

# KIC 009531823

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009531823-01	OBS	No	0.560961	131.749450	8.5	3.025	9.2	10.4	2.23	9067	0.75	101072.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009531823-01	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

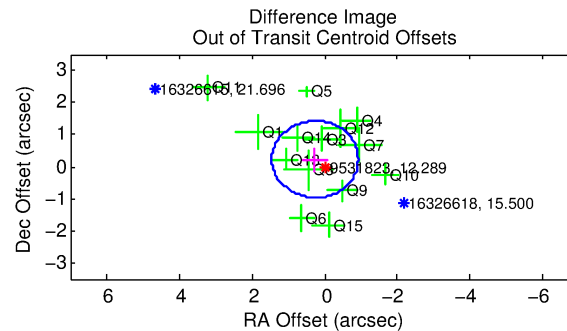
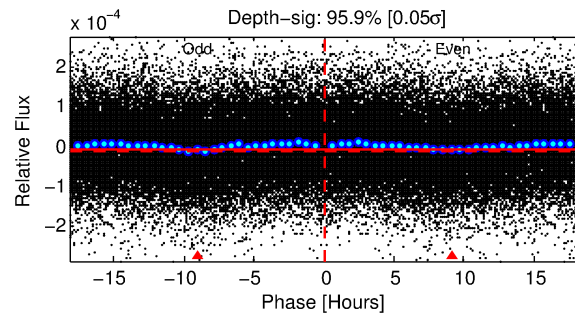
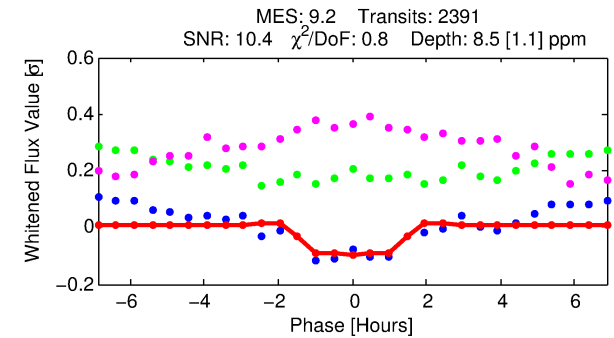
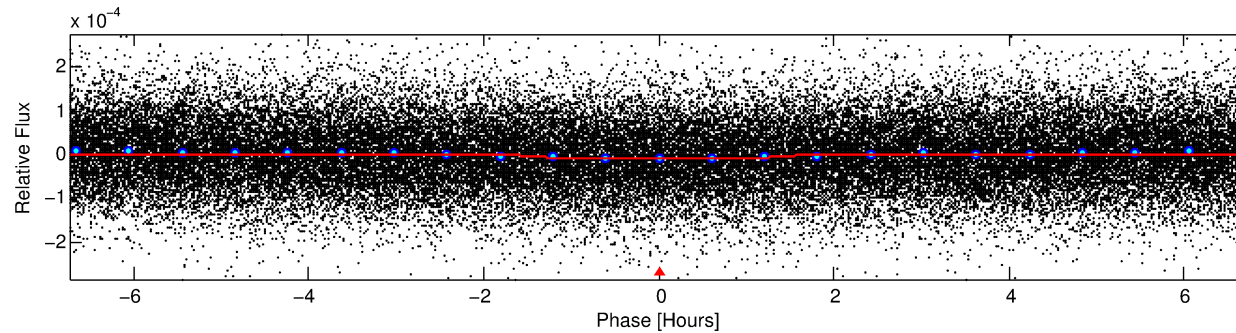
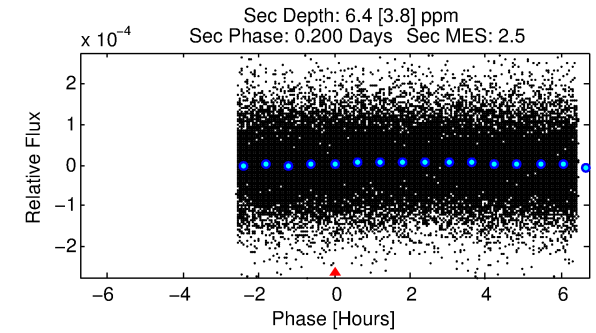
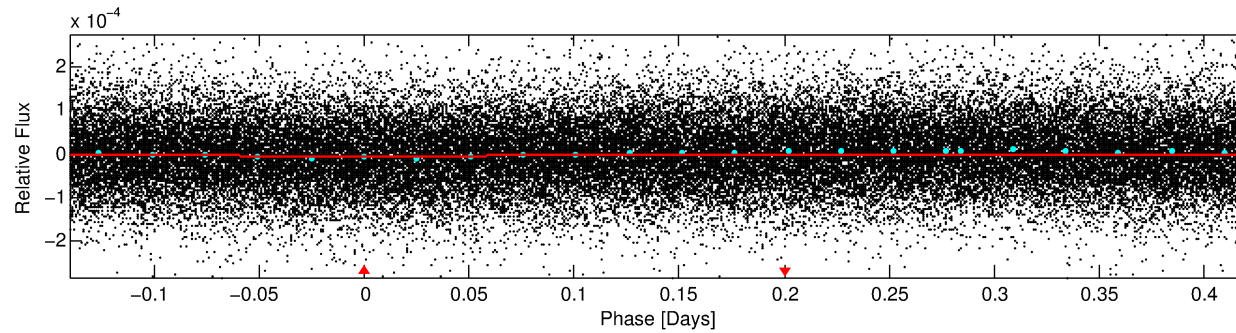
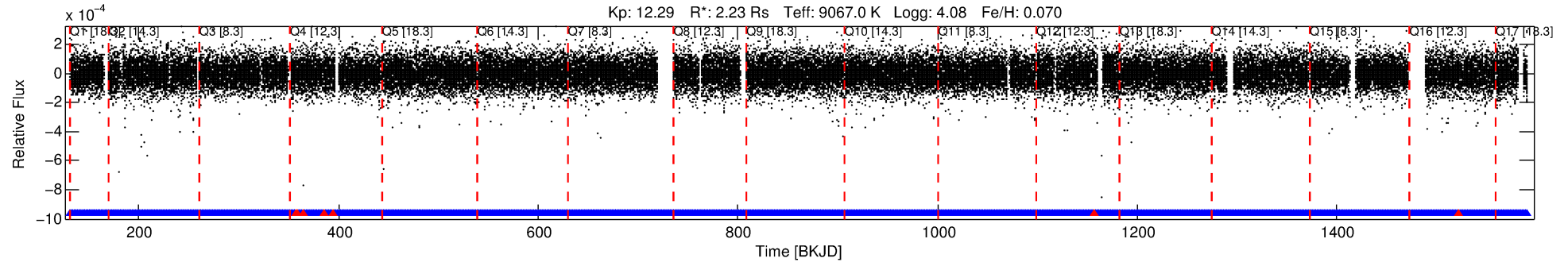
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009531823-01

No Significant Match Found

# DV One-Page Summary

KIC: 9531823 Candidate: 1 of 1 Period: 0.561 d



## DV Fit Results:

Period = 0.56096 [0.00001] d  
Epoch = 131.7494 [0.0030] BKJD  
Rp/R\* = 0.0031 [0.0008]  
a/R\* = 1.13 [0.47]  
b = 0.90 [0.41]  
Seff = 101072.97 [37587.26]  
Teq = 4547 [423] K  
Rp = 0.75 [0.30] Re  
a = 0.0173 [0.0040] AU  
Ag = 1.87 [1.61] [0.54σ]  
Teffp = 8219 [1684] K [2.12σ]

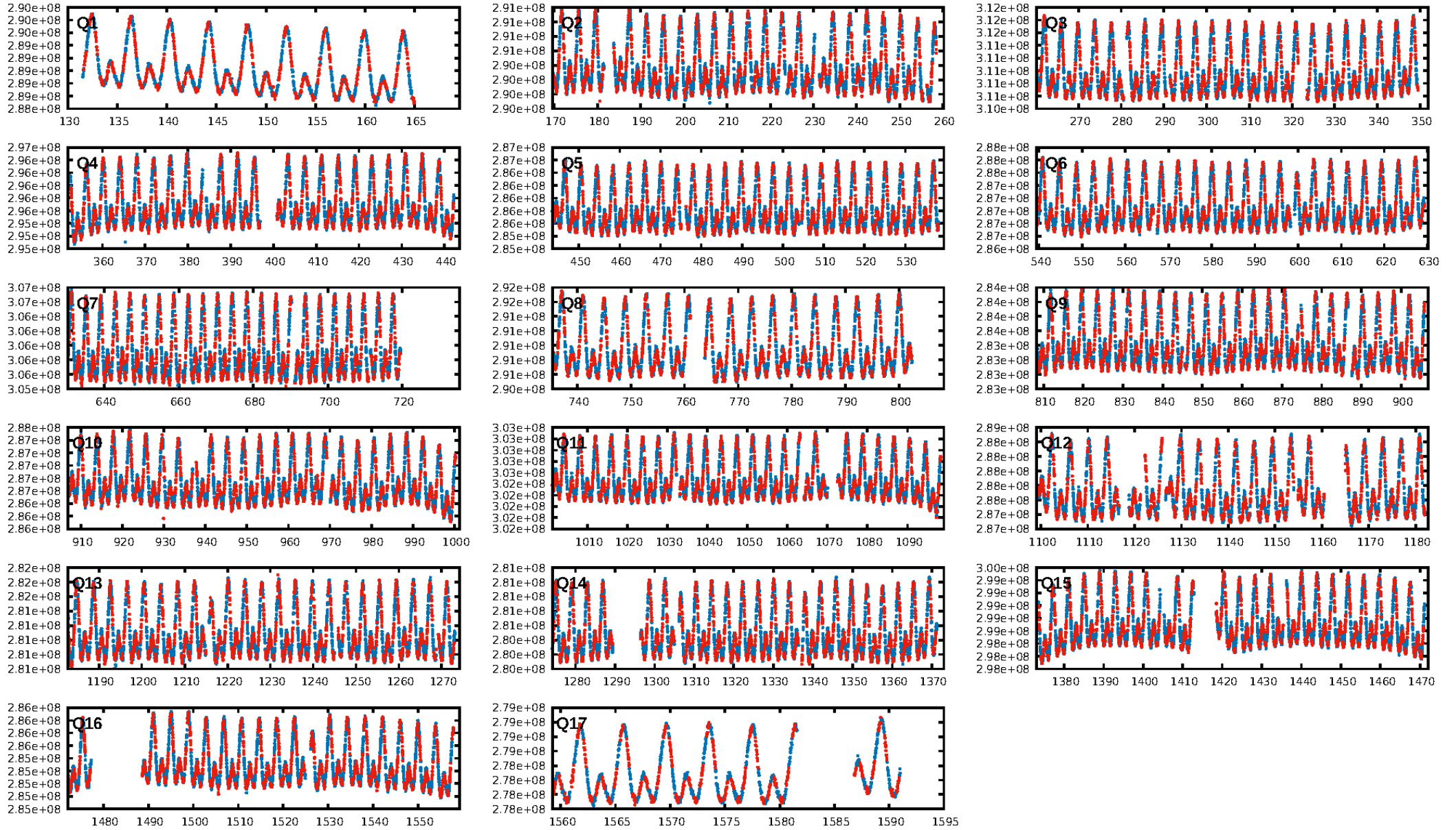
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.23e-15  
RollingBand-fgt: 1.00 [2275/2283]  
**GhostDiagnostic-chr: 0.2751**  
Centroid-sig: 14.0%  
Centroid-so: 1.347 arcsec [1.53σ]  
OotOffset-rm: 0.351 arcsec [0.88σ]  
KicOffset-rm: 0.274 arcsec [0.79σ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:17:26 Z

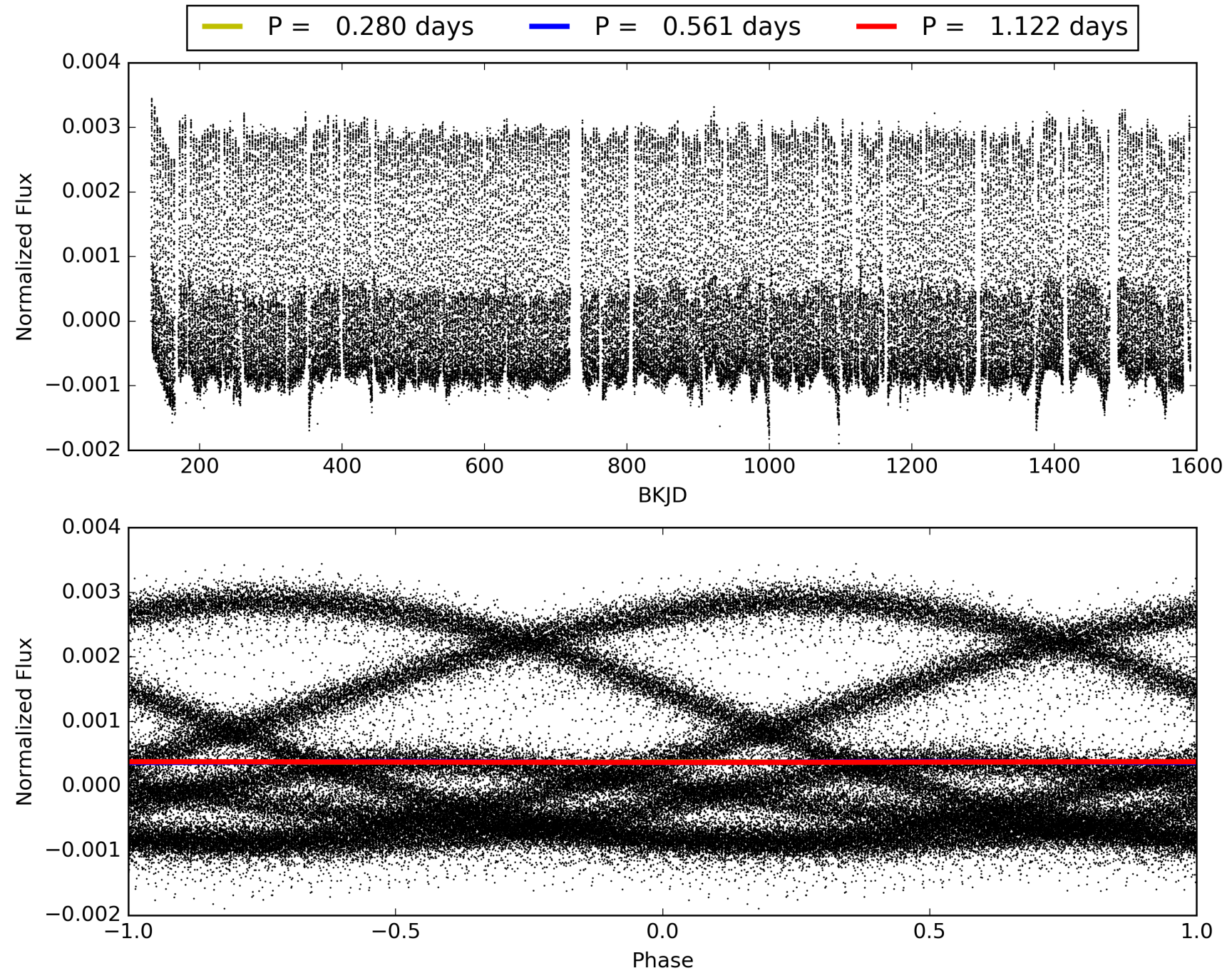
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009531823-01, PDC Light Curves



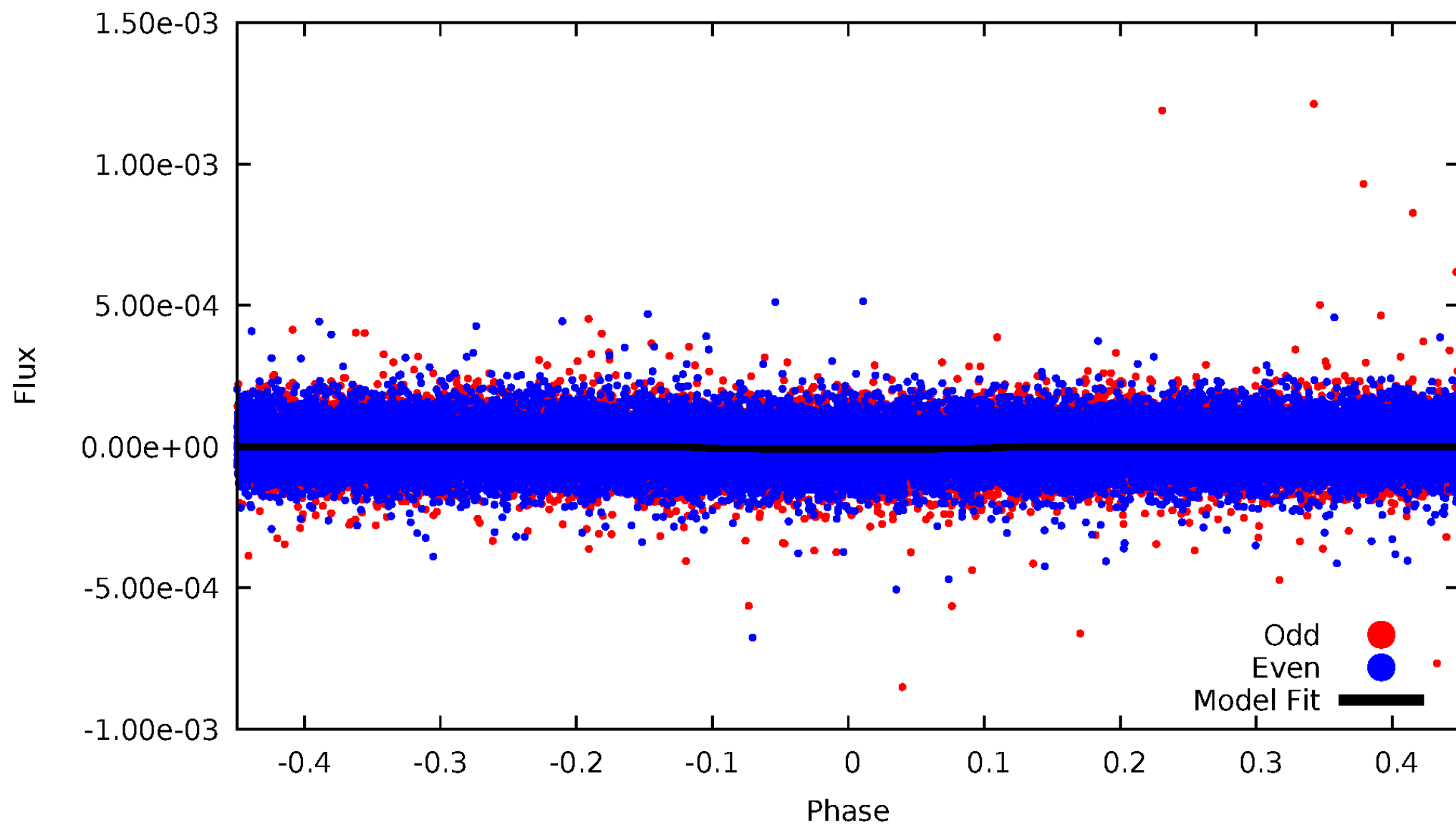


TCE 009531823-01



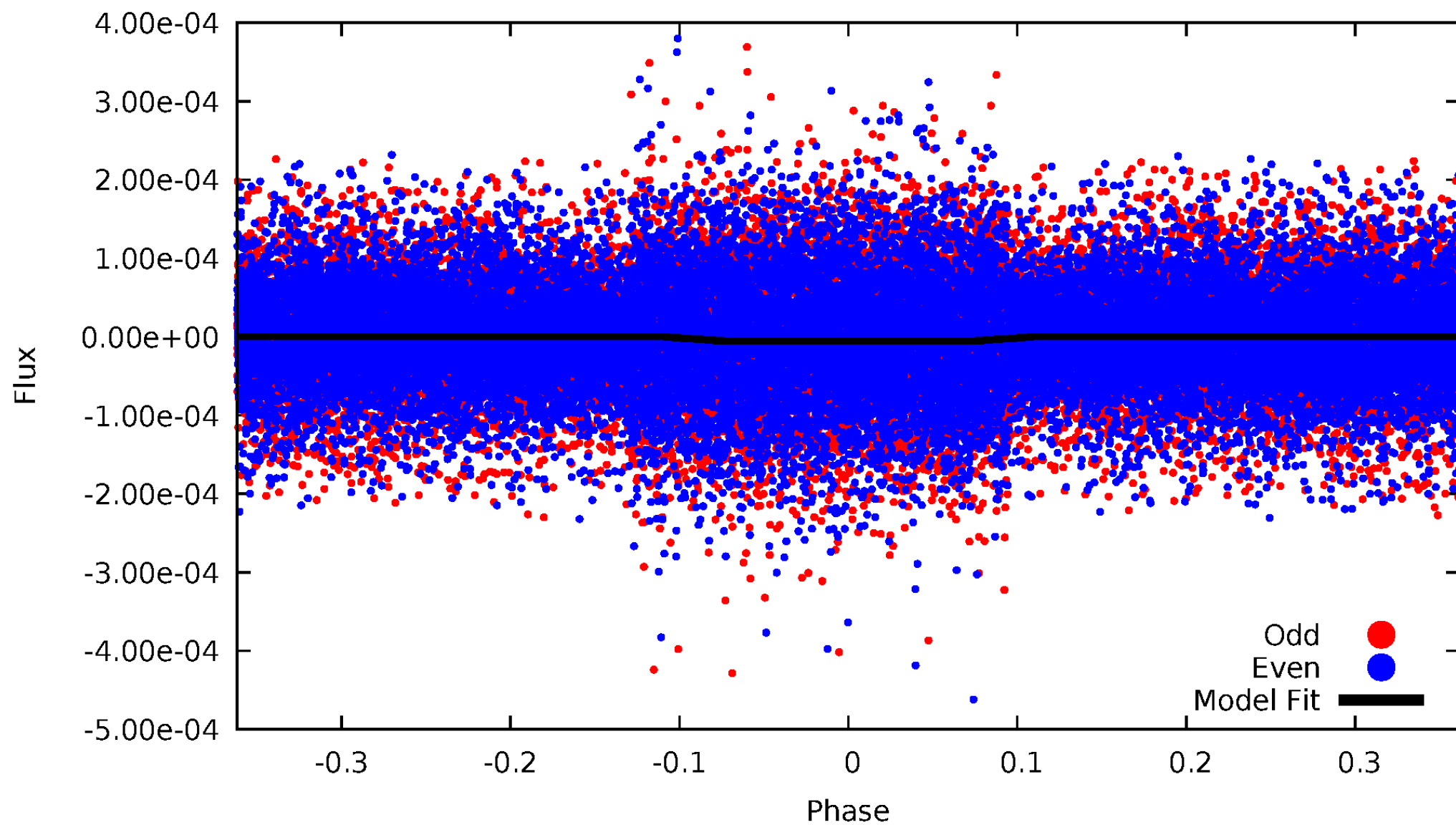
# DV Odd/Even

TCE 009531823-01



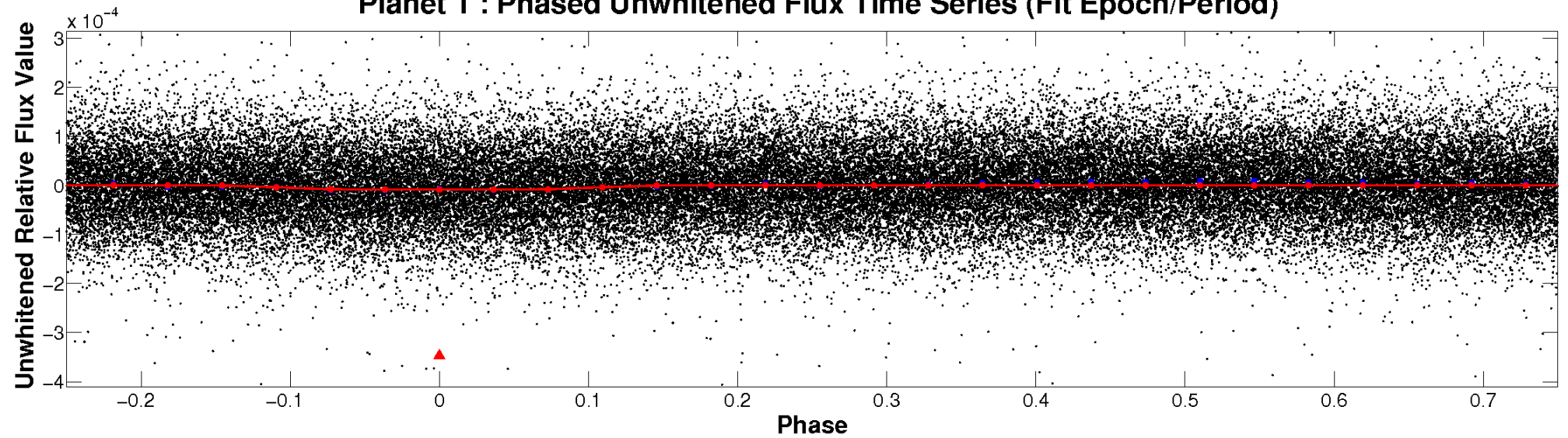
# ALT Odd/Even

TCE 009531823-01

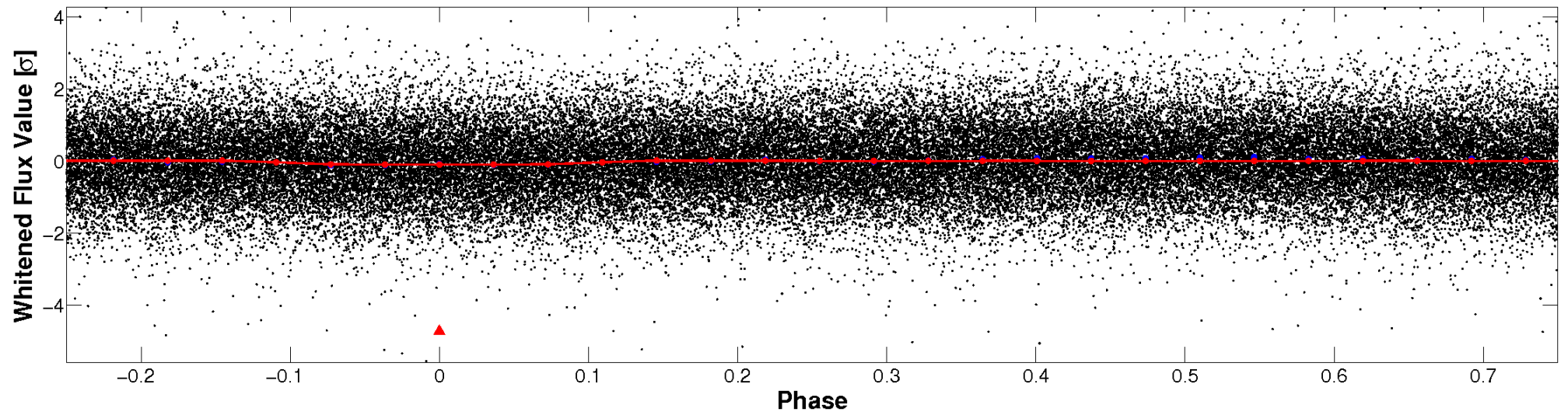


# Non-Whitened Vs. Whitened Light Curve

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



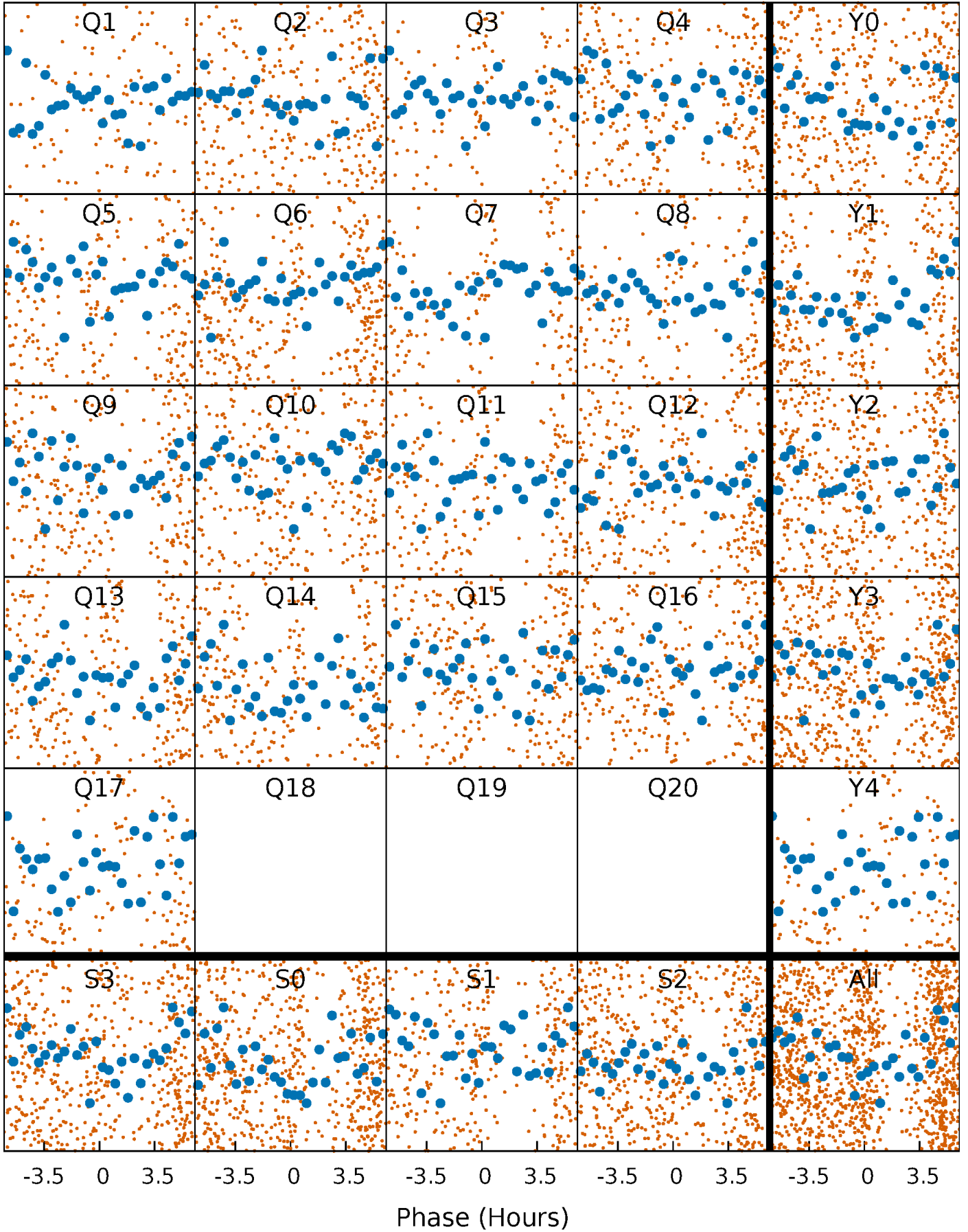
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

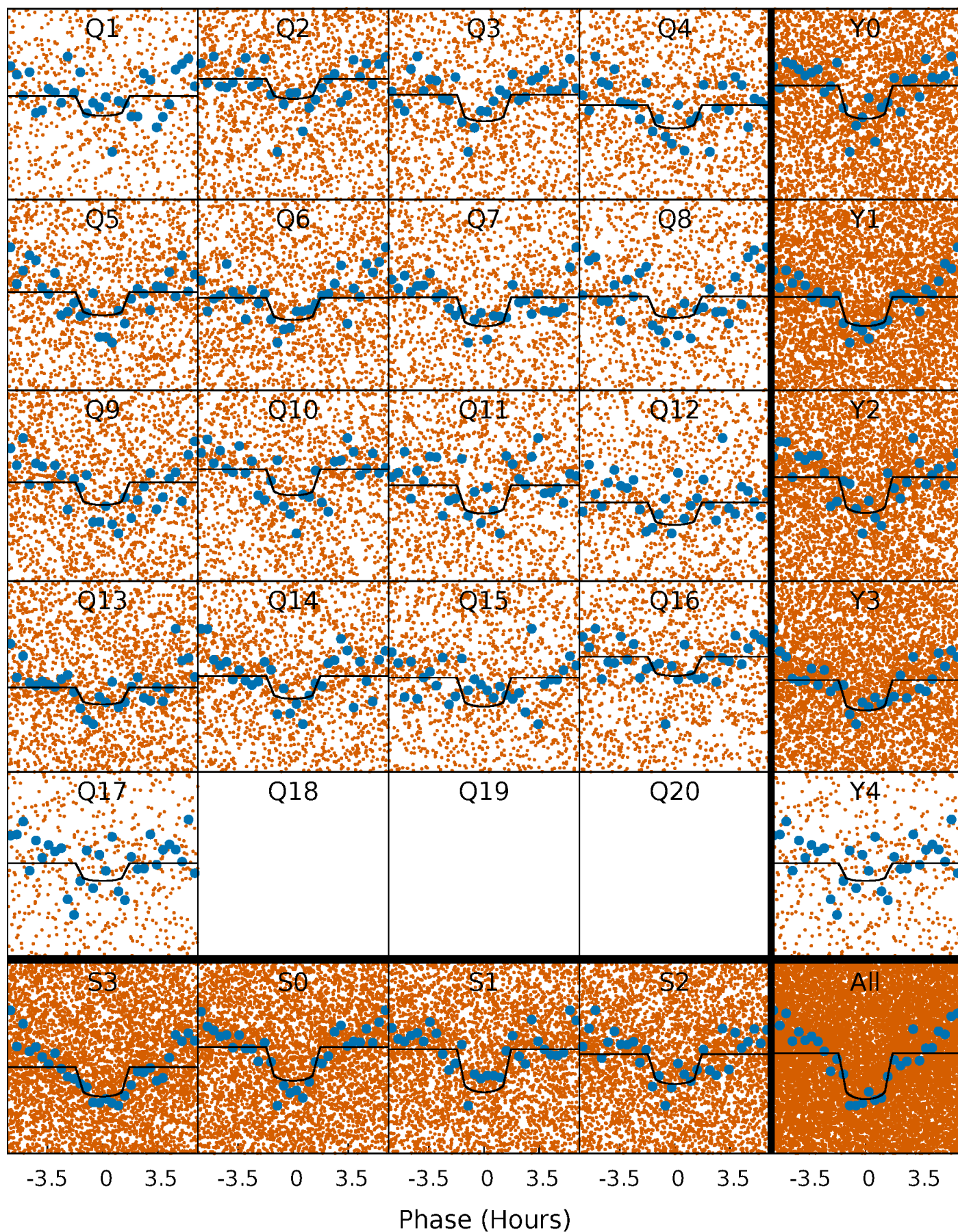
TCE 009531823-01   P= 0.560961 Days    $T_0=131.749450$  (BKJD)





# DV Quarter-Phased Transit Curves

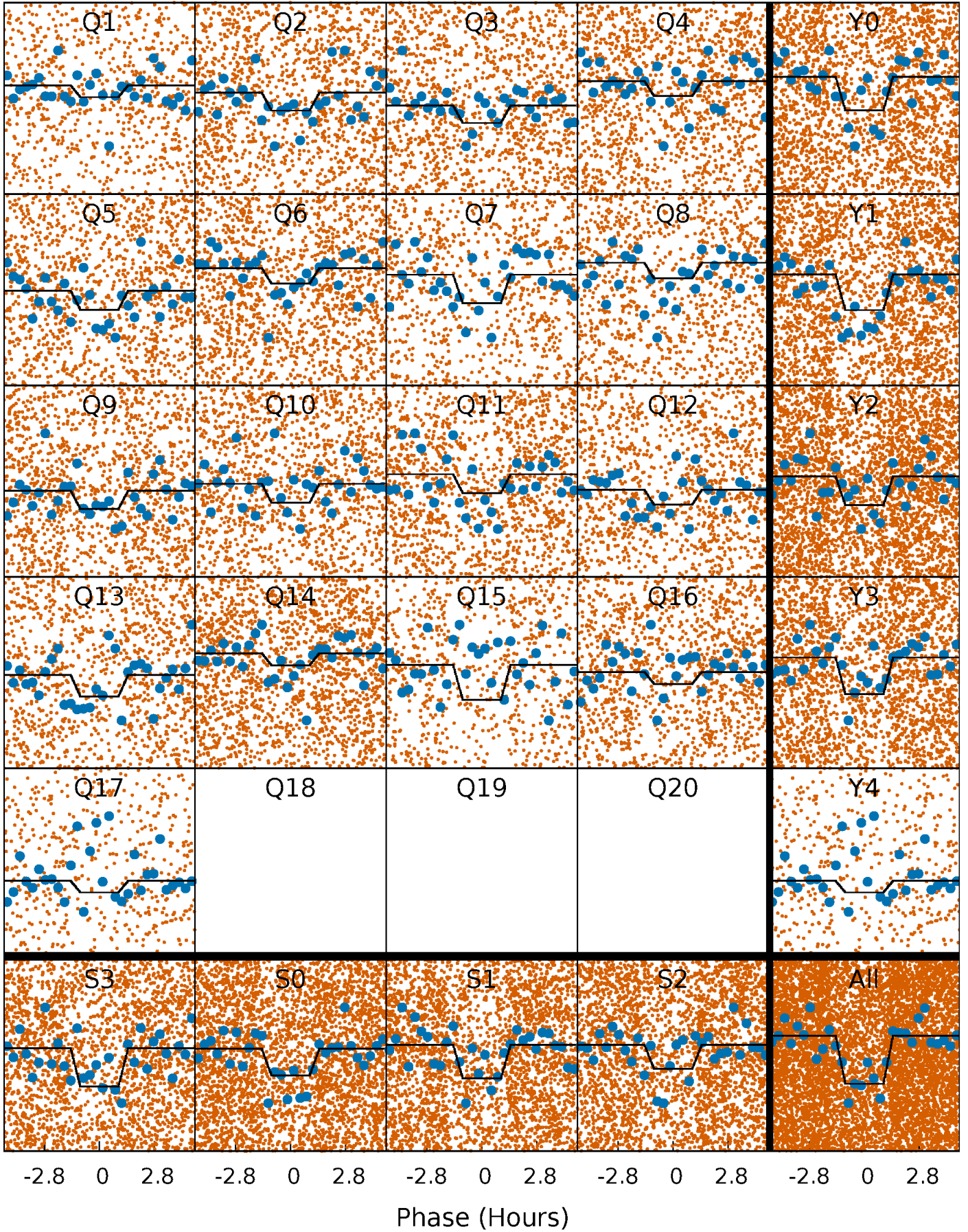
TCE 009531823-01 P= 0.560961 Days  $T_0=131.749450$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

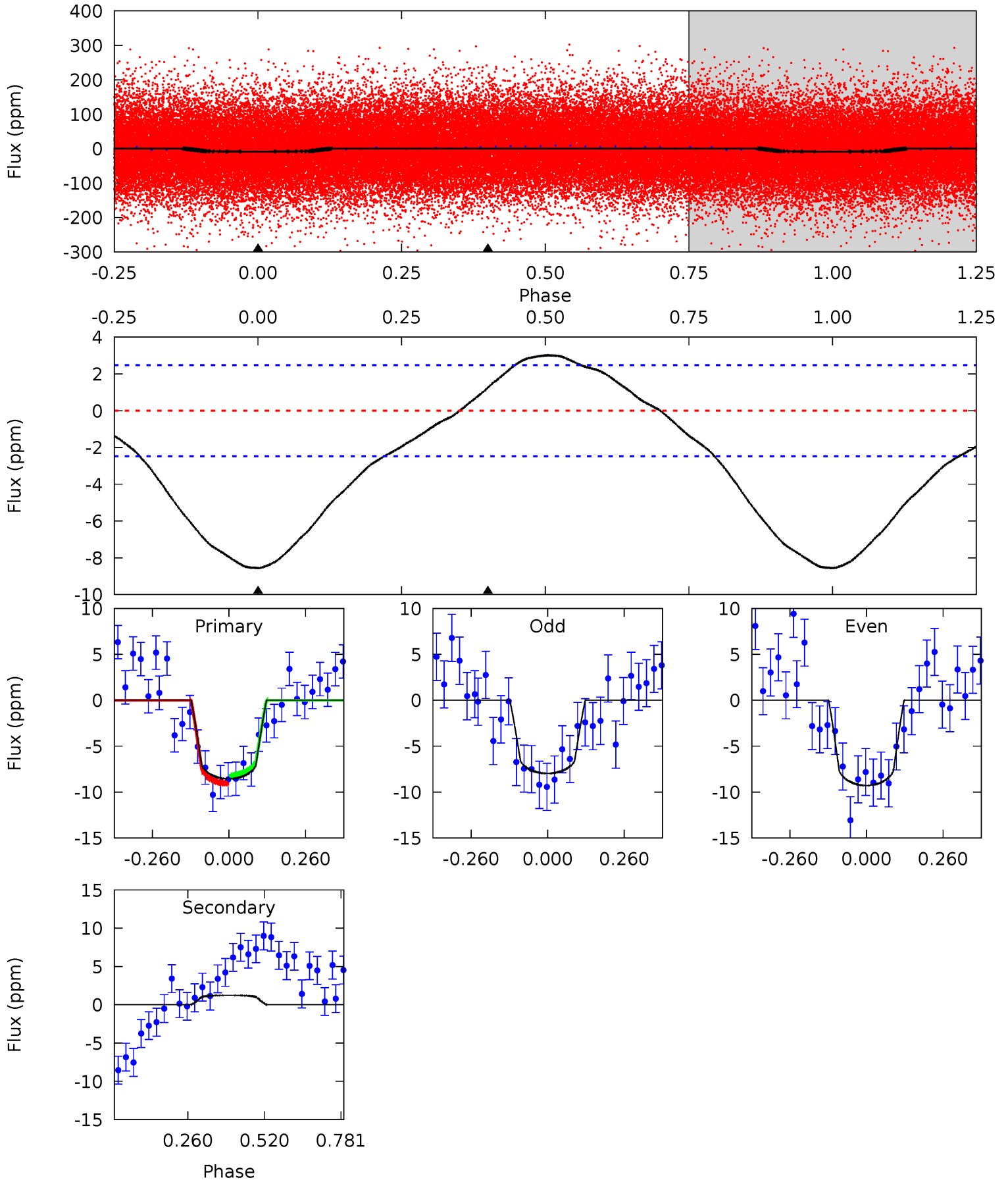
TCE 009531823-01 P= 0.560962 Days  $T_0=131.746692$  (BKJD)



# DV Model-Shift Uniqueness Test

009531823-01, P = 0.560961 Days, E = 131.188489 Days

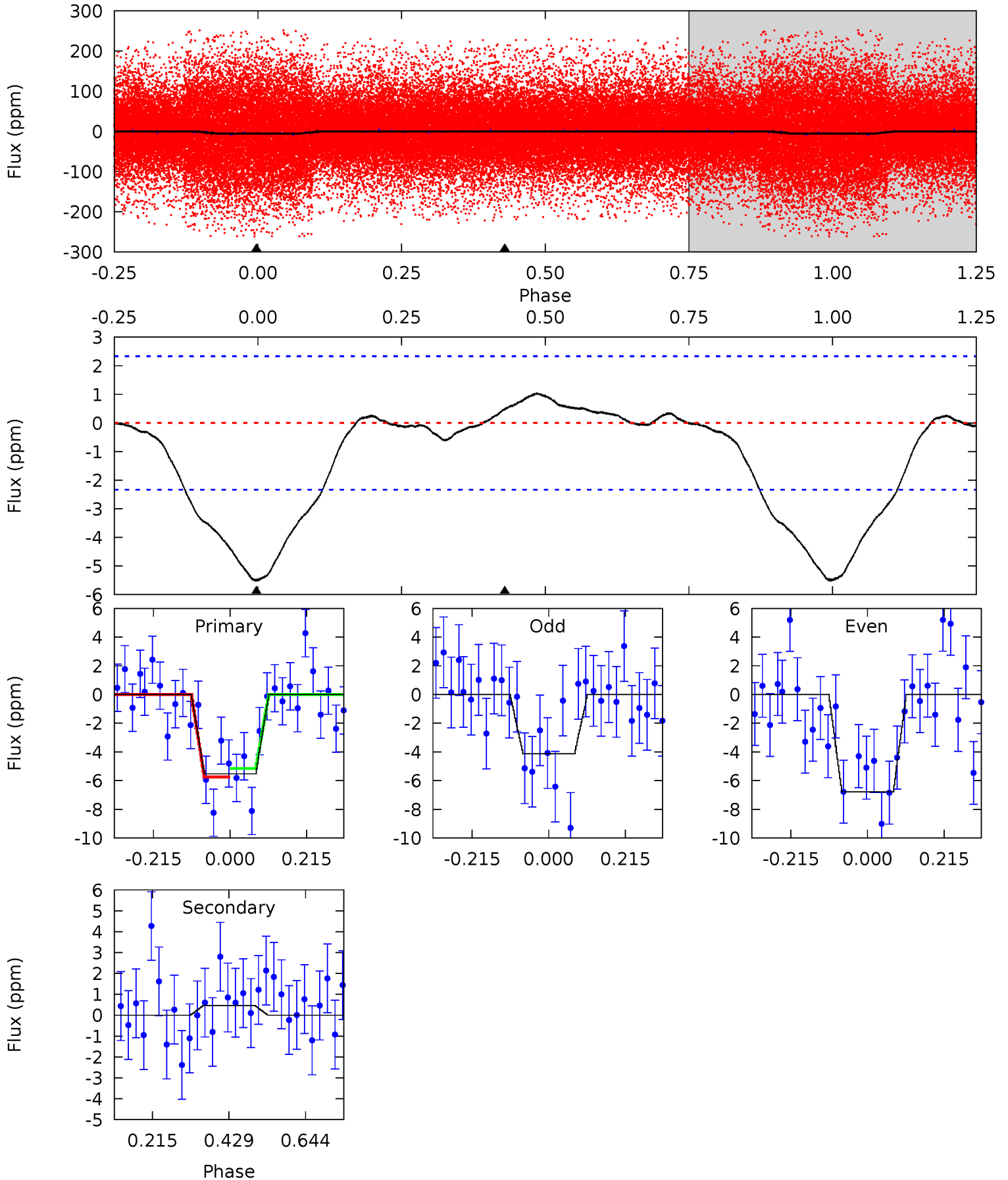
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	-2.19	0	0	4.36	1.13	1.17	15.1	15.1	-2.19	-2.19	1.16	0.94	0.26	0.79



# Alt Model-Shift Uniqueness Test

009531823-01, P = 0.560962 Days, E = 131.185730 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
10.4	-0.88	0	0	4.40	1.24	0.26	10.4	10.4	-0.88	-0.88	2.50	1.16	0.16	0.56





### Stellar Parameters For KIC 009531823

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$9067^{+286}_{-430}$	$4.080^{+0.165}_{-0.165}$	$0.070^{+0.150}_{-0.650}$	$2.232^{+0.654}_{-0.654}$	$2.183^{+0.372}_{-0.605}$	$0.276^{+0.296}_{-0.123}$
	+3%/-5%	+4%/-4%	+214%/-929%	+29%/-29%	+17%/-28%	+107%/-45%
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 009531823-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$1 \pm 1$	$0.74^{+0.25}_{-0.23}$	$6380^{+505}_{-492}$	$-6042^{+598}_{-791}$	$-0.339^{+0.190}_{-0.433}$
Alt.	$0 \pm 1$	$0.57^{+0.24}_{-0.19}$	$6351^{+453}_{-438}$	$-5679^{+736}_{-975}$	$-0.210^{+0.224}_{-0.456}$

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

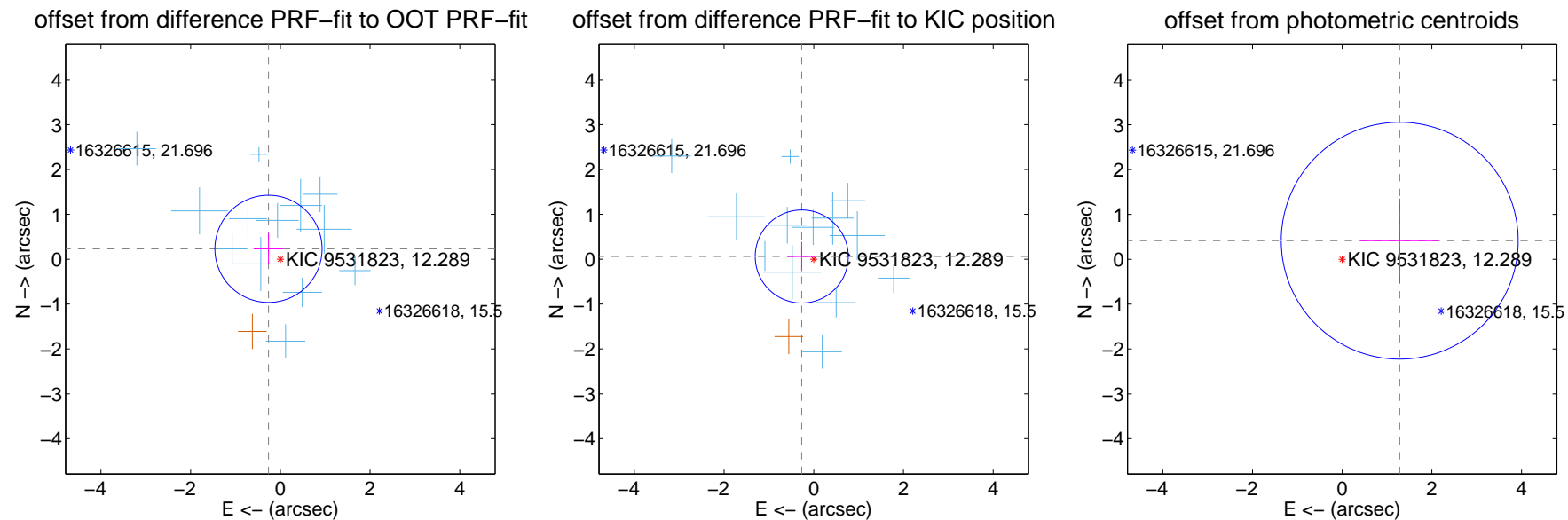
## DV Centroid Data

Supplemental centroid analysis for 009531823-01. Kepler magnitude: 12.29. Transit SNR 10.41

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

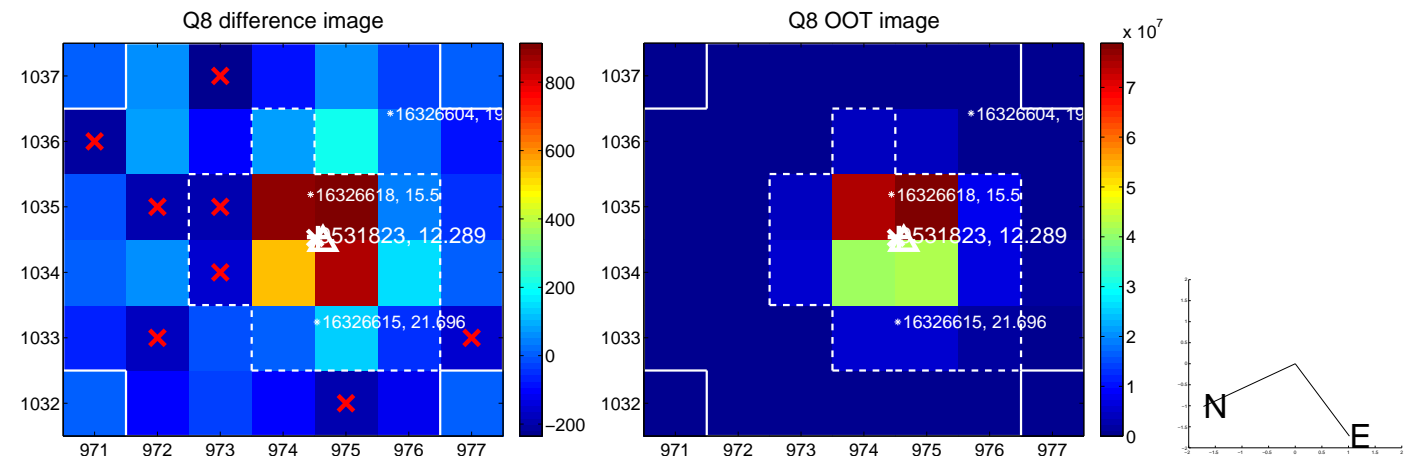
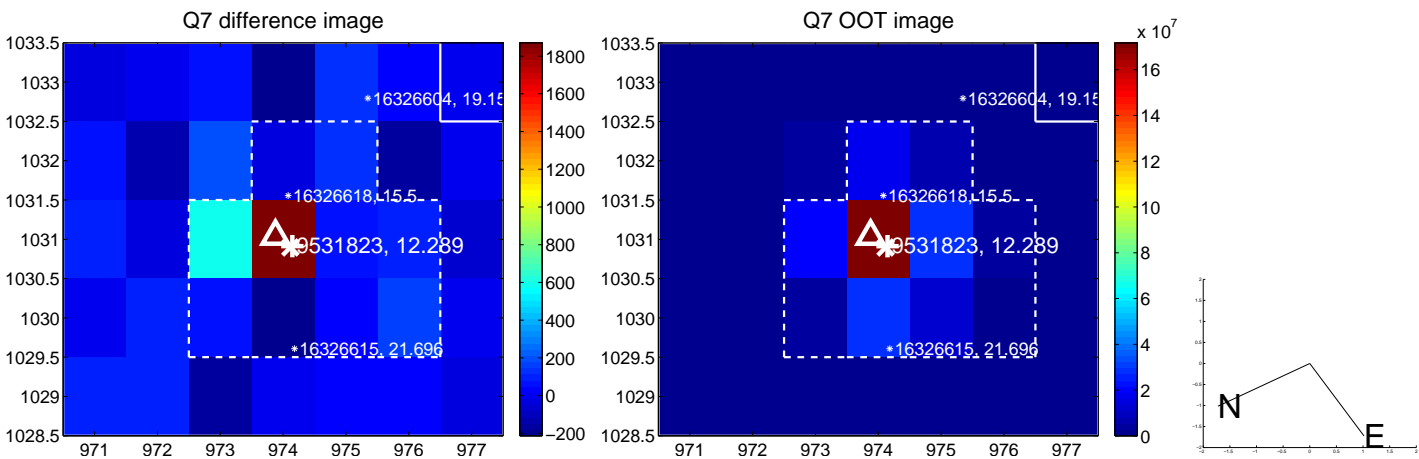
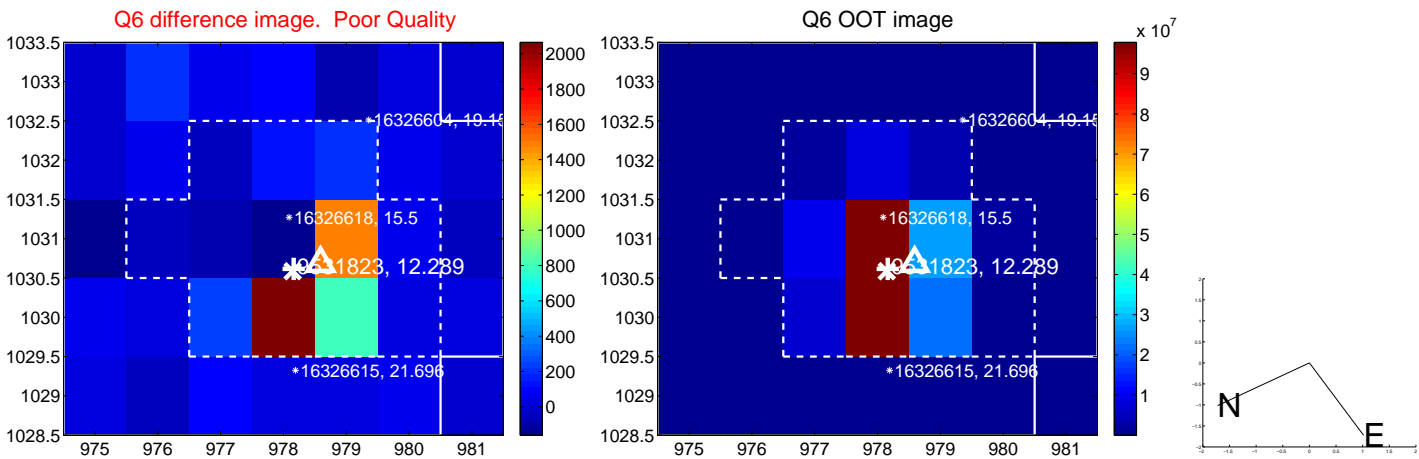
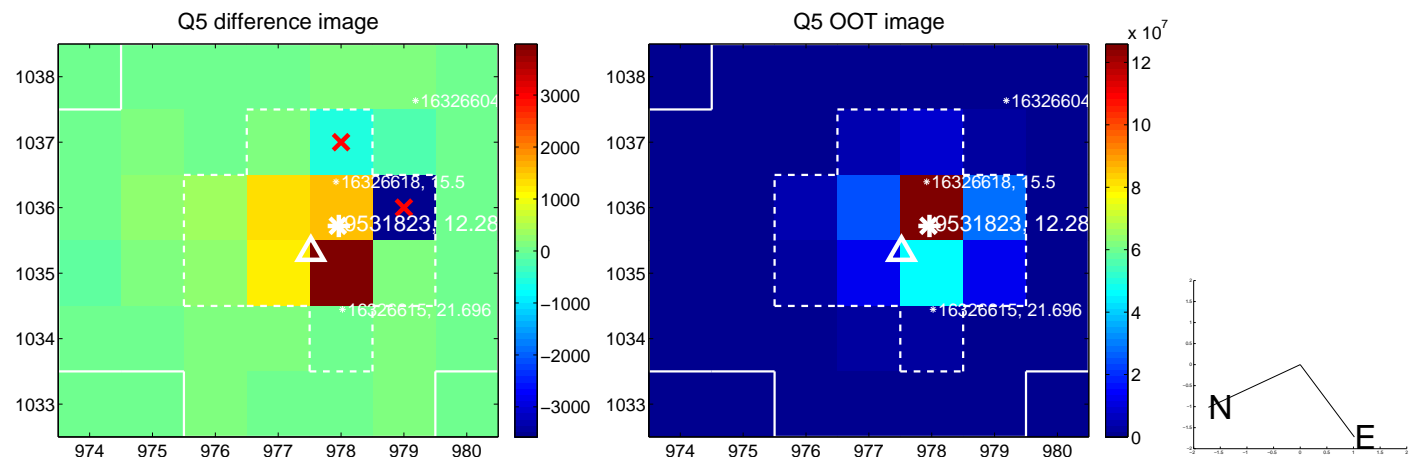
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.351 \pm 0.398$	0.88	$0.265 \pm 0.330$	$0.230 \pm 0.351$
PRF-fit source offset from KIC position	$0.274 \pm 0.346$	0.79	$0.268 \pm 0.322$	$0.060 \pm 0.326$
photometric centroid source offset	$1.35 \pm 0.88$	1.53	$-1.28 \pm 0.87$	$0.41 \pm 0.94$



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.

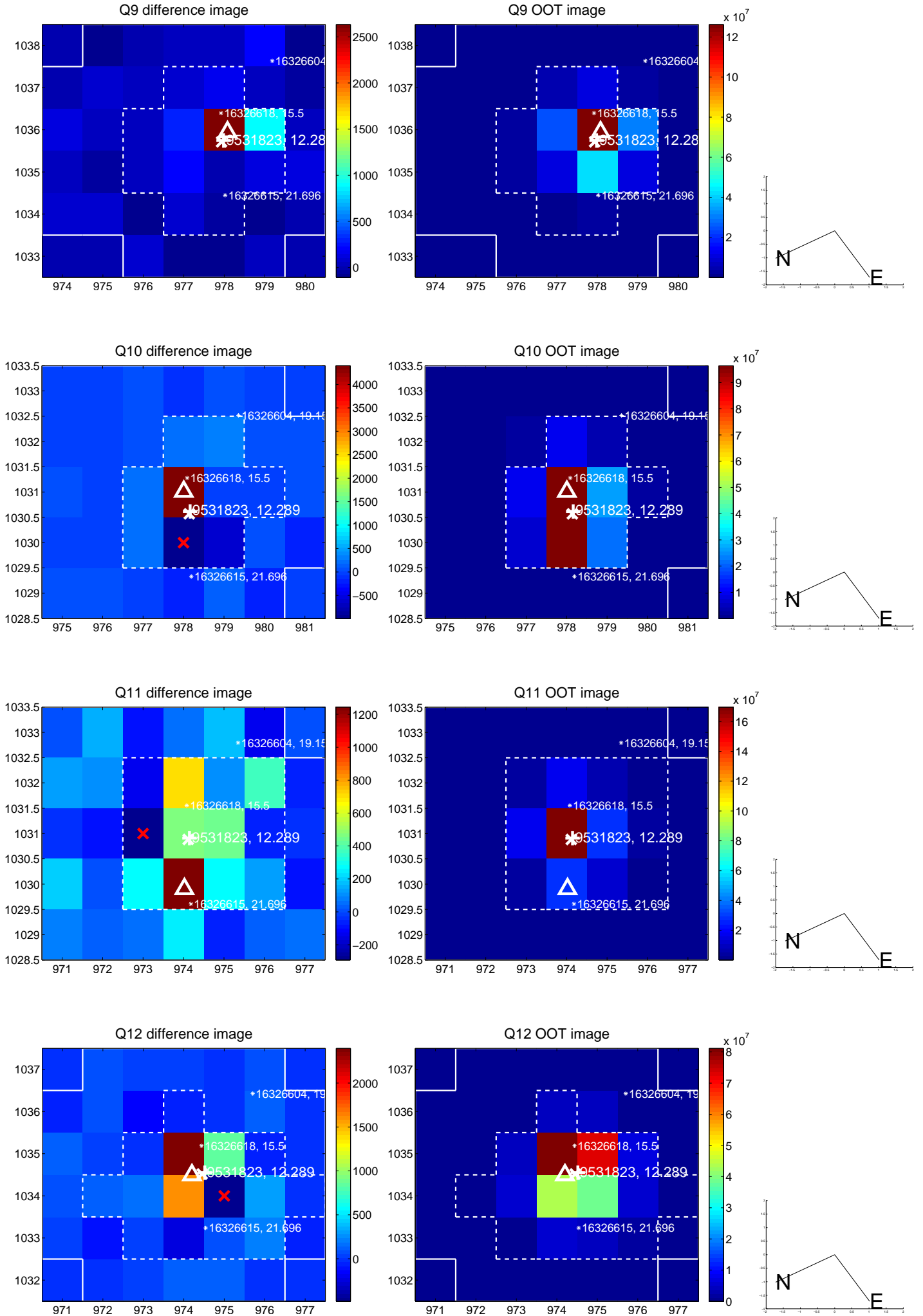


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

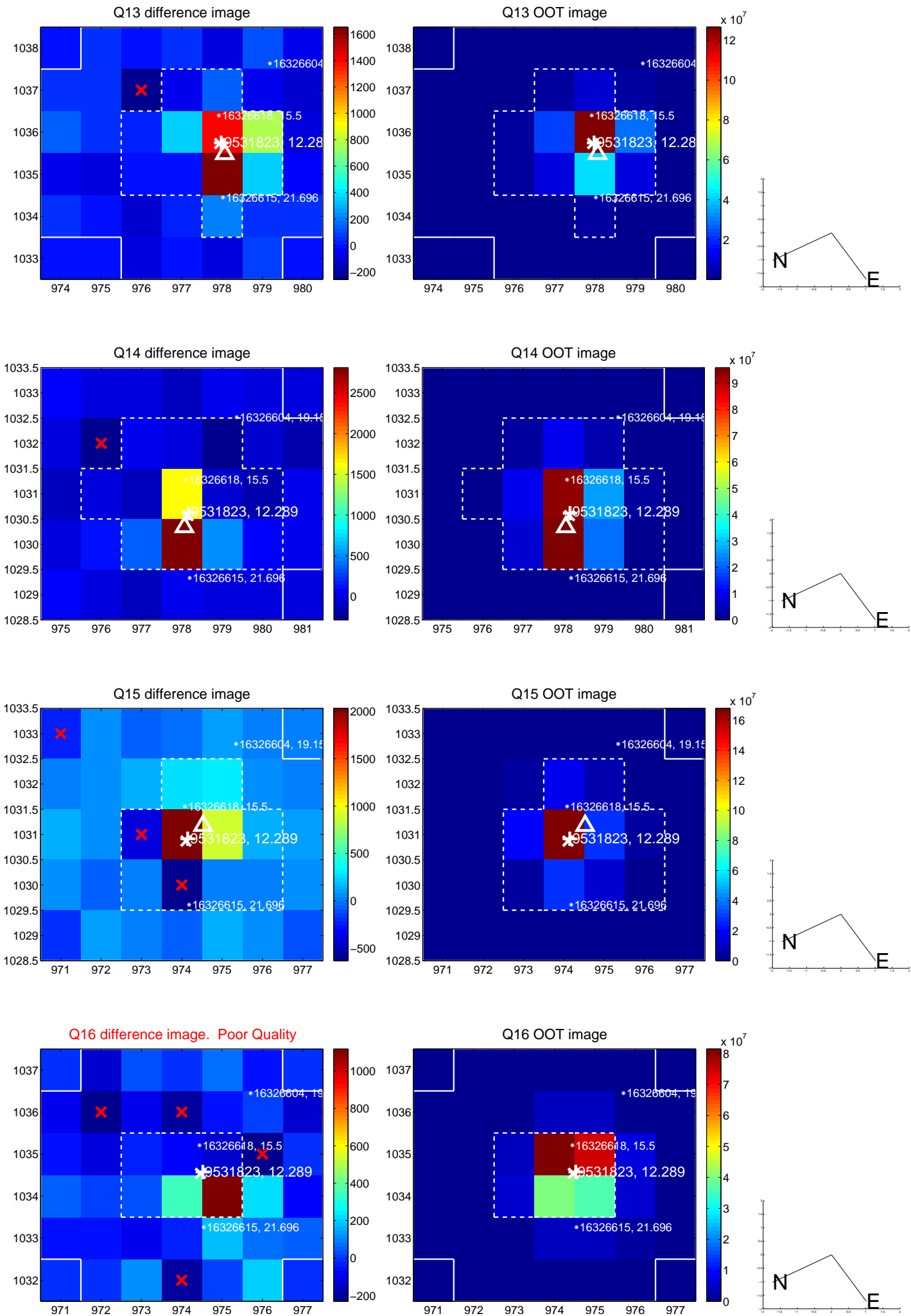




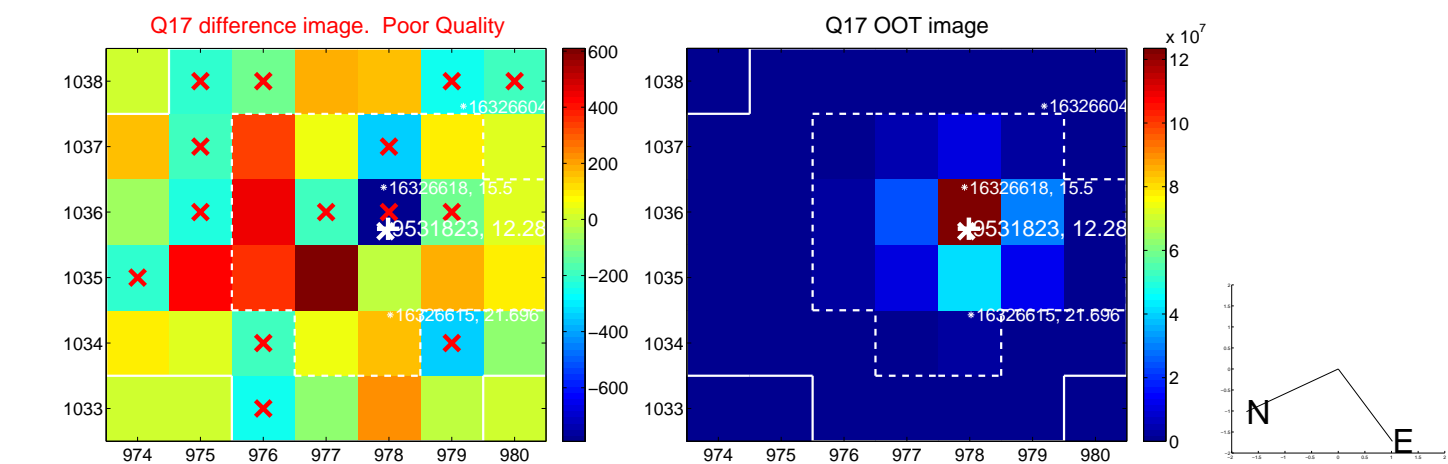
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



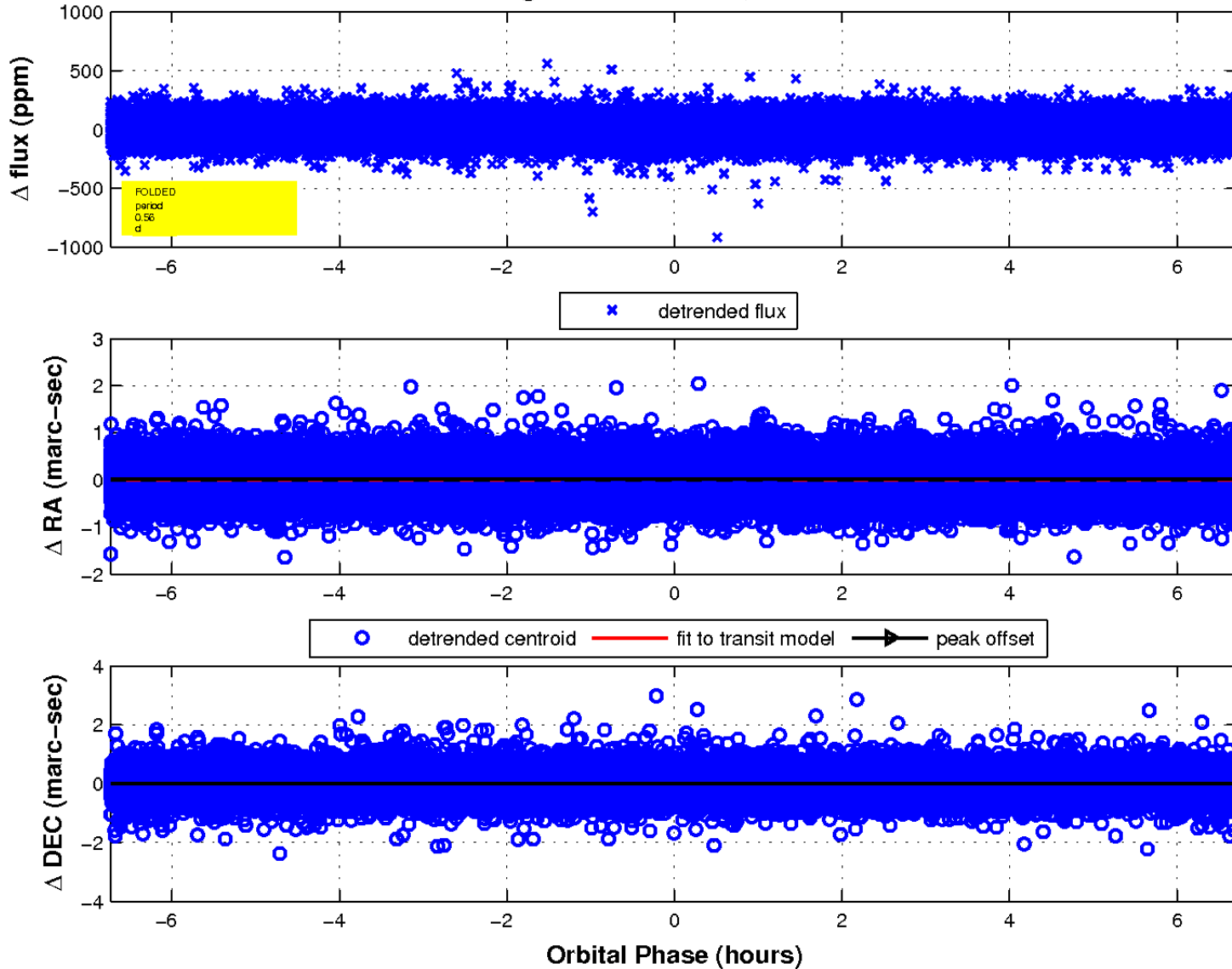
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

