

# KIC 002441151

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002441151-01	OBS	0603.01	2.192008	132.216059	1224.2	2.882	136.4	114.4	1.12	5499	6.10	1035.16

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002441151-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—CENT_RESOLVED_OFFSET—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 002441151-01

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	$\sigma_P$	$\sigma_T$
002441151-01	2441151	3642.01	2441161	1:1	10.6	2	1	16.65	14.68	93.57	Direct-PRF	0	0.01	0.01

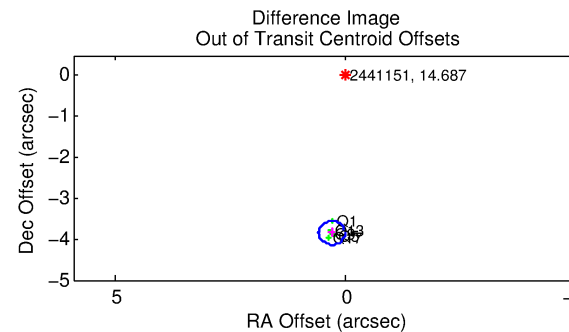
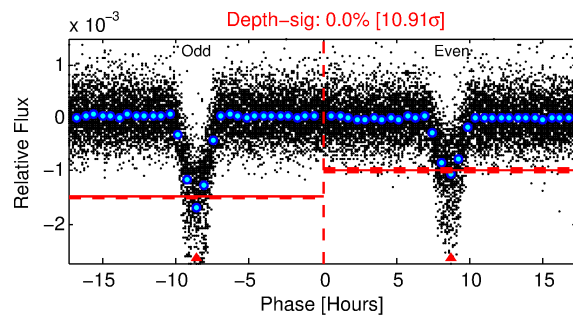
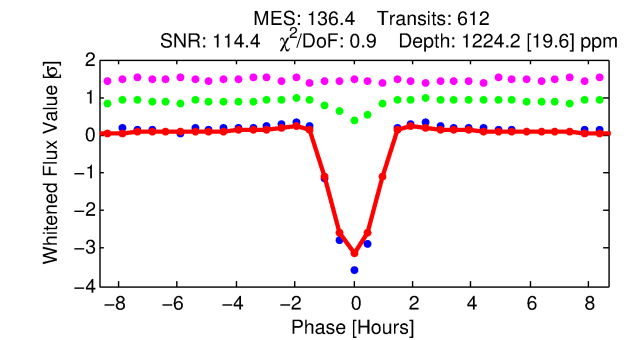
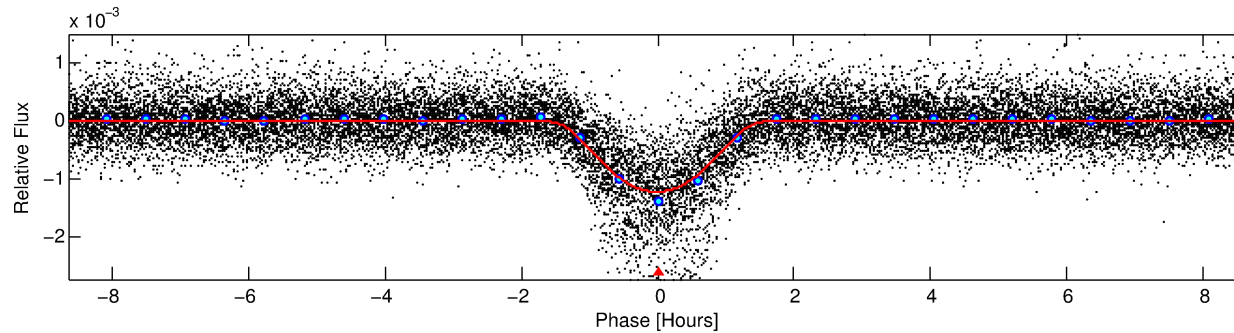
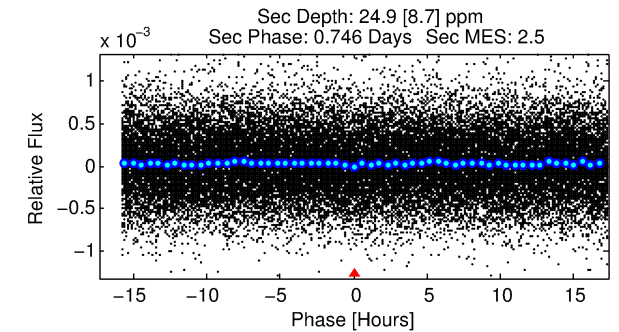
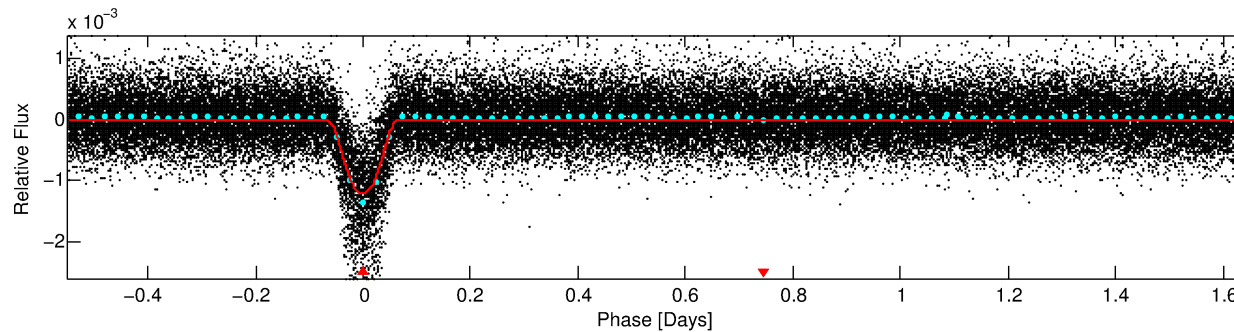
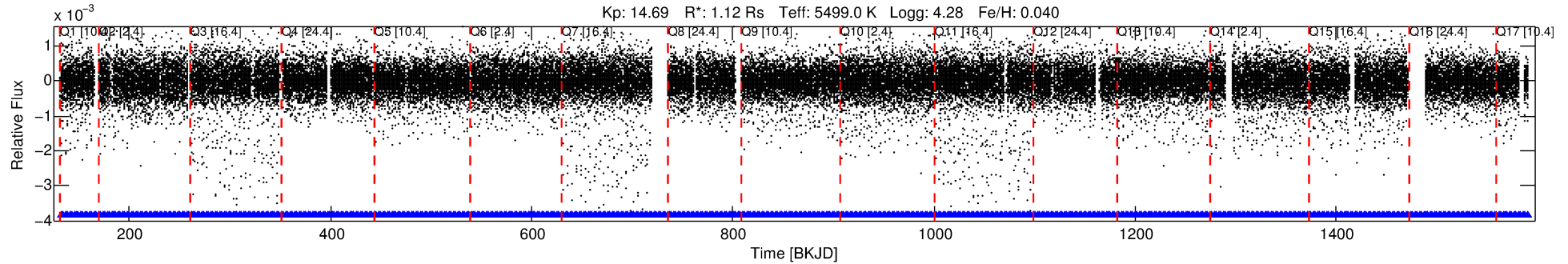
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  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: 2441151 Candidate: 1 of 1 Period: 2.192 d

KOI: K00603.01 Corr: 0.987

Kp: 14.69 R\*: 1.12 Rs Teff: 5499.0 K Logg: 4.28 Fe/H: 0.040



## DV Fit Results:

Period = 2.19201 [0.00000] d  
Epoch = 132.2161 [0.0004] BKJD  
Rp/R\* = 0.0497 [0.0067]  
a/R\* = 2.44 [0.10]  
b = 0.98 [0.01]  
Seff = 1035.16 [341.70]  
Teff = 1446 [119] K  
Rp = 6.10 [1.63] Re  
a = 0.0316 [0.0067] AU  
Ag = 0.37 [0.20] [-3.12σ]  
Teff = 1743 [193] K [1.31σ]

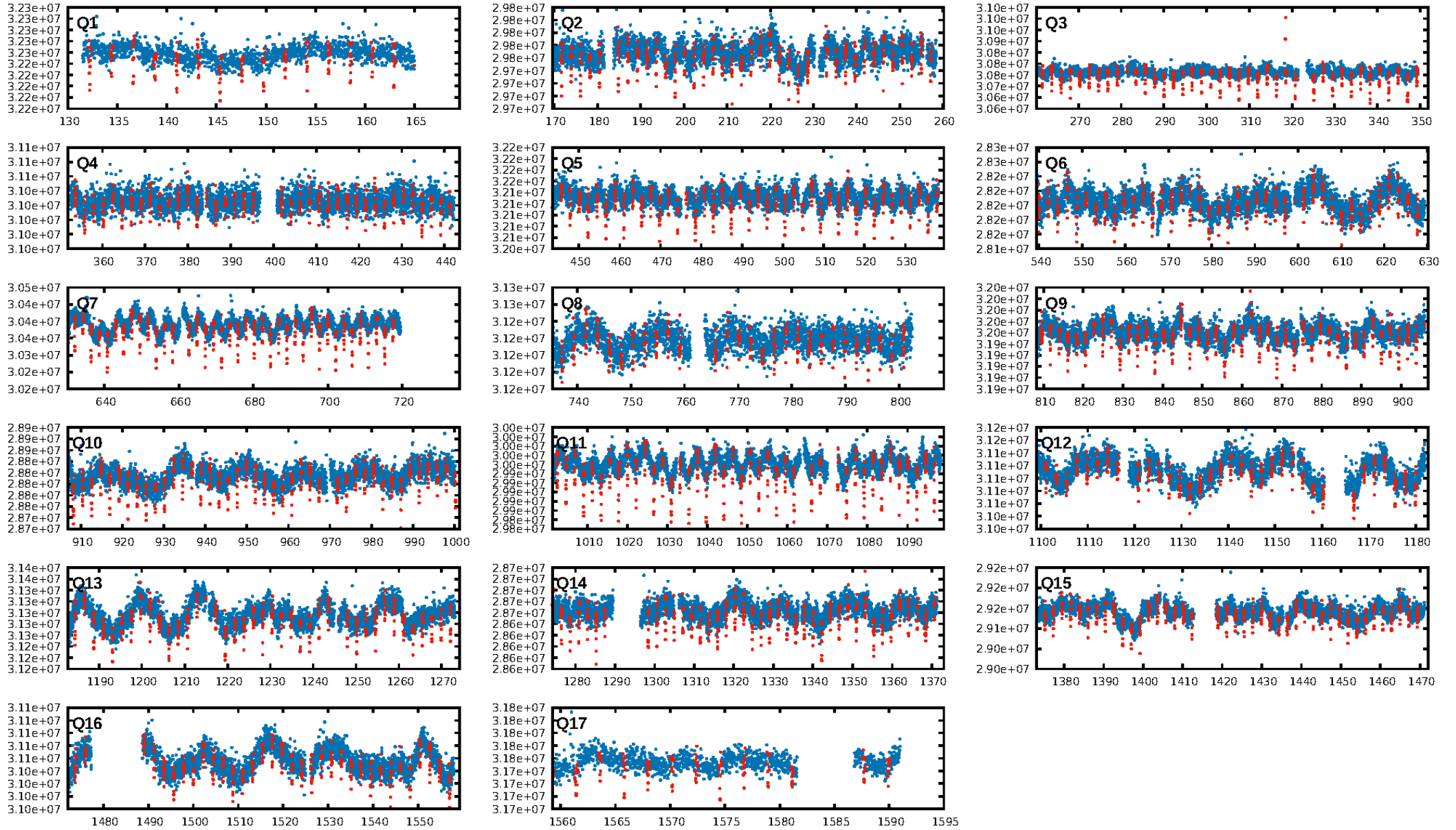
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [584/584]  
GhostDiagnostic-chr: -0.2126  
Centroid-sig: 0.0%  
Centroid-so: 15.305 arcsec [168.45σ]  
OotOffset-rm: 3.859 arcsec [40.06σ]  
KicOffset-rm: 3.710 arcsec [37.52σ]  
OotOffset-st: 0/0/0/5 [5]  
KicOffset-st: 0/0/0/5 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [17/17]

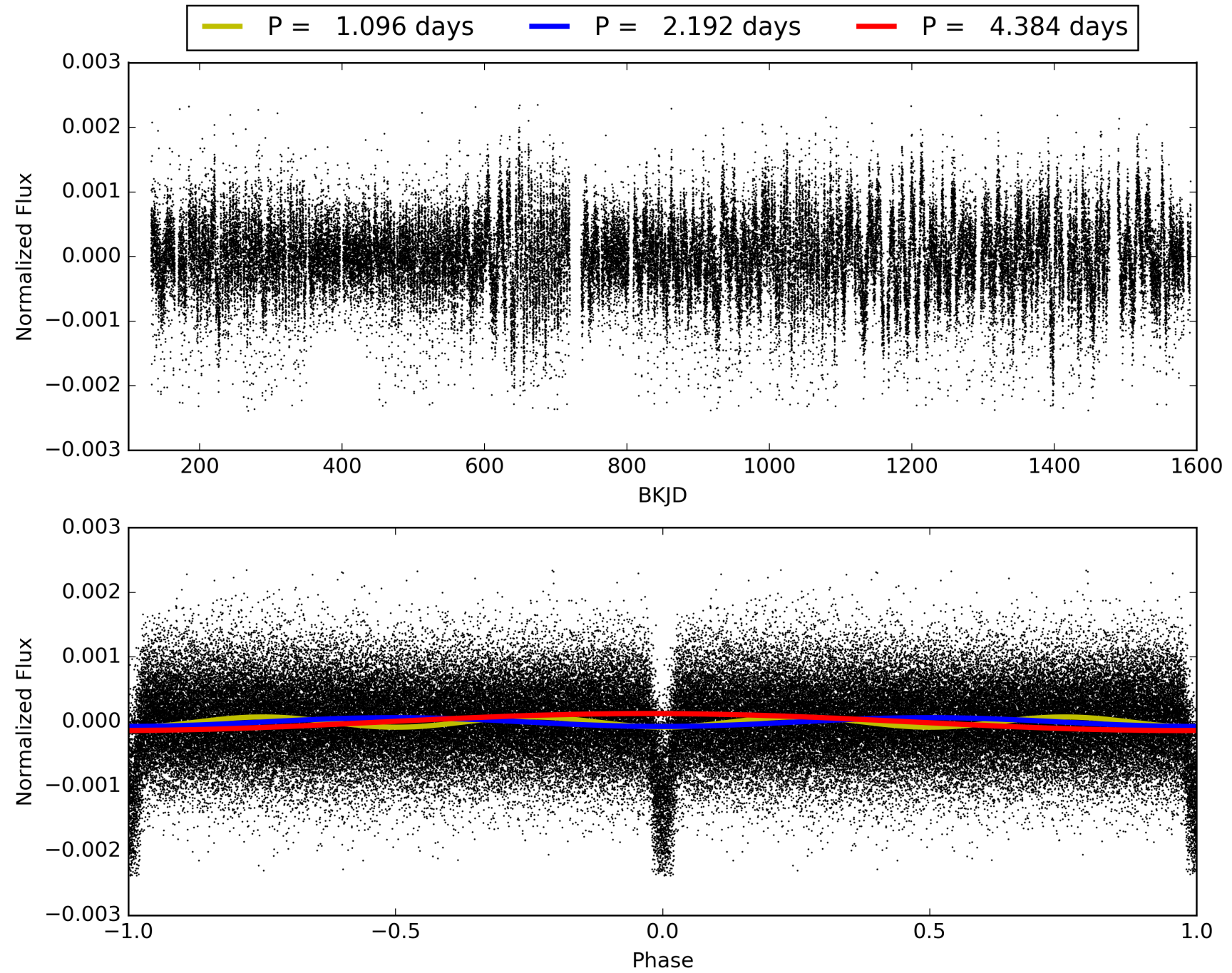
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:08:11 Z

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

# TCE 002441151-01, PDC Light Curves

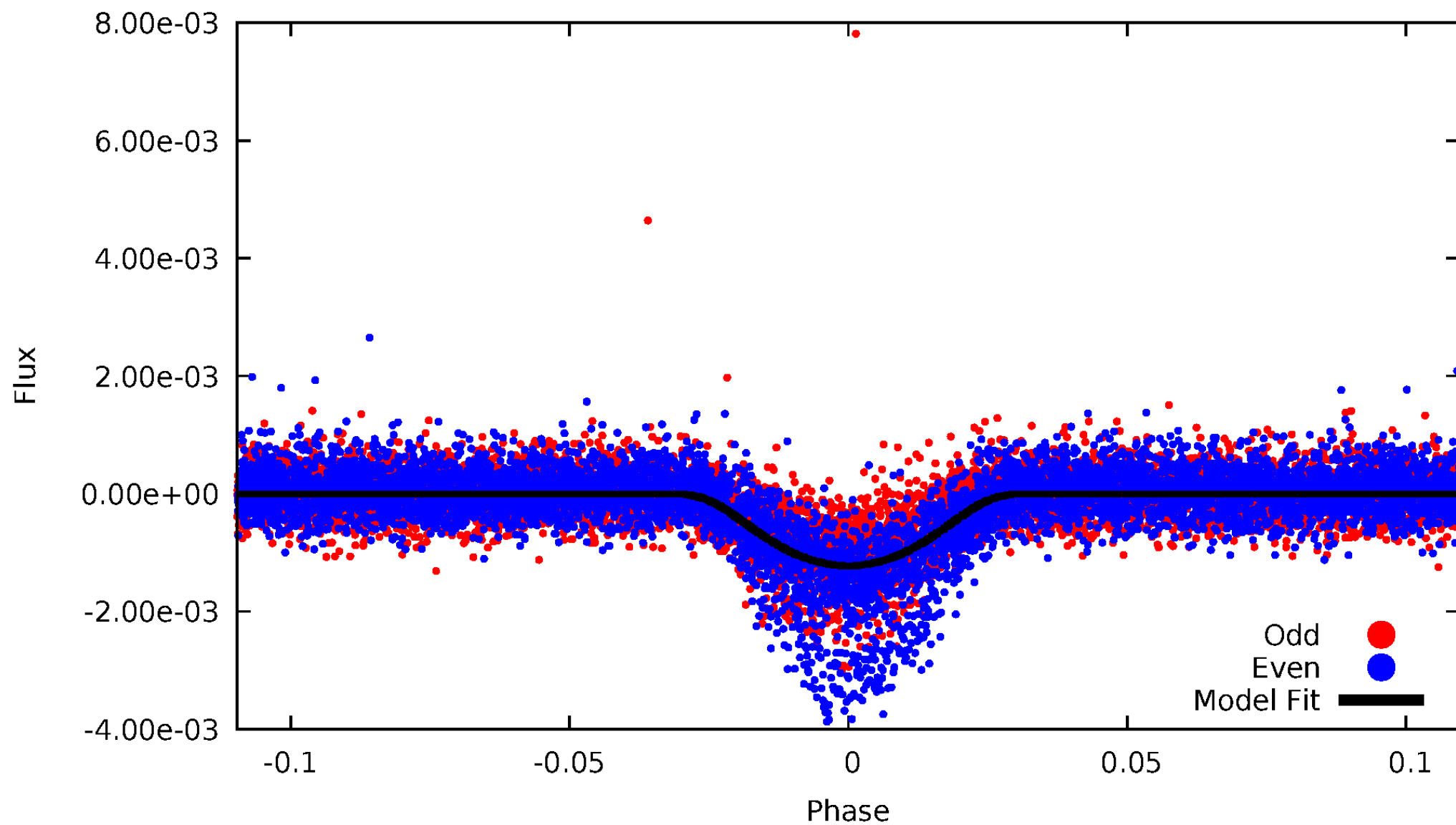


TCE 002441151-01



# DV Odd/Even

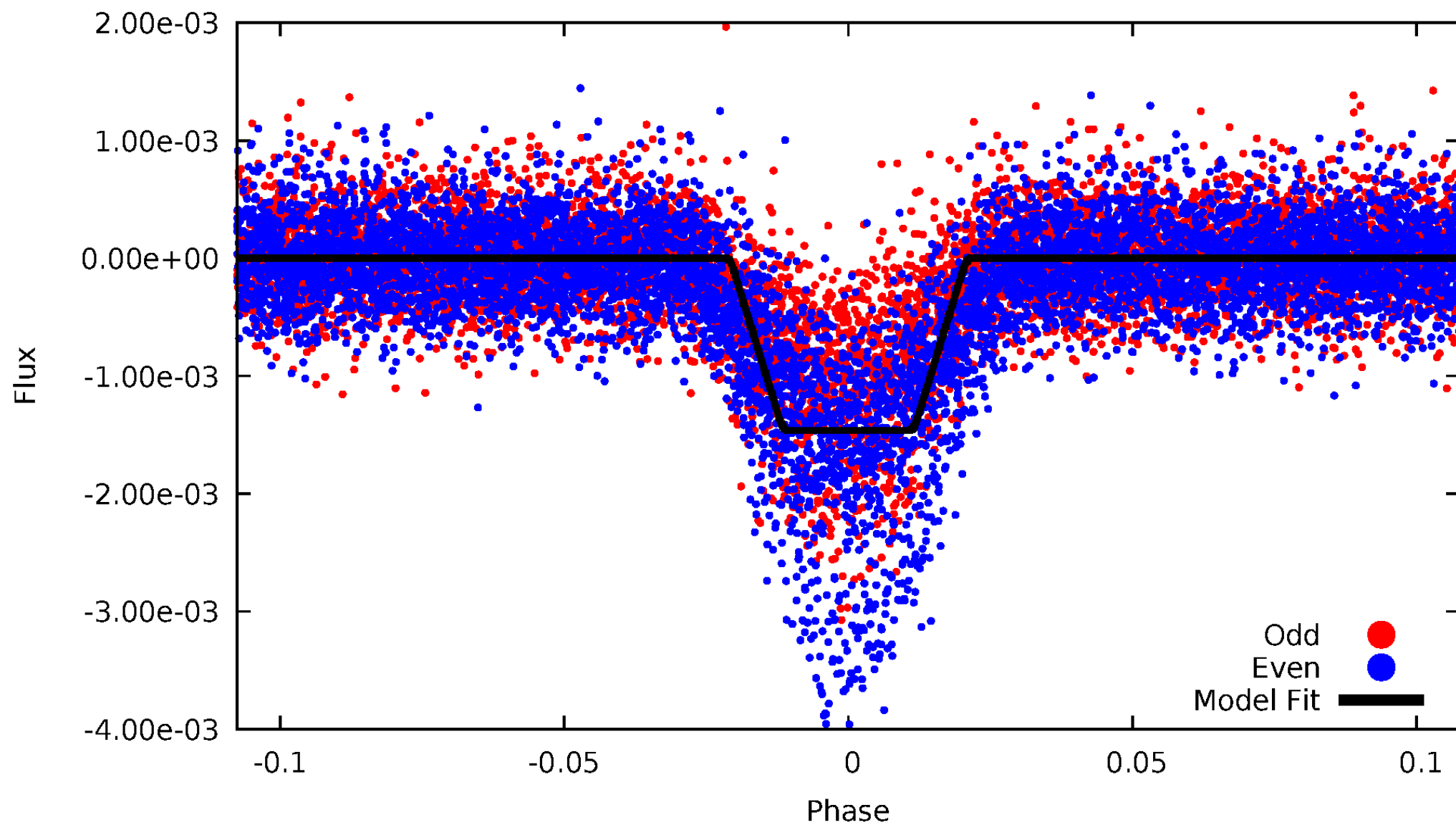
TCE 002441151-01





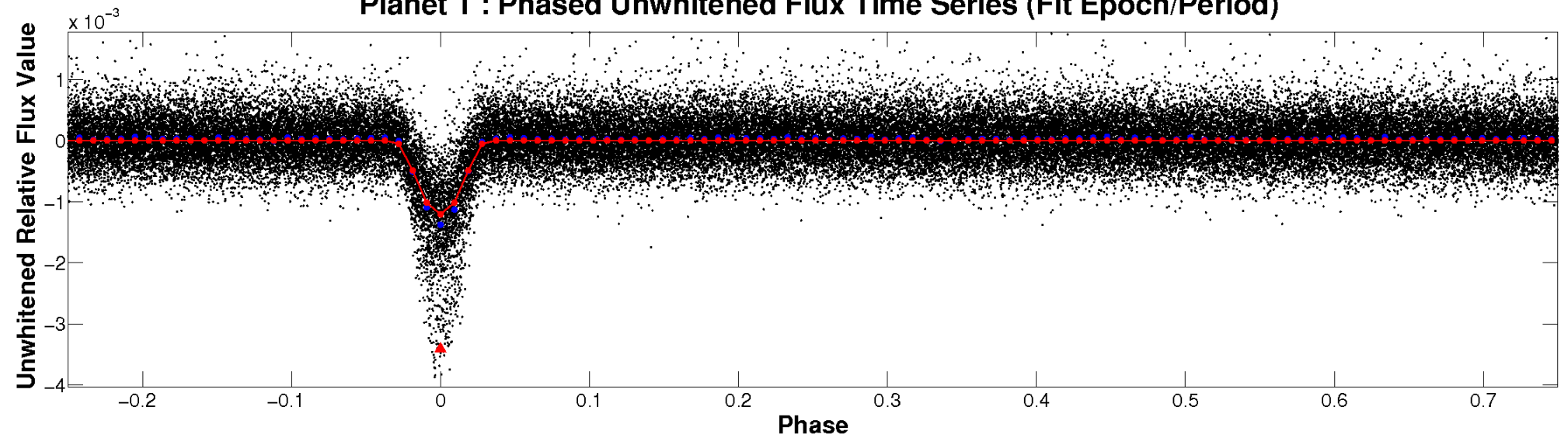
# ALT Odd/Even

TCE 002441151-01

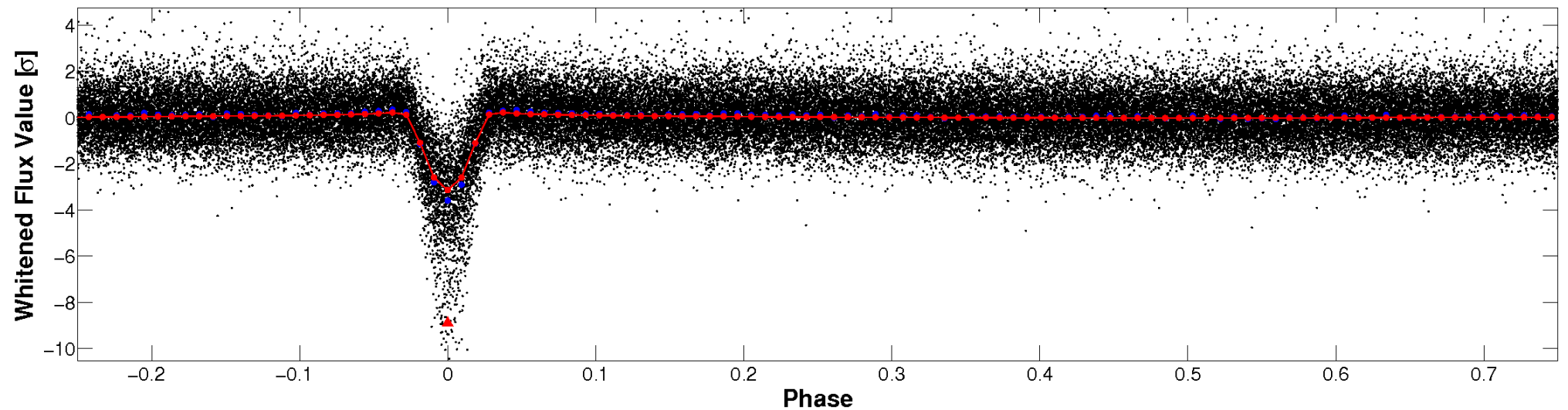


# Non-Whitened Vs. Whitened Light Curve

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

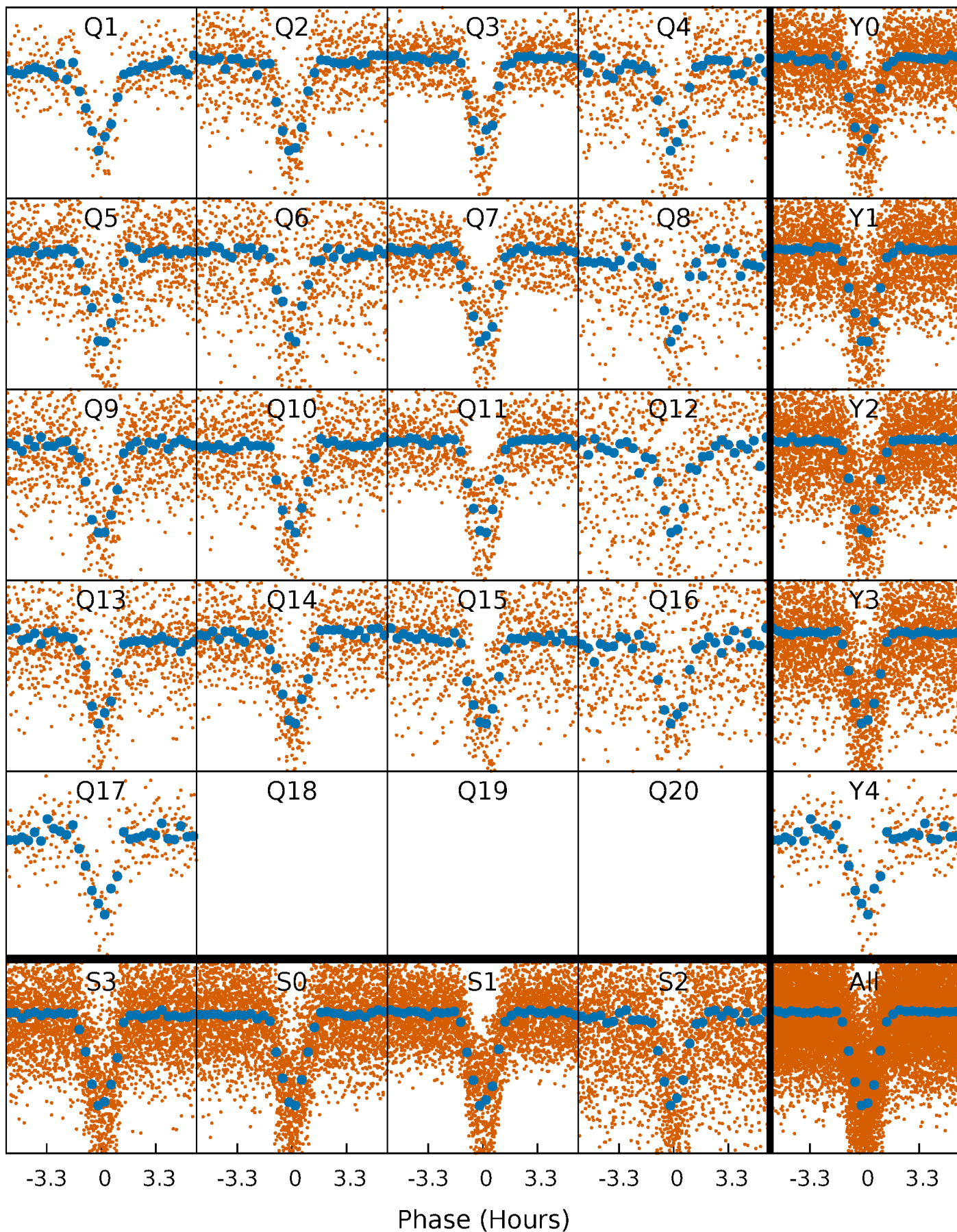


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

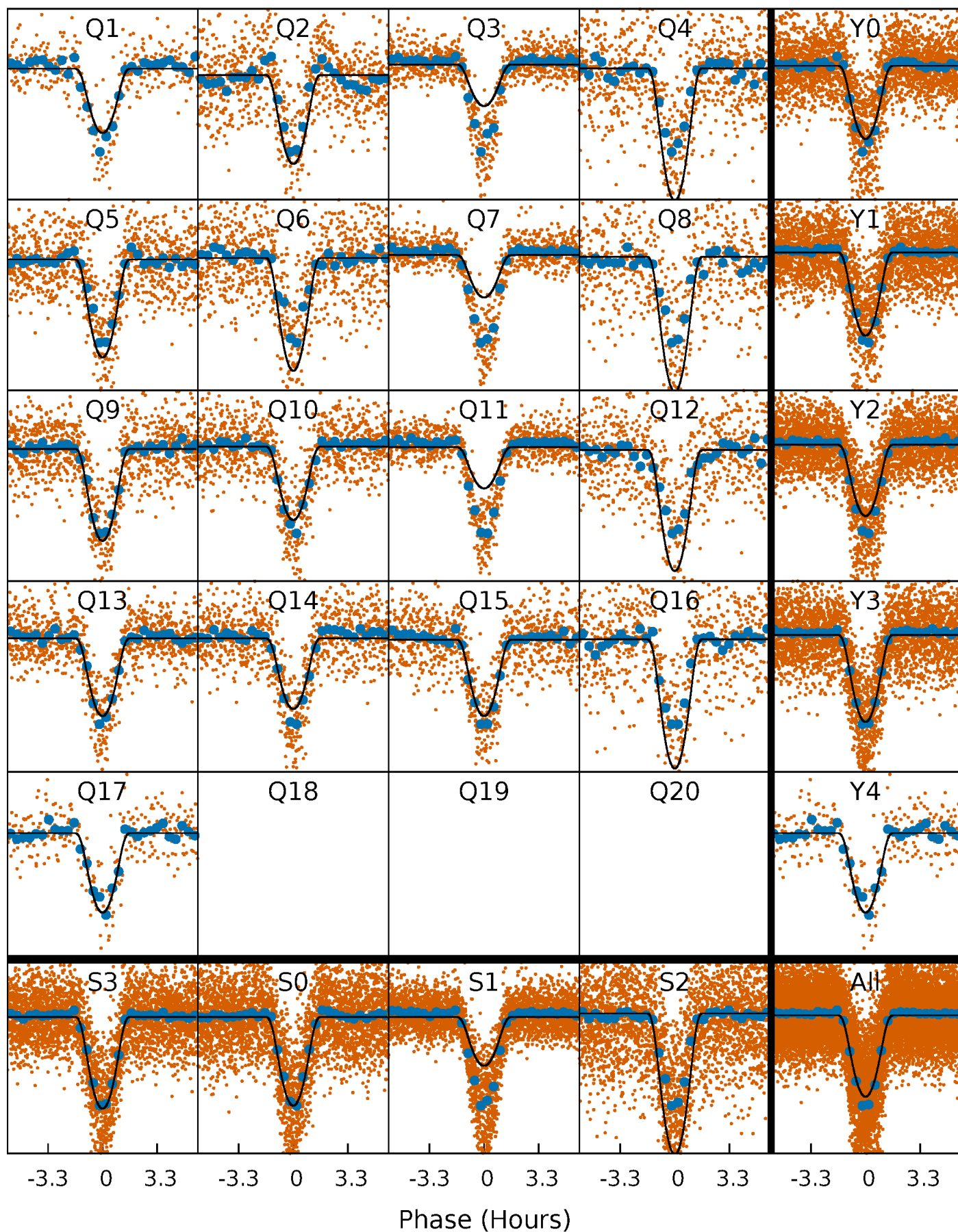
TCE 002441151-01 P= 2.192008 Days  $T_0=132.216059$  (BKJD)





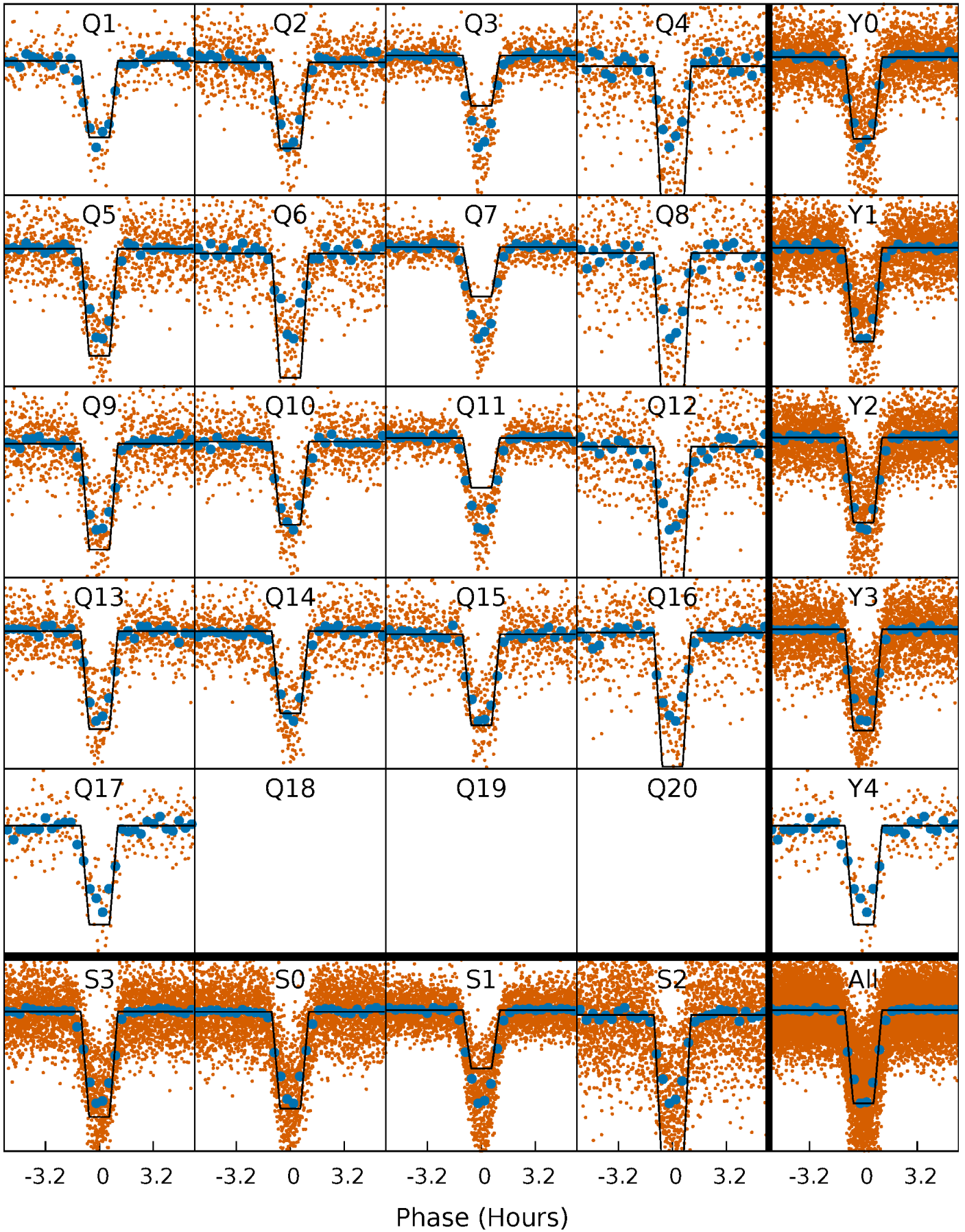
# DV Quarter-Phased Transit Curves

TCE 002441151-01 P= 2.192008 Days  $T_0=132.216059$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

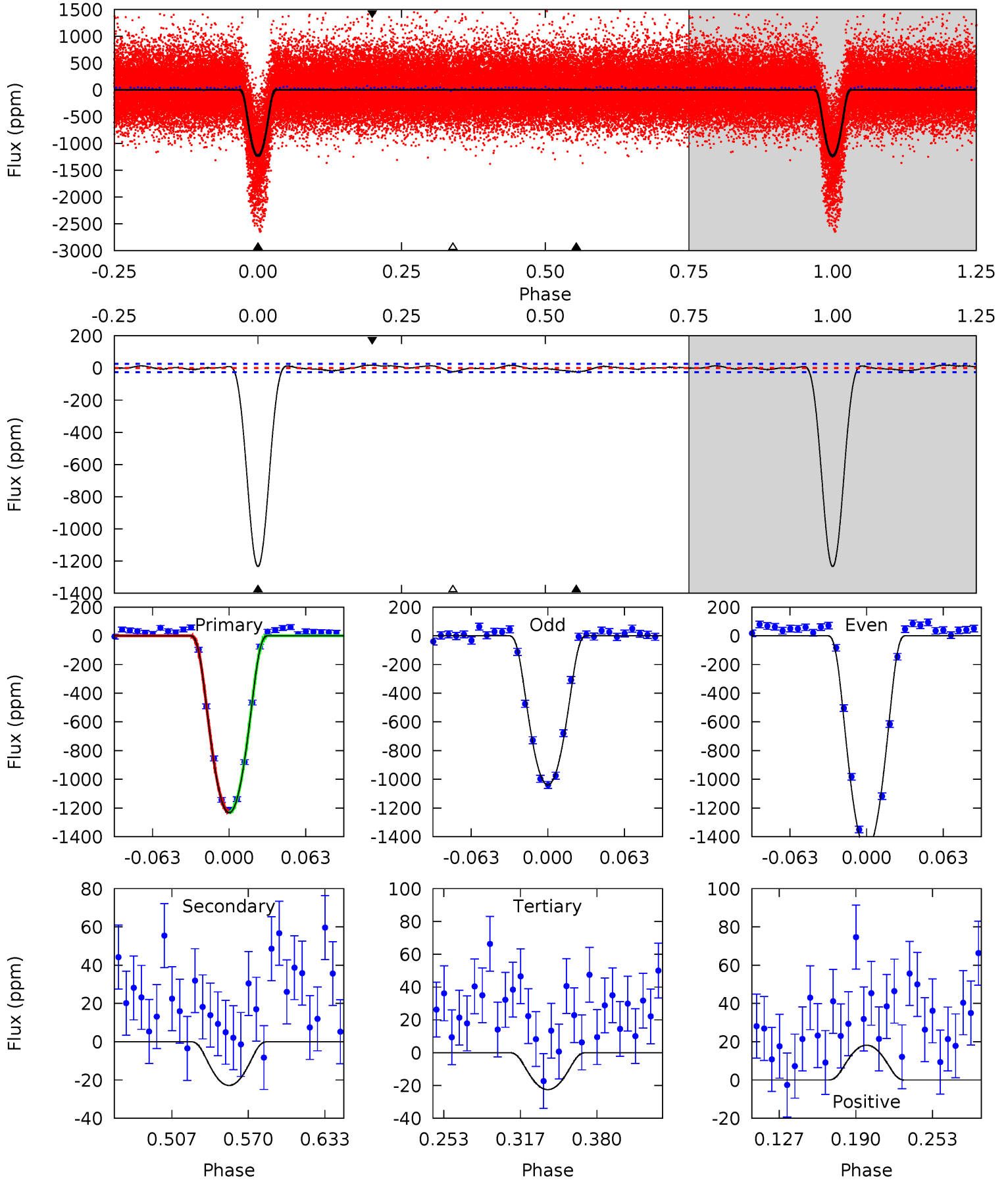
TCE 002441151-01 P= 2.192005 Days  $T_0=132.217297$  (BKJD)



# DV Model-Shift Uniqueness Test

002441151-01, P = 2.192008 Days, E = 130.024051 Days

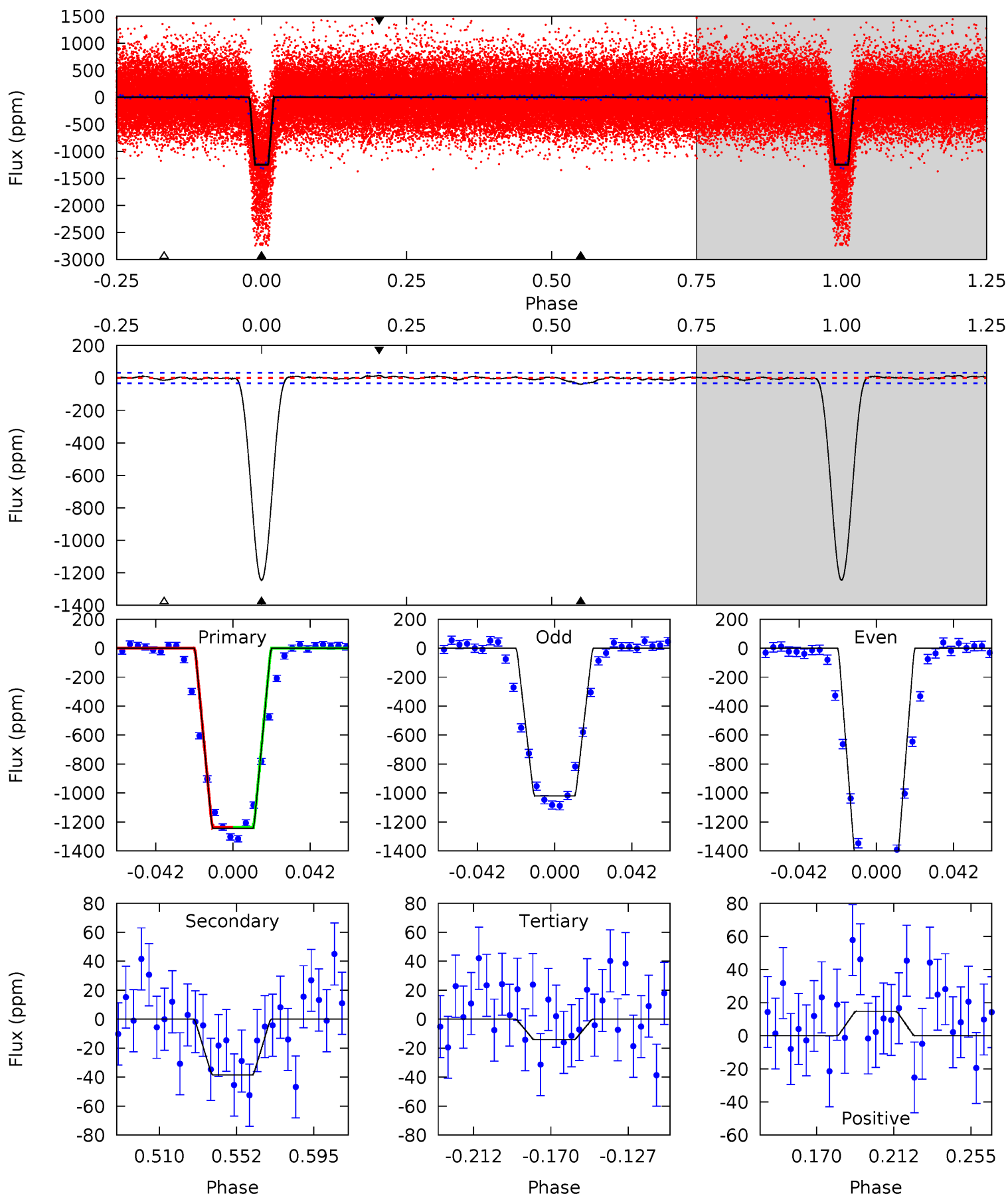
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
220.5	4.08	4.03	3.25	4.66	1.86	1.51	216.4	217.2	0.05	0.83	40.4	1.15	0.01	0.38



# Alt Model-Shift Uniqueness Test

002441151-01, P = 2.192005 Days, E = 130.025292 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
183.4	5.66	2.08	2.16	4.74	2.03	0.91	181.3	181.2	3.58	3.50	36.3	1.14	0.01	0.06



### Stellar Parameters For KIC 002441151

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5499^{+73}_{-73}$	$4.280^{+0.187}_{-0.153}$	$0.040^{+0.150}_{-0.150}$	$1.125^{+0.260}_{-0.212}$	$0.878^{+0.062}_{-0.041}$	$0.868^{+0.730}_{-0.401}$
	+1%/-1%	+4%/-4%	+375%/-375%	+23%/-19%	+7%/-5%	+84%/-46%
Source	SPE68	SPE68	SPE68	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 002441151-01 / KOI 0603.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-23 \pm 6$	$6.06^{+1.09}_{-1.04}$	$2018^{+126}_{-111}$	$1961^{+404}_{-4151}$	$0.333^{+0.184}_{-0.118}$
Alt.	$-38 \pm 7$	$4.63^{+1.11}_{-0.90}$	$2010^{+124}_{-116}$	$2772^{+216}_{-233}$	$0.982^{+0.592}_{-0.359}$

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



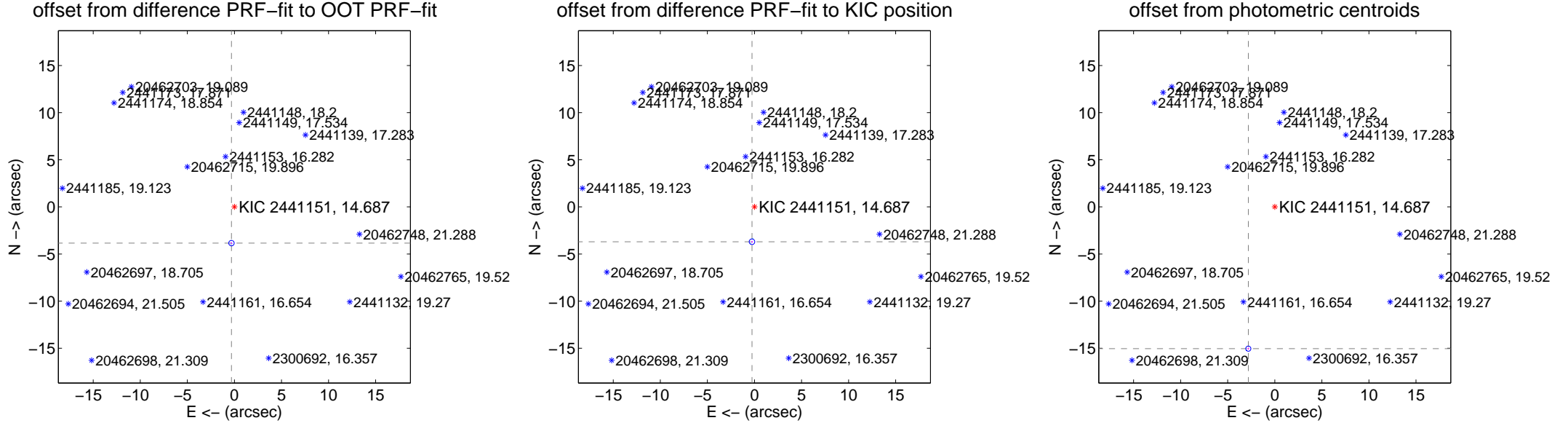
## DV Centroid Data

Supplemental centroid analysis for 002441151-01. Kepler magnitude: 14.69. Transit SNR 114.38

There are 5 quarters with good PRF difference image offsets

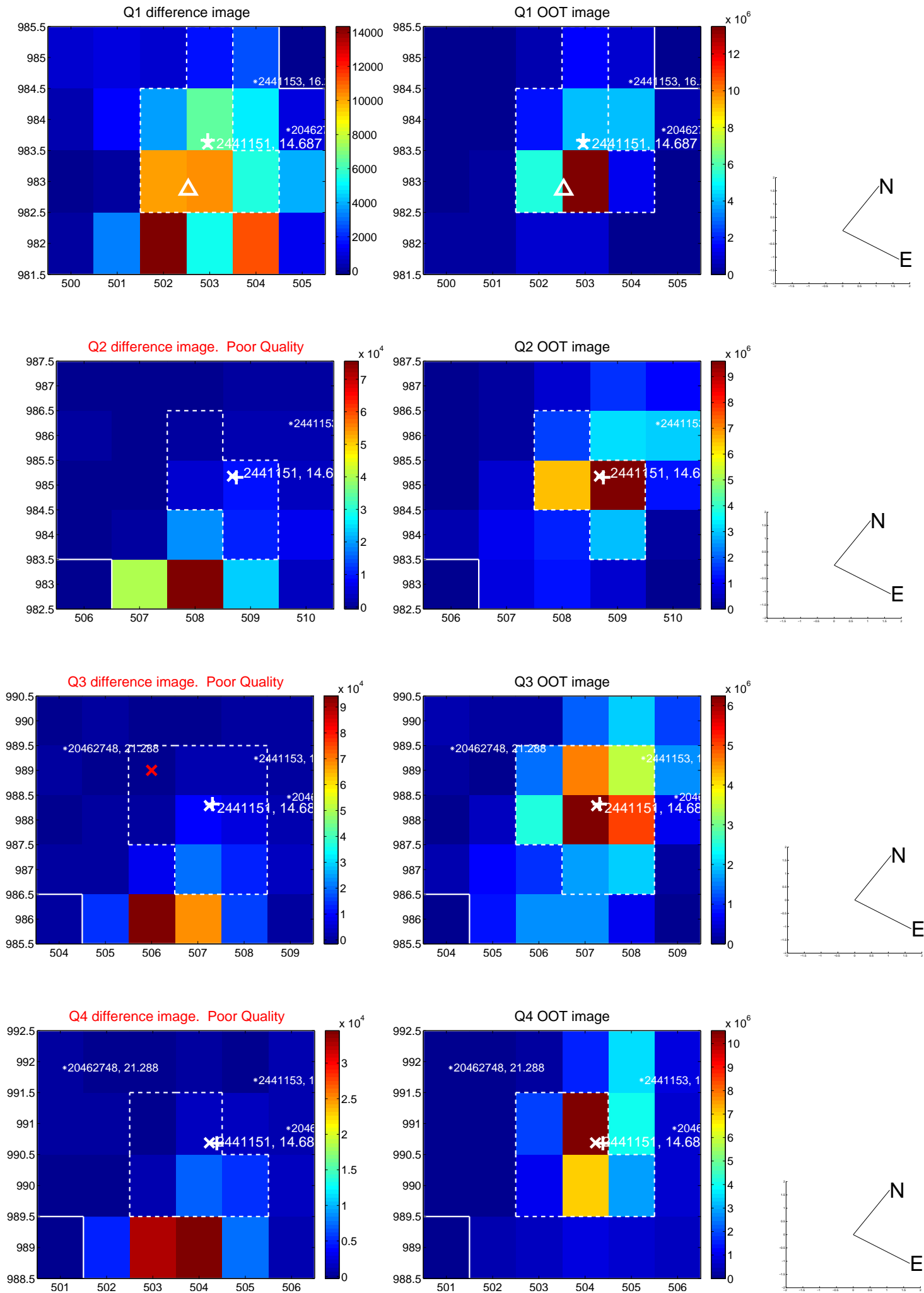
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>3.859 <math>\pm</math> 0.096</b>	<b>40.06</b>	0.314 $\pm$ 0.069	-3.846 $\pm$ 0.096
PRF-fit source offset from KIC position	<b>3.710 <math>\pm</math> 0.099</b>	<b>37.52</b>	0.265 $\pm$ 0.074	-3.701 $\pm$ 0.098
photometric centroid source offset	<b>15.30 <math>\pm</math> 0.09</b>	<b>168.46</b>	2.81 $\pm$ 0.09	-15.04 $\pm$ 0.09

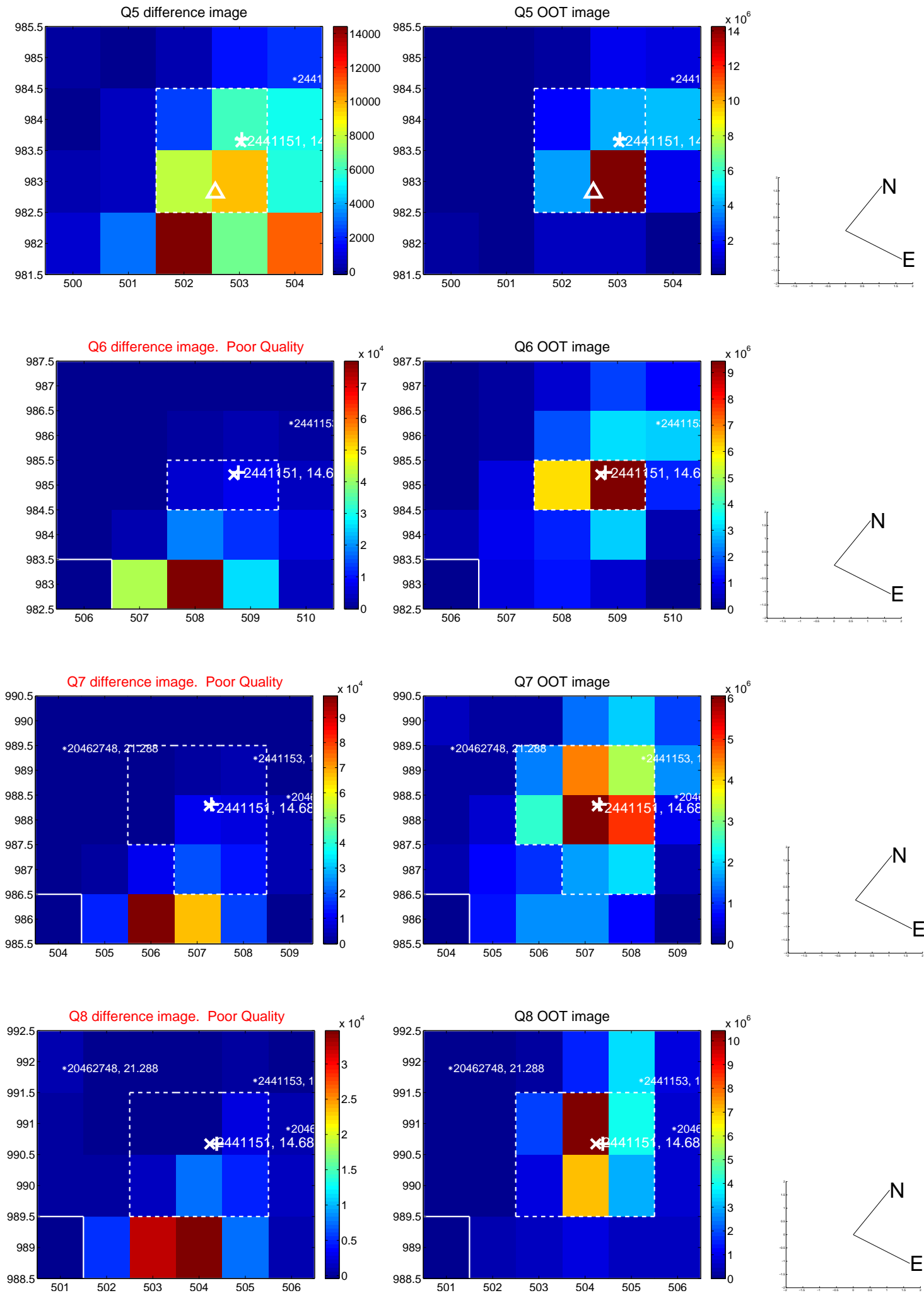


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

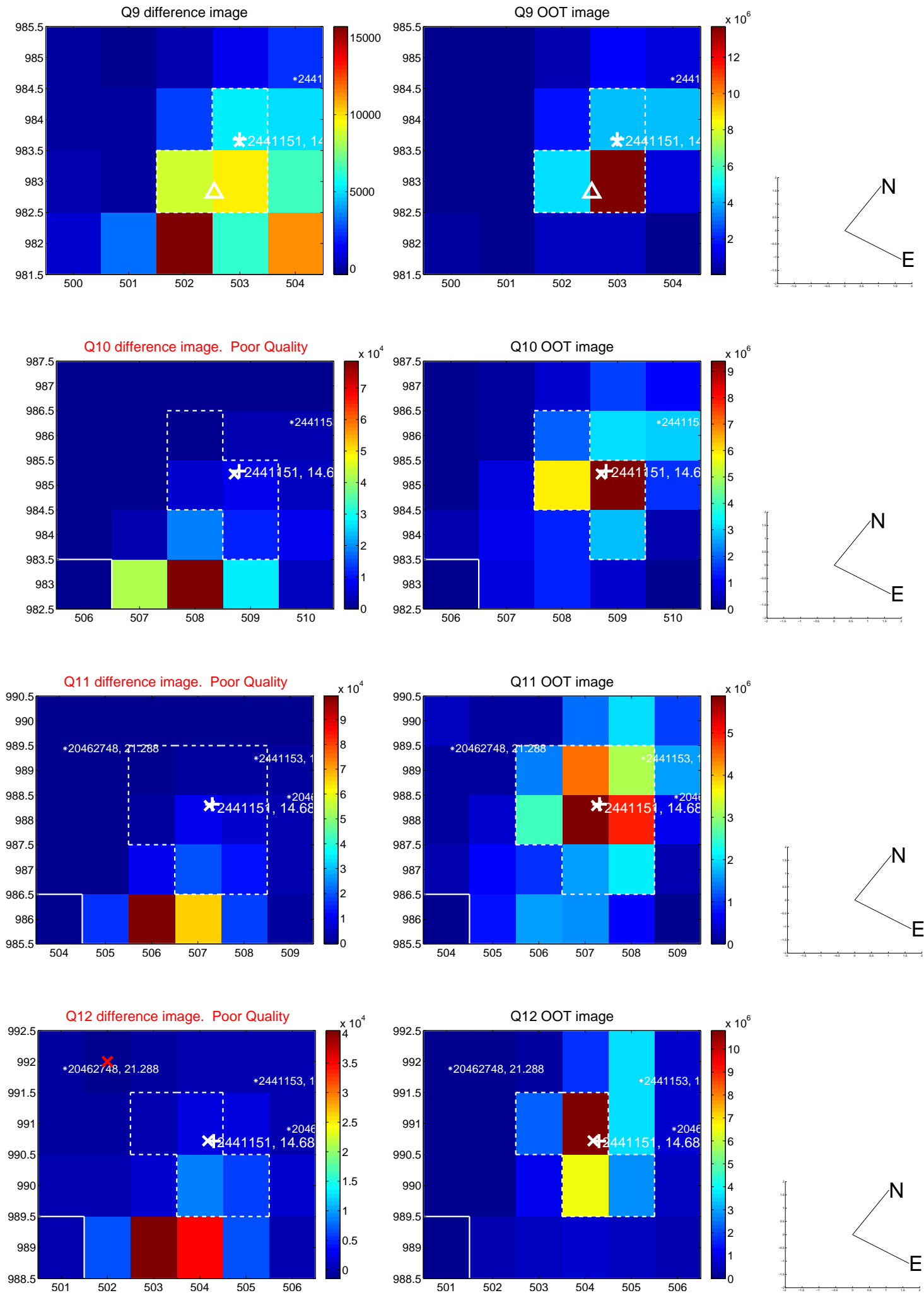
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



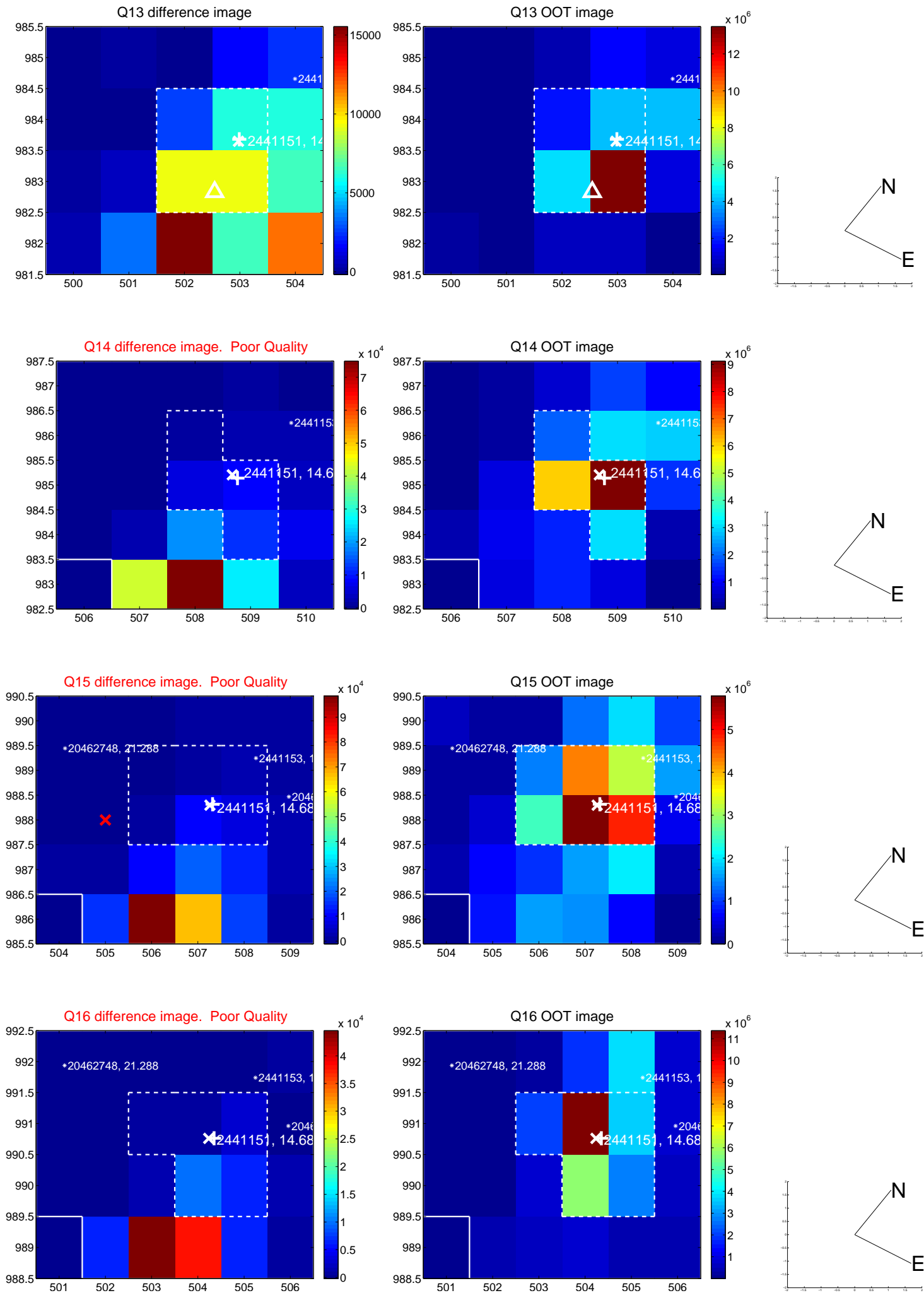
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

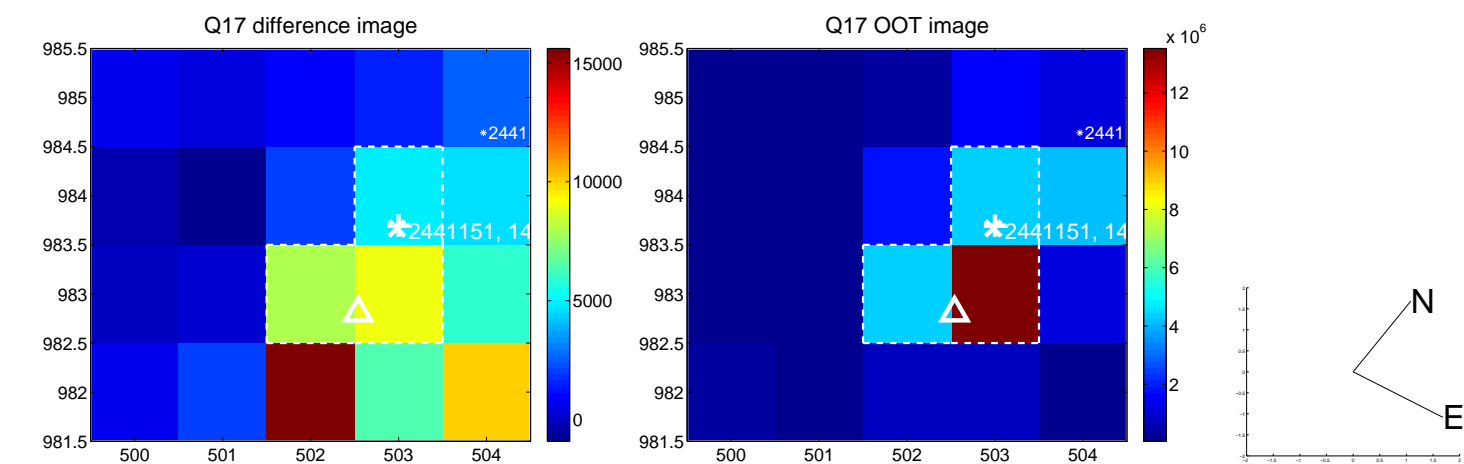


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

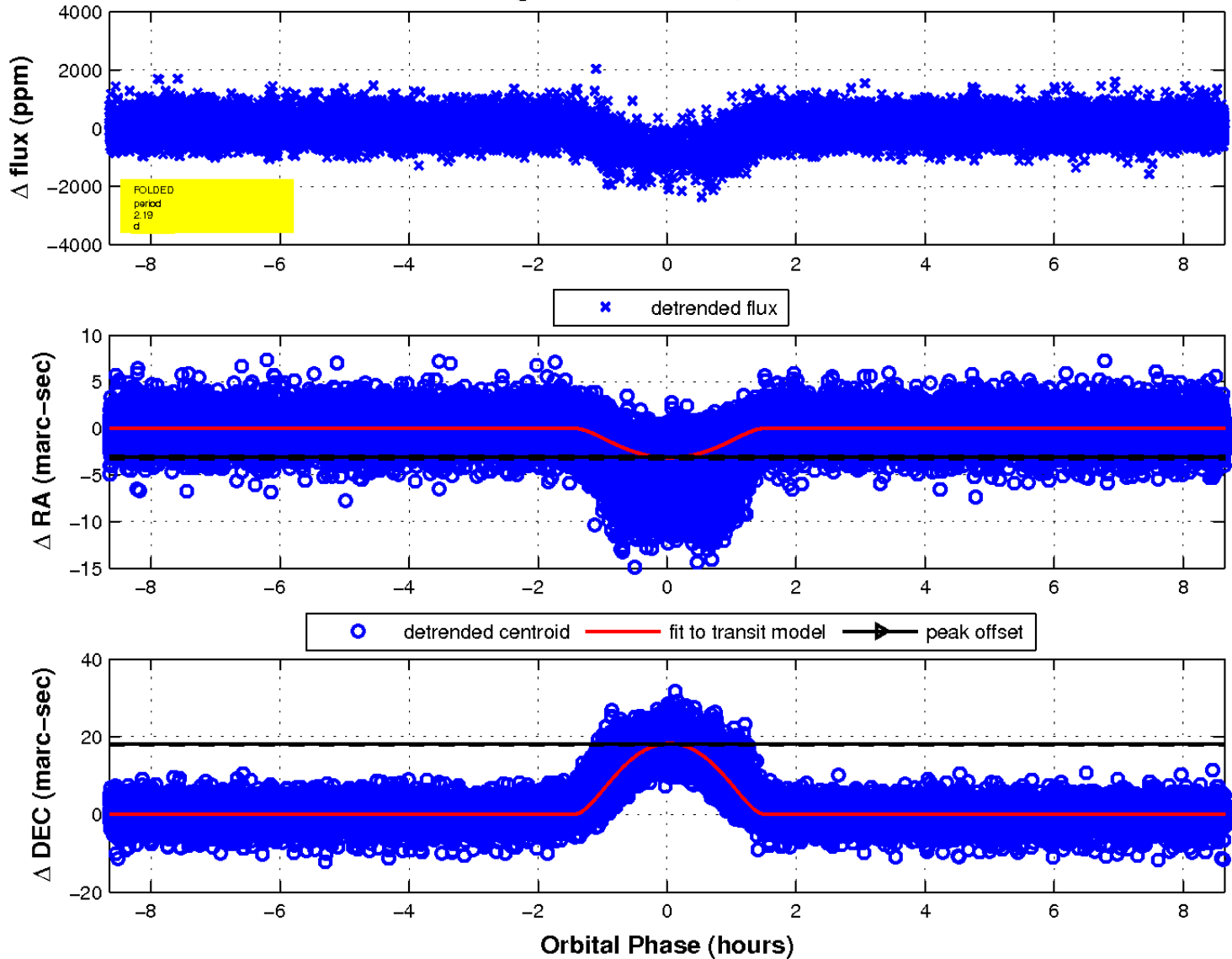




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

