

# KIC 010803371

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010803371-01	OBS	No	0.742574	132.042776	3.3	2.162	9.9	1.0	3.56	7557	0.70	88668.26
010803371-02	OBS	No	0.742332	131.668675	5.5	1.387	8.7	1.2	3.56	7557	1.04	88706.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010803371-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
010803371-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

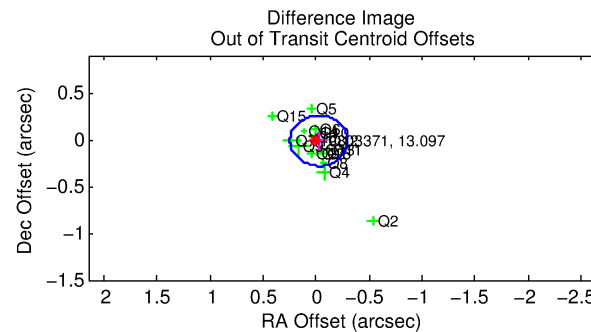
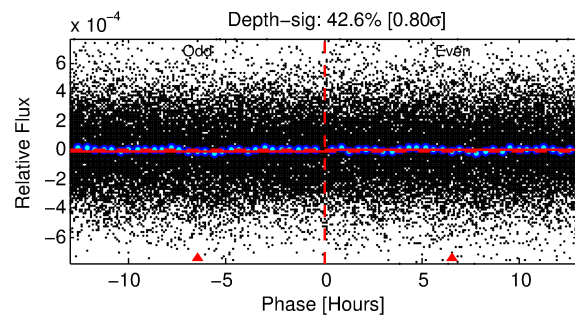
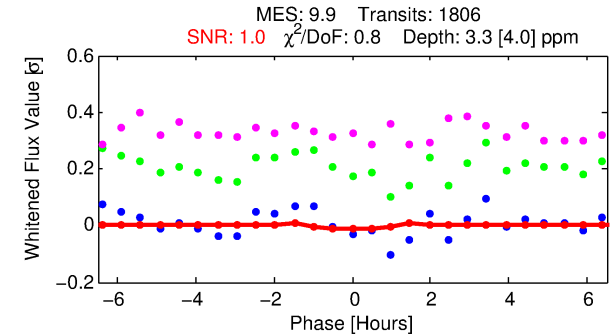
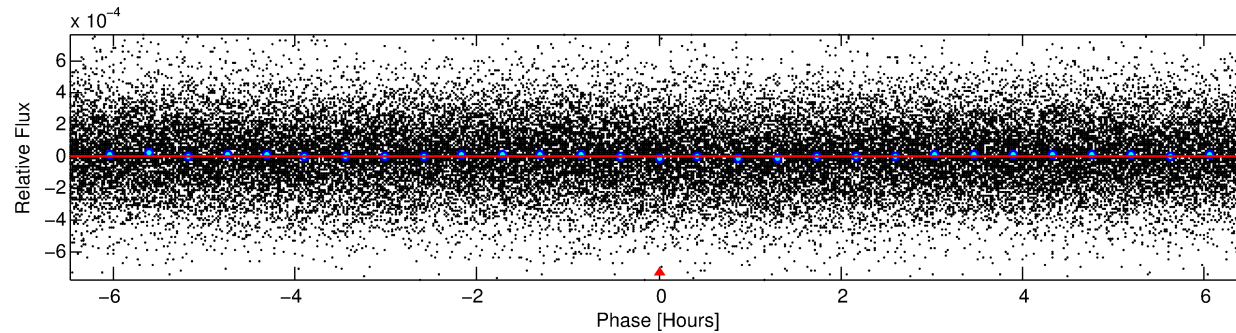
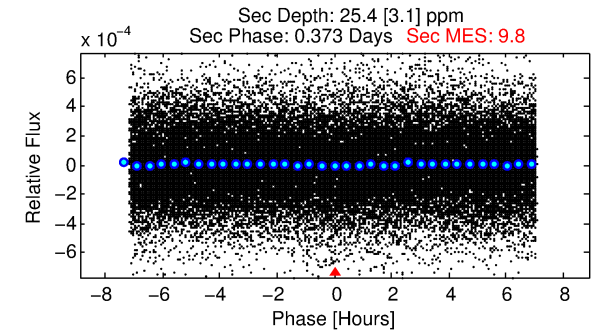
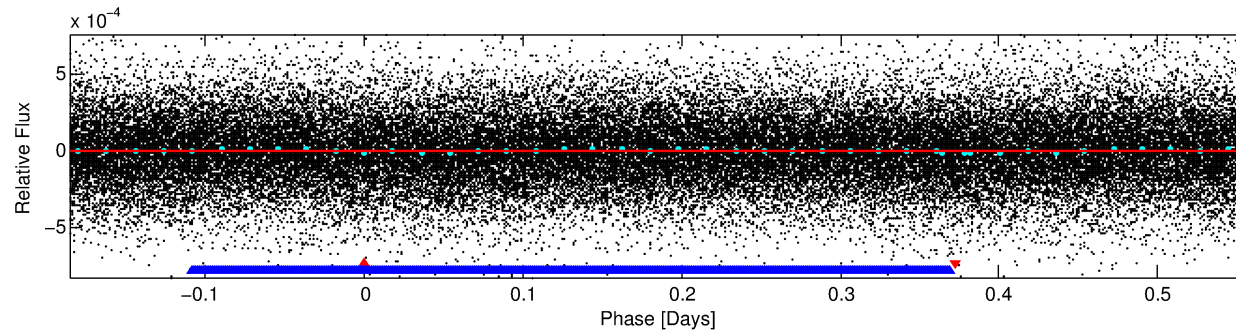
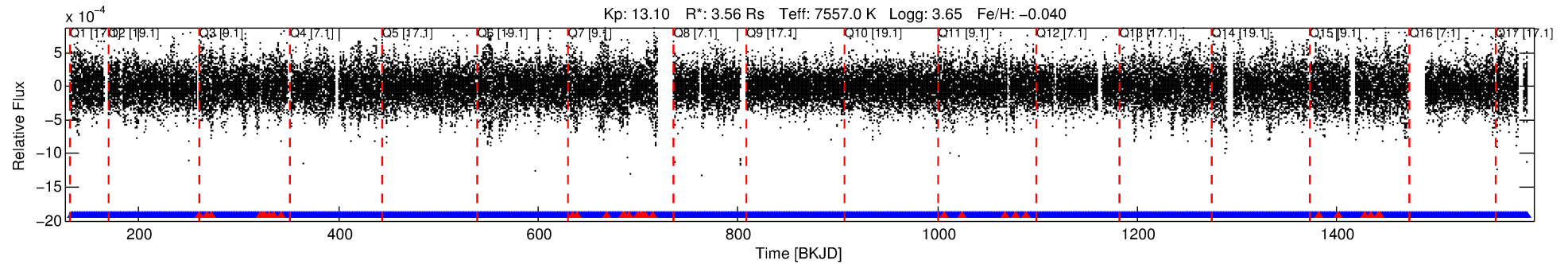
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010803371-01

No Significant Match Found

# DV One-Page Summary

KIC: 10803371 Candidate: 1 of 2 Period: 0.743 d



## DV Fit Results:

Period = 0.74257 [0.00009] d  
Epoch = 132.0428 [0.0170] BKJD  
Rp/R\* = 0.0018 [0.0012]  
a/R\* = 1.94 [2.62]  
b = 0.75 [1.09]  
Seff = 88668.26 [74265.31]  
Teff = 4400 [921] K  
Rp = 0.70 [0.60] Re  
a = 0.0204 [0.0103] AU  
Ag = 11.92 [19.16] [0.57σ]  
Teffp = 12640 [4413] K [1.83σ]

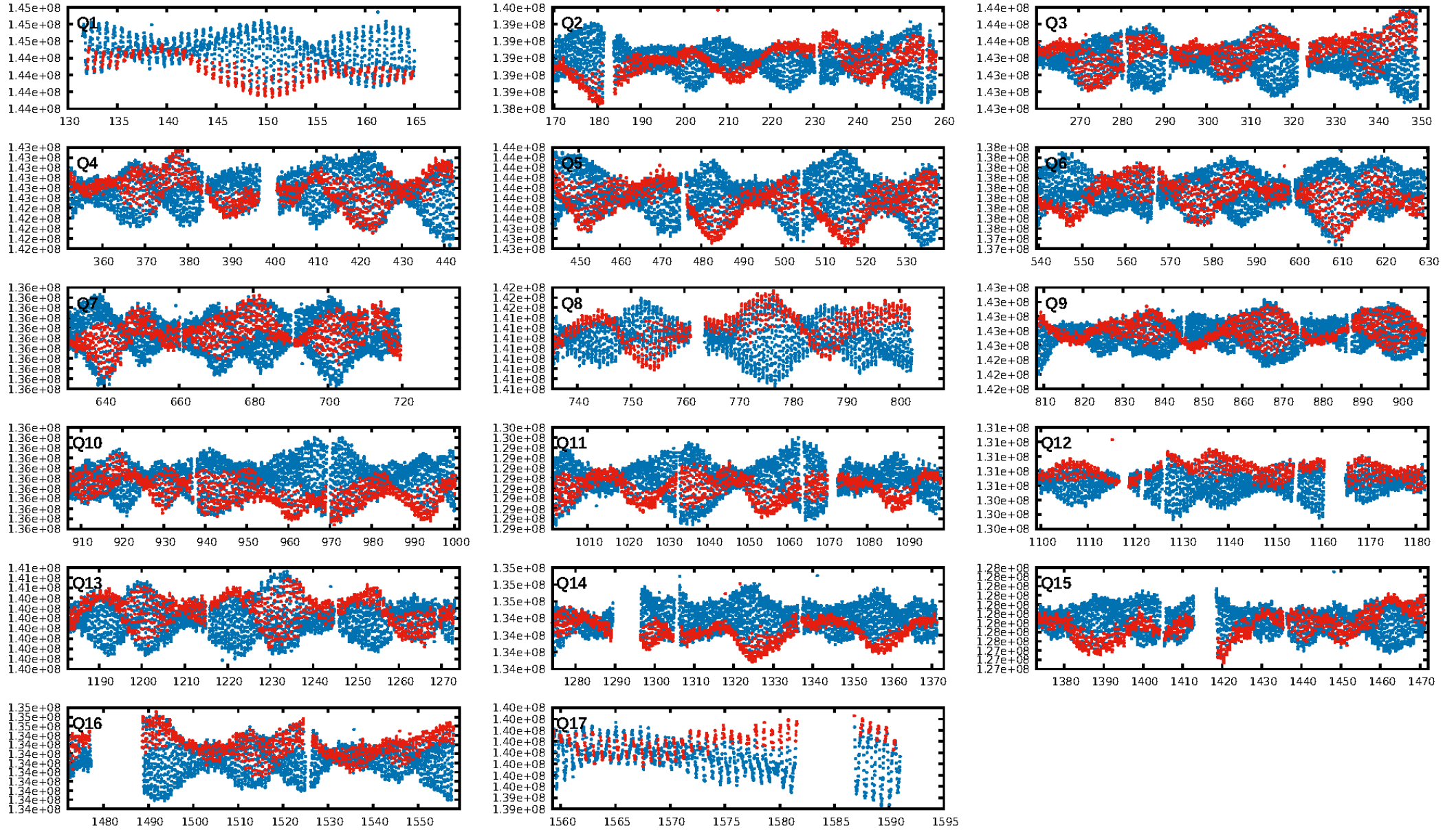
## DV Diagnostic Results:

**ShortPeriod-sig: 0.2% [0.00σ]**  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.05e-24  
RollingBand-fgt: 0.98 [1693/1725]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.026 arcsec [0.29σ]  
OotOffset-st: 4/4/4/5 [17]  
**KicOffset-rm: 0.289 arcsec [3.07σ]**  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.47 [8/17]  
DiffImageOverlap-fno: 0.24 [4/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:05:09 Z

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

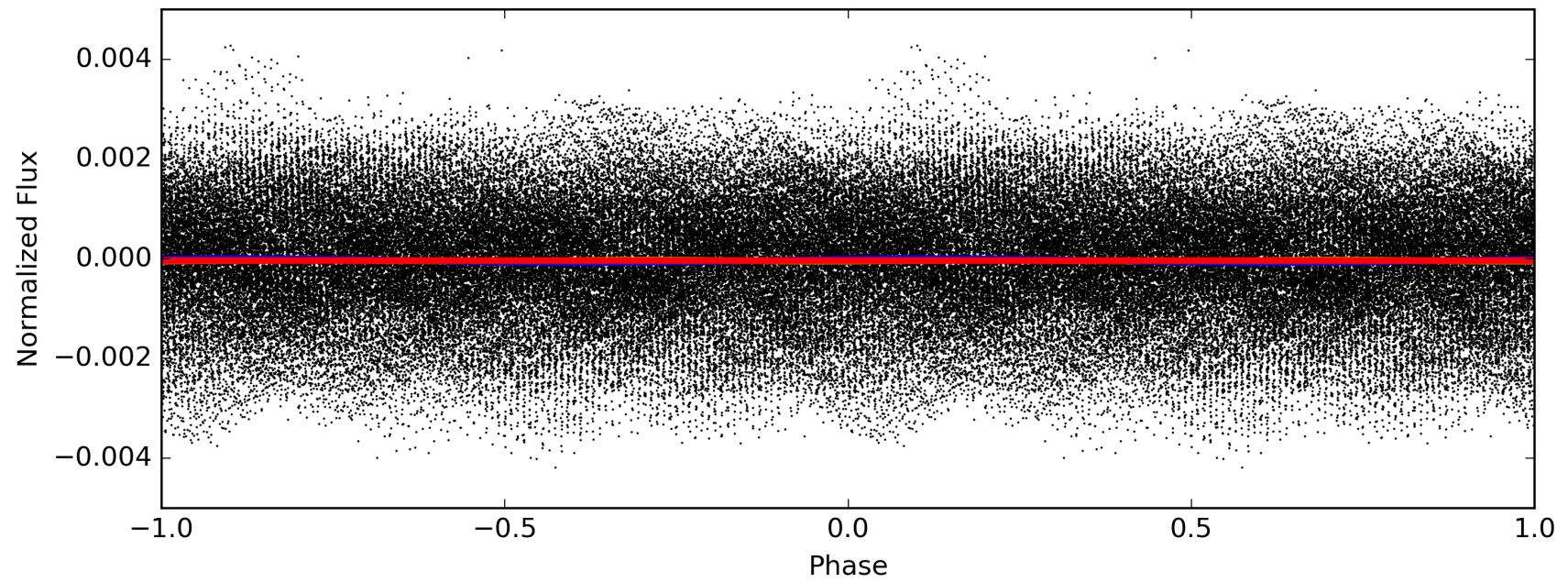
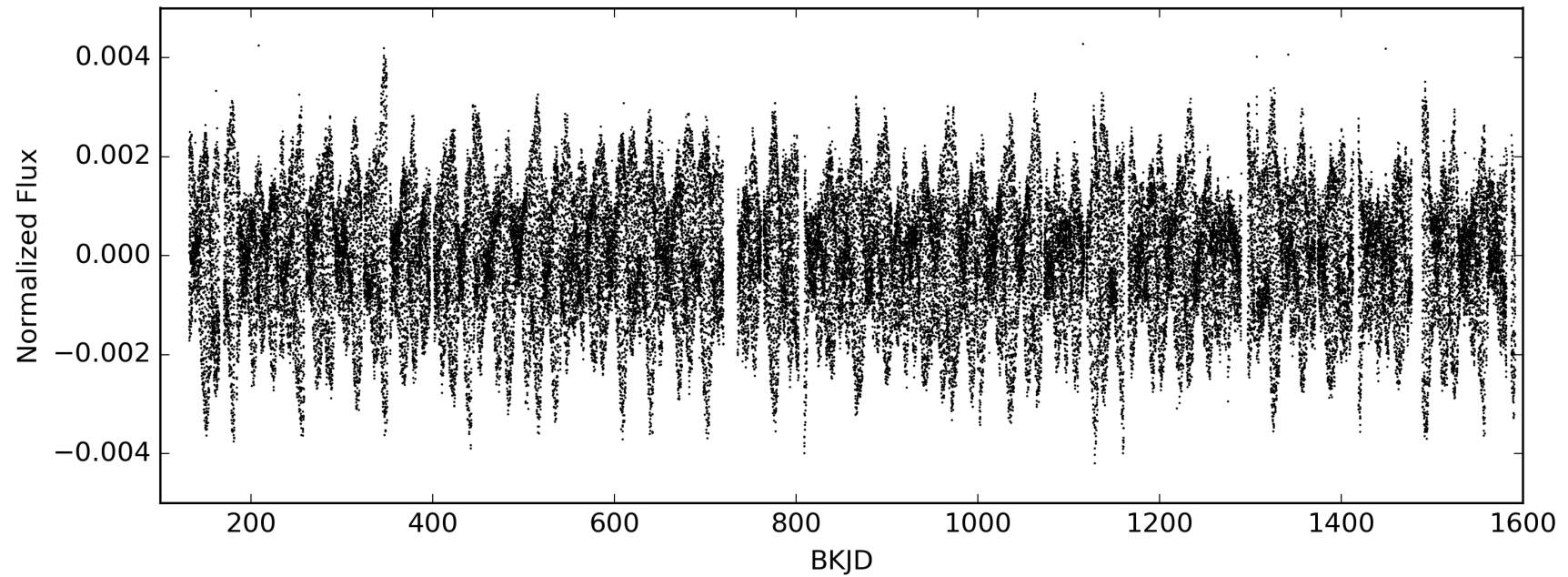
# TCE 010803371-01, PDC Light Curves





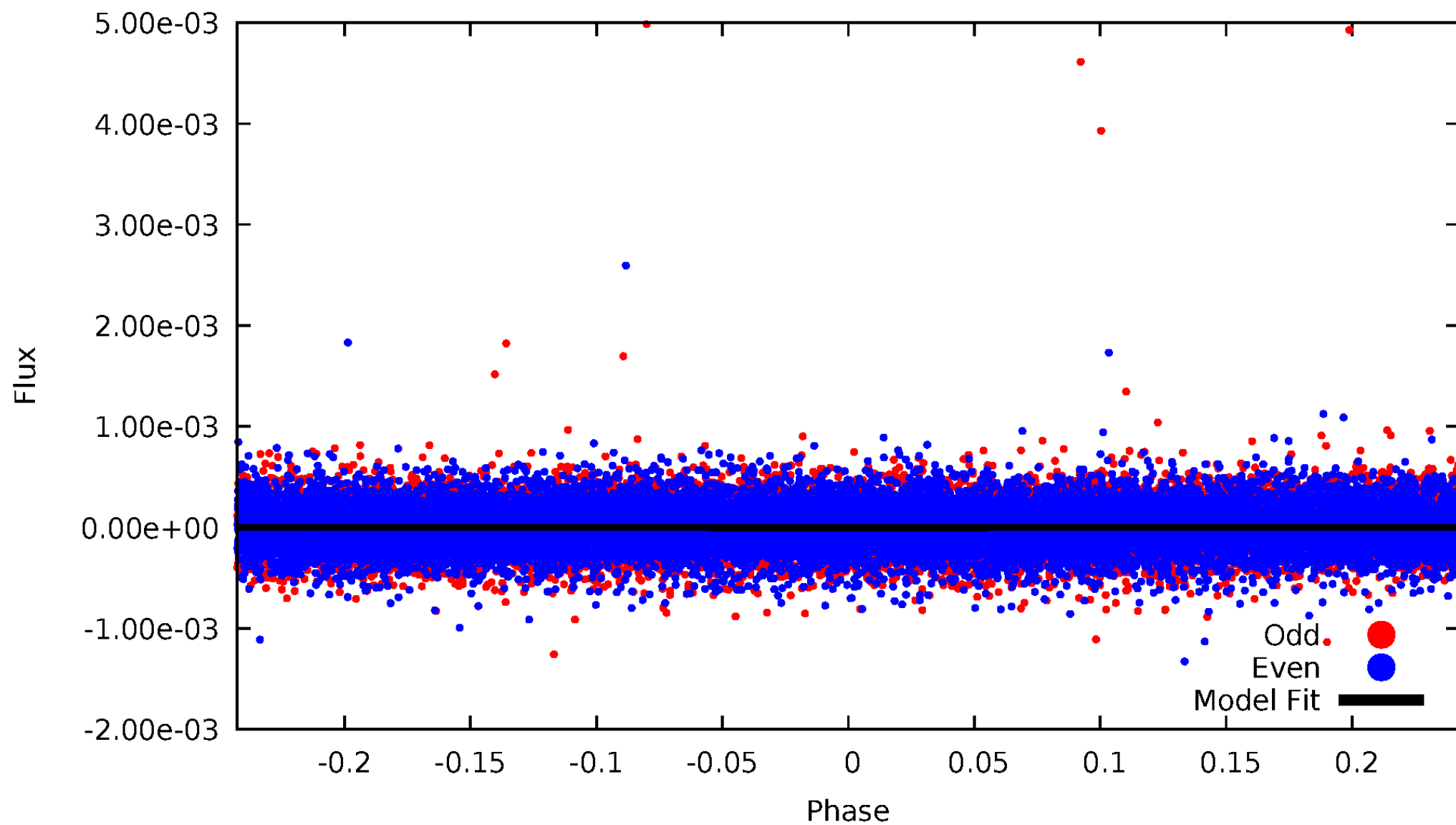
TCE 010803371-01

— P = 0.371 days — P = 0.743 days — P = 1.485 days



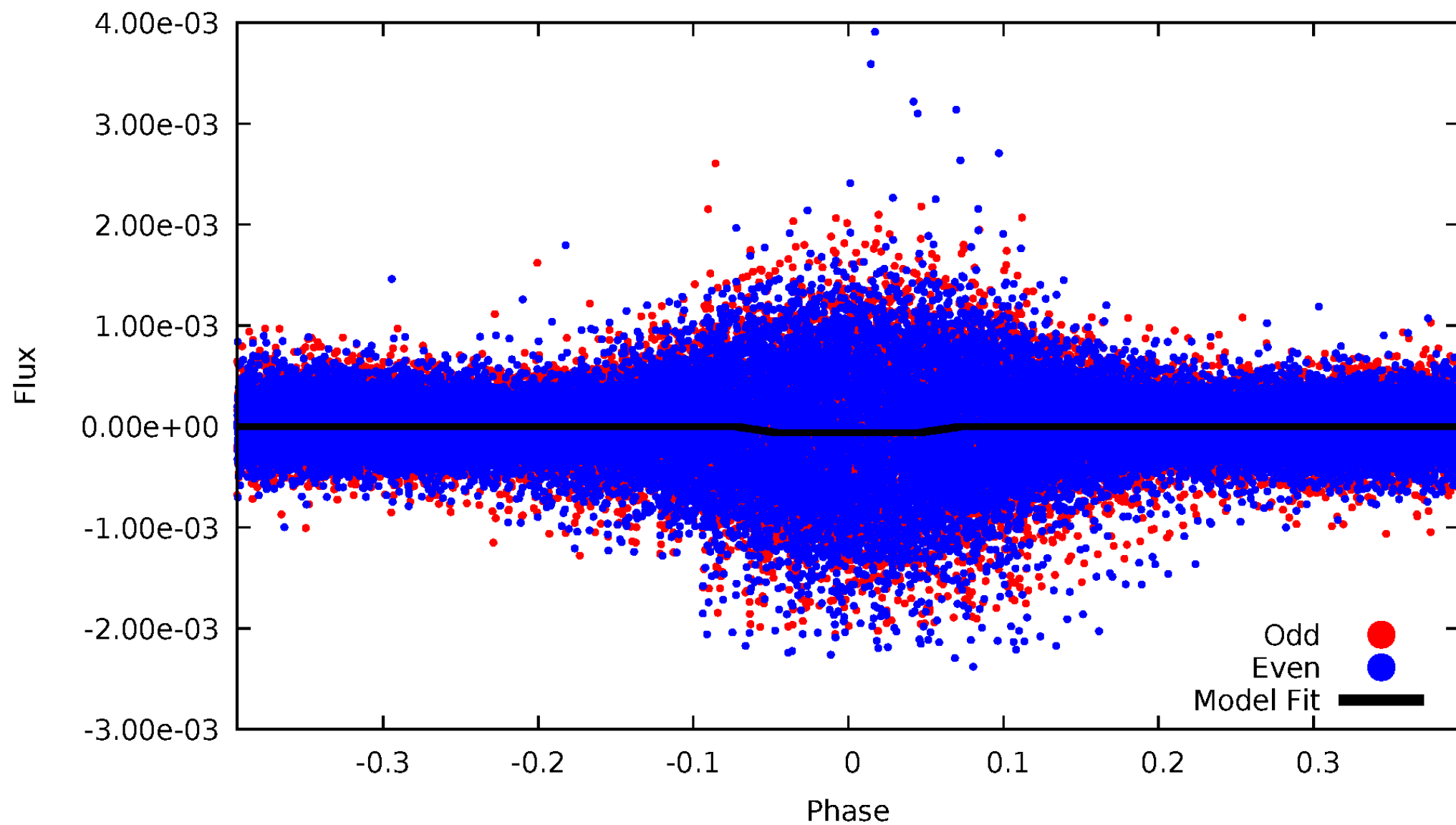
# DV Odd/Even

TCE 010803371-01

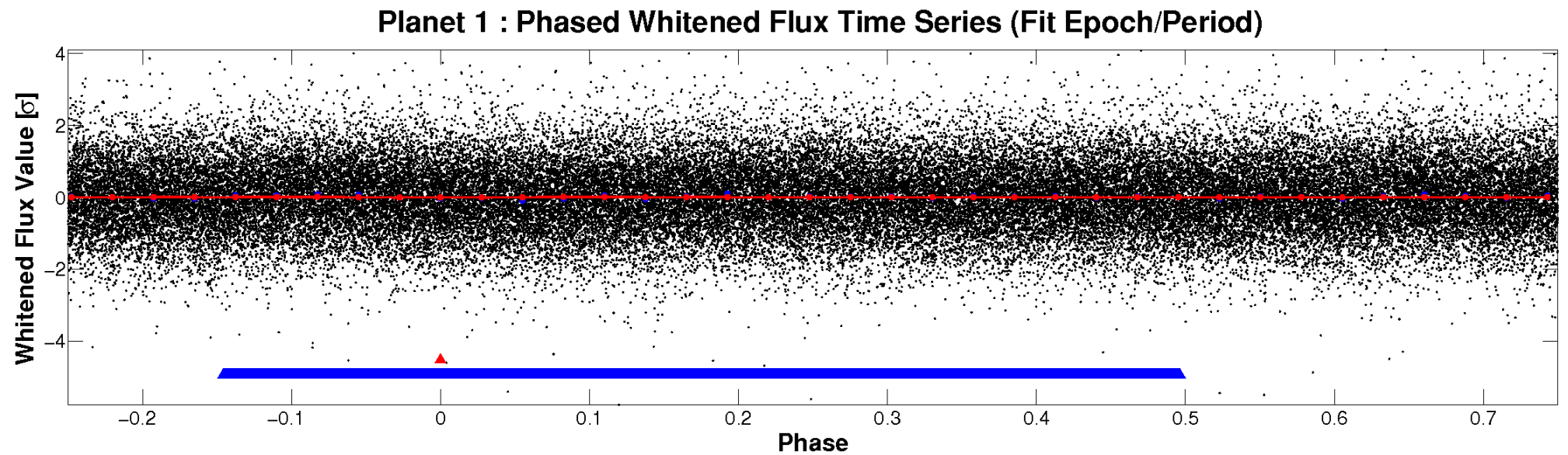
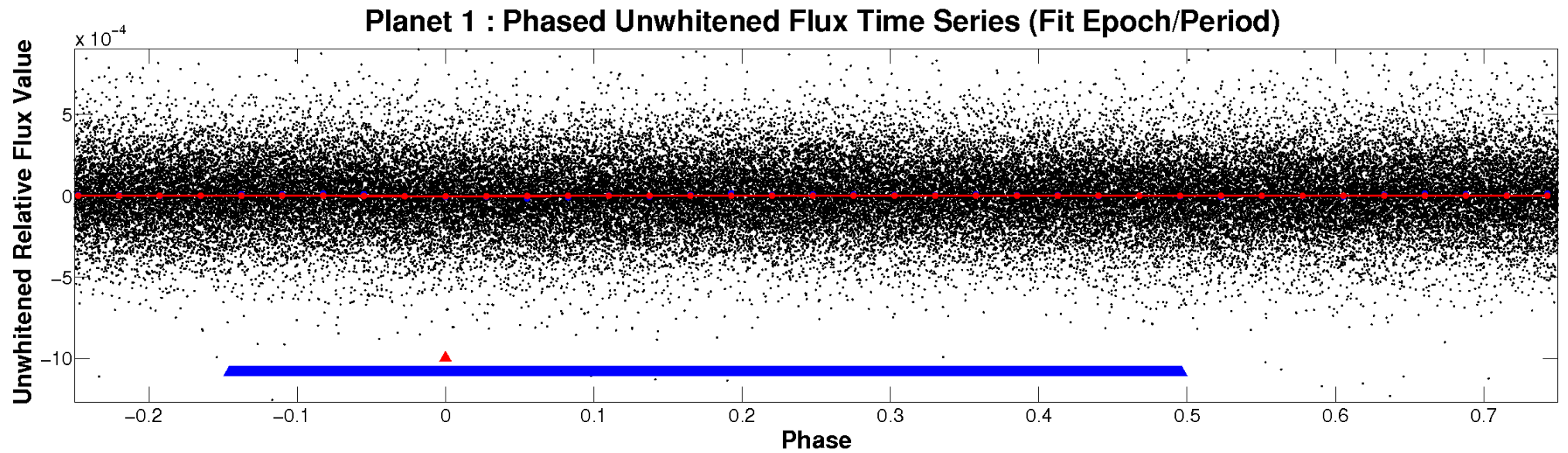


# ALT Odd/Even

TCE 010803371-01



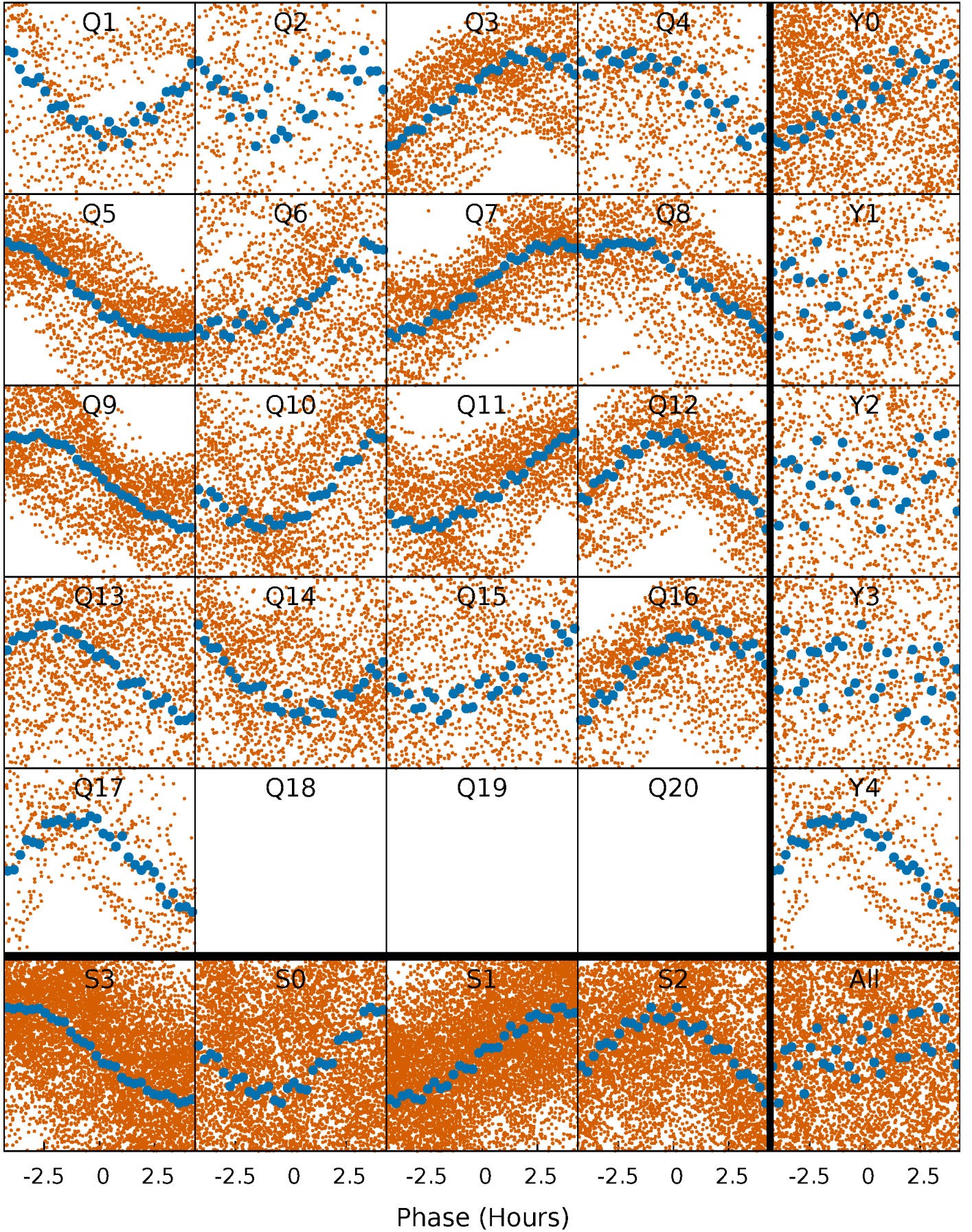
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

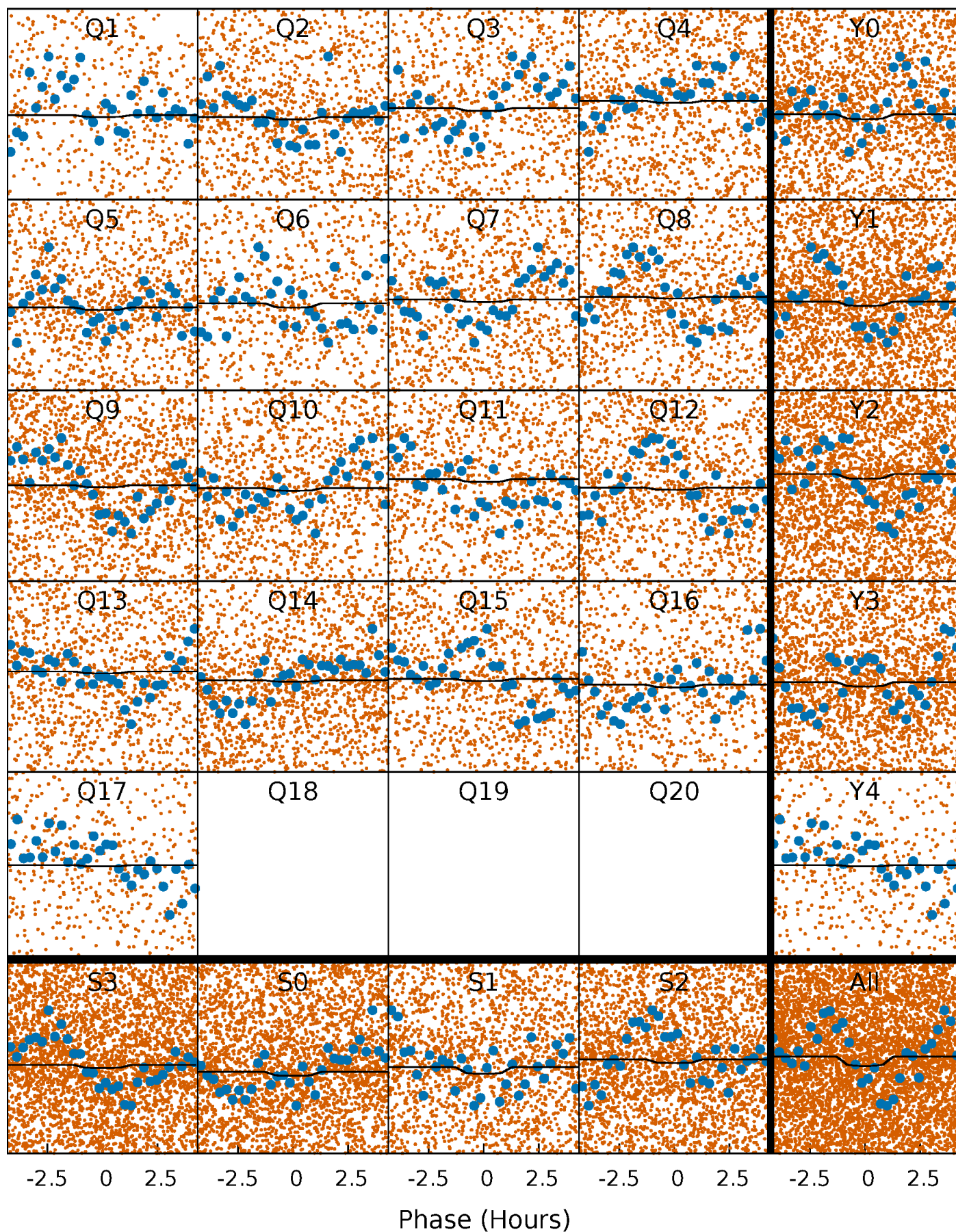
TCE 010803371-01   P= 0.742574 Days    $T_0=132.042776$  (BKJD)





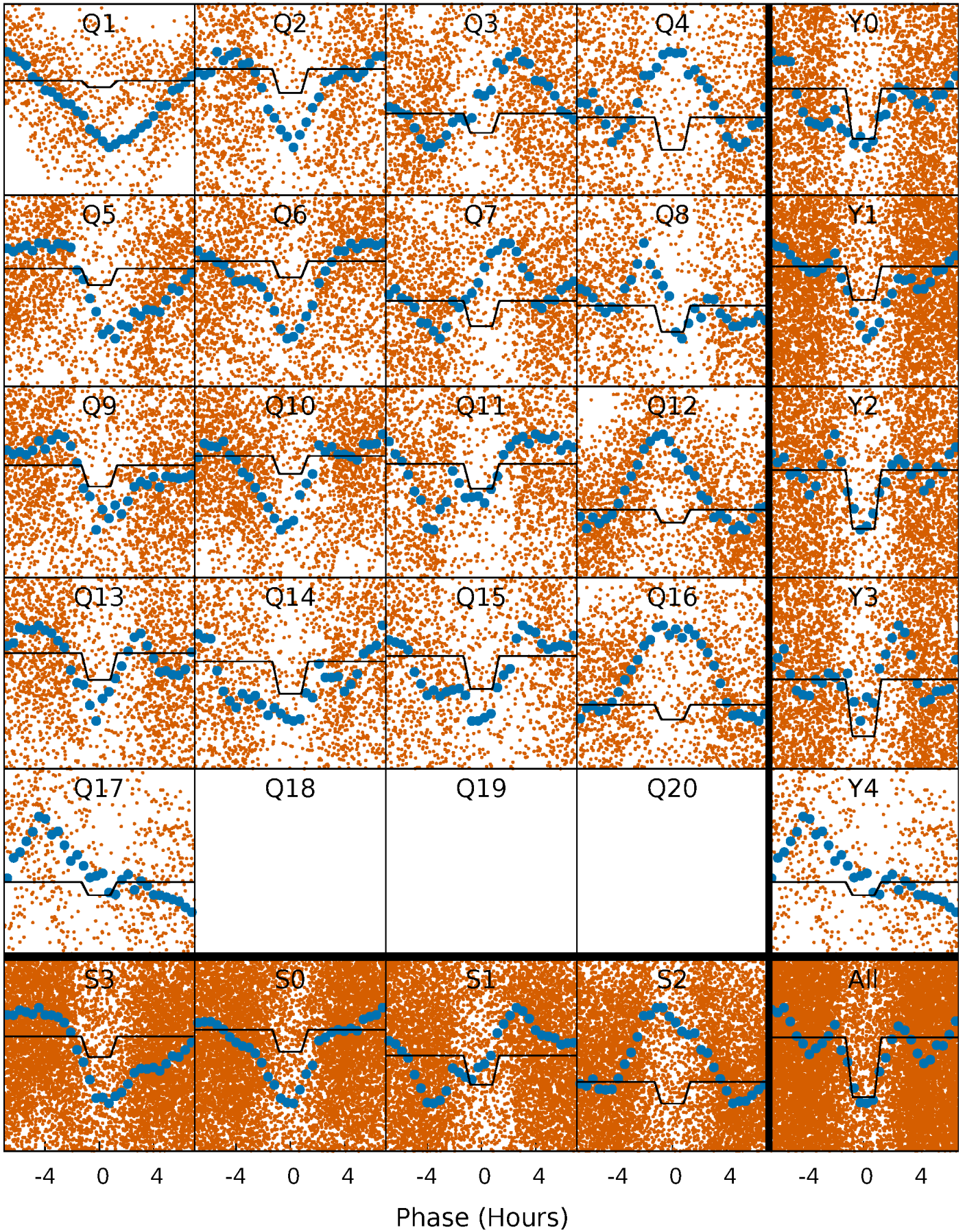
# DV Quarter-Phased Transit Curves

TCE 010803371-01   P= 0.742574 Days    $T_0=132.042776$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010803371-01 P= 0.742647 Days  $T_0=131.994338$  (BKJD)

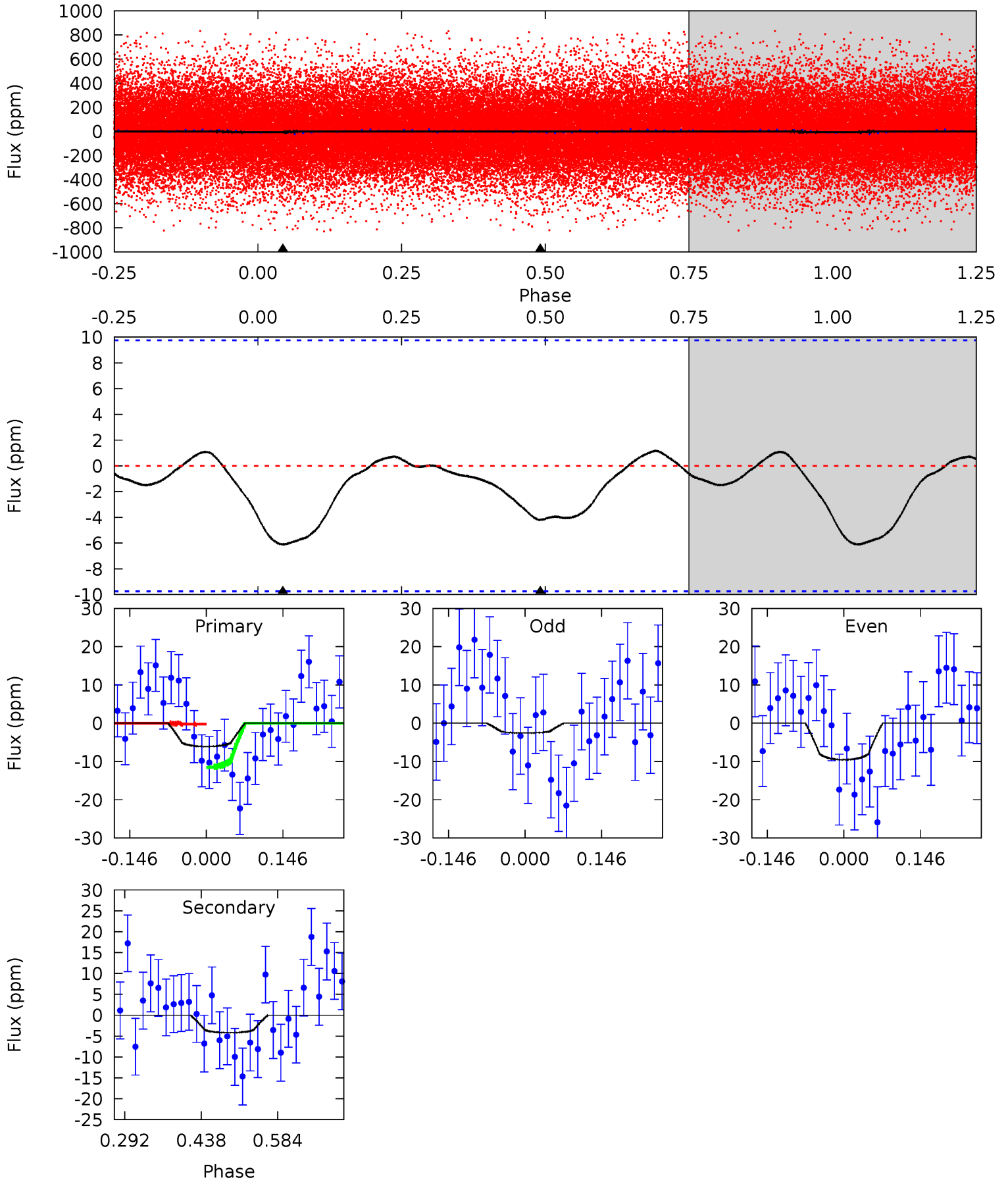




# DV Model-Shift Uniqueness Test

010803371-01, P = 0.742574 Days, E = 131.300202 Days

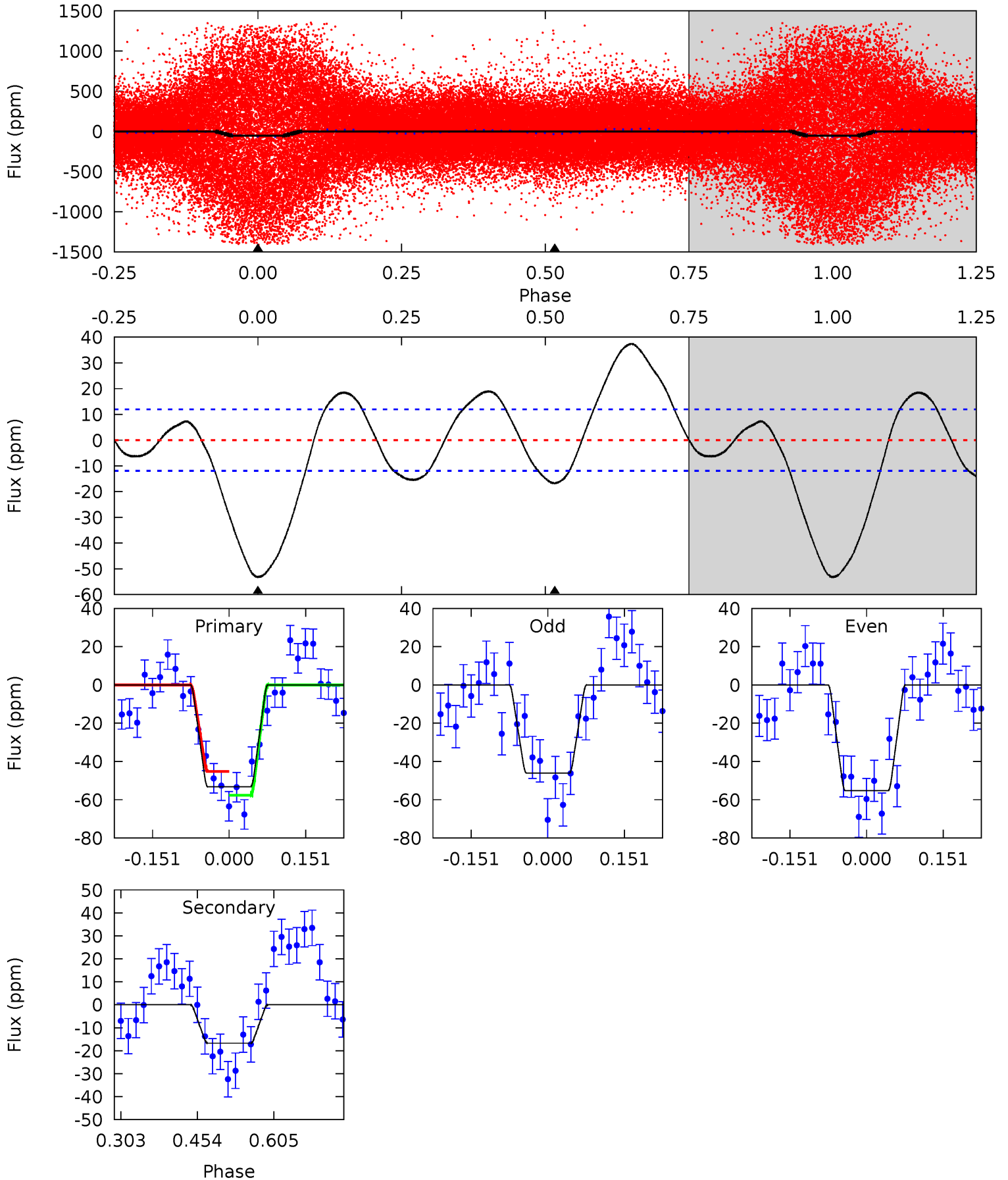
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.81	1.93	0	0	4.48	1.45	0.34	2.81	2.81	1.93	1.93	1.61	0.61	0.16	2.61



# Alt Model-Shift Uniqueness Test

010803371-01, P = 0.742647 Days, E = 131.251691 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
20.0	6.28	0	0	4.48	1.43	4.78	20.0	20.0	6.28	6.28	1.72	1.54	0.41	2.34





### Stellar Parameters For KIC 010803371

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7557^{+210}_{-341}$	$3.650^{+0.486}_{-0.081}$	$-0.040^{+0.200}_{-0.300}$	$3.562^{+0.560}_{-1.791}$	$2.066^{+0.241}_{-0.562}$	$0.064^{+0.305}_{-0.017}$
	+3%/-5%	+13%/-2%	+500%/-750%	+16%/-50%	+12%/-27%	+474%/-27%
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 010803371-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4 \pm 2$	$0.68^{+0.45}_{-0.39}$	$5897^{+448}_{-751}$	$6968^{+6280}_{-2427}$	$1.837^{+8.773}_{-1.324}$
Alt.	$-17 \pm 3$	$2.80^{+0.77}_{-0.77}$	$5893^{+422}_{-773}$	$4416^{+776}_{-1606}$	$0.490^{+0.422}_{-0.181}$

$T_{max}$  = 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

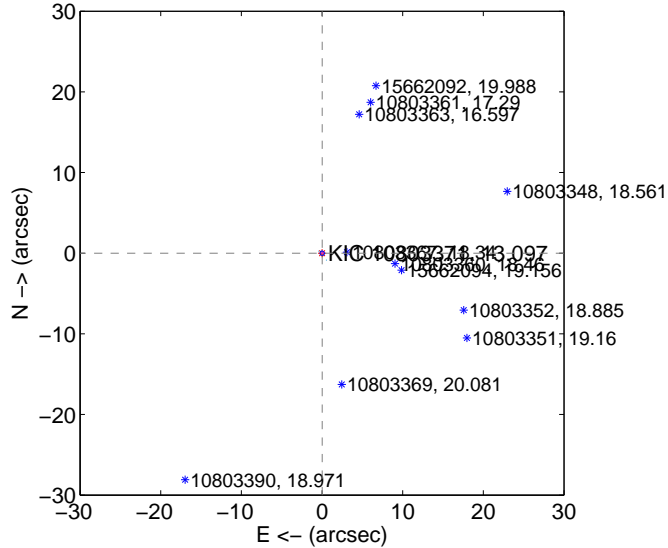
Supplemental centroid analysis for 010803371-01. Kepler magnitude: 13.10. Transit SNR 1.05

There are 8 quarters with good PRF difference image offsets

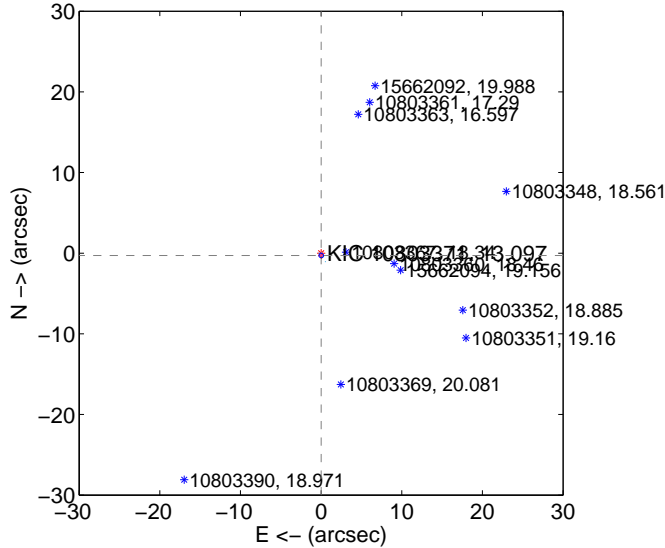
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.026 \pm 0.090$	0.29	$-0.023 \pm 0.079$	$-0.012 \pm 0.089$
PRF-fit source offset from KIC position	$0.289 \pm 0.094$	3.07	$-0.013 \pm 0.081$	$-0.289 \pm 0.093$
photometric centroid source offset	—	—	—	—

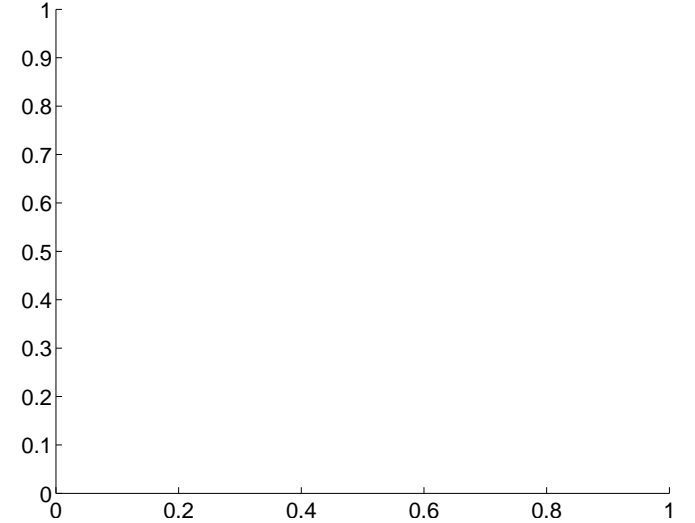
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

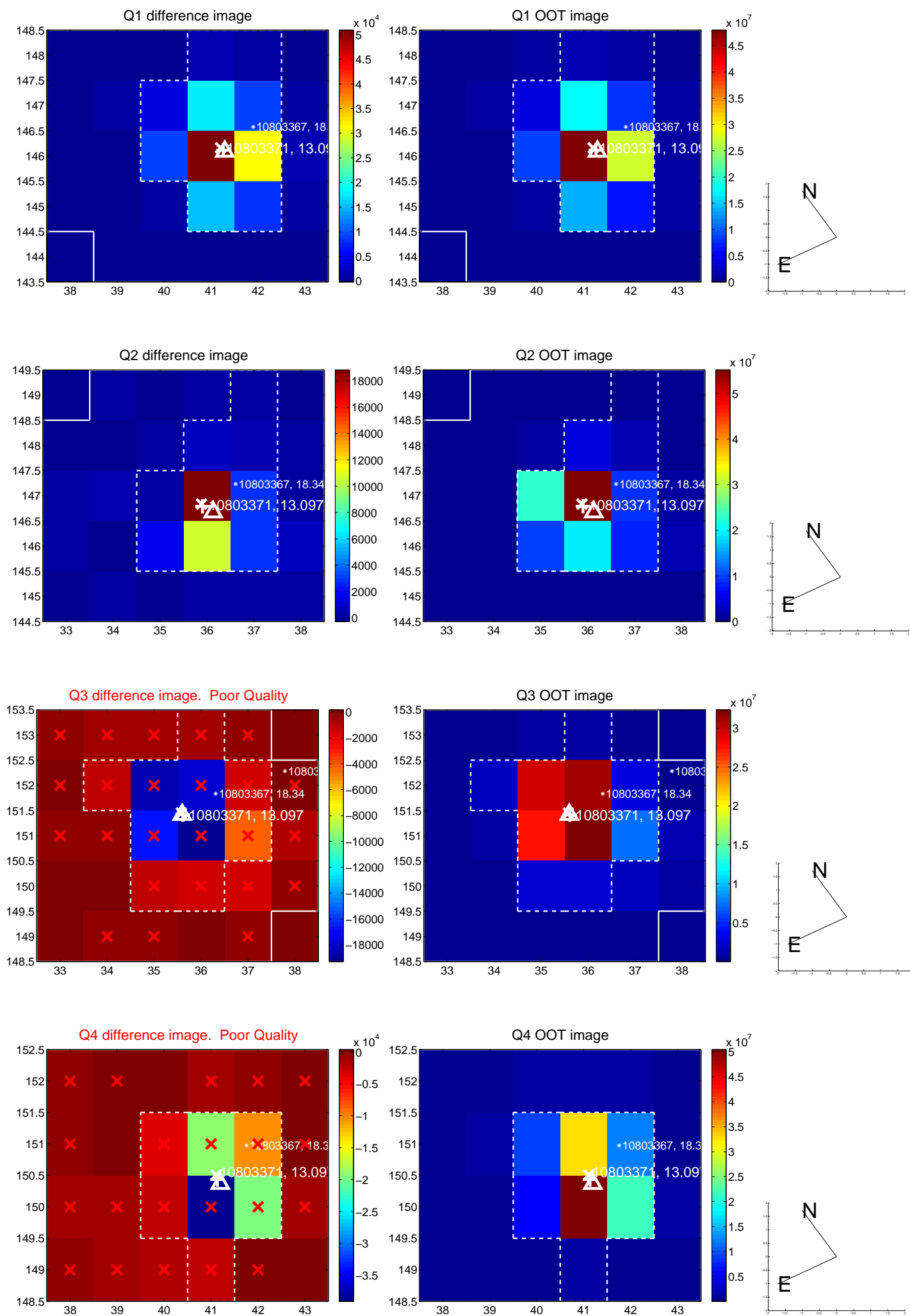


There are no photometric centroids

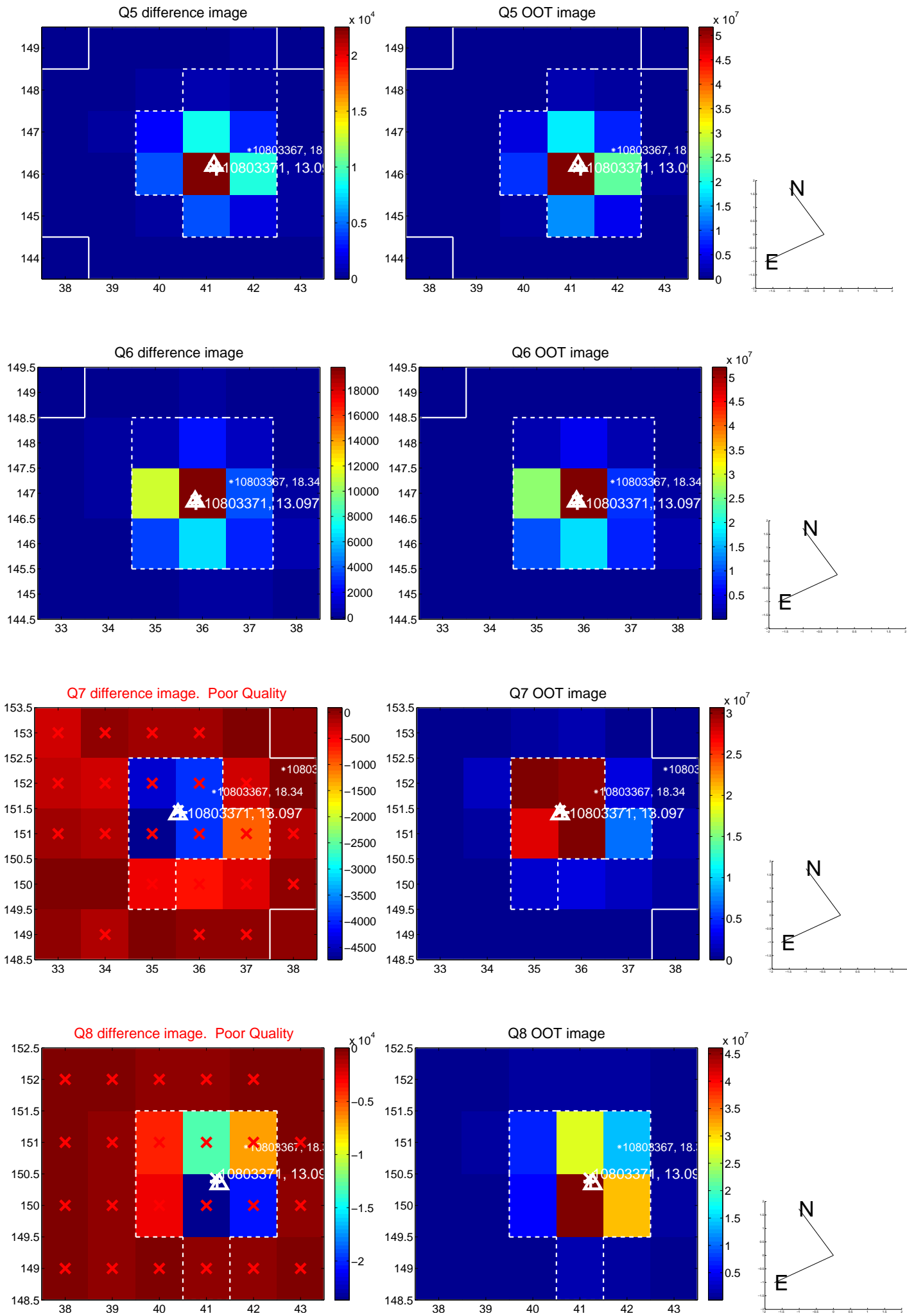


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

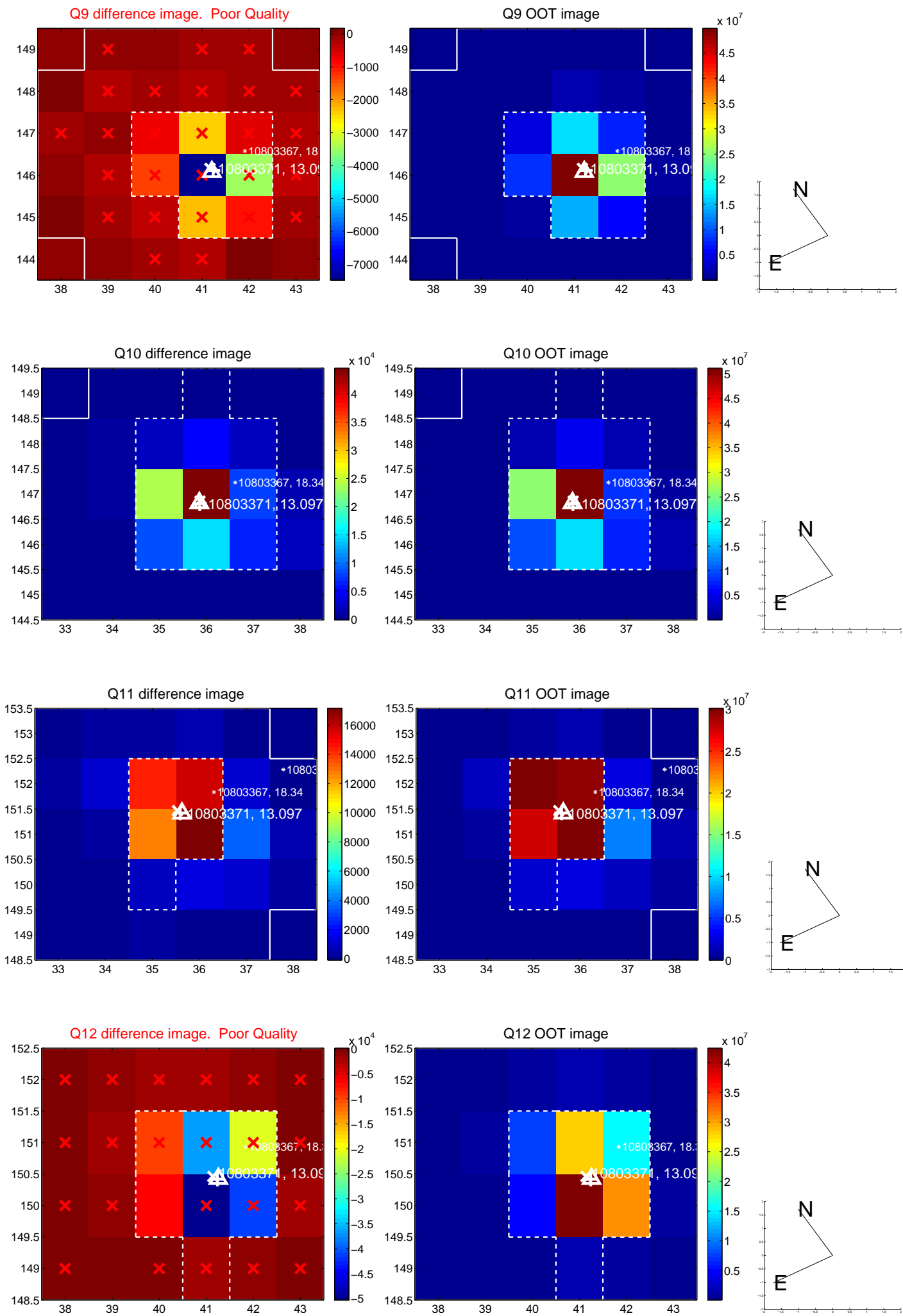


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

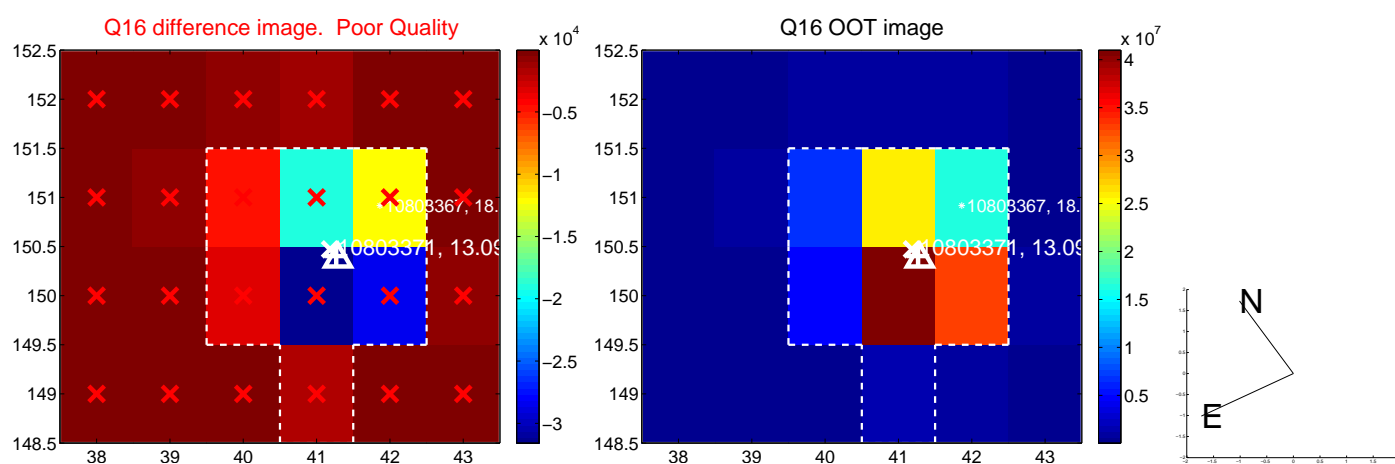
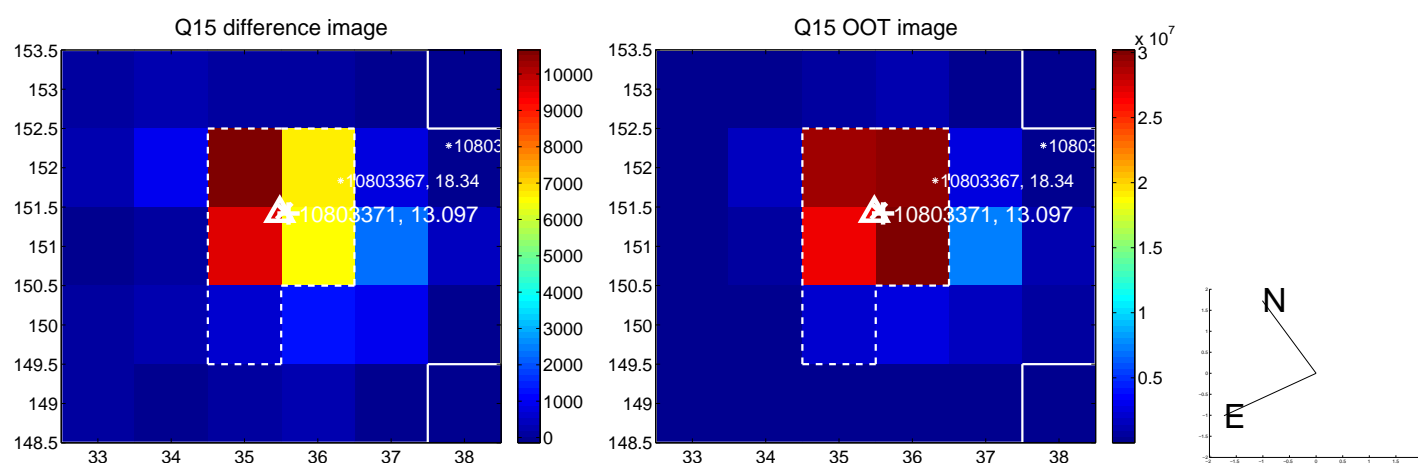
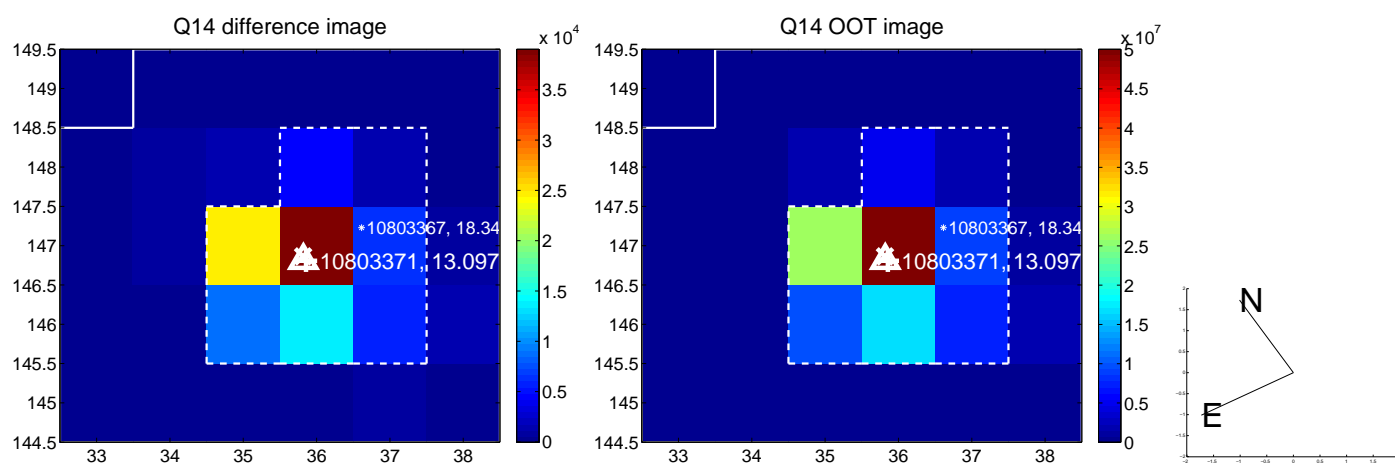
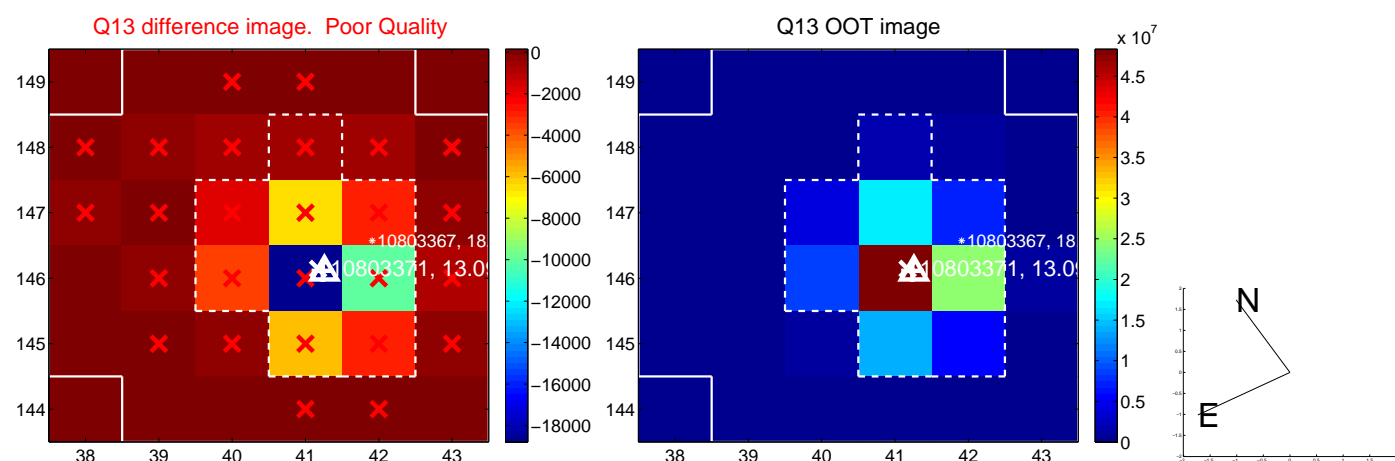




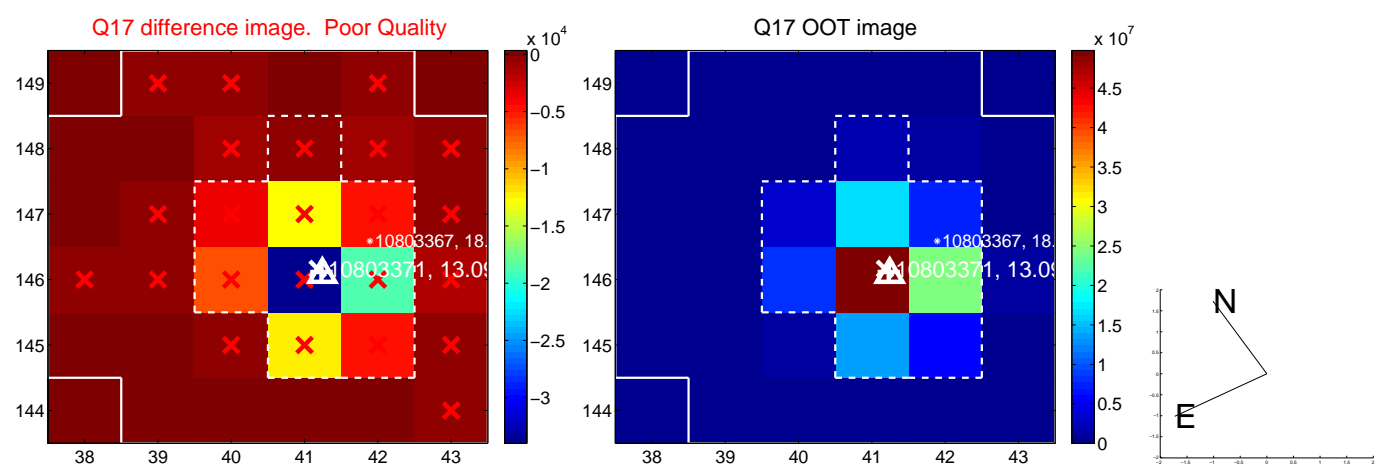
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



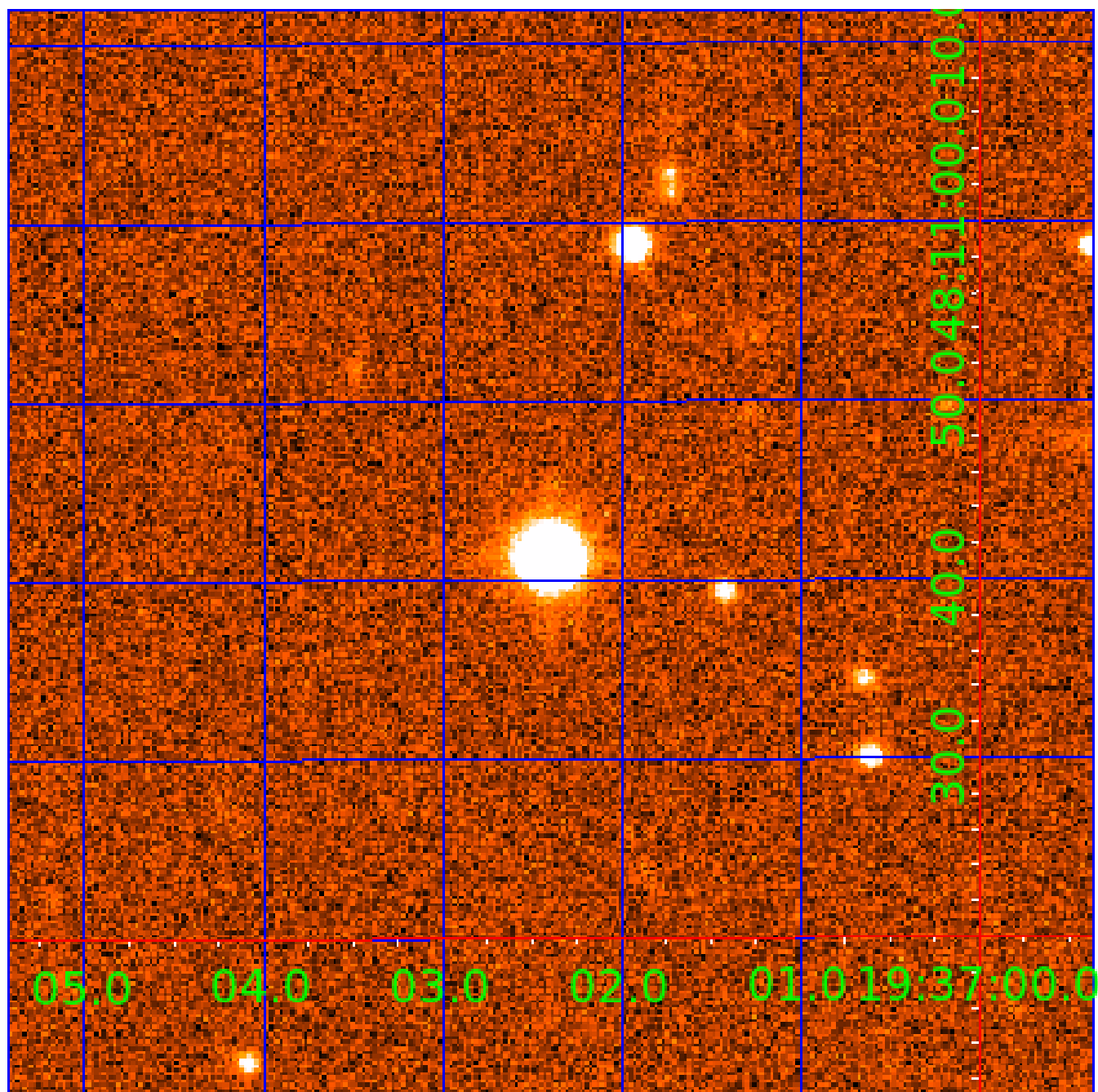
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 010803371

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010803371-01	OBS	No	0.742574	132.042776	3.3	2.162	9.9	1.0	3.56	7557	0.70	88668.26
010803371-02	OBS	No	0.742332	131.668675	5.5	1.387	8.7	1.2	3.56	7557	1.04	88706.90

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010803371-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
010803371-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

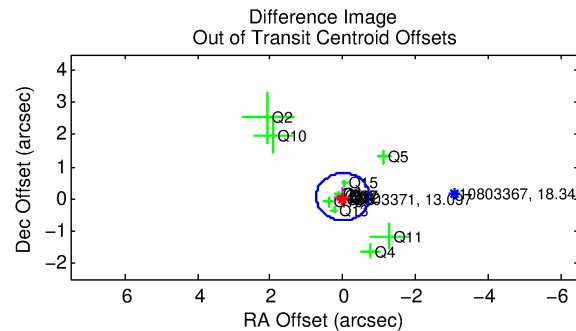
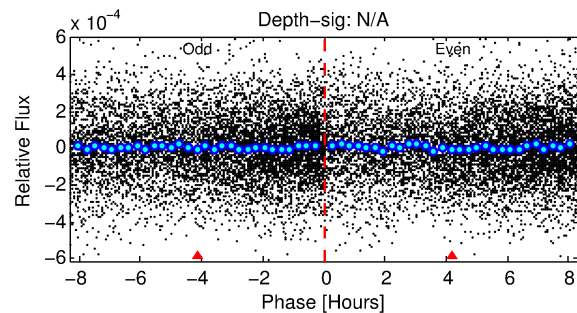
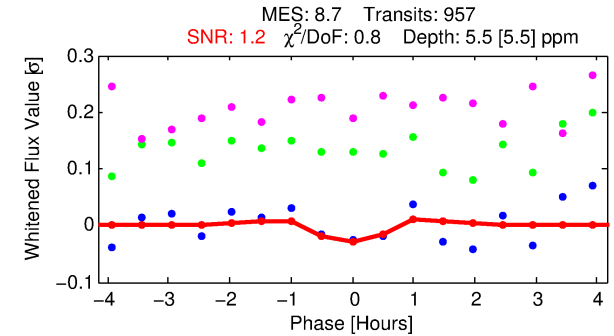
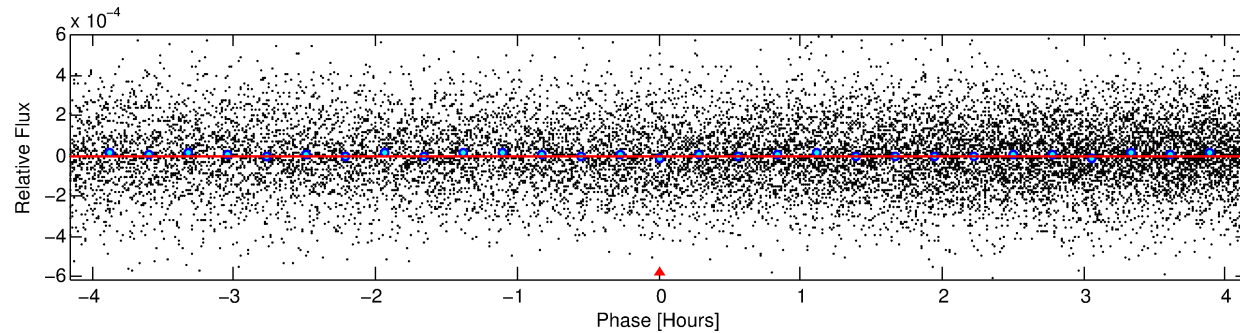
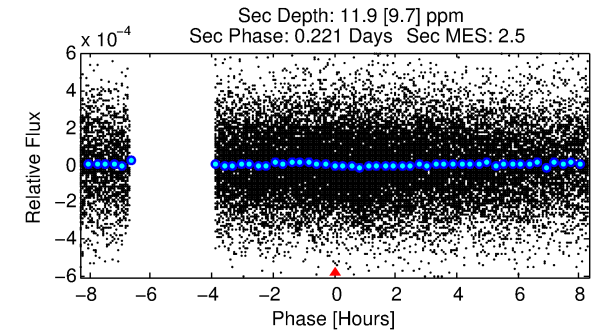
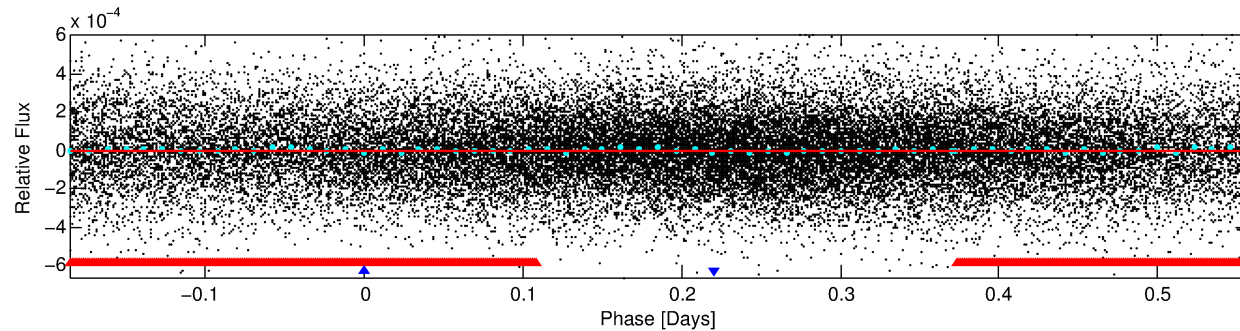
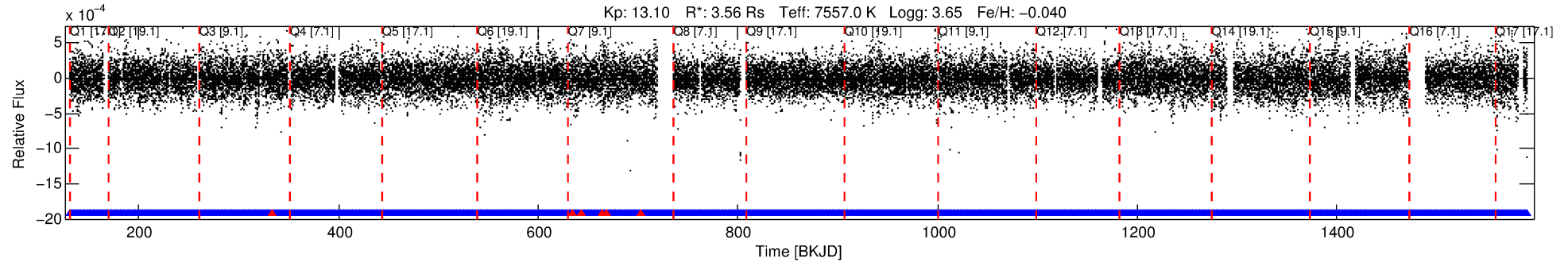
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010803371-02

No Significant Match Found

# DV One-Page Summary

KIC: 10803371 Candidate: 2 of 2 Period: 0.742 d



## DV Fit Results:

Period = 0.74233 [0.00006] d  
Epoch = 131.6687 [0.0130] BKJD  
Rp/R\* = 0.0027 [0.0030]  
a/R\* = 1.54 [6.12]  
b = 0.96 [0.58]  
Seff = 88706.89 [74297.67]  
Teff = 4401 [921] K  
Rp = 1.04 [1.27] Re  
a = 0.0204 [0.0103] AU  
Ag = 2.51 [6.27] [0.24σ]  
Teffp = 8561 [5071] K [0.81σ]

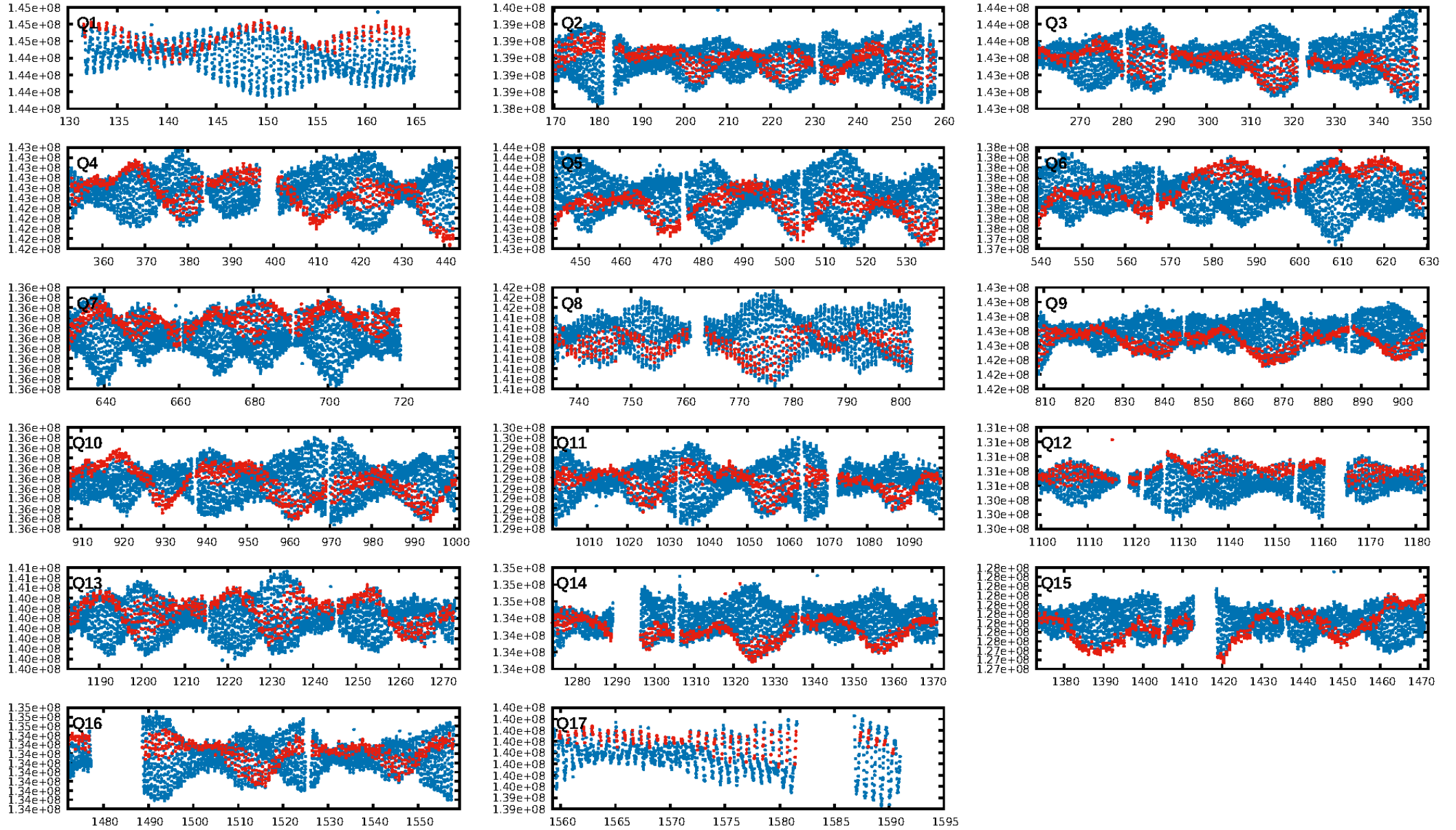
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.2% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.99e-19  
RollingBand-fgt: 0.99 [906/912]  
GhostDiagnostic-chr: -0.5009  
Centroid-sig: 7.0%  
Centroid-so: 4.680 arcsec [1.35σ]  
OotOffset-rm: 0.063 arcsec [0.26σ]  
KicOffset-rm: 0.209 arcsec [0.68σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.53 [9/17]  
DiffImageOverlap-fno: 0.29 [5/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:05:21 Z

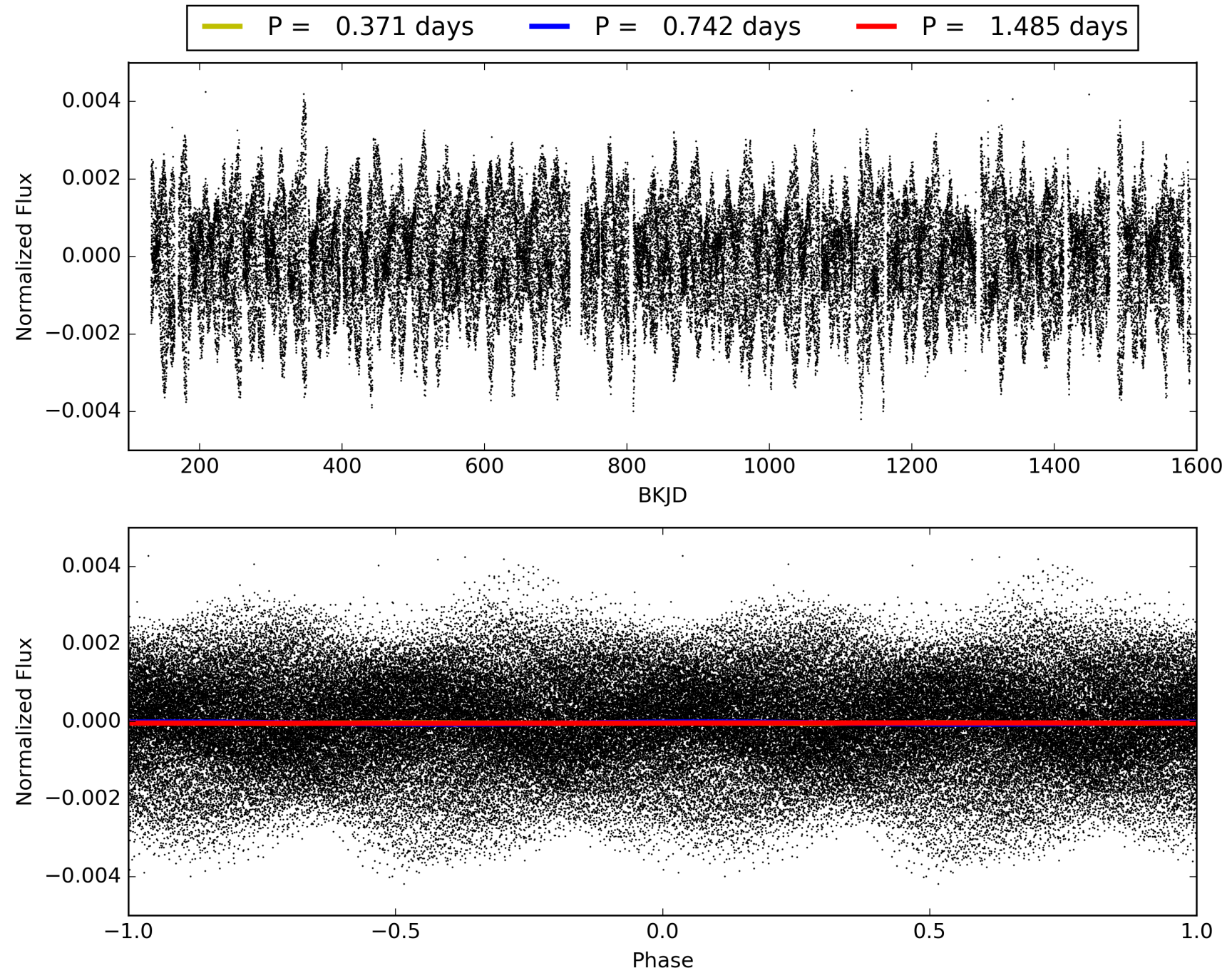
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010803371-02, PDC Light Curves





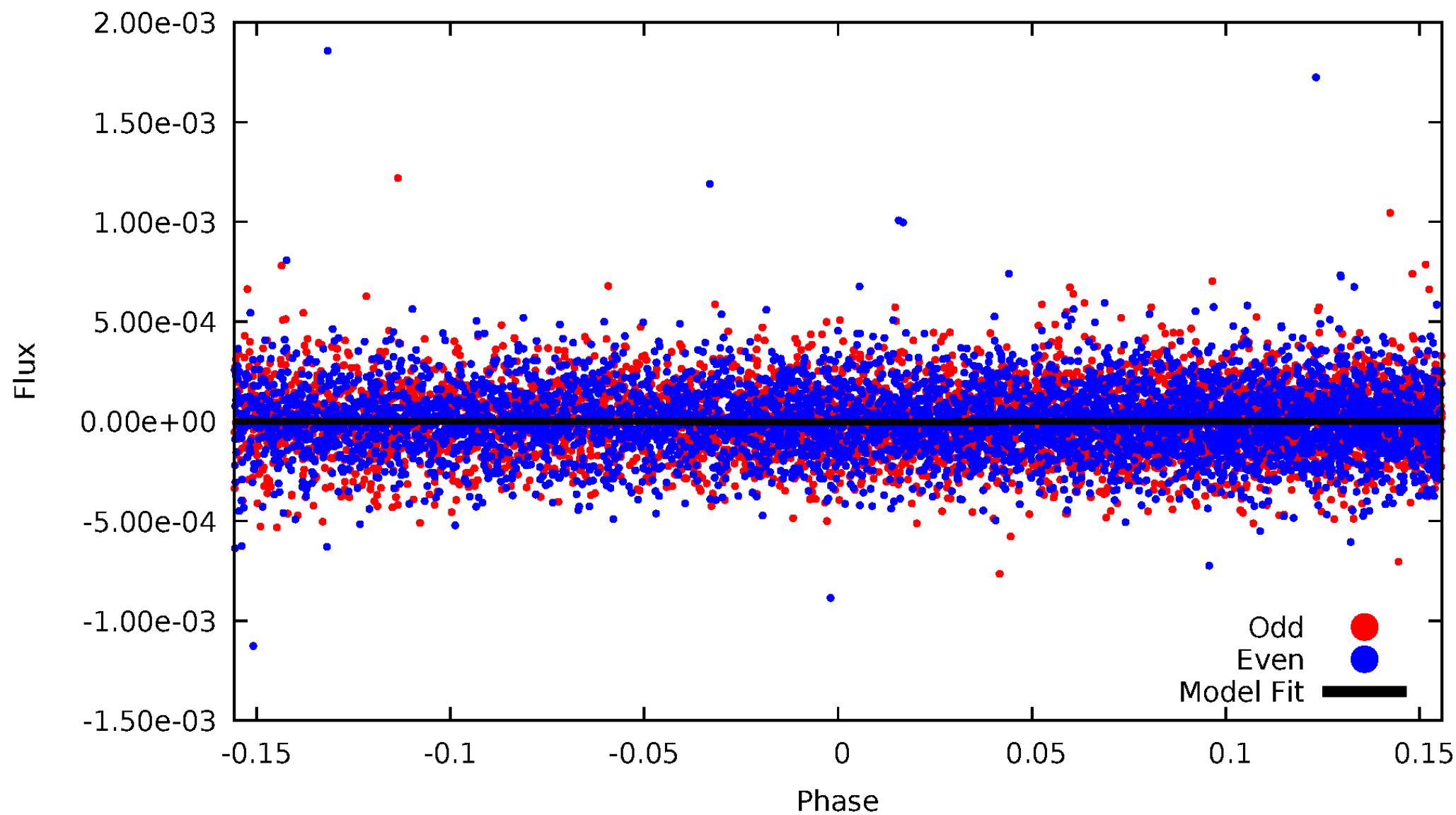
TCE 010803371-02





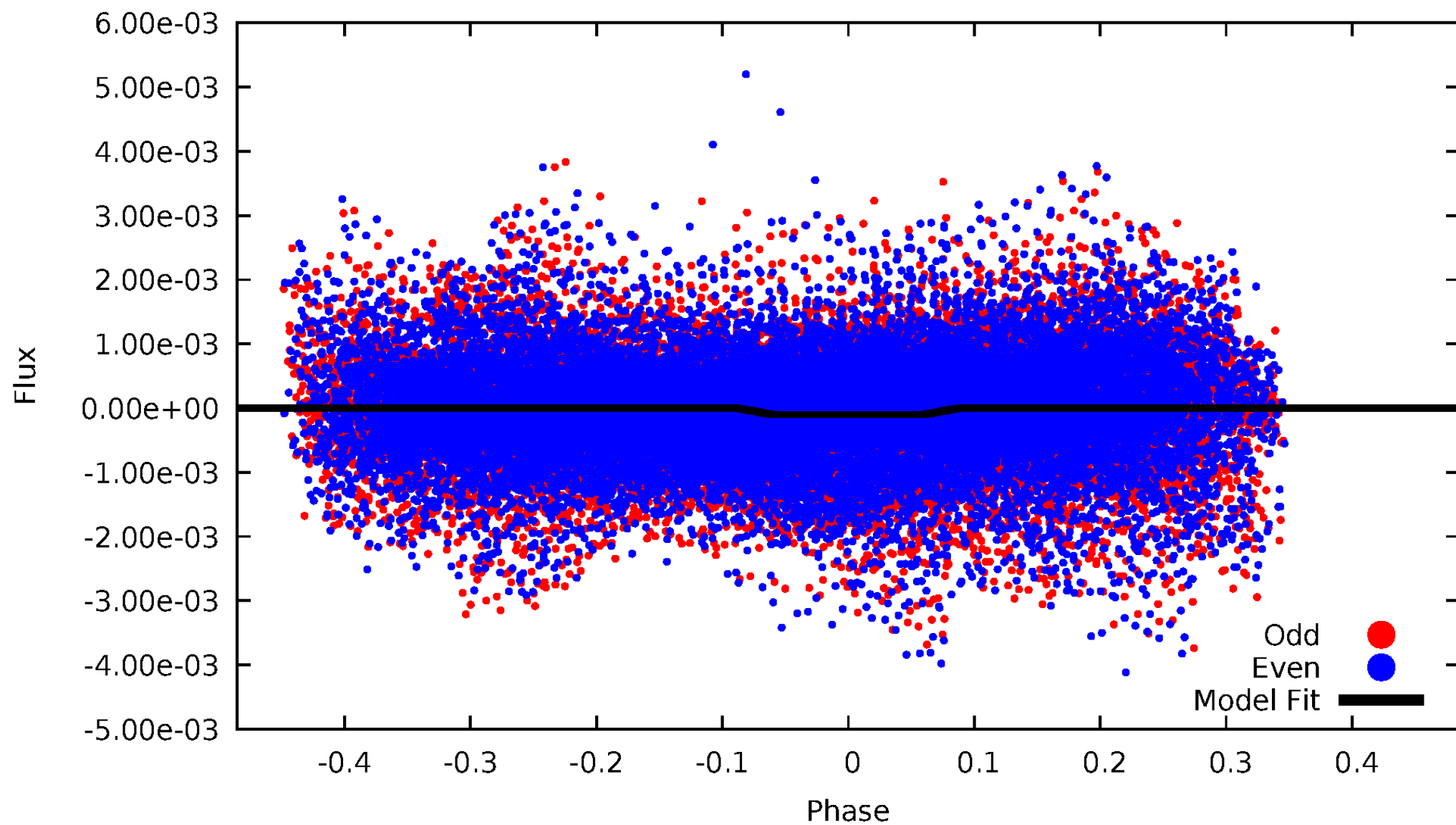
# DV Odd/Even

TCE 010803371-02



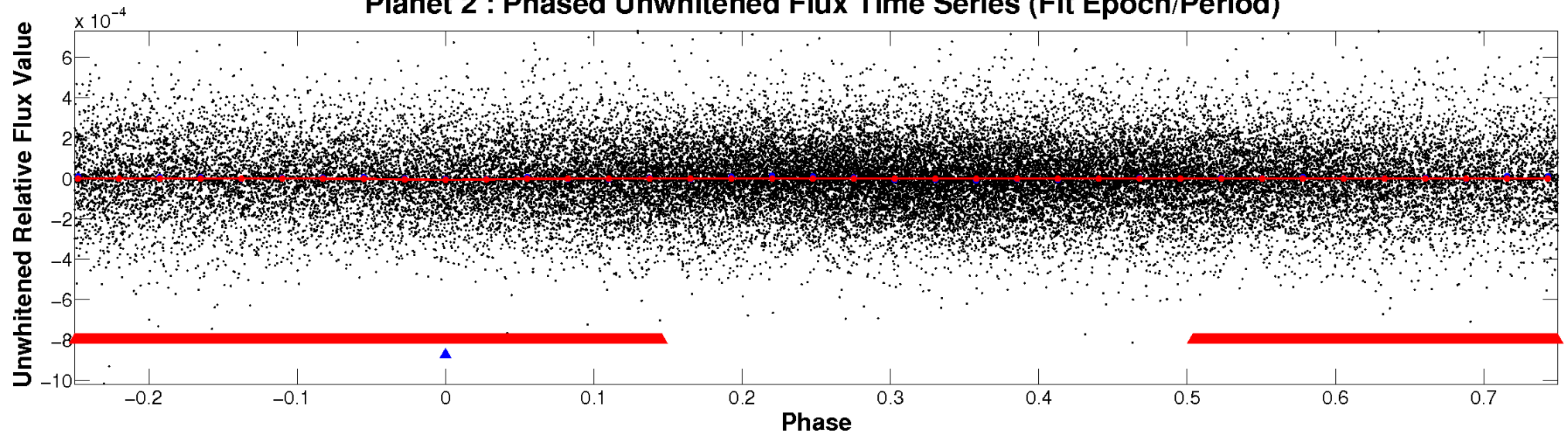
# ALT Odd/Even

TCE 010803371-02

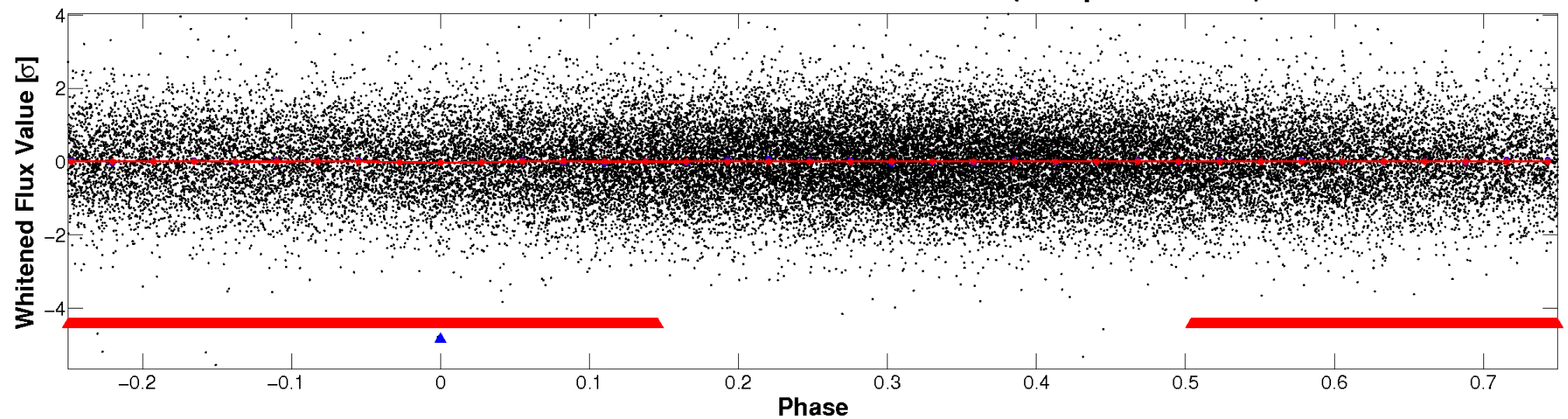


# Non-Whitened Vs. Whitened Light Curve

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

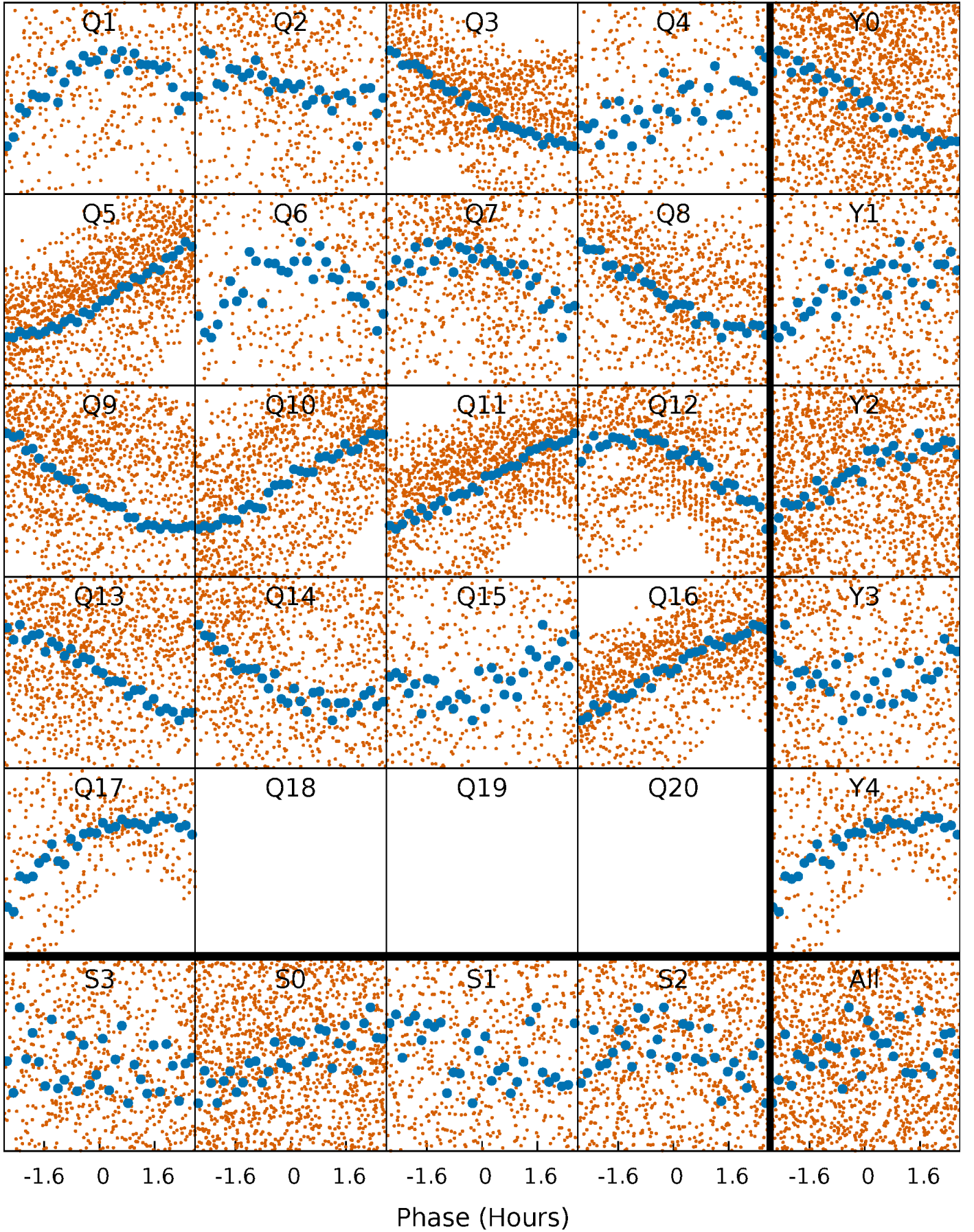


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

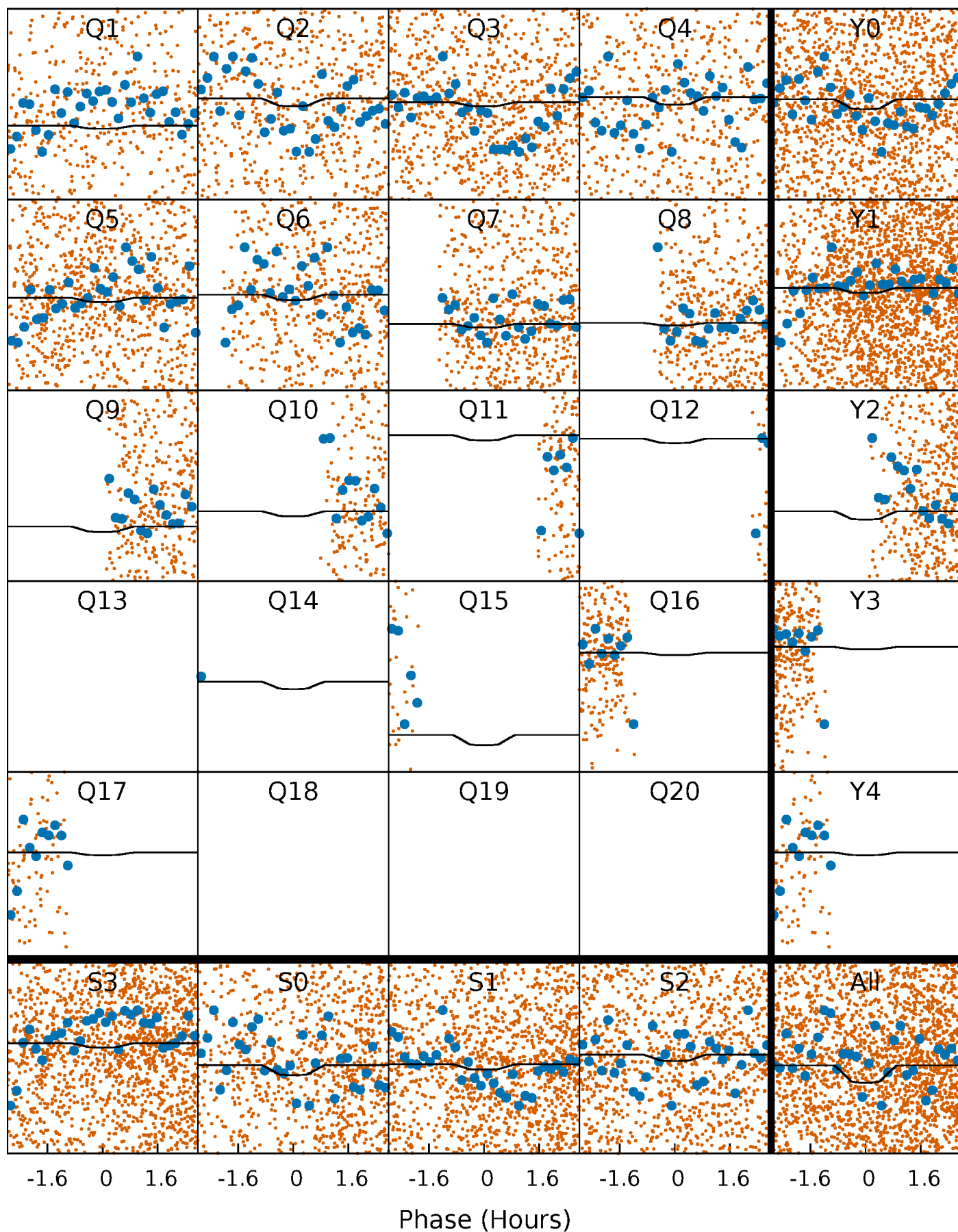
TCE 010803371-02   P= 0.742332 Days    $T_0=131.668675$  (BKJD)





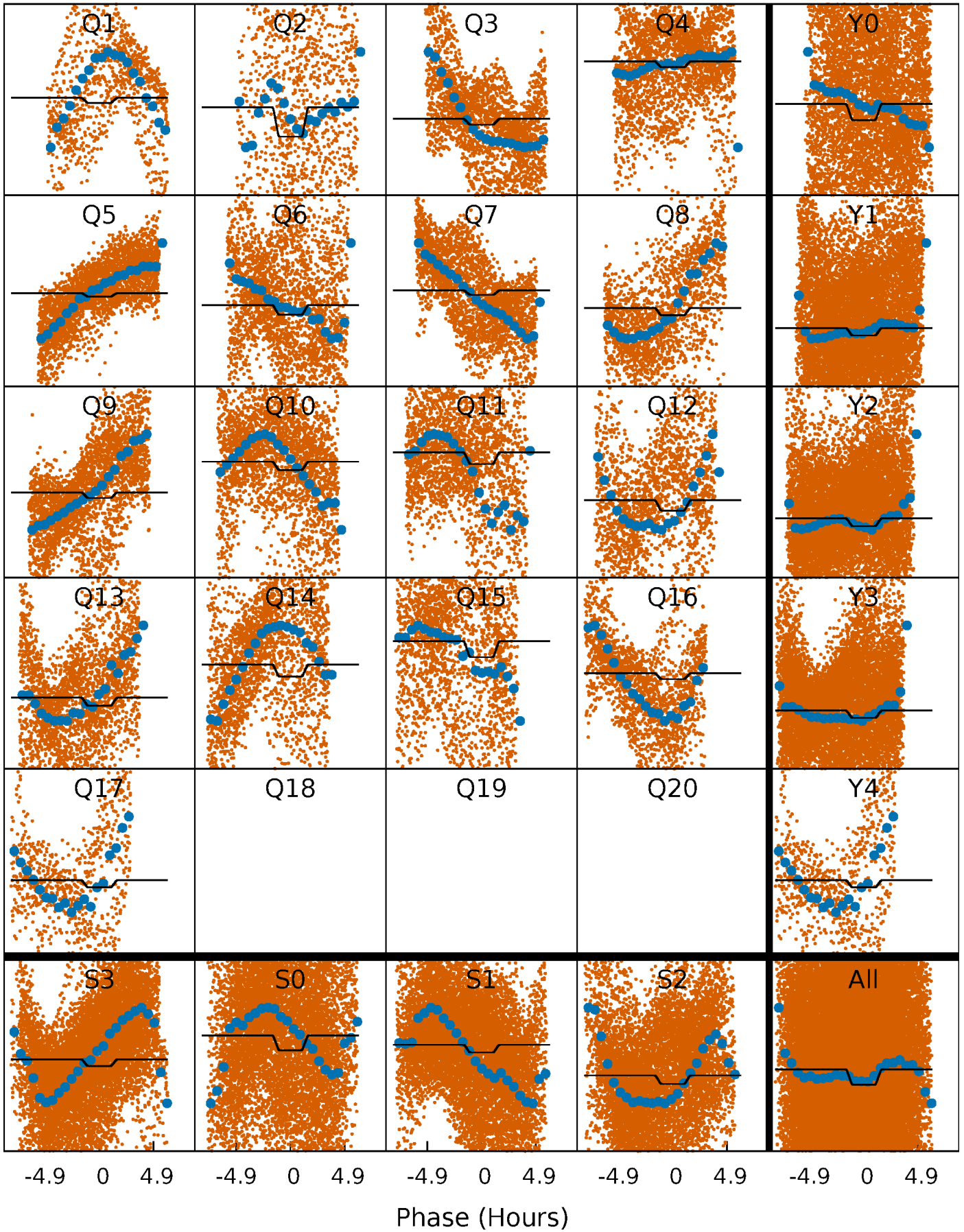
# DV Quarter-Phased Transit Curves

TCE 010803371-02     $P = 0.742332$  Days     $T_0 = 131.668675$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010803371-02     $P = 0.742647$  Days     $T_0 = 131.638238$  (BKJD)

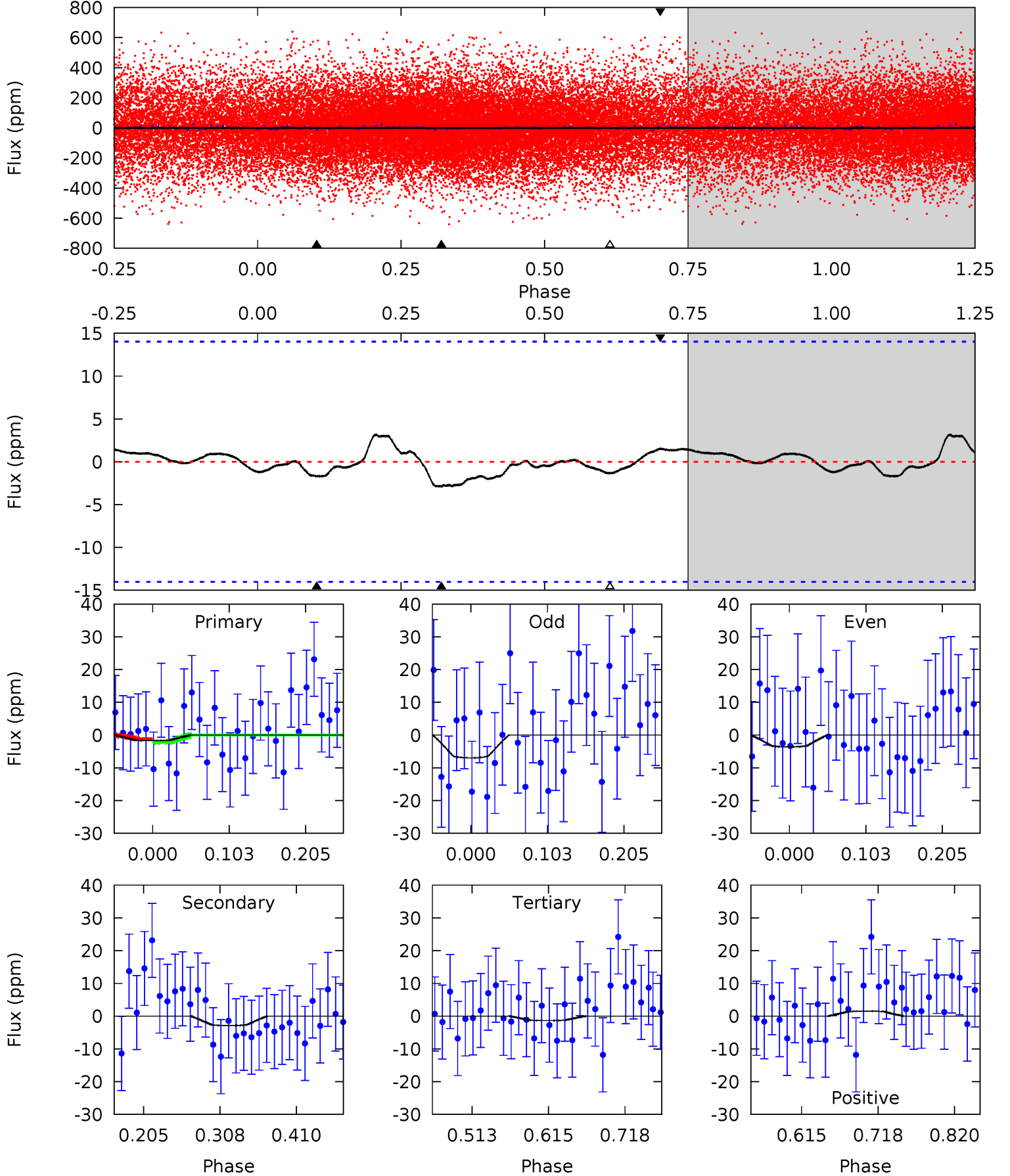




# DV Model-Shift Uniqueness Test

010803371-02, P = 0.742332 Days, E = 130.926343 Days

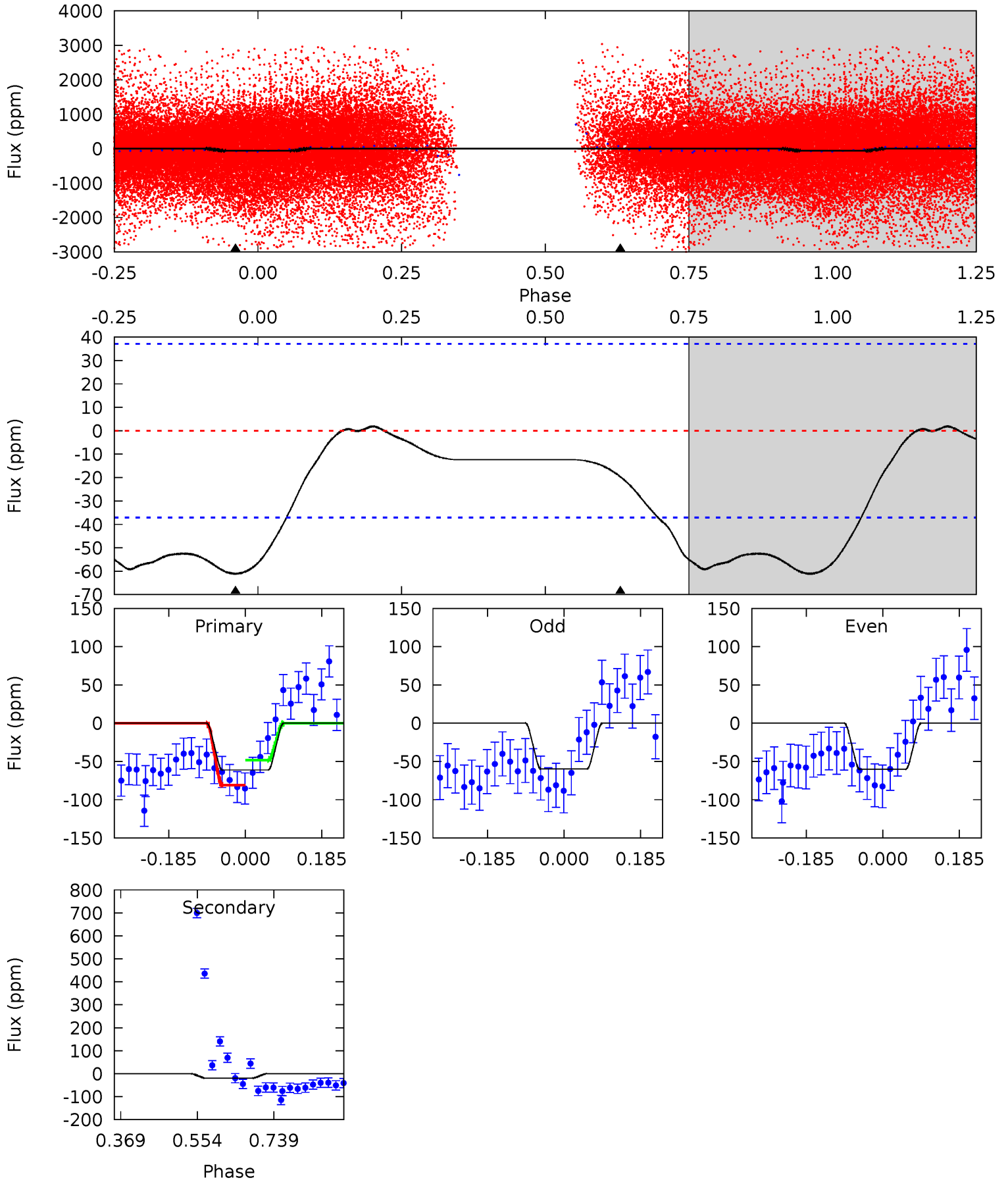
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.55	0.94	0.44	0.49	4.56	1.63	0.31	0.12	0.06	0.50	0.45	0.55	-0.22	0.52	0.19



# Alt Model-Shift Uniqueness Test

010803371-02, P = 0.742647 Days, E = 130.895591 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
7.30	2.35	0	0	4.43	1.33	0.44	7.30	7.30	2.35	2.35	0.02	-9.51	0.03	2.29



### Stellar Parameters For KIC 010803371

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7557^{+210}_{-341}$	$3.650^{+0.486}_{-0.081}$	$-0.040^{+0.200}_{-0.300}$	$3.562^{+0.560}_{-1.791}$	$2.066^{+0.241}_{-0.562}$	$0.064^{+0.305}_{-0.017}$
	+3%/-5%	+13%/-2%	+500%/-750%	+16%/-50%	+12%/-27%	+474%/-27%
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 010803371-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-3\pm3$	$1.08^{+1.04}_{-0.72}$	$5859^{+461}_{-706}$	$3651^{+5178}_{-8639}$	$0.386^{+3.300}_{-0.409}$
Alt.	$-20\pm8$	$3.55^{+1.31}_{-1.24}$	$5926^{+448}_{-743}$	$3382^{+1917}_{-7698}$	$0.341^{+0.538}_{-0.190}$

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

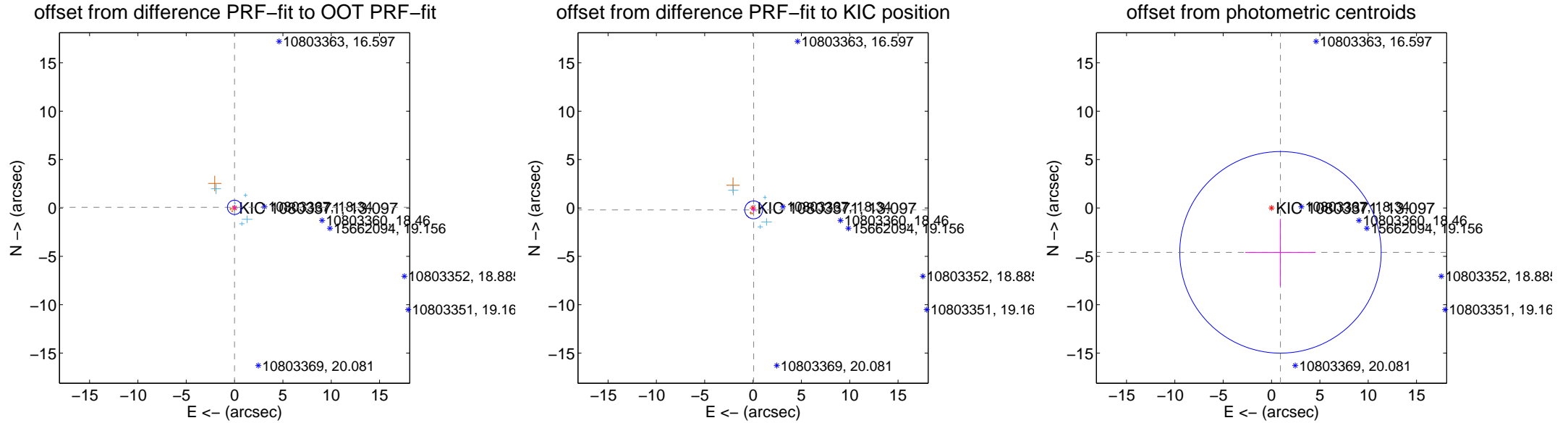
## DV Centroid Data

Supplemental centroid analysis for 010803371-02. Kepler magnitude: 13.10. Transit SNR 1.21

There are 9 quarters with good PRF difference image offsets

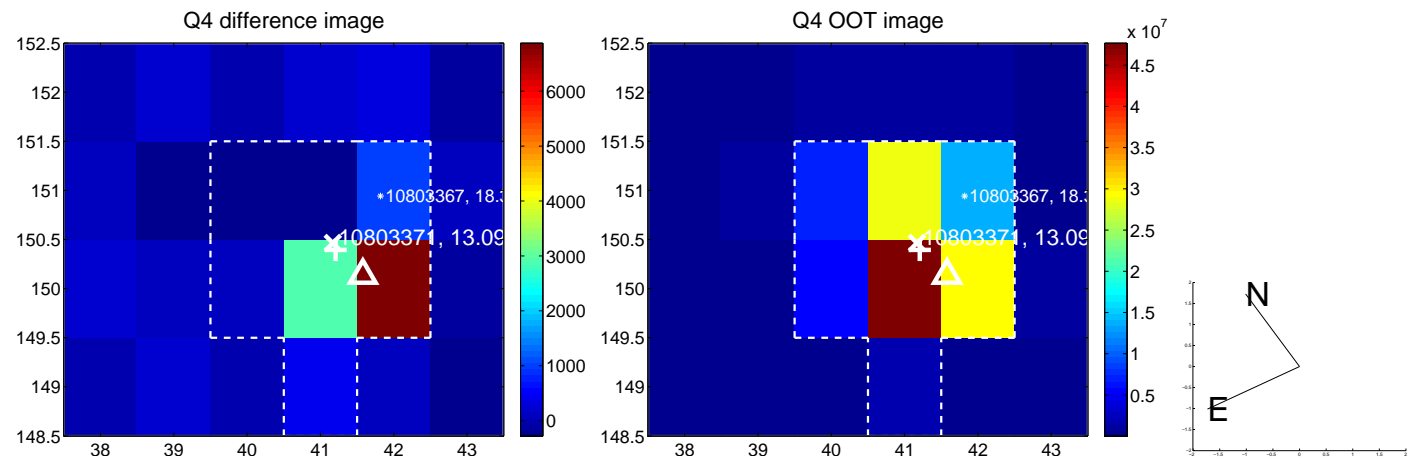
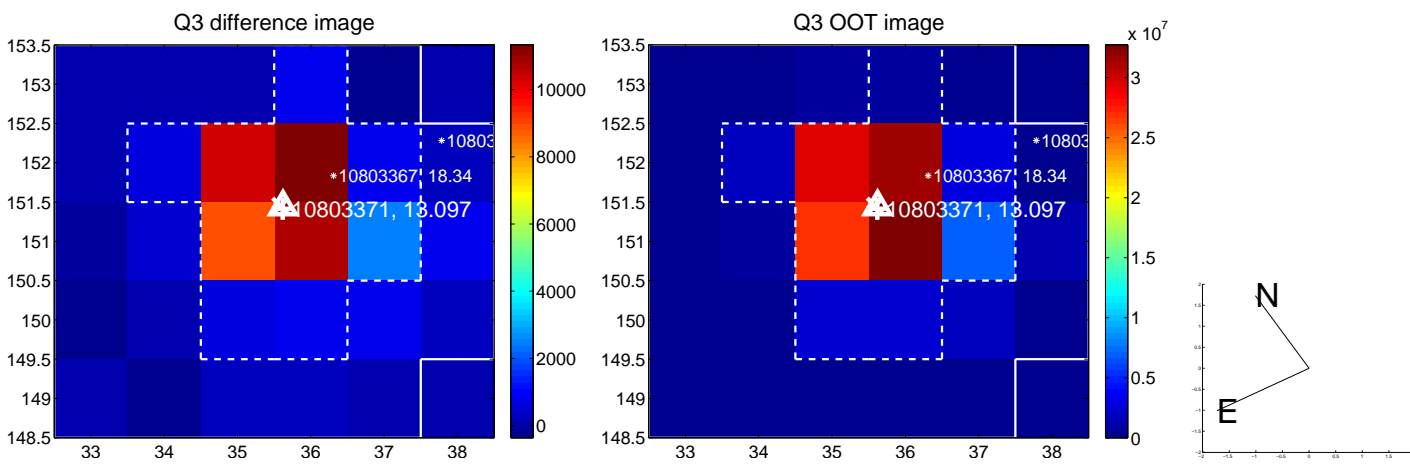
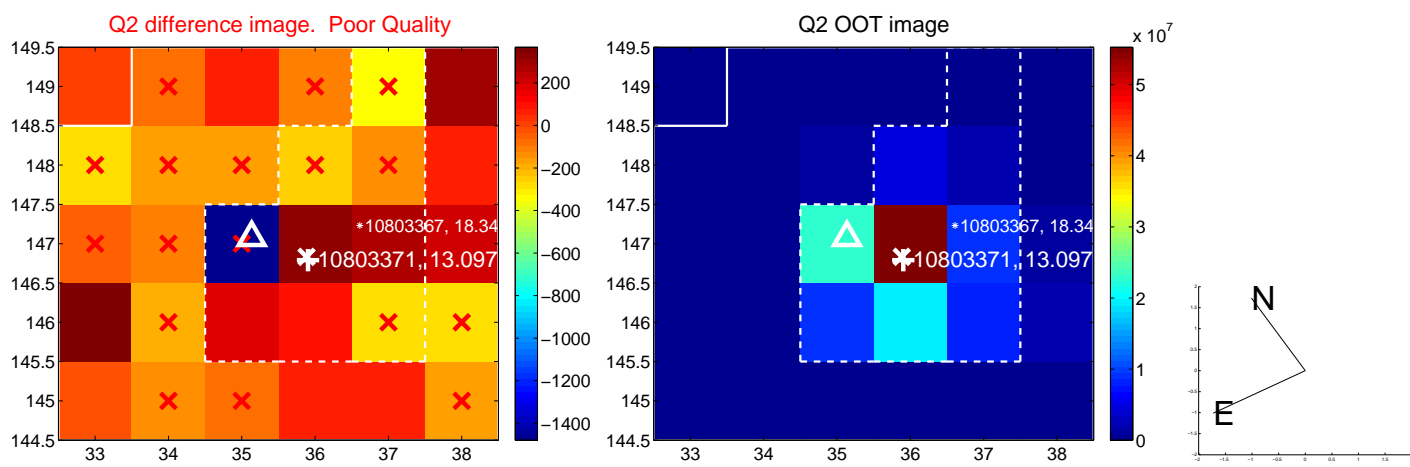
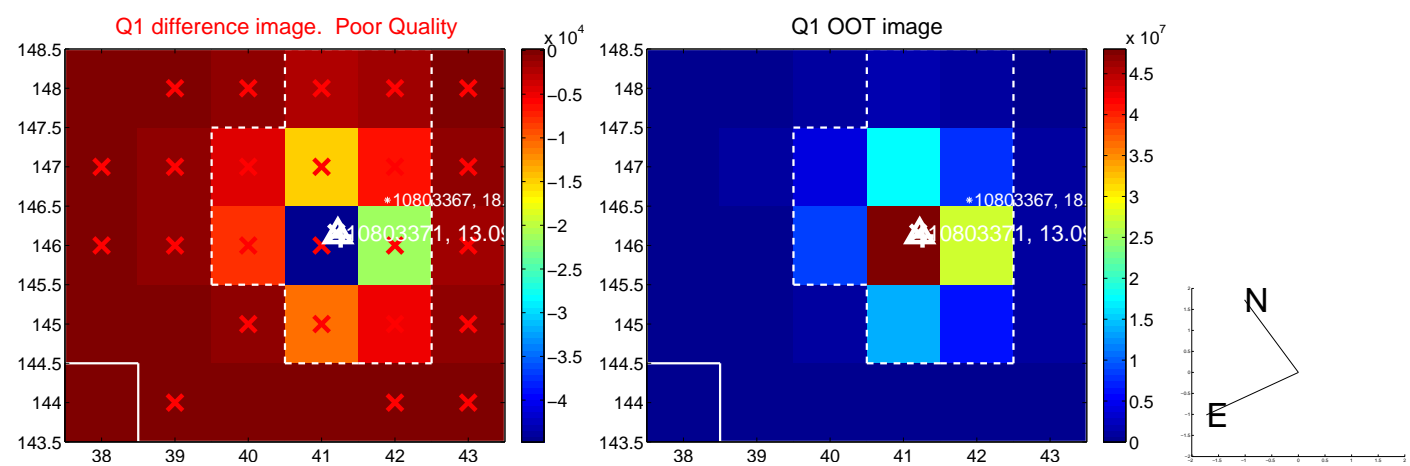
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.246$	0.26	$0.002 \pm 0.200$	$0.063 \pm 0.242$
PRF-fit source offset from KIC position	$0.209 \pm 0.307$	0.68	$-0.063 \pm 0.224$	$-0.199 \pm 0.269$
photometric centroid source offset	$4.68 \pm 3.47$	1.35	$-0.93 \pm 3.64$	$-4.59 \pm 3.46$

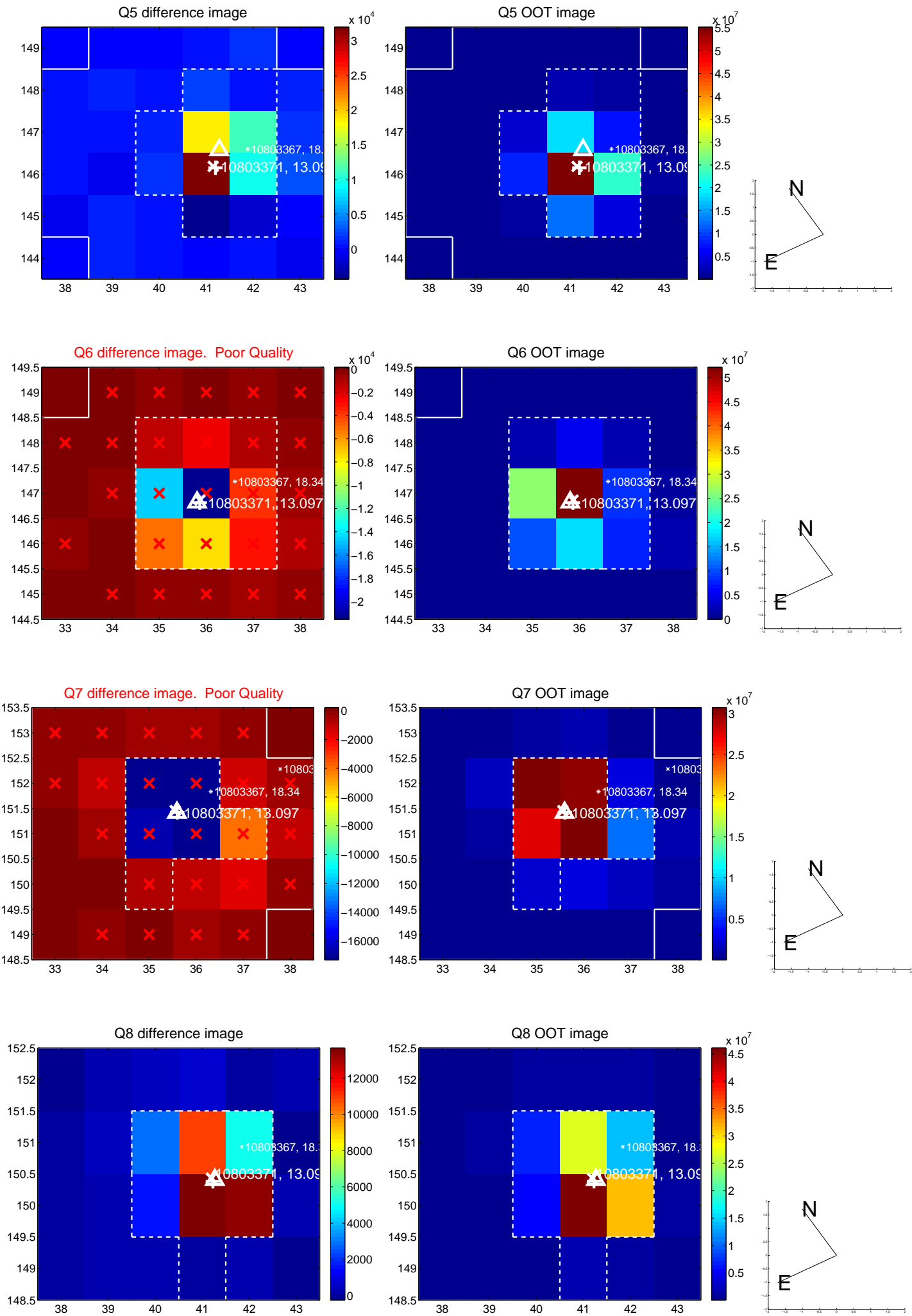


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

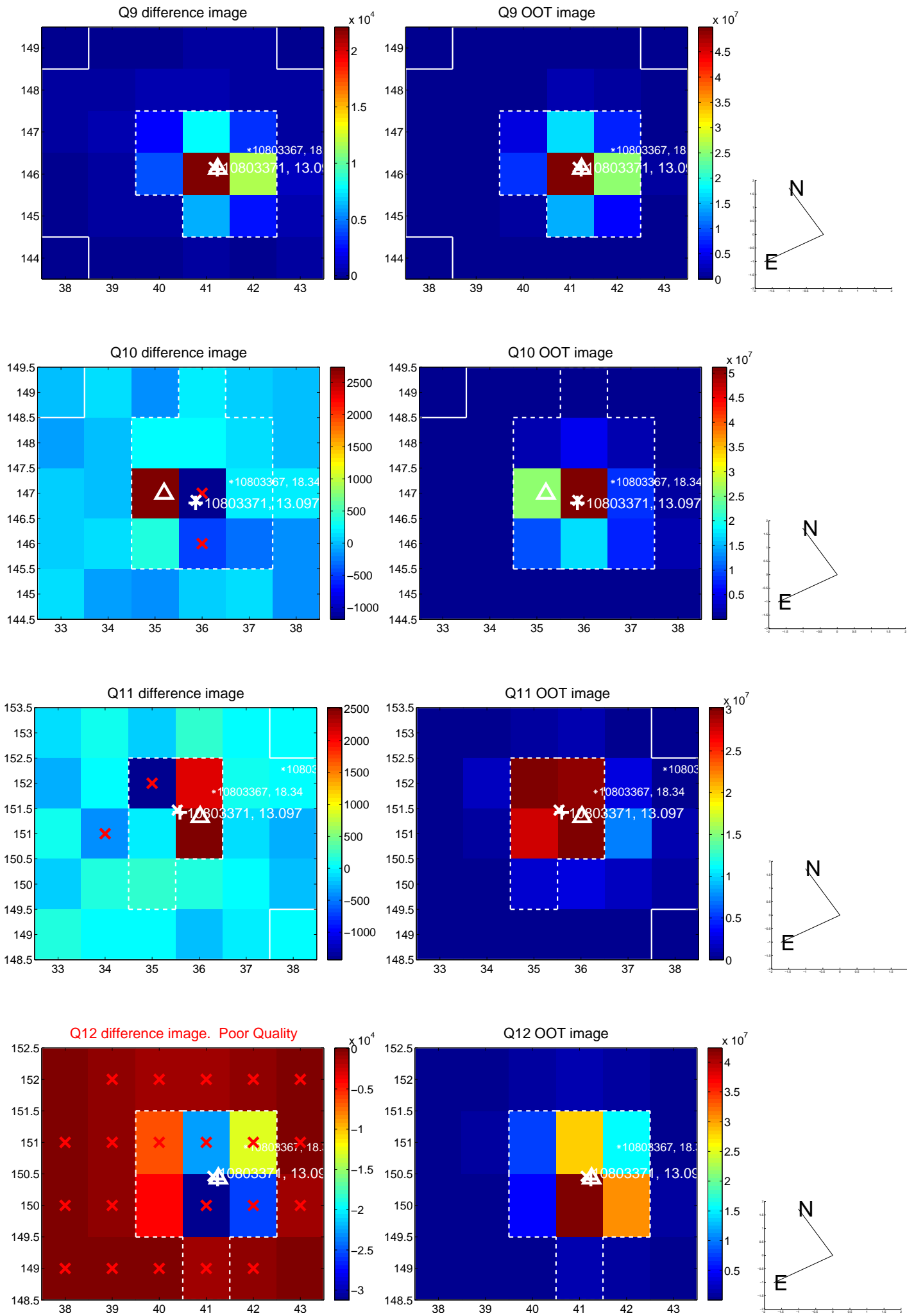


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

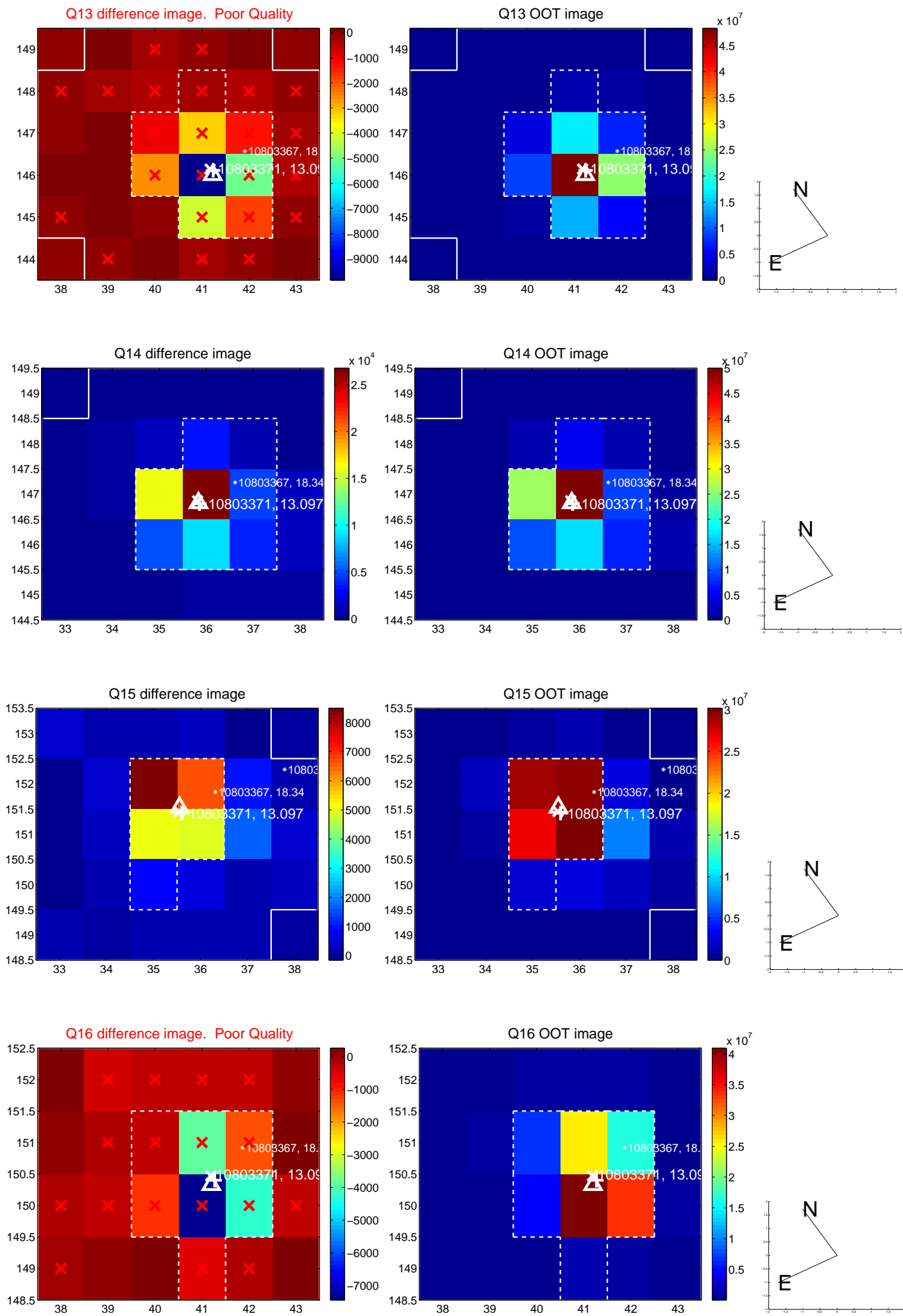




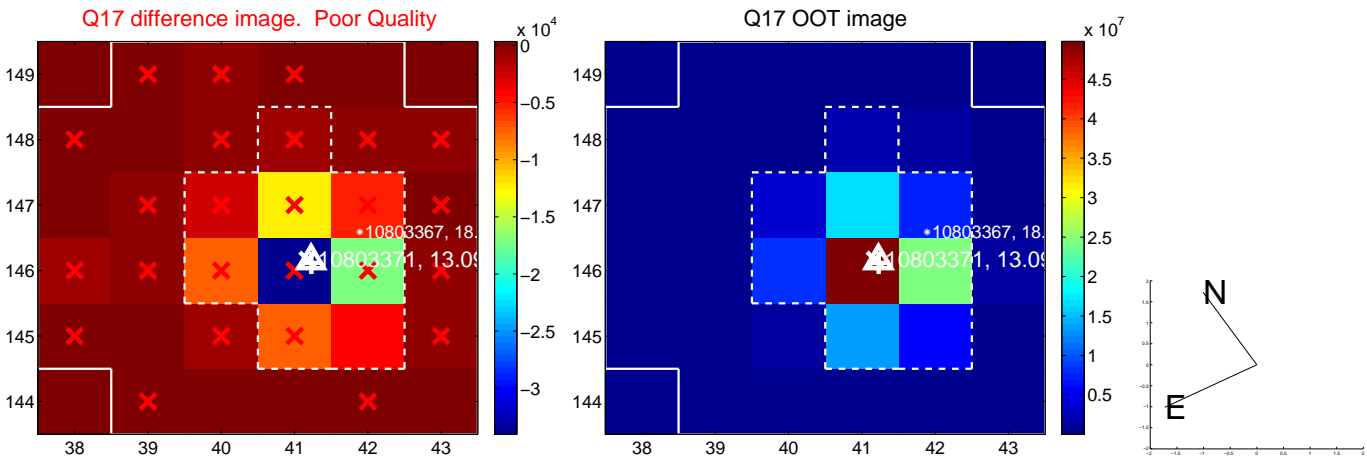
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



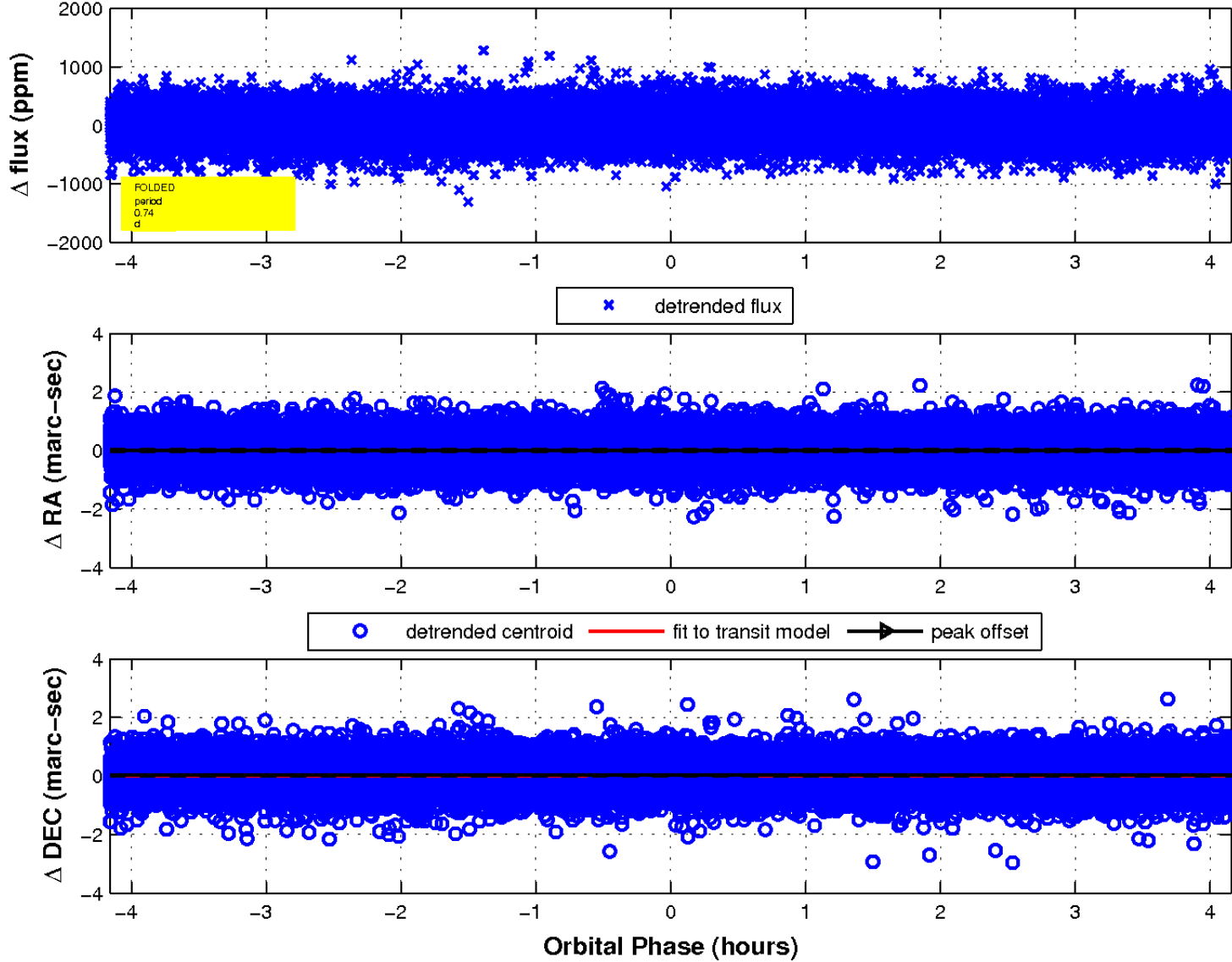
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

