

# KIC 008621471

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008621471-01	OBS	No	375.804258	140.432463	1076.2	52.781	9.1	13.2	1.01	6063	3.78	1.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008621471-01	OBS	FP	0.00	1	0	0	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—EPHEM_MATCH

**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.

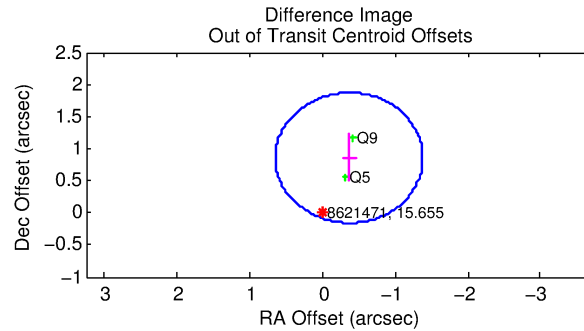
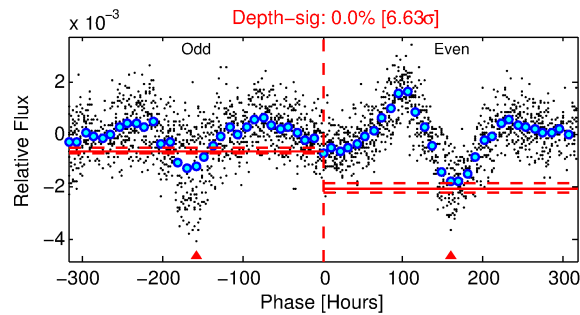
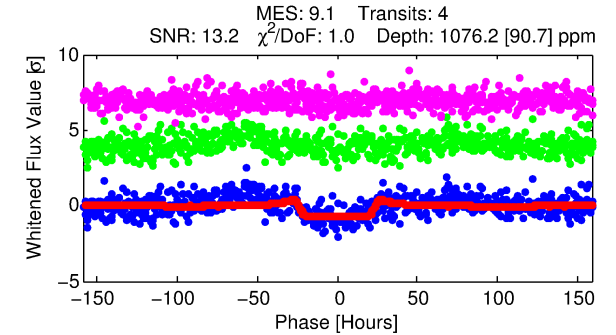
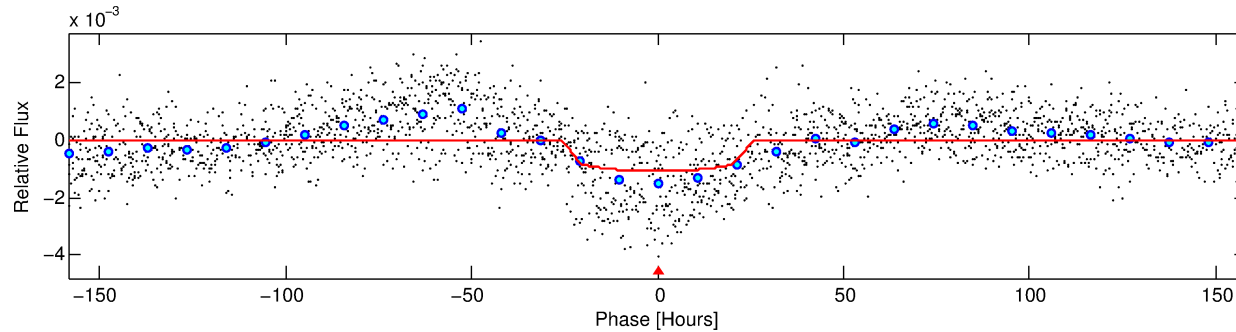
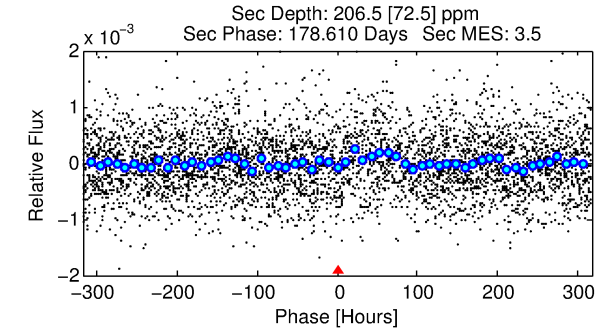
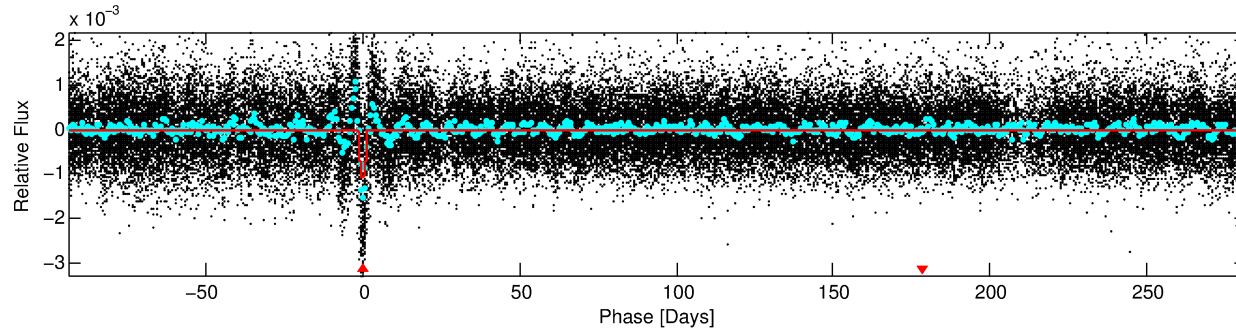
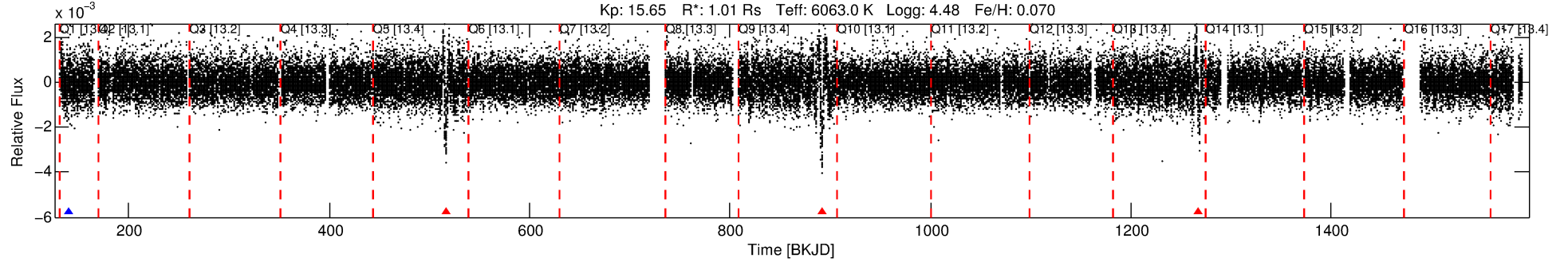
## Ephemeris Match Information For 008621471-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008621471-01	8621471	008751461-01	8751461	1:1	1393.4	350	-2	15.13	15.66	1.15	Col-Anomaly	1	3.70	4.03

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 8621471 Candidate: 1 of 1 Period: 375.804 d



## DV Fit Results:

Period = 375.80426 [0.02680] d  
Epoch = 140.4325 [0.0423] BKJD  
Rp/R\* = 0.0342 [0.0024]  
a/R\* = 32.11 [7.74]  
b = 0.85 [0.08]  
Seff = 1.11 [0.40]  
Teq = 262 [23] K  
Rp = 3.78 [1.03] Re  
a = 1.0579 [0.2366] AU  
Ag = 8917.13 [4455.19] [2.00σ]  
Teffp = 3930 [397] K [9.24σ]

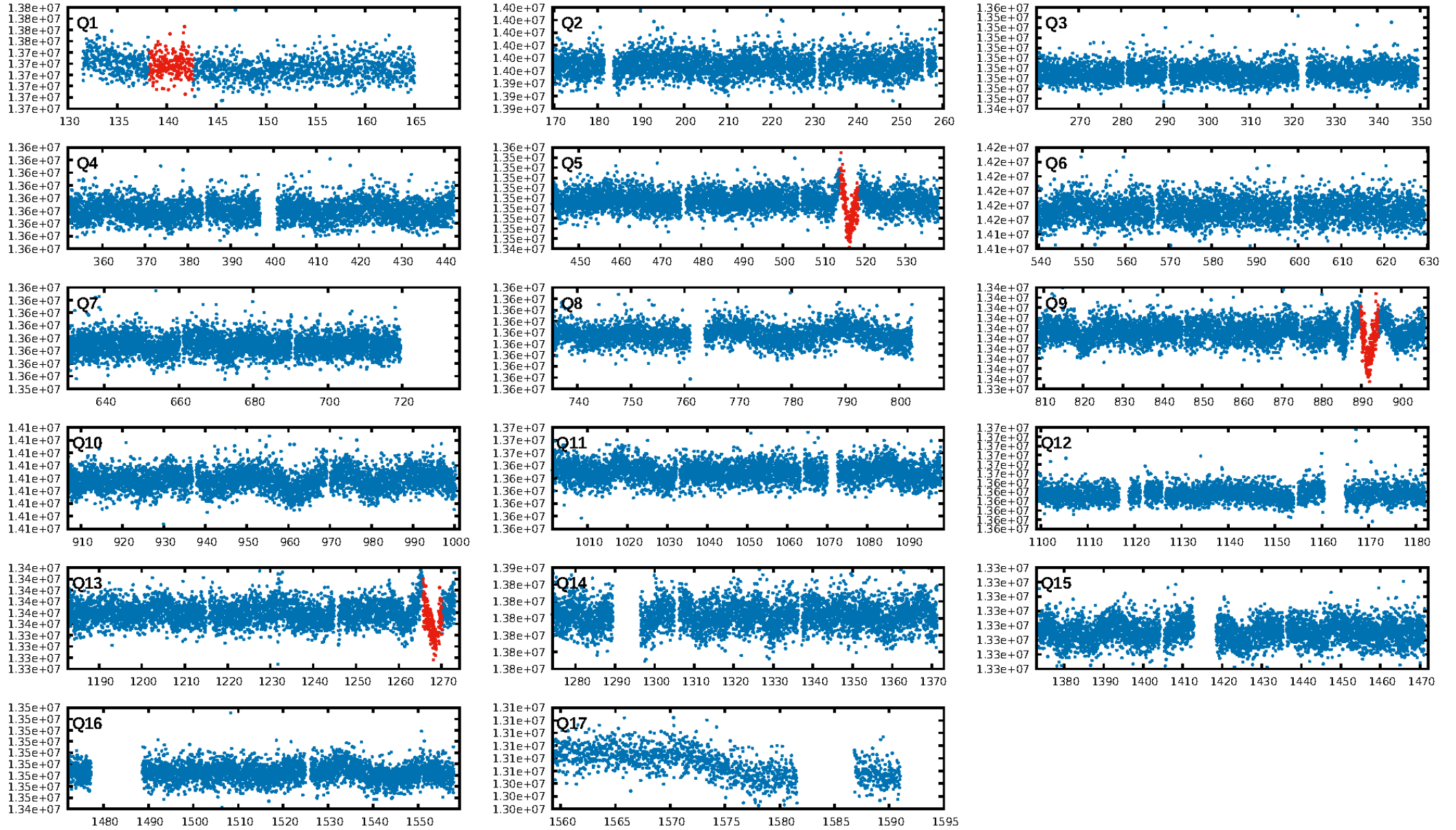
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.60e-19  
RollingBand-fgt: 0.00 [0/3]  
GhostDiagnostic-chr: 0.5375  
Centroid-sig: 84.6%  
Centroid-so: 0.188 arcsec [0.21σ]  
OotOffset-rm: 0.932 arcsec [2.75σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-rm: 0.991 arcsec [2.70σ]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

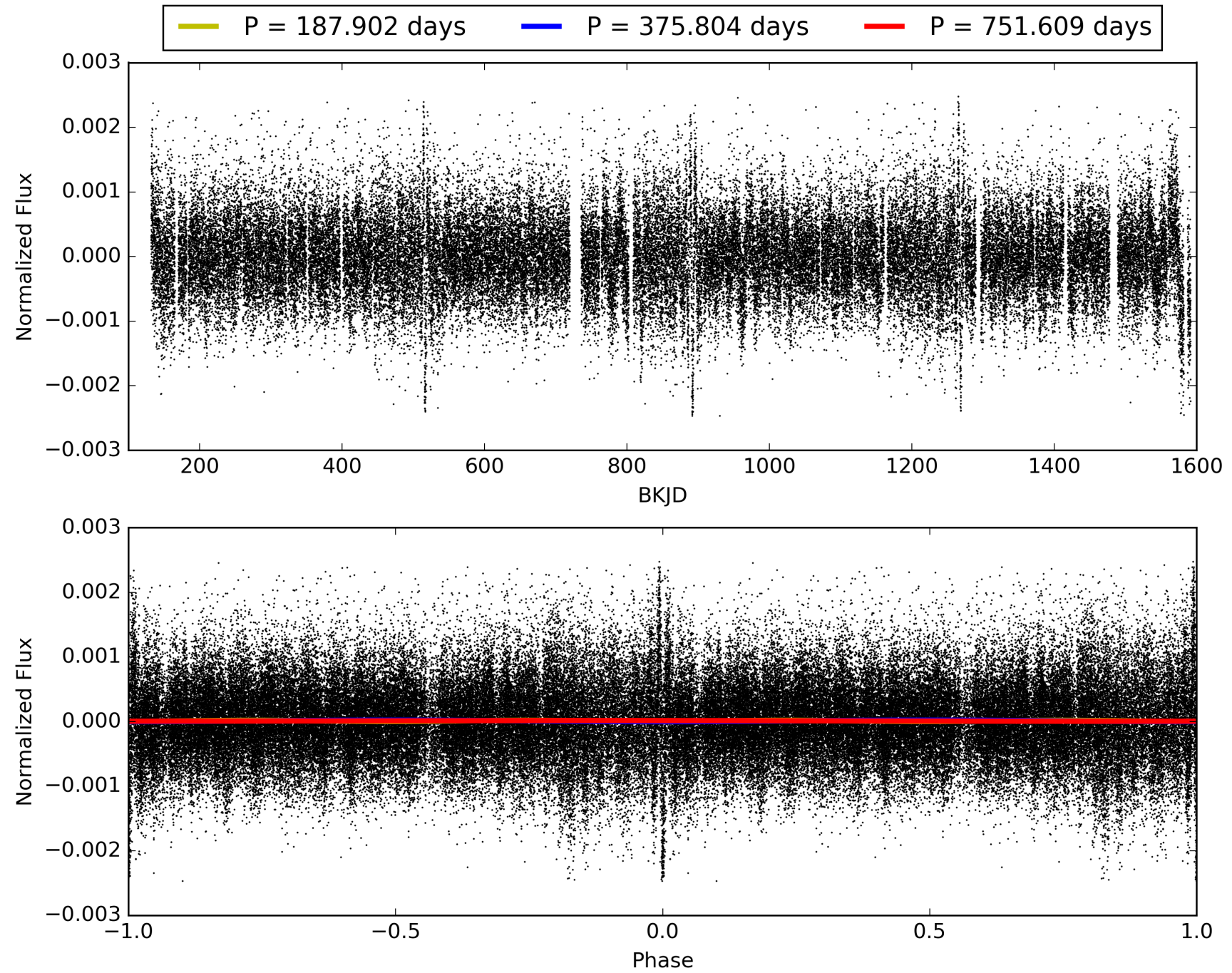
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:12:09 Z

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

# TCE 008621471-01, PDC Light Curves

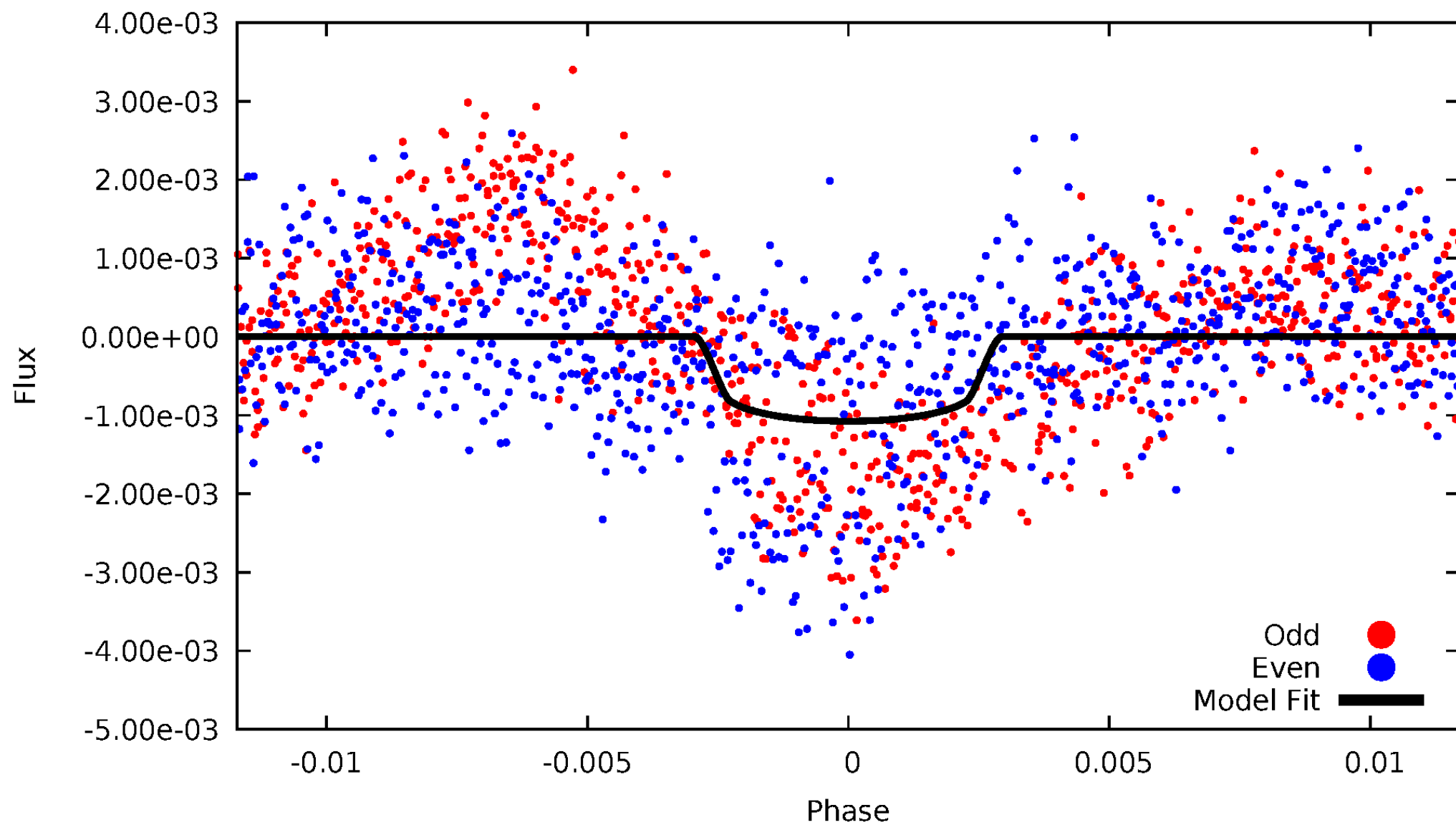


TCE 008621471-01



# DV Odd/Even

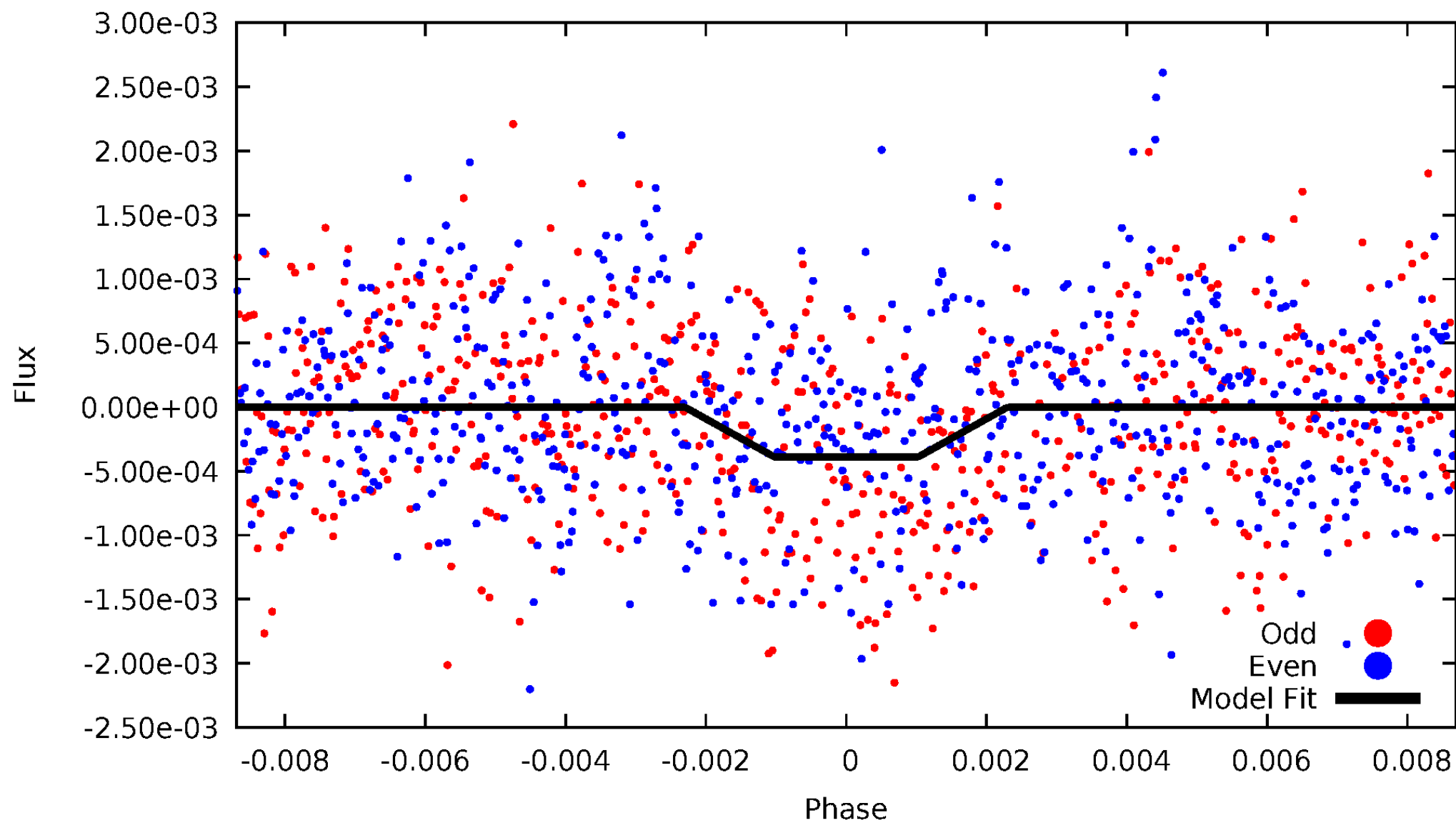
TCE 008621471-01





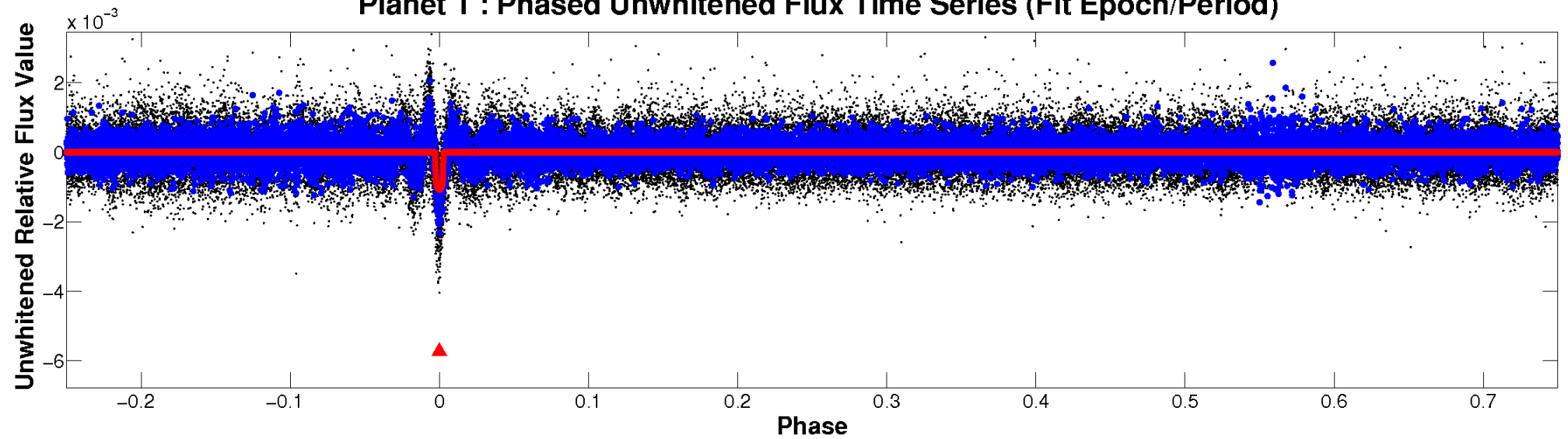
# ALT Odd/Even

TCE 008621471-01

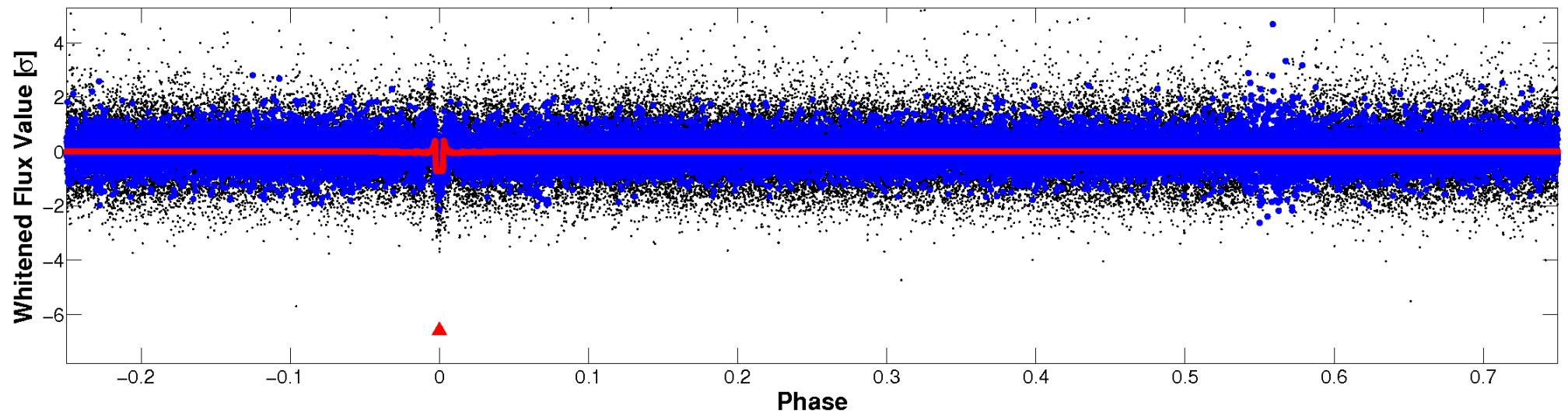


# Non-Whitened Vs. Whitened Light Curve

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

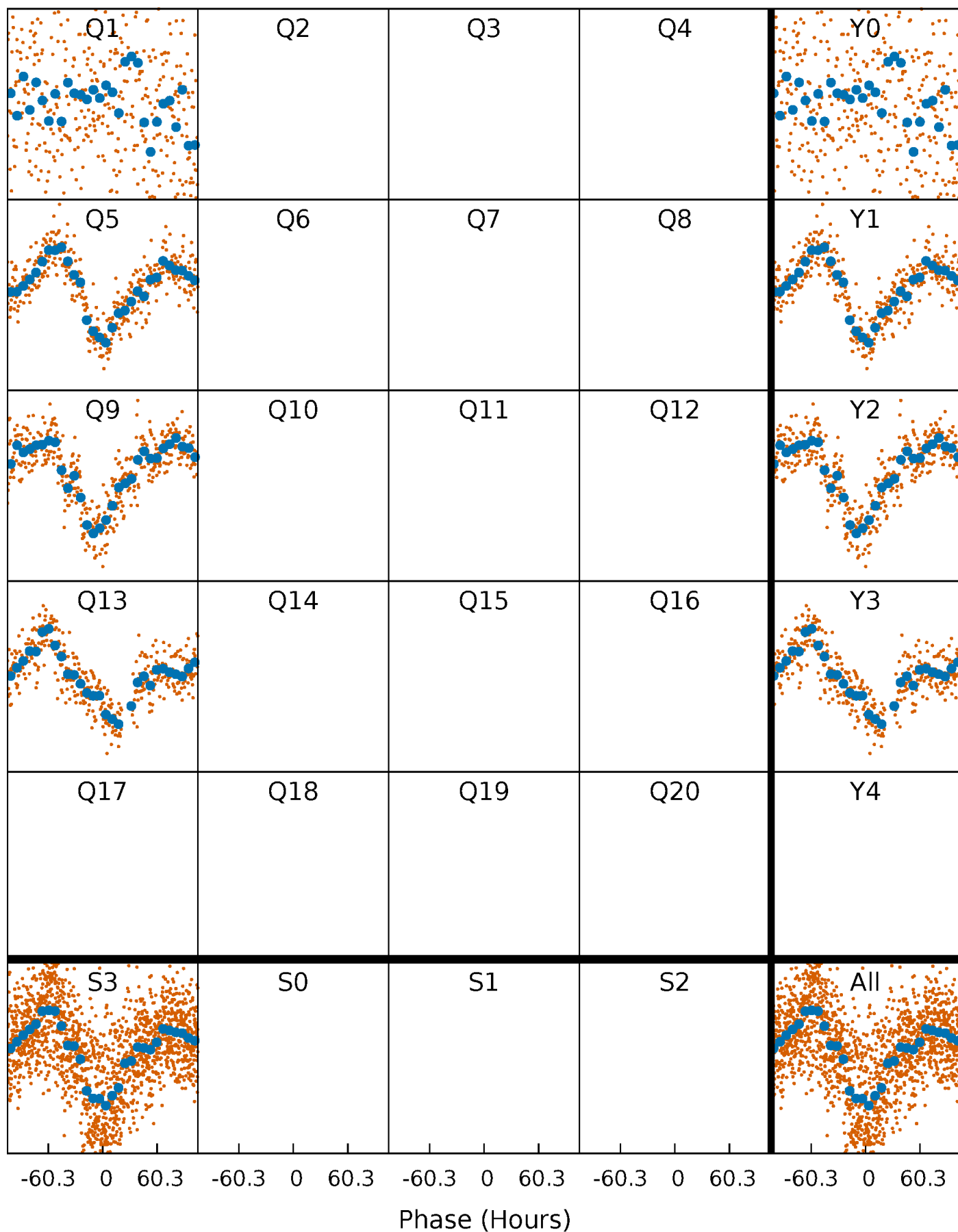


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

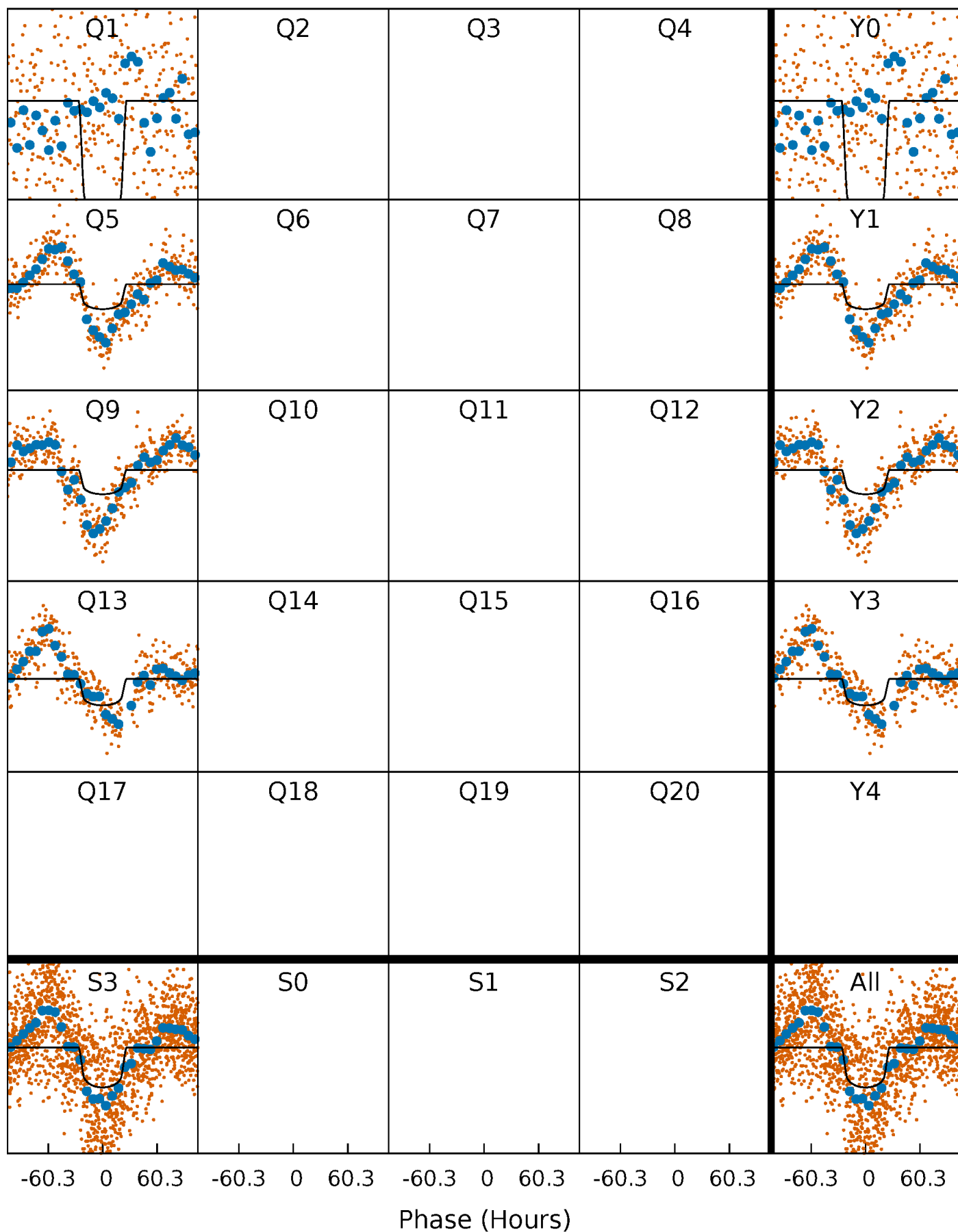
TCE 008621471-01 P=375.804258 Days  $T_0=140.432463$  (BKJD)





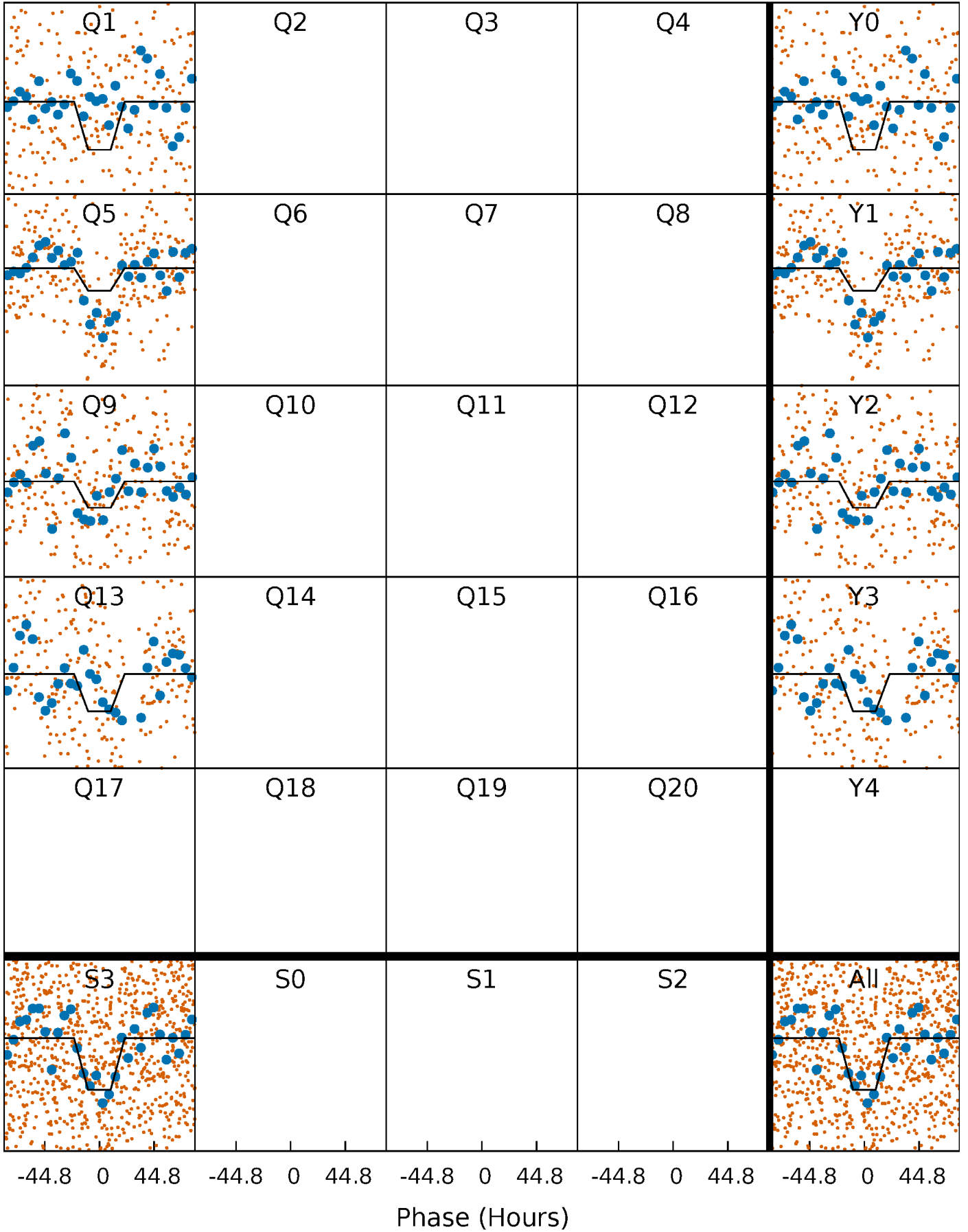
# DV Quarter-Phased Transit Curves

TCE 008621471-01     $P=375.804258$  Days     $T_0=140.432463$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

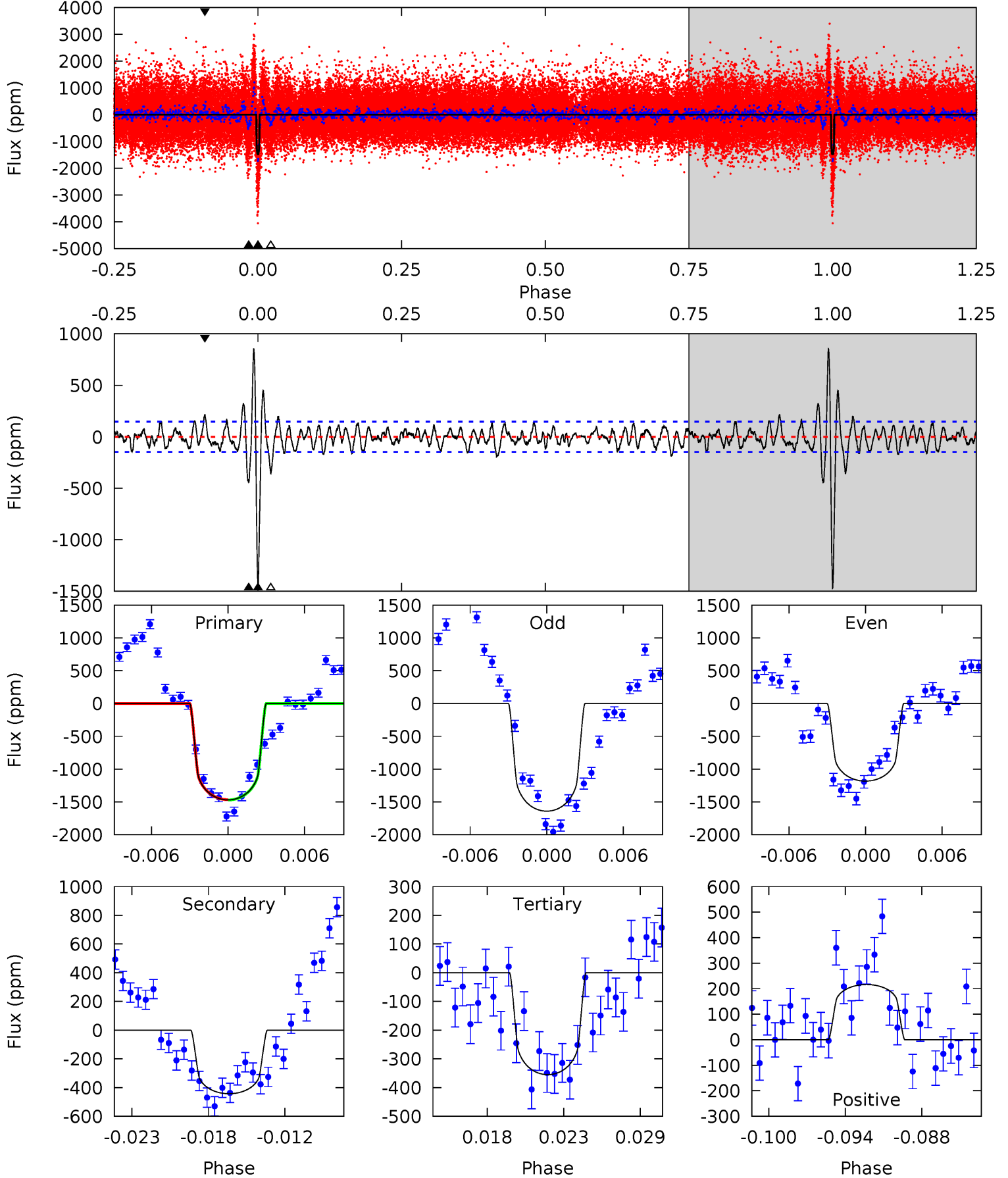
TCE 008621471-01 P=375.929826 Days  $T_0=140.109467$  (BKJD)



# DV Model-Shift Uniqueness Test

008621471-01, P = 375.804258 Days, E = 140.432463 Days

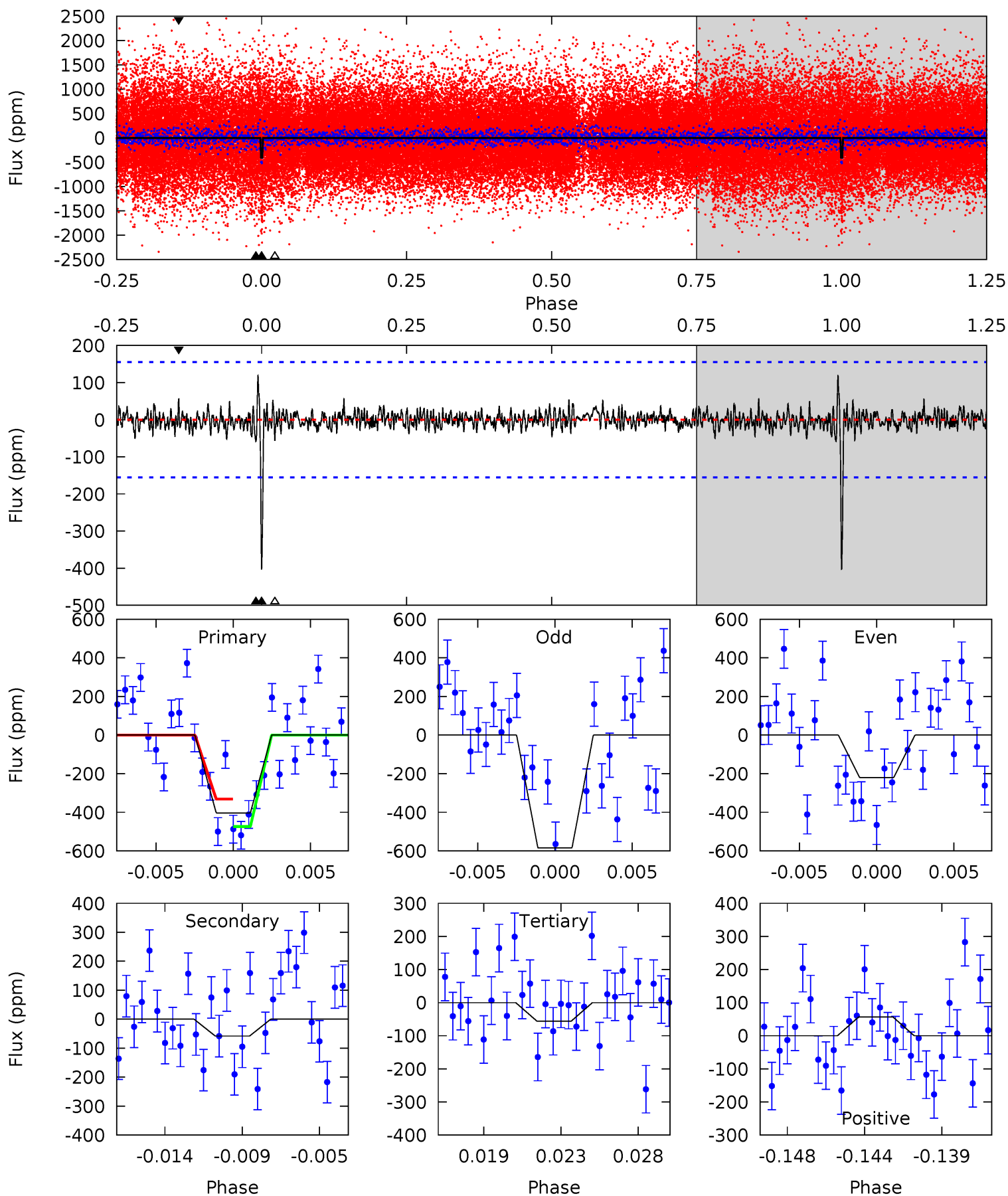
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
51.5	15.5	12.4	7.58	5.13	2.75	3.35	39.0	43.9	3.07	7.93	8.07	0.87	0.37	0.08



# Alt Model-Shift Uniqueness Test

008621471-01, P = 375.929826 Days, E = 140.109467 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
13.4	1.94	1.87	1.89	5.17	2.83	0.56	11.5	11.5	0.07	0.05	6.07	1.36	0.23	2.35



### Stellar Parameters For KIC 008621471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6063^{+163}_{-217}$	$4.476^{+0.048}_{-0.180}$	$0.070^{+0.250}_{-0.350}$	$1.012^{+0.267}_{-0.114}$	$1.117^{+0.120}_{-0.160}$	$1.519^{+0.380}_{-0.747}$
	+3%/-4%	+1%/-4%	+357%/-500%	+26%/-11%	+11%/-14%	+25%/-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 008621471-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-443 \pm 29$	$3.92^{+0.59}_{-0.41}$	$373^{+21}_{-17}$	$4855^{+202}_{-209}$	$17164^{+4107}_{-3510}$
Alt.	$-58 \pm 30$	$2.26^{+0.38}_{-0.34}$	$372^{+22}_{-17}$	$4034^{+437}_{-497}$	$6552^{+4831}_{-3515}$

$T_{max}$  = 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

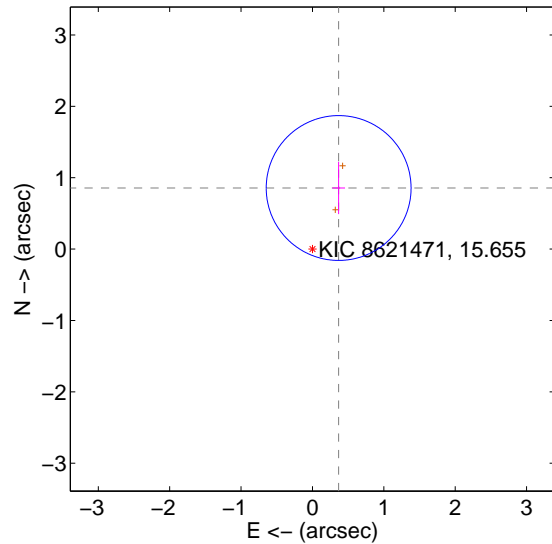
Supplemental centroid analysis for 008621471-01. Kepler magnitude: 15.65. Transit SNR 13.16

There are 0 quarters with good PRF difference image offsets

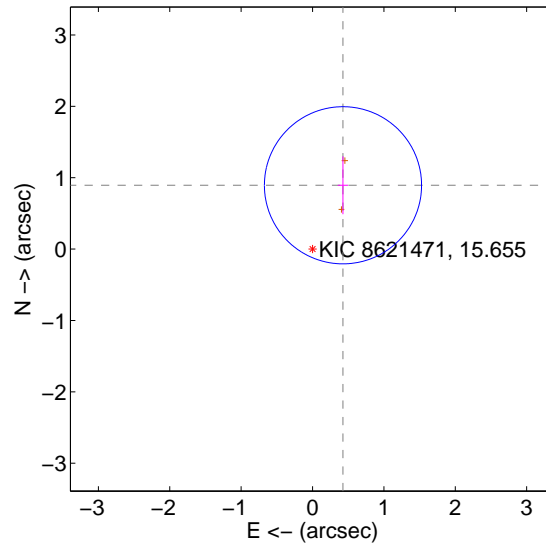
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.932 \pm 0.338$	2.75	$-0.367 \pm 0.089$	$0.856 \pm 0.366$
PRF-fit source offset from KIC position	$0.991 \pm 0.367$	2.70	$-0.427 \pm 0.072$	$0.894 \pm 0.405$
photometric centroid source offset	$0.19 \pm 0.88$	0.21	$0.16 \pm 0.87$	$-0.10 \pm 0.90$

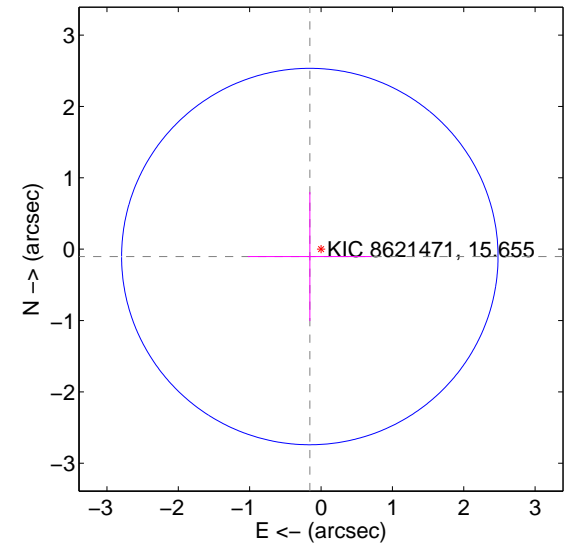
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



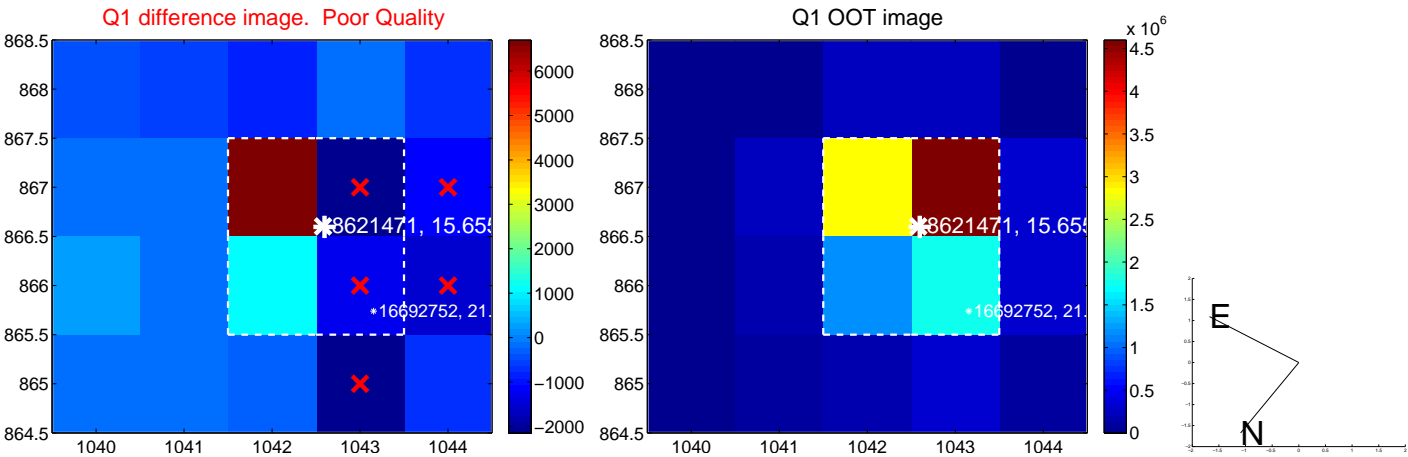
offset from photometric centroids



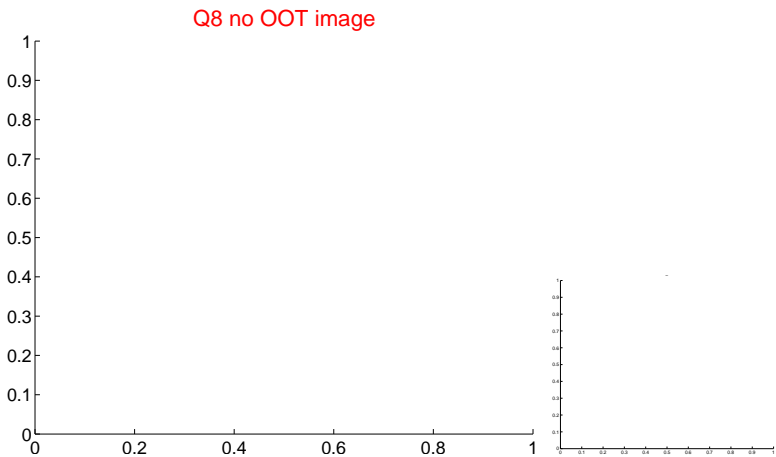
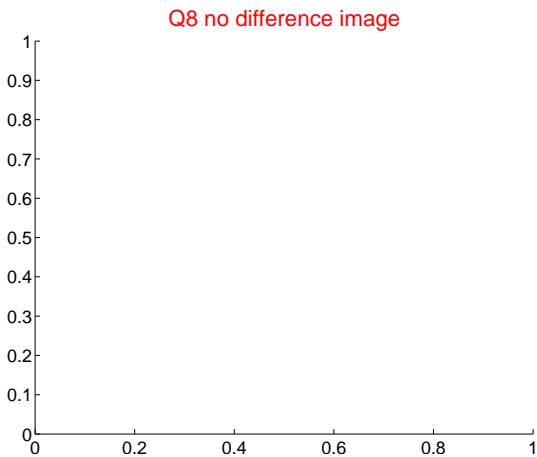
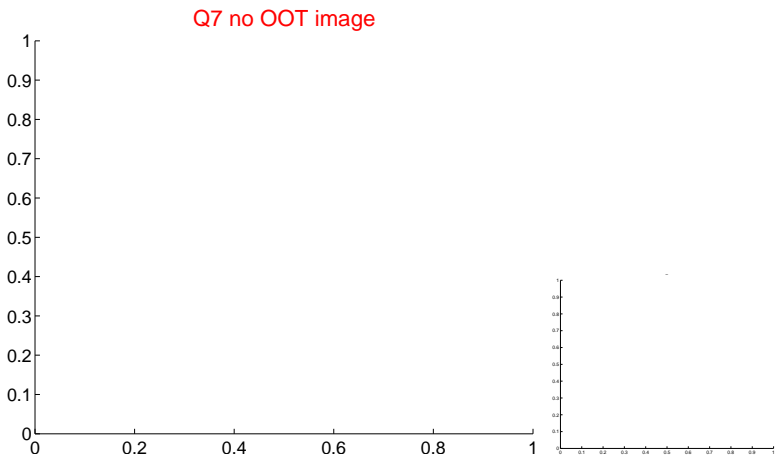
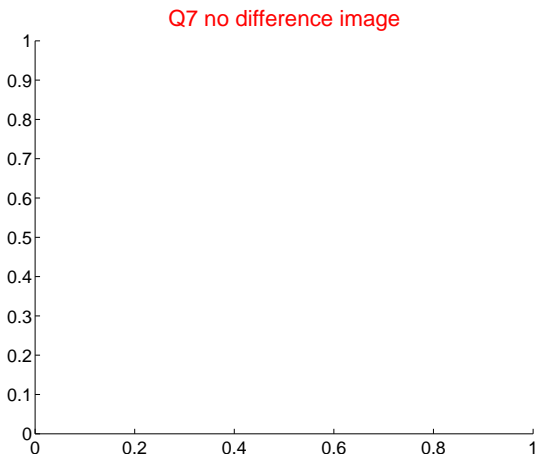
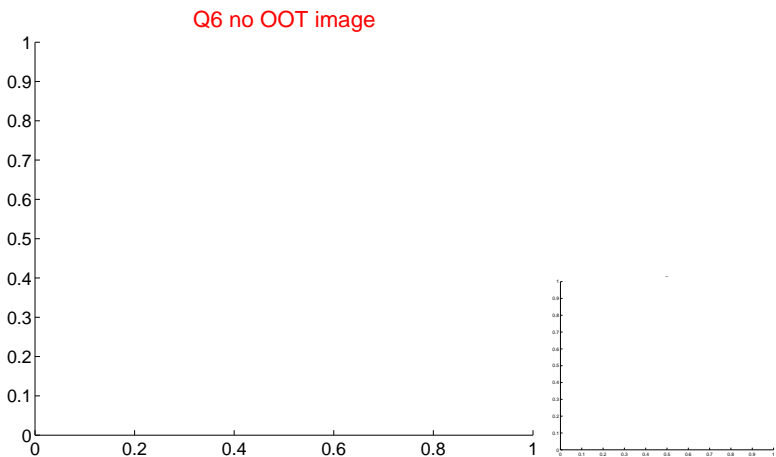
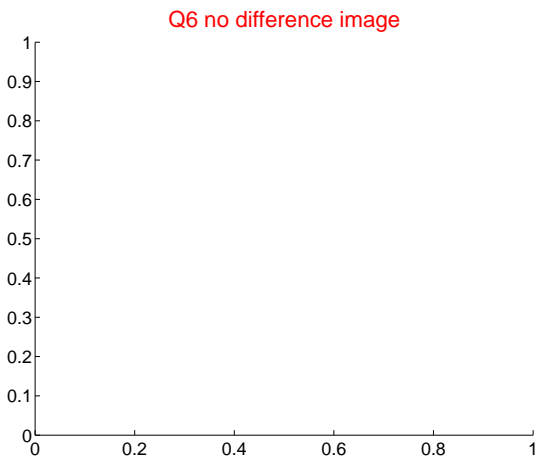
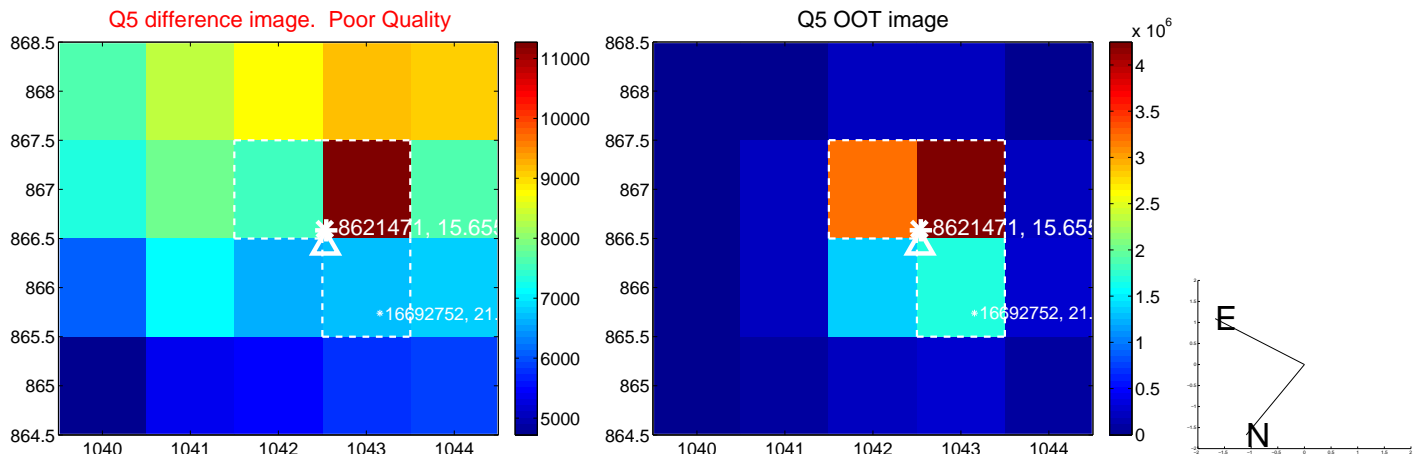
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



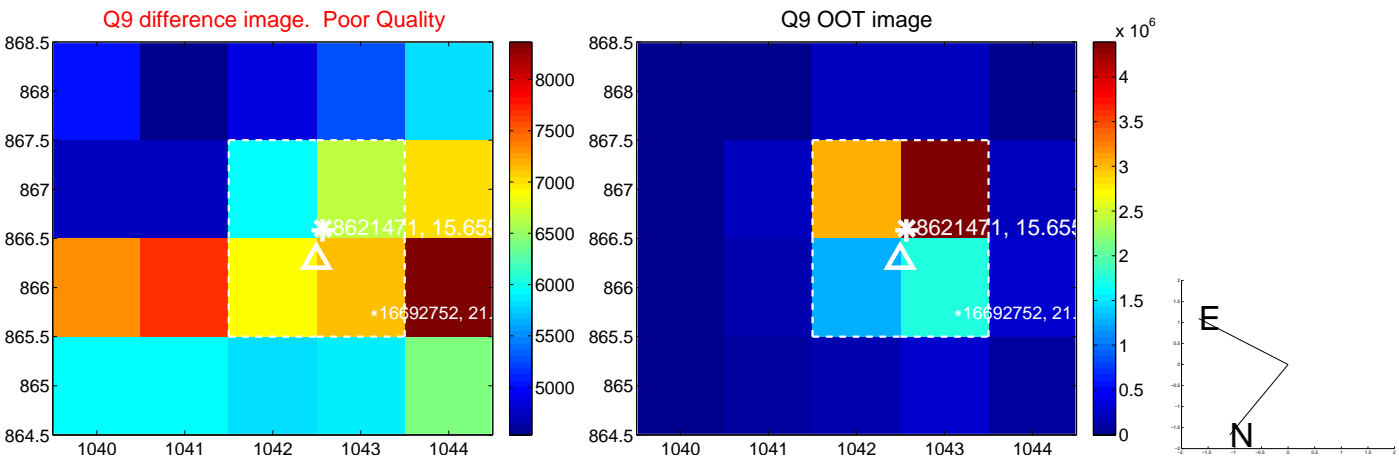
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



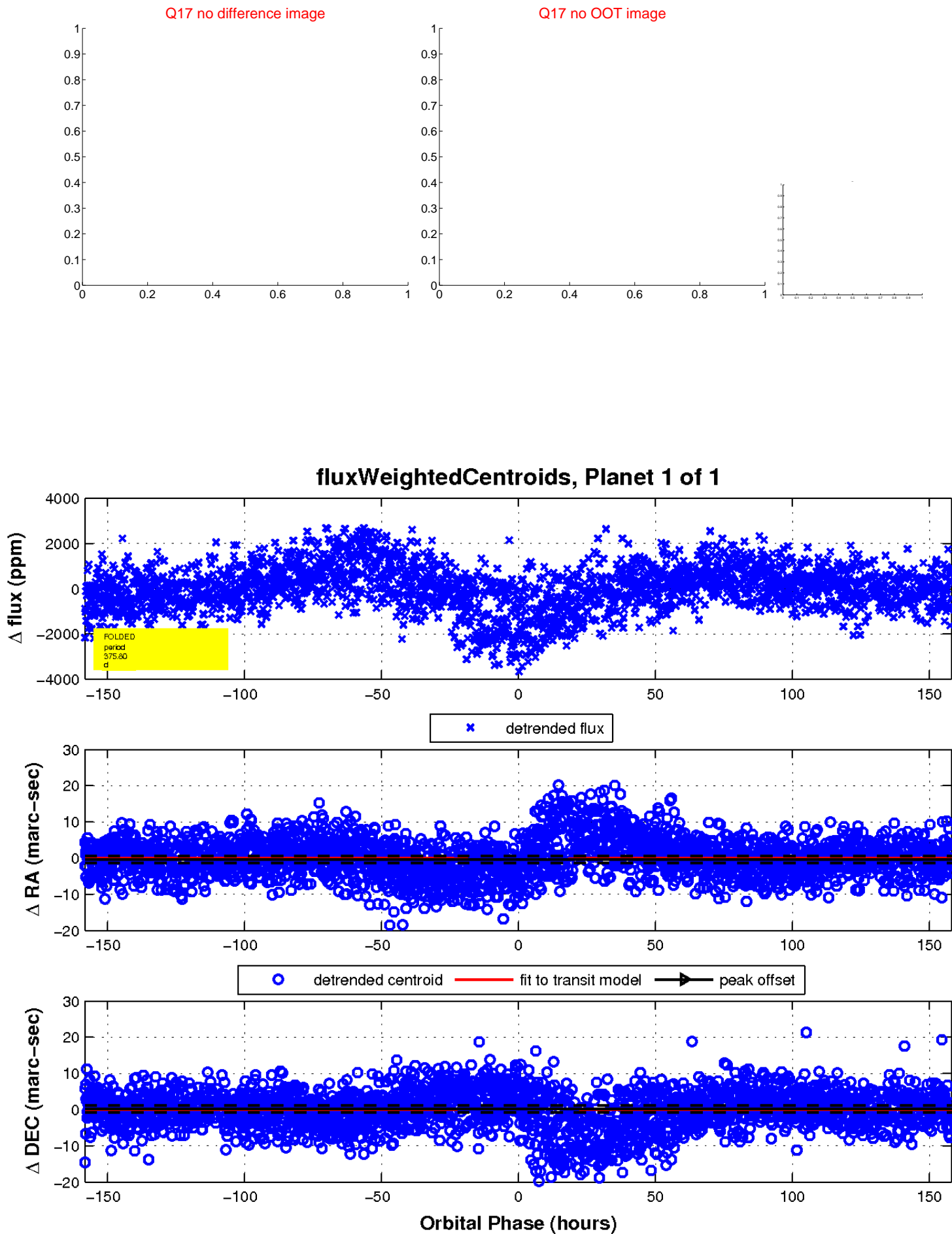
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



# UKIRT Image

Declination

