

# KIC 009899352

## 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> )
009899352-01	OBS	3135.01	1.332511	132.077627	145.2	4.106	21.3	18.5	0.86	5718	1.24	1303.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009899352-01	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 009899352-01

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>
009899352-01	9899352	BR-Cyg-pri	9899416	1:1	135.3	25	22	10.03	15.85	4612.90	Direct-PRF	0	3.31	2.00

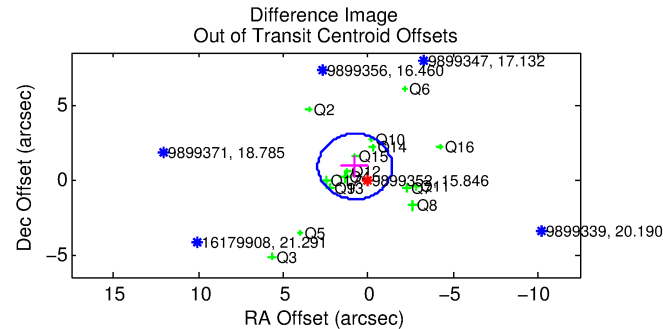
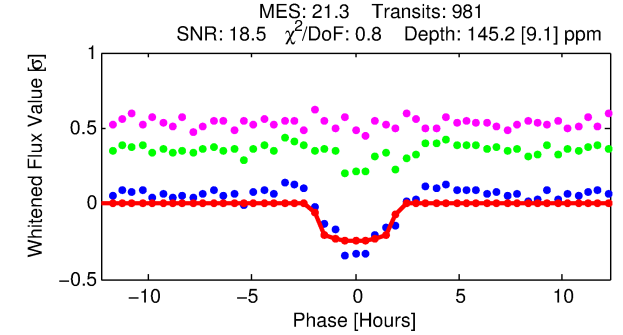
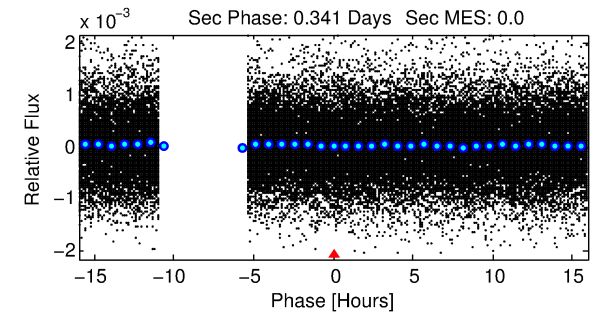
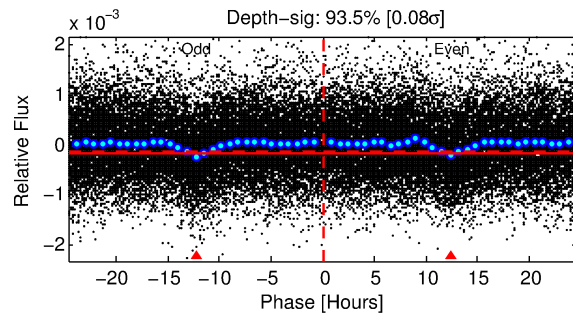
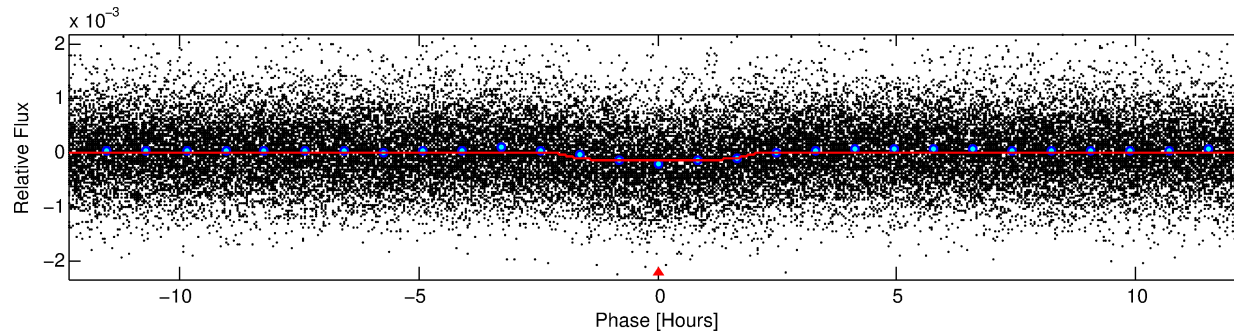
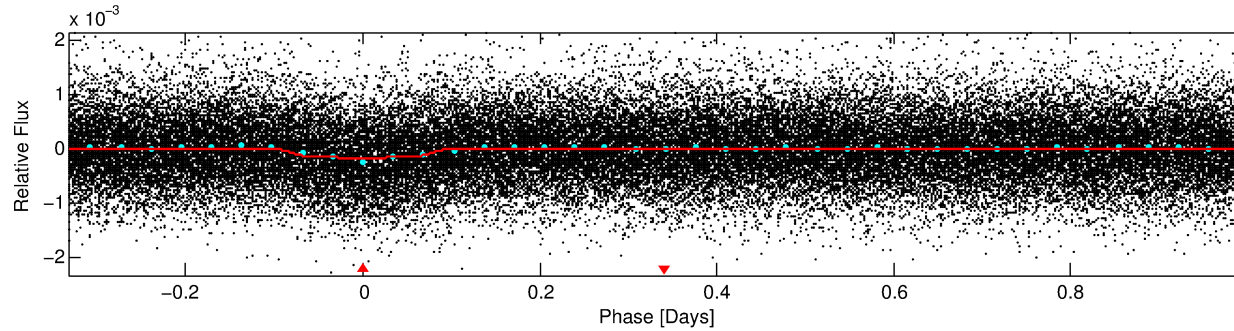
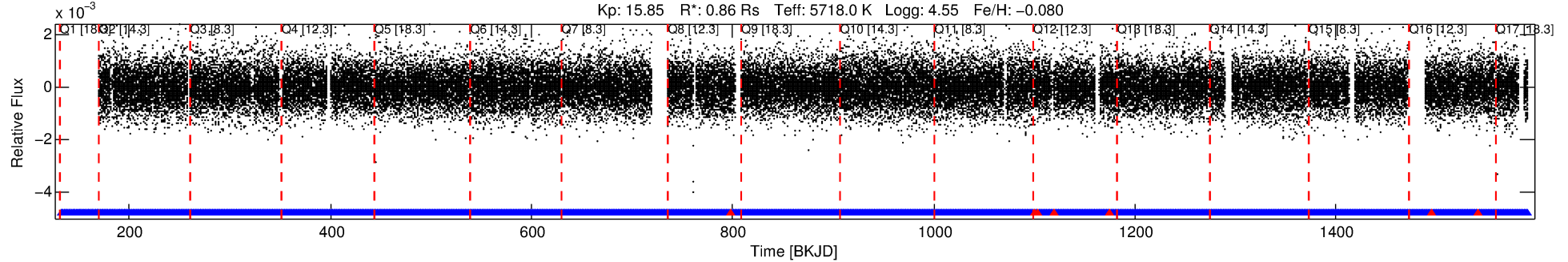
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided 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: 9899352 Candidate: 1 of 1 Period: 1.333 d

KOI: K03135.01 Corr: 0.916

Kp: 15.85 R\*: 0.86 Rs Teff: 5718.0 K Logg: 4.55 Fe/H: -0.080



## DV Fit Results:

Period = 1.33251 [0.00001] d  
Epoch = 132.0776 [0.0028] BKJD  
Rp/R\* = 0.0131 [0.0036]  
a/R\* = 1.49 [1.06]  
b = 0.90 [0.28]  
Seff = 1303.12 [412.67]  
Teq = 1532 [121] K  
Rp = 1.24 [0.45] Re  
a = 0.0234 [0.0047] AU  
Ag = N/A  
Teffp = N/A

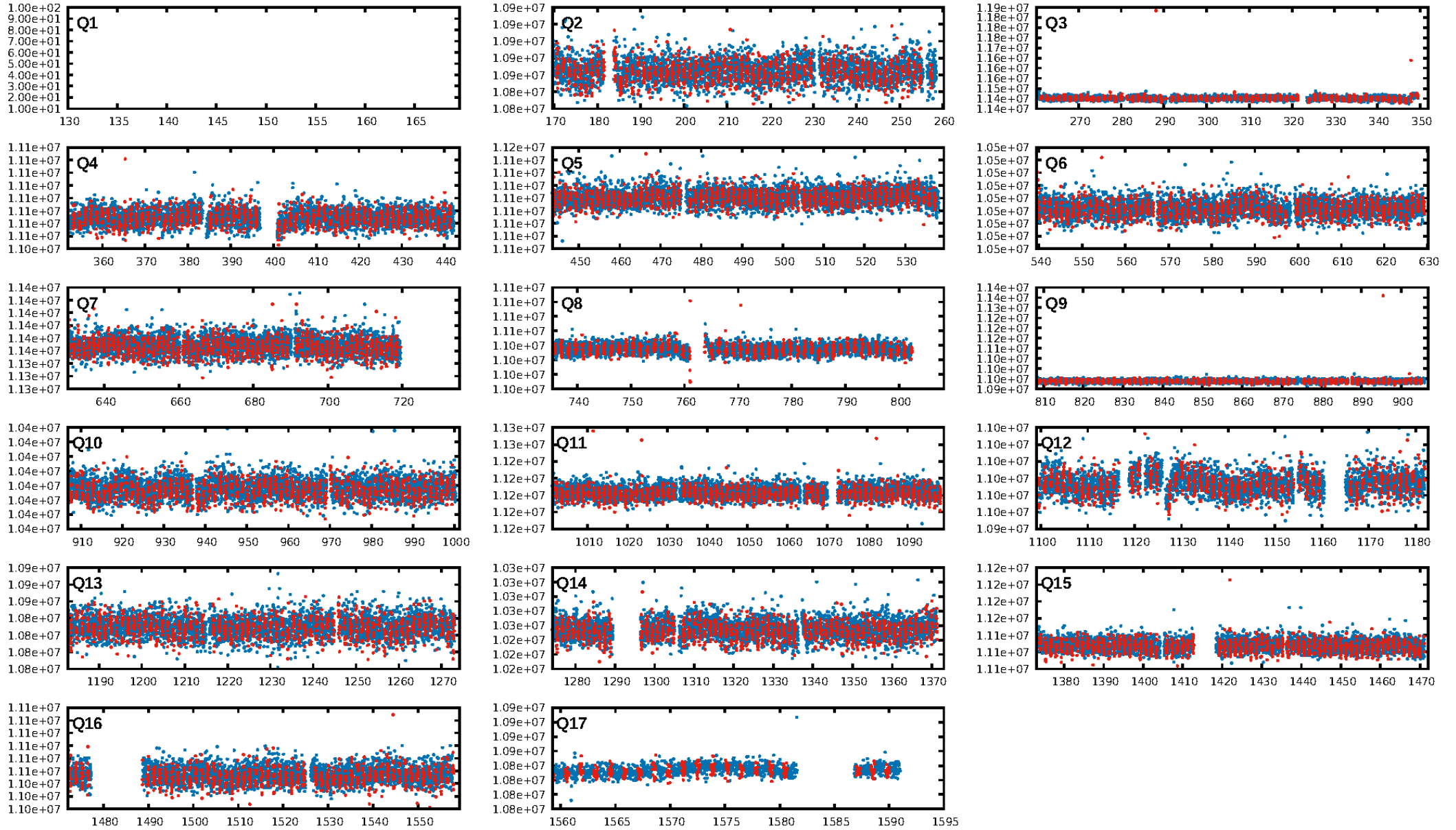
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.56e-94  
RollingBand-fgt: 0.99 [954/961]  
GhostDiagnostic-chr: -0.1563  
Centroid-sig: 0.0%  
Centroid-so: 6.798 arcsec [10.90σ]  
OotOffset-rm: 1.165 arcsec [1.60σ]  
KicOffset-rm: 1.852 arcsec [2.30σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.06 [1/16]  
DiffImageOverlap-fno: 1.00 [16/16]

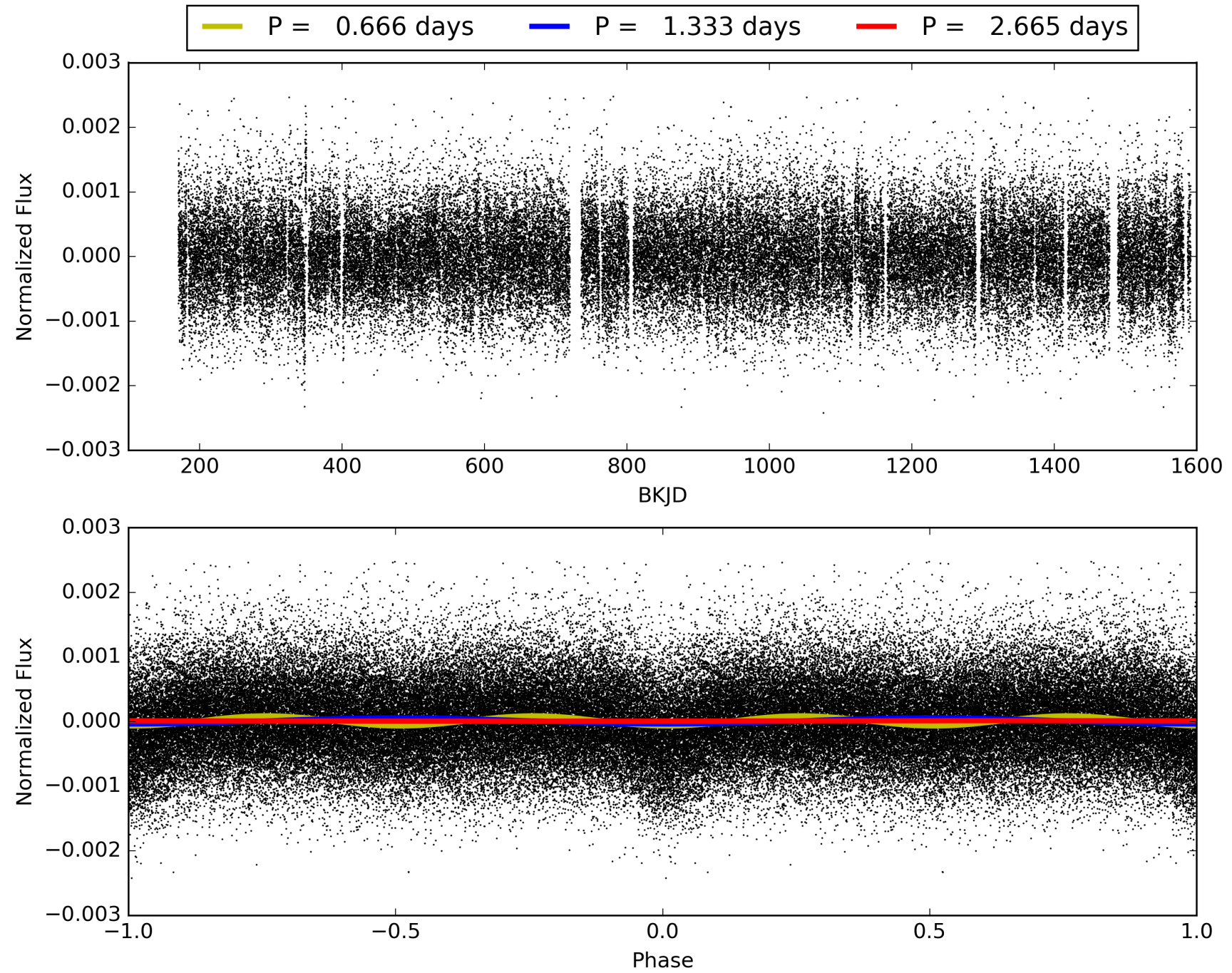
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:03:10 Z

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

# TCE 009899352-01, PDC Light Curves



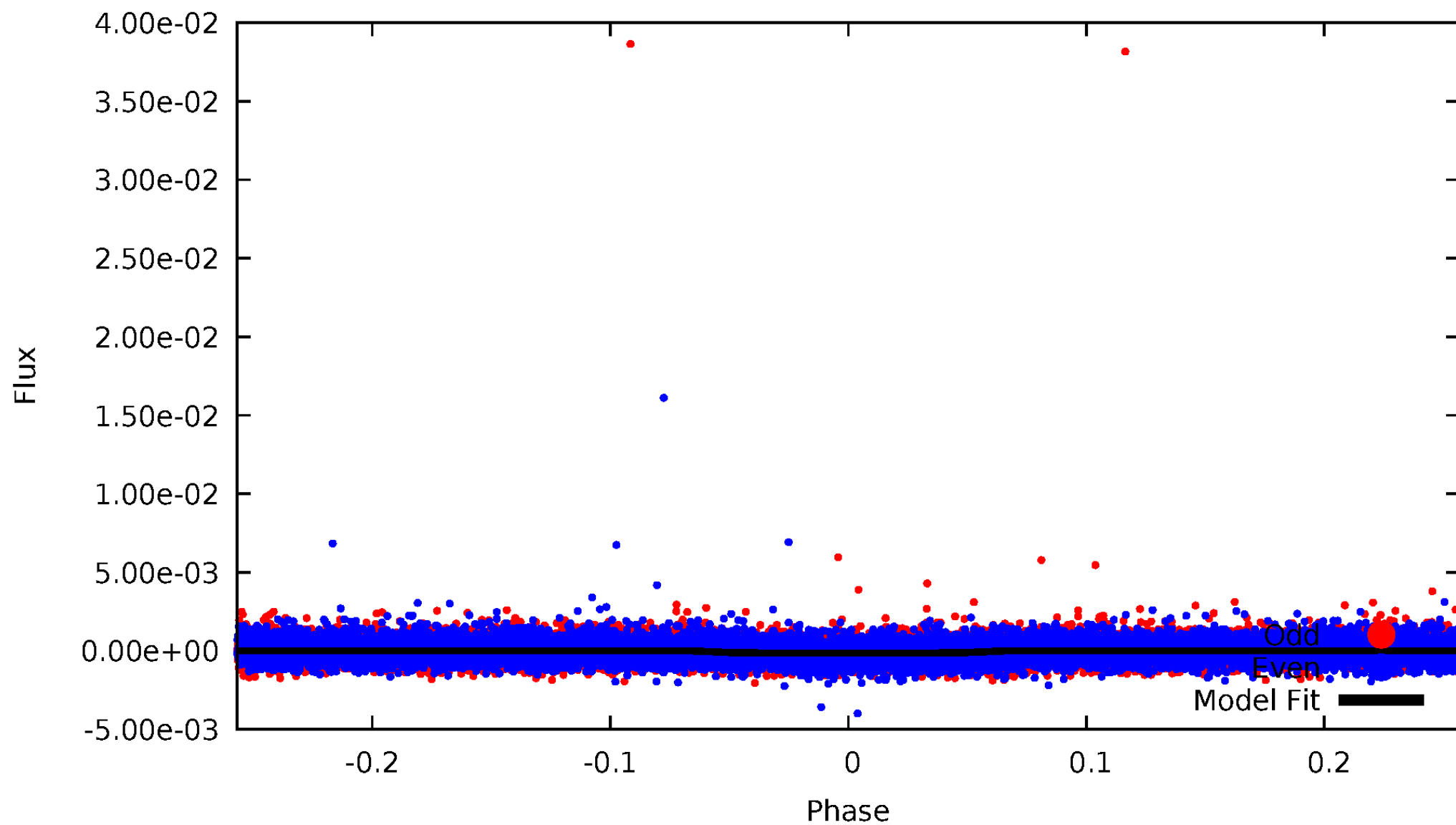
TCE 009899352-01





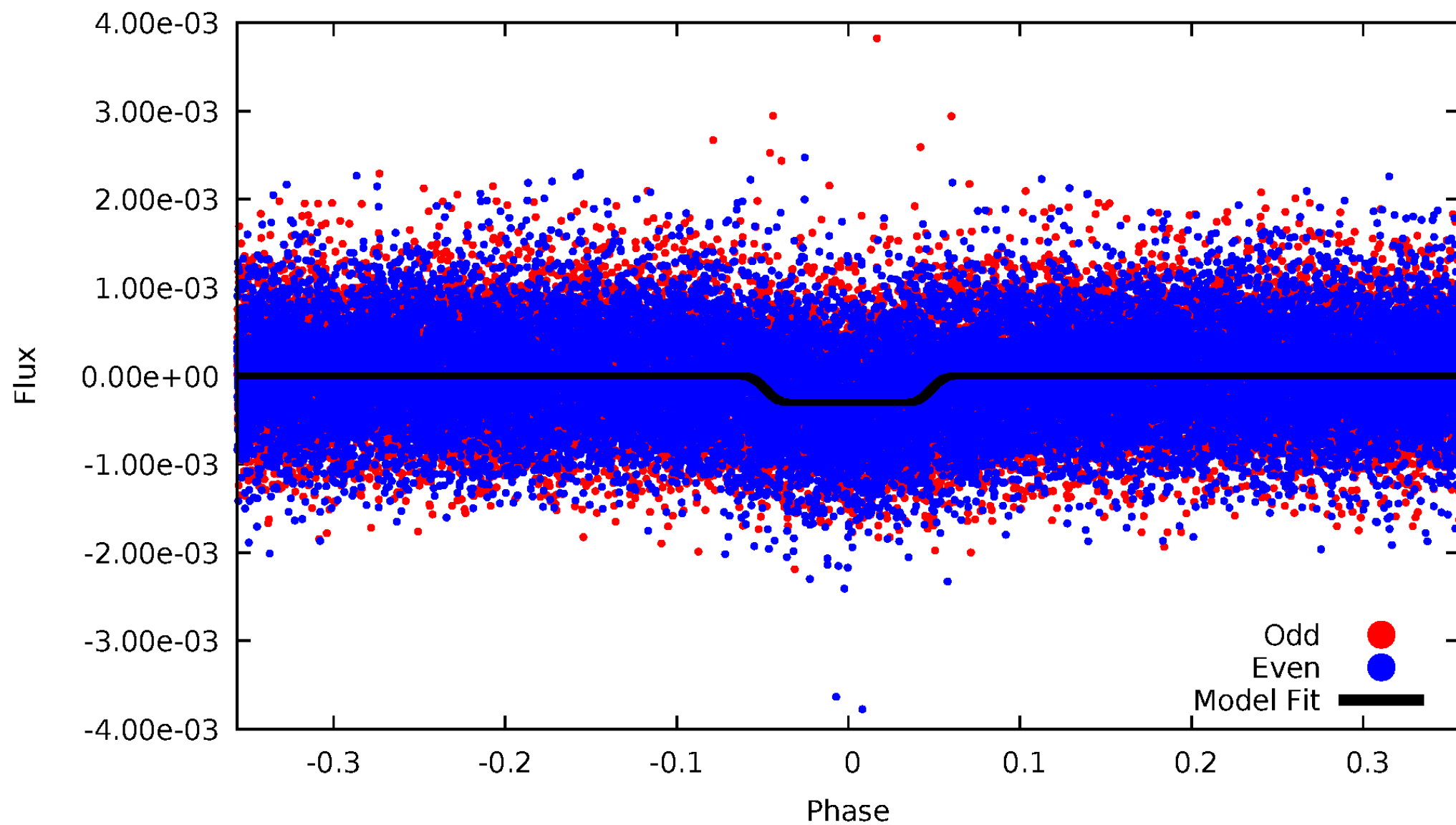
# DV Odd/Even

TCE 009899352-01



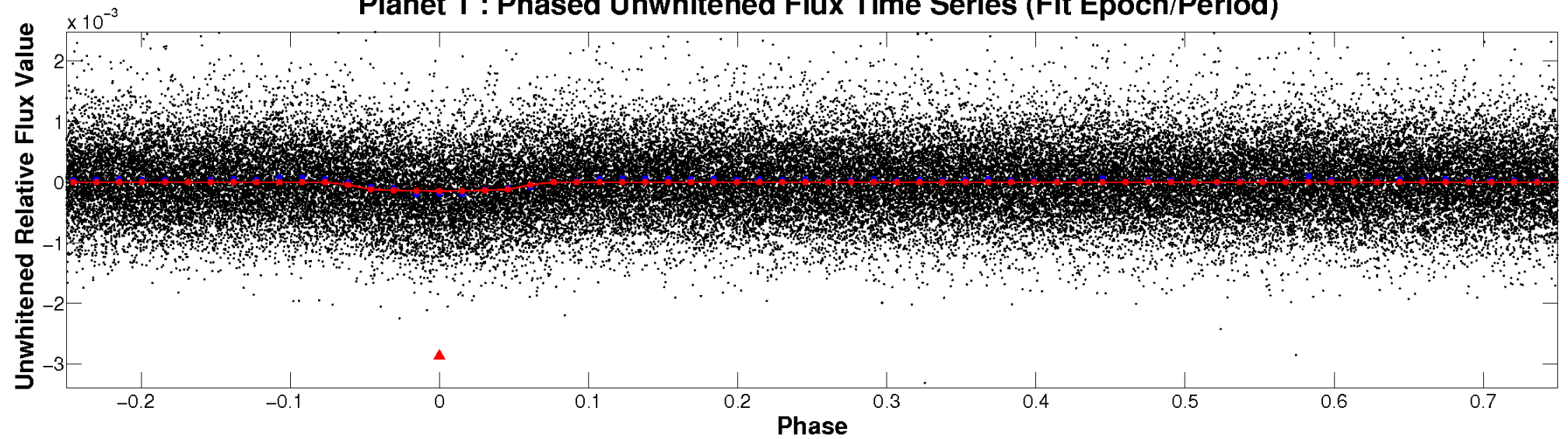
# ALT Odd/Even

TCE 009899352-01

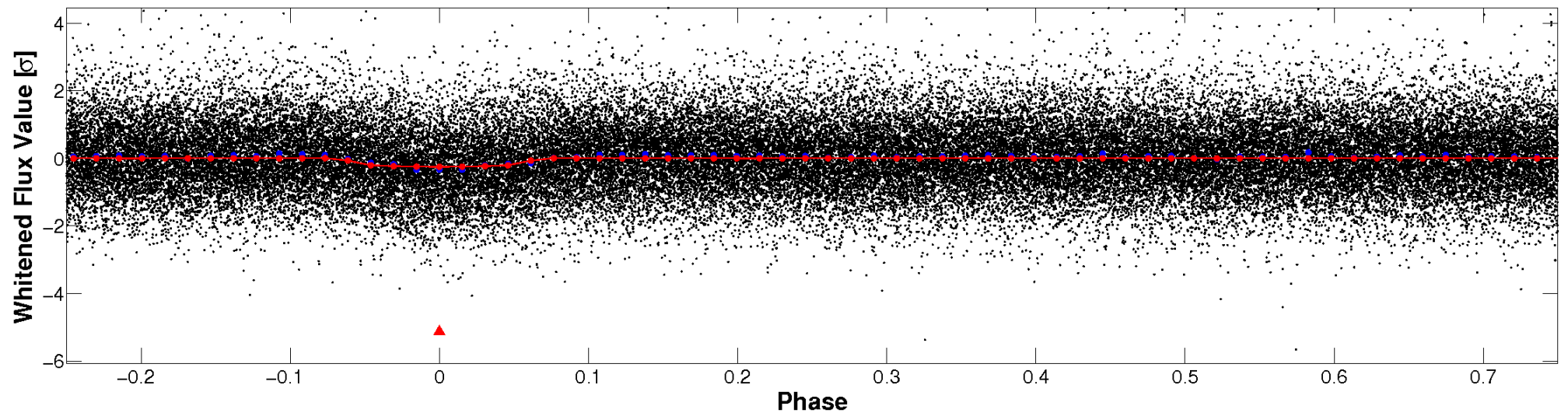


# Non-Whitened Vs. Whitened Light Curve

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

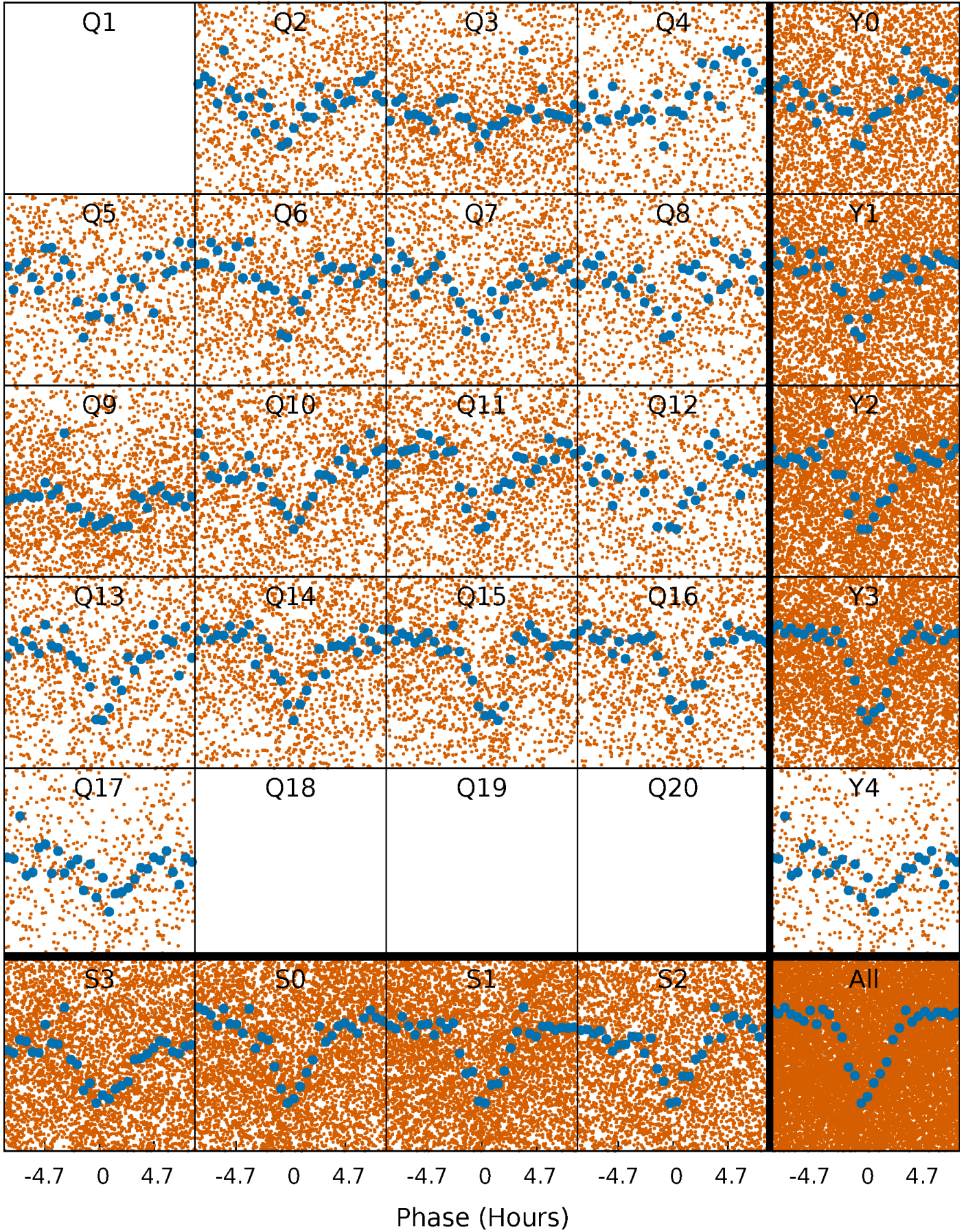


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

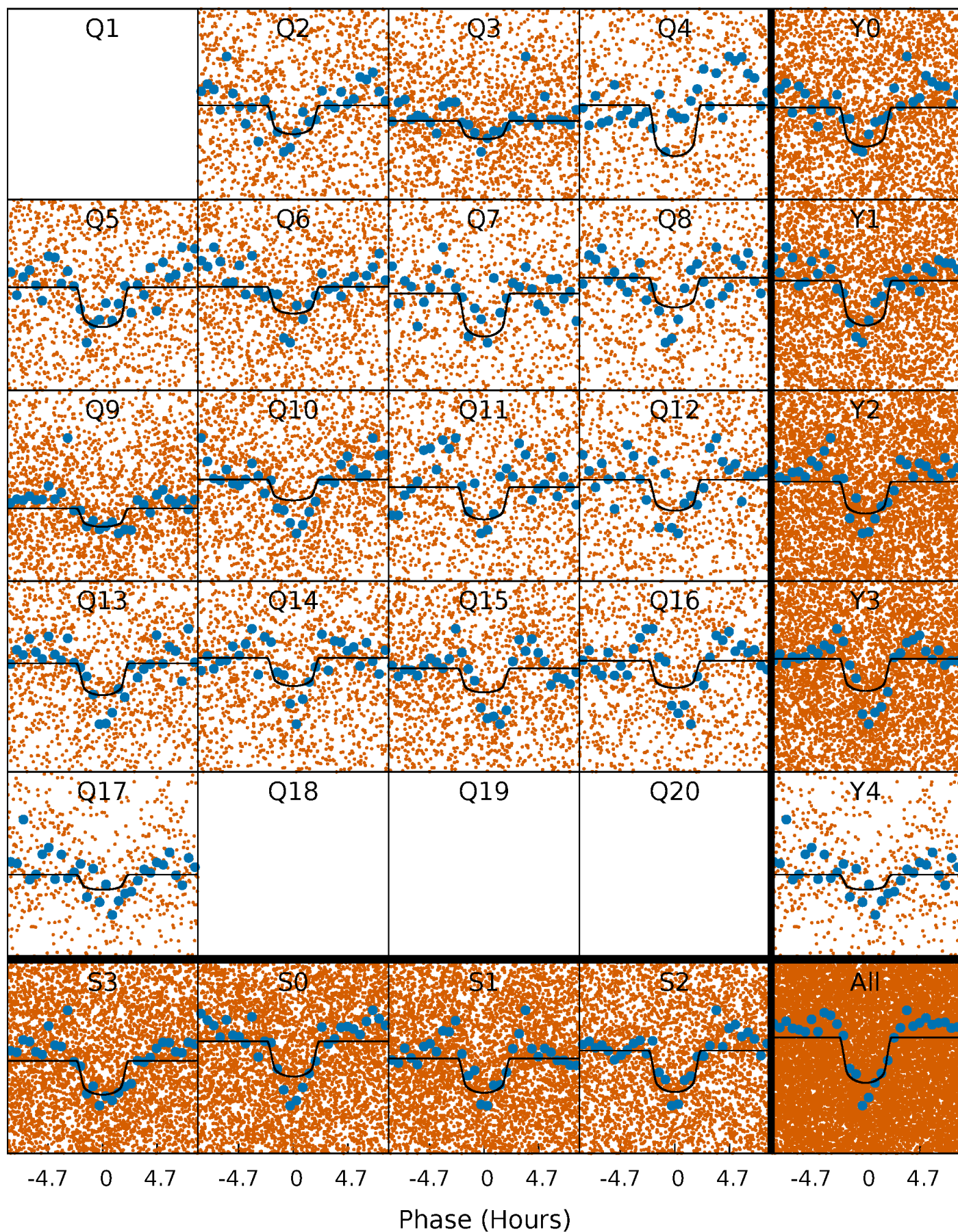
TCE 009899352-01   P= 1.332511 Days    $T_0=132.077627$  (BKJD)





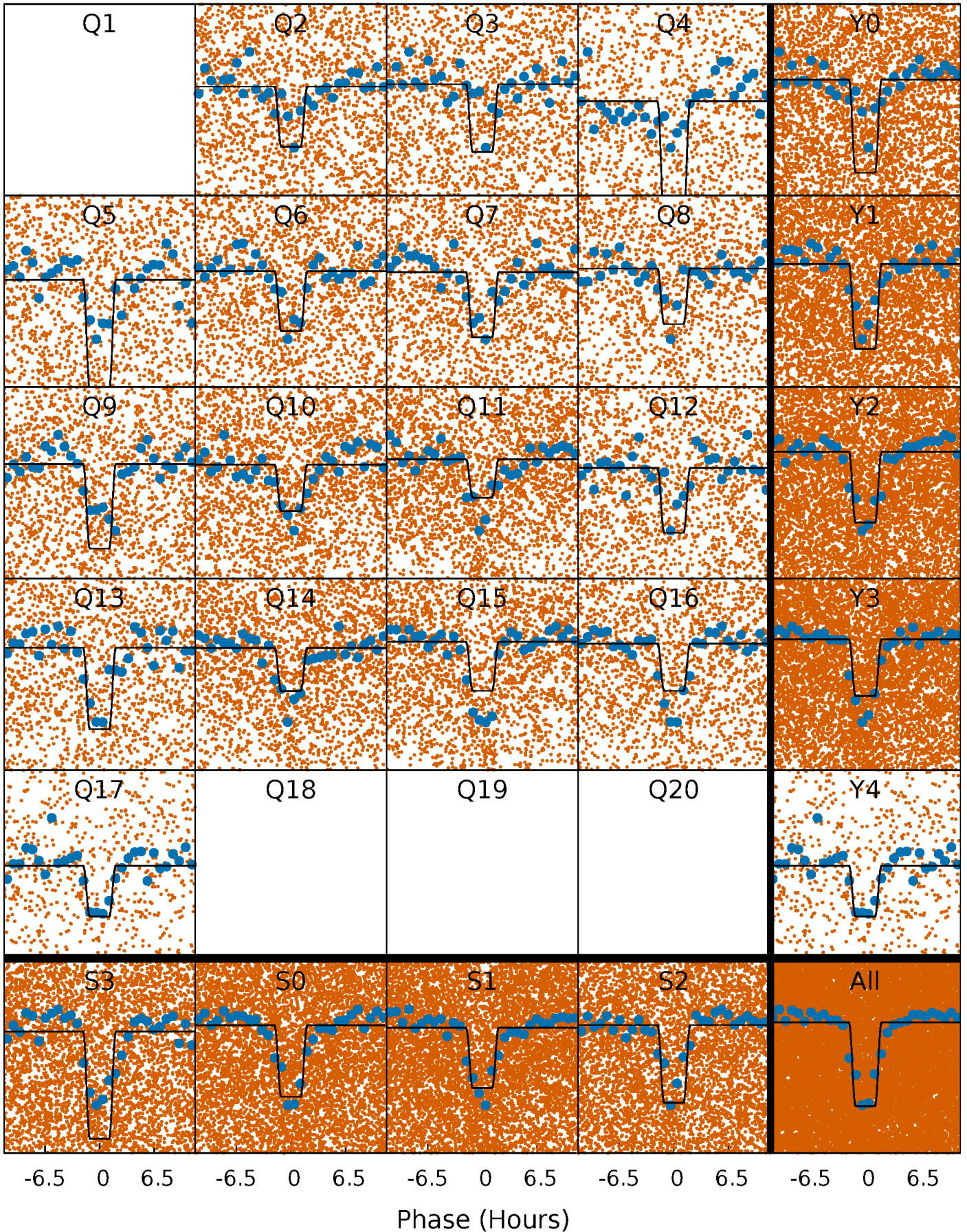
# DV Quarter-Phased Transit Curves

TCE 009899352-01 P= 1.332511 Days  $T_0=132.077627$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009899352-01 P= 1.332579 Days  $T_0=132.039247$  (BKJD)

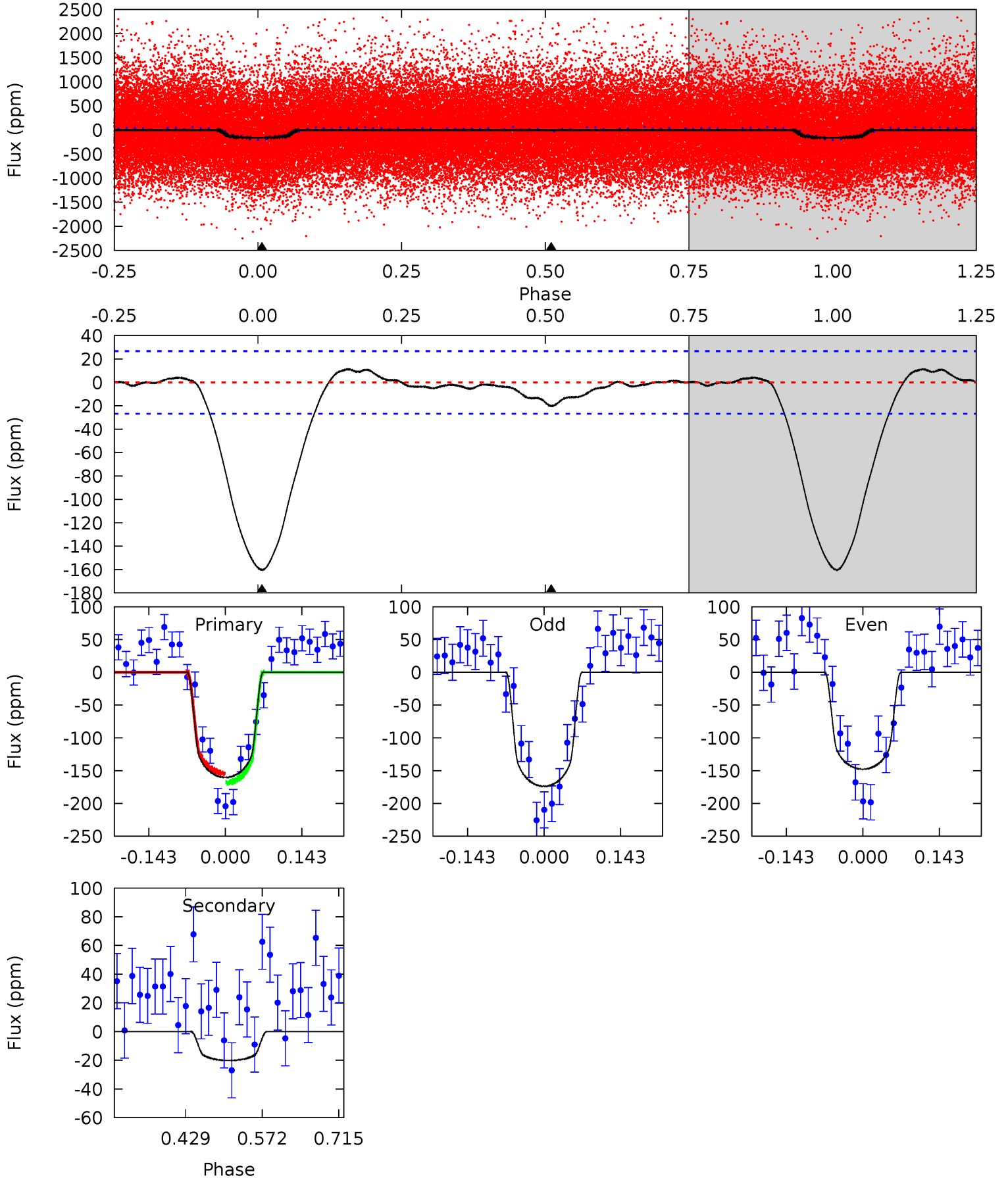




# DV Model-Shift Uniqueness Test

009899352-01, P = 1.332511 Days, E = 132.077627 Days

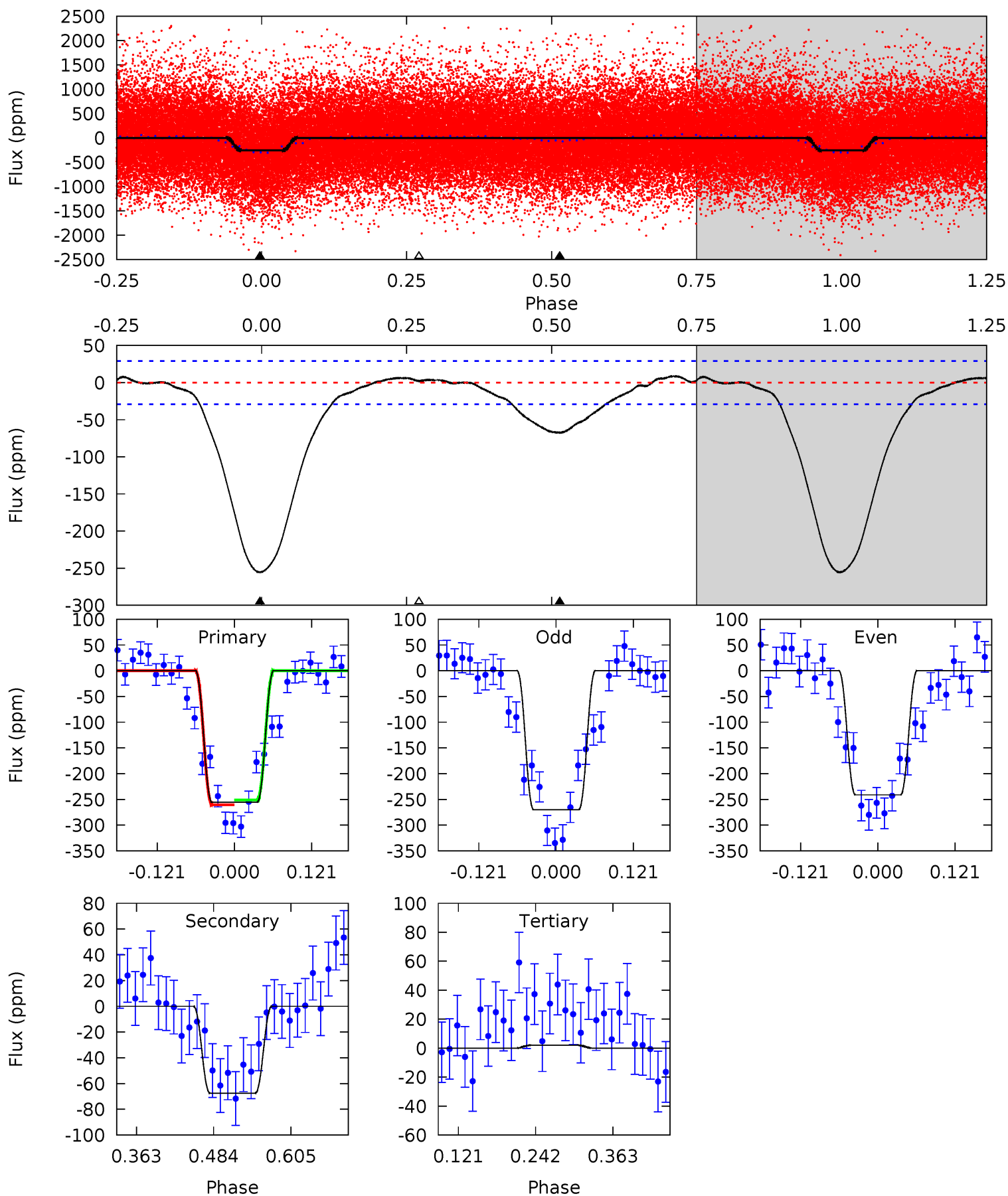
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	3.38	0	0	4.49	1.46	0.71	26.8	26.8	3.38	3.38	2.20	0.95	0.07	1.23



# Alt Model-Shift Uniqueness Test

009899352-01, P = 1.332579 Days, E = 132.039247 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
39.8	10.5	-0.32	0	4.52	1.55	1.12	40.1	39.8	10.8	10.5	2.23	0.97	0.03	0.72





### Stellar Parameters For KIC 009899352

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5718^{+153}_{-170}$	$4.549^{+0.040}_{-0.160}$	$-0.080^{+0.300}_{-0.300}$	$0.863^{+0.208}_{-0.069}$	$0.960^{+0.095}_{-0.116}$	$2.107^{+0.431}_{-0.950}$
	+3%/-3%	+1%/-4%	+375%/-375%	+24%/-8%	+10%/-12%	+20%/-45%
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 009899352-01 / KOI 3135.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-20 \pm 6$	$1.28^{+0.36}_{-0.38}$	$2181^{+118}_{-93}$	$3690^{+526}_{-399}$	$3.588^{+3.706}_{-1.624}$
Alt.	$-67 \pm 6$	$1.65^{+0.42}_{-0.35}$	$2177^{+123}_{-89}$	$4182^{+402}_{-297}$	$7.274^{+4.477}_{-2.643}$

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

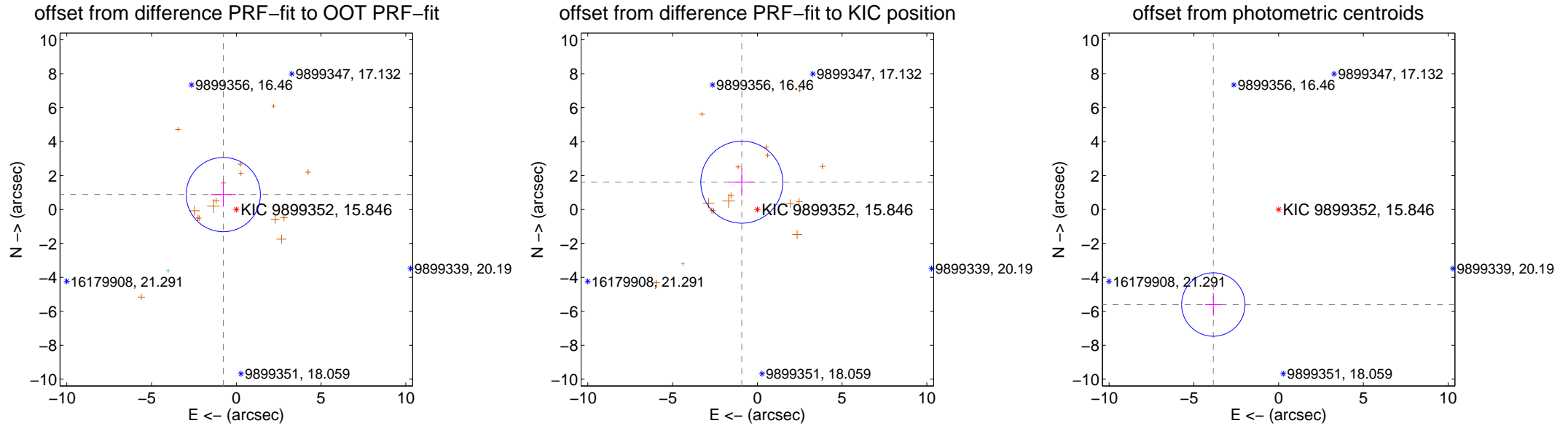
## DV Centroid Data

Supplemental centroid analysis for 009899352-01. Kepler magnitude: 15.85. Transit SNR 18.51

There are 1 quarters with good PRF difference image offsets

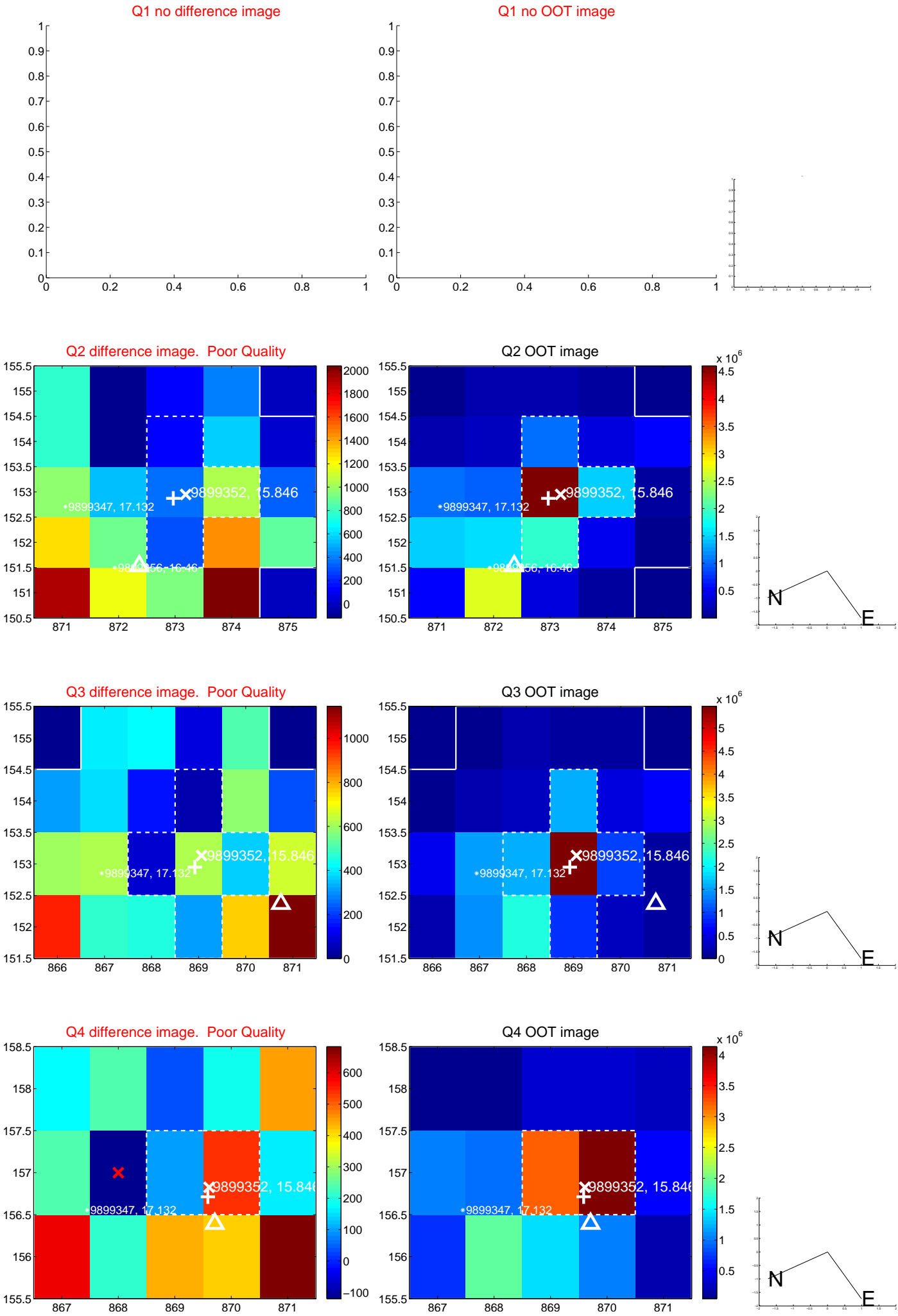
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.165 \pm 0.730$	1.60	$0.767 \pm 0.754$	$0.877 \pm 0.710$
PRF-fit source offset from KIC position	$1.852 \pm 0.806$	2.30	$0.916 \pm 0.789$	$1.610 \pm 0.812$
photometric centroid source offset	$6.80 \pm 0.62$	10.90	$3.85 \pm 0.49$	$-5.60 \pm 0.68$

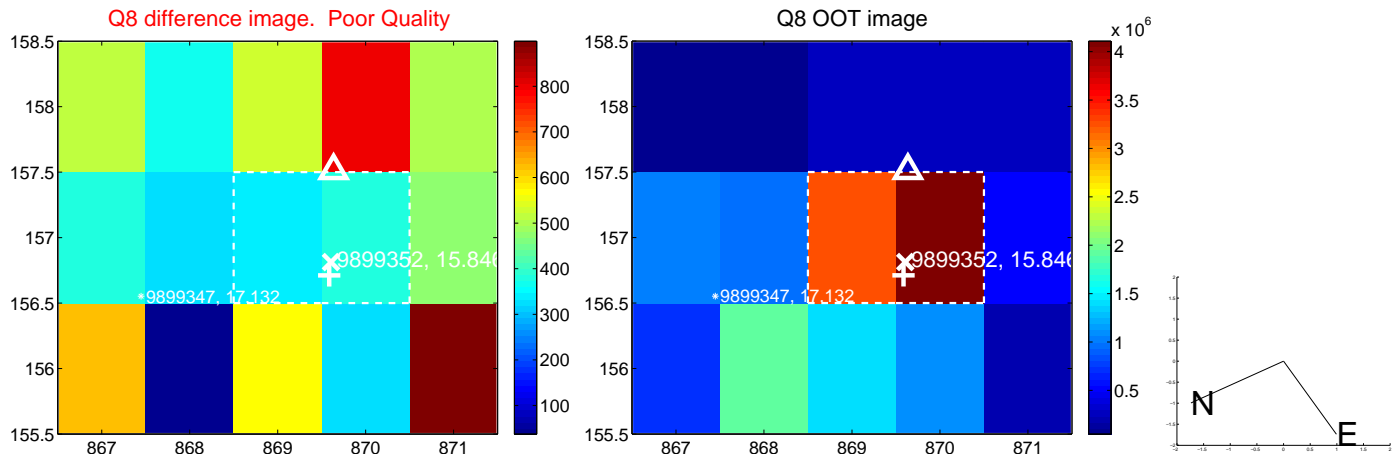
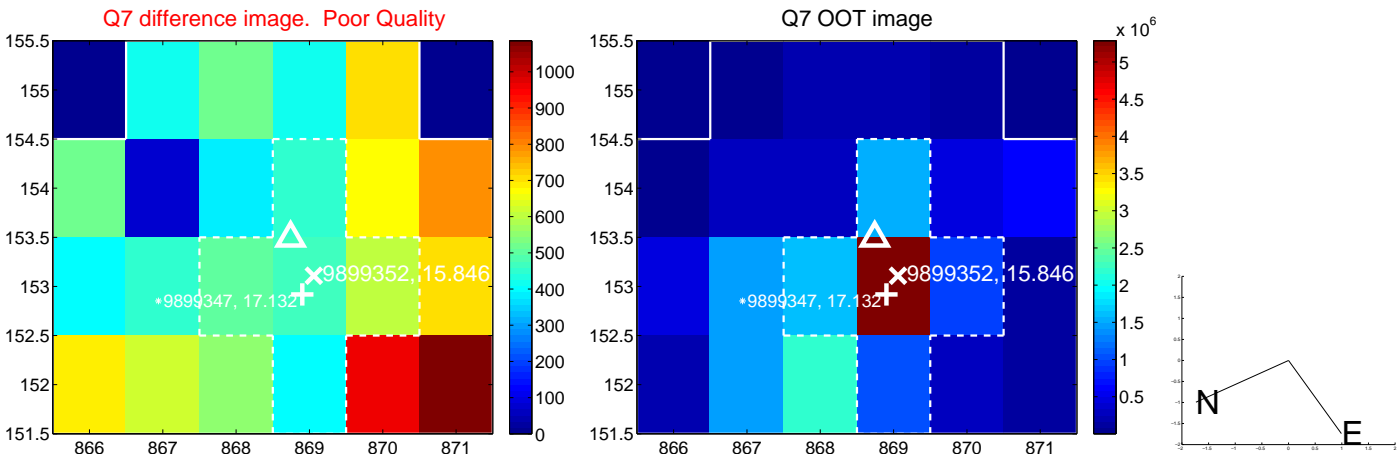
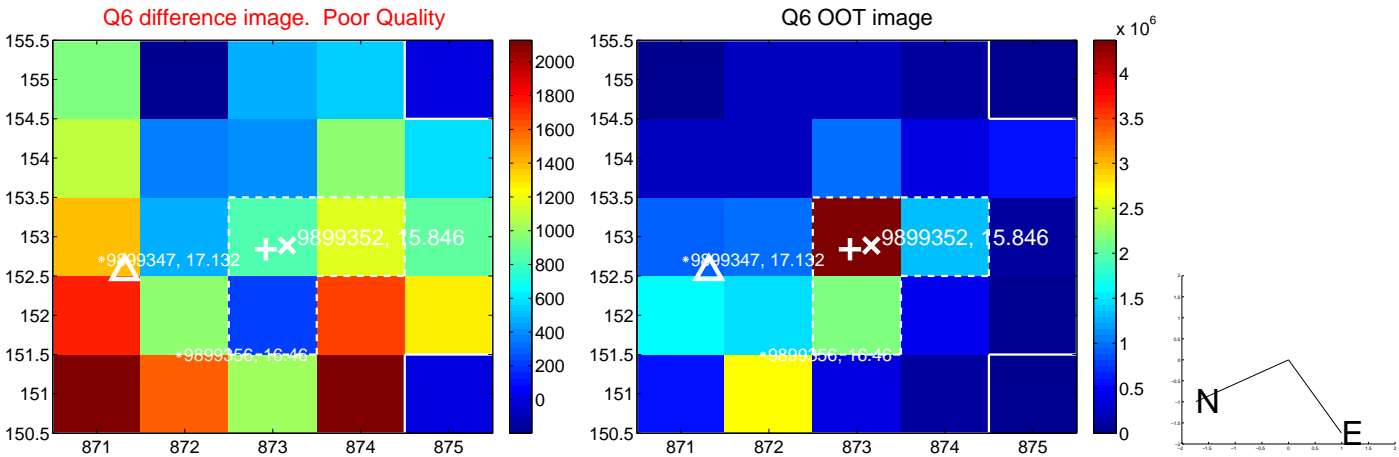
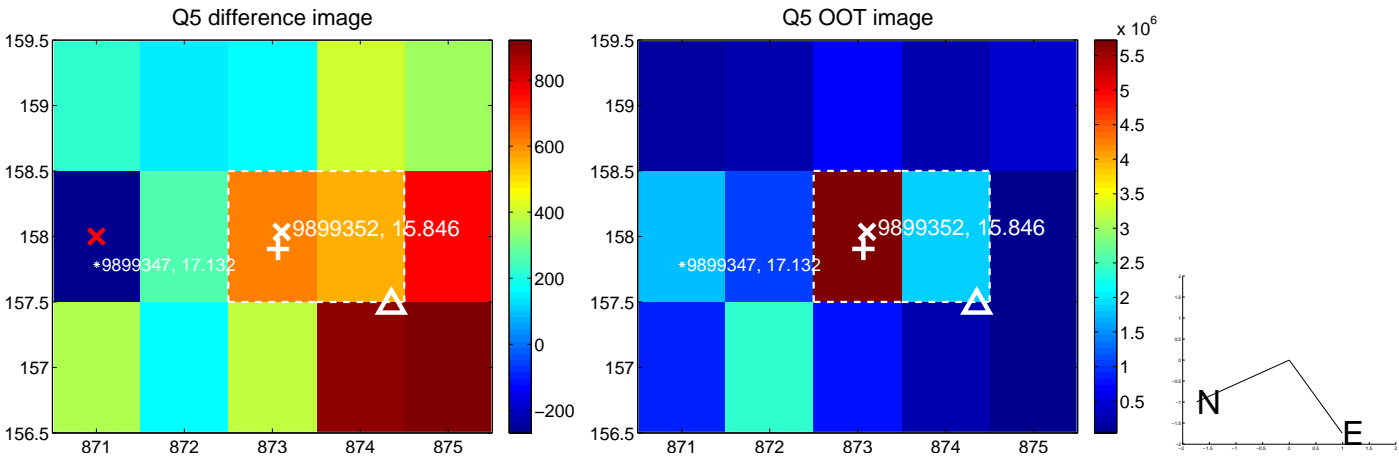


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

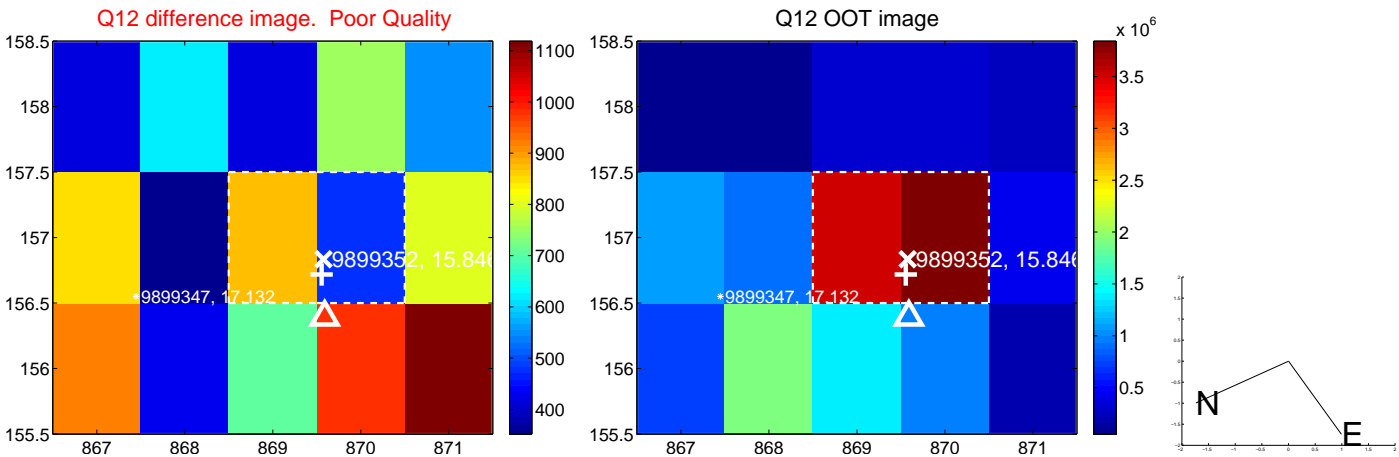
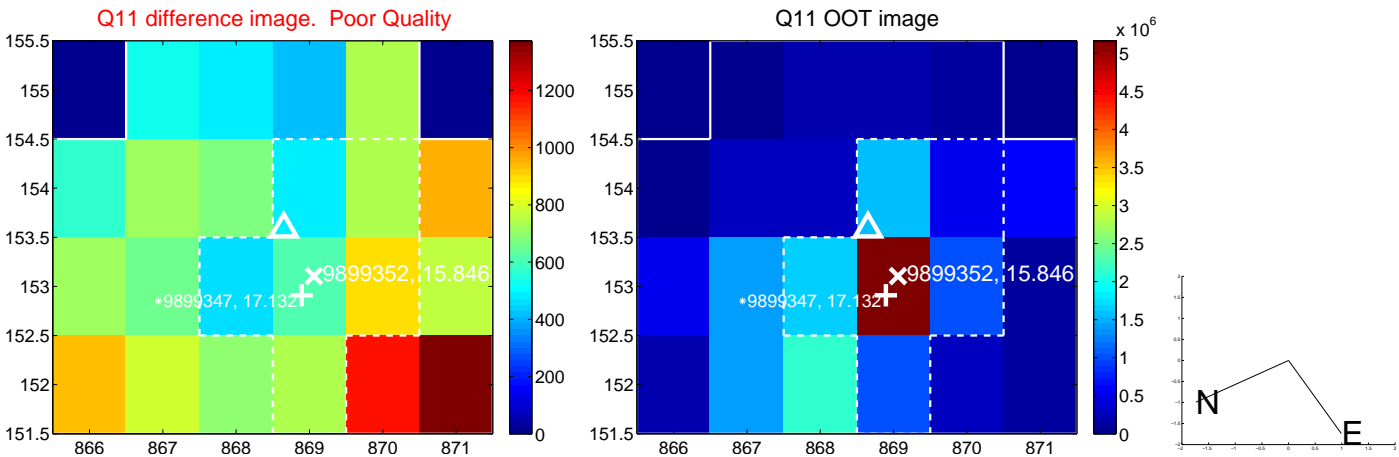
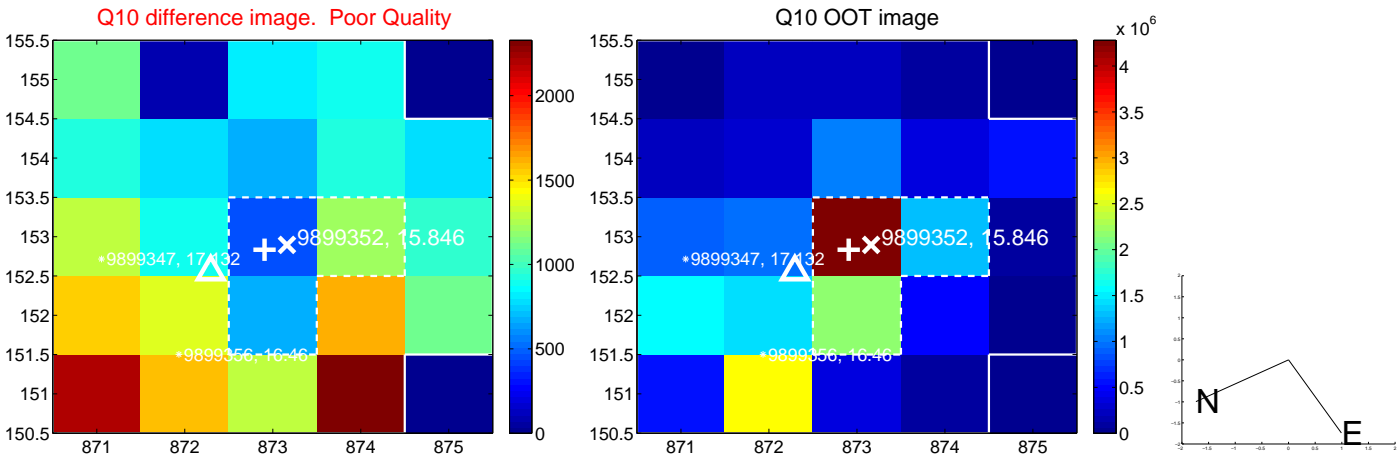
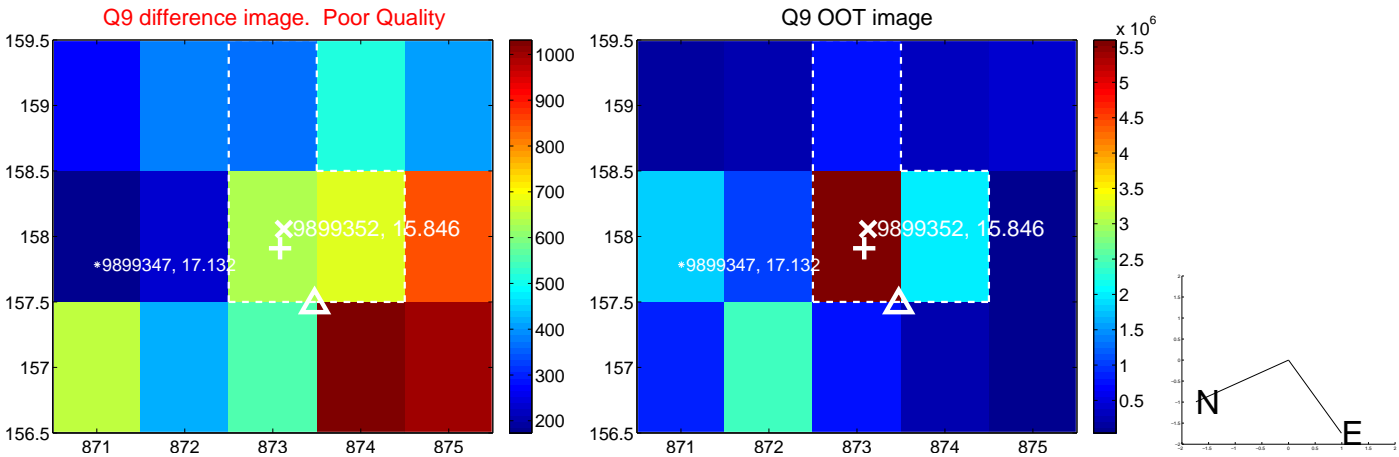


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

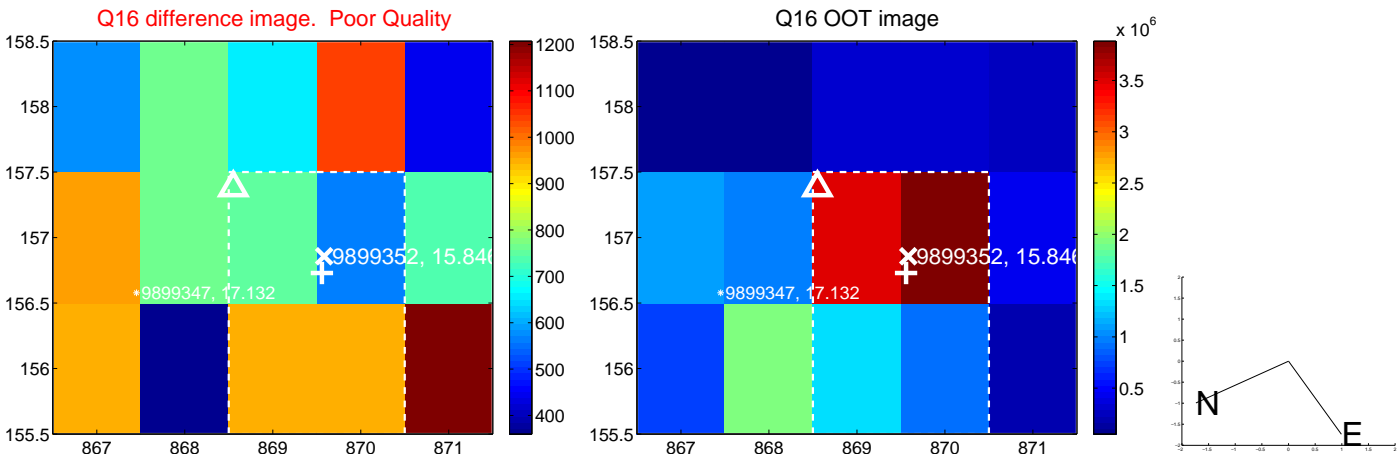
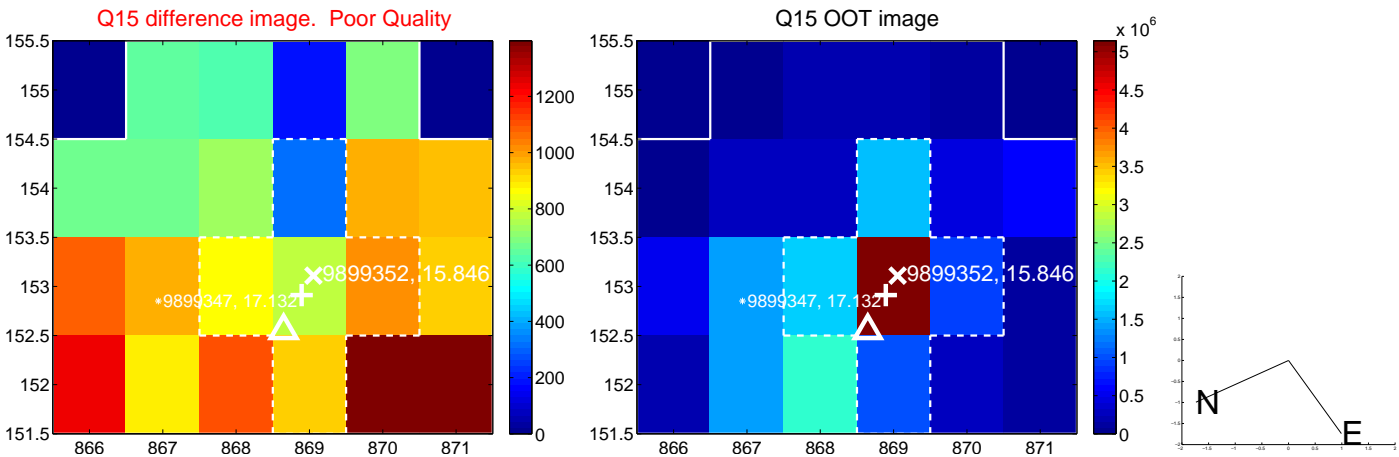
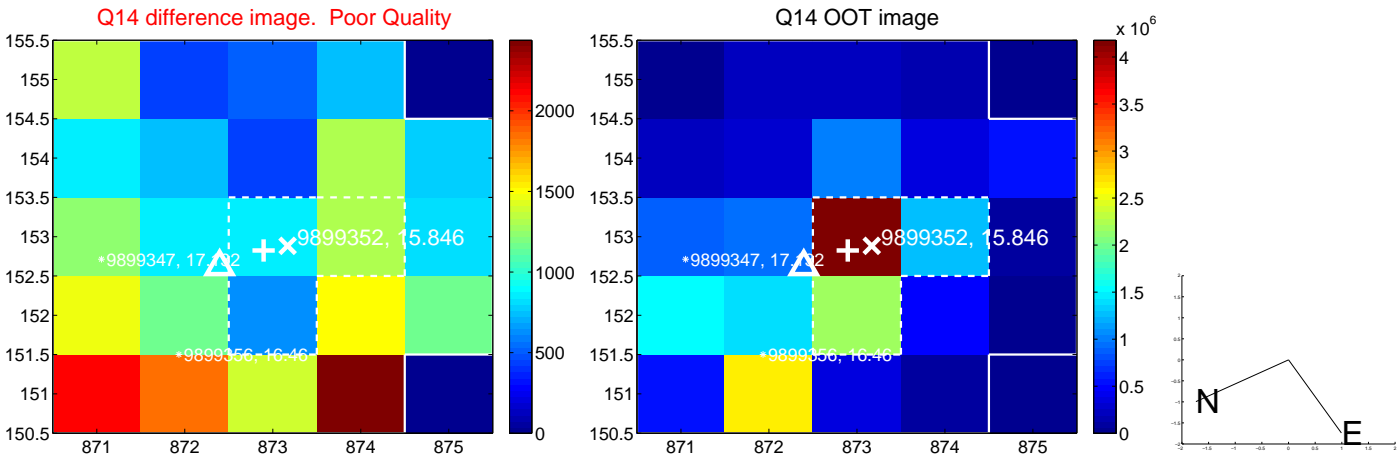
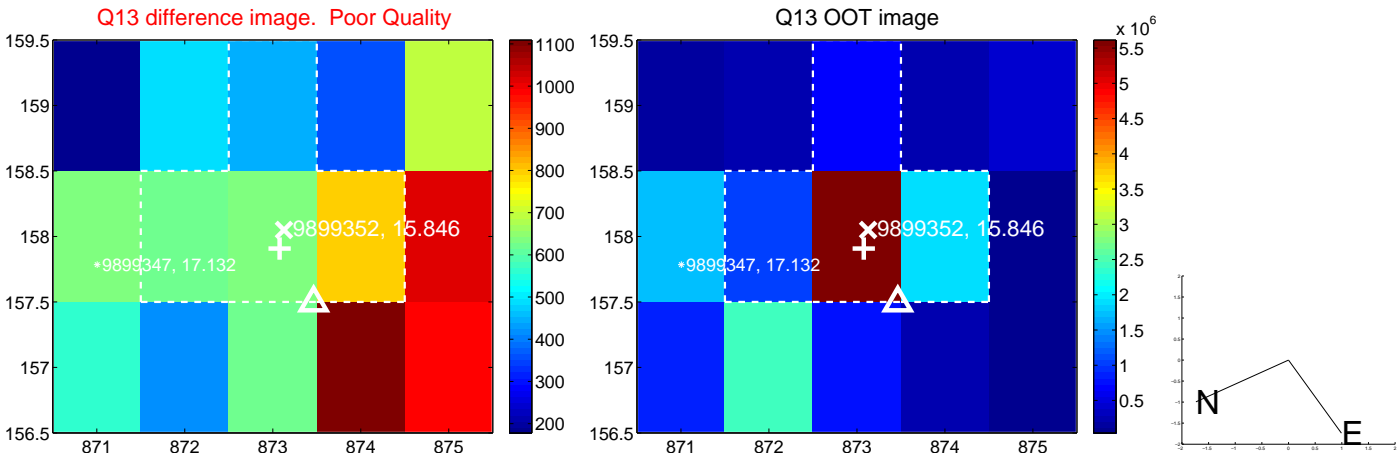




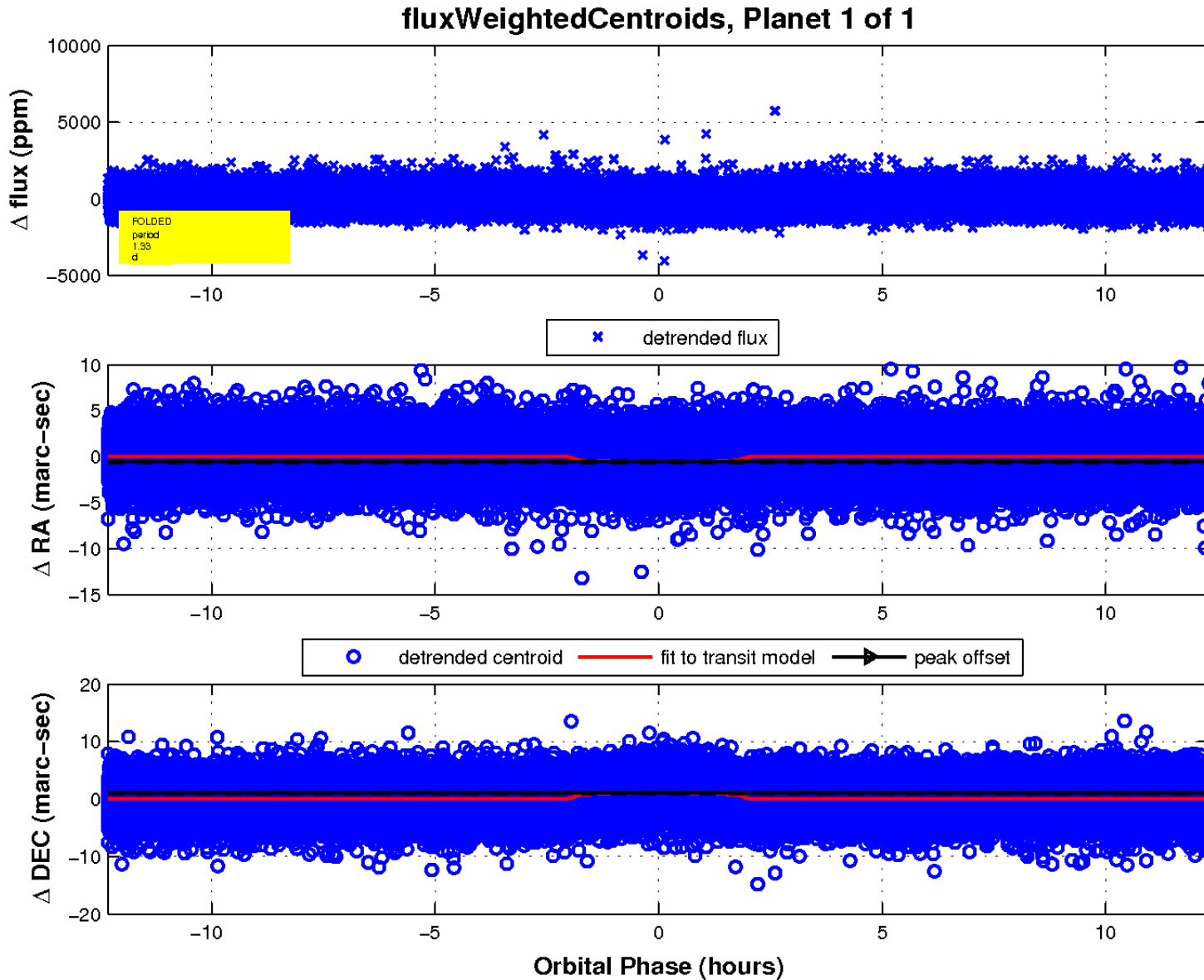
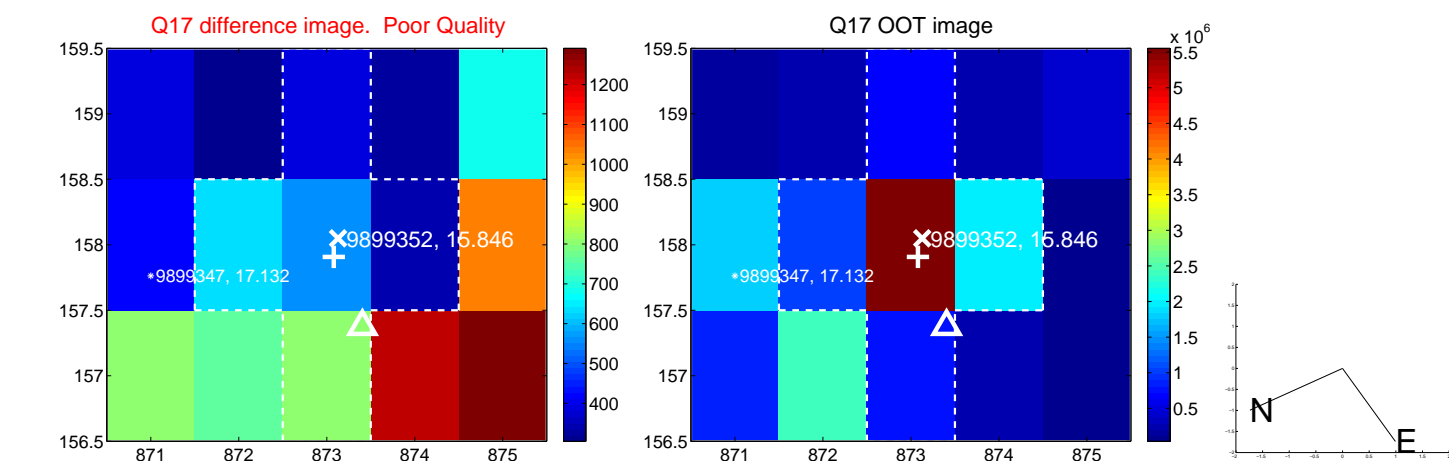
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

