

# KIC 009899355

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
009899355-01	OBS	1554.01	1.332473	132.109462	106.8	2.132	15.8	9.3	0.88	5995	1.07	1624.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009899355-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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 009899355-01

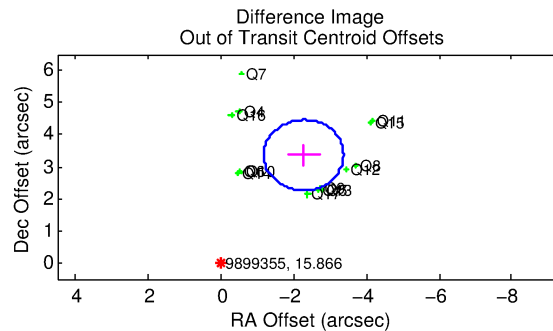
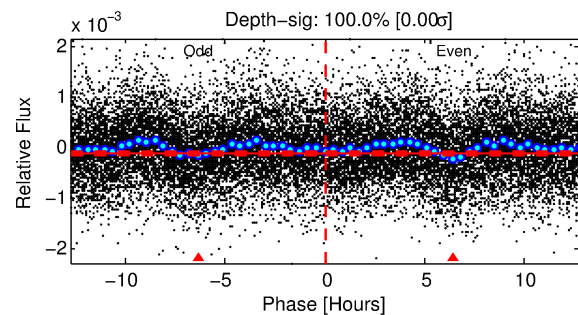
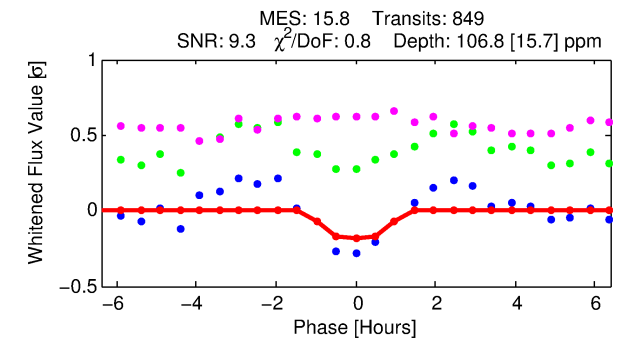
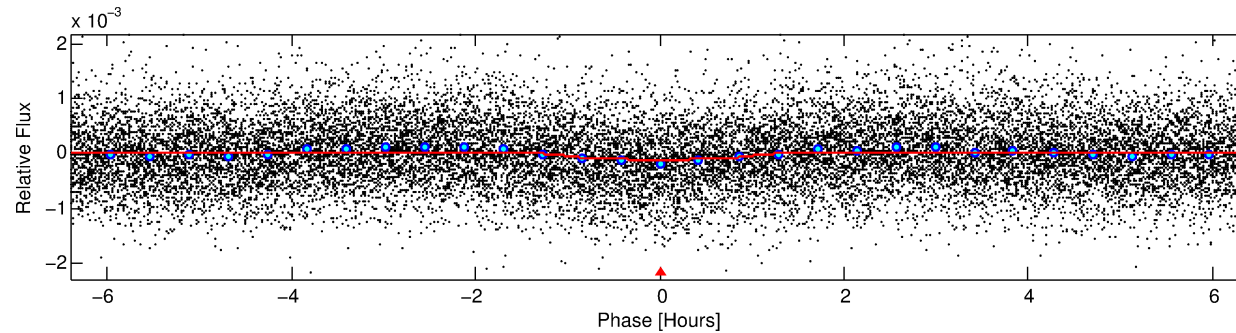
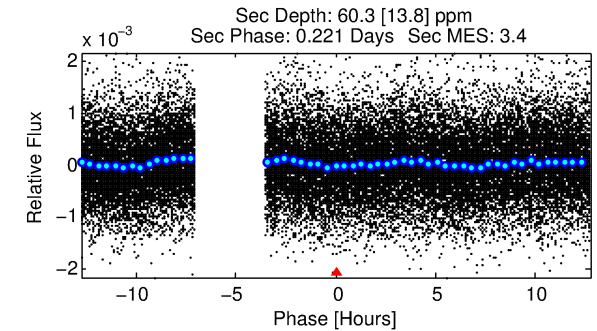
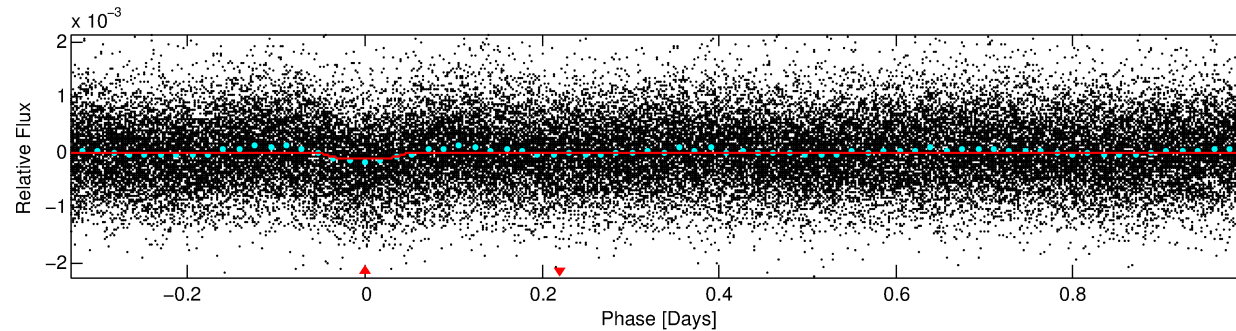
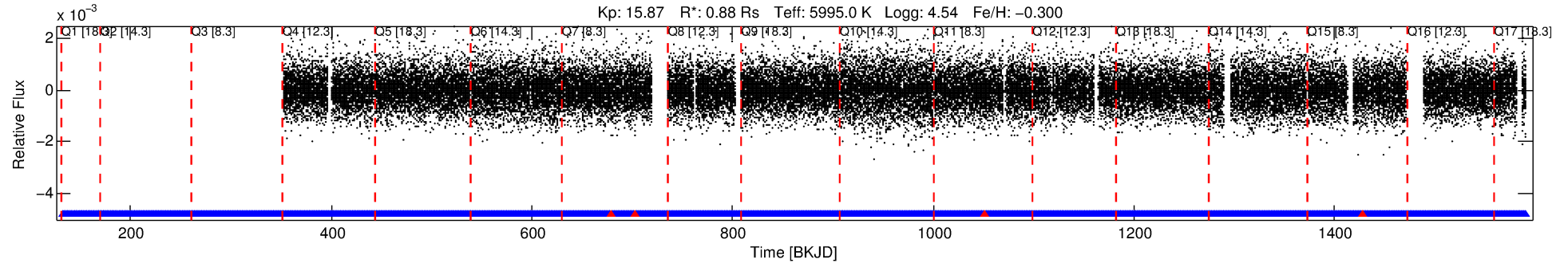
TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
009899355-01	9899355	009899416-01	9899416	1:1	108.1	21	16	10.03	15.87	5704.20	Direct-PRF	0	4.72	3.52

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9899355 Candidate: 1 of 1 Period: 1.332 d  
KOI: K01554 Corr: No Ephemeris Match

Kp: 15.87 R\*: 0.88 Rs Teff: 5995.0 K Logg: 4.54 Fe/H: -0.300



## DV Fit Results:

Period = 1.33247 [0.00001] d  
Epoch = 132.1095 [0.0033] BKJD  
Rp/R\* = 0.0112 [0.0087]  
a/R\* = 2.39 [8.12]  
b = 0.90 [0.88]  
Seff = 1624.94 [625.98]  
Teq = 1619 [156] K  
Rp = 1.07 [0.89] Re  
a = 0.0234 [0.0057] AU  
Ag = 15.93 [25.74] [0.58σ]  
Teff = 5001 [1981] K [1.70σ]

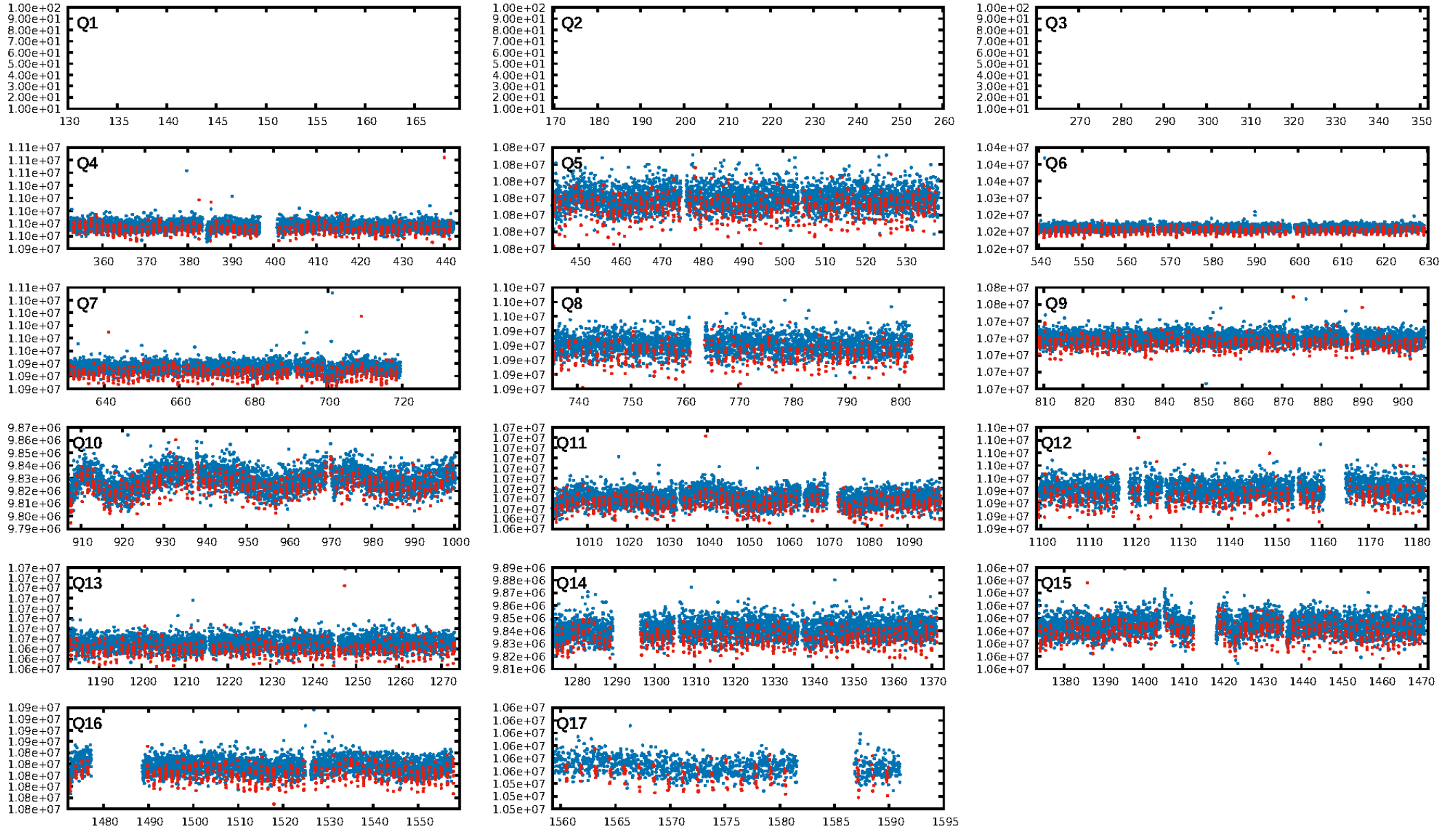
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.57e-55  
RollingBand-fgt: 1.00 [826/830]  
GhostDiagnostic-chr: 0.1048  
Centroid-sig: 0.0%  
Centroid-so: 5.973 arcsec [4.23σ]  
OotOffset-rm: 4.057 arcsec [11.06σ]  
KicOffset-rm: 3.975 arcsec [10.77σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.00 [0/14]  
DiffImageOverlap-fno: 1.00 [14/14]

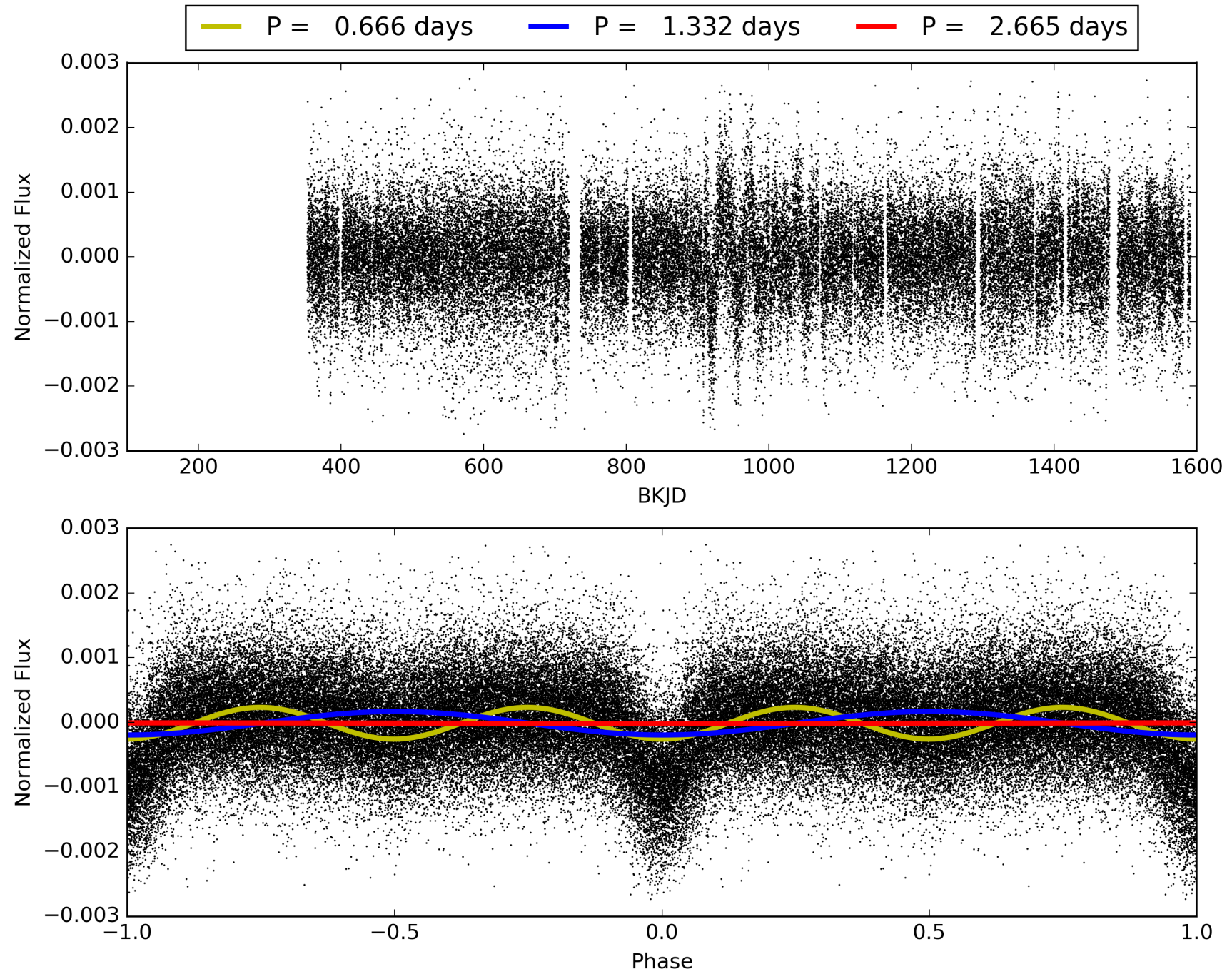
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:06:43 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009899355-01, PDC Light Curves



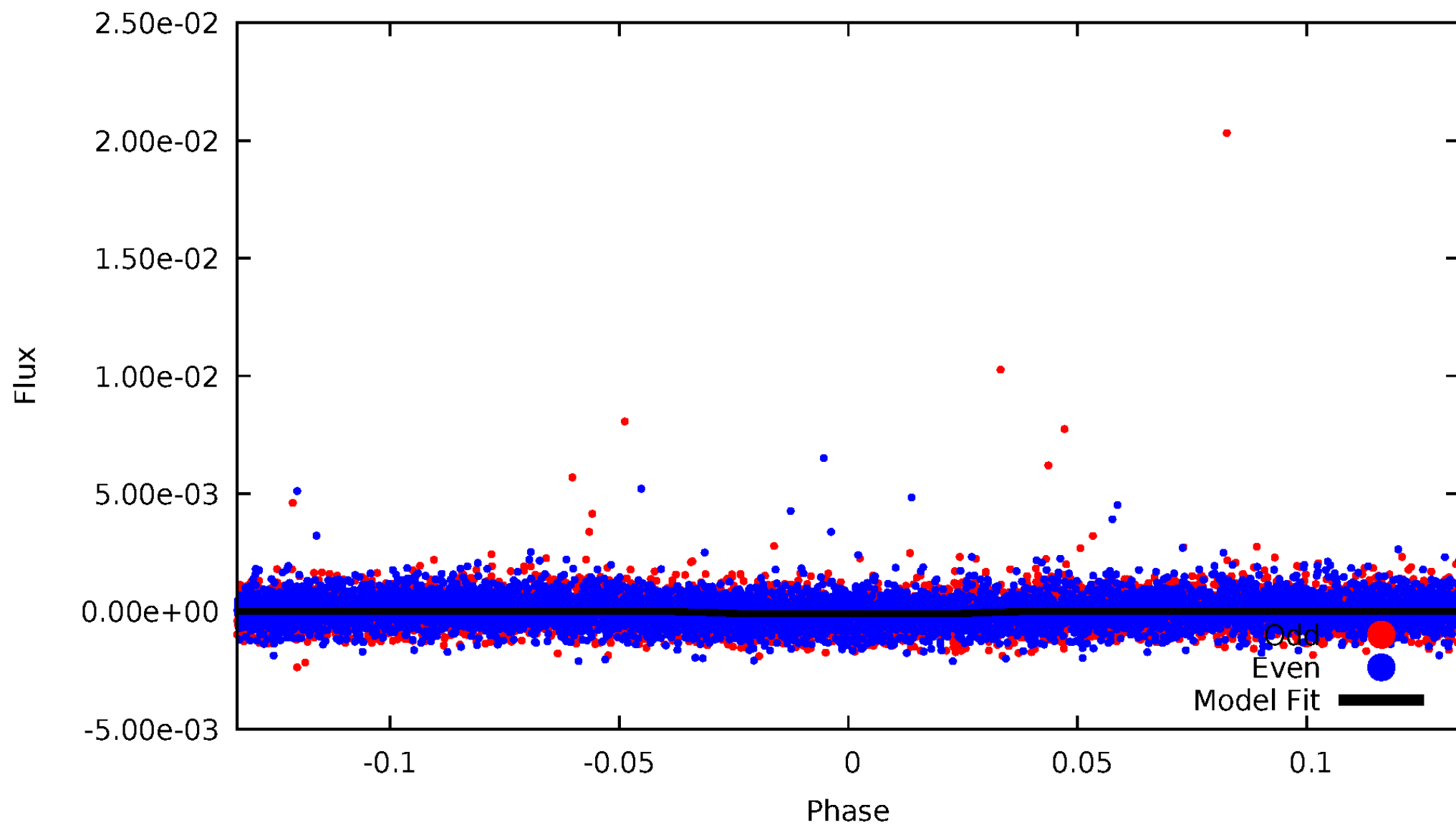
TCE 009899355-01





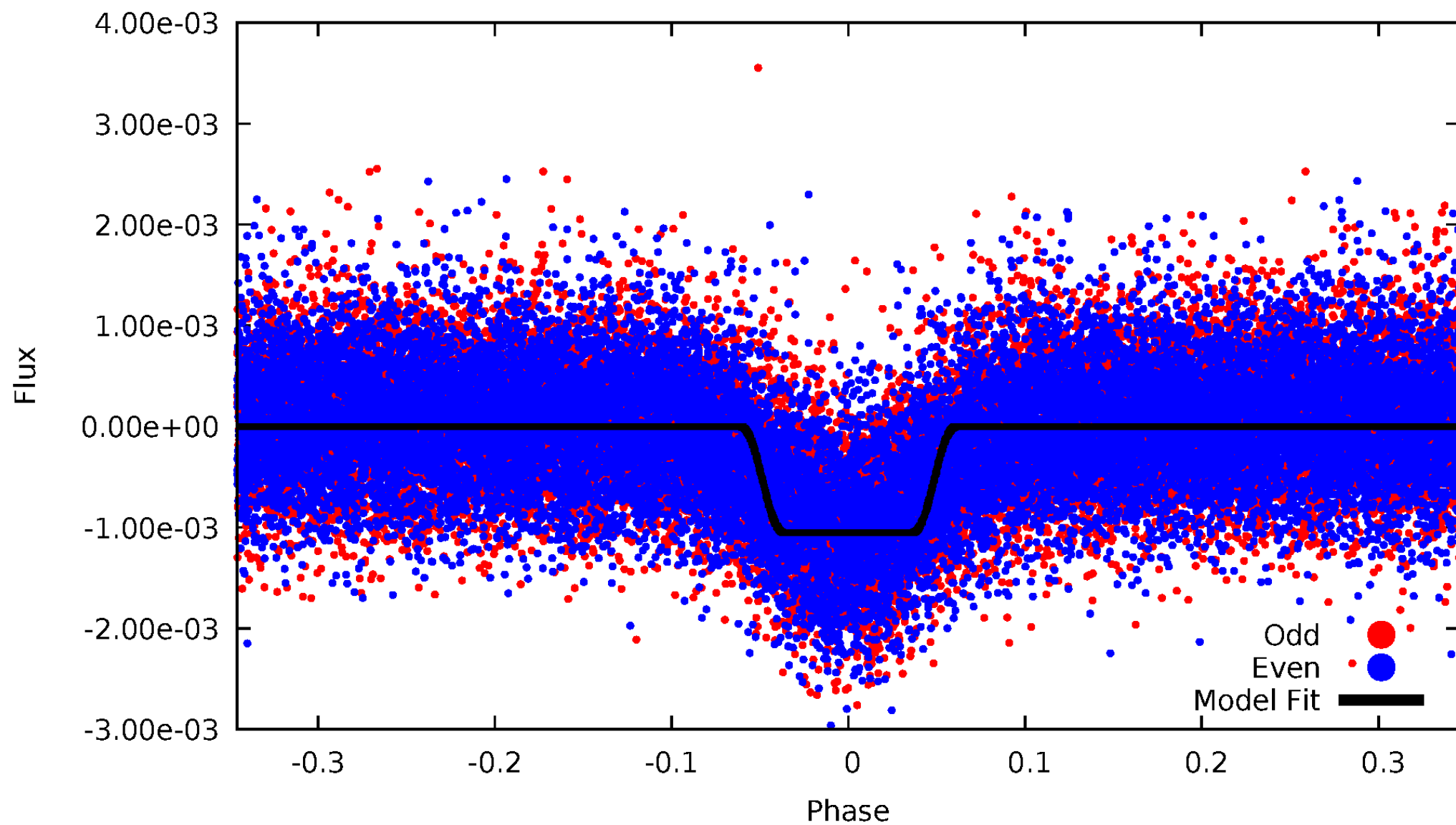
# DV Odd/Even

TCE 009899355-01



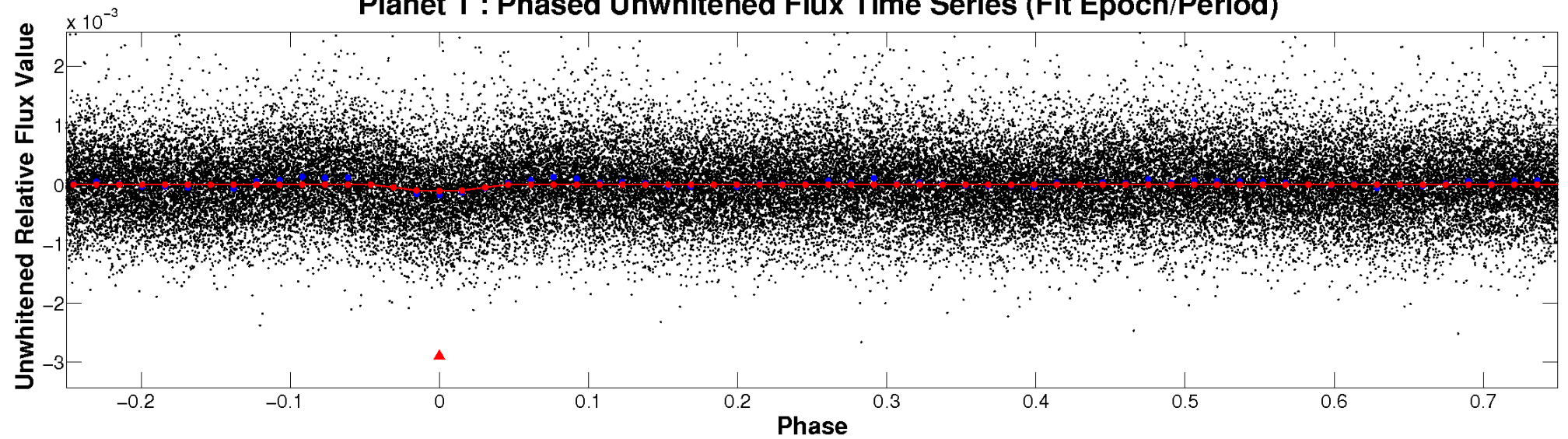
# ALT Odd/Even

TCE 009899355-01

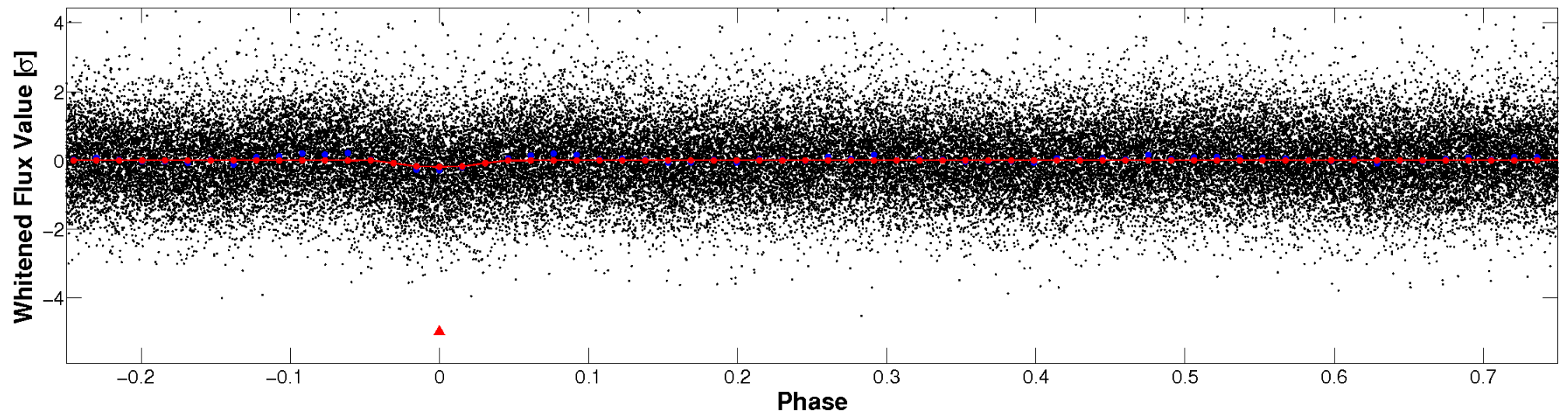


# Non-Whitened Vs. Whitened Light Curve

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

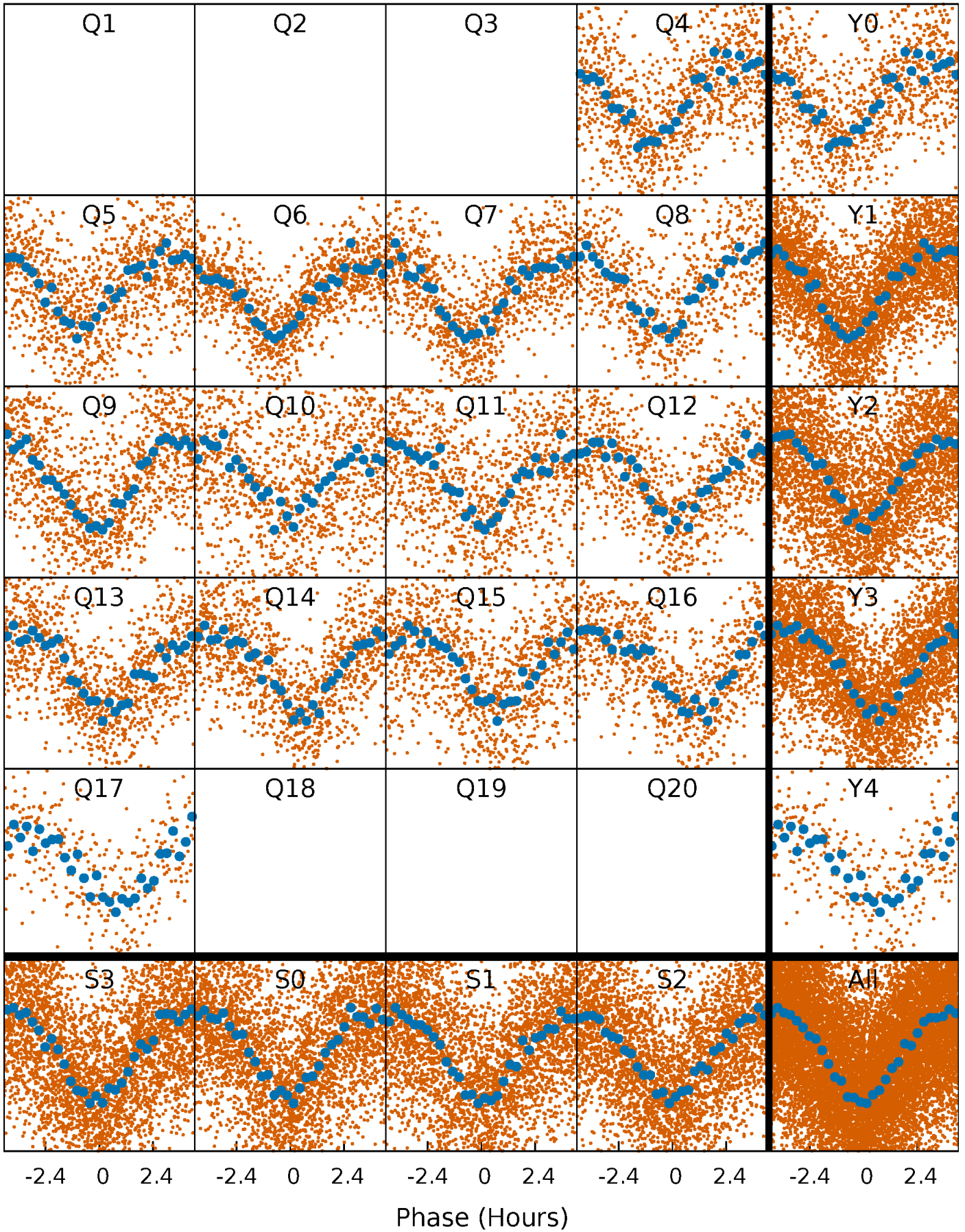


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

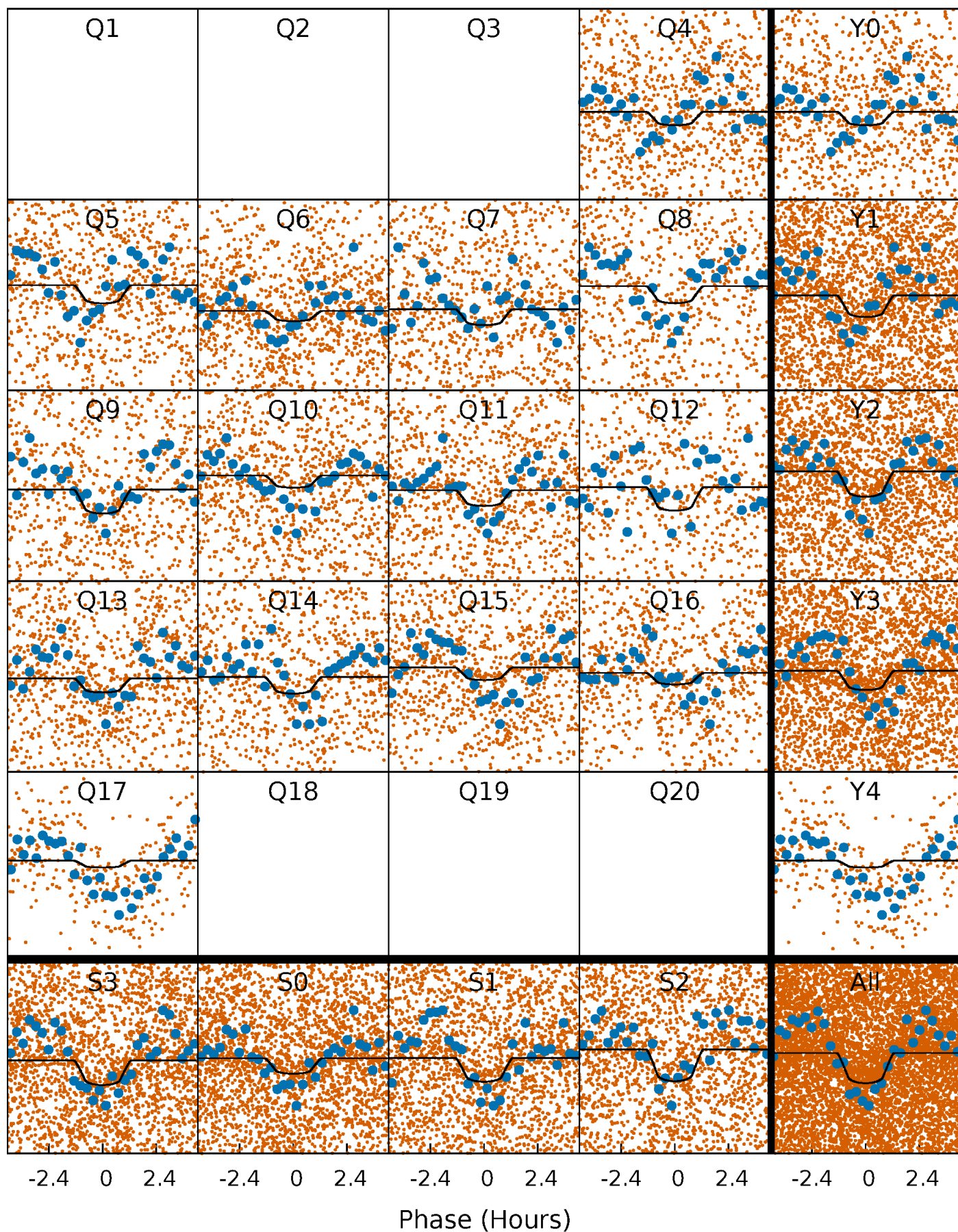
TCE 009899355-01 P= 1.332473 Days  $T_0=132.109462$  (BKJD)





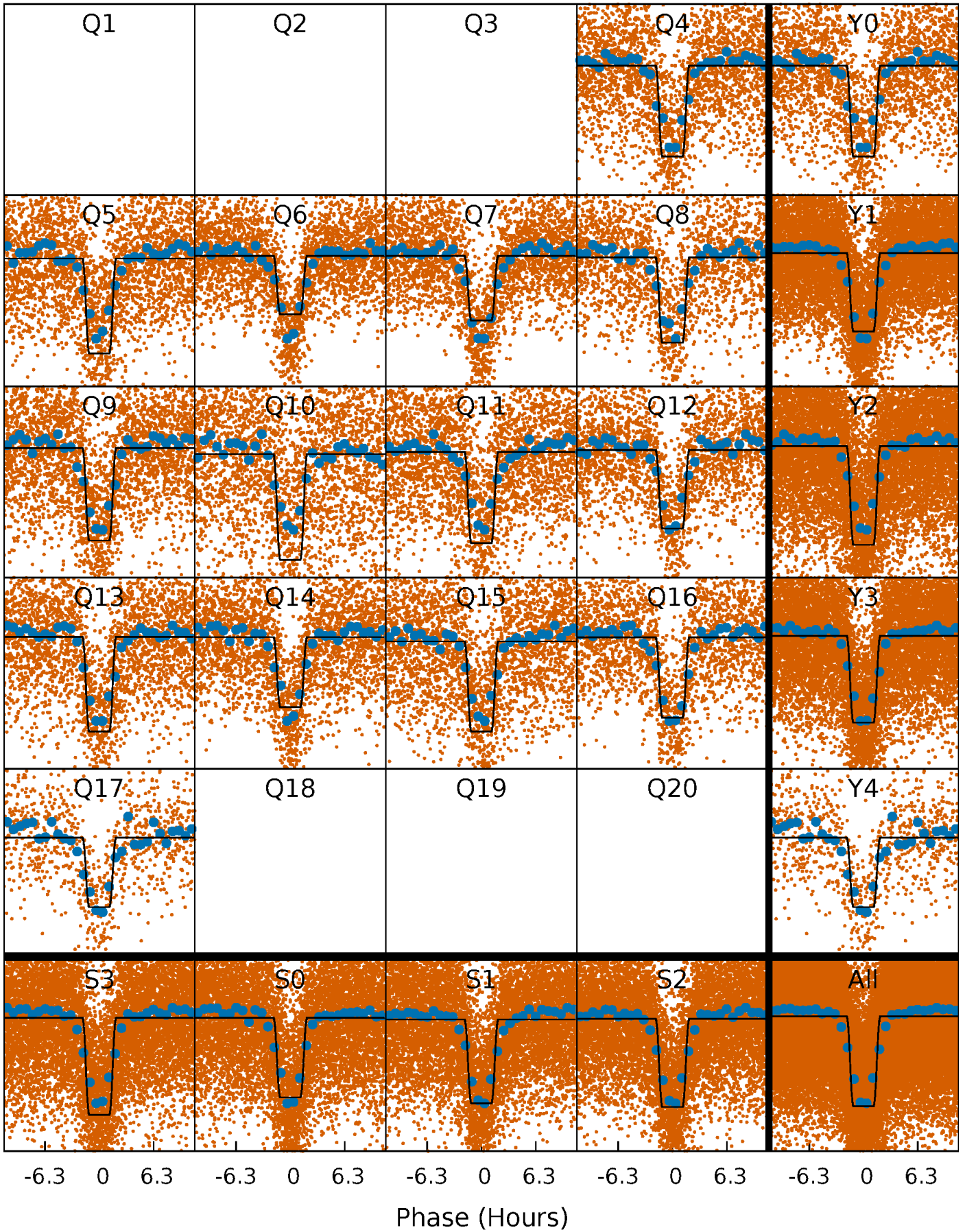
# DV Quarter-Phased Transit Curves

TCE 009899355-01 P= 1.332473 Days  $T_0=132.109462$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

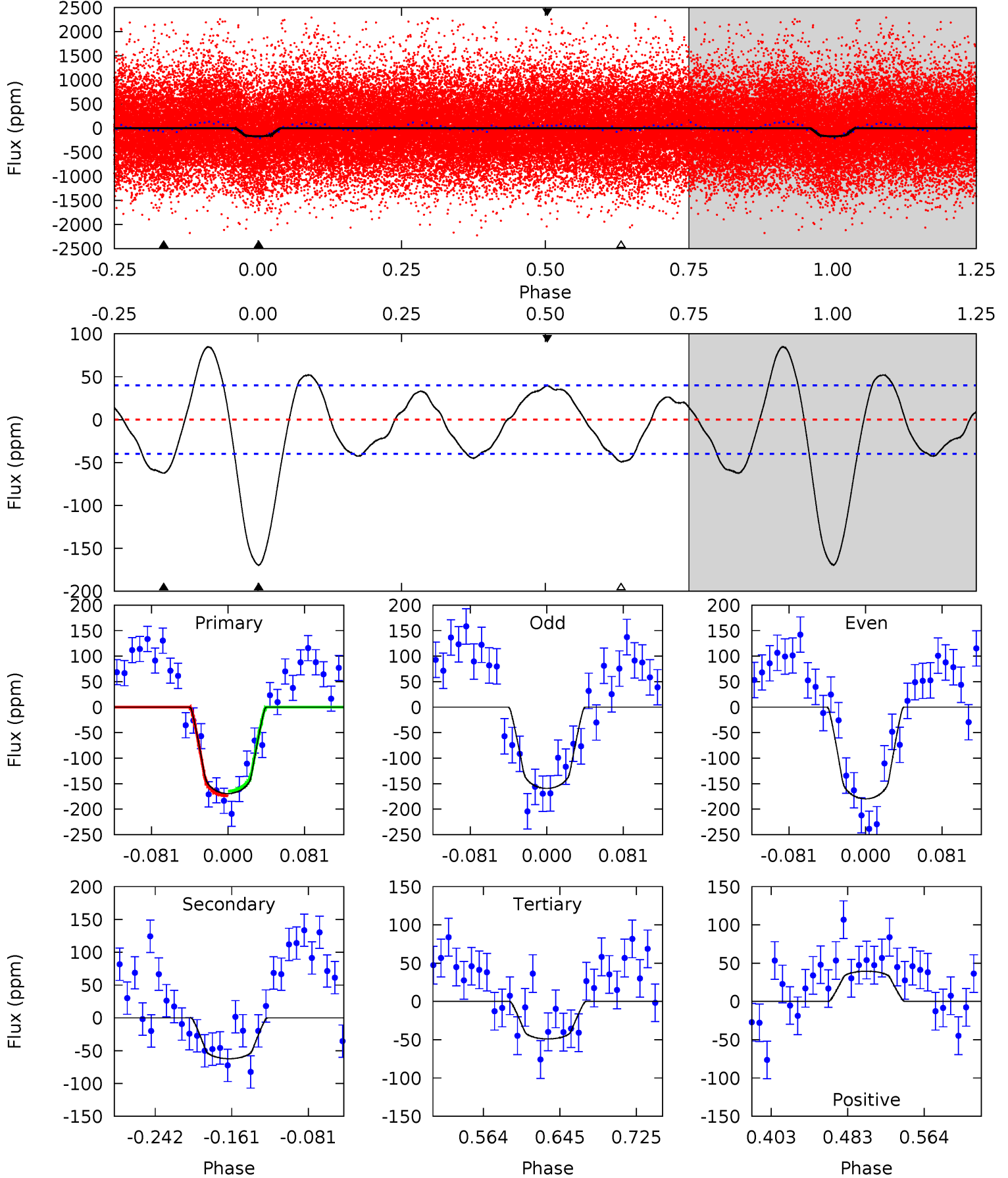
TCE 009899355-01 P= 1.332562 Days  $T_0=132.052439$  (BKJD)



# DV Model-Shift Uniqueness Test

009899355-01, P = 1.332473 Days, E = 132.109462 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
19.6	7.20	5.66	4.57	4.61	1.75	3.40	13.9	15.0	1.53	2.63	1.18	0.98	0.33	0.53

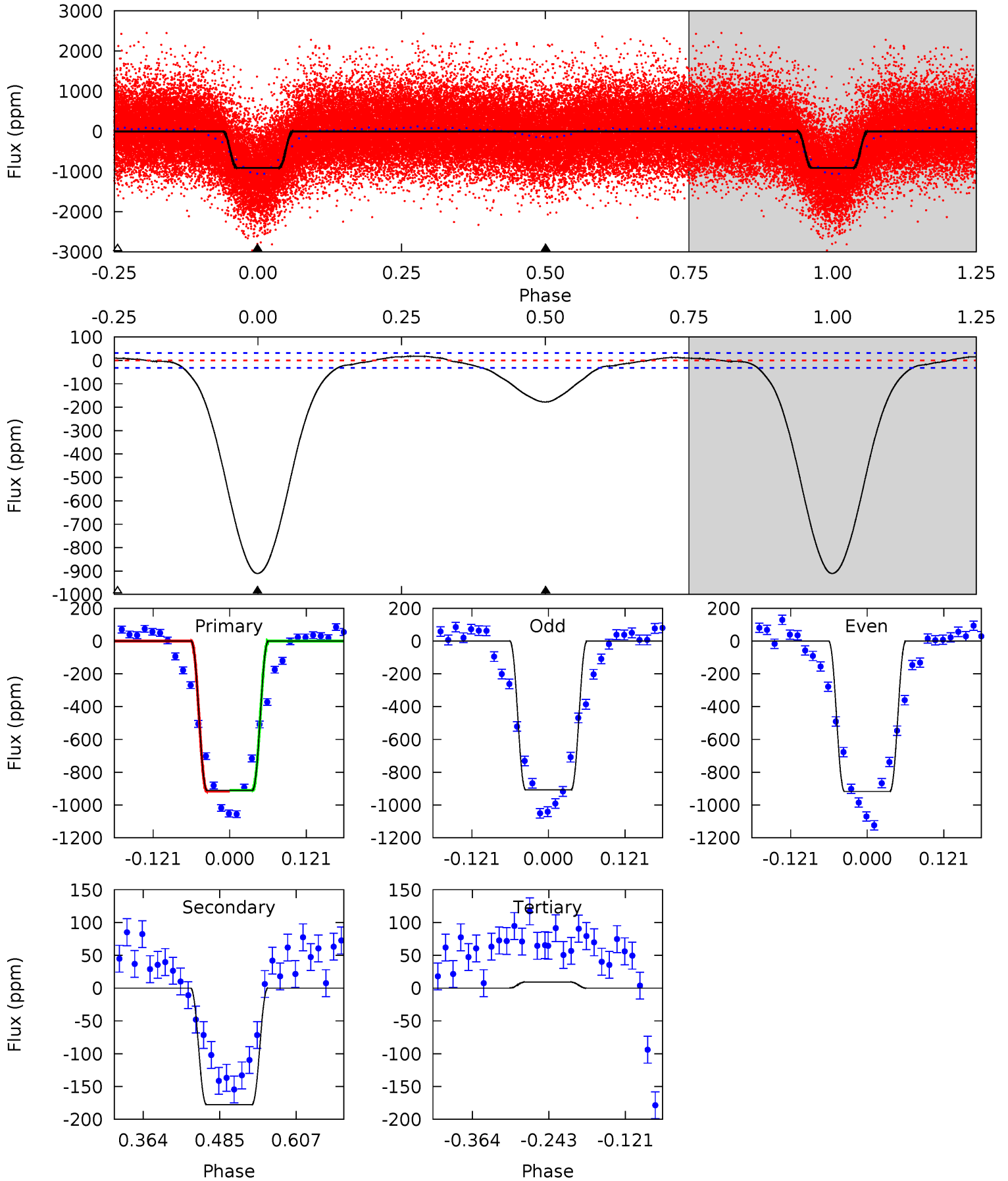




# Alt Model-Shift Uniqueness Test

009899355-01, P = 1.332562 Days, E = 132.052439 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
129.0	25.2	-1.31	0	4.52	1.55	2.24	130.3	129.0	26.5	25.2	0.66	1.02	0.02	0.38





### Stellar Parameters For KIC 009899355

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5995^{+189}_{-231}$	$4.536^{+0.048}_{-0.192}$	$-0.300^{+0.300}_{-0.300}$	$0.878^{+0.256}_{-0.085}$	$0.964^{+0.117}_{-0.129}$	$2.009^{+0.505}_{-0.984}$
	+3%/-4%	+1%/-4%	+100%/-100%	+29%/-10%	+12%/-13%	+25%/-49%
Source	KIC0	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 009899355-01 / KOI 1554.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-62 \pm 9$	$1.26^{+0.79}_{-0.76}$	$2307^{+154}_{-111}$	$4784^{+2563}_{-844}$	$11^{+56}_{-7}$
Alt.	$-178 \pm 7$	$3.20^{+0.95}_{-0.87}$	$2306^{+151}_{-114}$	$4097^{+539}_{-380}$	$5.120^{+4.558}_{-2.036}$

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

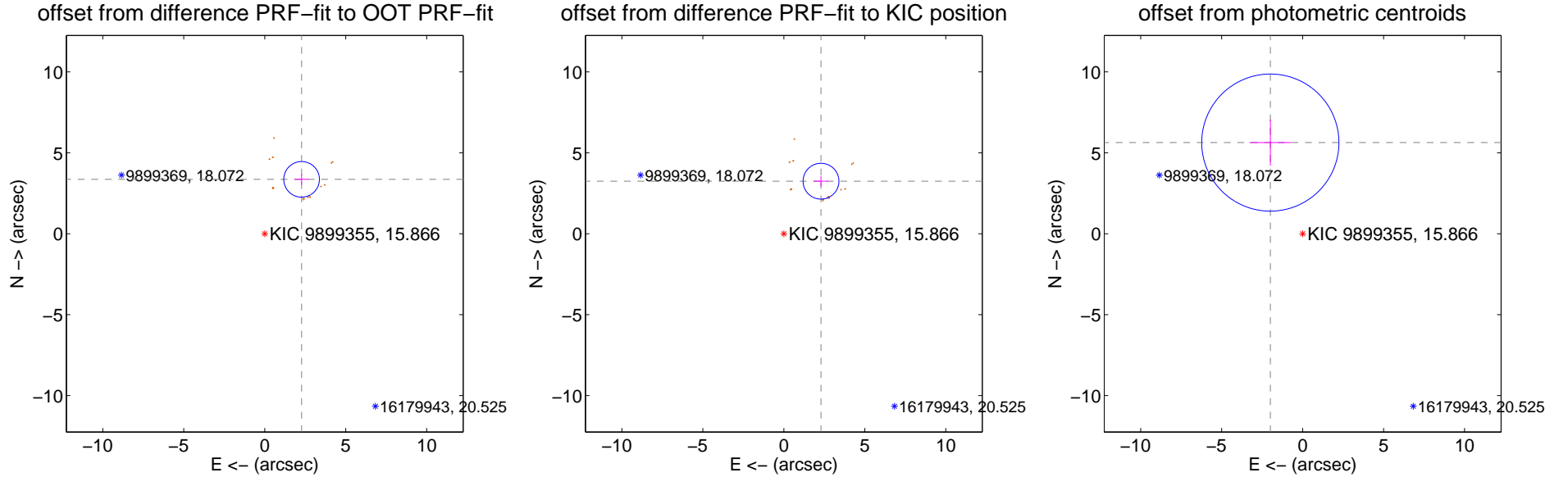
## DV Centroid Data

Supplemental centroid analysis for 009899355-01. Kepler magnitude: 15.87. Transit SNR 9.29

There are 0 quarters with good PRF difference image offsets

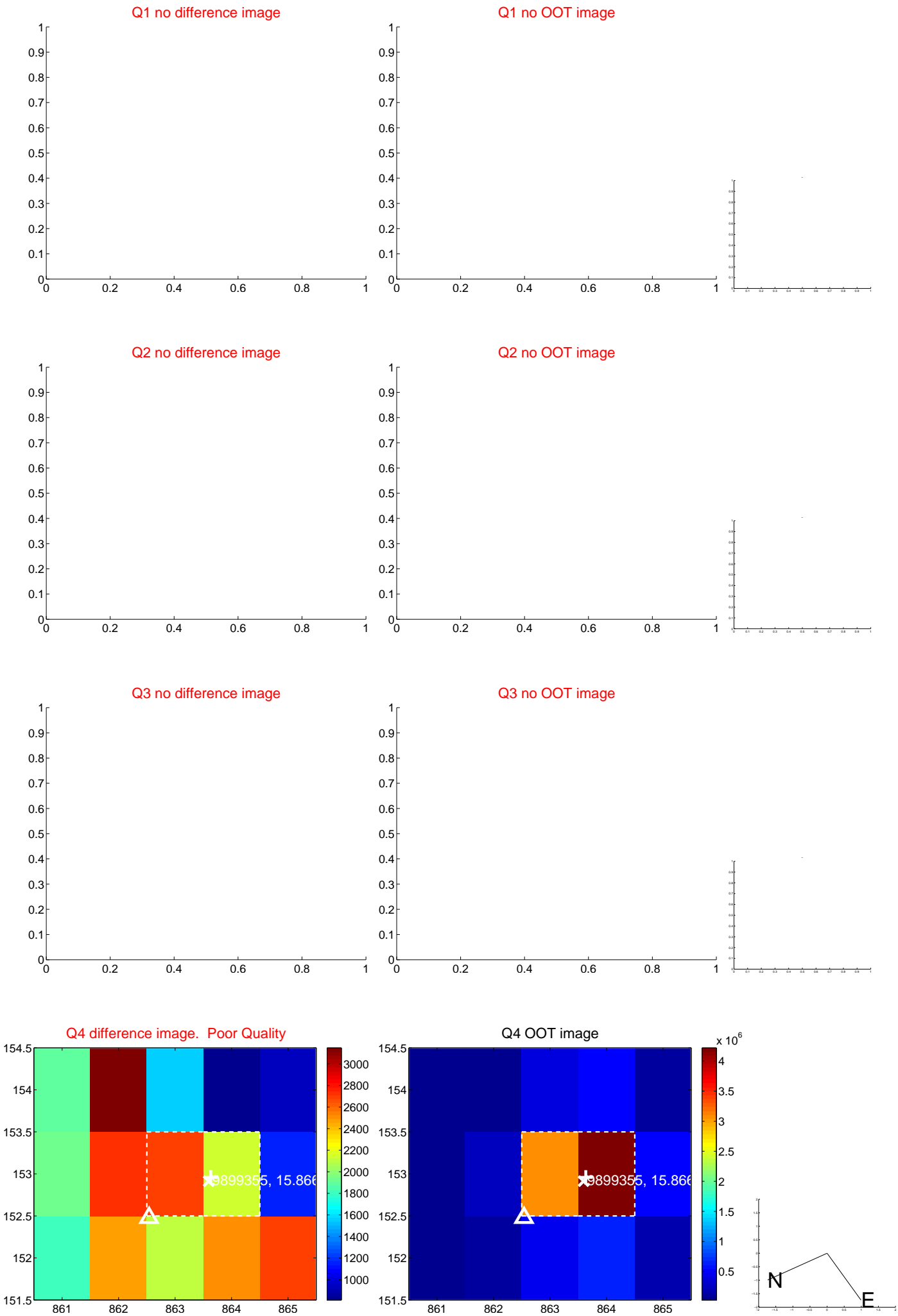
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.057 \pm 0.367$	11.06	$-2.275 \pm 0.437$	$3.359 \pm 0.330$
PRF-fit source offset from KIC position	$3.975 \pm 0.369$	10.77	$-2.295 \pm 0.448$	$3.245 \pm 0.322$
photometric centroid source offset	$5.97 \pm 1.41$	4.23	$1.99 \pm 1.29$	$5.63 \pm 1.43$

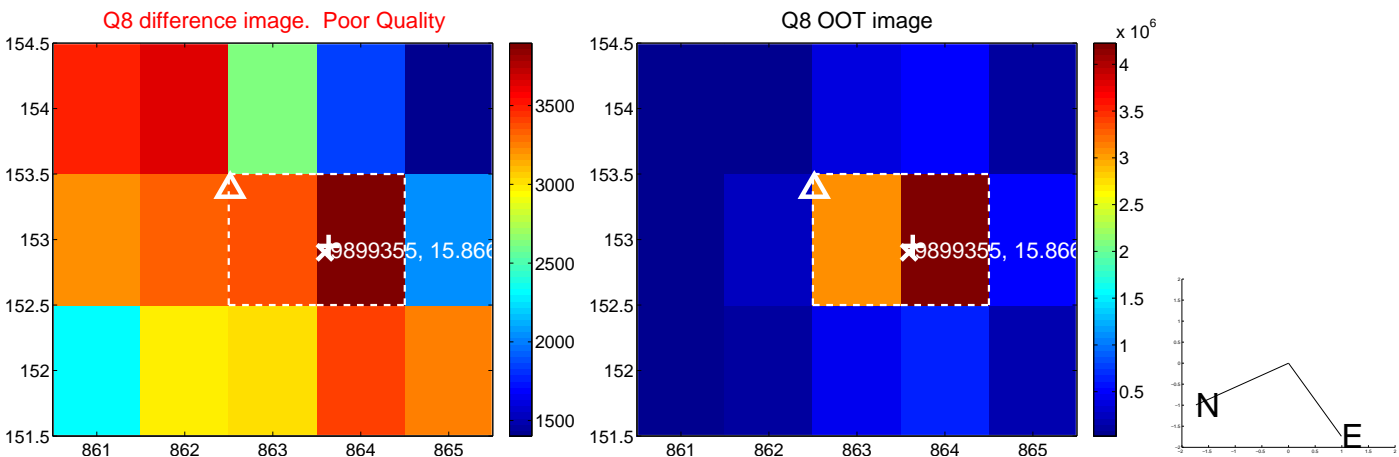
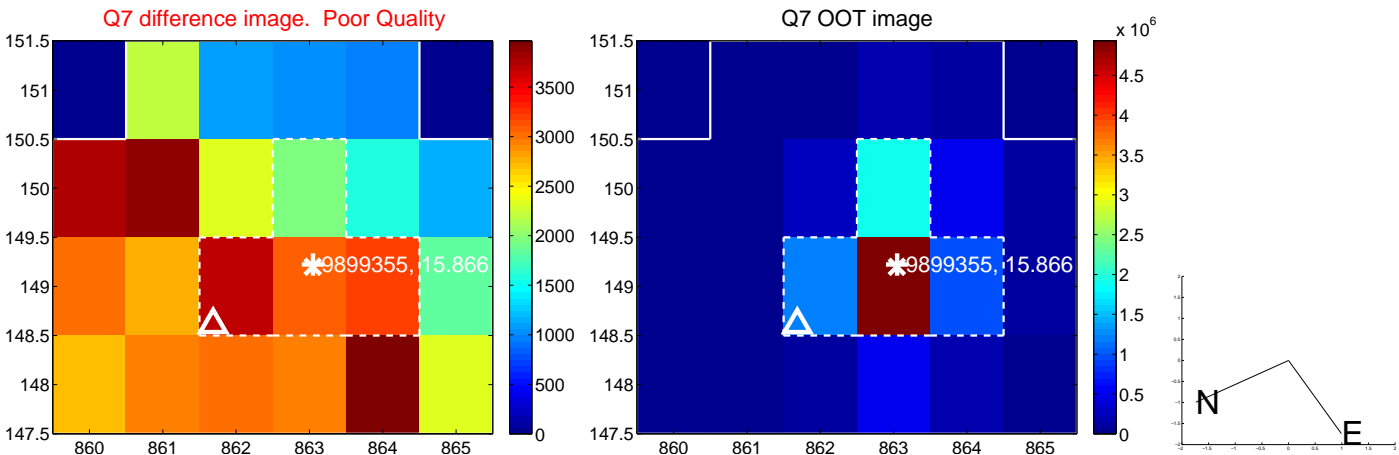
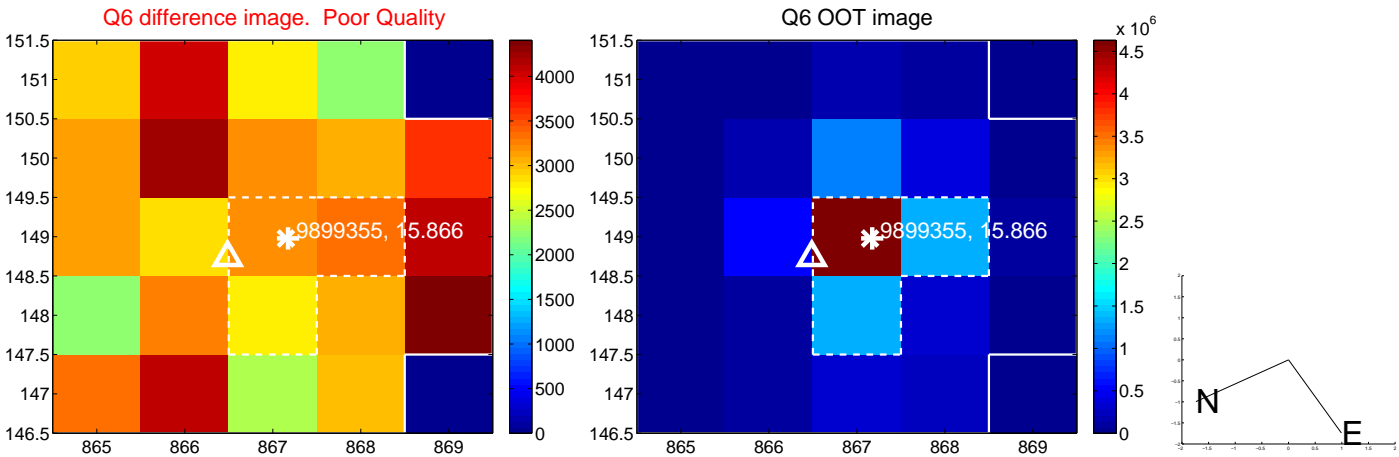
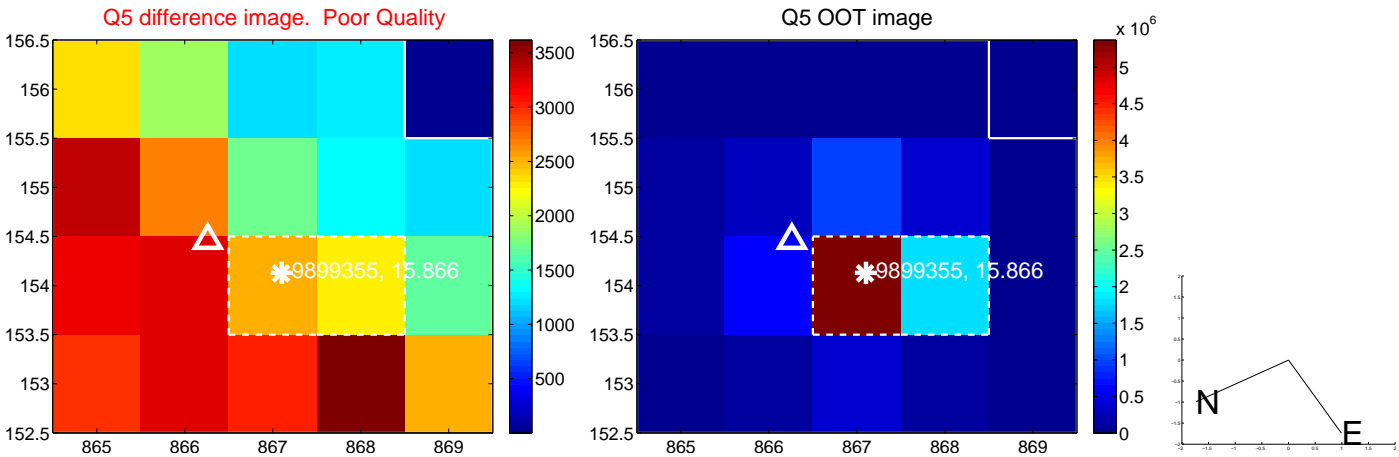


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

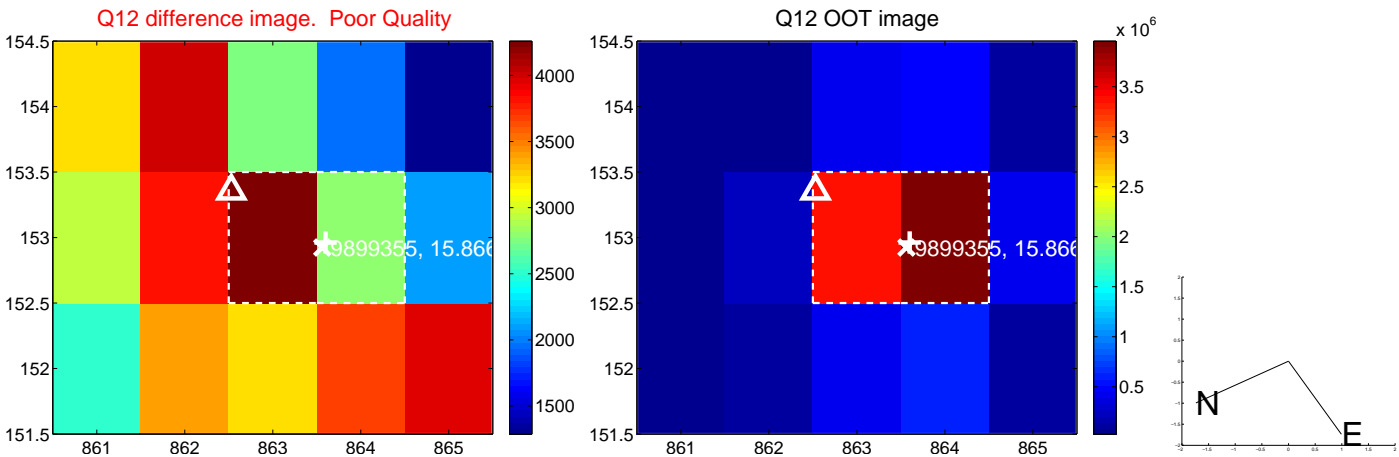
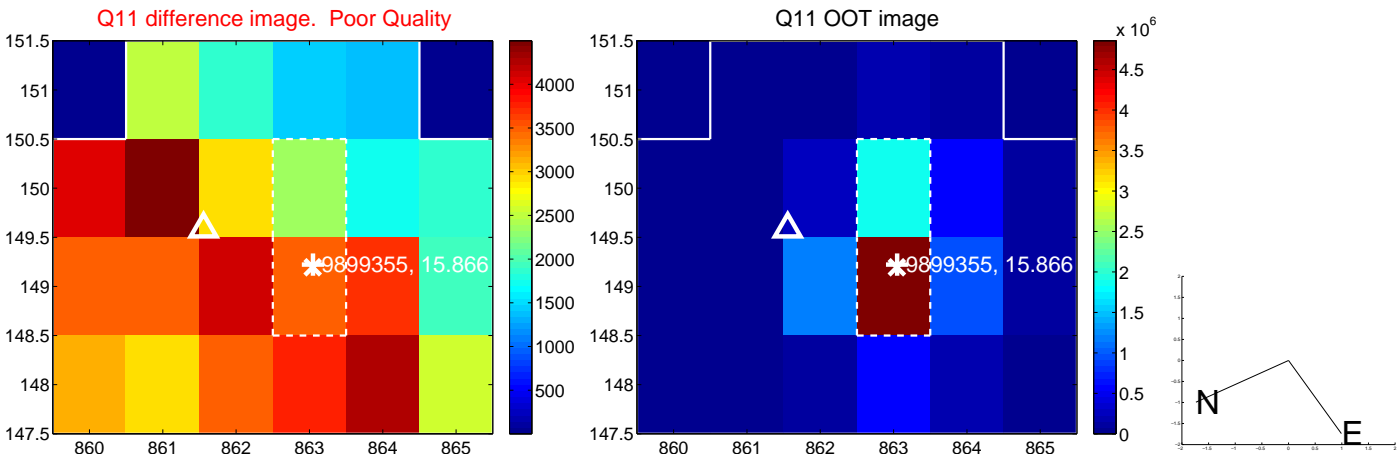
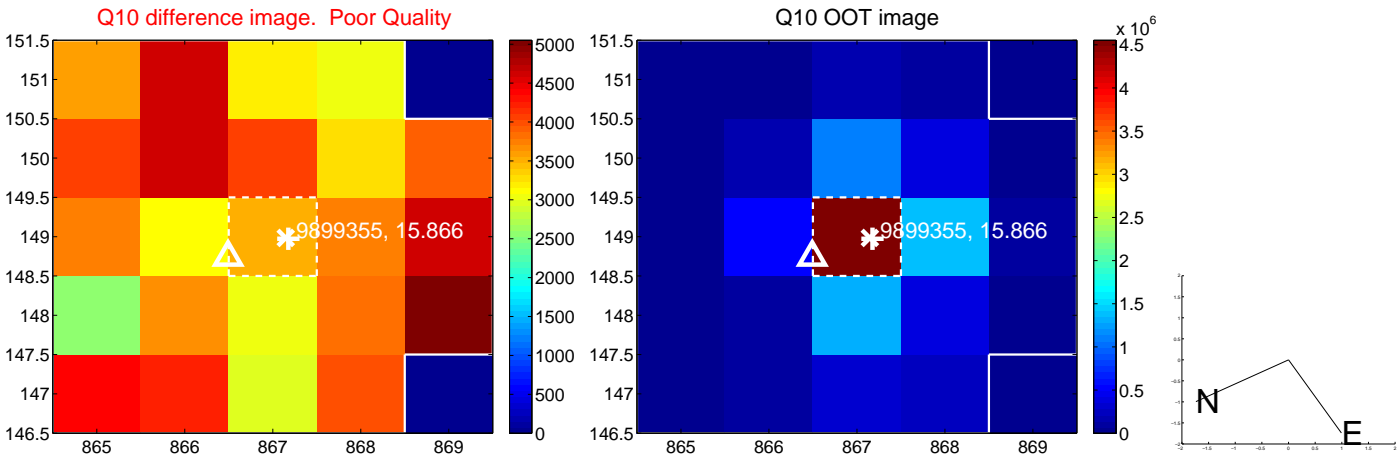
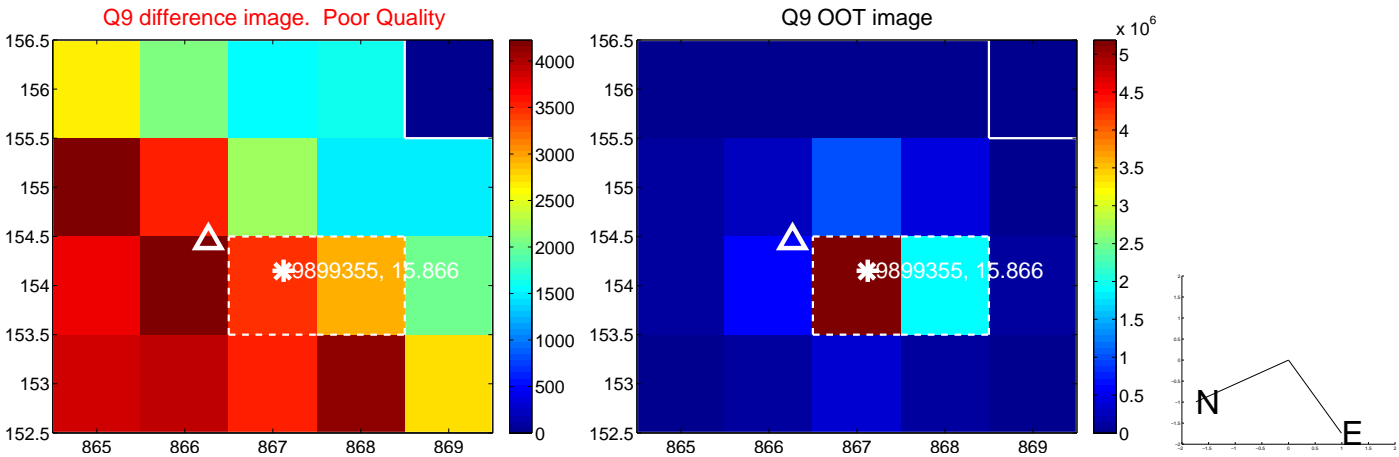


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

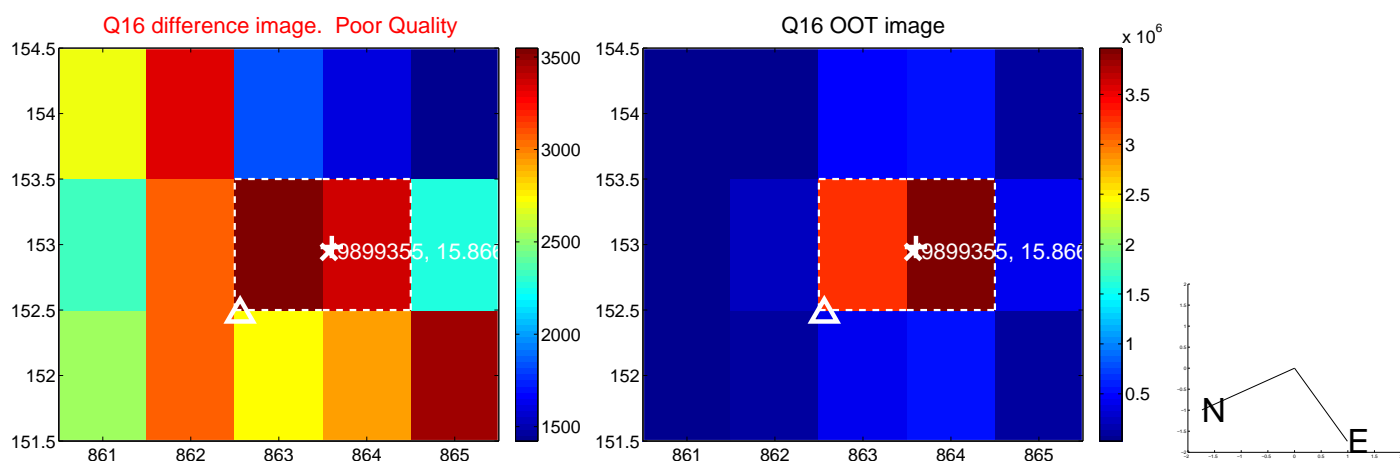
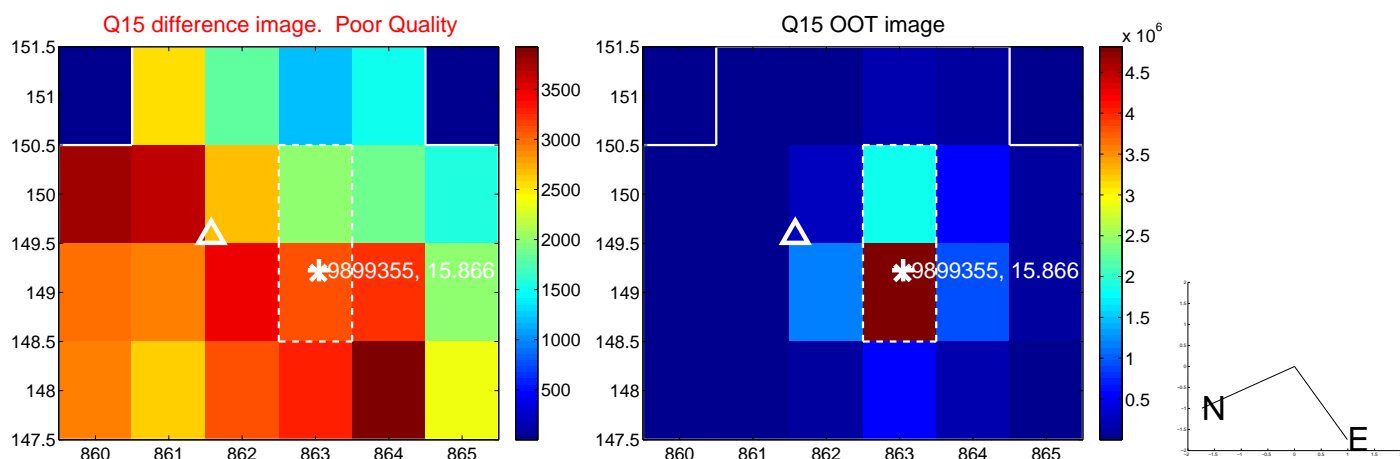
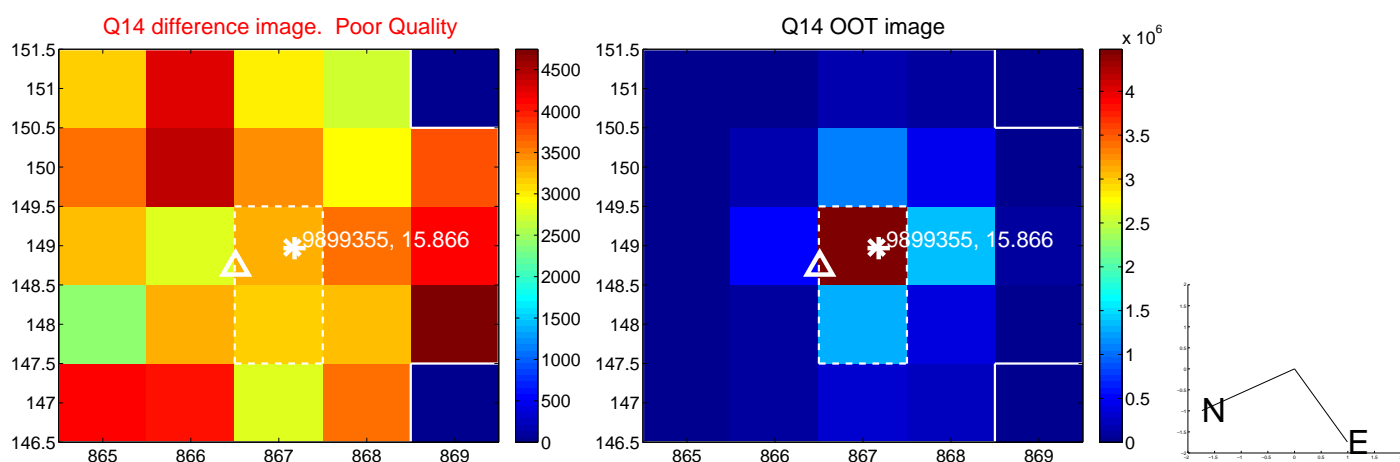
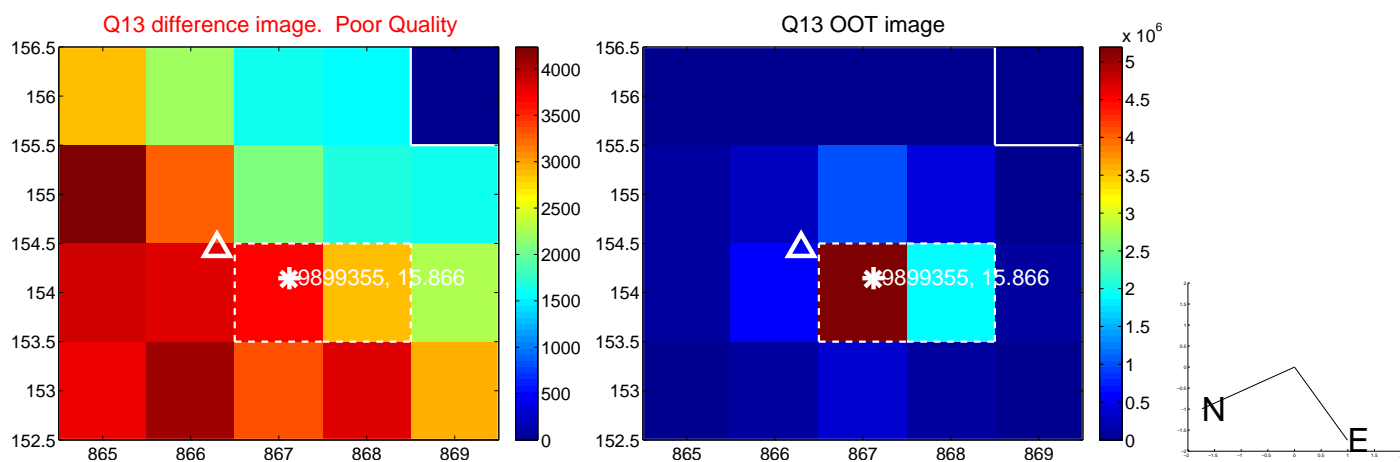




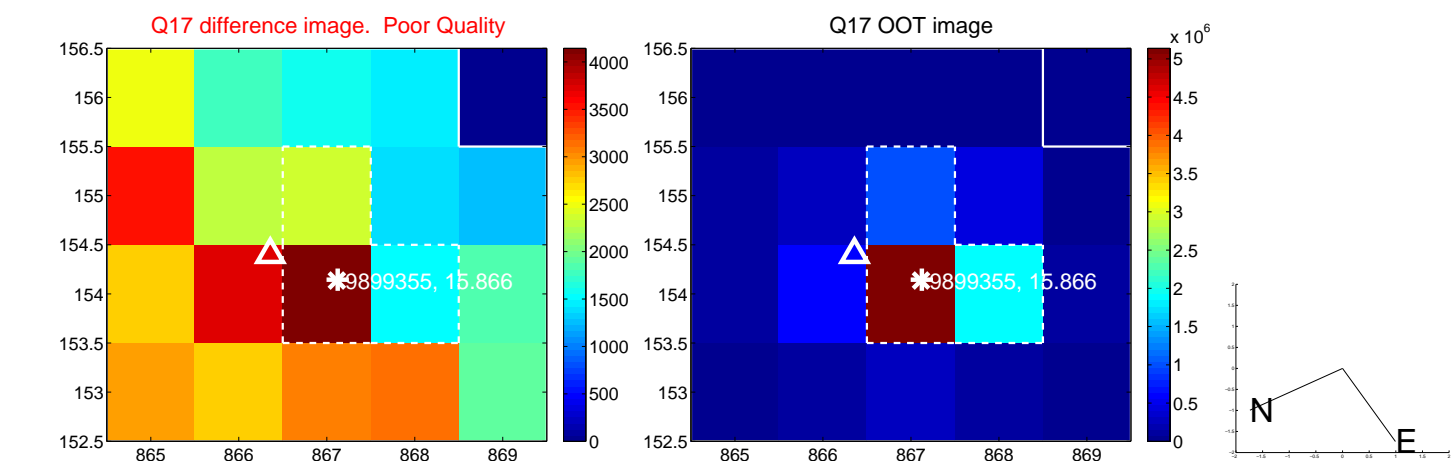
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



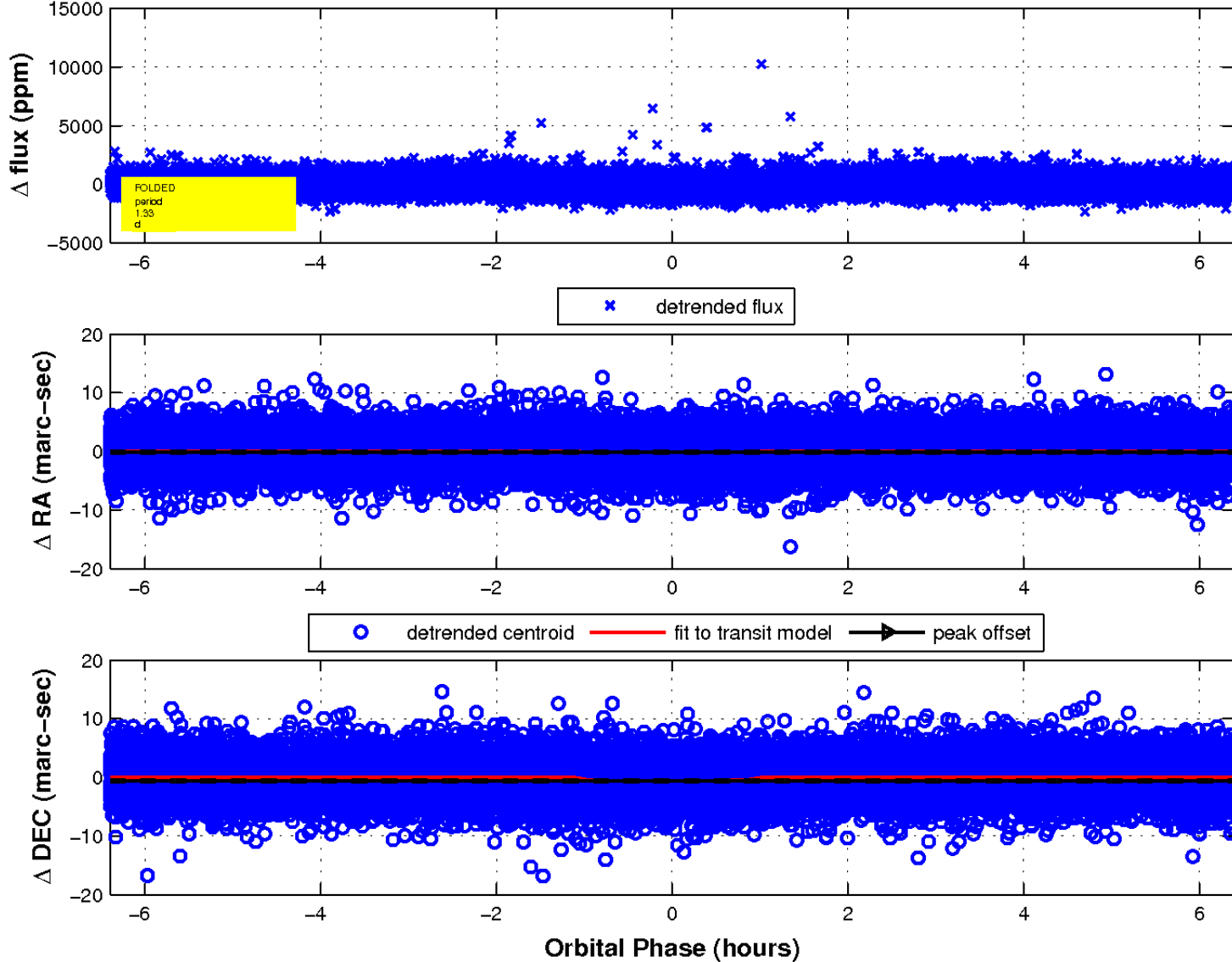
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

