

# KIC 010087165

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010087165-01	OBS	No	206.636588	251.308192	990.3	2.830	7.5	8.1	0.74	4914	2.74	0.70

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010087165-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—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.

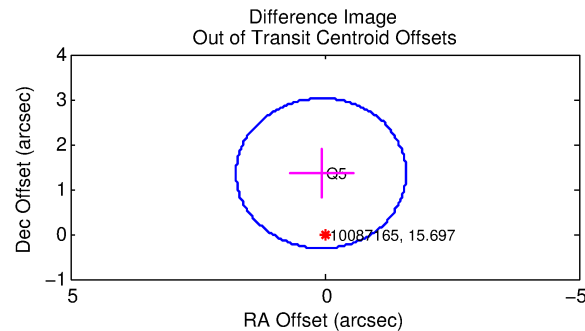
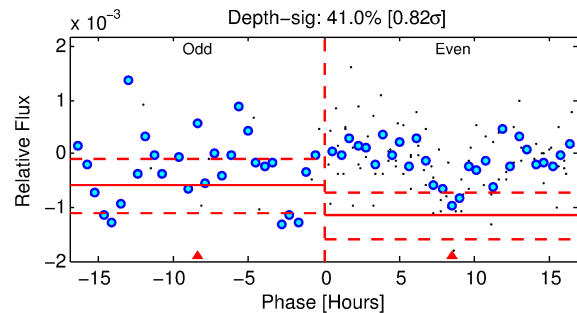
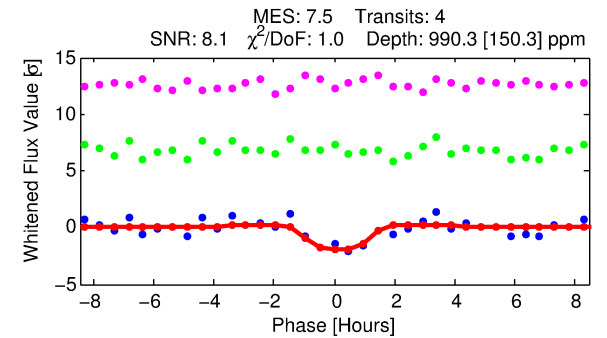
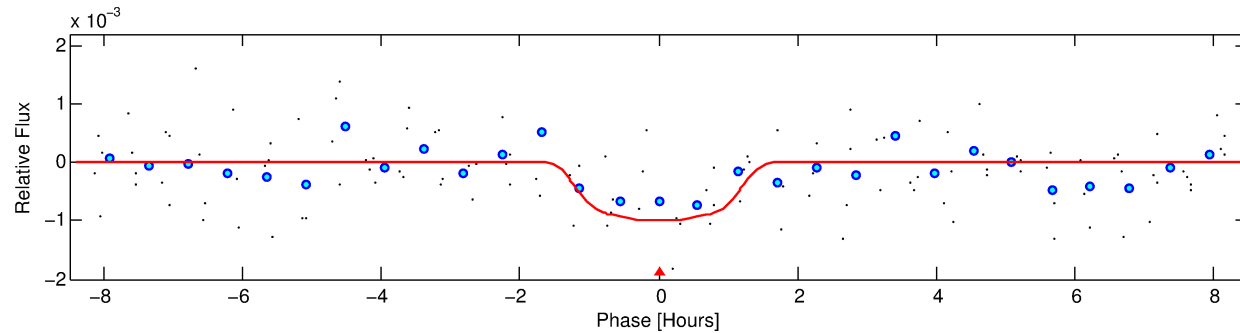
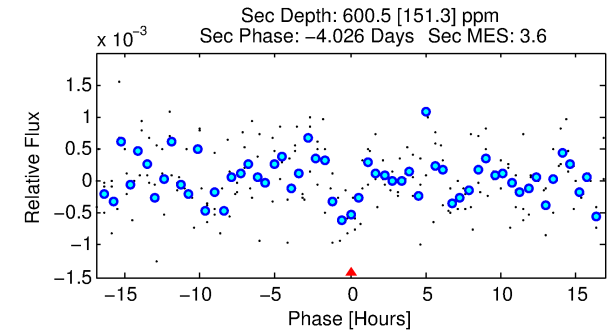
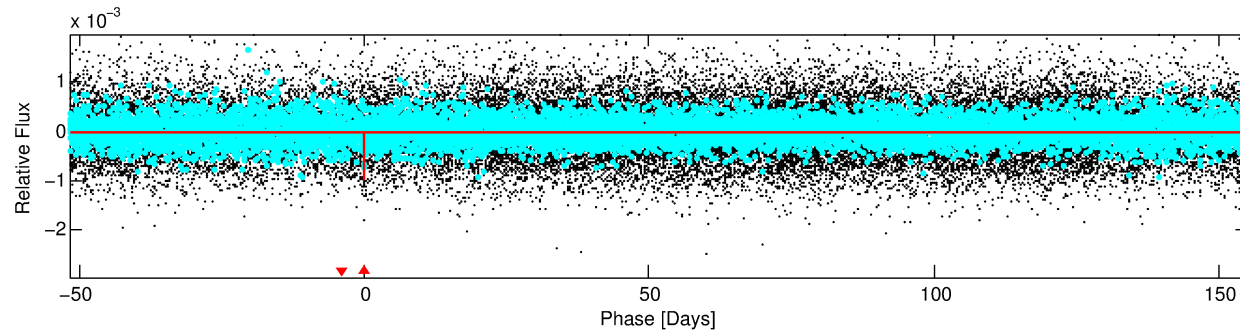
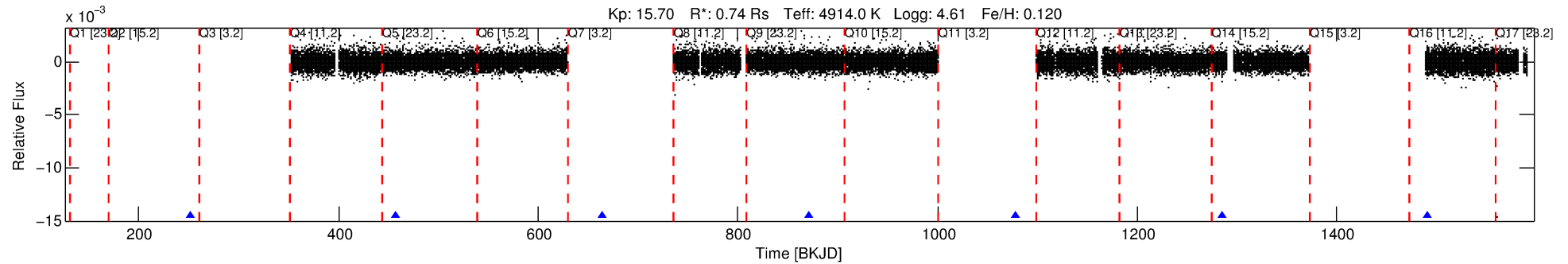
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010087165-01

No Significant Match Found

# DV One-Page Summary

KIC: 10087165 Candidate: 1 of 1 Period: 206.637 d



## DV Fit Results:

Period = 206.63659 [0.00250] d  
Epoch = 251.3082 [0.0082] BKJD  
Rp/R\* = 0.0340 [0.1297]  
a/R\* = 316.13 [4414.05]  
b = 0.86 [4.21]  
Seff = 0.70 [0.13]  
Teq = 233 [11] K  
Rp = 2.74 [10.45] Re  
a = 0.6376 [0.0570] AU  
Ag = 17861.80 [136153.67] [0.13σ]  
Teffp = 4169 [7945] K [0.50σ]

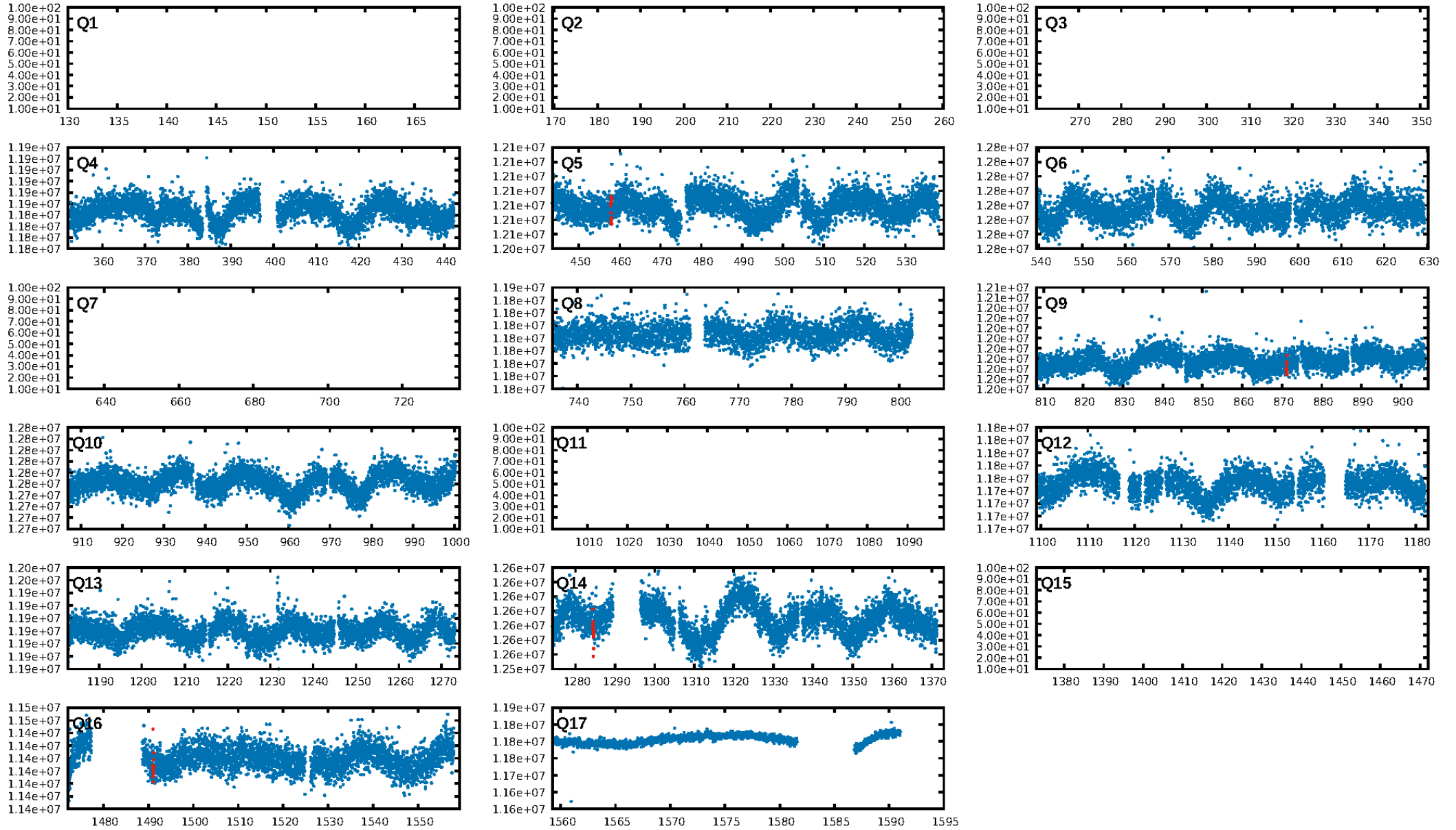
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.4%  
ModelChiSquareGof-sig: 98.6%  
Bootstrap-pfa: 1.98e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.547  
Centroid-sig: 26.9%  
Centroid-so: 1.887 arcsec [1.14σ]  
OotOffset-rm: 1.353 arcsec [2.43σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-rm: 1.295 arcsec [2.32σ]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [4/4]

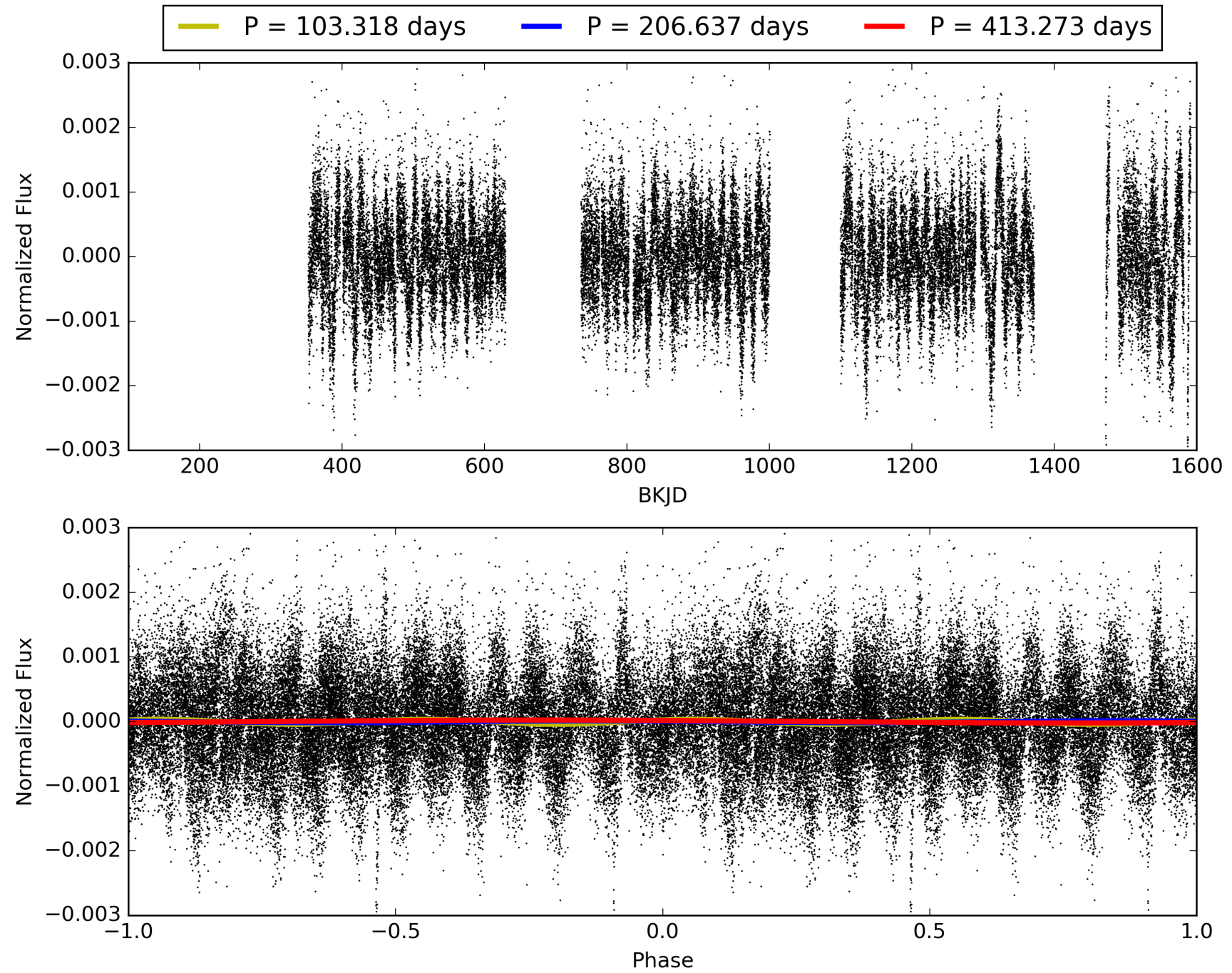
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:16:58 Z

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

# TCE 010087165-01, PDC Light Curves

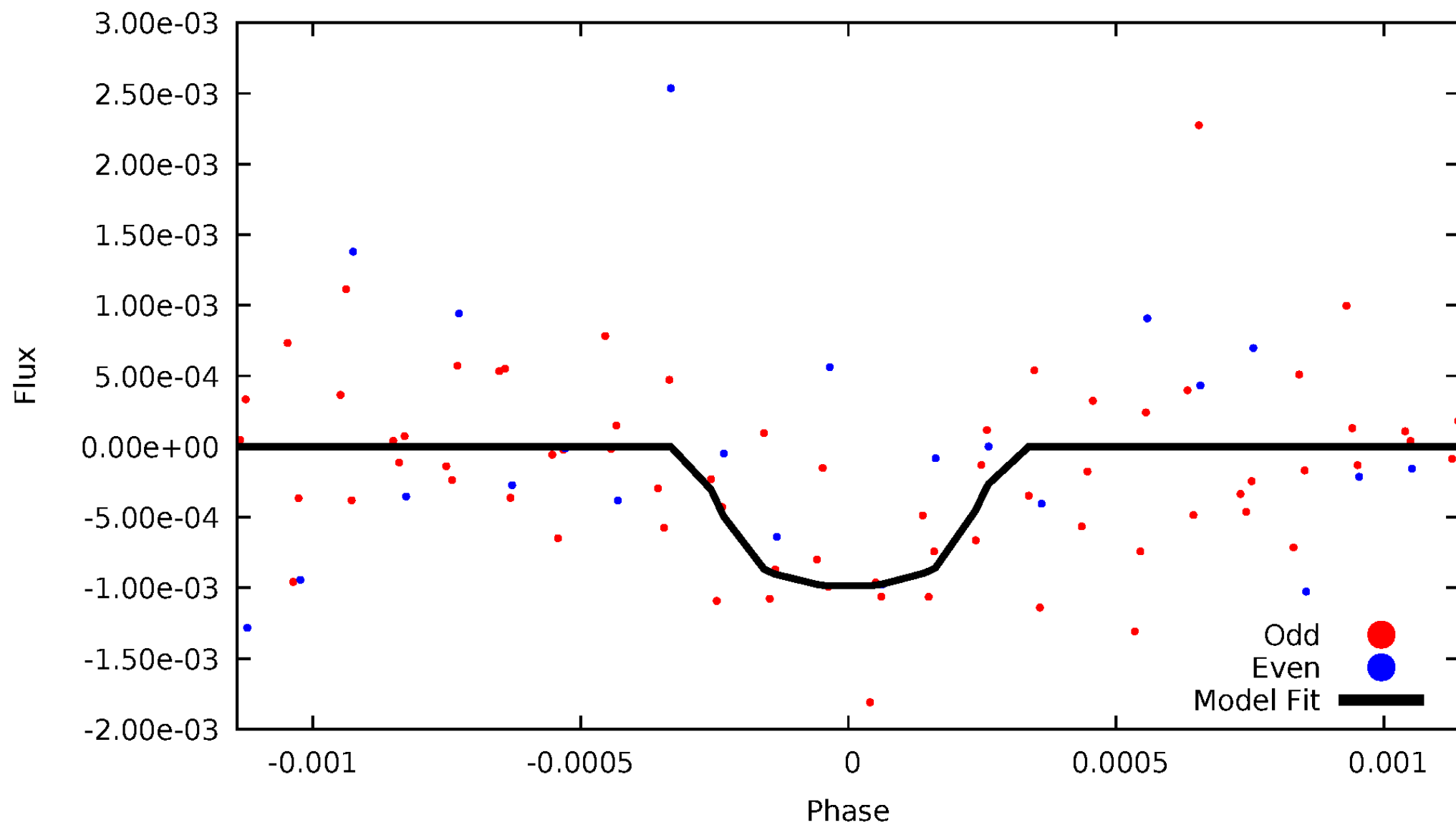


TCE 010087165-01



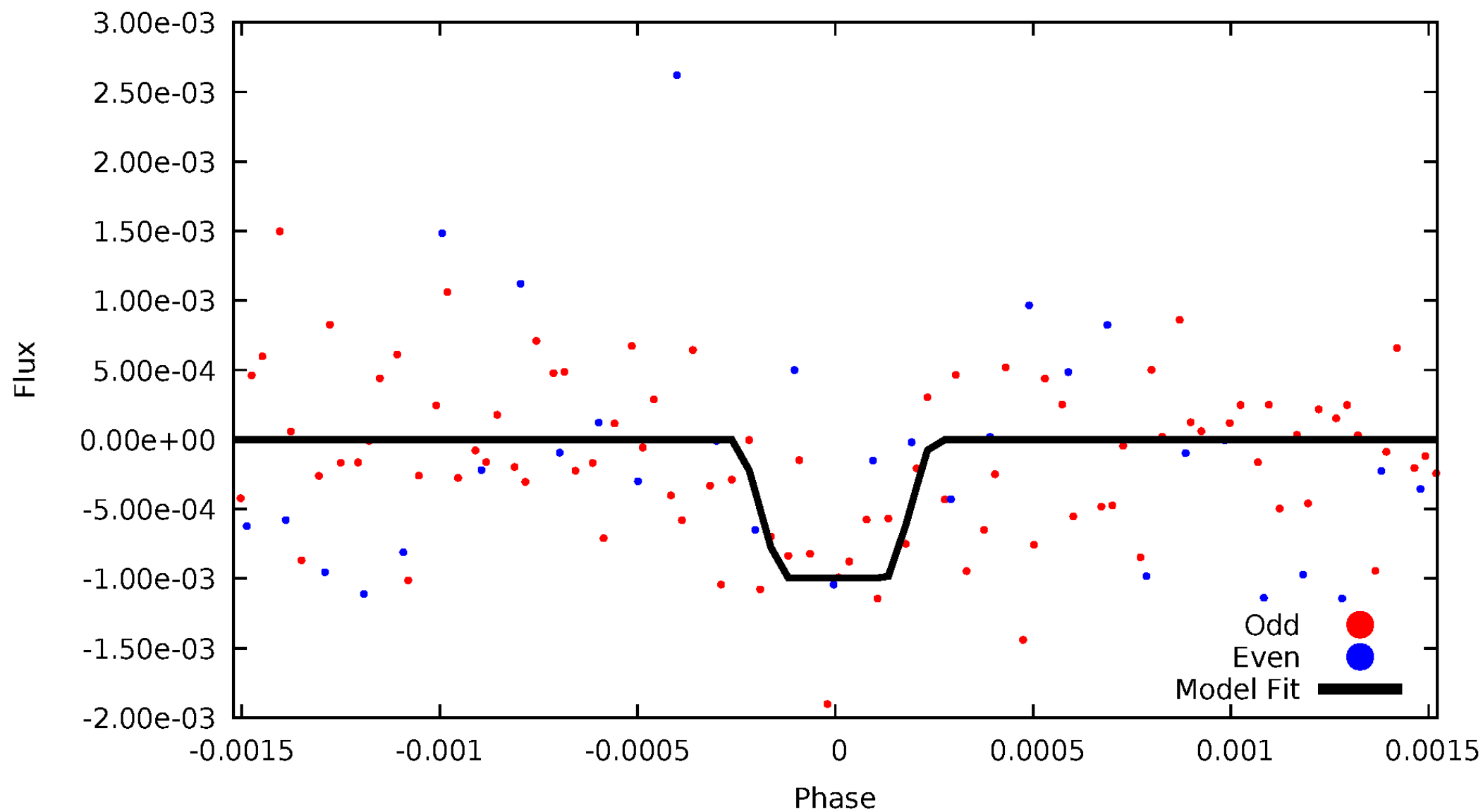
# DV Odd/Even

TCE 010087165-01



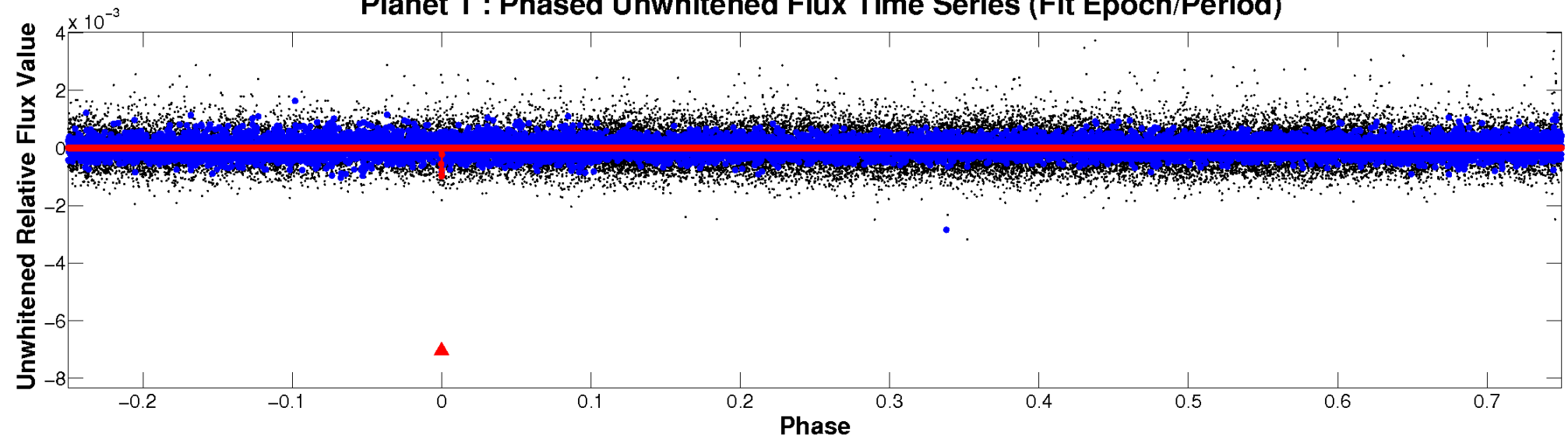
# ALT Odd/Even

TCE 010087165-01

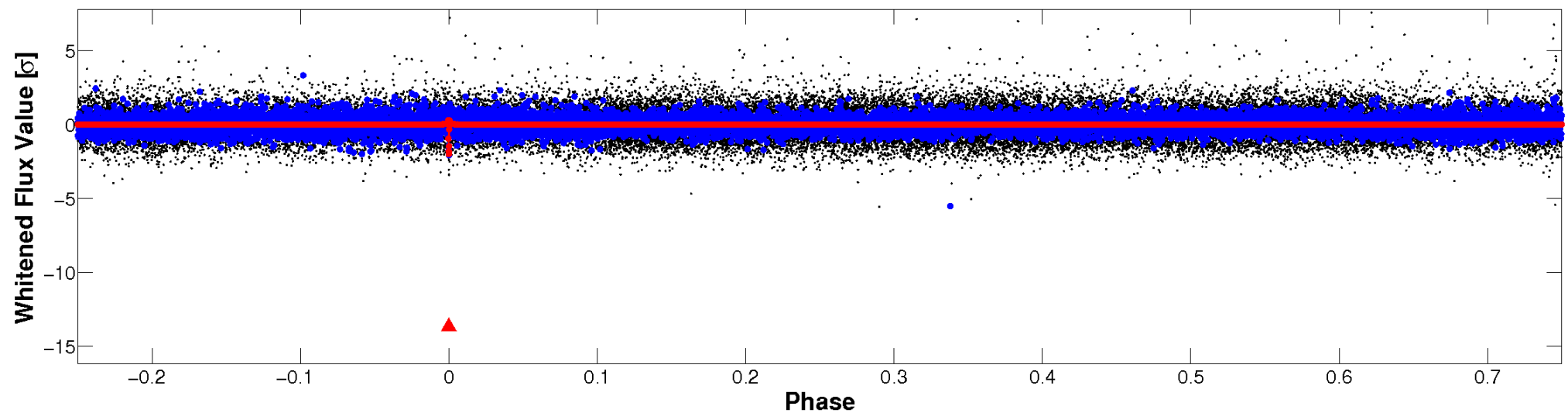


# Non-Whitened Vs. Whitened Light Curve

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

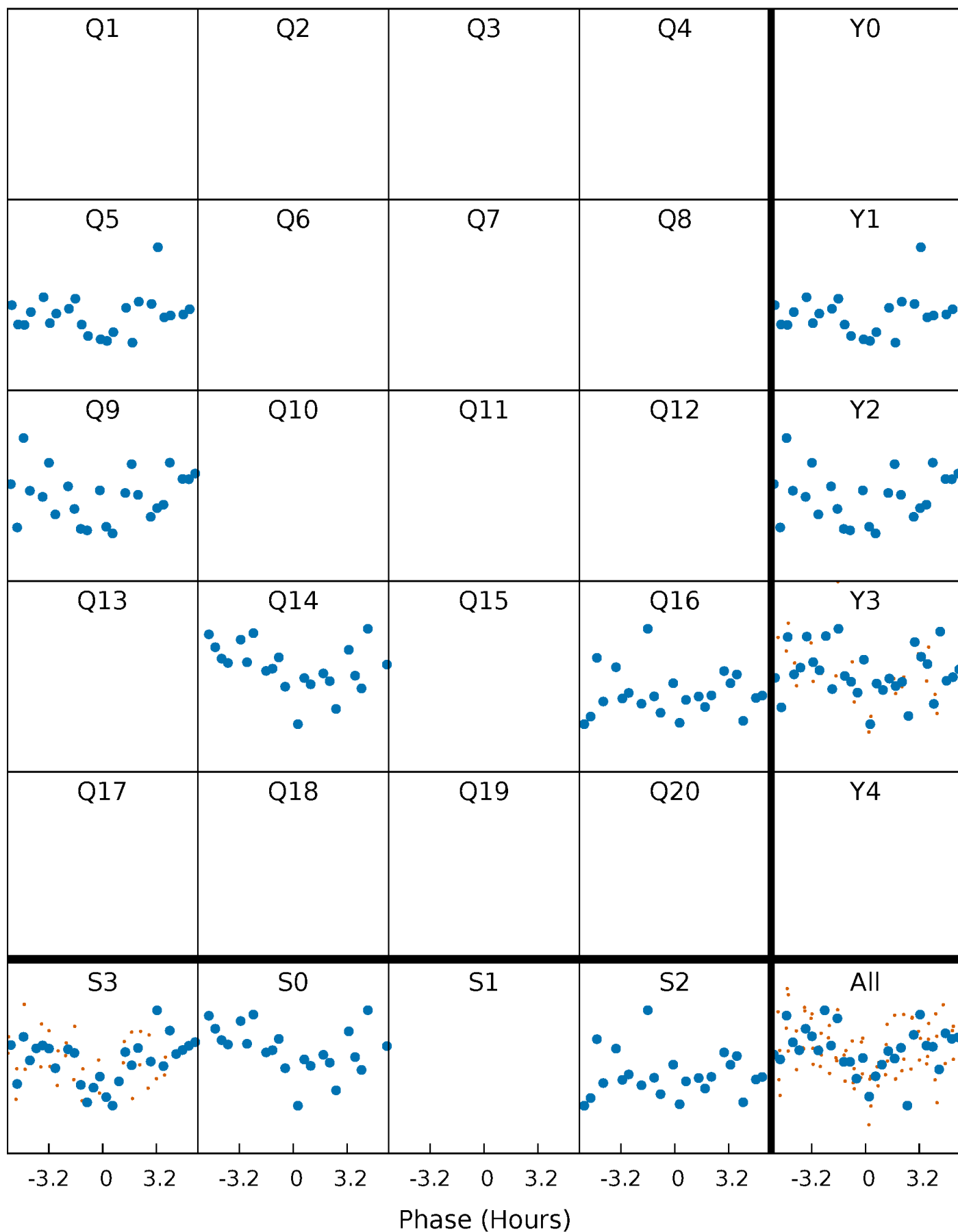


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

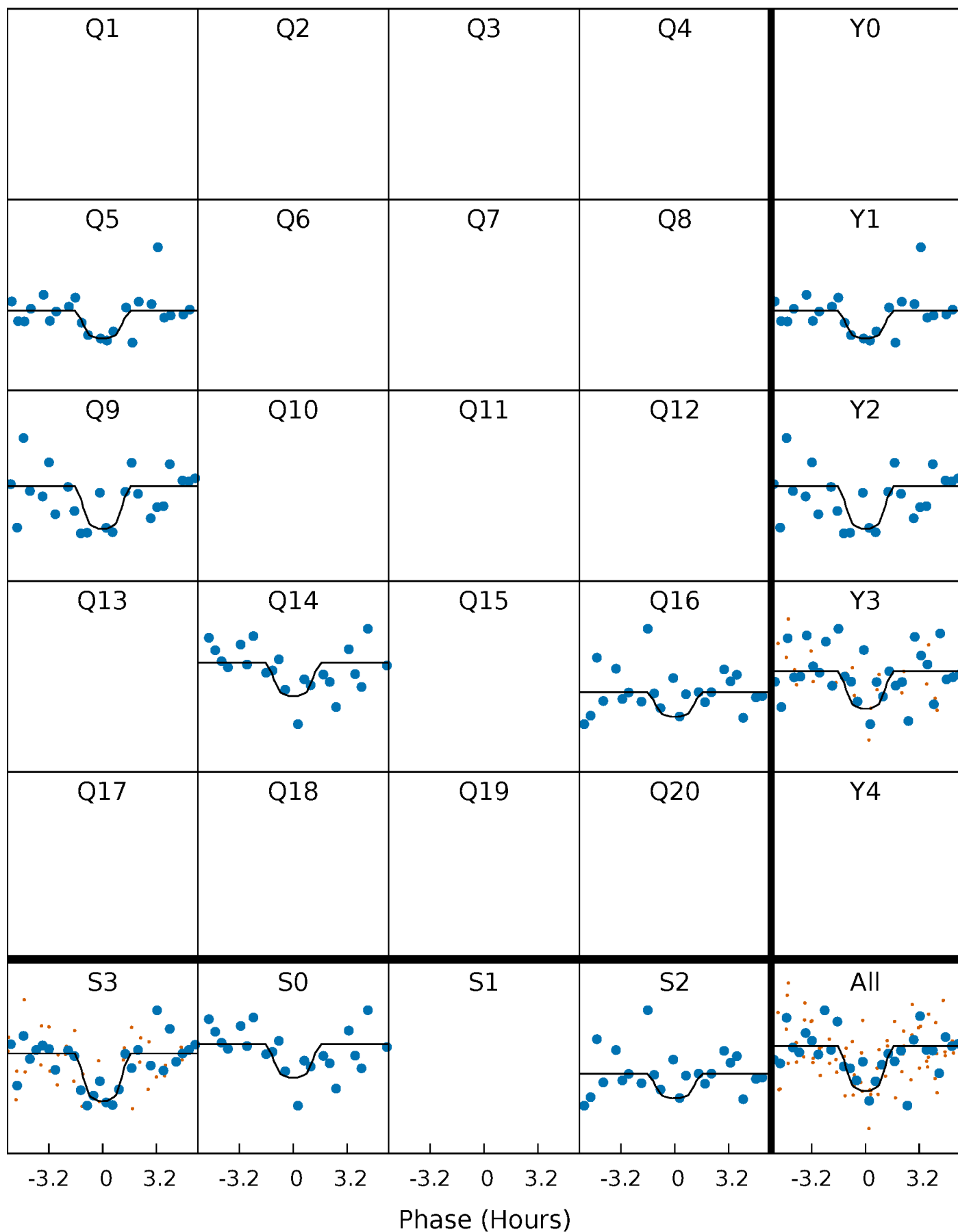
TCE 010087165-01 P=206.636588 Days  $T_0=251.308192$  (BKJD)





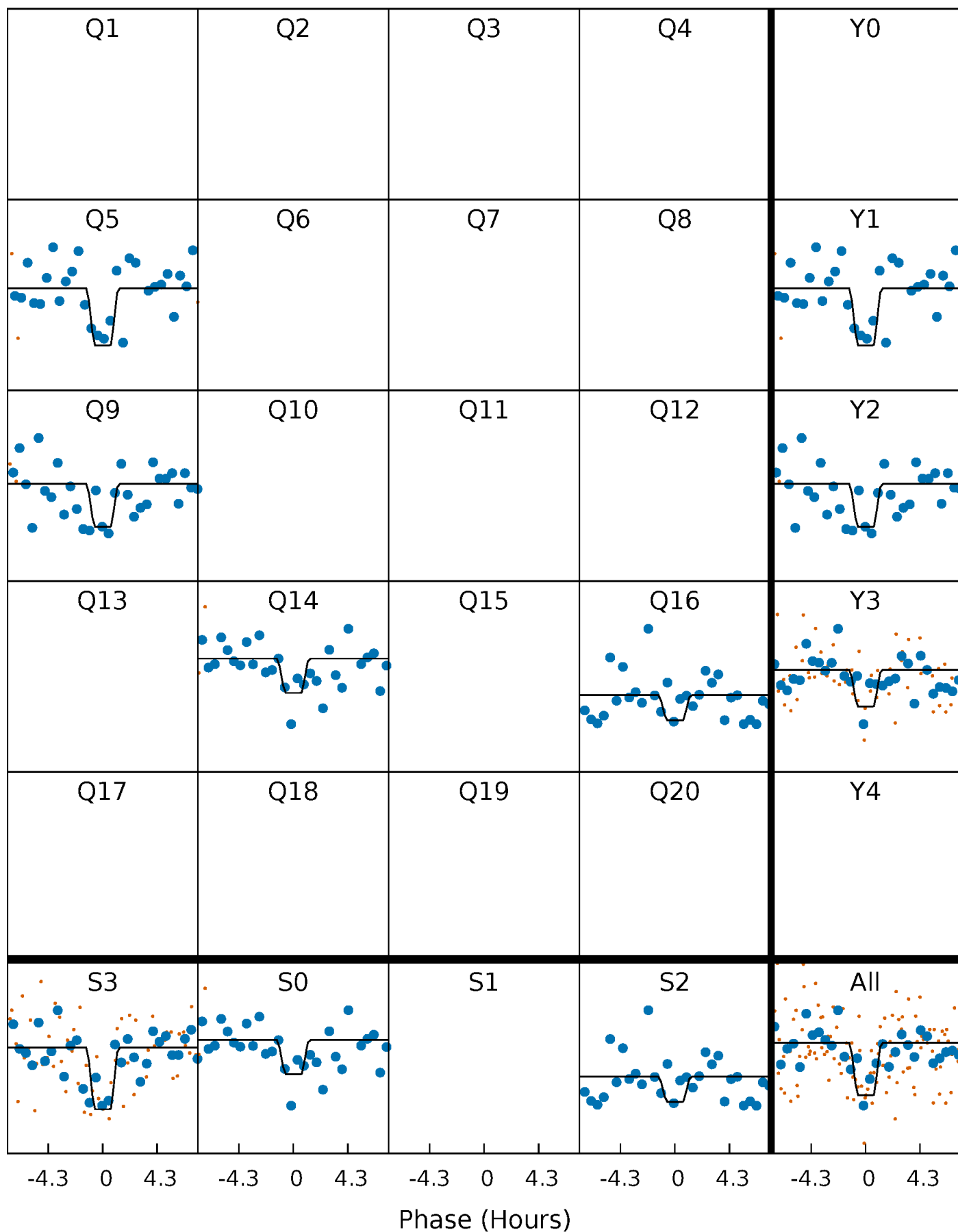
# DV Quarter-Phased Transit Curves

TCE 010087165-01 P=206.636588 Days  $T_0=251.308192$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

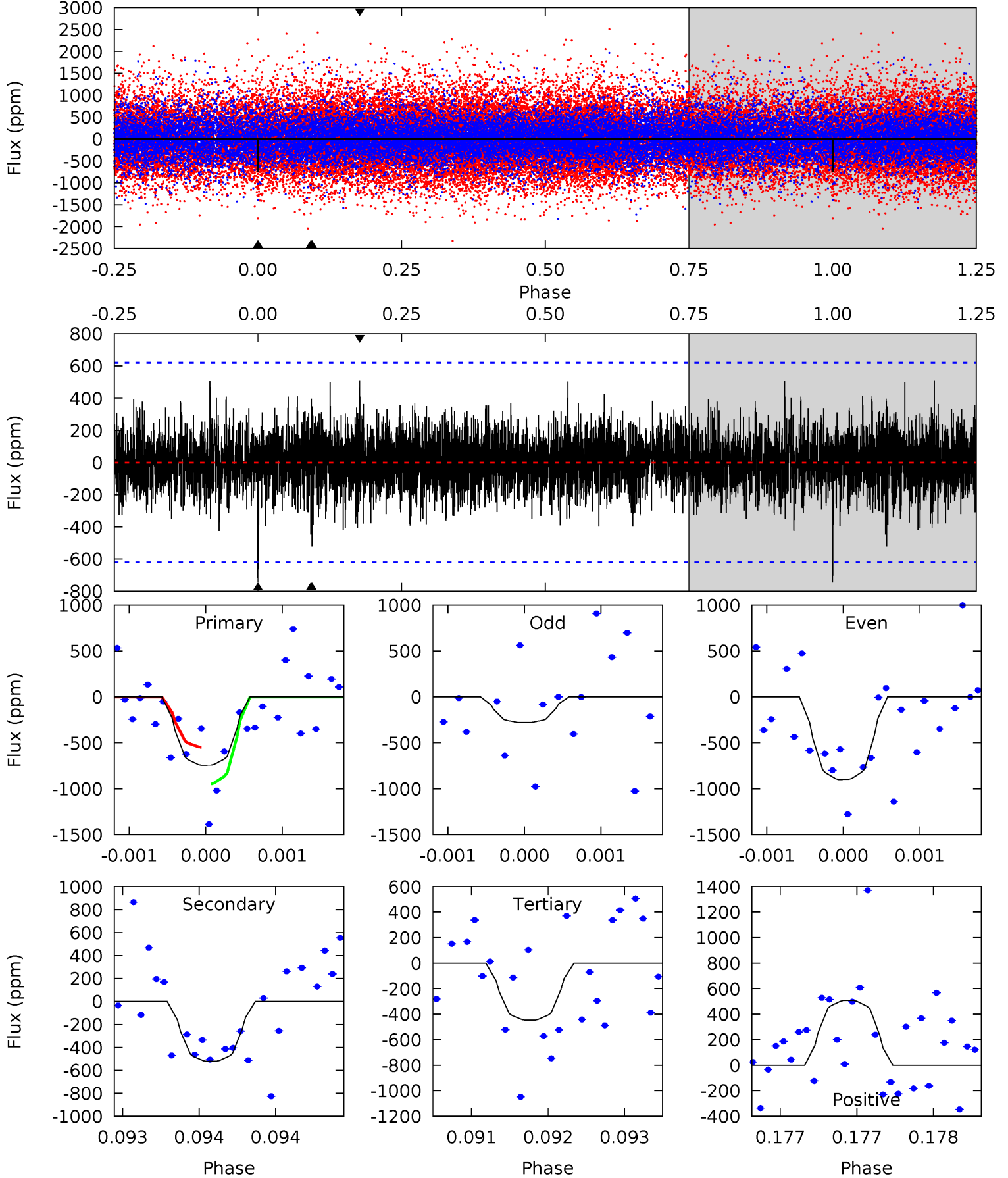
TCE 010087165-01 P=206.638347 Days  $T_0=251.311792$  (BKJD)



# DV Model-Shift Uniqueness Test

010087165-01, P = 206.636588 Days, E = 251.308192 Days

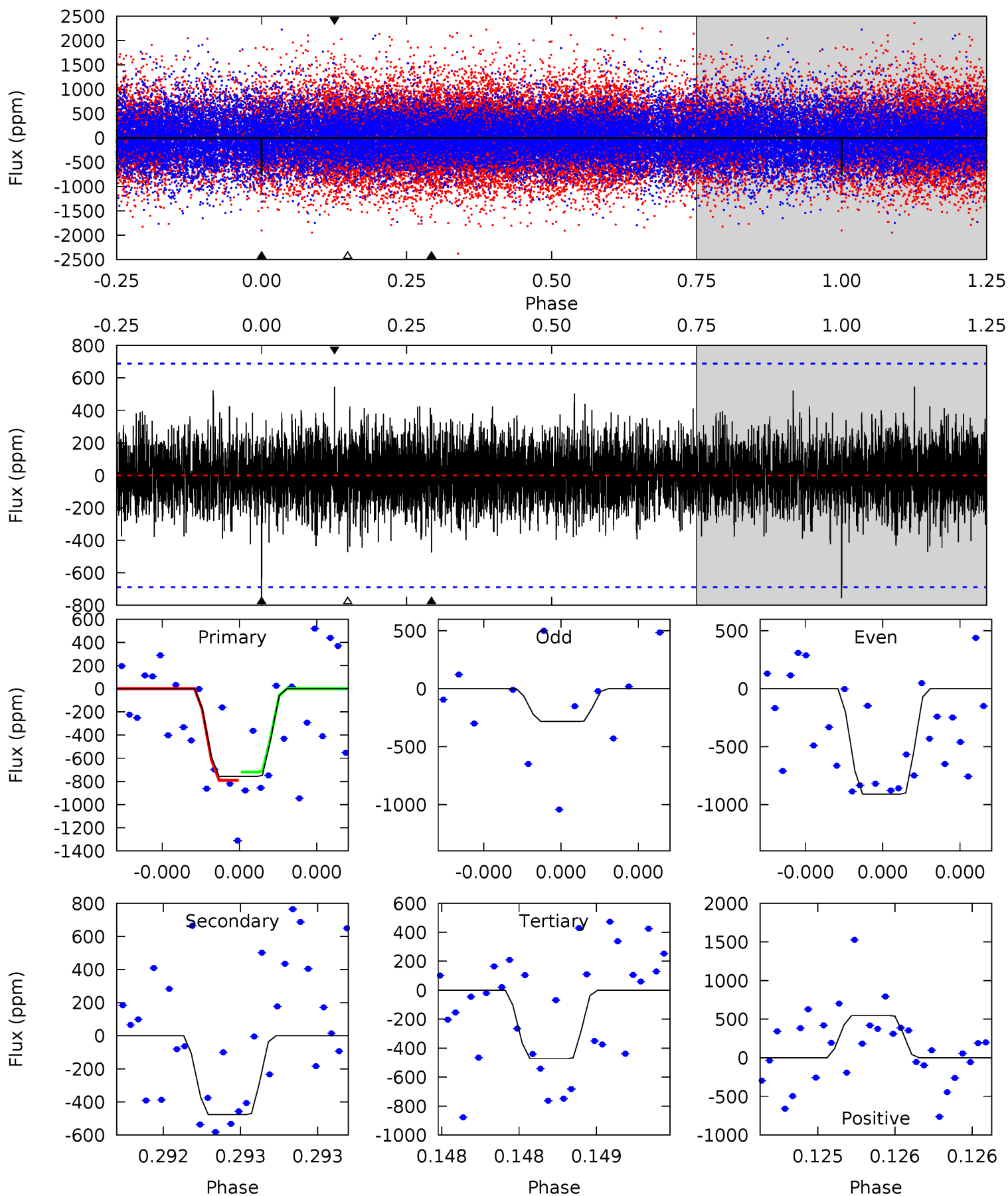
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.66	4.66	3.99	4.54	5.55	3.44	1.14	2.66	2.11	0.67	0.12	2.42	0.85	0.41	1.79



# Alt Model-Shift Uniqueness Test

010087165-01, P = 206.638347 Days, E = 251.311792 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
6.14	3.86	3.83	4.44	5.59	3.51	1.09	2.31	1.70	0.03	-0.58	2.22	0.92	0.42	0.29



### Stellar Parameters For KIC 010087165

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4914^{+174}_{-174}$	$4.610^{+0.022}_{-0.067}$	$0.120^{+0.250}_{-0.300}$	$0.738^{+0.081}_{-0.050}$	$0.830^{+0.048}_{-0.083}$	$2.905^{+0.381}_{-0.680}$
	+4%/-4%	+0%/-1%	+208%/-250%	+11%/-7%	+6%/-10%	+13%/-23%
Source	KIC0	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 010087165-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-521 \pm 112$	$7.96^{+8.85}_{-5.70}$	$329^{+13}_{-13}$	$2993^{+1532}_{-541}$	$1840^{+22054}_{-1444}$
Alt.	$-475 \pm 123$	$8.02^{+7.48}_{-5.63}$	$330^{+12}_{-14}$	$2954^{+1461}_{-495}$	$1622^{+17317}_{-1219}$

$T_{max}$  = 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

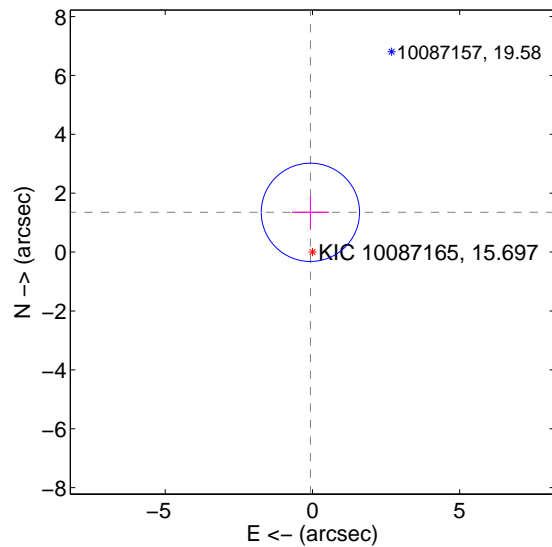
Supplemental centroid analysis for 010087165-01. Kepler magnitude: 15.70. Transit SNR 8.07

There are 0 quarters with good PRF difference image offsets

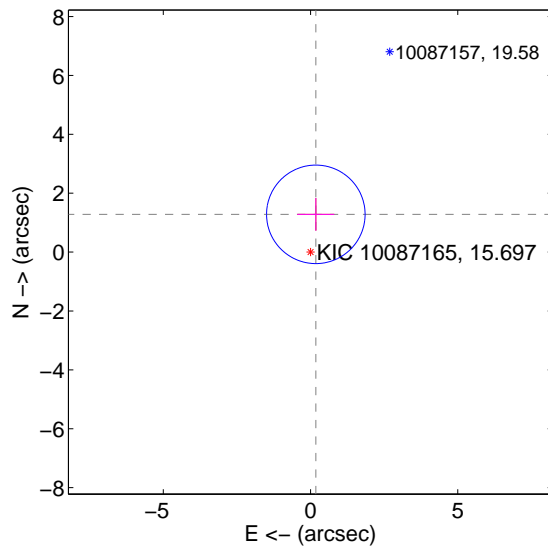
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.353 \pm 0.556$	2.43	$0.069 \pm 0.628$	$1.351 \pm 0.556$
PRF-fit source offset from KIC position	$1.295 \pm 0.558$	2.32	$-0.180 \pm 0.628$	$1.283 \pm 0.556$
photometric centroid source offset	$1.89 \pm 1.65$	1.14	$1.08 \pm 1.52$	$-1.55 \pm 1.72$

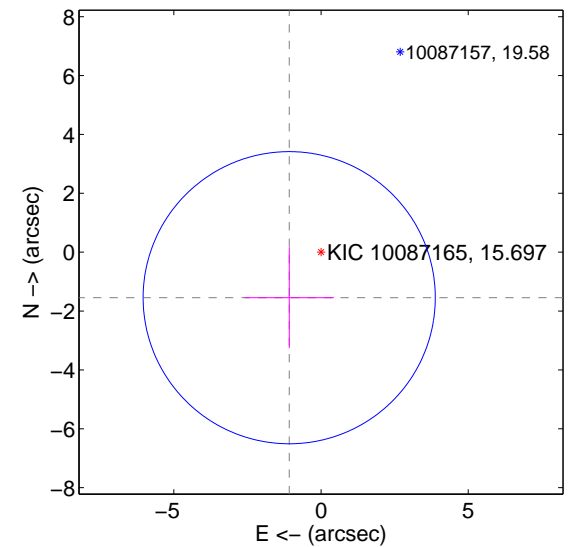
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

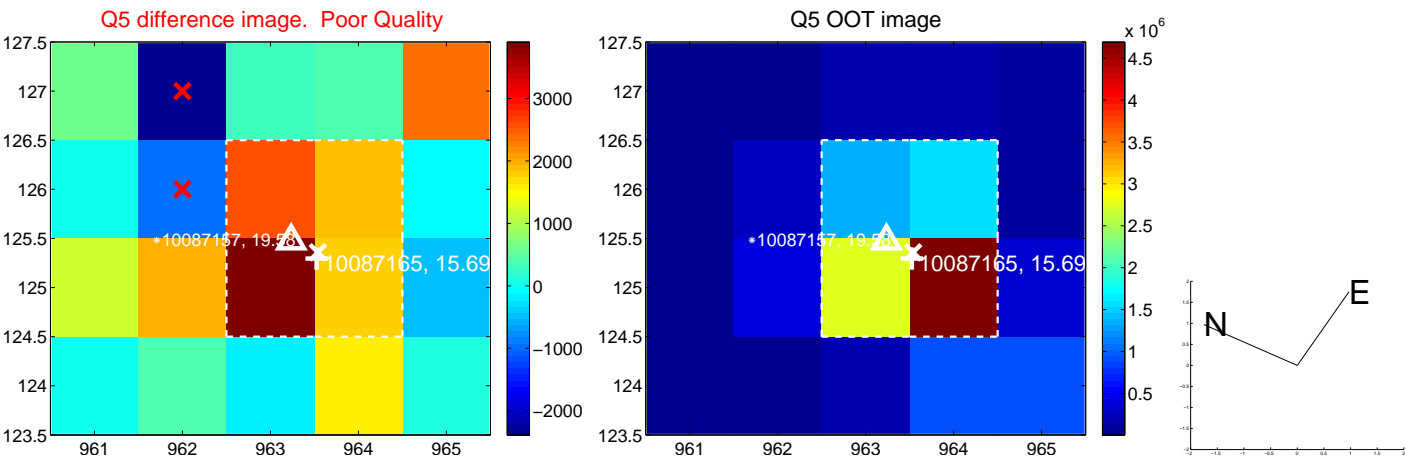


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

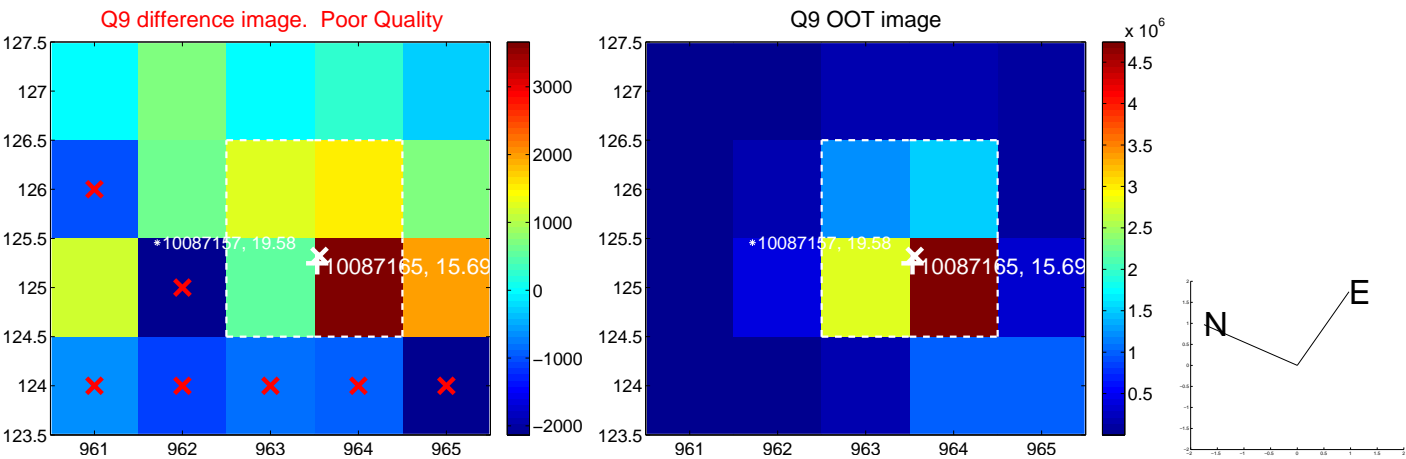


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

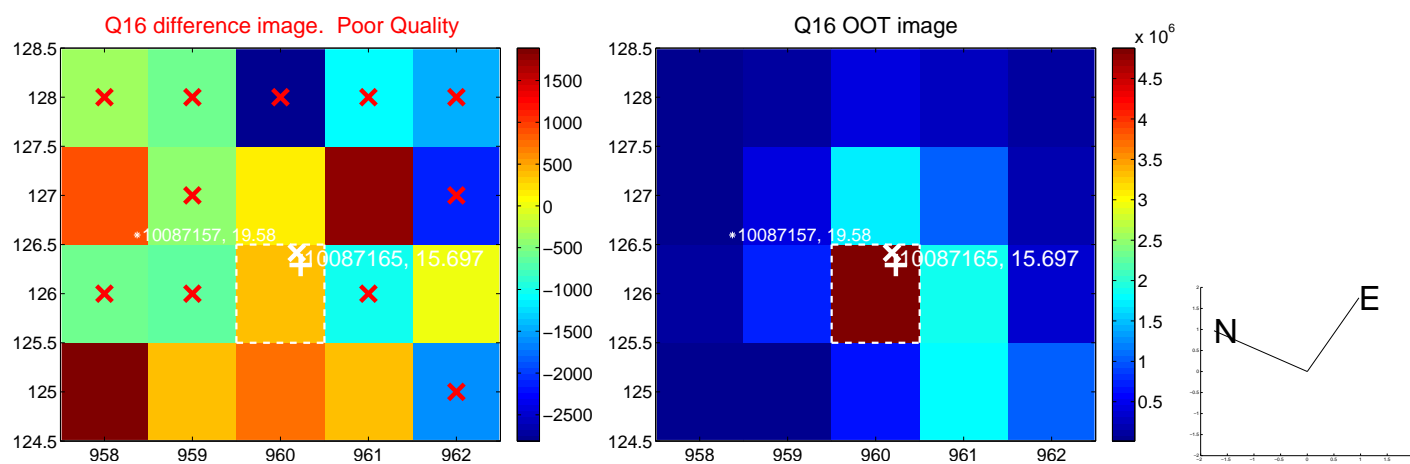
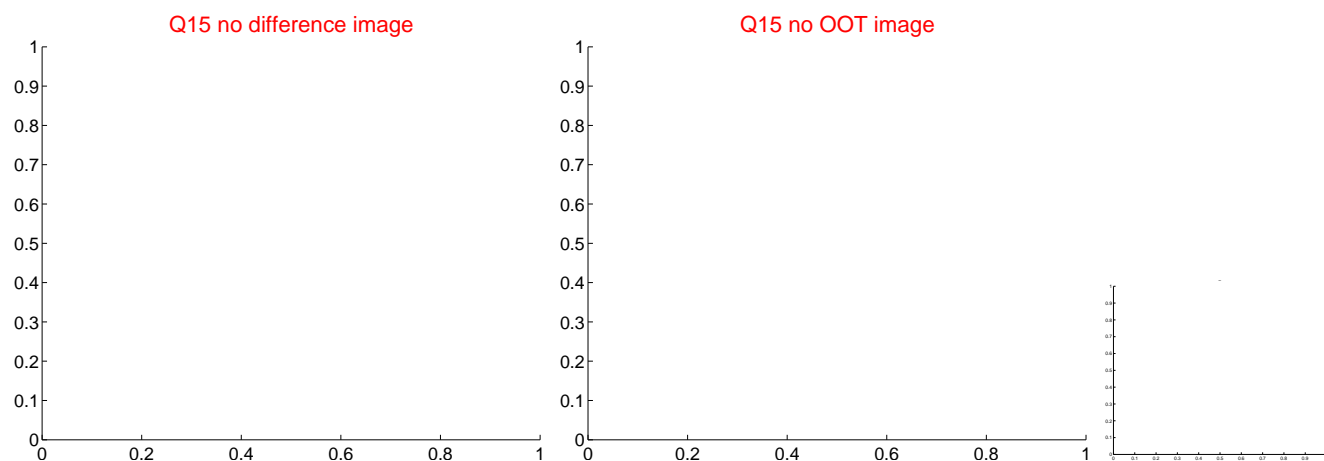
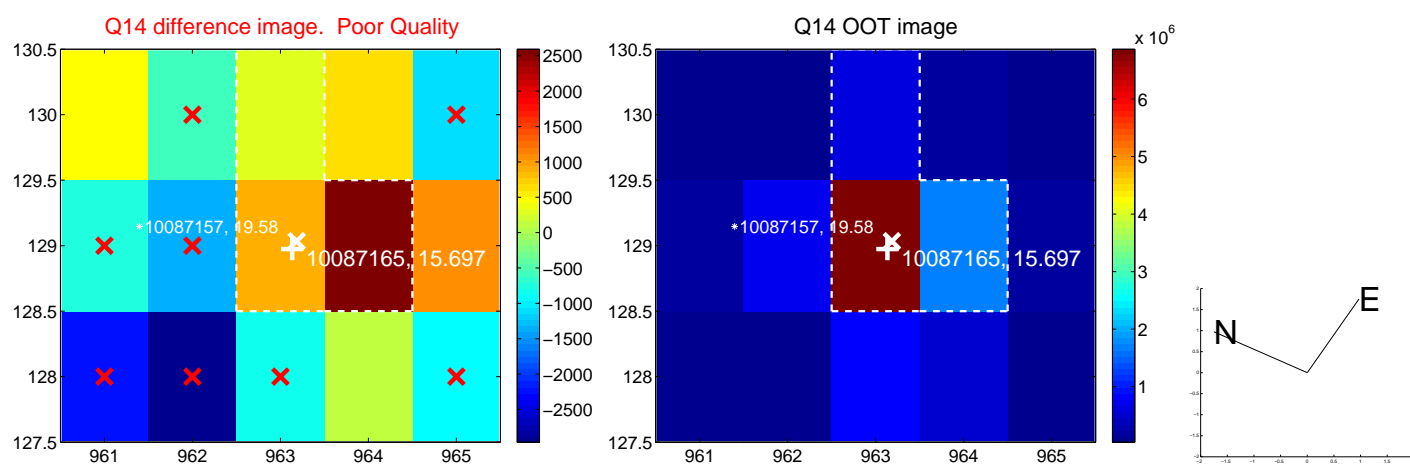
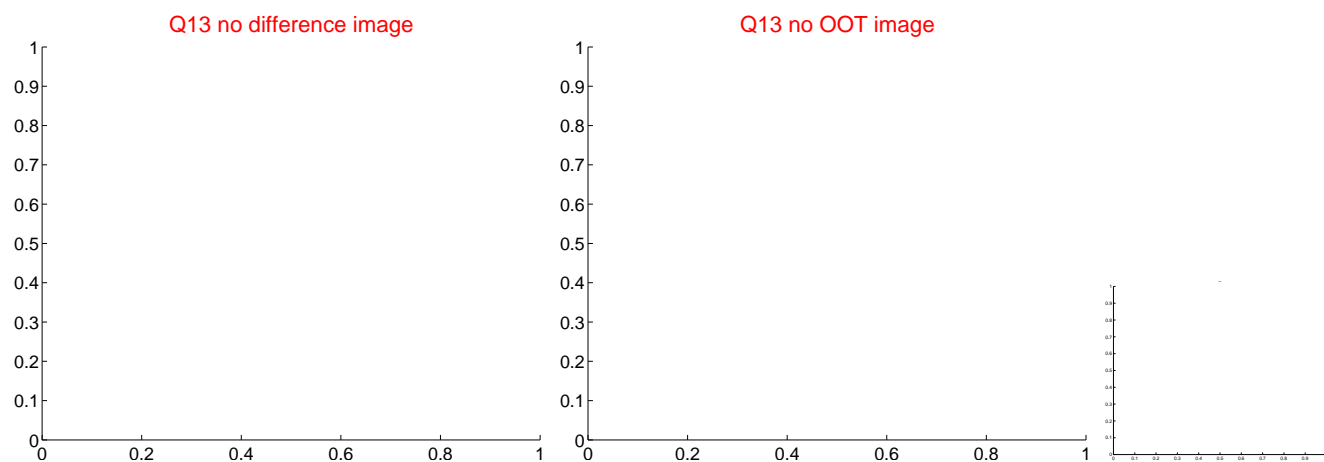




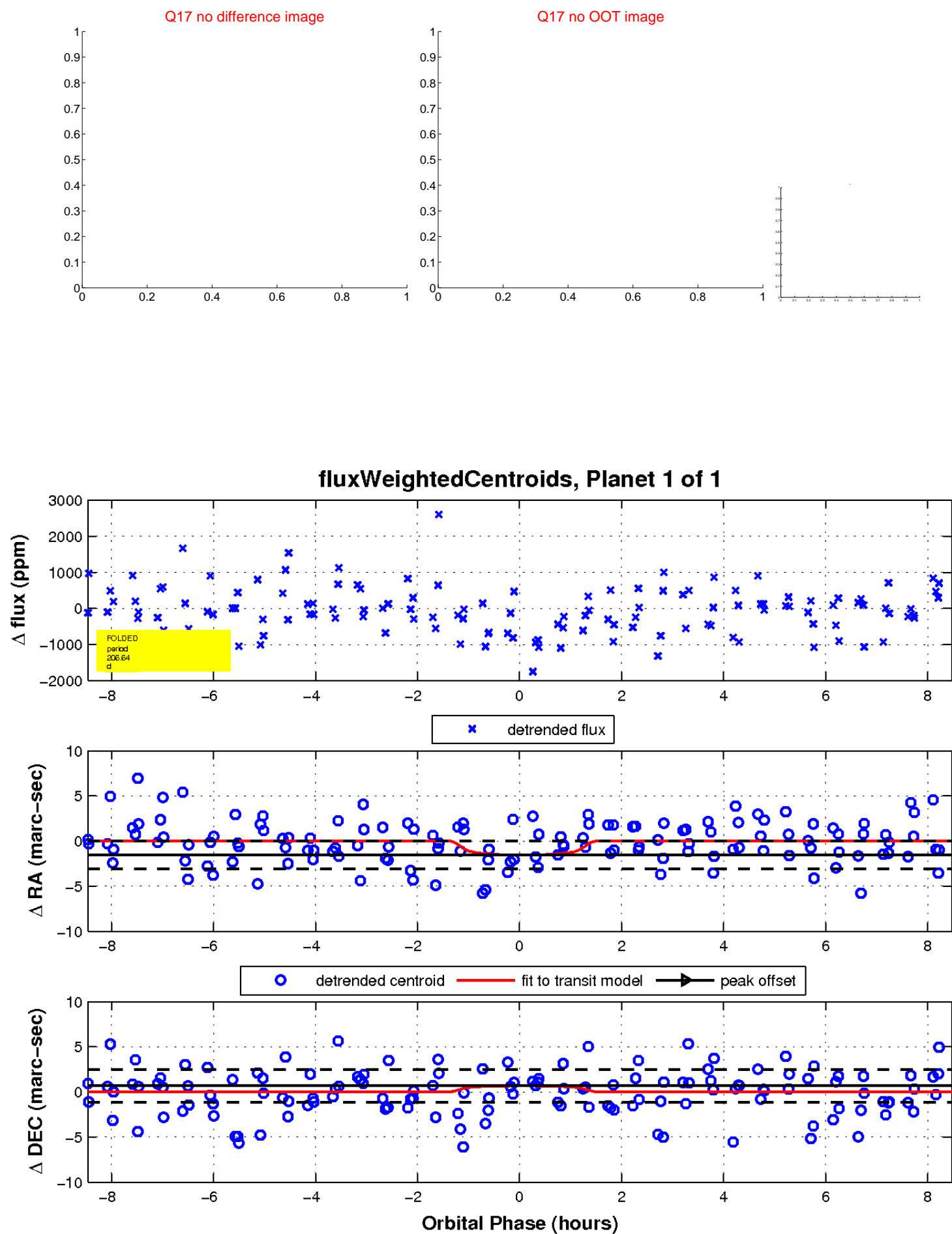
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

