

# KIC 004850961

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004850961-01	OBS	4092.01	24.497469	133.918371	444.8	5.324	15.6	17.3	1.16	6392	2.82	64.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004850961-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT

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

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

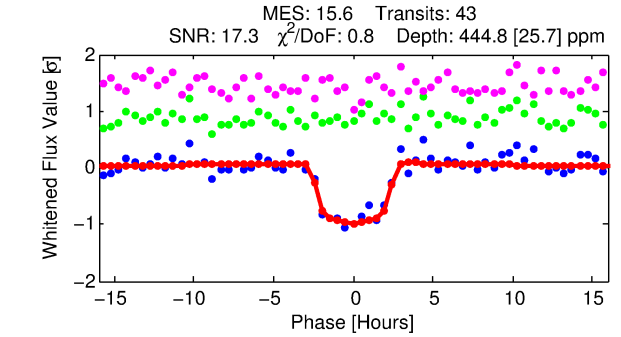
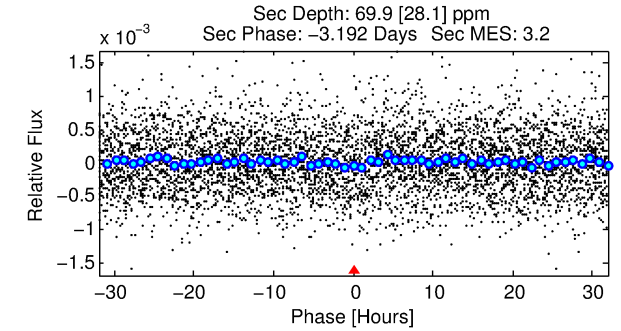
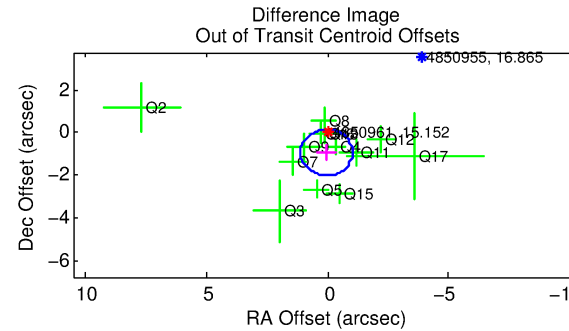
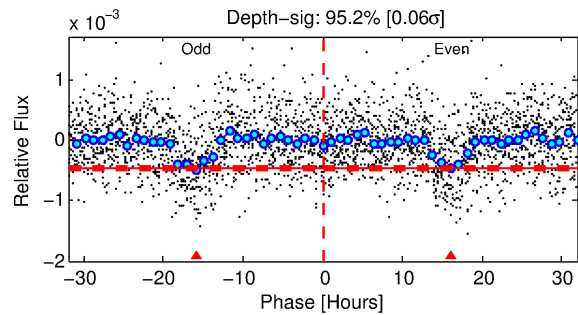
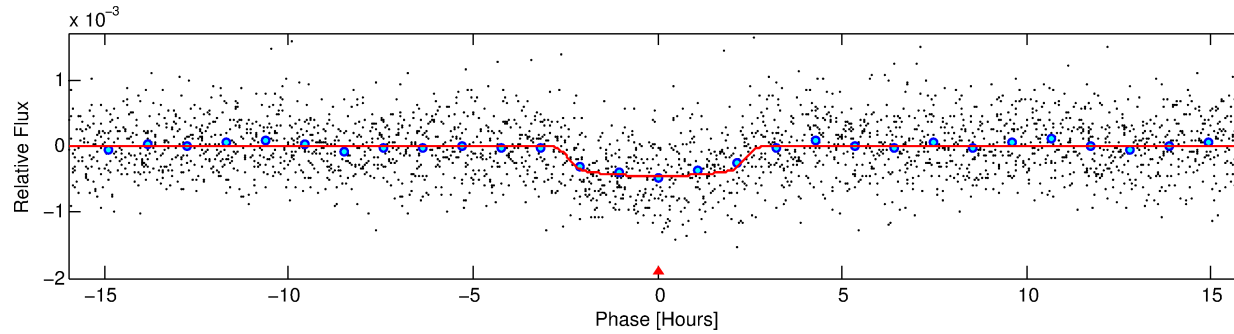
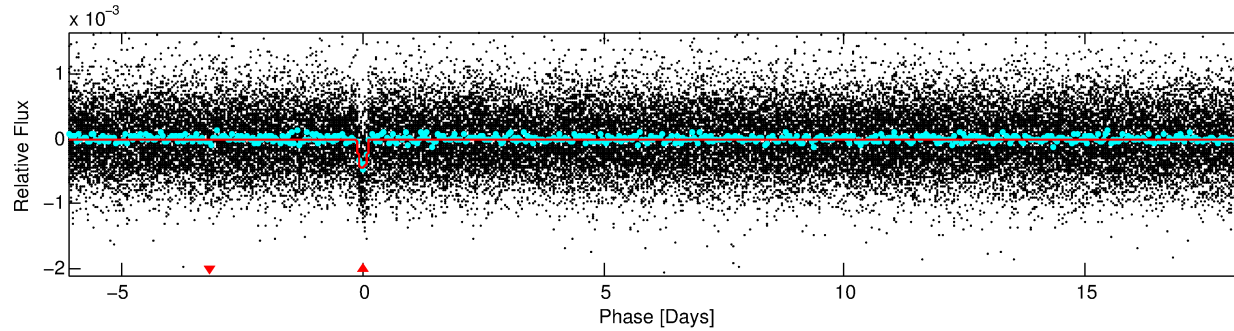
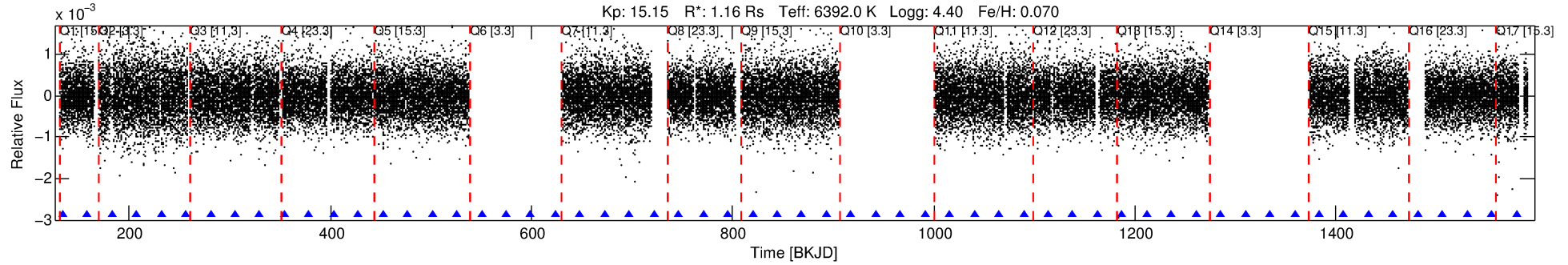
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004850961-01

No Significant Match Found

# DV One-Page Summary

KIC: 4850961 Candidate: 1 of 1 Period: 24.497 d  
KOI: K04092.01 Corr: 0.977



## DV Fit Results:

Period = 24.49747 [0.00017] d  
Epoch = 133.9184 [0.0059] BKJD  
Rp/R\* = 0.0222 [0.0031]  
a/R\* = 18.67 [13.56]  
b = 0.87 [0.20]  
Seff = 64.38 [23.38]  
Teq = 722 [66] K  
Rp = 2.82 [0.86] Re  
a = 0.1771 [0.0400] AU  
Ag = 151.96 [89.83] [1.68 $\sigma$ ]  
Teffp = 3921 [504] K [6.29 $\sigma$ ]

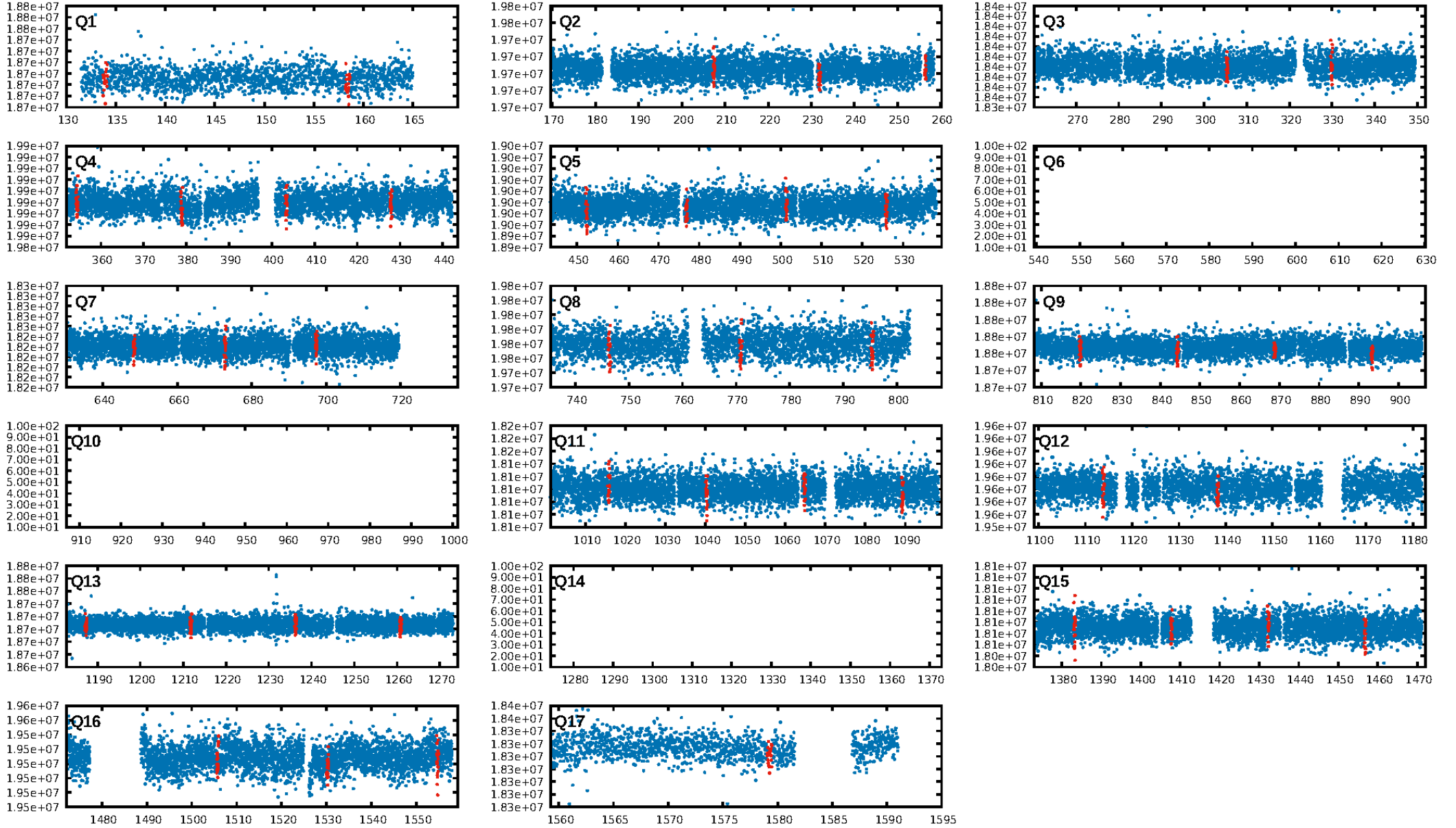
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.41e-53  
RollingBand-fgt: 1.00 [40/40]  
GhostDiagnostic-chr: 3.525  
Centroid-sig: 0.0%  
Centroid-so: 1.384 arcsec [1.74 $\sigma$ ]  
OotOffset-rm: 0.933 arcsec [2.60 $\sigma$ ]  
KicOffset-rm: 0.721 arcsec [1.70 $\sigma$ ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 1.00 [14/14]

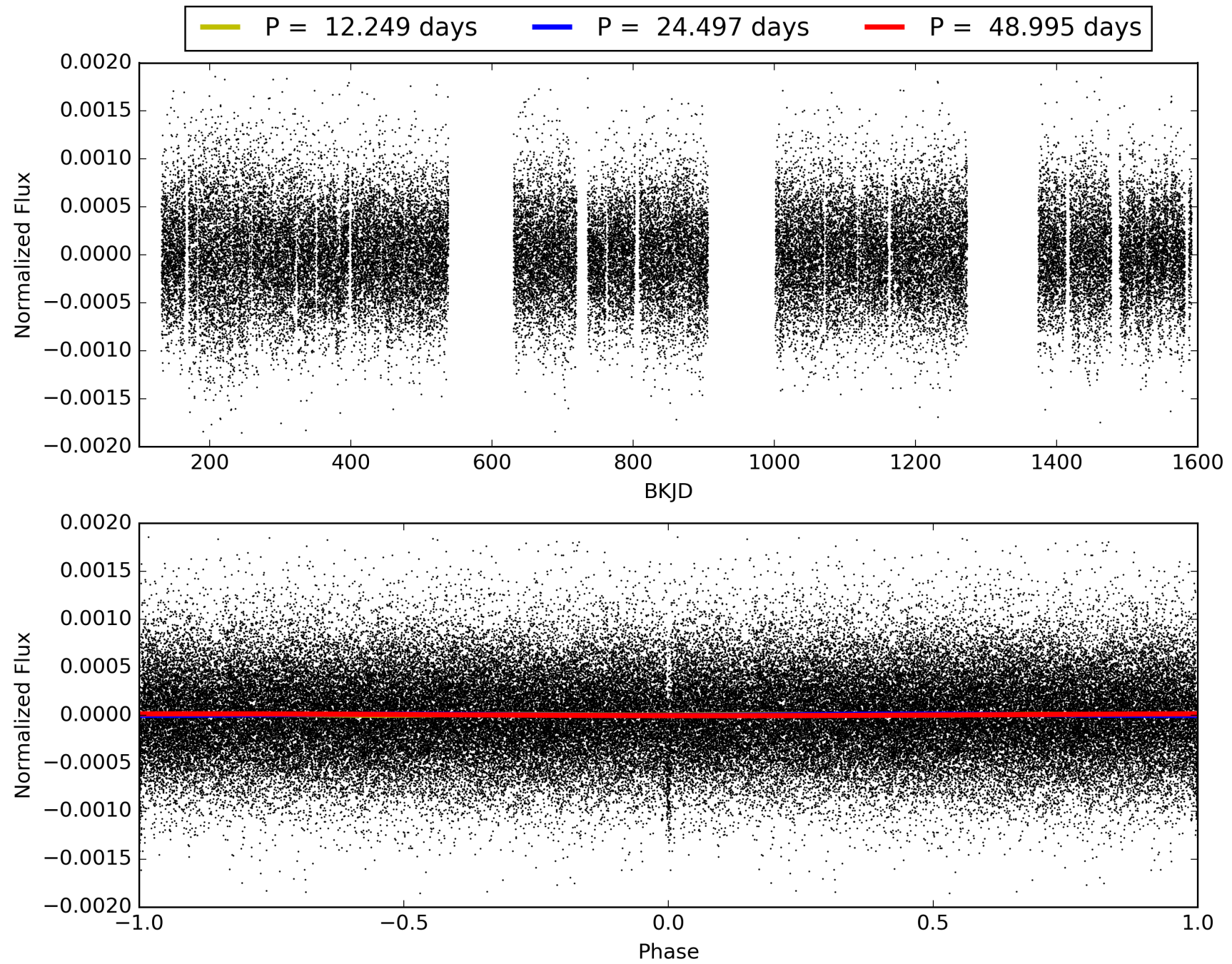
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:27:19 Z

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

# TCE 004850961-01, PDC Light Curves

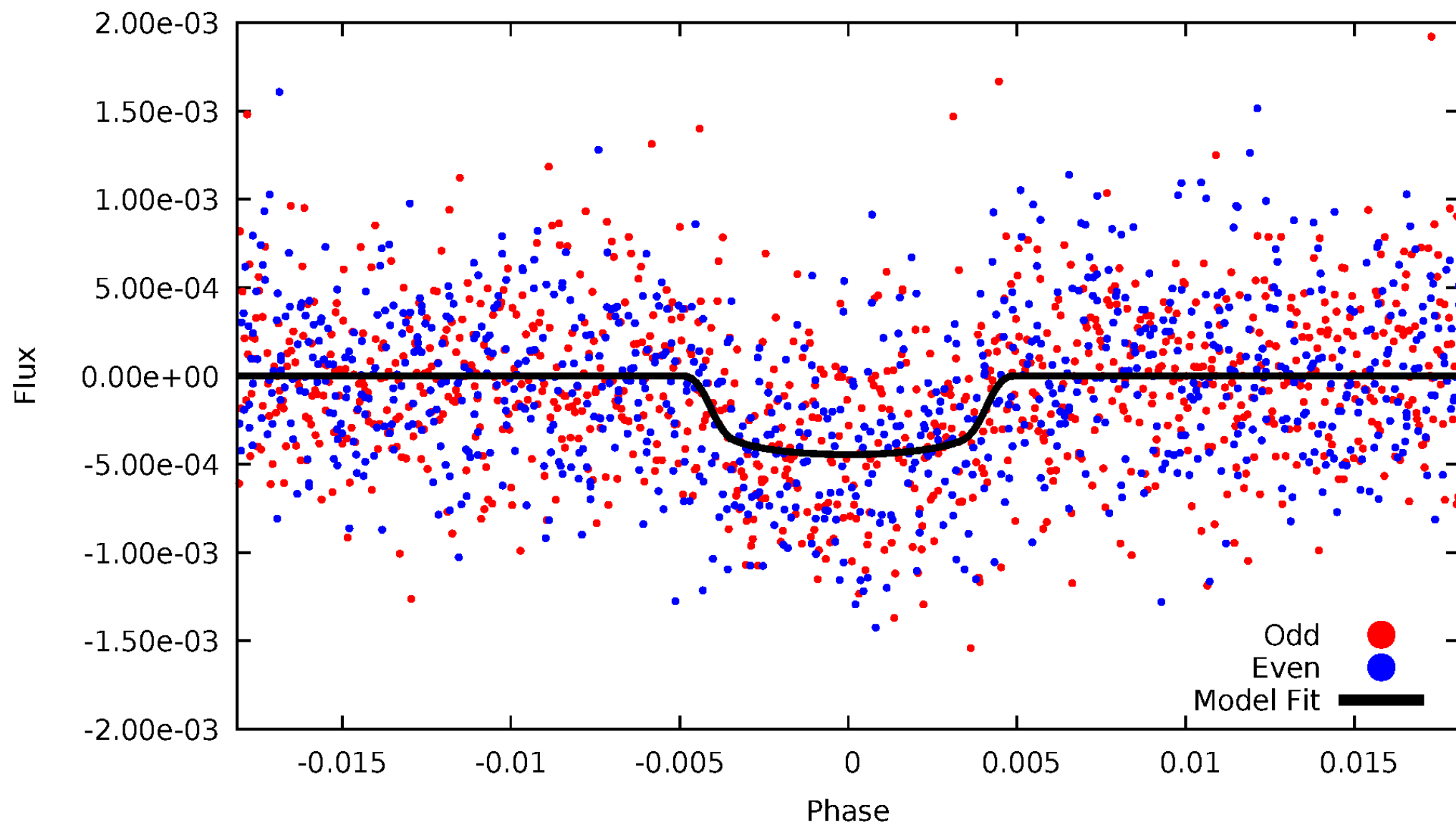


TCE 004850961-01



# DV Odd/Even

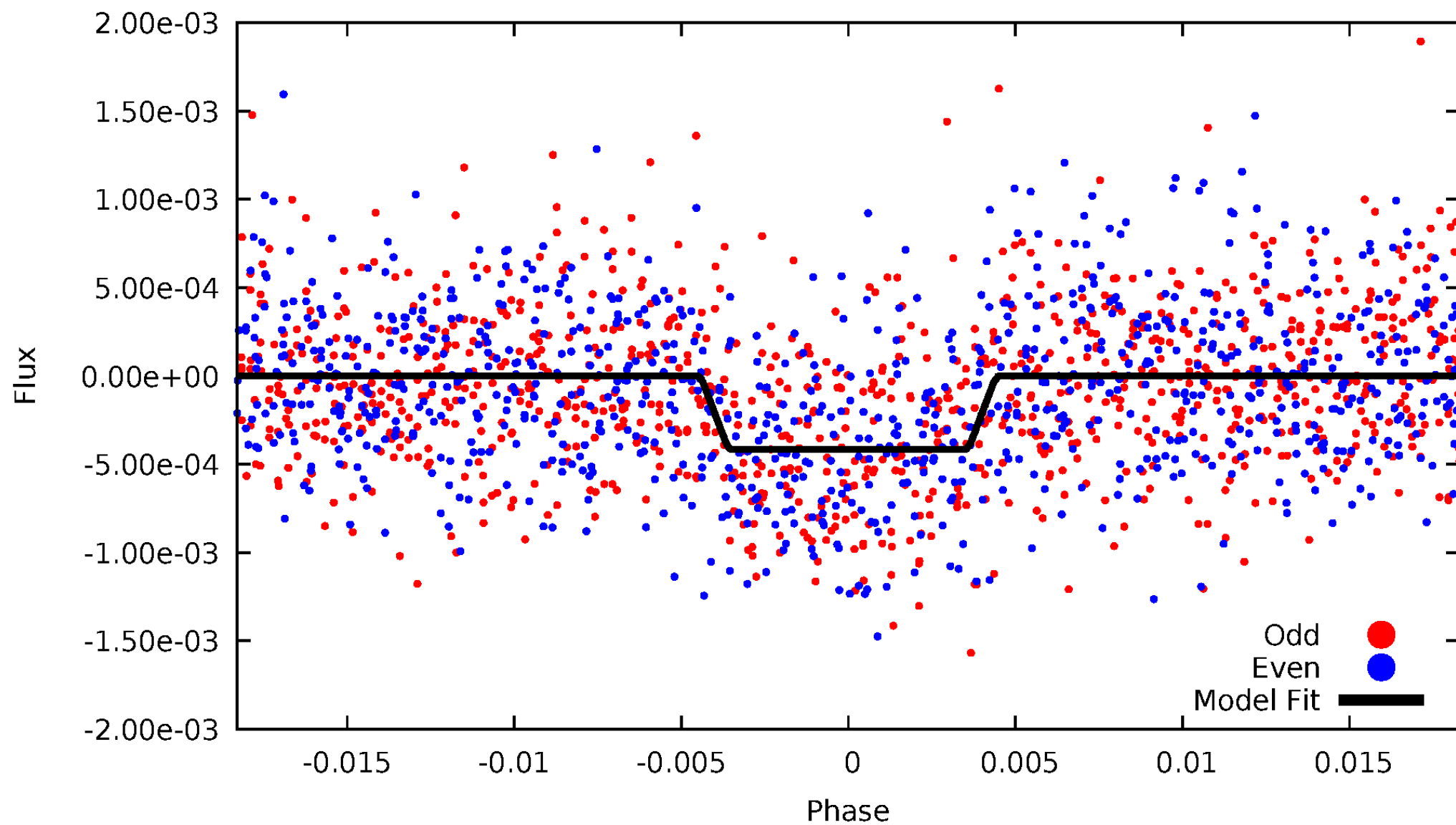
TCE 004850961-01





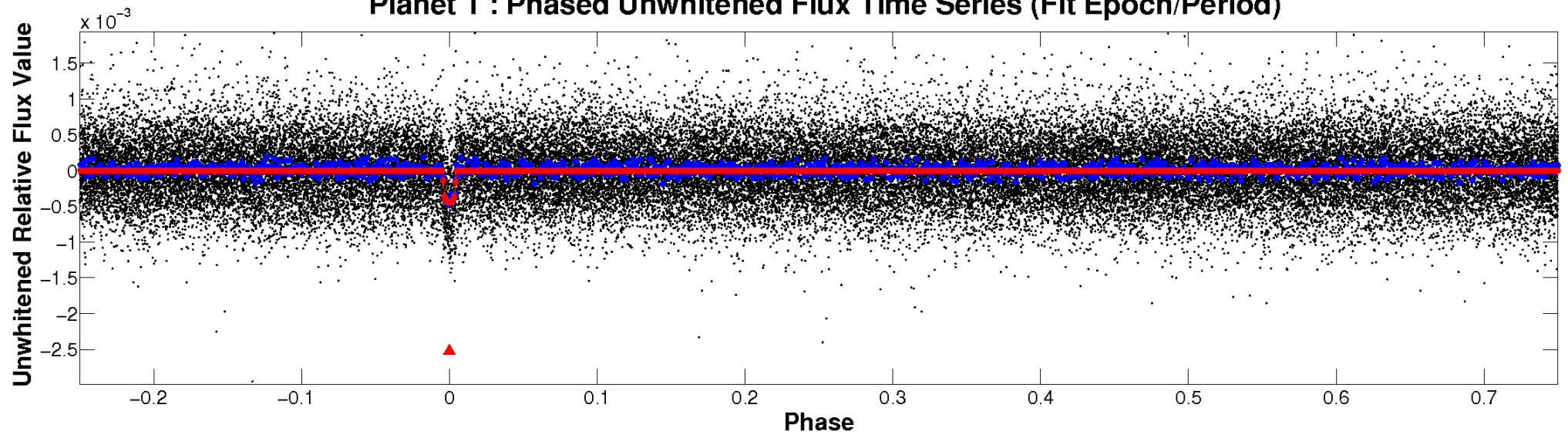
# ALT Odd/Even

TCE 004850961-01

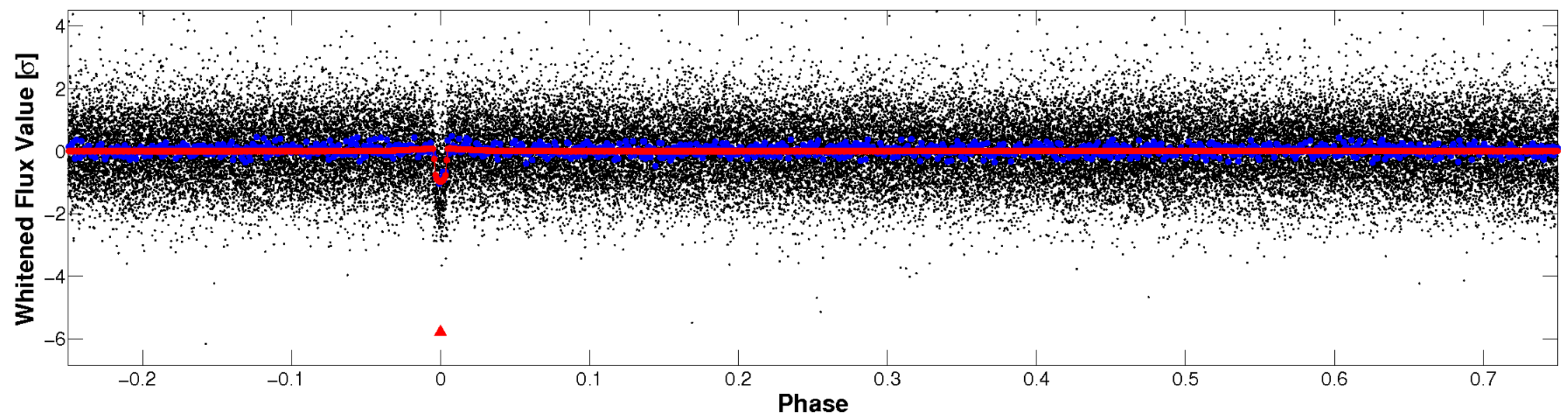


# Non-Whitened Vs. Whitened Light Curve

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

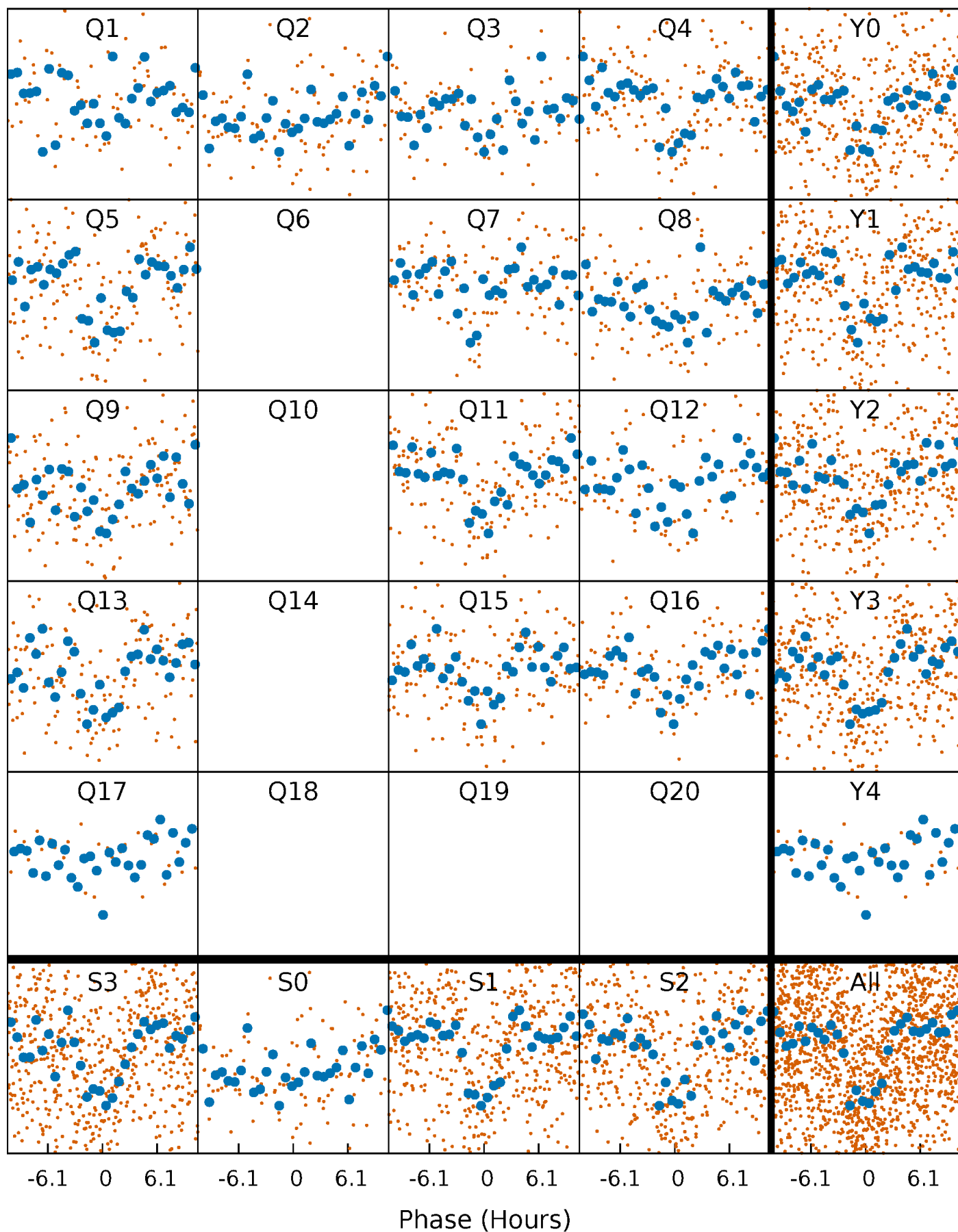


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

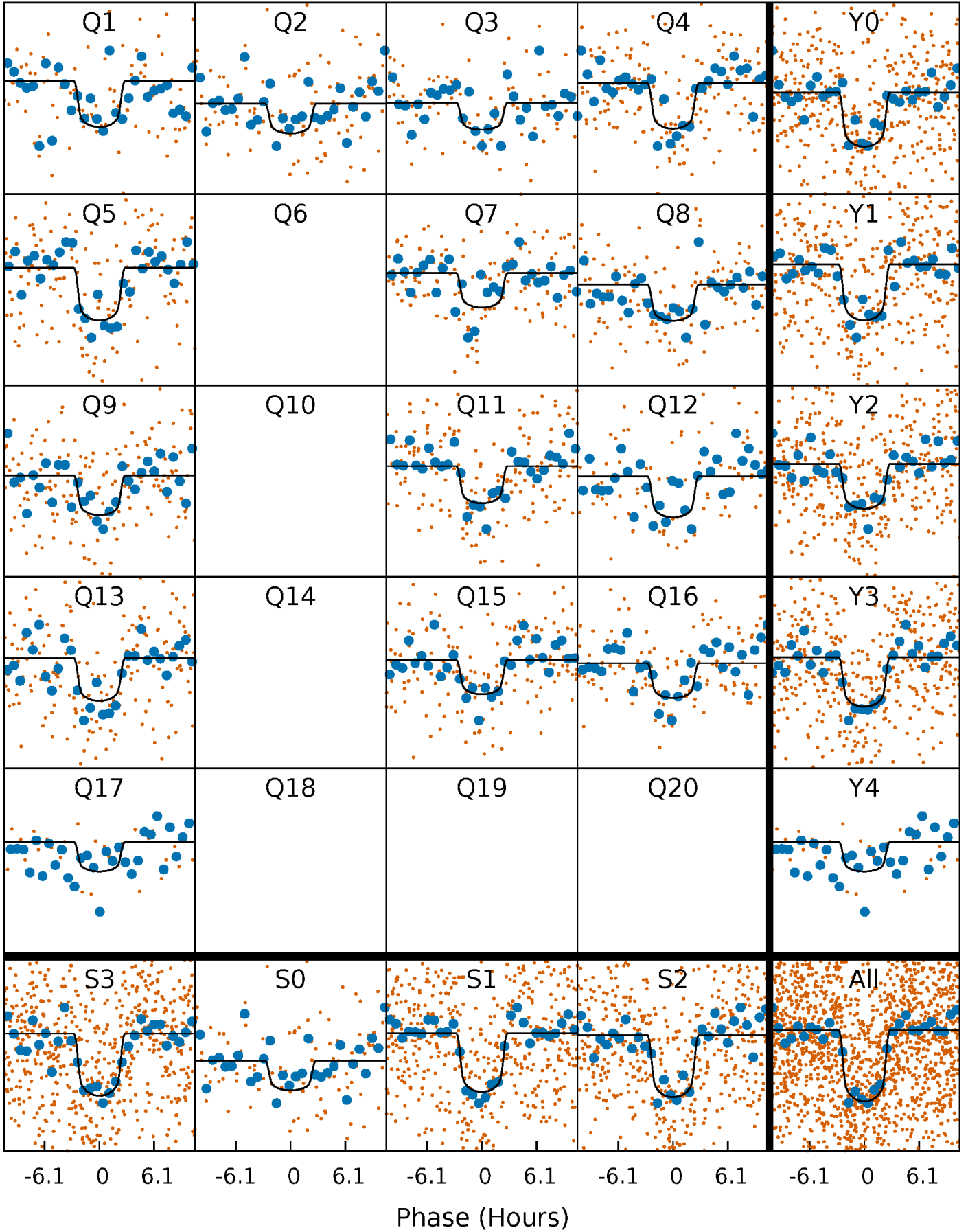
TCE 004850961-01 P= 24.497469 Days  $T_0=133.918371$  (BKJD)





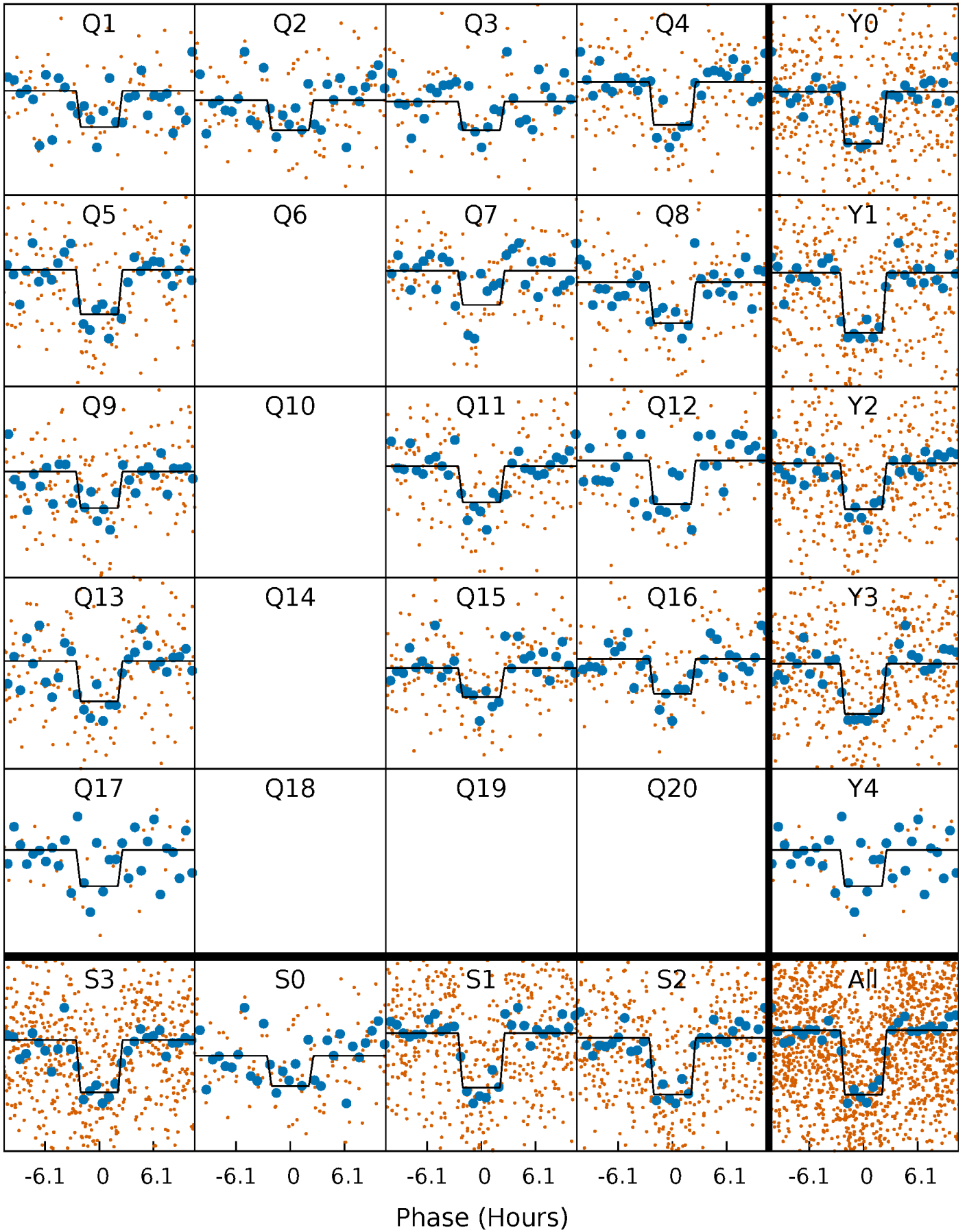
# DV Quarter-Phased Transit Curves

TCE 004850961-01 P= 24.497469 Days  $T_0=133.918371$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

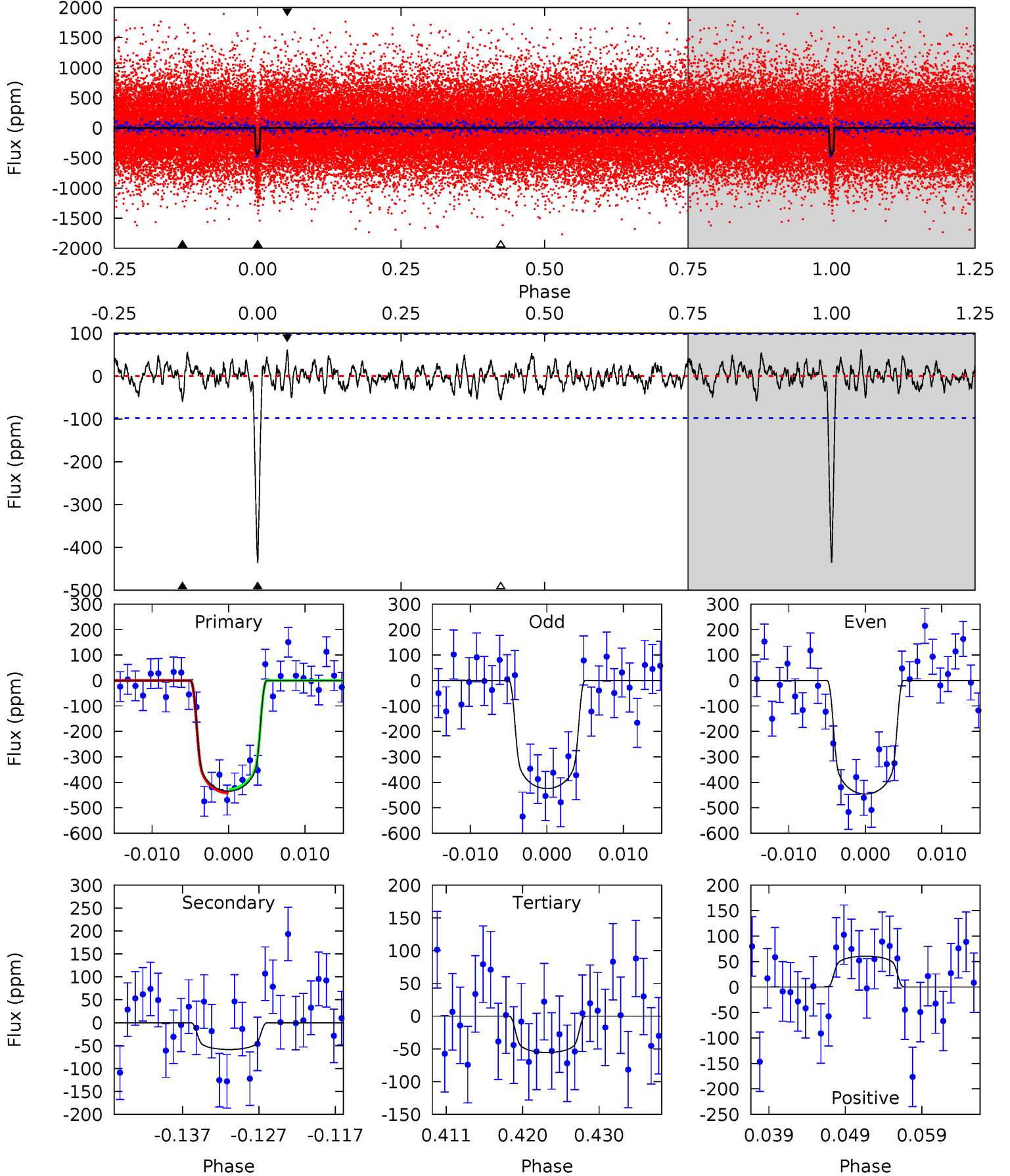
TCE 004850961-01   P= 24.497371 Days    $T_0=133.922364$  (BKJD)



# DV Model-Shift Uniqueness Test

004850961-01,  $P = 24.497469$  Days,  $E = 109.420902$  Days

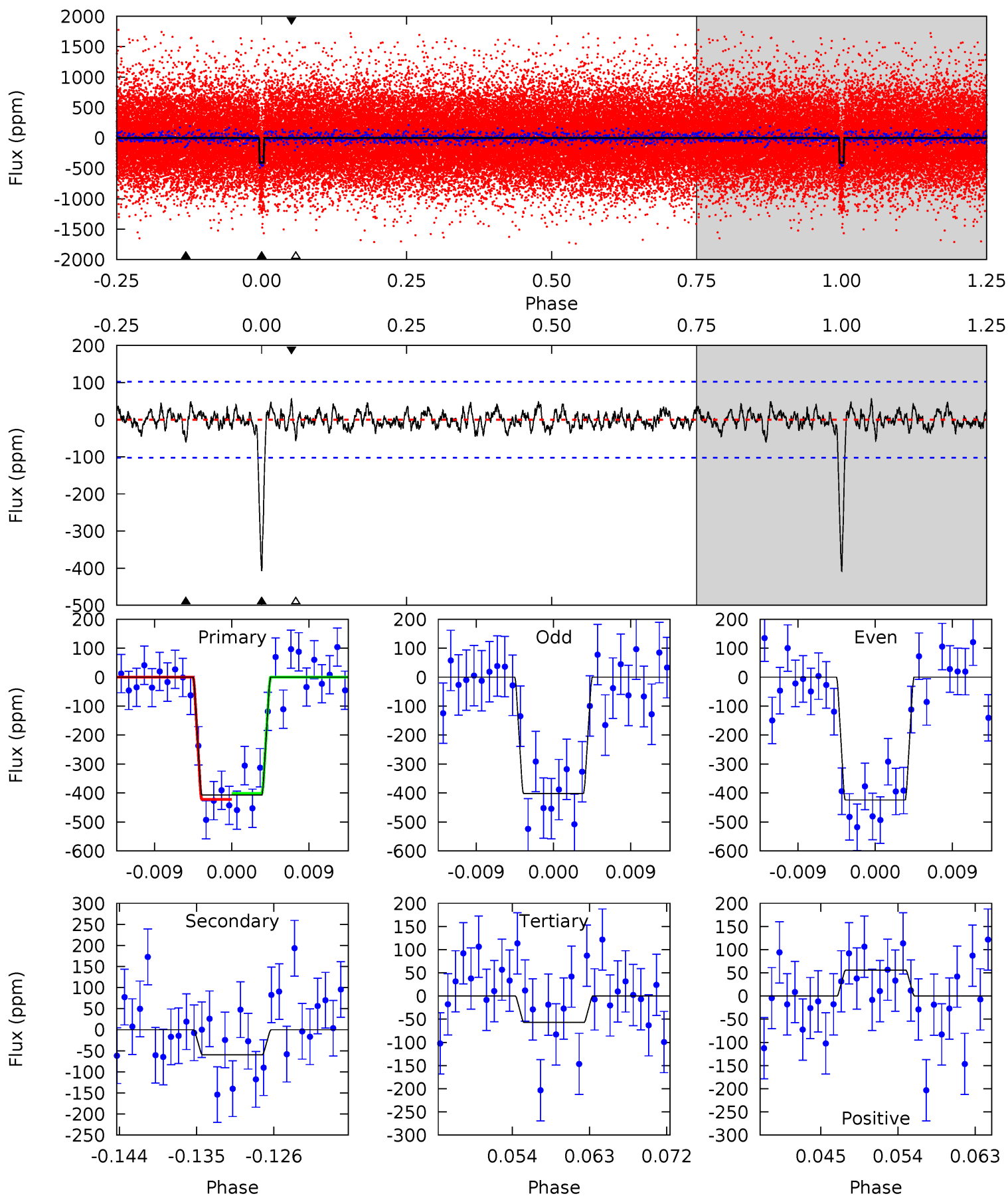
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	2.99	2.85	3.10	5.03	2.58	0.99	19.4	19.1	0.15	-0.11	0.55	1.01	0.12	0.35



# Alt Model-Shift Uniqueness Test

004850961-01, P = 24.497371 Days, E = 109.424993 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
20.1	2.93	2.81	2.76	5.05	2.61	0.87	17.3	17.3	0.12	0.17	0.55	1.04	0.12	0.52



### Stellar Parameters For KIC 004850961

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6392^{+156}_{-245}$	$4.399^{+0.060}_{-0.180}$	$0.070^{+0.200}_{-0.350}$	$1.162^{+0.312}_{-0.156}$	$1.232^{+0.133}_{-0.199}$	$1.107^{+0.345}_{-0.515}$
	+2%/-4%	+1%/-4%	+286%/-500%	+27%/-13%	+11%/-16%	+31%/-47%
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 004850961-01 / KOI 4092.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-58 \pm 20$	$2.89^{+0.60}_{-0.48}$	$1025^{+71}_{-51}$	$4007^{+319}_{-296}$	$112^{+63}_{-47}$
Alt.	$-59 \pm 20$	$2.66^{+0.54}_{-0.46}$	$1021^{+68}_{-55}$	$4156^{+393}_{-346}$	$140^{+88}_{-59}$

$T_{max}$  = 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

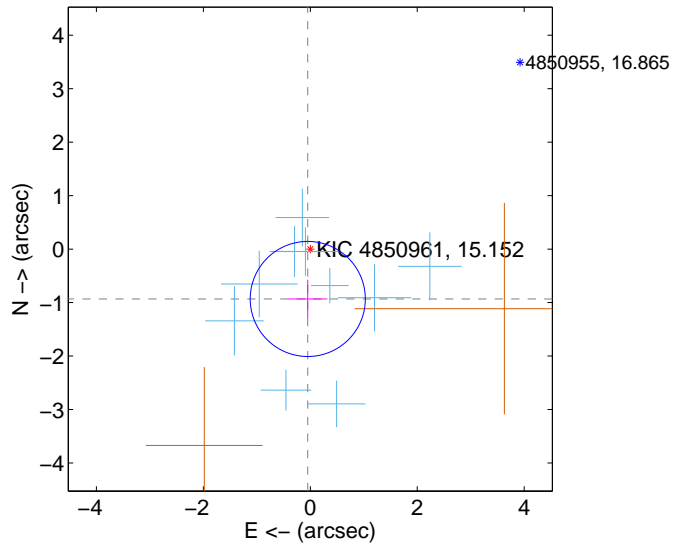
Supplemental centroid analysis for 004850961-01. Kepler magnitude: 15.15. Transit SNR 17.31

There are 10 quarters with good PRF difference image offsets

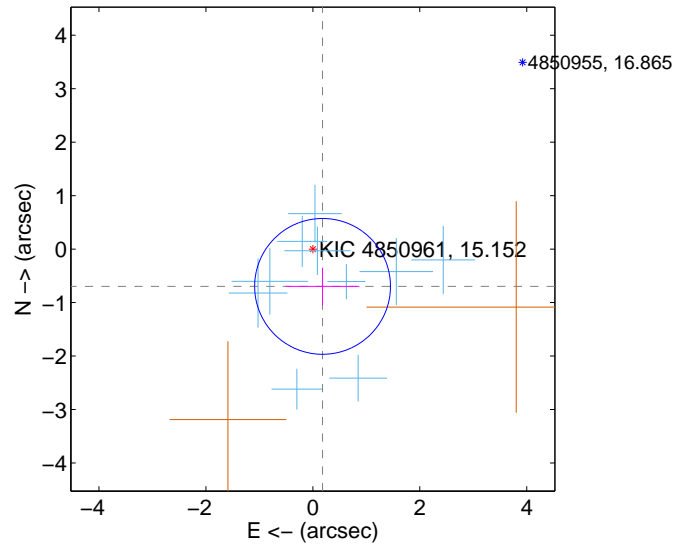
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.933 \pm 0.359$	2.60	$0.047 \pm 0.365$	$-0.932 \pm 0.359$
PRF-fit source offset from KIC position	$0.721 \pm 0.423$	1.70	$-0.182 \pm 0.686$	$-0.697 \pm 0.350$
photometric centroid source offset	$1.38 \pm 0.80$	1.74	$0.09 \pm 0.80$	$-1.38 \pm 0.80$

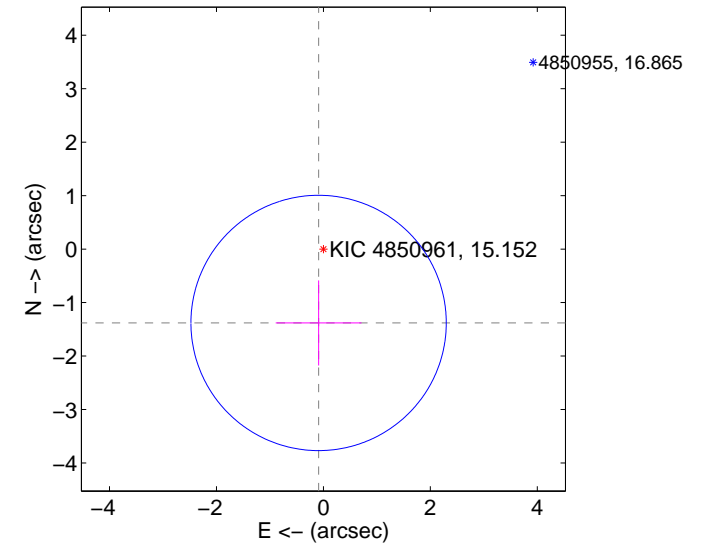
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

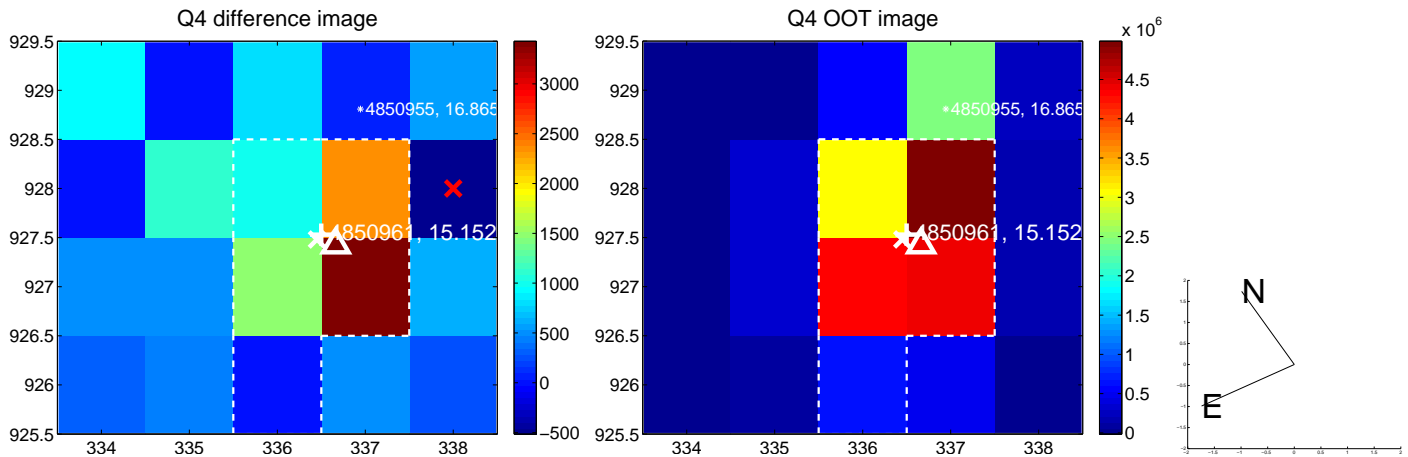
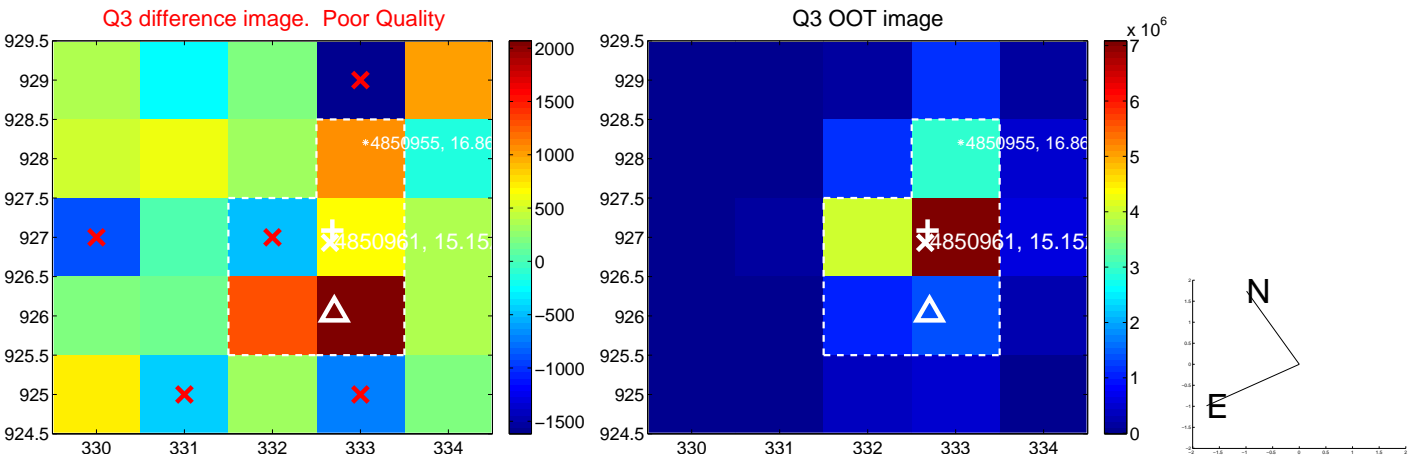
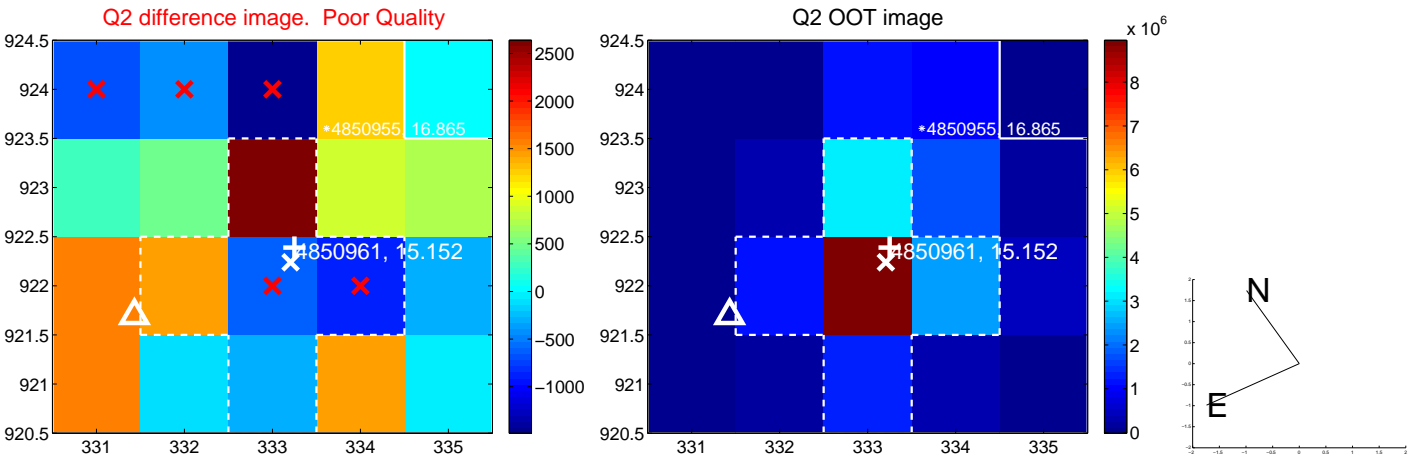
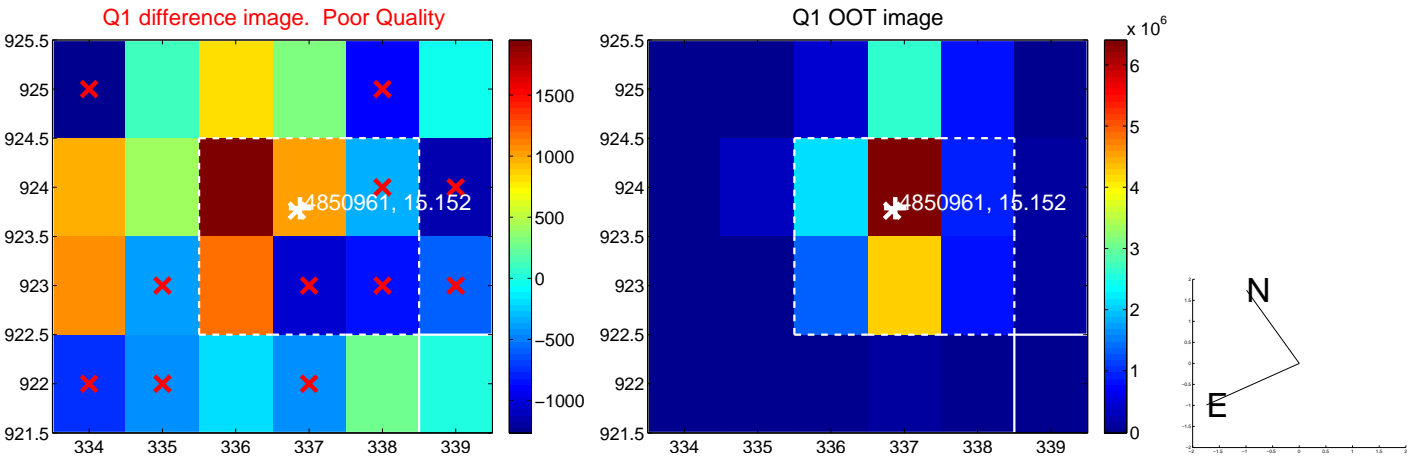


offset from photometric centroids

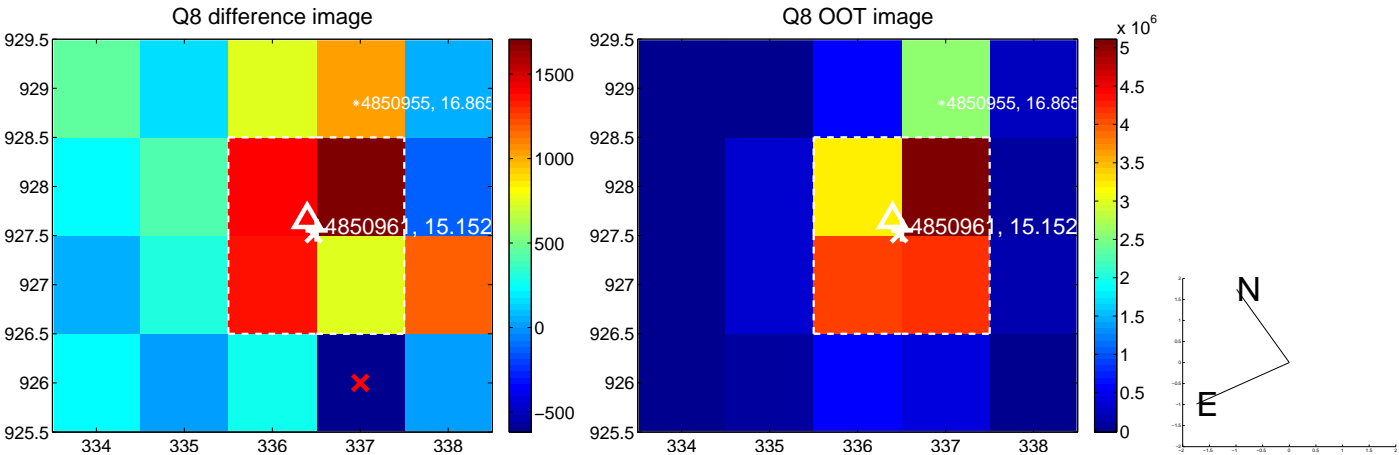
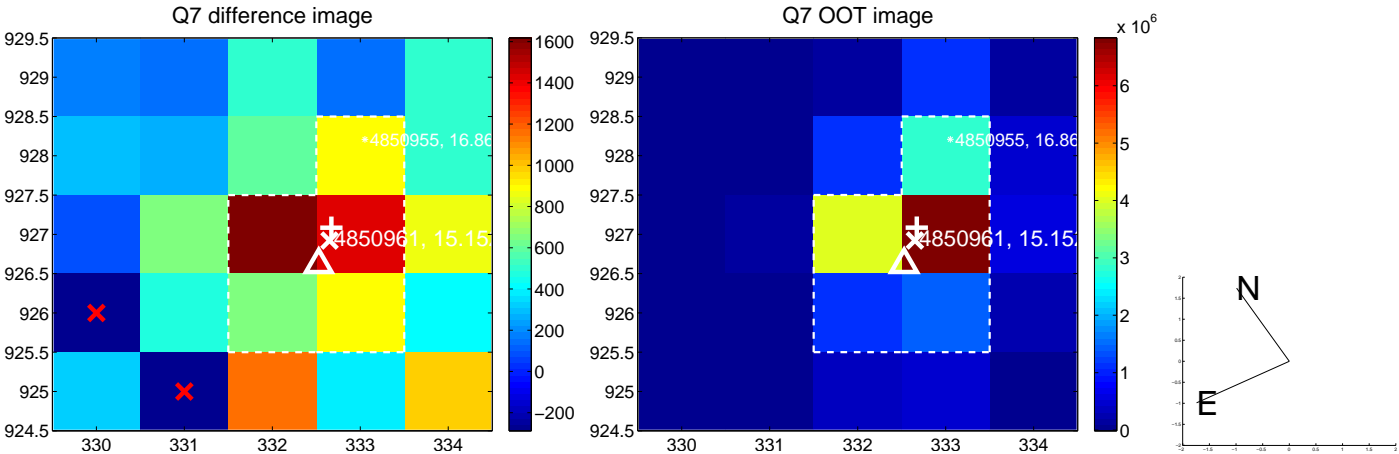
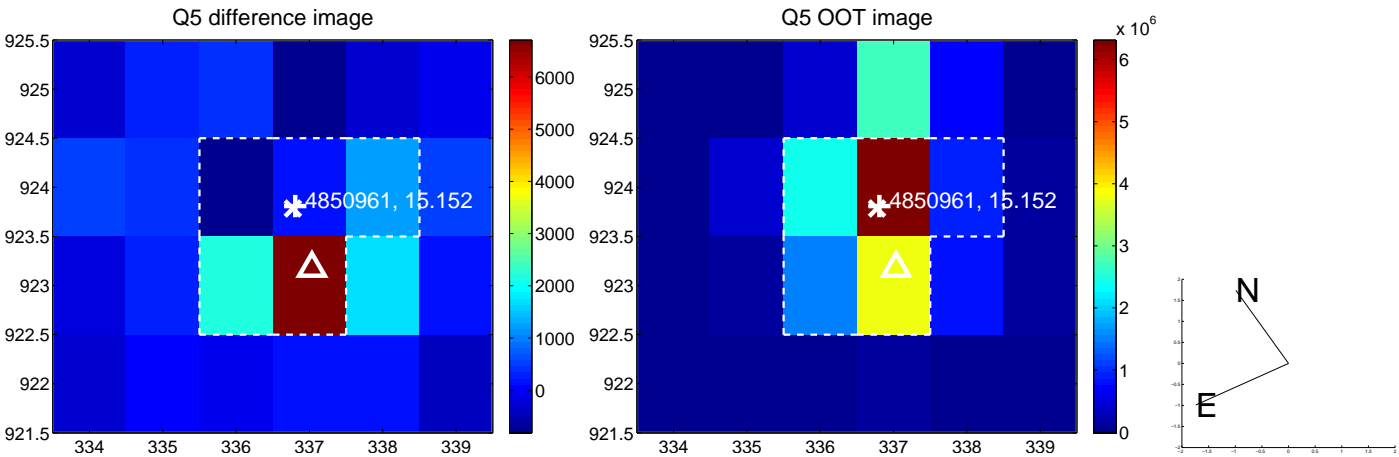


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

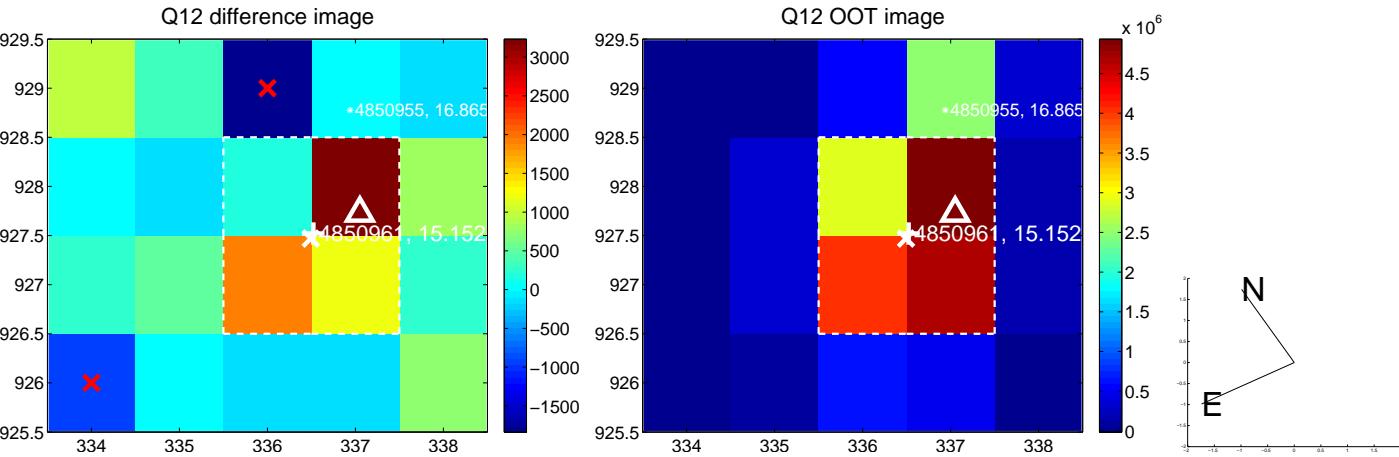
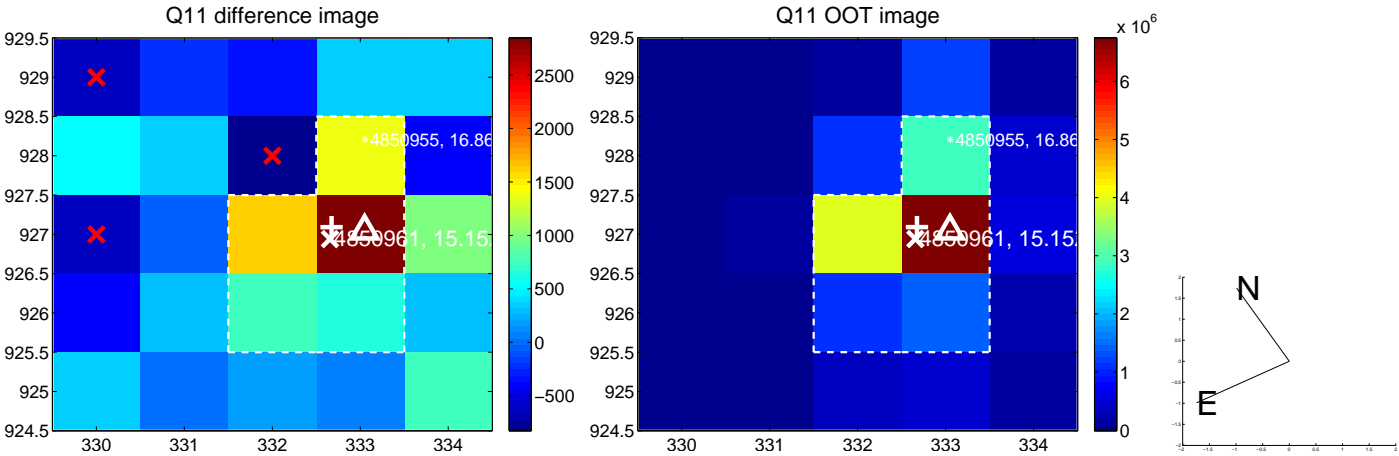
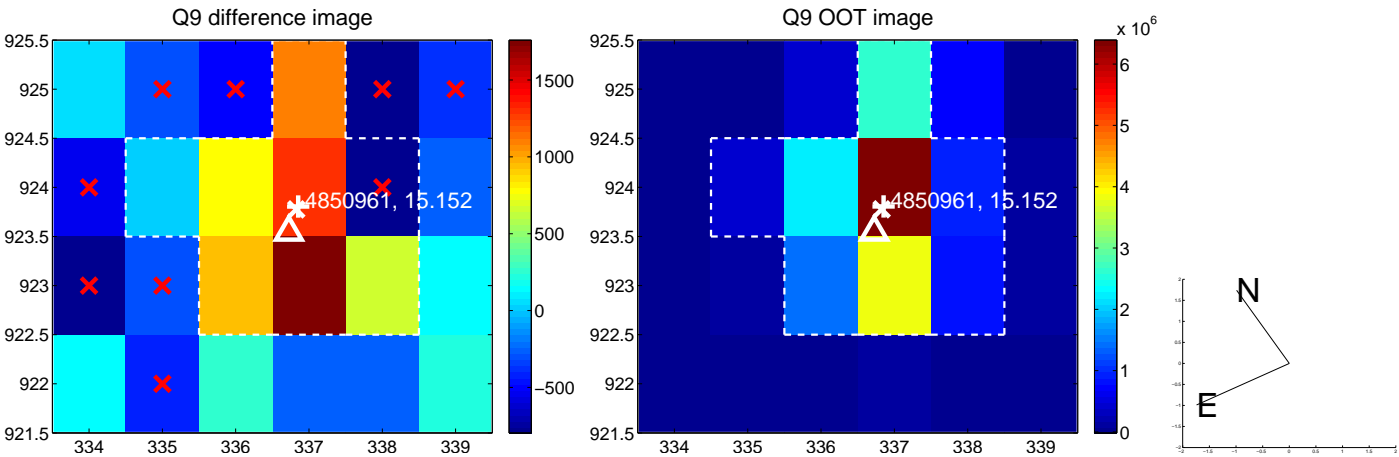
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



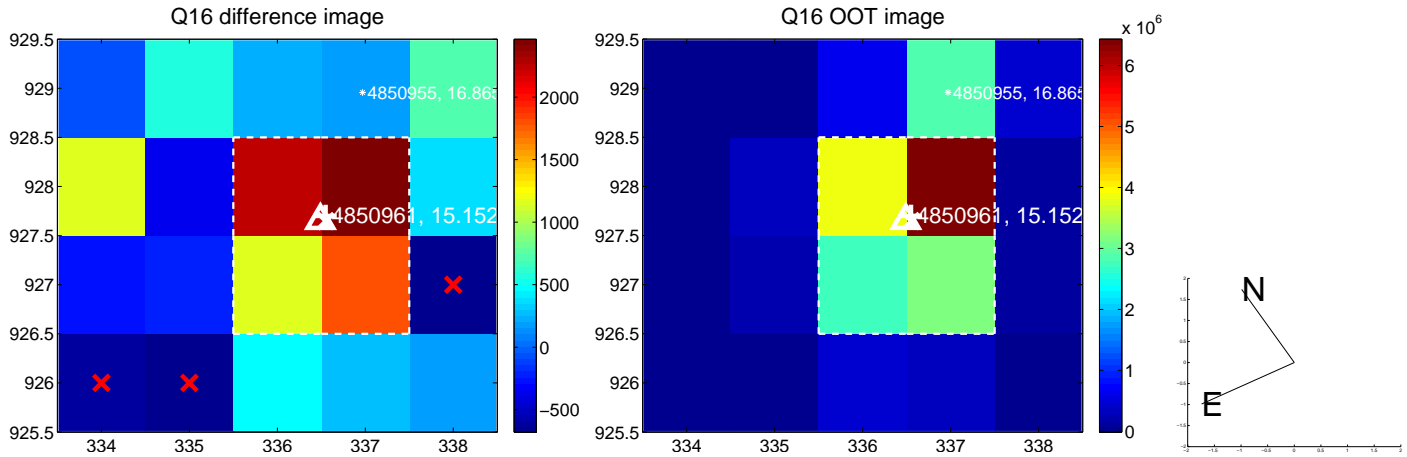
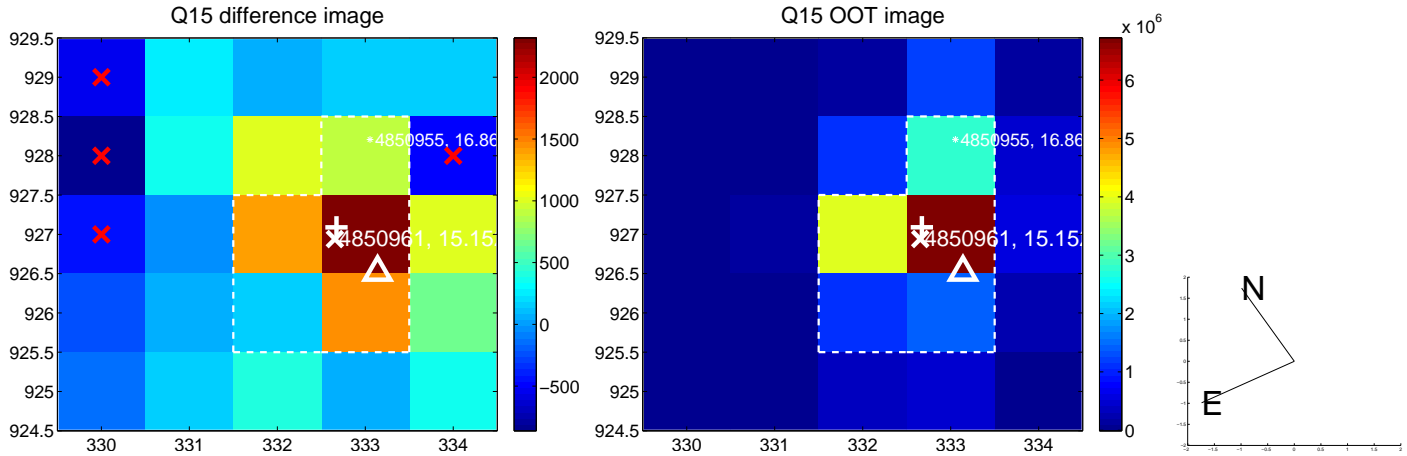
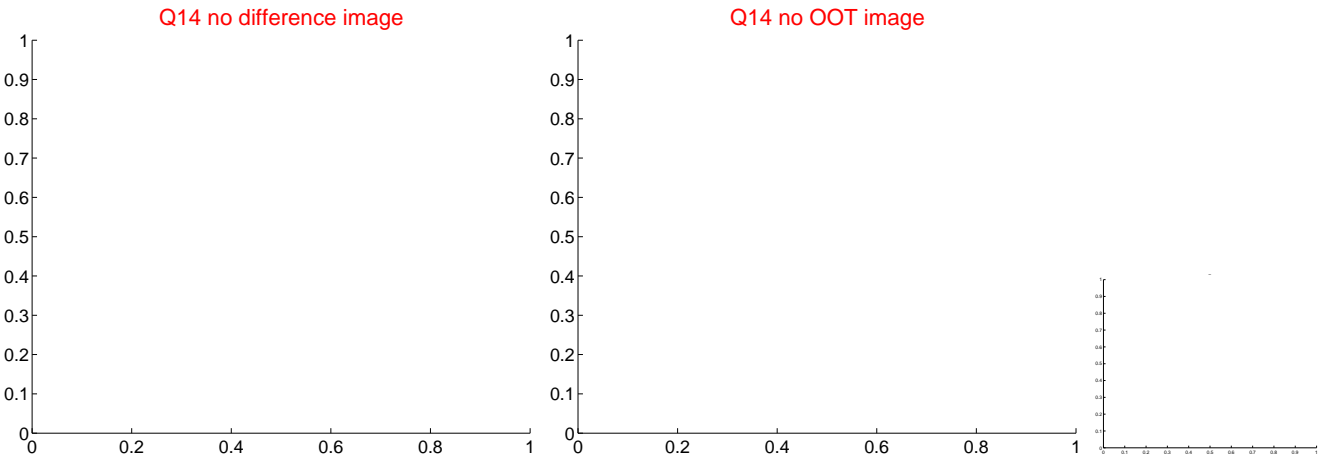
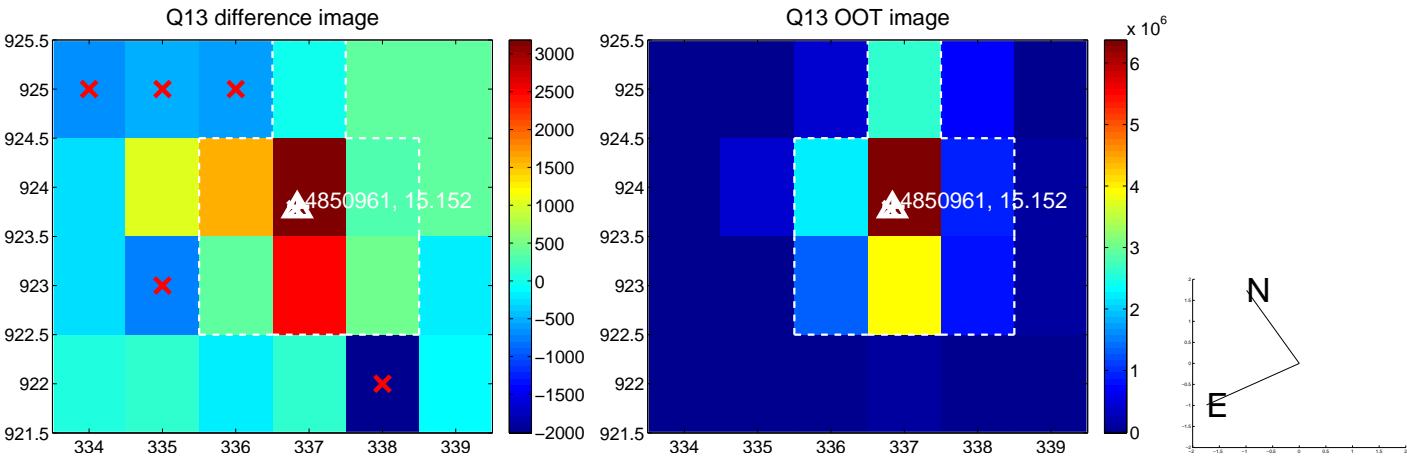
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

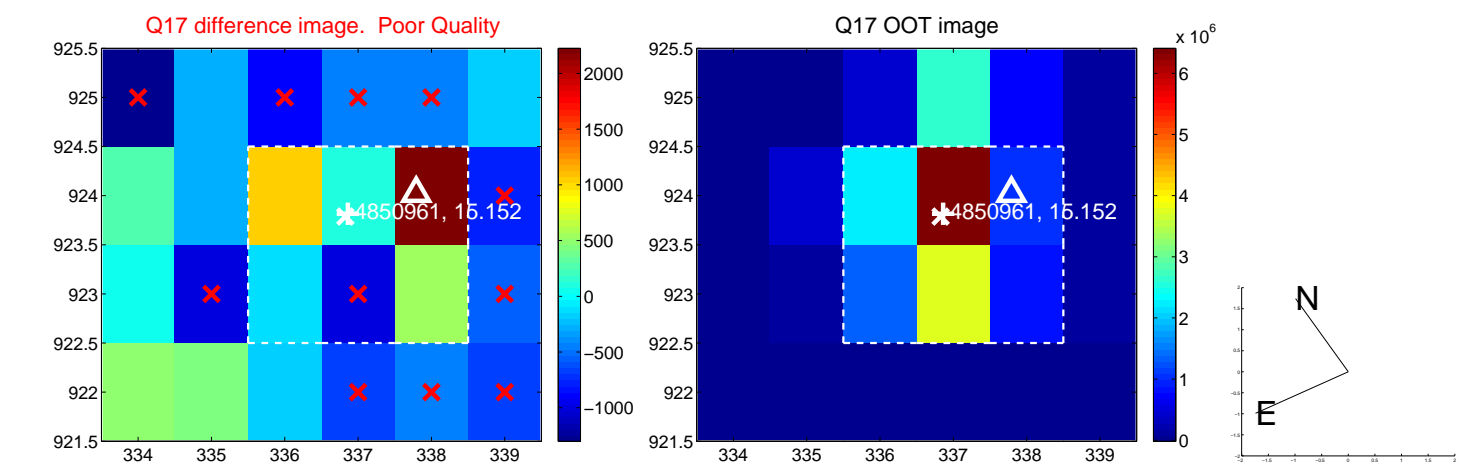


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

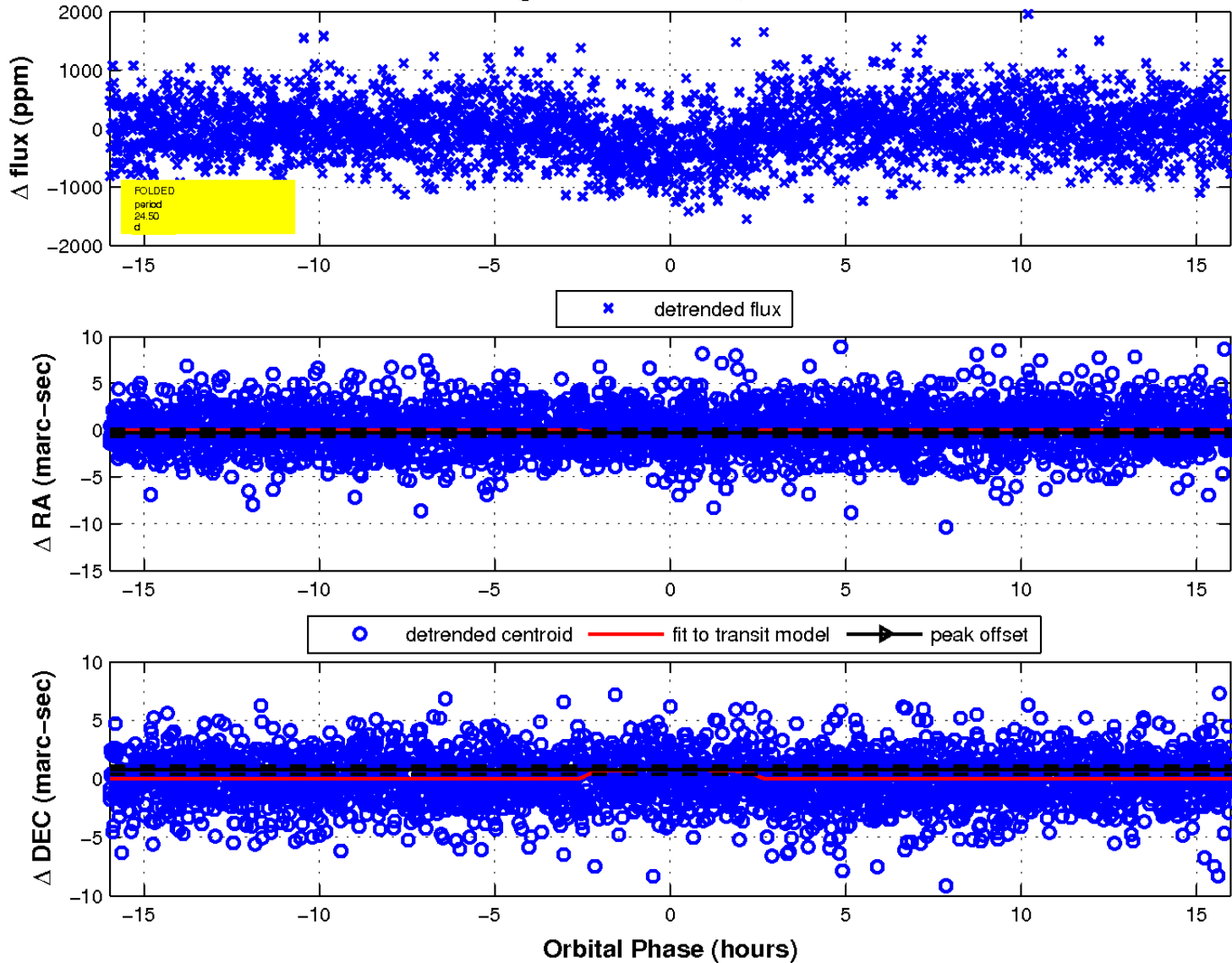




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

