

# KIC 009771576

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009771576-01	OBS	8185.01	398.663070	481.194415	1050.4	28.763	11.4	12.2	0.77	5303	3.27	0.42

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009771576-01	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_ALT—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.

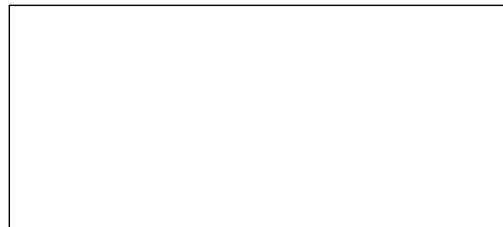
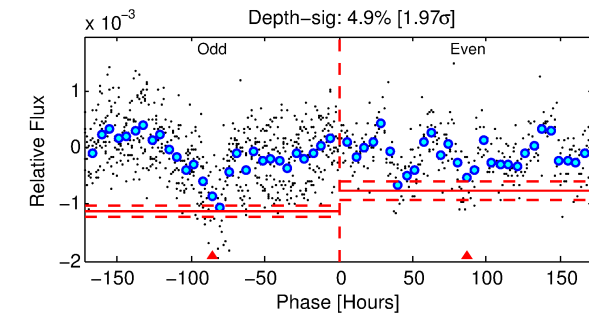
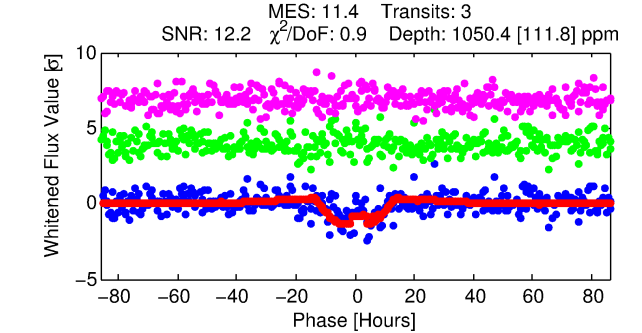
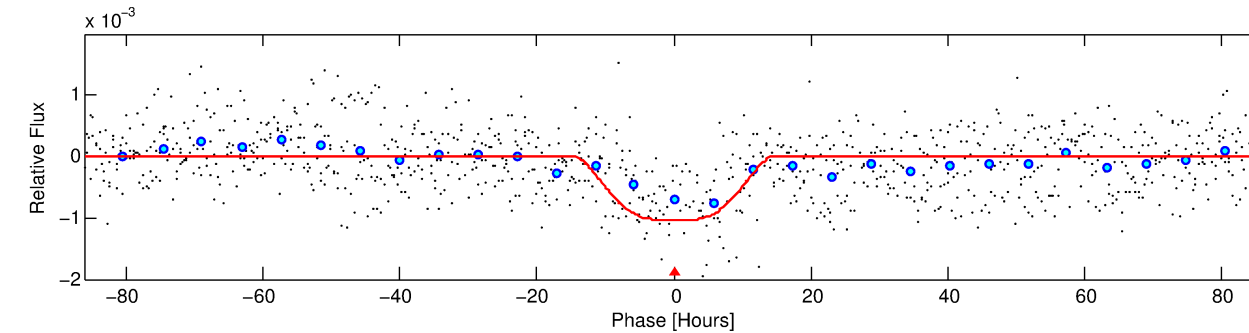
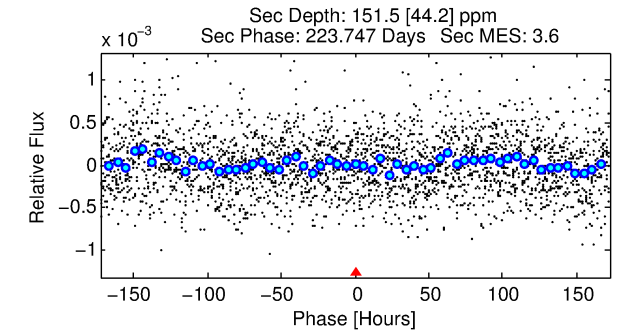
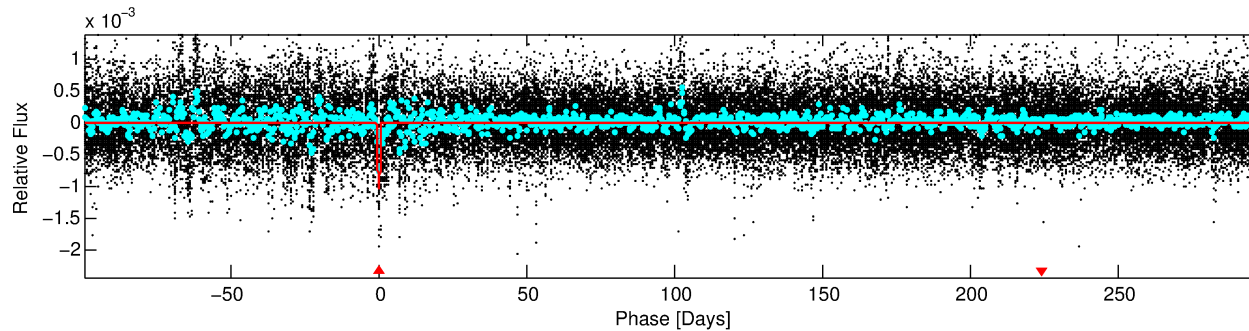
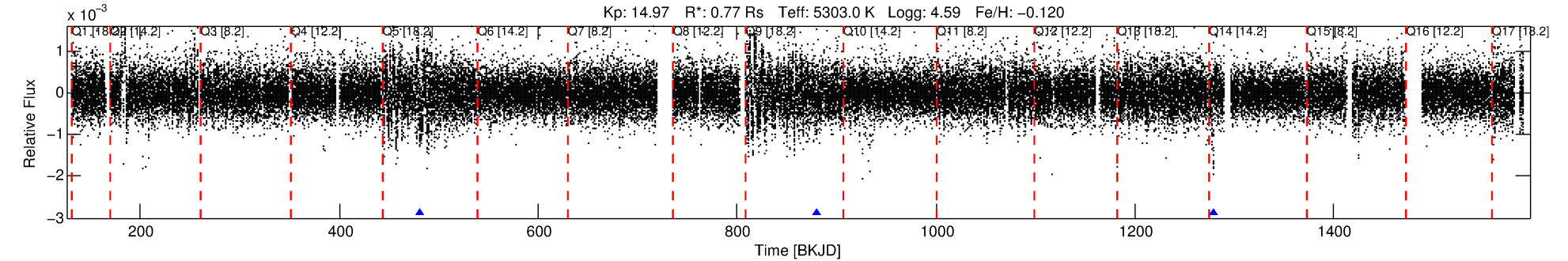
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009771576-01

No Significant Match Found

# DV One-Page Summary

KIC: 9771576 Candidate: 1 of 1 Period: 398.663 d



## DV Fit Results:

Period = 398.66307 [0.02935] d  
Epoch = 481.1944 [0.0491] BKJD  
Rp/R\* = 0.0389 [0.0030]  
a/R\* = 43.85 [5.21]  
b = 0.95 [0.01]  
Seff = 0.42 [0.09]  
Teq = 205 [12] K  
Rp = 3.27 [0.57] Re  
a = 1.0049 [0.1334] AU  
Ag = 7874.91 [3006.50] [2.62σ]  
Teffp = 2985 [262] K [10.61σ]

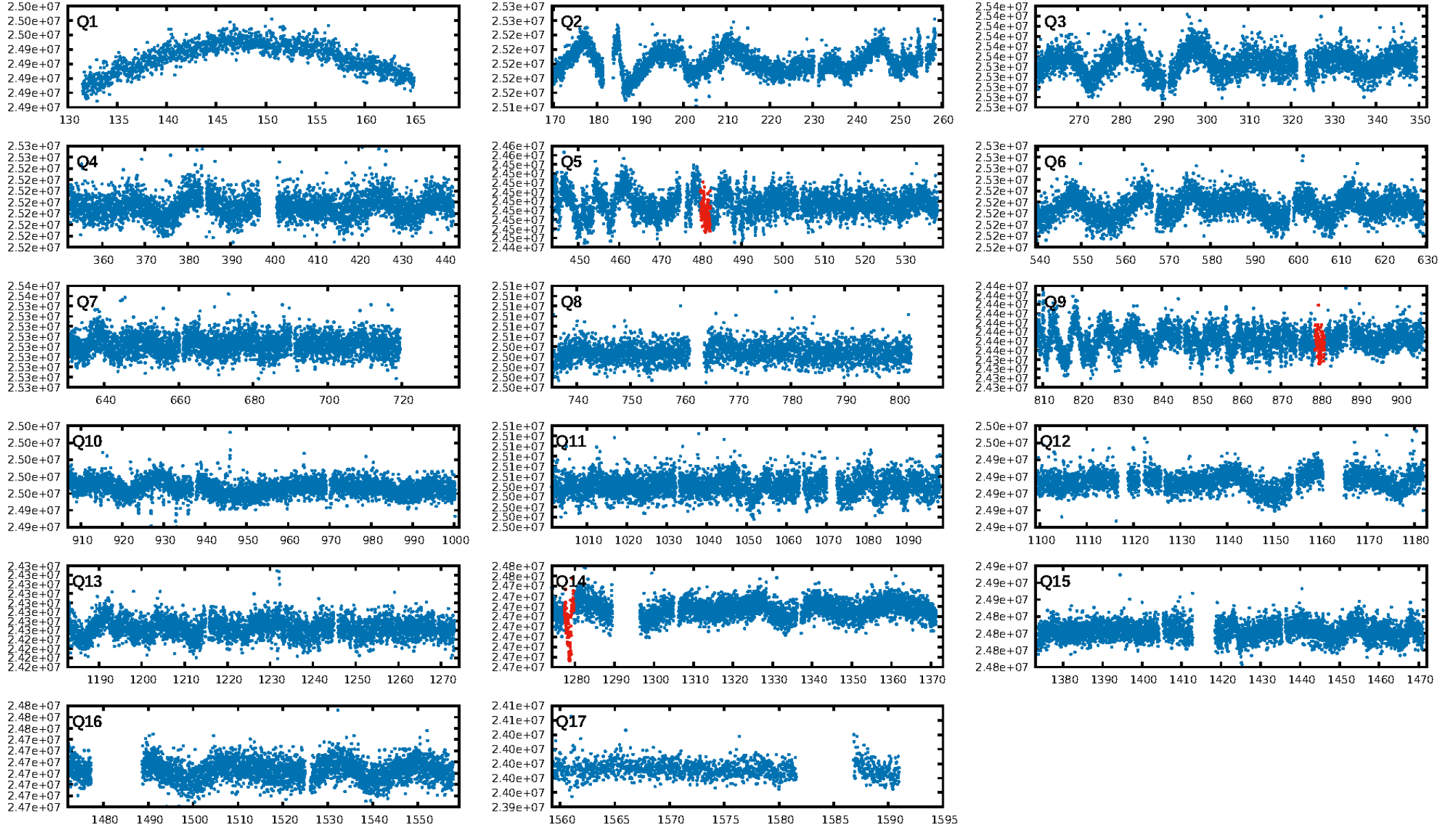
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 2.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.90e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.417  
Centroid-sig: 0.0%  
Centroid-so: 5.801 arcsec [3.79σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [2/2]

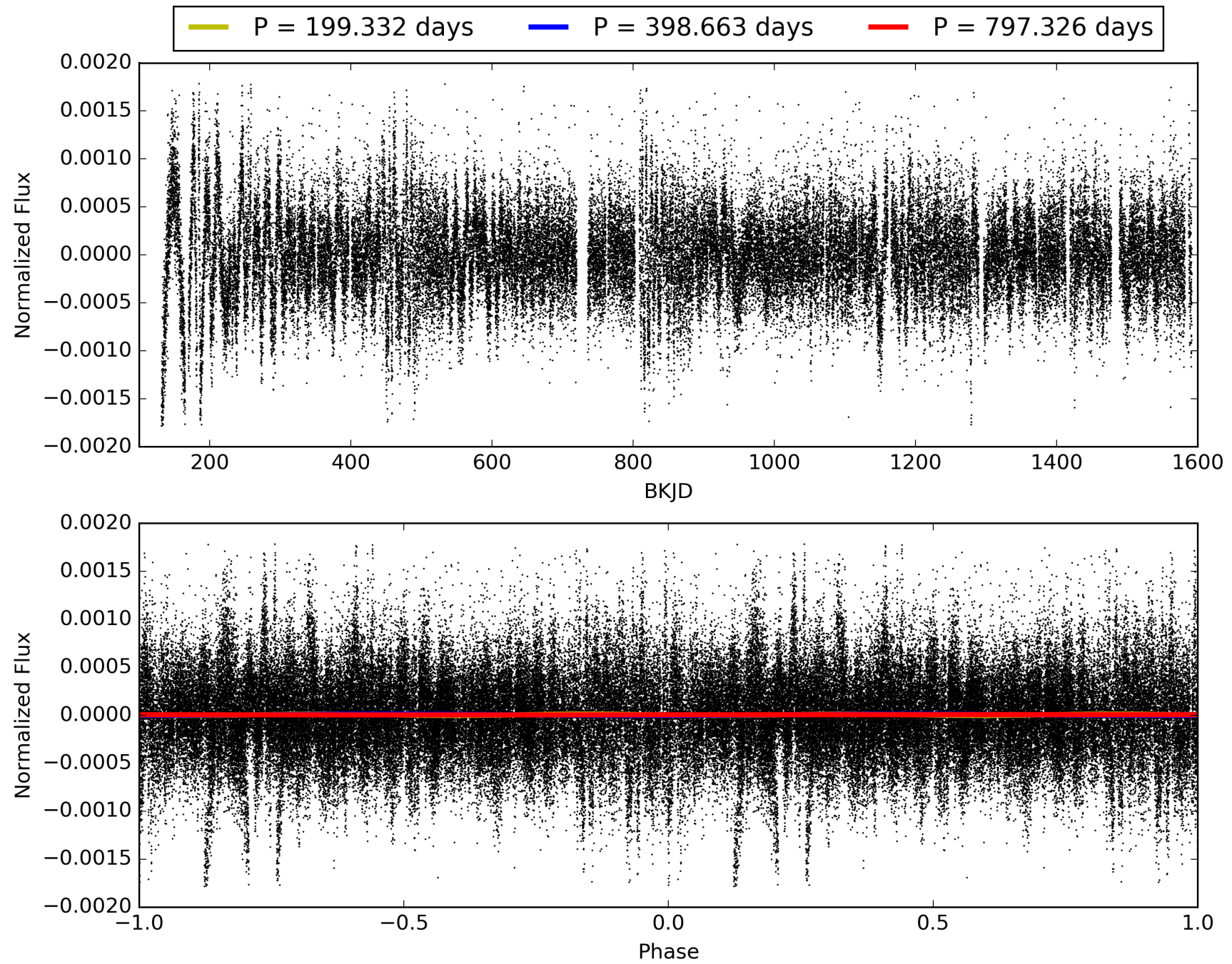
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:03:00 Z

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

# TCE 009771576-01, PDC Light Curves

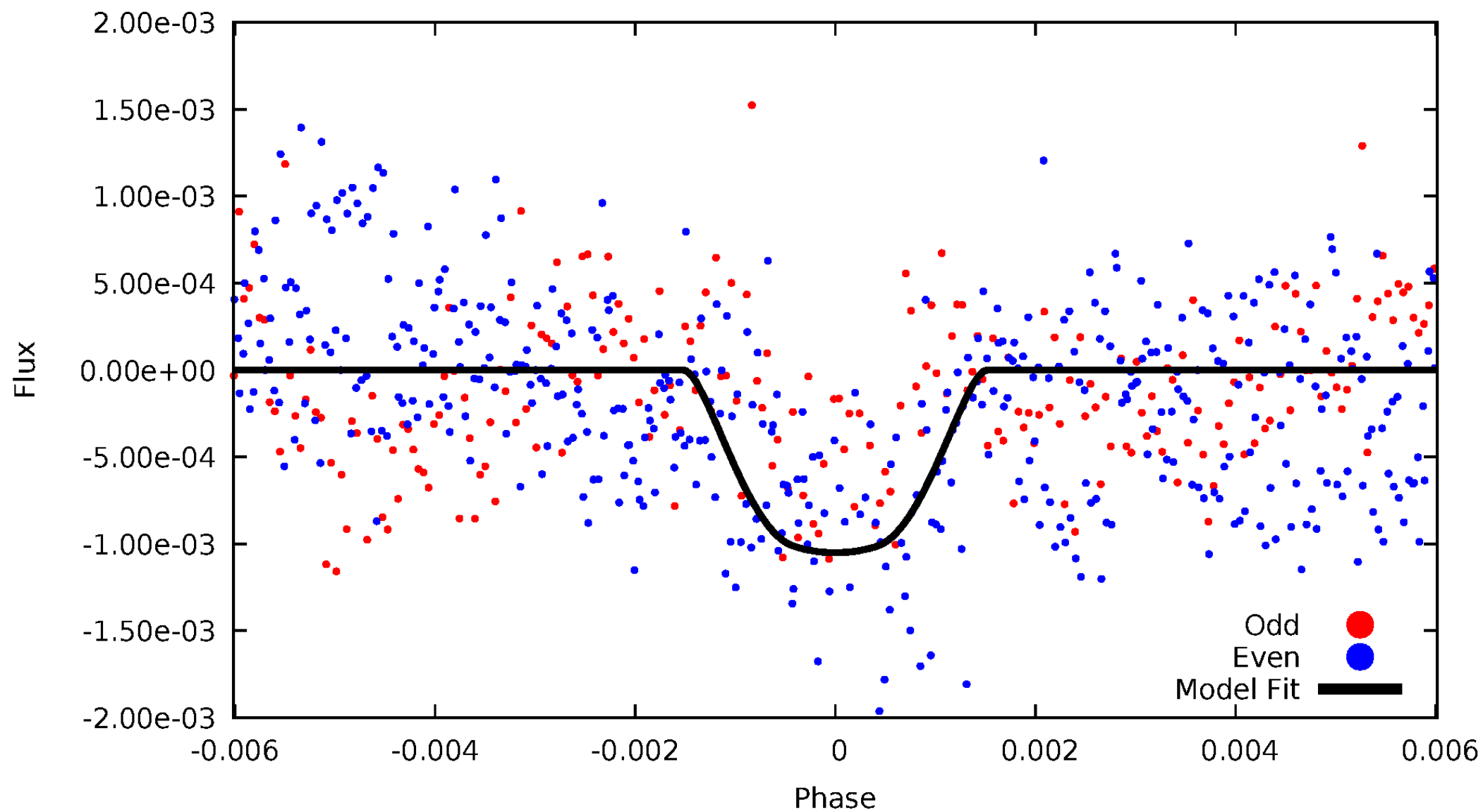


TCE 009771576-01



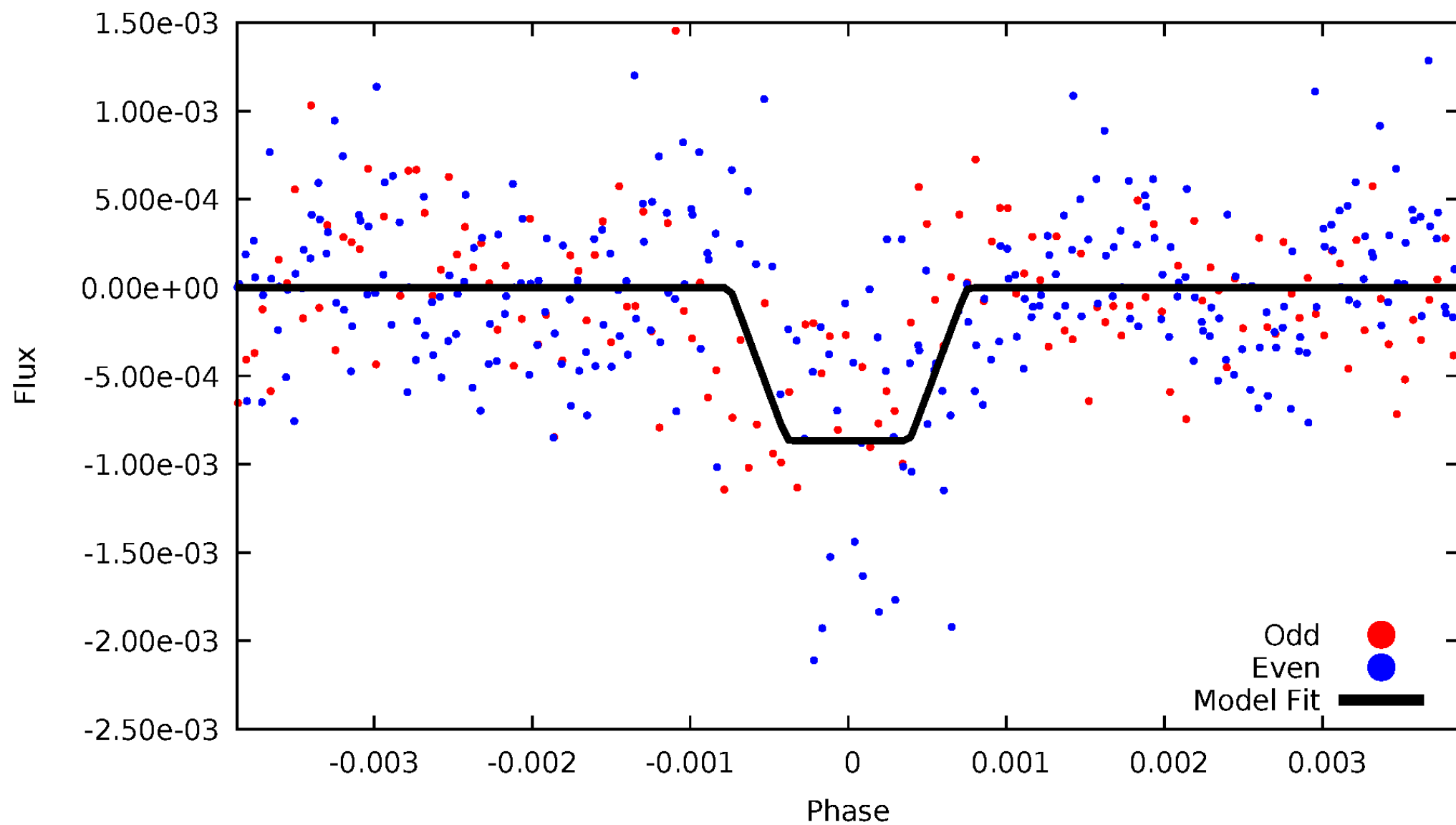
# DV Odd/Even

TCE 009771576-01



# ALT Odd/Even

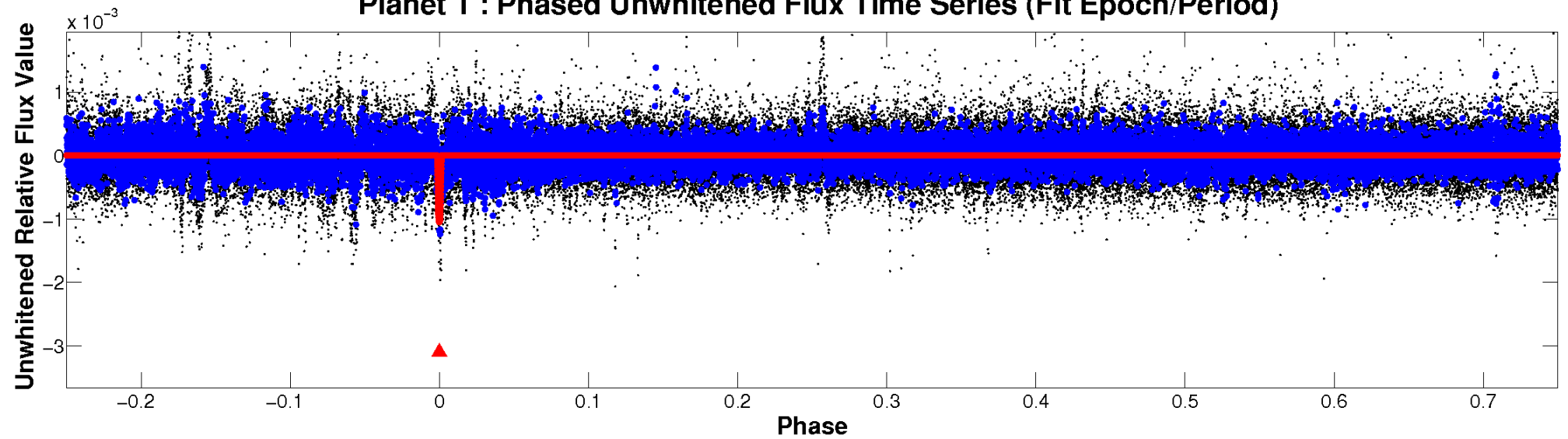
TCE 009771576-01



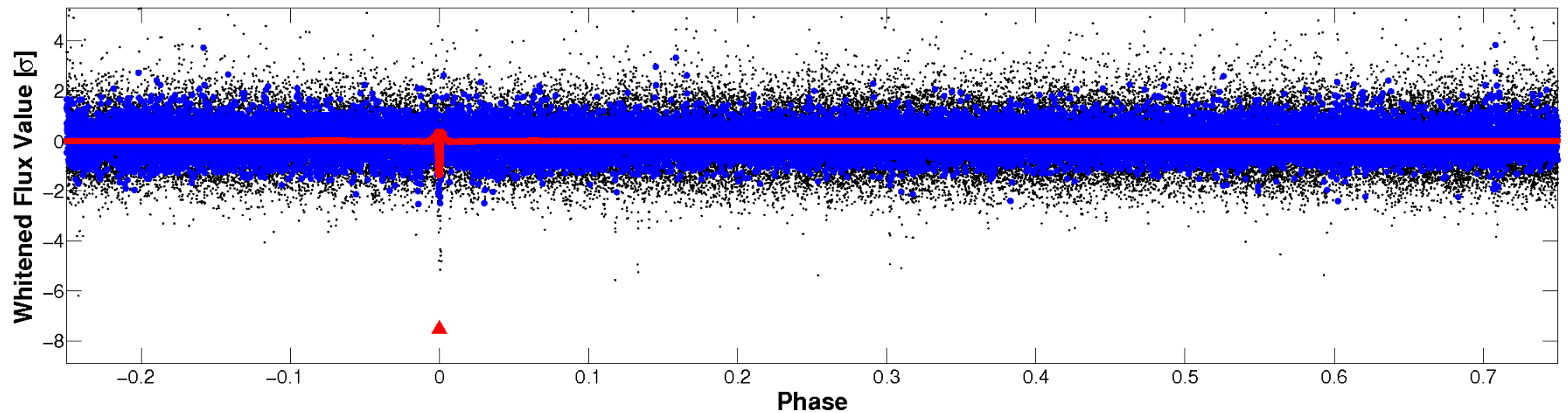


# Non-Whitened Vs. Whitened Light Curve

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

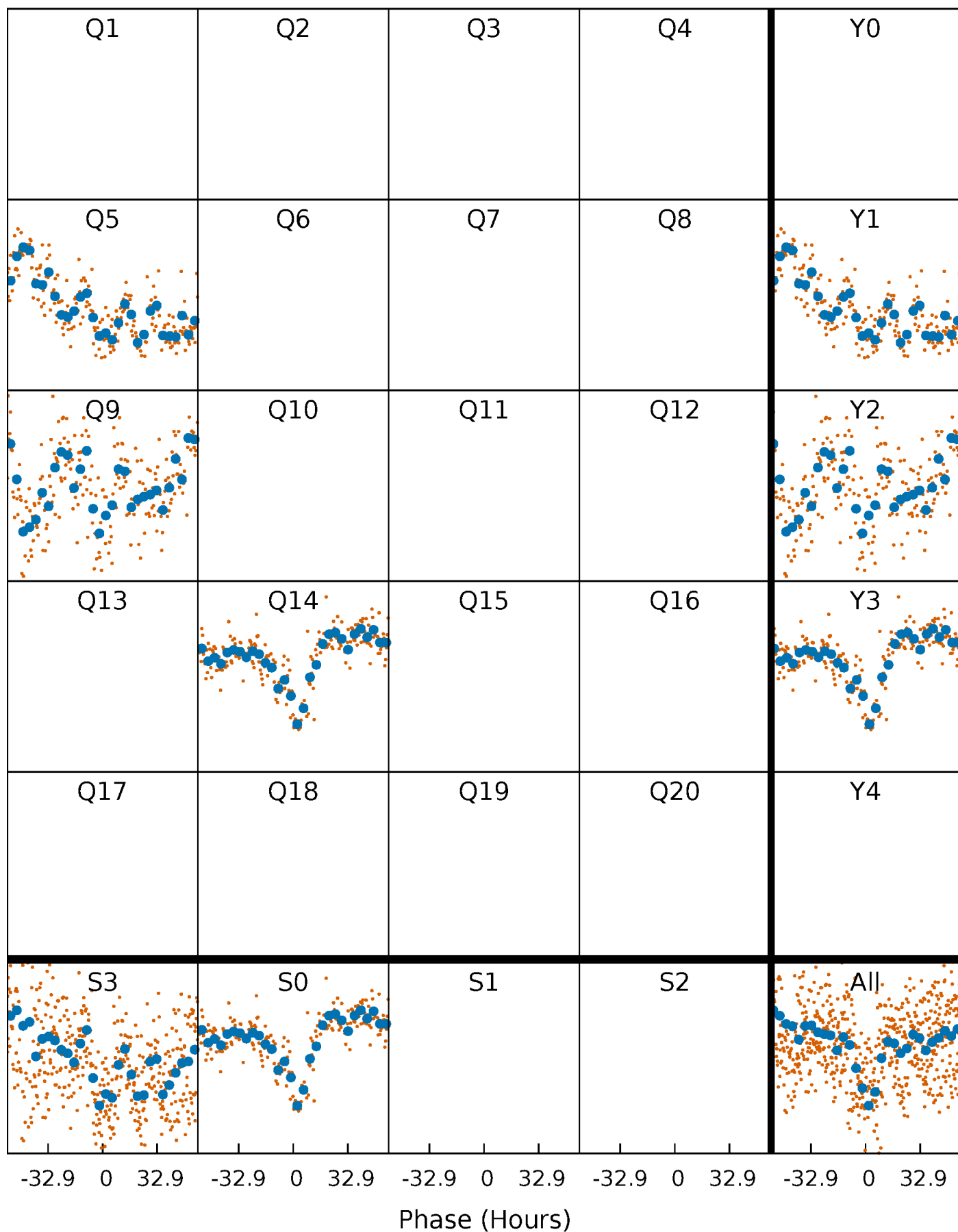


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

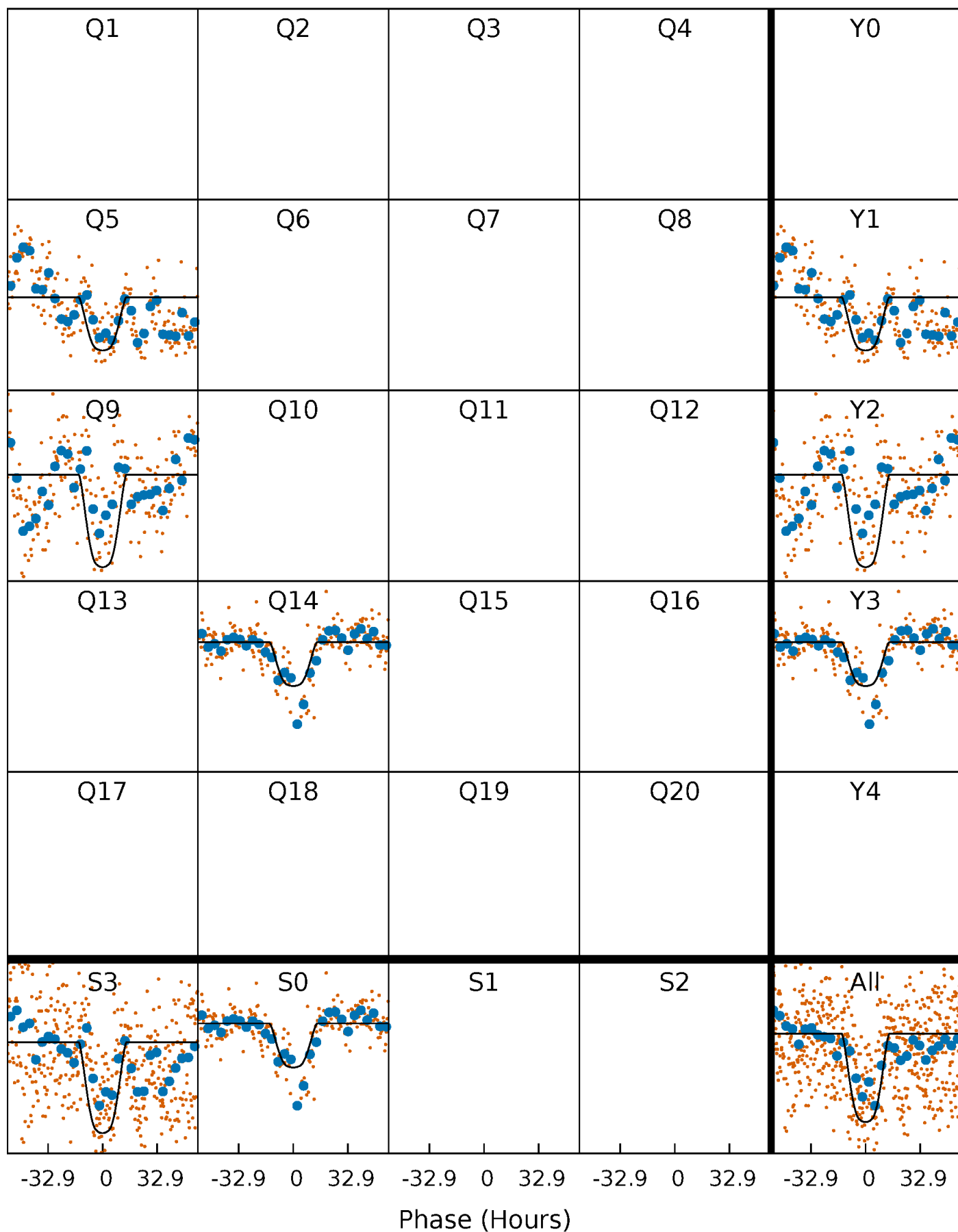
TCE 009771576-01     $P=398.663070$  Days     $T_0=481.194415$  (BKJD)





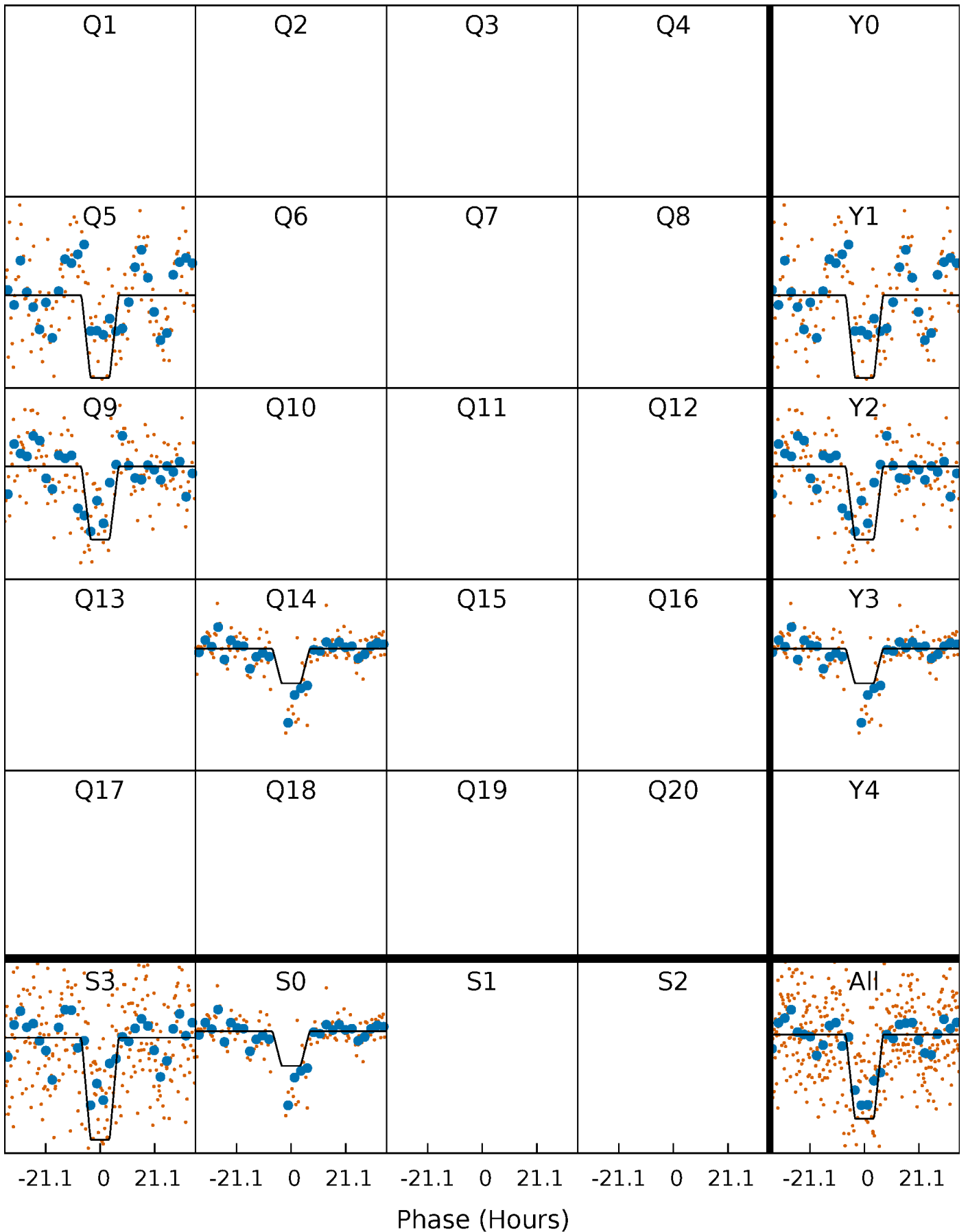
# DV Quarter-Phased Transit Curves

TCE 009771576-01 P=398.663070 Days  $T_0=481.194415$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

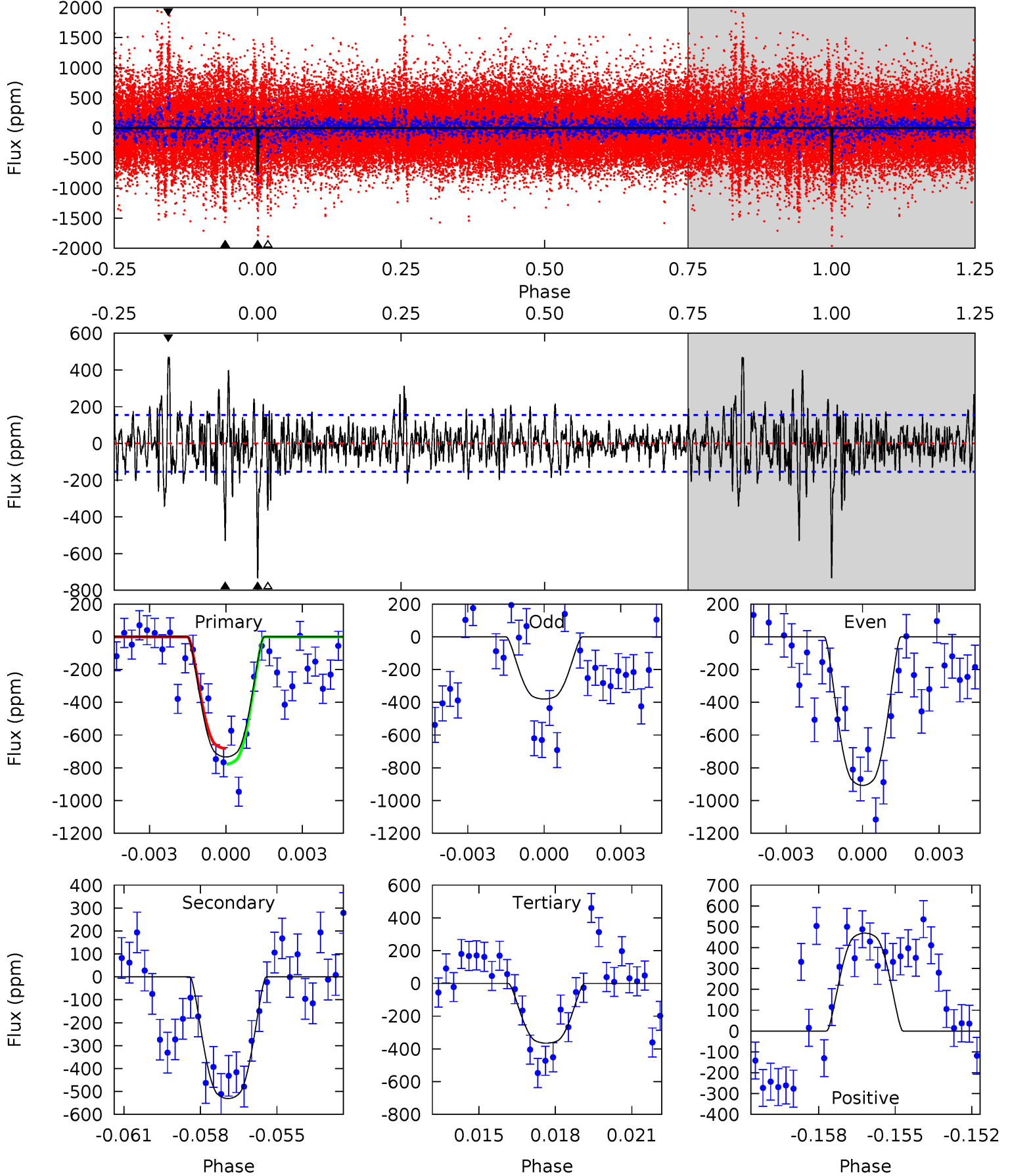
TCE 009771576-01 P=398.822224 Days  $T_0=481.138118$  (BKJD)



# DV Model-Shift Uniqueness Test

009771576-01, P = 398.663070 Days, E = 82.531345 Days

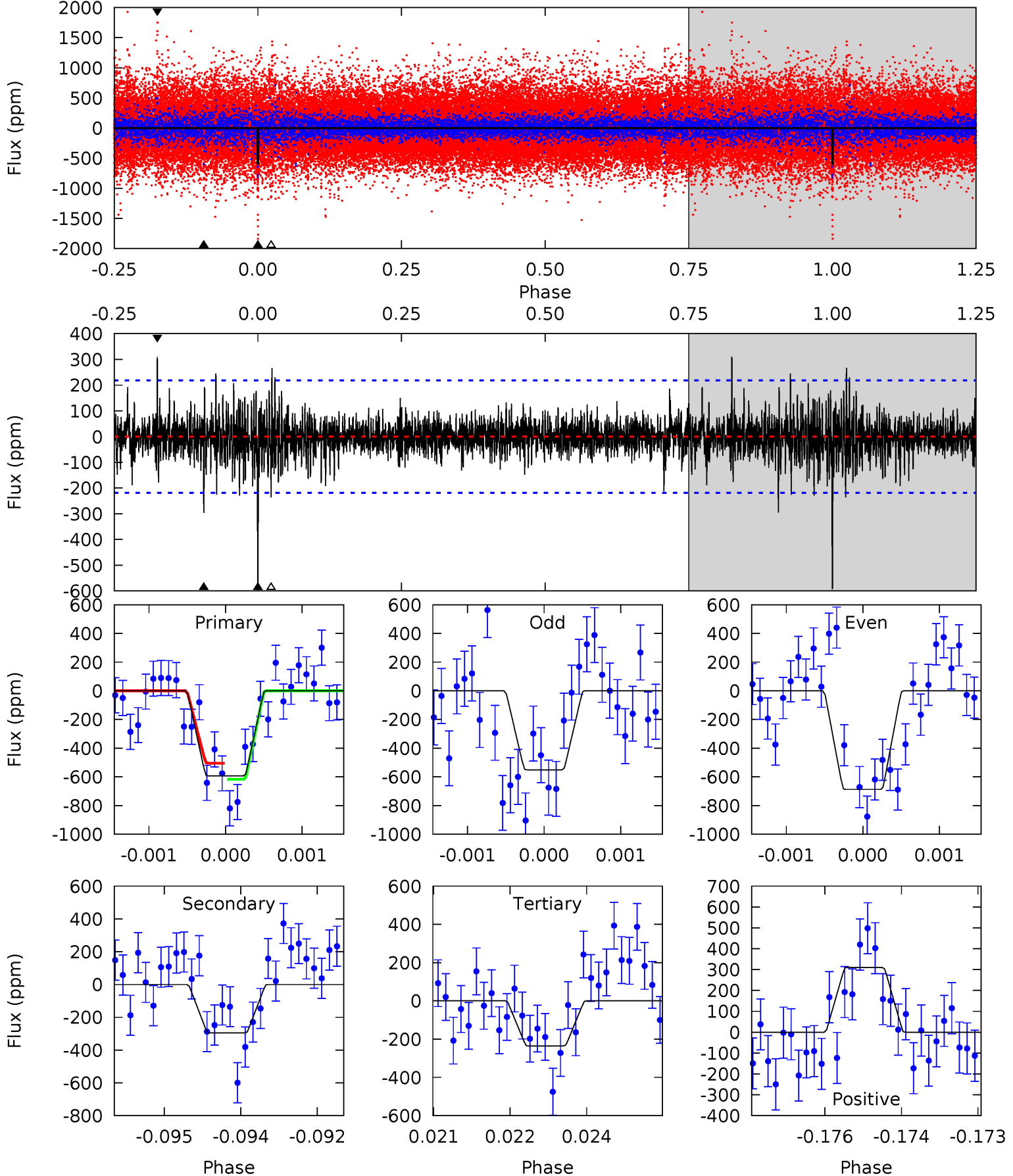
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	18.0	12.4	15.9	5.25	2.96	3.03	12.5	8.98	5.63	2.08	8.52	1.09	0.39	1.62



# Alt Model-Shift Uniqueness Test

009771576-01, P = 398.822224 Days, E = 82.315894 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
14.6	7.28	5.80	7.63	5.38	3.18	1.31	8.81	6.98	1.48	-0.35	1.66	1.37	0.34	1.34



### Stellar Parameters For KIC 009771576

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5303^{+159}_{-143}$	$4.594^{+0.035}_{-0.105}$	$-0.120^{+0.300}_{-0.300}$	$0.771^{+0.122}_{-0.066}$	$0.861^{+0.070}_{-0.096}$	$2.645^{+0.481}_{-0.856}$
	+3%/-3%	+1%/-2%	+250%/-250%	+16%/-9%	+8%/-11%	+18%/-32%
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 009771576-01 / KOI 8185.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-531 \pm 29$	$3.32^{+0.38}_{-0.32}$	$291^{+12}_{-12}$	$4298^{+186}_{-154}$	$26309^{+5827}_{-5042}$
Alt.	$-296 \pm 41$	$2.53^{+0.35}_{-0.28}$	$290^{+13}_{-11}$	$4257^{+232}_{-214}$	$25202^{+7298}_{-6130}$

$T_{\text{max}}$  = 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

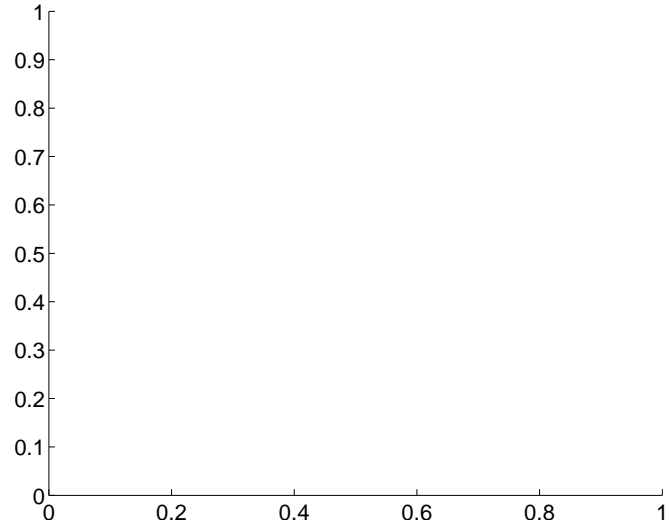
Supplemental centroid analysis for 009771576-01. Kepler magnitude: 14.97. Transit SNR 12.20

There are 0 quarters with good PRF difference image offsets

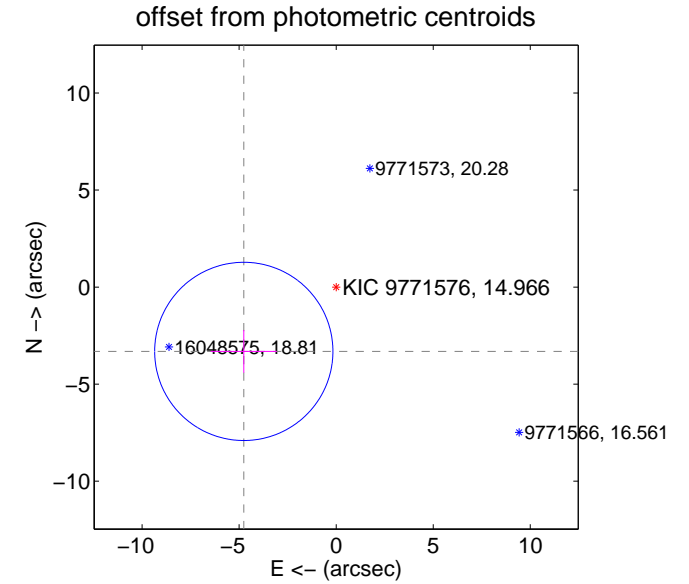
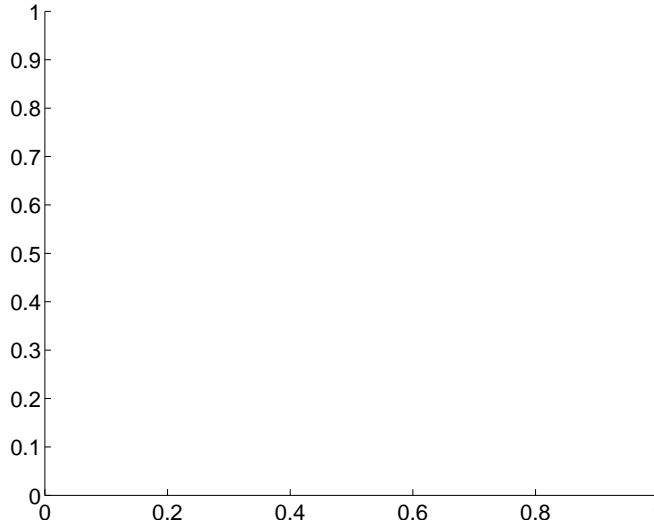
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$5.80 \pm 1.53$	3.79	$4.76 \pm 1.70$	$-3.31 \pm 1.10$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



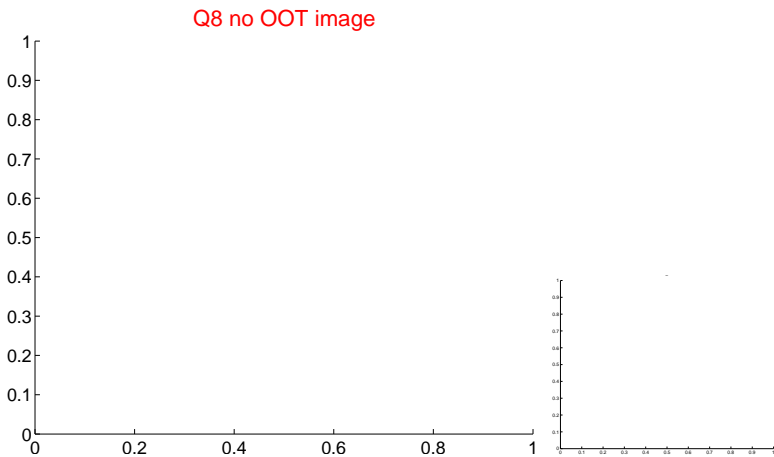
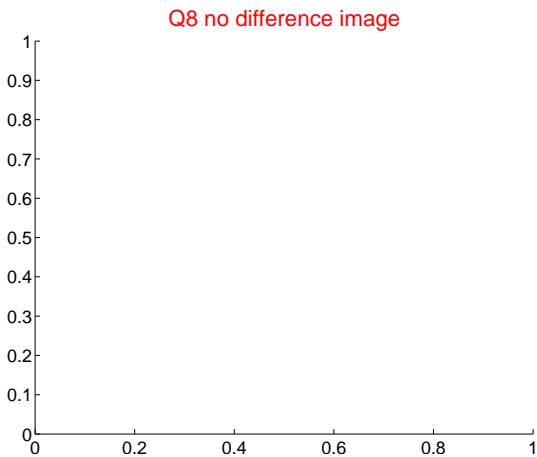
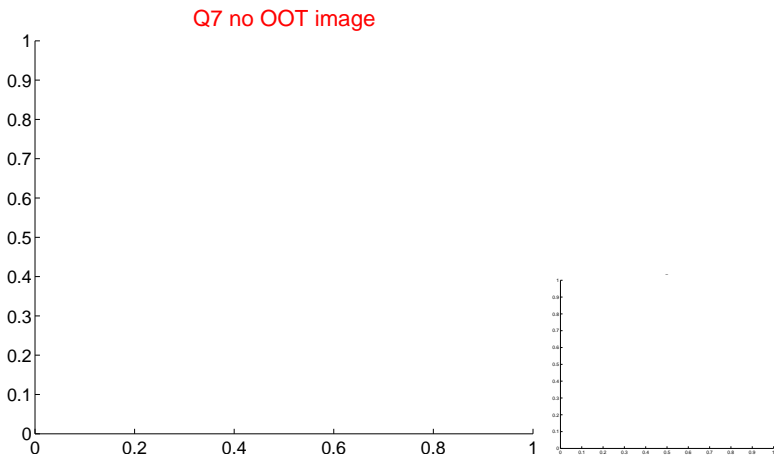
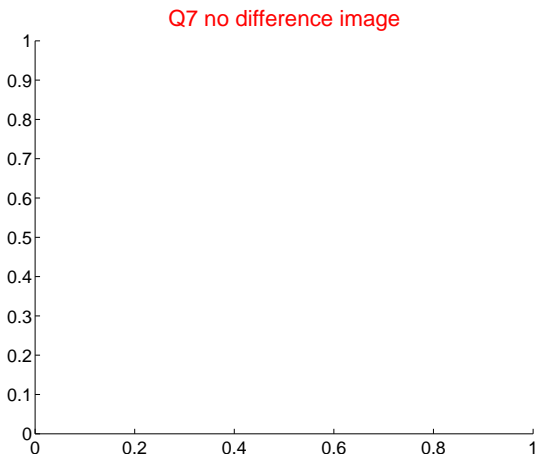
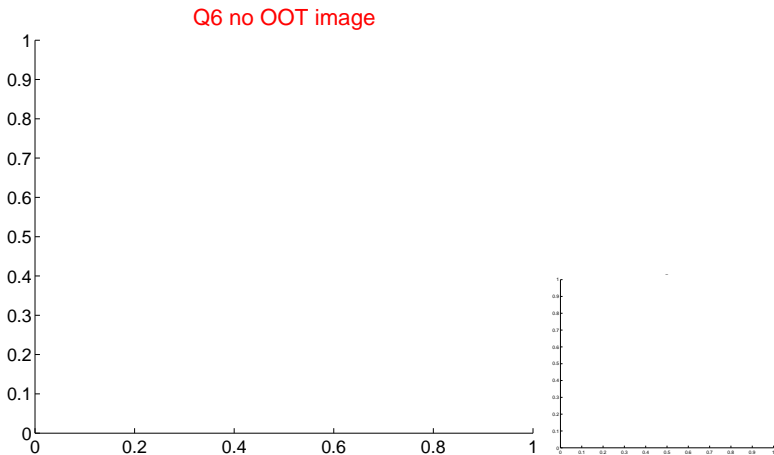
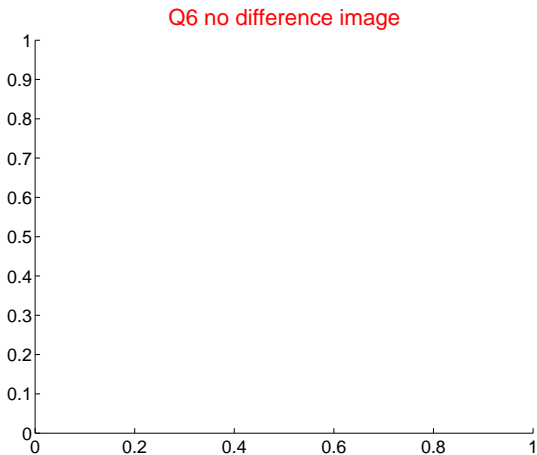
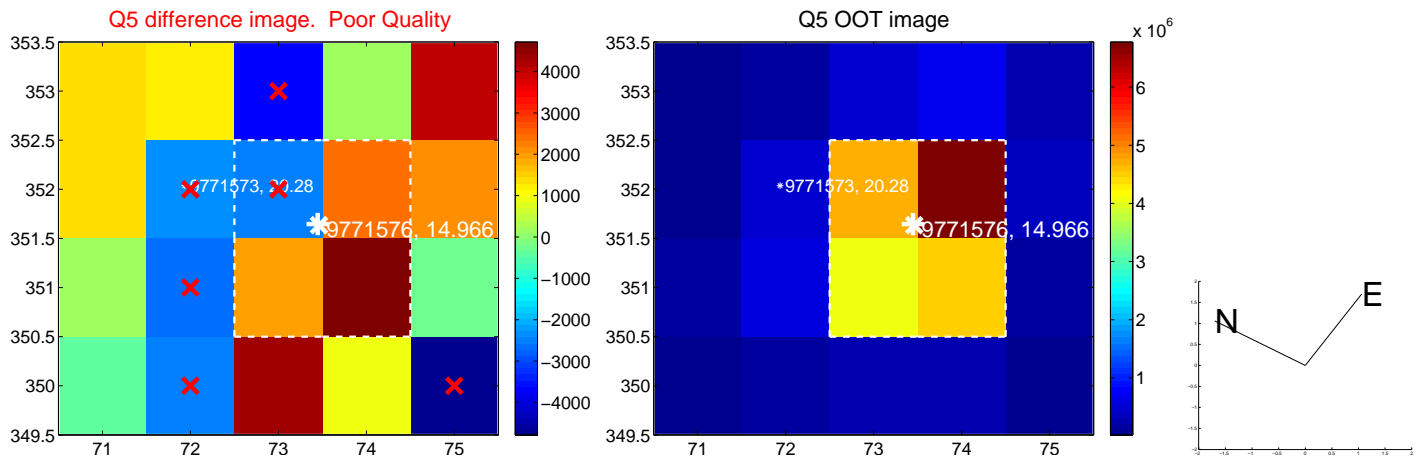
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



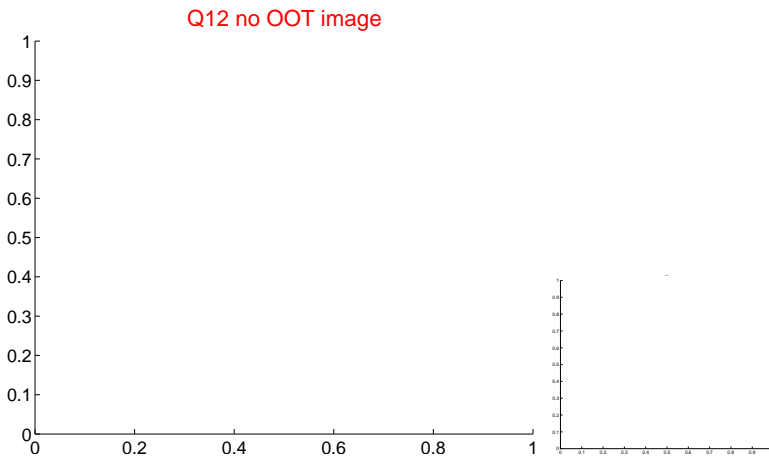
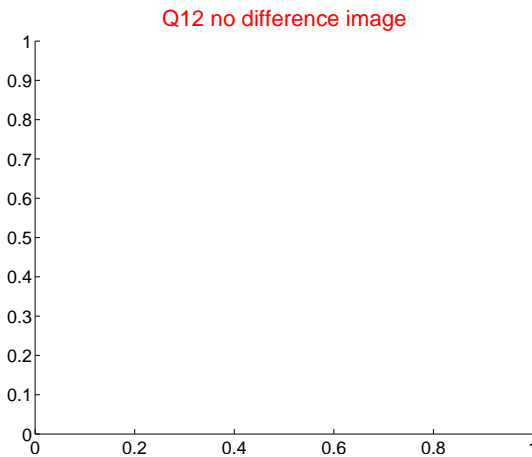
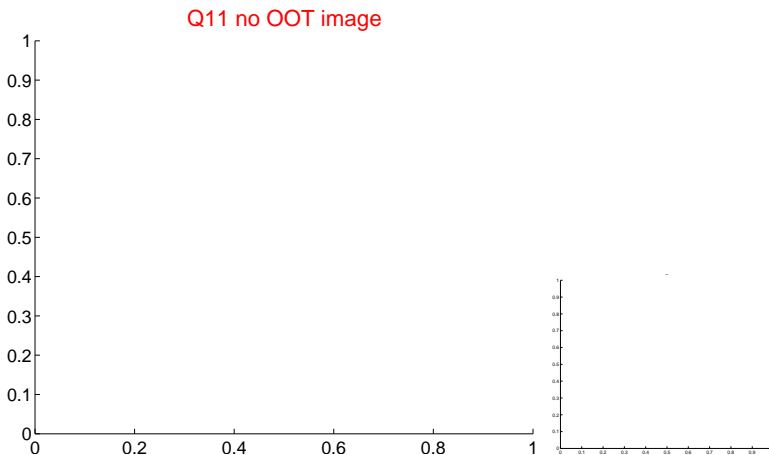
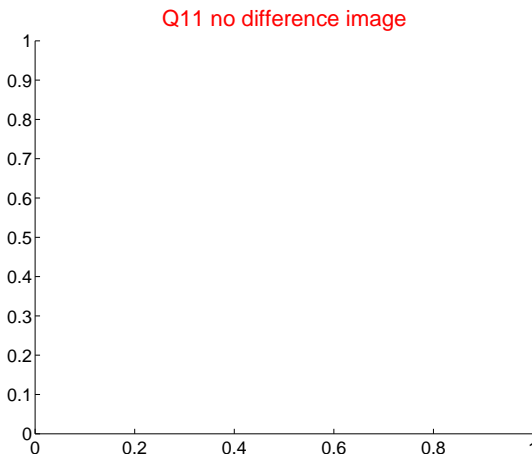
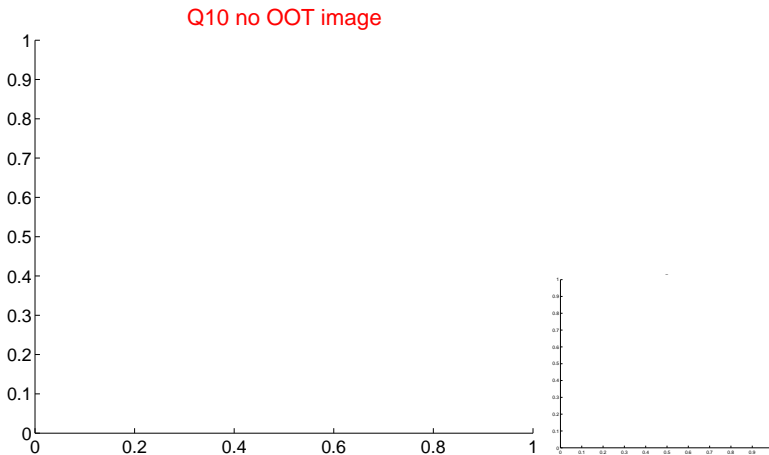
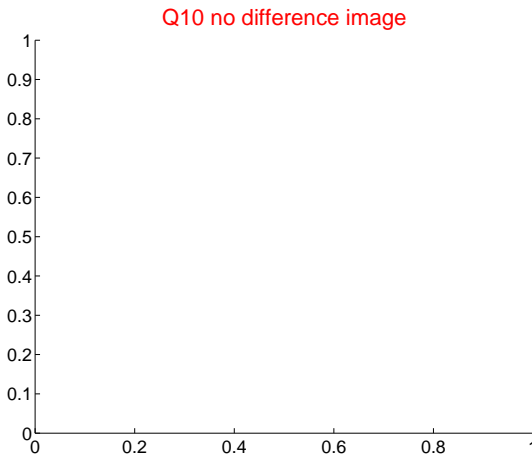
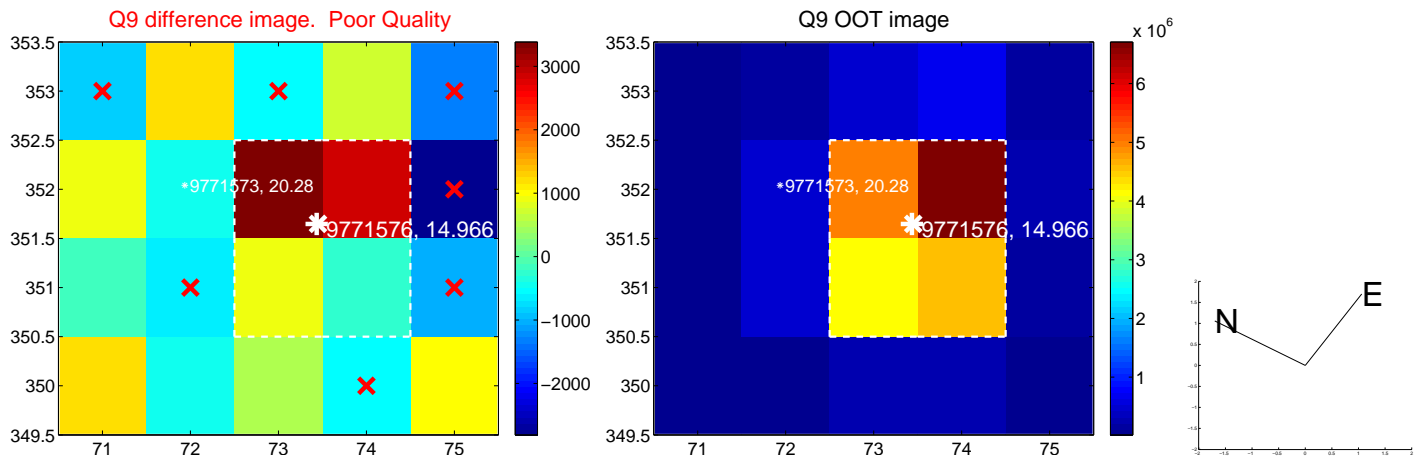
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



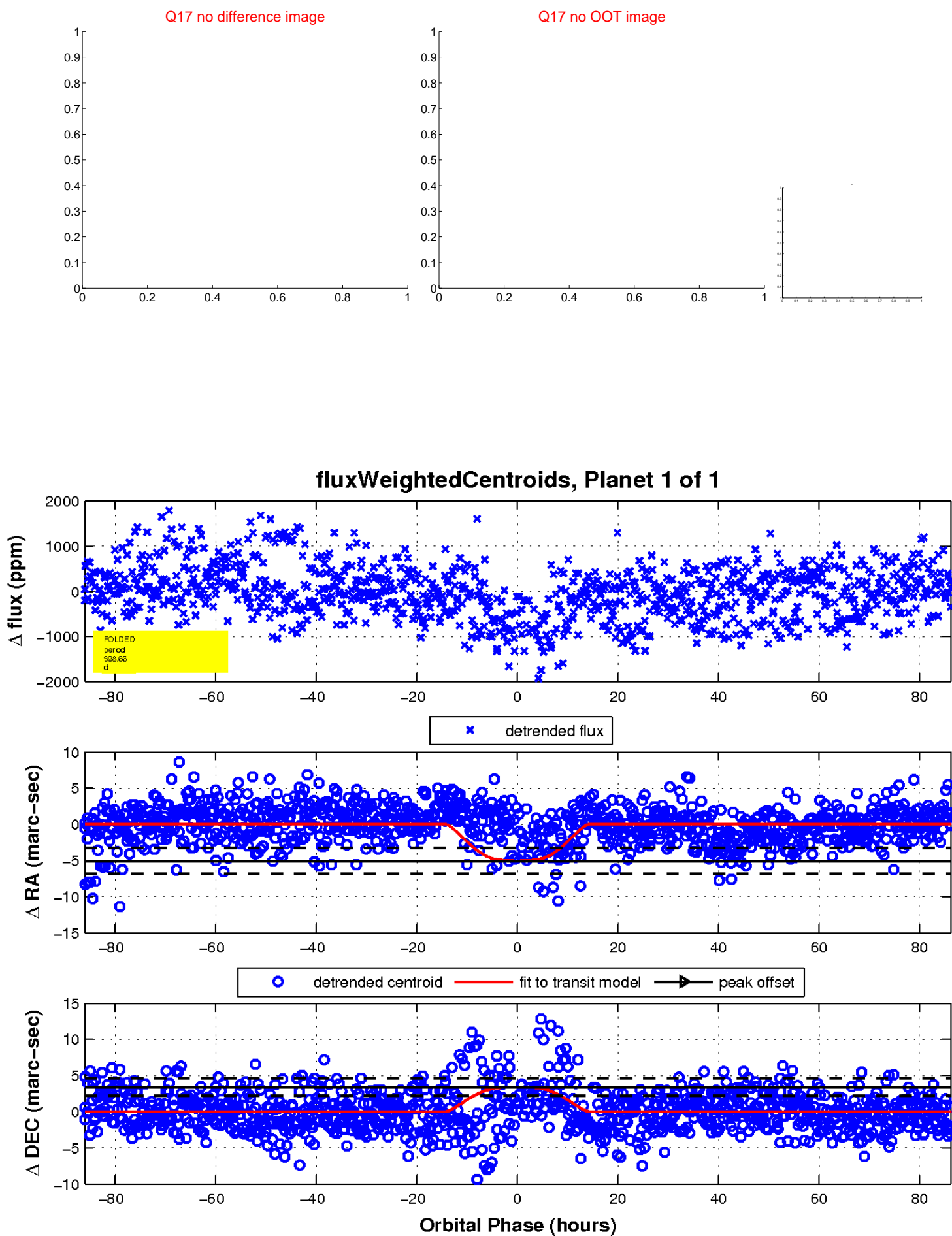
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

Declination

