

# KIC 010005609

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010005609-01	OBS	No	605.345595	249.508637	1071.5	9.674	7.8	7.7	0.60	4441	2.08	0.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010005609-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS

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

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

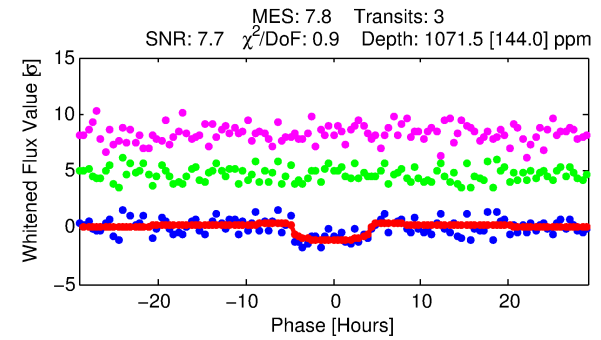
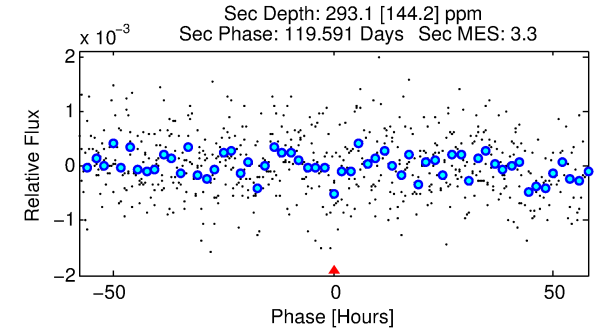
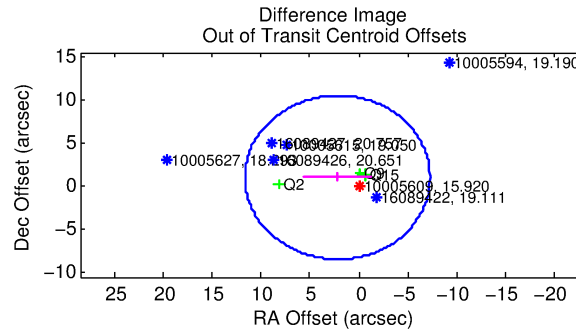
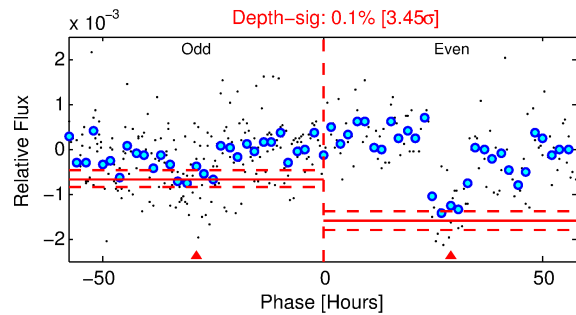
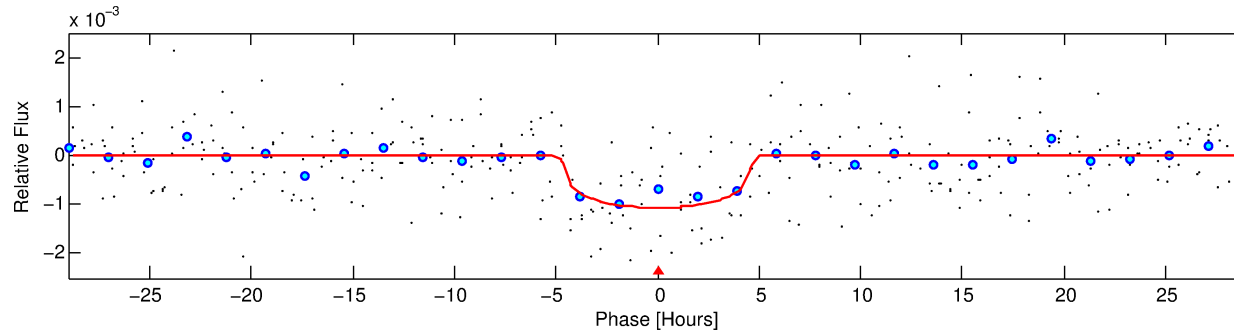
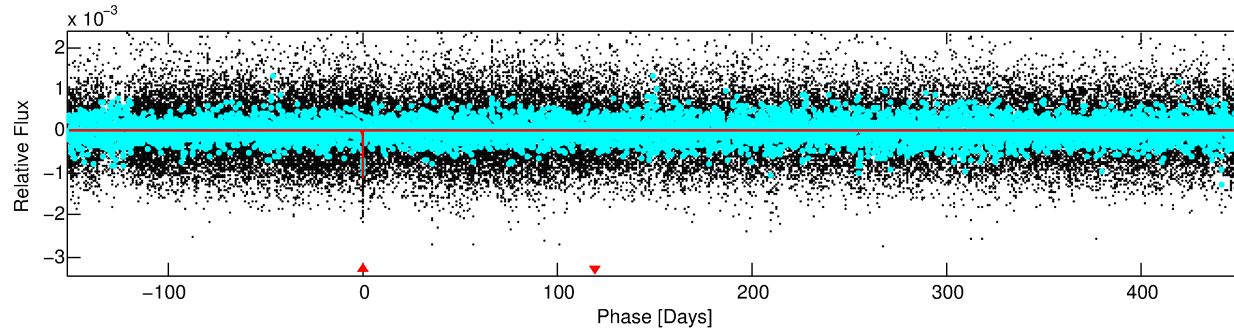
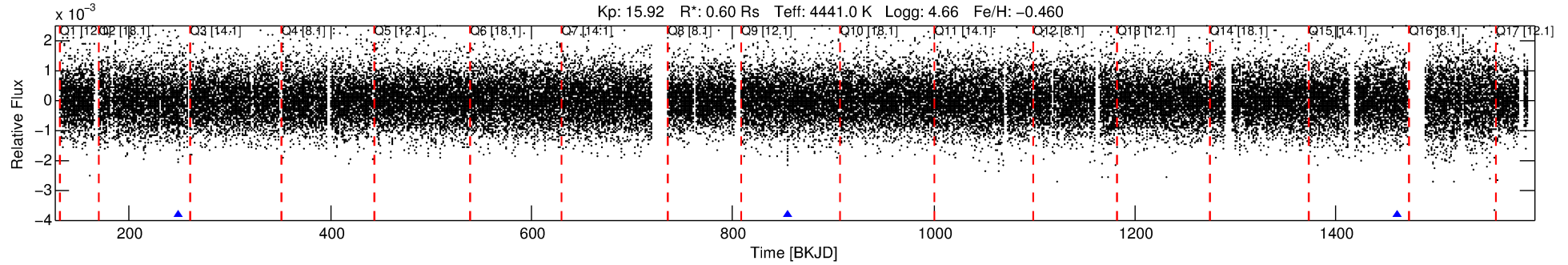
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010005609-01

No Significant Match Found

# DV One-Page Summary

KIC: 10005609 Candidate: 1 of 1 Period: 605.346 d



## DV Fit Results:

Period = 605.34560 [0.01230] d  
Epoch = 249.5086 [0.0165] BKJD  
Rp/R\* = 0.0318 [0.0188]  
a/R\* = 370.82 [730.44]  
b = 0.68 [1.59]  
Seff = 0.09 [0.01]  
Teq = 140 [5] K  
Rp = 2.08 [1.25] Re  
a = 1.1771 [0.0851] AU  
Ag = 51676.56 [66394.53] [0.78 $\sigma$ ]  
Teffp = 3261 [1049] K [2.98 $\sigma$ ]

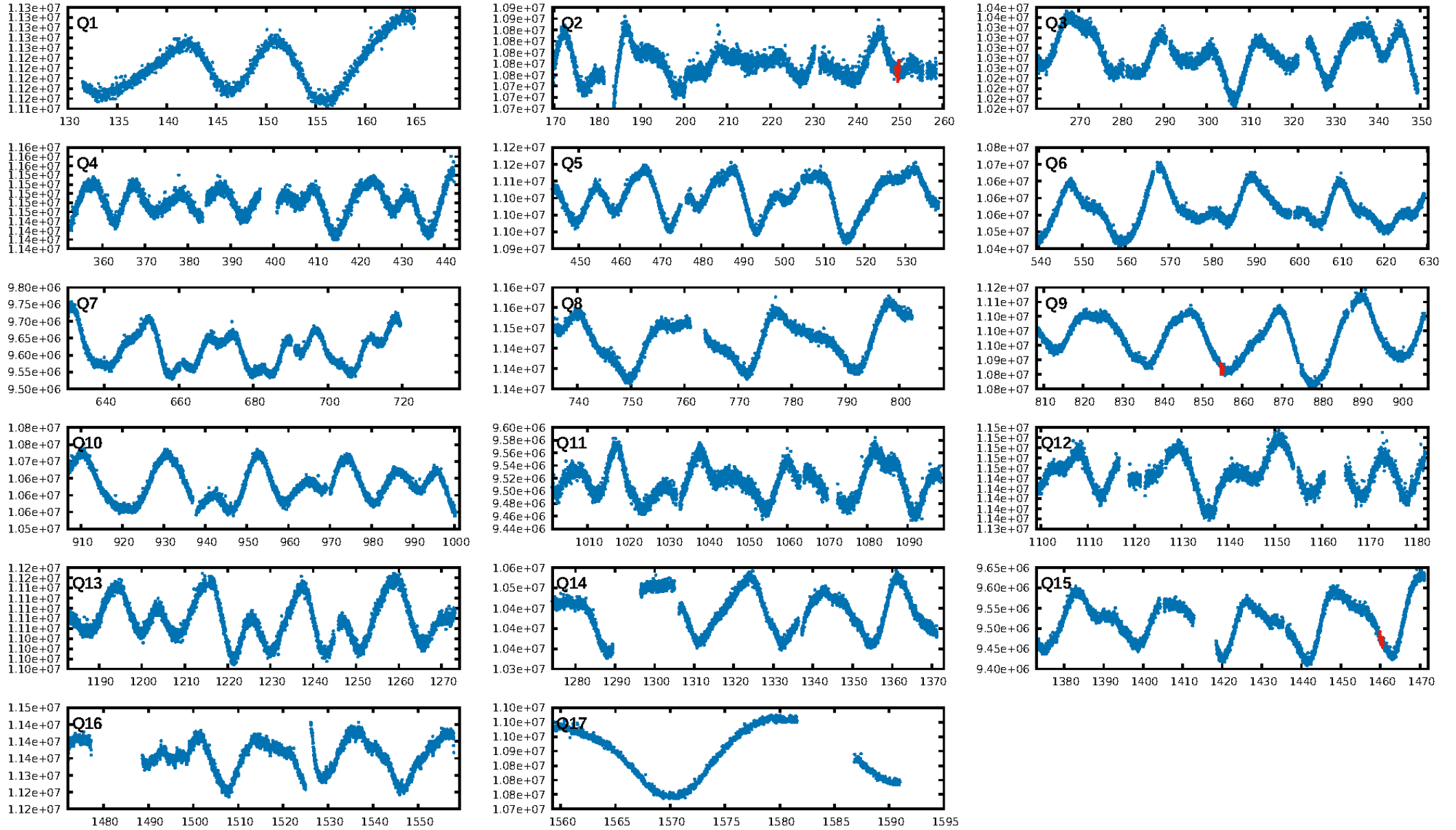
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 6.8%  
ModelChiSquareGof-sig: 94.6%  
**Bootstrap-pfa: 1.26e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -2.59  
Centroid-sig: 88.4%  
Centroid-so: 0.671 arcsec [0.50 $\sigma$ ]  
OotOffset-rm: 2.417 arcsec [0.77 $\sigma$ ]  
KicOffset-rm: 2.377 arcsec [0.72 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

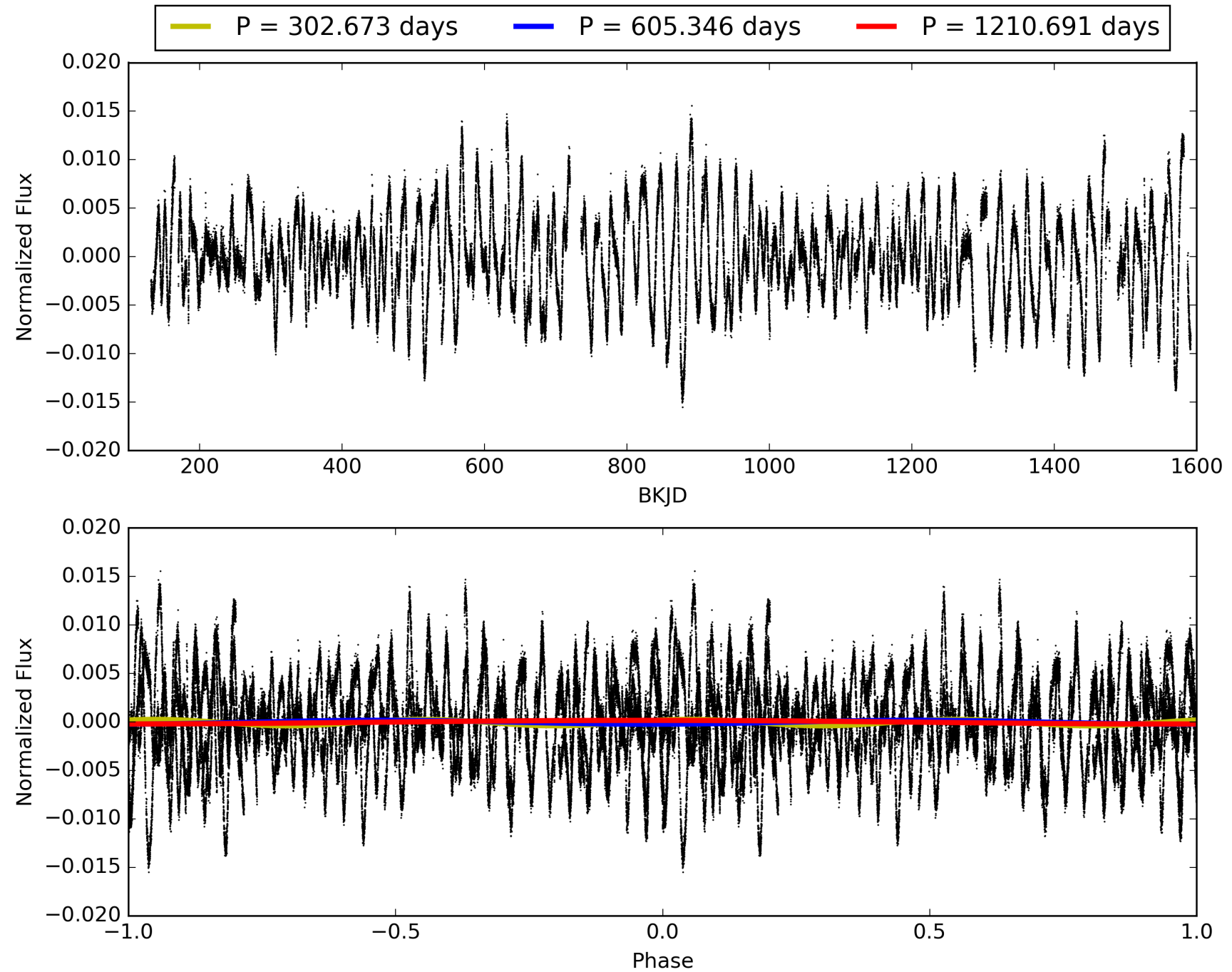
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:13:54 Z

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

# TCE 010005609-01, PDC Light Curves

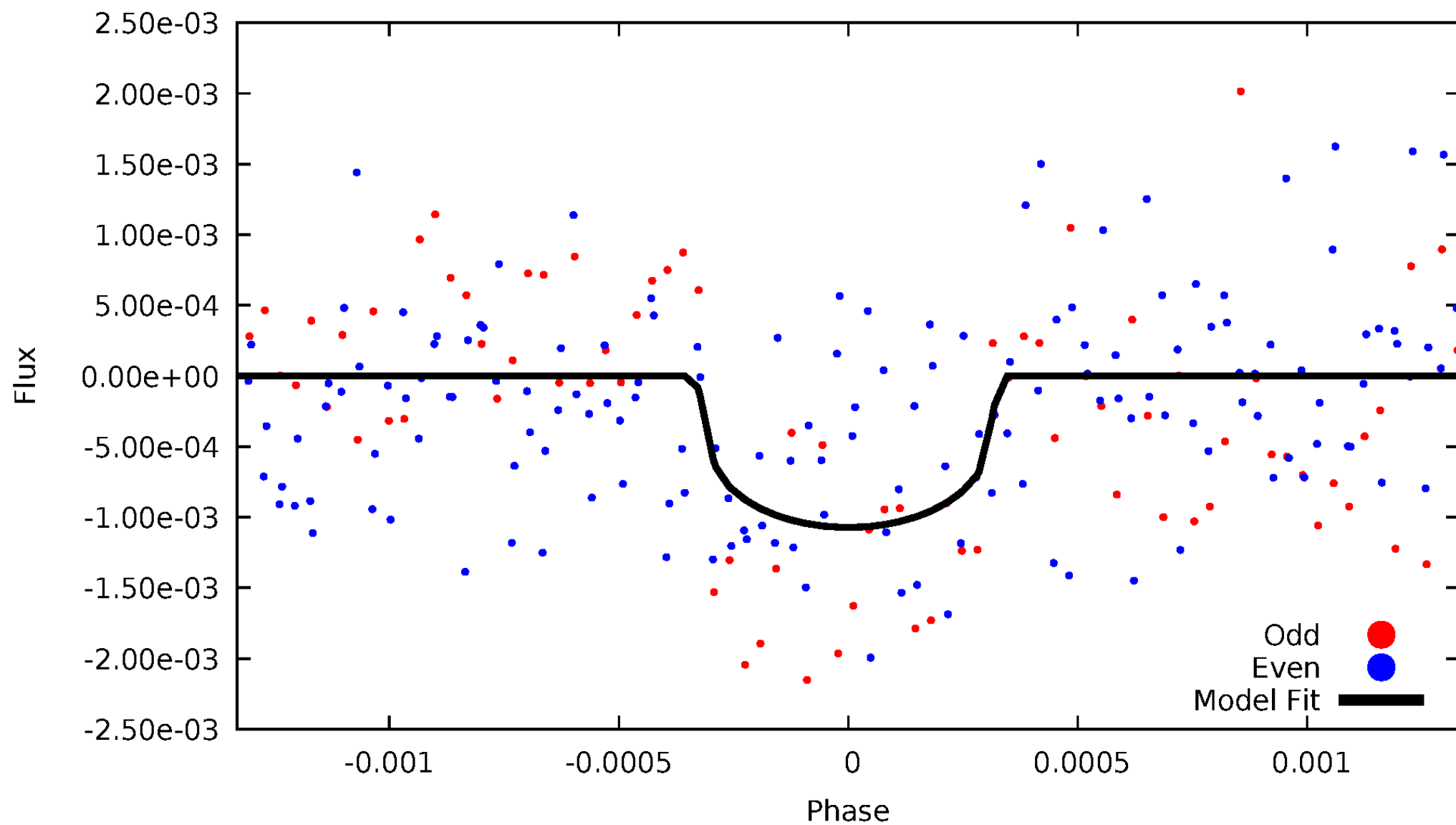


TCE 010005609-01



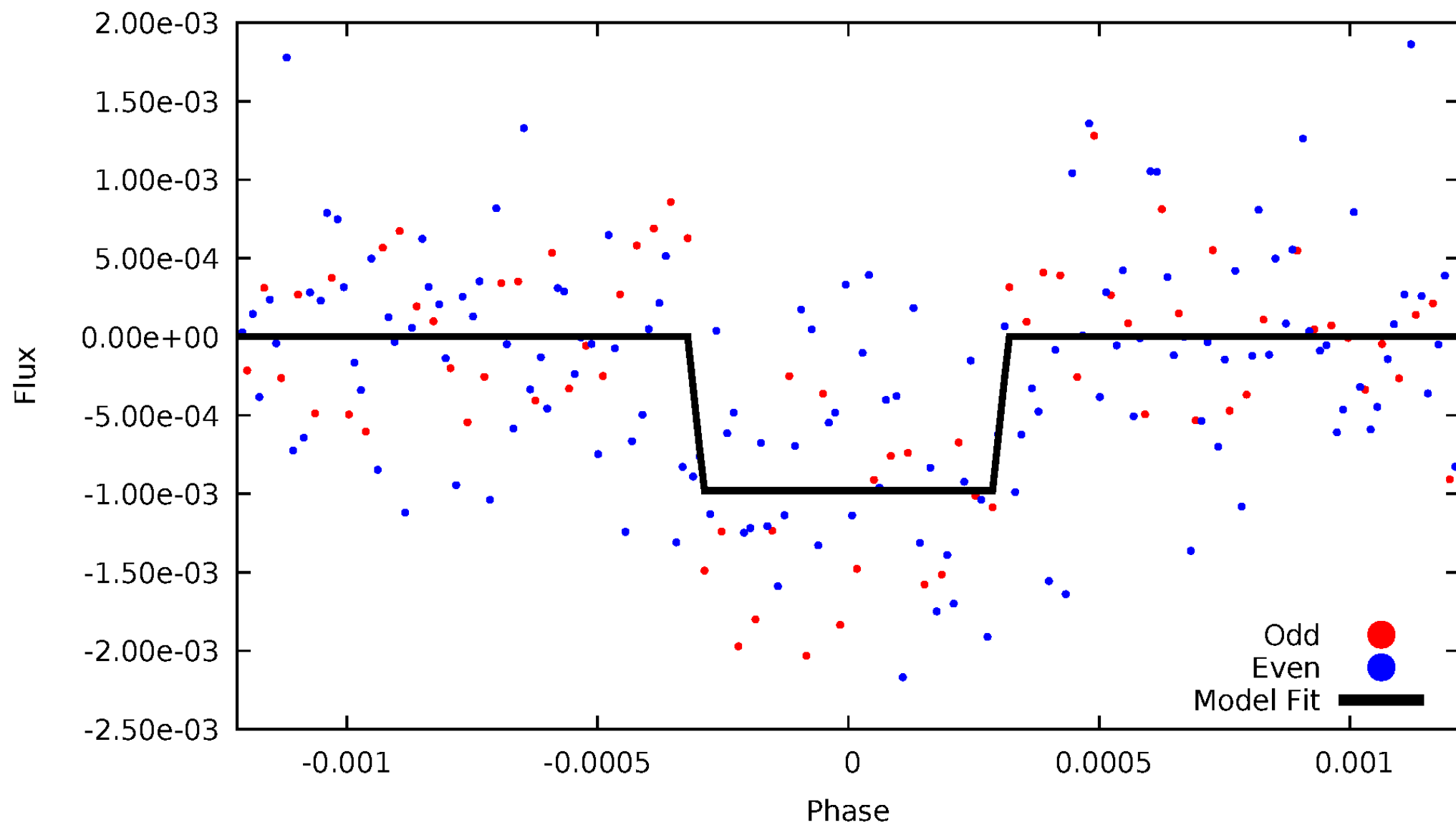
# DV Odd/Even

TCE 010005609-01



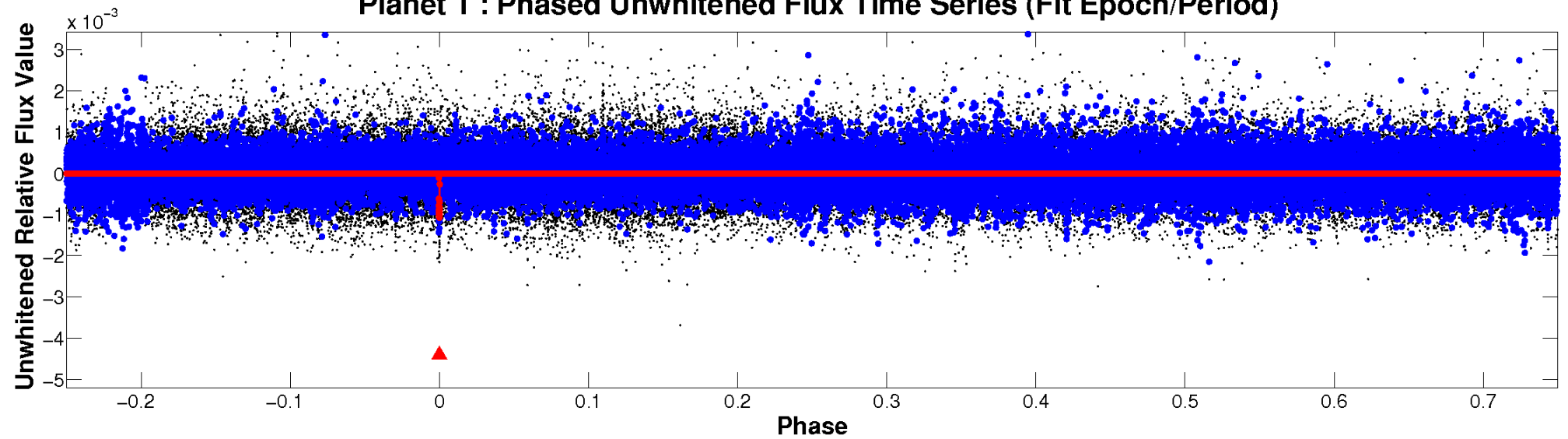
# ALT Odd/Even

TCE 010005609-01

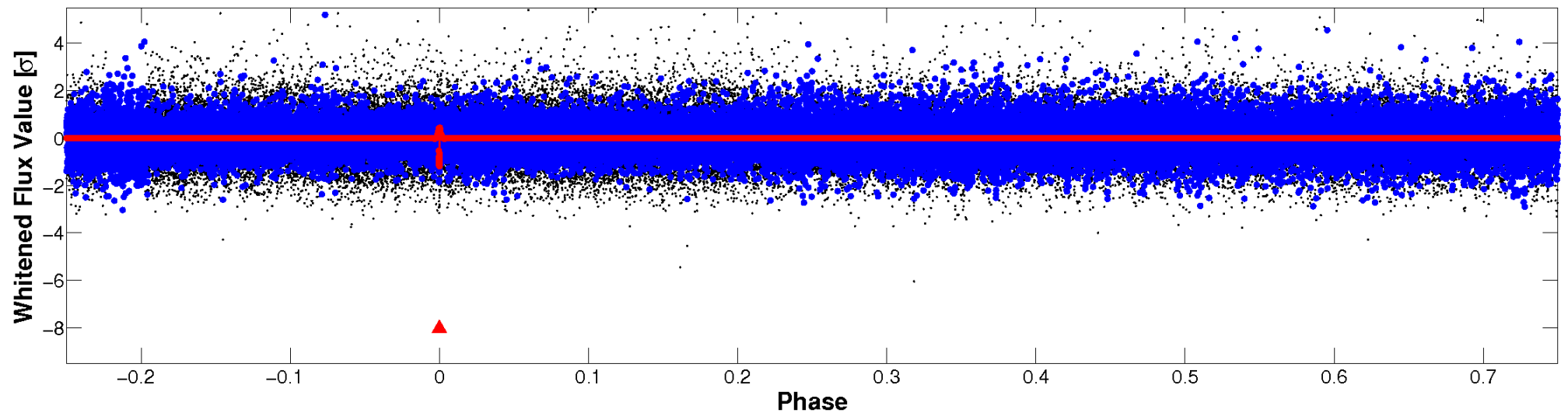


# Non-Whitened Vs. Whitened Light Curve

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

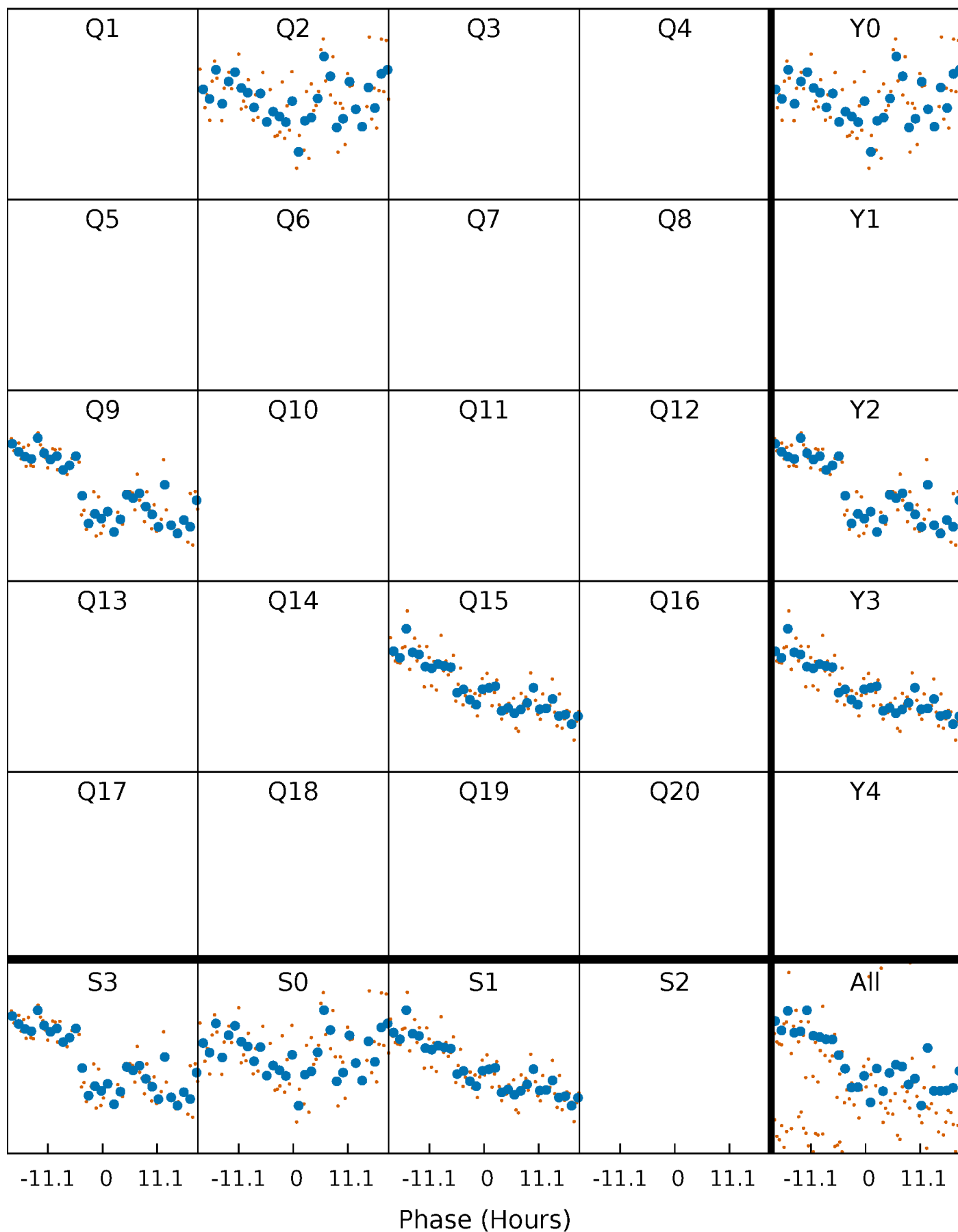


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

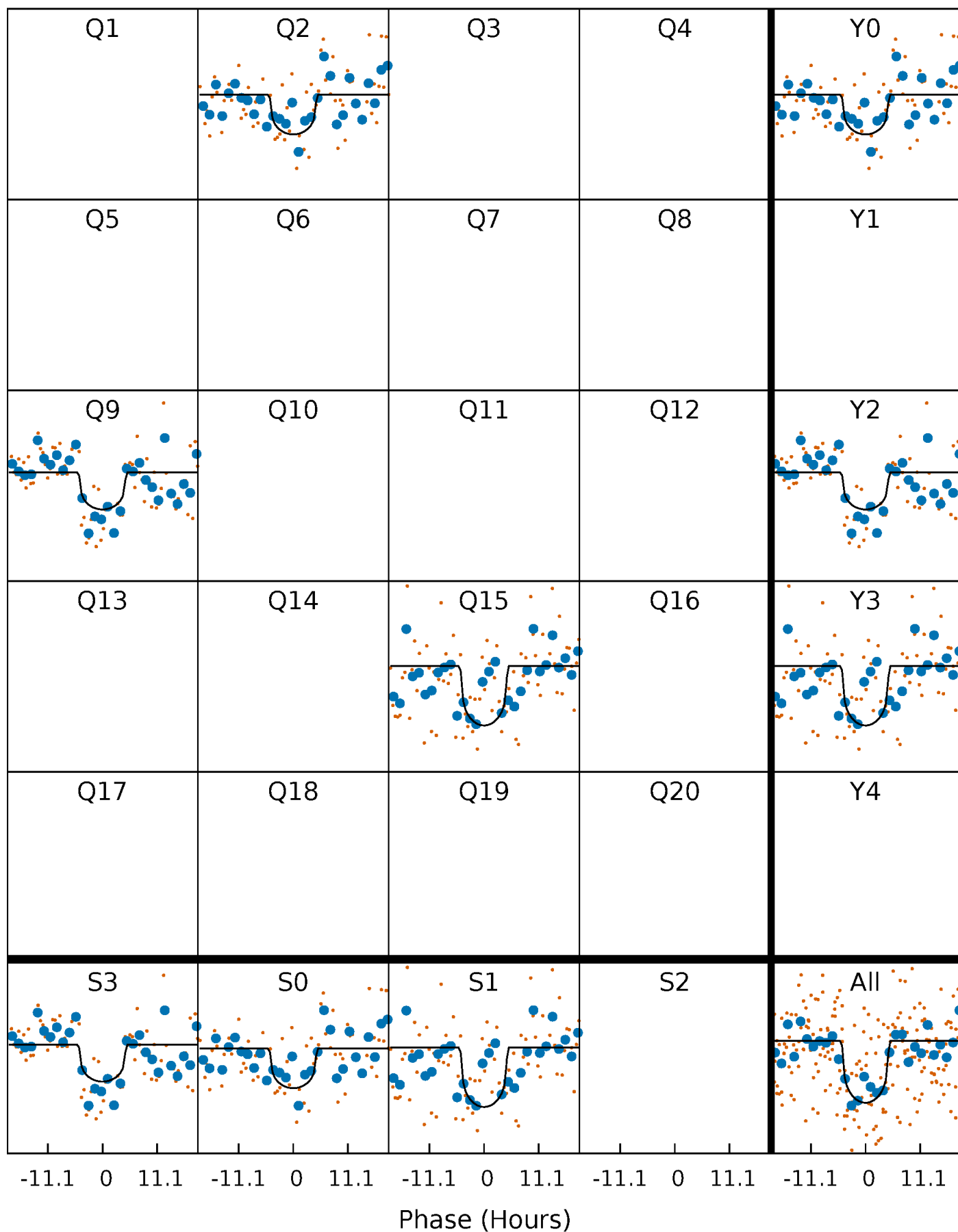
TCE 010005609-01 P=605.345595 Days  $T_0=249.508637$  (BKJD)





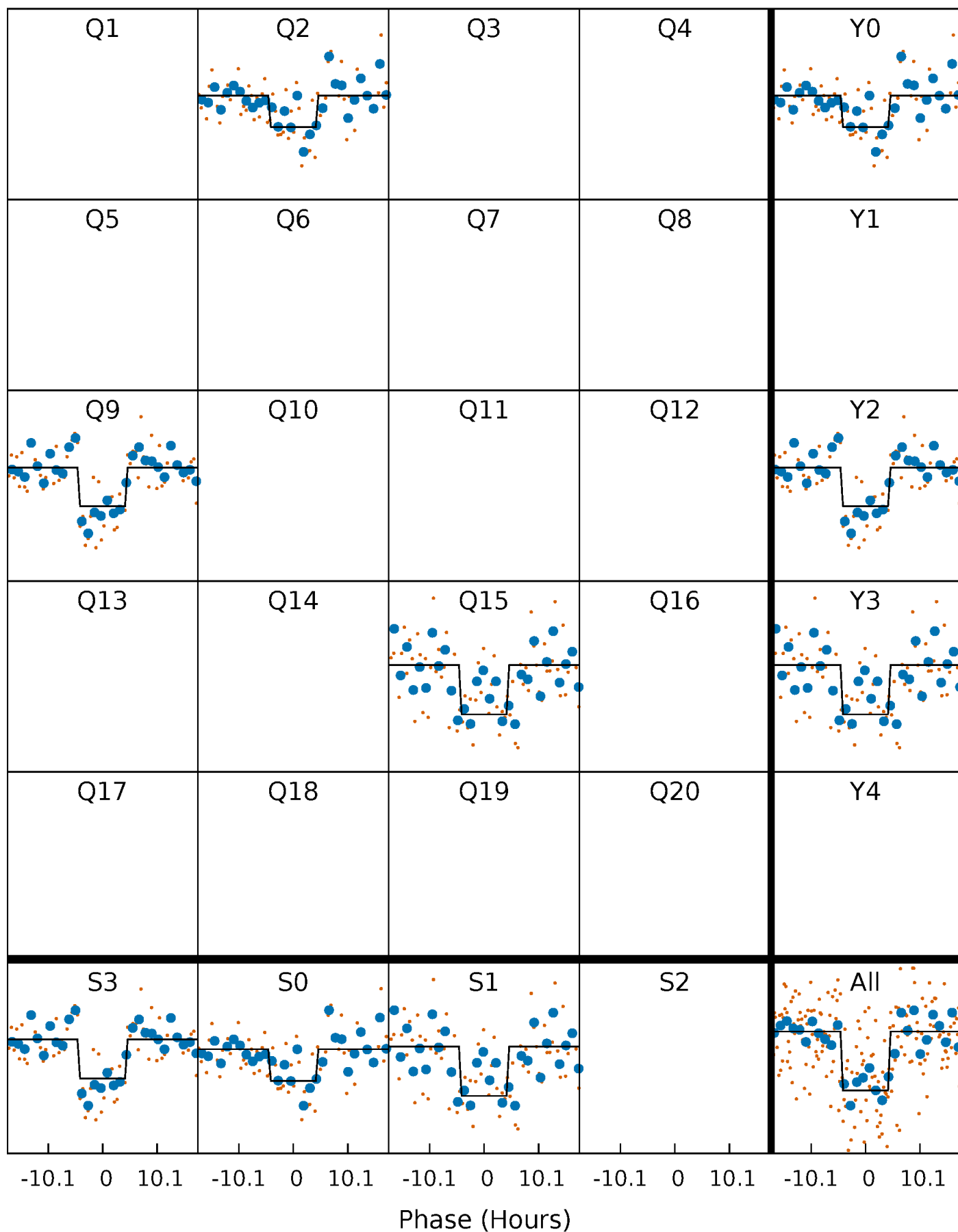
# DV Quarter-Phased Transit Curves

TCE 010005609-01 P=605.345595 Days  $T_0=249.508637$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

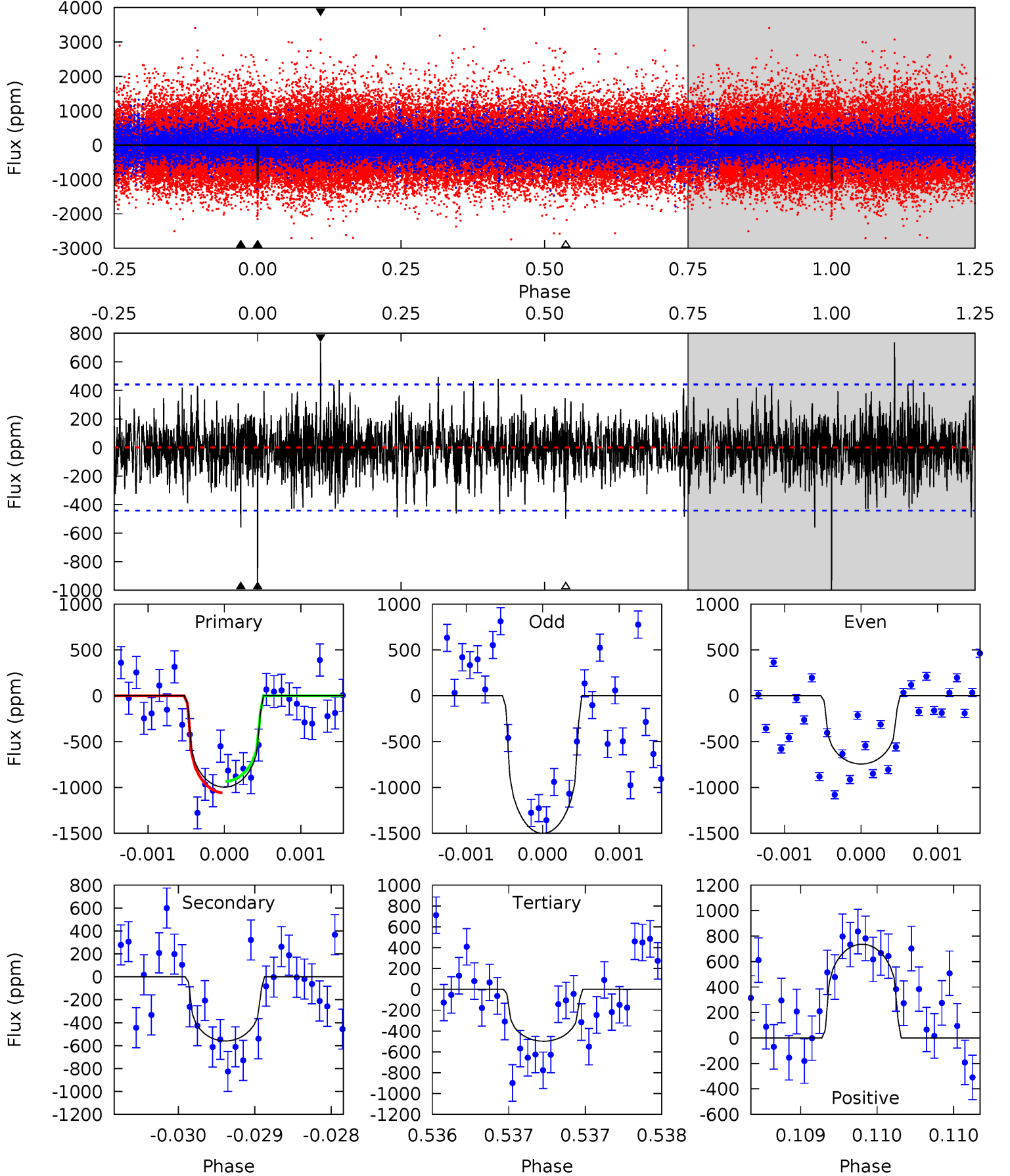
TCE 010005609-01 P=605.378271 Days  $T_0=249.472262$  (BKJD)



# DV Model-Shift Uniqueness Test

010005609-01, P = 605.345595 Days, E = 249.508637 Days

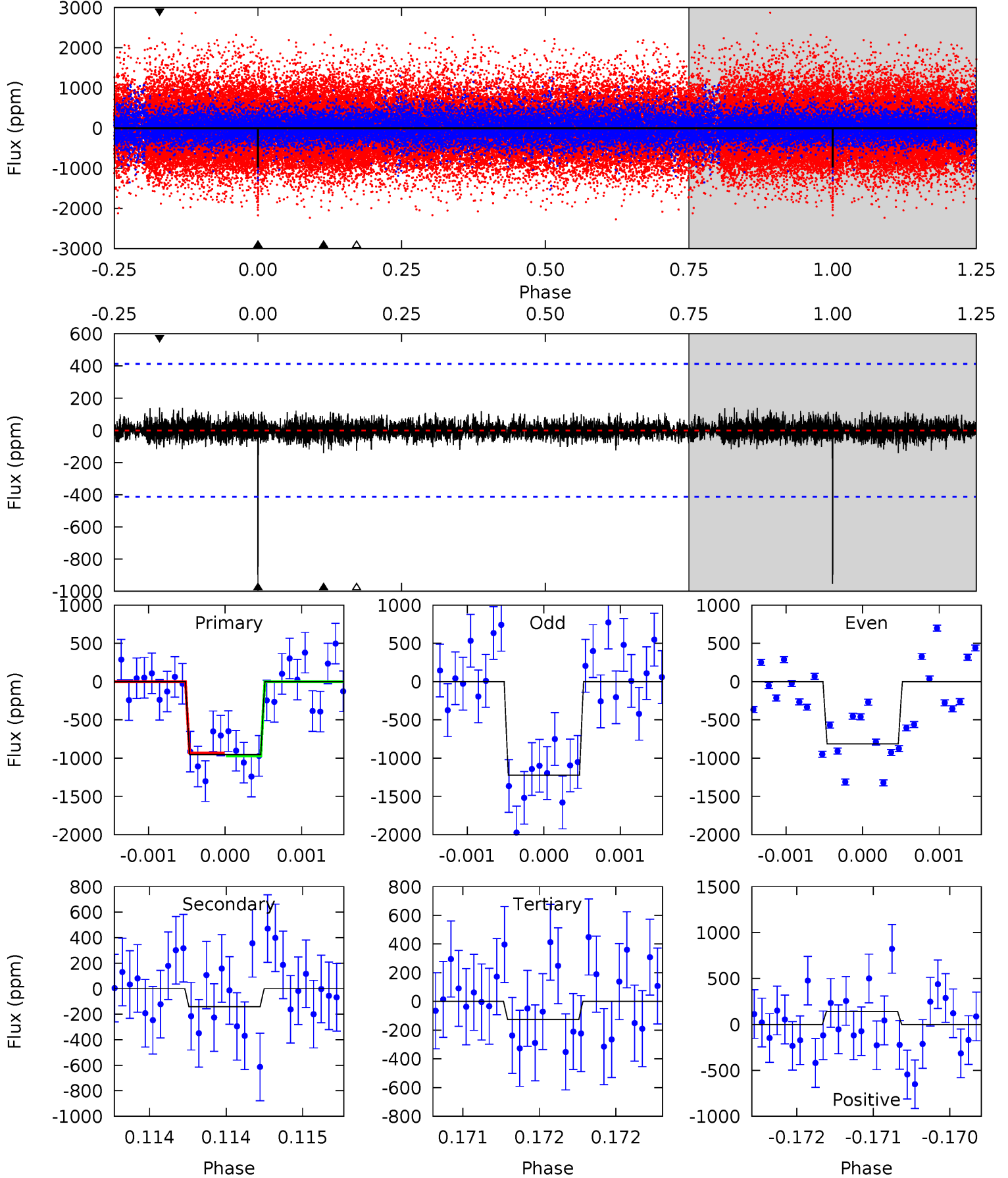
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	7.00	6.22	9.20	5.52	3.40	1.62	6.24	3.26	0.78	-2.20	4.52	1.16	0.42	0.78



# Alt Model-Shift Uniqueness Test

010005609-01, P = 605.378271 Days, E = 249.472262 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	1.89	1.68	1.88	5.54	3.42	0.44	11.1	10.9	0.21	0.01	2.59	1.02	0.13	0.26



### Stellar Parameters For KIC 010005609

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4441^{+131}_{-131}$	$4.655^{+0.048}_{-0.028}$	$-0.460^{+0.300}_{-0.300}$	$0.600^{+0.050}_{-0.056}$	$0.593^{+0.063}_{-0.048}$	$3.868^{+0.886}_{-0.497}$
	+3%/-3%	+1%/-1%	+65%/-65%	+8%/-9%	+11%/-8%	+23%/-13%
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 010005609-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-560 \pm 80$	$2.19^{+1.20}_{-1.17}$	$195^{+6}_{-6}$	$3912^{+1377}_{-562}$	$91867^{+327347}_{-54956}$
Alt.	$-141 \pm 75$	$2.22^{+1.28}_{-1.19}$	$195^{+7}_{-7}$	$3101^{+864}_{-483}$	$20426^{+74229}_{-14290}$

$T_{\text{max}}$  = 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

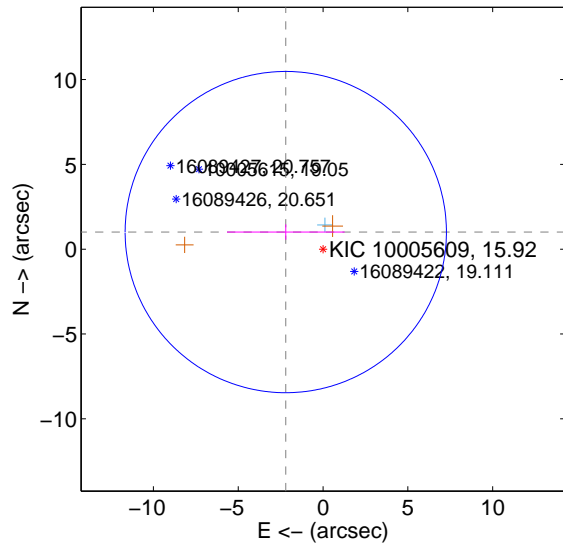
Supplemental centroid analysis for 010005609-01. Kepler magnitude: 15.92. Transit SNR 7.68

There are 1 quarters with good PRF difference image offsets

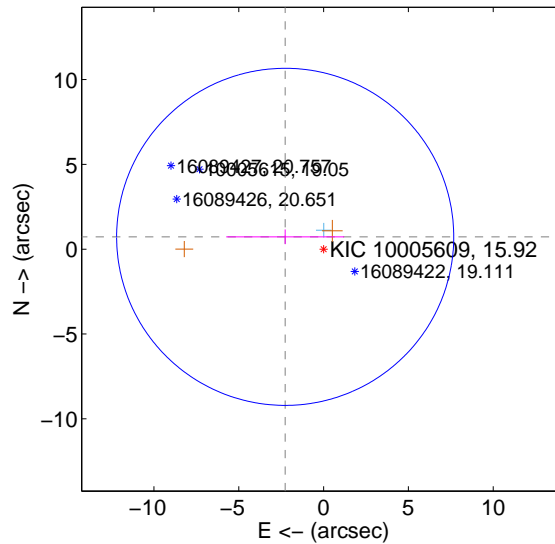
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.417 \pm 3.157$	0.77	$2.196 \pm 3.467$	$1.007 \pm 0.452$
PRF-fit source offset from KIC position	$2.377 \pm 3.312$	0.72	$2.264 \pm 3.476$	$0.727 \pm 0.435$
photometric centroid source offset	$0.67 \pm 1.34$	0.50	$-0.04 \pm 1.43$	$-0.67 \pm 1.34$

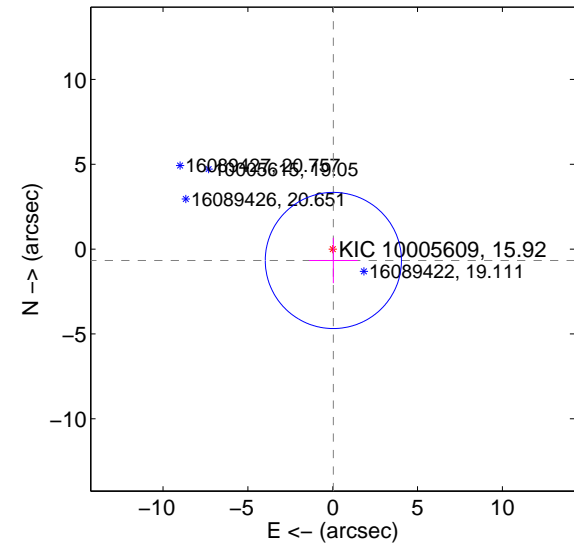
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

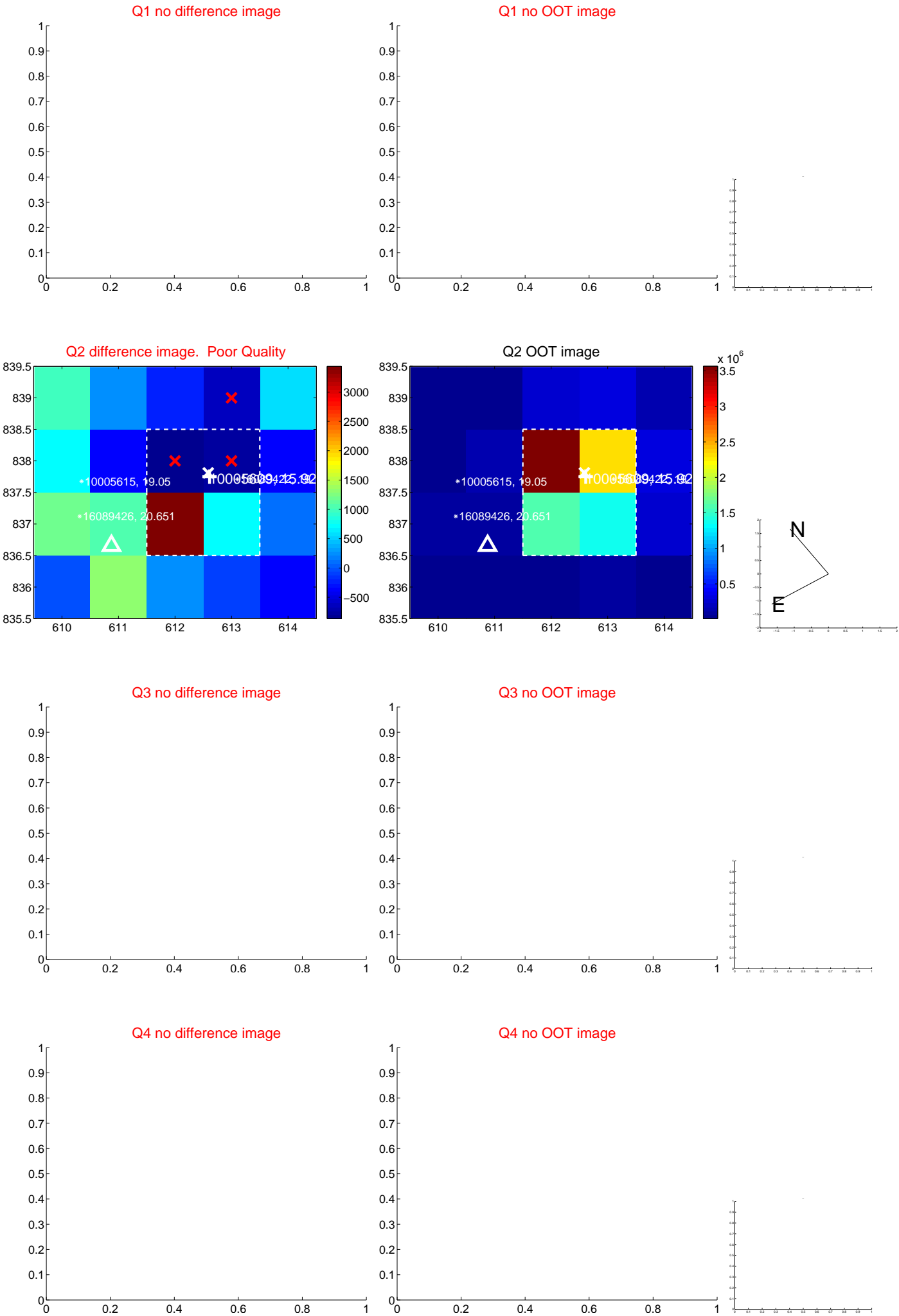


offset from photometric centroids



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.

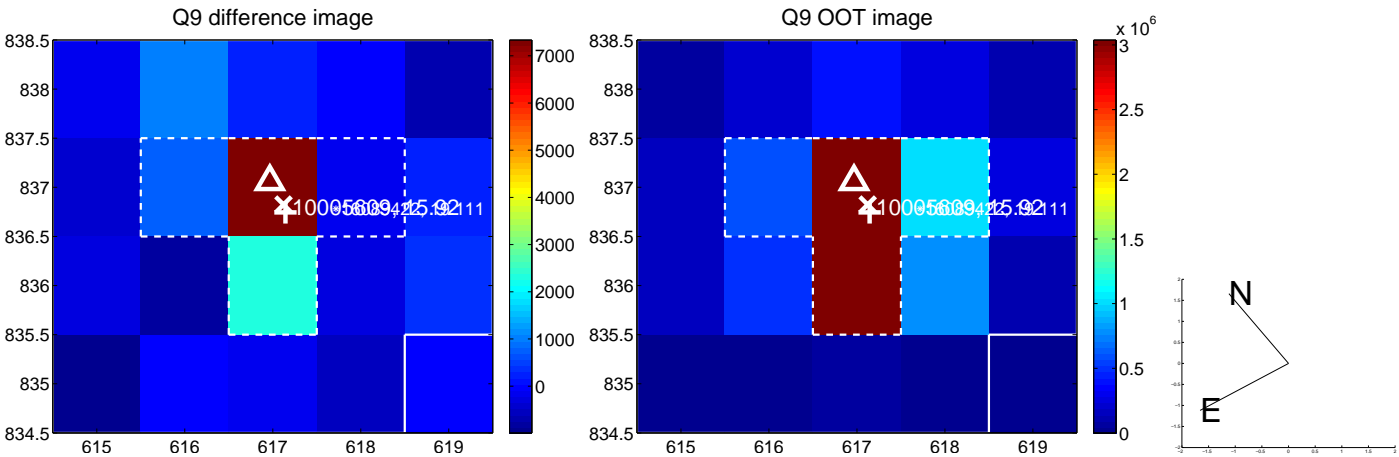


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

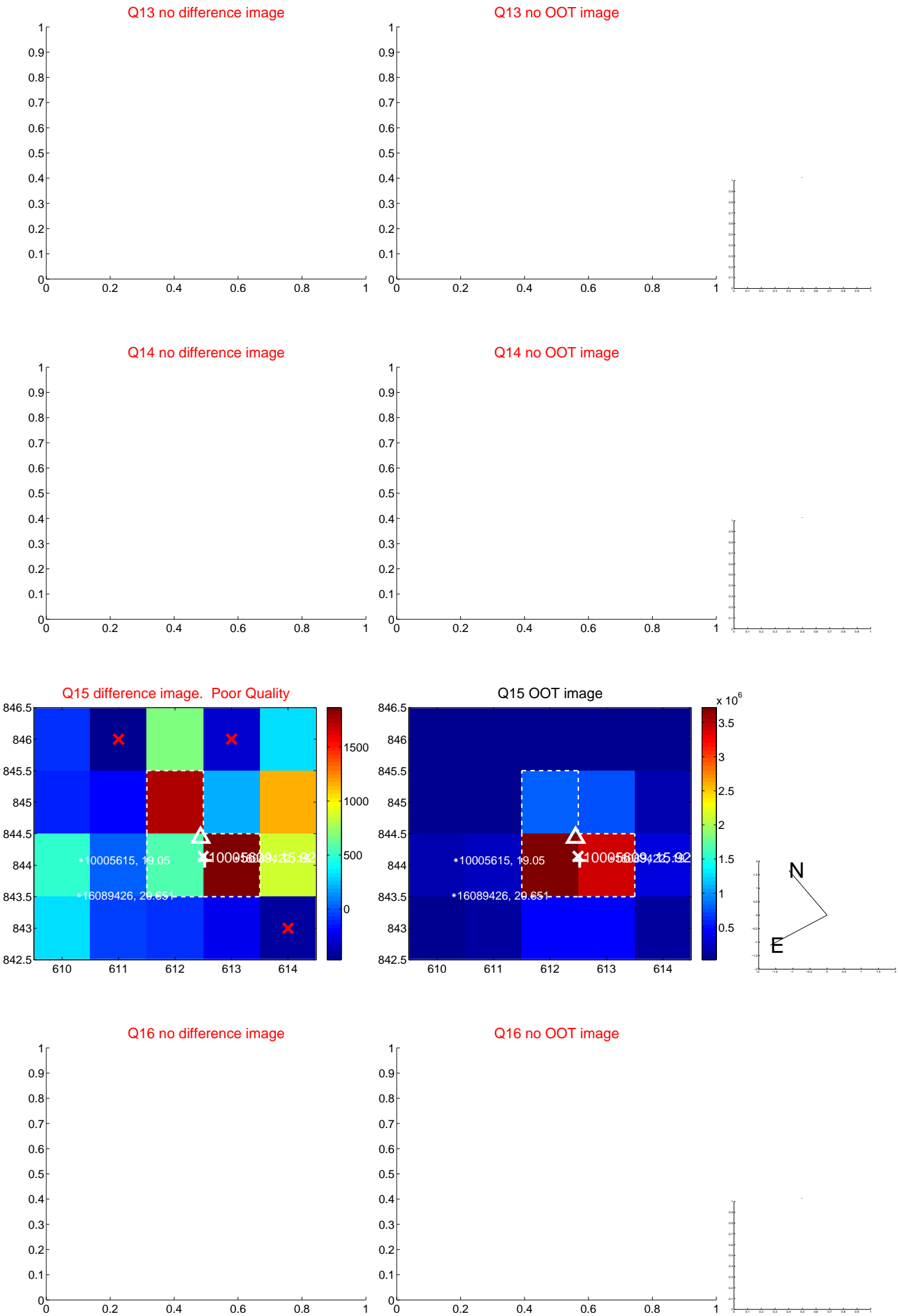




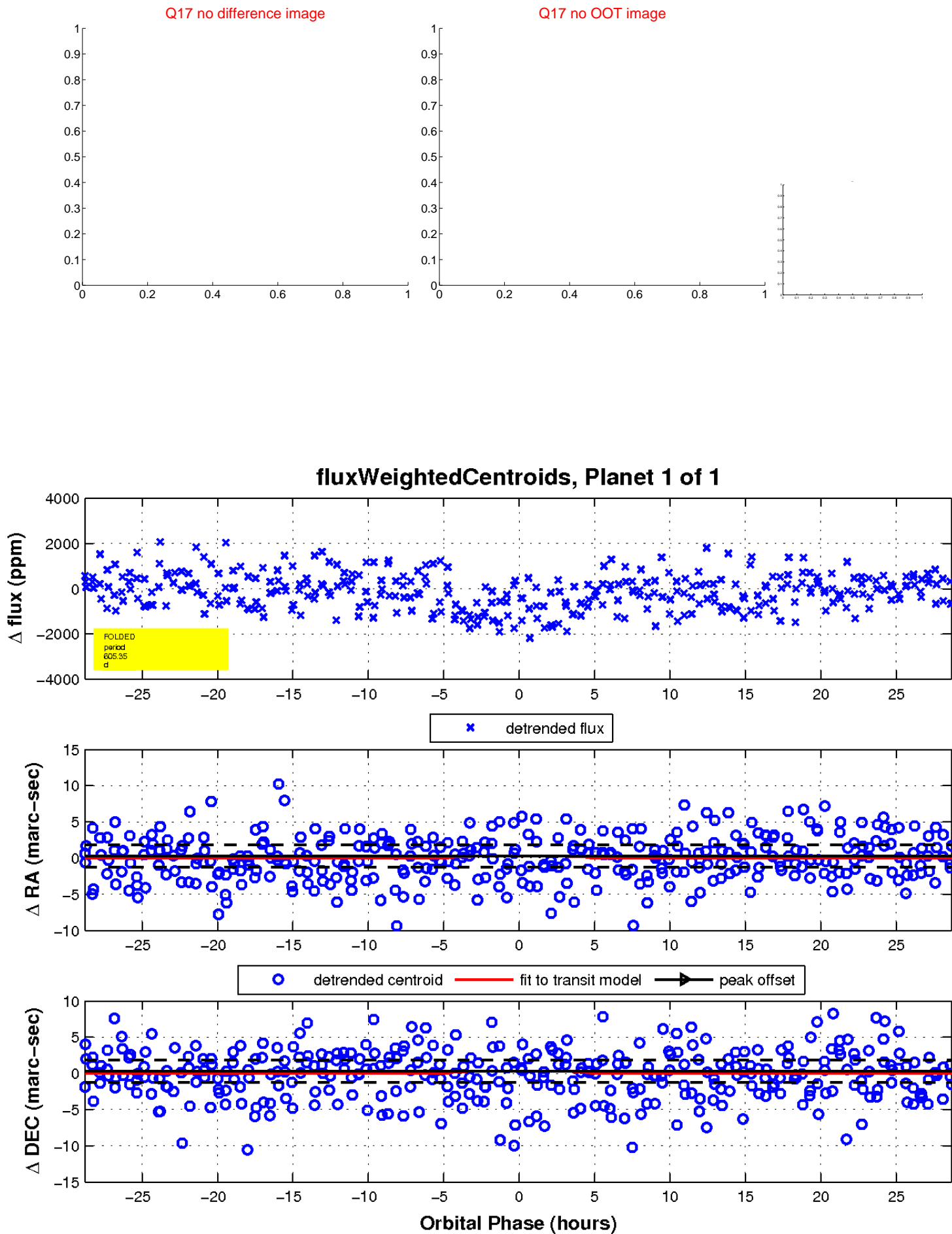
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.



# UKIRT Image

Declination

