

# KIC 009541223

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009541223-01	OBS	No	435.762063	307.741637	215.3	6.681	7.1	6.8	2.23	8404	3.69	11.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009541223-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE--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.

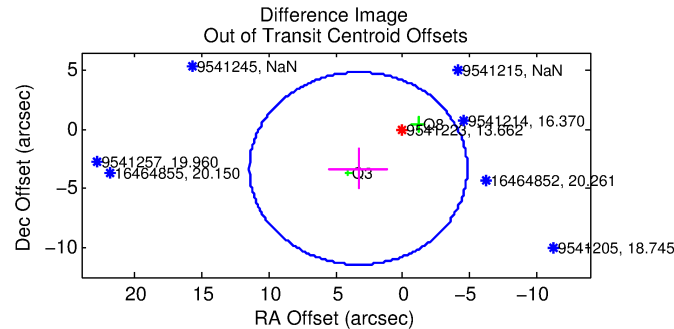
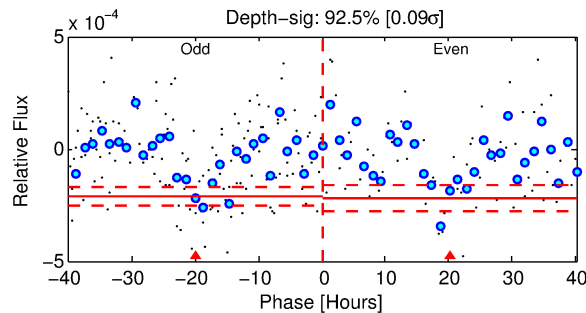
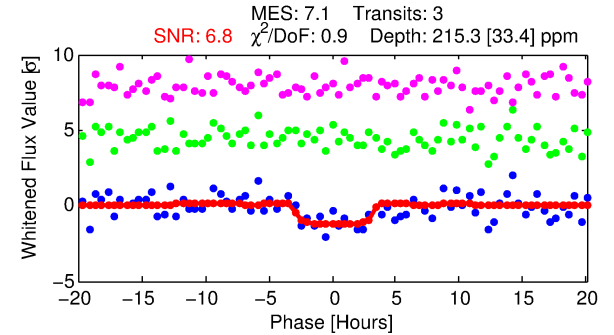
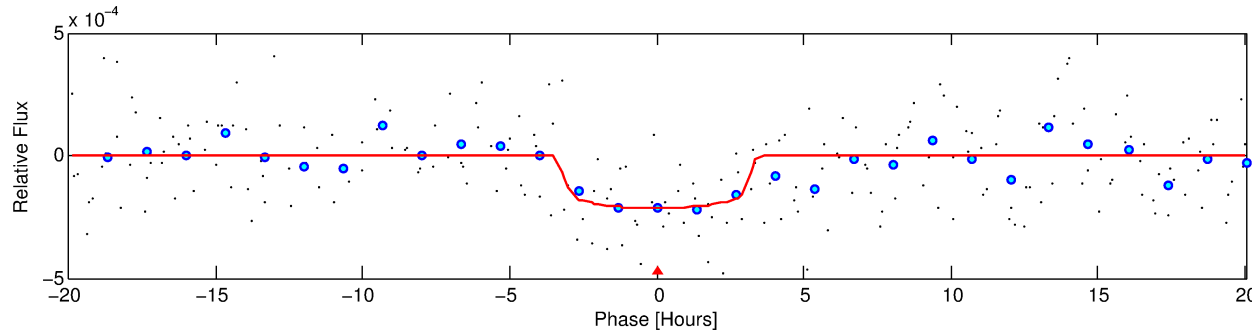
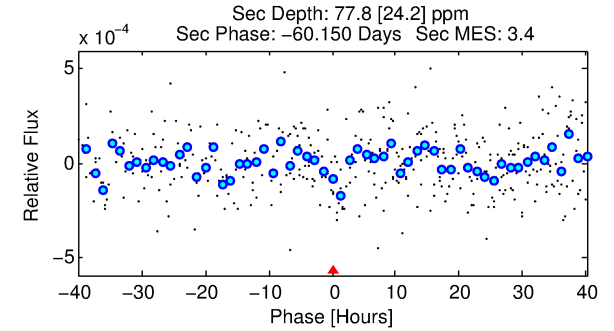
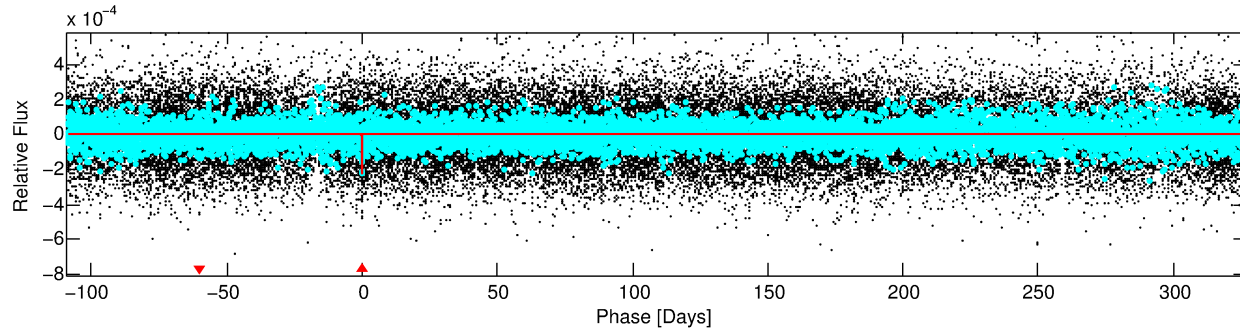
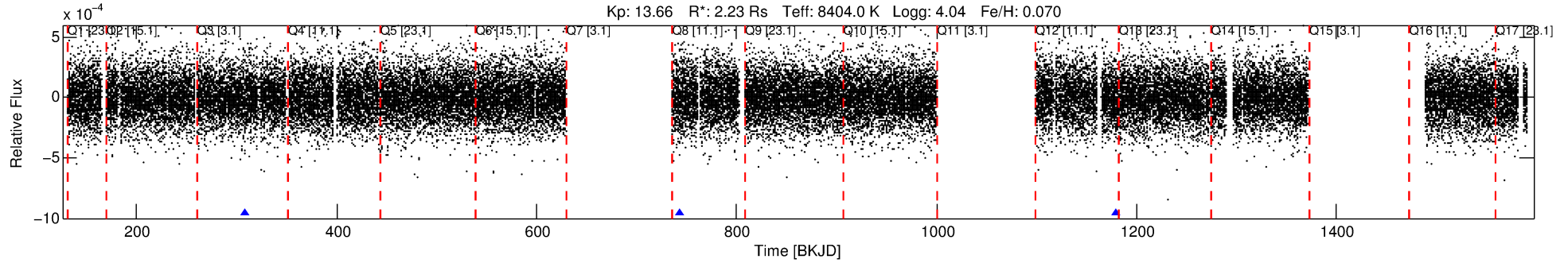
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009541223-01

No Significant Match Found

# DV One-Page Summary

KIC: 9541223 Candidate: 1 of 1 Period: 435.762 d



## DV Fit Results:

Period = 435.76206 [0.01122] d  
Epoch = 307.7416 [0.0145] BKJD  
Rp/R\* = 0.0152 [0.0077]  
a/R\* = 273.31 [857.68]  
b = 0.85 [1.01]  
Seff = 11.03 [3.95]  
Teff = 465 [42] K  
Rp = 3.69 [2.10] Re  
a = 1.4193 [0.3076] AU  
Ag = 6319.08 [6981.38] [0.90σ]  
Teffp = 6406 [1719] K [3.45σ]

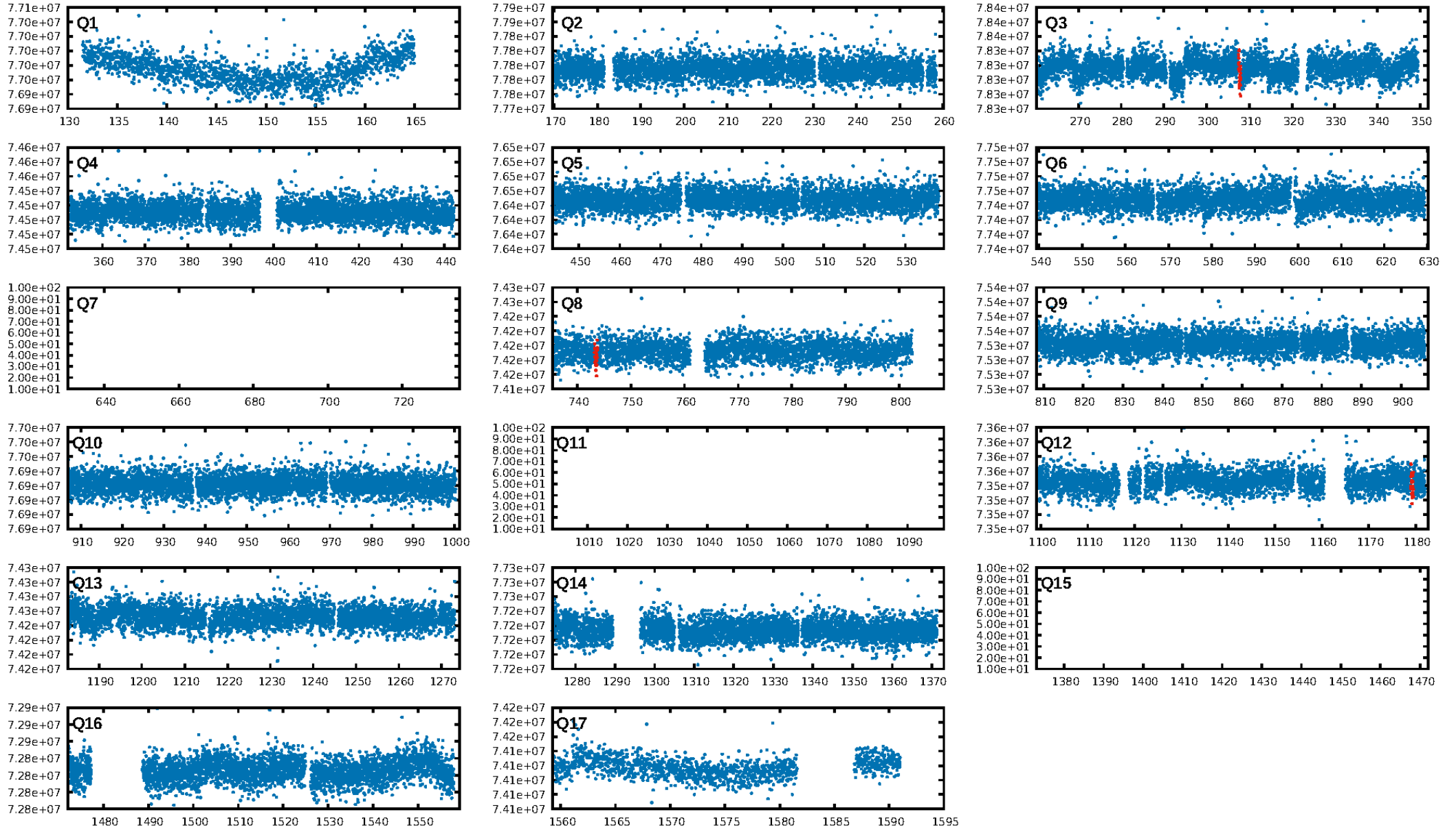
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.2%  
ModelChiSquareGof-sig: 99.6%  
**Bootstrap-pfa: 1.29e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.4685  
Centroid-sig: 2.4%  
Centroid-so: 2.853 arcsec [1.42σ]  
OotOffset-rm: 4.683 arcsec [1.73σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-rm: 4.567 arcsec [1.41σ]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

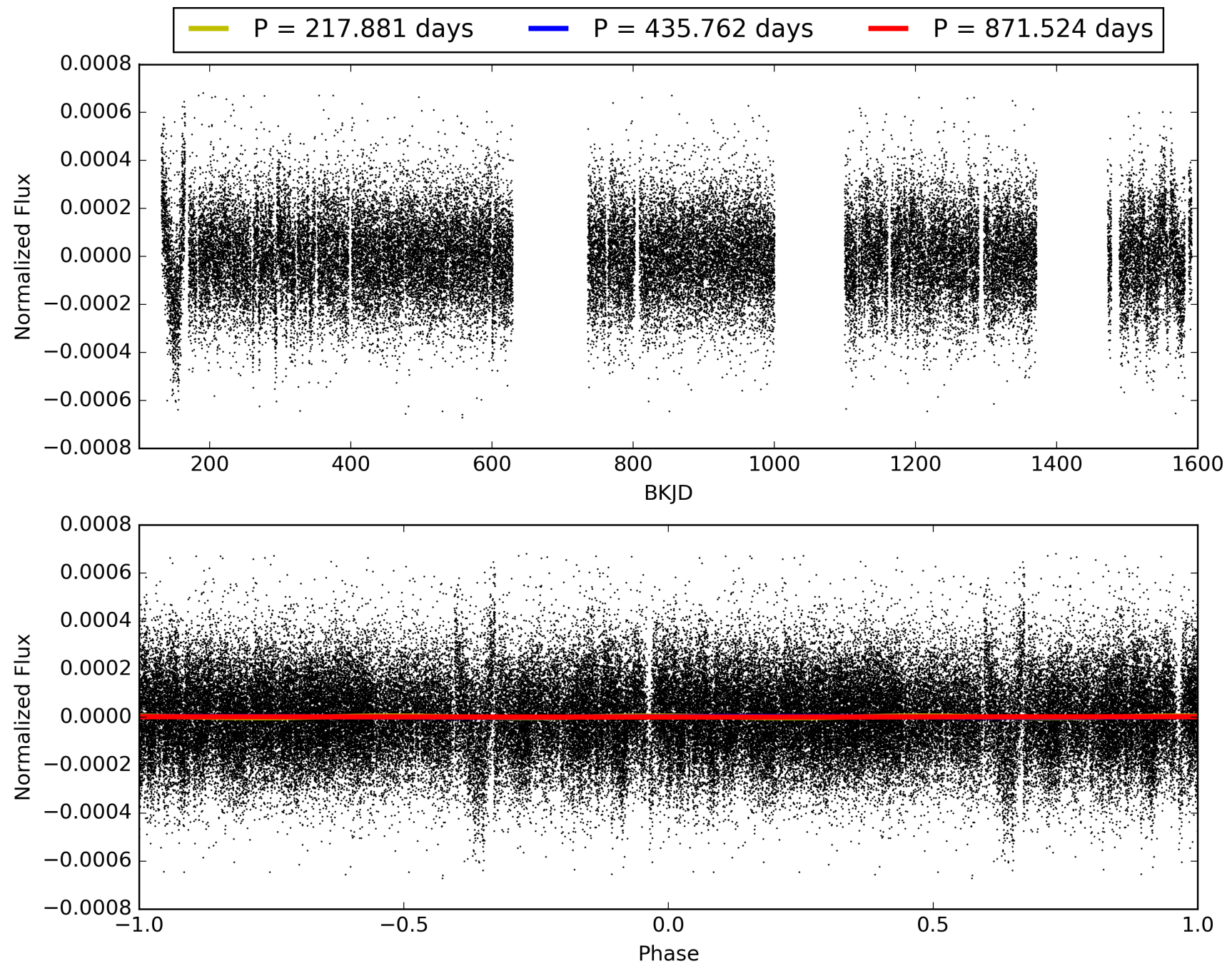
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:03:09 Z

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

# TCE 009541223-01, PDC Light Curves

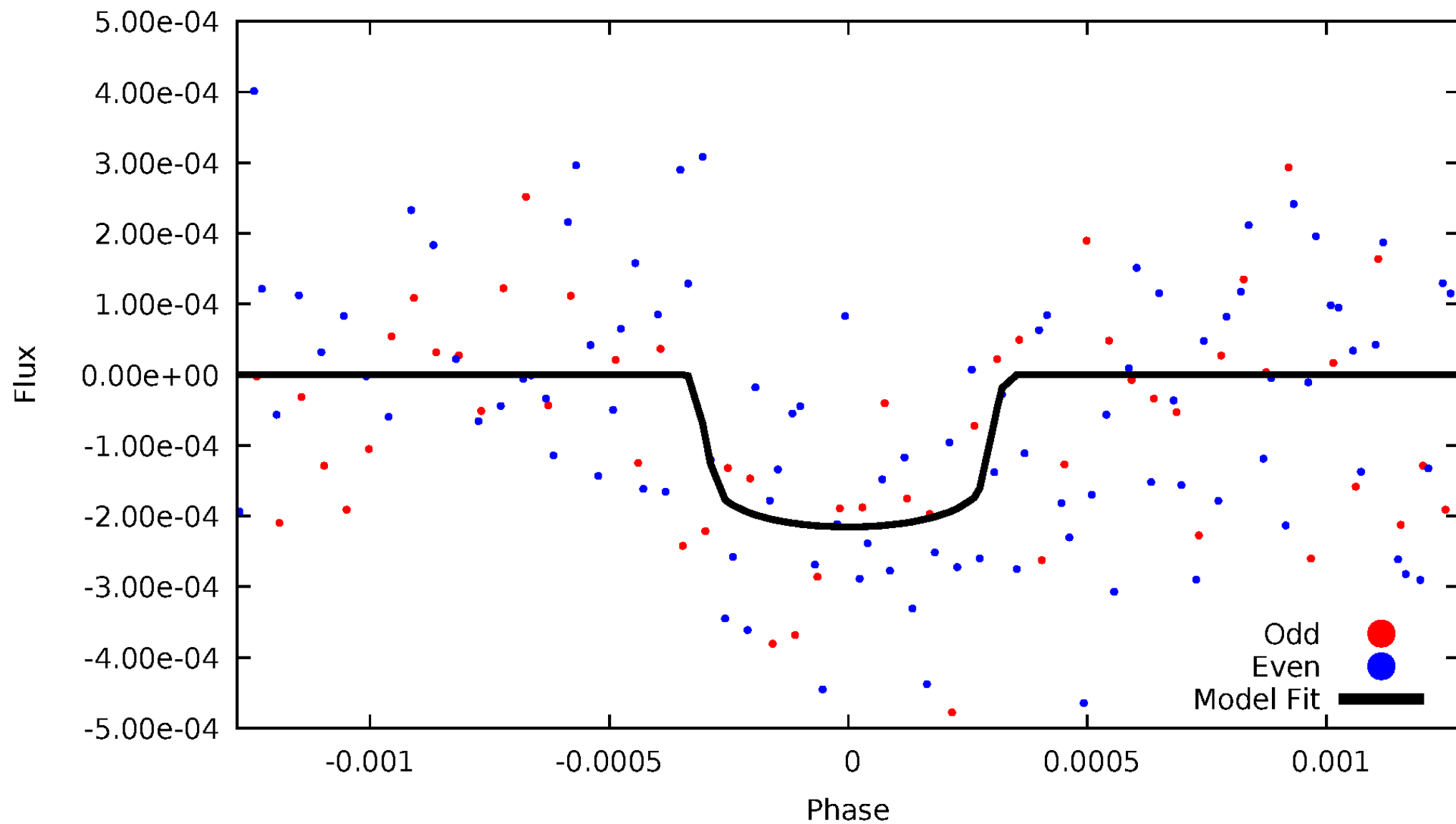


TCE 009541223-01



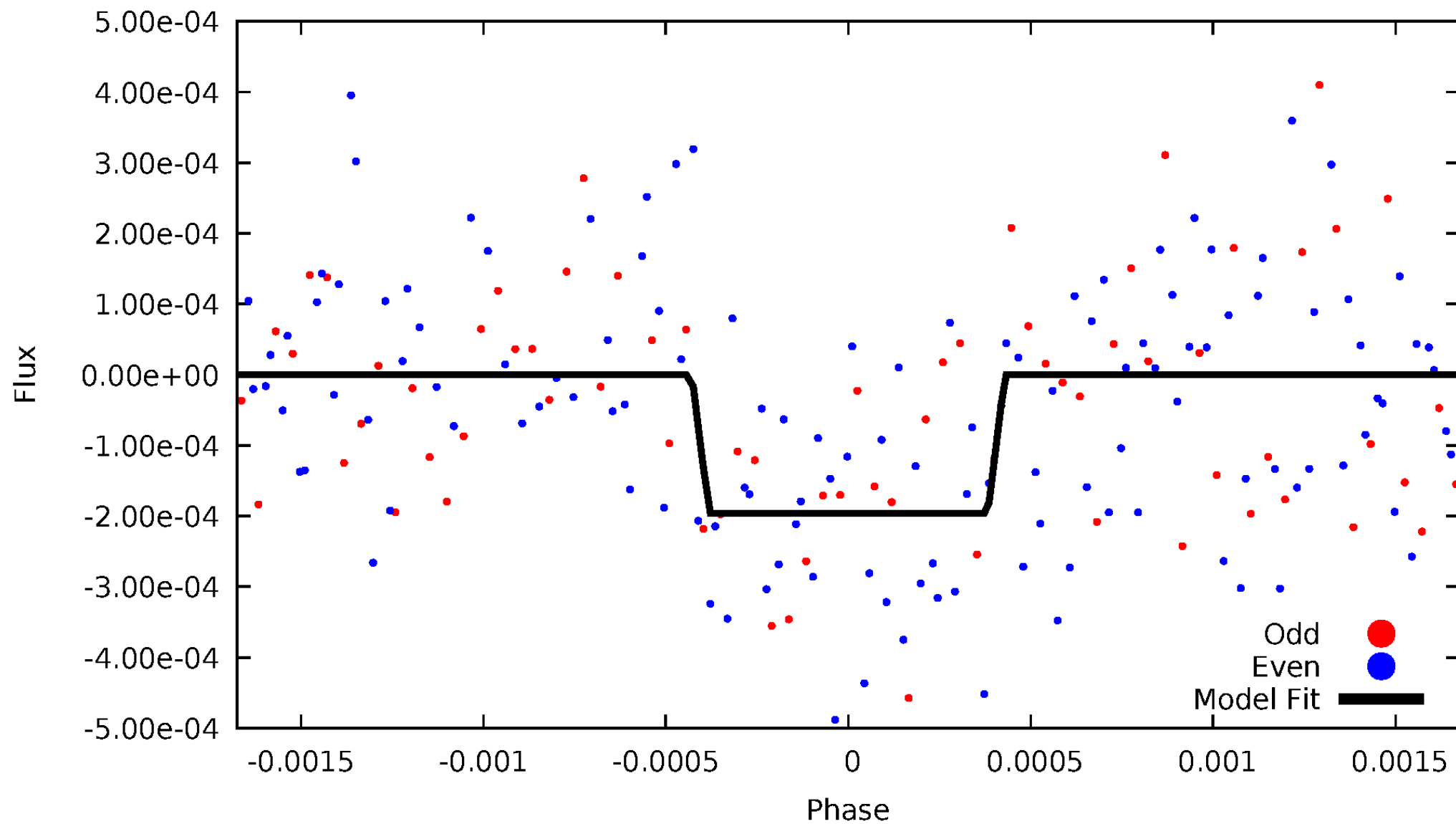
# DV Odd/Even

TCE 009541223-01

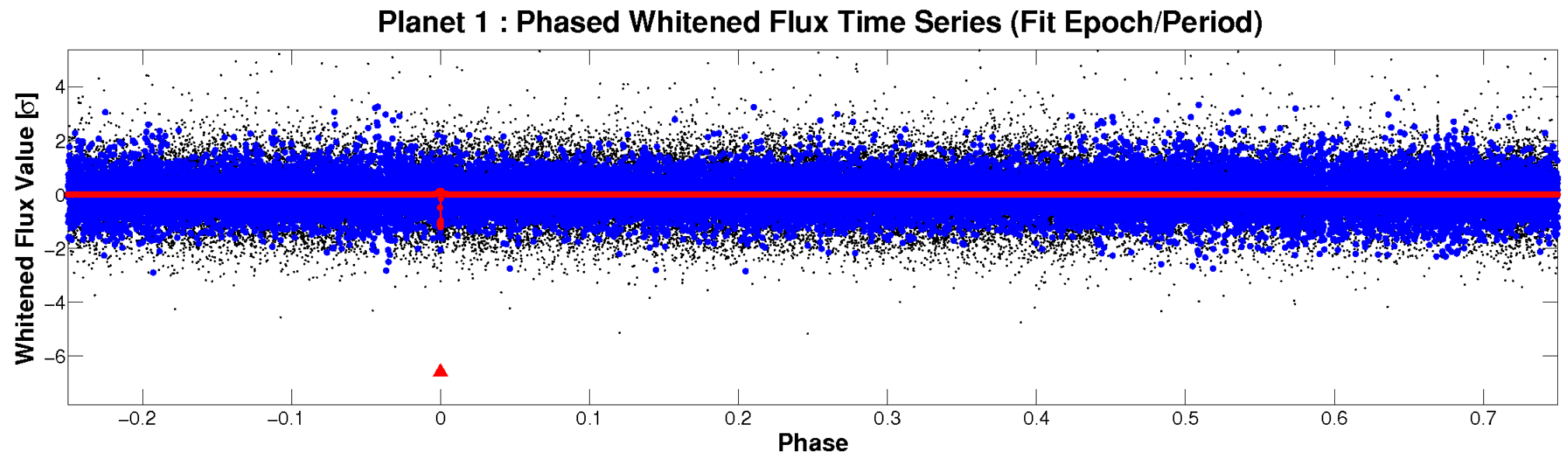
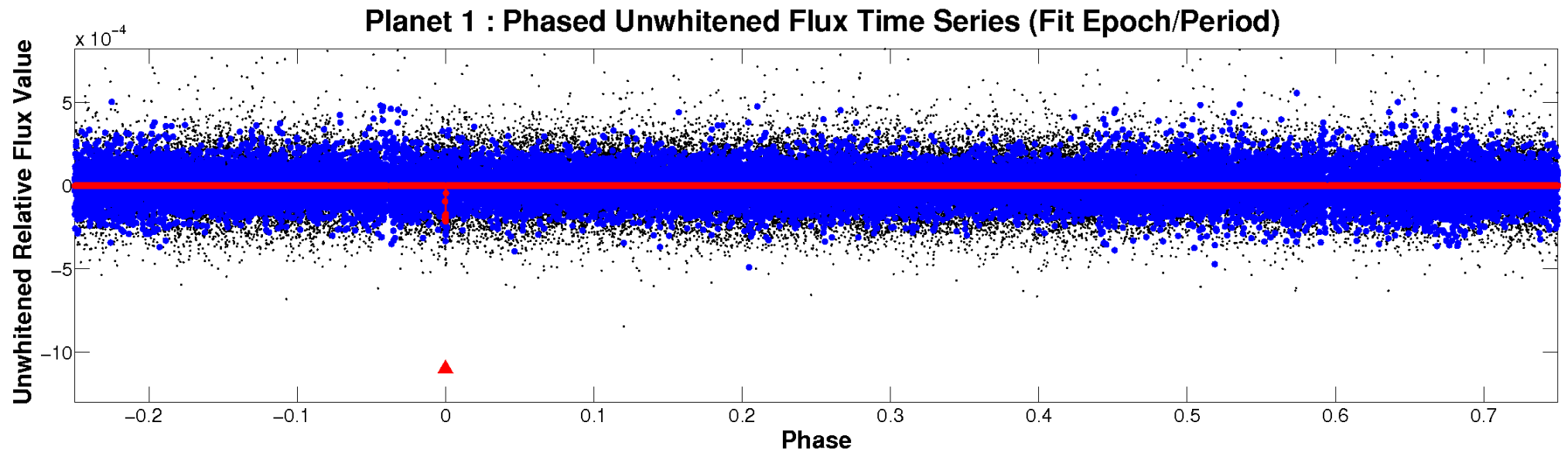


# ALT Odd/Even

TCE 009541223-01



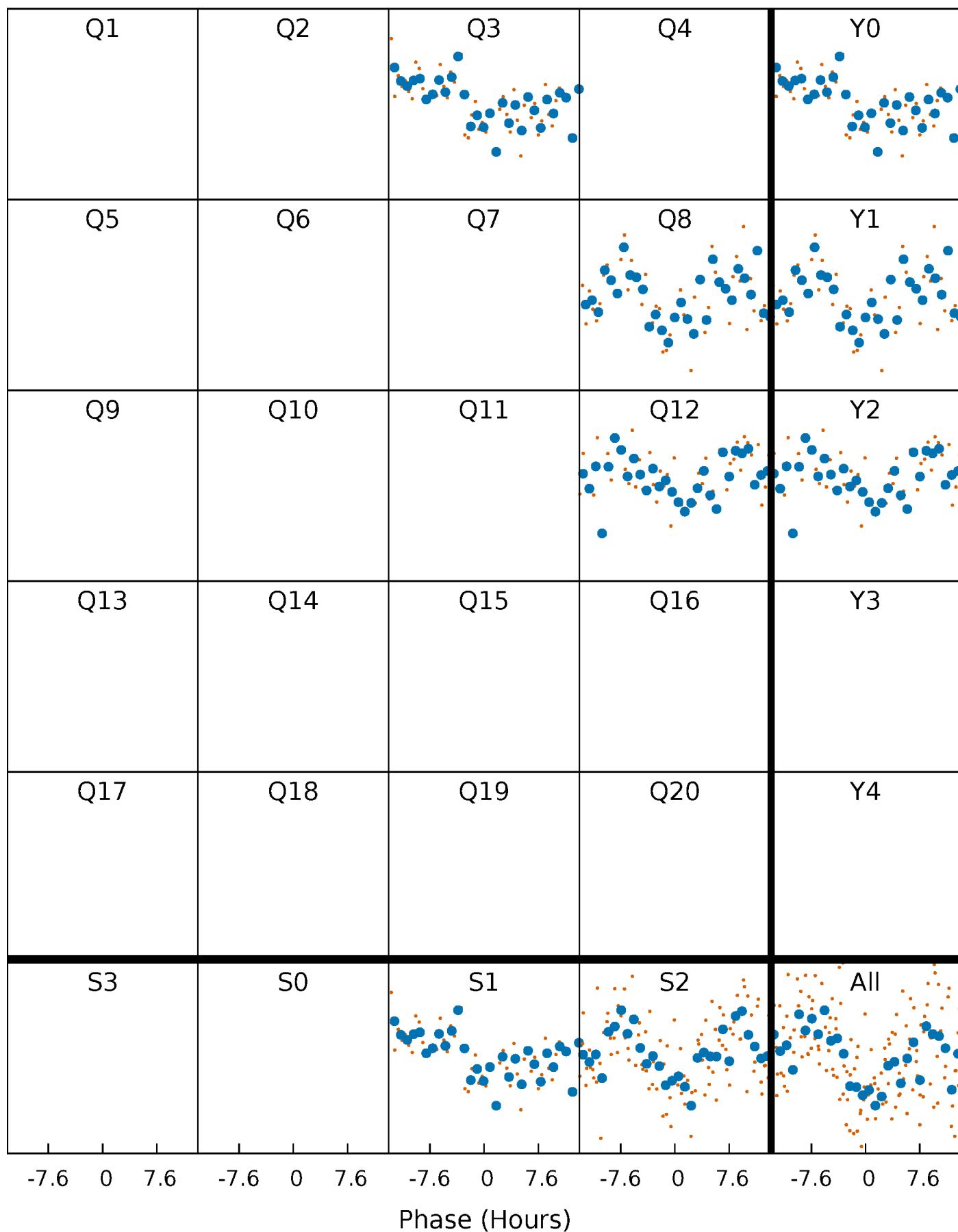
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

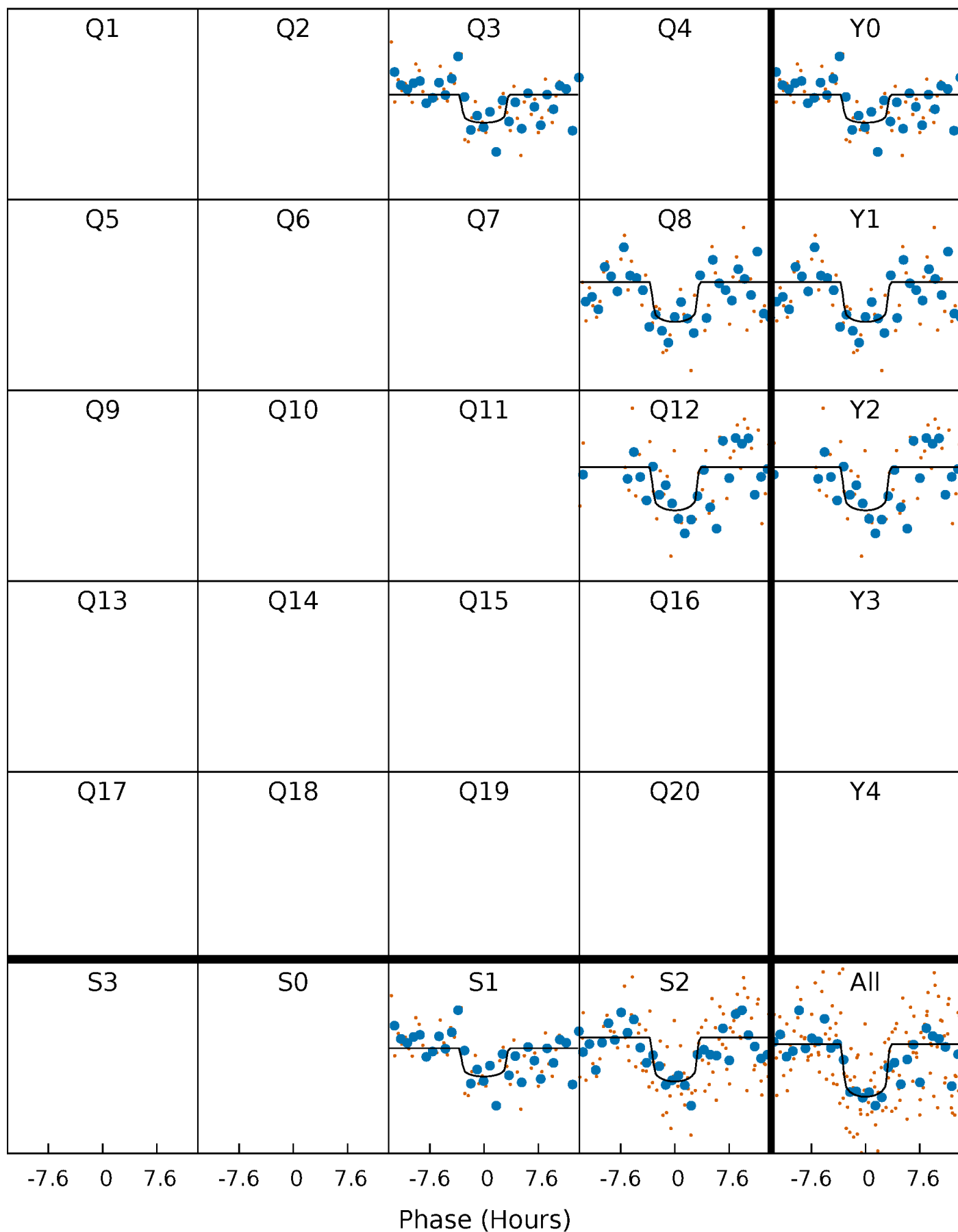
TCE 009541223-01 P=435.762063 Days  $T_0=307.741637$  (BKJD)





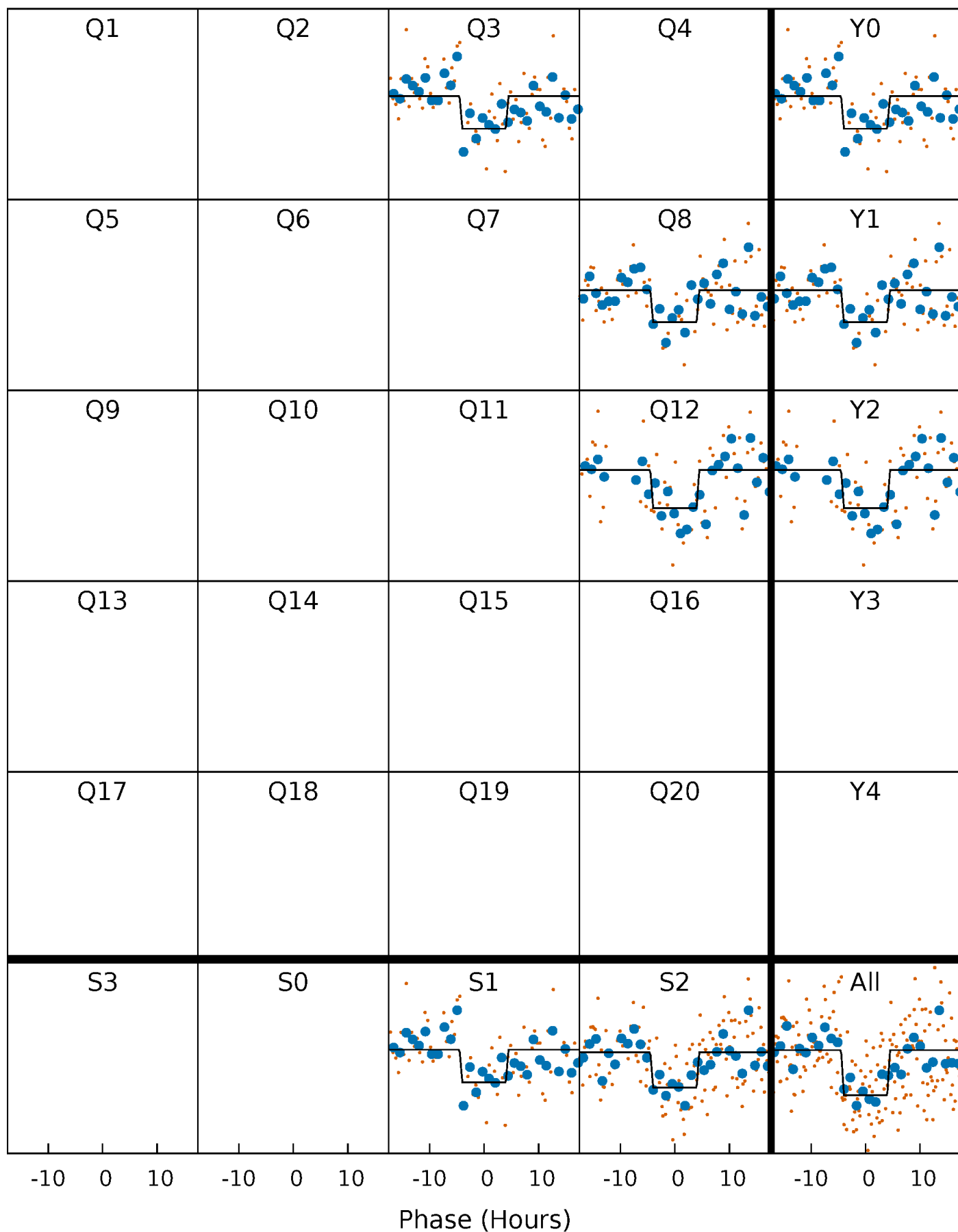
# DV Quarter-Phased Transit Curves

TCE 009541223-01 P=435.762063 Days  $T_0=307.741637$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

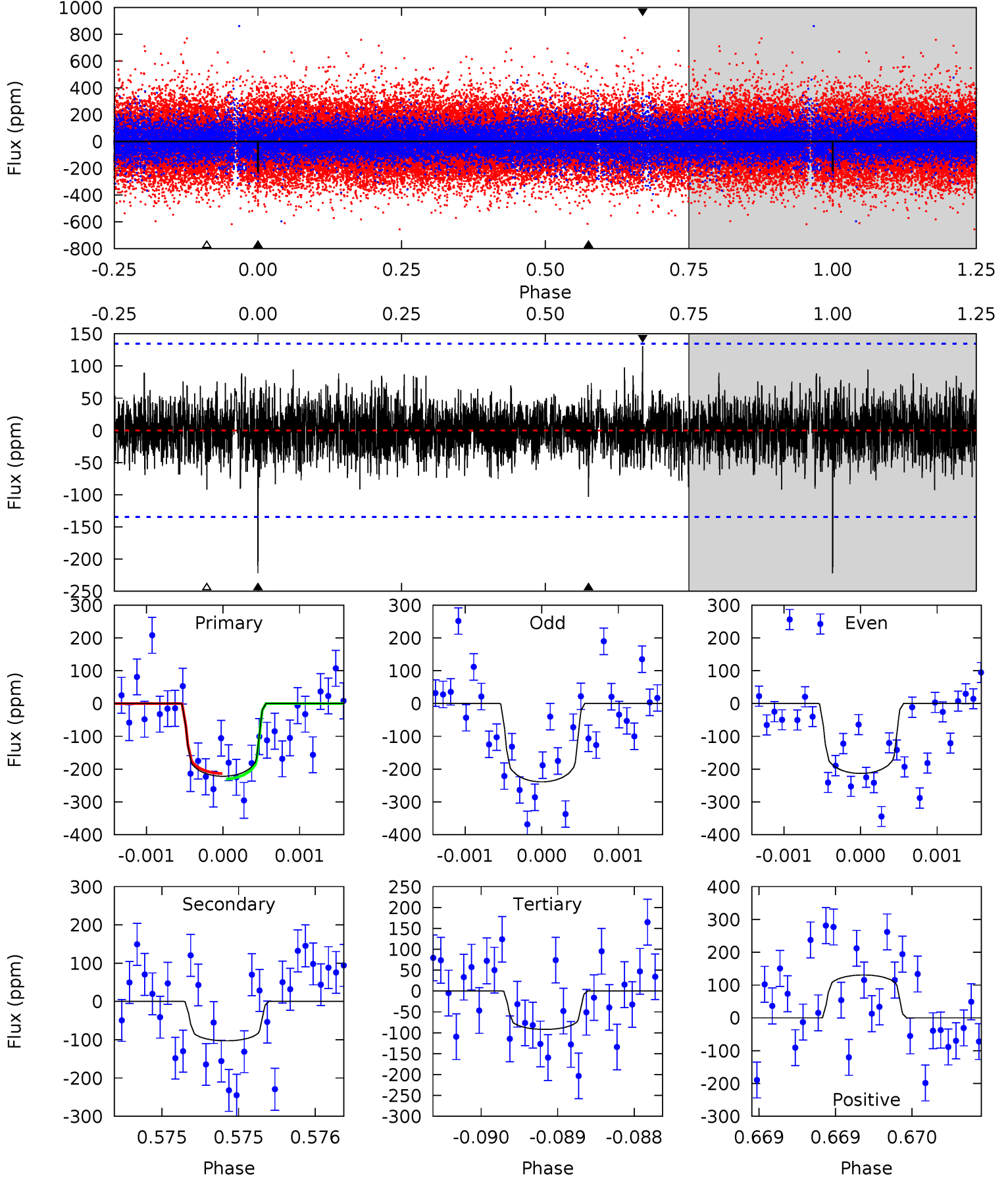
TCE 009541223-01 P=435.732045 Days  $T_0=307.794107$  (BKJD)



# DV Model-Shift Uniqueness Test

009541223-01, P = 435.762063 Days, E = 307.741637 Days

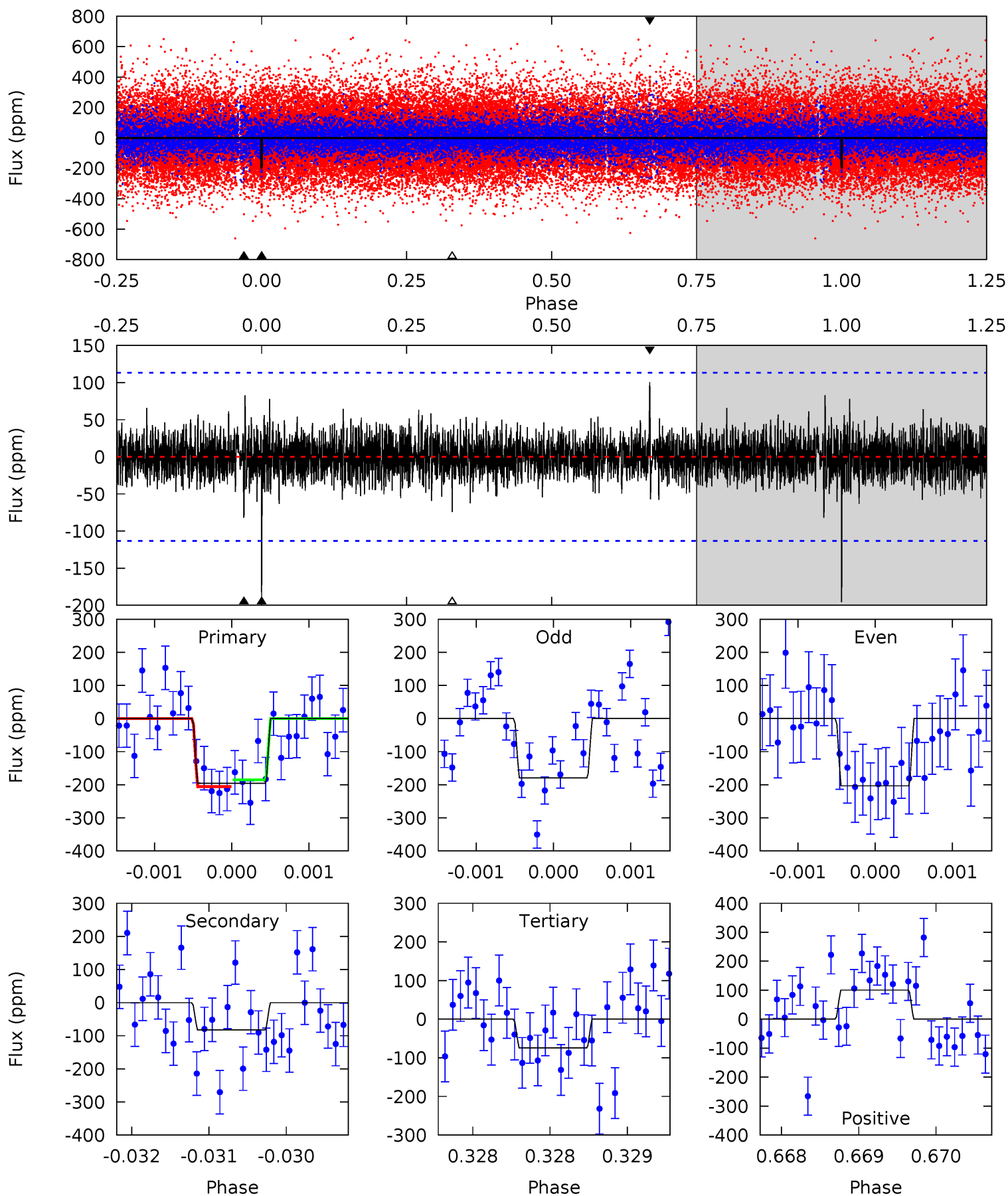
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.12	4.23	3.78	5.37	5.53	3.42	1.08	5.34	3.75	0.45	-1.14	0.50	1.03	0.37	0.35



# Alt Model-Shift Uniqueness Test

009541223-01, P = 435.732045 Days, E = 307.794107 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
9.45	3.97	3.59	4.85	5.48	3.33	0.91	5.86	4.60	0.38	-0.88	0.54	1.00	0.34	0.48



### Stellar Parameters For KIC 009541223

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8404^{+232}_{-364}$	$4.044^{+0.170}_{-0.139}$	$0.070^{+0.250}_{-0.500}$	$2.230^{+0.474}_{-0.579}$	$2.008^{+0.307}_{-0.421}$	$0.255^{+0.267}_{-0.097}$
	+3%/-4%	+4%/-3%	+357%/-714%	+21%/-26%	+15%/-21%	+105%/-38%
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 009541223-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-103 \pm 24$	$3.59^{+2.11}_{-1.66}$	$646^{+40}_{-43}$	$6610^{+3091}_{-1327}$	$8415^{+20808}_{-5135}$
Alt.	$-82 \pm 21$	$3.62^{+1.76}_{-1.75}$	$647^{+42}_{-45}$	$6244^{+2895}_{-1081}$	$6719^{+19051}_{-3832}$

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

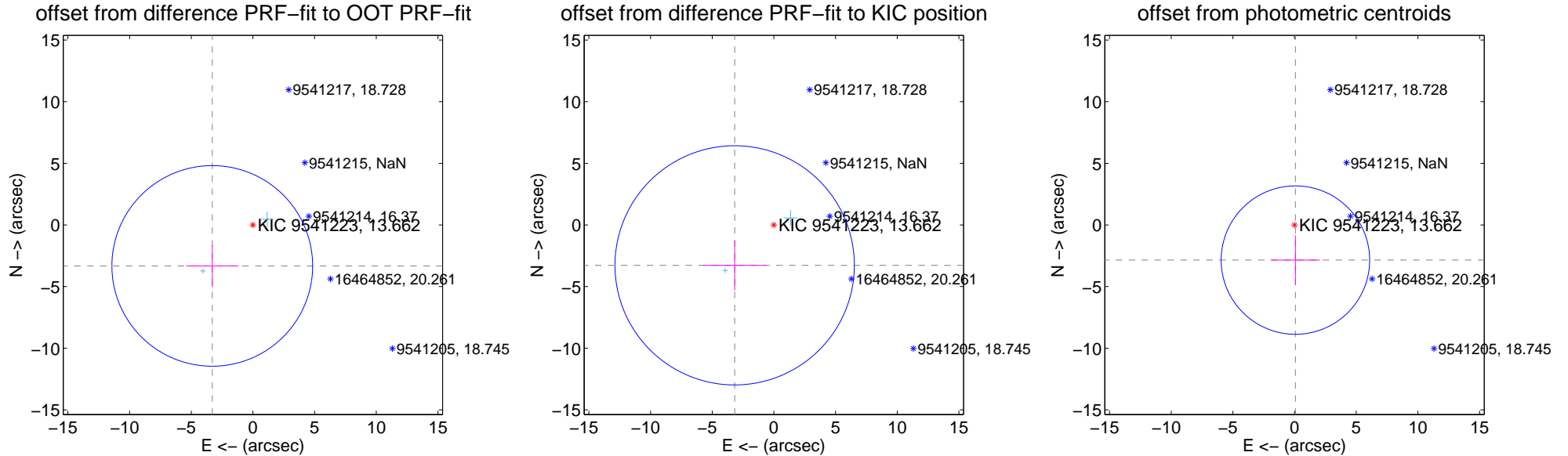
## DV Centroid Data

Supplemental centroid analysis for 009541223-01. Kepler magnitude: 13.66. Transit SNR 6.83

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.683 \pm 2.713$	1.73	$3.298 \pm 2.125$	$-3.325 \pm 1.715$
PRF-fit source offset from KIC position	$4.567 \pm 3.235$	1.41	$3.181 \pm 2.543$	$-3.277 \pm 2.041$
photometric centroid source offset	$2.85 \pm 2.01$	1.42	$-0.07 \pm 1.98$	$-2.85 \pm 2.01$



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



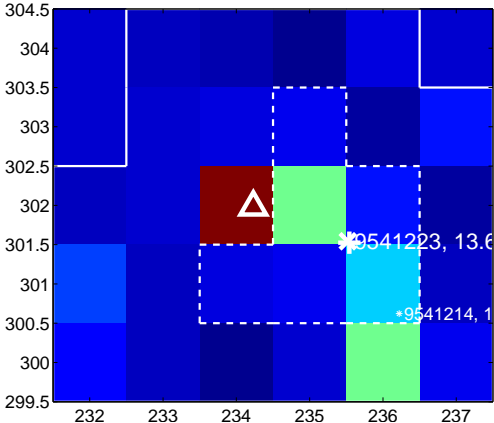
Q2 no difference image



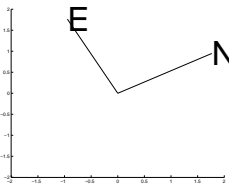
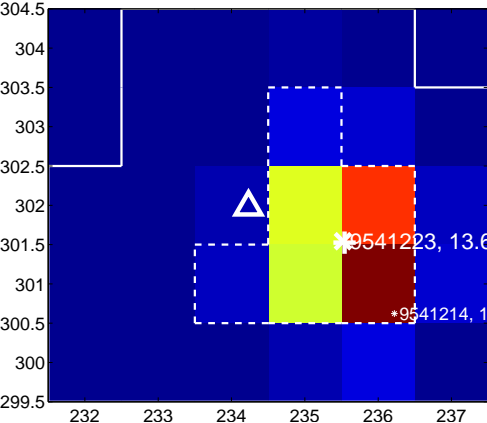
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image

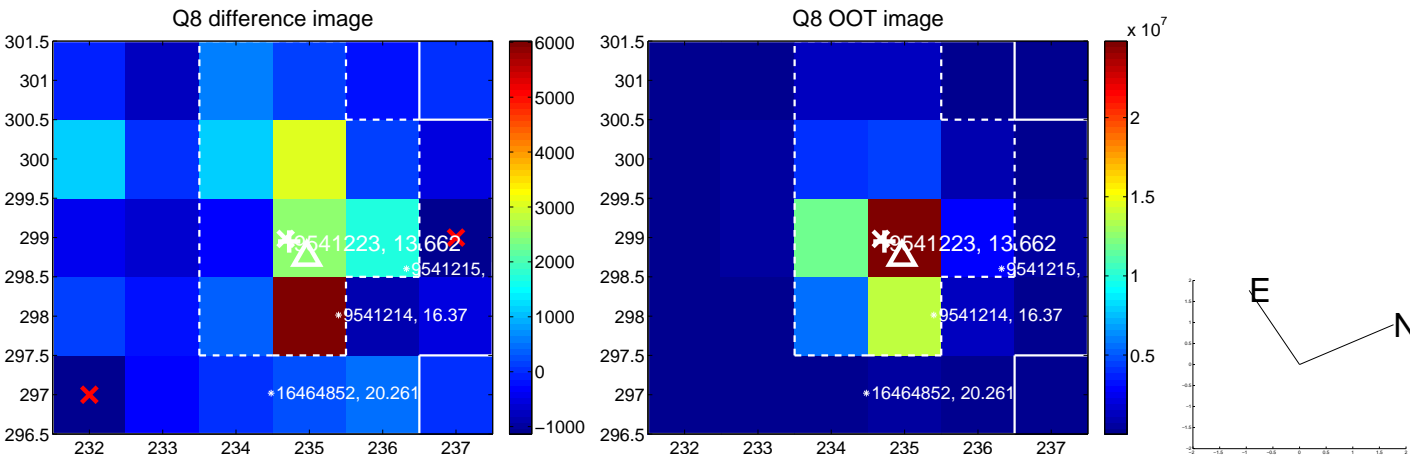


Q4 no OOT image





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



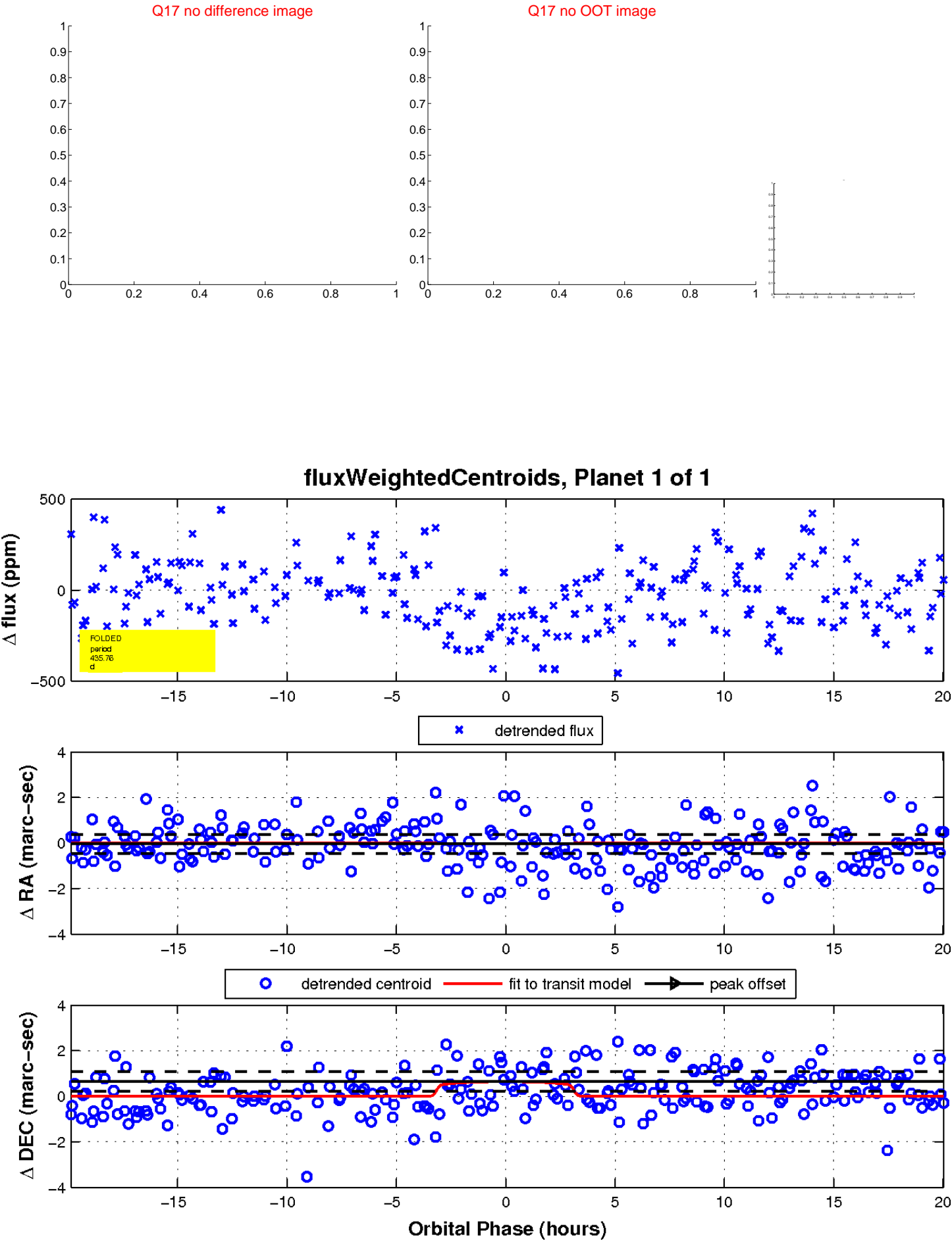
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

