

# KIC 008442463

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008442463-01	OBS	No	138.960385	247.430461	182.3	10.863	7.3	7.0	4.42	4911	7.11	26.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008442463-01	OBS	FP	0.07	1	0	0	0	LPP_DV

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

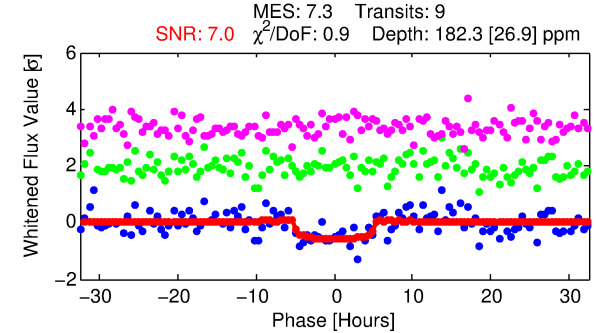
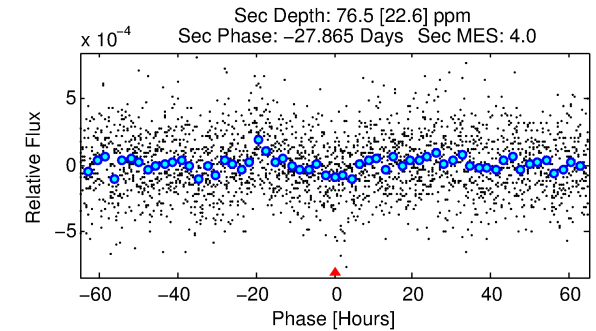
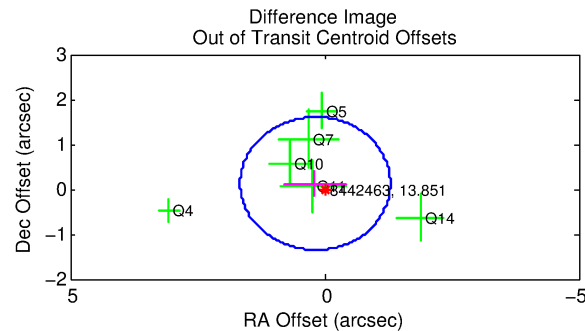
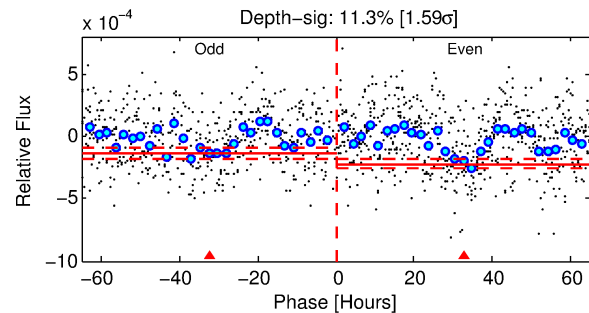
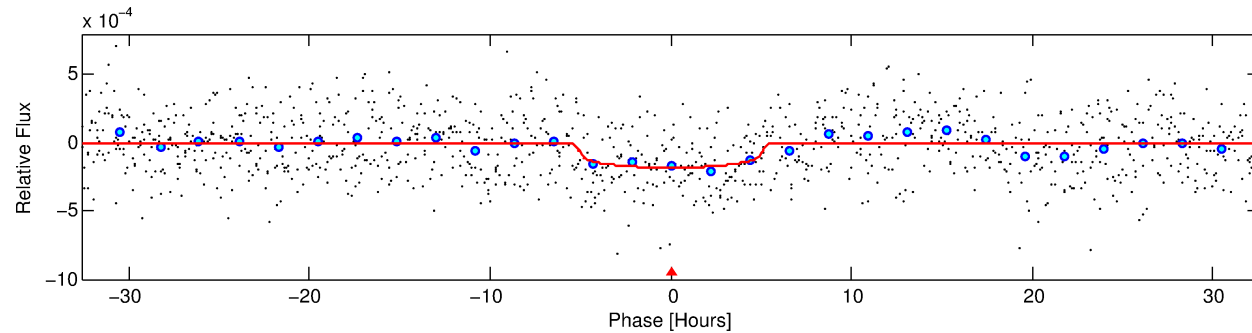
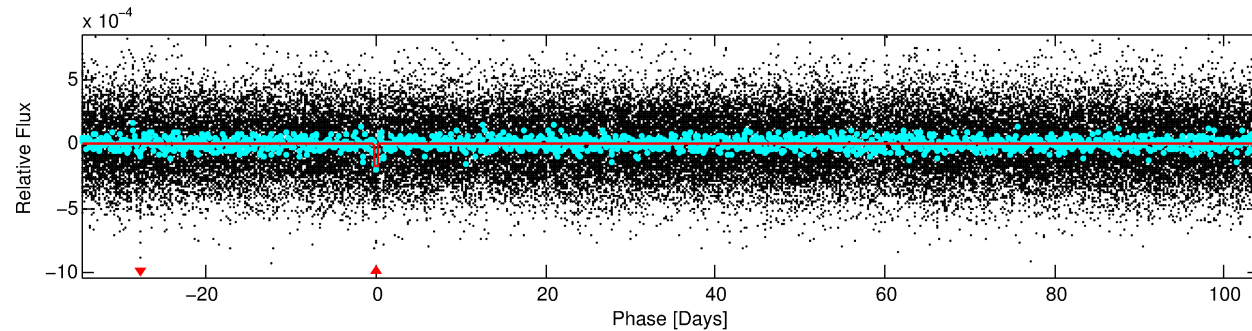
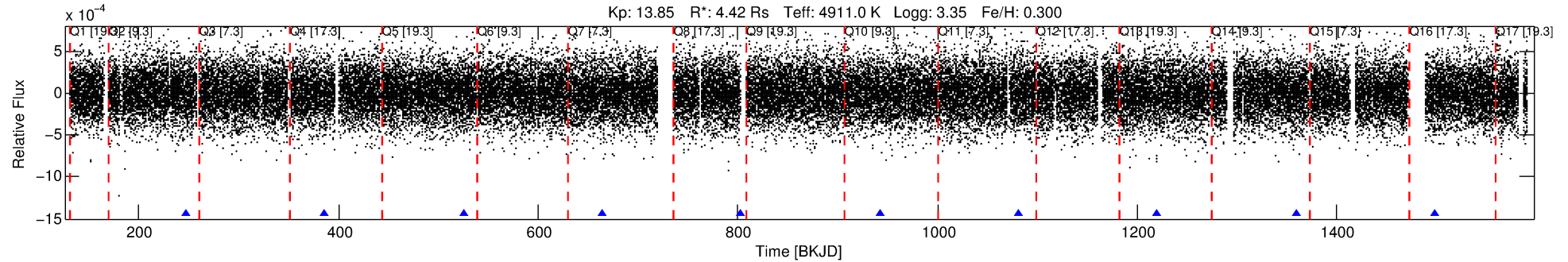
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008442463-01

No Significant Match Found

# DV One-Page Summary

KIC: 8442463 Candidate: 1 of 1 Period: 138.960 d  
KOI: K05519 Corr: No Ephemeris Match



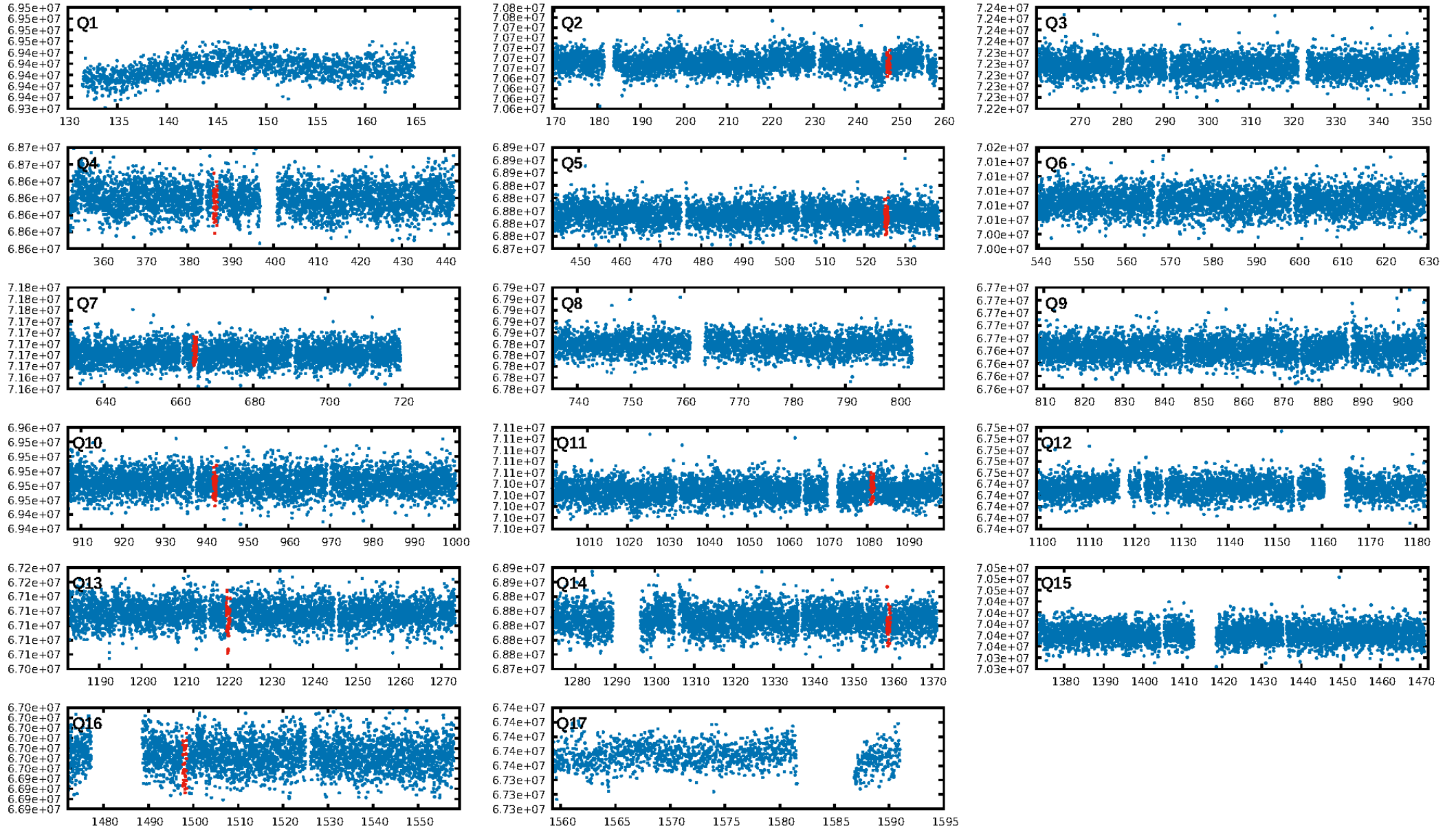
## DV Fit Results:

Period = 138.96038 [0.00385] d  
Epoch = 247.4305 [0.0216] BKJD  
Rp/R\* = 0.0147 [0.0046]  
a/R\* = 50.01 [57.50]  
b = 0.88 [0.31]  
Seff = 26.87 [17.67]  
Teq = 581 [95] K  
Rp = 7.11 [3.81] Re  
a = 0.6154 [0.2524] AU  
Ag = 315.08 [298.64] [1.05 $\sigma$ ]  
Teffp = 3782 [661] K [4.79 $\sigma$ ]

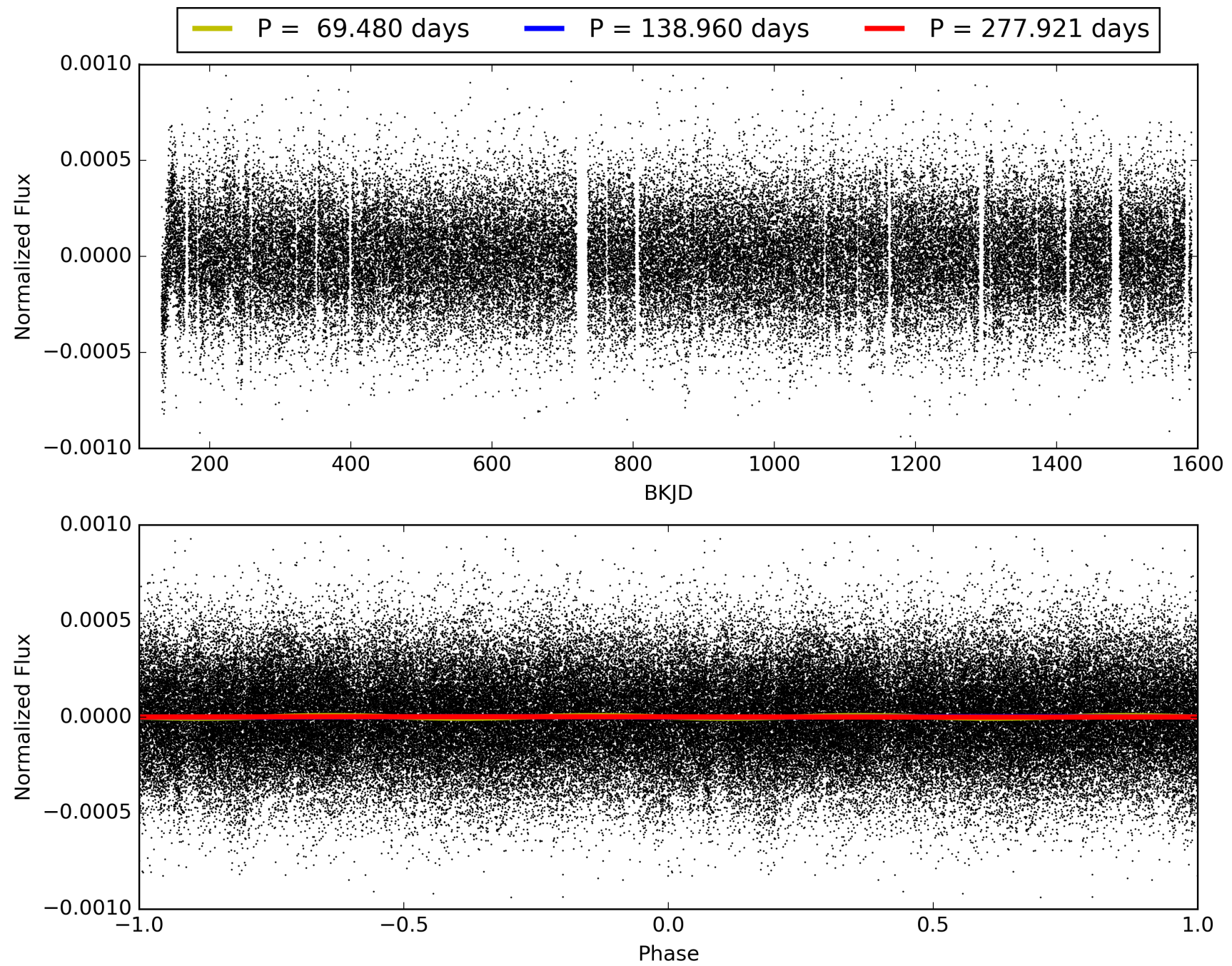
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 14.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.89e-12**  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: 6.115  
Centroid-sig: 33.8%  
Centroid-so: 1.118 arcsec [1.03 $\sigma$ ]  
OotOffset-rm: 0.222 arcsec [0.45 $\sigma$ ]  
KicOffset-rm: 0.402 arcsec [0.91 $\sigma$ ]  
OotOffset-st: 2/2/1/1 [6]  
KicOffset-st: 2/2/1/1 [6]  
DiffImageQuality-fgm: 1.00 [6/6]  
DiffImageOverlap-fno: 1.00 [7/7]

# TCE 008442463-01, PDC Light Curves

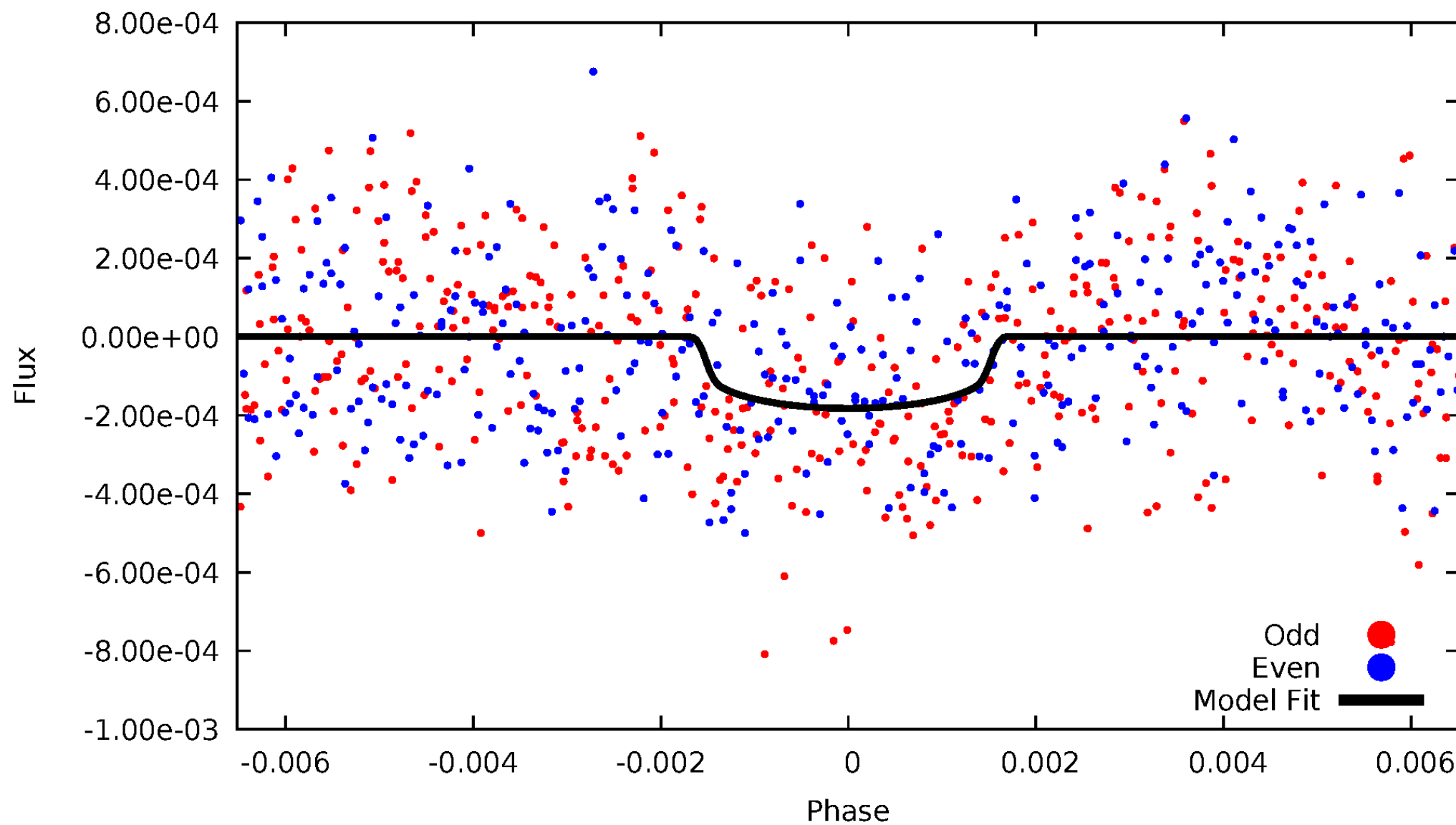


TCE 008442463-01



# DV Odd/Even

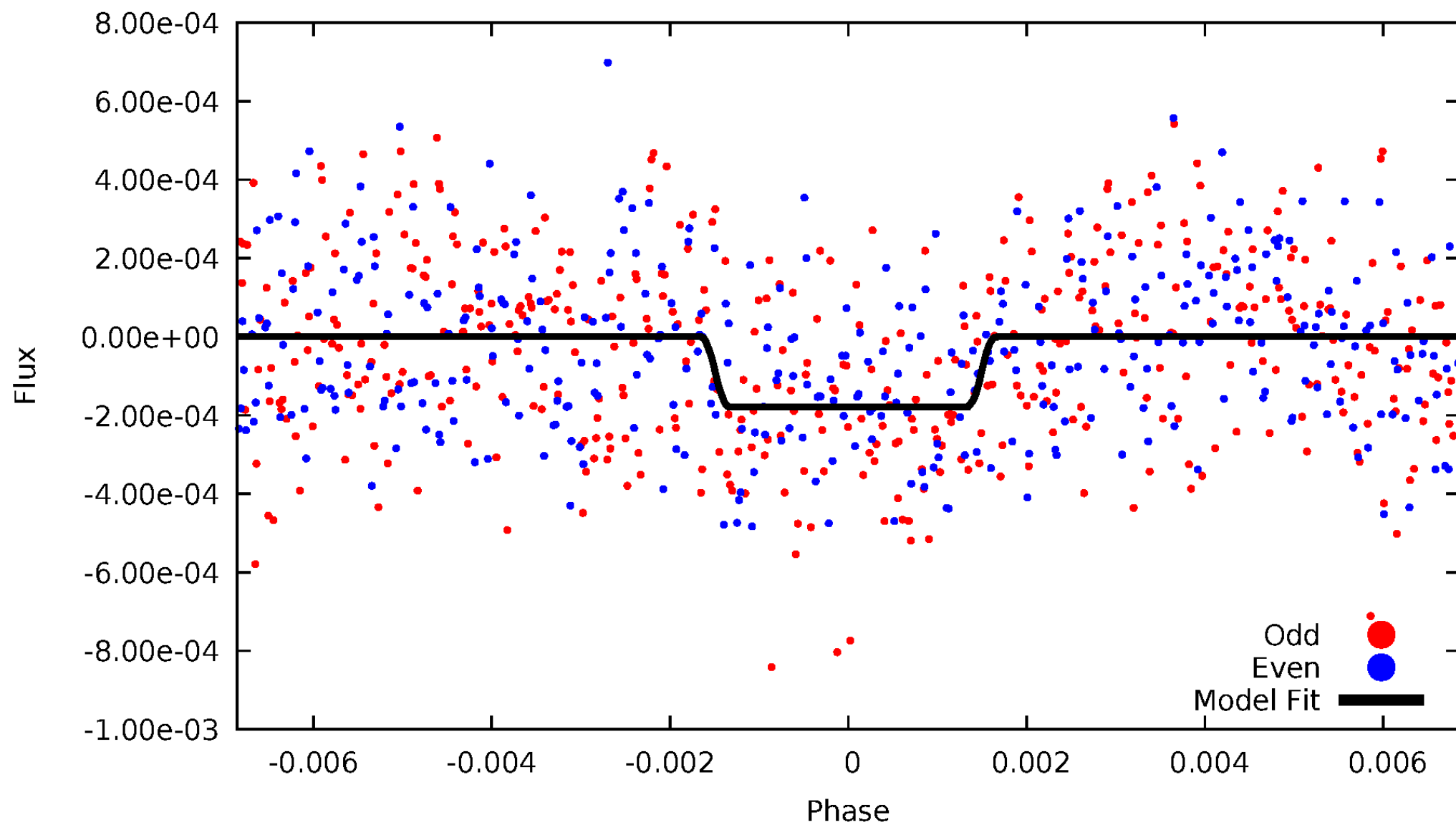
TCE 008442463-01



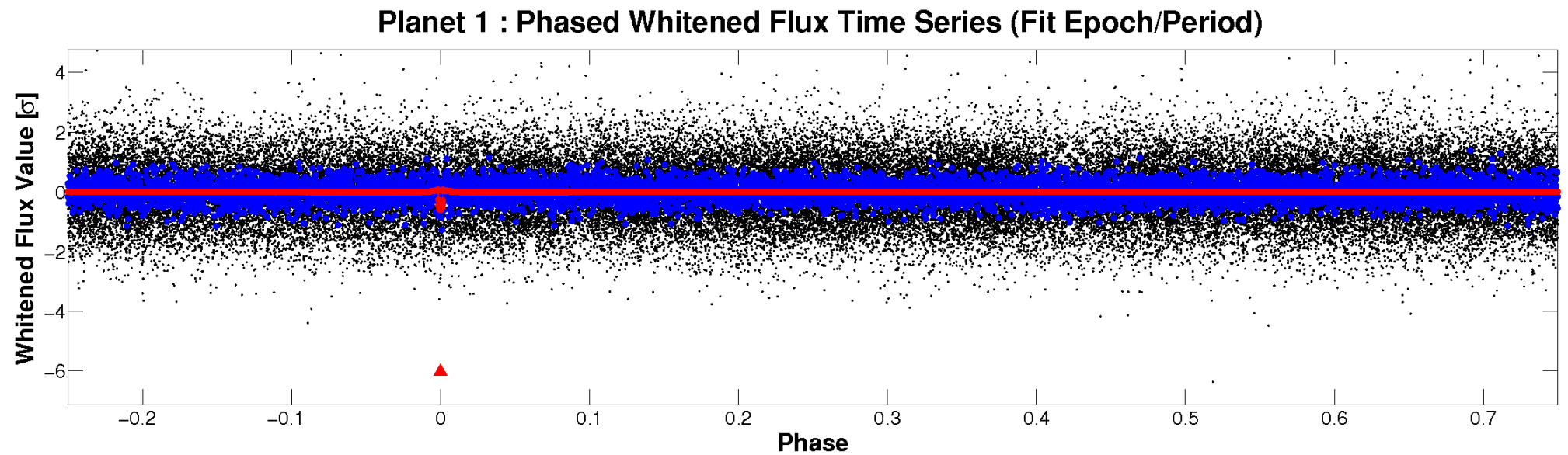
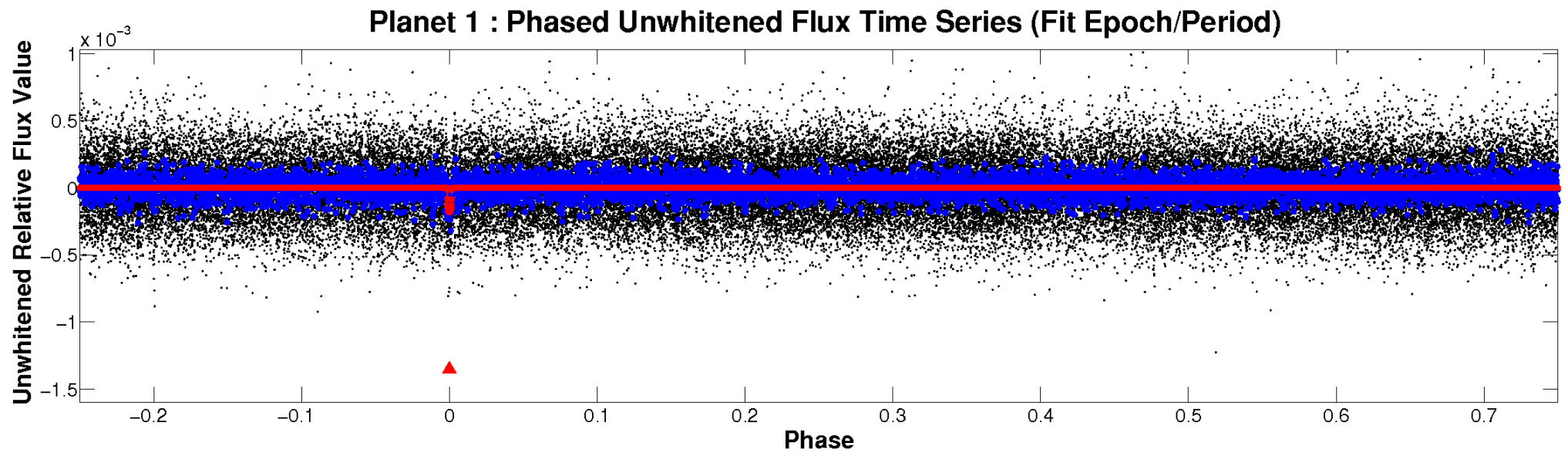


# ALT Odd/Even

TCE 008442463-01

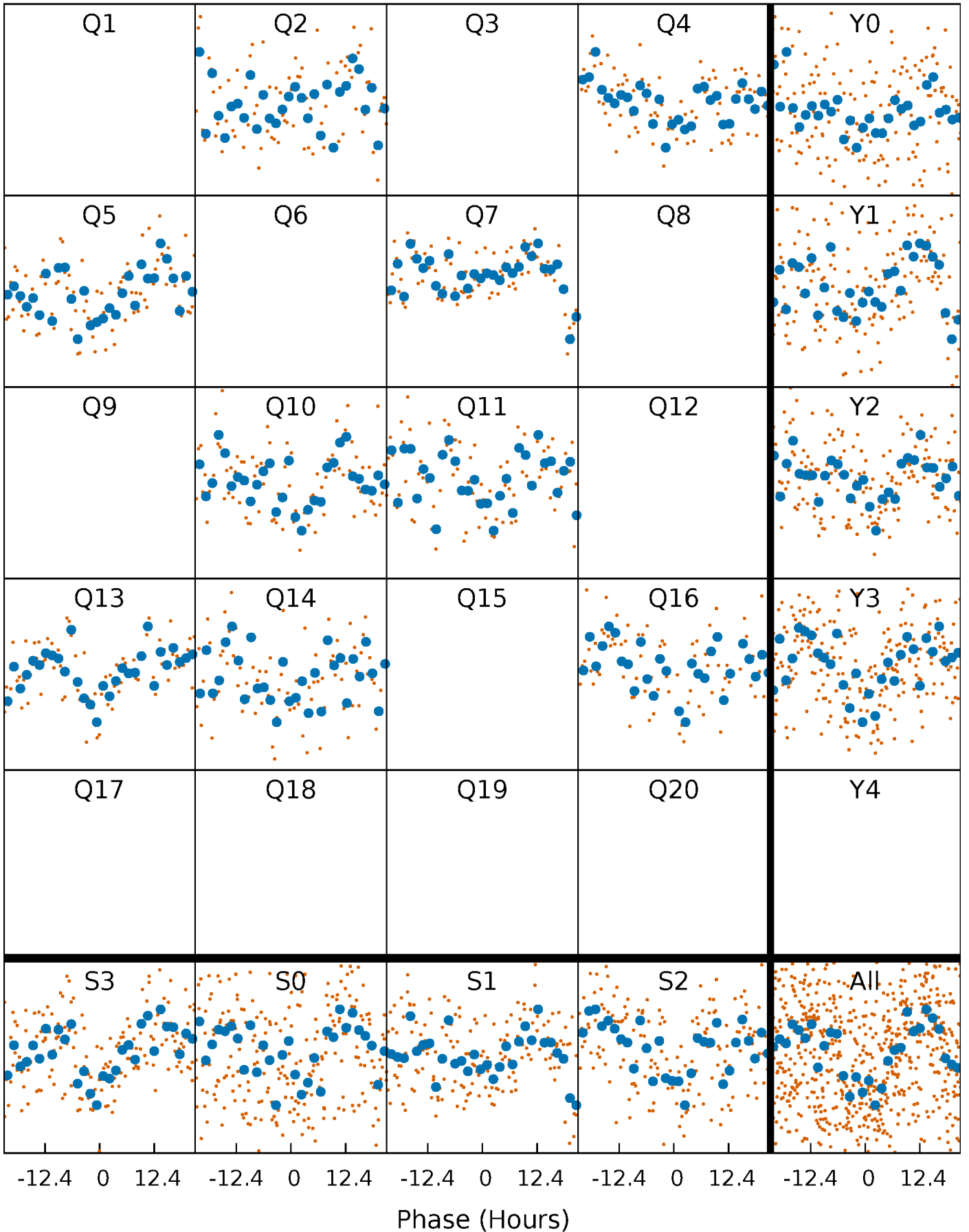


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

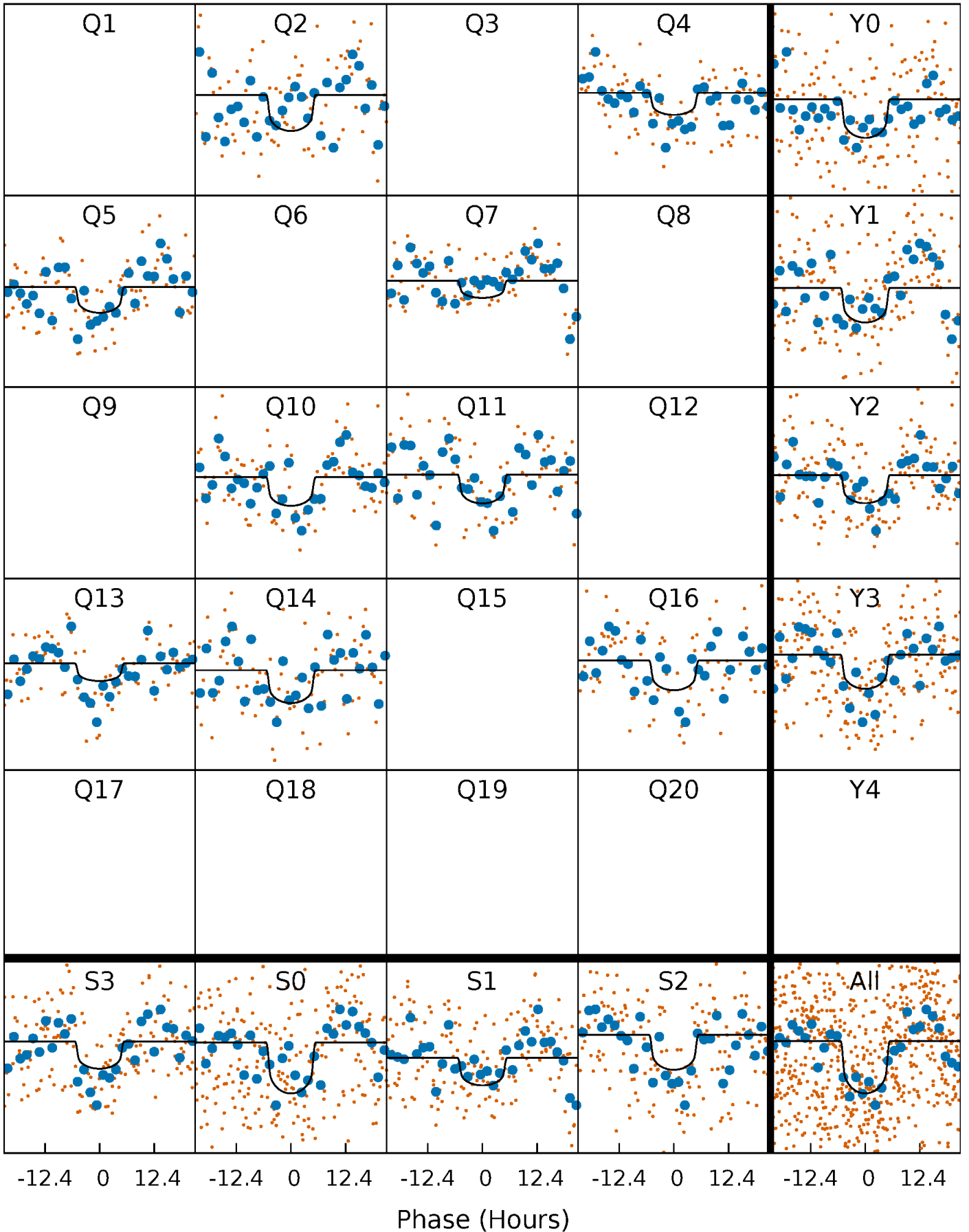
TCE 008442463-01   P=138.960385 Days    $T_0=247.430461$  (BKJD)





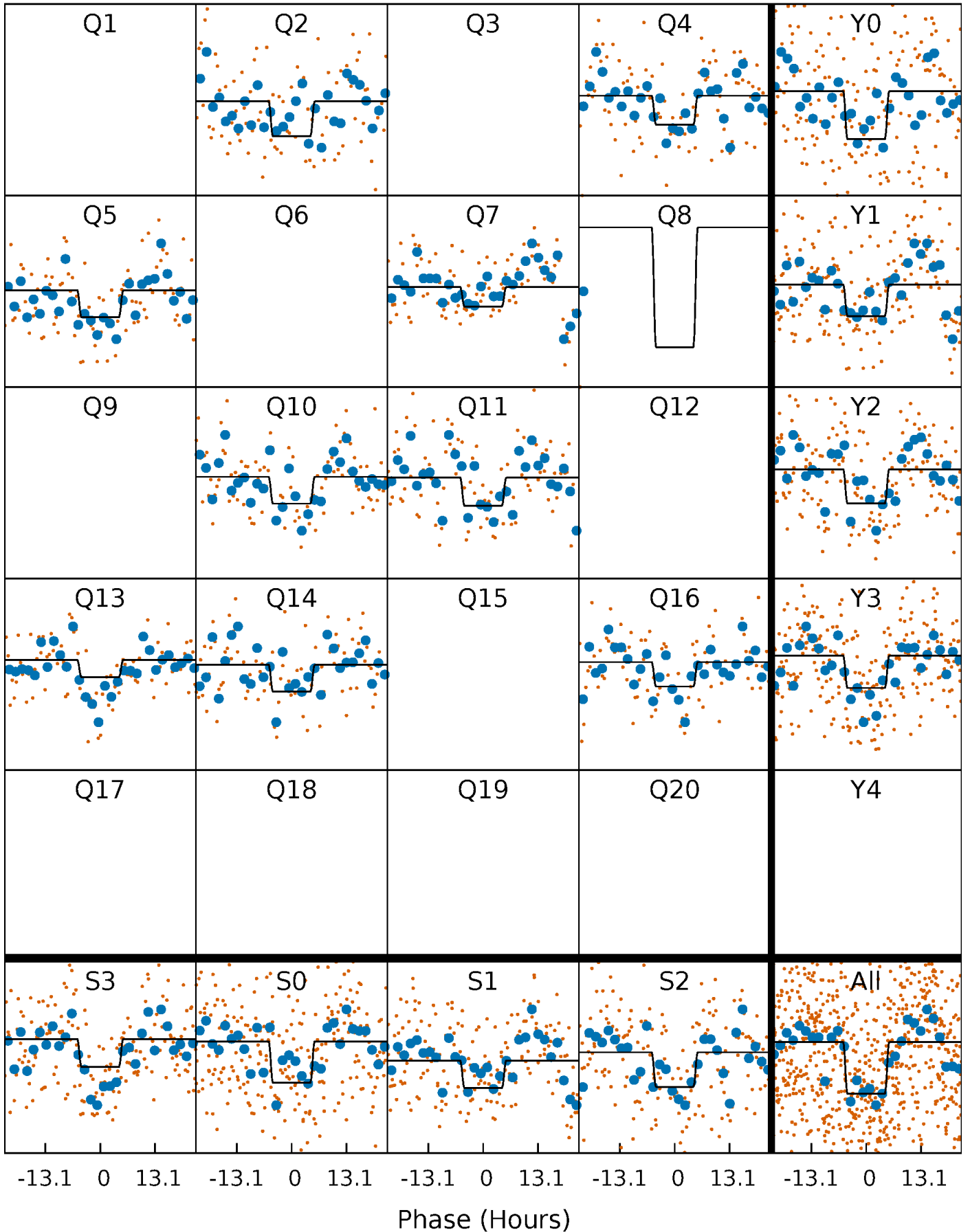
# DV Quarter-Phased Transit Curves

TCE 008442463-01 P=138.960385 Days  $T_0=247.430461$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

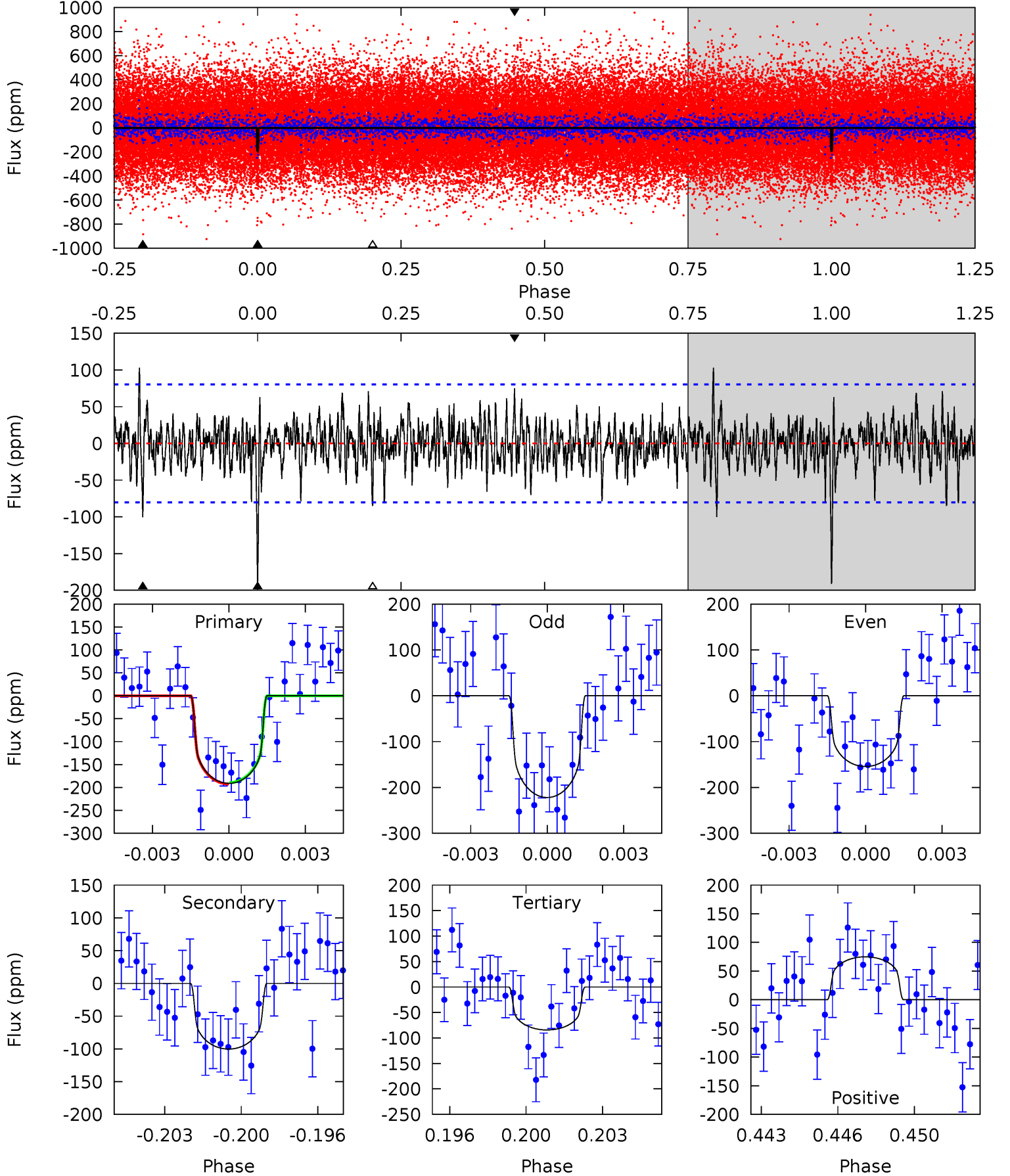
TCE 008442463-01 P=138.961830 Days  $T_0=247.415958$  (BKJD)



# DV Model-Shift Uniqueness Test

008442463-01, P = 138.960385 Days, E = 108.470076 Days

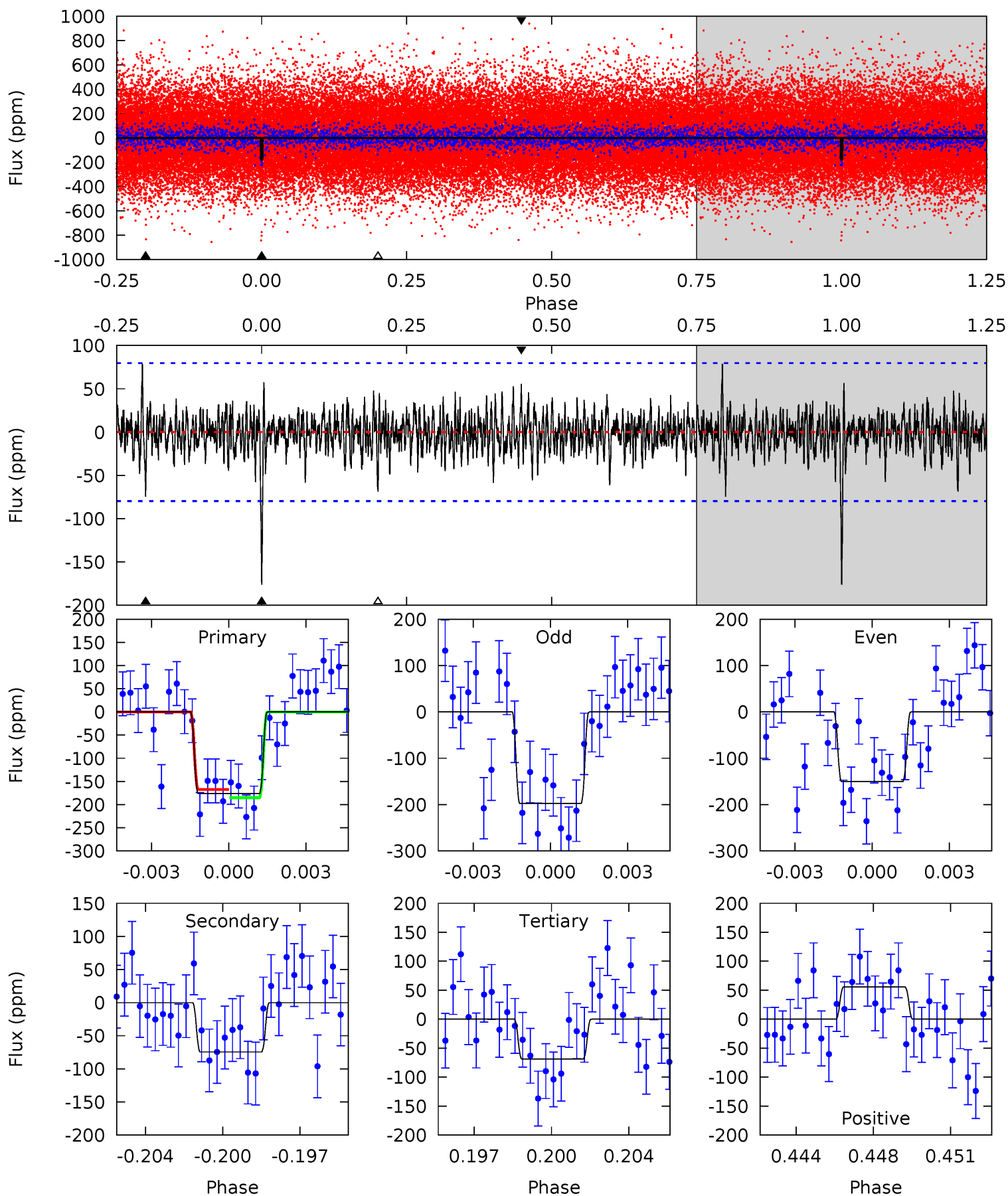
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	6.53	5.49	4.88	5.23	2.93	1.57	6.96	7.57	1.04	1.65	2.19	1.04	0.35	0.09



# Alt Model-Shift Uniqueness Test

008442463-01, P = 138.961830 Days, E = 108.454128 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
11.6	4.90	4.51	3.66	5.23	2.93	1.16	7.06	7.91	0.38	1.24	1.54	1.03	0.31	0.58



### Stellar Parameters For KIC 008442463

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4911^{+118}_{-133}$	$3.354^{+0.378}_{-0.252}$	$0.300^{+0.150}_{-0.300}$	$4.419^{+1.398}_{-1.922}$	$1.608^{+0.310}_{-0.575}$	$0.026^{+0.090}_{-0.014}$
	+2%/-3%	+11%/-8%	+50%/-100%	+32%/-43%	+19%/-36%	+343%/-55%
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 008442463-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-100 \pm 15$	$6.85^{+3.07}_{-2.56}$	$811^{+84}_{-86}$	$4238^{+673}_{-441}$	$432^{+636}_{-226}$
Alt.	$-75 \pm 15$	$6.09^{+2.78}_{-2.37}$	$806^{+76}_{-90}$	$4146^{+817}_{-462}$	$410^{+722}_{-224}$

$T_{max}$  = 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

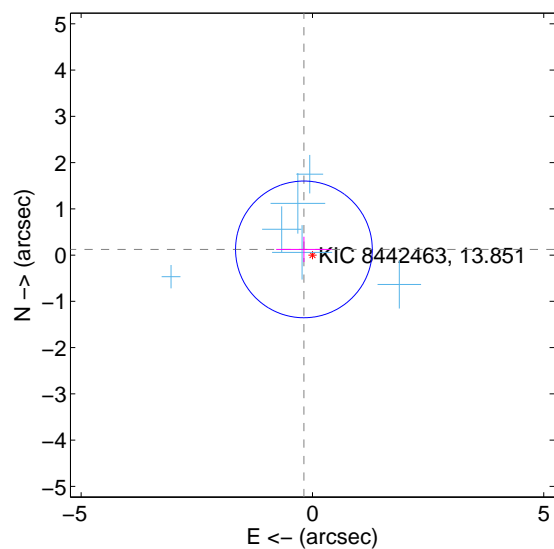
Supplemental centroid analysis for 008442463-01. Kepler magnitude: 13.85. Transit SNR 6.97

There are 6 quarters with good PRF difference image offsets

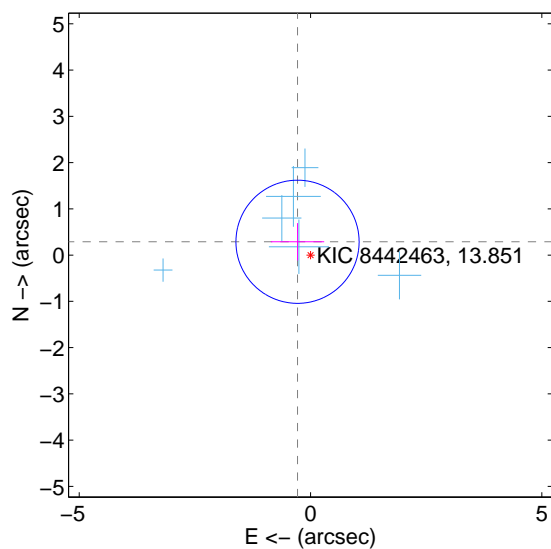
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.222 \pm 0.493$	0.45	$0.184 \pm 0.598$	$0.123 \pm 0.274$
PRF-fit source offset from KIC position	$0.402 \pm 0.444$	0.91	$0.281 \pm 0.577$	$0.288 \pm 0.405$
photometric centroid source offset	$1.12 \pm 1.08$	1.03	$0.82 \pm 1.05$	$-0.76 \pm 1.11$

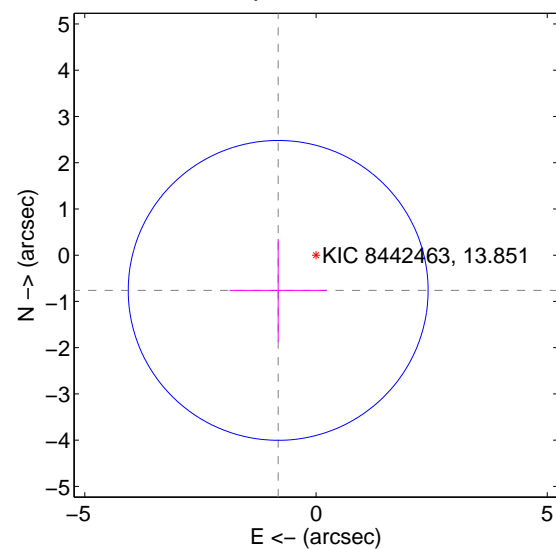
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



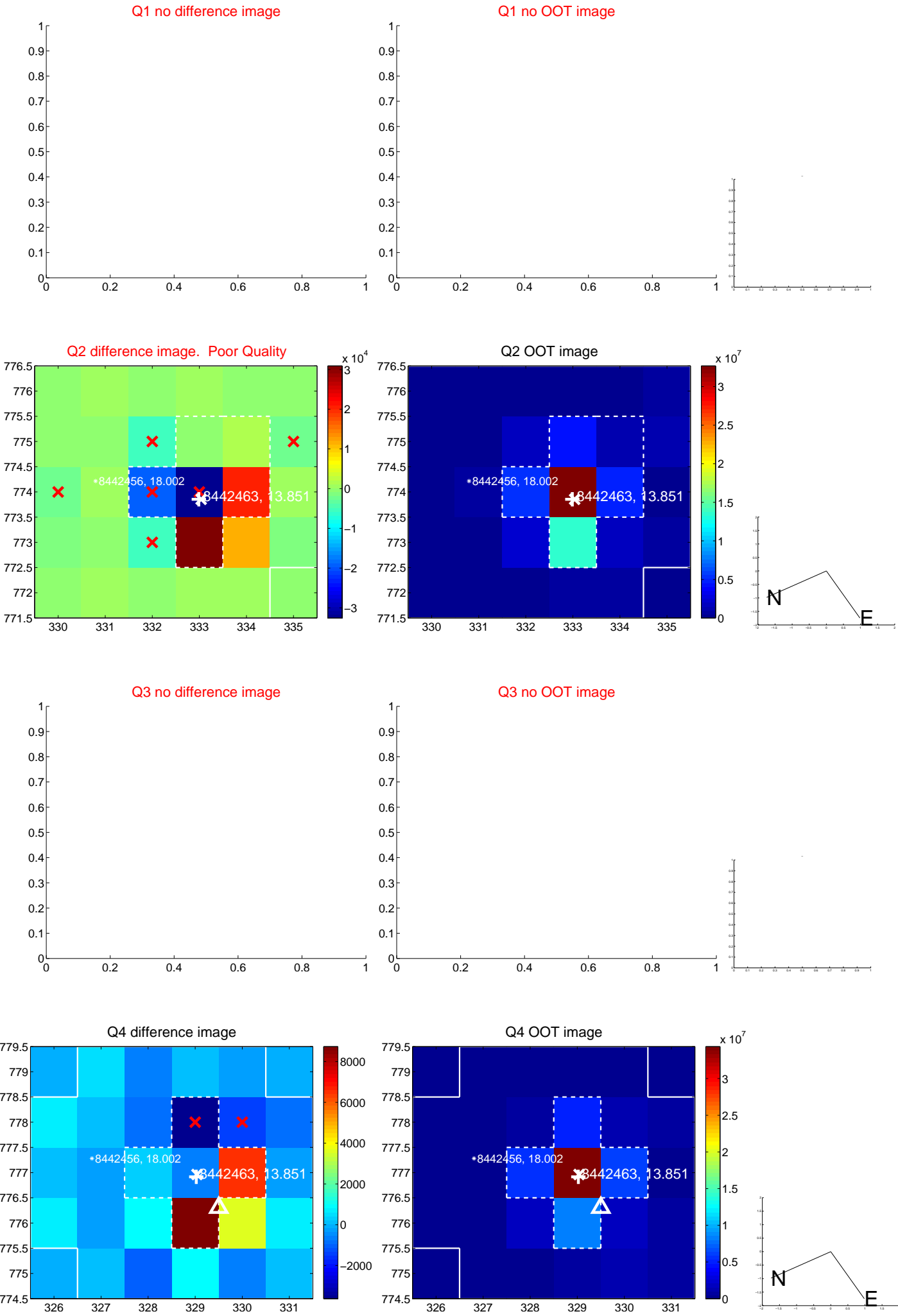
offset from photometric centroids



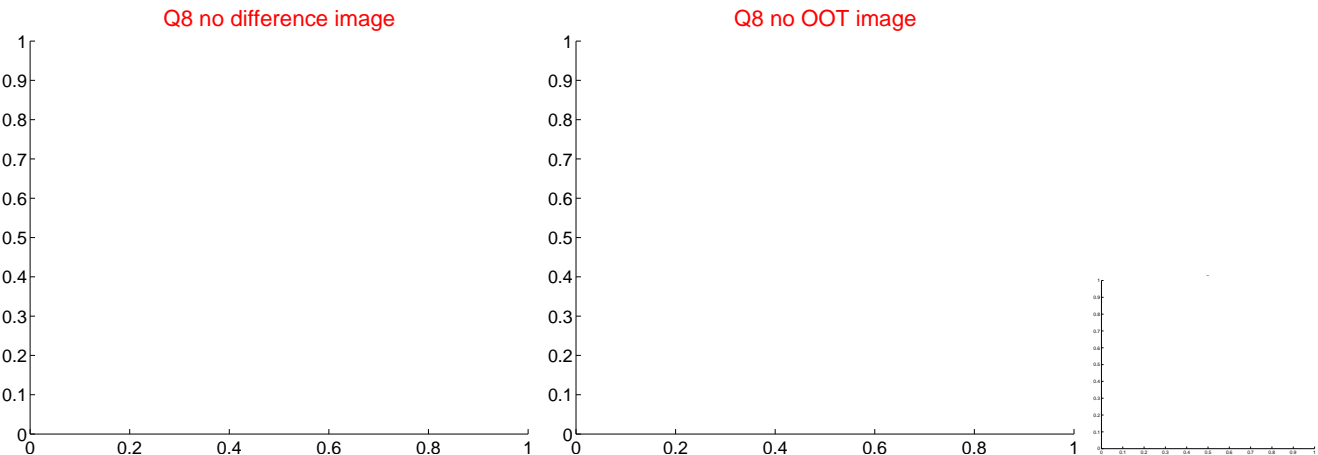
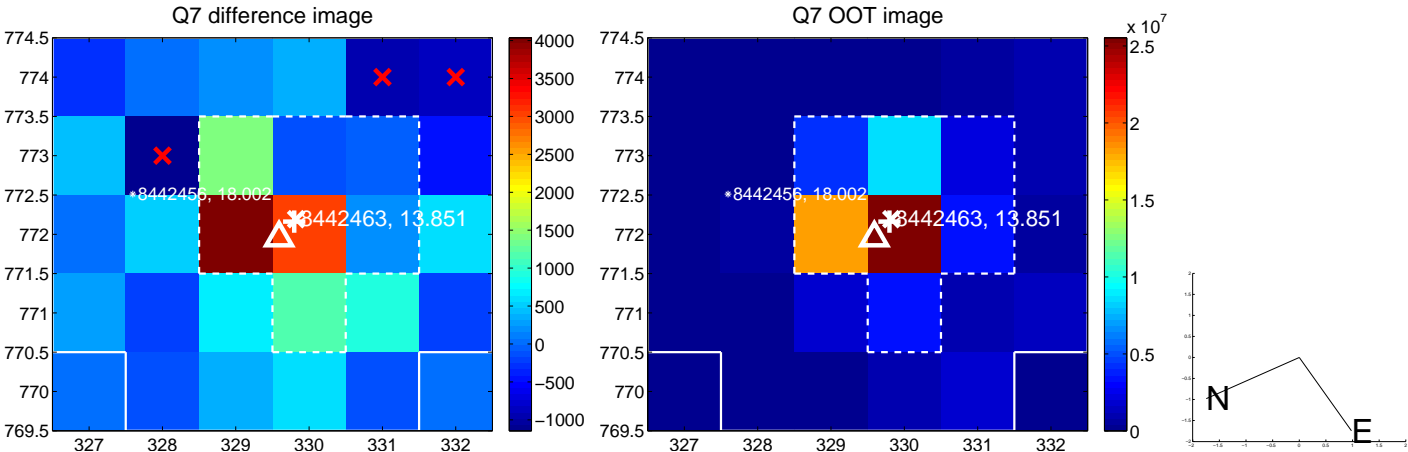
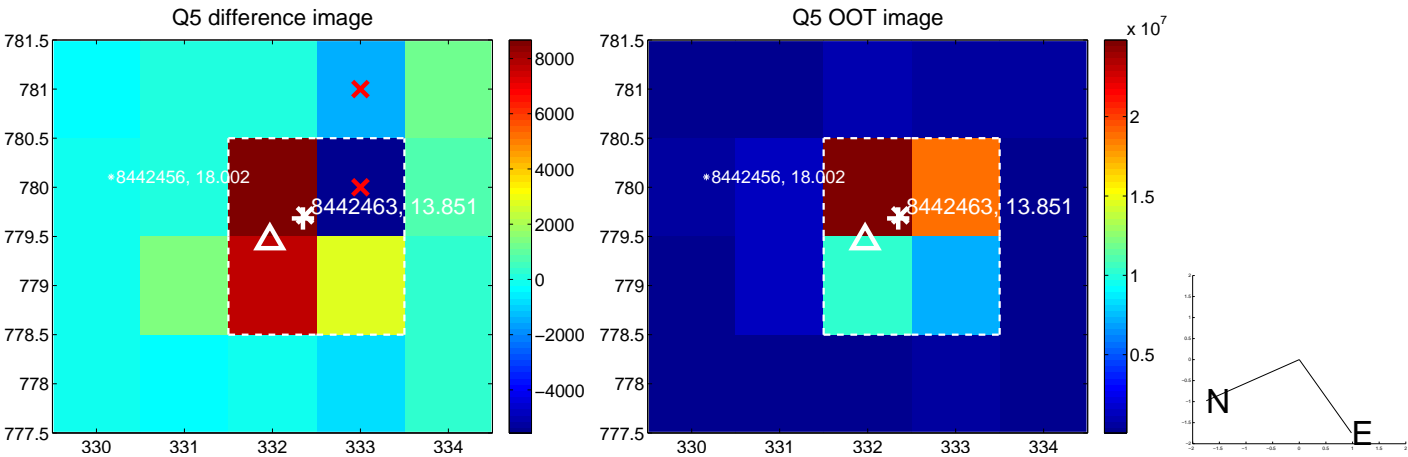
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



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

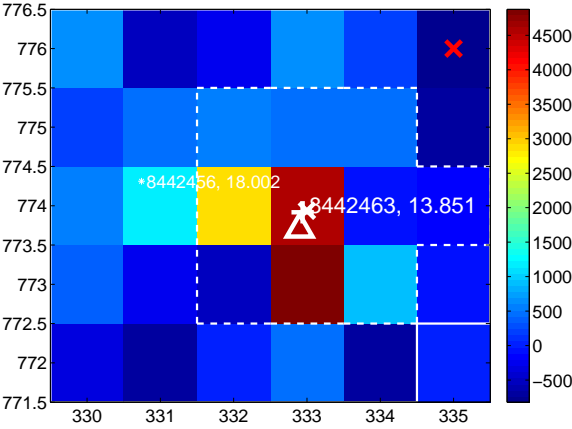
Q9 no difference image



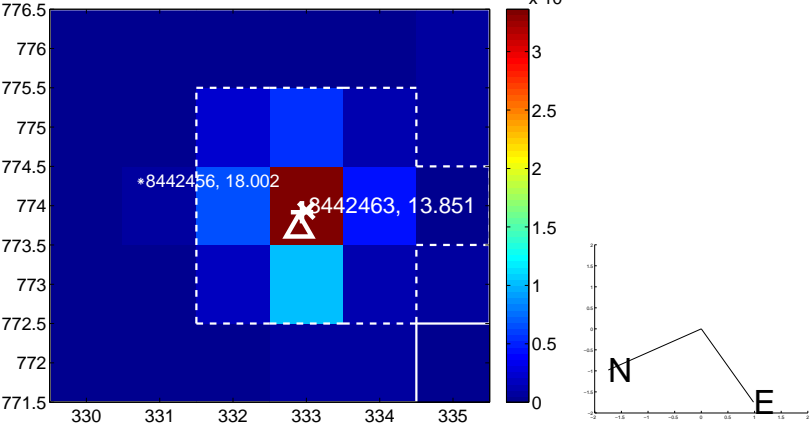
Q9 no OOT image



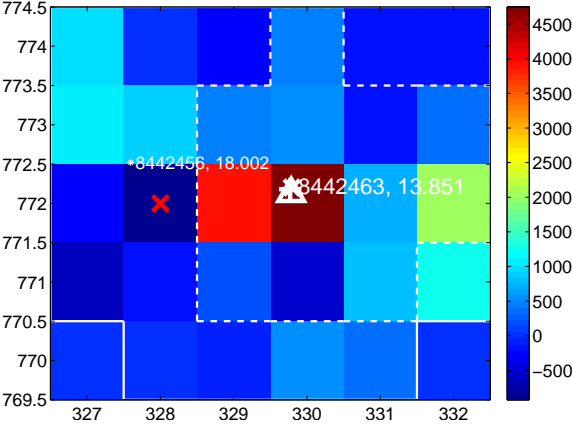
Q10 difference image



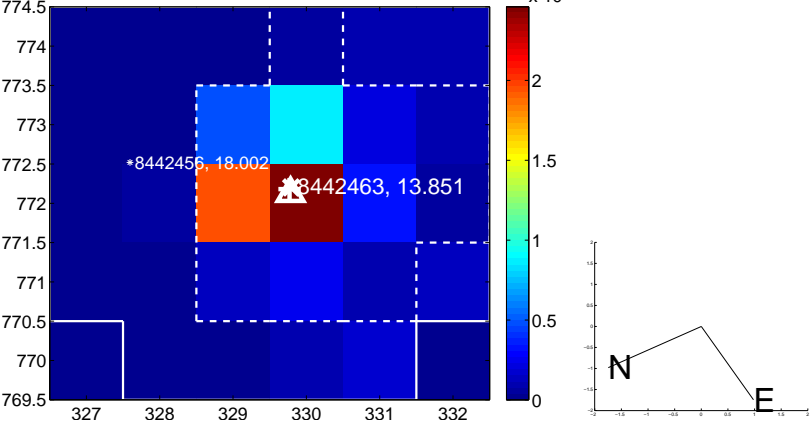
Q10 OOT image



Q11 difference image



Q11 OOT image



Q12 no difference image



Q12 no OOT image



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

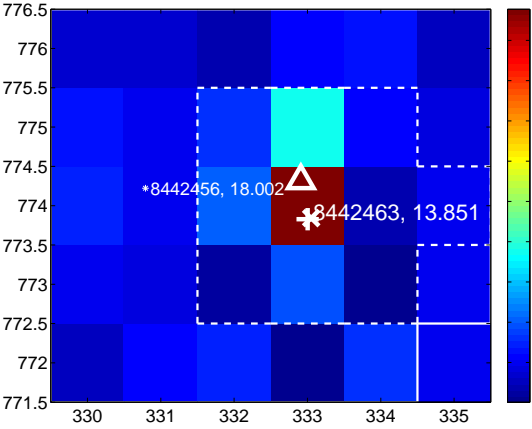
Q13 no difference image



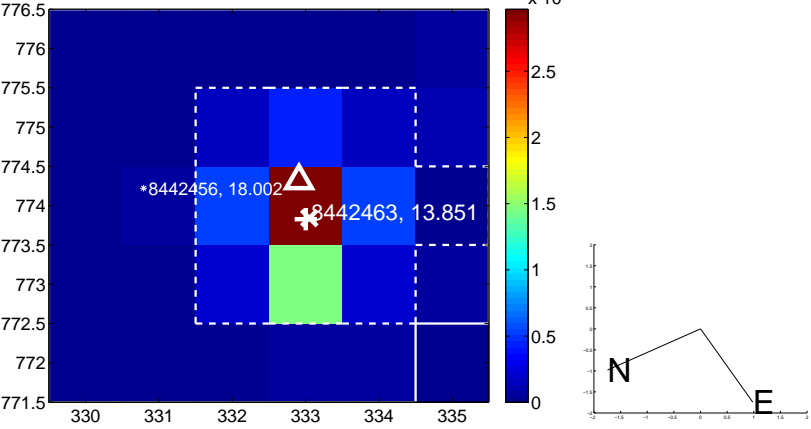
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



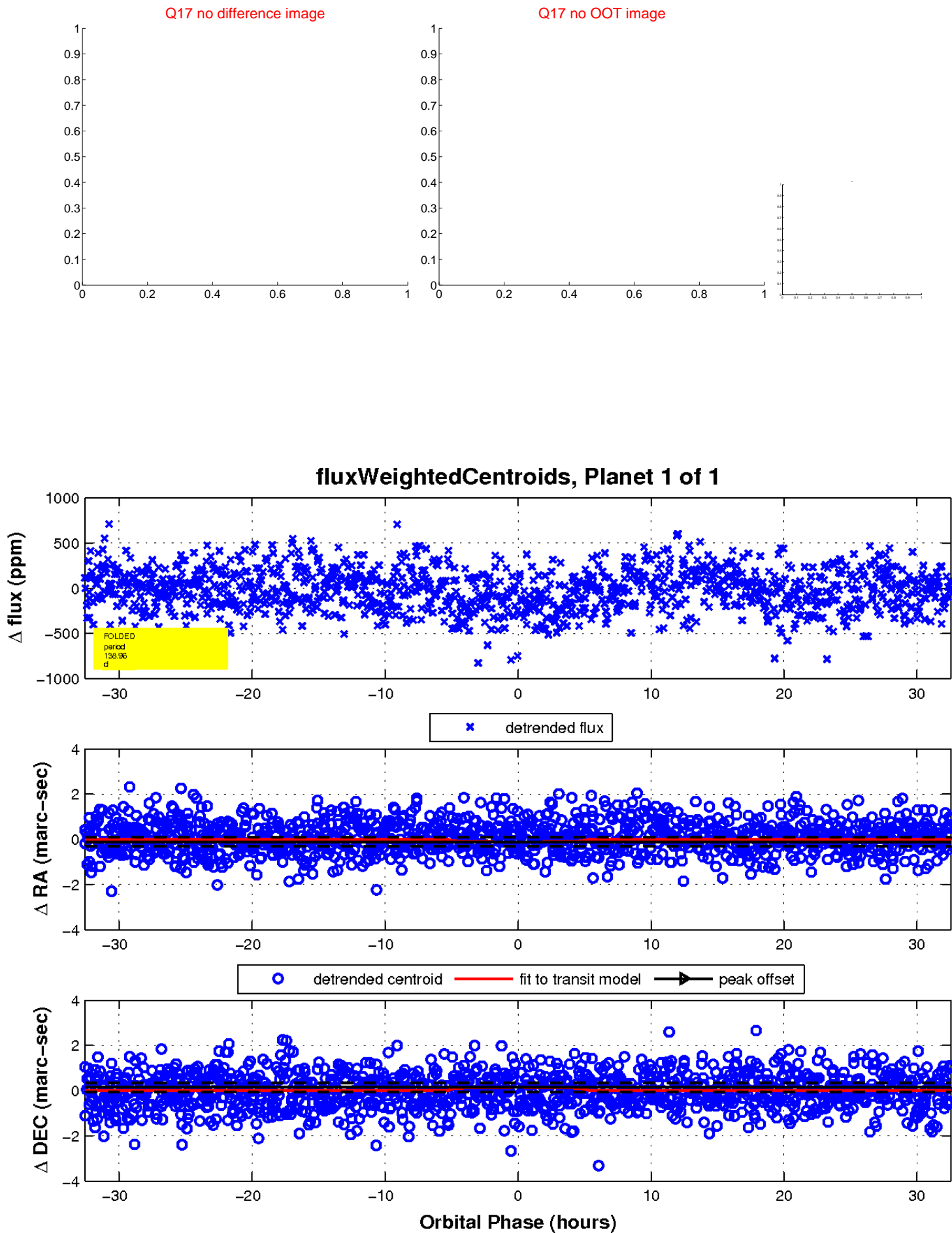
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

