

# KIC 006863161

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006863161-01	OBS	3757.01	1.984597	133.502682	17419.0	6.016	1035.9	293.6	2.62	9191	51.74	25954.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006863161-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

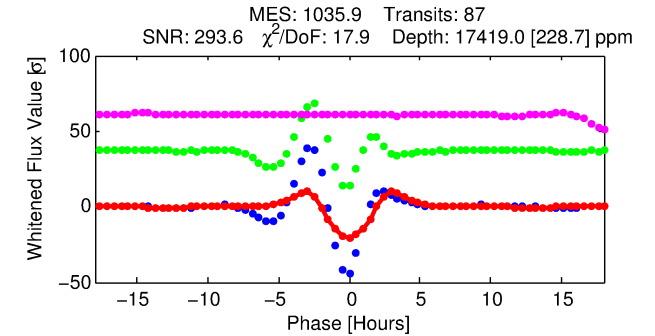
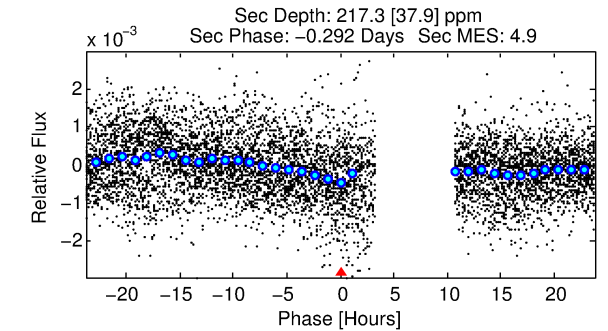
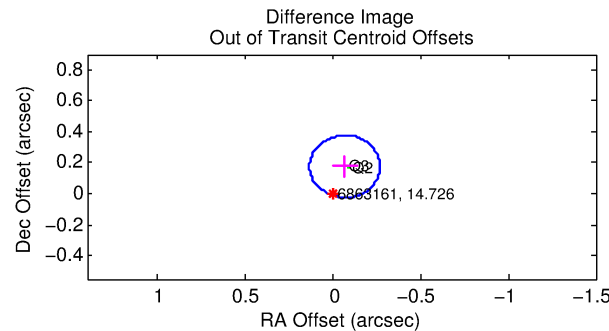
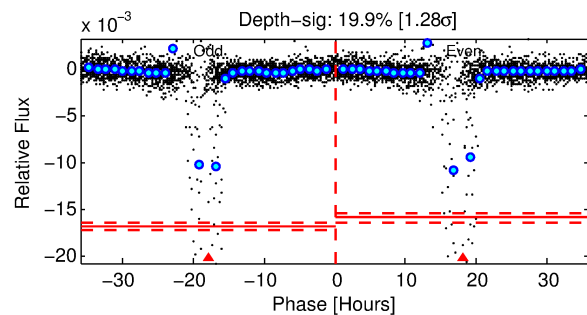
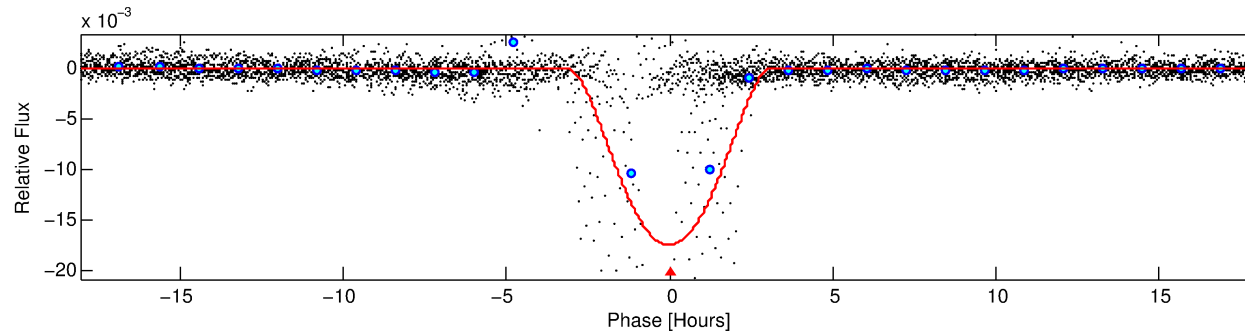
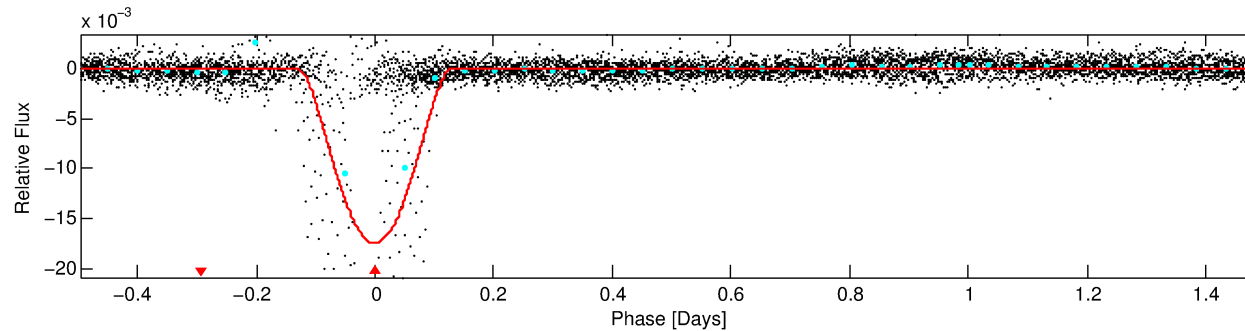
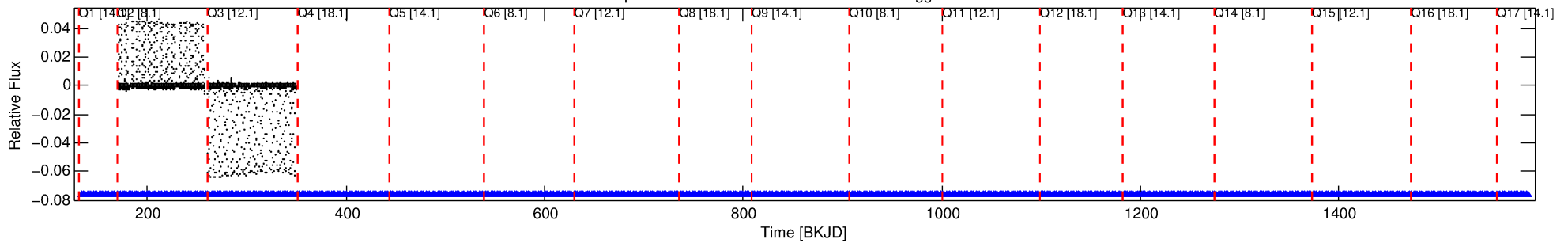
## Ephemeris Match Information For 006863161-01

No Significant Match Found

# DV One-Page Summary

KIC: 6863161 Candidate: 1 of 1 Period: 1.985 d  
KOI: K03757 Corr: No Ephemeris Match

Kp: 14.73 R\*: 2.62 Rs Teff: 9191.0 K Logg: 3.97 Fe/H: 0.070



## DV Fit Results:

Period = 1.98460 [0.00002] d  
Epoch = 133.5027 [0.0014] BKJD  
Rp/R\* = 0.1810 [0.0377]  
a/R\* = 2.02 [0.03]  
b = 0.96 [0.06]  
Seff = 25954.10 [12450.31]  
Teq = 3237 [388] K  
Rp = 51.74 [22.22] Re  
a = 0.0411 [0.0127] AU  
Ag = 0.08 [0.05] [-19.40σ]  
Teffp = 2623 [320] K [-1.22σ]

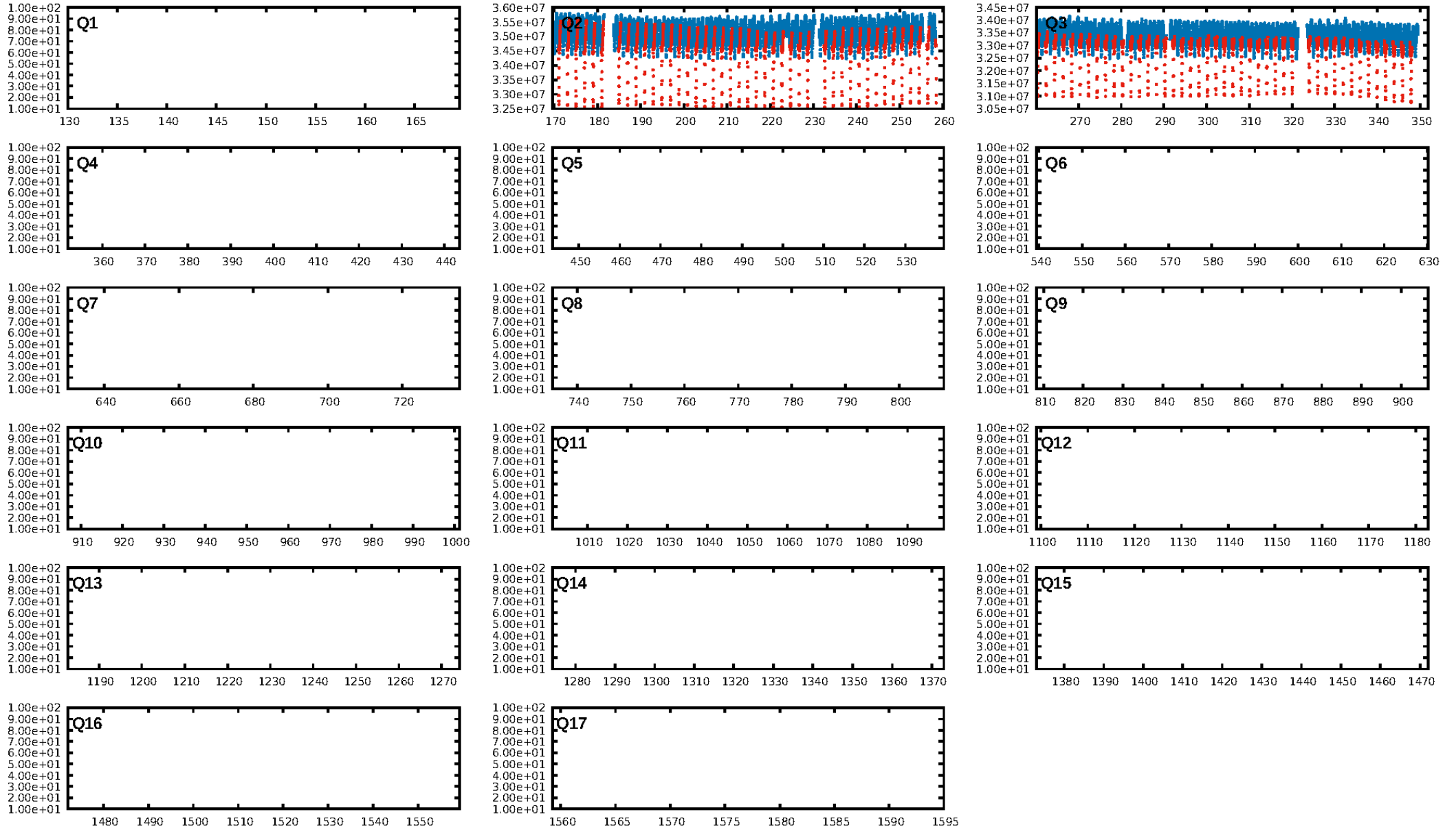
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [87/87]  
GhostDiagnostic-chr: 1.044  
Centroid-sig: N/A  
Centroid-so: 0.304 arcsec [24.27σ]  
OotOffset-rm: 0.189 arcsec [2.83σ]  
KicOffset-rm: 0.116 arcsec [1.64σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

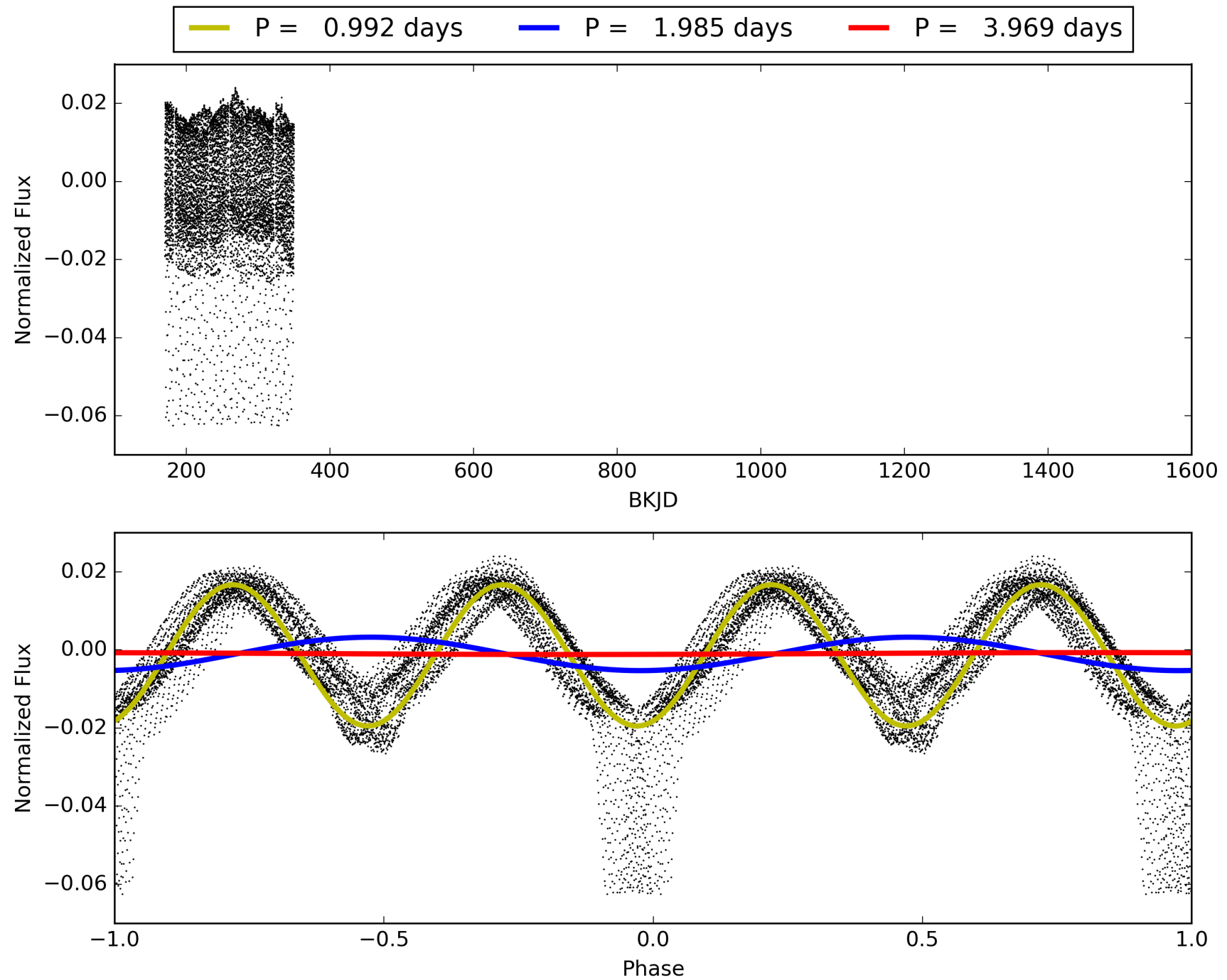
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:13:15 Z

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

# TCE 006863161-01, PDC Light Curves

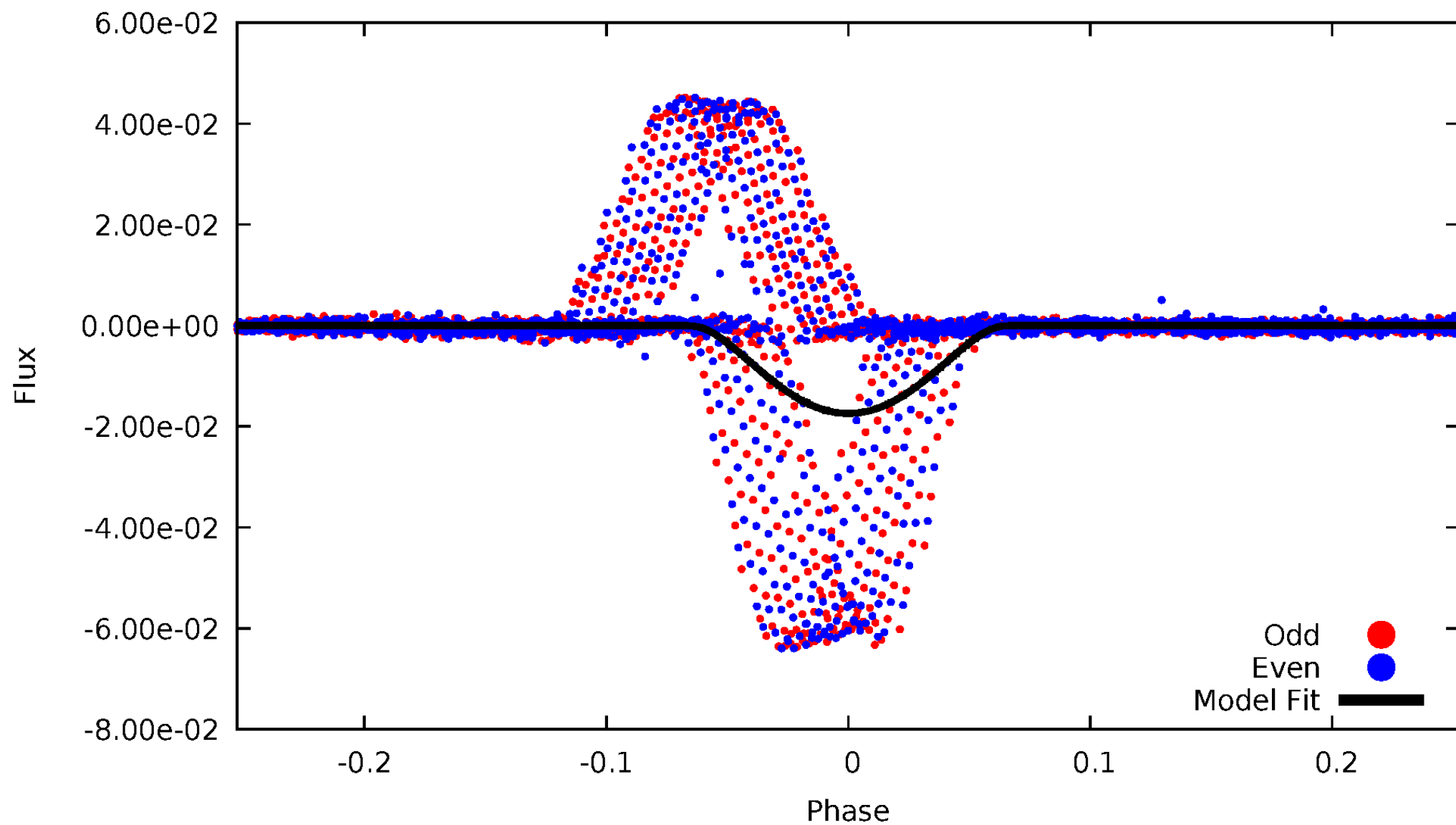


TCE 006863161-01



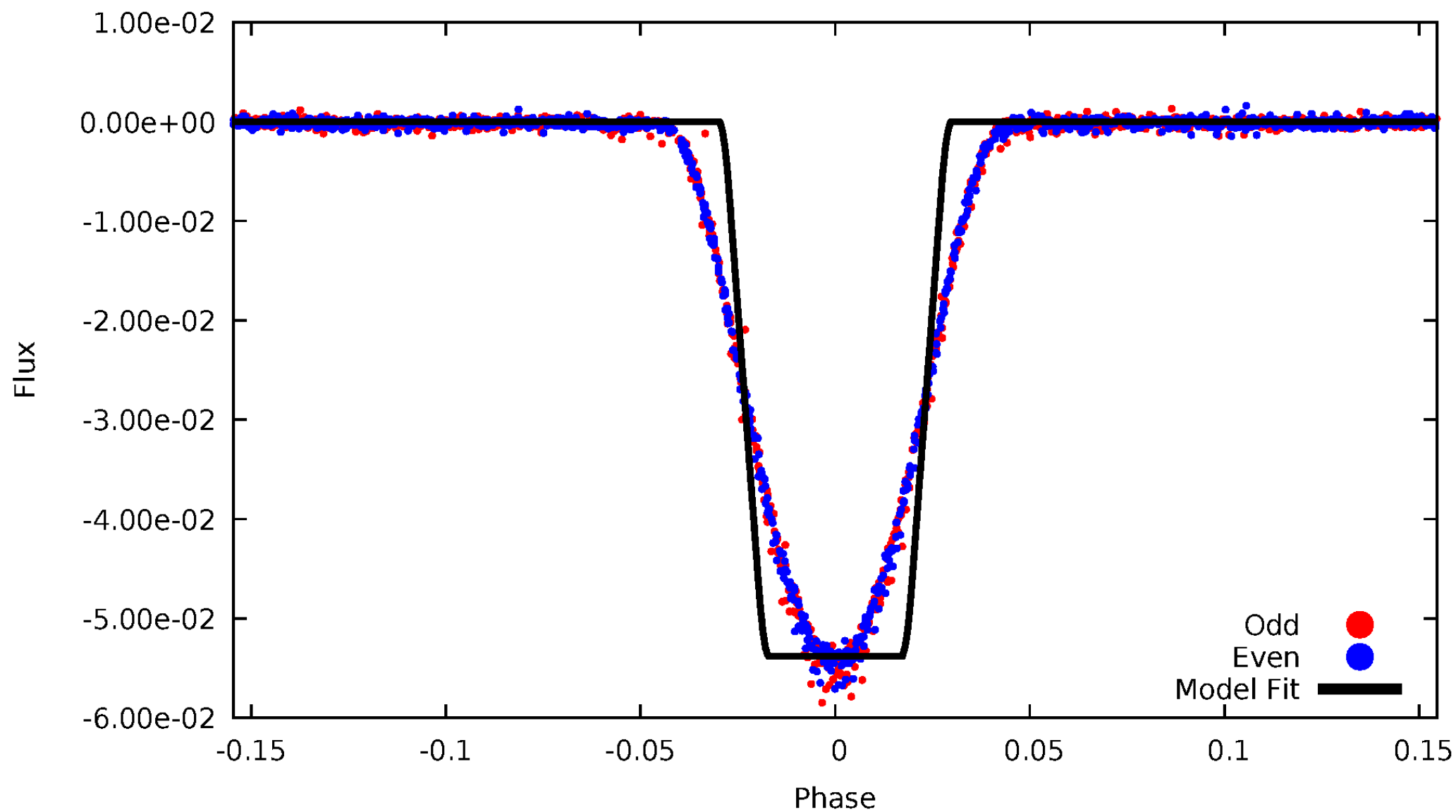
# DV Odd/Even

TCE 006863161-01



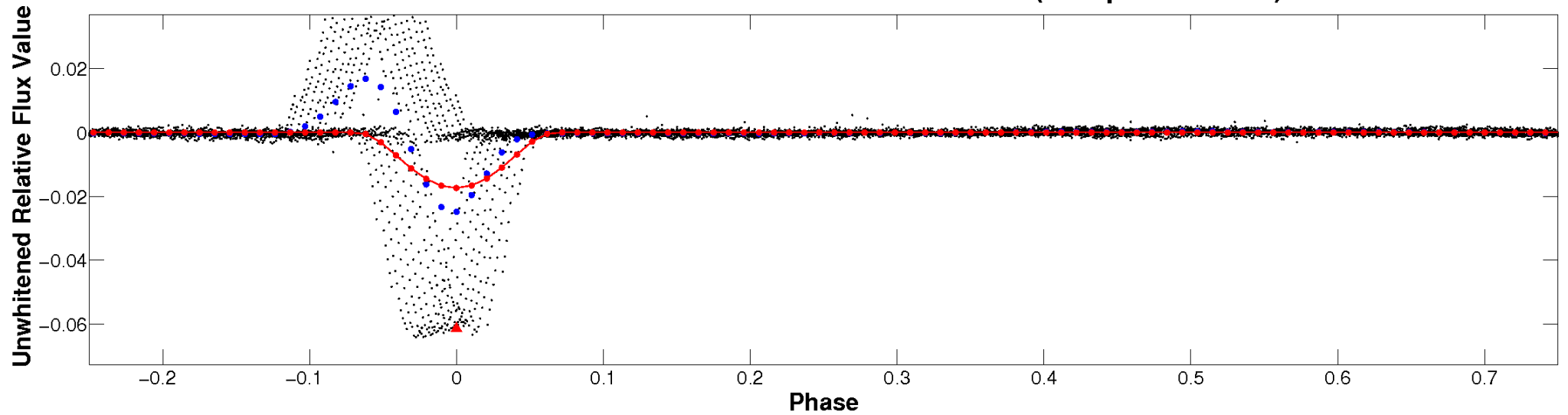
# ALT Odd/Even

TCE 006863161-01

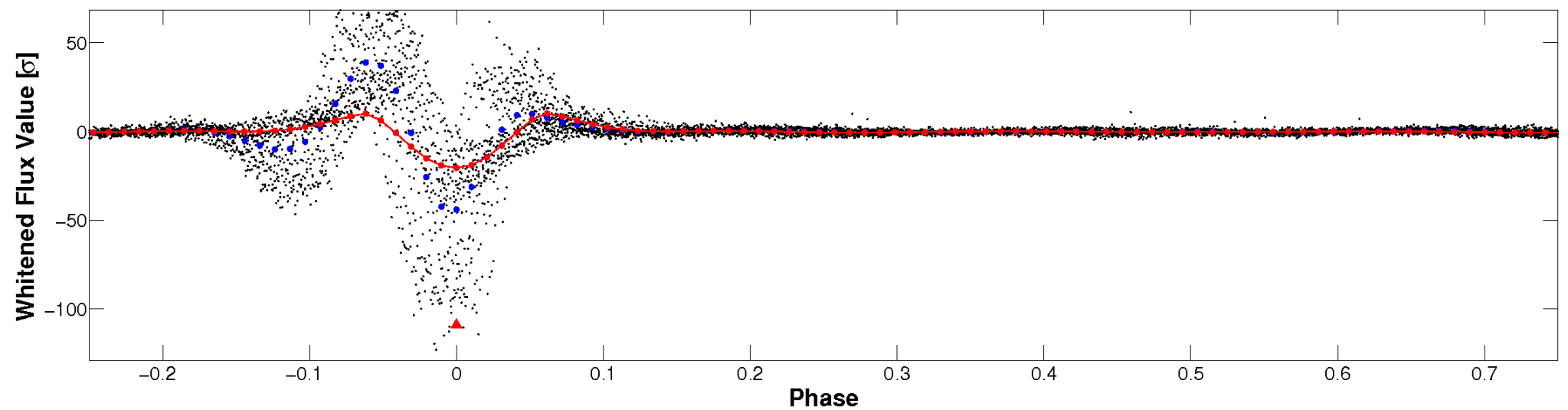


# Non-Whitened Vs. Whitened Light Curve

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

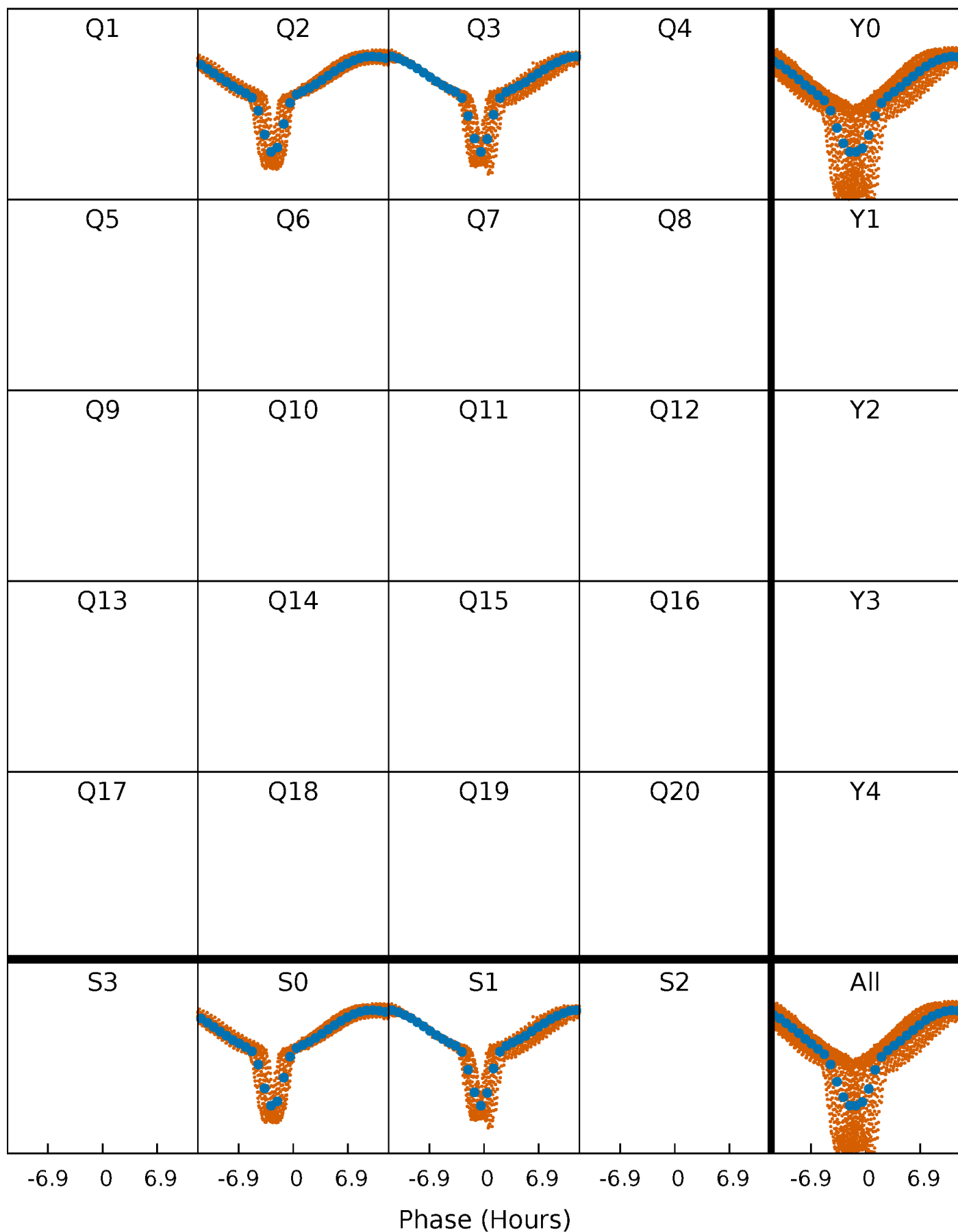


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

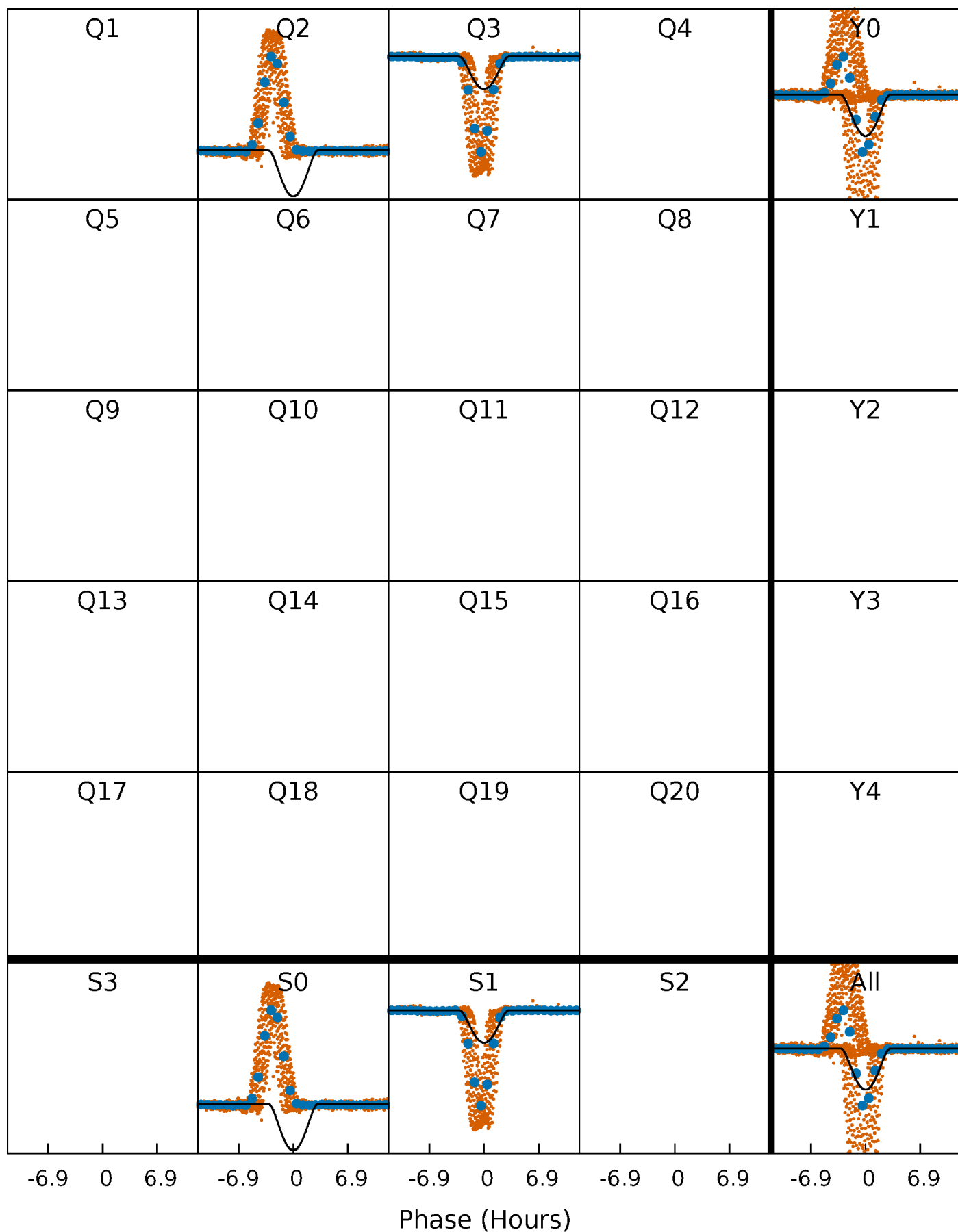
TCE 006863161-01 P= 1.984597 Days  $T_0=133.502682$  (BKJD)





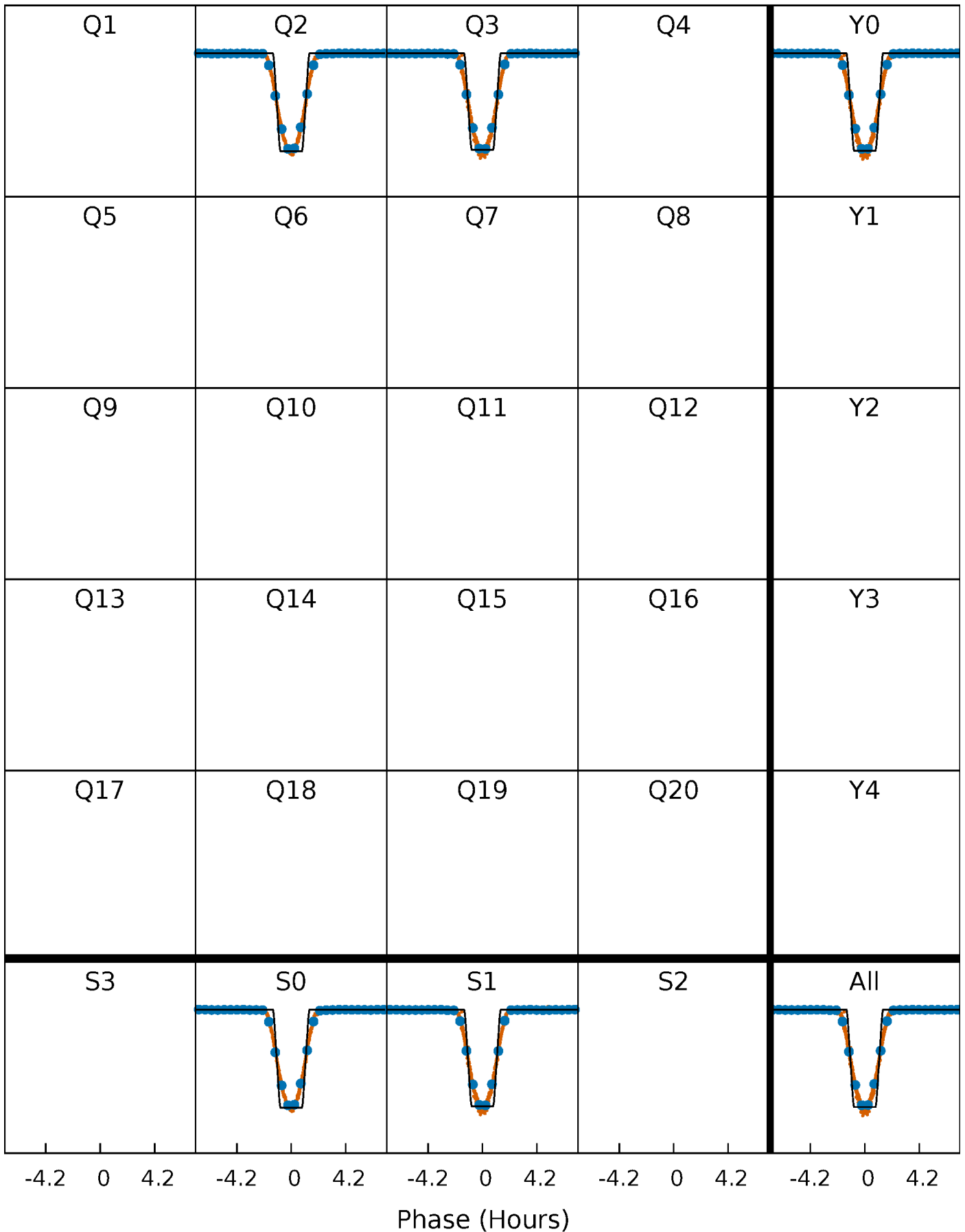
# DV Quarter-Phased Transit Curves

TCE 006863161-01 P= 1.984597 Days  $T_0=133.502682$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

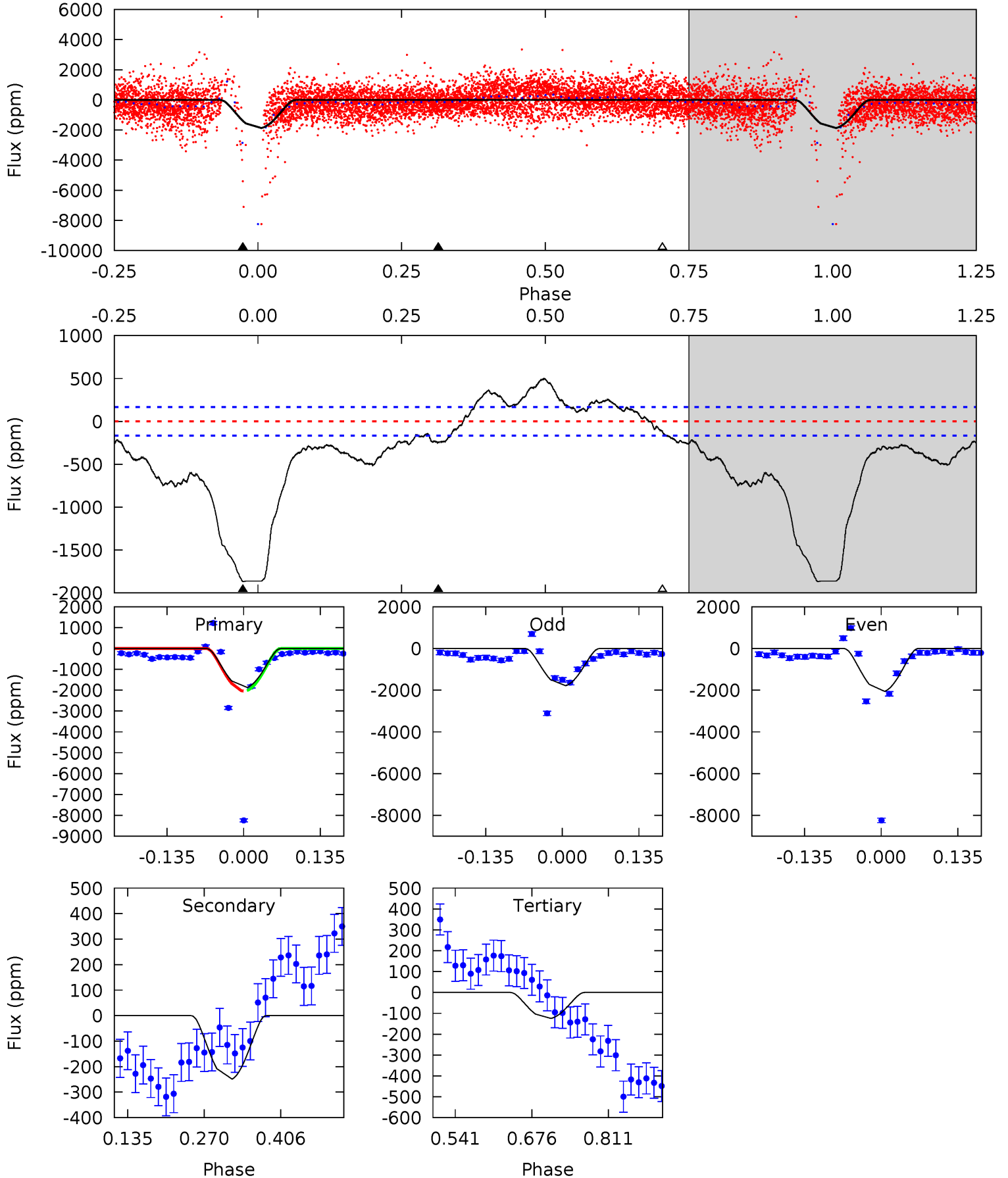
TCE 006863161-01 P= 1.986631 Days  $T_0=133.311940$  (BKJD)



# DV Model-Shift Uniqueness Test

006863161-01, P = 1.984597 Days, E = 133.502682 Days

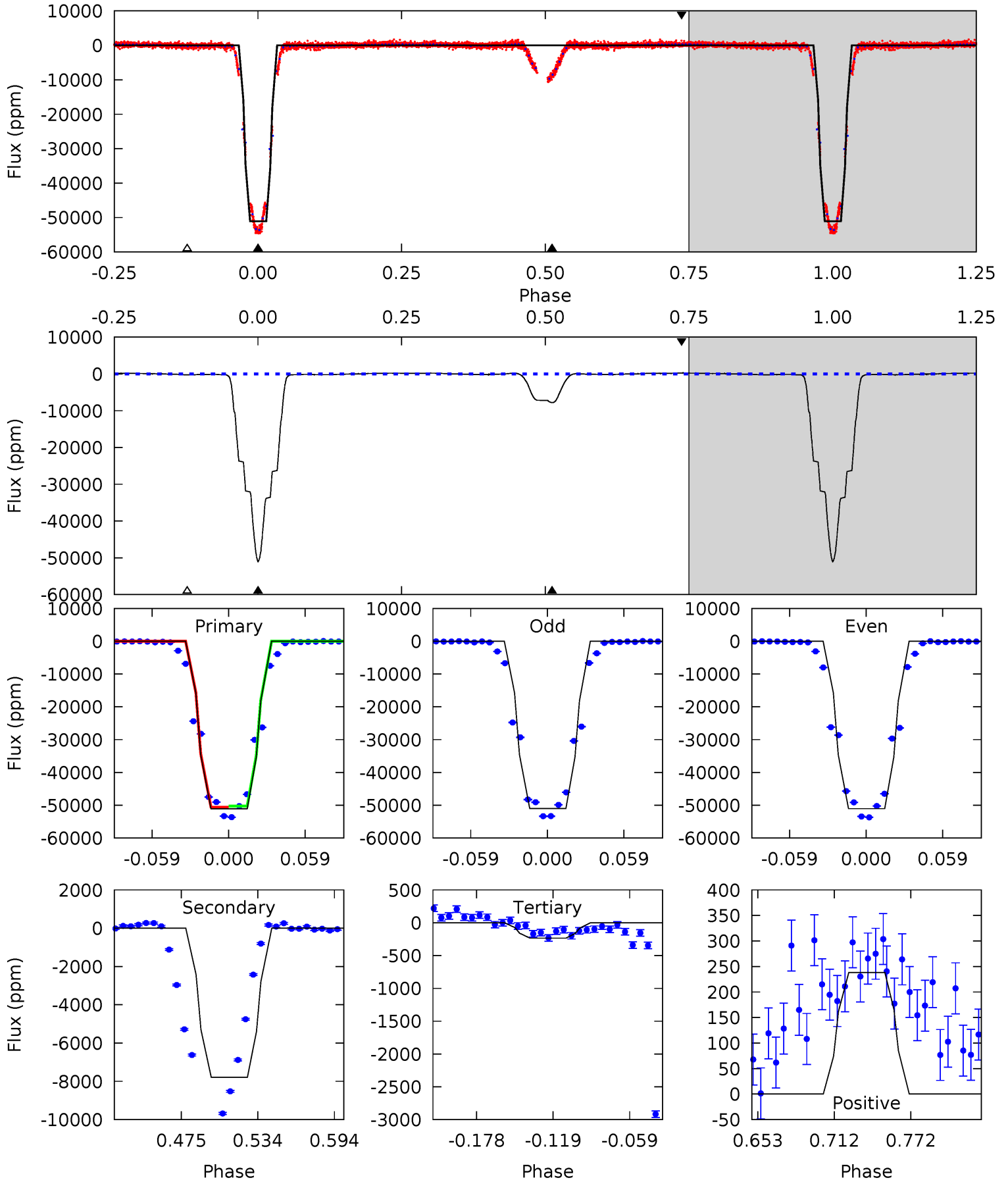
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.3	6.70	3.35	0	4.50	1.49	8.54	46.9	50.3	3.35	6.70	3.58	0.53	0.21	0



# Alt Model-Shift Uniqueness Test

006863161-01, P = 1.986631 Days, E = 133.311940 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
2093	319.3	9.62	9.76	4.67	1.89	6.11	2084	2084	309.7	309.6	1.30	1.01	0.00	0



### Stellar Parameters For KIC 006863161

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	$9191^{+286}_{-430}$	$3.973^{+0.237}_{-0.172}$	$0.070^{+0.200}_{-0.700}$	$2.619^{+0.805}_{-0.984}$	$2.349^{+0.384}_{-0.713}$	$0.184^{+0.320}_{-0.089}$
	+3%/-5%	+6%/-4%	+286%/-1000%	+31%/-38%	+16%/-30%	+174%/-48%
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 006863161-01 / KOI 3757.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-249 \pm 37$	$50.40^{+15.52}_{-13.27}$	$4485^{+387}_{-422}$	$-3615^{+378}_{-277}$	$0.087^{+0.074}_{-0.035}$
Alt.	$-7792 \pm 24$	$65.30^{+16.03}_{-15.14}$	$4499^{+364}_{-403}$	$5147^{+516}_{-417}$	$1.686^{+1.113}_{-0.568}$

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

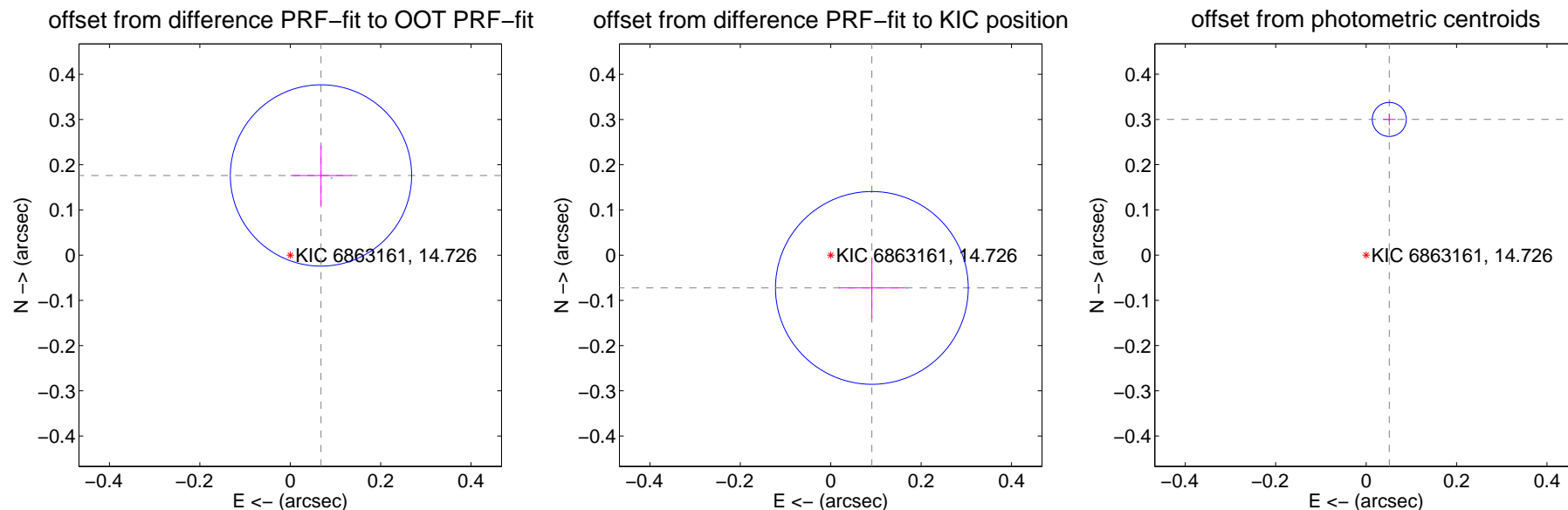
## DV Centroid Data

Supplemental centroid analysis for 006863161-01. Kepler magnitude: 14.73. Transit SNR 293.56

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.189 \pm 0.067$	2.83	$-0.068 \pm 0.067$	$0.176 \pm 0.067$
PRF-fit source offset from KIC position	$0.116 \pm 0.071$	1.64	$-0.091 \pm 0.074$	$-0.072 \pm 0.067$
photometric centroid source offset	$0.30 \pm 0.01$	24.27	$-0.05 \pm 0.01$	$0.30 \pm 0.01$



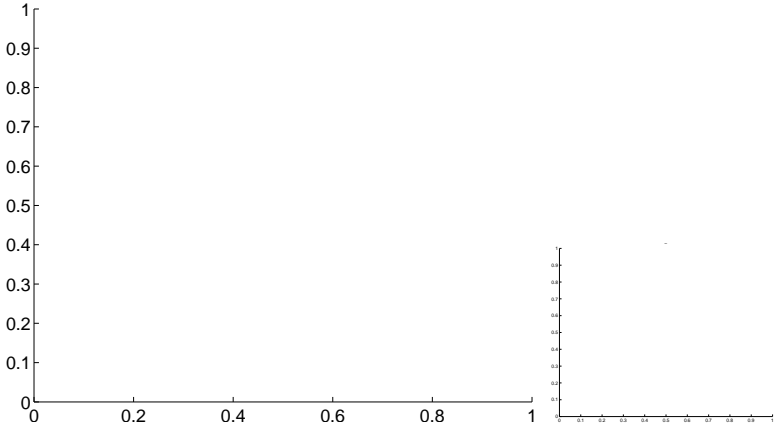
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

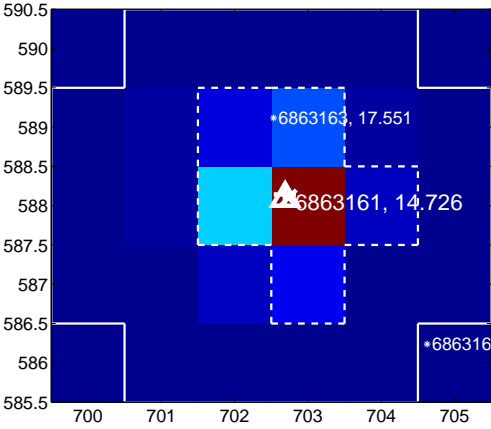
Q1 no difference image



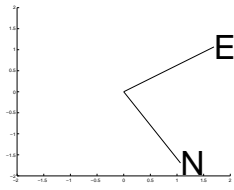
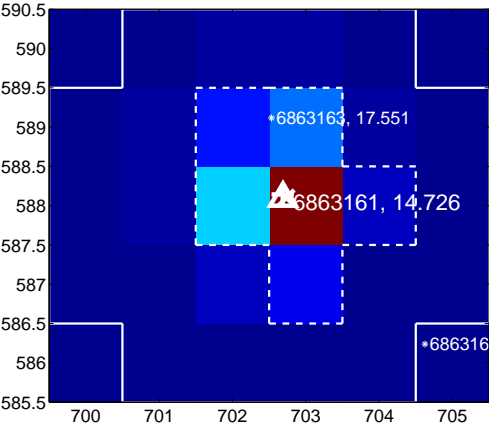
Q1 no OOT image



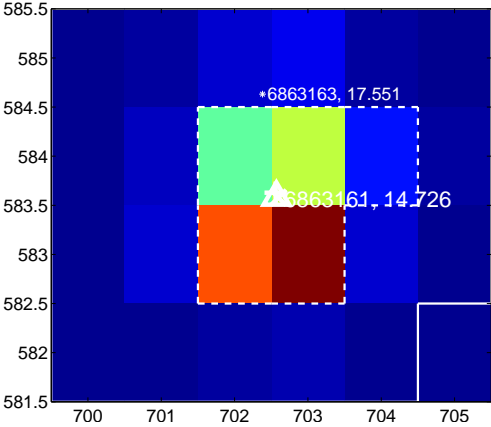
Q2 difference image



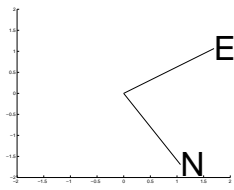
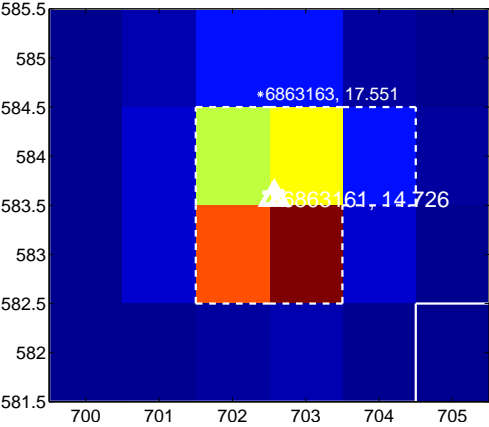
Q2 OOT image



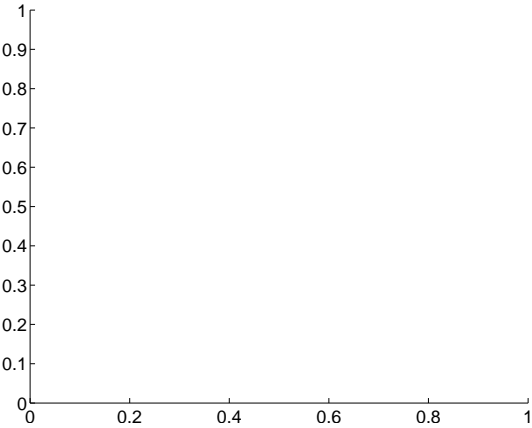
Q3 difference image



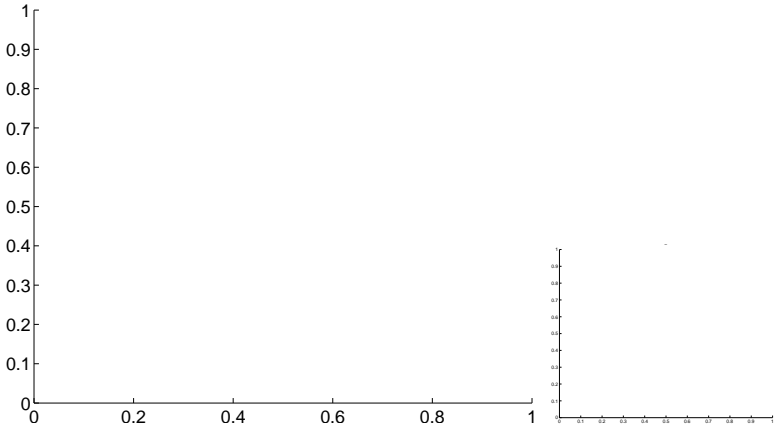
Q3 OOT image



Q4 no difference image



Q4 no OOT image



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





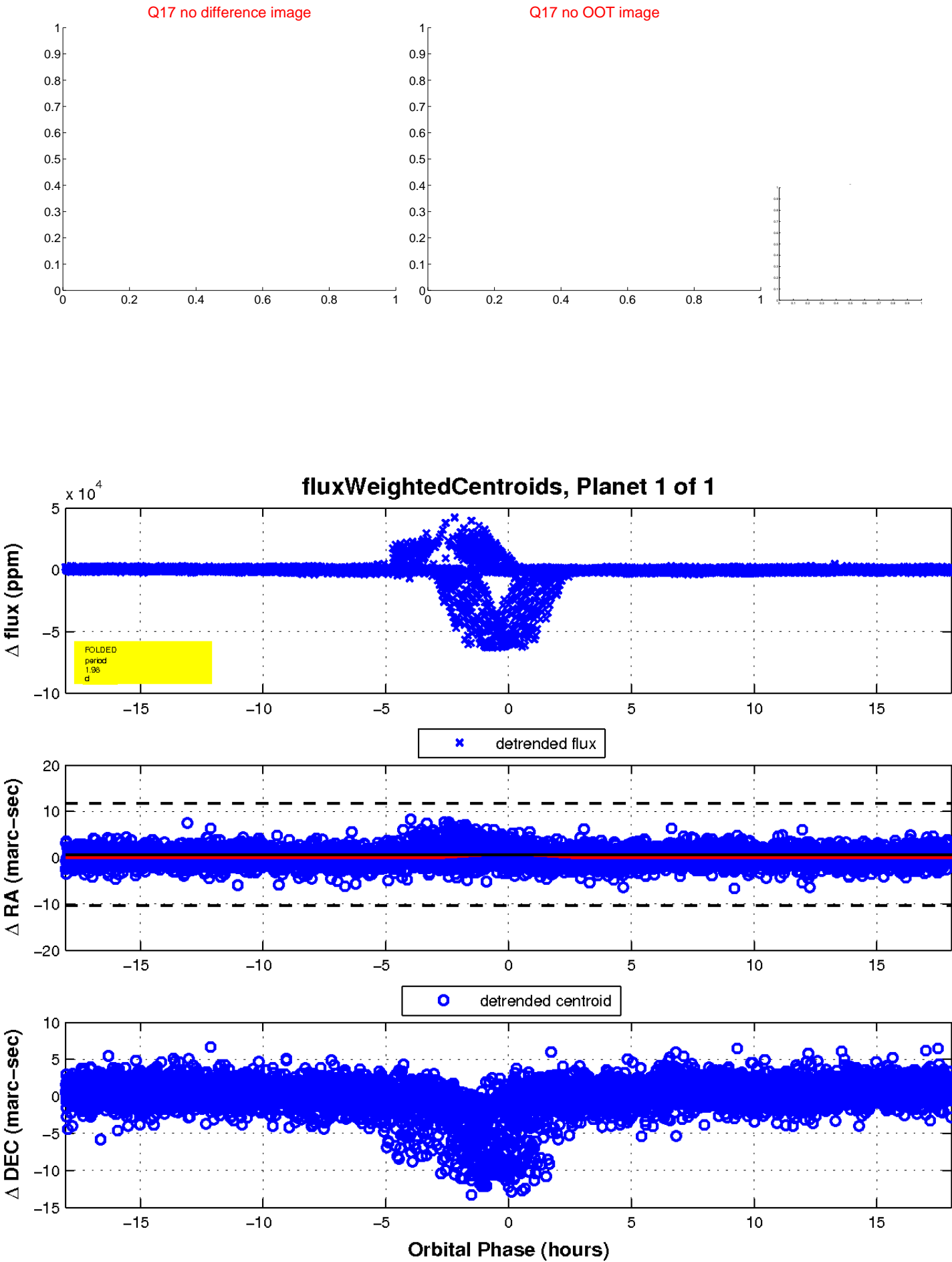
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : 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

