

# KIC 009886691

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009886691-01	OBS	No	461.865176	250.966639	341.1	20.453	8.2	8.9	0.84	5845	1.71	0.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009886691-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

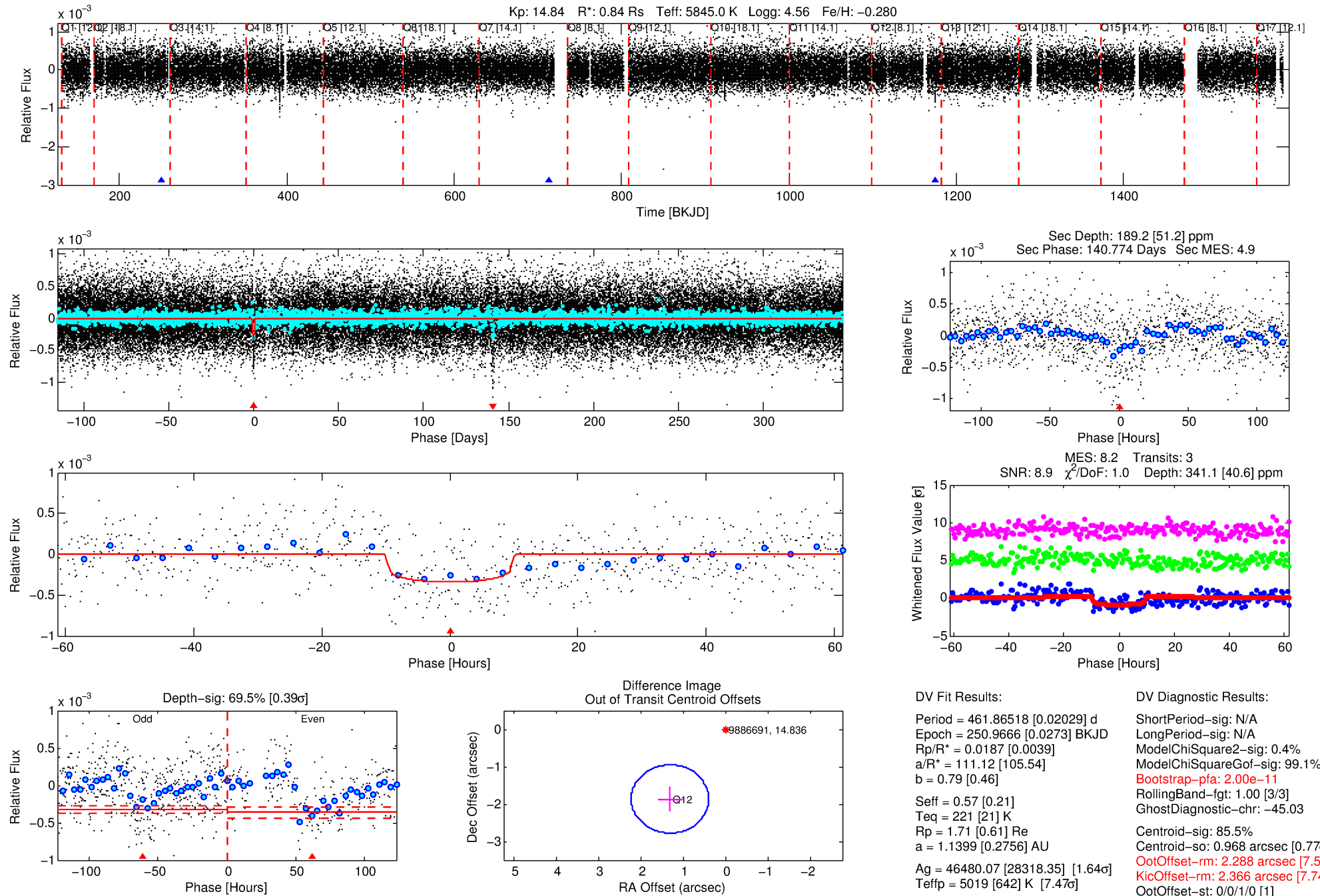
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009886691-01

No Significant Match Found

# DV One-Page Summary

KIC: 9886691 Candidate: 1 of 1 Period: 461.865 d



## DV Fit Results:

Period = 461.86518 [0.02029] d  
Epoch = 250.9666 [0.0273] BKJD  
Rp/R\* = 0.0187 [0.0039]  
a/R\* = 111.12 [105.54]  
b = 0.79 [0.46]  
Seff = 0.57 [0.21]  
Teq = 221 [21] K  
Rp = 1.71 [0.61] Re  
a = 1.1399 [0.2756] AU  
Ag = 46480.07 [28318.35] [1.64 $\sigma$ ]  
Teffp = 5019 [642] K [7.47 $\sigma$ ]

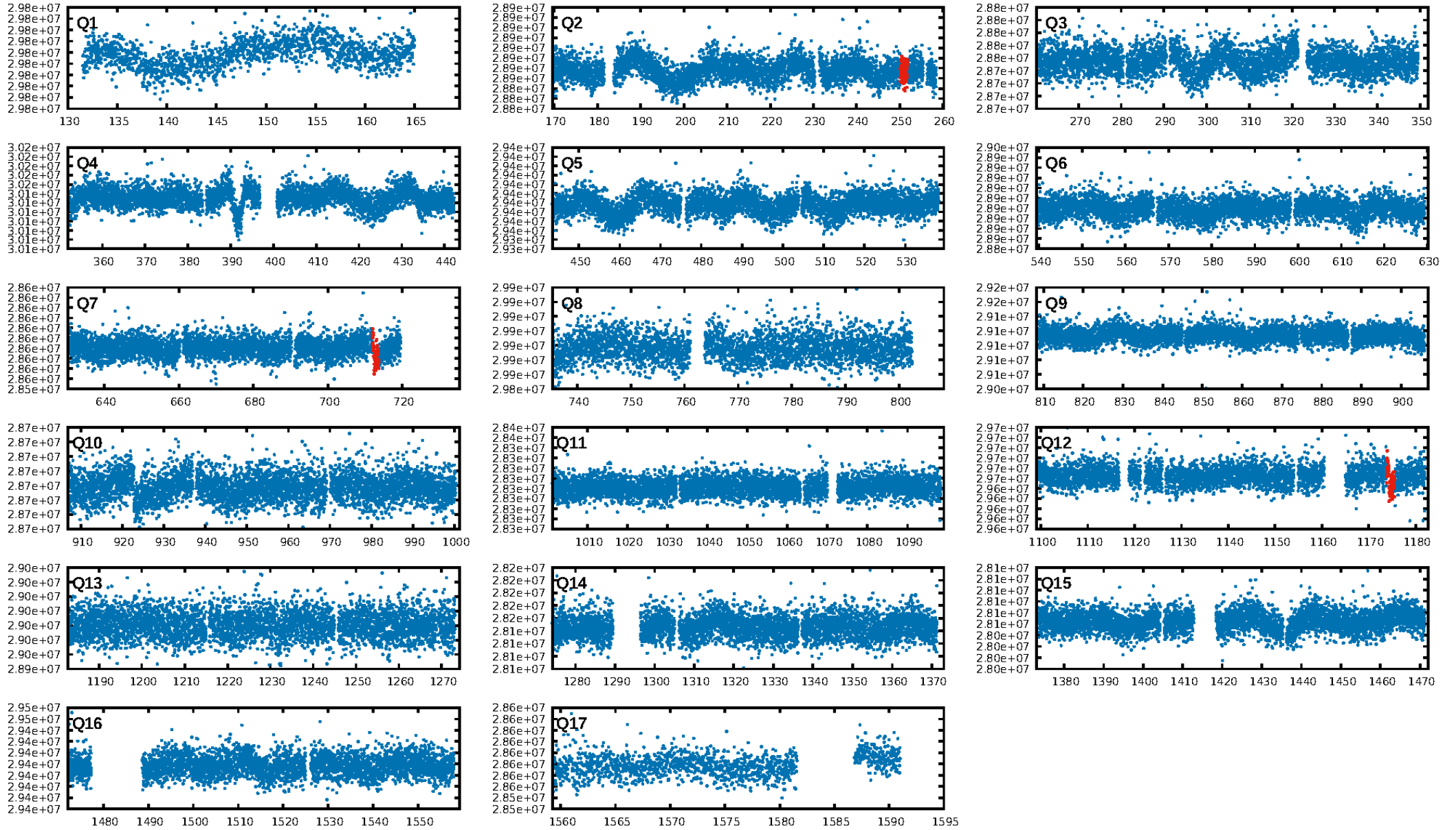
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 99.1%  
**Bootstrap-pfa: 2.00e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -45.03  
Centroid-sig: 85.5%  
Centroid-so: 0.968 arcsec [0.77 $\sigma$ ]  
**OotOffset-rm: 2.288 arcsec [7.51 $\sigma$ ]**  
**KicOffset-rm: 2.366 arcsec [7.74 $\sigma$ ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

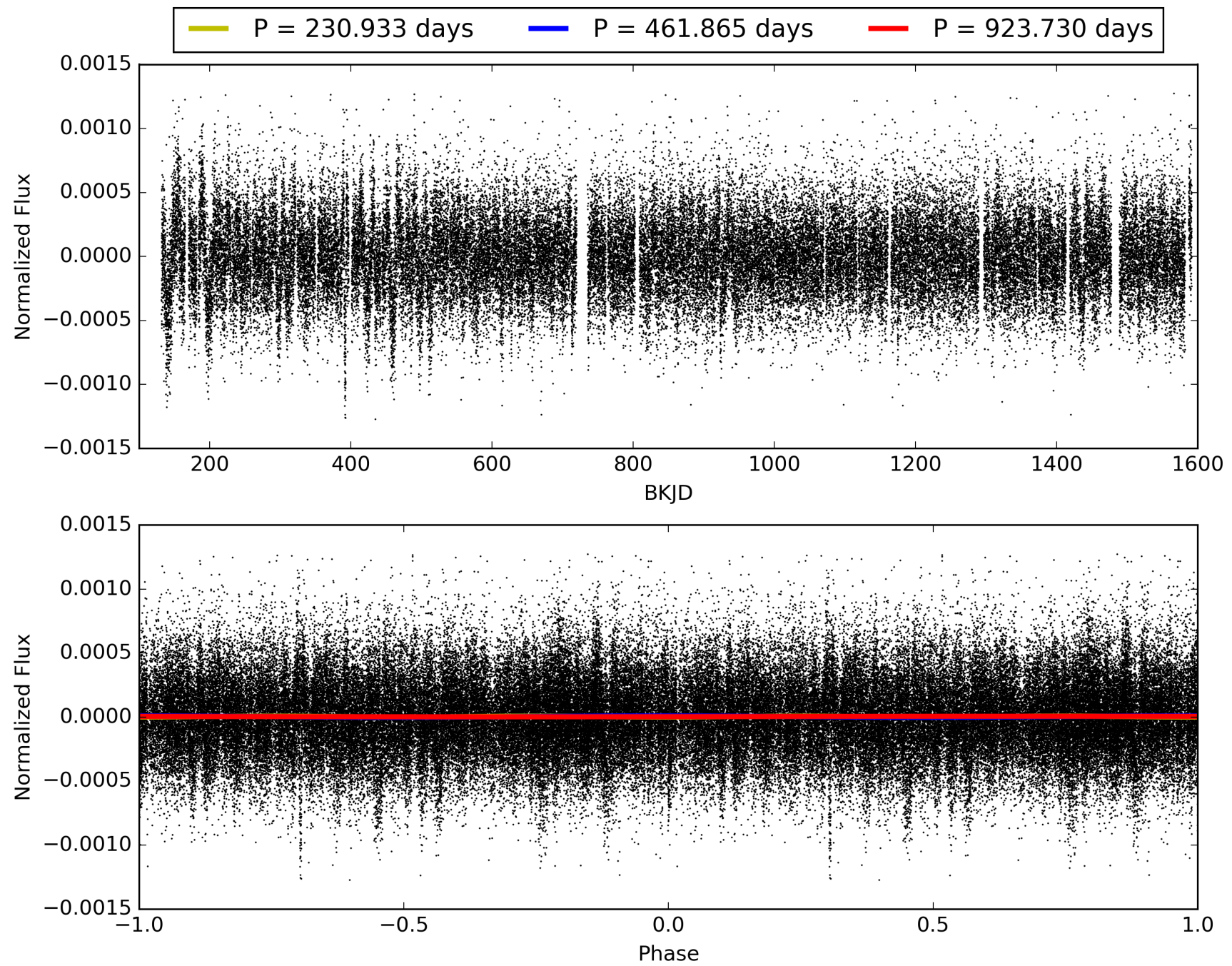
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:29:32 Z

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

# TCE 009886691-01, PDC Light Curves

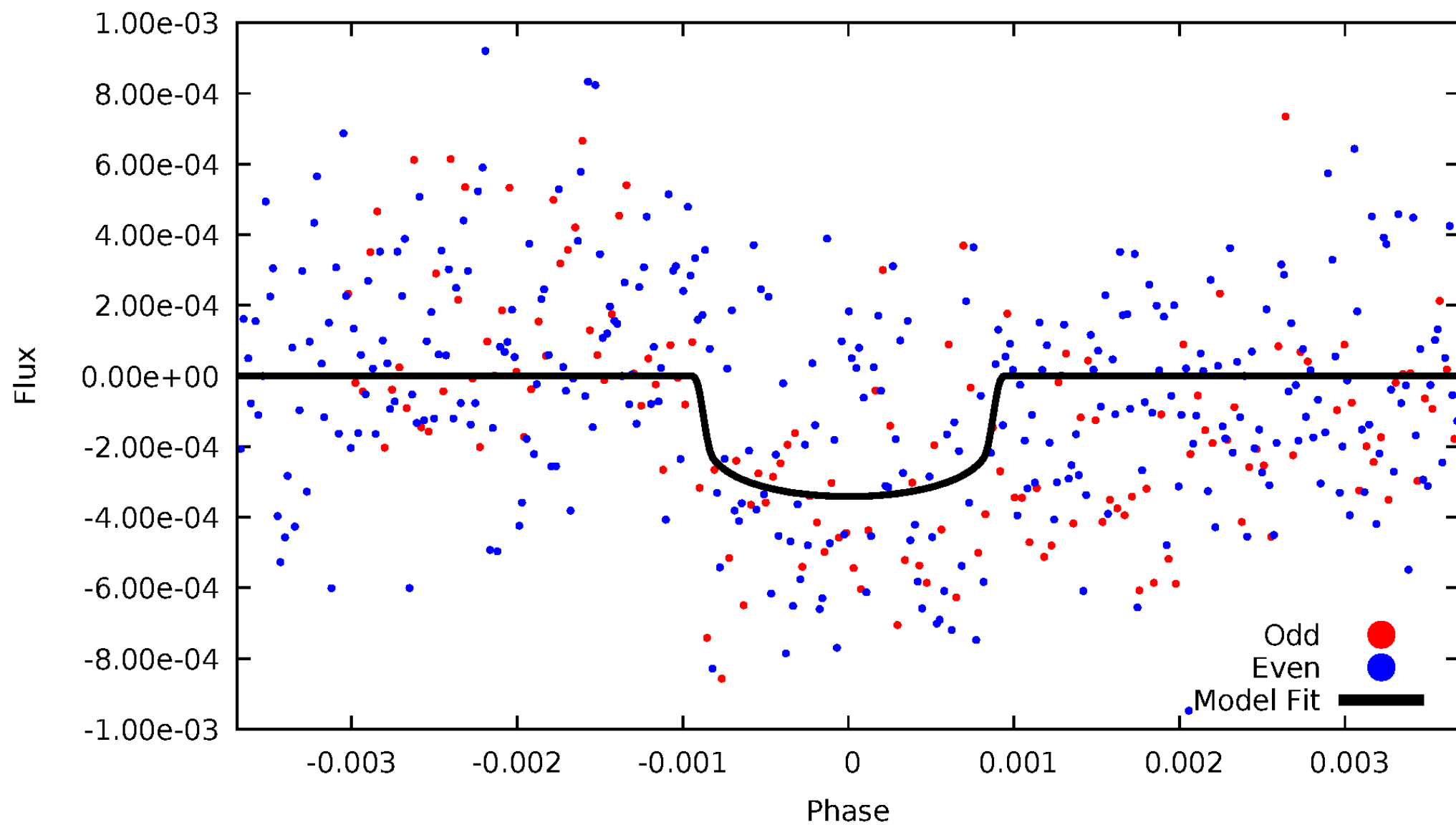


TCE 009886691-01



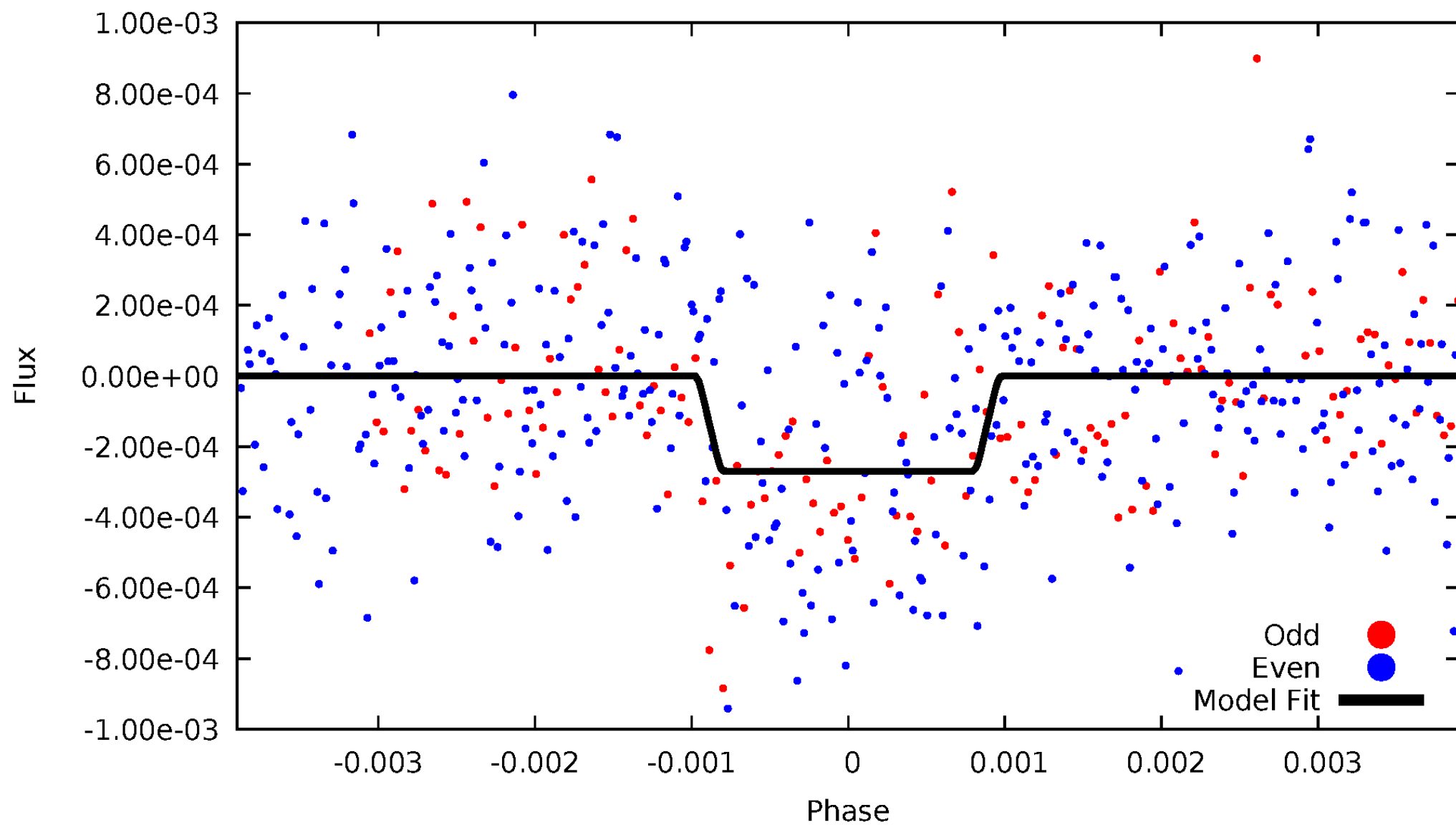
# DV Odd/Even

TCE 009886691-01



# ALT Odd/Even

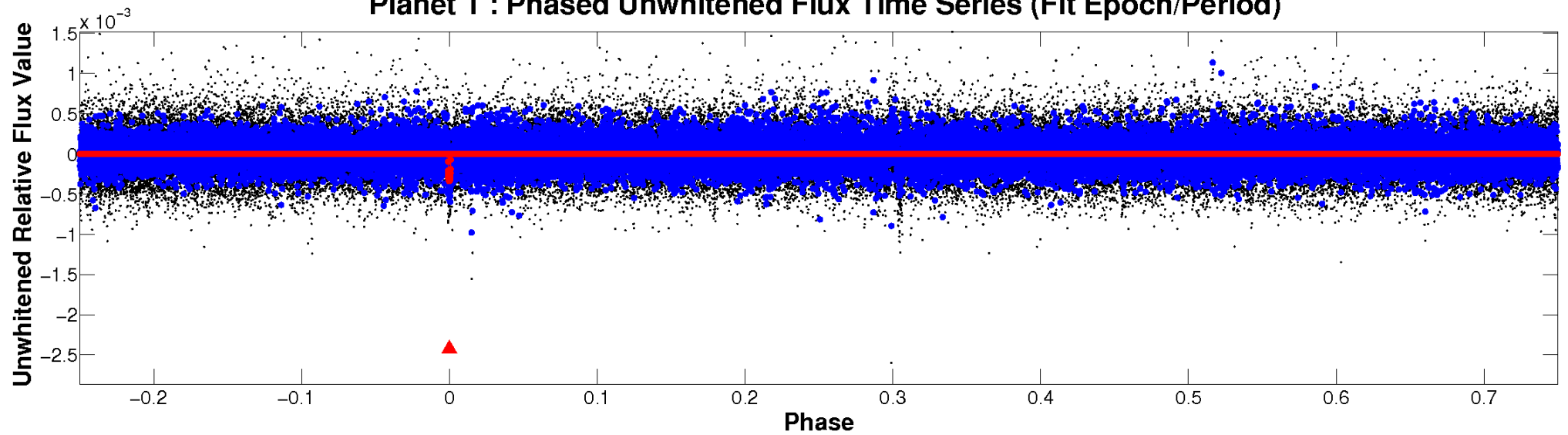
TCE 009886691-01



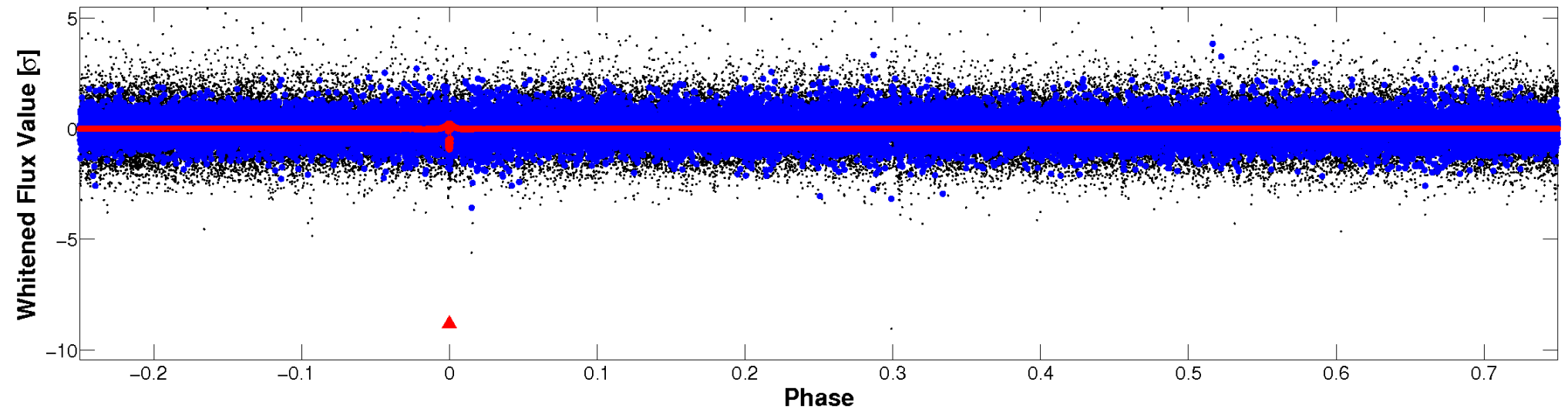


# Non-Whitened Vs. Whitened Light Curve

**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

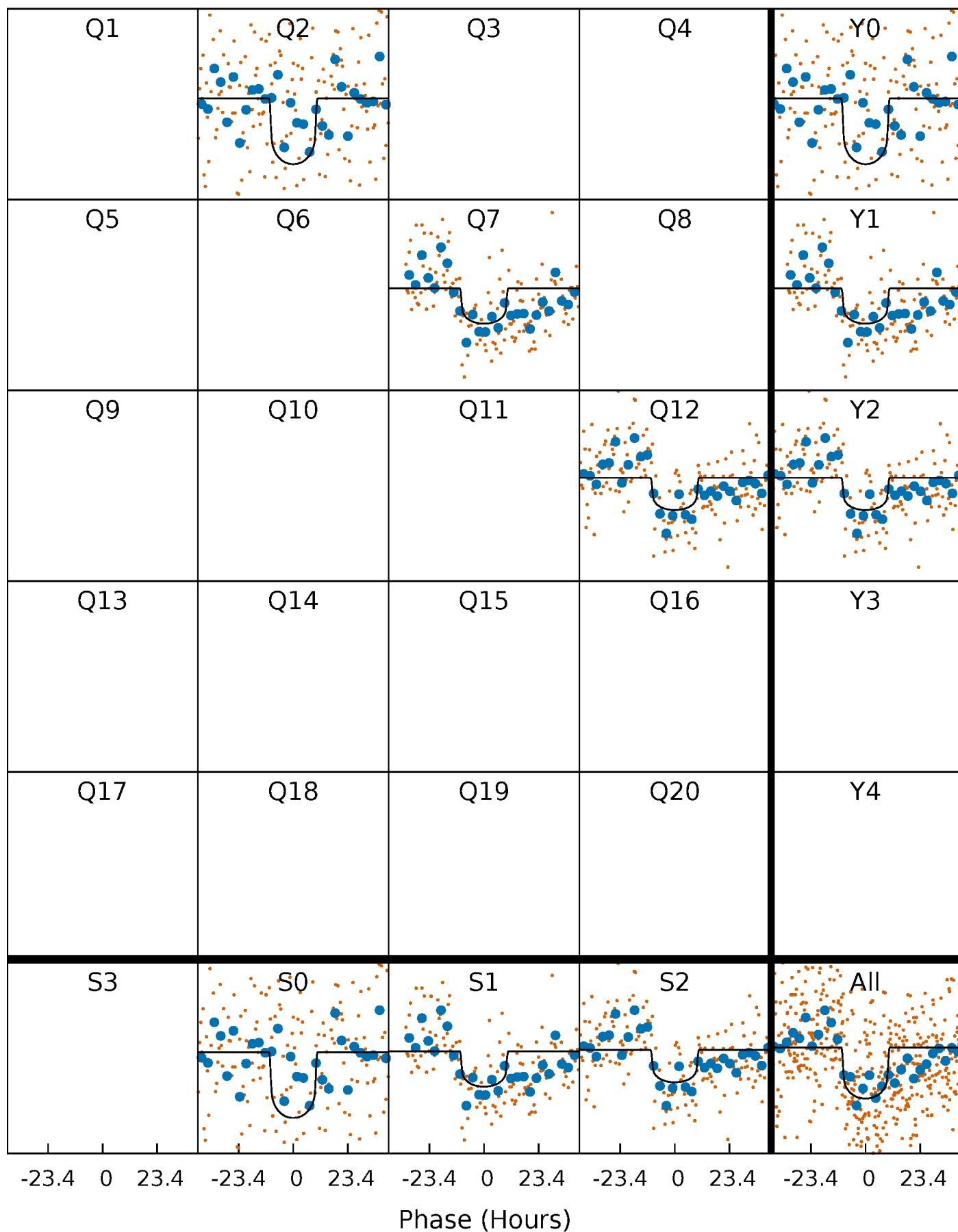
TCE 009886691-01 P=461.865176 Days  $T_0=250.966640$  (BKJD)





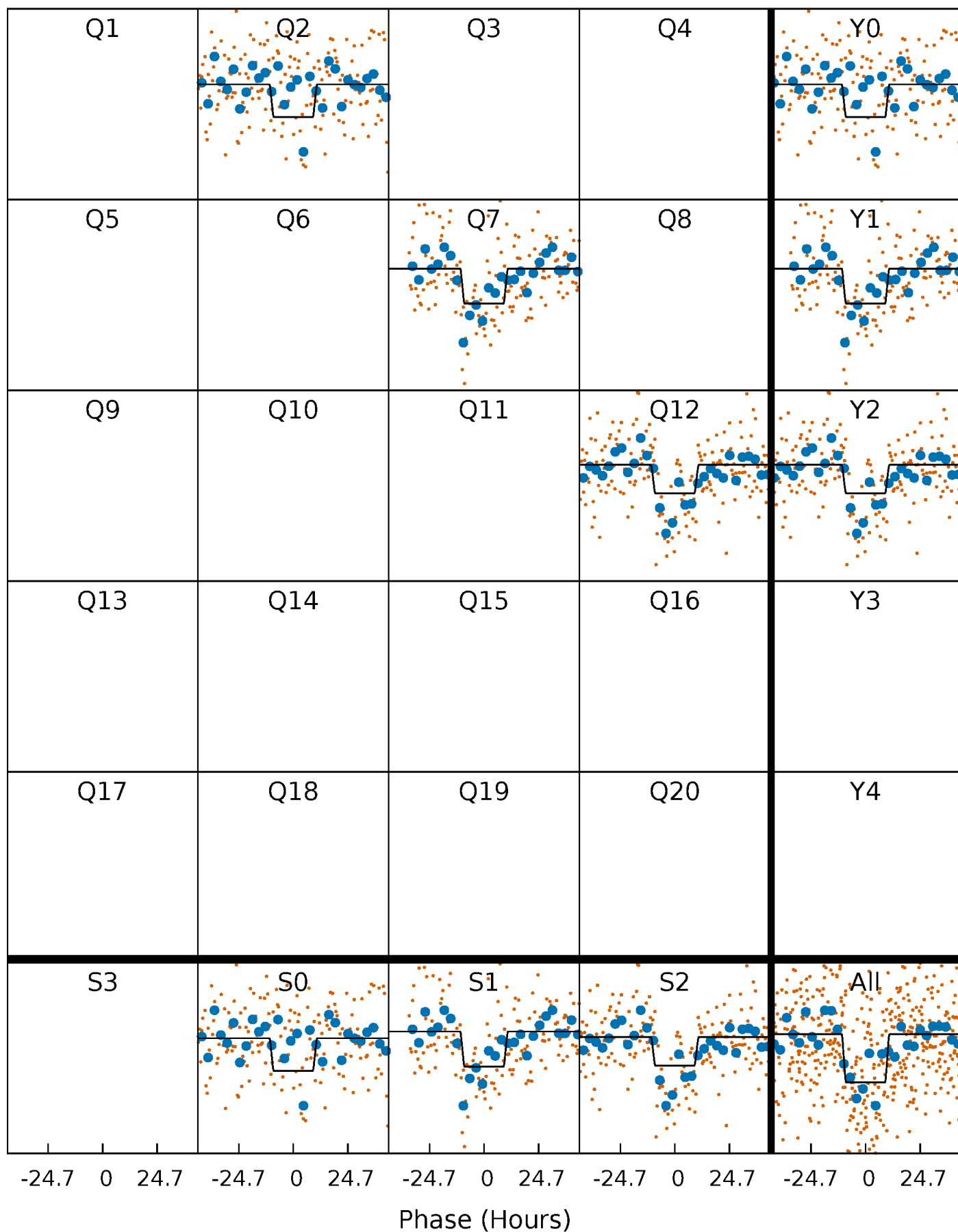
# DV Quarter-Phased Transit Curves

TCE 009886691-01 P=461.865176 Days  $T_0=250.966640$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

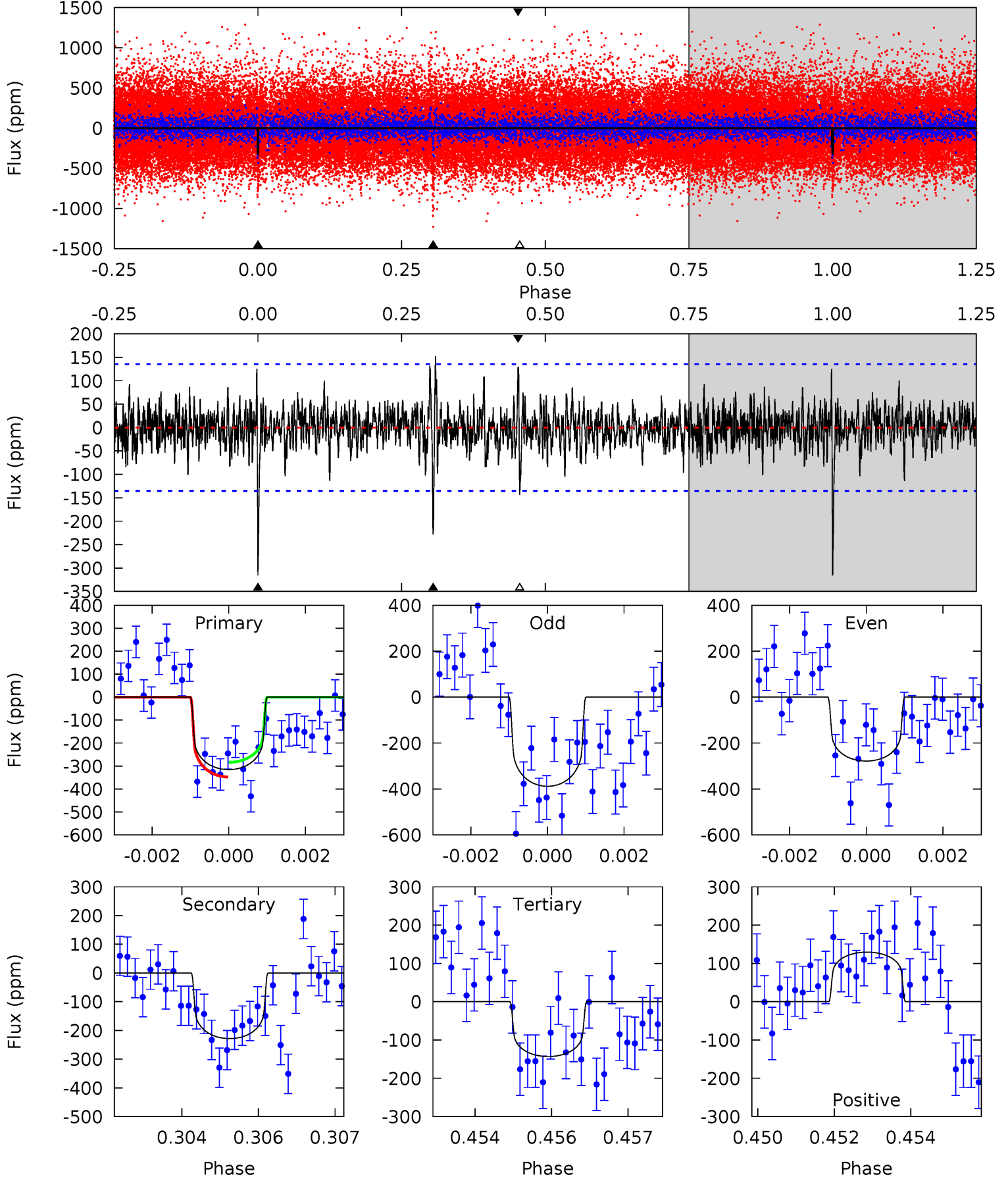
TCE 009886691-01 P=461.825701 Days  $T_0=251.021793$  (BKJD)



# DV Model-Shift Uniqueness Test

009886691-01, P = 461.865176 Days, E = 250.966640 Days

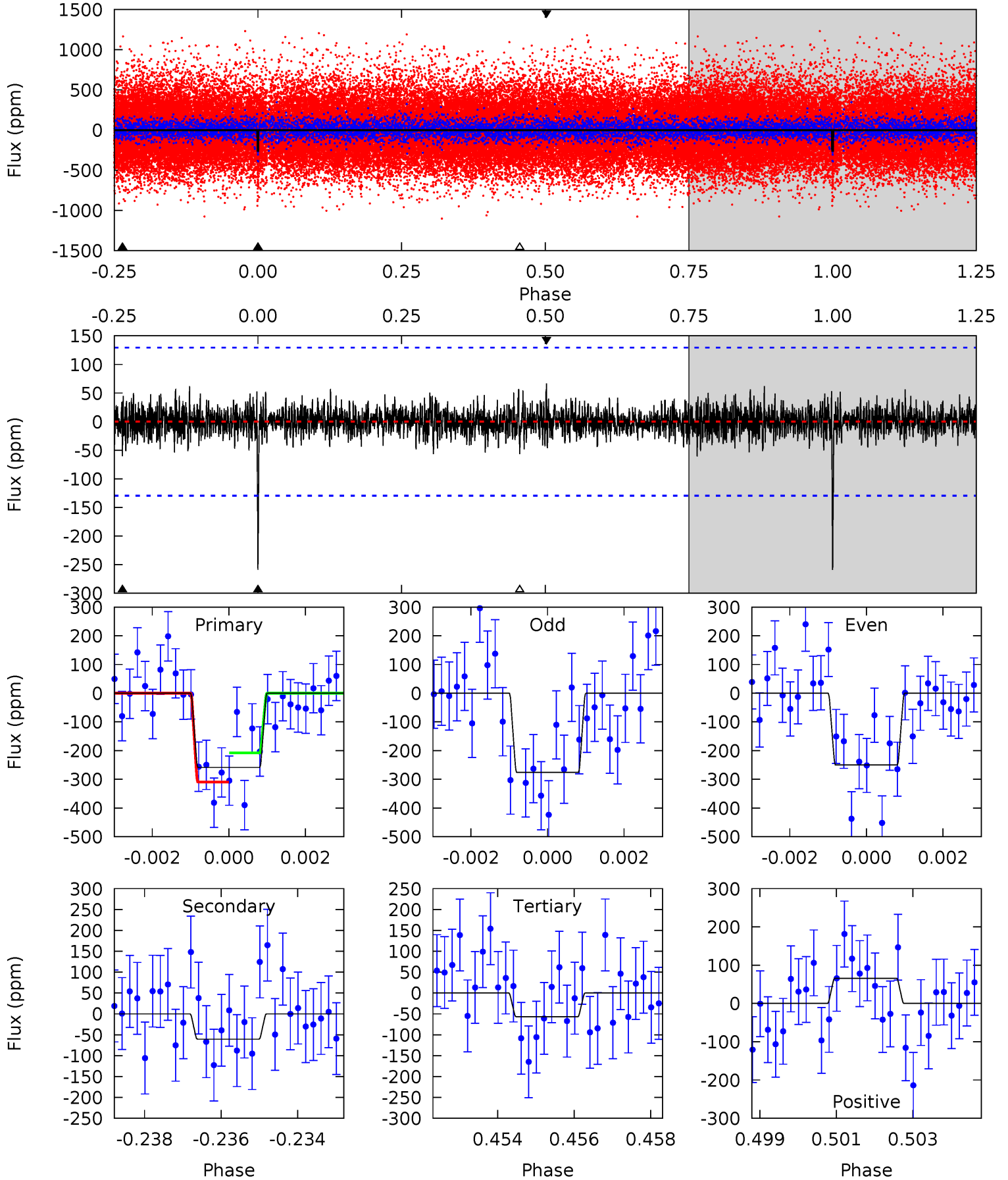
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	9.01	5.65	5.11	5.34	3.11	1.31	6.80	7.34	3.36	3.90	2.06	0.81	0.33	1.26



# Alt Model-Shift Uniqueness Test

009886691-01, P = 461.825701 Days, E = 251.021793 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
10.7	2.49	2.33	2.71	5.33	3.10	0.69	8.33	7.94	0.16	-0.23	0.50	0.94	0.20	2.09



### Stellar Parameters For KIC 009886691

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5845^{+157}_{-174}$	$4.558^{+0.036}_{-0.192}$	$-0.280^{+0.300}_{-0.300}$	$0.838^{+0.241}_{-0.075}$	$0.926^{+0.099}_{-0.110}$	$2.214^{+0.430}_{-1.133}$
	+3%/-3%	+1%/-4%	+107%/-107%	+29%/-9%	+11%/-12%	+19%/-51%
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 009886691-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-228 \pm 25$	$1.79^{+0.46}_{-0.42}$	$316^{+21}_{-13}$	$5312^{+651}_{-462}$	$49905^{+33399}_{-18236}$
Alt.	$-60 \pm 24$	$1.59^{+0.43}_{-0.42}$	$316^{+22}_{-15}$	$4251^{+607}_{-482}$	$16462^{+16704}_{-8316}$

$T_{\text{max}}$  = 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

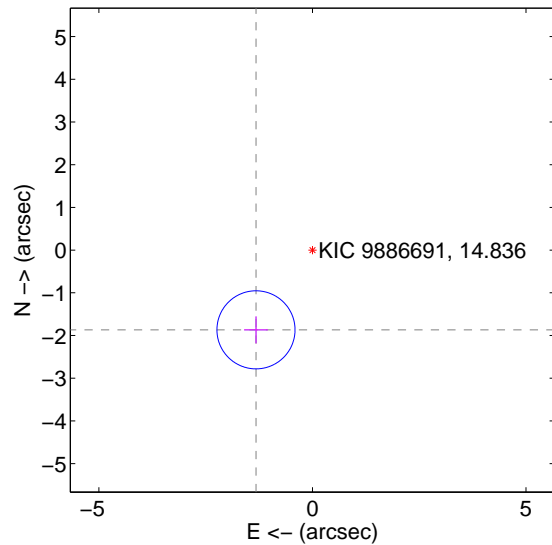
Supplemental centroid analysis for 009886691-01. Kepler magnitude: 14.84. Transit SNR 8.89

There are 1 quarters with good PRF difference image offsets

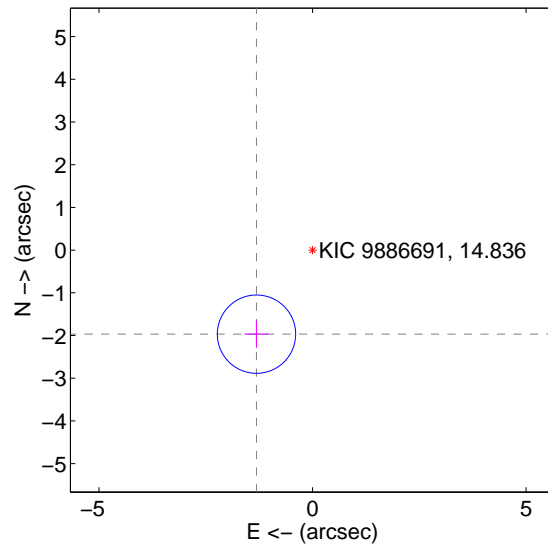
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.288 \pm 0.305$	7.51	$1.322 \pm 0.280$	$-1.867 \pm 0.317$
PRF-fit source offset from KIC position	$2.366 \pm 0.306$	7.74	$1.312 \pm 0.280$	$-1.968 \pm 0.317$
photometric centroid source offset	$0.97 \pm 1.25$	0.77	$-0.76 \pm 1.35$	$-0.60 \pm 1.08$

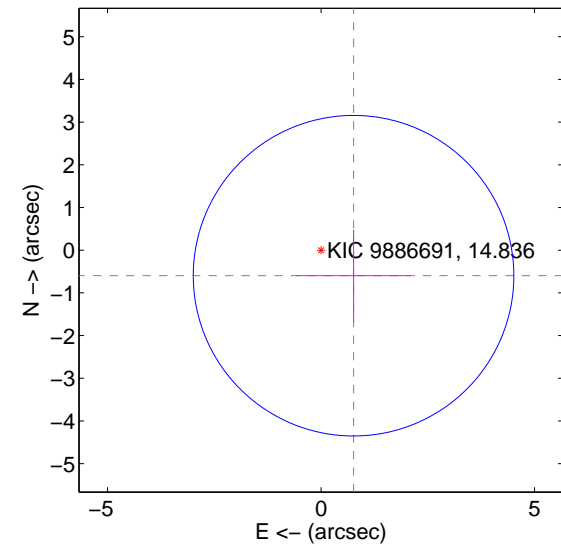
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

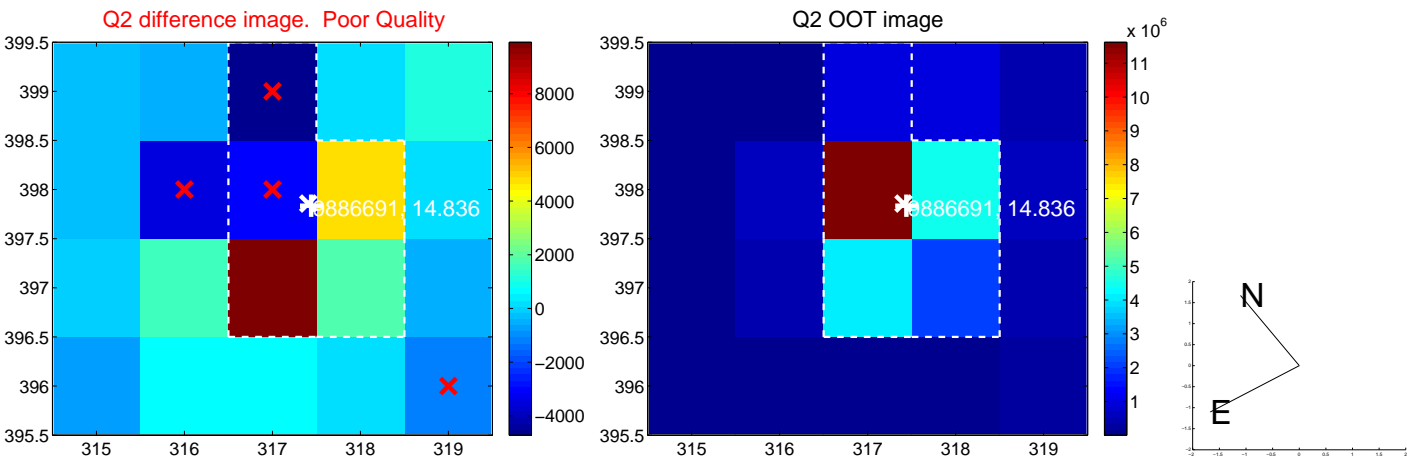
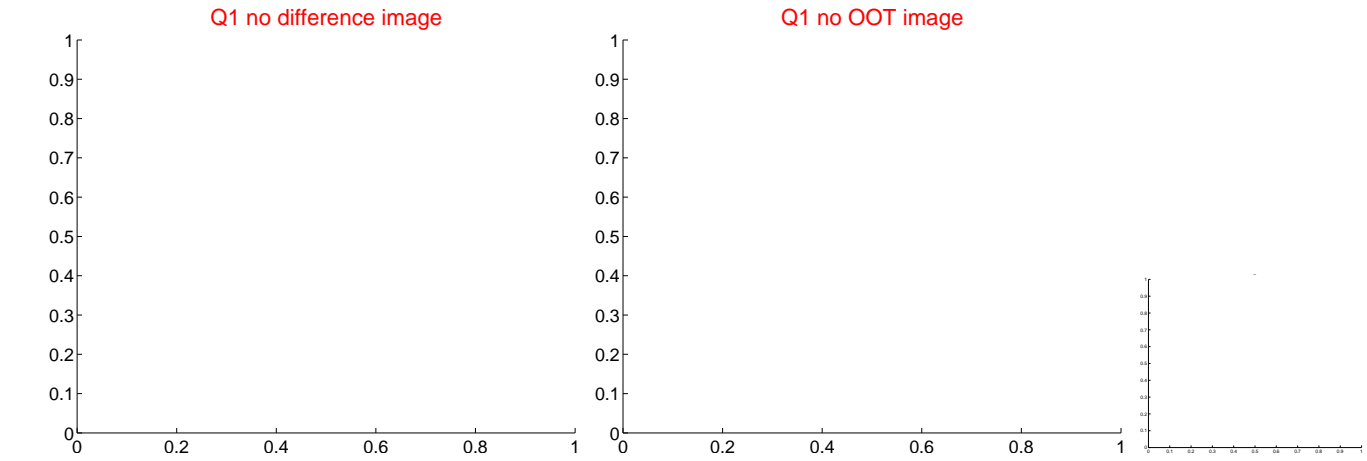


offset from photometric centroids



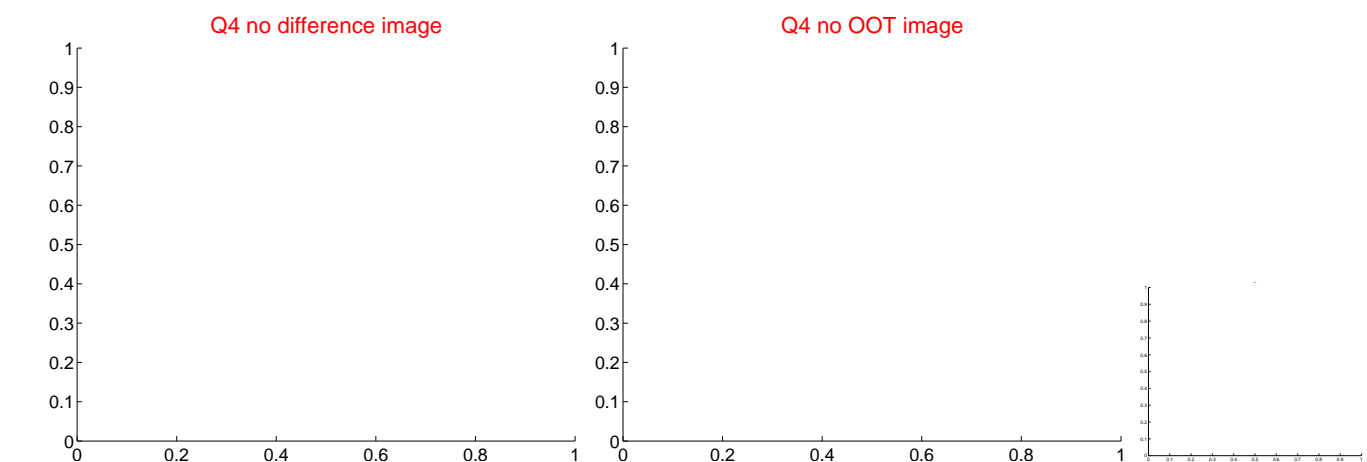
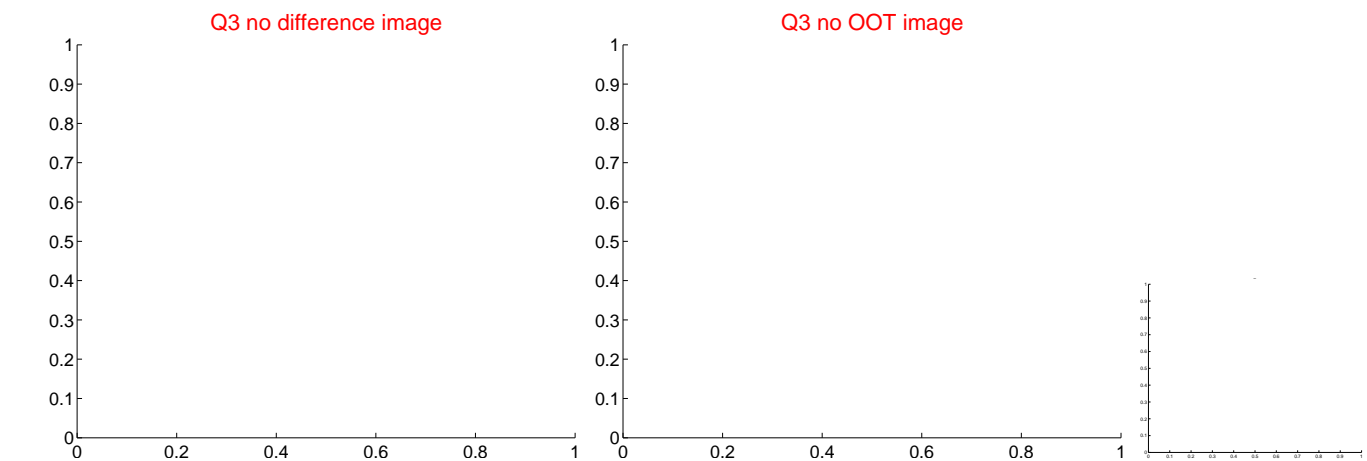
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



N

E

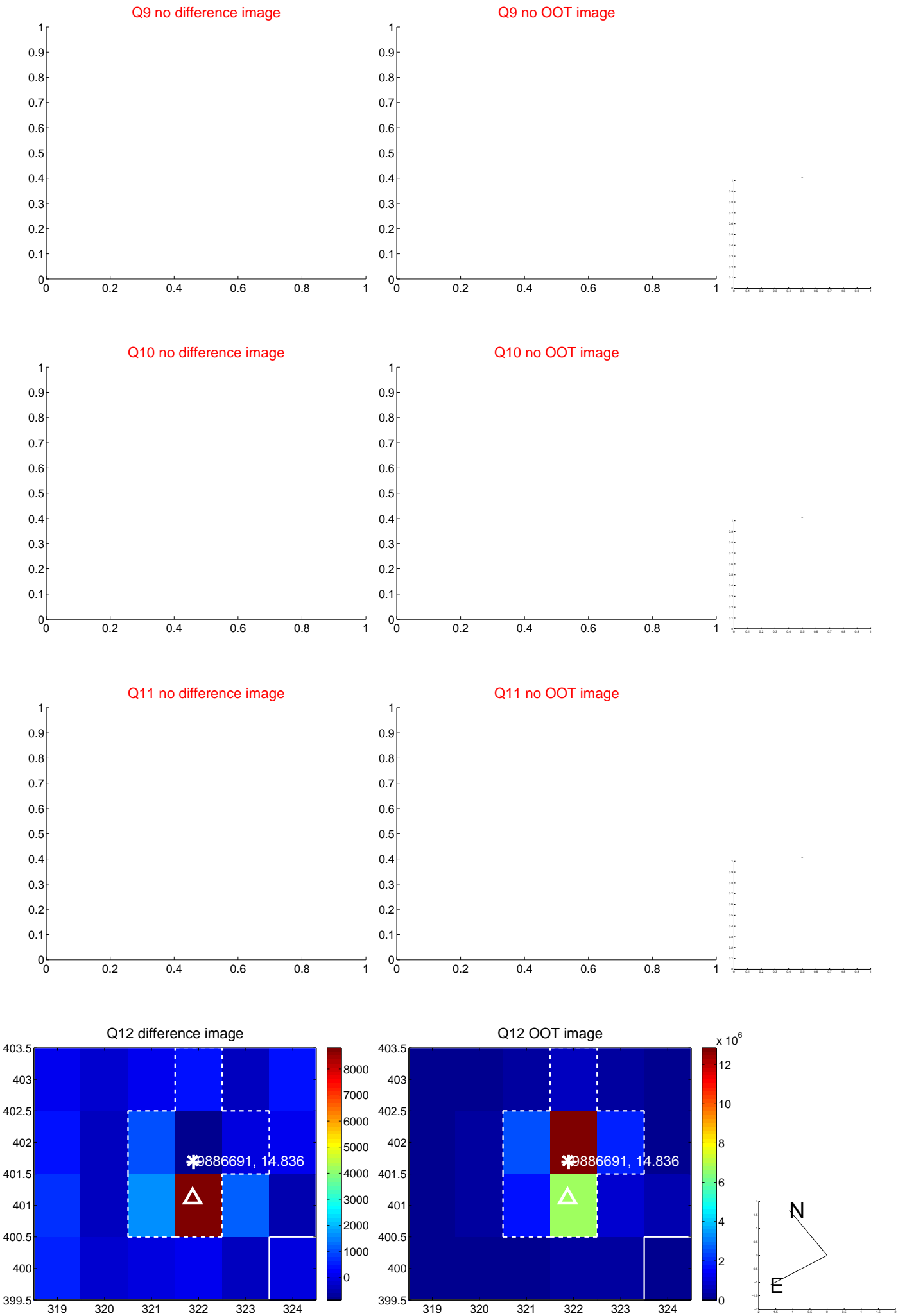




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



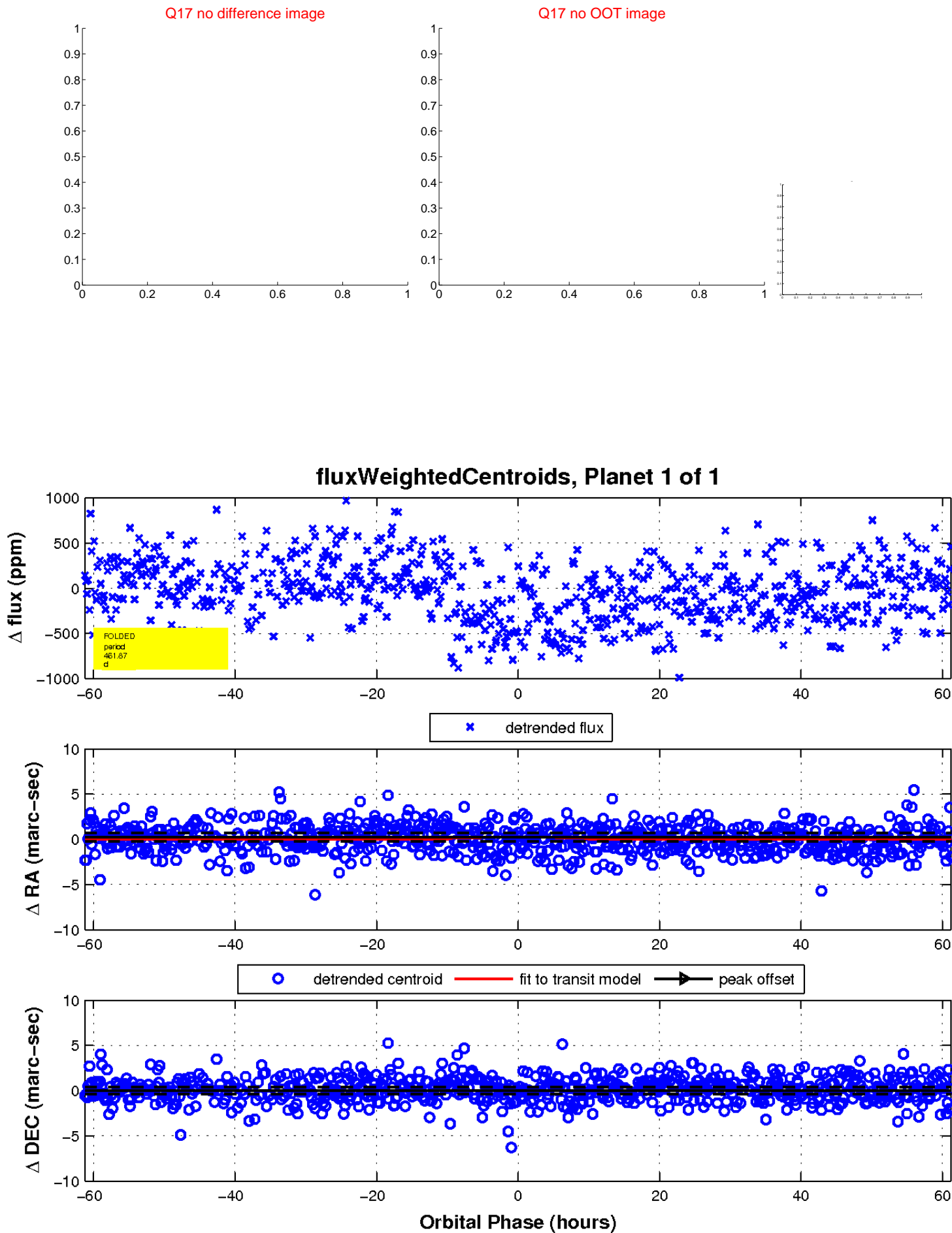
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

