

# KIC 003327993

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003327993-01	OBS	2157.01	2.115540	131.981343	352.7	6.234	24.1	27.2	0.95	5900	3.57	904.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003327993-01	OBS	FP	0.00	0	0	1	1	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.

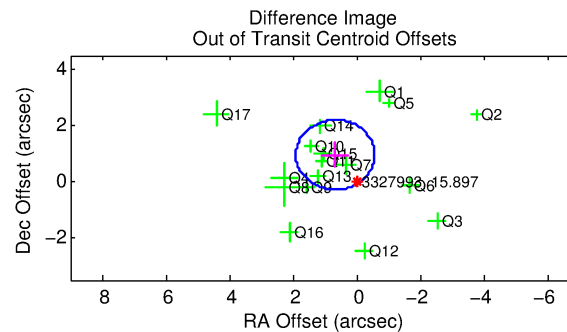
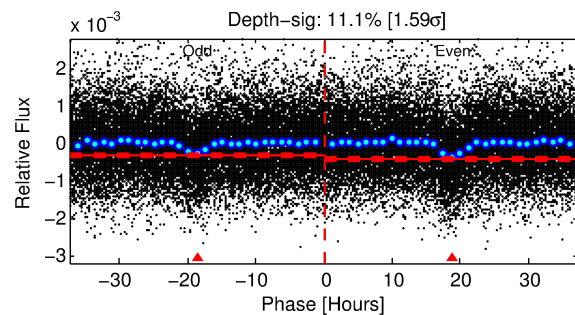
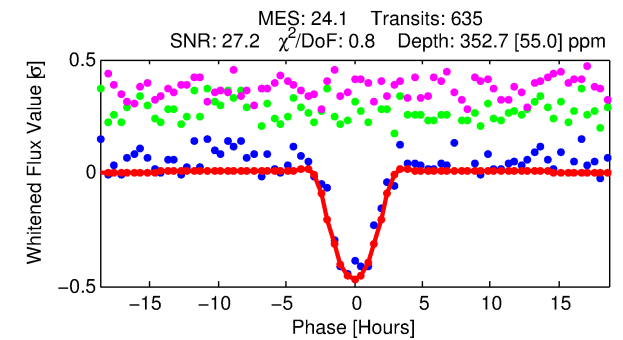
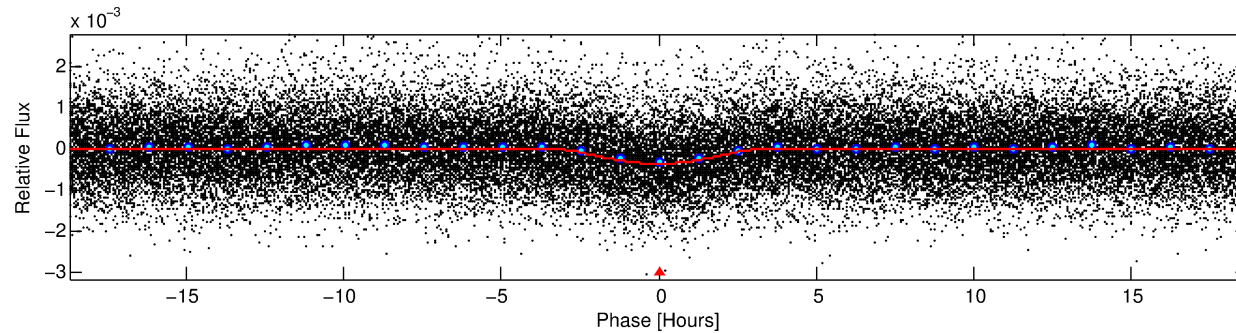
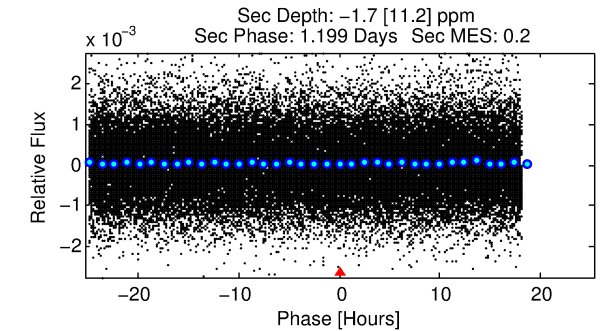
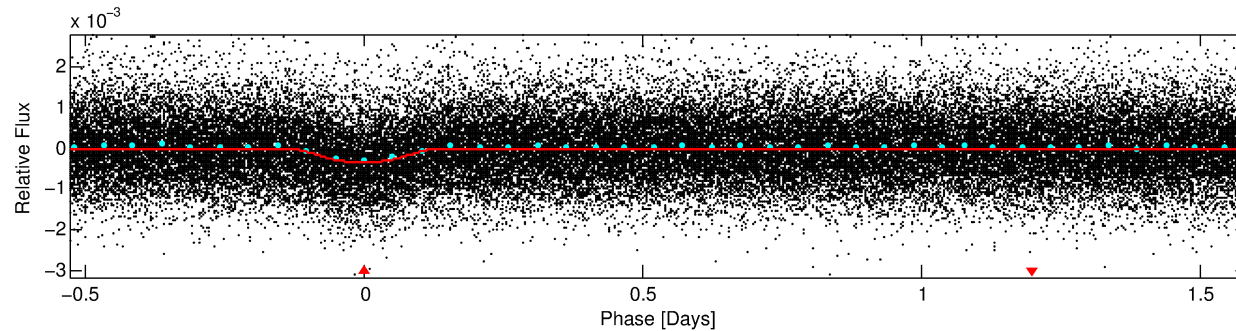
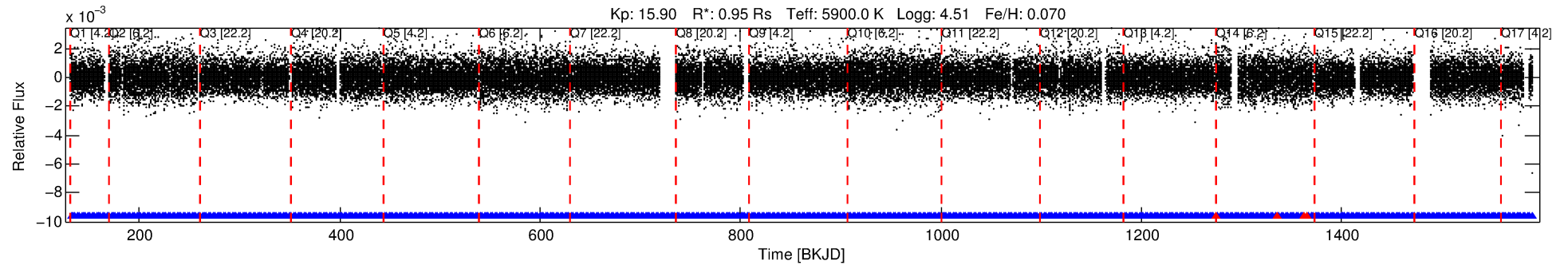
## Ephemeris Match Information For 003327993-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
003327993-01	3327993	003327980-pri	3327980	1:2	70.6	8	-16	12.12	15.90	1205.10	Direct-PRF	0	1.89	0.54

**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: 3327993 Candidate: 1 of 1 Period: 2.116 d  
KOI: K02157.01 Corr: 0.963



## DV Fit Results:

Period = 2.11554 [0.00001] d  
Epoch = 131.9813 [0.0047] BKJD  
Rp/R\* = 0.0344 [0.0495]  
a/R\* = 1.22 [0.09]  
b = 1.00 [0.08]  
Seff = 904.75 [371.45]  
Teq = 1398 [144] K  
Rp = 3.57 [5.26] Re  
a = 0.0329 [0.0088] AU  
Ag = N/A  
Teffp = N/A

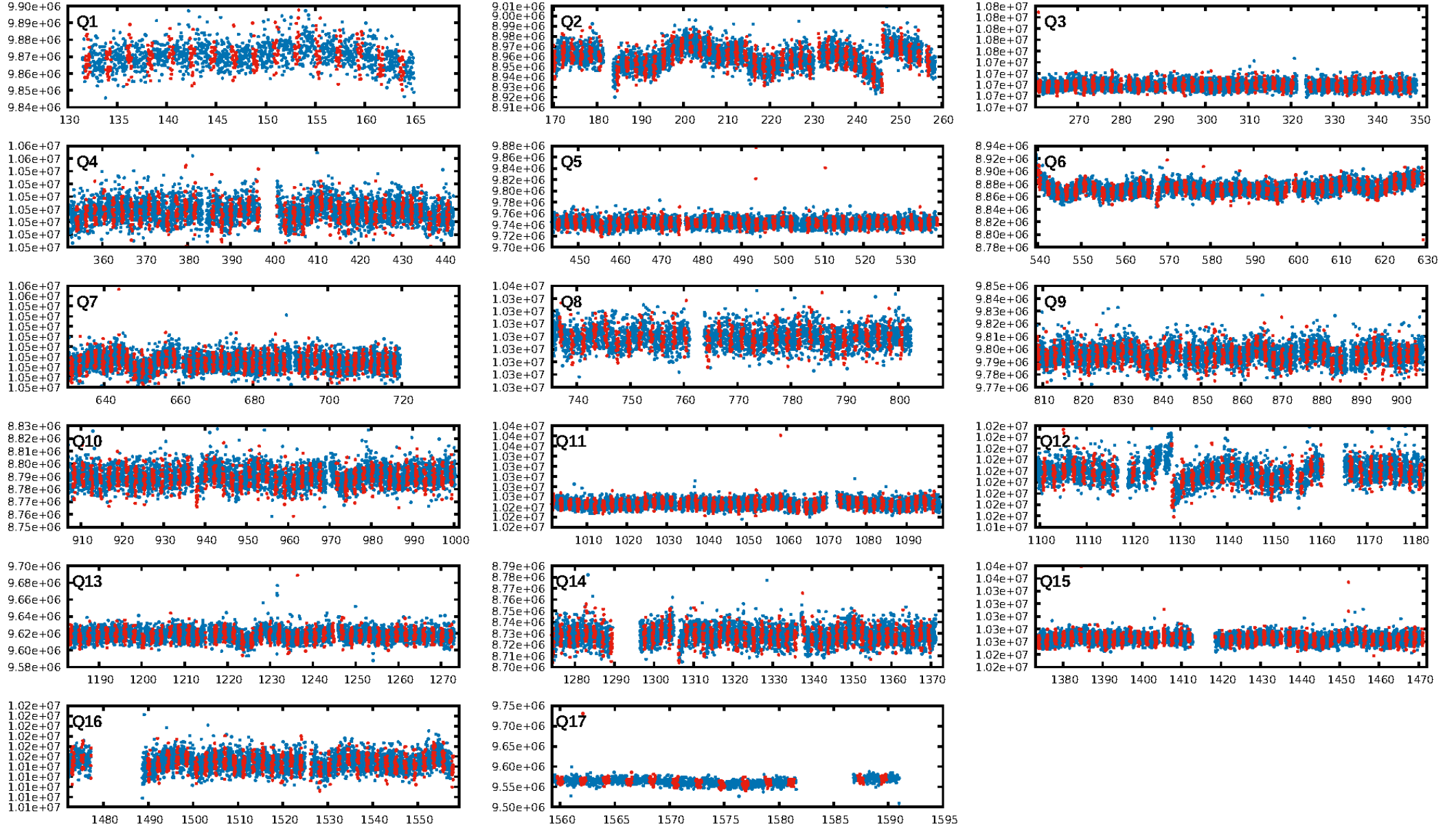
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.94e-113  
RollingBand-fgt: 0.99 [602/606]  
**GhostDiagnostic-chr: 0.006207**  
Centroid-sig: 0.0%  
Centroid-so: 1.776 arcsec [2.73σ]  
OotOffset-rm: 1.168 arcsec [2.82σ]  
KicOffset-rm: 1.033 arcsec [2.39σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 1.00 [17/17]

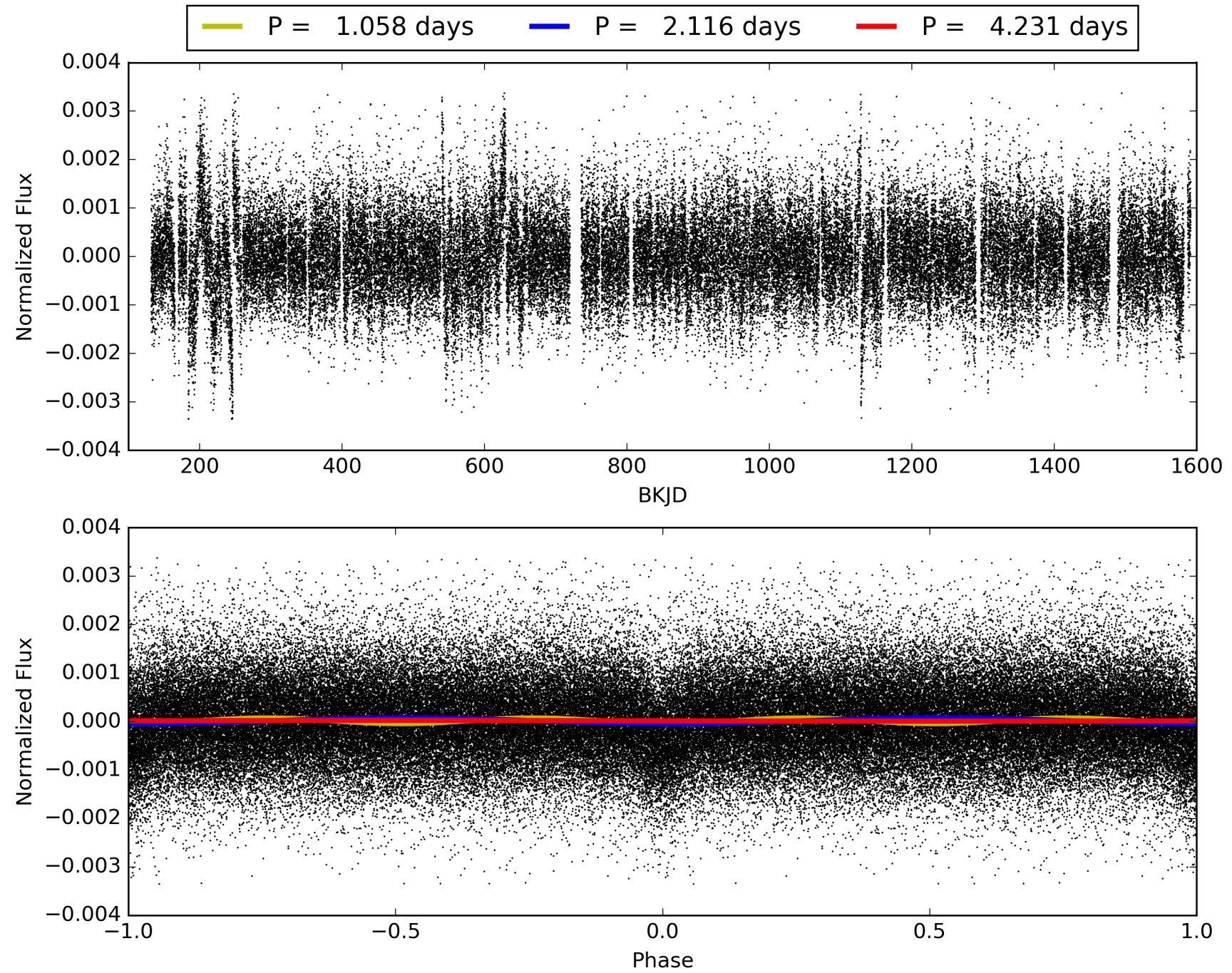
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:31:20 Z

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

# TCE 003327993-01, PDC Light Curves



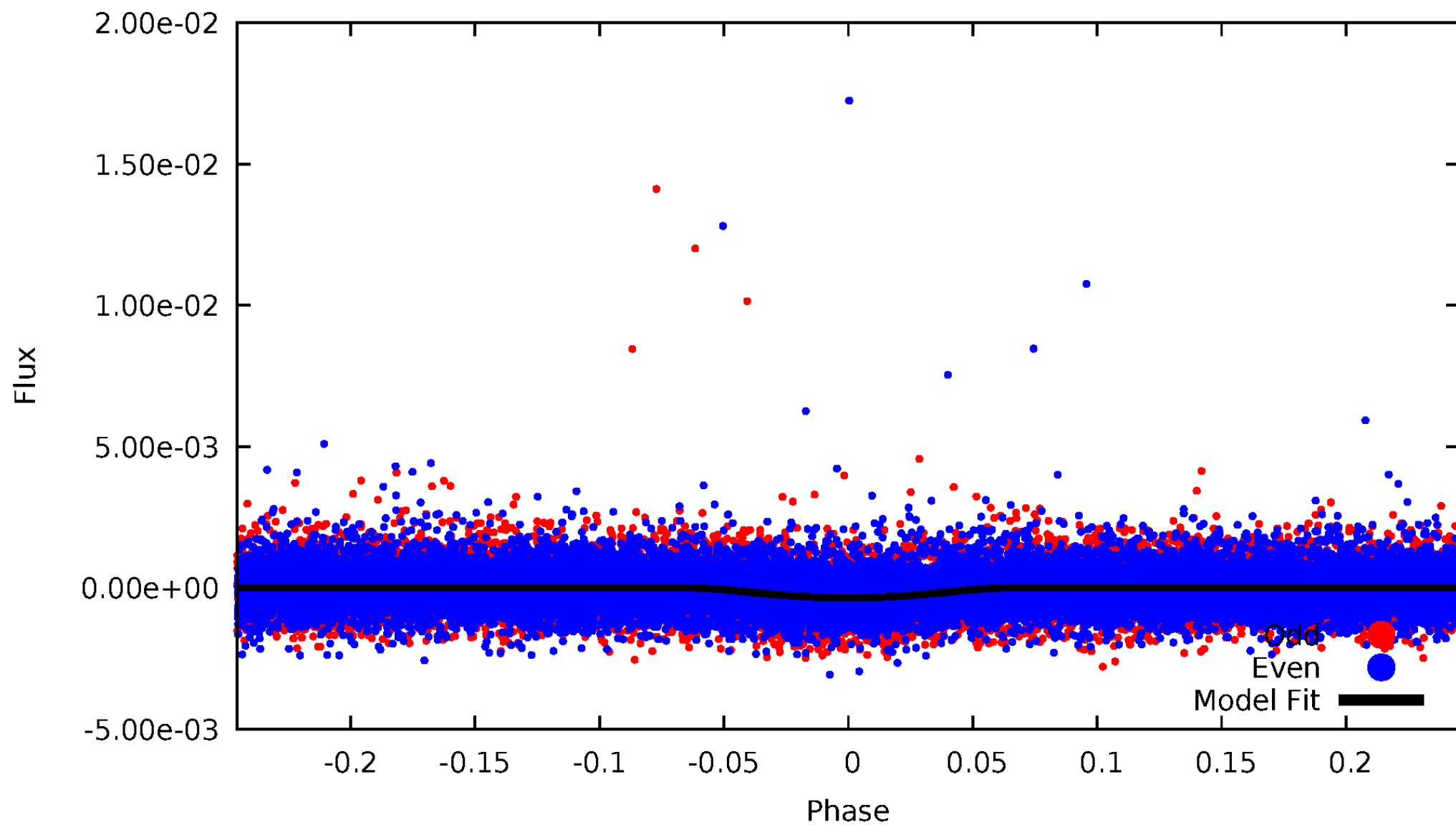
TCE 003327993-01





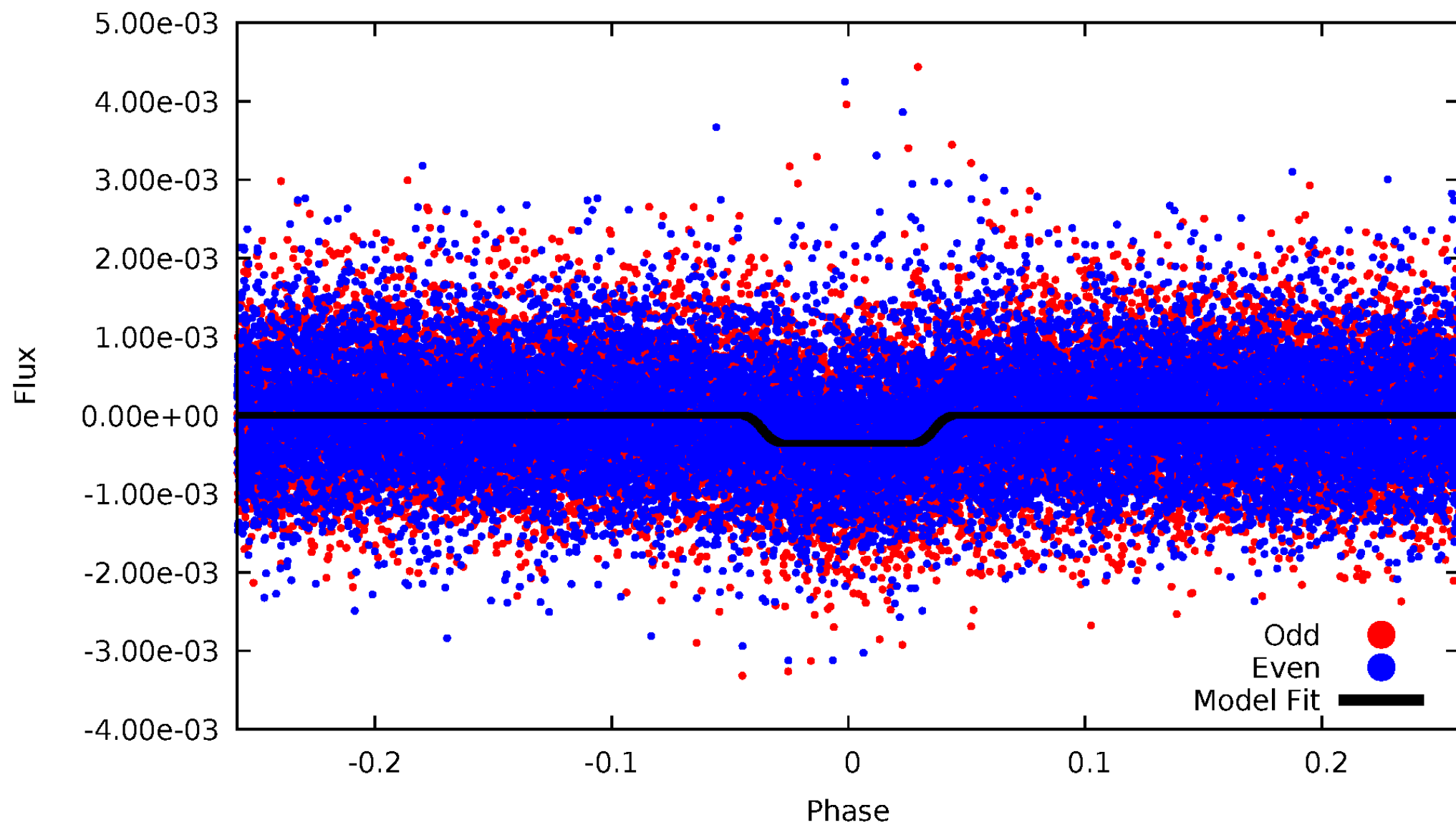
# DV Odd/Even

TCE 003327993-01



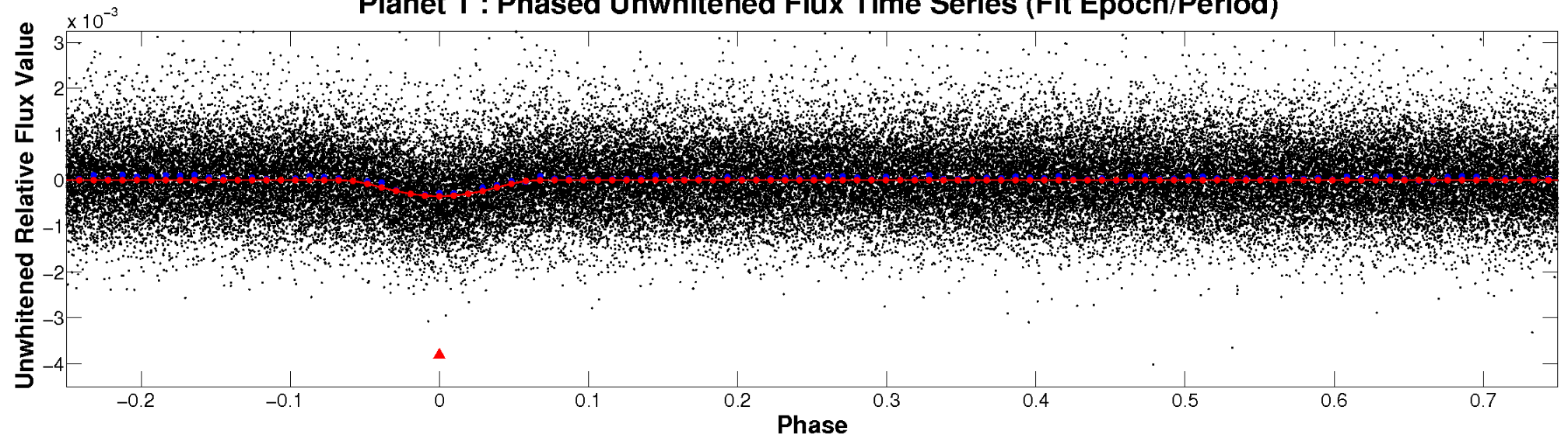
# ALT Odd/Even

TCE 003327993-01

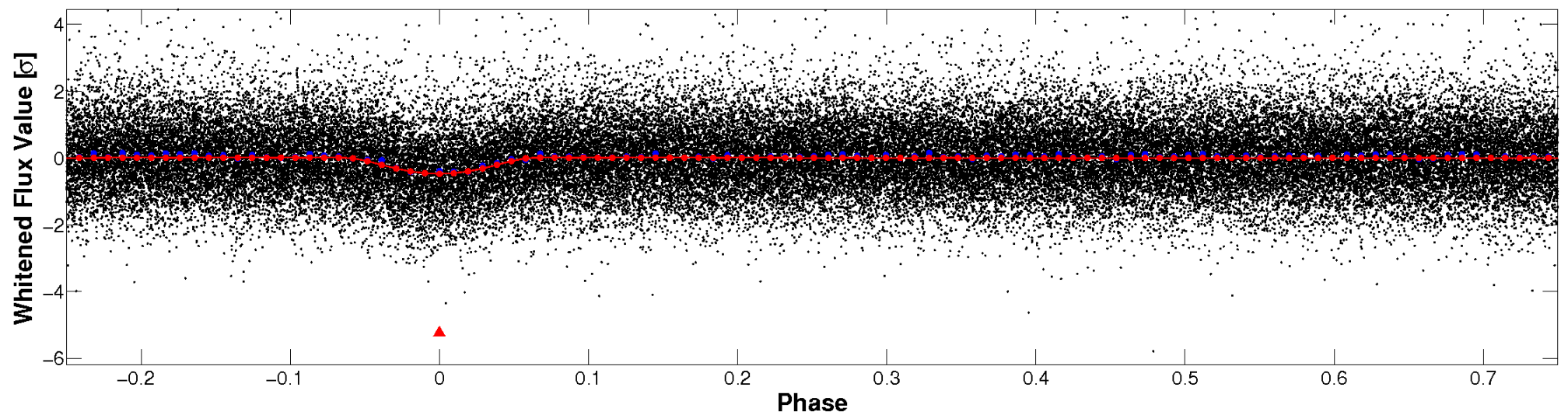


# Non-Whitened Vs. Whitened Light Curve

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

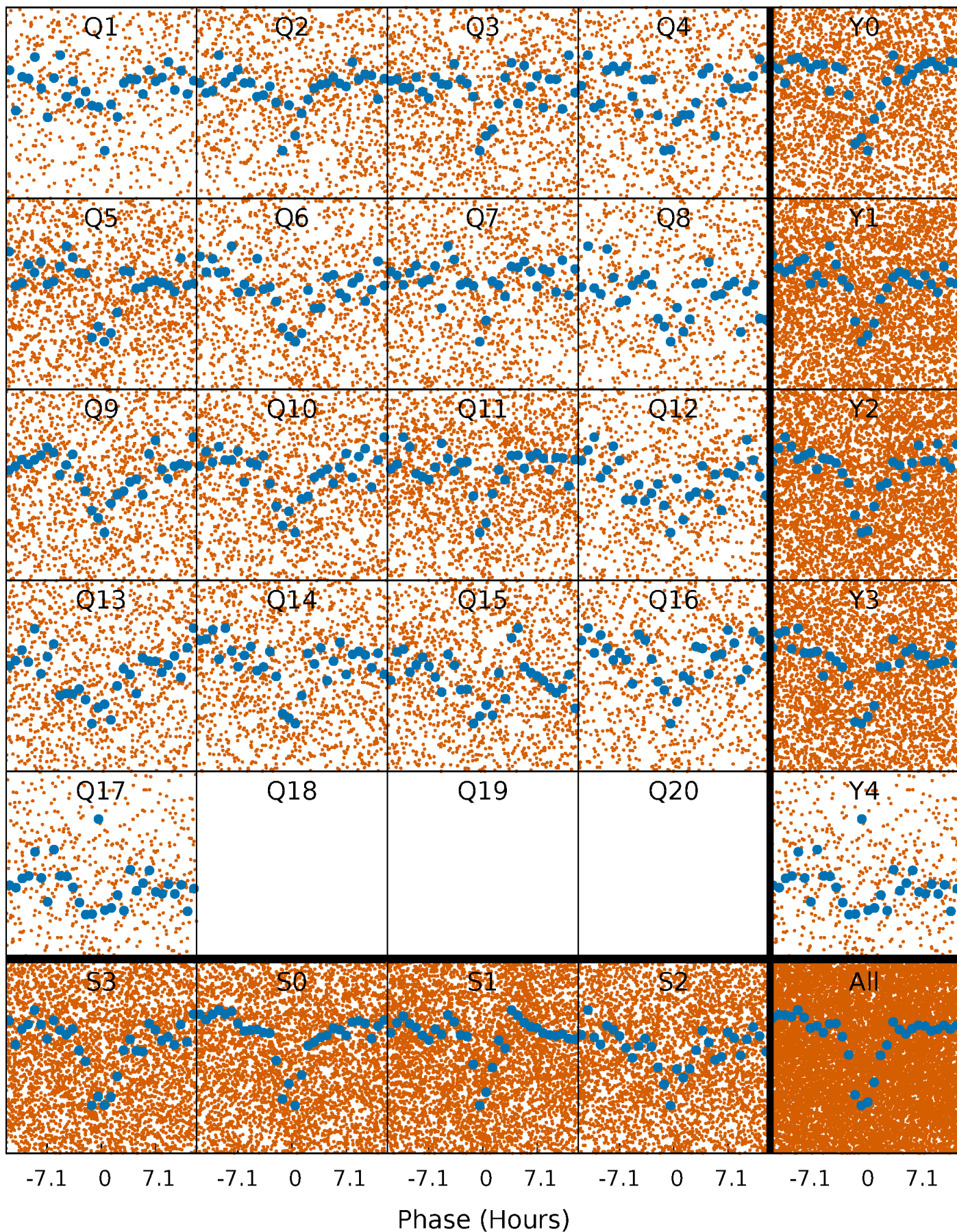


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

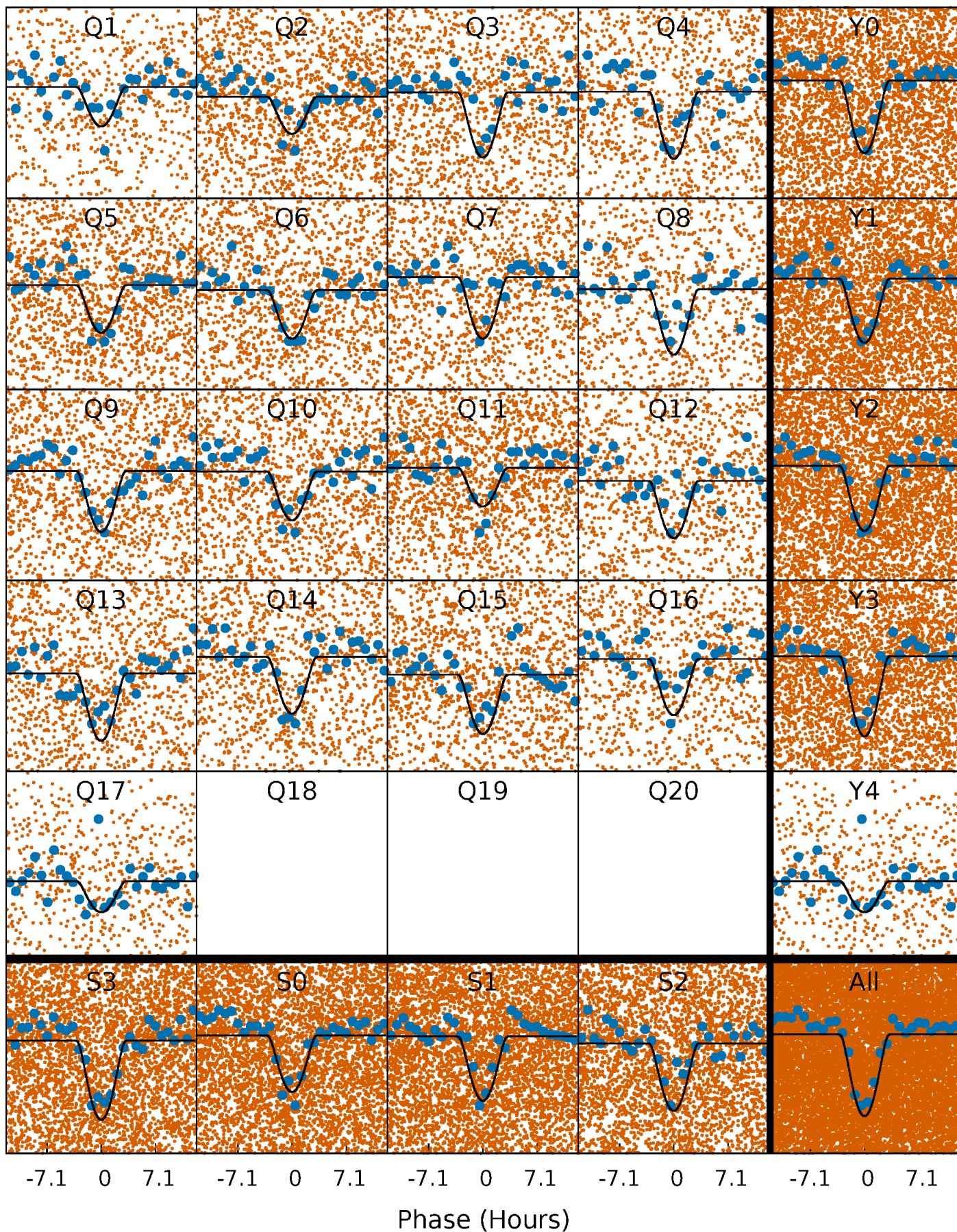
TCE 003327993-01 P= 2.115540 Days  $T_0=131.981343$  (BKJD)





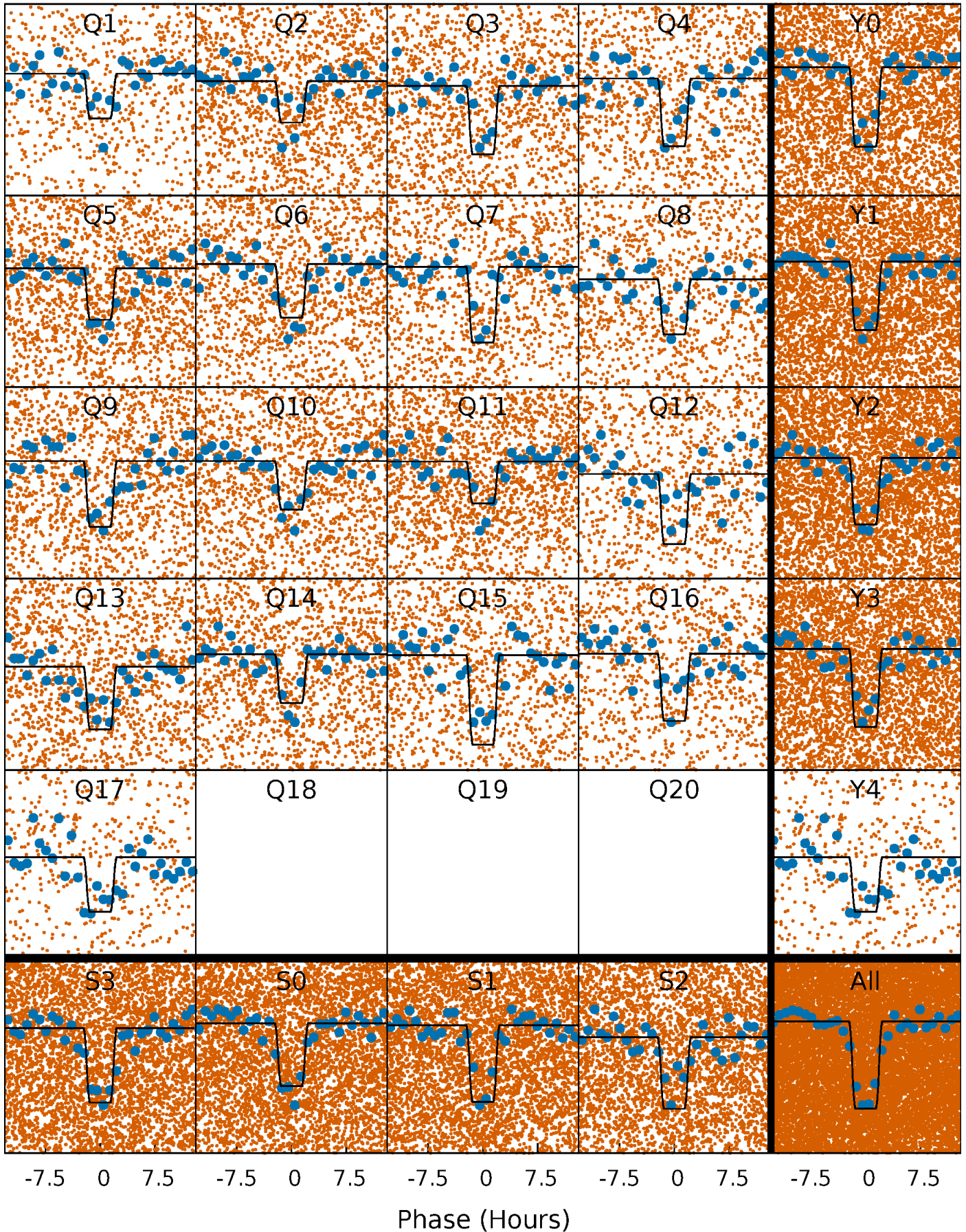
# DV Quarter-Phased Transit Curves

TCE 003327993-01 P= 2.115540 Days  $T_0=131.981343$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003327993-01 P= 2.115527 Days  $T_0=131.982059$  (BKJD)

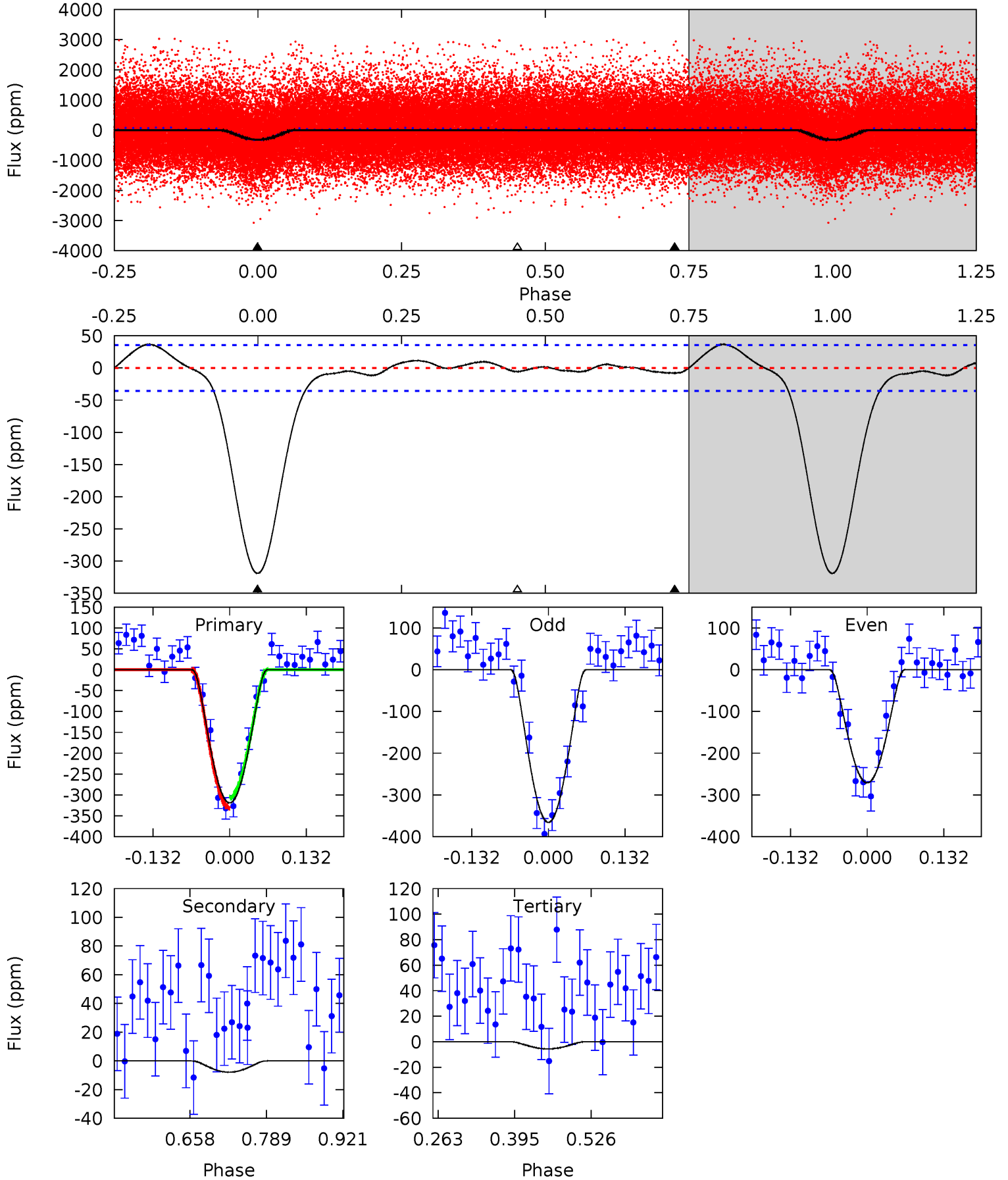




# DV Model-Shift Uniqueness Test

003327993-01, P = 2.115540 Days, E = 129.865803 Days

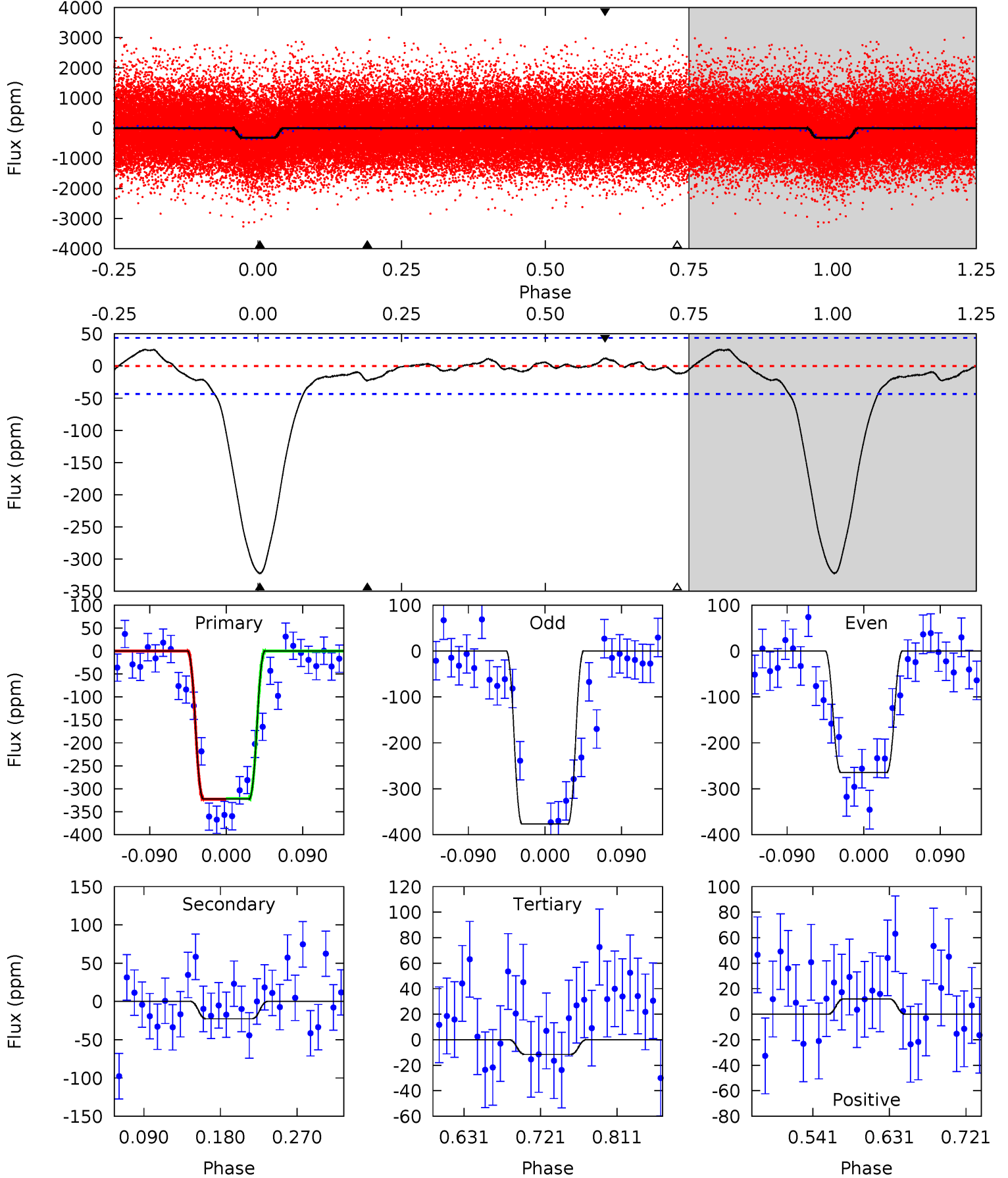
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.4	1.00	0.71	0	4.51	1.51	0.81	39.6	40.4	0.29	1.00	5.96	0.95	0.10	1.51



# Alt Model-Shift Uniqueness Test

003327993-01, P = 2.115527 Days, E = 129.866532 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
33.9	2.38	1.22	1.27	4.59	1.69	1.06	32.7	32.6	1.17	1.12	5.91	0.99	0.07	0.08





### Stellar Parameters For KIC 003327993

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5900^{+176}_{-193}$	$4.509^{+0.037}_{-0.213}$	$0.070^{+0.250}_{-0.300}$	$0.951^{+0.301}_{-0.094}$	$1.065^{+0.124}_{-0.138}$	$1.745^{+0.364}_{-0.929}$
	+3%/-3%	+1%/-5%	+357%/-429%	+32%/-10%	+12%/-13%	+21%/-53%
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 003327993-01 / KOI 2157.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-8 \pm 8$	$5.50^{+4.84}_{-3.60}$	$2009^{+127}_{-103}$	$-2351^{+5161}_{-198}$	$0.110^{+0.882}_{-0.112}$
Alt.	$-23 \pm 9$	$4.46^{+4.35}_{-2.80}$	$2009^{+156}_{-99}$	$2467^{+1265}_{-4801}$	$0.574^{+4.275}_{-0.430}$

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

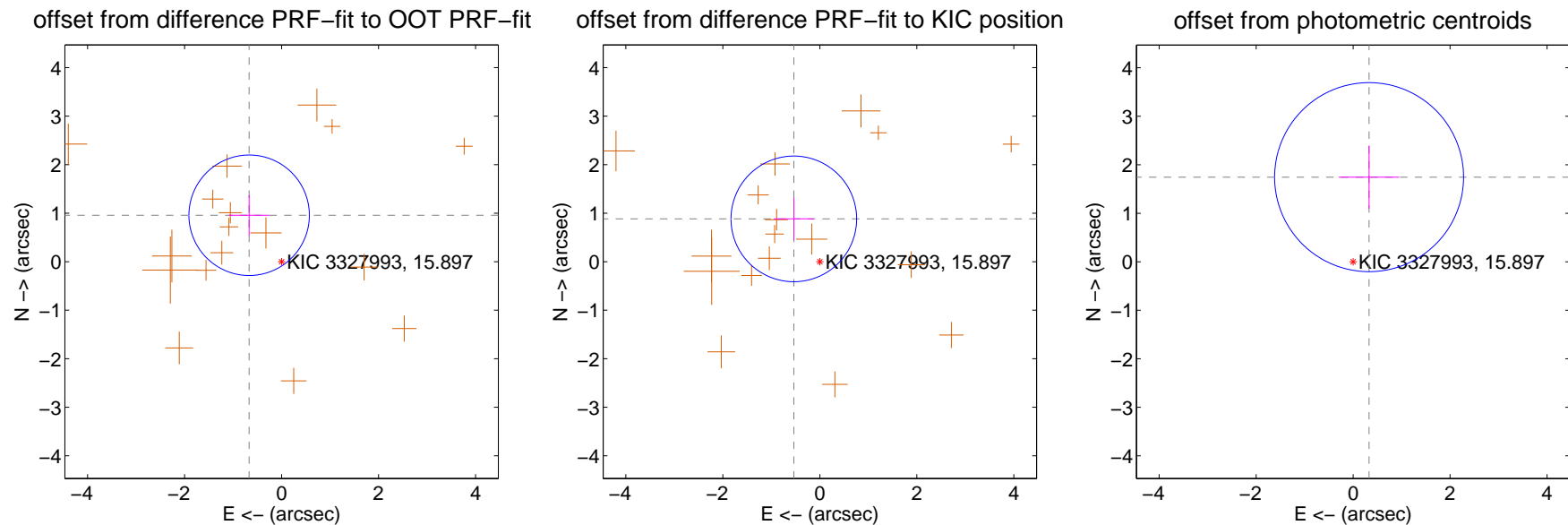
## DV Centroid Data

Supplemental centroid analysis for 003327993-01. Kepler magnitude: 15.90. Transit SNR 27.16

There are 0 quarters with good PRF difference image offsets

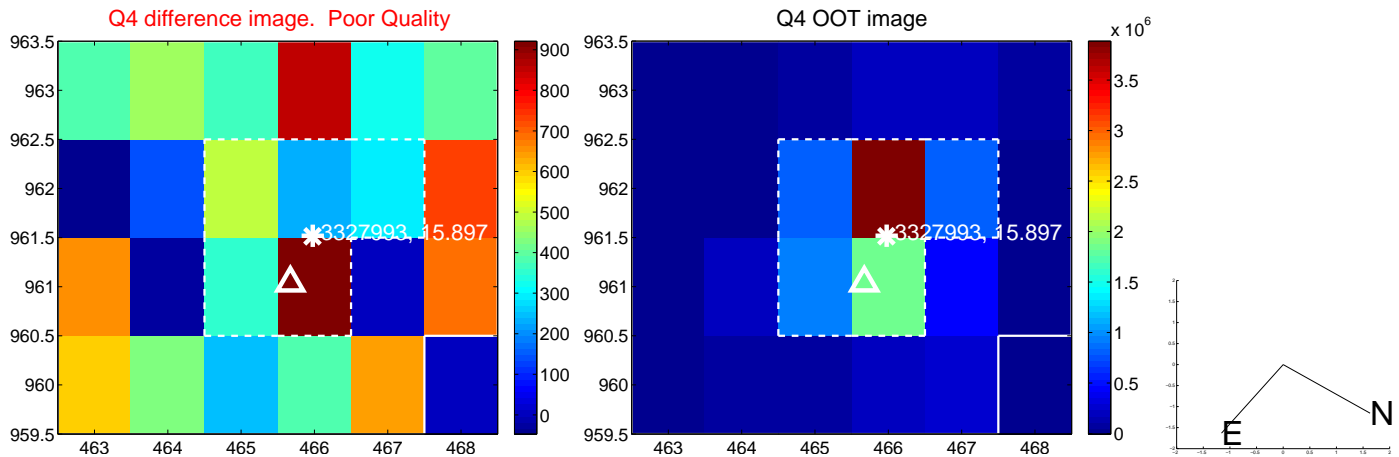
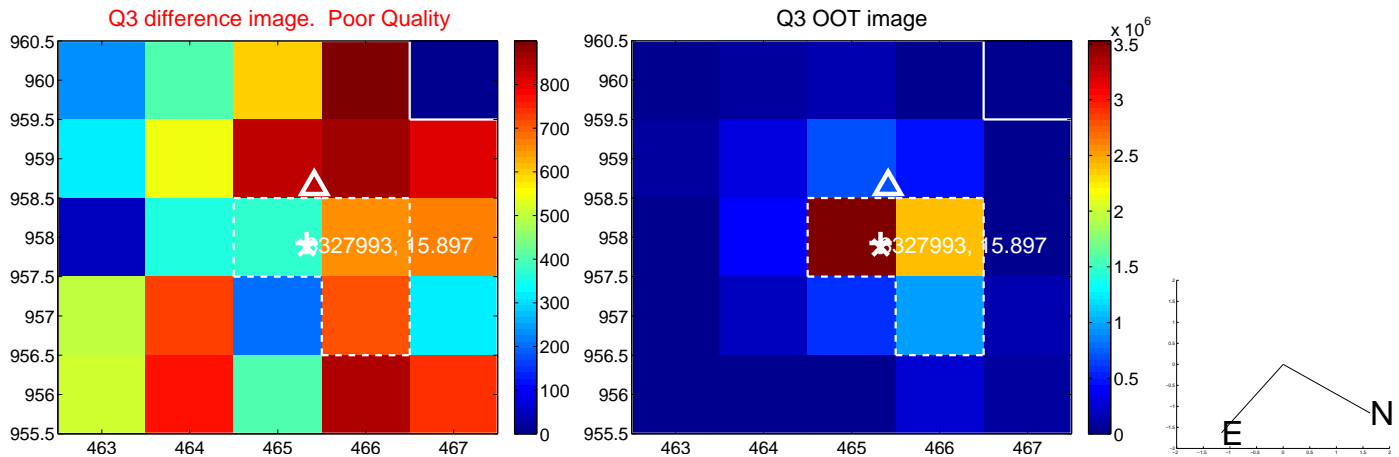
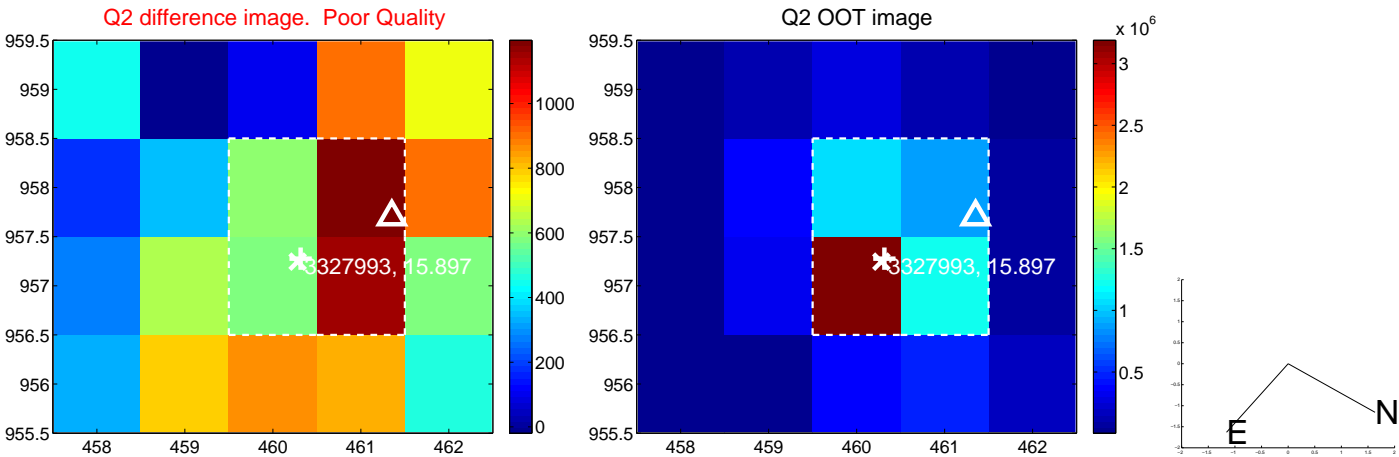
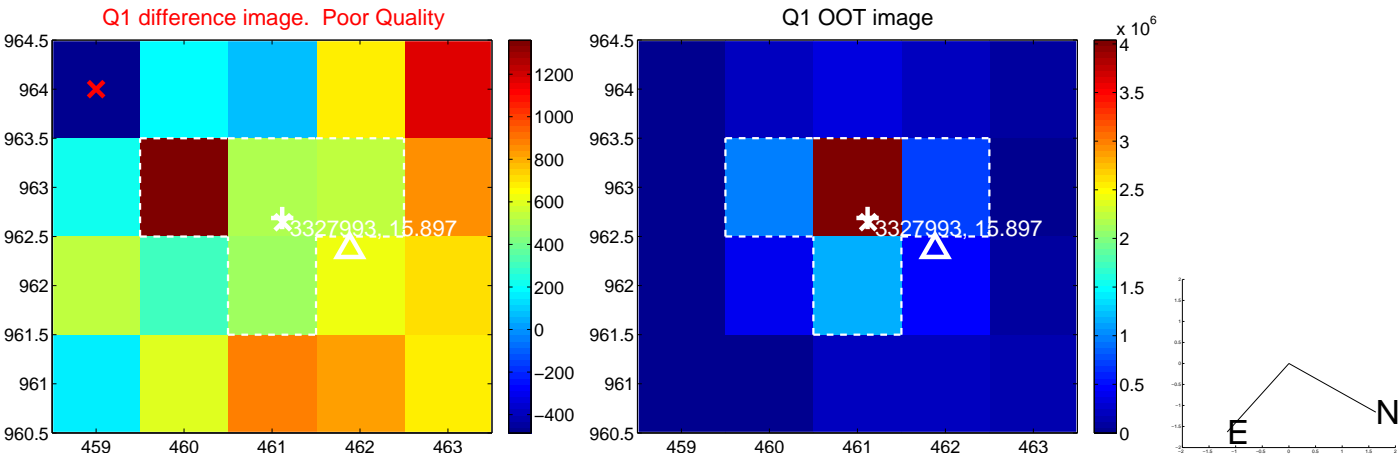
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.168 \pm 0.414$	2.82	$0.669 \pm 0.415$	$0.957 \pm 0.413$
PRF-fit source offset from KIC position	$1.033 \pm 0.432$	2.39	$0.537 \pm 0.417$	$0.883 \pm 0.437$
photometric centroid source offset	$1.78 \pm 0.65$	2.73	$-0.33 \pm 0.62$	$1.74 \pm 0.65$

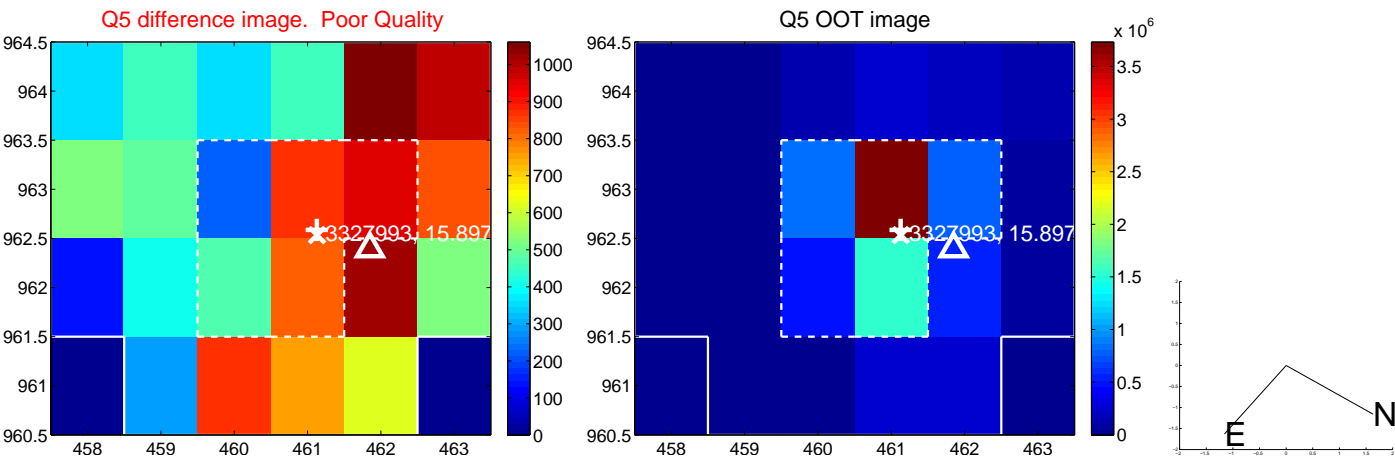


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

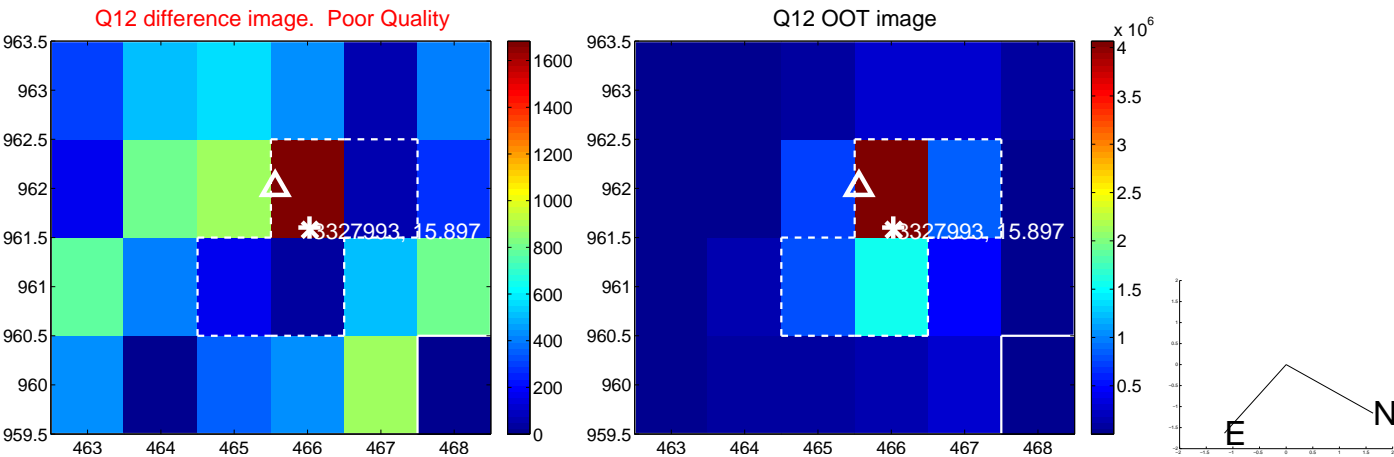
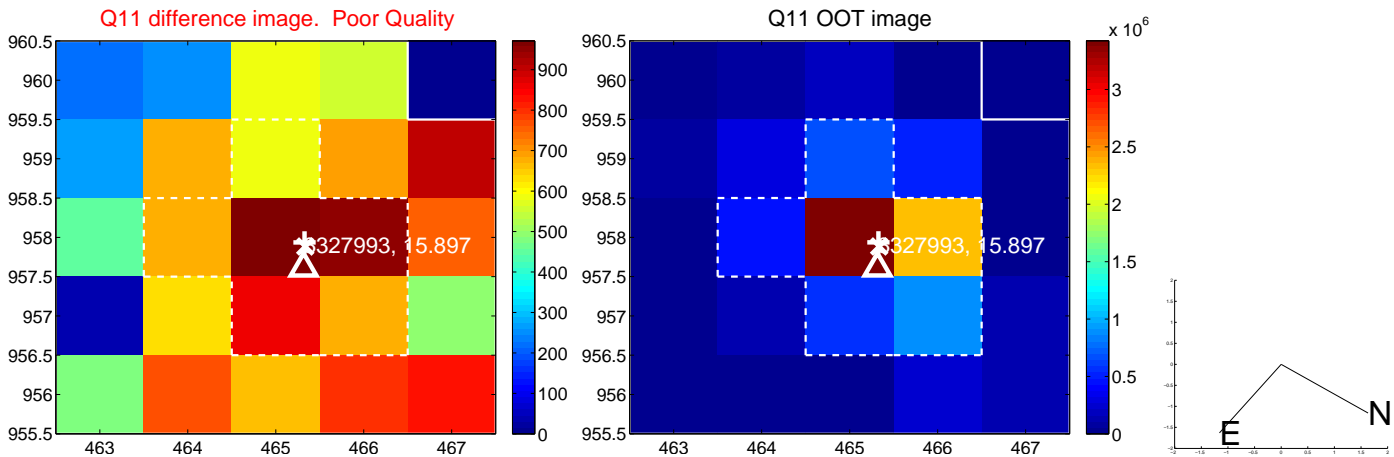
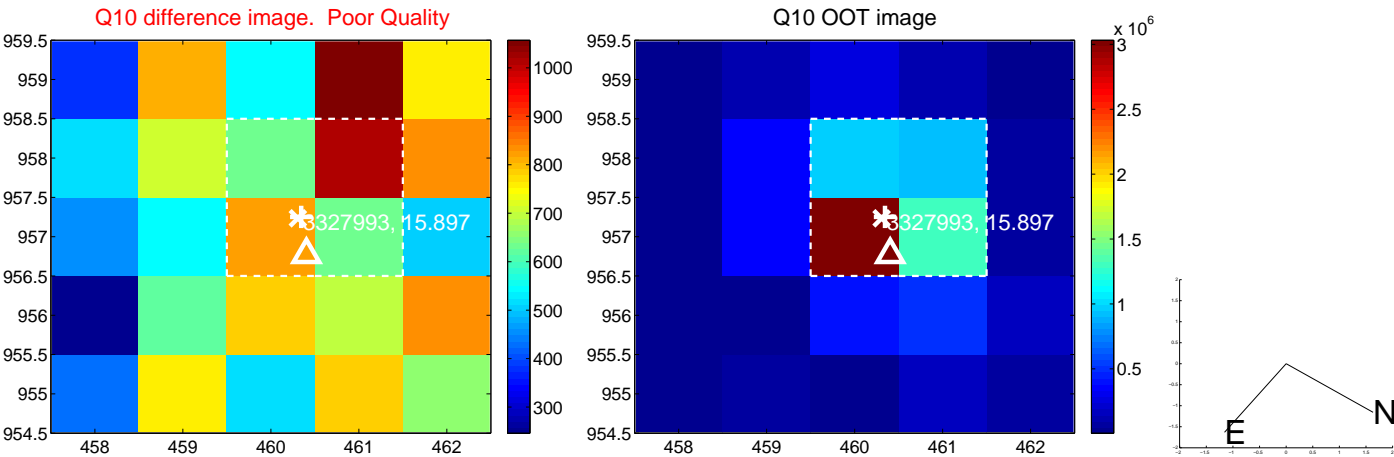
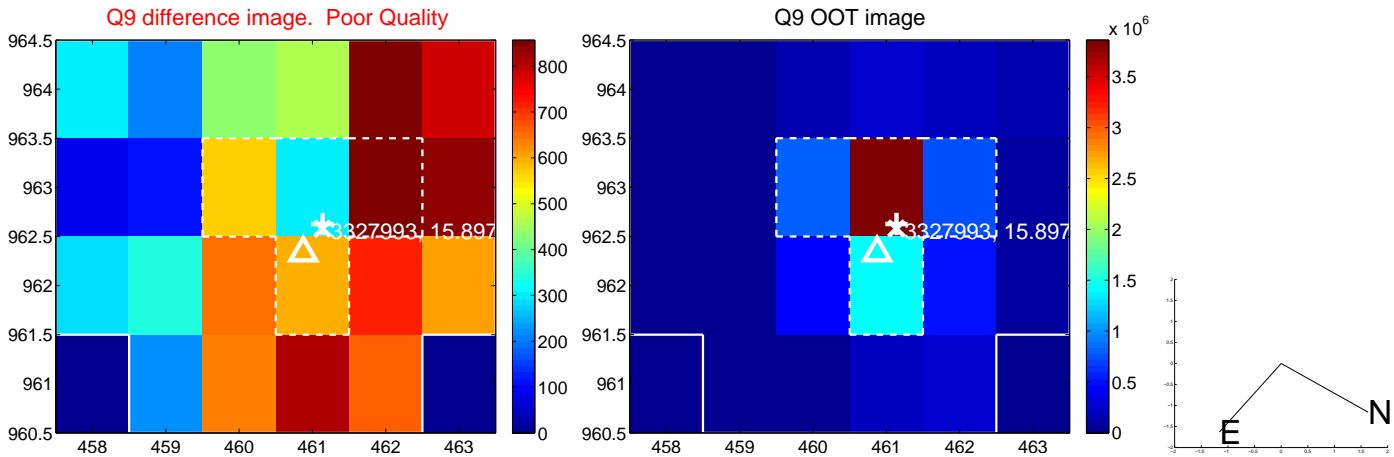


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

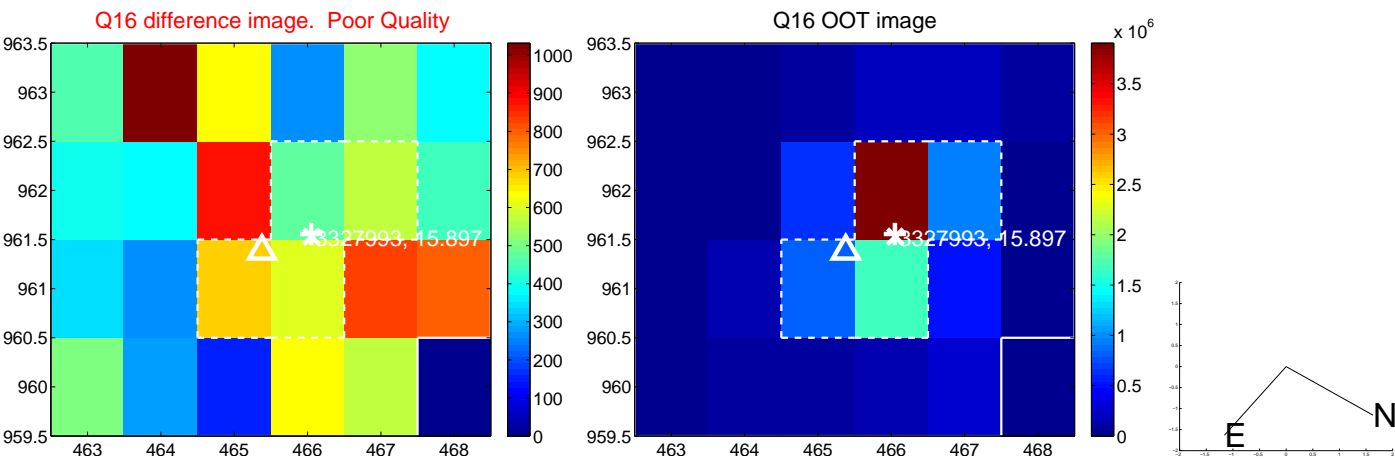
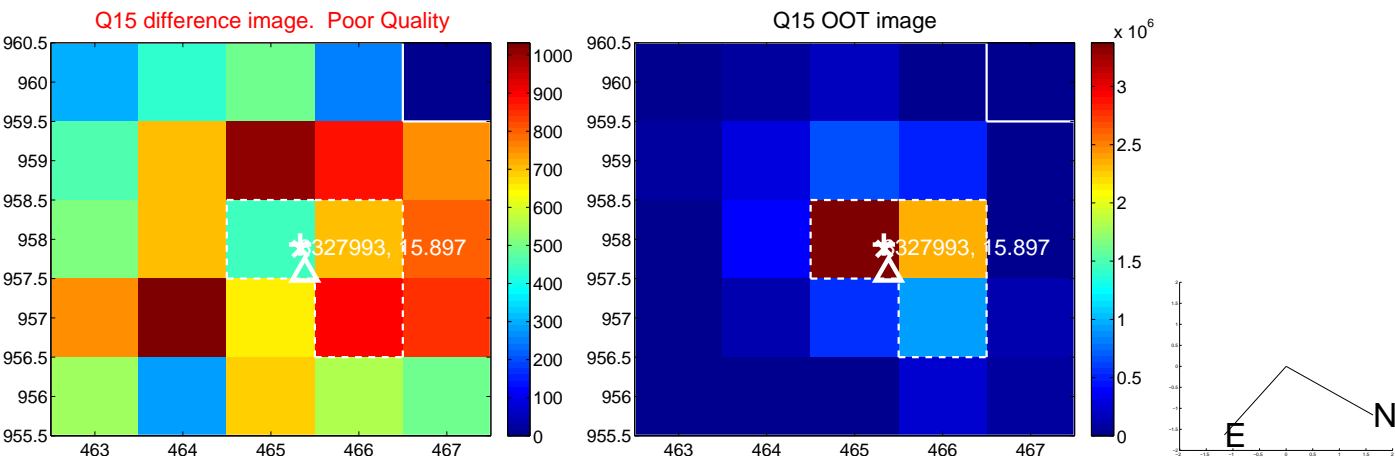
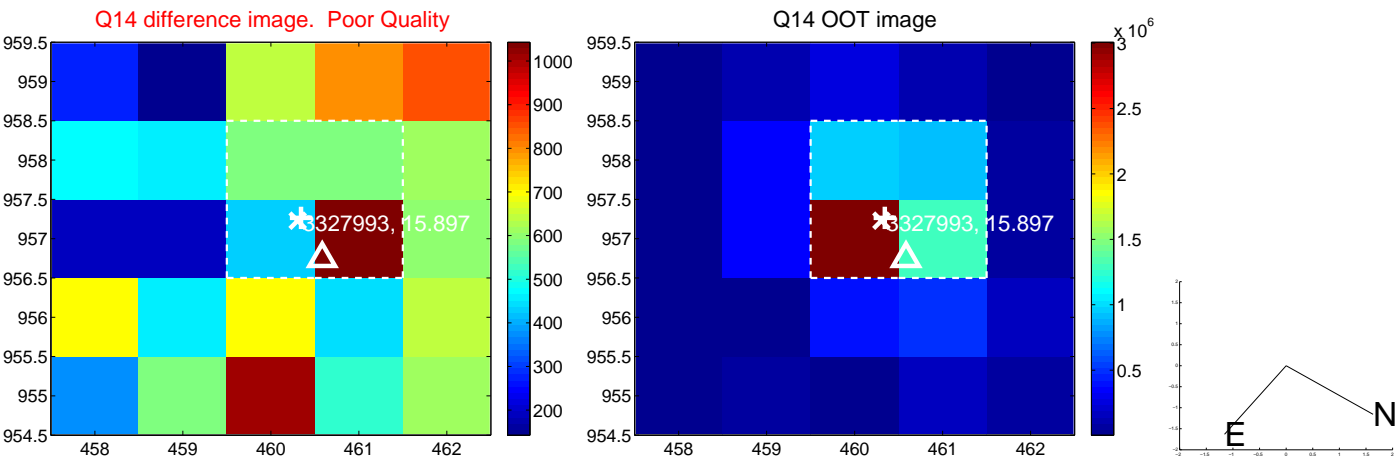
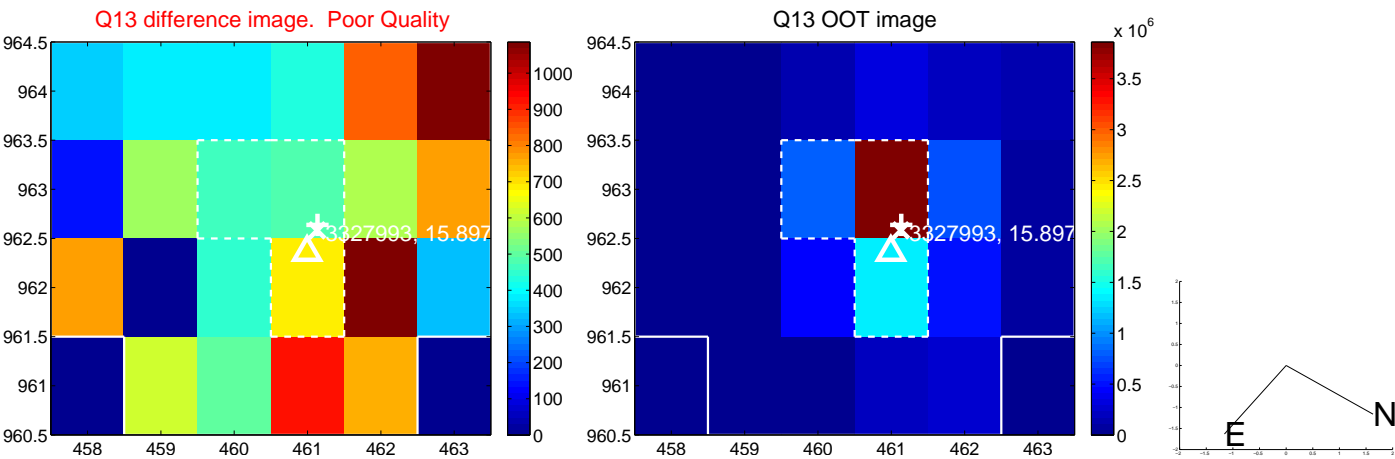




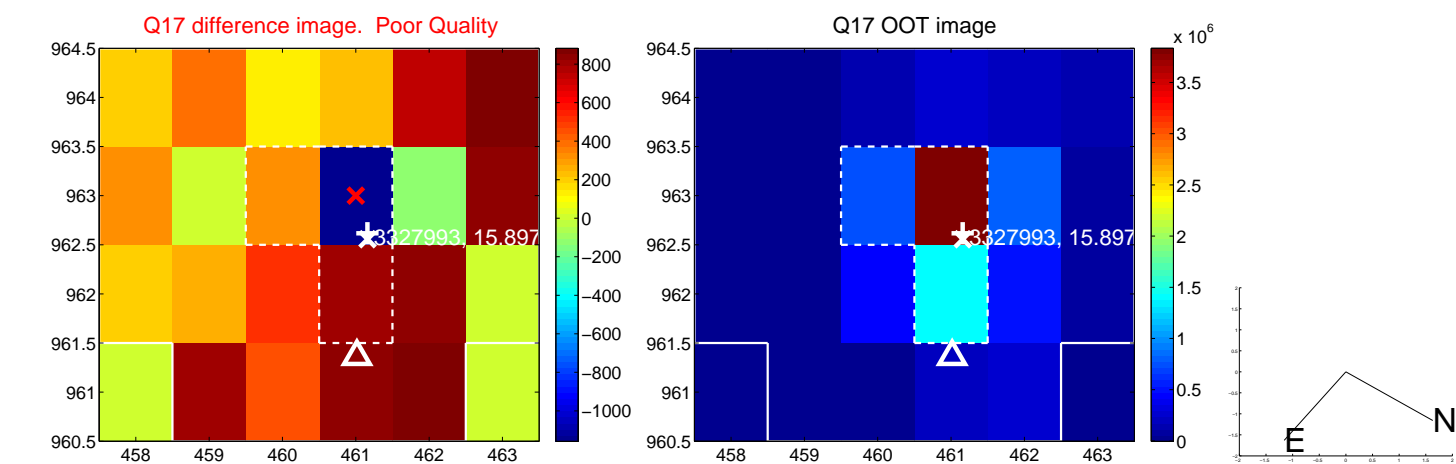
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



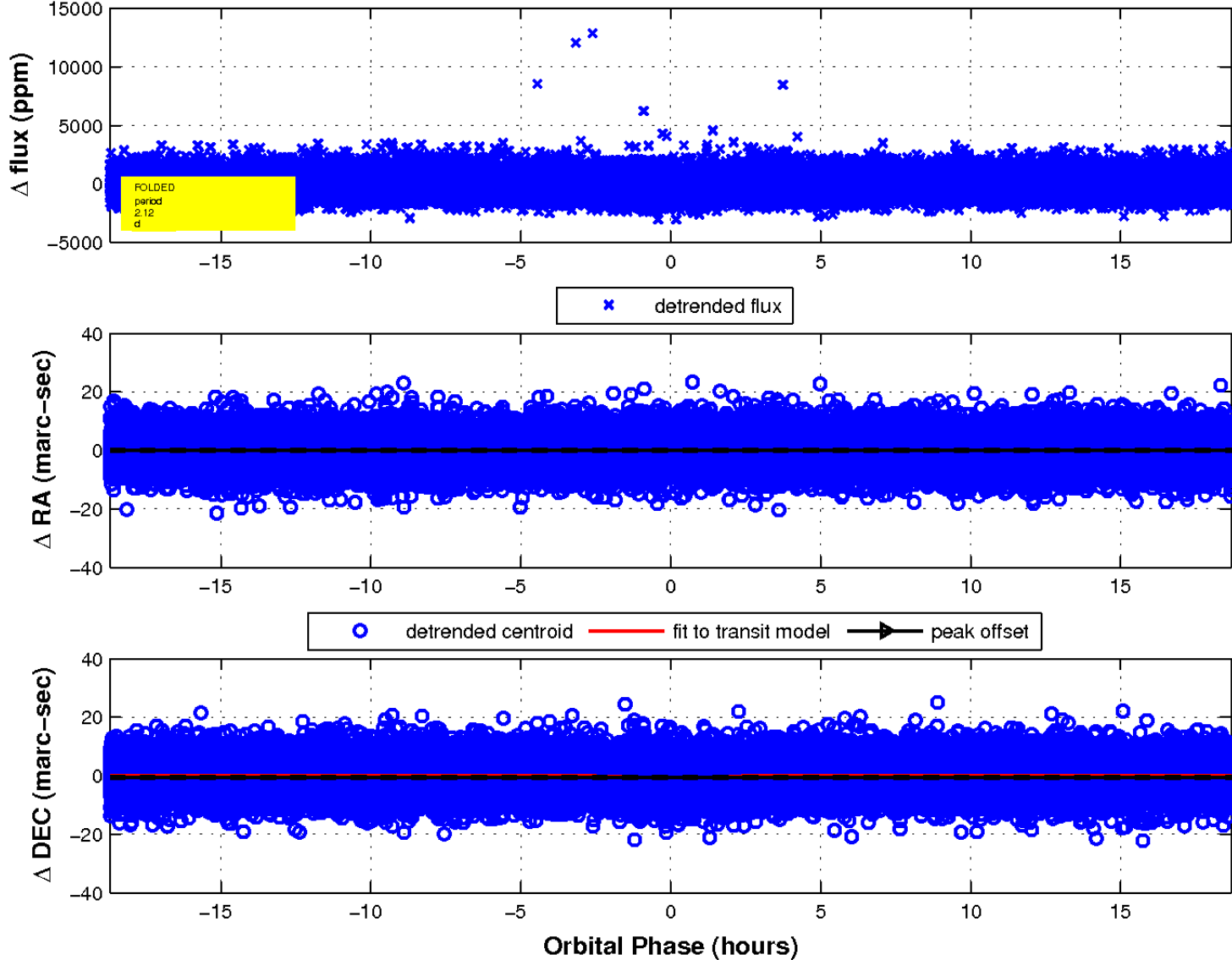
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

