

# KIC 009996632

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009996632-01	OBS	2621.01	8.443085	136.286765	344.4	3.813	17.2	17.6	1.02	6081	2.24	180.32

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009996632-01	OBS	FP	0.27	0	0	1	0	CENT_RESOLVED_OFFSET

**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.

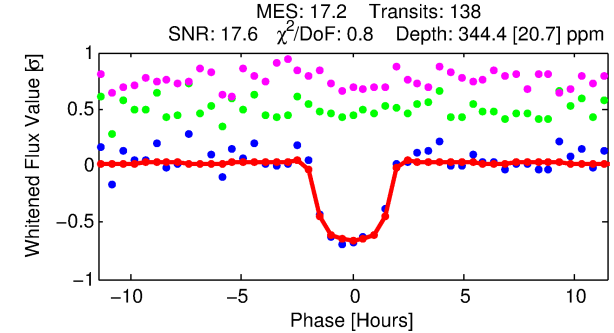
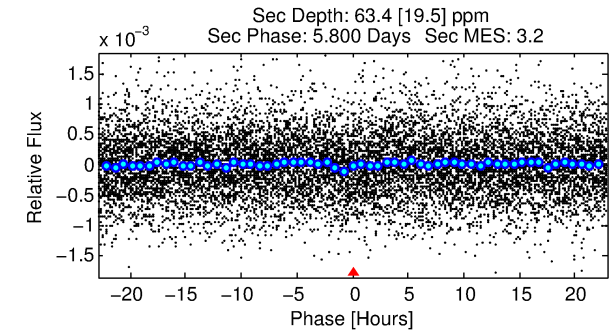
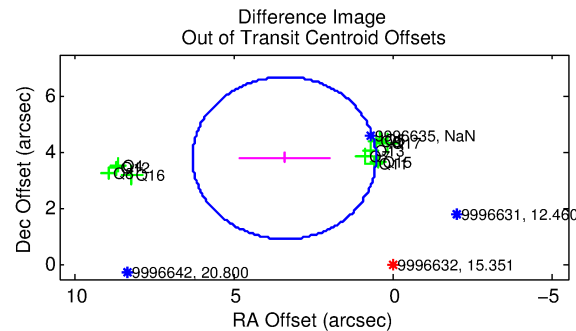
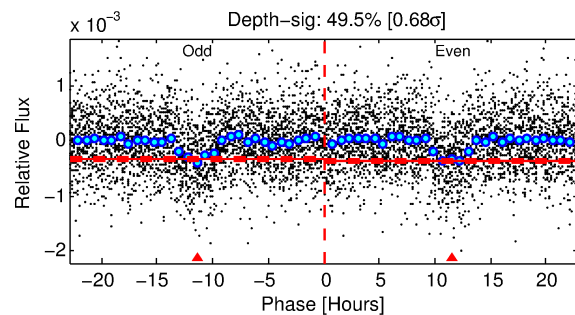
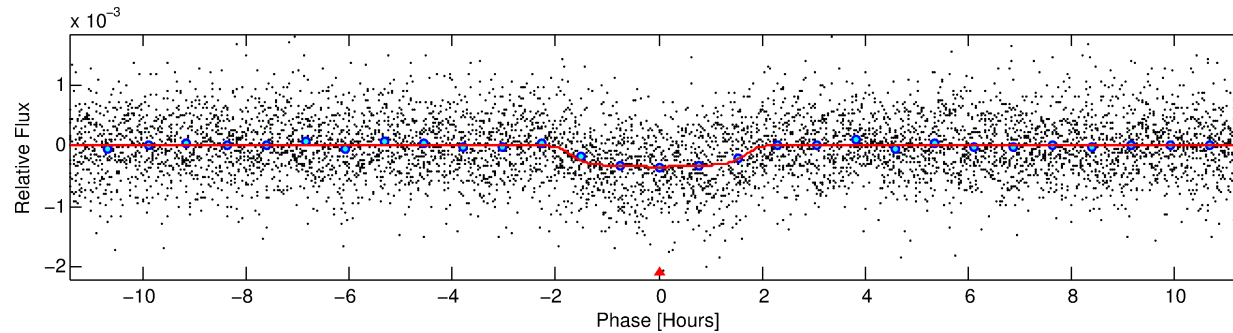
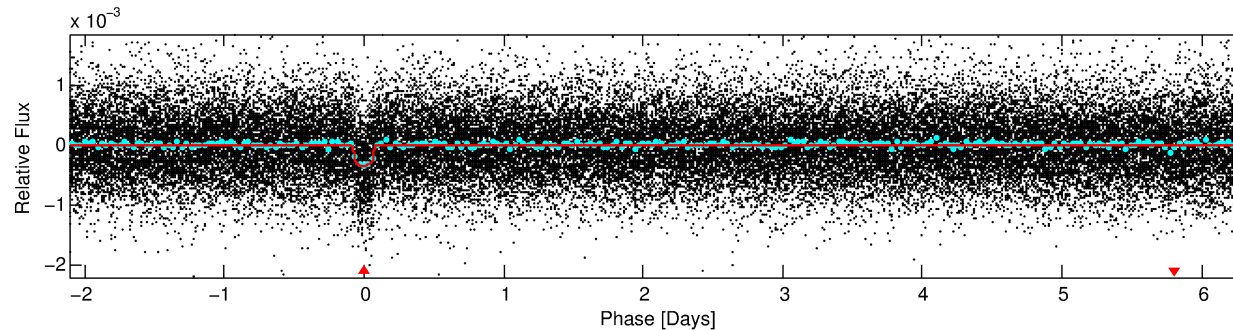
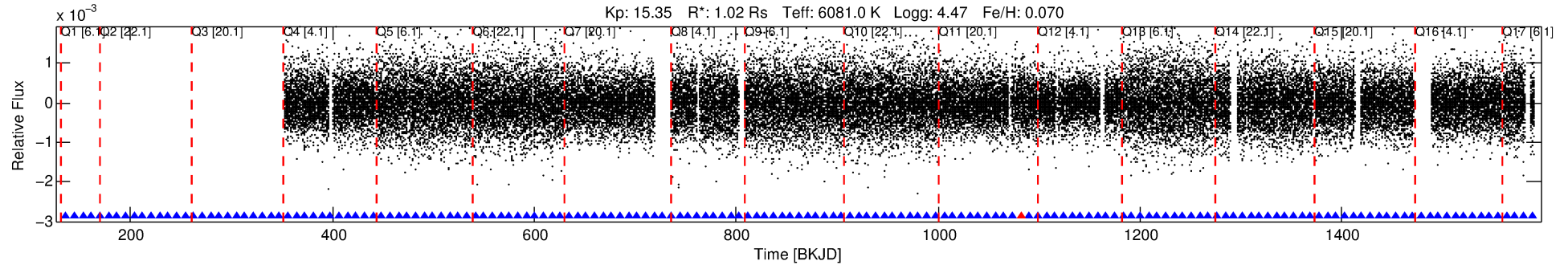
## Ephemeris Match Information For 009996632-01

No Significant Match Found

# DV One-Page Summary

KIC: 9996632 Candidate: 1 of 1 Period: 8.443 d  
KOI: K02621.01 Corr: 0.925

Kp: 15.35 R\*: 1.02 Rs Teff: 6081.0 K Logg: 4.47 Fe/H: 0.070



## DV Fit Results:

Period = 8.44309 [0.00005] d  
Epoch = 136.2868 [0.0052] BKJD  
Rp/R\* = 0.0201 [0.0036]  
a/R\* = 8.20 [7.25]  
b = 0.90 [0.19]  
Seff = 180.32 [81.09]  
Teq = 934 [105] K  
Rp = 2.24 [0.86] Re  
a = 0.0843 [0.0241] AU  
Ag = 49.37 [31.21] [1.55σ]  
Teff = 3829 [482] K [5.87σ]

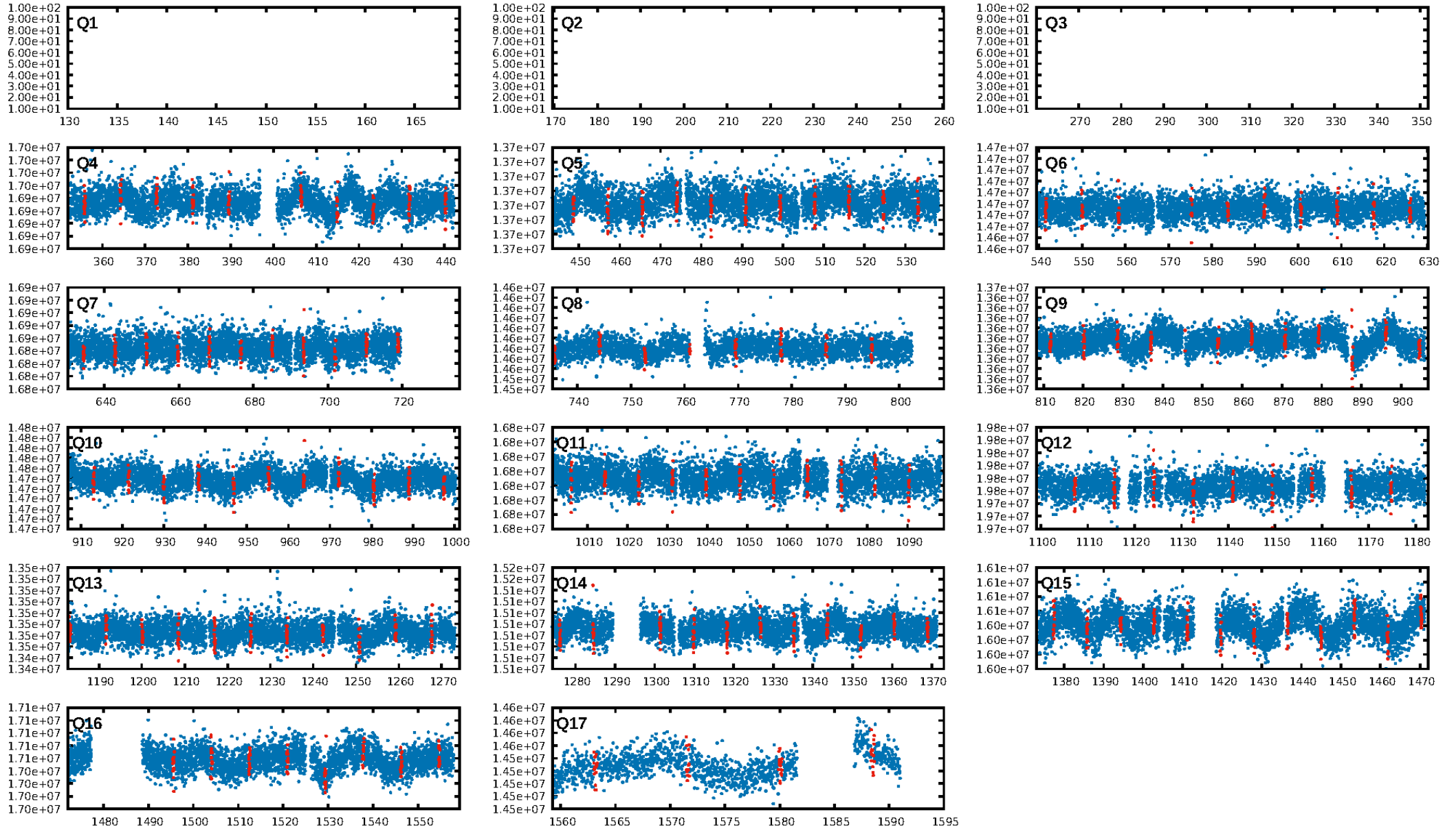
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 70.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.02e-67  
RollingBand-fgt: 0.99 [133/134]  
GhostDiagnostic-chr: 1.307  
Centroid-sig: 0.0%  
Centroid-so: 3.652 arcsec [11.79σ]  
OotOffset-rm: 5.120 arcsec [5.32σ]  
KicOffset-rm: 4.764 arcsec [39.68σ]  
OotOffset-st: 0/3/4/4 [11]  
KicOffset-st: 1/3/4/4 [12]  
DiffImageQuality-fgm: 0.92 [11/12]  
DiffImageOverlap-fno: 1.00 [14/14]

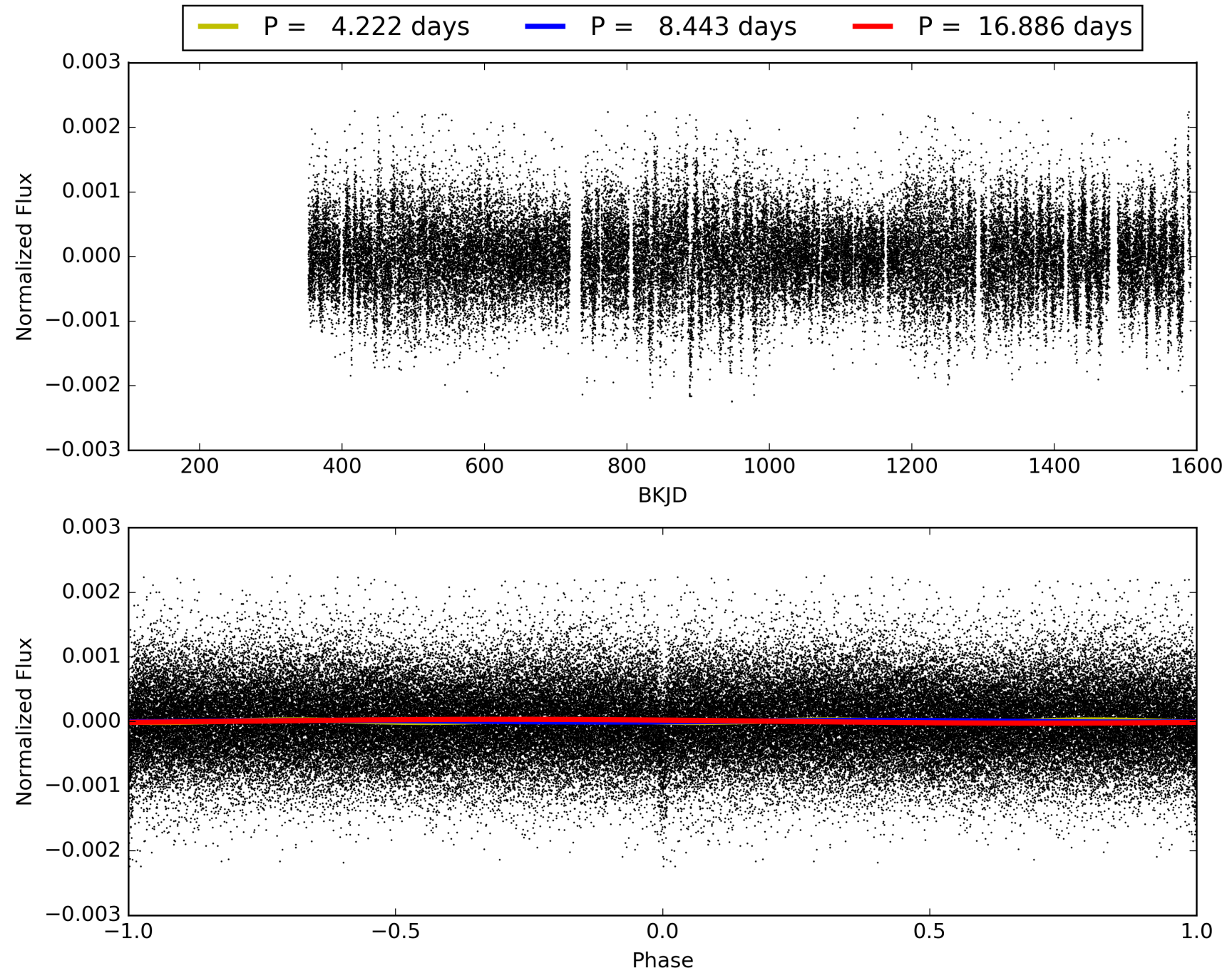
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 20:42:32 Z

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

# TCE 009996632-01, PDC Light Curves

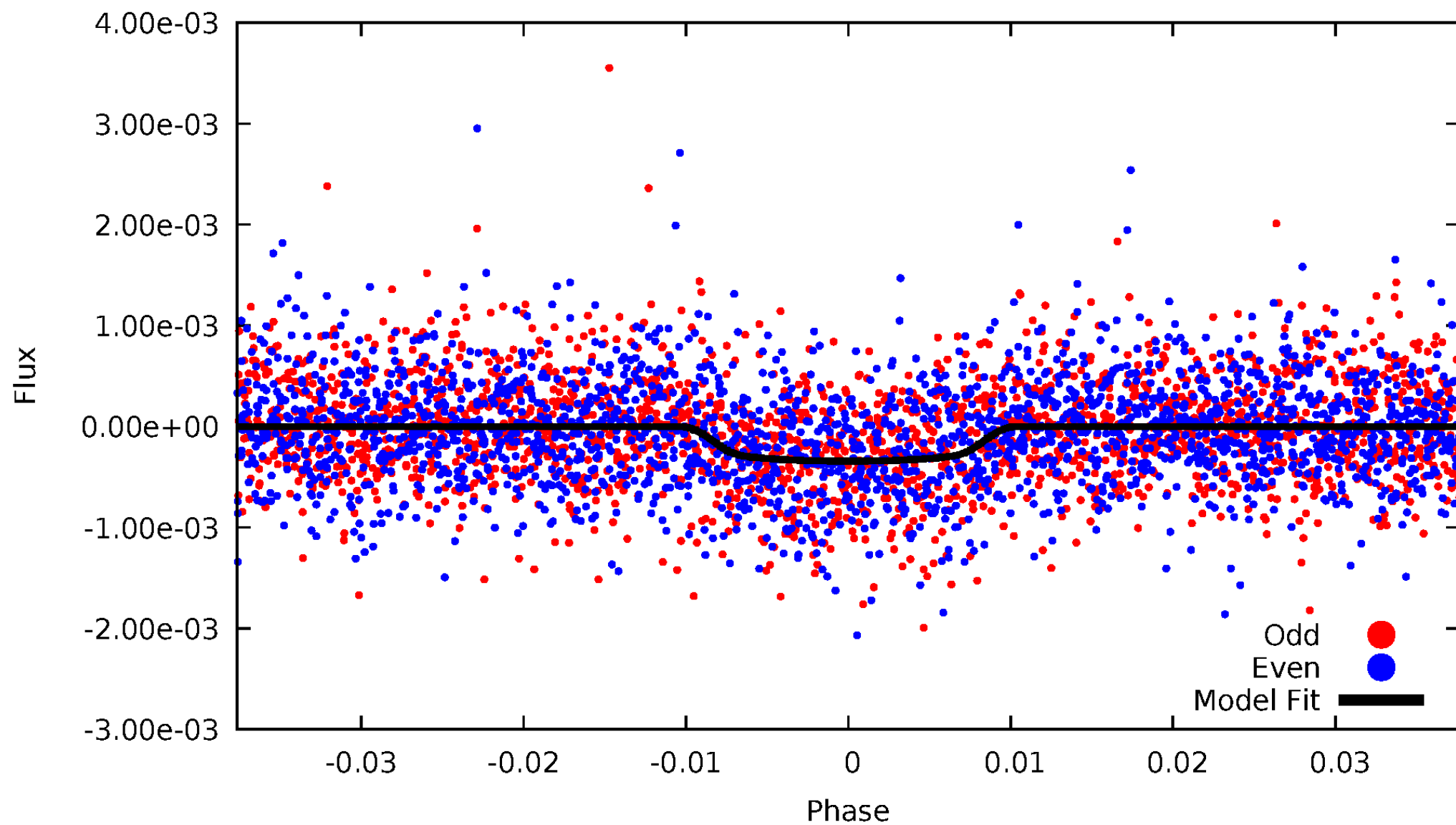


TCE 009996632-01



# DV Odd/Even

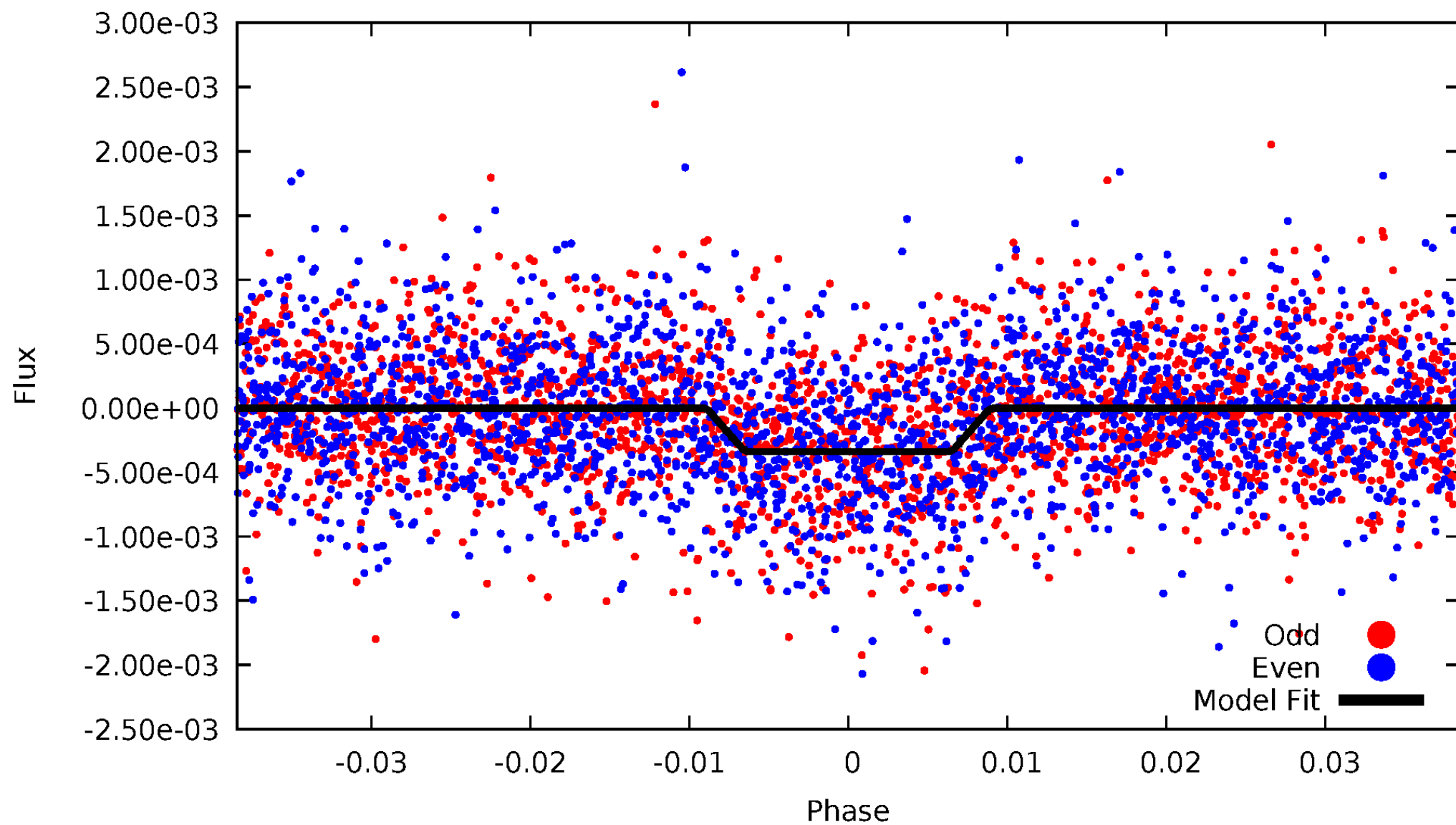
TCE 009996632-01





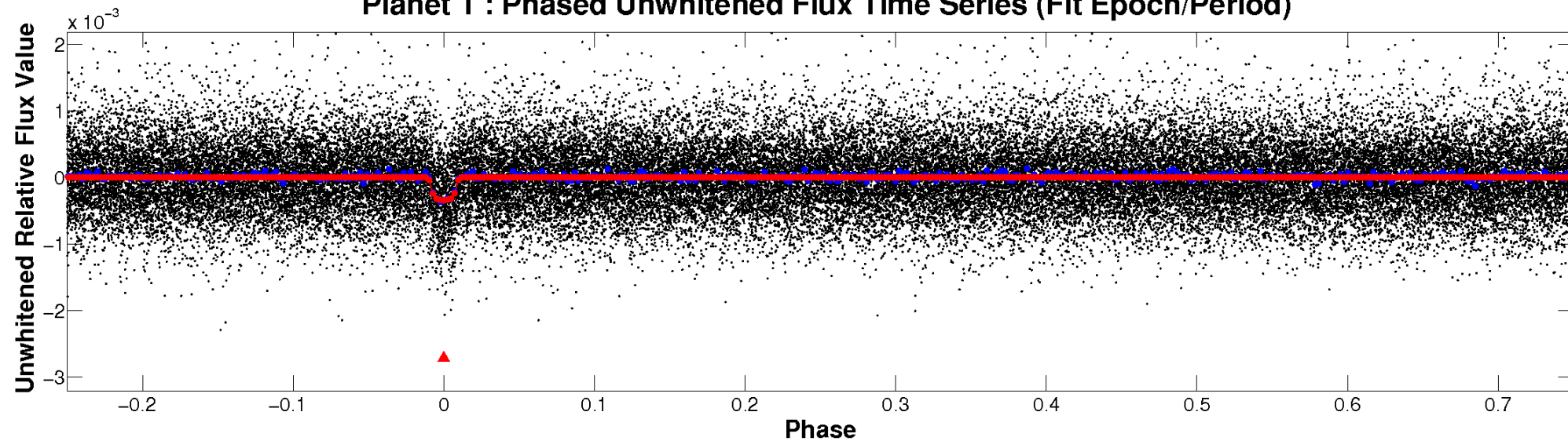
# ALT Odd/Even

TCE 009996632-01

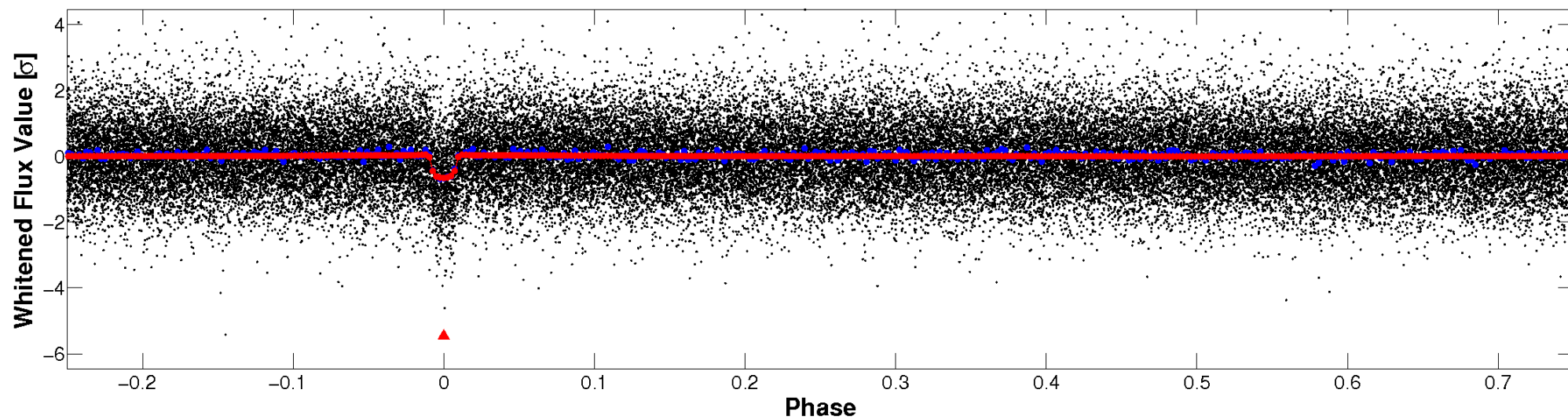


# Non-Whitened Vs. Whitened Light Curve

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

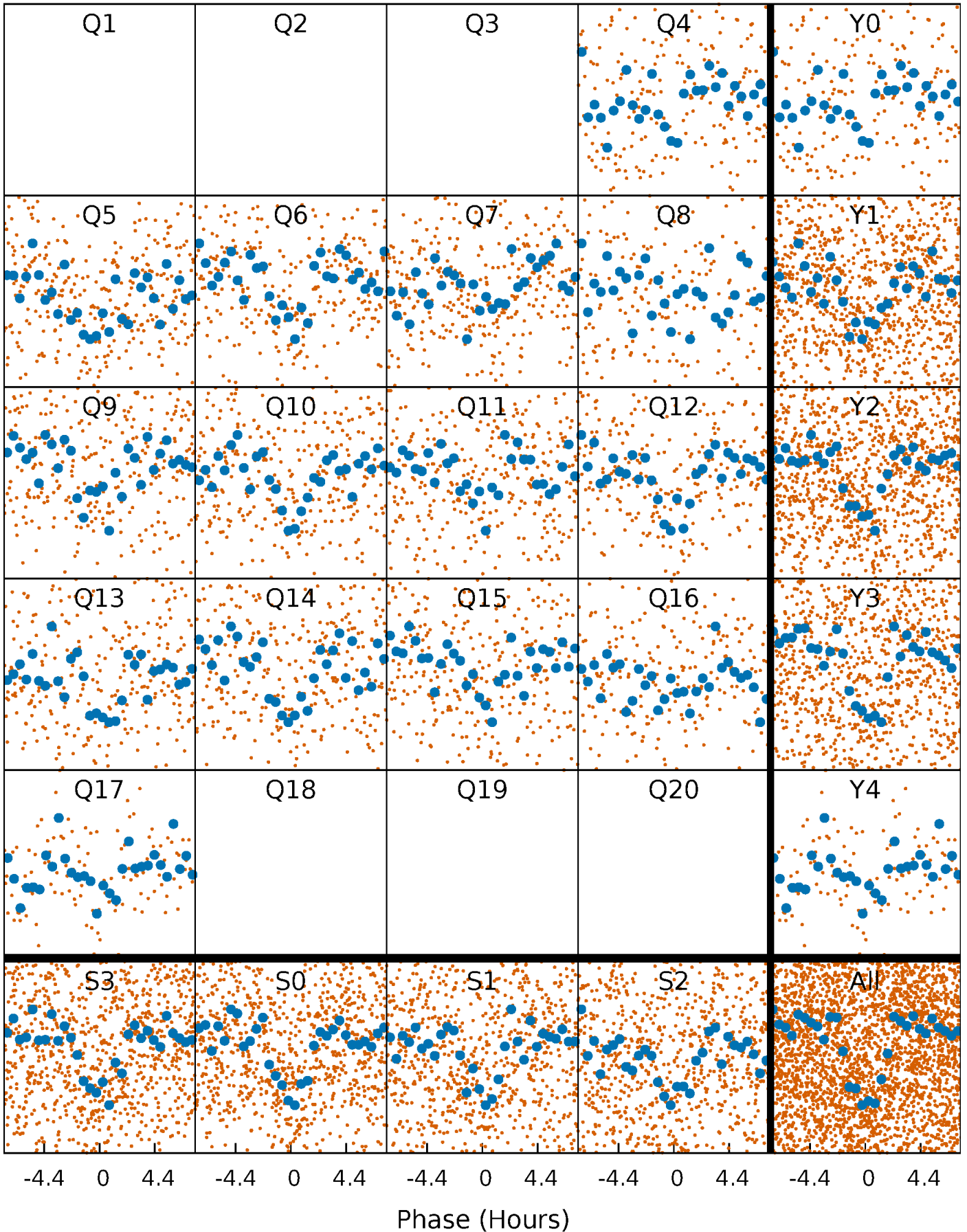


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

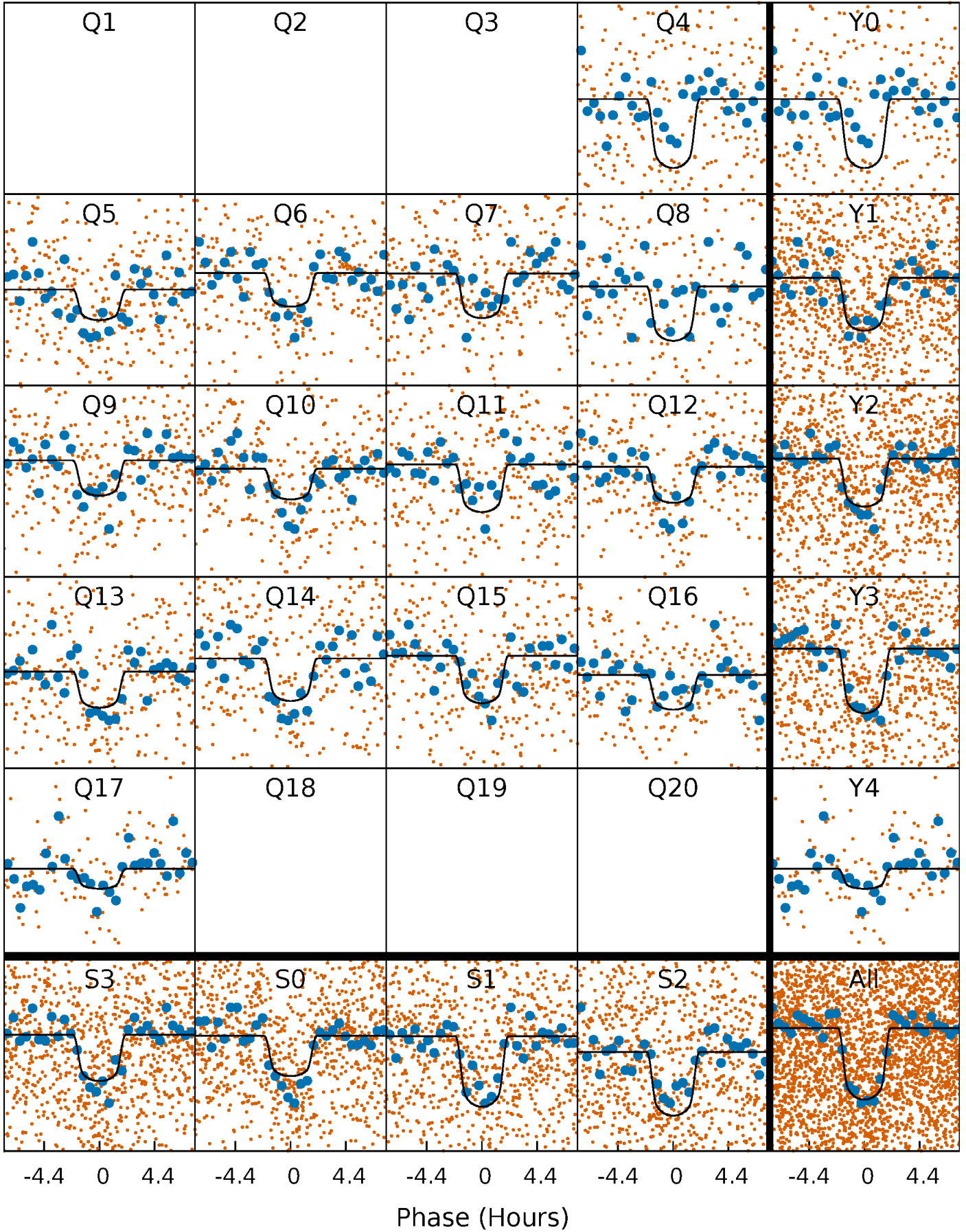
TCE 009996632-01   P= 8.443085 Days    $T_0=136.286765$  (BKJD)





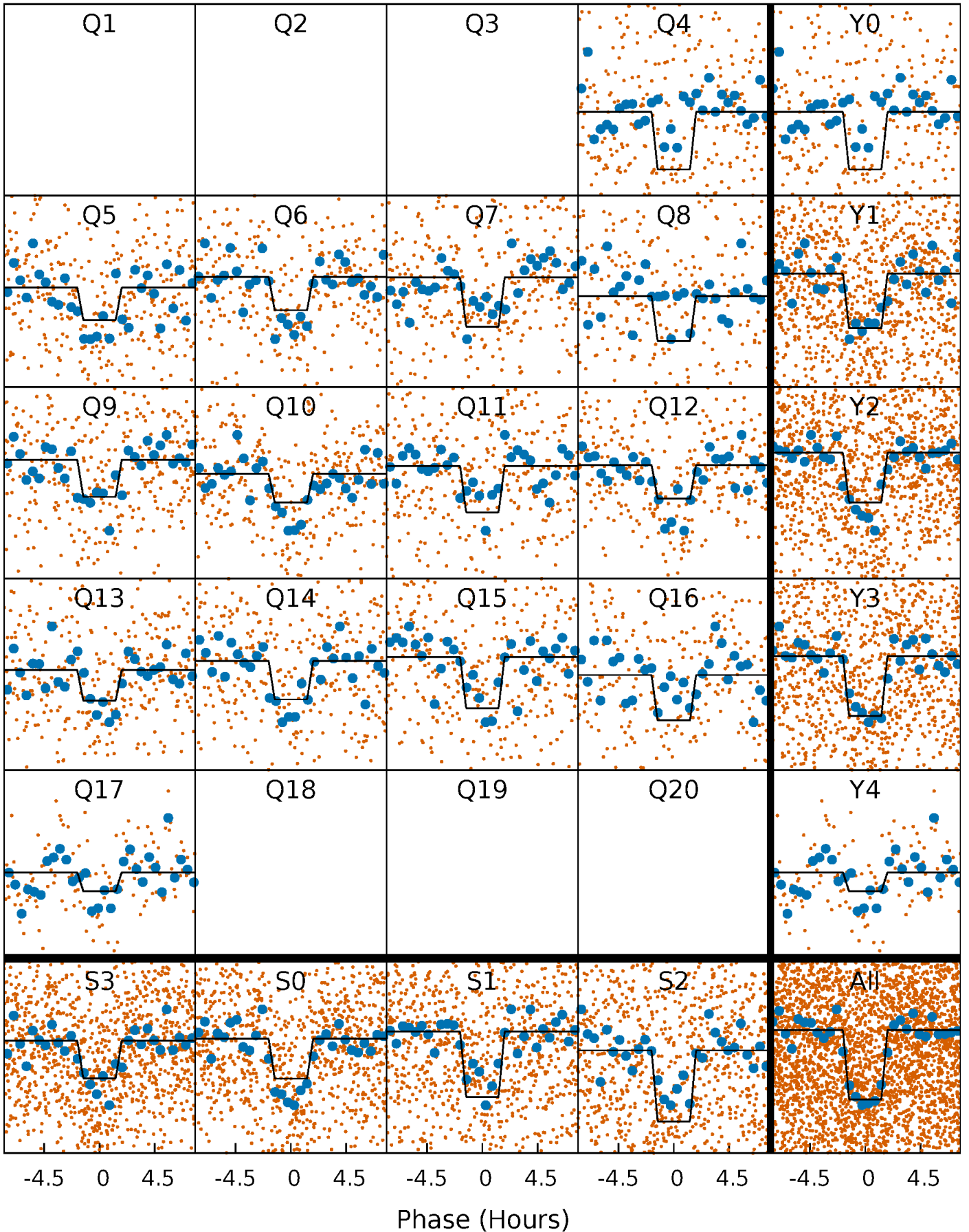
# DV Quarter-Phased Transit Curves

TCE 009996632-01   P= 8.443085 Days    $T_0=136.286765$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

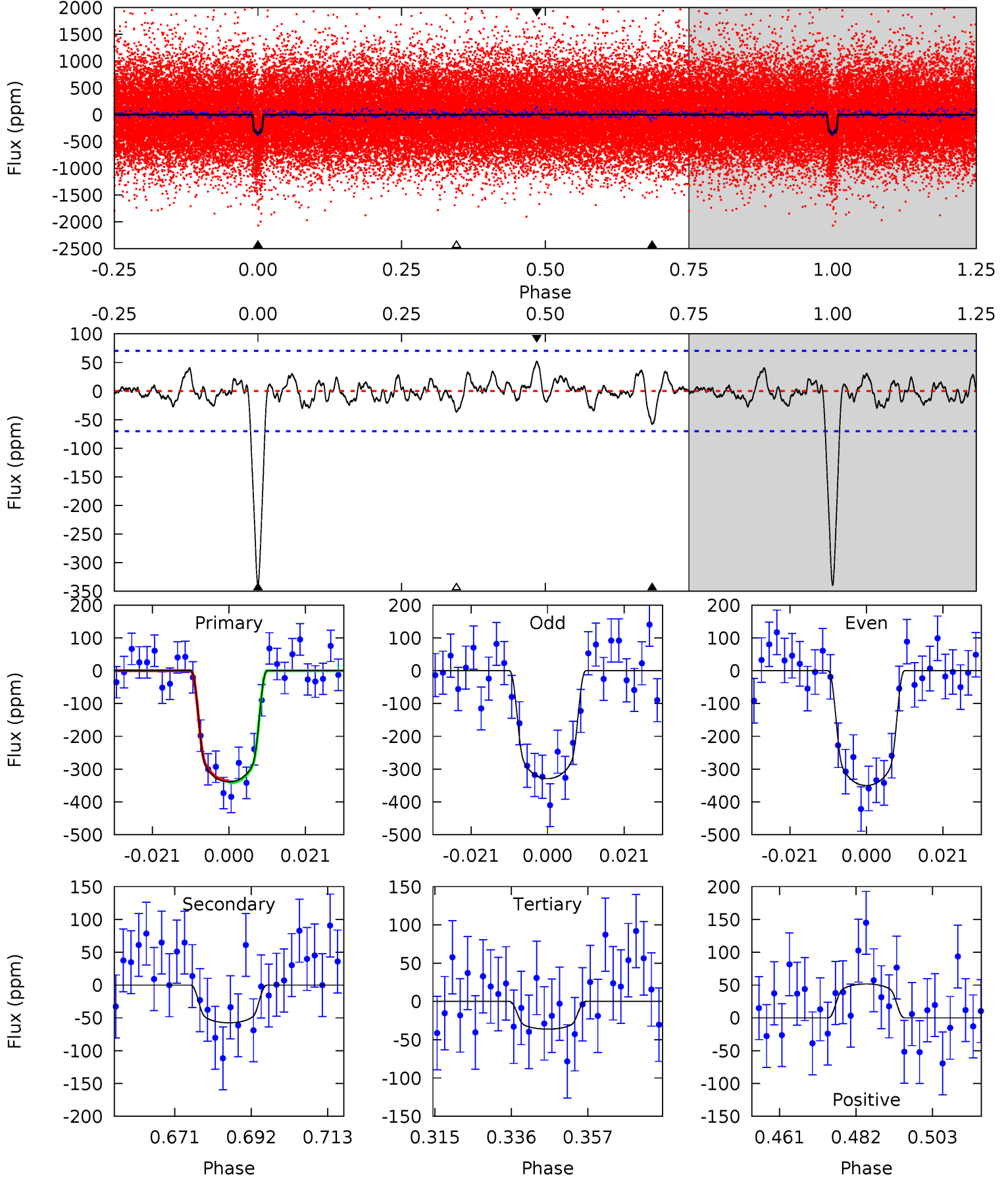
TCE 009996632-01 P= 8.443133 Days  $T_0=136.281319$  (BKJD)



# DV Model-Shift Uniqueness Test

009996632-01, P = 8.443085 Days, E = 136.286765 Days

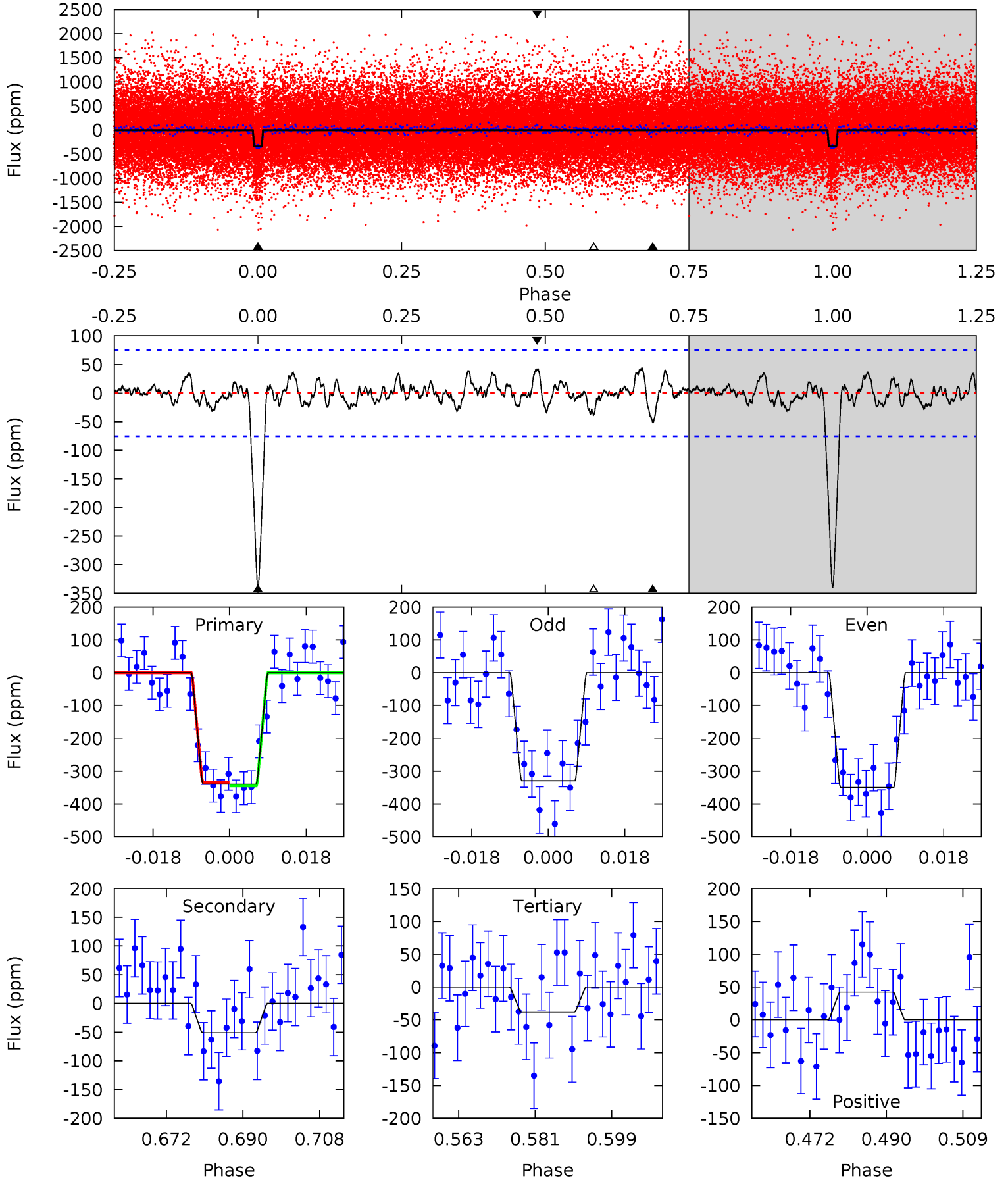
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.6	4.00	2.51	3.59	4.88	2.31	1.04	21.1	20.0	1.49	0.41	0.73	0.97	0.13	0.23



# Alt Model-Shift Uniqueness Test

009996632-01, P = 8.443133 Days, E = 136.281319 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
22.1	3.31	2.48	2.74	4.91	2.36	1.00	19.6	19.3	0.83	0.57	0.66	0.98	0.11	0.34



### Stellar Parameters For KIC 009996632

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6081^{+191}_{-255}$	$4.468^{+0.054}_{-0.229}$	$0.070^{+0.250}_{-0.300}$	$1.023^{+0.345}_{-0.115}$	$1.122^{+0.147}_{-0.147}$	$1.476^{+0.347}_{-0.850}$
	+3%/-4%	+1%/-5%	+357%/-429%	+34%/-11%	+13%/-13%	+24%/-58%
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 009996632-01 / KOI 2621.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-58 \pm 14$	$2.36^{+0.62}_{-0.47}$	$1338^{+100}_{-81}$	$4011^{+397}_{-308}$	$39^{+27}_{-15}$
Alt.	$-51 \pm 15$	$2.18^{+0.54}_{-0.51}$	$1335^{+110}_{-68}$	$4059^{+457}_{-368}$	$41^{+30}_{-19}$

$T_{max}$  = 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

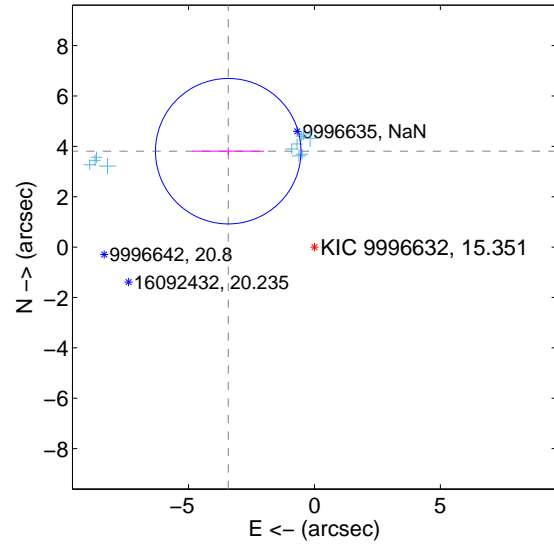
Supplemental centroid analysis for 009996632-01. Kepler magnitude: 15.35. Transit SNR 17.63

There are 11 quarters with good PRF difference image offsets

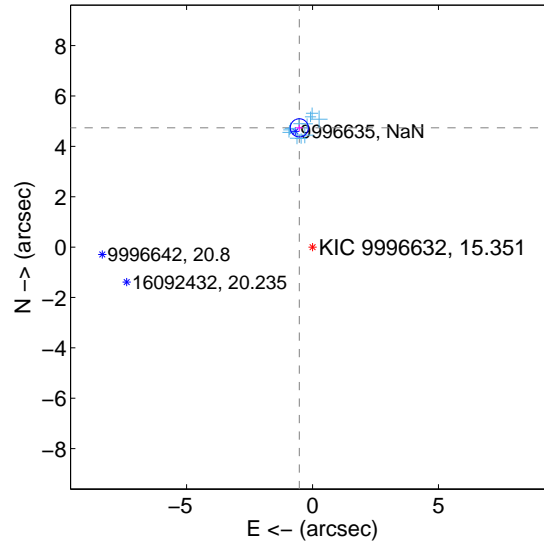
The direct PRF centroid is offset from the target star catalog position by about 0.87 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.120 \pm 0.962$	$5.32$	$3.423 \pm 1.429$	$3.808 \pm 0.160$
PRF-fit source offset from KIC position	$4.764 \pm 0.120$	$39.68$	$0.524 \pm 0.137$	$4.735 \pm 0.120$
photometric centroid source offset	$3.65 \pm 0.31$	$11.79$	$-0.38 \pm 0.53$	$3.63 \pm 0.31$

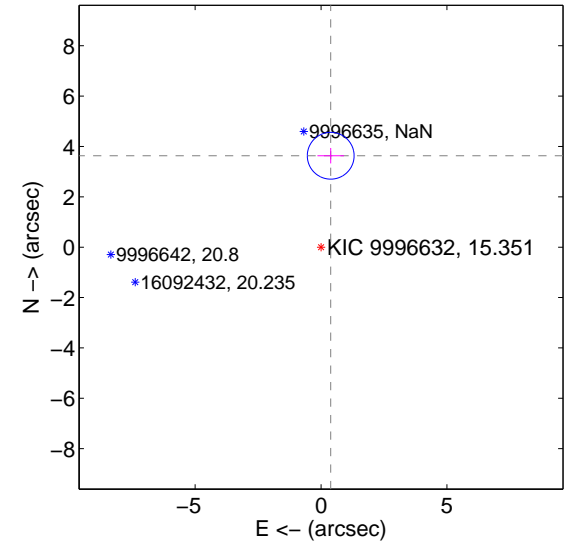
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

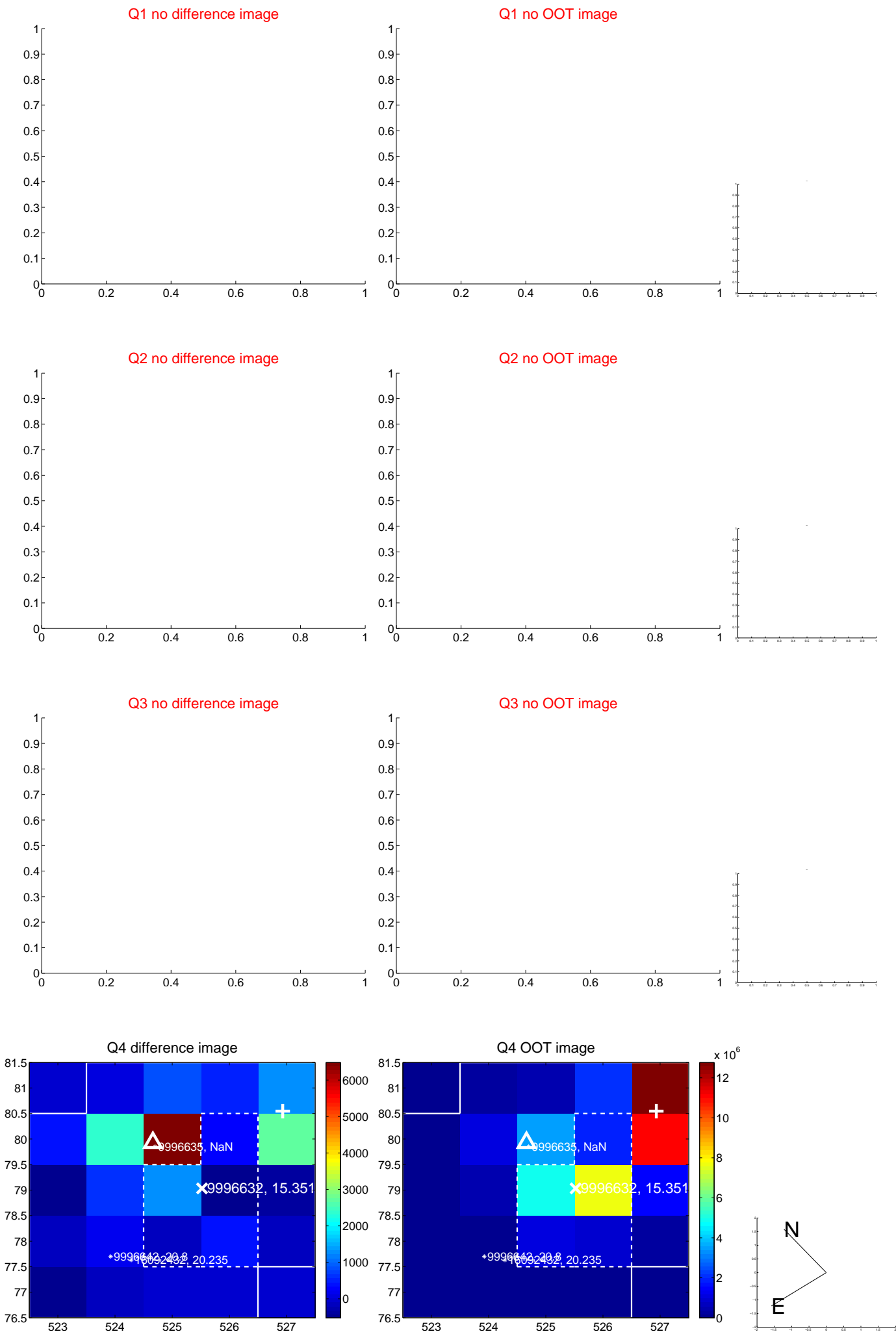


offset from photometric centroids

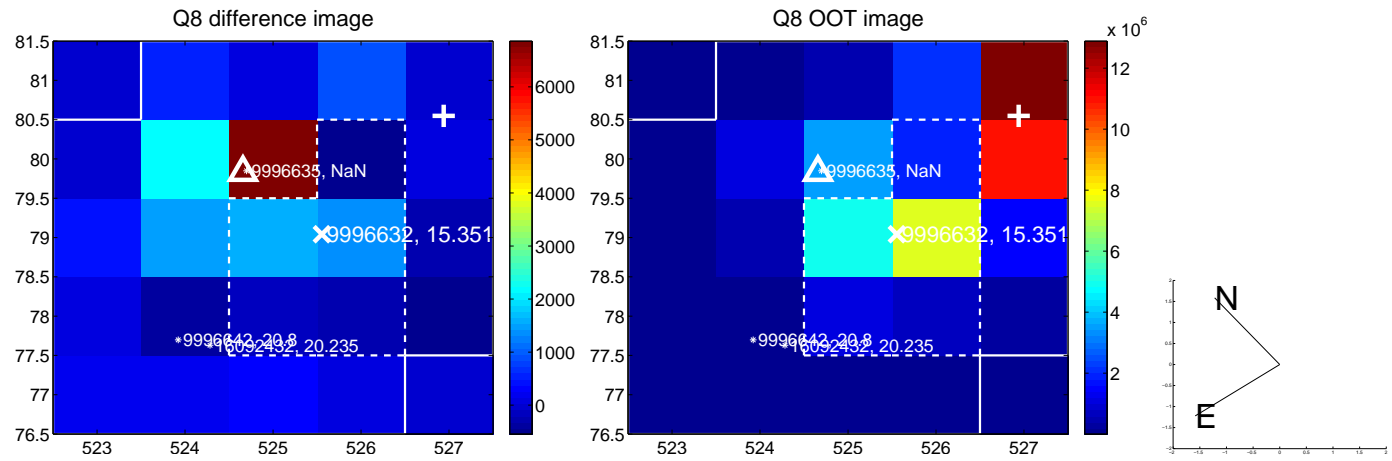
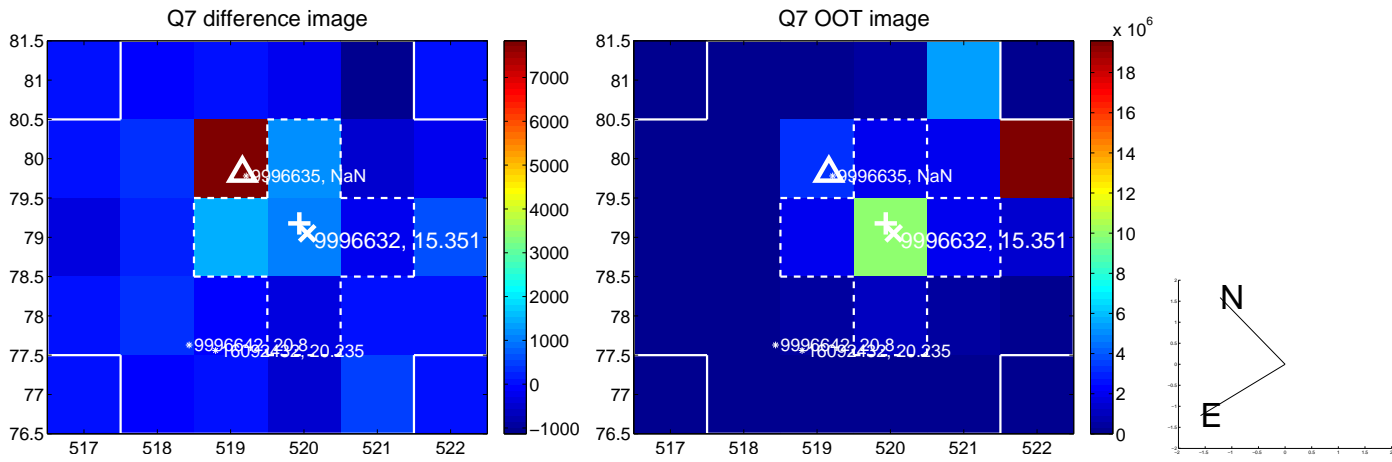
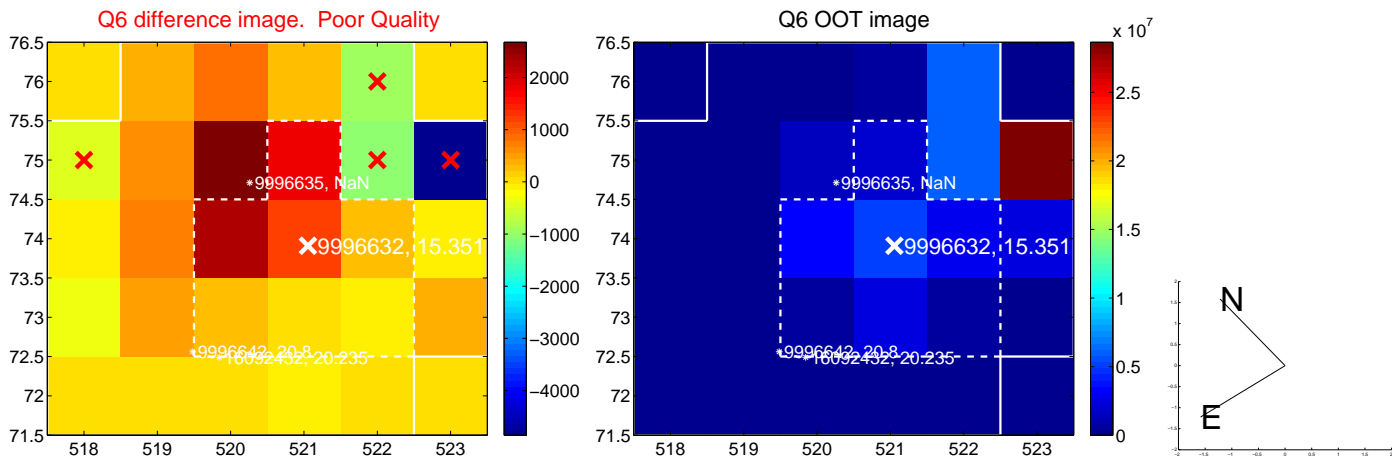
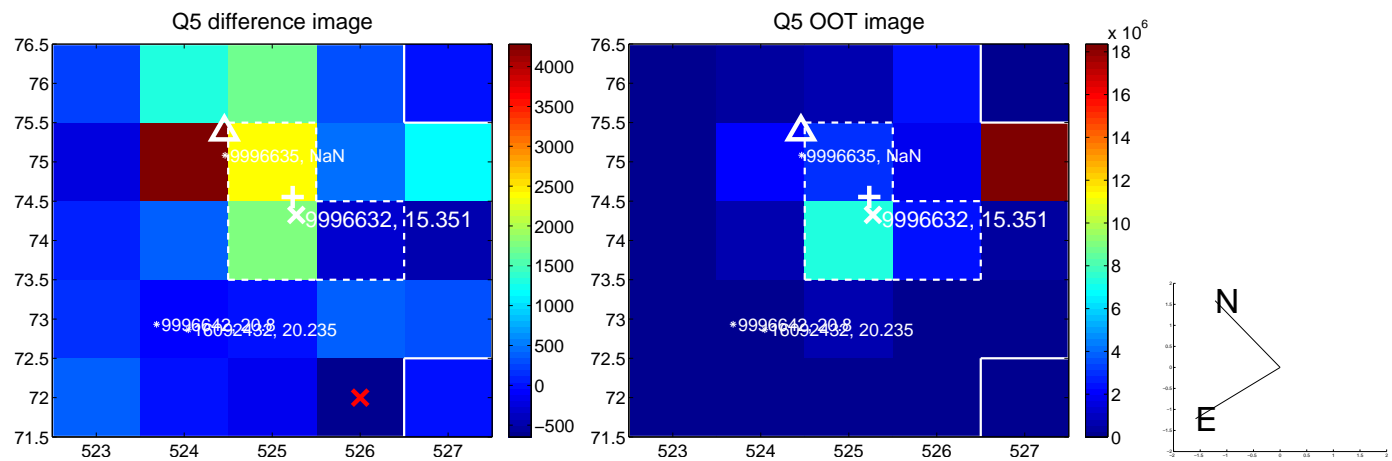


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

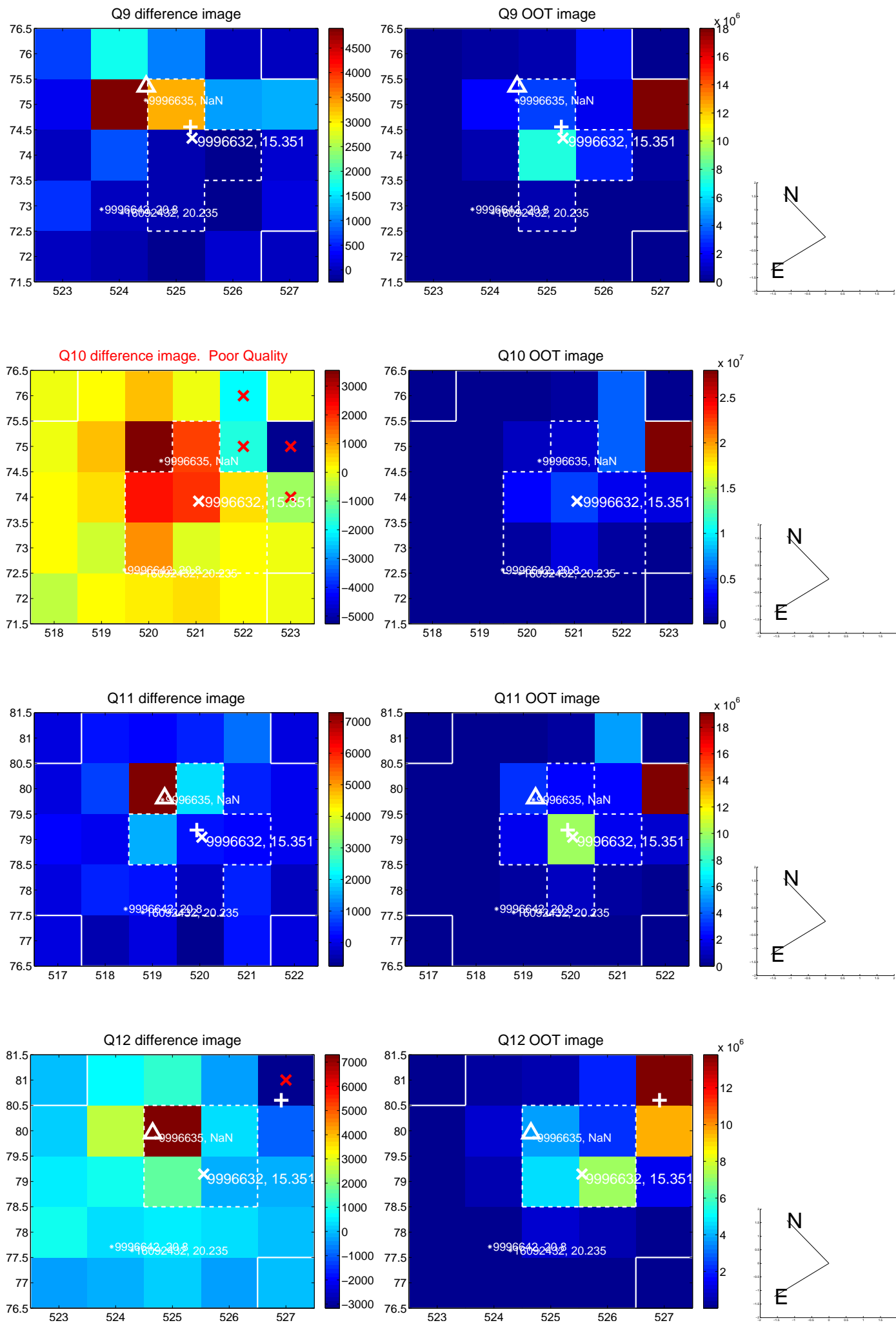
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



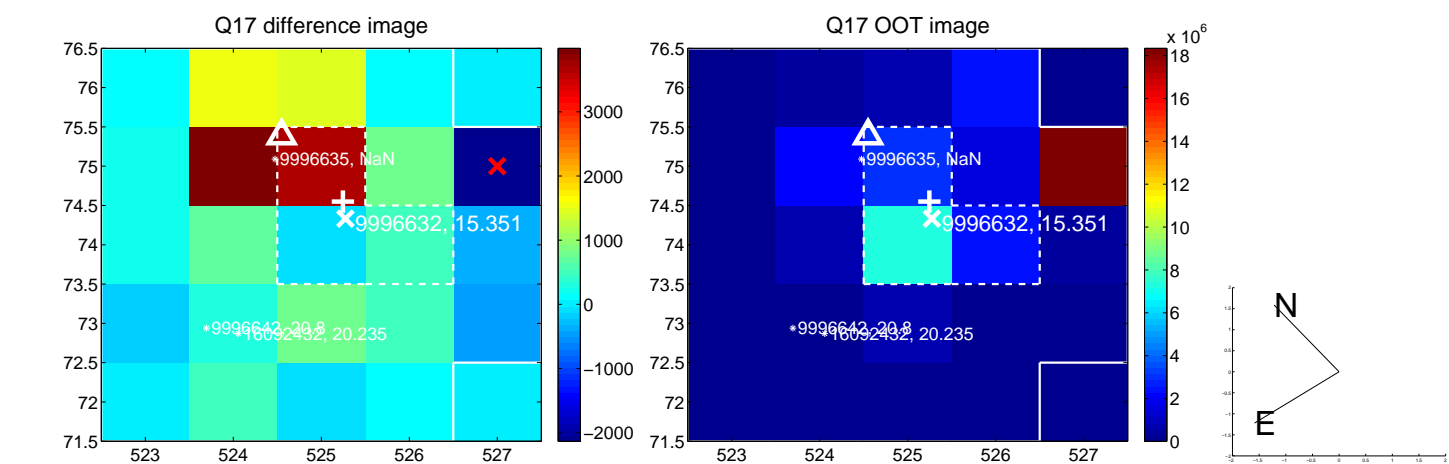
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



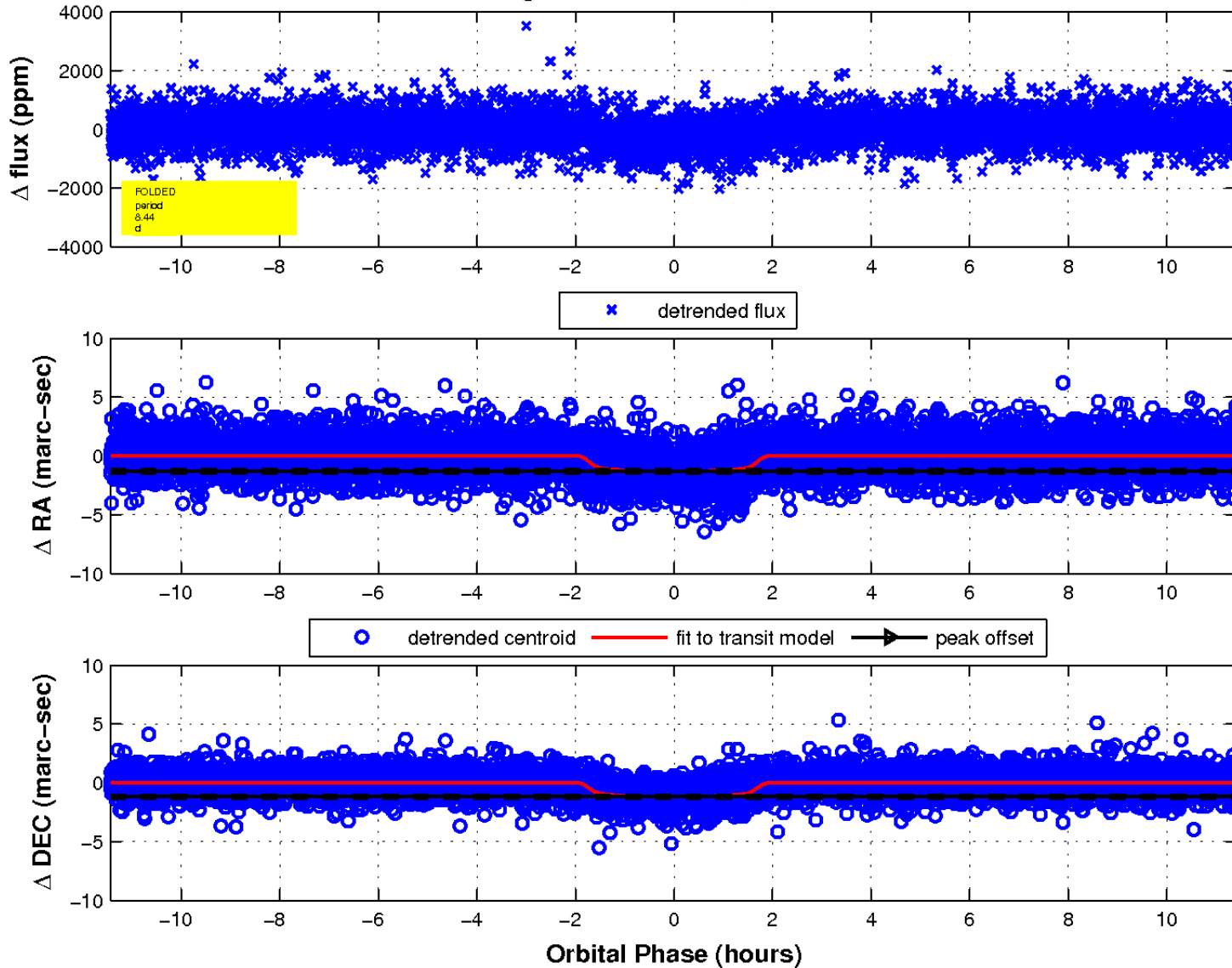




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

