

# KIC 010450889

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010450889-01	OBS	No	551.518109	239.640735	2220.6	4.350	12.4	10.6	0.53	3900	2.57	0.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010450889-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—MOD_NONUNIQ_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.

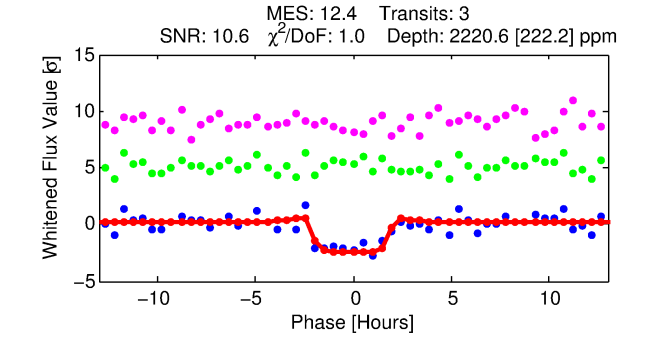
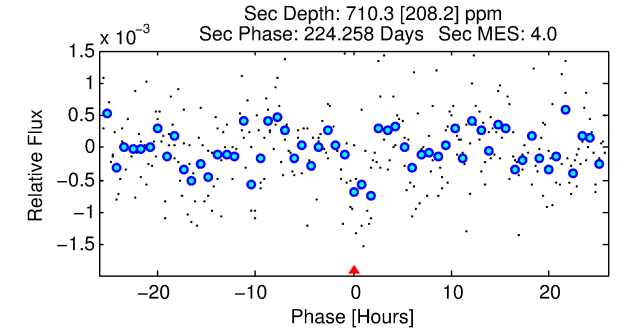
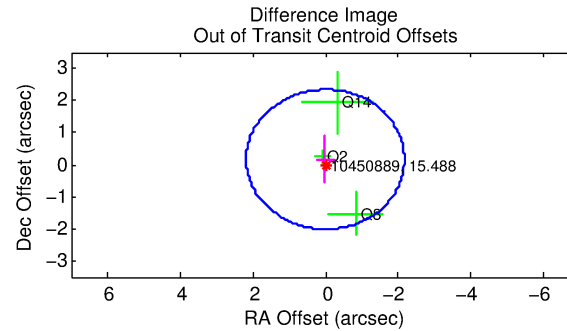
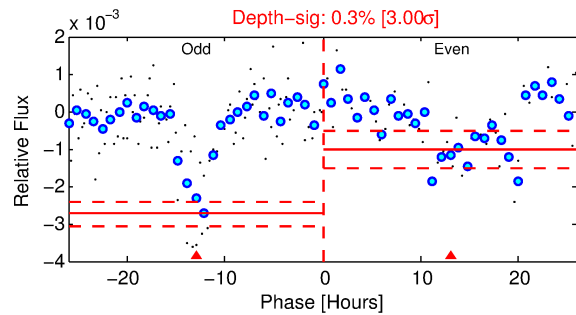
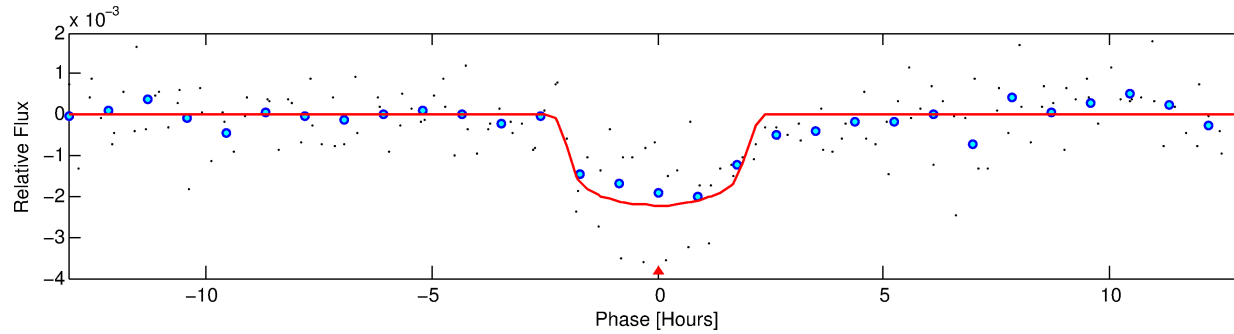
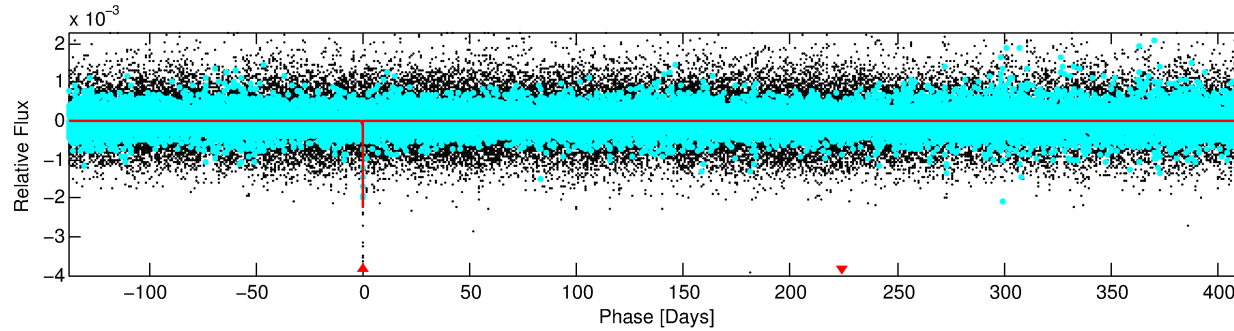
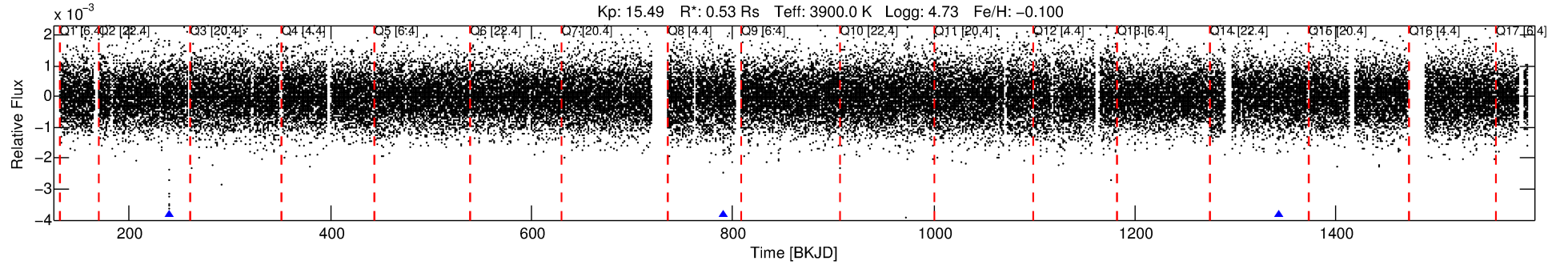
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010450889-01

No Significant Match Found

# DV One-Page Summary

KIC: 10450889 Candidate: 1 of 1 Period: 551.518 d



## DV Fit Results:

Period = 551.51811 [0.00453] d  
Epoch = 239.6407 [0.0064] BKJD  
Rp/R\* = 0.0441 [0.0330]  
a/R\* = 881.56 [2754.22]  
b = 0.51 [4.55]  
Seff = 0.05 [0.00]  
Teq = 121 [2] K  
Rp = 2.57 [1.93] Re  
a = 1.0817 [0.0372] AU  
Ag = 69127.34 [105483.78] [0.66 $\sigma$ ]  
Teffp = 3031 [1156] K [2.52 $\sigma$ ]

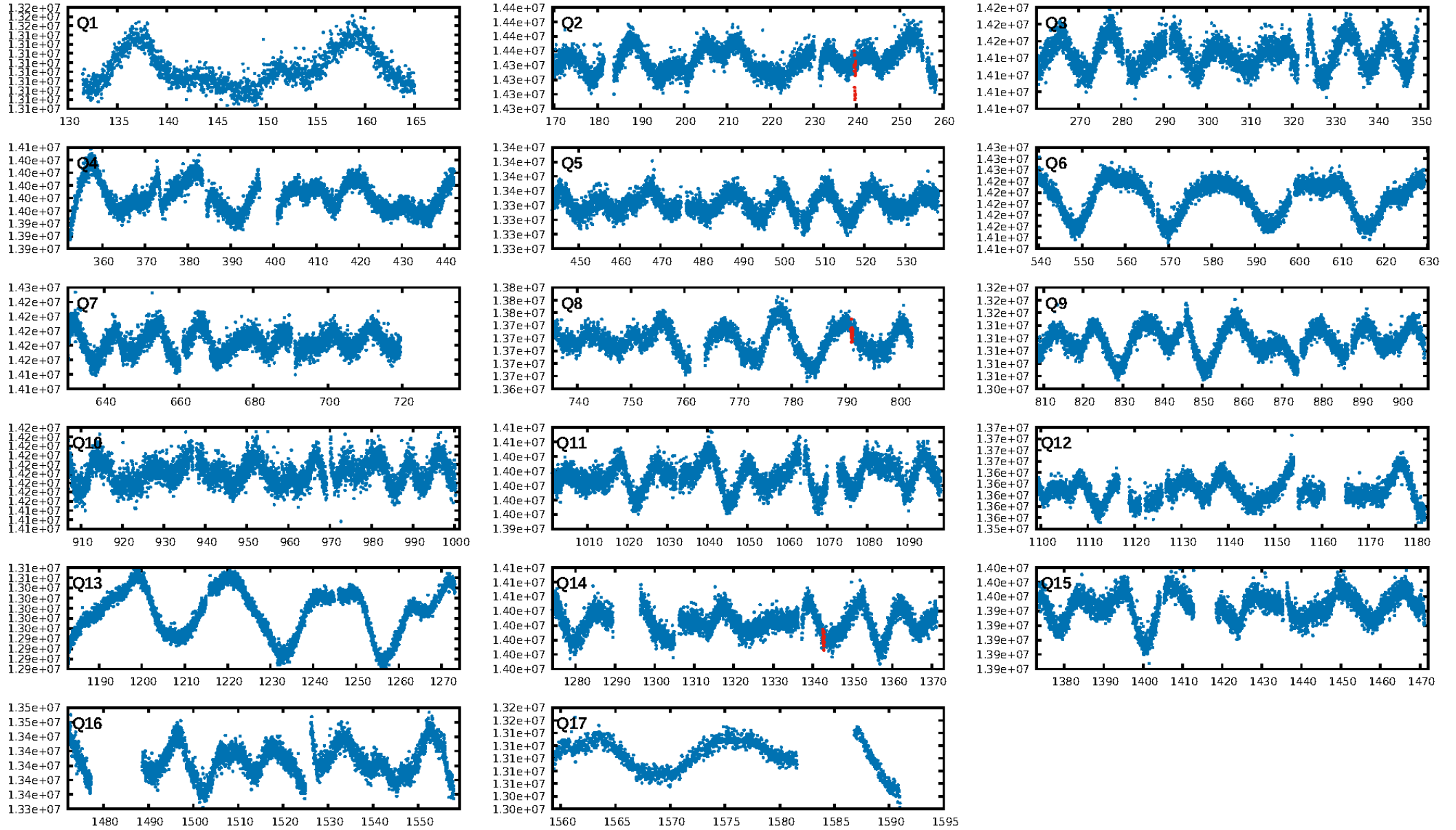
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 49.3%  
Bootstrap-pfa: 1.33e-30  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -4.124  
Centroid-sig: 58.1%  
Centroid-so: 0.344 arcsec [0.40 $\sigma$ ]  
OotOffset-rm: 0.163 arcsec [0.22 $\sigma$ ]  
KicOffset-rm: 0.381 arcsec [0.92 $\sigma$ ]  
OotOffset-st: 2/0/1/0 [3]  
KicOffset-st: 2/0/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

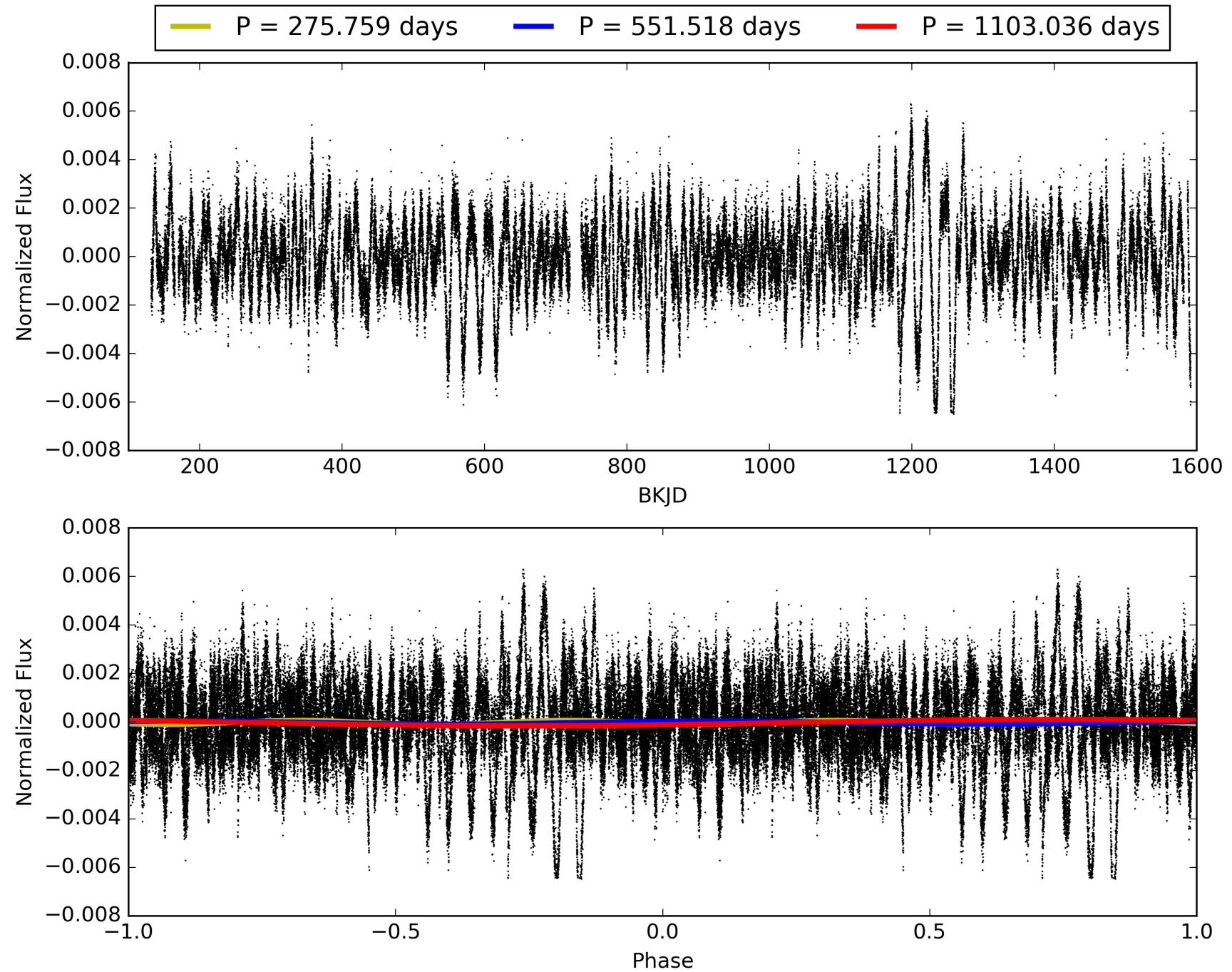
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:36:22 Z

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

# TCE 010450889-01, PDC Light Curves

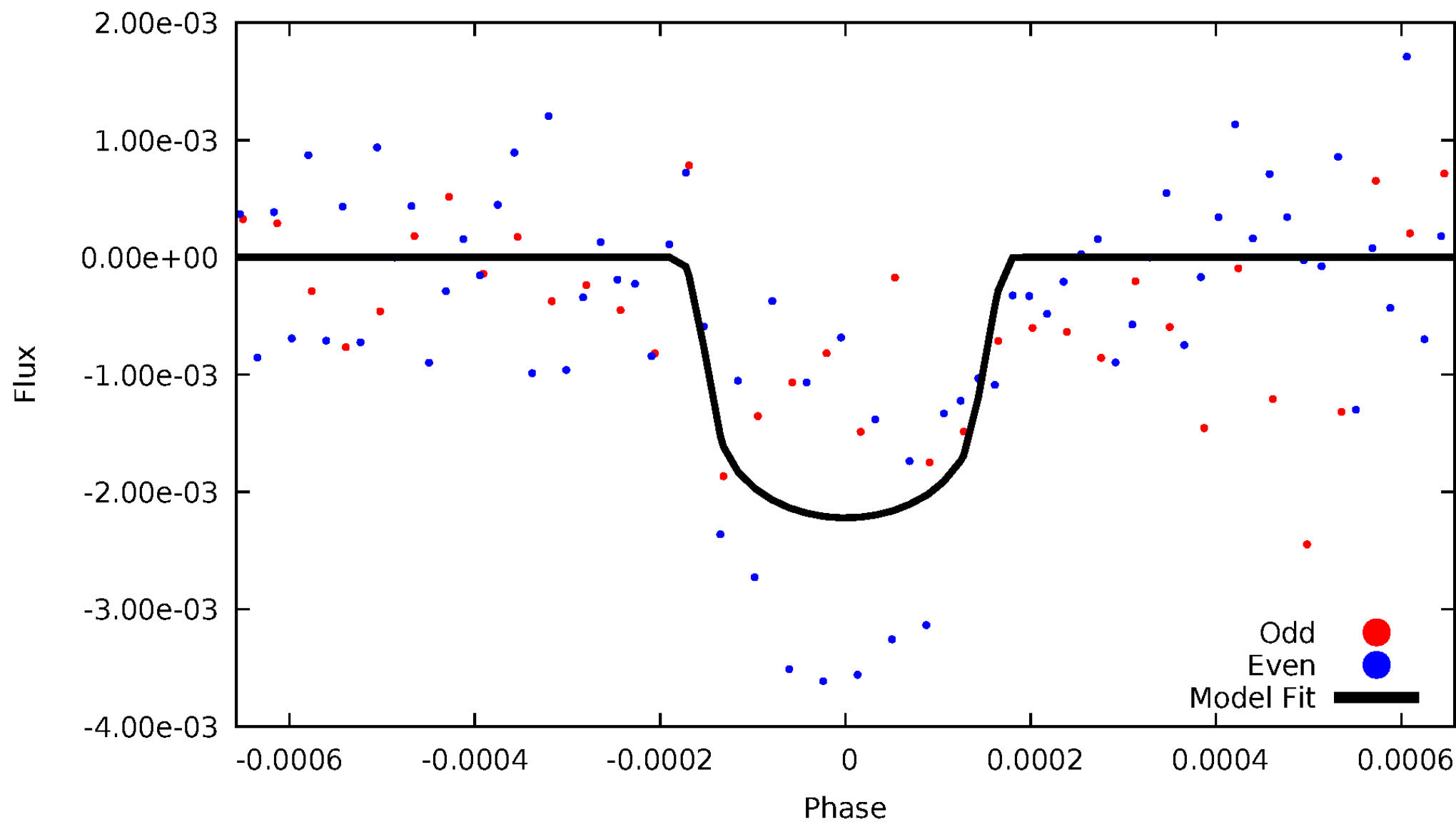


# TCE 010450889-01



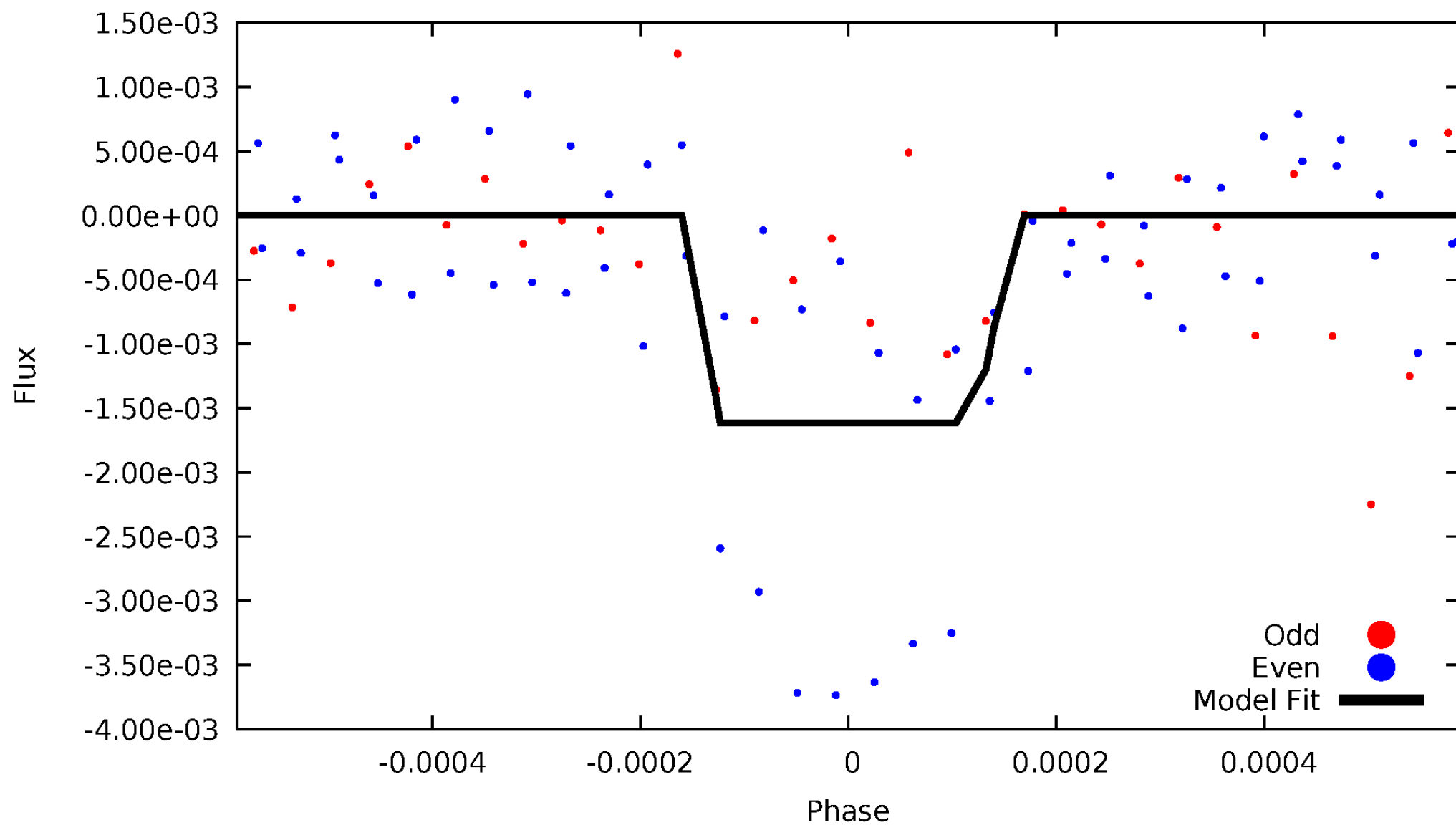
# DV Odd/Even

TCE 010450889-01



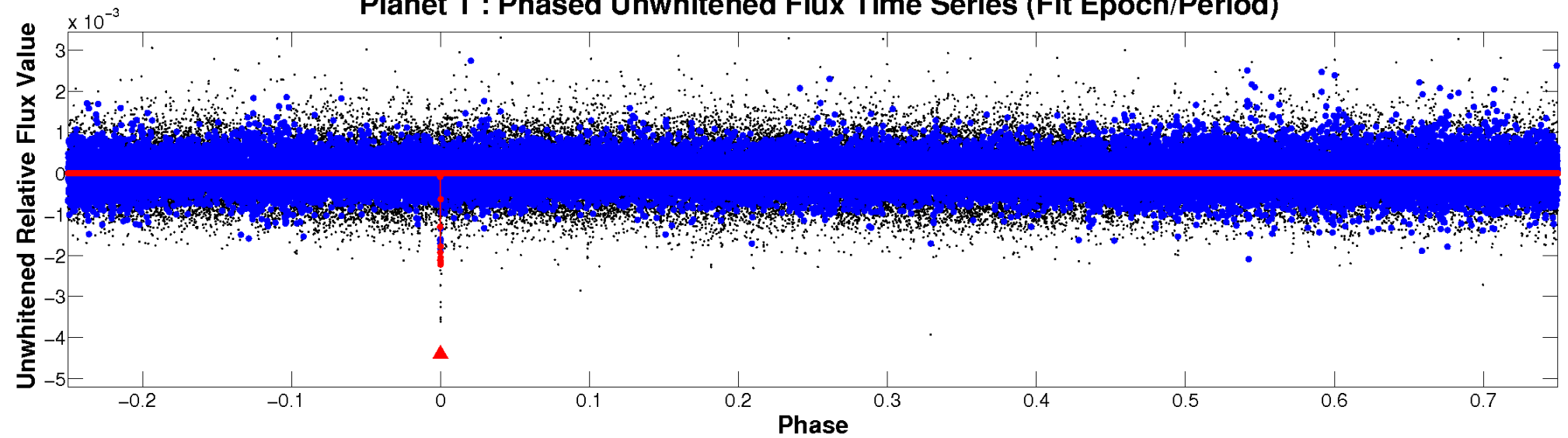
# ALT Odd/Even

TCE 010450889-01

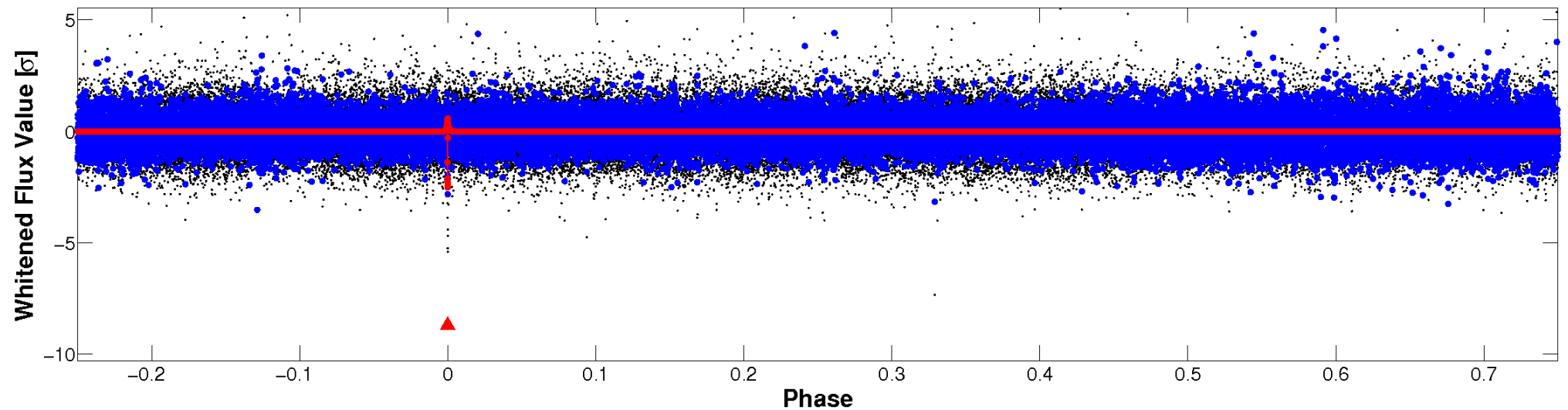


# Non-Whitened Vs. Whitened Light Curve

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

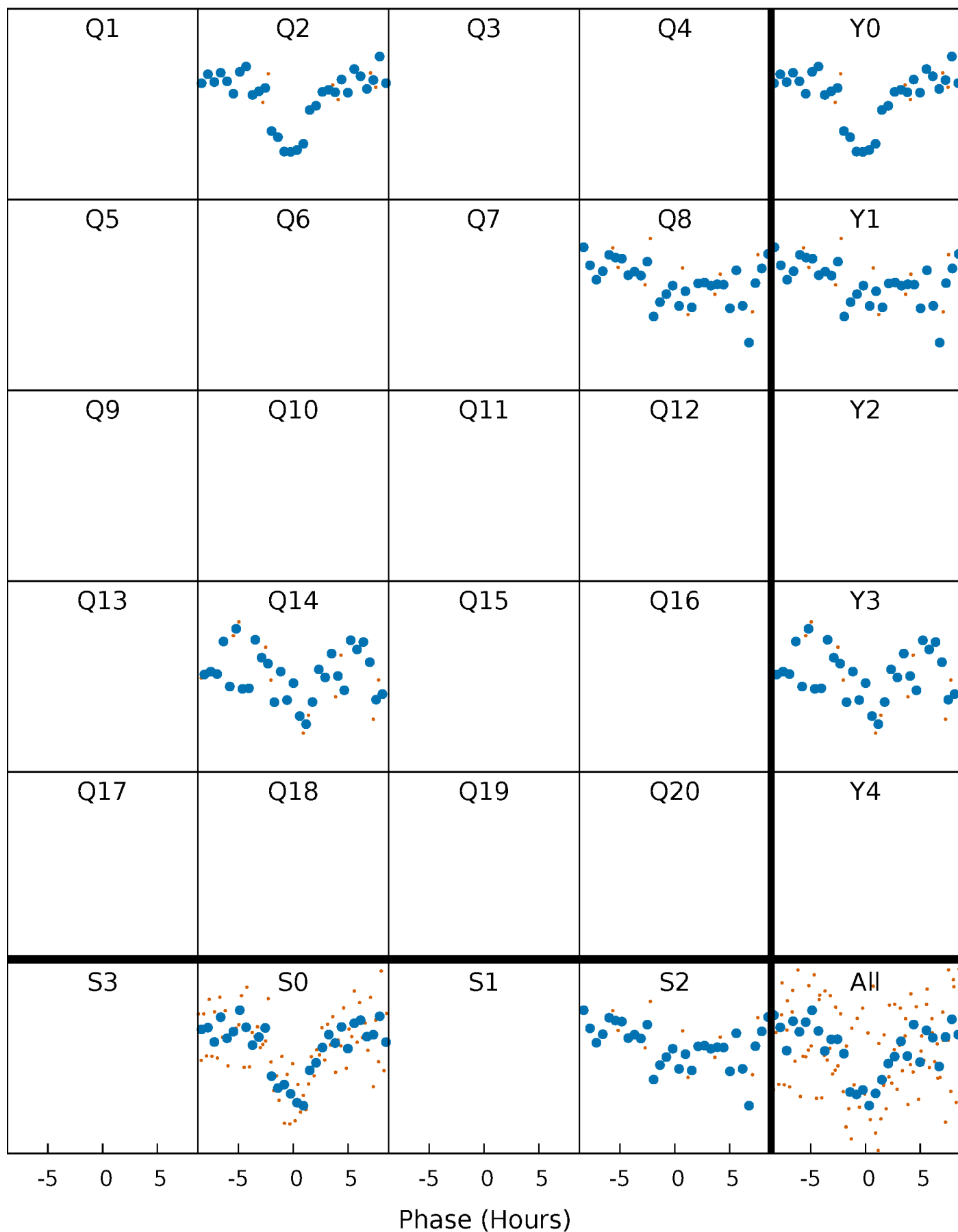


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

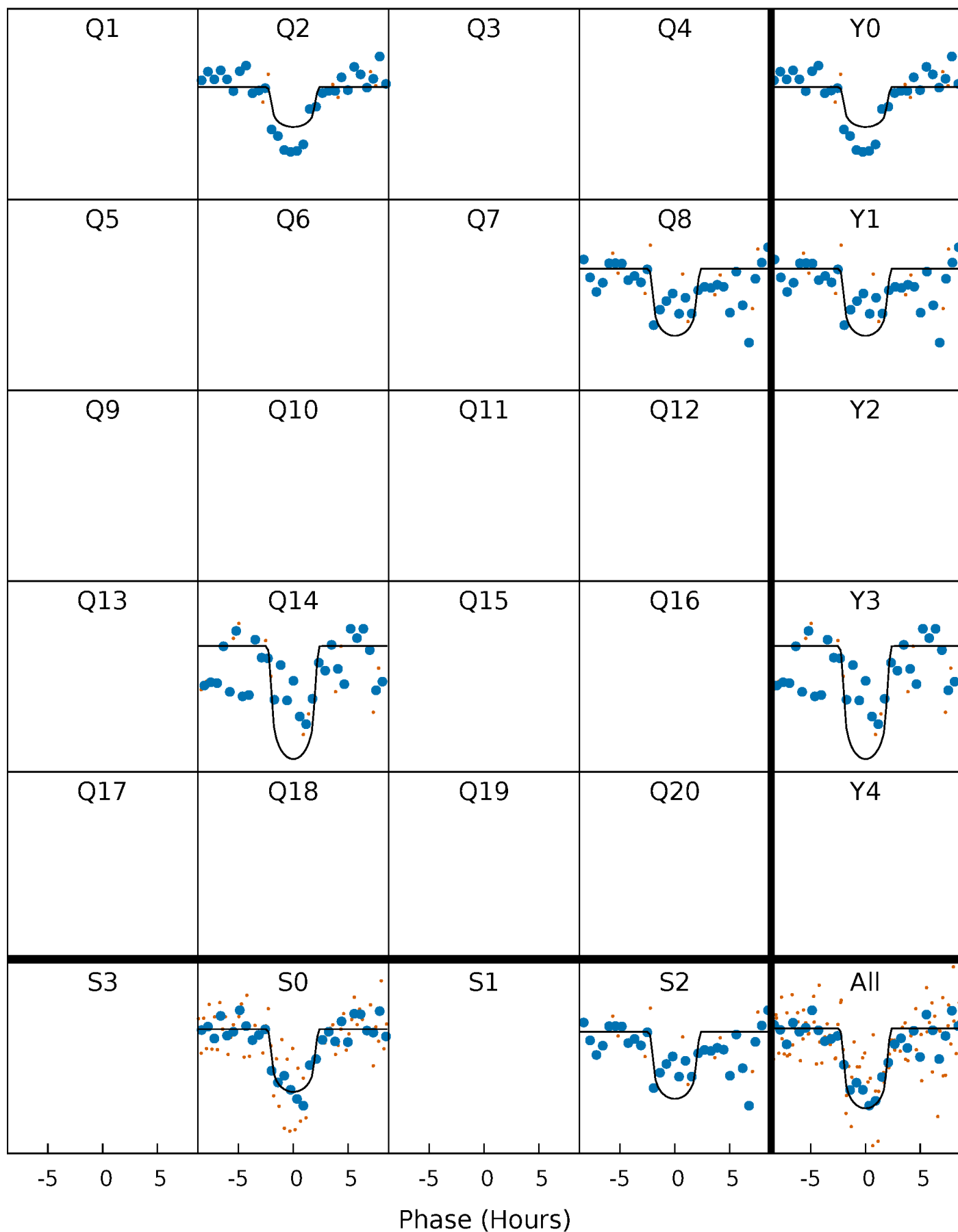
TCE 010450889-01 P=551.518109 Days  $T_0=239.640735$  (BKJD)





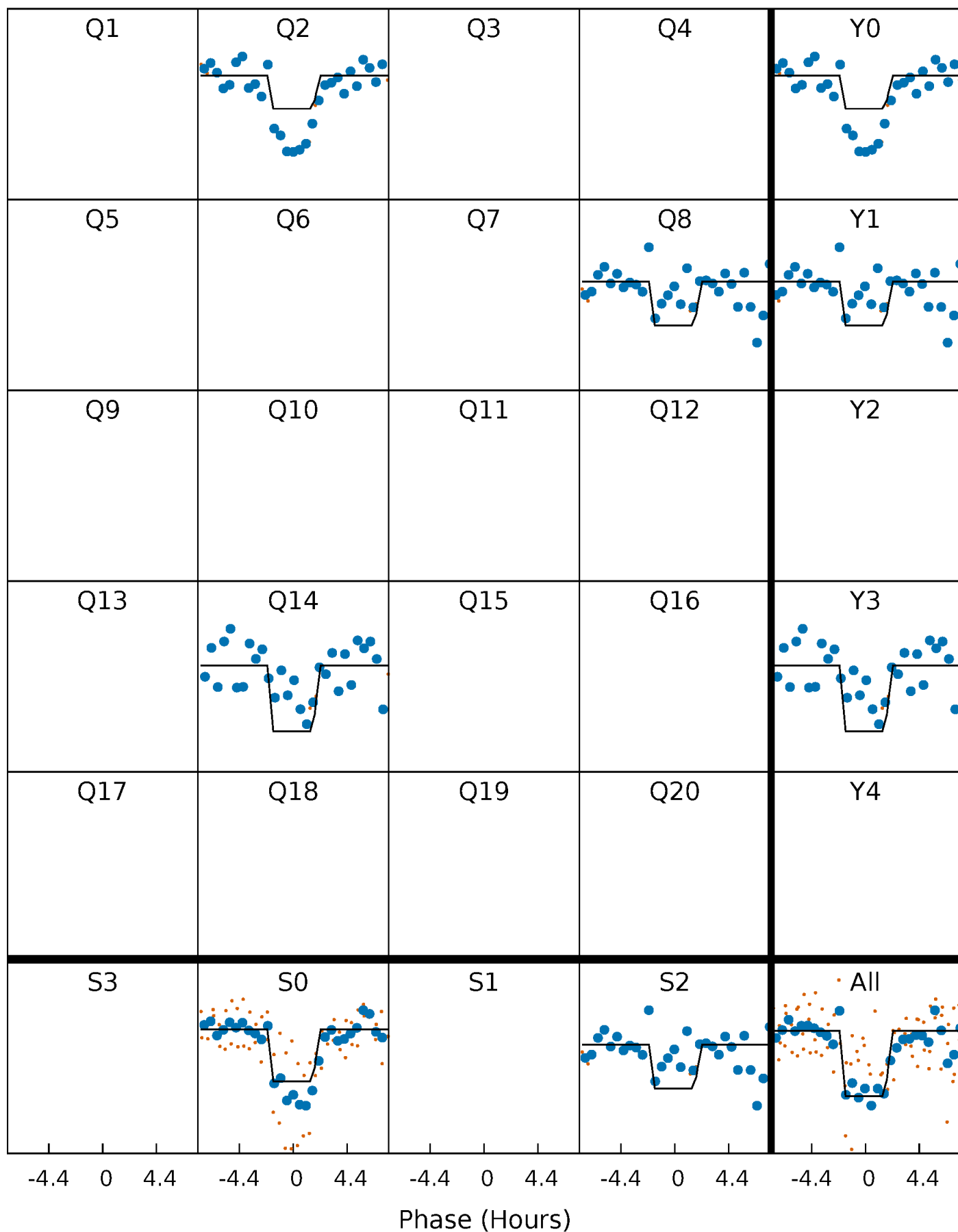
# DV Quarter-Phased Transit Curves

TCE 010450889-01 P=551.518109 Days  $T_0=239.640735$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

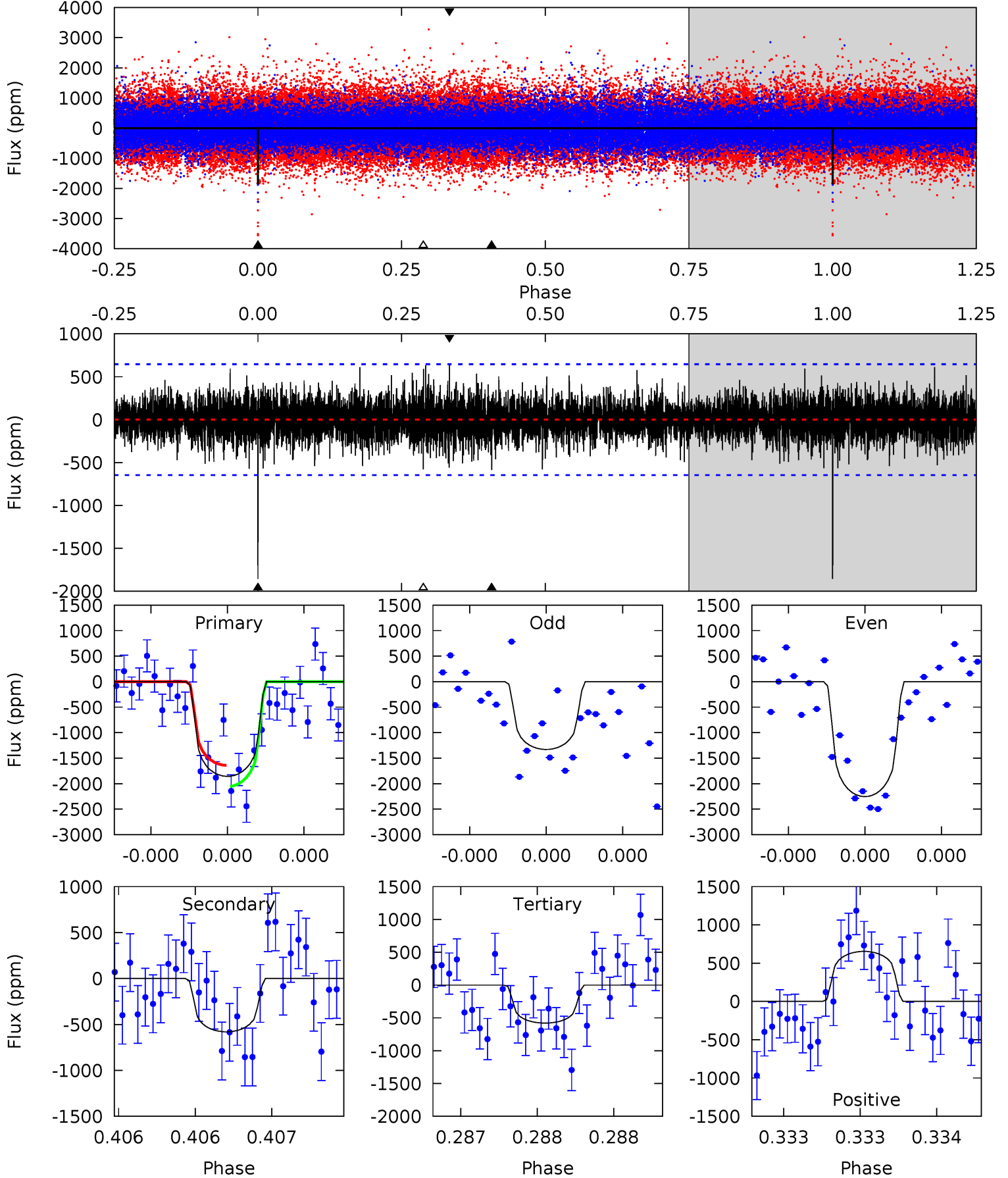
TCE 010450889-01 P=551.522218 Days  $T_0=239.634191$  (BKJD)



# DV Model-Shift Uniqueness Test

010450889-01, P = 551.518109 Days, E = 239.640735 Days

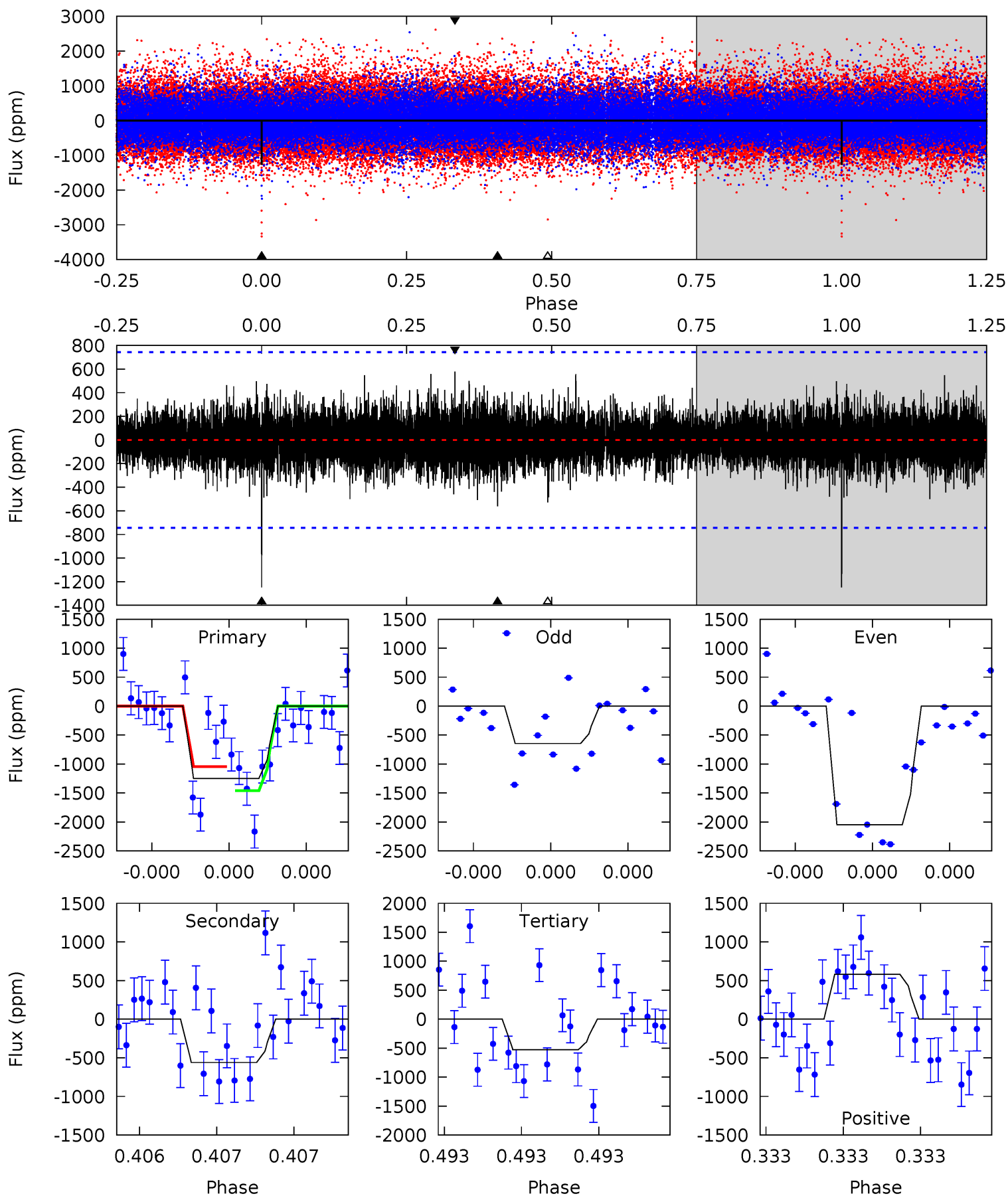
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	5.07	5.06	5.71	5.63	3.57	1.37	11.1	10.5	0.01	-0.64	4.00	1.46	0.26	1.80



# Alt Model-Shift Uniqueness Test

010450889-01, P = 551.522218 Days, E = 239.634191 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
9.53	4.28	4.04	4.43	5.68	3.64	1.00	5.50	5.10	0.25	-0.15	5.36	1.92	0.32	1.58



### Stellar Parameters For KIC 010450889

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3900^{+46}_{-50}$	$4.727^{+0.017}_{-0.022}$	$-0.100^{+0.100}_{-0.100}$	$0.534^{+0.024}_{-0.021}$	$0.555^{+0.020}_{-0.025}$	$5.136^{+0.442}_{-0.450}$
	+1%/-1%	+0%/-0%	+100%/-100%	+4%/-4%	+4%/-5%	+9%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 010450889-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-581 \pm 115$	$2.82^{+1.91}_{-1.61}$	$169^{+3}_{-3}$	$3120^{+1005}_{-398}$	$46511^{+206776}_{-29677}$
Alt.	$-560 \pm 131$	$2.67^{+1.81}_{-1.56}$	$169^{+3}_{-3}$	$3138^{+1056}_{-409}$	$47663^{+241926}_{-30614}$

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

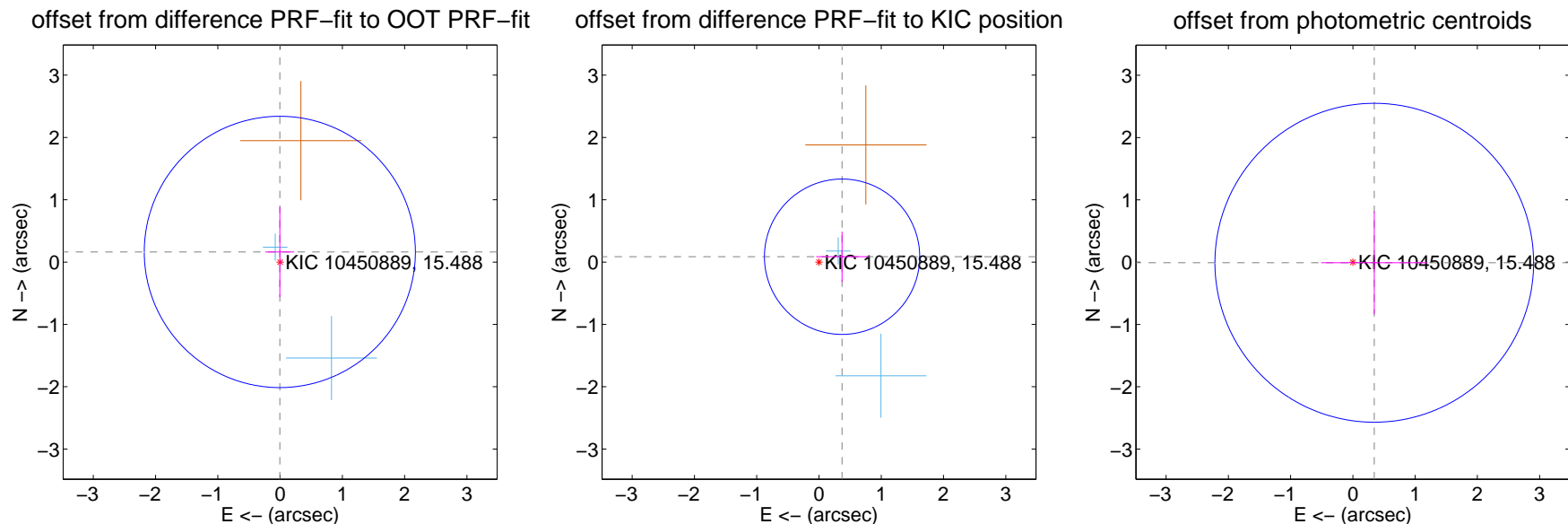
## DV Centroid Data

Supplemental centroid analysis for 010450889-01. Kepler magnitude: 15.49. Transit SNR 10.64

There are 2 quarters with good PRF difference image offsets

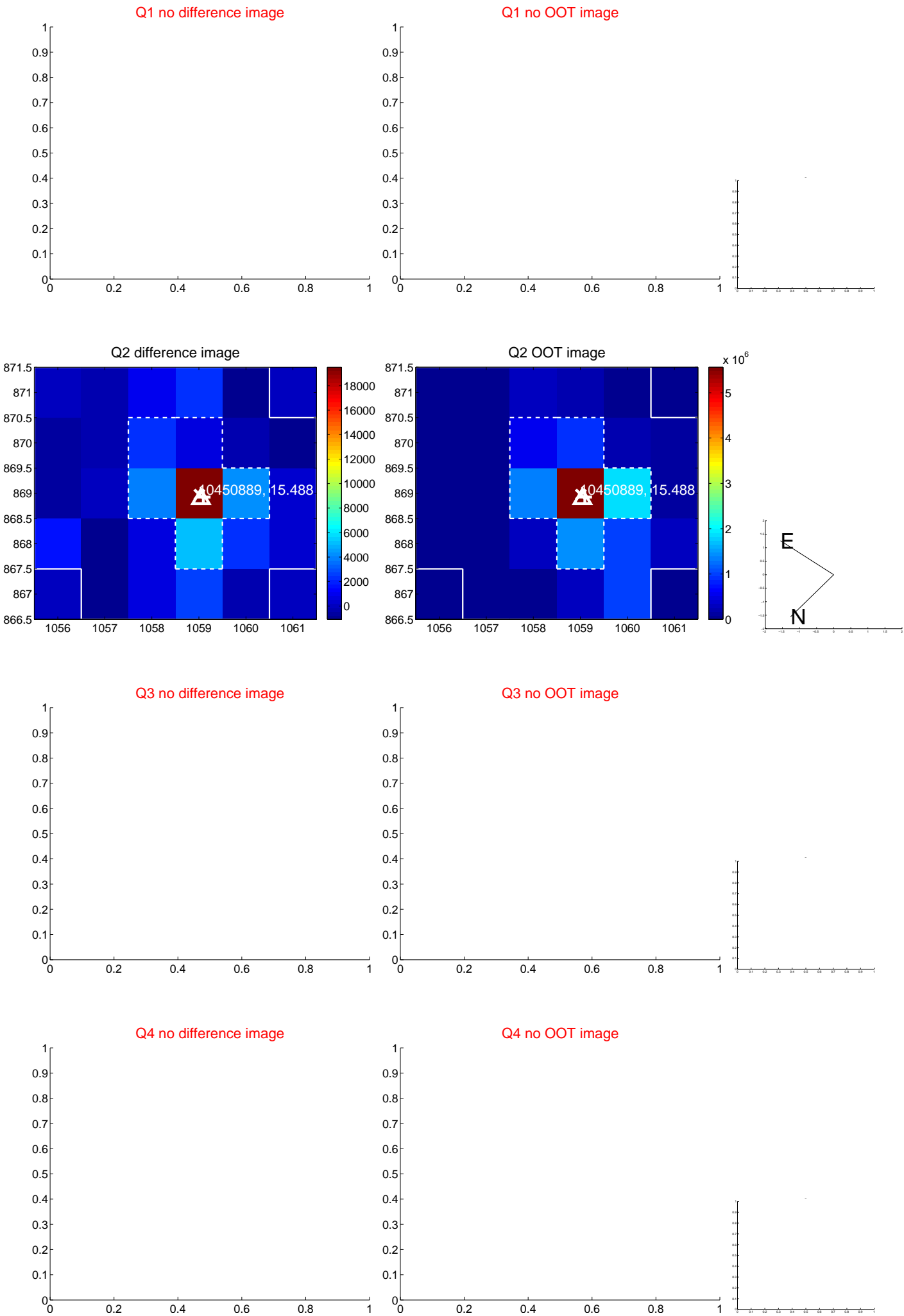
The direct PRF centroid is offset from the target star catalog position by about 0.42 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.163 \pm 0.726$	0.22	$0.005 \pm 0.232$	$0.163 \pm 0.722$
PRF-fit source offset from KIC position	$0.381 \pm 0.415$	0.92	$-0.371 \pm 0.416$	$0.086 \pm 0.402$
photometric centroid source offset	$0.34 \pm 0.85$	0.40	$-0.34 \pm 0.85$	$-0.01 \pm 0.83$

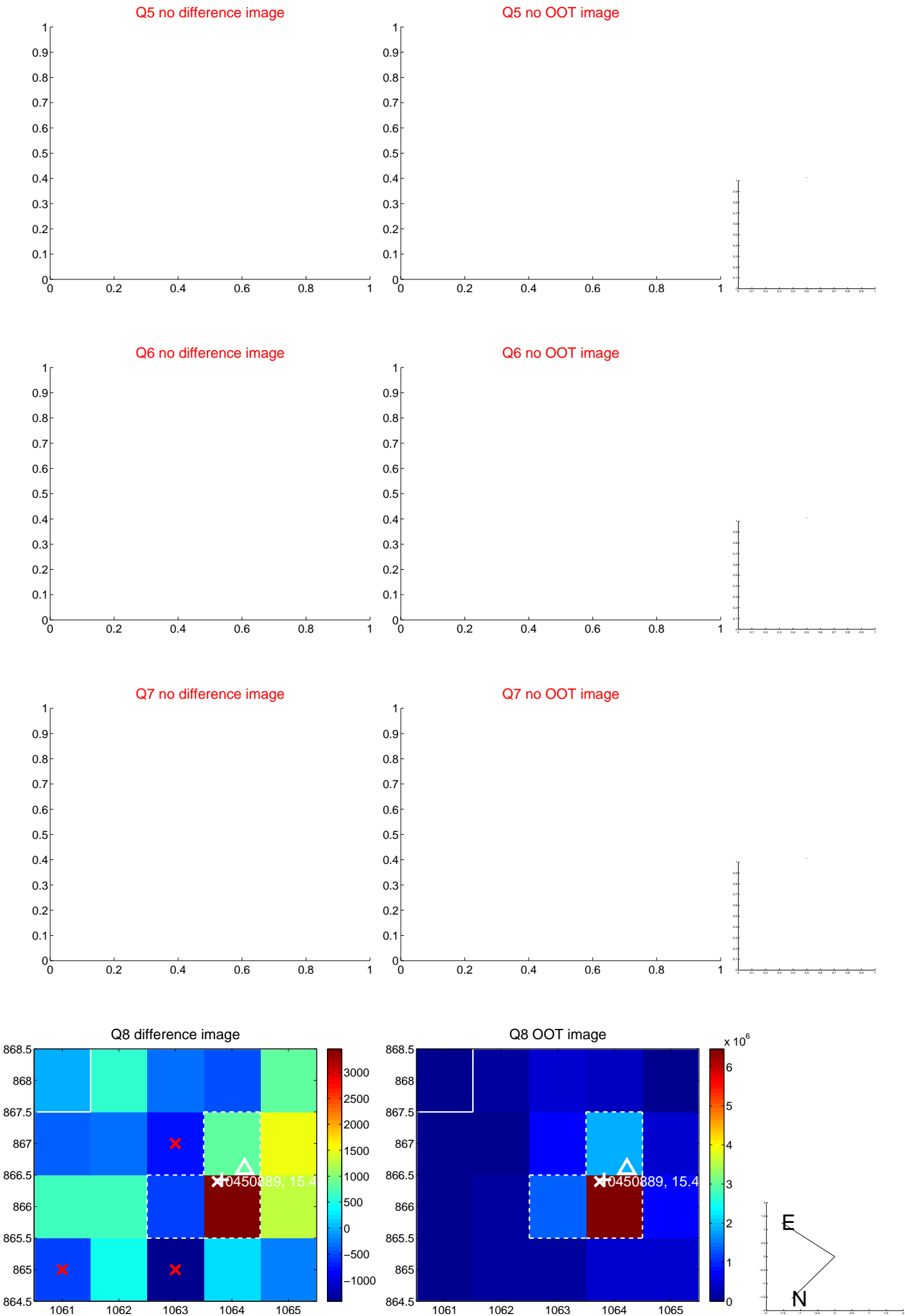


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

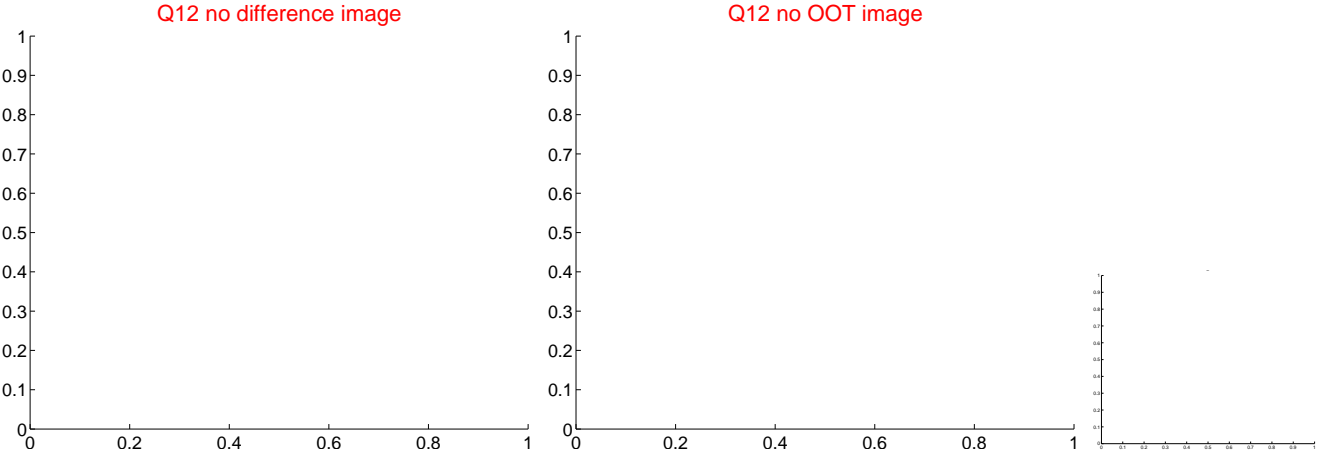
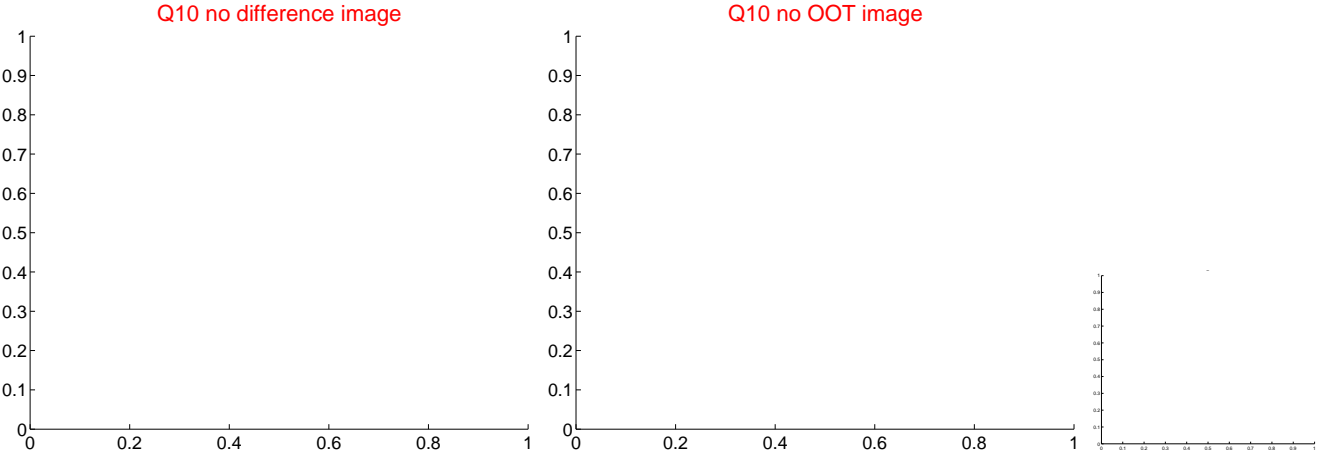


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



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

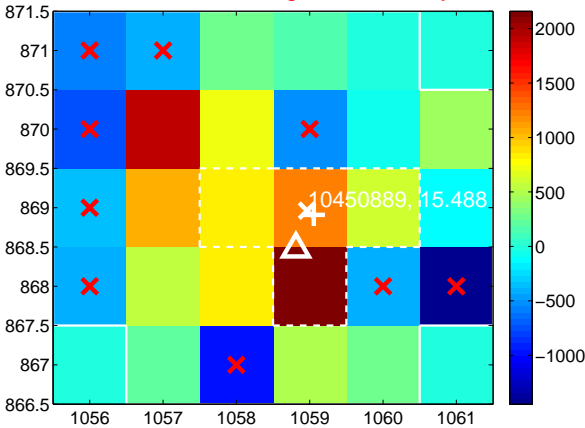
Q13 no difference image



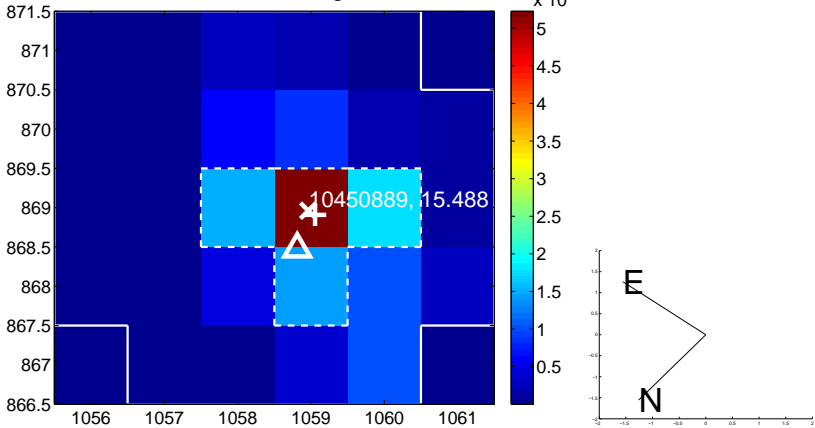
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



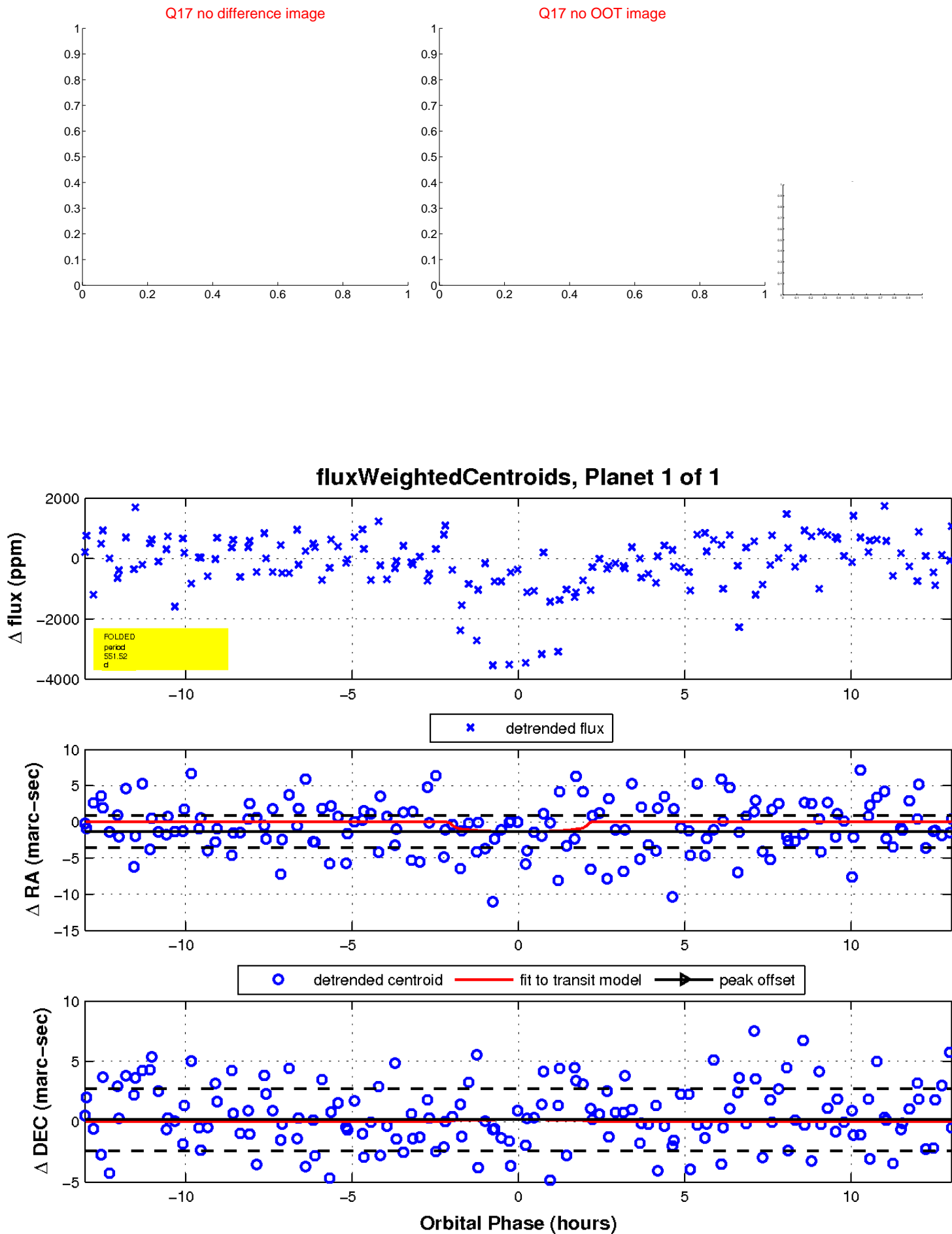
Q16 no difference image



Q16 no OOT image



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



# UKIRT Image

Declination

