

# KIC 009118340

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118340-01	OBS	7927.01	1.035299	132.346752	63.7	1.464	14.3	14.1	3.51	7030	3.27	42234.19
009118340-02	OBS	No	1.035302	131.824933	58.3	1.864	20.2	15.1	3.51	7030	3.15	42234.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118340-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
009118340-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—HALO_GHOST

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

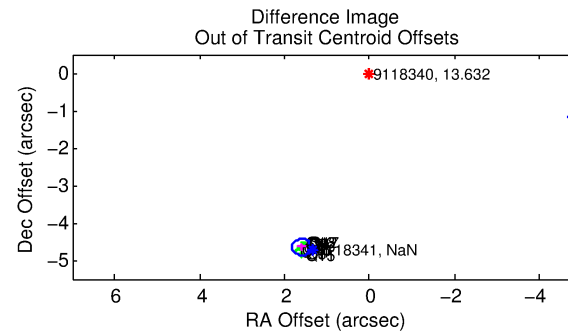
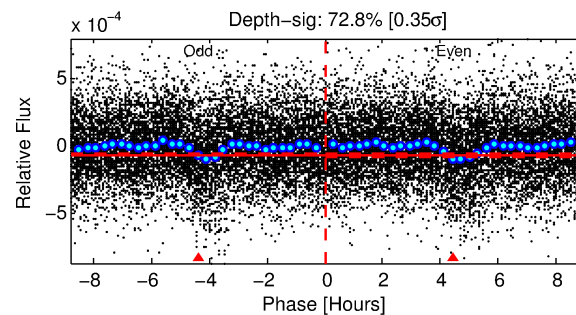
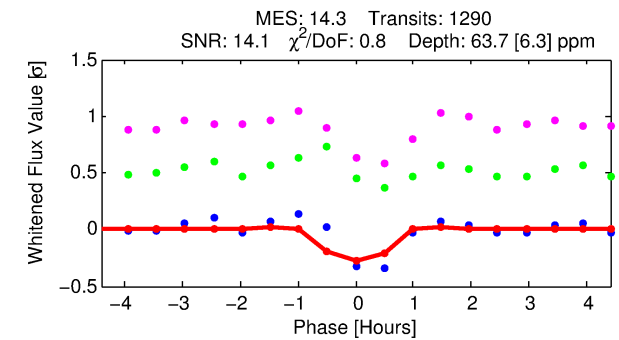
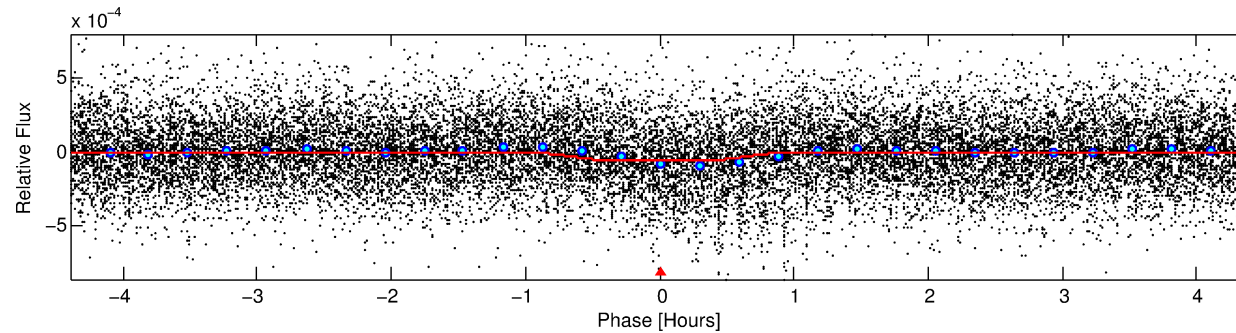
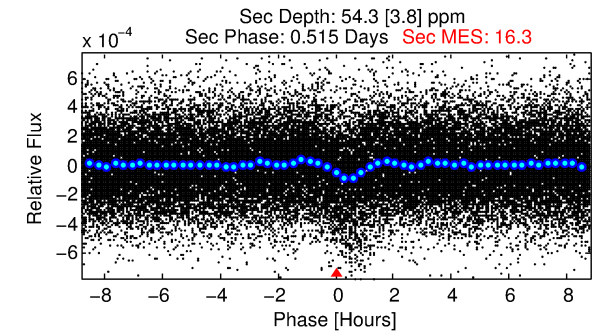
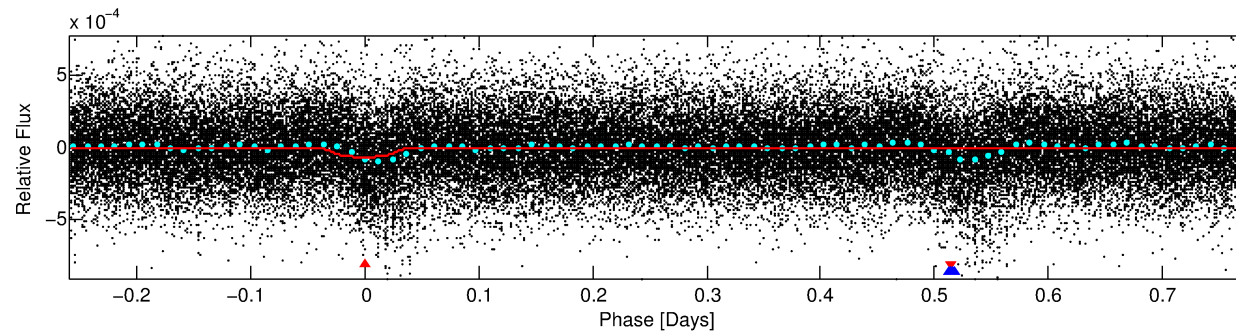
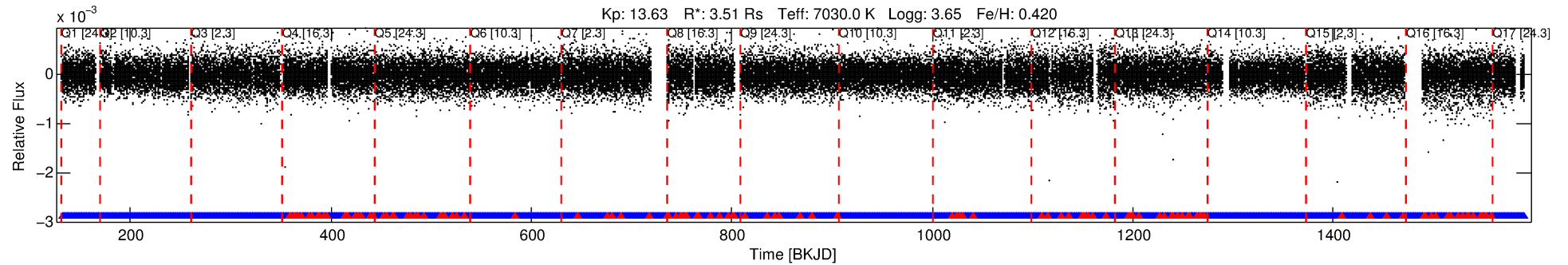
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009118340-01

No Significant Match Found

# DV One-Page Summary

KIC: 9118340 Candidate: 1 of 2 Period: 1.035 d



## DV Fit Results:

Period = 1.03530 [0.00001] d  
Epoch = 132.3468 [0.0015] BKJD  
Rp/R\* = 0.0085 [0.0031]  
a/R\* = 2.61 [4.89]  
b = 0.90 [0.46]  
Seff = 42234.19 [33421.21]  
Teff = 3655 [723] K  
Rp = 3.27 [1.97] Re  
a = 0.0253 [0.0120] AU  
Ag = 1.78 [1.87] [0.42 $\sigma$ ]  
Teffp = 6530 [1225] K [2.02 $\sigma$ ]

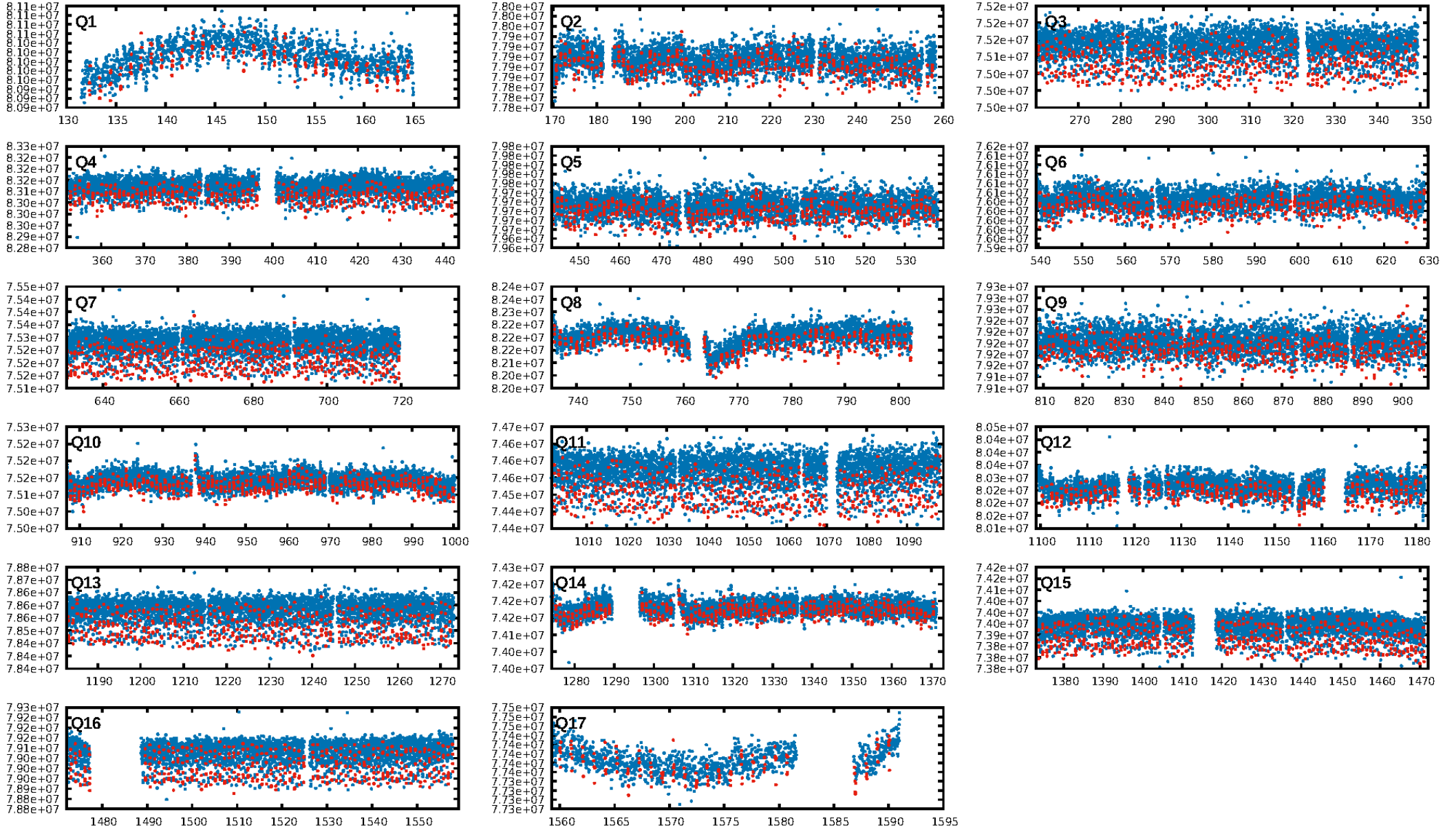
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 5.20e-42  
RollingBand-fgt: 0.90 [1112/1233]  
GhostDiagnostic-chr: -0.1371  
Centroid-sig: 0.0%  
Centroid-so: 43.894 arcsec [49.04 $\sigma$ ]  
OotOffset-rm: 4.914 arcsec [67.22 $\sigma$ ]  
KicOffset-rm: 4.866 arcsec [63.83 $\sigma$ ]  
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]

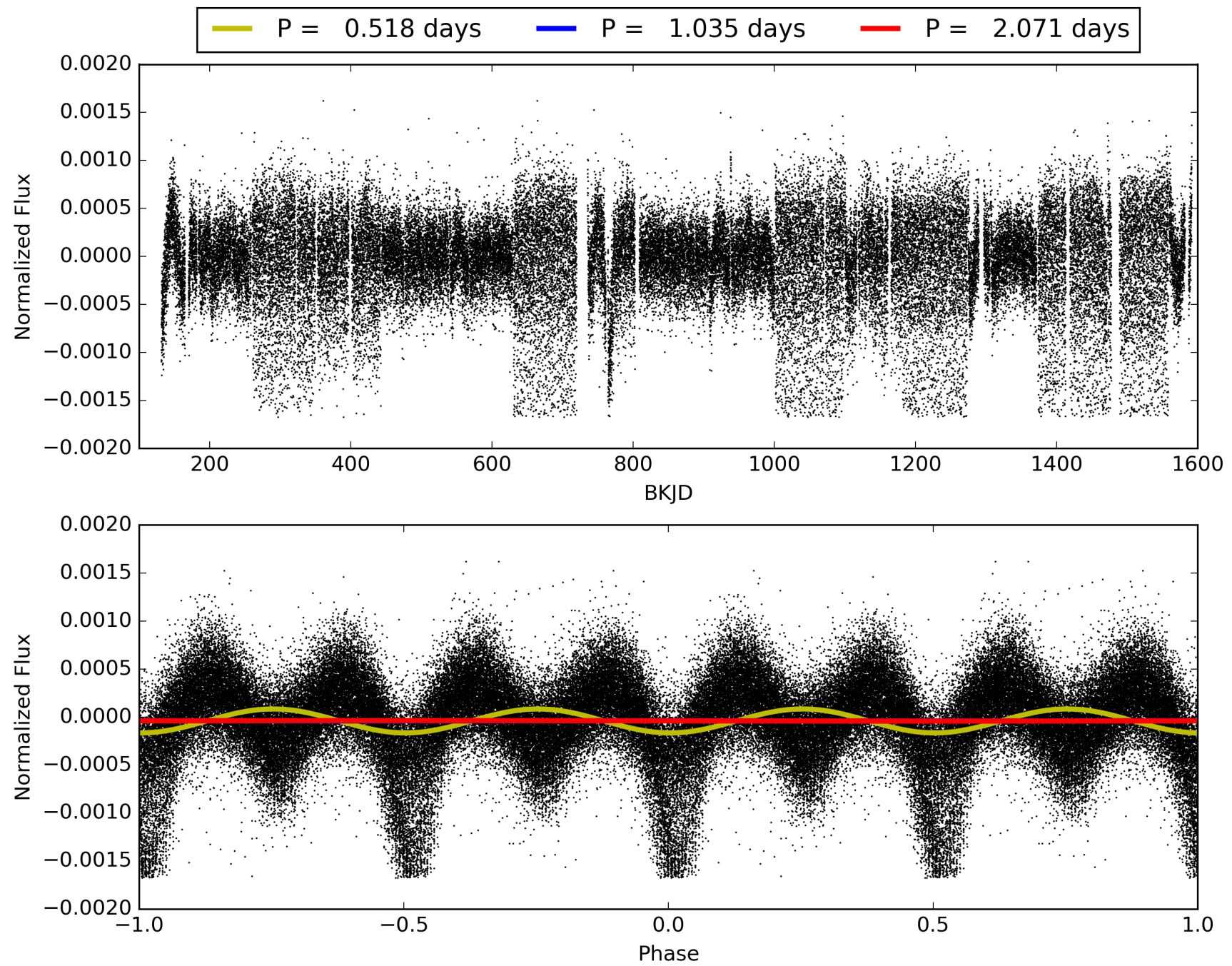
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:05:28 Z

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

# TCE 009118340-01, PDC Light Curves



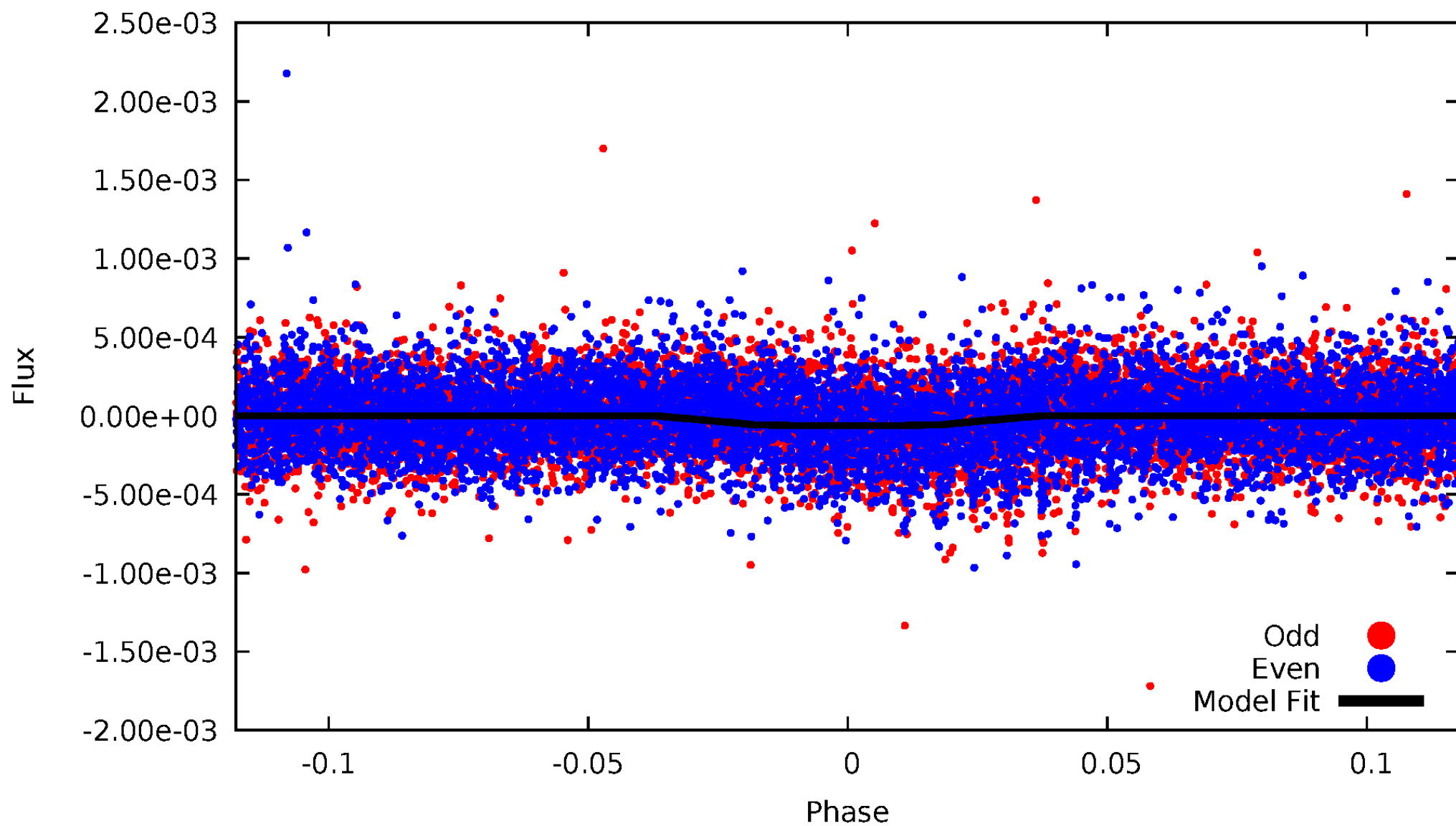
TCE 009118340-01





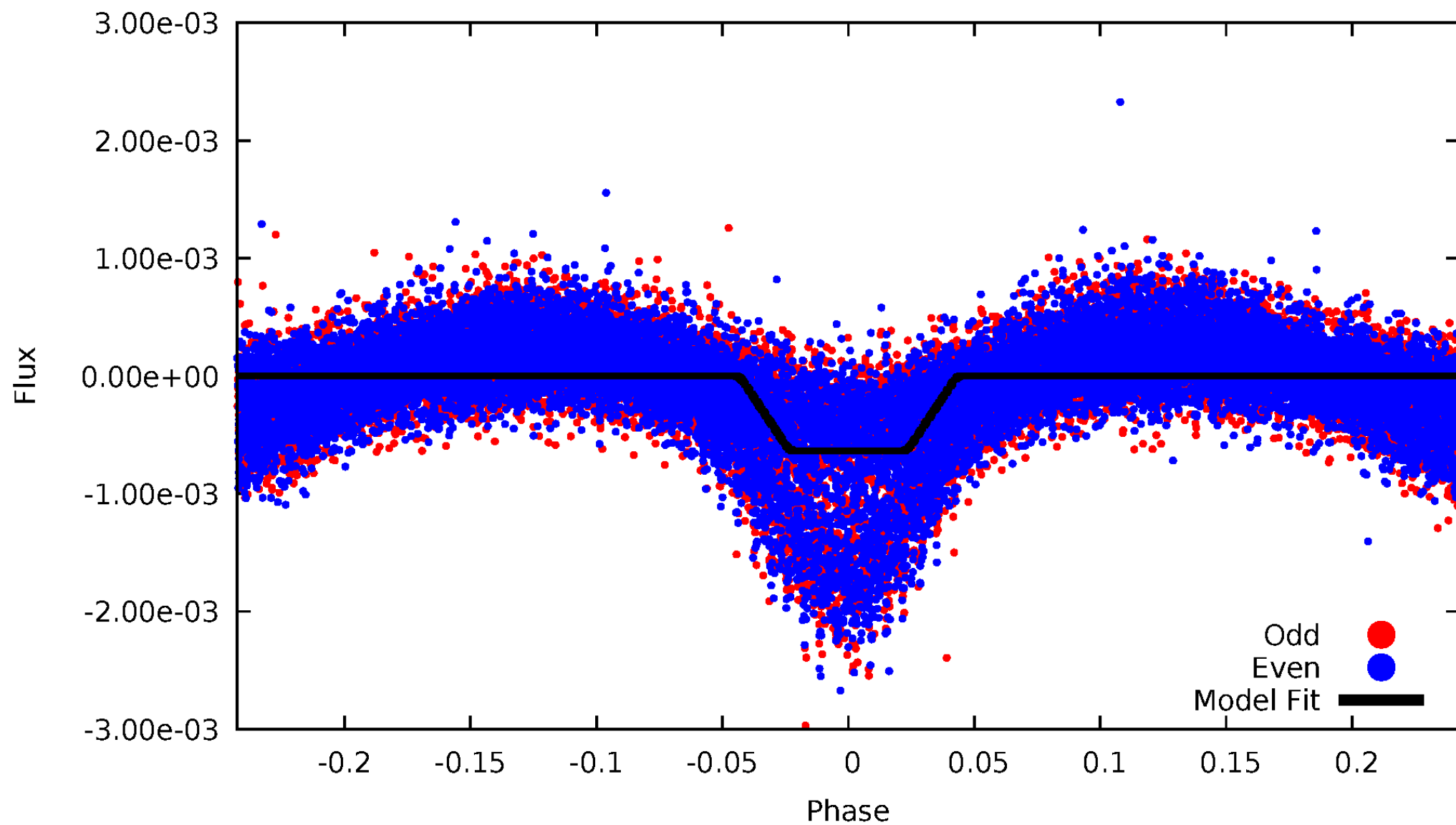
# DV Odd/Even

TCE 009118340-01

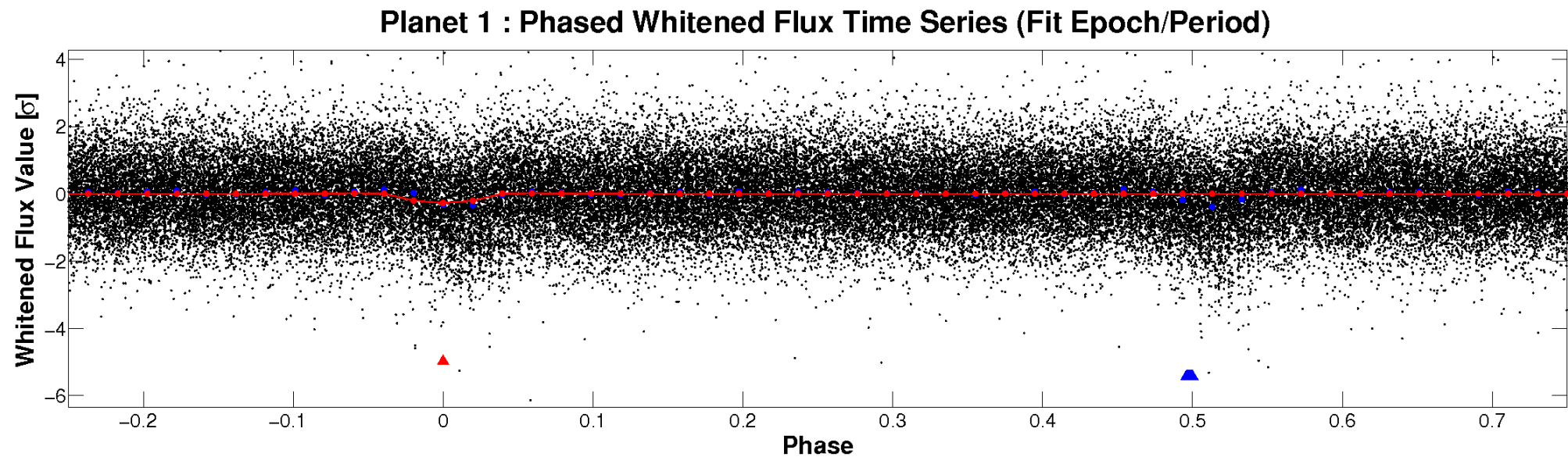
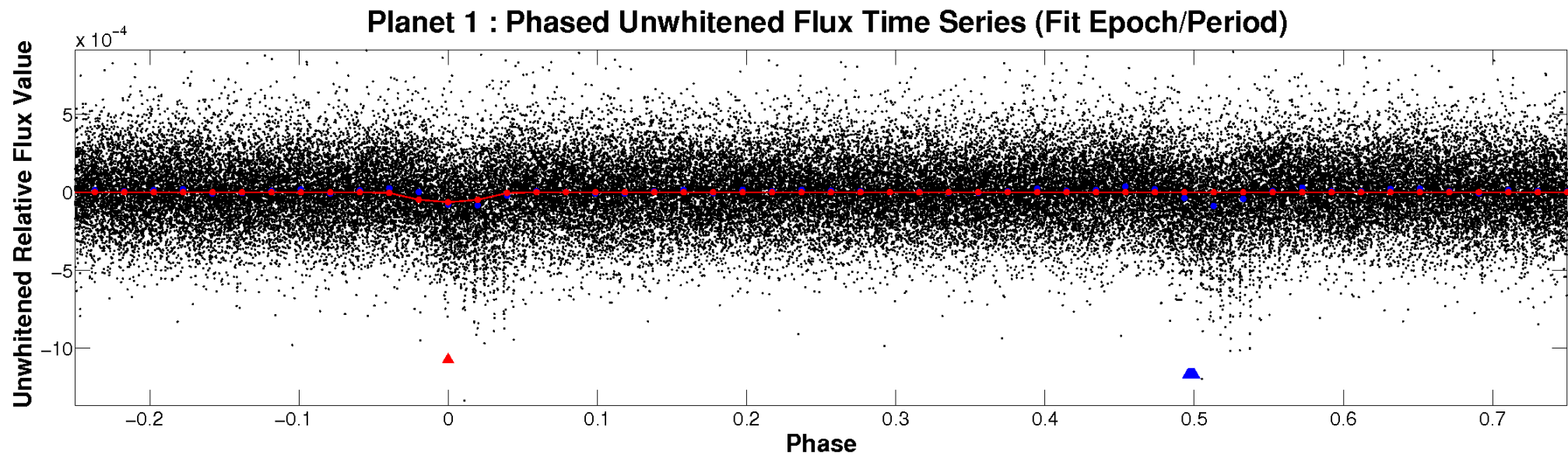


# ALT Odd/Even

TCE 009118340-01

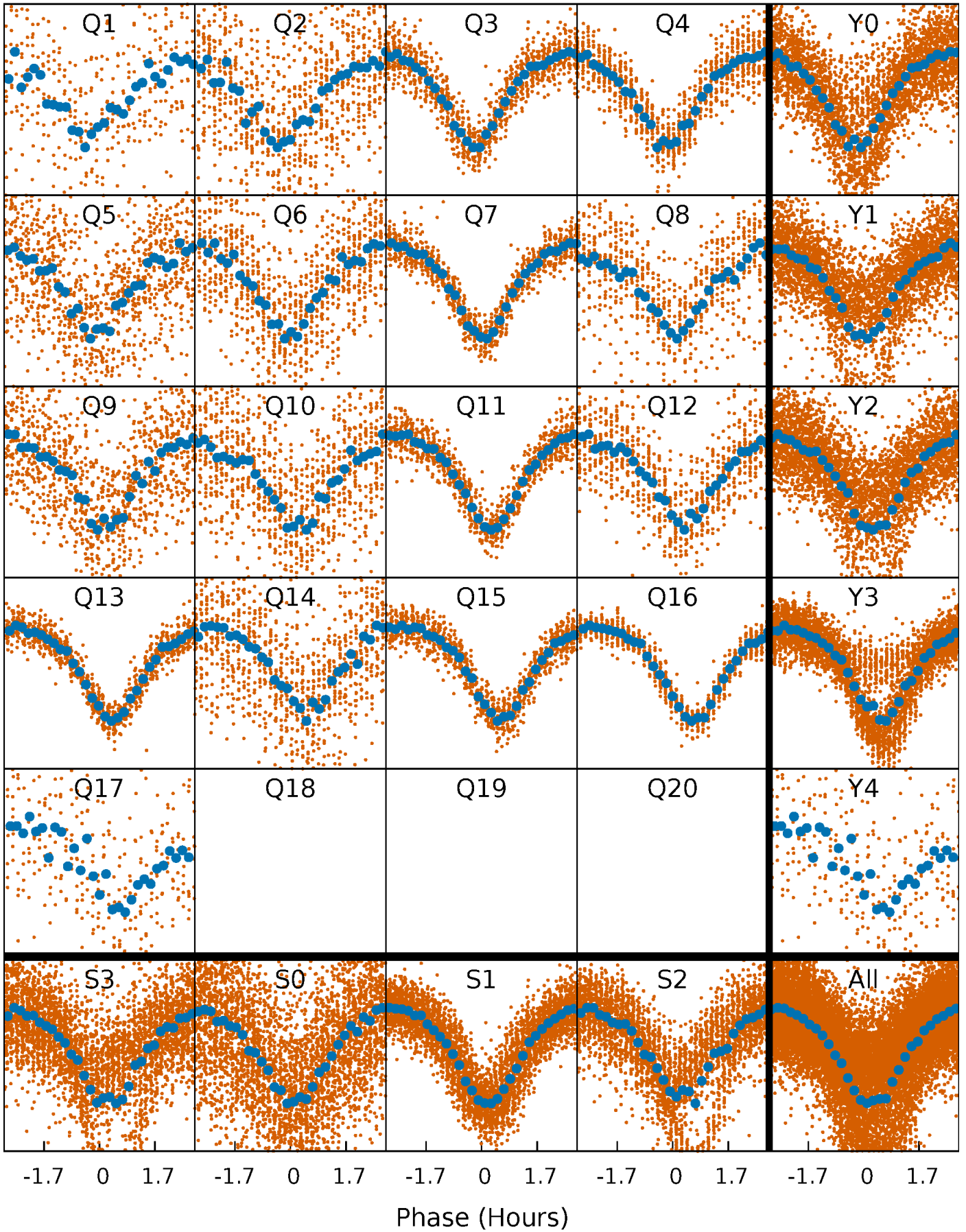


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

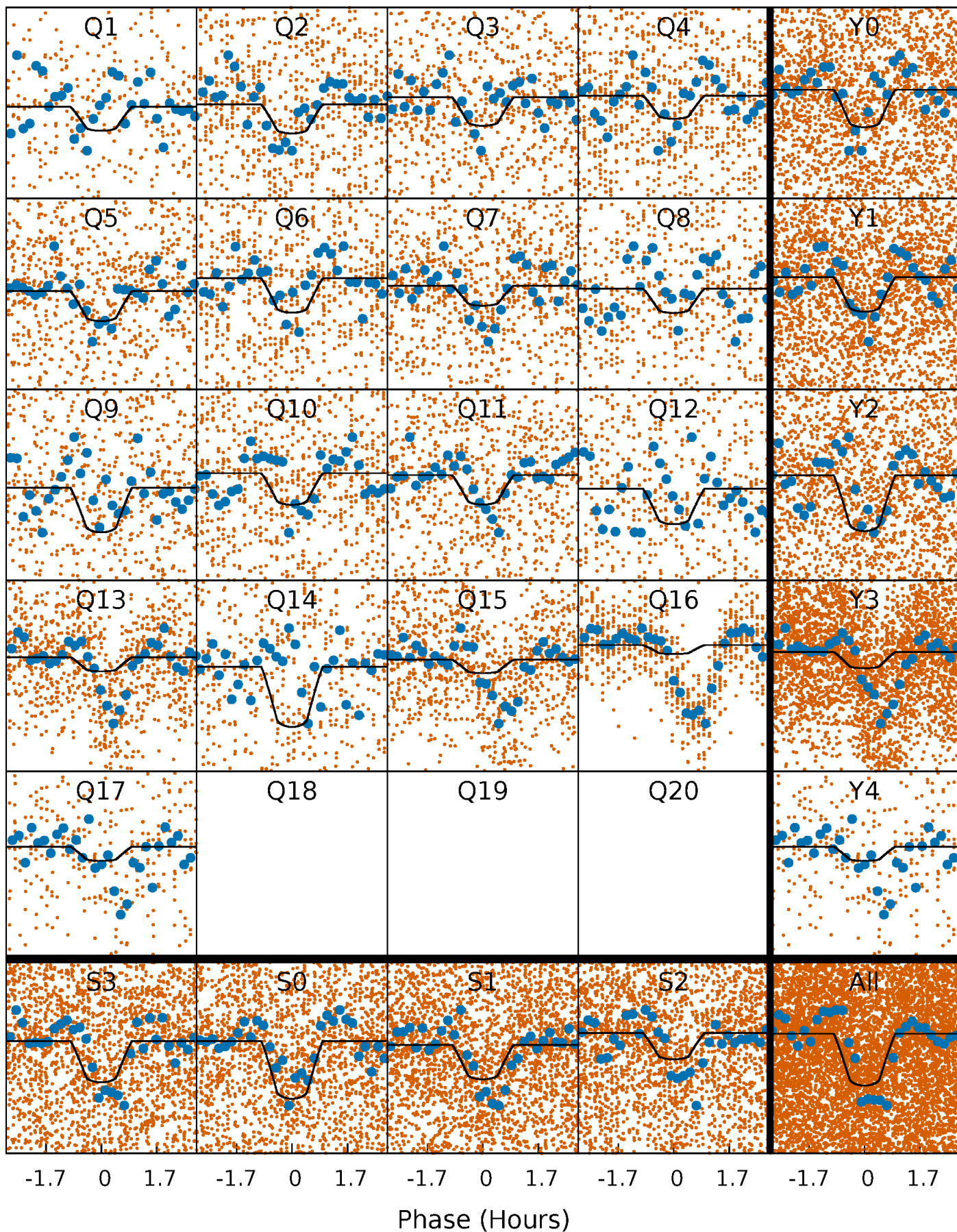
TCE 009118340-01 P= 1.035299 Days  $T_0=132.346752$  (BKJD)





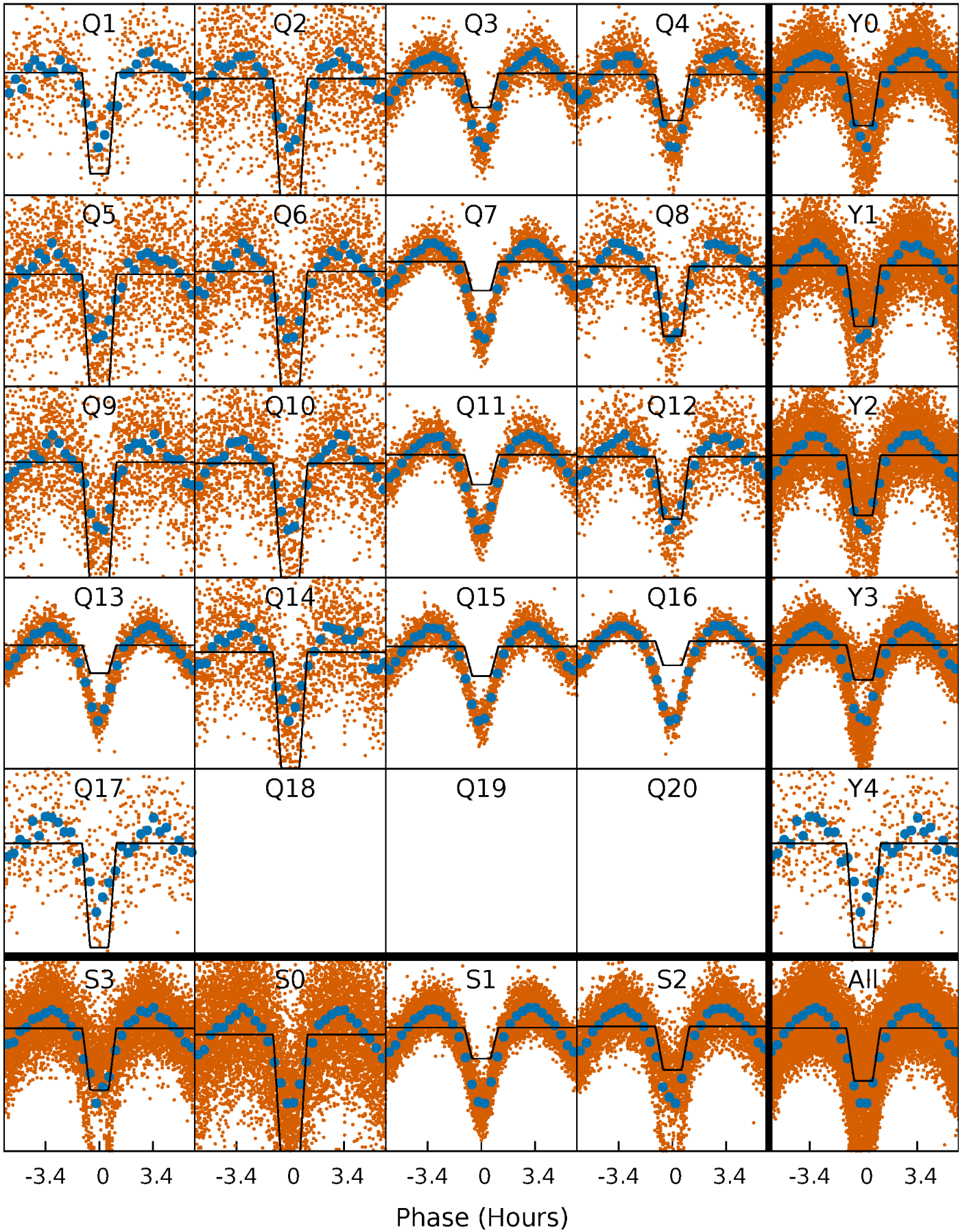
# DV Quarter-Phased Transit Curves

TCE 009118340-01 P= 1.035299 Days  $T_0=132.346752$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

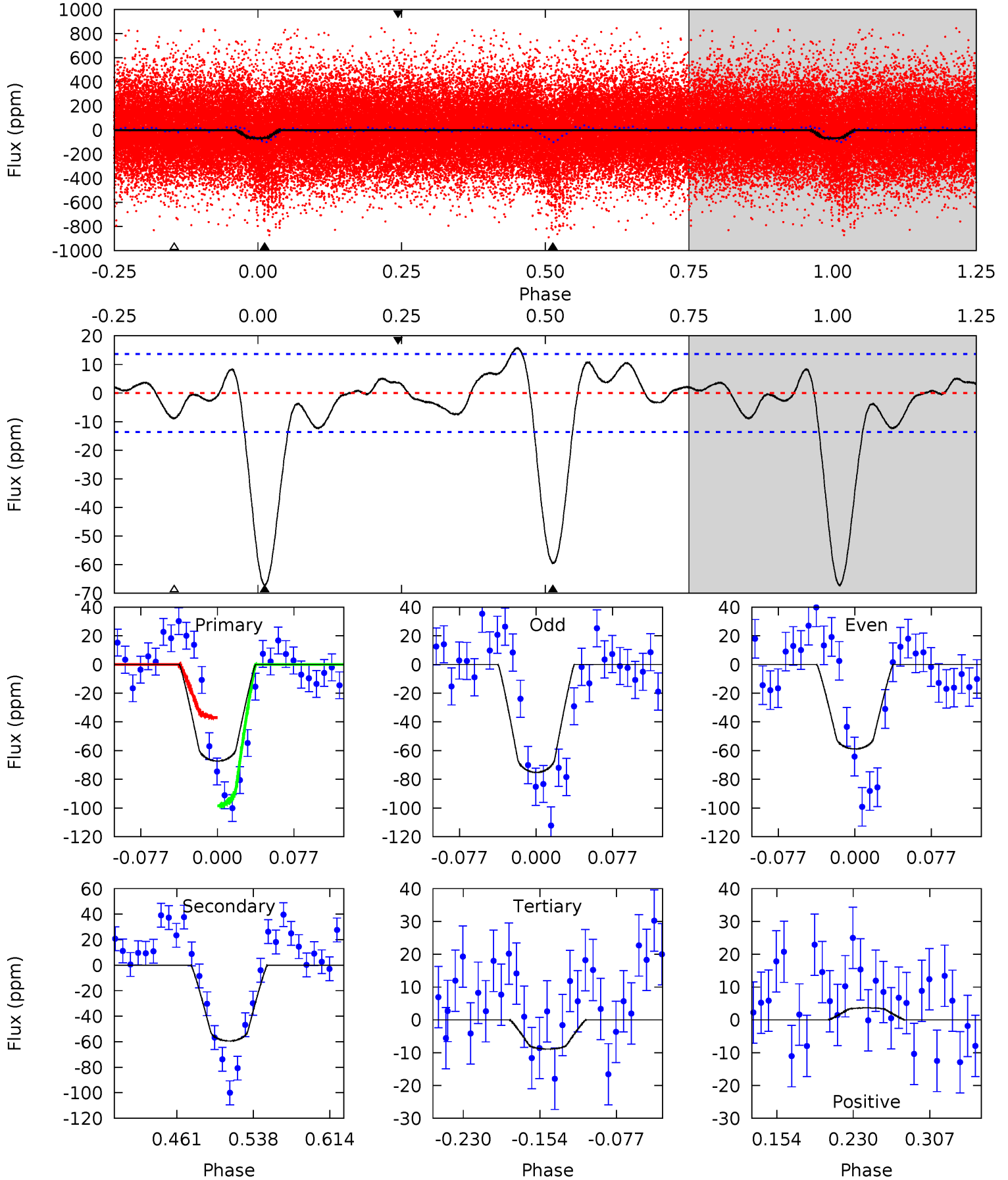
TCE 009118340-01   P= 1.035334 Days    $T_0=132.329156$  (BKJD)



# DV Model-Shift Uniqueness Test

009118340-01, P = 1.035299 Days, E = 131.311453 Days

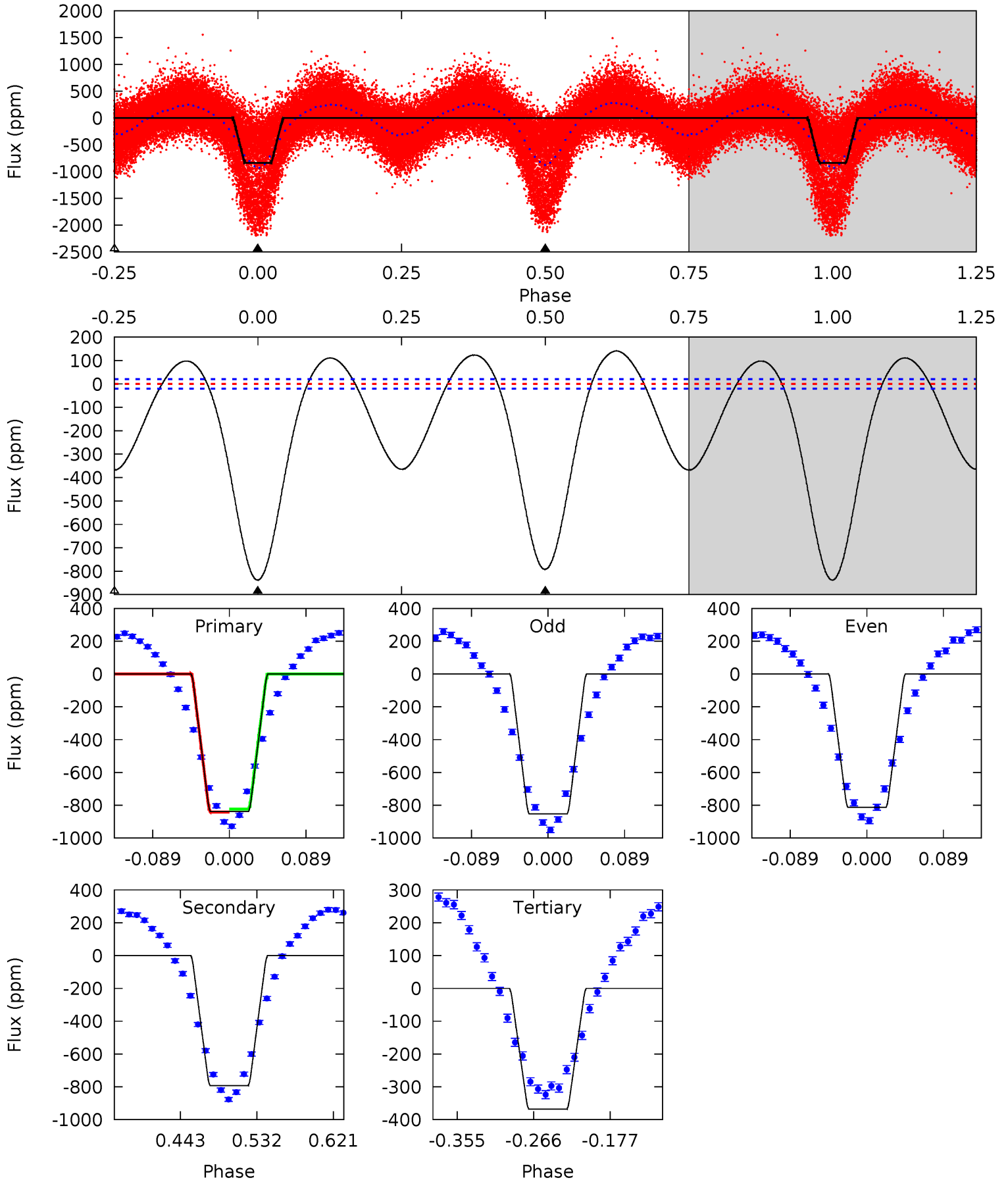
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.8	20.2	3.02	1.24	4.62	1.77	1.72	19.8	21.6	17.2	18.9	2.78	1.10	0.19	10.5



# Alt Model-Shift Uniqueness Test

009118340-01, P = 1.035334 Days, E = 131.293822 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
190.6	180.2	83.7	0	4.59	1.70	38.9	107.0	190.6	96.5	180.2	4.47	1.33	0.14	2.02





### Stellar Parameters For KIC 009118340

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7030^{+196}_{-364}$	$3.650^{+0.451}_{-0.080}$	$0.420^{+0.050}_{-0.350}$	$3.512^{+0.425}_{-1.699}$	$2.011^{+0.117}_{-0.466}$	$0.065^{+0.286}_{-0.017}$
	+3%/-5%	+12%/-2%	+12%/-83%	+12%/-48%	+6%/-23%	+438%/-26%
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 009118340-01 / KOI 7927.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-59 \pm 3$	$2.95^{+1.23}_{-1.16}$	$4890^{+377}_{-583}$	$6323^{+1771}_{-1039}$	$2.377^{+3.936}_{-1.196}$
Alt.	$-792 \pm 4$	$8.90^{+1.60}_{-2.37}$	$4895^{+377}_{-626}$	$7274^{+708}_{-607}$	$3.508^{+2.632}_{-0.977}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

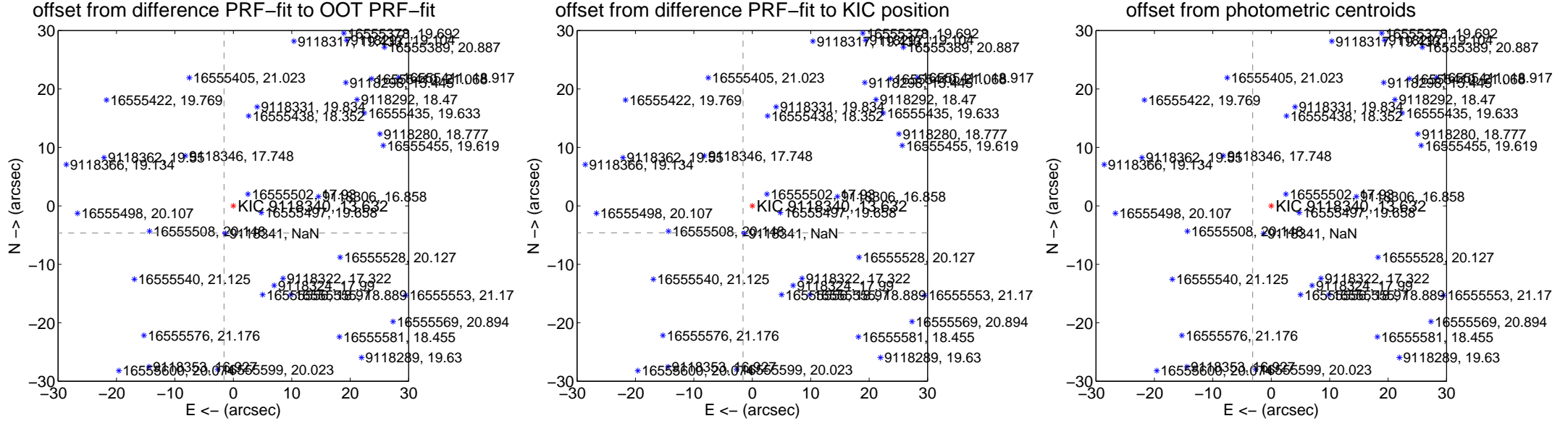
$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

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

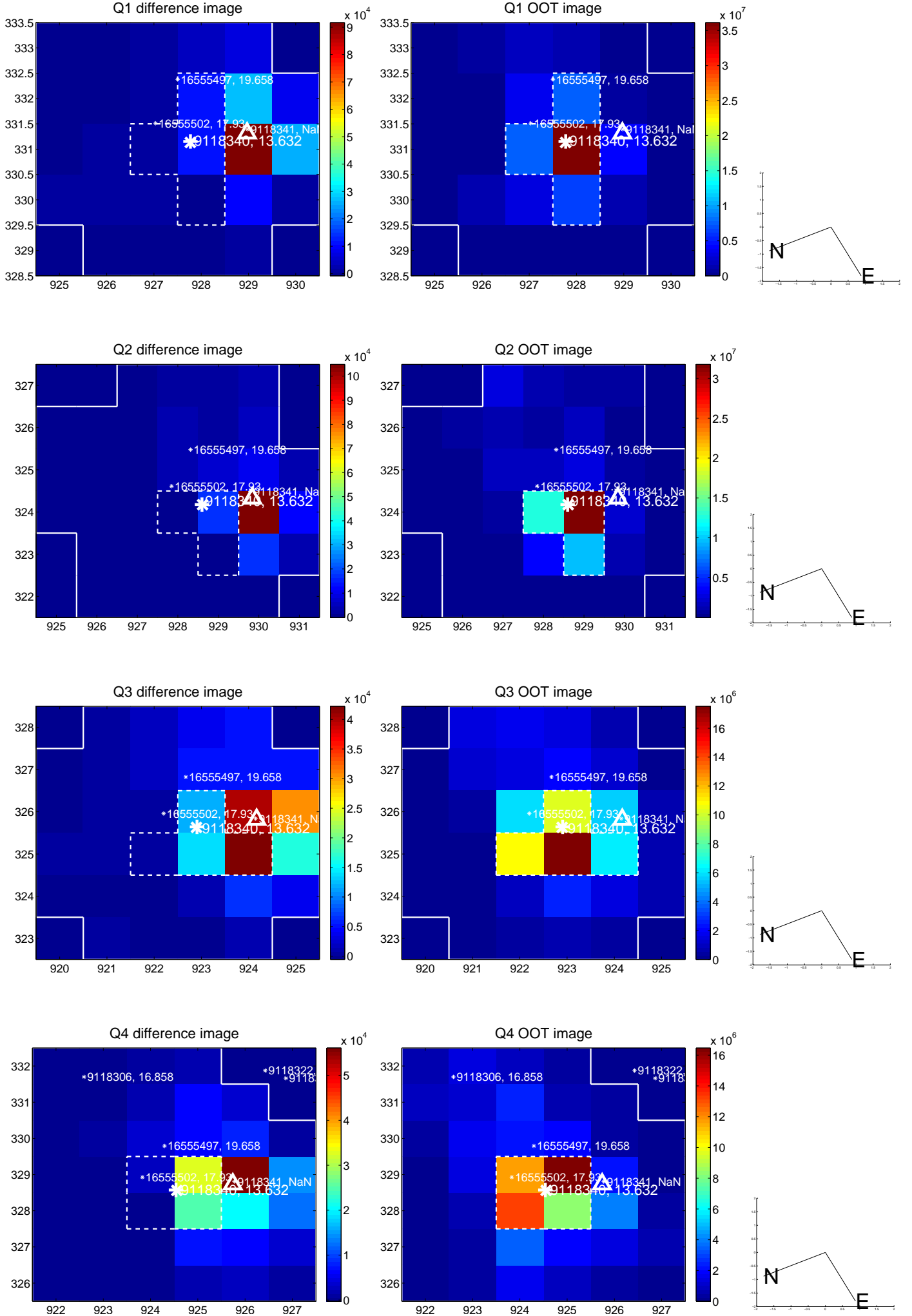
Supplemental centroid analysis for 009118340-01. Kepler magnitude: 13.63. Transit SNR 14.12  
 There are 17 quarters with good PRF difference image offsets  
 The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.914 \pm 0.073$	<b>67.22</b>	$1.597 \pm 0.068$	$-4.647 \pm 0.074$
PRF-fit source offset from KIC position	$4.866 \pm 0.076$	<b>63.83</b>	$1.577 \pm 0.069$	$-4.603 \pm 0.076$
photometric centroid source offset	$43.89 \pm 0.90$	<b>49.04</b>	$3.18 \pm 0.68$	$-43.78 \pm 0.90$

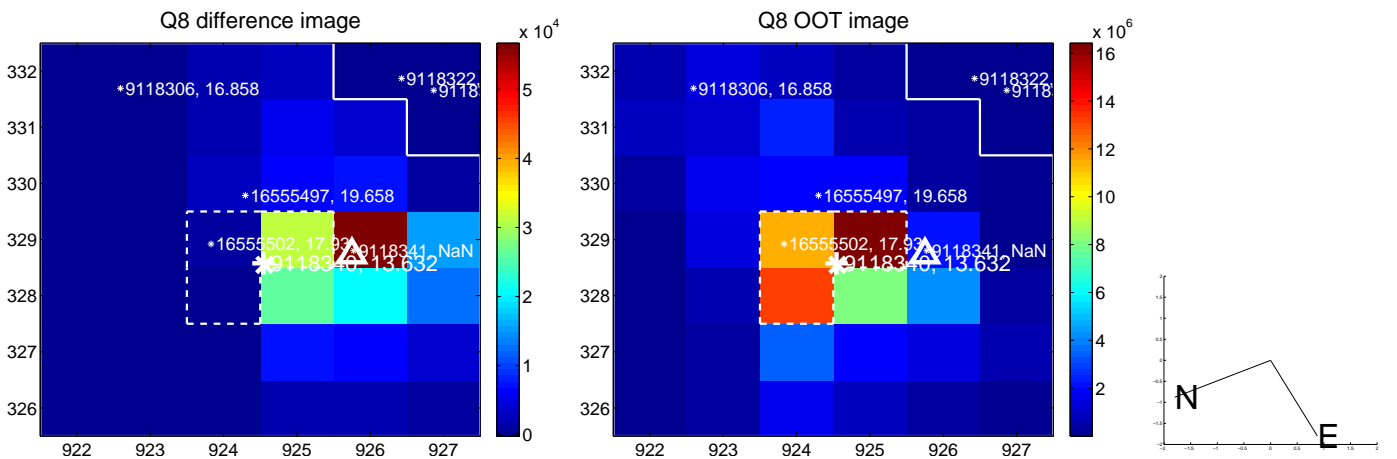
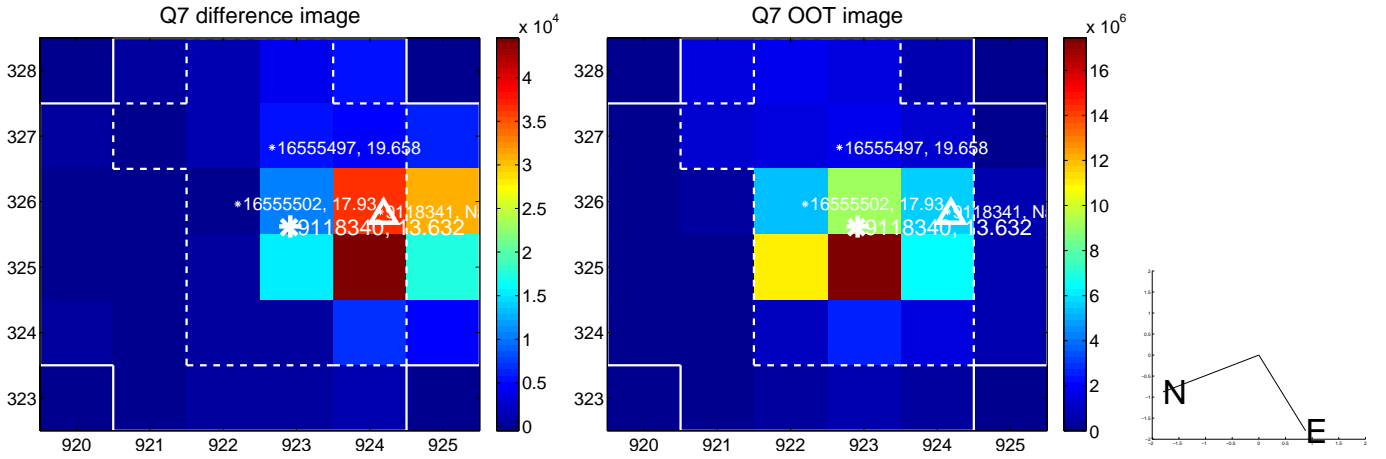
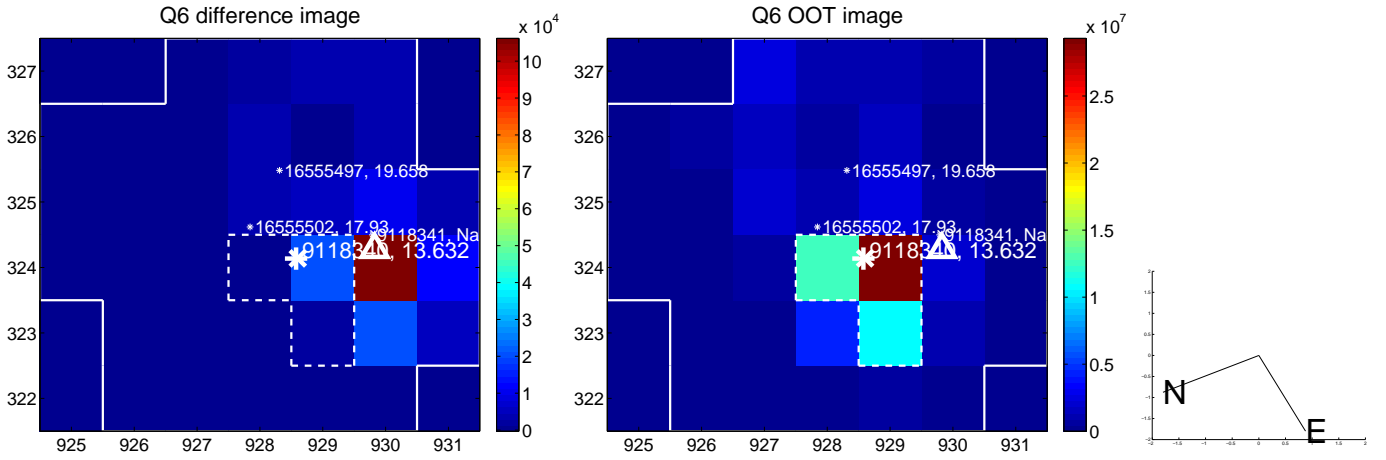
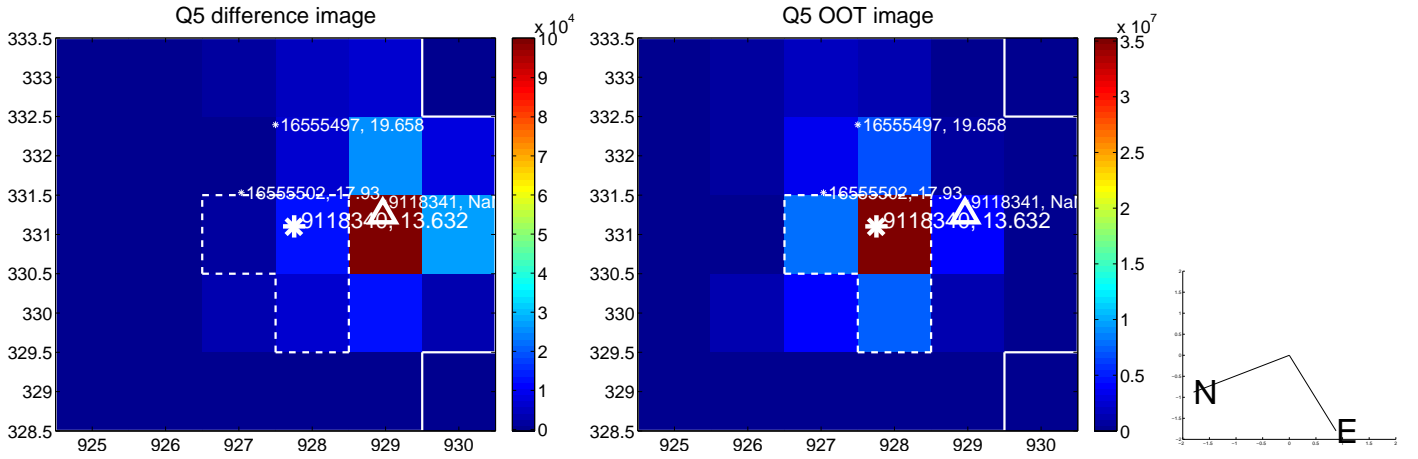


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

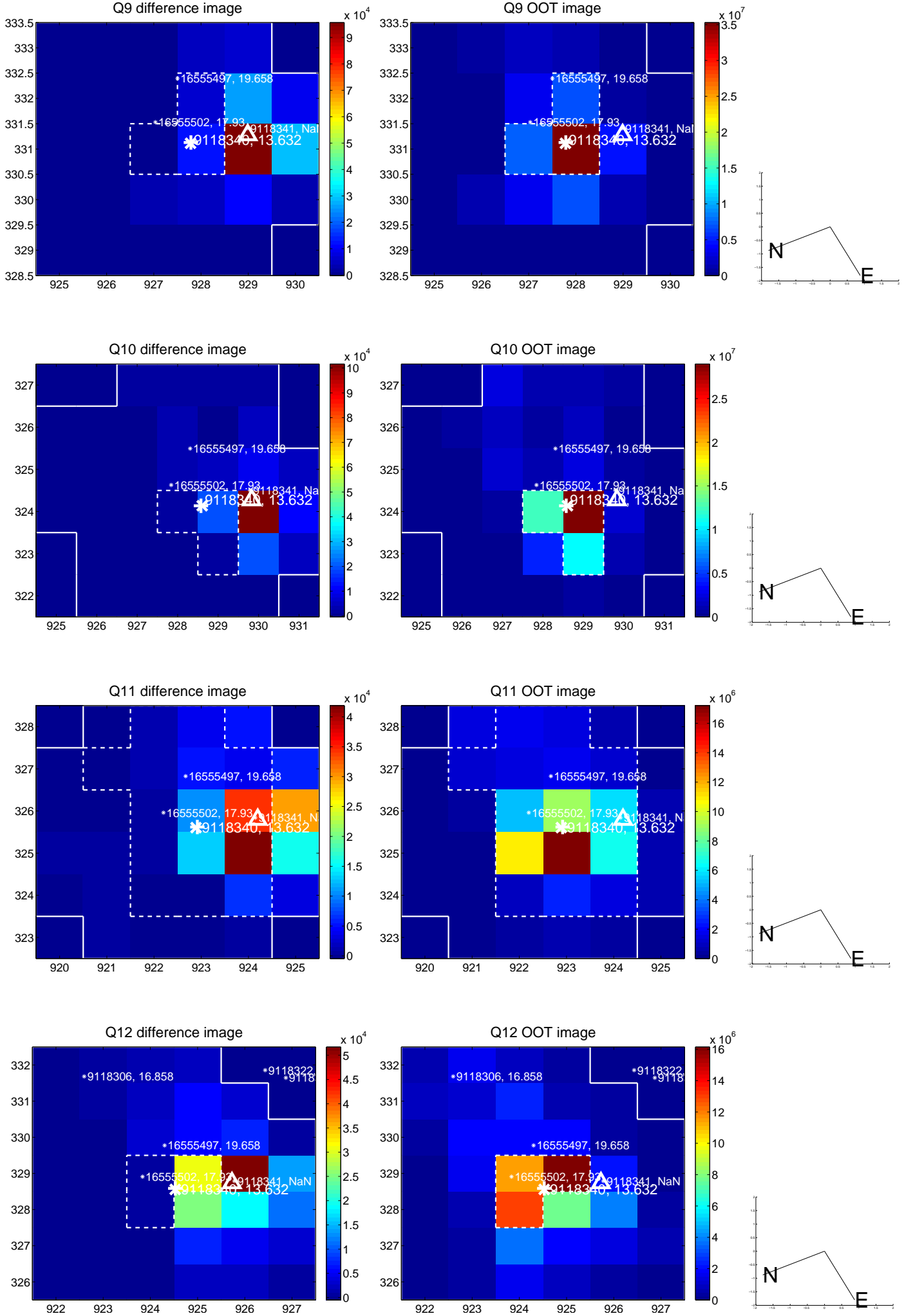


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

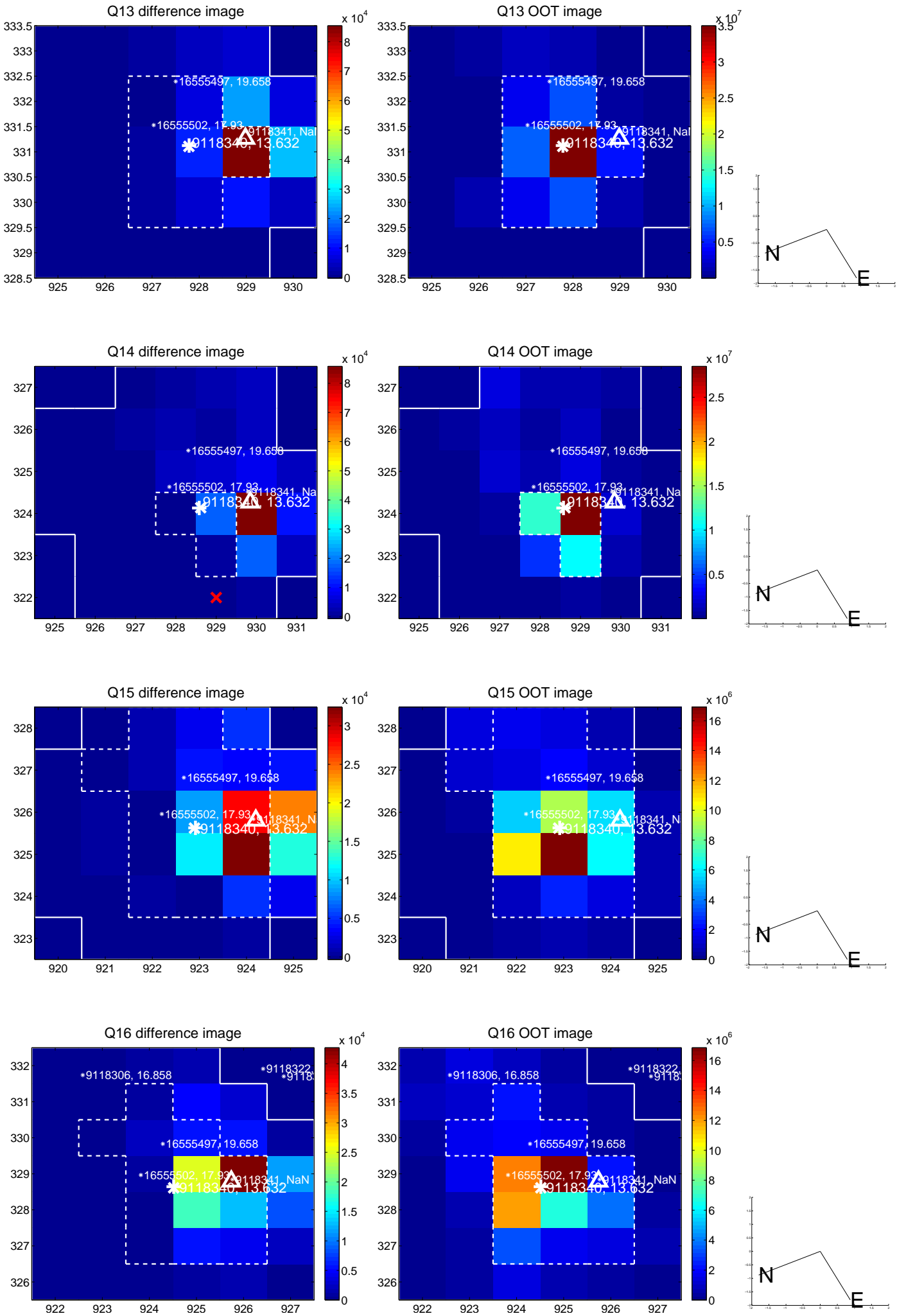




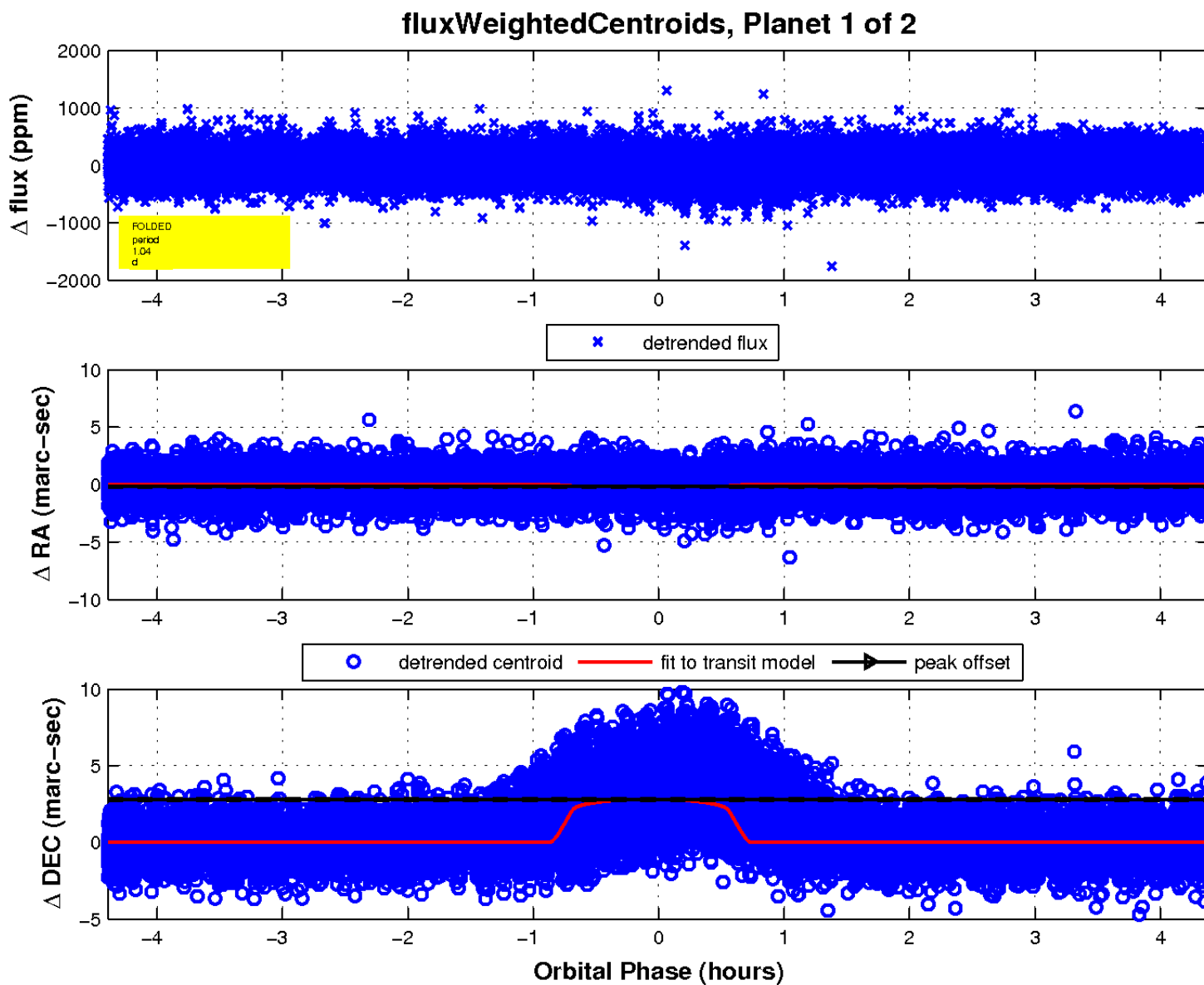
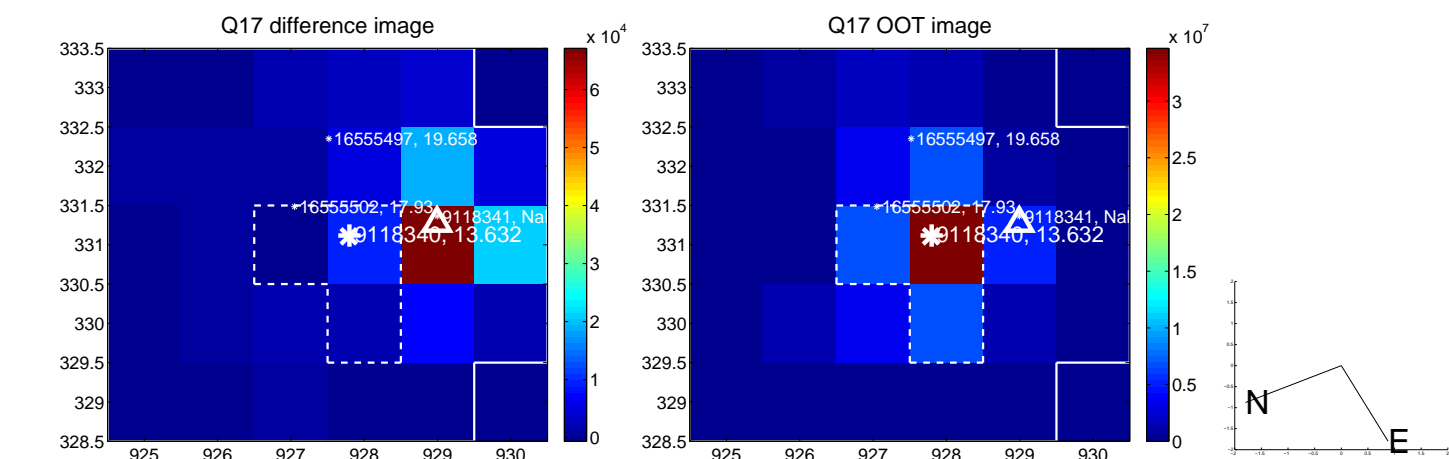
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

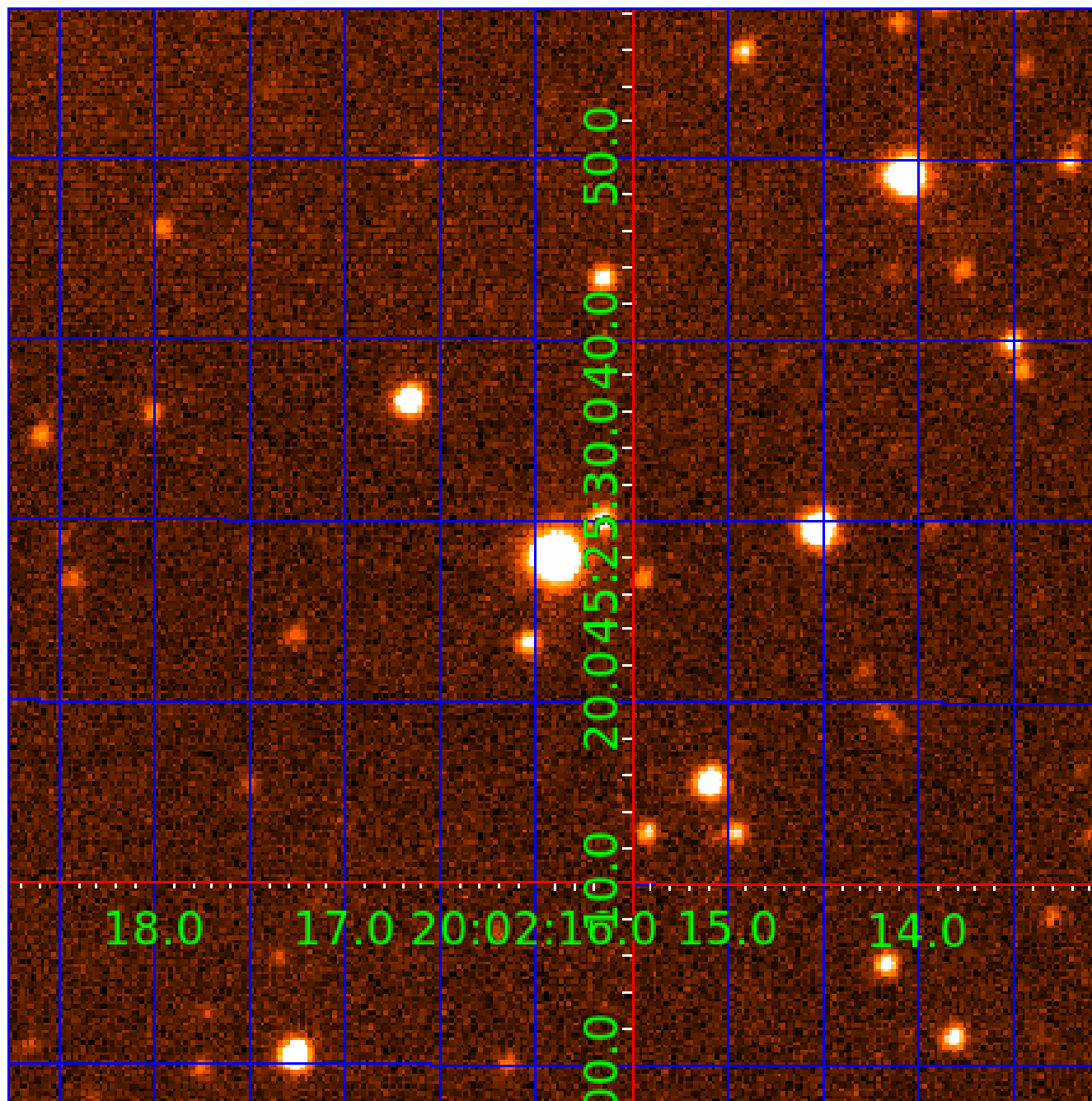


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 009118340

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009118340-01	OBS	7927.01	1.035299	132.346752	63.7	1.464	14.3	14.1	3.51	7030	3.27	42234.19
009118340-02	OBS	No	1.035302	131.824933	58.3	1.864	20.2	15.1	3.51	7030	3.15	42234.03

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009118340-01	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
009118340-02	OBS	FP	0.00	1	0	1	0	MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—HALO_GHOST

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

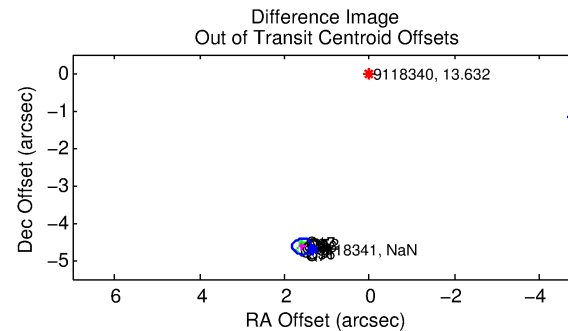
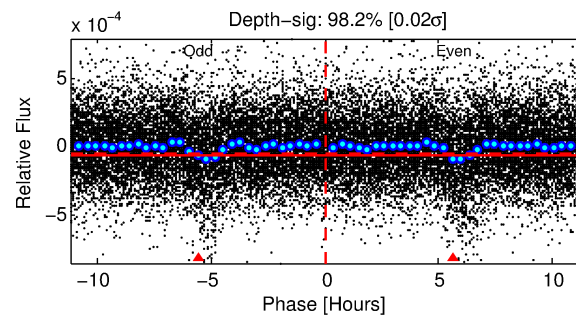
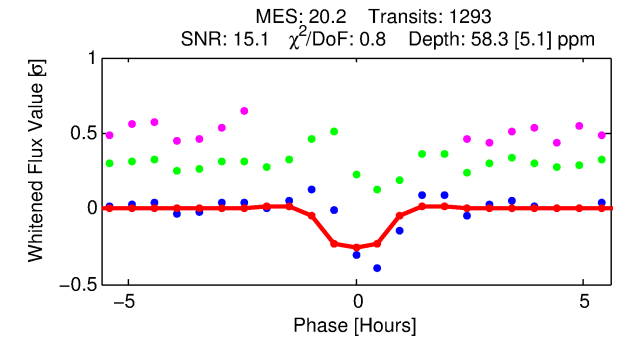
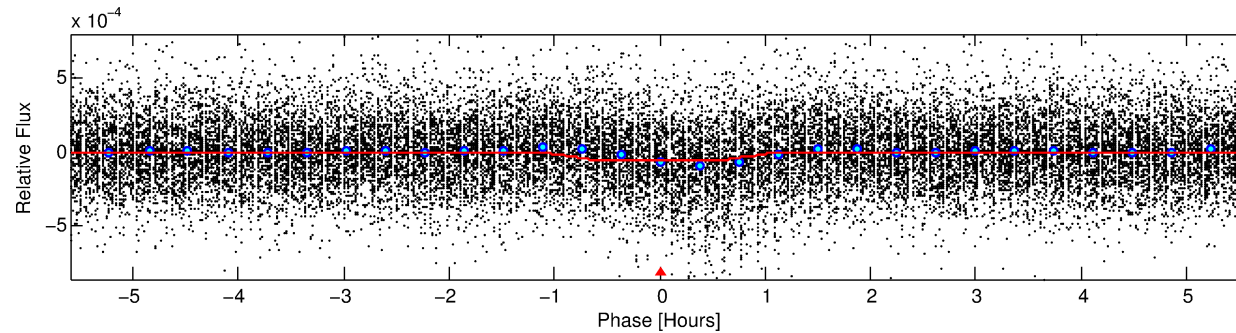
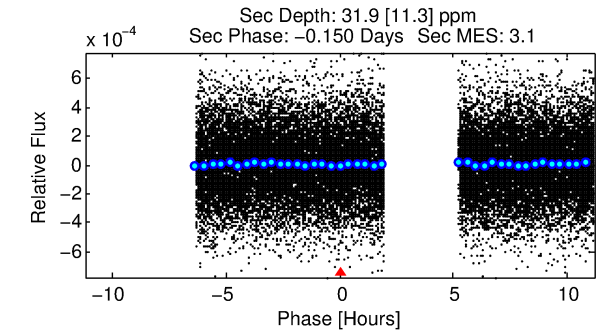
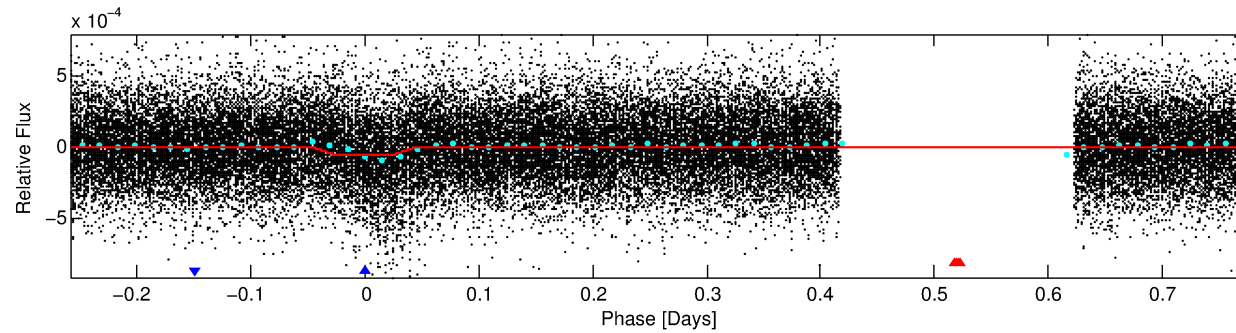
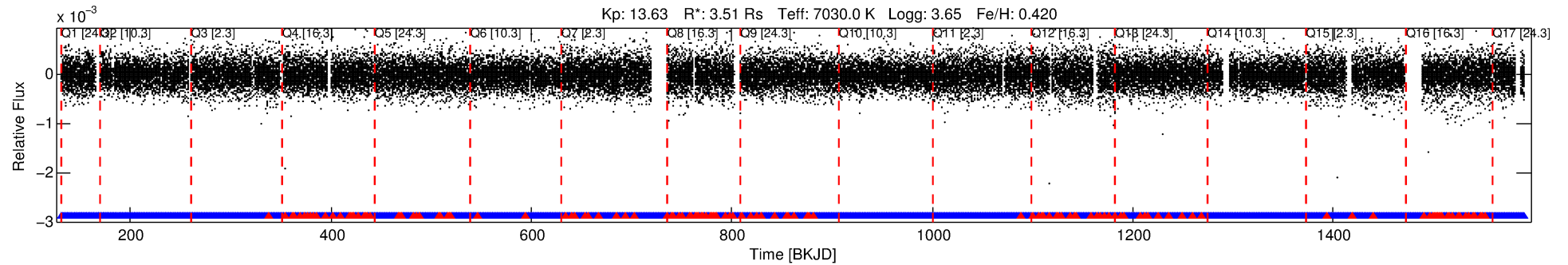
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009118340-02

No Significant Match Found

# DV One-Page Summary

KIC: 9118340 Candidate: 2 of 2 Period: 1.035 d



## DV Fit Results:

Period = 1.03530 [0.00001] d  
Epoch = 131.8249 [0.0016] BKJD  
Rp/R\* = 0.0082 [0.0021]  
a/R\* = 2.04 [2.43]  
b = 0.91 [0.29]  
Seff = 42234.03 [33421.09]  
Teq = 3655 [723] K  
Rp = 3.15 [1.73] Re  
a = 0.0253 [0.0120] AU  
Ag = 1.13 [1.11] [0.11σ]  
Teff = 5821 [954] K [1.81σ]

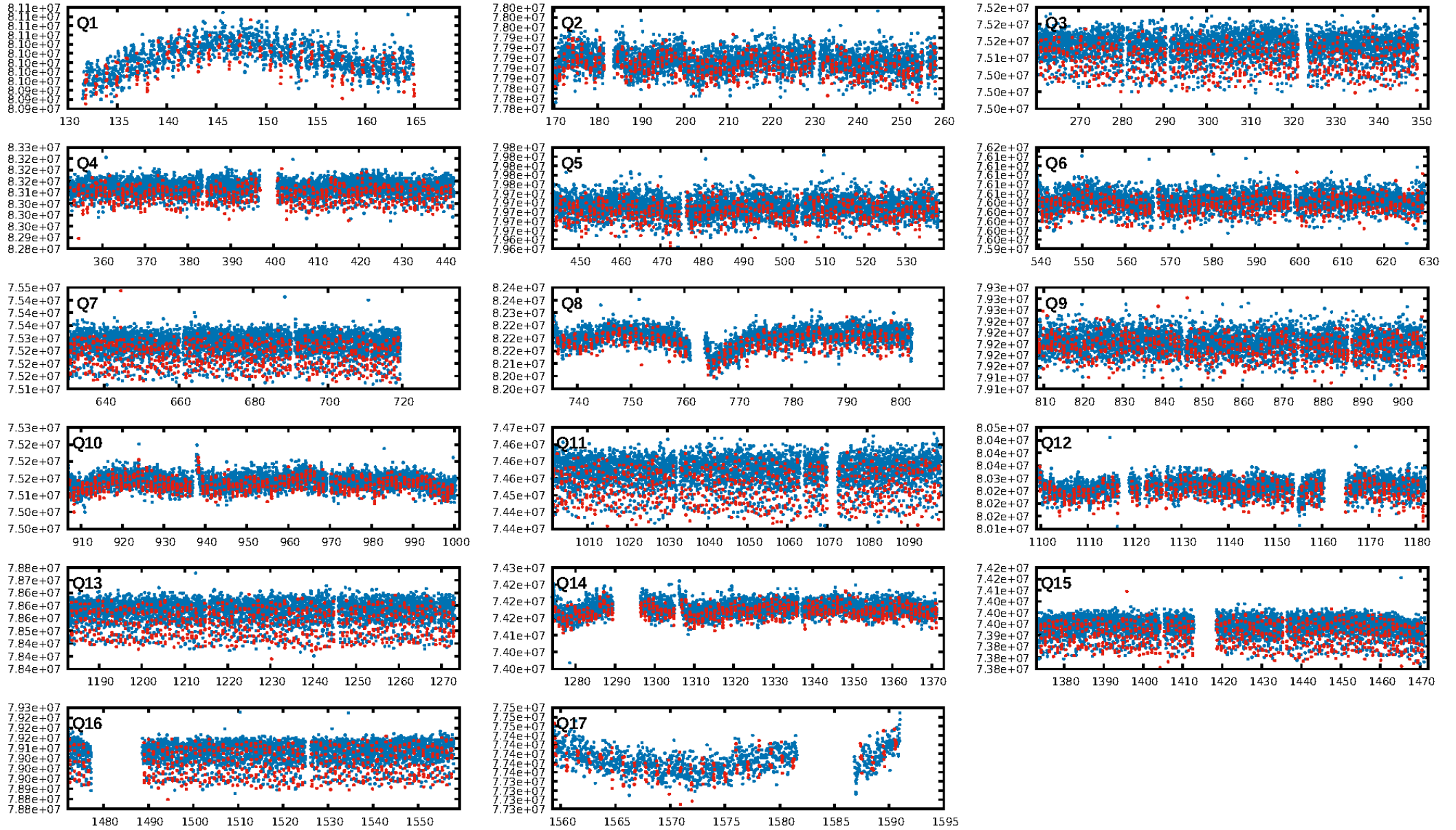
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 8.15e-81  
RollingBand-fgt: 0.89 [1101/1234]  
GhostDiagnostic-chr: 0.003982  
Centroid-sig: 0.0%  
Centroid-so: 38.330 arcsec [42.83σ]  
OotOffset-rm: 4.900 arcsec [66.62σ]  
KicOffset-rm: 4.853 arcsec [64.84σ]  
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]

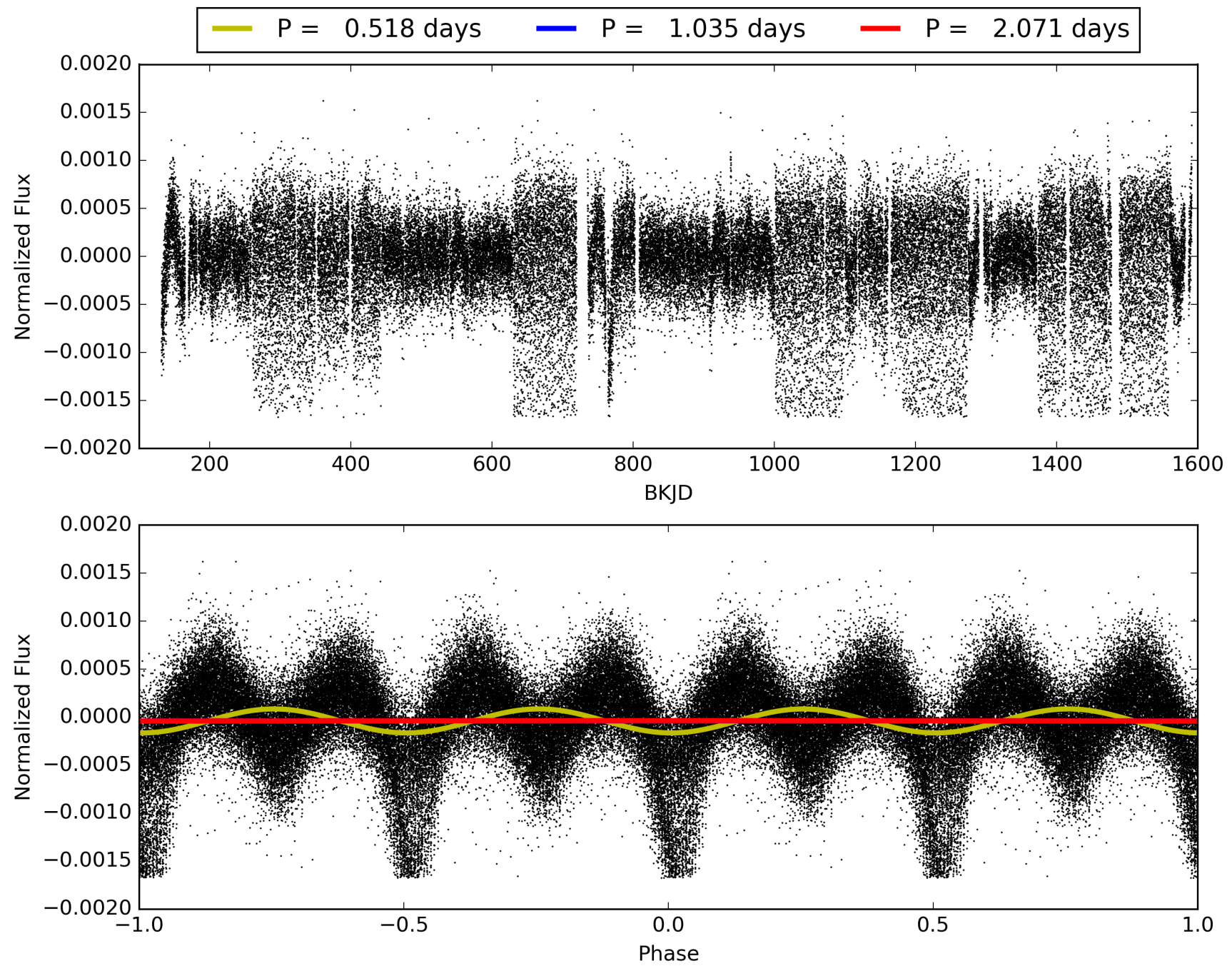
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:05:37 Z

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

# TCE 009118340-02, PDC Light Curves



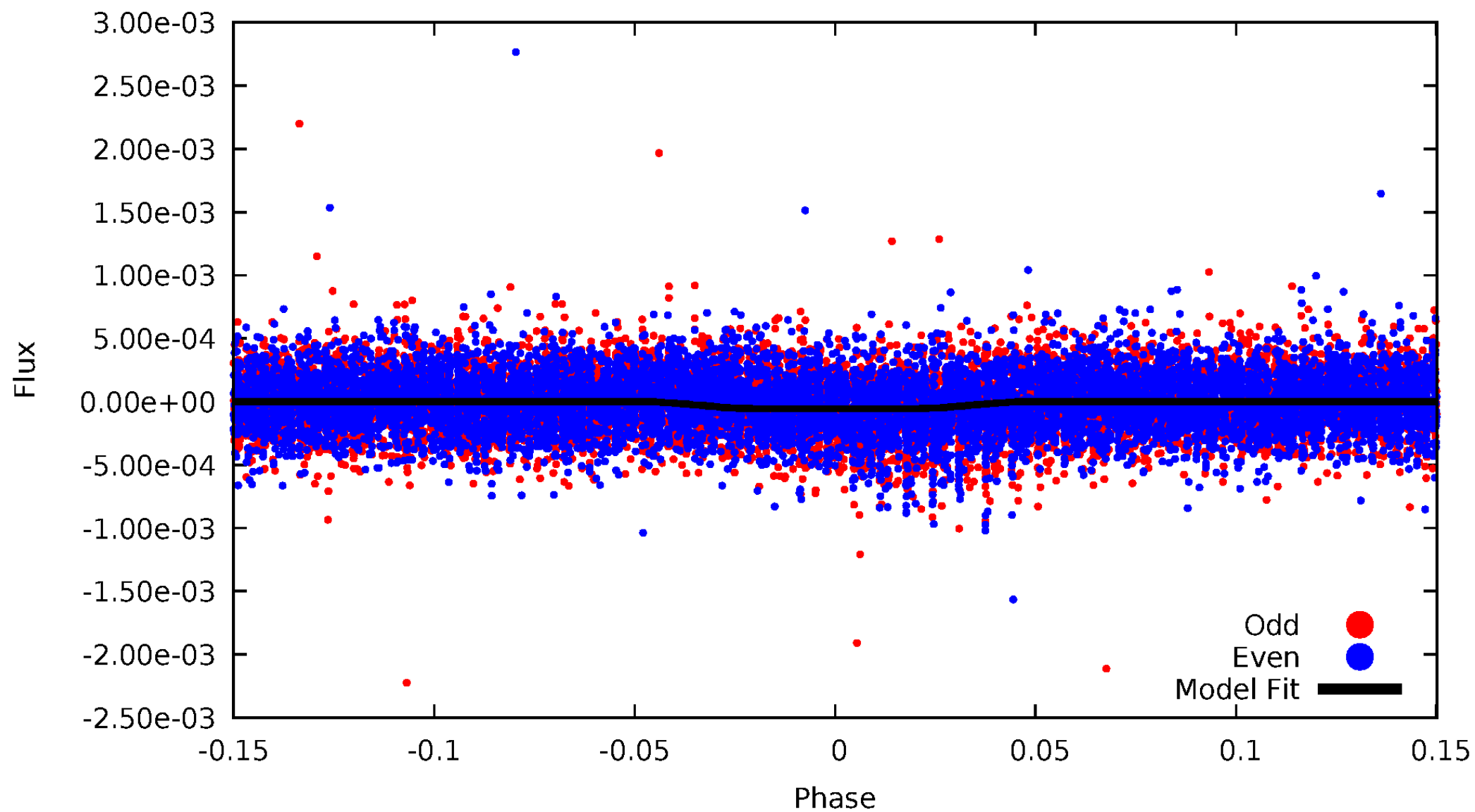
TCE 009118340-02





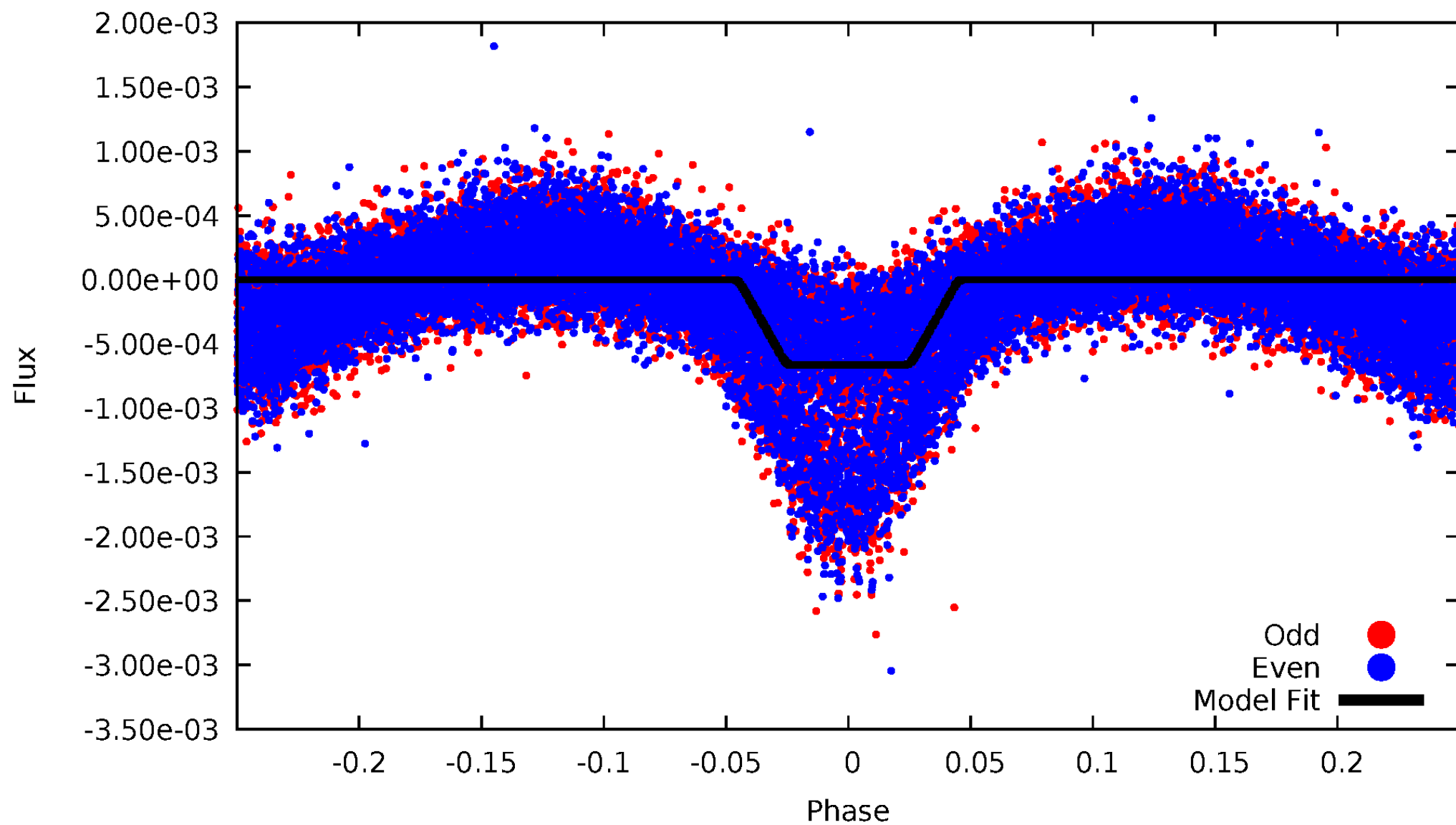
# DV Odd/Even

TCE 009118340-02



# ALT Odd/Even

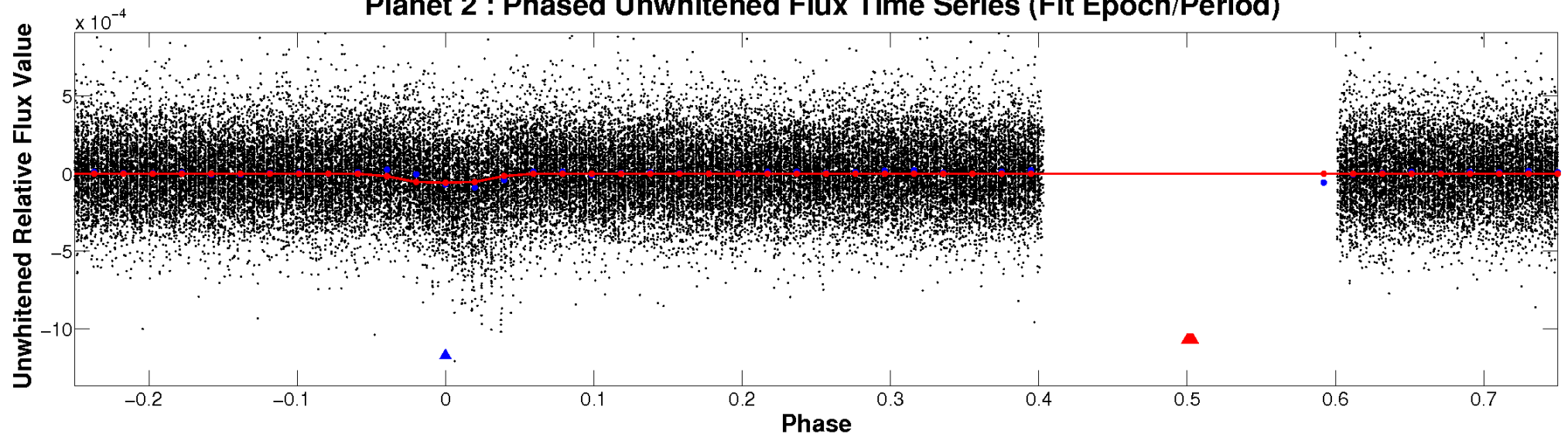
TCE 009118340-02



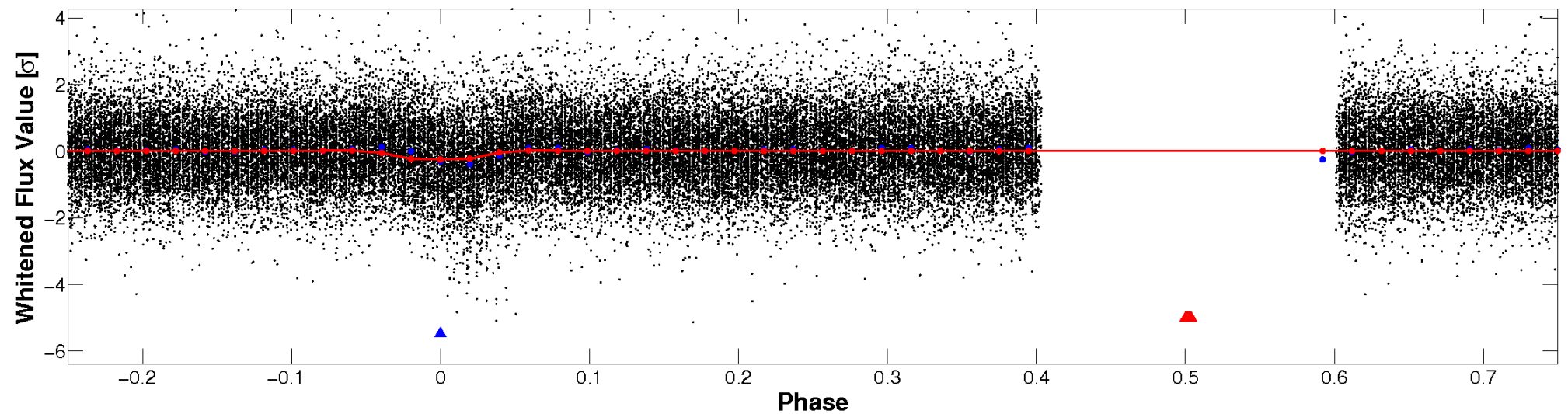


# Non-Whitened Vs. Whitened Light Curve

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

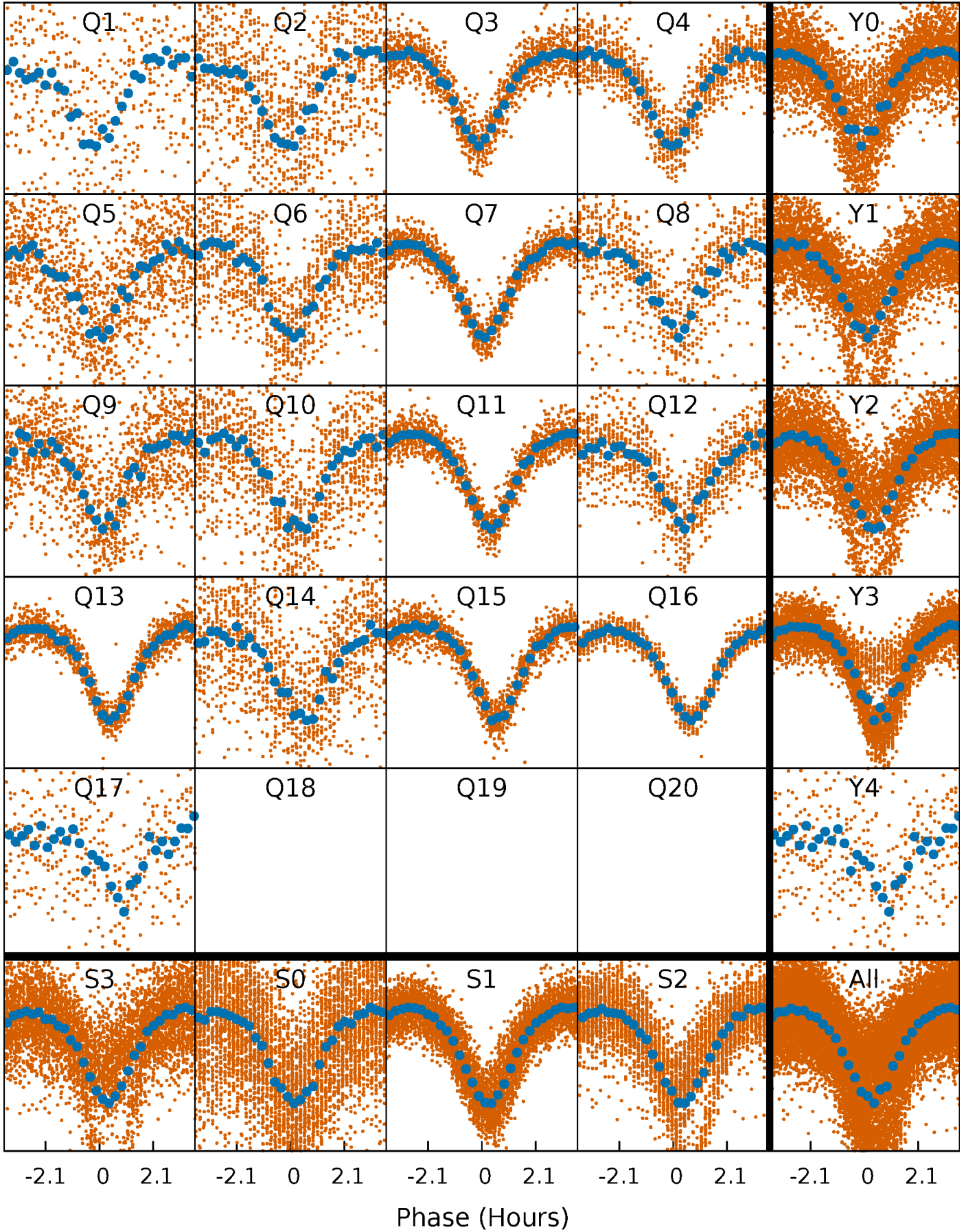


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



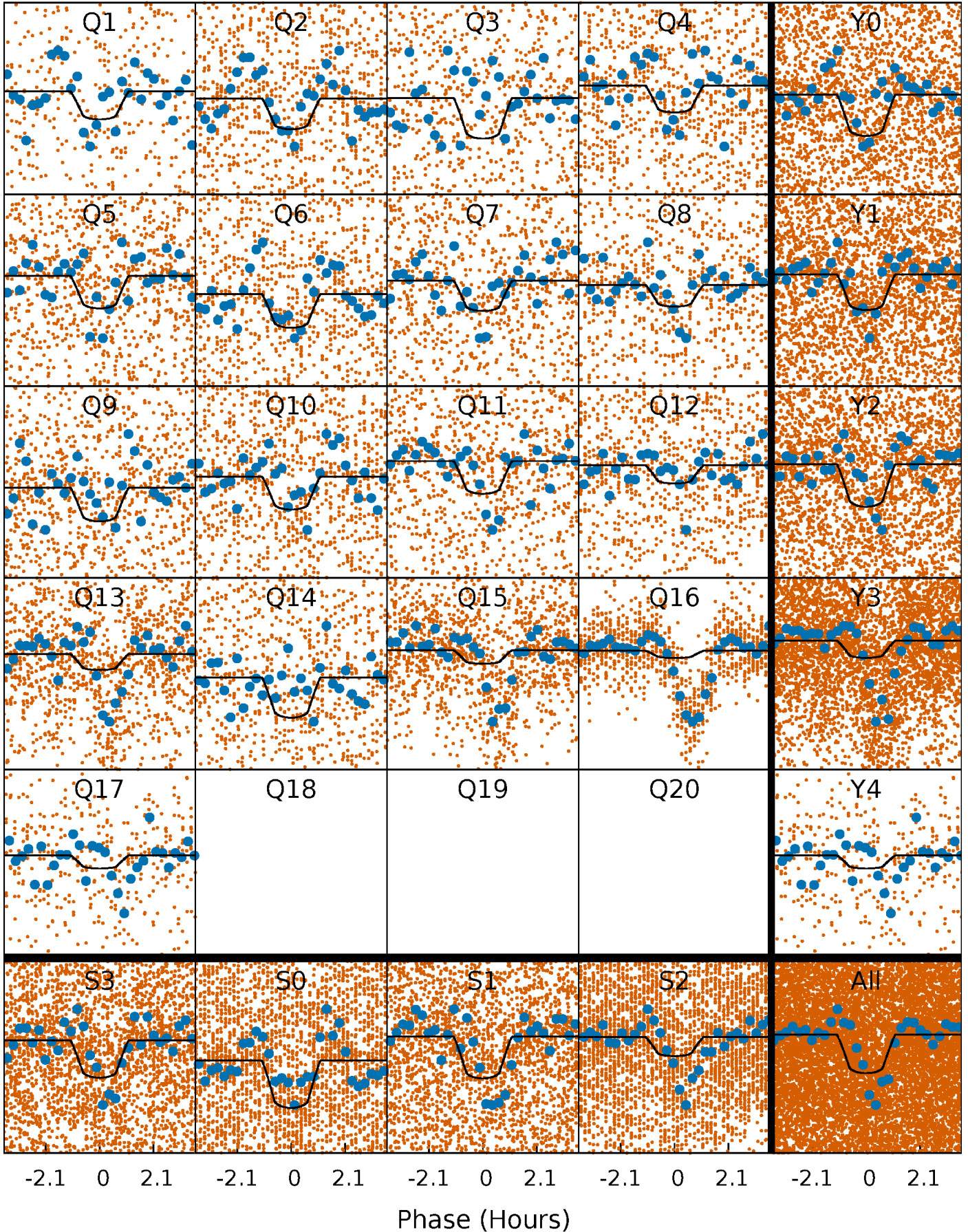
# PDC Quarter-Phased Transit Curves

TCE 009118340-02   P= 1.035302 Days    $T_0=131.824933$  (BKJD)



# DV Quarter-Phased Transit Curves

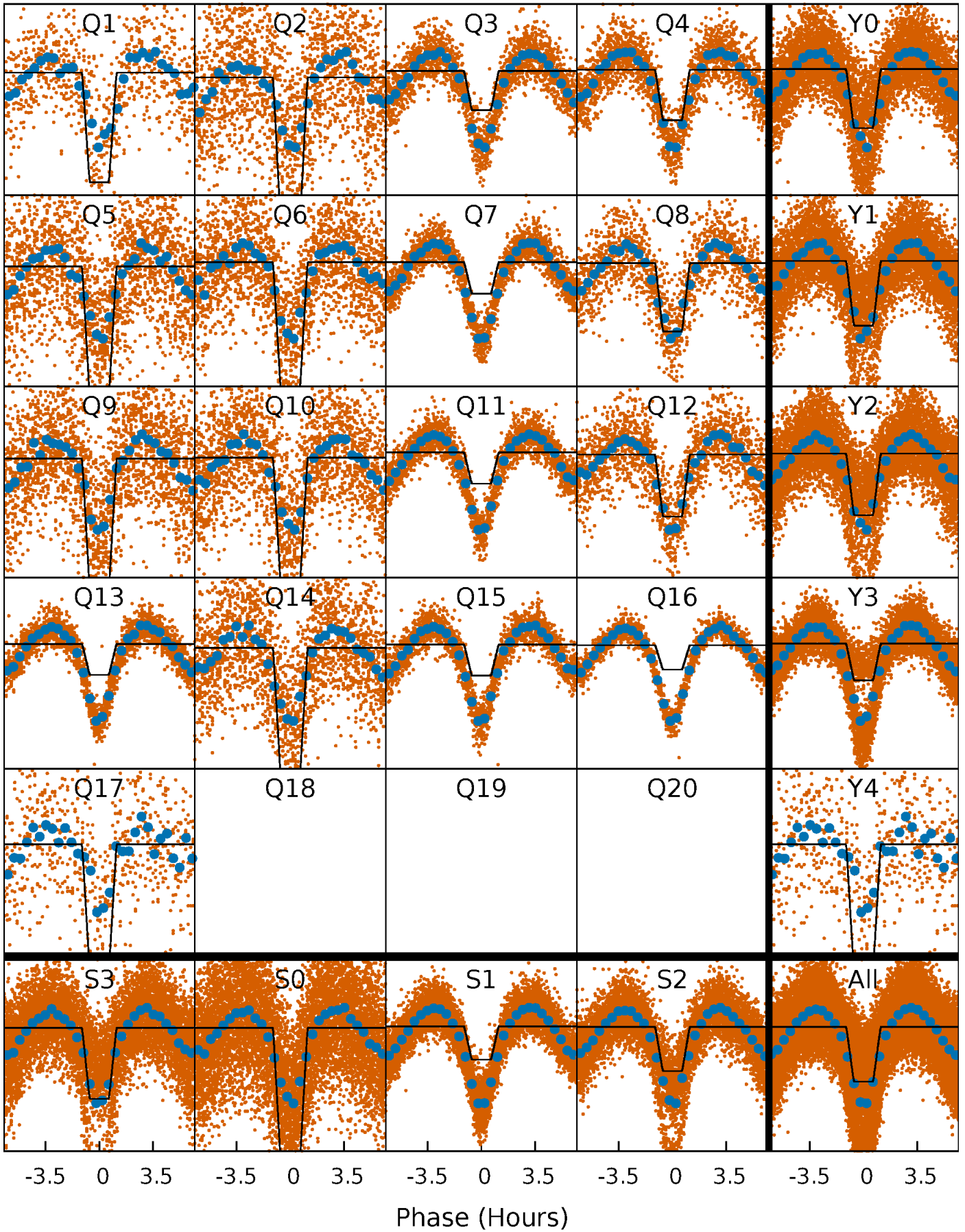
TCE 009118340-02   P= 1.035302 Days    $T_0=131.824933$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

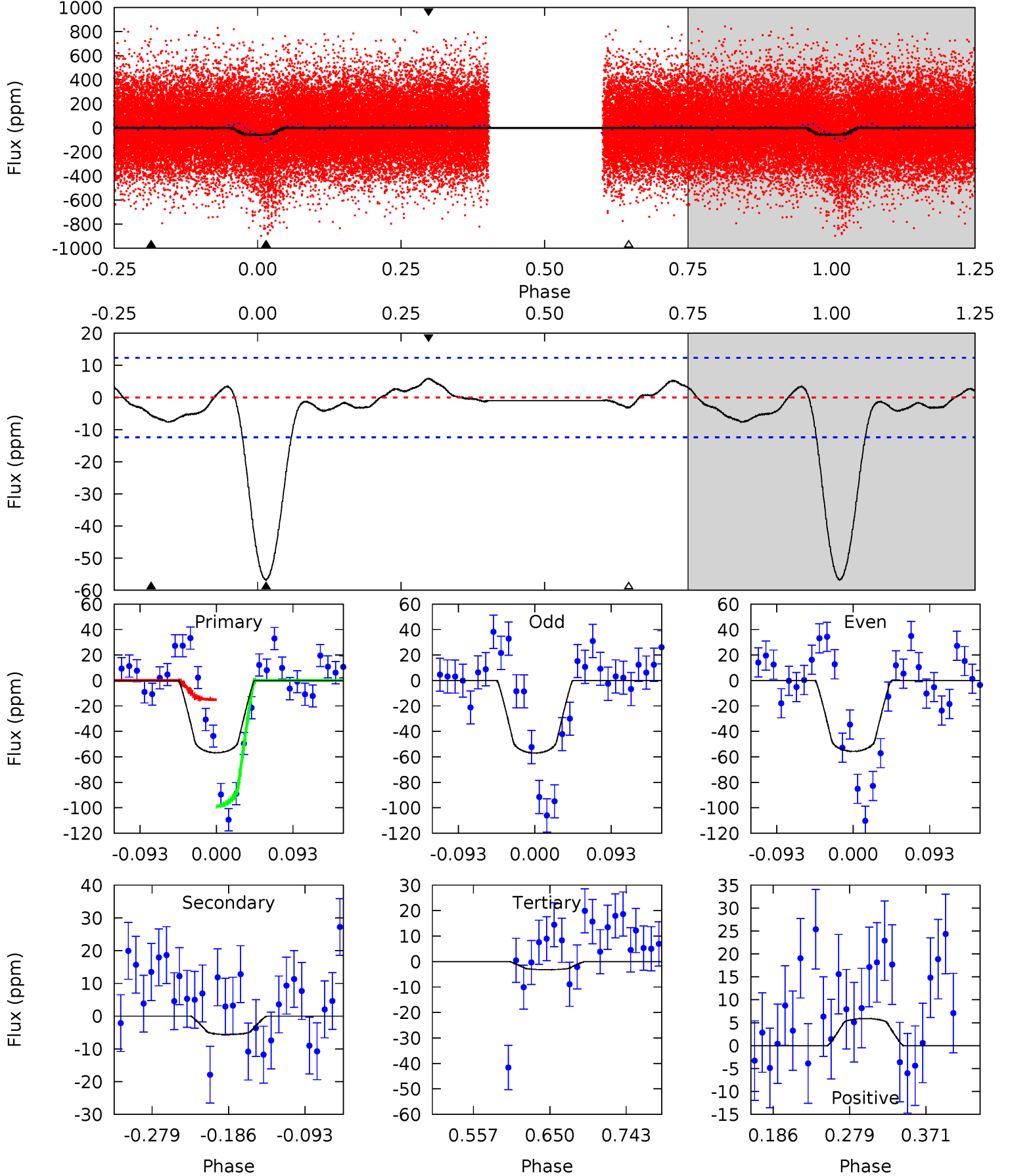
TCE 009118340-02   P= 1.035333 Days    $T_0=131.812246$  (BKJD)



# DV Model-Shift Uniqueness Test

009118340-02, P = 1.035302 Days, E = 130.789631 Days

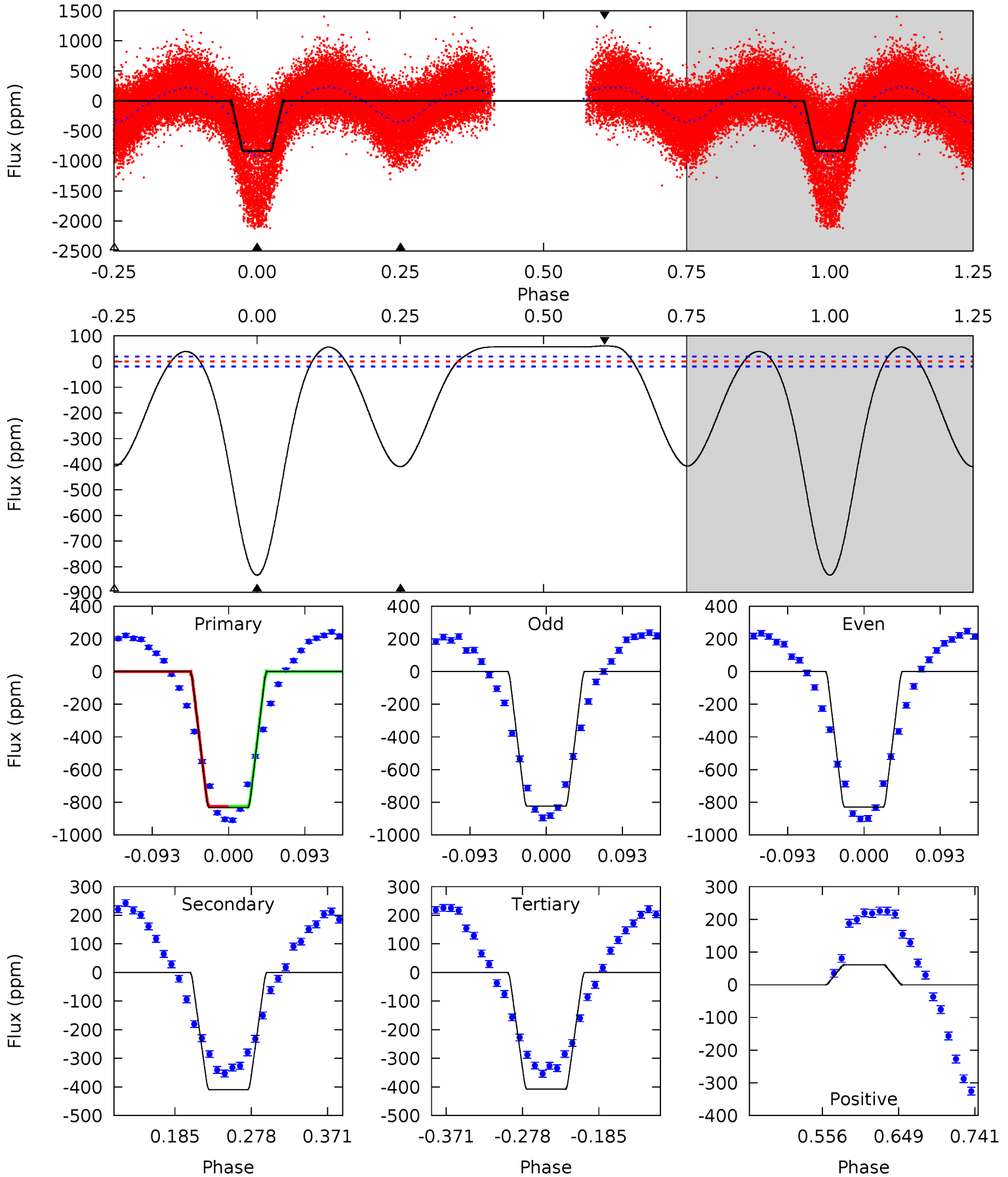
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	2.08	1.17	2.18	4.58	1.68	1.02	19.8	18.8	0.91	-0.10	0.24	1.16	0.09	15.6



# Alt Model-Shift Uniqueness Test

009118340-02, P = 1.035333 Days, E = 130.776913 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
195.5	96.1	95.6	14.4	4.58	1.68	37.0	99.9	181.1	0.53	81.7	0.58	1.26	0.07	0.10





### Stellar Parameters For KIC 009118340

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7030^{+196}_{-364}$	$3.650^{+0.451}_{-0.080}$	$0.420^{+0.050}_{-0.350}$	$3.512^{+0.425}_{-1.699}$	$2.011^{+0.117}_{-0.466}$	$0.065^{+0.286}_{-0.017}$
	+3%/-5%	+12%/-2%	+12%/-83%	+12%/-48%	+6%/-23%	+438%/-26%
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 009118340-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-6\pm3$	$2.81^{+0.98}_{-0.93}$	$4891^{+379}_{-610}$	$-3280^{+7173}_{-749}$	$0.229^{+0.301}_{-0.135}$
Alt.	$-410\pm4$	$9.32^{+1.51}_{-2.36}$	$4928^{+375}_{-628}$	$5838^{+389}_{-352}$	$1.638^{+1.158}_{-0.402}$

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

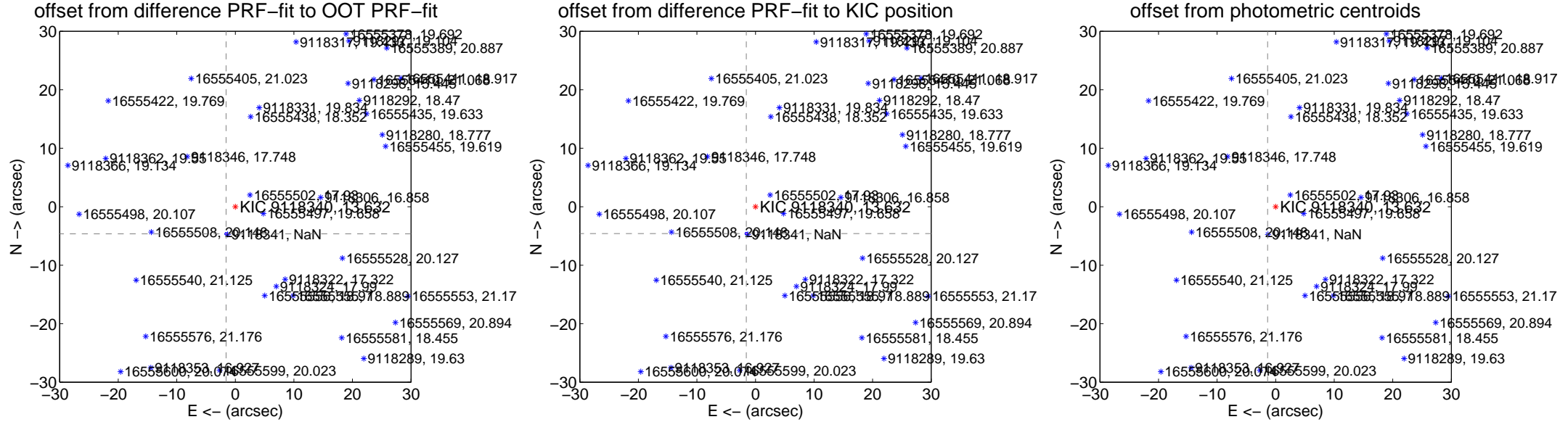
## DV Centroid Data

Supplemental centroid analysis for 009118340-02. Kepler magnitude: 13.63. Transit SNR 15.05

There are 17 quarters with good PRF difference image offsets

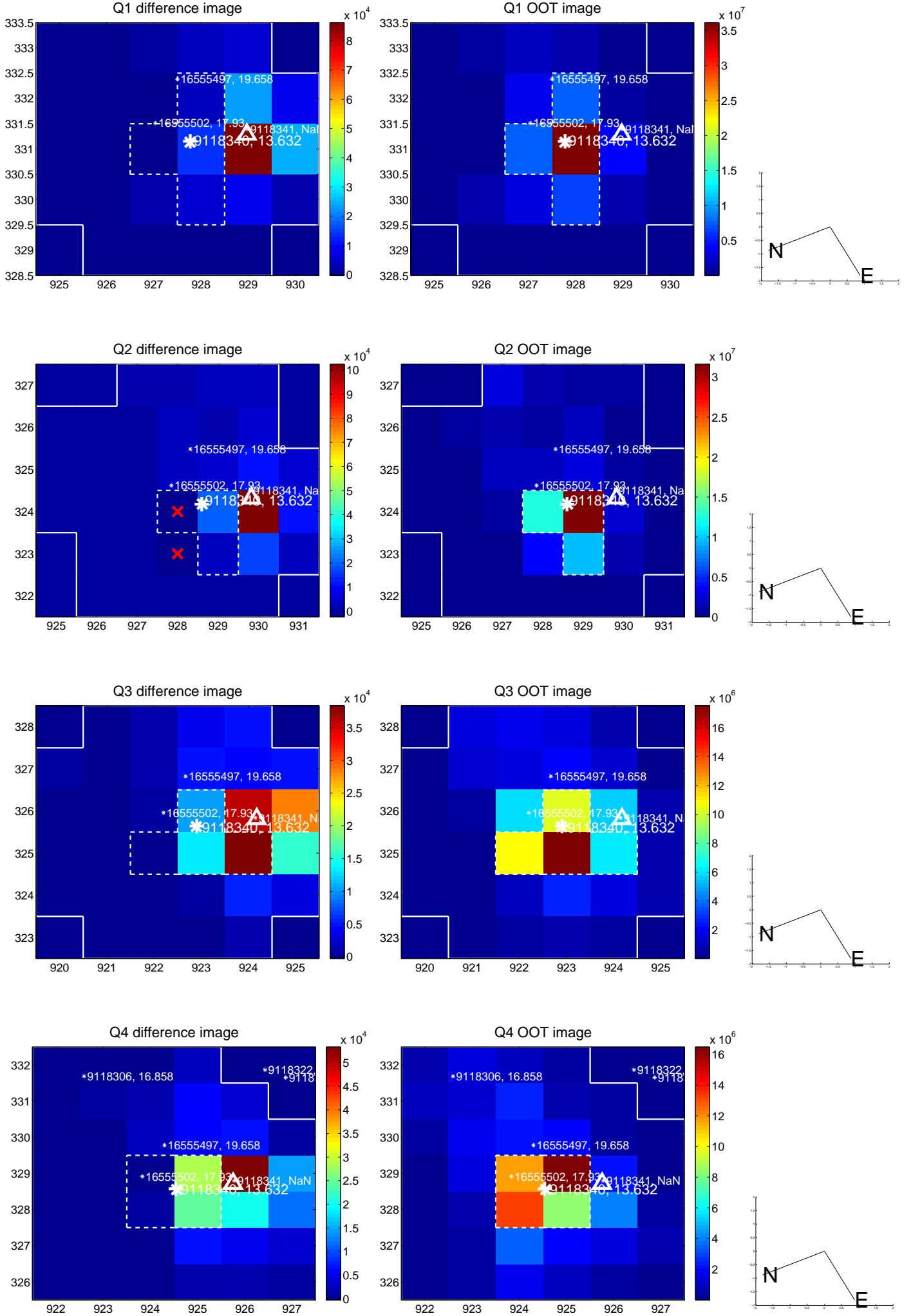
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>4.900 <math>\pm</math> 0.074</b>	<b>66.62</b>	1.586 $\pm$ 0.068	-4.637 $\pm$ 0.073
PRF-fit source offset from KIC position	<b>4.853 <math>\pm</math> 0.075</b>	<b>64.84</b>	1.575 $\pm$ 0.069	-4.590 $\pm$ 0.075
photometric centroid source offset	<b>38.33 <math>\pm</math> 0.89</b>	<b>42.83</b>	1.37 $\pm$ 0.66	-38.31 $\pm$ 0.90

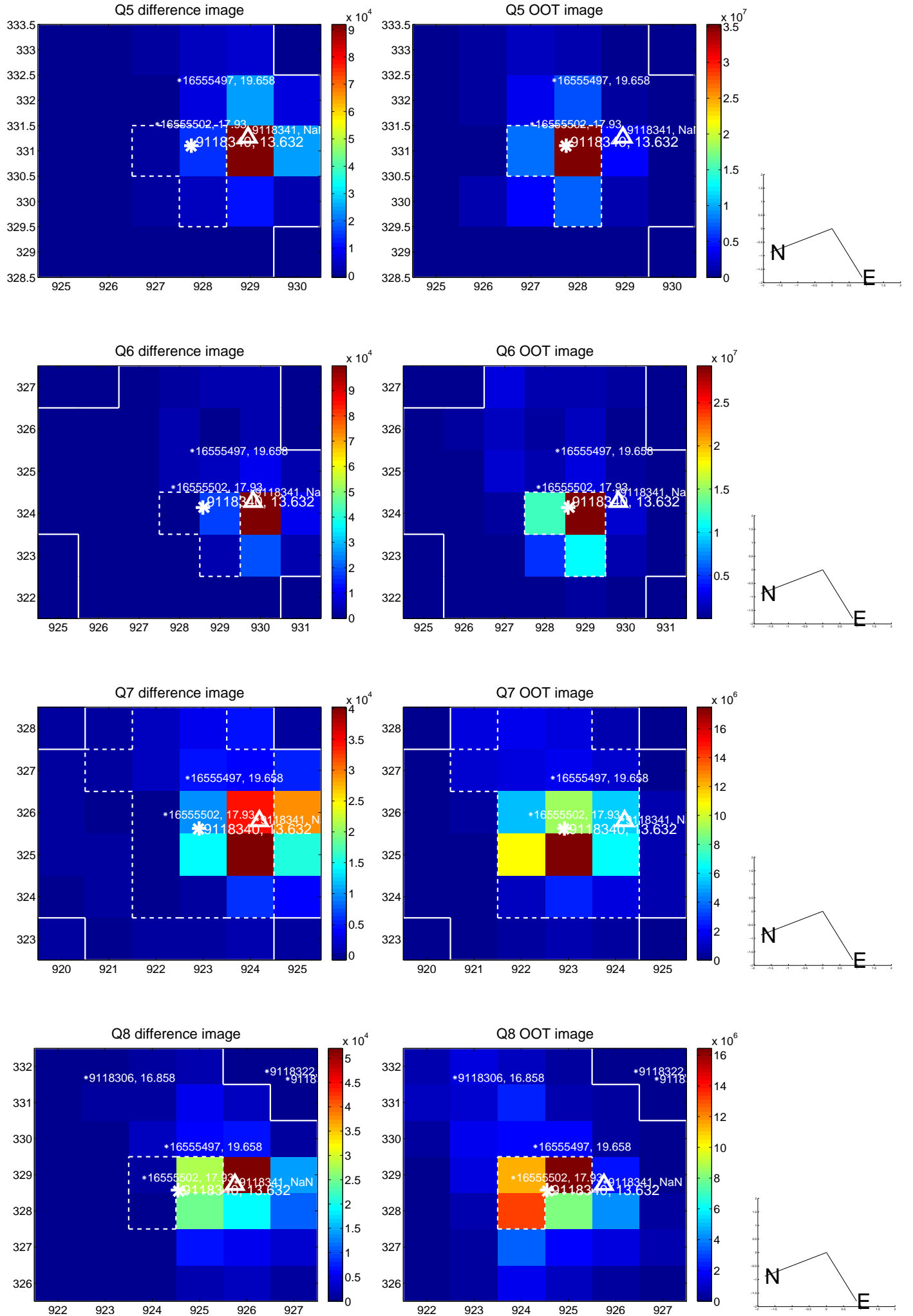


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000 are from the UKIRT catalog.

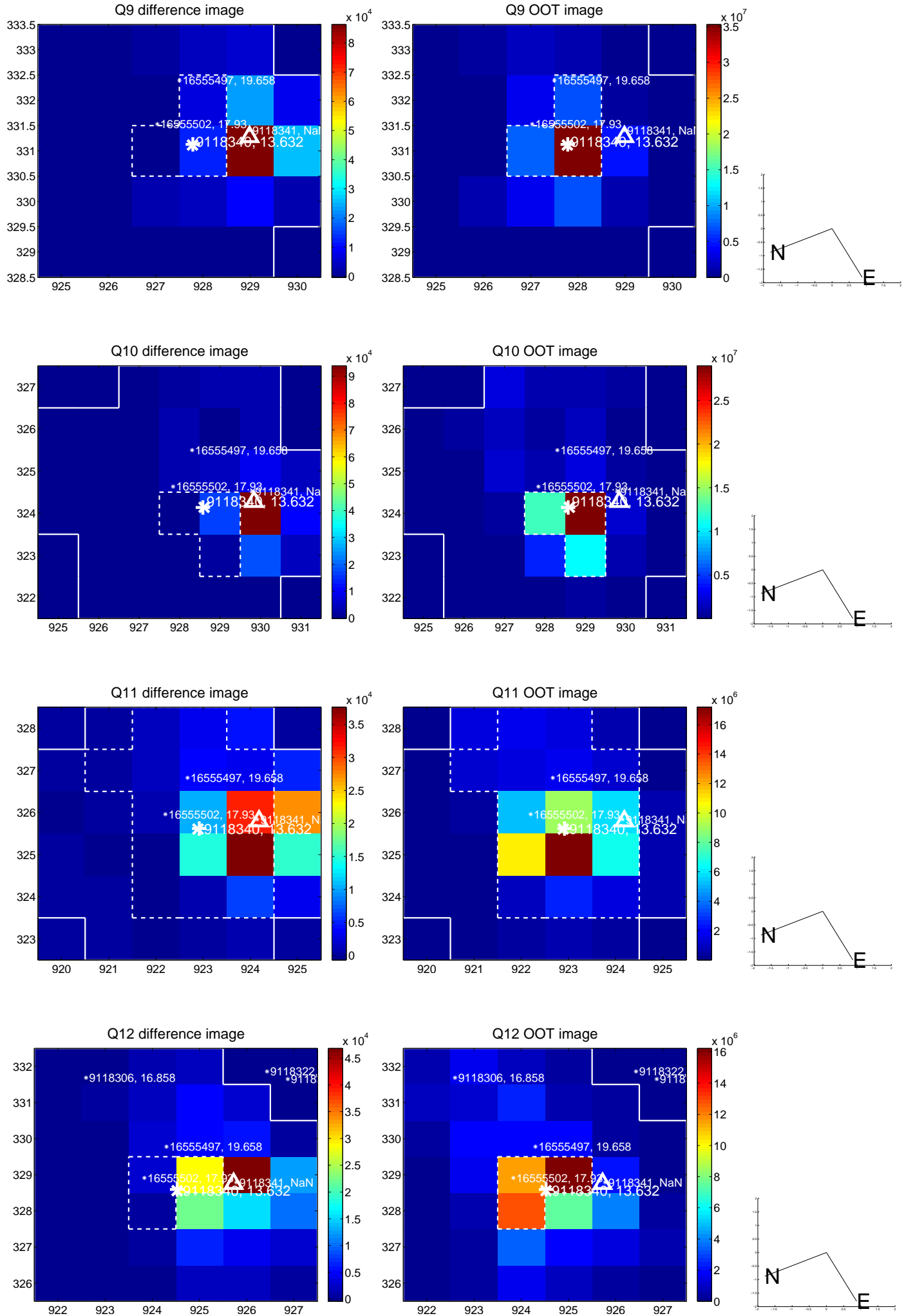
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



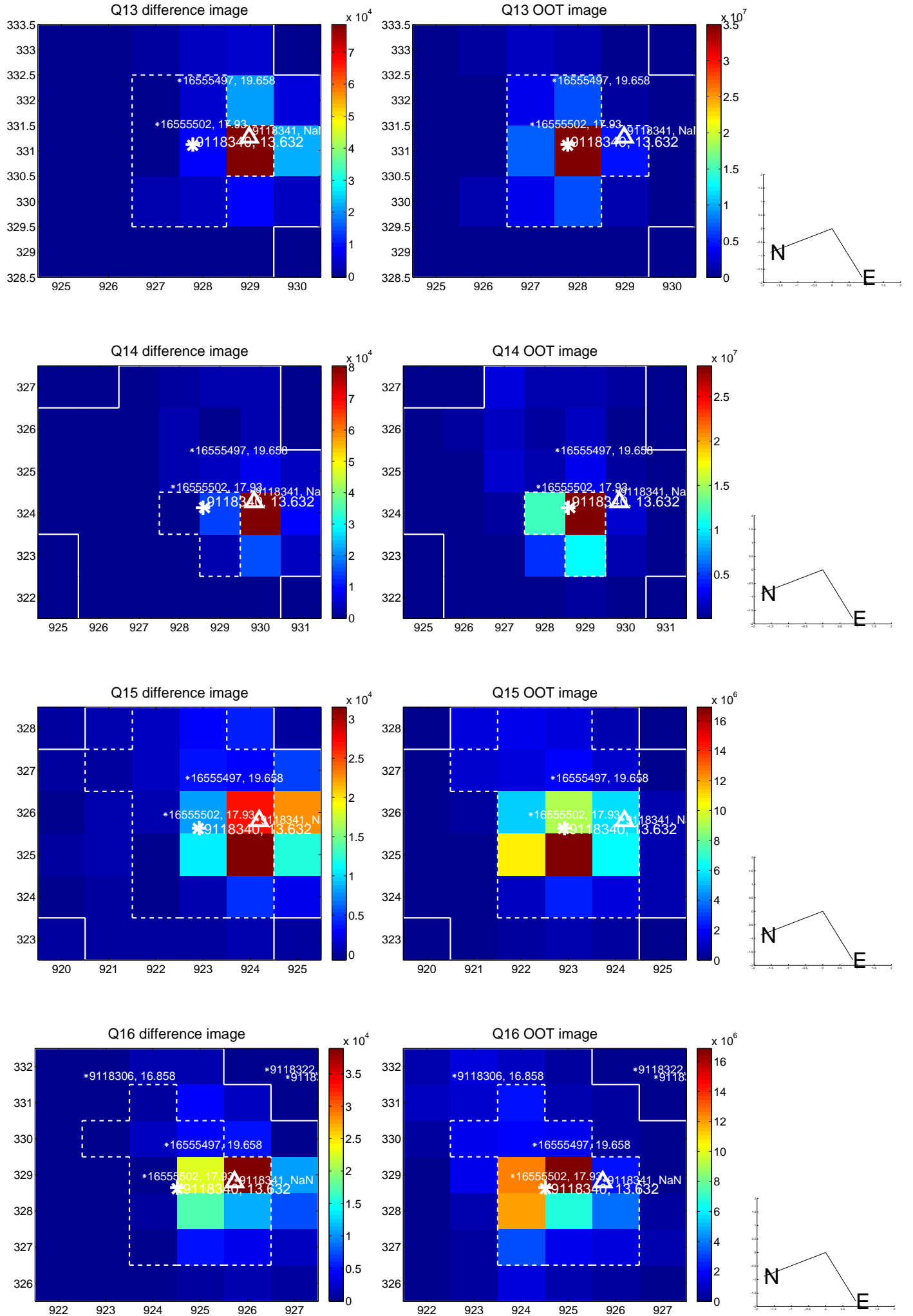
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

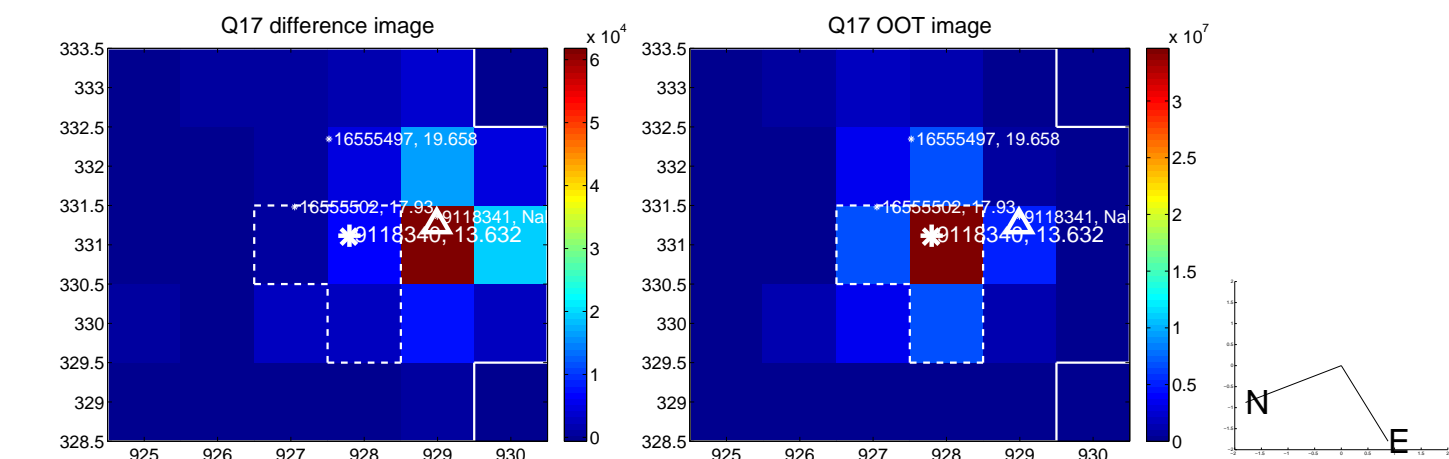


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

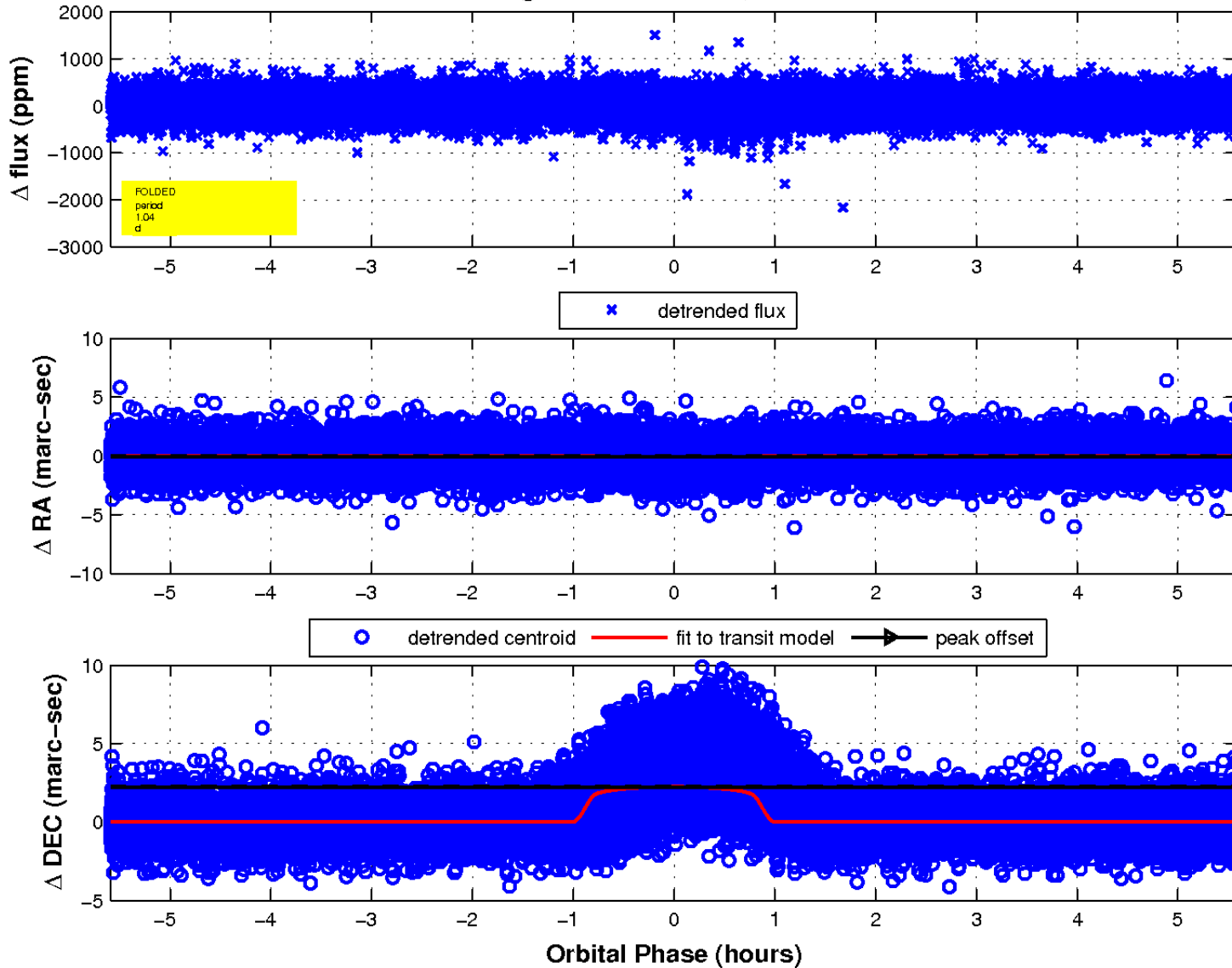




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

