

# KIC 008176653

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008176653-01	OBS	1016.01	2.866687	134.064963	674.9	1.027	36.5	47.1	0.76	5238	2.43	282.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008176653-01	OBS	FP	0.00	0	0	1	0	CENT_UNRESOLVED_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.

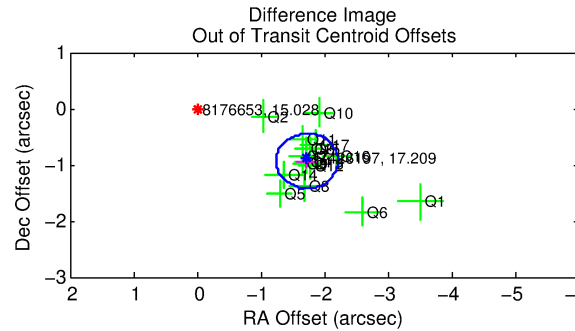
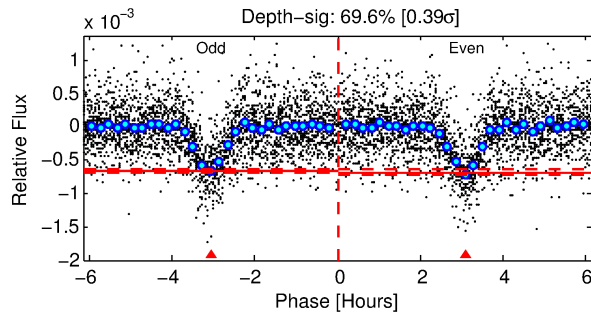
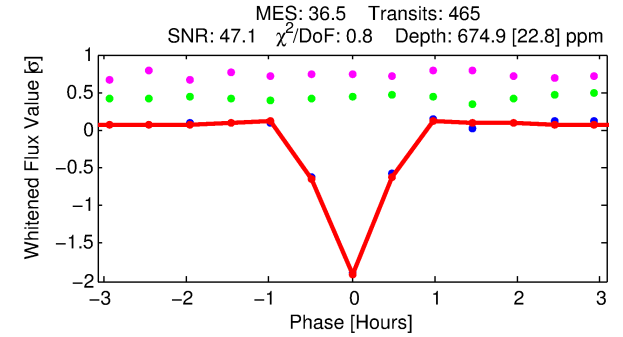
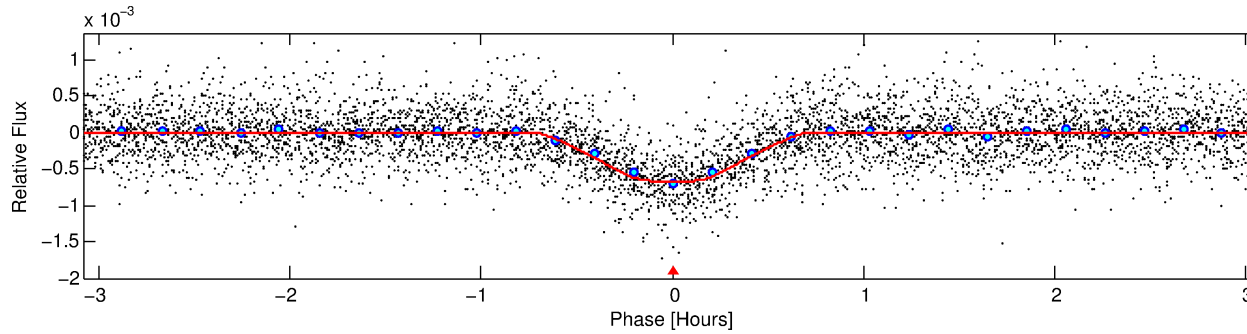
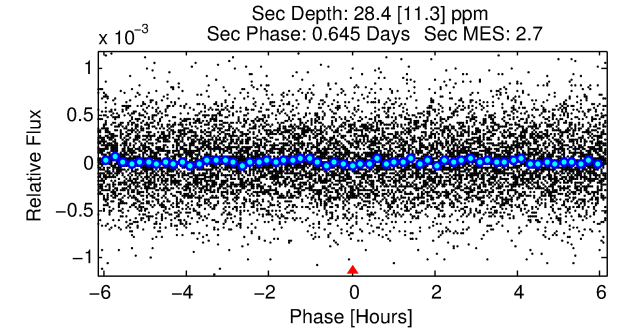
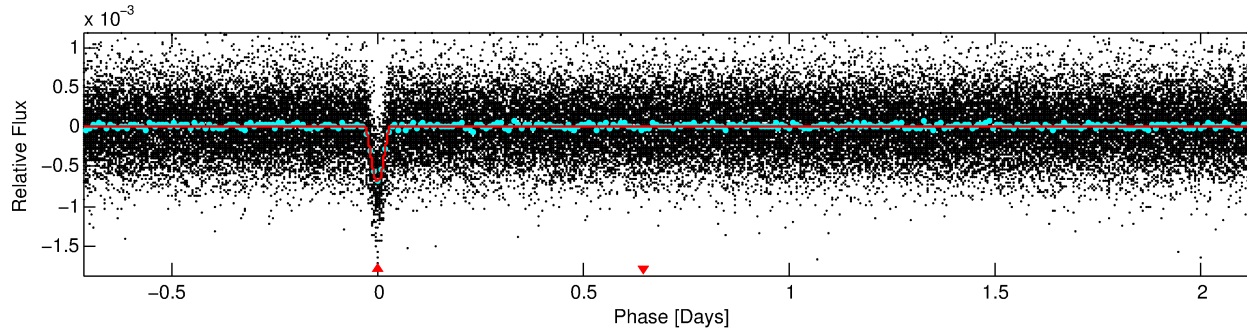
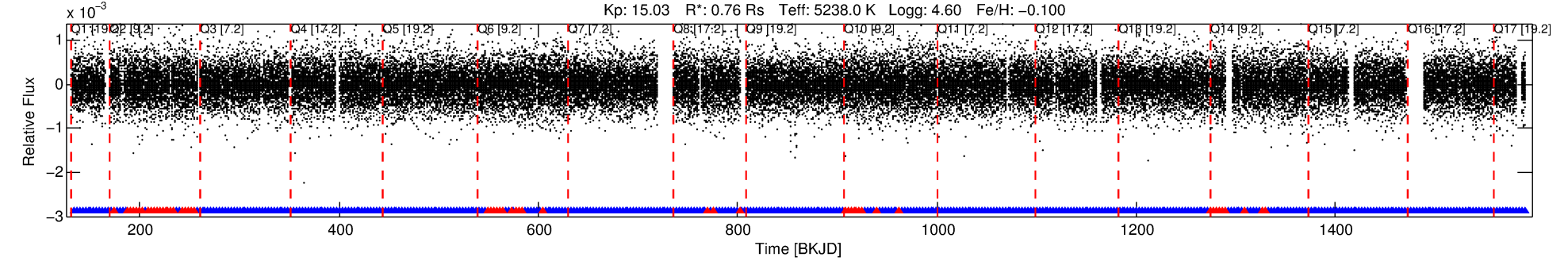
## Ephemeris Match Information For 008176653-01

No Significant Match Found

# DV One-Page Summary

KIC: 8176653 Candidate: 1 of 1 Period: 2.867 d  
KOI: K01016.01 Corr: 0.947

Kp: 15.03 R\*: 0.76 Rs Teff: 5238.0 K Logg: 4.60 Fe/H: -0.100



## DV Fit Results:

Period = 2.86669 [0.00000] d  
Epoch = 134.0650 [0.0004] BKJD  
Rp/R\* = 0.0291 [0.0044]  
a/R\* = 10.67 [6.35]  
b = 0.90 [0.13]  
Seff = 282.56 [61.95]  
Teq = 1045 [57] K  
Rp = 2.43 [0.53] Re  
a = 0.0373 [0.0048] AU  
Ag = 3.70 [1.96] [1.38σ]  
Teffp = 2242 [287] K [4.08σ]

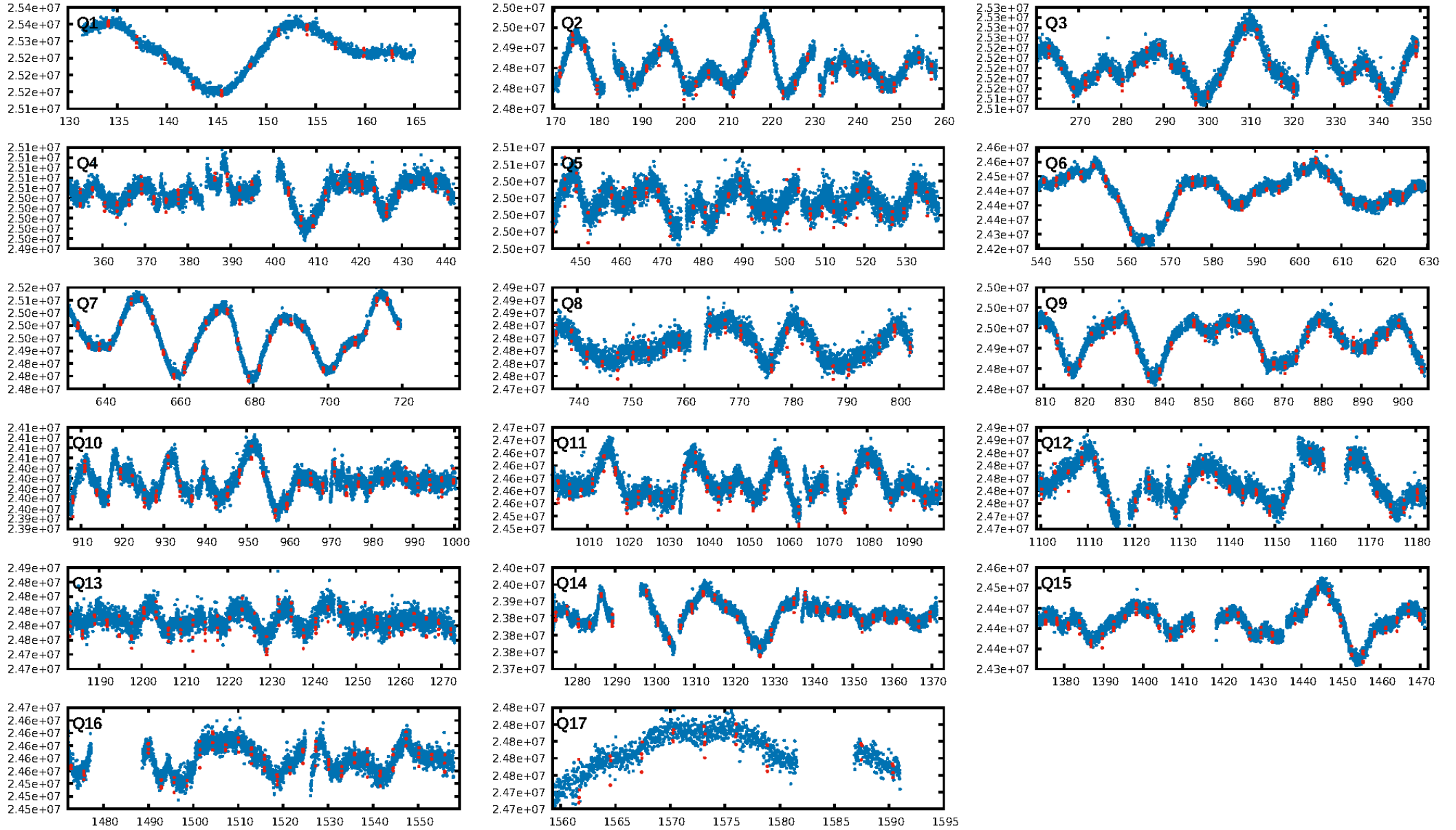
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.25e-275  
RollingBand-fgt: 0.88 [391/445]  
GhostDiagnostic-chr: 3.348  
Centroid-sig: 0.0%  
Centroid-so: 1.672 arcsec [5.95σ]  
OotOffset-rm: 1.965 arcsec [12.13σ]  
KicOffset-rm: 1.811 arcsec [10.81σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

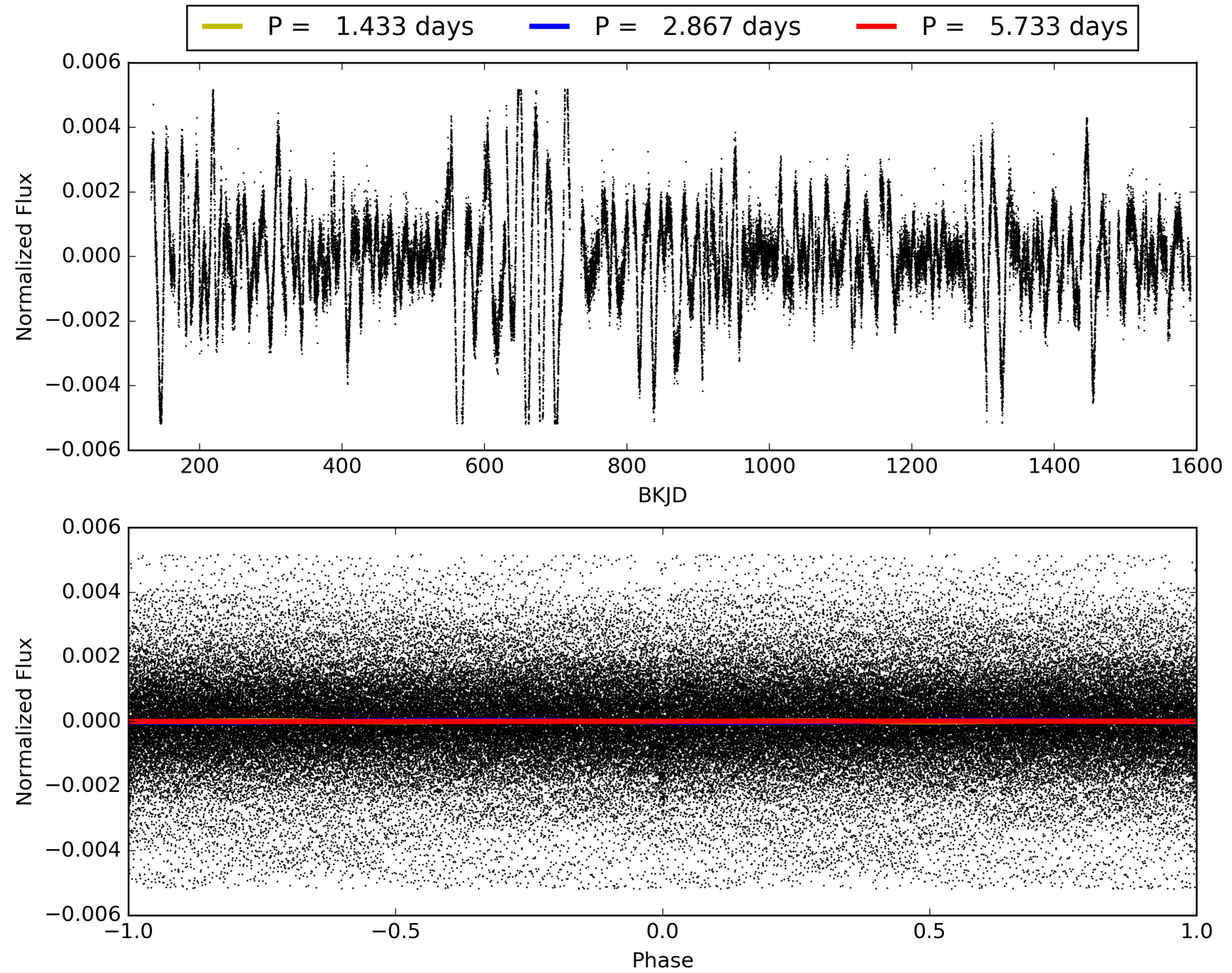
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:51:01 Z

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

# TCE 008176653-01, PDC Light Curves

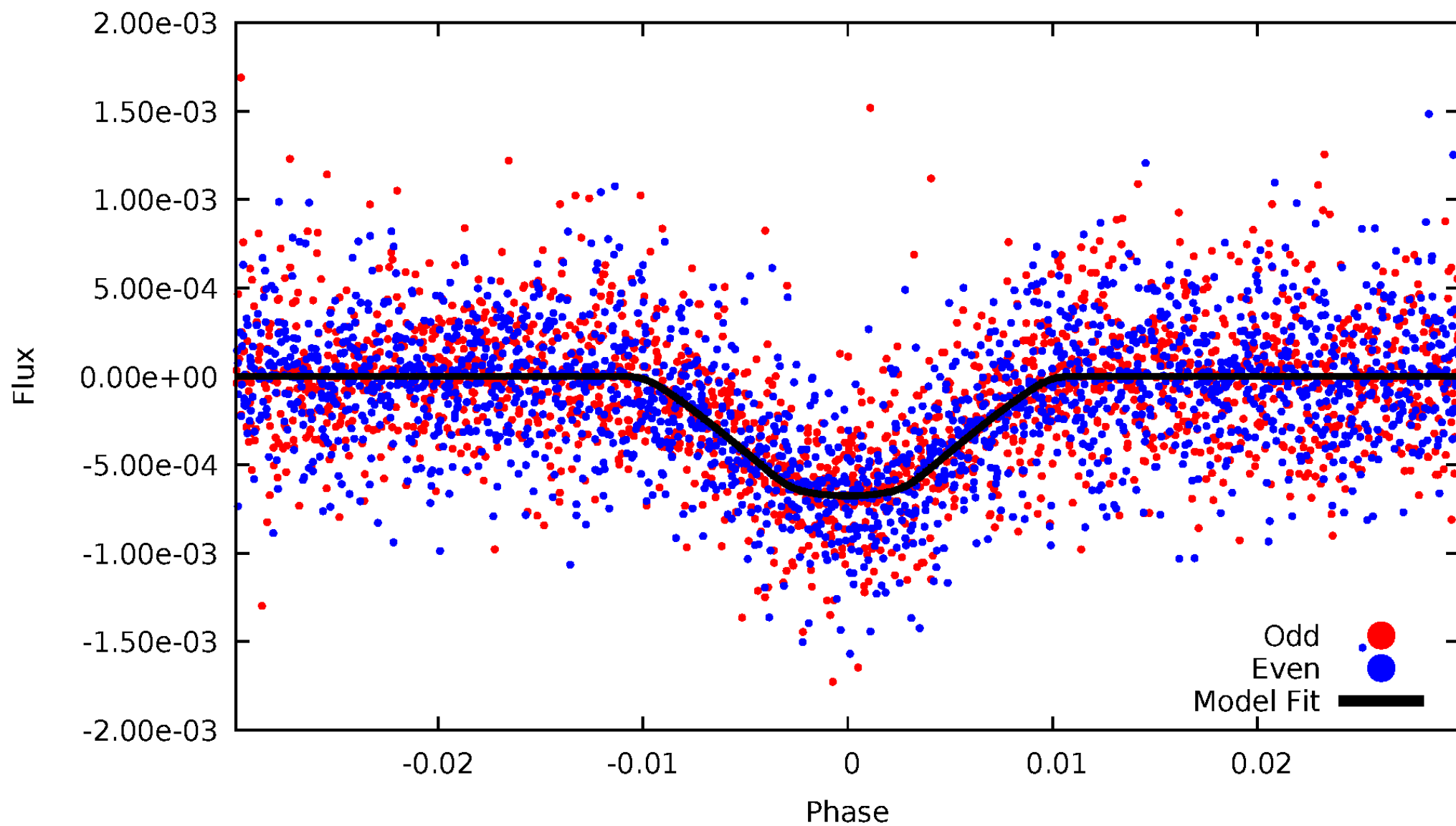


# TCE 008176653-01



# DV Odd/Even

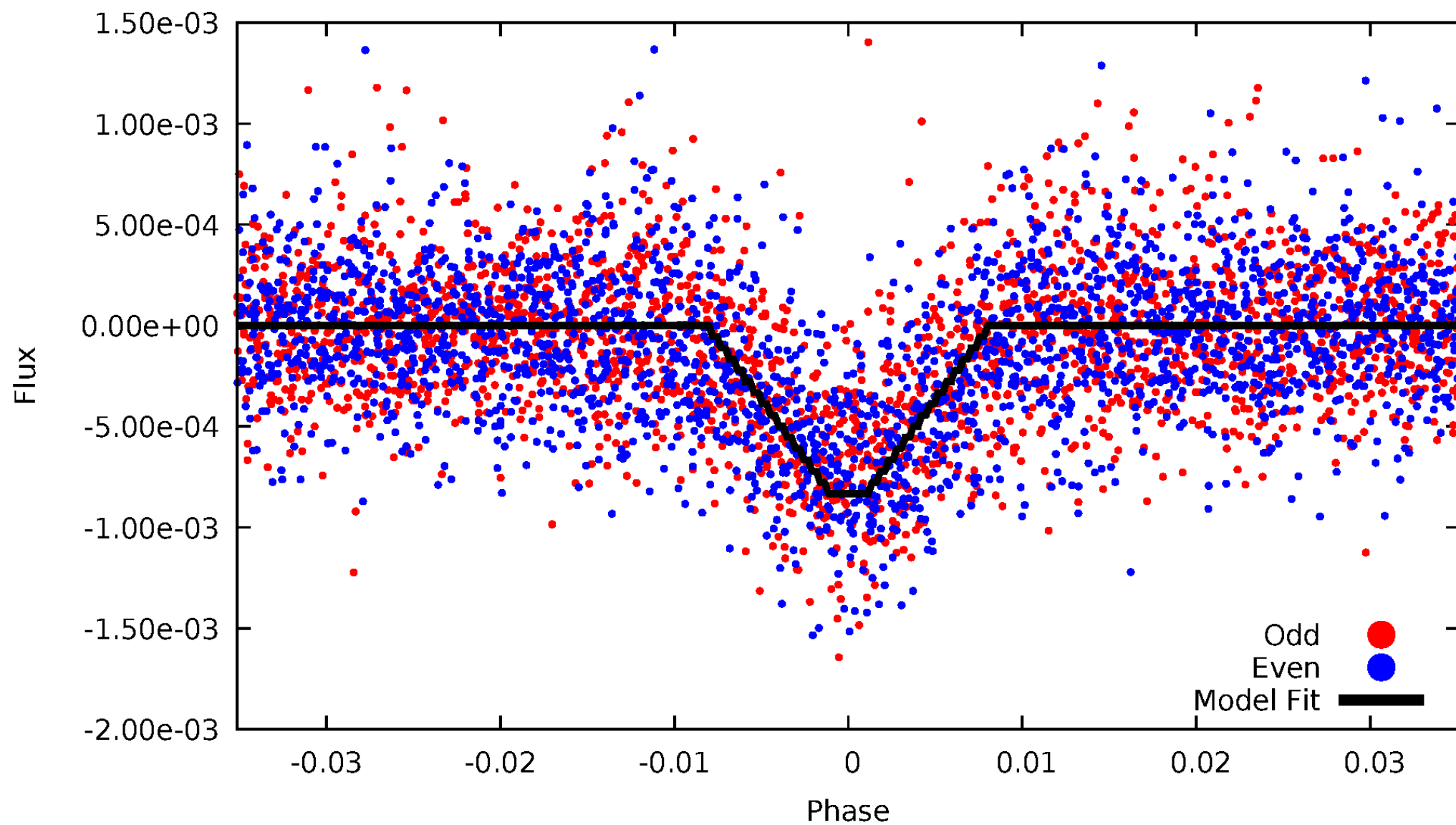
TCE 008176653-01





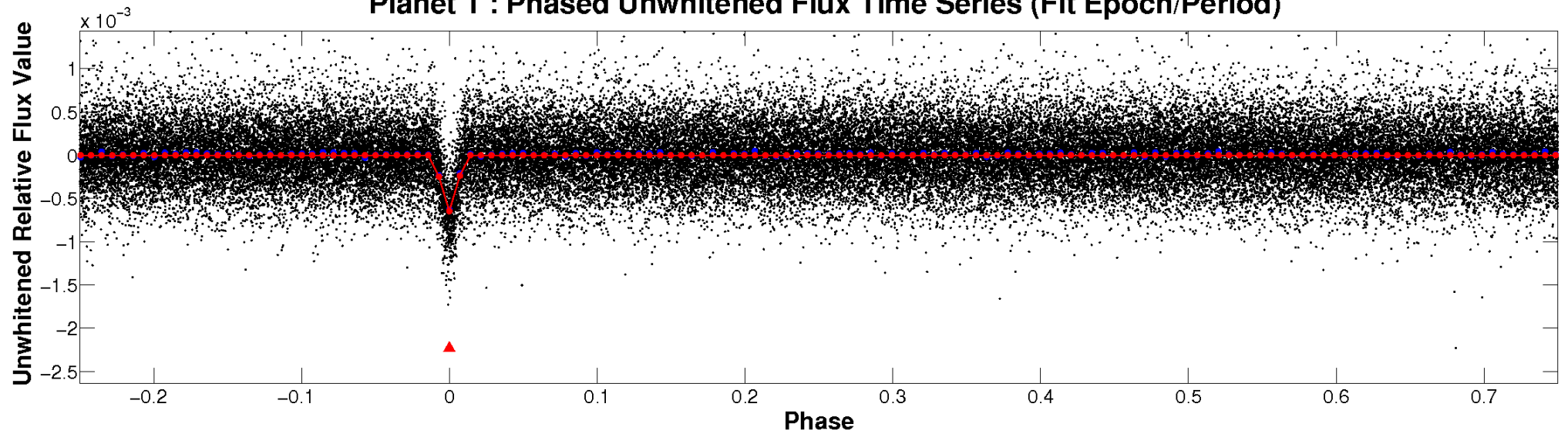
# ALT Odd/Even

TCE 008176653-01

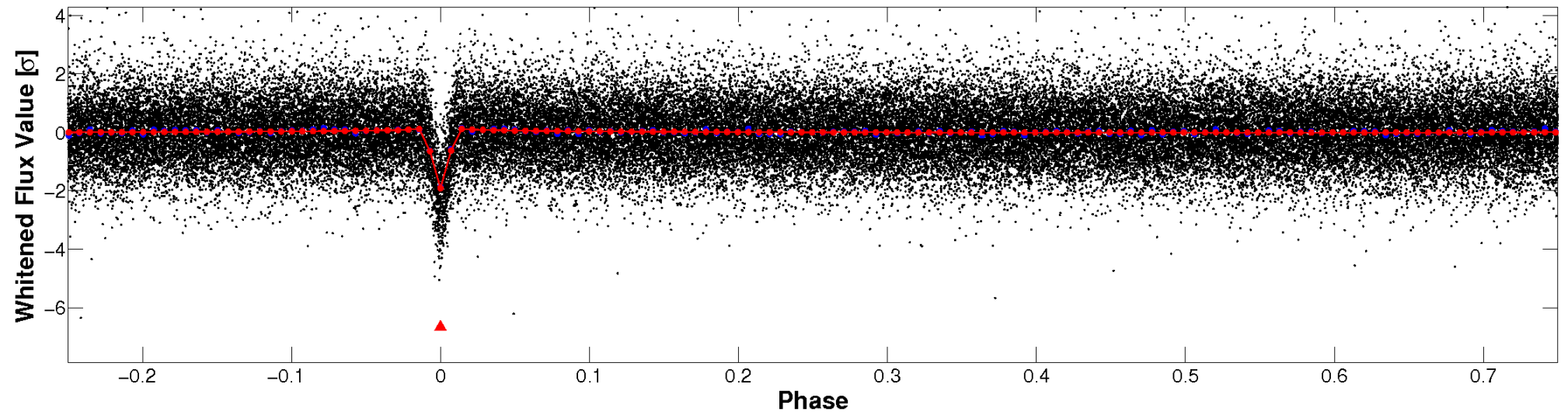


# Non-Whitened Vs. Whitened Light Curve

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

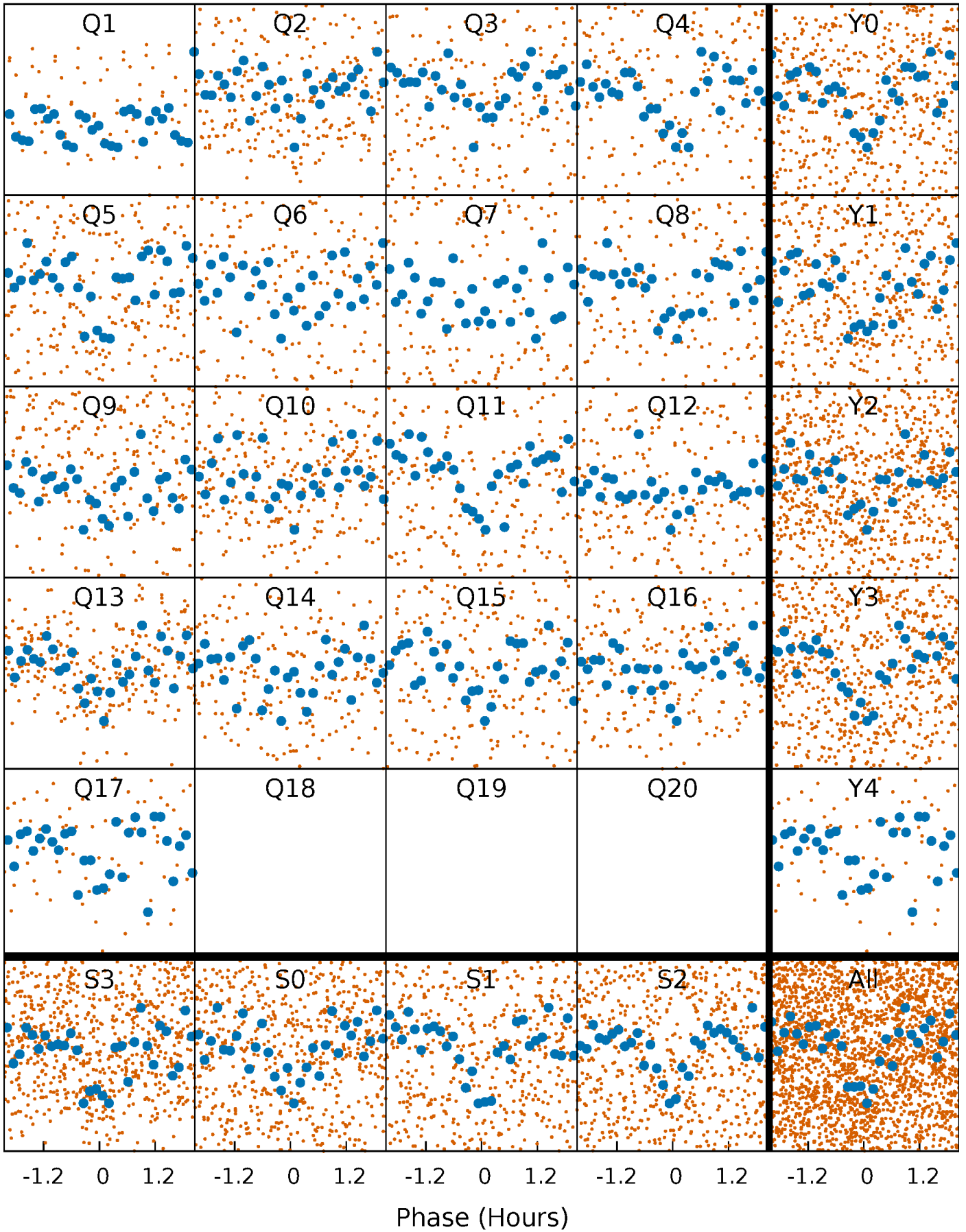


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

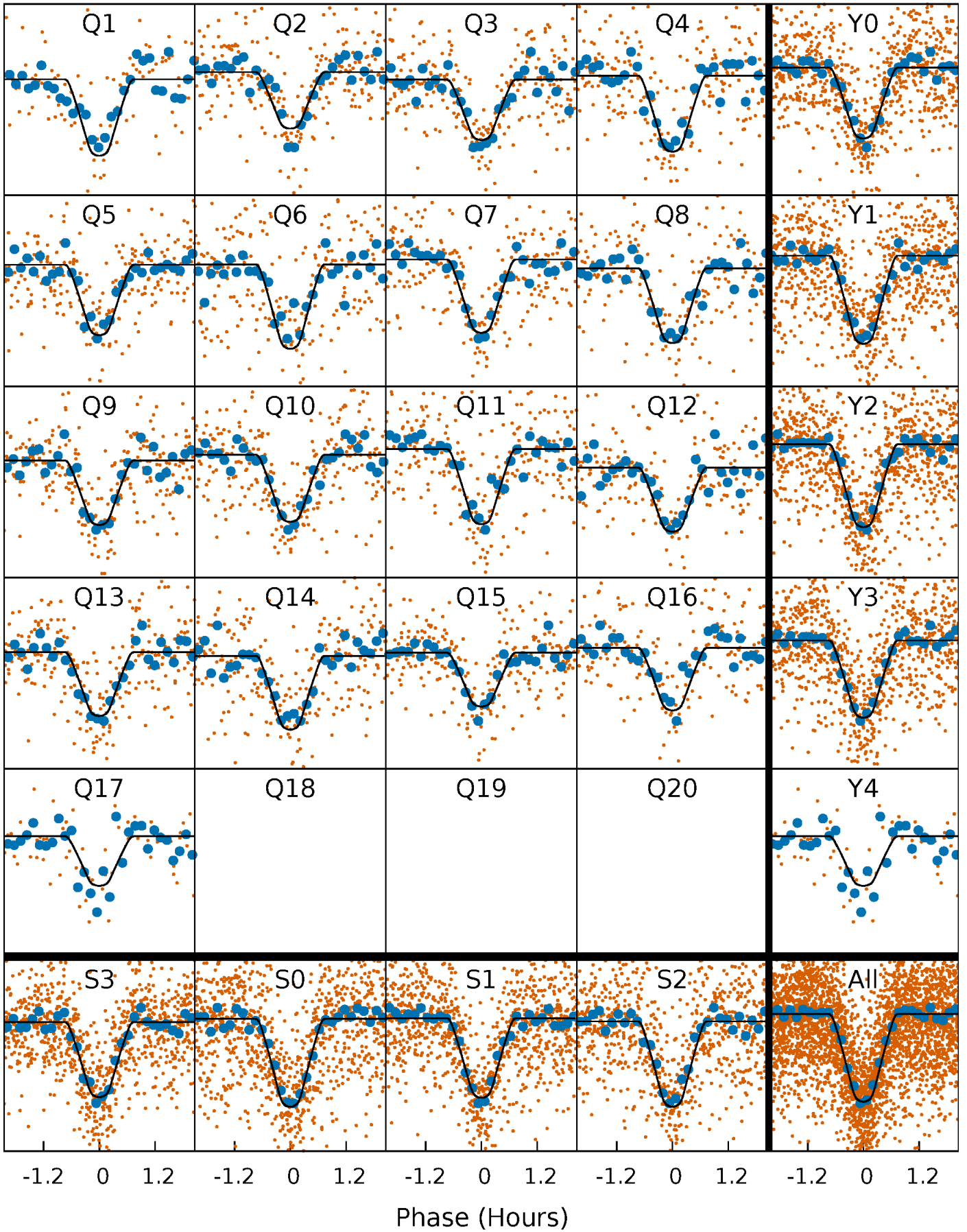
TCE 008176653-01 P= 2.866687 Days  $T_0=134.064963$  (BKJD)





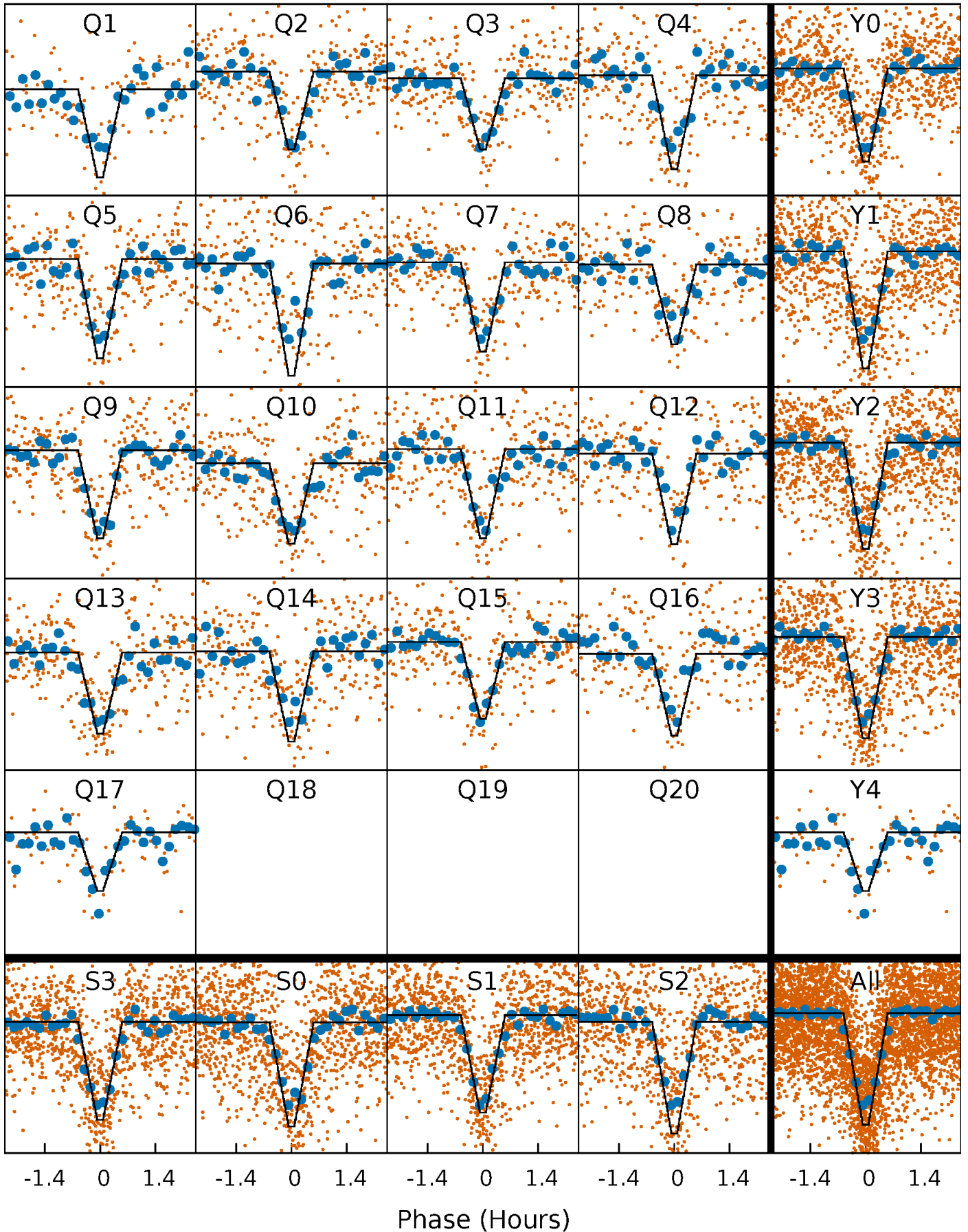
# DV Quarter-Phased Transit Curves

TCE 008176653-01 P= 2.866687 Days  $T_0=134.064963$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

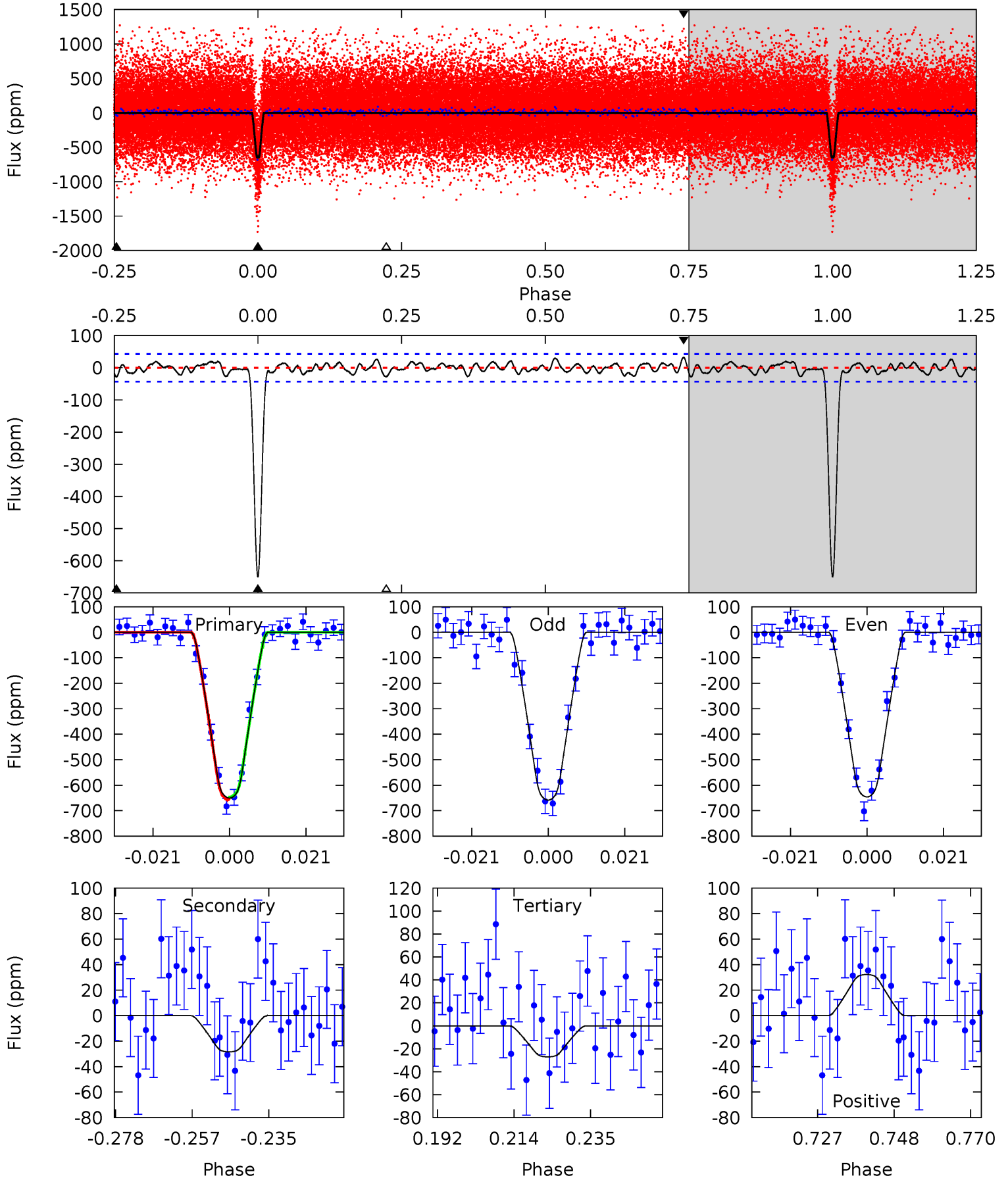
TCE 008176653-01 P= 2.866685 Days  $T_0=134.065140$  (BKJD)



# DV Model-Shift Uniqueness Test

008176653-01, P = 2.866687 Days, E = 131.198276 Days

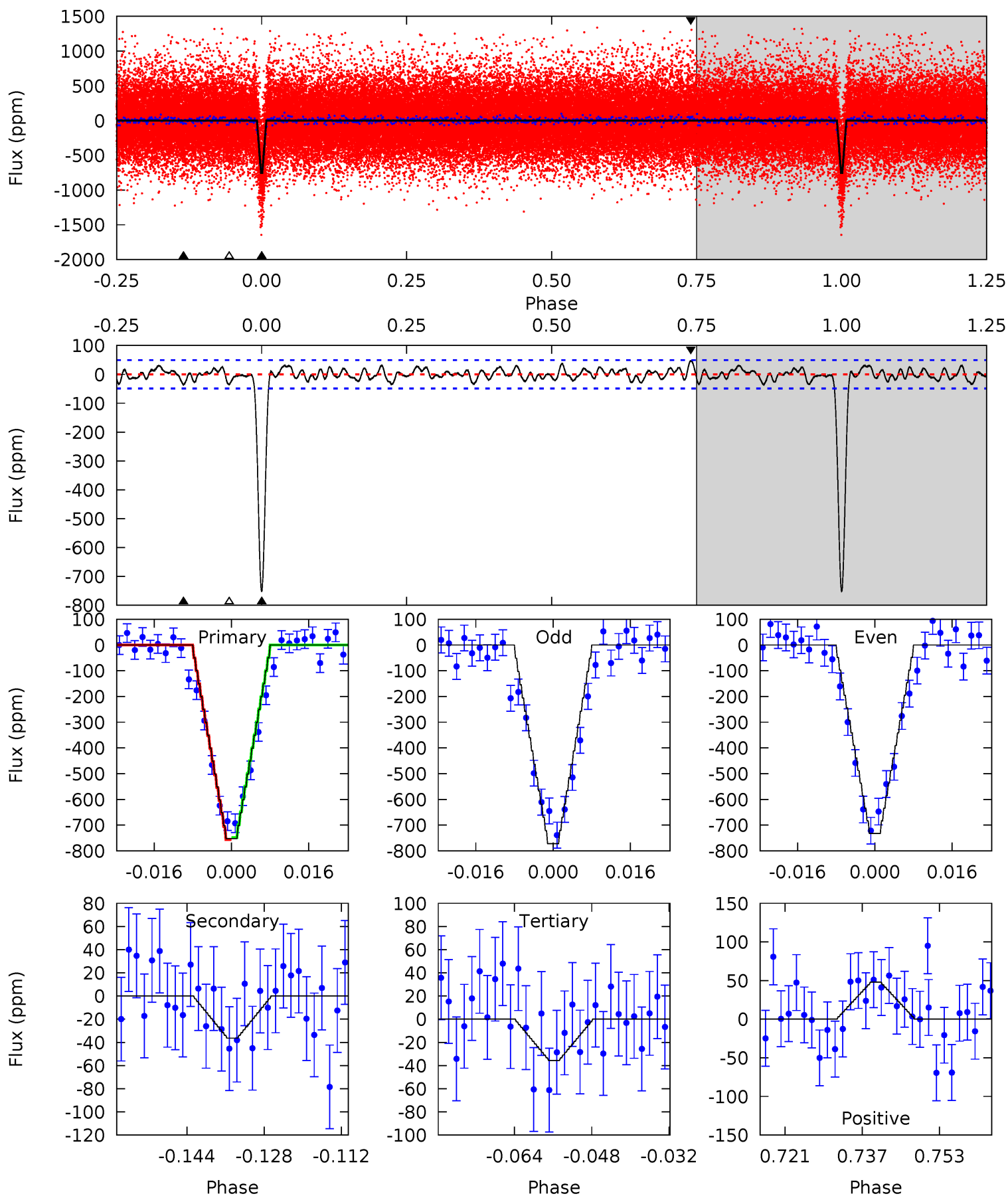
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.2	3.24	3.09	3.68	4.88	2.30	1.36	71.1	70.5	0.15	-0.44	0.72	0.98	0.05	0.56



# Alt Model-Shift Uniqueness Test

008176653-01, P = 2.866685 Days, E = 131.198455 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
75.8	3.66	3.59	4.82	4.94	2.41	1.54	72.2	70.9	0.08	-1.15	2.02	0.97	0.06	0.38



### Stellar Parameters For KIC 008176653

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5238^{+158}_{-158}$	$4.598^{+0.032}_{-0.097}$	$-0.100^{+0.300}_{-0.300}$	$0.764^{+0.122}_{-0.056}$	$0.854^{+0.069}_{-0.095}$	$2.693^{+0.464}_{-0.834}$
	+3%/-3%	+1%/-2%	+300%/-300%	+16%/-7%	+8%/-11%	+17%/-31%
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 008176653-01 / KOI 1016.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-28 \pm 9$	$2.48^{+0.42}_{-0.41}$	$1484^{+68}_{-61}$	$2893^{+188}_{-208}$	$3.504^{+1.843}_{-1.342}$
Alt.	$-36 \pm 10$	$2.47^{+0.44}_{-0.37}$	$1478^{+64}_{-60}$	$2984^{+209}_{-192}$	$4.374^{+2.333}_{-1.549}$

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



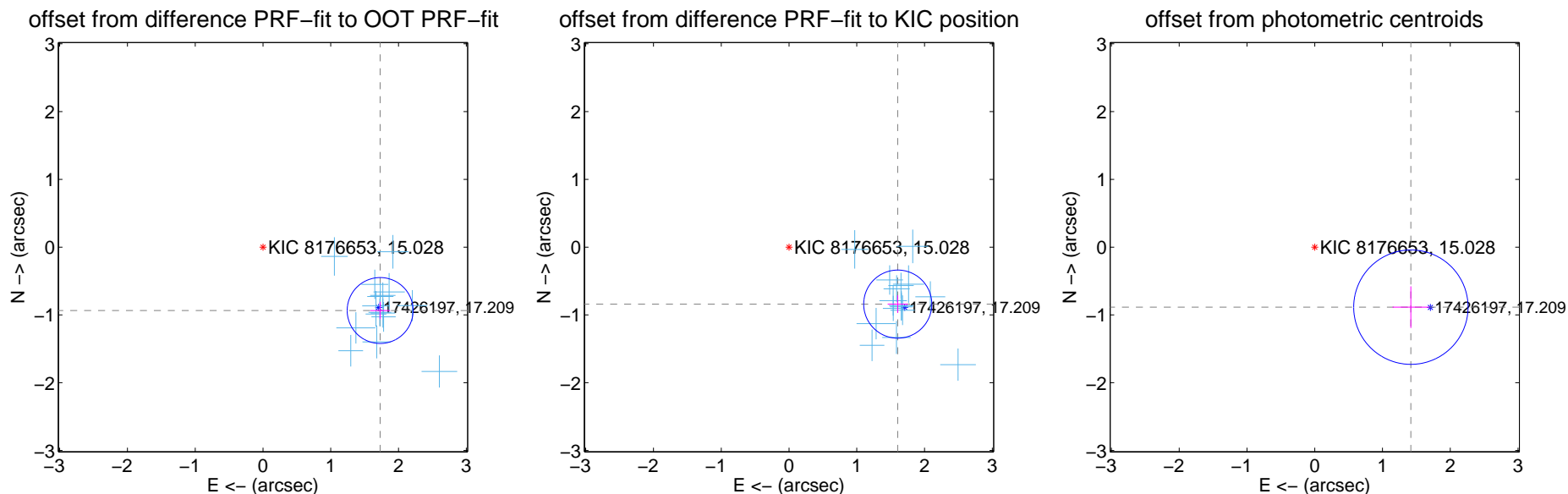
## DV Centroid Data

Supplemental centroid analysis for 008176653-01. Kepler magnitude: 15.03. Transit SNR 47.14

There are 17 quarters with good PRF difference image offsets

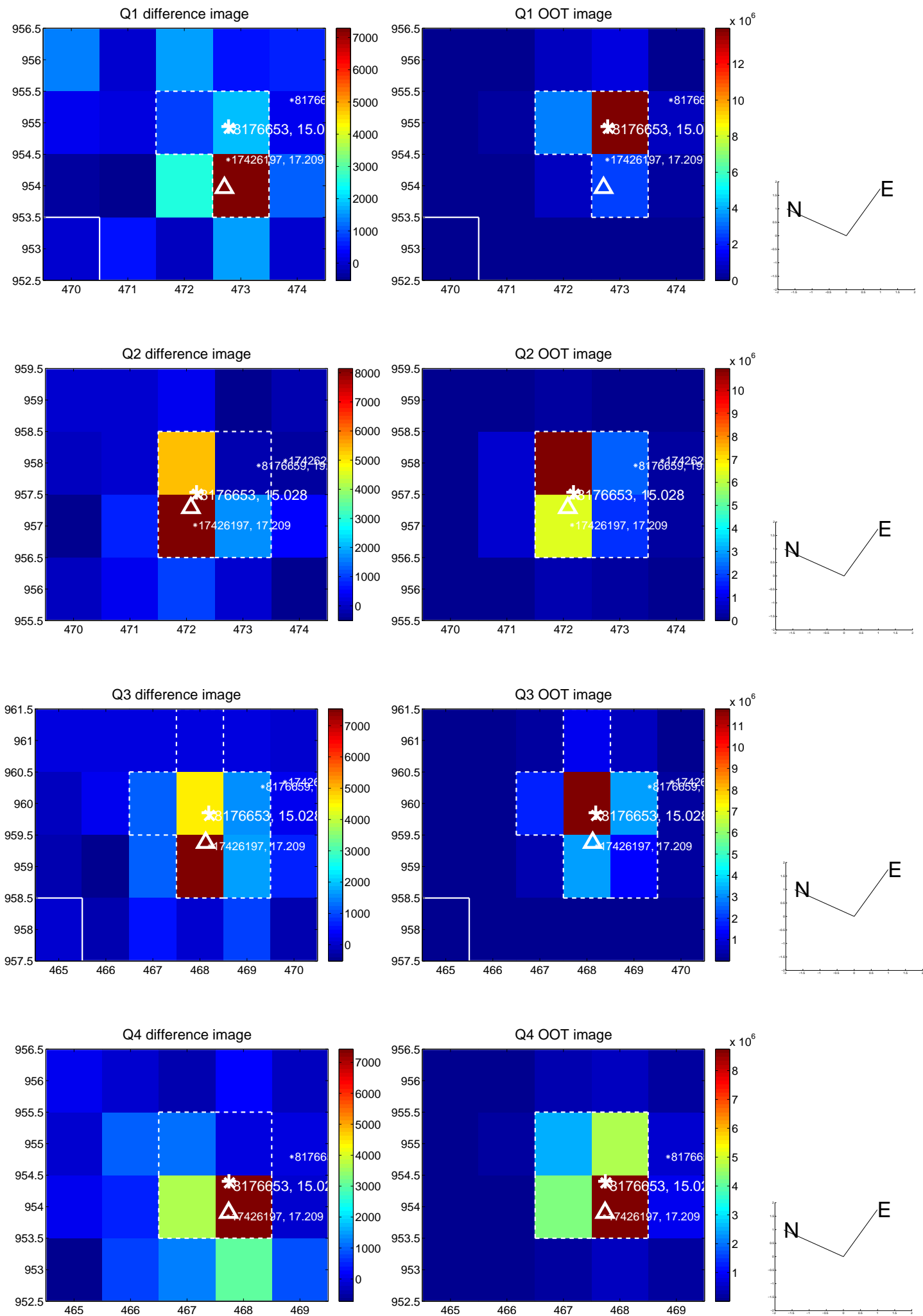
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.965 \pm 0.162$	12.13	$-1.728 \pm 0.147$	$-0.935 \pm 0.128$
PRF-fit source offset from KIC position	$1.811 \pm 0.167$	10.81	$-1.604 \pm 0.149$	$-0.840 \pm 0.131$
photometric centroid source offset	$1.67 \pm 0.28$	5.95	$-1.42 \pm 0.27$	$-0.89 \pm 0.31$

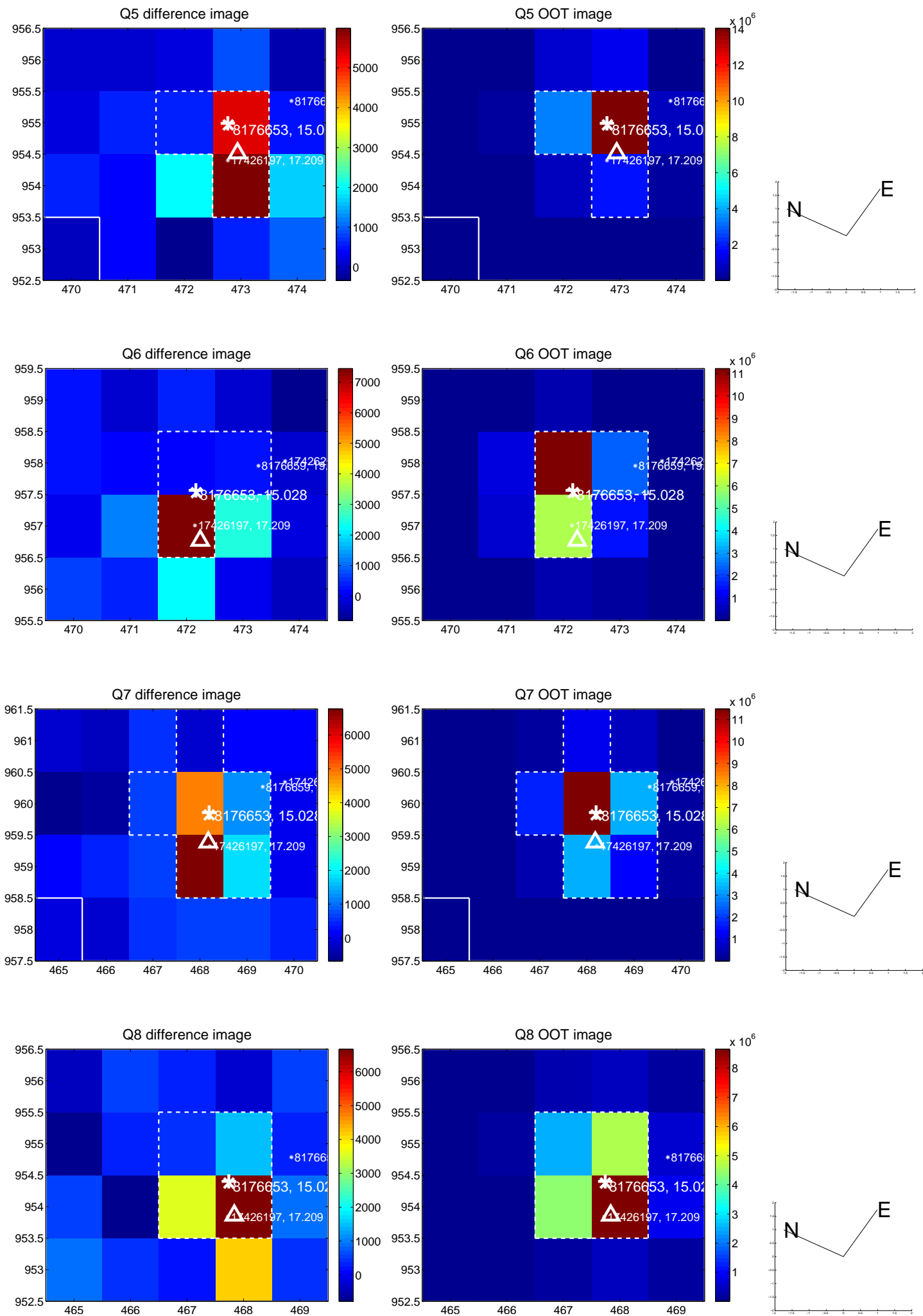


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

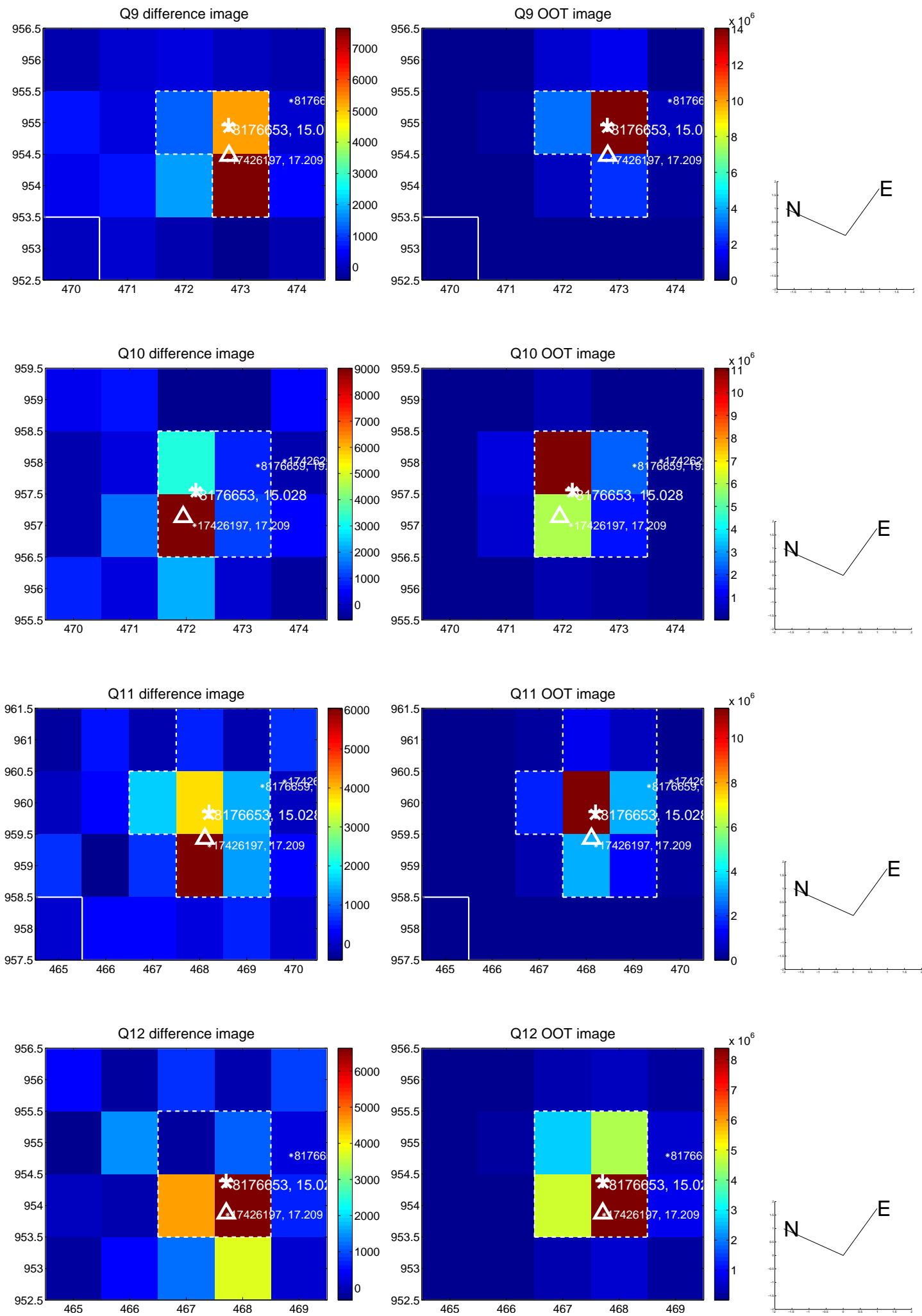
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



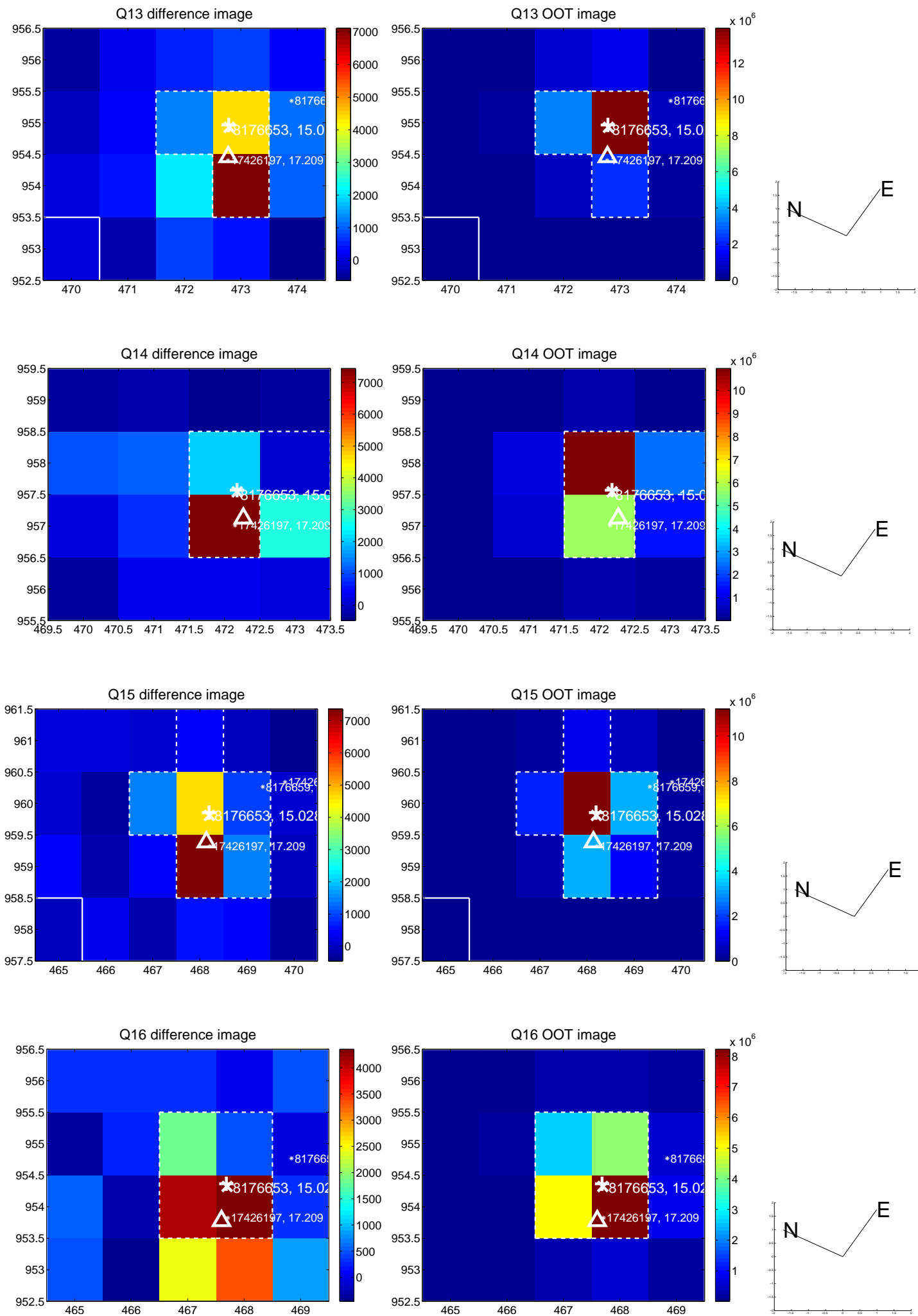
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

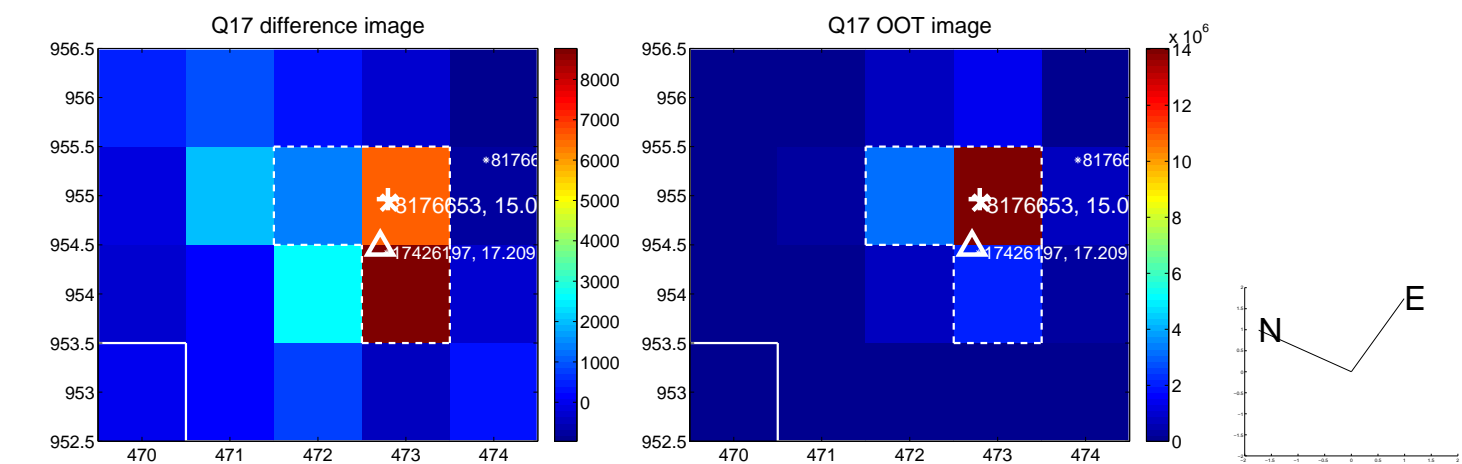


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

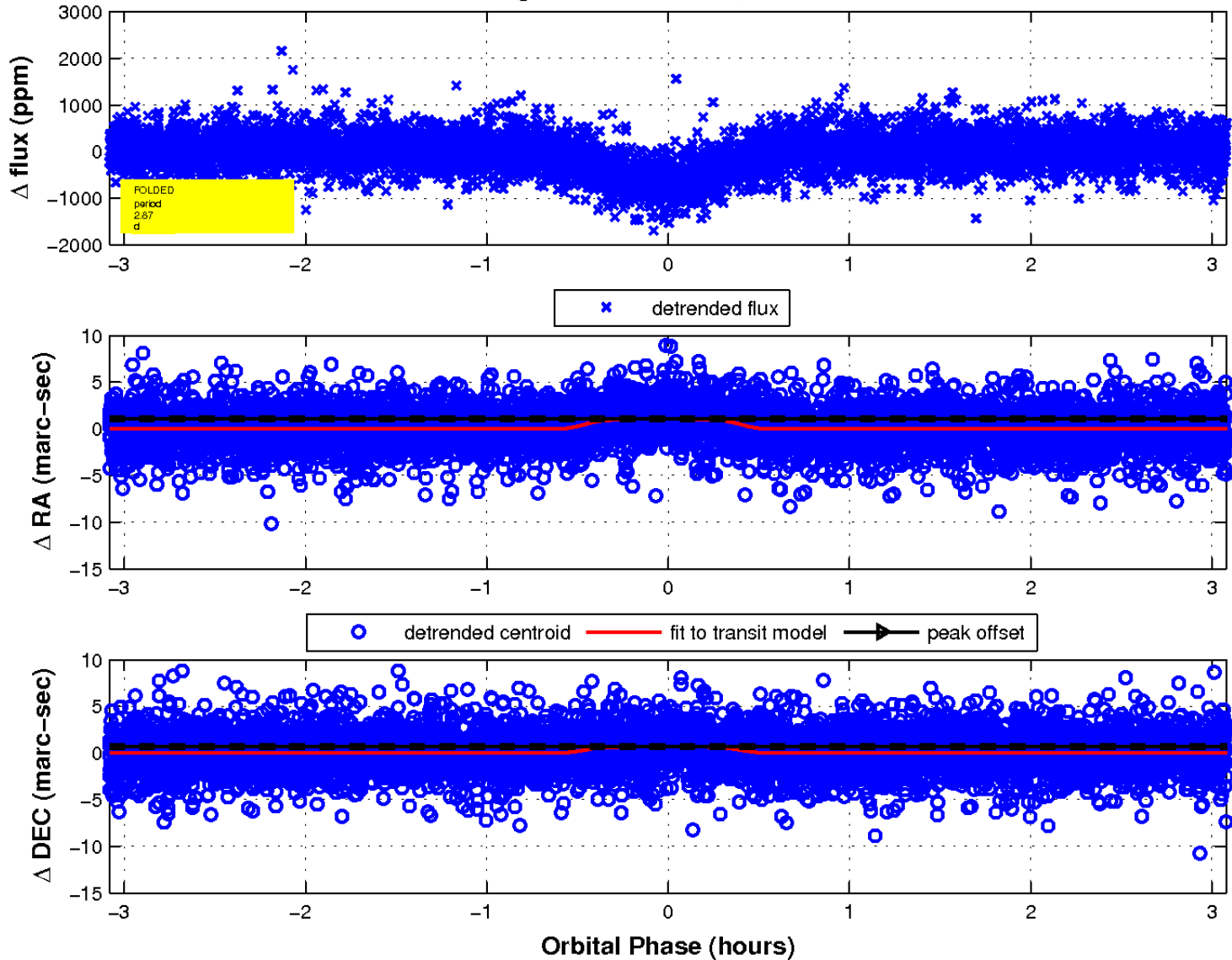




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

