

# KIC 008951205

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008951205-01	OBS	4099.01	4.950614	132.805878	278.2	1.885	14.2	16.7	0.72	5431	1.42	145.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008951205-01	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.

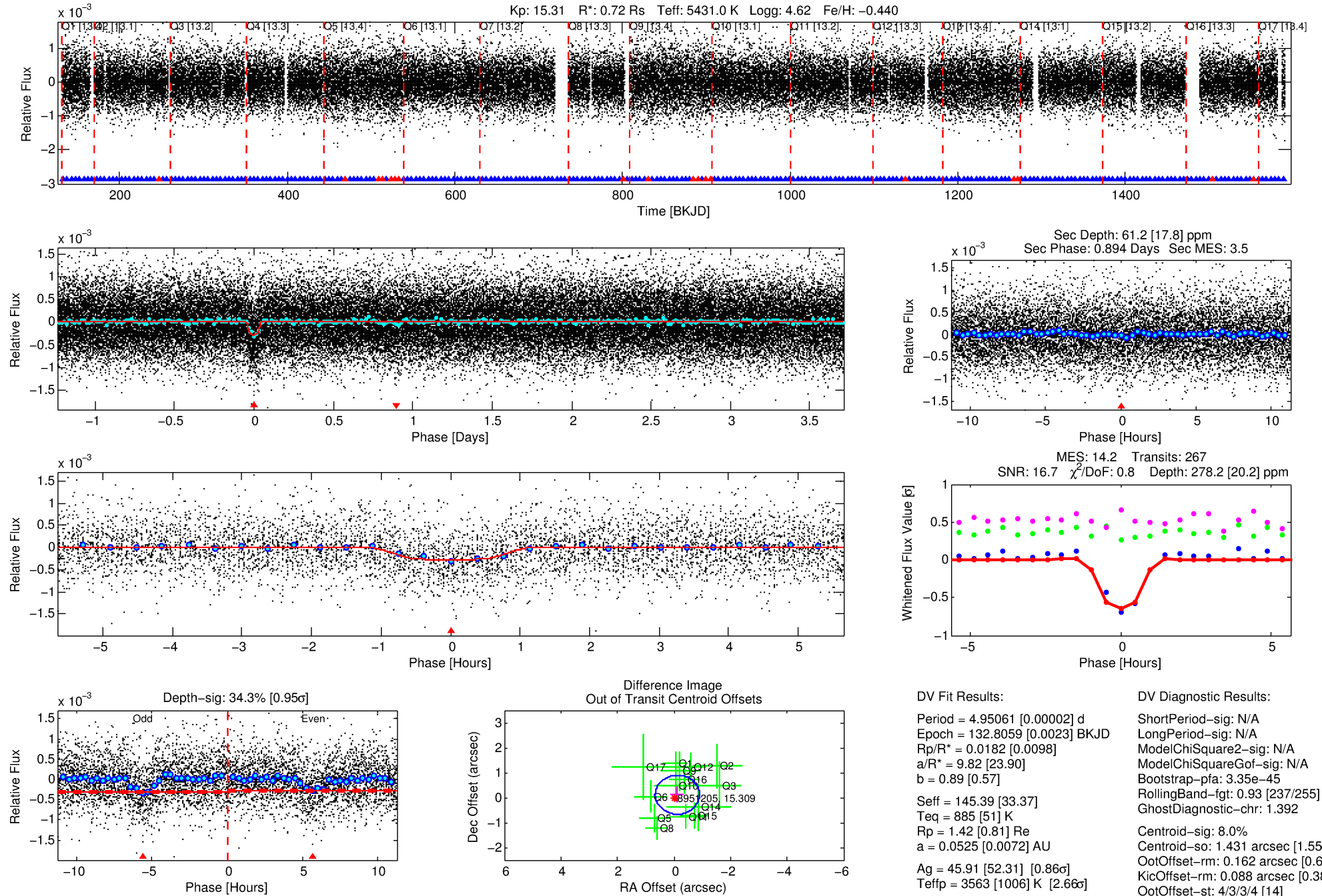
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008951205-01

No Significant Match Found

# DV One-Page Summary

KIC: 8951205 Candidate: 1 of 1 Period: 4.951 d  
KOI: K04099.01 Corr: 0.979



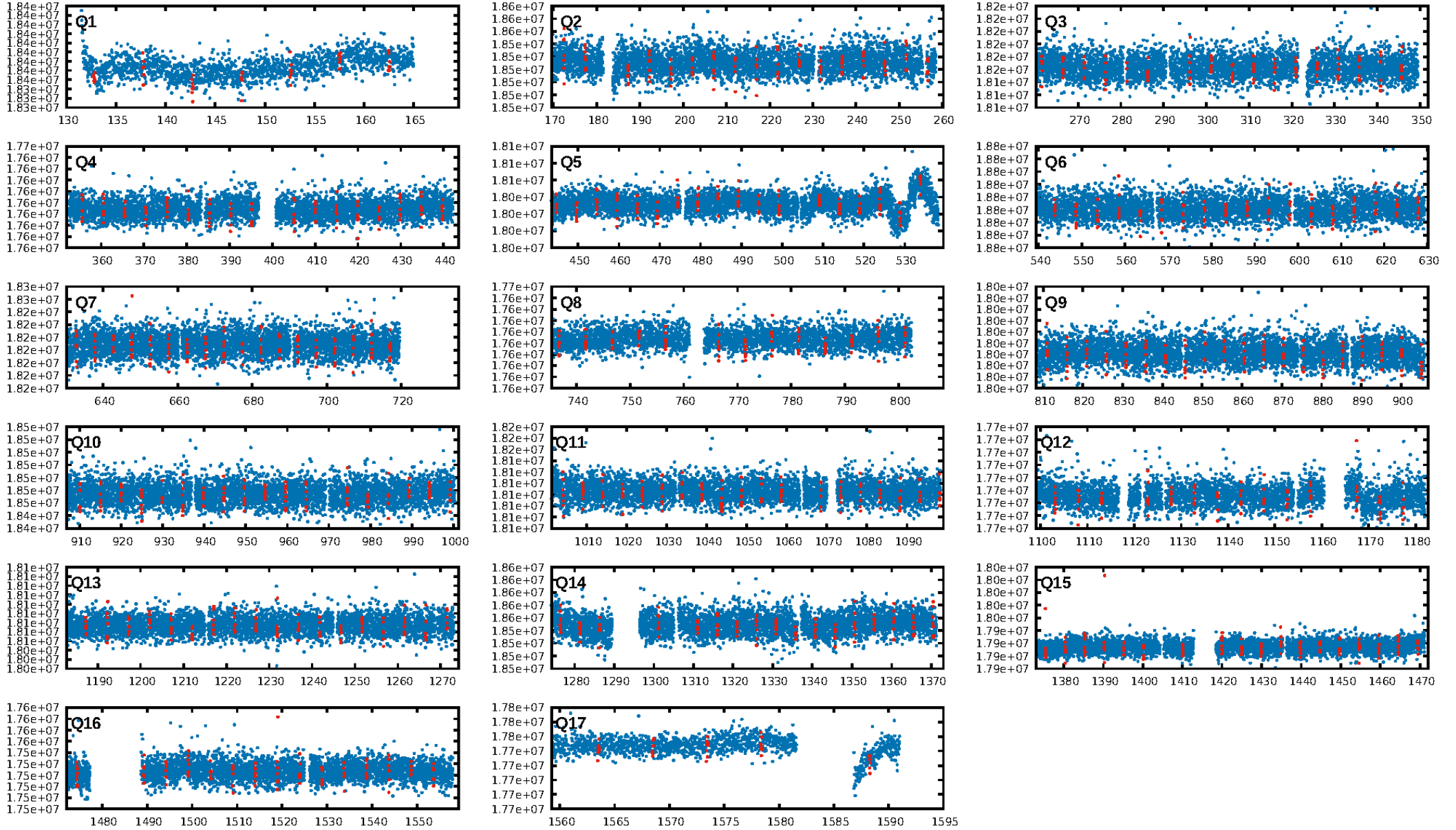
## DV Fit Results:

Period = 4.95061 [0.00002] d  
Epoch = 132.8059 [0.0023] BKJD  
Rp/R\* = 0.0182 [0.0098]  
a/R\* = 9.82 [23.90]  
b = 0.89 [0.57]  
Seff = 145.39 [33.37]  
Teff = 885 [51] K  
Rp = 1.42 [0.81] Re  
a = 0.0525 [0.0072] AU  
Ag = 45.91 [52.31] [0.86 $\sigma$ ]  
Teffp = 3563 [1006] K [2.66 $\sigma$ ]

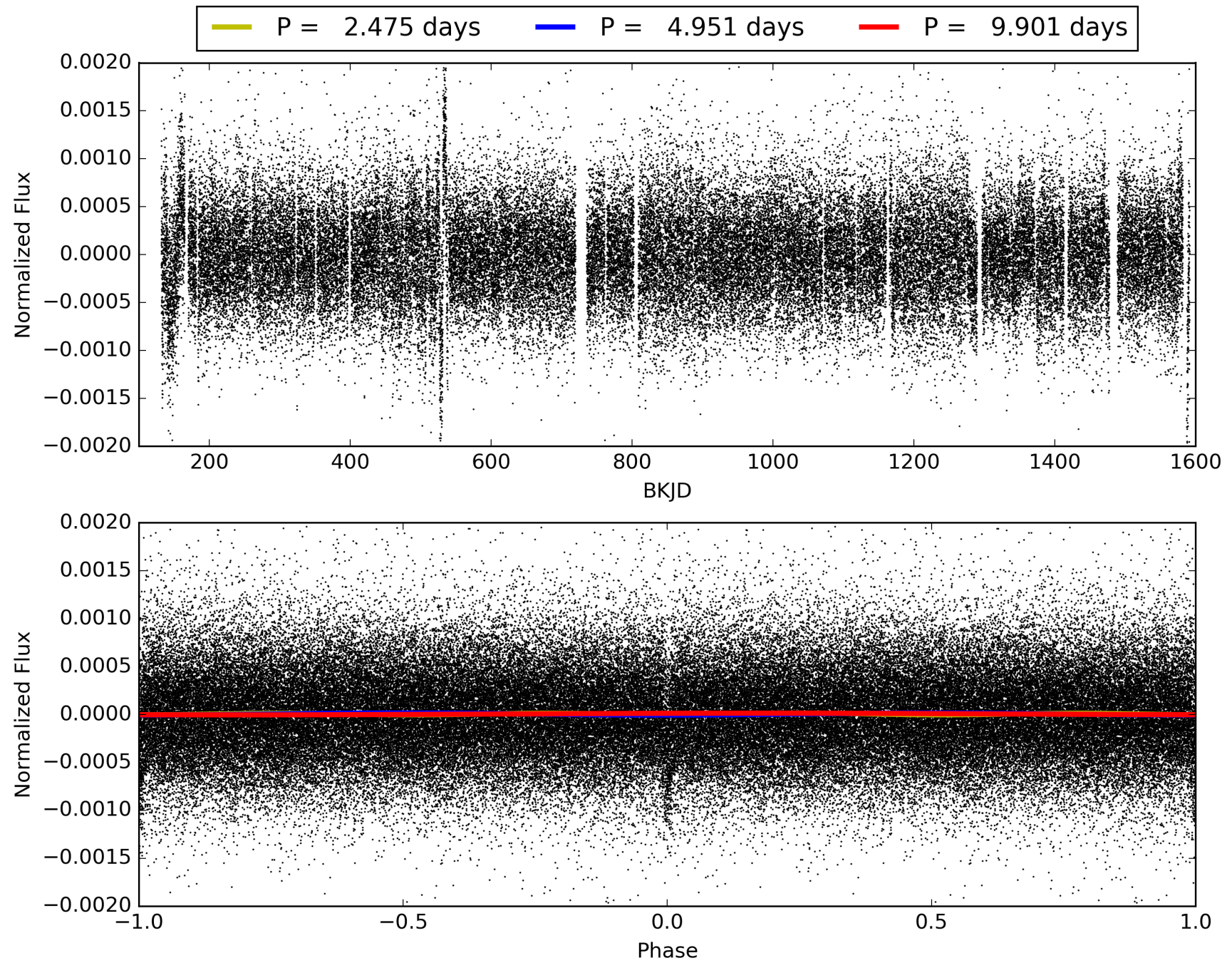
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.35e-45  
RollingBand-fgt: 0.93 [237/255]  
GhostDiagnostic-chr: 1.392  
Centroid-sig: 8.0%  
Centroid-so: 1.431 arcsec [1.55 $\sigma$ ]  
OotOffset-rm: 0.162 arcsec [0.62 $\sigma$ ]  
KicOffset-rm: 0.088 arcsec [0.38 $\sigma$ ]  
OotOffset-st: 4/3/3/4 [14]  
KicOffset-st: 4/3/3/4 [14]  
DiffImageQuality-fgm: 0.71 [10/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008951205-01, PDC Light Curves

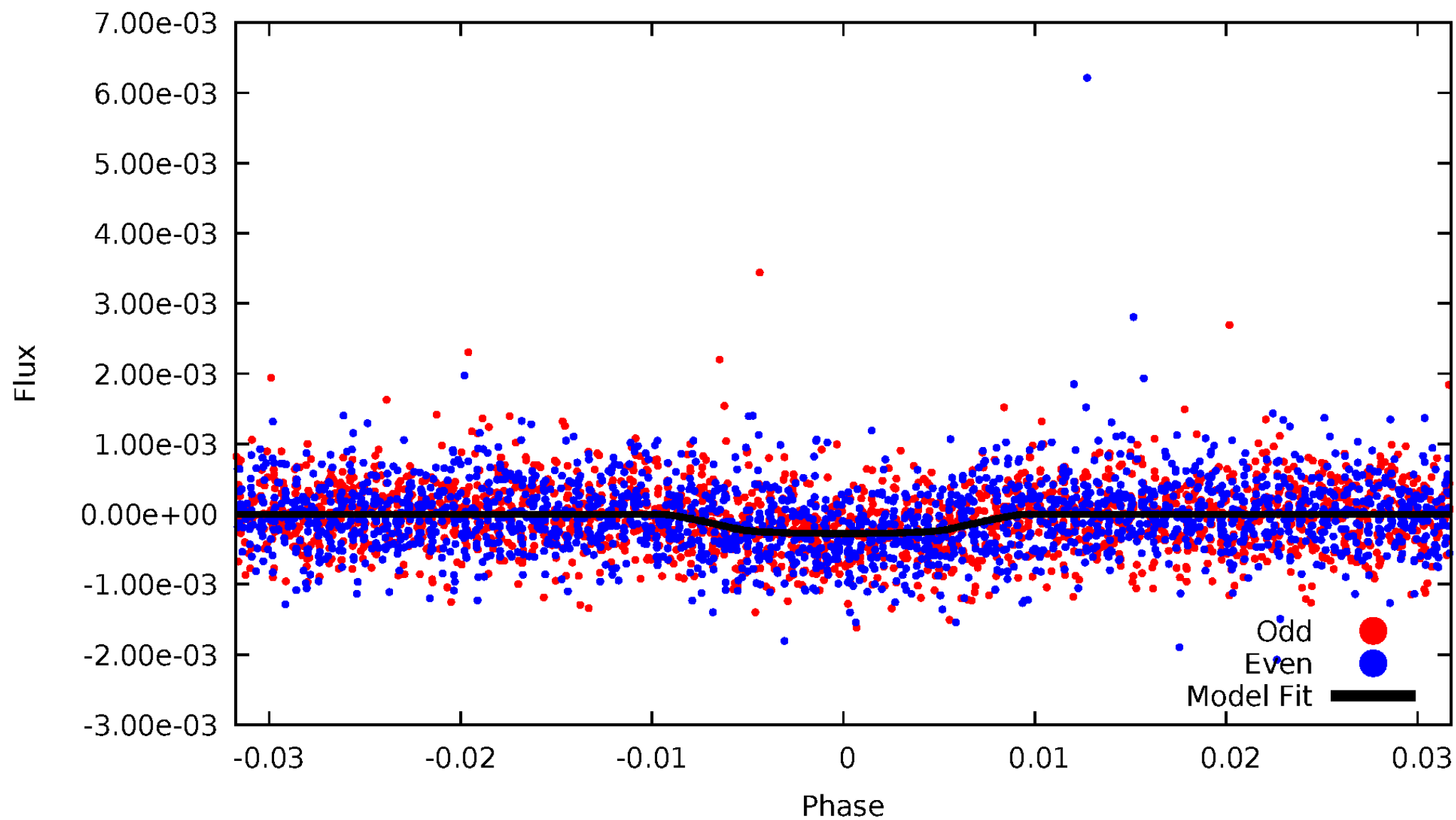


TCE 008951205-01



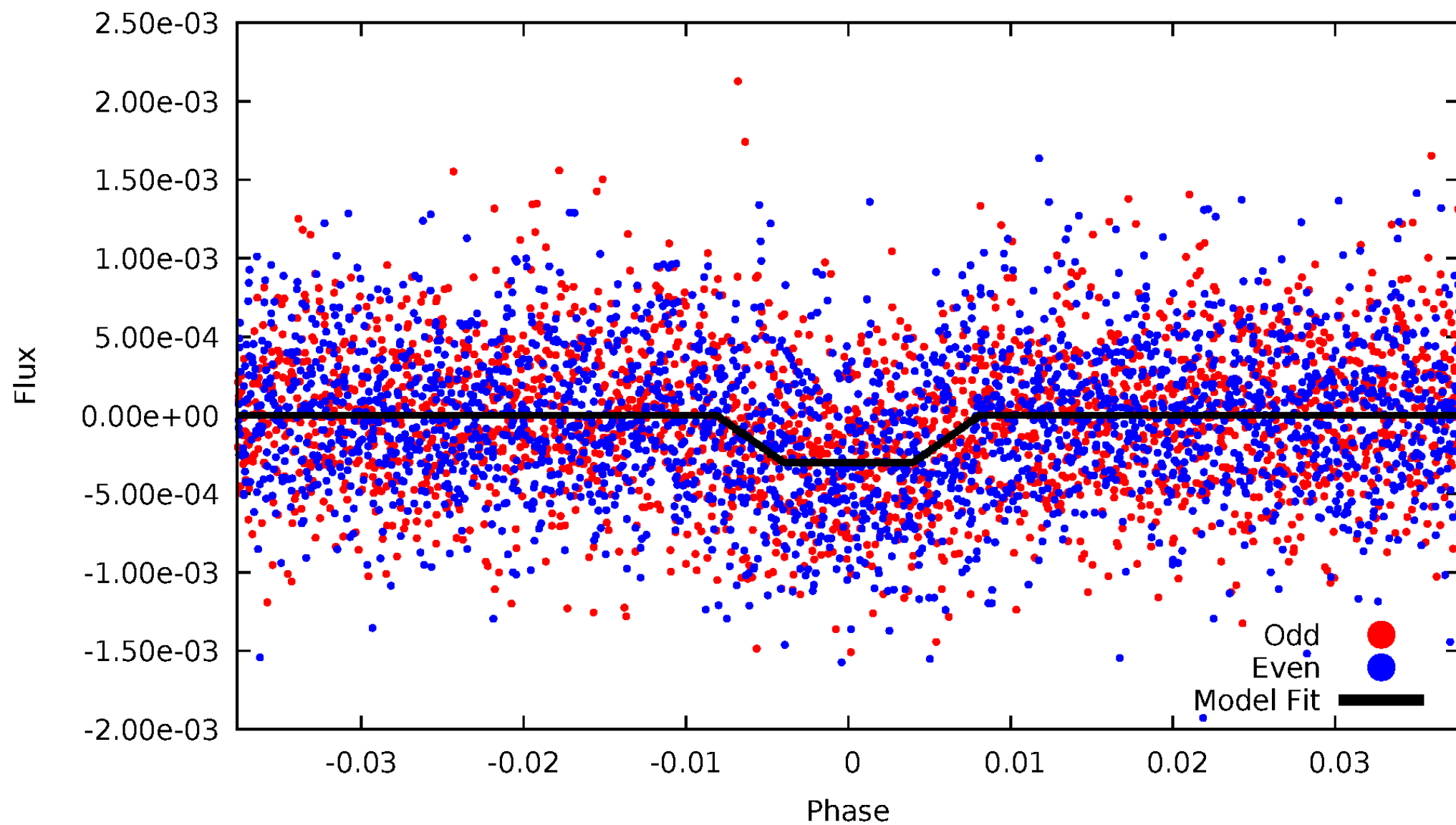
# DV Odd/Even

TCE 008951205-01



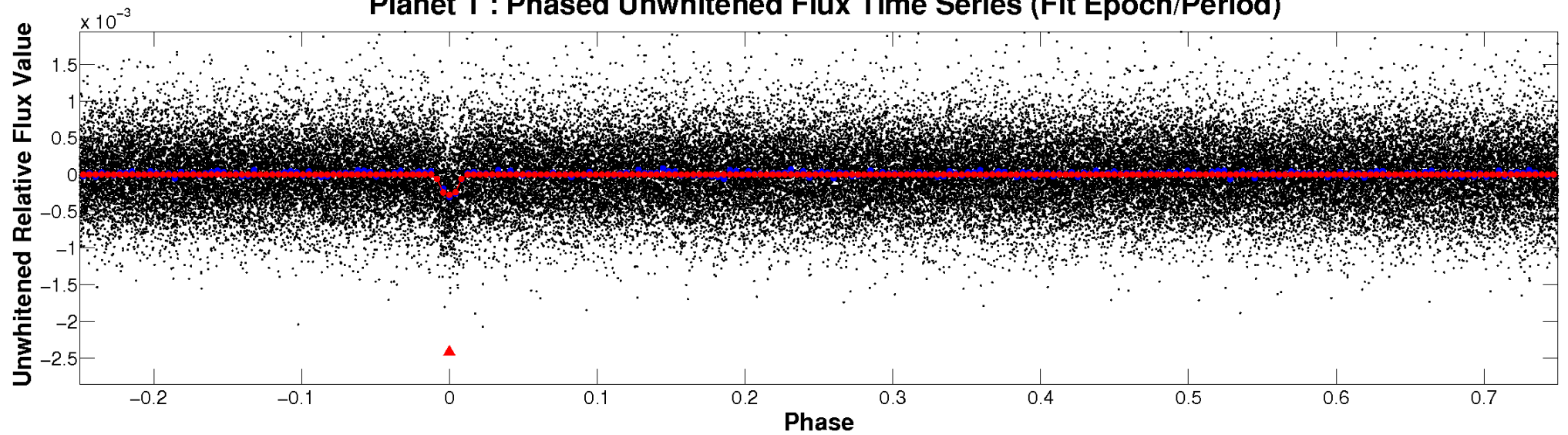
# ALT Odd/Even

TCE 008951205-01

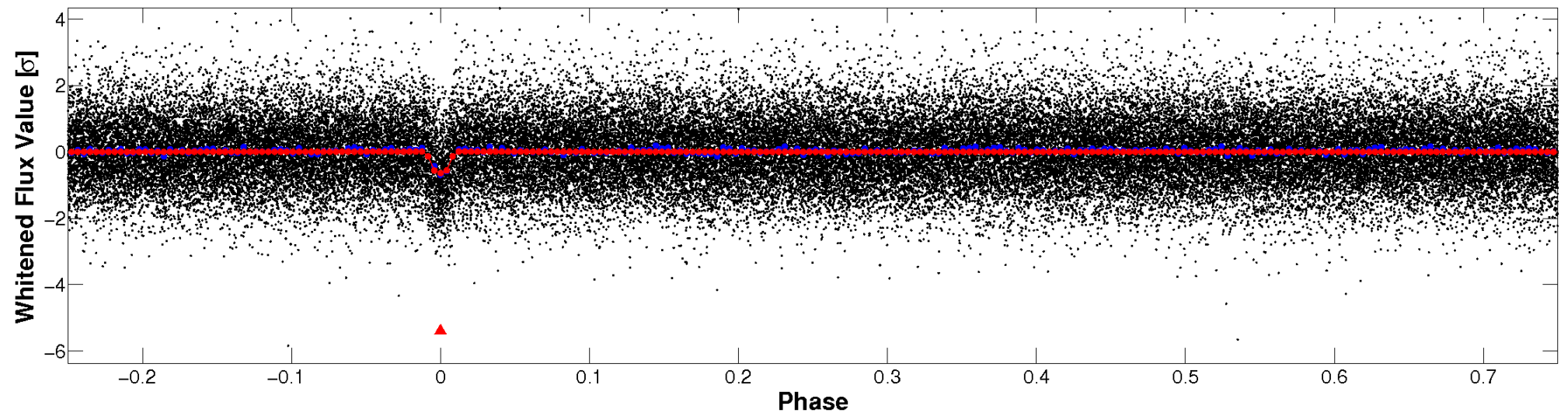


# Non-Whitened Vs. Whitened Light Curve

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

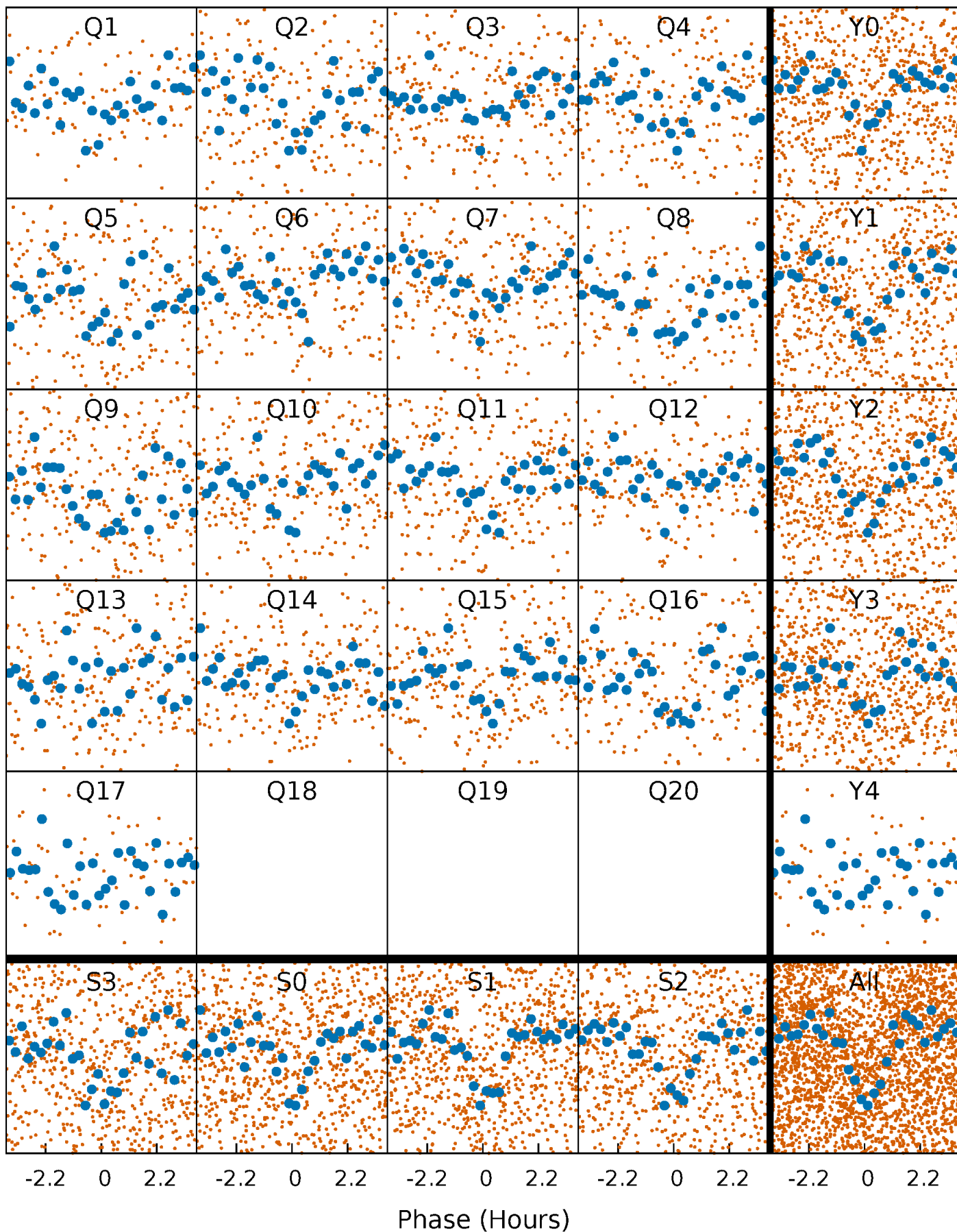


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



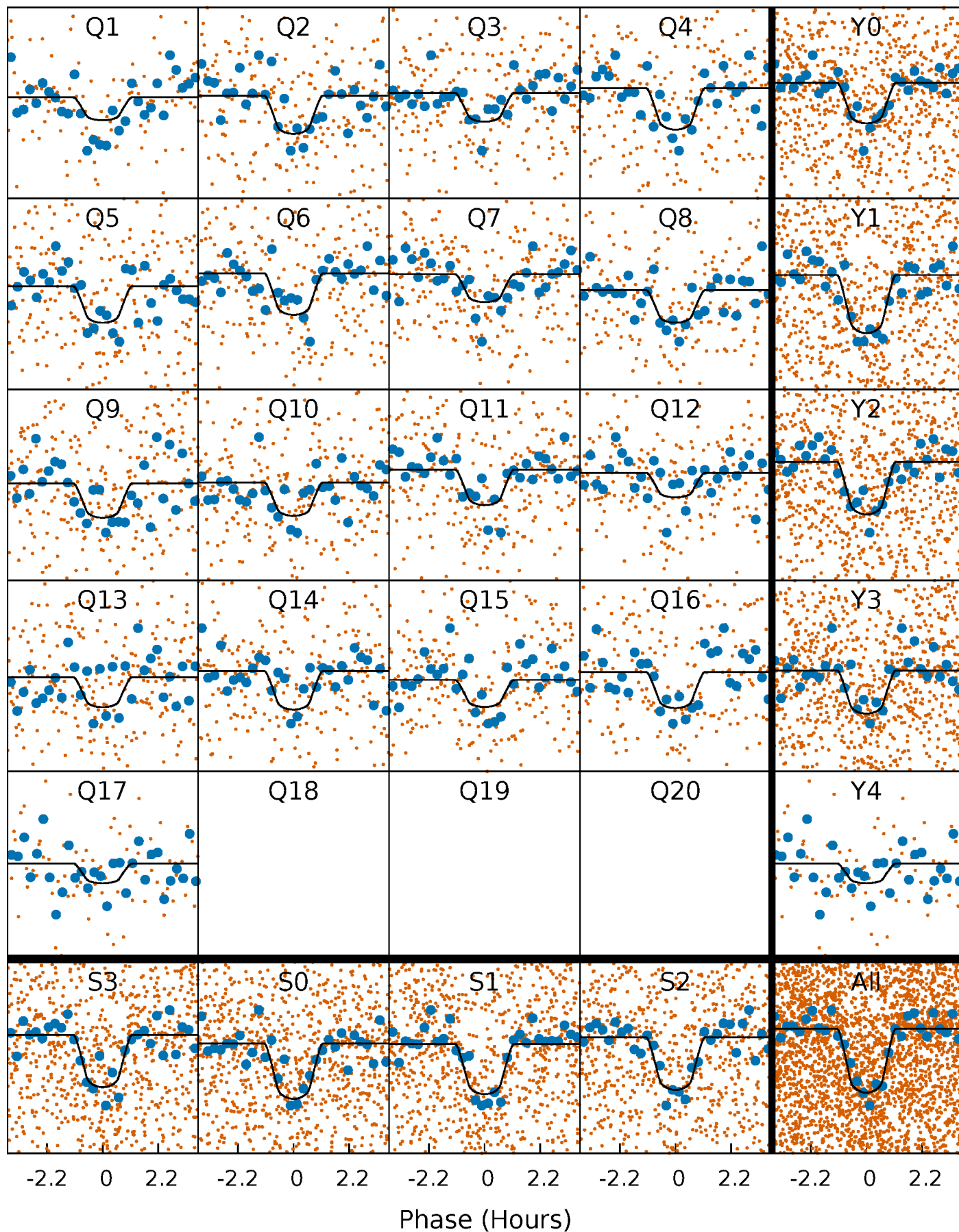
# PDC Quarter-Phased Transit Curves

TCE 008951205-01 P= 4.950614 Days  $T_0=132.805878$  (BKJD)



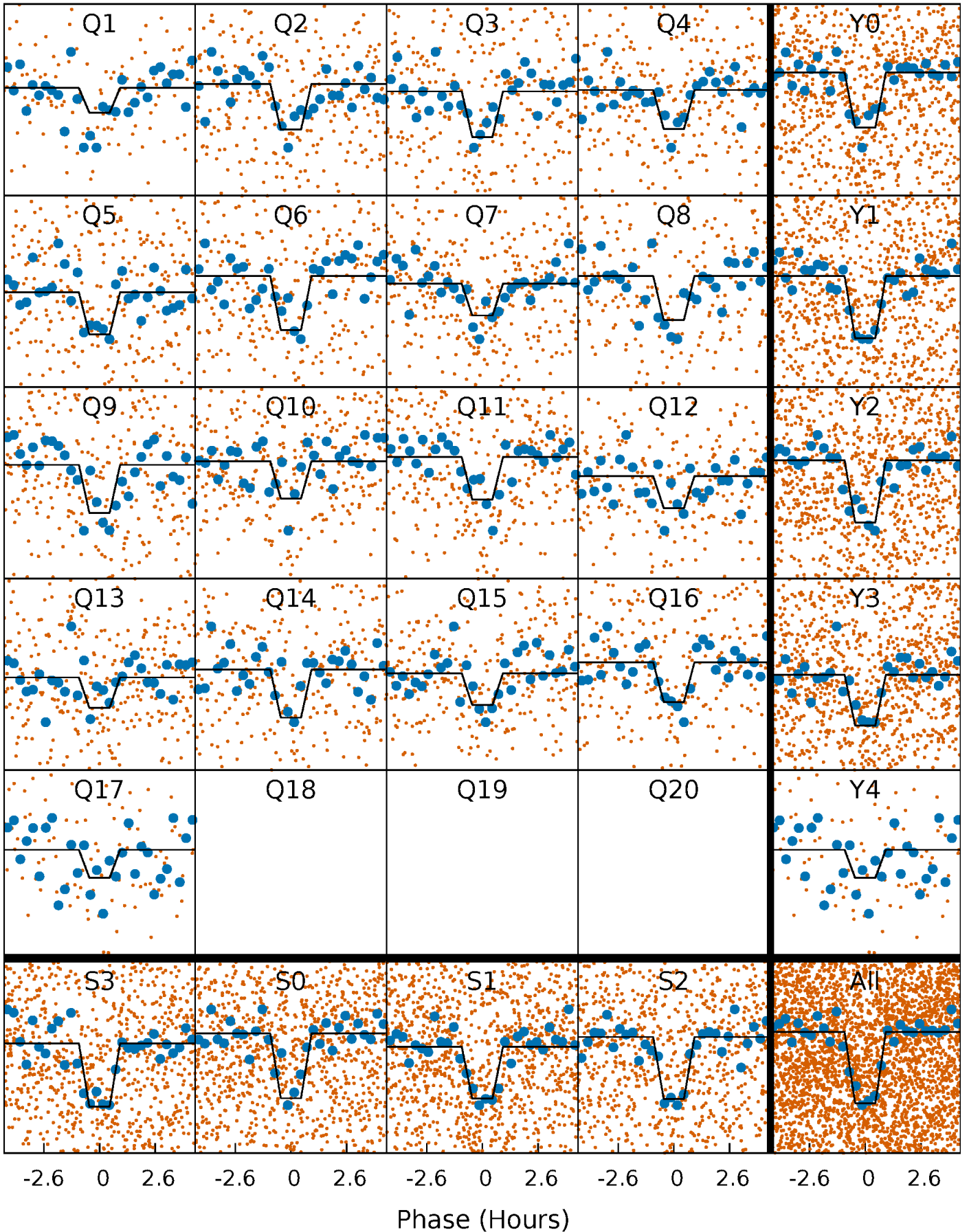
# DV Quarter-Phased Transit Curves

TCE 008951205-01 P= 4.950614 Days  $T_0=132.805878$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

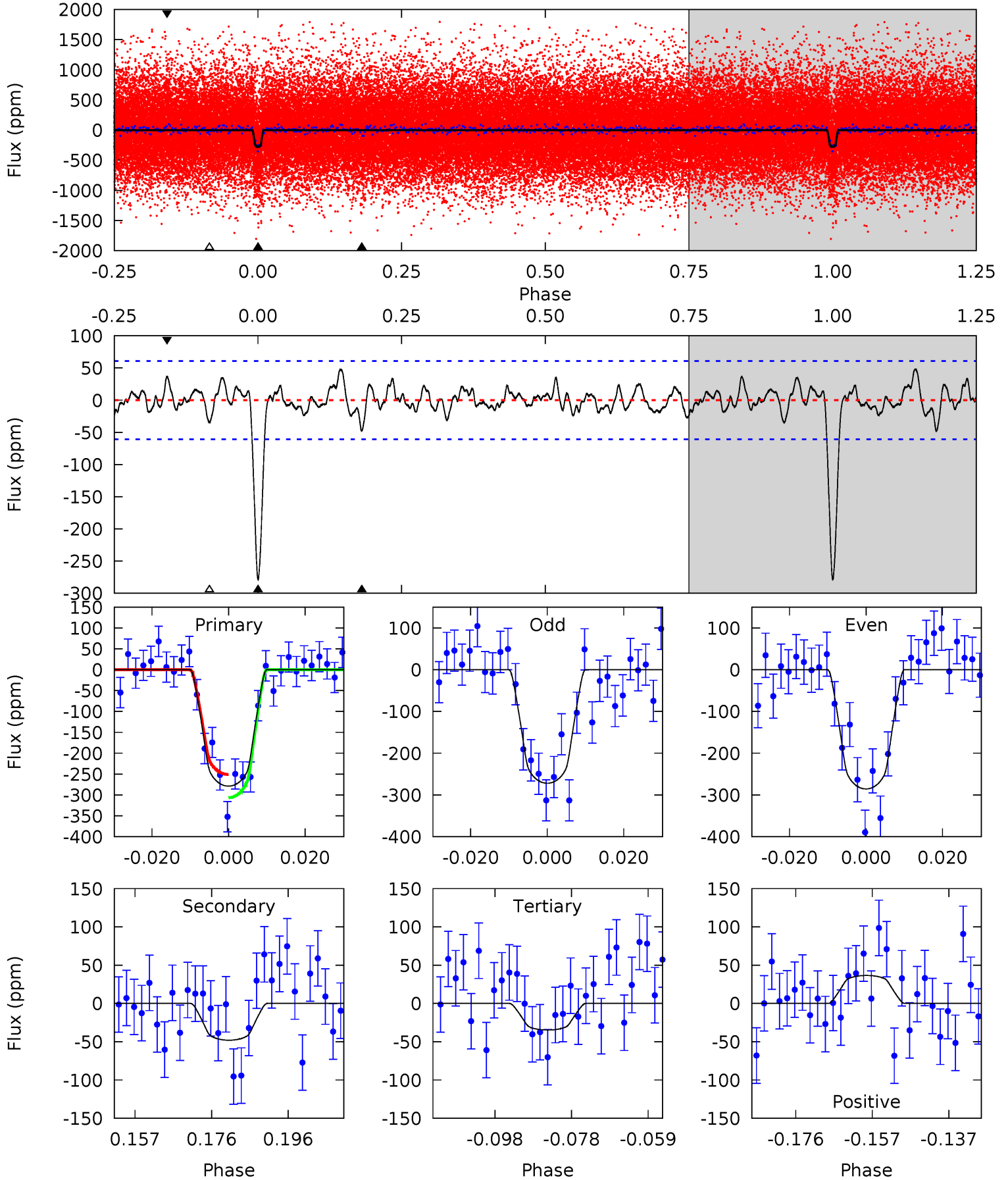
TCE 008951205-01 P= 4.950597 Days  $T_0=132.811180$  (BKJD)



# DV Model-Shift Uniqueness Test

008951205-01, P = 4.950614 Days, E = 127.855264 Days

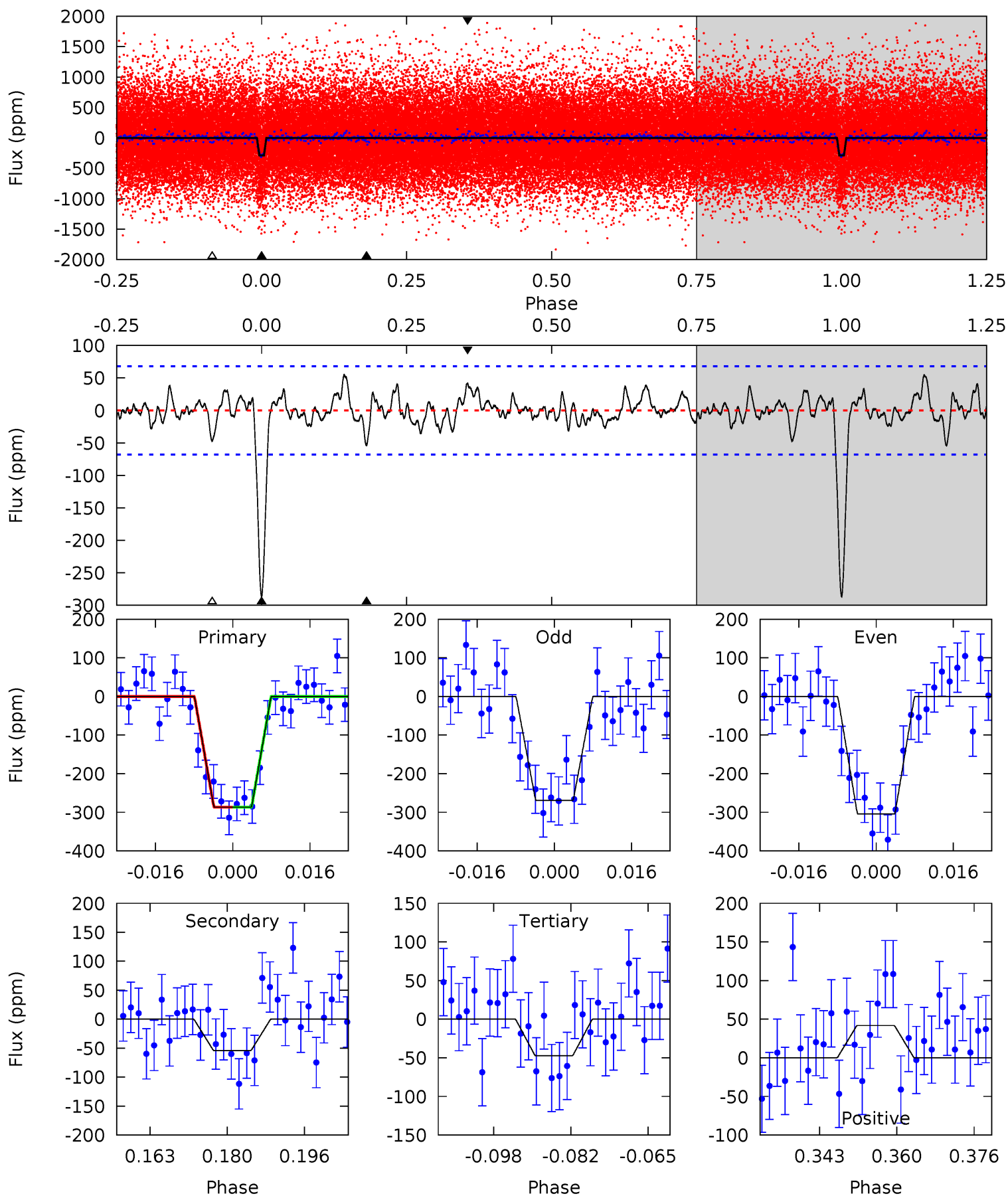
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	3.87	2.80	2.94	4.90	2.33	1.12	19.7	19.5	1.07	0.92	0.55	0.94	0.15	2.24



# Alt Model-Shift Uniqueness Test

008951205-01, P = 4.950597 Days, E = 127.860583 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
20.8	3.93	3.44	3.04	4.93	2.40	1.18	17.4	17.8	0.49	0.89	1.28	0.93	0.16	0.01



### Stellar Parameters For KIC 008951205

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5431^{+162}_{-162}$	$4.623^{+0.035}_{-0.105}$	$-0.440^{+0.300}_{-0.300}$	$0.717^{+0.120}_{-0.055}$	$0.802^{+0.074}_{-0.090}$	$3.060^{+0.449}_{-0.973}$
	+3%/-3%	+1%/-2%	+68%/-68%	+17%/-8%	+9%/-11%	+15%/-32%
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 008951205-01 / KOI 4099.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-48 \pm 12$	$1.51^{+0.80}_{-0.78}$	$1251^{+55}_{-46}$	$3674^{+1131}_{-493}$	$31^{+97}_{-18}$
Alt.	$-54 \pm 14$	$1.45^{+0.78}_{-0.71}$	$1253^{+55}_{-45}$	$3772^{+1156}_{-496}$	$37^{+118}_{-22}$

$T_{max}$  = 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

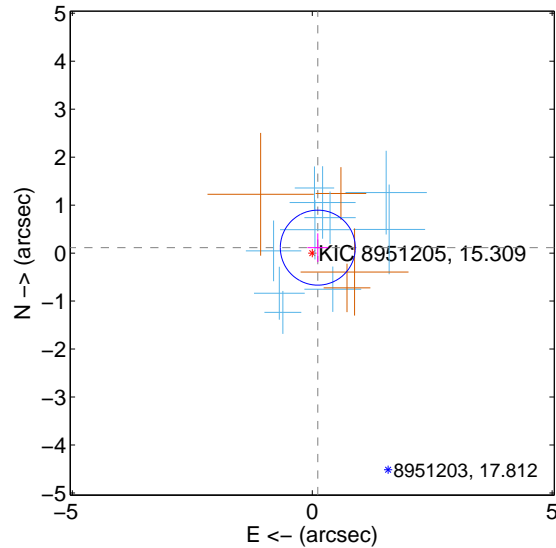
Supplemental centroid analysis for 008951205-01. Kepler magnitude: 15.31. Transit SNR 16.73

There are 10 quarters with good PRF difference image offsets

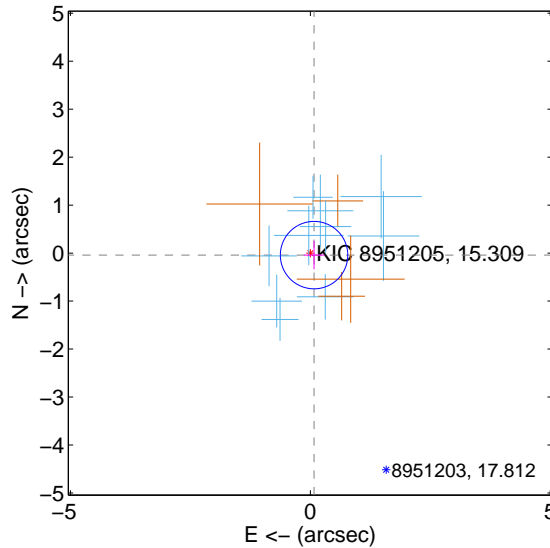
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.162 \pm 0.260$	0.62	$-0.116 \pm 0.218$	$0.113 \pm 0.299$
PRF-fit source offset from KIC position	$0.088 \pm 0.234$	0.38	$-0.078 \pm 0.213$	$-0.042 \pm 0.297$
photometric centroid source offset	$1.43 \pm 0.92$	1.55	$-0.92 \pm 0.92$	$-1.10 \pm 0.93$

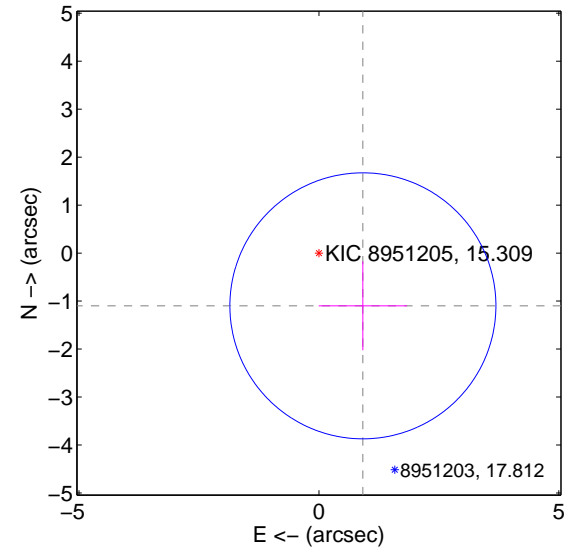
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

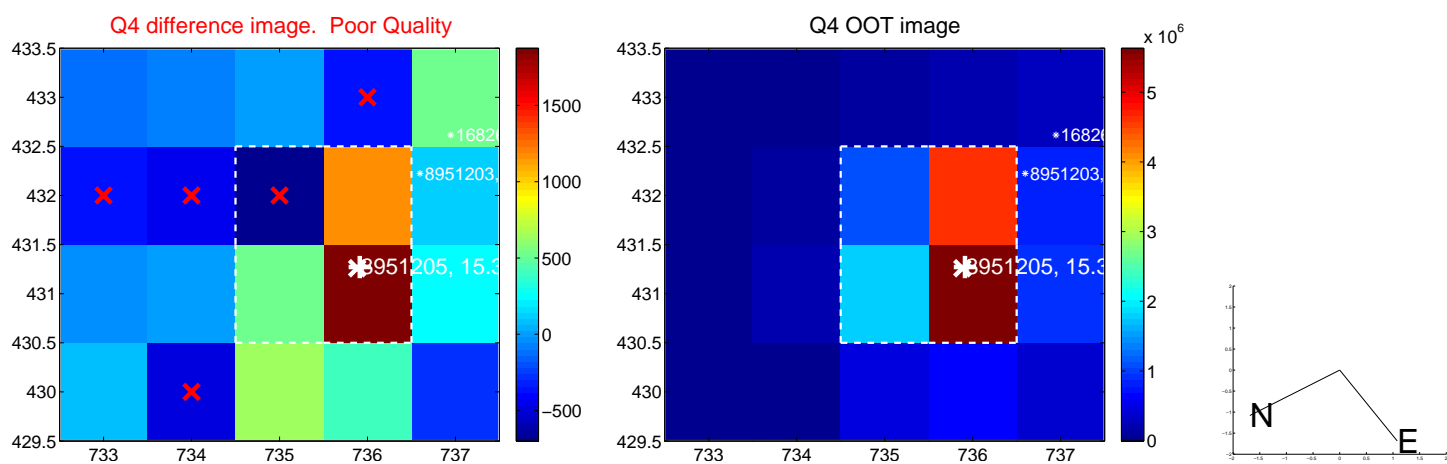
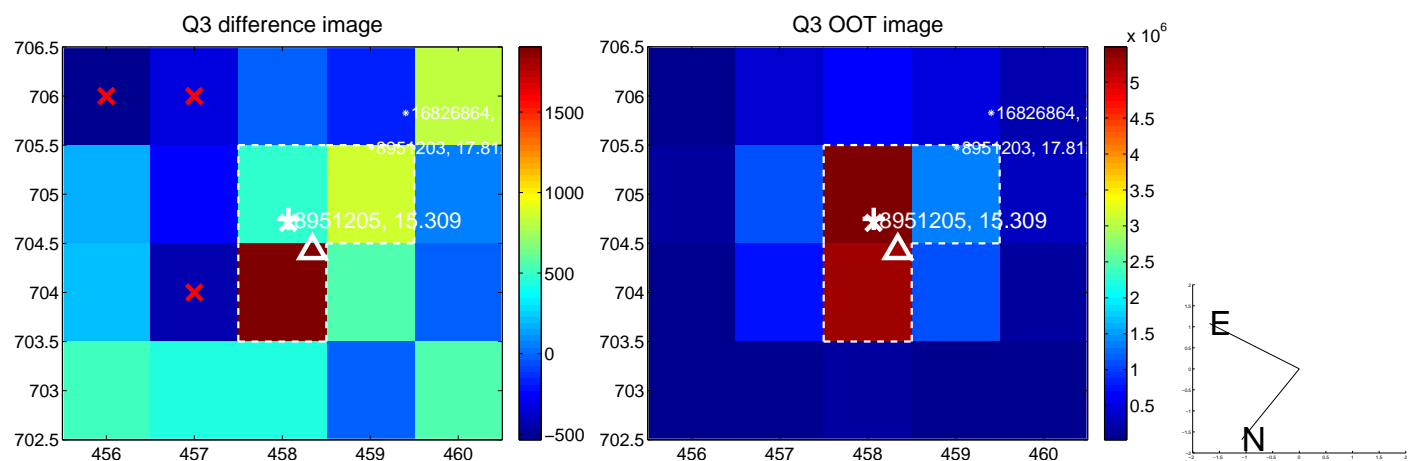
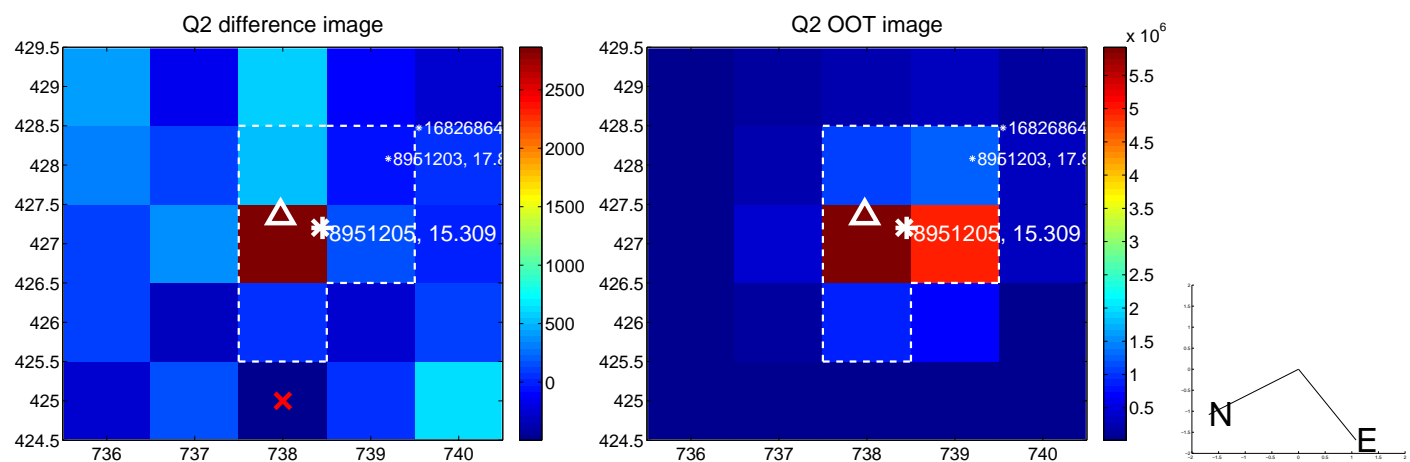
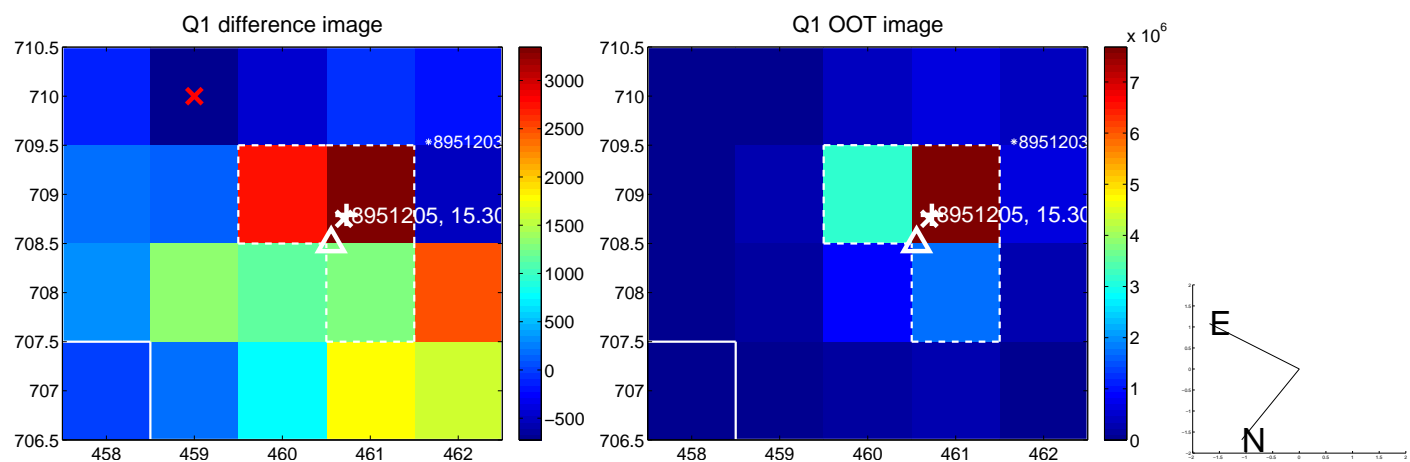


offset from photometric centroids

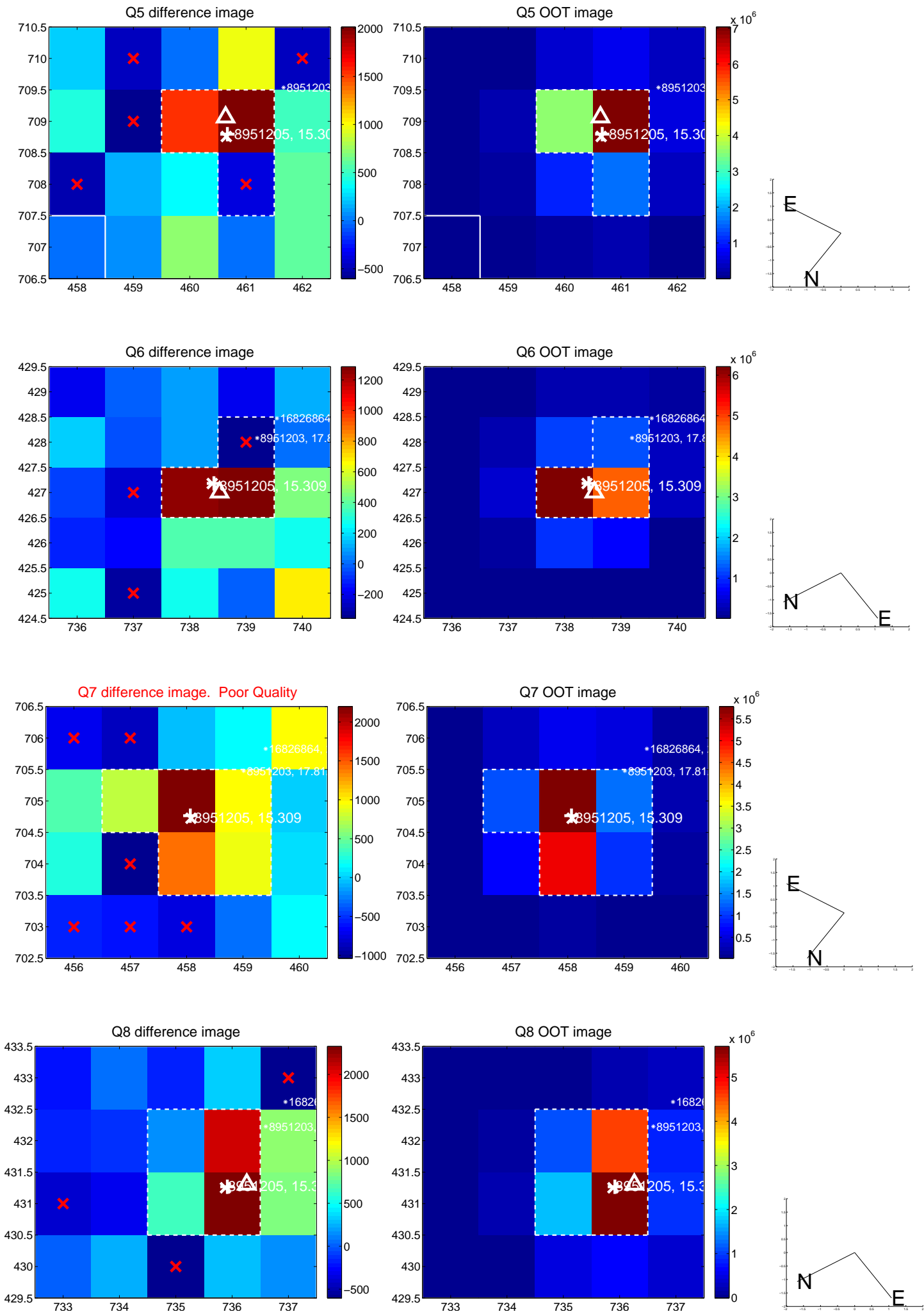


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

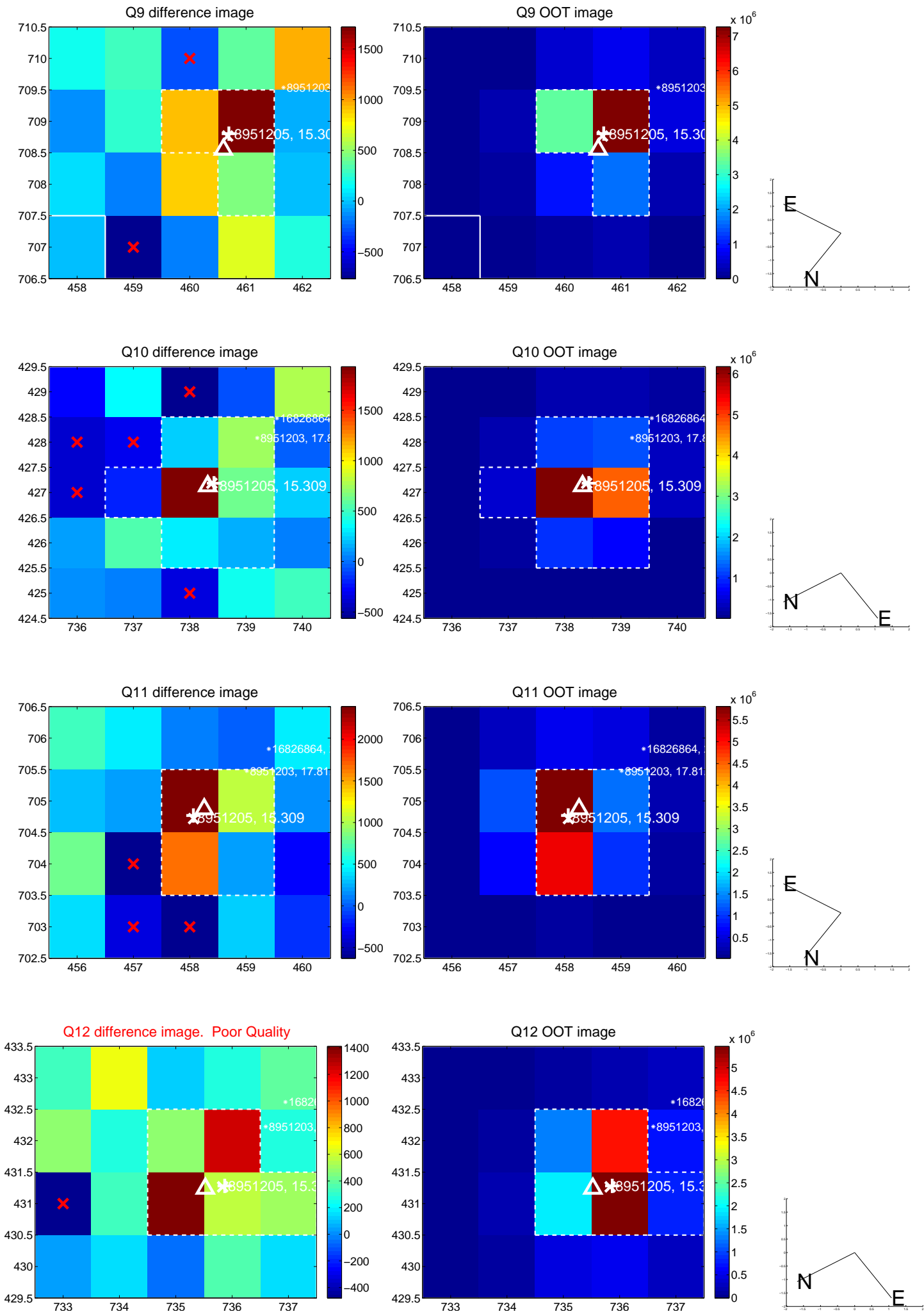
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



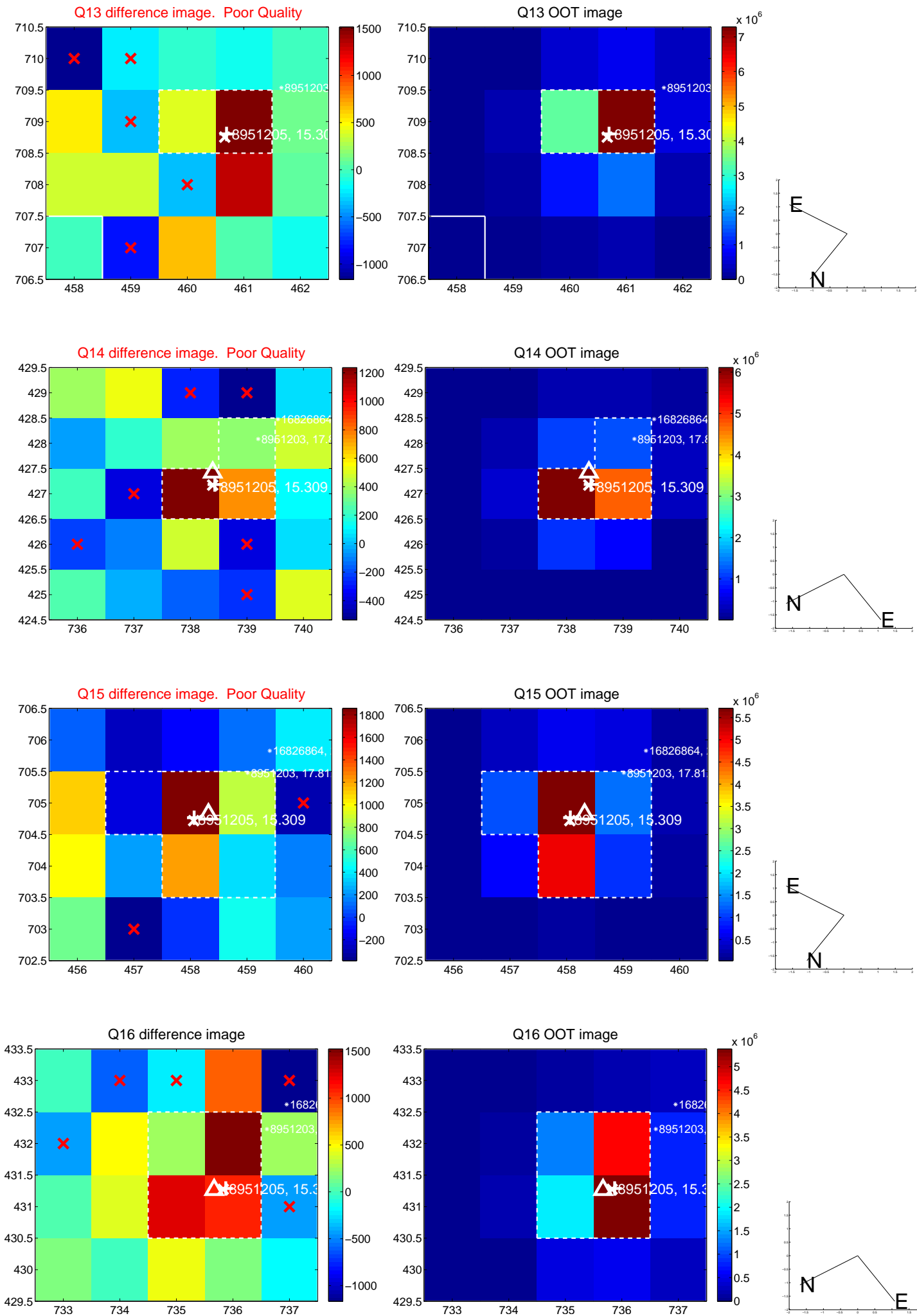
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



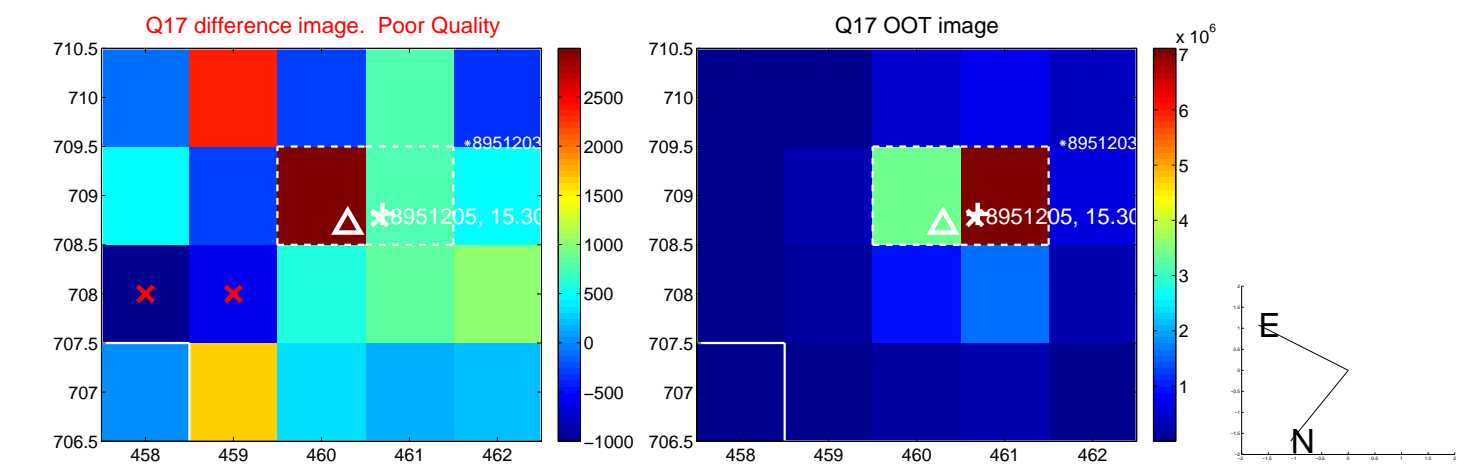
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



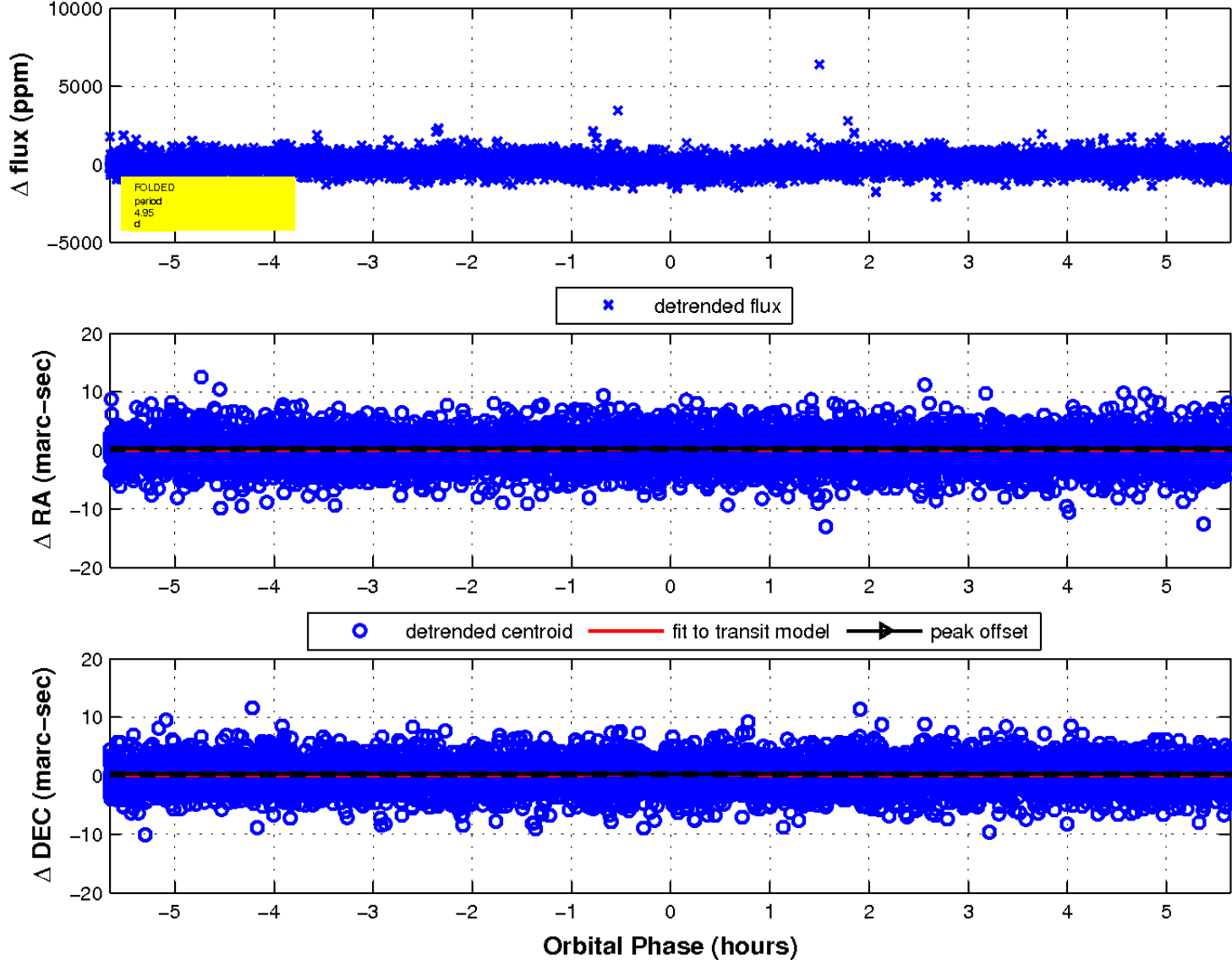
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

