

# KIC 004270799

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004270799-01	OBS	4810.01	115.240848	155.586684	538.3	6.817	10.2	11.0	1.04	5589	2.71	4.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004270799-01	OBS	PC	0.85	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.

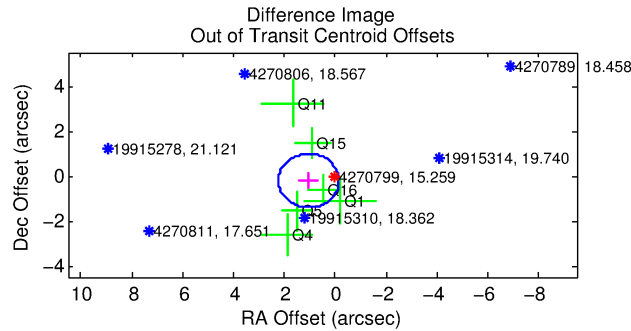
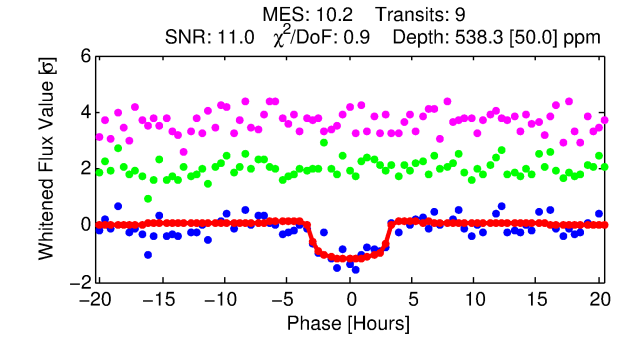
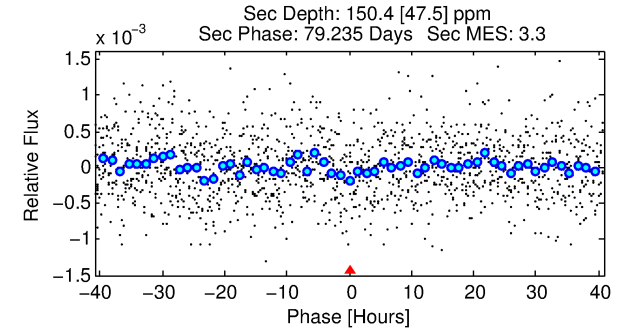
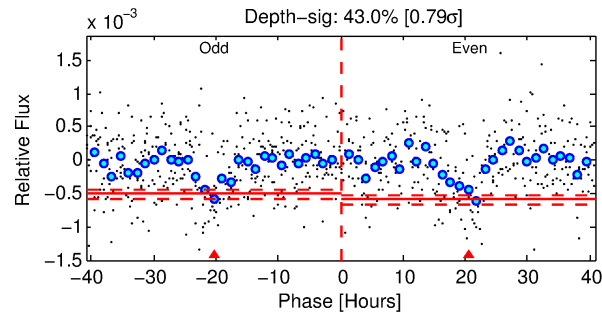
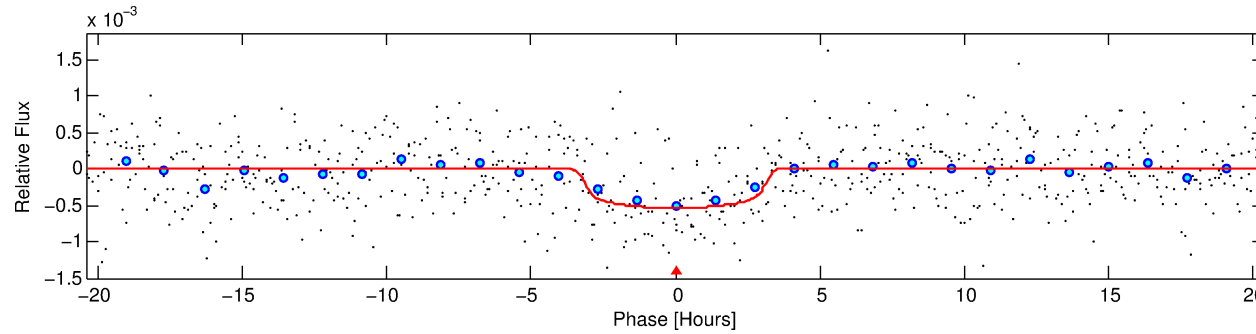
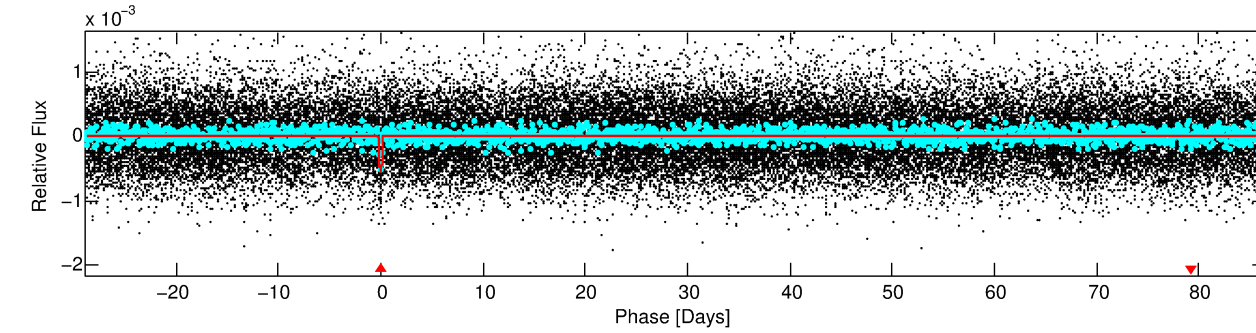
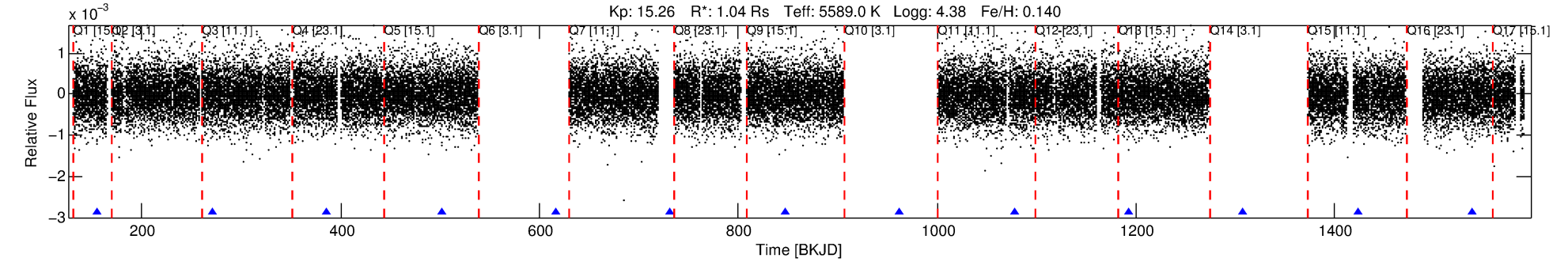
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004270799-01

No Significant Match Found

# DV One-Page Summary

KIC: 4270799 Candidate: 1 of 1 Period: 115.241 d  
KOI: K04810.01 Corr: 0.888



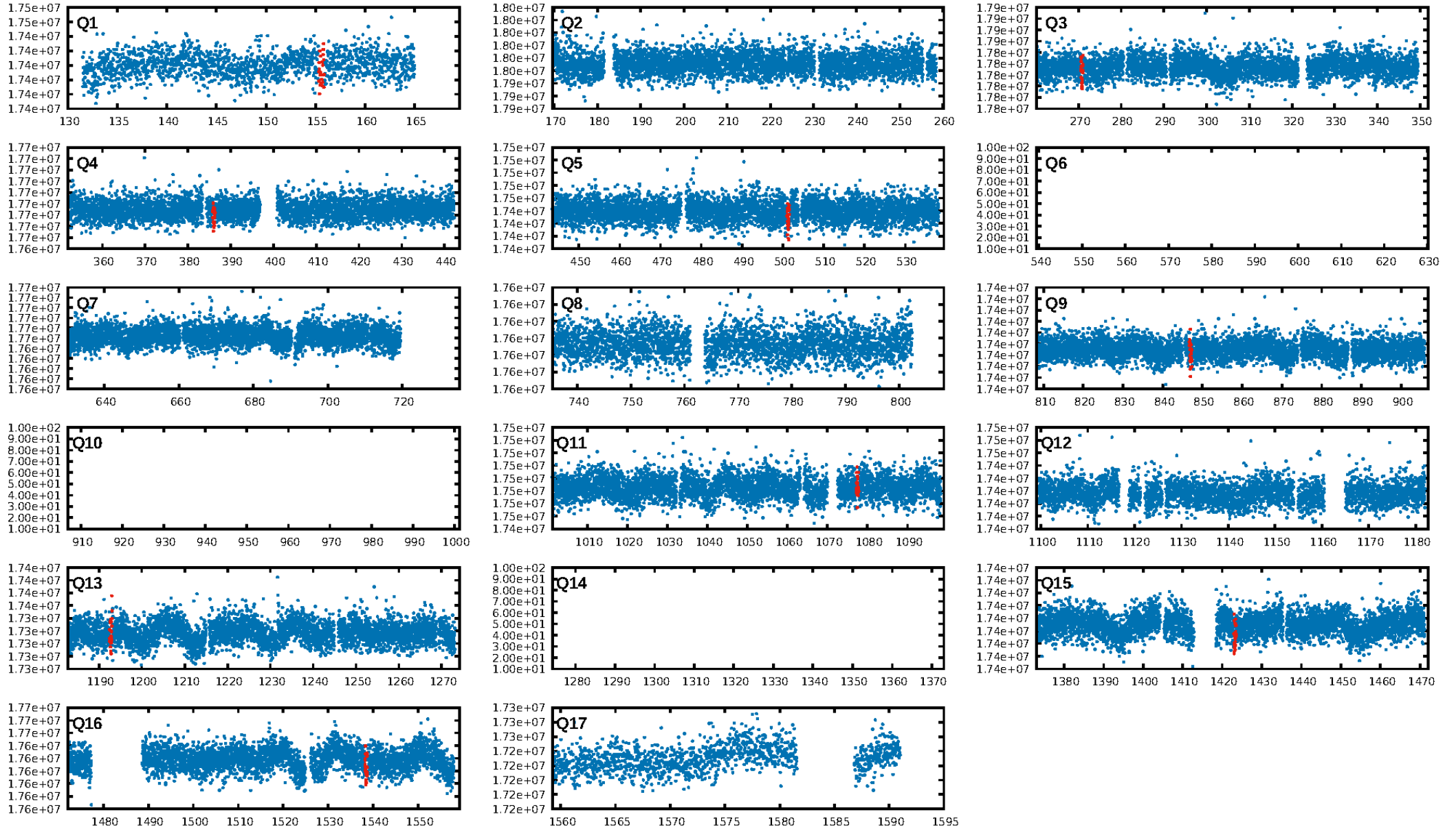
## DV Fit Results:

Period = 115.24085 [0.00150] d  
Epoch = 155.5867 [0.0108] BKJD  
Rp/R\* = 0.0239 [0.0086]  
a/R\* = 79.15 [118.67]  
b = 0.82 [0.61]  
Seff = 4.53 [0.92]  
Teq = 372 [19] K  
Rp = 2.71 [1.05] Re  
a = 0.4556 [0.0588] AU  
Ag = 2343.13 [1895.40] [1.24σ]  
Teffp = 4001 [787] K [4.61σ]

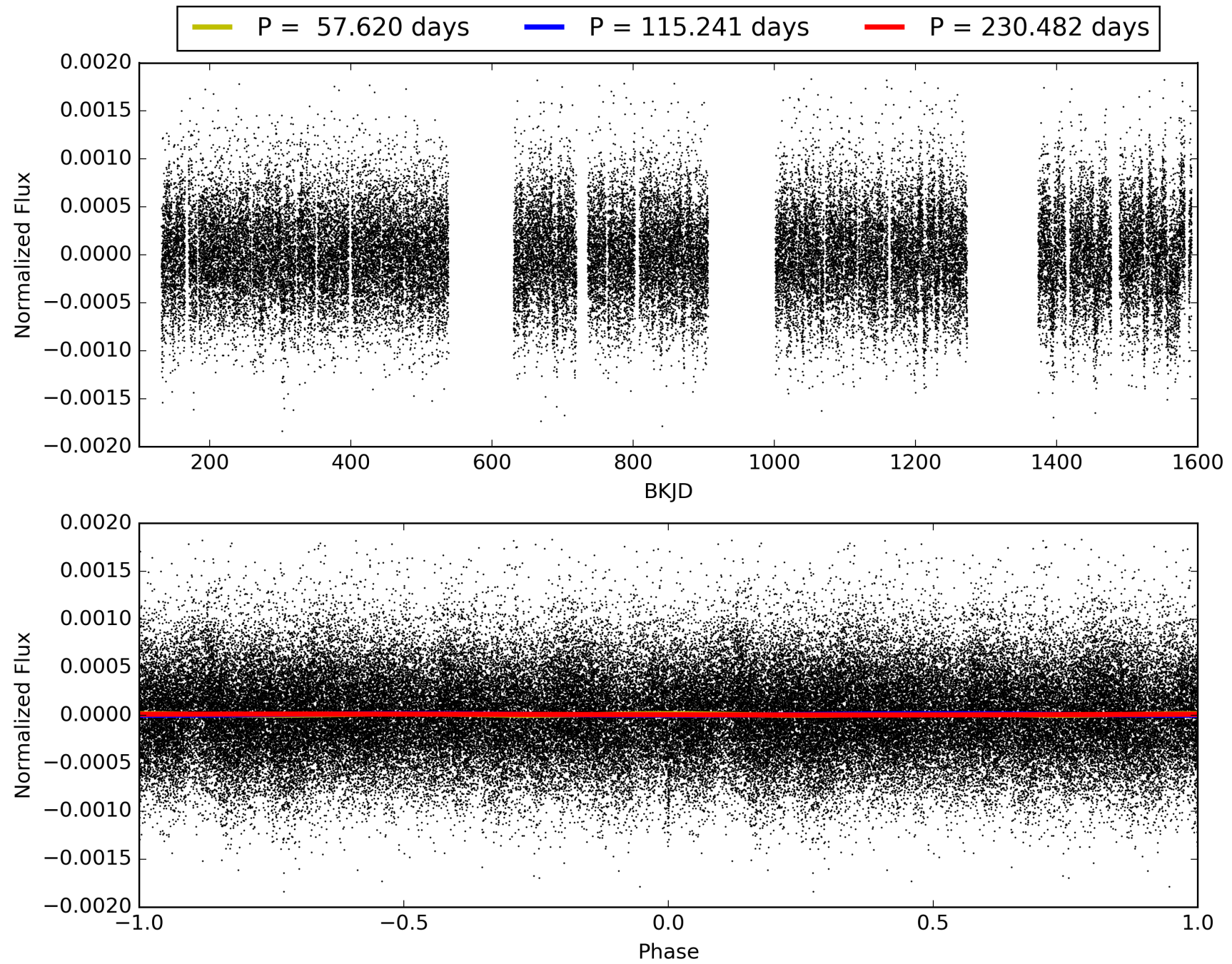
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 67.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.52e-23  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 7.396  
Centroid-sig: 54.7%  
Centroid-so: 0.682 arcsec [0.58σ]  
OotOffset-rm: 1.069 arcsec [2.68σ]  
KicOffset-rm: 1.008 arcsec [2.53σ]  
OotOffset-st: 0/2/2/2 [6]  
KicOffset-st: 0/2/2/2 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 1.00 [7/7]

# TCE 004270799-01, PDC Light Curves

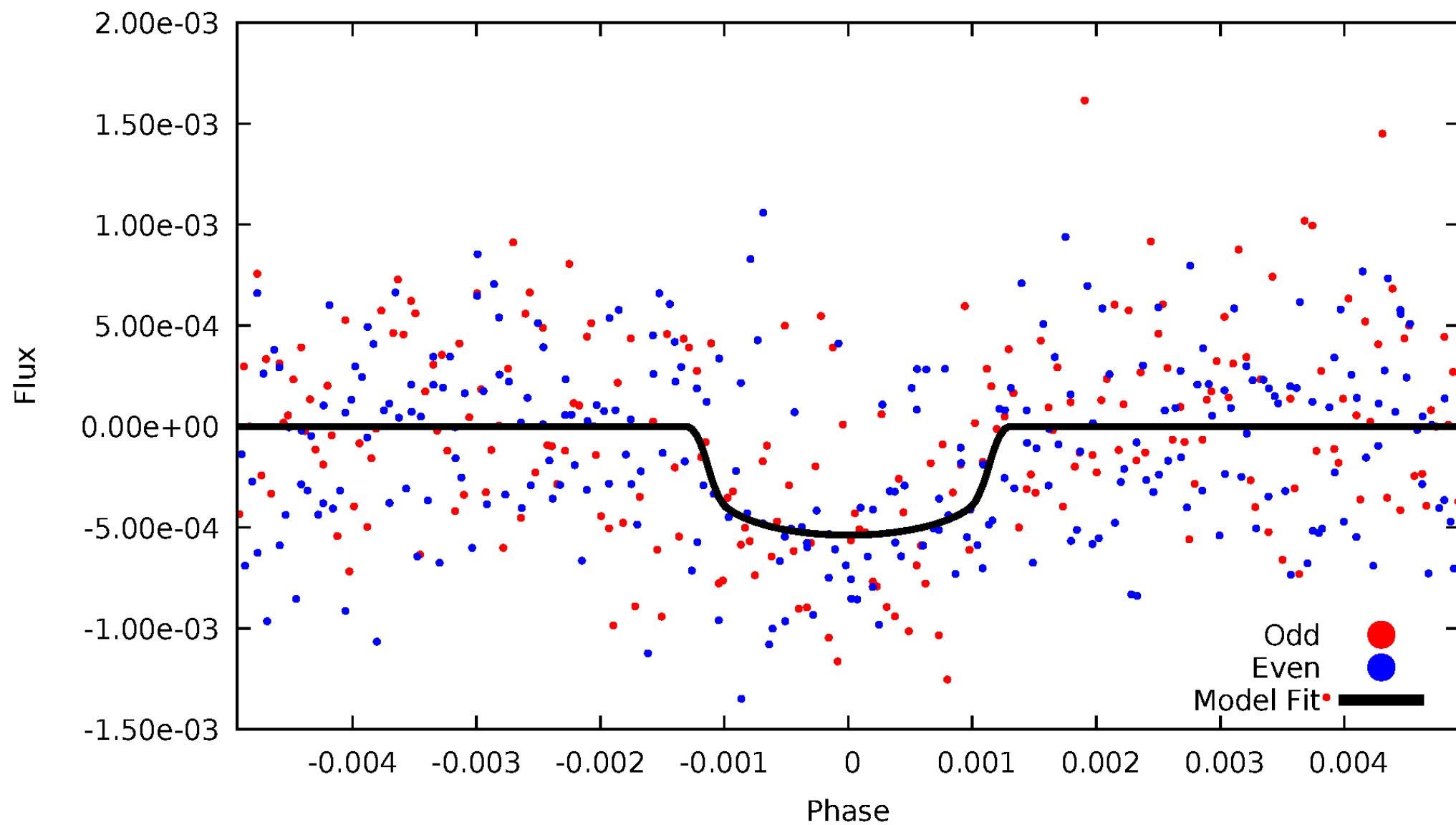


TCE 004270799-01



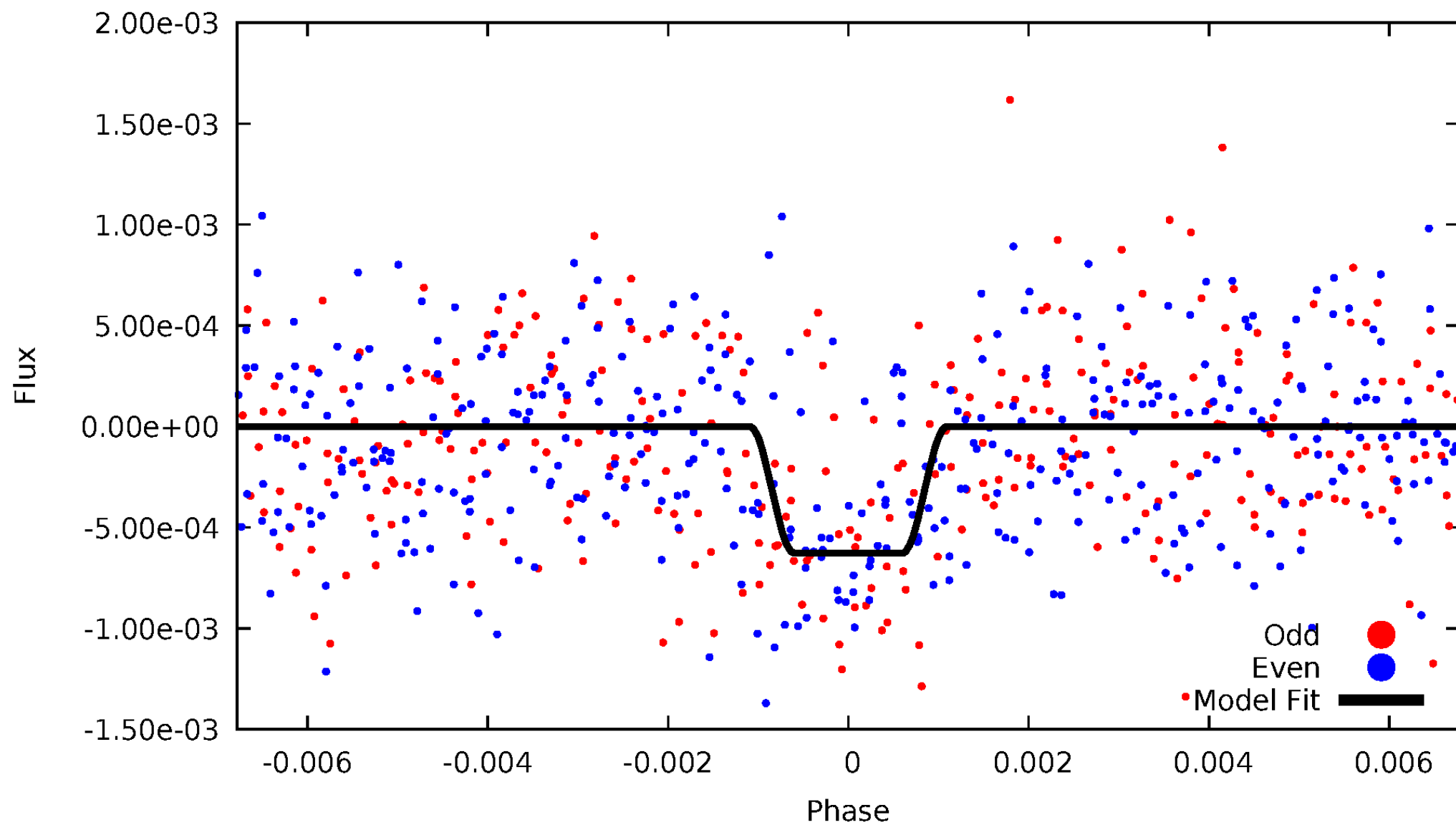
# DV Odd/Even

TCE 004270799-01



# ALT Odd/Even

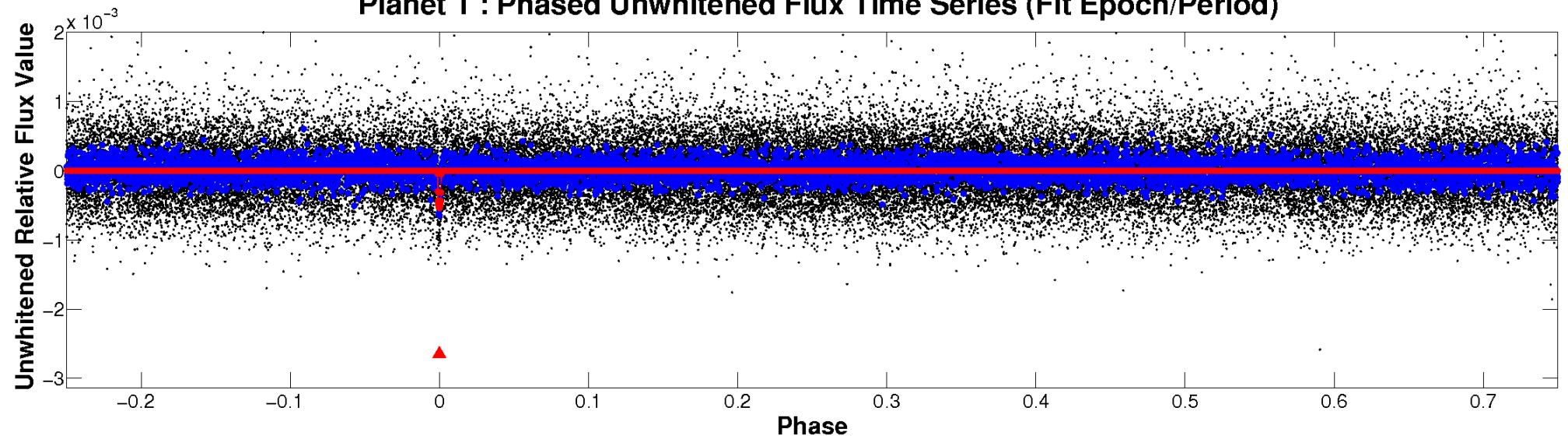
TCE 004270799-01



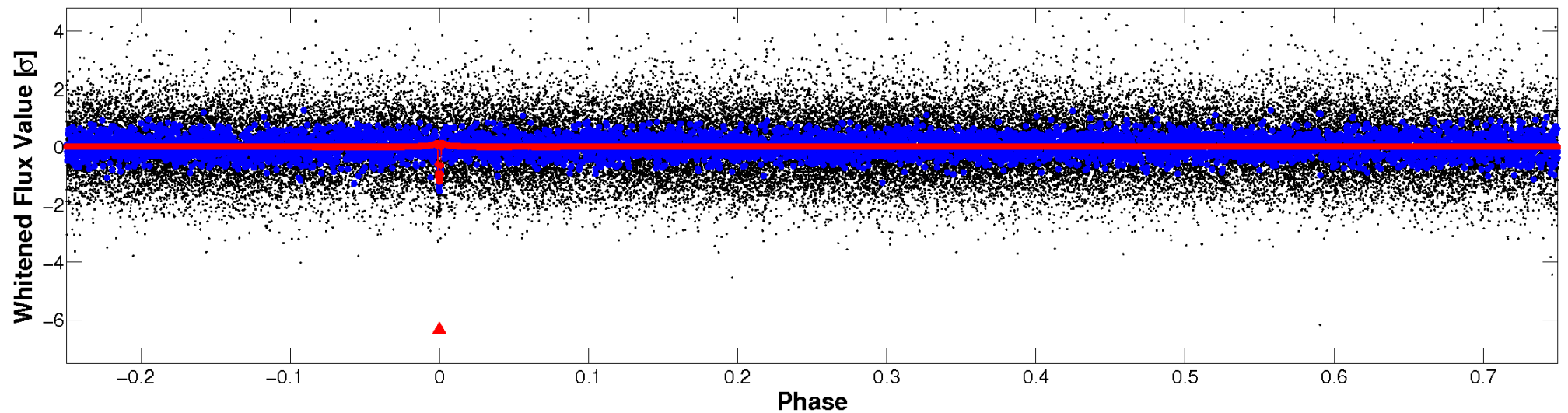


# Non-Whitened Vs. Whitened Light Curve

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

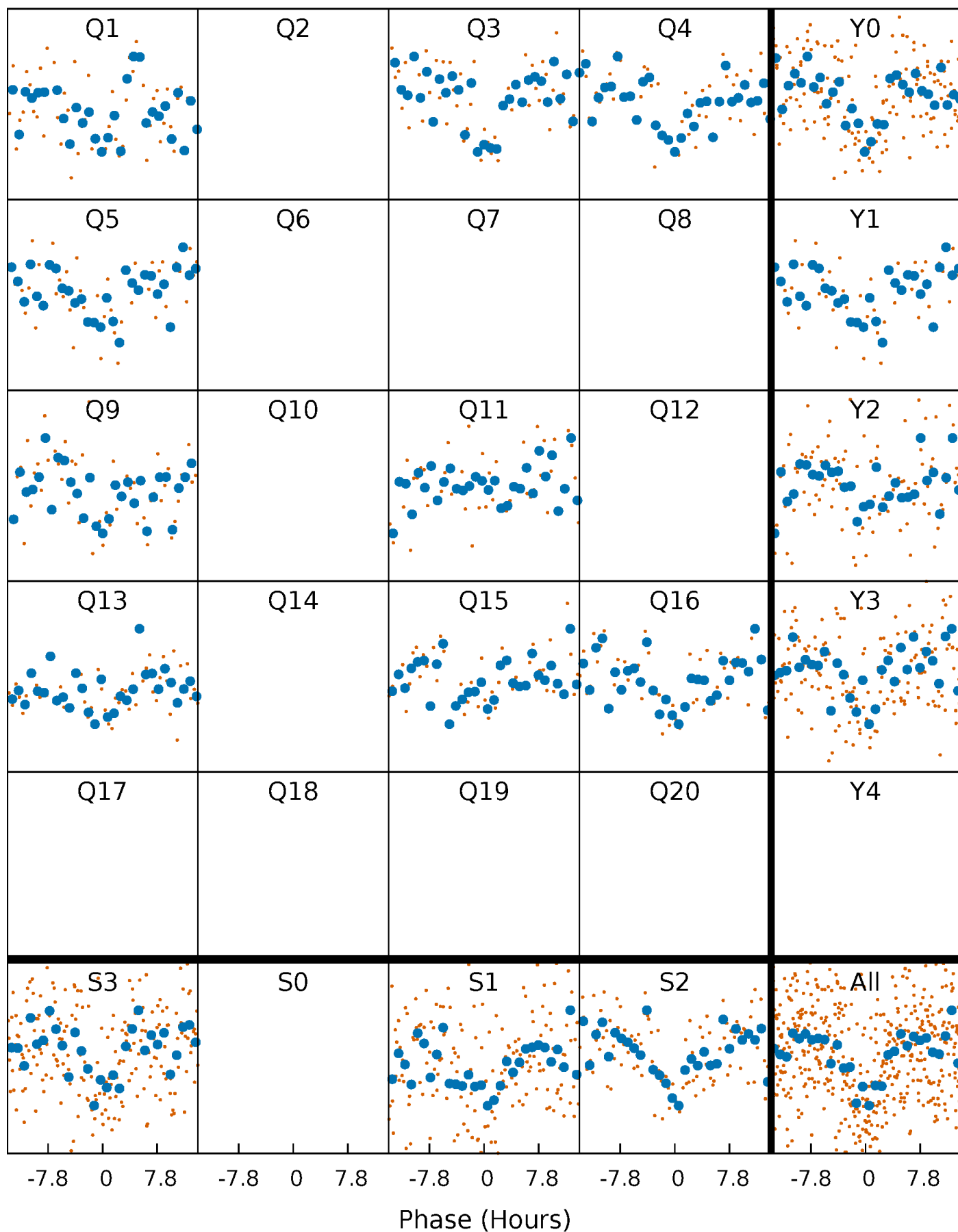


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 004270799-01 P=115.240848 Days  $T_0=155.586684$  (BKJD)





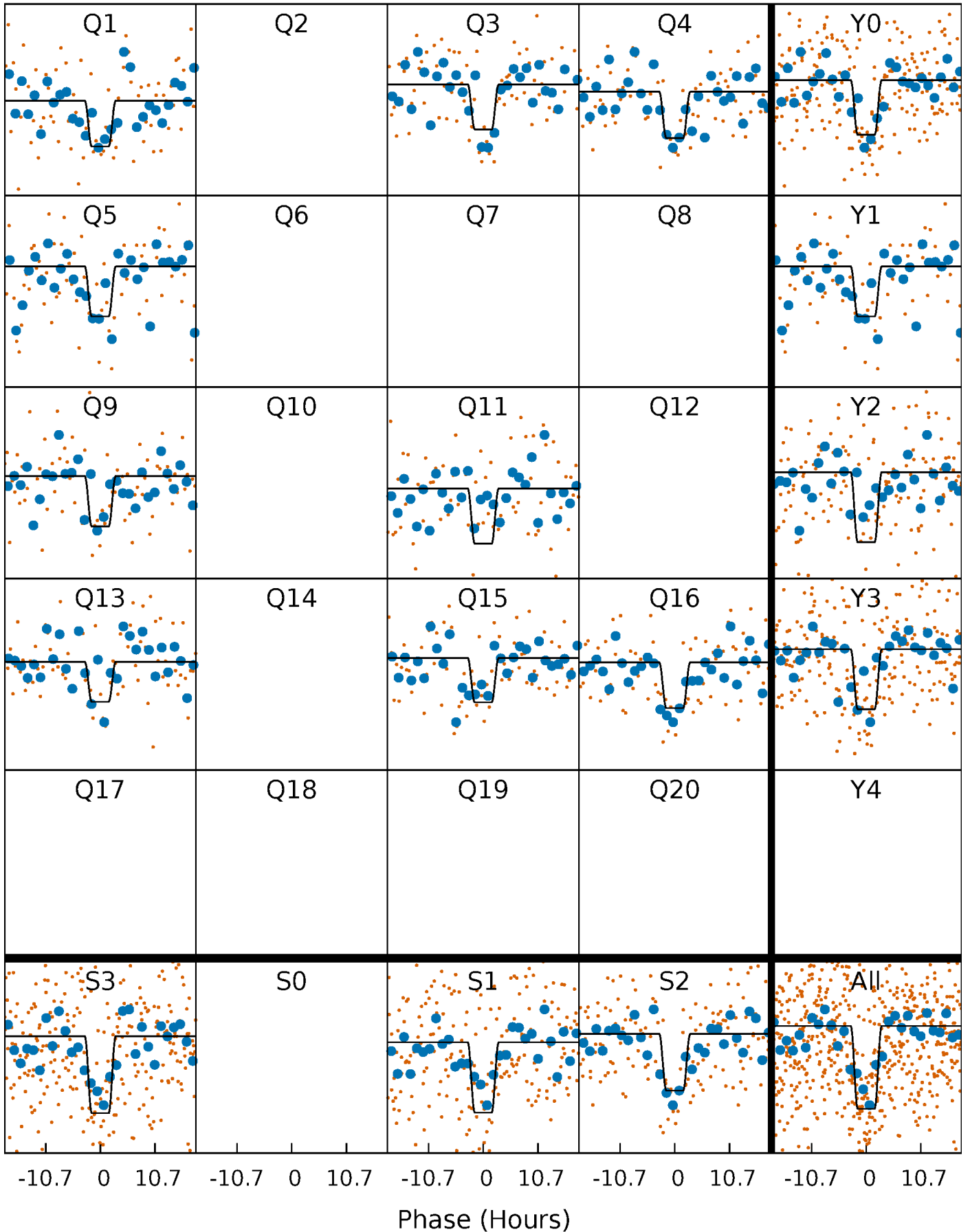
# DV Quarter-Phased Transit Curves

TCE 004270799-01     $P=115.240848$  Days     $T_0=155.586684$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

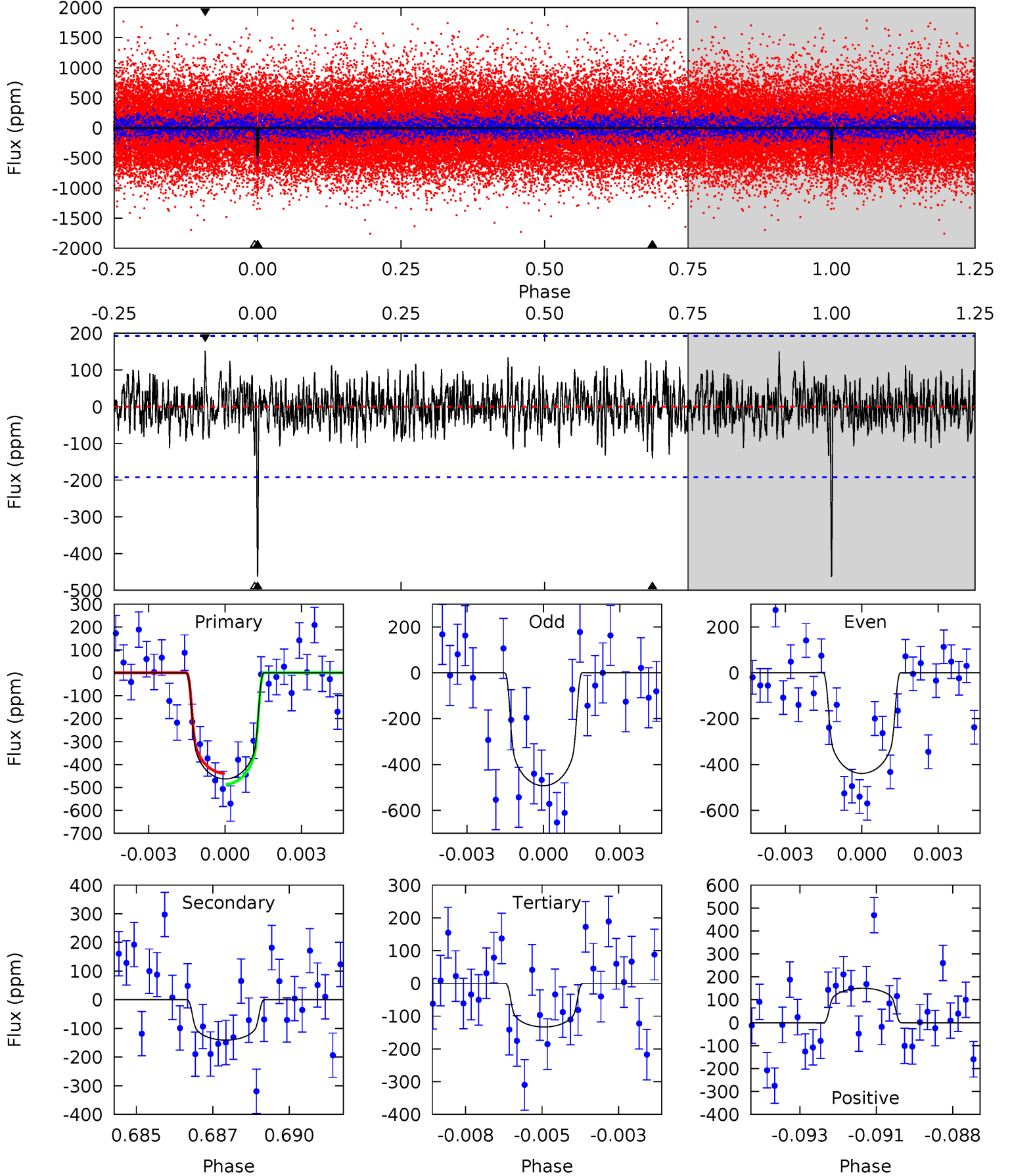
TCE 004270799-01 P=115.243319 Days  $T_0=155.577646$  (BKJD)



# DV Model-Shift Uniqueness Test

004270799-01,  $P = 115.240848$  Days,  $E = 40.345836$  Days

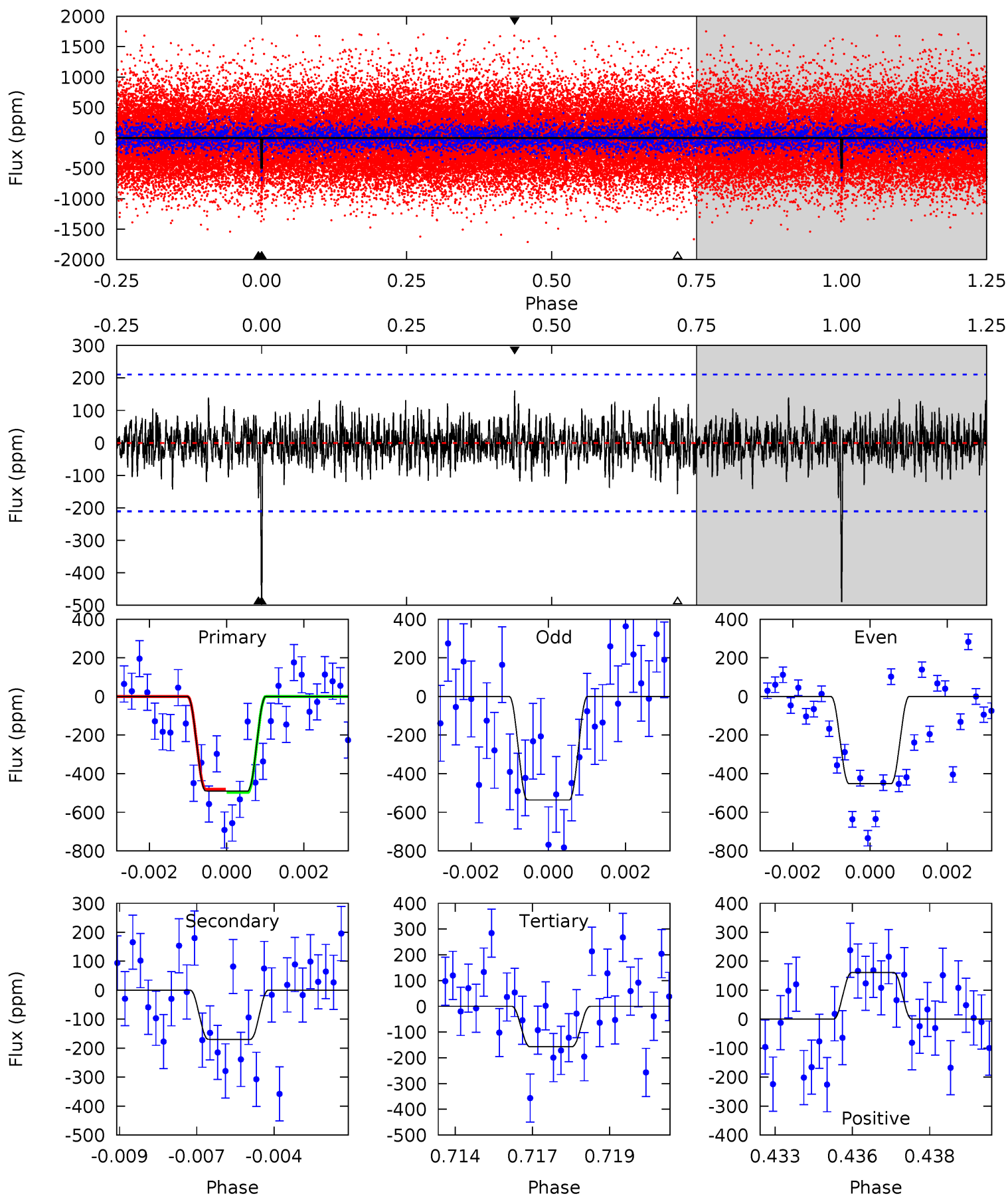
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	3.86	3.66	4.13	5.28	3.01	1.16	9.06	8.59	0.21	-0.26	0.73	1.08	0.25	0.65



# Alt Model-Shift Uniqueness Test

004270799-01, P = 115.243319 Days, E = 40.334327 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
12.3	4.28	3.97	4.06	5.31	3.06	1.10	8.38	8.29	0.31	0.22	1.06	1.11	0.25	0.21



### Stellar Parameters For KIC 004270799

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5589^{+75}_{-75}$	$4.384^{+0.099}_{-0.110}$	$0.140^{+0.150}_{-0.150}$	$1.037^{+0.152}_{-0.114}$	$0.948^{+0.060}_{-0.048}$	$1.199^{+0.512}_{-0.387}$
	+1%/-1%	+2%/-3%	+107%/-107%	+15%/-11%	+6%/-5%	+43%/-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 004270799-01 / KOI 4810.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-141 \pm 36$	$2.74^{+0.95}_{-0.99}$	$520^{+22}_{-18}$	$4135^{+790}_{-408}$	$2058^{+2917}_{-954}$
Alt.	$-170 \pm 40$	$2.83^{+1.08}_{-1.01}$	$521^{+20}_{-18}$	$4296^{+796}_{-507}$	$2412^{+3215}_{-1191}$

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

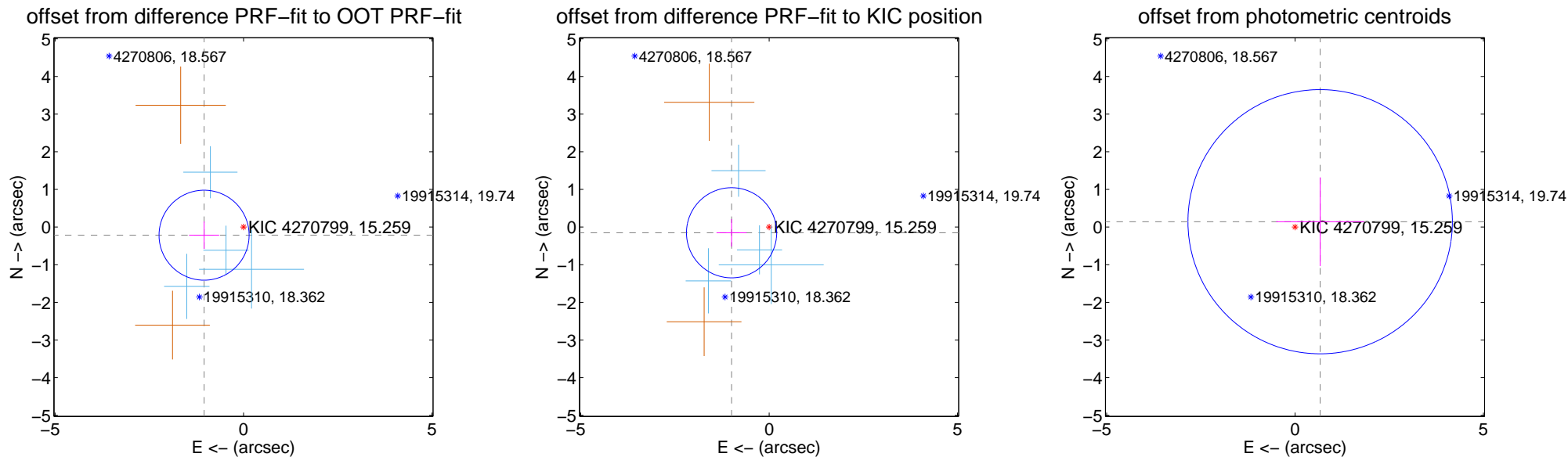
## DV Centroid Data

Supplemental centroid analysis for 004270799-01. Kepler magnitude: 15.26. Transit SNR 11.01

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

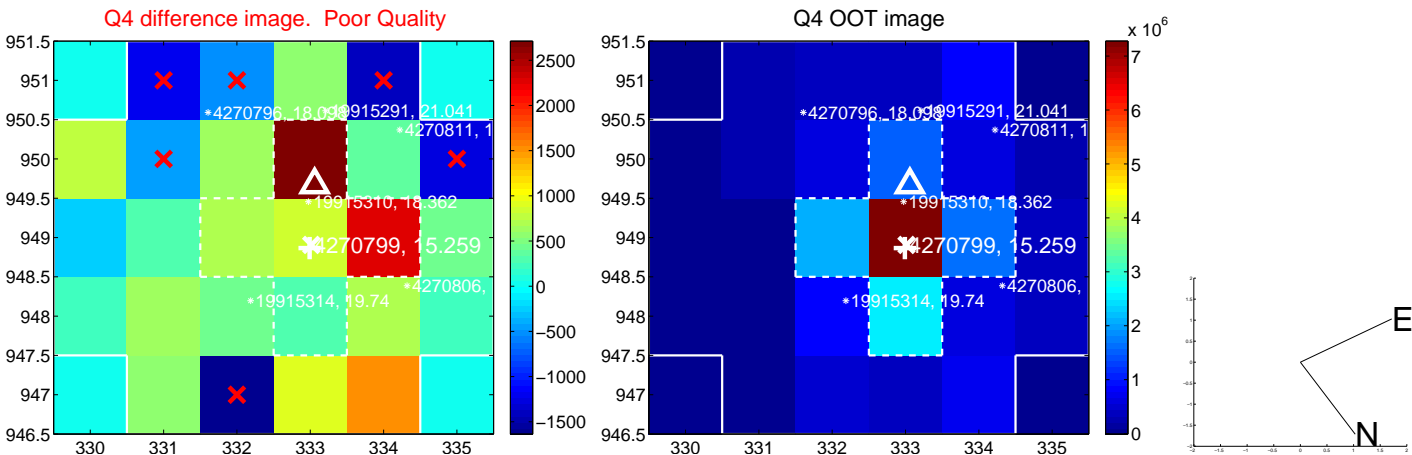
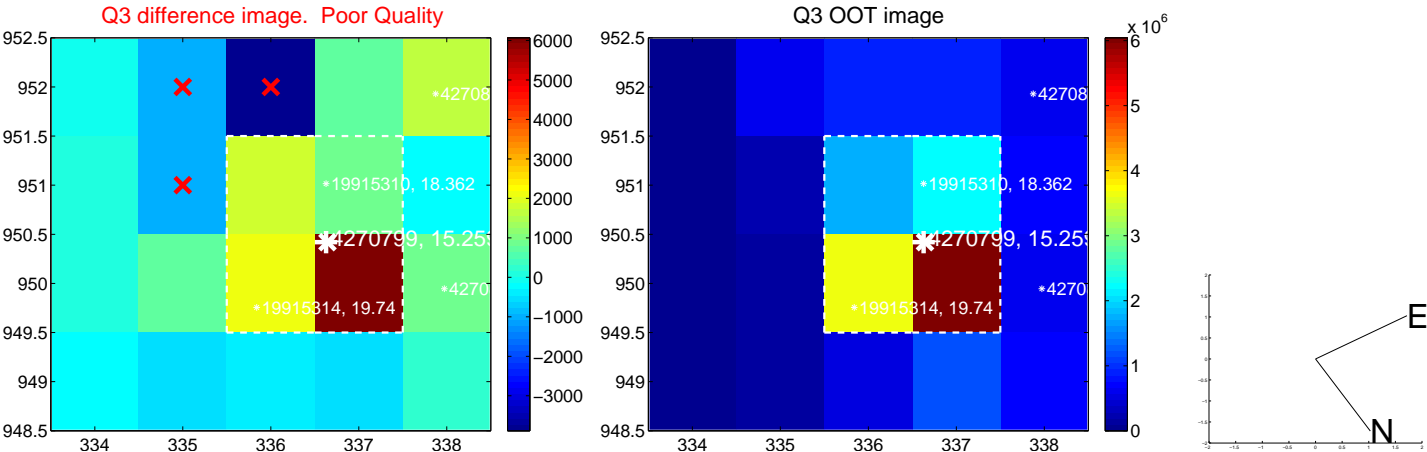
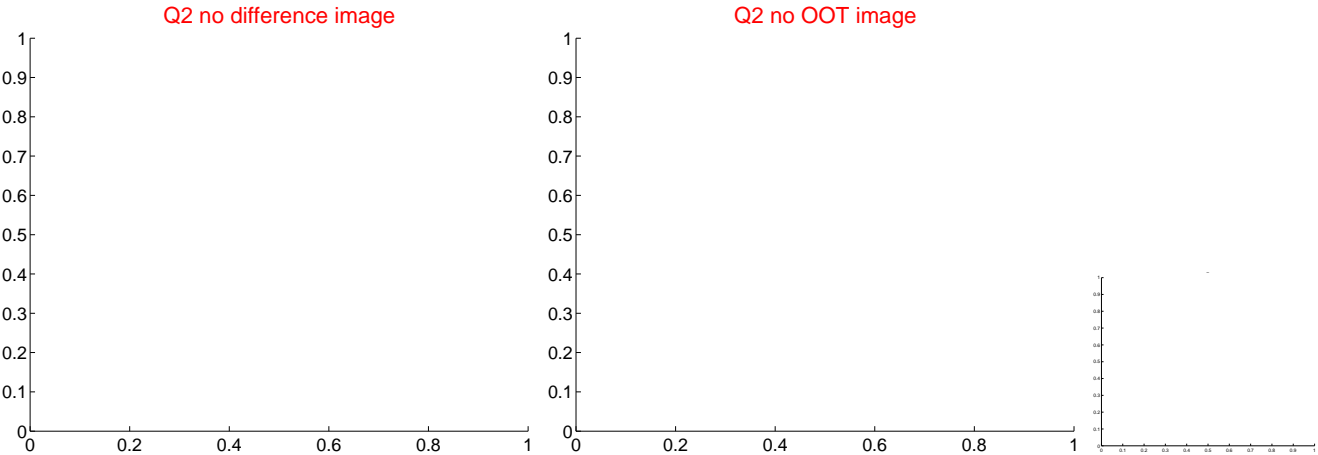
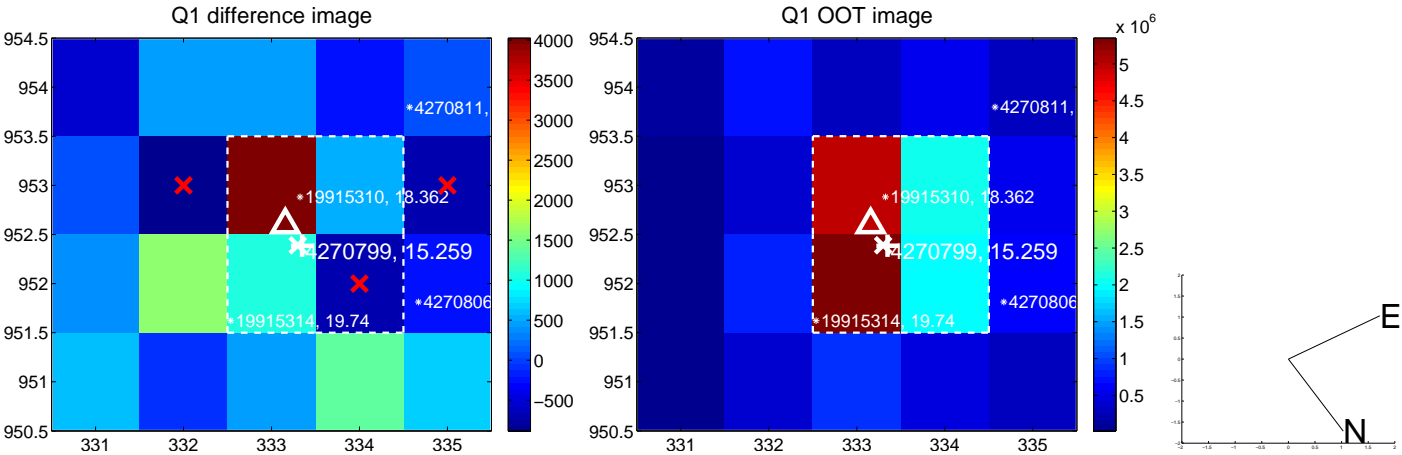
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.069 \pm 0.398$	2.68	$1.047 \pm 0.400$	$-0.216 \pm 0.365$
PRF-fit source offset from KIC position	$1.008 \pm 0.399$	2.53	$0.996 \pm 0.400$	$-0.151 \pm 0.365$
photometric centroid source offset	$0.68 \pm 1.17$	0.58	$-0.67 \pm 1.17$	$0.14 \pm 1.18$



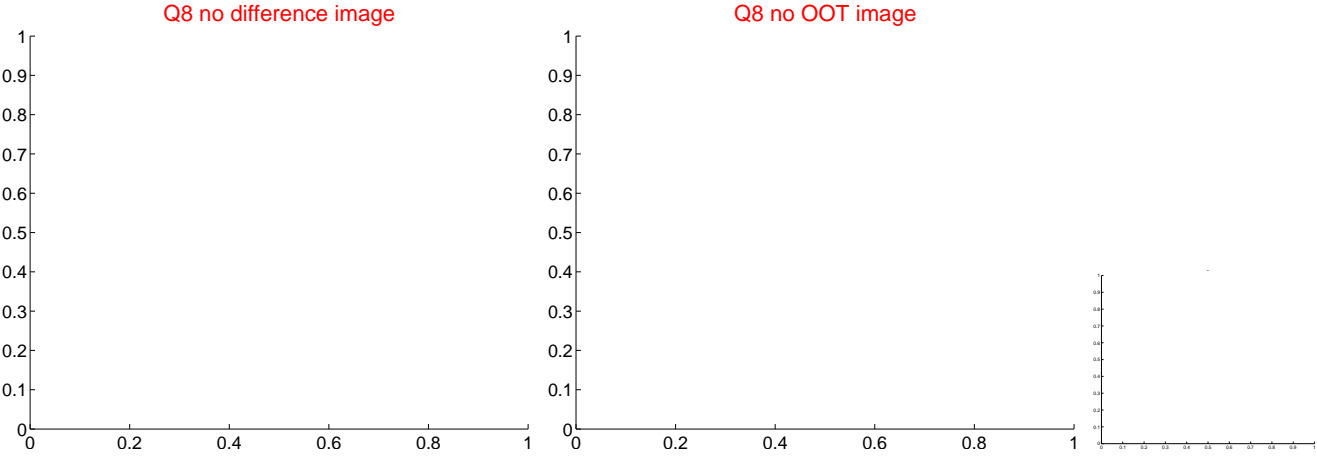
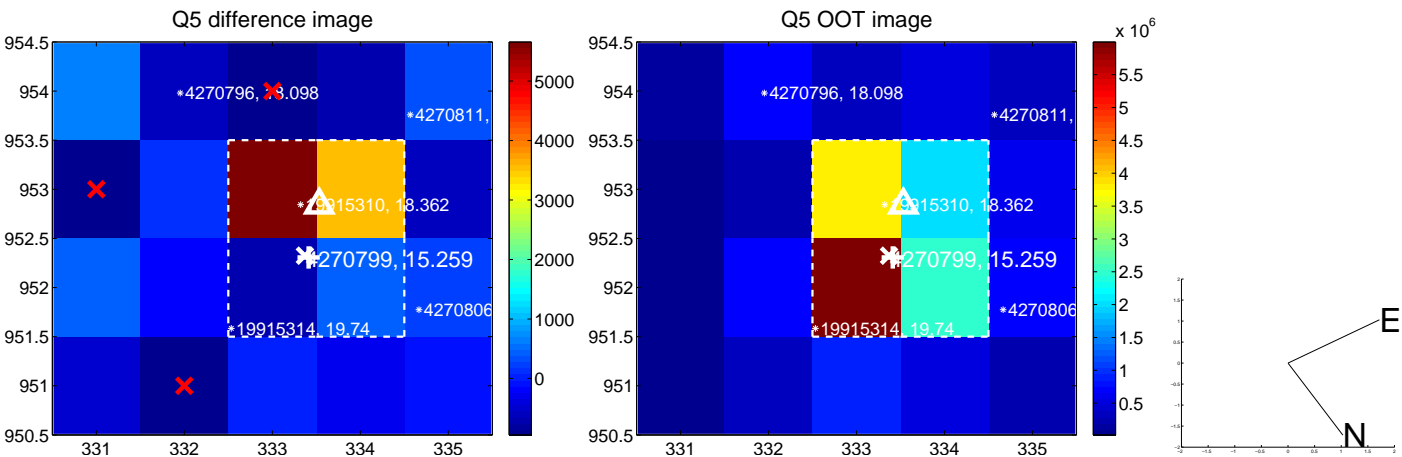
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



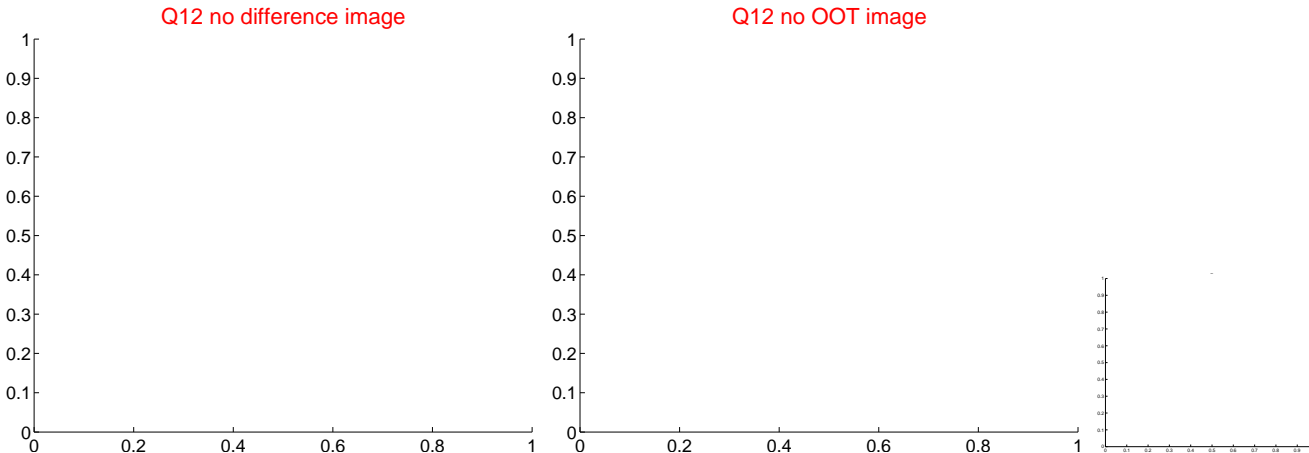
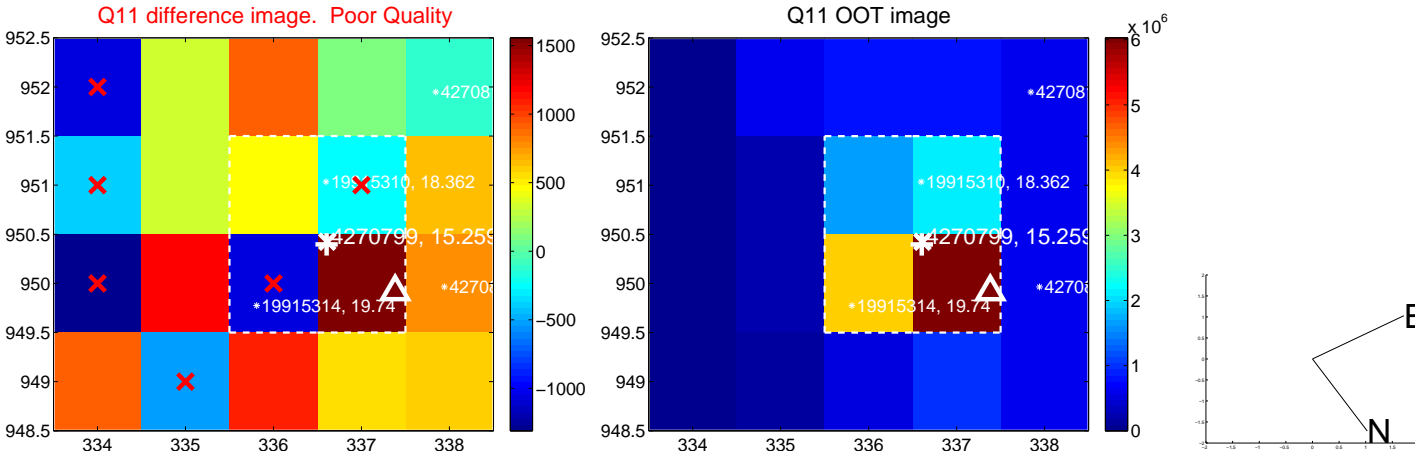
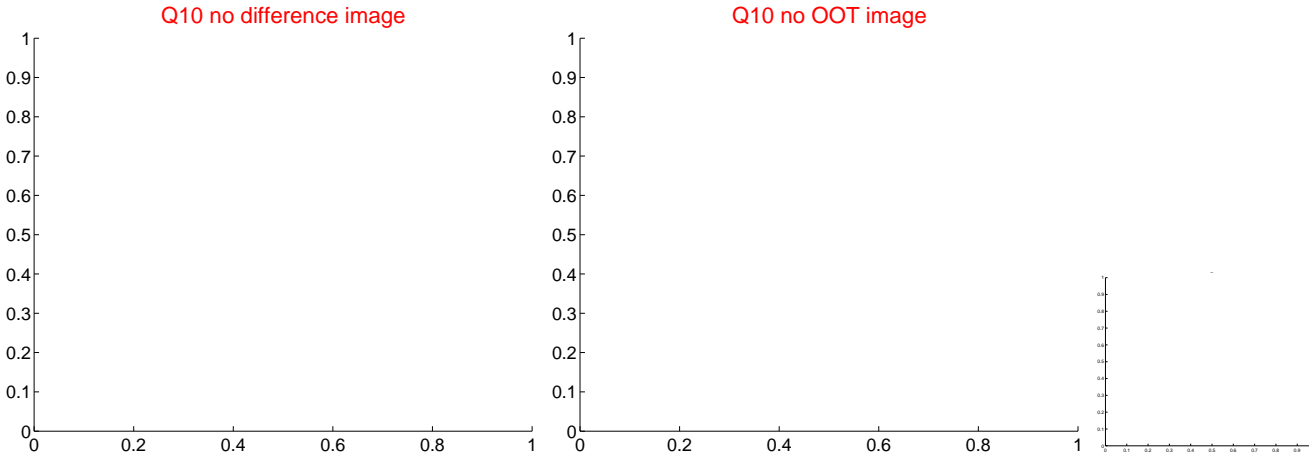
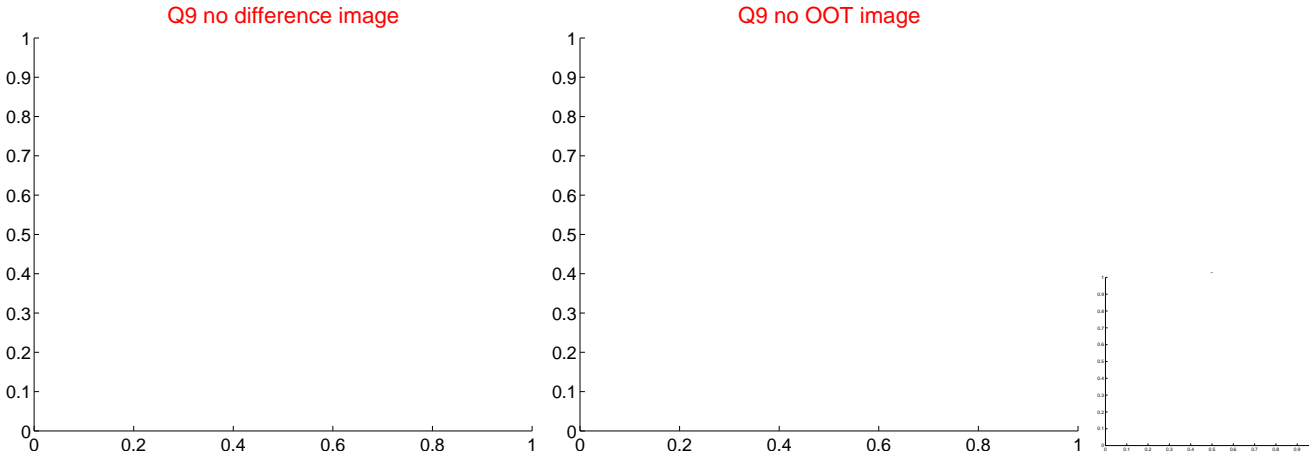
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

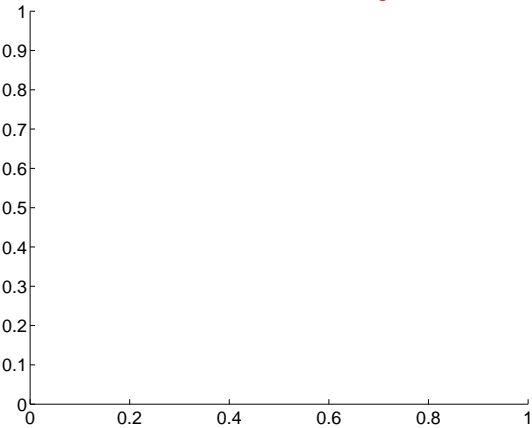
Q13 no difference image



Q13 no OOT image



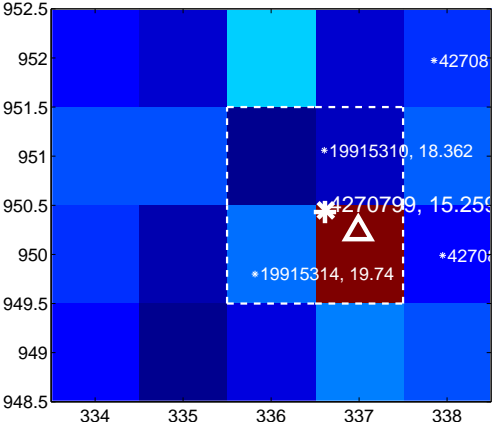
Q14 no difference image



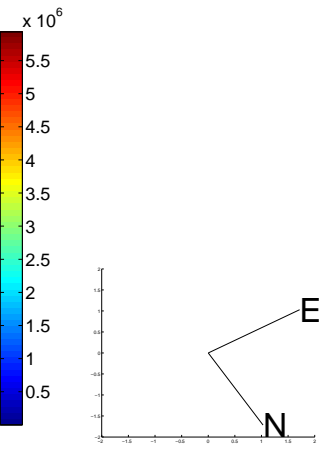
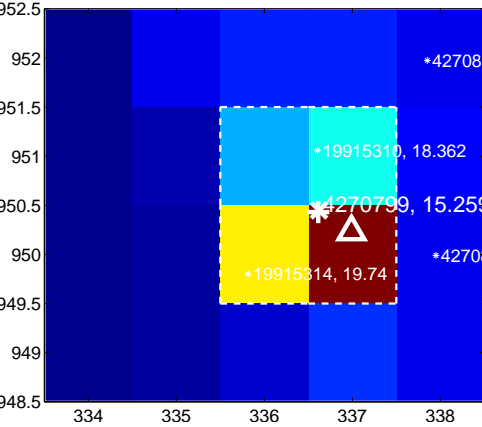
Q14 no OOT image



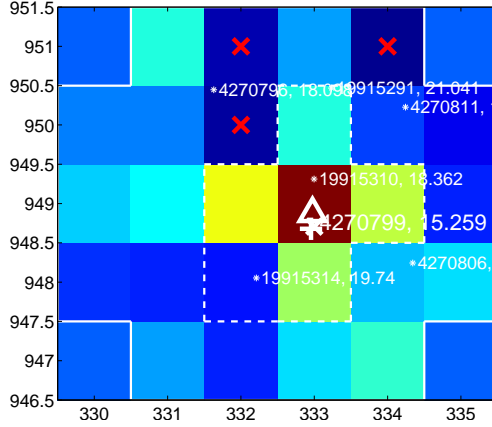
Q15 difference image



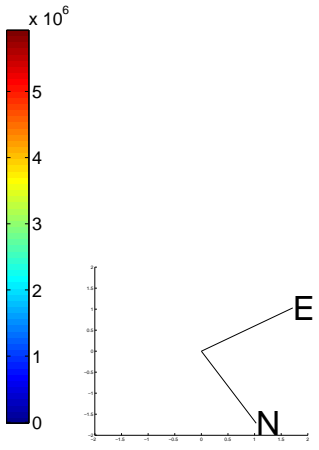
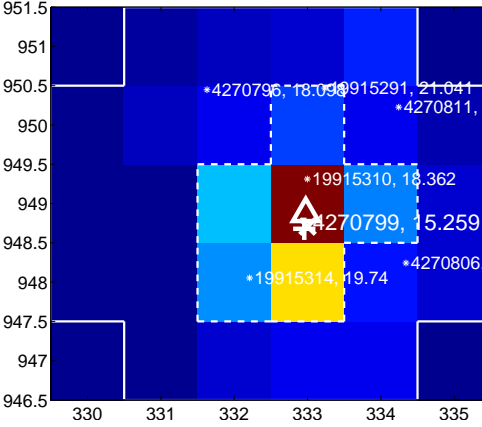
Q15 OOT image



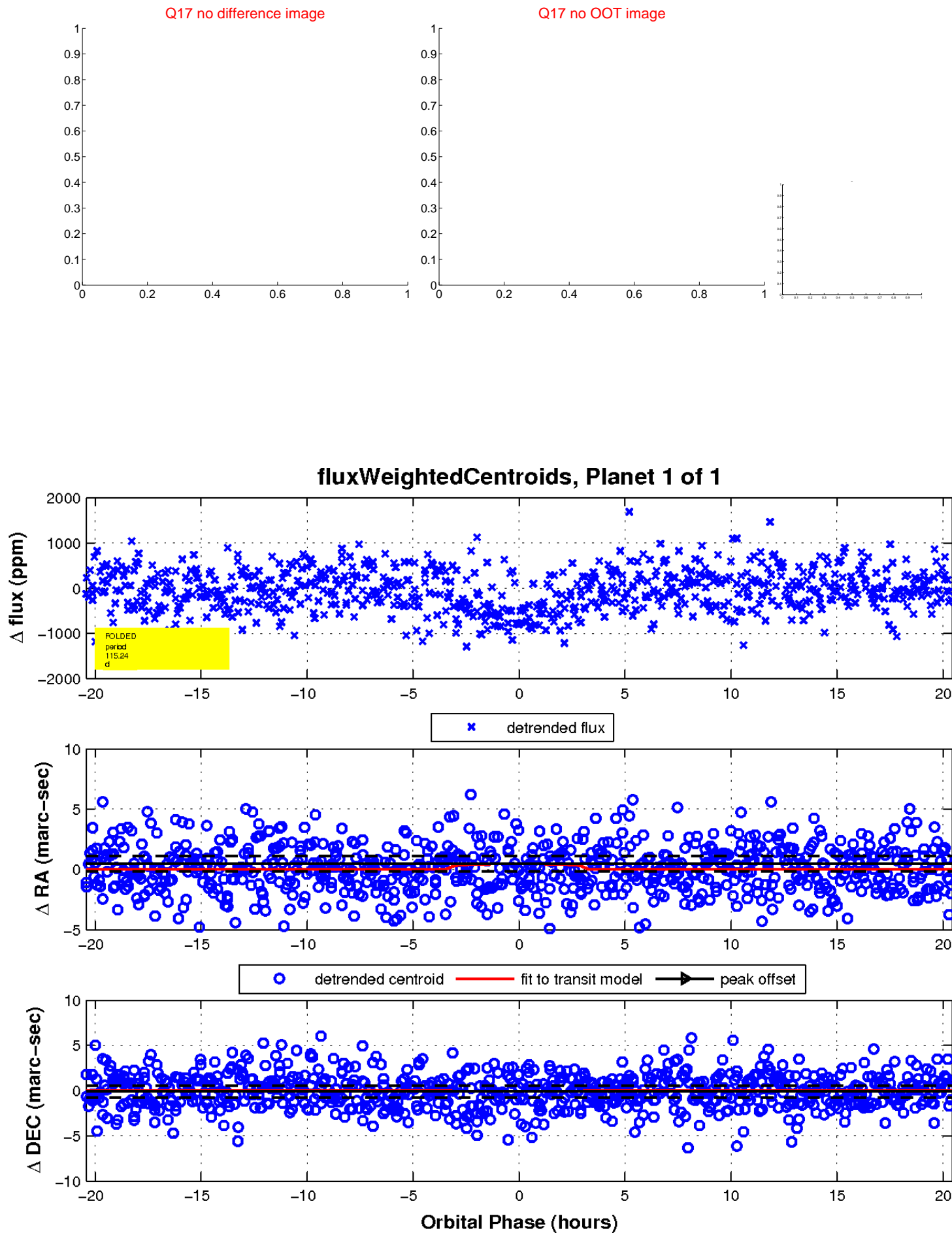
Q16 difference image



Q16 OOT image



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



UKIRT Image

Declination

