

# KIC 003116544

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003116544-01	OBS	No	405.850043	192.807554	467.3	5.228	7.9	7.7	0.47	3795	1.05	0.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003116544-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—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.

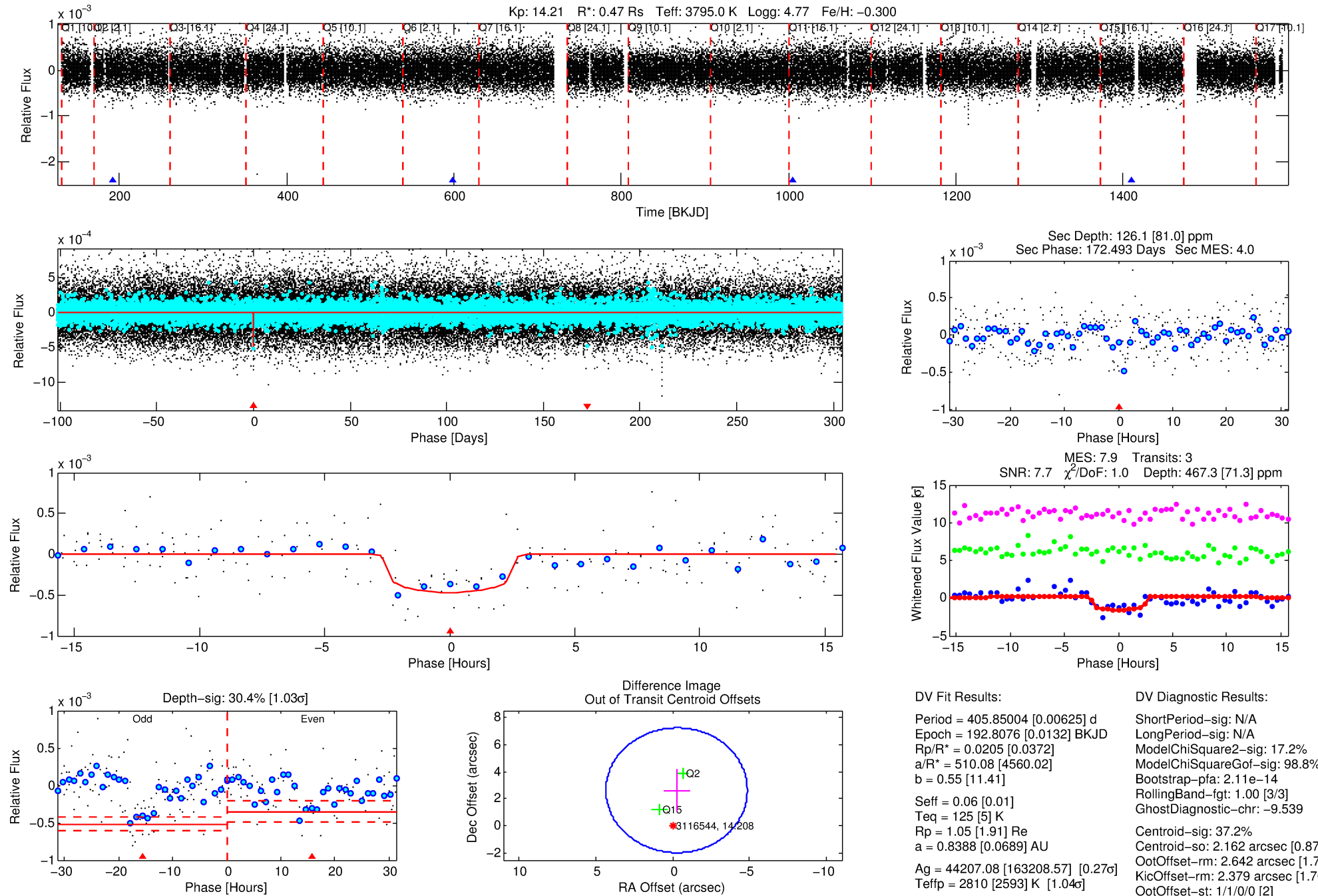
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003116544-01

No Significant Match Found

# DV One-Page Summary

KIC: 3116544 Candidate: 1 of 1 Period: 405.850 d



## DV Fit Results:

Period = 405.85004 [0.00625] d  
Epoch = 192.8076 [0.0132] BKJD  
Rp/R\* = 0.0205 [0.0372]  
a/R\* = 510.08 [4560.02]  
b = 0.55 [11.41]  
Seff = 0.06 [0.01]  
Teq = 125 [5] K  
Rp = 1.05 [1.91] Re  
a = 0.8388 [0.0689] AU  
Ag = 44207.08 [163208.57] [0.27 $\sigma$ ]  
Teffp = 2810 [2593] K [1.04 $\sigma$ ]

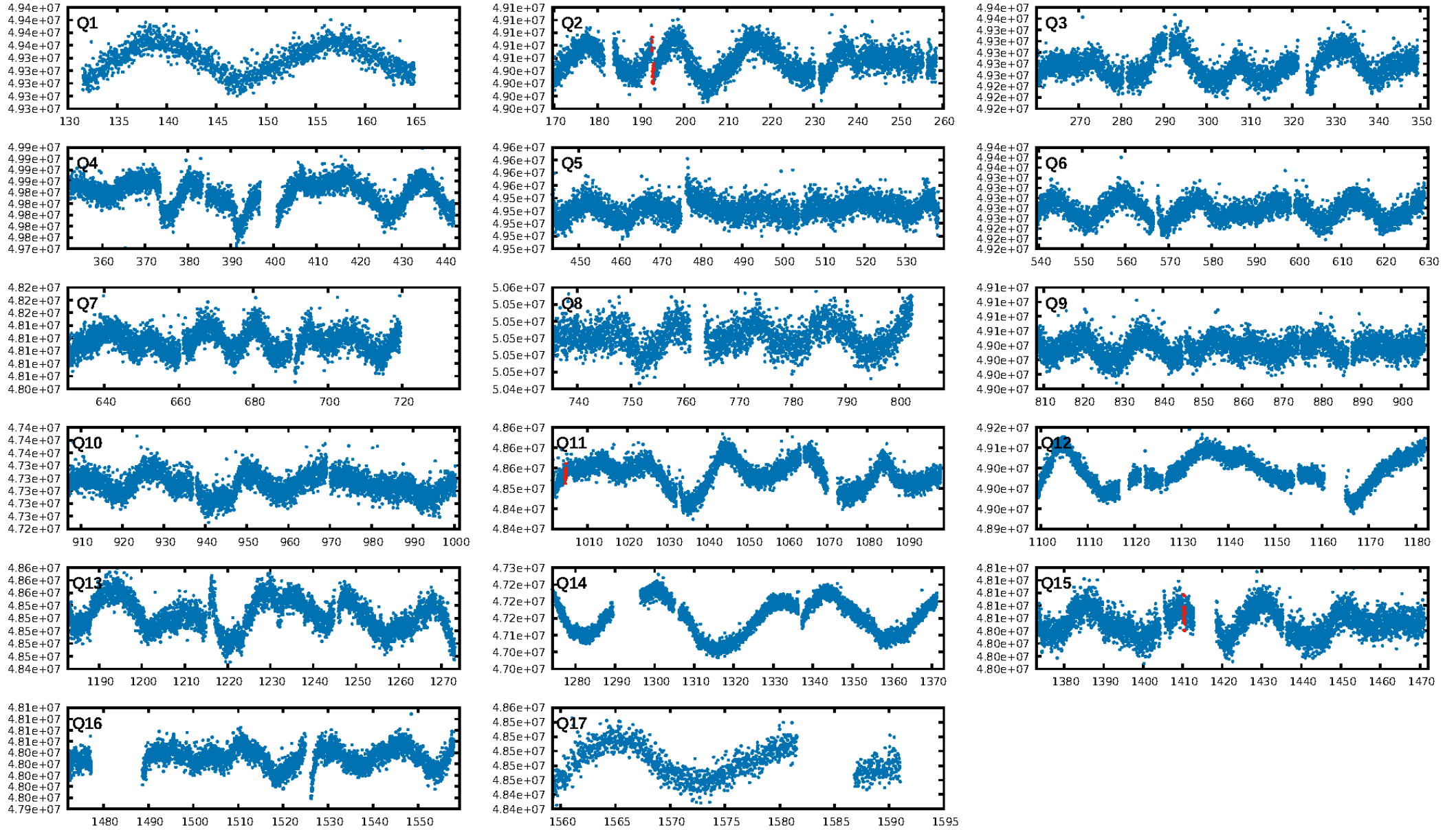
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.2%  
ModelChiSquareGof-sig: 98.8%  
Bootstrap-pfa: 2.11e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -9.539  
Centroid-sig: 37.2%  
Centroid-so: 2.162 arcsec [0.87 $\sigma$ ]  
OotOffset-rm: 2.642 arcsec [1.73 $\sigma$ ]  
KicOffset-rm: 2.379 arcsec [1.70 $\sigma$ ]  
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]

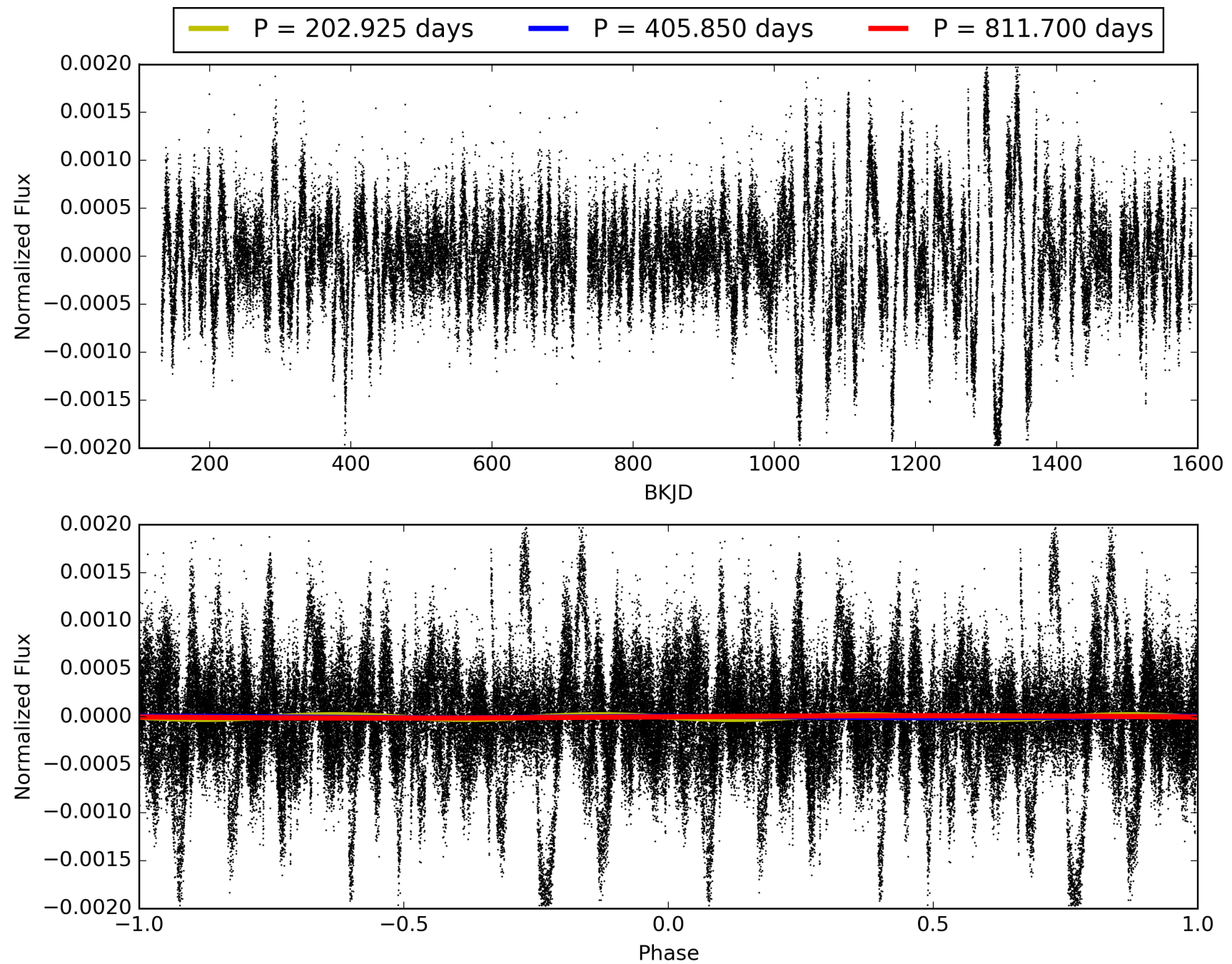
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:49:50 Z

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

# TCE 003116544-01, PDC Light Curves

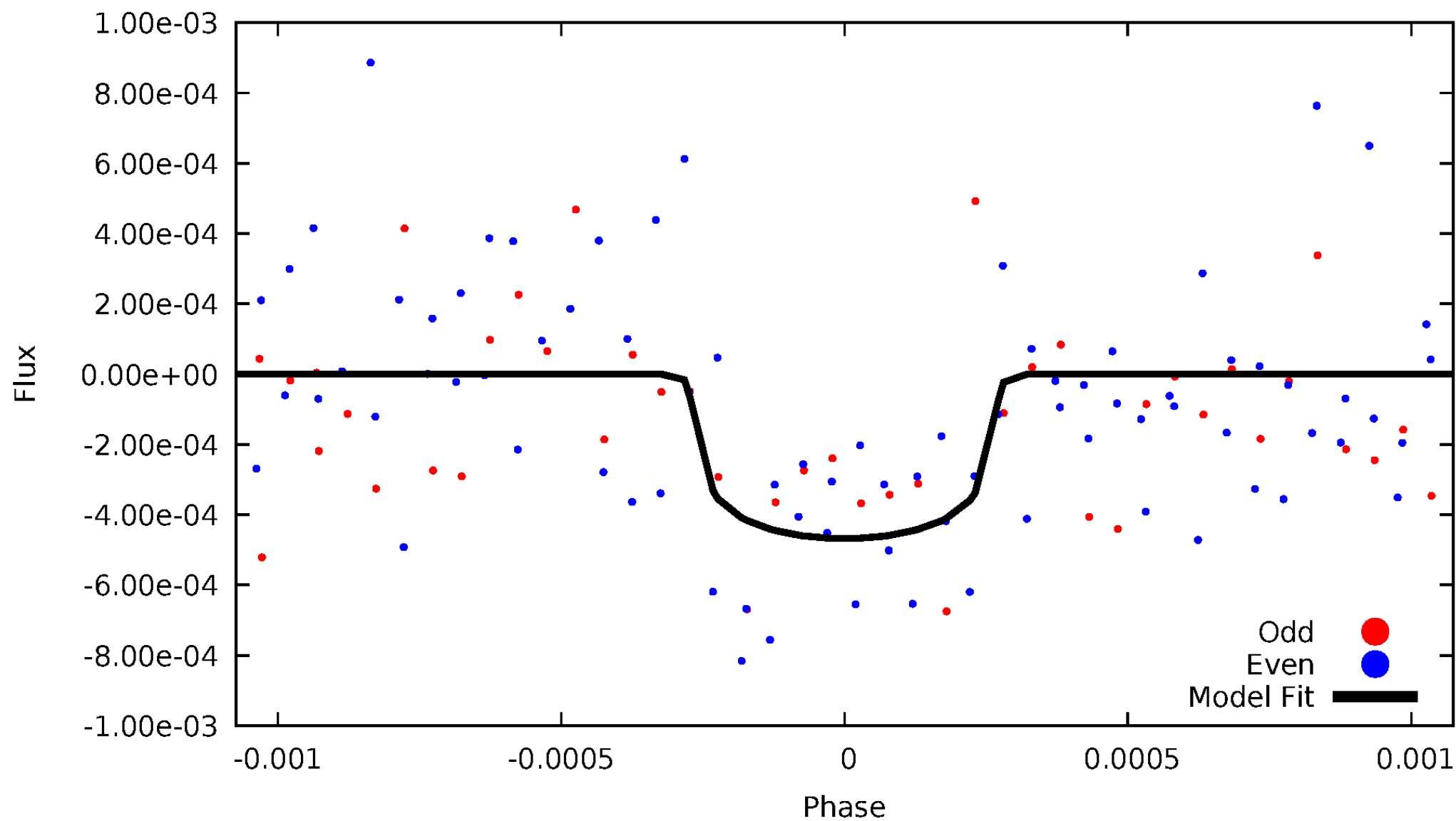


# TCE 003116544-01



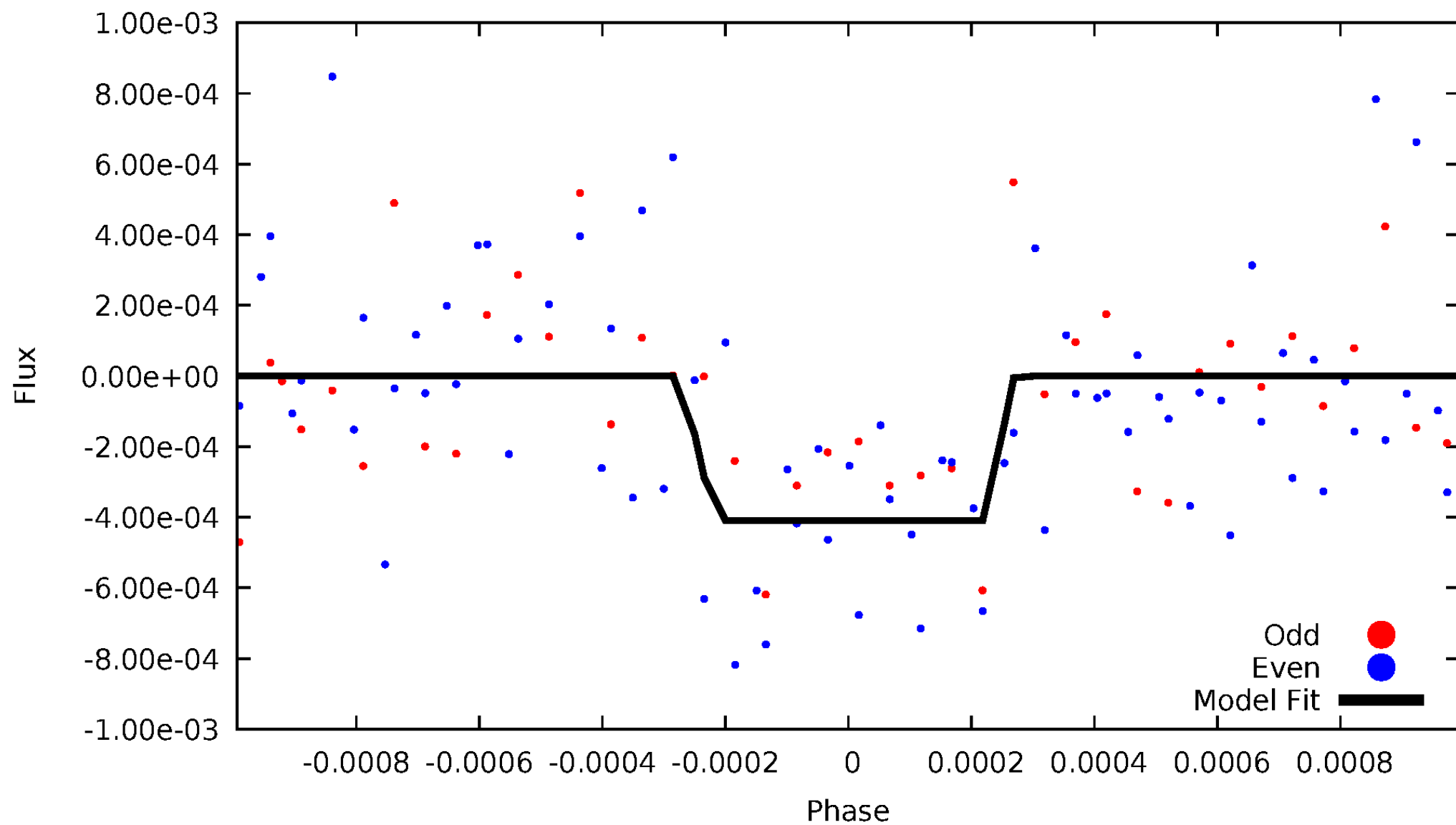
# DV Odd/Even

TCE 003116544-01



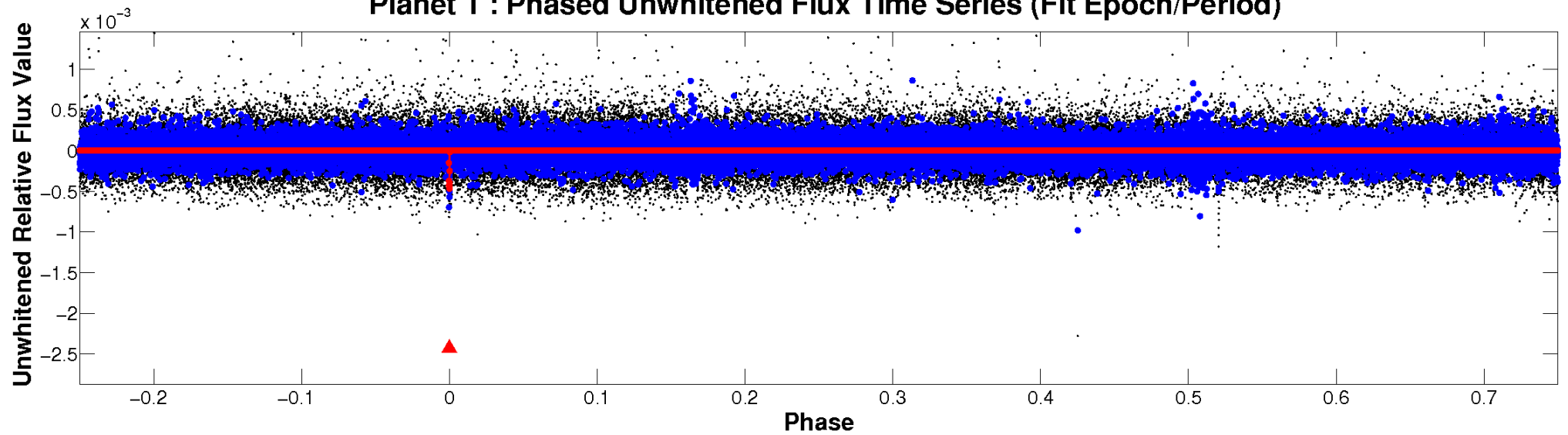
# ALT Odd/Even

TCE 003116544-01

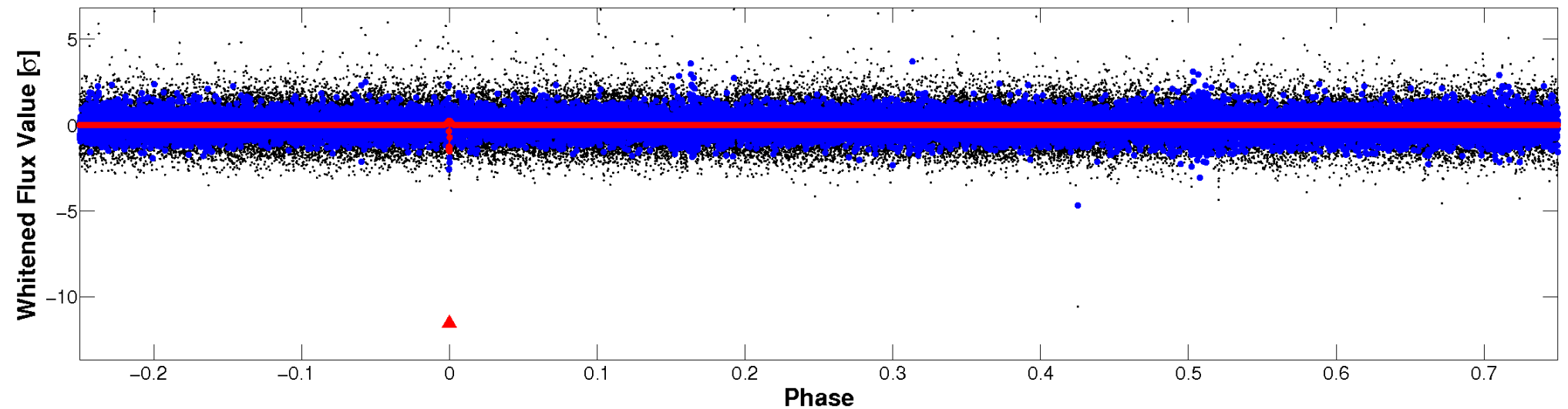


# Non-Whitened Vs. Whitened Light Curve

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

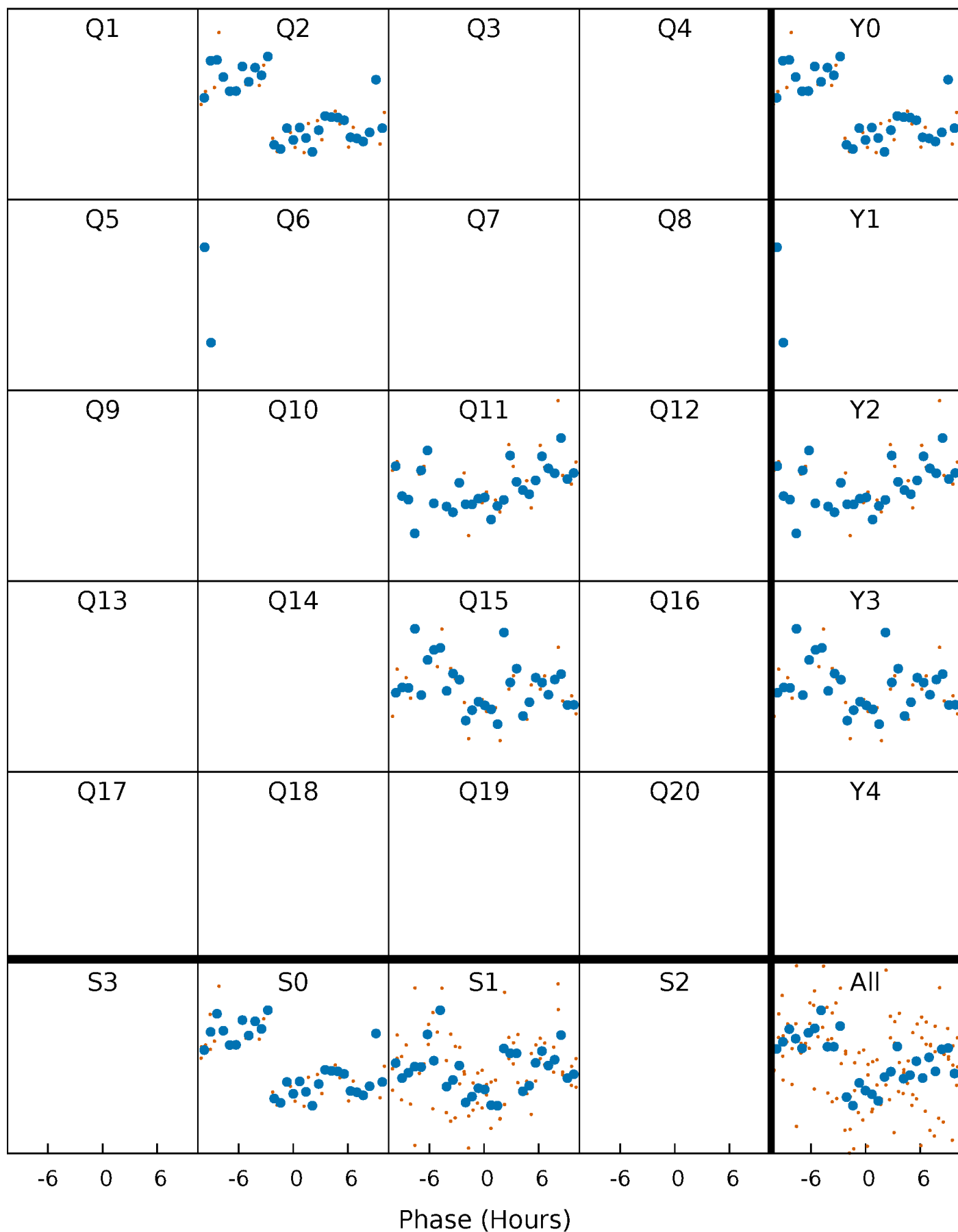


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

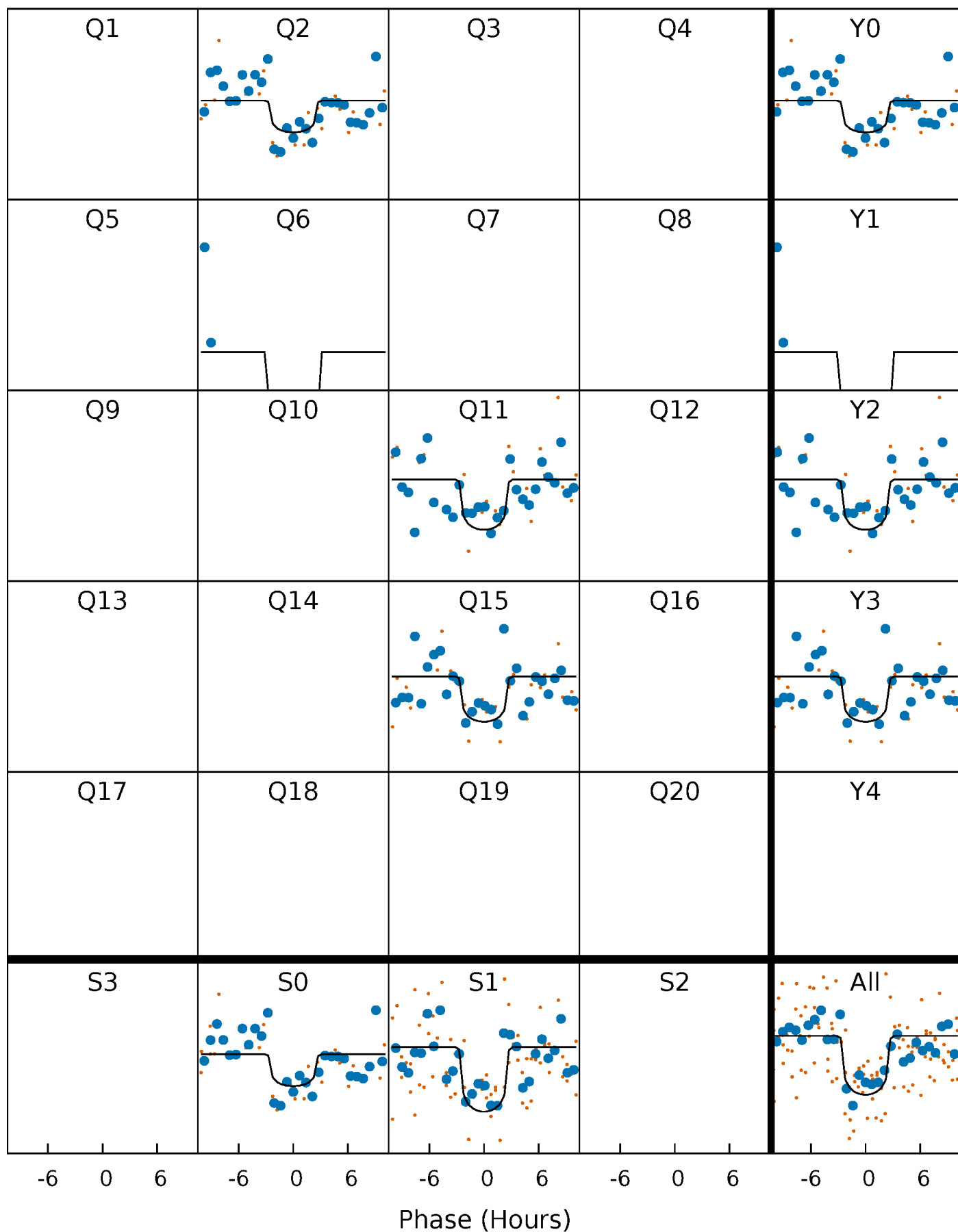
TCE 003116544-01 P=405.850043 Days  $T_0=192.807554$  (BKJD)





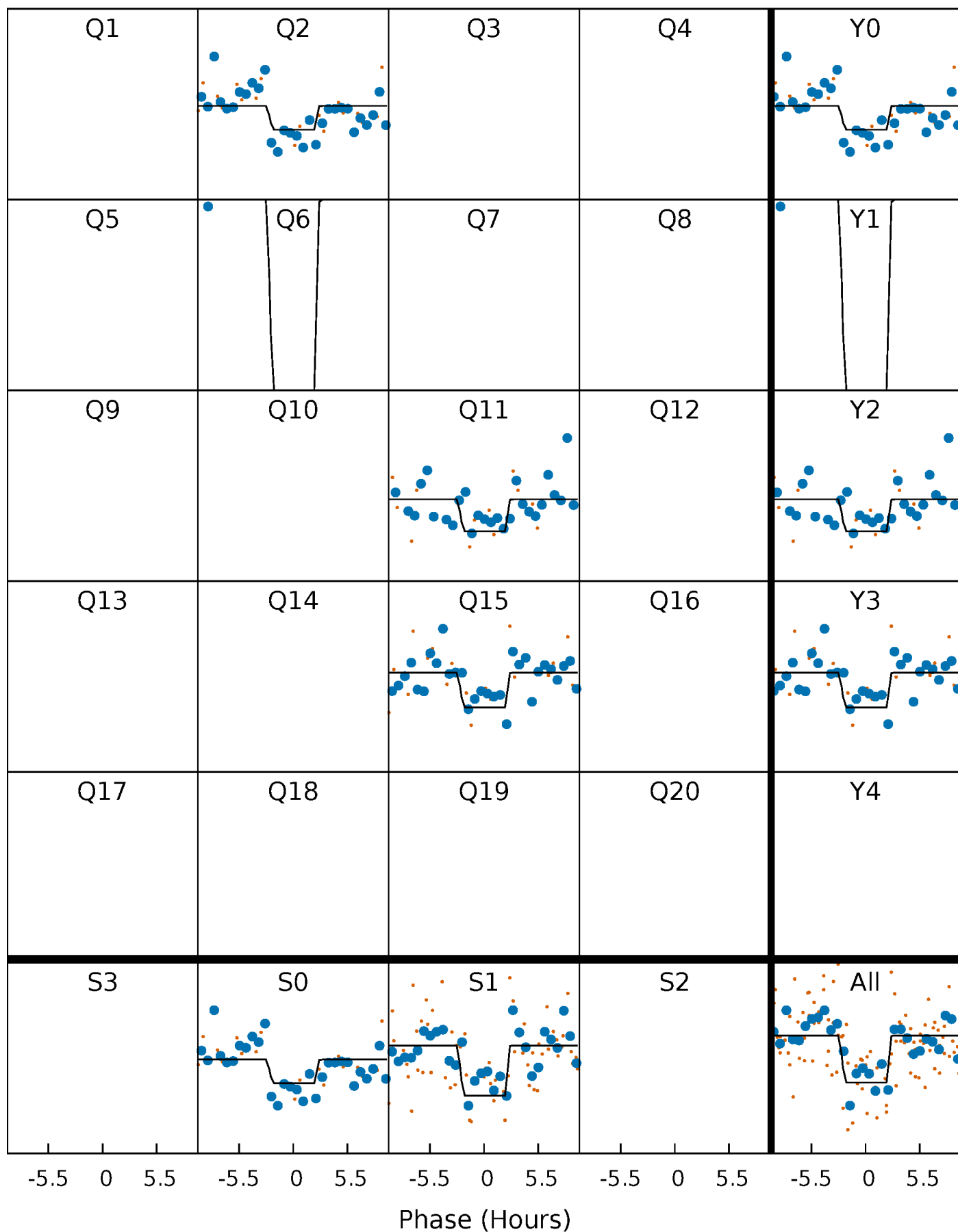
# DV Quarter-Phased Transit Curves

TCE 003116544-01 P=405.850043 Days  $T_0=192.807554$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

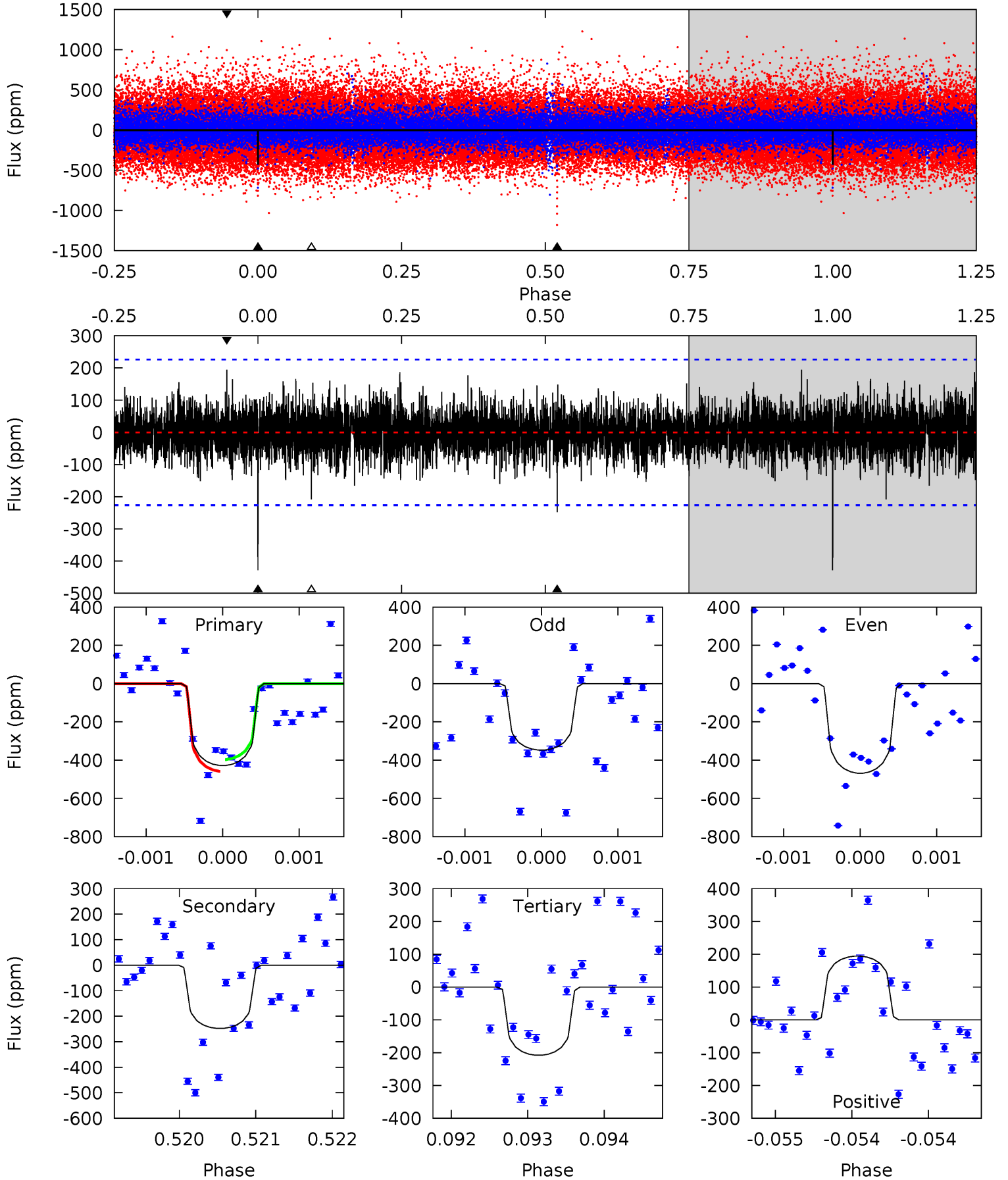
TCE 003116544-01 P=405.844558 Days  $T_0=192.808553$  (BKJD)



# DV Model-Shift Uniqueness Test

003116544-01, P = 405.850043 Days, E = 192.807554 Days

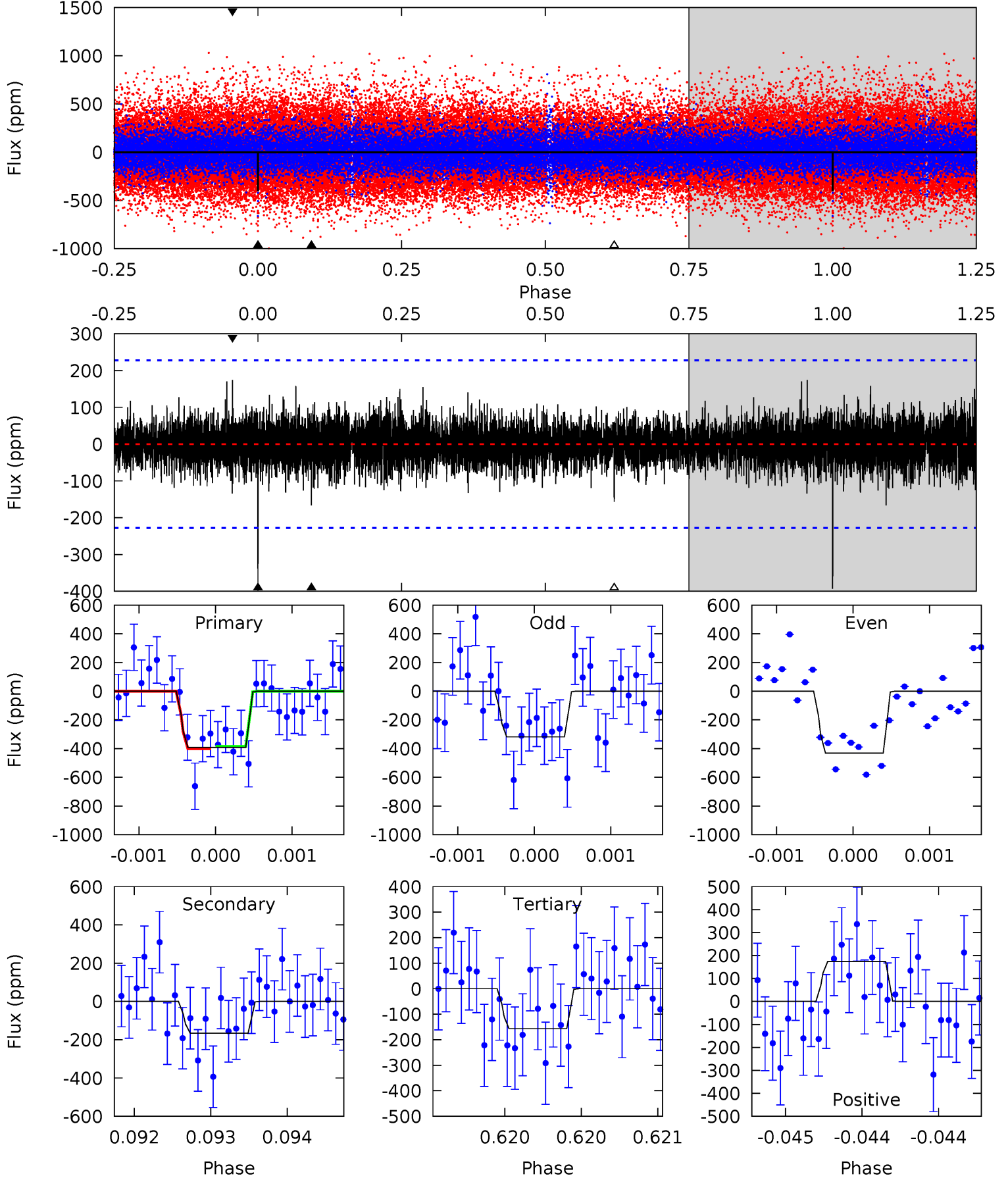
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	6.06	5.09	4.75	5.54	3.43	1.17	5.38	5.72	0.98	1.31	1.41	1.22	0.31	0.75



# Alt Model-Shift Uniqueness Test

003116544-01, P = 405.844558 Days, E = 192.808553 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
9.58	4.06	3.81	4.26	5.56	3.45	0.94	5.77	5.32	0.24	-0.20	1.31	1.23	0.31	0.20



### Stellar Parameters For KIC 003116544

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3795^{+90}_{-101}$	$4.773^{+0.060}_{-0.040}$	$-0.300^{+0.200}_{-0.200}$	$0.470^{+0.044}_{-0.048}$	$0.478^{+0.047}_{-0.047}$	$6.487^{+1.930}_{-1.032}$
	+2%/-3%	+1%/-1%	+67%/-67%	+9%/-10%	+10%/-10%	+30%/-16%
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 003116544-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-248 \pm 41$	$1.71^{+1.64}_{-1.14}$	$174^{+6}_{-6}$	$3011^{+1281}_{-506}$	$32698^{+261309}_{-24373}$
Alt.	$-166 \pm 41$	$1.71^{+1.63}_{-1.12}$	$174^{+6}_{-6}$	$2856^{+1028}_{-481}$	$22538^{+155471}_{-17128}$

$T_{max}$  = 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

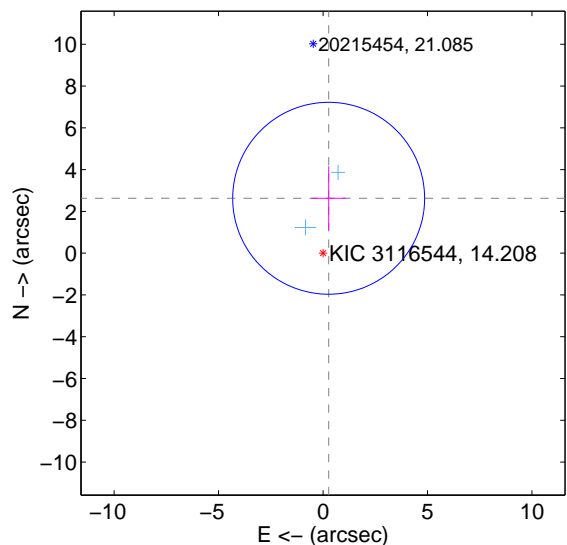
Supplemental centroid analysis for 003116544-01. Kepler magnitude: 14.21. Transit SNR 7.66

There are 2 quarters with good PRF difference image offsets

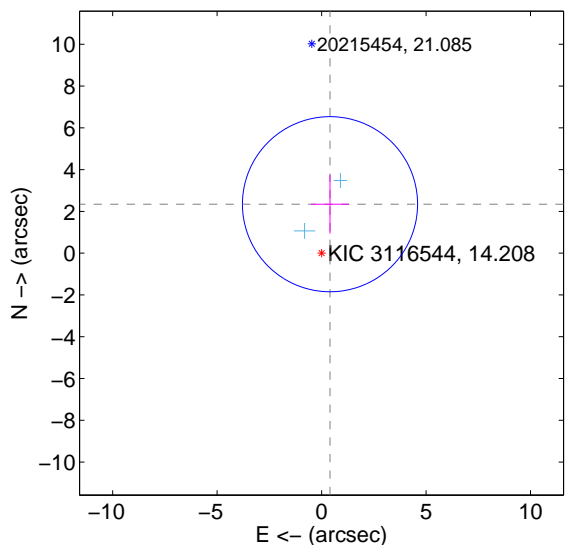
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.642 \pm 1.531$	1.73	$-0.269 \pm 0.831$	$2.629 \pm 1.537$
PRF-fit source offset from KIC position	$2.379 \pm 1.397$	1.70	$-0.403 \pm 0.913$	$2.345 \pm 1.409$
photometric centroid source offset	$2.16 \pm 2.50$	0.87	$0.12 \pm 1.87$	$-2.16 \pm 2.50$

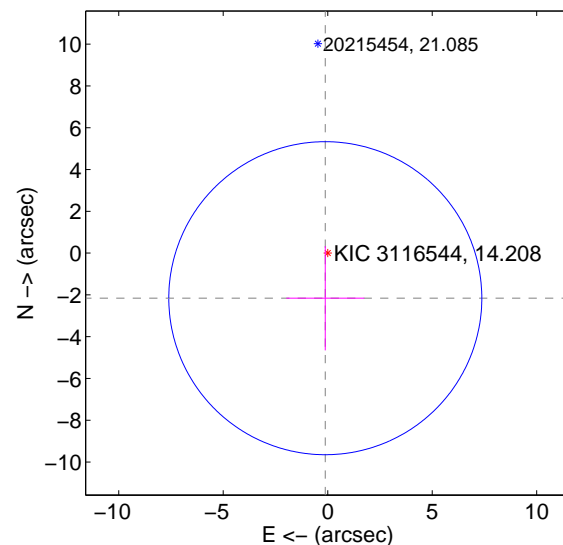
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



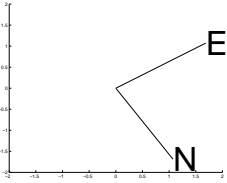
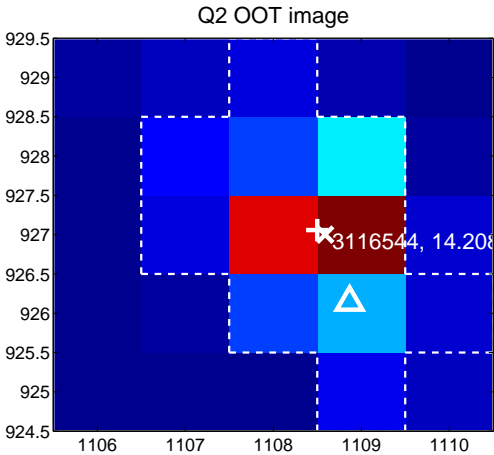
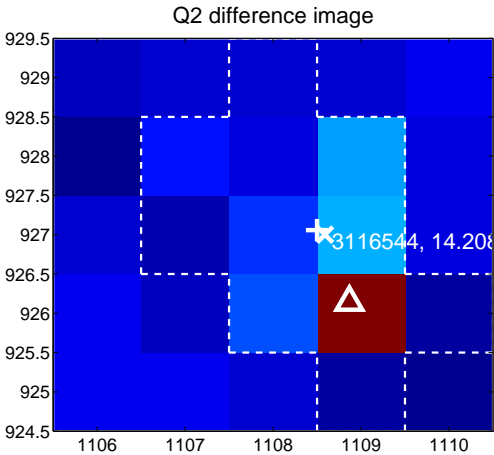
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

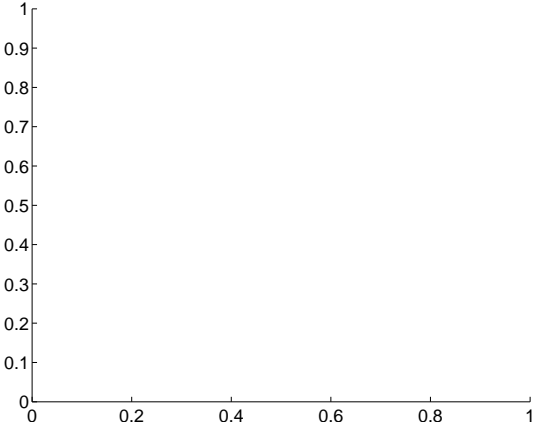
Q1 no difference image



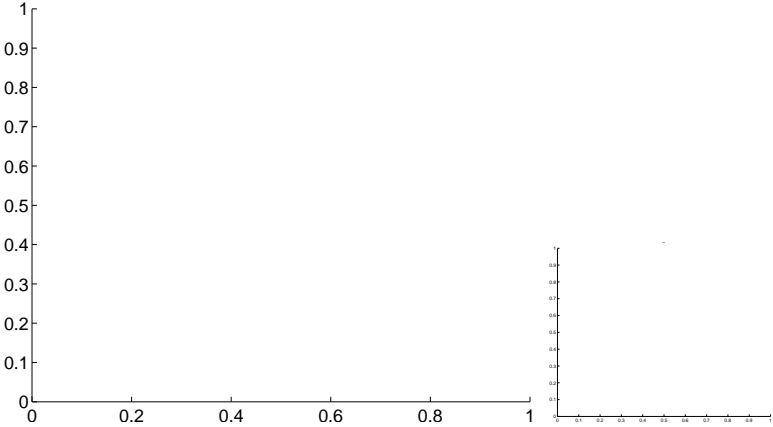
Q1 no OOT image



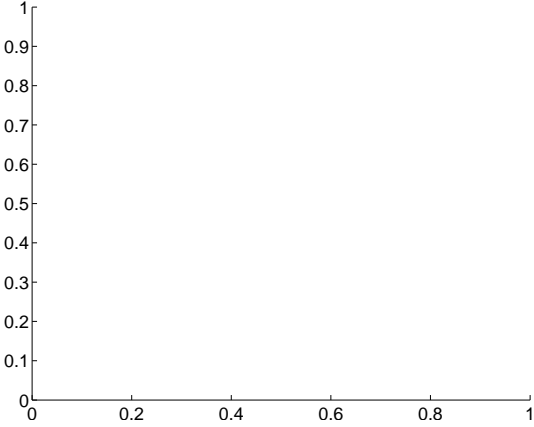
Q3 no difference image



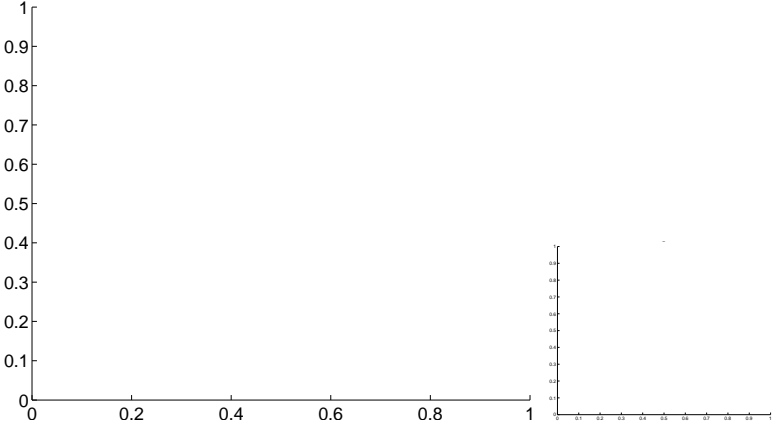
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

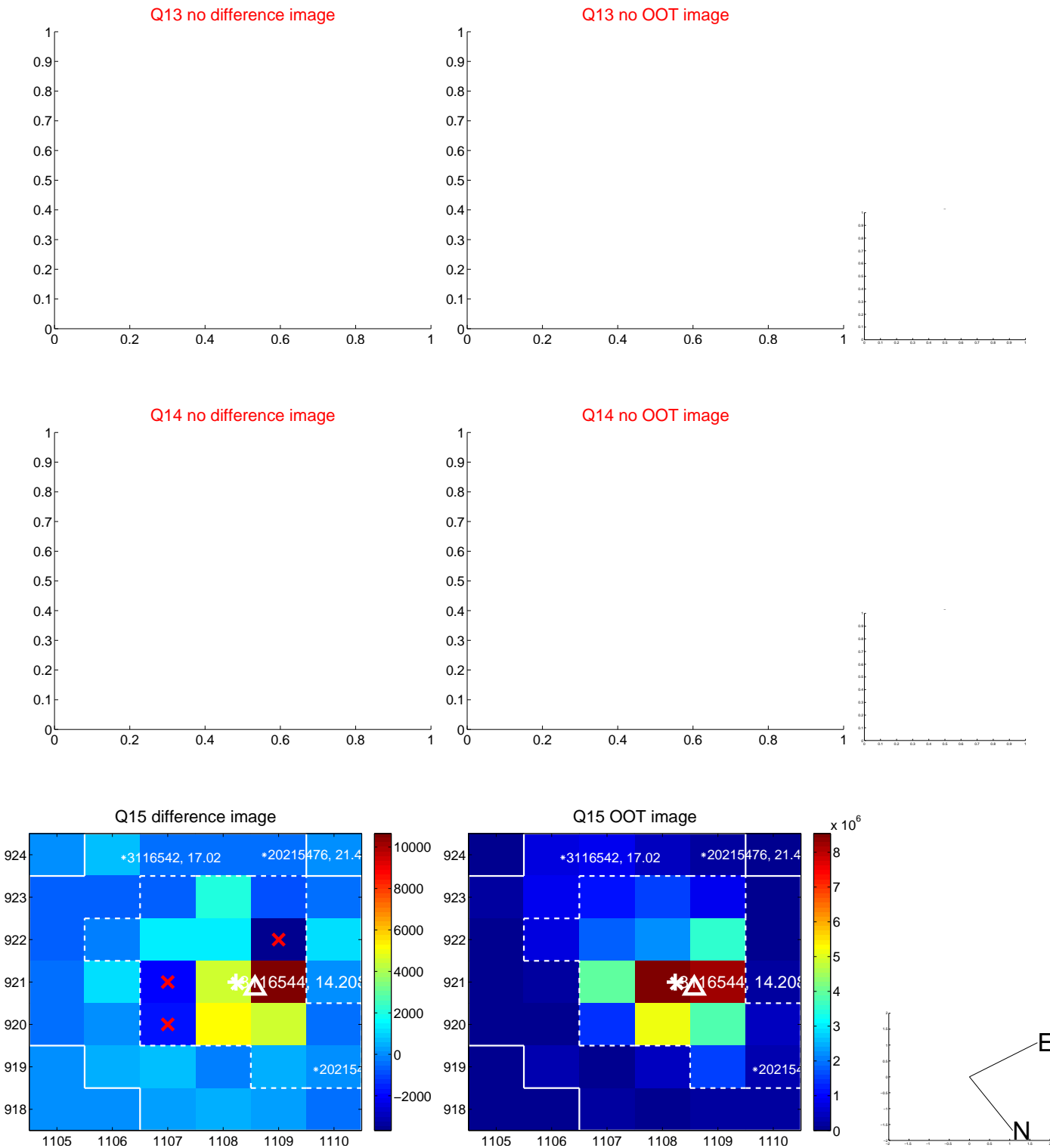




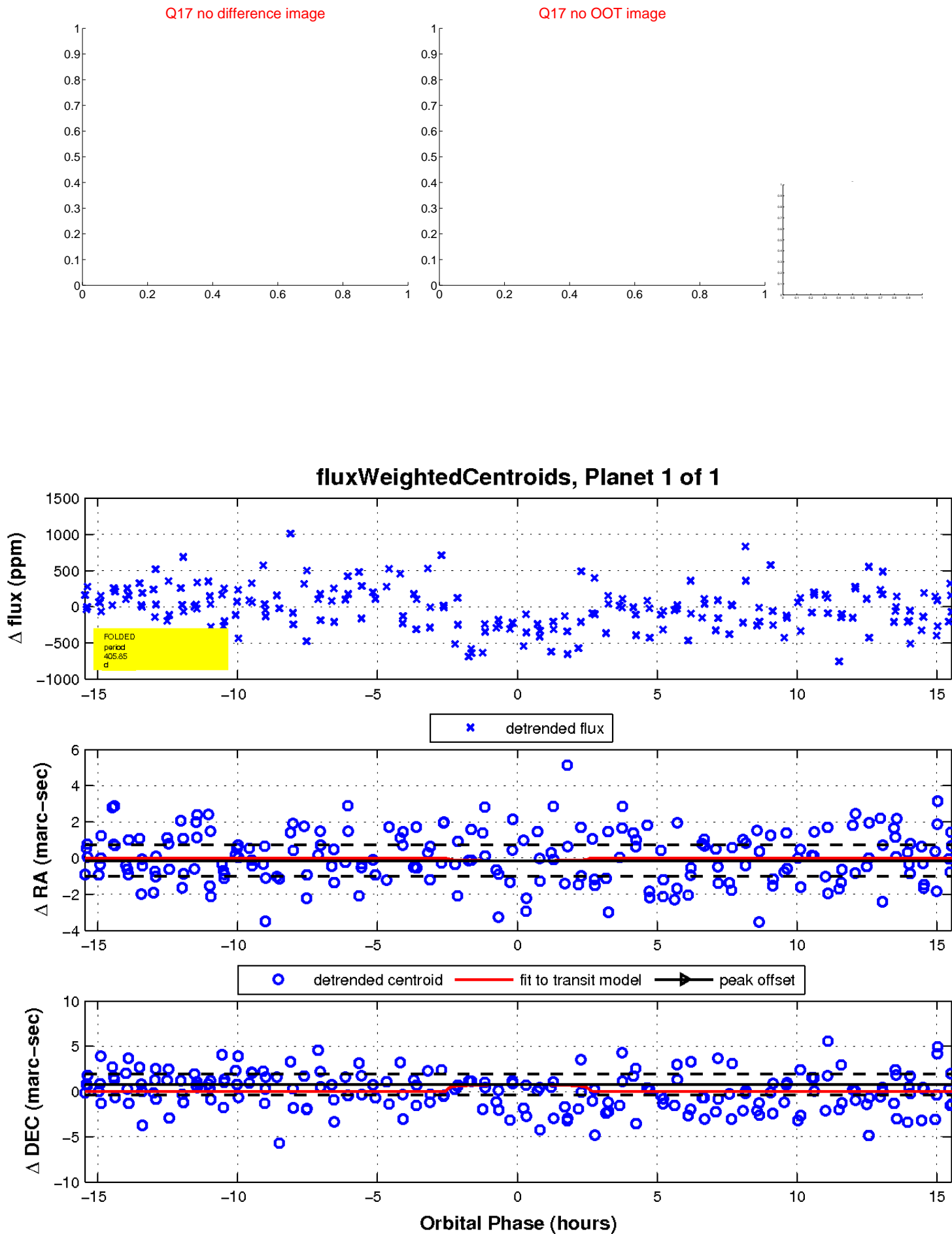
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

