

# KIC 004473613

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004473613-01	OBS	4803.01	4.361287	132.524894	172.2	2.181	10.1	11.2	0.87	5520	1.36	236.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004473613-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT

**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.

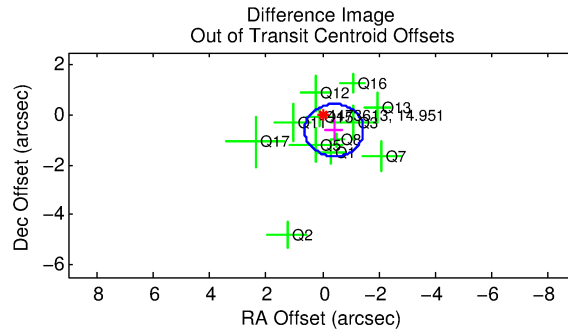
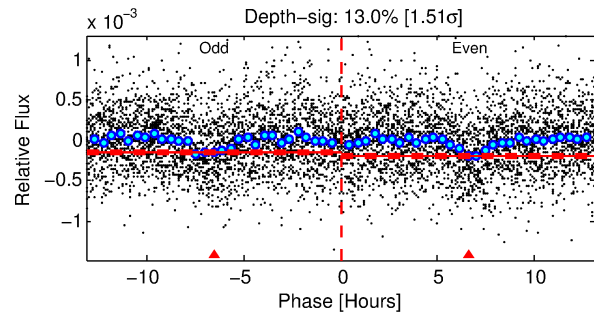
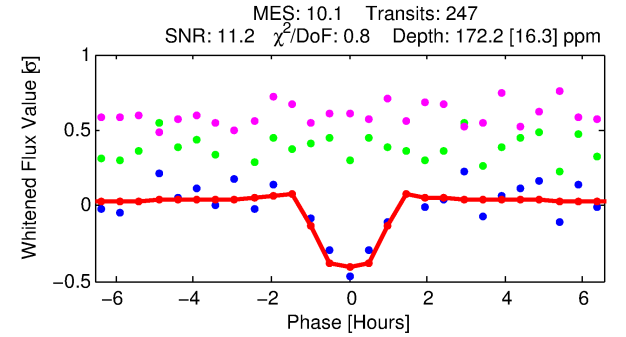
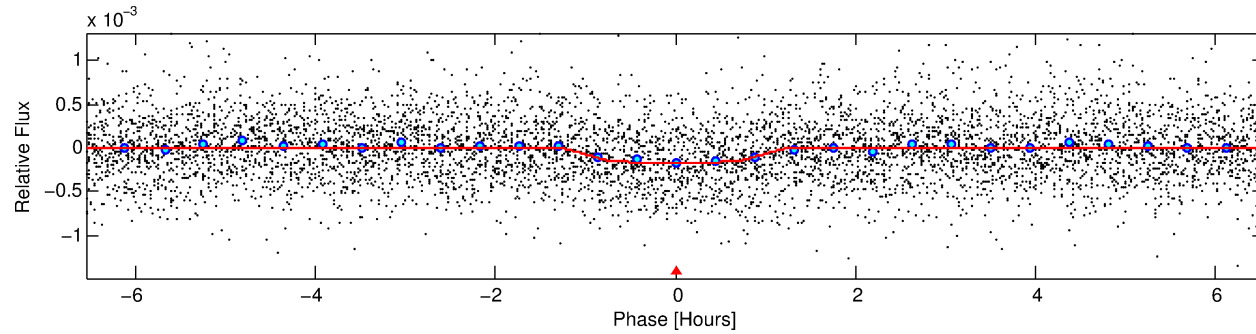
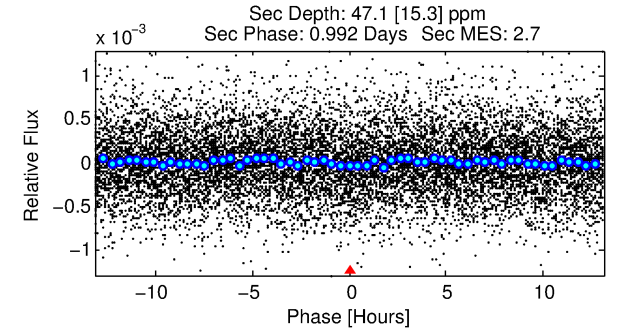
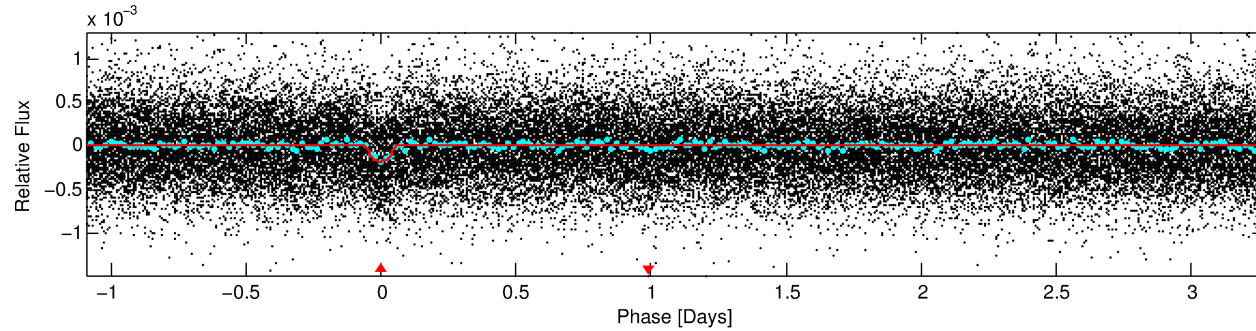
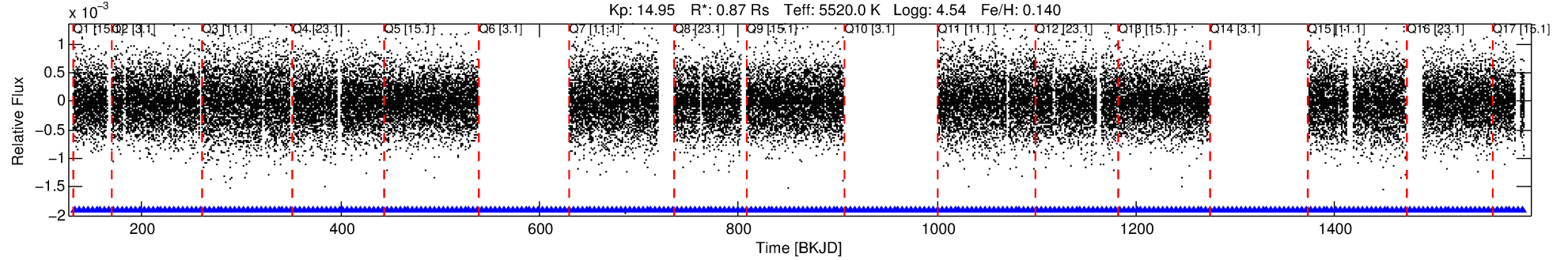
## Ephemeris Match Information For 004473613-01

No Significant Match Found

# DV One-Page Summary

KIC: 4473613 Candidate: 1 of 1 Period: 4.361 d

KOI: K04803.01 Corr: 0.972



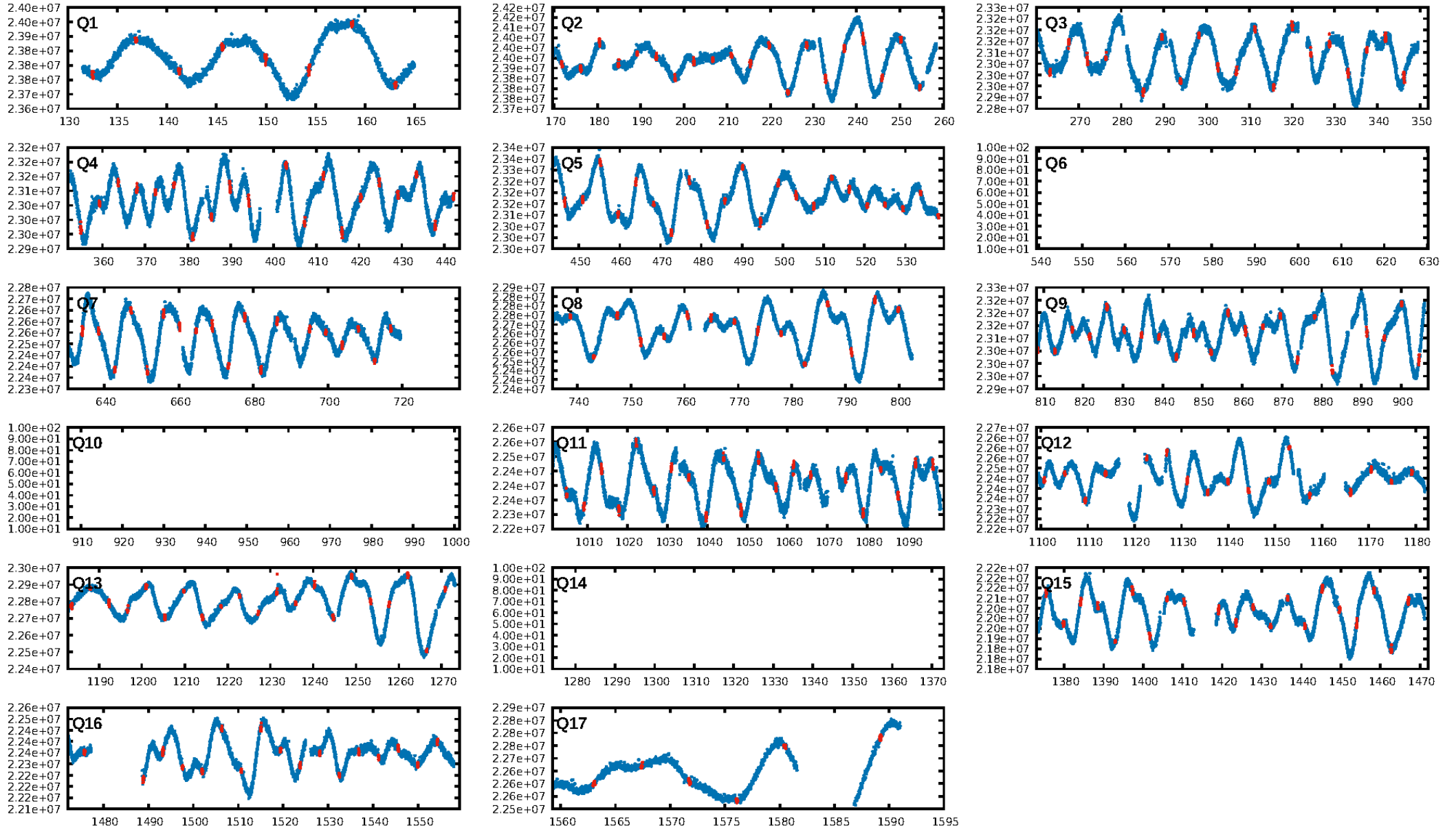
## DV Fit Results:

Period = 4.36129 [0.00002] d  
Epoch = 132.5249 [0.0031] BKJD  
Rp/R\* = 0.0143 [0.0092]  
a/R\* = 7.55 [20.99]  
b = 0.89 [0.69]  
Seff = 236.51 [50.18]  
Teff = 1000 [53] K  
Rp = 1.36 [0.90] Re  
a = 0.0518 [0.0066] AU  
Ag = 37.56 [50.73] [0.72σ]  
Teffp = 3827 [1279] K [2.21σ]

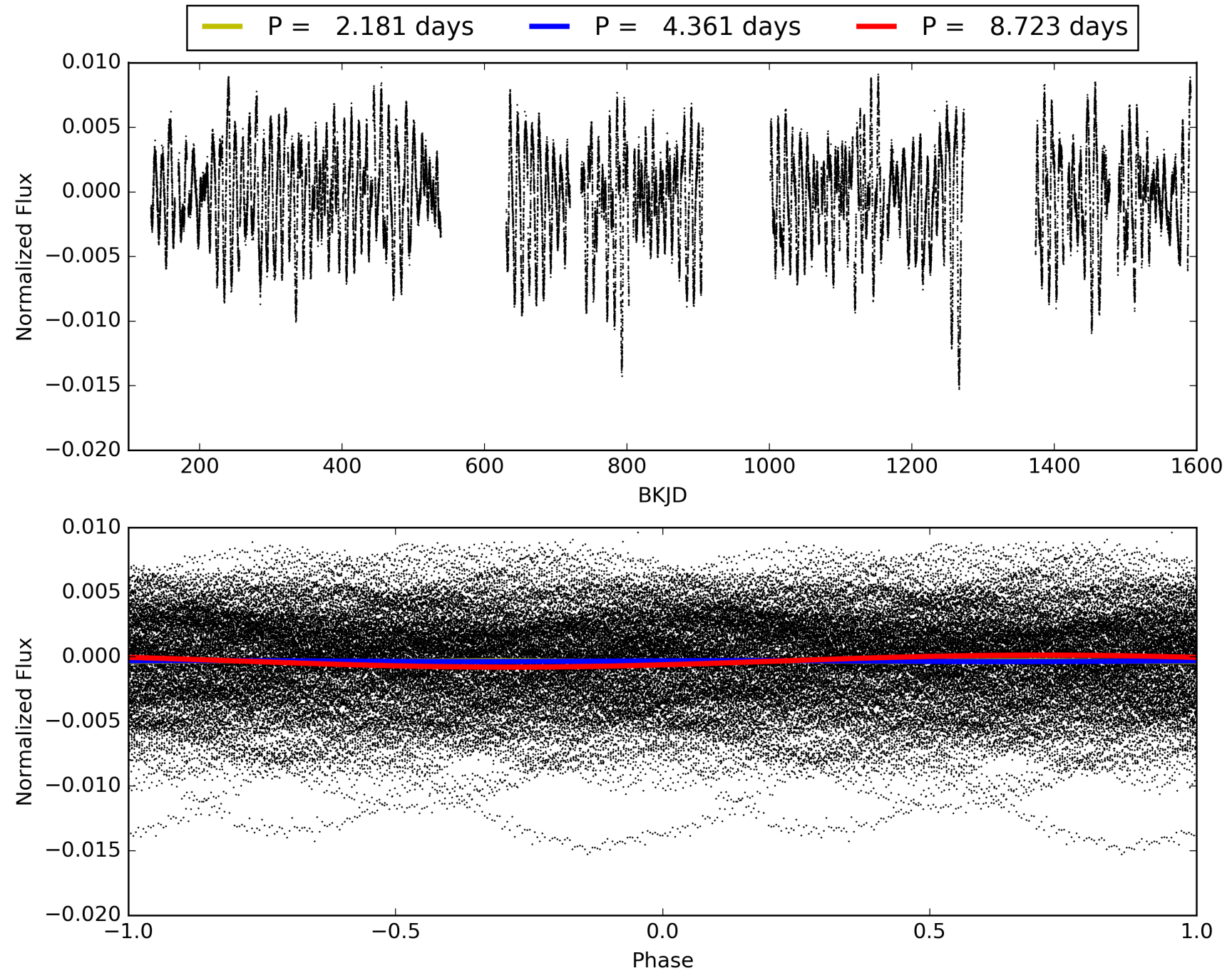
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.44e-23  
RollingBand-fgt: 1.00 [233/233]  
GhostDiagnostic-chr: 1.653  
Centroid-sig: 13.2%  
Centroid-so: 1.530 arcsec [1.55σ]  
OotOffset-rm: 0.739 arcsec [2.12σ]  
KicOffset-rm: 0.682 arcsec [1.97σ]  
OotOffset-st: 1/4/3/4 [12]  
KicOffset-st: 1/4/3/4 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 004473613-01, PDC Light Curves

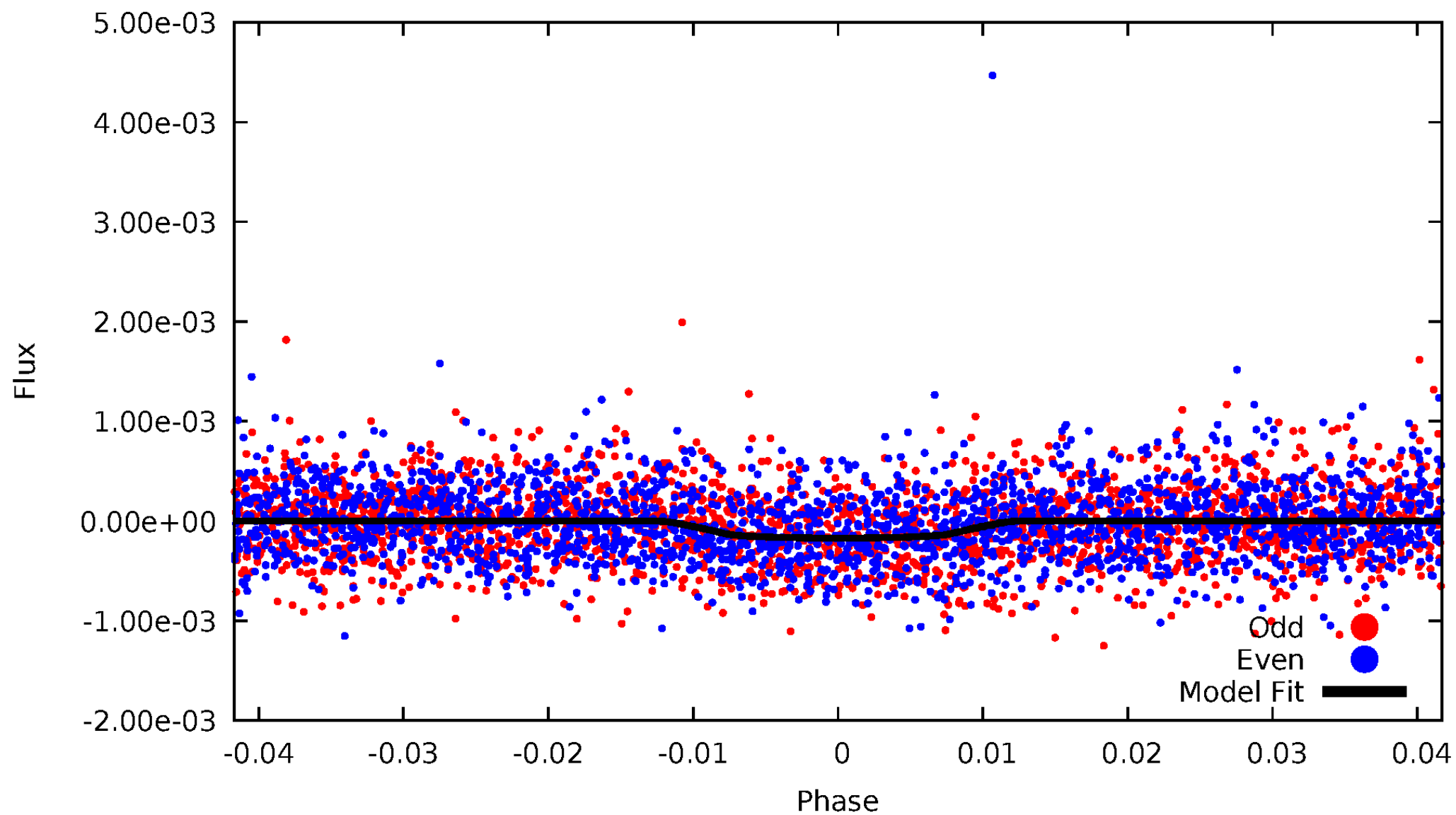


TCE 004473613-01



# DV Odd/Even

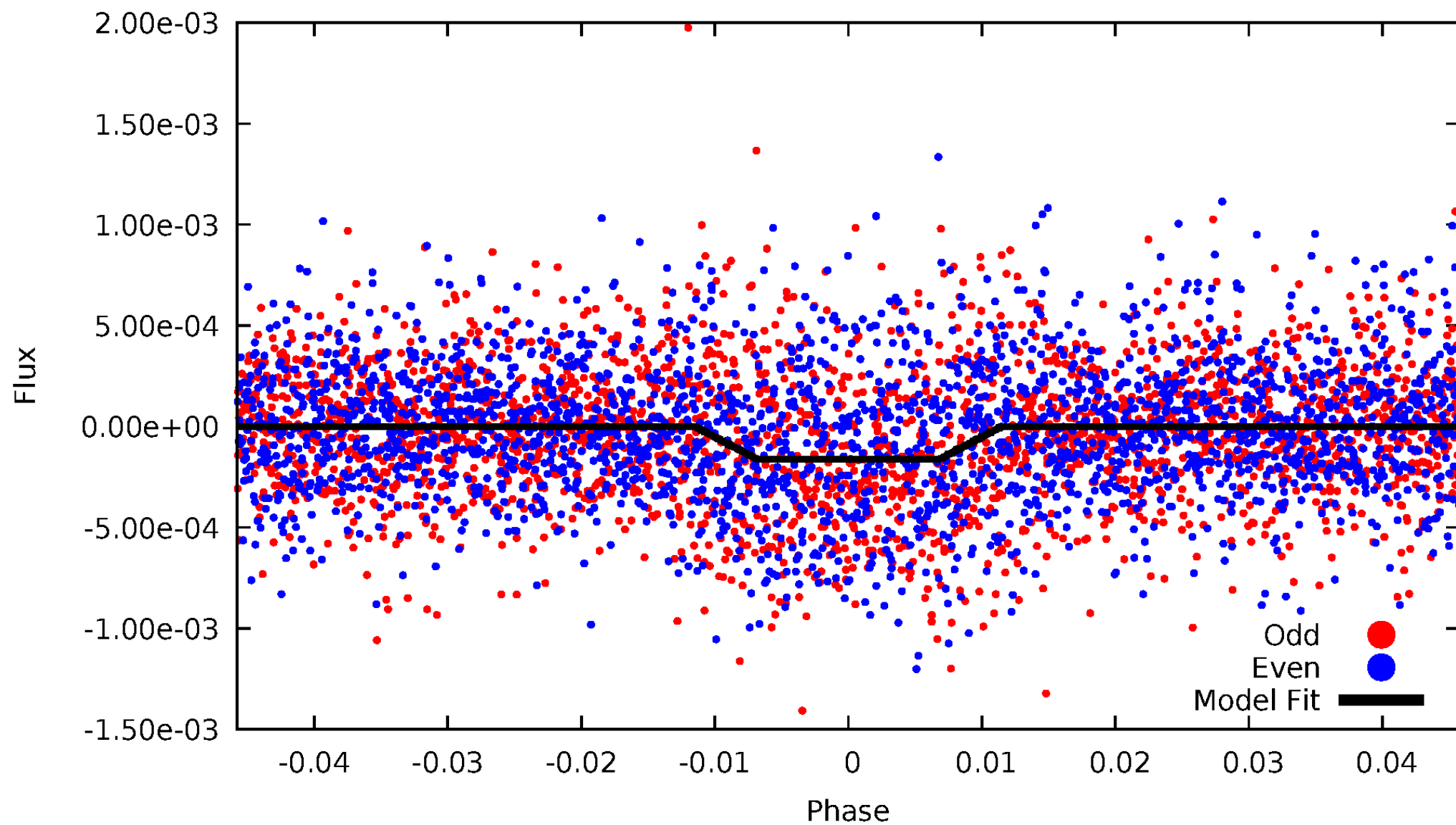
TCE 004473613-01





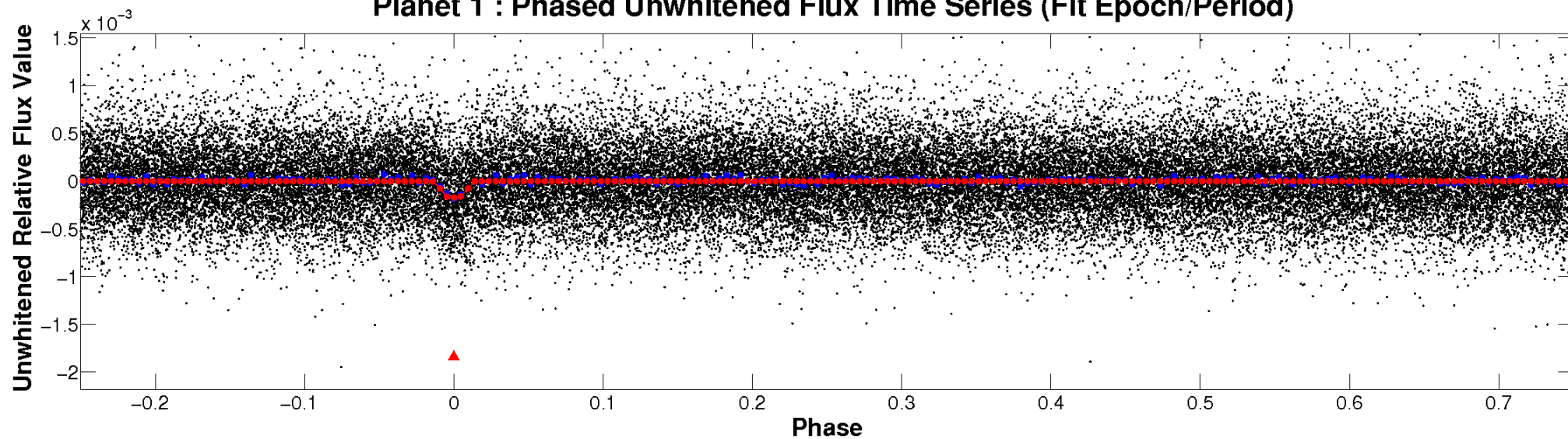
# ALT Odd/Even

TCE 004473613-01

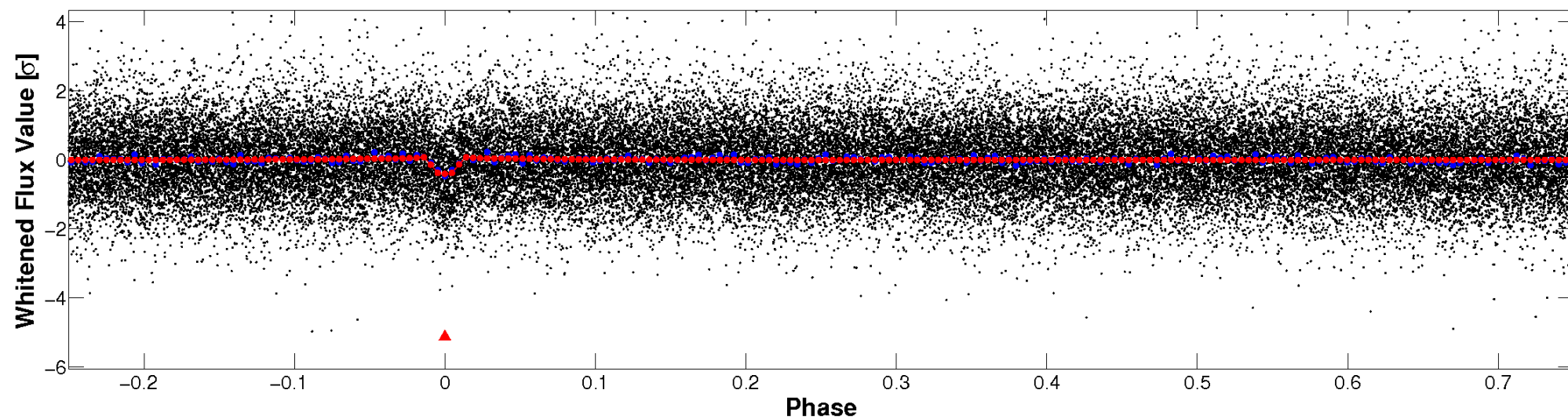


# Non-Whitened Vs. Whitened Light Curve

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

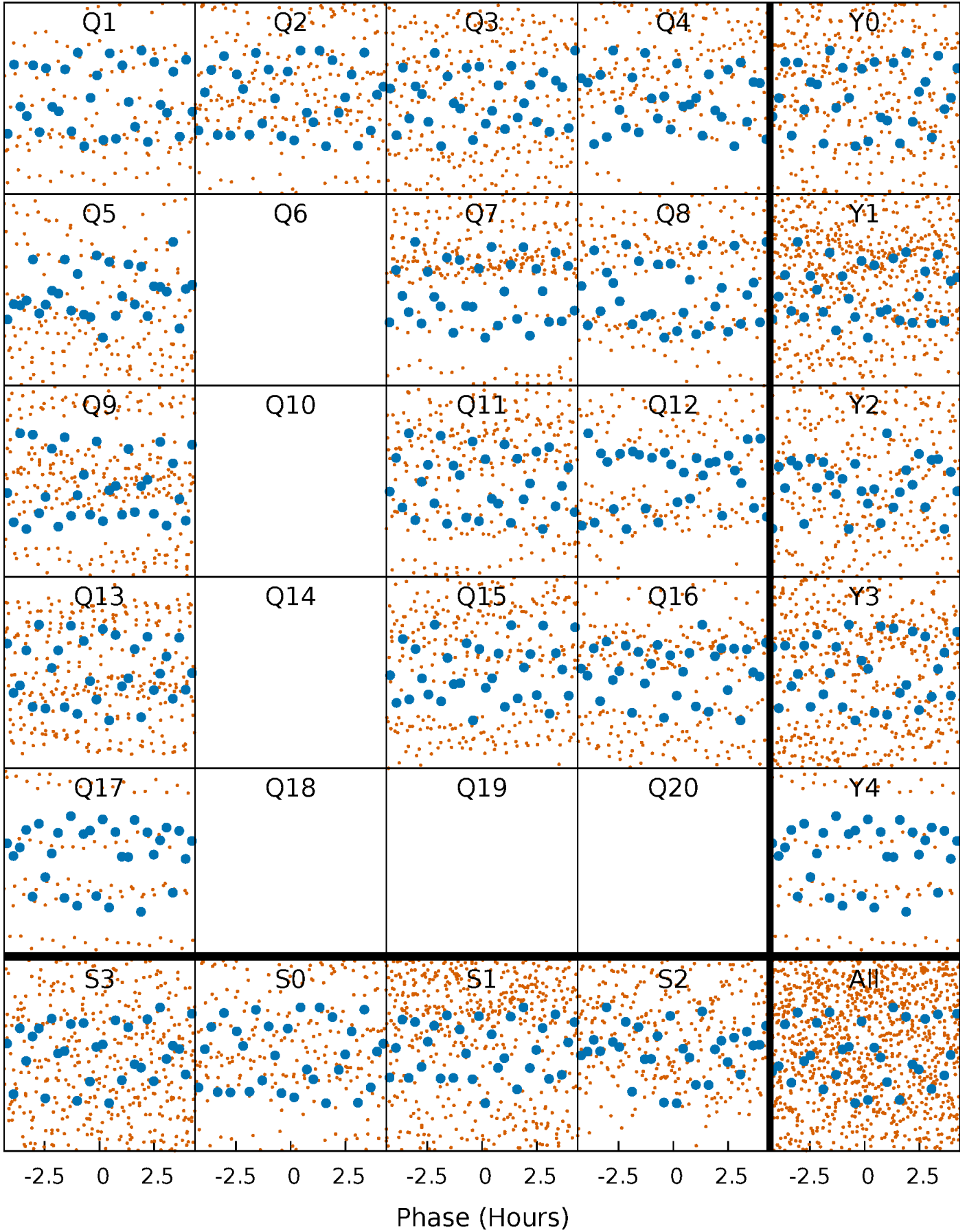


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

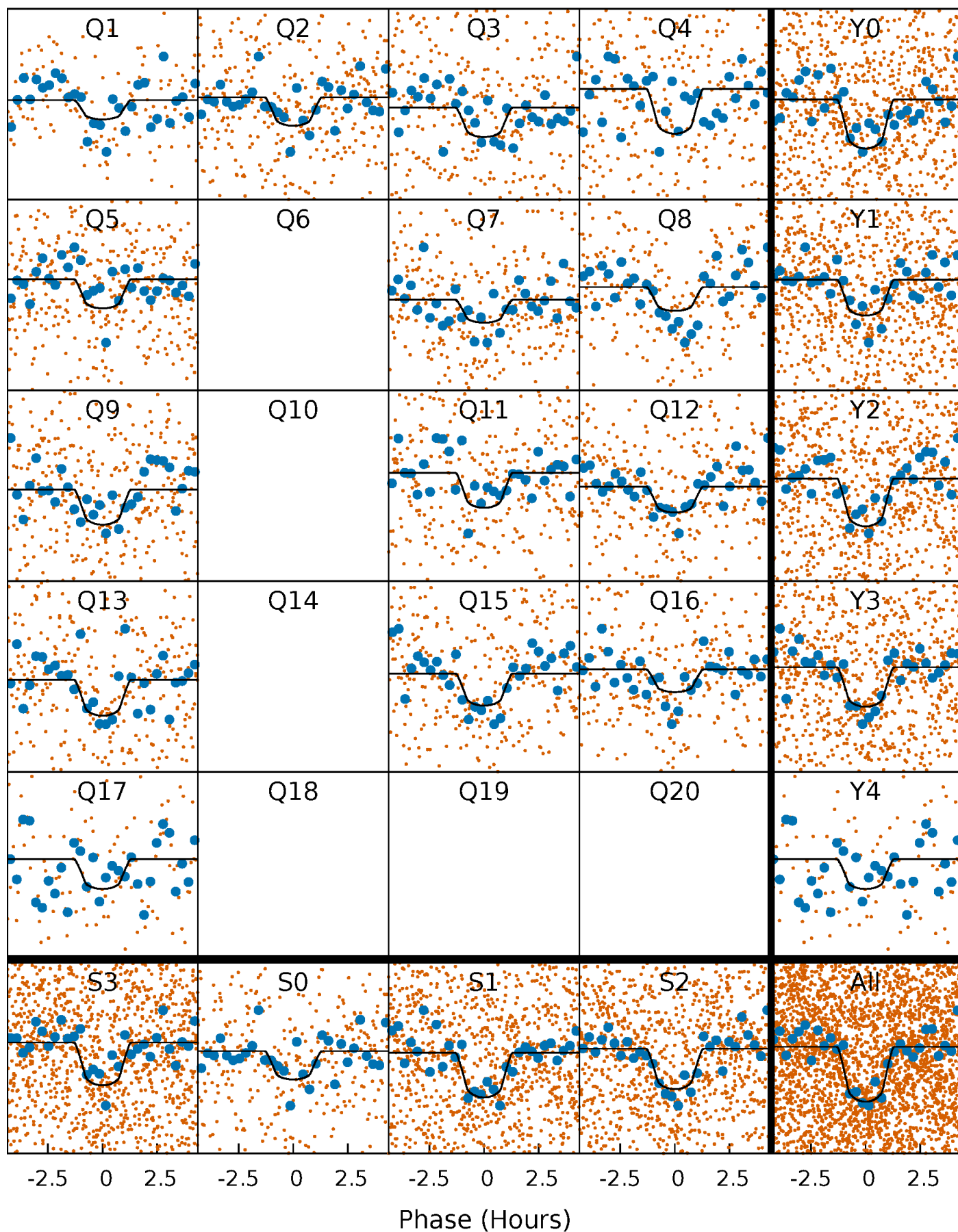
TCE 004473613-01 P= 4.361287 Days  $T_0=132.524894$  (BKJD)





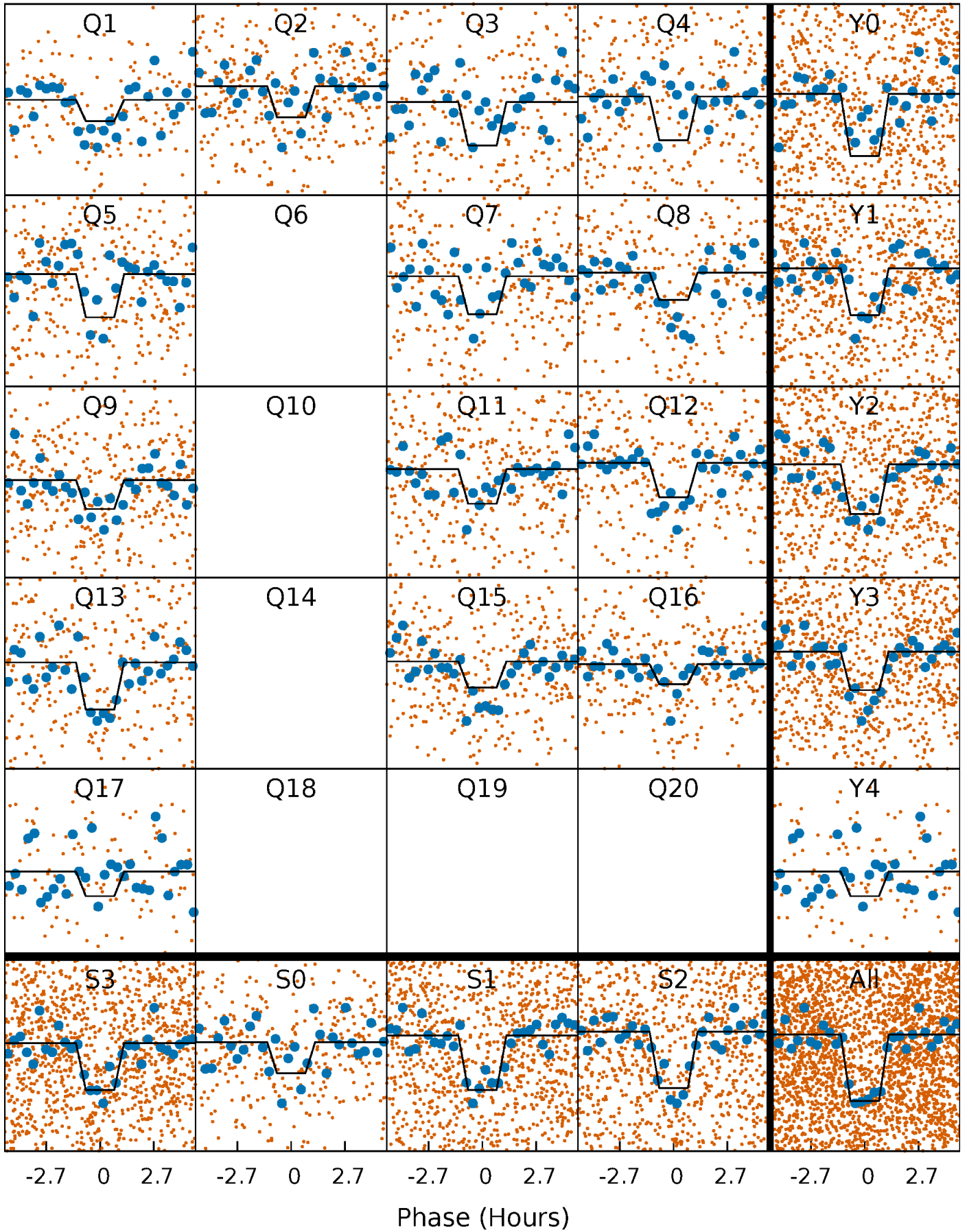
# DV Quarter-Phased Transit Curves

TCE 004473613-01 P= 4.361287 Days  $T_0=132.524894$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

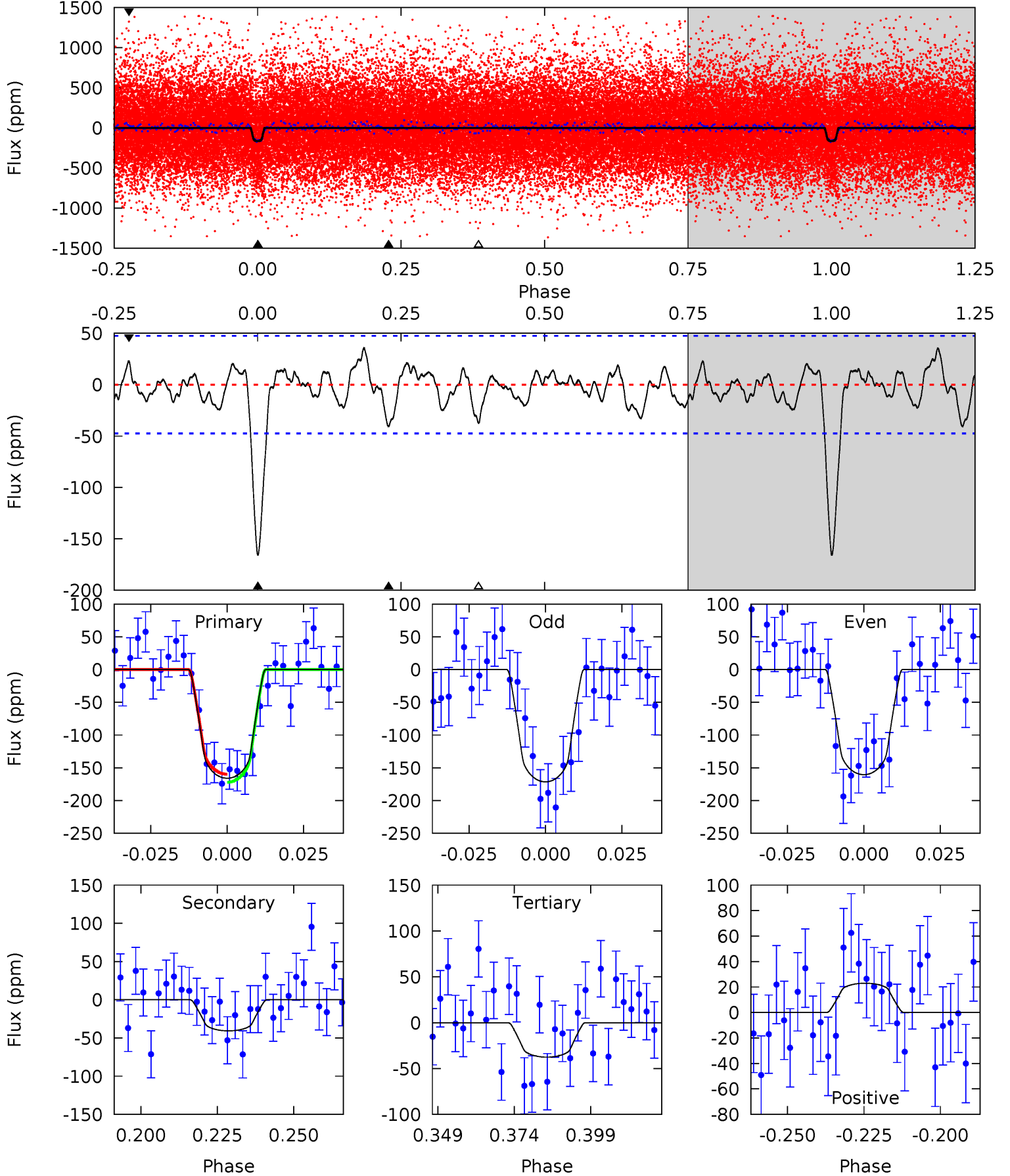
TCE 004473613-01 P= 4.361260 Days  $T_0=132.531453$  (BKJD)



# DV Model-Shift Uniqueness Test

004473613-01, P = 4.361287 Days, E = 128.163607 Days

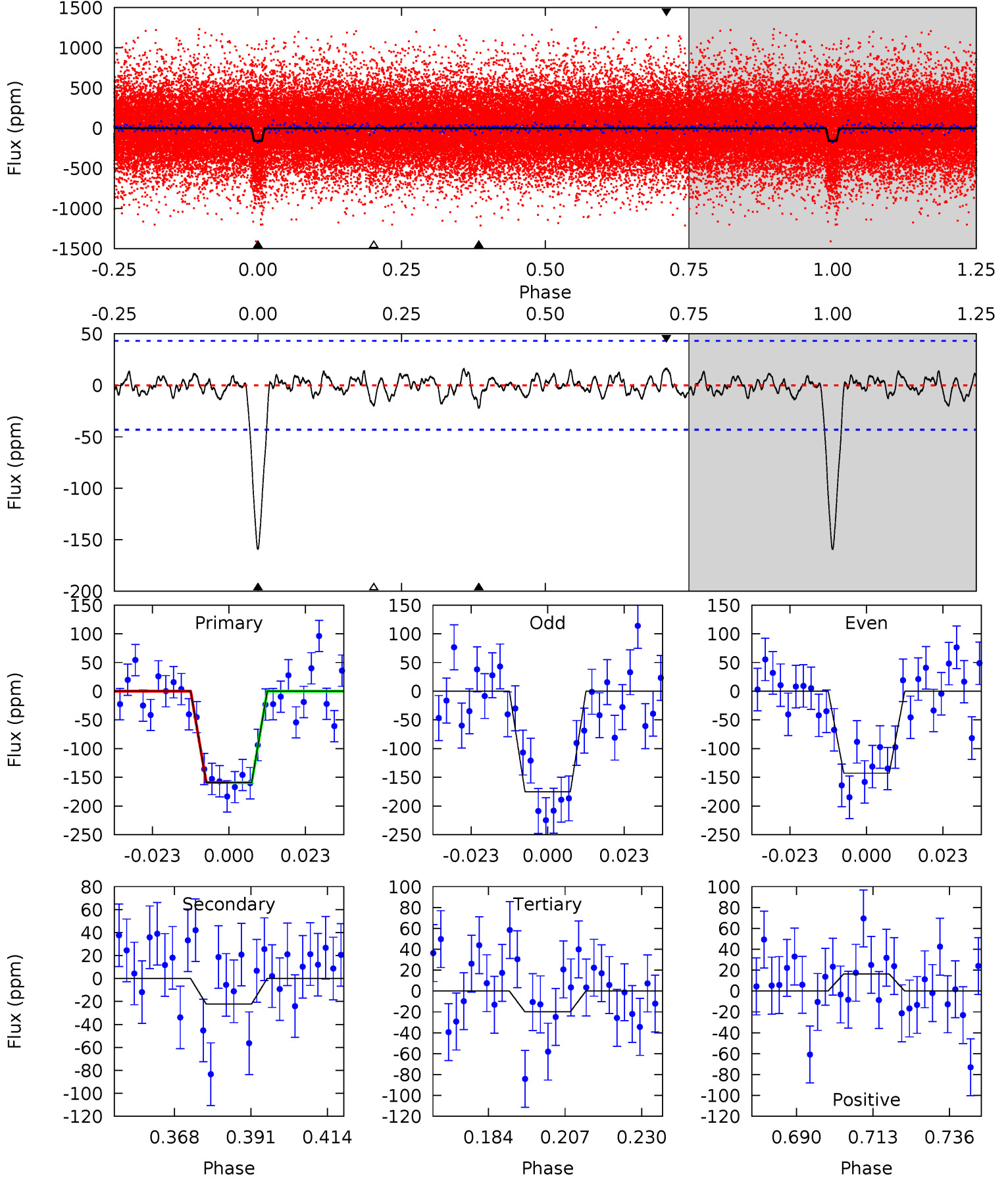
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	4.16	3.84	2.35	4.85	2.24	1.33	13.1	14.6	0.32	1.81	0.56	0.86	0.18	0.63



# Alt Model-Shift Uniqueness Test

004473613-01, P = 4.361260 Days, E = 128.170193 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
17.9	2.51	2.24	1.85	4.86	2.27	0.77	15.7	16.1	0.26	0.66	1.83	0.89	0.09	0.02



### Stellar Parameters For KIC 004473613

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5520^{+74}_{-82}$	$4.544^{+0.021}_{-0.119}$	$0.140^{+0.150}_{-0.150}$	$0.873^{+0.118}_{-0.039}$	$0.972^{+0.035}_{-0.070}$	$2.059^{+0.154}_{-0.656}$
	+1%/-1%	+0%/-3%	+107%/-107%	+14%/-4%	+4%/-7%	+7%/-32%
Source	SPE90	SPE90	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 004473613-01 / KOI 4803.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-41 \pm 10$	$1.49^{+0.83}_{-0.85}$	$1413^{+53}_{-30}$	$3939^{+1534}_{-588}$	$28^{+114}_{-18}$
Alt.	$-22 \pm 9$	$1.32^{+0.89}_{-0.77}$	$1411^{+49}_{-29}$	$3643^{+1409}_{-617}$	$19^{+83}_{-13}$

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



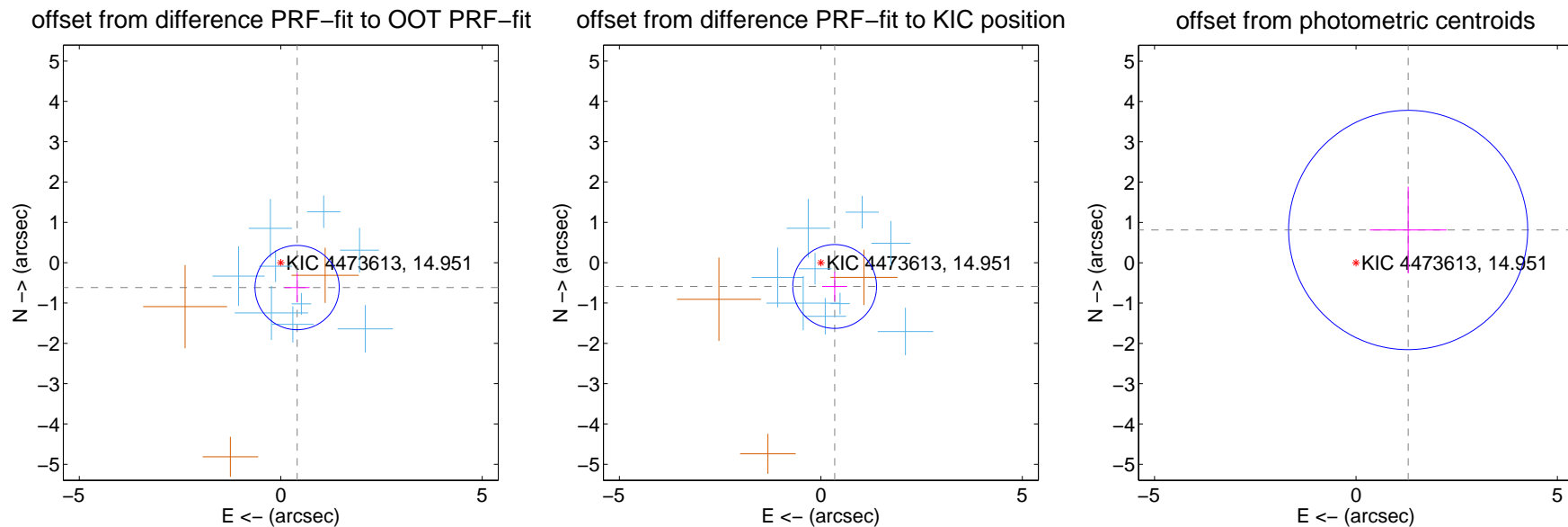
## DV Centroid Data

Supplemental centroid analysis for 004473613-01. Kepler magnitude: 14.95. Transit SNR 11.25

There are 9 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

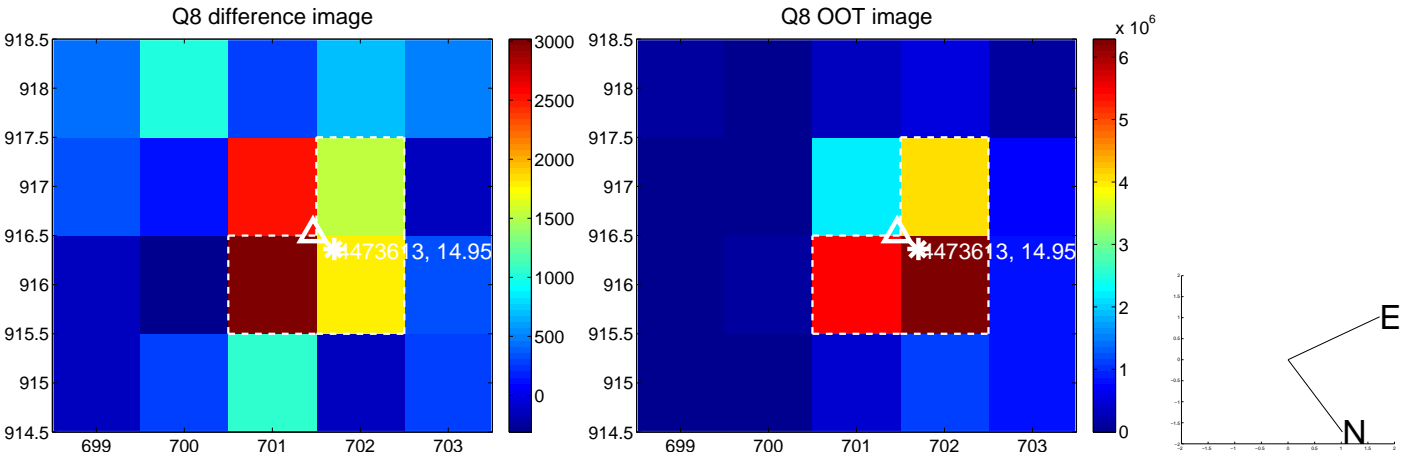
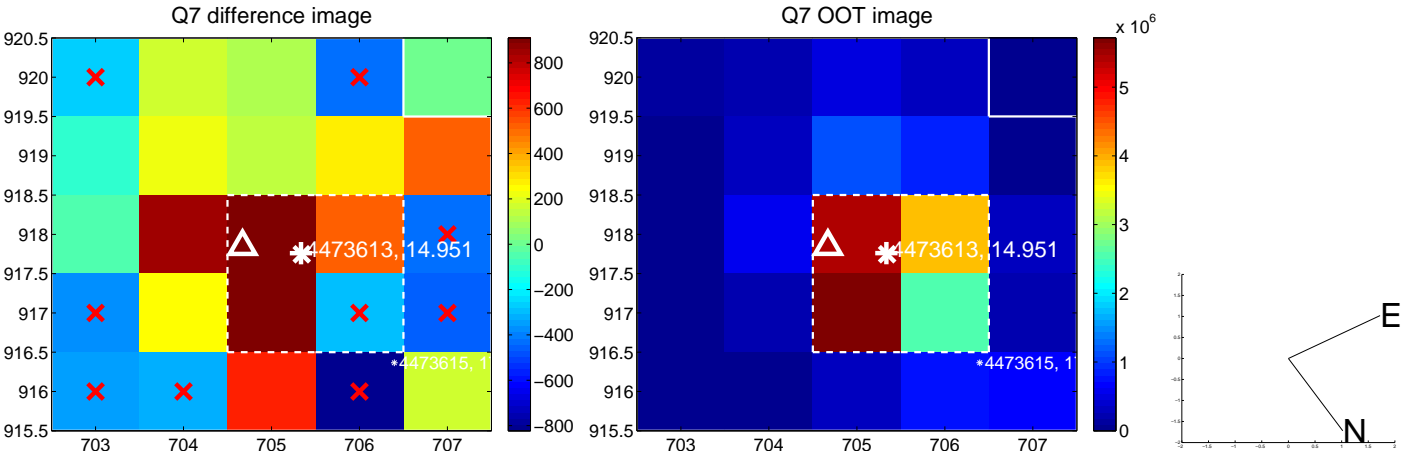
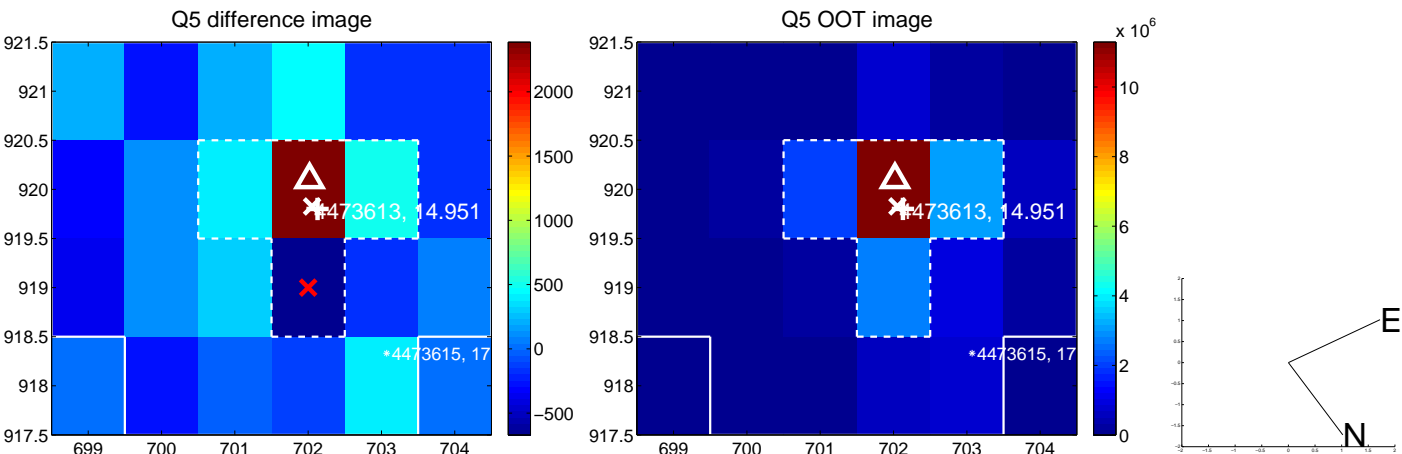
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.739 \pm 0.348$	2.12	$-0.406 \pm 0.309$	$-0.617 \pm 0.364$
PRF-fit source offset from KIC position	$0.682 \pm 0.347$	1.97	$-0.343 \pm 0.310$	$-0.590 \pm 0.358$
photometric centroid source offset	$1.53 \pm 0.99$	1.55	$-1.30 \pm 0.95$	$0.81 \pm 1.08$



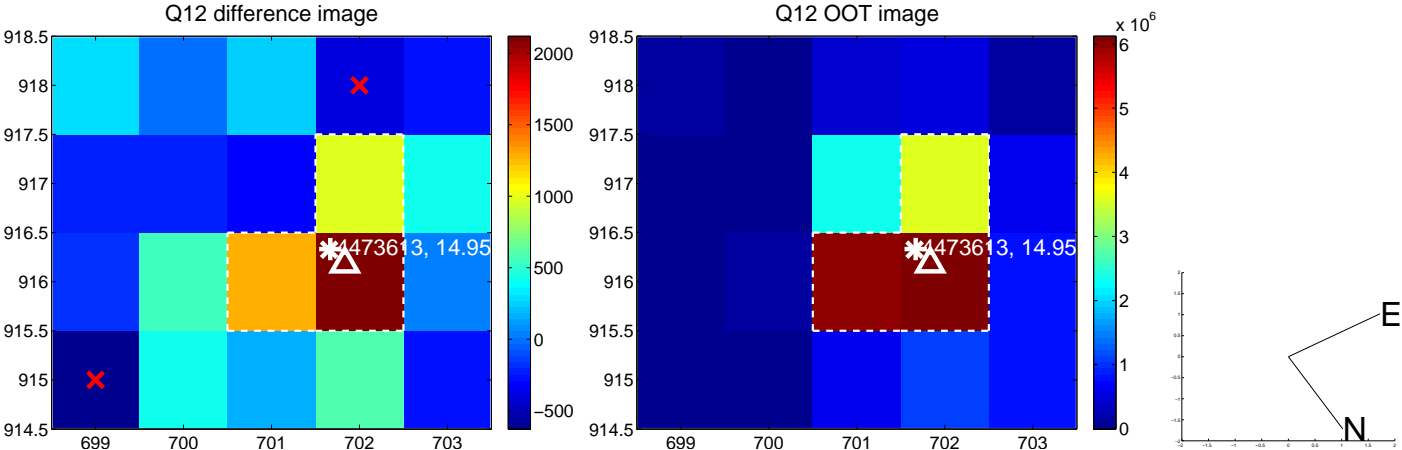
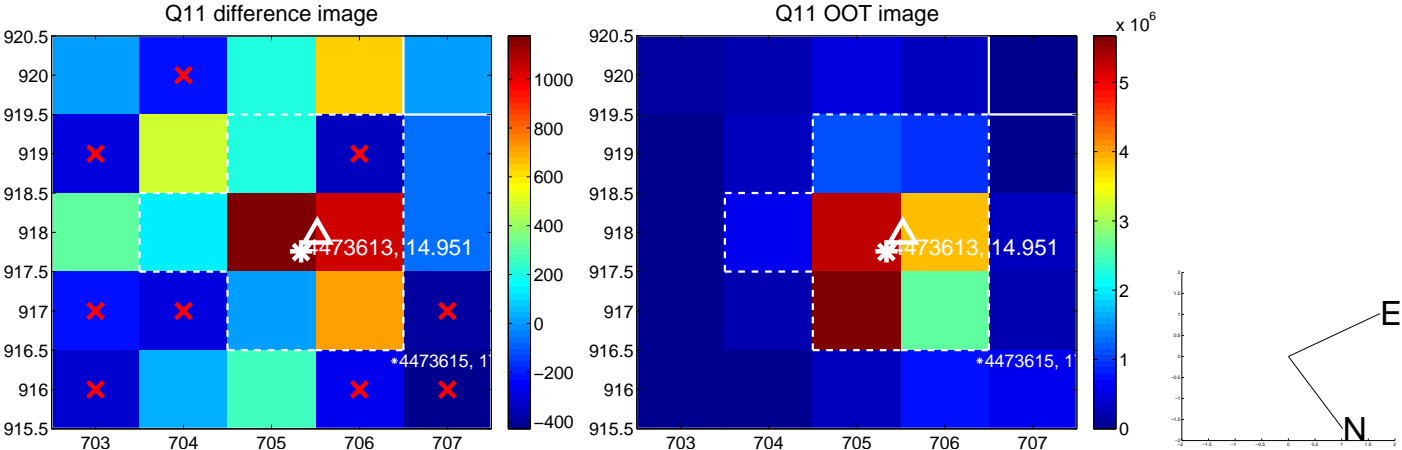
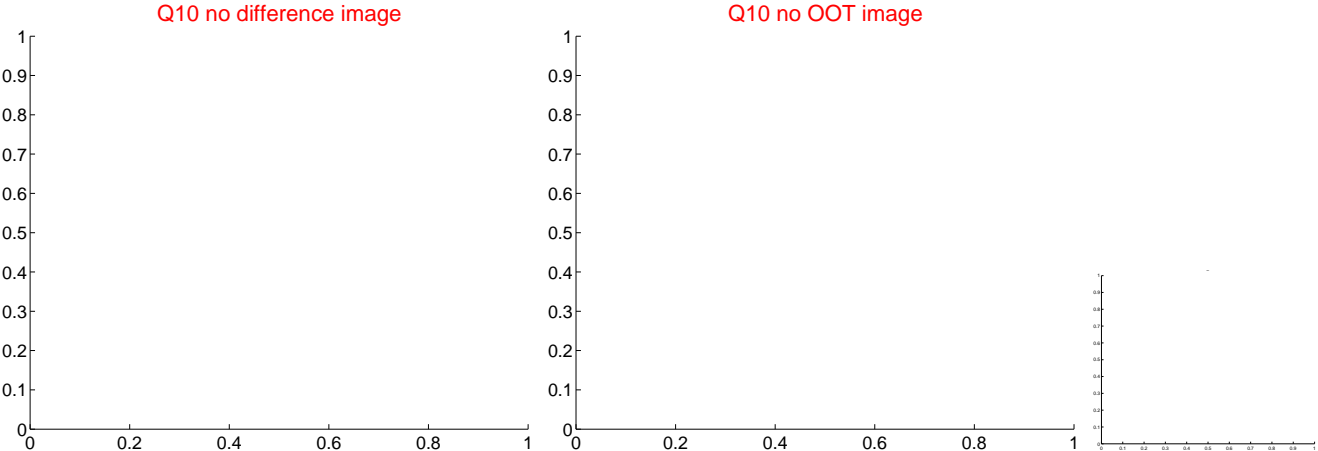
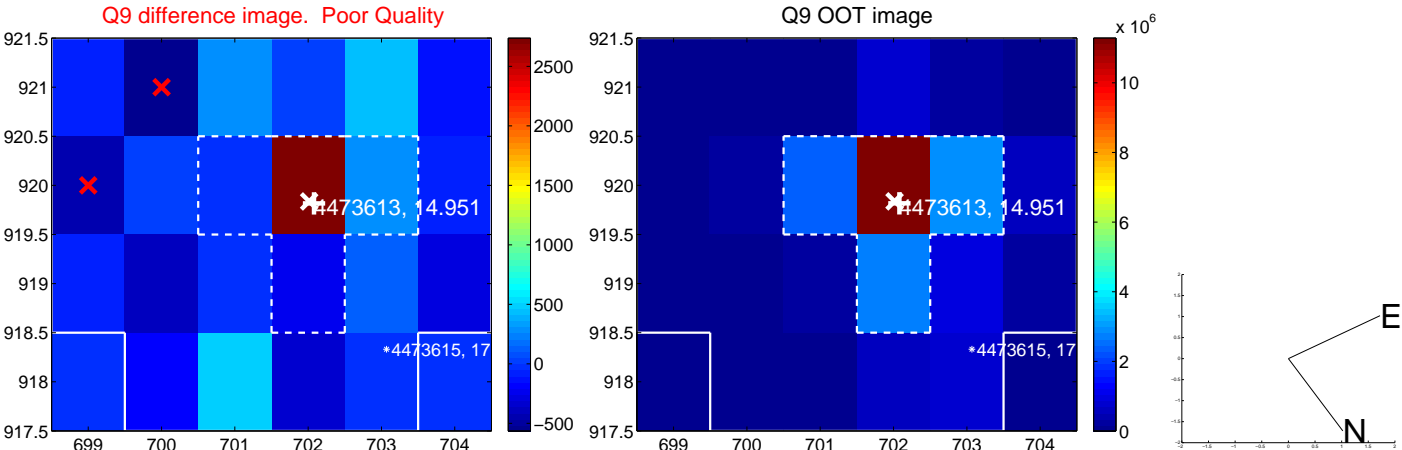
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



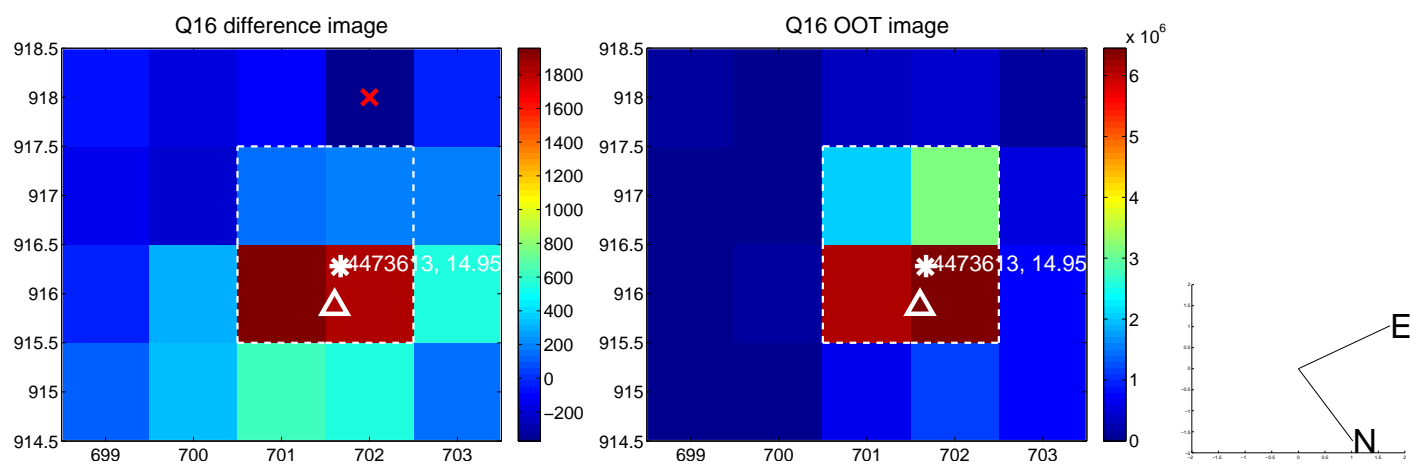
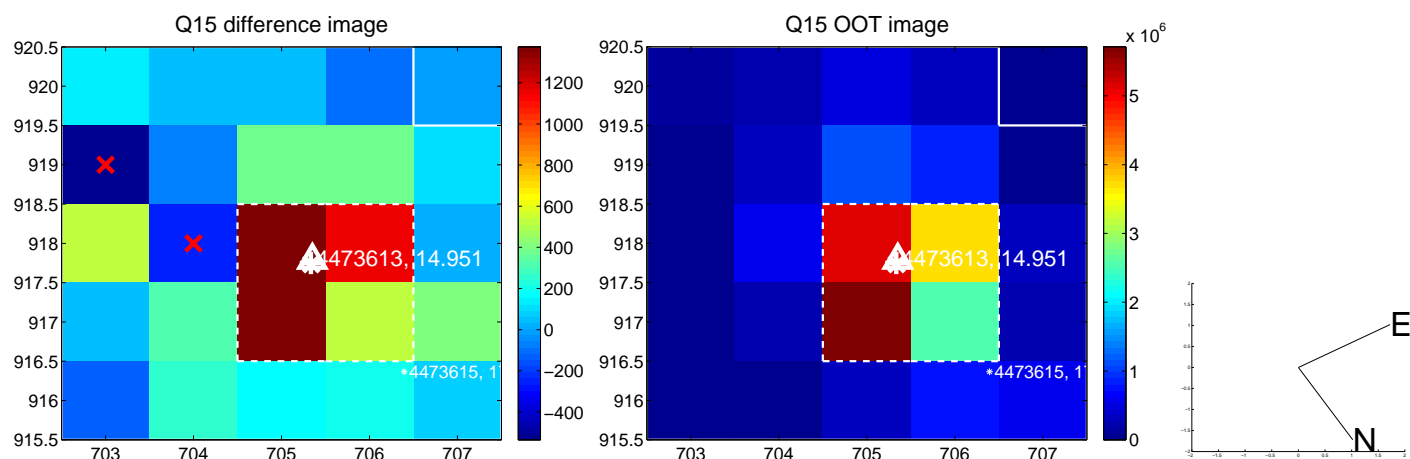
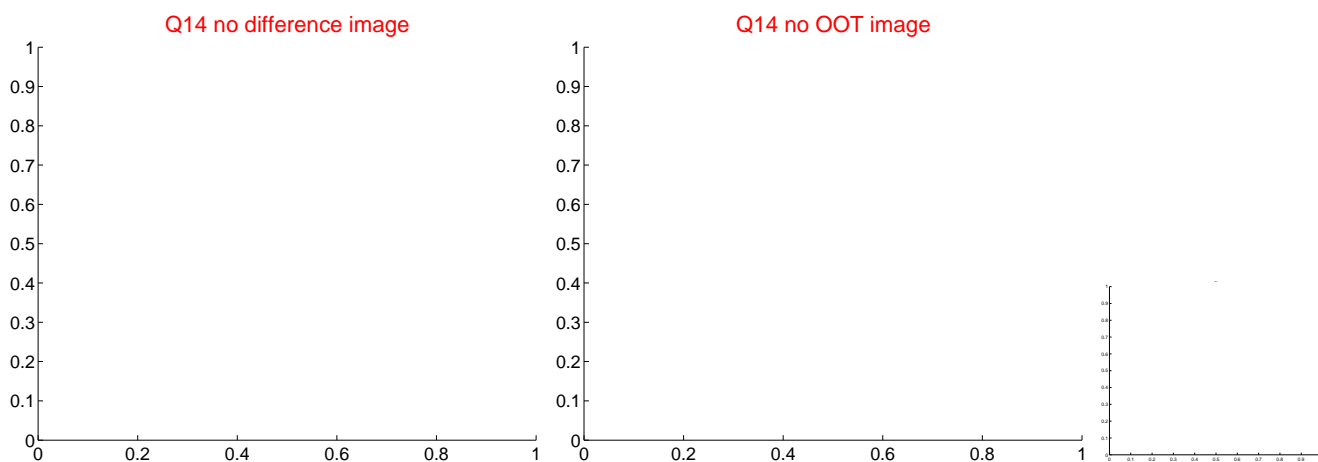
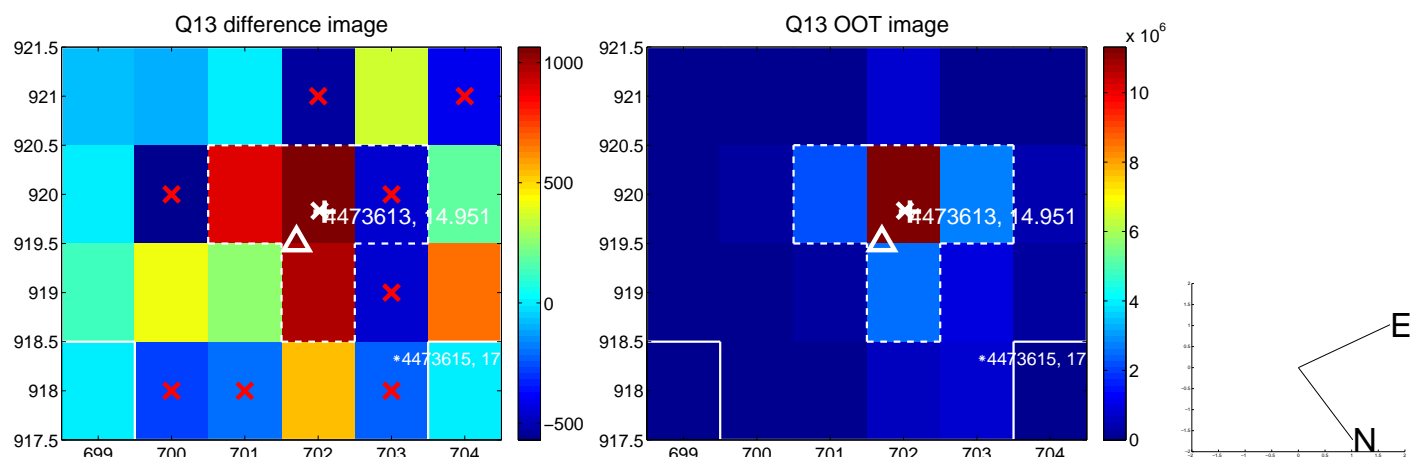
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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







UKIRT Image

Declination

