

# KIC 008231401

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008231401-01	OBS	No	528.848835	462.772798	1064.7	3.869	10.8	7.3	5.56	4970	18.20	7.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008231401-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

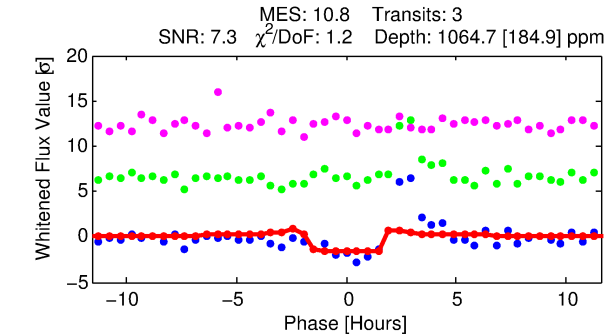
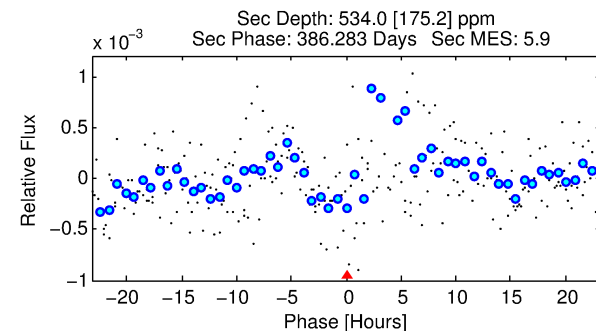
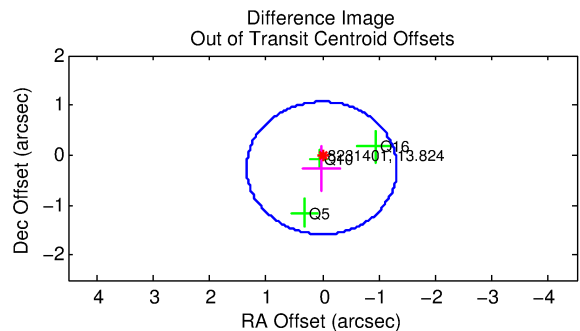
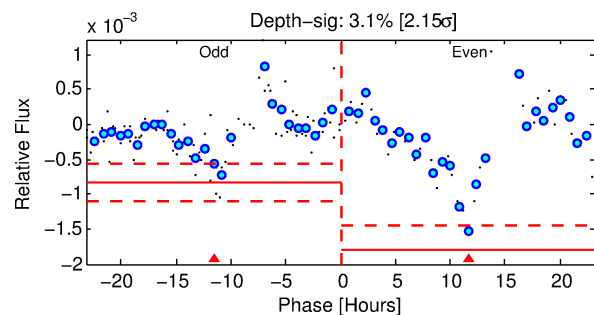
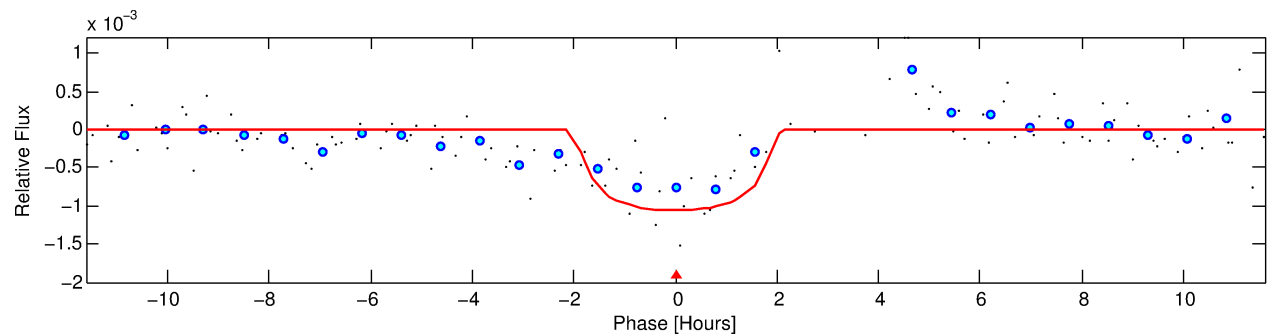
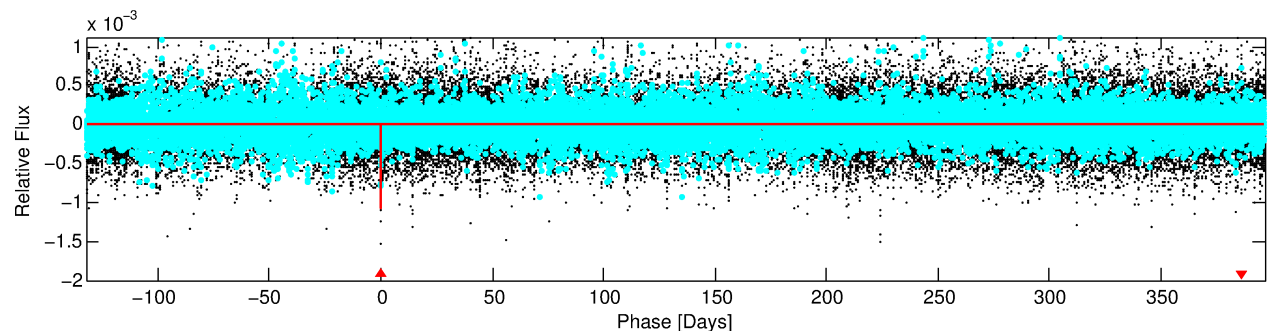
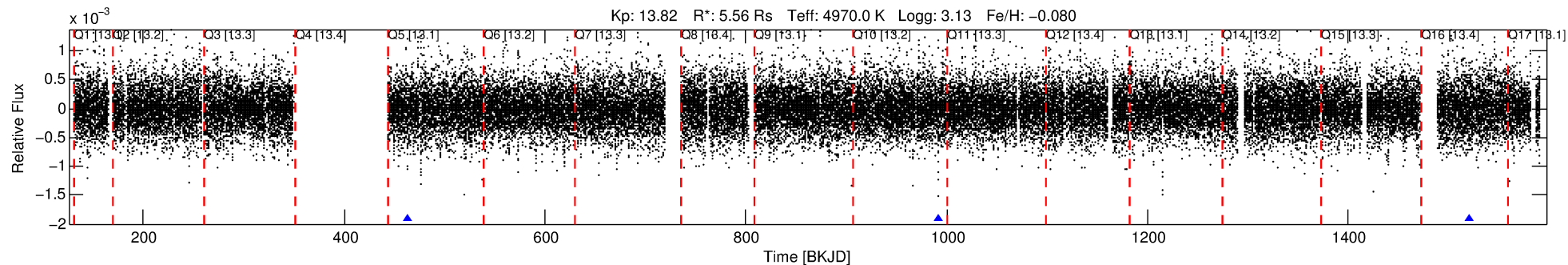
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008231401-01

No Significant Match Found

# DV One-Page Summary

KIC: 8231401 Candidate: 1 of 1 Period: 528.849 d



## DV Fit Results:

Period = 528.84884 [0.00640] d  
Epoch = 462.7728 [0.0090] BKJD  
Rp/R\* = 0.0300 [0.0618]  
a/R\* = 960.01 [6749.98]  
b = 0.46 [12.12]  
Seff = 7.80 [5.40]  
Teq = 426 [74] K  
Rp = 18.20 [38.49] Re  
a = 1.4720 [0.6466] AU  
Ag = 1921.27 [8050.89] [0.24 $\sigma$ ]  
Teffp = 4361 [4509] K [0.87 $\sigma$ ]

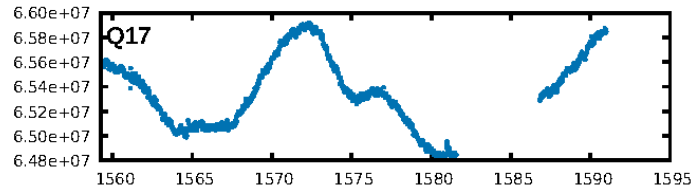
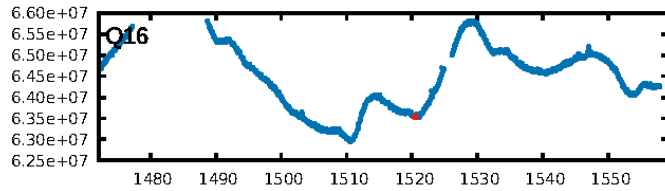
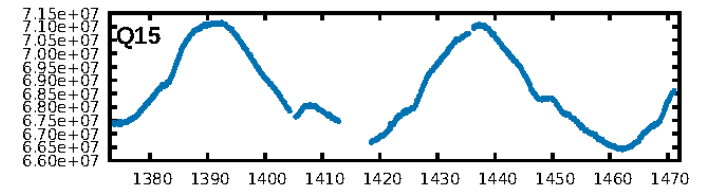
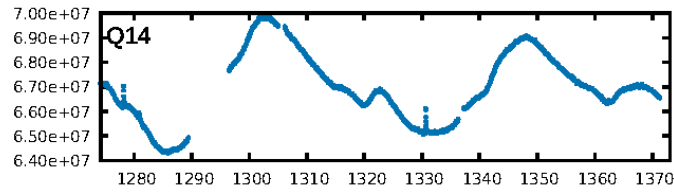
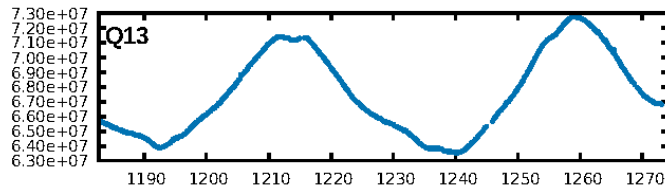
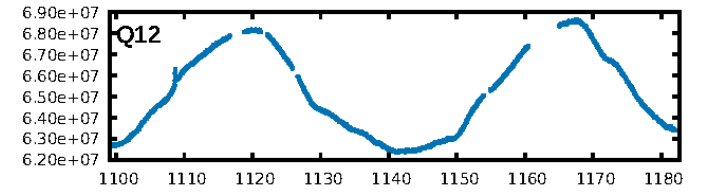
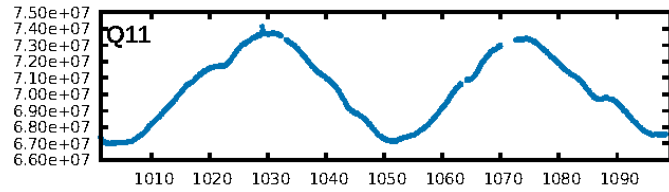
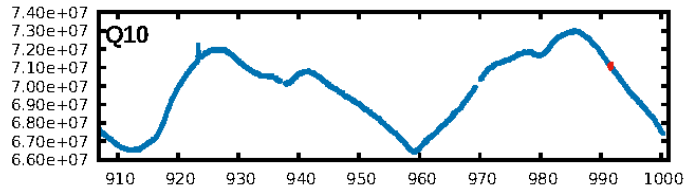
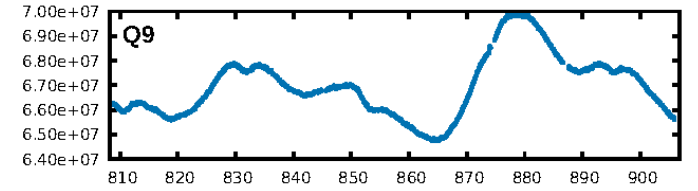
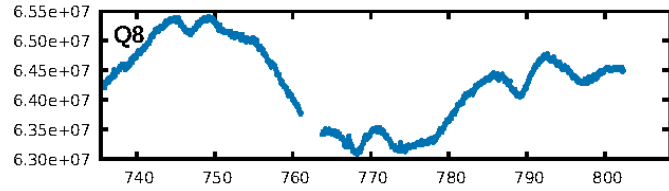
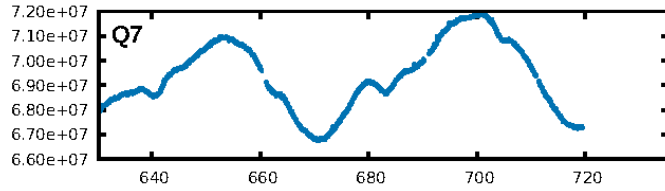
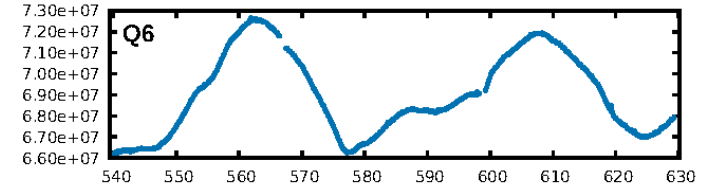
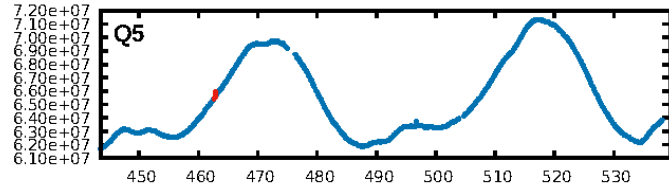
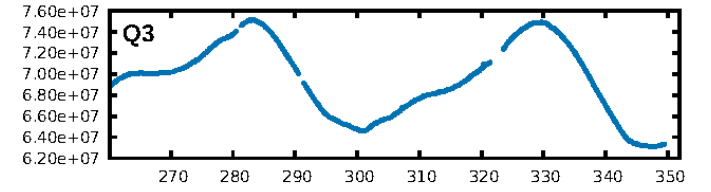
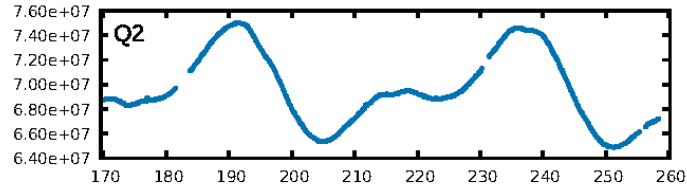
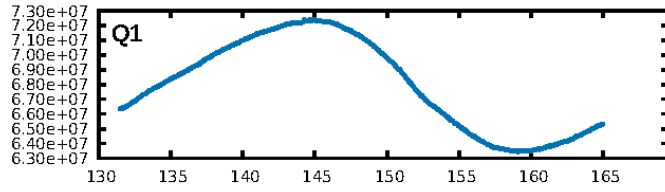
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 4.2%  
ModelChiSquareGof-sig: 77.7%  
**Bootstrap-pfa: 1.91e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.743  
Centroid-sig: 9.3%  
Centroid-so: 0.964 arcsec [1.28 $\sigma$ ]  
OotOffset-rm: 0.258 arcsec [0.58 $\sigma$ ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.327 arcsec [0.71 $\sigma$ ]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

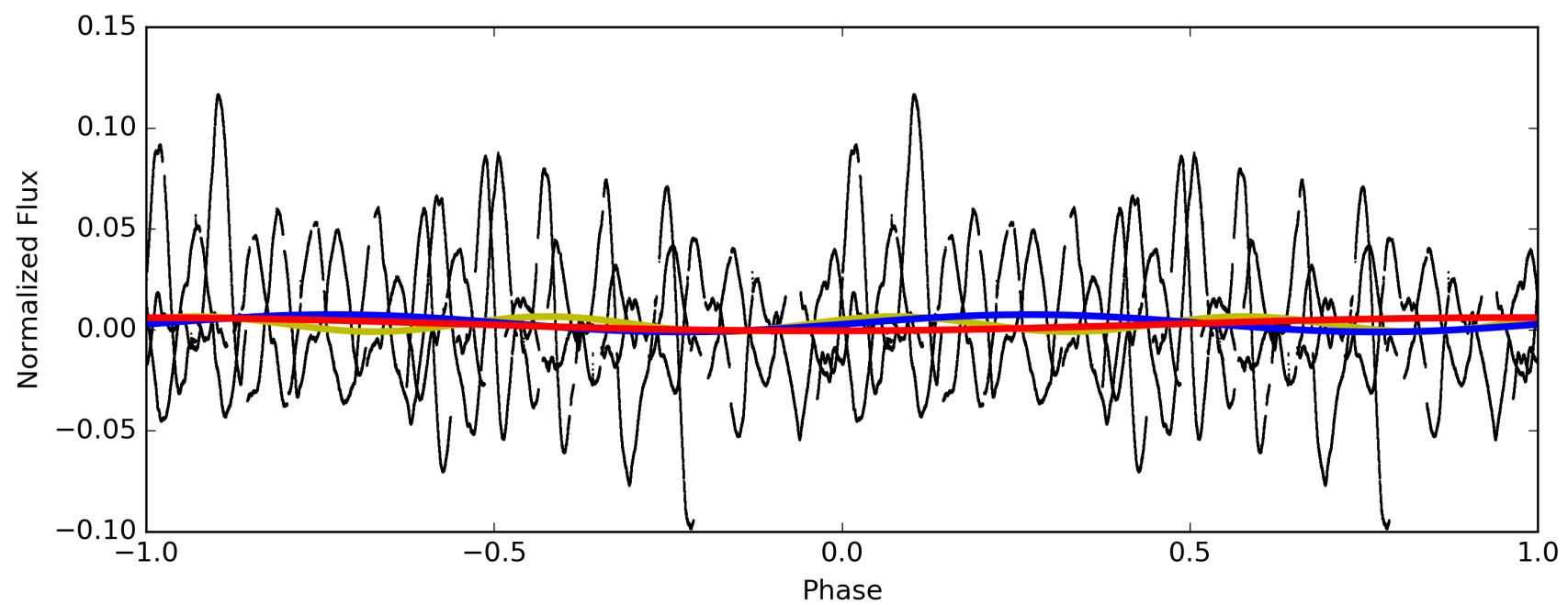
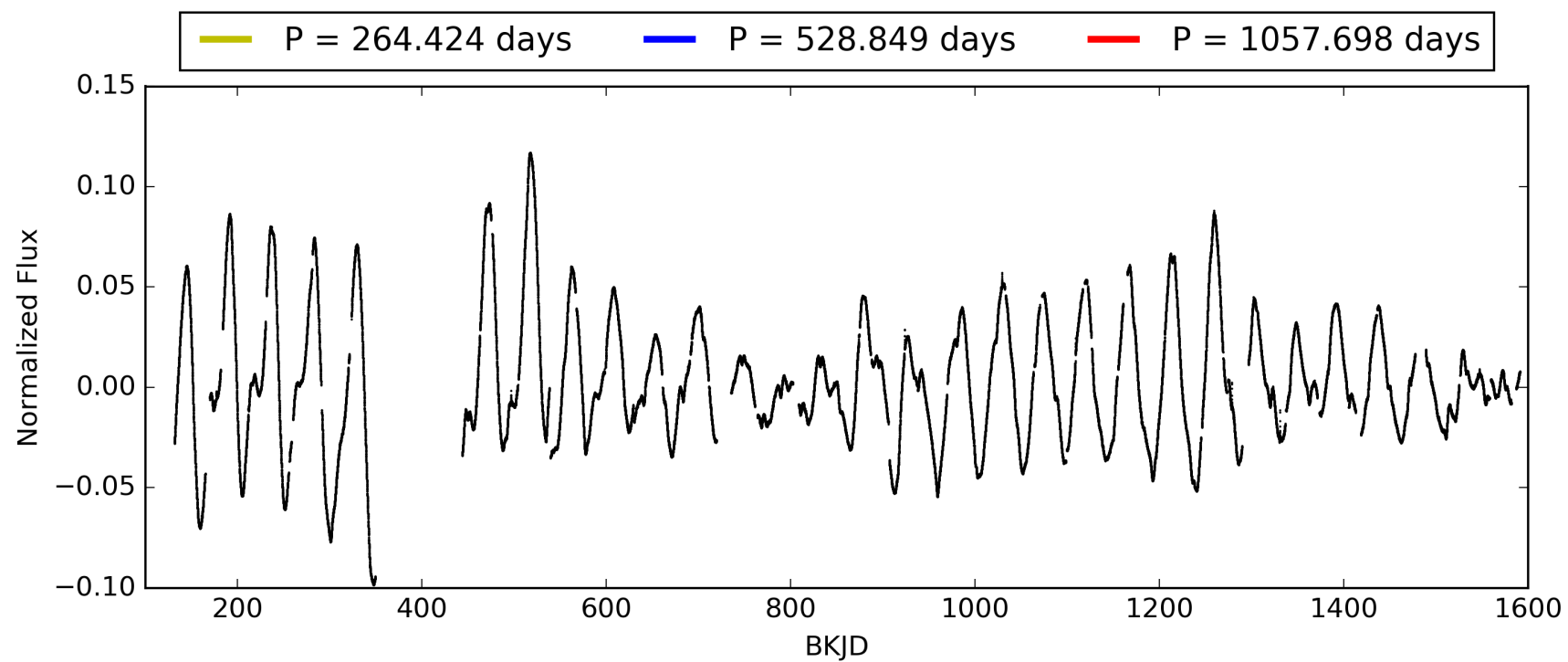
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:16:52 Z

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

# TCE 008231401-01, PDC Light Curves

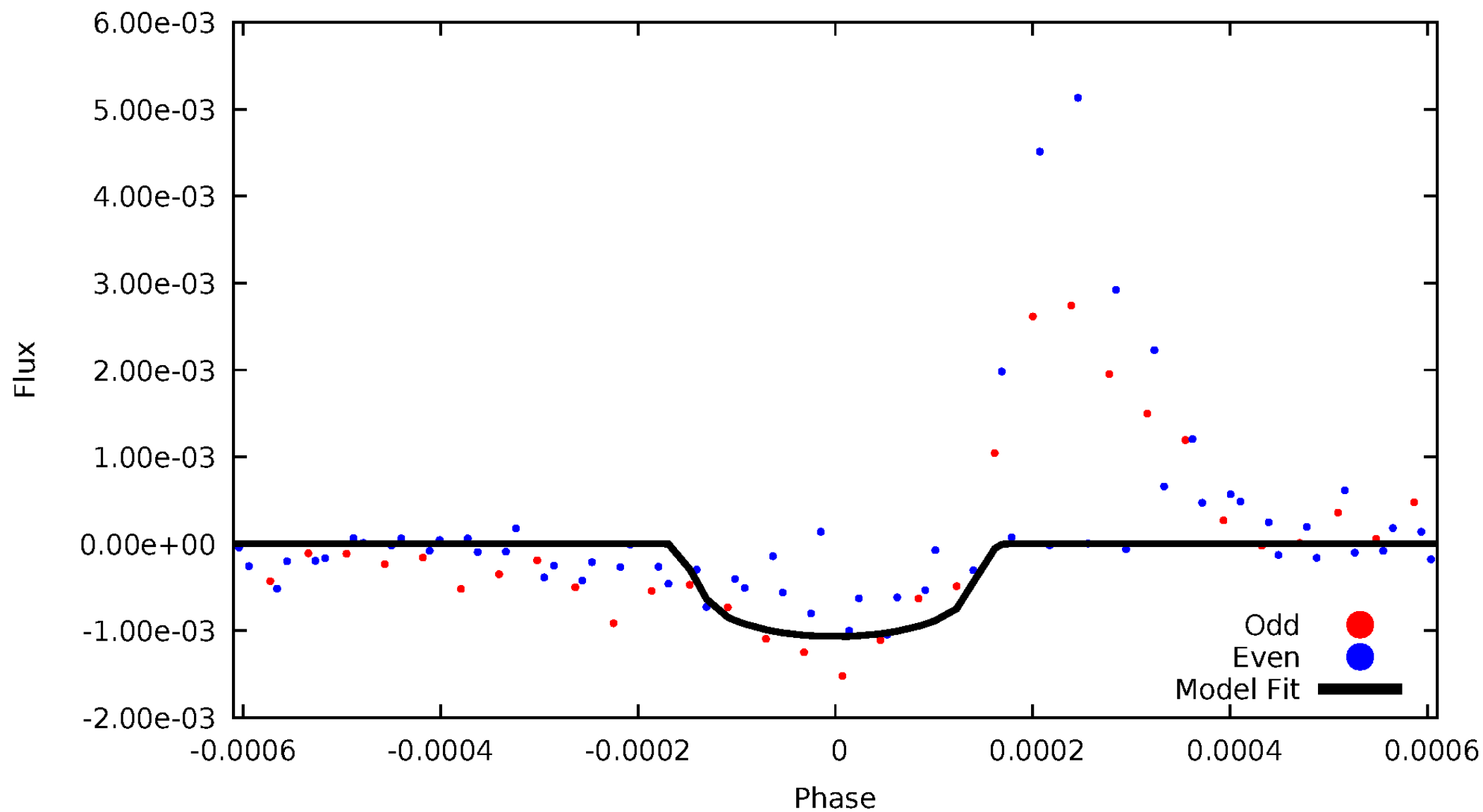


TCE 008231401-01



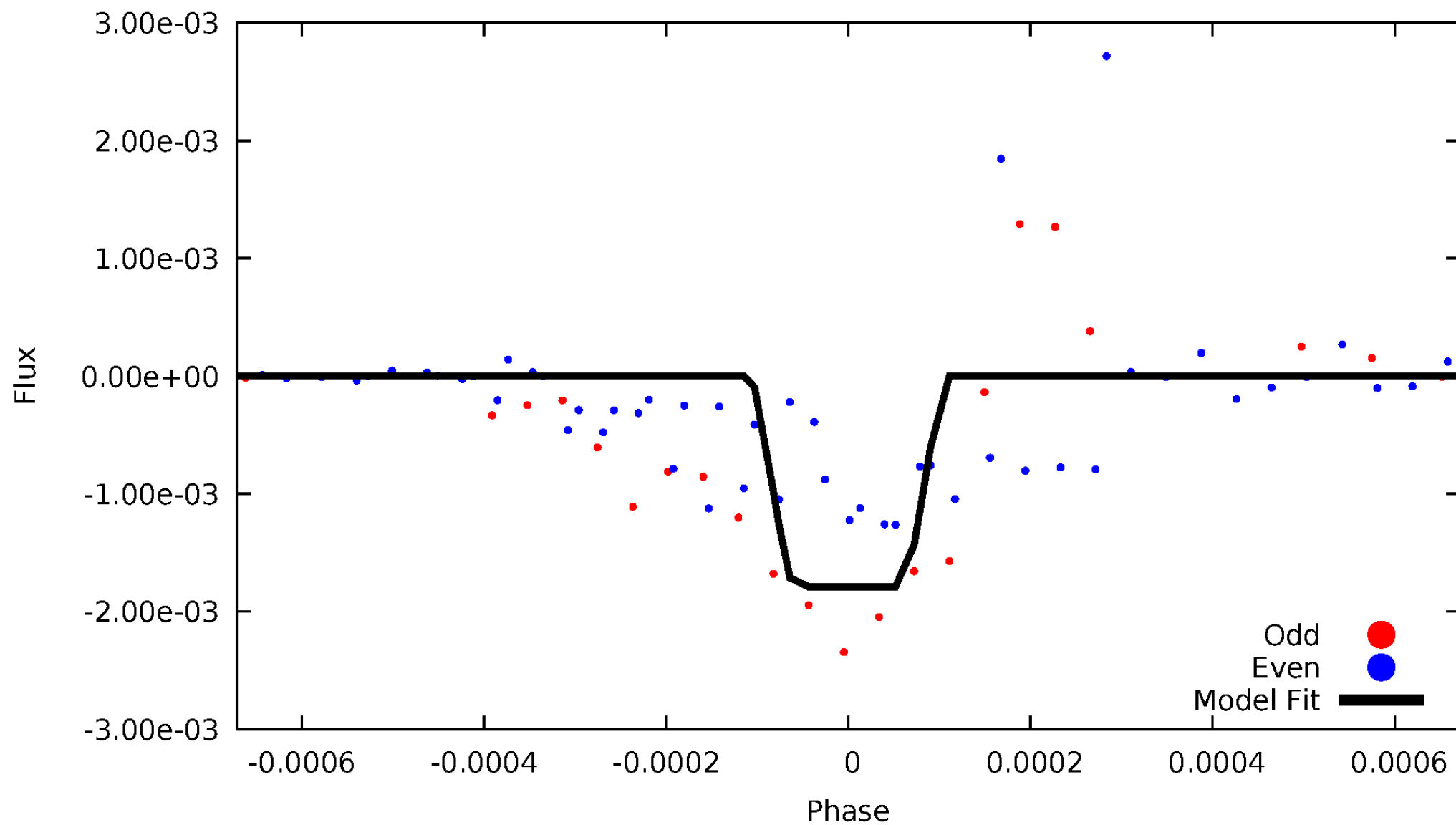
# DV Odd/Even

TCE 008231401-01

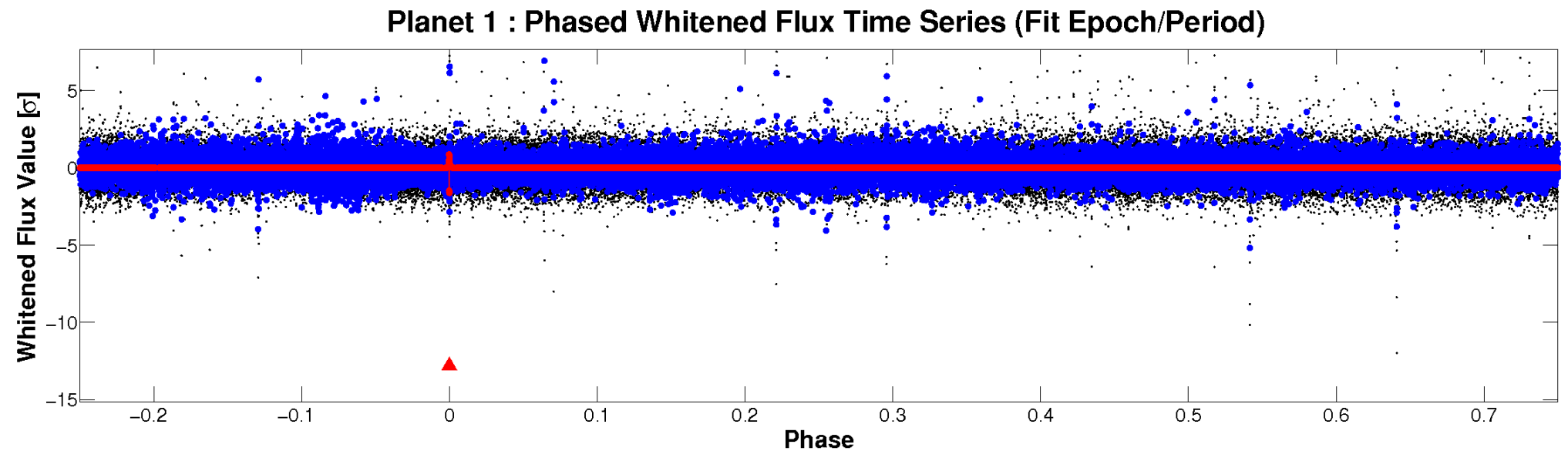
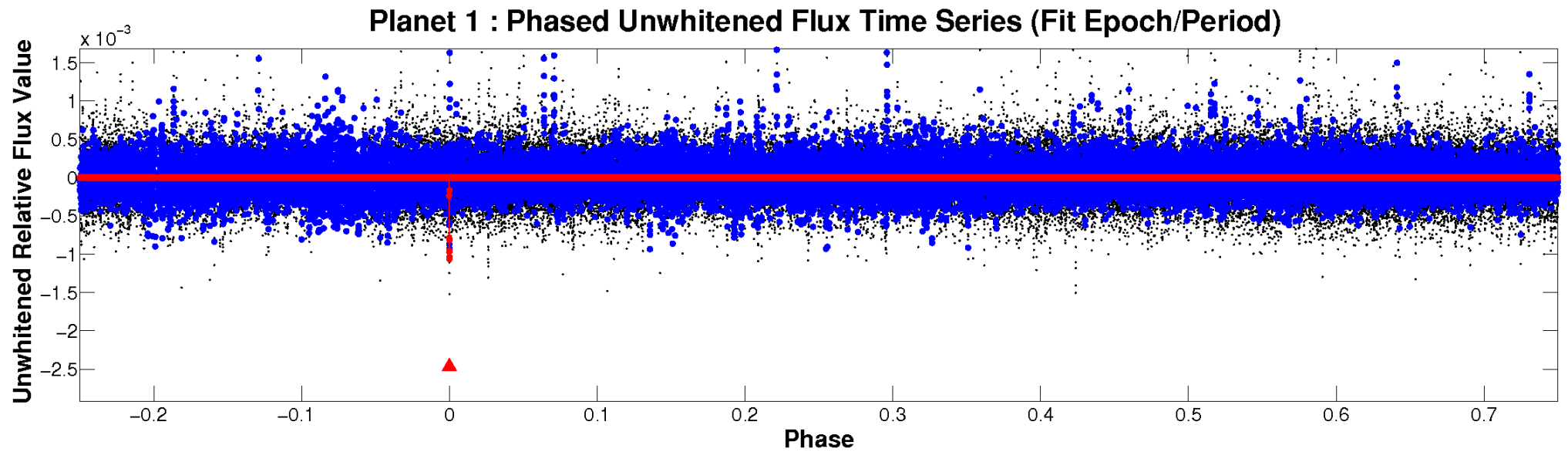


# ALT Odd/Even

TCE 008231401-01

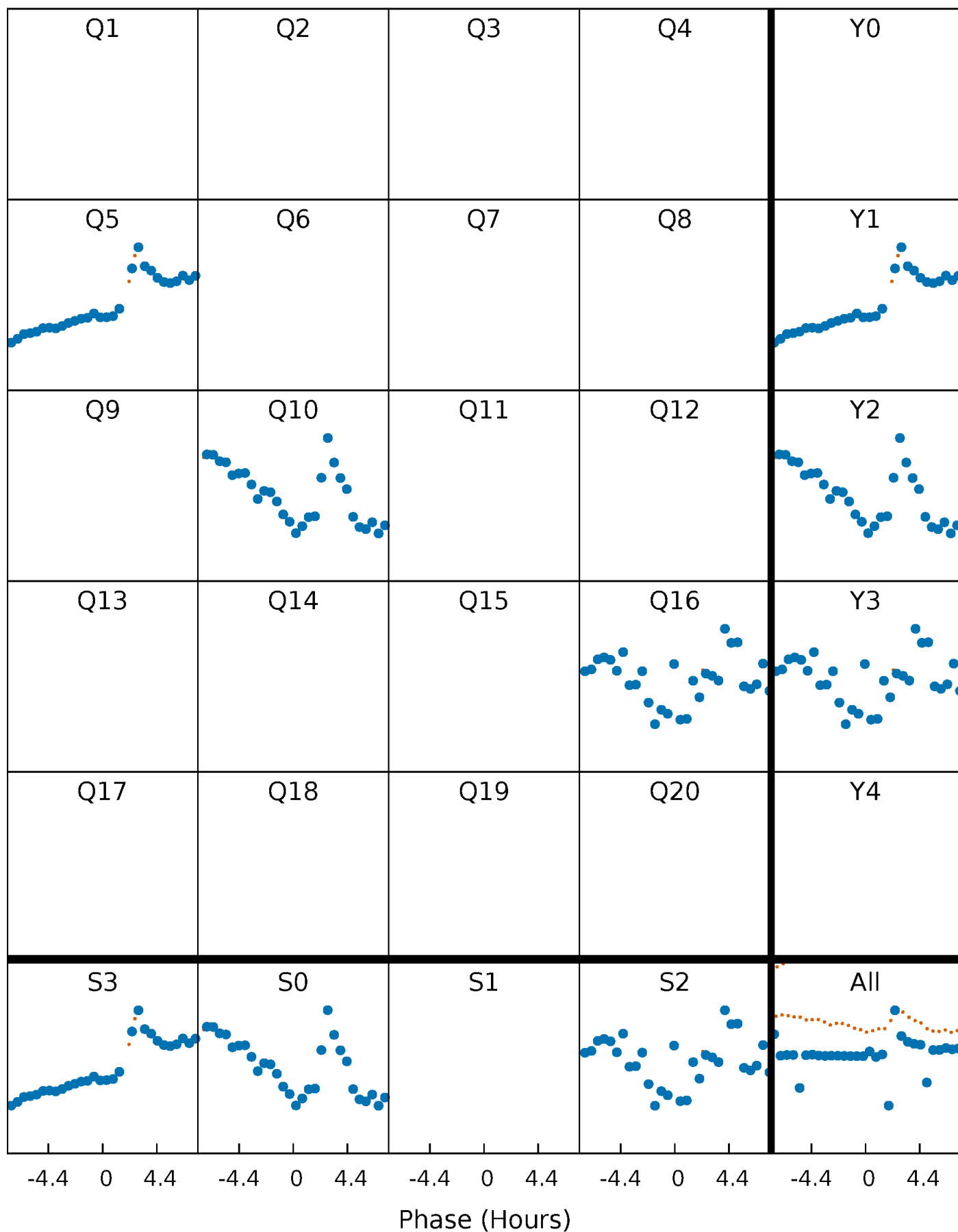


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

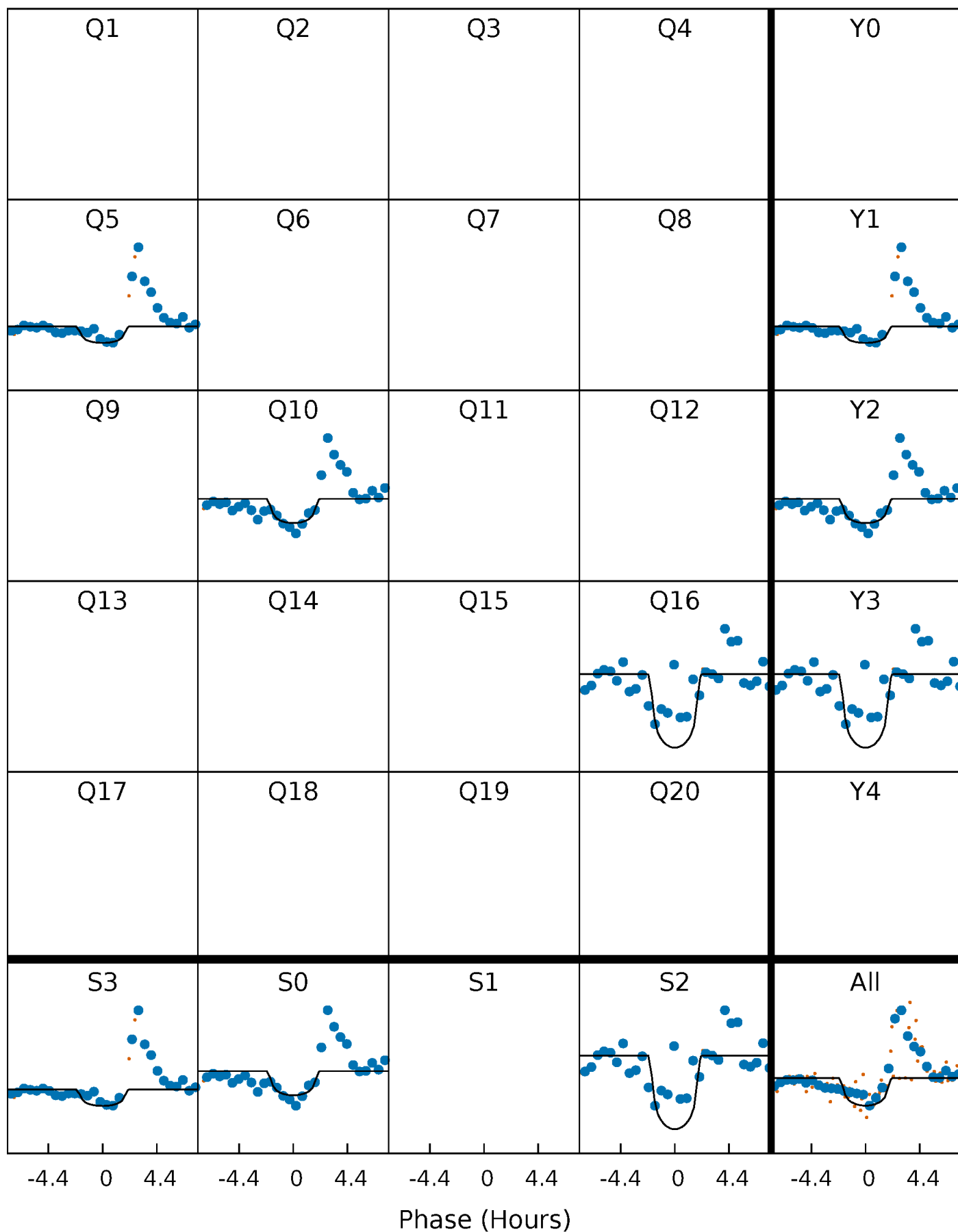
TCE 008231401-01 P=528.848835 Days  $T_0=462.772798$  (BKJD)





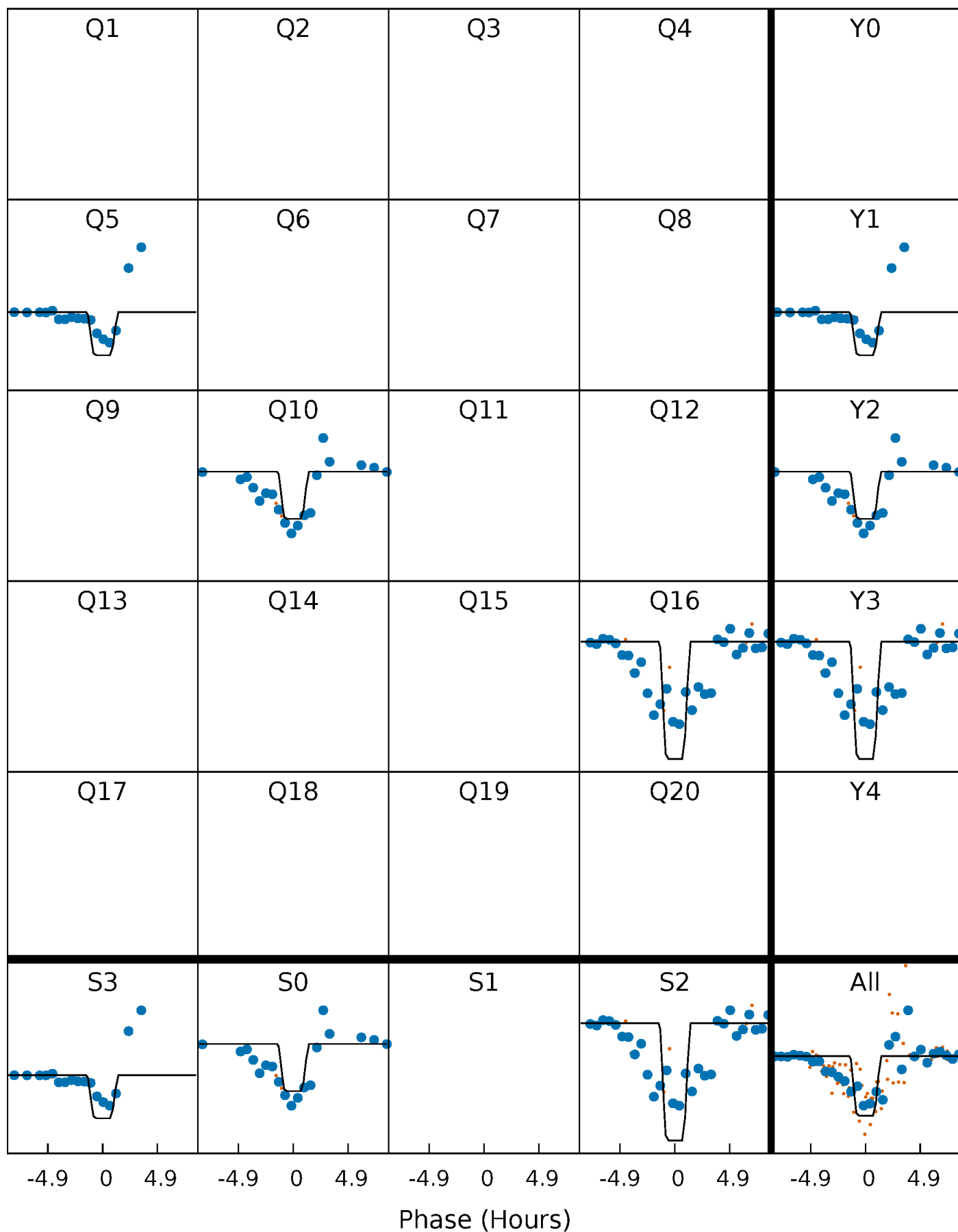
# DV Quarter-Phased Transit Curves

TCE 008231401-01 P=528.848835 Days  $T_0=462.772798$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

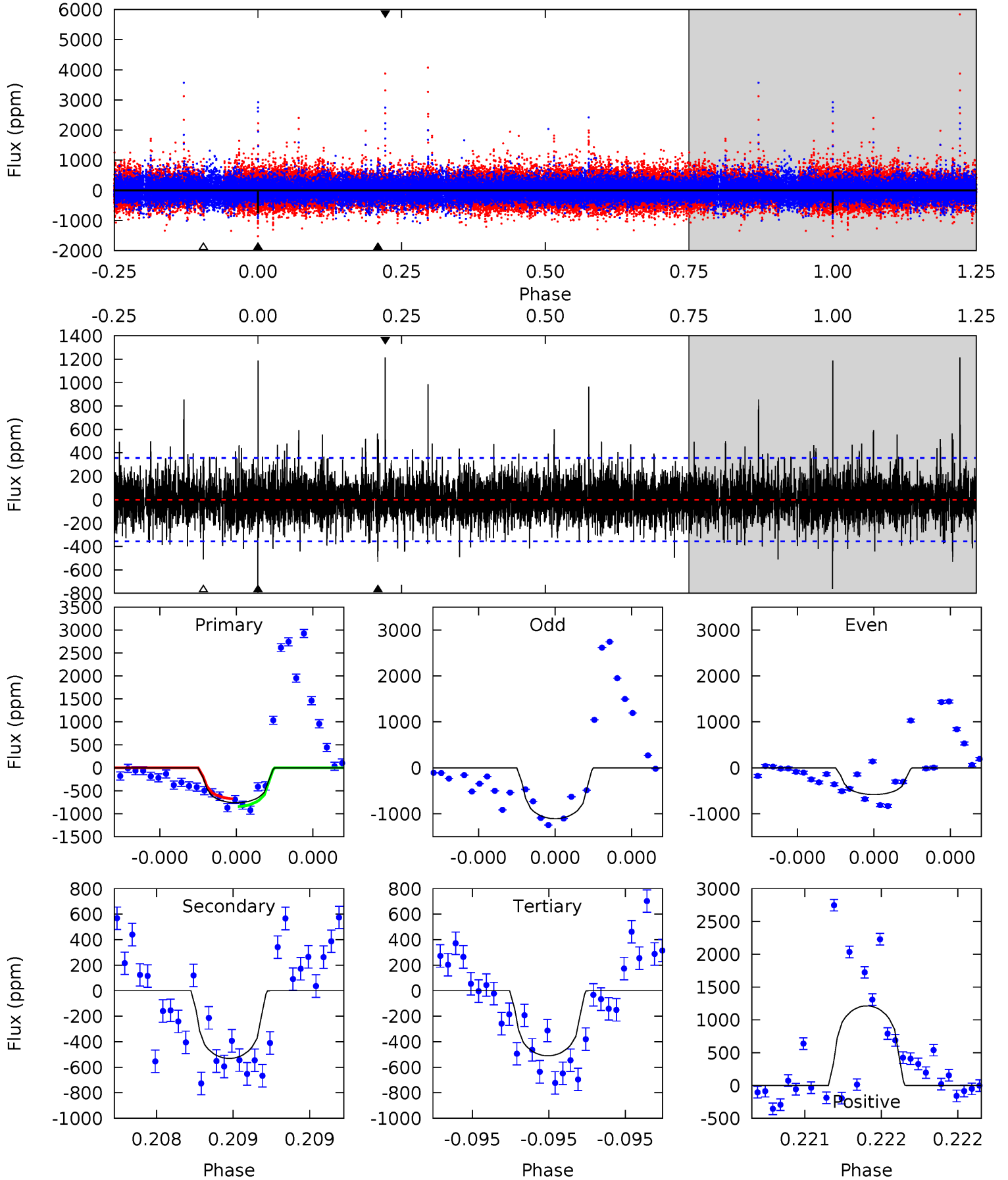
TCE 008231401-01 P=528.854589 Days  $T_0=462.773362$  (BKJD)



# DV Model-Shift Uniqueness Test

008231401-01, P = 528.848835 Days, E = 462.772798 Days

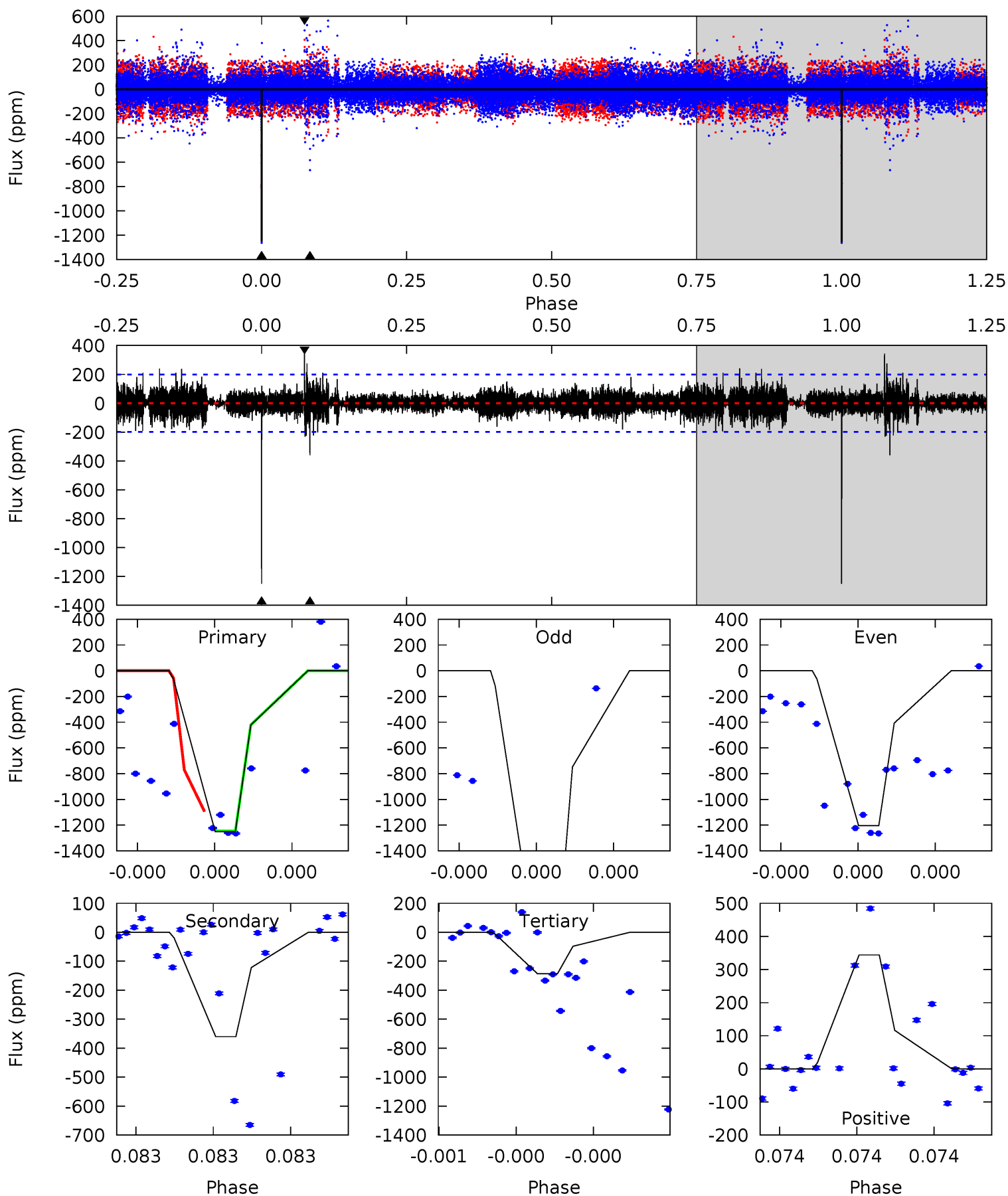
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	8.39	8.06	19.2	5.64	3.58	2.08	3.99	-7.12	0.33	-10.8	3.69	1.07	0.61	1.34



# Alt Model-Shift Uniqueness Test

008231401-01, P = 528.854589 Days, E = 462.773362 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
36.1	10.4	8.25	9.93	5.74	3.73	1.05	27.8	26.2	2.15	0.47	18.3	1.32	0.22	0



### Stellar Parameters For KIC 008231401

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4970^{+111}_{-123}$	$3.130^{+0.396}_{-0.231}$	$-0.080^{+0.250}_{-0.250}$	$5.559^{+1.983}_{-2.644}$	$1.521^{+0.271}_{-0.504}$	$0.012^{+0.049}_{-0.007}$
	+2%/-2%	+13%/-7%	+312%/-312%	+36%/-48%	+18%/-33%	+391%/-59%
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 008231401-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-531 \pm 63$	$31.63^{+32.29}_{-21.99}$	$592^{+62}_{-64}$	$3627^{+2073}_{-679}$	$629^{+5609}_{-489}$
Alt.	$-360 \pm 35$	$34.37^{+31.67}_{-22.13}$	$592^{+61}_{-64}$	$3324^{+1420}_{-554}$	$363^{+2306}_{-266}$

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

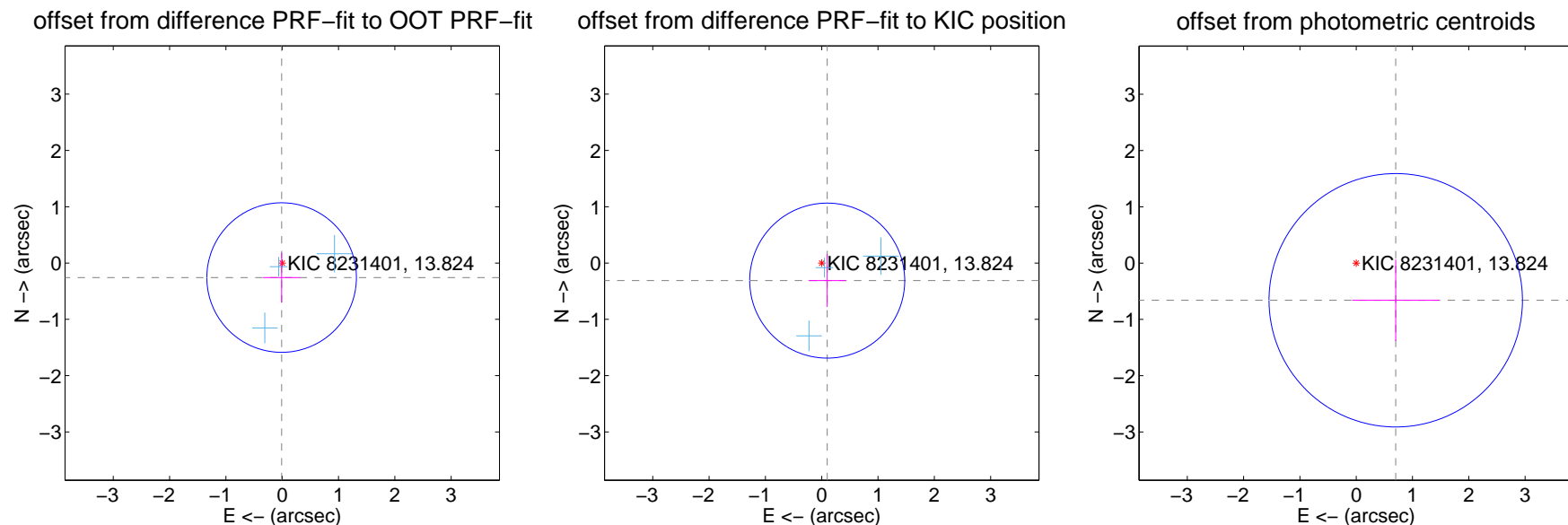
## DV Centroid Data

Supplemental centroid analysis for 008231401-01. Kepler magnitude: 13.82. Transit SNR 7.29

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.258 \pm 0.443$	0.58	$0.011 \pm 0.329$	$-0.258 \pm 0.443$
PRF-fit source offset from KIC position	$0.327 \pm 0.459$	0.71	$-0.098 \pm 0.333$	$-0.312 \pm 0.469$
photometric centroid source offset	$0.96 \pm 0.75$	1.28	$-0.70 \pm 0.77$	$-0.66 \pm 0.72$

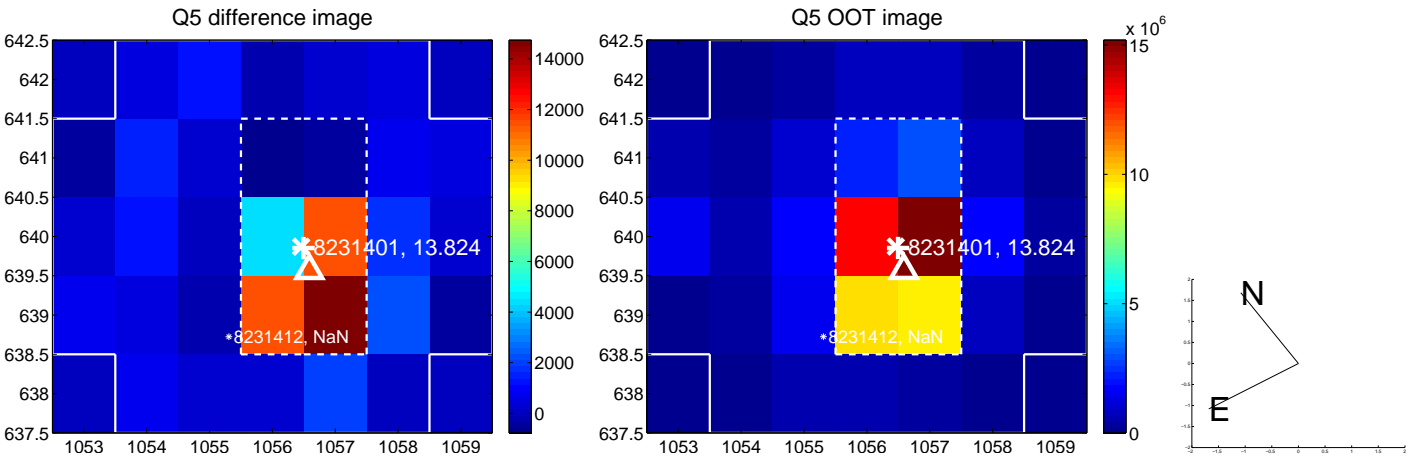


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

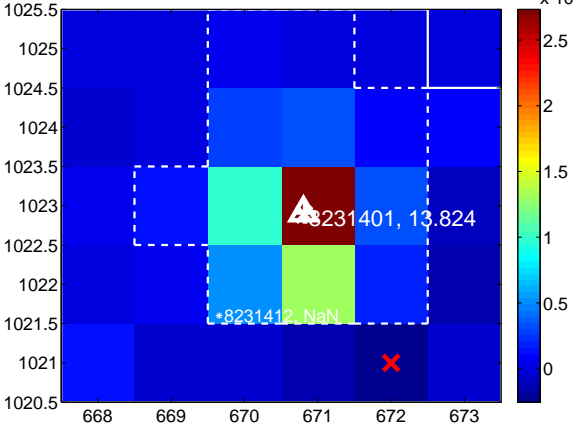
Q9 no difference image



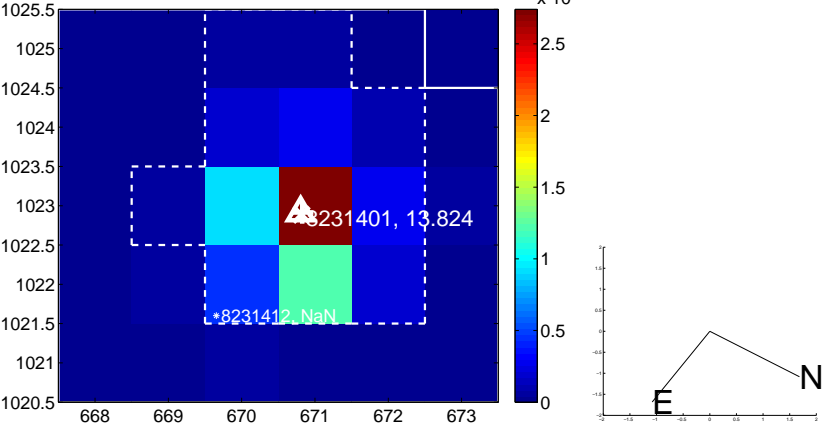
Q9 no OOT image



Q10 difference image



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

Q13 no difference image



Q13 no OOT image



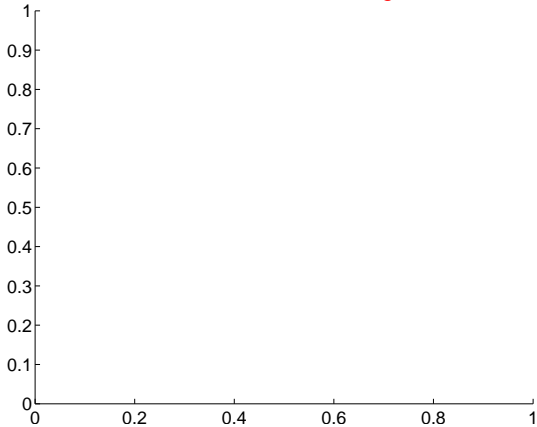
Q14 no difference image



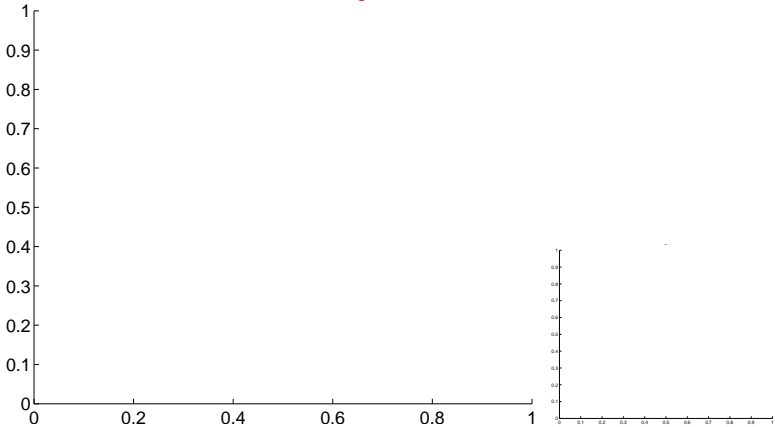
Q14 no OOT image



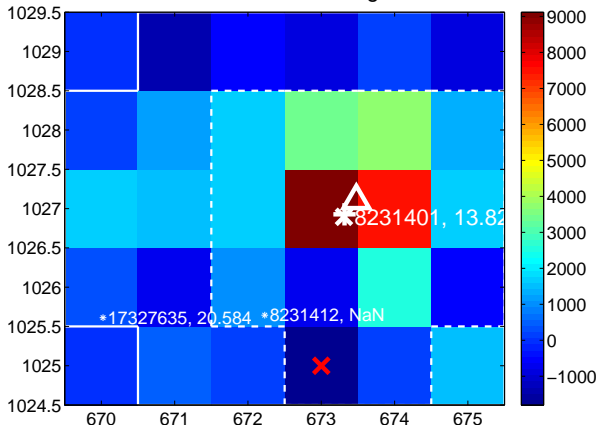
Q15 no difference image



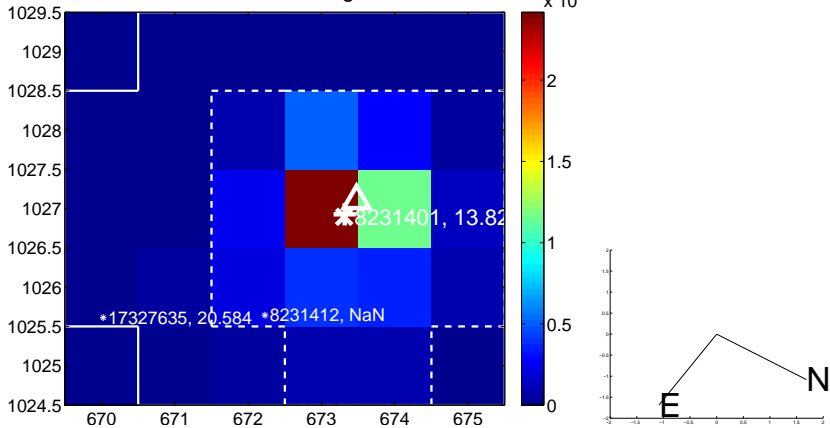
Q15 no OOT image



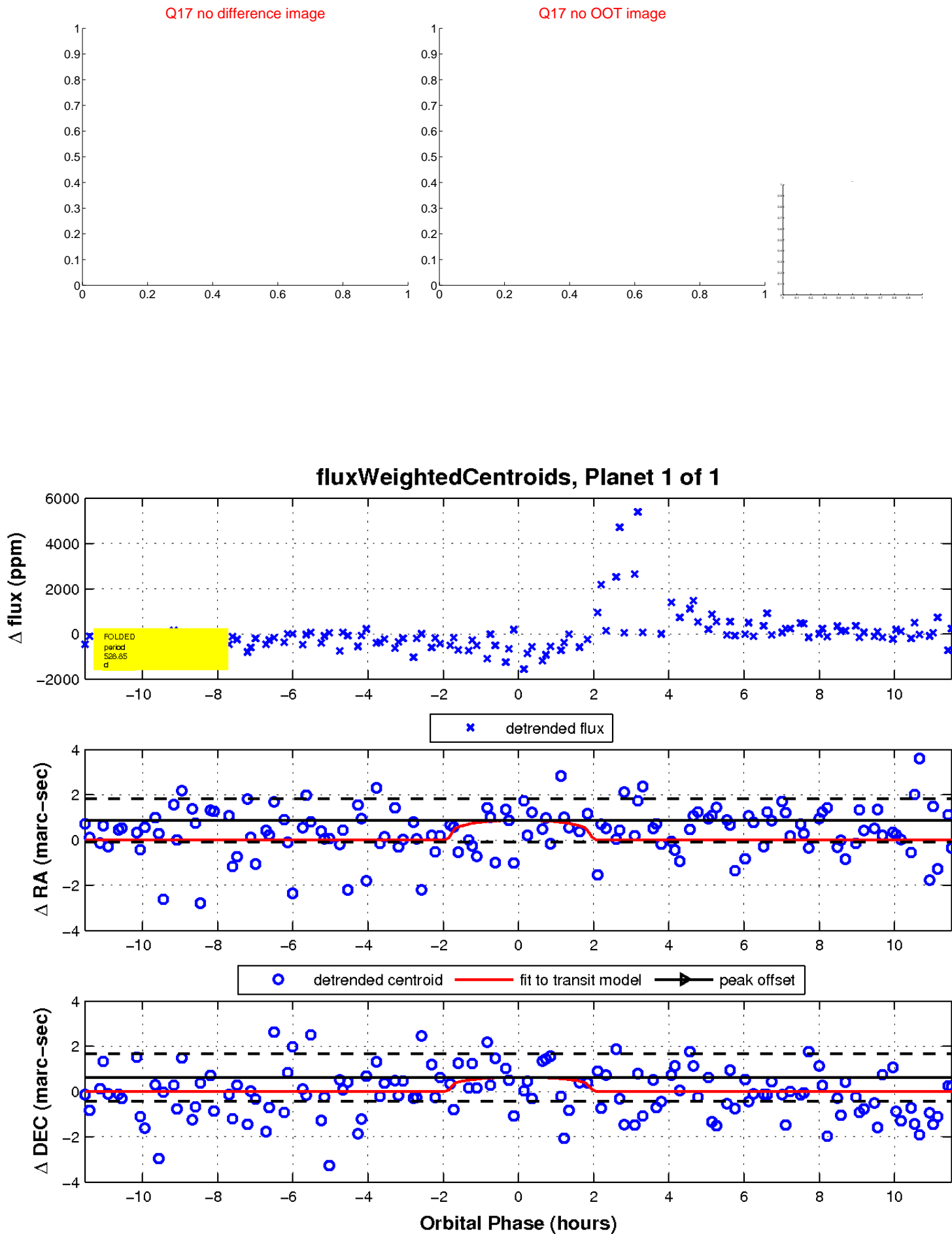
Q16 difference image



Q16 OOT image



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



UKIRT Image

Declination

