

# KIC 009053779

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009053779-01	OBS	No	402.031968	294.416152	176.7	5.684	7.6	7.1	0.82	5349	1.31	0.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009053779-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_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.

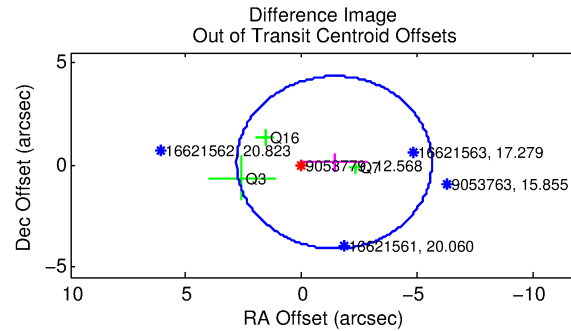
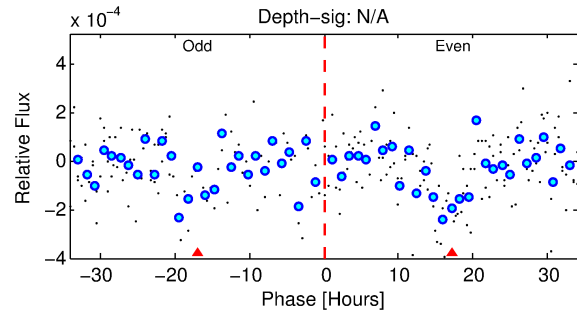
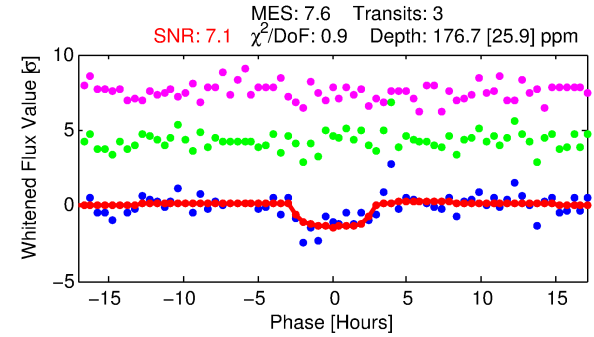
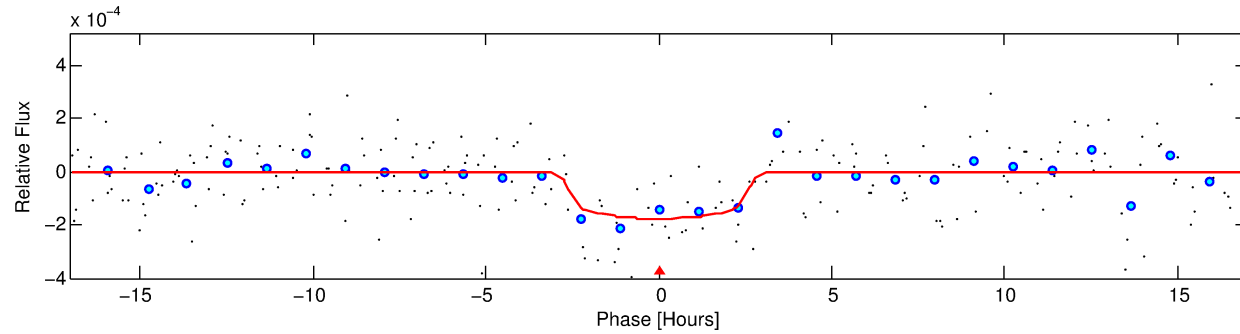
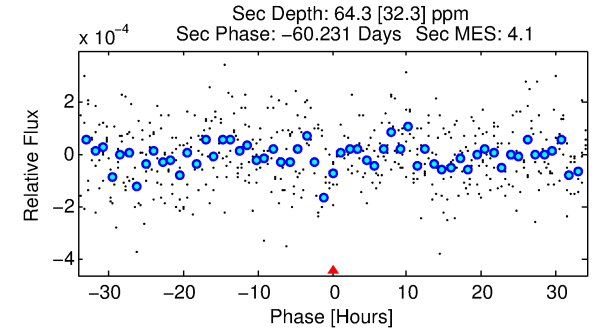
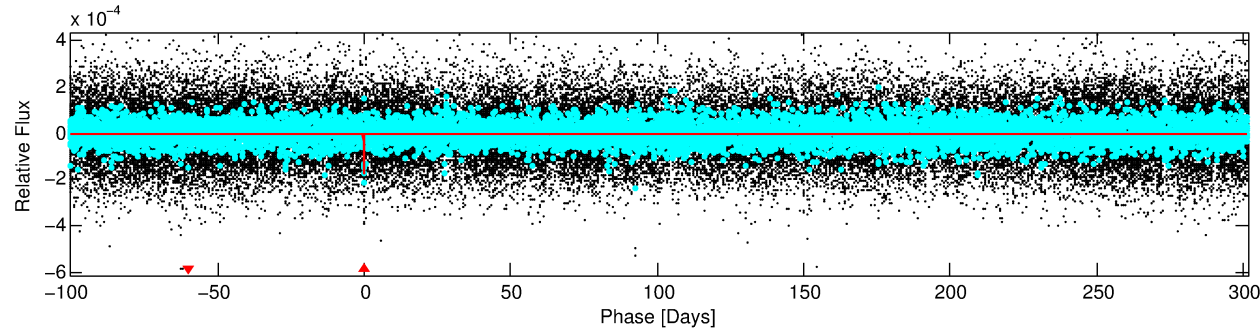
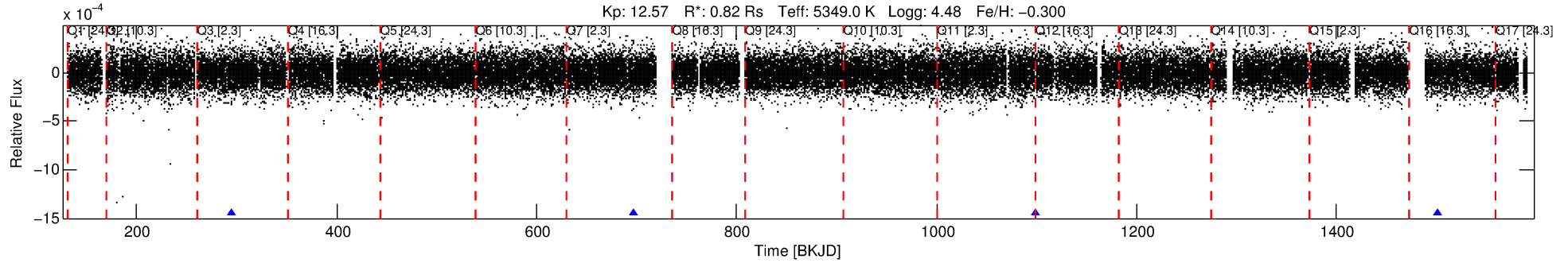
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009053779-01

No Significant Match Found

# DV One-Page Summary

KIC: 9053779 Candidate: 1 of 1 Period: 402.032 d



## DV Fit Results:

Period = 402.03197 [0.00650] d  
Epoch = 294.4162 [0.0135] BKJD  
Rp/R\* = 0.0146 [0.0118]  
a/R\* = 252.18 [895.03]  
b = 0.90 [0.76]  
Seff = 0.53 [0.15]  
Teq = 217 [15] K  
Rp = 1.31 [1.08] Re  
a = 0.9685 [0.1594] AU  
Ag = 19345.96 [32960.70] [0.59σ]  
Teffp = 3962 [1673] K [2.24σ]

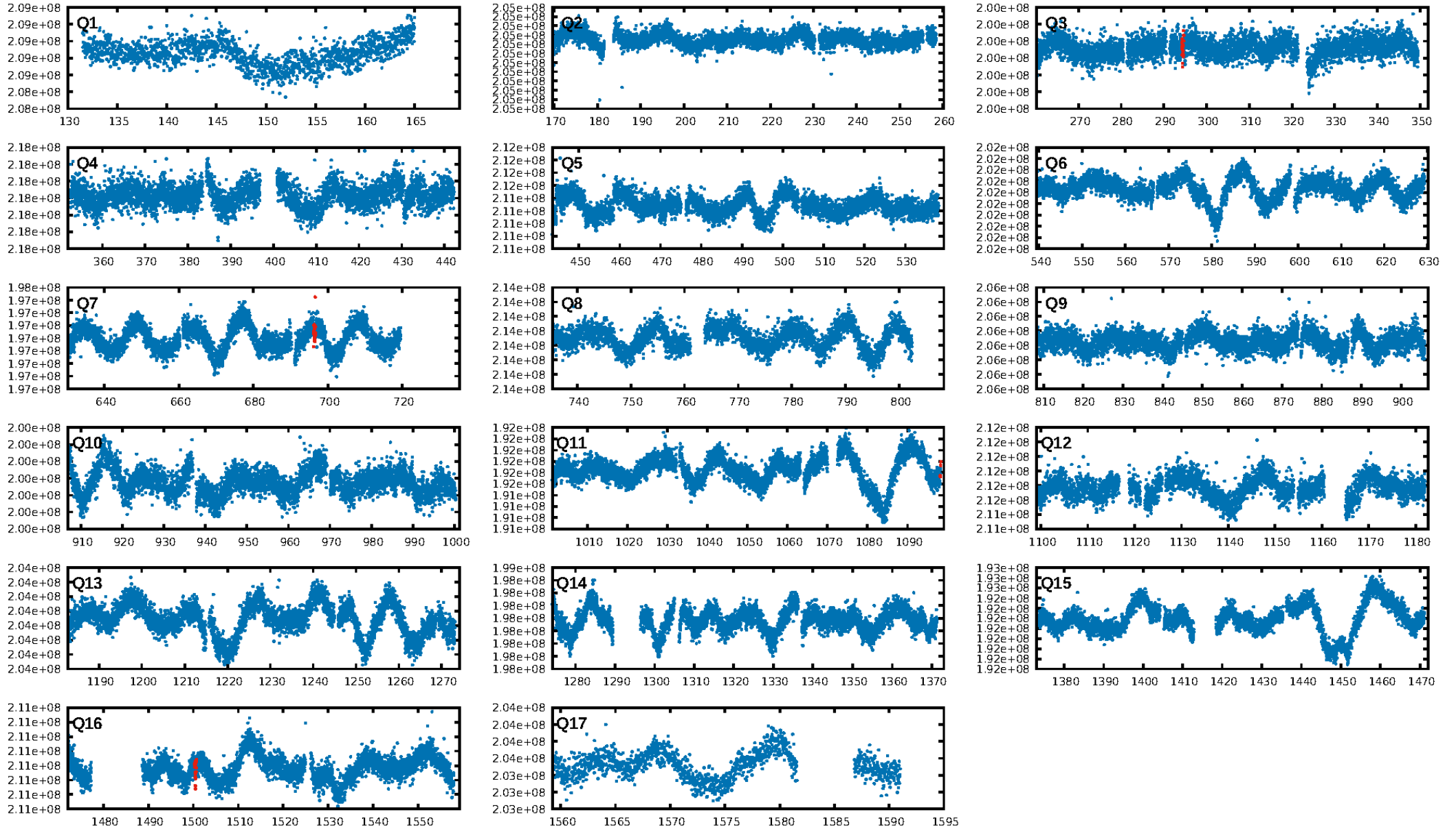
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 24.6%  
ModelChiSquareGof-sig: 95.2%  
**Bootstrap-pfa: 5.04e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.354  
Centroid-sig: 68.7%  
Centroid-so: 0.806 arcsec [0.39σ]  
OotOffset-rm: 1.422 arcsec [1.01σ]  
OotOffset-st: 0.2/1/0 [3]  
KicOffset-rm: 1.486 arcsec [0.98σ]  
KicOffset-st: 0.2/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

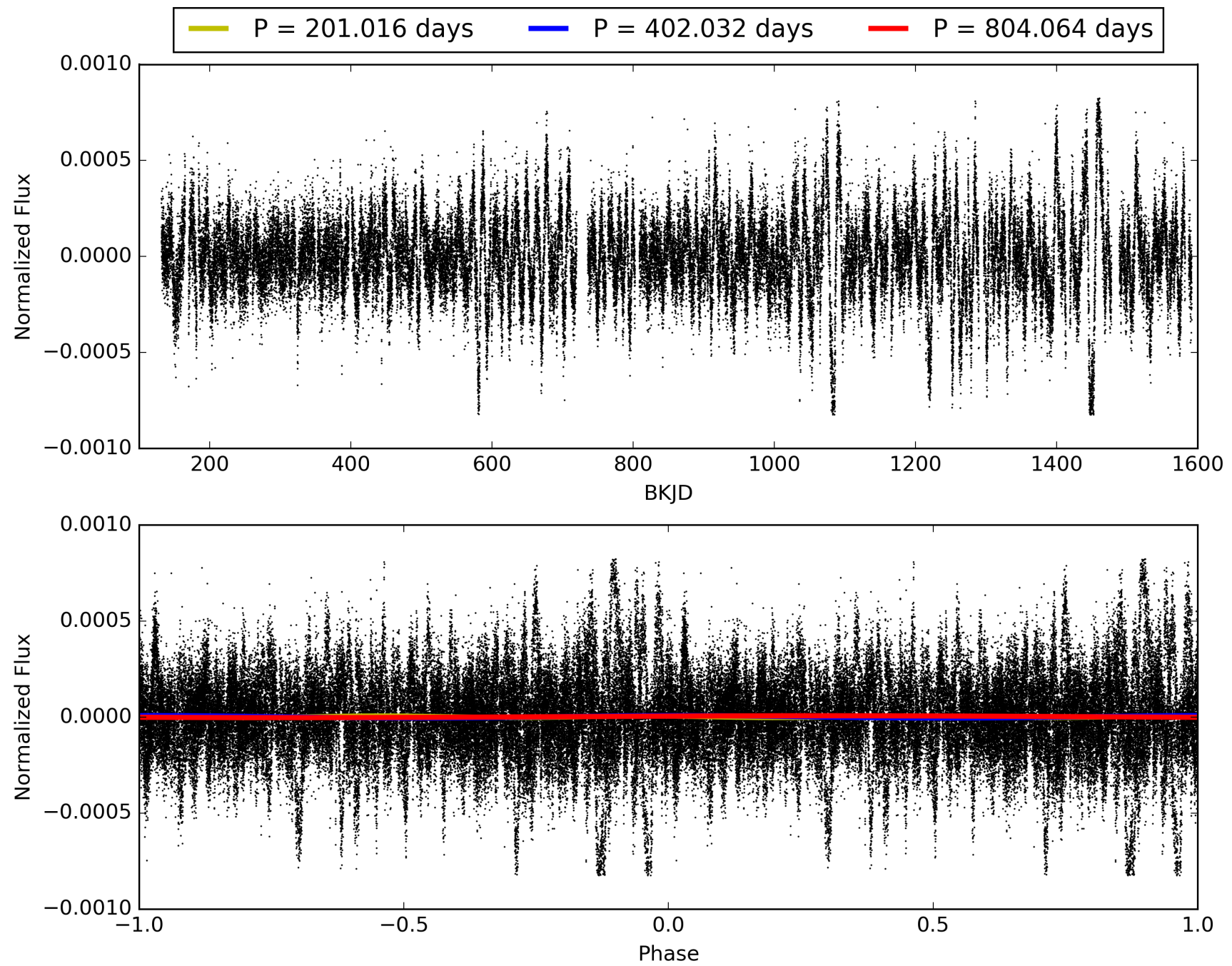
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:52:08 Z

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

# TCE 009053779-01, PDC Light Curves

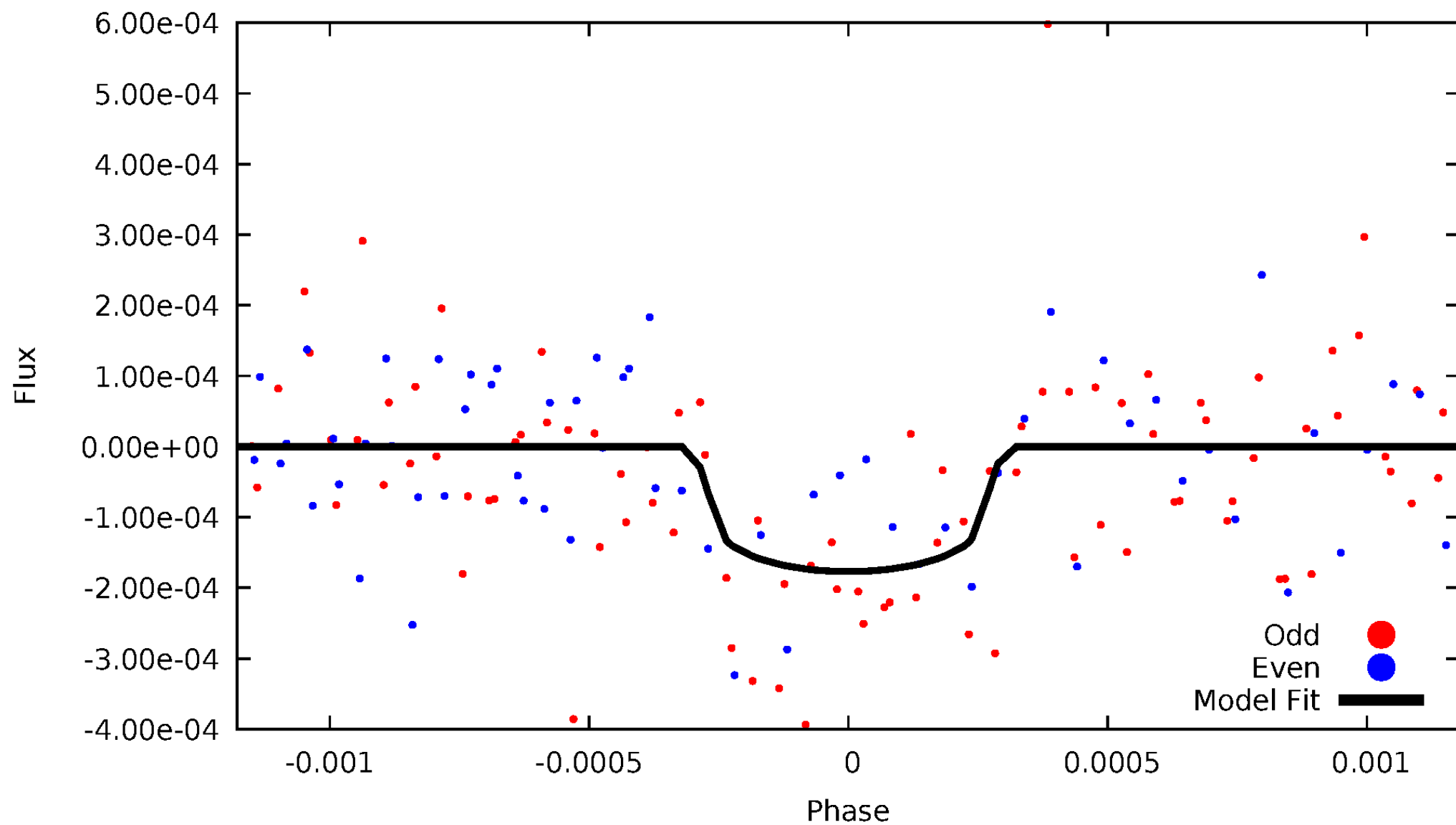


TCE 009053779-01



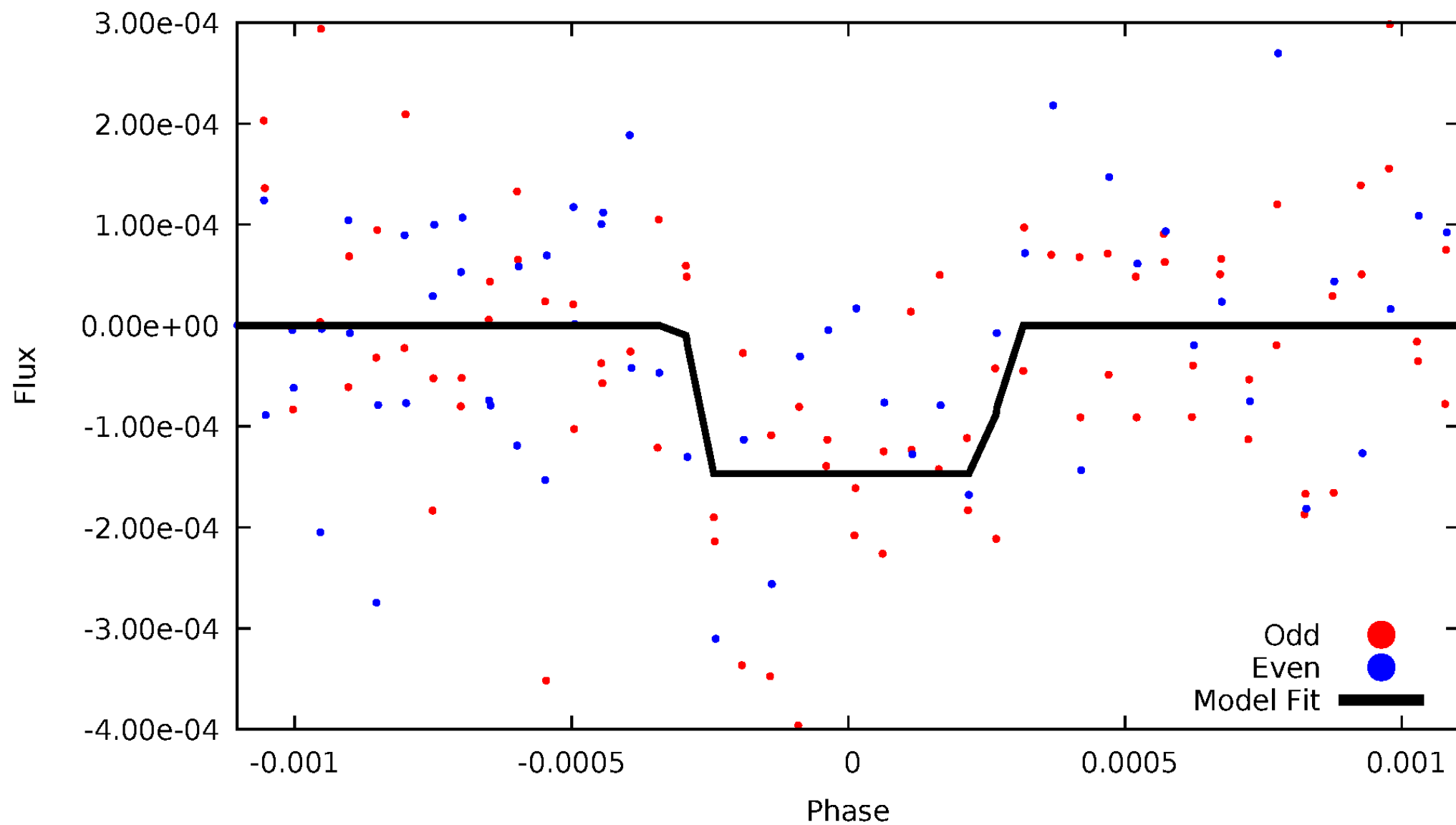
# DV Odd/Even

TCE 009053779-01



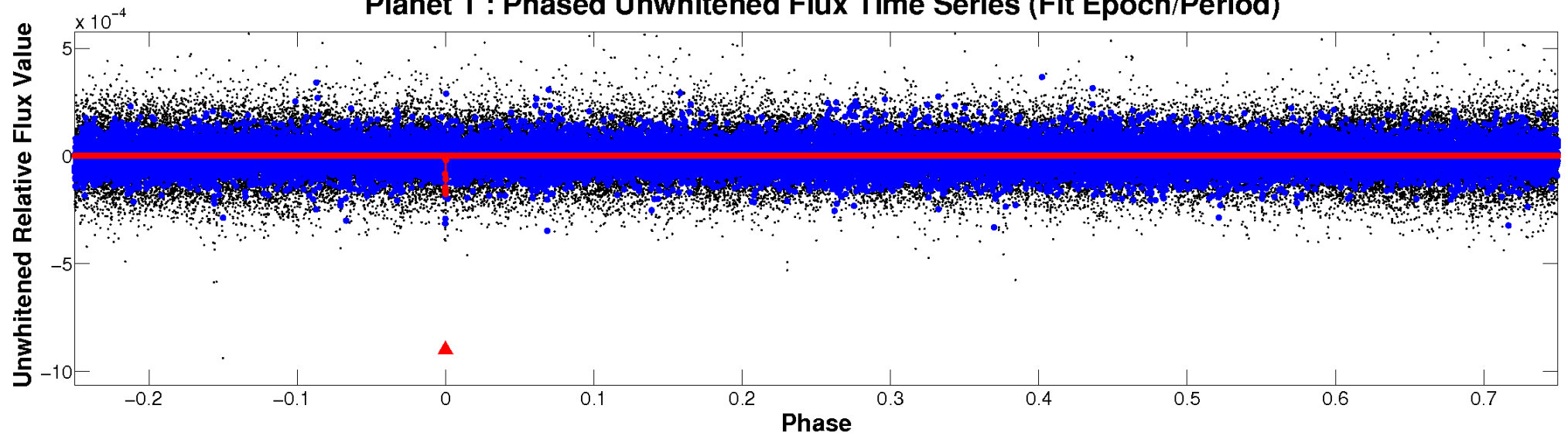
# ALT Odd/Even

TCE 009053779-01

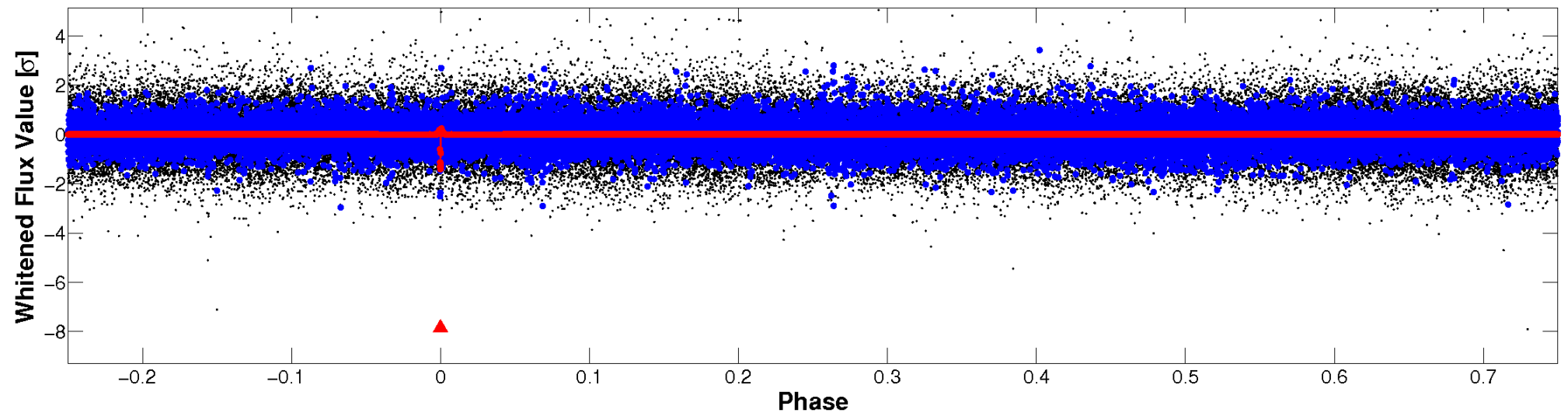


# Non-Whitened Vs. Whitened Light Curve

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

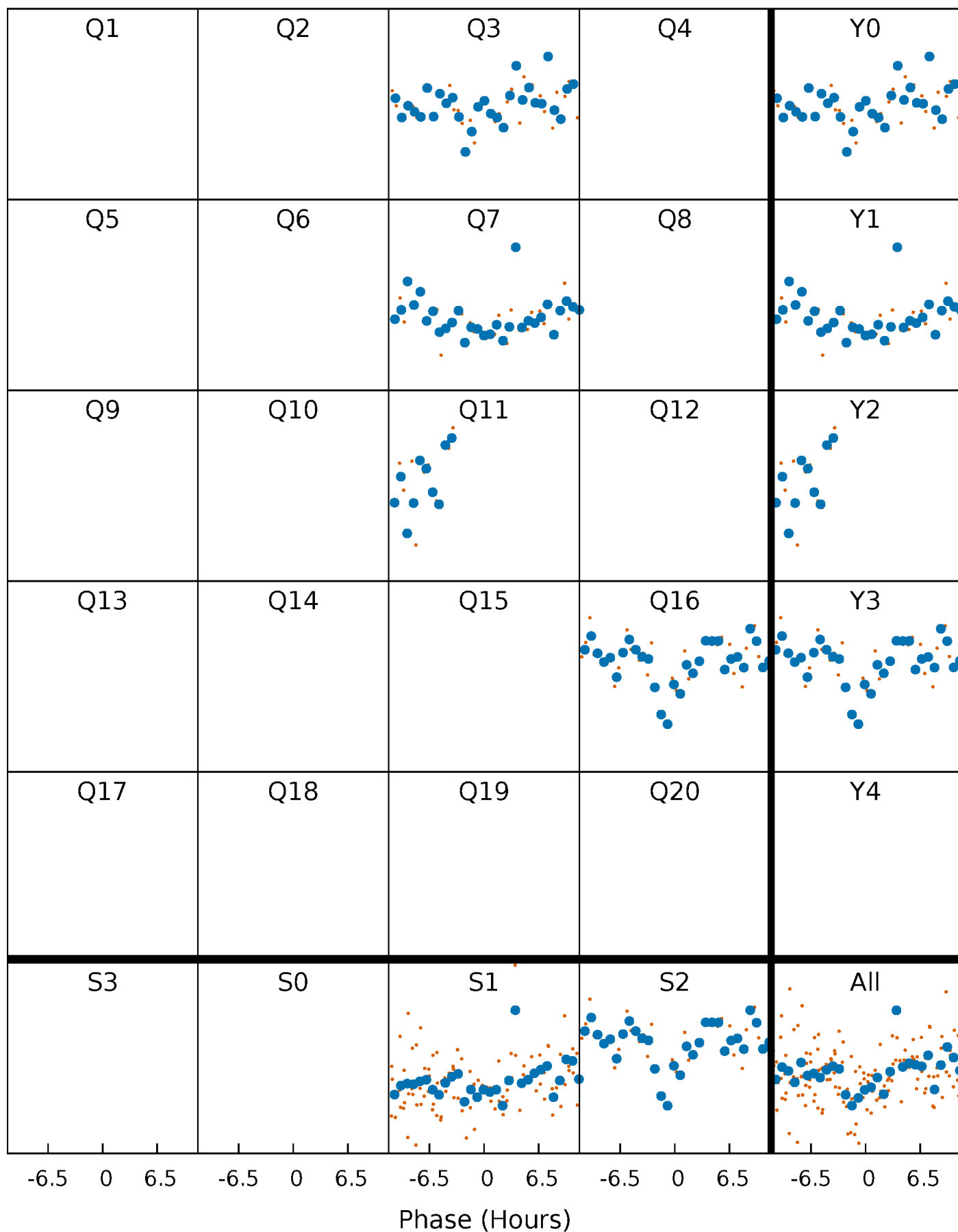


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

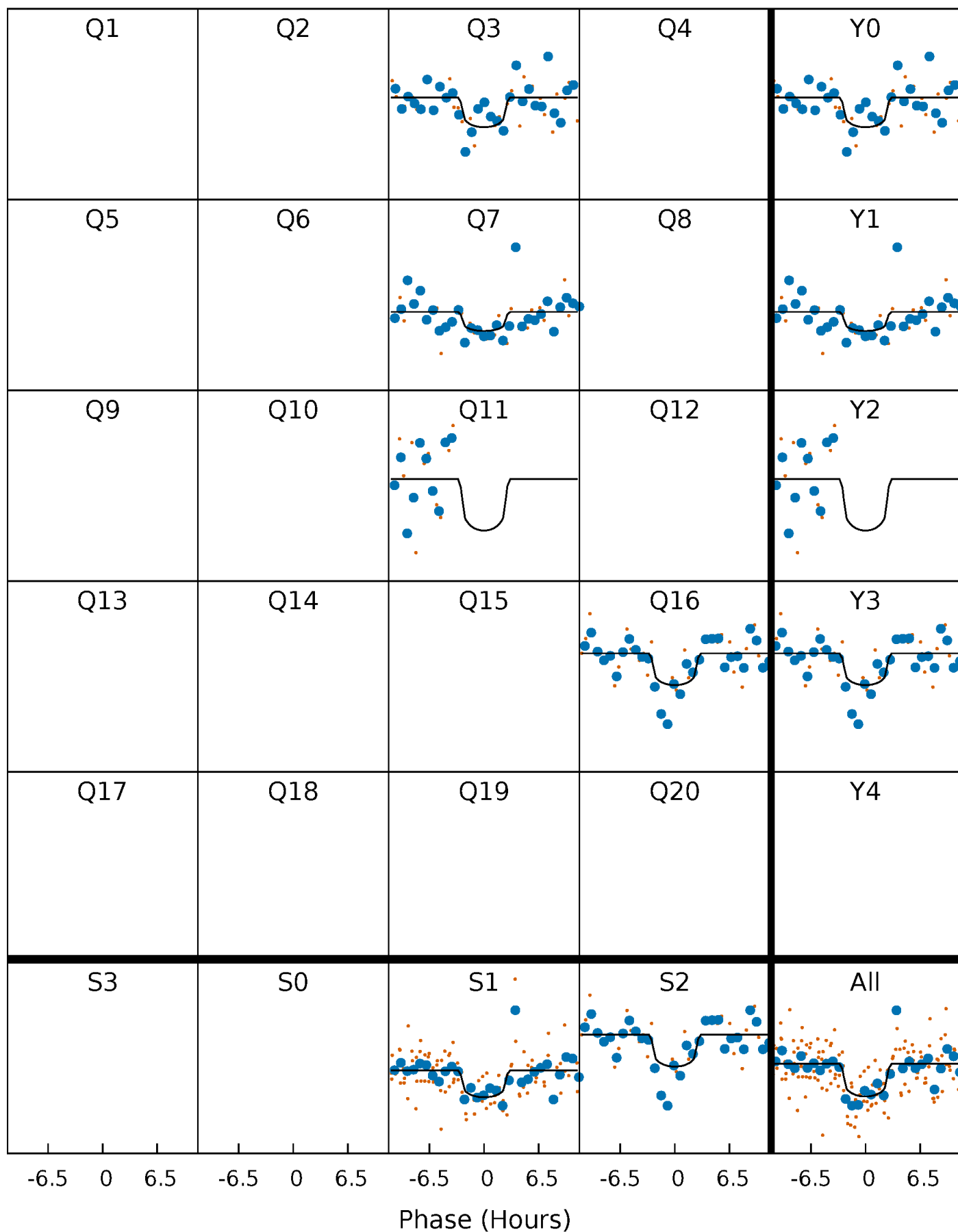
TCE 009053779-01 P=402.031968 Days  $T_0=294.416152$  (BKJD)





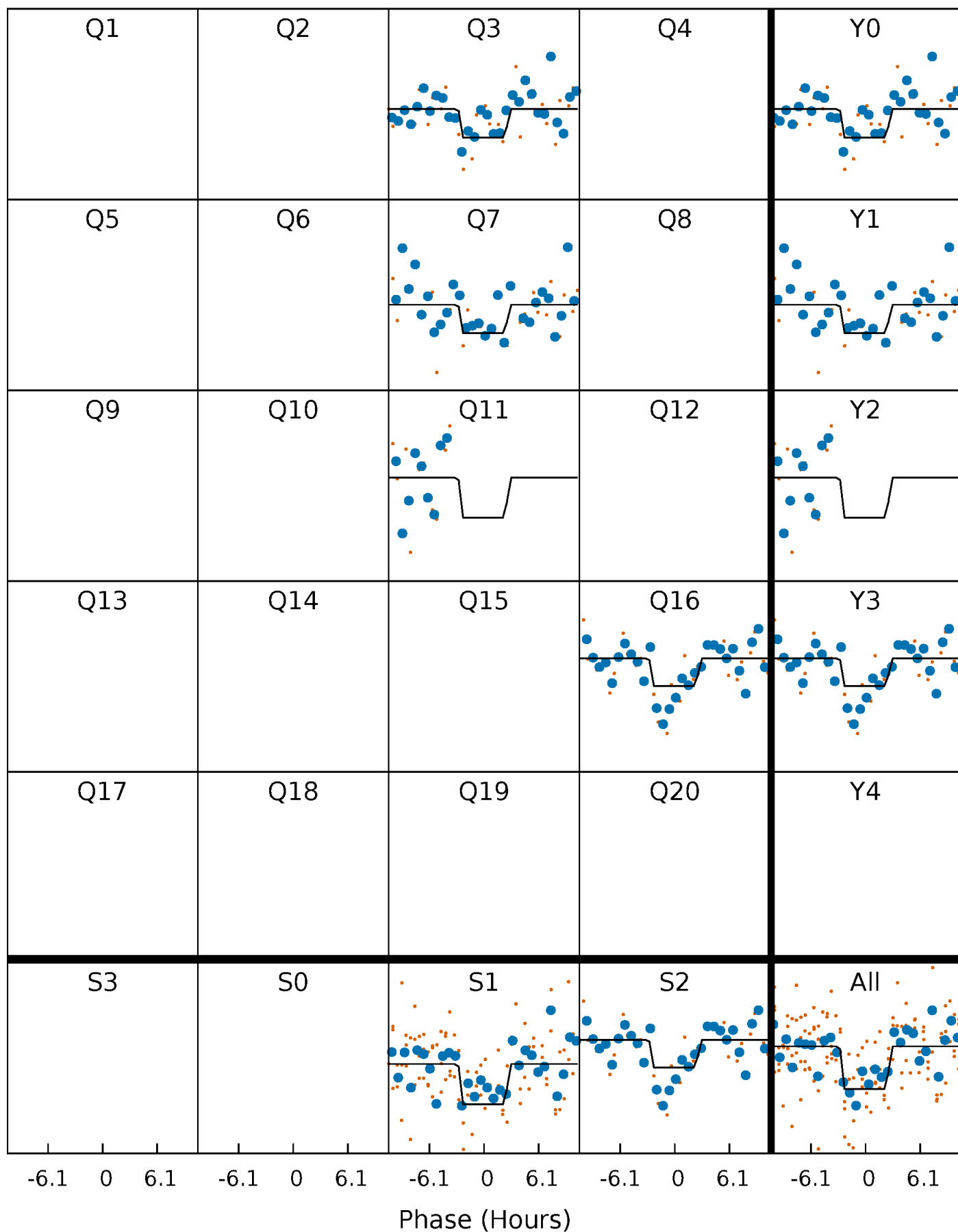
# DV Quarter-Phased Transit Curves

TCE 009053779-01 P=402.031968 Days  $T_0=294.416152$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

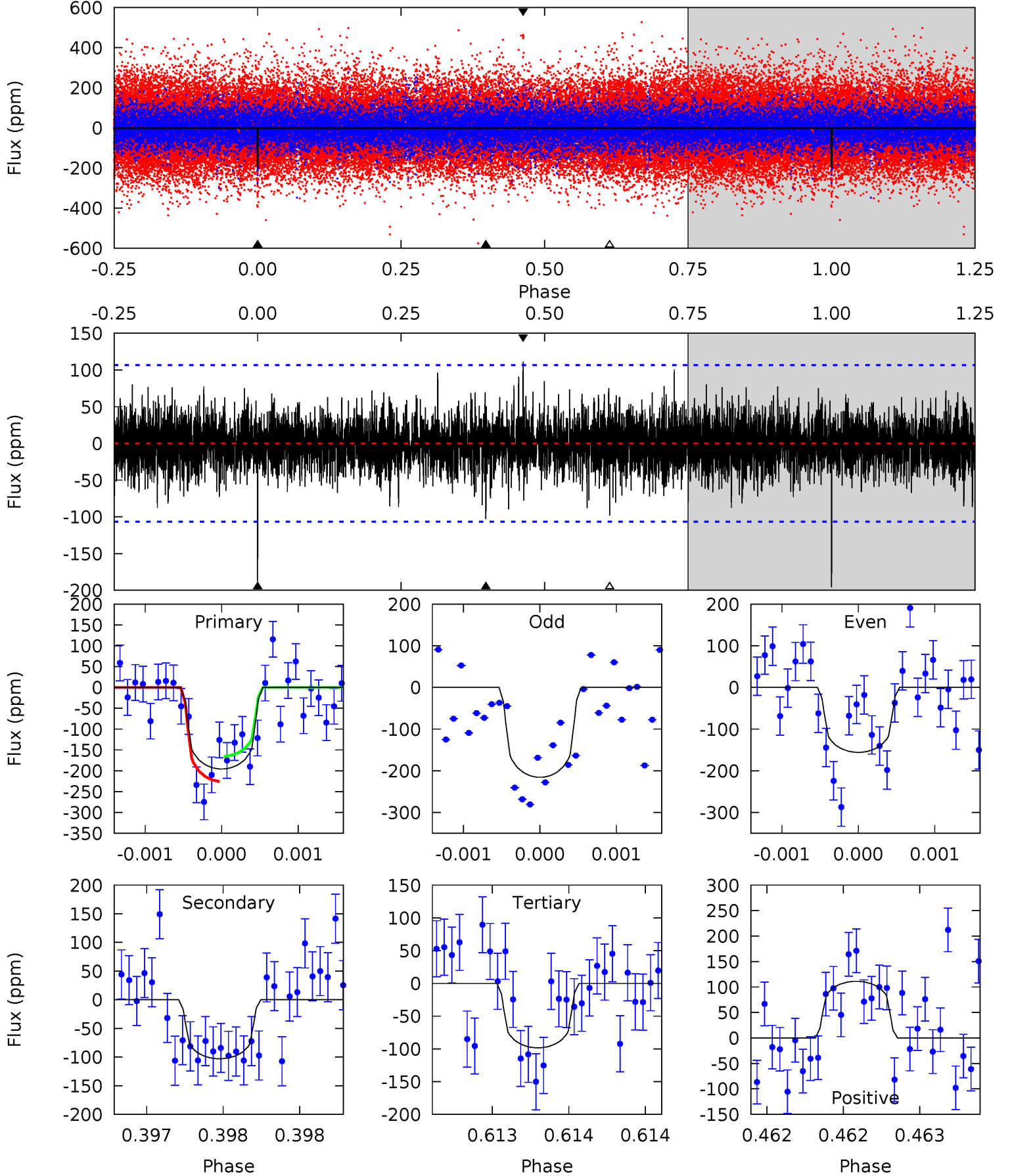
TCE 009053779-01 P=402.030293 Days  $T_0=294.424337$  (BKJD)



# DV Model-Shift Uniqueness Test

009053779-01, P = 402.031968 Days, E = 294.416152 Days

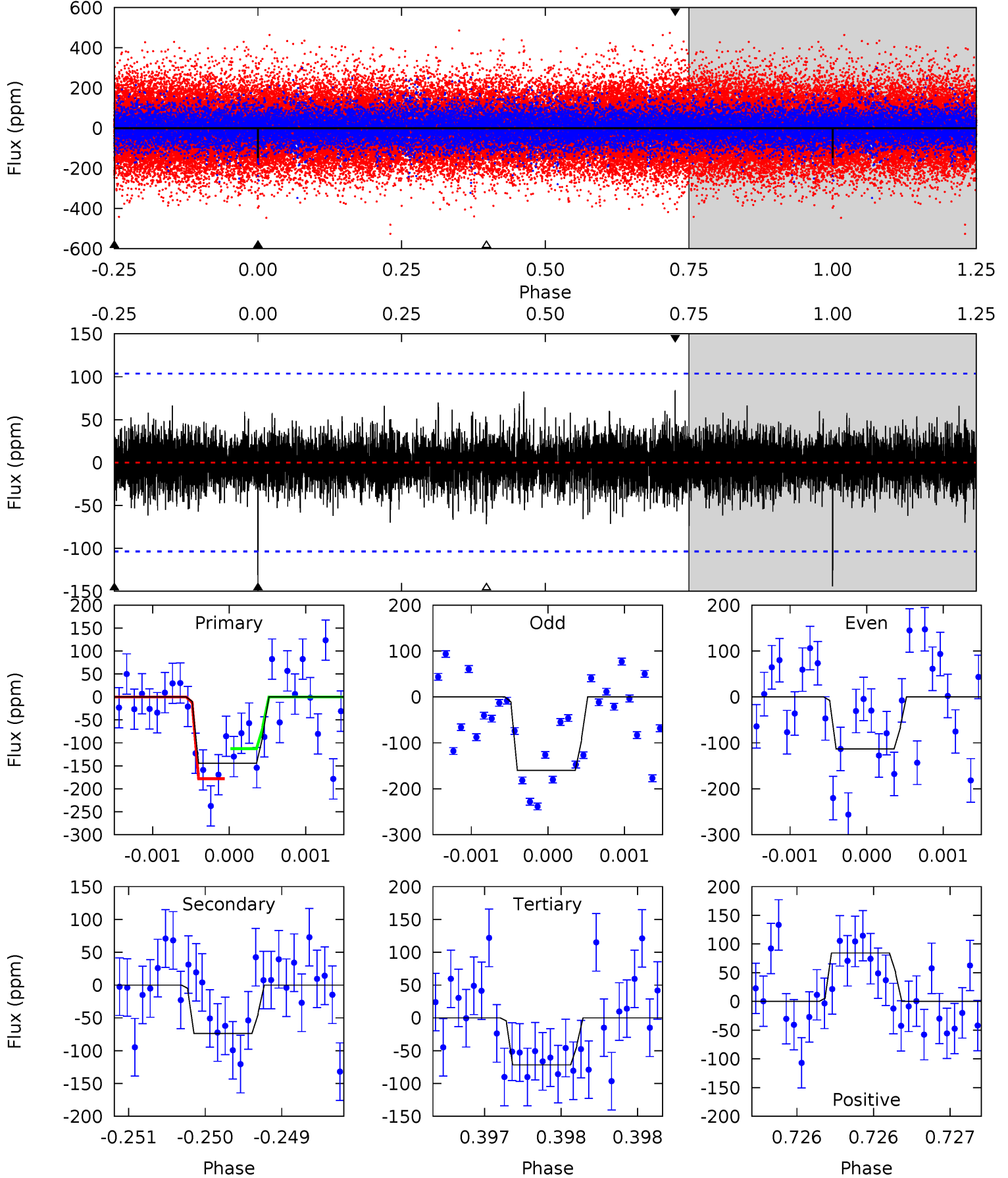
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	5.35	5.11	5.78	5.54	3.43	1.30	5.06	4.39	0.24	-0.43	1.48	0.92	0.36	1.56



# Alt Model-Shift Uniqueness Test

009053779-01, P = 402.030293 Days, E = 294.424337 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
7.71	3.95	3.83	4.51	5.54	3.43	1.01	3.88	3.20	0.12	-0.56	1.18	1.24	0.37	1.75



### Stellar Parameters For KIC 009053779

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5349^{+159}_{-143}$	$4.484^{+0.104}_{-0.143}$	$-0.300^{+0.350}_{-0.250}$	$0.821^{+0.151}_{-0.113}$	$0.750^{+0.113}_{-0.052}$	$1.912^{+0.906}_{-0.718}$
	+3%/-3%	+2%/-3%	+117%/-83%	+18%/-14%	+15%/-7%	+47%/-38%
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 009053779-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-103 \pm 19$	$1.54^{+0.99}_{-0.91}$	$306^{+15}_{-15}$	$4358^{+2014}_{-734}$	$22735^{+113546}_{-14451}$
Alt.	$-74 \pm 19$	$1.35^{+1.01}_{-0.83}$	$306^{+16}_{-15}$	$4304^{+2353}_{-785}$	$20523^{+135885}_{-14014}$

$T_{max}$  = 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

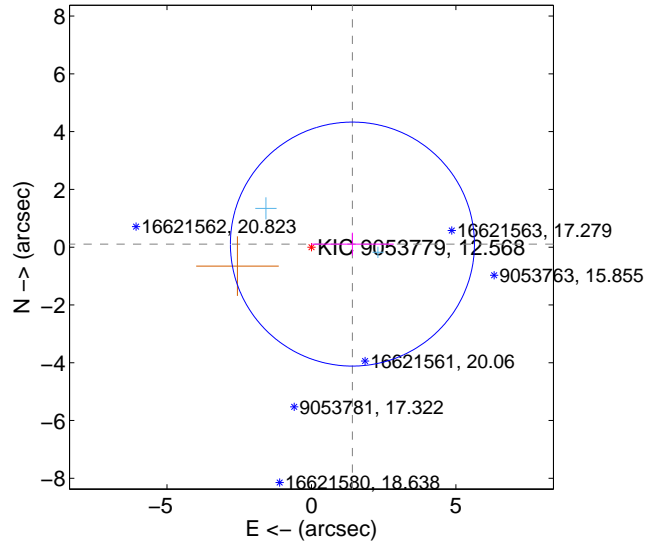
Supplemental centroid analysis for 009053779-01. Kepler magnitude: 12.57. Transit SNR 7.09

There are 2 quarters with good PRF difference image offsets

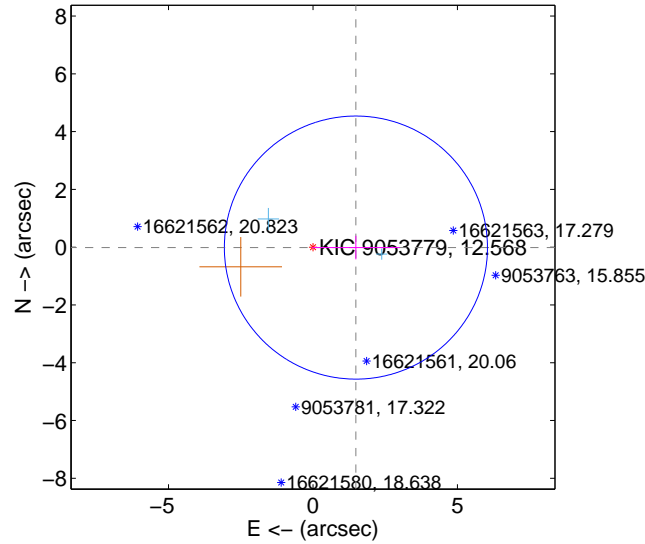
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.422 \pm 1.408$	1.01	$-1.418 \pm 1.431$	$0.107 \pm 0.396$
PRF-fit source offset from KIC position	$1.486 \pm 1.518$	0.98	$-1.486 \pm 1.515$	$-0.014 \pm 0.409$
photometric centroid source offset	$0.81 \pm 2.06$	0.39	$0.32 \pm 2.64$	$0.74 \pm 1.93$

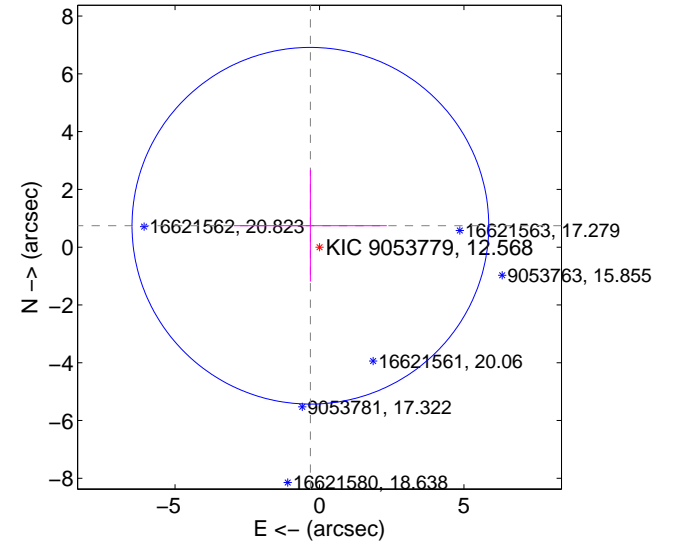
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

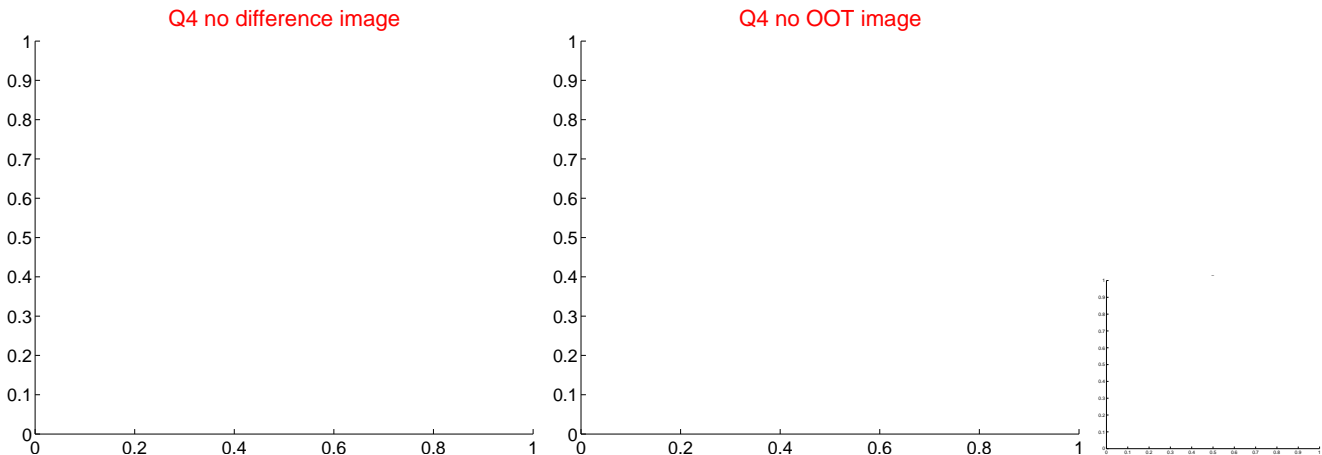
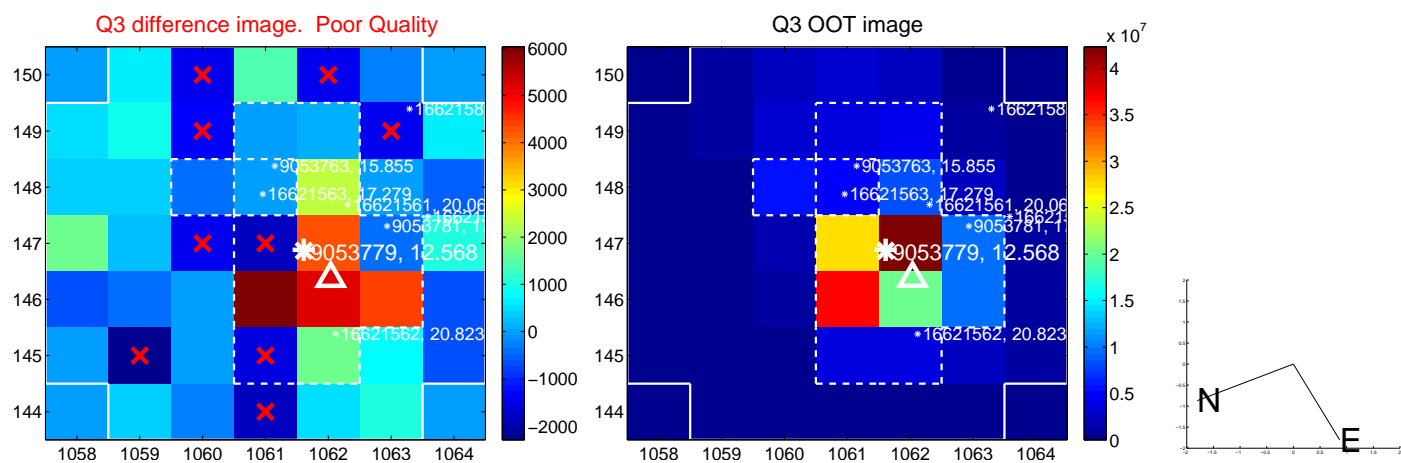
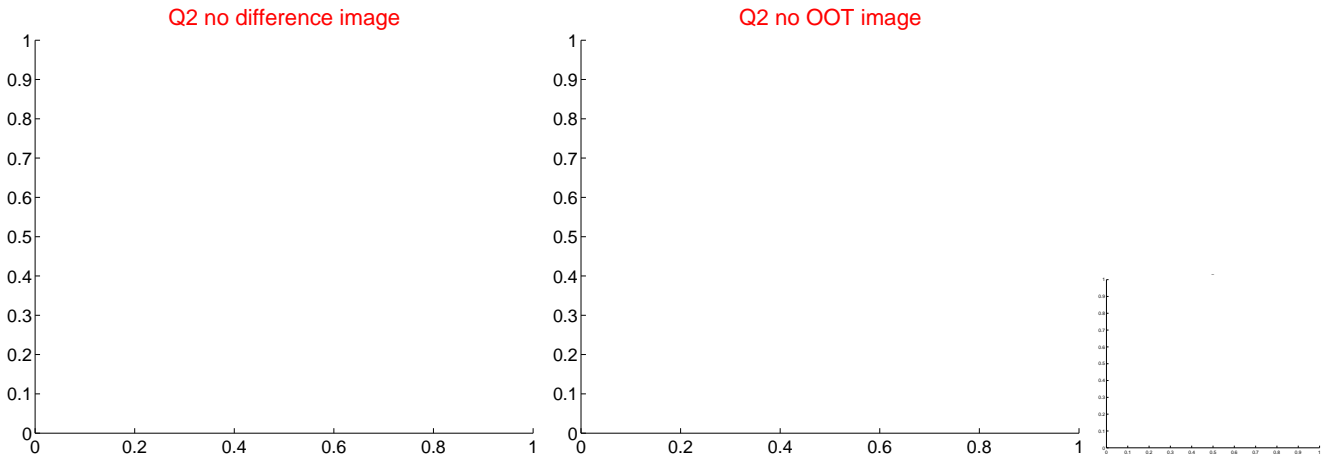


offset from photometric centroids

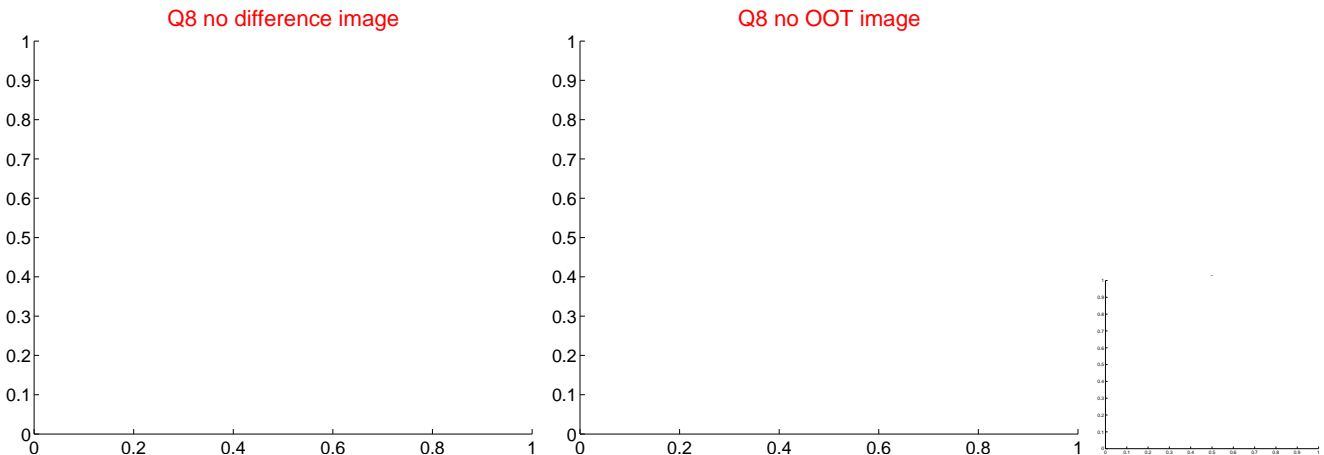
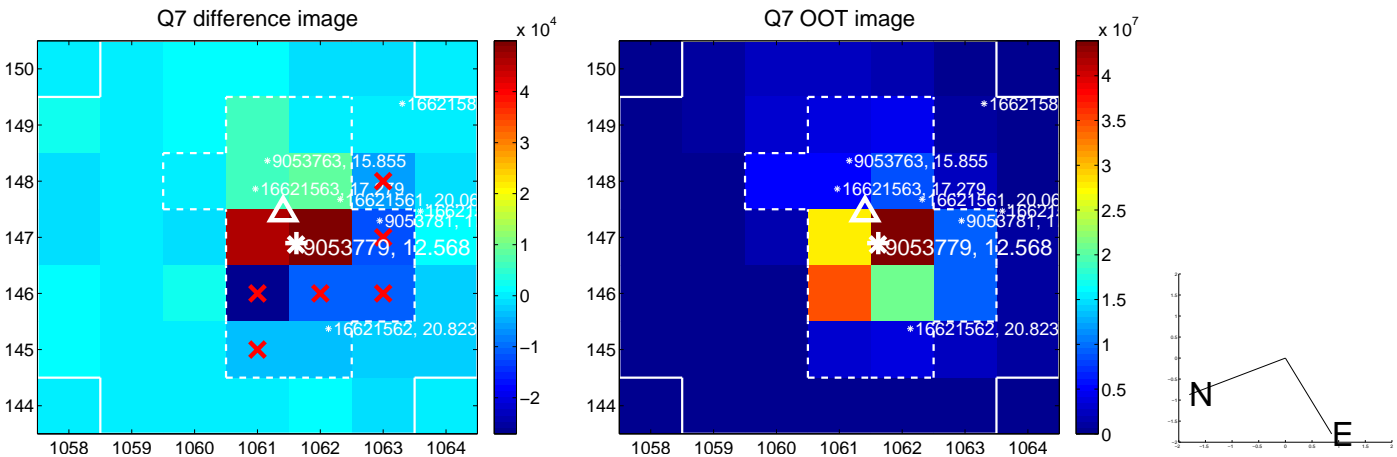
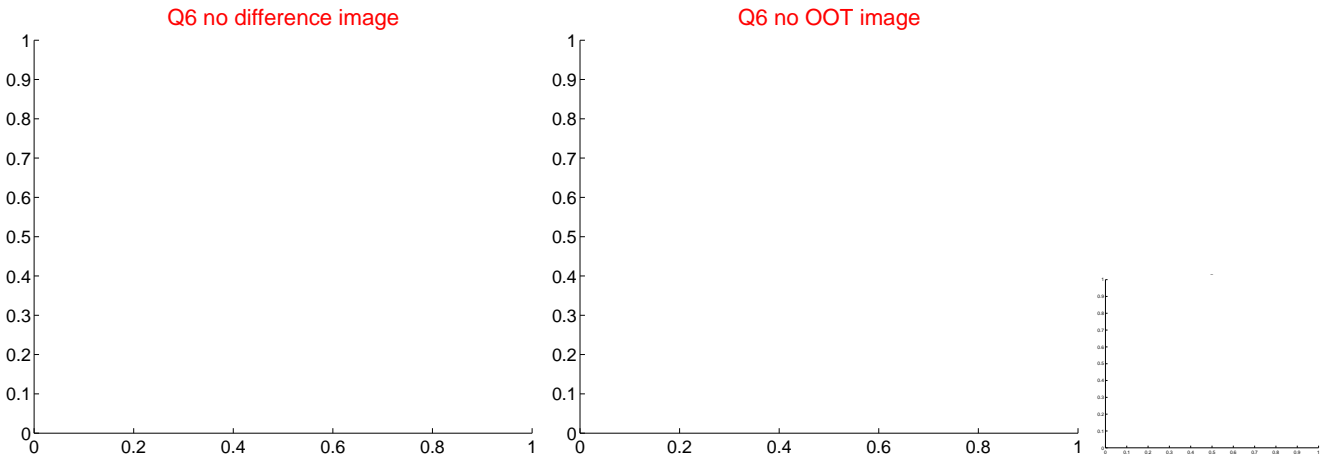
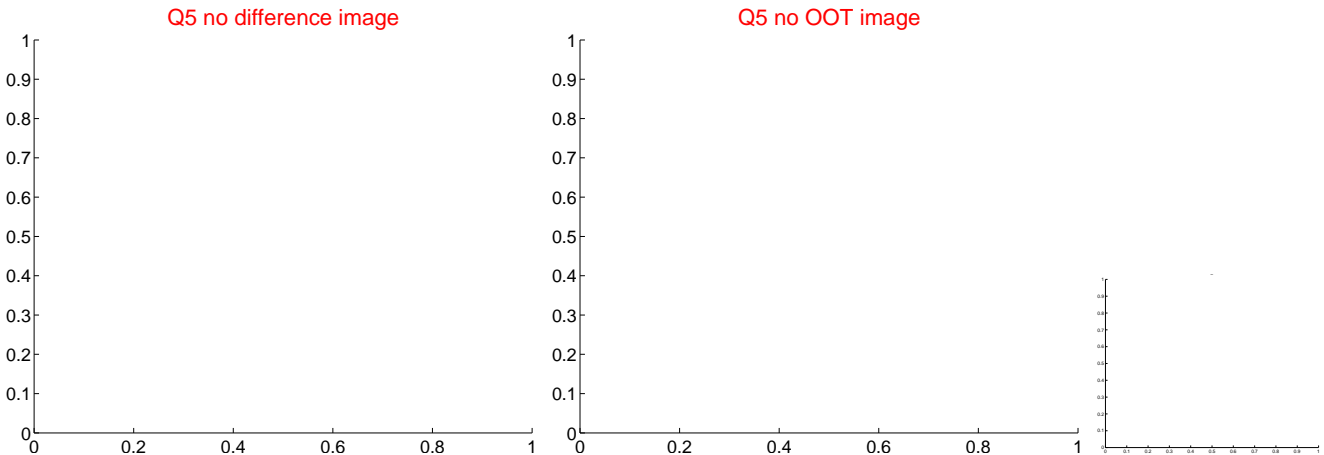


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

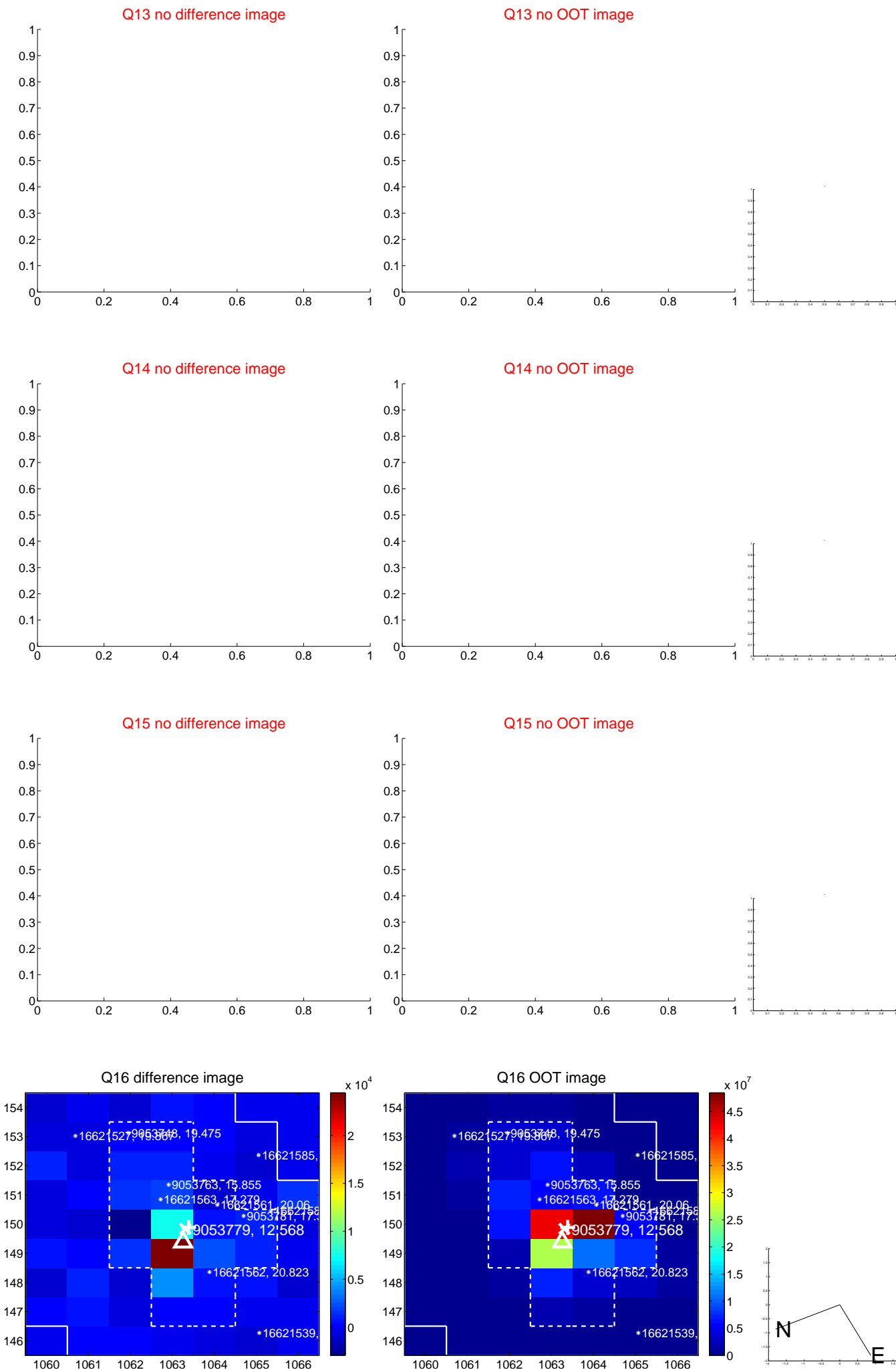




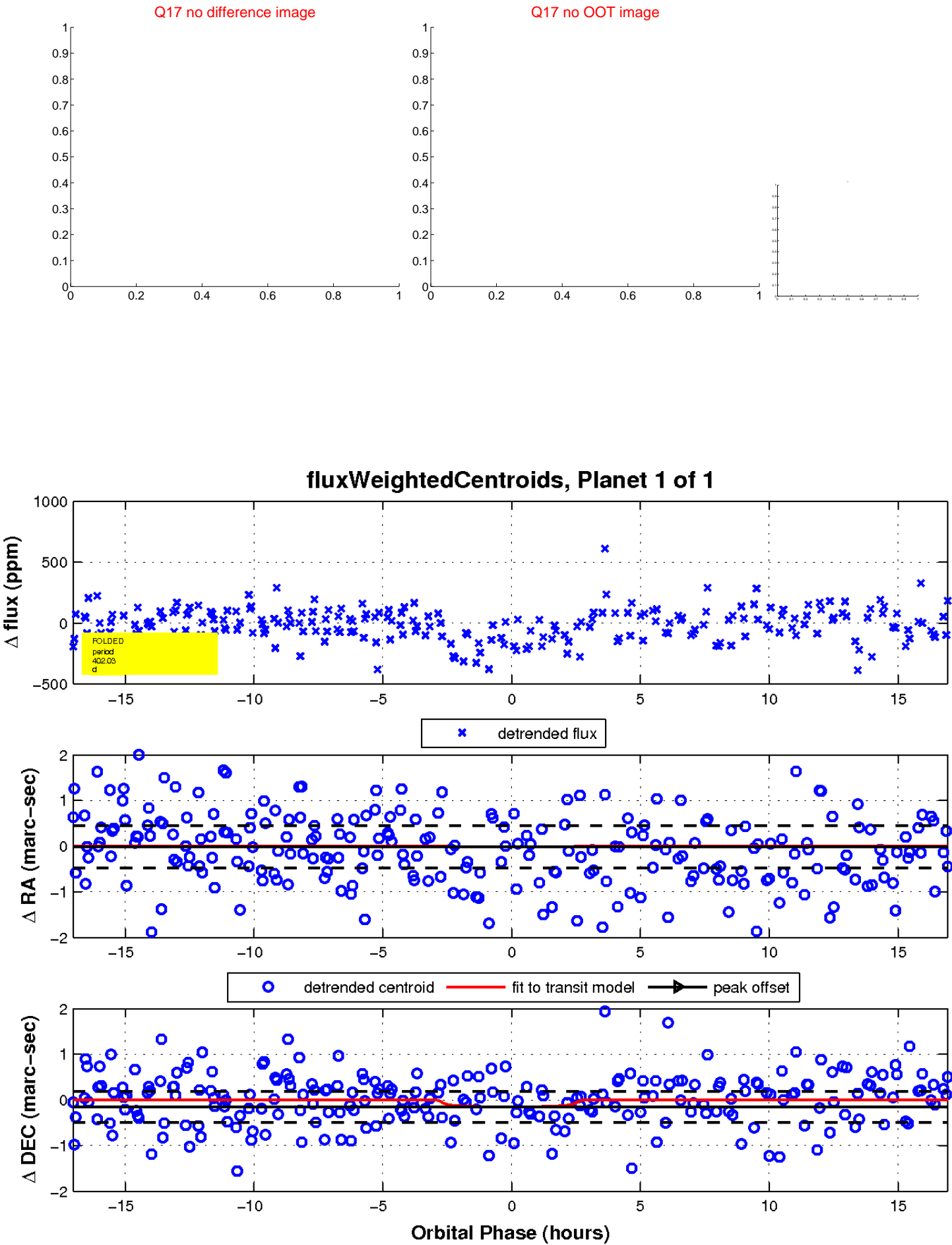
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

