

# KIC 004572728

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004572728-01	OBS	8249.01	309.191256	326.222434	118.7	11.609	7.2	7.0	1.75	6299	2.17	5.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004572728-01	OBS	PC	0.36	0	0	0	0	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.

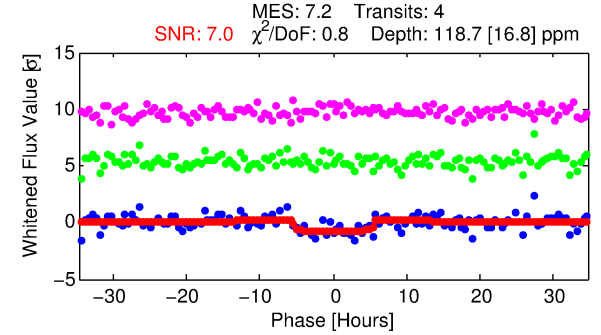
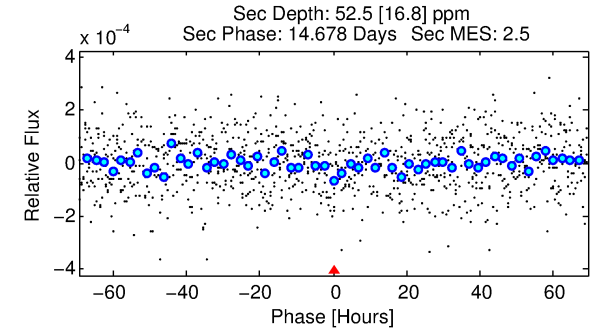
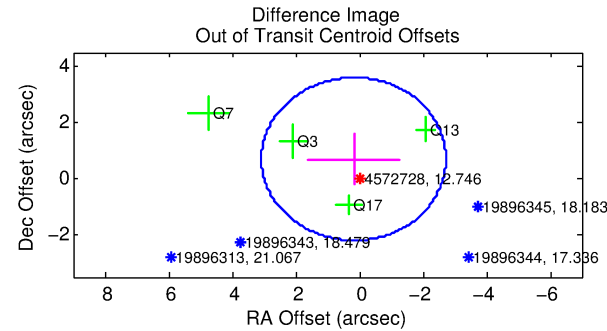
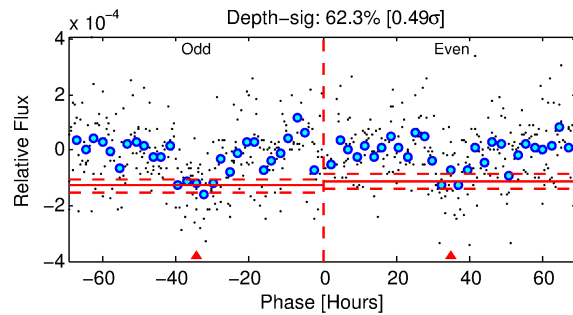
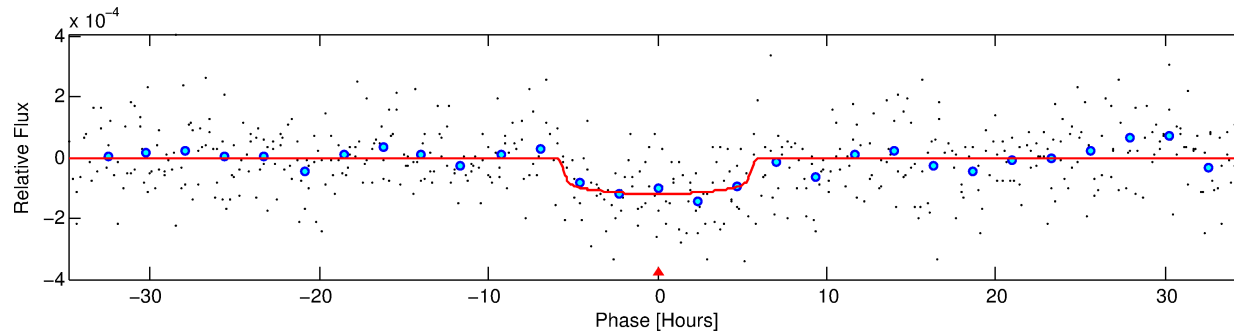
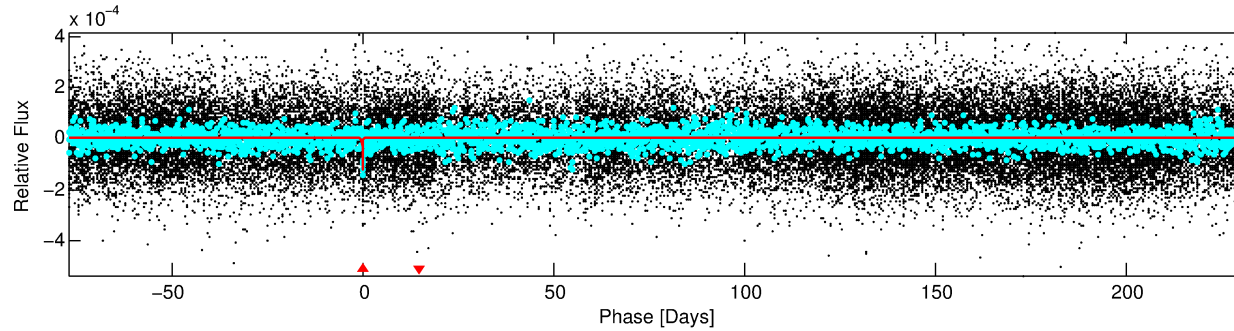
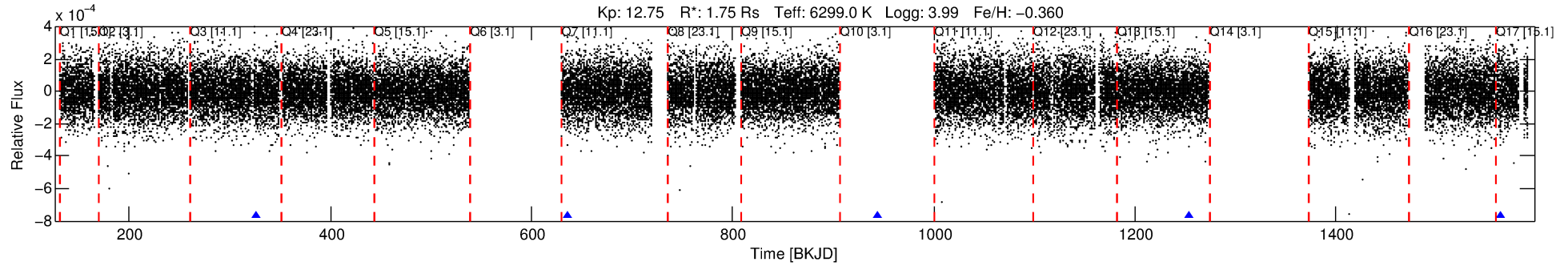
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004572728-01

No Significant Match Found

# DV One-Page Summary

KIC: 4572728 Candidate: 1 of 1 Period: 309.191 d



## DV Fit Results:

Period = 309.19126 [0.00648] d  
Epoch = 326.2224 [0.0163] BKJD  
Rp/R\* = 0.0114 [0.0027]  
a/R\* = 107.99 [131.74]  
b = 0.86 [0.37]  
Seff = 5.09 [2.30]  
Teq = 383 [43] K  
Rp = 2.18 [0.84] Re  
a = 0.9230 [0.2600] AU  
Ag = 5203.95 [3742.27] [1.39 $\sigma$ ]  
Teffp = 5030 [730] K [6.36 $\sigma$ ]

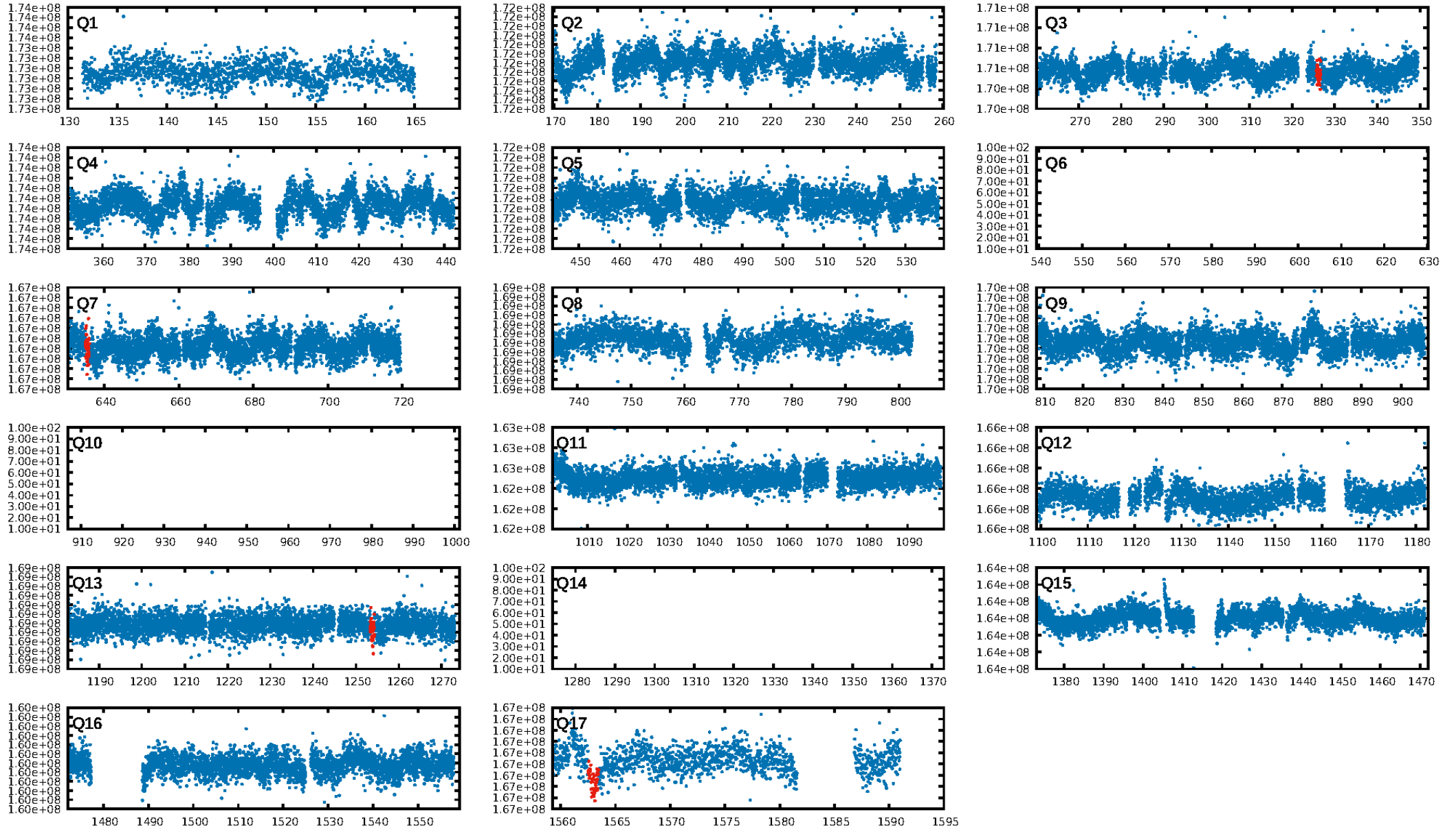
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 38.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.85e-14  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -3.858  
Centroid-sig: 84.7%  
Centroid-so: 1.077 arcsec [0.62 $\sigma$ ]  
OotOffset-rm: 0.722 arcsec [0.75 $\sigma$ ]  
OotOffset-st: 0/2/0/2 [4]  
KicOffset-rm: 0.318 arcsec [0.25 $\sigma$ ]  
KicOffset-st: 0/2/0/2 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 1.00 [4/4]

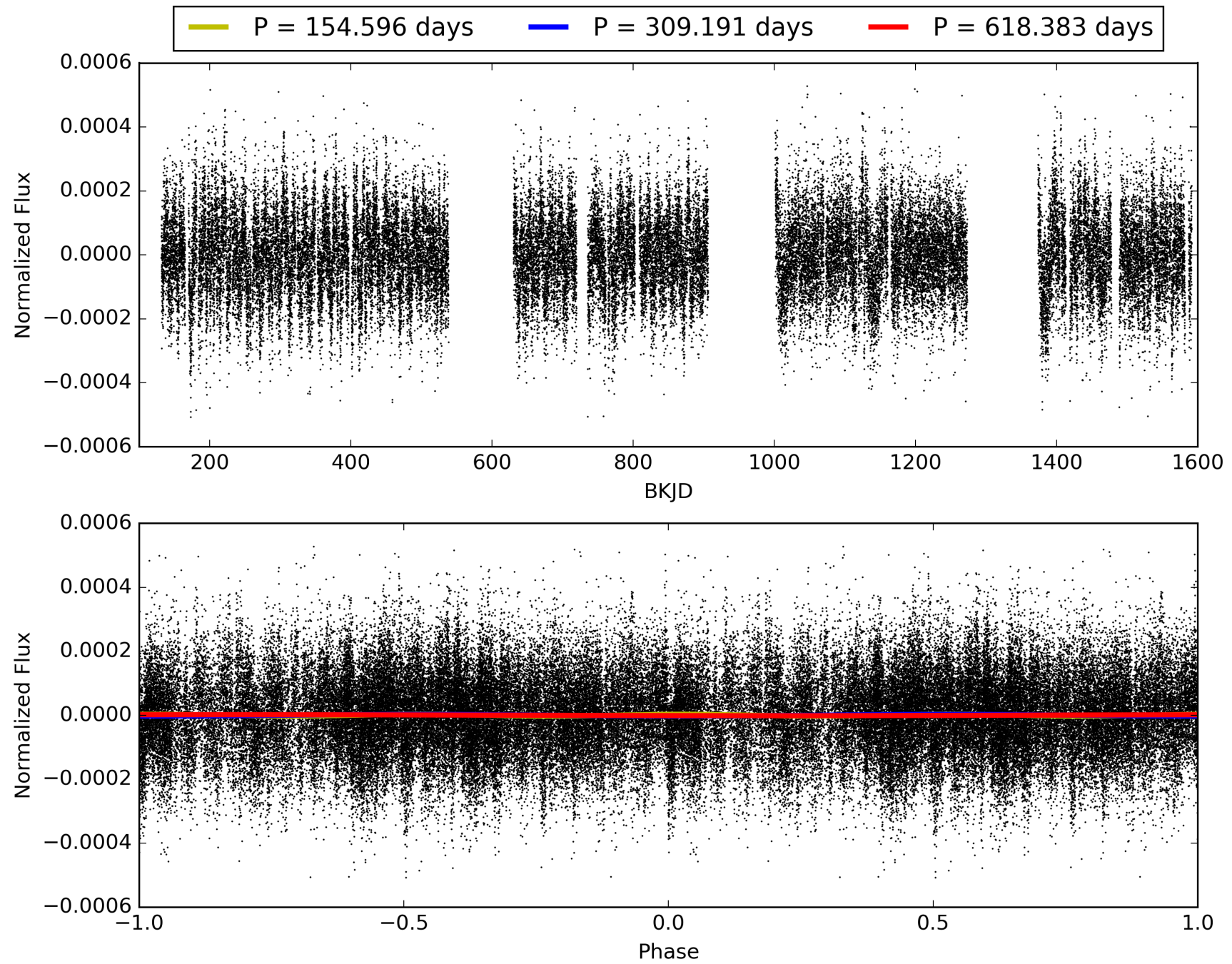
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:07:24 Z

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

# TCE 004572728-01, PDC Light Curves

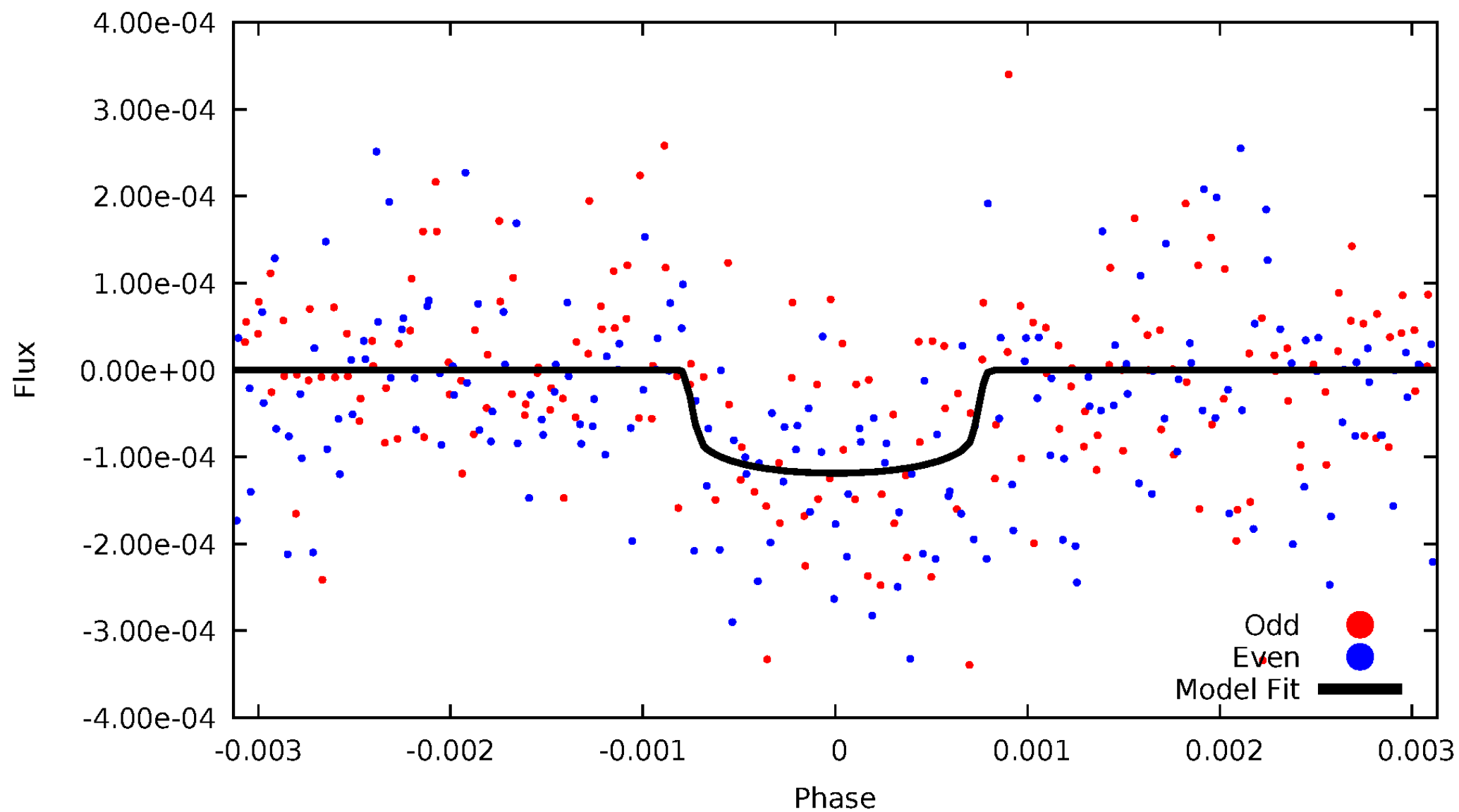


TCE 004572728-01



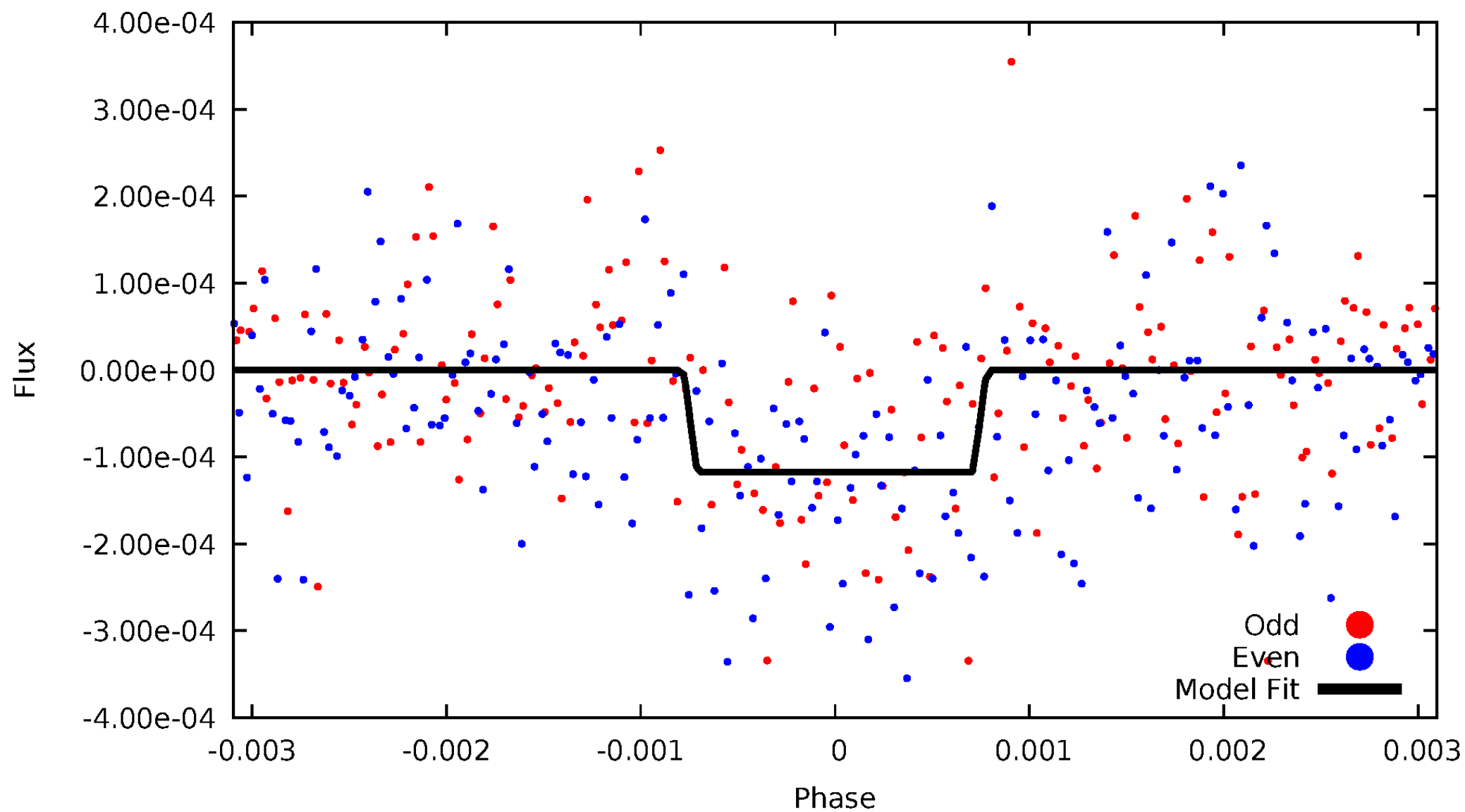
# DV Odd/Even

TCE 004572728-01

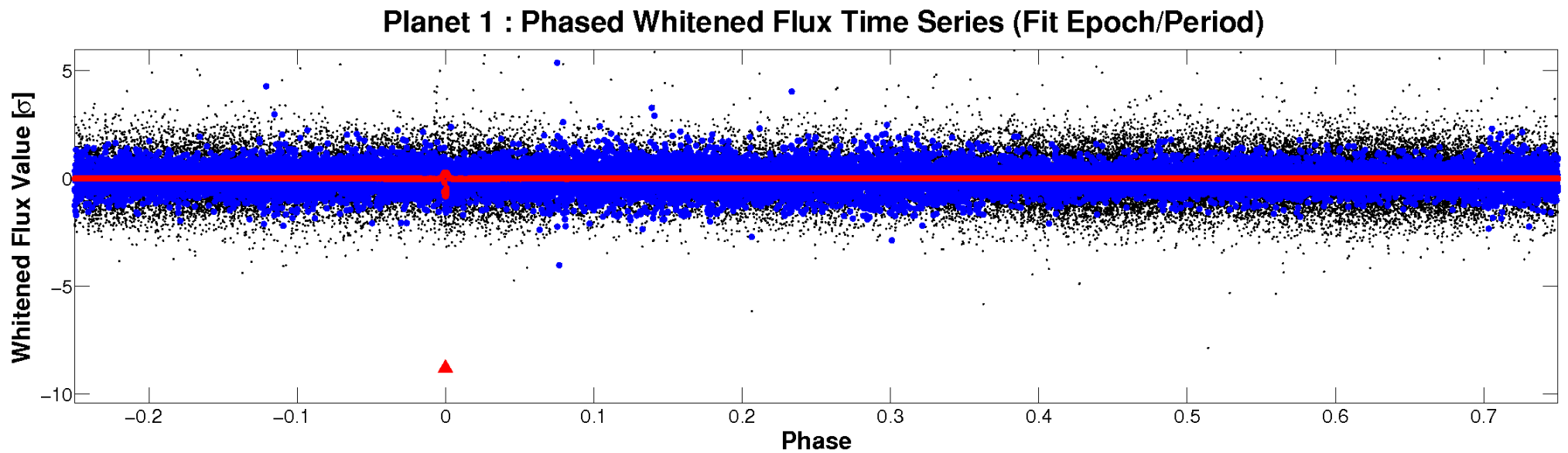
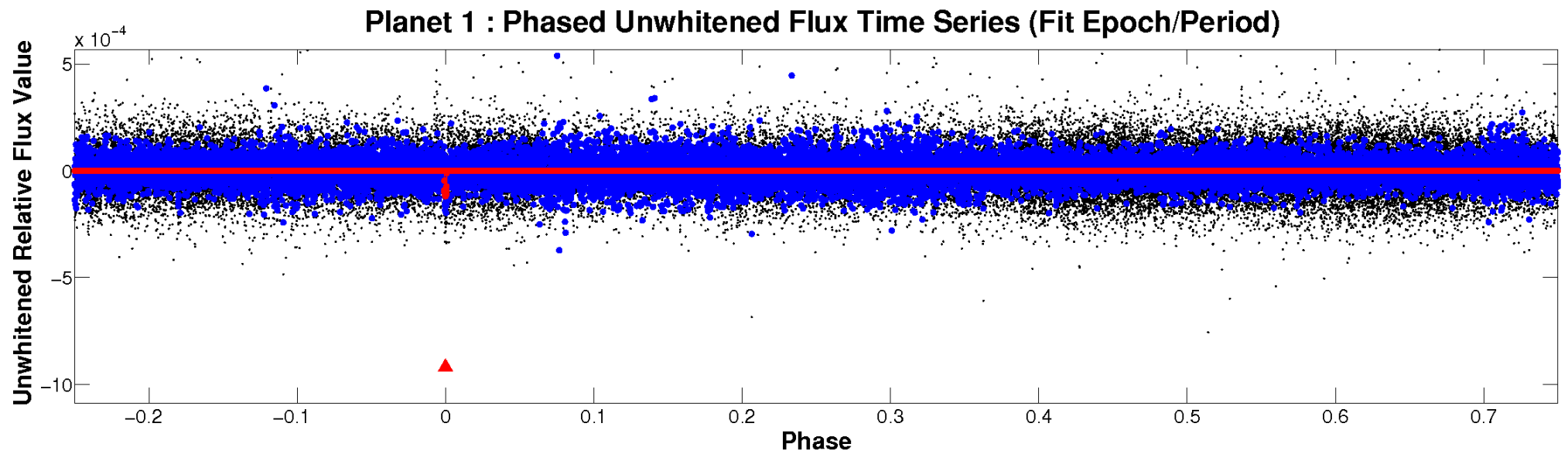


# ALT Odd/Even

TCE 004572728-01



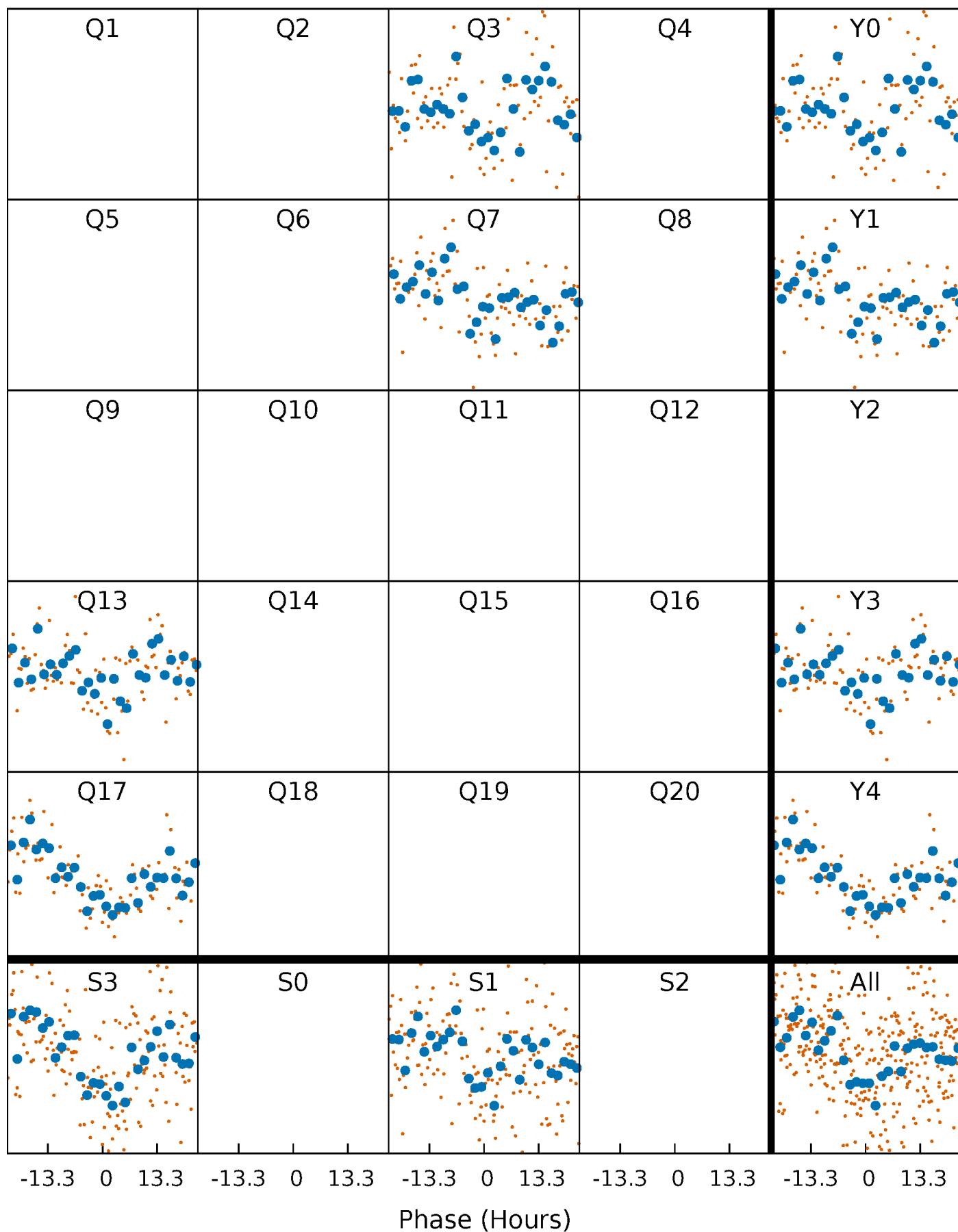
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

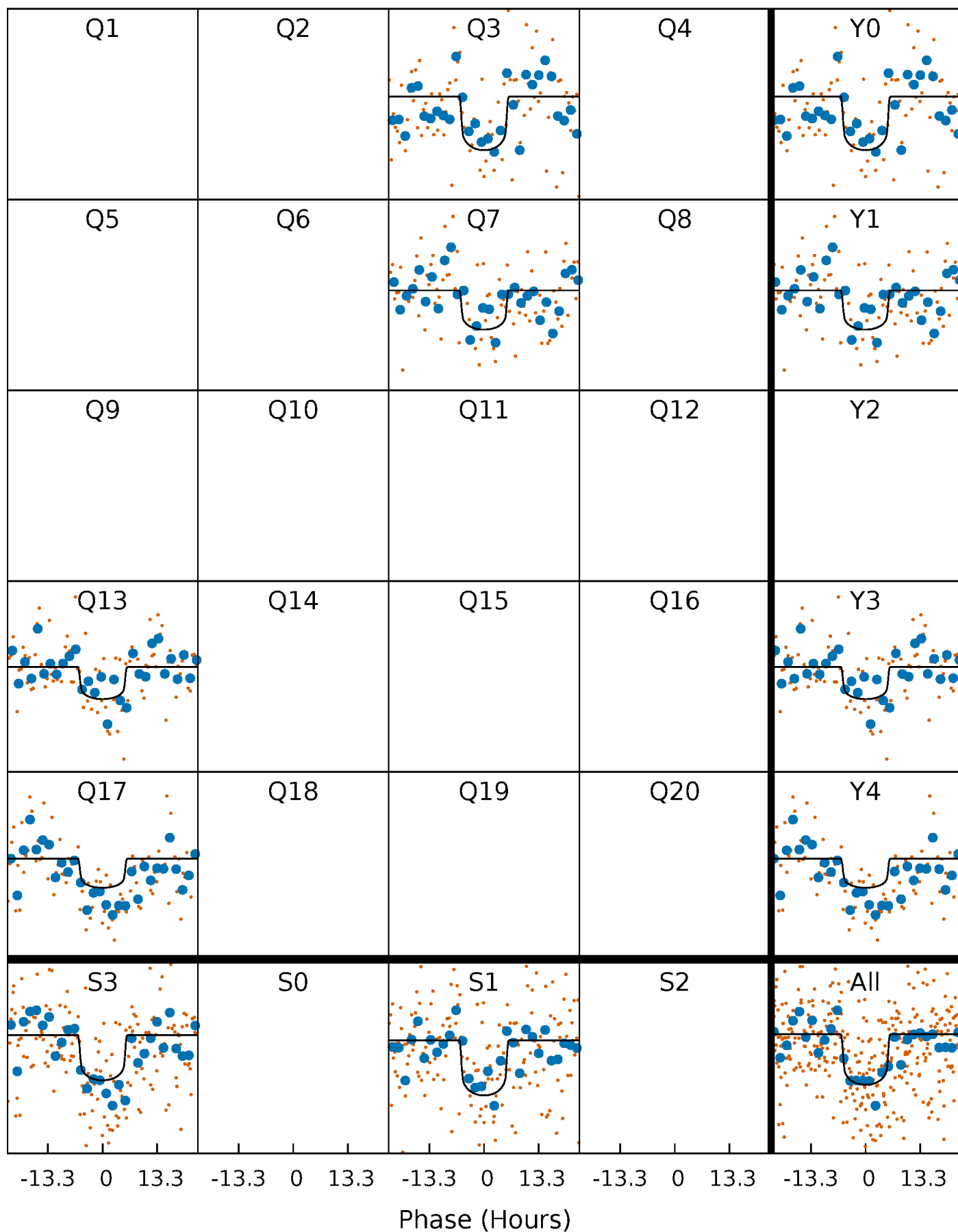
TCE 004572728-01 P=309.191256 Days  $T_0=326.222434$  (BKJD)





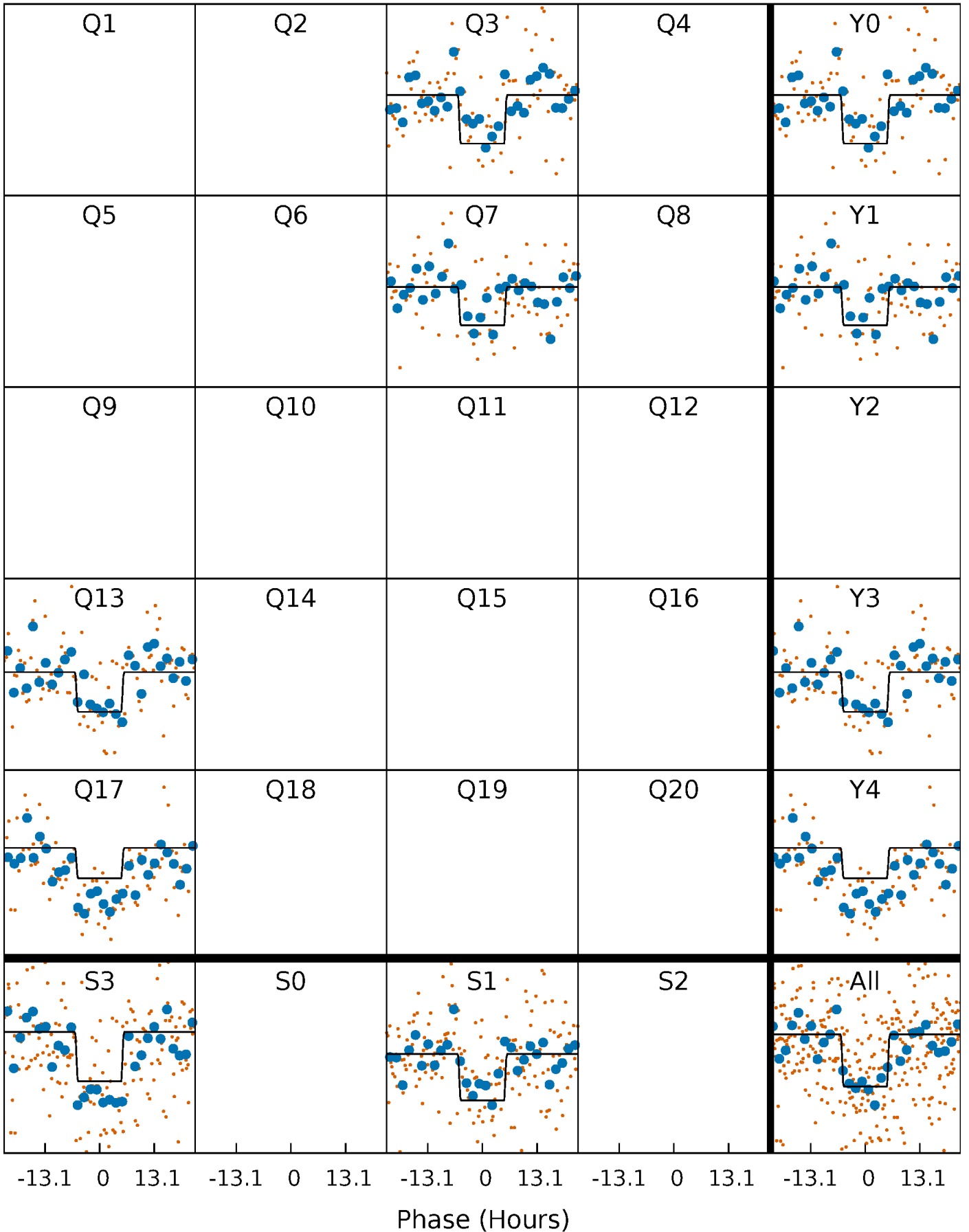
# DV Quarter-Phased Transit Curves

TCE 004572728-01     $P=309.191256$  Days     $T_0=326.222434$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

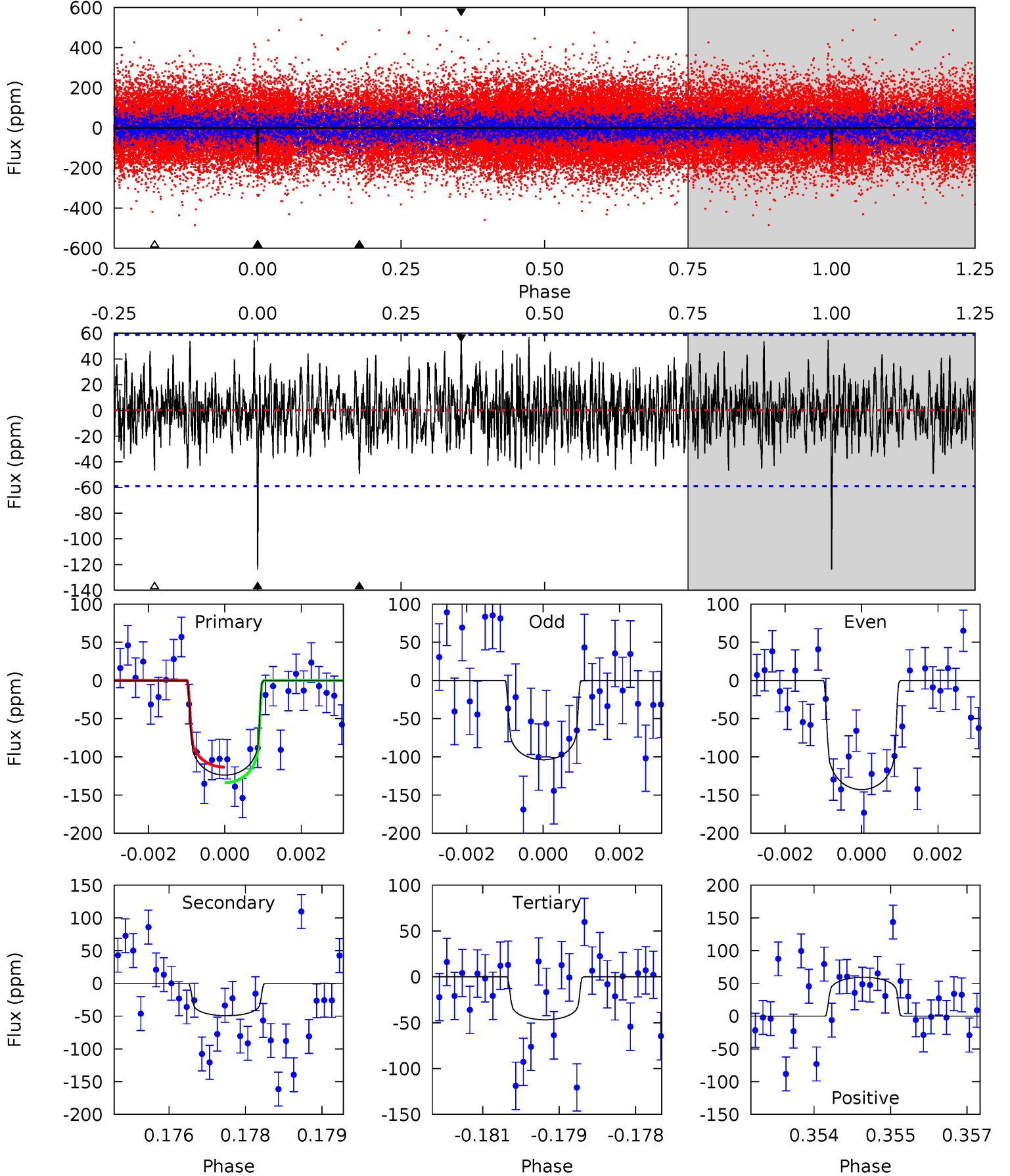
TCE 004572728-01 P=309.193819 Days  $T_0=326.218470$  (BKJD)



# DV Model-Shift Uniqueness Test

004572728-01, P = 309.191256 Days, E = 17.031178 Days

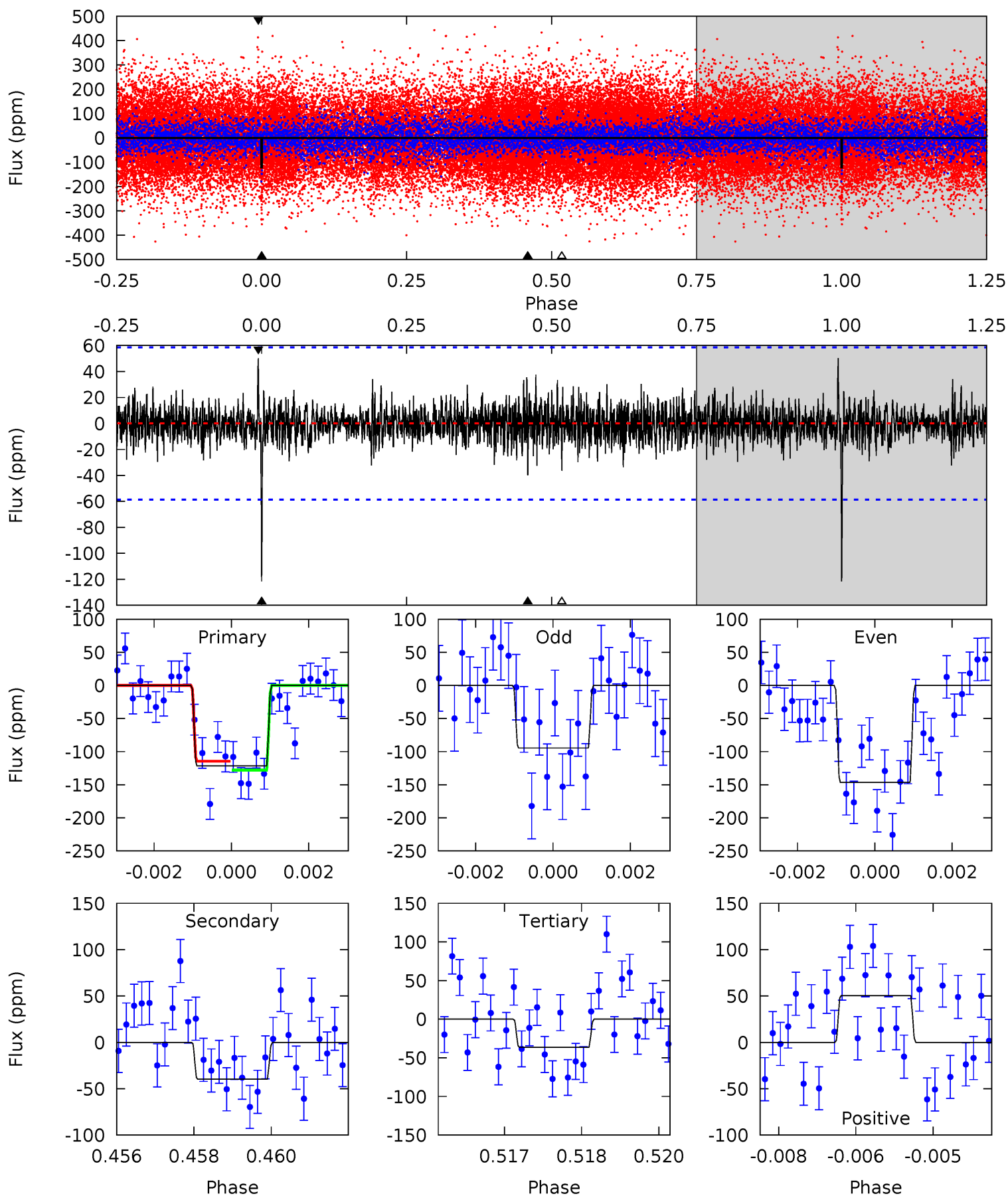
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	4.49	4.26	5.41	5.36	3.15	1.50	7.02	5.88	0.23	-0.92	1.78	1.19	0.32	0.93



# Alt Model-Shift Uniqueness Test

004572728-01,  $P = 309.193819$  Days,  $E = 17.024651$  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
11.1	3.65	3.33	4.62	5.37	3.17	0.90	7.81	6.52	0.33	-0.96	2.37	1.27	0.29	0.61



### Stellar Parameters For KIC 004572728

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6299^{+174}_{-174}$	$3.990^{+0.253}_{-0.117}$	$-0.360^{+0.300}_{-0.300}$	$1.754^{+0.358}_{-0.537}$	$1.095^{+0.208}_{-0.151}$	$0.286^{+0.481}_{-0.098}$
	+3%/-3%	+6%/-3%	+83%/-83%	+20%/-31%	+19%/-14%	+168%/-34%
Source	PHO1	FLK73	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 004572728-01 / KOI 8249.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-49 \pm 11$	$2.09^{+0.65}_{-0.56}$	$529^{+32}_{-40}$	$5011^{+713}_{-454}$	$5195^{+4663}_{-2140}$
Alt.	$-40 \pm 11$	$2.03^{+0.56}_{-0.54}$	$530^{+32}_{-41}$	$4866^{+727}_{-485}$	$4646^{+4169}_{-2094}$

$T_{max}$  = 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

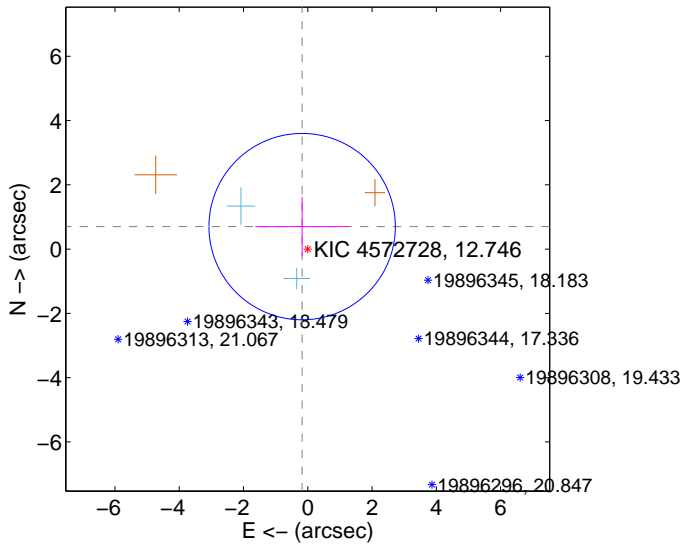
Supplemental centroid analysis for 004572728-01. Kepler magnitude: 12.75. Transit SNR 7.00

There are 2 quarters with good PRF difference image offsets

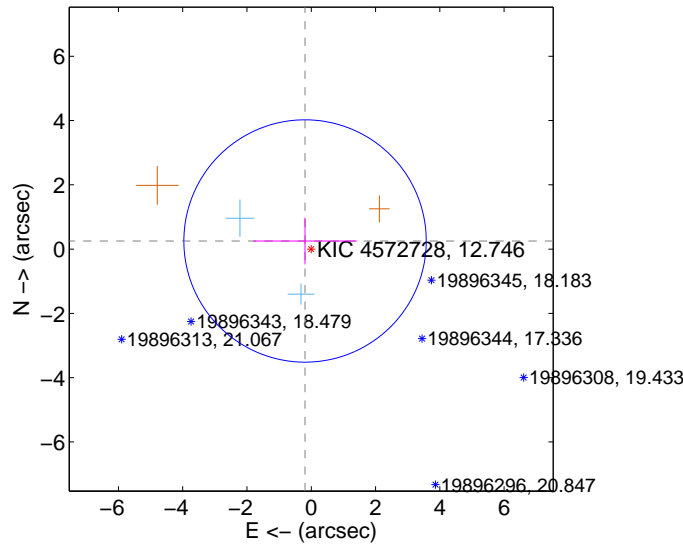
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.722 \pm 0.967$	0.75	$0.176 \pm 1.455$	$0.700 \pm 0.927$
PRF-fit source offset from KIC position	$0.318 \pm 1.257$	0.25	$0.193 \pm 1.612$	$0.252 \pm 0.727$
photometric centroid source offset	$1.08 \pm 1.73$	0.62	$0.61 \pm 1.30$	$-0.89 \pm 1.90$

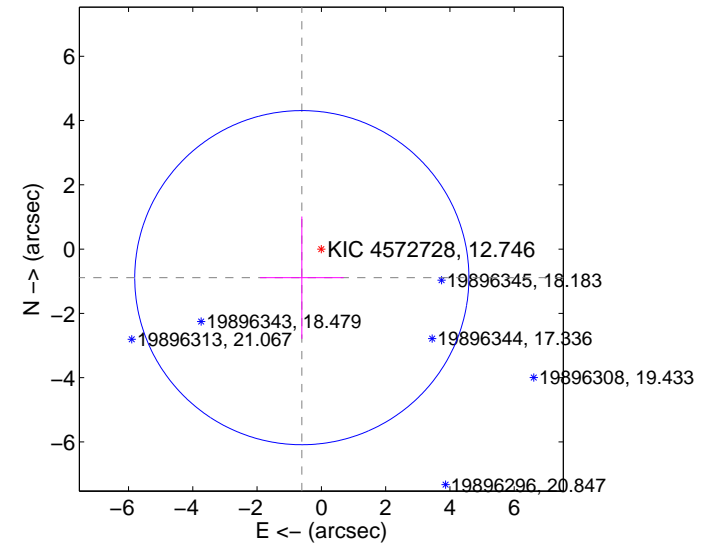
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

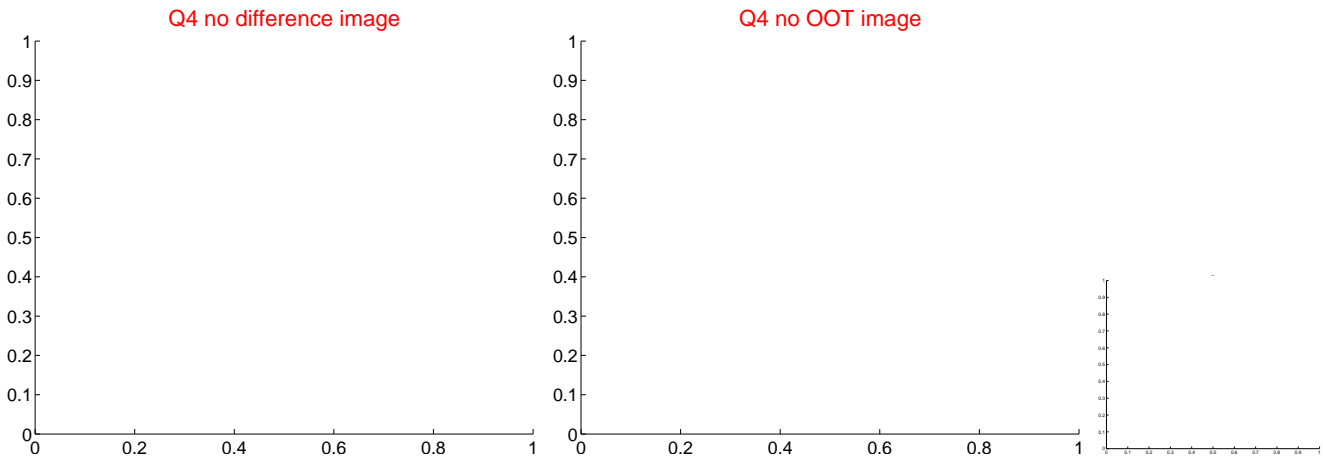
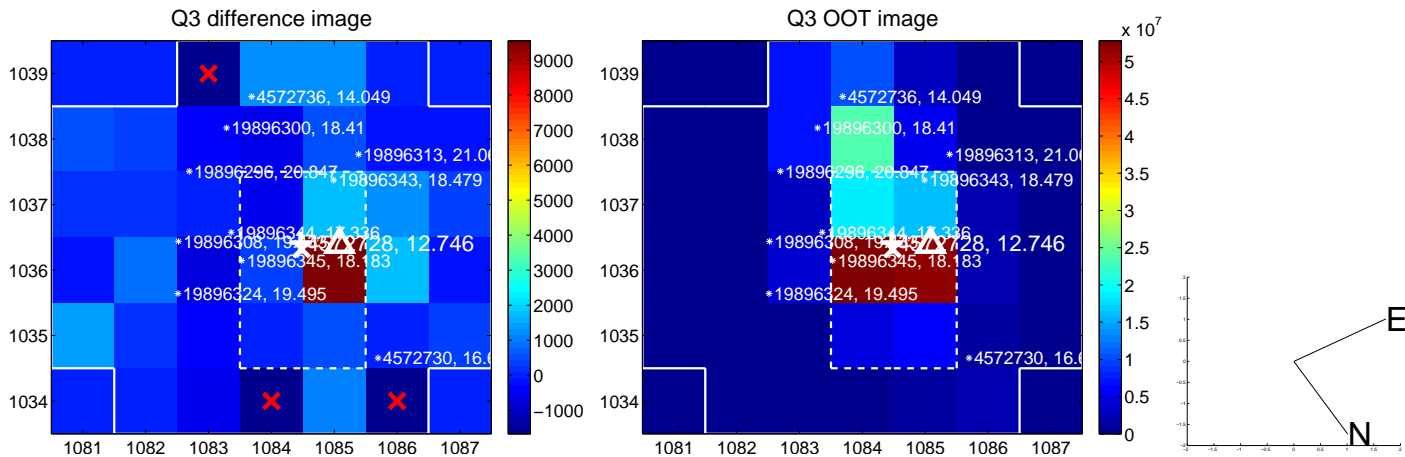
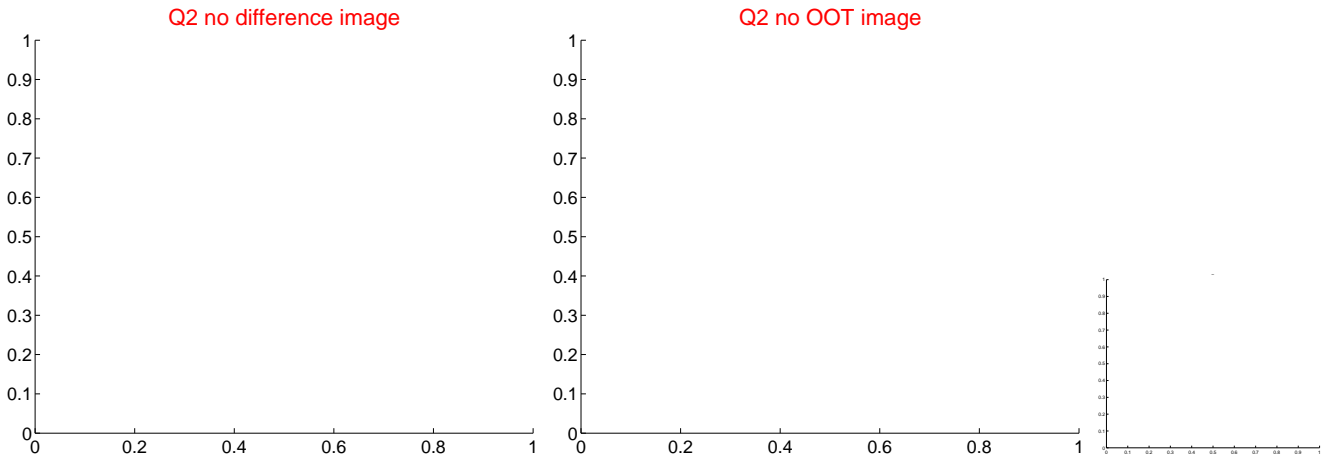
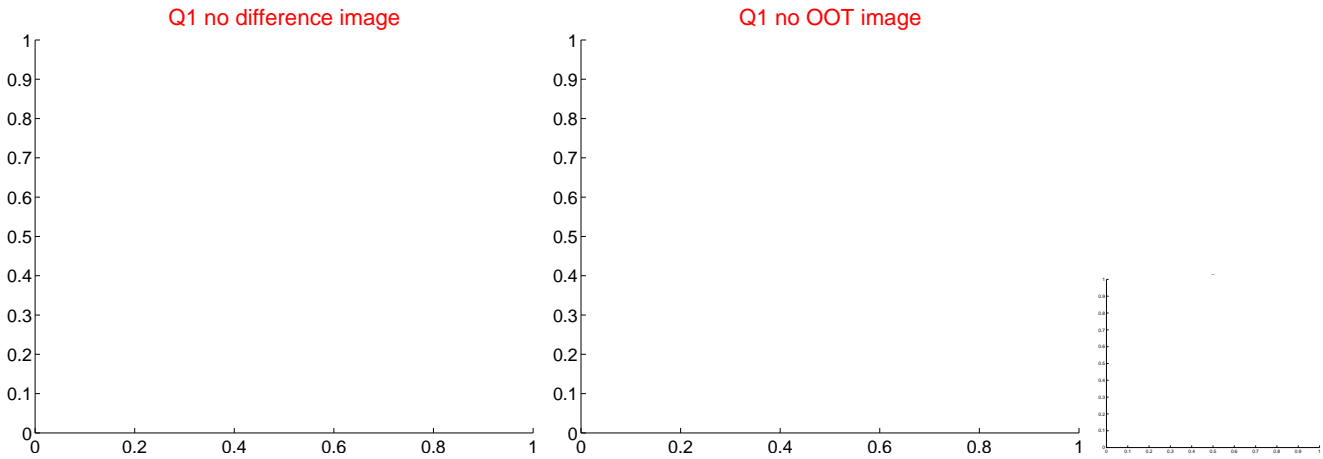


offset from photometric centroids



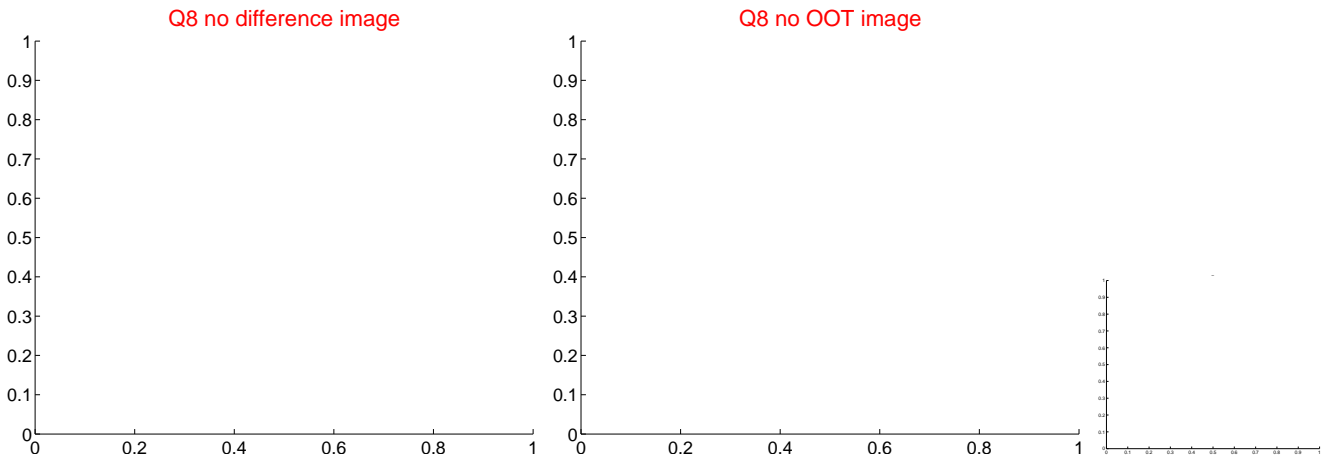
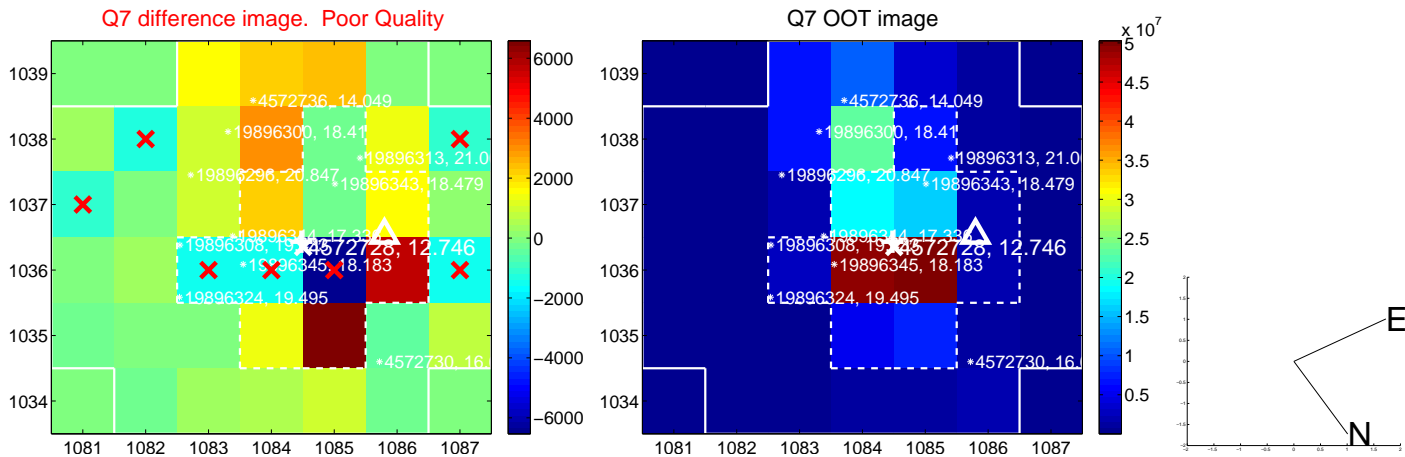
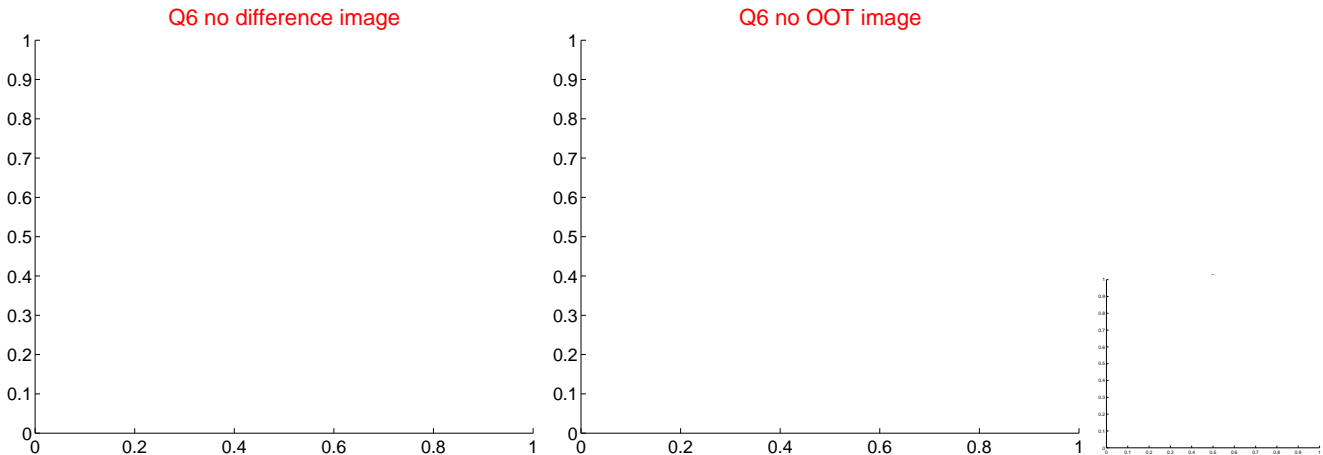
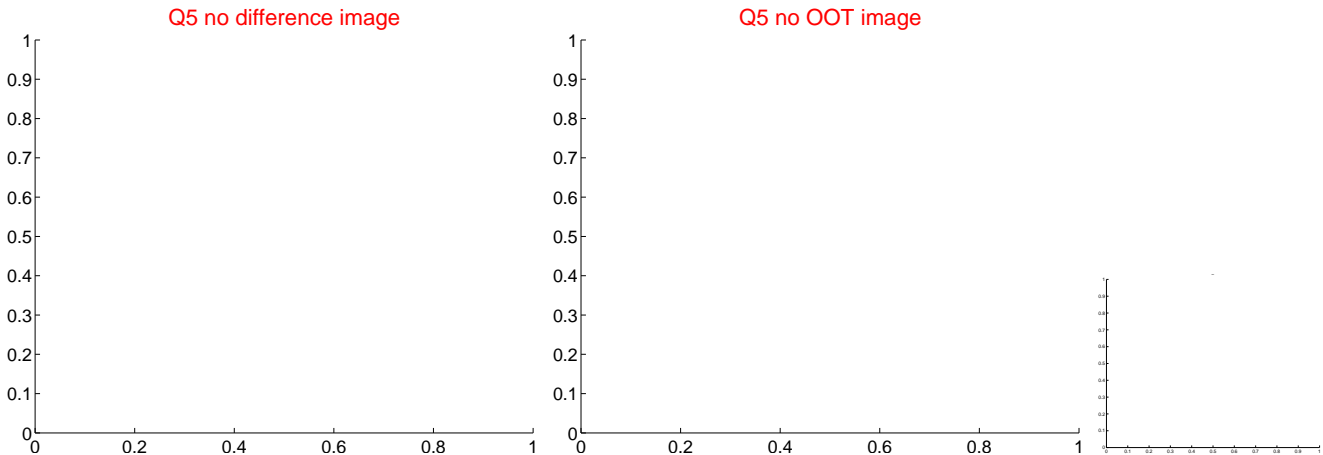
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





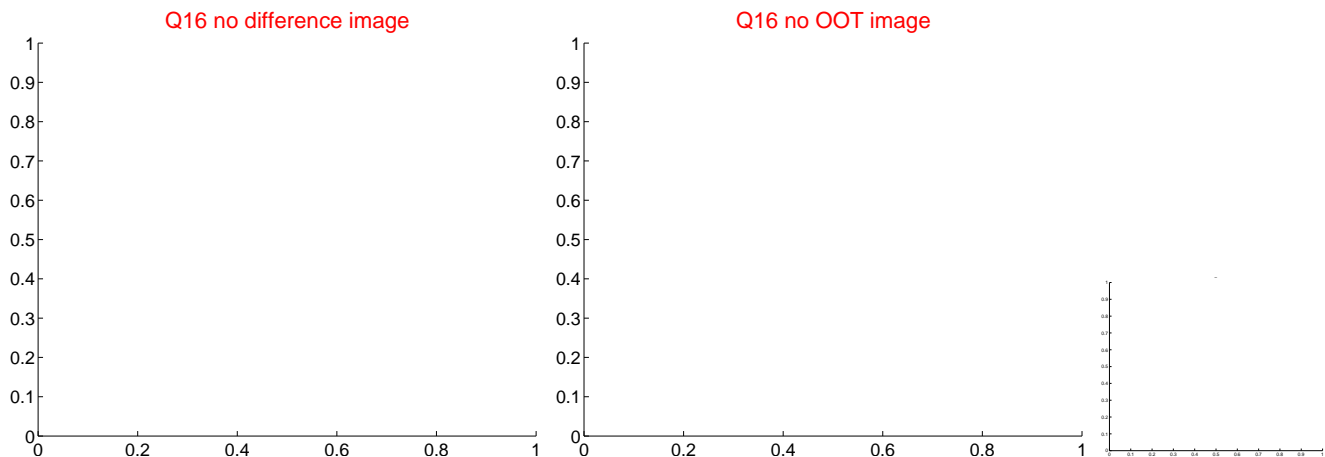
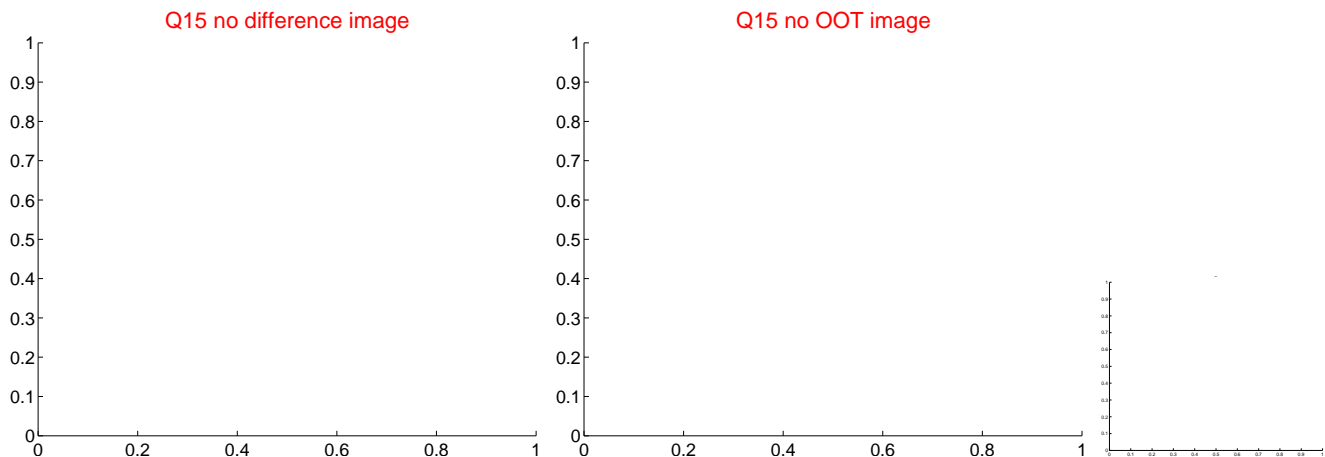
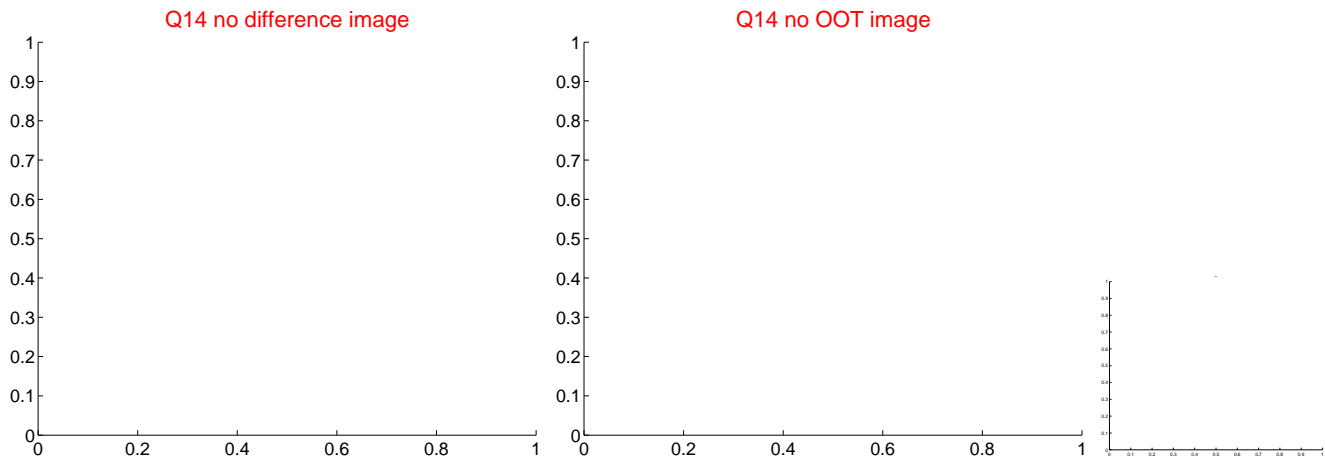
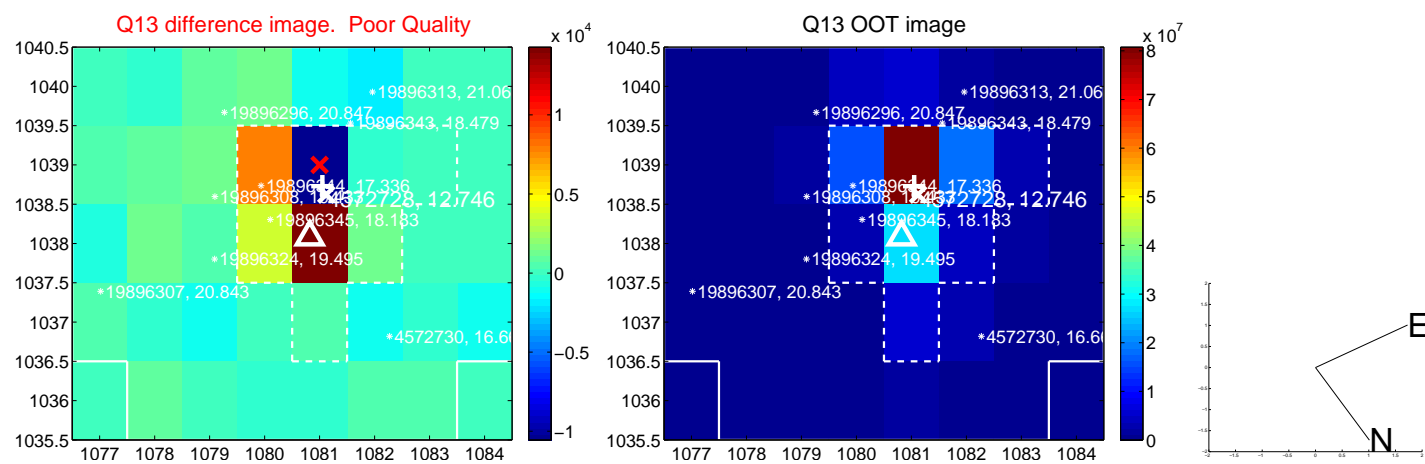
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



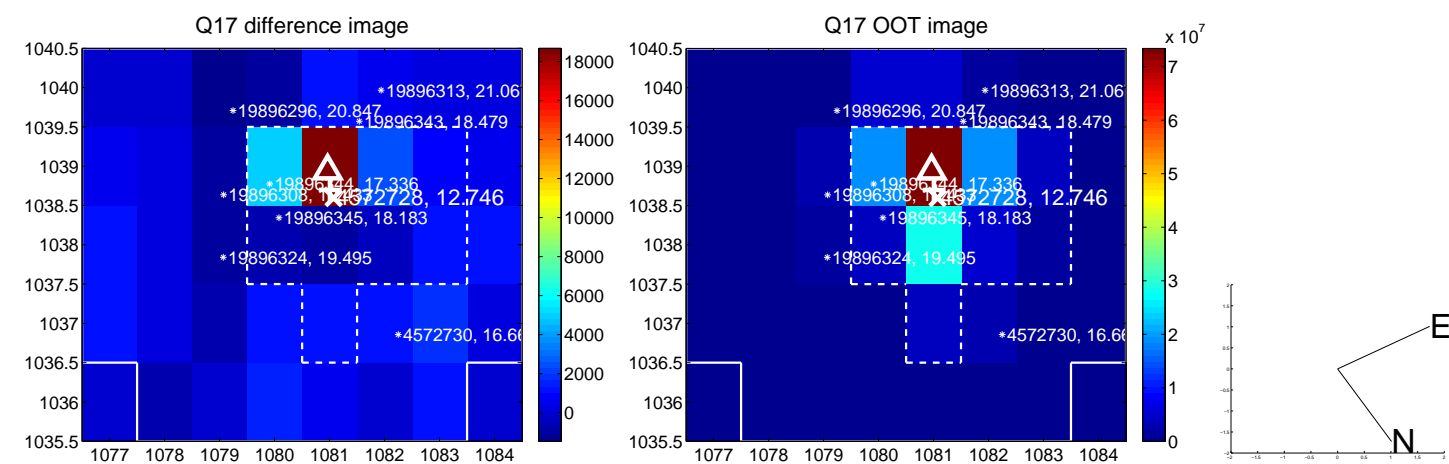
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



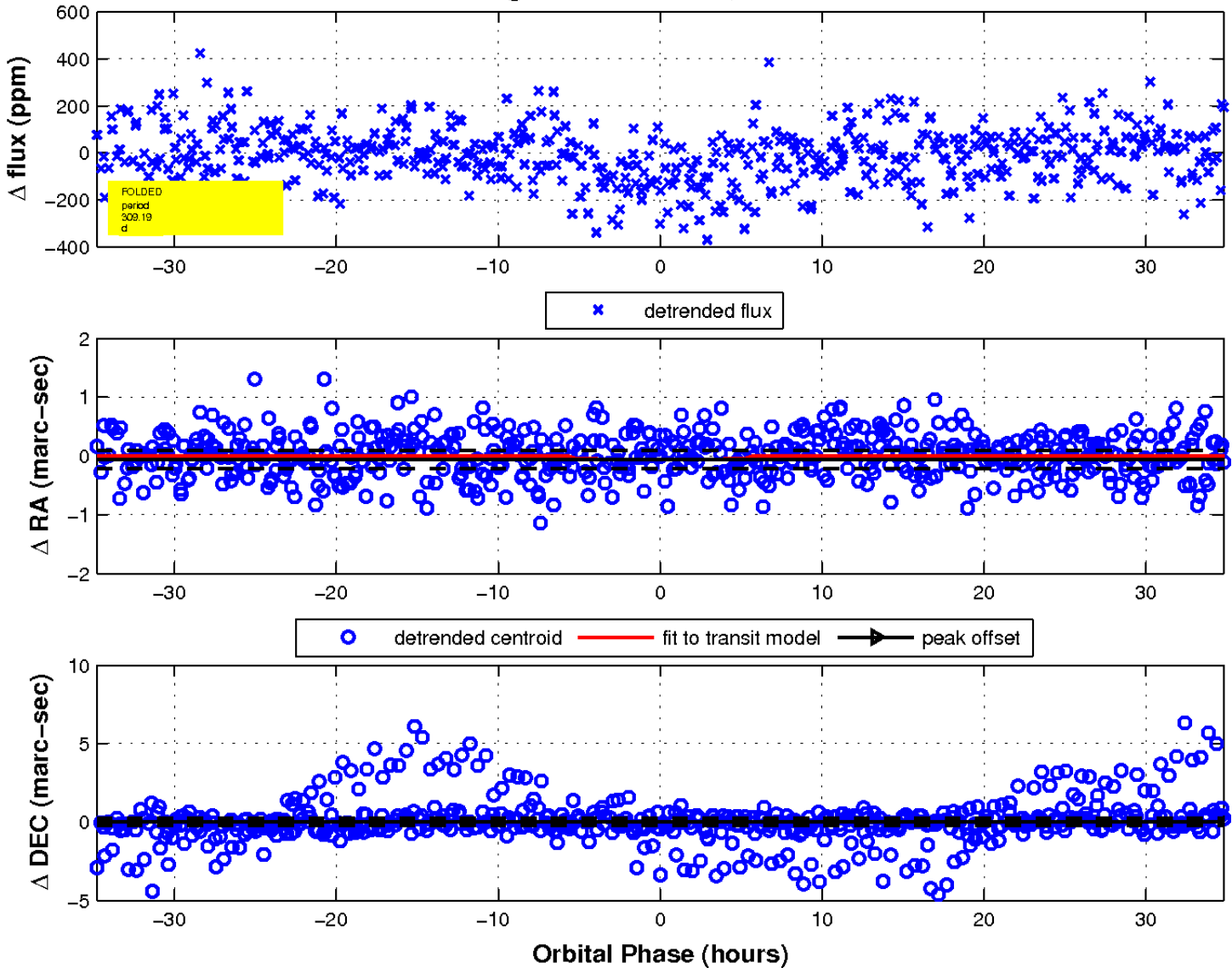
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

