

# KIC 003238245

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003238245-01	OBS	No	1.745351	131.898791	21.2	6.878	8.0	7.2	1.77	7326	0.93	7609.26
003238245-02	OBS	No	364.698614	225.691816	272.4	8.589	8.0	6.7	1.77	7326	3.25	6.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003238245-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003238245-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

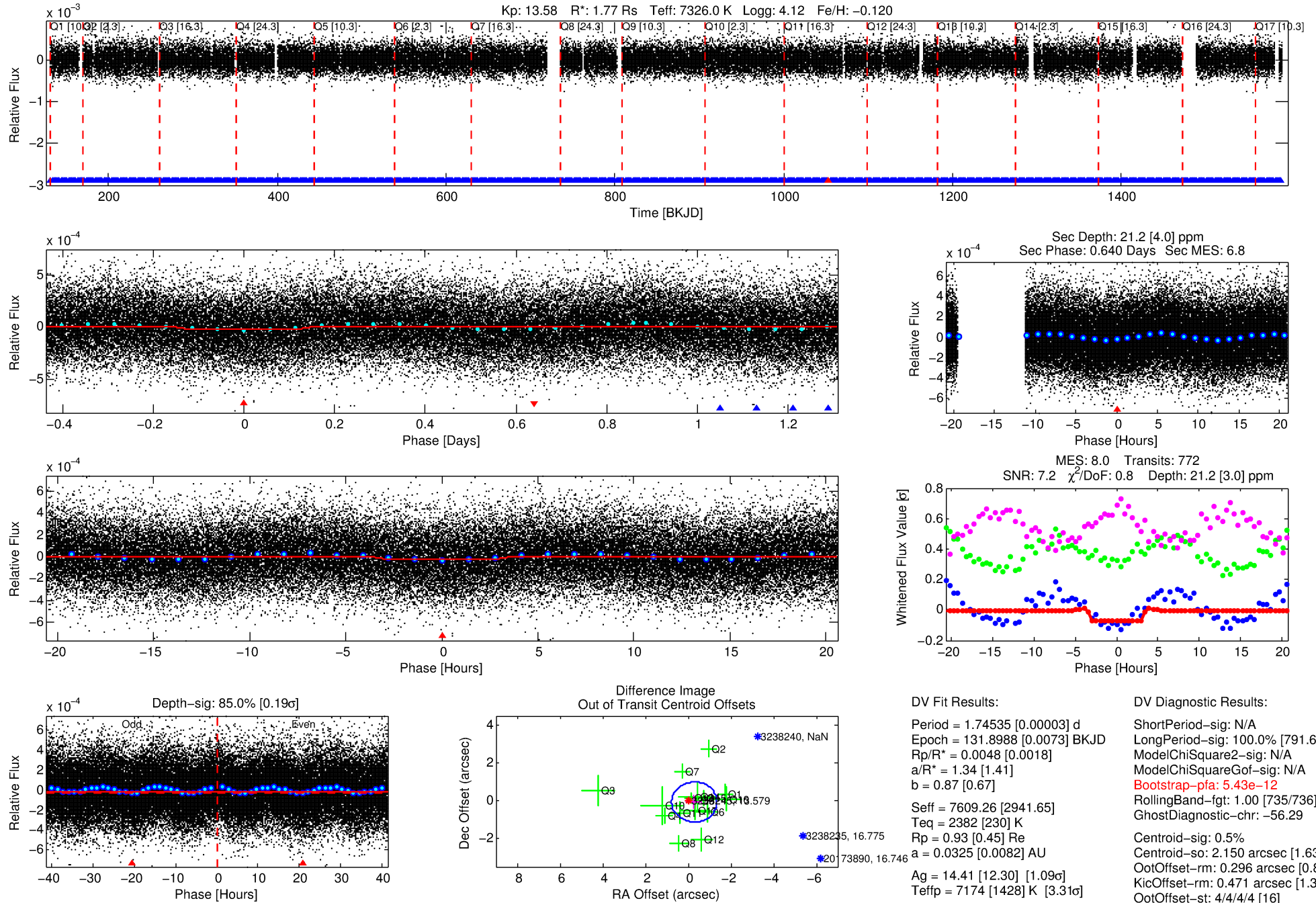
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003238245-01

No Significant Match Found

# DV One-Page Summary

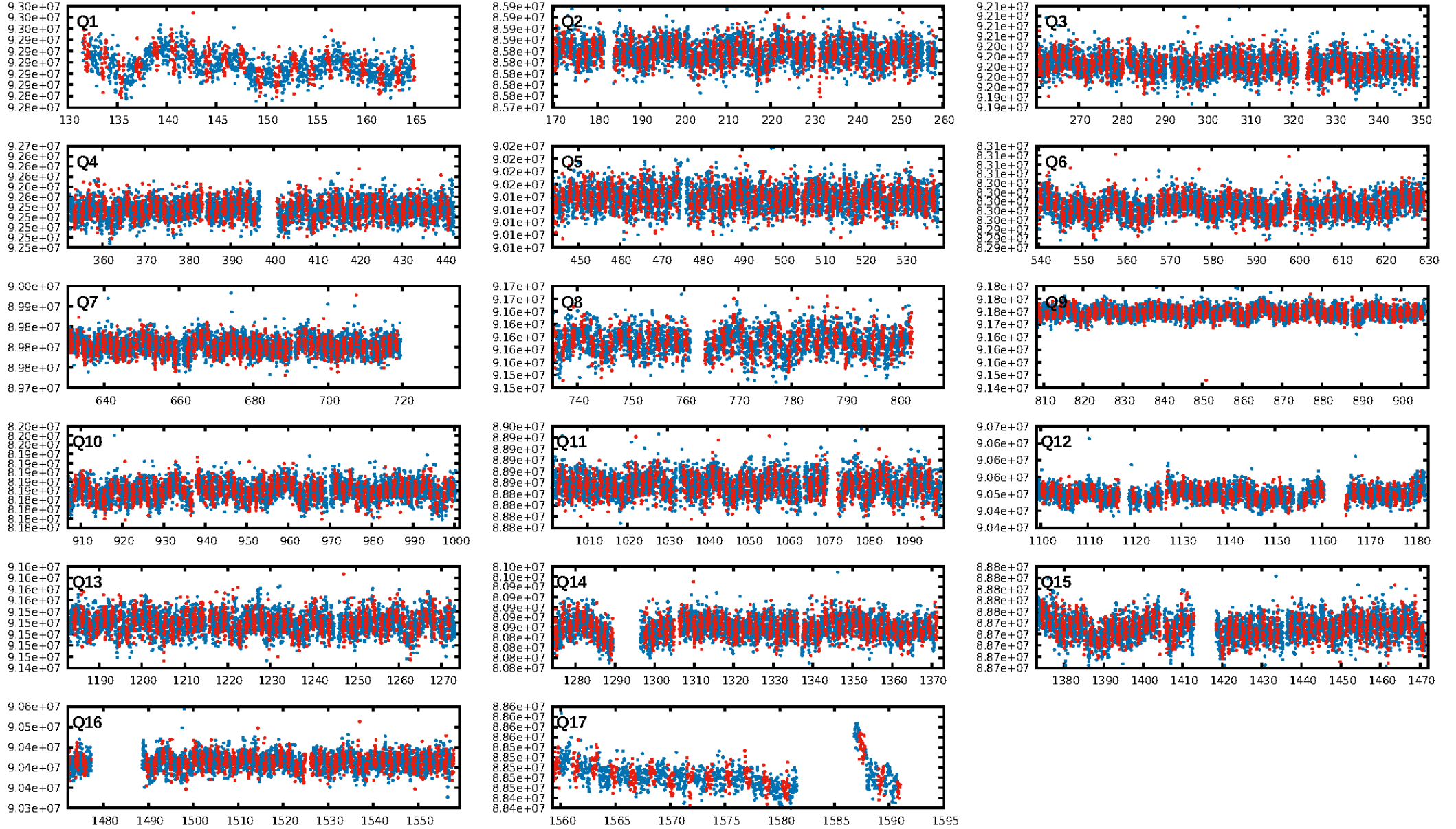
KIC: 3238245 Candidate: 1 of 2 Period: 1.745 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:26:59 Z

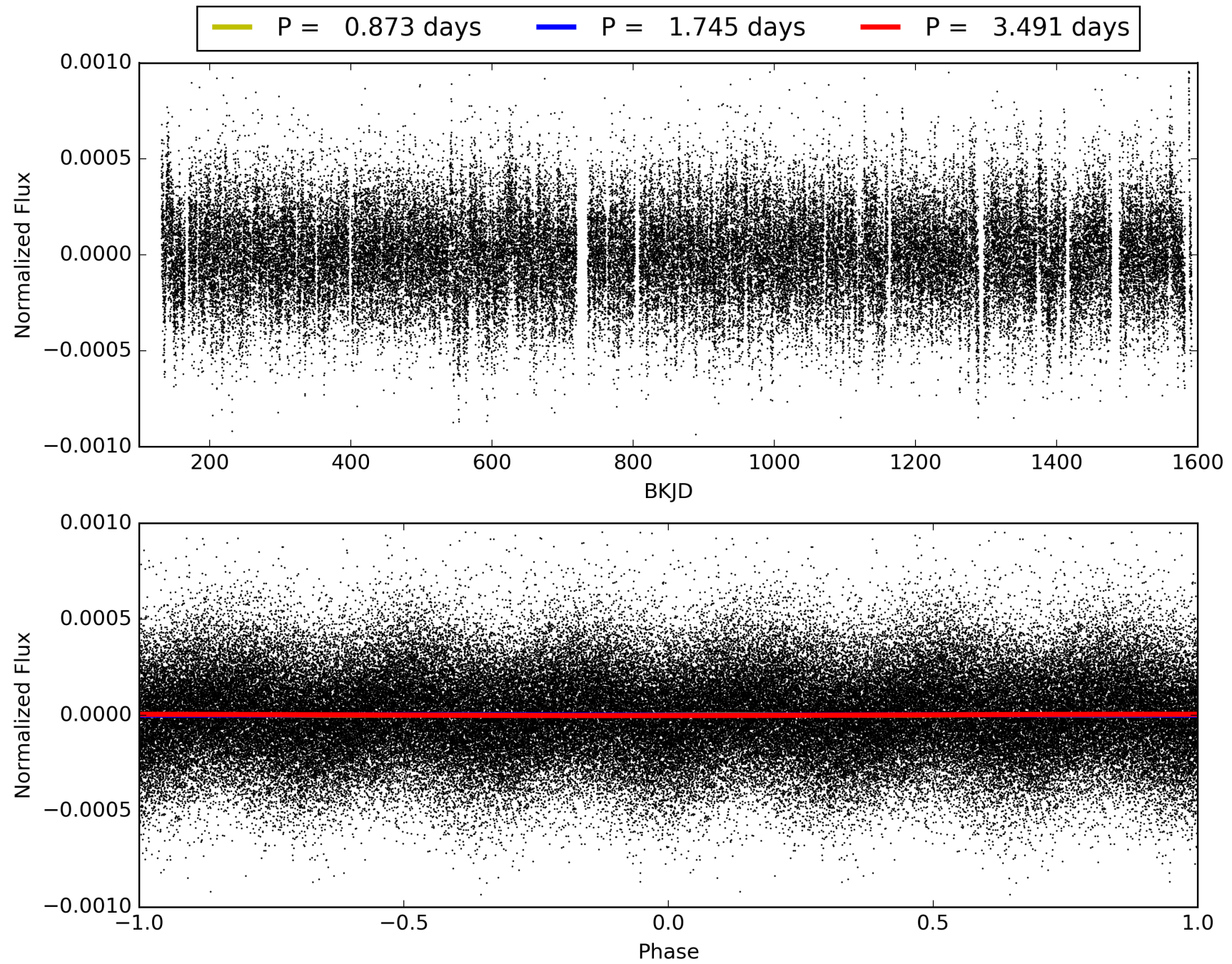
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003238245-01, PDC Light Curves



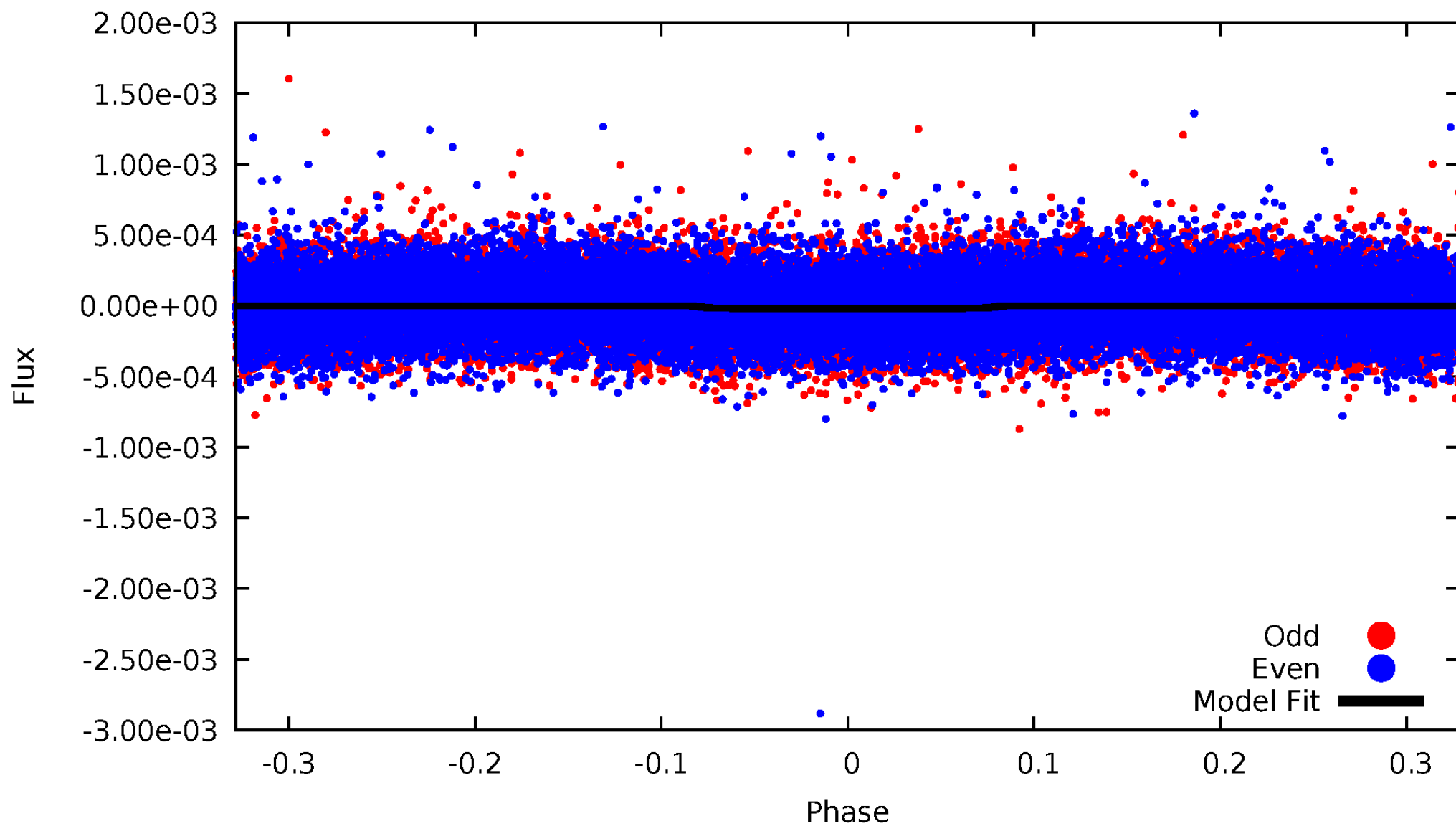


TCE 003238245-01



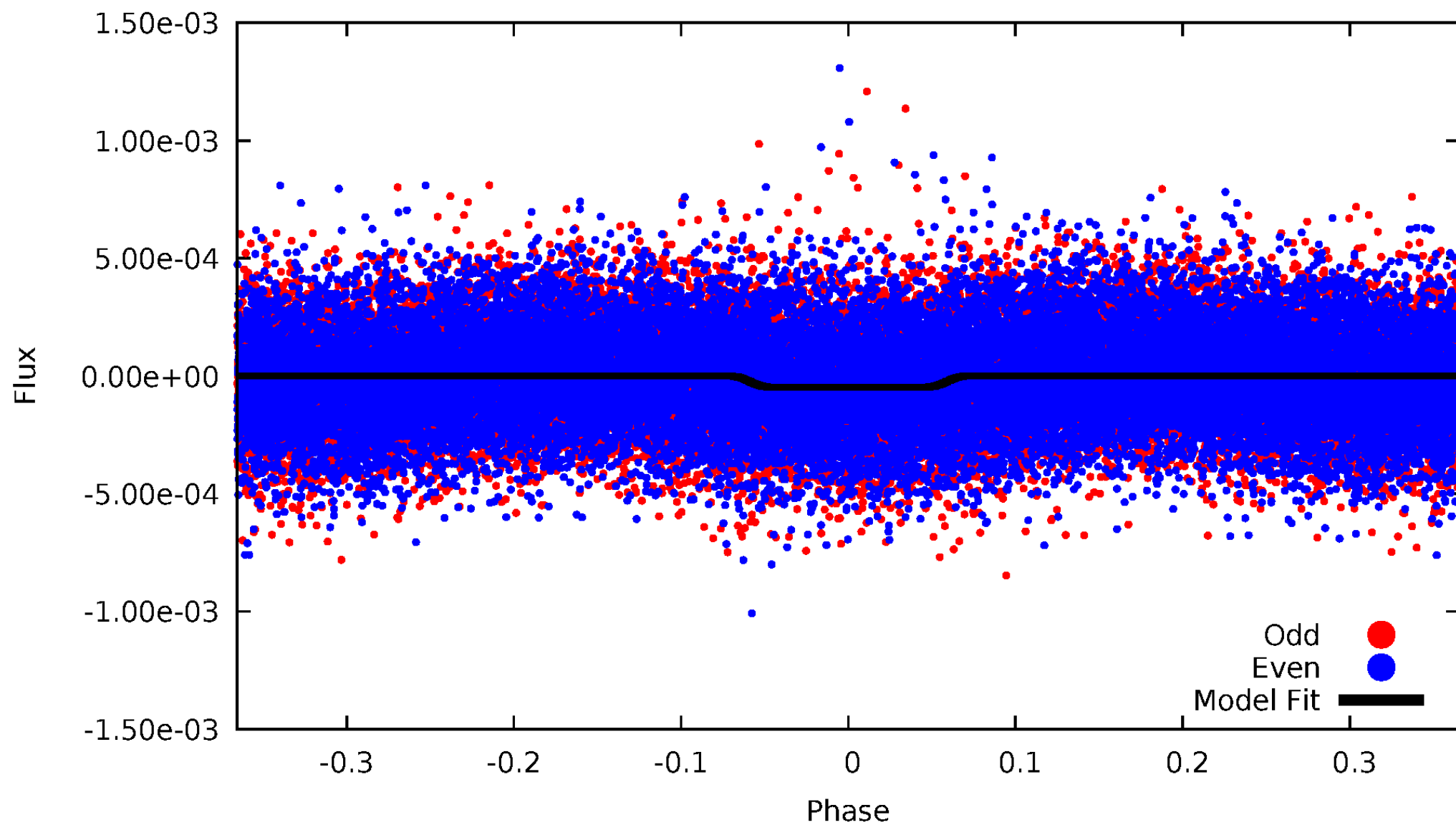
# DV Odd/Even

TCE 003238245-01



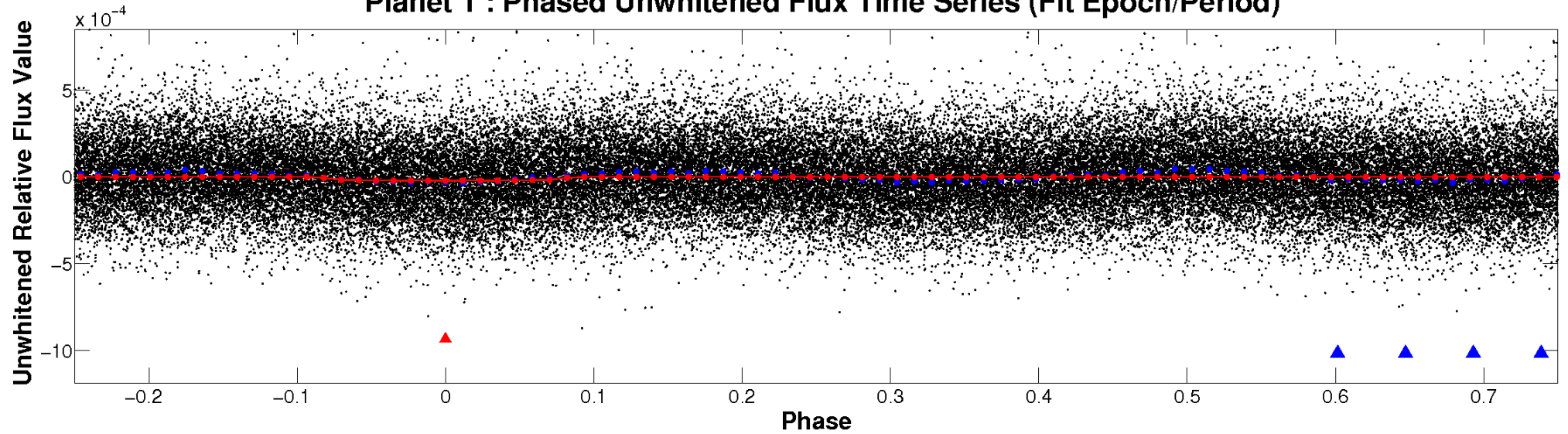
# ALT Odd/Even

TCE 003238245-01

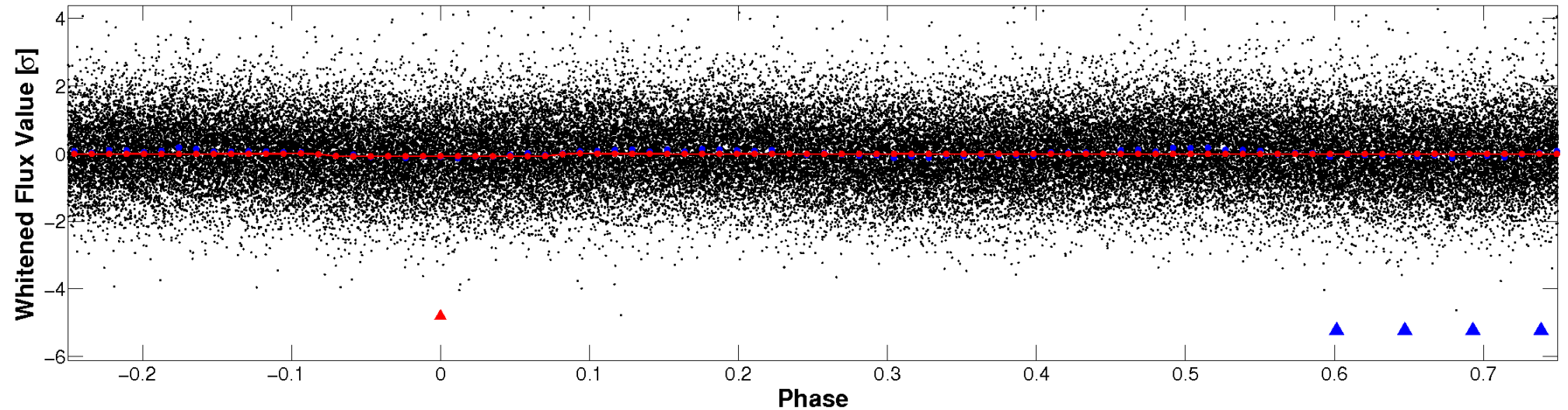


# Non-Whitened Vs. Whitened Light Curve

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



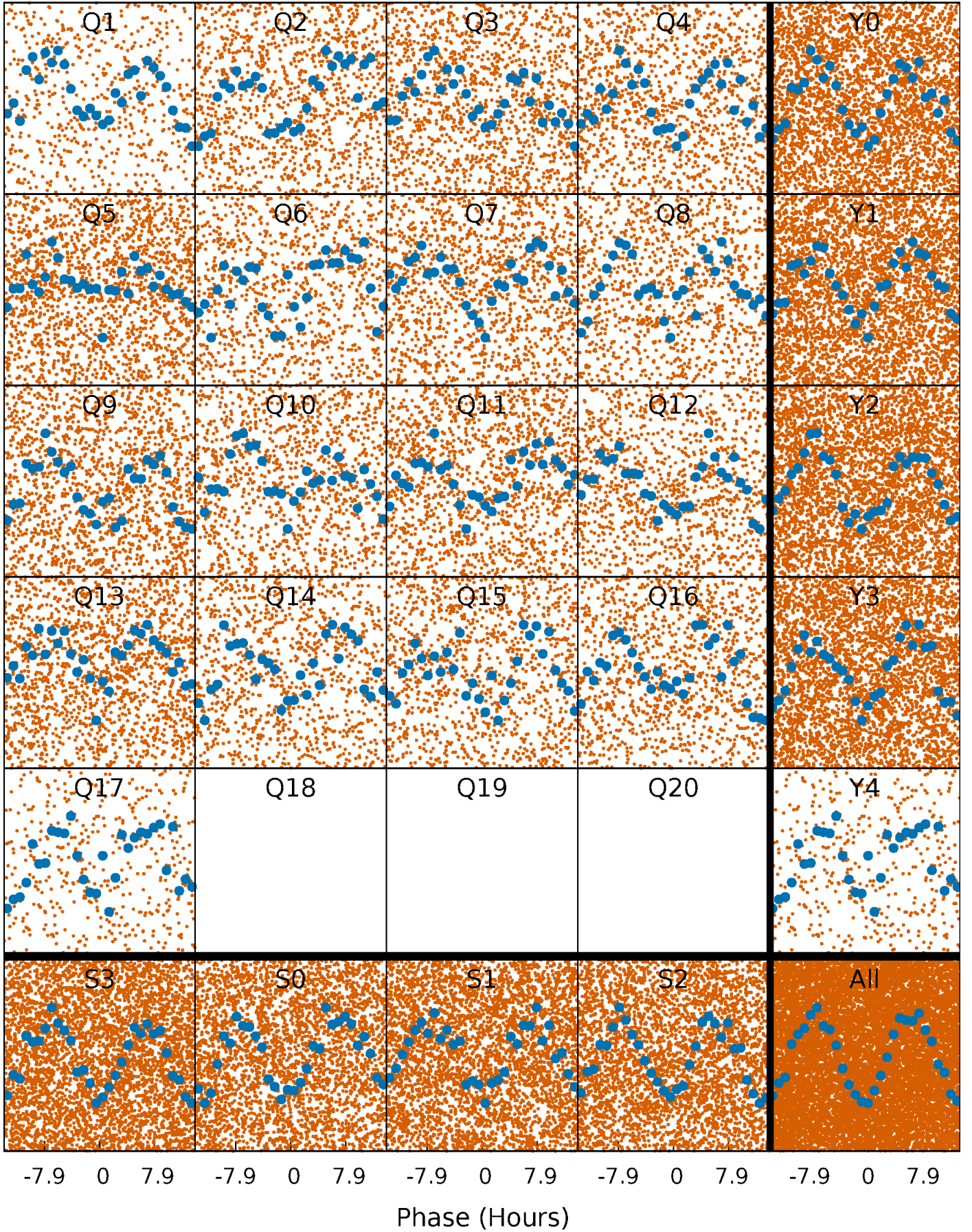
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

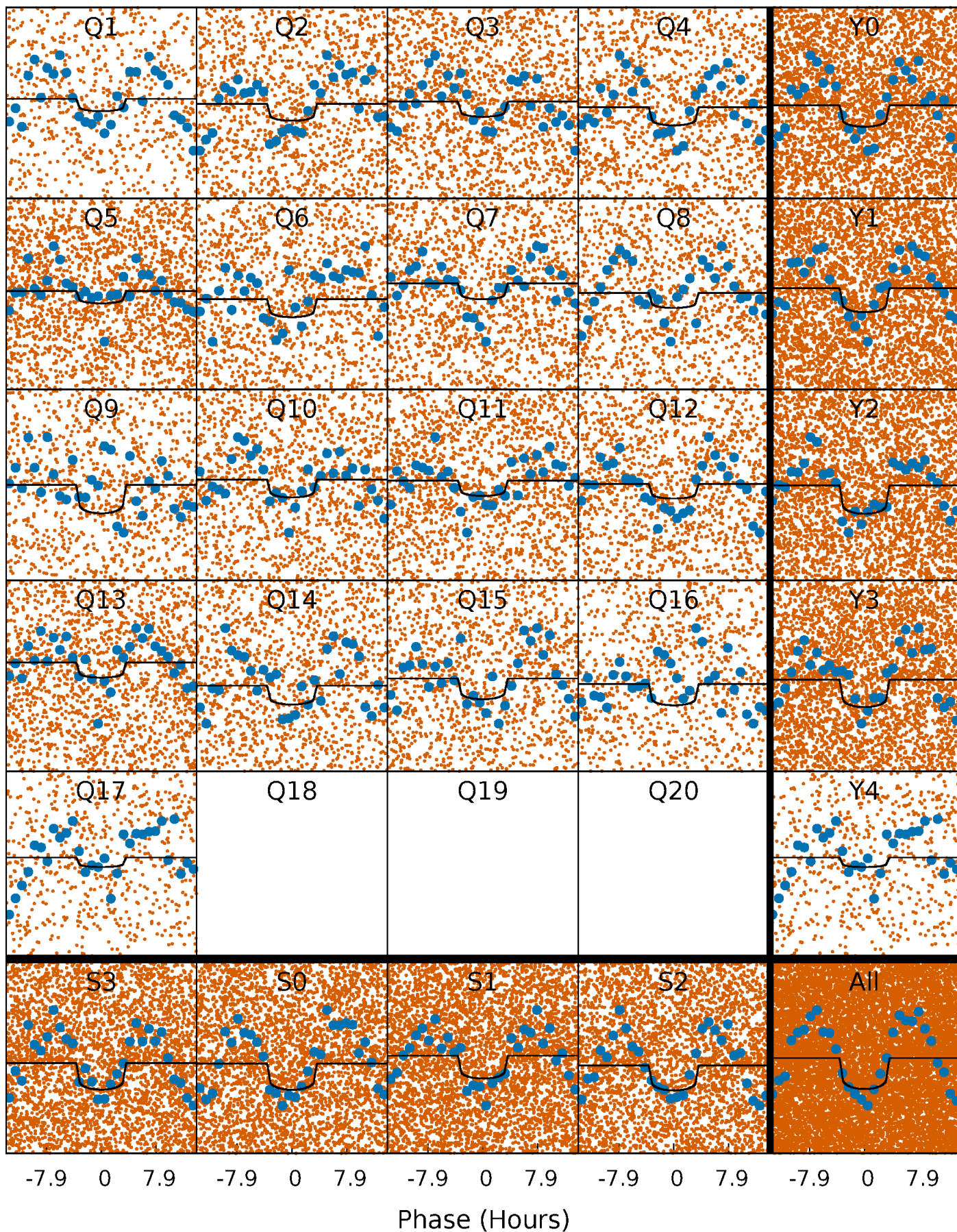
TCE 003238245-01 P= 1.745351 Days  $T_0=131.898791$  (BKJD)





# DV Quarter-Phased Transit Curves

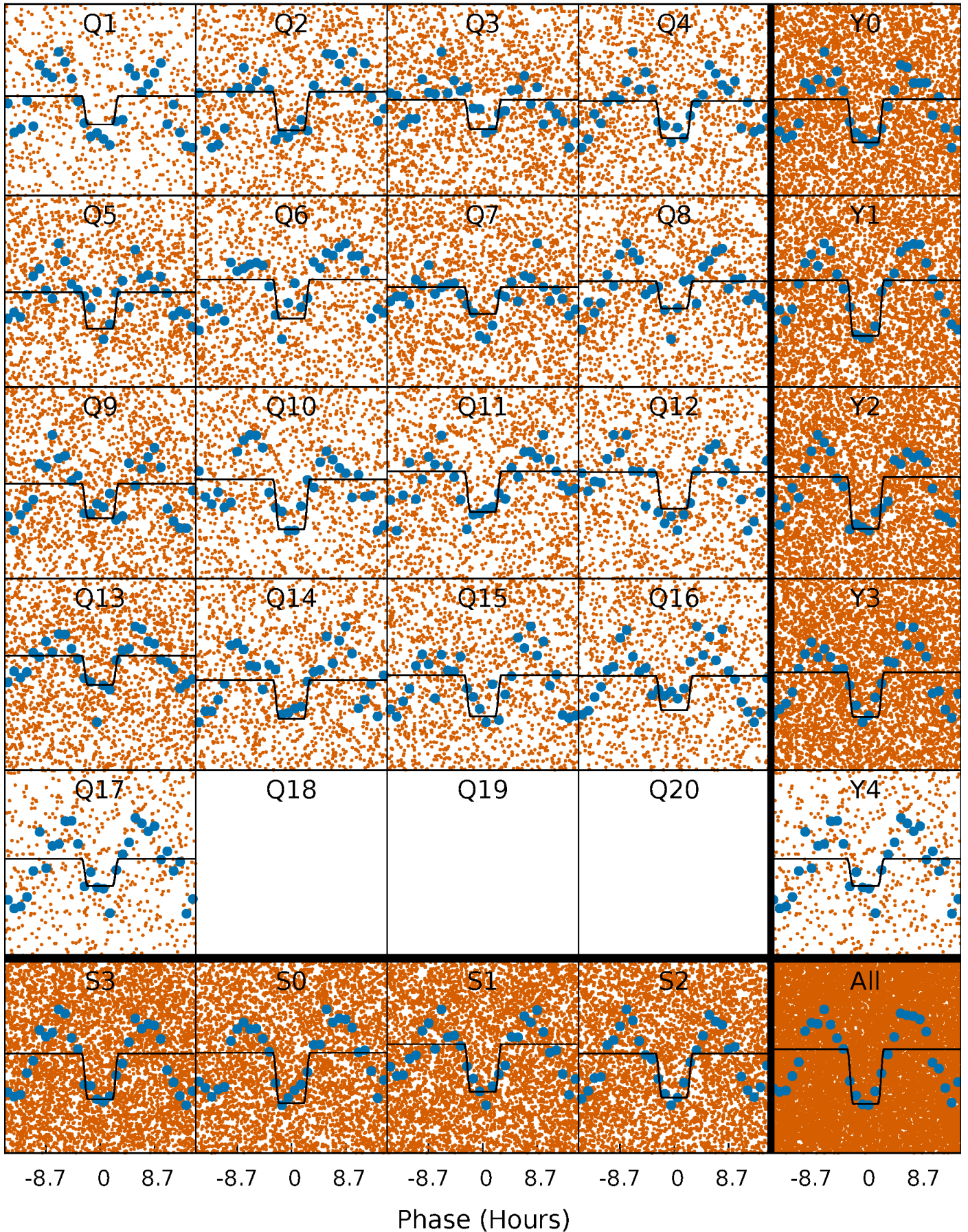
TCE 003238245-01 P= 1.745351 Days  $T_0=131.898791$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

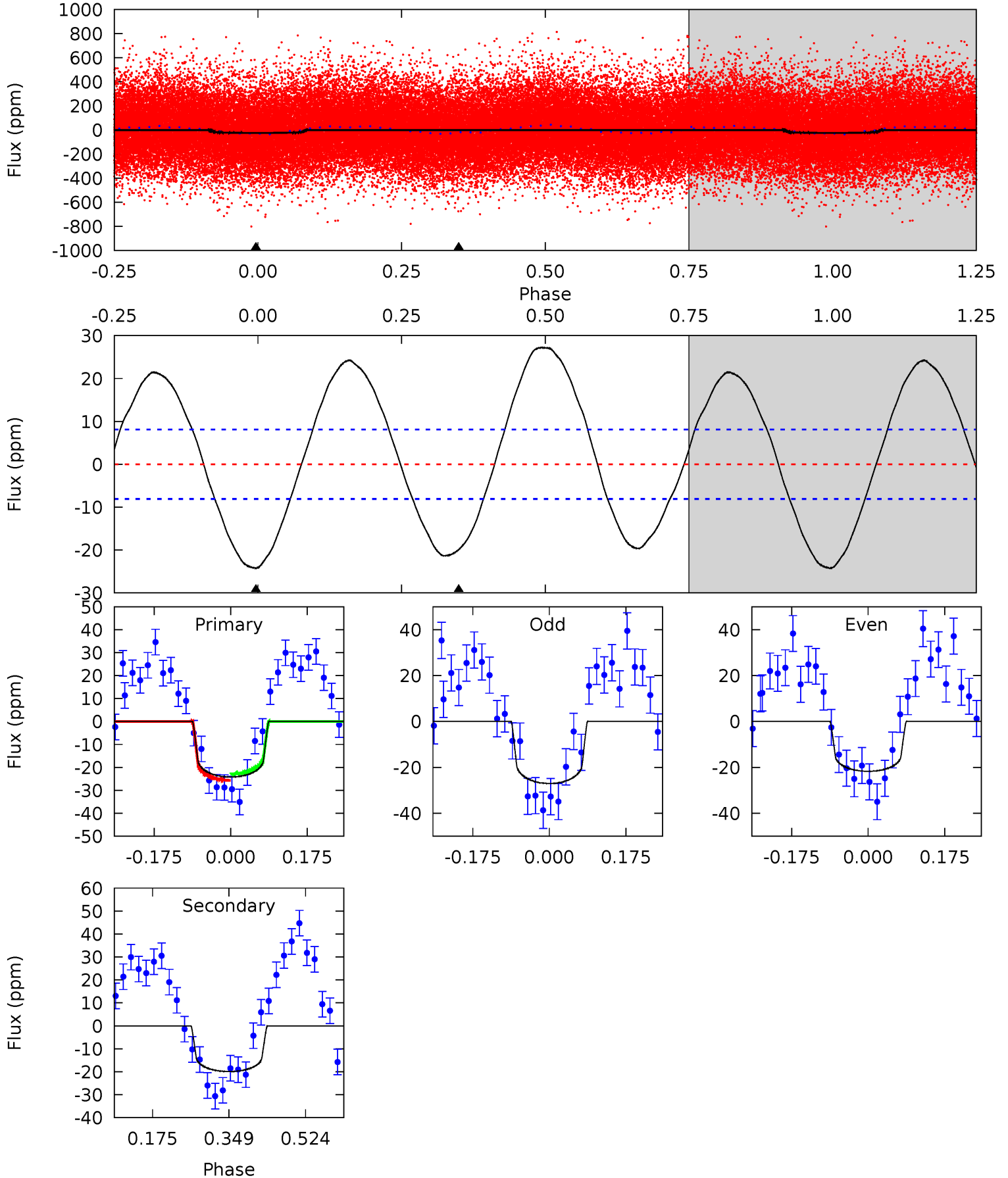
TCE 003238245-01 P= 1.745392 Days  $T_0=131.872648$  (BKJD)



# DV Model-Shift Uniqueness Test

003238245-01, P = 1.745351 Days, E = 130.153440 Days

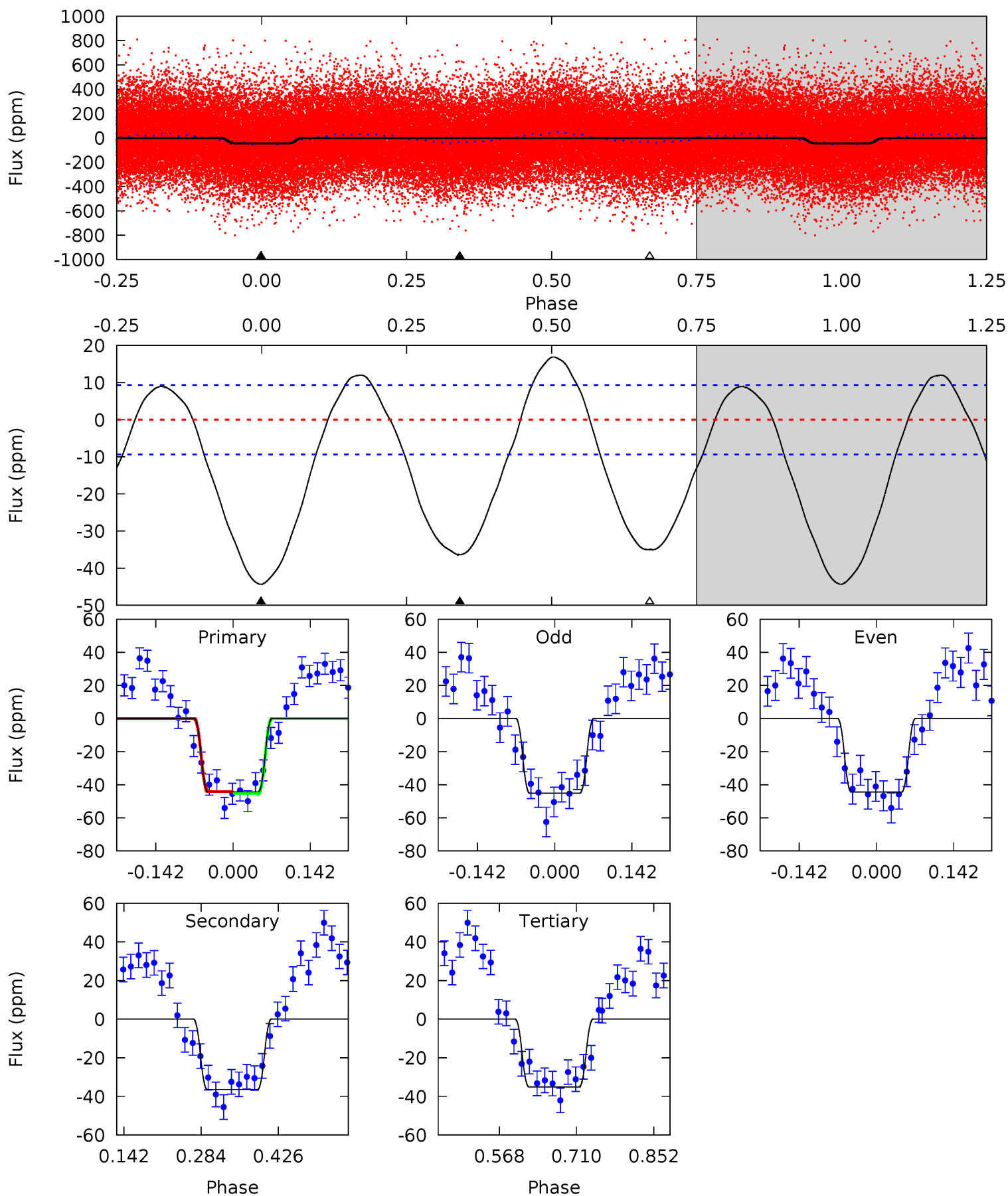
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	10.9	0	0	4.45	1.36	8.01	13.3	13.3	10.9	10.9	1.47	0.95	0.53	0.77



# Alt Model-Shift Uniqueness Test

003238245-01, P = 1.745392 Days, E = 130.127256 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
21.3	17.5	16.8	0	4.49	1.47	8.59	4.47	21.3	0.66	17.5	0.16	1.04	0.28	0.27





### Stellar Parameters For KIC 003238245

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7326^{+228}_{-304}$	$4.122^{+0.149}_{-0.182}$	$-0.120^{+0.200}_{-0.350}$	$1.767^{+0.555}_{-0.370}$	$1.508^{+0.219}_{-0.241}$	$0.385^{+0.296}_{-0.196}$
	+3%/-4%	+4%/-4%	+167%/-292%	+31%/-21%	+15%/-16%	+77%/-51%
Source	KIC0	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 003238245-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-20 \pm 2$	$0.95^{+0.37}_{-0.39}$	$3328^{+252}_{-217}$	$6920^{+2522}_{-1154}$	$13^{+23}_{-6}$
Alt.	$-36 \pm 2$	$1.30^{+0.43}_{-0.37}$	$3323^{+256}_{-231}$	$6735^{+1411}_{-813}$	$12^{+11}_{-5}$

$T_{\text{max}}$  = 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

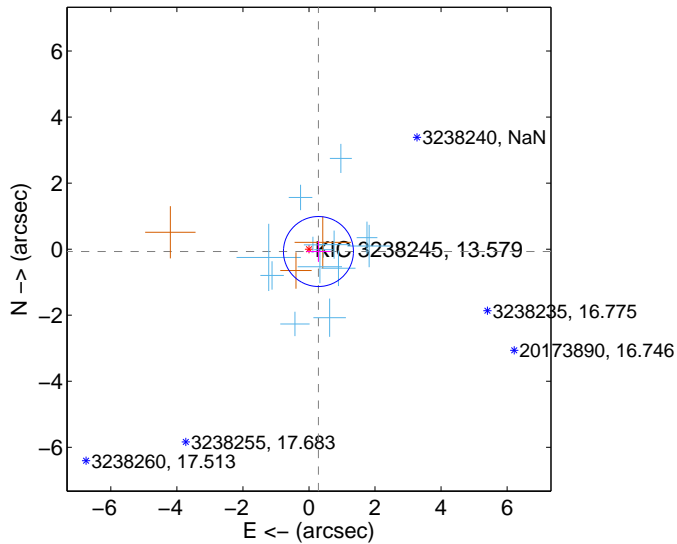
Supplemental centroid analysis for 003238245-01. Kepler magnitude: 13.58. Transit SNR 7.19

There are 13 quarters with good PRF difference image offsets

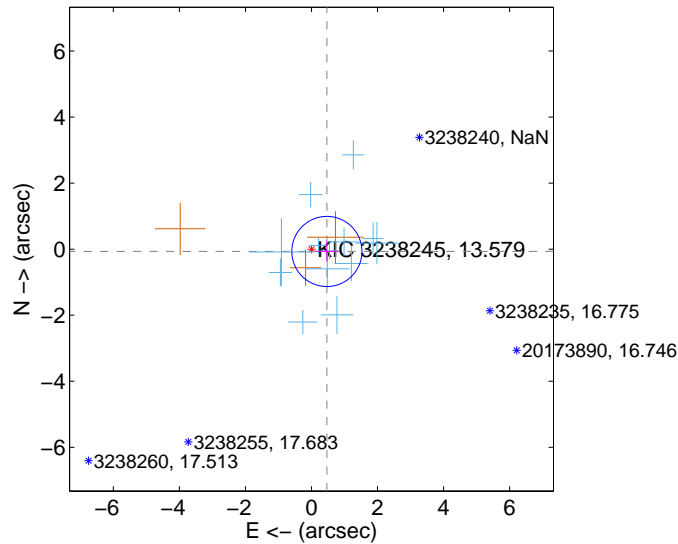
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.296 \pm 0.353$	0.84	$-0.287 \pm 0.359$	$-0.071 \pm 0.317$
PRF-fit source offset from KIC position	$0.471 \pm 0.354$	1.33	$-0.466 \pm 0.356$	$-0.069 \pm 0.308$
photometric centroid source offset	$2.15 \pm 1.32$	1.63	$1.26 \pm 1.21$	$1.74 \pm 1.37$

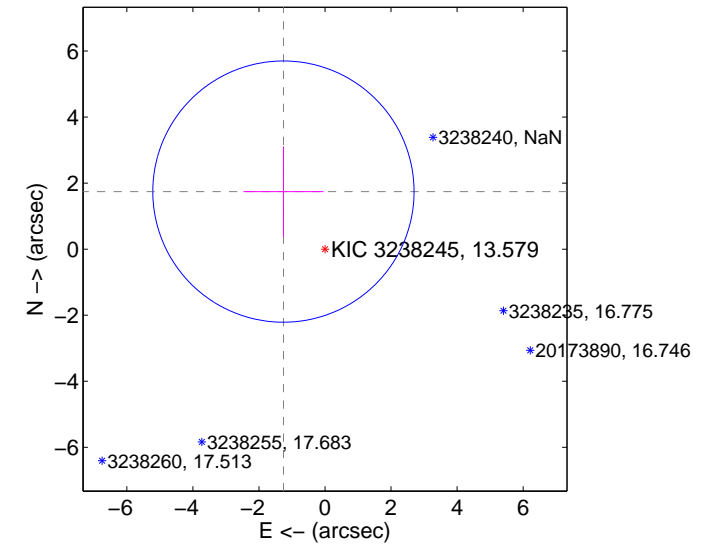
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

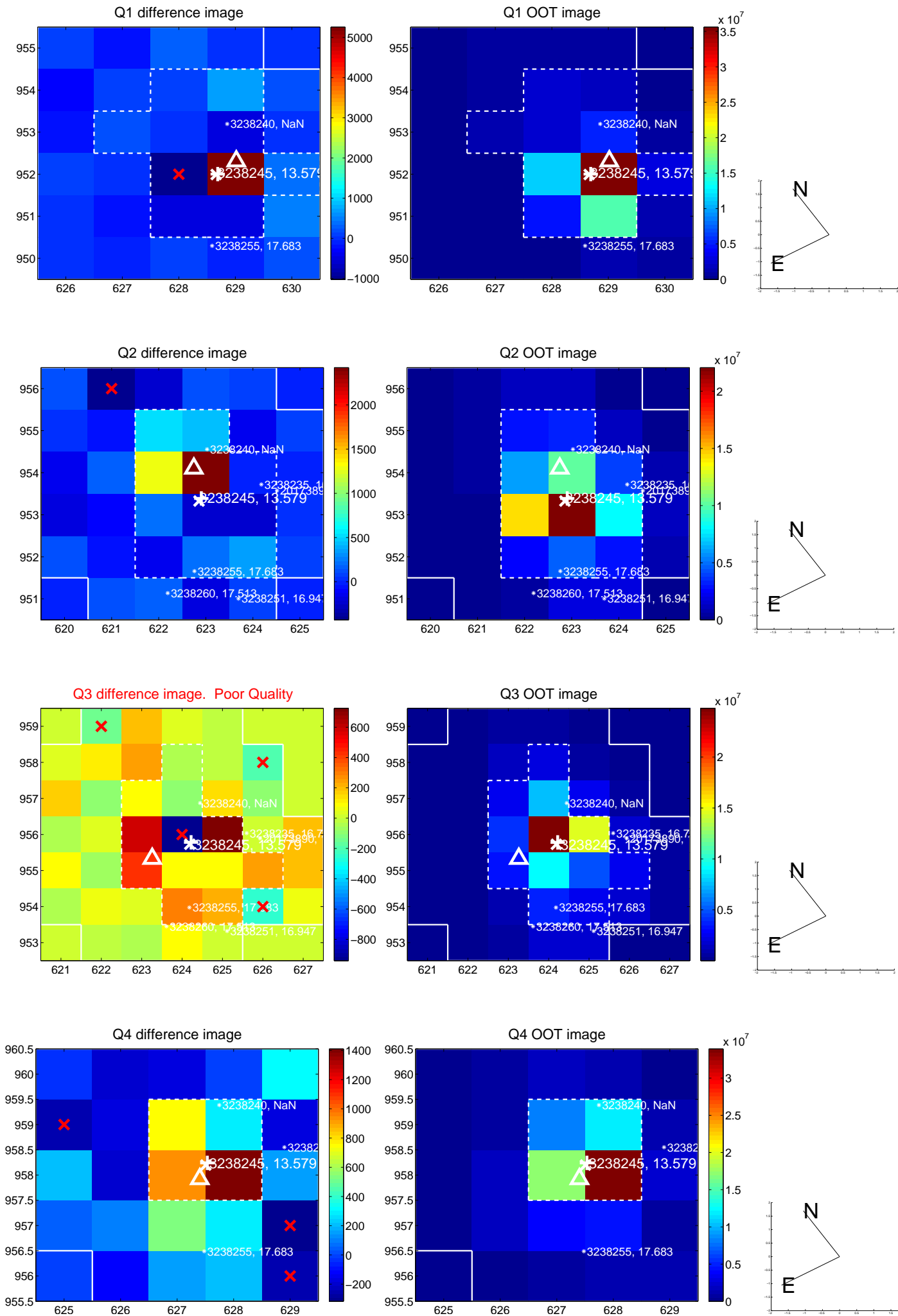


offset from photometric centroids



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.

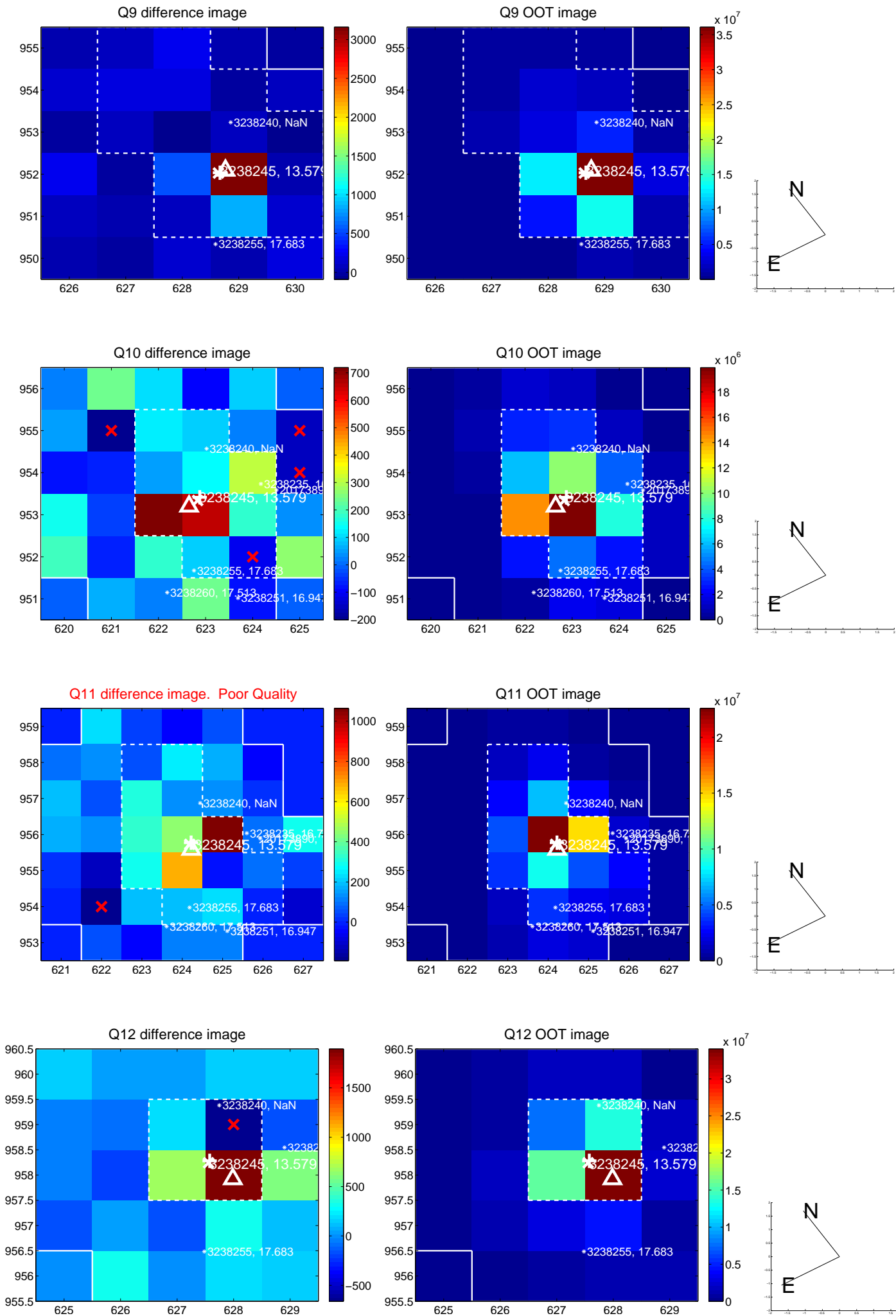
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



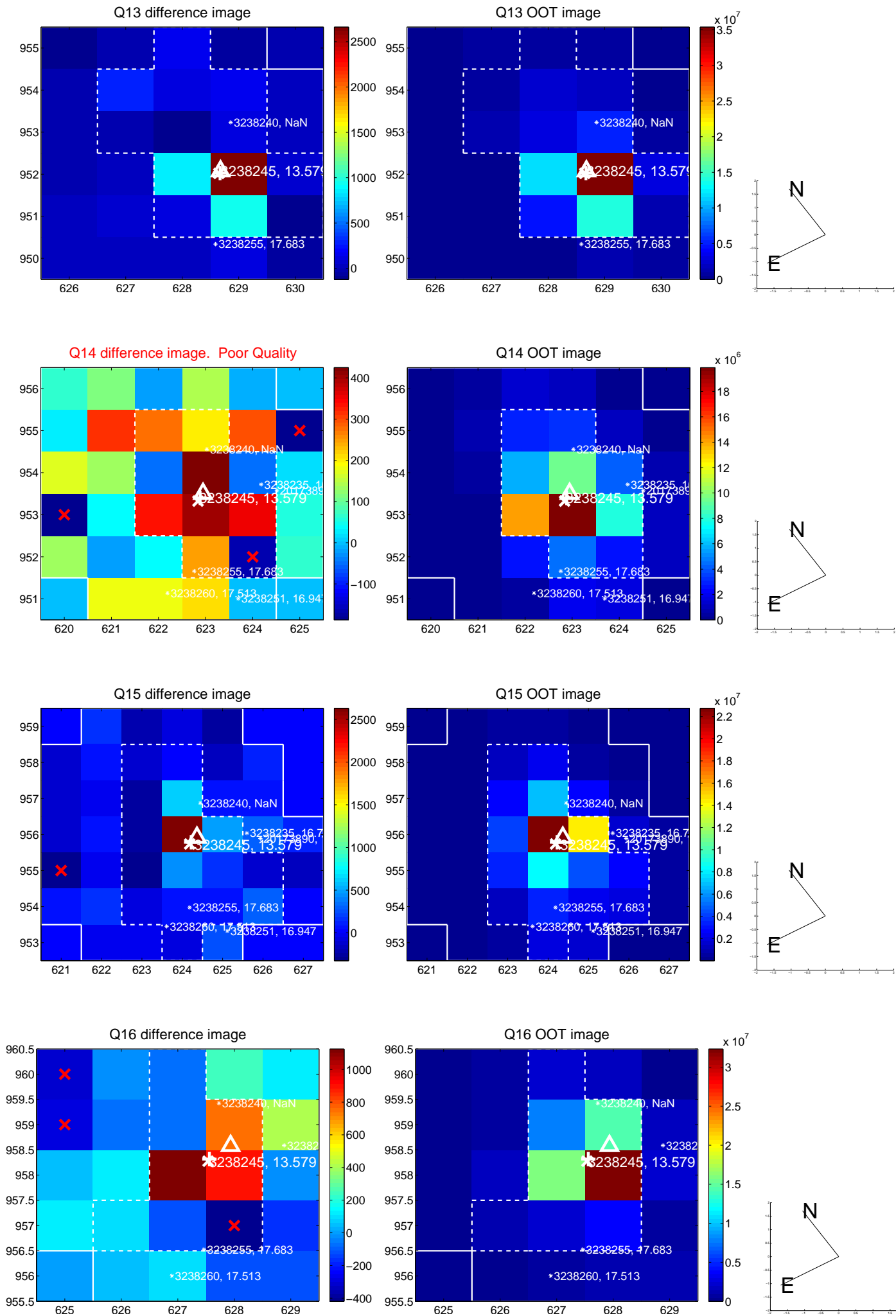




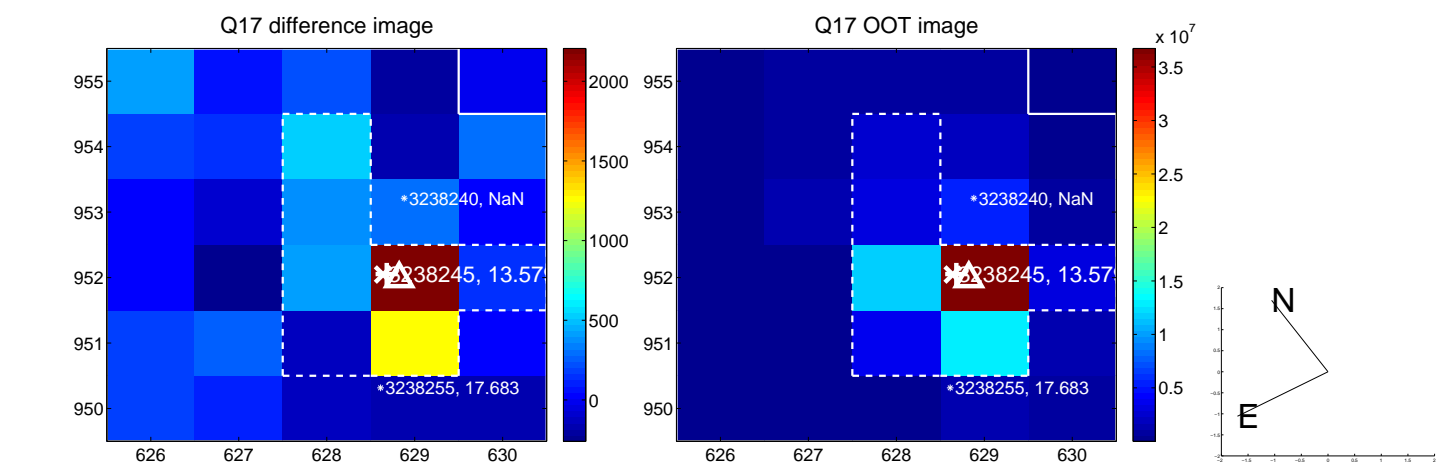
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



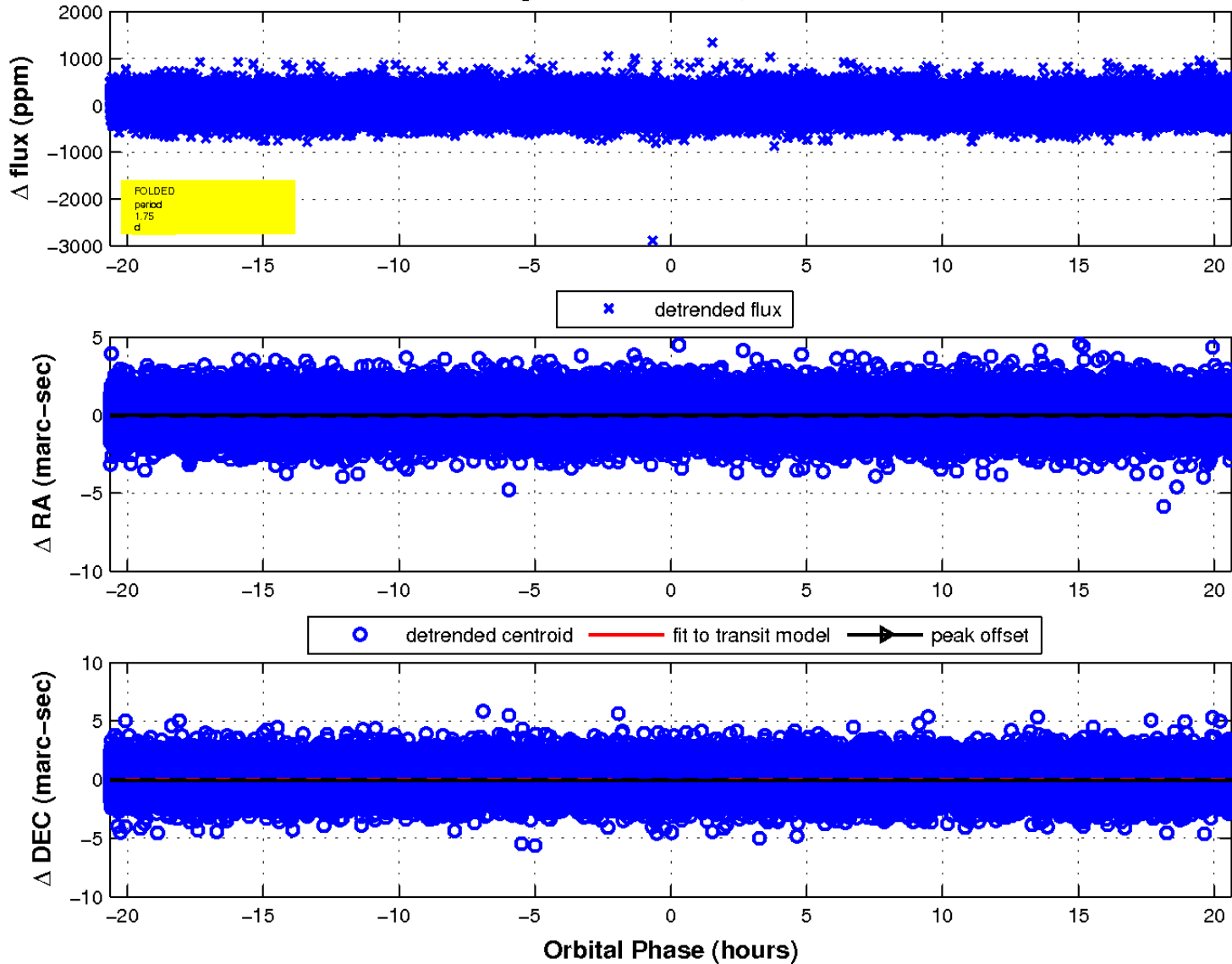
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

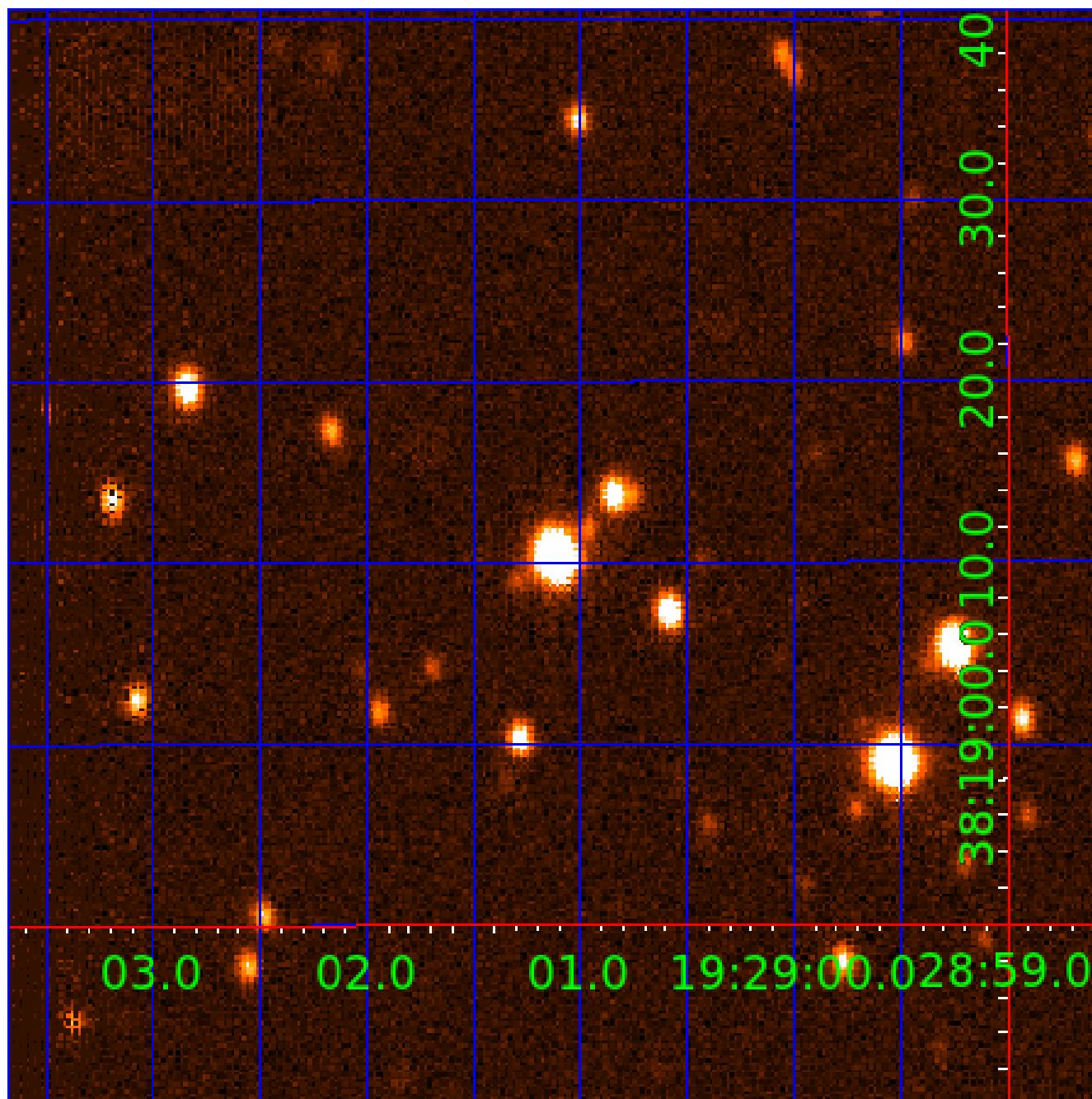


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 003238245

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003238245-01	OBS	No	1.745351	131.898791	21.2	6.878	8.0	7.2	1.77	7326	0.93	7609.26
003238245-02	OBS	No	364.698614	225.691816	272.4	8.589	8.0	6.7	1.77	7326	3.25	6.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003238245-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003238245-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

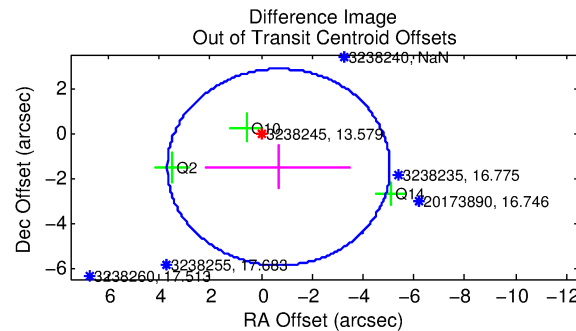
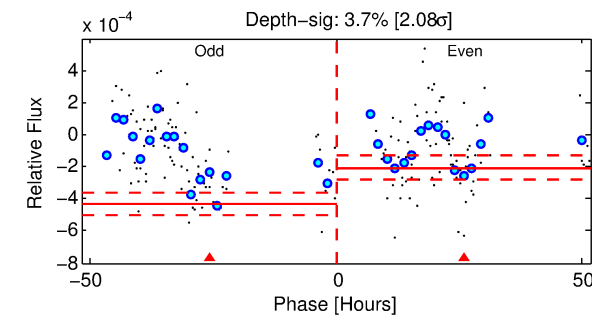
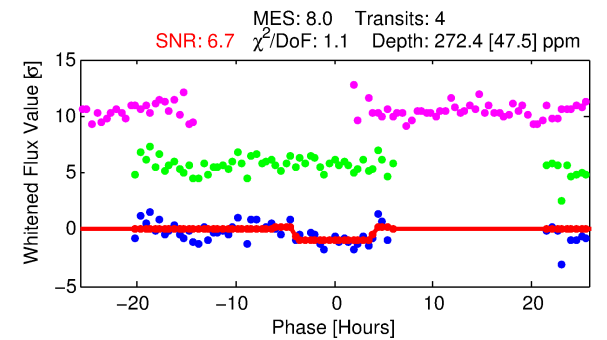
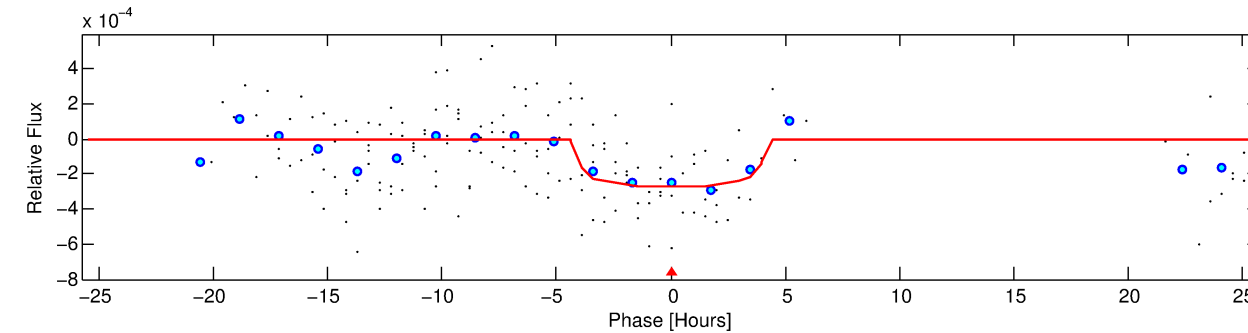
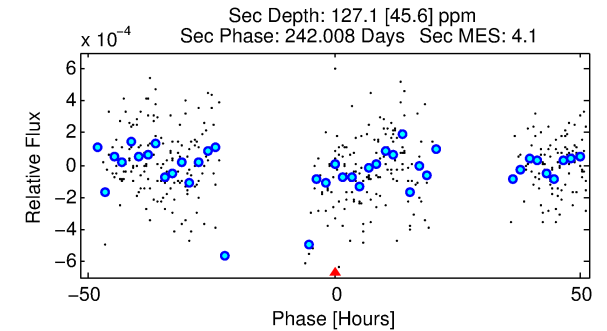
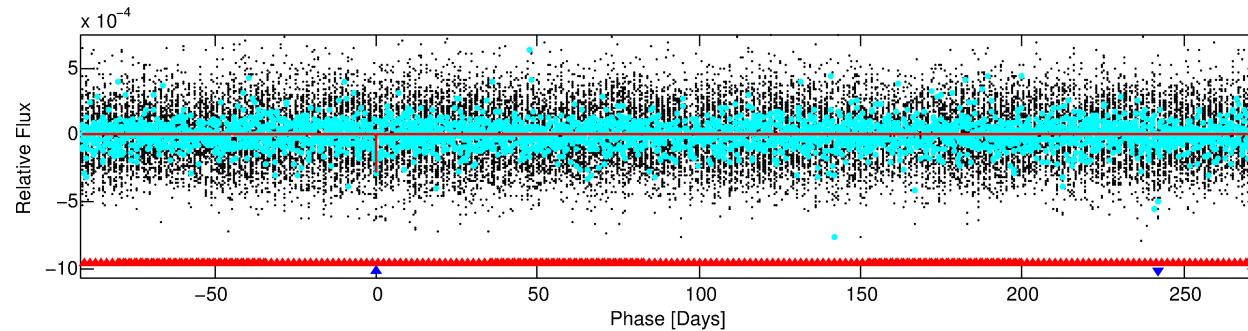
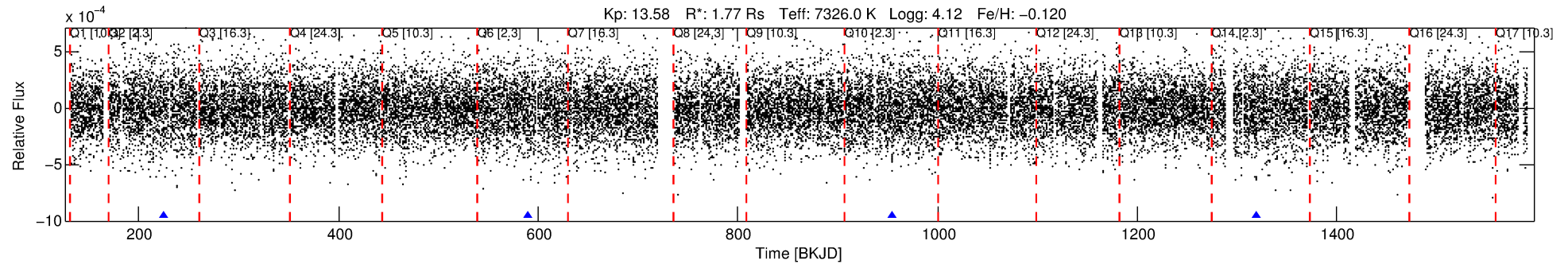
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003238245-02

No Significant Match Found

# DV One-Page Summary

KIC: 3238245 Candidate: 2 of 2 Period: 364.699 d



## DV Fit Results:

Period = 364.69861 [0.01193] d  
Epoch = 225.6918 [0.0250] BKJD  
Rp/R\* = 0.0168 [0.0053]  
a/R\* = 191.90 [353.91]  
b = 0.83 [0.71]  
Seff = 6.14 [2.37]  
Teq = 401 [39] K  
Rp = 3.25 [1.44] Re  
a = 1.1459 [0.2884] AU  
Ag = 8705.59 [6968.40] [1.25σ]  
Teffp = 5994 [1108] K [5.05σ]

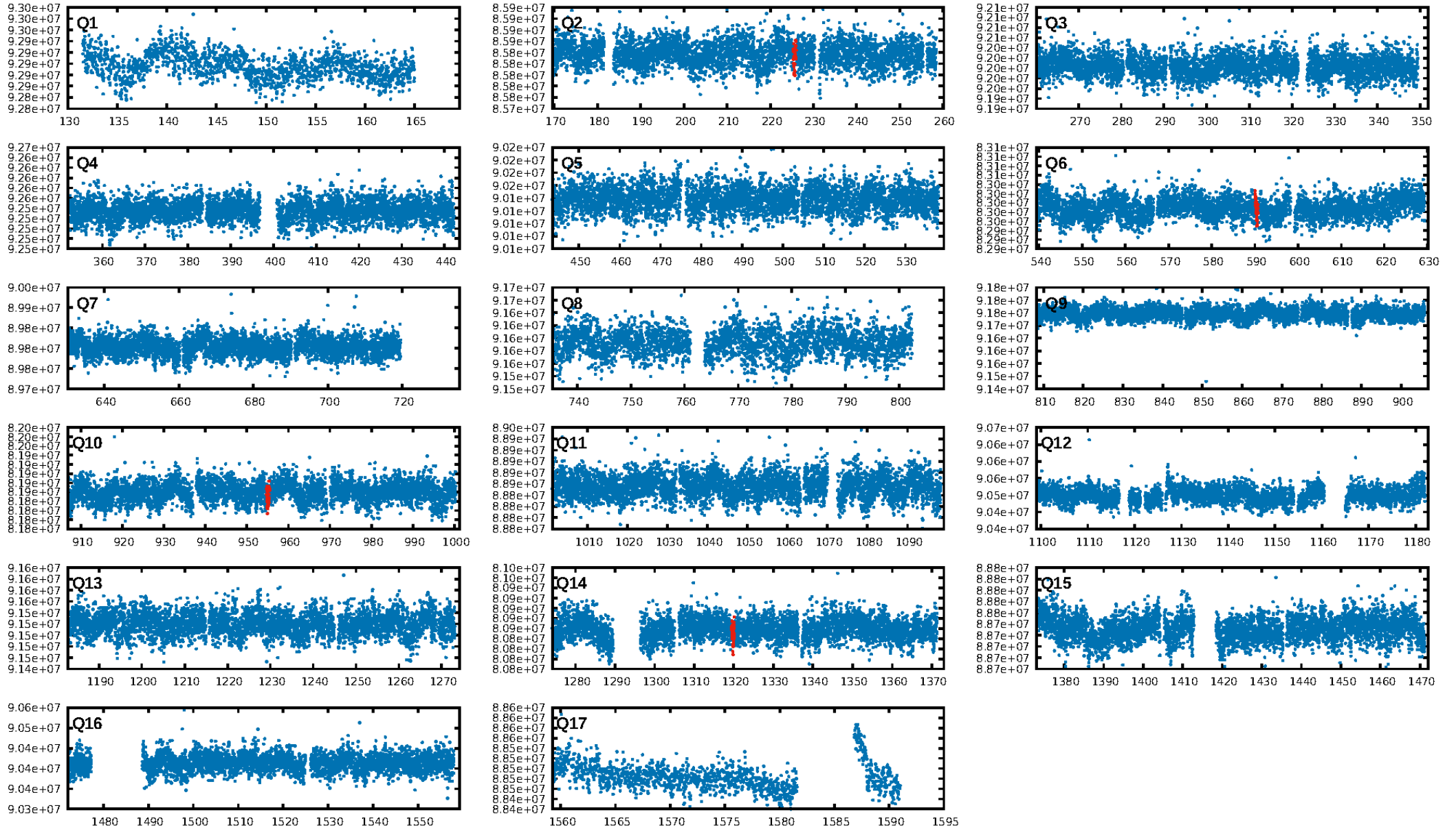
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [791.65σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.3%  
ModelChiSquareGof-sig: 99.6%  
**Bootstrap-pfa: 6.10e-11**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 134.2  
Centroid-sig: 30.9%  
Centroid-so: 1.113 arcsec [0.64σ]  
OotOffset-rm: 1.673 arcsec [1.15σ]  
KicOffset-rm: 1.724 arcsec [0.98σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.00 [0/4]

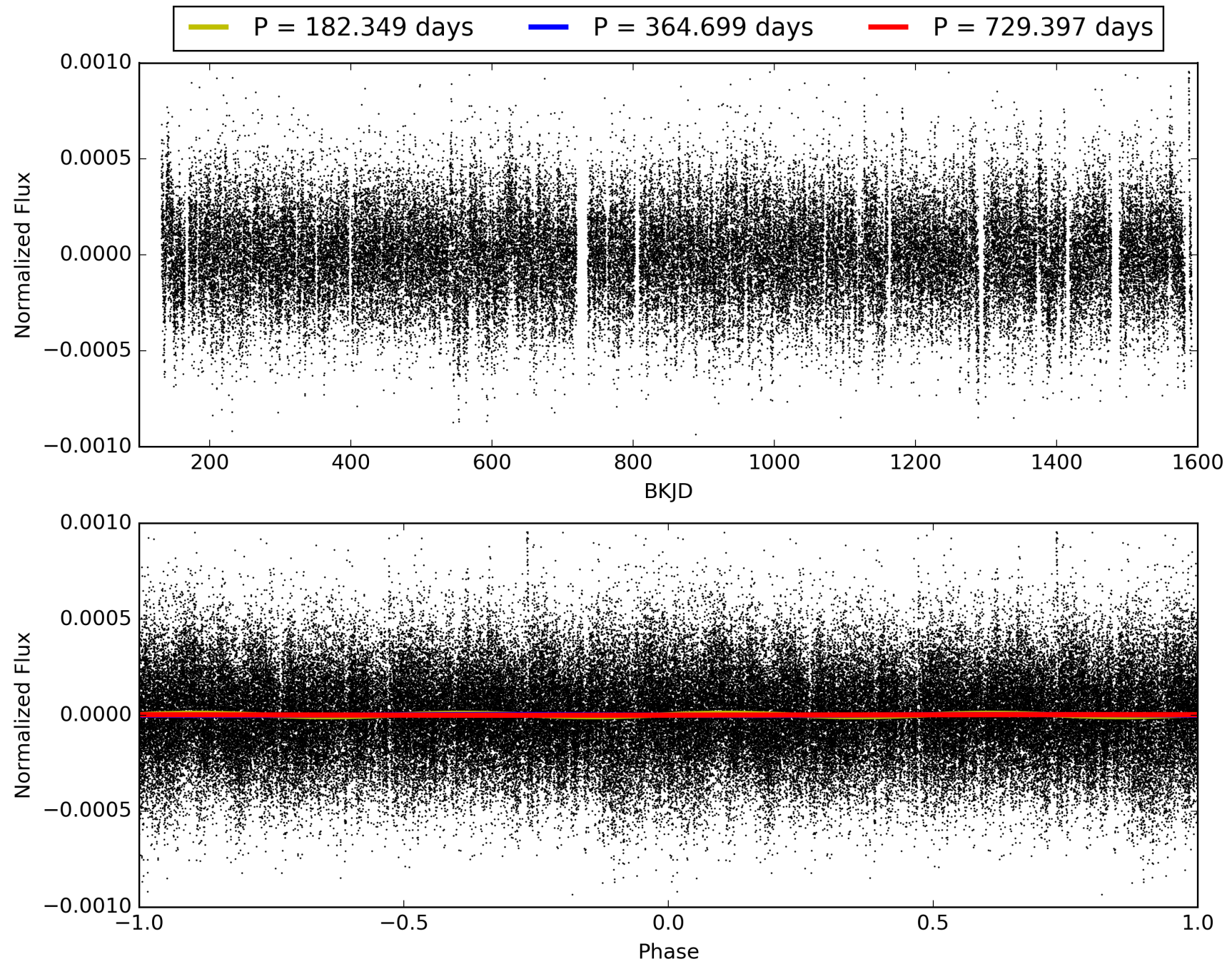
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:27:11 Z

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

# TCE 003238245-02, PDC Light Curves



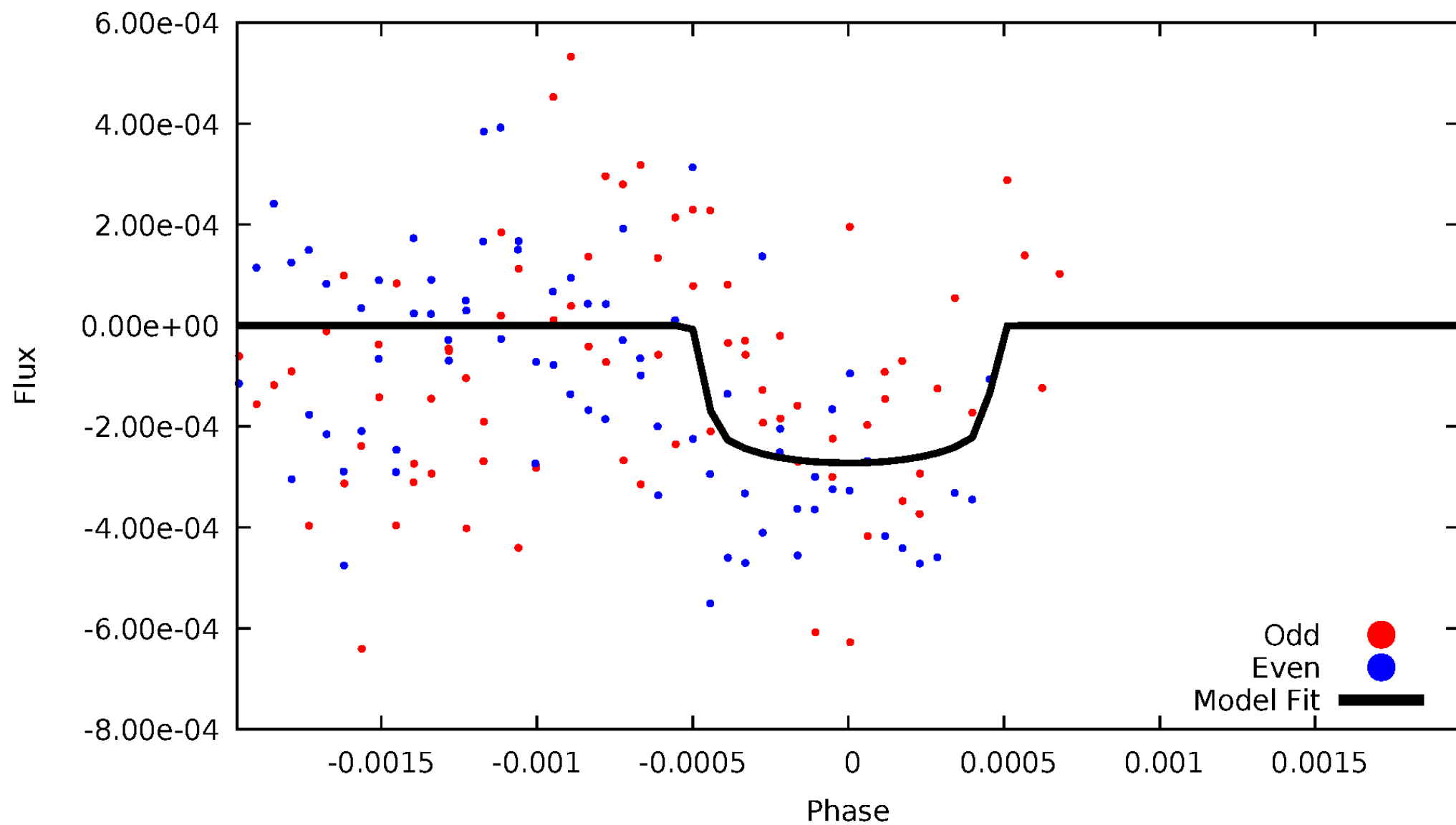
TCE 003238245-02





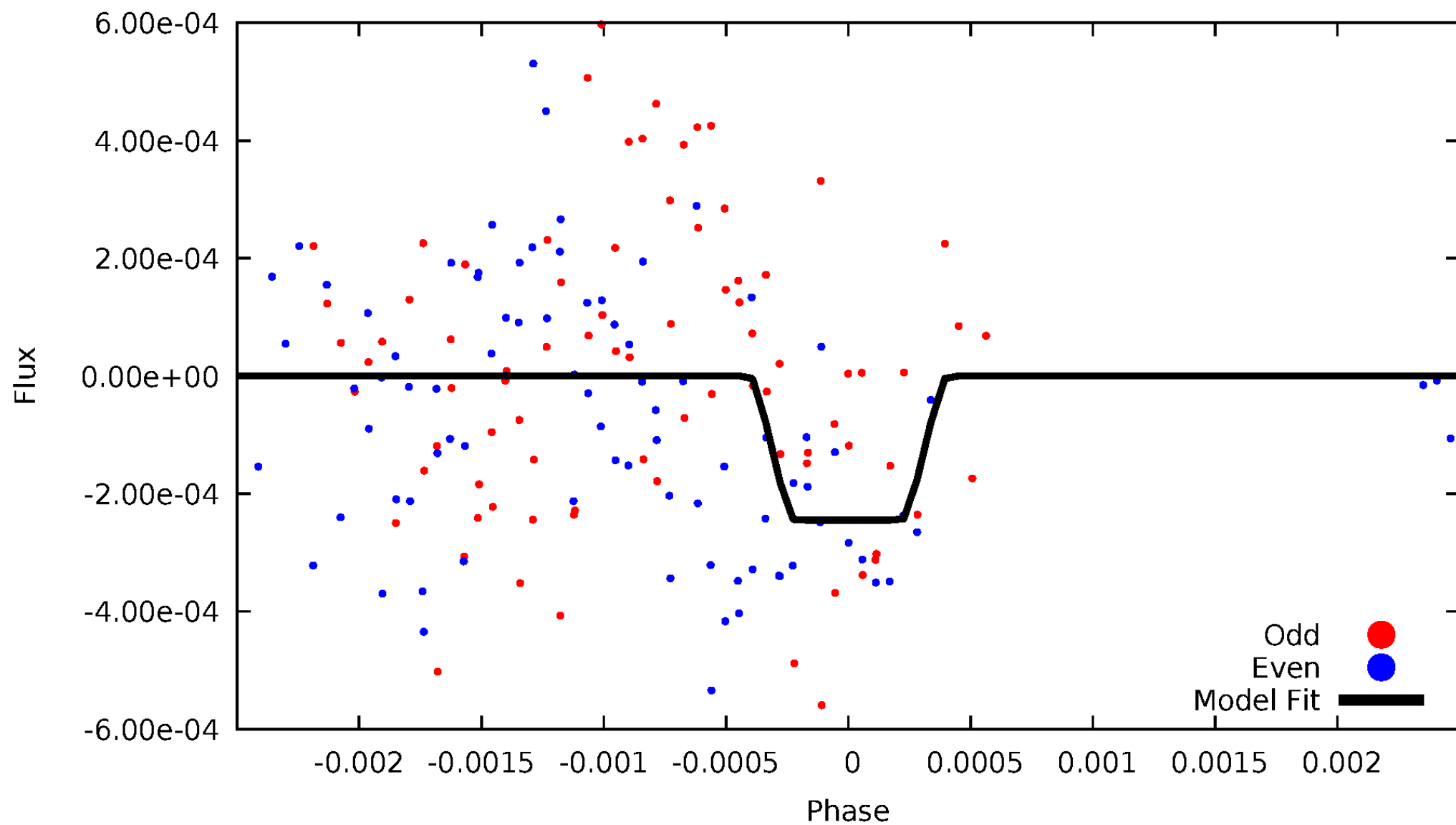
# DV Odd/Even

TCE 003238245-02



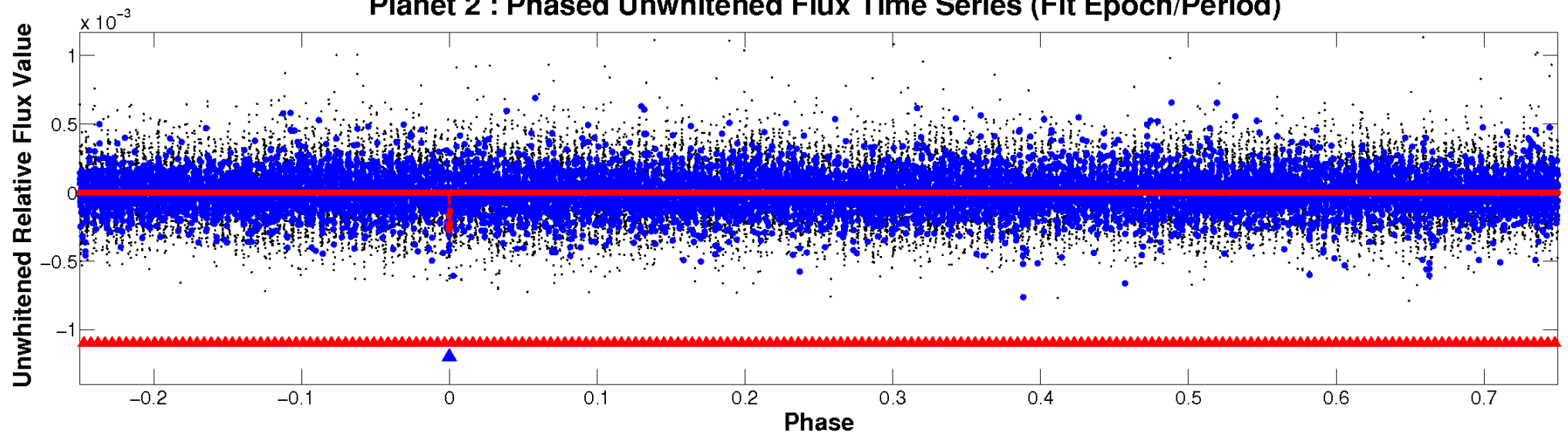
# ALT Odd/Even

TCE 003238245-02

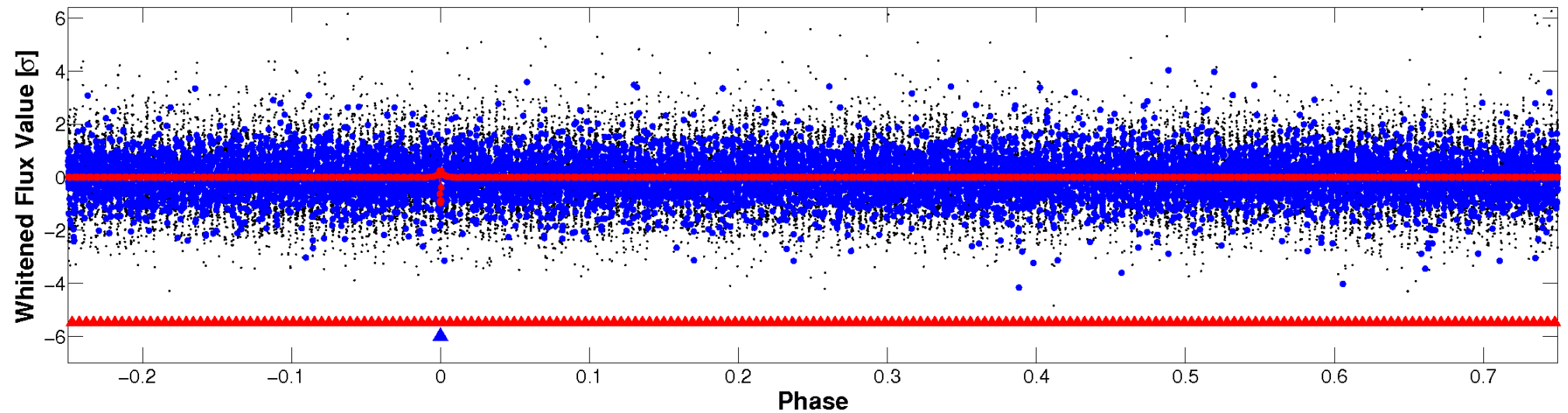


# Non-Whitened Vs. Whitened Light Curve

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

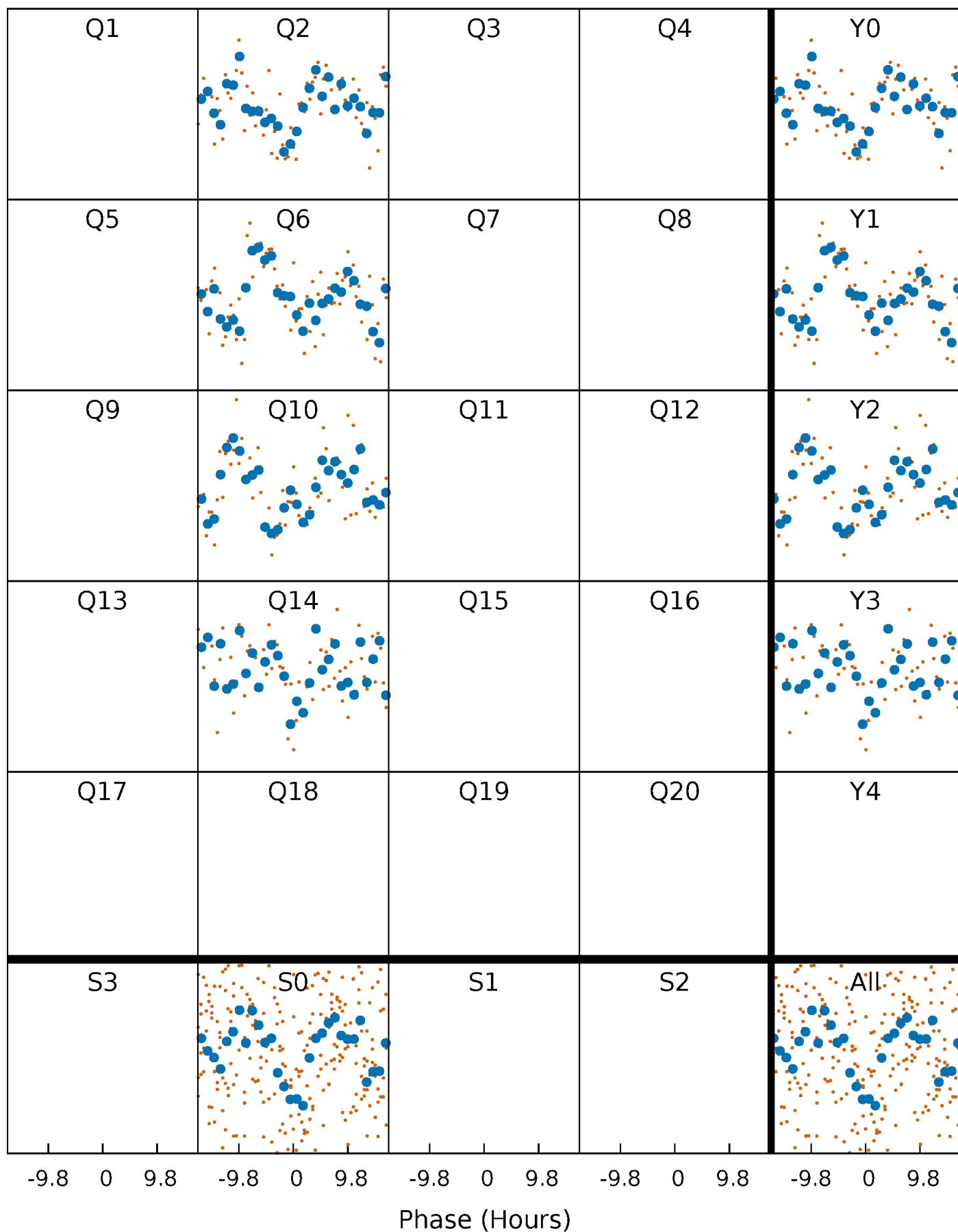


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



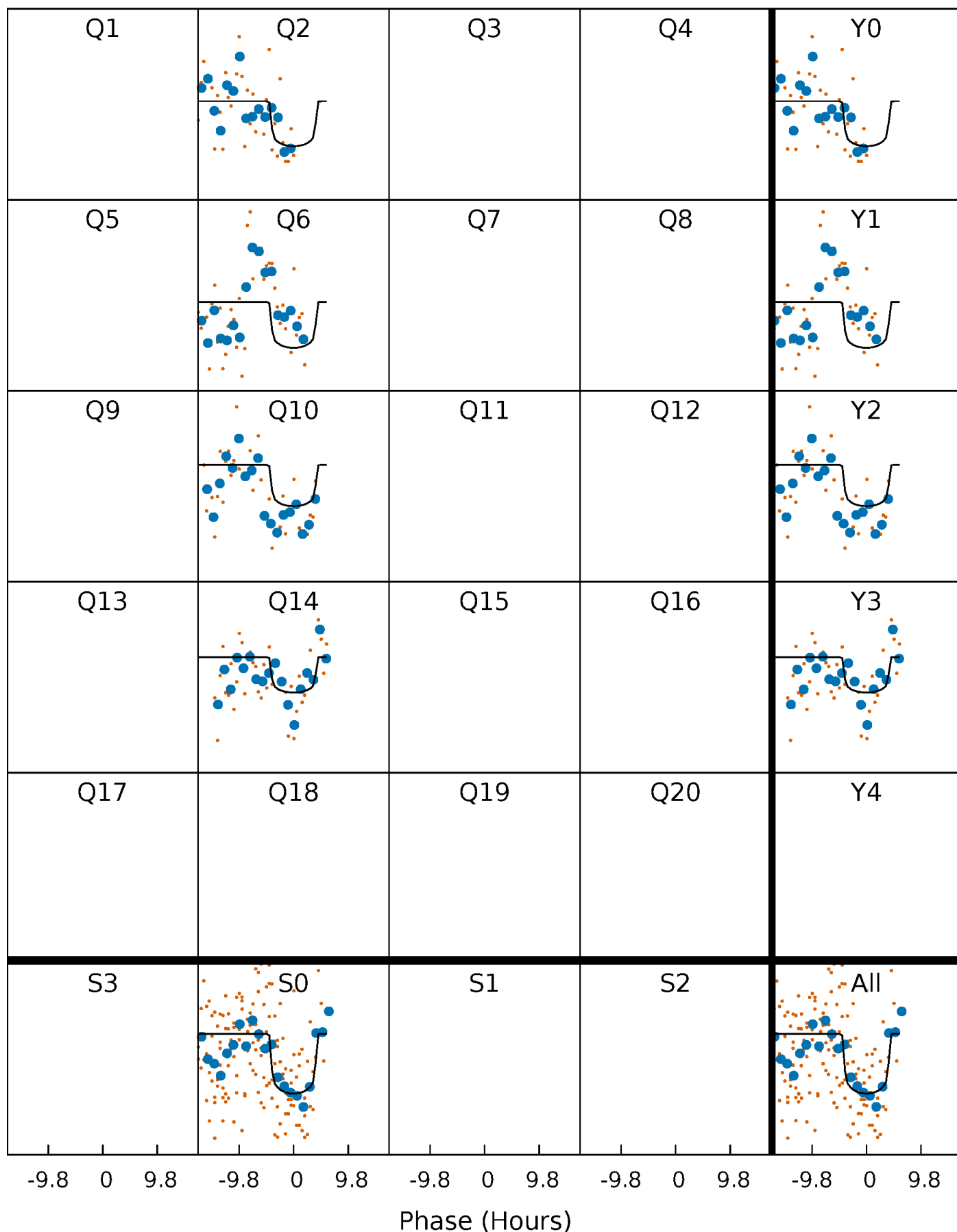
# PDC Quarter-Phased Transit Curves

TCE 003238245-02 P=364.698614 Days  $T_0=225.691816$  (BKJD)



# DV Quarter-Phased Transit Curves

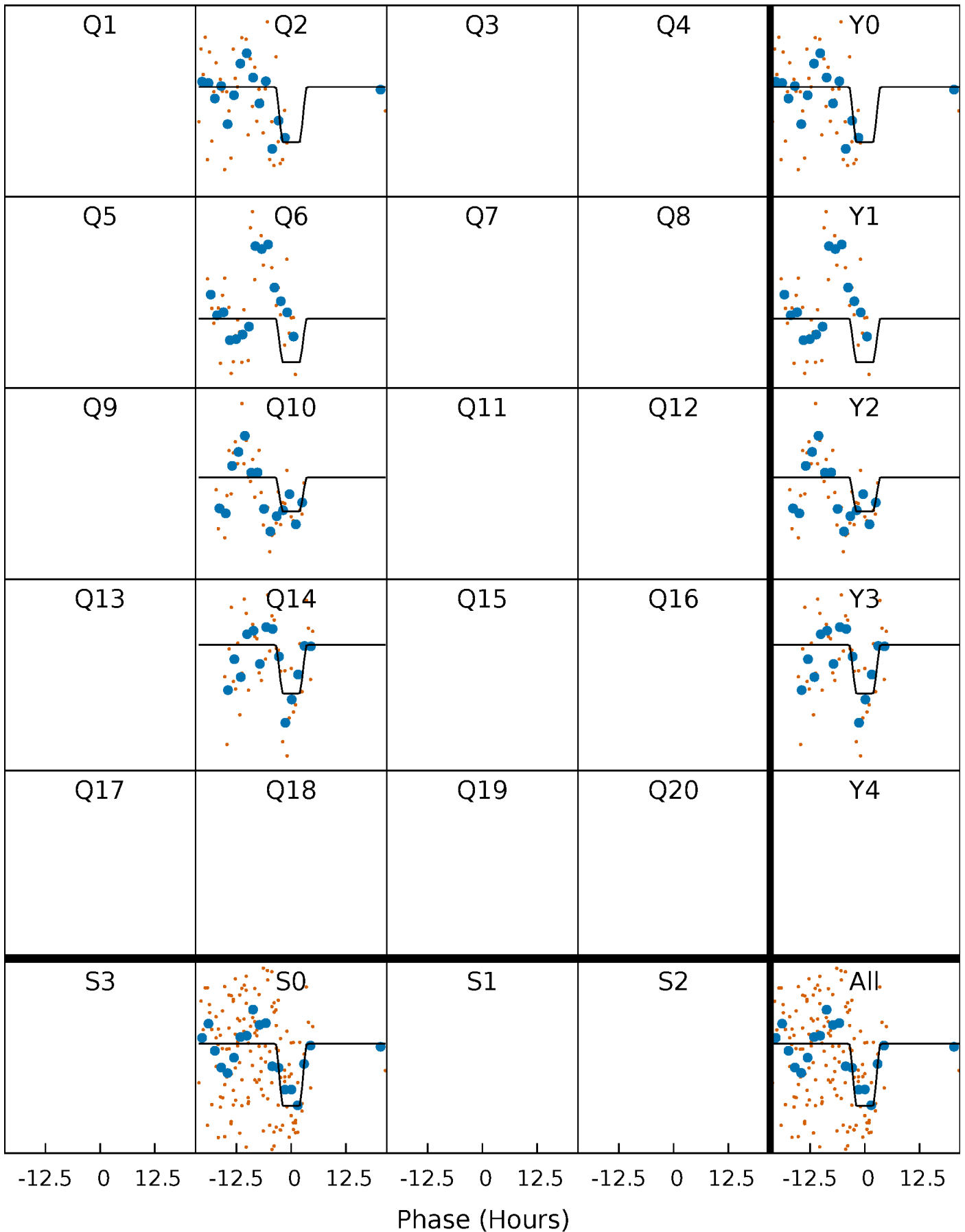
TCE 003238245-02 P=364.698614 Days  $T_0=225.691816$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

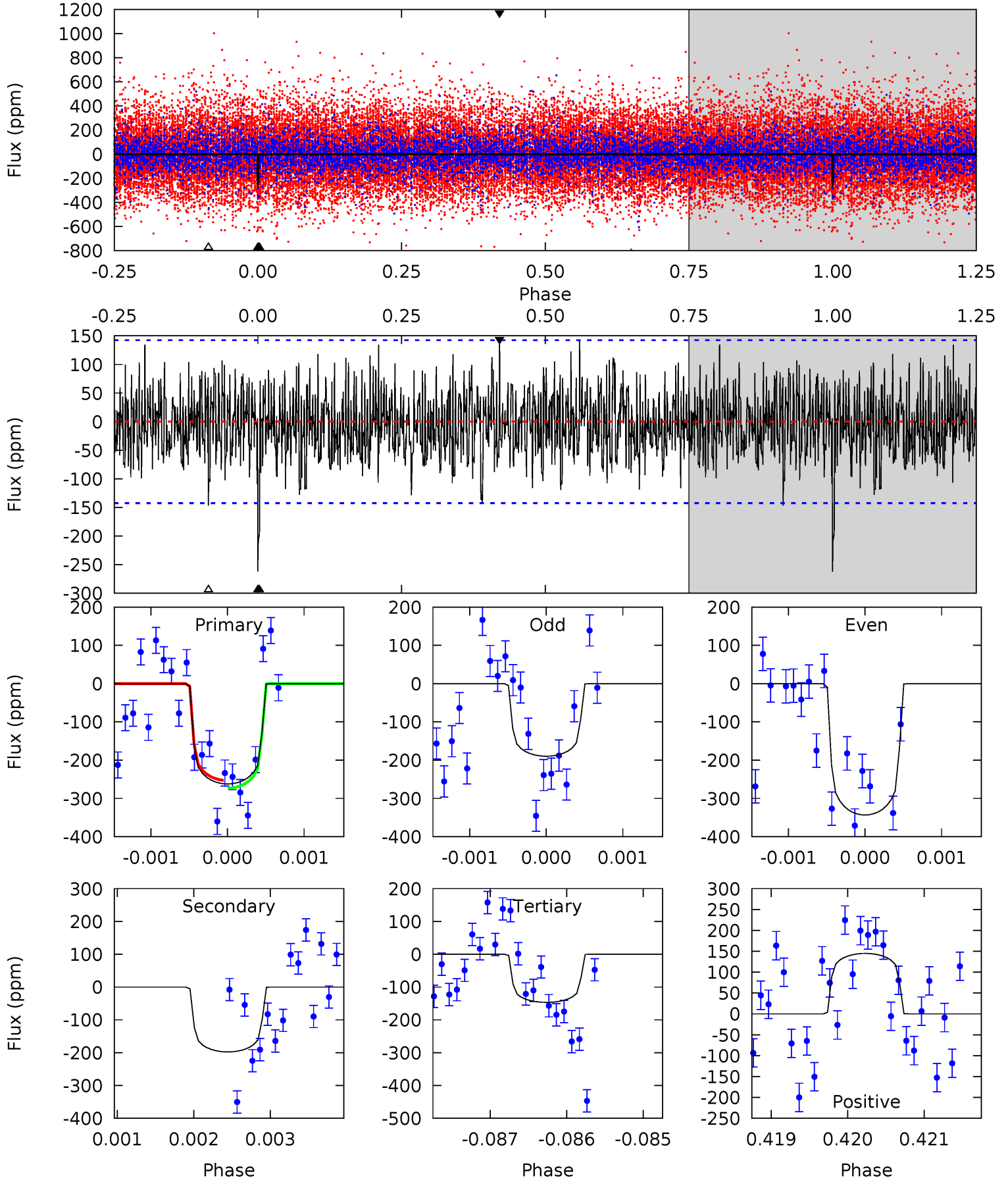
TCE 003238245-02 P=364.698179 Days  $T_0=225.735199$  (BKJD)



# DV Model-Shift Uniqueness Test

003238245-02, P = 364.698614 Days, E = 225.691816 Days

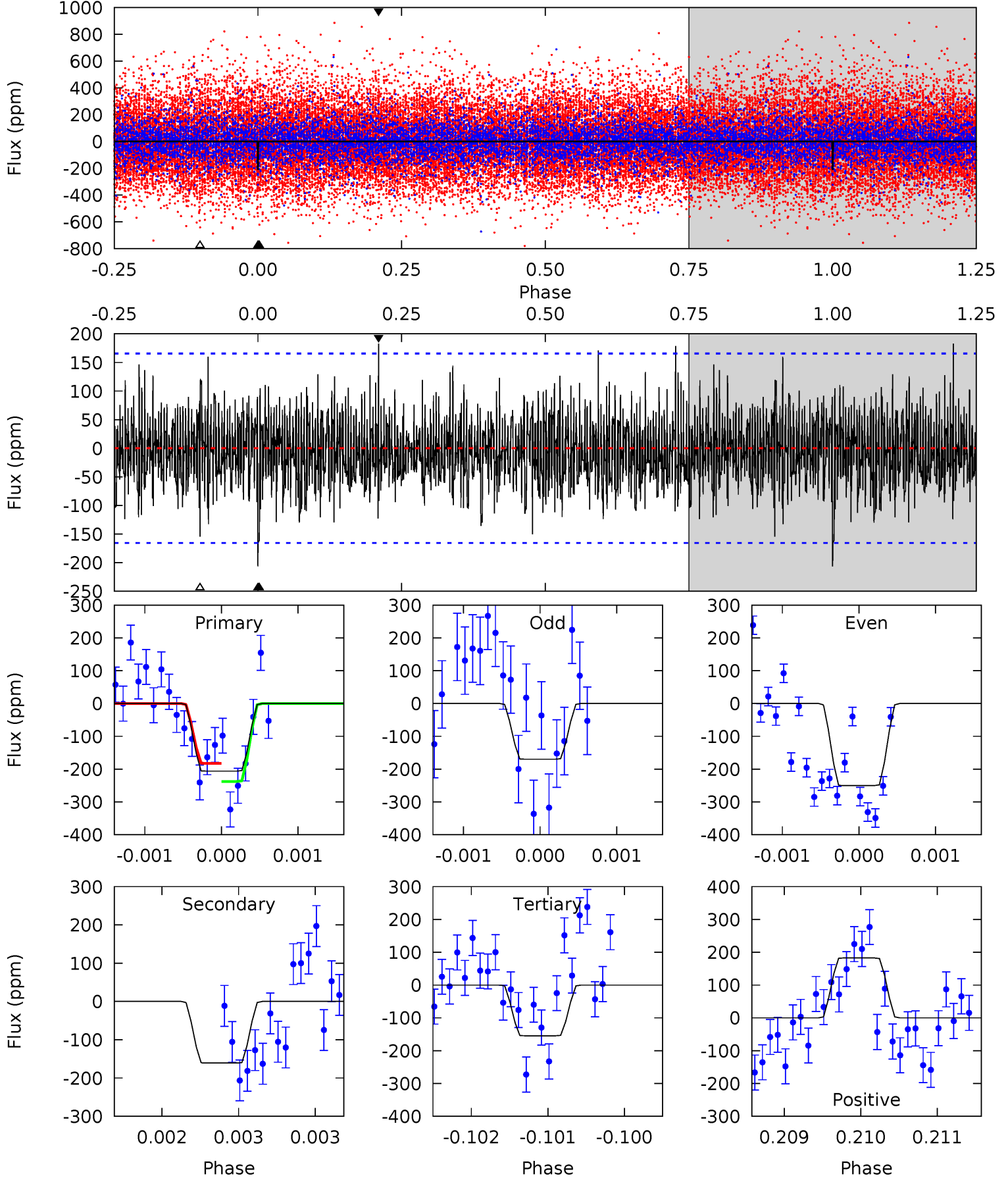
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	7.56	5.61	5.54	5.45	3.29	1.65	4.42	4.49	1.95	2.02	2.93	0.97	0.36	0.39



# Alt Model-Shift Uniqueness Test

003238245-02, P = 364.698179 Days, E = 225.735199 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
6.83	5.33	5.12	6.04	5.48	3.34	1.48	1.71	0.79	0.21	-0.71	1.32	0.79	0.47	0.88



### Stellar Parameters For KIC 003238245

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7326^{+228}_{-304}$	$4.122^{+0.149}_{-0.182}$	$-0.120^{+0.200}_{-0.350}$	$1.767^{+0.555}_{-0.370}$	$1.508^{+0.219}_{-0.241}$	$0.385^{+0.296}_{-0.196}$
	+3%/-4%	+4%/-4%	+167%/-292%	+31%/-21%	+15%/-16%	+77%/-51%
Source	KIC0	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 003238245-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-198 \pm 26$	$3.31^{+1.23}_{-1.04}$	$562^{+43}_{-37}$	$6554^{+1650}_{-865}$	$13215^{+14183}_{-6348}$
Alt.	$-161 \pm 30$	$3.04^{+1.13}_{-1.02}$	$562^{+47}_{-40}$	$6486^{+1793}_{-895}$	$12668^{+15717}_{-6459}$

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

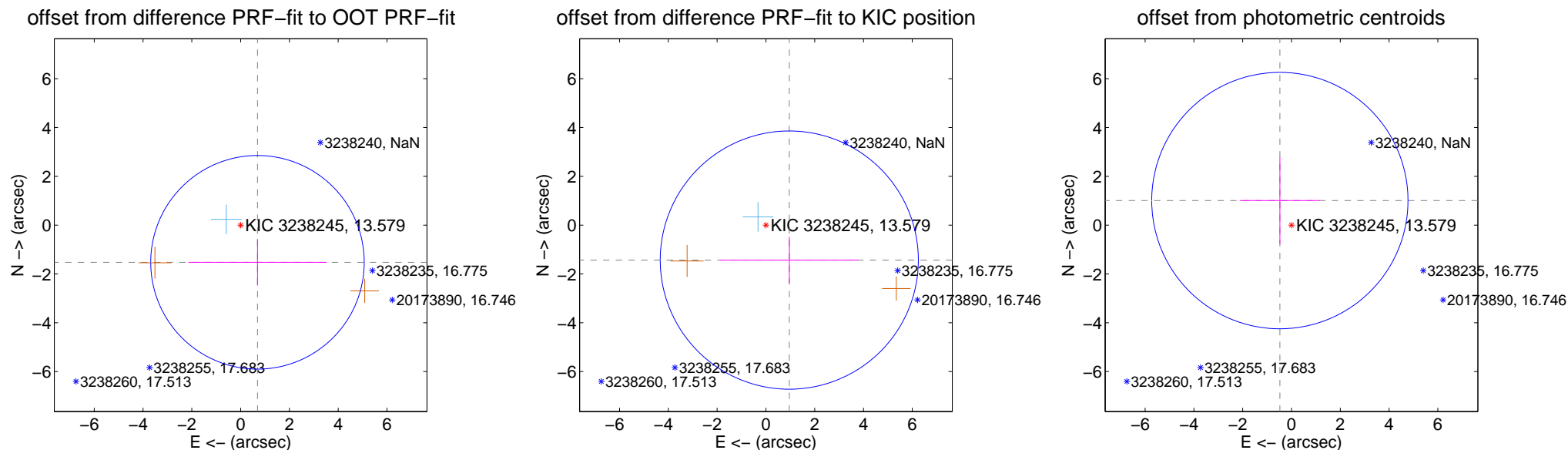
## DV Centroid Data

Supplemental centroid analysis for 003238245-02. Kepler magnitude: 13.58. Transit SNR 6.68

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

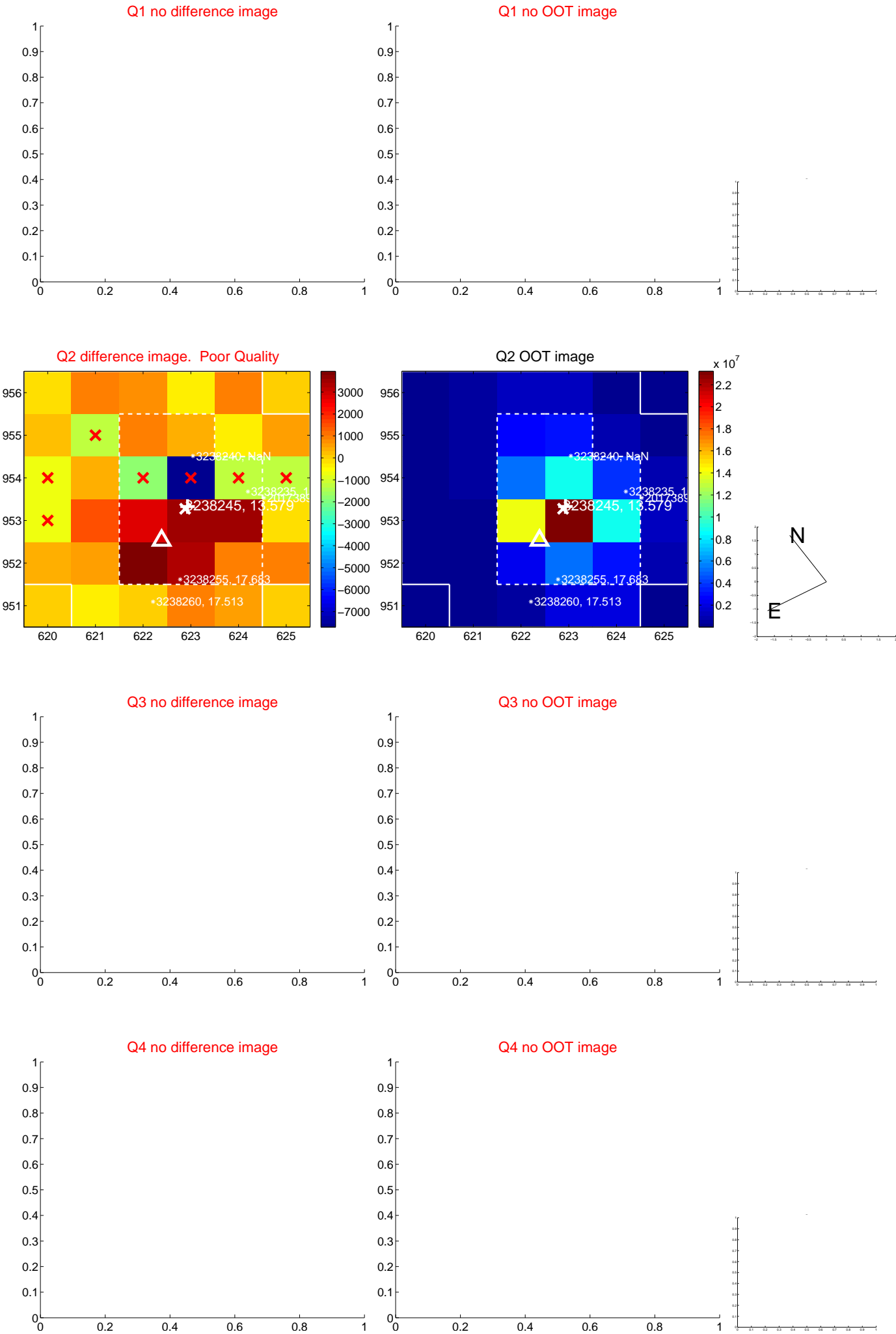
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.673 \pm 1.459$	1.15	$-0.691 \pm 2.838$	$-1.523 \pm 0.953$
PRF-fit source offset from KIC position	$1.724 \pm 1.763$	0.98	$-0.958 \pm 2.831$	$-1.433 \pm 0.956$
photometric centroid source offset	$1.11 \pm 1.75$	0.64	$0.48 \pm 1.64$	$1.01 \pm 1.77$



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.

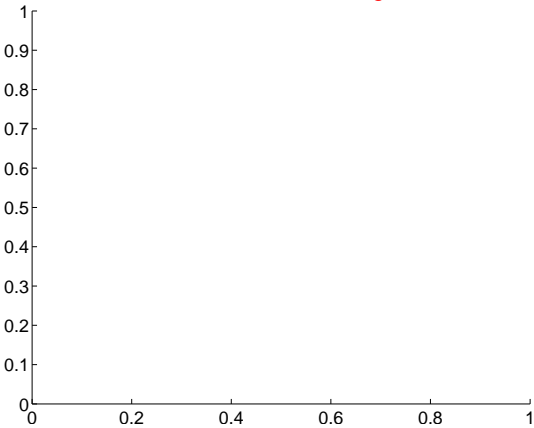


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

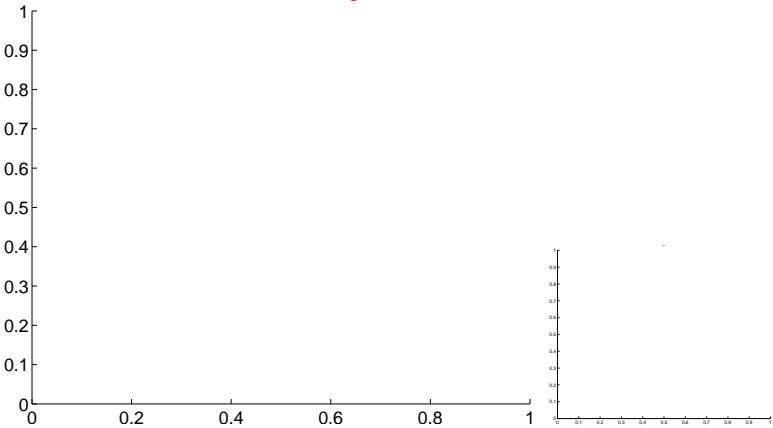


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

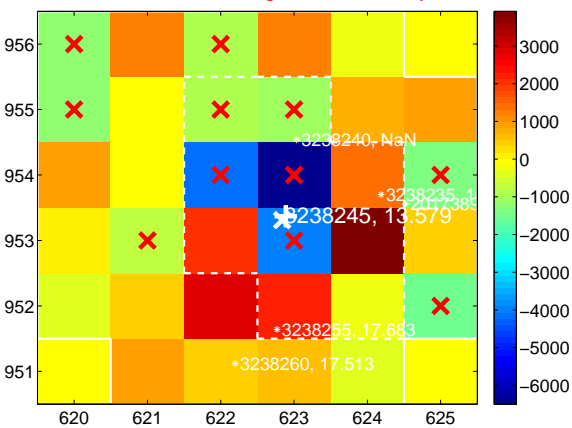
Q5 no difference image



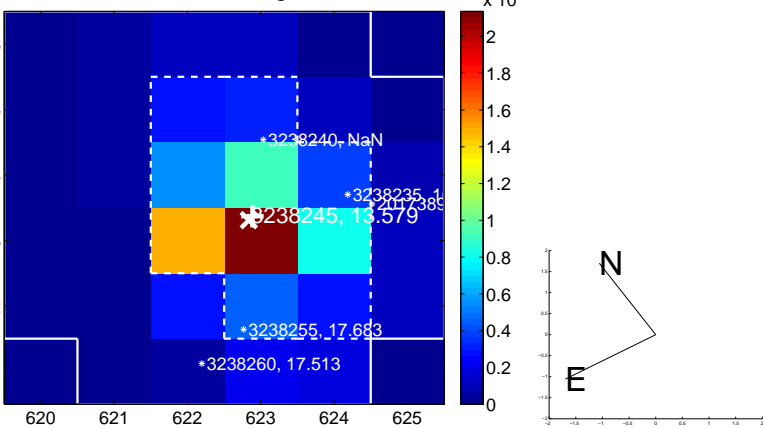
Q5 no OOT image



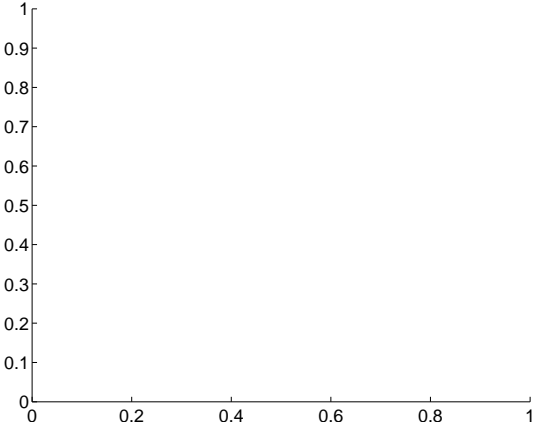
Q6 difference image. Poor Quality



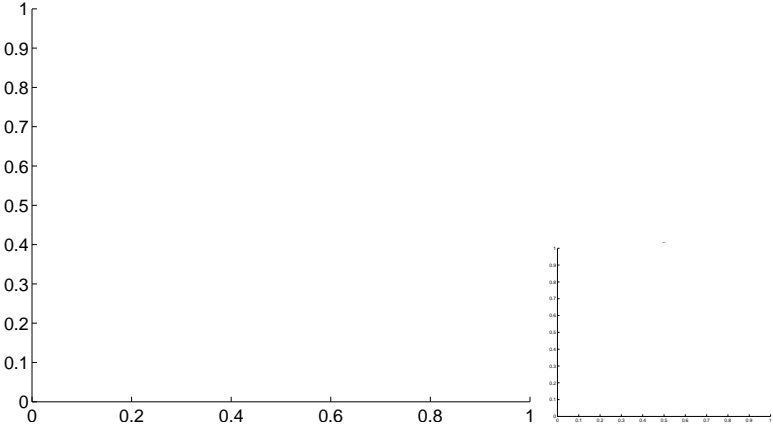
Q6 OOT image



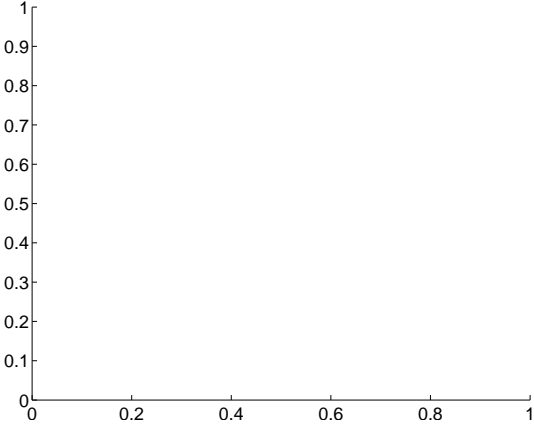
Q7 no difference image



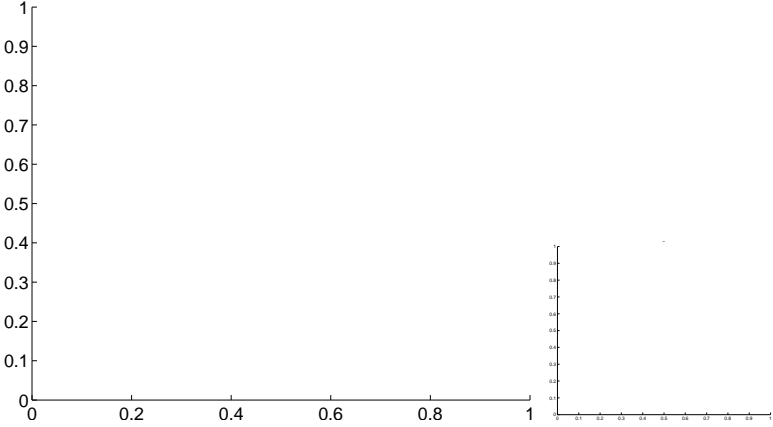
Q7 no OOT image



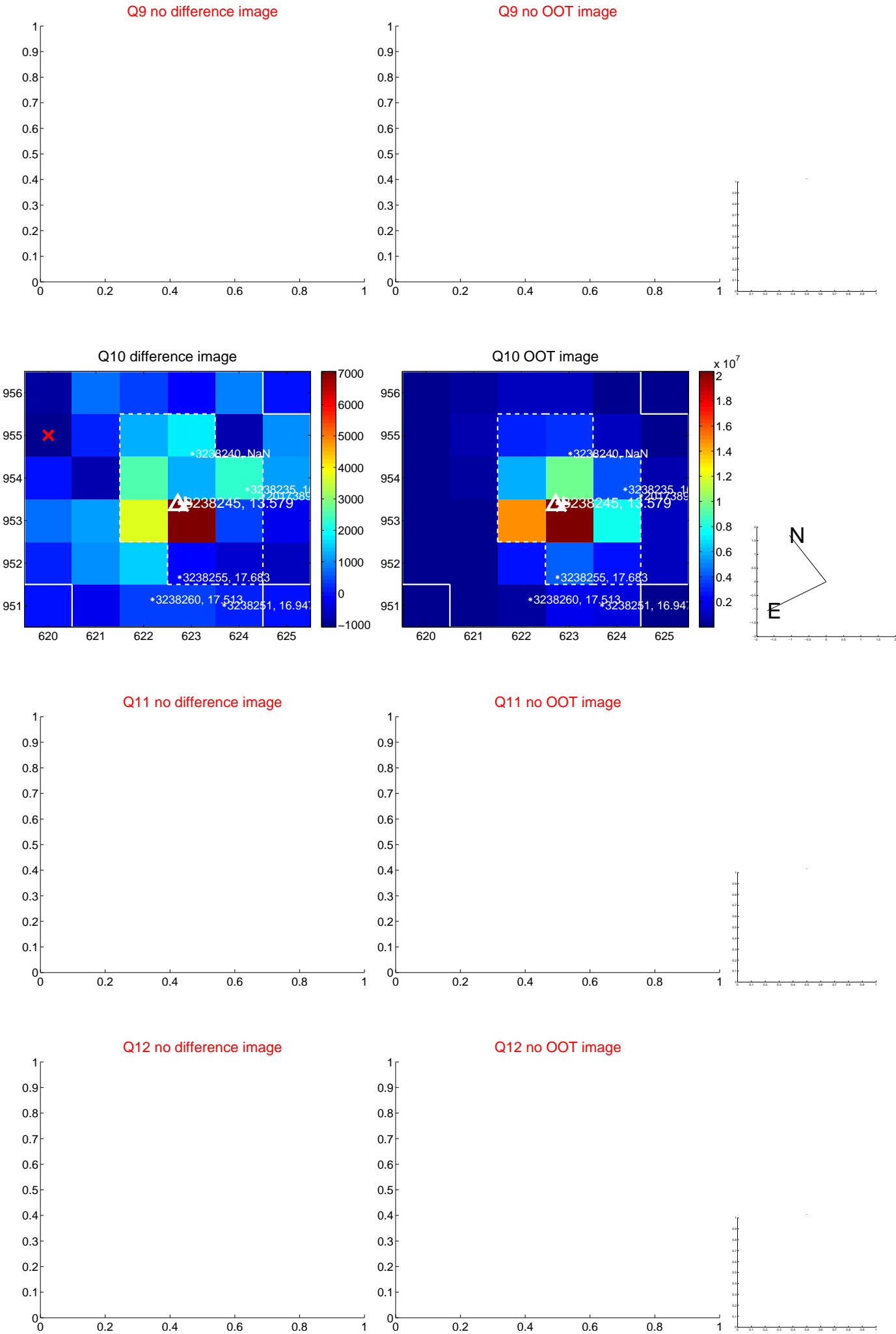
Q8 no difference image



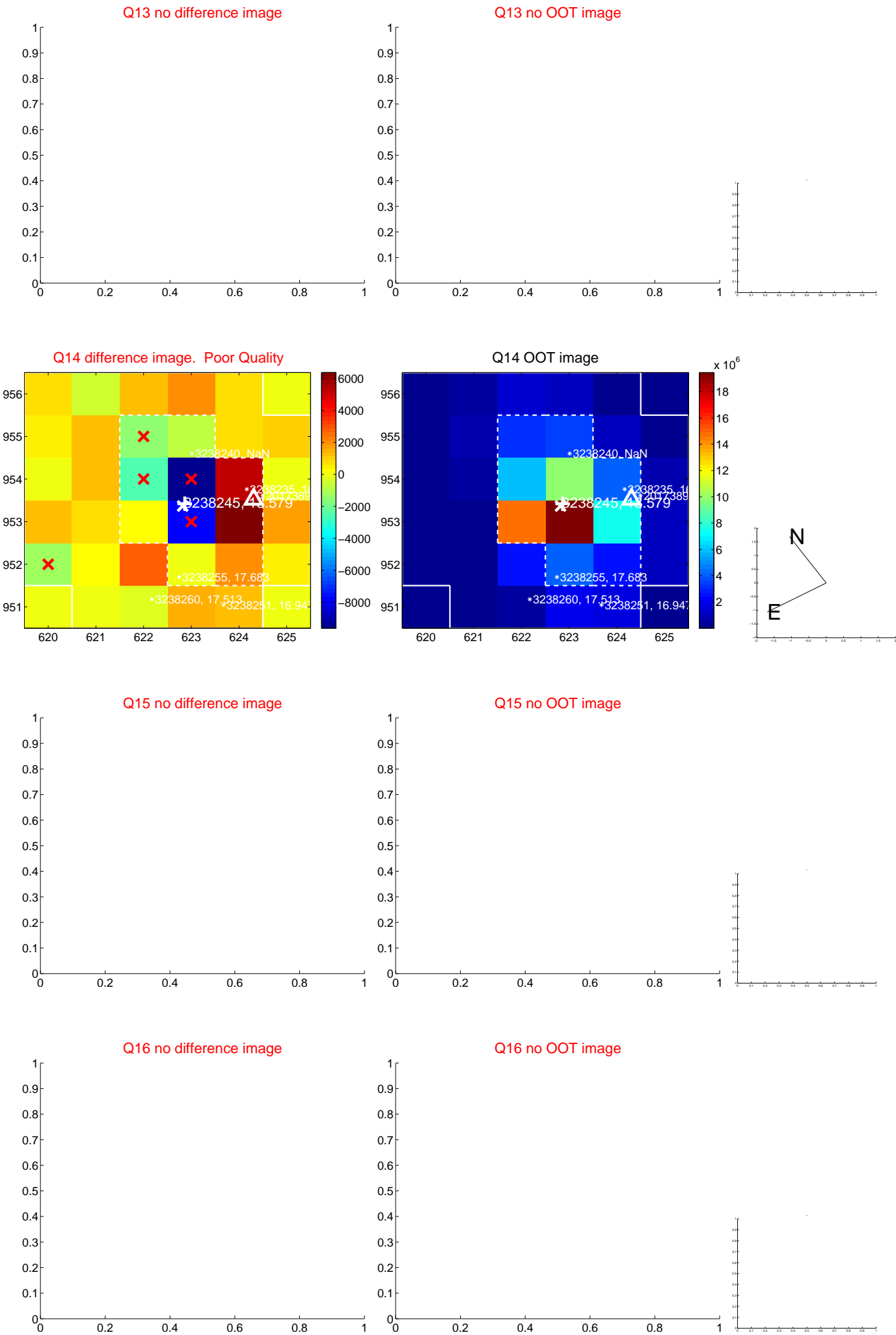
Q8 no OOT image



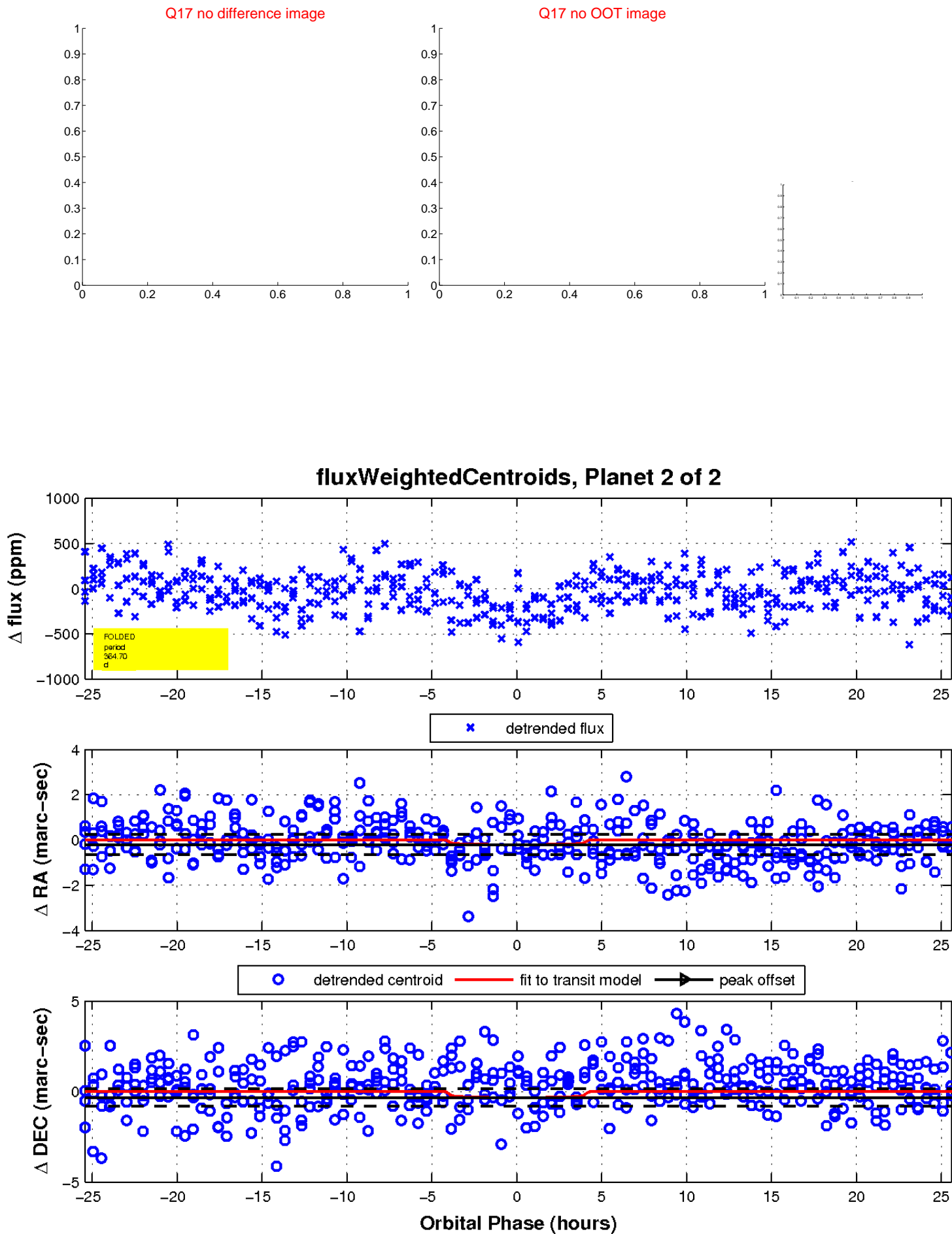
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

