

# KIC 011824218

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
011824218-01	OBS	3845.01	15.841341	145.458925	2419.9	1.824	66.2	62.1	19.70	4993	172.35	6093.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011824218-01	OBS	FP	0.00	0	1	1	1	DEEP_V_SHAPED—CENT_RESOLVED_OFFSET—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 011824218-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
011824218-01	11824218	437.01	11824222	1:1	6.3	2	0	14.50	13.73	13.17	Direct-PRF	0	0.06	0.04

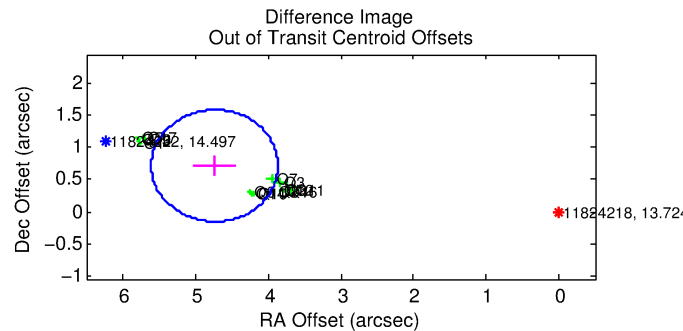
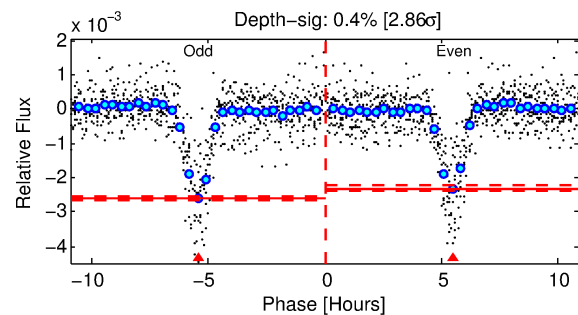
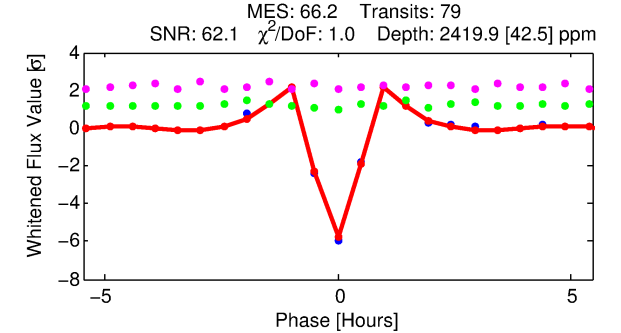
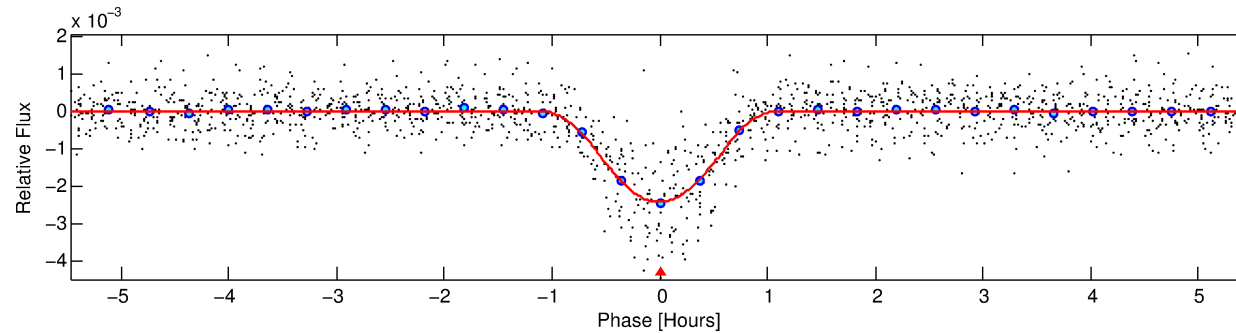
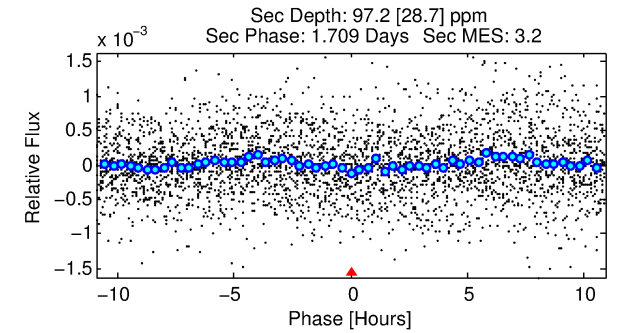
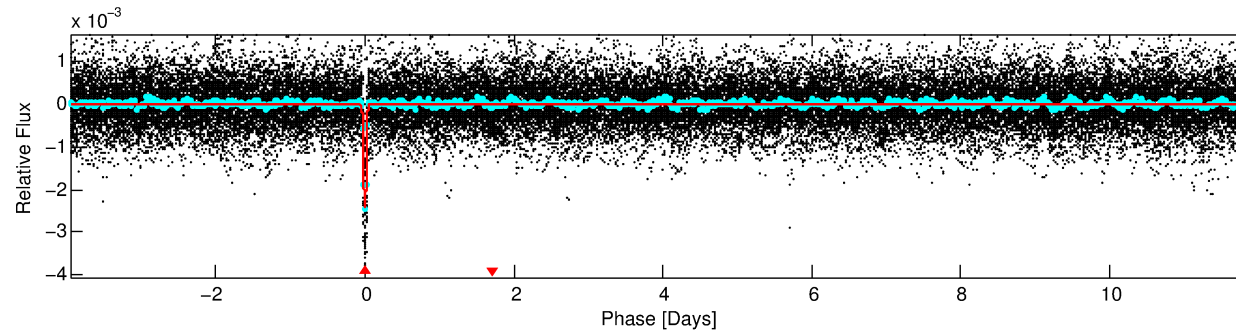
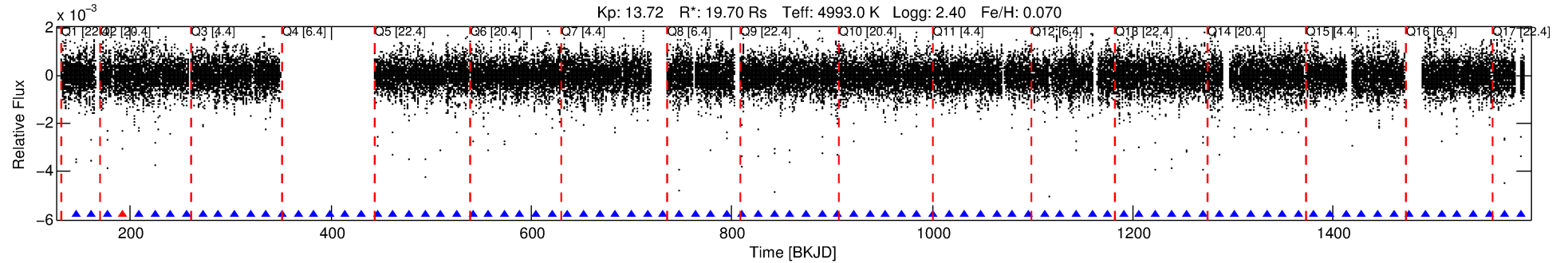
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 11824218 Candidate: 1 of 1 Period: 15.841 d

KOI: K03845.01 Corr: 0.878

Kp: 13.72 R\*: 19.70 Rs Teff: 4993.0 K Logg: 2.40 Fe/H: 0.070



## DV Fit Results:

Period = 15.84134 [0.00001] d  
Epoch = 145.4589 [0.0005] BKJD  
Rp/R\* = 0.0802 [0.0378]  
a/R\* = 29.40 [3.51]  
b = 0.99 [0.06]  
Seff = 6093.34 [2109.37]  
Teq = 2253 [195] K  
Rp = 172.35 [108.82] Re  
a = 0.1883 [0.0531] AU  
Ag = 0.06 [0.07] [-14.28σ]  
Teffp = 1751 [440] K [-1.04σ]

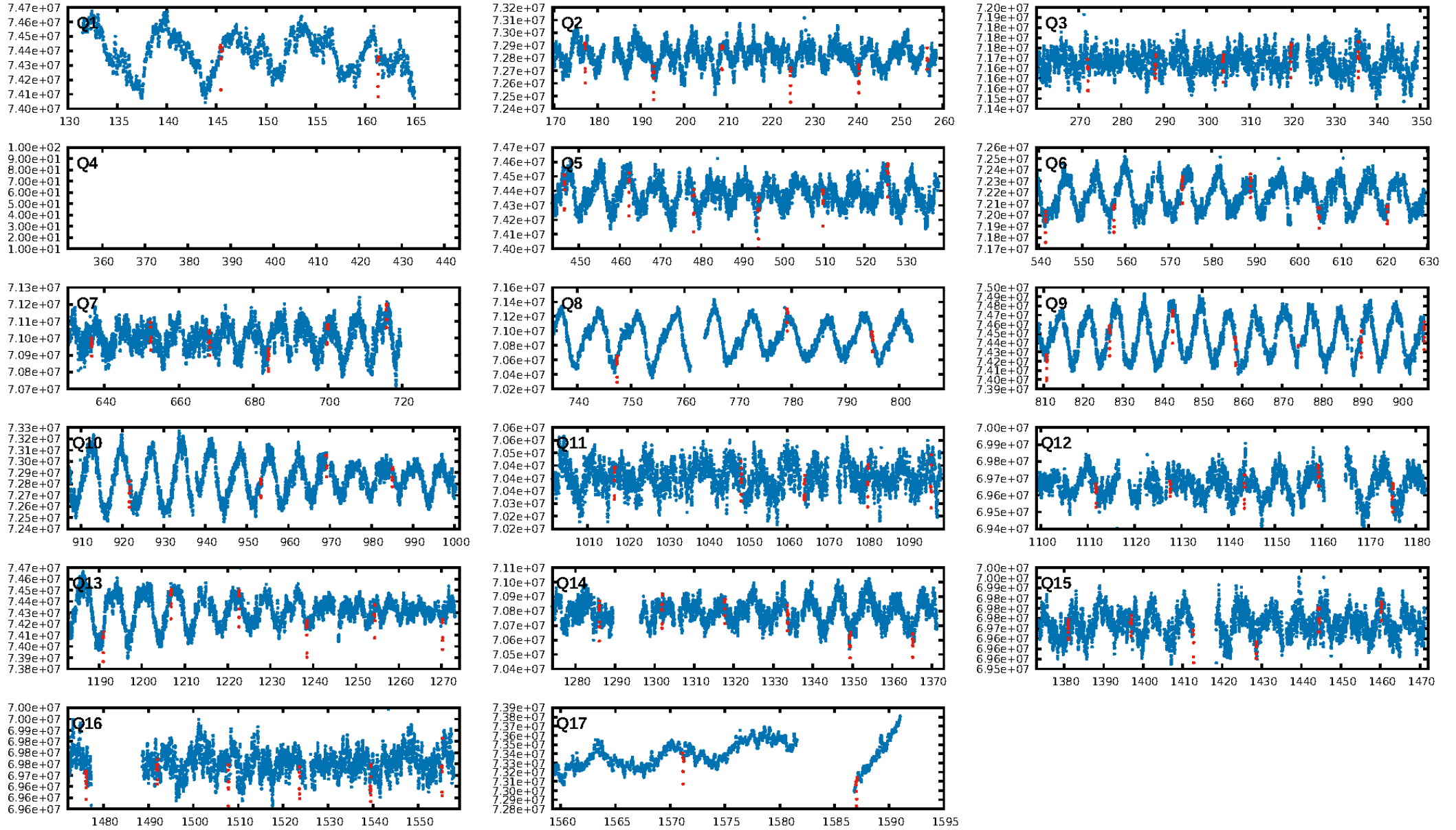
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGoF-sig: 83.8%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.99 [74/75]  
GhostDiagnostic-chr: -0.2956  
Centroid-sig: 0.0%  
Centroid-so: 14.583 arcsec [84.56σ]  
OotOffset-rm: 4.790 arcsec [16.50σ]  
KicOffset-rm: 6.358 arcsec [86.19σ]  
OotOffset-st: 4/3/3/5 [15]  
KicOffset-st: 4/3/3/5 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [16/16]

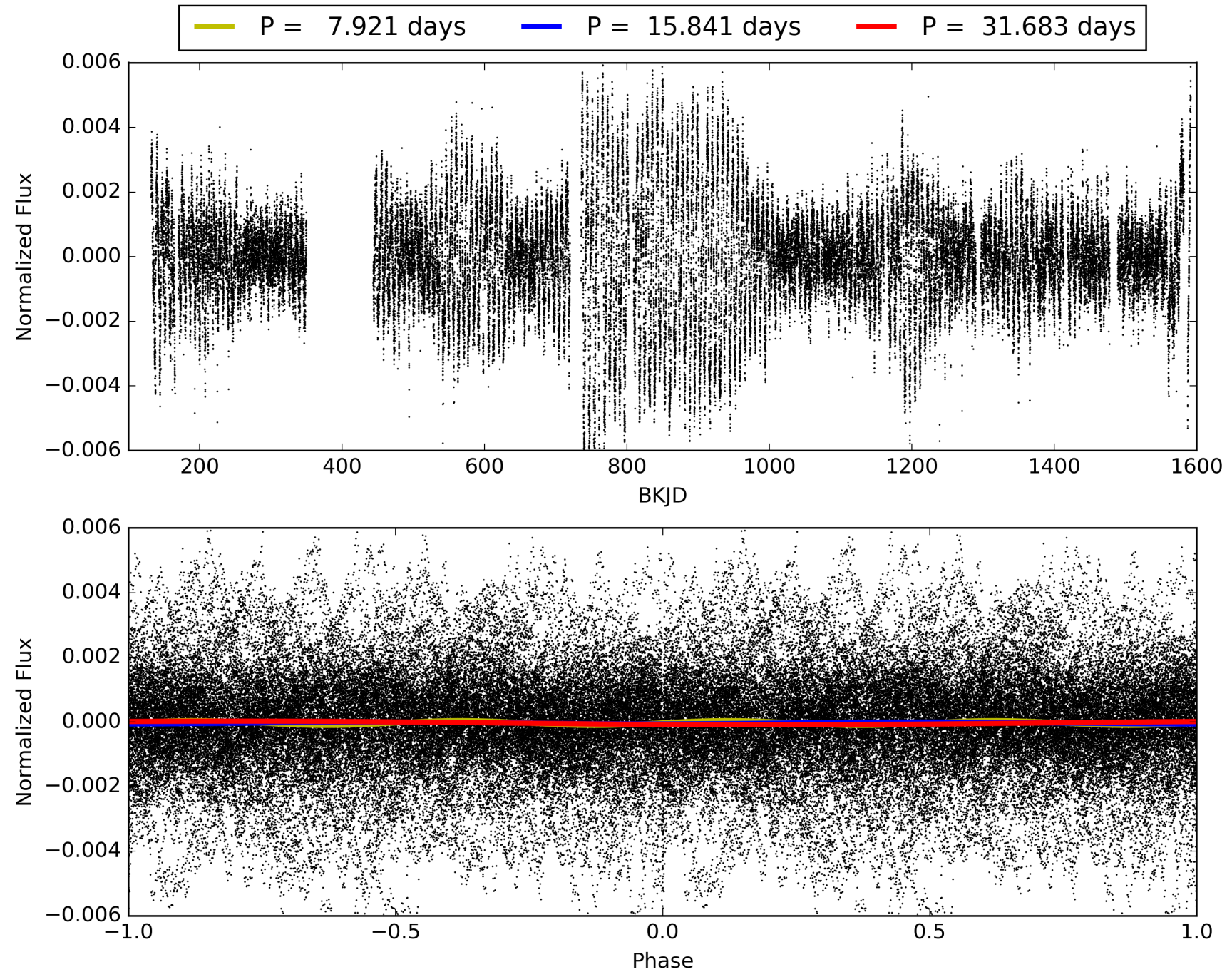
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 22:23:35 Z

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

# TCE 011824218-01, PDC Light Curves

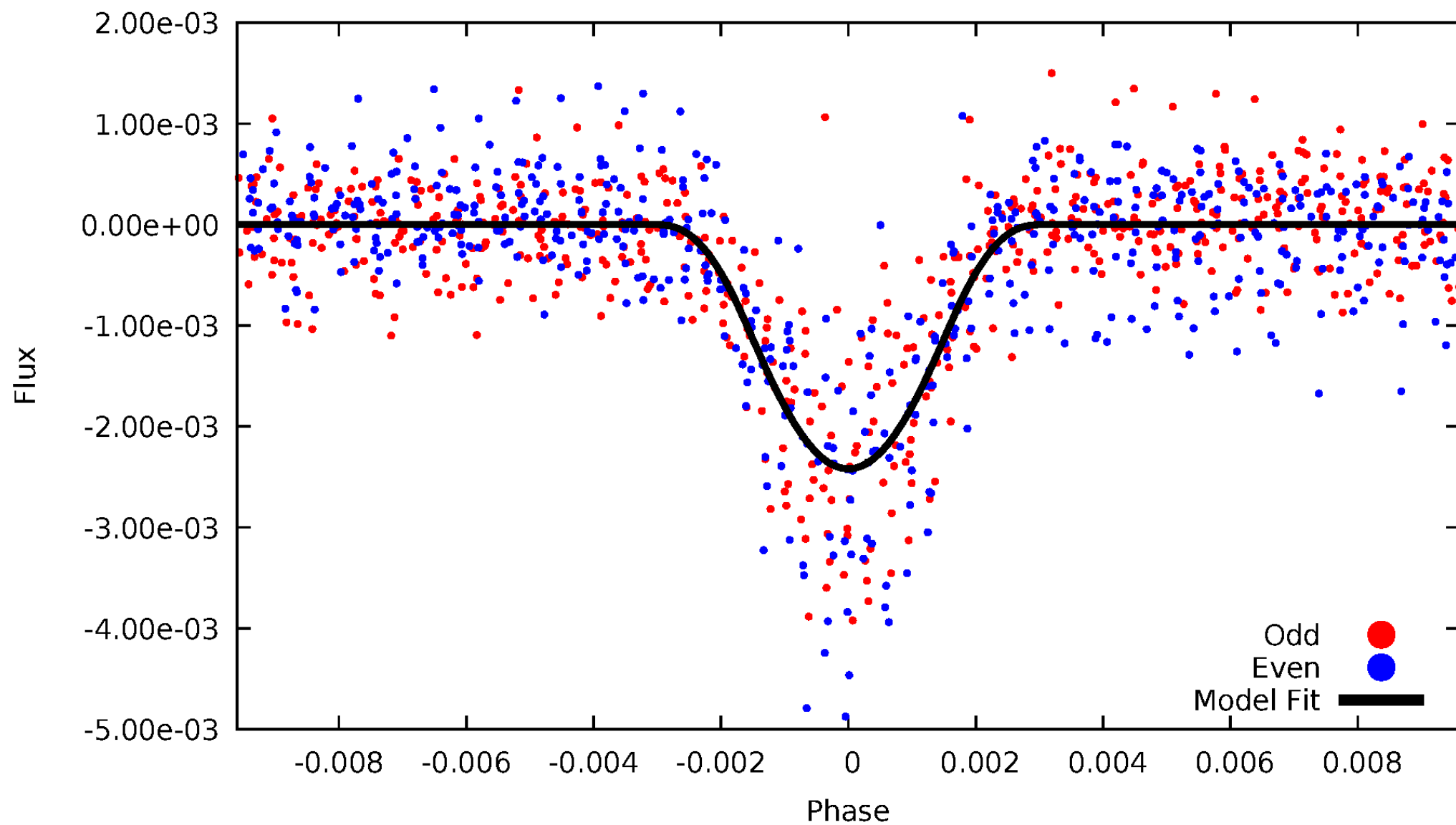


# TCE 011824218-01



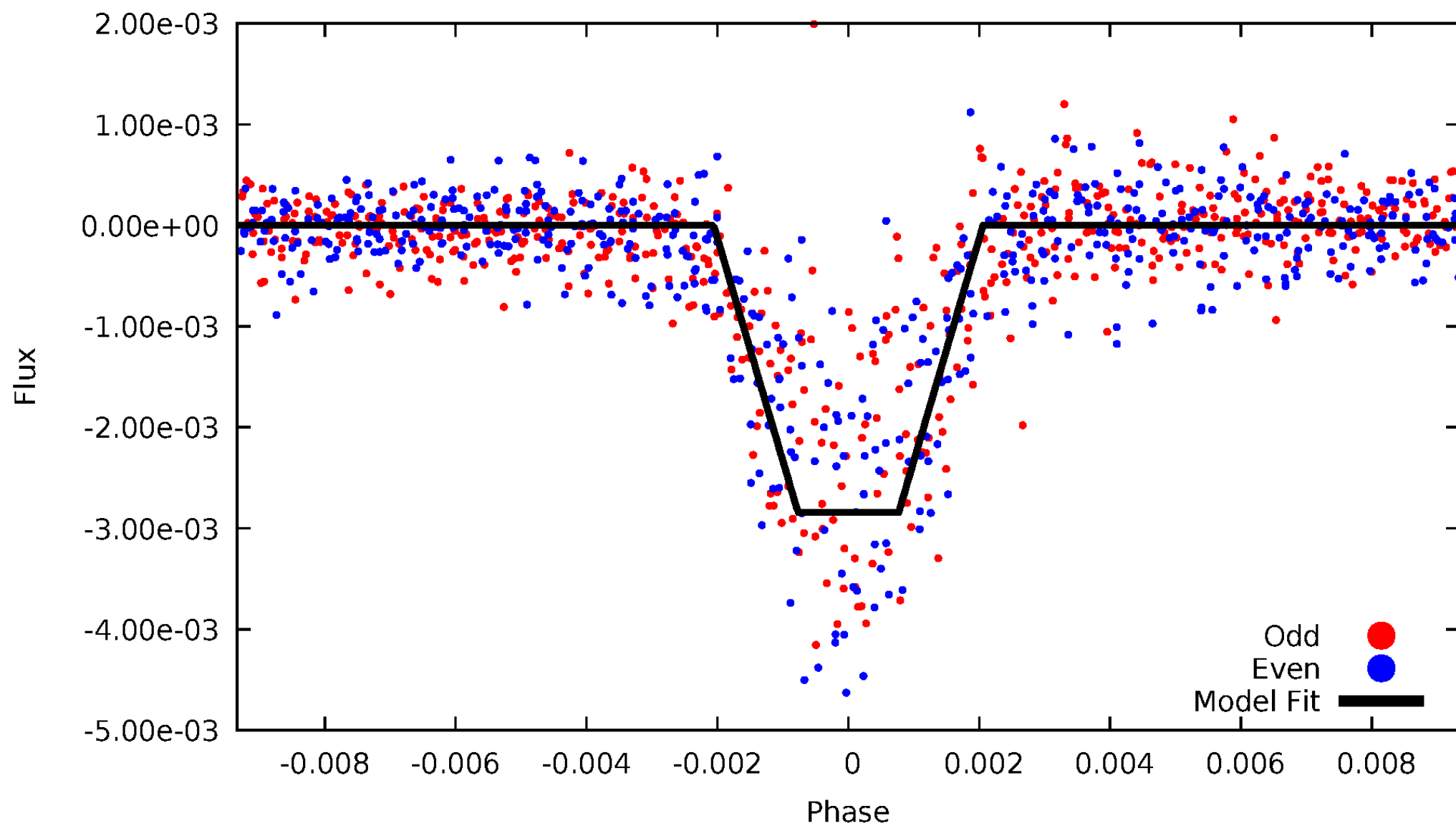
# DV Odd/Even

TCE 011824218-01



# ALT Odd/Even

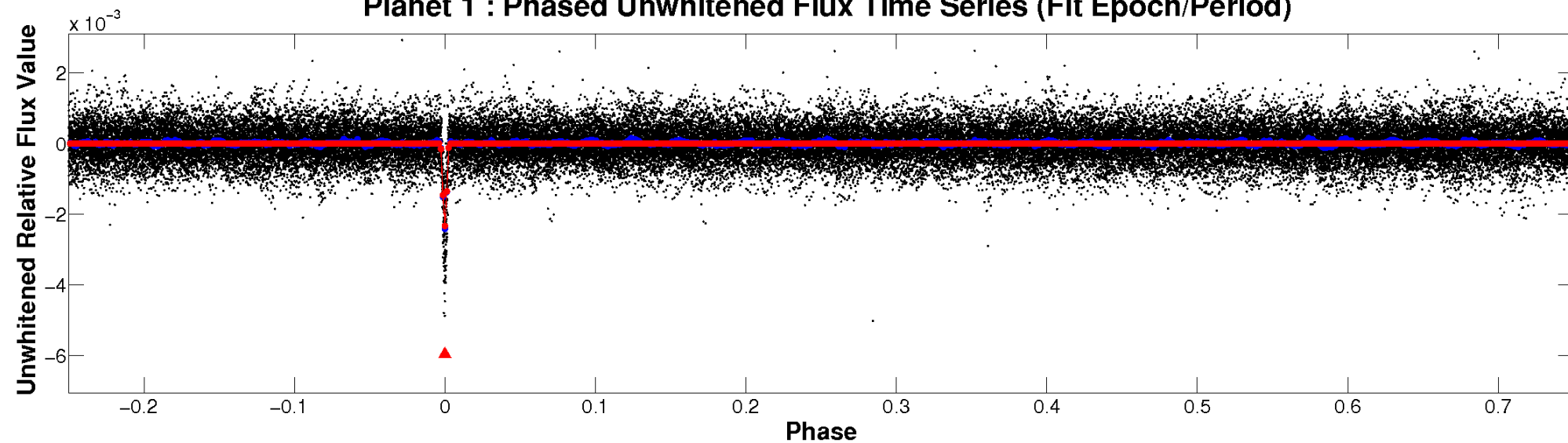
TCE 011824218-01



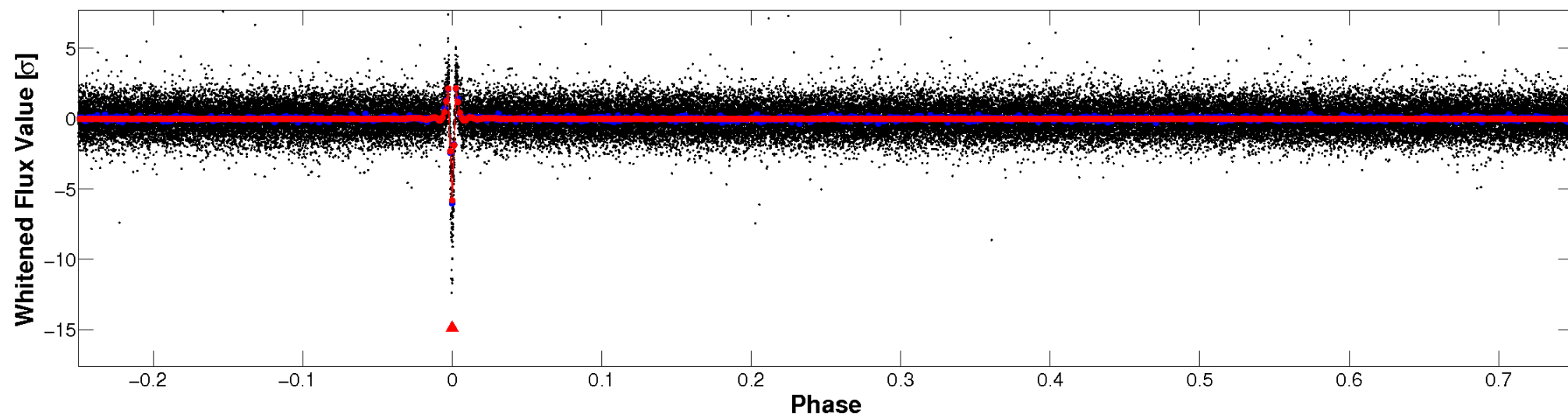


# Non-Whitened Vs. Whitened Light Curve

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

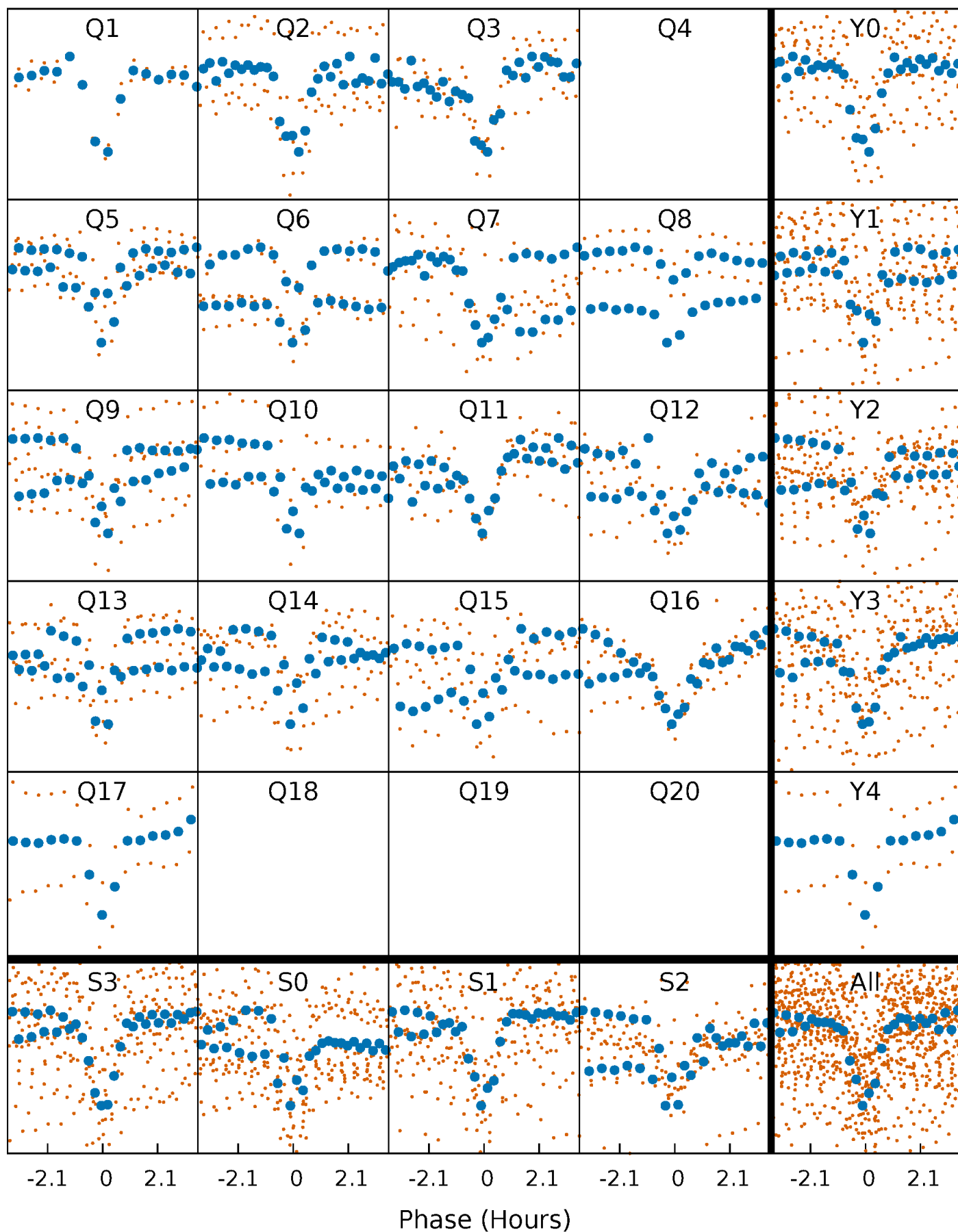


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

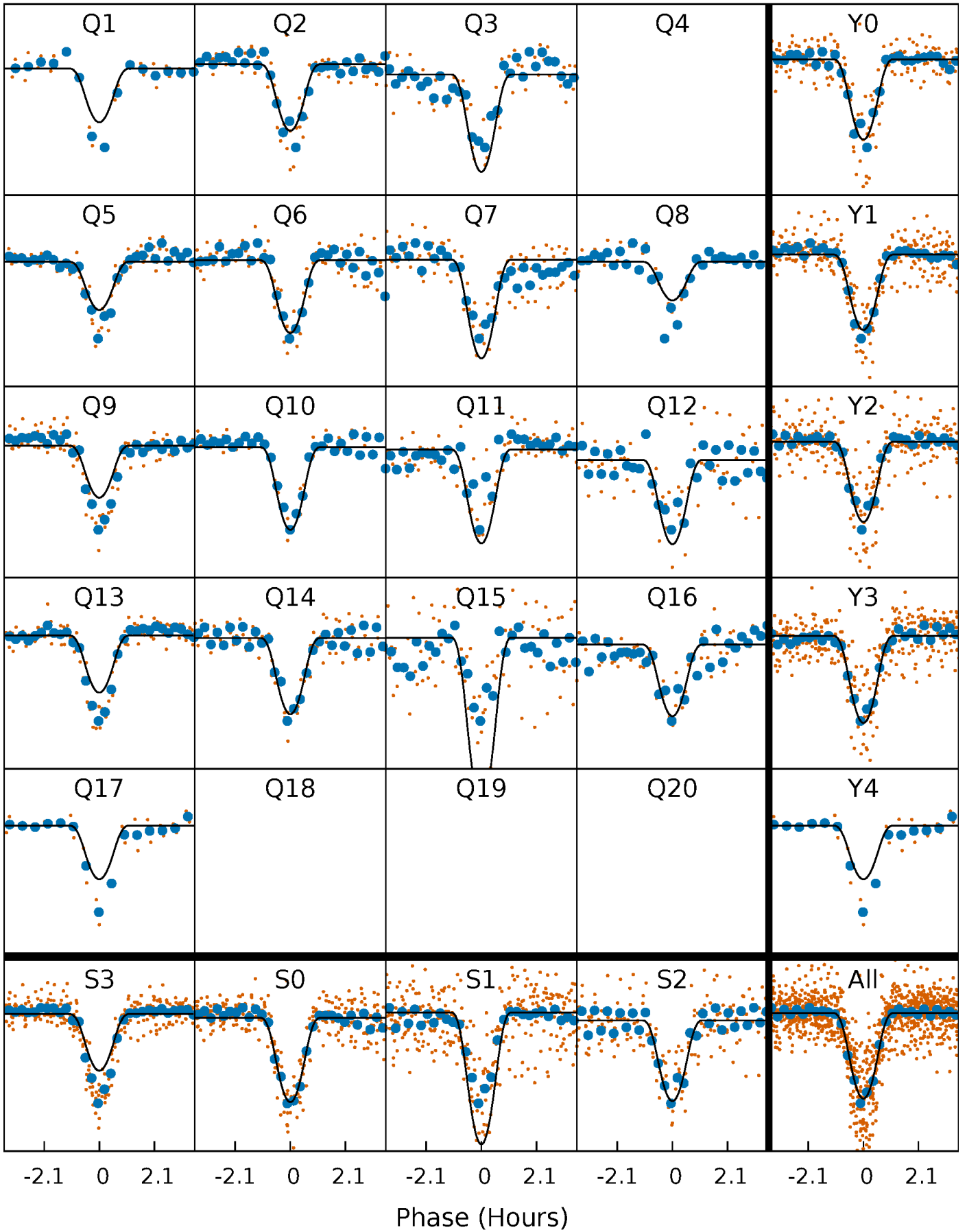
TCE 011824218-01 P= 15.841341 Days  $T_0=145.458925$  (BKJD)





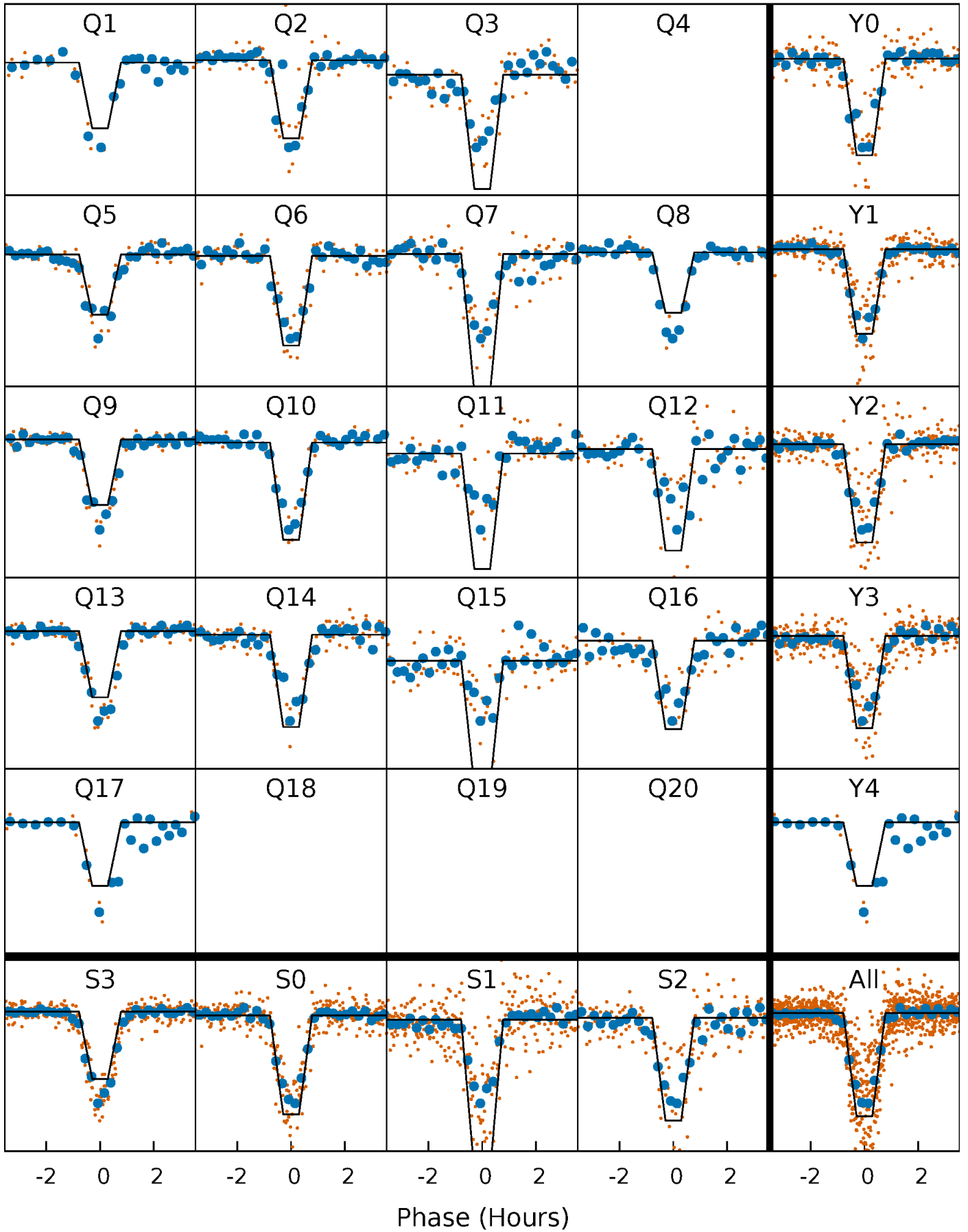
# DV Quarter-Phased Transit Curves

TCE 011824218-01 P= 15.841341 Days  $T_0=145.458925$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

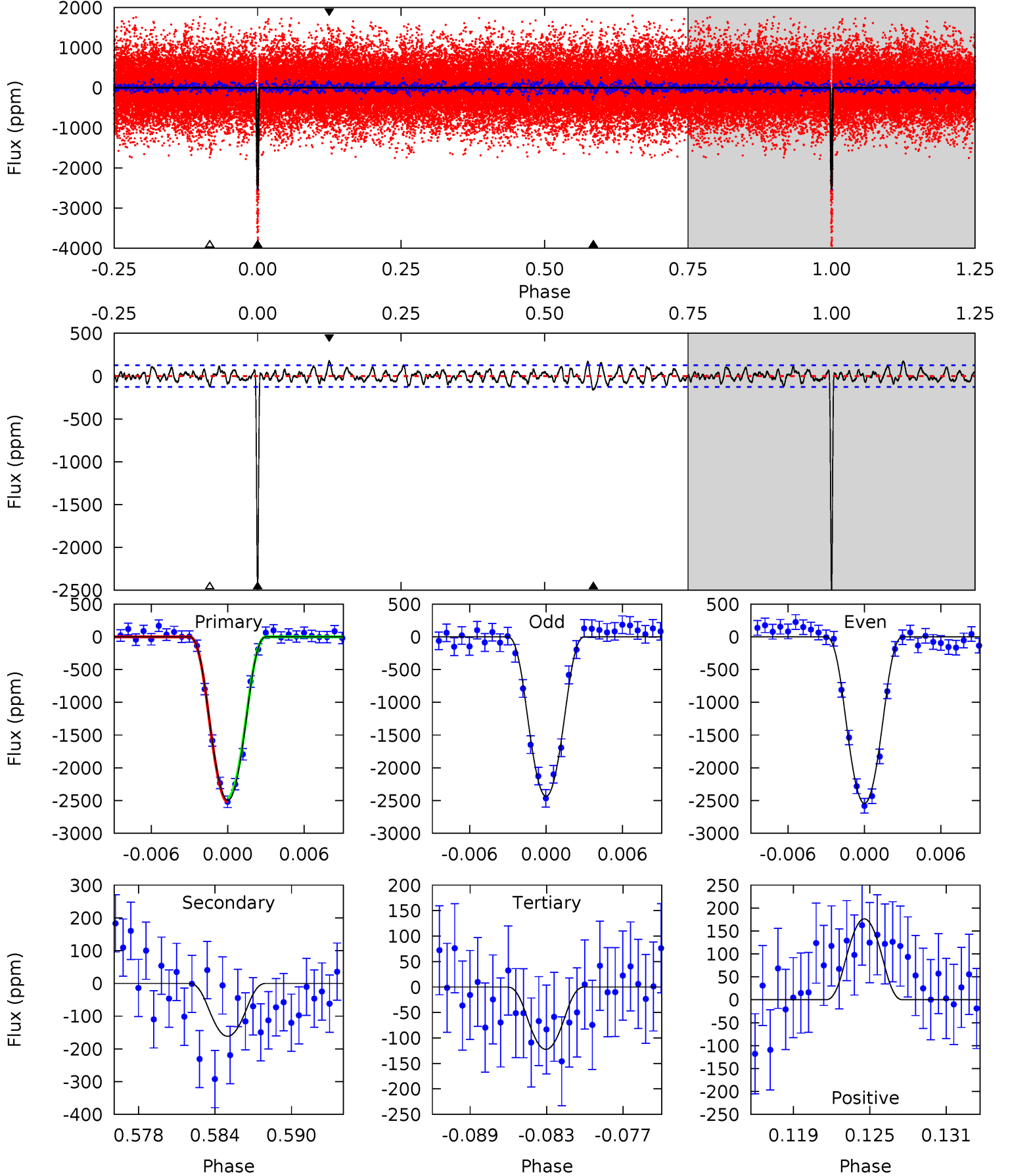
TCE 011824218-01 P= 15.841269 Days  $T_0=145.461959$  (BKJD)



# DV Model-Shift Uniqueness Test

011824218-01, P = 15.841341 Days, E = 129.617584 Days

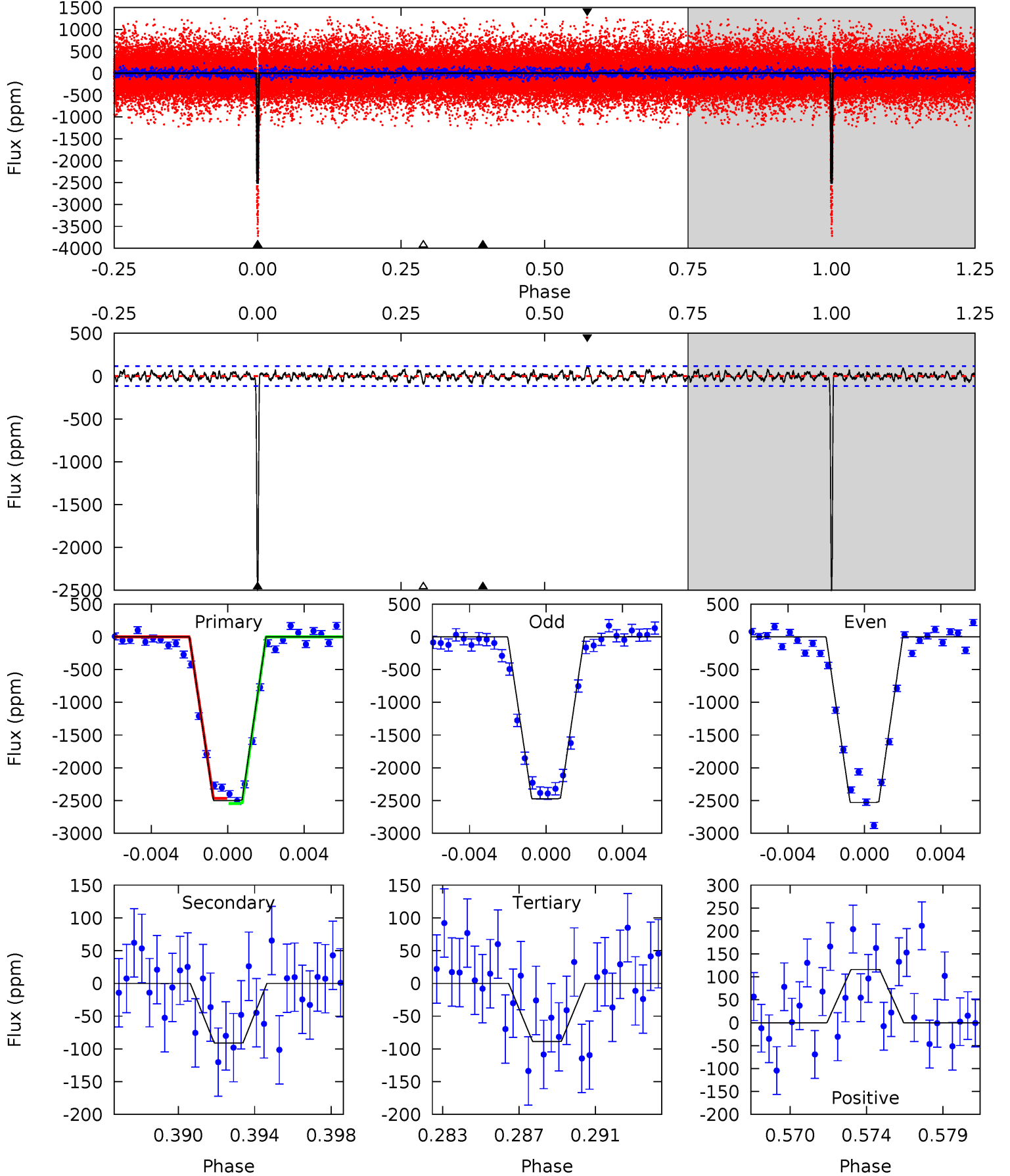
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
100.6	6.50	4.93	7.10	5.12	2.75	2.08	95.7	93.5	1.58	-0.60	2.22	1.05	0.07	1.33



# Alt Model-Shift Uniqueness Test

011824218-01,  $P = 15.841269$  Days,  $E = 129.620690$  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
111.5	4.07	3.96	5.18	5.19	2.87	1.47	107.6	106.4	0.10	-1.11	1.23	1.04	0.04	0



### Stellar Parameters For KIC 011824218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4993^{+106}_{-242}$	$2.399^{+0.039}_{-0.025}$	$0.070^{+0.150}_{-0.650}$	$19.695^{+0.921}_{-8.286}$	$3.546^{+0.071}_{-2.432}$	$0.001^{+0.001}_{-0.000}$
	+2%/-5%	+2%/-1%	+214%/-929%	+5%/-42%	+2%/-69%	+80%/-7%
Source	PHO1	AST9	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 011824218-01 / KOI 3845.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-162 \pm 25$	$169.26^{+88.96}_{-82.19}$	$3145^{+83}_{-155}$	$-2912^{+5604}_{-165}$	$0.104^{+0.302}_{-0.058}$
Alt.	$-91 \pm 22$	$125.78^{+73.42}_{-70.50}$	$3148^{+83}_{-163}$	$-2906^{+5882}_{-166}$	$0.110^{+0.409}_{-0.068}$

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

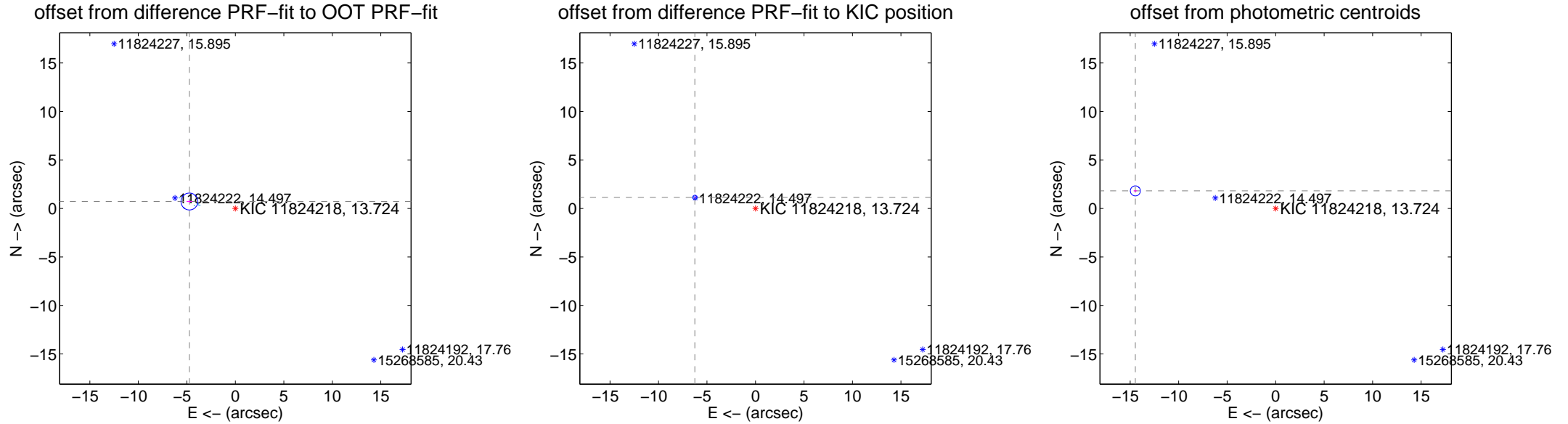
## DV Centroid Data

Supplemental centroid analysis for 011824218-01. Kepler magnitude: 13.72. Transit SNR 62.06

There are 15 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

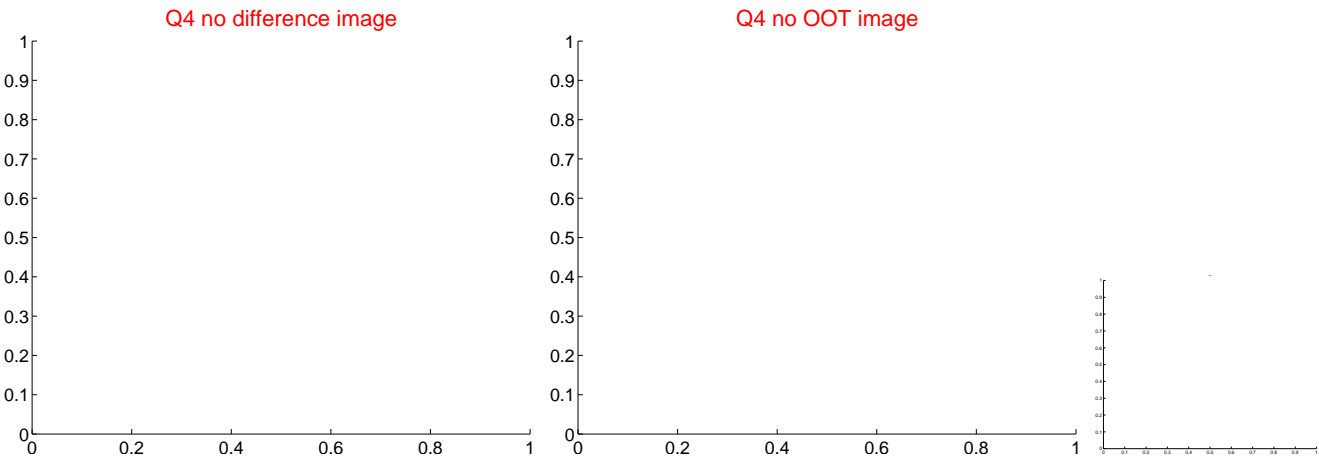
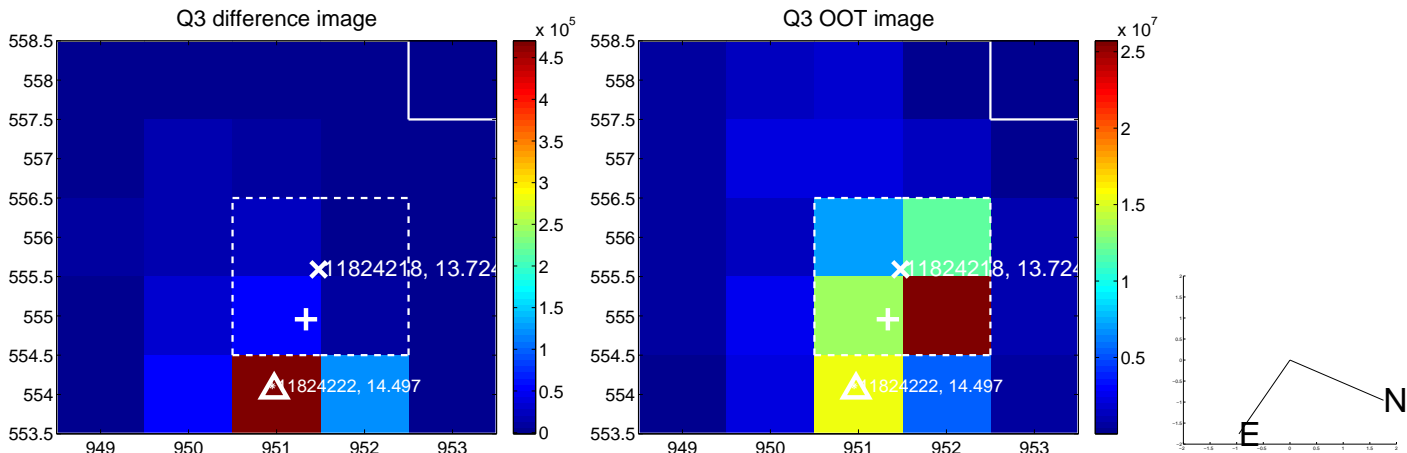
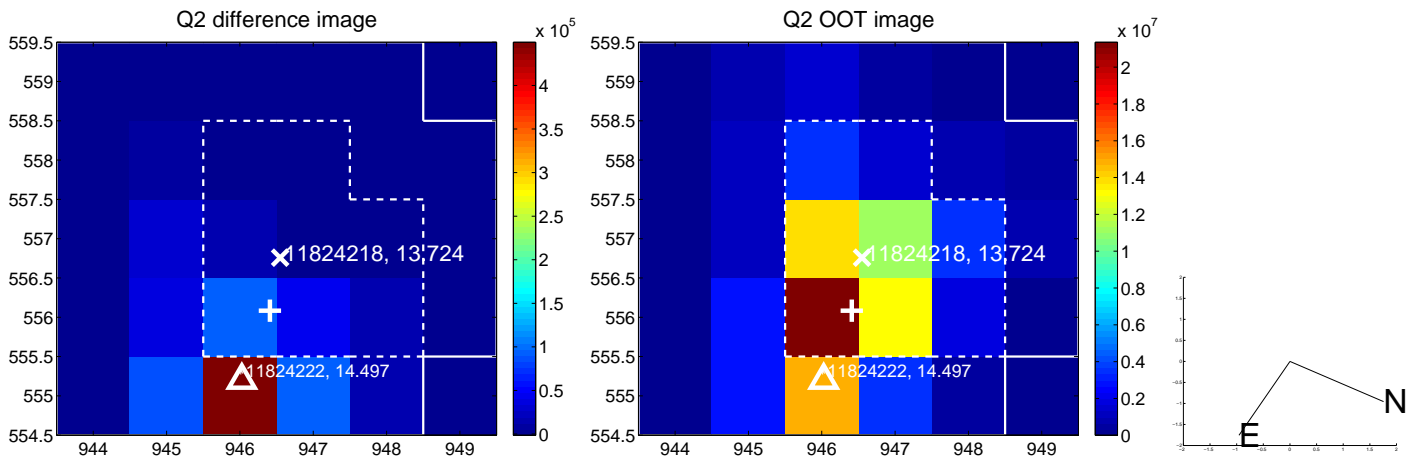
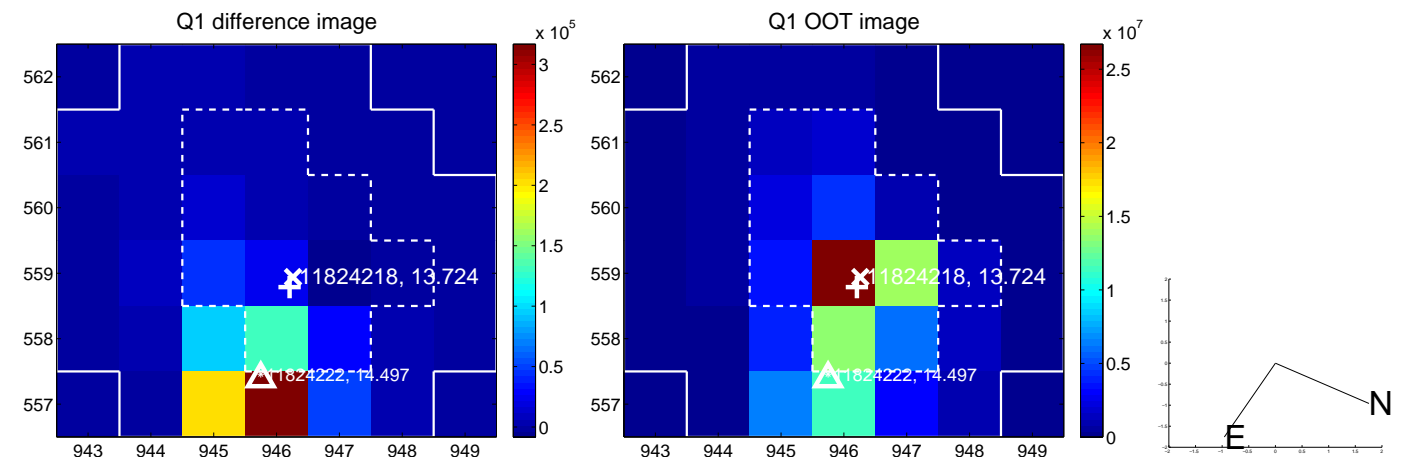
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>4.790 <math>\pm</math> 0.290</b>	<b>16.50</b>	4.736 $\pm$ 0.293	0.715 $\pm$ 0.139
PRF-fit source offset from KIC position	<b>6.358 <math>\pm</math> 0.074</b>	<b>86.19</b>	6.255 $\pm$ 0.074	1.141 $\pm$ 0.067
photometric centroid source offset	<b>14.58 <math>\pm</math> 0.17</b>	<b>84.56</b>	14.47 $\pm$ 0.17	1.81 $\pm$ 0.08



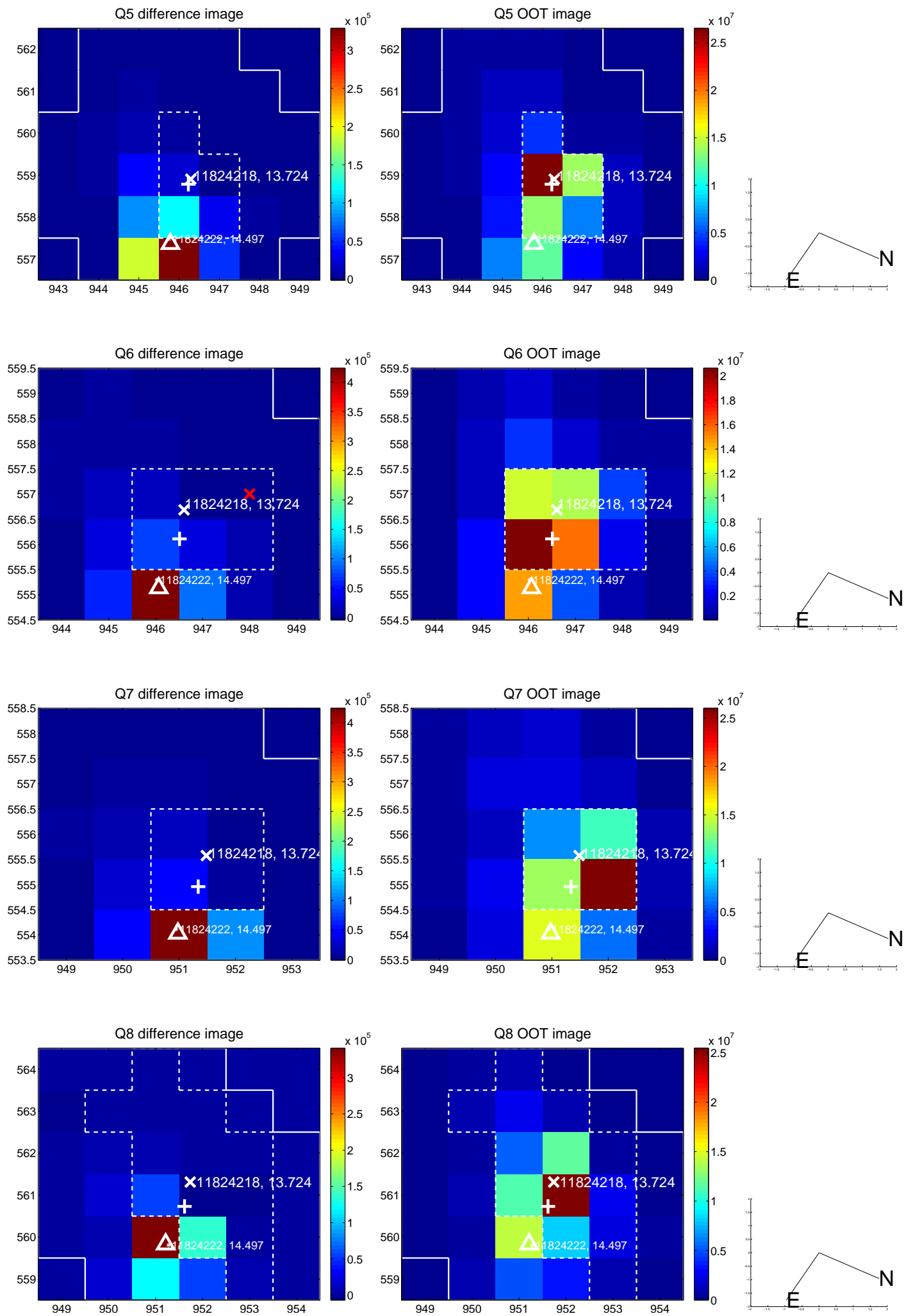
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



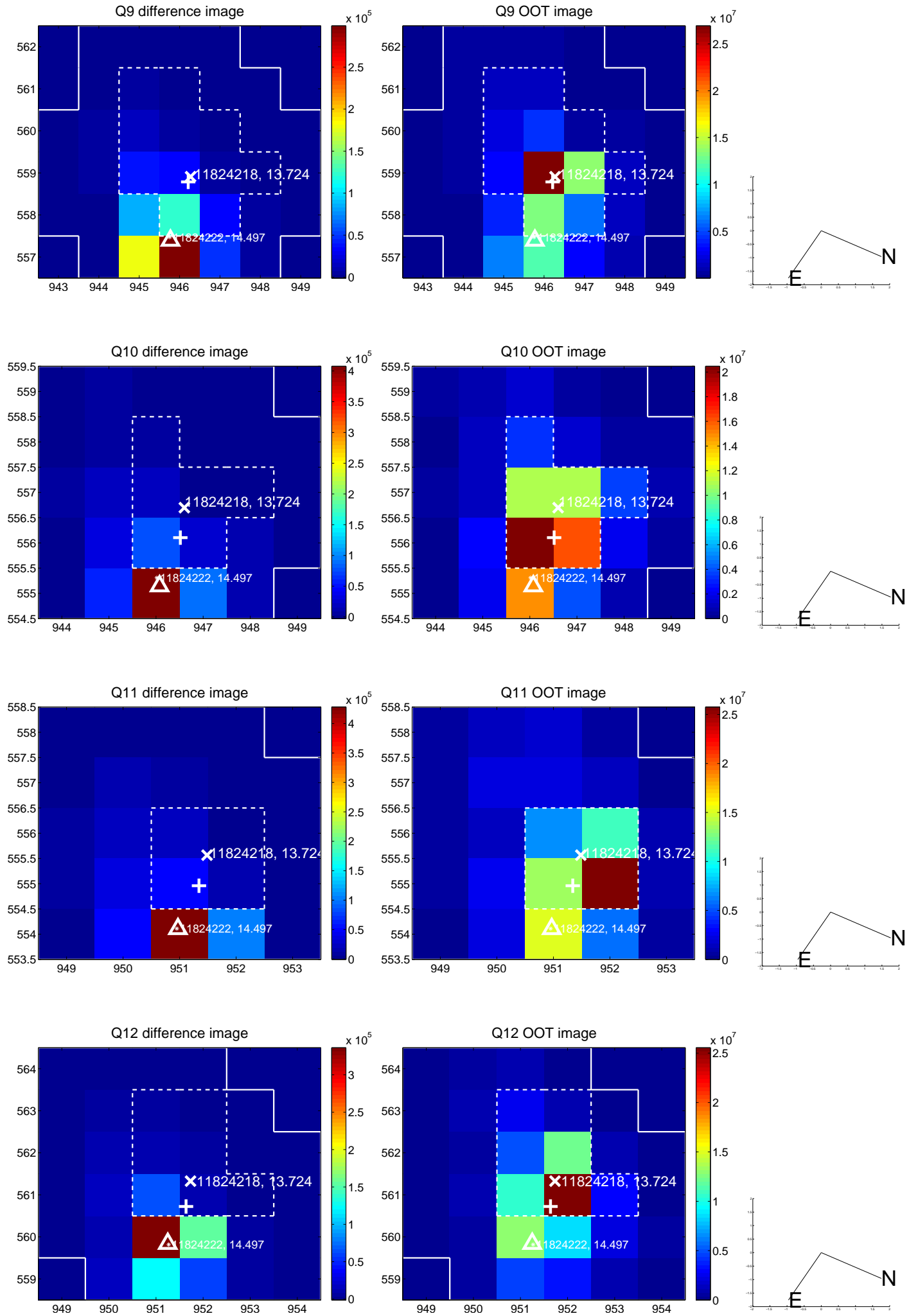
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



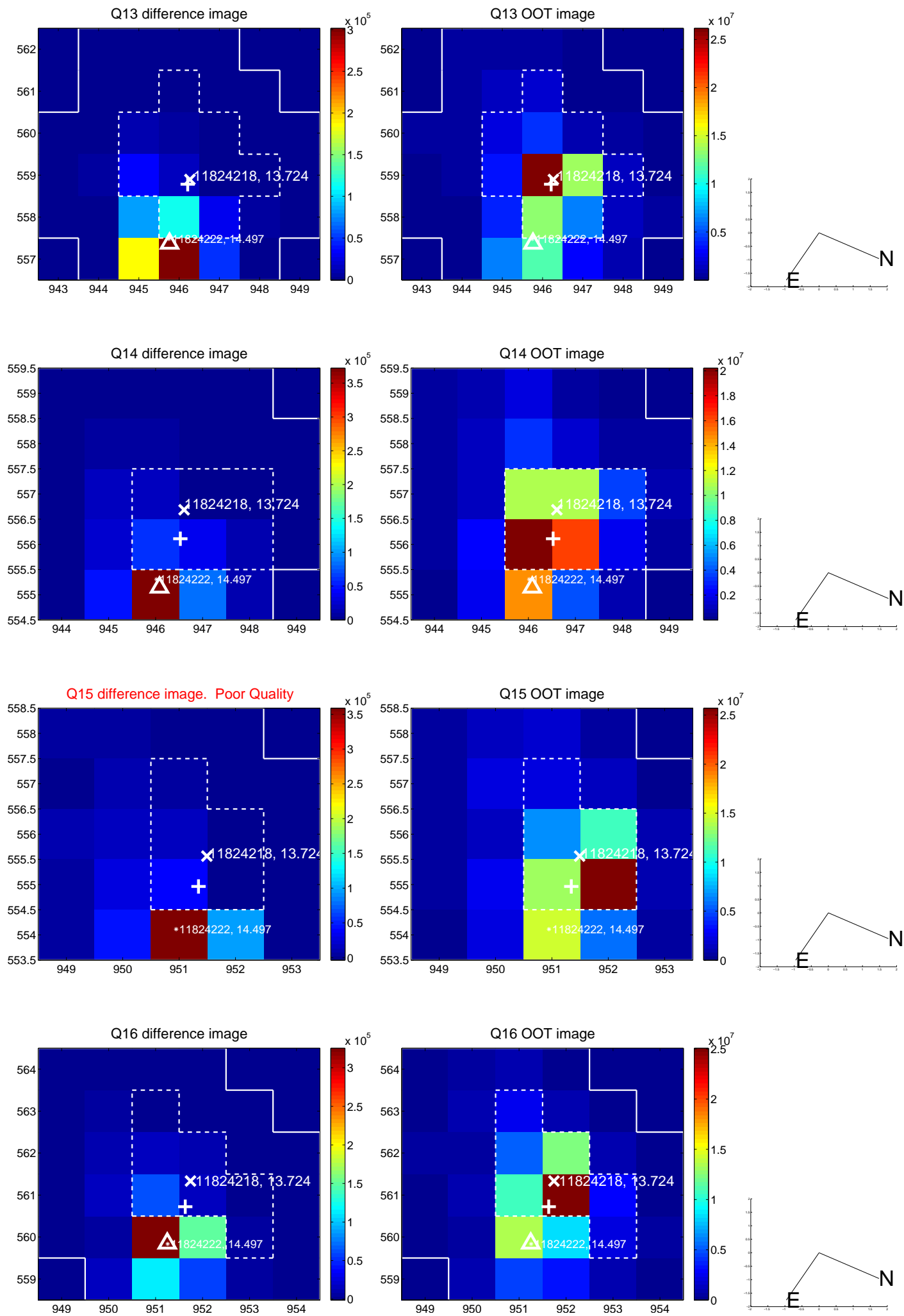
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



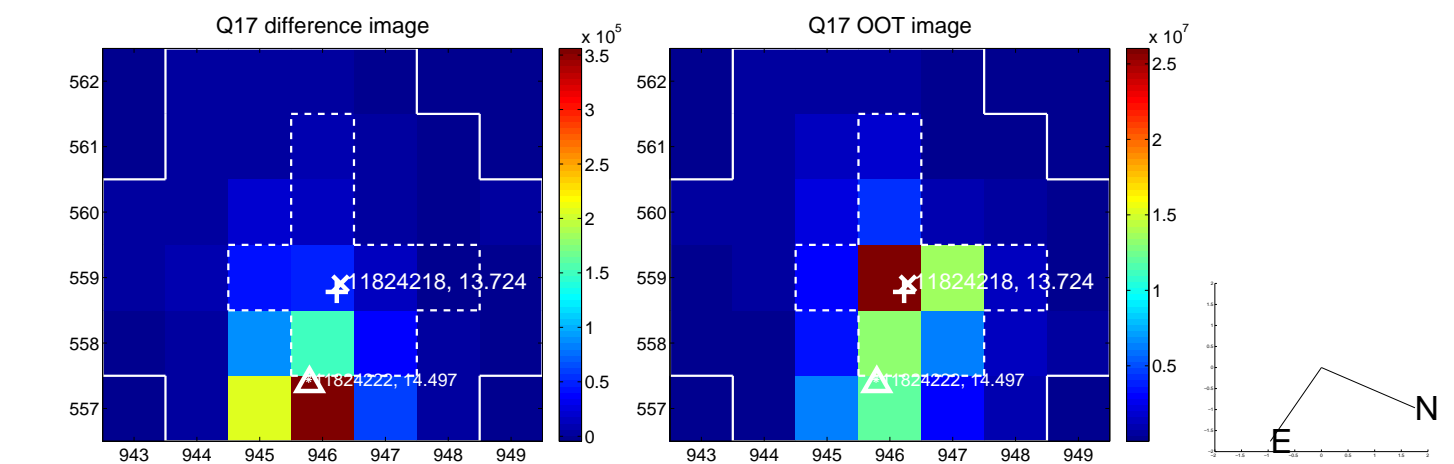
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



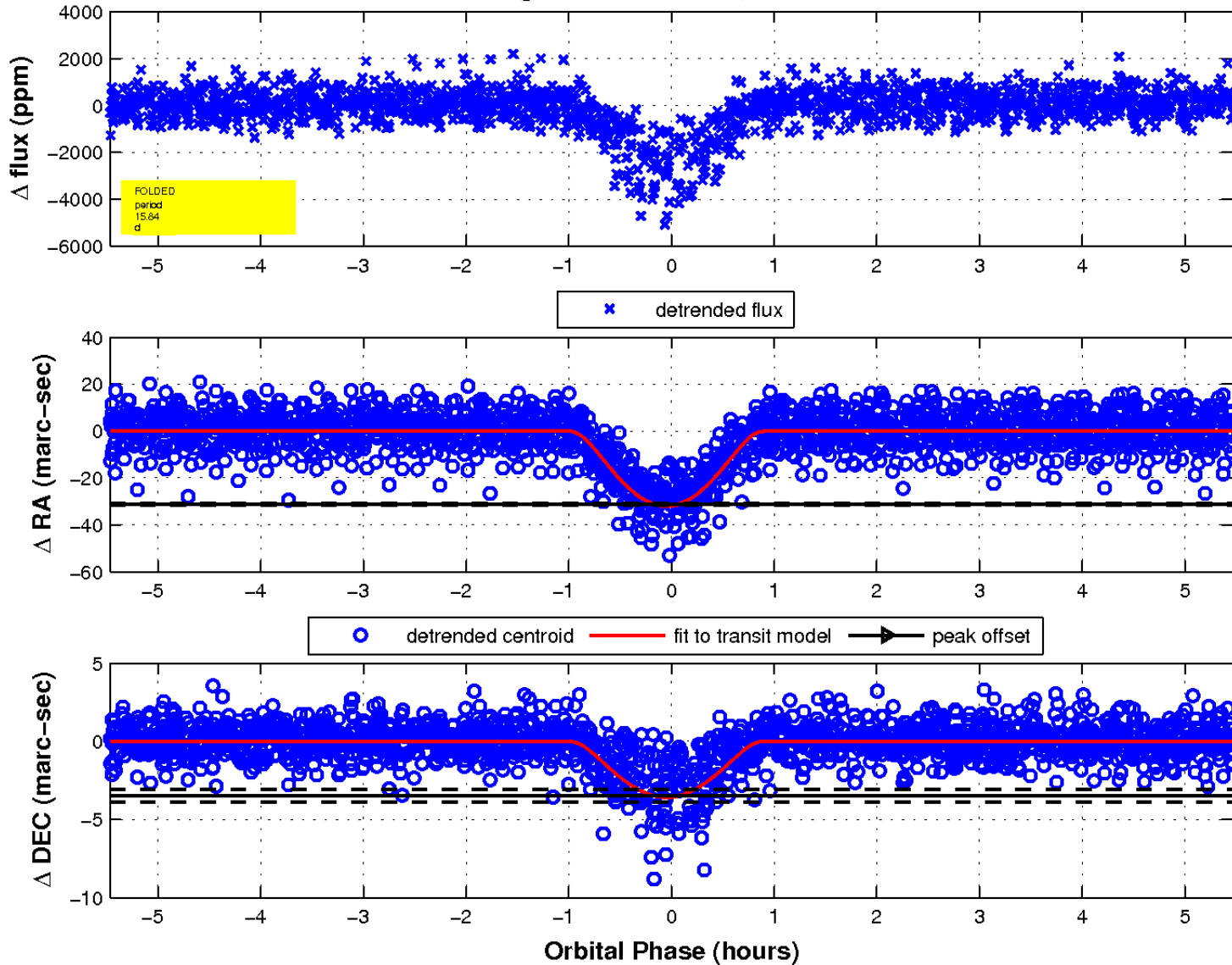
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

