

# KIC 008677016

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008677016-01	OBS	No	618.726291	150.989203	91.3	7.630	7.4	7.4	1.32	6105	1.42	1.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008677016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—INCONSISTENT_TRANS—CENT_SATURATED

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

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

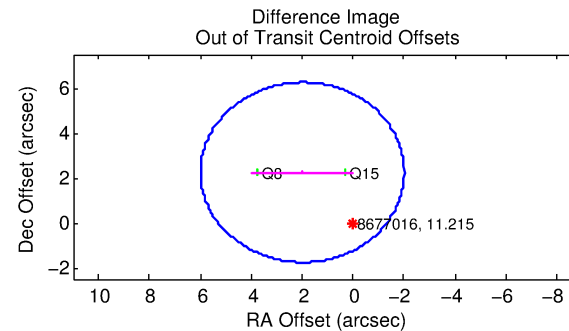
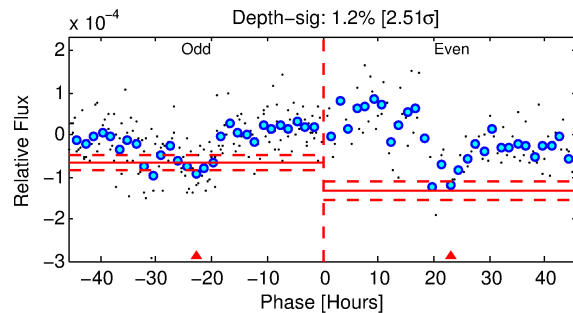
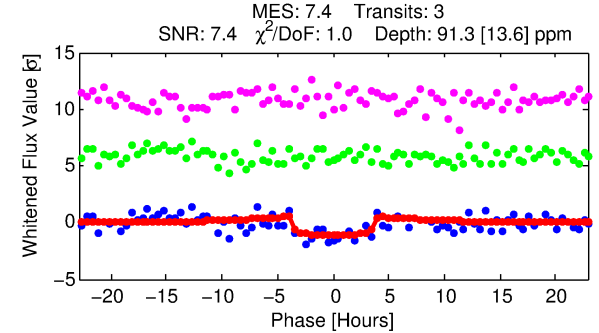
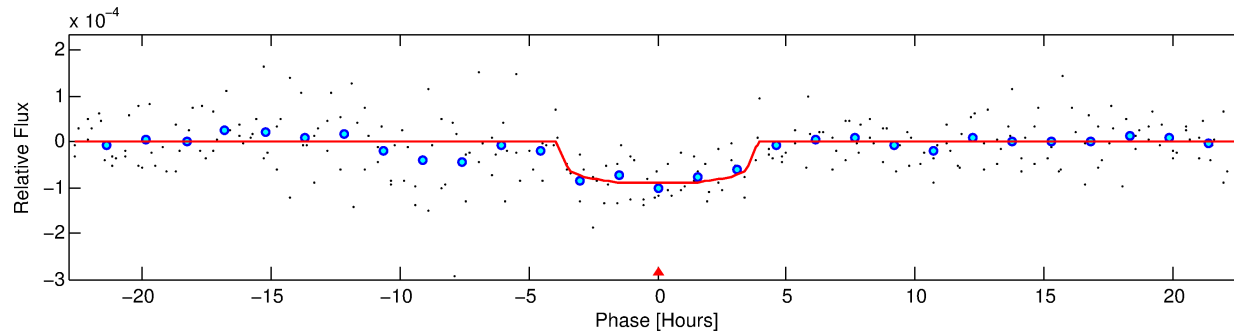
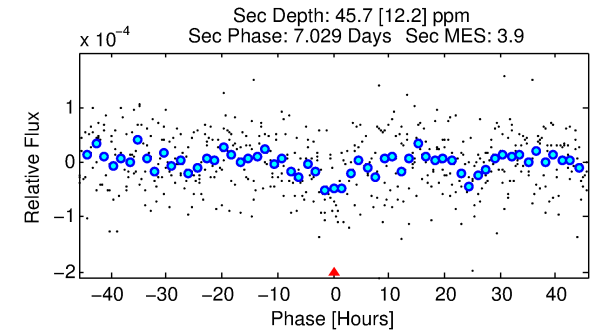
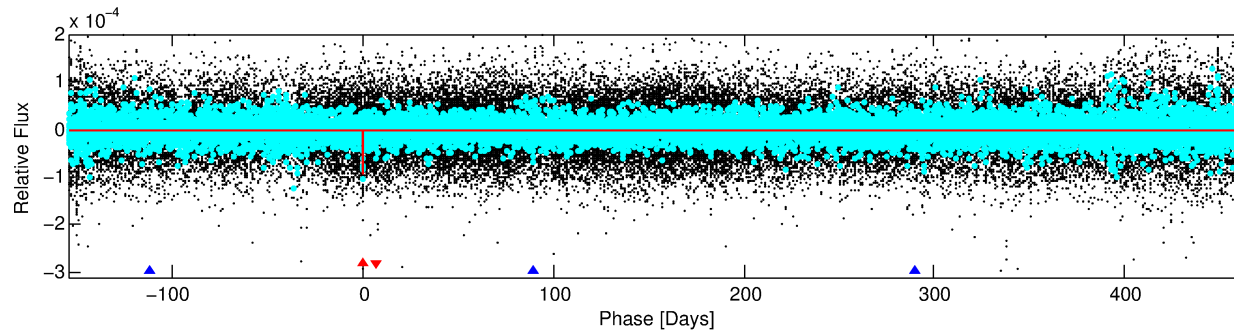
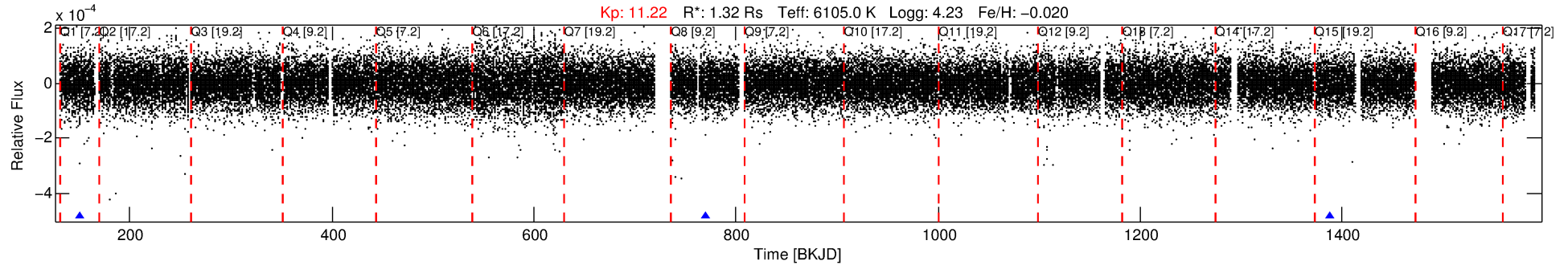
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008677016-01

No Significant Match Found

# DV One-Page Summary

KIC: 8677016 Candidate: 1 of 2 Period: 618.726 d



## DV Fit Results:

Period = 618.72629 [0.01152] d  
Epoch = 150.9892 [0.0160] BKJD  
Rp/R\* = 0.0099 [0.0052]  
a/R\* = 349.90 [920.80]  
b = 0.84 [0.95]  
Seff = 1.01 [0.09]  
Teq = 256 [5] K  
Rp = 1.42 [0.76] Re  
a = 1.4624 [0.0655] AU  
Ag = 26571.92 [29106.03] [0.91 sigma]  
Teffp = 5051 [1383] K [3.47 sigma]

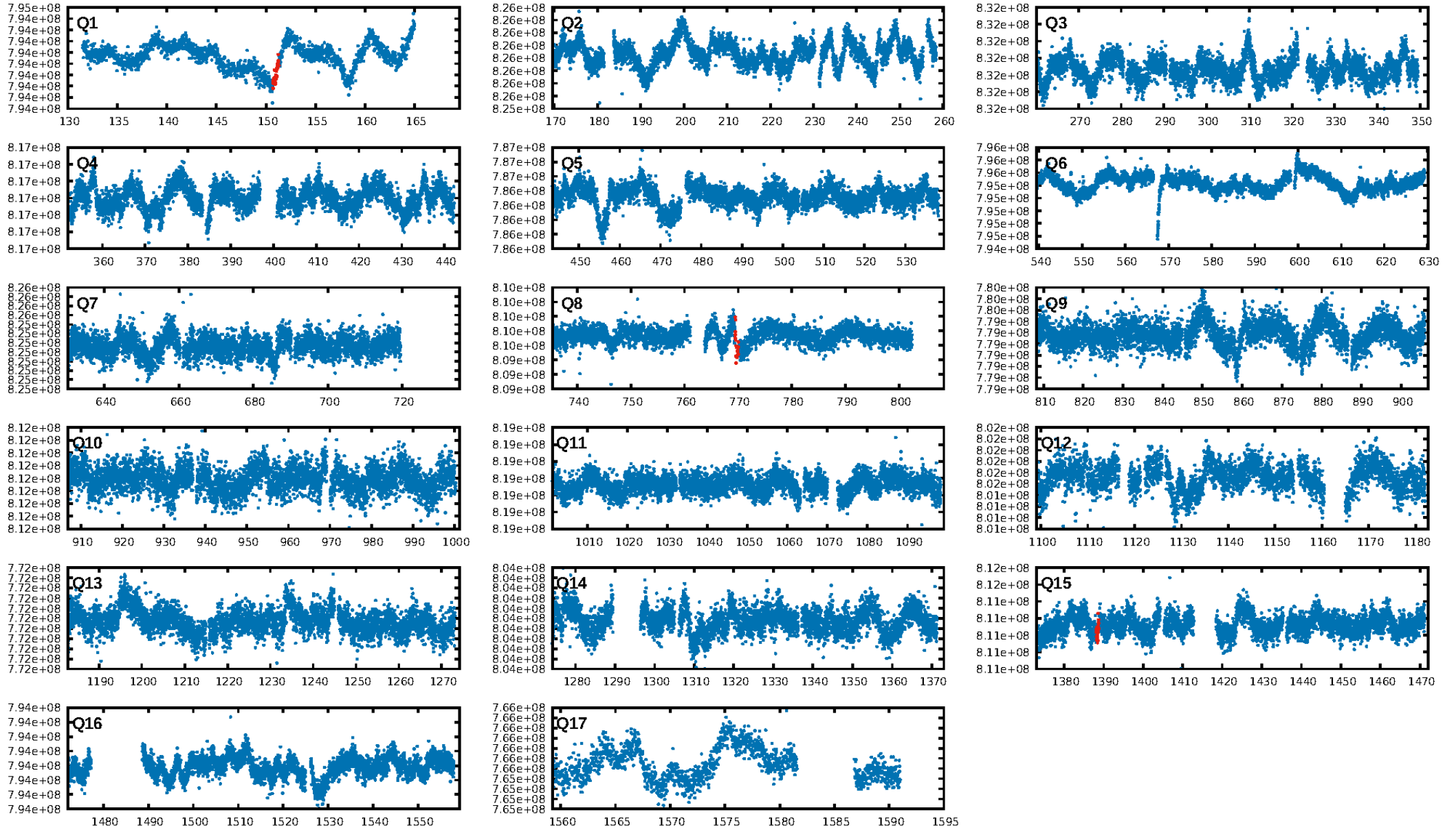
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [270.18 sigma]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 24.2%  
ModelChiSquareGof-sig: 98.9%  
Bootstrap-pfa: 2.95e-14  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 230.2  
Centroid-sig: 39.2%  
Centroid-so: 1.379 arcsec [1.10 sigma]  
OotOffset-rm: 2.999 arcsec [2.25 sigma]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-rm: 3.264 arcsec [3.04 sigma]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

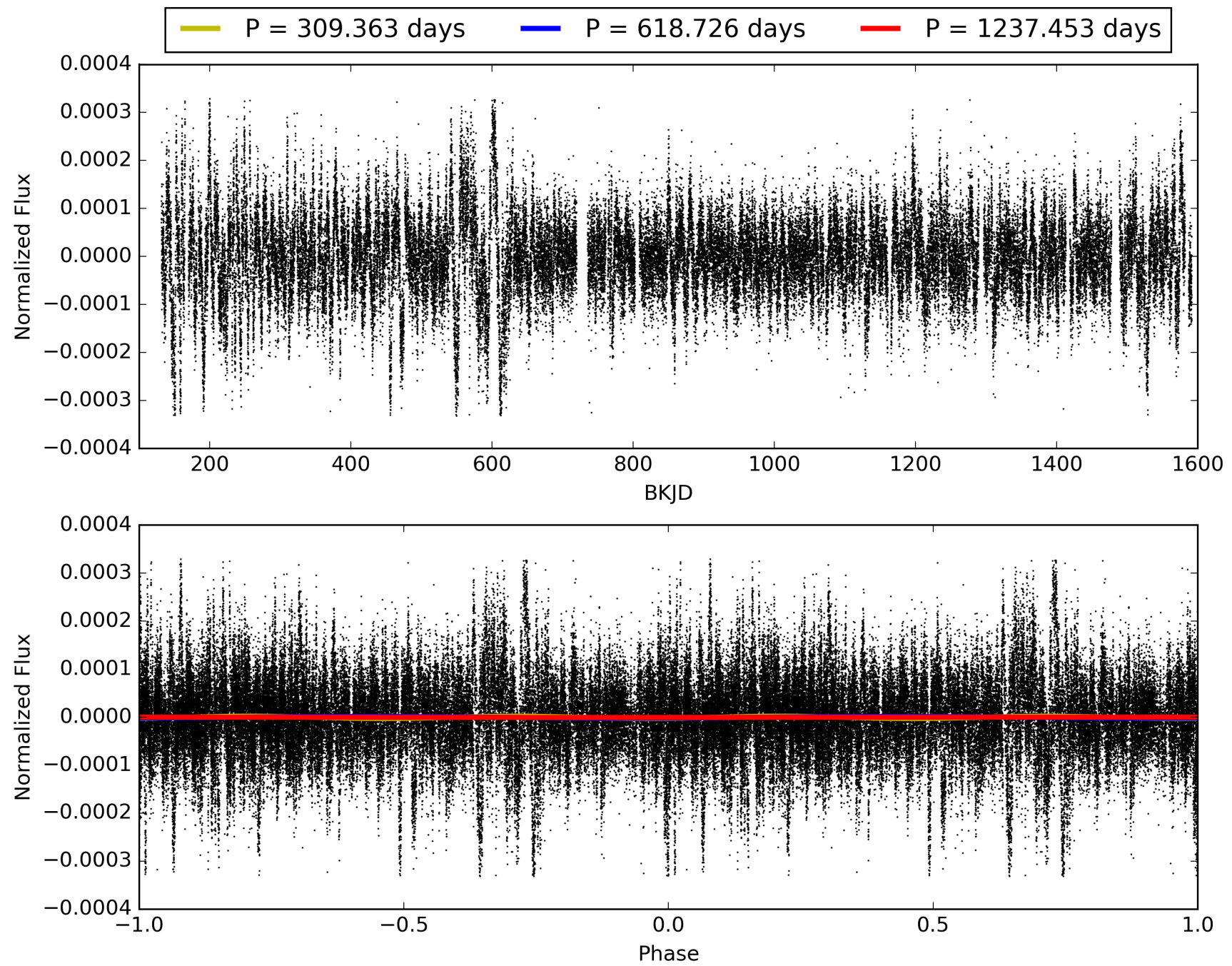
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:33:24 Z

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

# TCE 008677016-01, PDC Light Curves

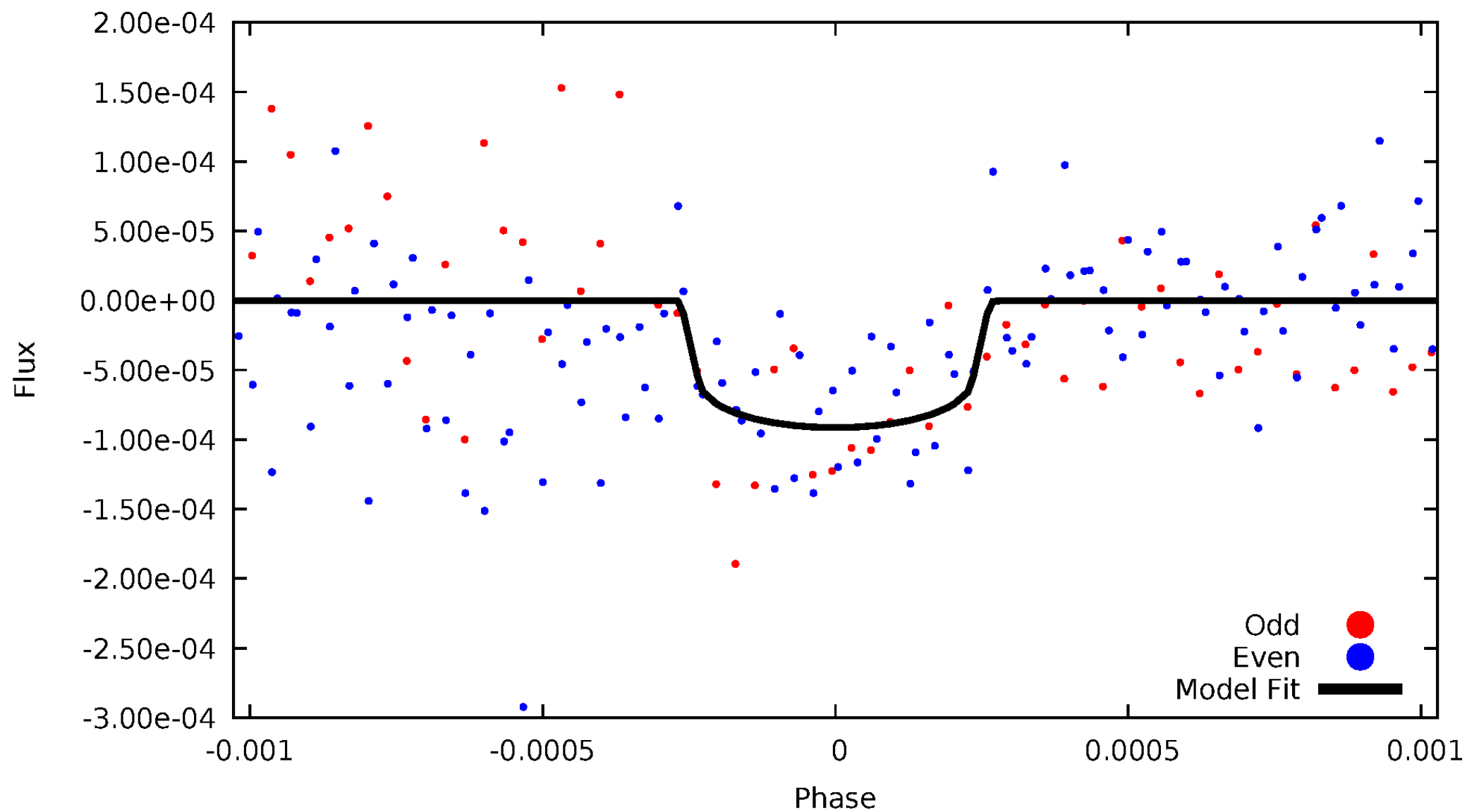


# TCE 008677016-01



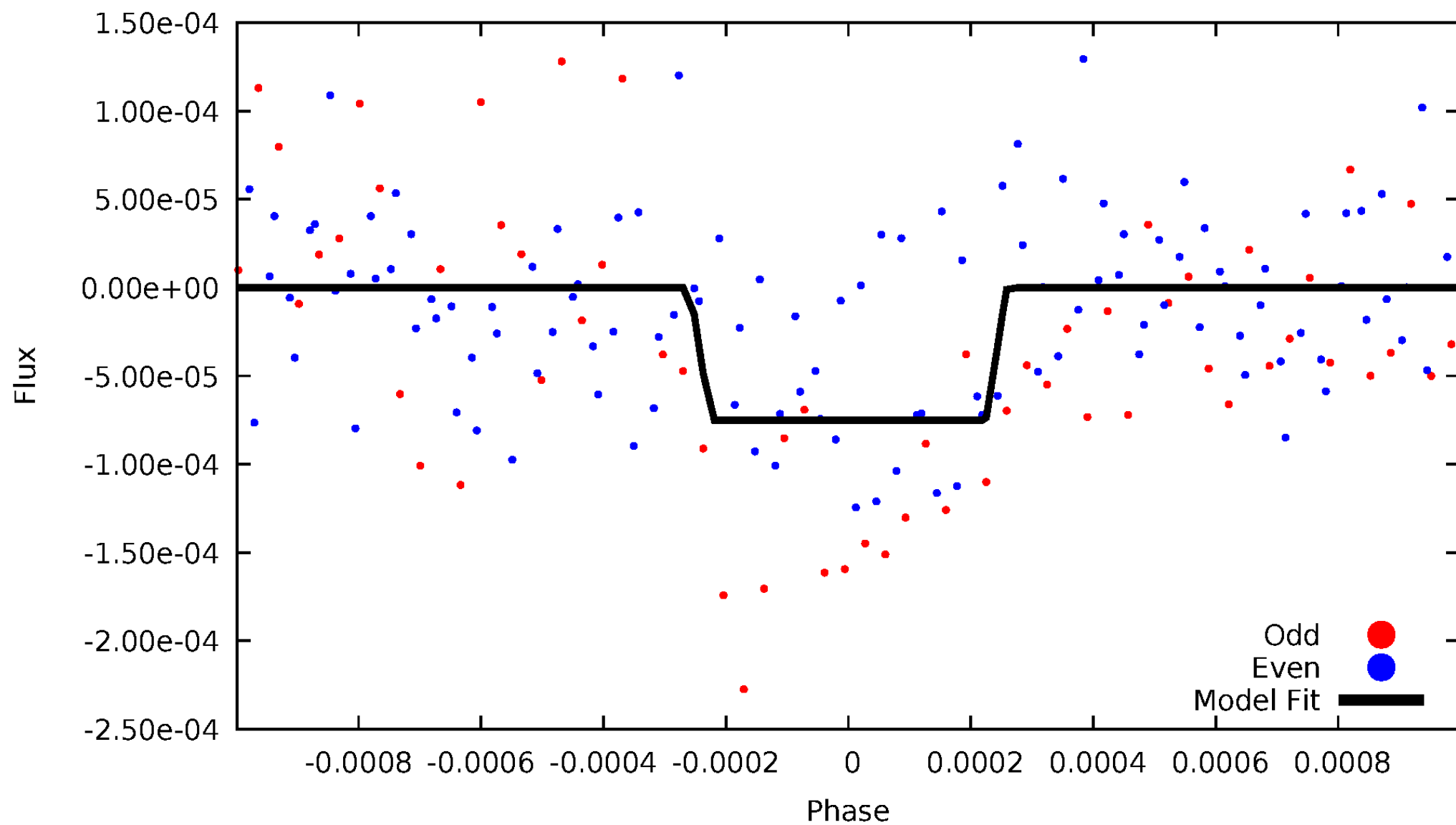
# DV Odd/Even

TCE 008677016-01



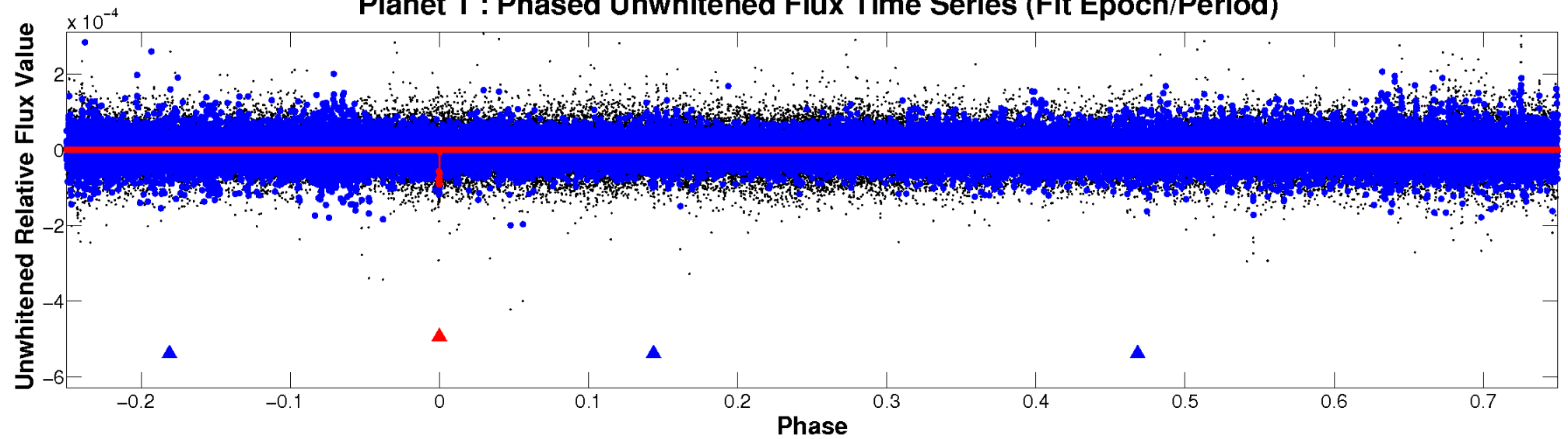
# ALT Odd/Even

TCE 008677016-01

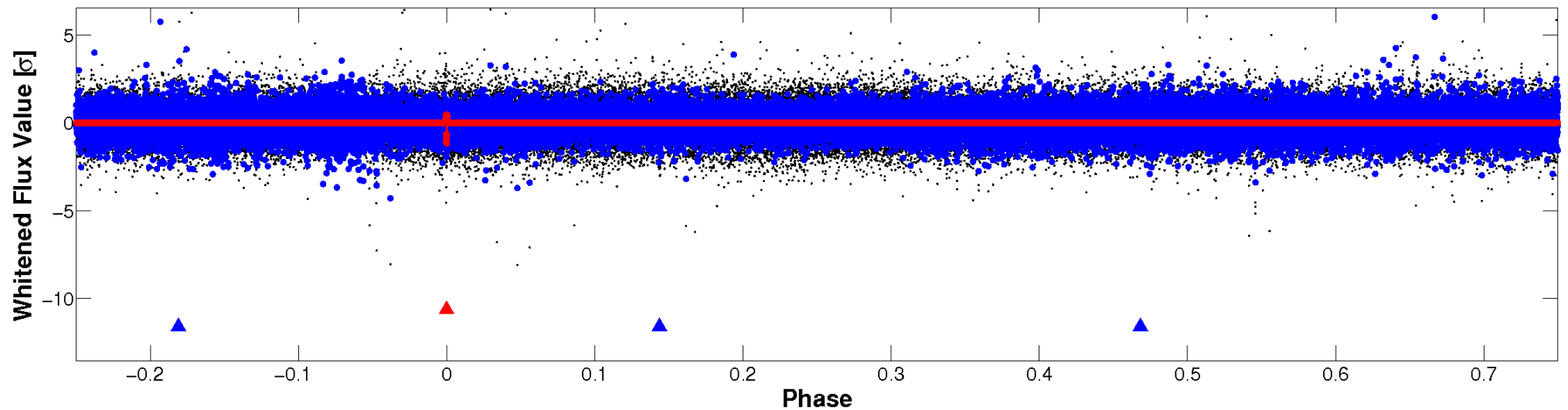


# Non-Whitened Vs. Whitened Light Curve

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

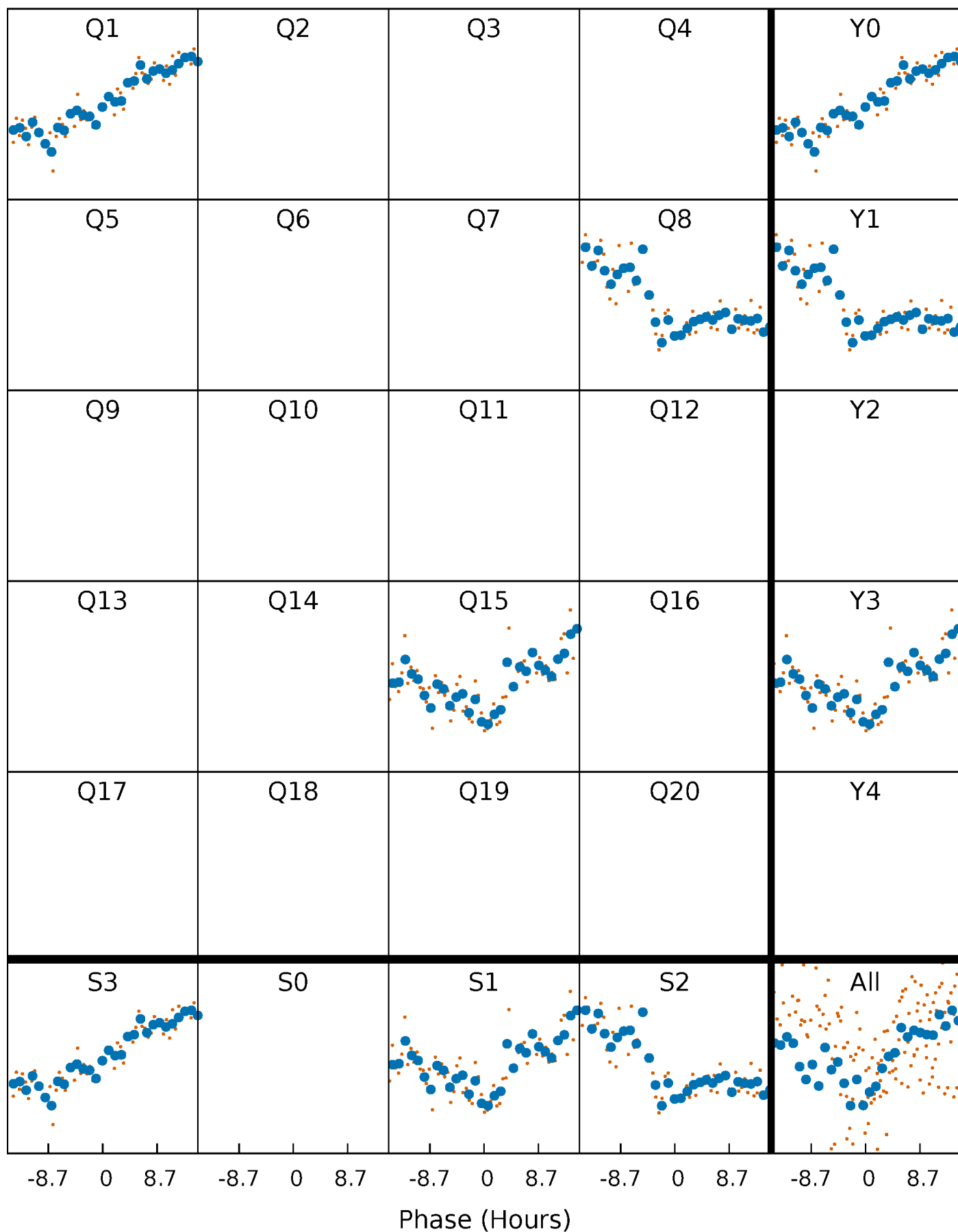


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

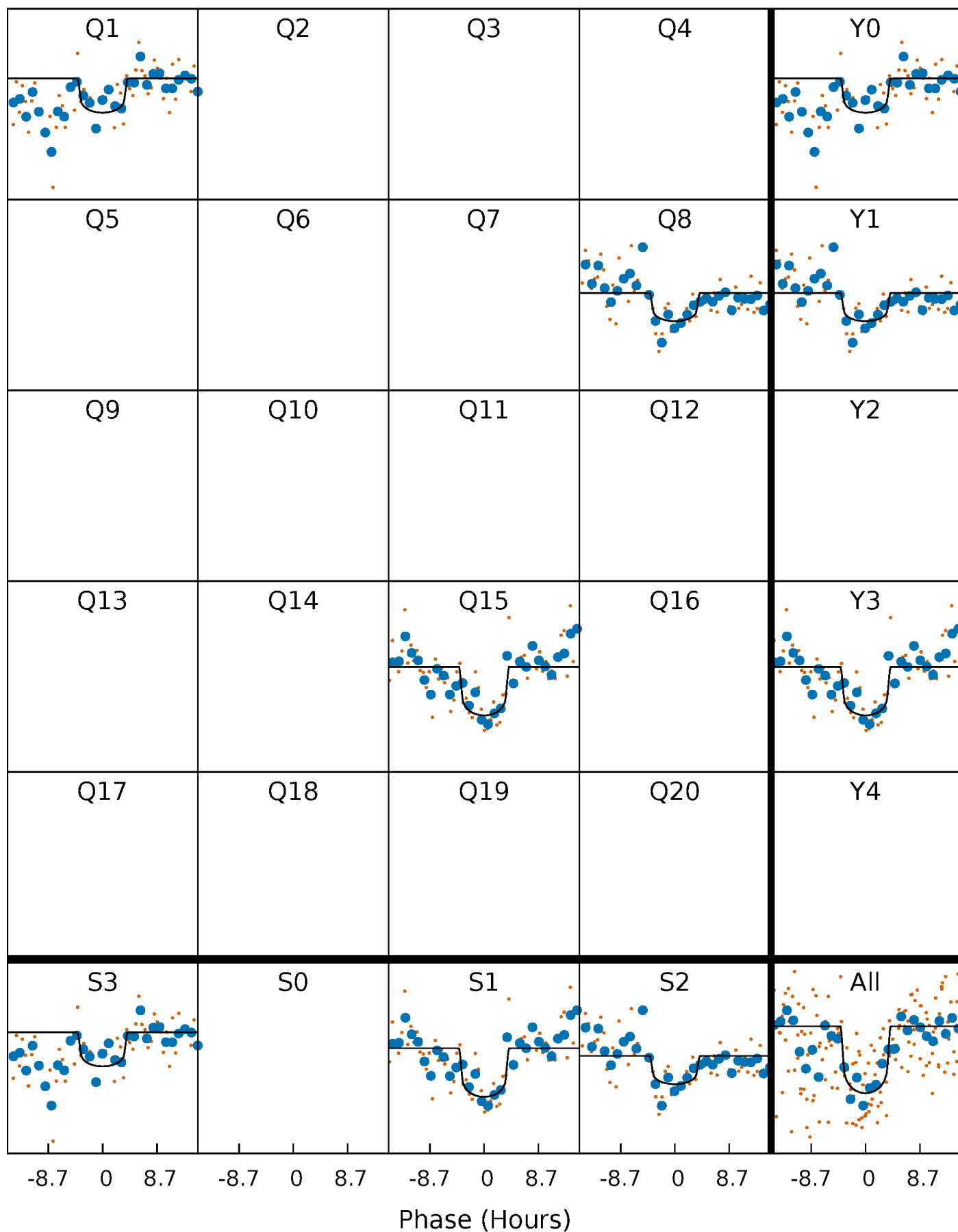
TCE 008677016-01 P=618.726291 Days  $T_0=150.989203$  (BKJD)





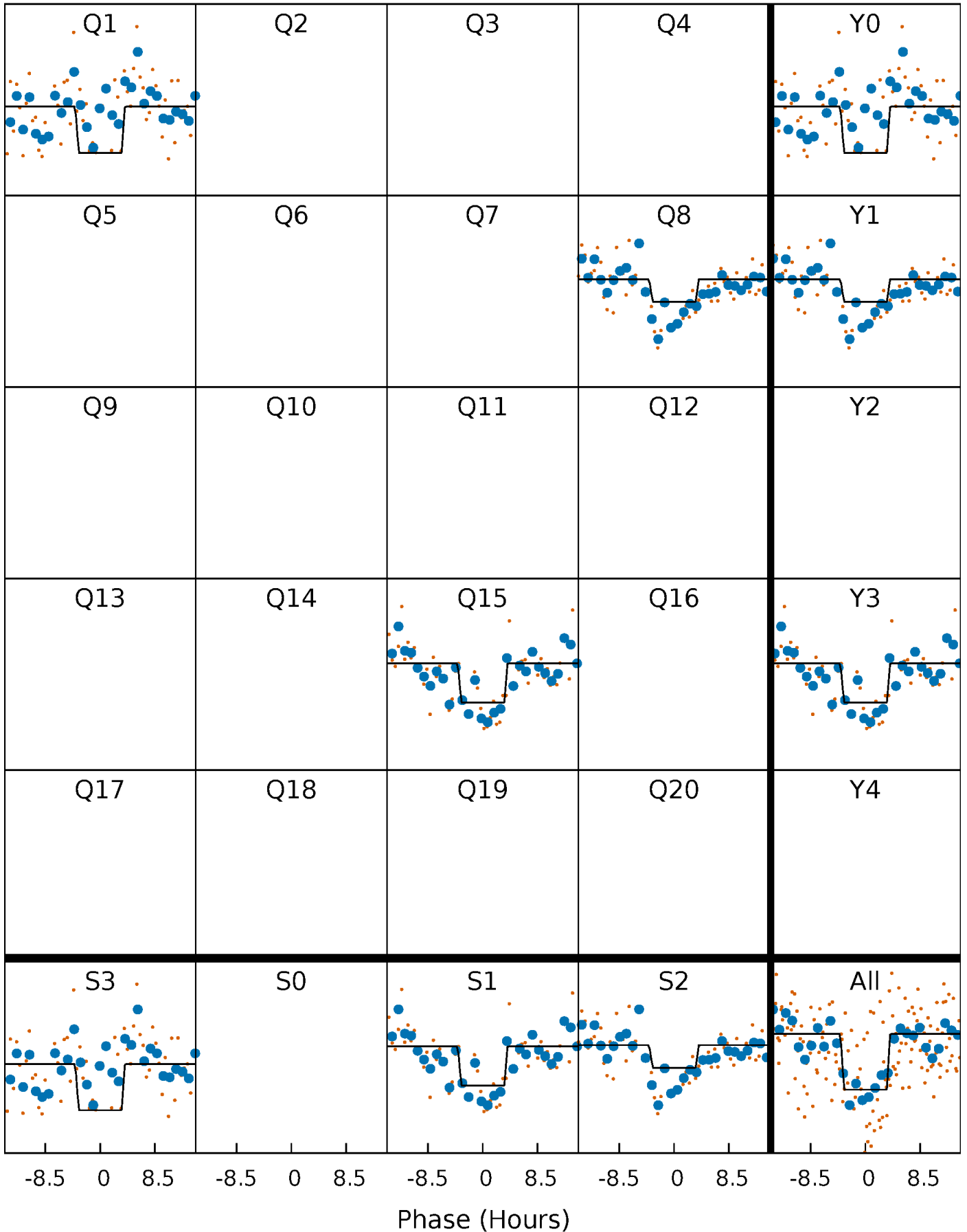
# DV Quarter-Phased Transit Curves

TCE 008677016-01 P=618.726291 Days  $T_0=150.989203$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

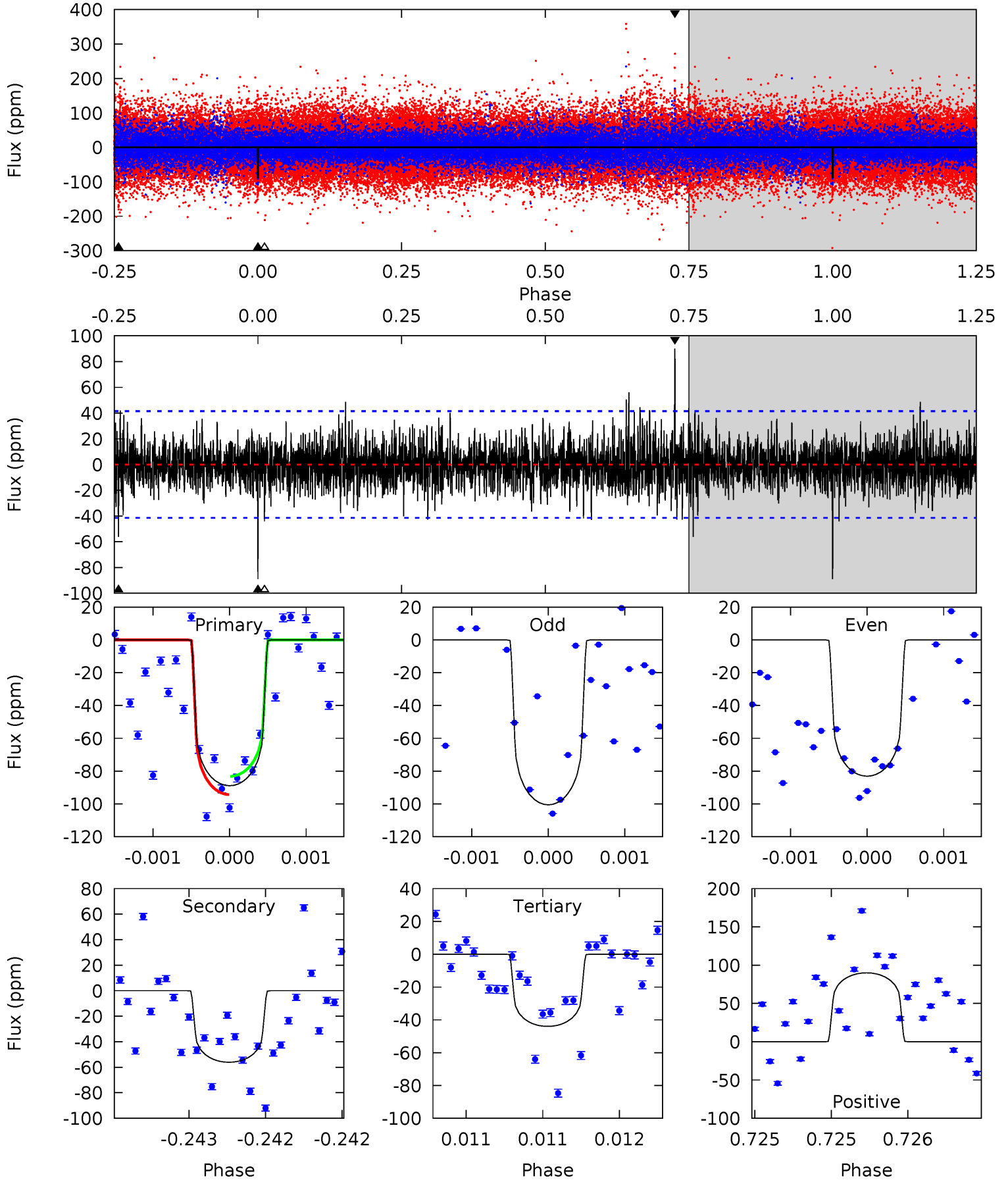
TCE 008677016-01 P=618.721386 Days  $T_0=150.994214$  (BKJD)



# DV Model-Shift Uniqueness Test

008677016-01, P = 618.726291 Days, E = 150.989203 Days

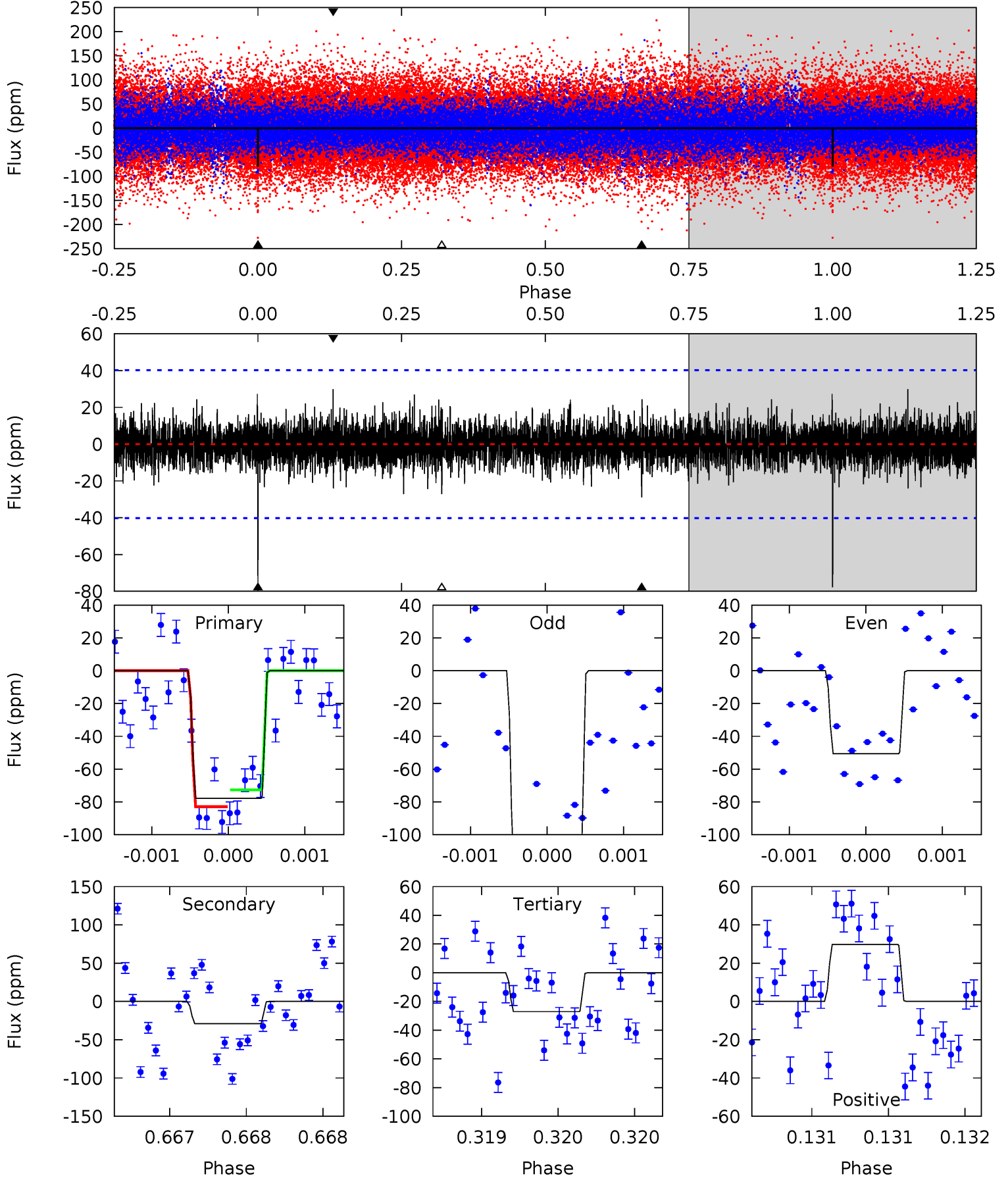
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	7.52	5.90	12.1	5.56	3.46	1.68	6.03	-0.15	1.62	-4.55	1.10	1.04	0.50	0.74



# Alt Model-Shift Uniqueness Test

008677016-01, P = 618.721386 Days, E = 150.994214 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
10.8	4.00	3.75	4.13	5.57	3.48	0.96	7.02	6.64	0.25	-0.13	5.24	0.90	0.28	0.71



### Stellar Parameters For KIC 008677016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6105^{+92}_{-83}$	$4.234^{+0.030}_{-0.027}$	$-0.020^{+0.150}_{-0.150}$	$1.320^{+0.076}_{-0.062}$	$1.087^{+0.106}_{-0.067}$	$0.666^{+0.073}_{-0.065}$
	+2%/-1%	+1%/-1%	+750%/-750%	+6%/-5%	+10%/-6%	+11%/-10%
Source	SPE72	AST10	SPE72	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008677016-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-56 \pm 7$	$1.54^{+0.75}_{-0.73}$	$358^{+7}_{-7}$	$5190^{+1922}_{-815}$	$28721^{+70993}_{-16477}$
Alt.	$-29 \pm 7$	$1.37^{+0.70}_{-0.71}$	$358^{+7}_{-6}$	$4730^{+1830}_{-708}$	$18162^{+55211}_{-10340}$

$T_{max}$  = 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

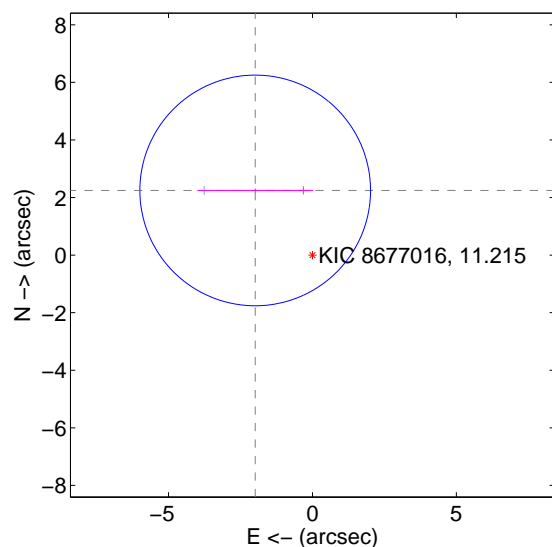
Supplemental centroid analysis for 008677016-01. **Kepler magnitude: 11.21.** Transit SNR 7.43

**There are 1 quarters with good PRF difference image offsets**

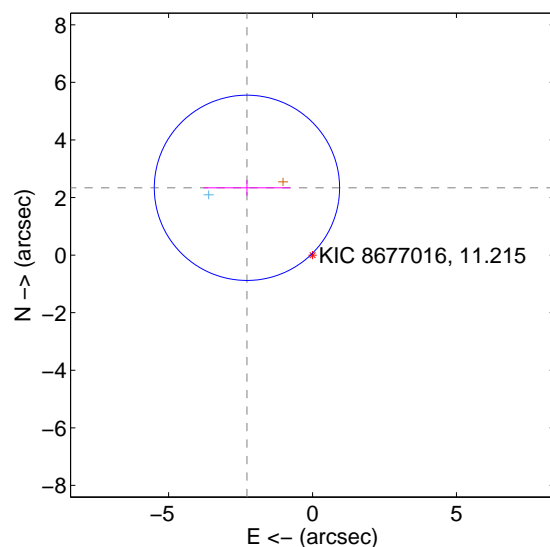
The direct PRF centroid is offset from the target star catalog position by about 0.77 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.999 \pm 1.335$	2.25	$1.988 \pm 2.013$	$2.246 \pm 0.067$
PRF-fit source offset from KIC position	<b><math>3.264 \pm 1.073</math></b>	<b>3.04</b>	$2.278 \pm 1.511$	$2.337 \pm 0.270$
photometric centroid source offset	$1.38 \pm 1.25$	1.10	$1.22 \pm 1.24$	$0.64 \pm 1.30$

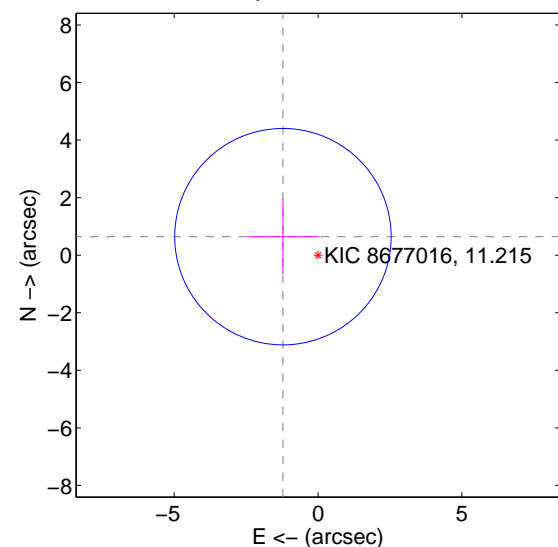
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

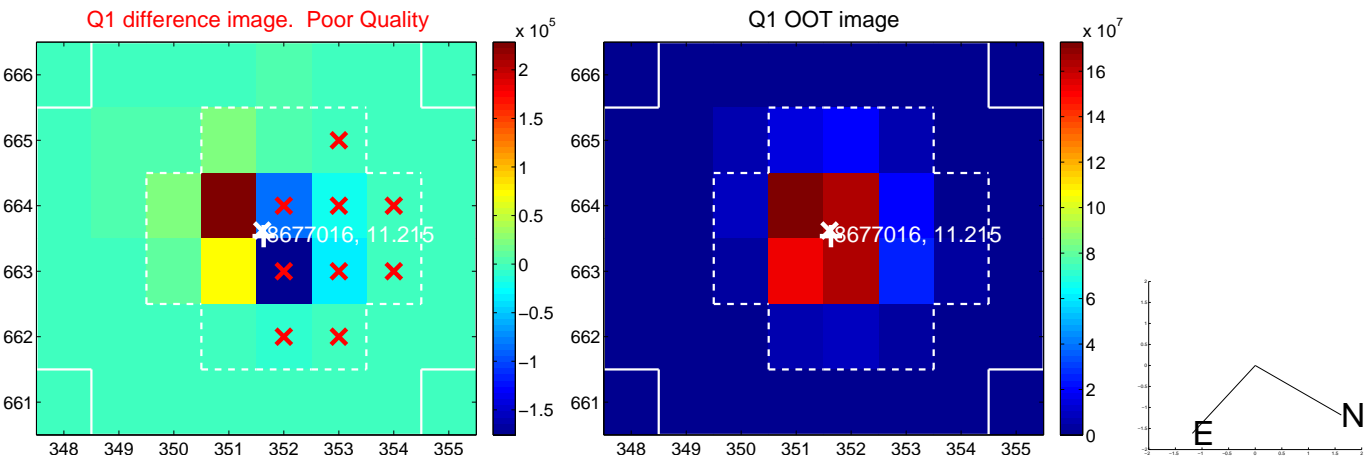


offset from photometric centroids

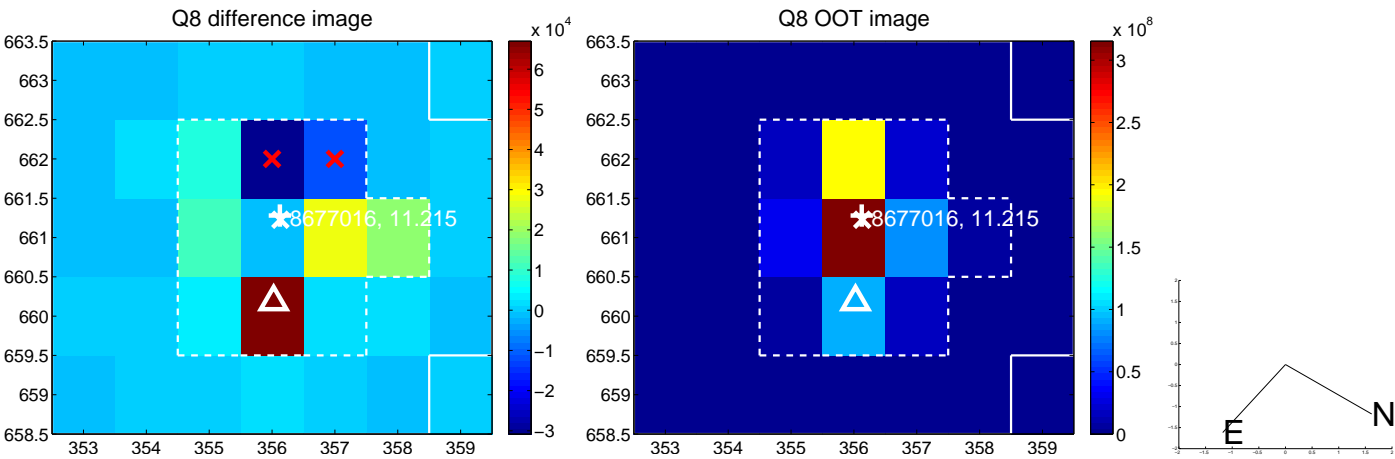
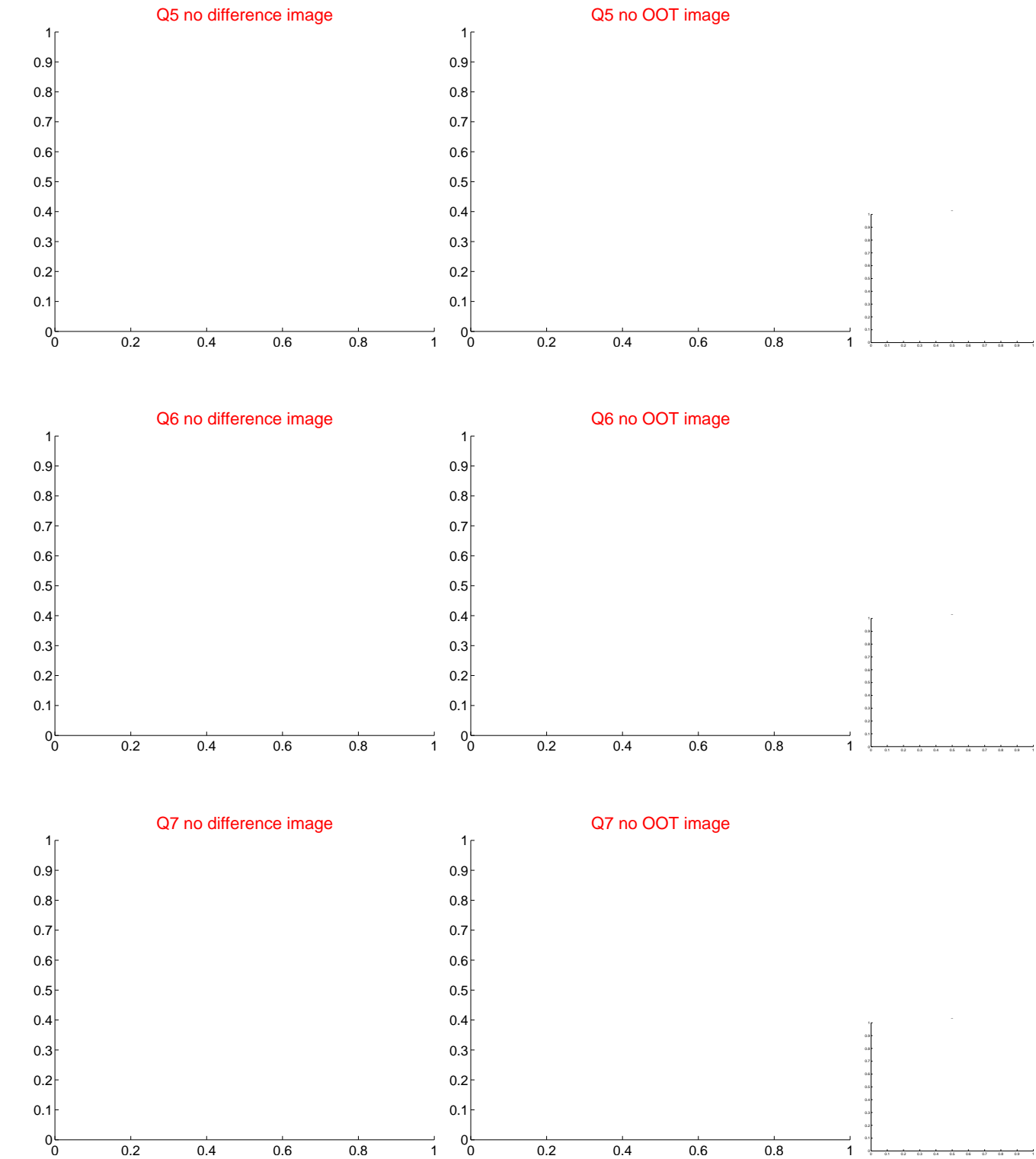


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

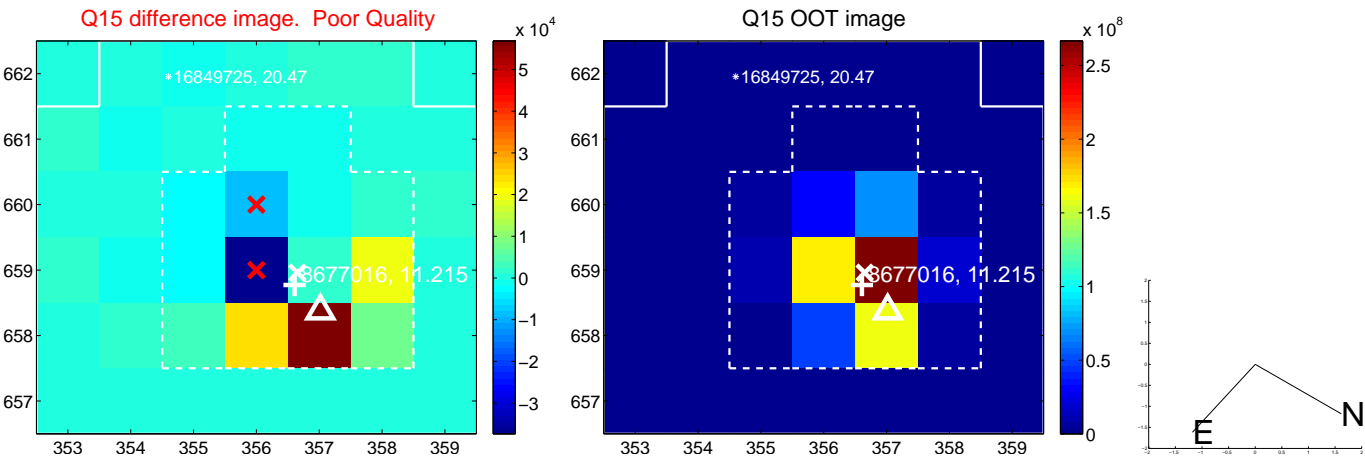




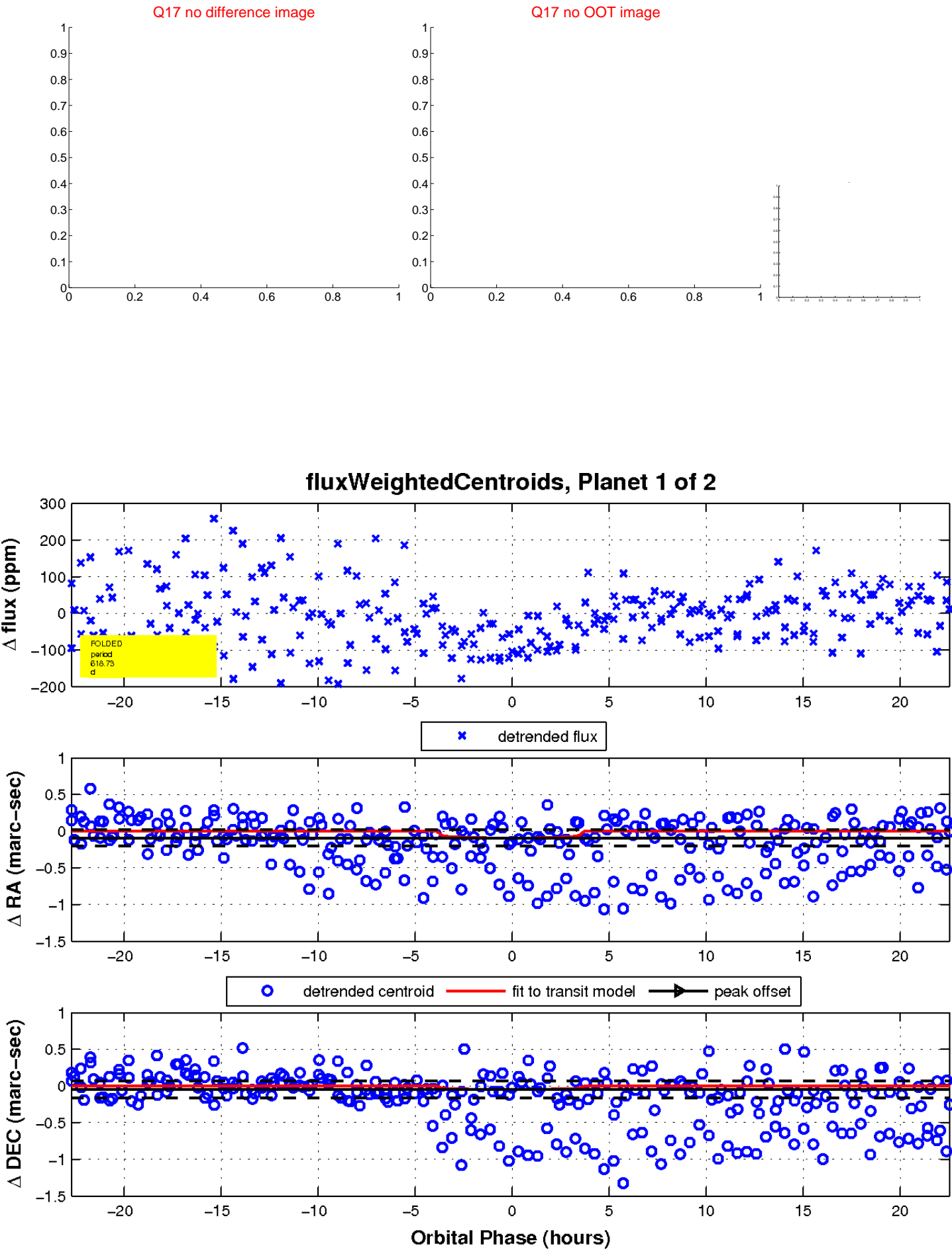
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

