

# KIC 009107251

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009107251-01	OBS	No	367.824801	173.201868	686.6	20.935	9.4	9.2	0.99	6120	3.08	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009107251-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

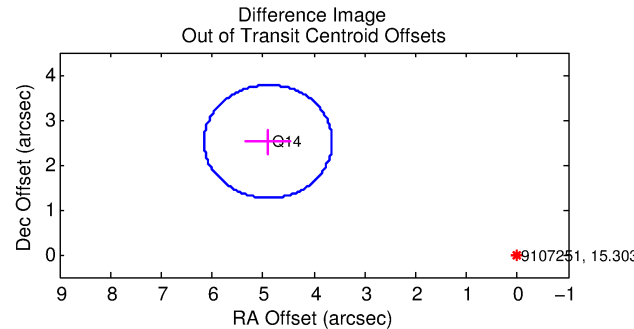
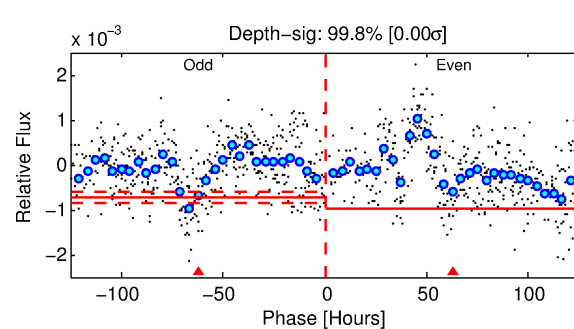
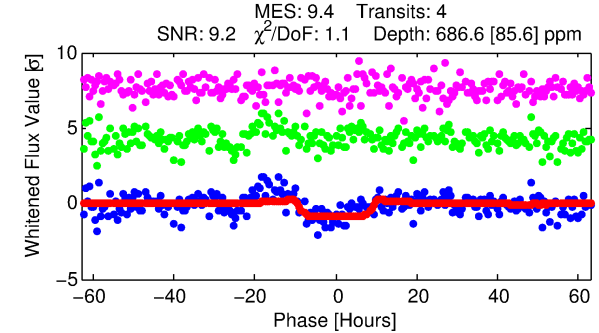
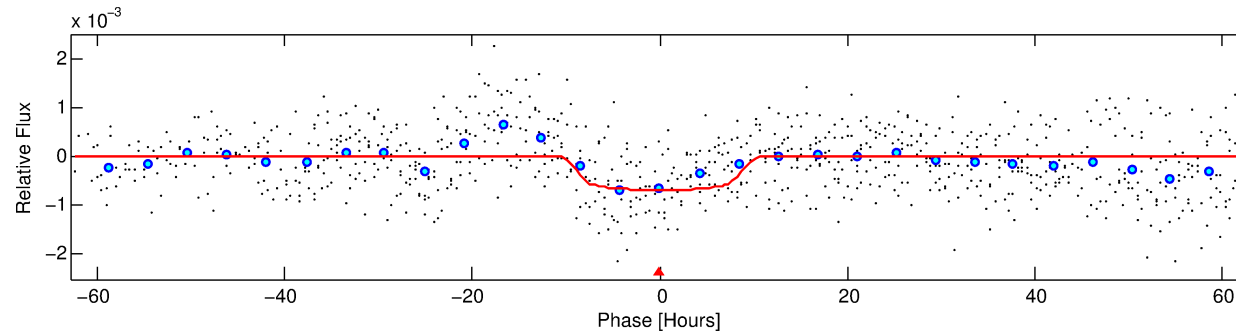
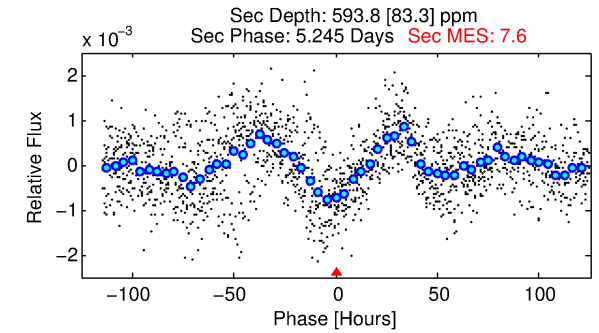
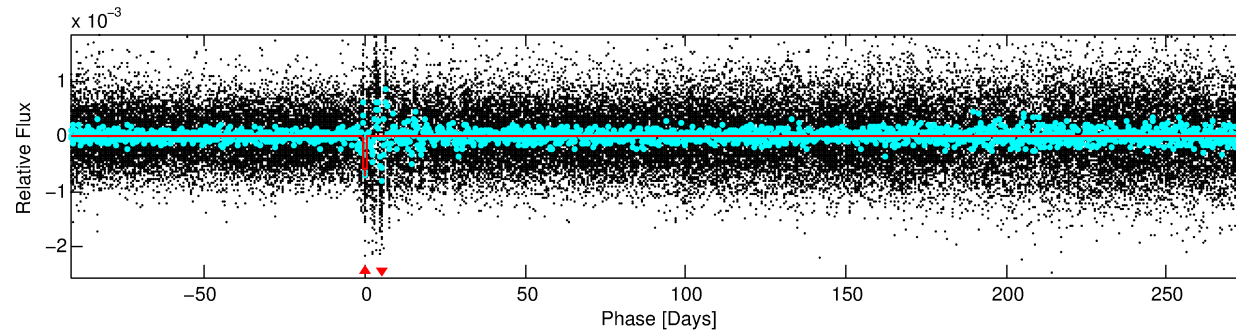
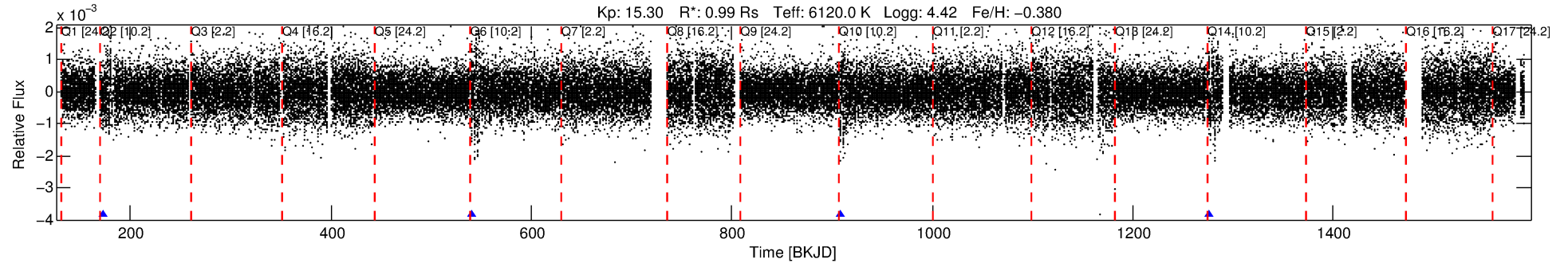
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009107251-01

No Significant Match Found

# DV One-Page Summary

KIC: 9107251 Candidate: 1 of 1 Period: 367.825 d



## DV Fit Results:

Period = 367.82480 [0.01672] d  
Epoch = 173.2019 [0.0302] BKJD  
Rp/R\* = 0.0285 [0.0026]  
a/R\* = 64.01 [20.32]  
b = 0.91 [0.06]  
Seff = 1.27 [0.47]  
Teq = 270 [25] K  
Rp = 3.08 [0.92] Re  
a = 0.9868 [0.2359] AU  
Ag = 33630.71 [14005.87] [2.40σ]  
Teff = 5662 [384] K [14.03σ]

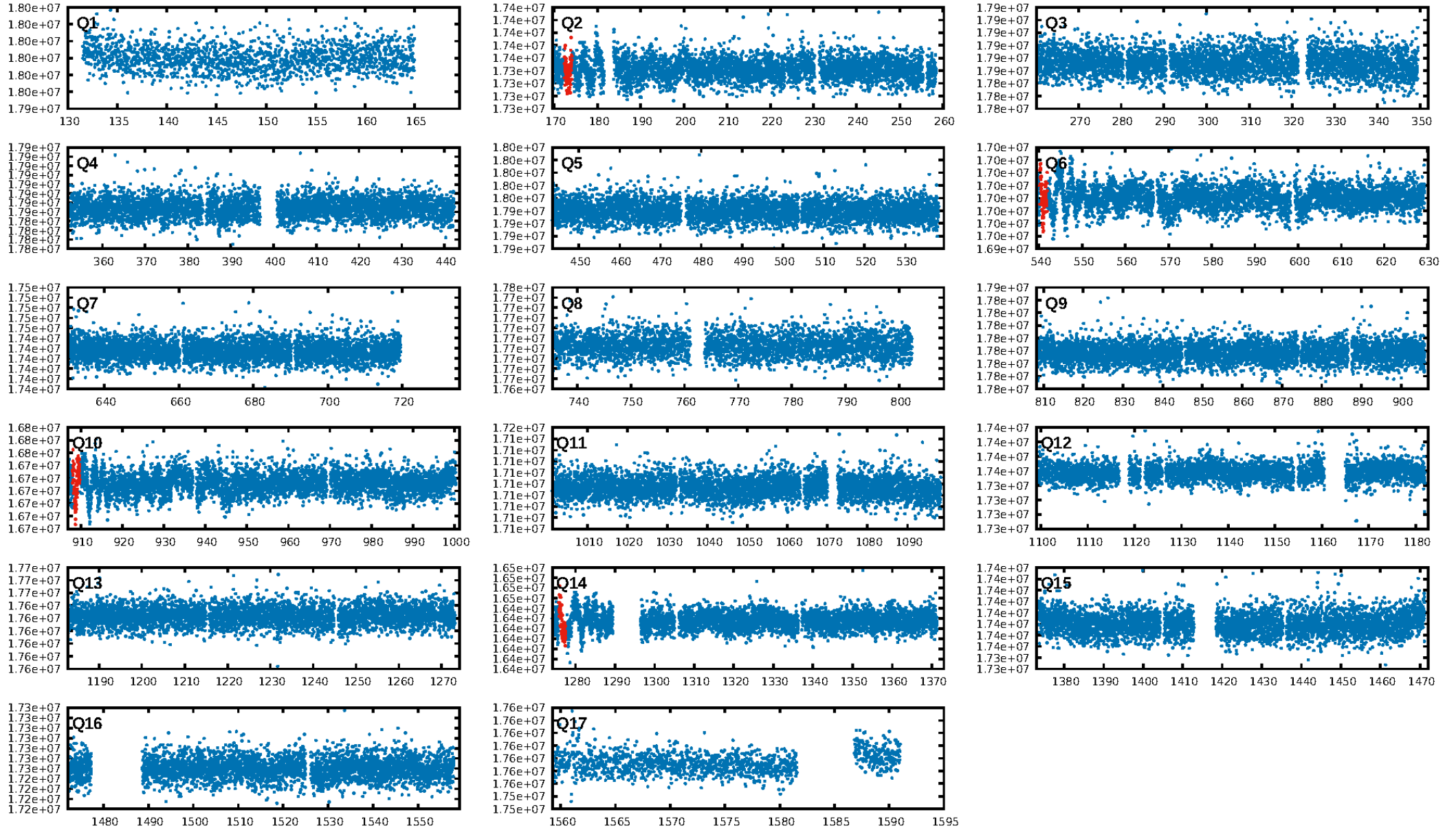
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 38.4%  
ModelChiSquareGoF-sig: 99.0%  
Bootstrap-pfa: 2.93e-10  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.642  
Centroid-sig: 1.3%  
Centroid-so: 3.202 arcsec [1.66σ]  
OotOffset-rm: 5.504 arcsec [13.12σ]  
KicOffset-rm: 5.483 arcsec [13.02σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

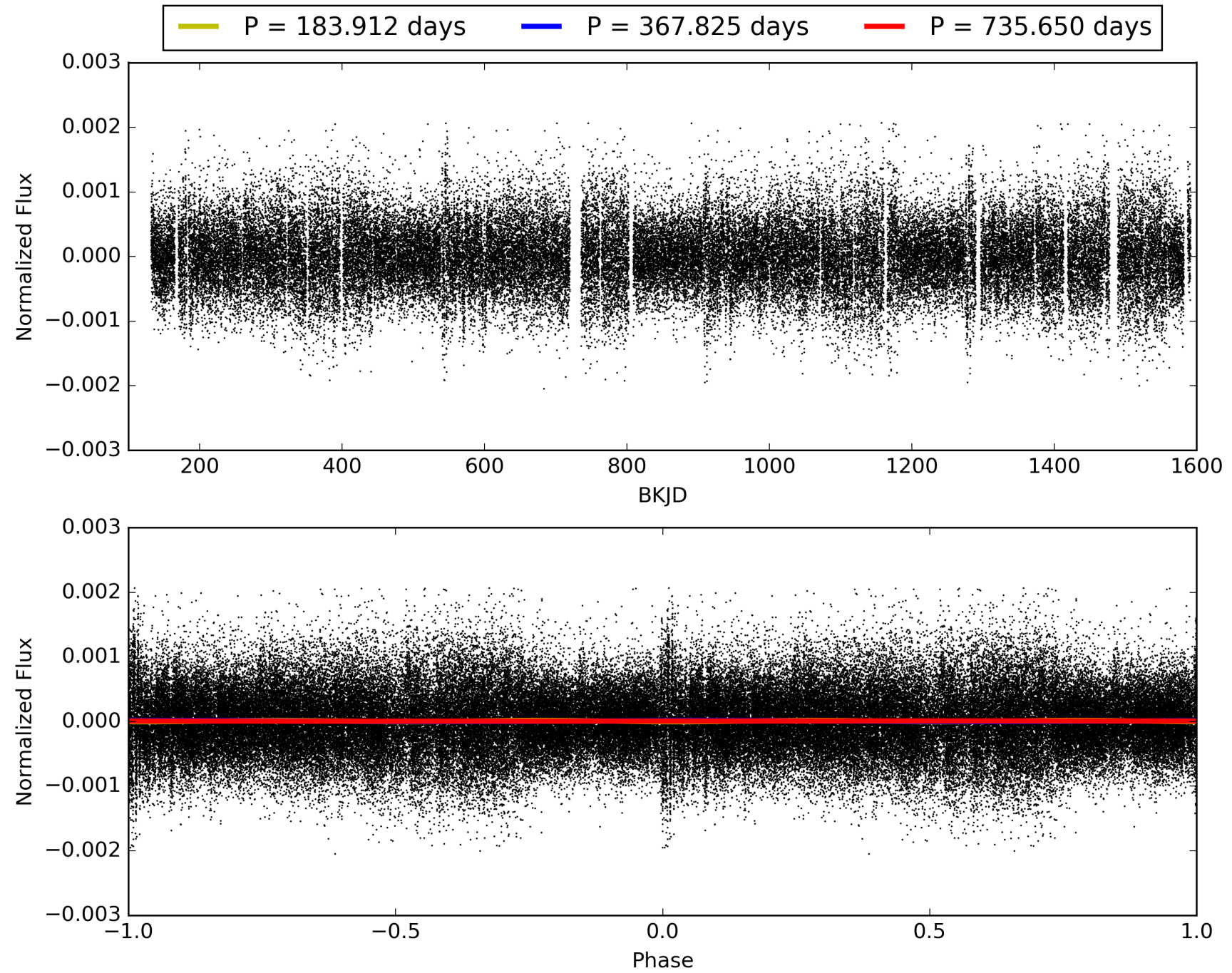
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:31:50 Z

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

# TCE 009107251-01, PDC Light Curves

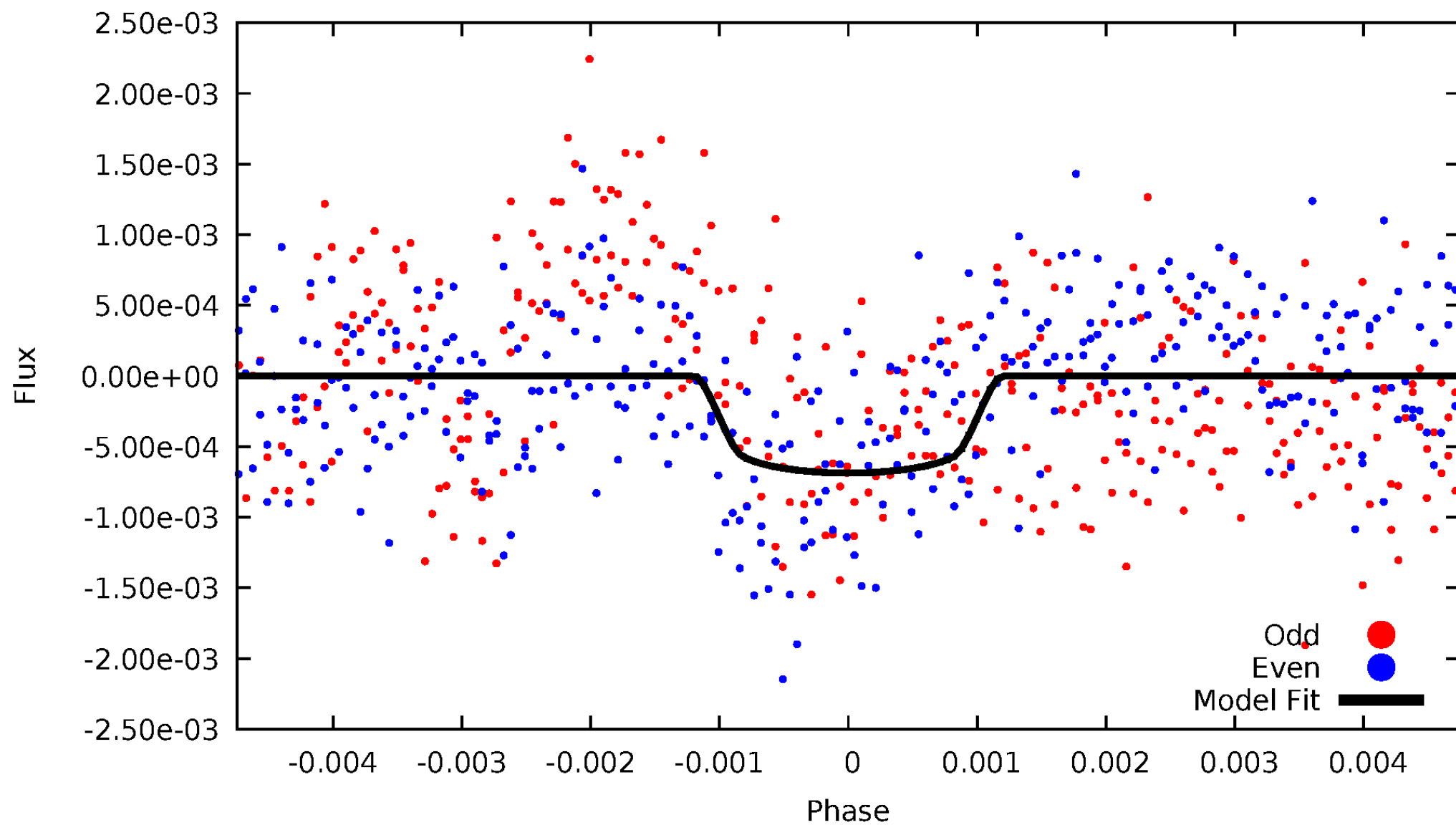


TCE 009107251-01



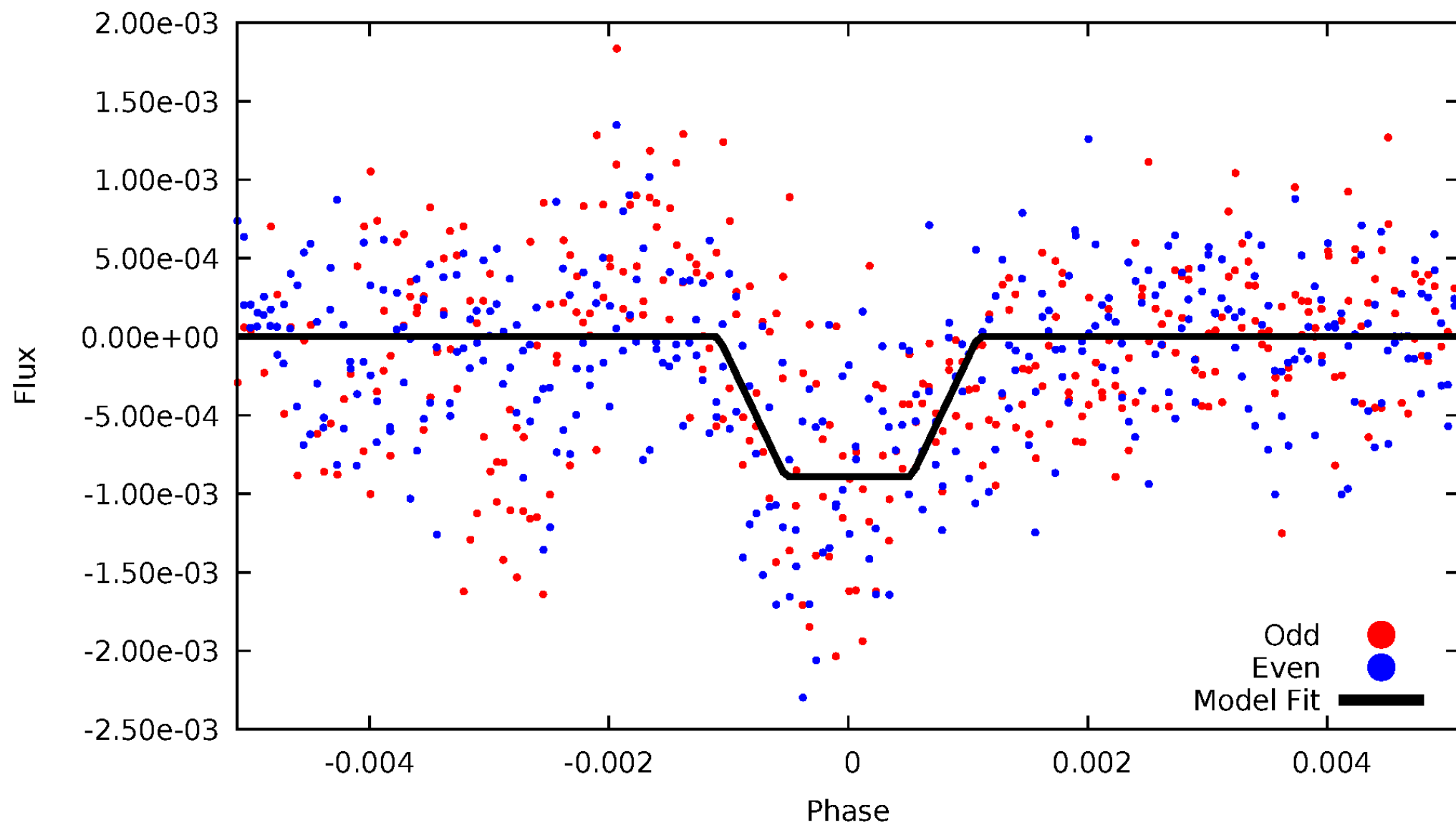
# DV Odd/Even

TCE 009107251-01



# ALT Odd/Even

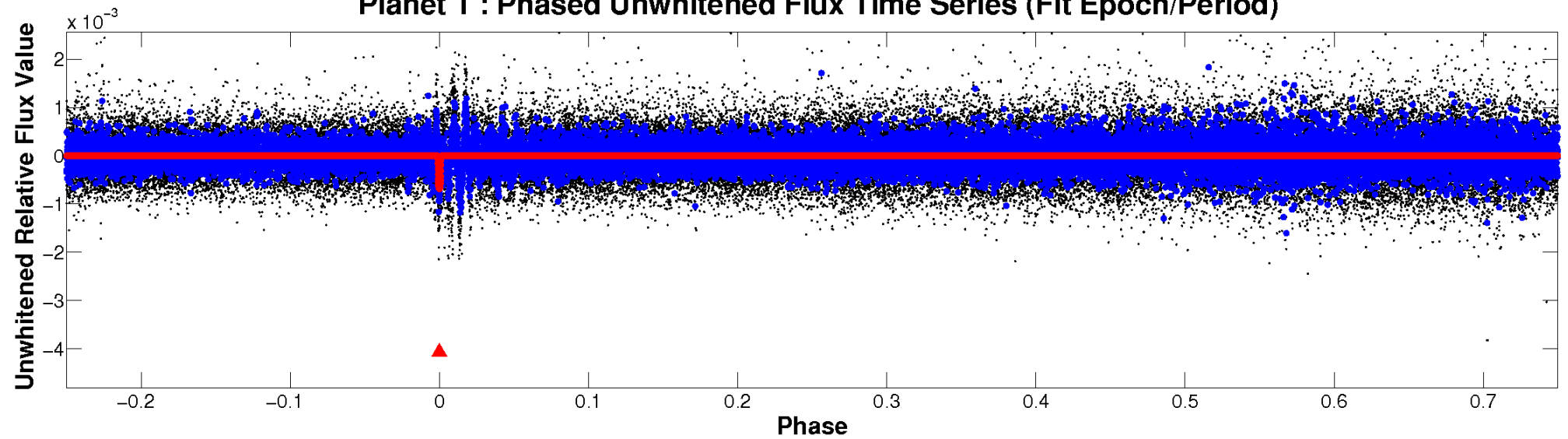
TCE 009107251-01



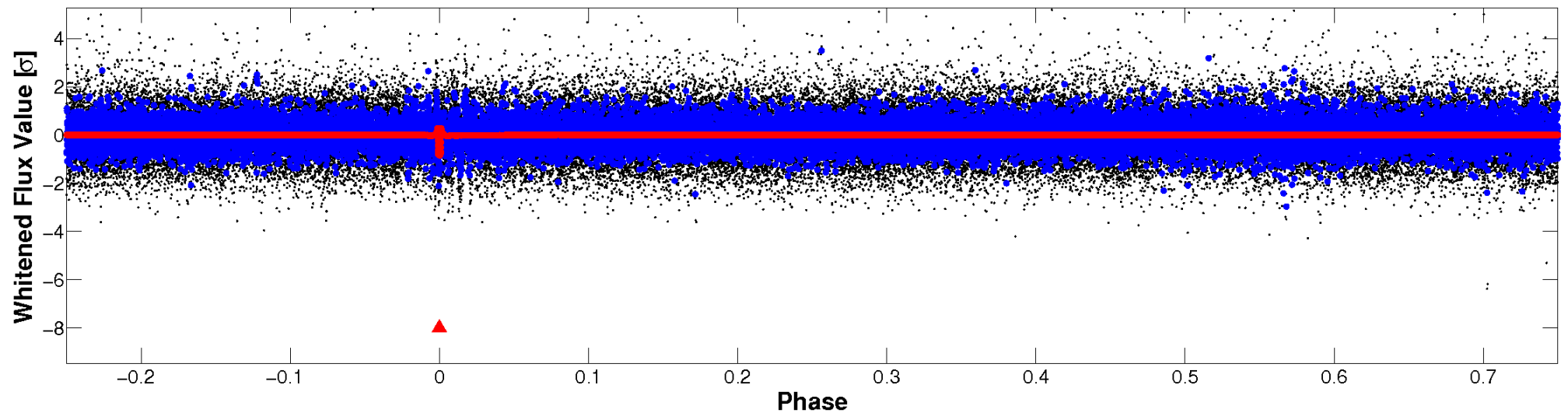


# Non-Whitened Vs. Whitened Light Curve

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

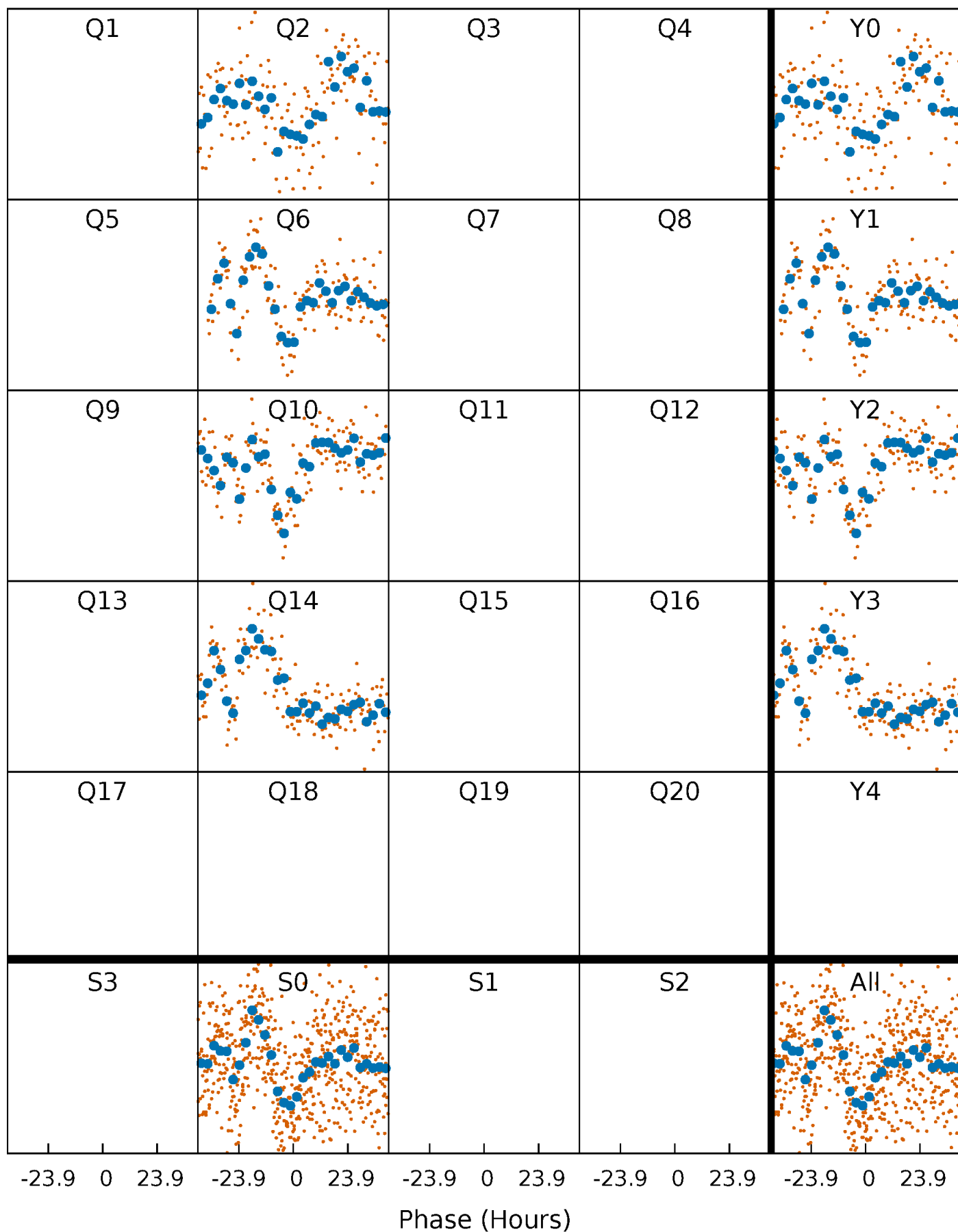


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

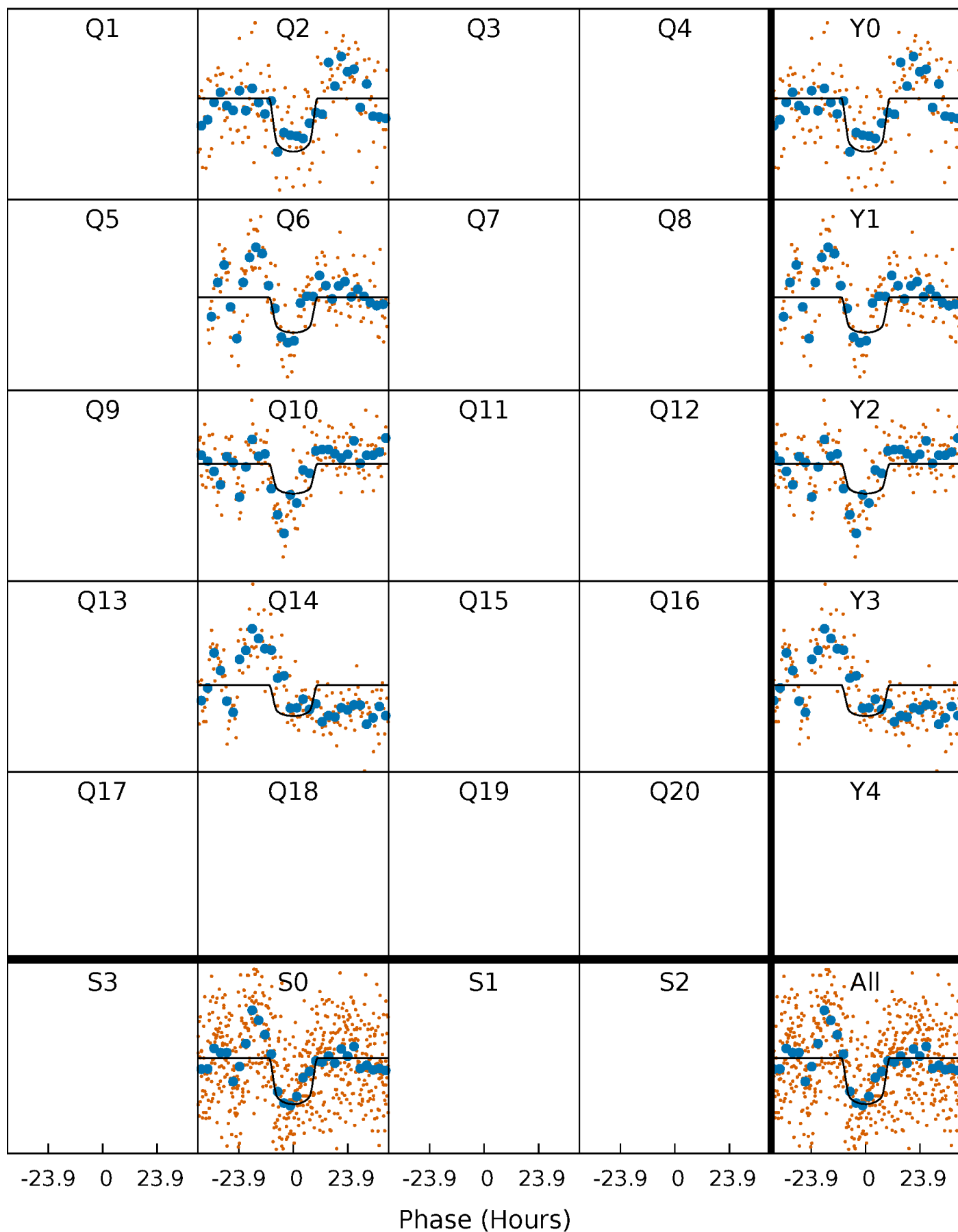
TCE 009107251-01 P=367.824801 Days  $T_0=173.201868$  (BKJD)





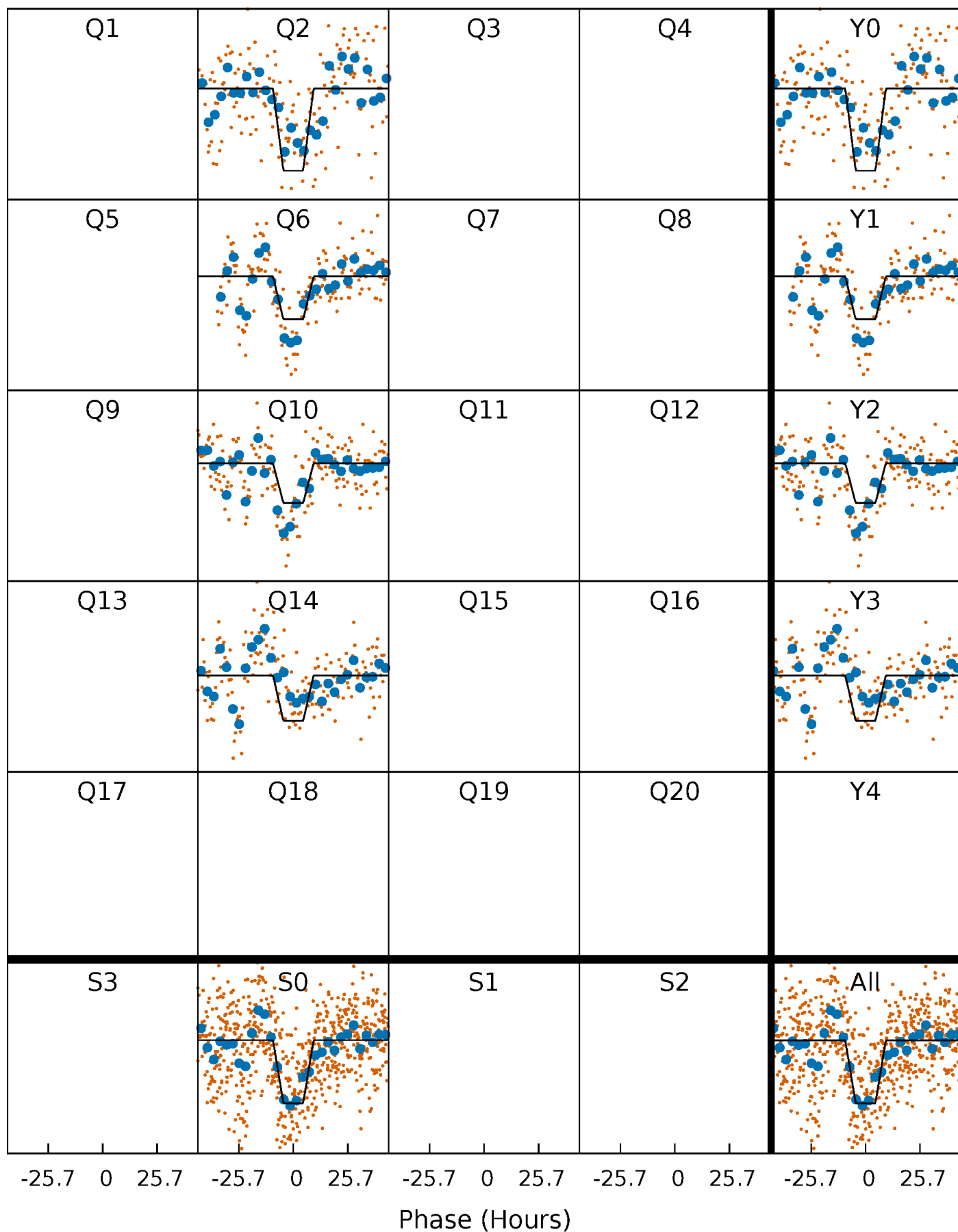
# DV Quarter-Phased Transit Curves

TCE 009107251-01 P=367.824801 Days  $T_0=173.201868$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

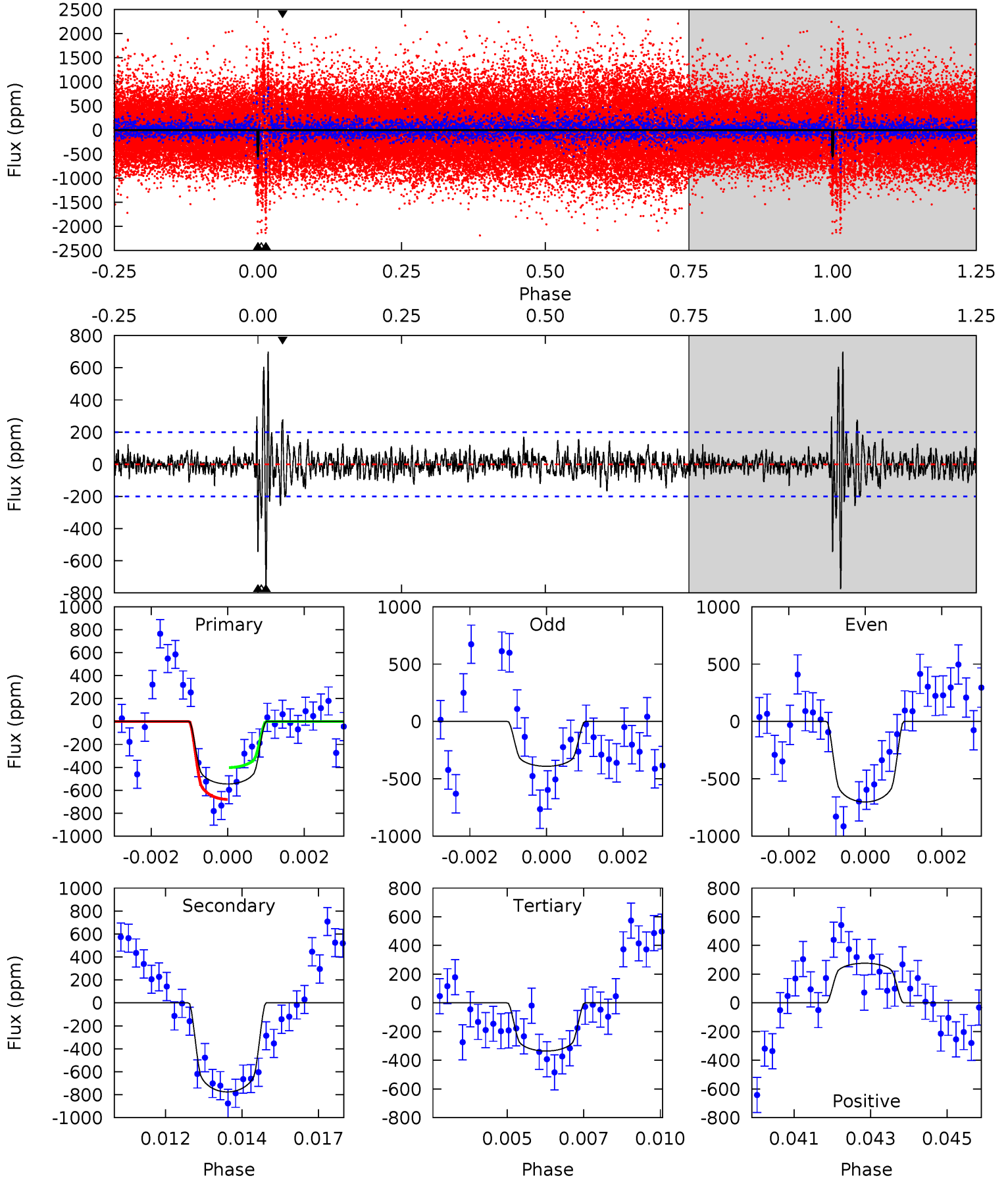
TCE 009107251-01 P=367.844947 Days  $T_0=173.114009$  (BKJD)



# DV Model-Shift Uniqueness Test

009107251-01, P = 367.824801 Days, E = 173.201868 Days

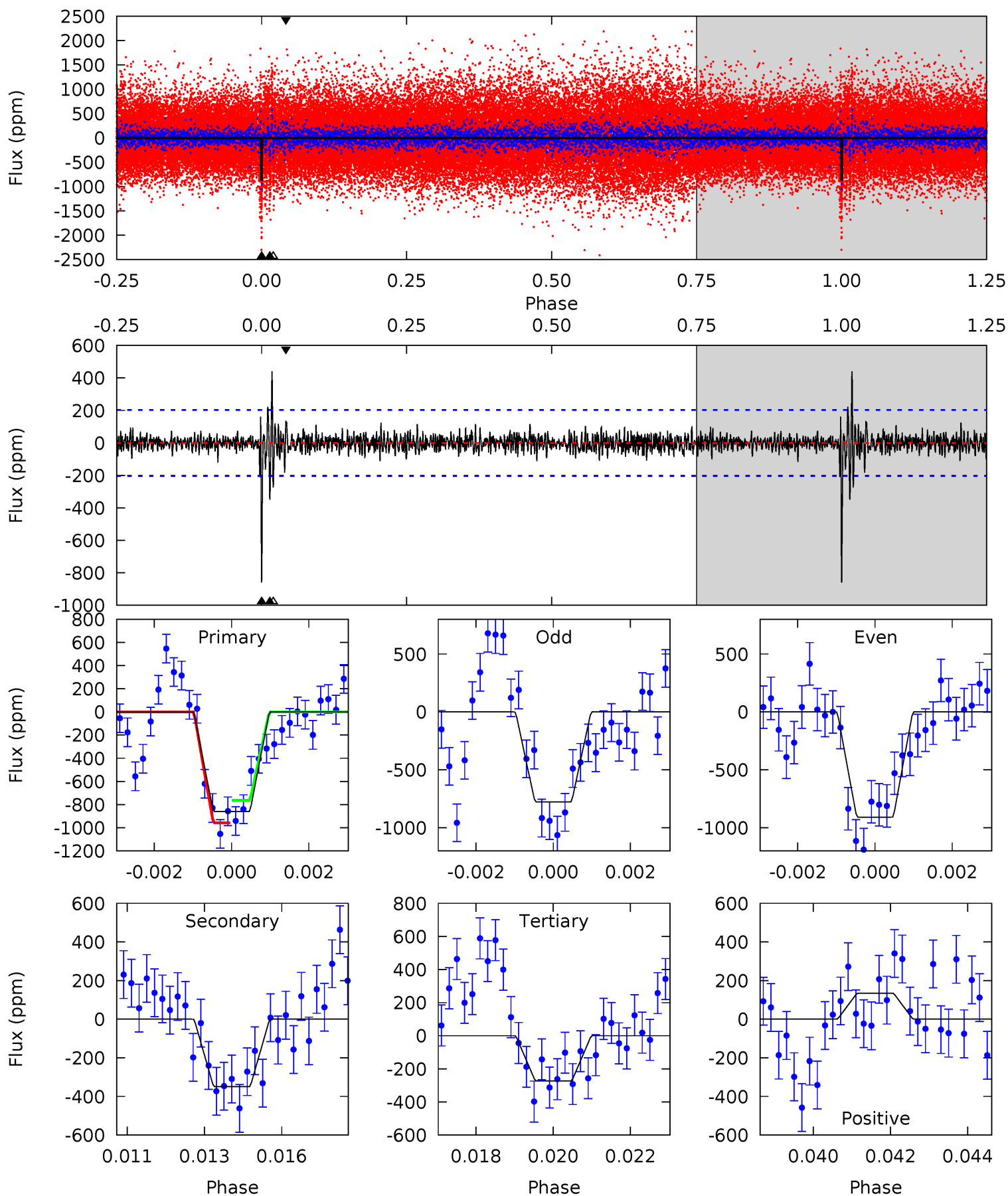
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.4	20.6	8.90	7.33	5.29	3.04	1.81	5.54	7.12	11.7	13.2	4.13	1.06	0.47	3.68



# Alt Model-Shift Uniqueness Test

009107251-01, P = 367.844947 Days, E = 173.114009 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
22.5	9.14	7.12	3.51	5.31	3.06	1.12	15.4	19.0	2.02	5.63	1.72	0.94	0.34	2.51



### Stellar Parameters For KIC 009107251

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6120^{+192}_{-214}$	$4.423^{+0.101}_{-0.188}$	$-0.380^{+0.300}_{-0.300}$	$0.990^{+0.283}_{-0.152}$	$0.947^{+0.127}_{-0.102}$	$1.375^{+0.606}_{-0.672}$
	+3%/-3%	+2%/-4%	+79%/-79%	+29%/-15%	+13%/-11%	+44%/-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 009107251-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-776 \pm 38$	$3.09^{+0.58}_{-0.41}$	$381^{+26}_{-21}$	$6040^{+408}_{-324}$	$42791^{+13265}_{-12262}$
Alt.	$-350 \pm 38$	$3.28^{+0.54}_{-0.39}$	$381^{+28}_{-22}$	$4932^{+265}_{-252}$	$17255^{+5169}_{-4800}$

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

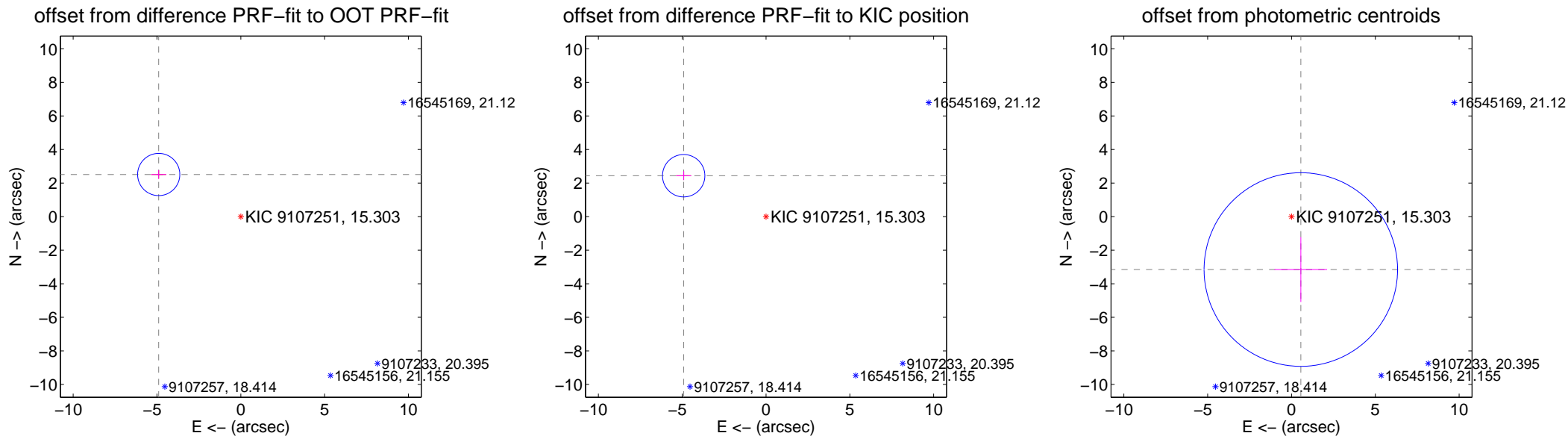
## DV Centroid Data

Supplemental centroid analysis for 009107251-01. Kepler magnitude: 15.30. Transit SNR 9.23

There are 0 quarters with good PRF difference image offsets

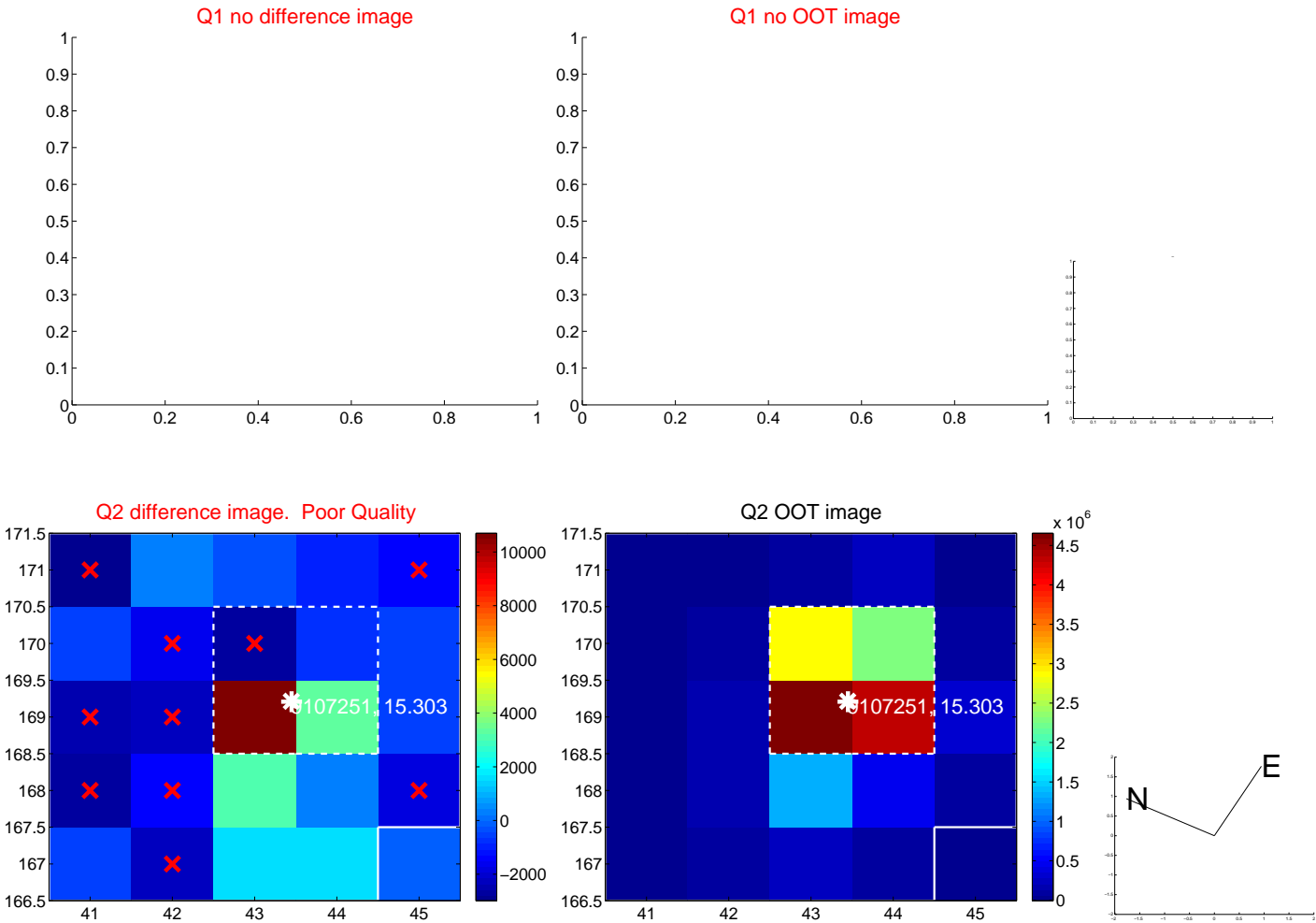
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.504 \pm 0.420$	13.12	$4.897 \pm 0.452$	$2.512 \pm 0.262$
PRF-fit source offset from KIC position	$5.483 \pm 0.421$	13.02	$4.911 \pm 0.452$	$2.438 \pm 0.262$
photometric centroid source offset	$3.20 \pm 1.92$	1.66	$-0.56 \pm 1.57$	$-3.15 \pm 1.93$



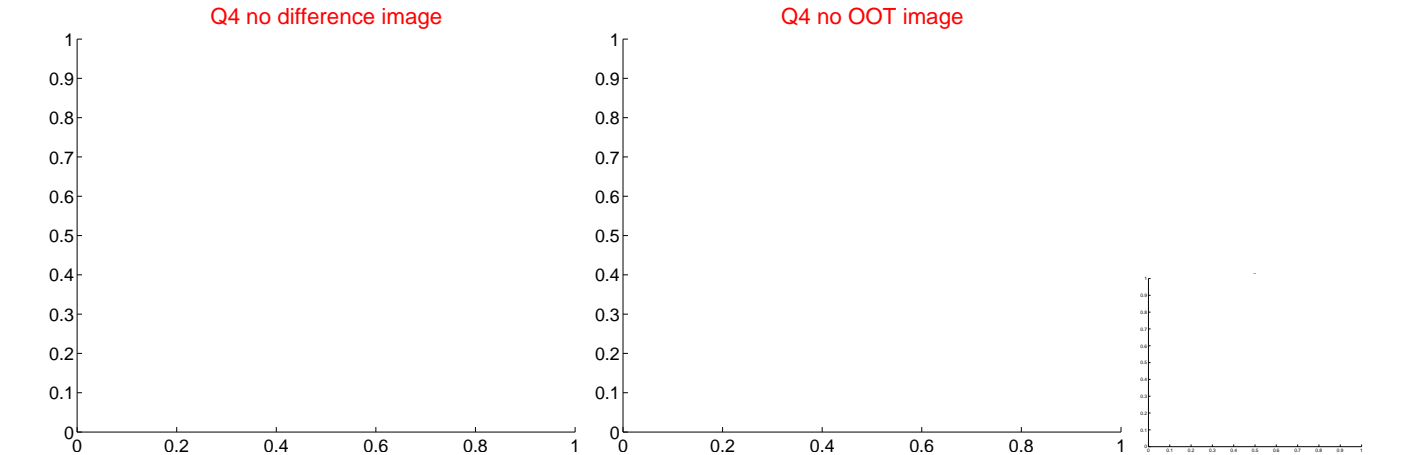
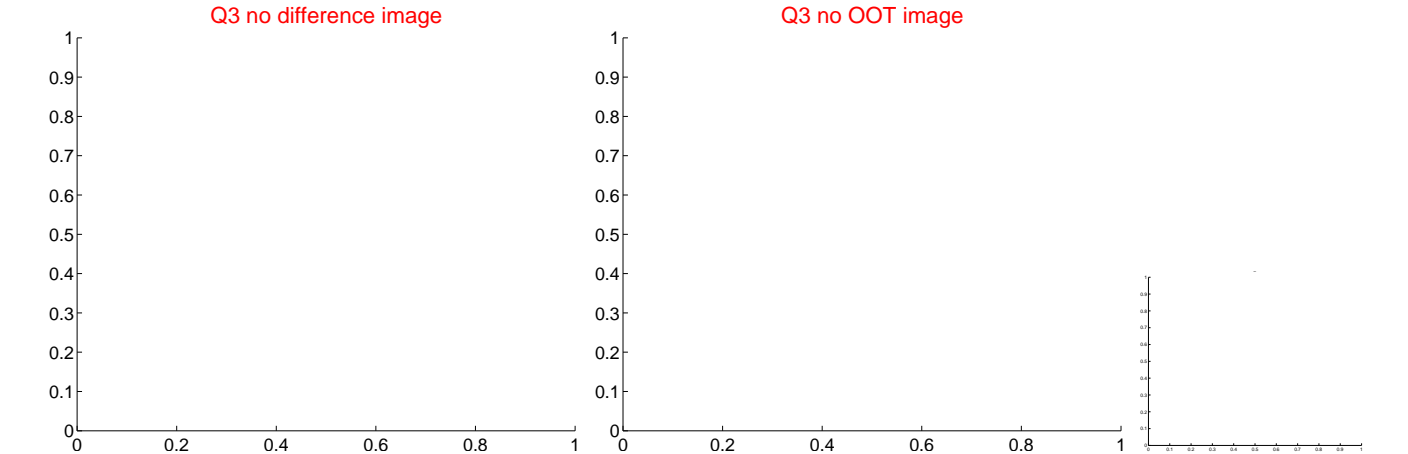
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



Q2 difference image. Poor Quality

Q2 OOT image





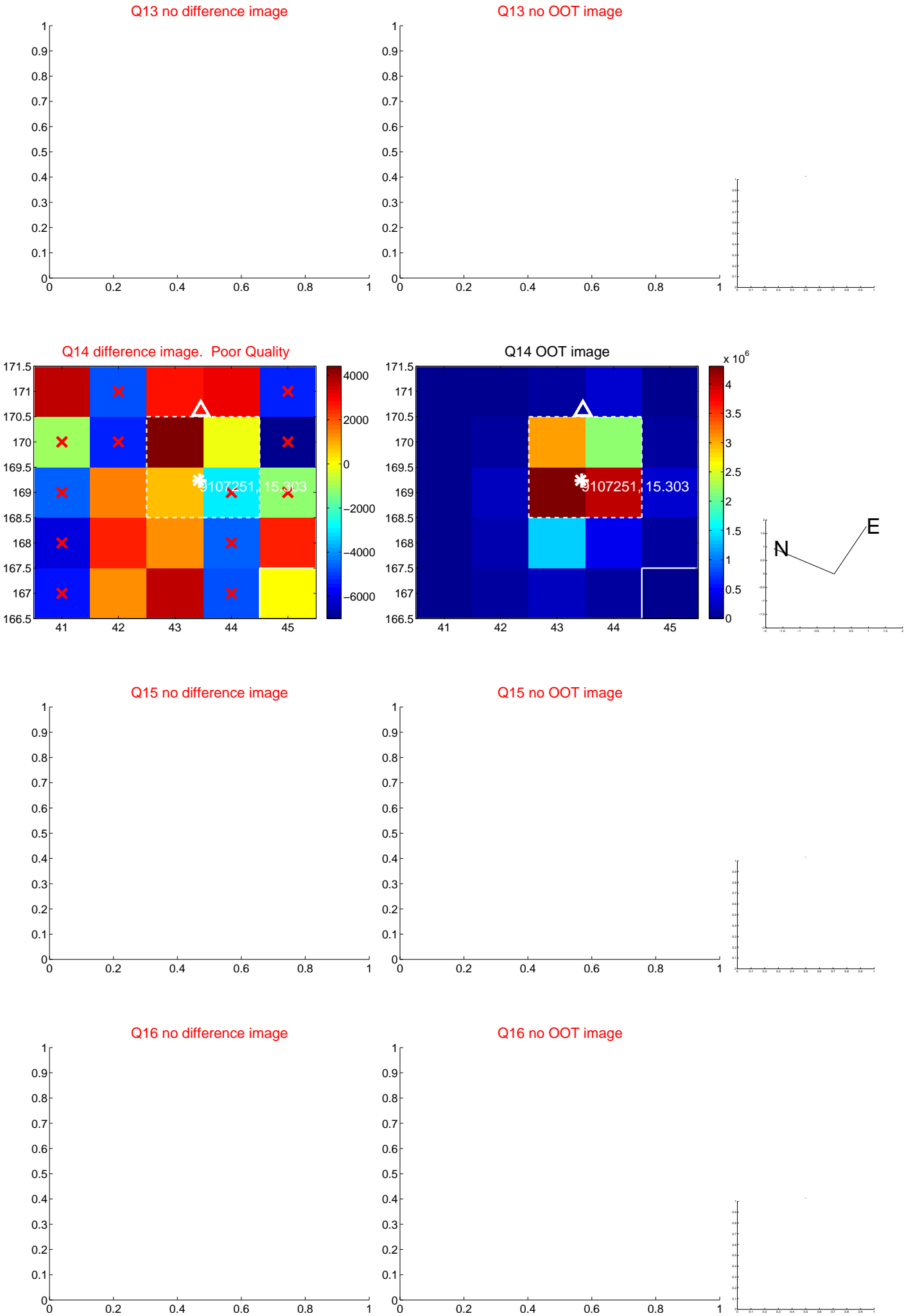
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



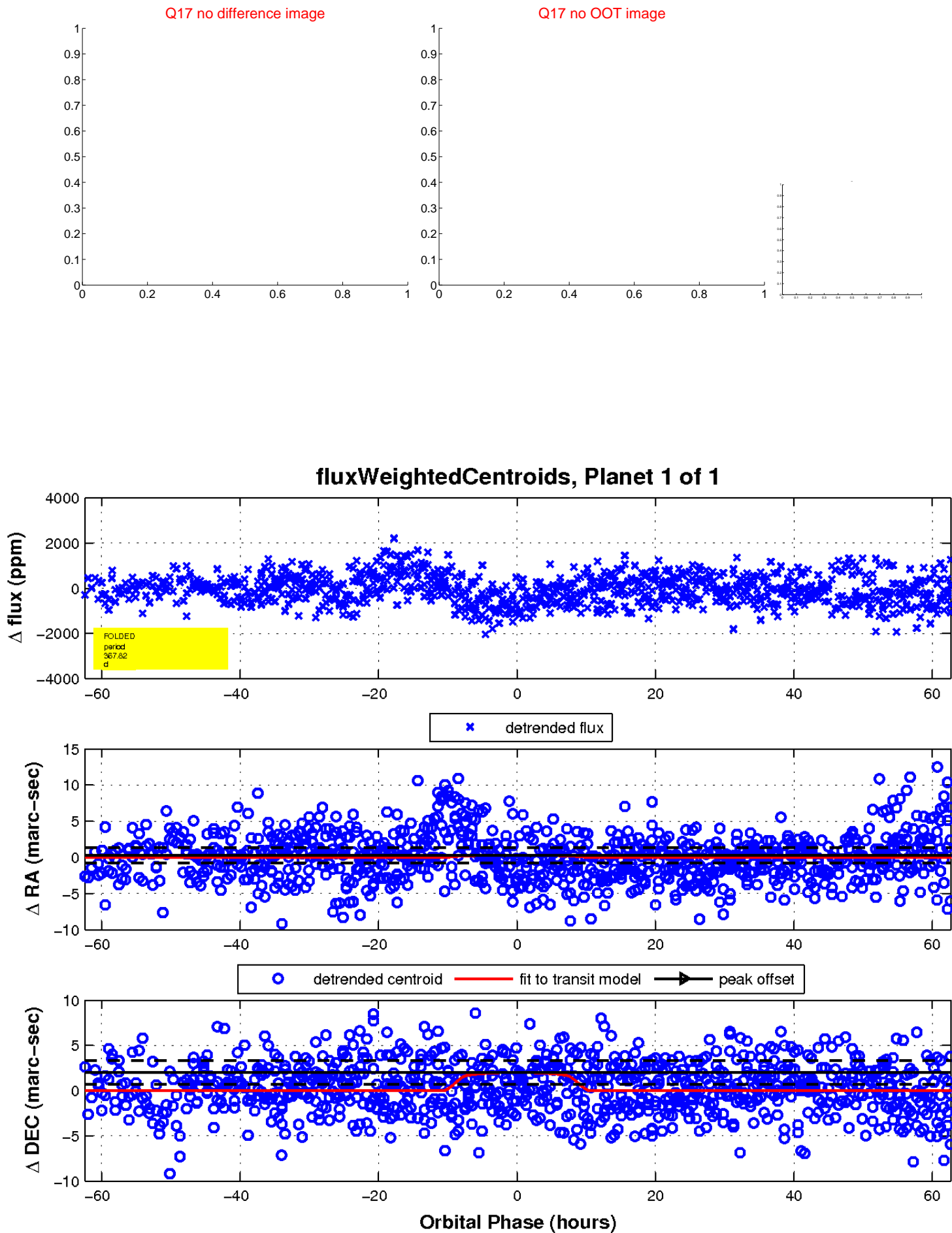
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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

