

# KIC 007031824

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031824-01	OBS	No	0.566753	131.882582	32.1	4.128	8.0	11.2	0.89	5693	0.61	4207.49
007031824-02	OBS	No	14.550932	133.664559	1049.8	0.553	12.2	13.7	0.89	5693	3.29	55.55
007031824-03	OBS	No	19.330040	149.327420	493.1	1.372	11.0	11.3	0.89	5693	2.02	38.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031824-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007031824-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007031824-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

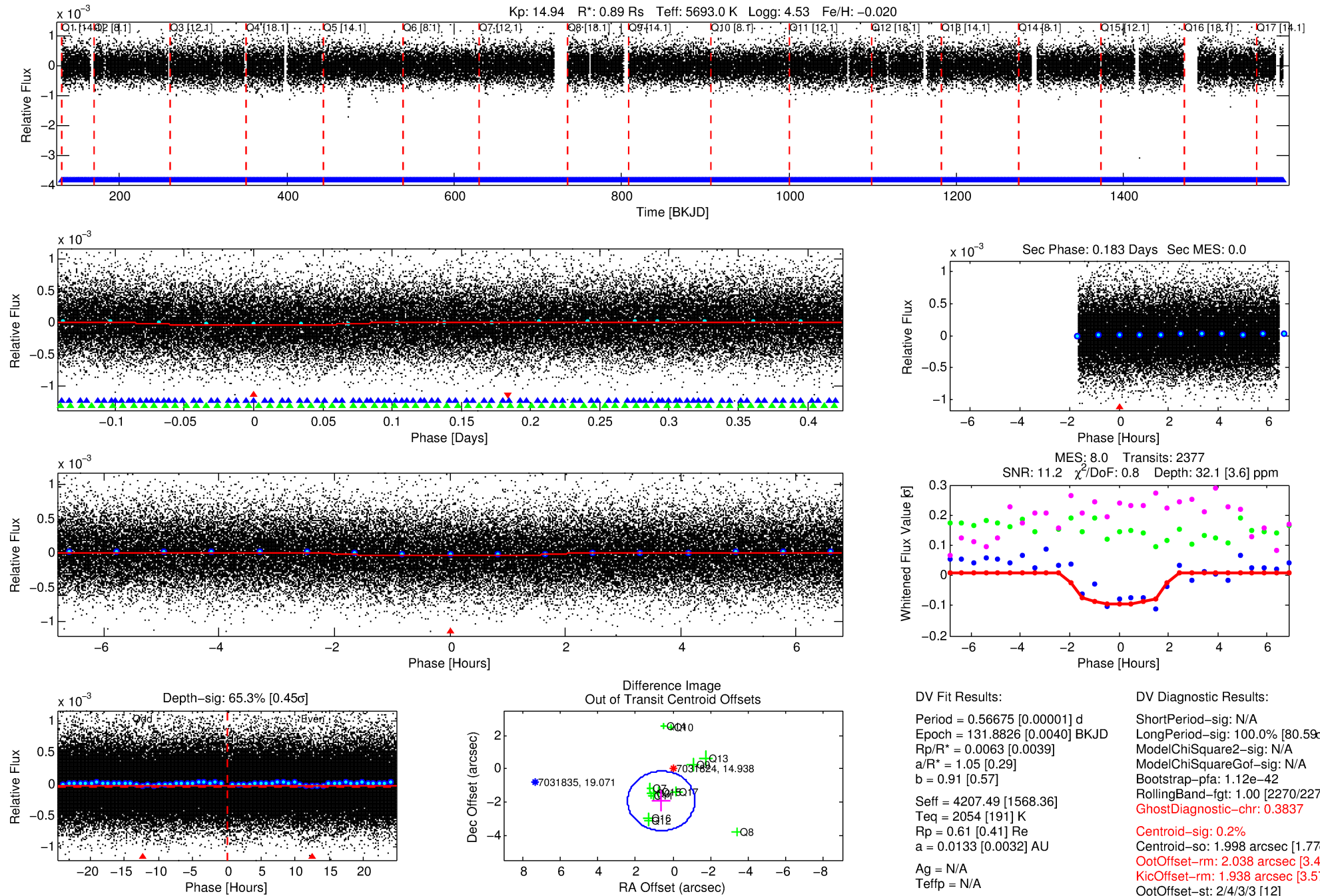
## Ephemeris Match Information For 007031824-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $\mu$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007031824-01	7031824	RR-Lyr-pri	7198959	1:1	965.3	137	-201	7.86	14.94	19478.00	Direct-PRF	0	0.98	20.35

**Notes:** P<sub>1</sub>:P<sub>2</sub> 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<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.  $\sigma_P$  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: 7031824 Candidate: 1 of 3 Period: 0.567 d



## DV Fit Results:

Period = 0.56675 [0.00001] d  
Epoch = 131.8826 [0.0040] BKJD  
Rp/R\* = 0.0063 [0.0039]  
a/R\* = 1.05 [0.29]  
b = 0.91 [0.57]  
Seff = 4207.49 [1568.36]  
Teff = 2054 [191] K  
Rp = 0.61 [0.41] Re  
a = 0.0133 [0.0032] AU  
Ag = N/A  
Teffp = N/A

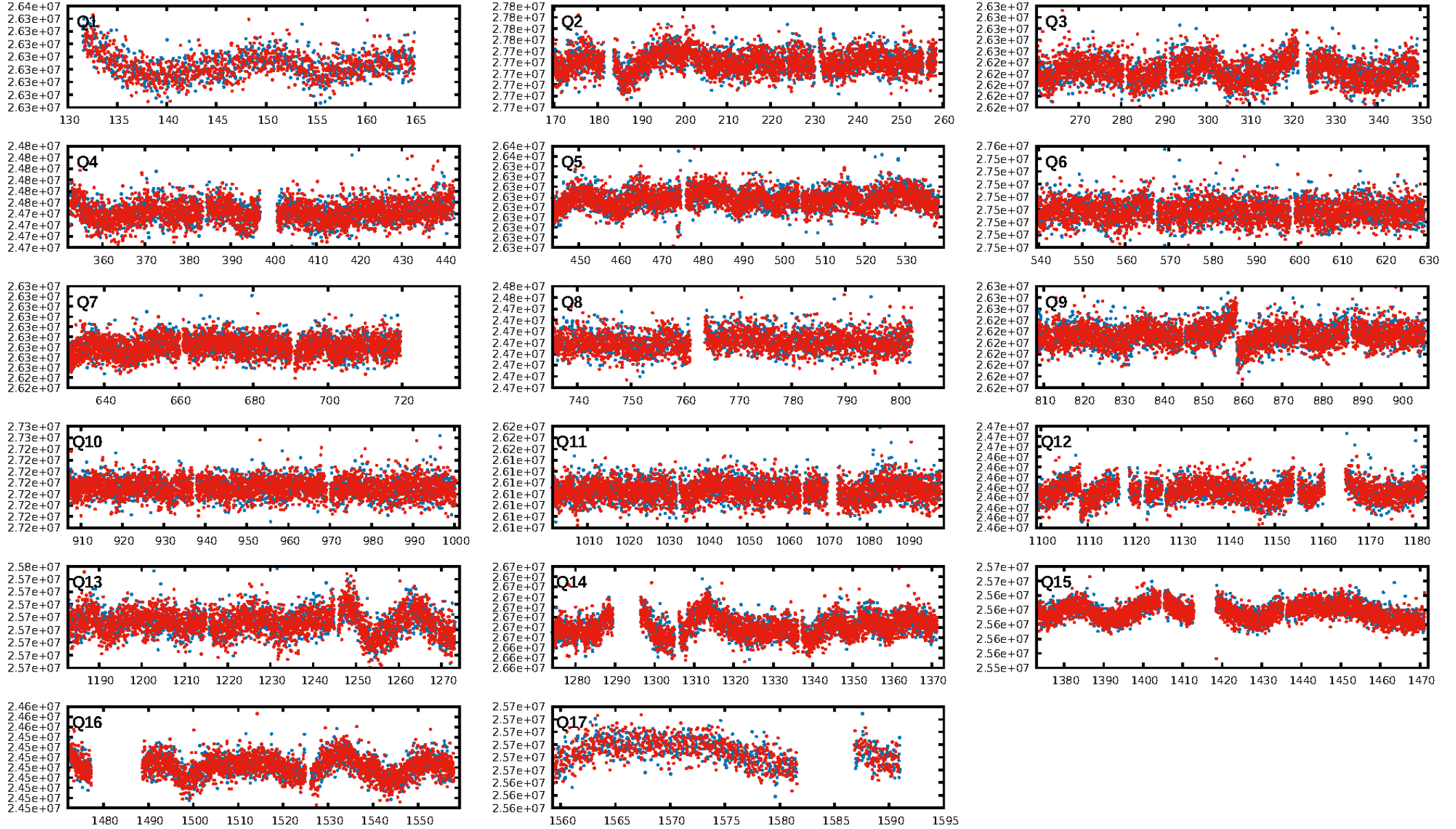
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [80.59 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.12e-42  
RollingBand-fgt: 1.00 [2270/2270]  
**GhostDiagnostic-chr: 0.3837**  
Centroid-sig: 0.2%  
Centroid-so: 1.998 arcsec [1.77 $\sigma$ ]  
**OotOffset-rm: 2.038 arcsec [3.42 $\sigma$ ]**  
**KicOffset-rm: 1.938 arcsec [3.57 $\sigma$ ]**  
OotOffset-st: 2/4/3/3 [12]  
KicOffset-st: 2/4/3/3 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:24:40 Z

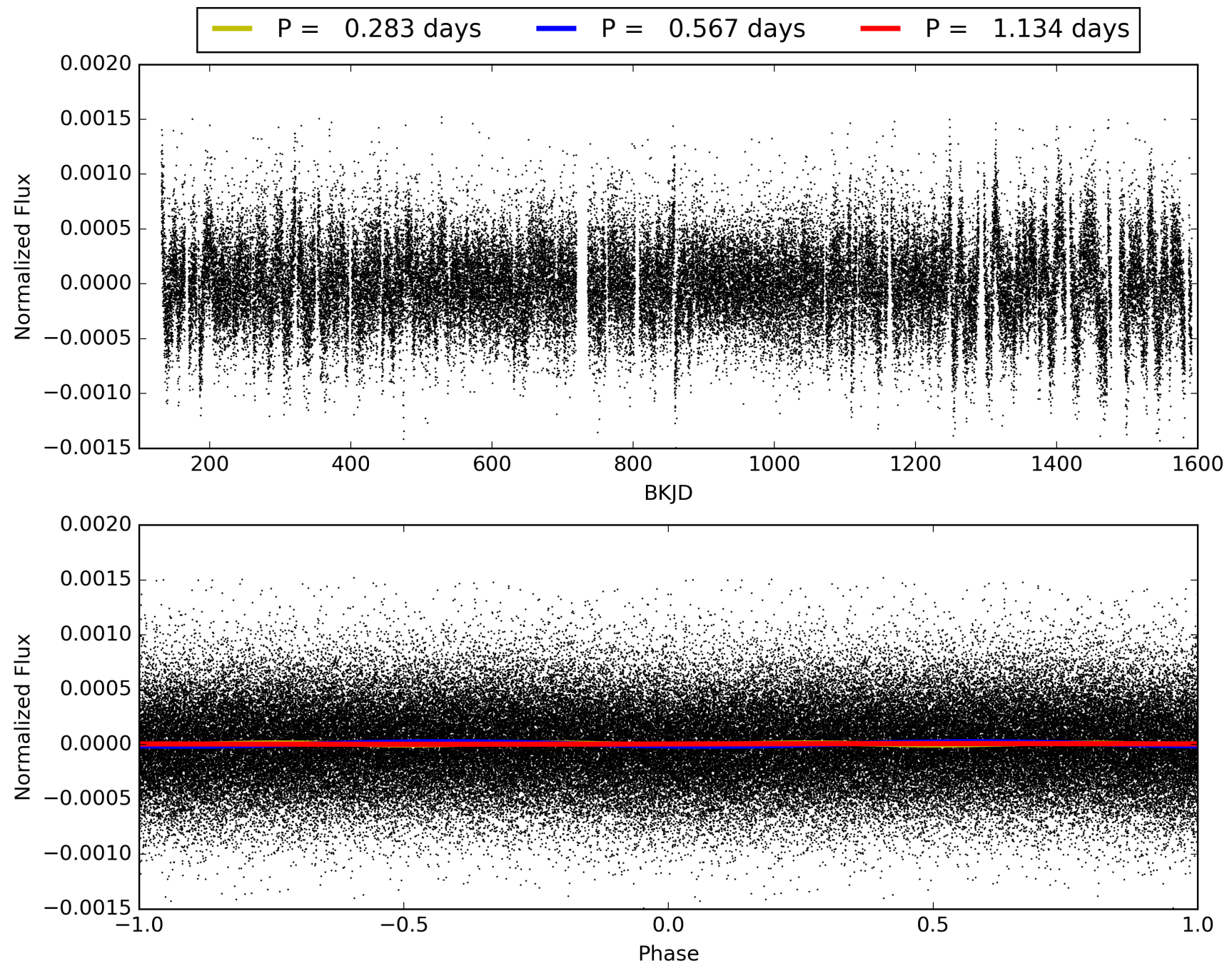
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007031824-01, PDC Light Curves



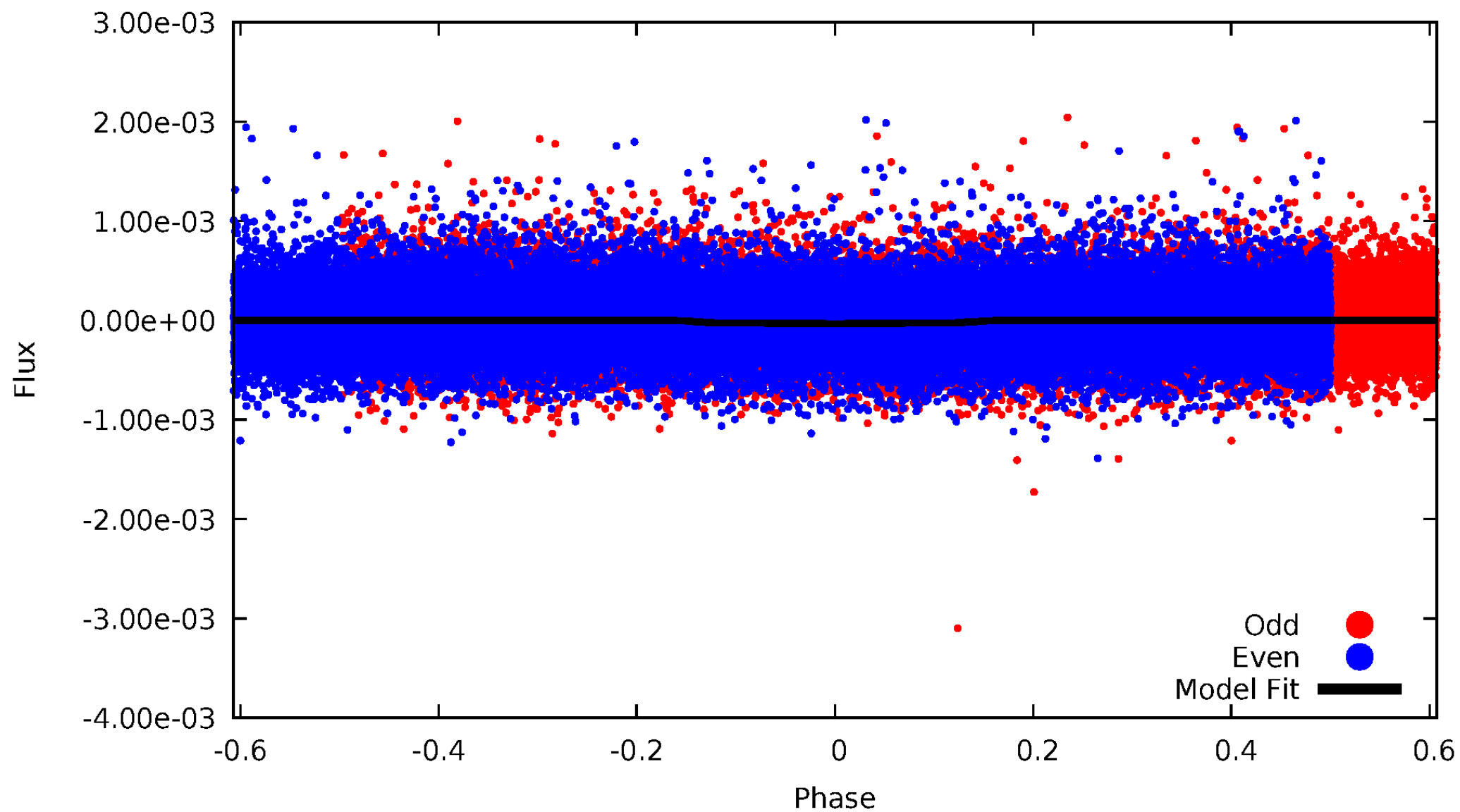


TCE 007031824-01



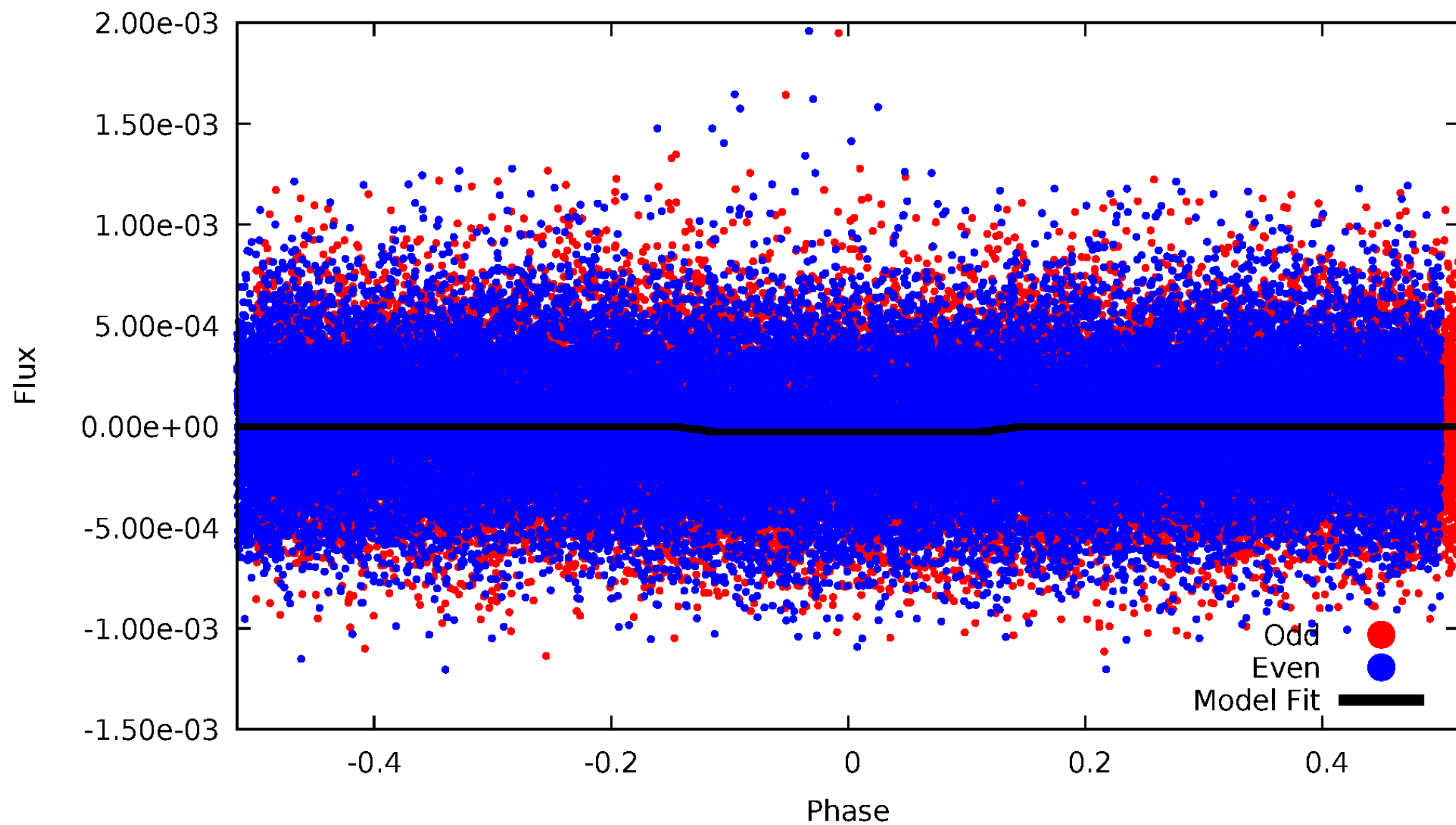
# DV Odd/Even

TCE 007031824-01



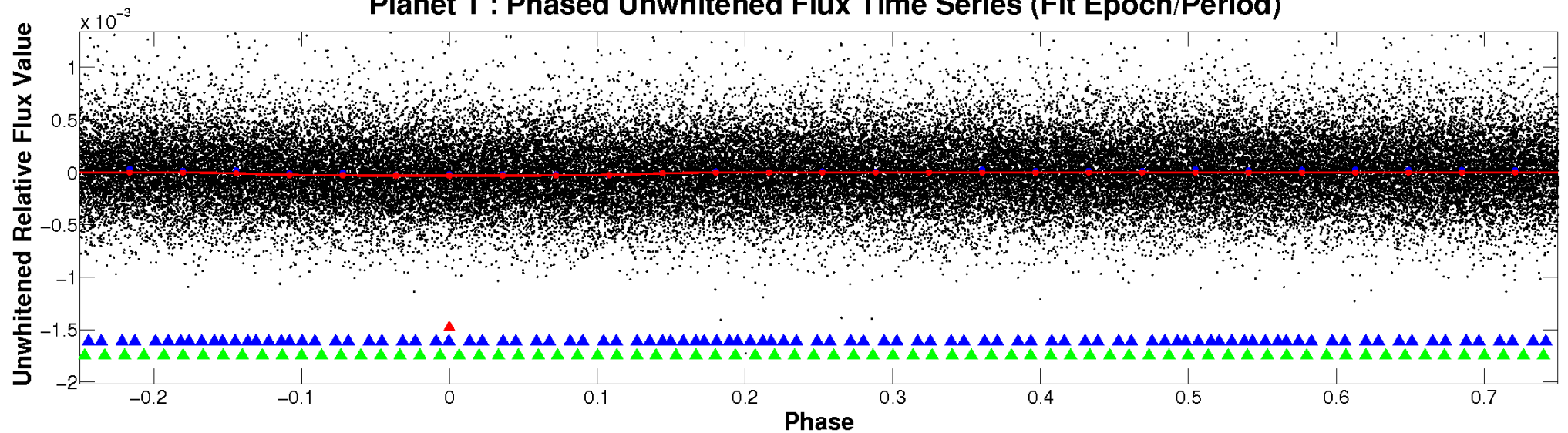
# ALT Odd/Even

TCE 007031824-01

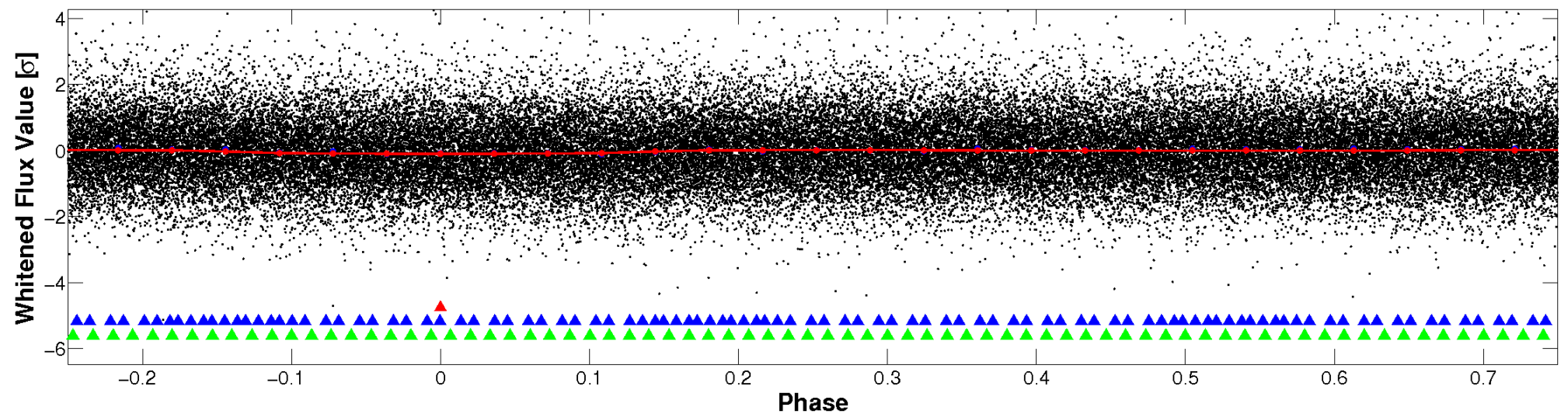


# Non-Whitened Vs. Whitened Light Curve

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



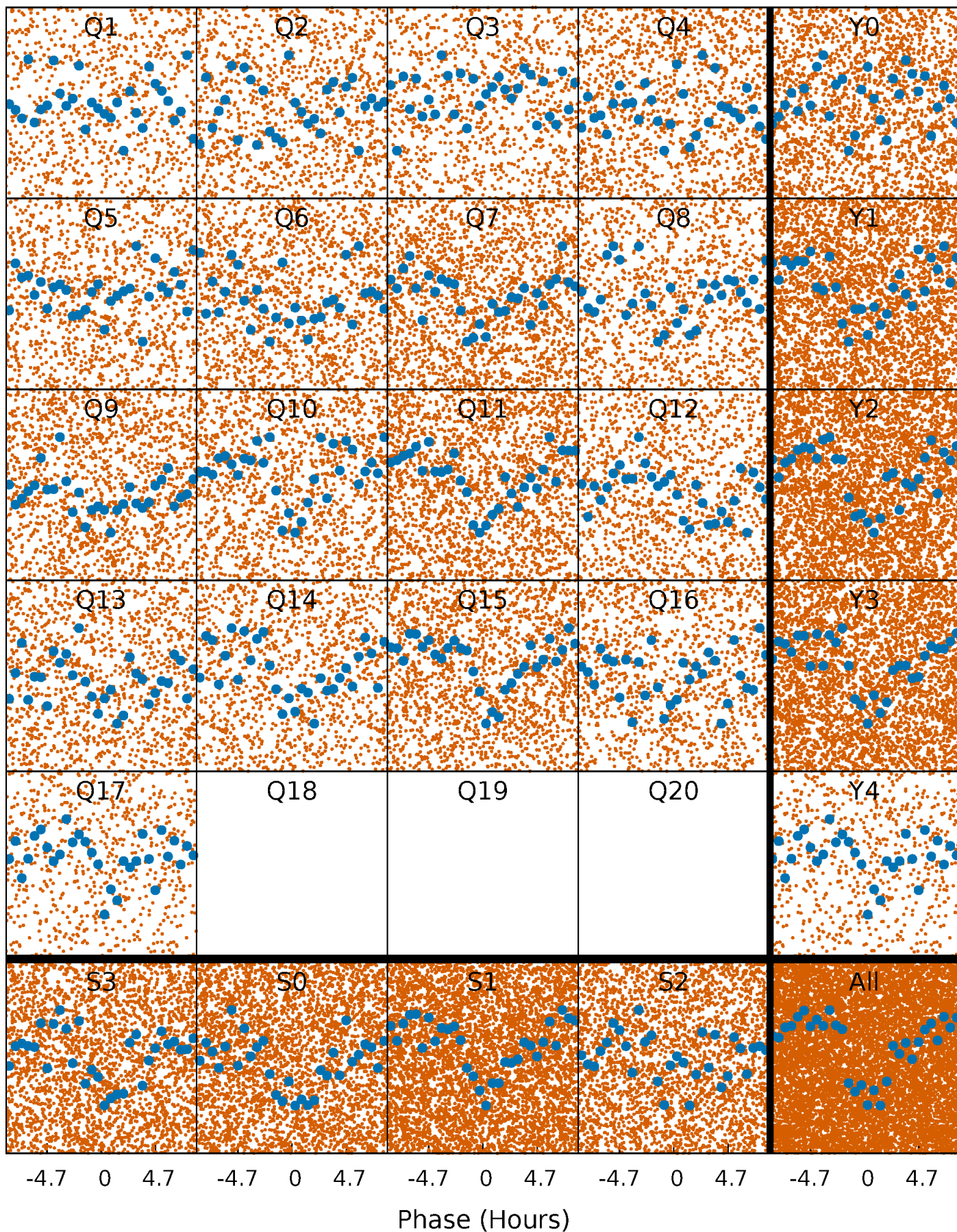
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

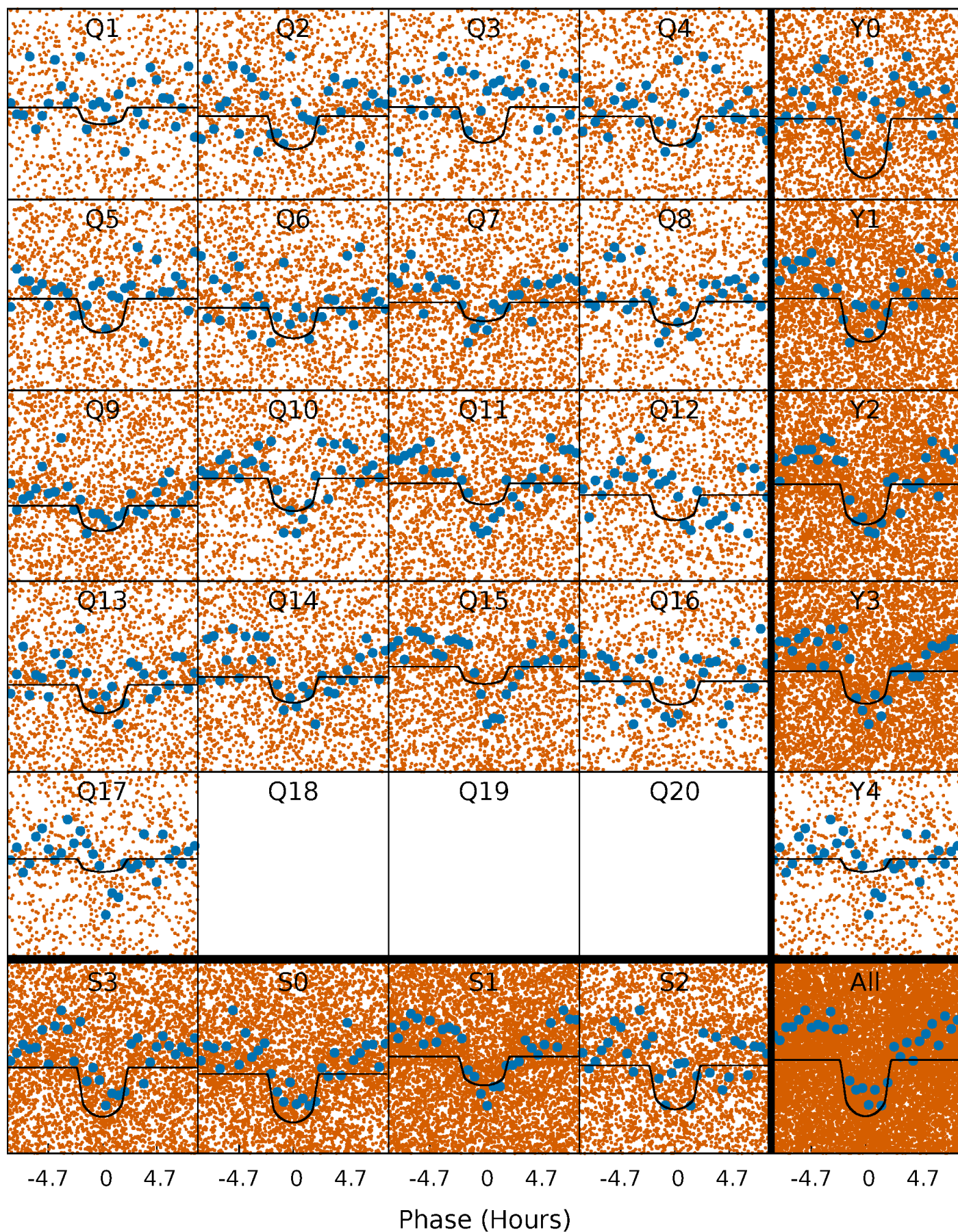
TCE 007031824-01 P= 0.566753 Days  $T_0=131.882582$  (BKJD)





# DV Quarter-Phased Transit Curves

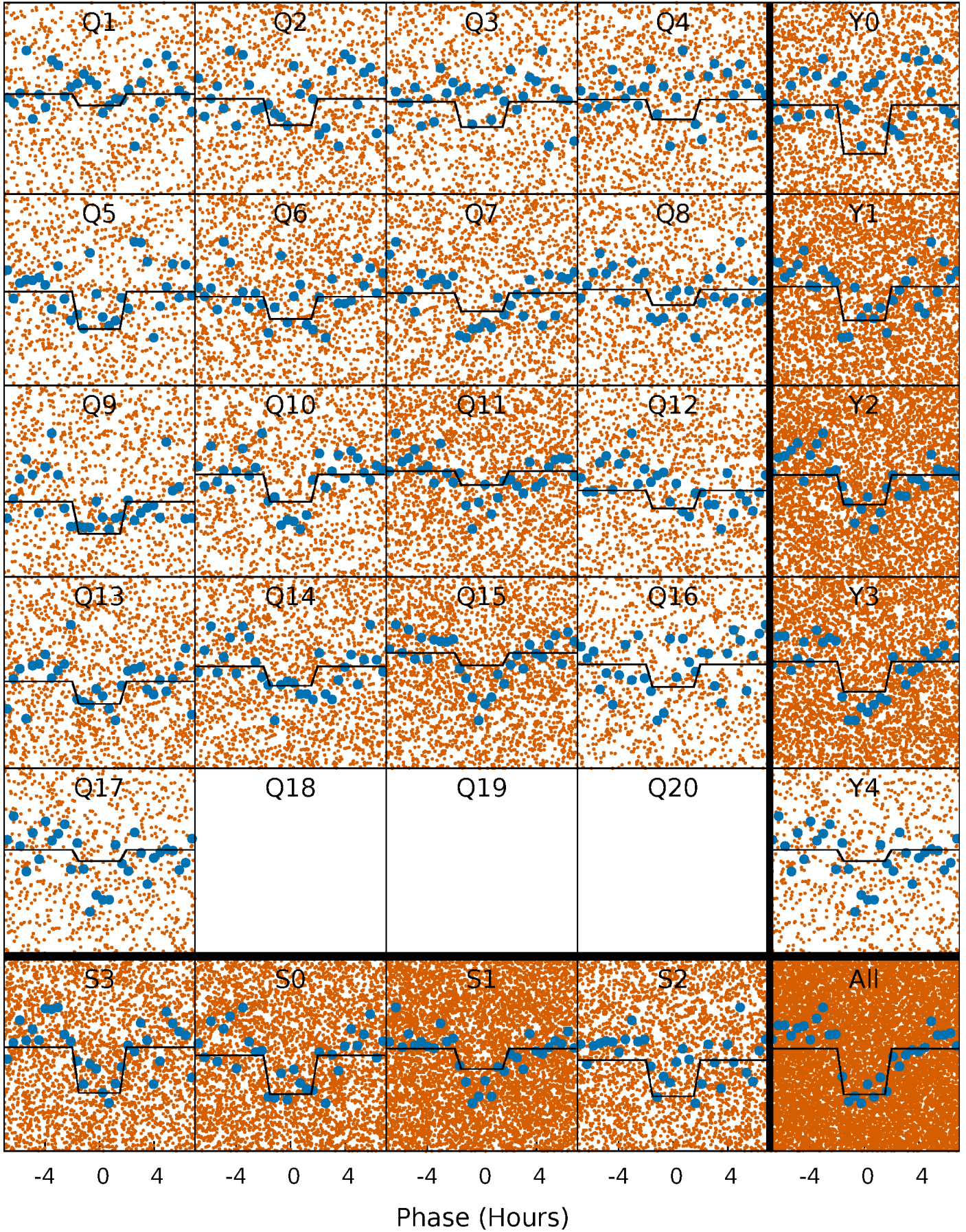
TCE 007031824-01 P= 0.566753 Days  $T_0=131.882582$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

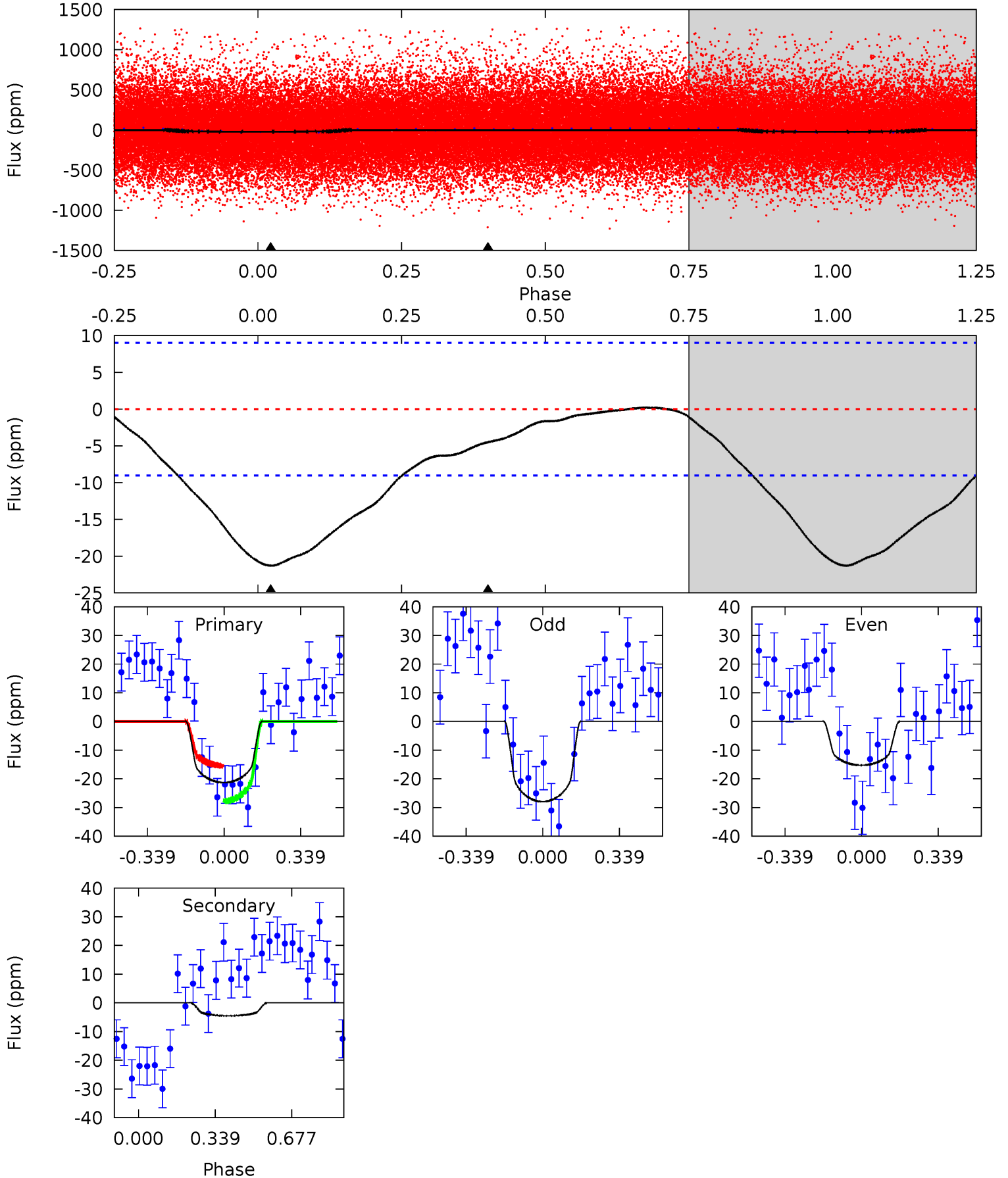
TCE 007031824-01 P= 0.566782 Days  $T_0=131.847903$  (BKJD)



# DV Model-Shift Uniqueness Test

007031824-01, P = 0.566753 Days, E = 131.315829 Days

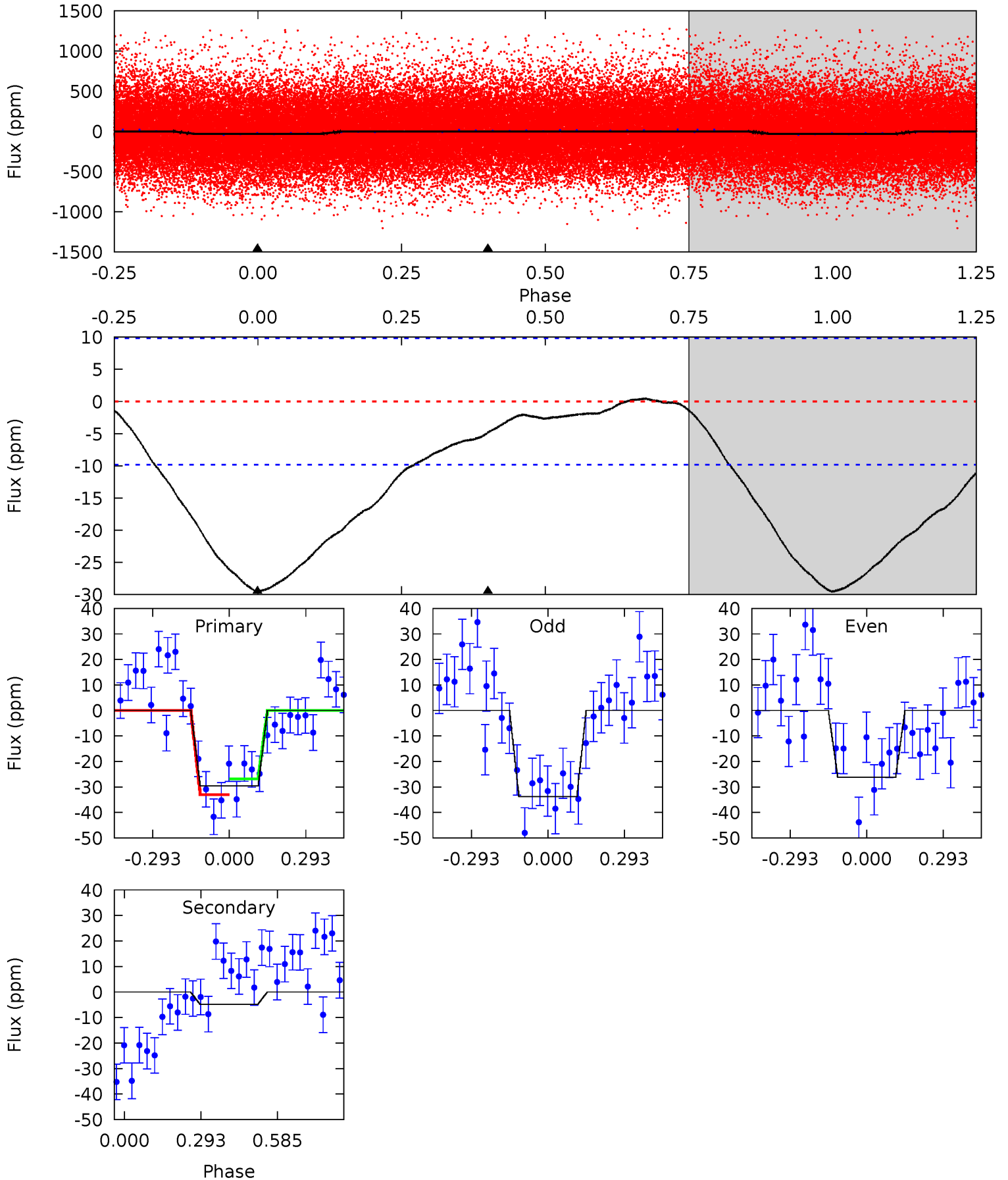
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	2.15	0	0	4.30	0.96	0.26	10.2	10.2	2.15	2.15	3.02	0.94	0.01	2.97



# Alt Model-Shift Uniqueness Test

007031824-01, P = 0.566782 Days, E = 131.281121 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
13.0	2.14	0	0	4.33	1.05	0.19	13.0	13.0	2.14	2.14	1.68	1.02	0.02	1.39





### Stellar Parameters For KIC 007031824

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5693^{+152}_{-169}$	$4.528^{+0.048}_{-0.192}$	$-0.020^{+0.250}_{-0.300}$	$0.886^{+0.259}_{-0.086}$	$0.965^{+0.104}_{-0.115}$	$1.956^{+0.471}_{-0.971}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-10%	+11%/-12%	+24%/-50%
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 007031824-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-5 \pm 2$	$0.65^{+0.40}_{-0.33}$	$2924^{+185}_{-123}$	$3421^{+1291}_{-5485}$	$0.957^{+3.379}_{-0.667}$
Alt.	$-5 \pm 2$	$0.58^{+0.38}_{-0.34}$	$2928^{+192}_{-135}$	$3709^{+1612}_{-1115}$	$1.311^{+5.519}_{-0.917}$

$T_{max}$  = 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

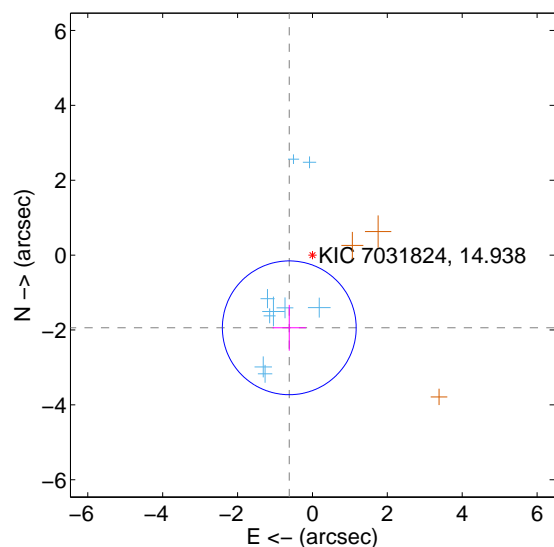
Supplemental centroid analysis for 007031824-01. Kepler magnitude: 14.94. Transit SNR 11.24

There are 9 quarters with good PRF difference image offsets

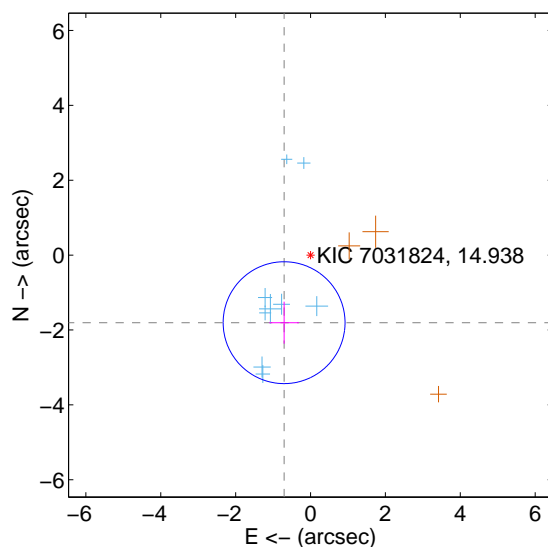
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.038 \pm 0.596$	$3.42$	$0.619 \pm 0.447$	$-1.942 \pm 0.612$
PRF-fit source offset from KIC position	$1.938 \pm 0.543$	$3.57$	$0.706 \pm 0.399$	$-1.805 \pm 0.560$
photometric centroid source offset	$2.00 \pm 1.13$	$1.77$	$0.12 \pm 1.17$	$-1.99 \pm 1.13$

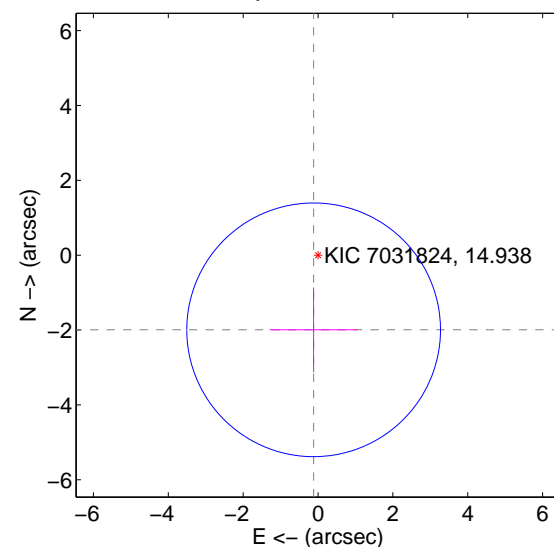
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

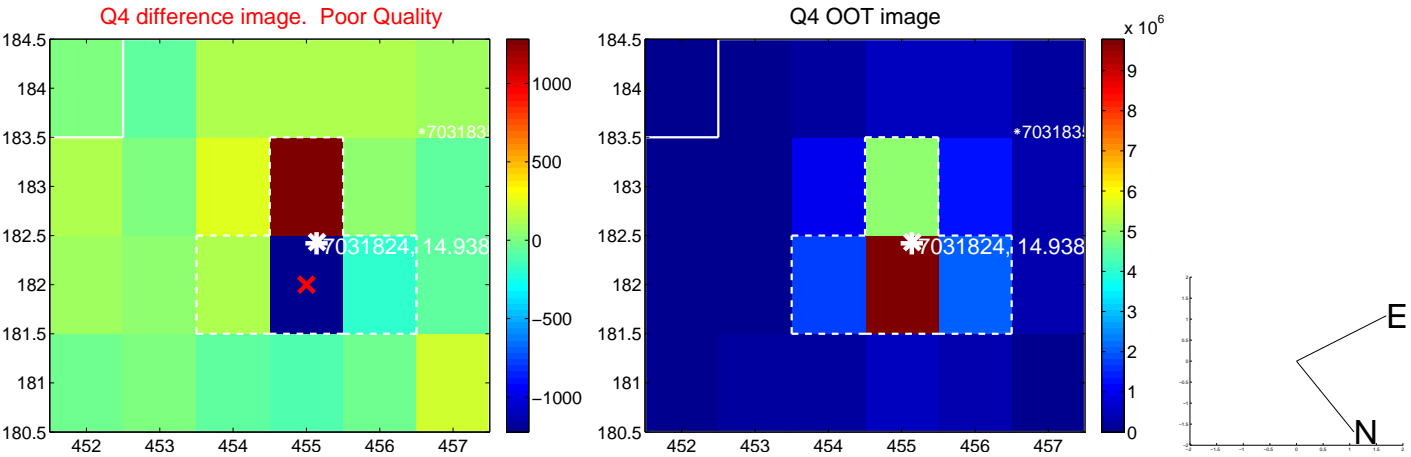
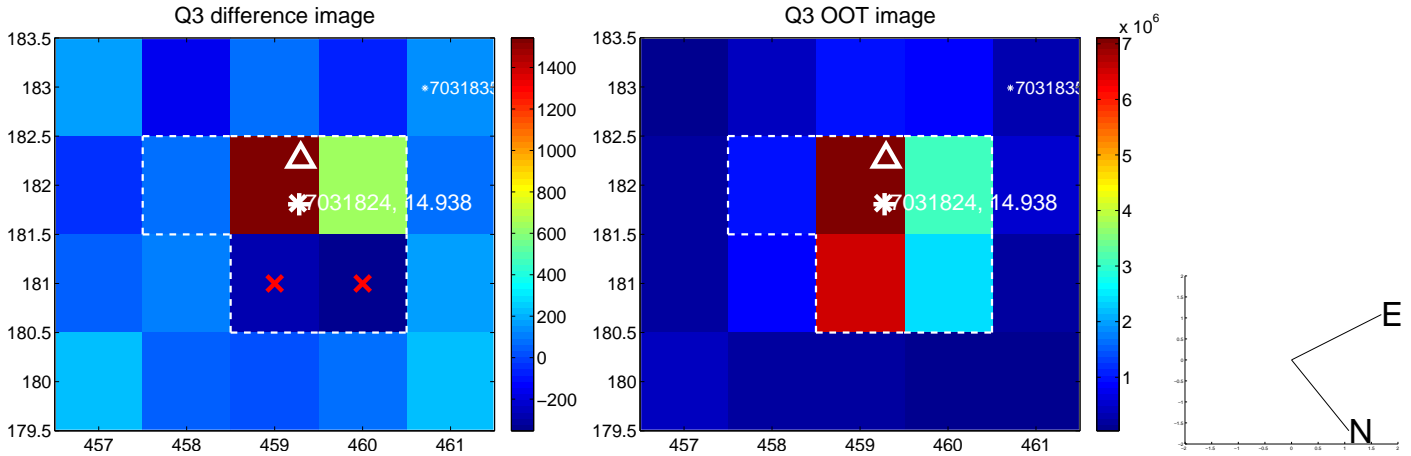
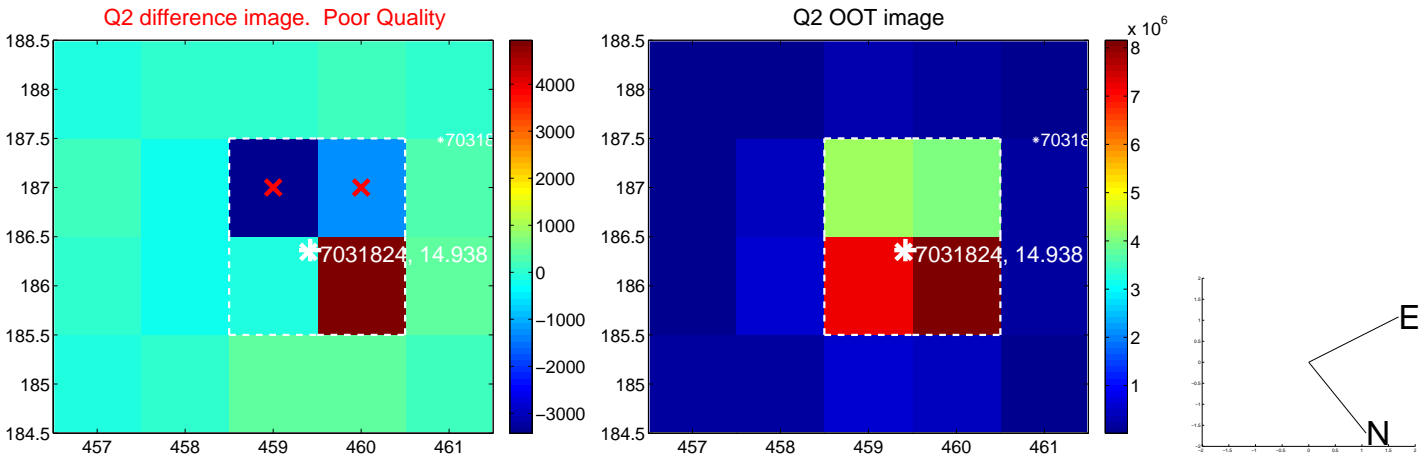
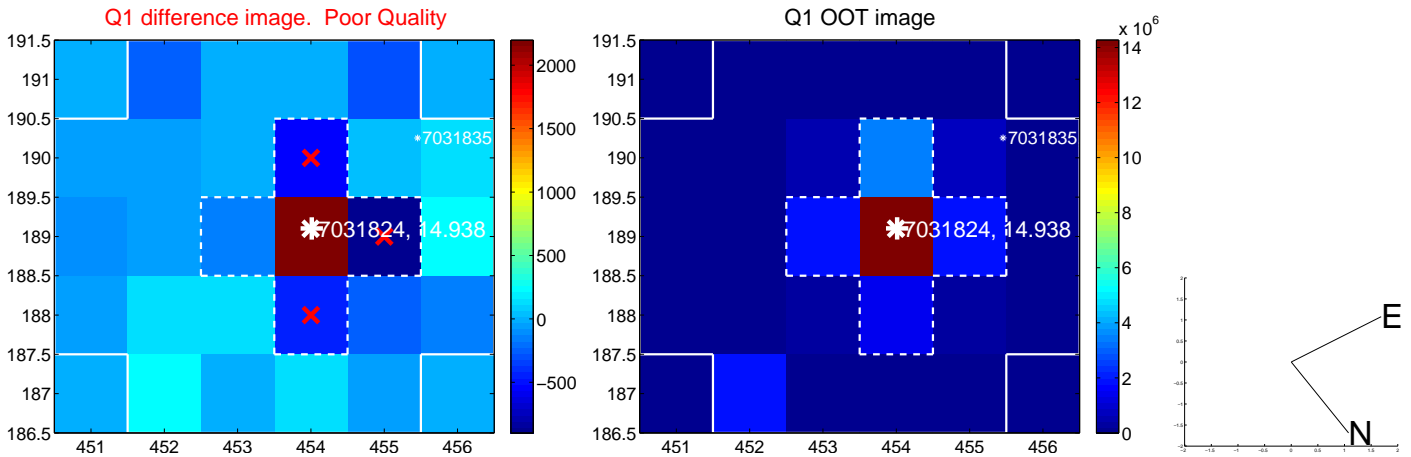


offset from photometric centroids

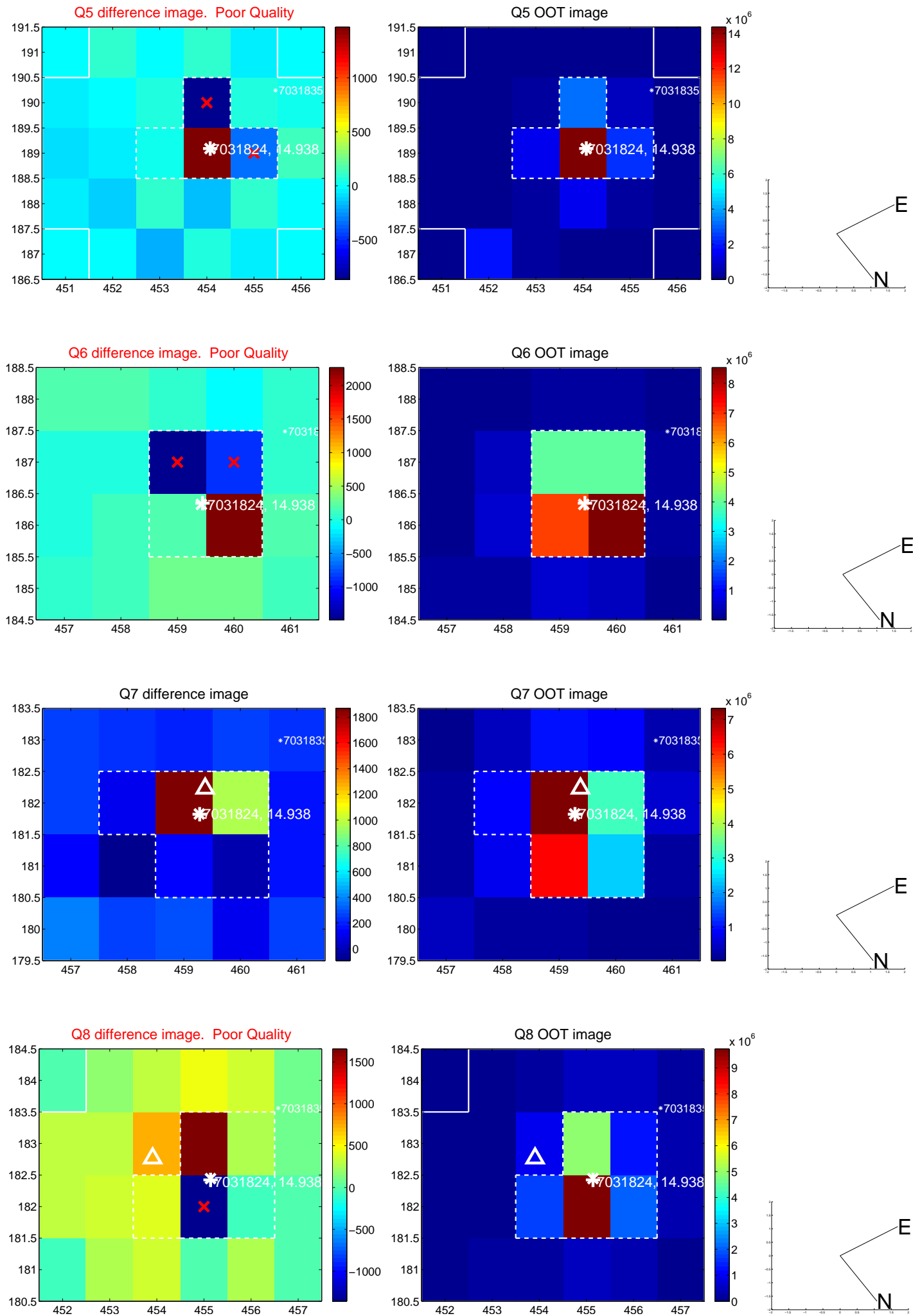


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

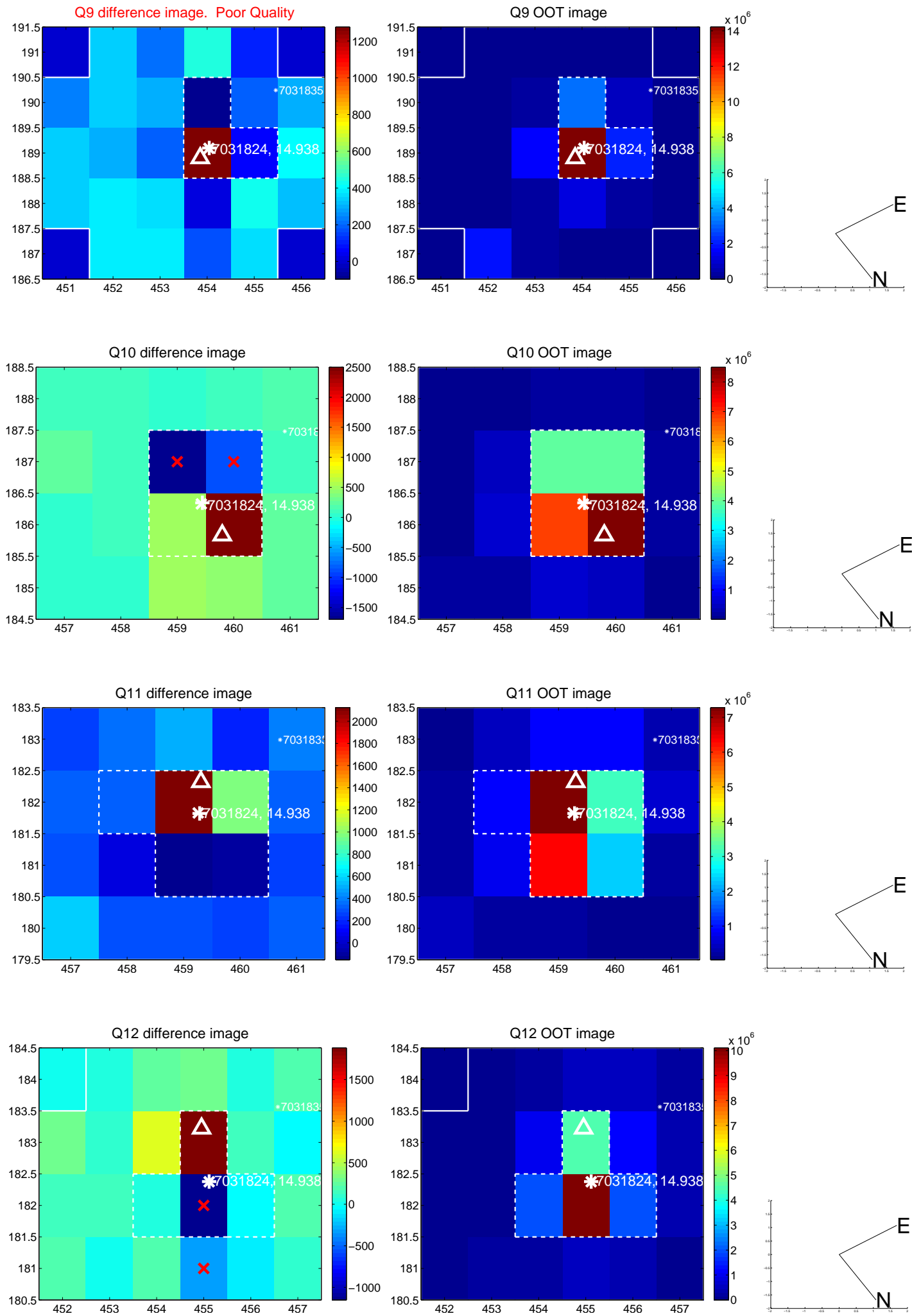


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

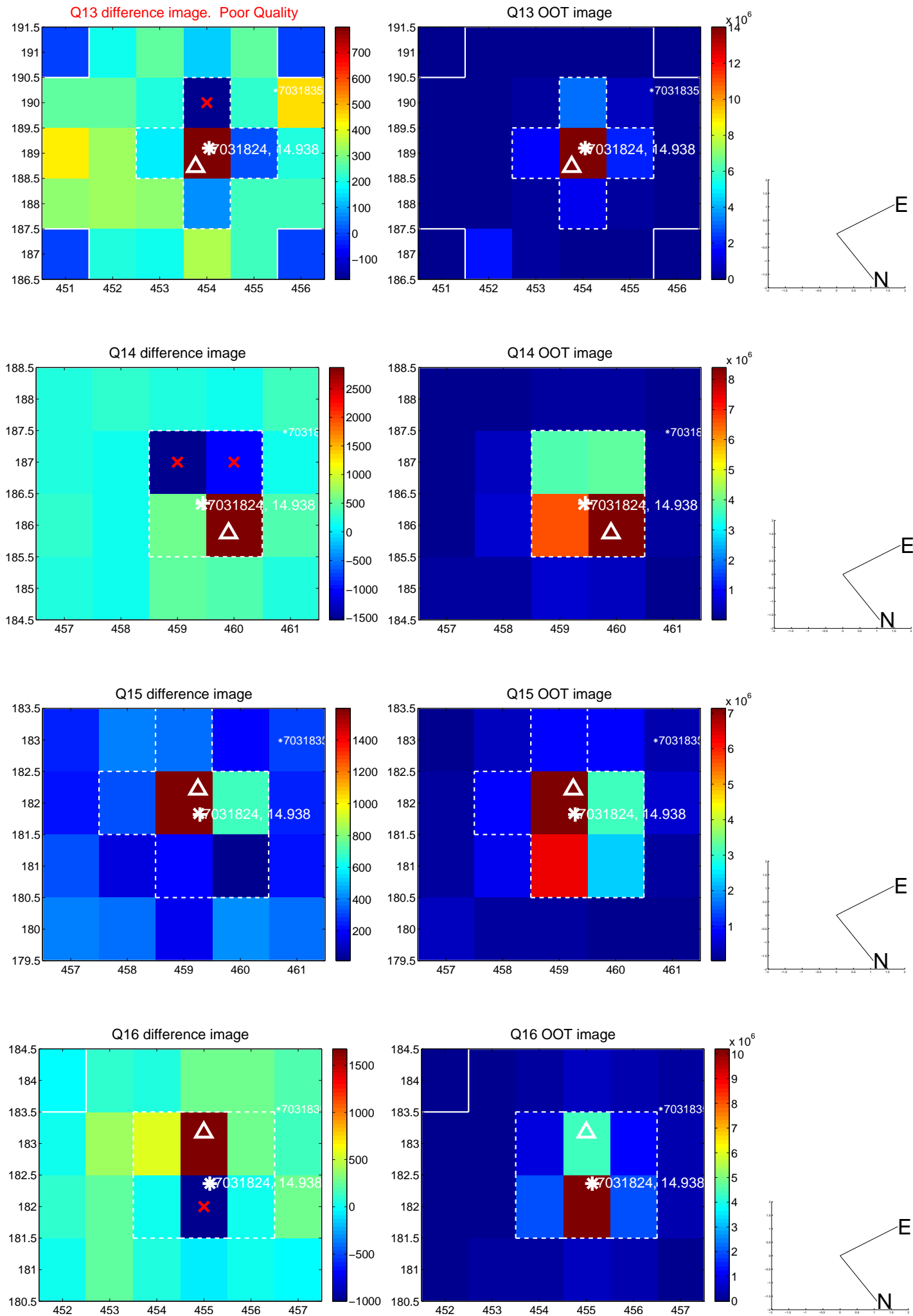




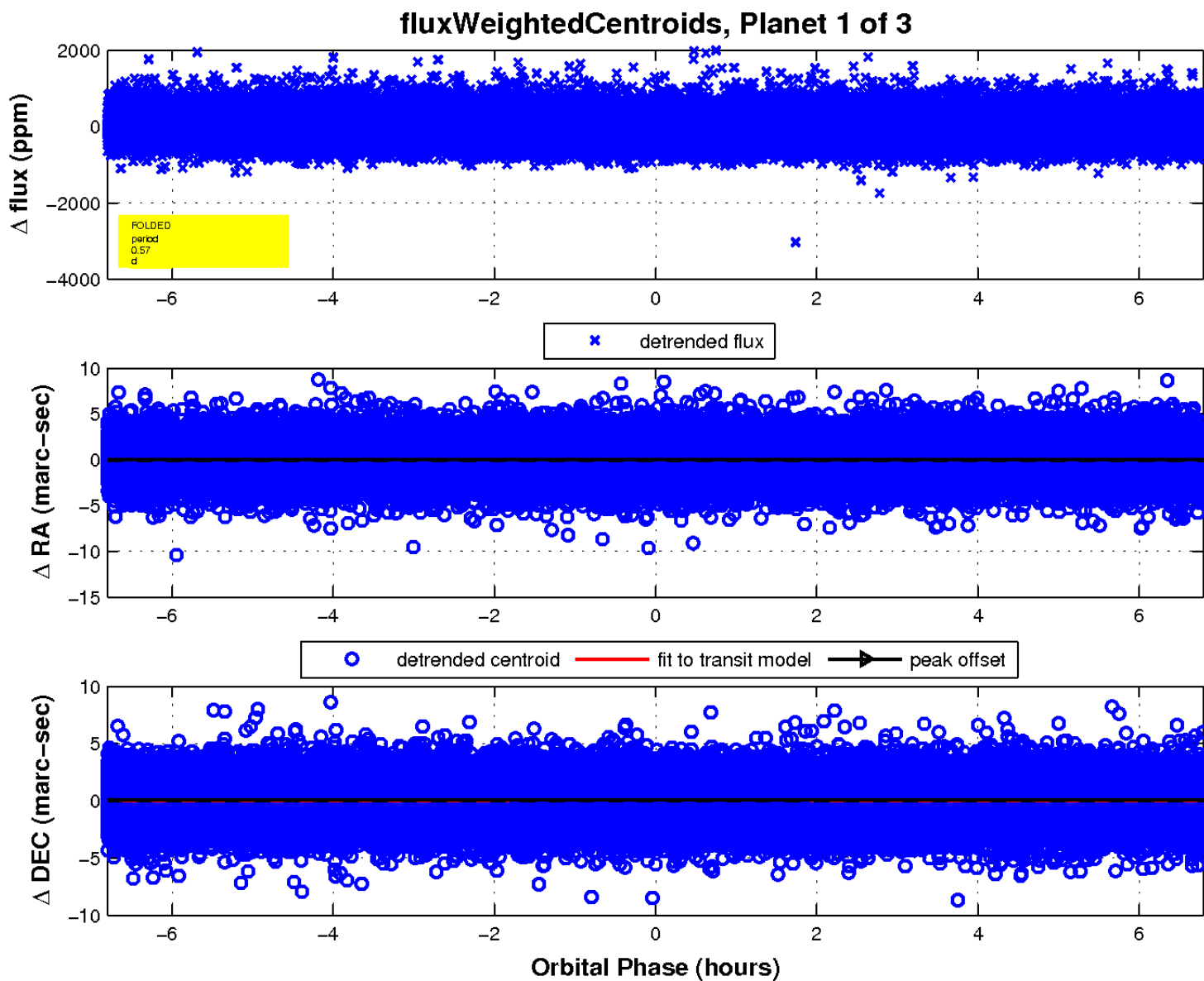
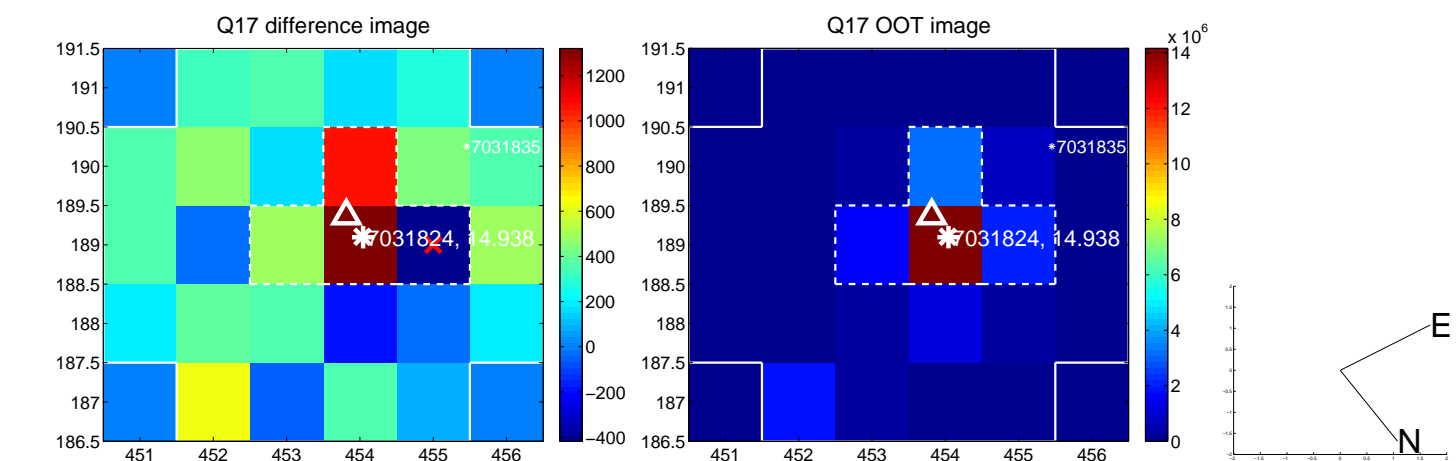
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

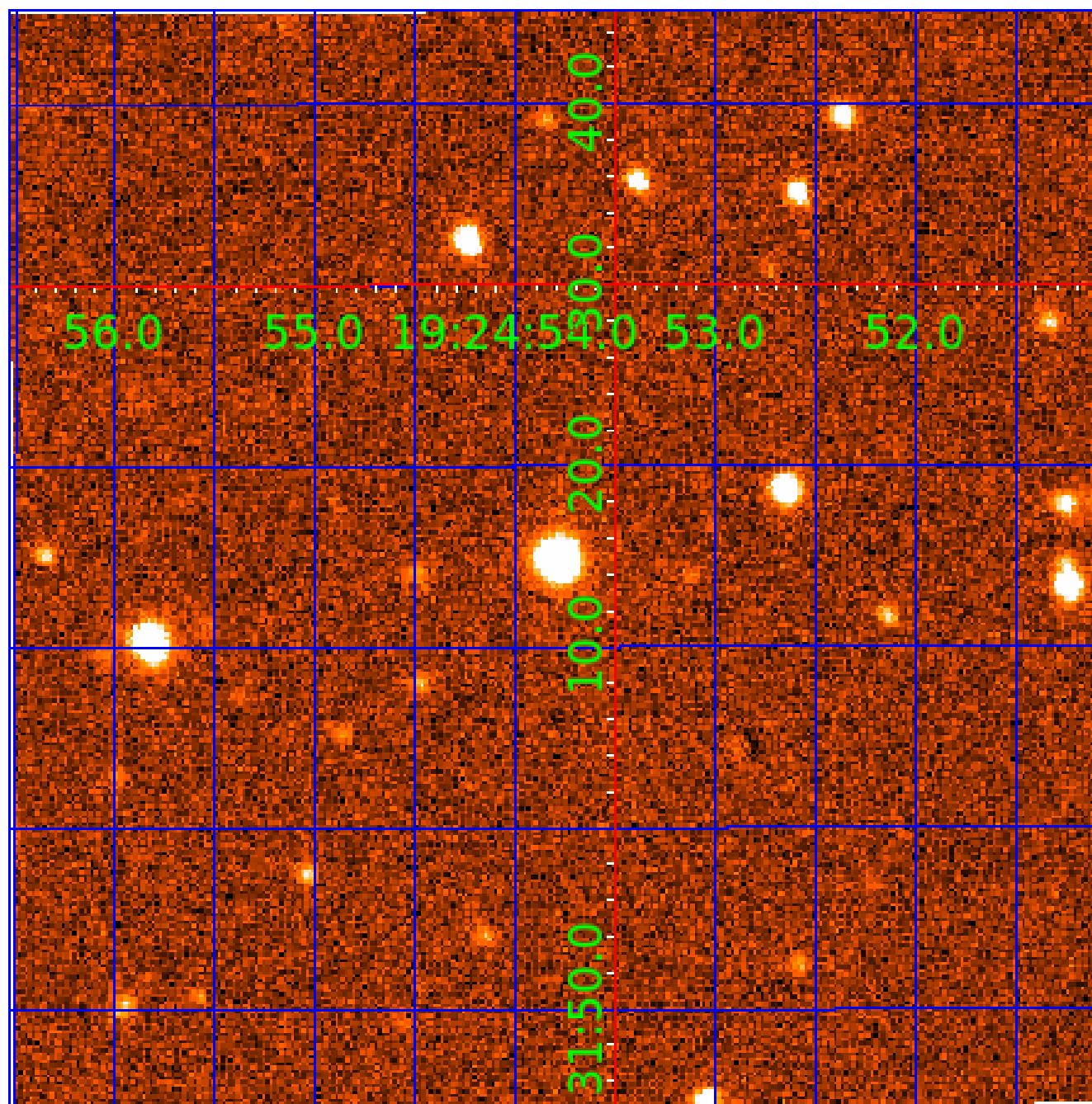


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007031824

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031824-01	OBS	No	0.566753	131.882582	32.1	4.128	8.0	11.2	0.89	5693	0.61	4207.49
007031824-02	OBS	No	14.550932	133.664559	1049.8	0.553	12.2	13.7	0.89	5693	3.29	55.55
007031824-03	OBS	No	19.330040	149.327420	493.1	1.372	11.0	11.3	0.89	5693	2.02	38.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031824-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007031824-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007031824-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

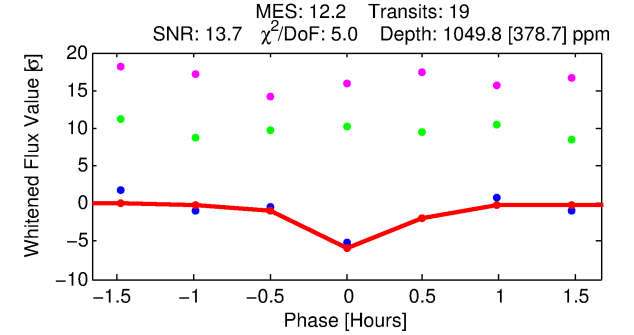
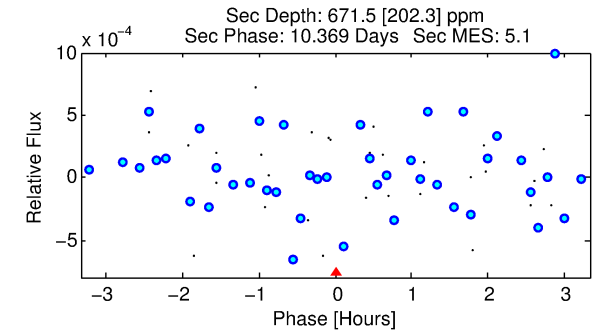
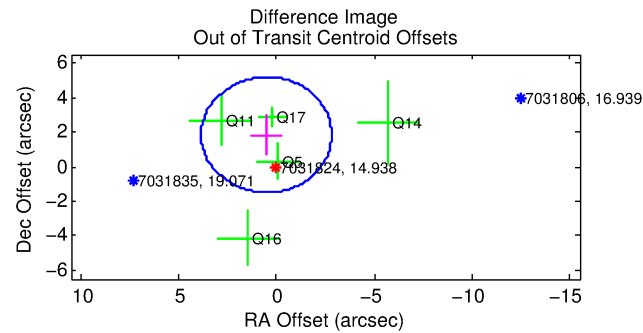
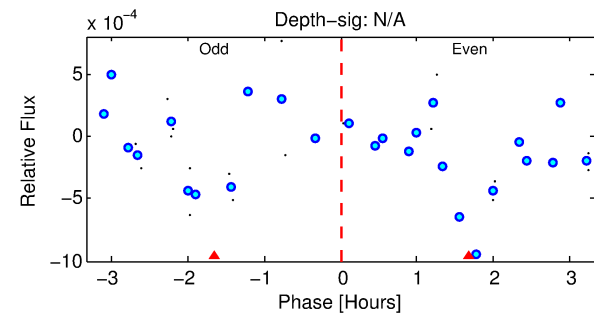
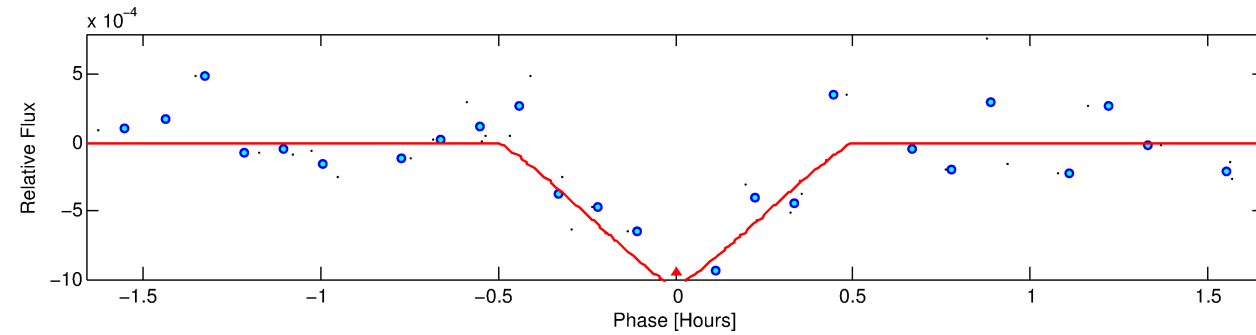
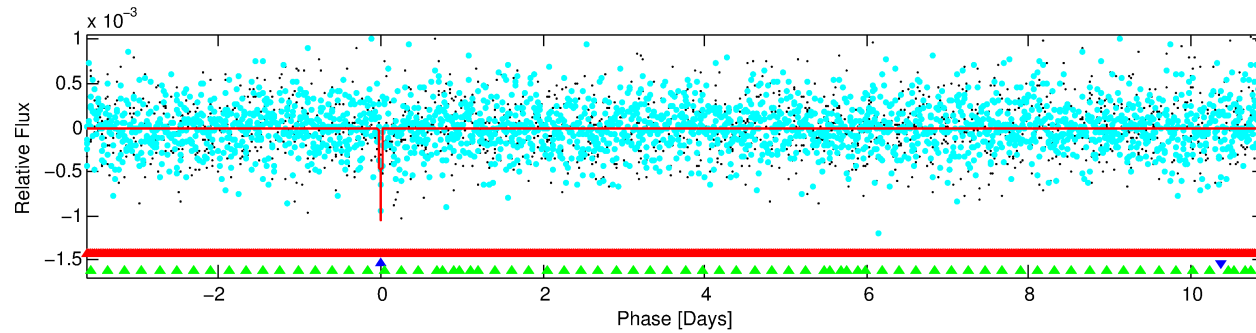
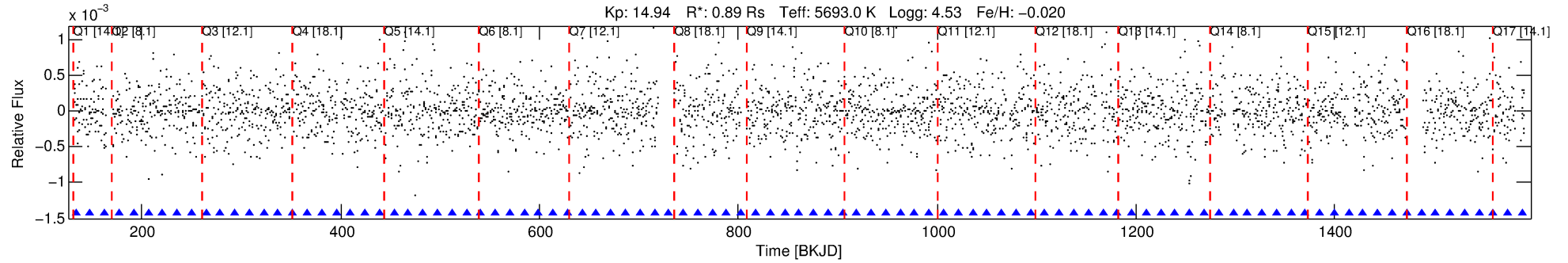
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007031824-02

No Significant Match Found

# DV One-Page Summary

KIC: 7031824 Candidate: 2 of 3 Period: 14.551 d



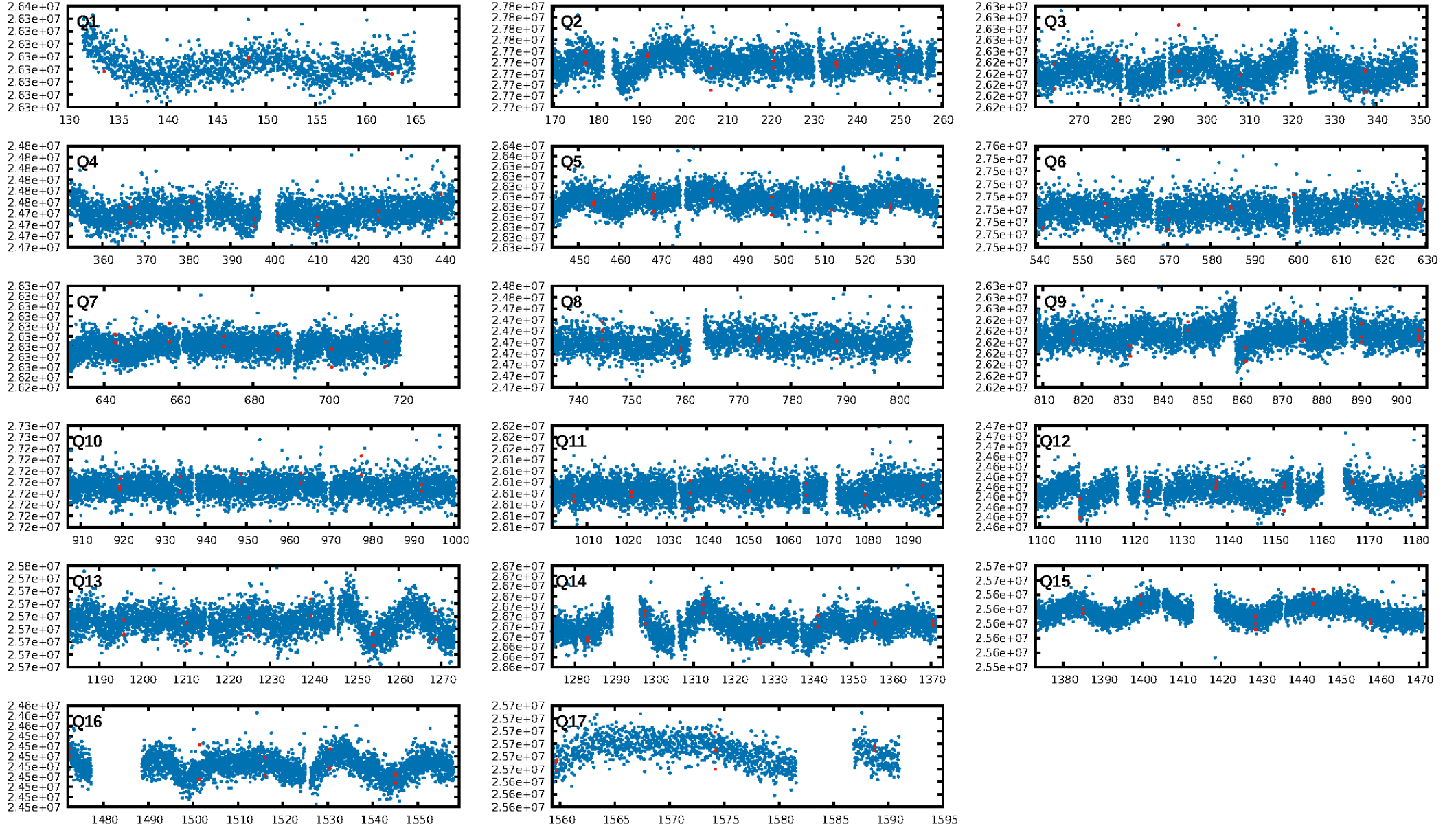
## DV Fit Results:

Period = 14.55093 [0.00007] d  
Epoch = 133.6646 [0.0033] BKJD  
Rp/R\* = 0.0341 [0.0267]  
a/R\* = 139.85 [433.36]  
b = 0.76 [1.71]  
Seff = 55.55 [20.71]  
Teff = 696 [65] K  
Rp = 3.29 [2.75] Re  
a = 0.1153 [0.0282] AU  
Ag = 453.27 [741.09] [0.61σ]  
Teffp = 4966 [1987] K [2.15σ]

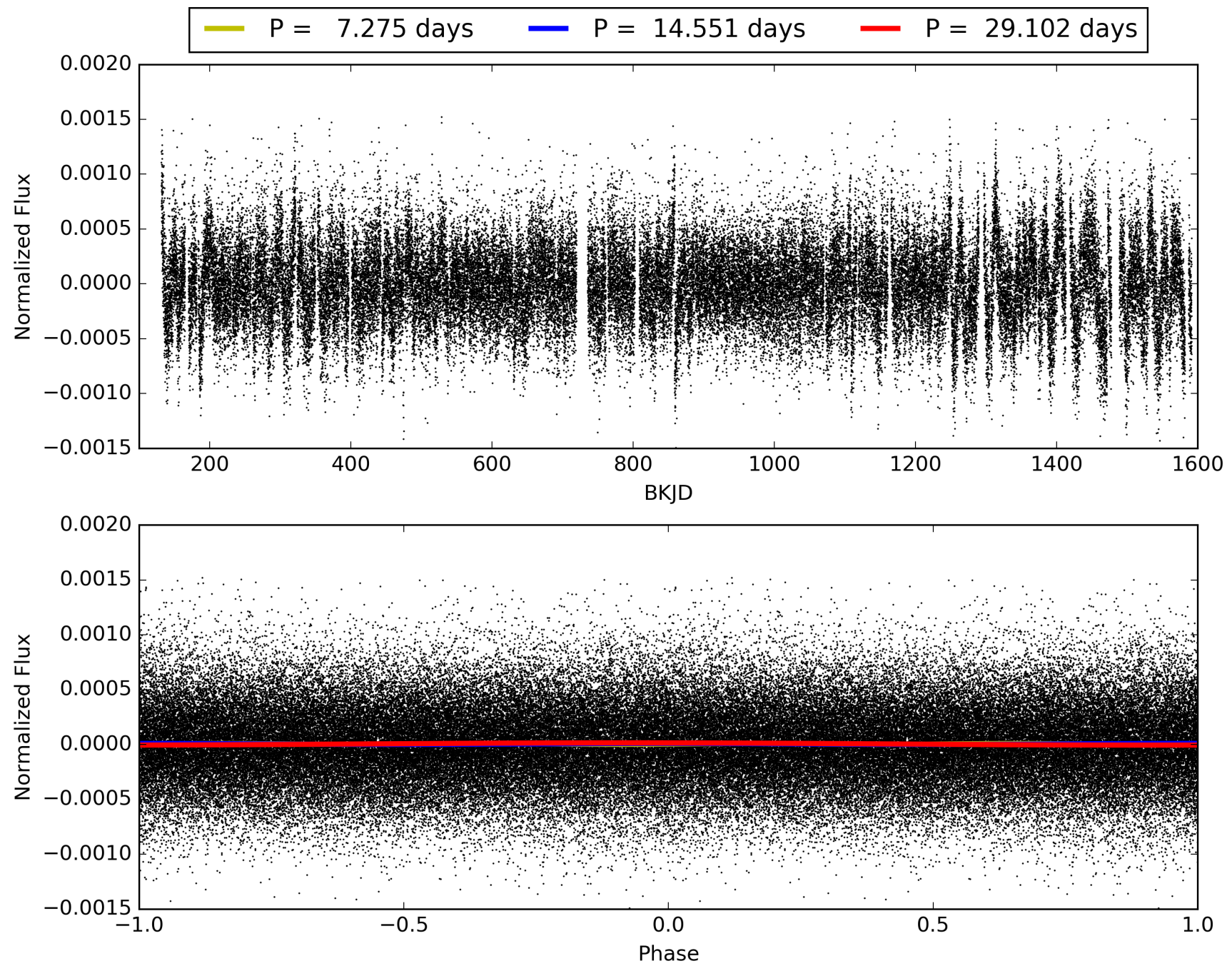
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [80.59σ]  
LongPeriod-sig: 100.0% [77.54σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 2.0%  
Bootstrap-pfa: 2.05e-13  
RollingBand-fgt: 1.00 [17/17]  
GhostDiagnostic-chr: 4.193  
Centroid-sig: 0.2%  
Centroid-so: 1.462 arcsec [2.90σ]  
OotOffset-rm: 1.911 arcsec [1.72σ]  
KicOffset-rm: 1.943 arcsec [1.74σ]  
OotOffset-st: 1/1/1/2 [5]  
KicOffset-st: 1/1/1/2 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 0.00 [0/15]

# TCE 007031824-02, PDC Light Curves



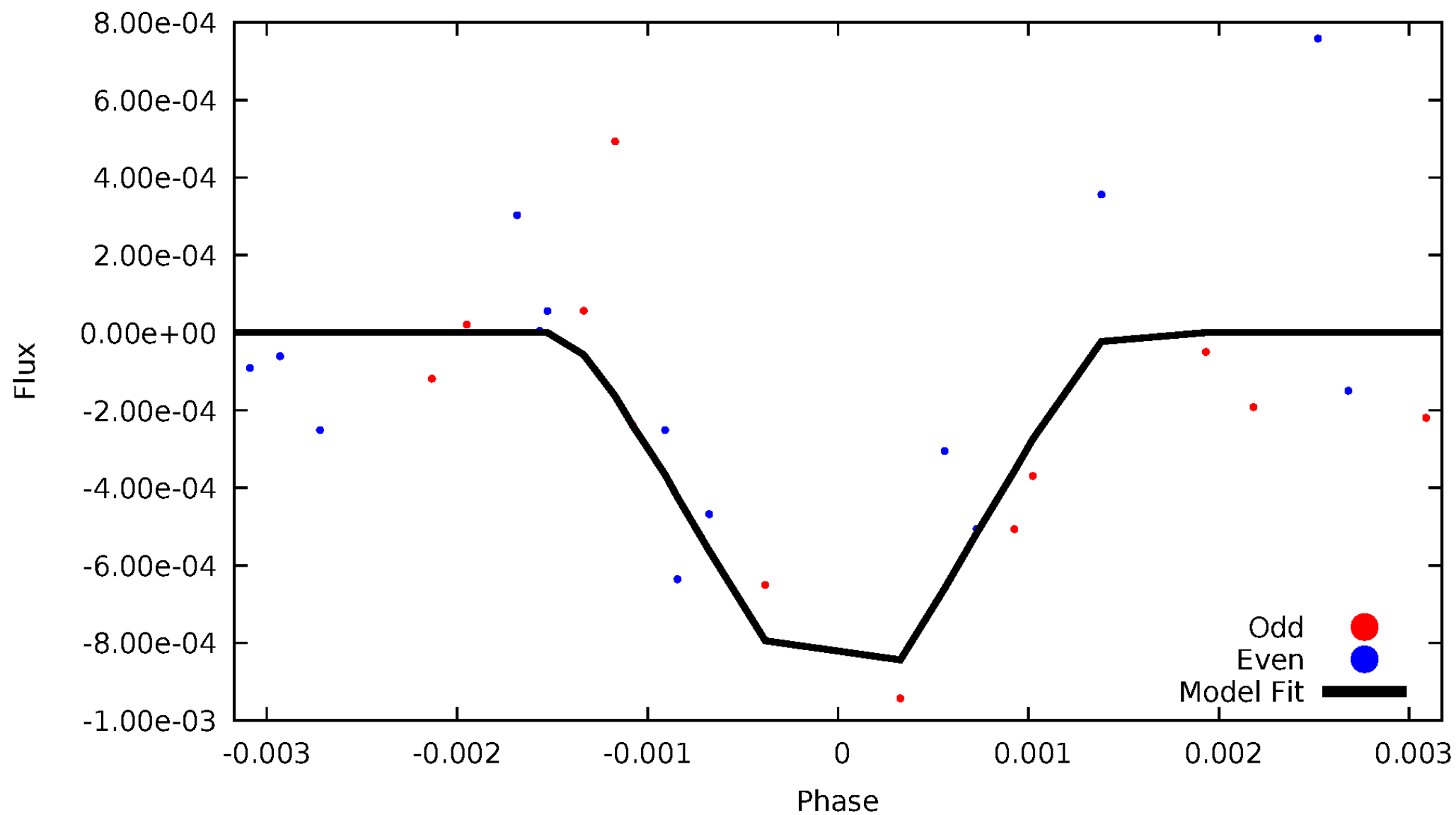
TCE 007031824-02





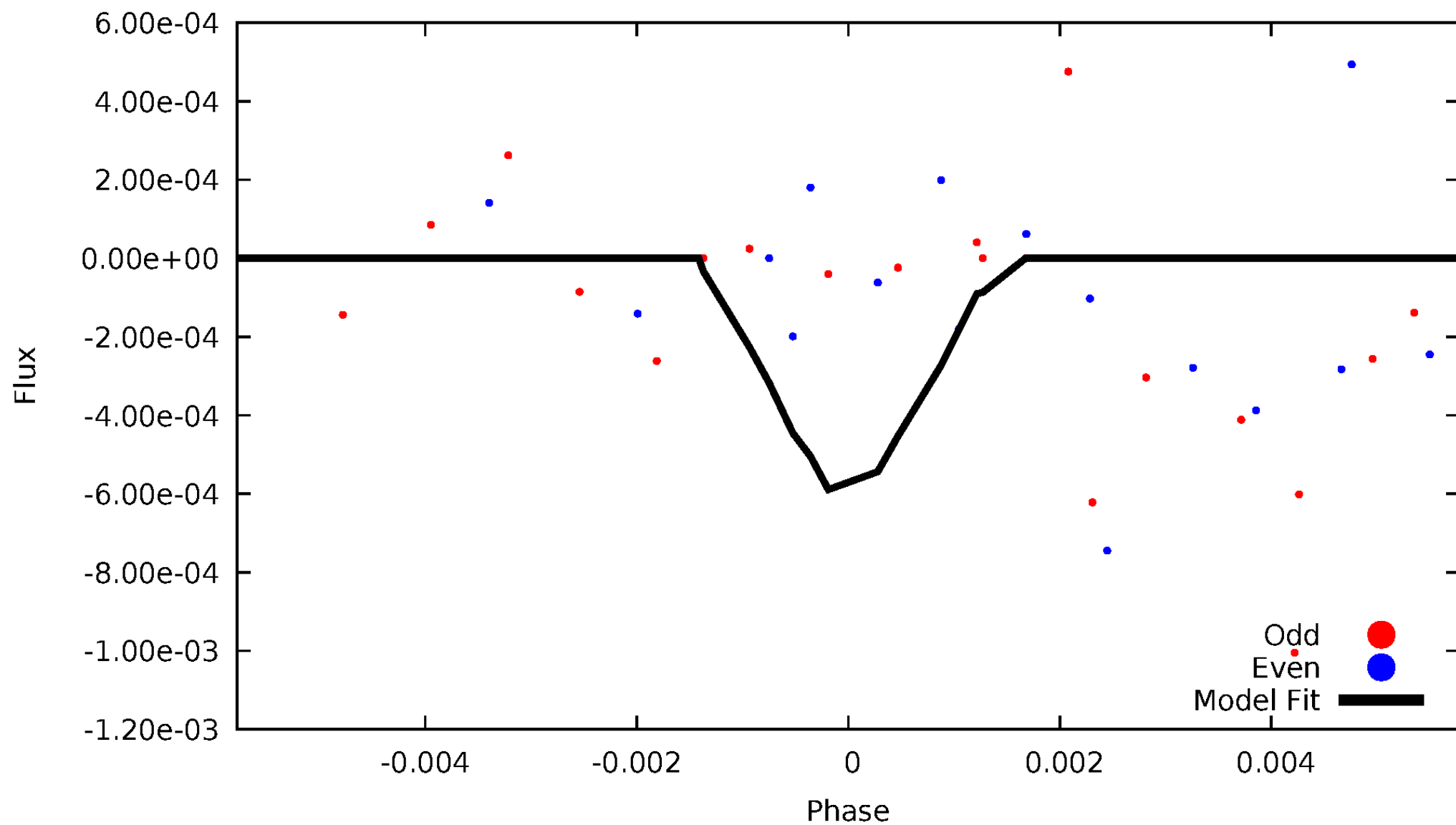
# DV Odd/Even

TCE 007031824-02



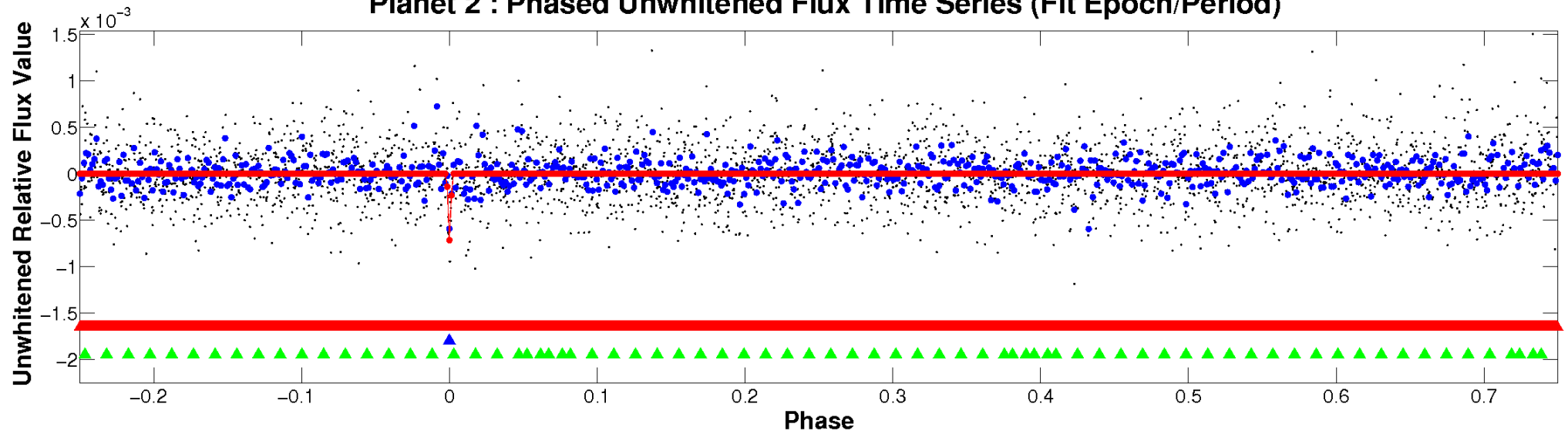
# ALT Odd/Even

TCE 007031824-02

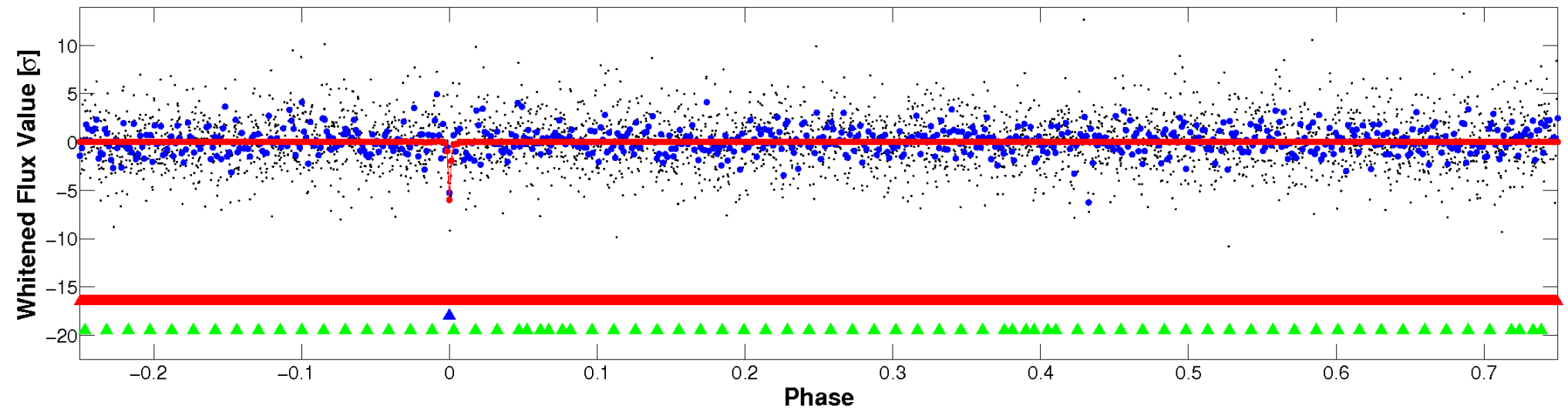


# Non-Whitened Vs. Whitened Light Curve

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

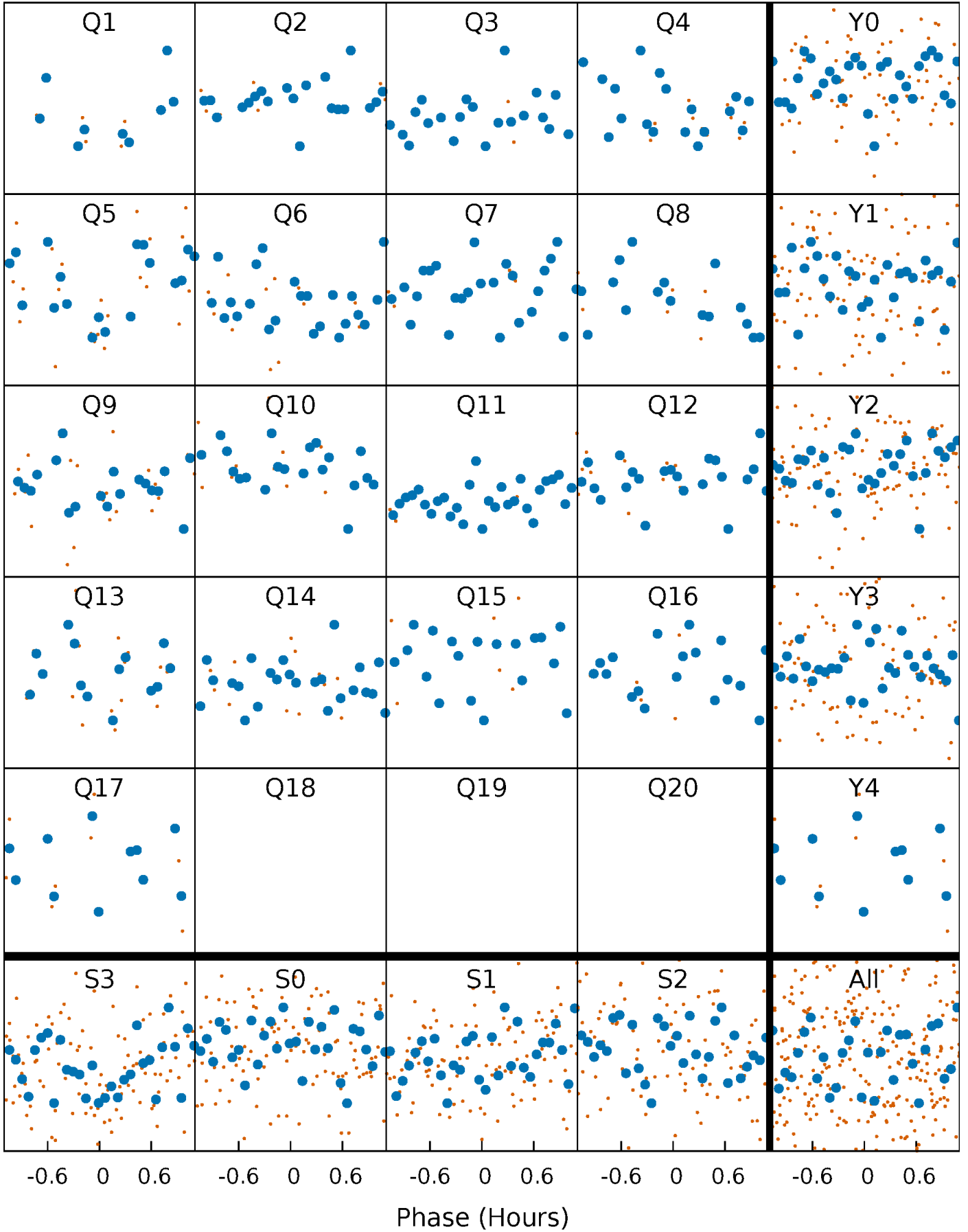


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



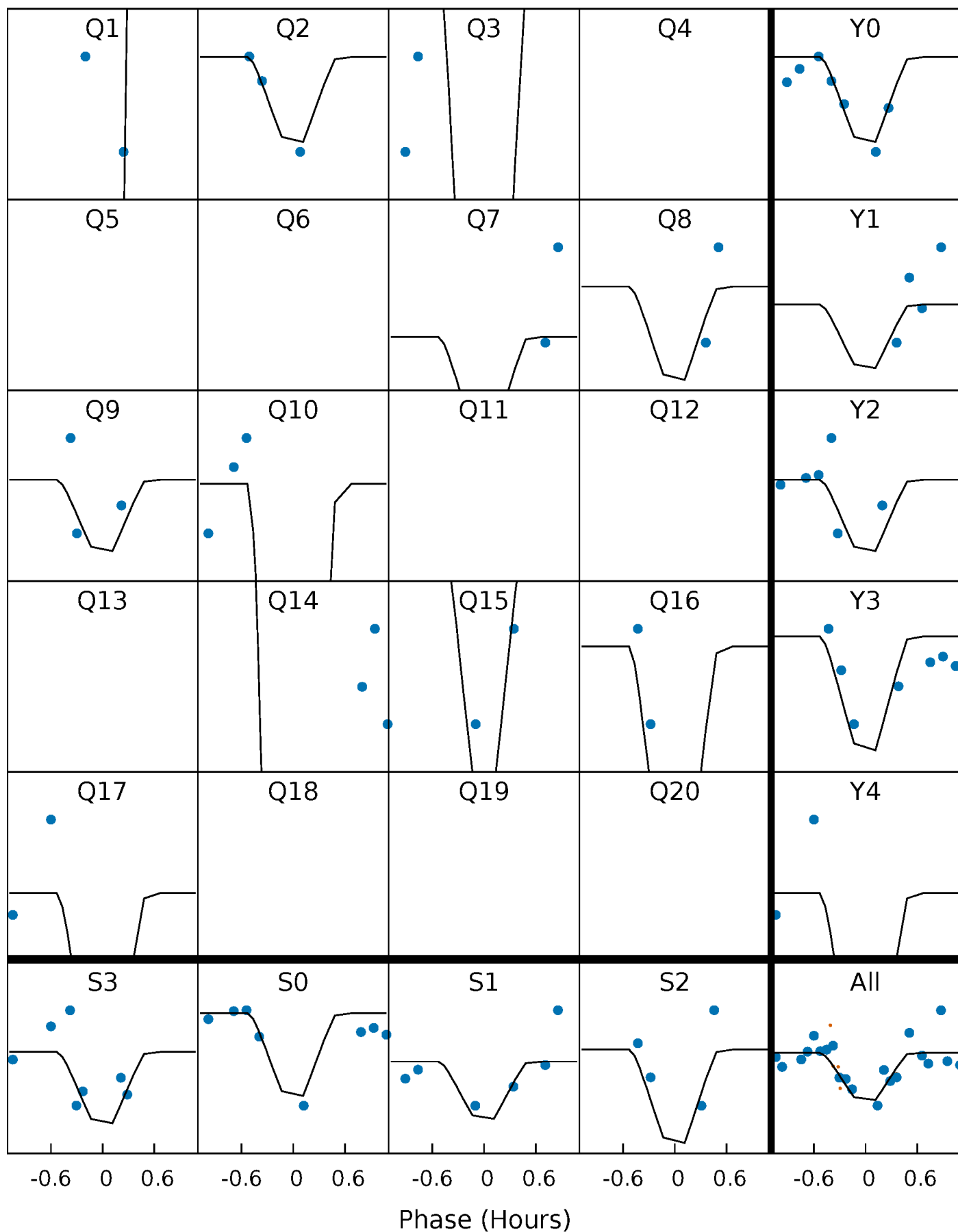
# PDC Quarter-Phased Transit Curves

TCE 007031824-02 P= 14.550932 Days  $T_0=133.664559$  (BKJD)



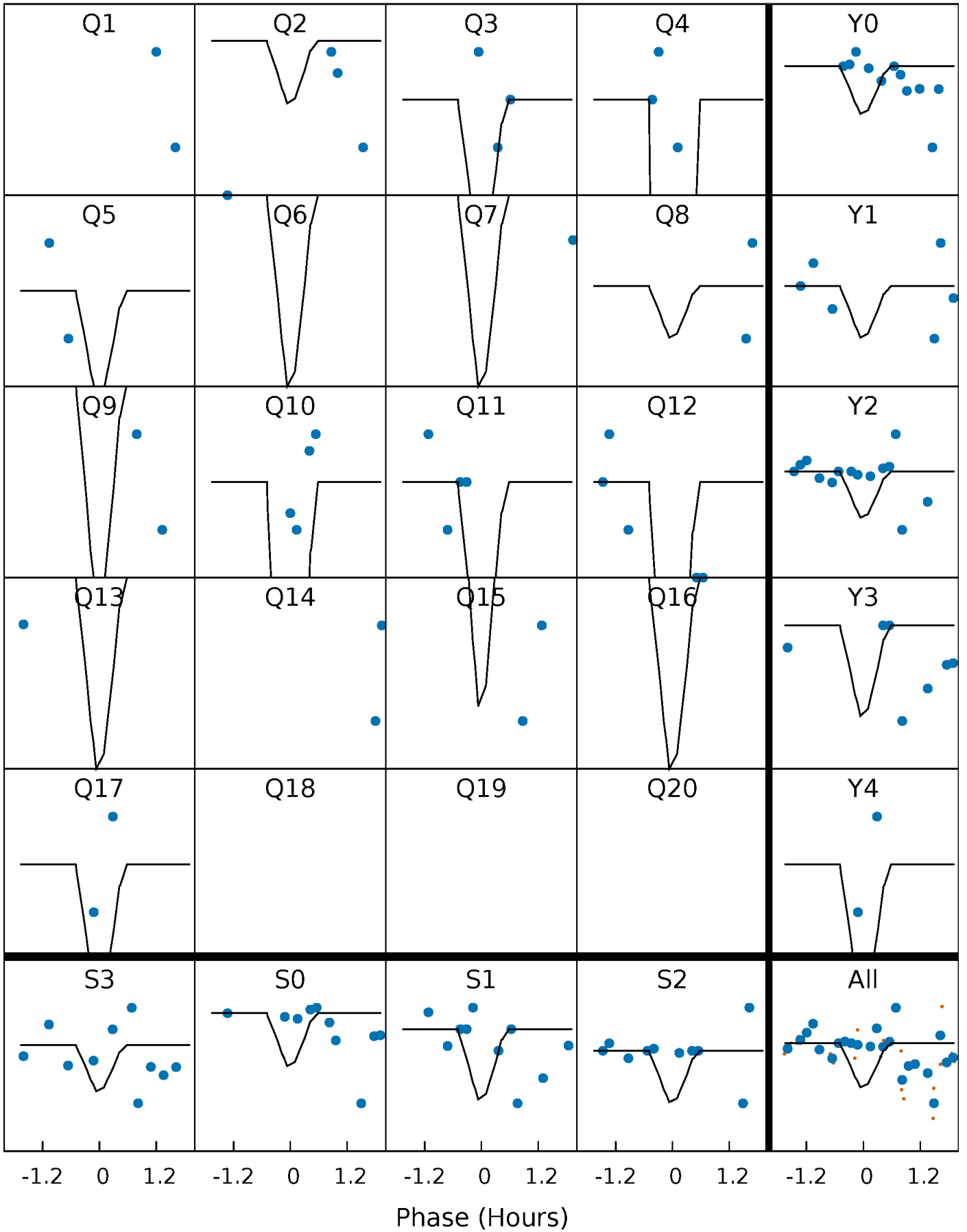
# DV Quarter-Phased Transit Curves

TCE 007031824-02 P= 14.550932 Days  $T_0=133.664559$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007031824-02 P= 14.551135 Days  $T_0=133.606907$  (BKJD)

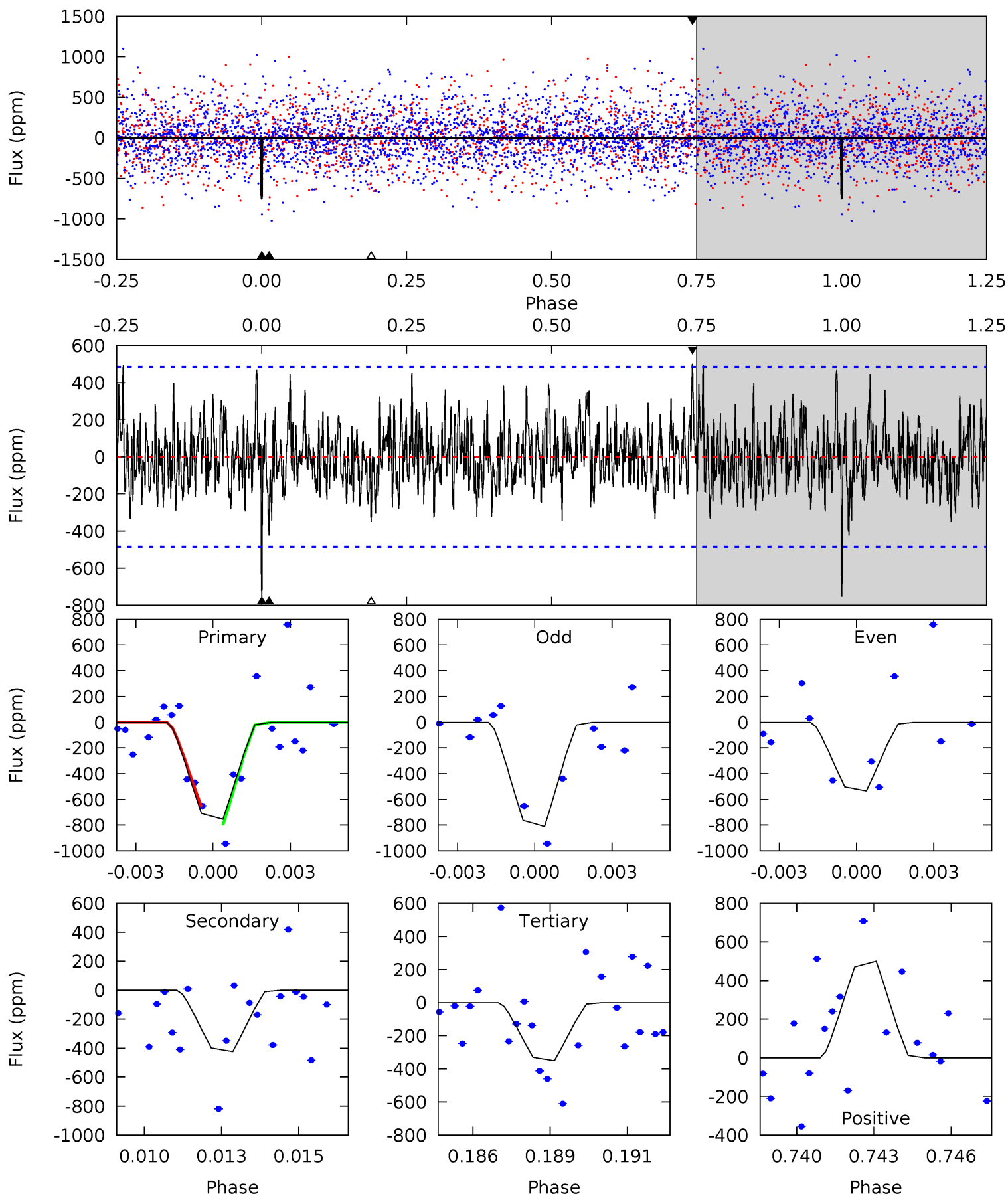




# DV Model-Shift Uniqueness Test

007031824-02, P = 14.550932 Days, E = 119.113627 Days

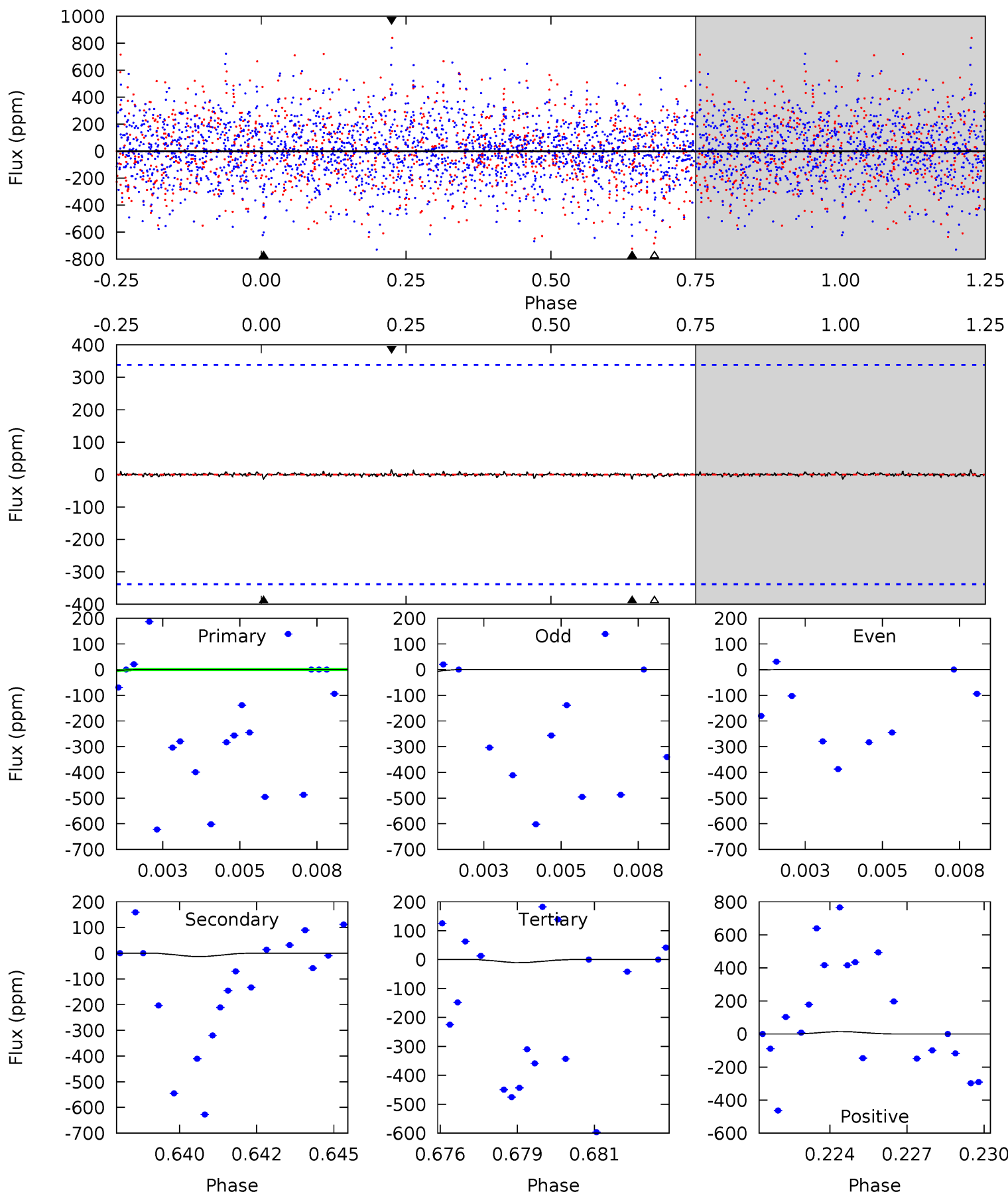
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.22	4.62	3.82	5.46	5.28	3.02	1.53	4.40	2.76	0.80	-0.84	1.50	1.03	0.40	0.79



# Alt Model-Shift Uniqueness Test

007031824-02, P = 14.551135 Days, E = 119.055772 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
0.21	0.21	0.16	0.23	5.28	3.01	0.04	0.04	-0.03	0.04	-0.03	0.14	0.02	0.53	0.05



### Stellar Parameters For KIC 007031824

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5693^{+152}_{-169}$	$4.528^{+0.048}_{-0.192}$	$-0.020^{+0.250}_{-0.300}$	$0.886^{+0.259}_{-0.086}$	$0.965^{+0.104}_{-0.115}$	$1.956^{+0.471}_{-0.971}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-10%	+11%/-12%	+24%/-50%
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 007031824-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-424 \pm 92$	$3.83^{+2.59}_{-2.25}$	$995^{+64}_{-45}$	$4367^{+2064}_{-722}$	$205^{+982}_{-135}$
Alt.	$-13 \pm 64$	$3.21^{+2.43}_{-2.12}$	$990^{+62}_{-43}$	$2532^{+1380}_{-5921}$	$5.464^{+111.480}_{-53.312}$

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

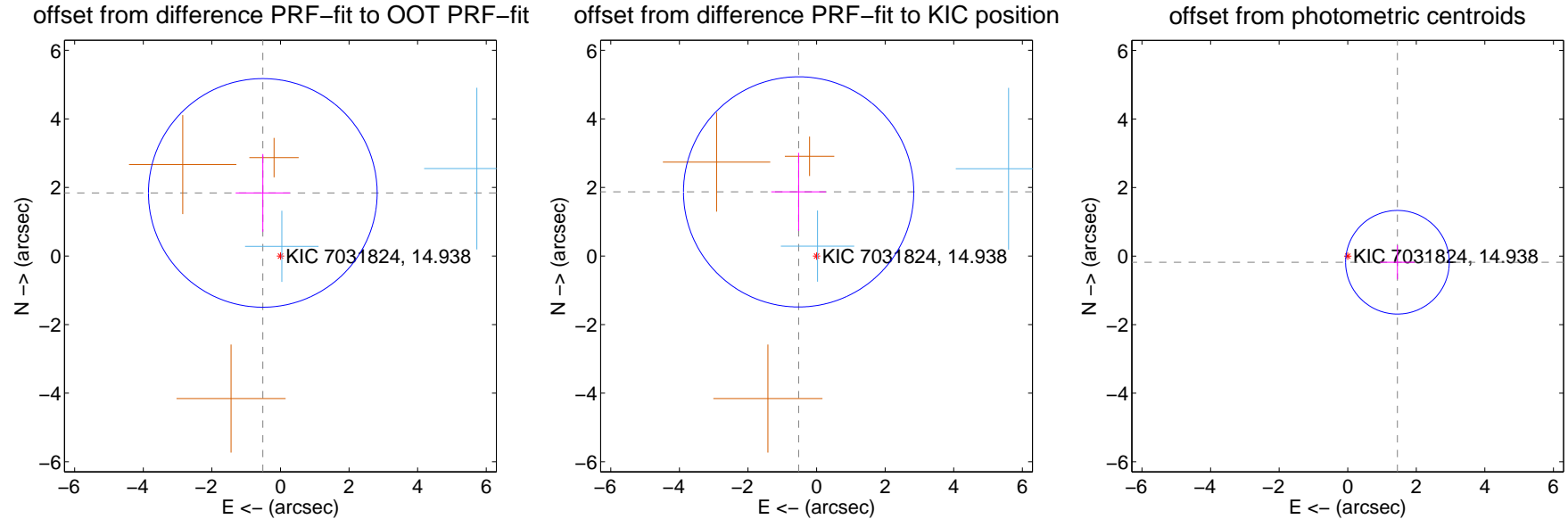
## DV Centroid Data

Supplemental centroid analysis for 007031824-02. Kepler magnitude: 14.94. Transit SNR 13.72

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.911 \pm 1.111$	1.72	$0.514 \pm 0.793$	$1.841 \pm 1.132$
PRF-fit source offset from KIC position	$1.943 \pm 1.119$	1.74	$0.524 \pm 0.796$	$1.871 \pm 1.140$
photometric centroid source offset	$1.46 \pm 0.50$	2.90	$-1.45 \pm 0.50$	$-0.18 \pm 0.50$



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.

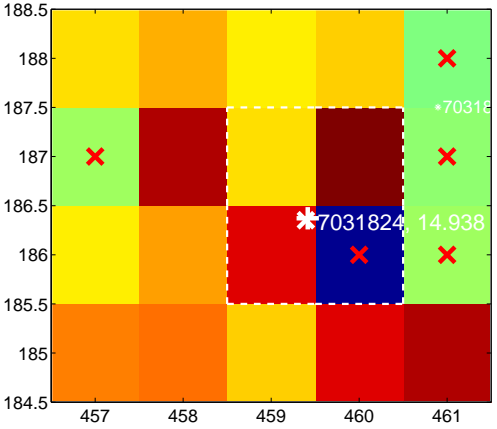
Q1 no difference image



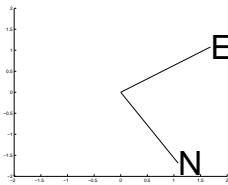
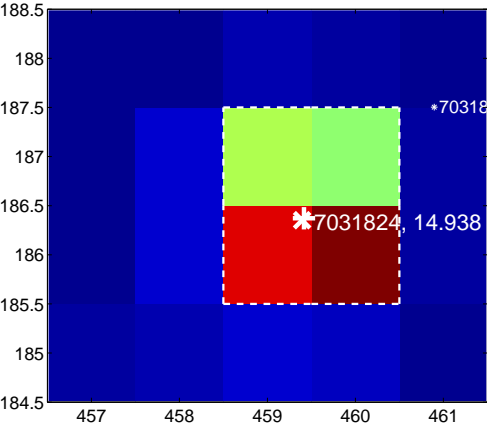
Q1 no OOT image



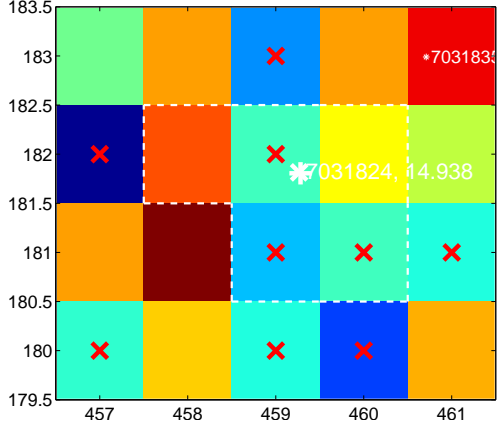
Q2 difference image. Poor Quality



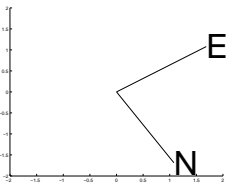
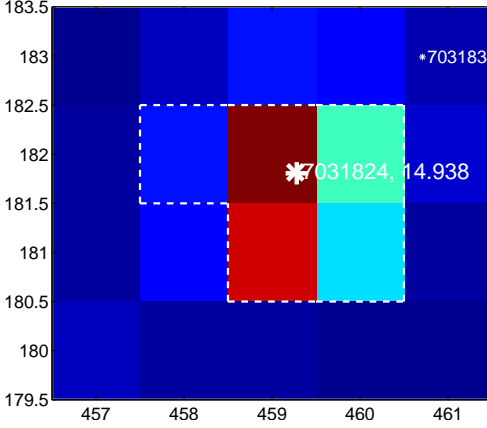
Q2 OOT image



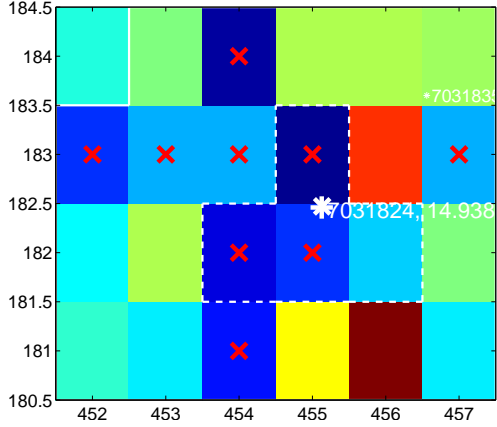
Q3 difference image. Poor Quality



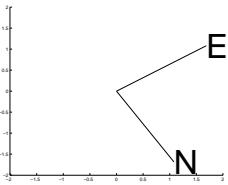
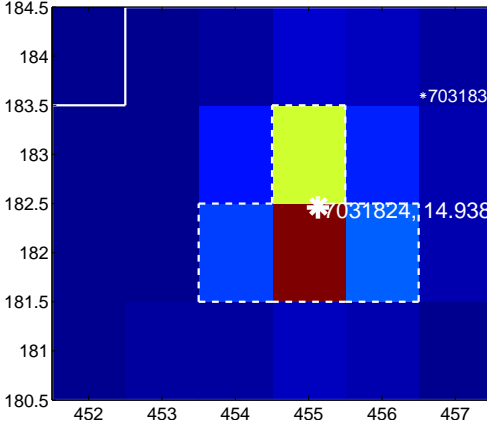
Q3 OOT image



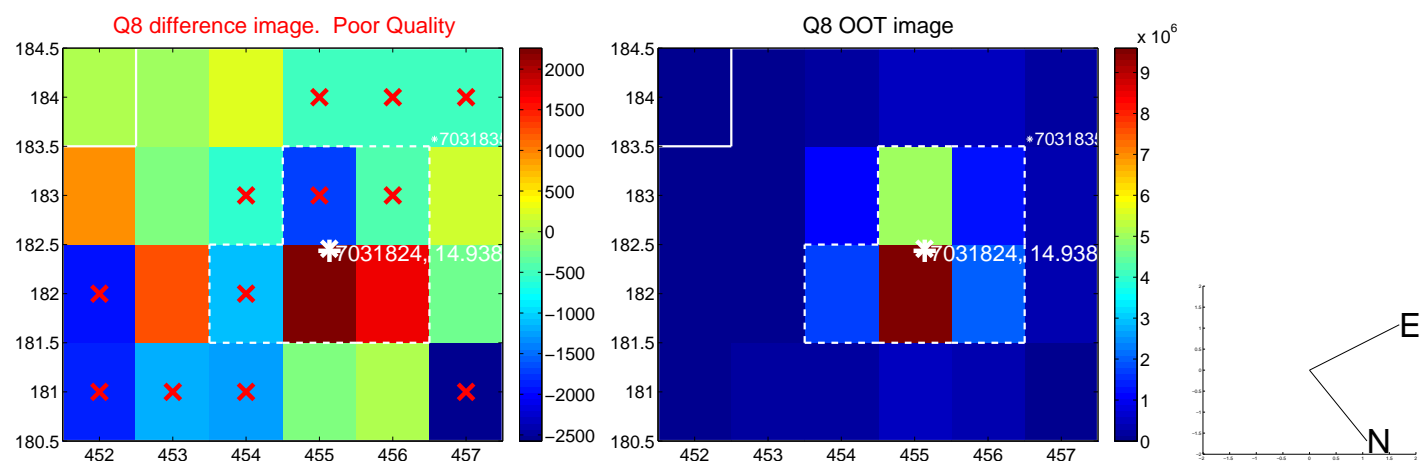
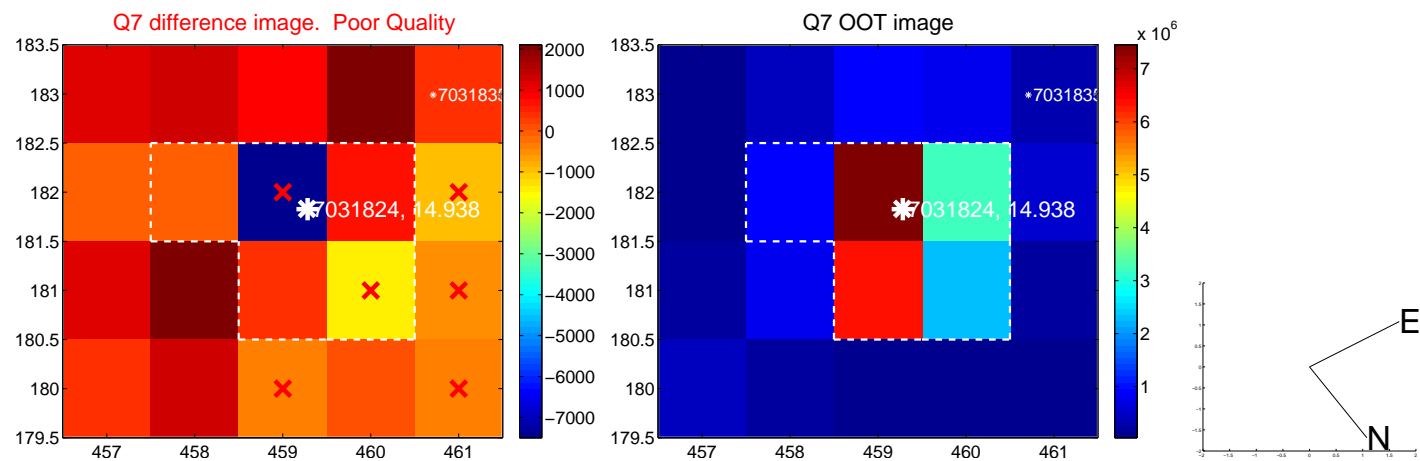
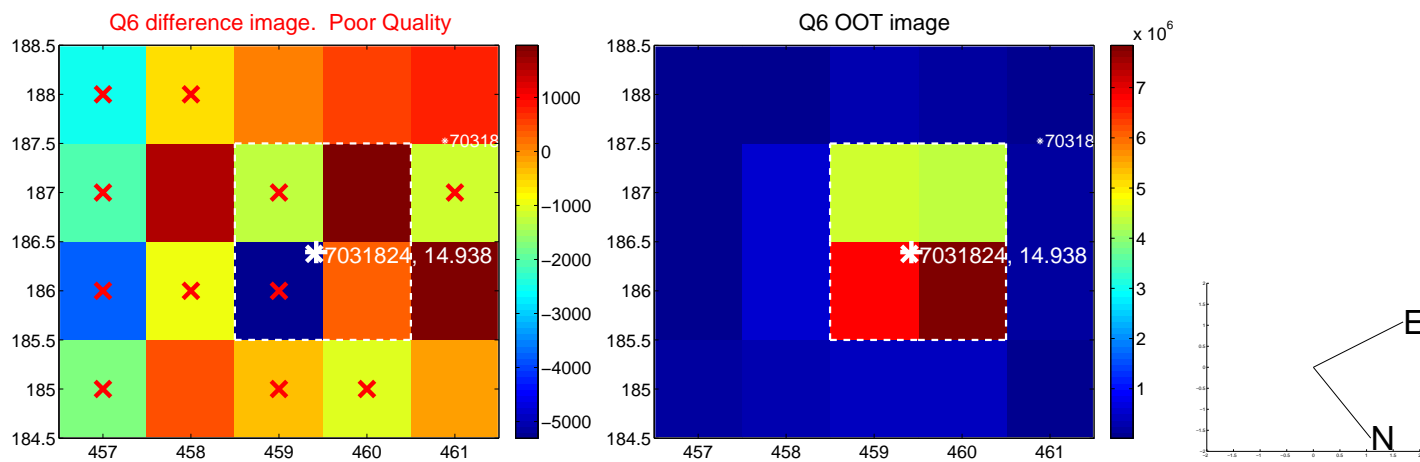
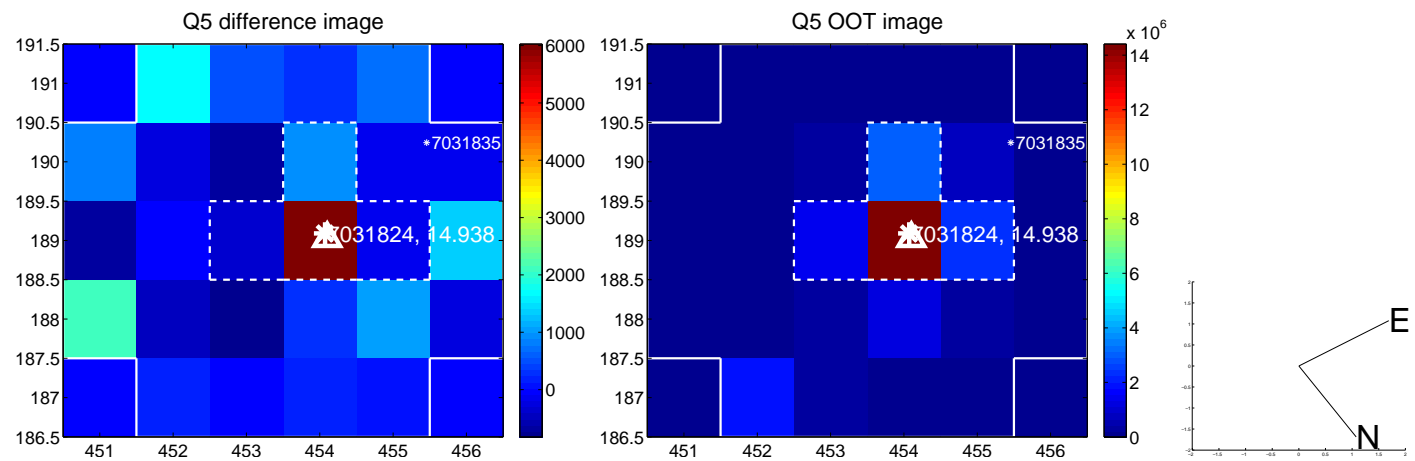
Q4 difference image. Poor Quality



Q4 OOT image

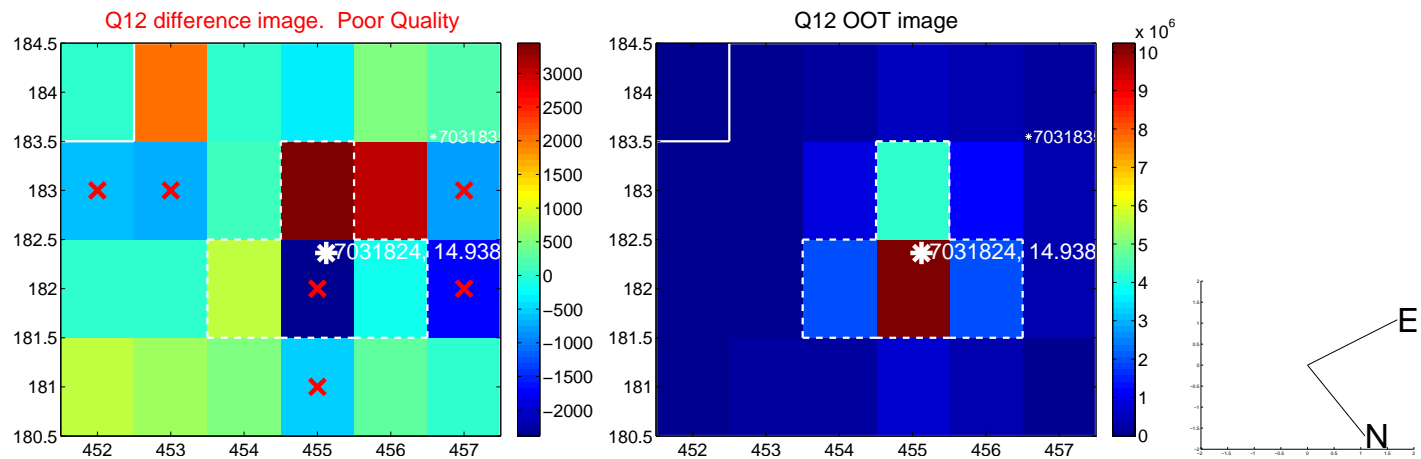
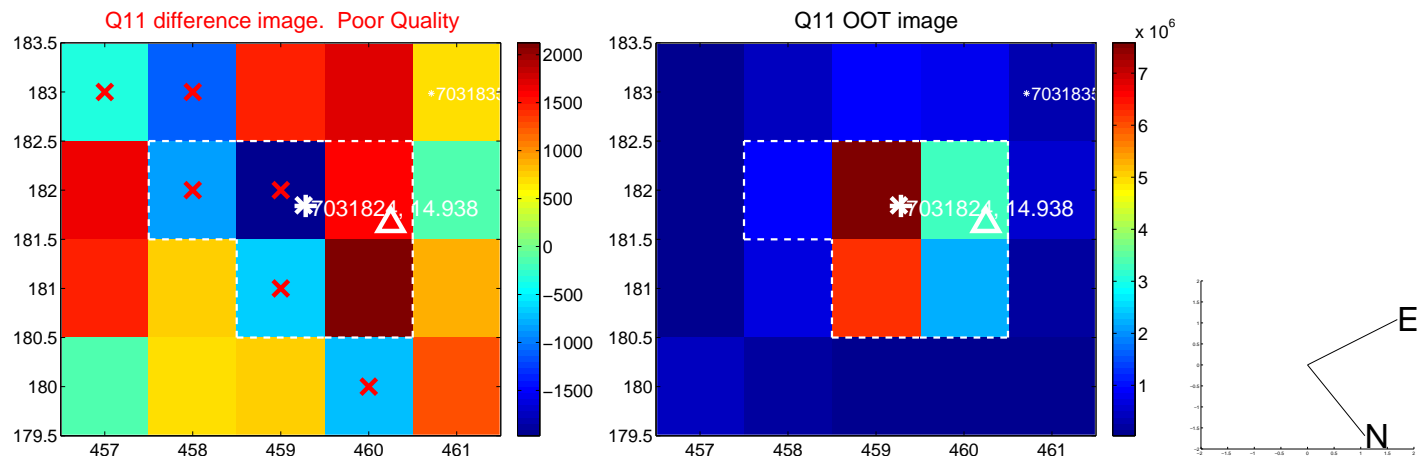
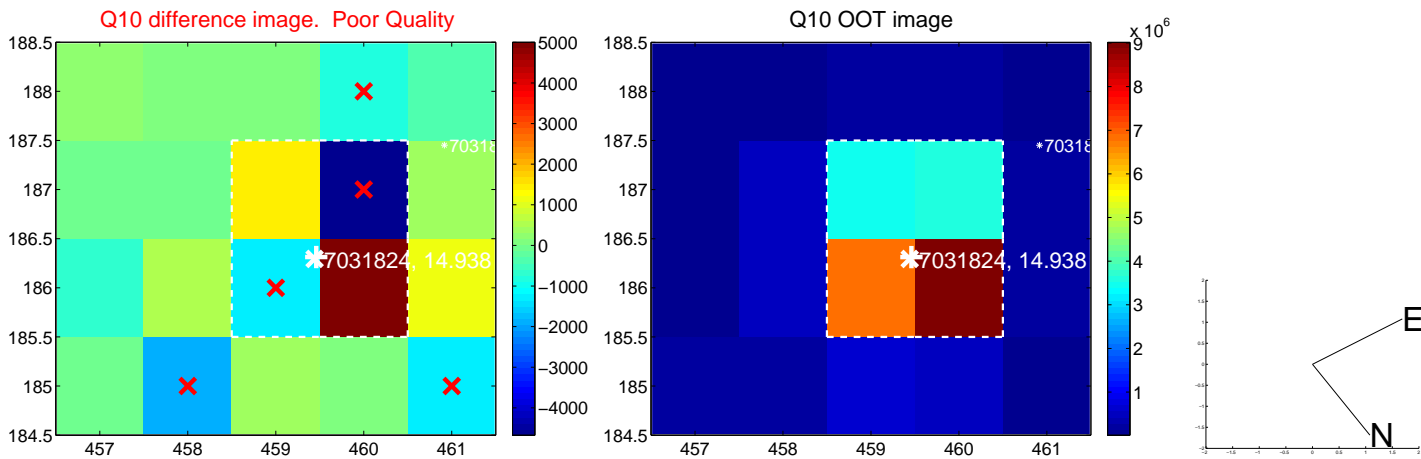
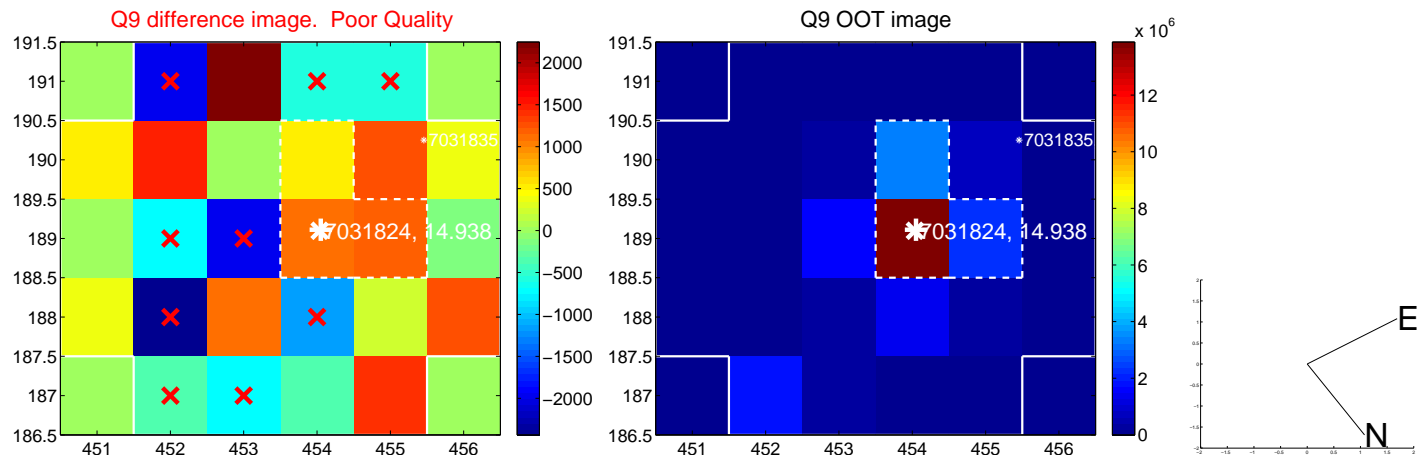


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

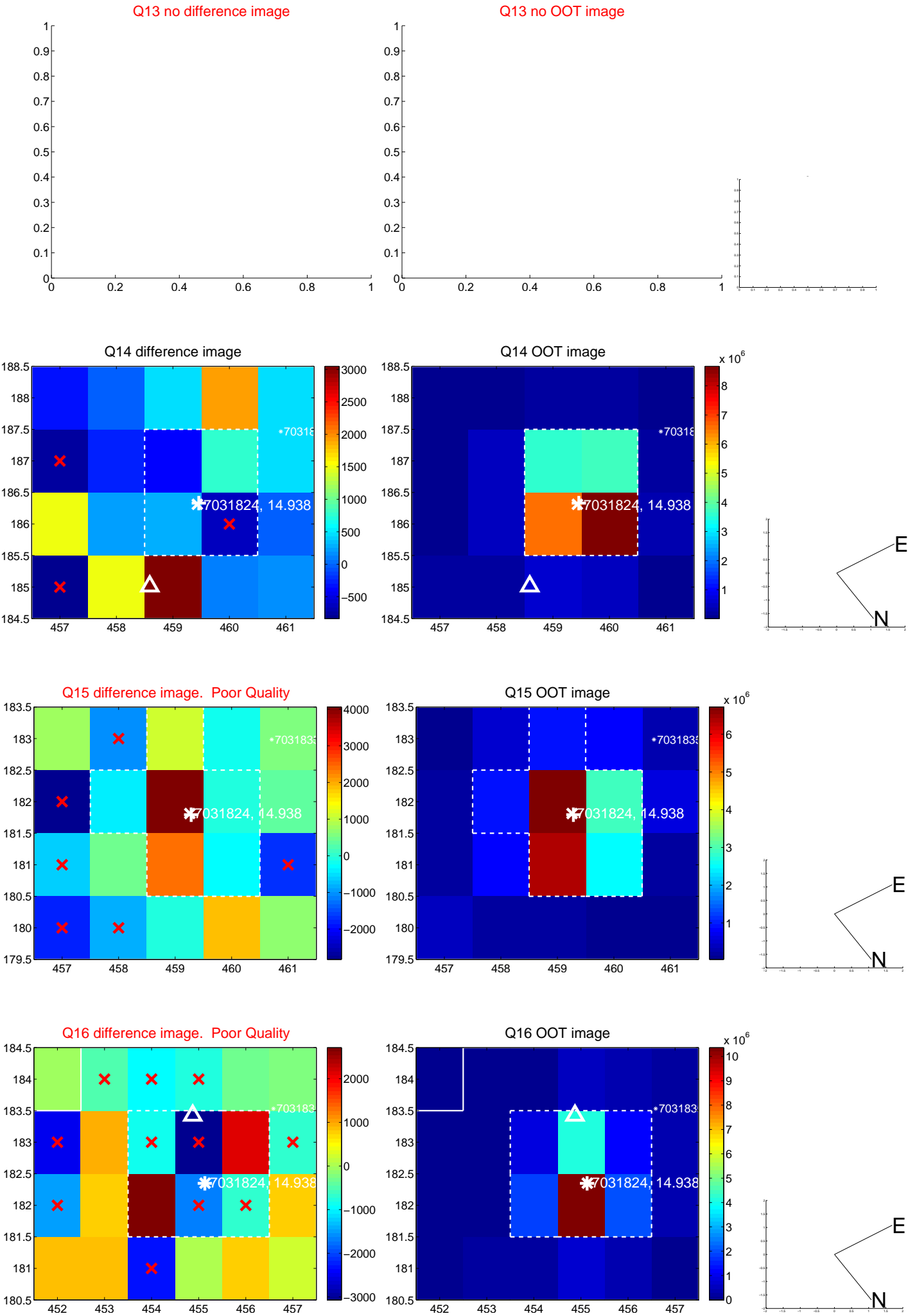




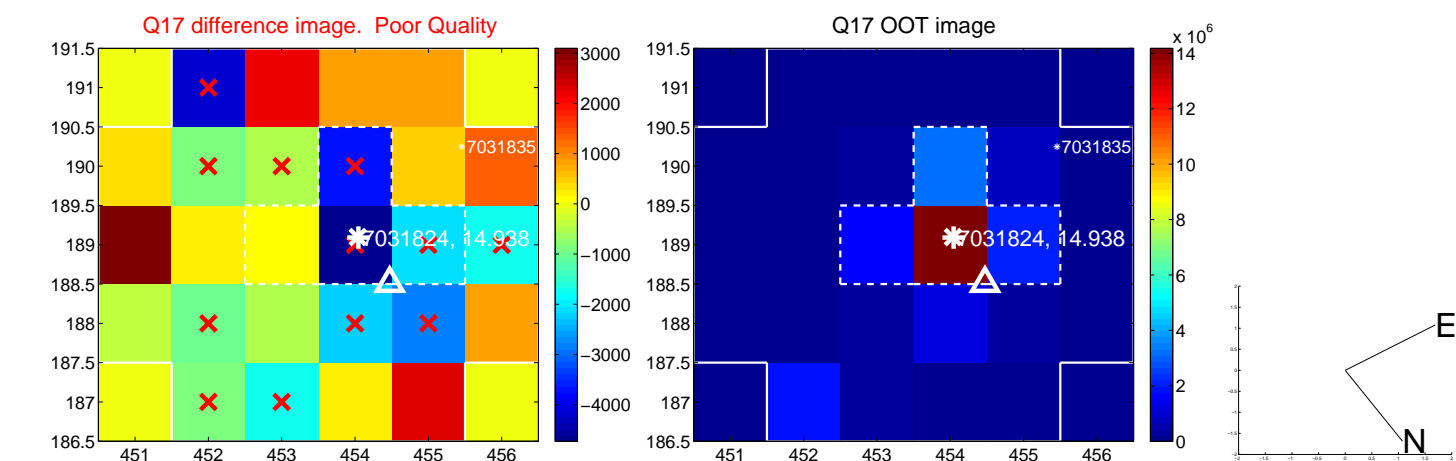
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



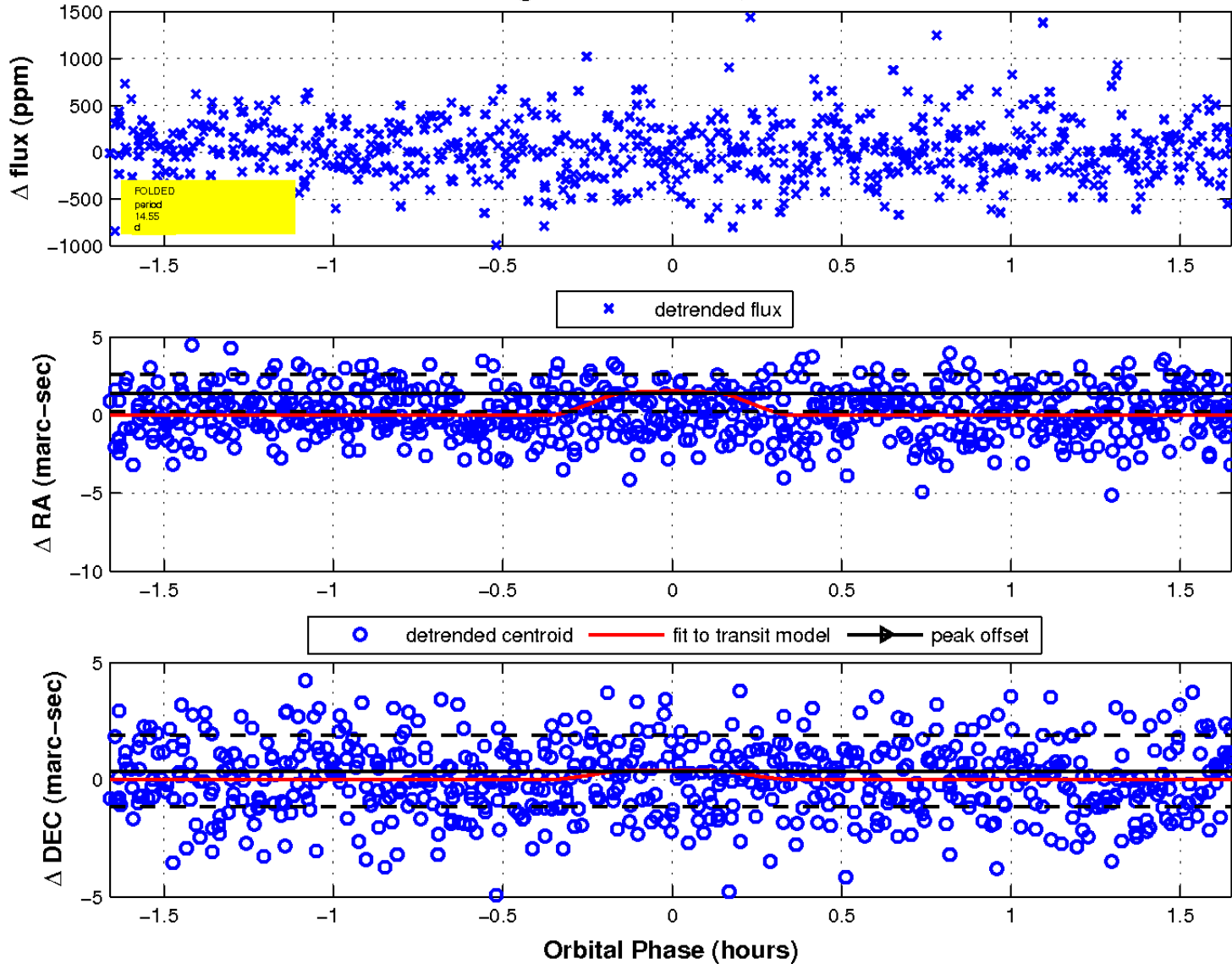
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

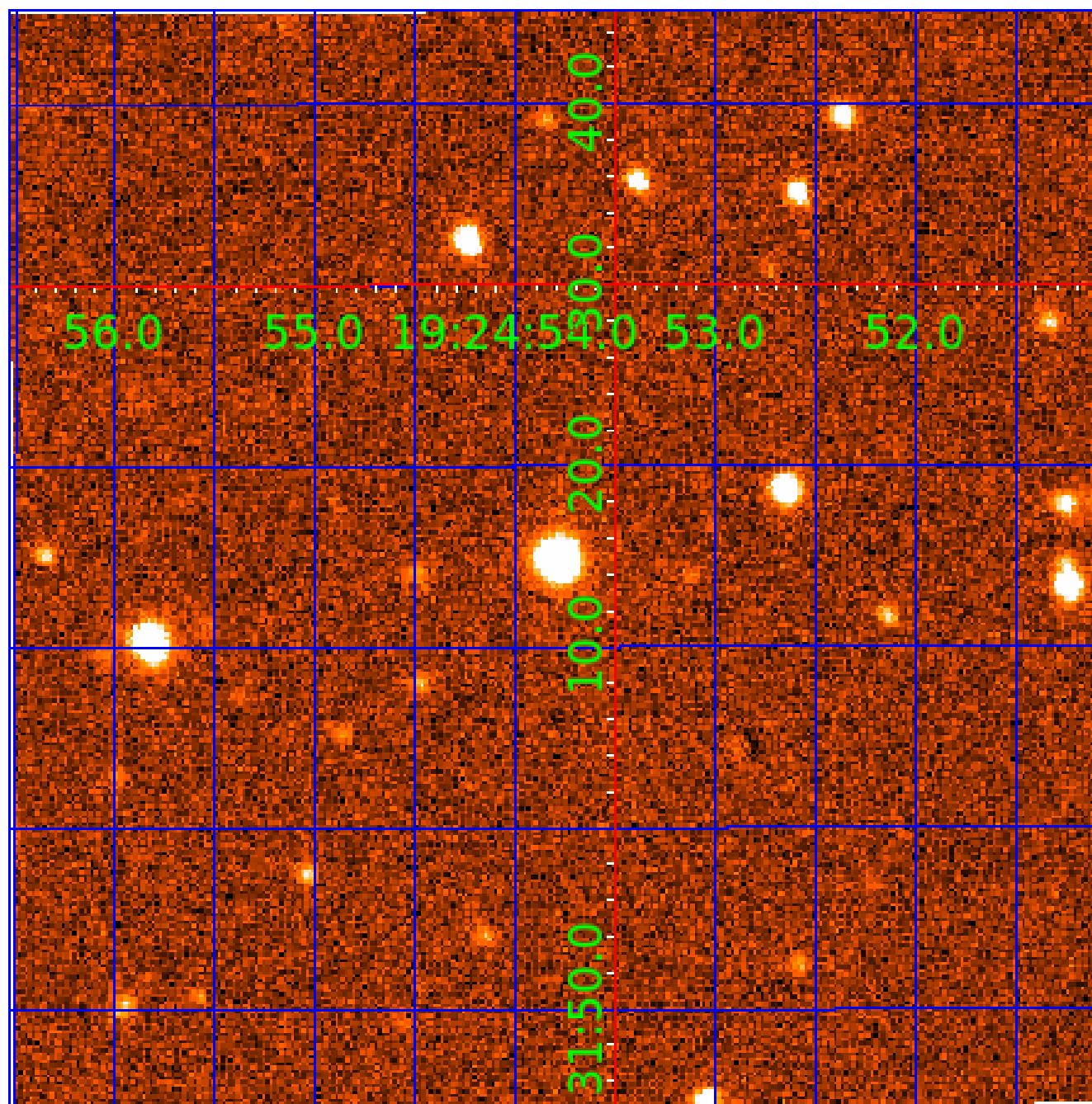


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 007031824

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007031824-01	OBS	No	0.566753	131.882582	32.1	4.128	8.0	11.2	0.89	5693	0.61	4207.49
007031824-02	OBS	No	14.550932	133.664559	1049.8	0.553	12.2	13.7	0.89	5693	3.29	55.55
007031824-03	OBS	No	19.330040	149.327420	493.1	1.372	11.0	11.3	0.89	5693	2.02	38.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031824-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007031824-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007031824-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

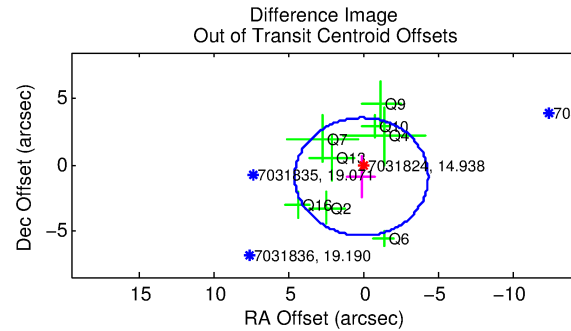
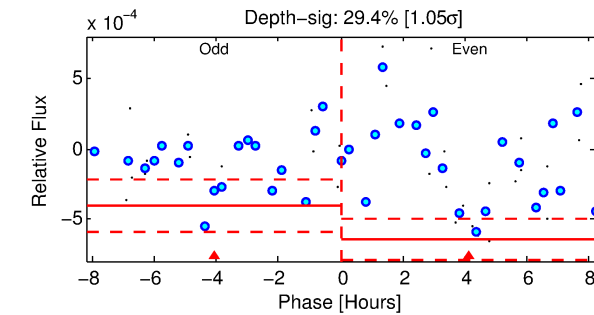
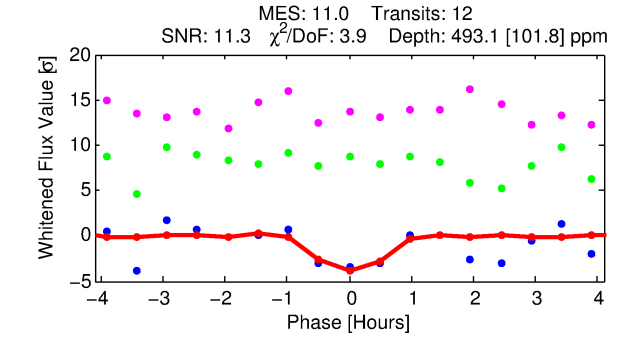
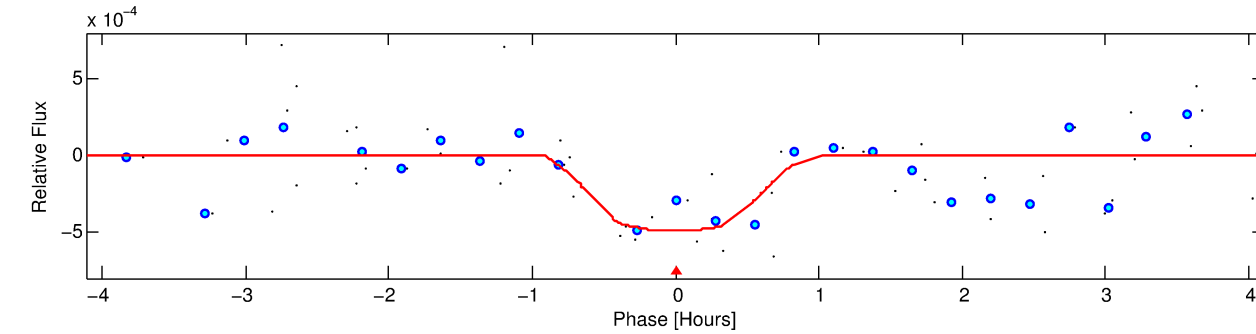
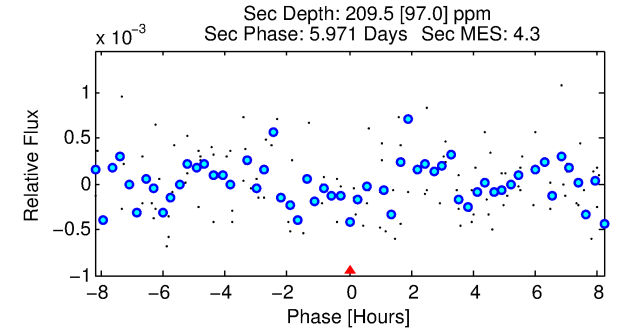
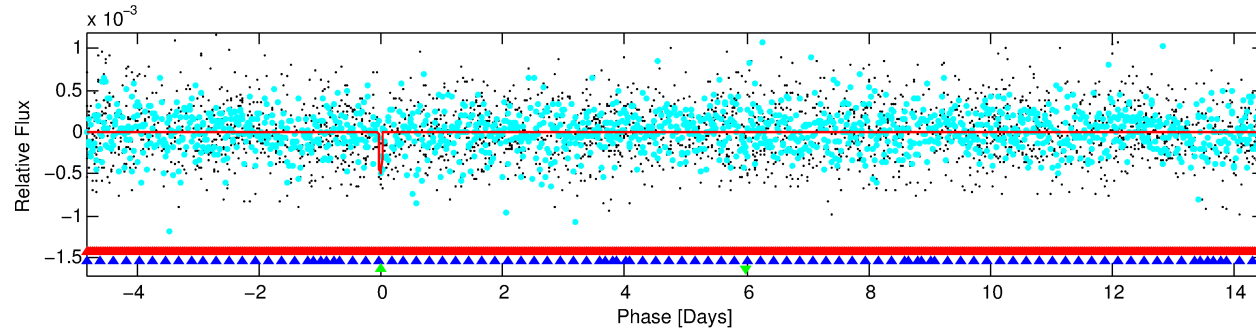
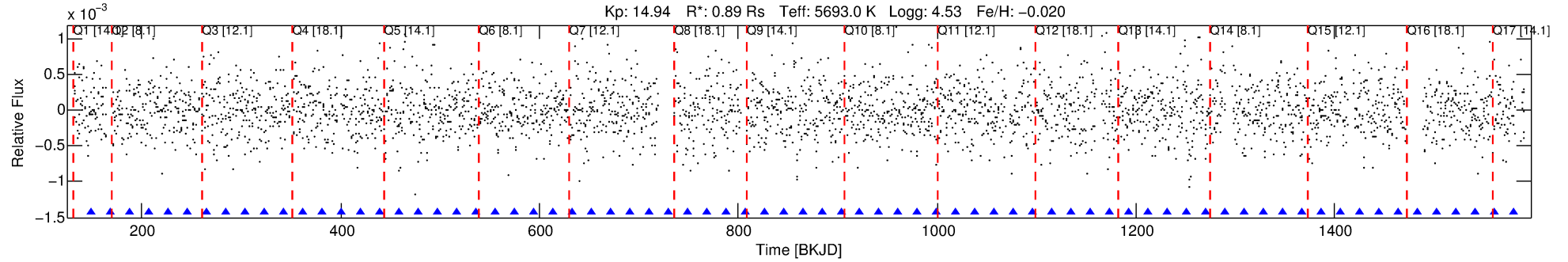
## Ephemeris Match Information For 007031824-03

No Significant Match Found



# DV One-Page Summary

KIC: 7031824 Candidate: 3 of 3 Period: 19.330 d



## DV Fit Results:

Period = 19.33004 [0.00021] d  
Epoch = 149.3274 [0.0098] BKJD  
Rp/R\* = 0.0209 [0.0440]  
a/R\* = 95.71 [852.84]  
b = 0.50 [13.57]  
Seff = 38.04 [14.18]  
Teff = 633 [59] K  
Rp = 2.02 [4.30] Re  
a = 0.1394 [0.0340] AU  
Ag = 548.91 [2335.84] [0.23 $\sigma$ ]  
Teffp = 4739 [5026] K [0.82 $\sigma$ ]

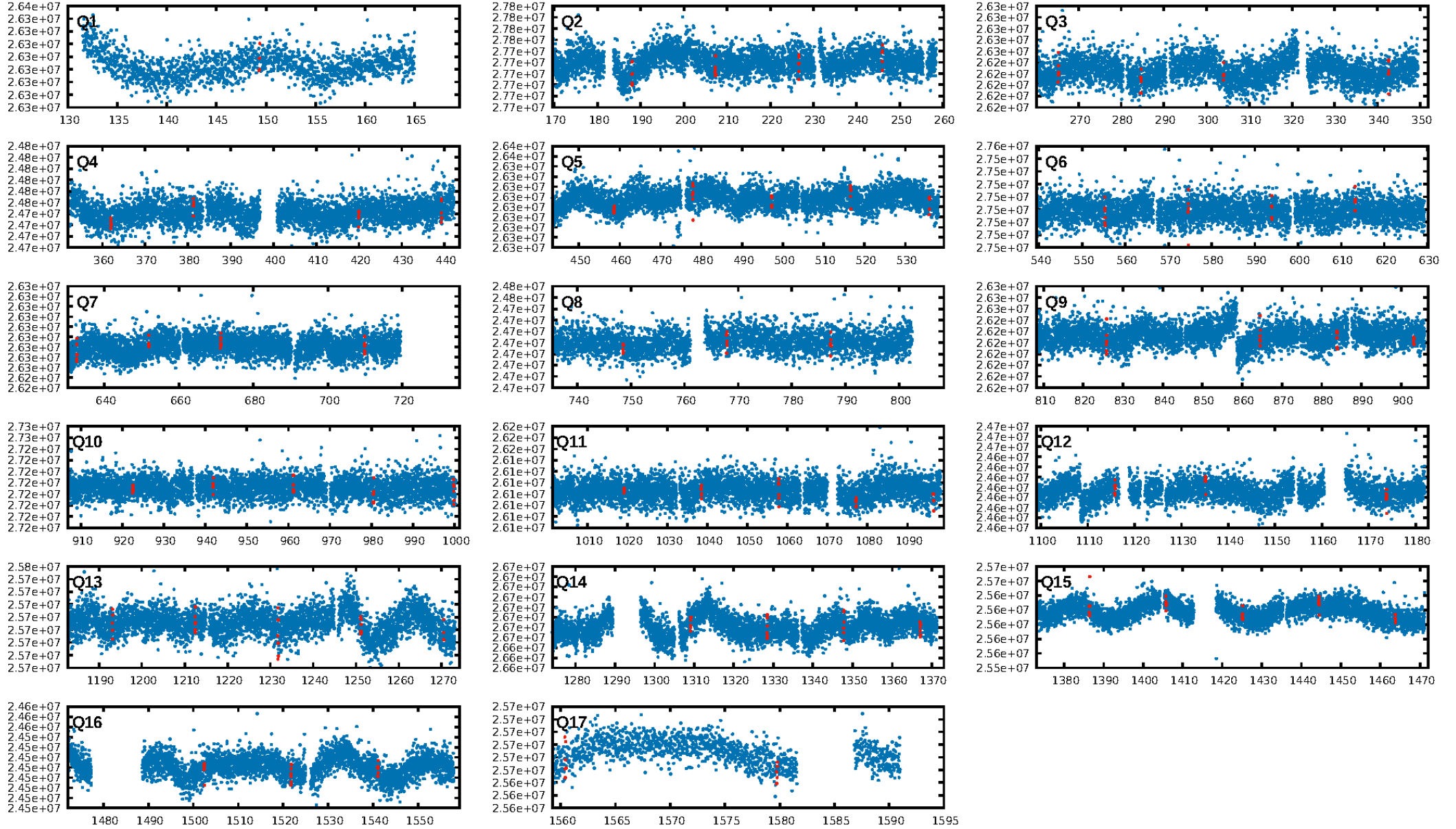
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.54 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 3.54e-11**  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: -0.6433  
**Centroid-sig: 0.1%**  
Centroid-so: 1.557 arcsec [1.99 $\sigma$ ]  
OotOffset-rm: 0.921 arcsec [0.62 $\sigma$ ]  
KicOffset-rm: 0.934 arcsec [0.63 $\sigma$ ]  
OotOffset-st: 3/1/2/2 [8]  
KicOffset-st: 3/1/2/2 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 0.00 [0/17]

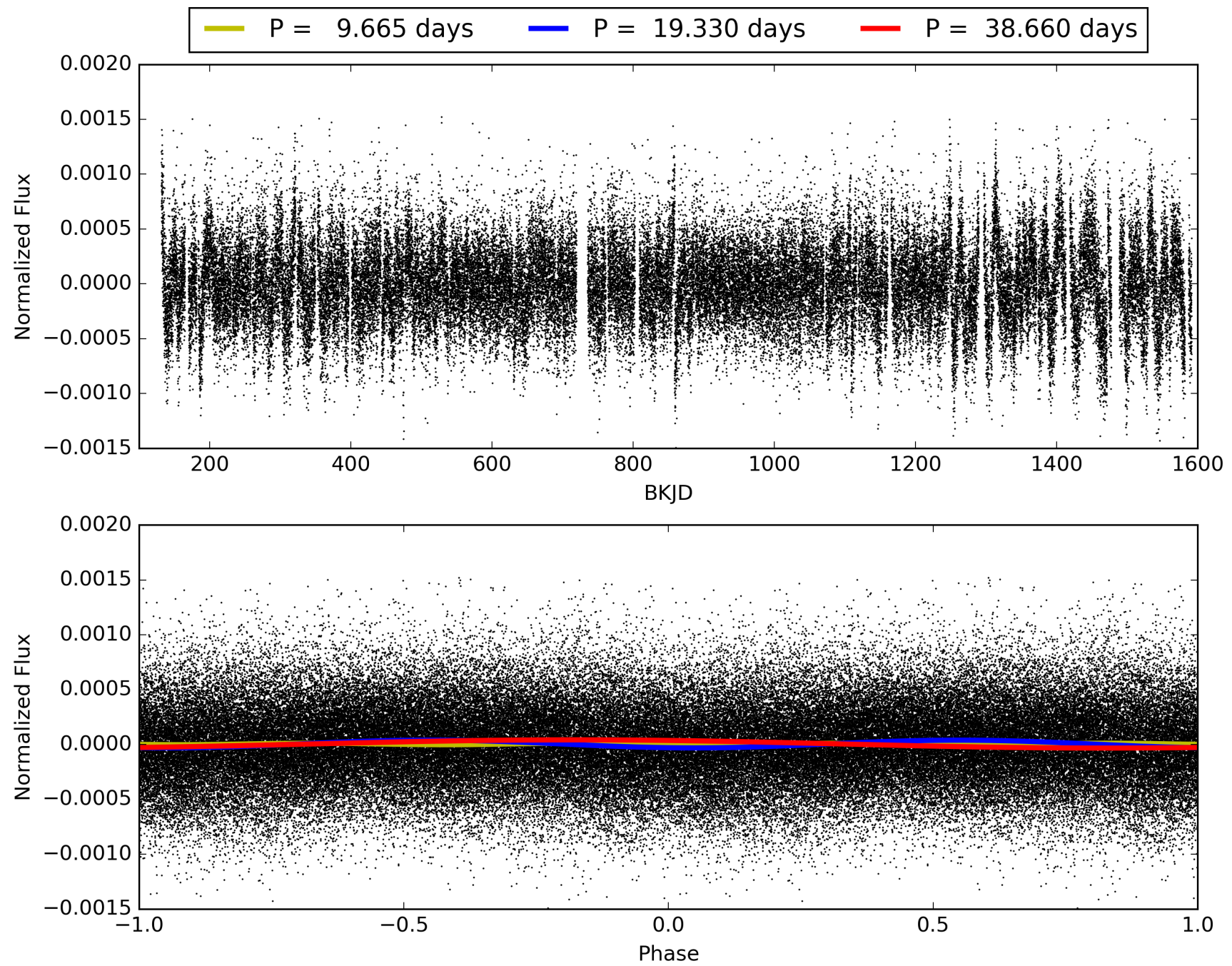
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:24:54 Z

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

# TCE 007031824-03, PDC Light Curves

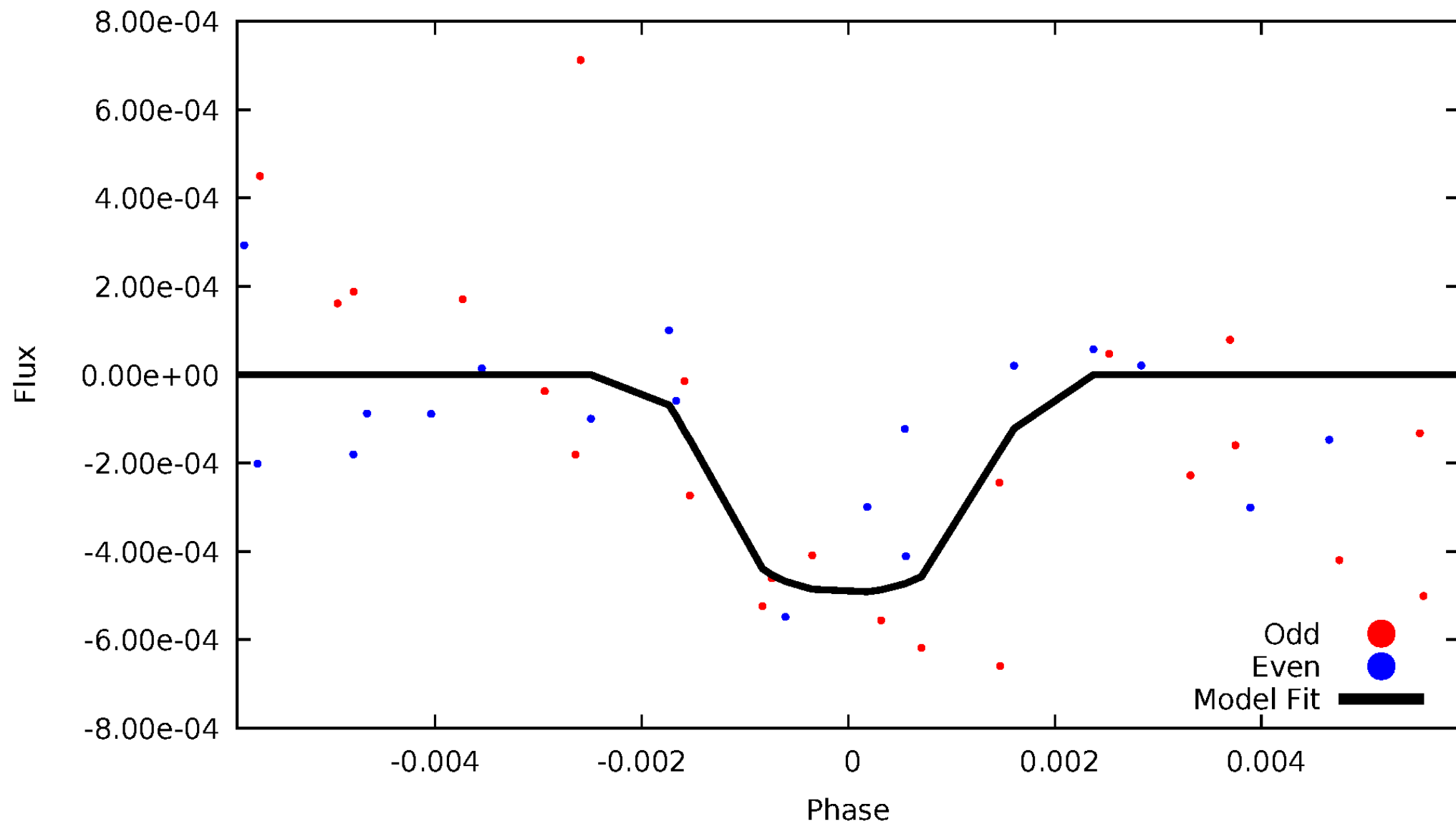


TCE 007031824-03



# DV Odd/Even

TCE 007031824-03





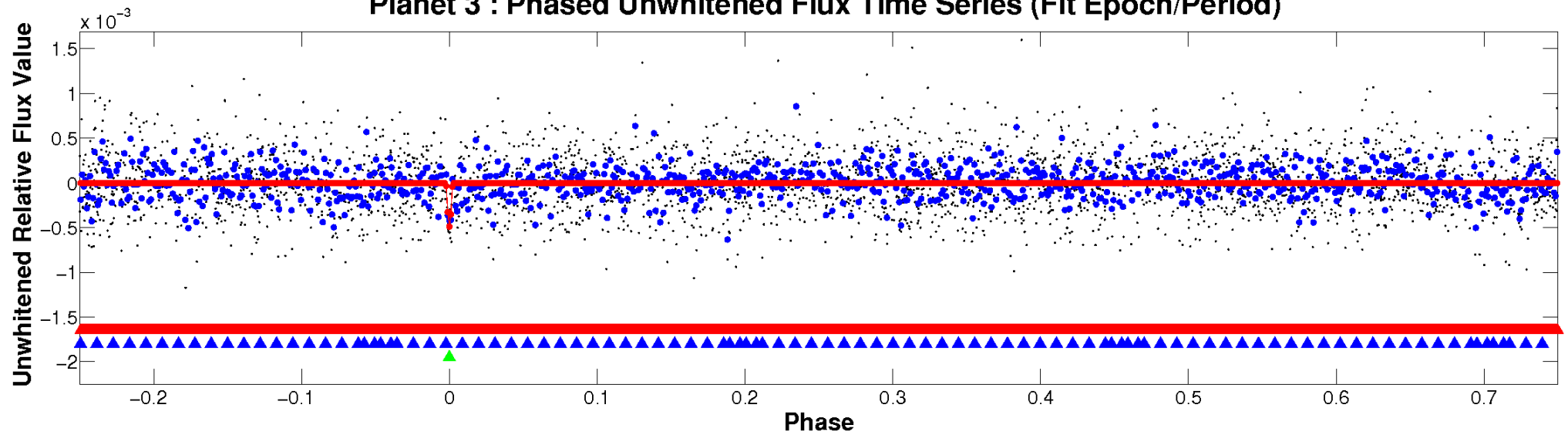


ALT Odd/Even

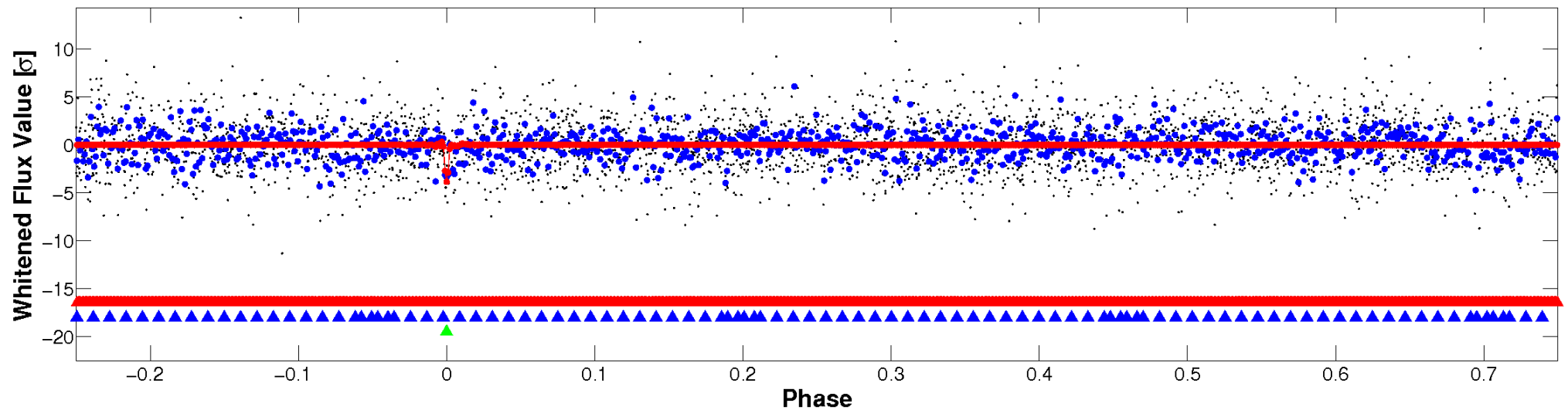
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

**Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

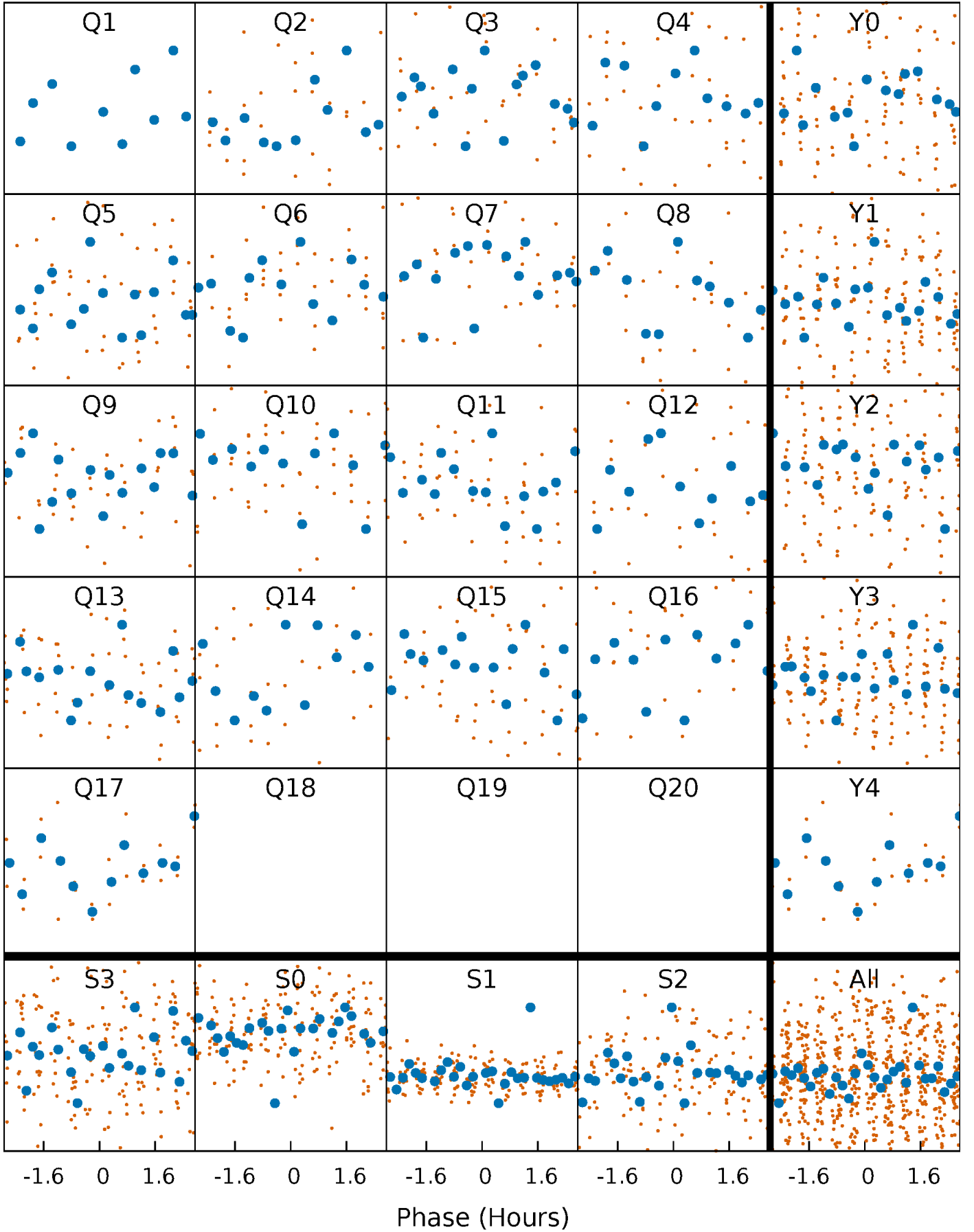


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



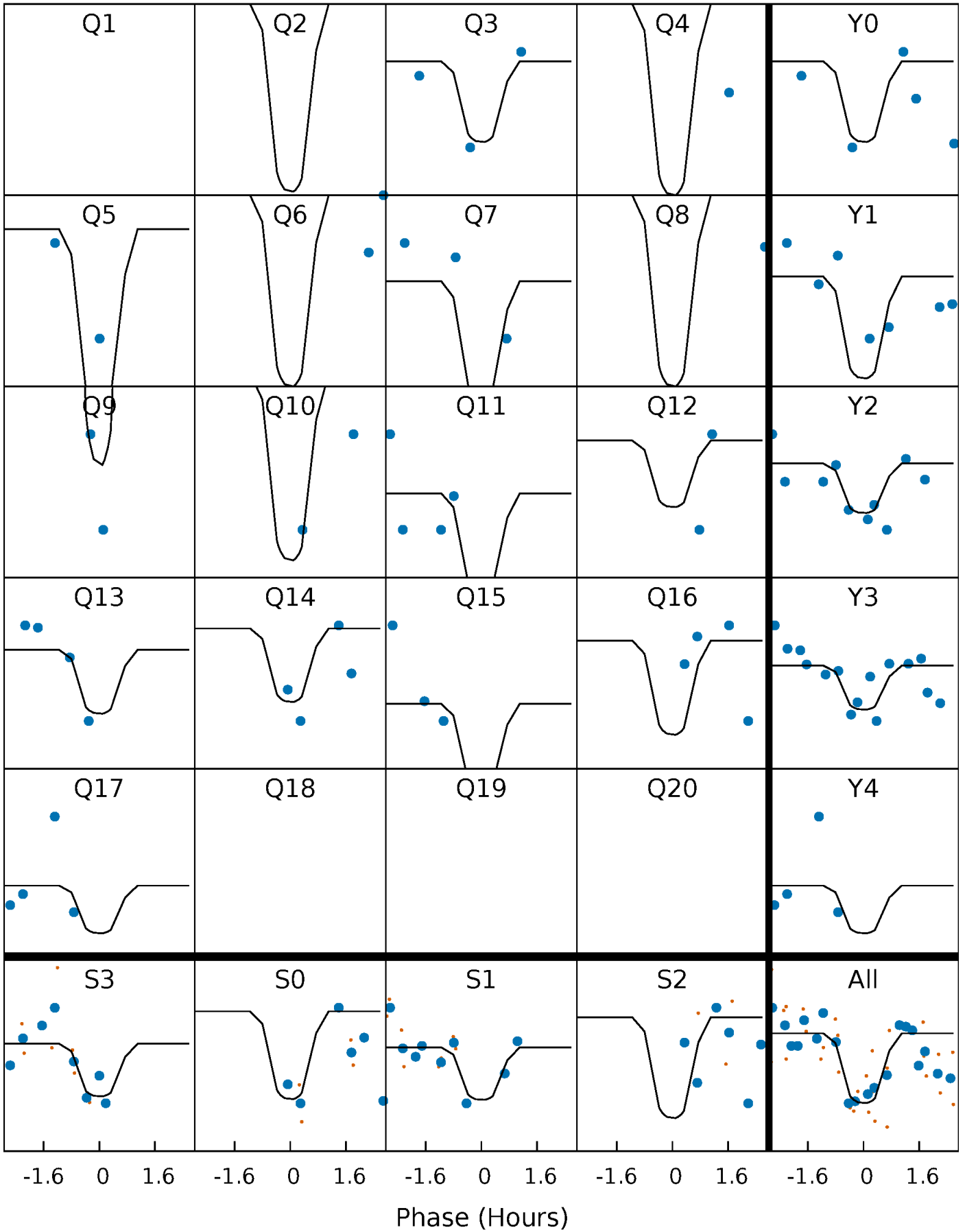
# PDC Quarter-Phased Transit Curves

TCE 007031824-03 P= 19.330040 Days  $T_0=149.327420$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007031824-03 P= 19.330040 Days  $T_0=149.327420$  (BKJD)

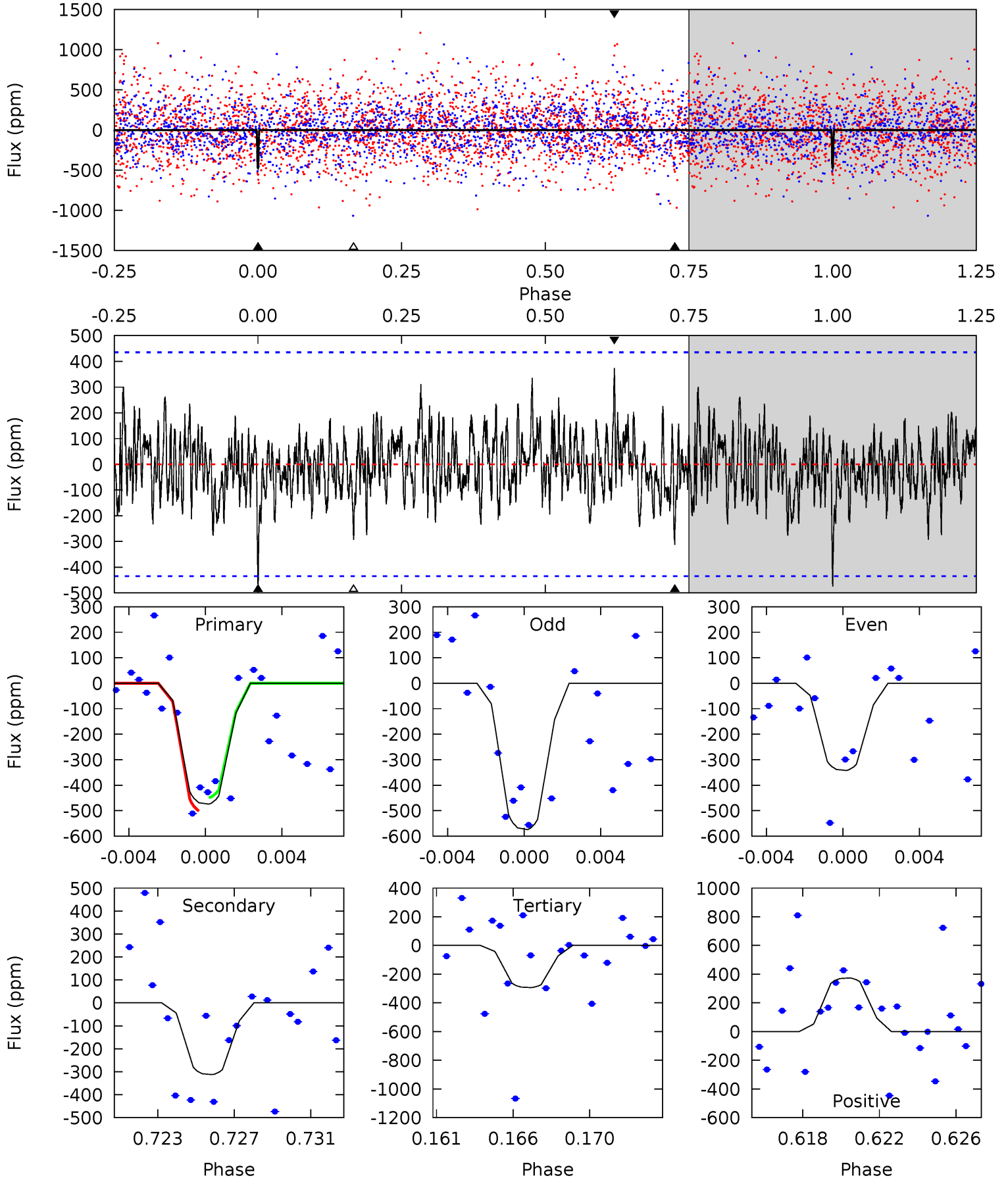


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007031824-03, P = 19.330040 Days, E = 129.997380 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
5.67	3.74	3.51	4.47	5.20	2.88	1.23	2.16	1.20	0.23	-0.73	1.41	0.82	0.44	0.31





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007031824

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5693^{+152}_{-169}$	$4.528^{+0.048}_{-0.192}$	$-0.020^{+0.250}_{-0.300}$	$0.886^{+0.259}_{-0.086}$	$0.965^{+0.104}_{-0.115}$	$1.956^{+0.471}_{-0.971}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-10%	+11%/-12%	+24%/-50%
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 007031824-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-313 \pm 84$	$4.00^{+3.72}_{-2.66}$	$901^{+59}_{-39}$	$4074^{+2425}_{-816}$	$202^{+1546}_{-149}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

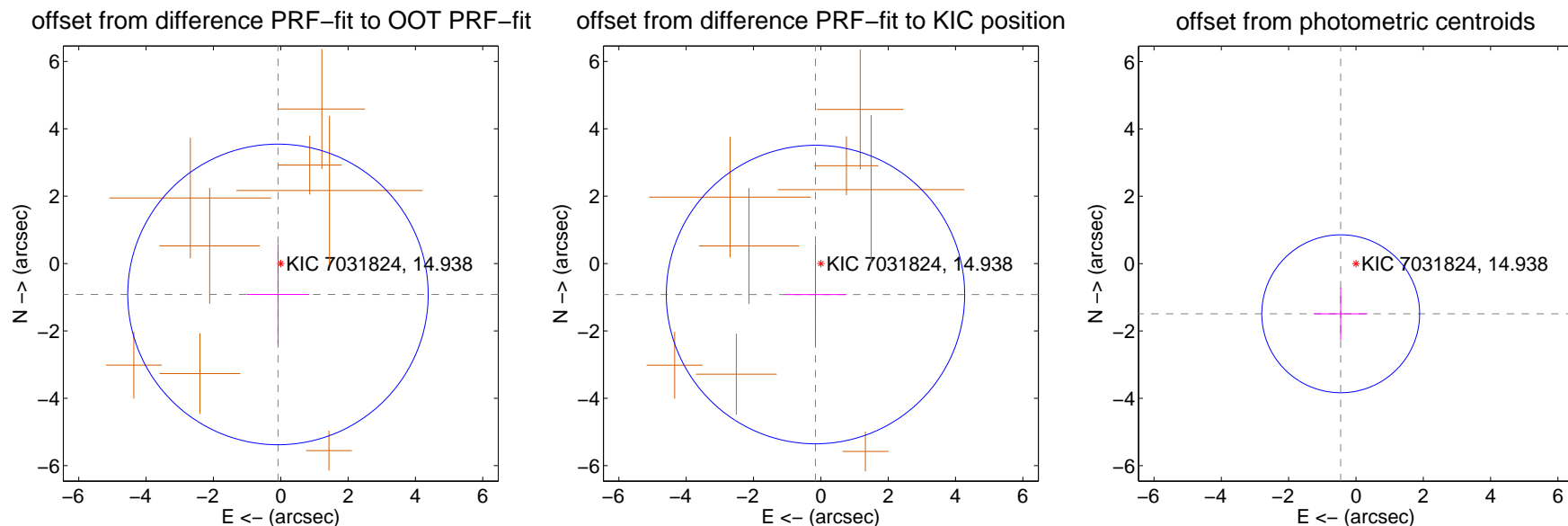
## DV Centroid Data

Supplemental centroid analysis for 007031824-03. Kepler magnitude: 14.94. Transit SNR 11.34

There are 0 quarters with good PRF difference image offsets

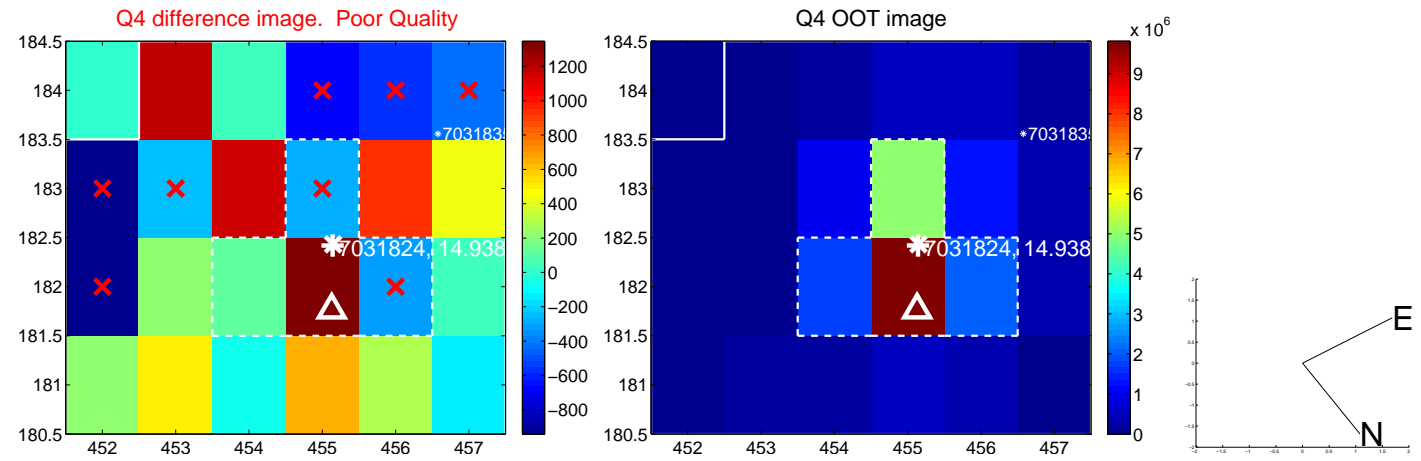
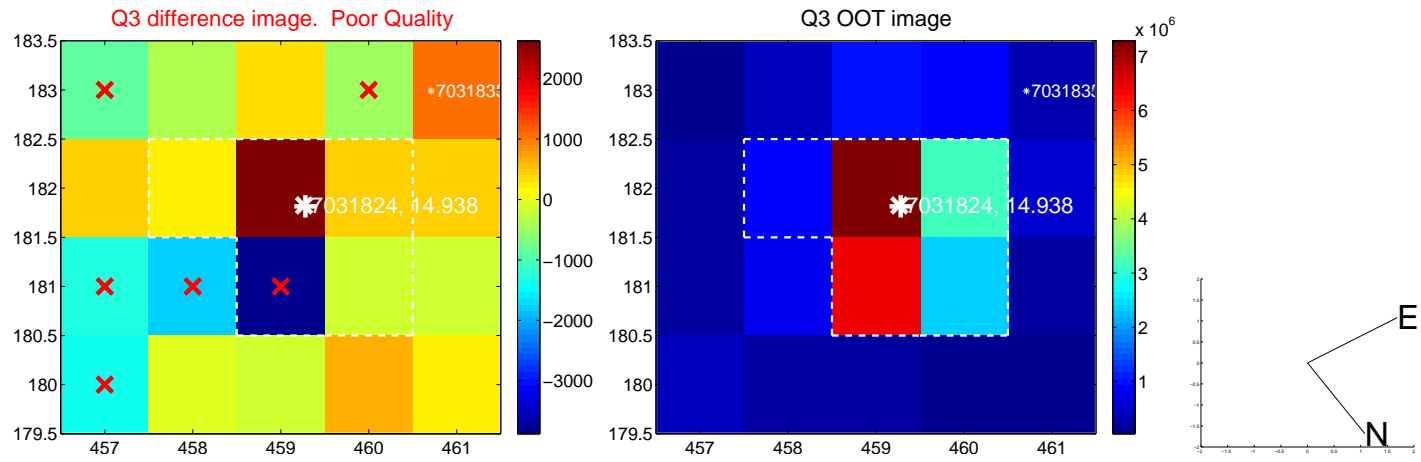
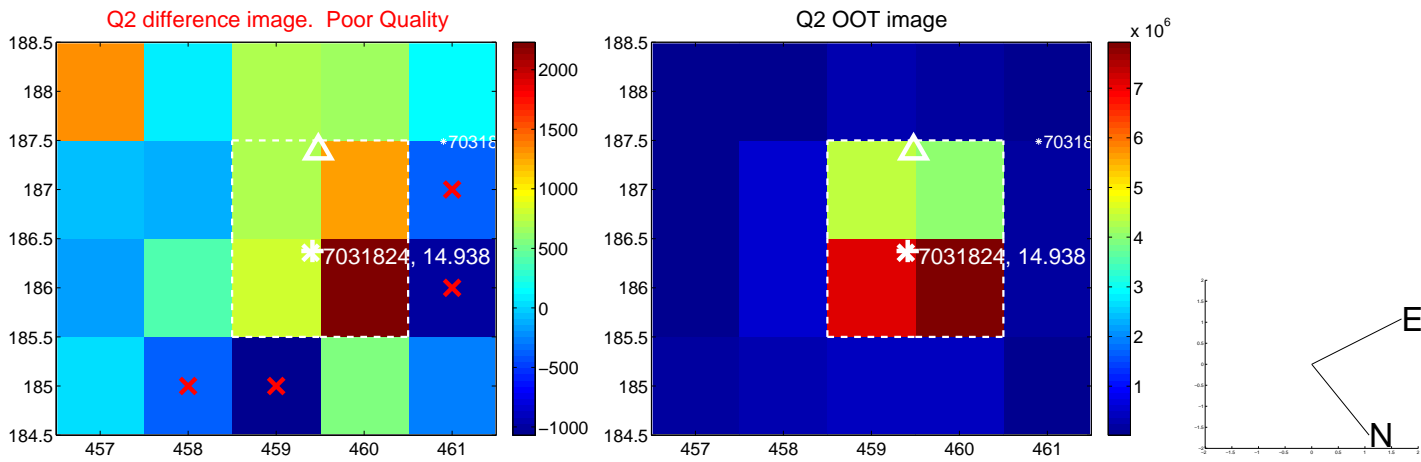
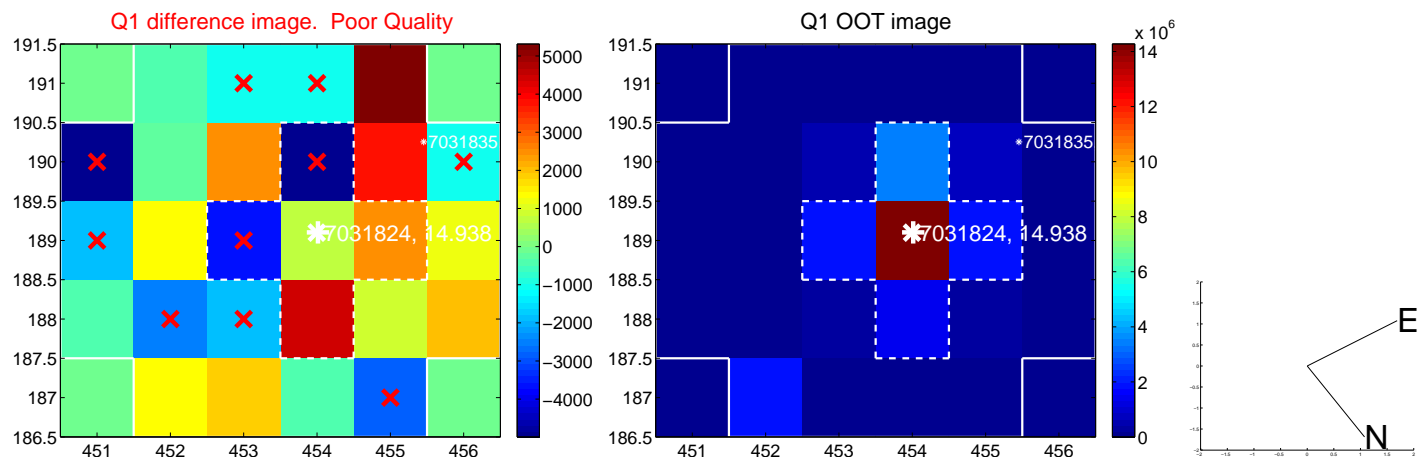
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.921 \pm 1.488$	0.62	$0.082 \pm 0.924$	$-0.917 \pm 1.491$
PRF-fit source offset from KIC position	$0.934 \pm 1.477$	0.63	$0.160 \pm 0.920$	$-0.921 \pm 1.491$
photometric centroid source offset	$1.56 \pm 0.78$	1.99	$0.45 \pm 0.80$	$-1.49 \pm 0.78$

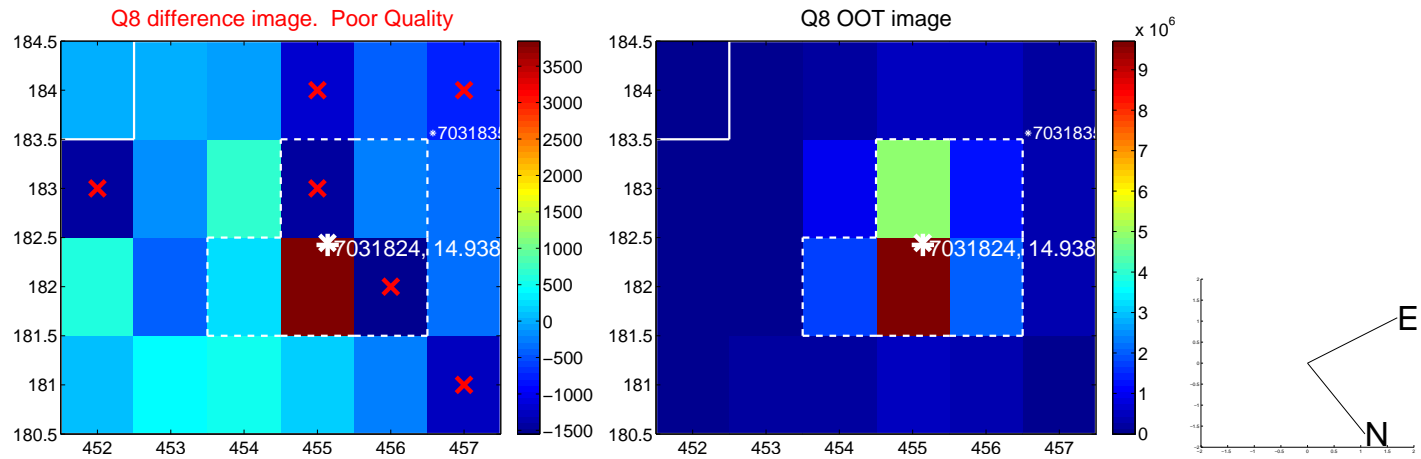
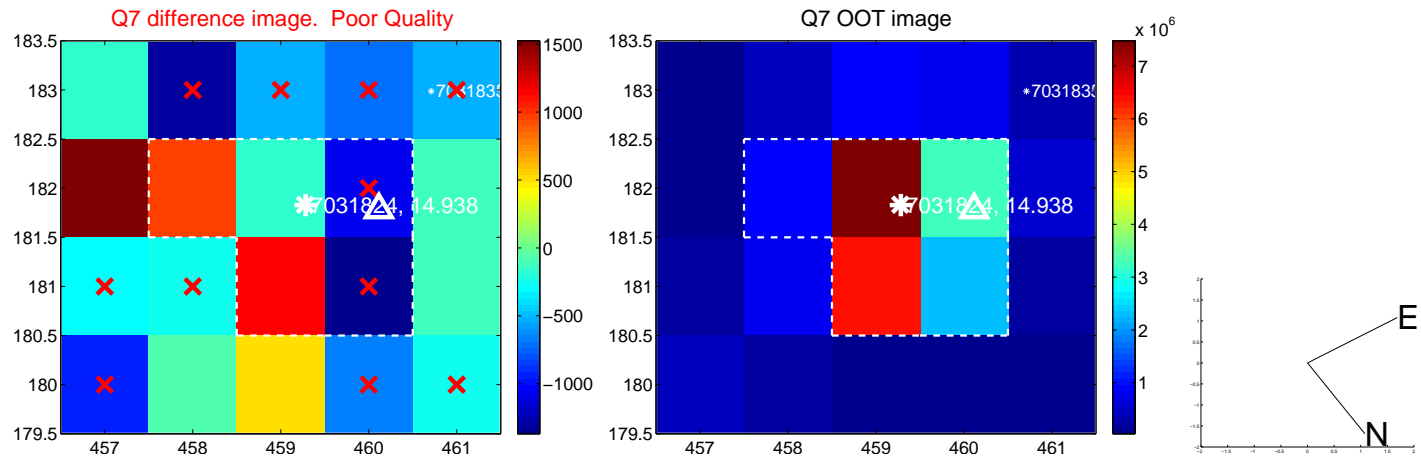
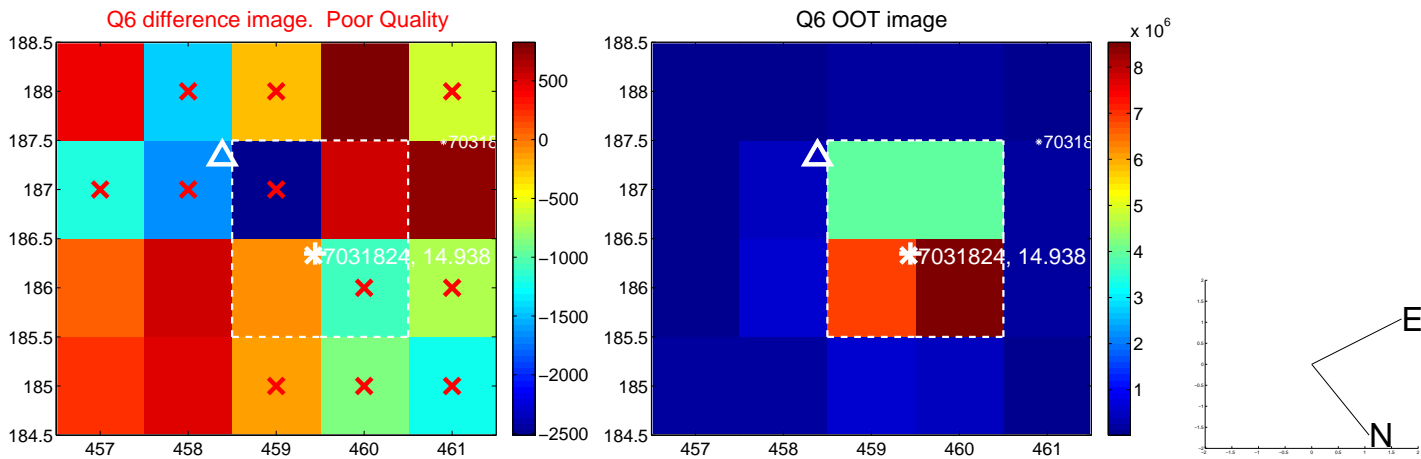
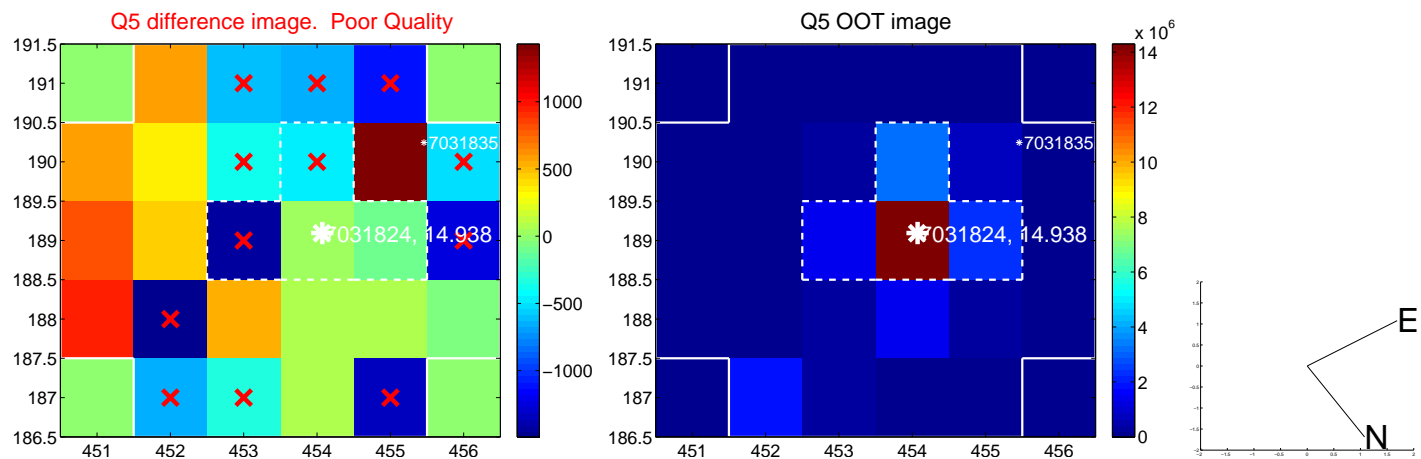


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

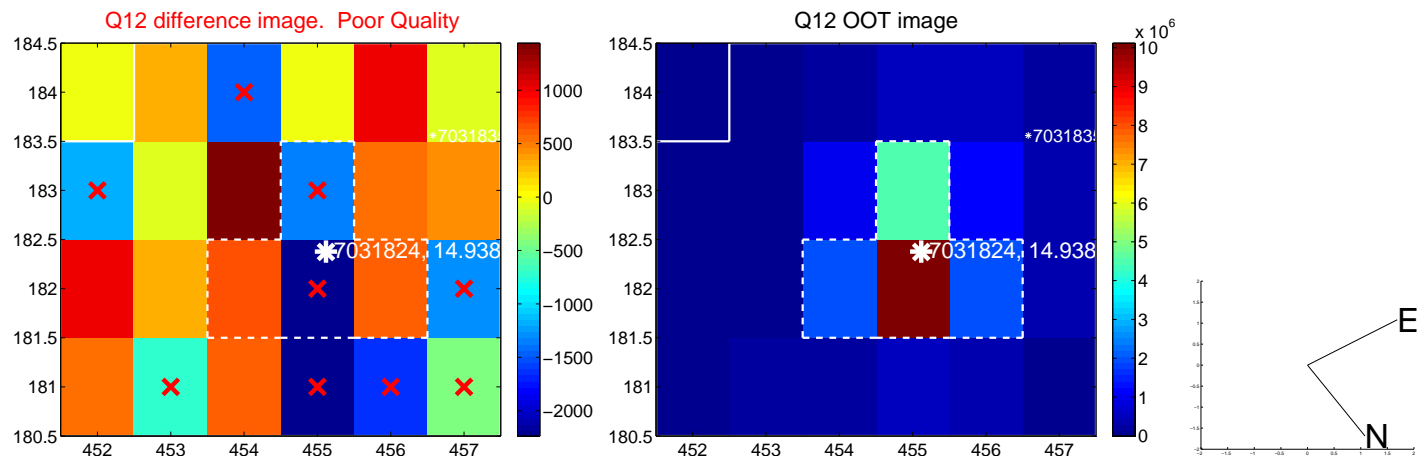
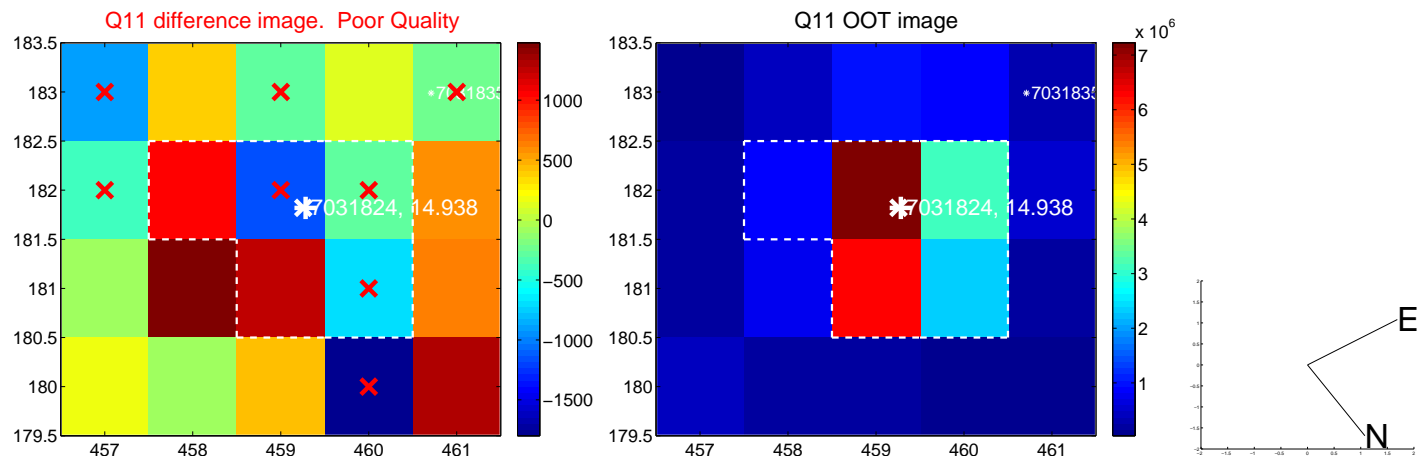
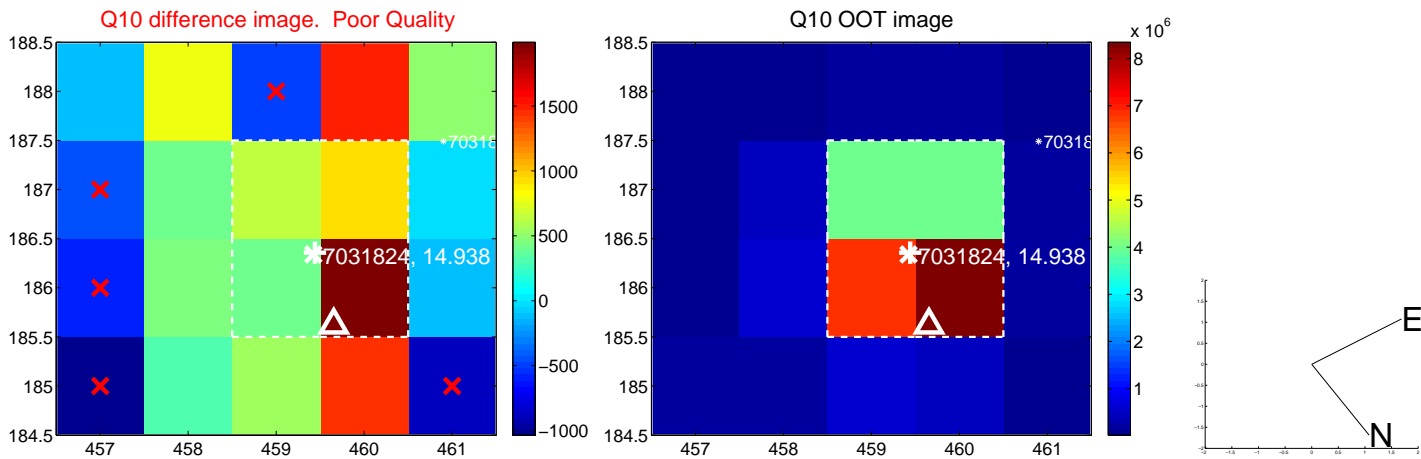
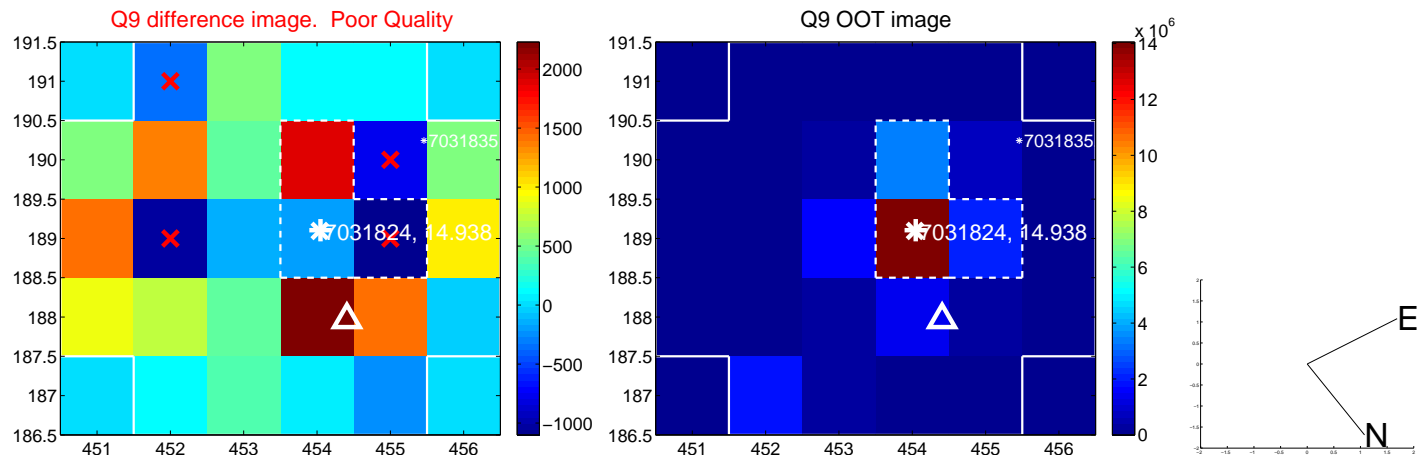
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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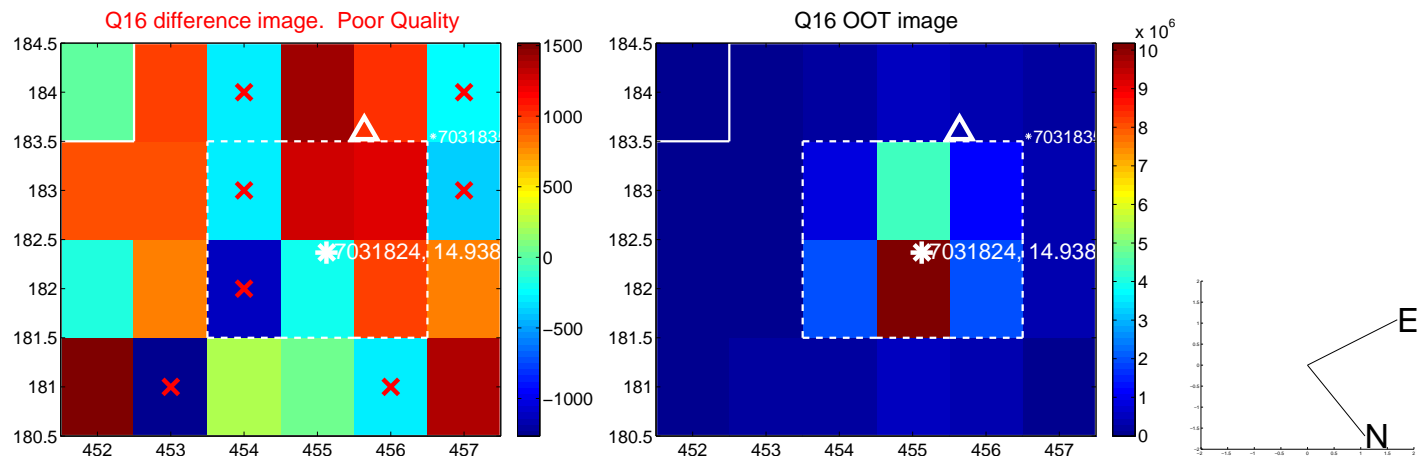
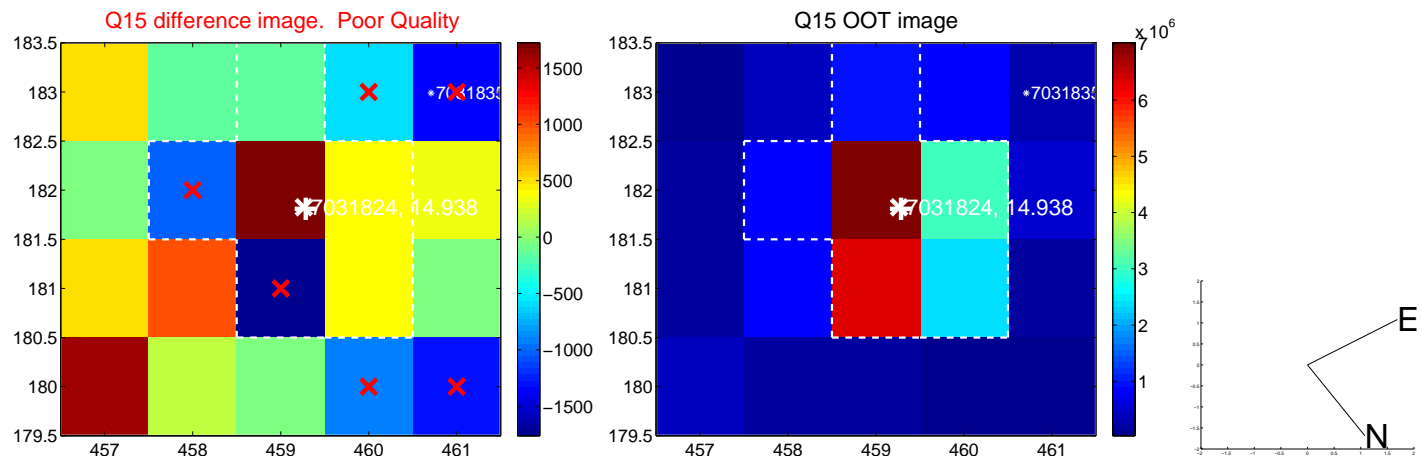
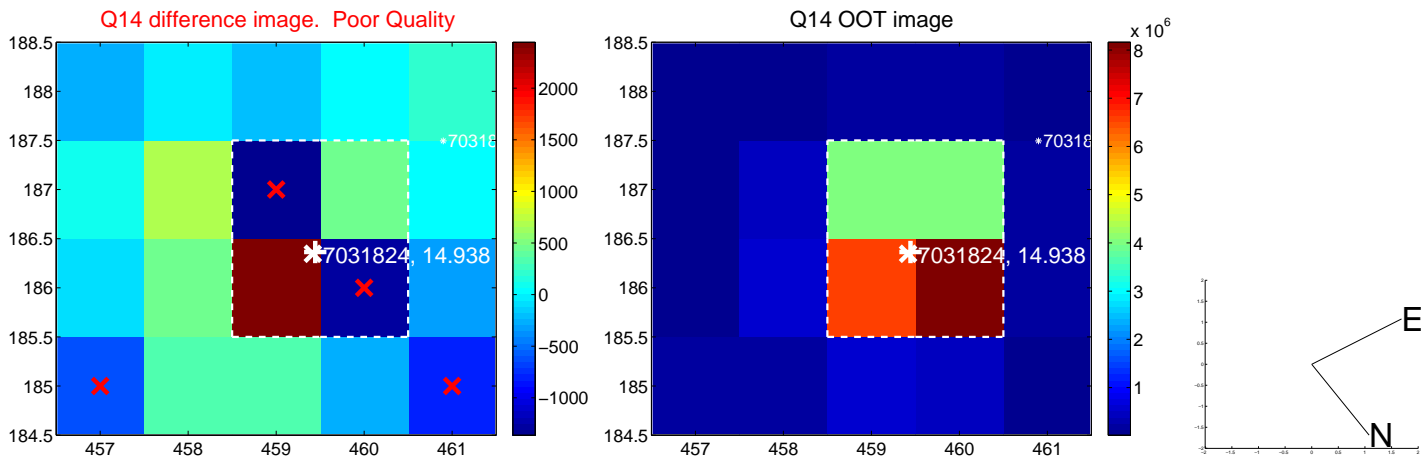
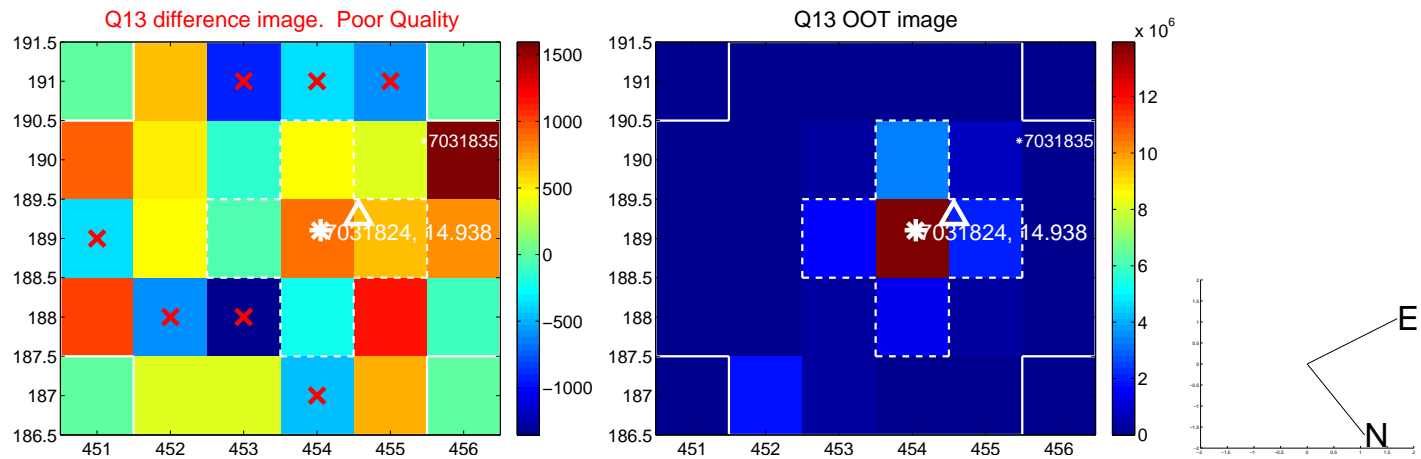


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

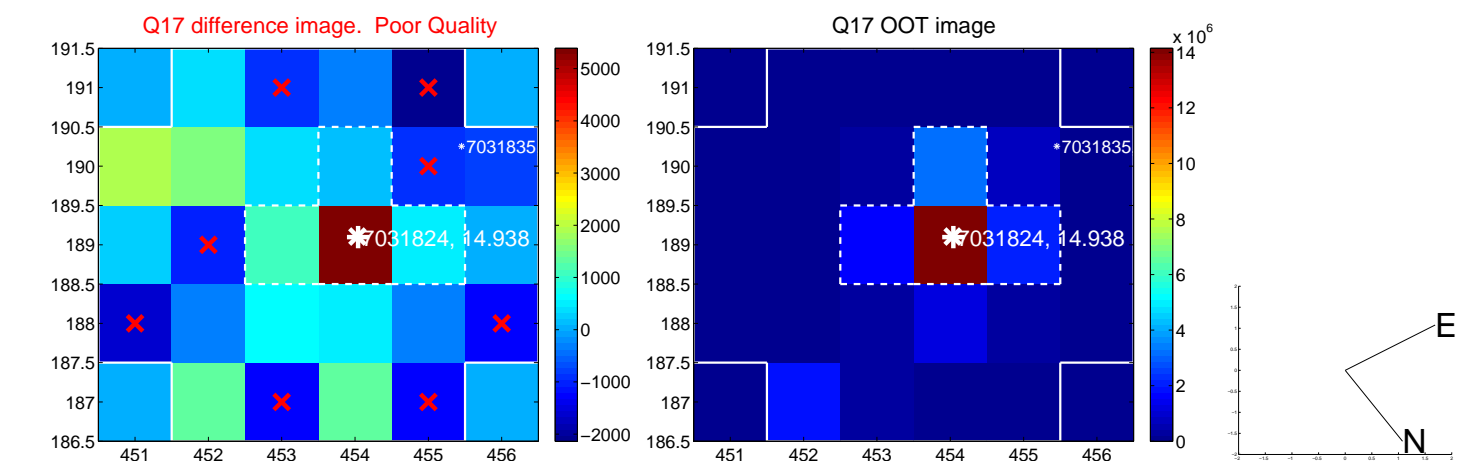




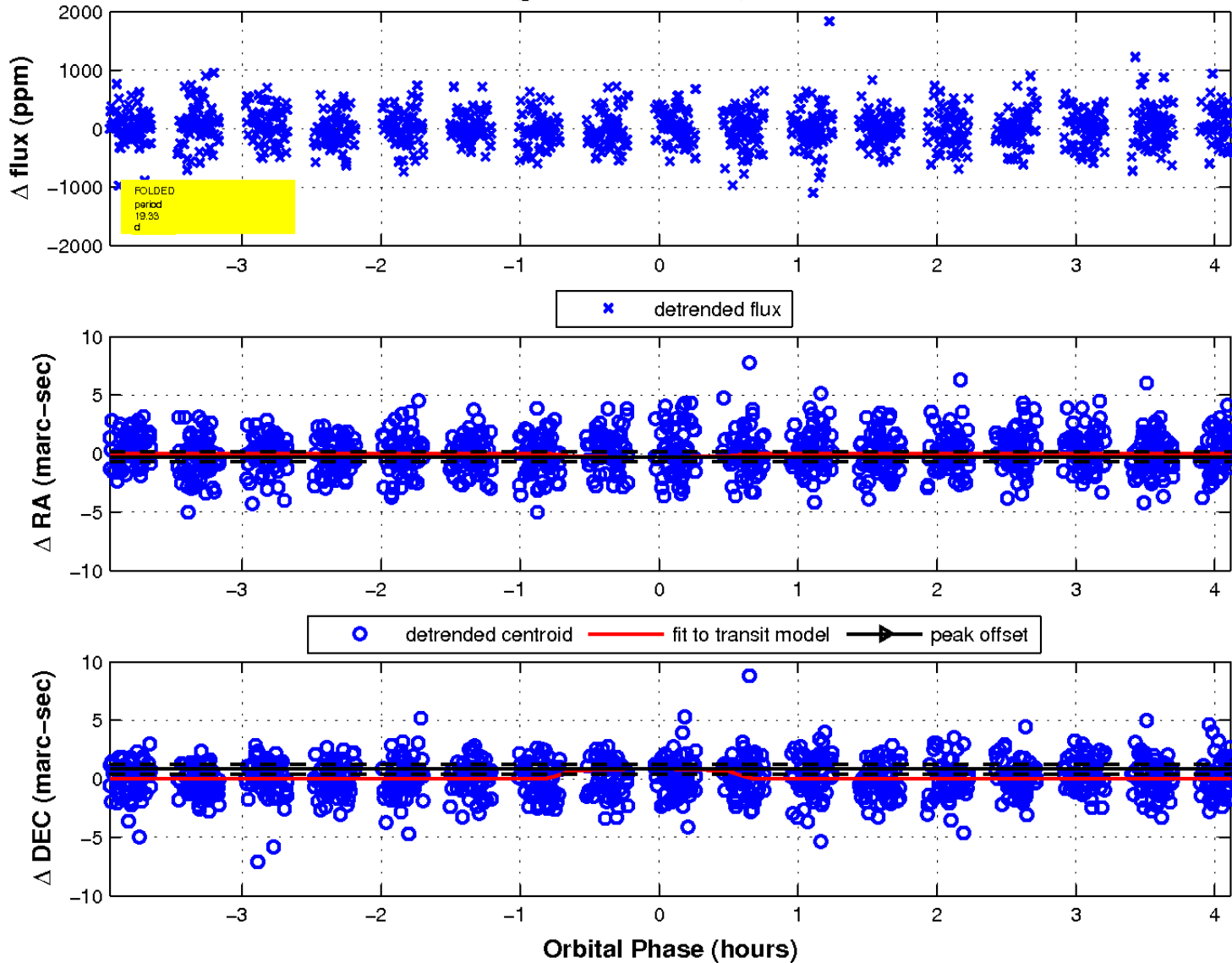
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

