

# KIC 010320656

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010320656-01	OBS	No	416.528286	224.623699	280.0	14.373	12.7	6.4	0.47	3755	0.83	0.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010320656-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—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.

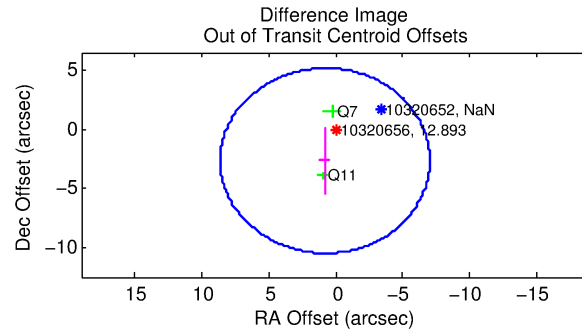
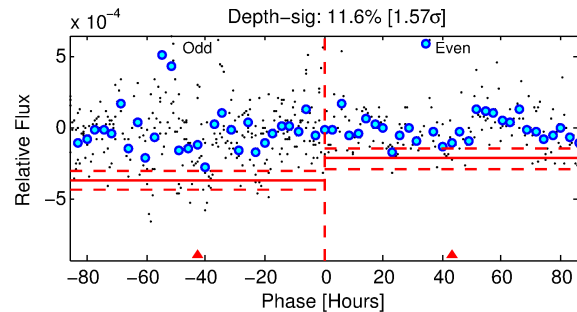
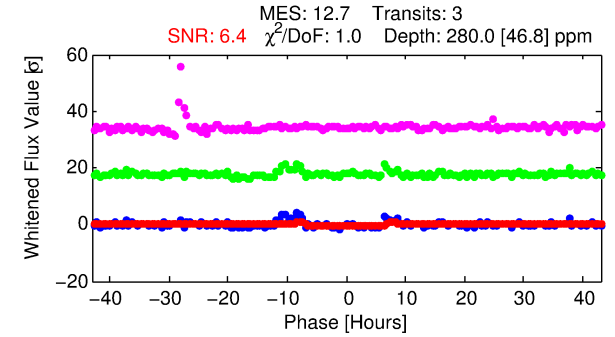
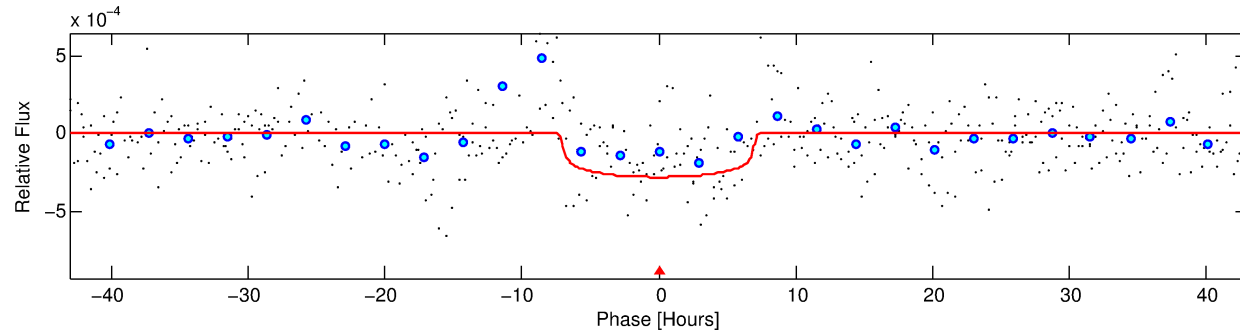
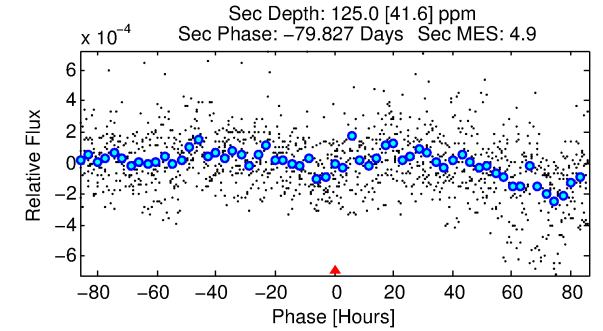
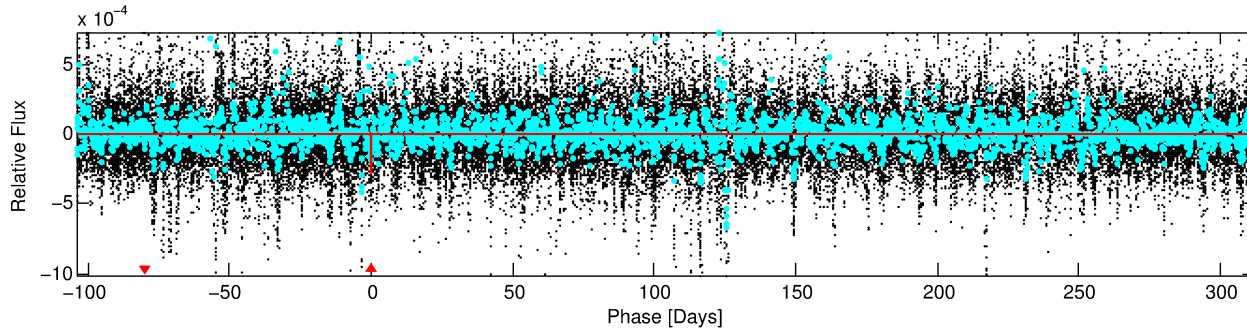
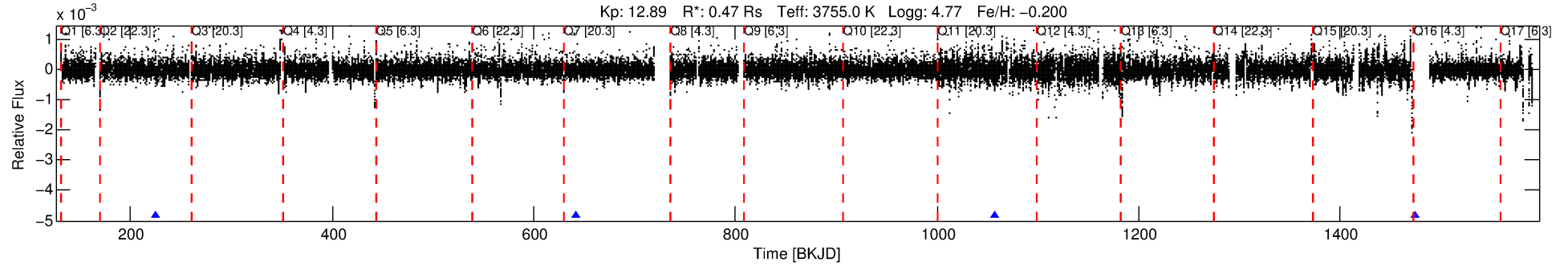
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010320656-01

No Significant Match Found

# DV One-Page Summary

KIC: 10320656 Candidate: 1 of 1 Period: 416.528 d



## DV Fit Results:

Period = 416.52829 [0.01191] d  
Epoch = 224.6237 [0.0146] BKJD  
Rp/R\* = 0.0160 [0.0062]  
a/R\* = 178.37 [314.66]  
b = 0.62 [1.76]  
Seff = 0.05 [0.01]  
Teq = 123 [3] K  
Rp = 0.83 [0.33] Re  
a = 0.8578 [0.0495] AU  
Ag = 73917.38 [62913.16] [1.17 $\sigma$ ]  
Teffp = 3136 [667] K [4.51 $\sigma$ ]

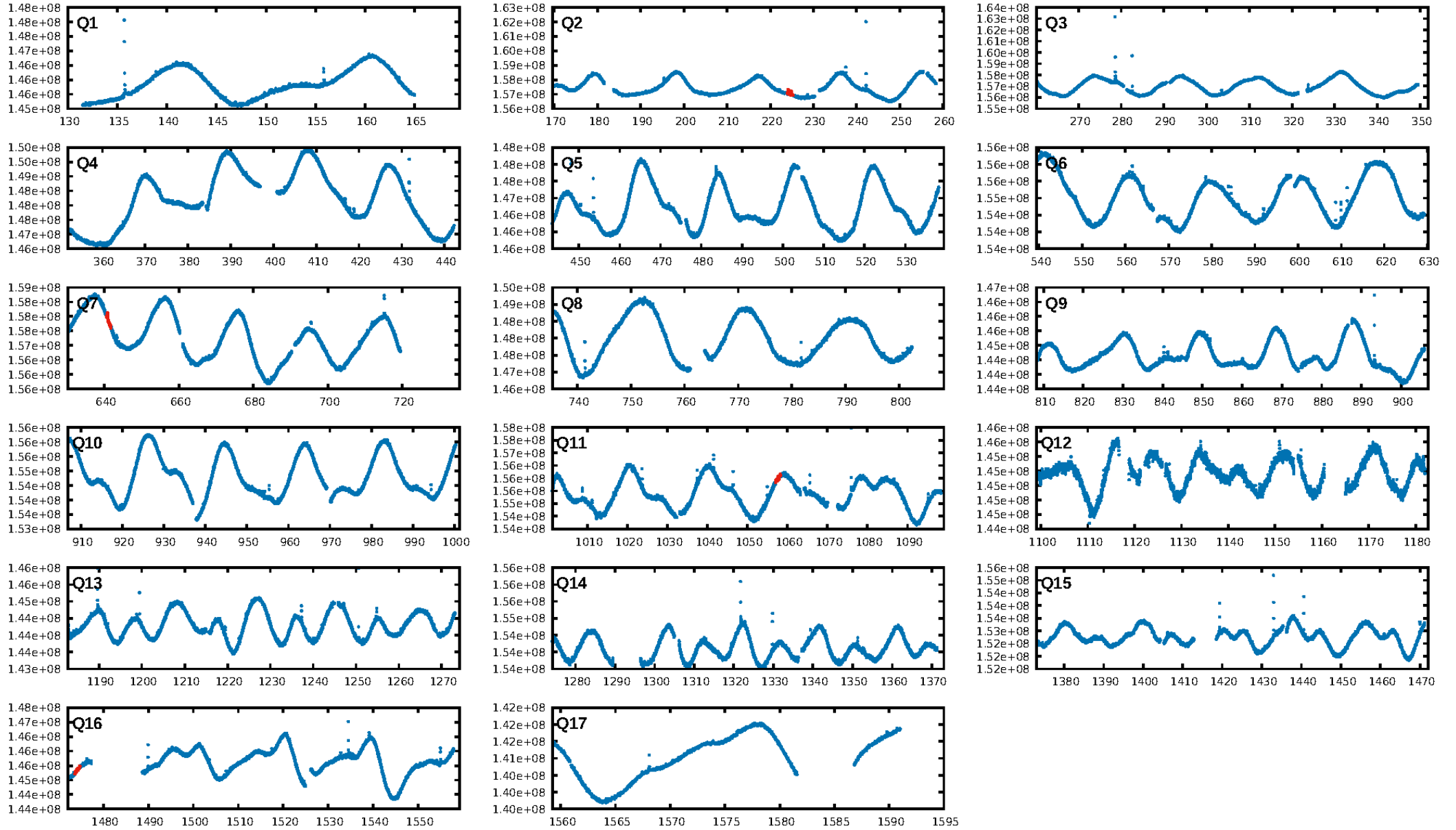
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 6.5%  
ModelChiSquareGof-sig: 99.3%  
Bootstrap-pfa: 1.96e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.576  
Centroid-sig: 11.9%  
Centroid-so: 1.629 arcsec [1.60 $\sigma$ ]  
OotOffset-rm: 2.782 arcsec [1.07 $\sigma$ ]  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-rm: 2.470 arcsec [0.96 $\sigma$ ]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

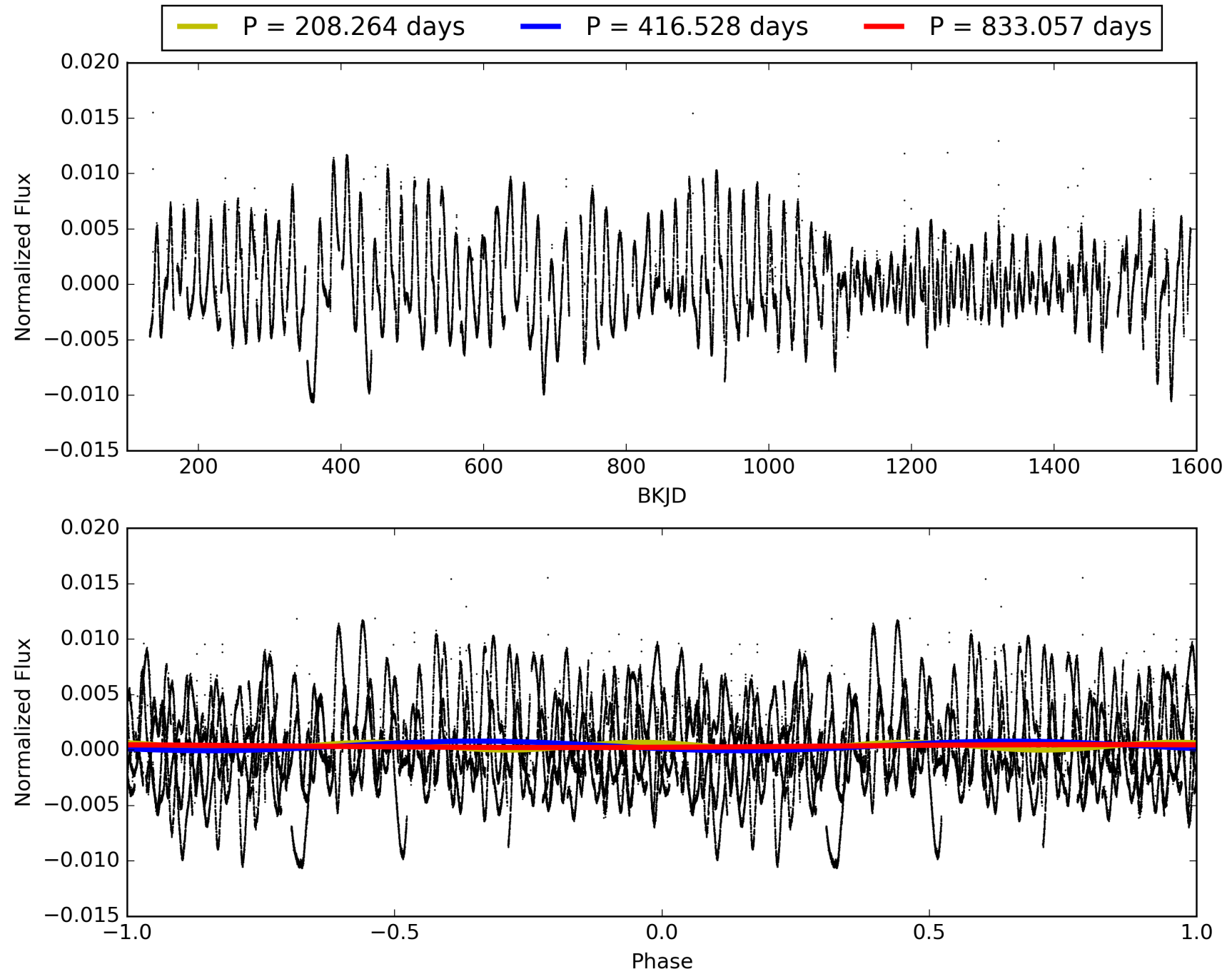
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:26:02 Z

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

# TCE 010320656-01, PDC Light Curves

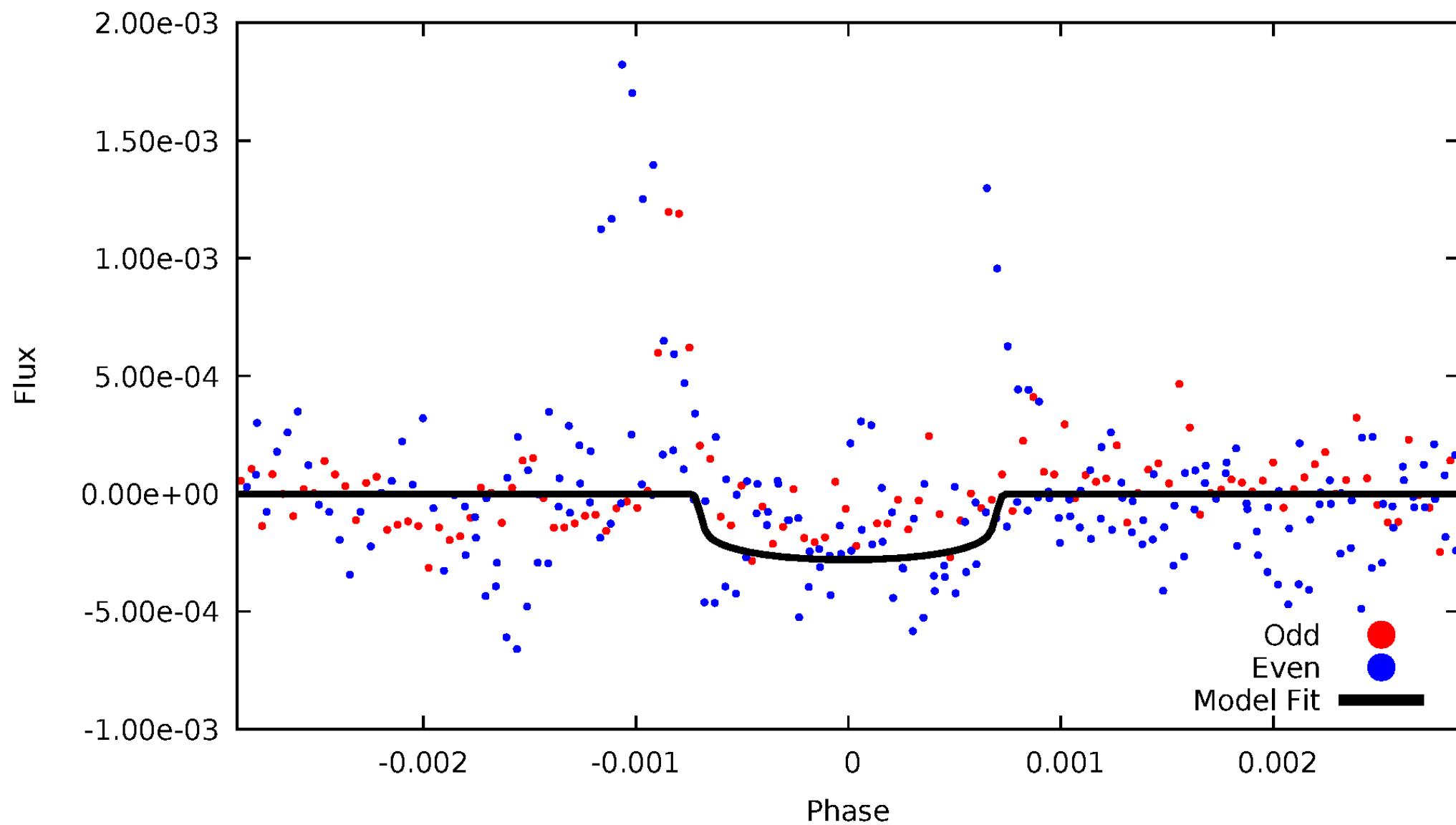


# TCE 010320656-01



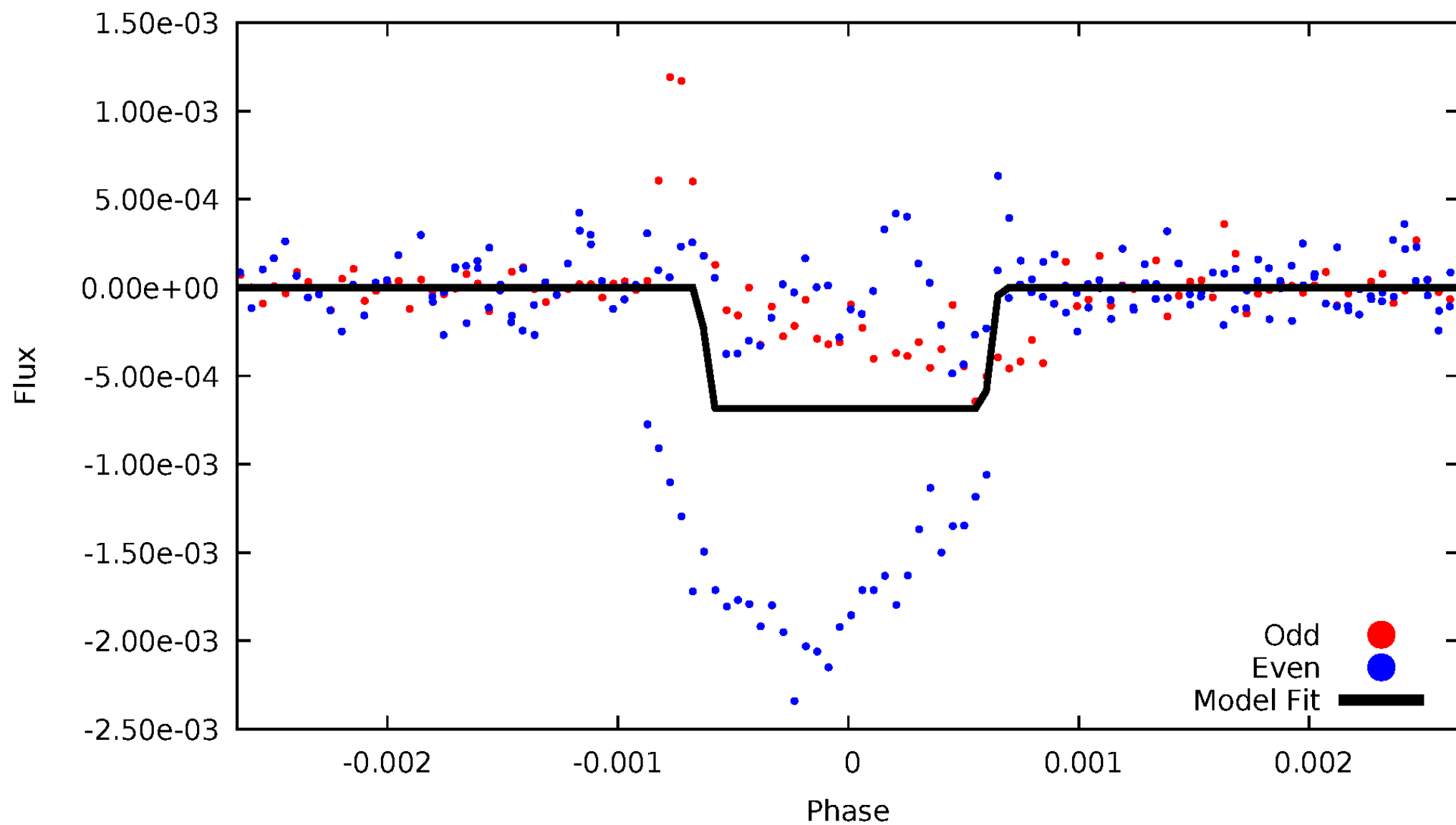
# DV Odd/Even

TCE 010320656-01



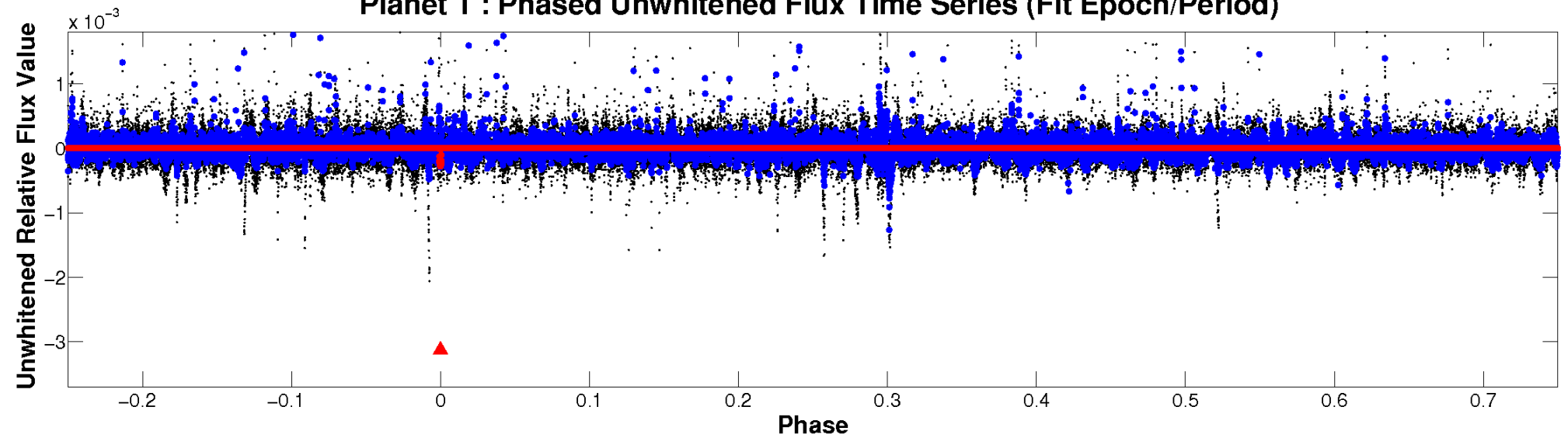
# ALT Odd/Even

TCE 010320656-01

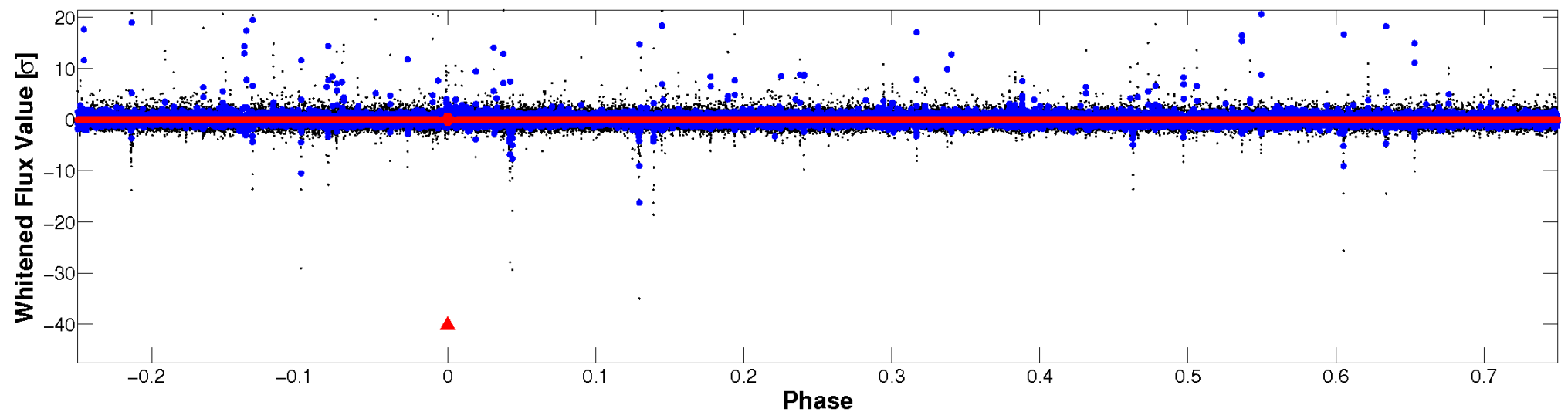


# Non-Whitened Vs. Whitened Light Curve

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

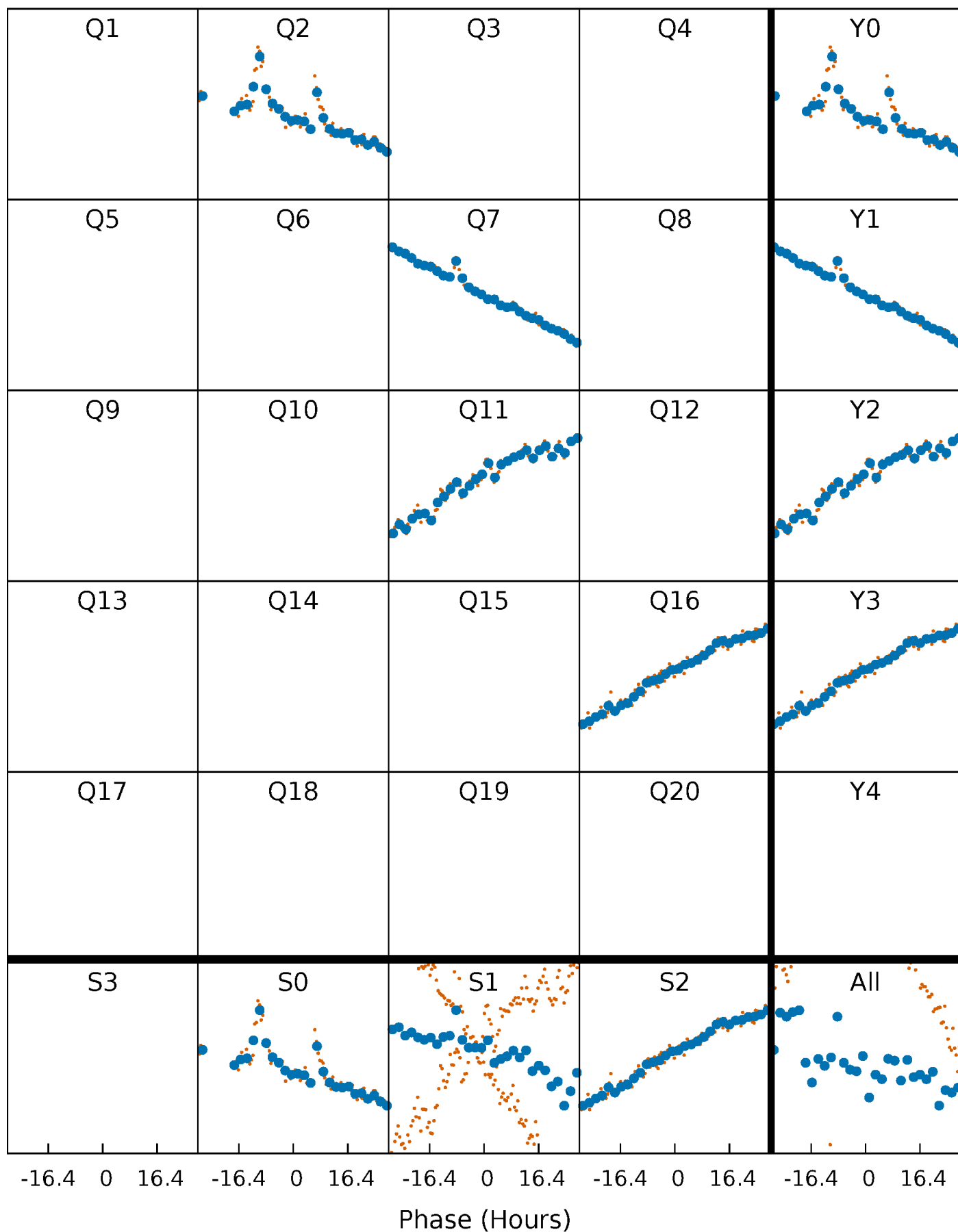


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 010320656-01 P=416.528285 Days  $T_0=224.623699$  (BKJD)





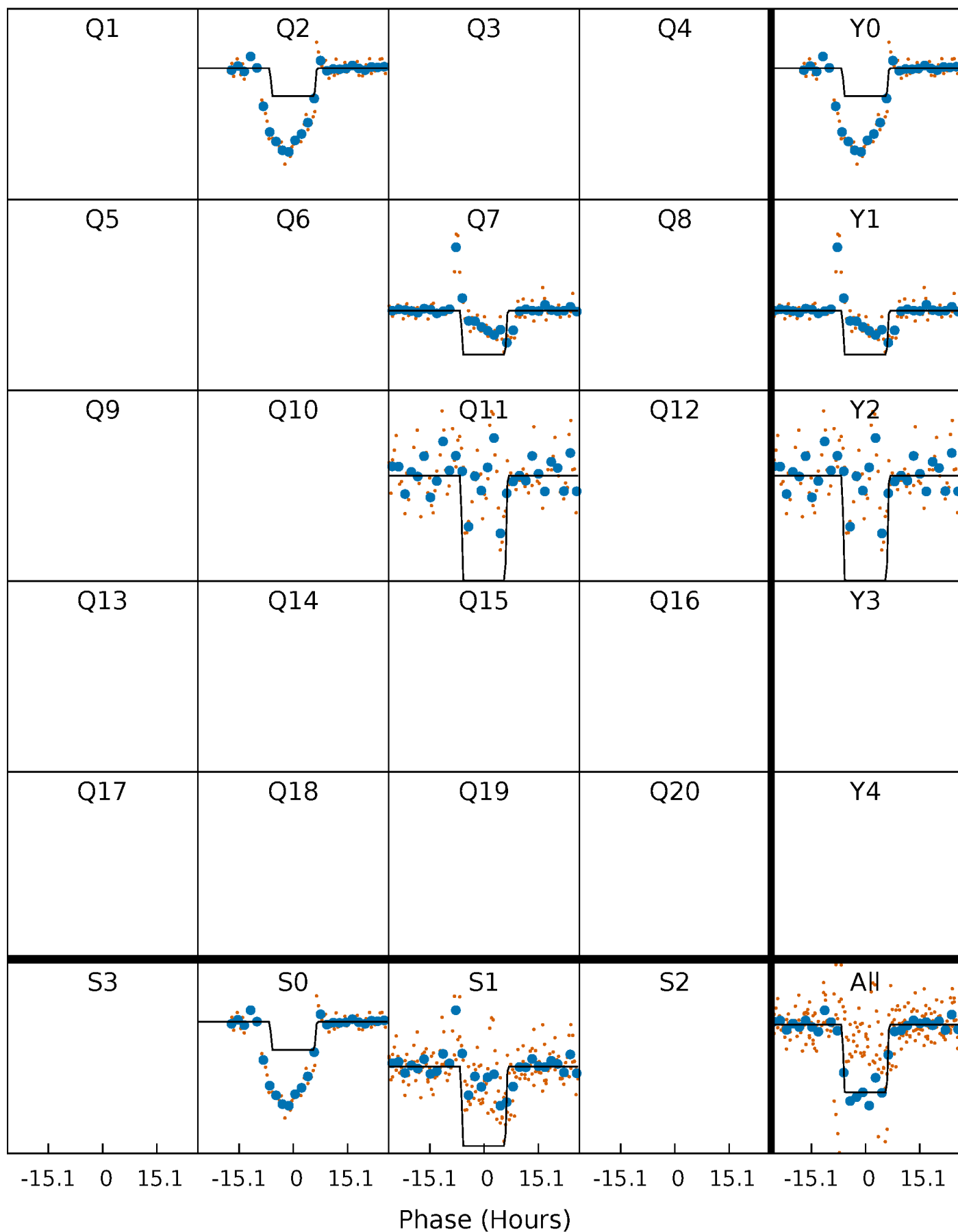
# DV Quarter-Phased Transit Curves

TCE 010320656-01 P=416.528285 Days  $T_0=224.623699$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

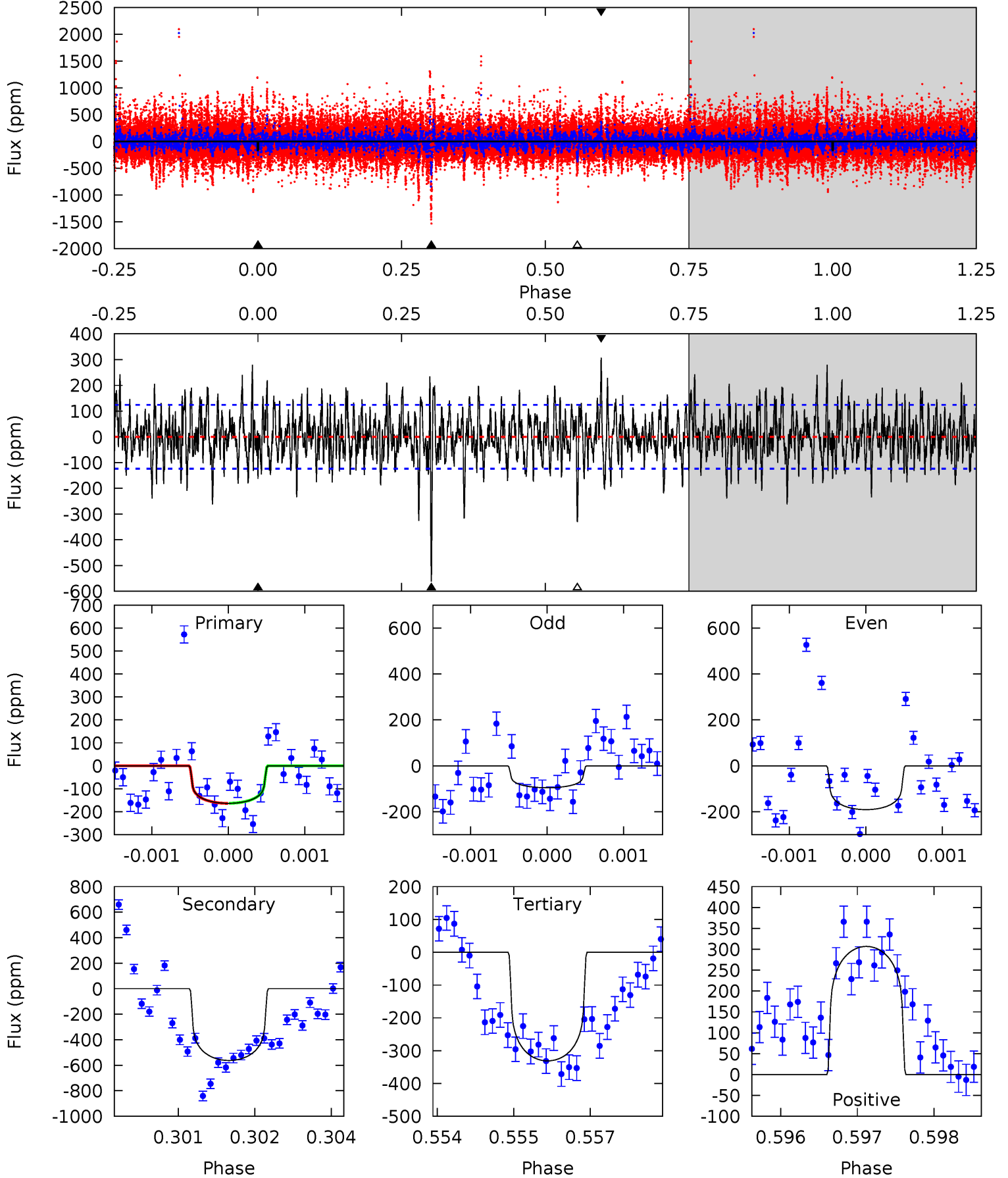
TCE 010320656-01 P=416.497253 Days  $T_0=224.624560$  (BKJD)



# DV Model-Shift Uniqueness Test

010320656-01, P = 416.528285 Days, E = 224.623699 Days

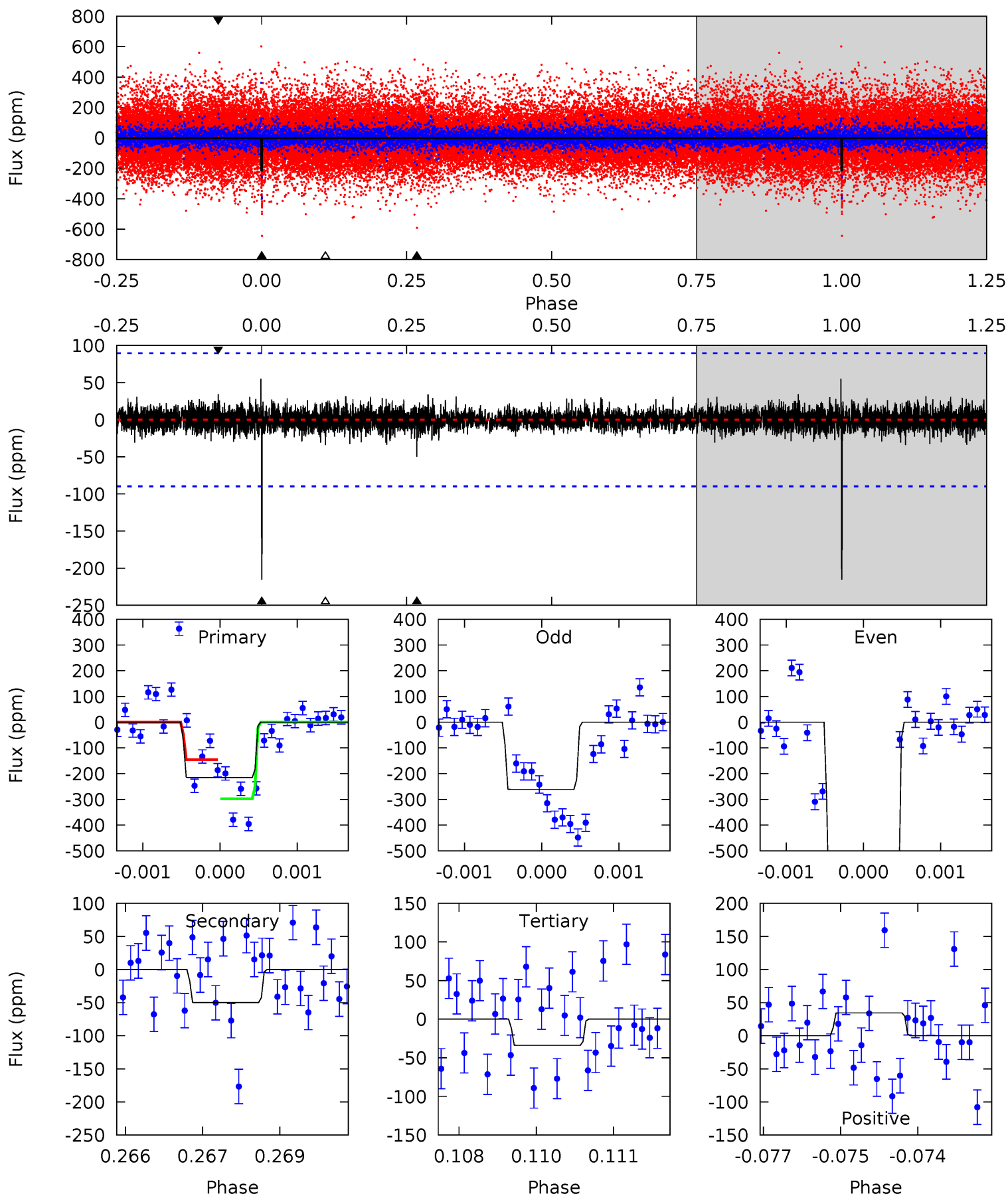
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.10	24.4	14.4	13.3	5.39	3.19	3.50	-7.28	-6.23	10.0	11.1	1.83	0.92	0.35	0.01



# Alt Model-Shift Uniqueness Test

010320656-01, P = 416.497253 Days, E = 224.624560 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
13.0	3.01	2.04	2.07	5.40	3.21	0.48	10.9	10.9	0.97	0.94	23.8	2.64	0.20	0



### Stellar Parameters For KIC 010320656

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3755^{+66}_{-74}$	$4.774^{+0.039}_{-0.028}$	$-0.200^{+0.100}_{-0.100}$	$0.473^{+0.028}_{-0.035}$	$0.485^{+0.030}_{-0.033}$	$6.451^{+1.159}_{-0.751}$
	+2%/-2%	+1%/-1%	+50%/-50%	+6%/-7%	+6%/-7%	+18%/-12%
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 010320656-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-562 \pm 23$	$0.85^{+0.31}_{-0.32}$	$171^{+4}_{-4}$	$4278^{+908}_{-466}$	$316060^{+516674}_{-143883}$
Alt.	$-50 \pm 17$	$1.34^{+0.32}_{-0.29}$	$171^{+4}_{-4}$	$2574^{+192}_{-177}$	$11055^{+8516}_{-4600}$

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

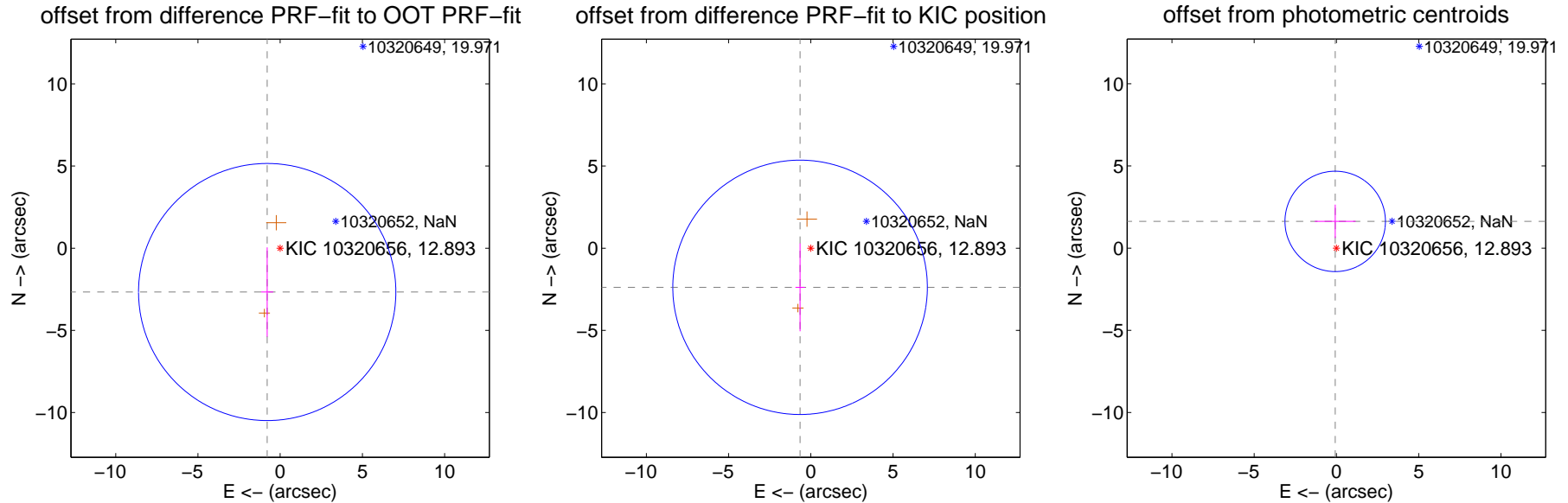
## DV Centroid Data

Supplemental centroid analysis for 010320656-01. Kepler magnitude: 12.89. Transit SNR 6.40

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.782 \pm 2.608$	1.07	$0.791 \pm 0.363$	$-2.667 \pm 2.718$
PRF-fit source offset from KIC position	$2.470 \pm 2.580$	0.96	$0.654 \pm 0.280$	$-2.381 \pm 2.674$
photometric centroid source offset	$1.63 \pm 1.02$	1.60	$0.08 \pm 1.24$	$1.63 \pm 1.02$

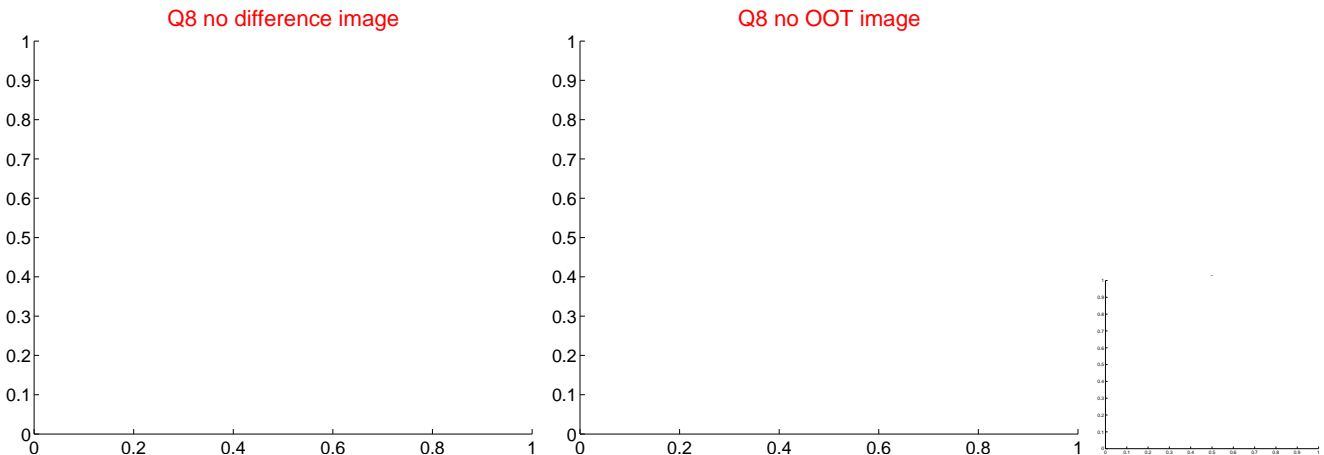
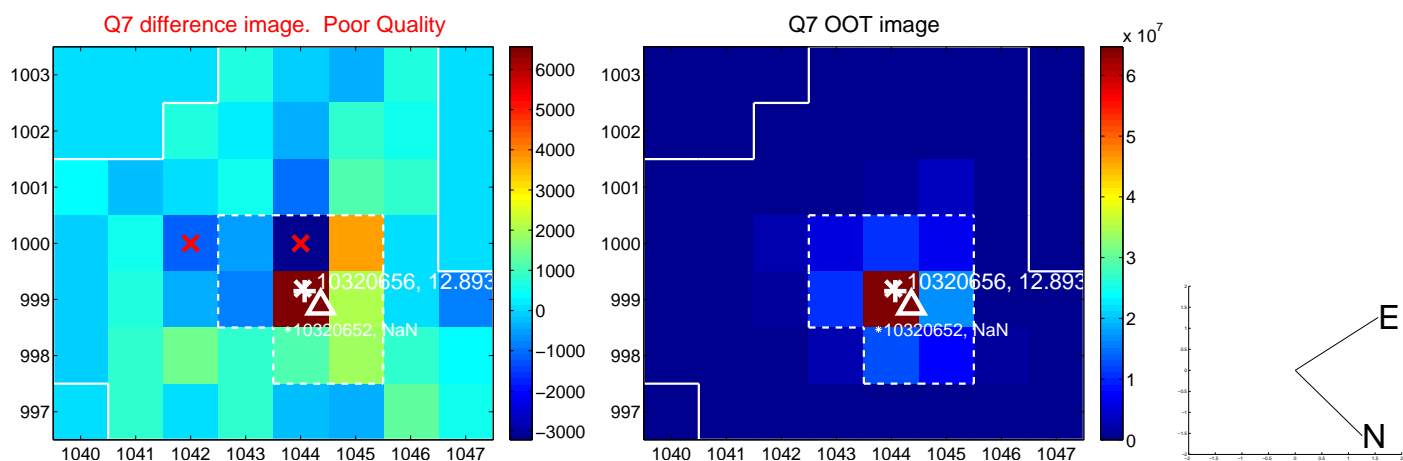
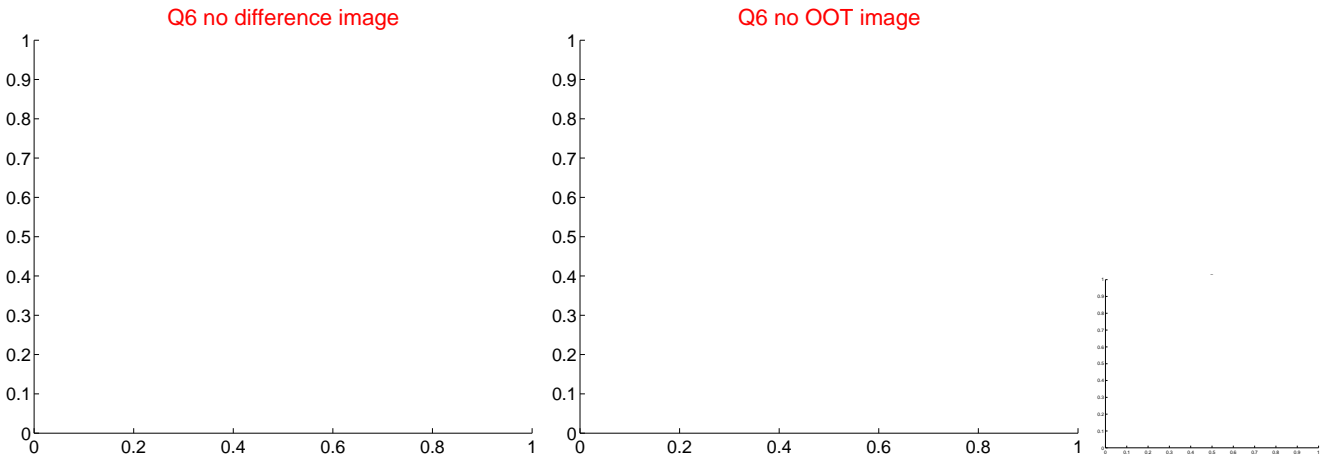
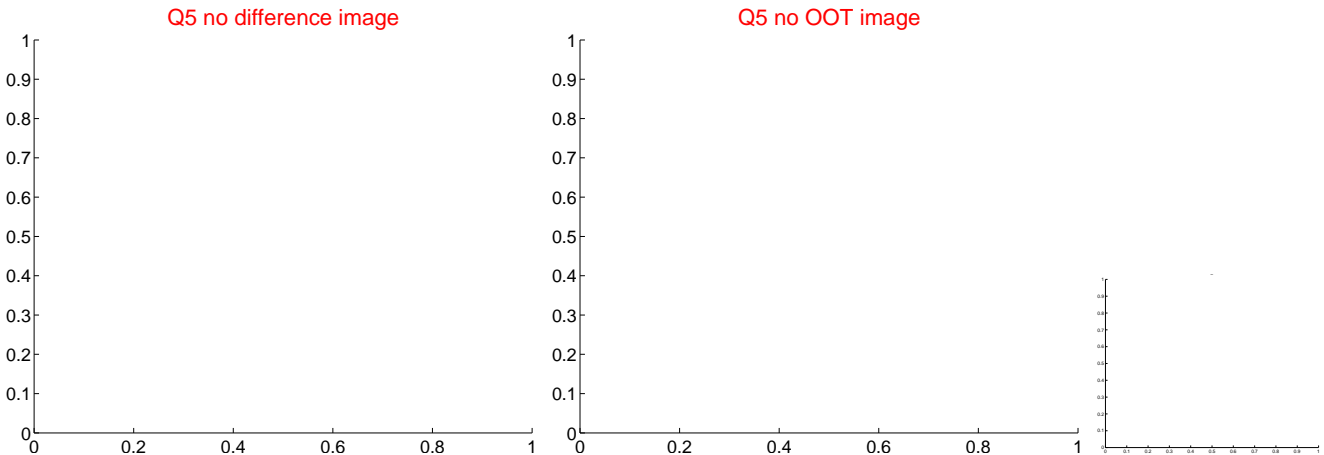


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

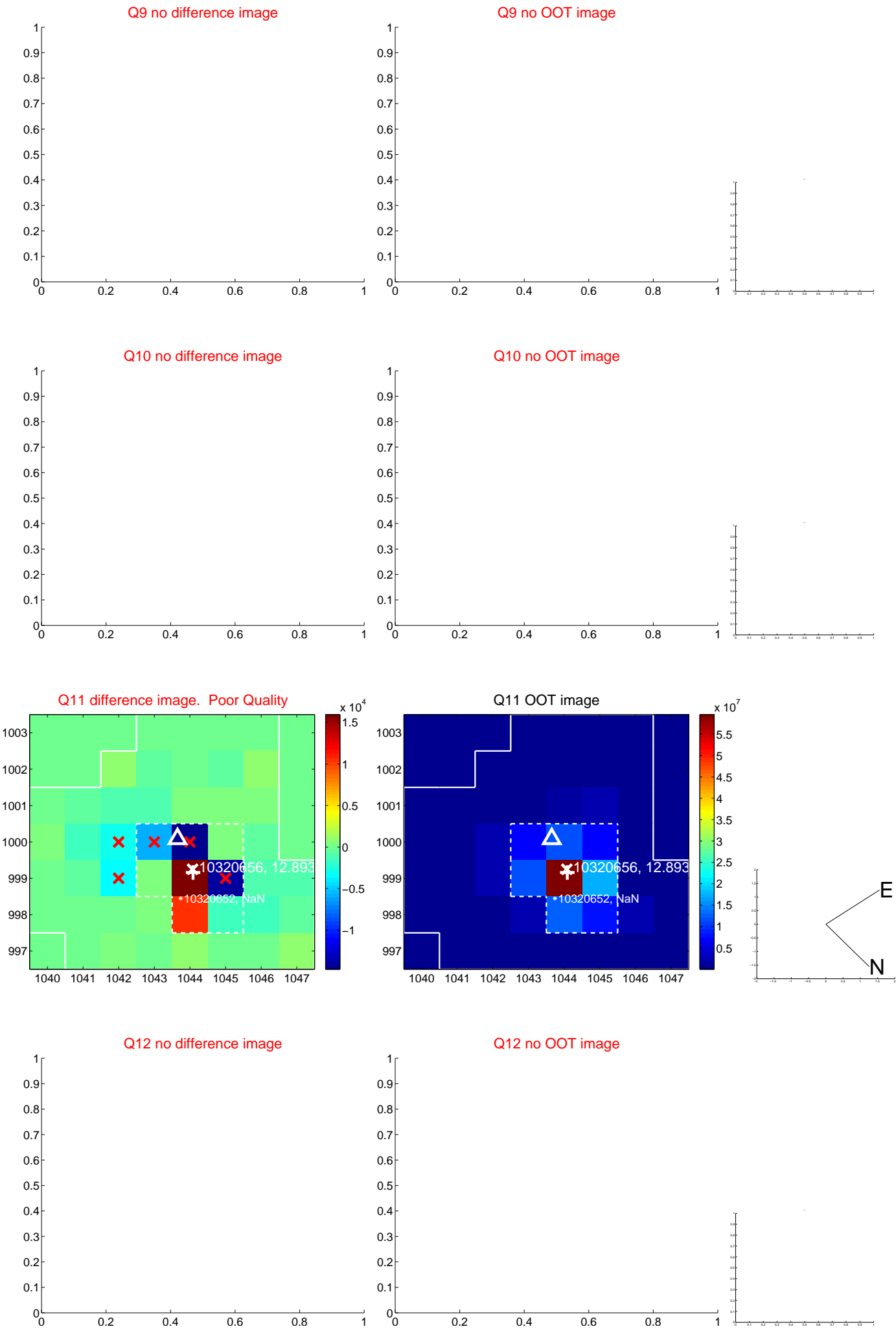


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value





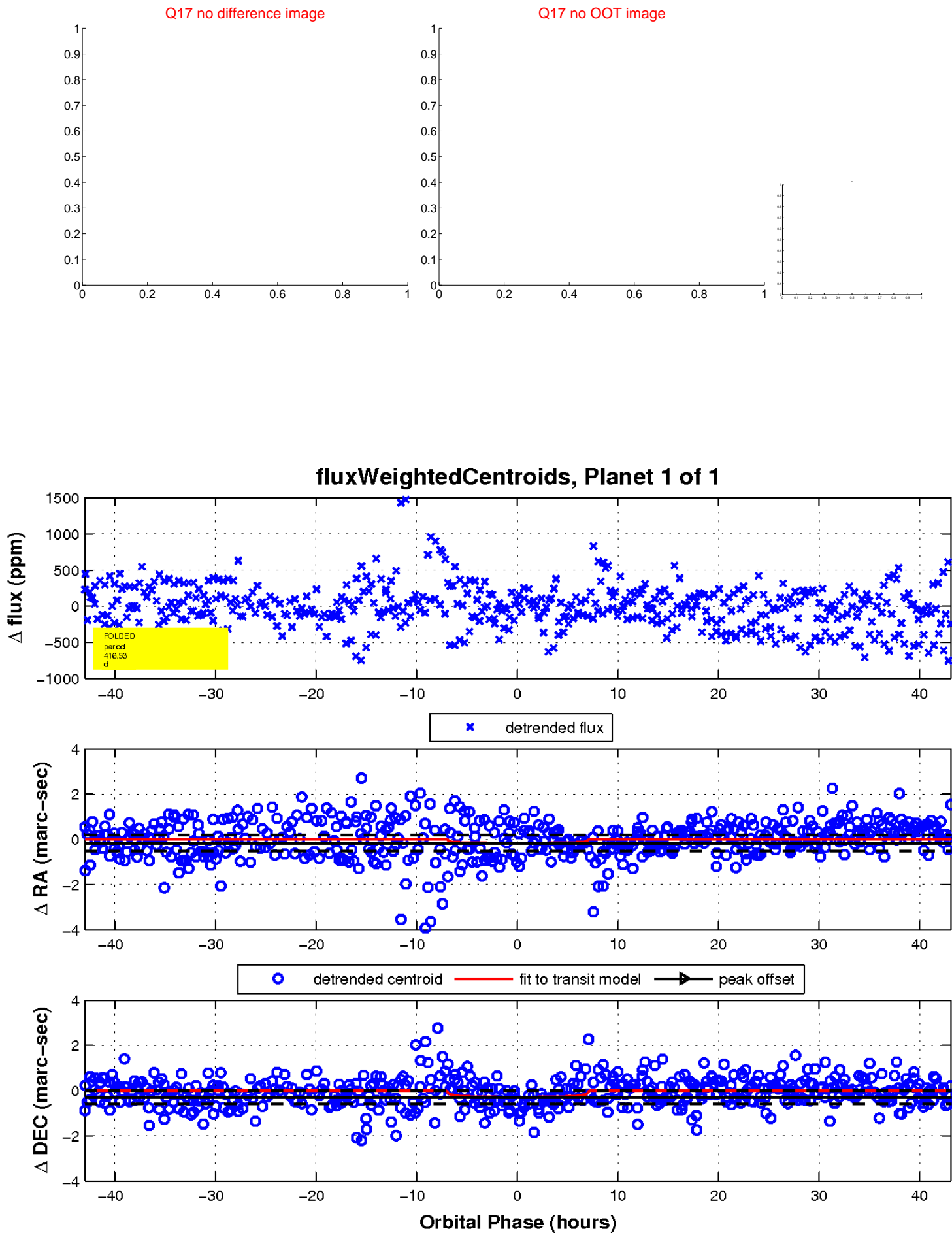
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

