

# KIC 010253977

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010253977-01	OBS	8201.01	392.601692	497.005202	817.5	3.920	7.3	7.0	0.75	5307	3.16	0.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010253977-01	OBS	PC	0.22	0	0	0	0	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.

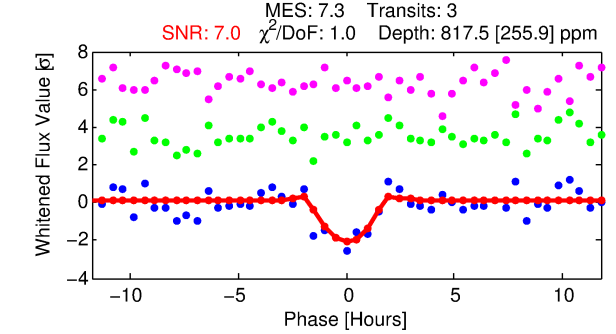
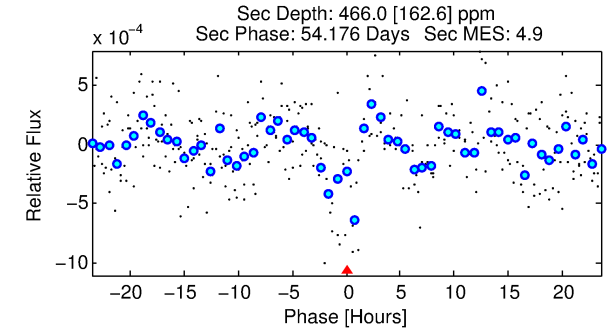
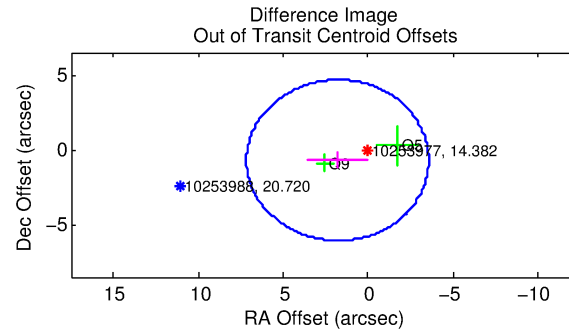
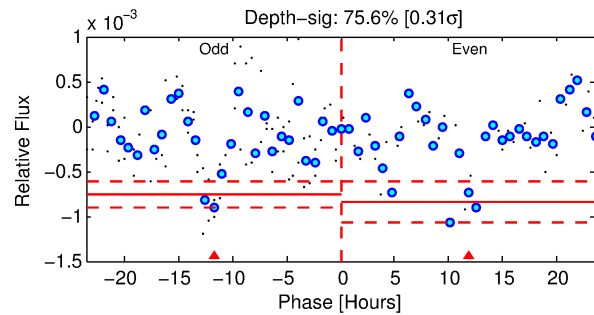
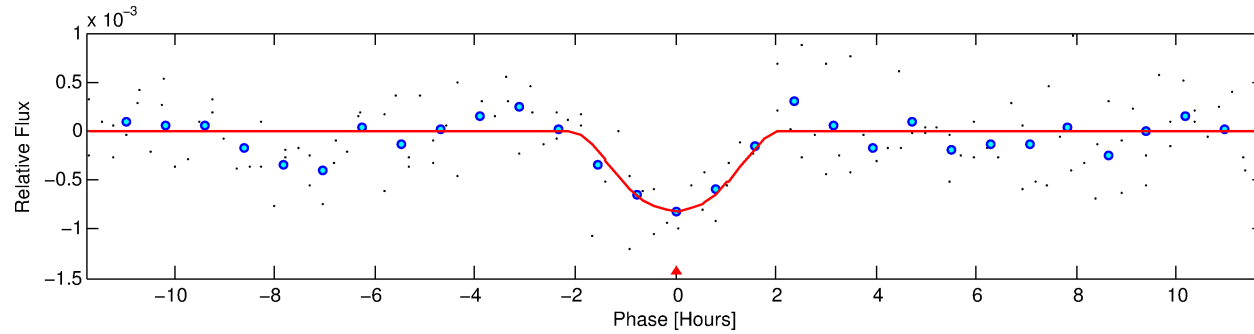
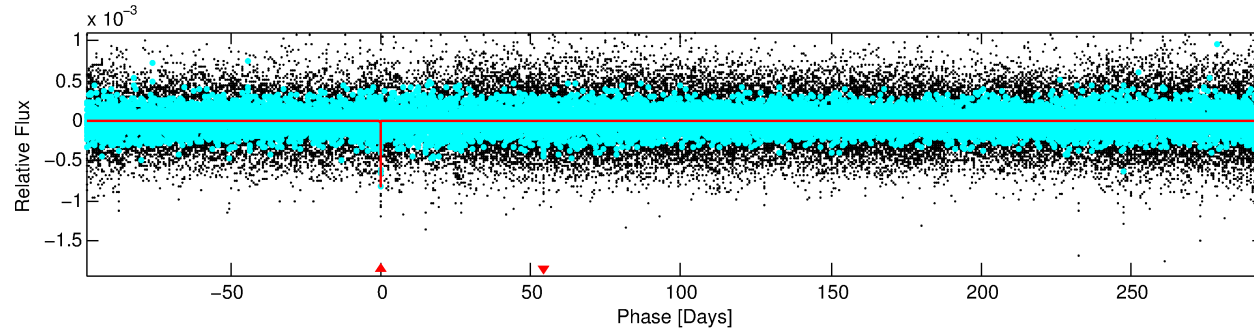
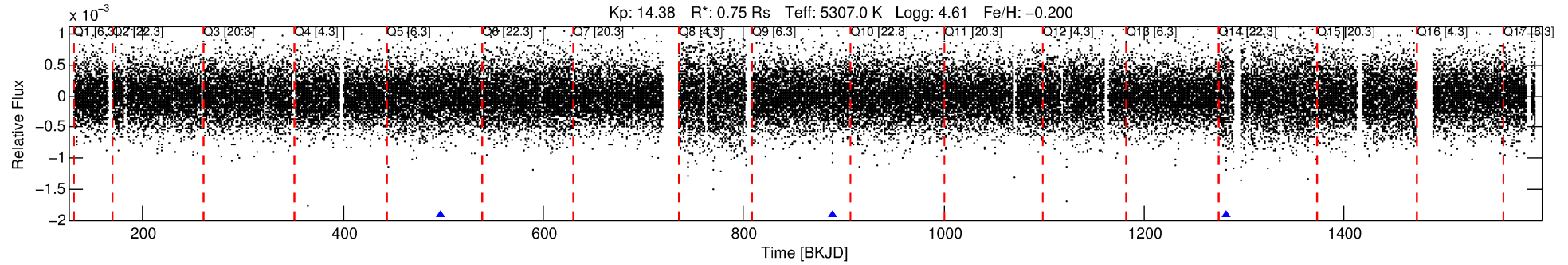
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010253977-01

No Significant Match Found

# DV One-Page Summary

KIC: 10253977 Candidate: 1 of 1 Period: 392.602 d



## DV Fit Results:

Period = 392.60169 [0.00833] d  
Epoch = 497.0052 [0.0102] BKJD  
Rp/R\* = 0.0385 [0.0402]  
a/R\* = 274.12 [152.93]  
b = 0.97 [0.09]  
Seff = 0.41 [0.09]  
Teq = 204 [11] K  
Rp = 3.16 [3.34] Re  
a = 0.9875 [0.1224] AU  
Ag = 25003.69 [53157.93] [0.47 $\sigma$ ]  
Teffp = 3975 [2109] K [1.79 $\sigma$ ]

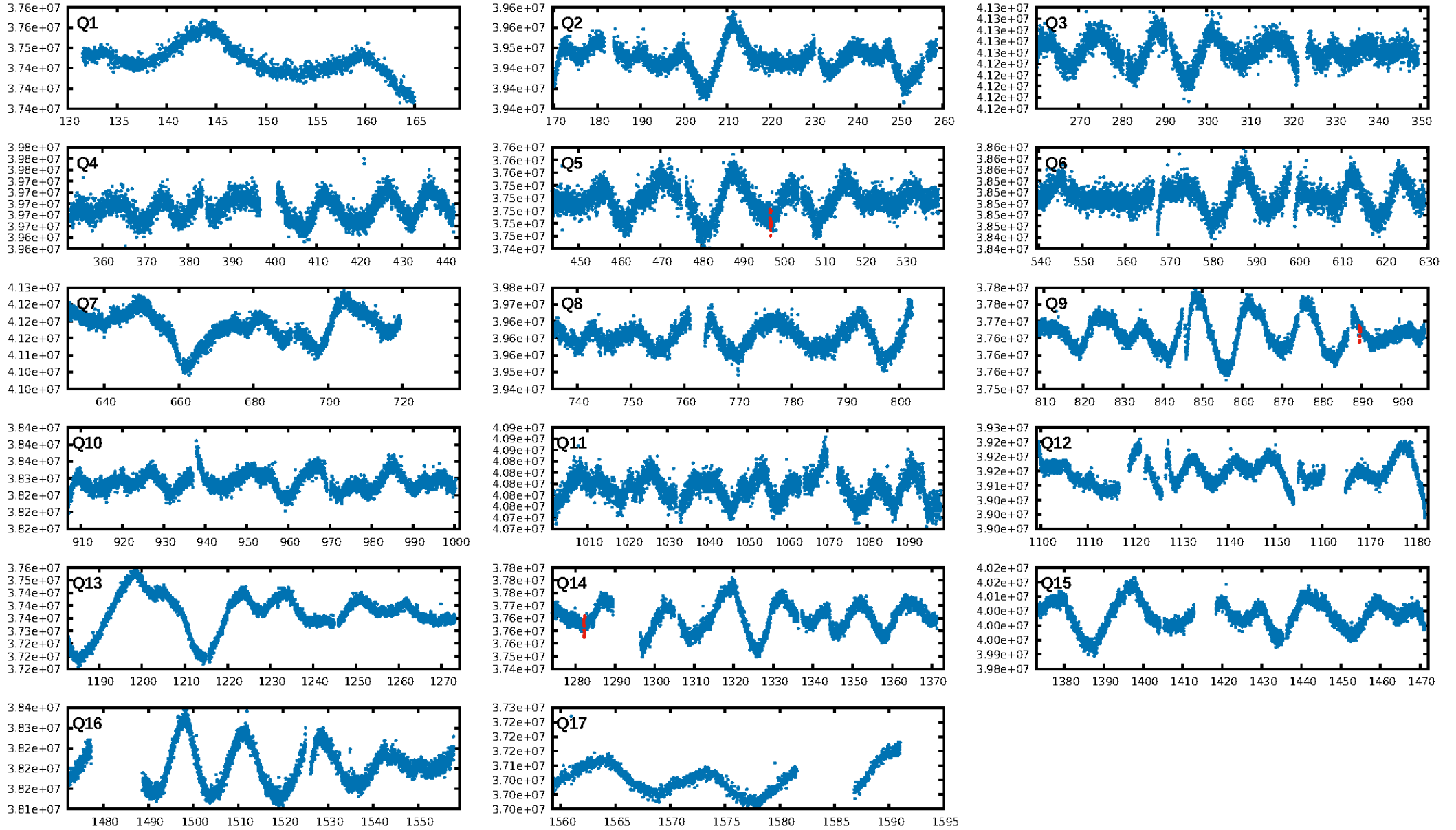
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 11.7%  
ModelChiSquareGof-sig: 98.5%  
**Bootstrap-pfa: 2.34e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.167  
Centroid-sig: 1.6%  
Centroid-so: 2.147 arcsec [1.43 $\sigma$ ]  
OotOffset-rm: 1.915 arcsec [1.07 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-rm: 1.884 arcsec [1.06 $\sigma$ ]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

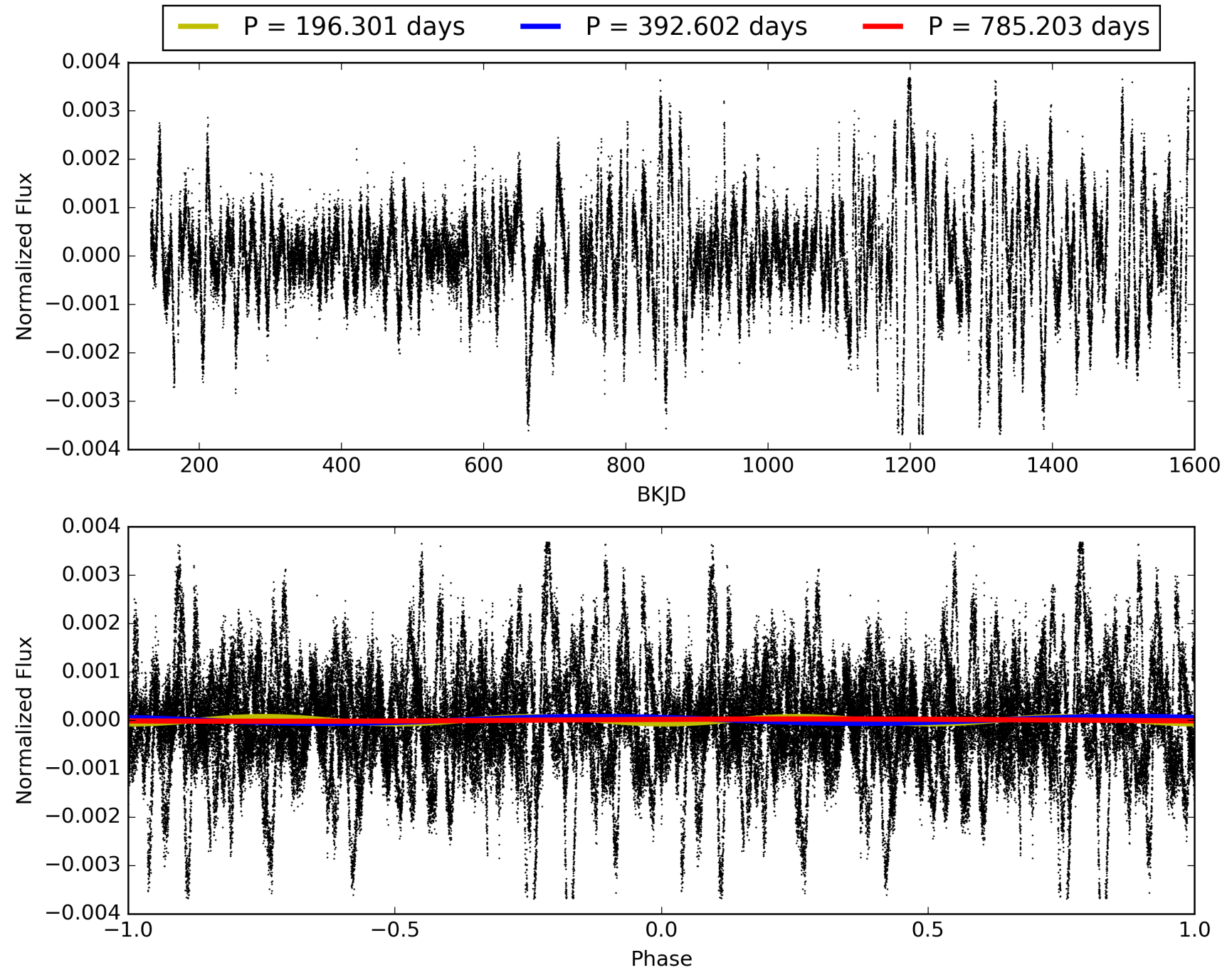
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:18:11 Z

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

# TCE 010253977-01, PDC Light Curves

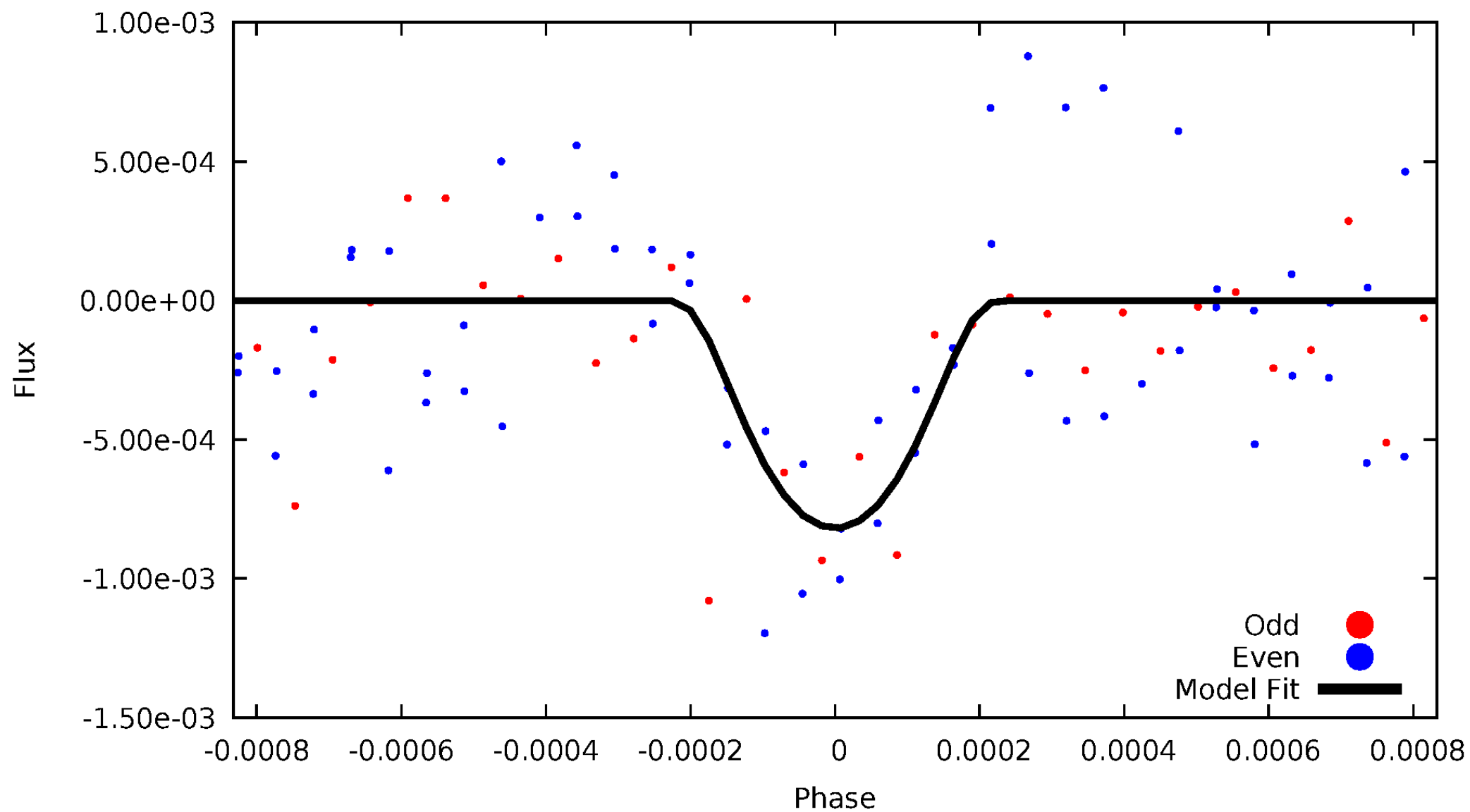


# TCE 010253977-01



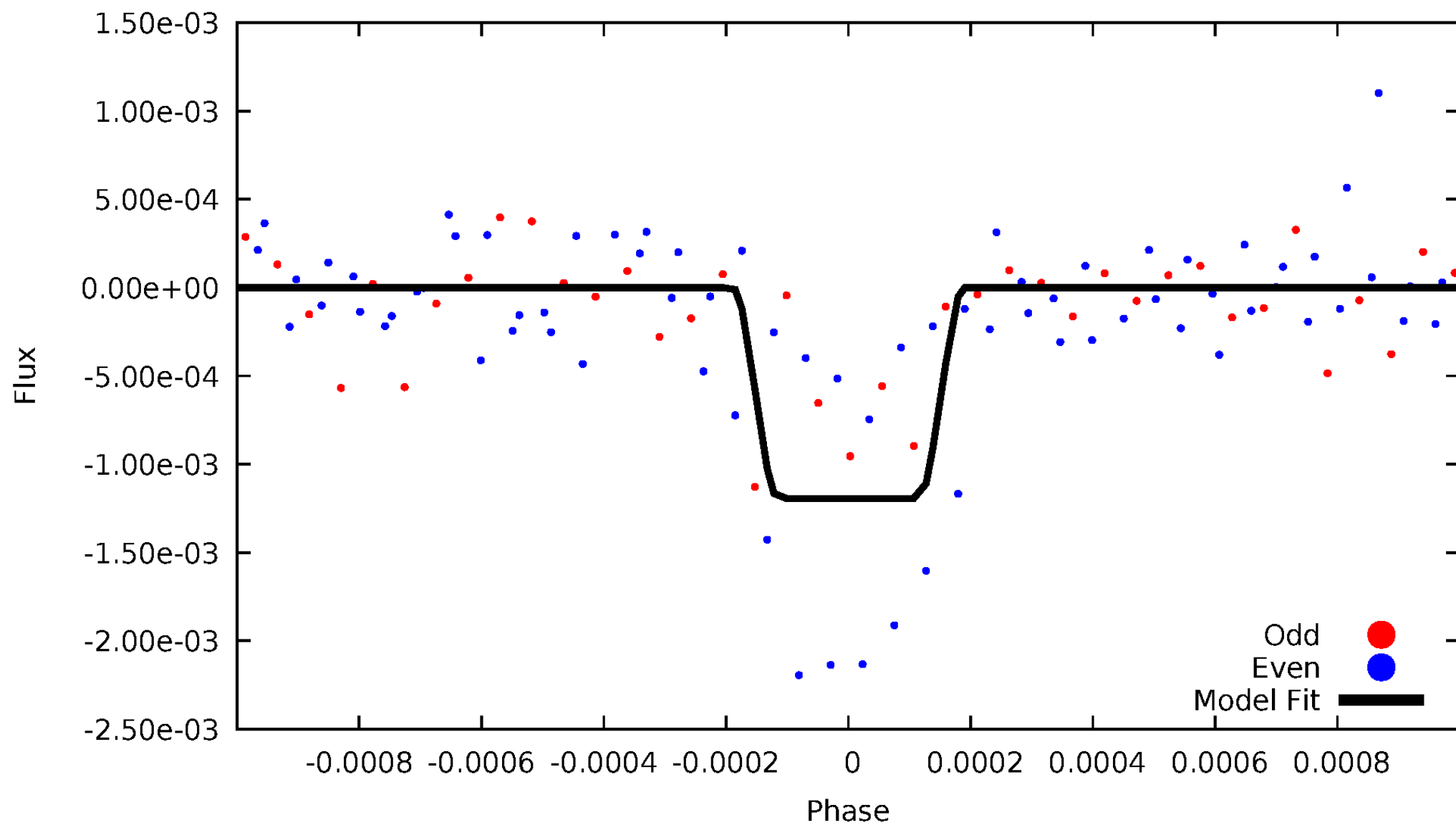
# DV Odd/Even

TCE 010253977-01



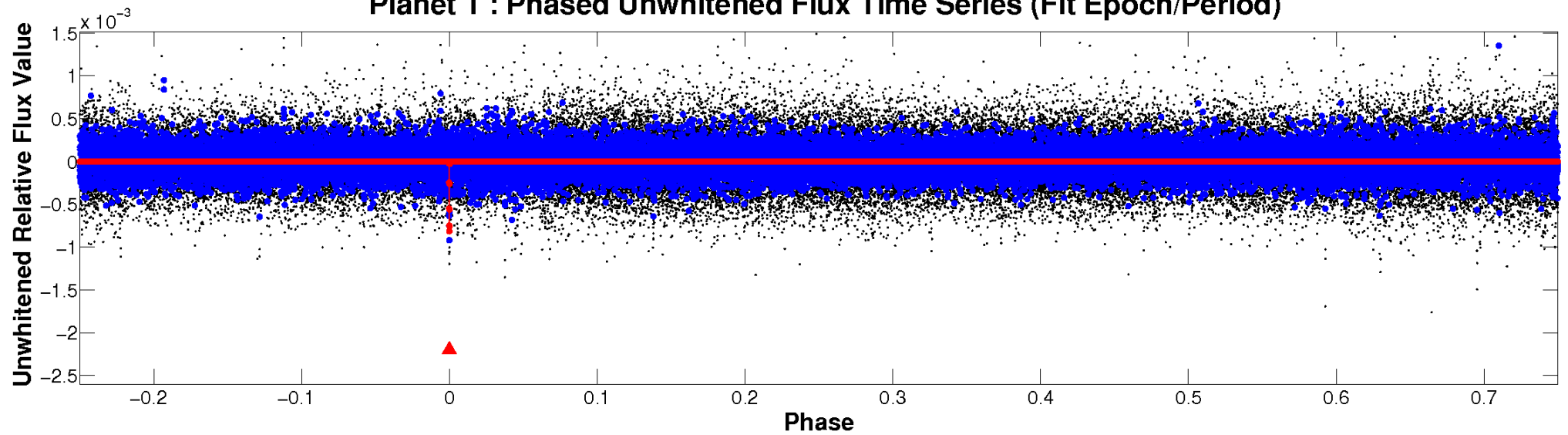
# ALT Odd/Even

TCE 010253977-01

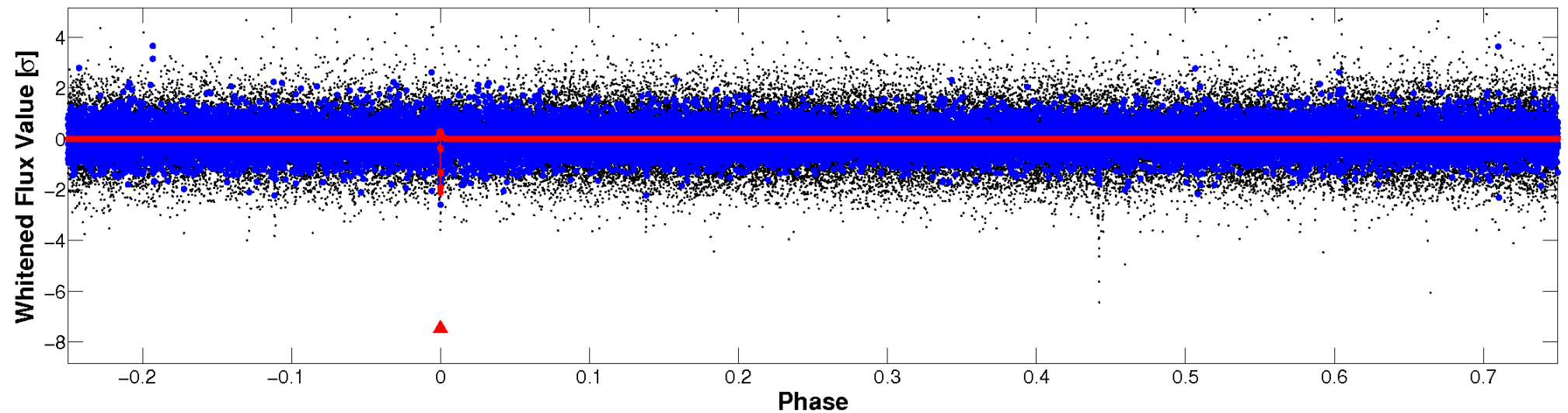


# Non-Whitened Vs. Whitened Light Curve

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

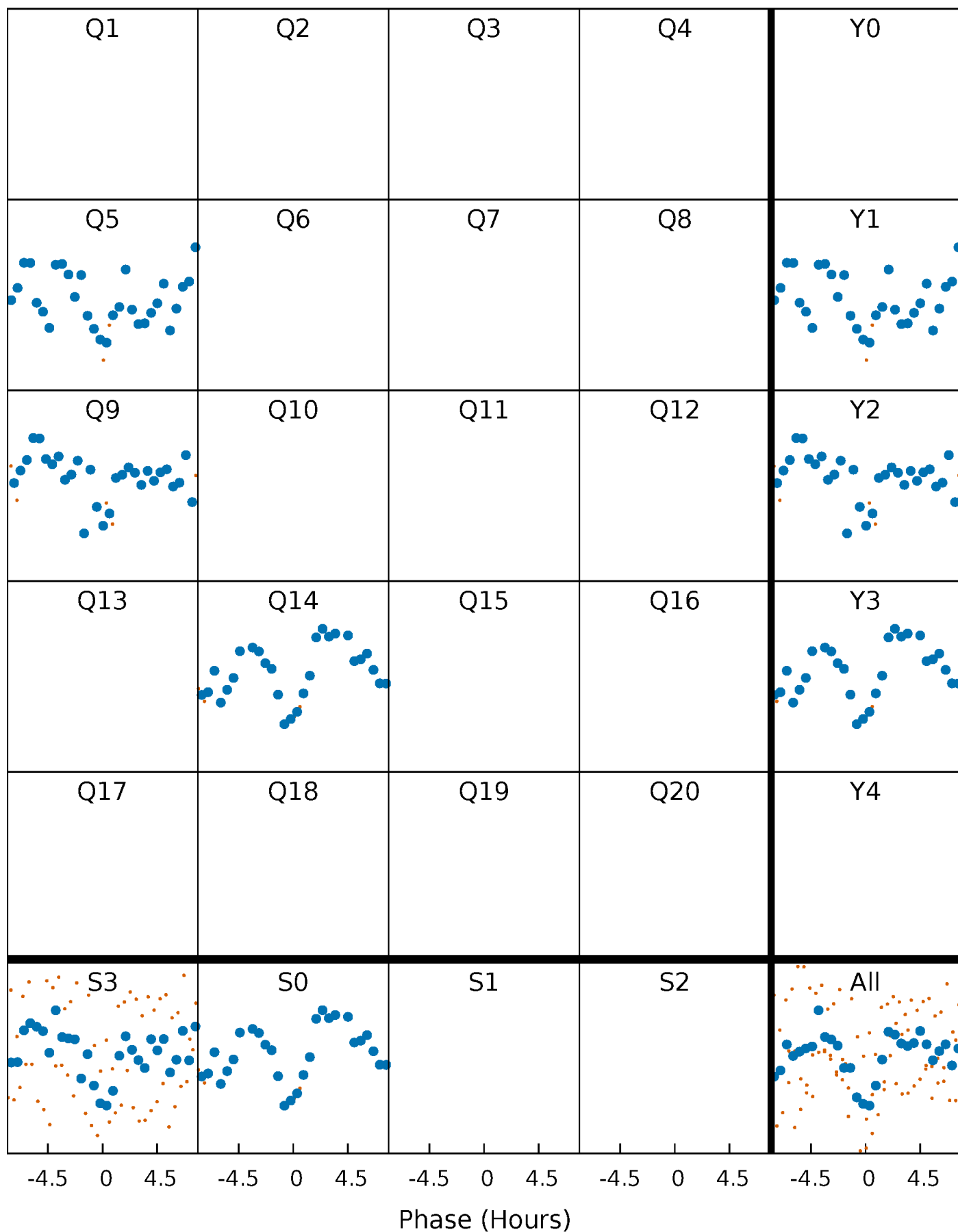


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

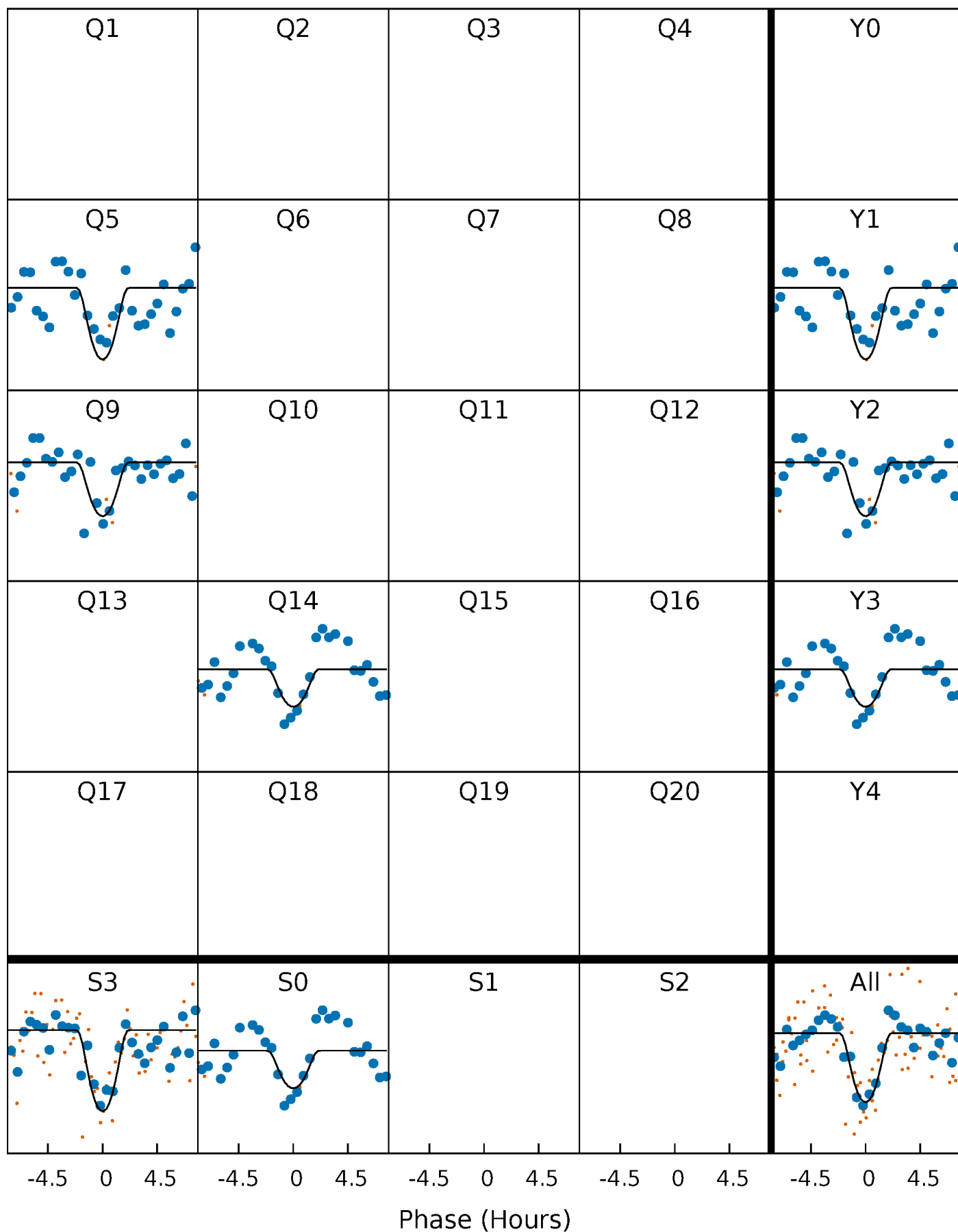
TCE 010253977-01     $P=392.601692$  Days     $T_0=497.005202$  (BKJD)





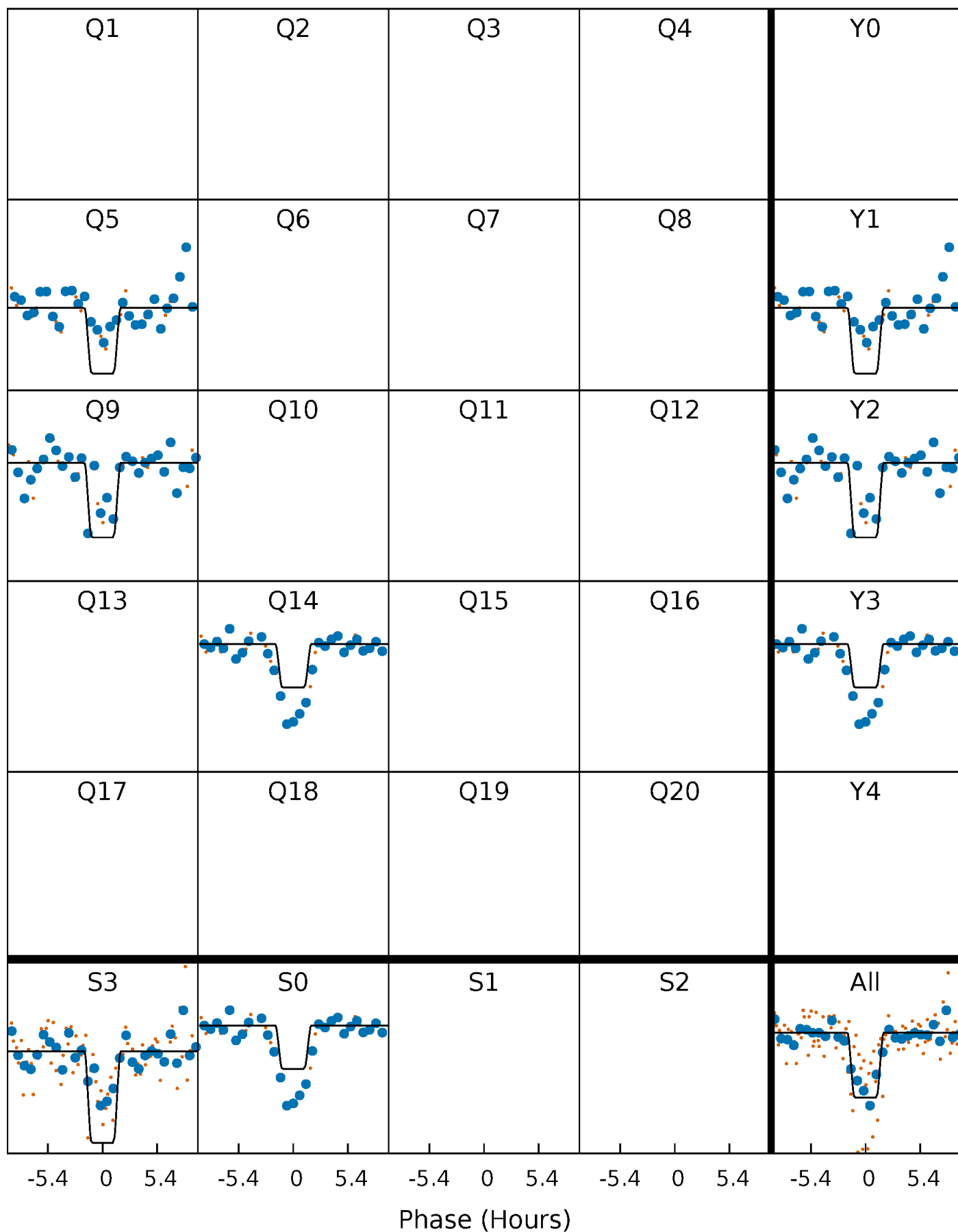
# DV Quarter-Phased Transit Curves

TCE 010253977-01 P=392.601692 Days  $T_0=497.005202$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

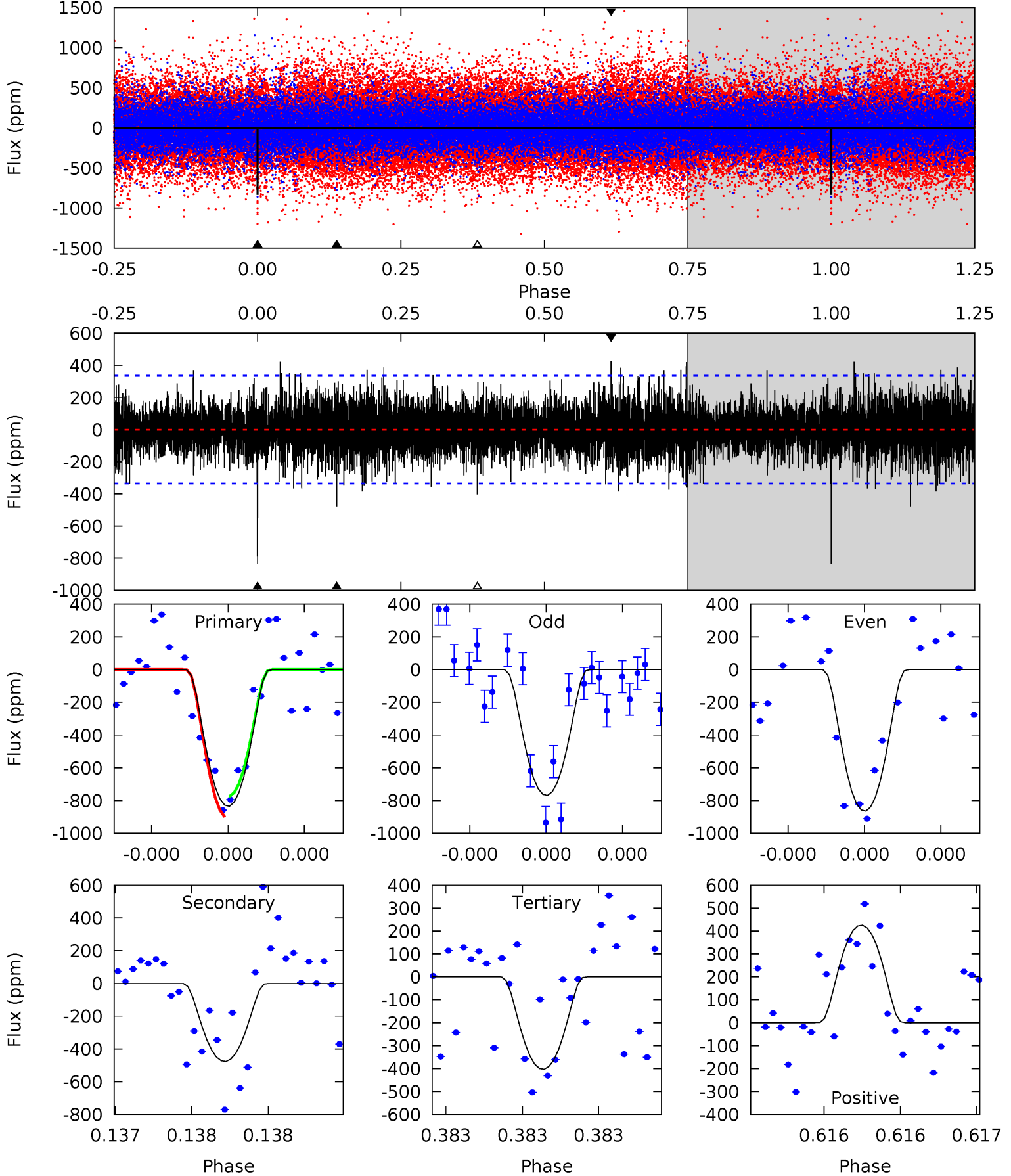
TCE 010253977-01 P=392.603611 Days  $T_0=496.994868$  (BKJD)



# DV Model-Shift Uniqueness Test

010253977-01, P = 392.601692 Days, E = 104.403510 Days

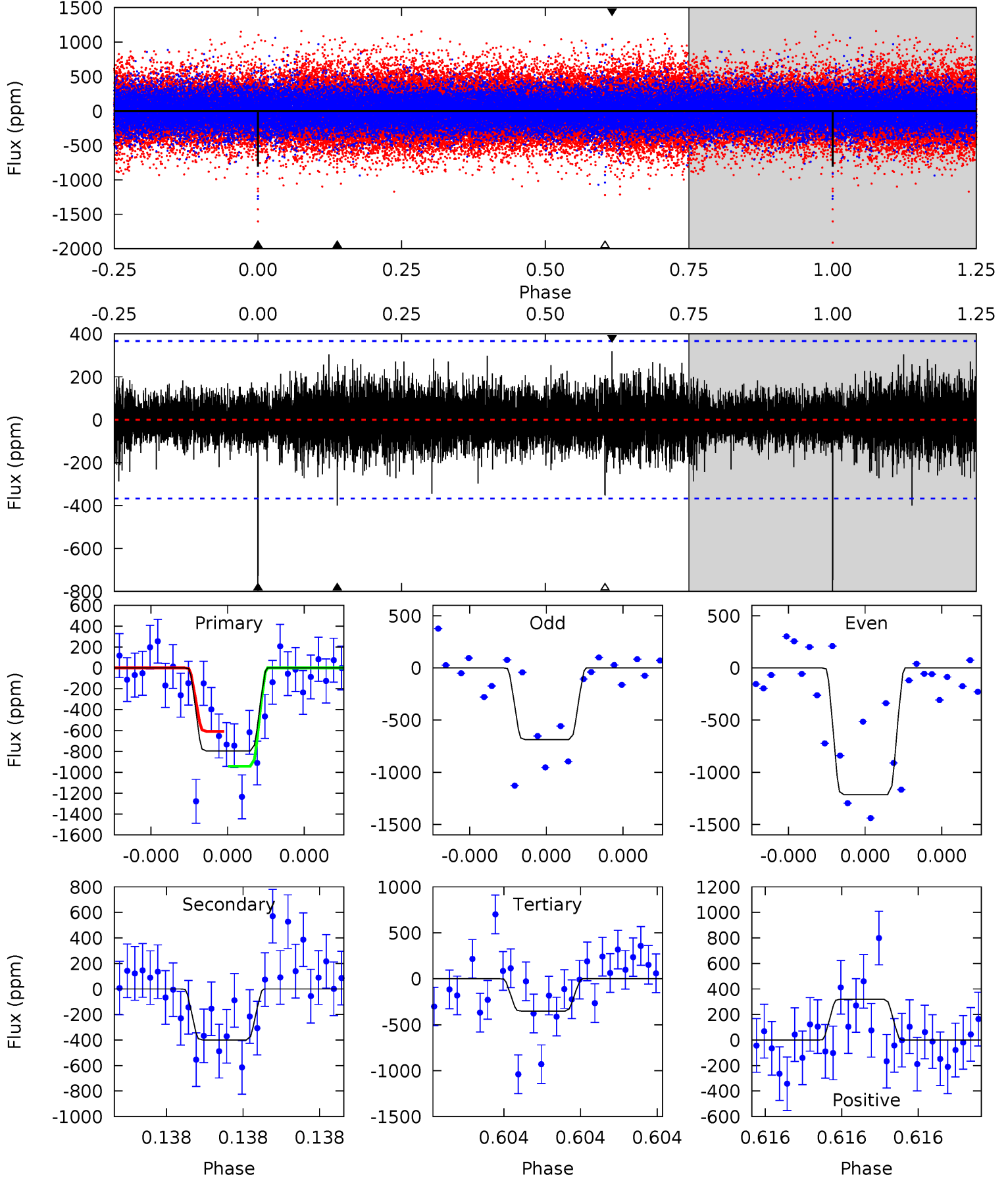
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	7.97	6.74	7.11	5.60	3.53	1.77	7.22	6.85	1.23	0.86	0.76	1.08	0.34	1.04



# Alt Model-Shift Uniqueness Test

010253977-01,  $P = 392.603611$  Days,  $E = 104.391257$  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
12.2	6.13	5.40	4.90	5.63	3.56	1.17	6.82	7.32	0.73	1.22	4.22	1.51	0.29	2.54



### Stellar Parameters For KIC 010253977

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5307^{+159}_{-143}$	$4.605^{+0.032}_{-0.097}$	$-0.200^{+0.300}_{-0.300}$	$0.753^{+0.112}_{-0.069}$	$0.843^{+0.070}_{-0.096}$	$2.786^{+0.456}_{-0.829}$
	+3%/-3%	+1%/-2%	+150%/-150%	+15%/-9%	+8%/-11%	+16%/-30%
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 010253977-01 / KOI 8201.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-477 \pm 60$	$4.05^{+3.25}_{-2.60}$	$290^{+12}_{-11}$	$3895^{+1965}_{-643}$	$14963^{+102393}_{-10213}$
Alt.	$-399 \pm 65$	$3.99^{+3.33}_{-2.64}$	$290^{+12}_{-11}$	$3816^{+2008}_{-682}$	$13617^{+105345}_{-9712}$

$T_{\text{max}}$  = 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

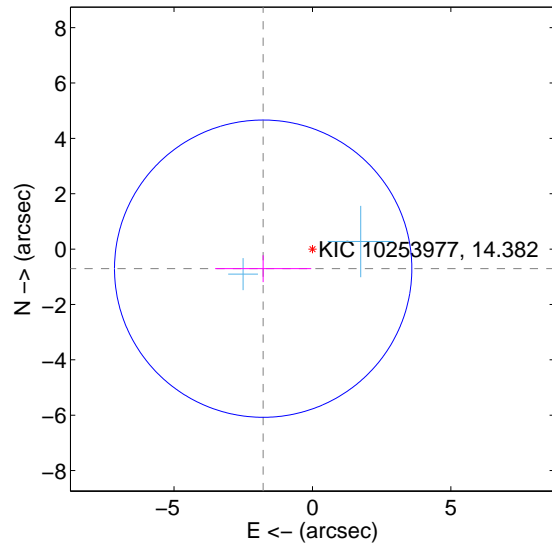
Supplemental centroid analysis for 010253977-01. Kepler magnitude: 14.38. Transit SNR 7.03

There are 2 quarters with good PRF difference image offsets

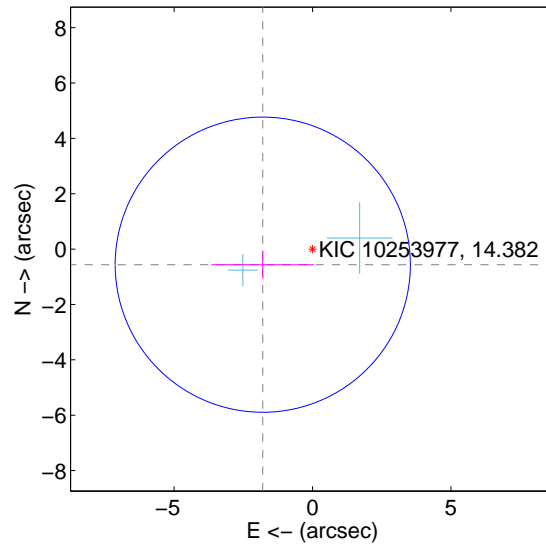
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.915 \pm 1.790$	1.07	$1.780 \pm 1.735$	$-0.707 \pm 0.486$
PRF-fit source offset from KIC position	$1.884 \pm 1.777$	1.06	$1.798 \pm 1.855$	$-0.563 \pm 0.510$
photometric centroid source offset	$2.15 \pm 1.50$	1.43	$1.80 \pm 1.52$	$-1.17 \pm 1.46$

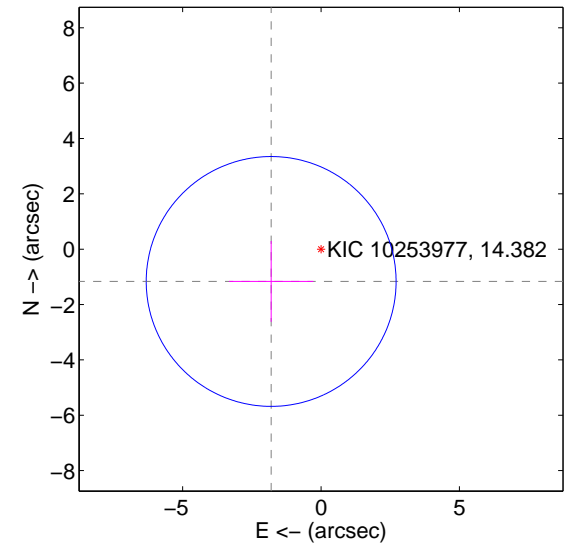
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

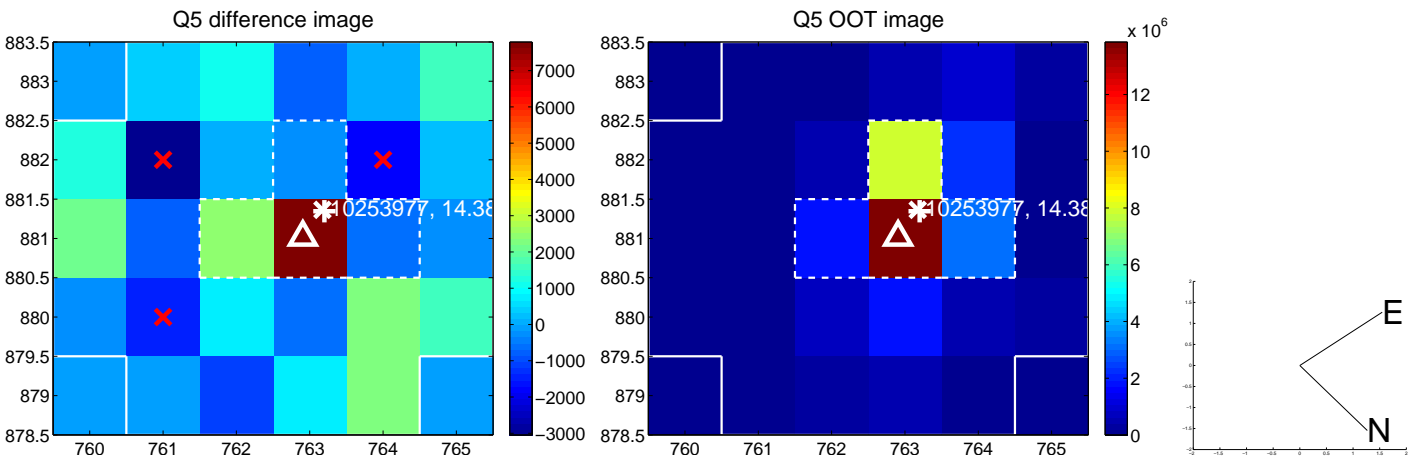


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

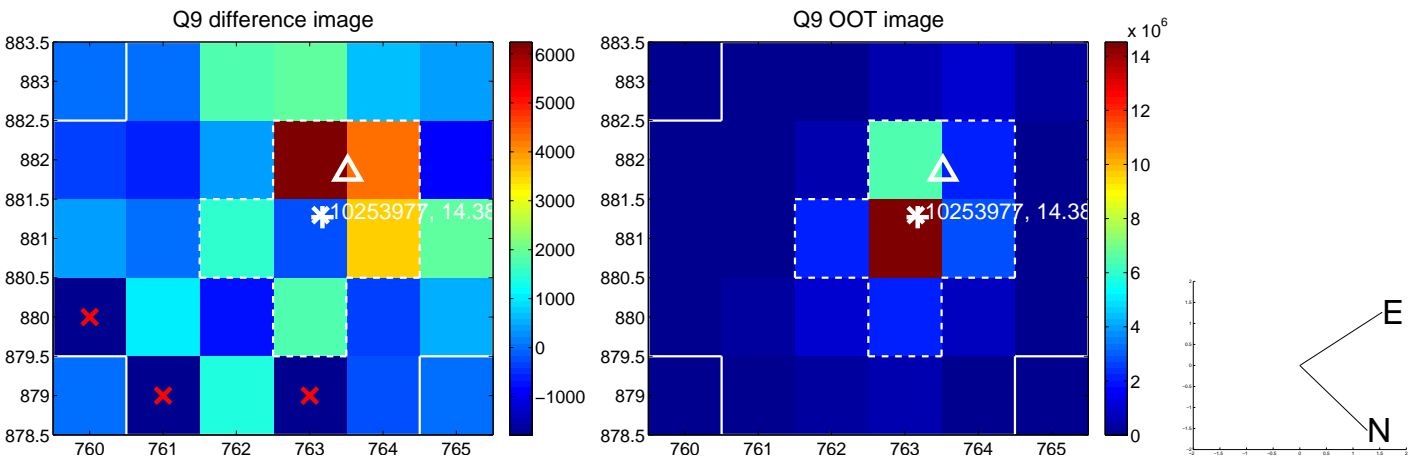


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





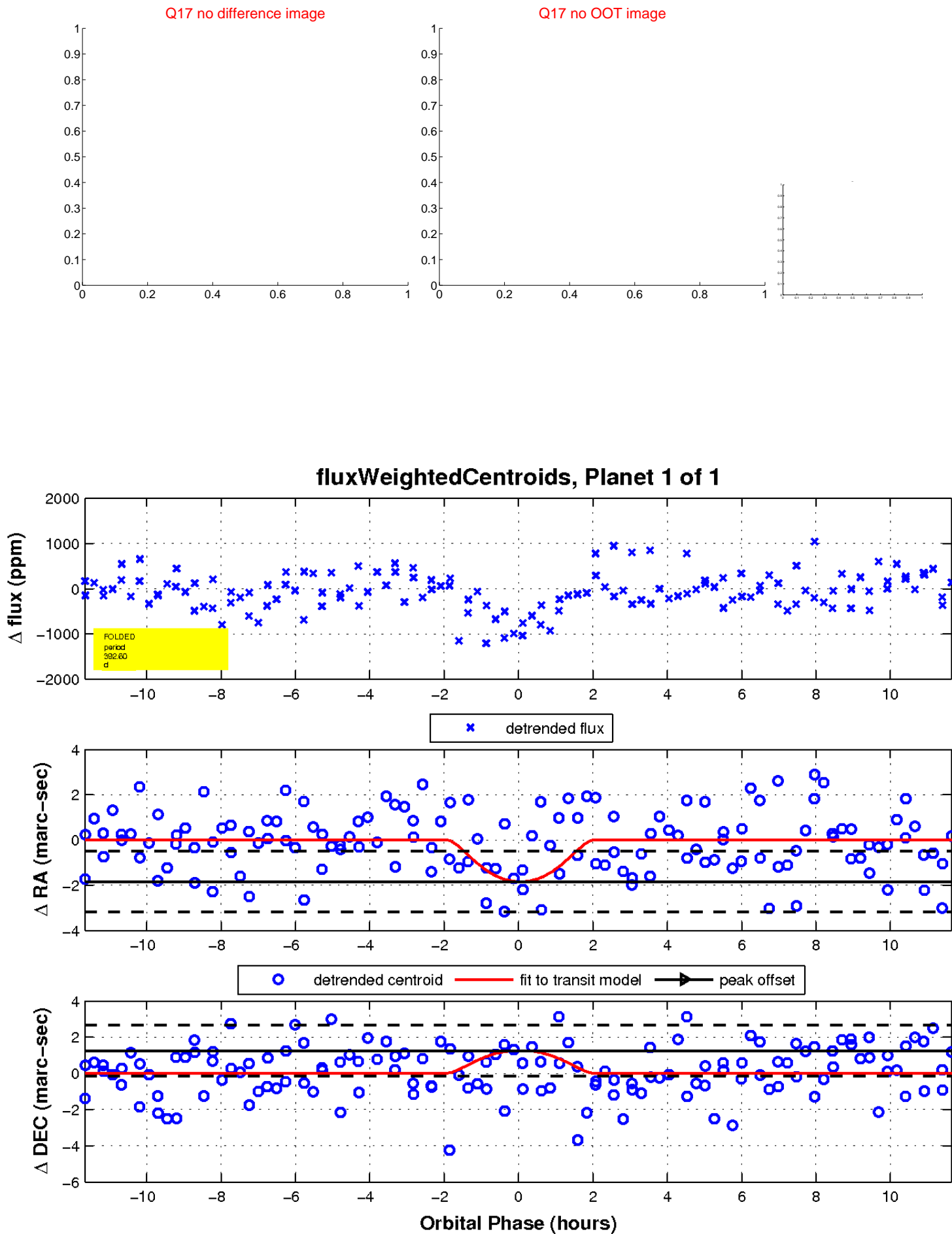
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

