

# KIC 003443790

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003443790-01	OBS	1185.01	1.665795	132.193700	1787.6	1.587	284.5	502.6	2.79	6261	13.92	11435.97
003443790-02	OBS	No	0.832894	132.196488	802.6	1.722	266.1	258.9	2.79	6261	10.17	28816.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003443790-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
003443790-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—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 003443790-01

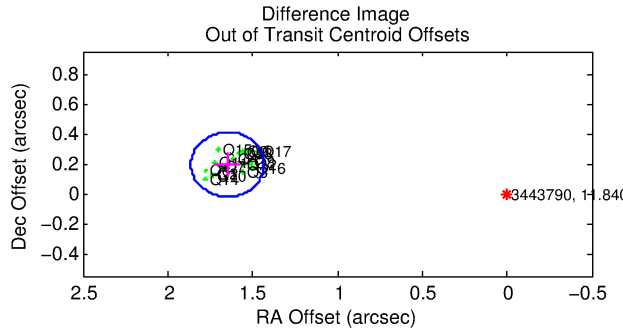
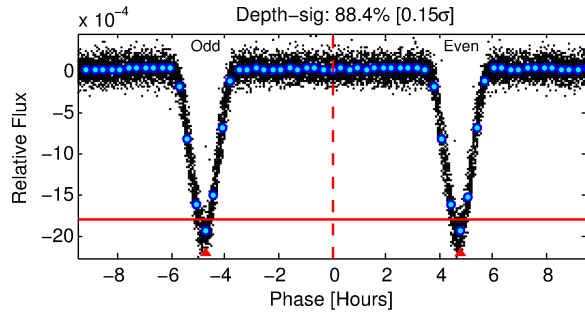
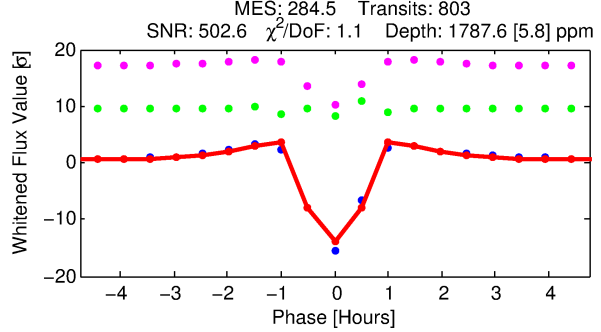
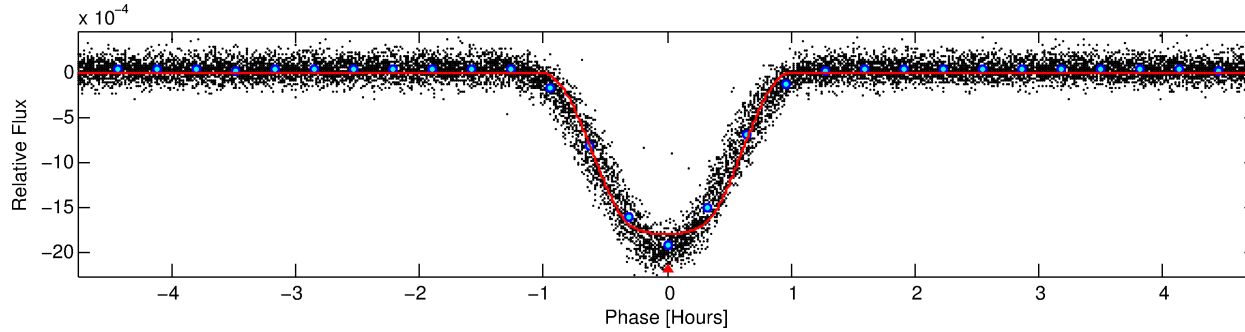
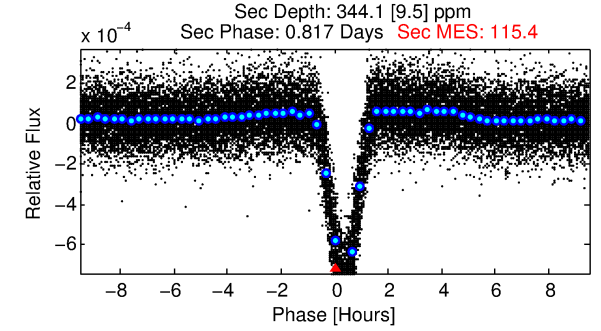
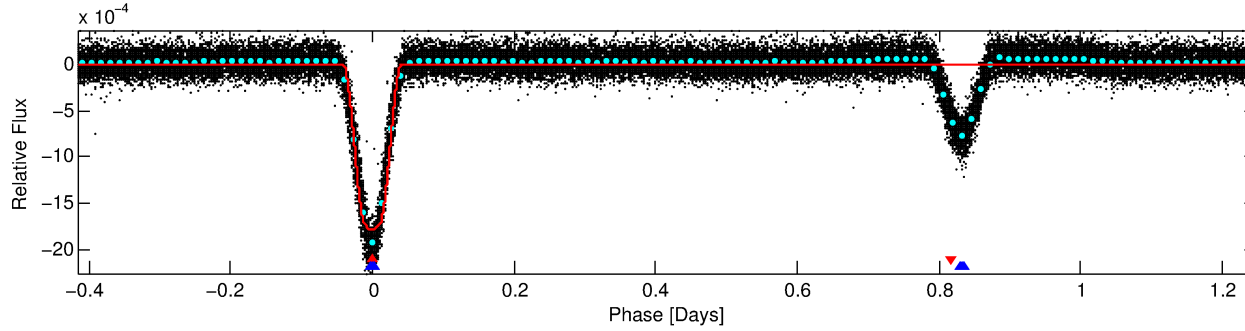
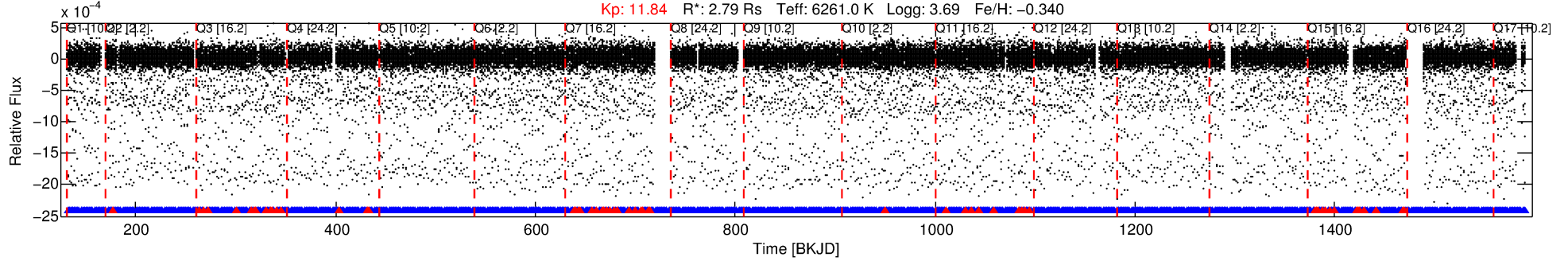
No Significant Match Found

# DV One-Page Summary

KIC: 3443790 Candidate: 1 of 2 Period: 1.666 d

KOI: K01185.01 Corr: 0.915

Kp: 11.84 R\*: 2.79 Rs Teff: 6261.0 K Logg: 3.69 Fe/H: -0.340



## DV Fit Results:

Period = 1.66579 [0.00000] d  
Epoch = 132.1937 [0.0000] BKJD  
Rp/R\* = 0.0457 [0.0002]  
a/R\* = 4.34 [0.07]  
b = 0.90 [0.00]  
Seff = 11435.97 [6518.12]  
Teq = 2637 [376] K  
Rp = 13.92 [5.38] Re  
a = 0.0306 [0.0109] AU  
Ag = 0.92 [0.51] [-0.16σ]  
Teffp = 3988 [115] K [3.44σ]

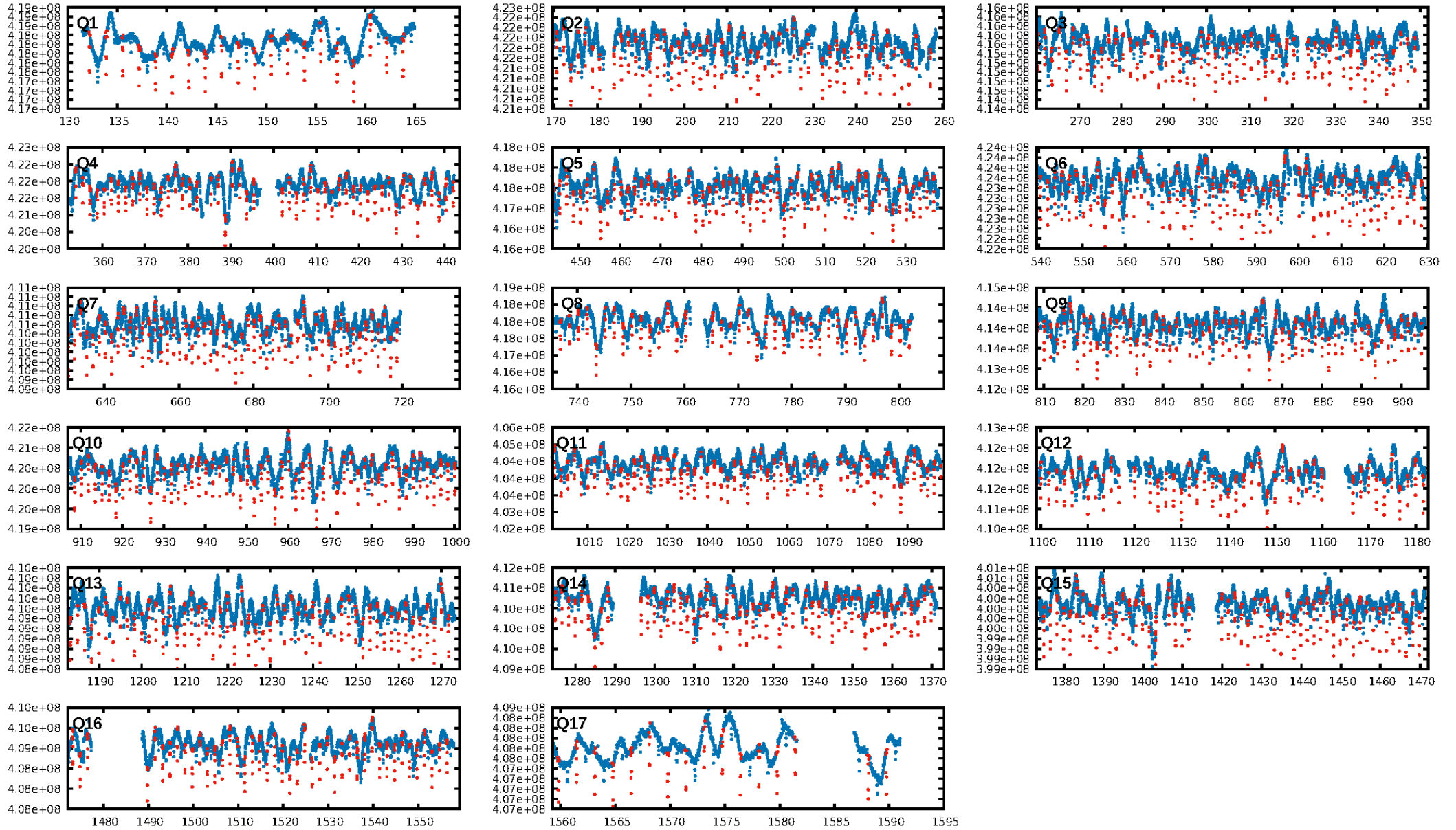
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.53σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.92 [709/767]  
GhostDiagnostic-chr: 4.513  
Centroid-sig: 0.0%  
Centroid-so: 0.850 arcsec [48.77σ]  
OotOffset-rm: 1.659 arcsec [23.08σ]  
KicOffset-rm: 1.646 arcsec [23.81σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

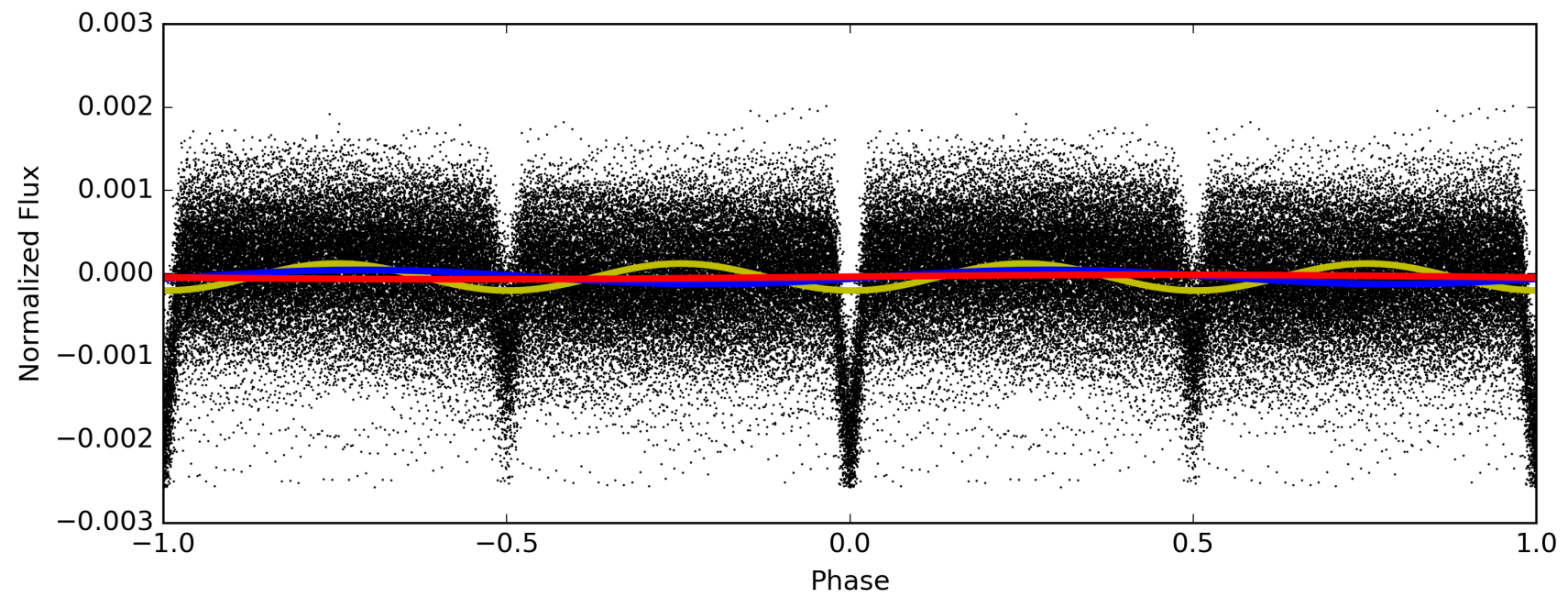
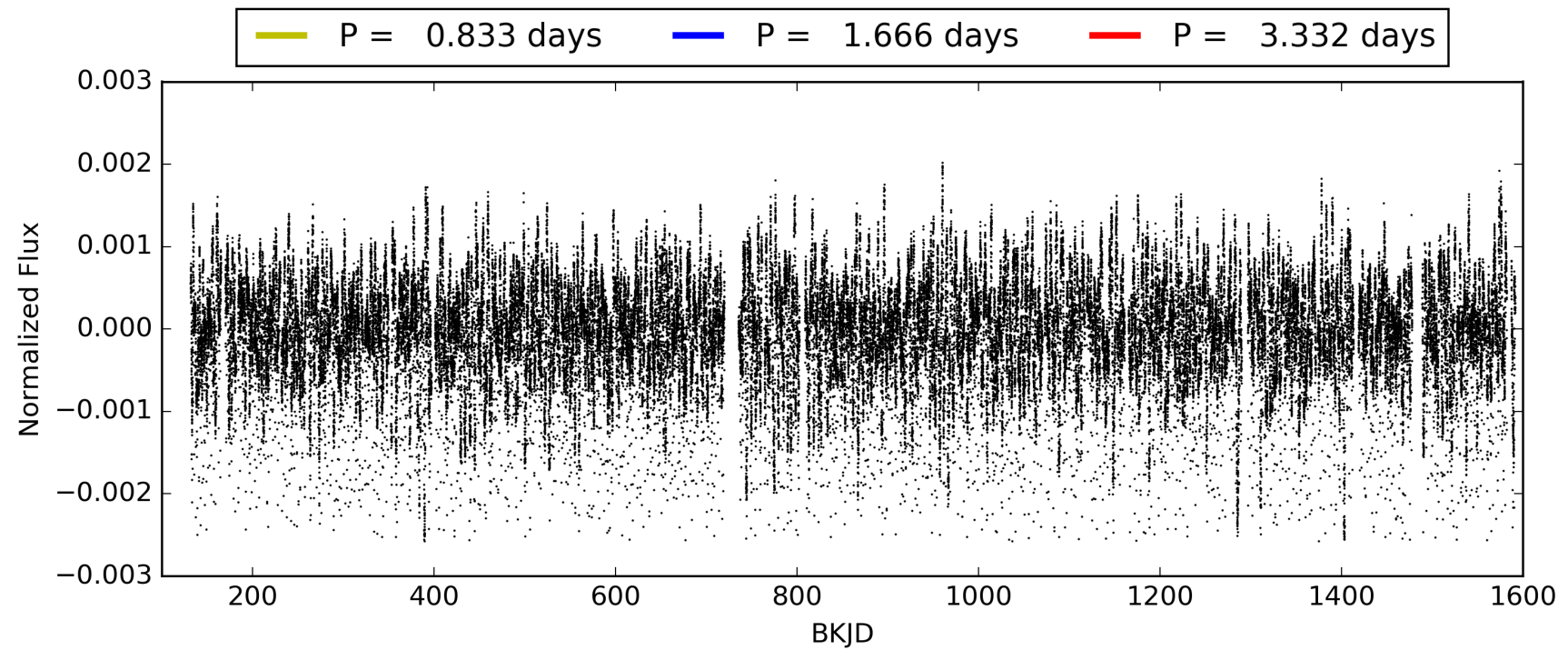
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:06:04 Z

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

# TCE 003443790-01, PDC Light Curves

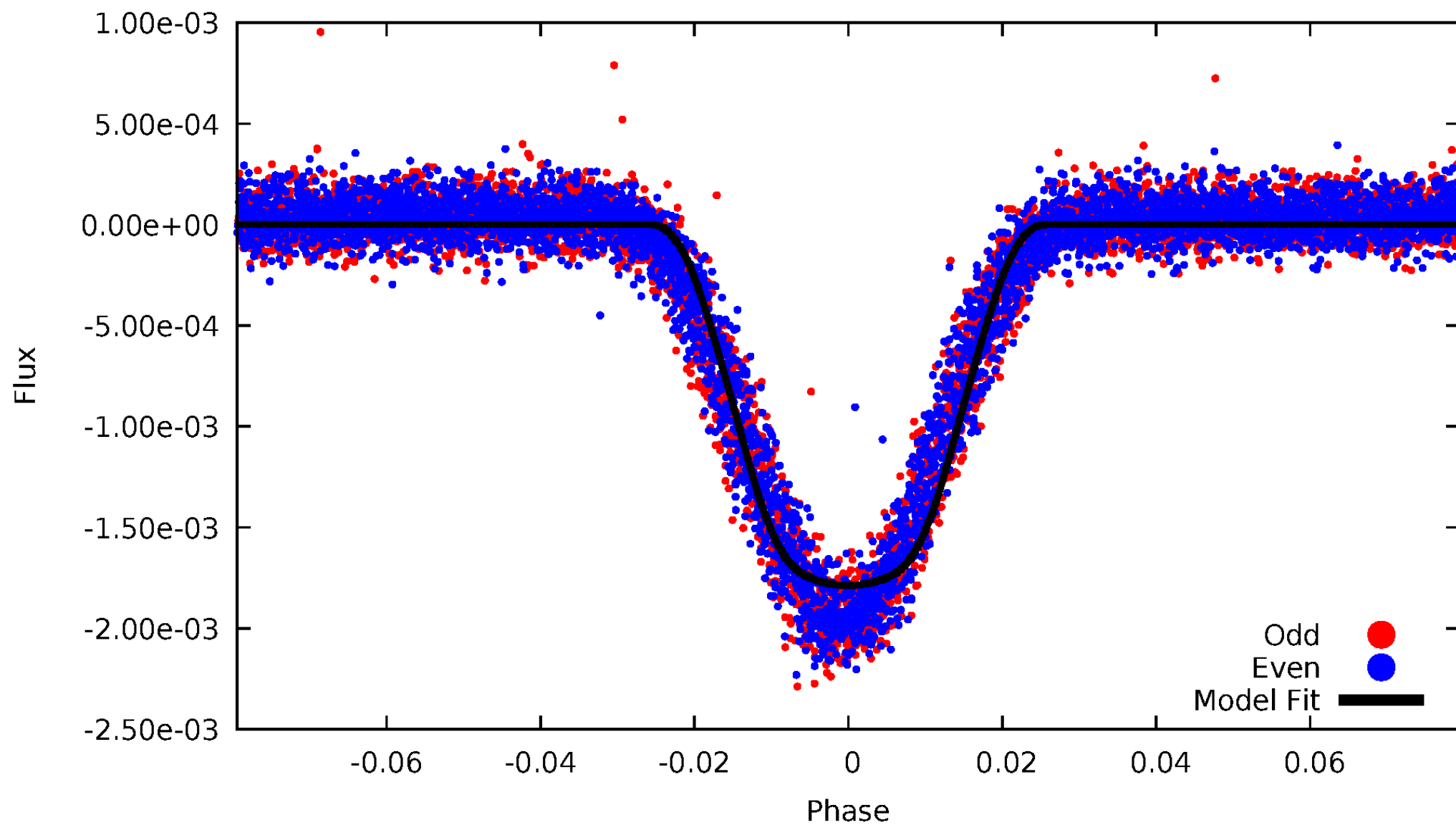


TCE 003443790-01



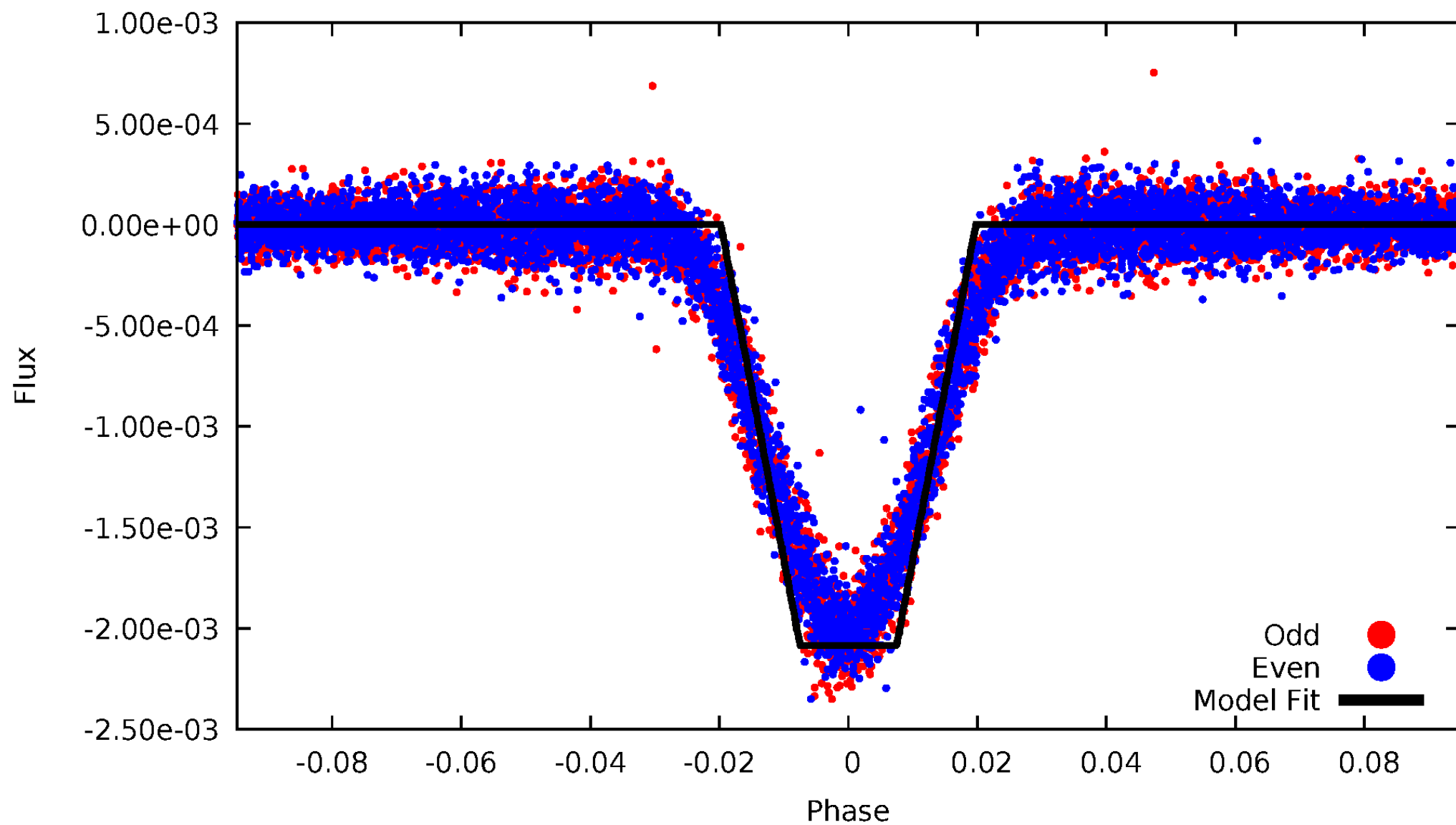
# DV Odd/Even

TCE 003443790-01



# ALT Odd/Even

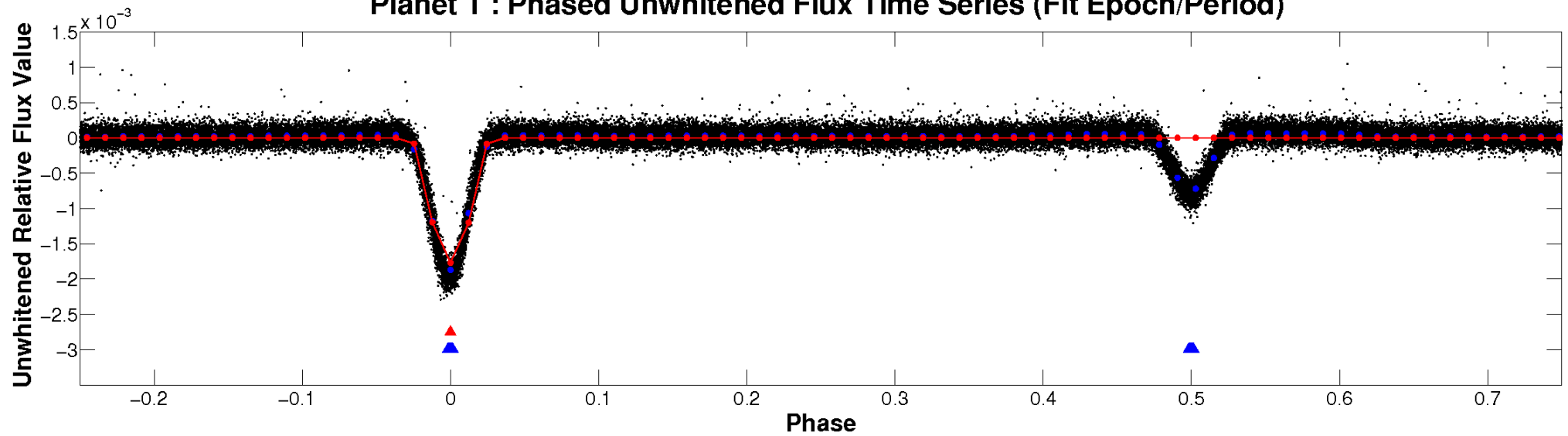
TCE 003443790-01



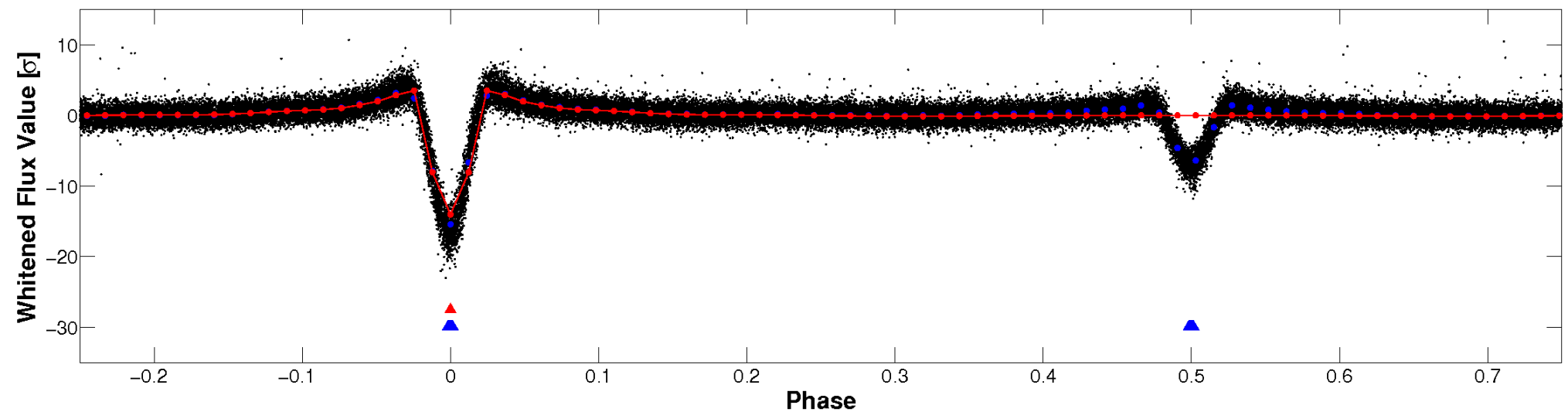


# Non-Whitened Vs. Whitened Light Curve

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

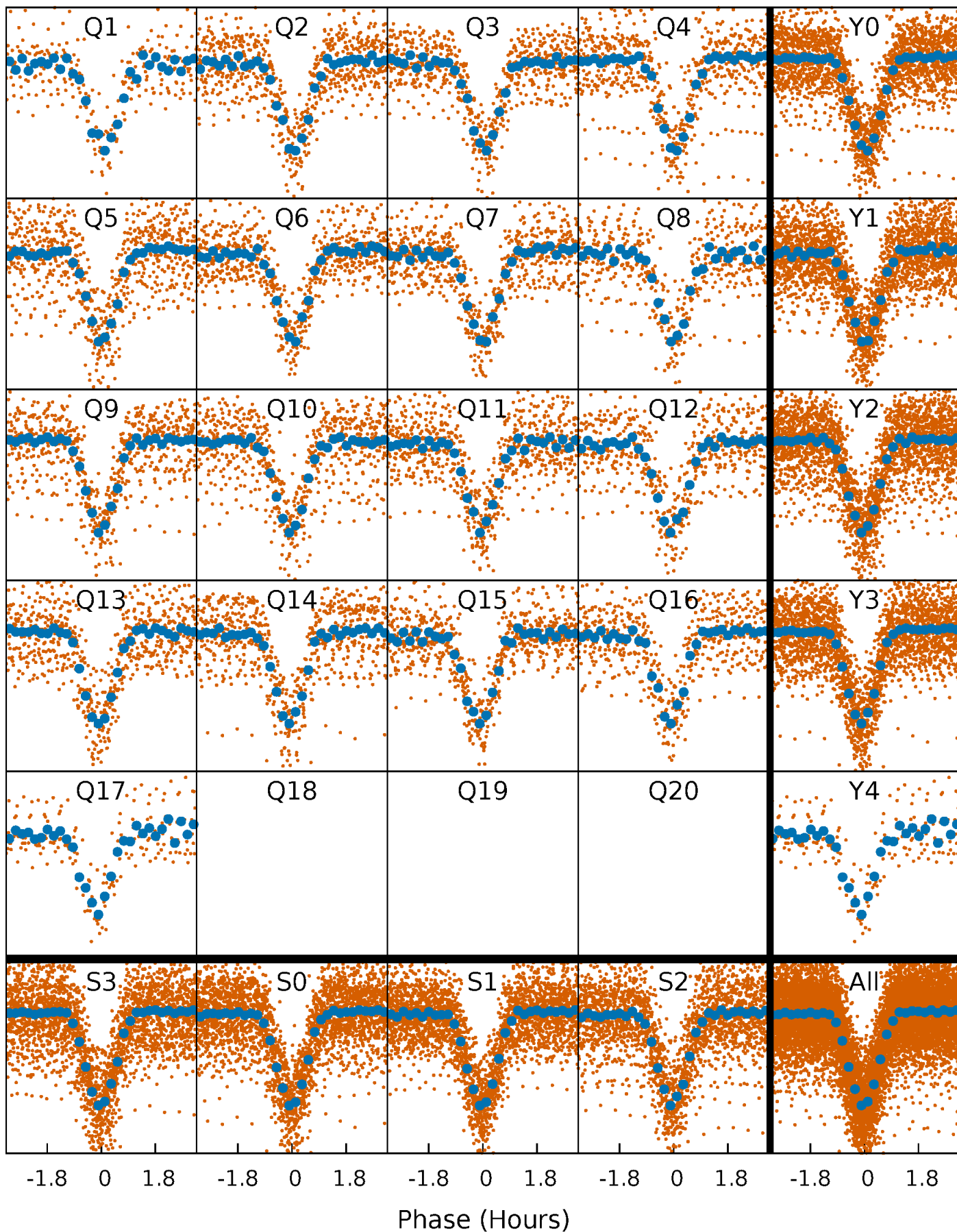


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

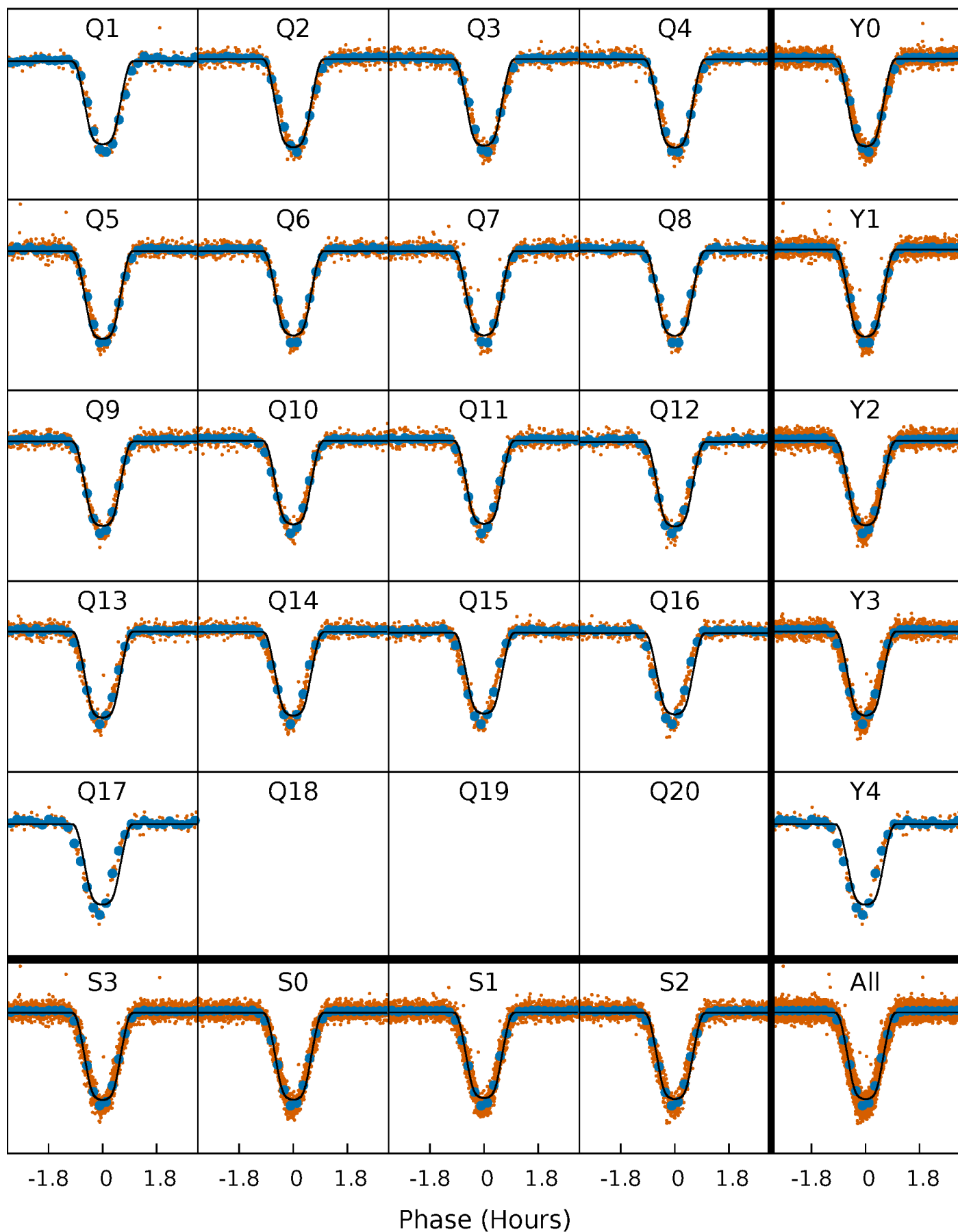
TCE 003443790-01 P= 1.665795 Days  $T_0=132.193700$  (BKJD)





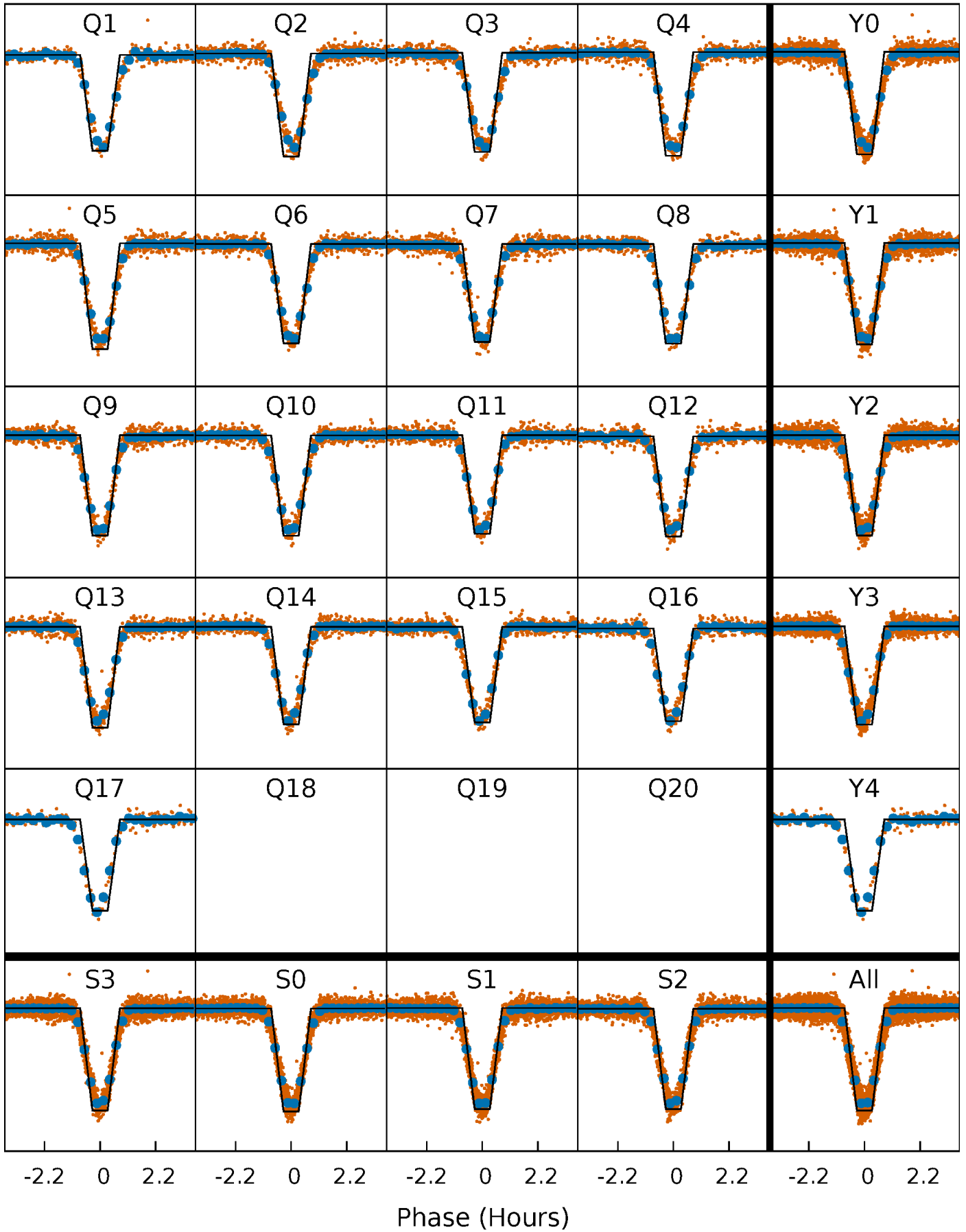
# DV Quarter-Phased Transit Curves

TCE 003443790-01 P= 1.665795 Days  $T_0=132.193700$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

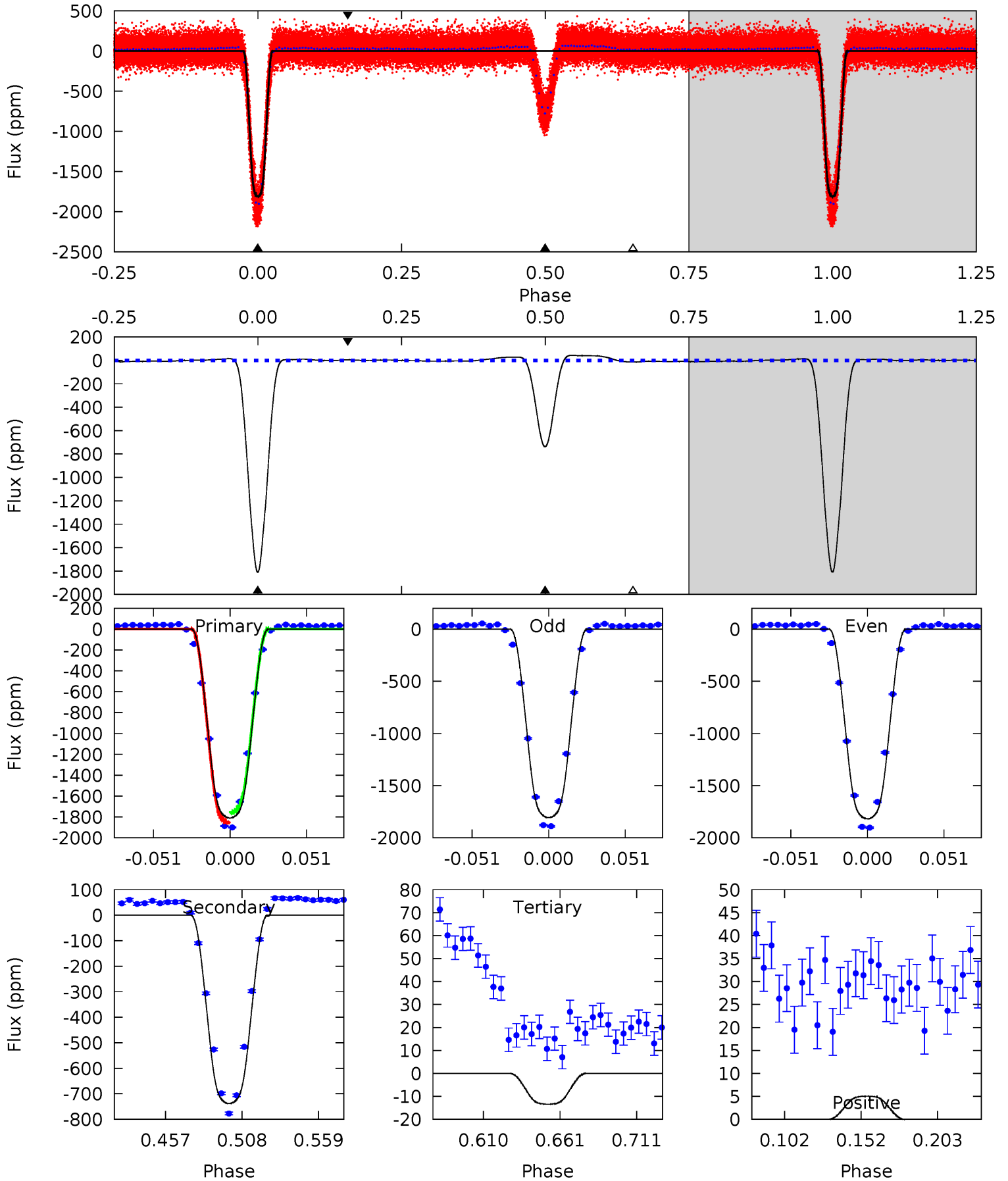
TCE 003443790-01   P= 1.665791 Days    $T_0=132.194259$  (BKJD)



# DV Model-Shift Uniqueness Test

003443790-01, P = 1.665795 Days, E = 130.527905 Days

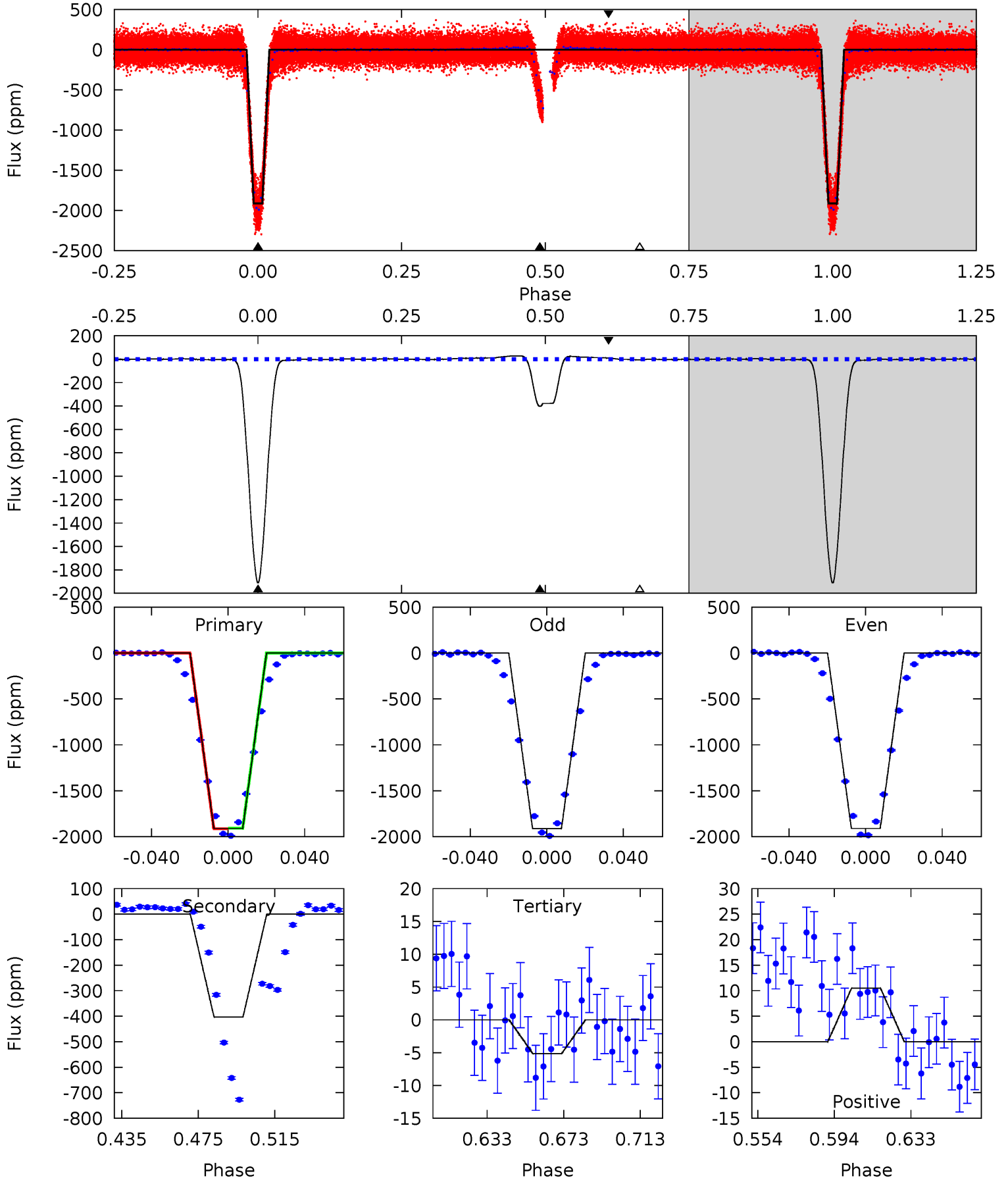
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1063	433.4	7.88	2.96	4.70	1.95	7.78	1055	1060	425.5	430.4	3.15	1.00	0.02	28.8



# Alt Model-Shift Uniqueness Test

003443790-01, P = 1.665791 Days, E = 130.528468 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
1093	230.8	2.94	6.00	4.76	2.06	4.50	1090	1087	227.8	224.8	0.42	1.00	0.01	2.18



### Stellar Parameters For KIC 003443790

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6261^{+175}_{-159}$	$3.686^{+0.323}_{-0.108}$	$-0.340^{+0.350}_{-0.300}$	$2.789^{+0.463}_{-1.079}$	$1.378^{+0.215}_{-0.323}$	$0.089^{+0.202}_{-0.029}$
	+3%/-3%	+9%/-3%	+103%/-88%	+17%/-39%	+16%/-23%	+226%/-32%
Source	PHO1	FLK73	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 003443790-01 / KOI 1185.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-738 \pm 2$	$13.82^{+1.55}_{-2.85}$	$3625^{+233}_{-314}$	$4784^{+103}_{-108}$	$2.084^{+0.945}_{-0.411}$
Alt.	$-404 \pm 2$	$13.62^{+1.73}_{-2.71}$	$3617^{+245}_{-322}$	$4141^{+106}_{-104}$	$1.154^{+0.557}_{-0.229}$

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

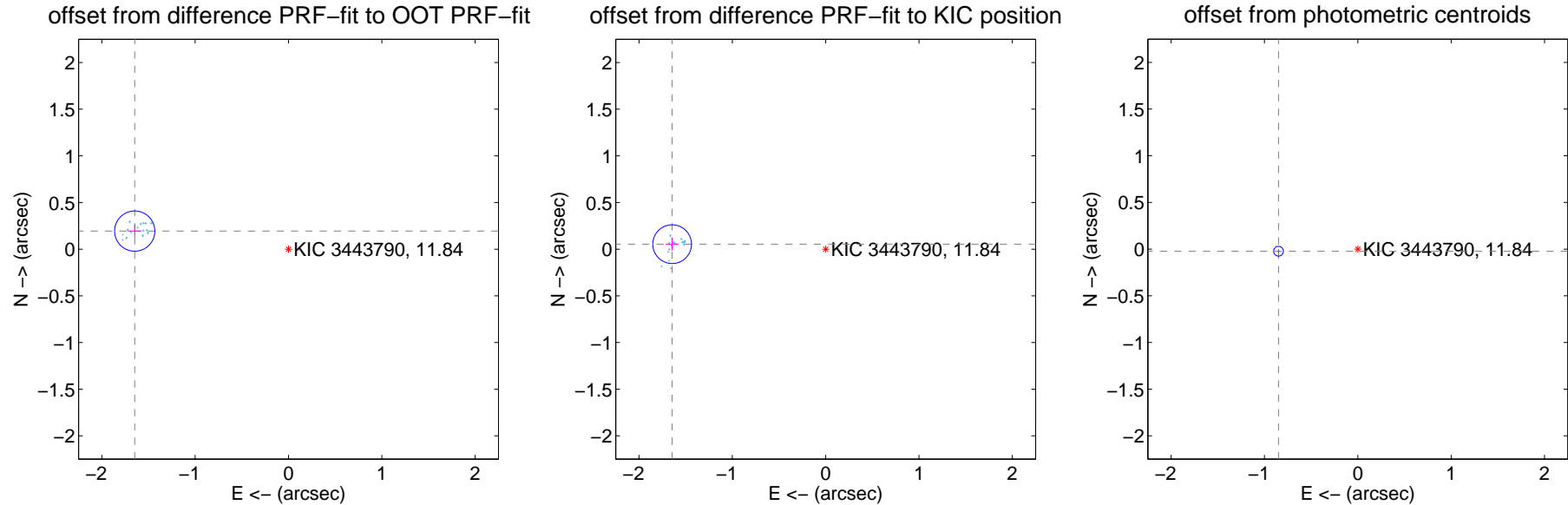
## DV Centroid Data

Supplemental centroid analysis for 003443790-01. **Kepler magnitude: 11.84.** Transit SNR 502.63

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

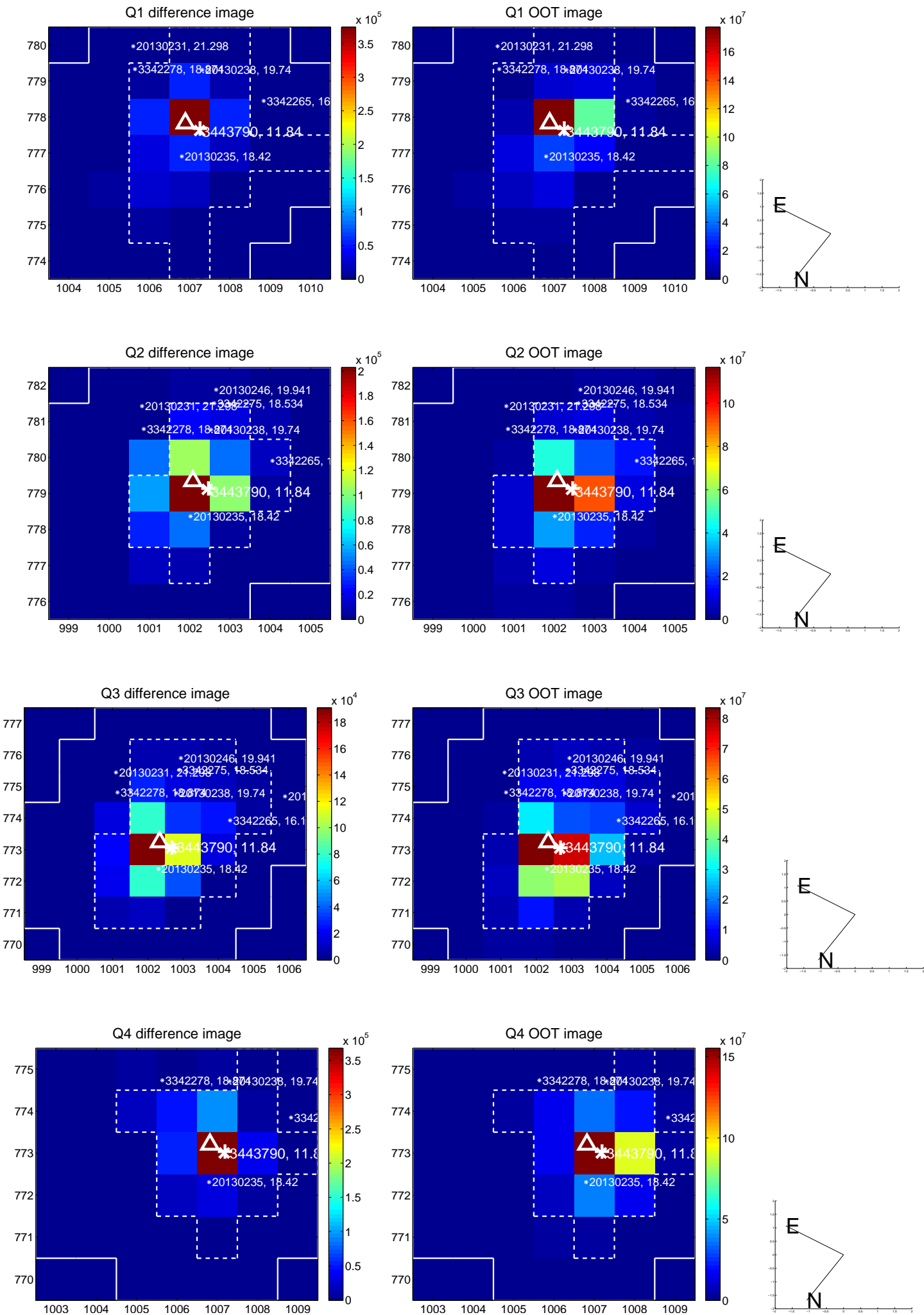
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.659 \pm 0.072</math></b>	<b>23.08</b>	$1.647 \pm 0.072$	$0.194 \pm 0.069$
PRF-fit source offset from KIC position	<b><math>1.646 \pm 0.069</math></b>	<b>23.81</b>	$1.645 \pm 0.069$	$0.054 \pm 0.068$
photometric centroid source offset	<b><math>0.85 \pm 0.02</math></b>	<b>48.77</b>	$0.85 \pm 0.02$	$-0.02 \pm 0.02$



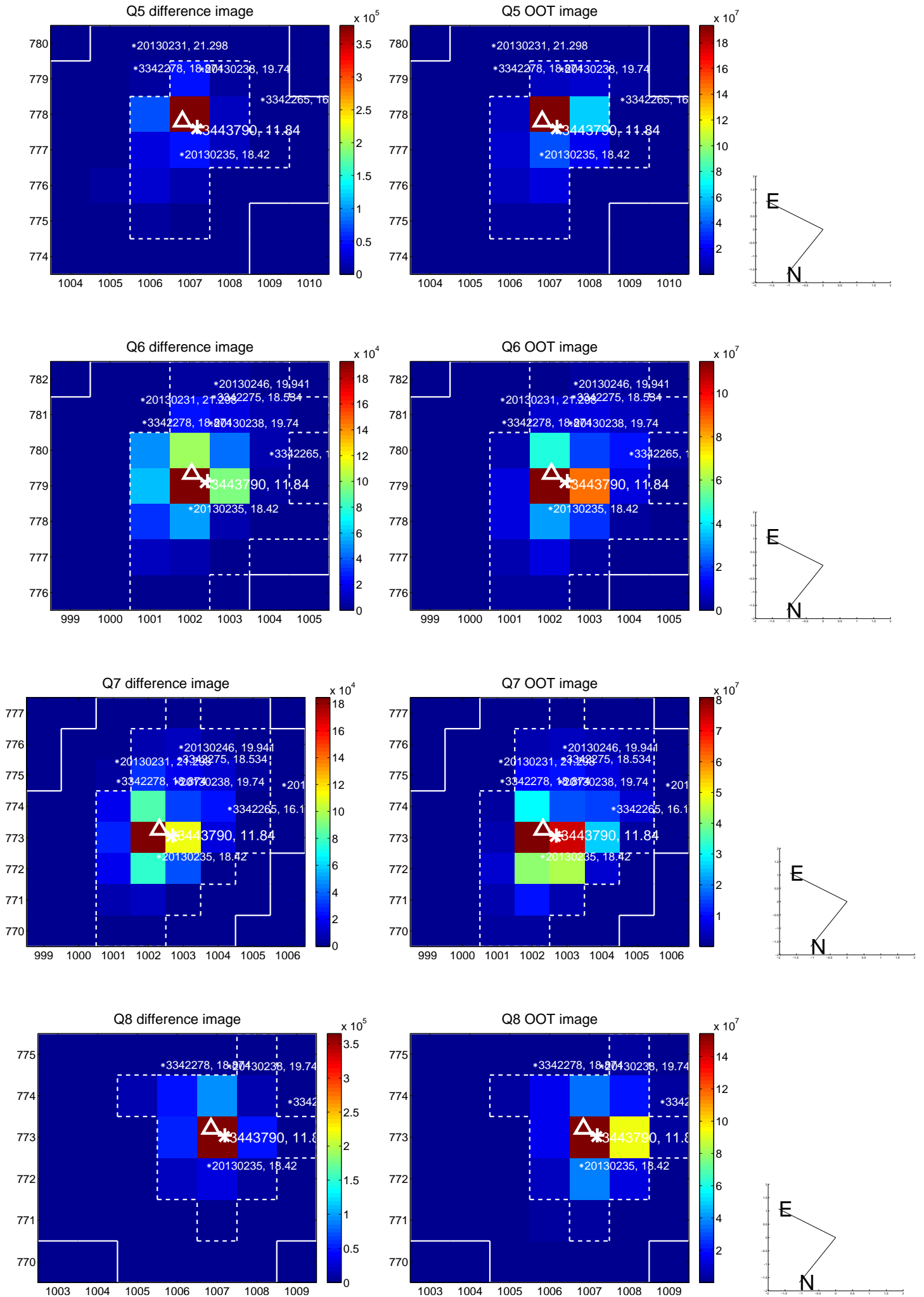
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



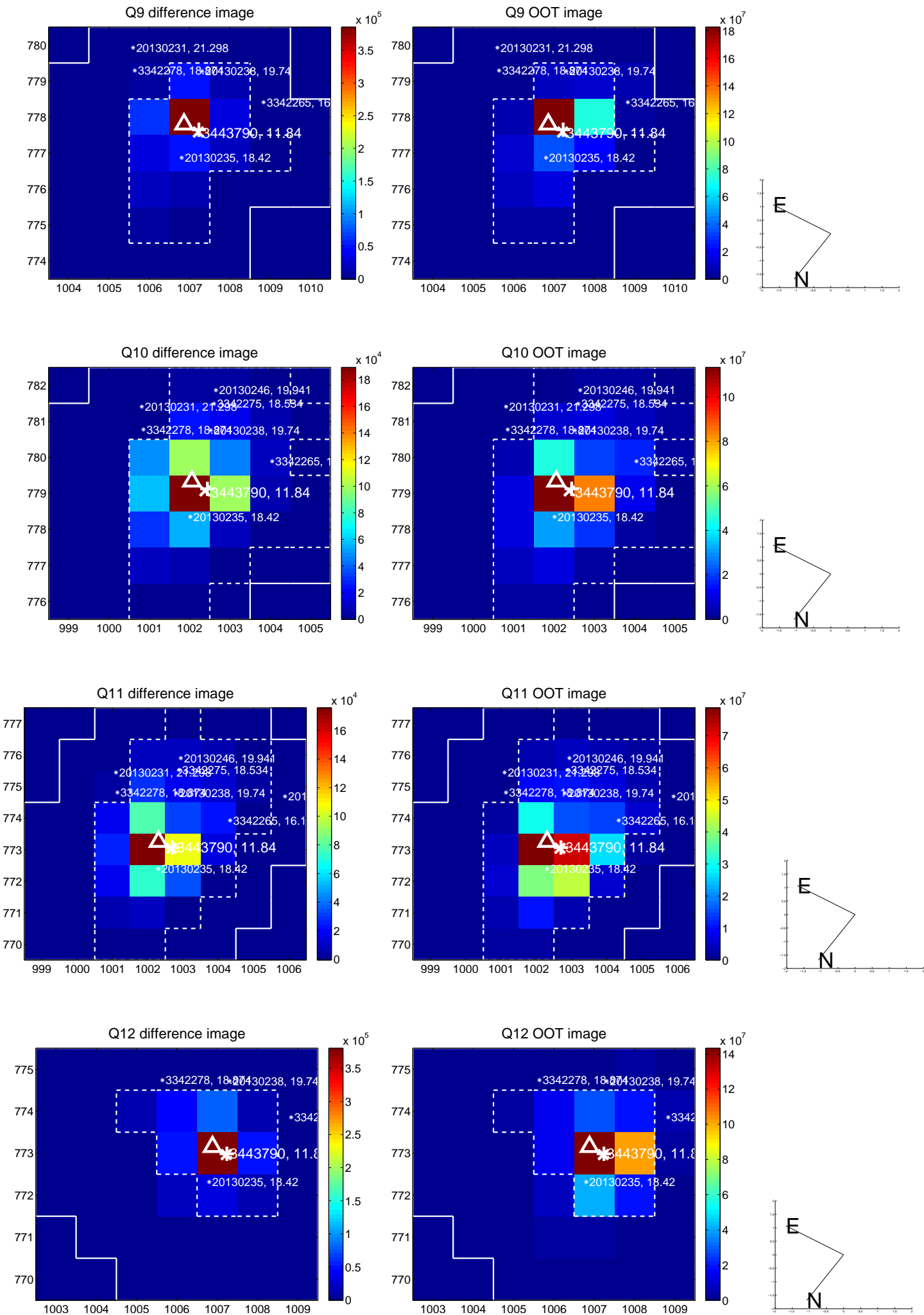
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



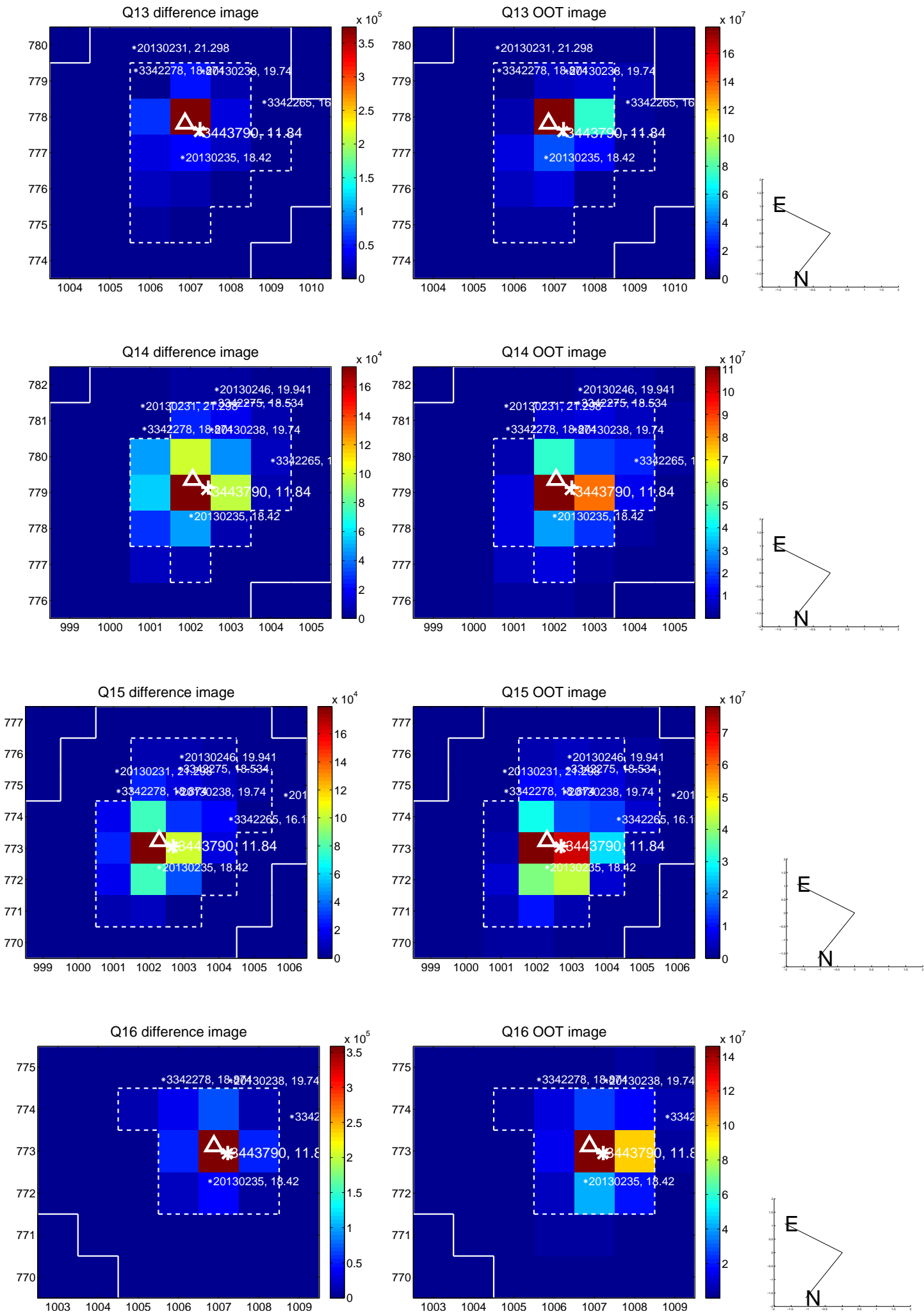
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



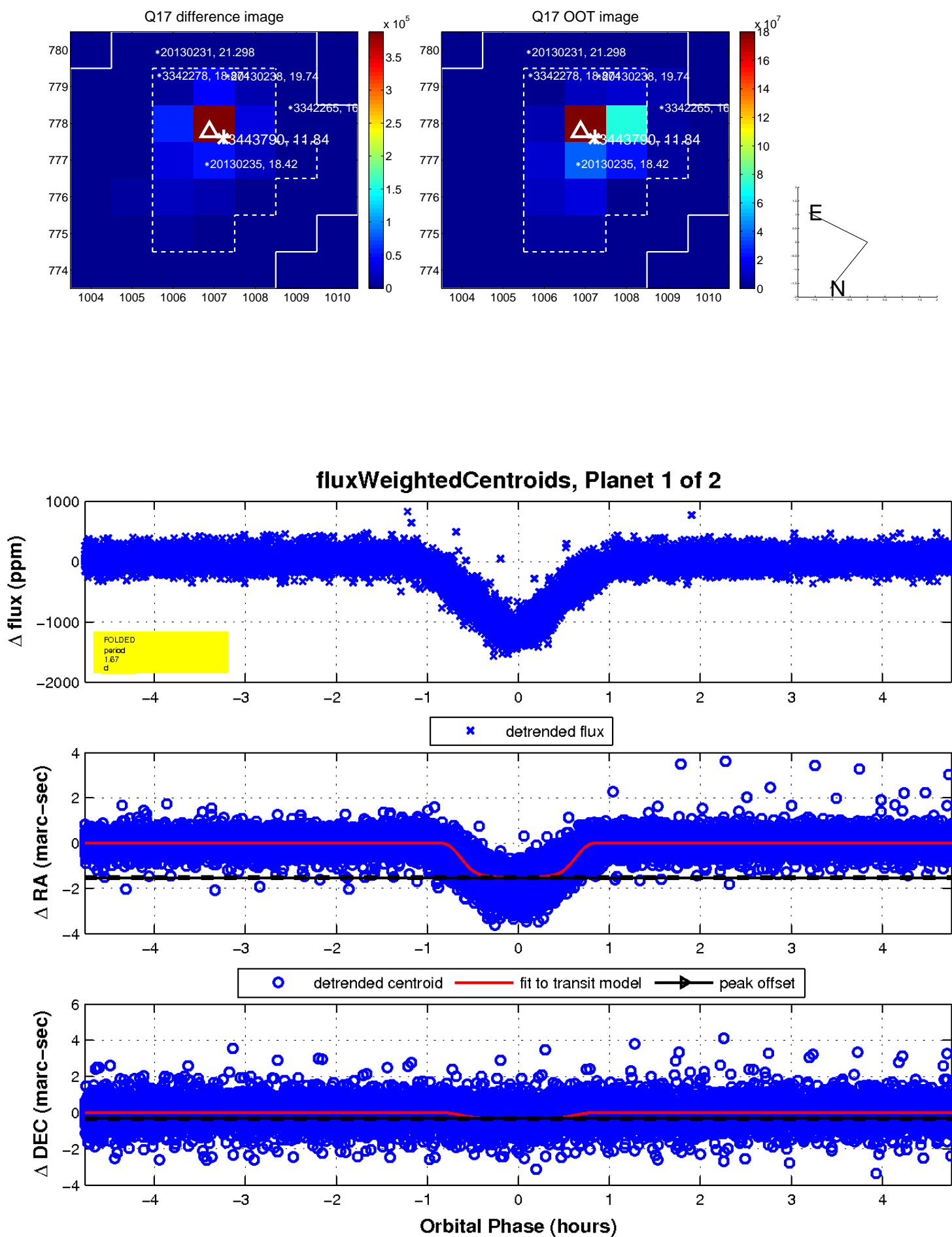
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

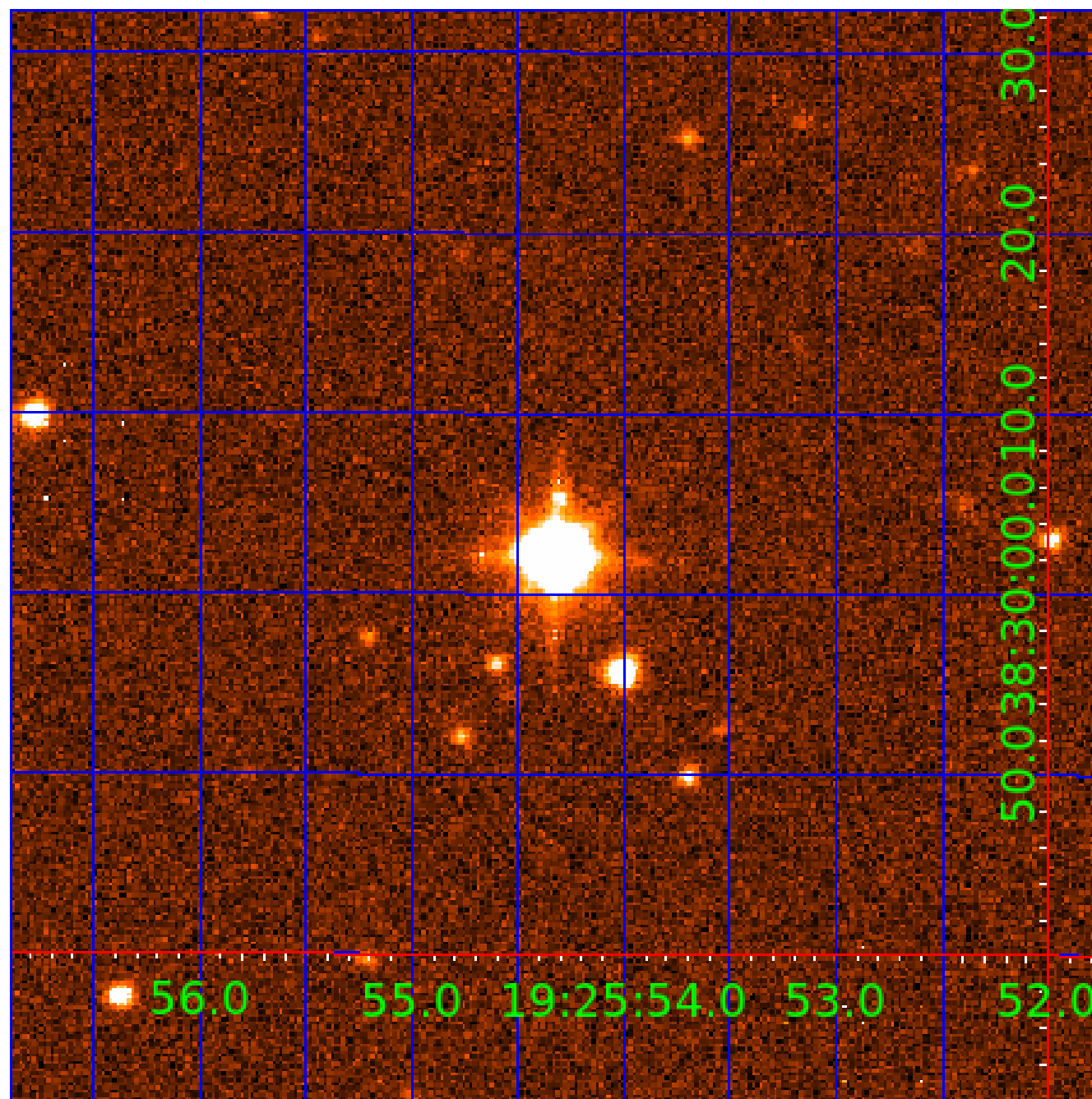


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003443790

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003443790-01	OBS	1185.01	1.665795	132.193700	1787.6	1.587	284.5	502.6	2.79	6261	13.92	11435.97
003443790-02	OBS	No	0.832894	132.196488	802.6	1.722	266.1	258.9	2.79	6261	10.17	28816.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003443790-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
003443790-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—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 003443790-02

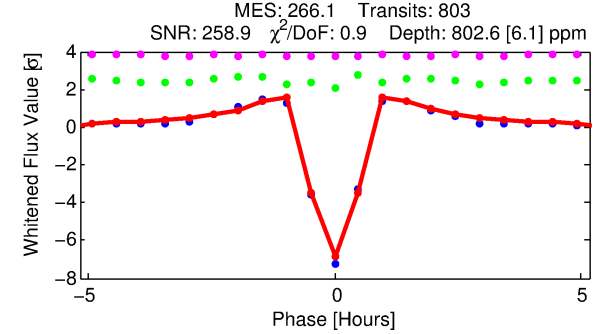
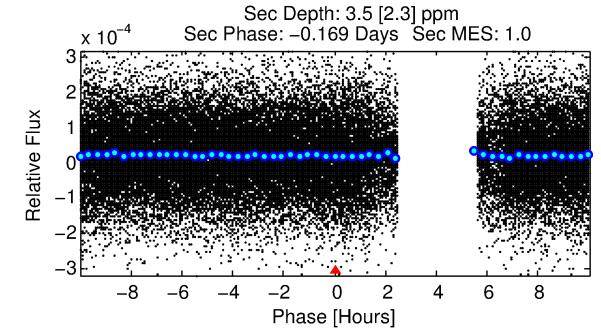
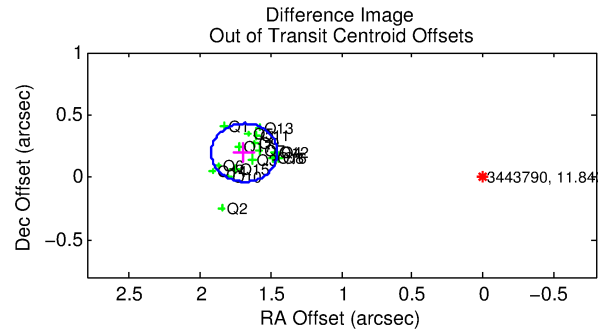
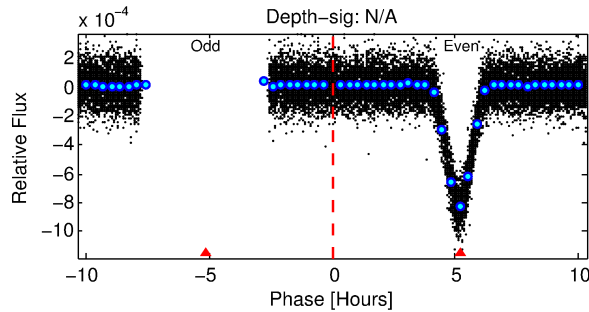
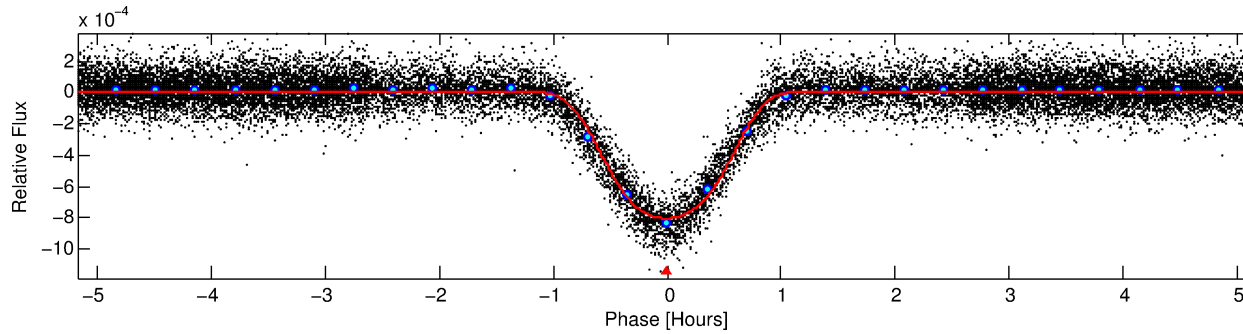
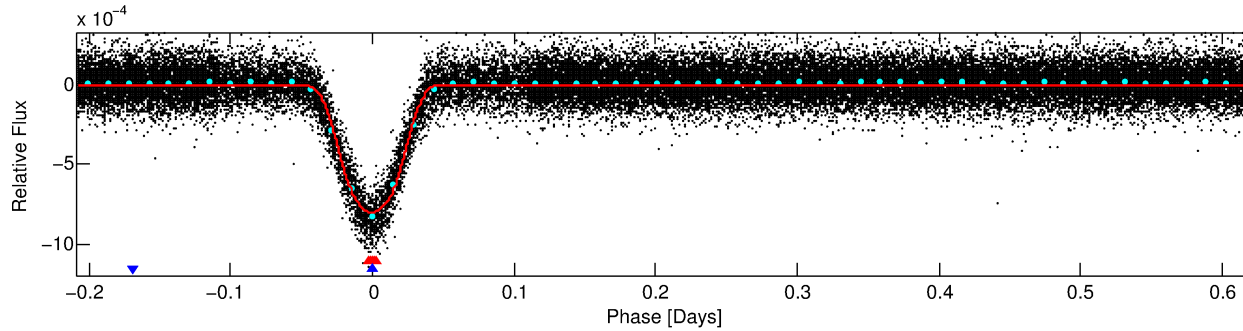
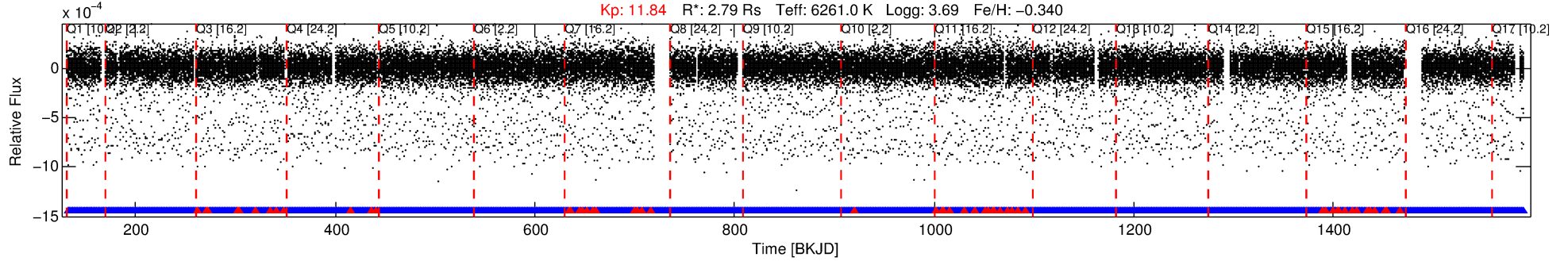
No Significant Match Found

# DV One-Page Summary

KIC: 3443790 Candidate: 2 of 2 Period: 0.833 d

KOI: K01185 Corr: No Ephemeris Match

Kp: 11.84 R\*: 2.79 Rs Teff: 6261.0 K Logg: 3.69 Fe/H: -0.340



## DV Fit Results:

Period = 0.83289 [0.00000] d  
Epoch = 132.1965 [0.0001] BKJD  
Rp/R\* = 0.0334 [0.0002]  
a/R\* = 1.70 [0.01]  
b = 0.96 [0.00]  
Seff = 28816.98 [16424.73]  
Teq = 3322 [473] K  
Rp = 10.17 [3.94] Re  
a = 0.0193 [0.0069] AU  
Ag = 0.01 [0.01] [-166.96σ]  
Teffp = 1477 [250] K [-3.45σ]

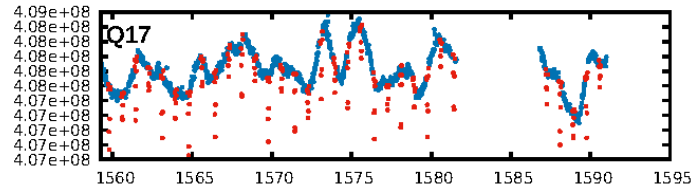
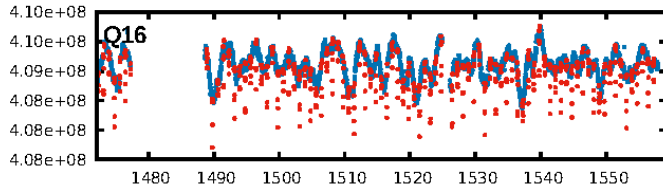
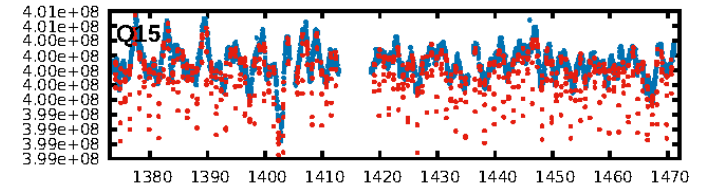
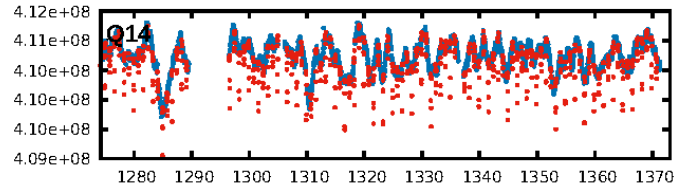
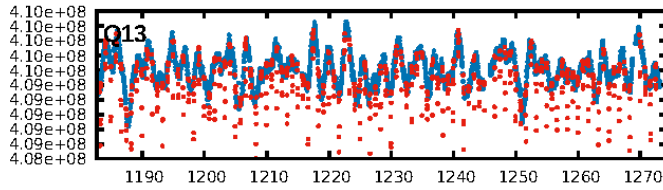
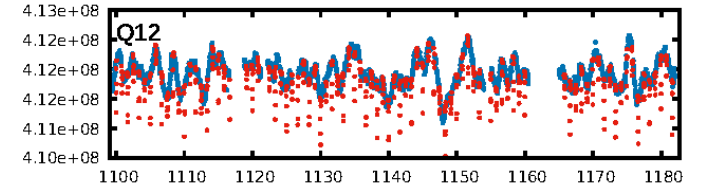
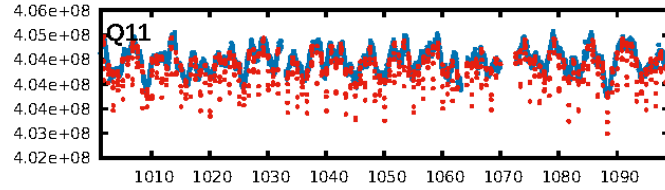
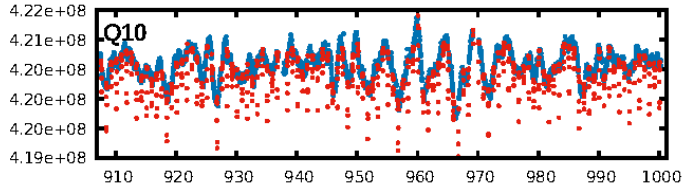
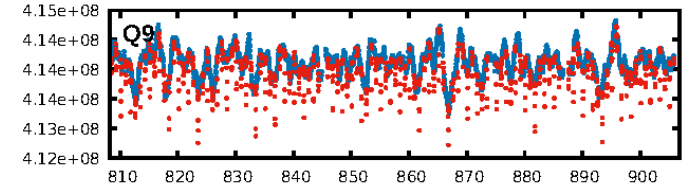
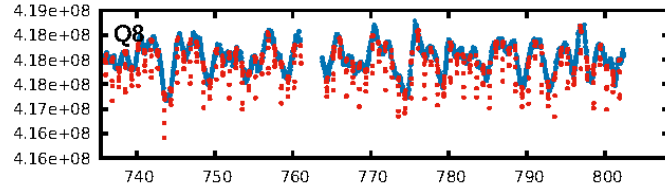
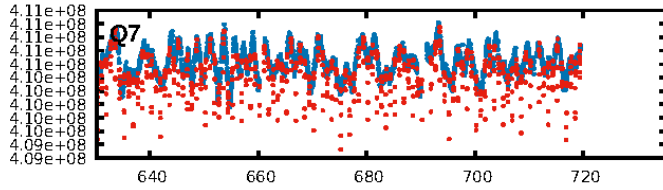
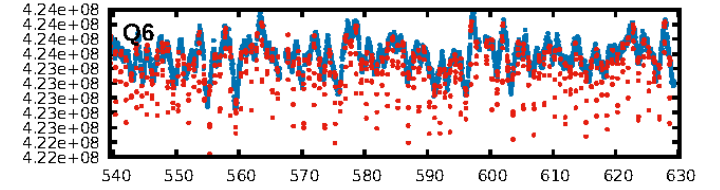
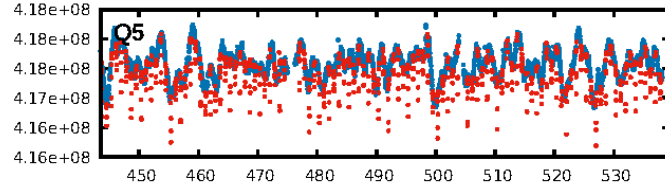
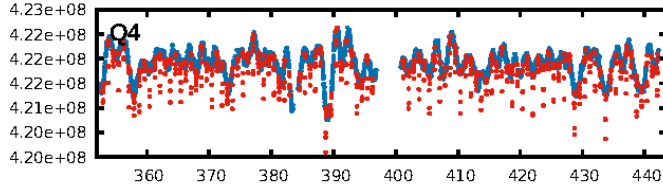
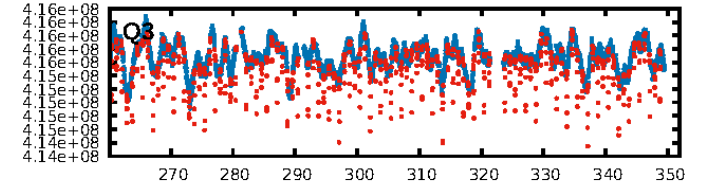
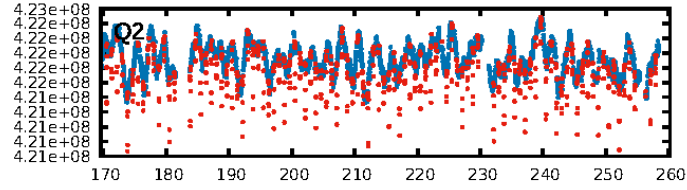
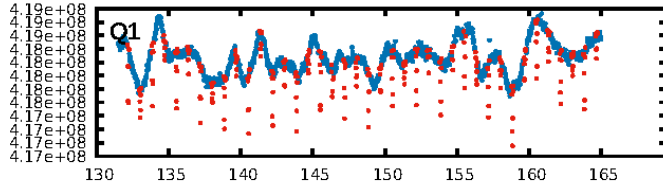
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [8.53σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.93 [714/767]  
GhostDiagnostic-chr: 43.11  
Centroid-sig: 0.0%  
Centroid-so: 0.538 arcsec [18.83σ]  
OotOffset-rm: 1.700 arcsec [21.79σ]  
KicOffset-rm: 1.686 arcsec [22.10σ]  
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]

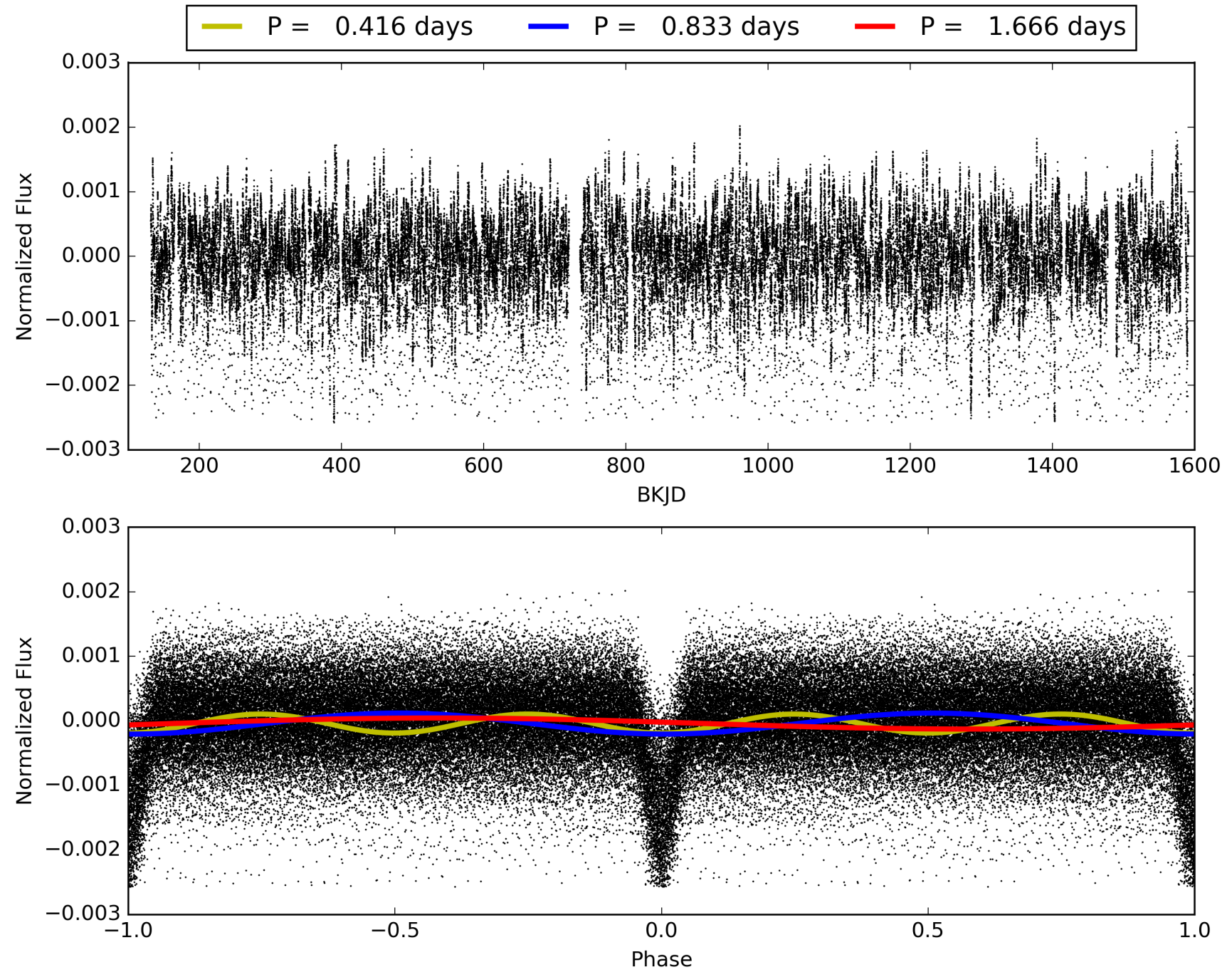
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003443790-02, PDC Light Curves

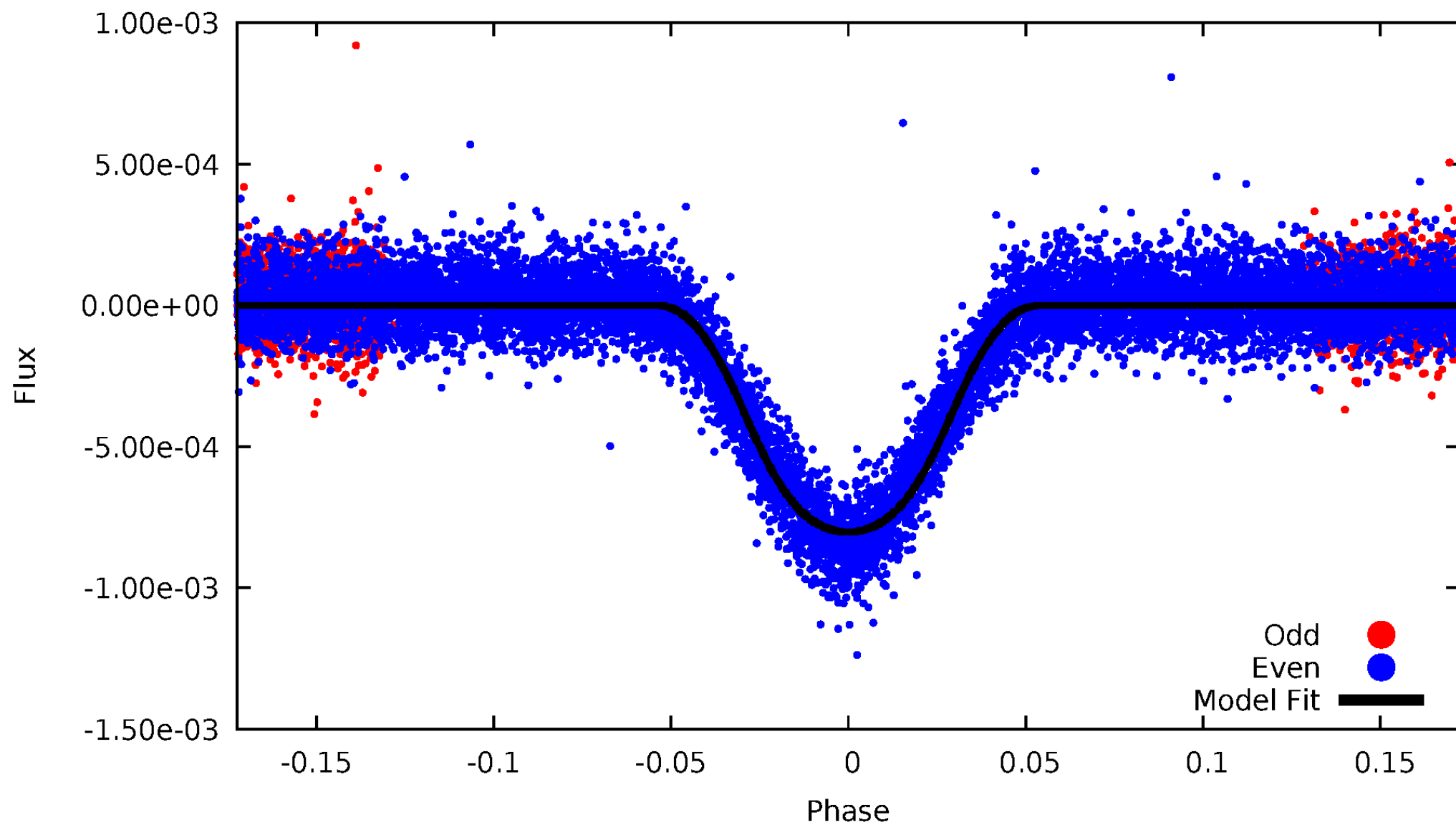


# TCE 003443790-02



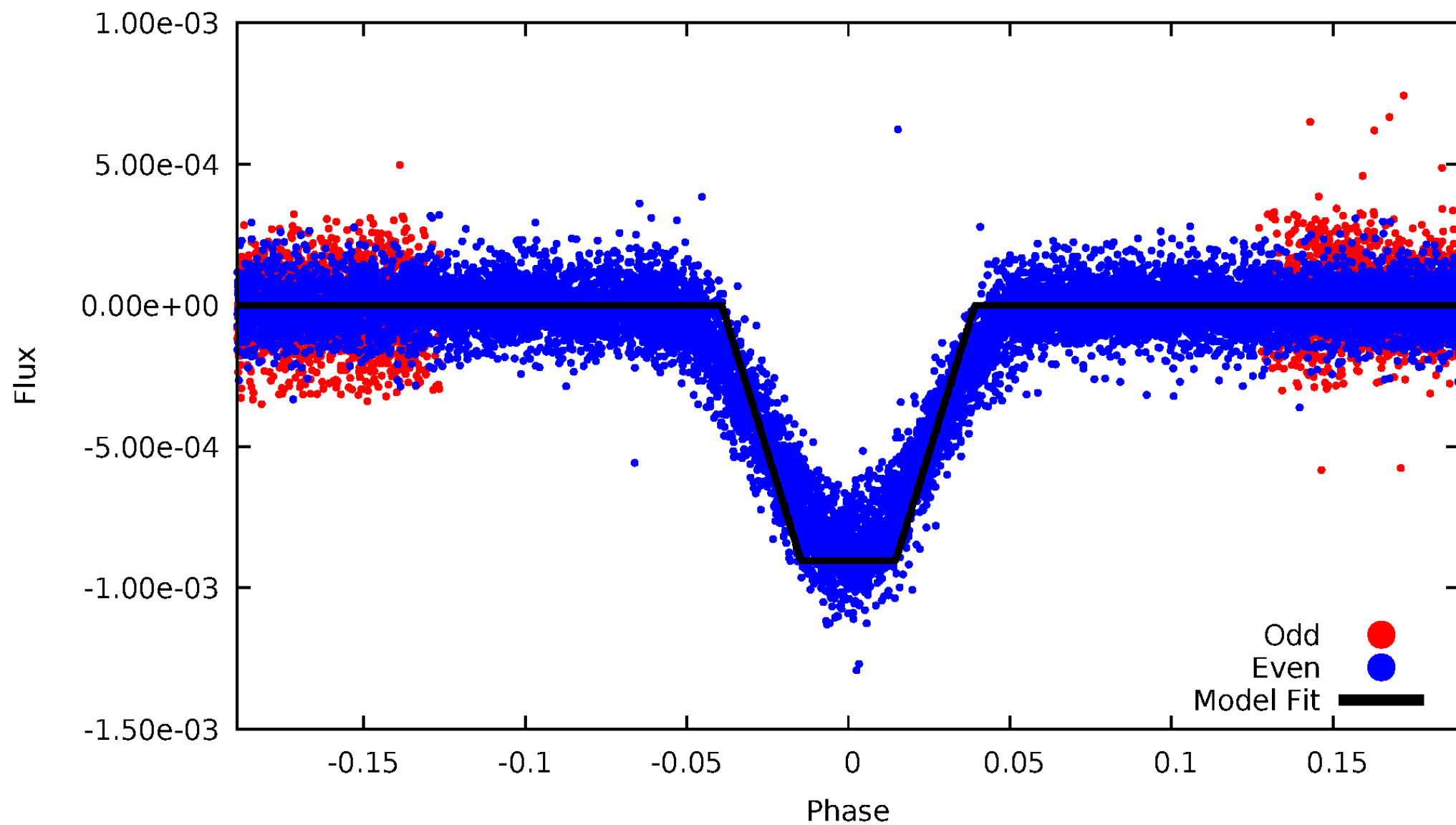
# DV Odd/Even

TCE 003443790-02



# ALT Odd/Even

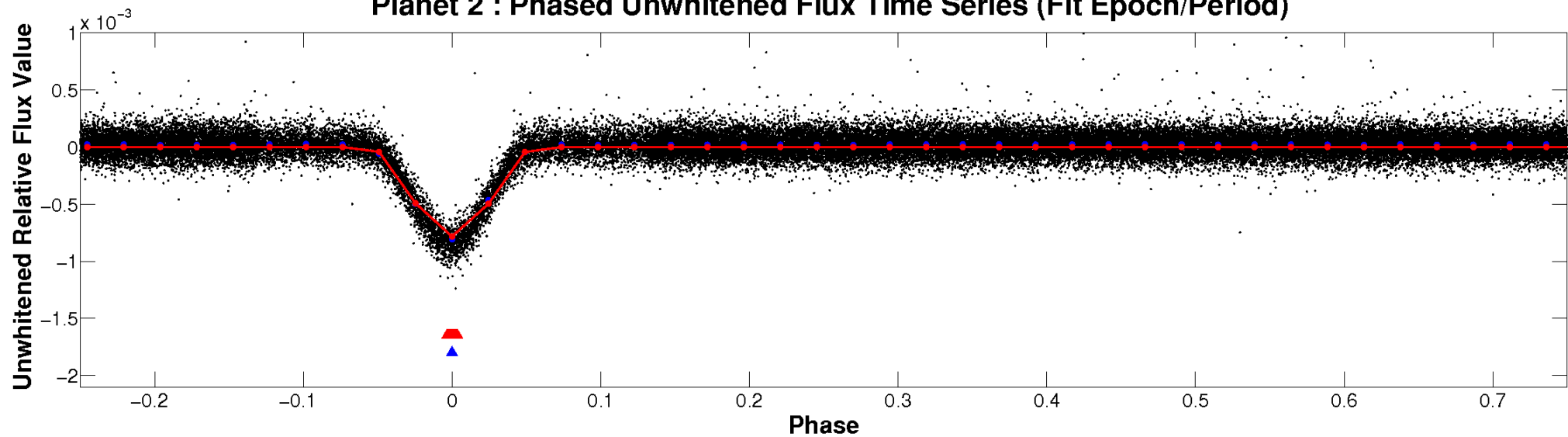
TCE 003443790-02



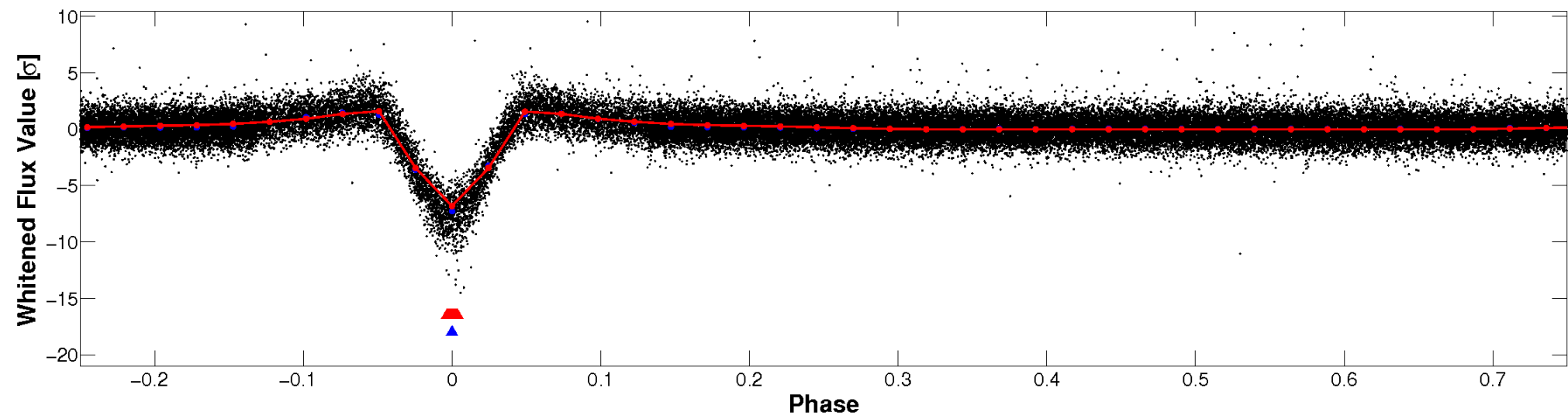


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

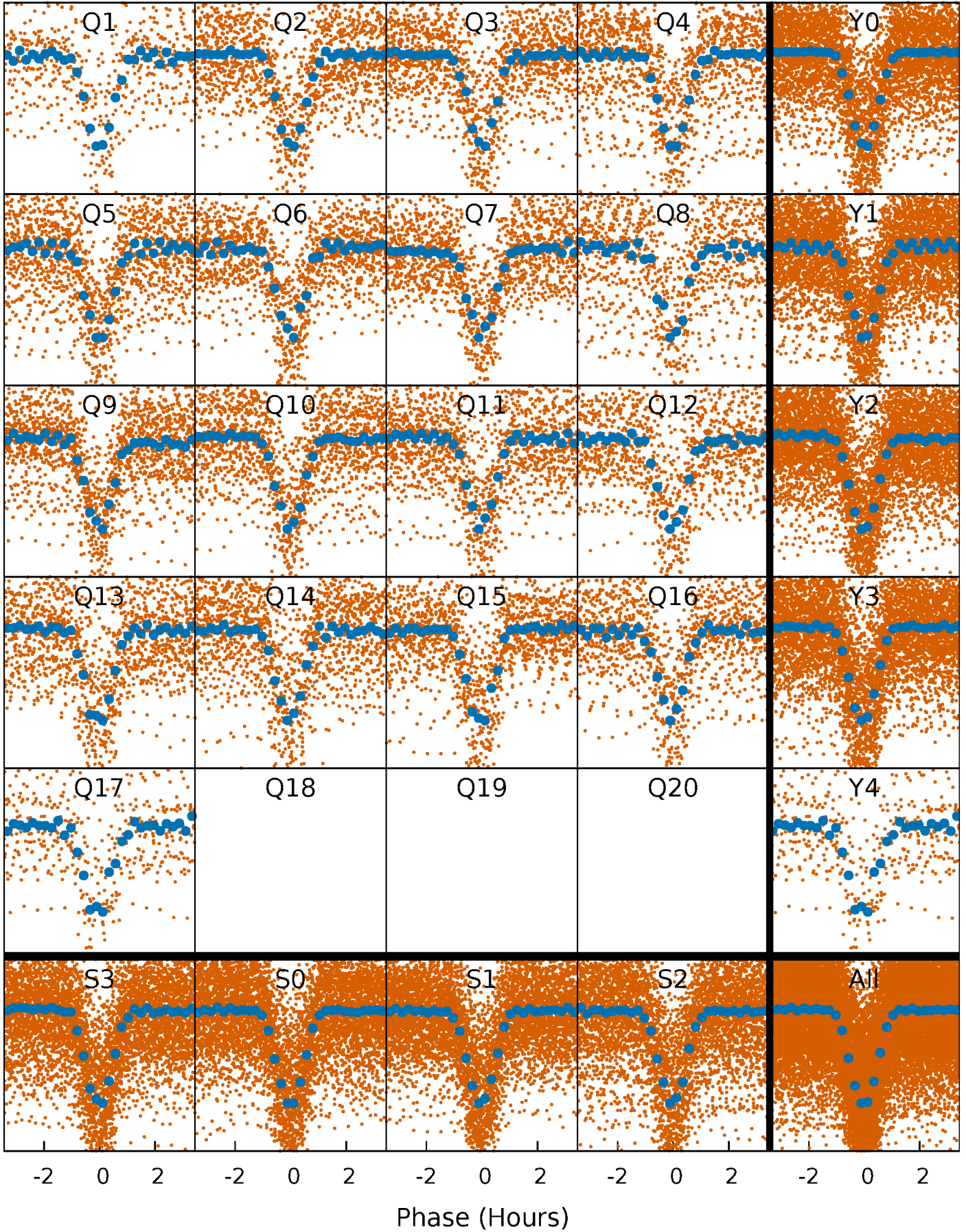


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



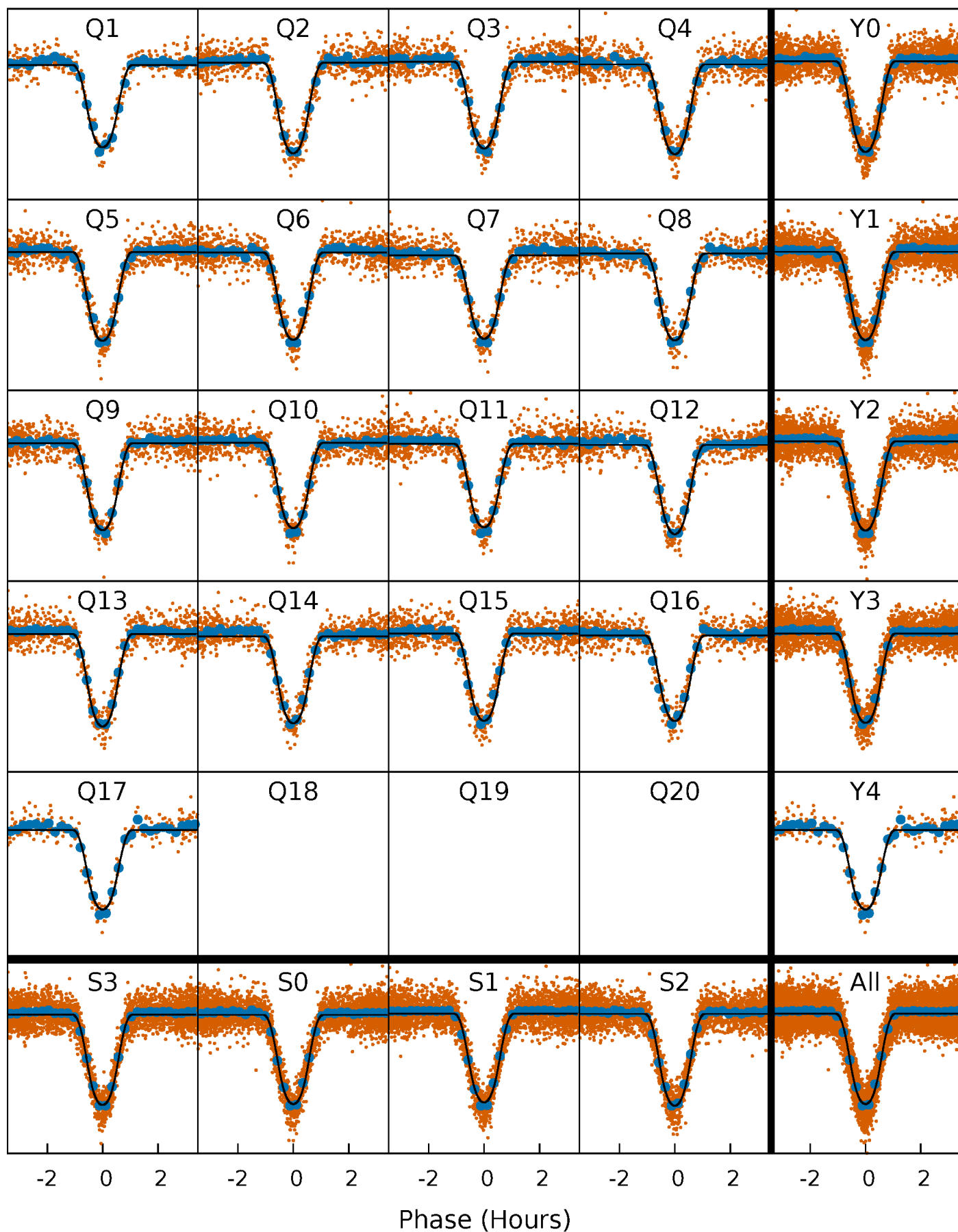
# PDC Quarter-Phased Transit Curves

TCE 003443790-02     $P = 0.832894$  Days     $T_0 = 132.196488$  (BKJD)



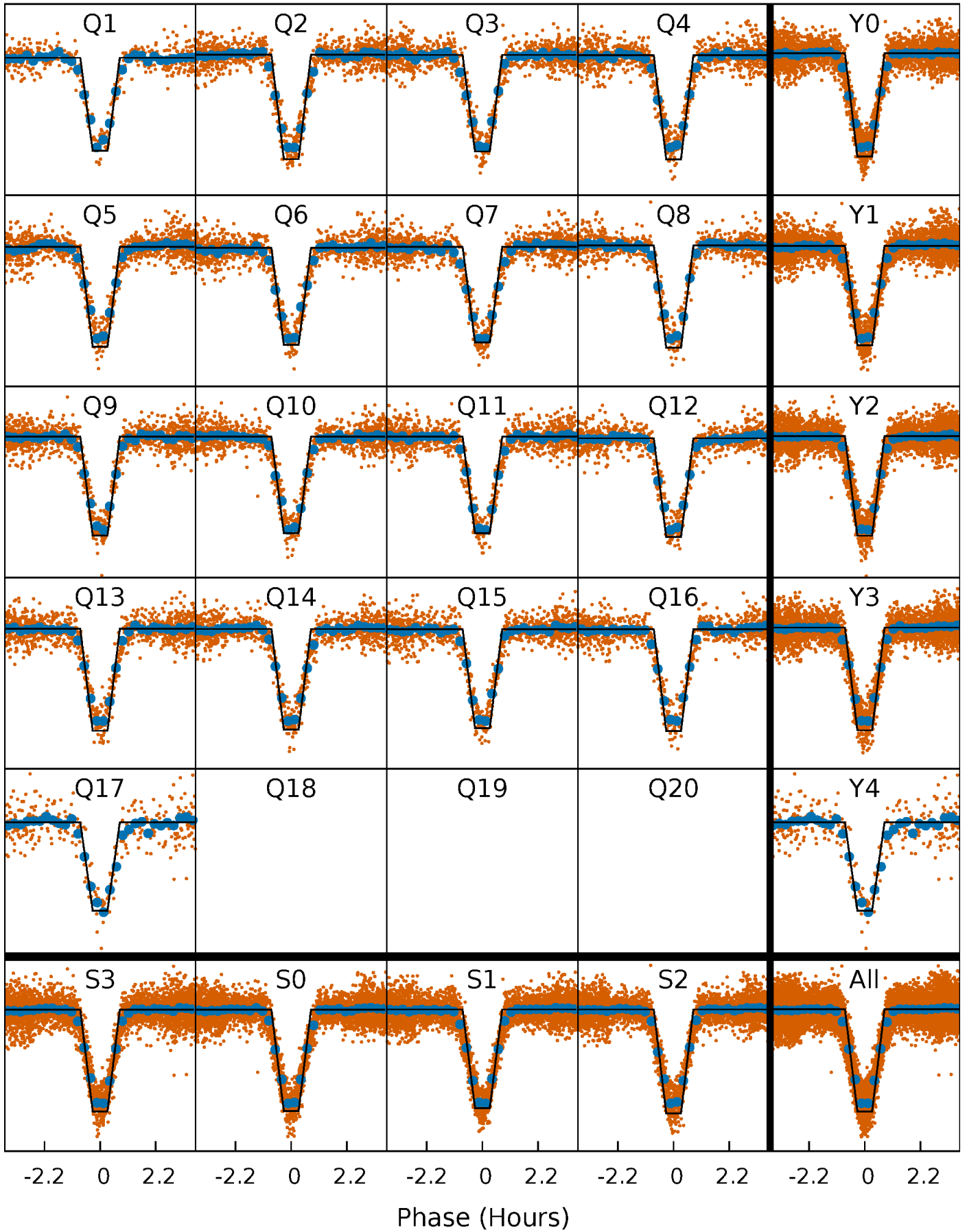
# DV Quarter-Phased Transit Curves

TCE 003443790-02     $P = 0.832894$  Days     $T_0 = 132.196488$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

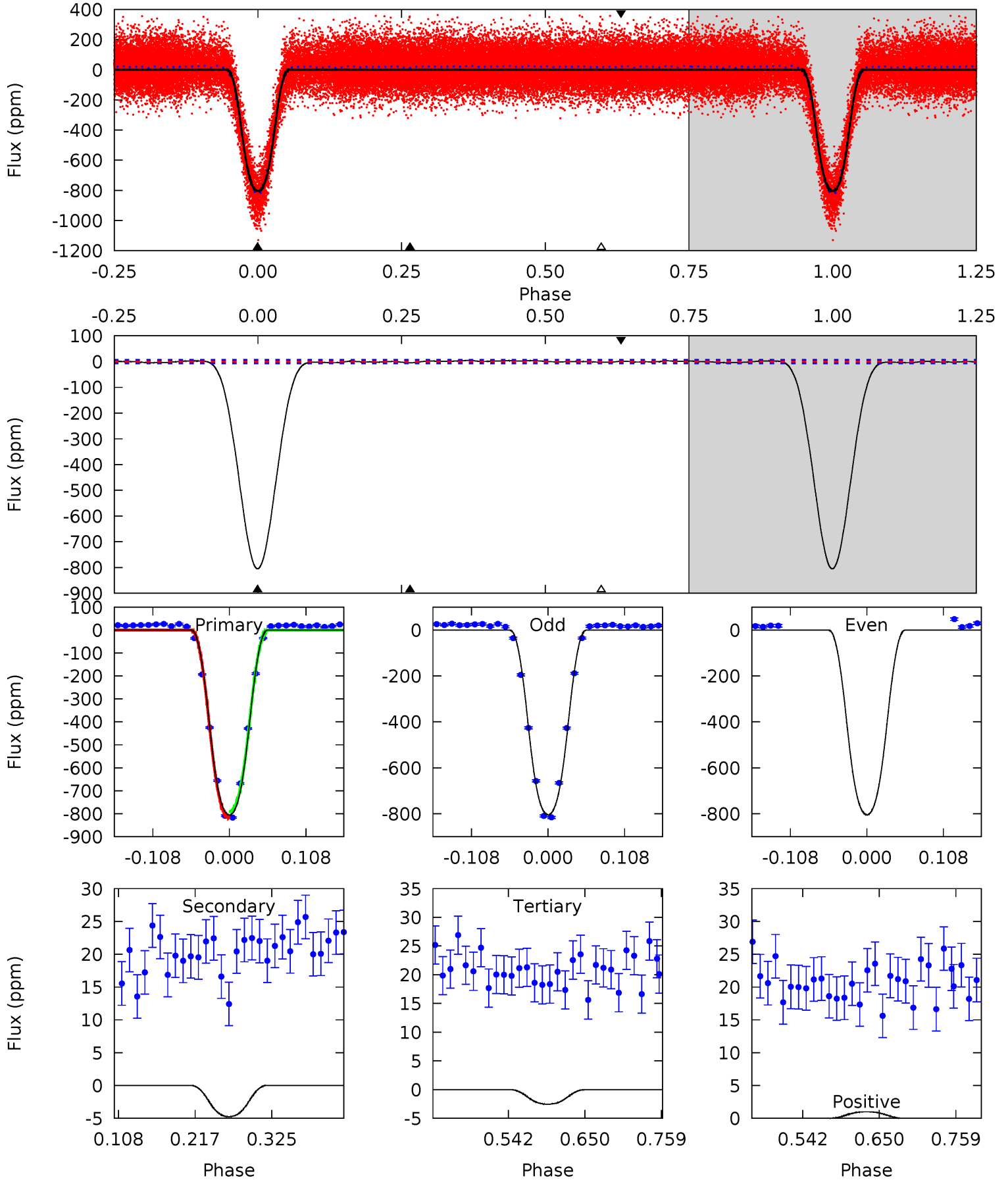
TCE 003443790-02   P= 0.832892 Days    $T_0=132.197702$  (BKJD)



# DV Model-Shift Uniqueness Test

003443790-02, P = 0.832894 Days, E = 131.363594 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
525.4	3.10	1.66	0.64	4.55	1.61	1.38	523.7	524.7	1.44	2.45	0	1.00	0.01	8.48

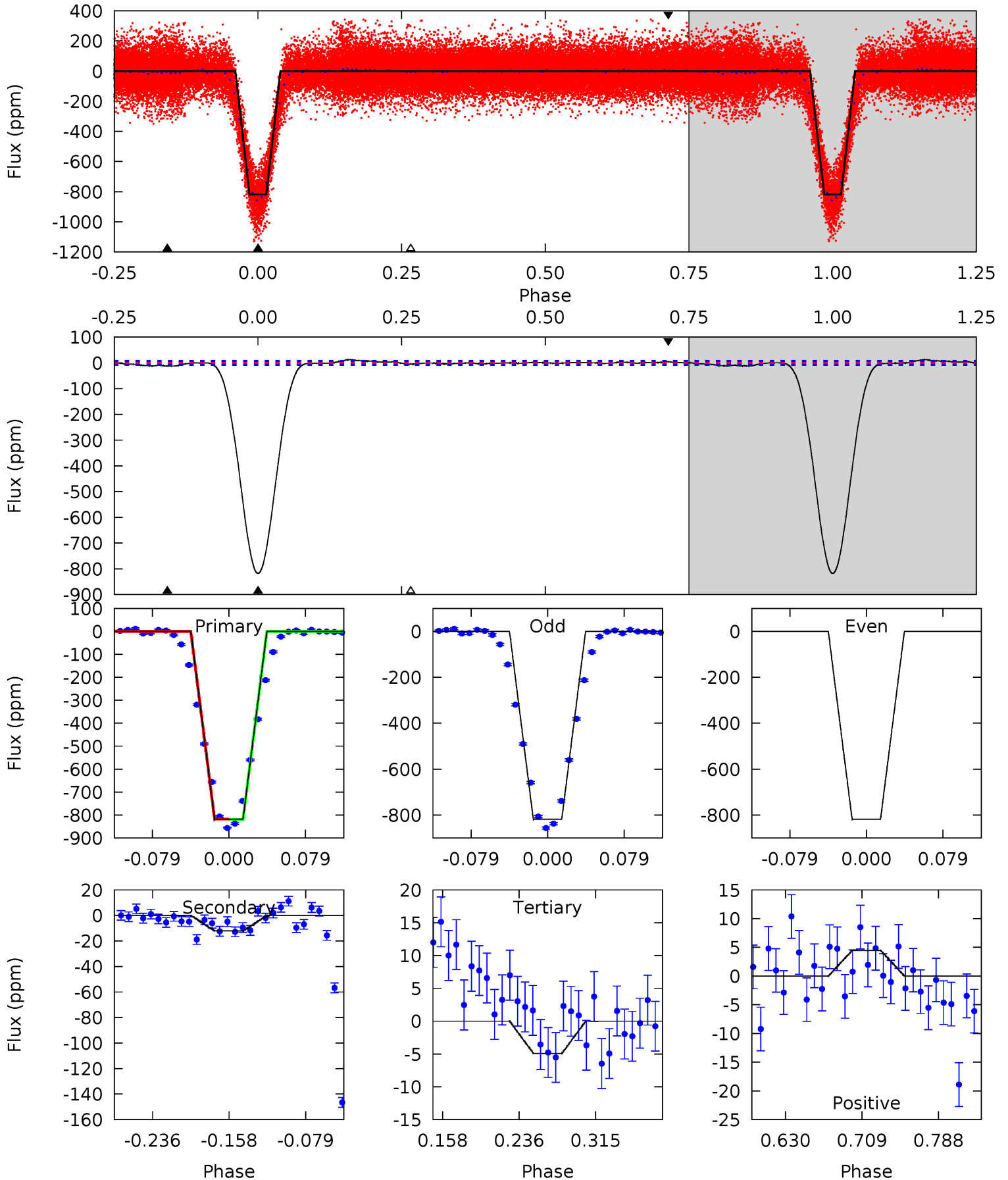




# Alt Model-Shift Uniqueness Test

003443790-02, P = 0.832892 Days, E = 131.364810 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
495.2	7.35	2.98	2.71	4.61	1.76	2.07	492.3	492.5	4.37	4.64	0	1.00	0.02	0.27





### Stellar Parameters For KIC 003443790

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6261^{+175}_{-159}$	$3.686^{+0.323}_{-0.108}$	$-0.340^{+0.350}_{-0.300}$	$2.789^{+0.463}_{-1.079}$	$1.378^{+0.215}_{-0.323}$	$0.089^{+0.202}_{-0.029}$
	+3%/-3%	+9%/-3%	+103%/-88%	+17%/-39%	+16%/-23%	+226%/-32%
Source	PHO1	FLK73	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 003443790-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 2$	$10.19^{+1.09}_{-2.06}$	$4608^{+256}_{-421}$	$-4050^{+275}_{-165}$	$0.010^{+0.005}_{-0.004}$
Alt.	$-12 \pm 2$	$9.09^{+0.95}_{-1.95}$	$4587^{+256}_{-447}$	$-3979^{+305}_{-170}$	$0.032^{+0.015}_{-0.007}$

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

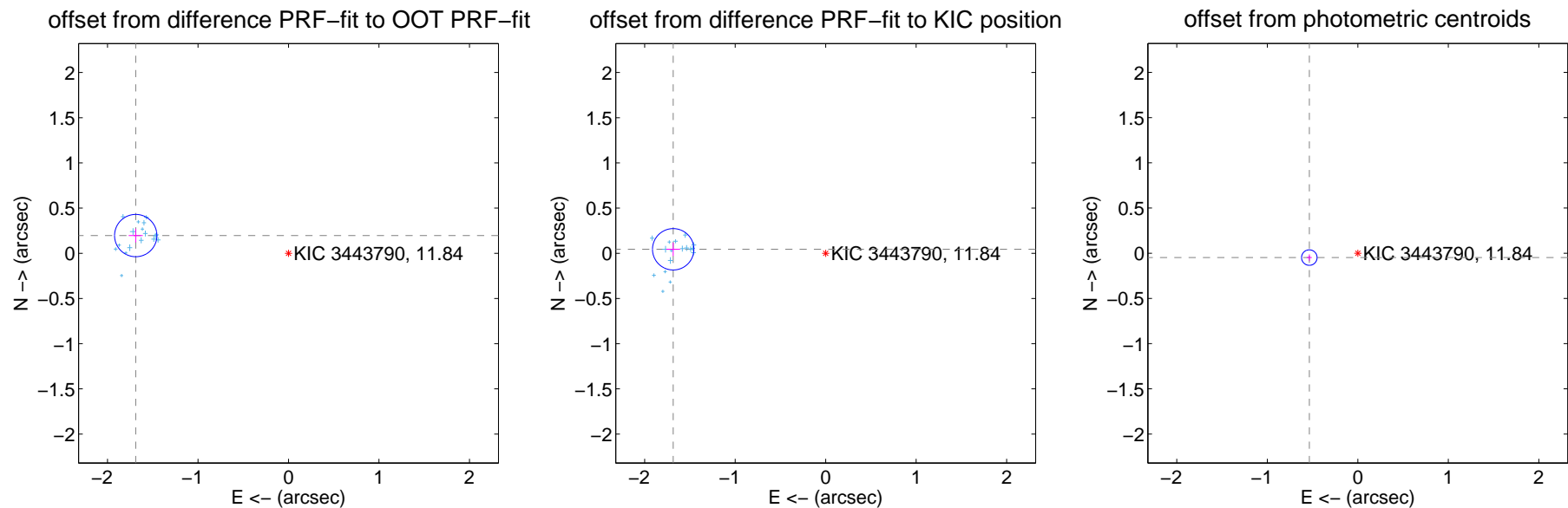
## DV Centroid Data

Supplemental centroid analysis for 003443790-02. **Kepler magnitude: 11.84.** Transit SNR 258.94

There are 17 quarters with good PRF difference image offsets

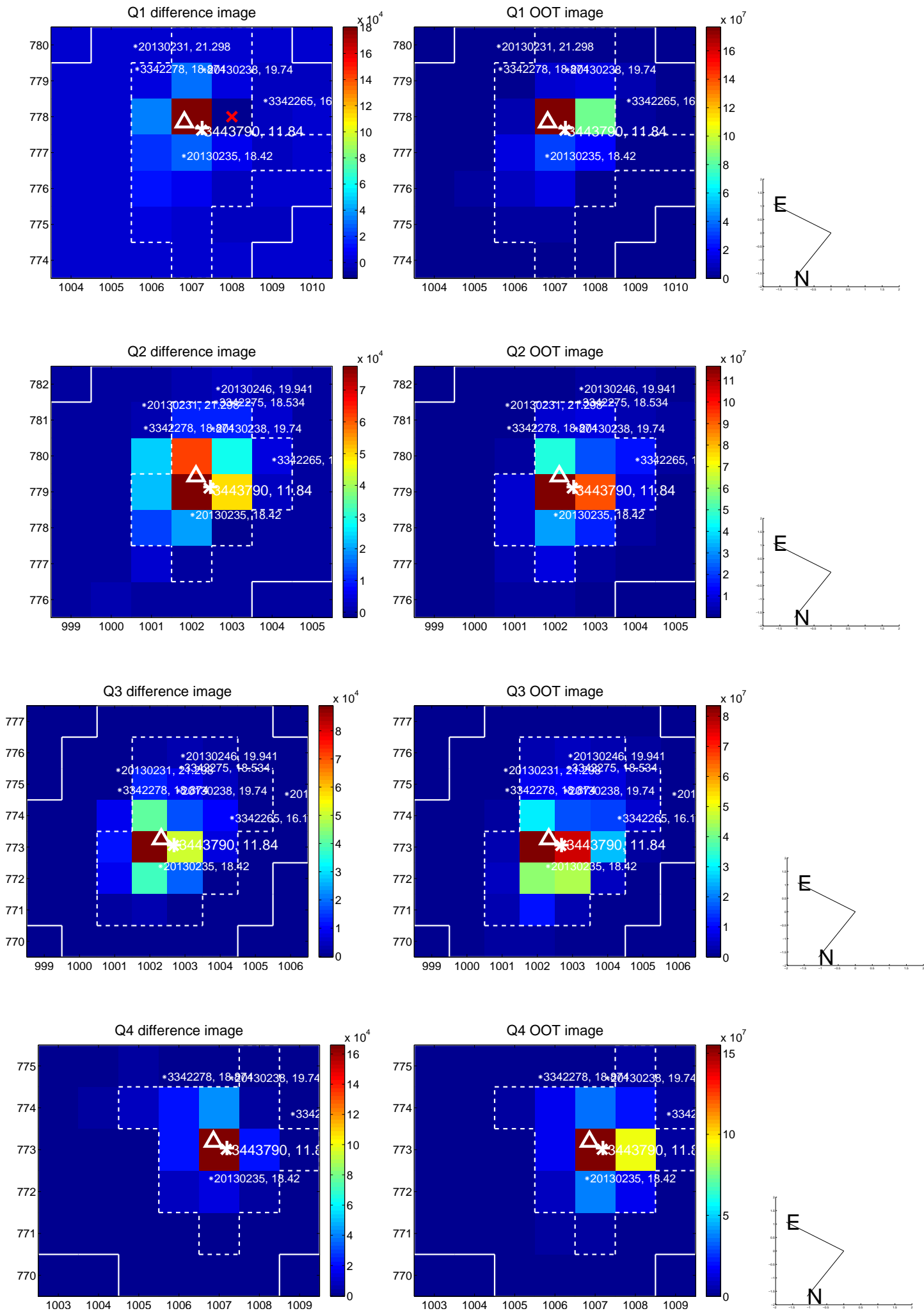
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.700 \pm 0.078</math></b>	<b>21.79</b>	$1.688 \pm 0.078$	$0.196 \pm 0.076$
PRF-fit source offset from KIC position	<b><math>1.686 \pm 0.076</math></b>	<b>22.10</b>	$1.685 \pm 0.076$	$0.044 \pm 0.073$
photometric centroid source offset	<b><math>0.54 \pm 0.03</math></b>	<b>18.83</b>	$0.54 \pm 0.03$	$-0.05 \pm 0.04$

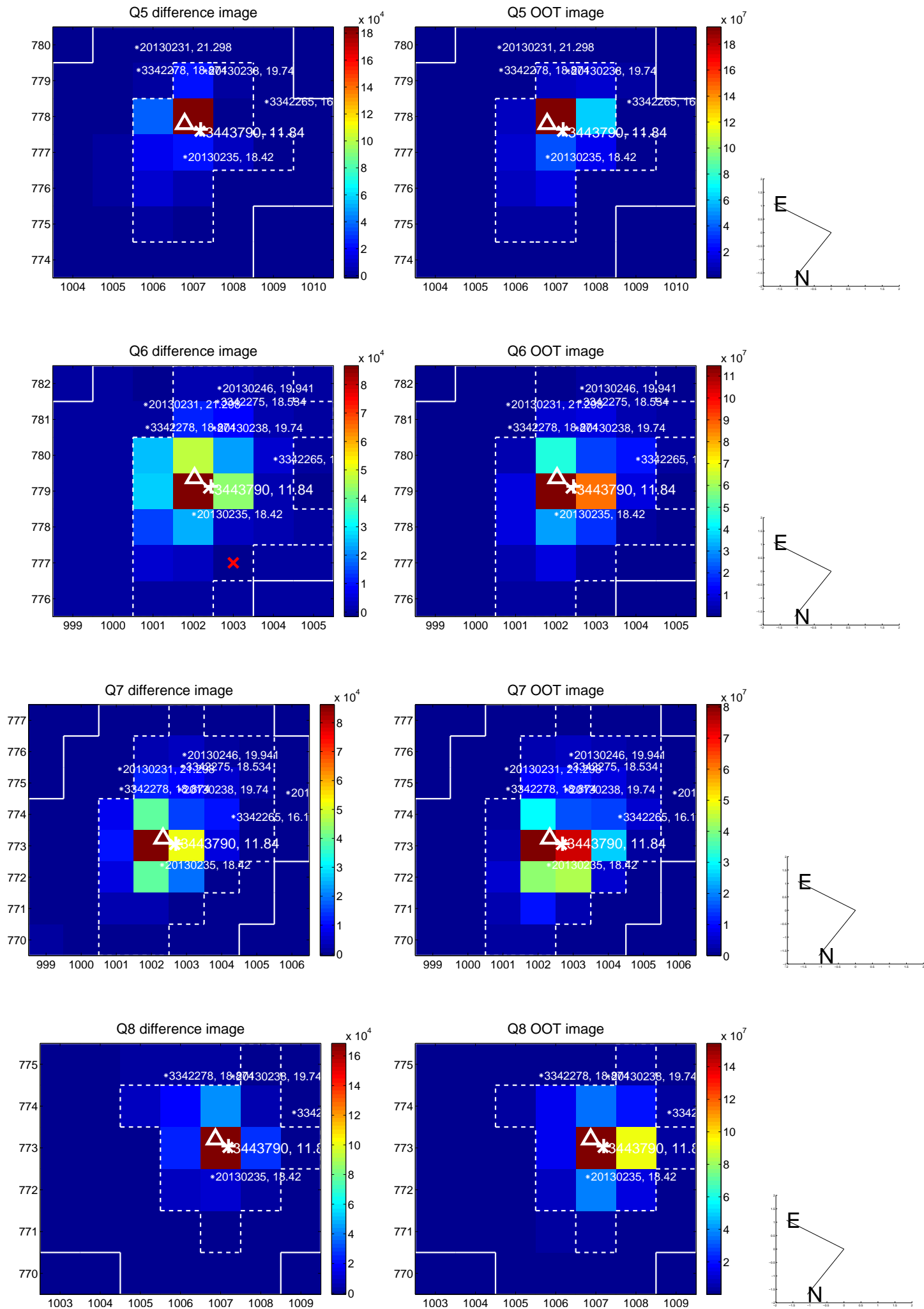


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

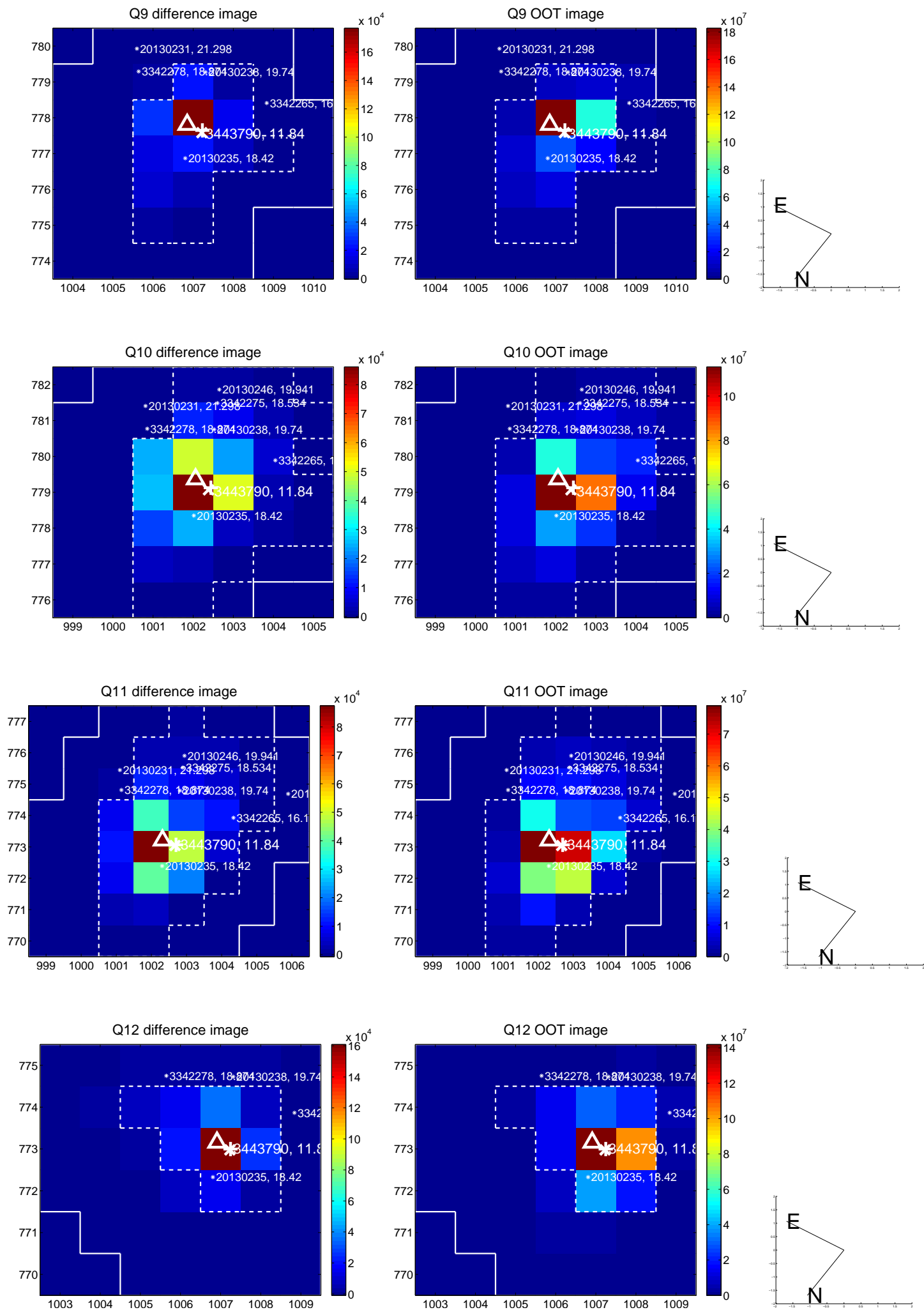
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



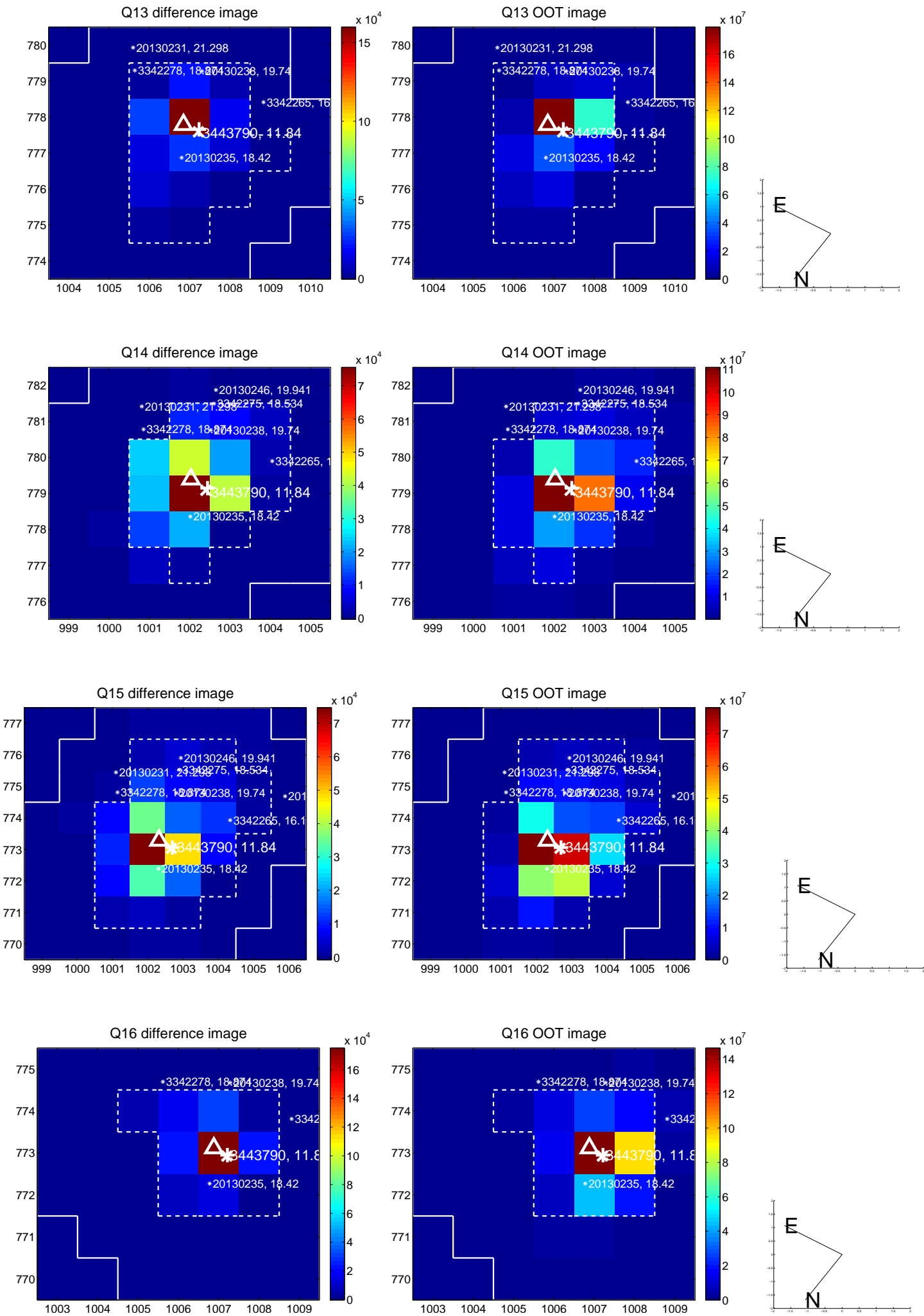
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



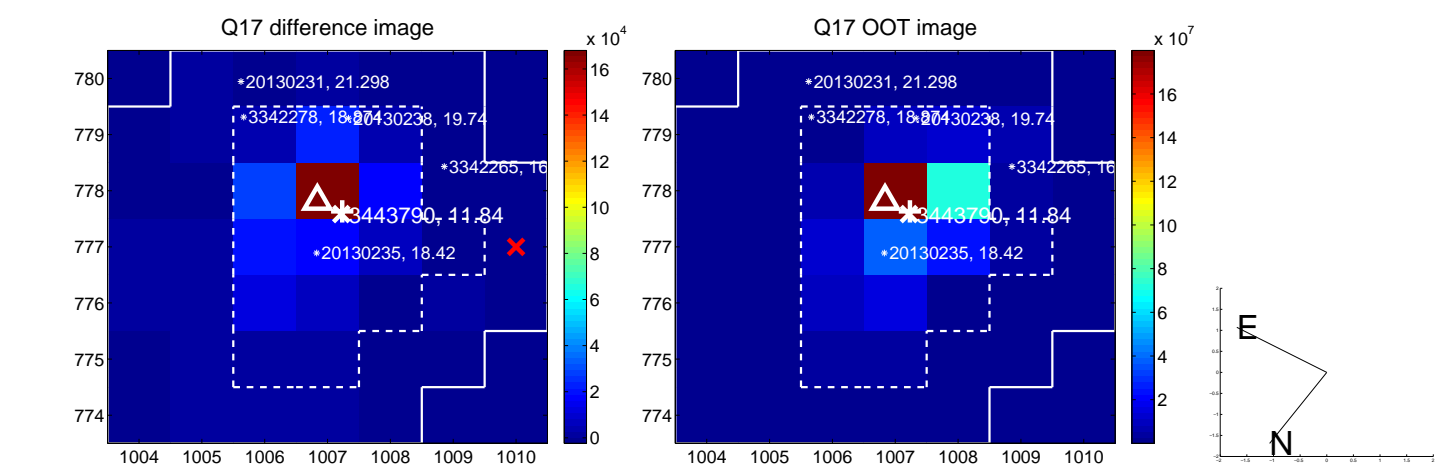
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



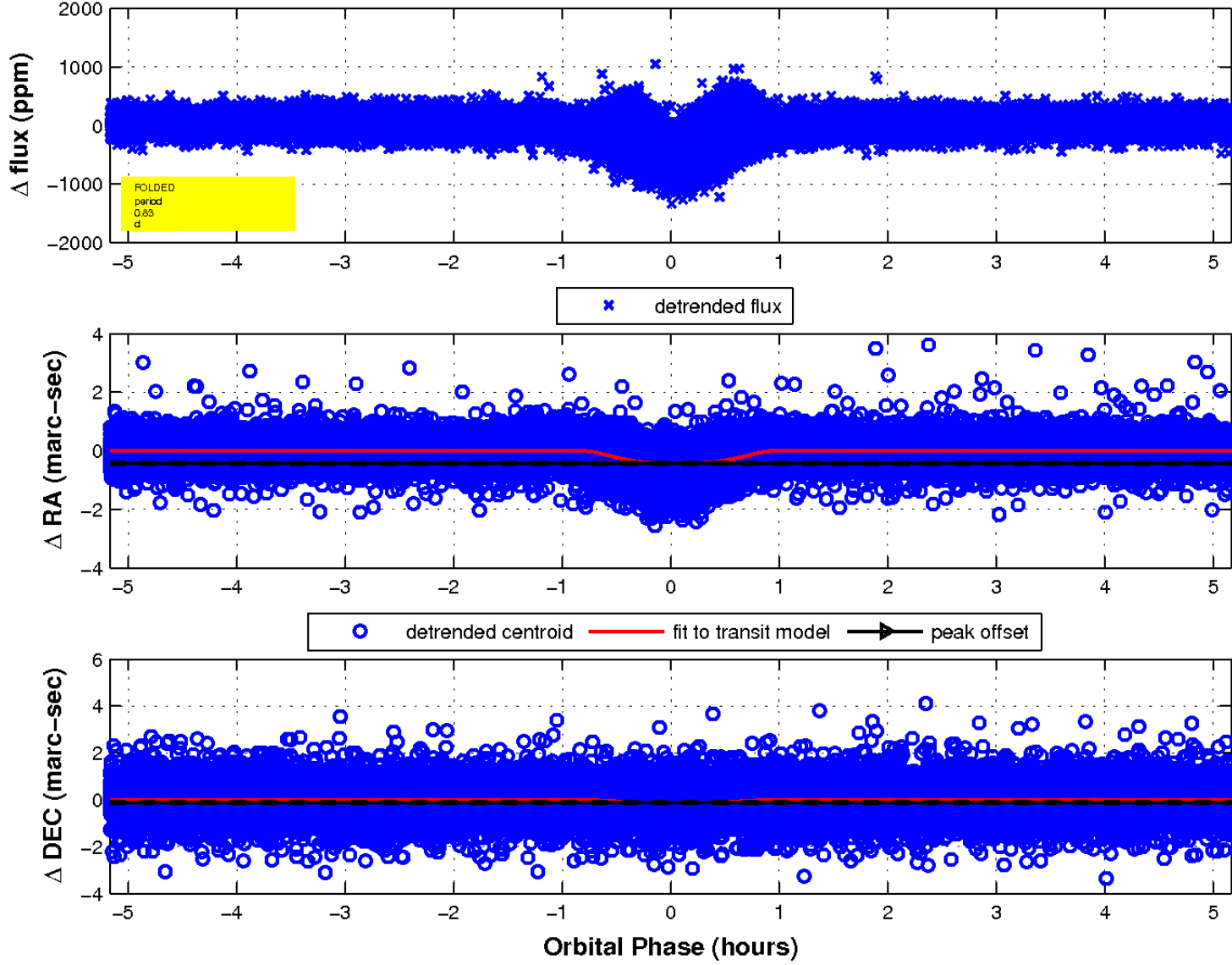
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2





UKIRT Image

Declination

