

# KIC 009656543

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009656543-01	OBS	3588.01	1.272299	132.494595	352420.2	3.277	5347.1	2810.9	1.62	5503	109.90	3988.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009656543-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED

**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 009656543-01

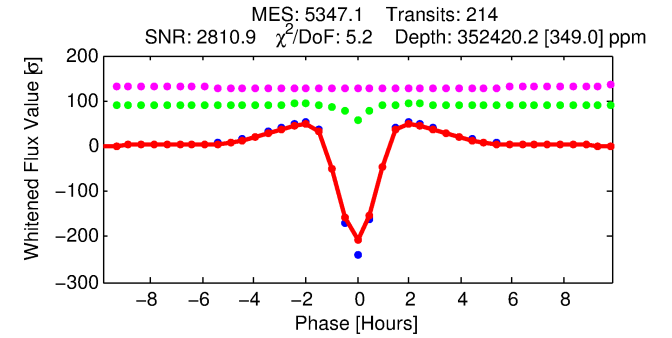
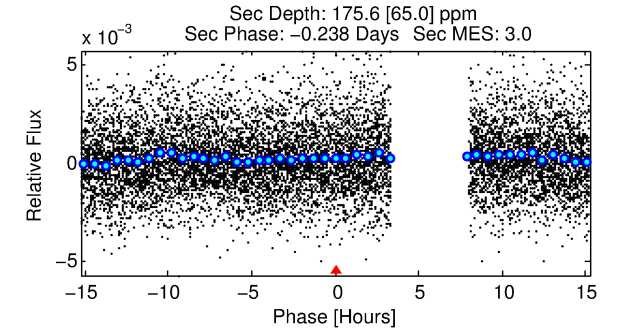
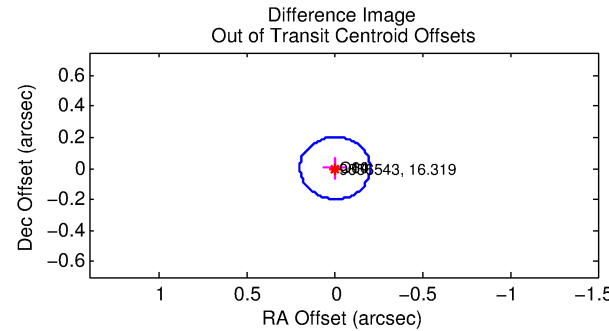
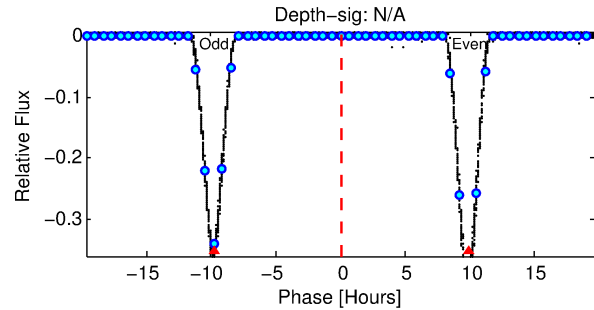
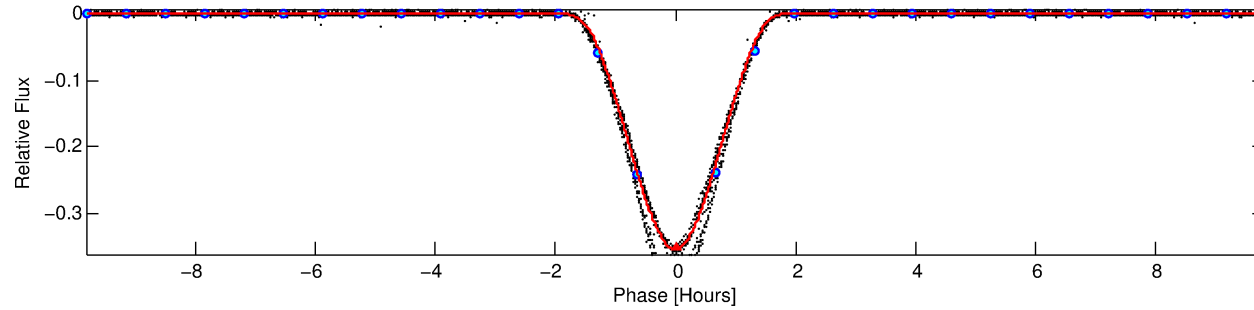
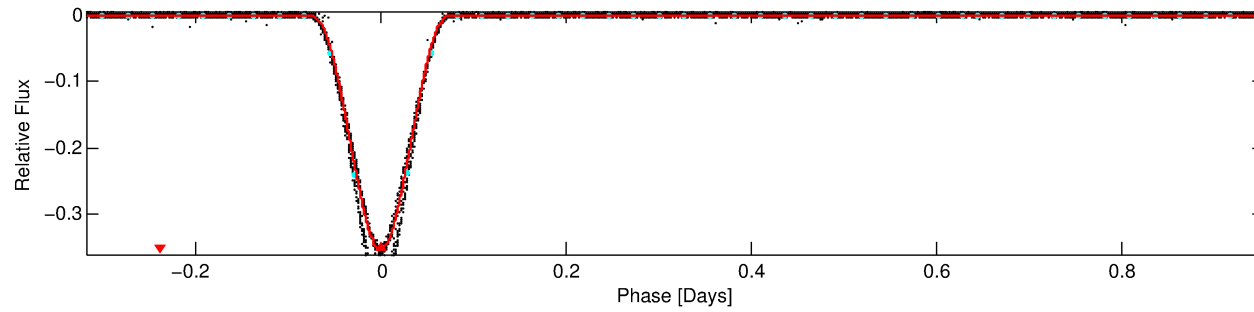
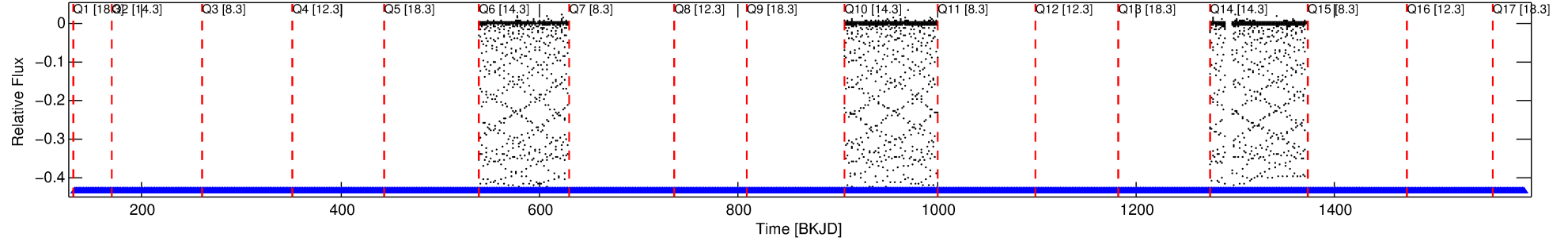
No Significant Match Found

# DV One-Page Summary

KIC: 9656543 Candidate: 1 of 1 Period: 1.272 d

KOI: K03588 Corr: No Ephemeris Match

Kp: 16.32 R\*: 1.62 Rs Teff: 5503.0 K Logg: 4.03 Fe/H: 0.180



## DV Fit Results:

Period = 1.27230 [0.00000] d  
Epoch = 132.4946 [0.0000] BKJD  
Rp/R\* = 0.6232 [0.0377]  
a/R\* = 4.65 [0.06]  
b = 0.55 [0.07]  
Seff = 3988.42 [2905.93]  
Teff = 2026 [369] K  
Rp = 109.90 [47.53] Re  
a = 0.0232 [0.0101] AU  
Ag = 0.00 [0.00] [-283.71] $\sigma$   
Teffp = 802 [83] K [-3.24] $\sigma$

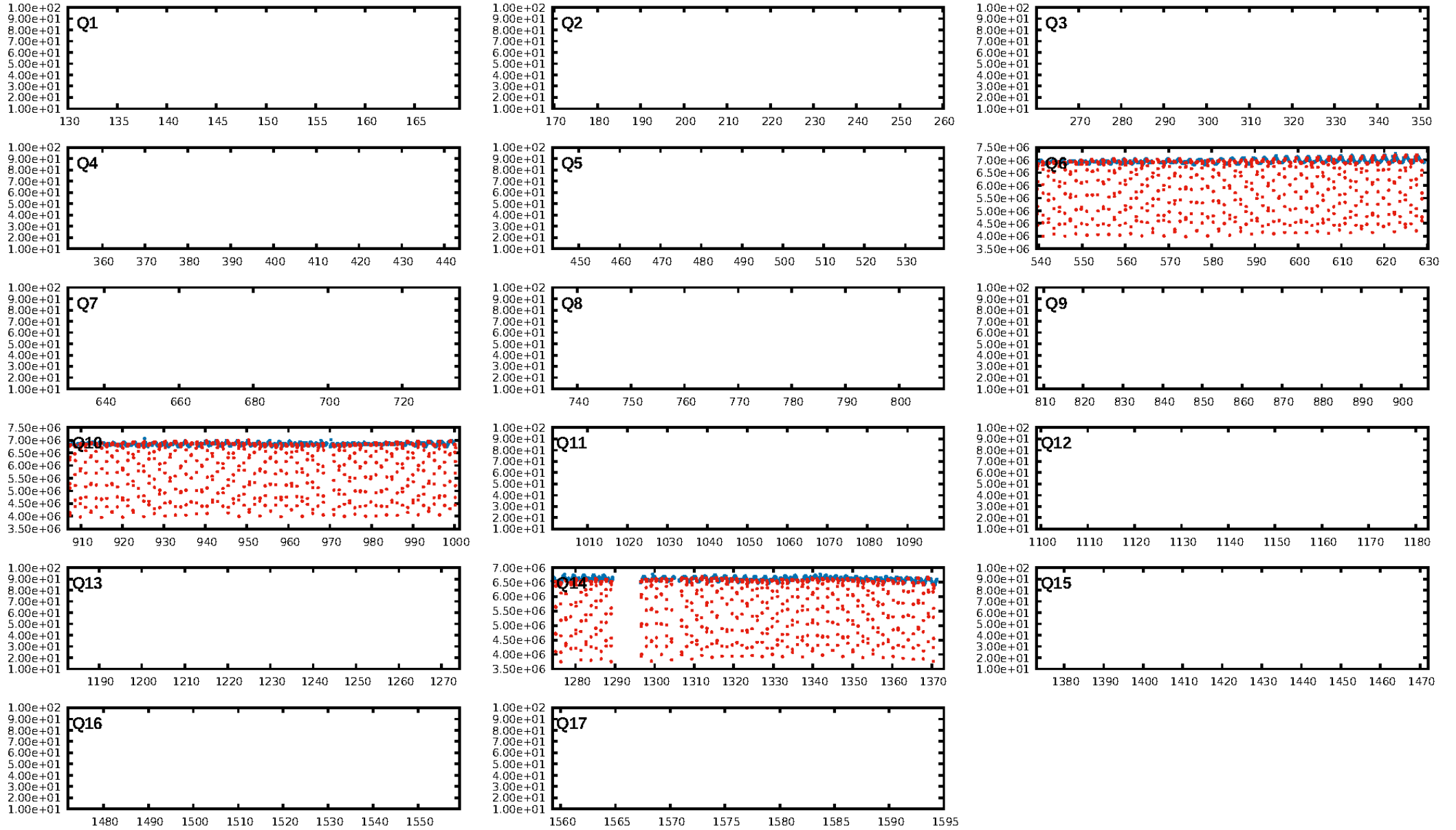
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [214/214]  
GhostDiagnostic-chr: 1.904  
Centroid-sig: 0.0%  
Centroid-so: 0.135 arcsec [49.16] $\sigma$   
OotOffset-rm: 0.003 arcsec [0.05] $\sigma$   
KicOffset-rm: 0.061 arcsec [0.90] $\sigma$   
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

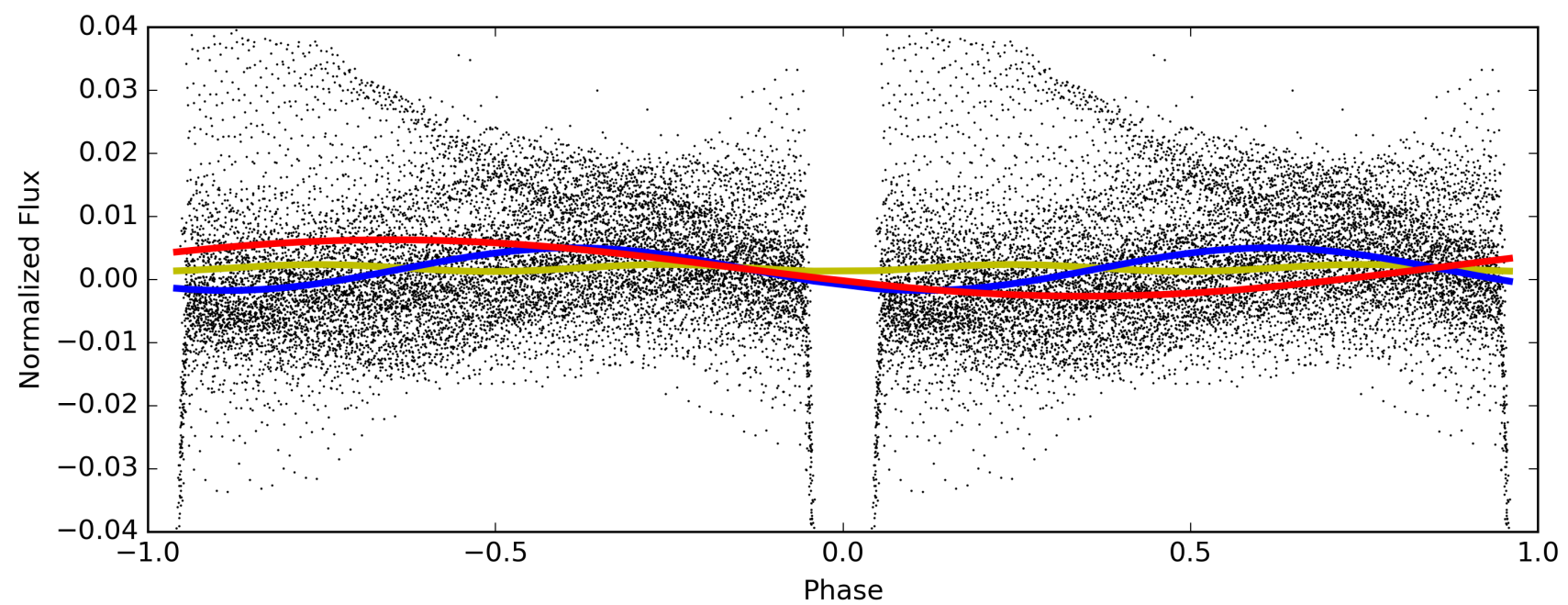
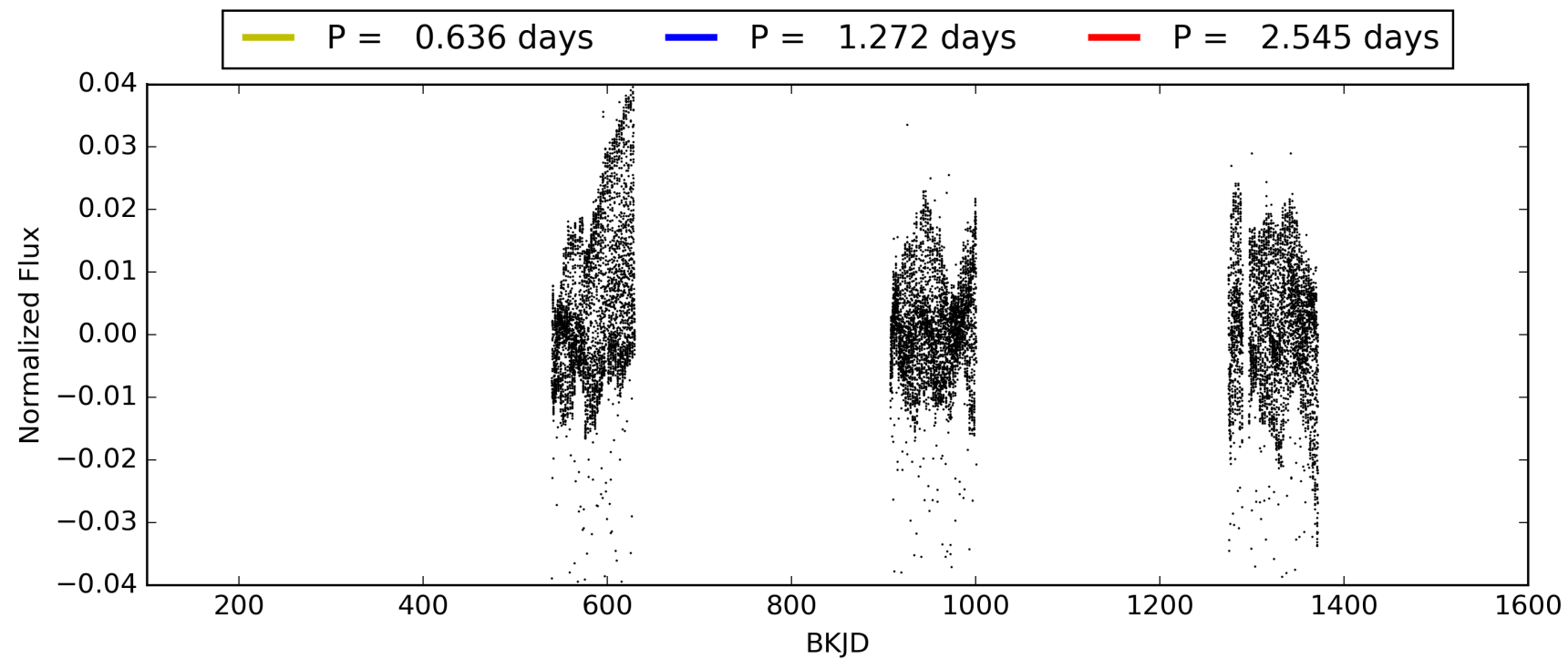
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:14:03 Z

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

# TCE 009656543-01, PDC Light Curves

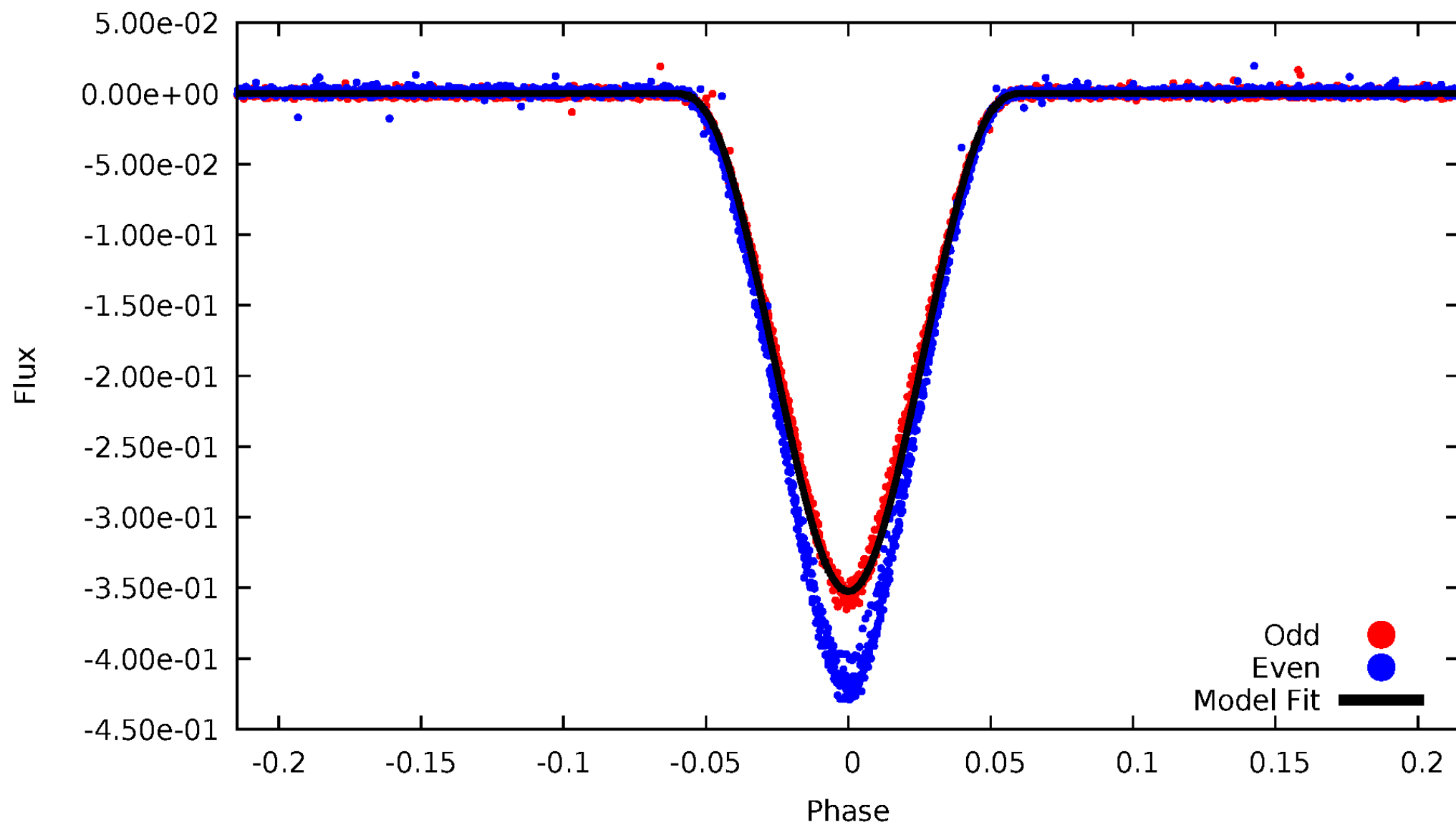


TCE 009656543-01



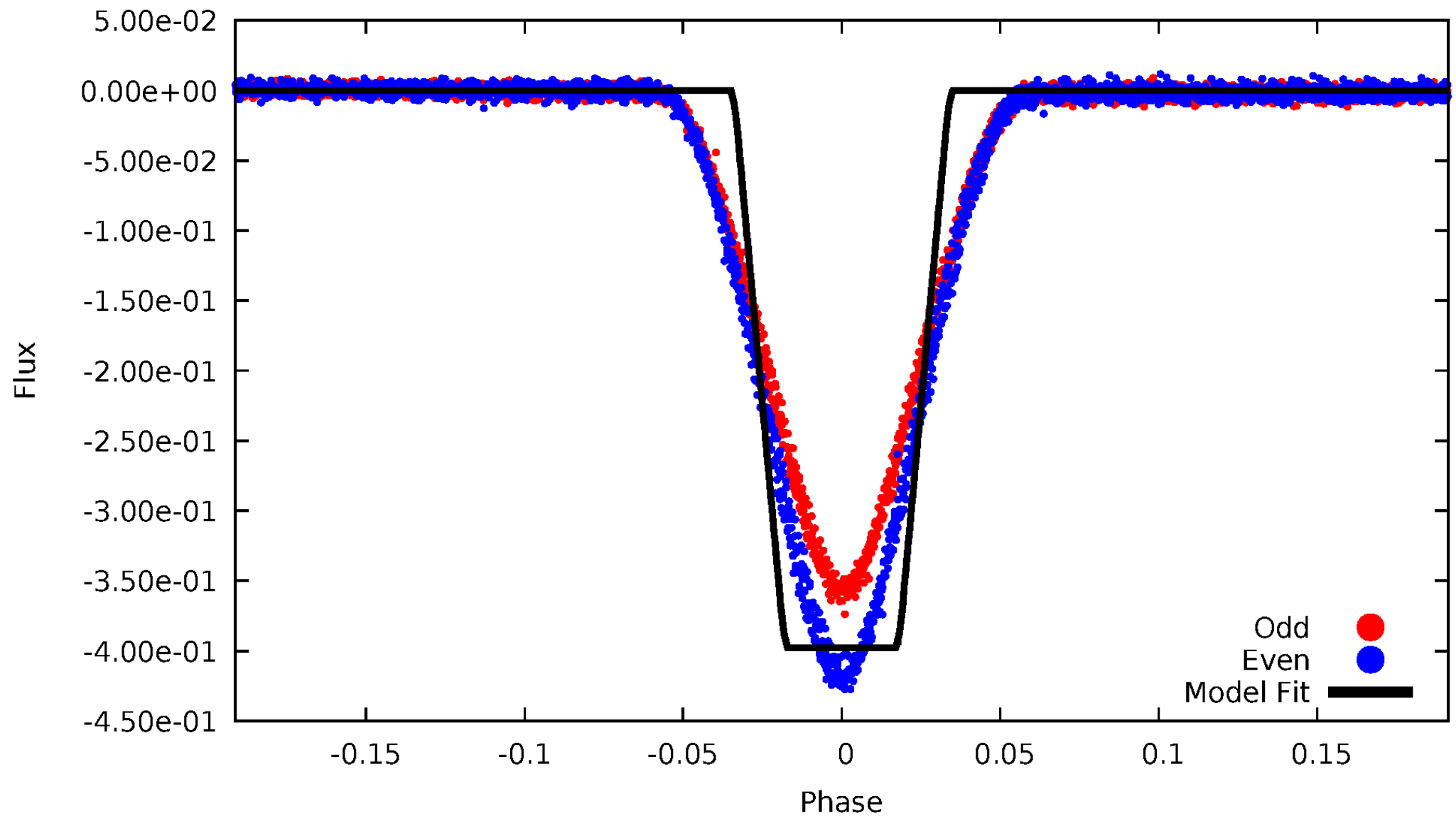
# DV Odd/Even

TCE 009656543-01



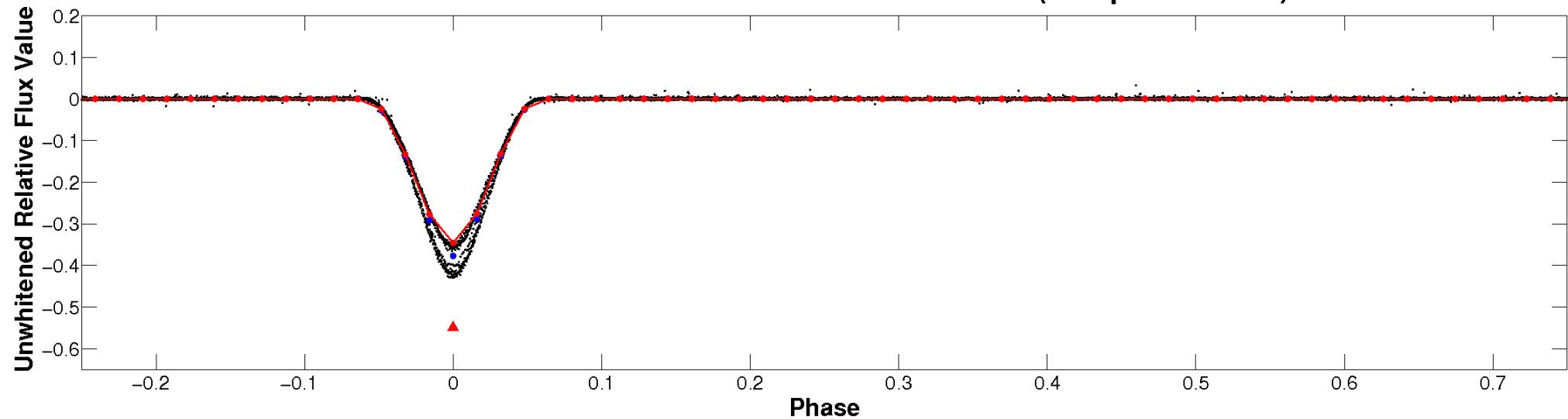
# ALT Odd/Even

TCE 009656543-01

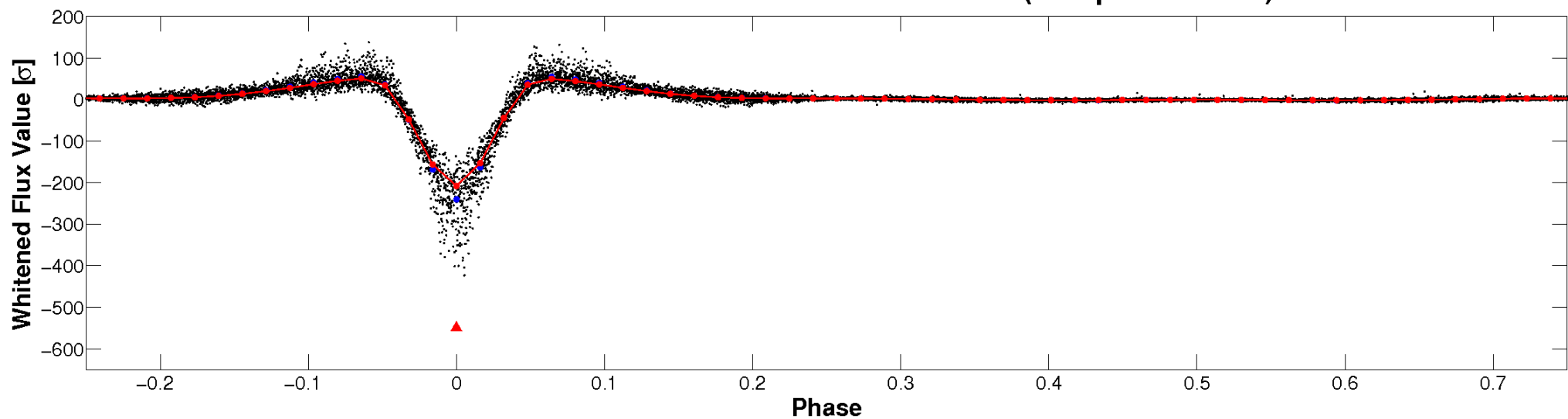


# Non-Whitened Vs. Whitened Light Curve

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

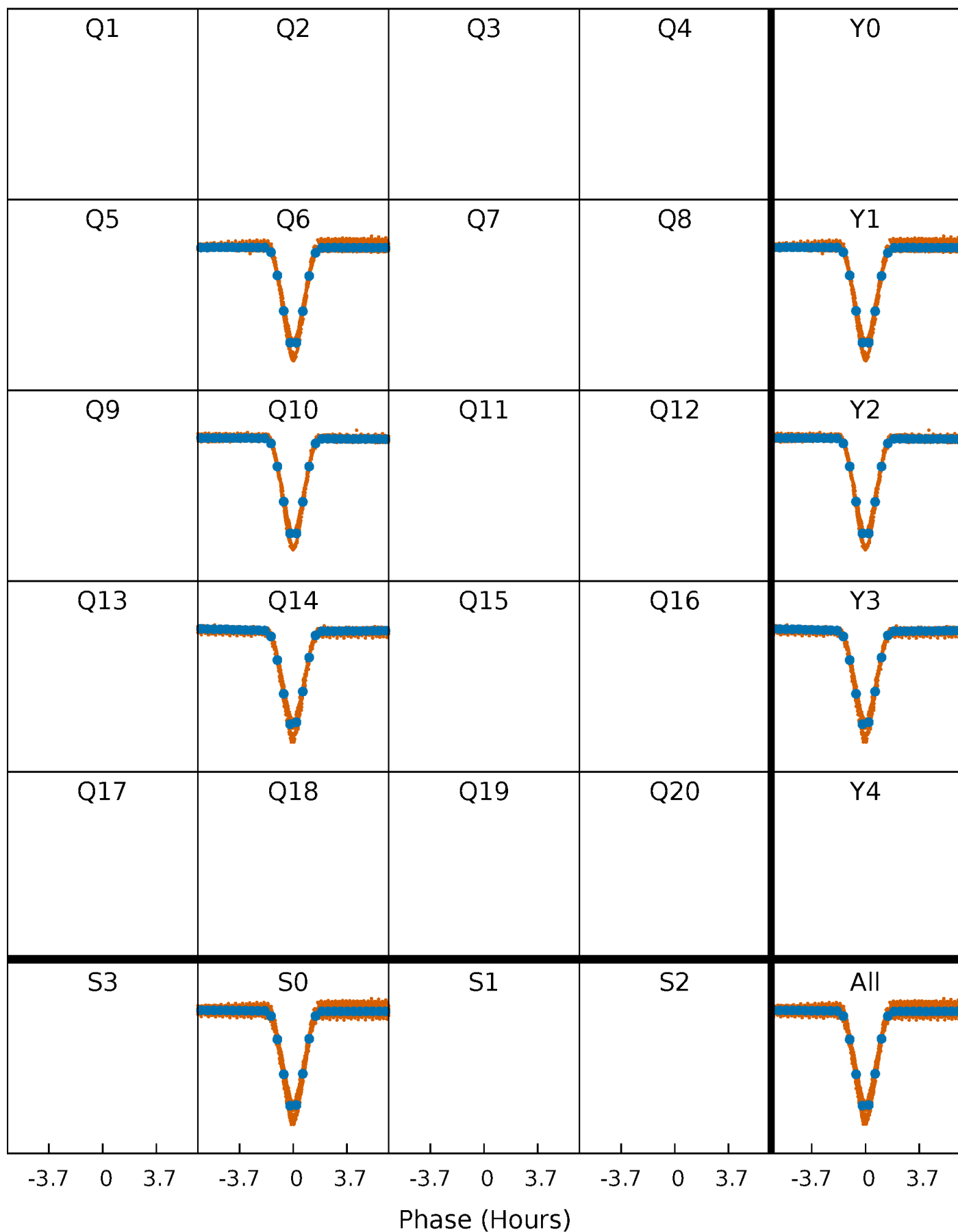


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

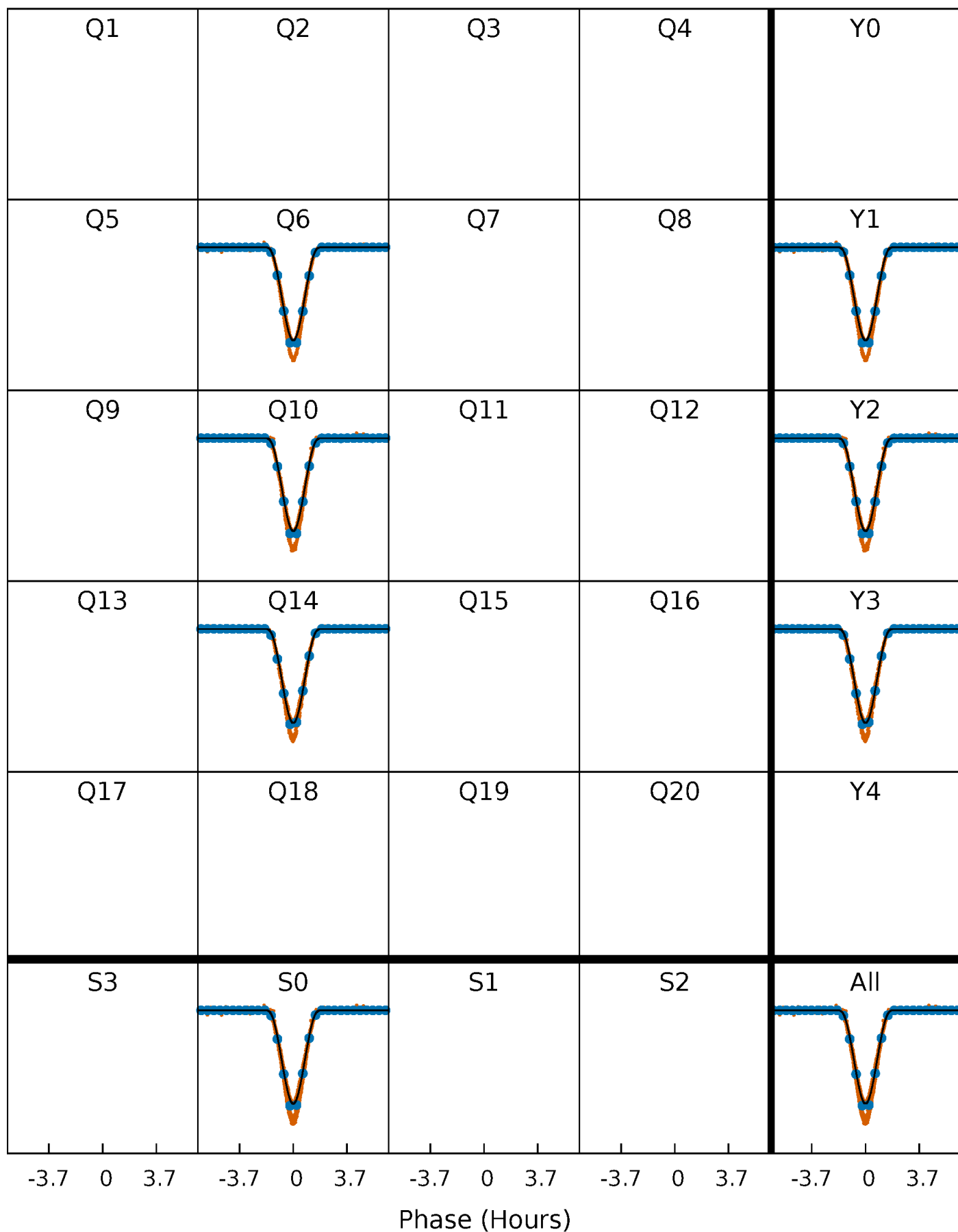
TCE 009656543-01 P= 1.272299 Days  $T_0=132.494595$  (BKJD)





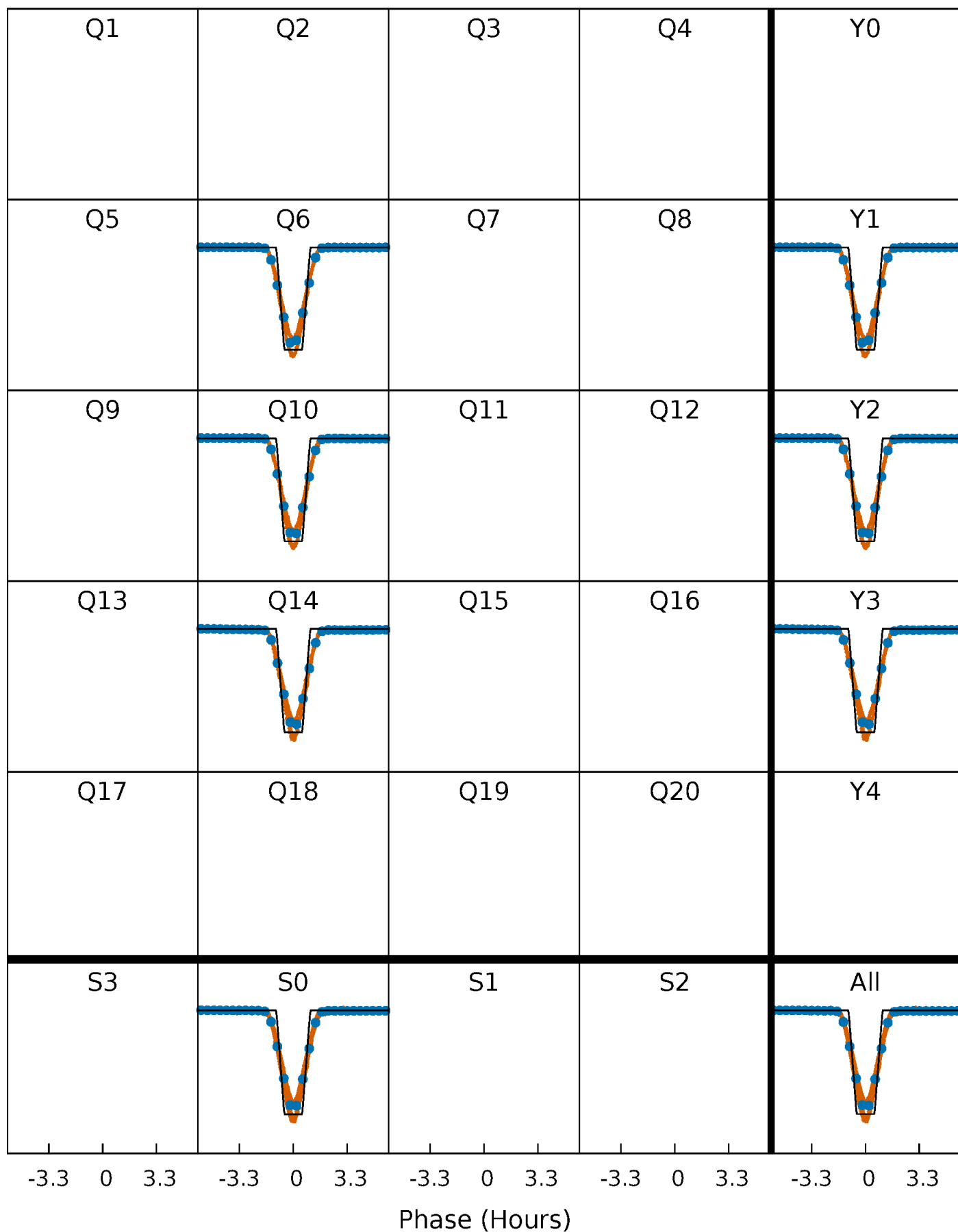
# DV Quarter-Phased Transit Curves

TCE 009656543-01   P= 1.272299 Days    $T_0=132.494595$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

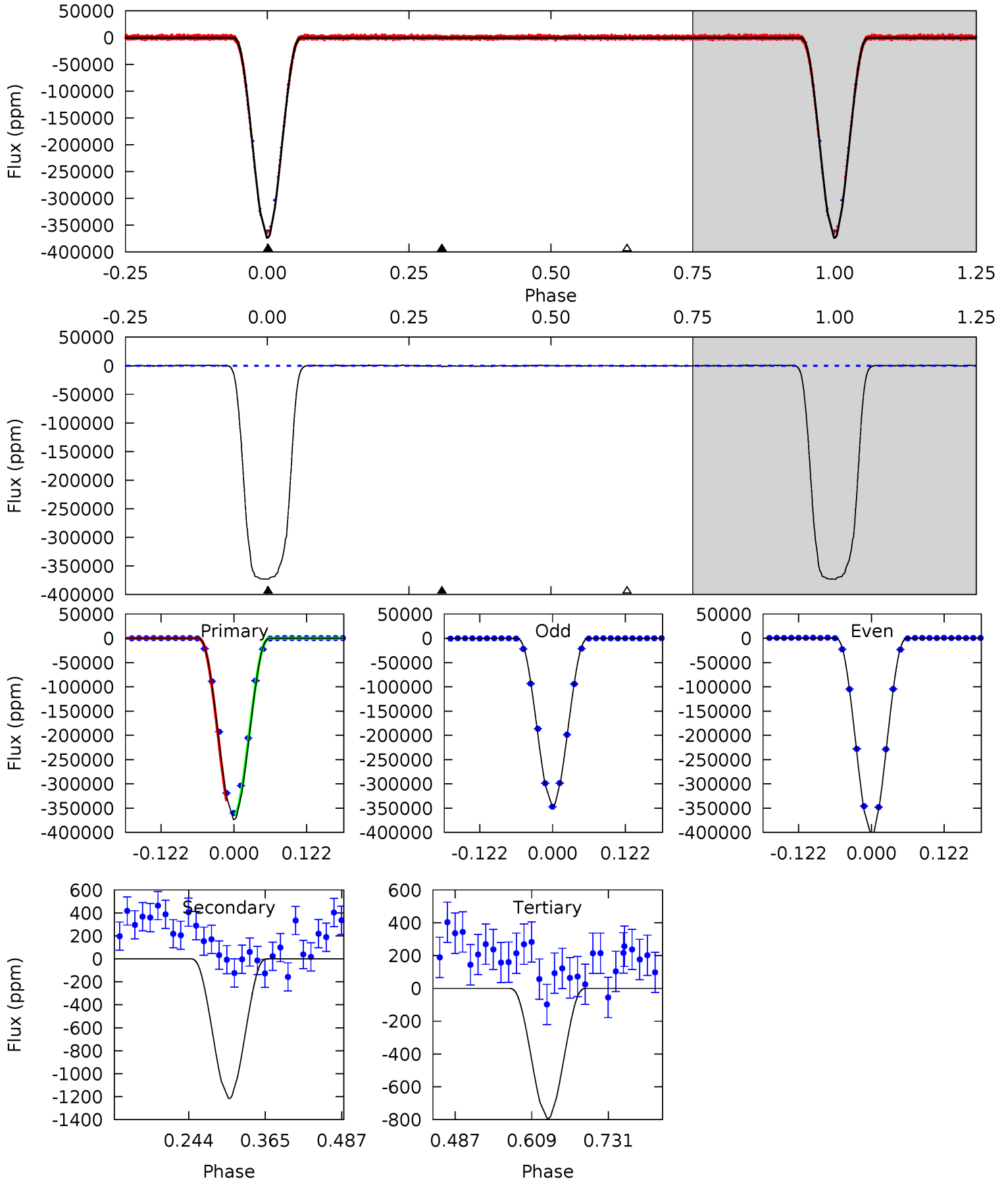
TCE 009656543-01   P= 1.272293 Days    $T_0=132.497921$  (BKJD)



# DV Model-Shift Uniqueness Test

009656543-01, P = 1.272299 Days, E = 132.494595 Days

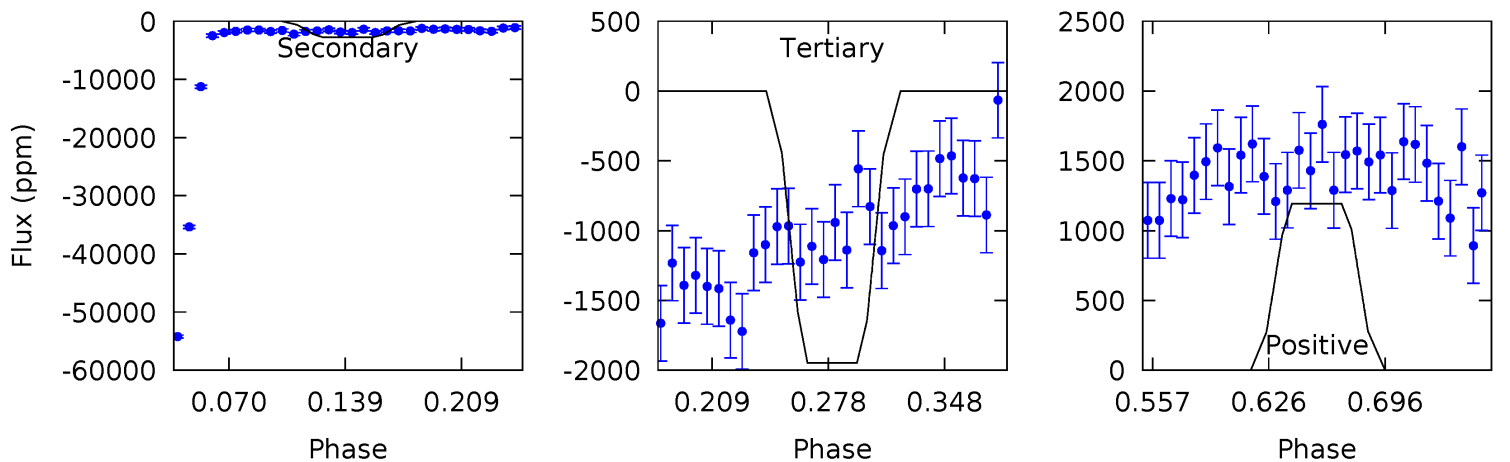
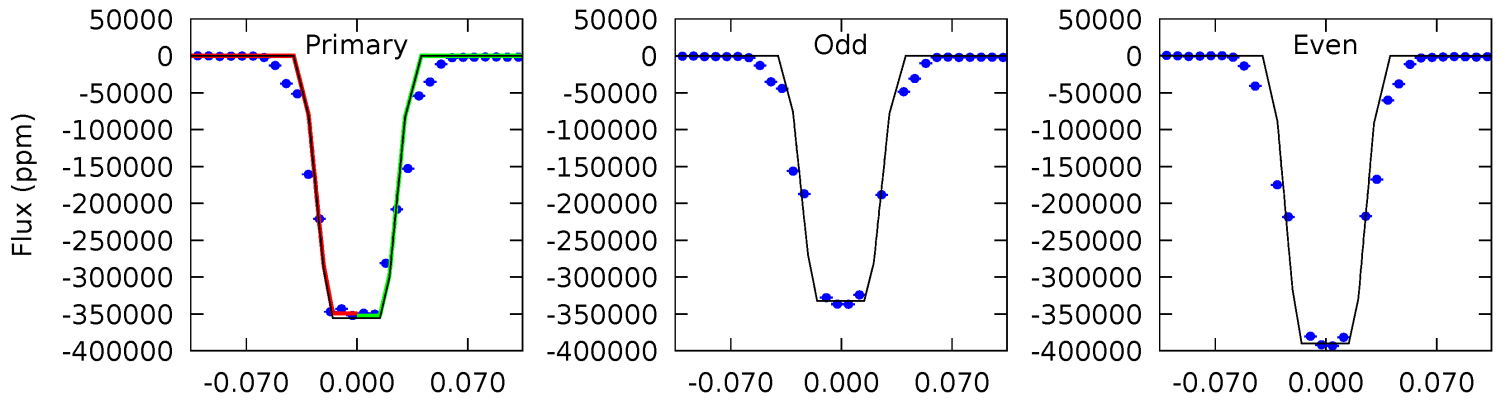
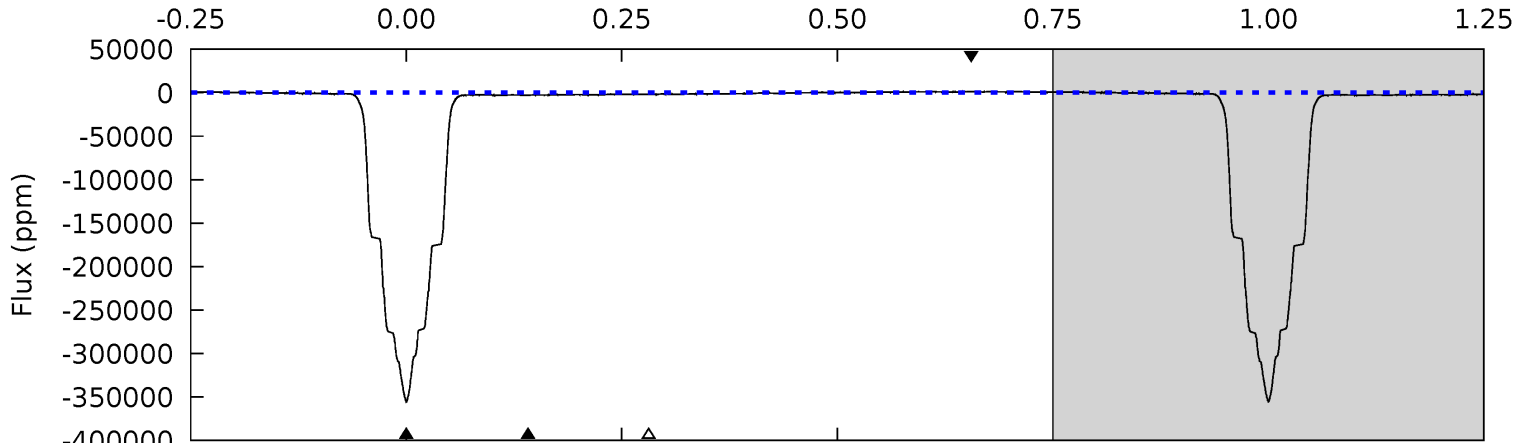
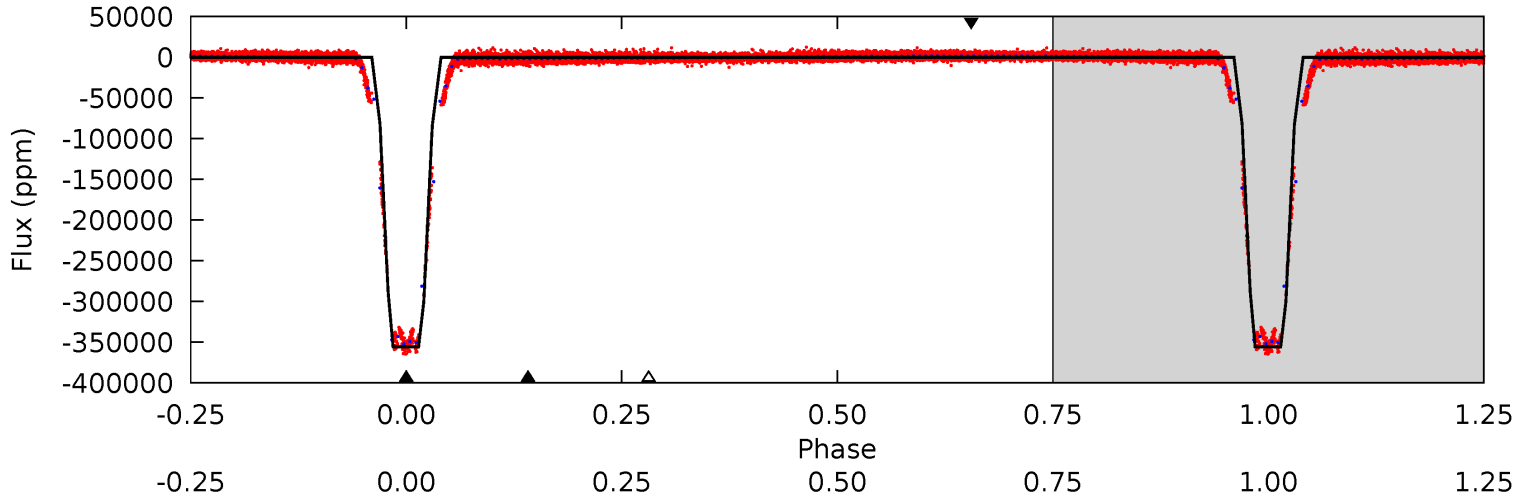
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6119	19.9	13.0	0	4.52	1.55	5.31	6106	6119	6.91	19.9	660.2	0.98	0.00	0



# Alt Model-Shift Uniqueness Test

009656543-01, P = 1.272293 Days, E = 132.497921 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
1799	13.9	9.85	6.04	4.64	1.81	5.42	1789	1793	4.09	7.89	146.5	1.00	0.00	7.65



### Stellar Parameters For KIC 009656543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5503^{+183}_{-166}$	$4.033^{+0.428}_{-0.143}$	$0.180^{+0.200}_{-0.250}$	$1.616^{+0.373}_{-0.692}$	$1.026^{+0.115}_{-0.127}$	$0.343^{+1.289}_{-0.140}$
	+3%/-3%	+11%/-4%	+111%/-139%	+23%/-43%	+11%/-12%	+376%/-41%
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 009656543-01 / KOI 3588.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1215 \pm 61$	$106.47^{+19.58}_{-23.85}$	$2794^{+207}_{-321}$	$-2916^{+212}_{-134}$	$0.031^{+0.021}_{-0.008}$
Alt.	$-2755 \pm 198$	$108.32^{+16.18}_{-24.42}$	$2776^{+223}_{-304}$	$-2849^{+241}_{-153}$	$0.071^{+0.045}_{-0.019}$

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

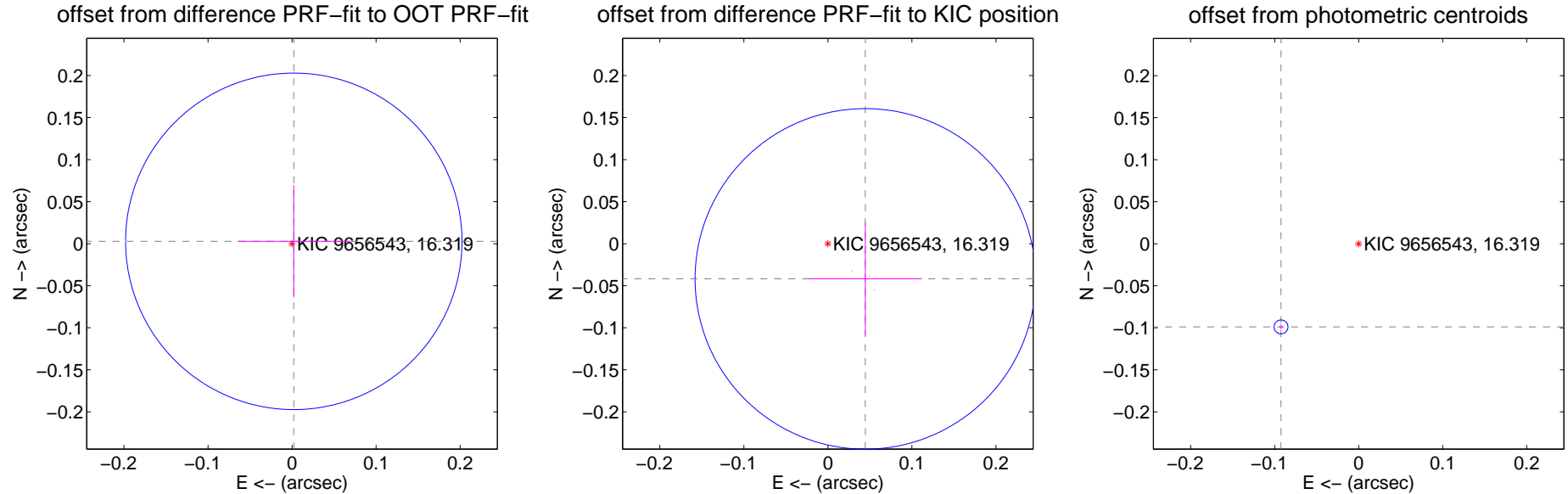
## DV Centroid Data

Supplemental centroid analysis for 009656543-01. Kepler magnitude: 16.32. Transit SNR 2810.89

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.003 \pm 0.067$	0.05	$-0.002 \pm 0.067$	$0.003 \pm 0.067$
PRF-fit source offset from KIC position	$0.061 \pm 0.068$	0.90	$-0.044 \pm 0.067$	$-0.042 \pm 0.067$
photometric centroid source offset	$0.14 \pm 0.00$	49.16	$0.09 \pm 0.00$	$-0.10 \pm 0.00$

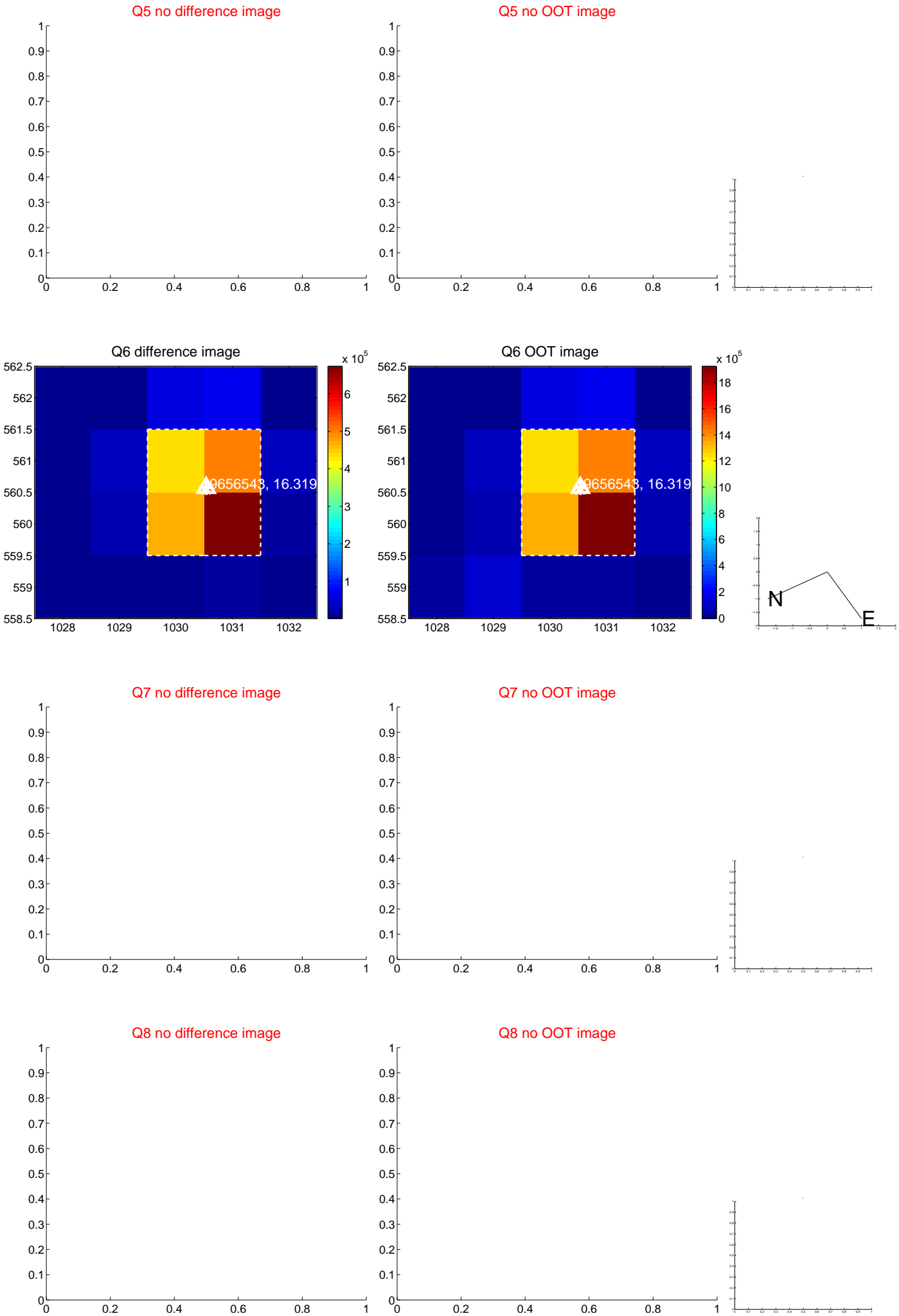


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

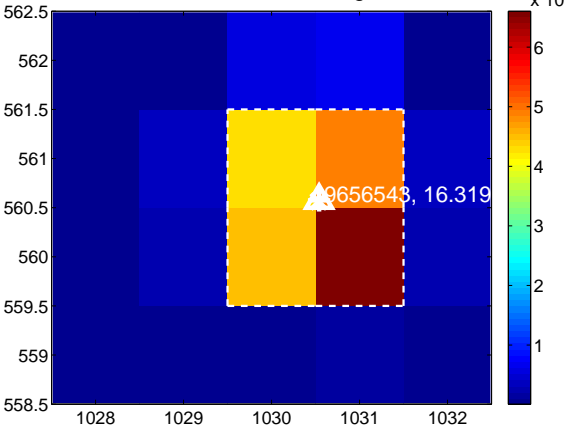
Q9 no difference image



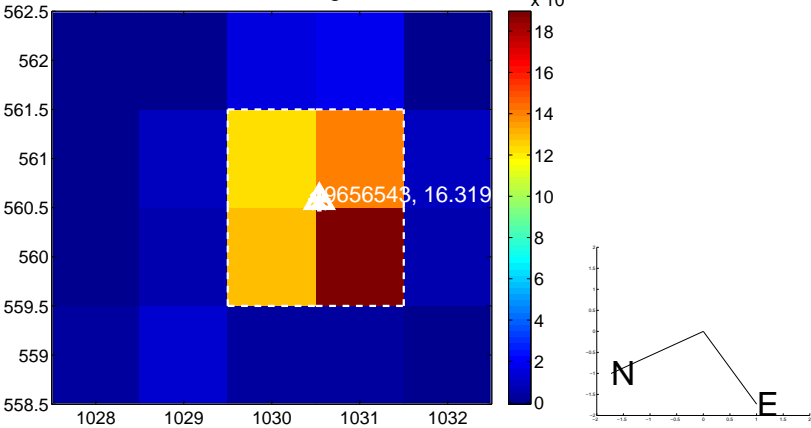
Q9 no OOT image



Q10 difference image



Q10 OOT image



Q11 no difference image



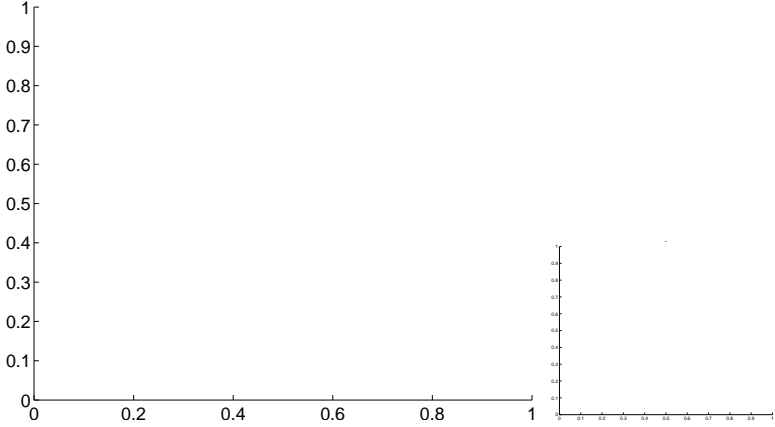
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

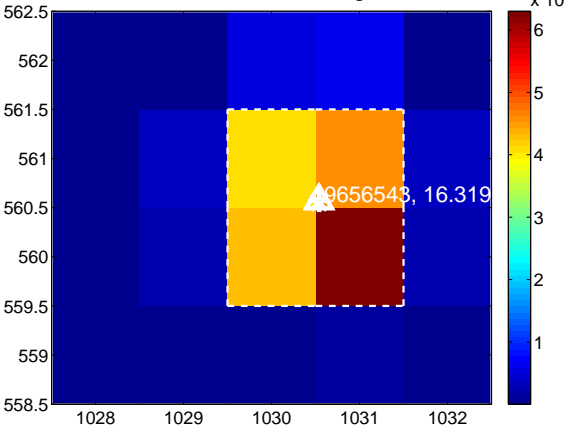
Q13 no difference image



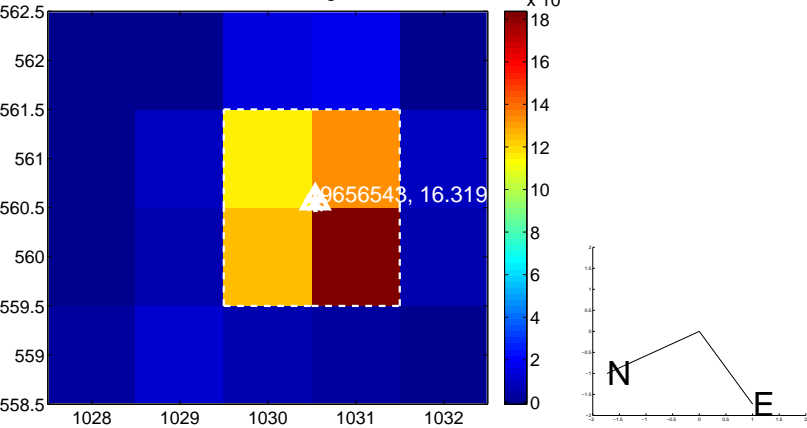
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



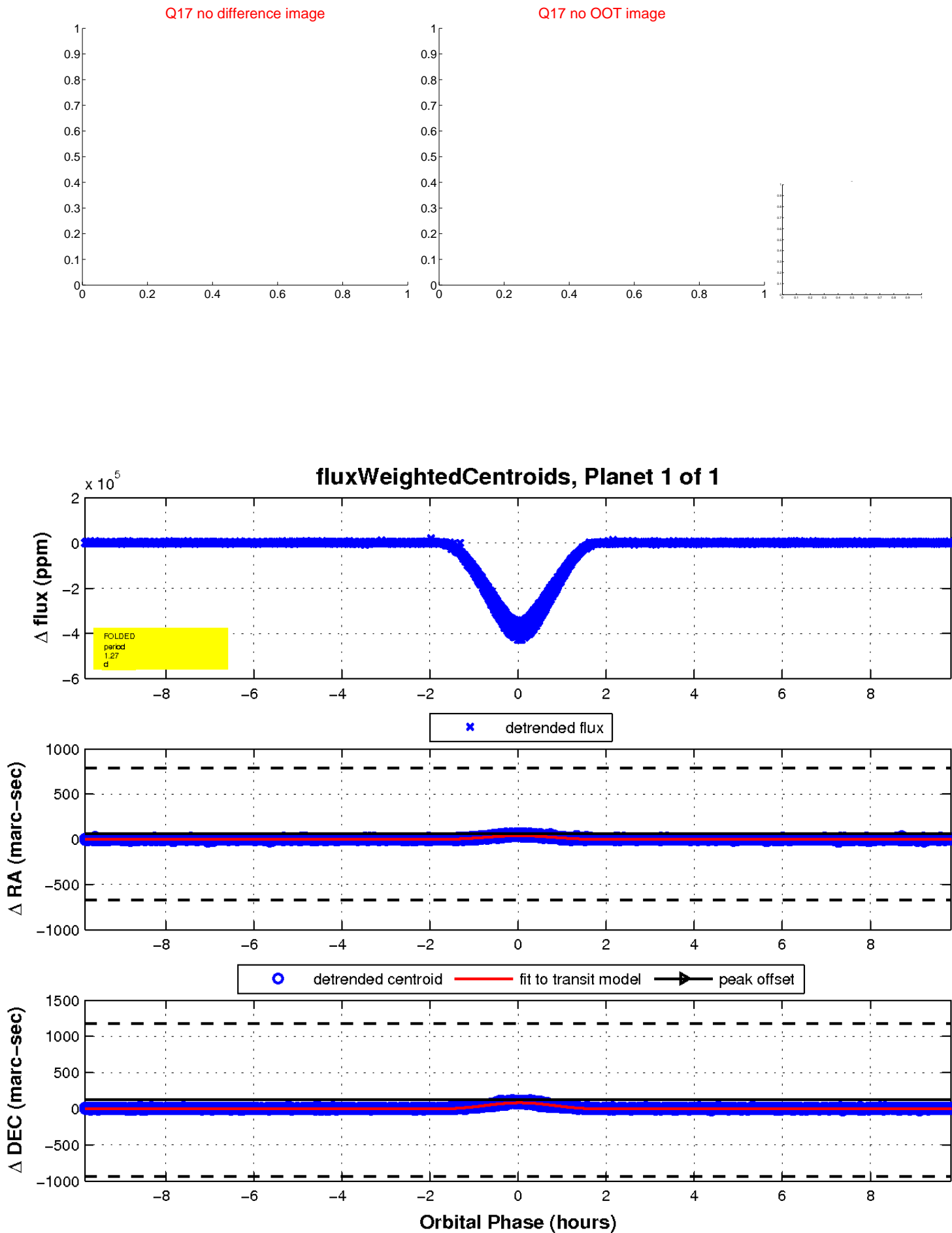
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

