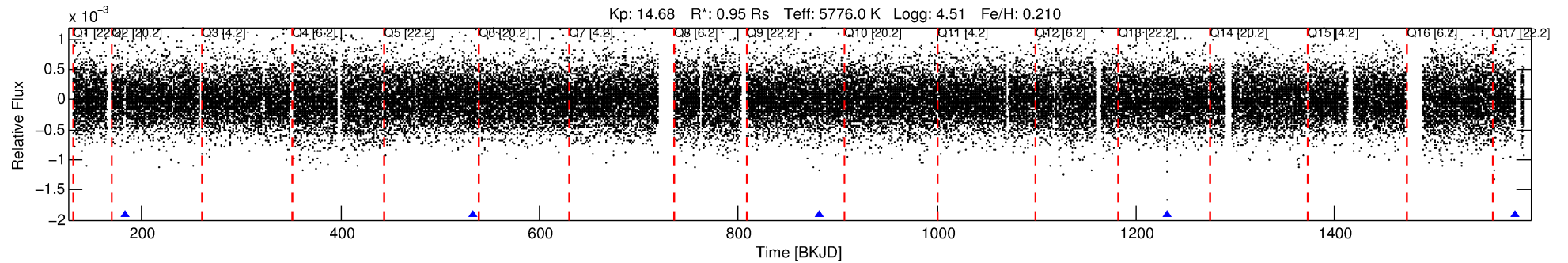
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012017411-01

No Significant Match Found

# DV One-Page Summary

KIC: 12017411 Candidate: 1 of 1 Period: 349.724 d



## DV Fit Results:

Period = 349.72450 [0.01008] d  
Epoch = 182.8589 [0.0207] BKJD  
Rp/R\* = 0.0256 [0.0285]  
a/R\* = 360.86 [1720.41]  
b = 0.78 [2.47]  
Seff = 0.91 [0.37]  
Teff = 249 [25] K  
Rp = 2.66 [3.06] Re  
a = 0.9939 [0.2584] AU  
Ag = 16761.31 [38268.74] [0.44 $\sigma$ ]  
Teffp = 4383 [2470] K [1.67 $\sigma$ ]

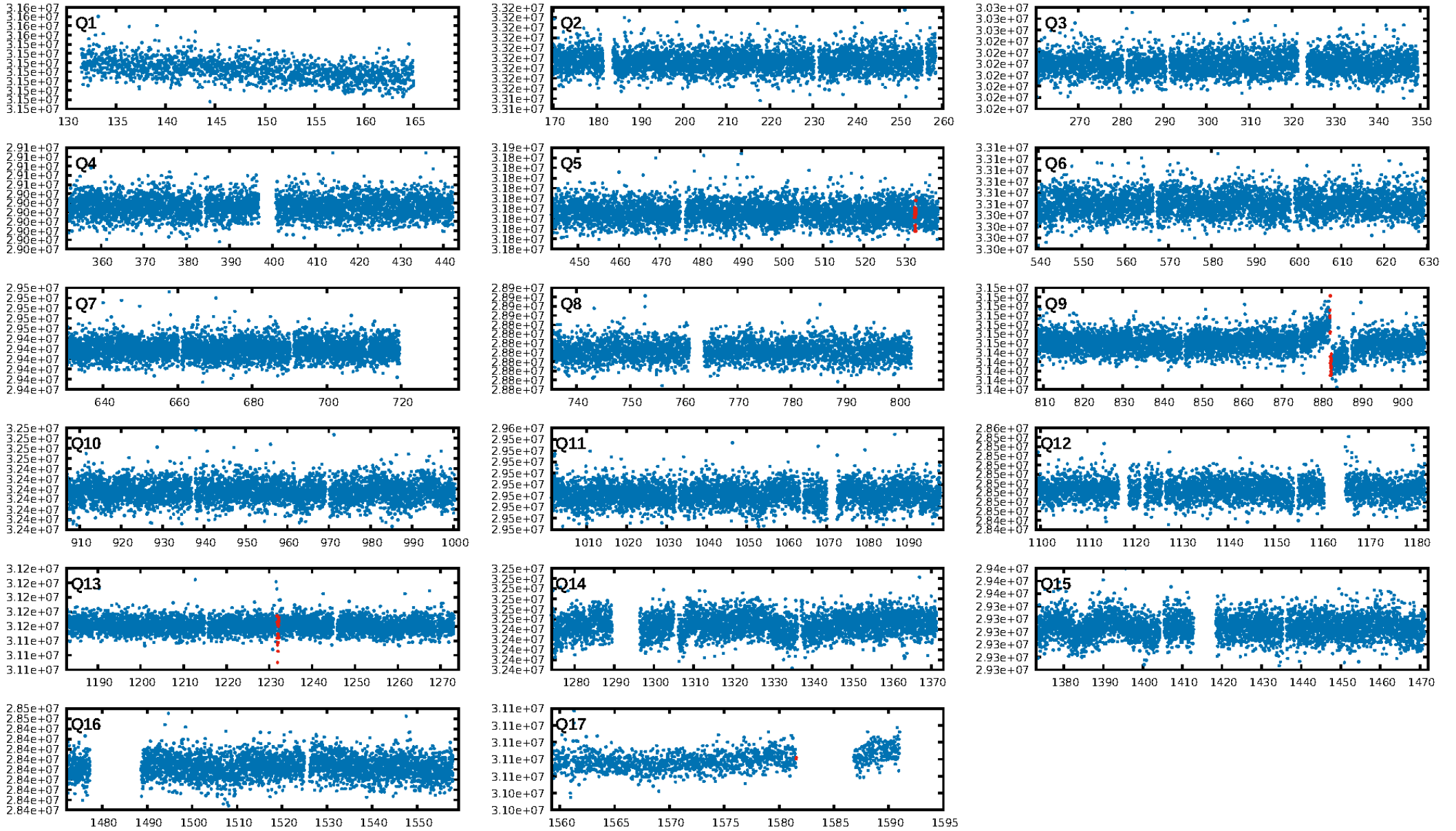
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 67.0%  
**Bootstrap-pfa: 2.56e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.521  
Centroid-sig: 3.0%  
Centroid-so: 3.091 arcsec [1.63 $\sigma$ ]  
OotOffset-rm: 1.825 arcsec [0.61 $\sigma$ ]  
KicOffset-rm: 1.811 arcsec [0.62 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

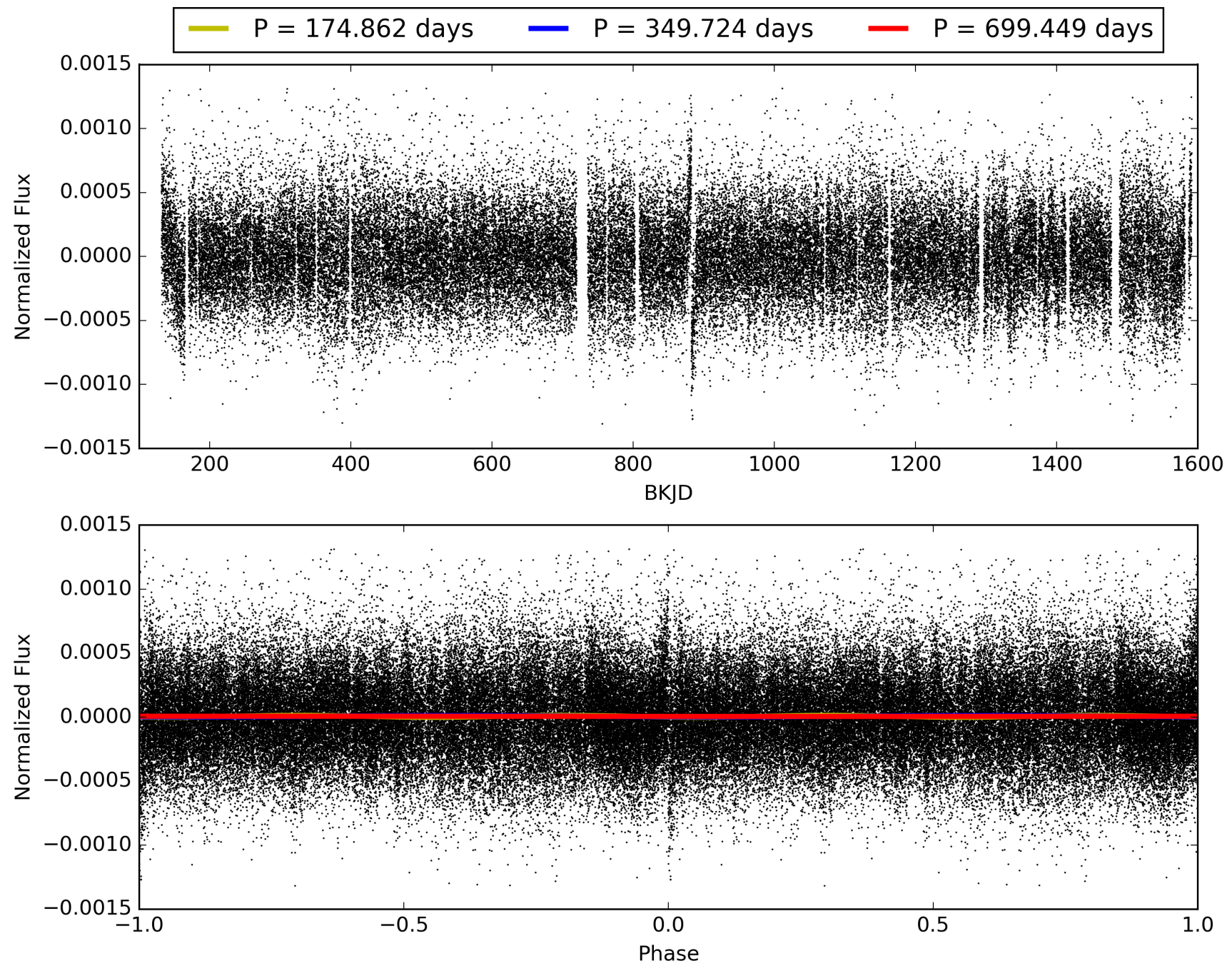
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 19:17:37 Z

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

# TCE 012017411-01, PDC Light Curves

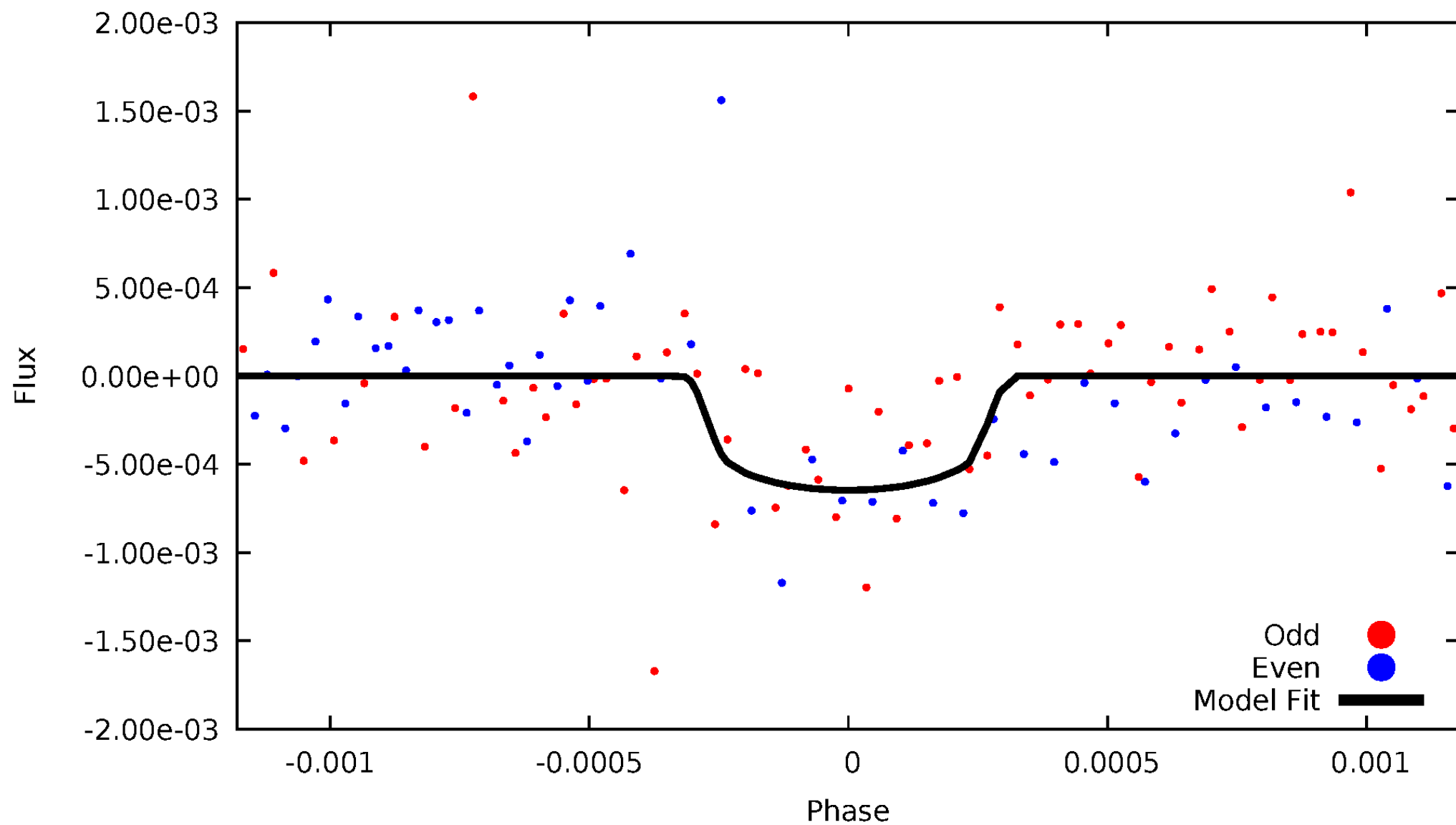


# TCE 012017411-01



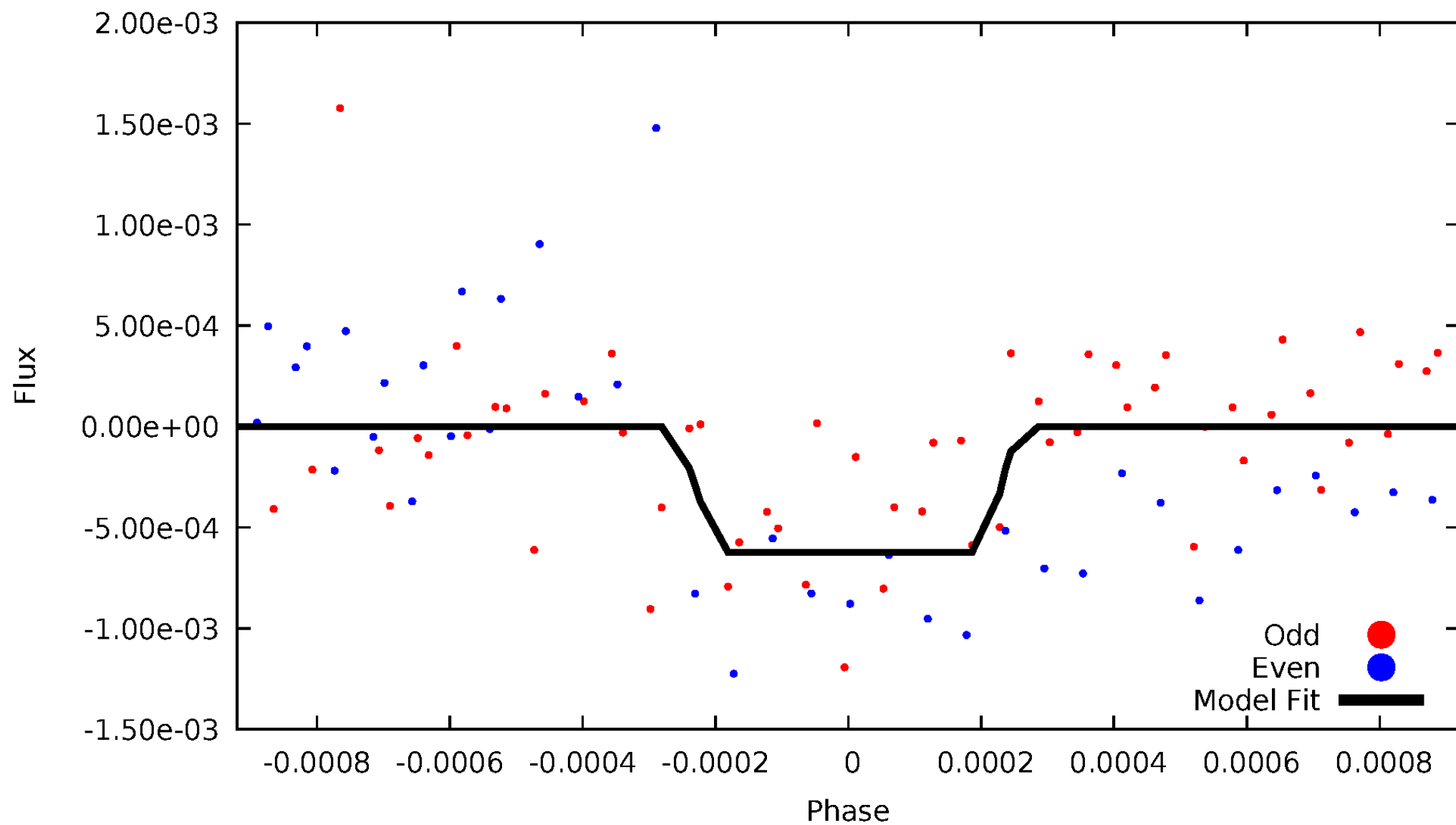
# DV Odd/Even

TCE 012017411-01



# ALT Odd/Even

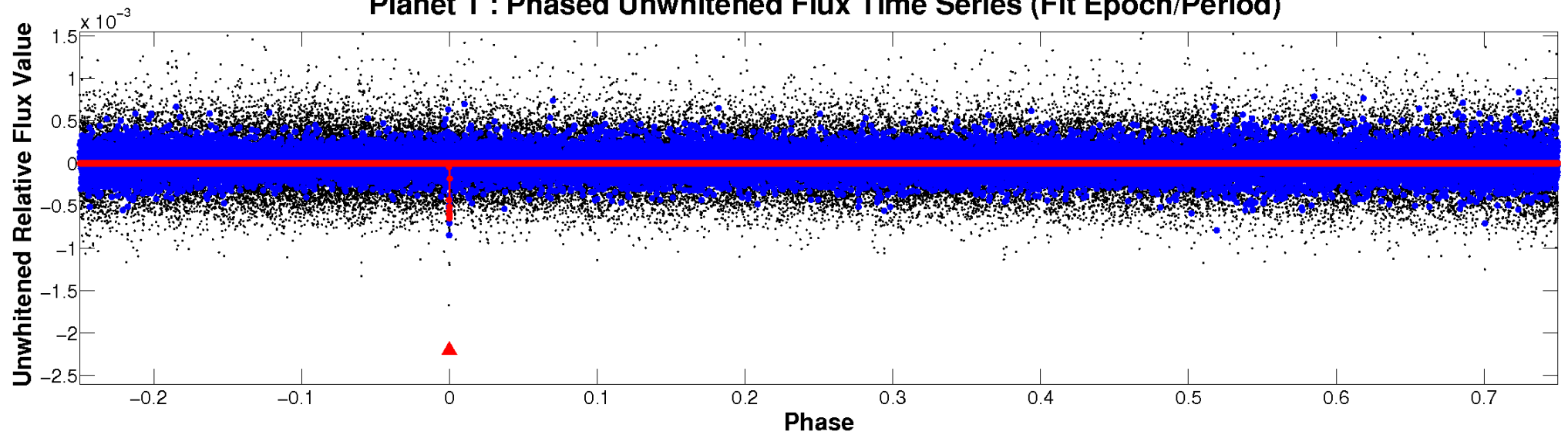
TCE 012017411-01



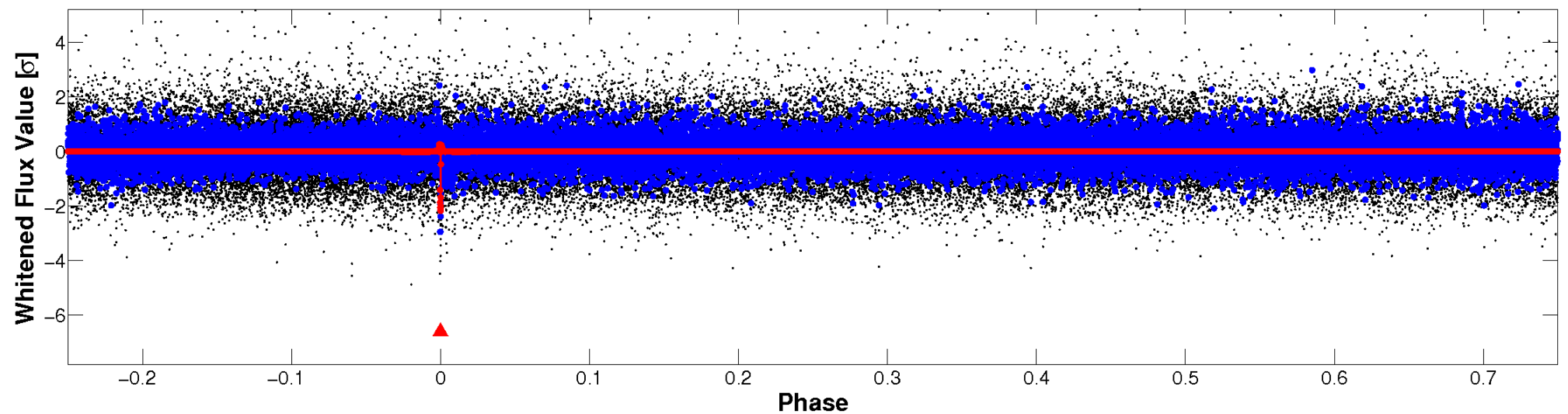


# Non-Whitened Vs. Whitened Light Curve

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

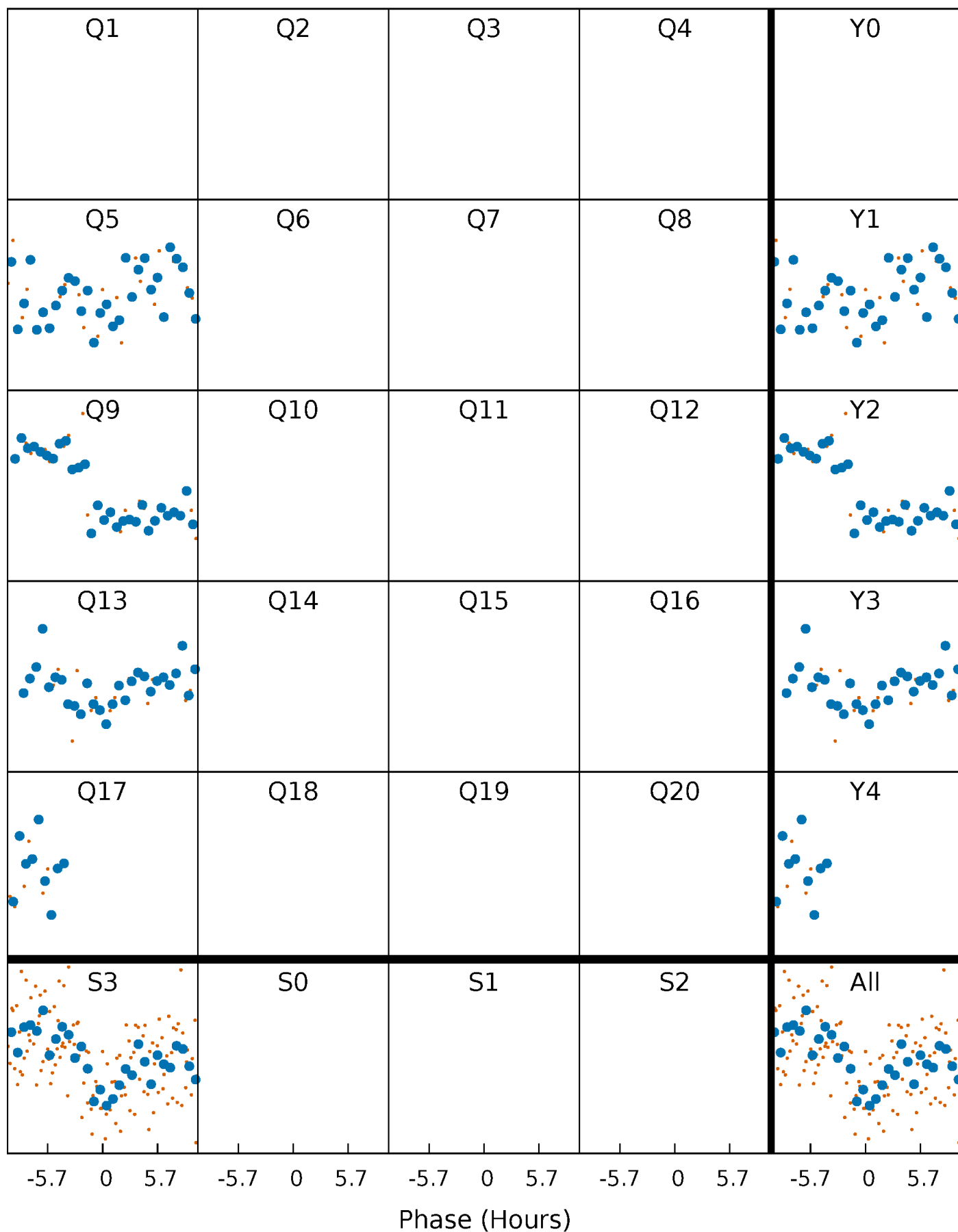


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

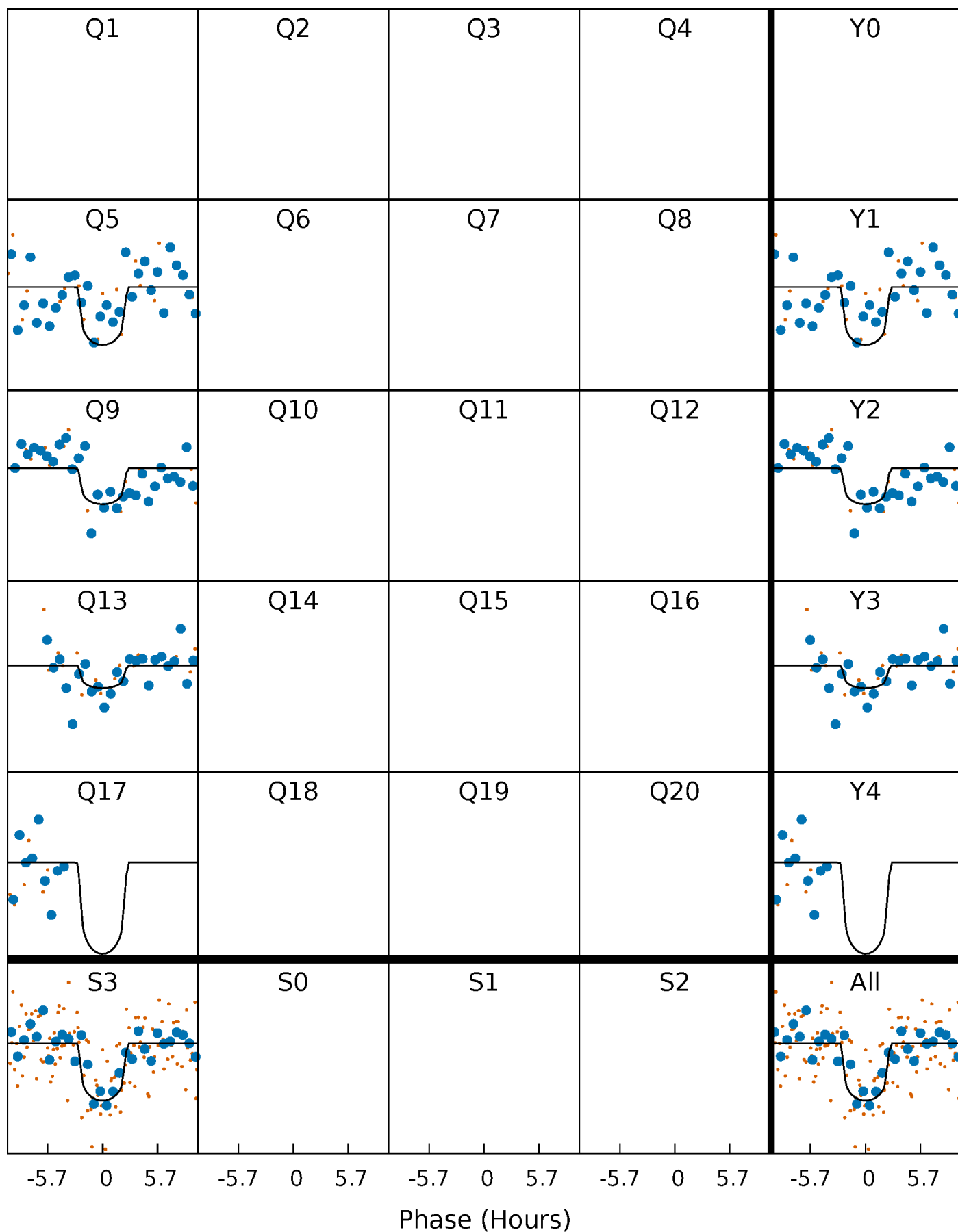
TCE 012017411-01 P=349.724499 Days  $T_0=182.858887$  (BKJD)





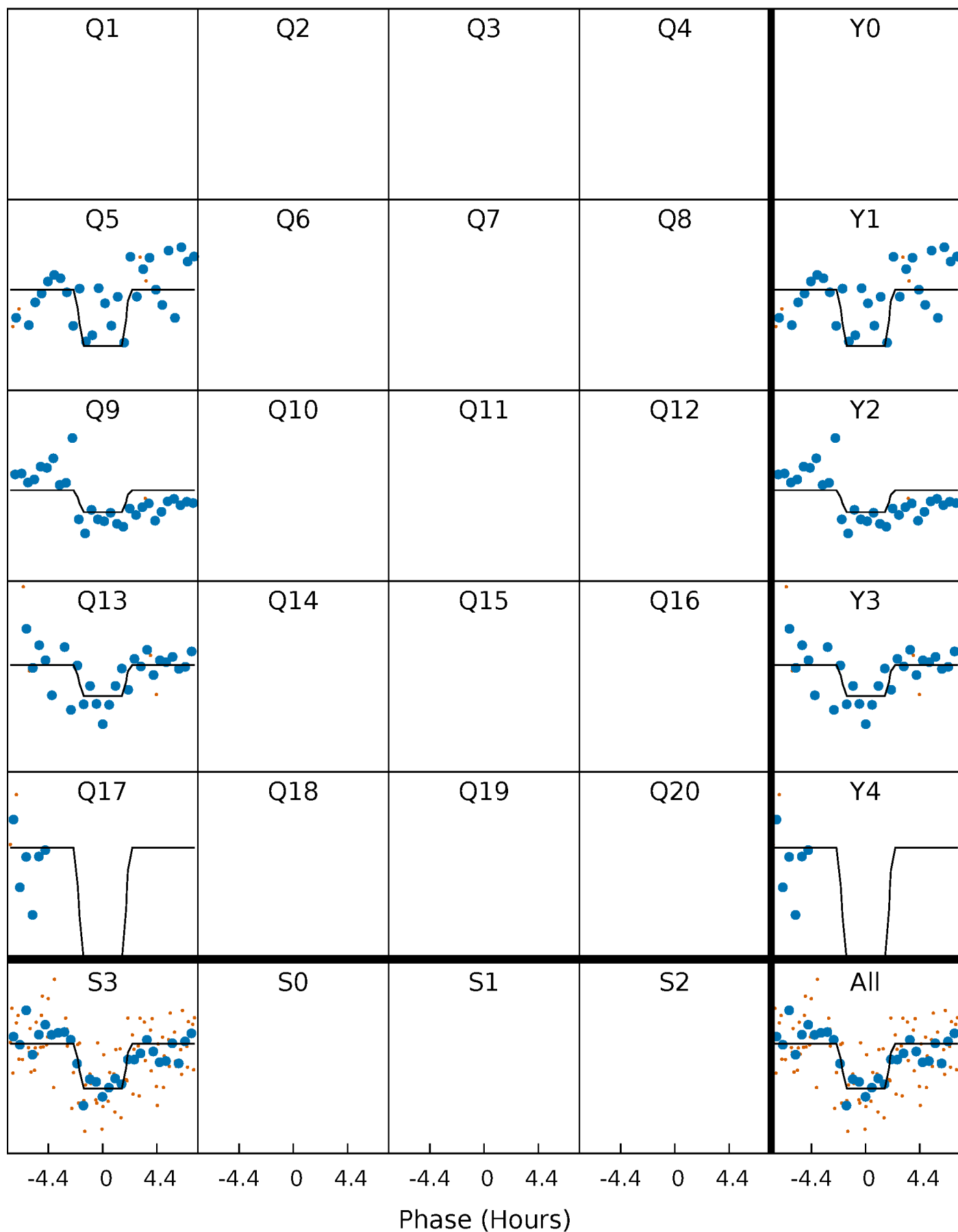
# DV Quarter-Phased Transit Curves

TCE 012017411-01 P=349.724499 Days  $T_0=182.858887$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

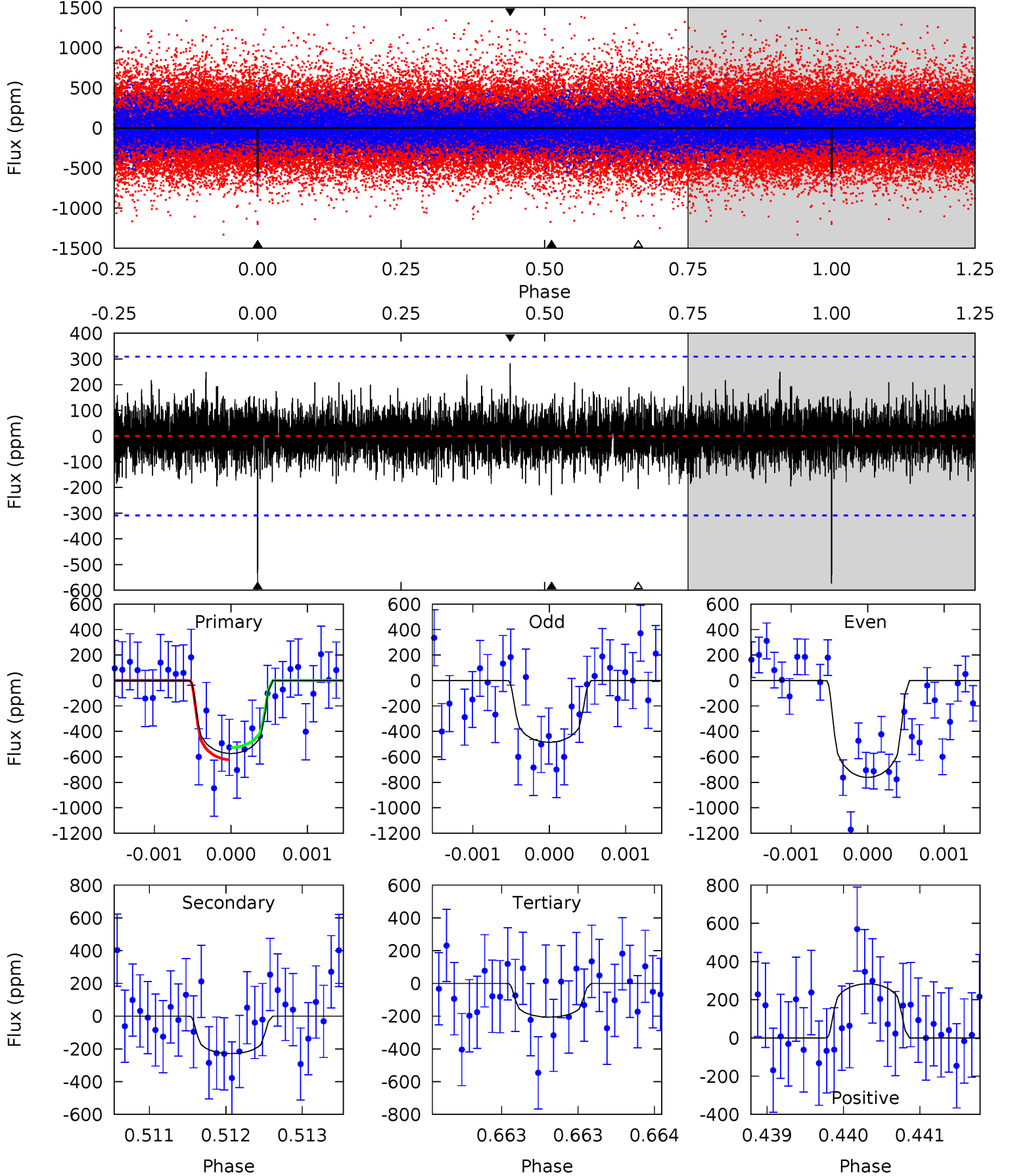
TCE 012017411-01 P=349.723243 Days  $T_0=182.876802$  (BKJD)



# DV Model-Shift Uniqueness Test

012017411-01, P = 349.724499 Days, E = 182.858887 Days

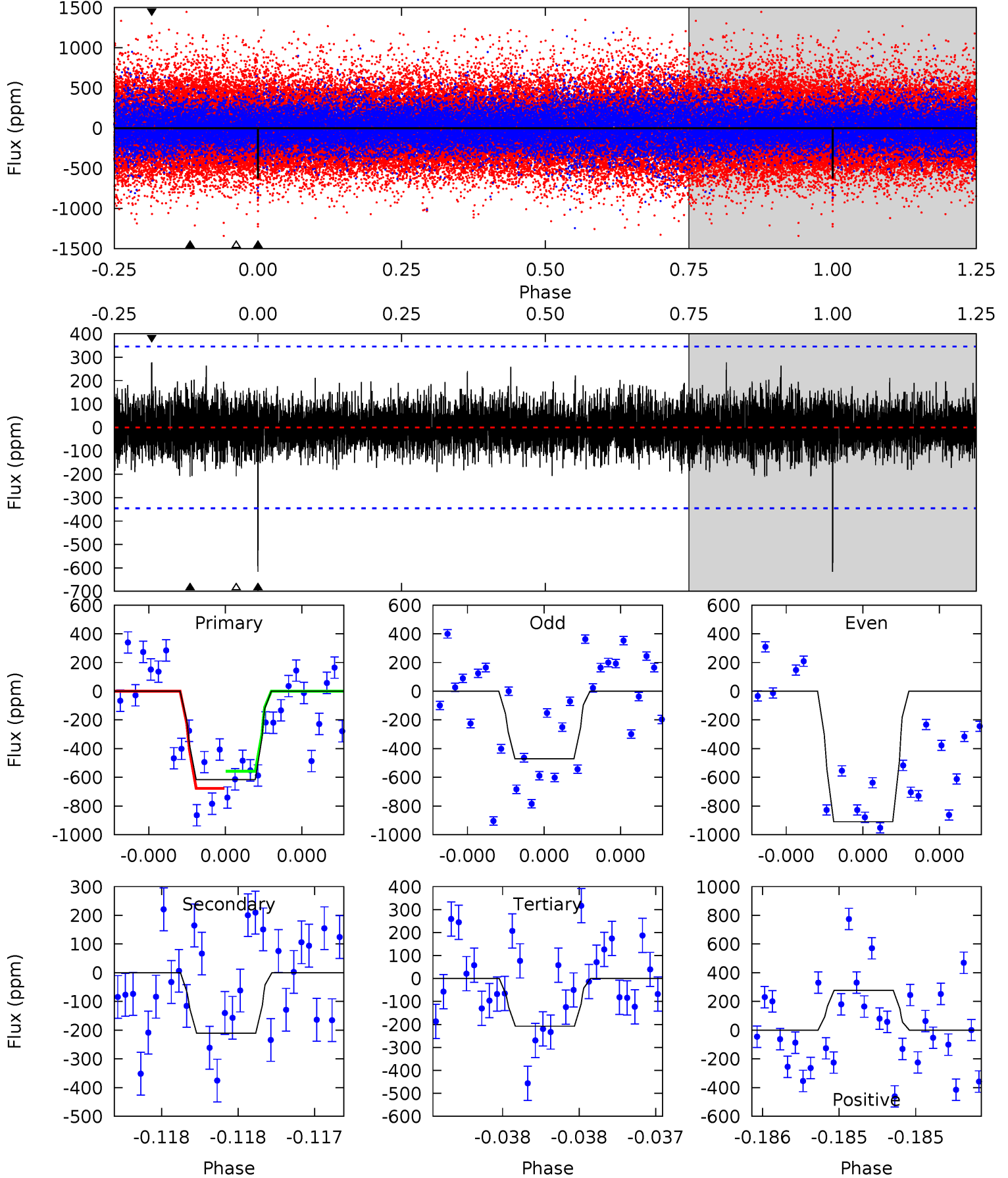
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	4.10	3.69	5.08	5.54	3.43	1.08	6.60	5.21	0.41	-0.98	2.38	0.90	0.33	0.86



# Alt Model-Shift Uniqueness Test

012017411-01, P = 349.723243 Days, E = 182.876802 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
9.94	3.40	3.35	4.48	5.58	3.49	0.99	6.59	5.46	0.05	-1.08	3.35	0.96	0.31	0.96



### Stellar Parameters For KIC 012017411

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5776^{+156}_{-191}$	$4.512^{+0.038}_{-0.212}$	$0.210^{+0.200}_{-0.300}$	$0.950^{+0.289}_{-0.077}$	$1.068^{+0.102}_{-0.136}$	$1.757^{+0.357}_{-0.919}$
	+3%/-3%	+1%/-5%	+95%/-143%	+30%/-8%	+10%/-13%	+20%/-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 012017411-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-229 \pm 56$	$3.45^{+2.91}_{-2.22}$	$356^{+24}_{-17}$	$4207^{+2328}_{-780}$	$10041^{+67767}_{-7281}$
Alt.	$-211 \pm 62$	$3.55^{+2.72}_{-2.34}$	$356^{+24}_{-18}$	$4126^{+2283}_{-752}$	$8844^{+67235}_{-6289}$

$T_{\text{max}}$  = 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

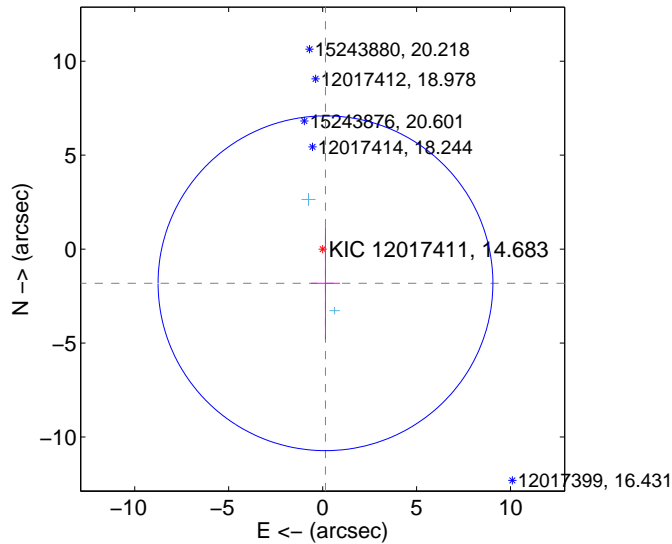
Supplemental centroid analysis for 012017411-01. Kepler magnitude: 14.68. Transit SNR 9.93

There are 2 quarters with good PRF difference image offsets

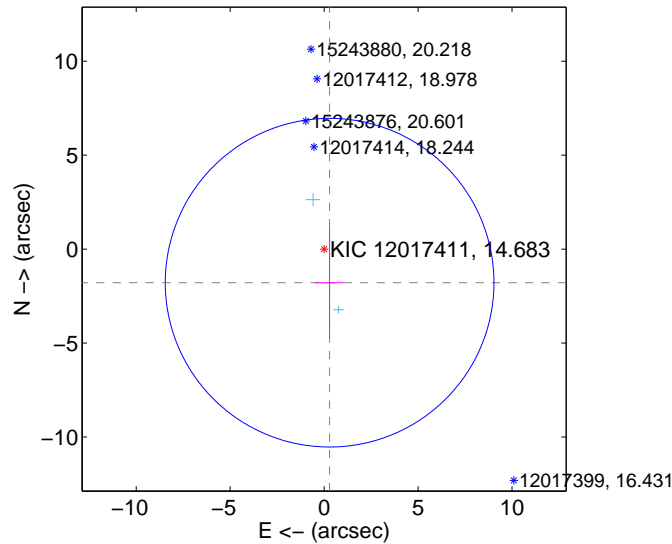
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.825 \pm 2.970$	0.61	$-0.151 \pm 0.777$	$-1.818 \pm 2.979$
PRF-fit source offset from KIC position	$1.811 \pm 2.915$	0.62	$-0.292 \pm 0.759$	$-1.788 \pm 2.952$
photometric centroid source offset	$3.09 \pm 1.89$	1.63	$0.58 \pm 1.61$	$3.04 \pm 1.90$

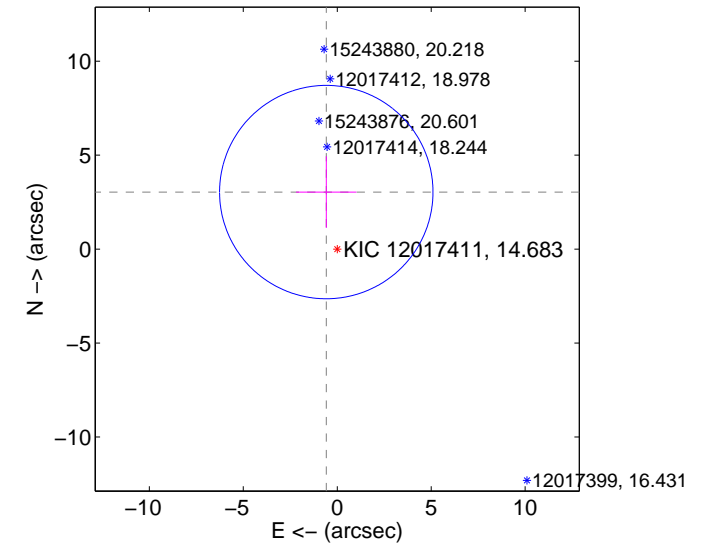
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



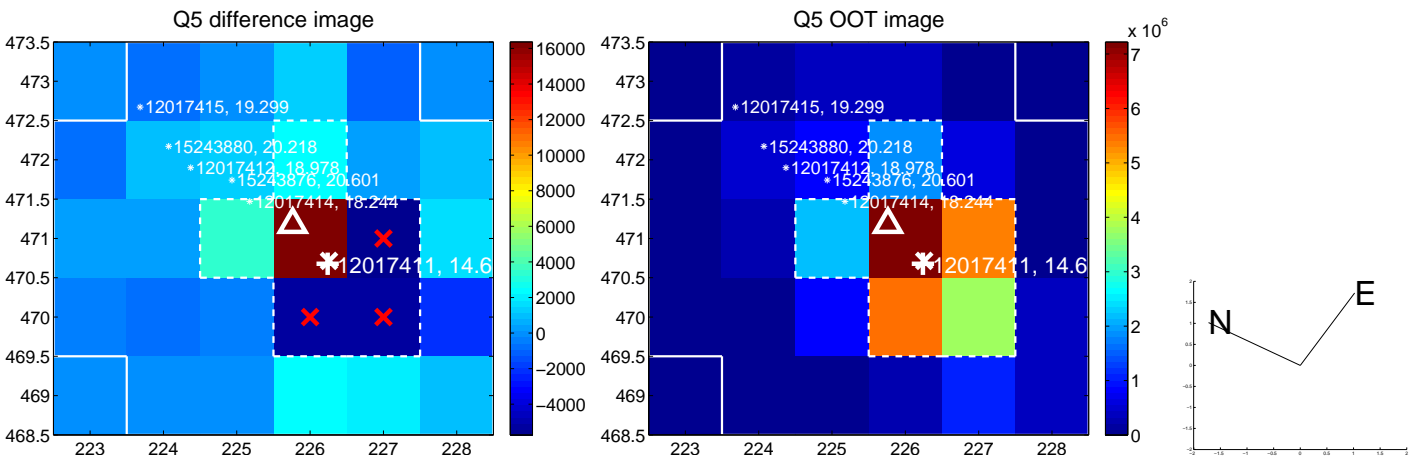
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

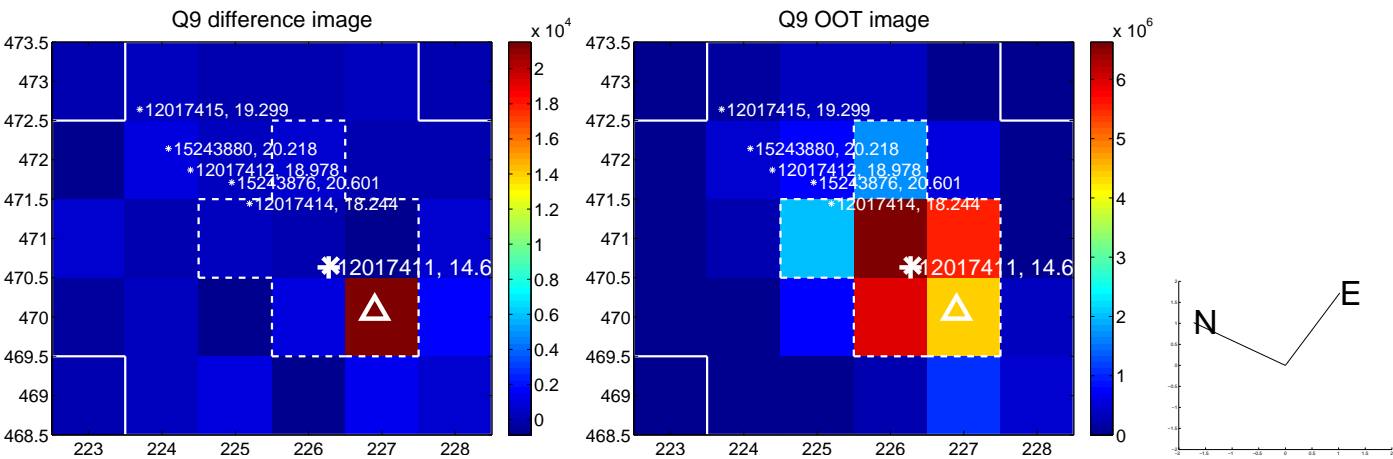




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



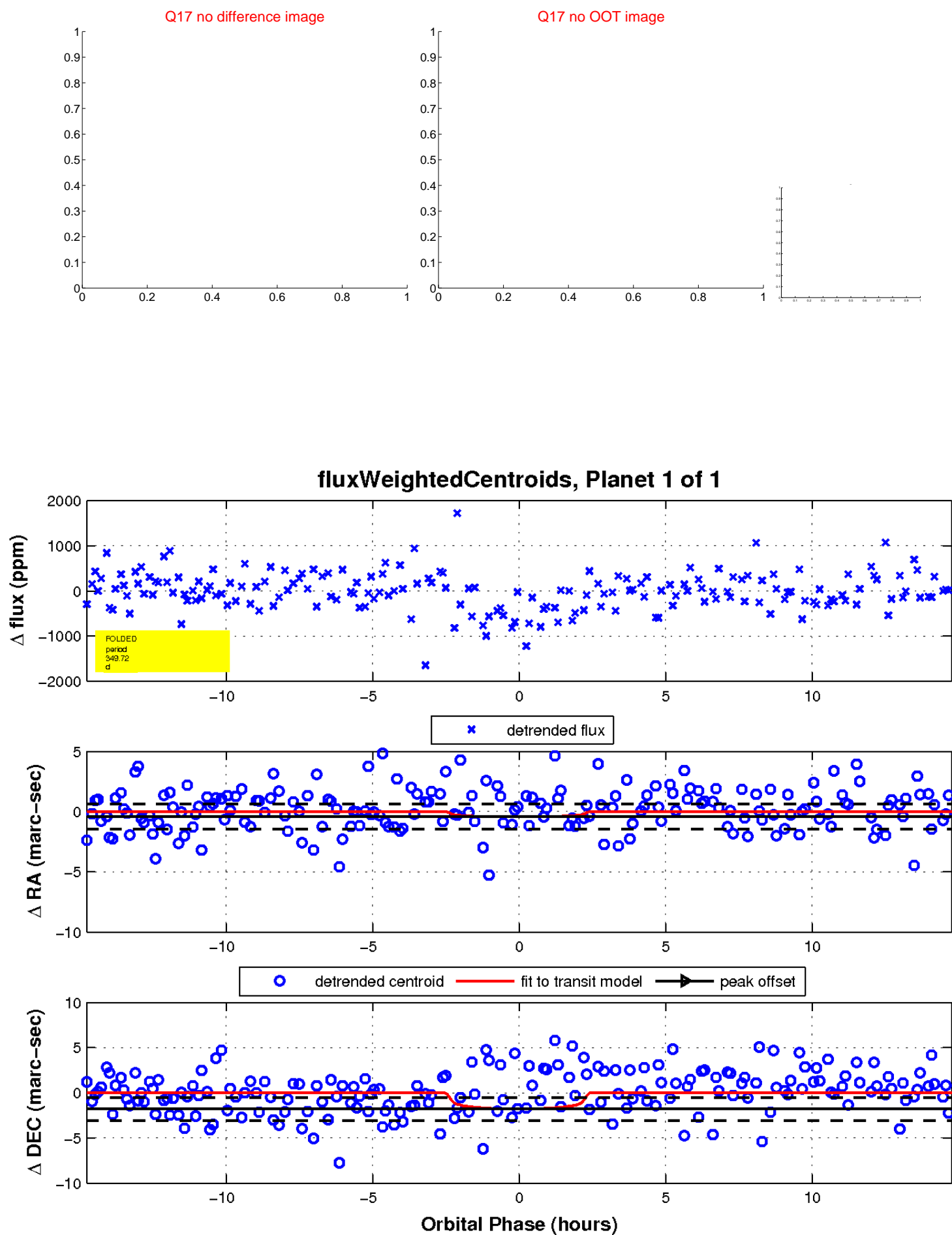
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

