

# KIC 009893318

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009893318-01	OBS	2660.01	18.016132	145.242751	489.6	4.266	14.3	16.1	1.06	6245	2.69	82.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009893318-01	OBS	PC	1.00	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.

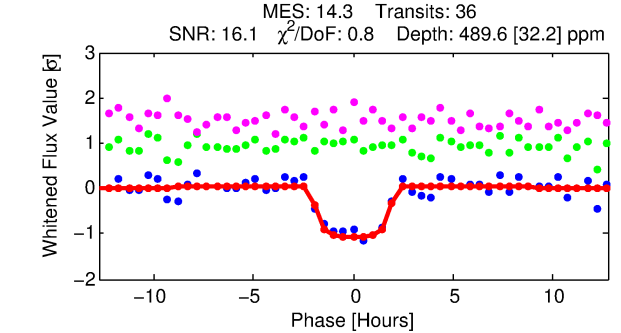
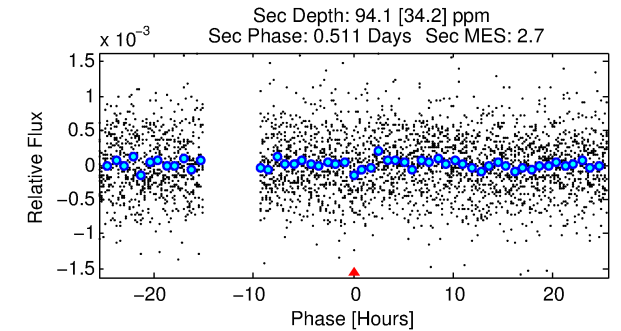
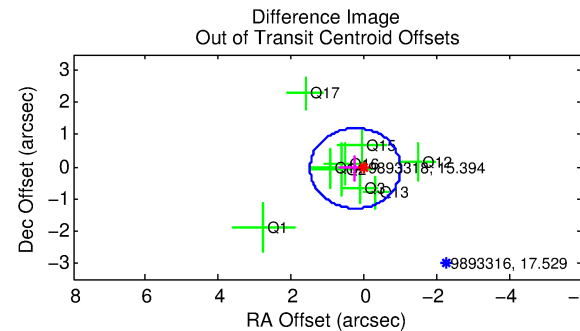
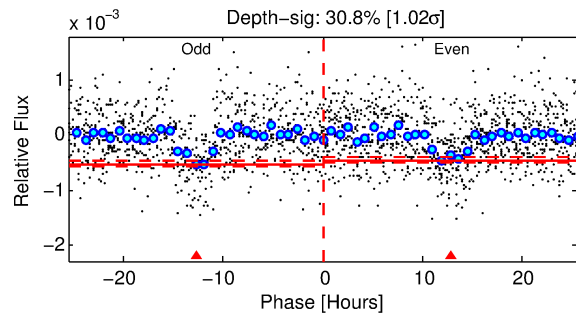
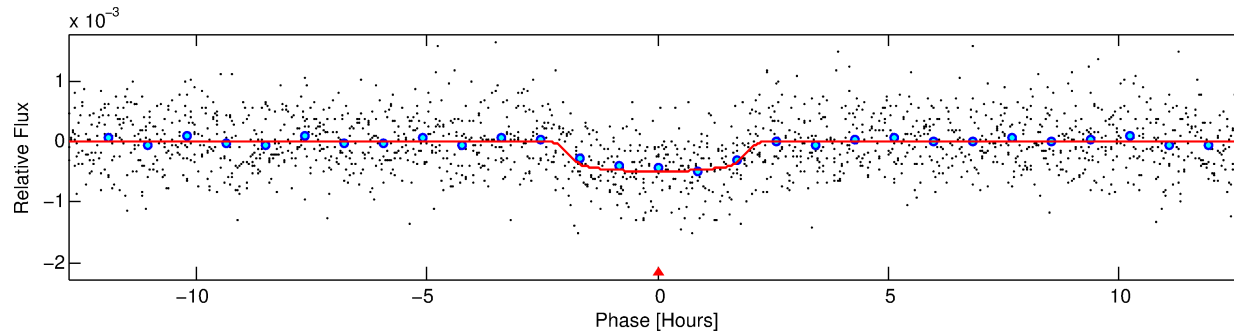
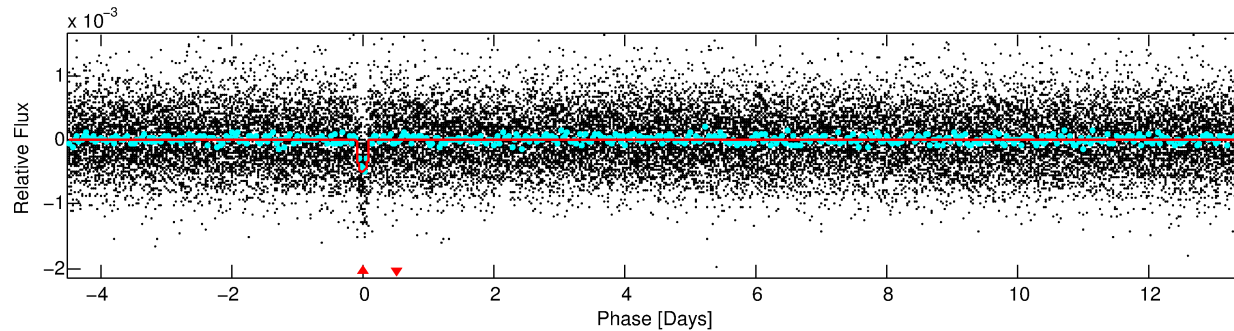
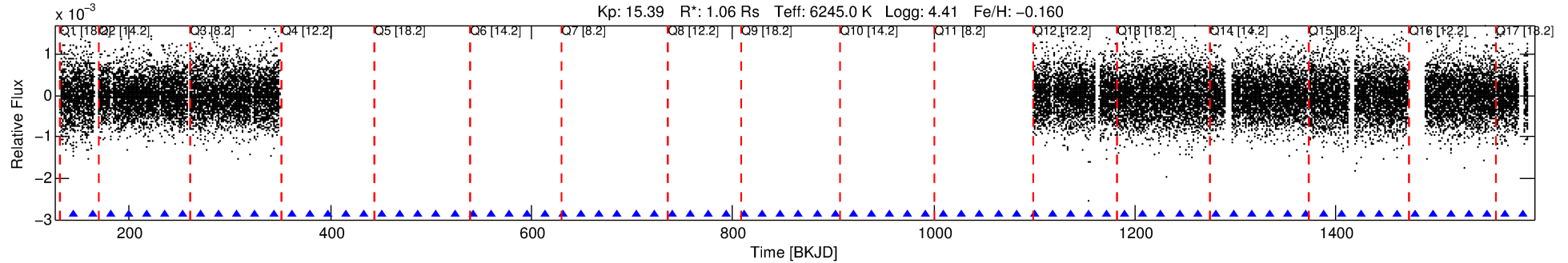
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009893318-01

No Significant Match Found

# DV One-Page Summary

KIC: 9893318 Candidate: 1 of 1 Period: 18.016 d  
KOI: K02660.01 Corr: 0.968



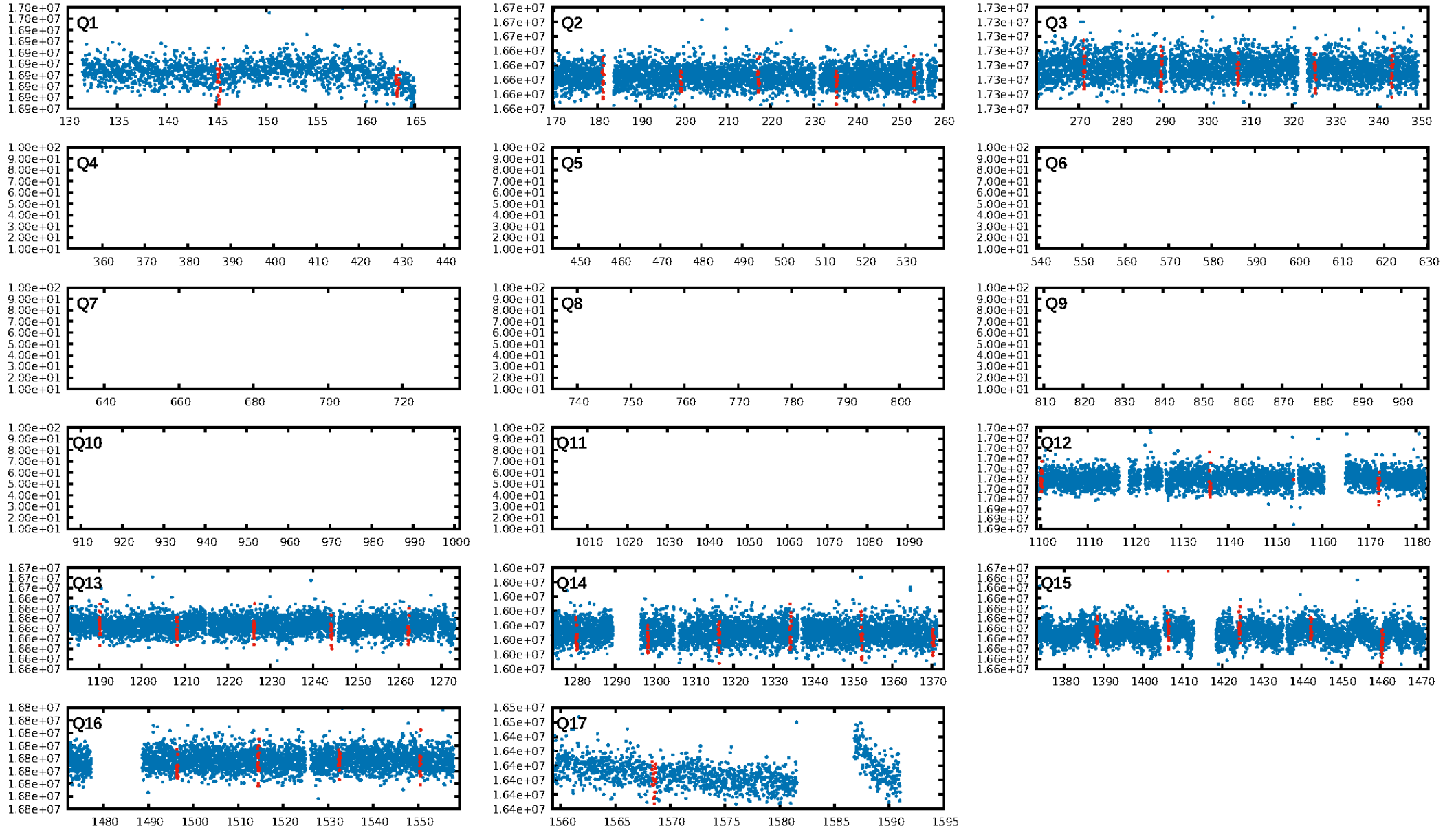
## DV Fit Results:

Period = 18.01613 [0.00010] d  
Epoch = 145.2428 [0.0052] BKJD  
Rp/R\* = 0.0231 [0.0051]  
a/R\* = 17.80 [20.07]  
b = 0.86 [0.34]  
Seff = 82.49 [34.57]  
Teq = 768 [81] K  
Rp = 2.69 [1.04] Re  
a = 0.1369 [0.0369] AU  
Ag = 134.01 [92.74] [1.43 $\sigma$ ]  
Teffp = 4042 [592] K [5.48 $\sigma$ ]

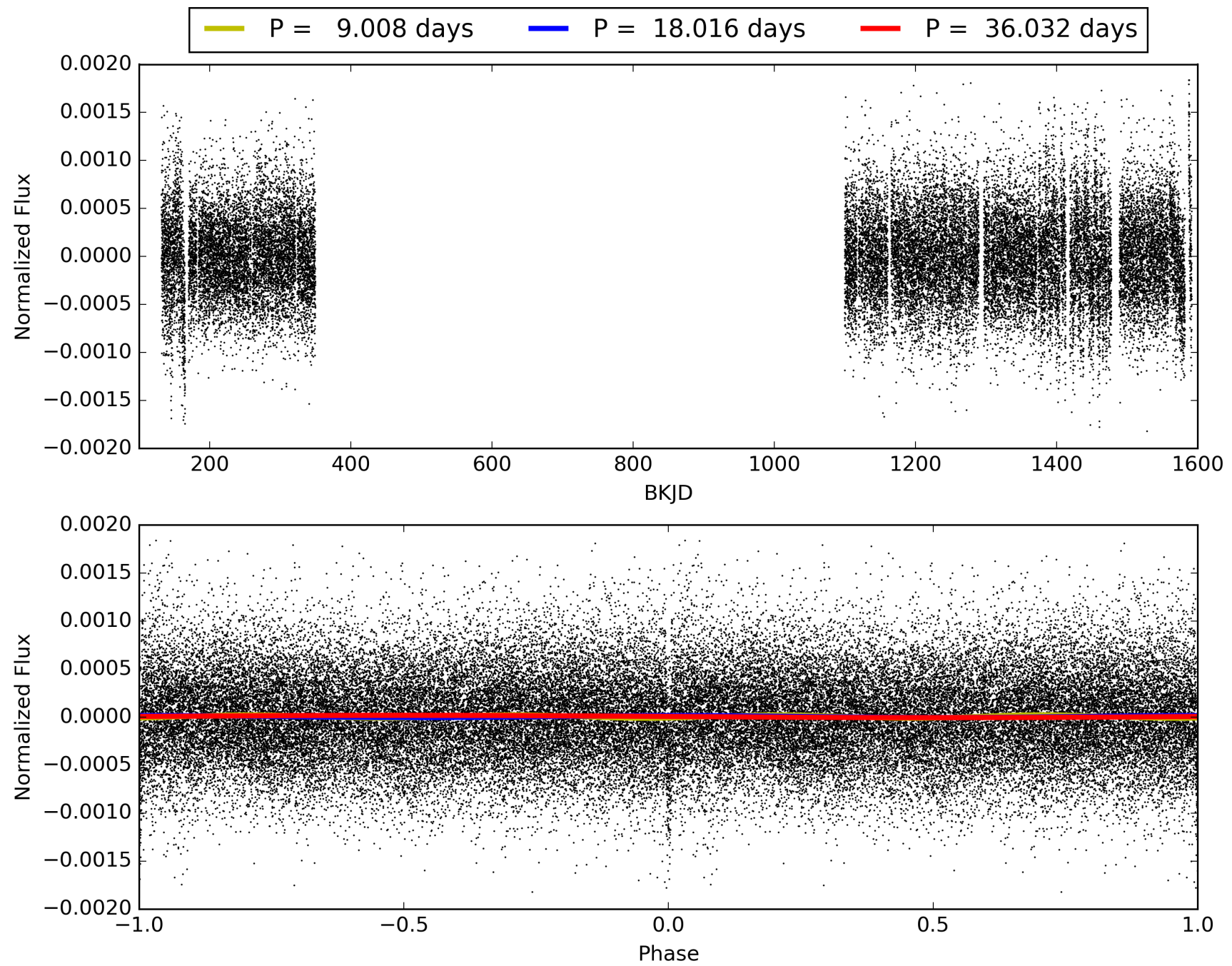
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.96e-44  
RollingBand-fgt: 1.00 [33/33]  
GhostDiagnostic-chr: 2.152  
Centroid-sig: 18.2%  
Centroid-so: 1.053 arcsec [1.25 $\sigma$ ]  
OotOffset-rm: 0.241 arcsec [0.58 $\sigma$ ]  
KicOffset-rm: 0.231 arcsec [0.56 $\sigma$ ]  
OotOffset-st: 2/2/2/3 [9]  
KicOffset-st: 2/2/2/3 [9]  
DiffImageQuality-fgm: 0.89 [8/9]  
DiffImageOverlap-fno: 1.00 [9/9]

# TCE 009893318-01, PDC Light Curves

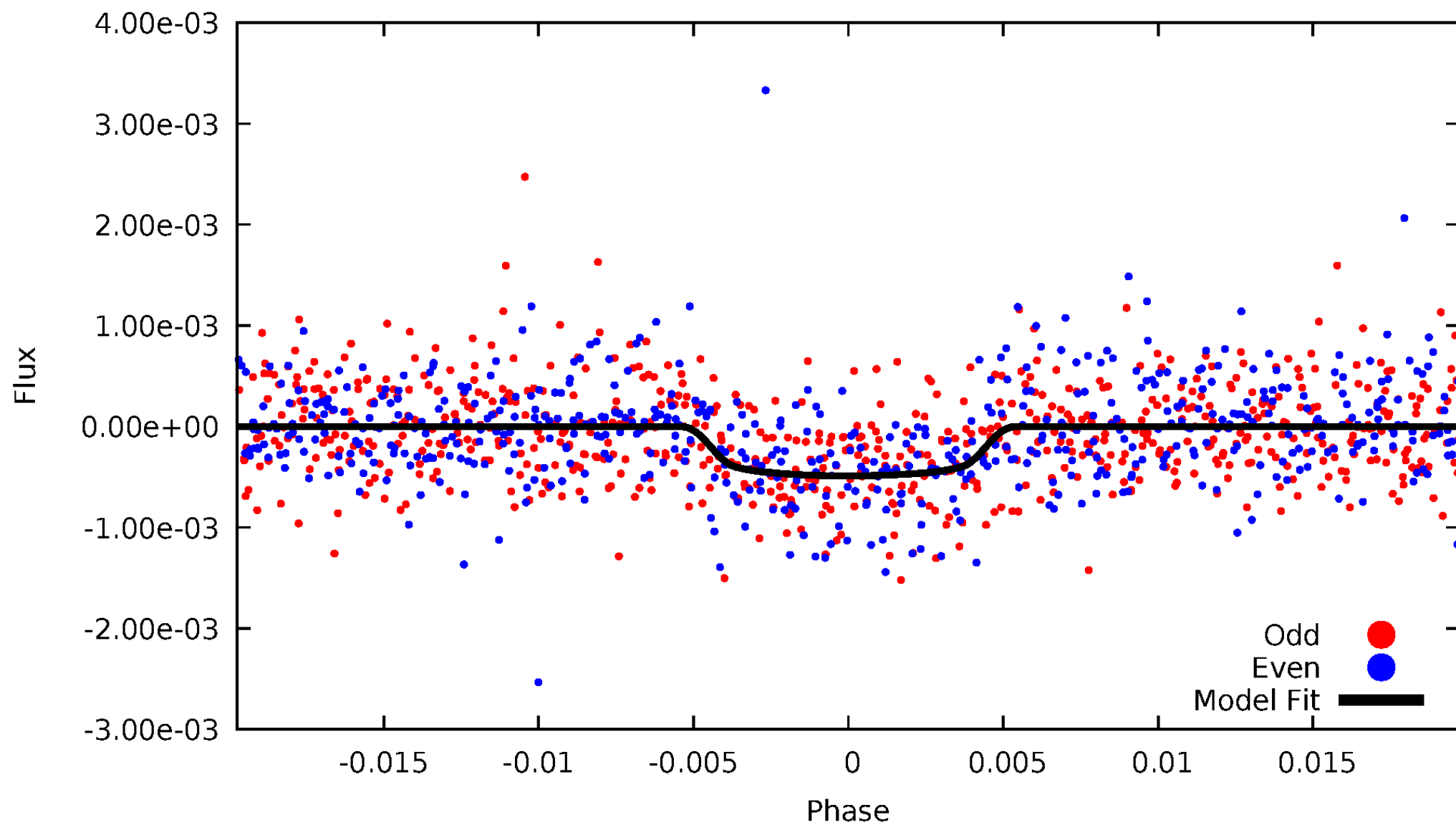


# TCE 009893318-01



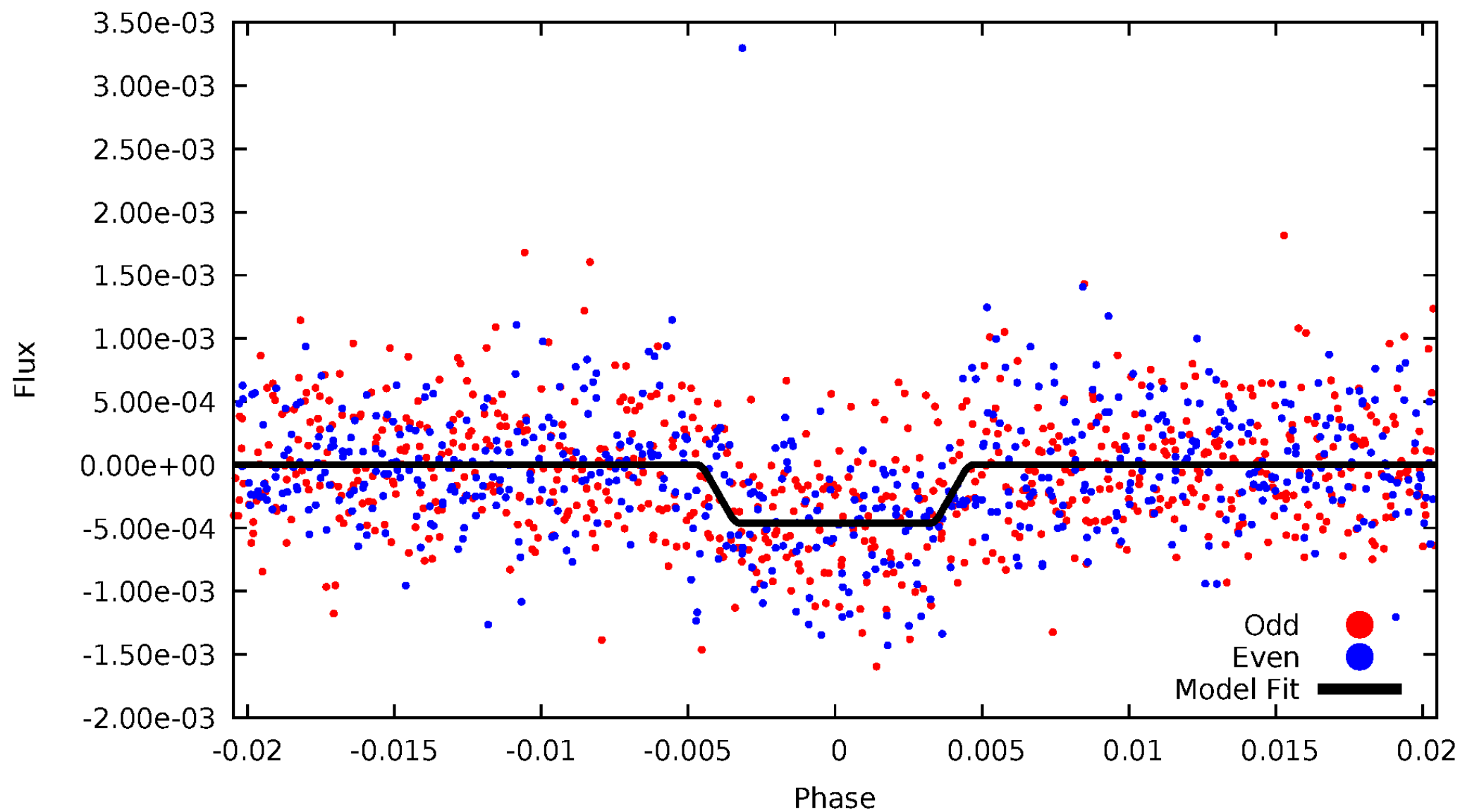
# DV Odd/Even

TCE 009893318-01



# ALT Odd/Even

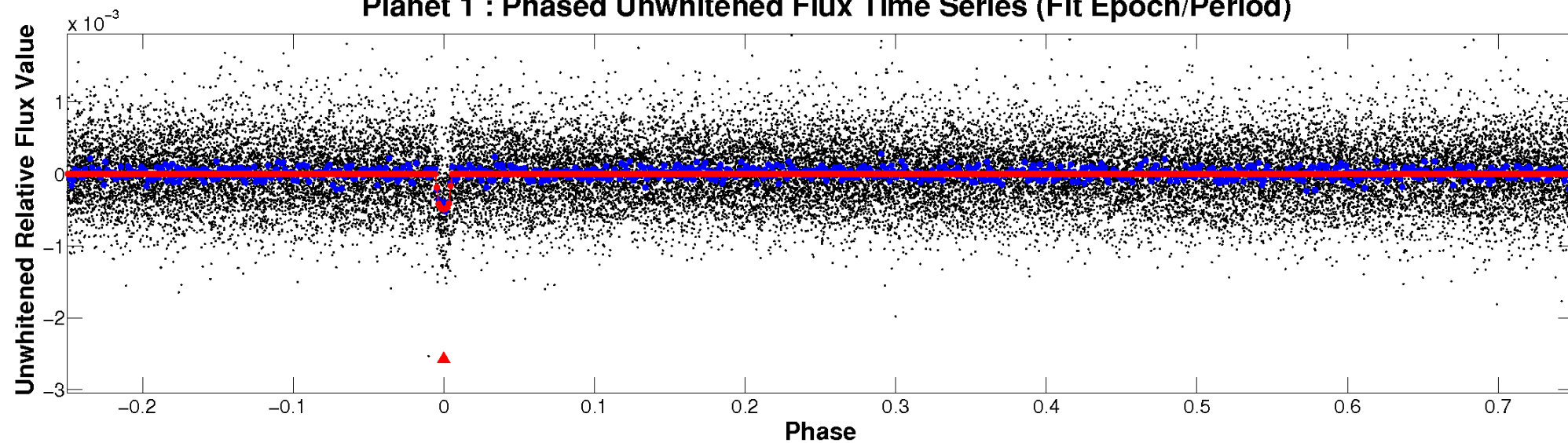
TCE 009893318-01



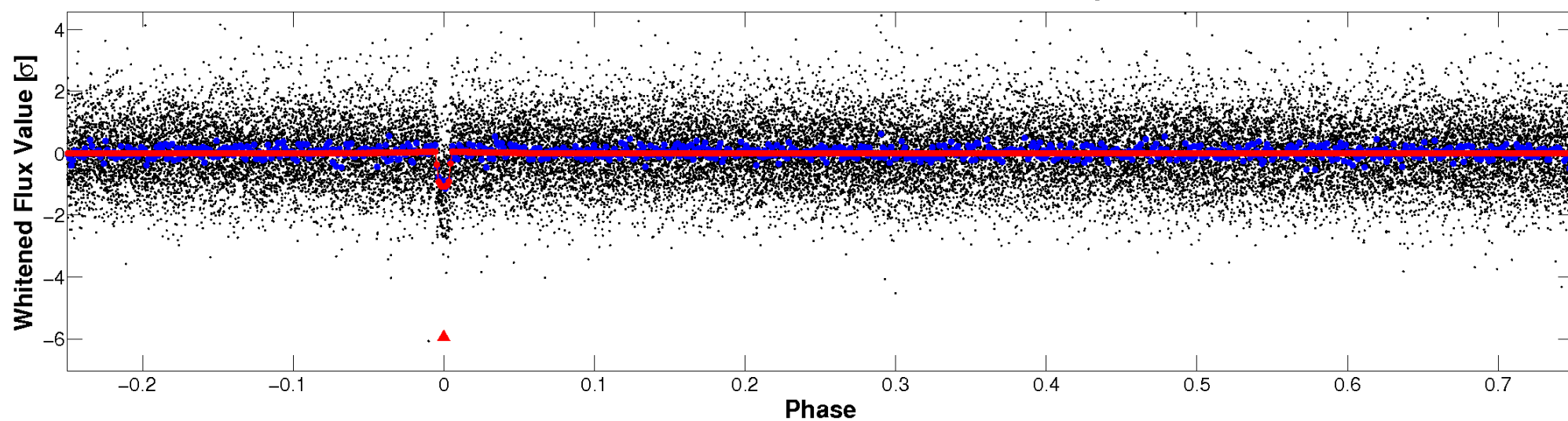


# Non-Whitened Vs. Whitened Light Curve

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

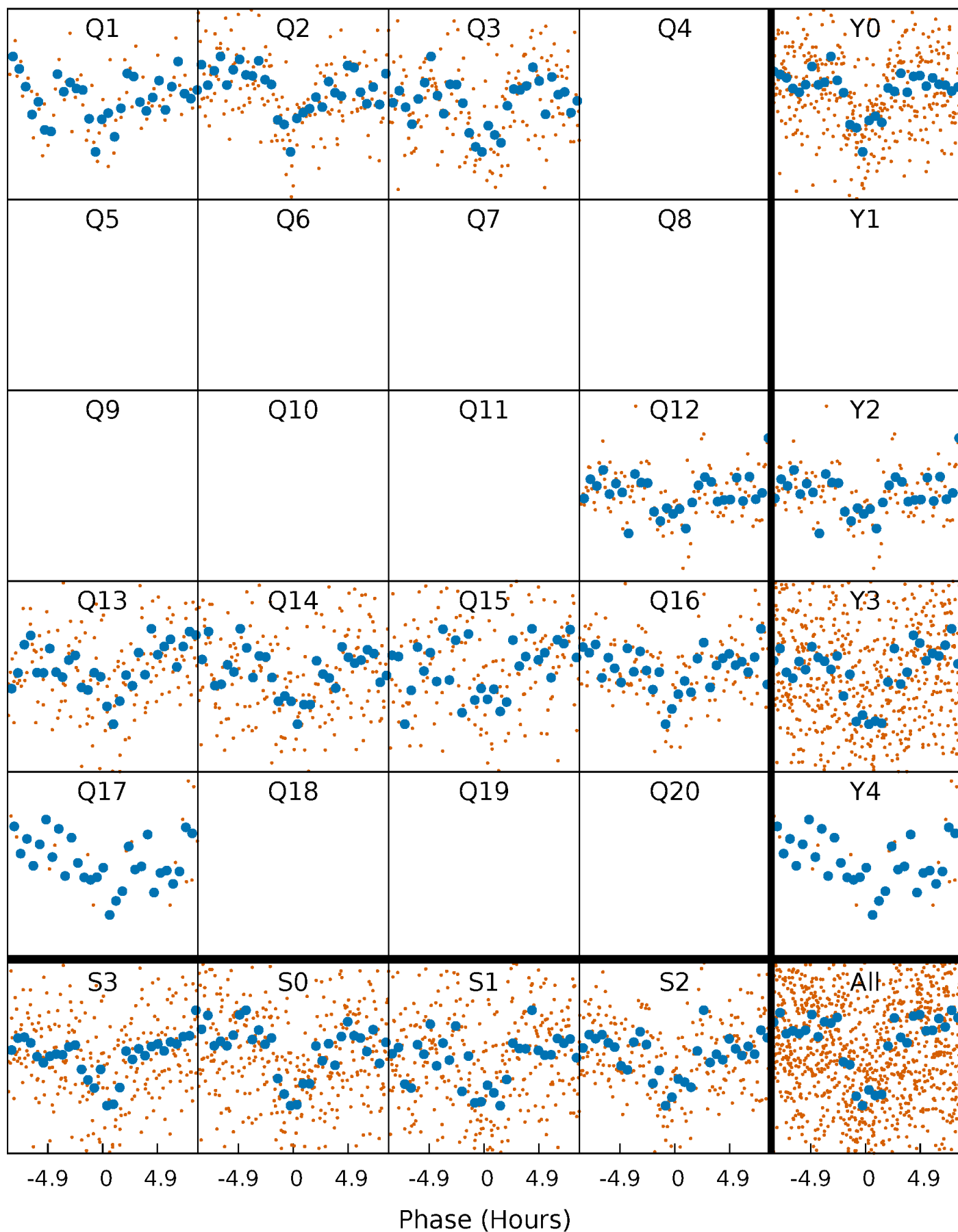


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

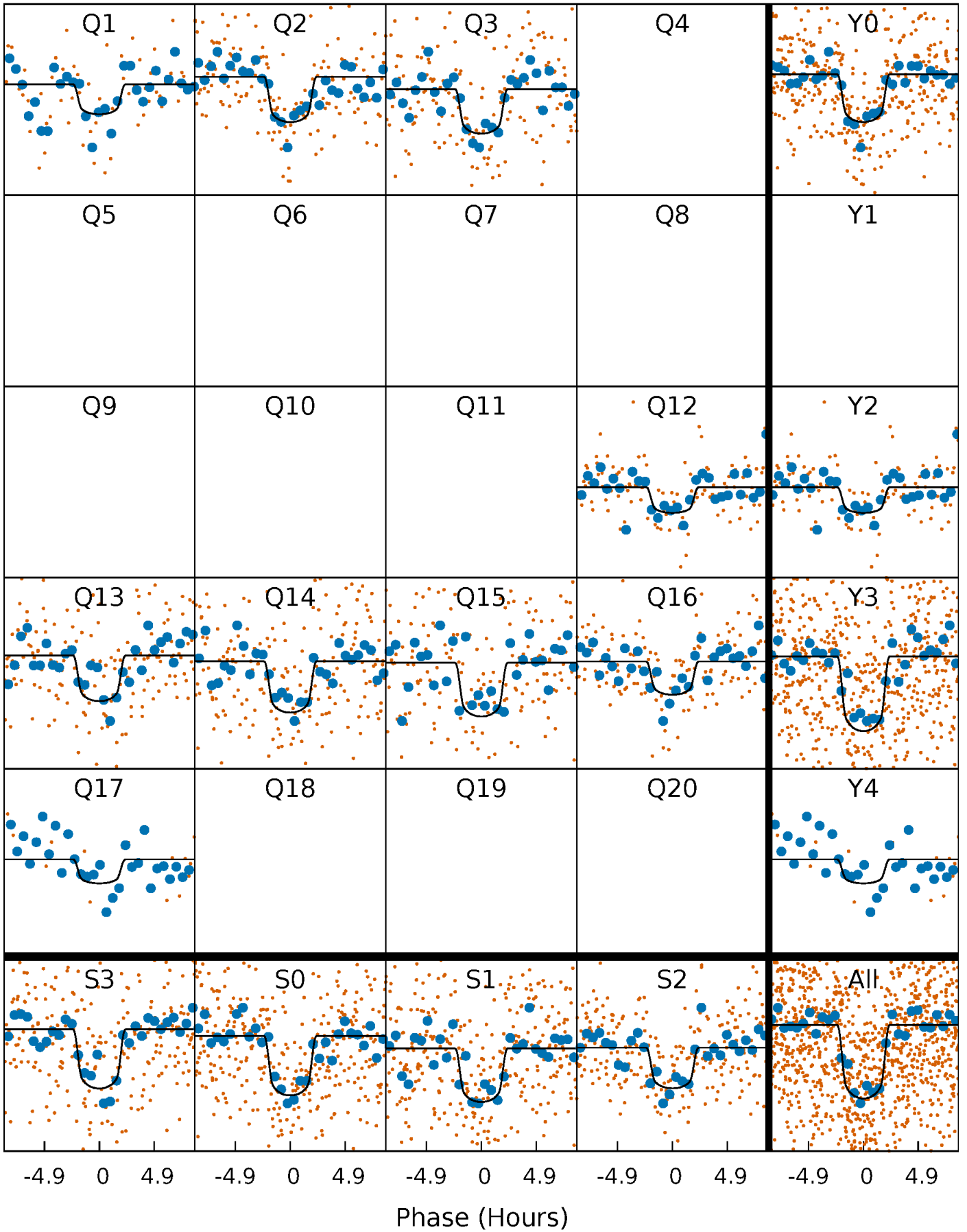
TCE 009893318-01   P= 18.016132 Days    $T_0=145.242751$  (BKJD)





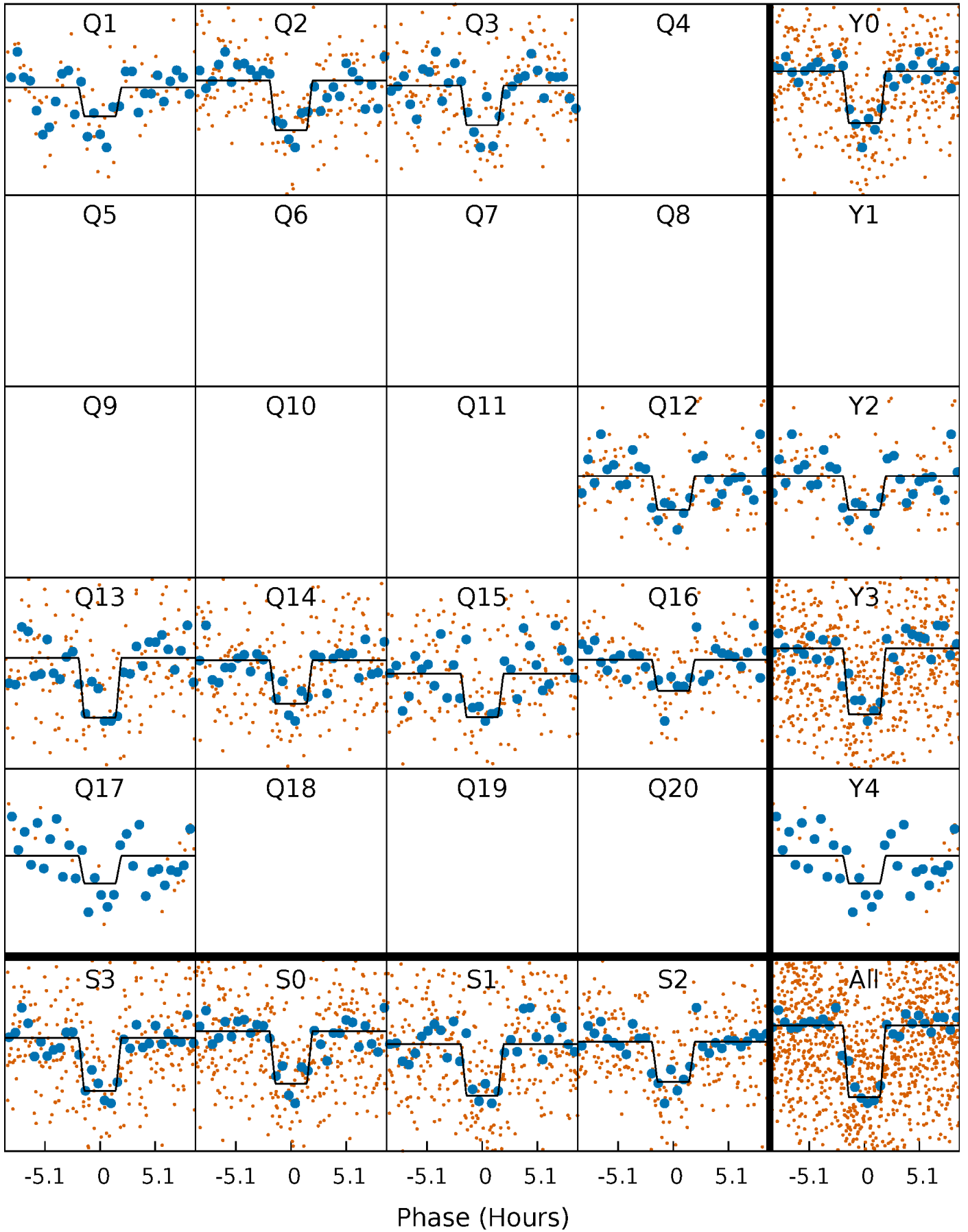
# DV Quarter-Phased Transit Curves

TCE 009893318-01 P= 18.016132 Days  $T_0=145.242751$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

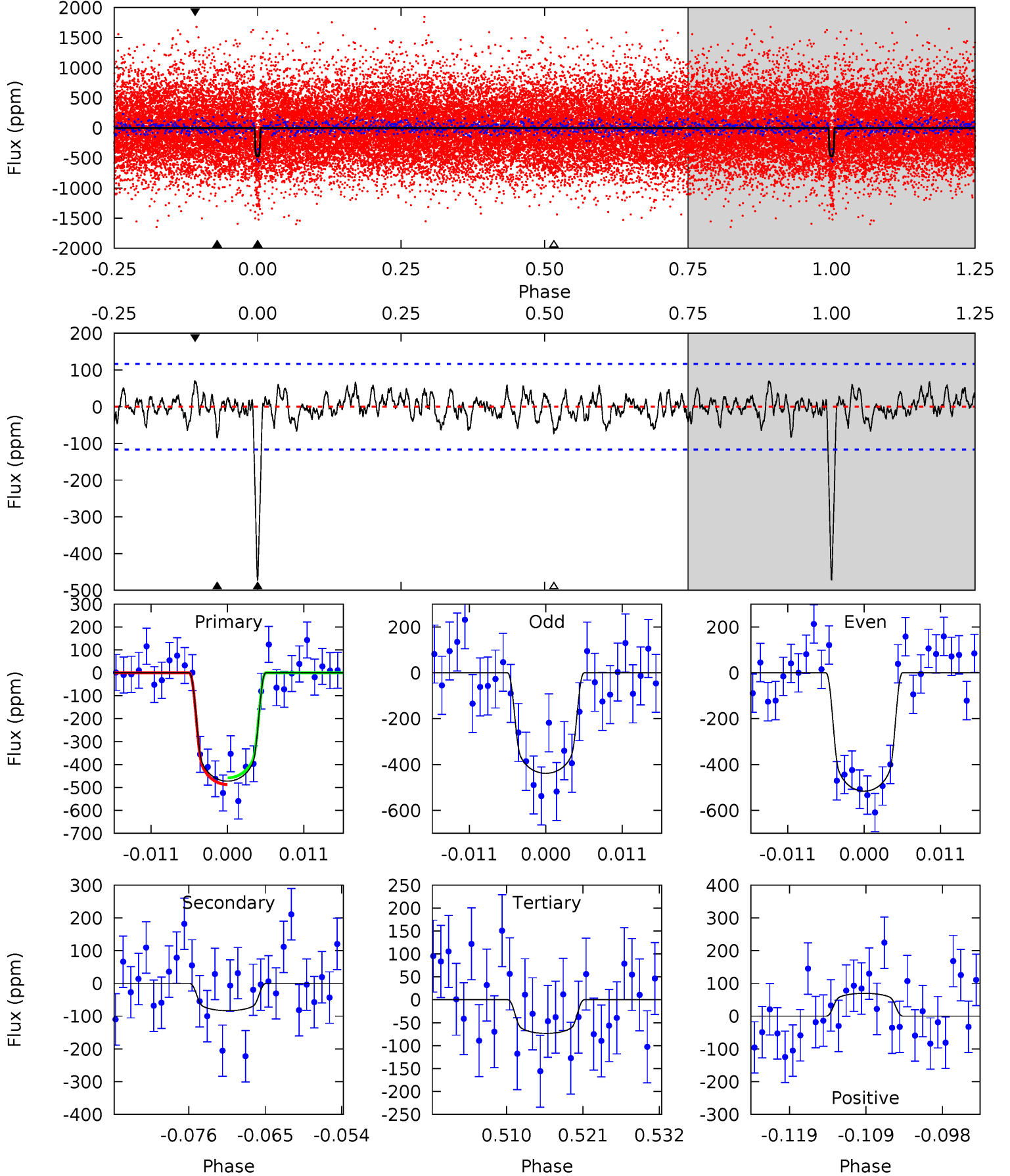
TCE 009893318-01 P= 18.016411 Days  $T_0=145.232011$  (BKJD)



# DV Model-Shift Uniqueness Test

009893318-01, P = 18.016132 Days, E = 127.226619 Days

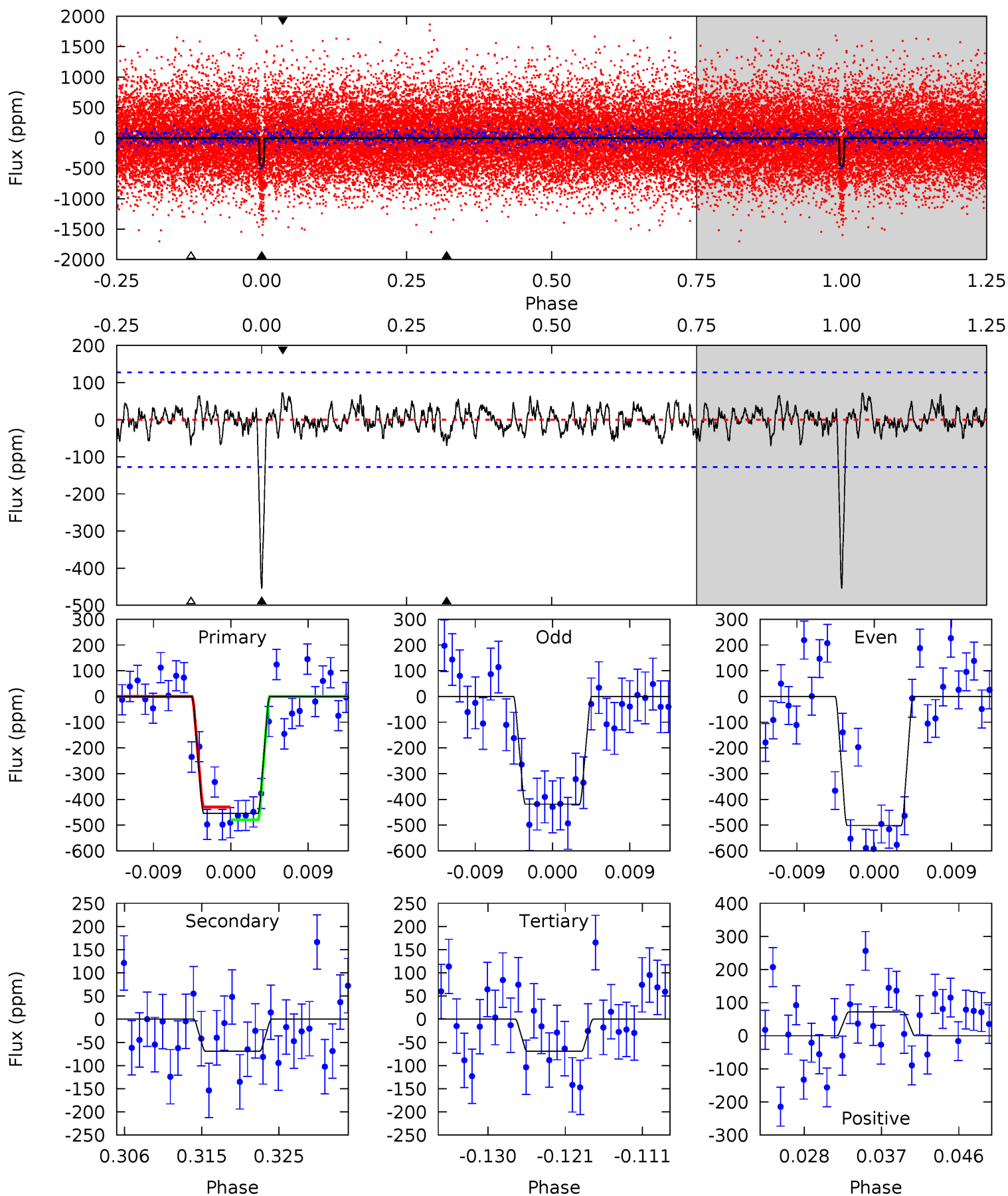
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	3.58	3.15	2.99	5.01	2.55	1.14	17.1	17.3	0.43	0.59	1.66	0.97	0.13	0.62



# Alt Model-Shift Uniqueness Test

009893318-01,  $P = 18.016411$  Days,  $E = 127.215600$  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
18.0	2.75	2.74	2.84	5.04	2.60	1.00	15.3	15.2	0.00	-0.10	1.63	0.99	0.14	0.99



### Stellar Parameters For KIC 009893318

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6245^{+175}_{-219}$	$4.406^{+0.072}_{-0.217}$	$-0.160^{+0.250}_{-0.300}$	$1.065^{+0.339}_{-0.145}$	$1.049^{+0.173}_{-0.129}$	$1.223^{+0.481}_{-0.666}$
	+3%/-4%	+2%/-5%	+156%/-188%	+32%/-14%	+16%/-12%	+39%/-54%
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 009893318-01 / KOI 2660.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-83 \pm 23$	$2.82^{+0.79}_{-0.69}$	$1090^{+86}_{-59}$	$4157^{+480}_{-356}$	$105^{+88}_{-46}$
Alt.	$-69 \pm 25$	$2.67^{+0.77}_{-0.67}$	$1095^{+85}_{-59}$	$4109^{+521}_{-410}$	$98^{+93}_{-47}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

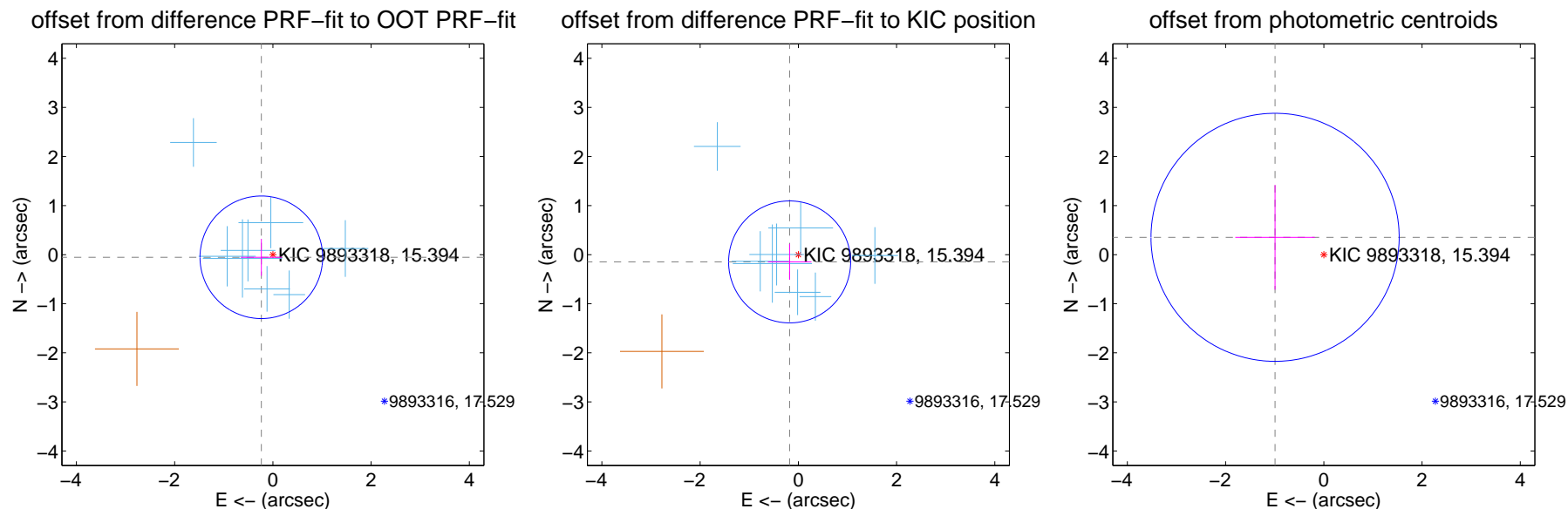
## DV Centroid Data

Supplemental centroid analysis for 009893318-01. Kepler magnitude: 15.39. Transit SNR 16.15

There are 8 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

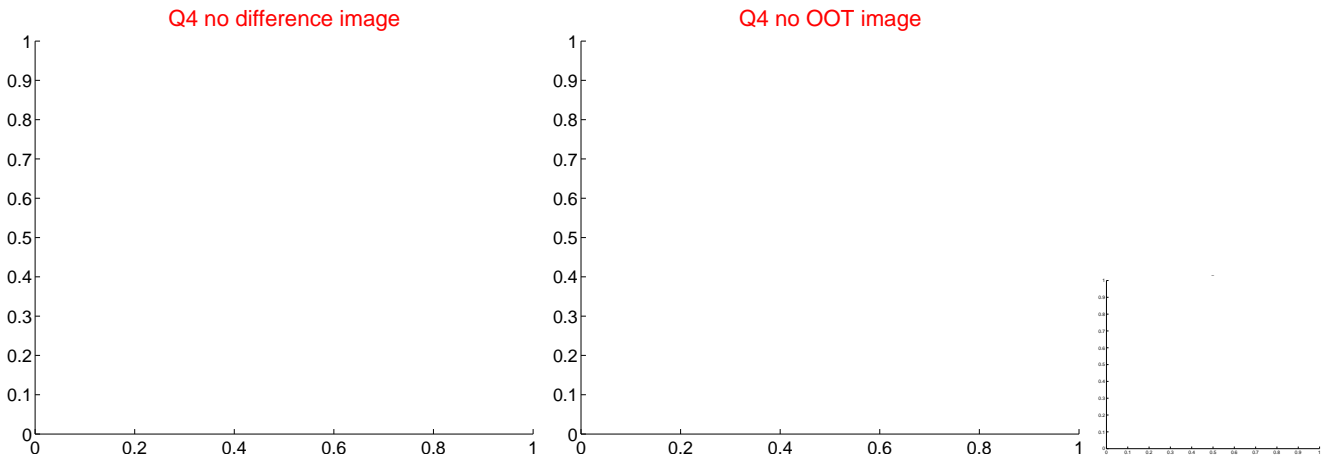
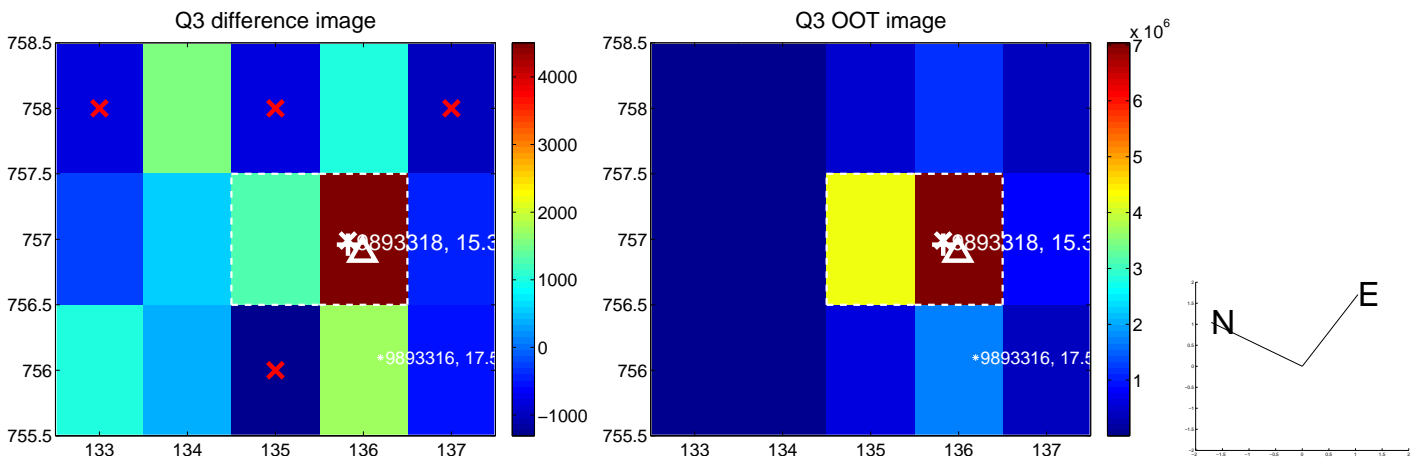
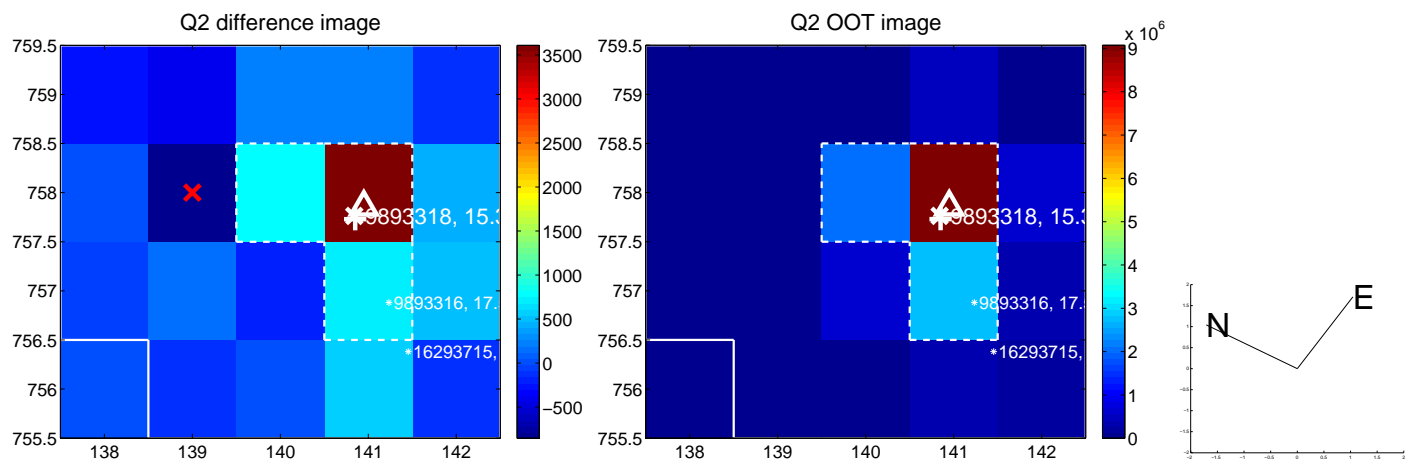
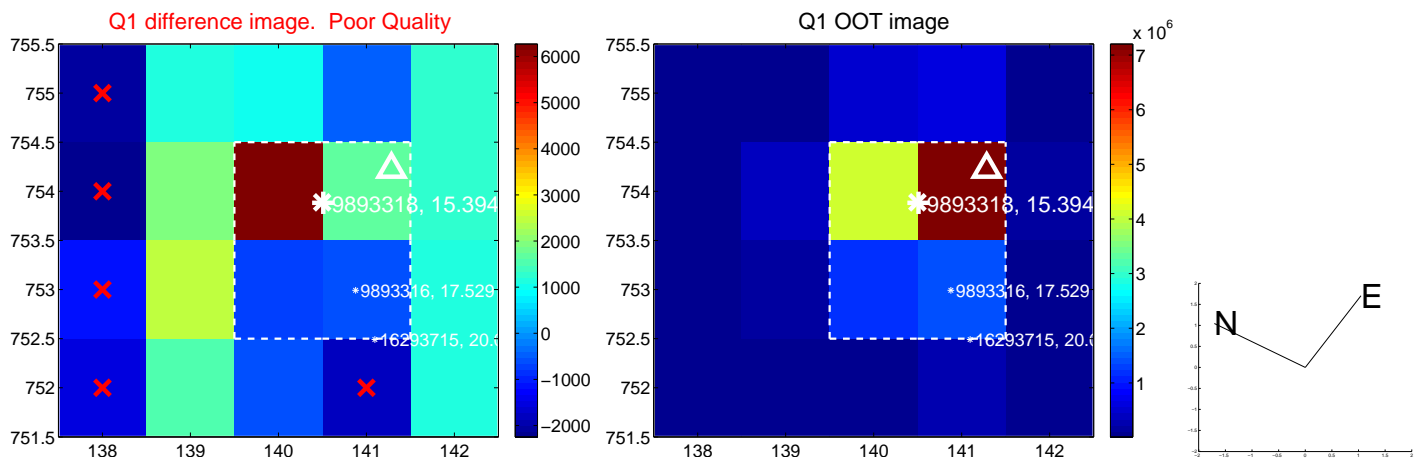
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.241 \pm 0.416$	0.58	$0.235 \pm 0.418$	$-0.054 \pm 0.376$
PRF-fit source offset from KIC position	$0.231 \pm 0.414$	0.56	$0.177 \pm 0.444$	$-0.148 \pm 0.366$
photometric centroid source offset	$1.05 \pm 0.84$	1.25	$0.99 \pm 0.81$	$0.35 \pm 1.07$



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.



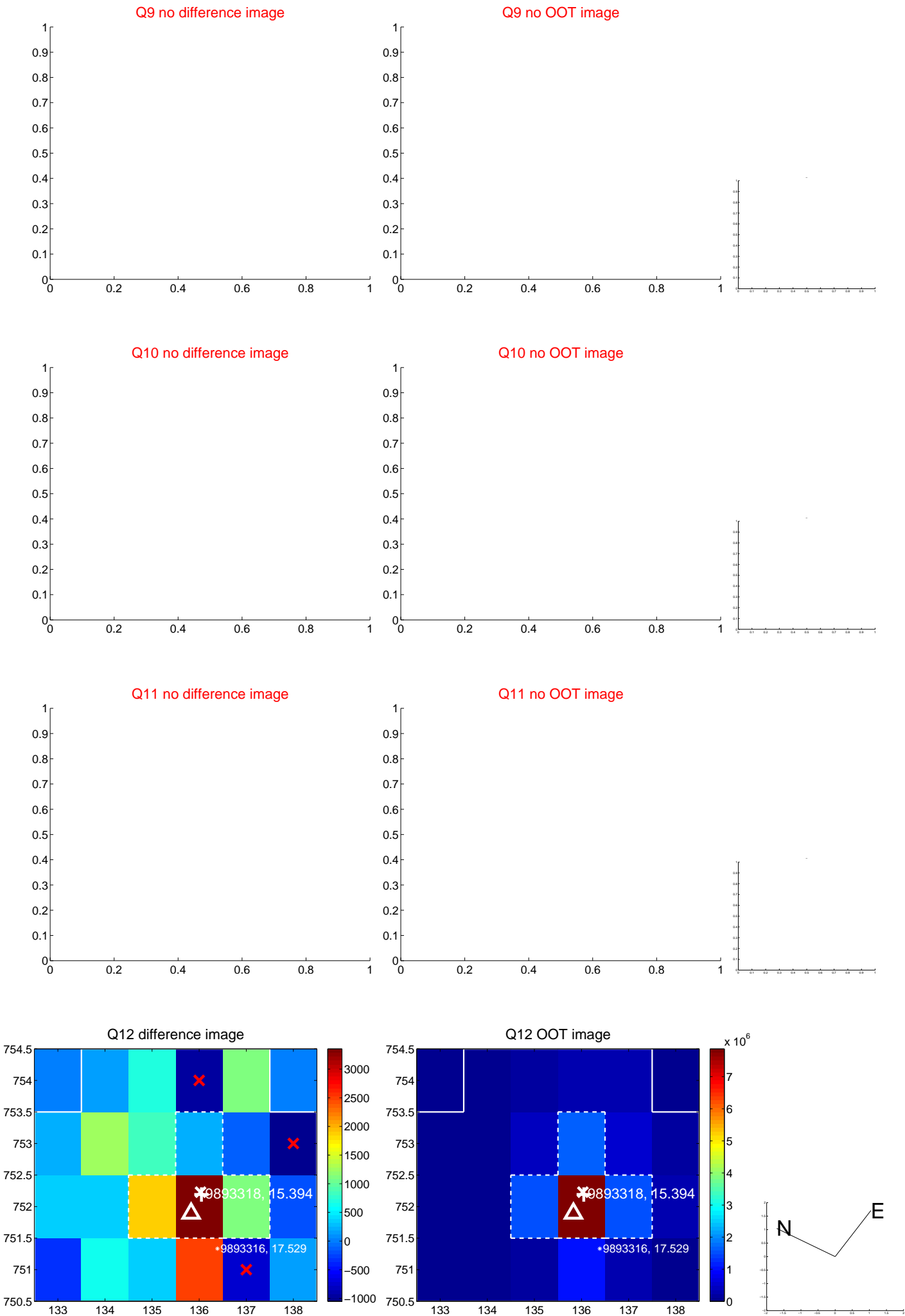
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



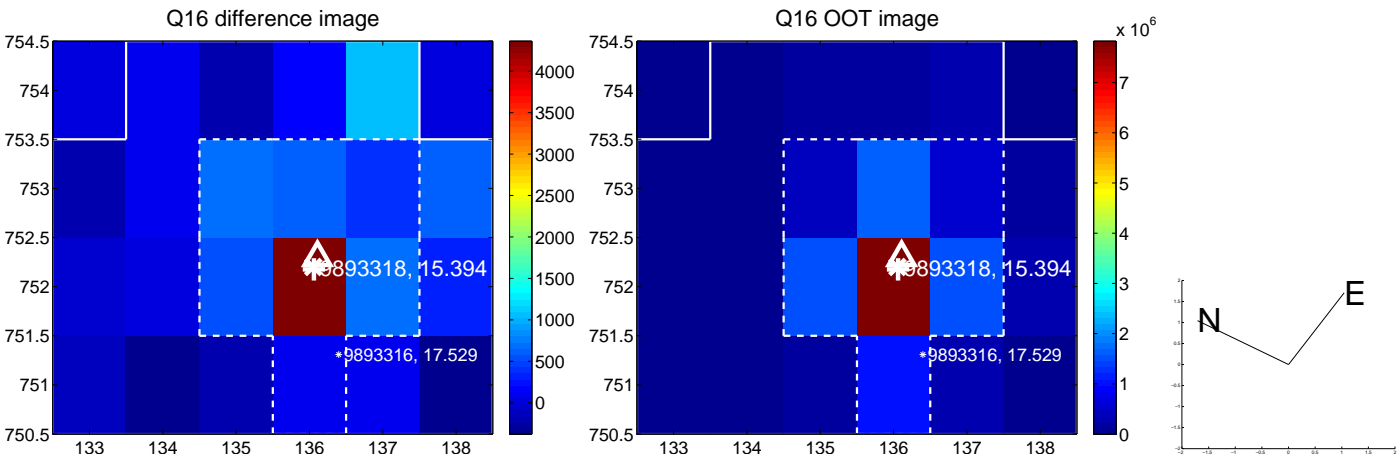
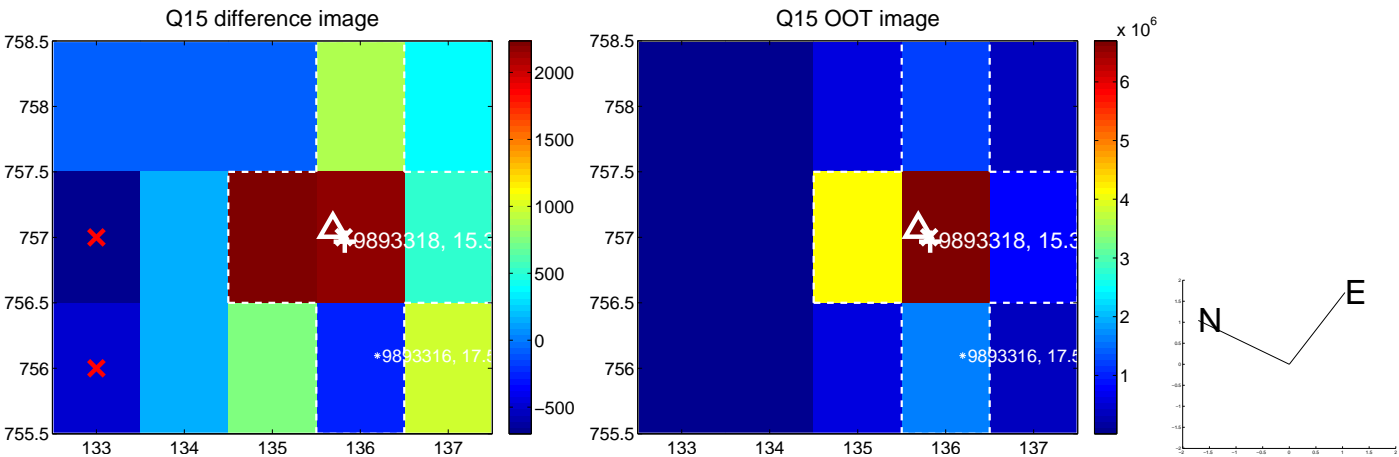
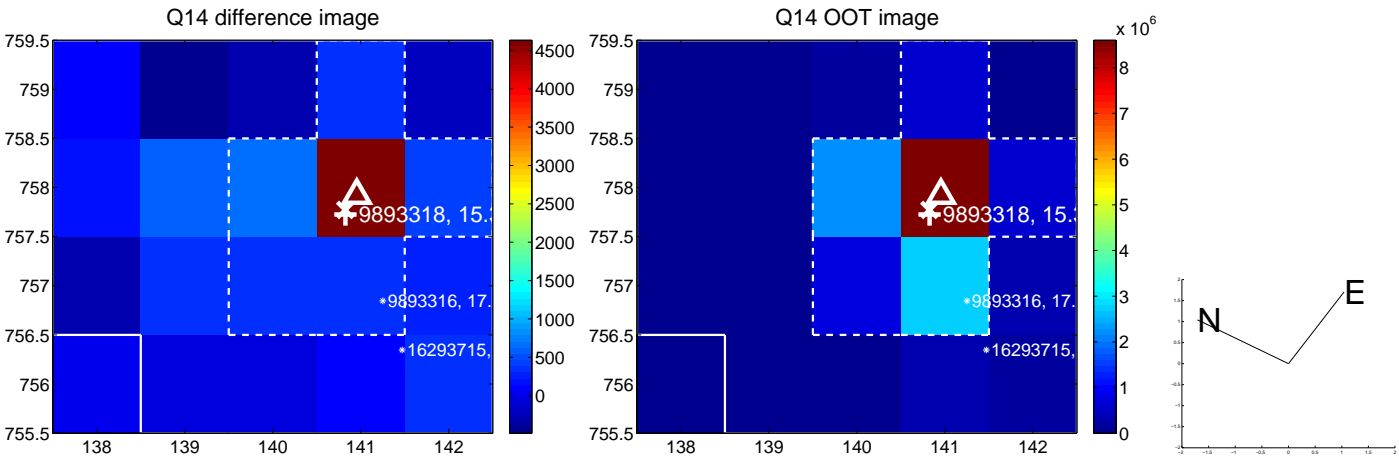
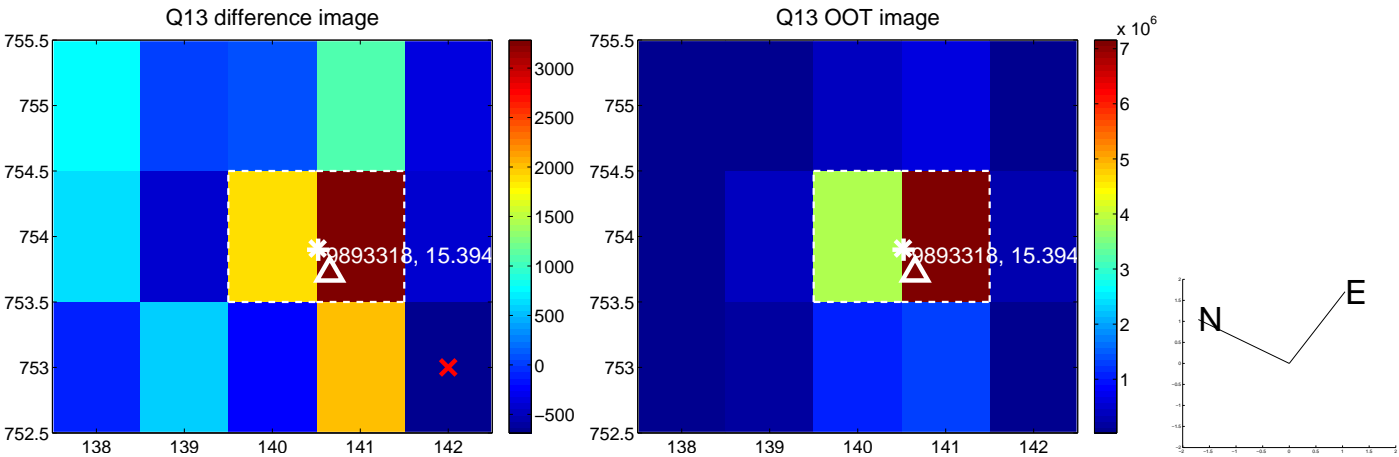
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



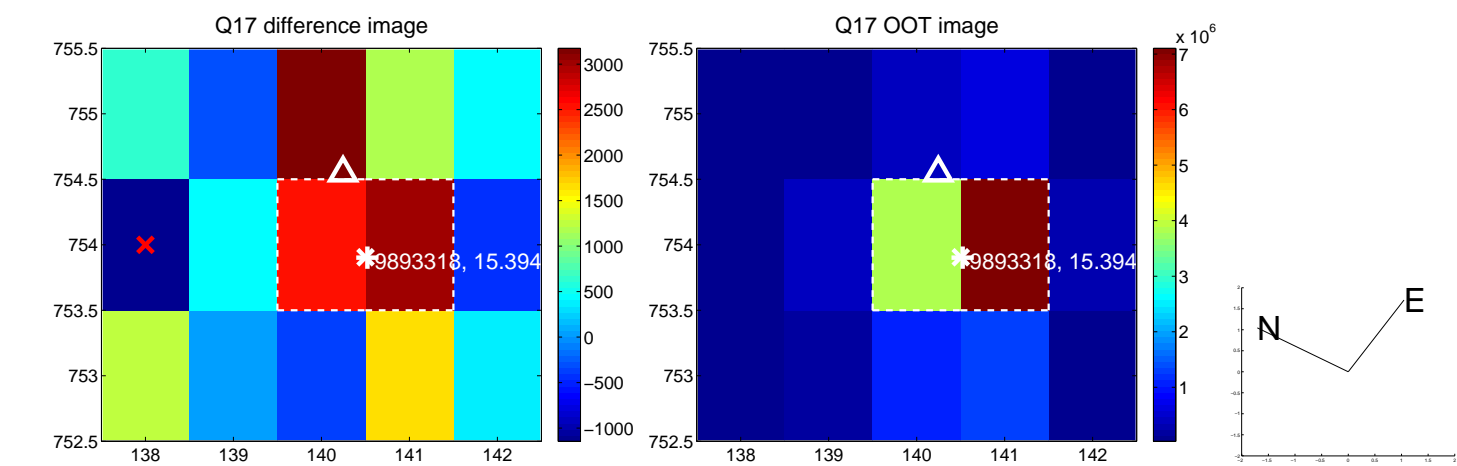
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



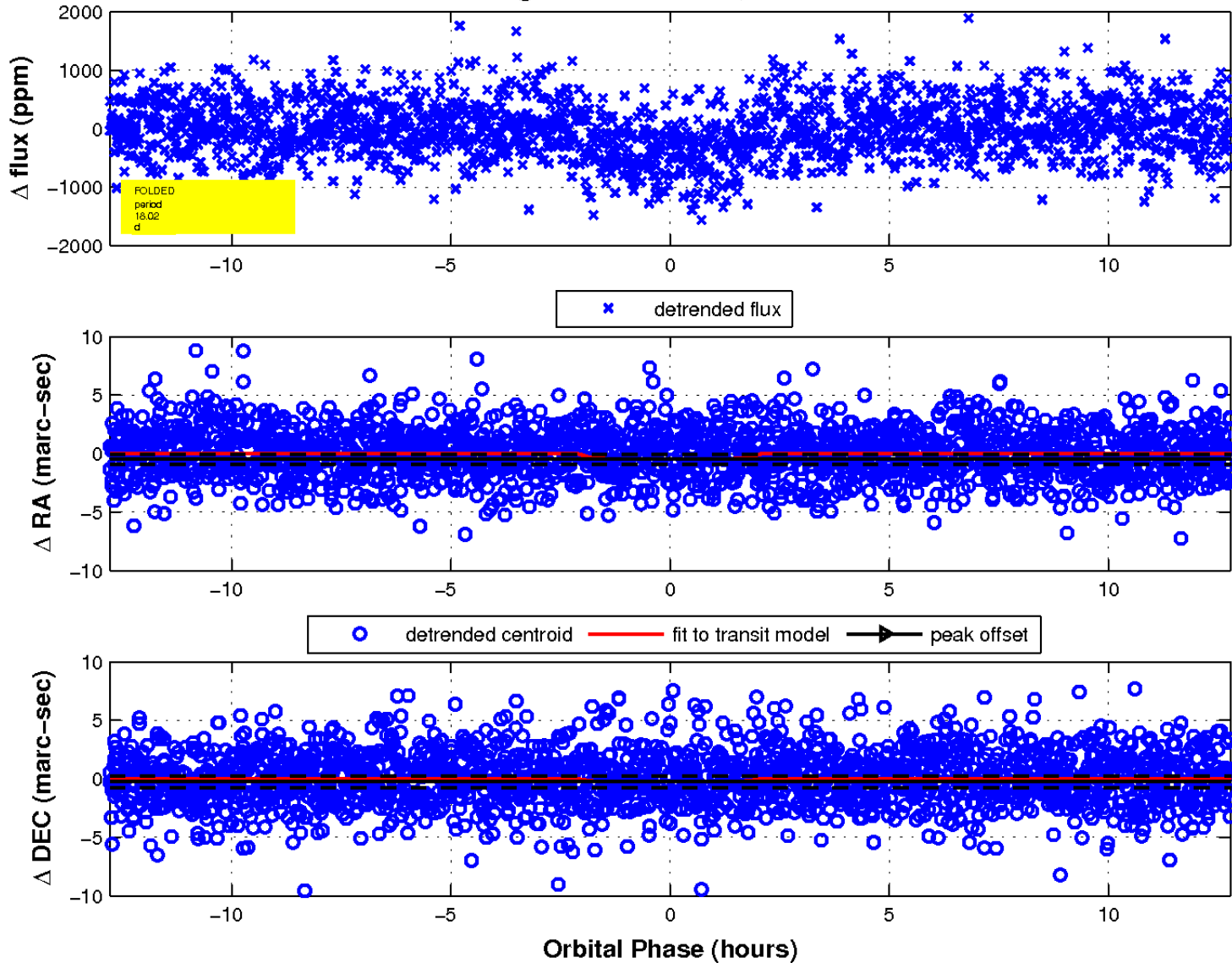
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

