

# KIC 009895709

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009895709-01	OBS	1594.01	1.818920	133.129310	307.9	1.756	33.0	36.6	0.96	6153	2.00	1364.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009895709-01	OBS	FP	0.00	0	0	1	0	CENT_UNRESOLVED_OFFSET

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

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

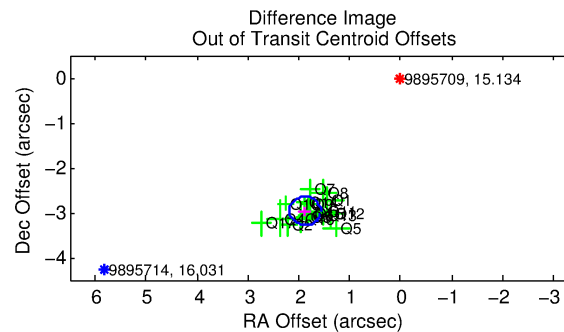
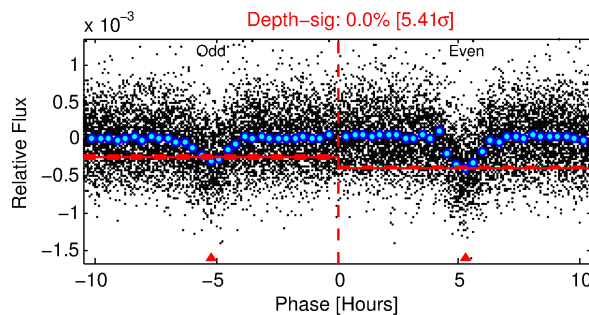
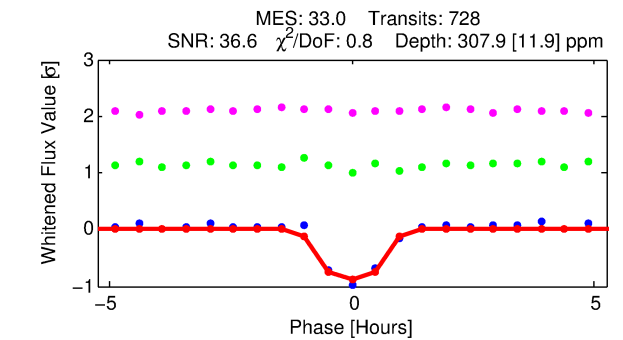
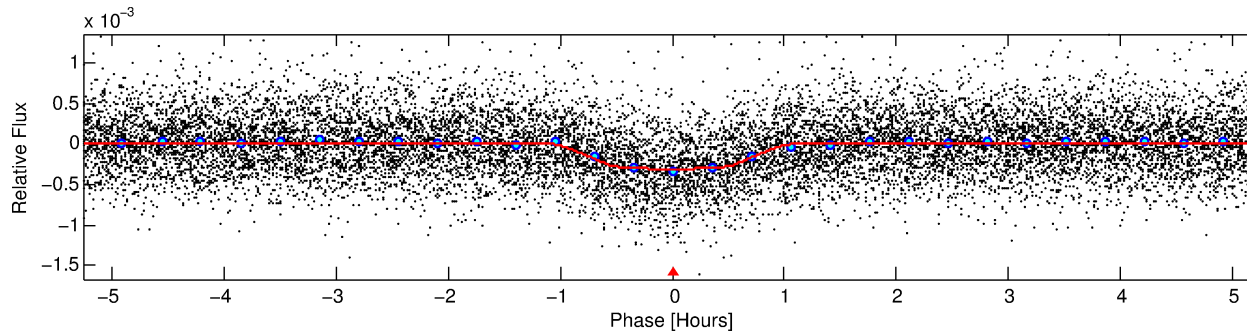
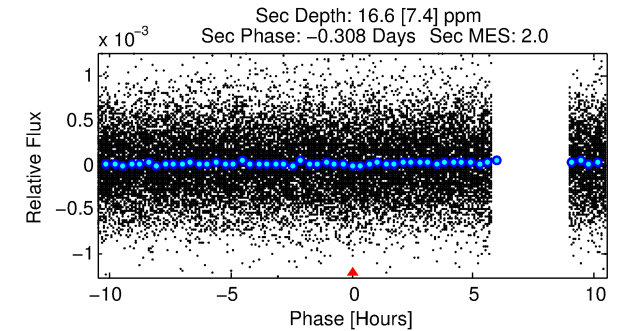
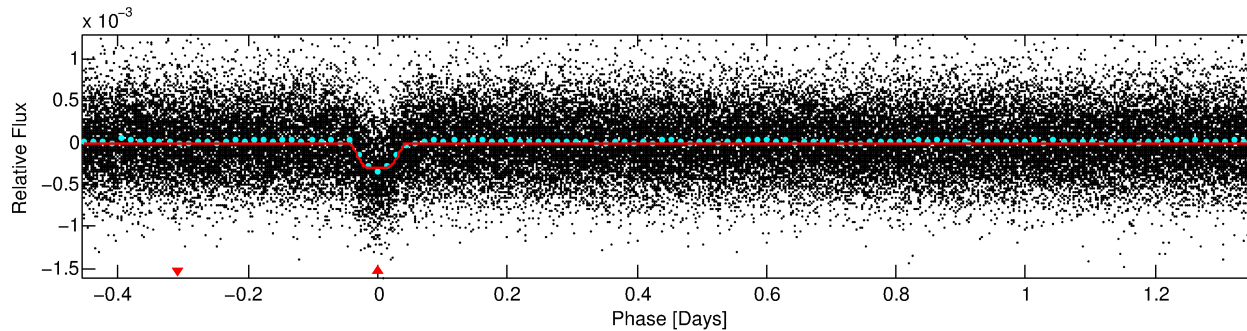
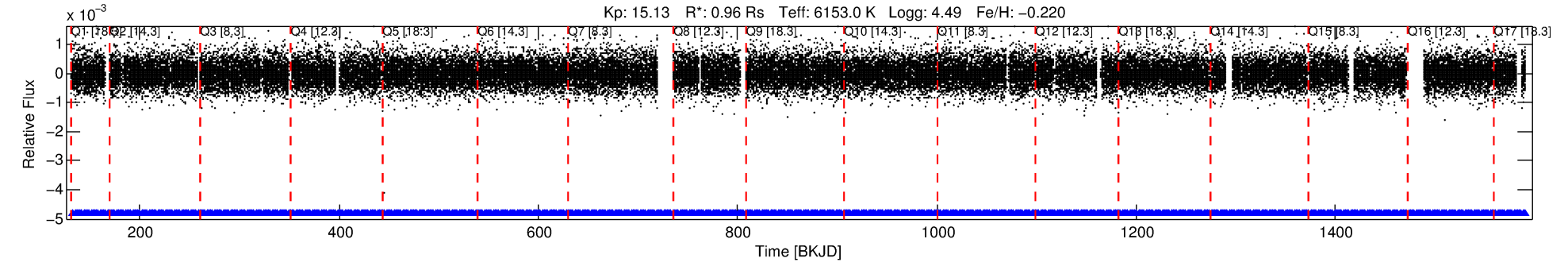
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009895709-01

No Significant Match Found

# DV One-Page Summary

KIC: 9895709 Candidate: 1 of 1 Period: 1.819 d  
KOI: K01594.01 Corr: 0.945



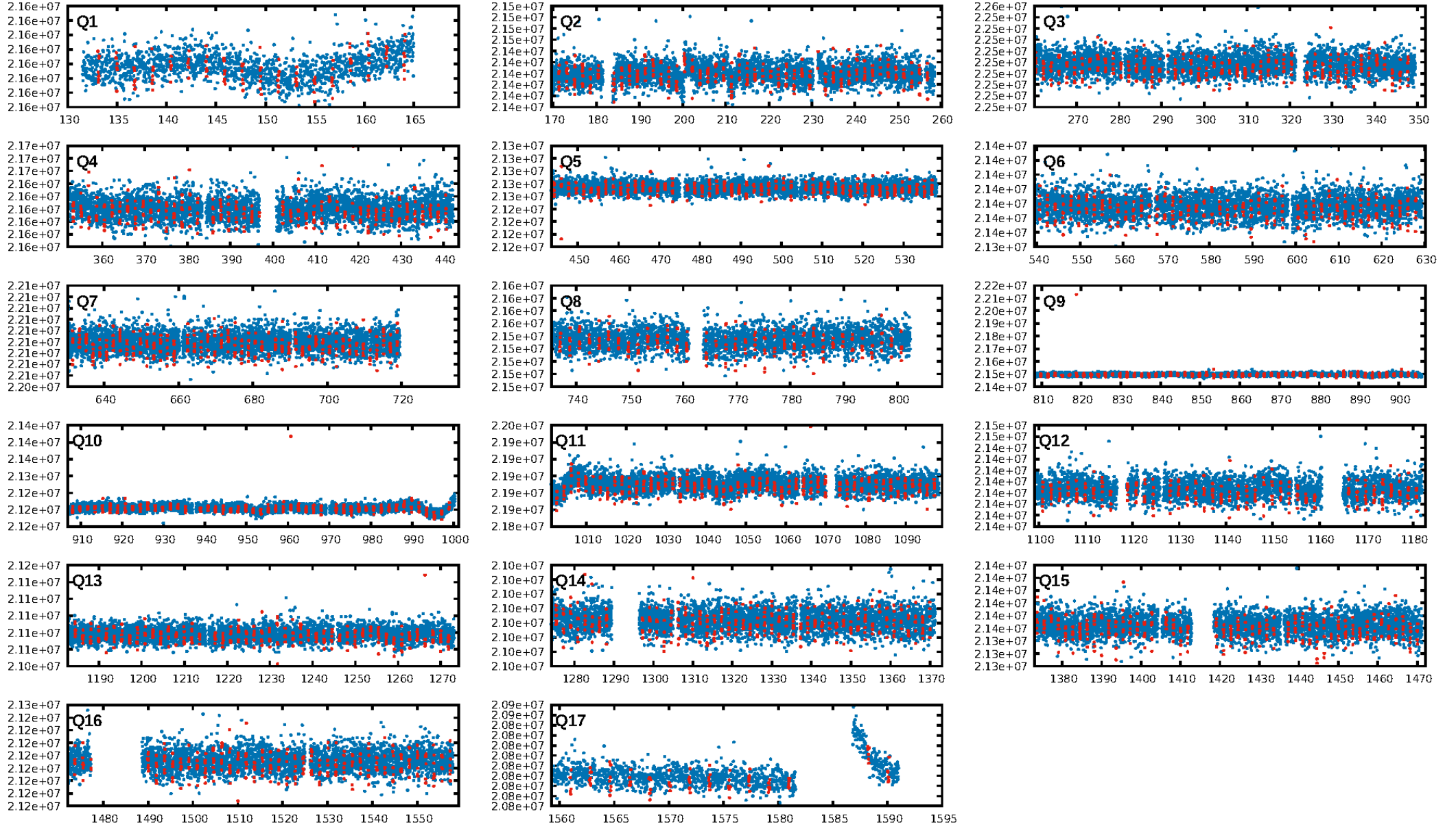
## DV Fit Results:

Period = 1.81892 [0.00000] d  
Epoch = 133.1293 [0.0008] BKJD  
Rp/R\* = 0.0191 [0.0028]  
a/R\* = 3.78 [2.75]  
b = 0.91 [0.15]  
Seff = 1364.40 [544.27]  
Teff = 1550 [155] K  
Rp = 2.00 [0.68] Re  
a = 0.0295 [0.0076] AU  
Ag = 1.99 [1.30] [0.76σ]  
Teffp = 2845 [391] K [3.08σ]

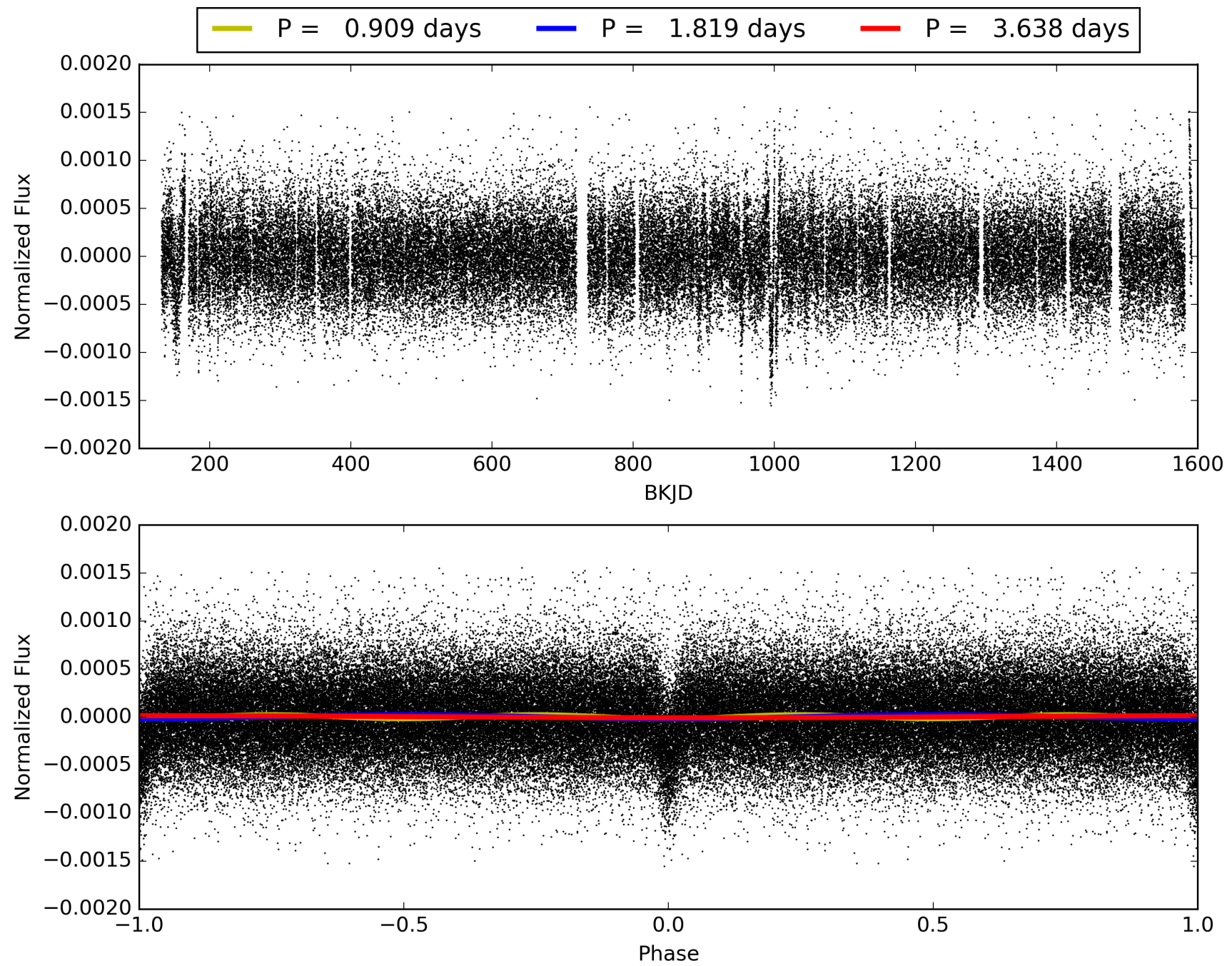
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.40e-228  
RollingBand-fgt: 1.00 [696/696]  
GhostDiagnostic-chr: 1.648  
Centroid-sig: 0.0%  
Centroid-so: 3.527 arcsec [10.37σ]  
OotOffset-rm: 3.512 arcsec [33.61σ]  
KicOffset-rm: 3.555 arcsec [34.10σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009895709-01, PDC Light Curves

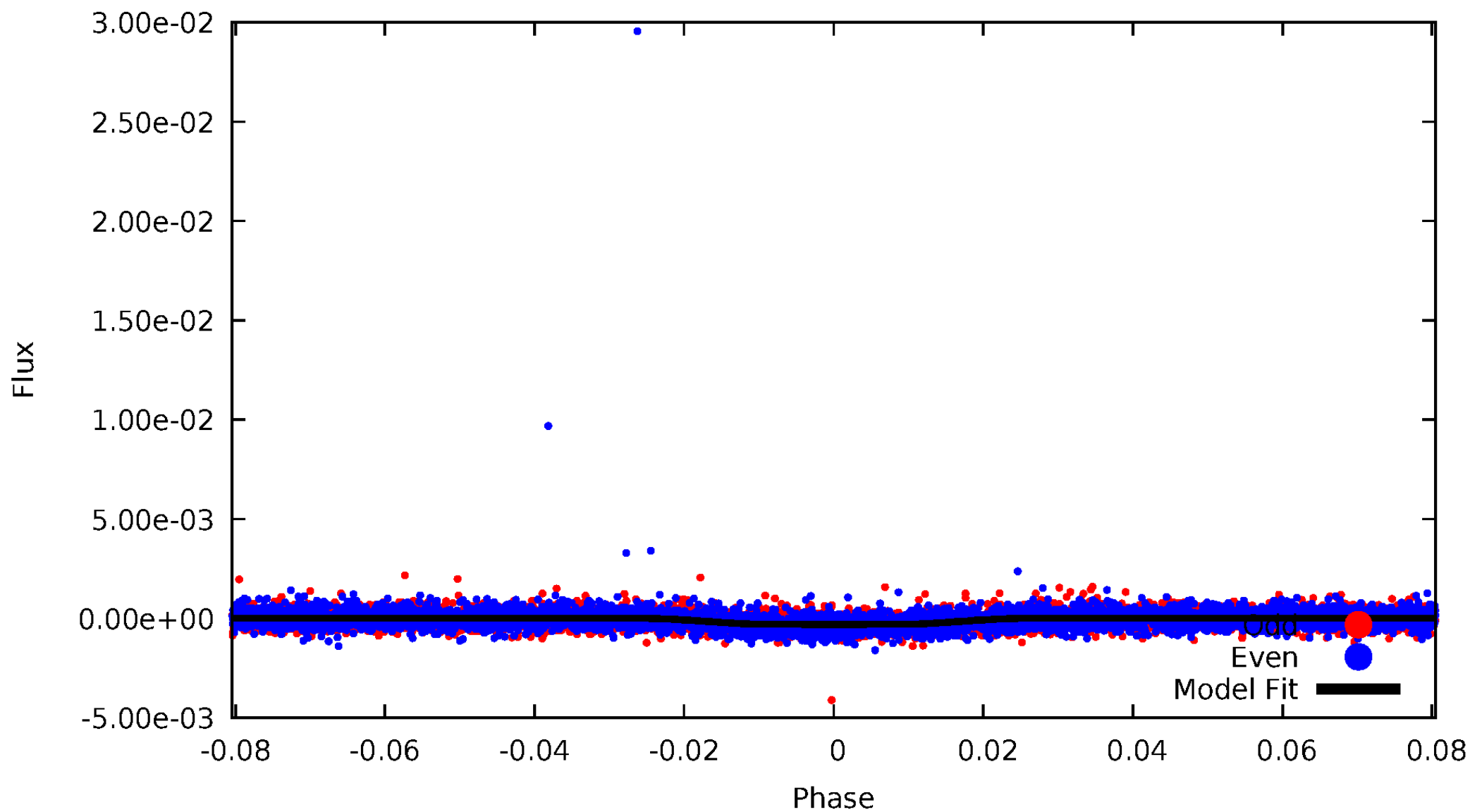


TCE 009895709-01



# DV Odd/Even

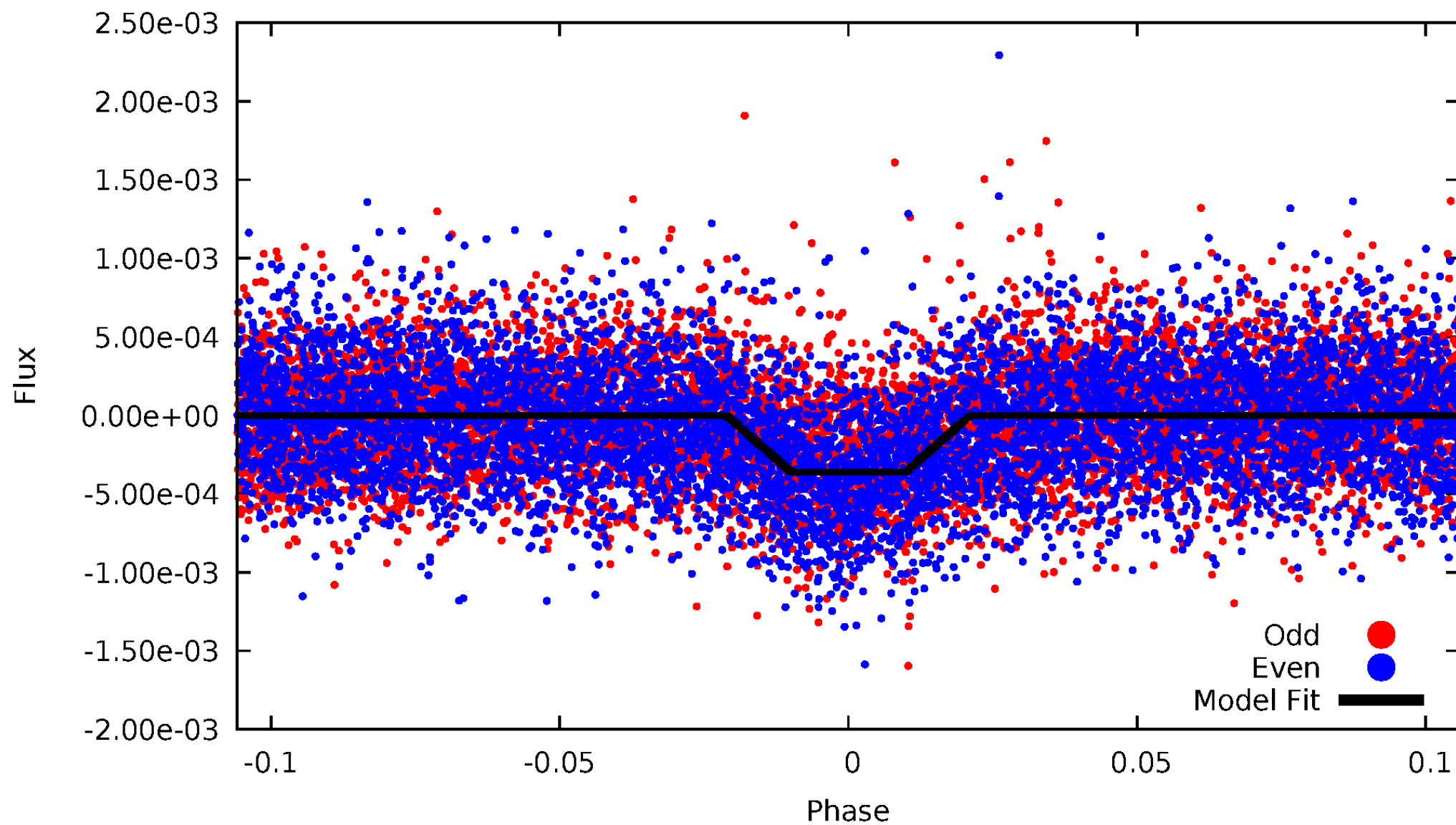
TCE 009895709-01





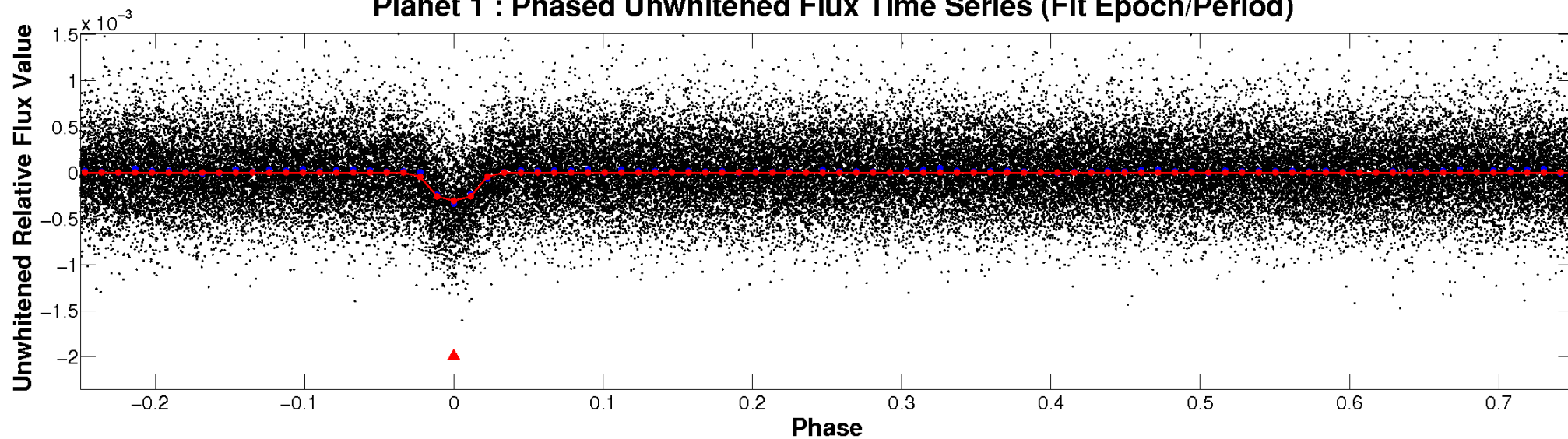
# ALT Odd/Even

TCE 009895709-01

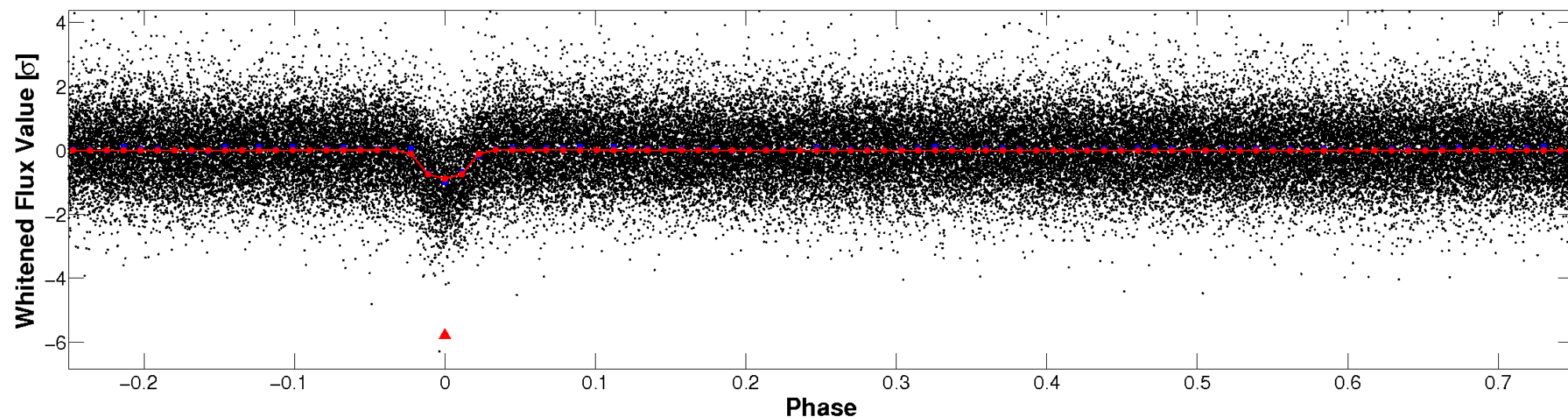


# Non-Whitened Vs. Whitened Light Curve

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

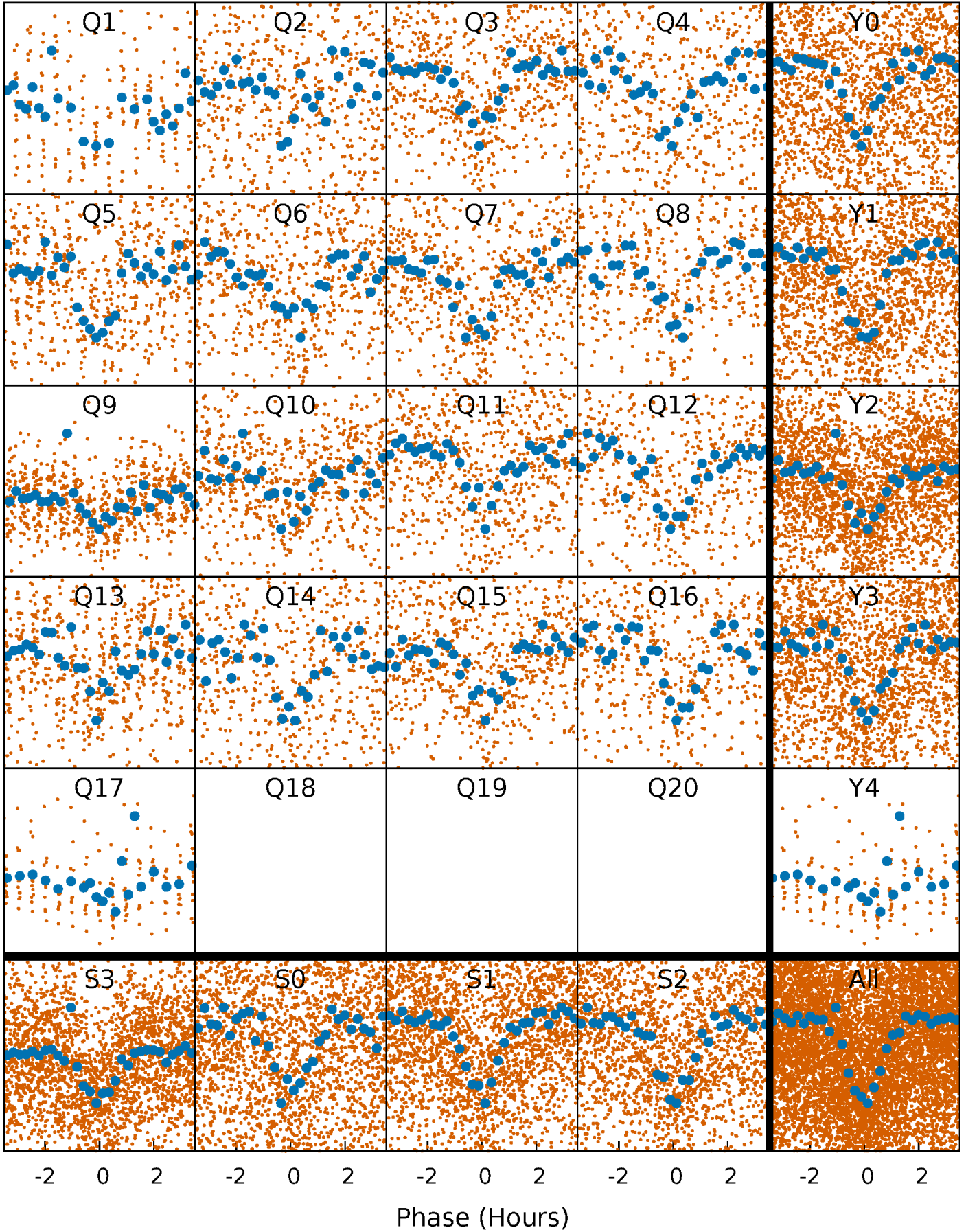


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

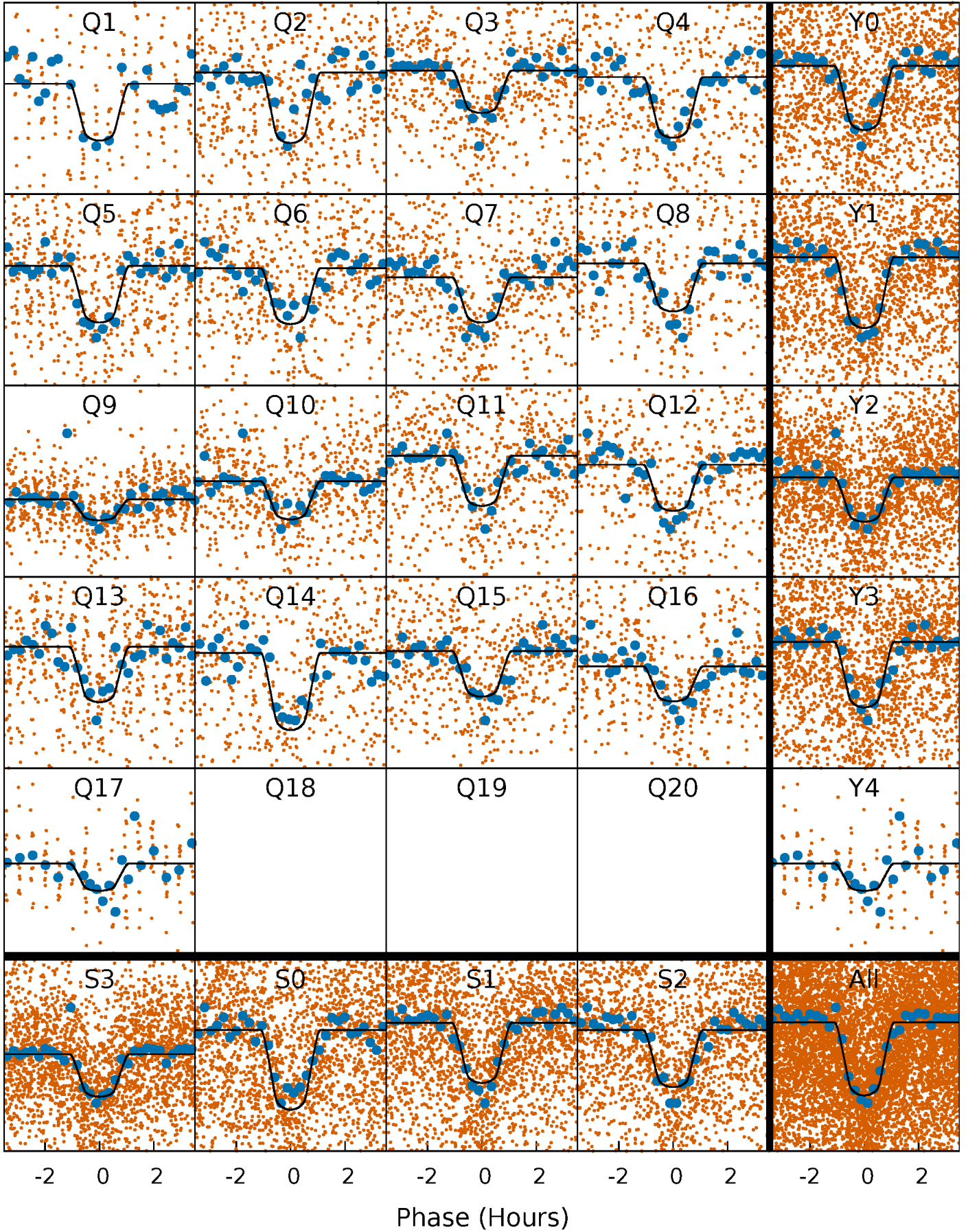
TCE 009895709-01   P= 1.818920 Days    $T_0=133.129310$  (BKJD)





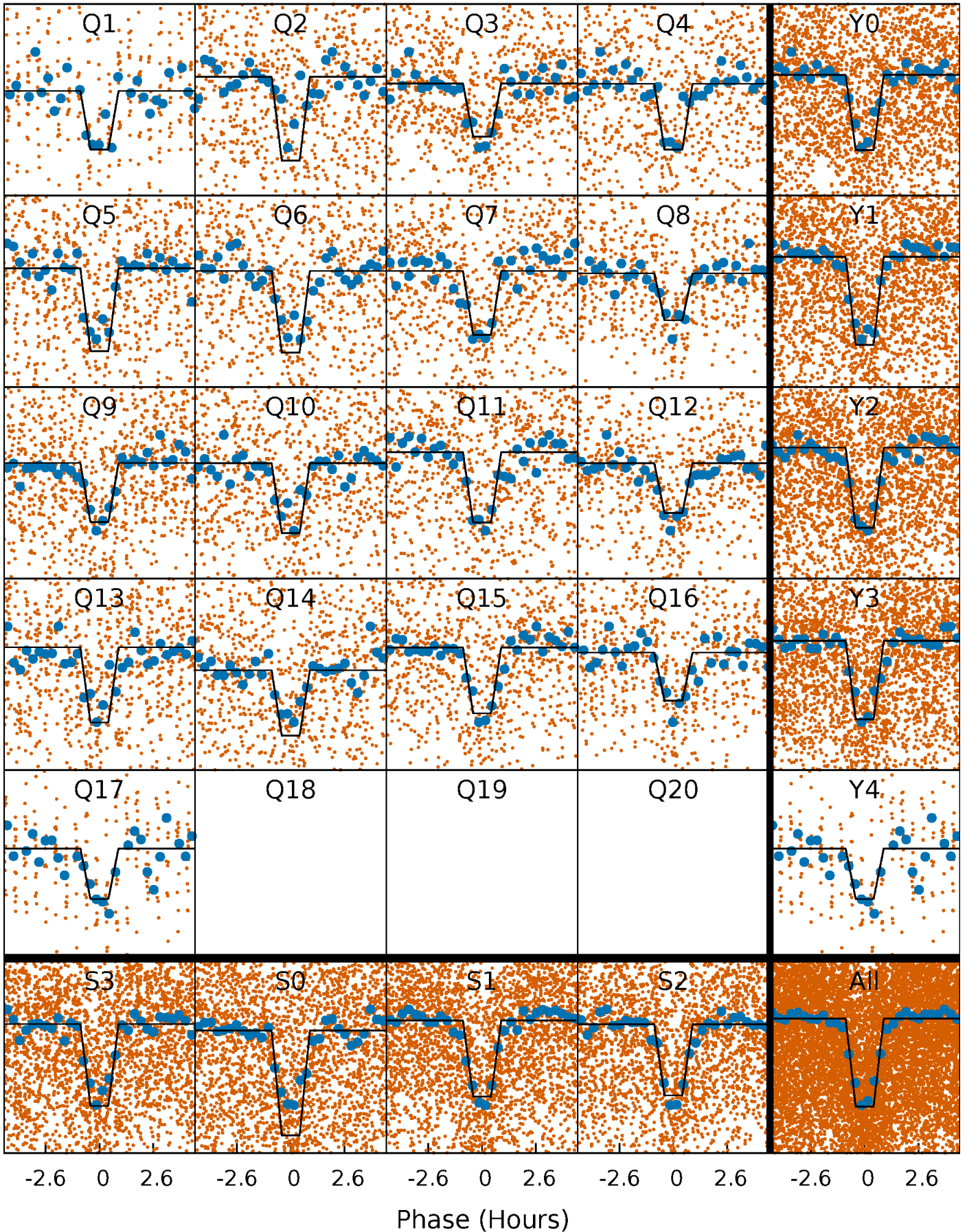
# DV Quarter-Phased Transit Curves

TCE 009895709-01   P= 1.818920 Days    $T_0=133.129310$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

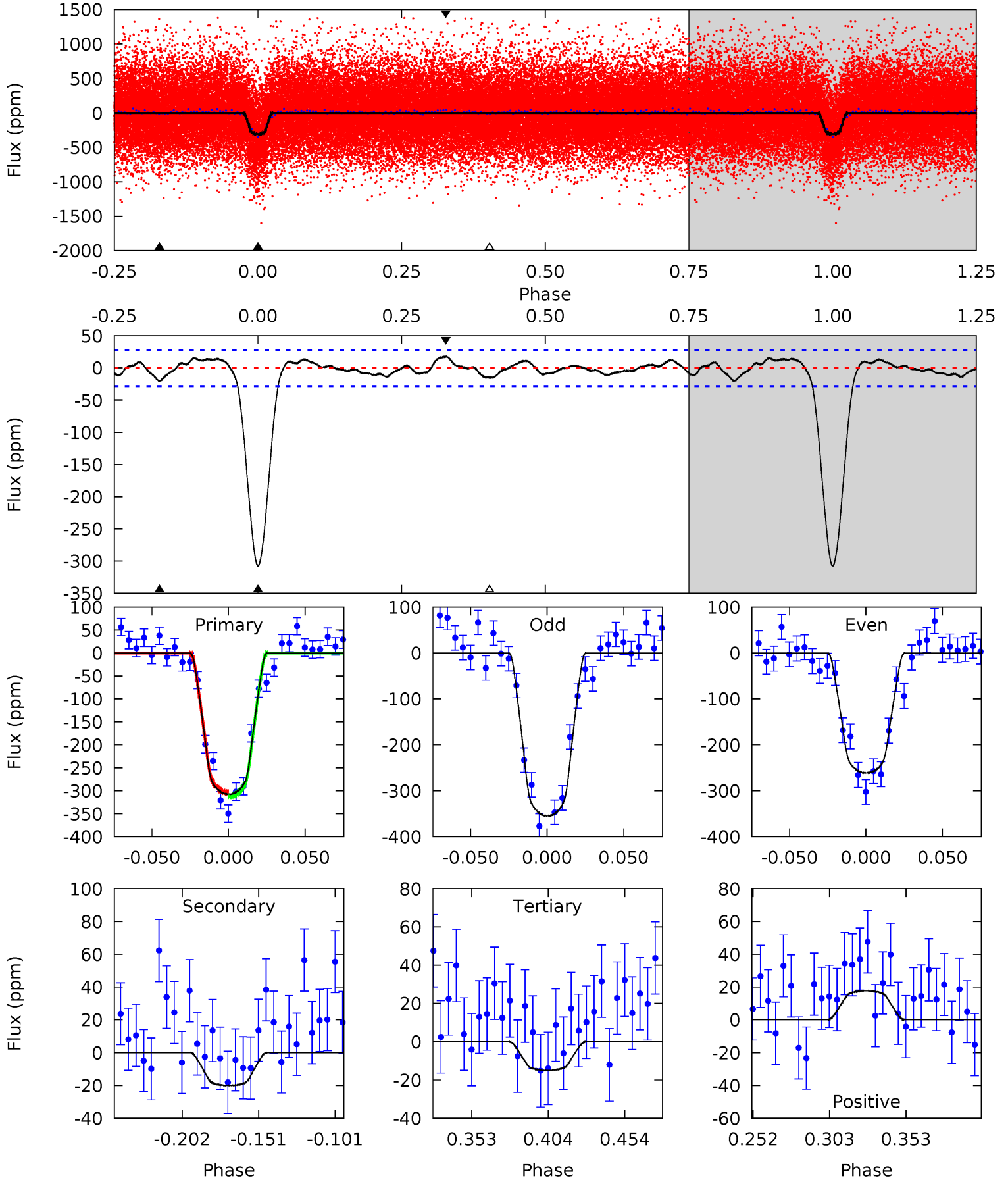
TCE 009895709-01 P= 1.818933 Days  $T_0=133.124638$  (BKJD)



# DV Model-Shift Uniqueness Test

009895709-01, P = 1.818920 Days, E = 131.310390 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
51.2	3.34	2.49	2.93	4.71	1.96	1.34	48.7	48.3	0.85	0.41	7.79	0.98	0.05	0.64

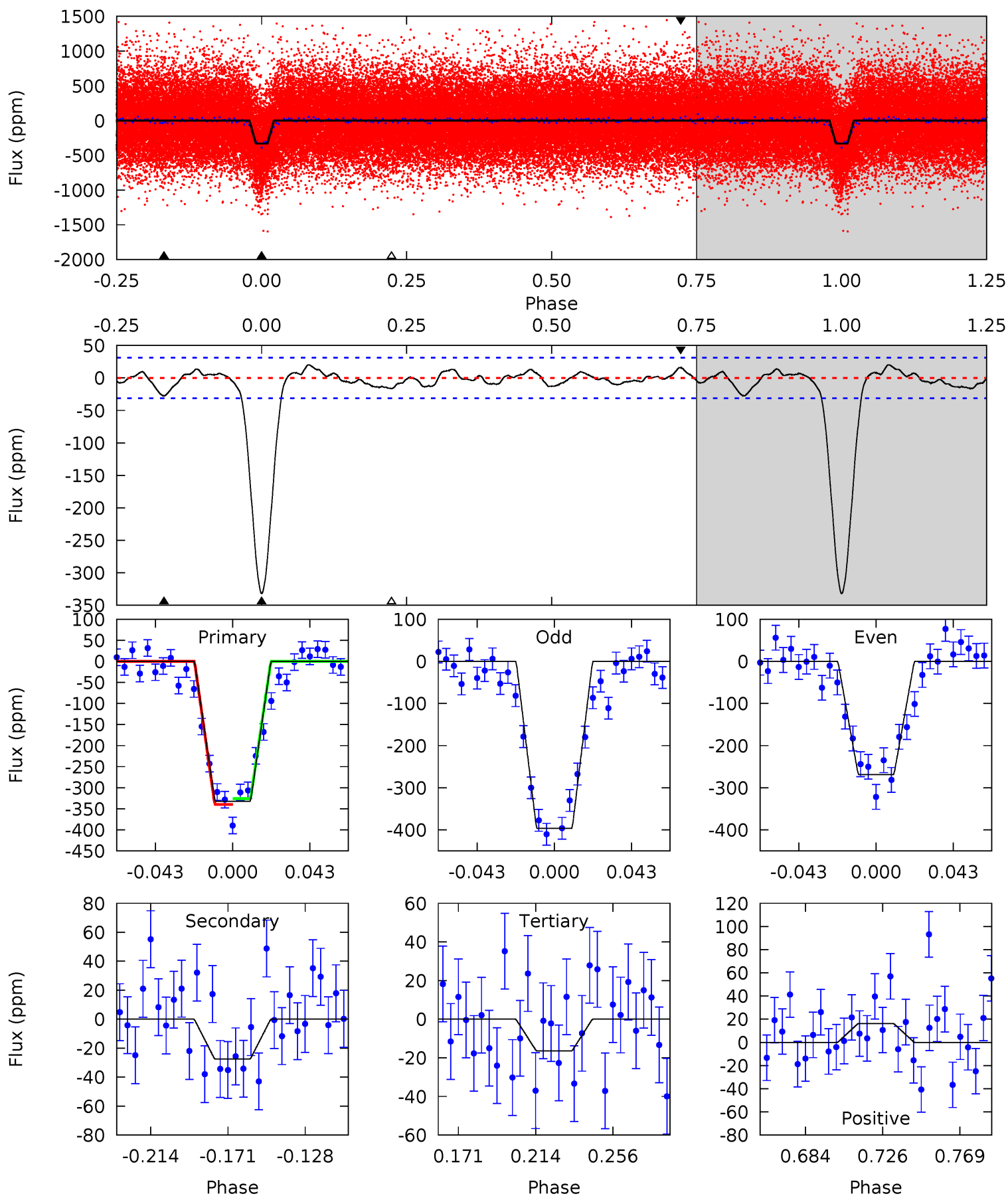




# Alt Model-Shift Uniqueness Test

009895709-01, P = 1.818933 Days, E = 131.305705 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
50.3	4.17	2.49	2.46	4.74	2.03	1.21	47.8	47.8	1.68	1.71	9.67	0.97	0.06	1.06





### Stellar Parameters For KIC 009895709

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6153^{+174}_{-196}$	$4.487^{+0.052}_{-0.208}$	$-0.220^{+0.300}_{-0.300}$	$0.962^{+0.292}_{-0.097}$	$1.036^{+0.144}_{-0.144}$	$1.641^{+0.440}_{-0.829}$
	+3%/-3%	+1%/-5%	+136%/-136%	+30%/-10%	+14%/-14%	+27%/-51%
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 009895709-01 / KOI 1594.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-20 \pm 6$	$2.11^{+0.45}_{-0.37}$	$2224^{+150}_{-111}$	$3373^{+255}_{-274}$	$2.007^{+1.002}_{-0.757}$
Alt.	$-28 \pm 7$	$2.08^{+0.45}_{-0.34}$	$2212^{+154}_{-113}$	$3597^{+259}_{-283}$	$2.966^{+1.565}_{-1.202}$

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

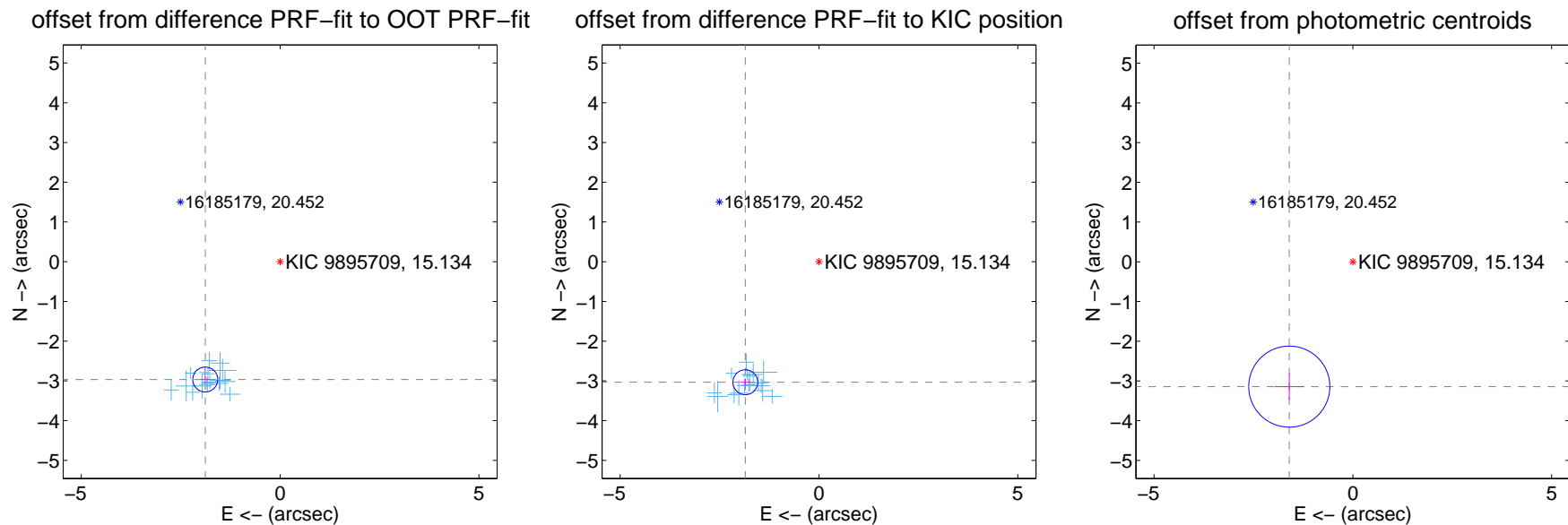
## DV Centroid Data

Supplemental centroid analysis for 009895709-01. Kepler magnitude: 15.13. Transit SNR 36.58

There are 17 quarters with good PRF difference image offsets

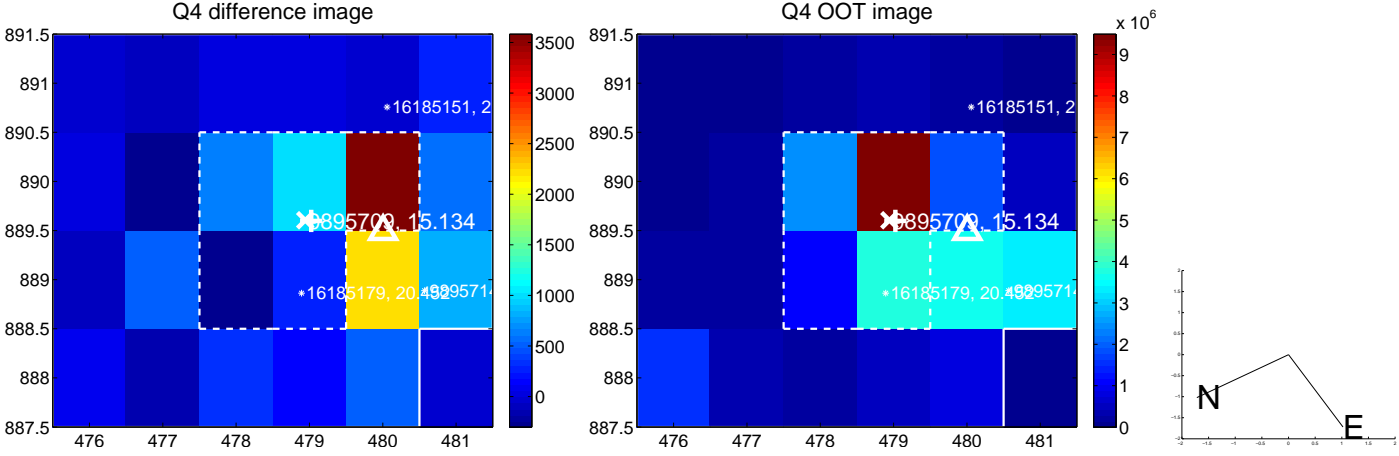
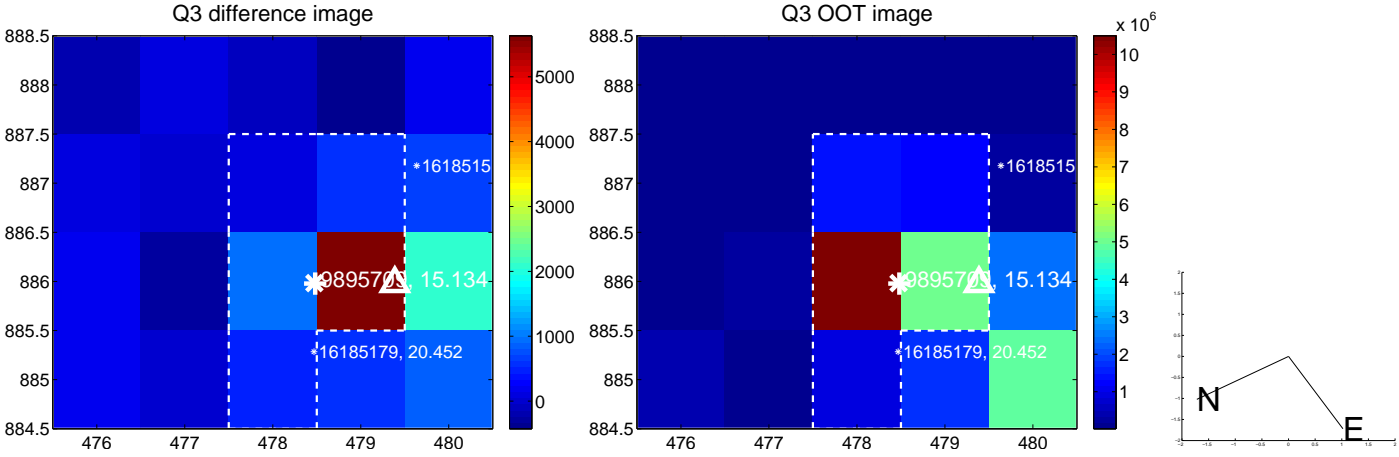
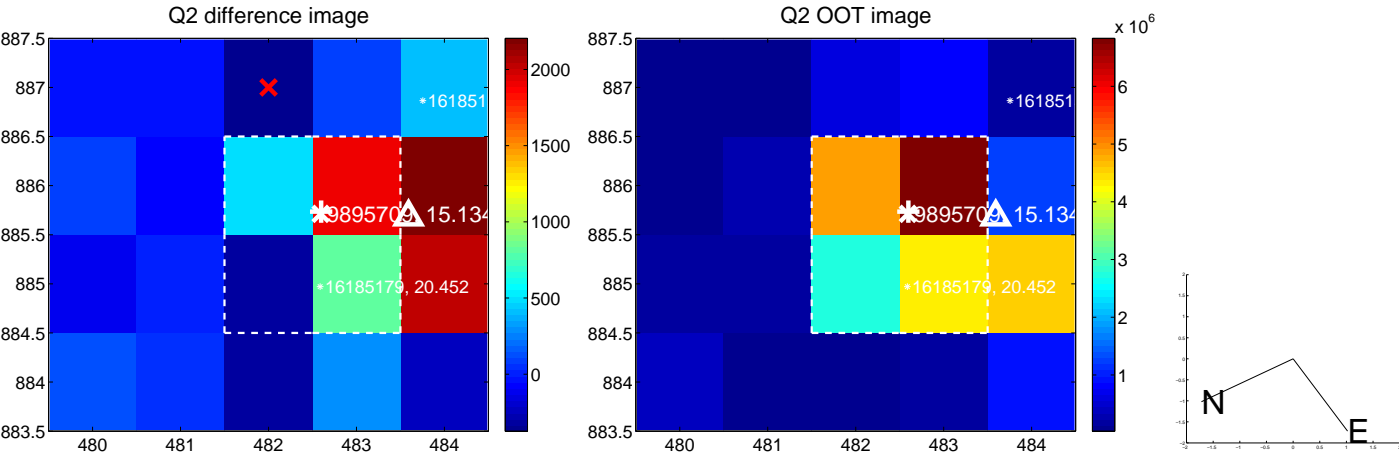
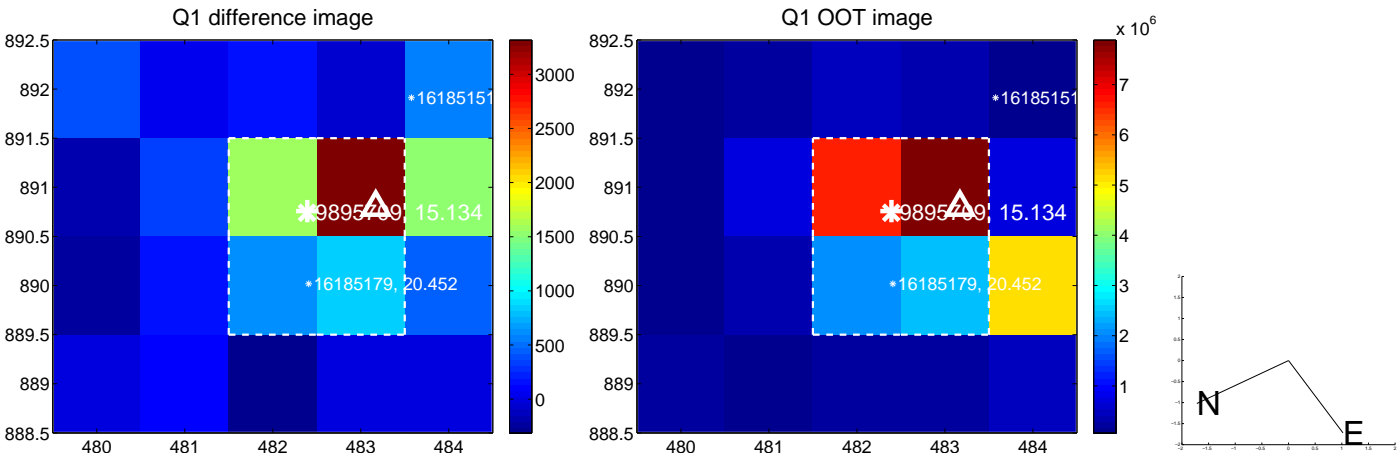
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.512 \pm 0.105$	<b>33.61</b>	$1.883 \pm 0.120$	$-2.965 \pm 0.088$
PRF-fit source offset from KIC position	$3.555 \pm 0.104$	<b>34.10</b>	$1.853 \pm 0.119$	$-3.034 \pm 0.088$
photometric centroid source offset	$3.53 \pm 0.34$	<b>10.37</b>	$1.60 \pm 0.37$	$-3.14 \pm 0.33$



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.

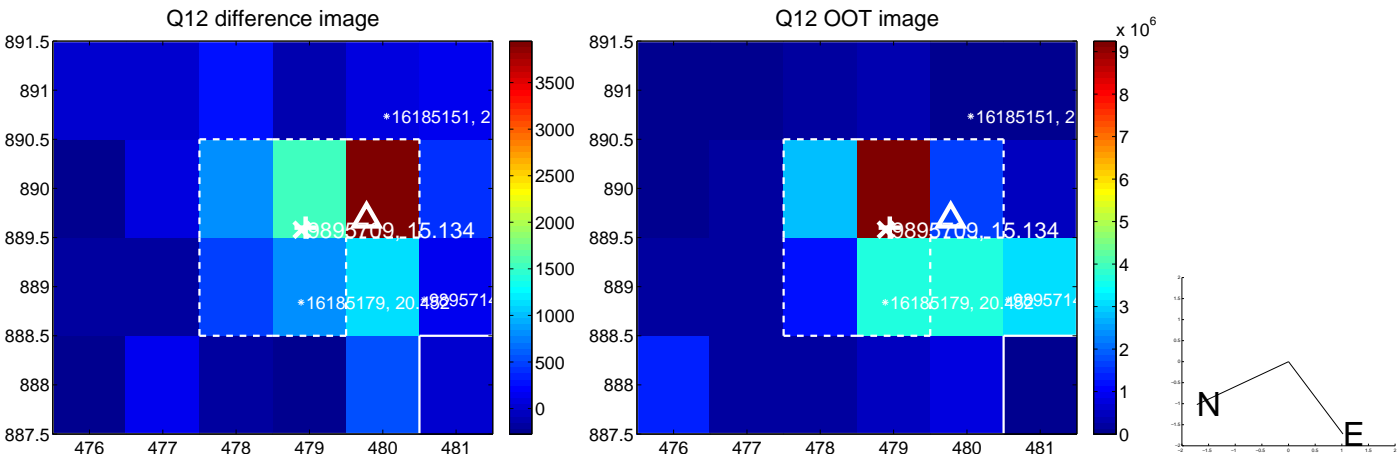
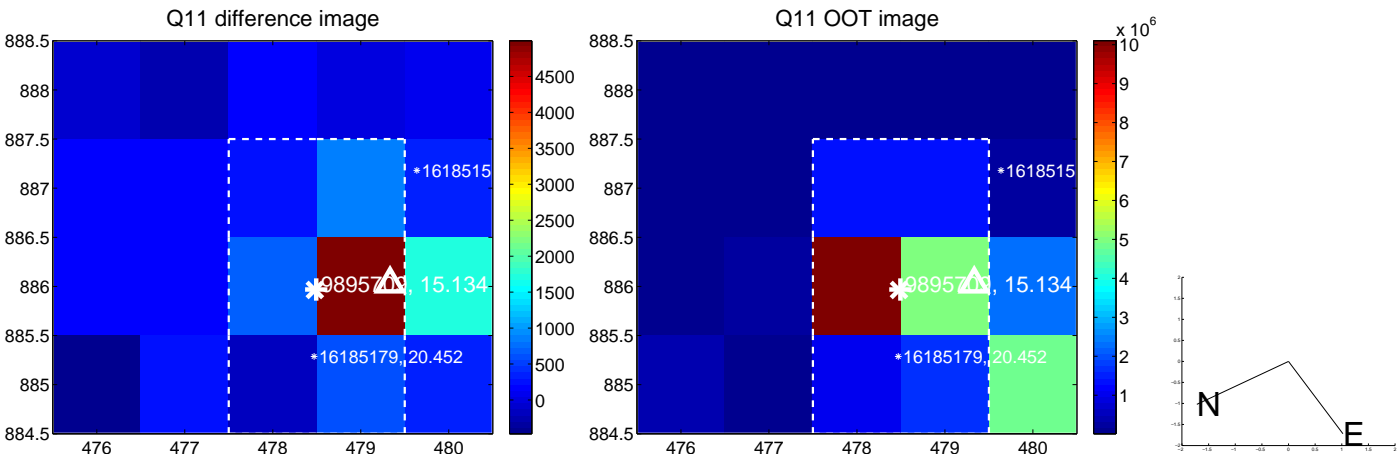
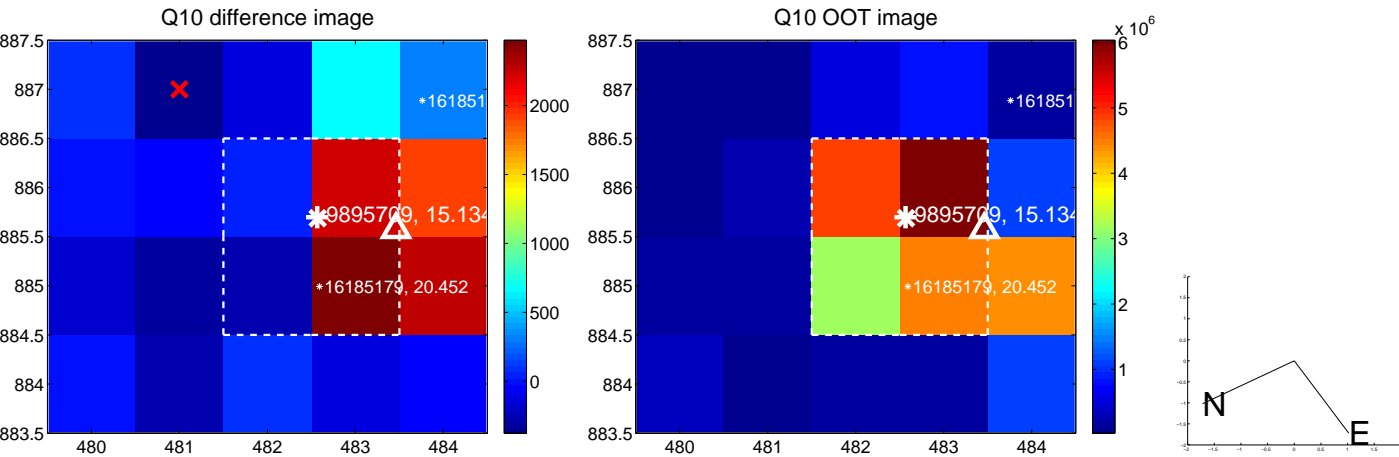
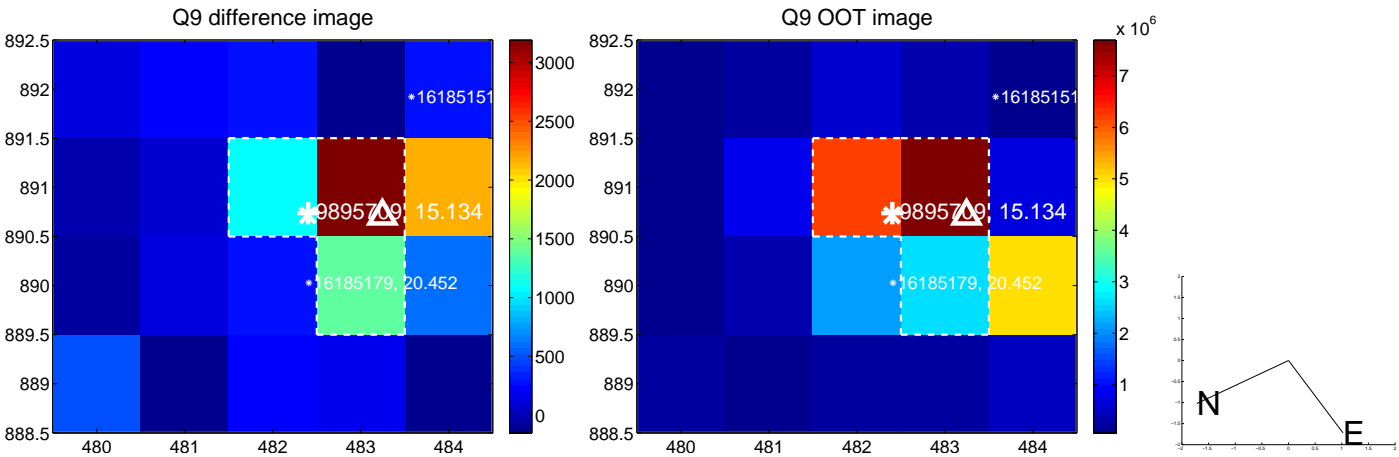
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





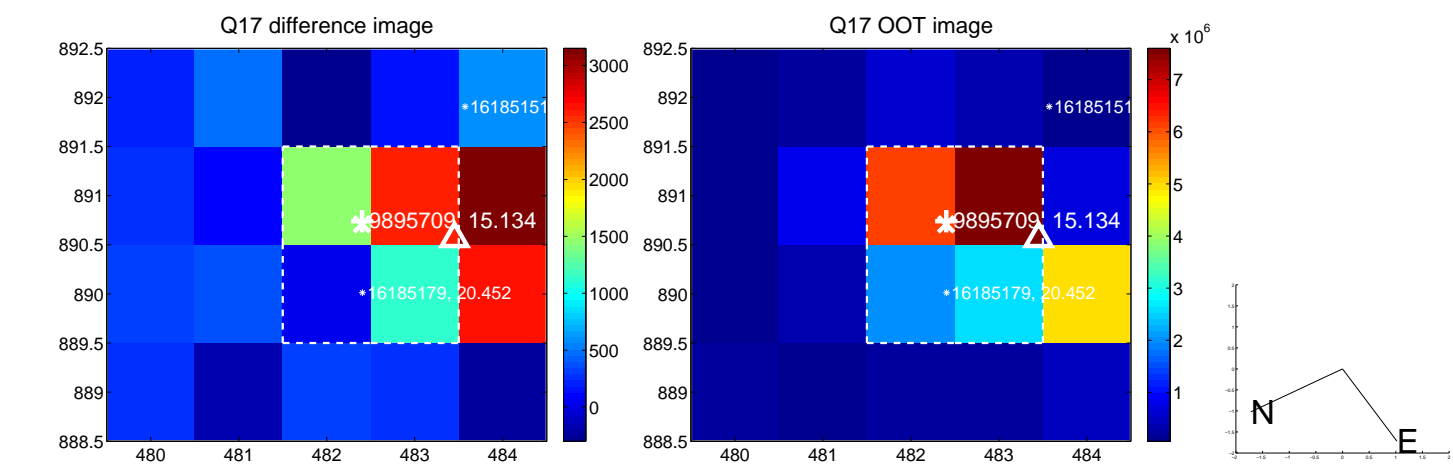


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

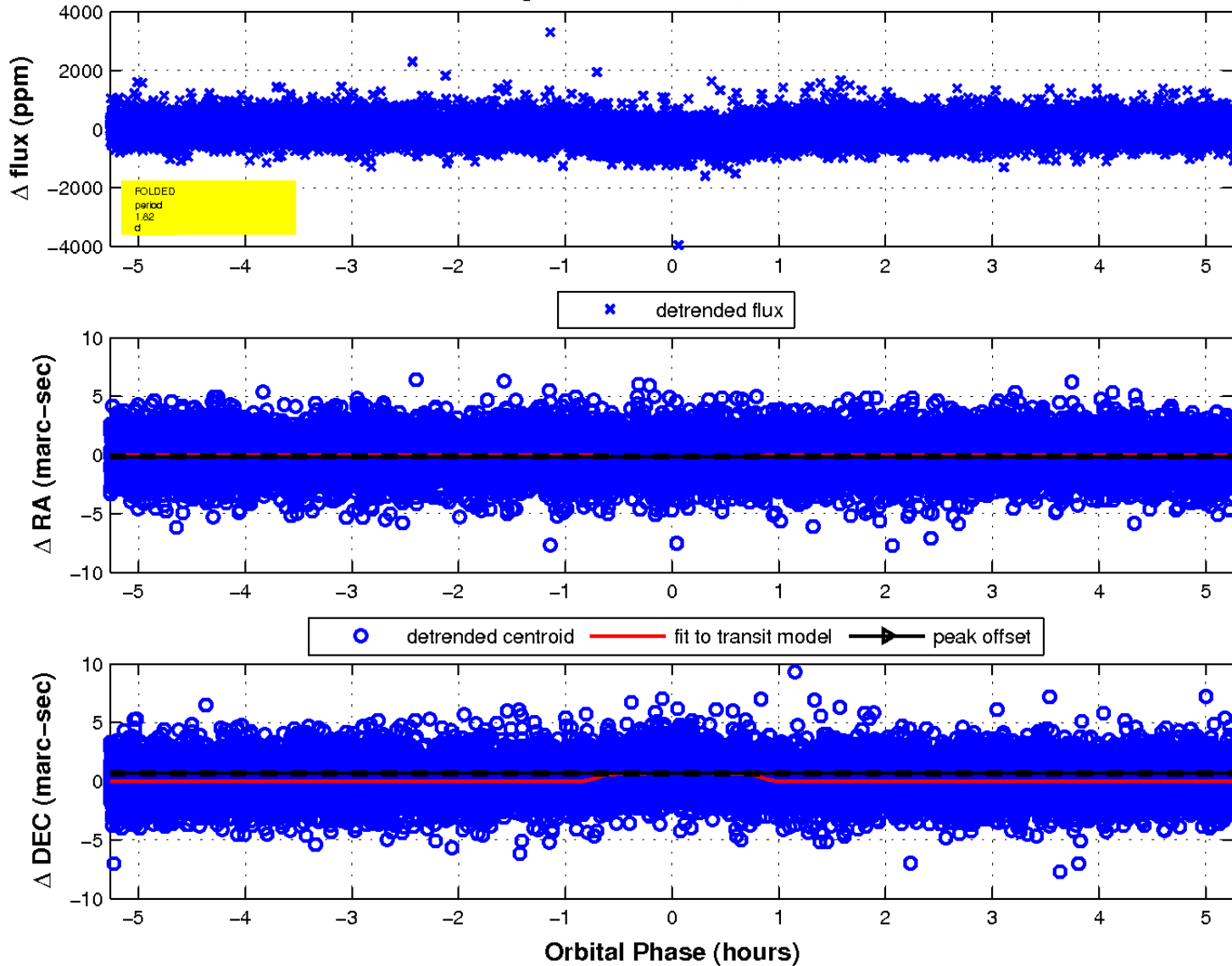




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



### fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

