

# KIC 010394802

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010394802-01	OBS	5790.01	178.264258	229.763281	1747.6	5.200	10.5	11.3	0.71	4899	3.58	0.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010394802-01	OBS	PC	0.80	0	0	0	0	CENT_KIC_POS—CENT_UNCERTAIN

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

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

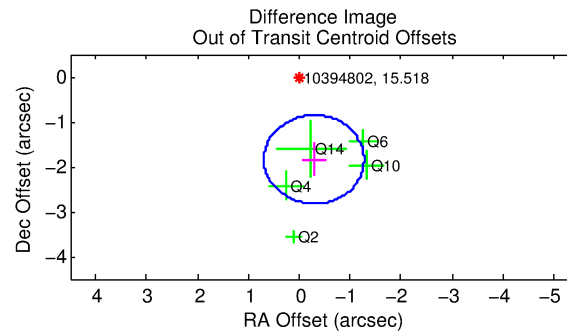
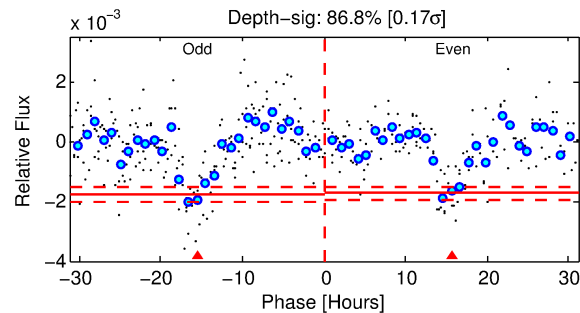
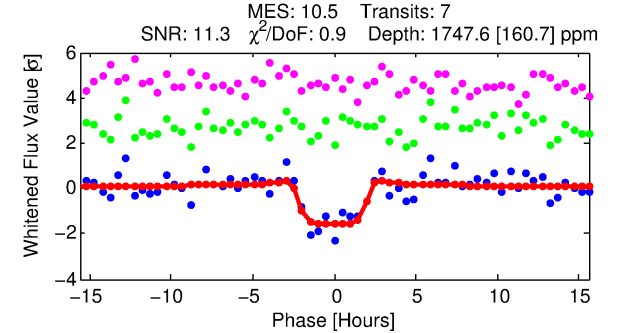
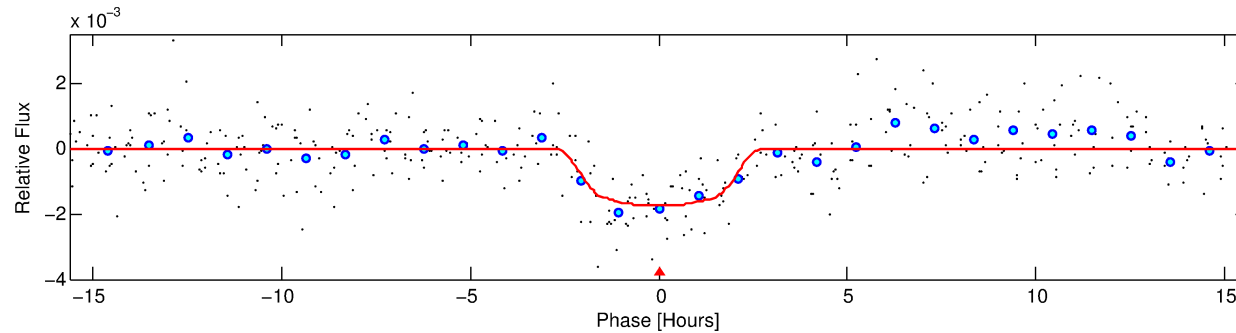
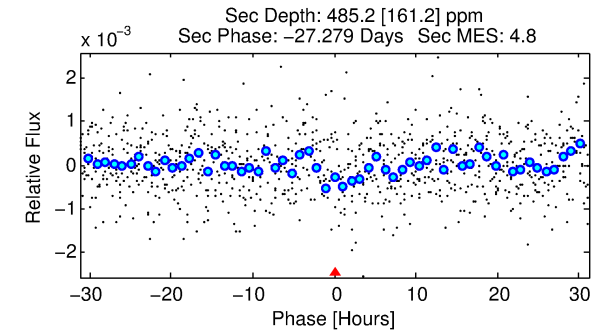
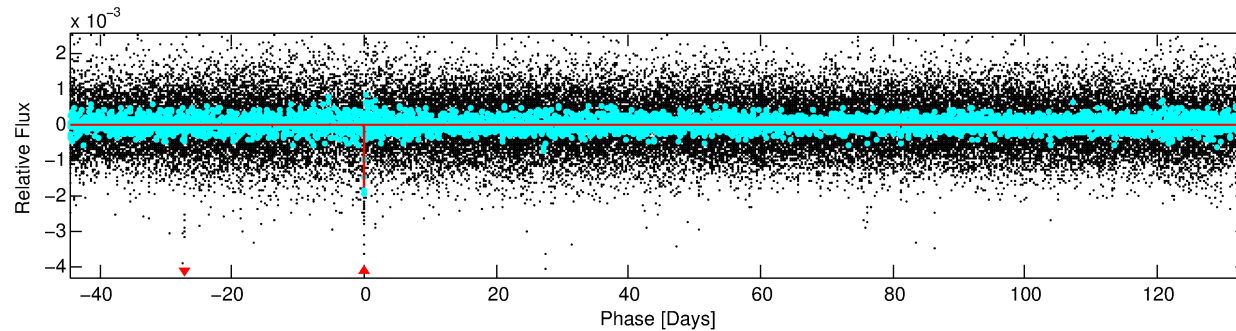
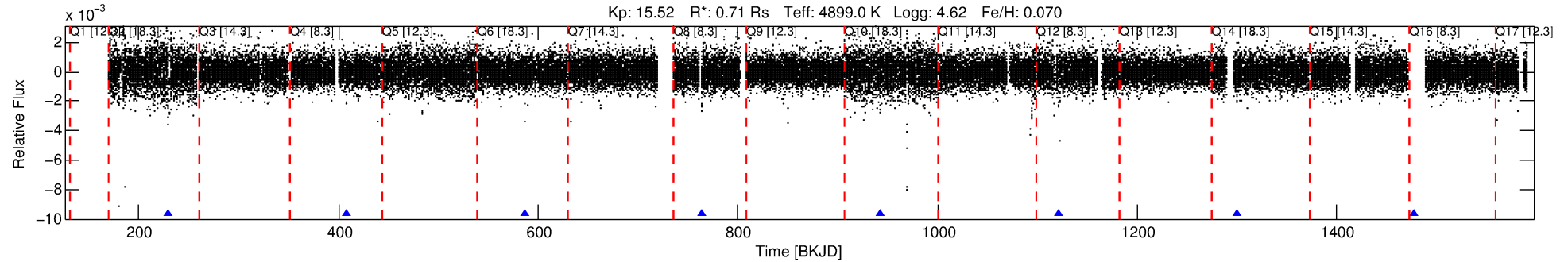
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010394802-01

No Significant Match Found

# DV One-Page Summary

KIC: 10394802 Candidate: 1 of 1 Period: 178.264 d  
KOI: K05790.01 Corr: 0.965



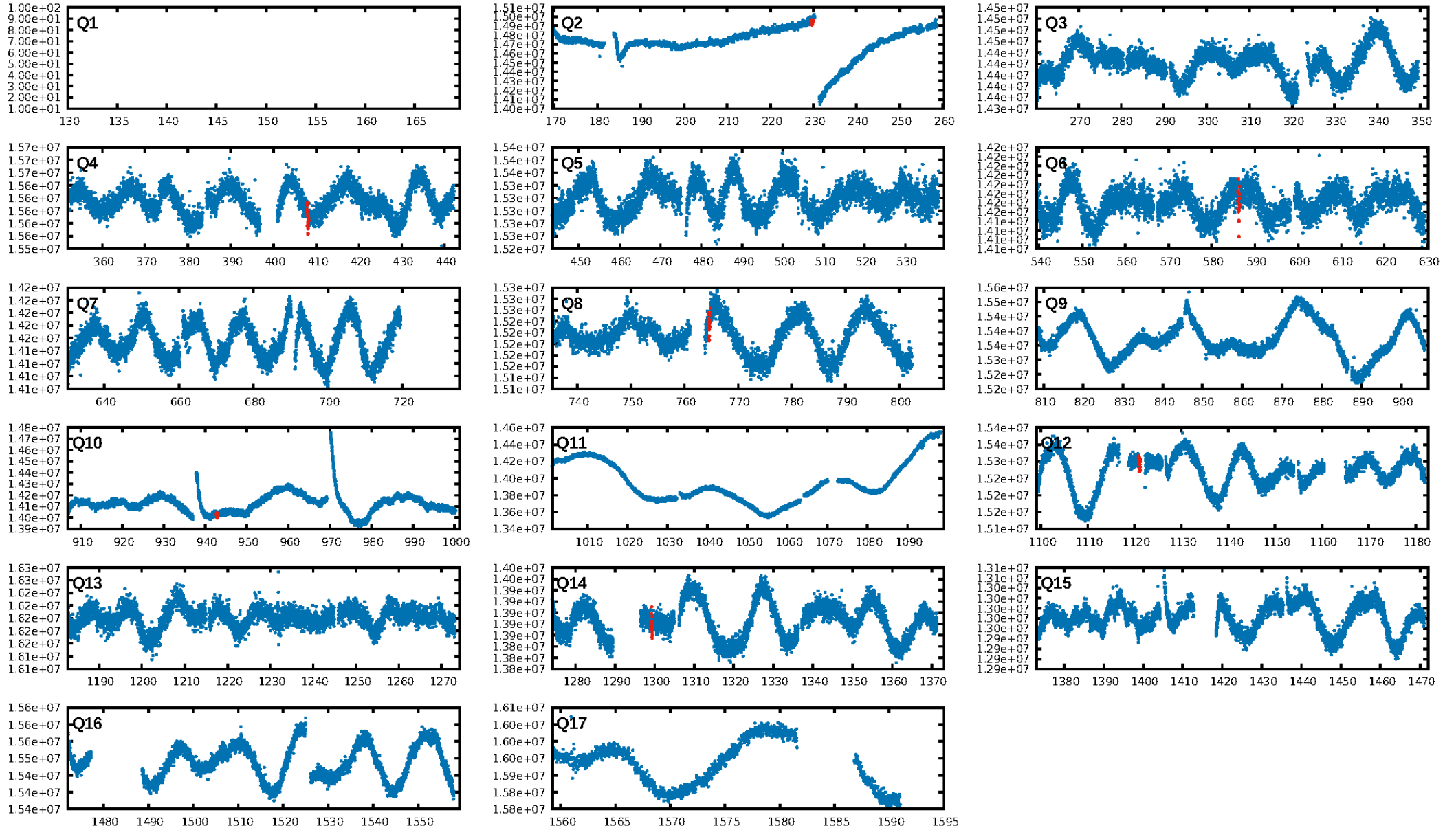
## DV Fit Results:

Period = 178.26426 [0.00218] d  
Epoch = 229.7633 [0.0076] BKJD  
Rp/R\* = 0.0460 [0.0054]  
a/R\* = 146.95 [51.48]  
b = 0.88 [0.09]  
Seff = 0.81 [0.11]  
Teq = 242 [8] K  
Rp = 3.58 [0.52] Re  
a = 0.5708 [0.0431] AU  
Ag = 6786.45 [2864.35] [2.37σ]  
Teffp = 3390 [350] K [9.00σ]

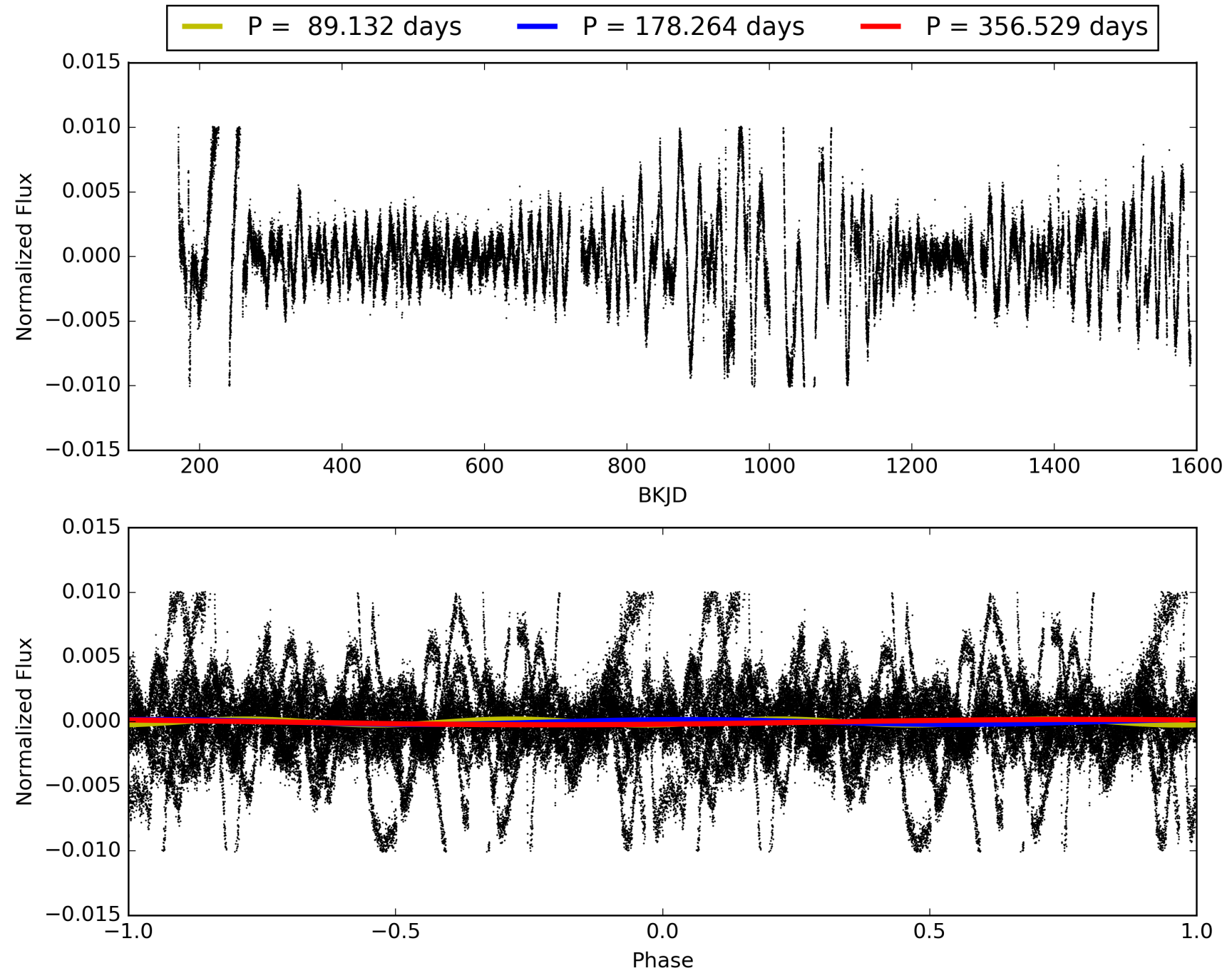
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 62.5%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: 3.91e-18  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -46.74  
Centroid-sig: 8.5%  
Centroid-so: 1.783 arcsec [4.95σ]  
OotOffset-rm: 1.863 arcsec [5.67σ]  
KicOffset-rm: 1.051 arcsec [2.43σ]  
OotOffset-st: 4/0/1/0 [5]  
KicOffset-st: 4/0/1/0 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [5/5]

# TCE 010394802-01, PDC Light Curves

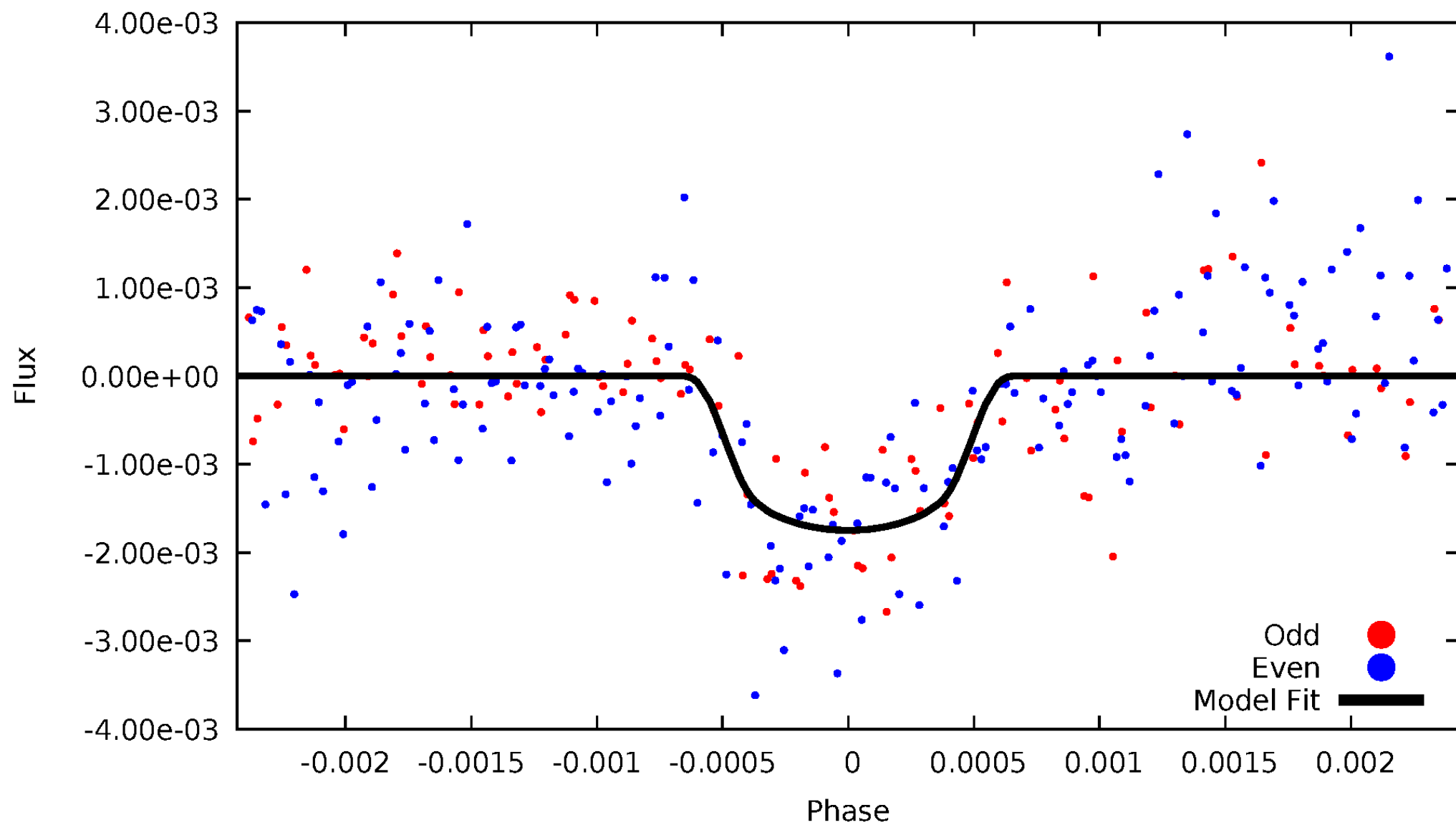


TCE 010394802-01



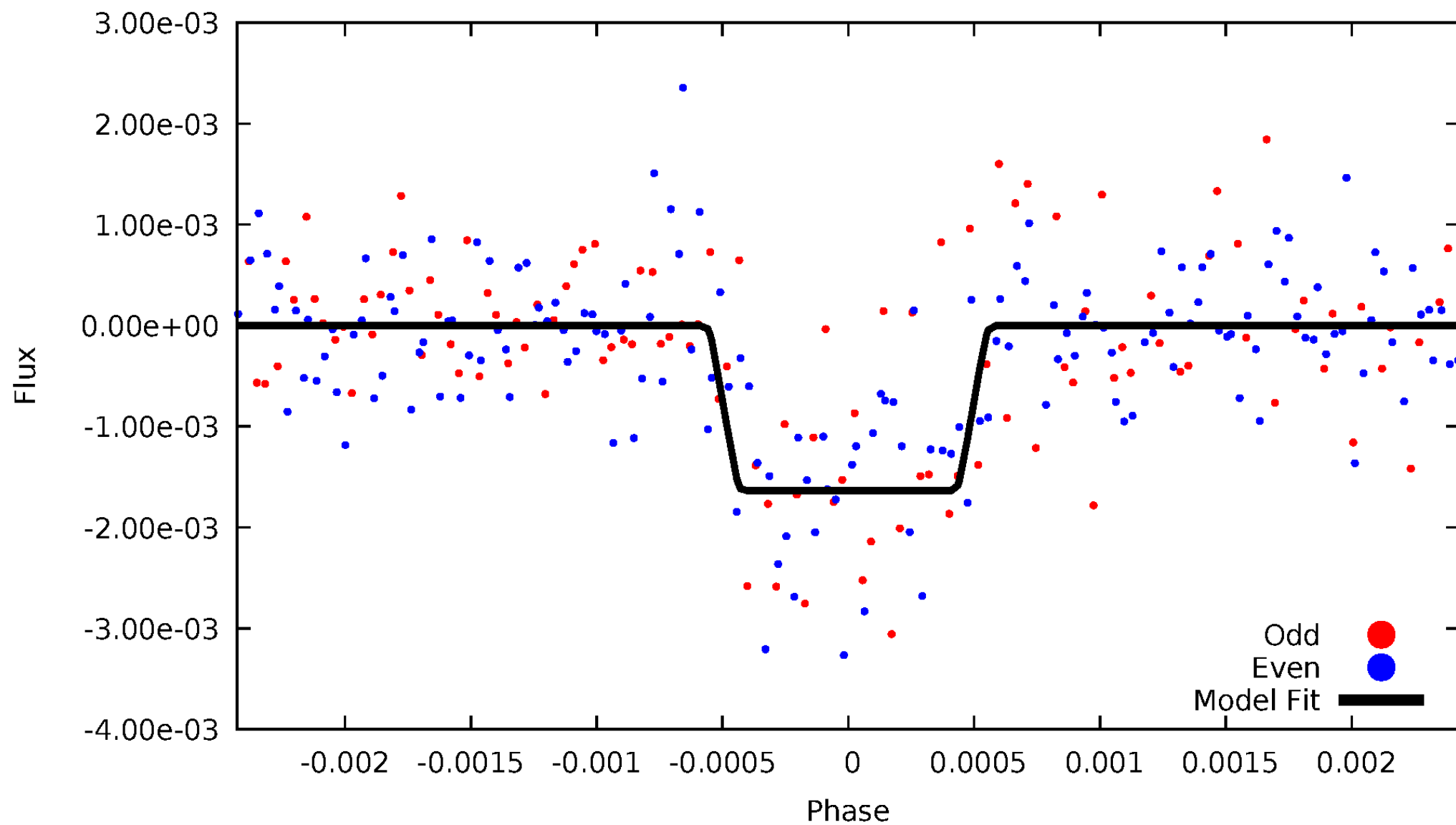
# DV Odd/Even

TCE 010394802-01



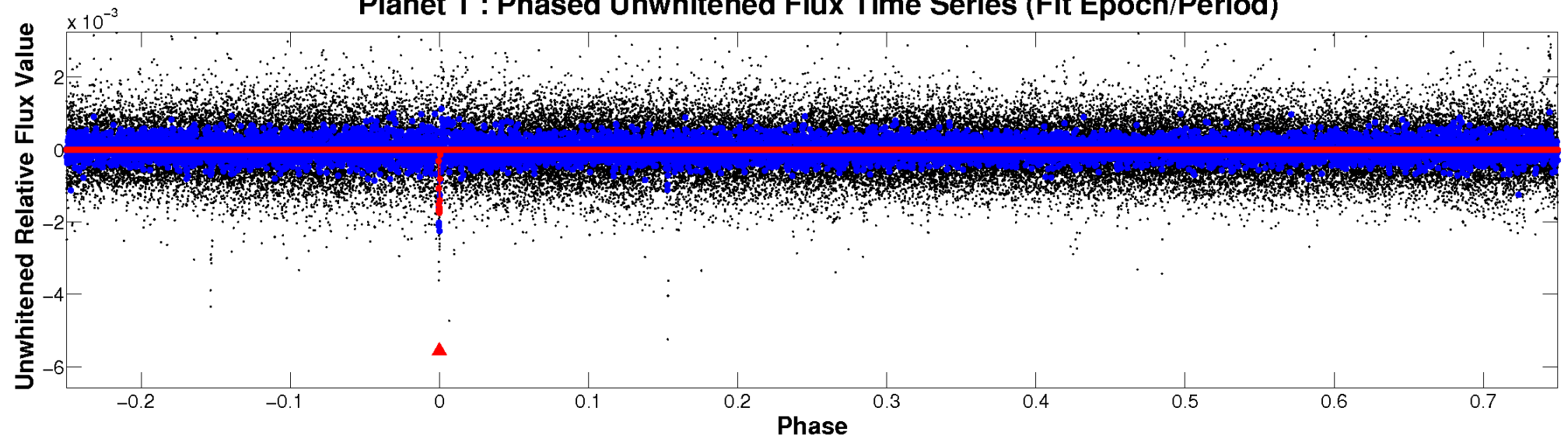
# ALT Odd/Even

TCE 010394802-01

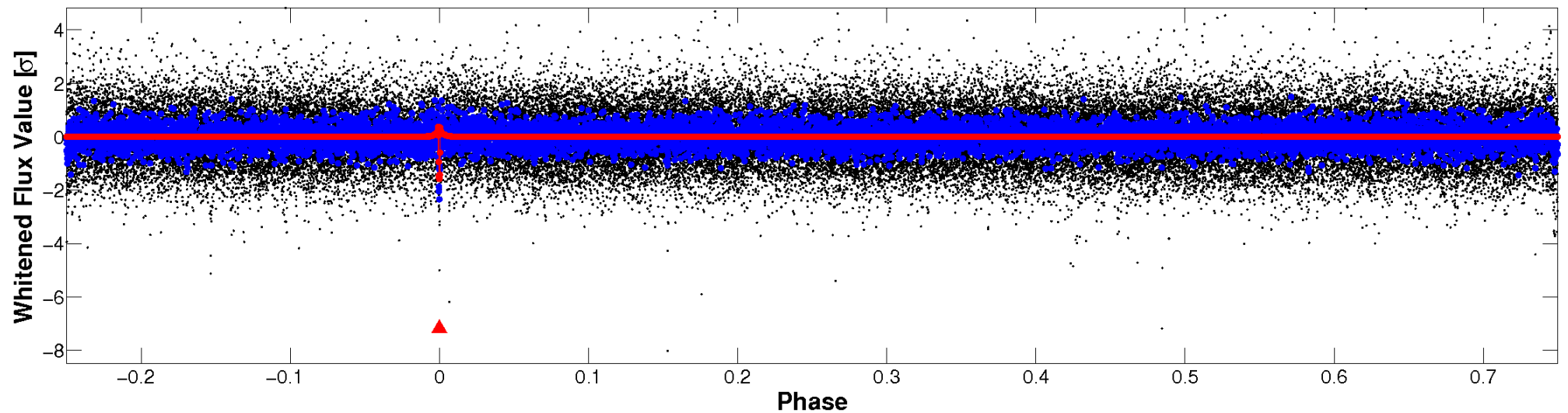


# Non-Whitened Vs. Whitened Light Curve

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

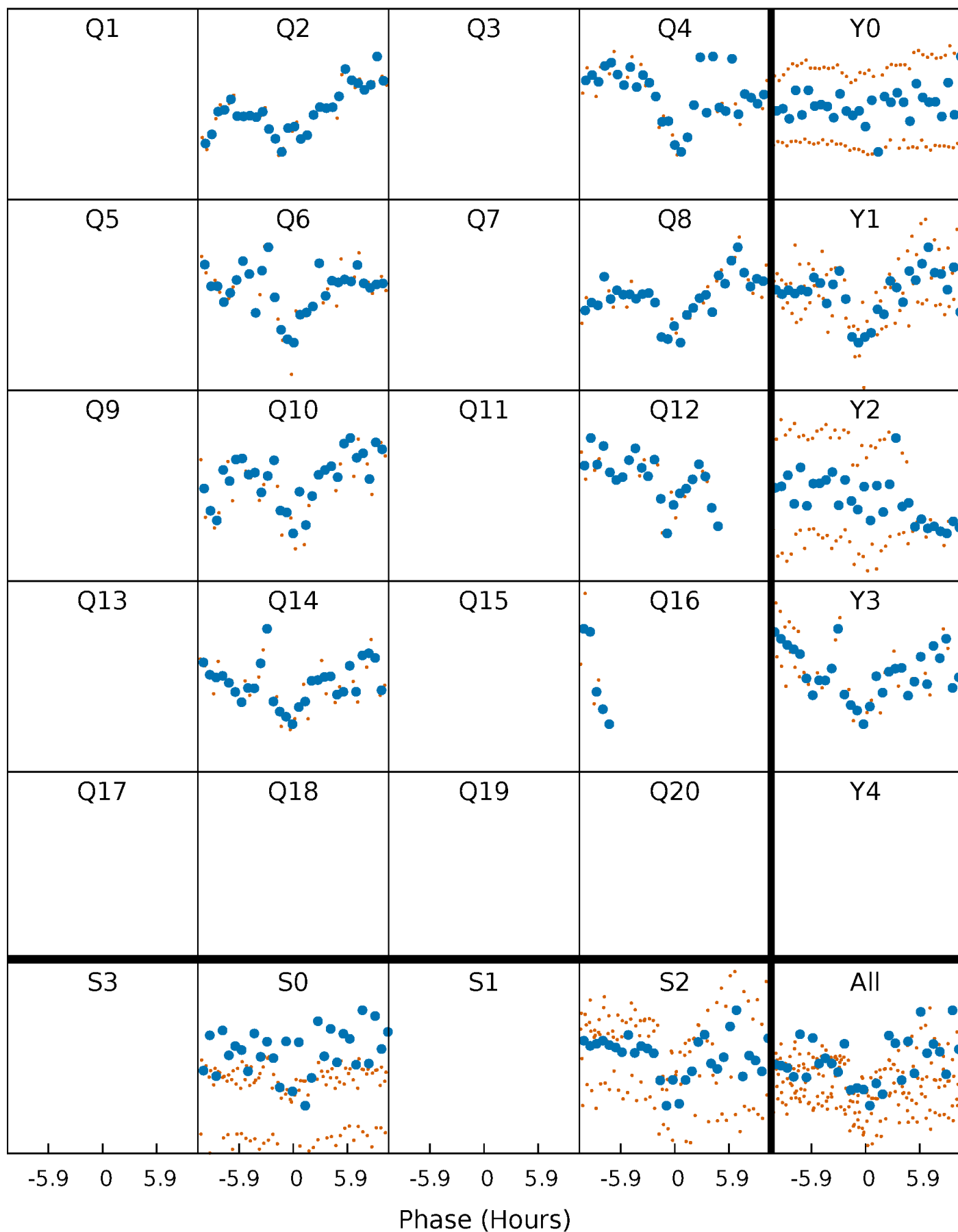


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

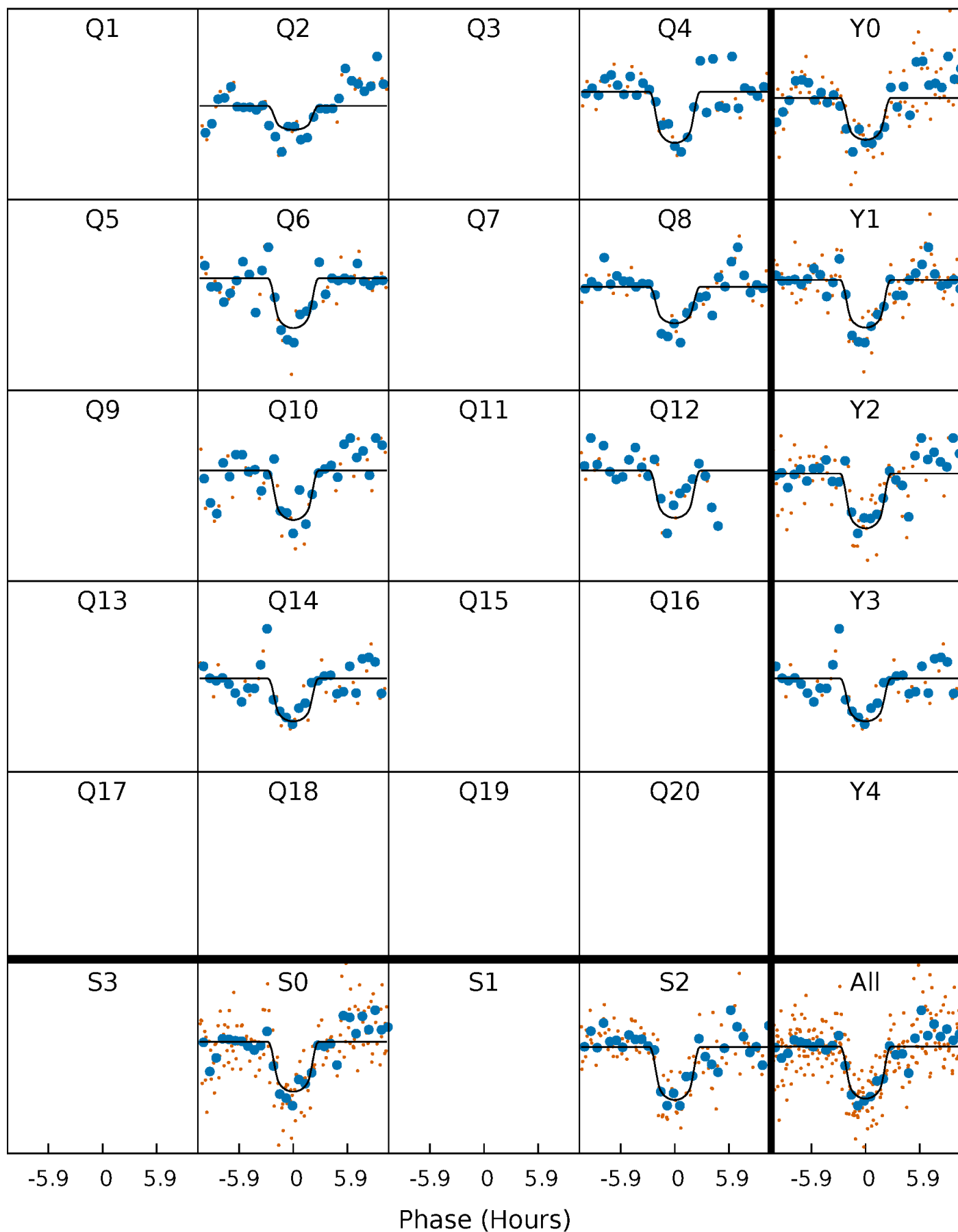
TCE 010394802-01 P=178.264258 Days  $T_0=229.763281$  (BKJD)





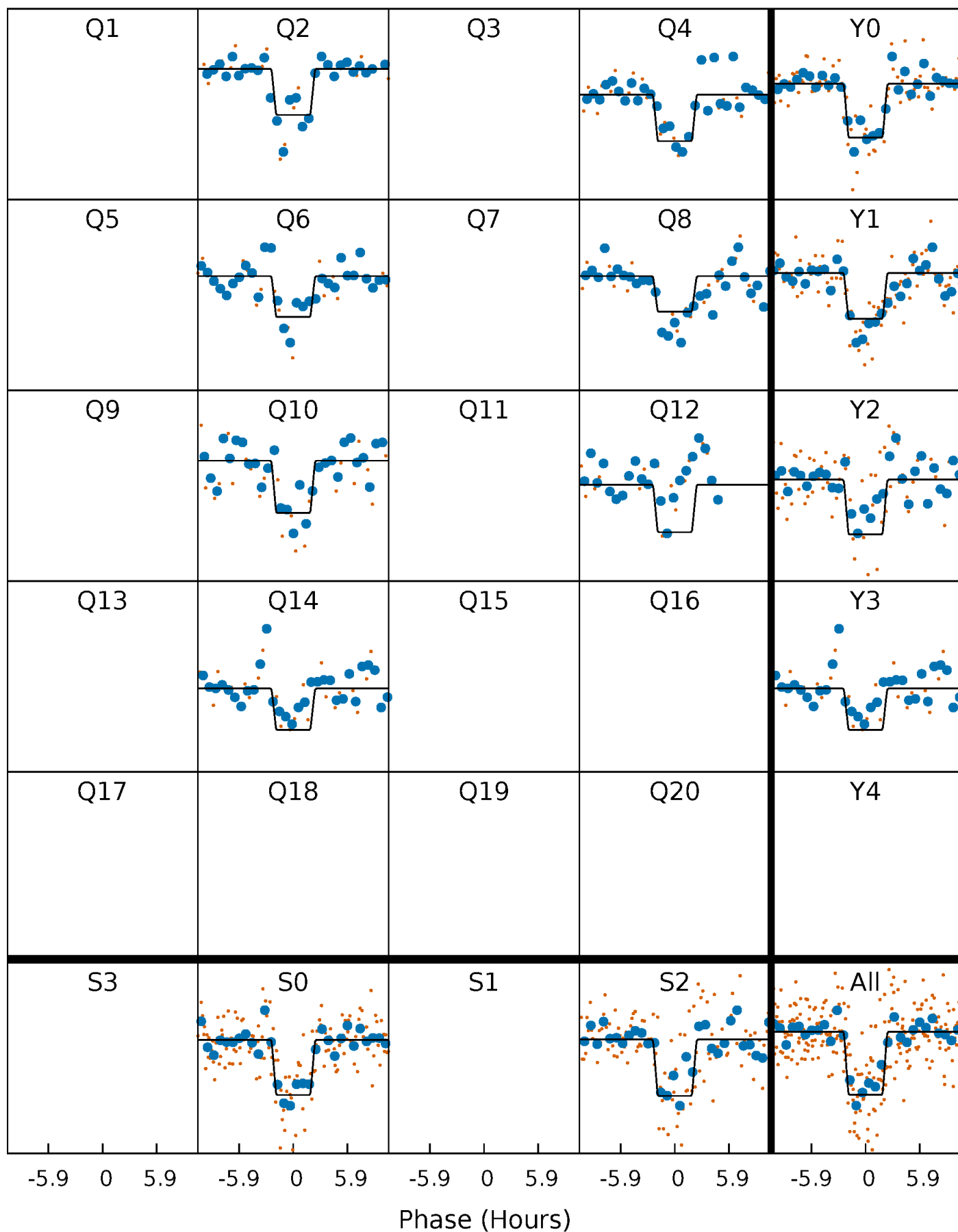
# DV Quarter-Phased Transit Curves

TCE 010394802-01 P=178.264258 Days  $T_0=229.763281$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

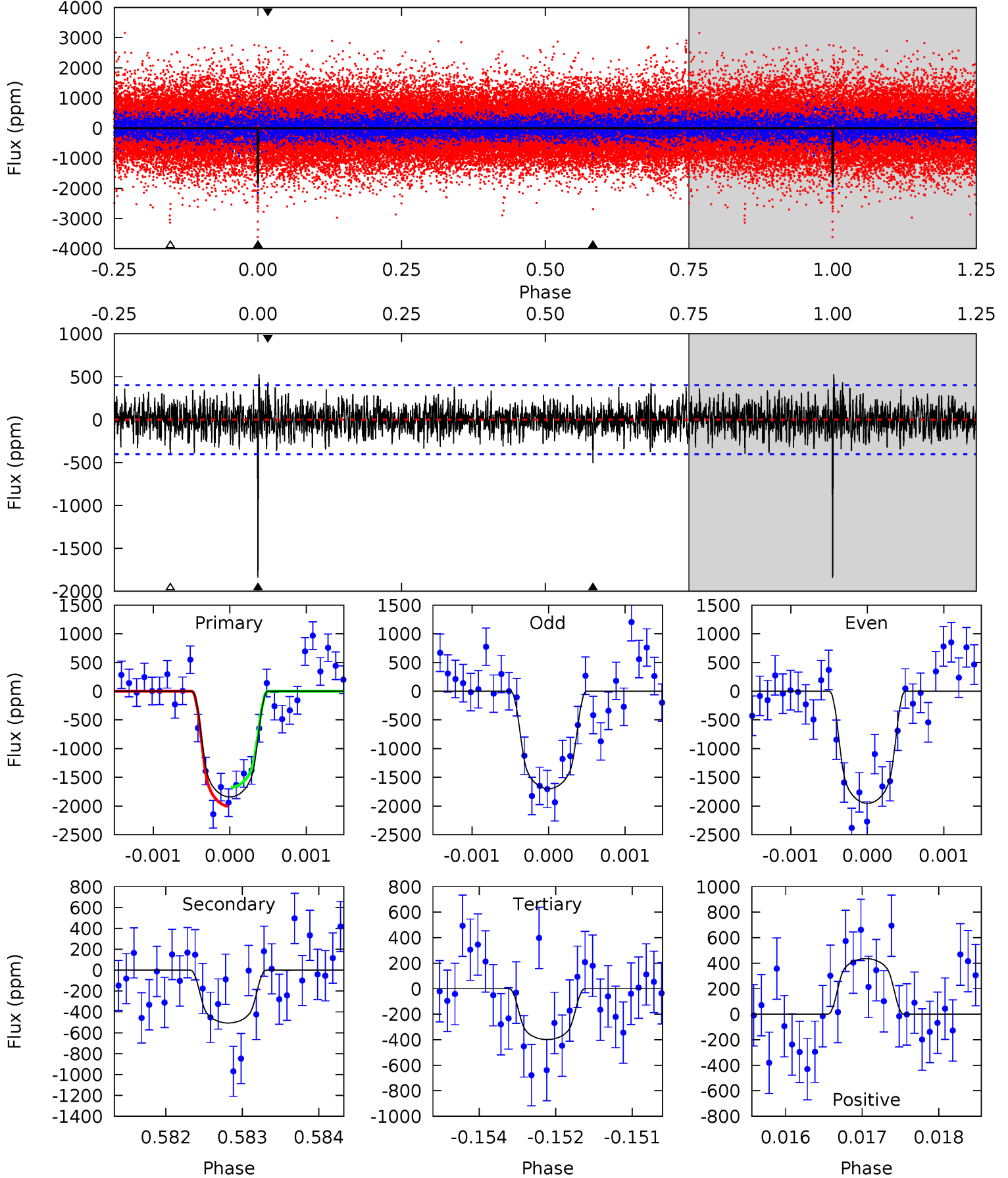
TCE 010394802-01 P=178.265638 Days  $T_0=229.755867$  (BKJD)



# DV Model-Shift Uniqueness Test

010394802-01,  $P = 178.264258$  Days,  $E = 51.499023$  Days

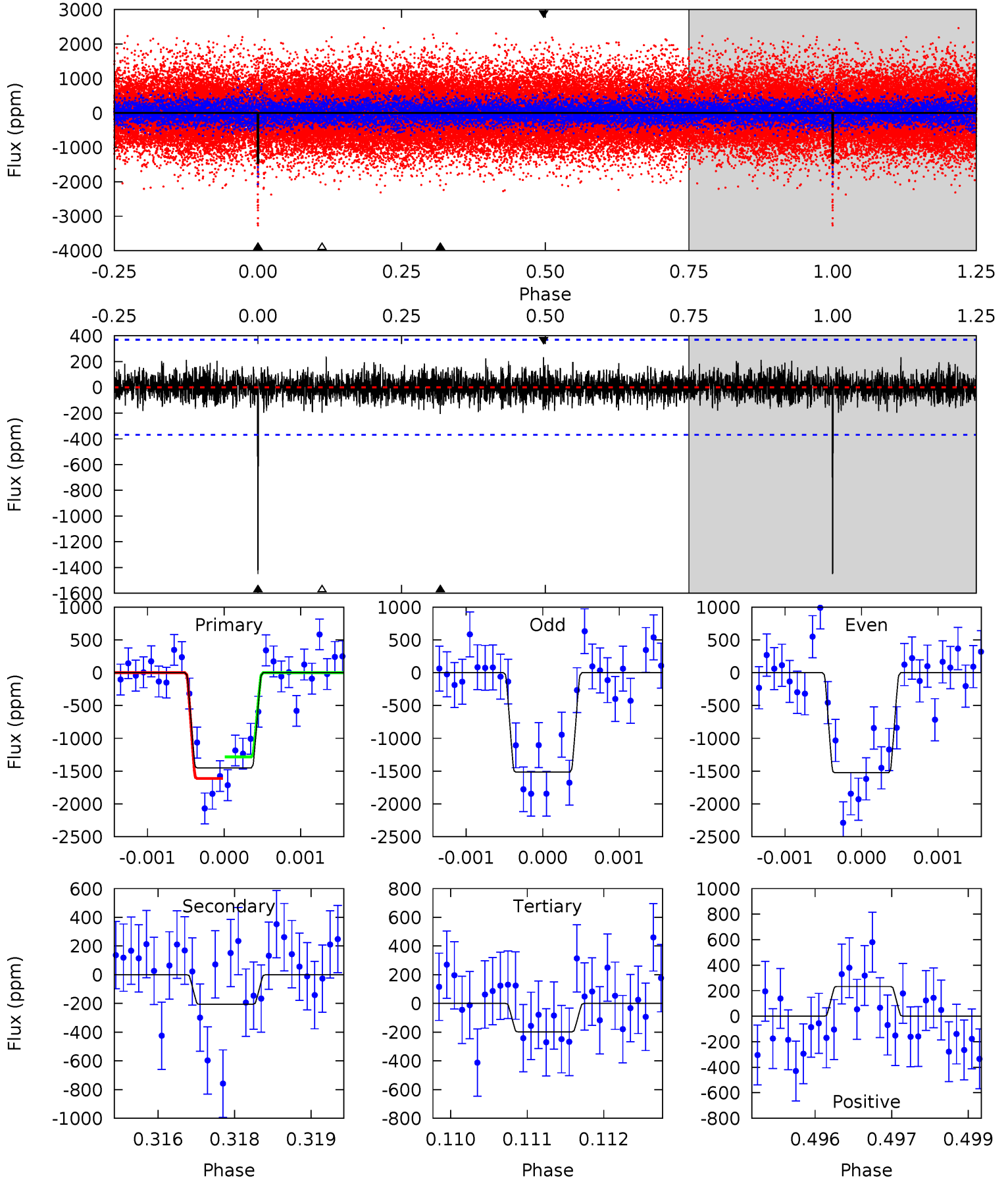
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.8	6.81	5.36	5.86	5.40	3.21	1.63	19.4	18.9	1.45	0.95	1.73	1.01	0.22	2.22



# Alt Model-Shift Uniqueness Test

010394802-01,  $P = 178.265638$  Days,  $E = 51.490229$  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
21.3	3.02	2.90	3.41	5.43	3.25	0.91	18.4	17.9	0.12	-0.40	0.06	0.89	0.14	2.43



### Stellar Parameters For KIC 010394802

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4899^{+77}_{-87}$	$4.624^{+0.007}_{-0.063}$	$0.070^{+0.200}_{-0.150}$	$0.713^{+0.062}_{-0.018}$	$0.818^{+0.029}_{-0.053}$	$3.178^{+0.157}_{-0.720}$
	+2%/-2%	+0%/-1%	+286%/-214%	+9%/-3%	+4%/-6%	+5%/-23%
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 010394802-01 / KOI 5790.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-506 \pm 74$	$3.70^{+0.44}_{-0.47}$	$342^{+8}_{-7}$	$3752^{+193}_{-168}$	$6749^{+2096}_{-1659}$
Alt.	$-205 \pm 68$	$3.29^{+0.43}_{-0.46}$	$342^{+8}_{-8}$	$3364^{+249}_{-229}$	$3439^{+1799}_{-1291}$

$T_{max}$  = 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

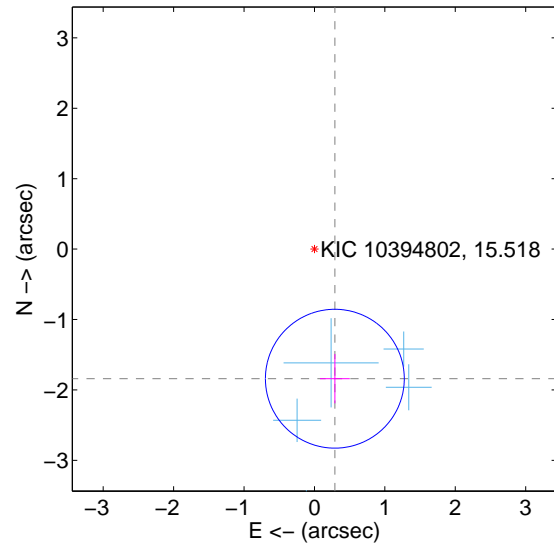
Supplemental centroid analysis for 010394802-01. Kepler magnitude: 15.52. Transit SNR 11.34

There are 5 quarters with good PRF difference image offsets

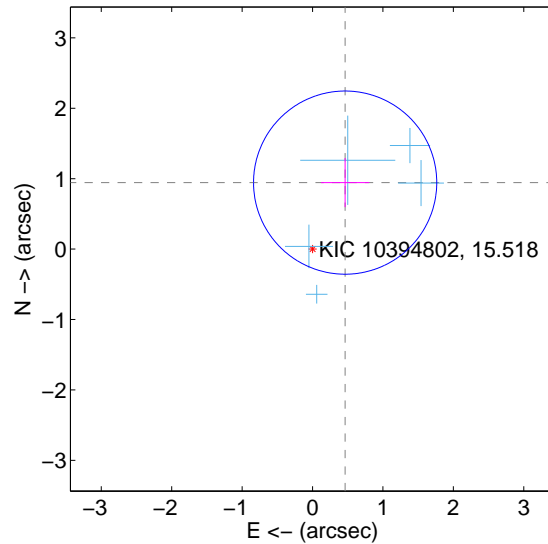
The OOT PRF centroid is offset from the target star catalog position by about 2.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.863 \pm 0.329$	5.67	$-0.290 \pm 0.211$	$-1.840 \pm 0.350$
PRF-fit source offset from KIC position	$1.051 \pm 0.434$	2.43	$-0.463 \pm 0.342$	$0.944 \pm 0.347$
photometric centroid source offset	$1.78 \pm 0.36$	4.95	$-0.02 \pm 0.23$	$1.78 \pm 0.36$

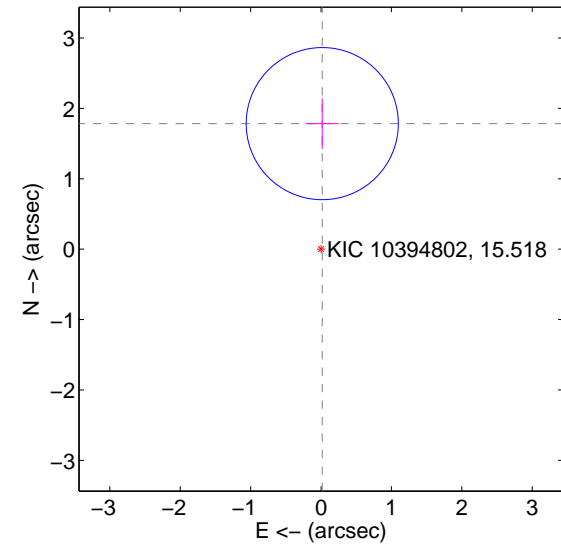
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

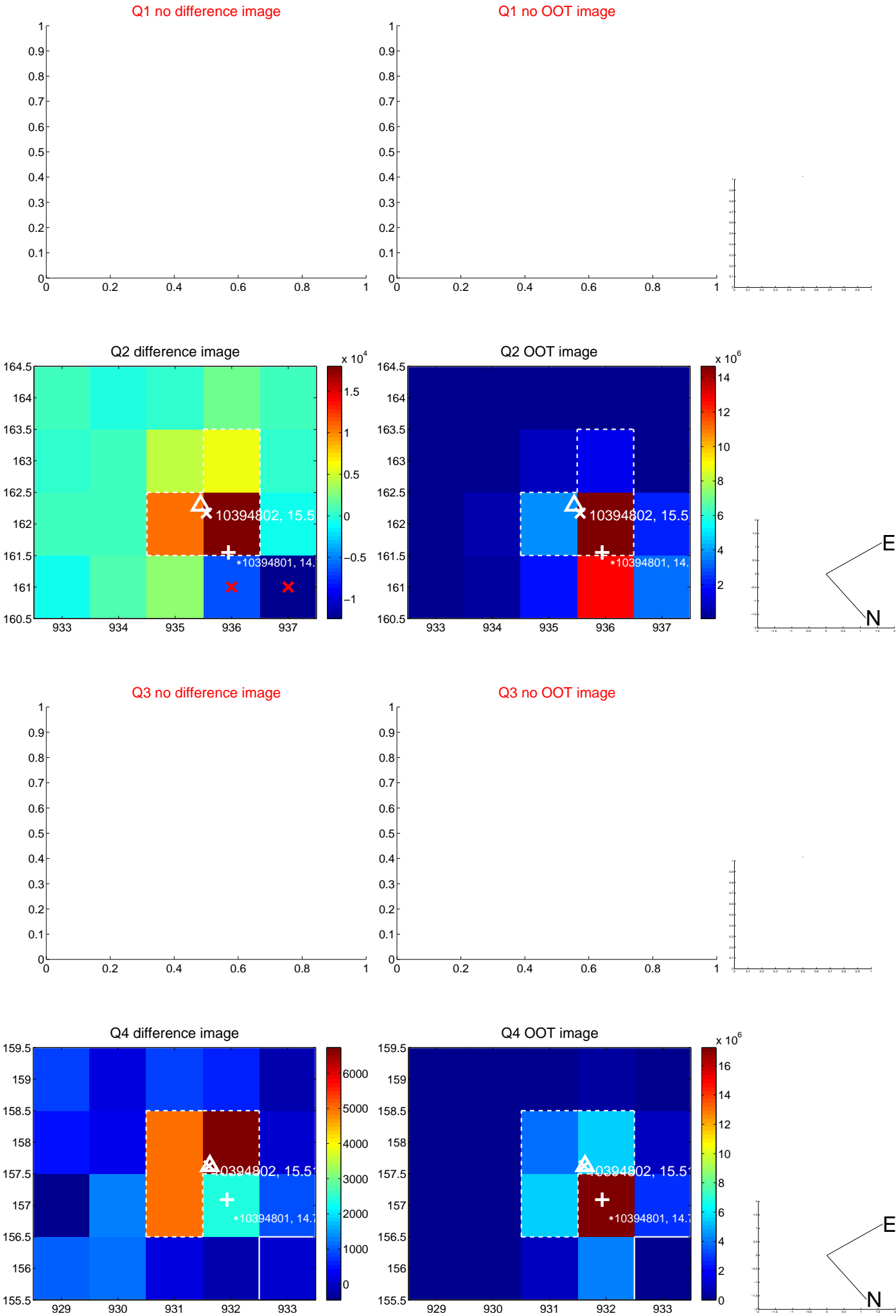


offset from photometric centroids



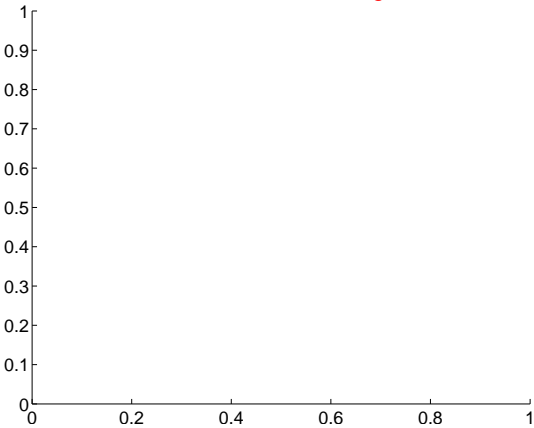
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

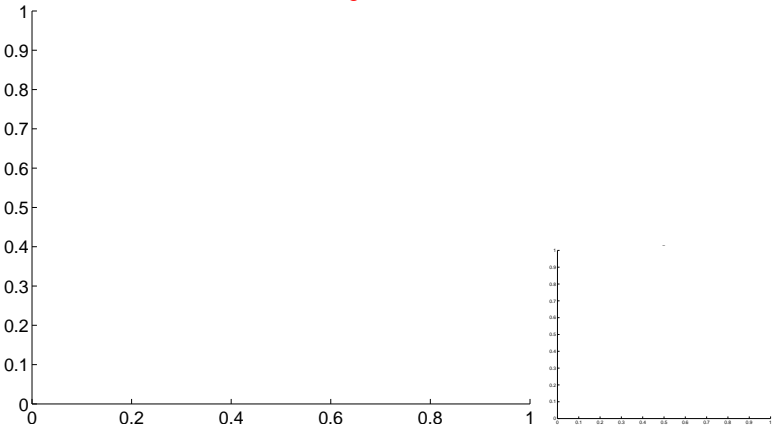


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

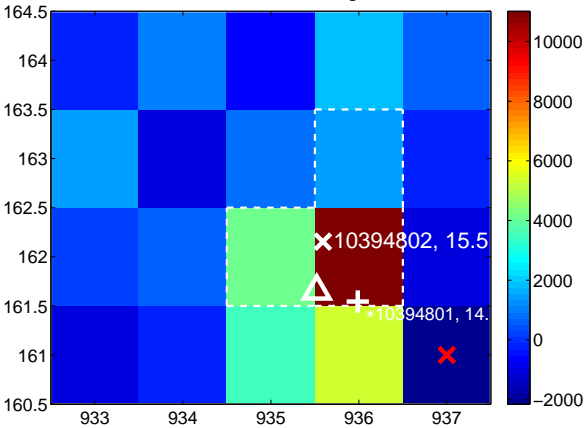
Q5 no difference image



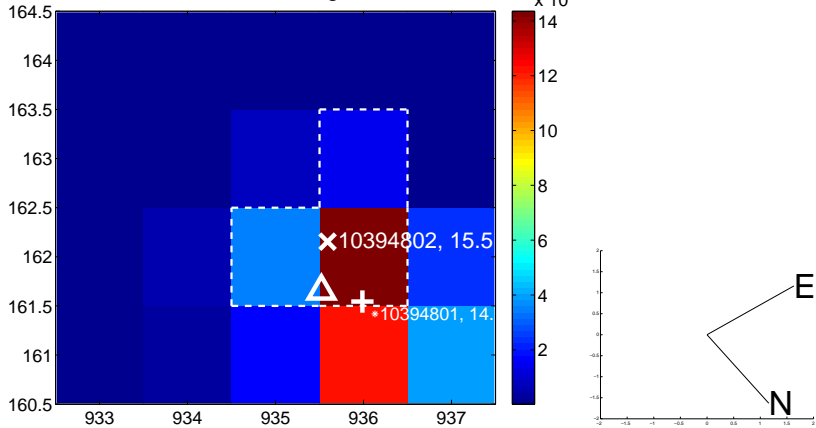
Q5 no OOT image



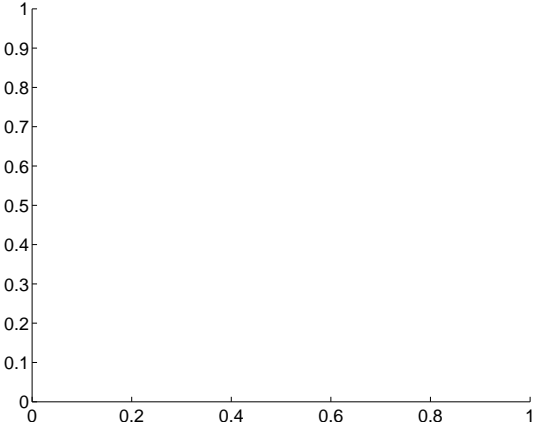
Q6 difference image



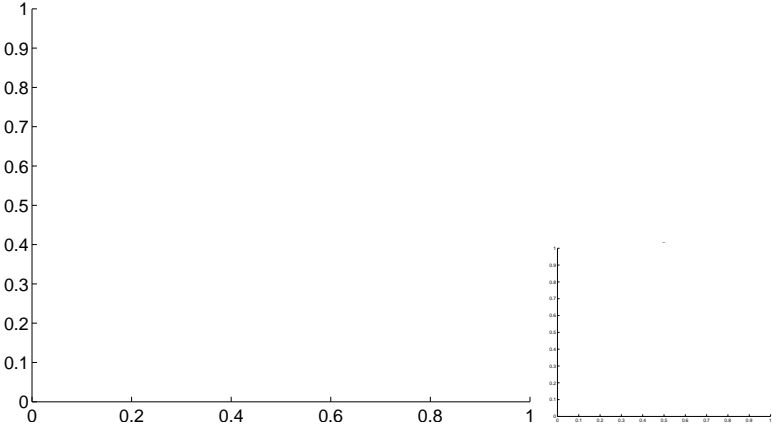
Q6 OOT image



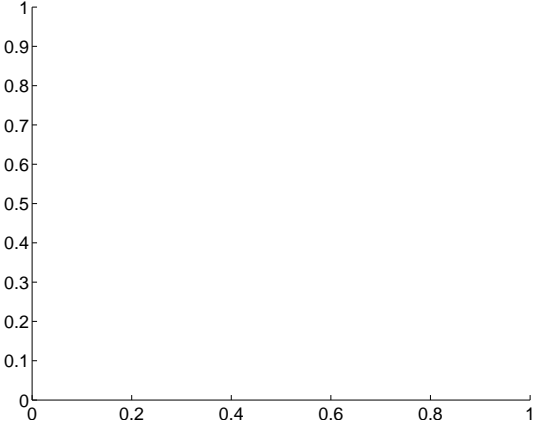
Q7 no difference image



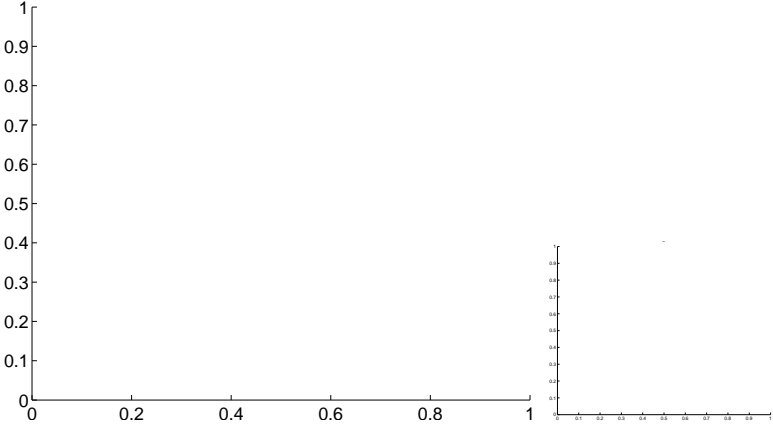
Q7 no OOT image



Q8 no difference image

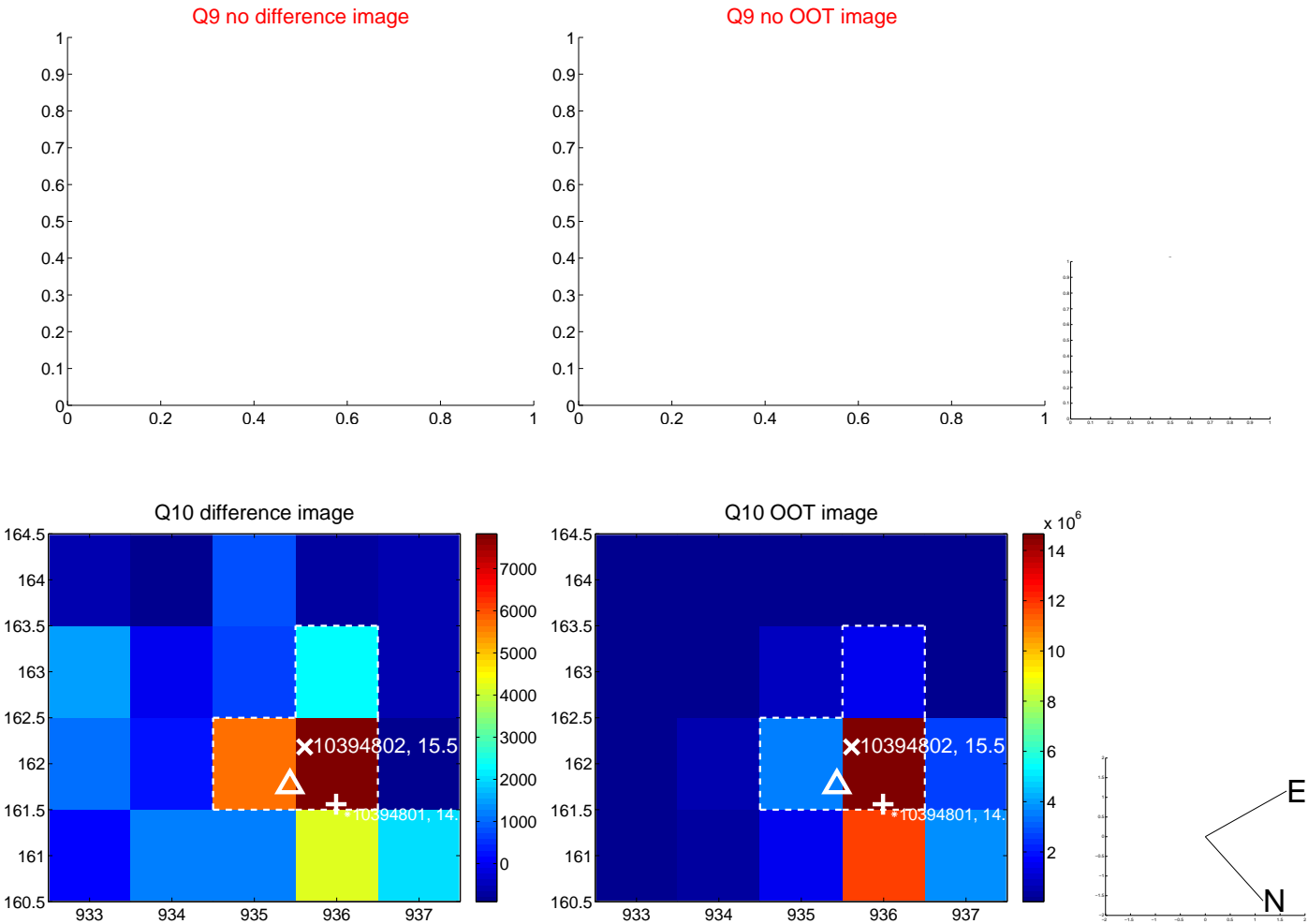


Q8 no OOT image

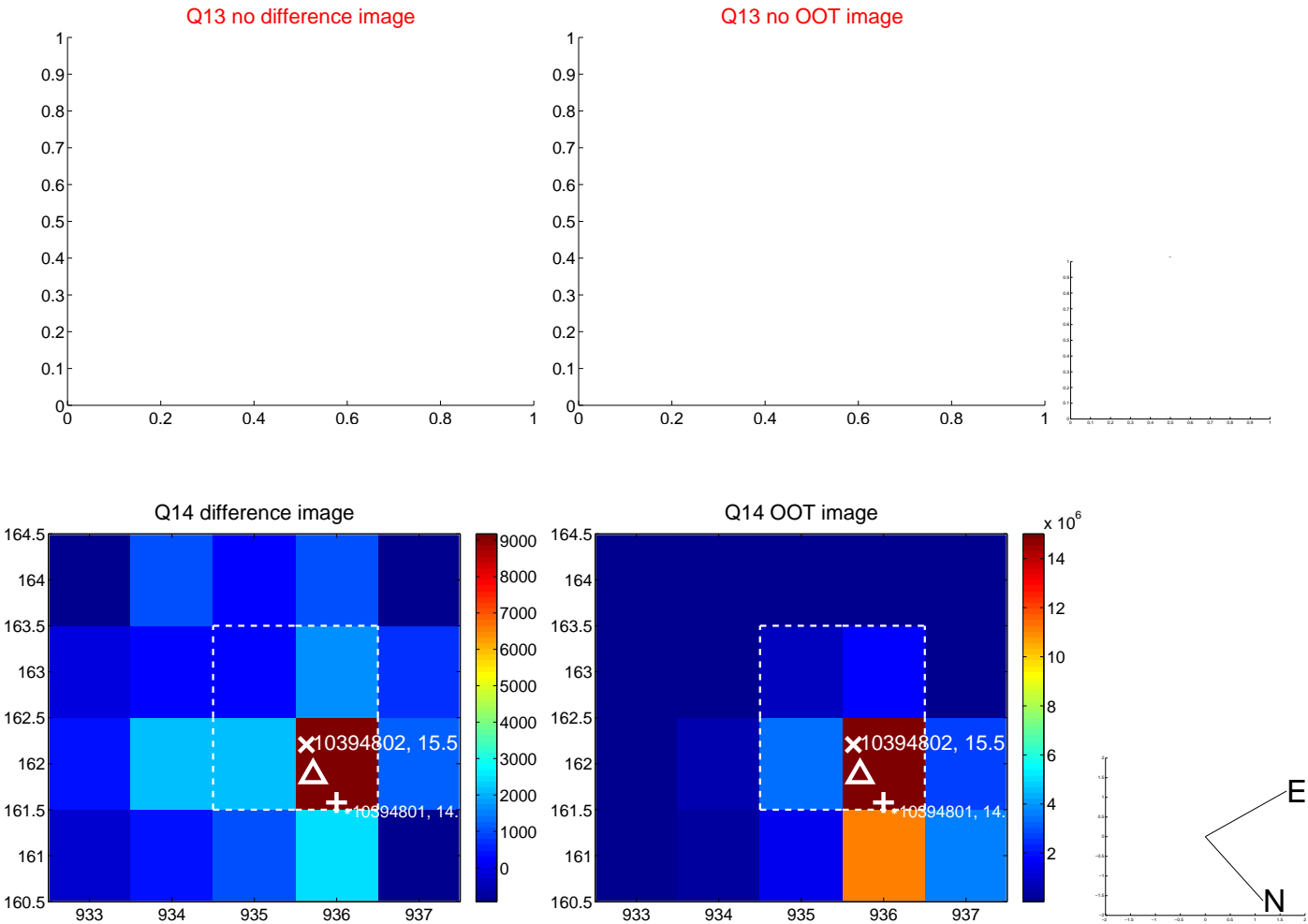




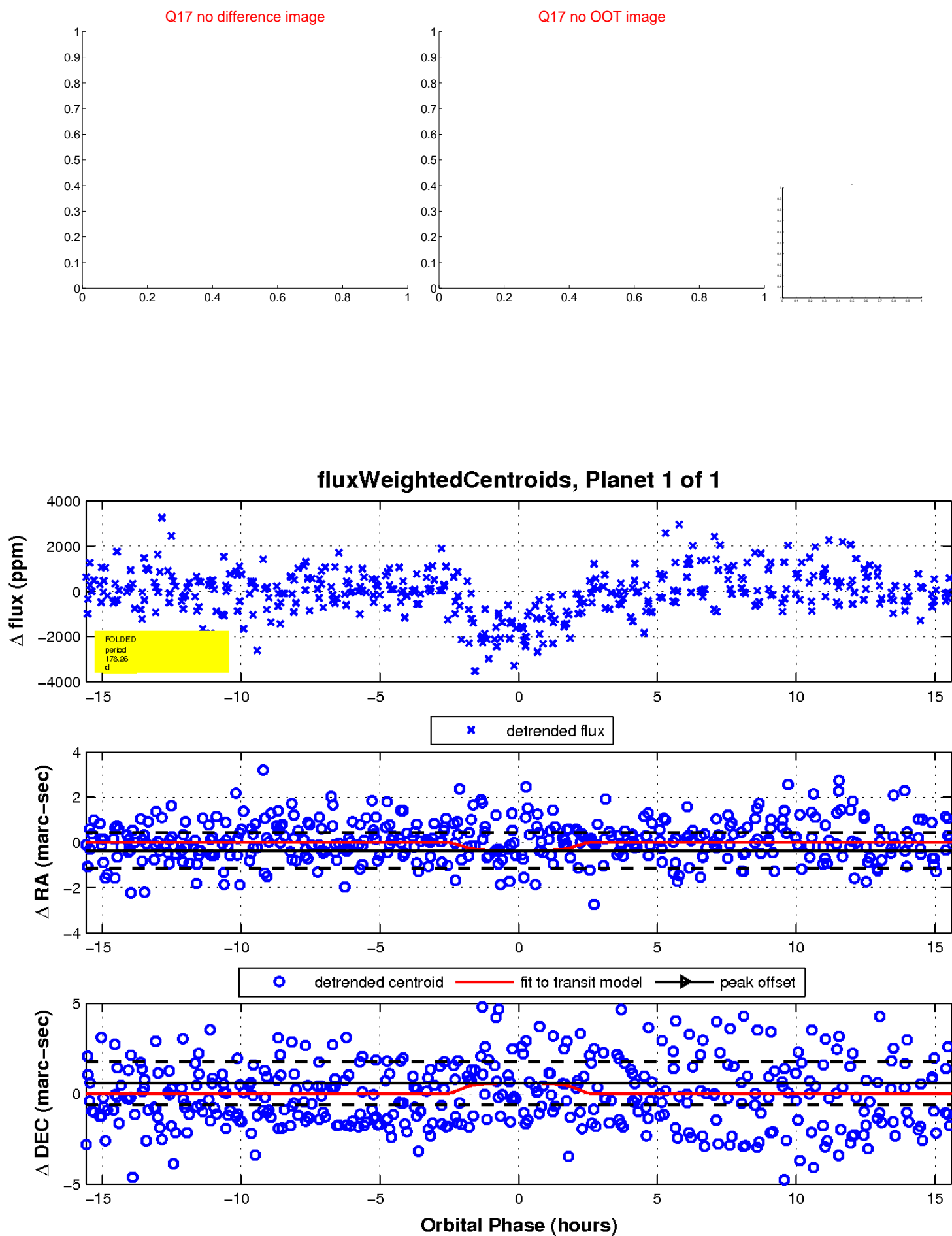
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

