

# KIC 004640798

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004640798-01	OBS	No	409.737511	290.732716	406.8	10.776	7.2	7.2	0.89	5418	1.98	0.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004640798-01	OBS	FP	0.02	1	0	0	0	ALL_TRANS_CHASES—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.

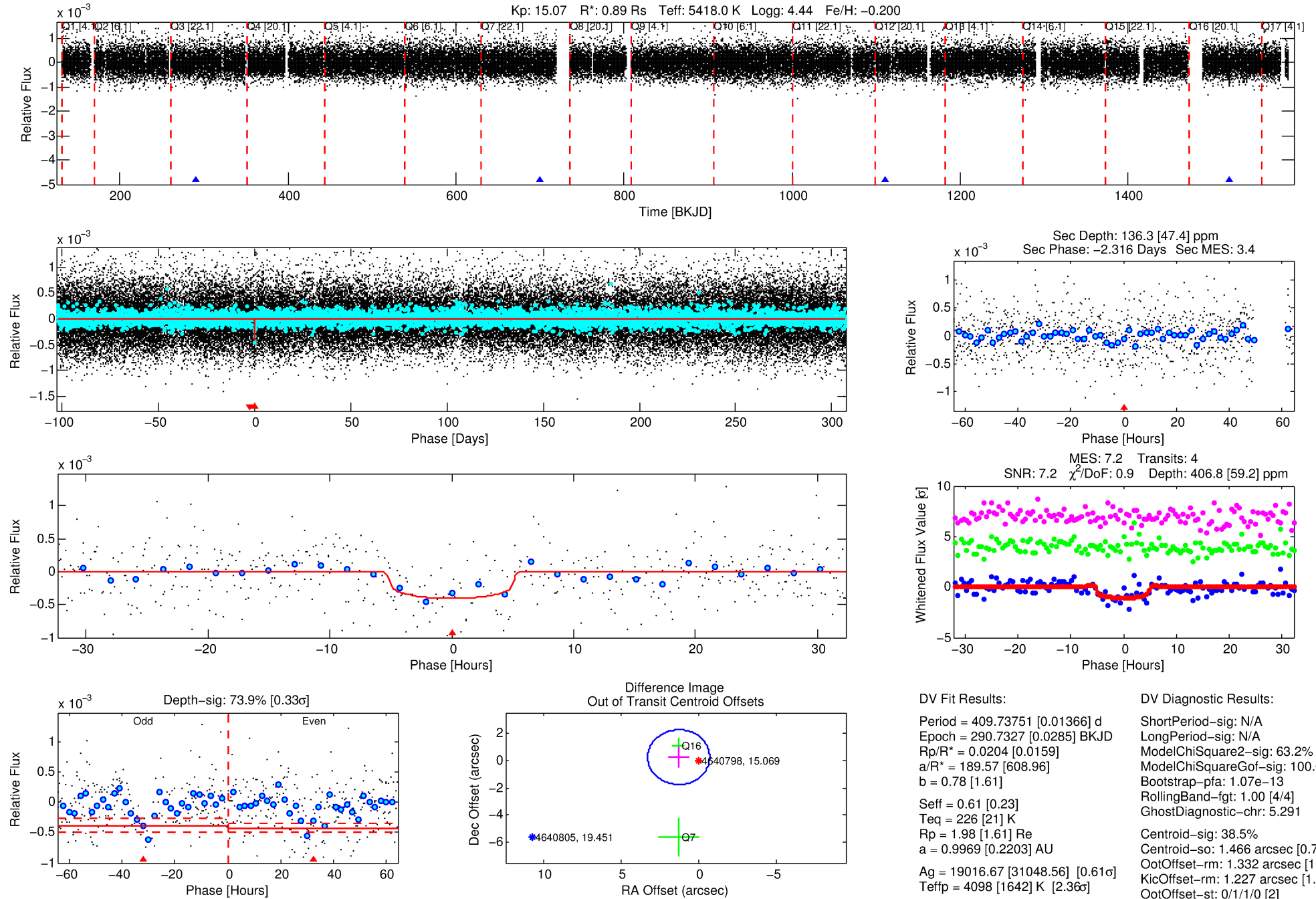
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004640798-01

No Significant Match Found

# DV One-Page Summary

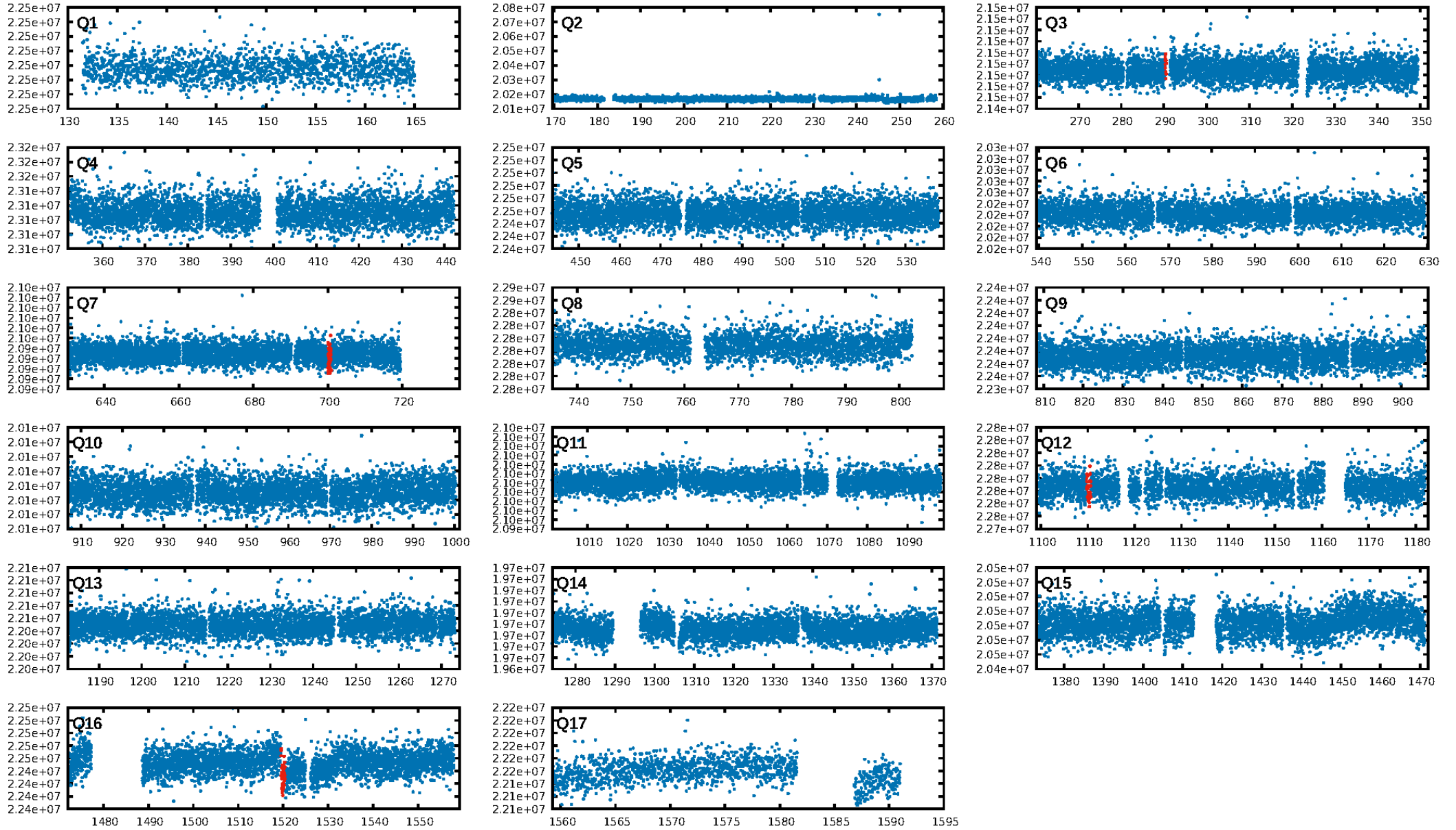
KIC: 4640798 Candidate: 1 of 1 Period: 409.738 d



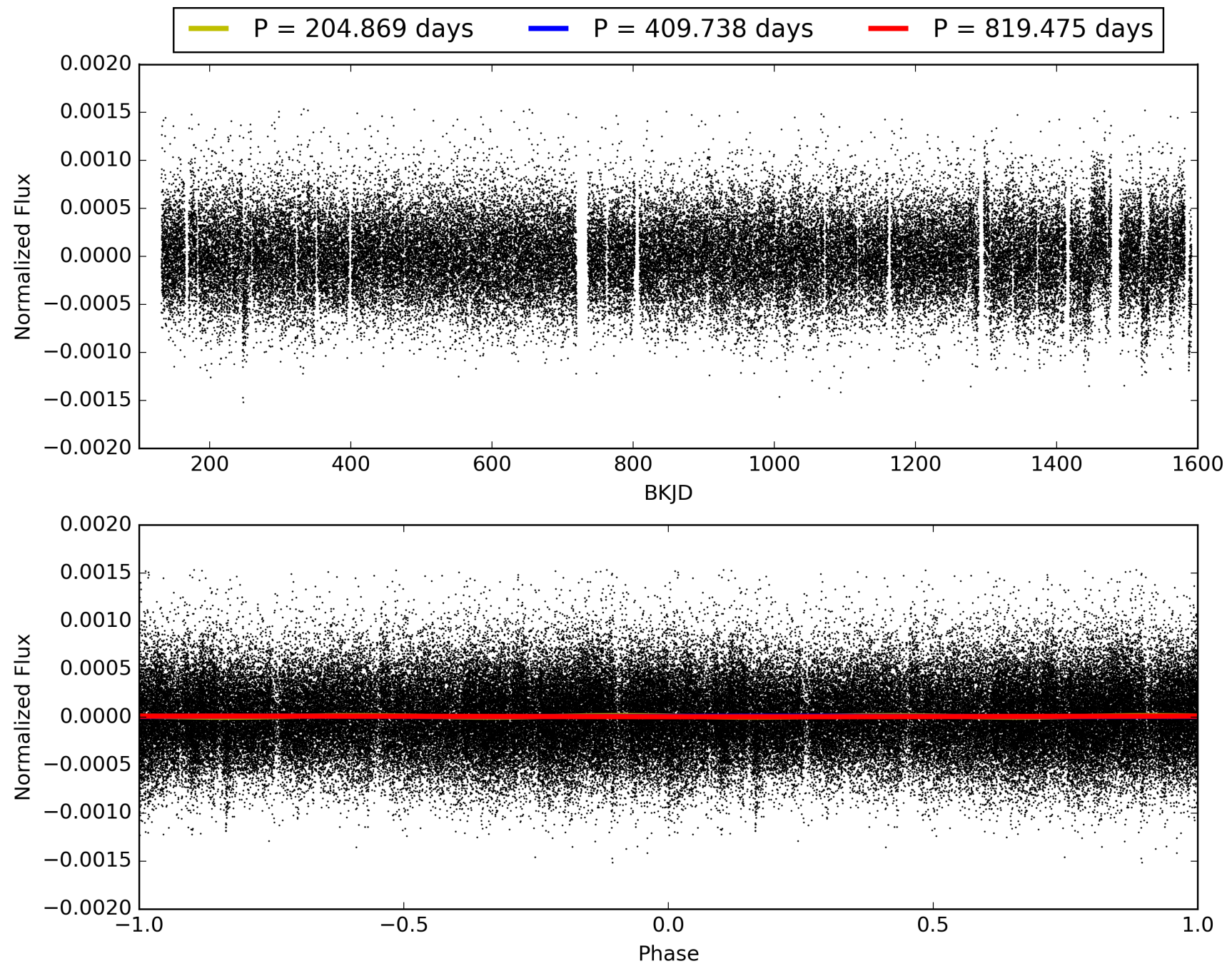
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:30:40 Z

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

# TCE 004640798-01, PDC Light Curves

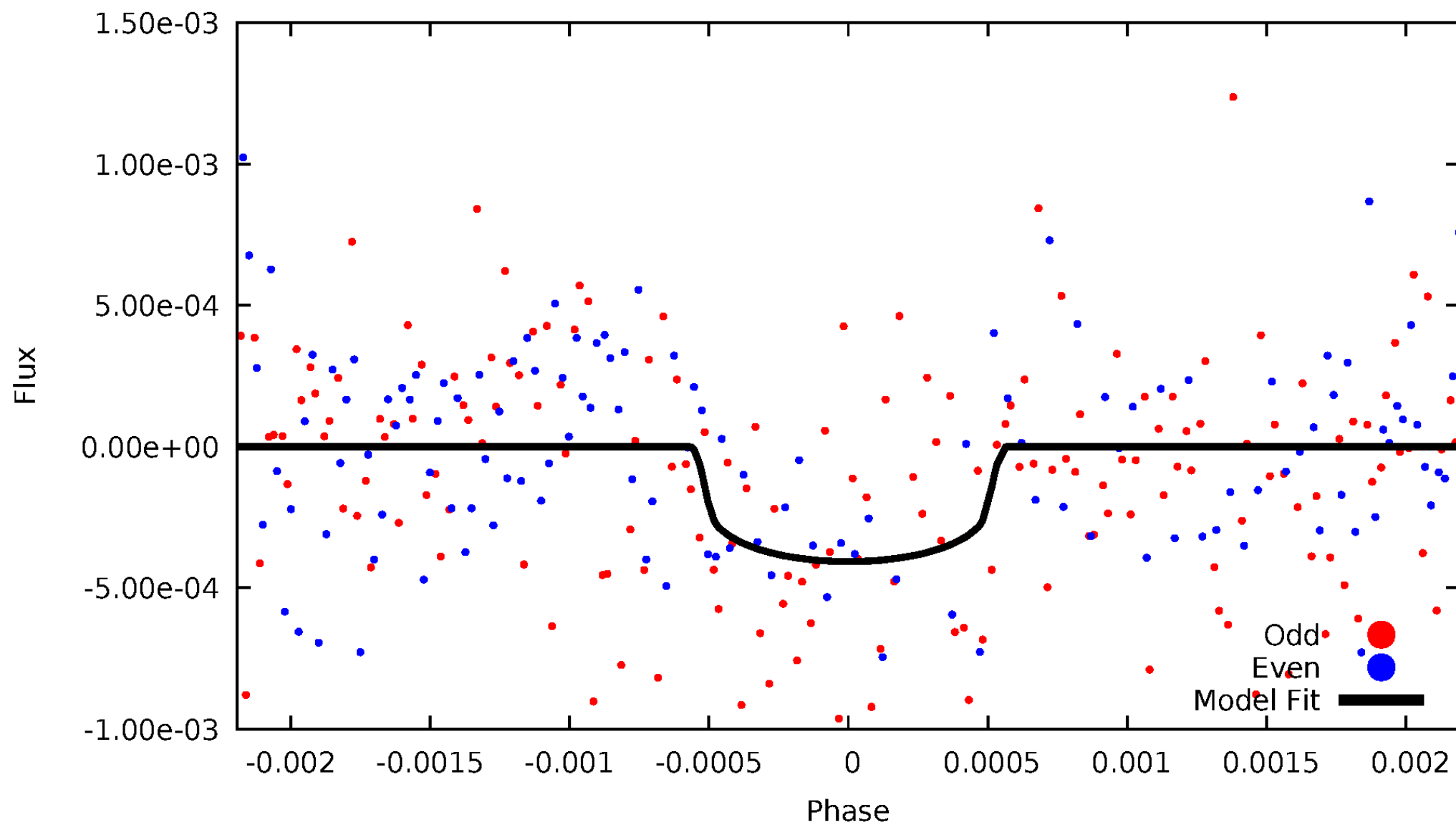


TCE 004640798-01



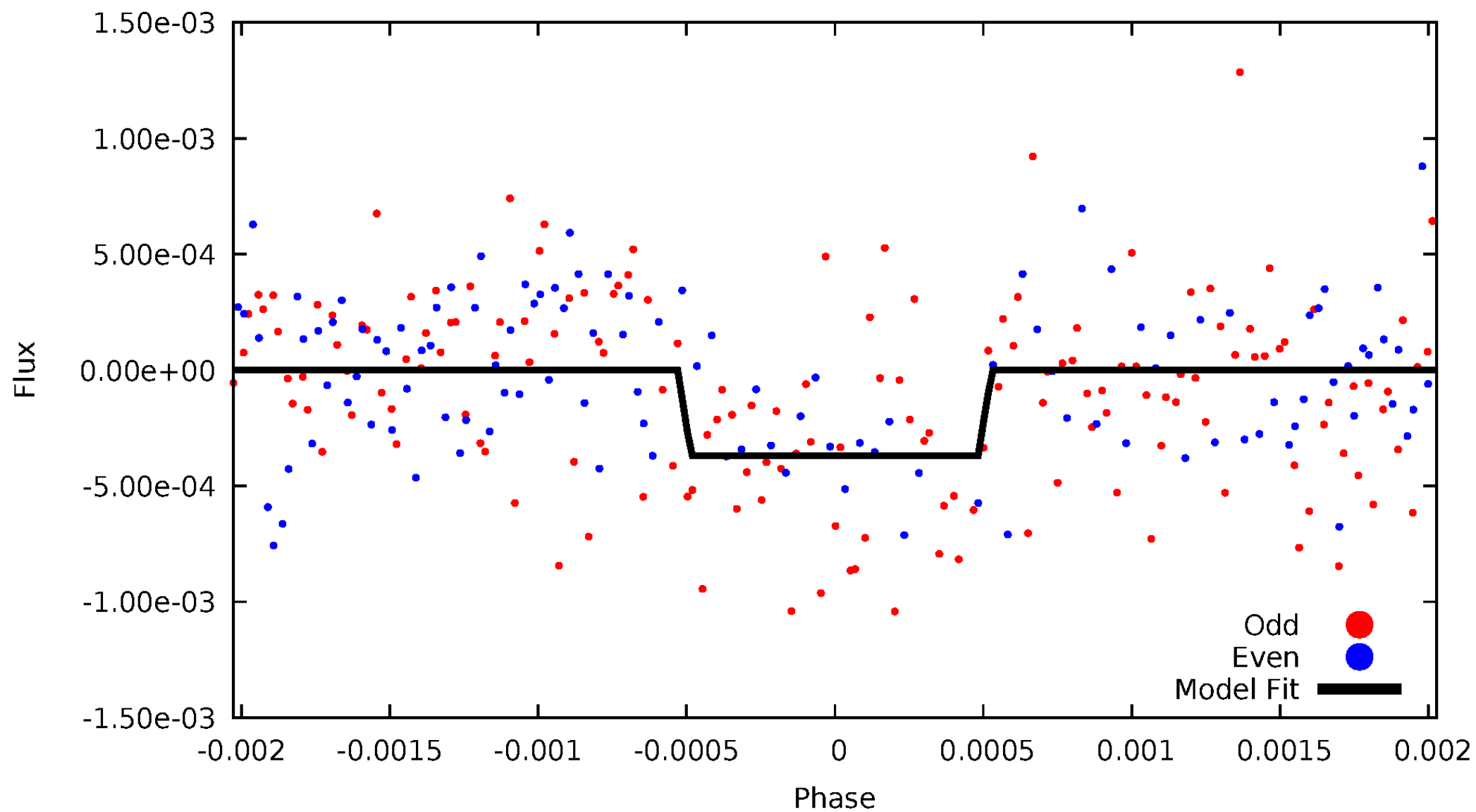
# DV Odd/Even

TCE 004640798-01



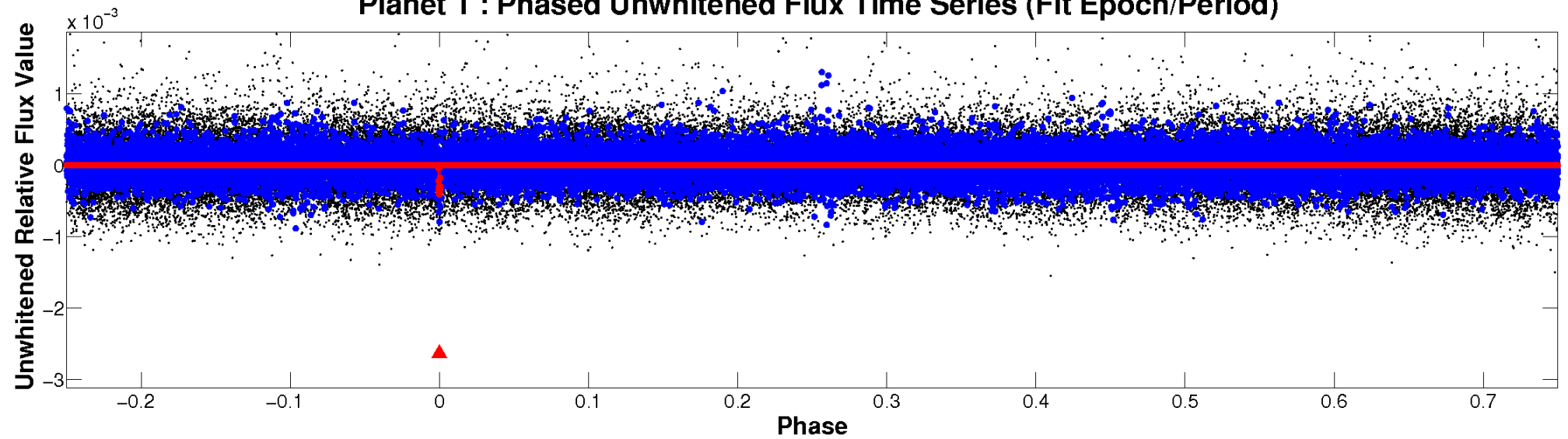
# ALT Odd/Even

TCE 004640798-01

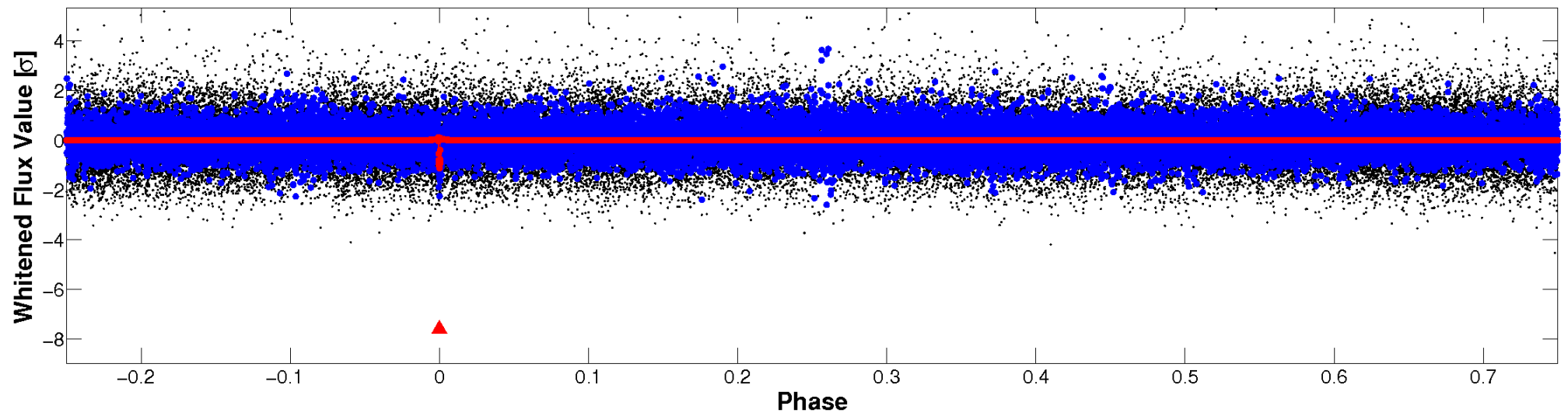


# Non-Whitened Vs. Whitened Light Curve

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



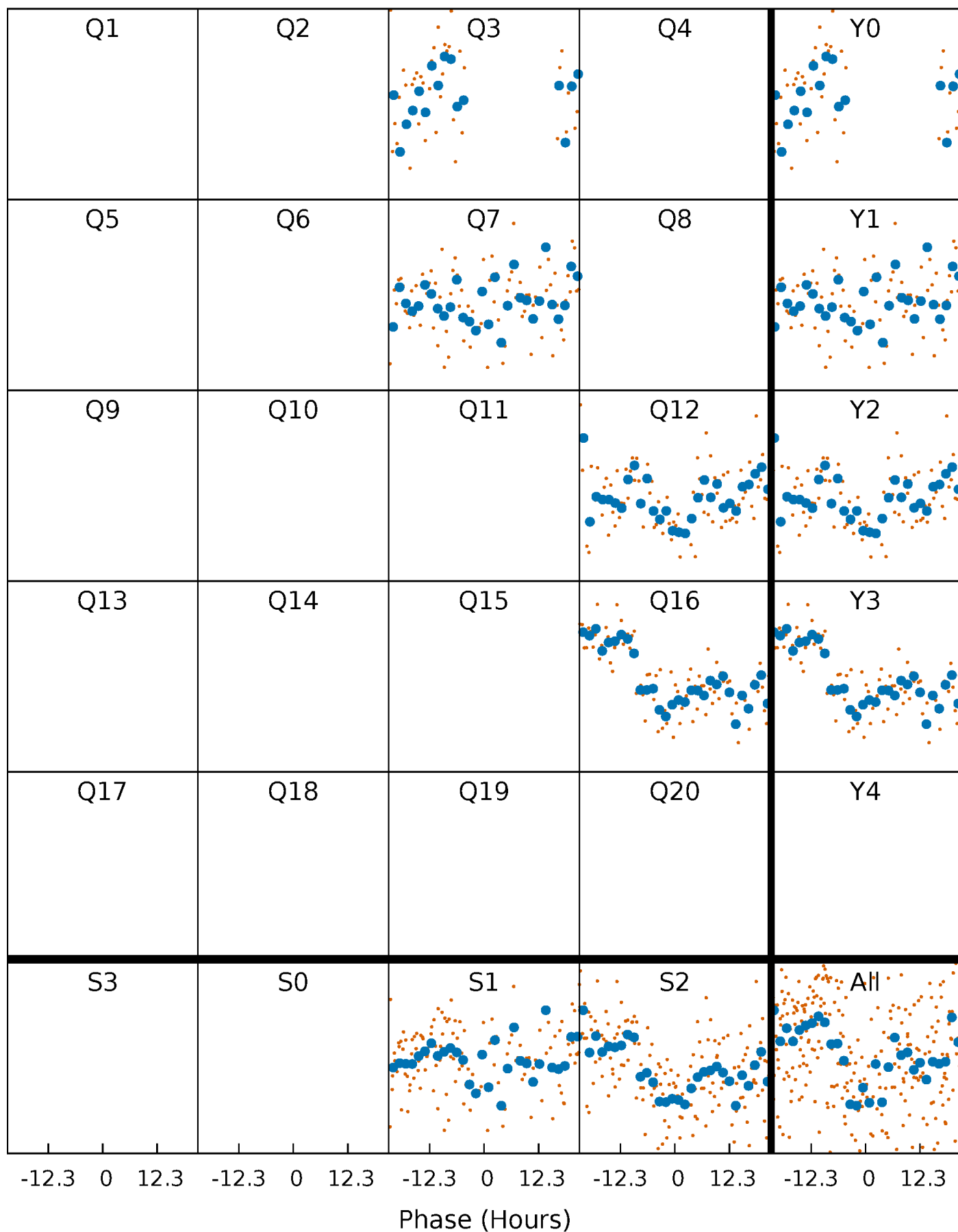
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

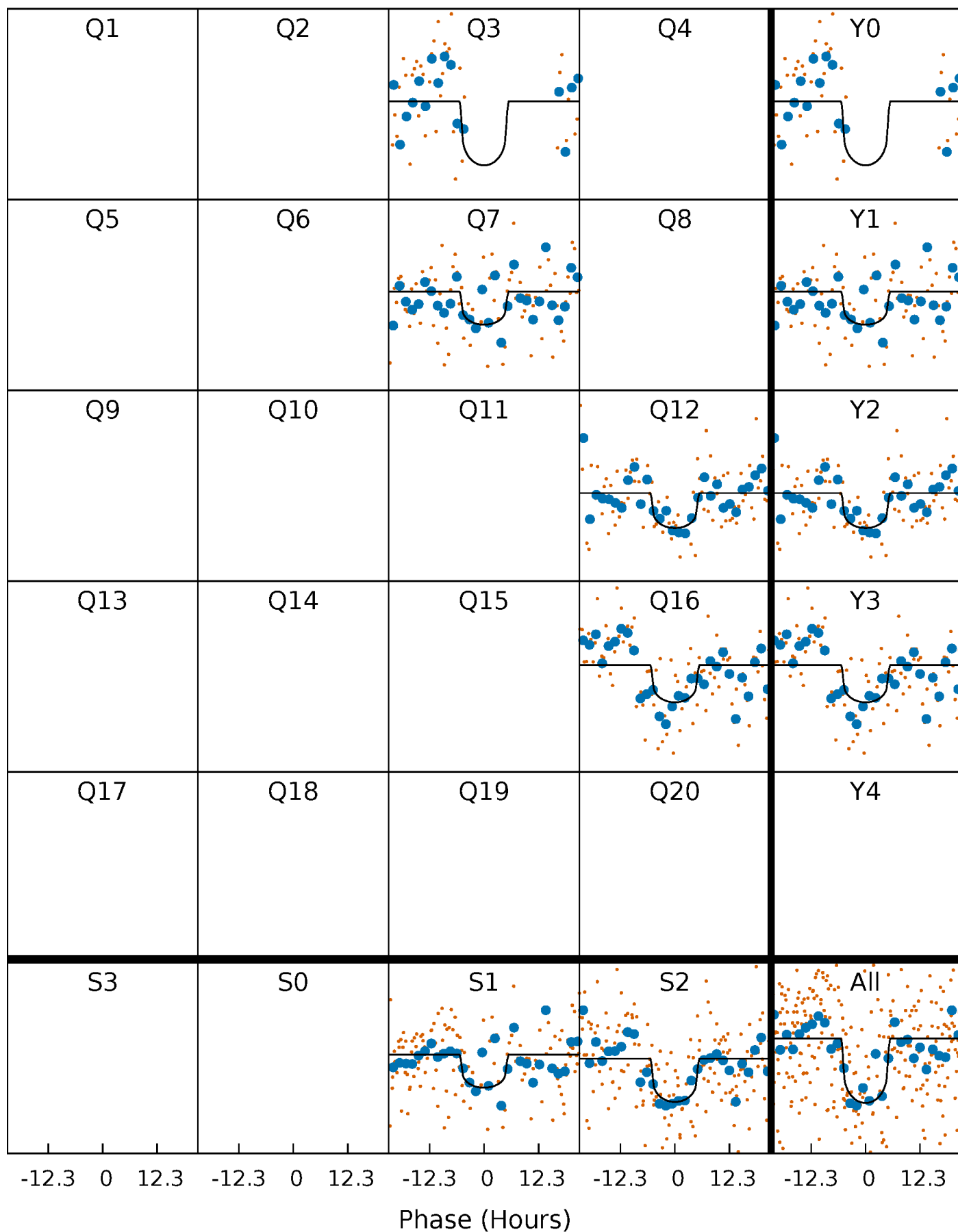
TCE 004640798-01 P=409.737511 Days  $T_0=290.732715$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 004640798-01 P=409.737511 Days  $T_0=290.732715$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

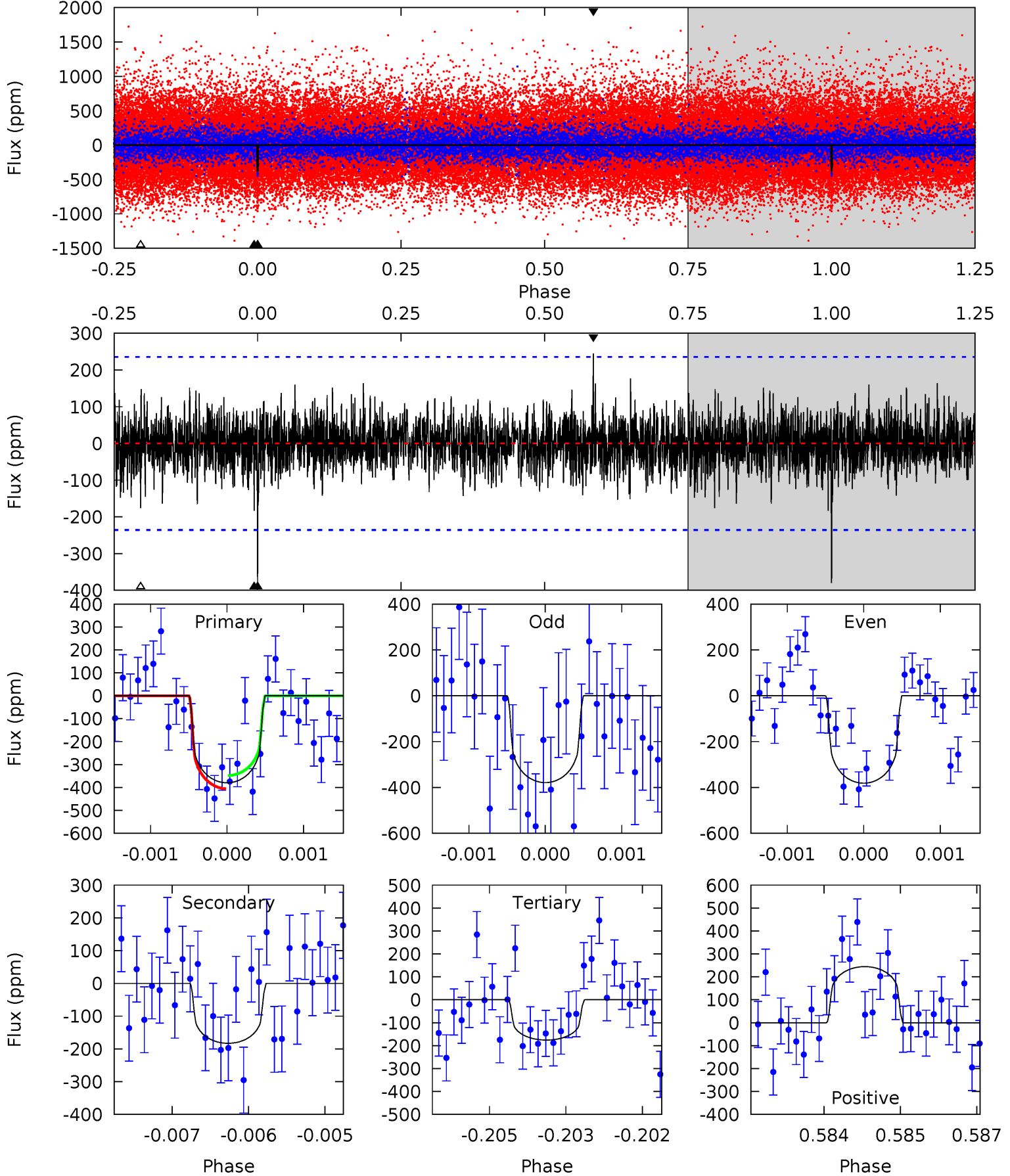
TCE 004640798-01 P=409.686067 Days  $T_0=290.790373$  (BKJD)



# DV Model-Shift Uniqueness Test

004640798-01, P = 409.737511 Days, E = 290.732715 Days

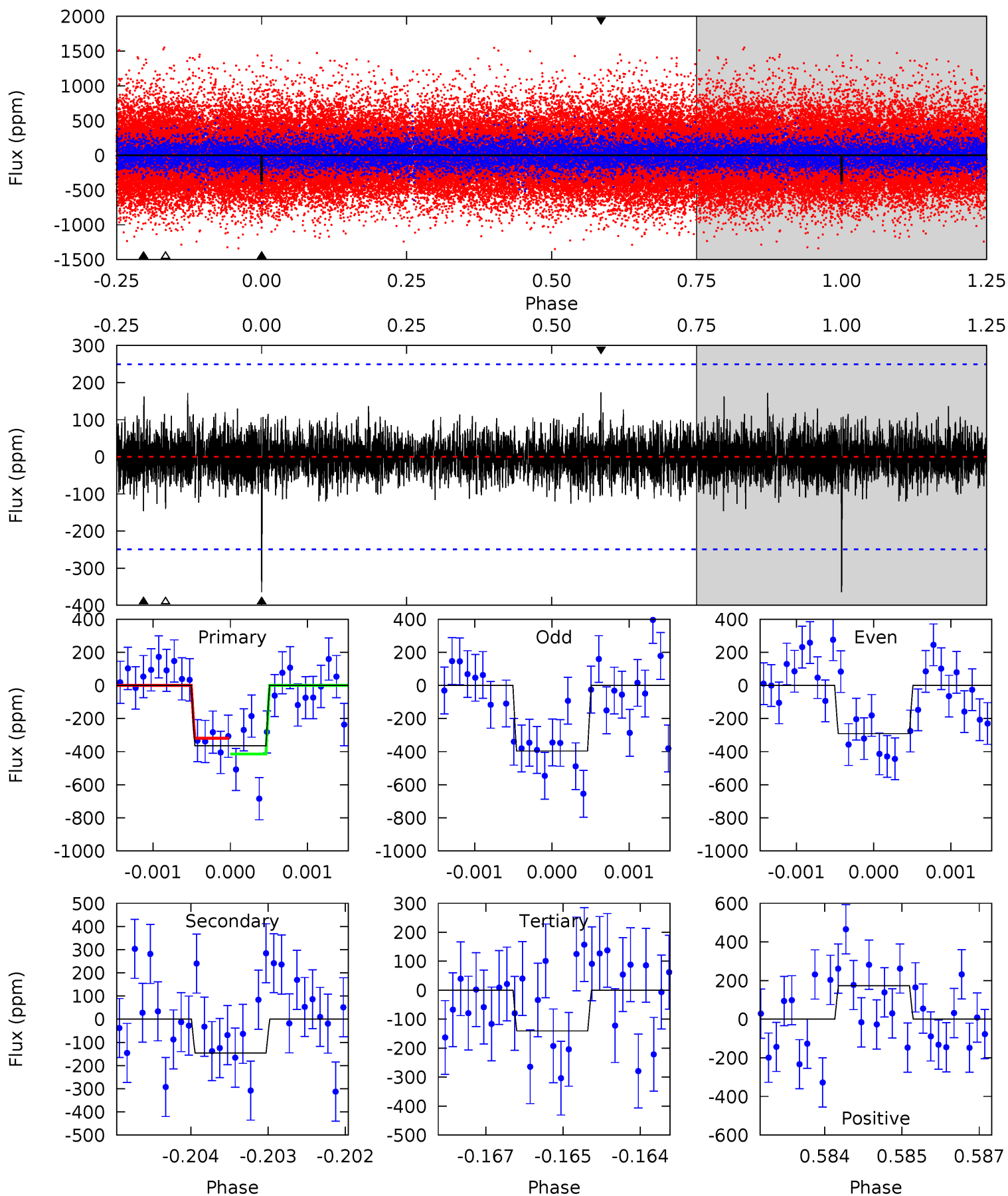
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.75	4.22	4.05	5.63	5.43	3.25	1.13	4.70	3.12	0.17	-1.42	0.03	0.95	0.39	0.66



# Alt Model-Shift Uniqueness Test

004640798-01, P = 409.686067 Days, E = 290.790373 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
7.96	3.19	3.07	3.79	5.44	3.28	0.86	4.88	4.16	0.11	-0.61	1.05	1.25	0.32	1.04



### Stellar Parameters For KIC 004640798

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5418^{+191}_{-159}$	$4.436^{+0.132}_{-0.198}$	$-0.200^{+0.300}_{-0.300}$	$0.889^{+0.214}_{-0.132}$	$0.788^{+0.122}_{-0.061}$	$1.577^{+0.907}_{-0.736}$
	+4%/-3%	+3%/-4%	+150%/-150%	+24%/-15%	+15%/-8%	+58%/-47%
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 004640798-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-183 \pm 43$	$2.28^{+1.57}_{-1.31}$	$319^{+24}_{-21}$	$4390^{+2035}_{-744}$	$19350^{+91809}_{-12685}$
Alt.	$-146 \pm 46$	$2.20^{+1.49}_{-1.32}$	$319^{+22}_{-19}$	$4192^{+1987}_{-697}$	$15484^{+85573}_{-10268}$

$T_{\text{max}}$  = 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

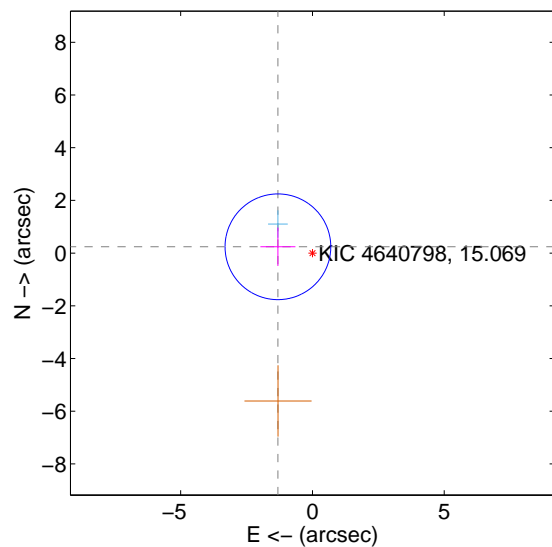
Supplemental centroid analysis for 004640798-01. Kepler magnitude: 15.07. Transit SNR 7.18

There are 1 quarters with good PRF difference image offsets

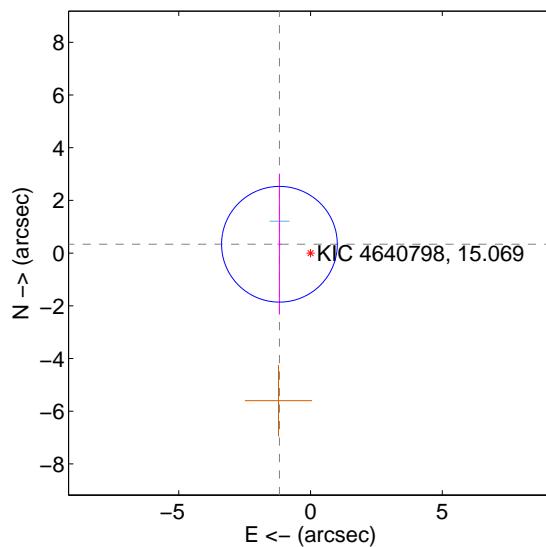
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.332 \pm 0.669$	1.99	$1.310 \pm 0.667$	$0.240 \pm 0.728$
PRF-fit source offset from KIC position	$1.227 \pm 0.732$	1.68	$1.180 \pm 0.068$	$0.335 \pm 2.667$
photometric centroid source offset	$1.47 \pm 2.06$	0.71	$1.05 \pm 2.03$	$-1.02 \pm 2.10$

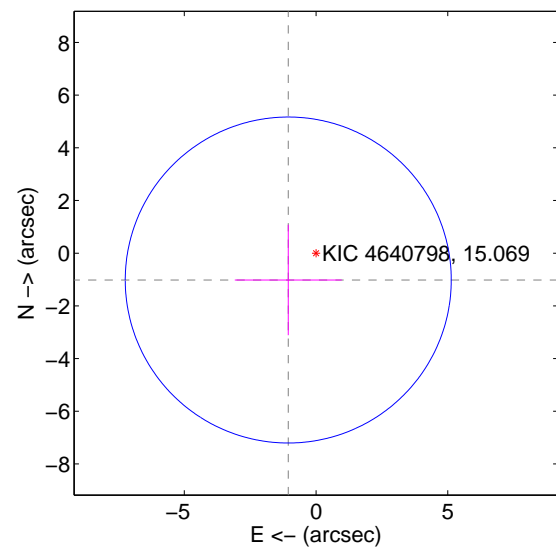
offset from difference PRF-fit to OOT PRF-fit



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.

Q5 no difference image



Q5 no OOT image



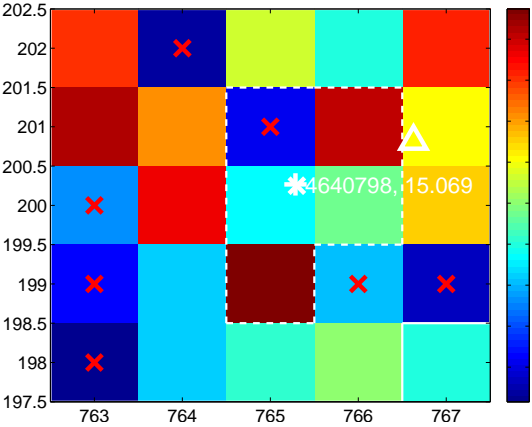
Q6 no difference image



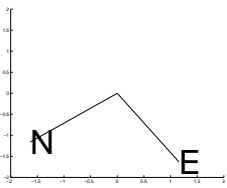
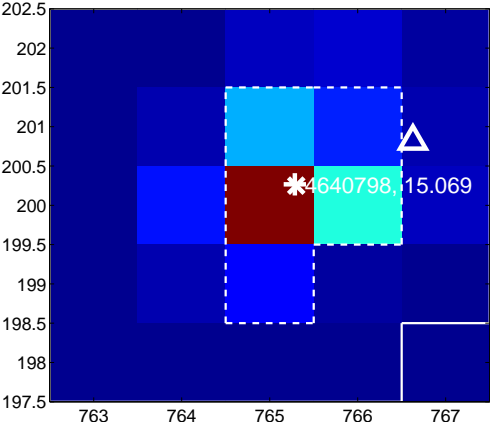
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



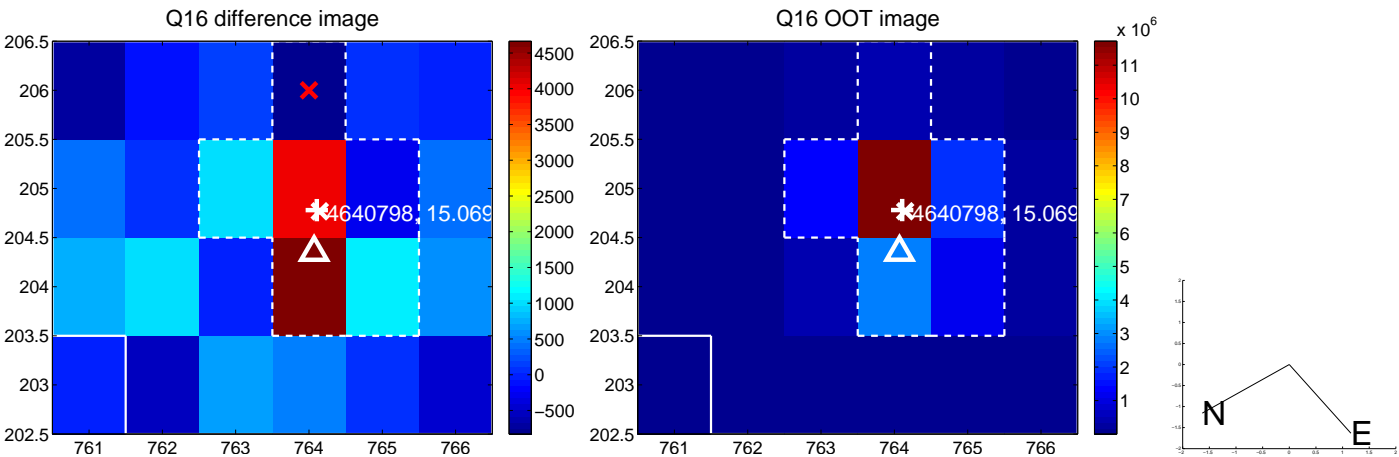
Q8 no OOT image



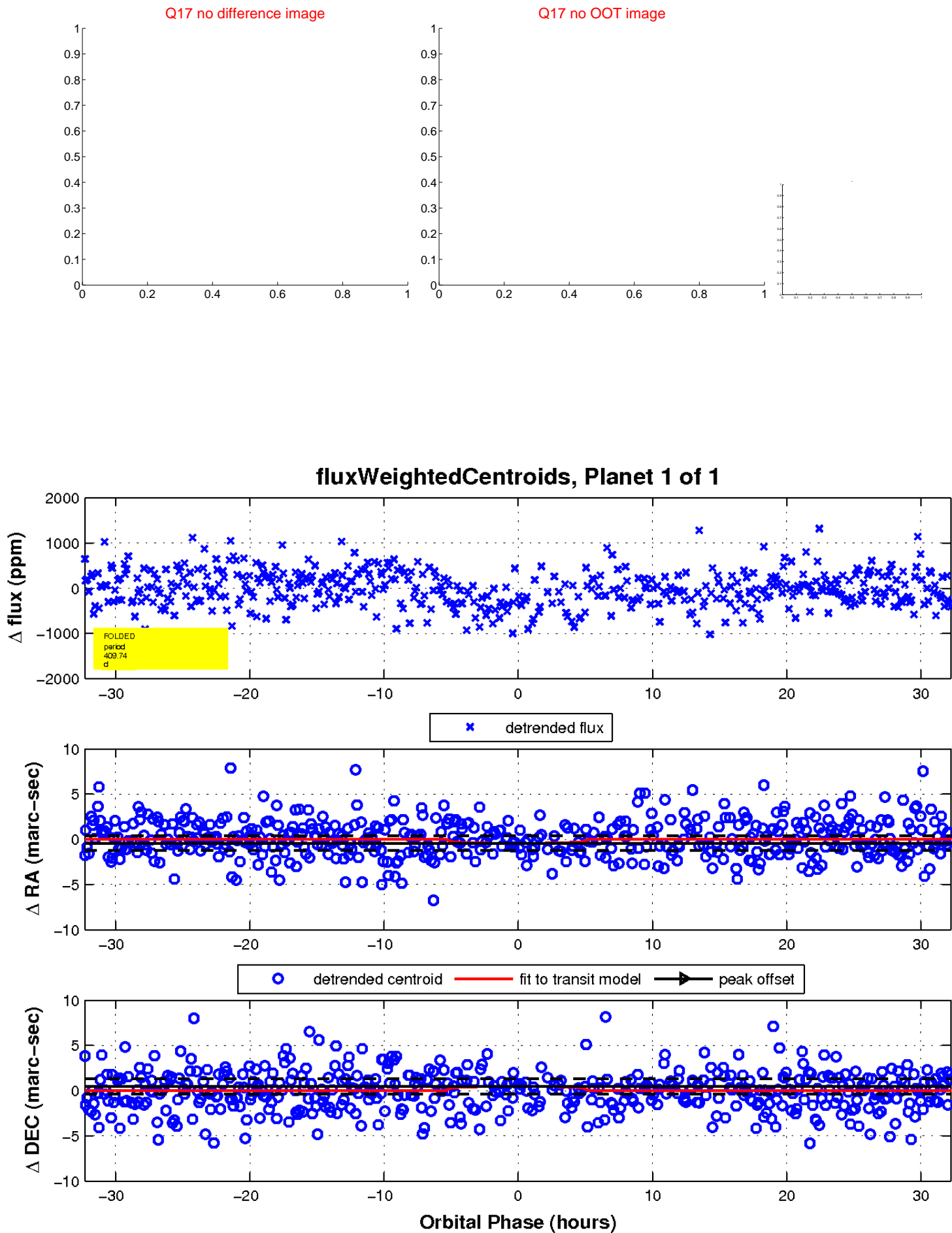
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



# UKIRT Image

Declination

