

# KIC 009899682

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009899682-01	OBS	No	1.332533	132.046336	41.9	5.028	8.5	8.3	0.76	5657	0.56	1065.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009899682-01	OBS	FP	0.00	1	0	0	1	LPP_DV—CENT_FEW_DIFFS—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.

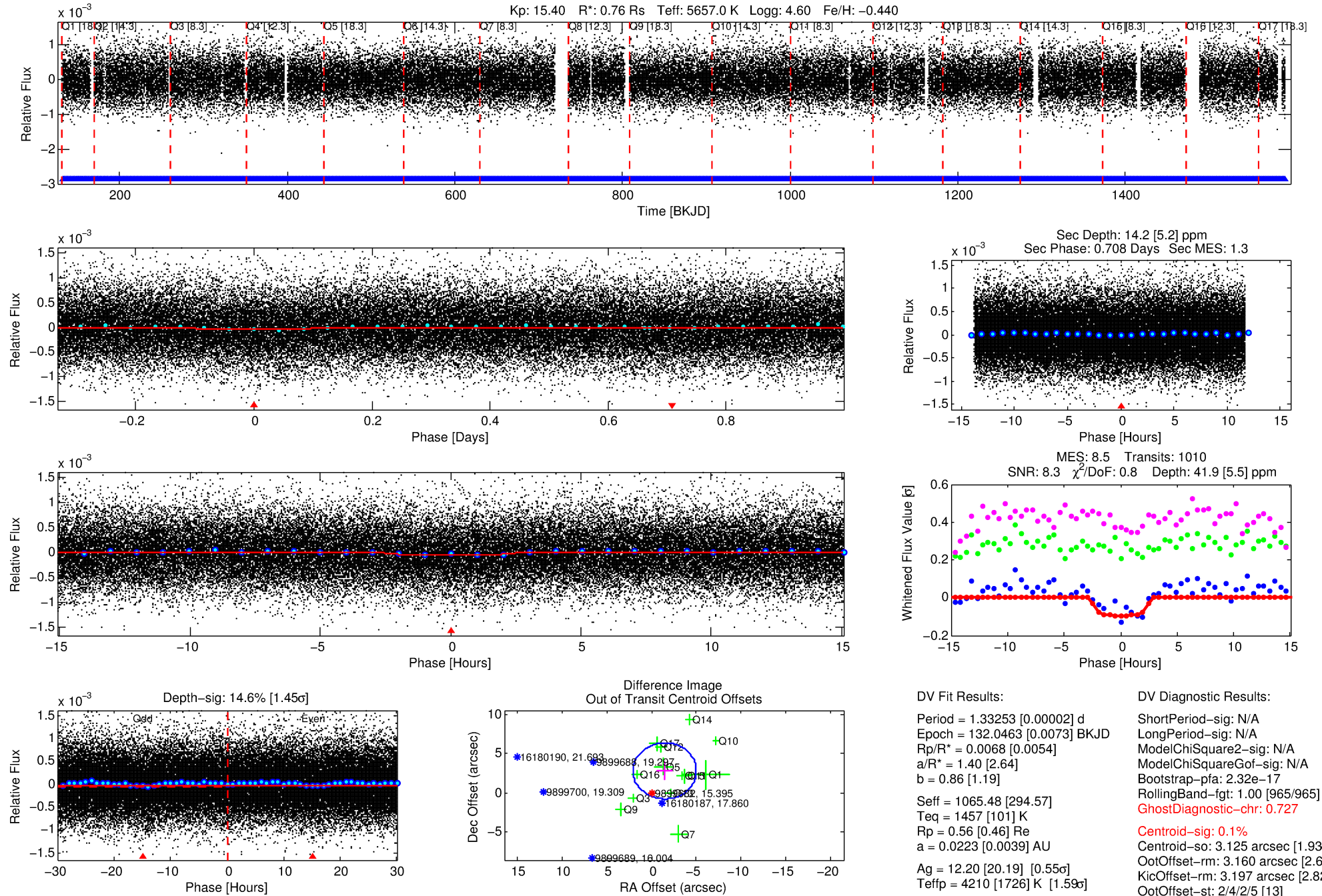
## Ephemeris Match Information For 009899682-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\prime$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
009899682-01	9899682	BR-Cyg-pri	9899416	1:1	231.5	-56	18	10.03	15.40	15925.00	Direct-PRF	0	1.94	0.13

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 9899682 Candidate: 1 of 1 Period: 1.333 d



## DV Fit Results:

Period = 1.33253 [0.00002] d  
Epoch = 132.0463 [0.0073] BKJD  
Rp/R\* = 0.0068 [0.0054]  
a/R\* = 1.40 [2.64]  
b = 0.86 [1.19]  
Seff = 1065.48 [294.57]  
Teff = 1457 [101] K  
Rp = 0.56 [0.46] Re  
a = 0.0223 [0.0039] AU  
Ag = 12.20 [20.19] [0.55 $\sigma$ ]  
Teffp = 4210 [1726] K [1.59 $\sigma$ ]

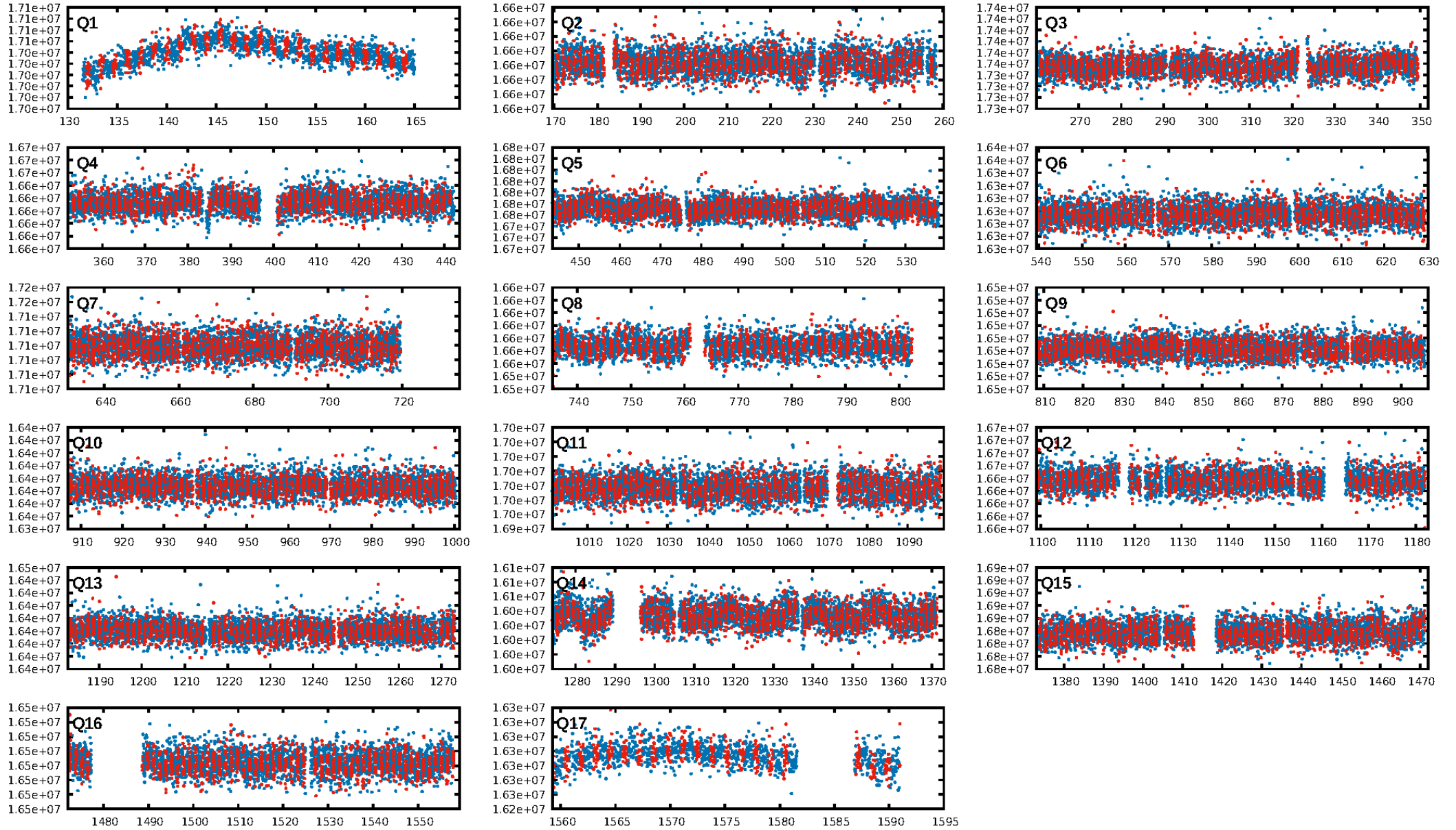
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.32e-17  
RollingBand-fgt: 1.00 [965/965]  
**GhostDiagnostic-chr: 0.727**  
Centroid-sig: 0.1%  
Centroid-so: 3.125 arcsec [1.93 $\sigma$ ]  
OotOffset-rm: 3.160 arcsec [2.67 $\sigma$ ]  
KicOffset-rm: 3.197 arcsec [2.82 $\sigma$ ]  
OotOffset-st: 2/4/2/5 [13]  
KicOffset-st: 2/4/2/5 [13]  
DiffImageQuality-fgm: 0.08 [1/13]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:37:54 Z

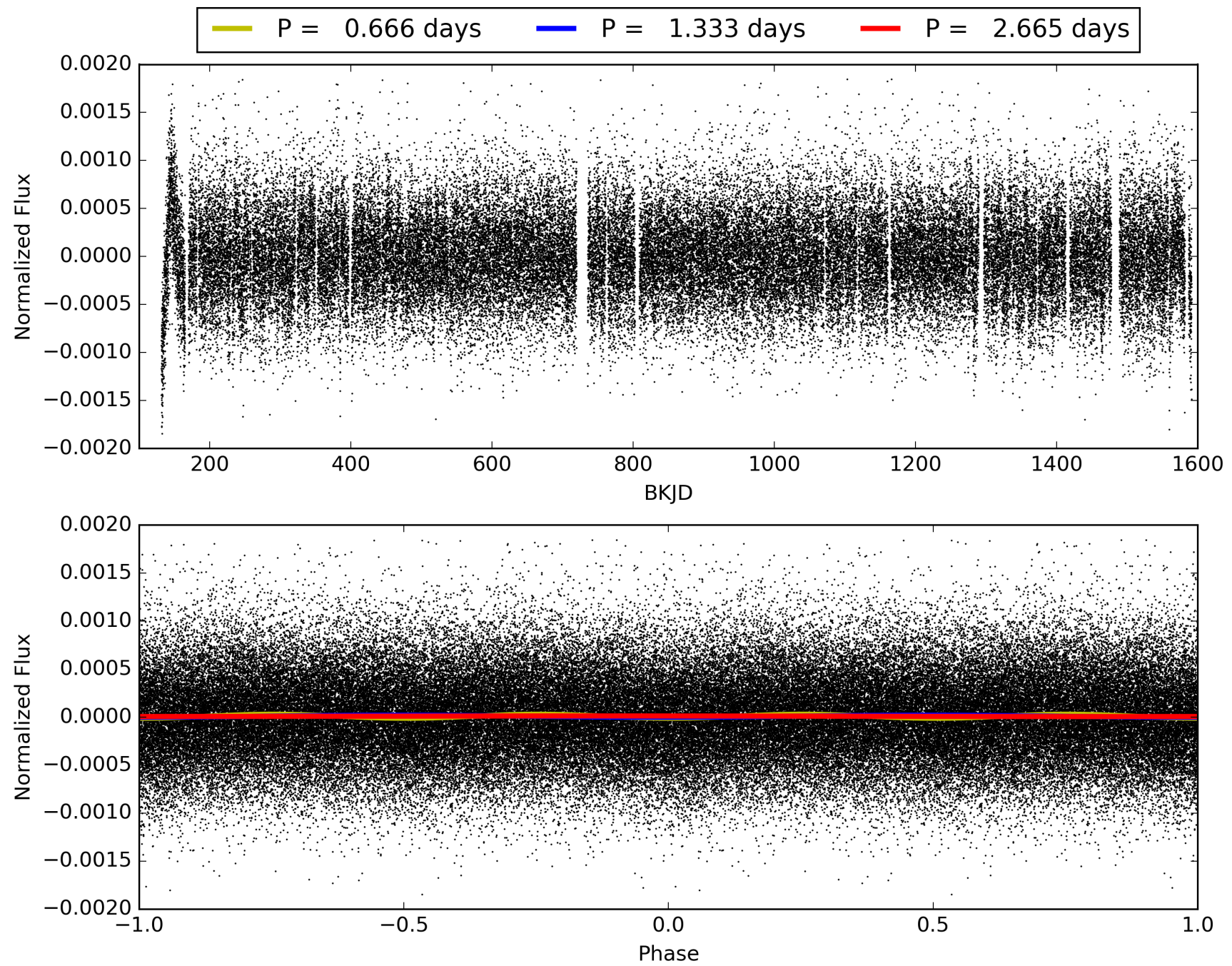
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009899682-01, PDC Light Curves



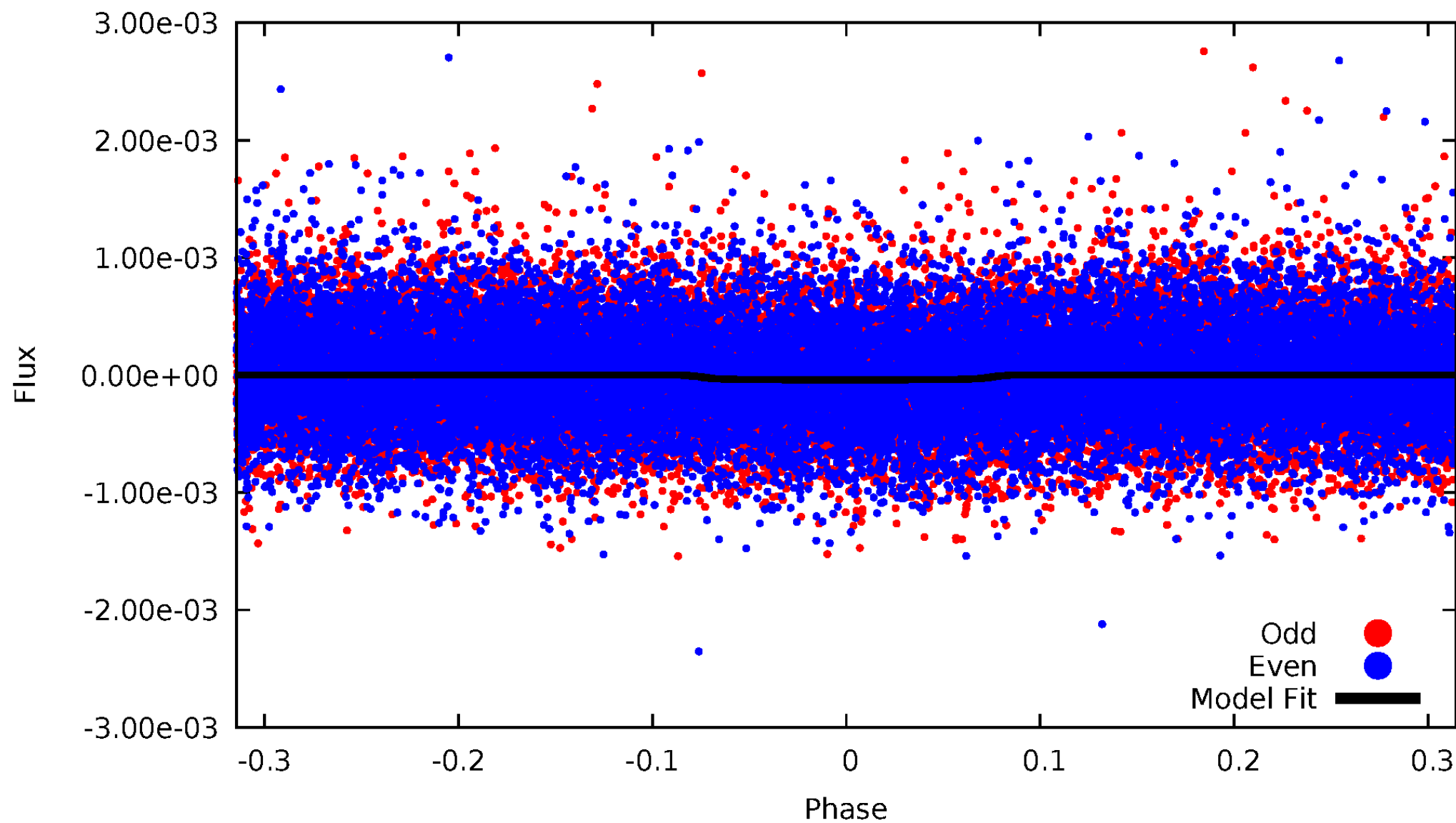


TCE 009899682-01



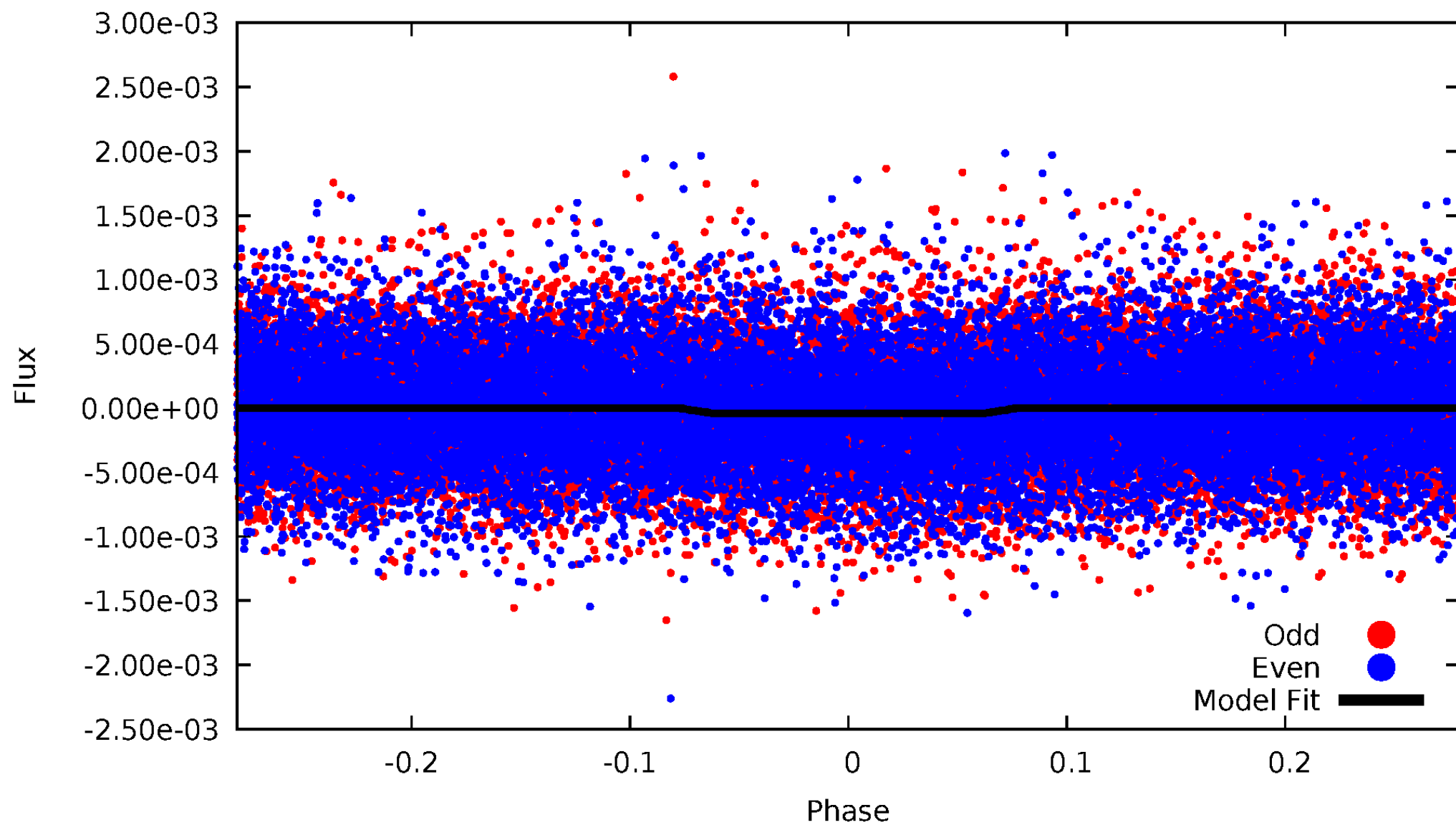
# DV Odd/Even

TCE 009899682-01

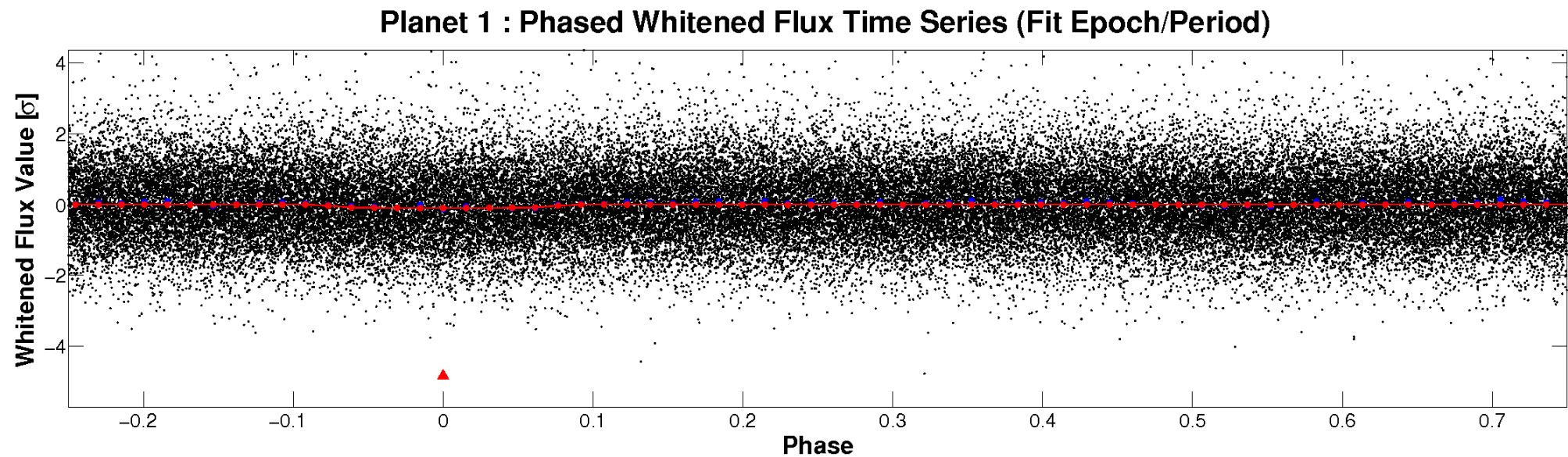
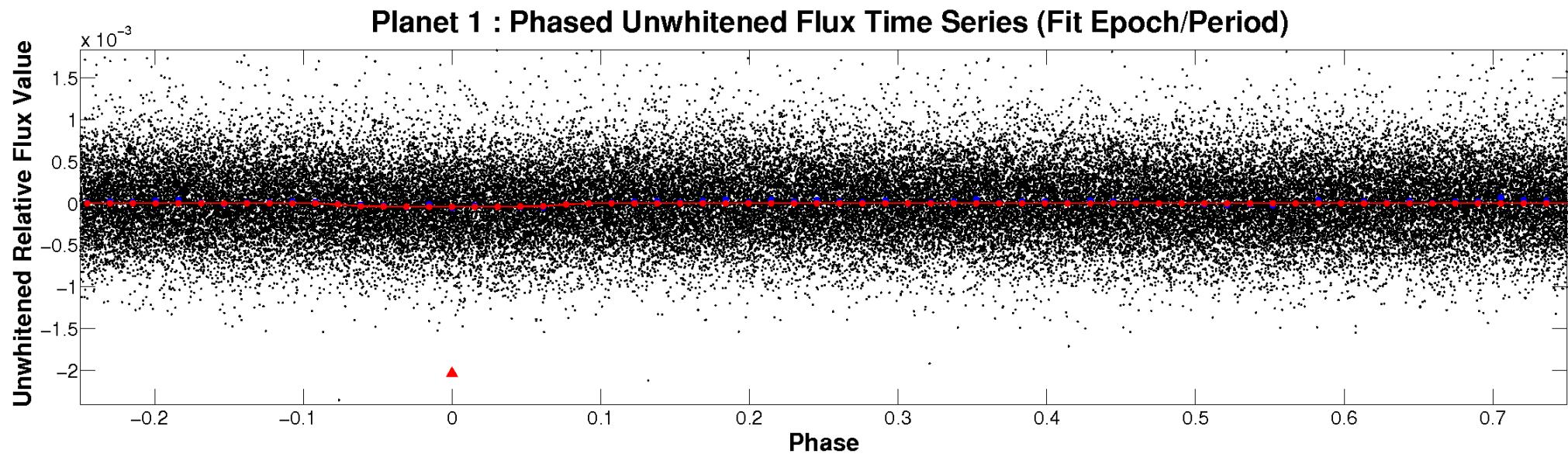


# ALT Odd/Even

TCE 009899682-01



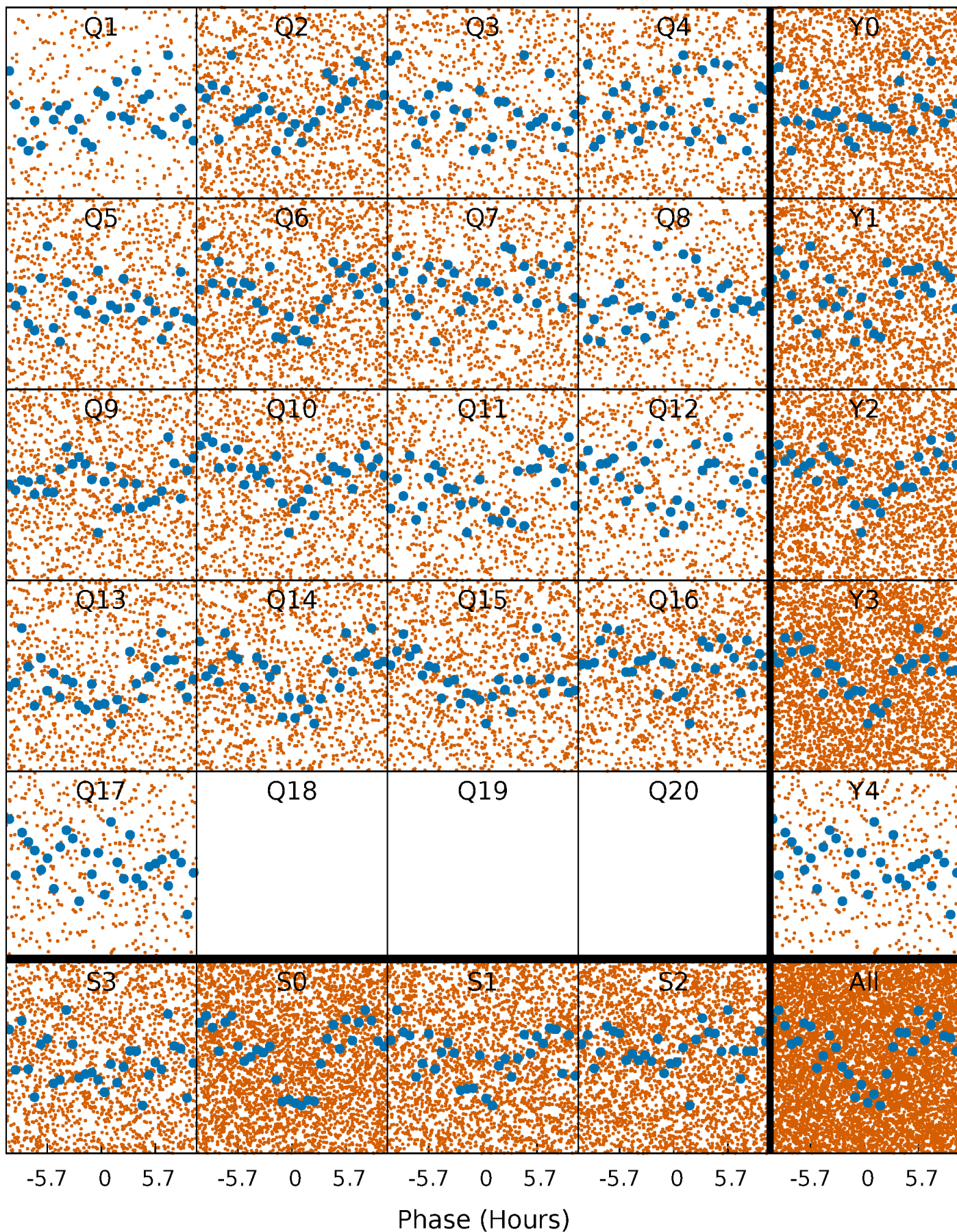
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

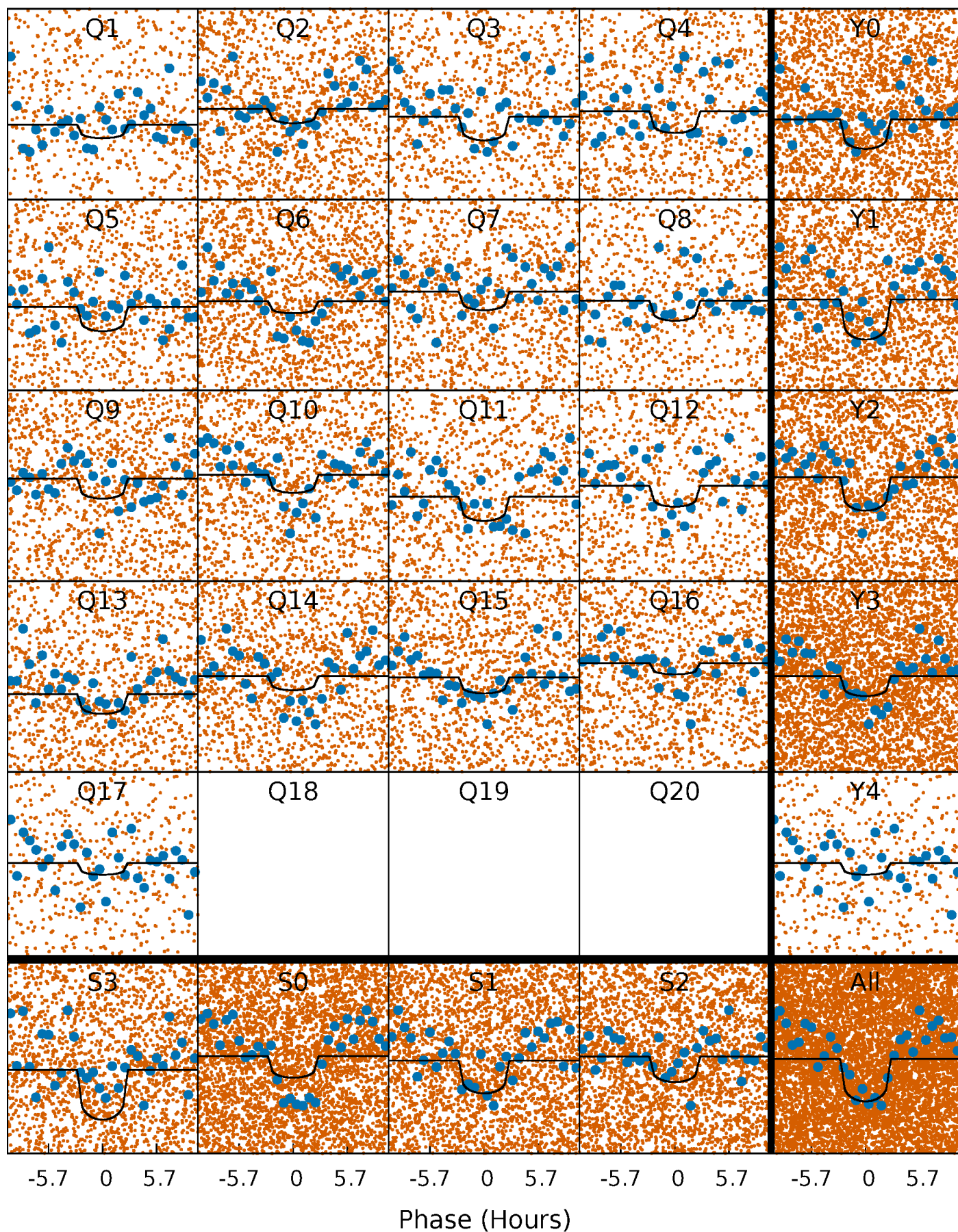
TCE 009899682-01   P= 1.332533 Days    $T_0=132.046336$  (BKJD)





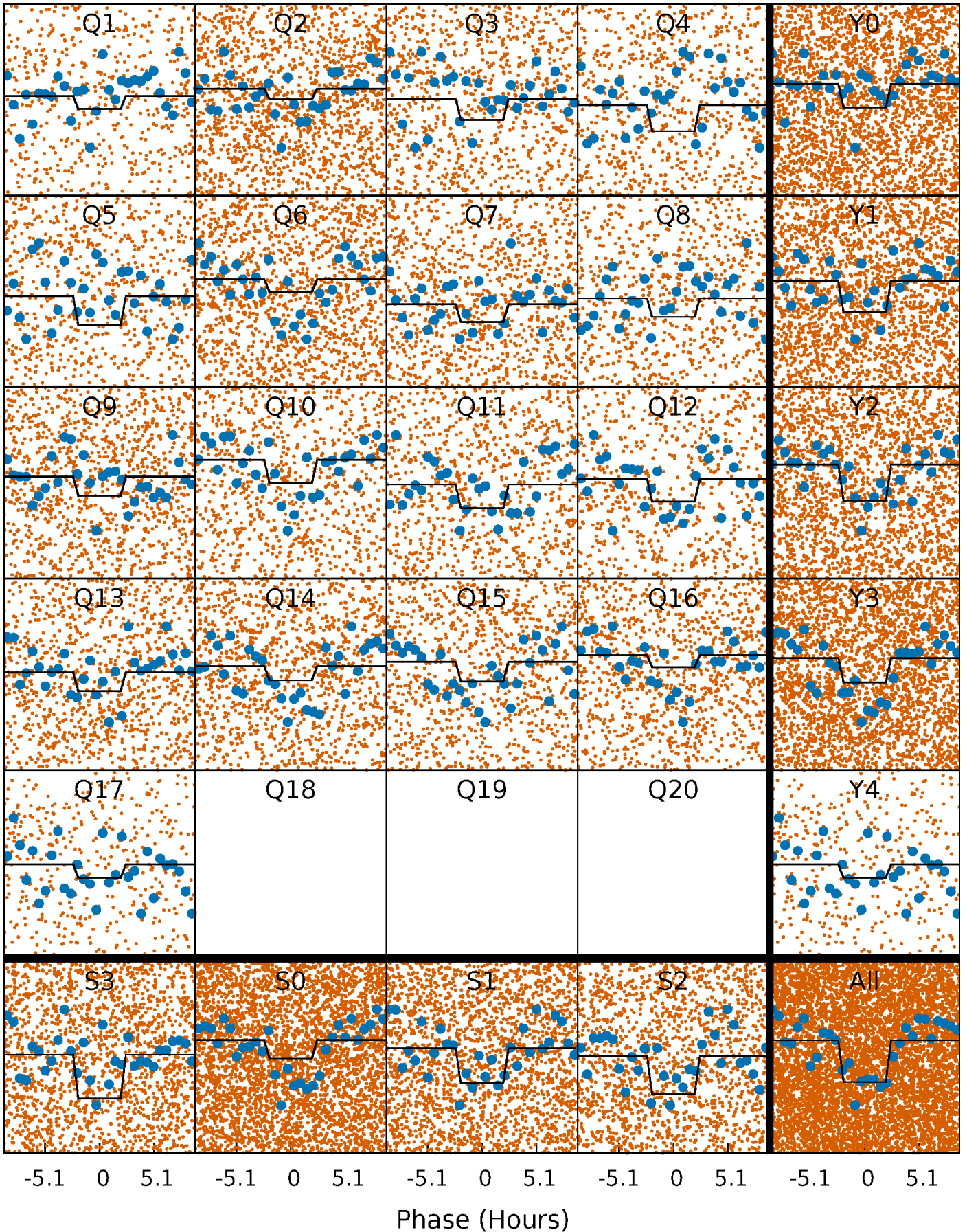
# DV Quarter-Phased Transit Curves

TCE 009899682-01 P= 1.332533 Days  $T_0=132.046336$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009899682-01 P= 1.332568 Days  $T_0=132.025880$  (BKJD)

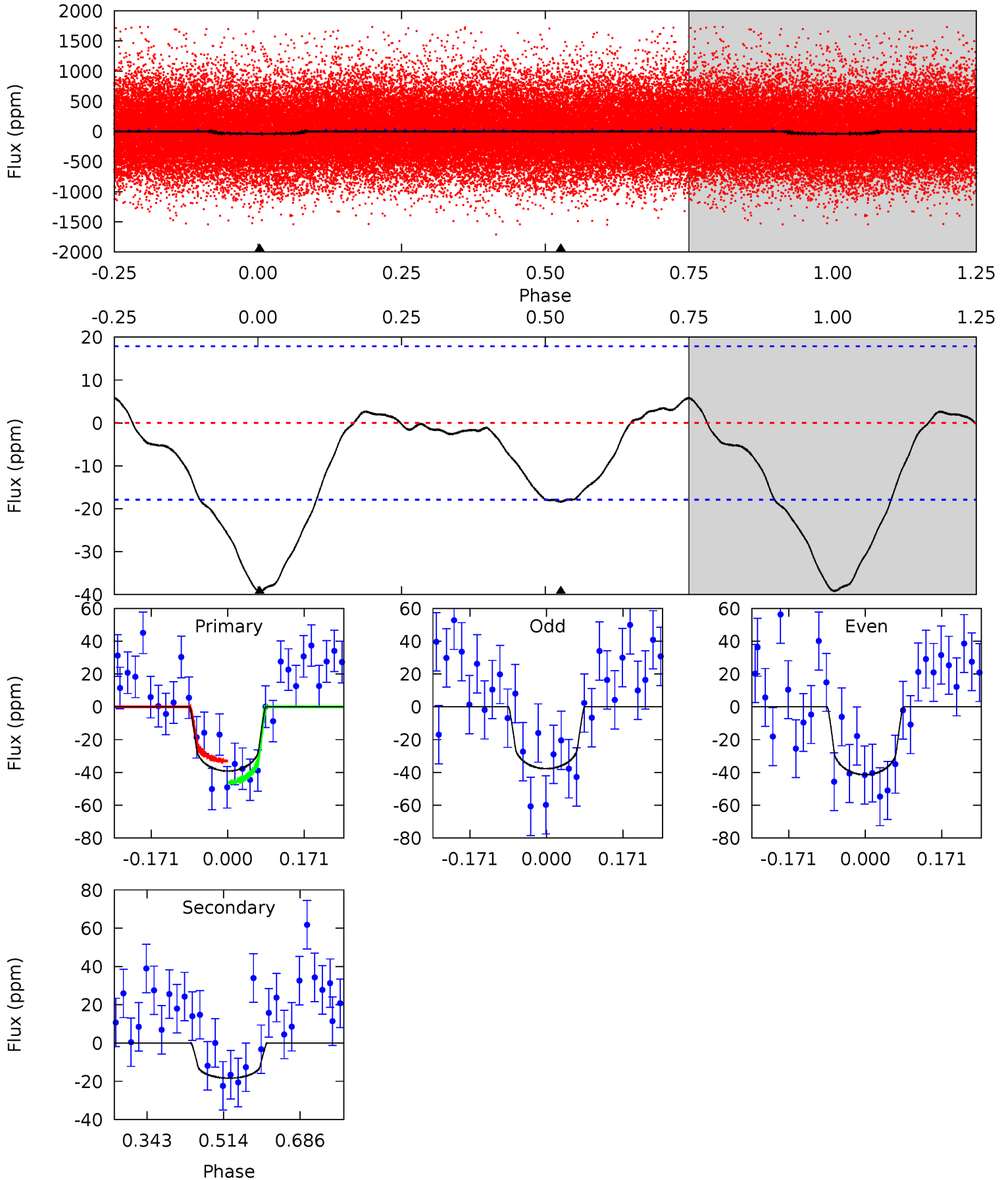




# DV Model-Shift Uniqueness Test

009899682-01, P = 1.332533 Days, E = 130.713803 Days

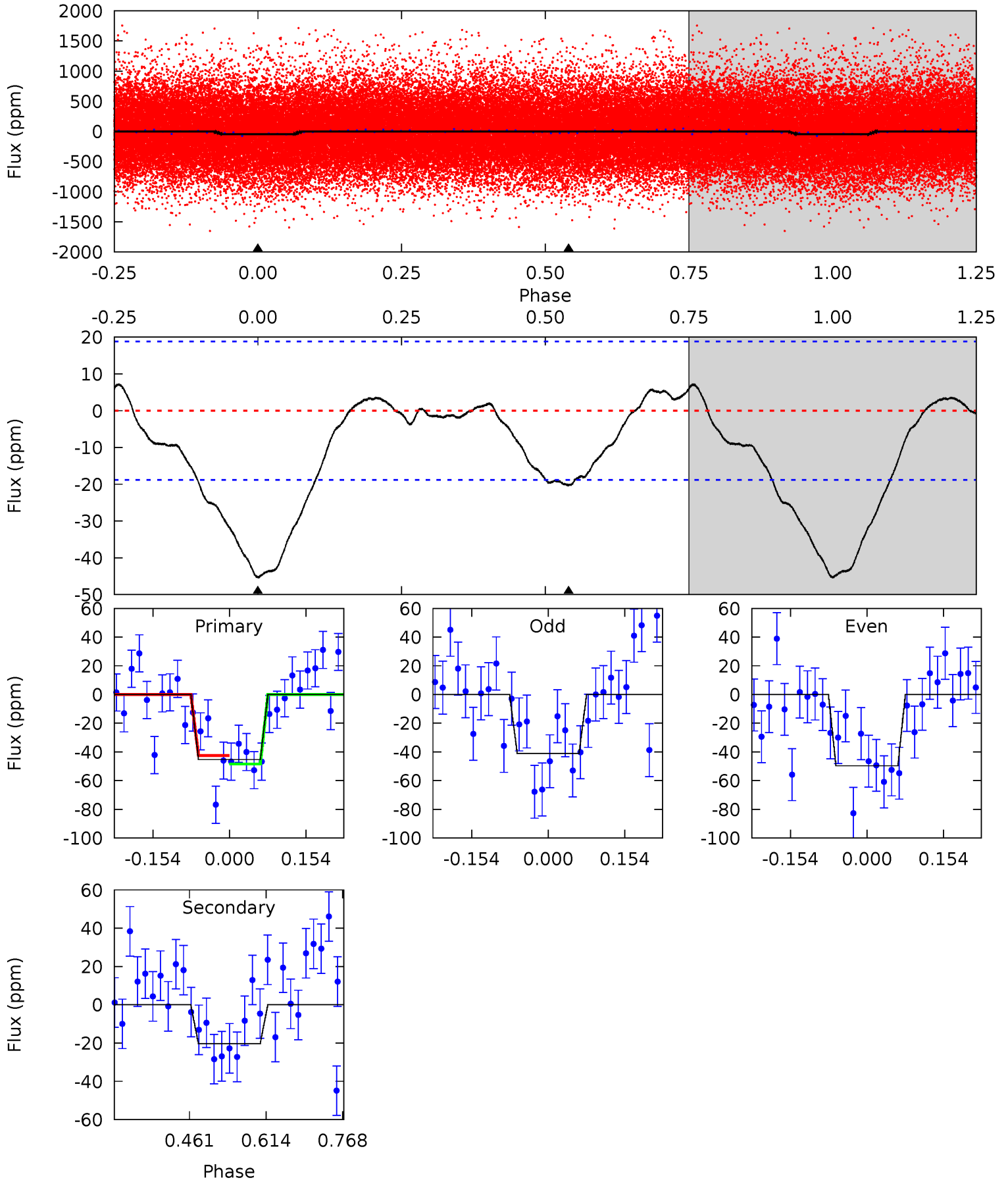
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.75	4.56	0	0	4.45	1.37	0.73	9.75	9.75	4.56	4.56	0.46	0.92	0.13	1.63



# Alt Model-Shift Uniqueness Test

009899682-01, P = 1.332568 Days, E = 130.693312 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
10.8	4.84	0	0	4.47	1.43	0.97	10.8	10.8	4.84	4.84	1.03	0.97	0.14	0.70





### Stellar Parameters For KIC 009899682

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5657^{+169}_{-169}$	$4.597^{+0.036}_{-0.135}$	$-0.440^{+0.300}_{-0.300}$	$0.760^{+0.158}_{-0.056}$	$0.849^{+0.080}_{-0.097}$	$2.723^{+0.501}_{-1.141}$
	+3%/-3%	+1%/-3%	+68%/-68%	+21%/-7%	+9%/-11%	+18%/-42%
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 009899682-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-18 \pm 4$	$0.63^{+0.44}_{-0.36}$	$2073^{+106}_{-83}$	$4488^{+2351}_{-851}$	$12^{+61}_{-8}$
Alt.	$-20 \pm 4$	$0.63^{+0.45}_{-0.38}$	$2082^{+102}_{-90}$	$4554^{+2433}_{-833}$	$13^{+71}_{-9}$

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

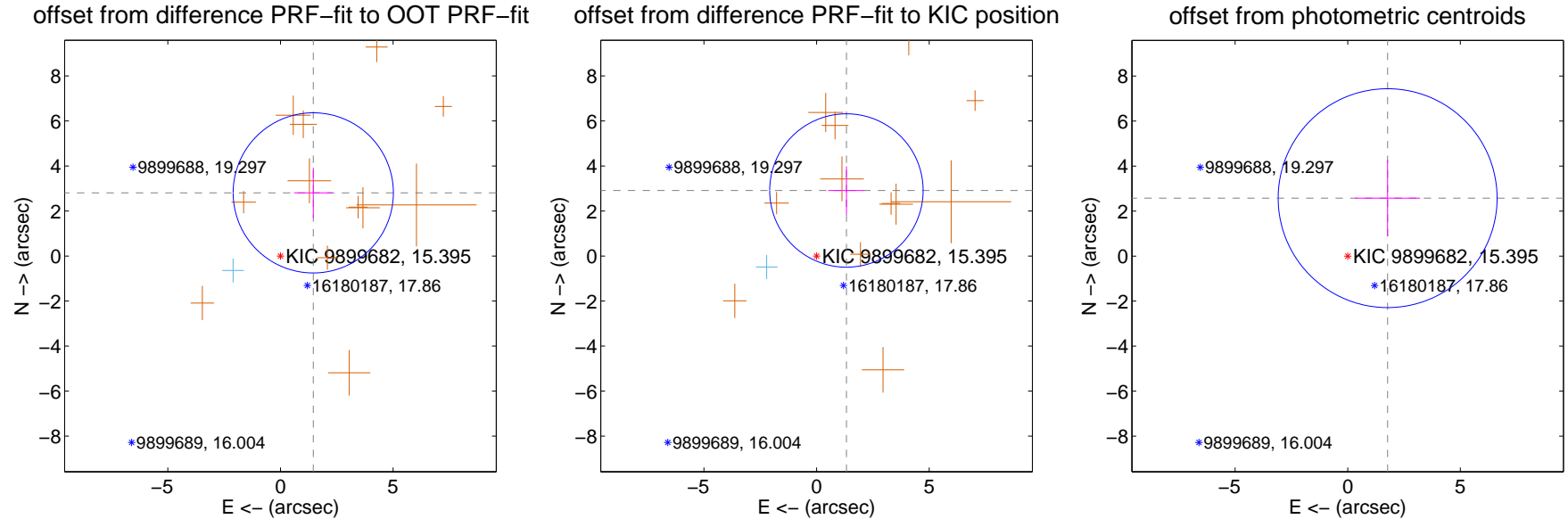
## DV Centroid Data

Supplemental centroid analysis for 009899682-01. Kepler magnitude: 15.39. Transit SNR 8.27

There are 1 quarters with good PRF difference image offsets

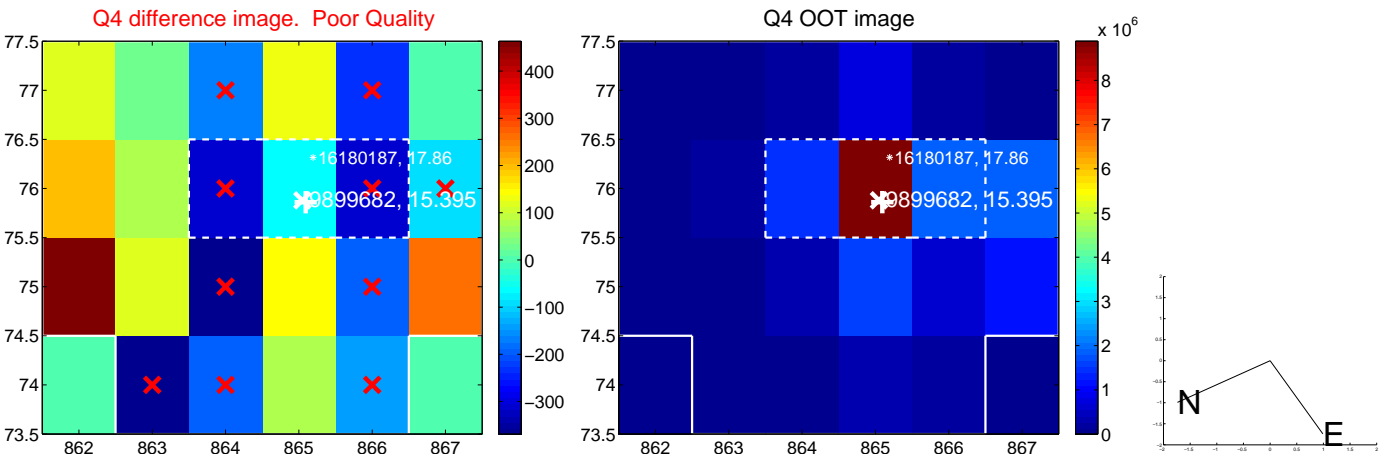
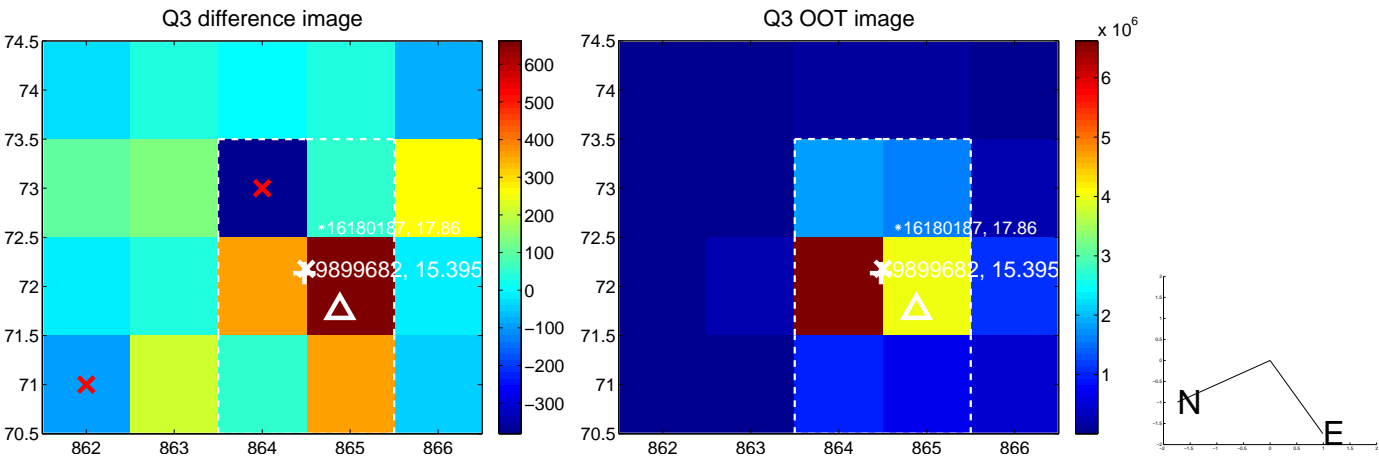
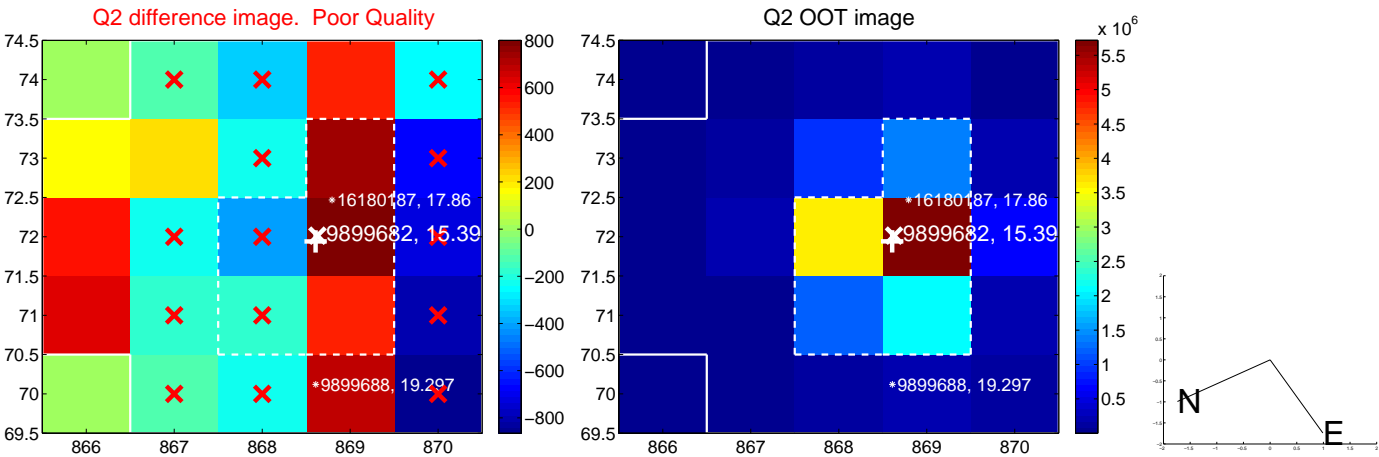
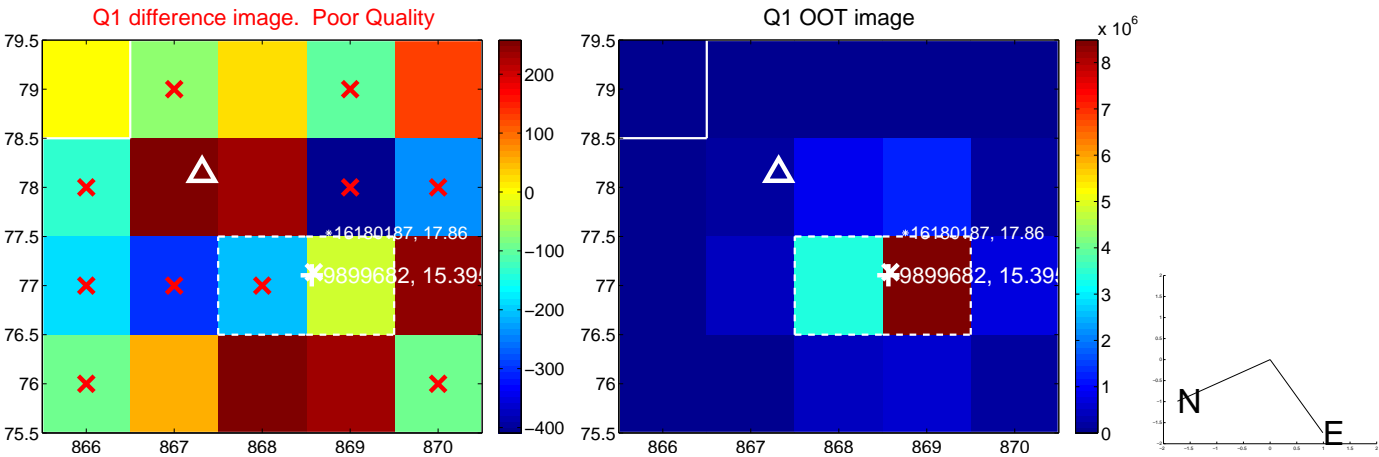
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.160 \pm 1.186$	2.67	$-1.456 \pm 0.850$	$2.804 \pm 1.113$
PRF-fit source offset from KIC position	$3.197 \pm 1.135$	2.82	$-1.325 \pm 0.804$	$2.910 \pm 1.069$
photometric centroid source offset	$3.13 \pm 1.62$	1.93	$-1.77 \pm 1.44$	$2.57 \pm 1.70$

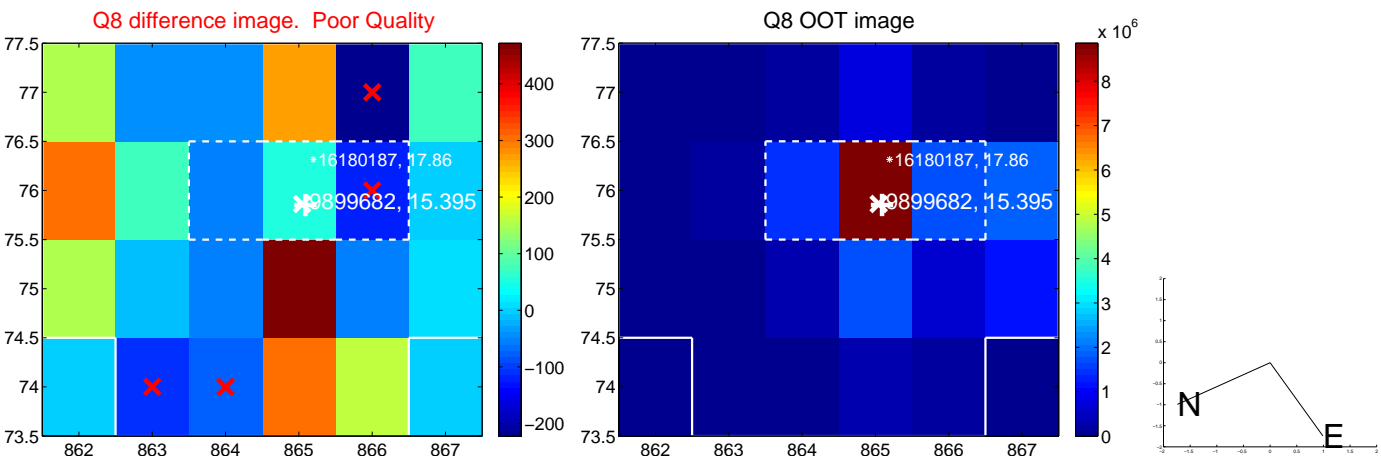
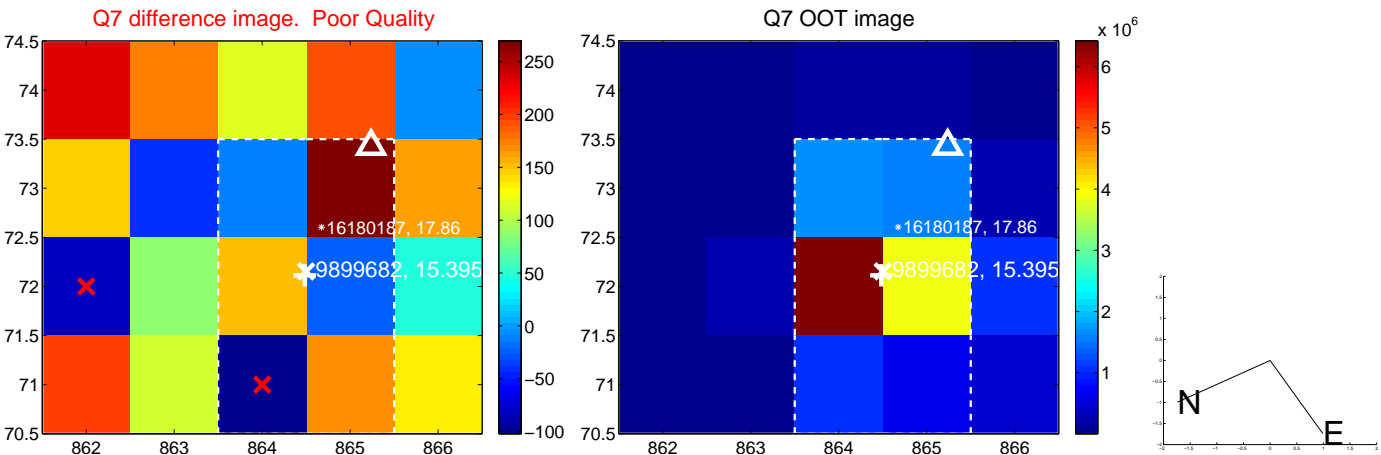
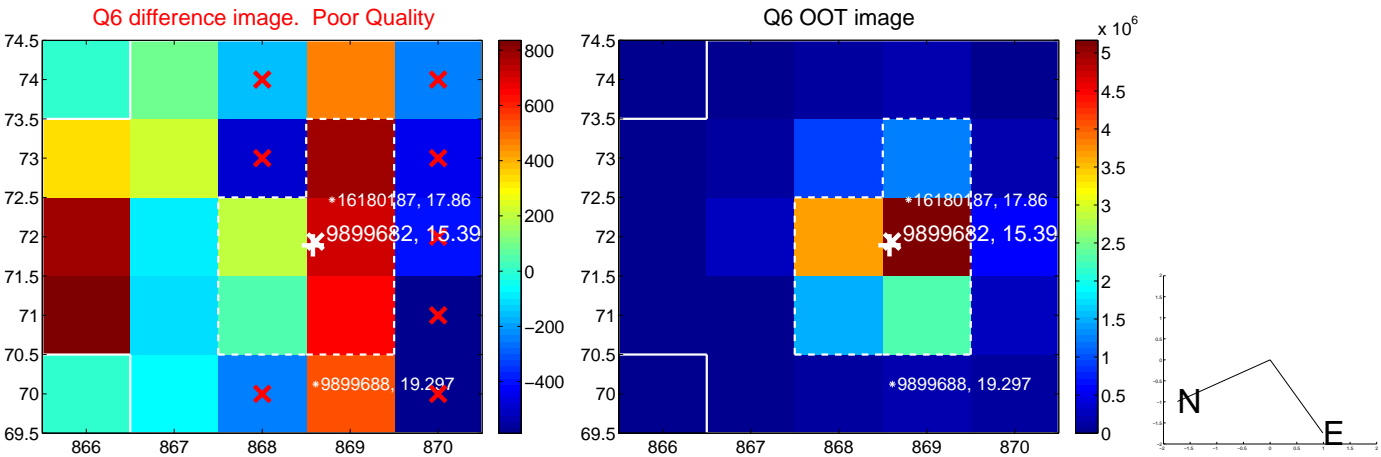
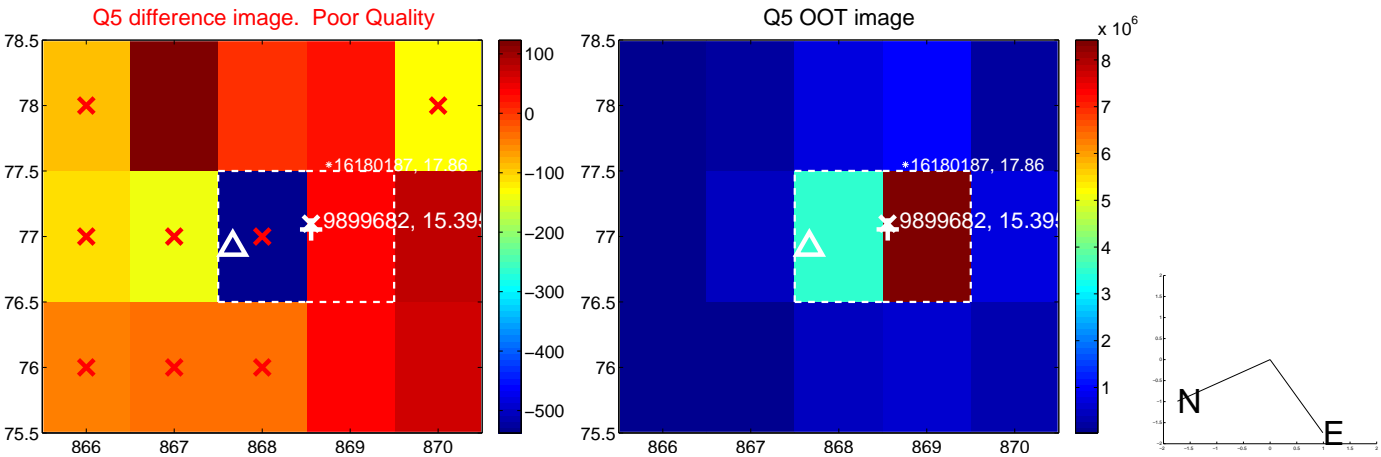


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

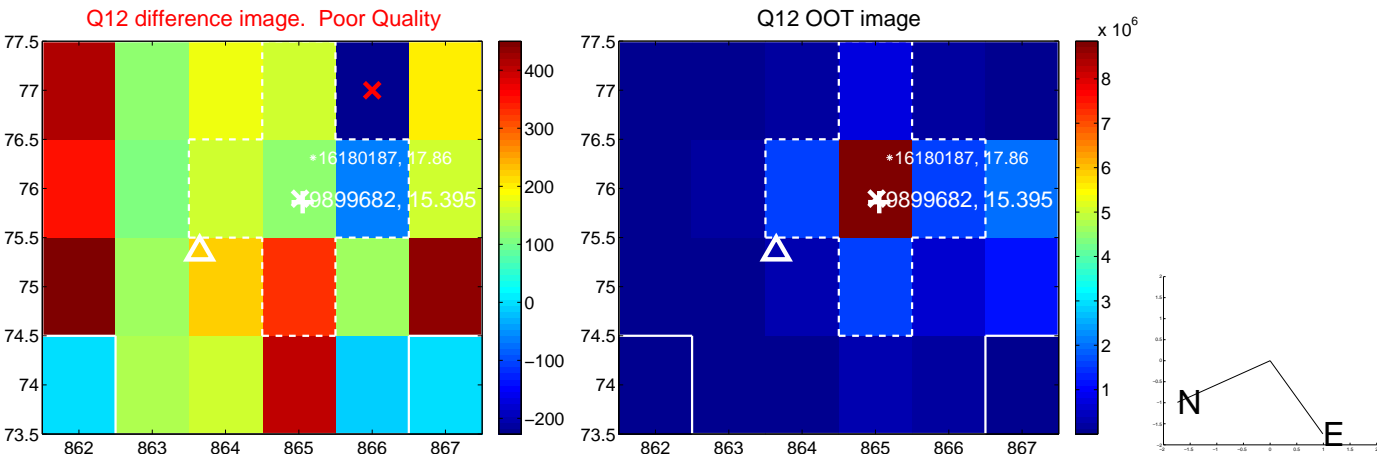
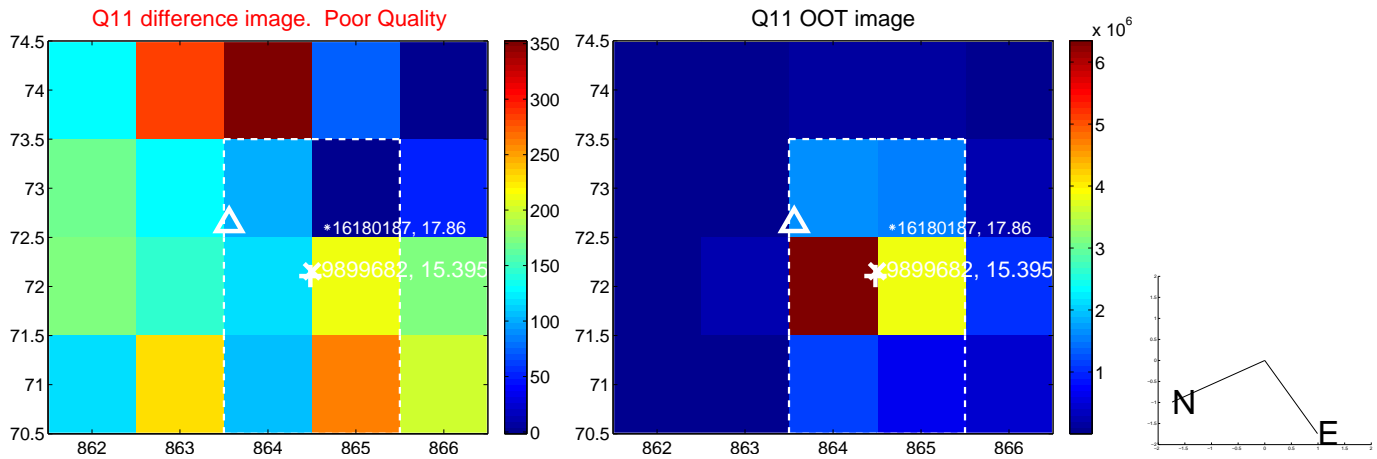
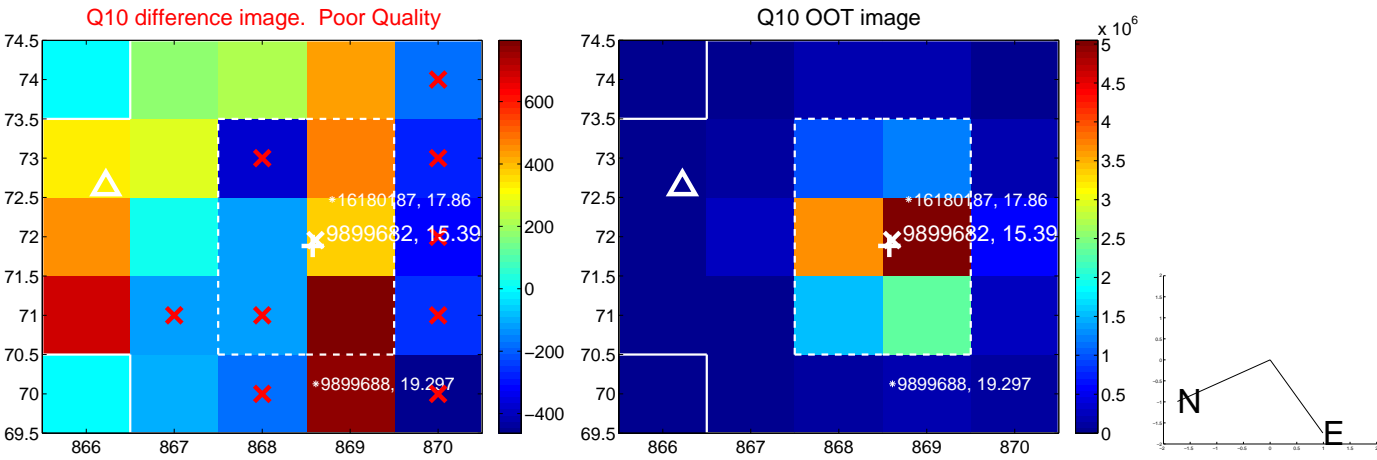
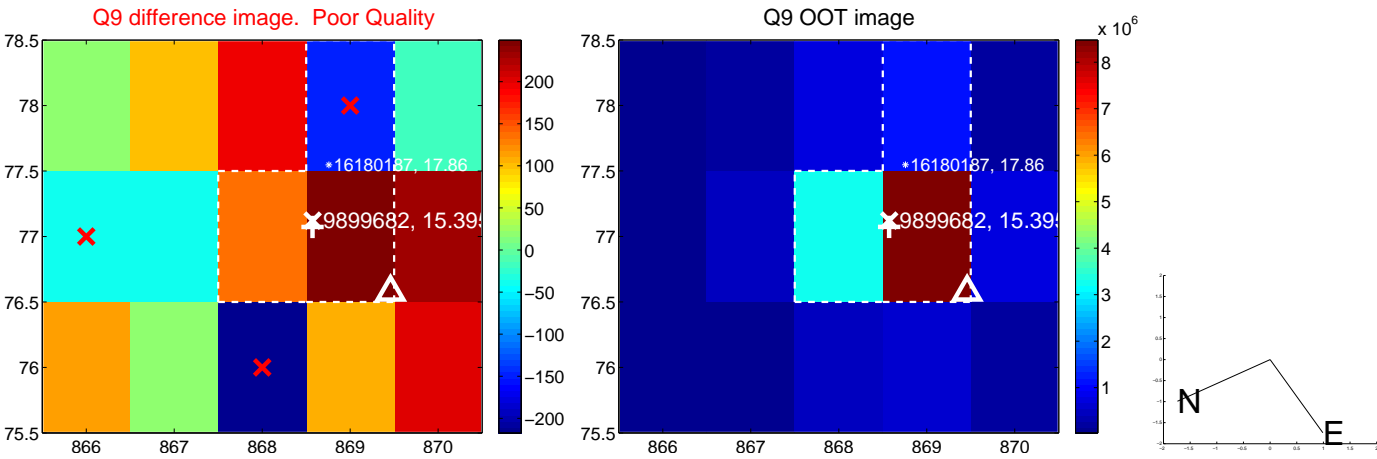


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

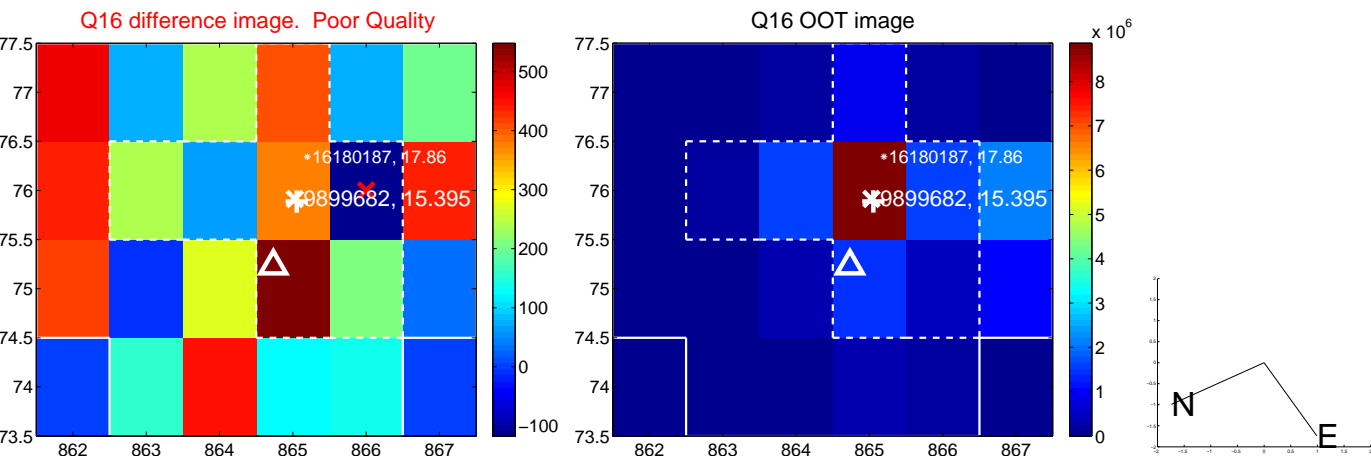
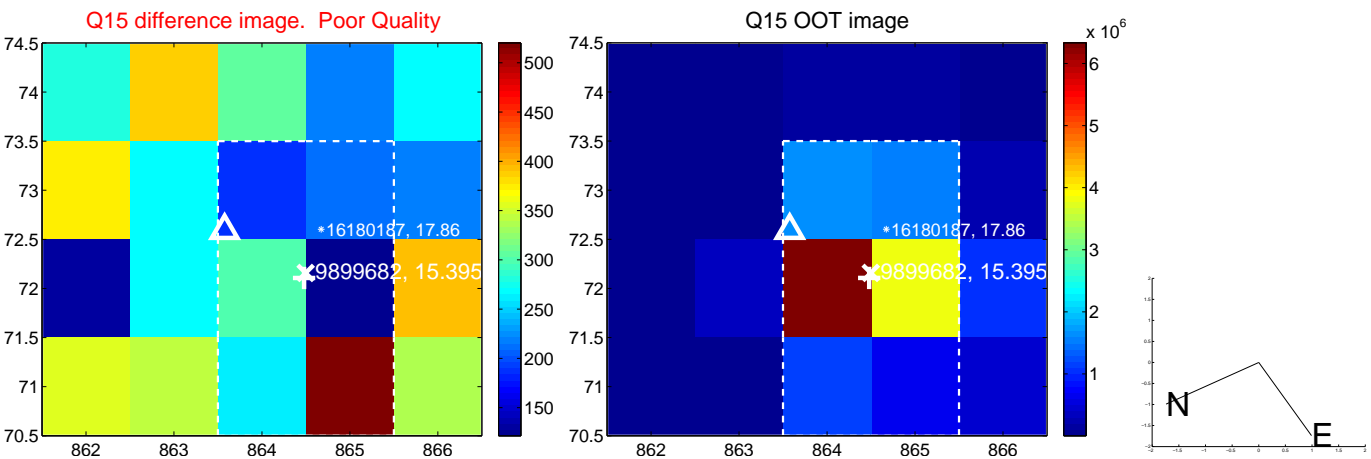
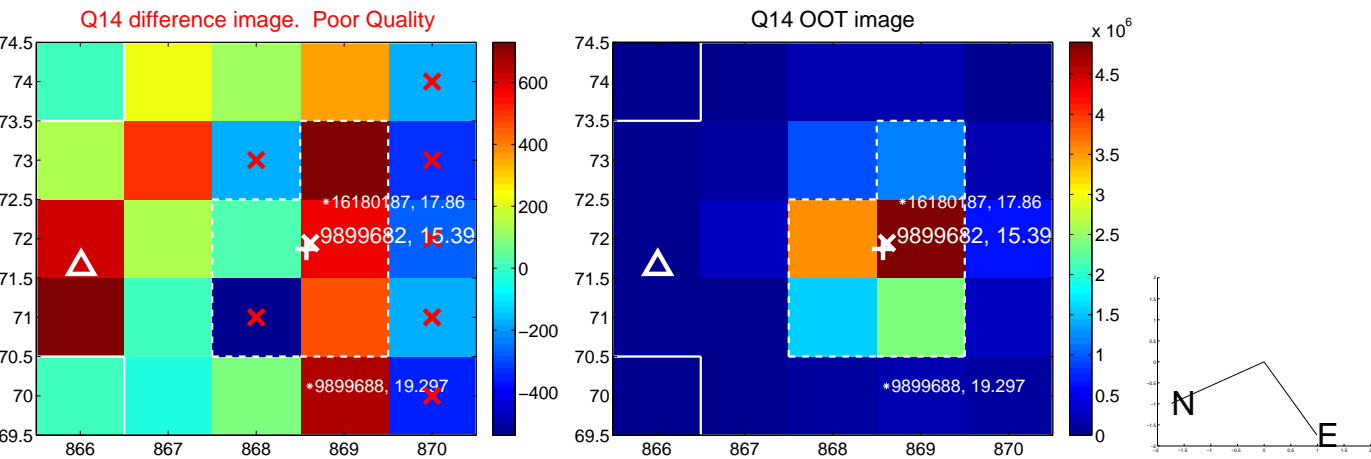
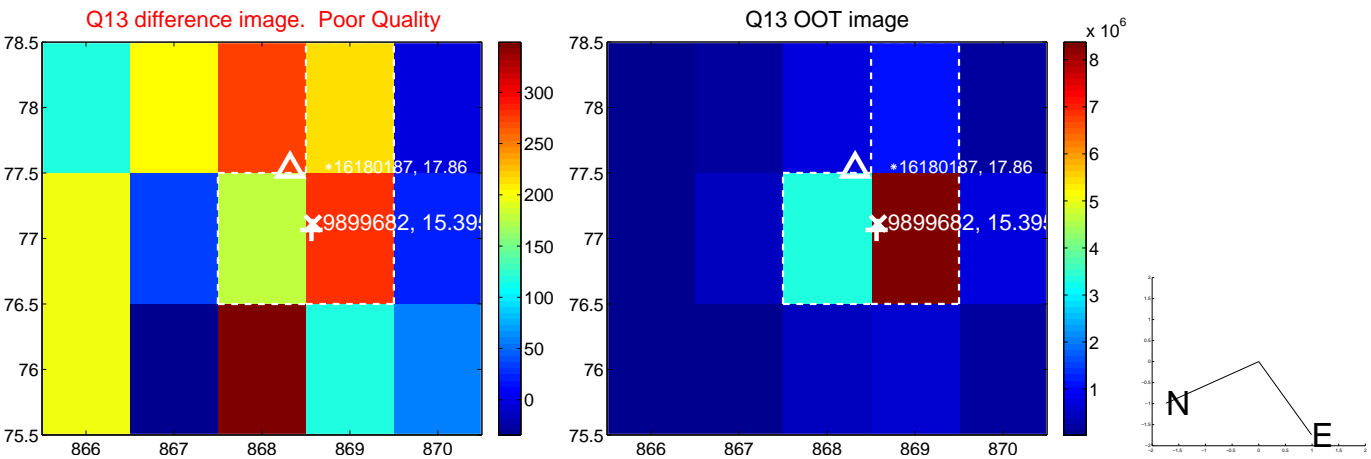




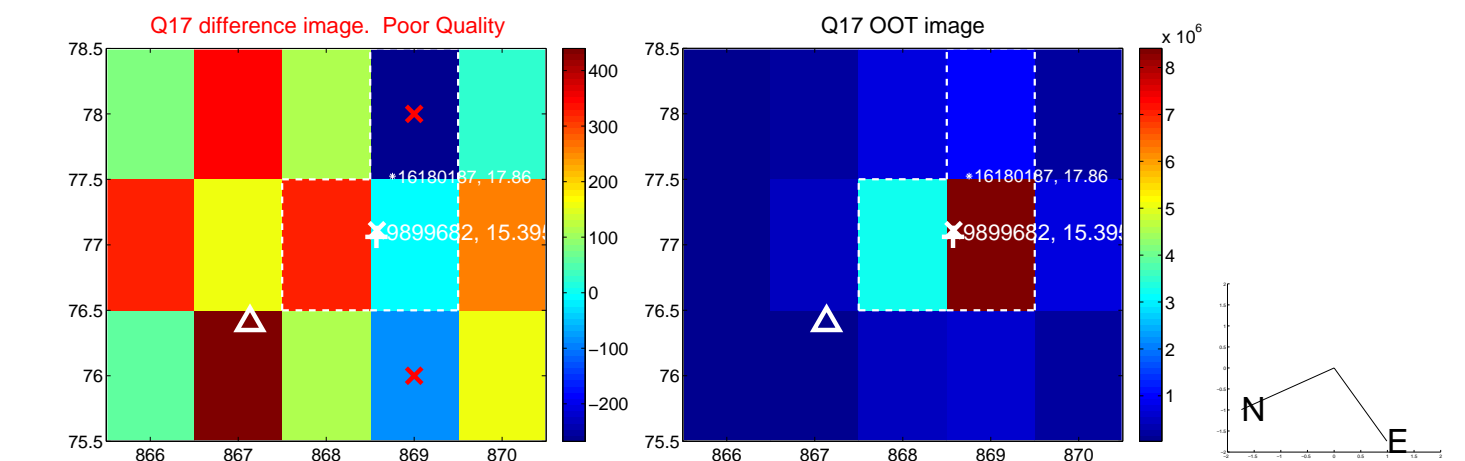
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



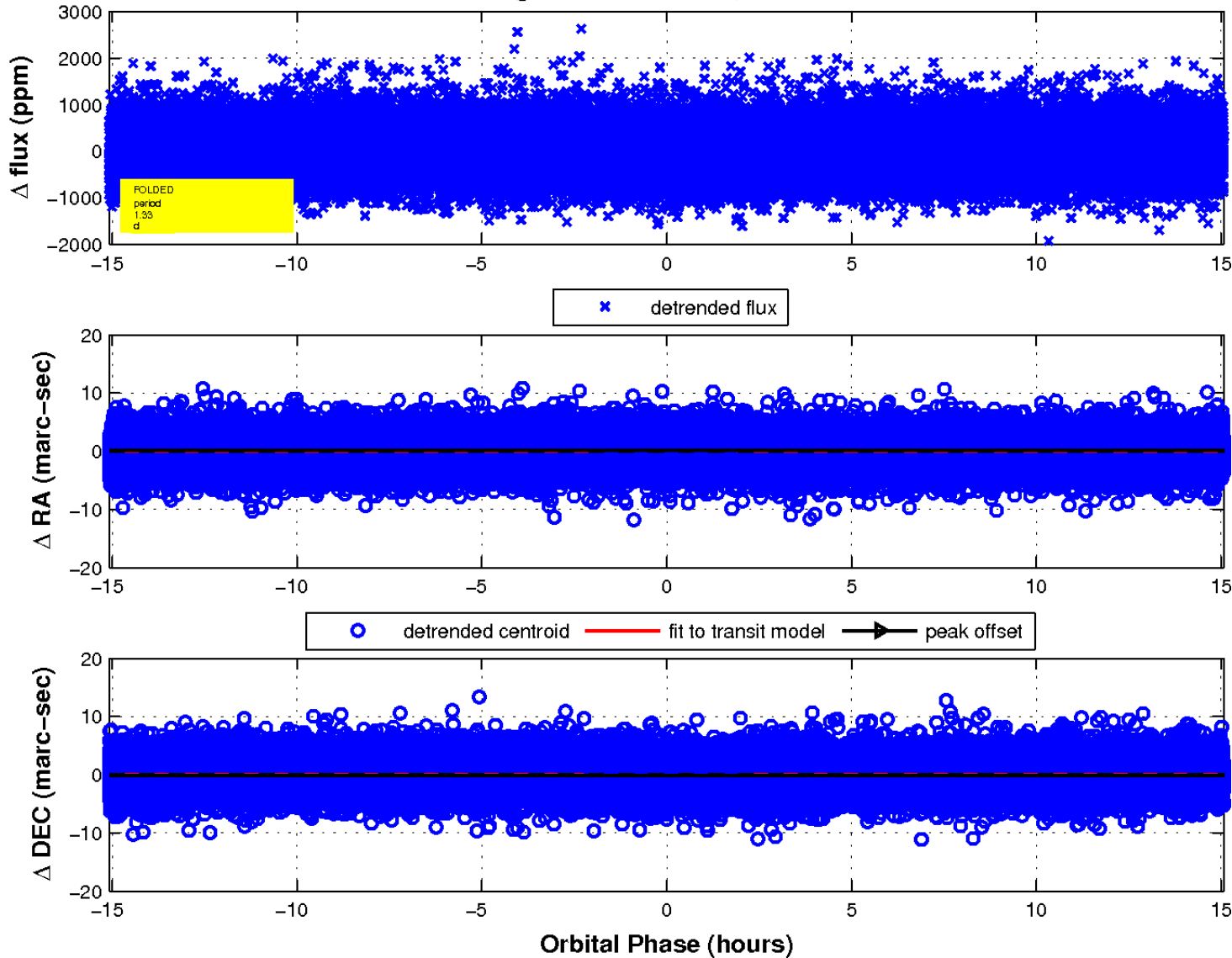
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

