

# KIC 008424446

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008424446-01	OBS	No	1.192268	131.987304	63.3	3.769	12.8	11.5	1.69	6742	1.56	9080.76
008424446-02	OBS	No	2.827857	133.941961	86.8	10.869	11.9	10.0	1.69	6742	1.83	2870.85
008424446-03	OBS	No	3.603311	133.457449	123.2	21.551	10.0	11.5	1.69	6742	2.23	2078.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008424446-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
008424446-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
008424446-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED

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

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

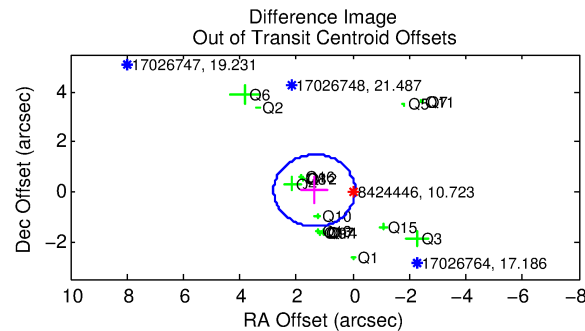
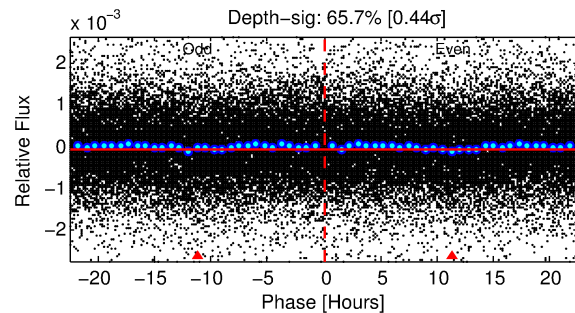
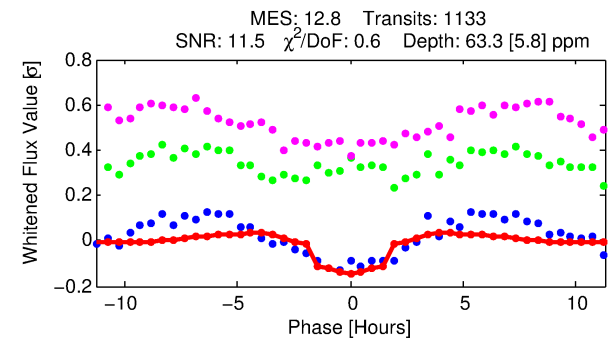
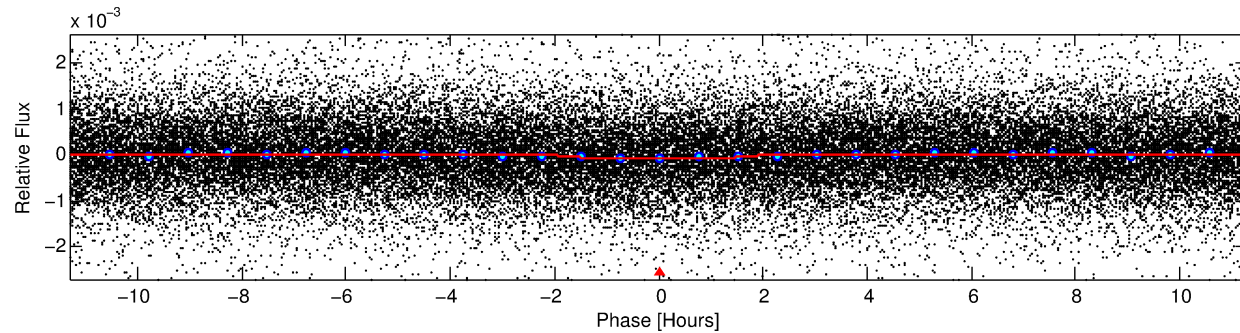
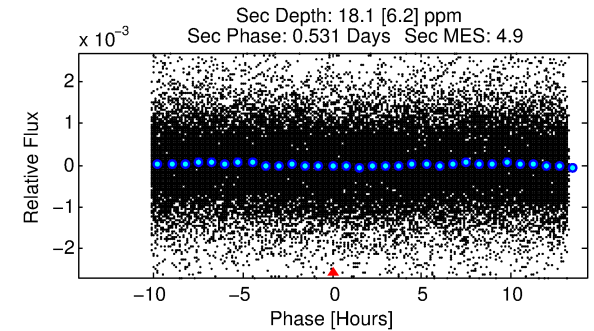
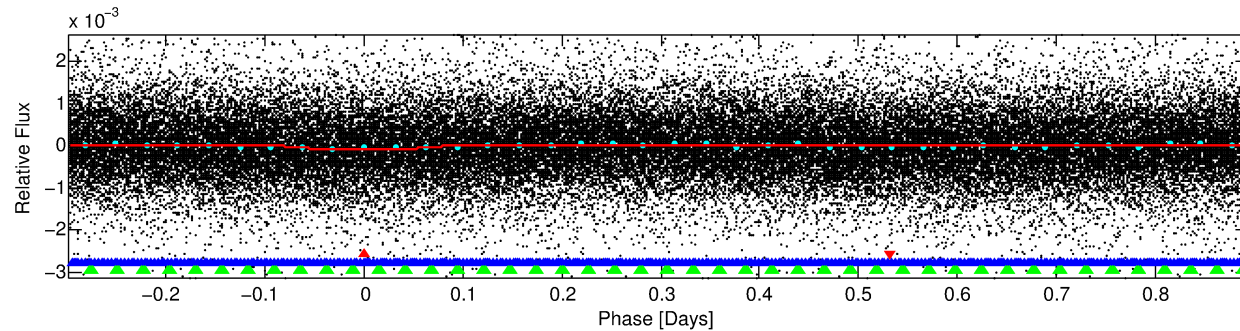
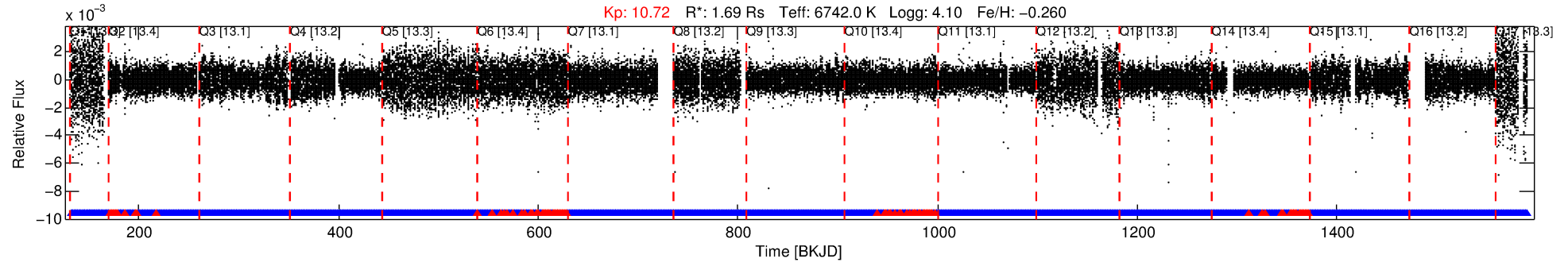
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008424446-01

No Significant Match Found

# DV One-Page Summary

KIC: 8424446 Candidate: 1 of 3 Period: 1.192 d



## DV Fit Results:

Period = 1.19227 [0.00001] d  
Epoch = 131.9873 [0.0032] BKJD  
 $R_p/R^*$  = 0.0085 [0.0025]  
 $a/R^*$  = 1.45 [1.32]  
 $b$  = 0.90 [0.37]  
 $S_{\text{eff}}$  = 9080.77 [4001.68]  
 $T_{\text{eq}}$  = 2489 [274] K  
 $R_p$  = 1.56 [0.64]  $R_e$   
 $a$  = 0.0241 [0.0063] AU  
 $A_g$  = 2.37 [1.87] [0.73σ]  
 $T_{\text{eff}}$  = 4775 [834] K [2.60σ]

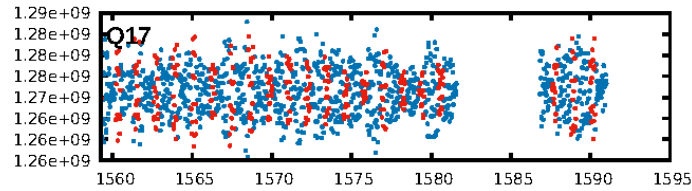
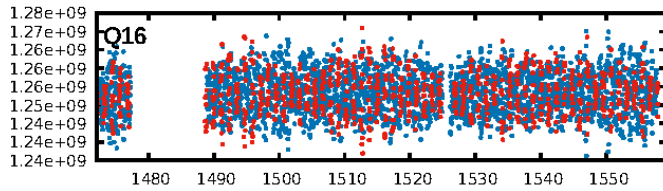
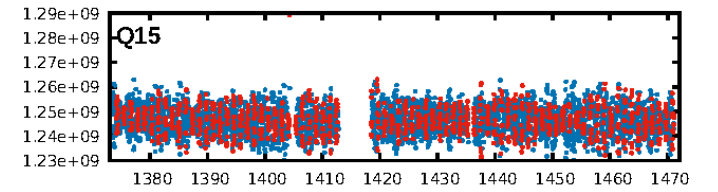
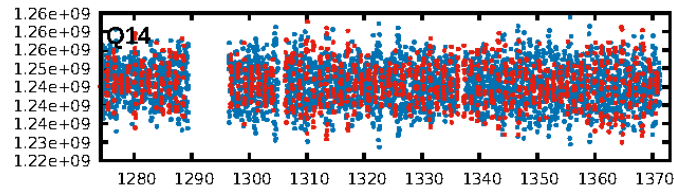
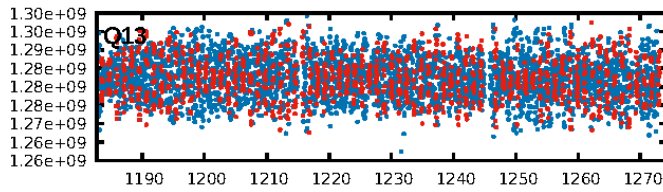
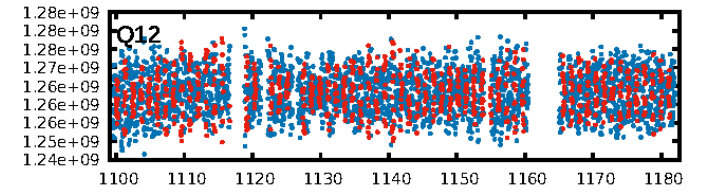
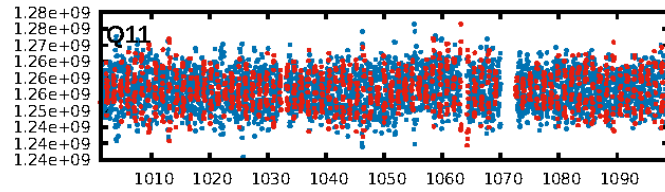
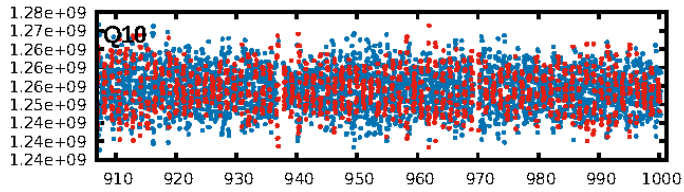
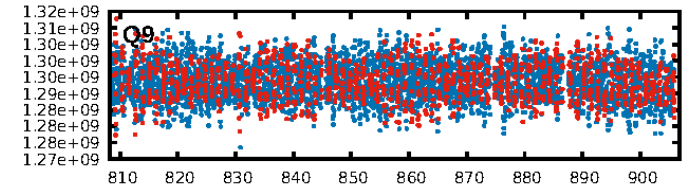
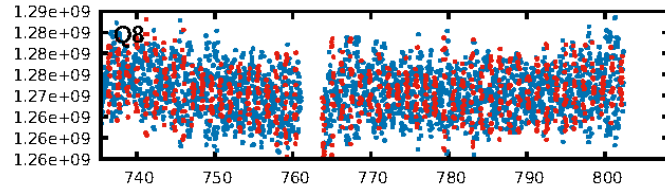
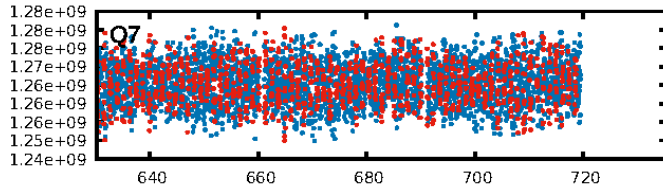
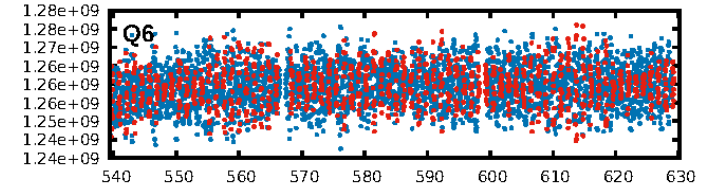
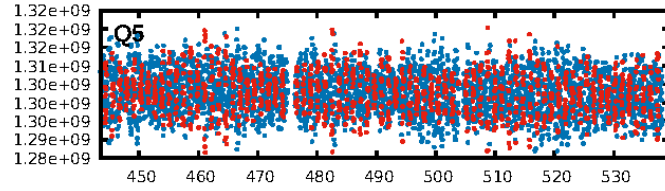
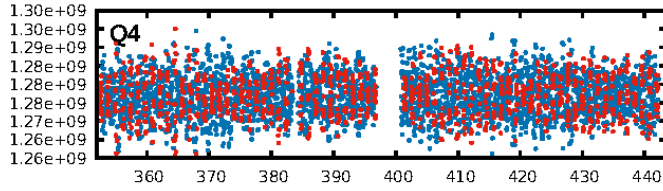
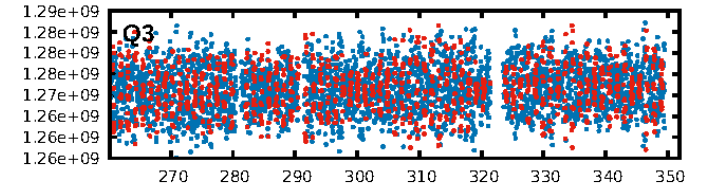
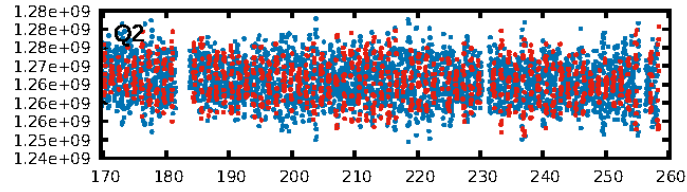
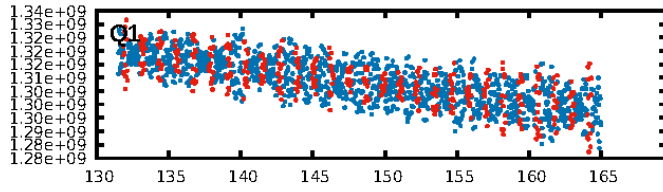
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.9% [3.41σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.92 [995/1084]  
GhostDiagnostic-chr: 1.545  
Centroid-sig: N/A  
Centroid-so: 0.446 arcsec [2.50σ]  
OotOffset-rm: 1.360 arcsec [2.83σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 1.868 arcsec [4.08σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.35 [6/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:25:00 Z

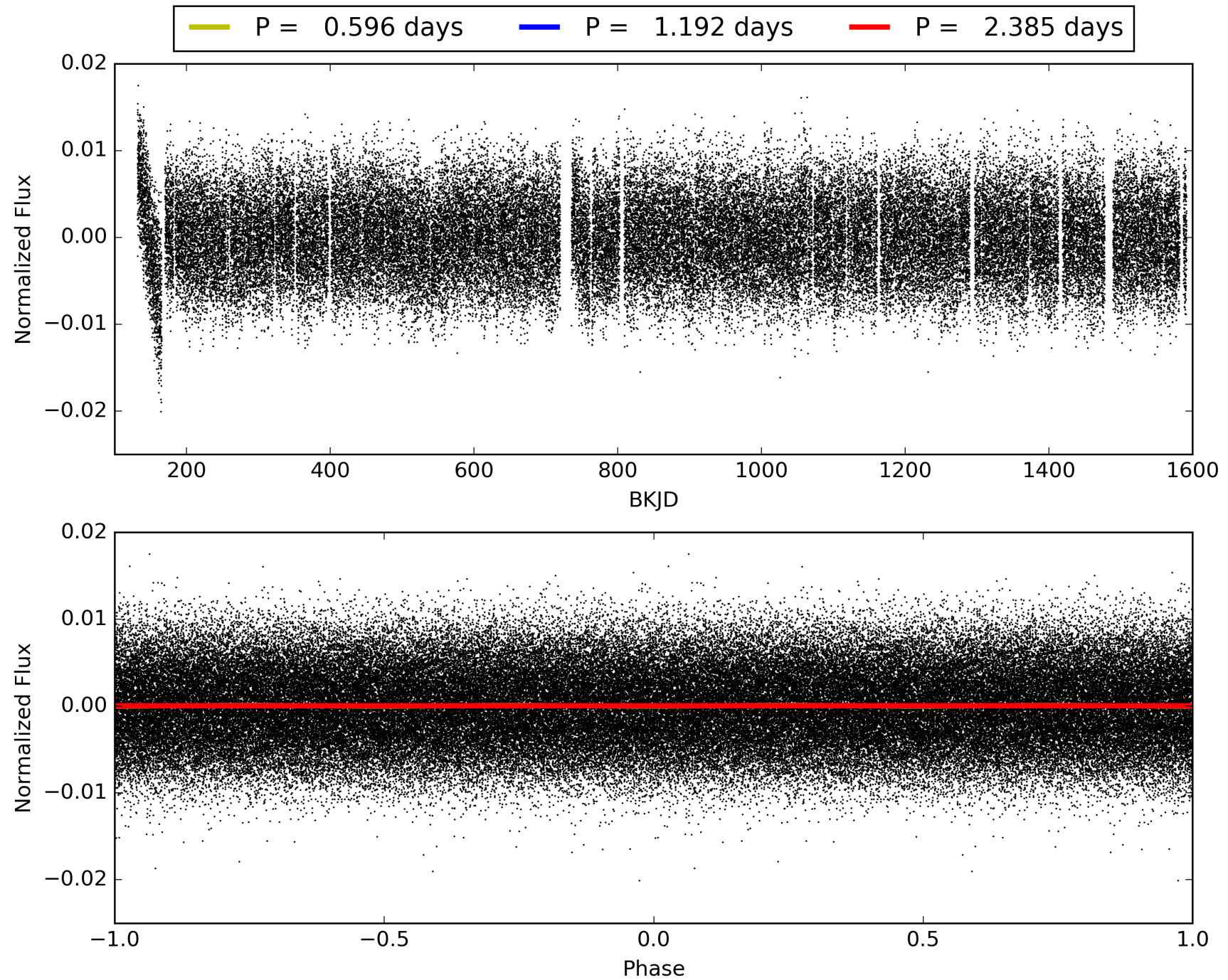
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008424446-01, PDC Light Curves





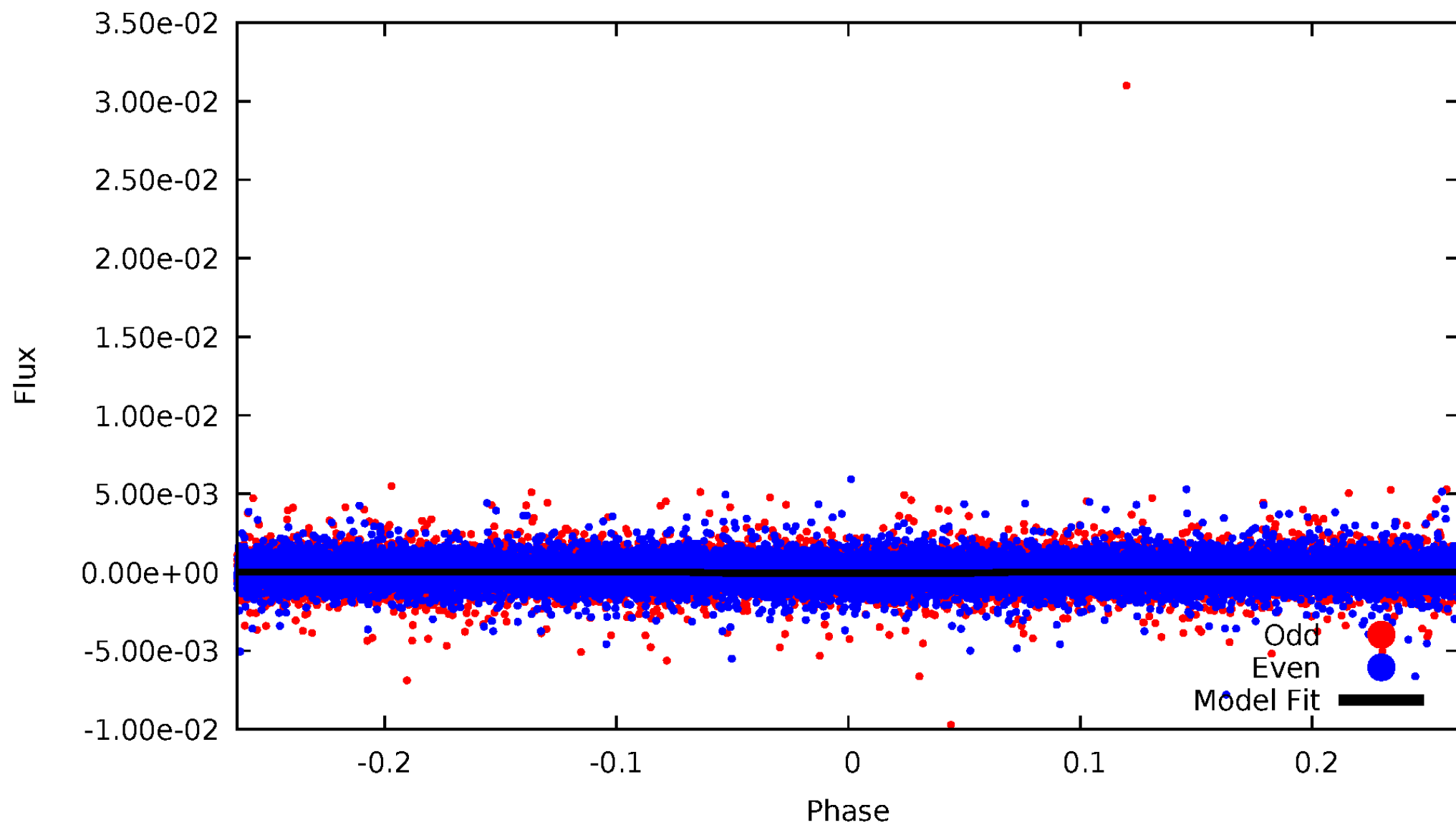
TCE 008424446-01





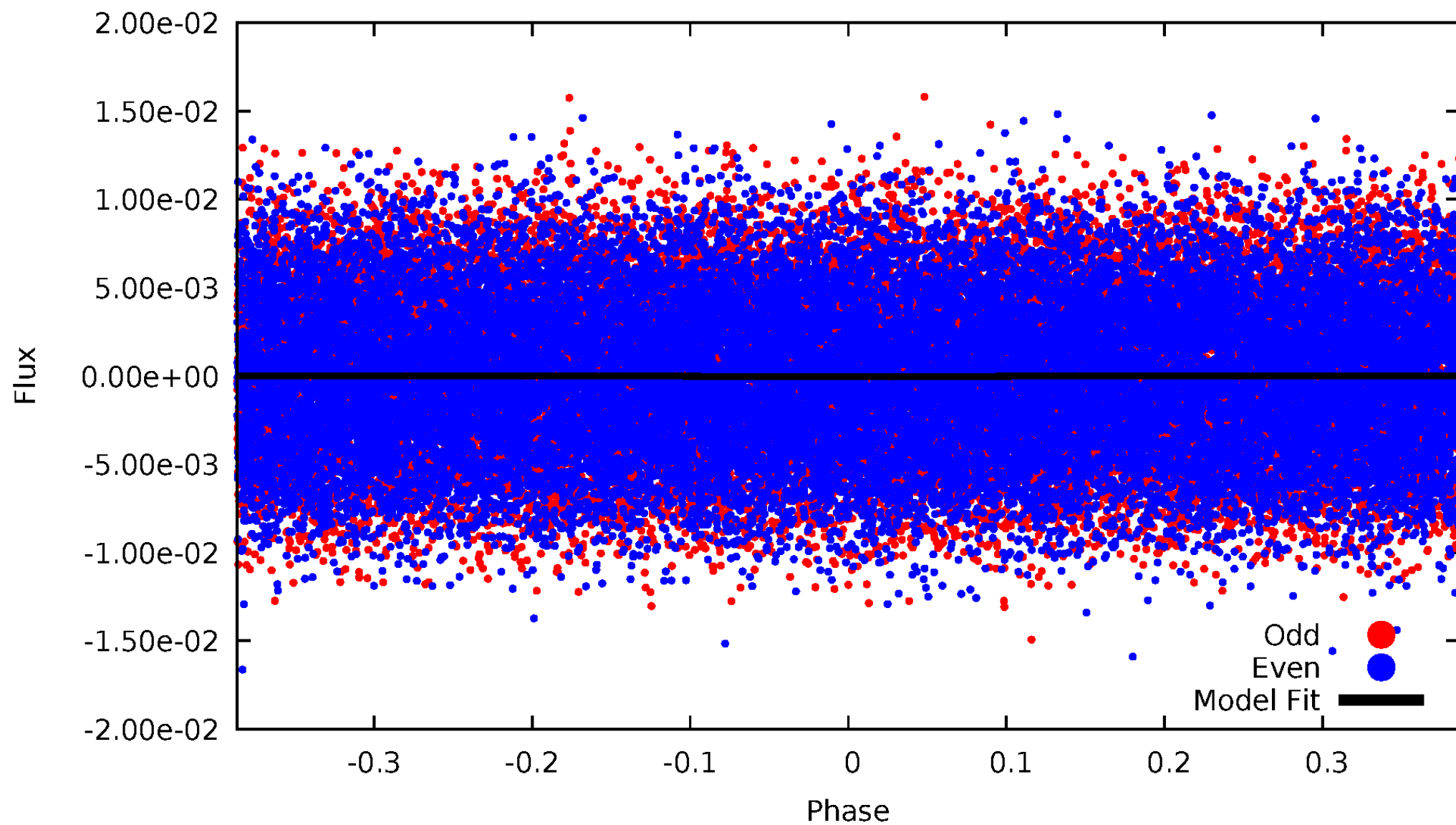
# DV Odd/Even

TCE 008424446-01



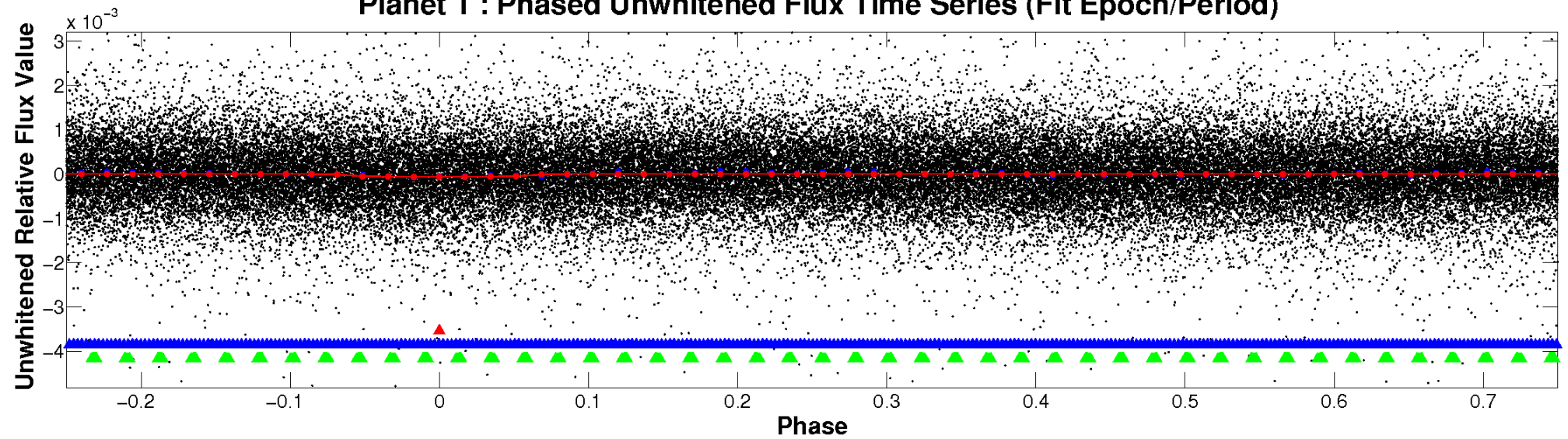
# ALT Odd/Even

TCE 008424446-01

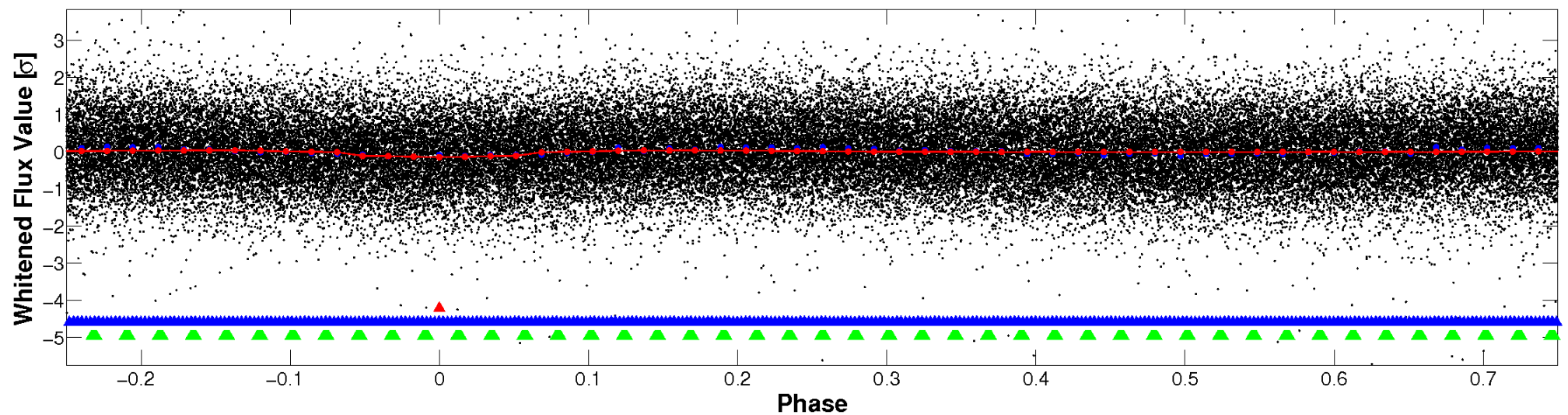


# Non-Whitened Vs. Whitened Light Curve

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



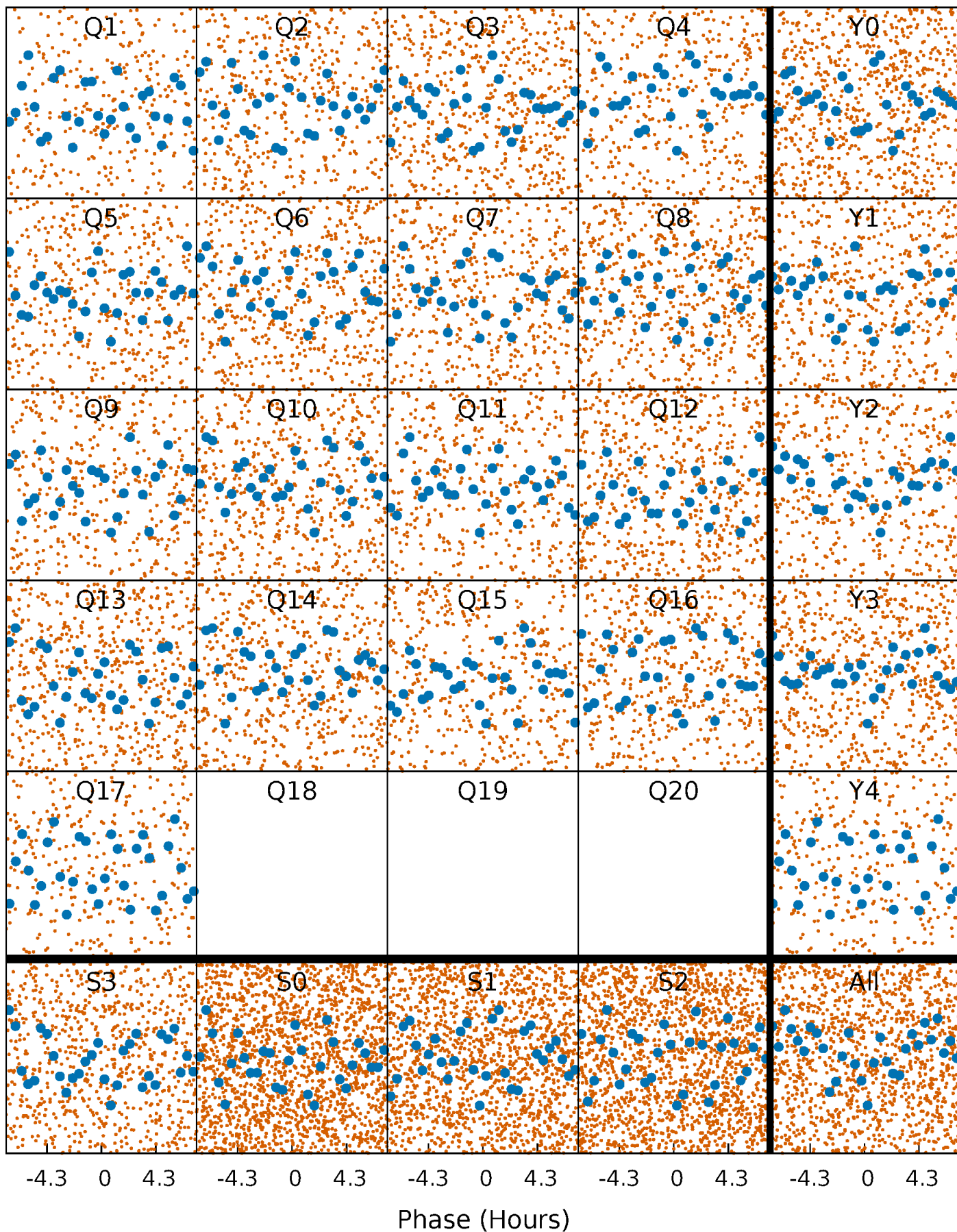
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





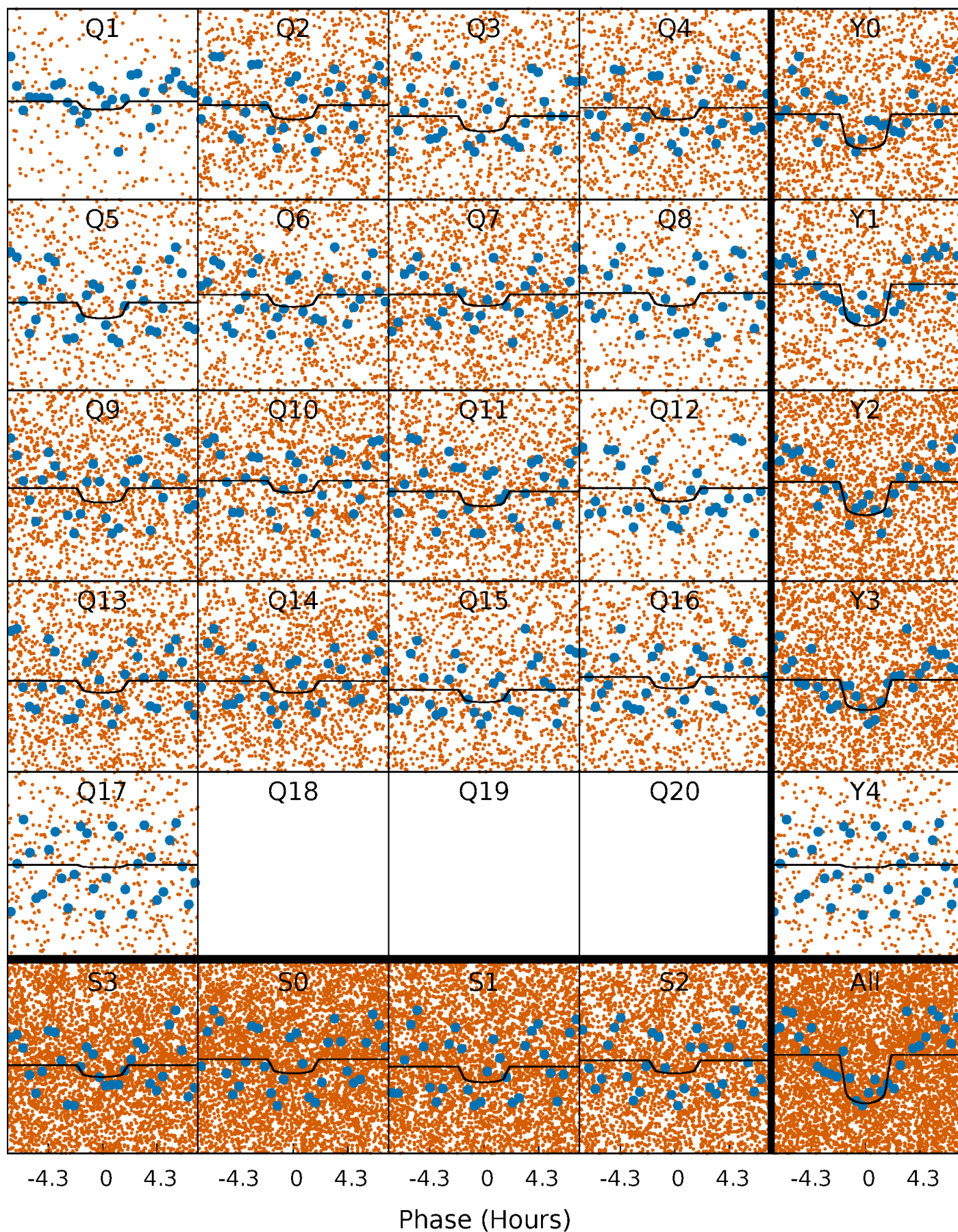
# PDC Quarter-Phased Transit Curves

TCE 008424446-01 P= 1.192268 Days  $T_0=131.987304$  (BKJD)



# DV Quarter-Phased Transit Curves

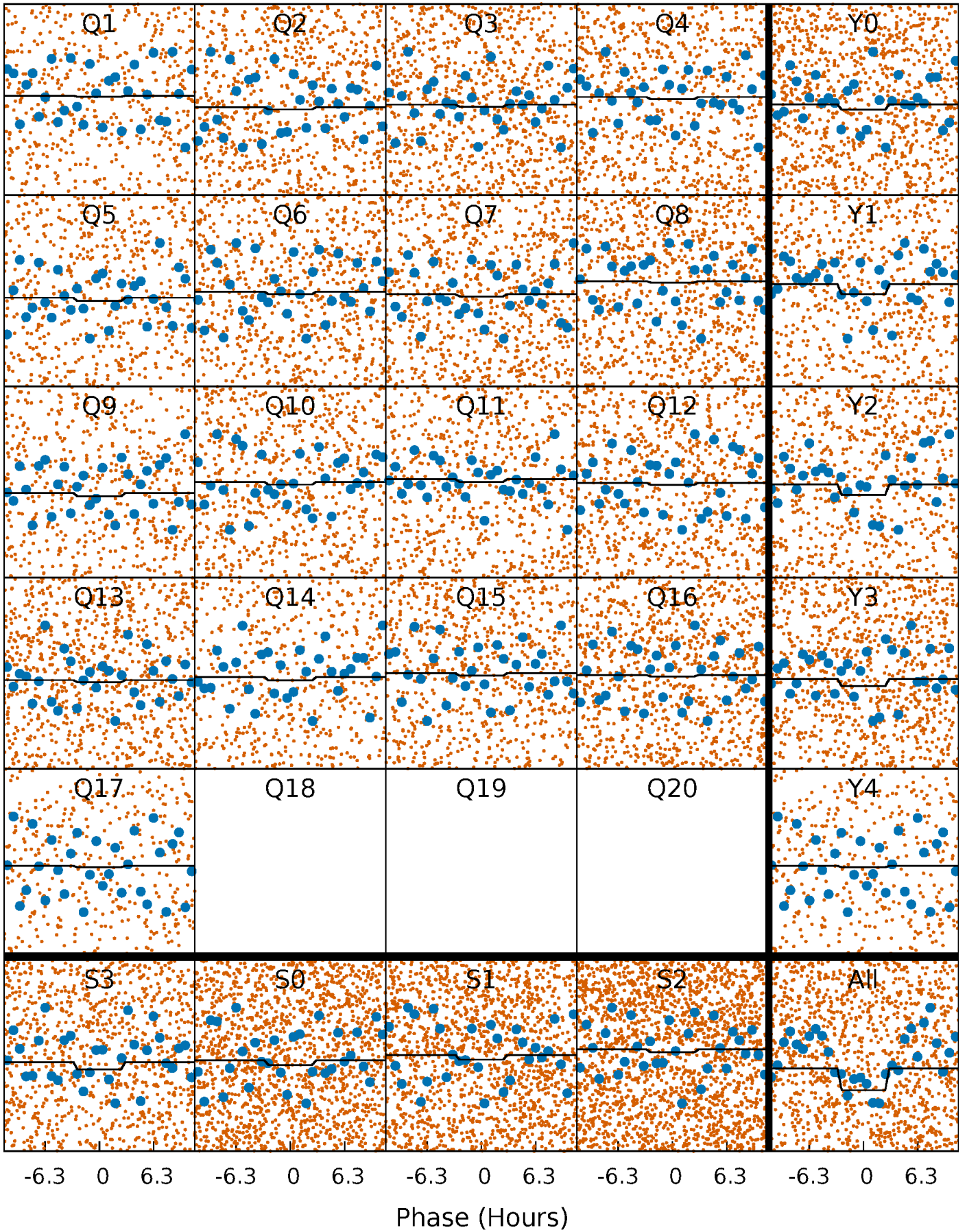
TCE 008424446-01 P= 1.192268 Days  $T_0=131.987304$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008424446-01 P= 1.192245 Days  $T_0=131.980335$  (BKJD)

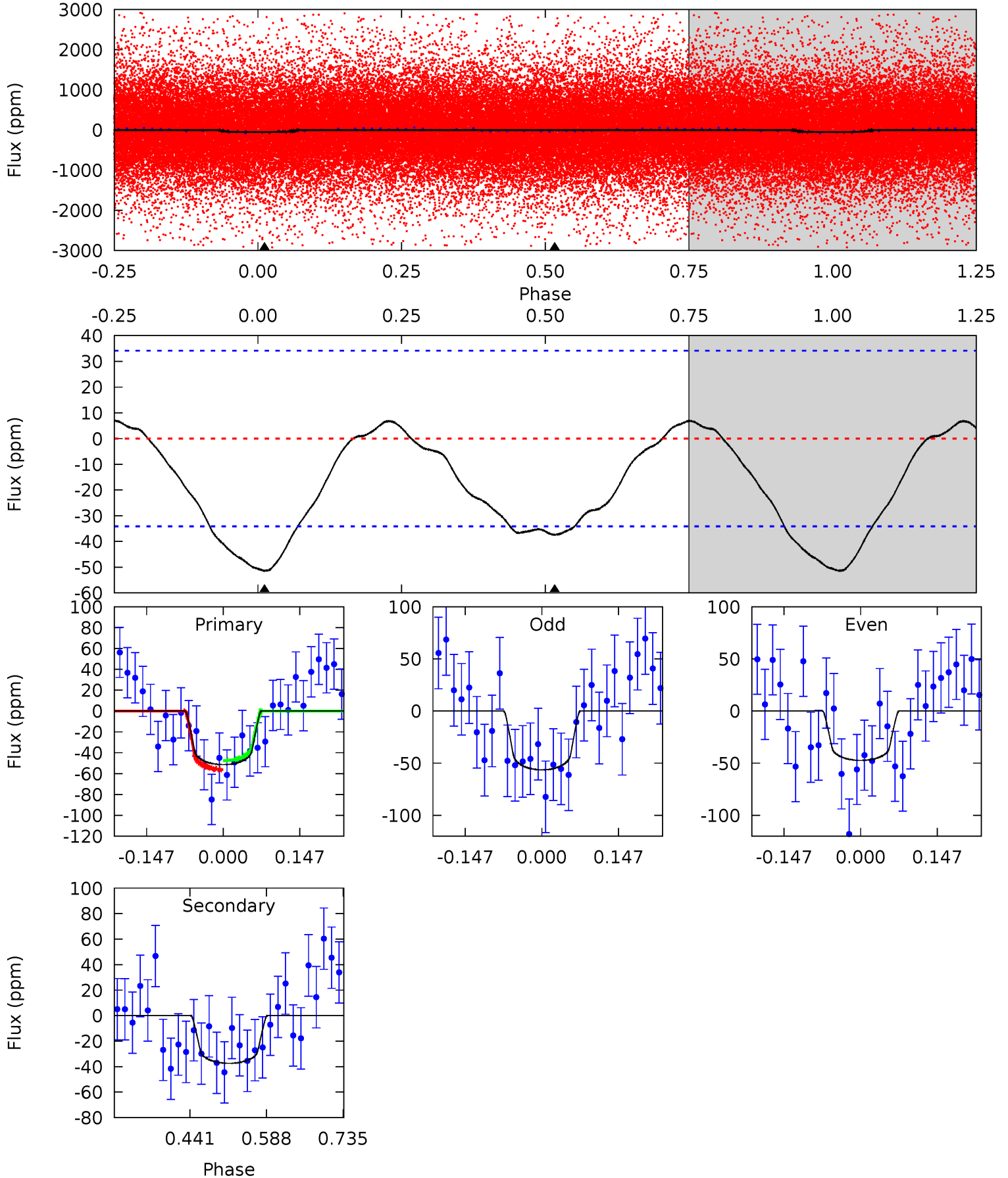




# DV Model-Shift Uniqueness Test

008424446-01, P = 1.192268 Days, E = 130.795036 Days

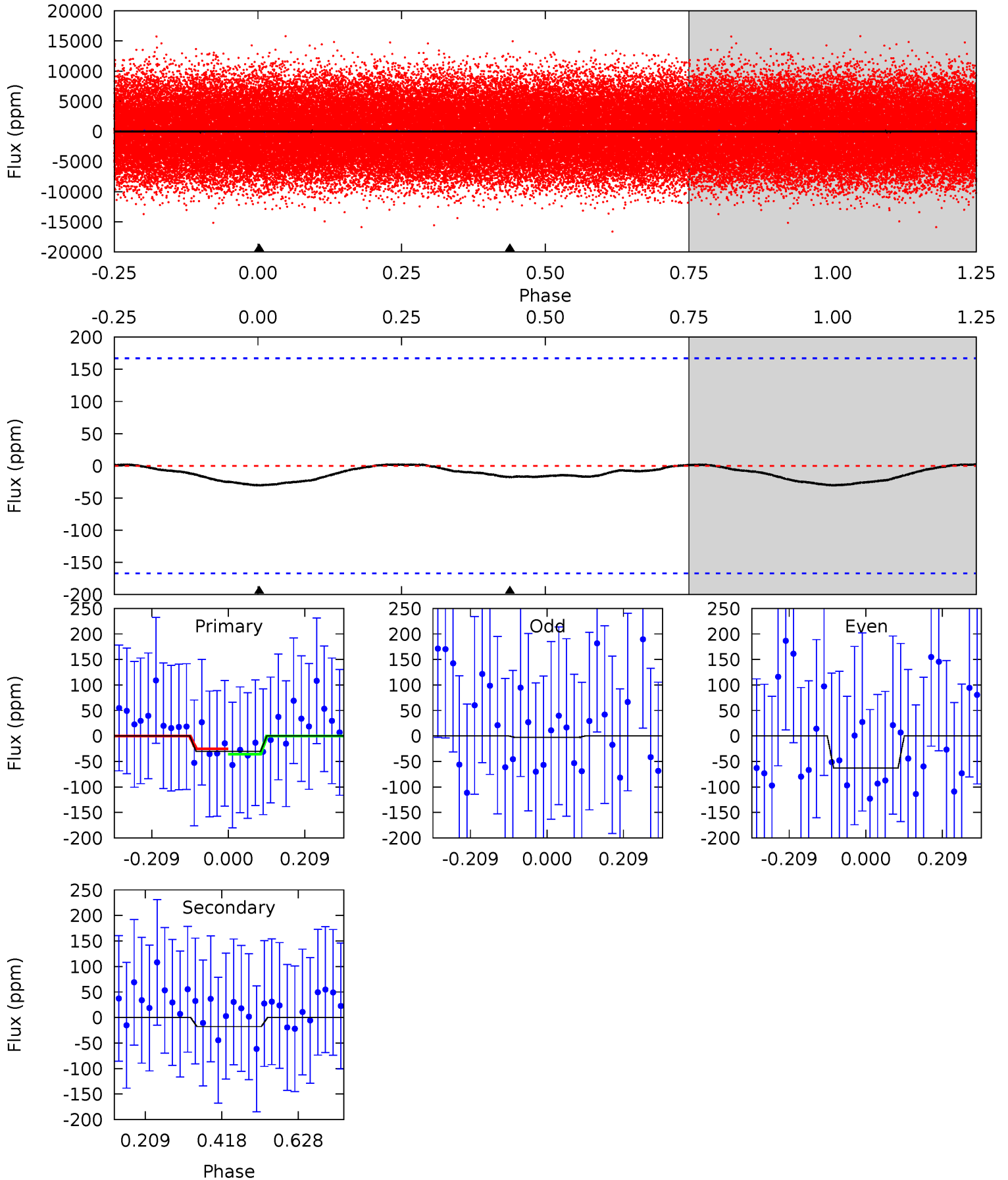
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.75	4.91	0	0	4.48	1.45	0.91	6.75	6.75	4.91	4.91	0.60	1.15	0.12	0.57



# Alt Model-Shift Uniqueness Test

008424446-01, P = 1.192245 Days, E = 130.788090 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
0.80	0.47	0	0	4.41	1.26	0.10	0.80	0.80	0.47	0.47	0.80	1.49	0.07	0.14



### Stellar Parameters For KIC 008424446

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6742^{+189}_{-284}$	$4.101^{+0.234}_{-0.175}$	$-0.260^{+0.250}_{-0.300}$	$1.686^{+0.485}_{-0.485}$	$1.315^{+0.194}_{-0.237}$	$0.387^{+0.497}_{-0.191}$
	+3%/-4%	+6%/-4%	+96%/-115%	+29%/-29%	+15%/-18%	+129%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008424446-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-37 \pm 8$	$1.55^{+0.55}_{-0.51}$	$3462^{+277}_{-275}$	$5555^{+1148}_{-683}$	$4.717^{+5.885}_{-2.158}$
Alt.	$-18 \pm 38$	$1.00^{+0.47}_{-0.42}$	$3447^{+283}_{-295}$	$5385^{+3242}_{-11808}$	$4.346^{+19.040}_{-12.280}$

$T_{max}$  = 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

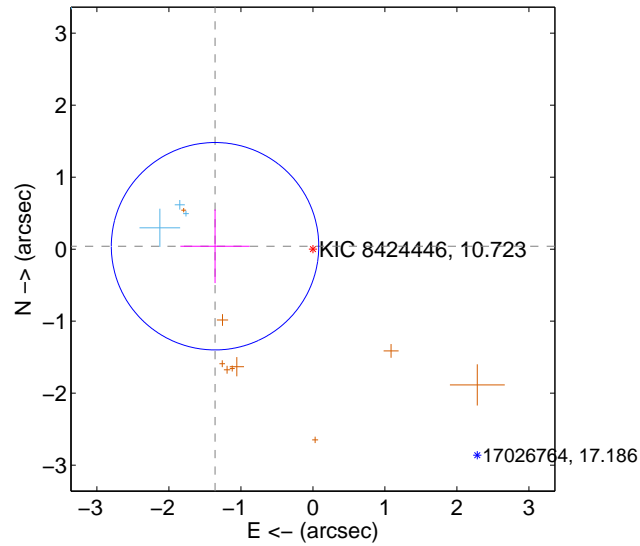
Supplemental centroid analysis for 008424446-01. **Kepler magnitude: 10.72**. Transit SNR 11.52

There are 6 quarters with good PRF difference image offsets

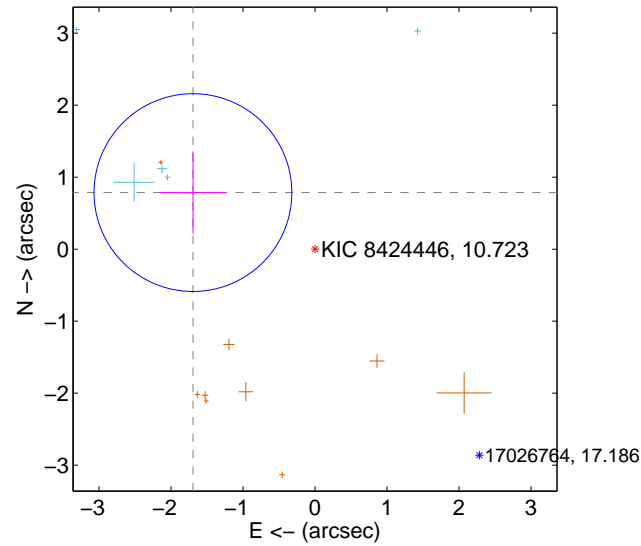
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.360 \pm 0.480$	2.83	$1.359 \pm 0.481$	$0.041 \pm 0.512$
PRF-fit source offset from KIC position	<b><math>1.868 \pm 0.458</math></b>	<b>4.08</b>	$1.695 \pm 0.461$	$0.786 \pm 0.571$
photometric centroid source offset	$0.45 \pm 0.18$	2.50	$-0.05 \pm 0.18$	$0.44 \pm 0.18$

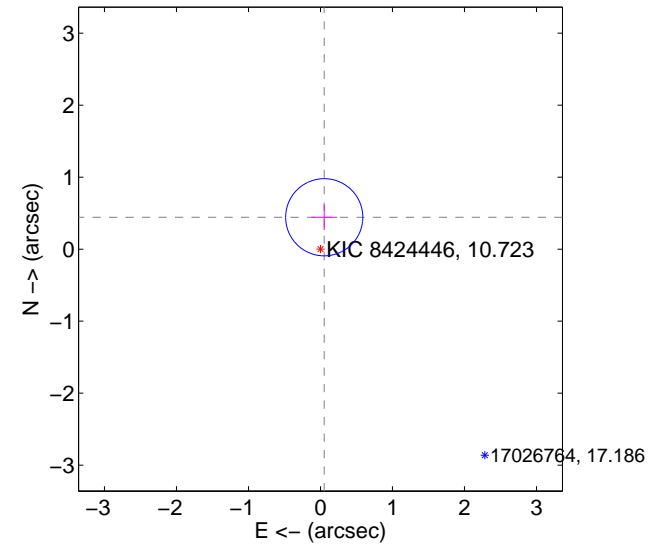
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

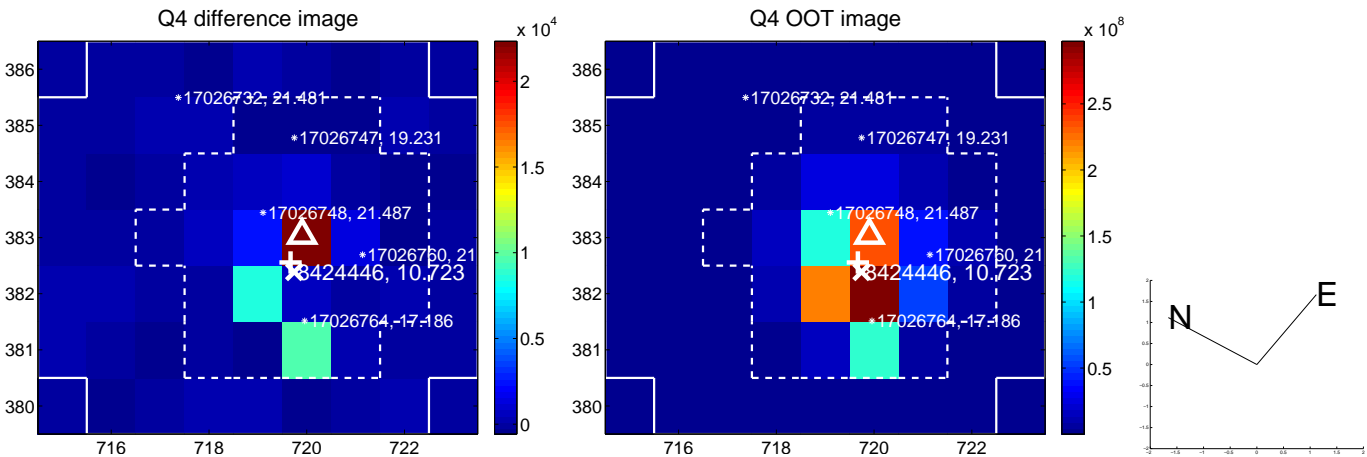
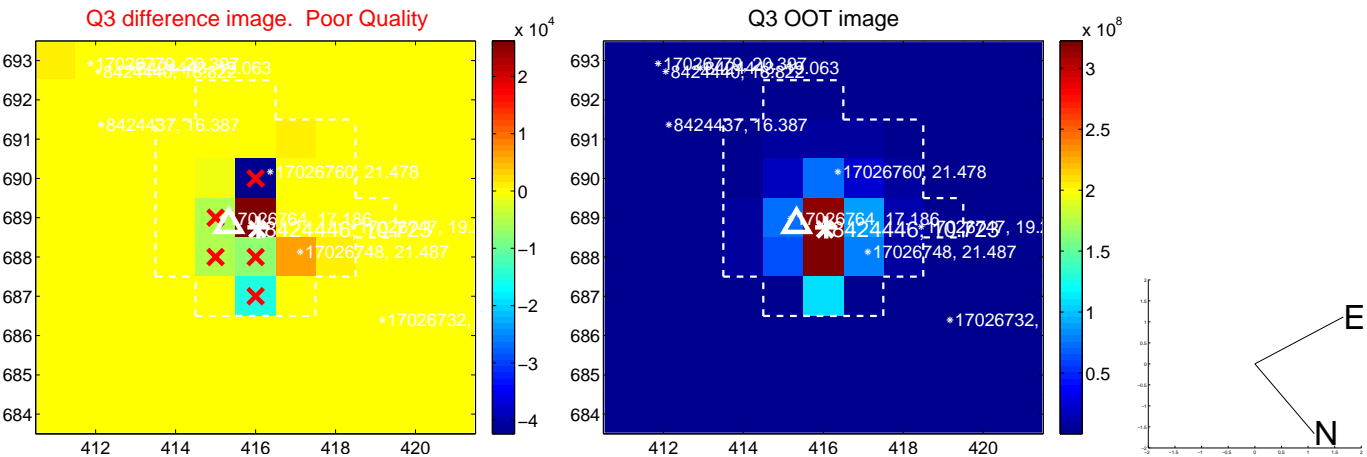
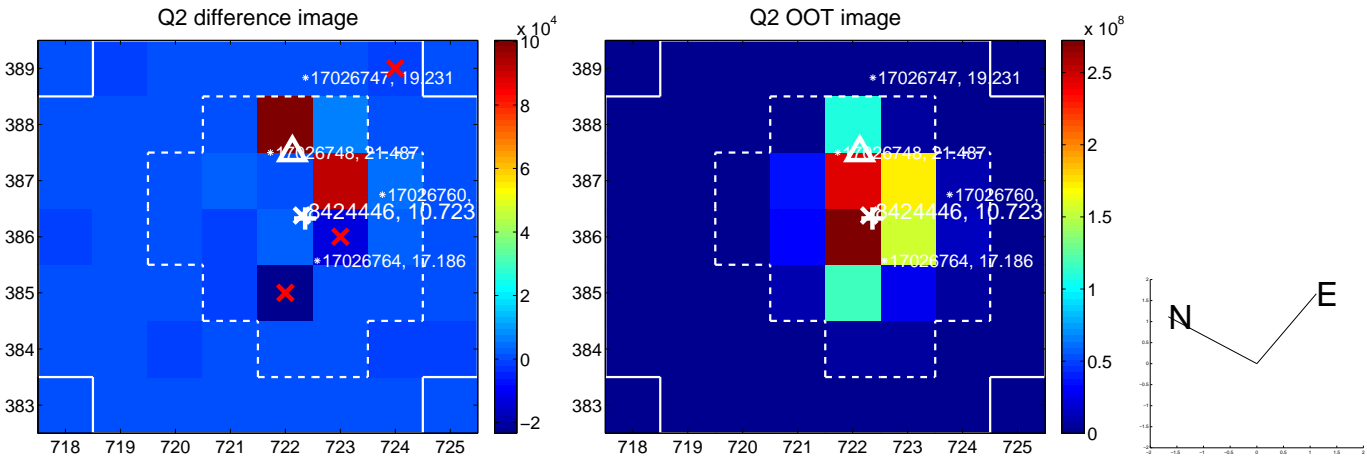
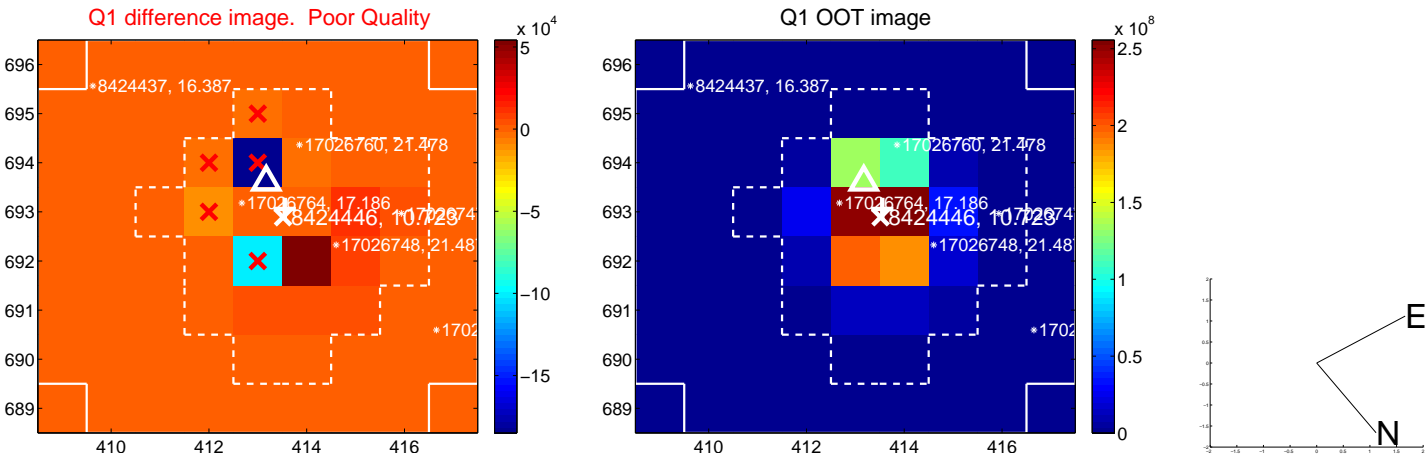


offset from photometric centroids

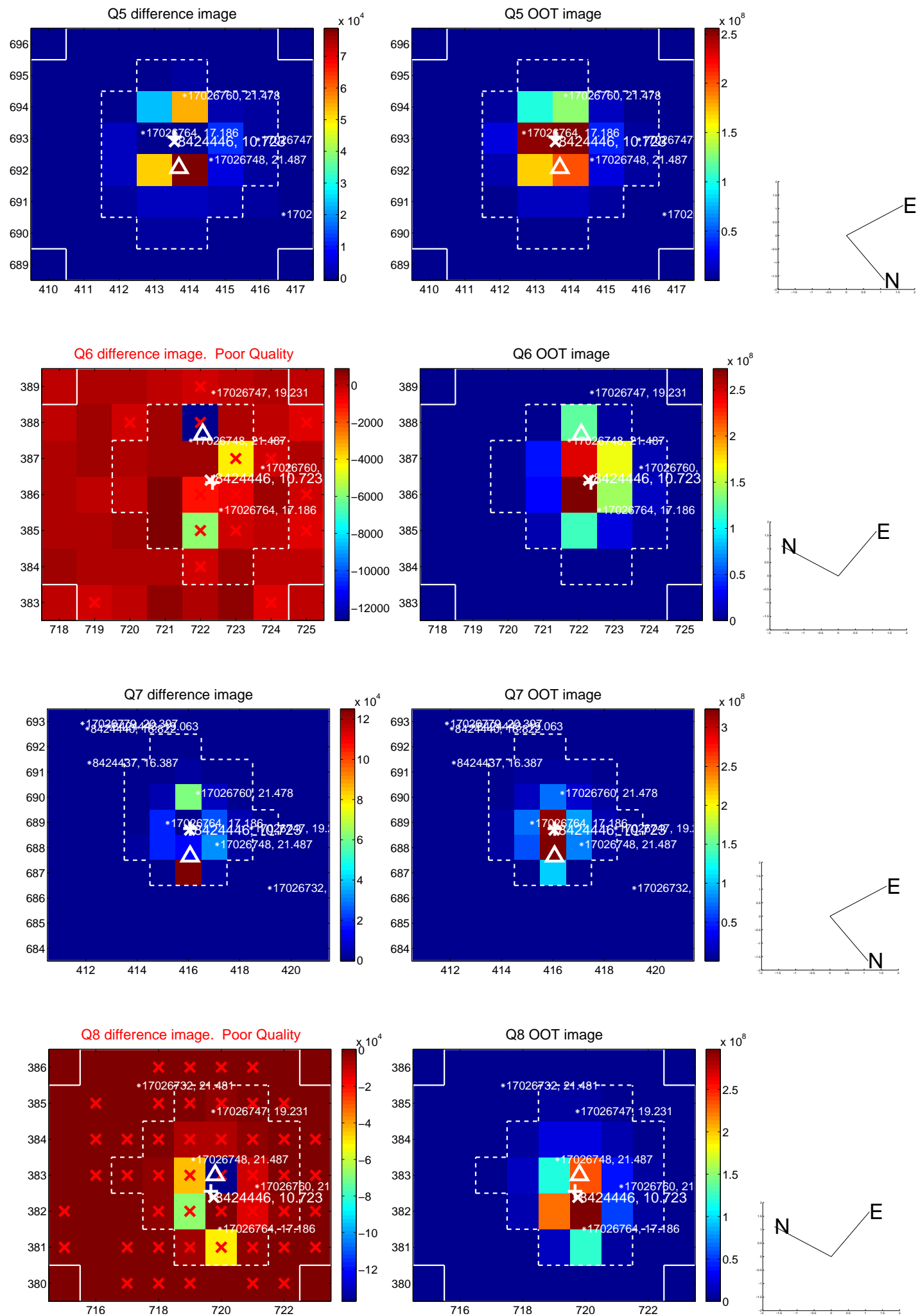


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

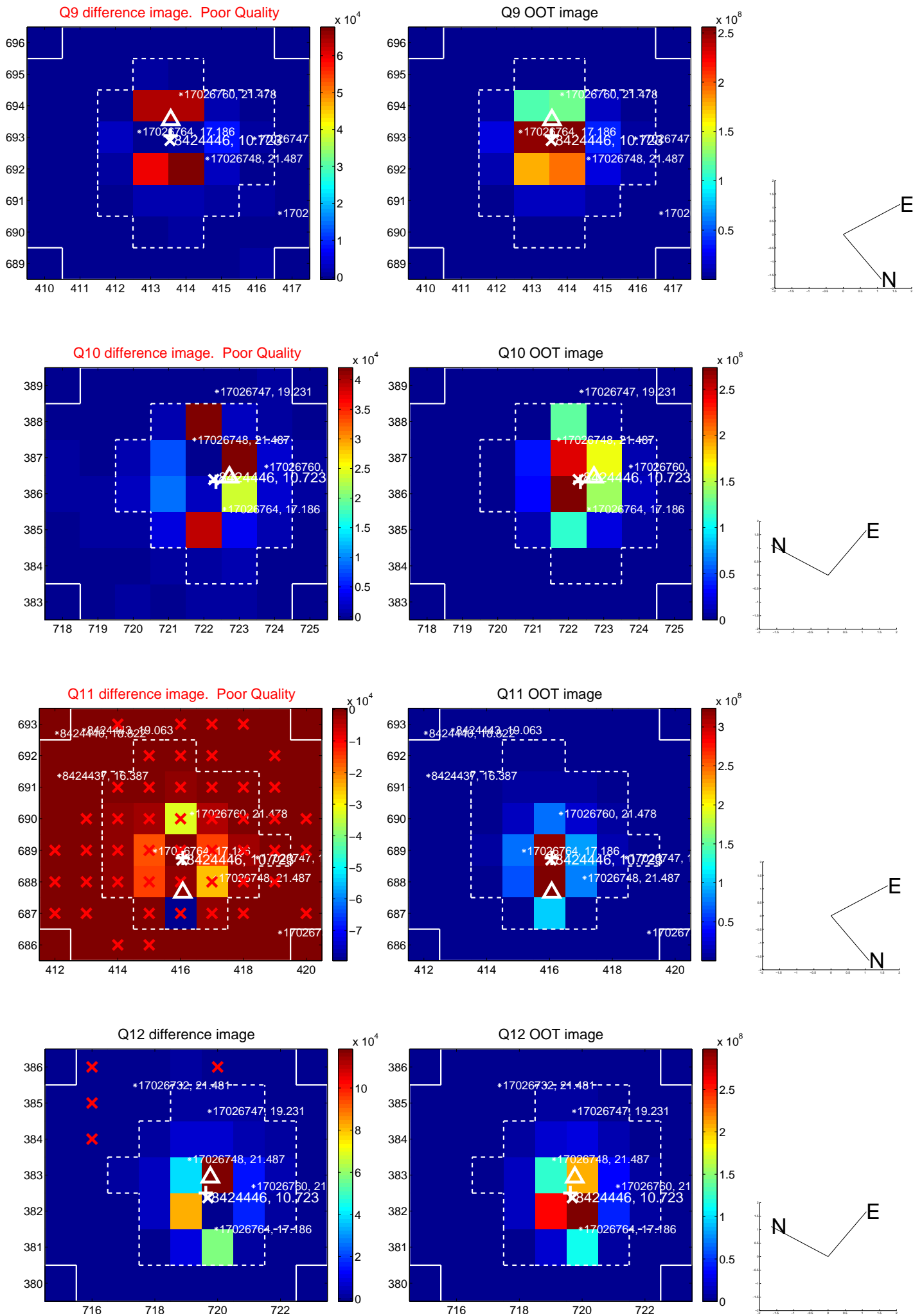


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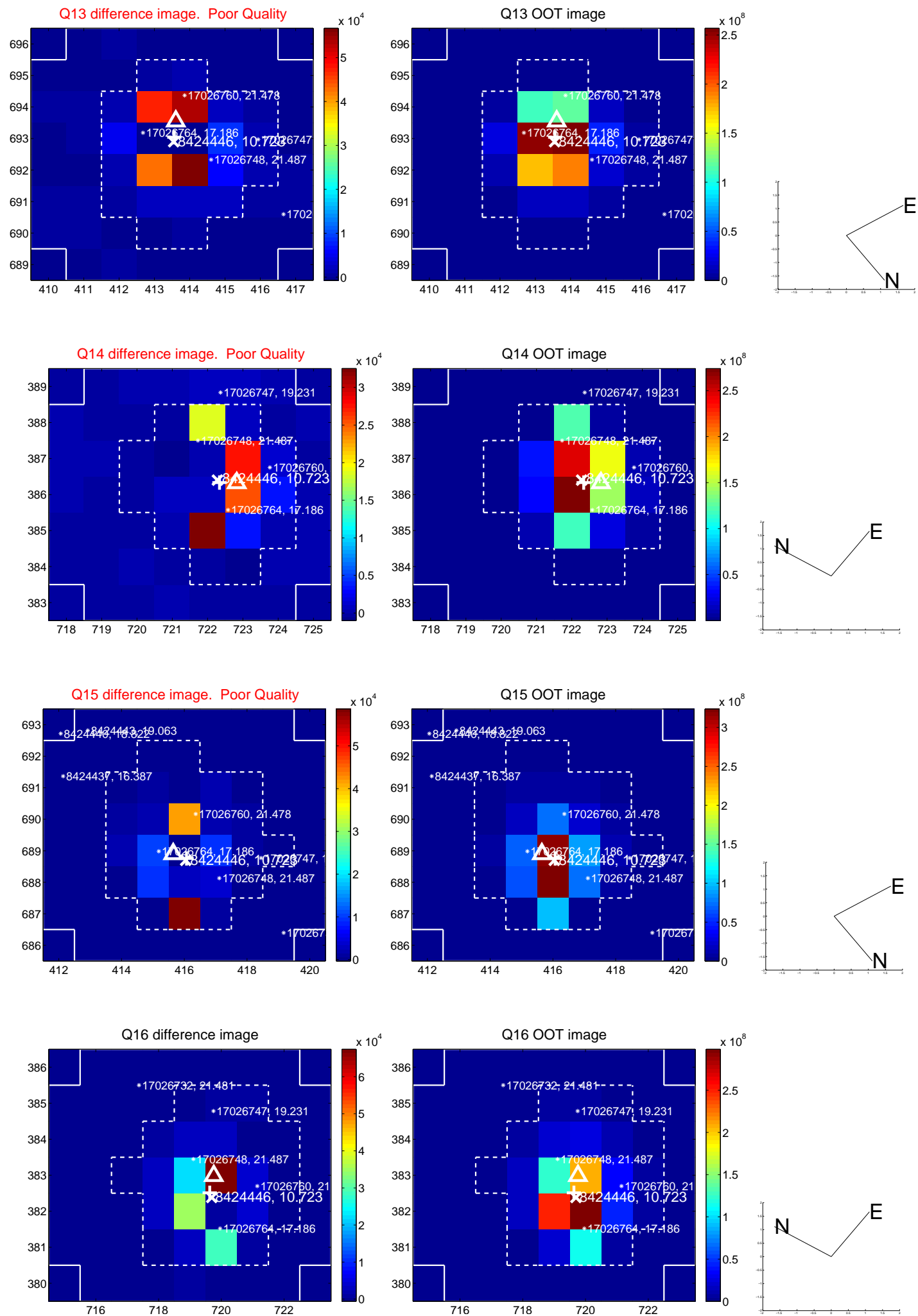




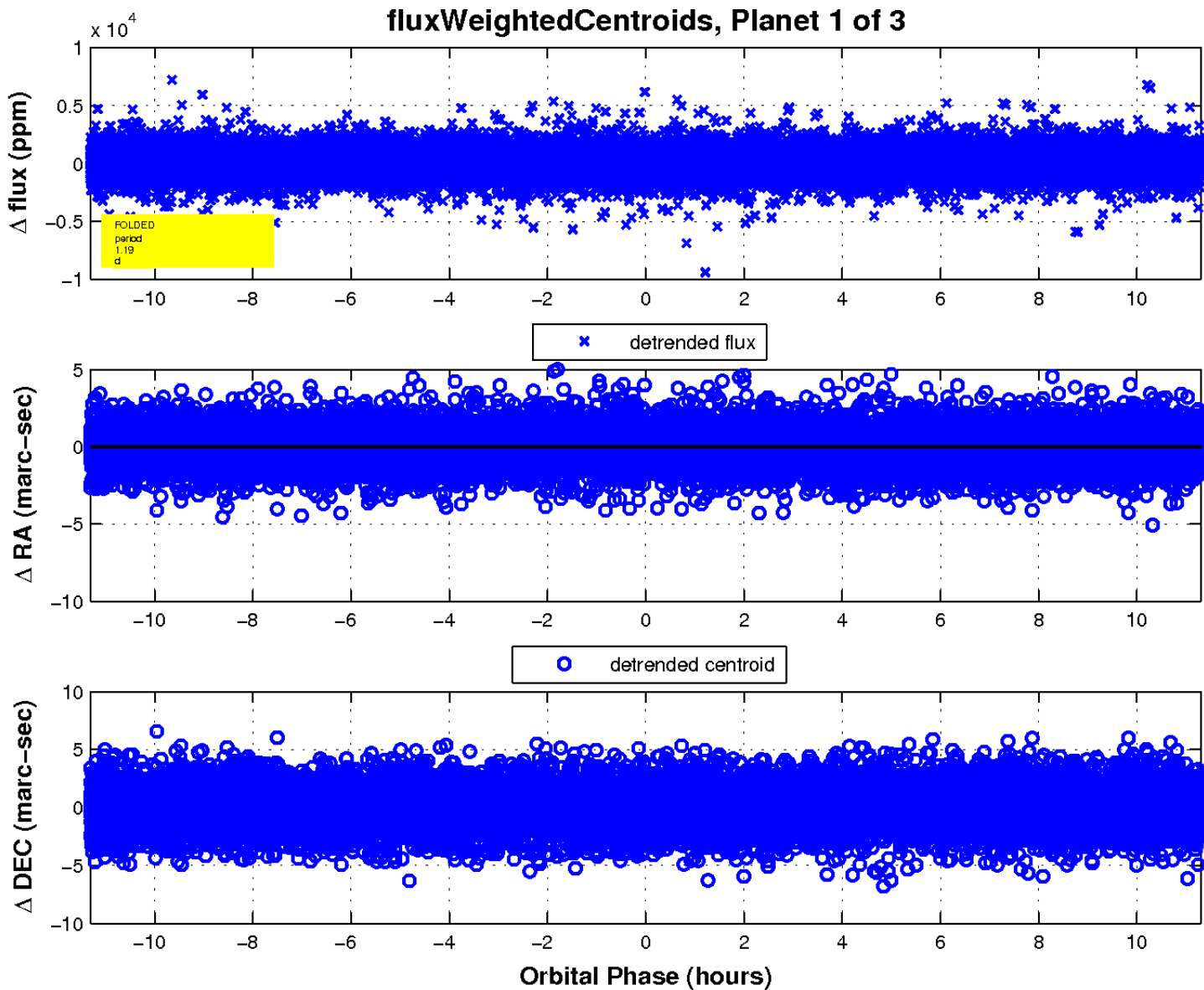
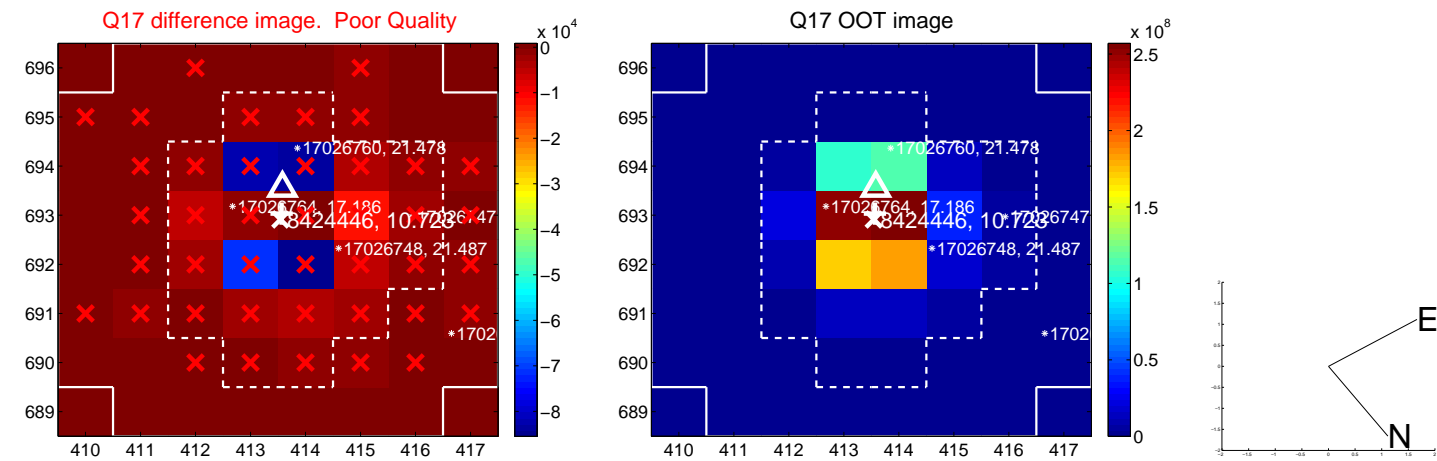
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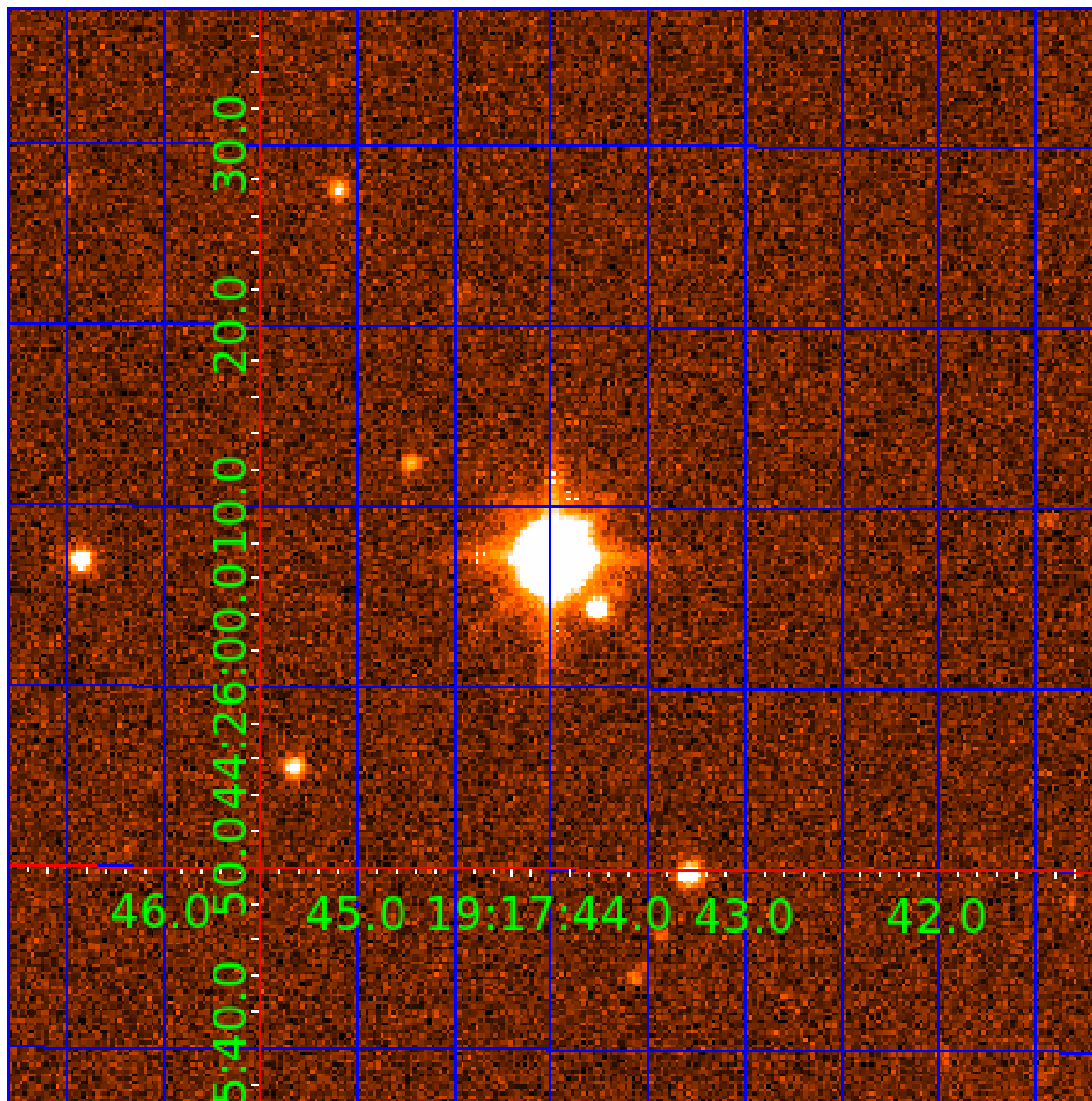


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008424446

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008424446-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
008424446-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
008424446-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED

**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.

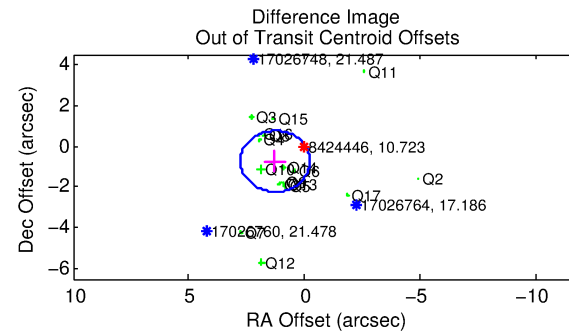
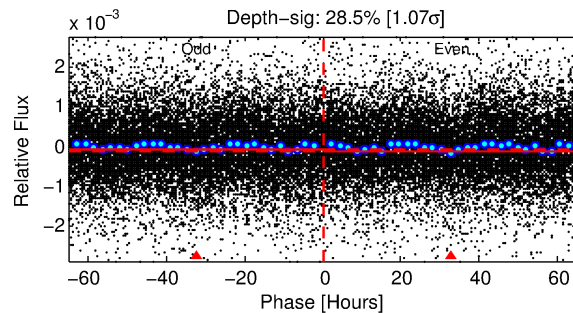
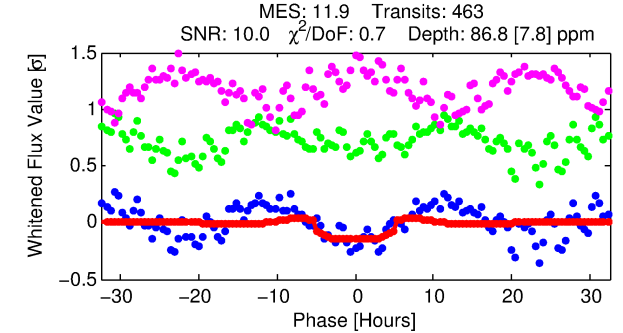
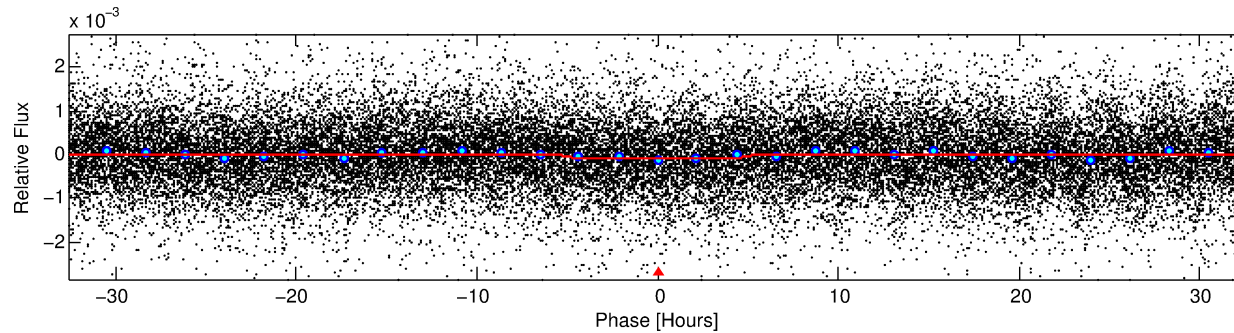
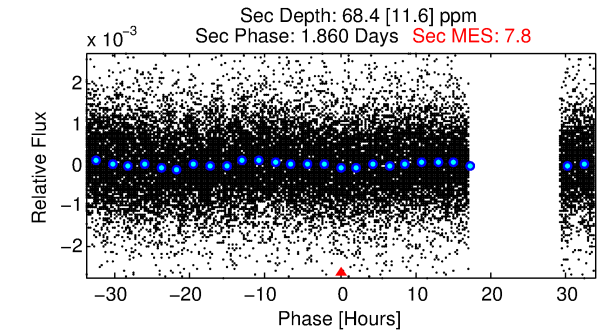
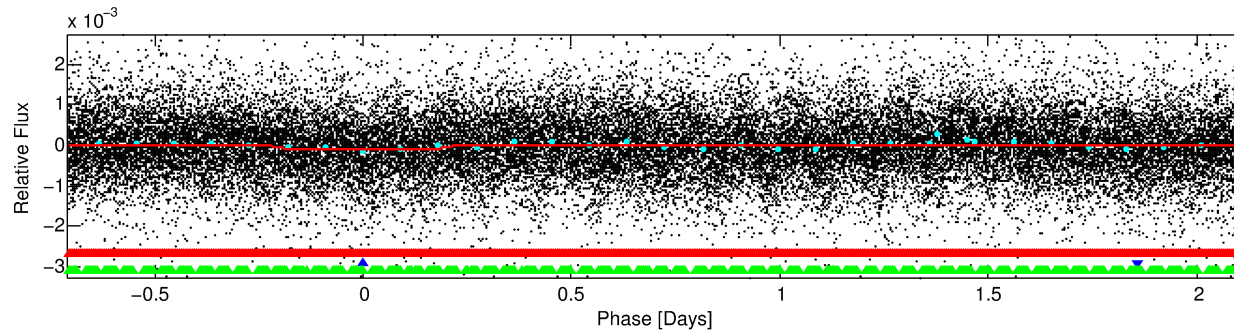
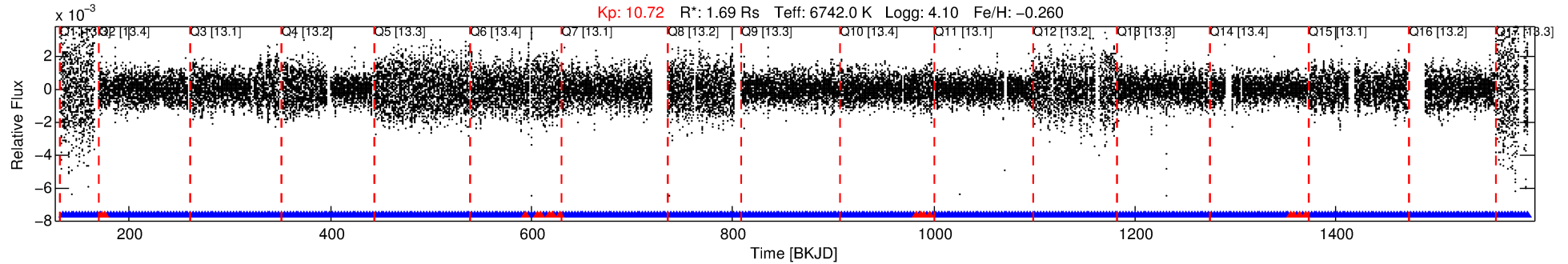
## Ephemeris Match Information For 008424446-02

No Significant Match Found



# DV One-Page Summary

KIC: 8424446 Candidate: 2 of 3 Period: 2.828 d



## DV Fit Results:

Period = 2.82786 [0.00004] d  
Epoch = 133.9420 [0.0084] BKJD  
Rp/R\* = 0.0099 [0.0012]  
a/R\* = 1.31 [0.36]  
b = 0.90 [0.14]  
Seff = 2870.85 [1265.12]  
Teq = 1867 [206] K  
Rp = 1.83 [0.57] Re  
a = 0.0428 [0.0112] AU  
Ag = 20.63 [10.34] [1.90 $\sigma$ ]  
Teffp = 6150 [518] K [7.68 $\sigma$ ]

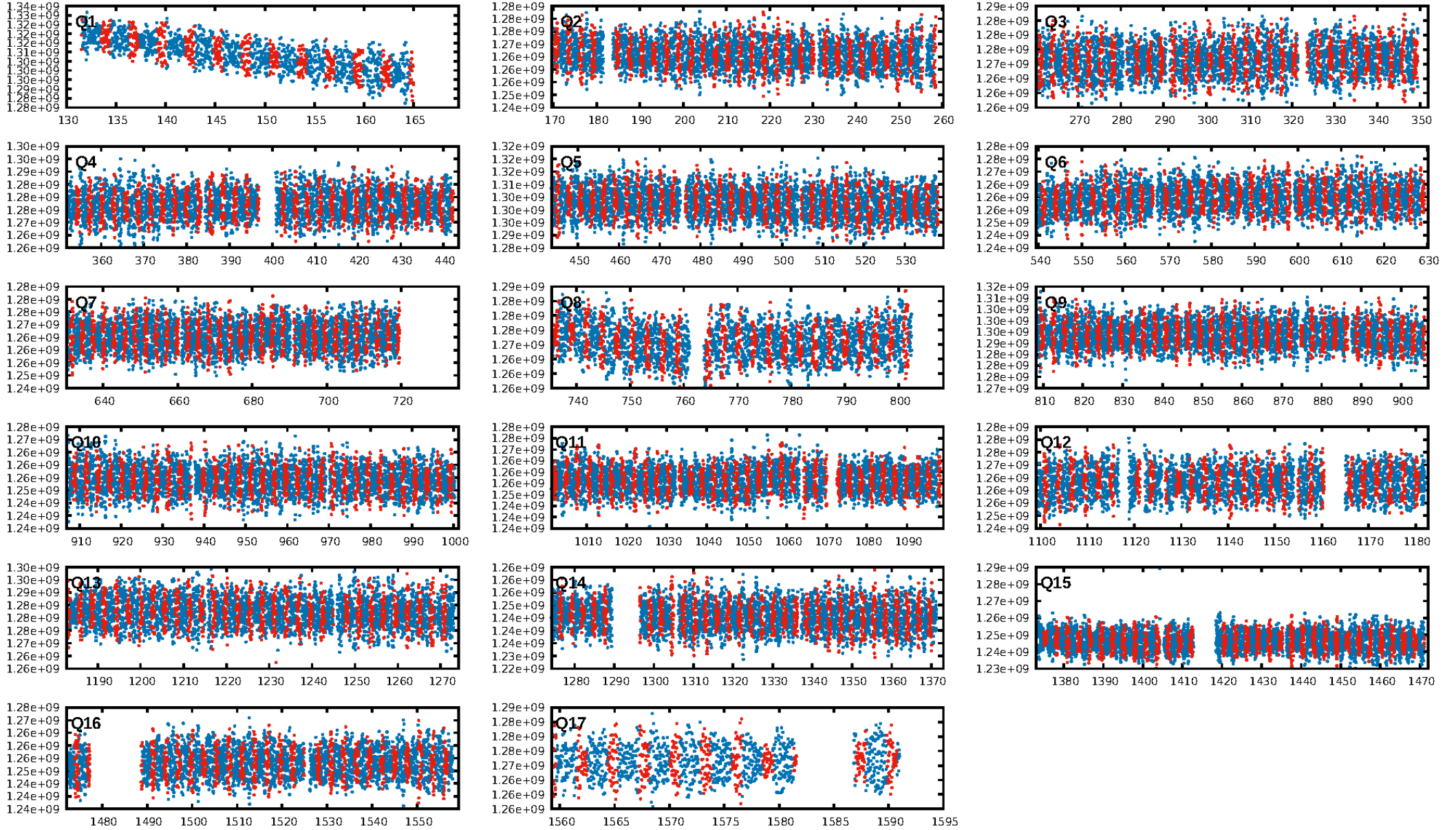
## DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.41 $\sigma$ ]  
LongPeriod-sig: 55.9% [0.77 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.96 [426/442]  
GhostDiagnostic-chr: 1.645  
Centroid-sig: N/A  
Centroid-so: 0.291 arcsec [1.85 $\sigma$ ]  
OotOffset-rm: 1.473 arcsec [2.95 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 1.953 arcsec [3.90 $\sigma$ ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.59 [10/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:25:12 Z

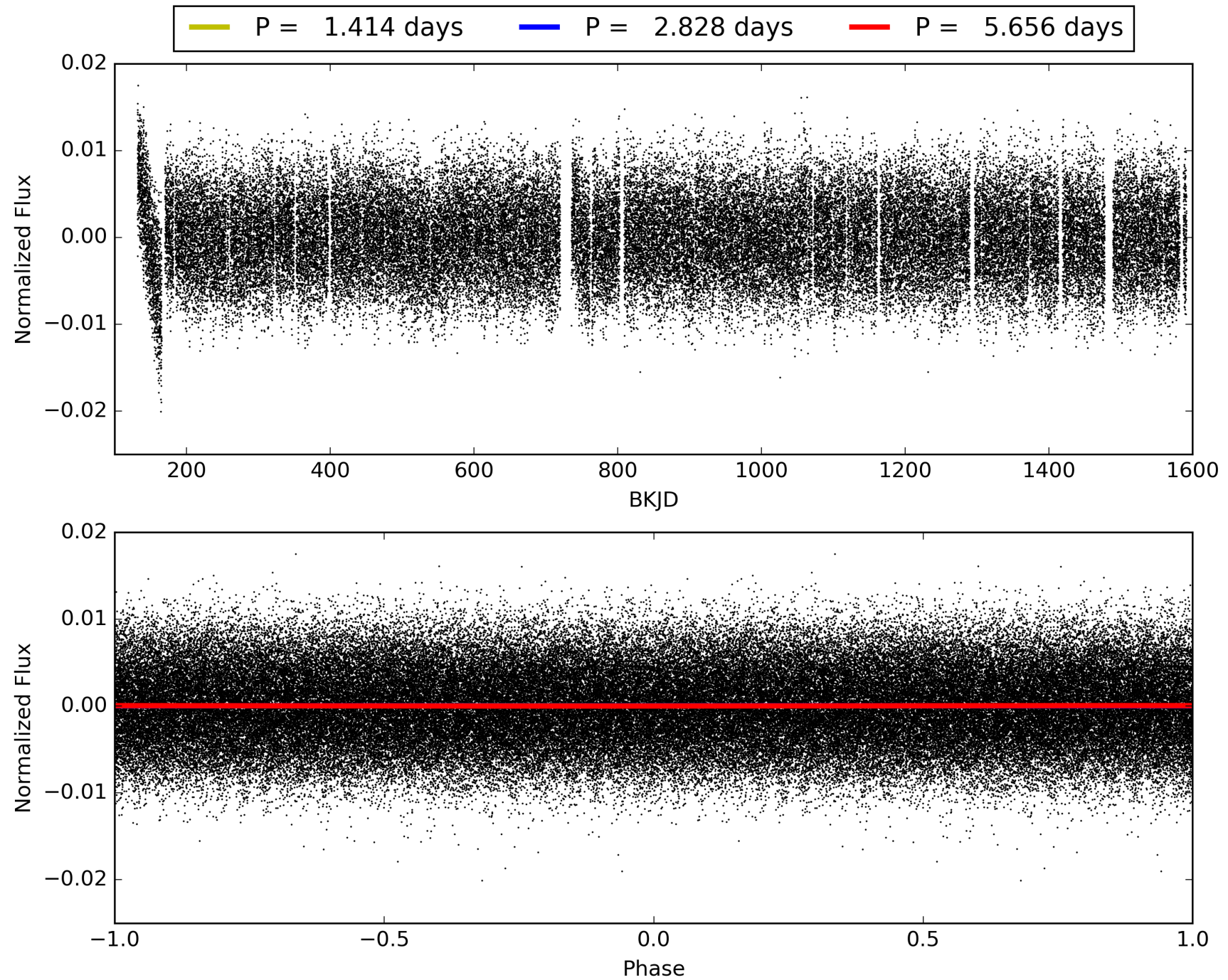
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008424446-02, PDC Light Curves



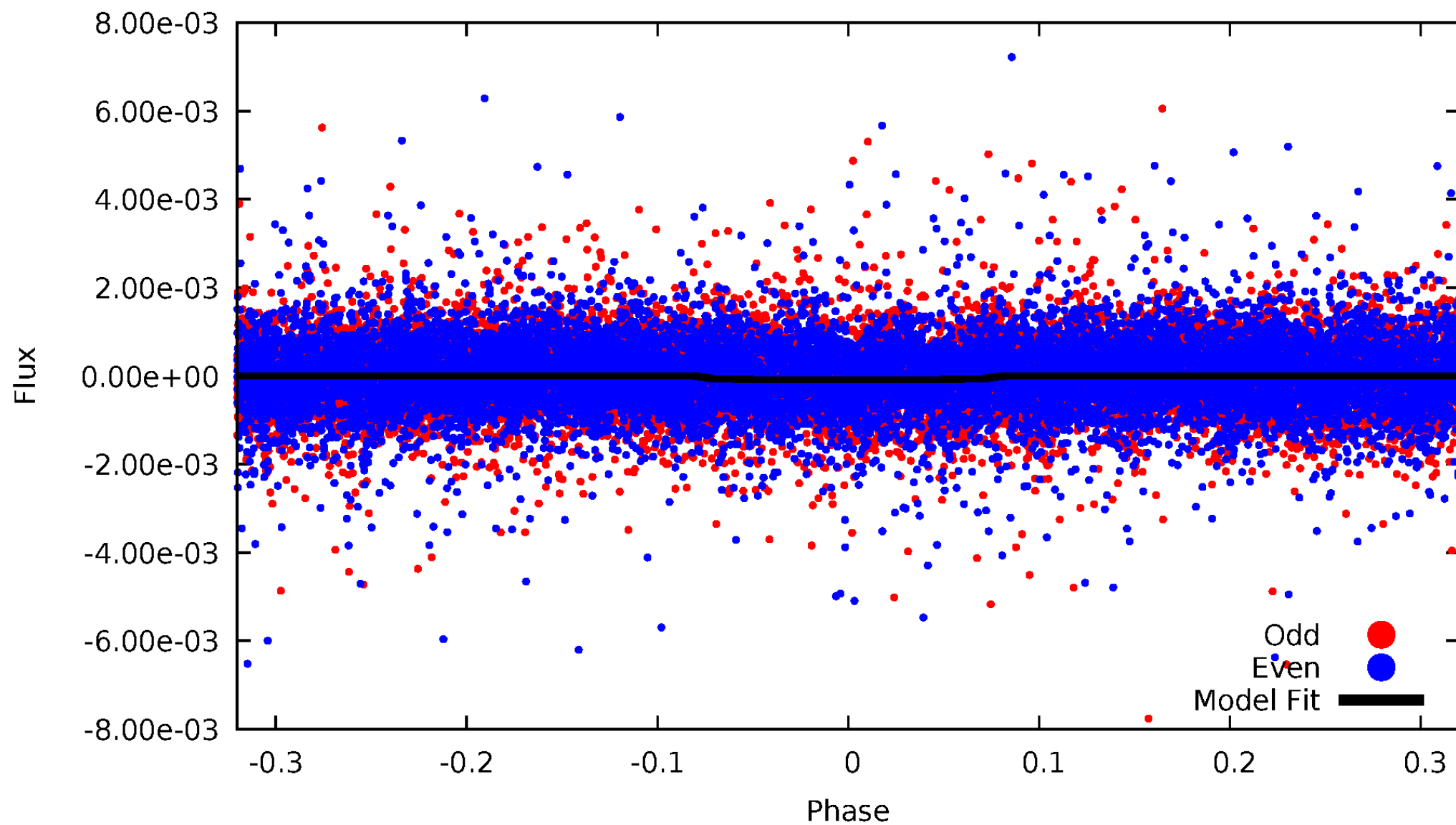


TCE 008424446-02



# DV Odd/Even

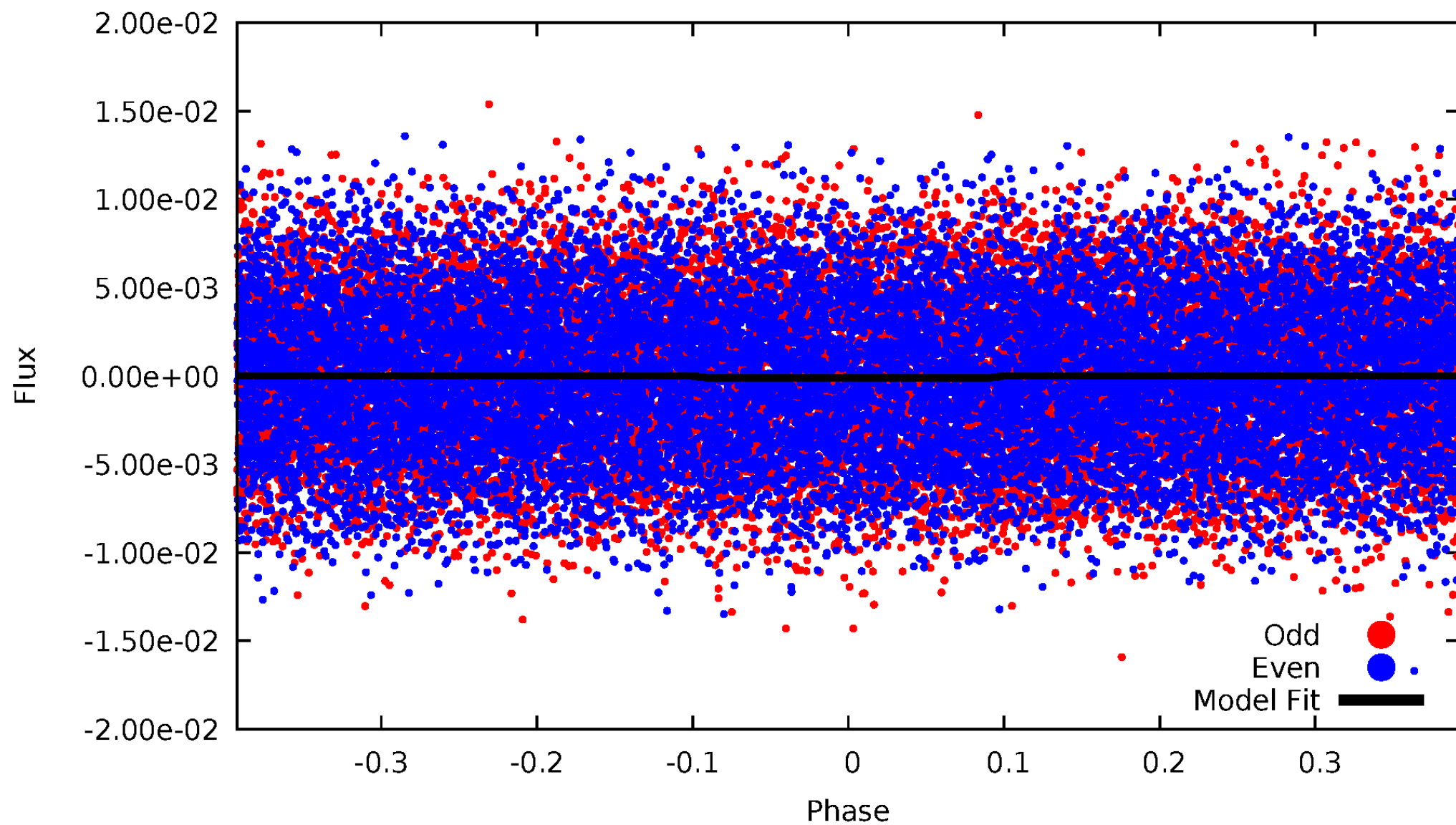
TCE 008424446-02





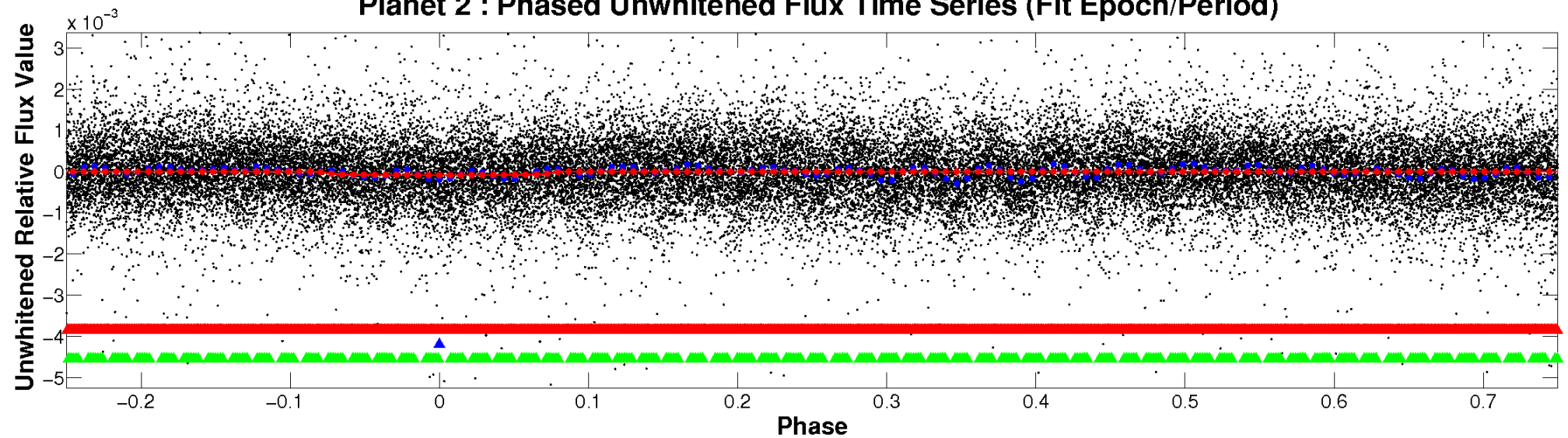
# ALT Odd/Even

TCE 008424446-02

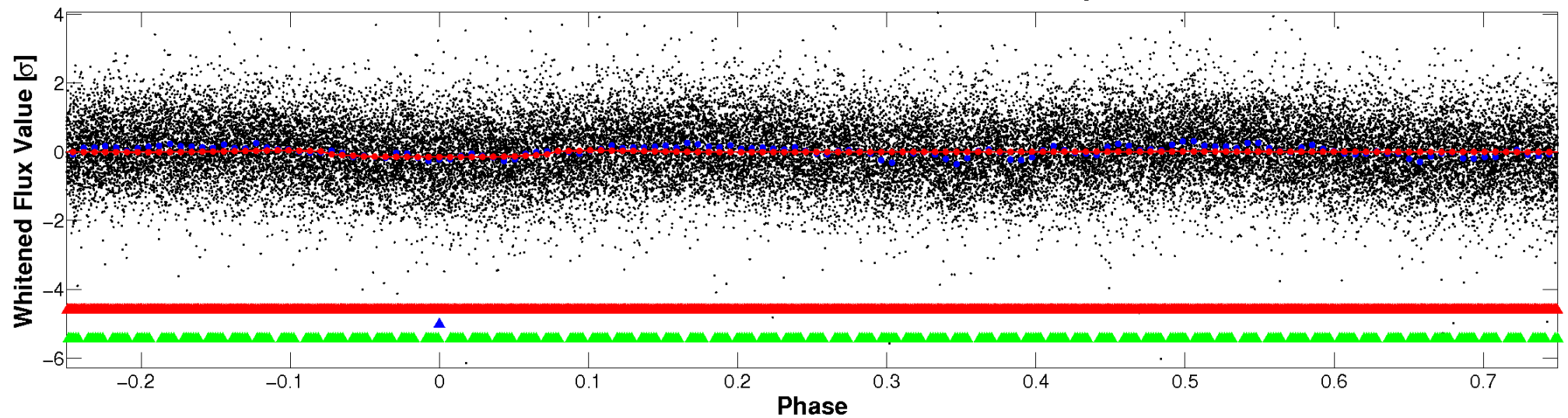


# Non-Whitened Vs. Whitened Light Curve

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

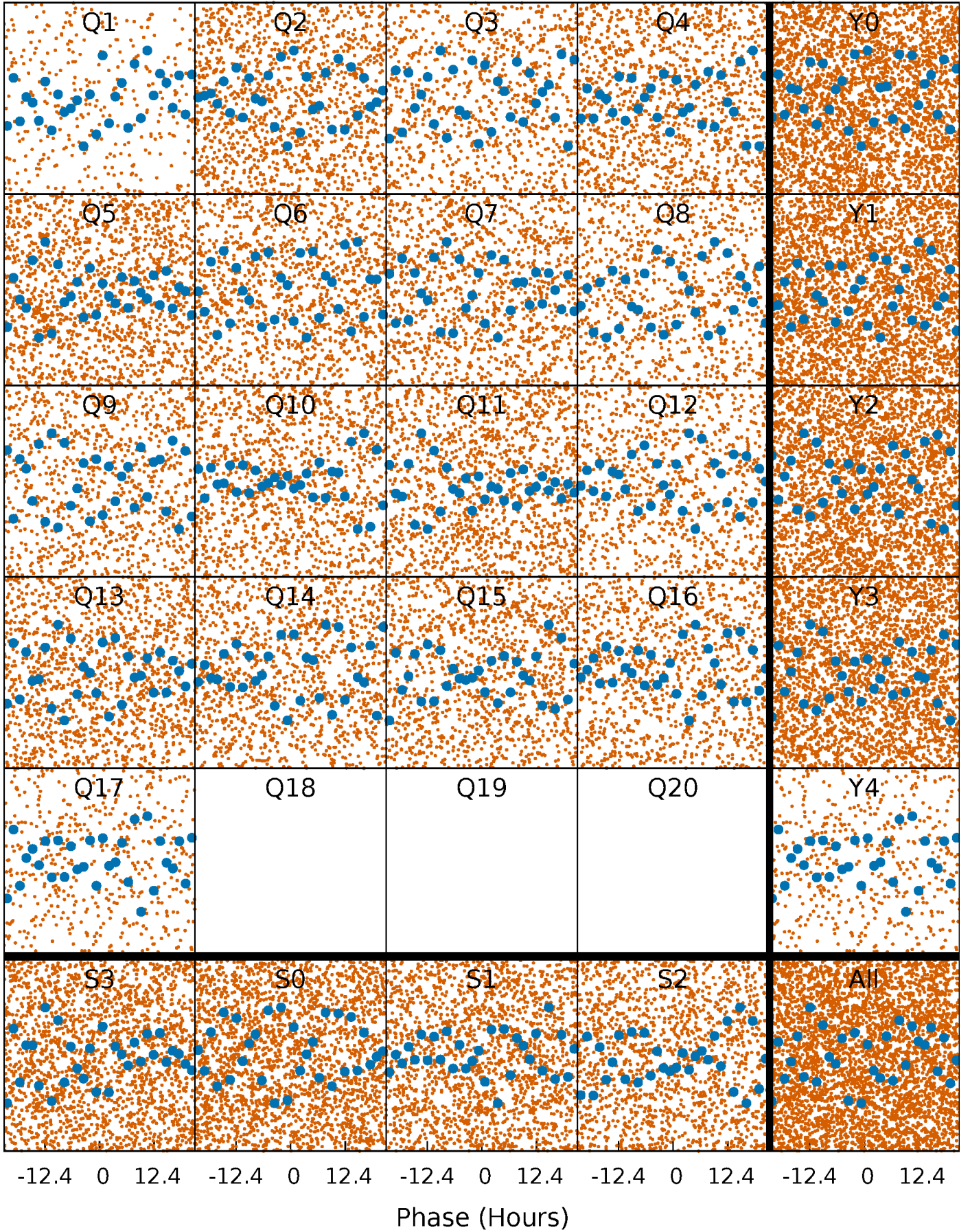


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

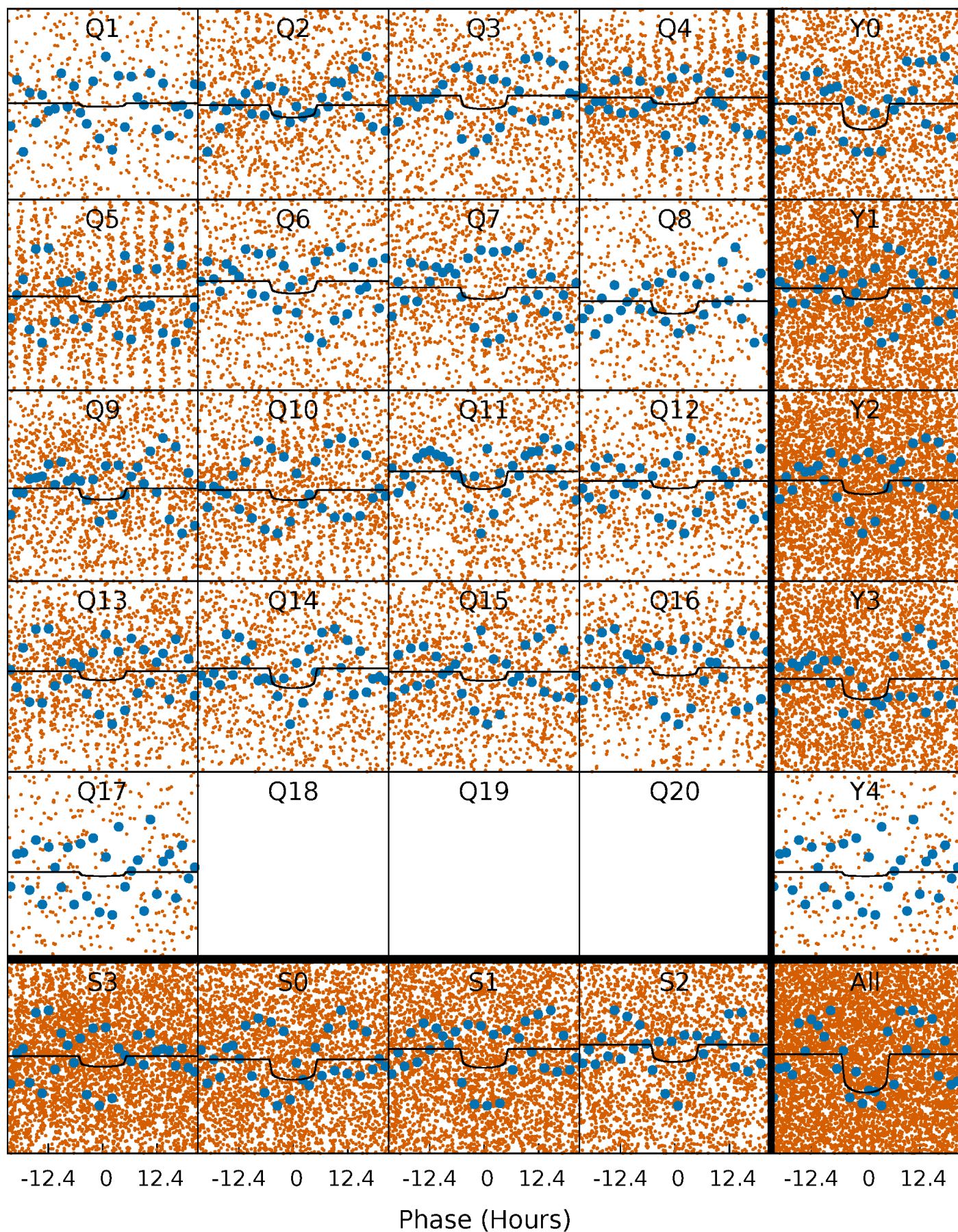
TCE 008424446-02   P= 2.827857 Days    $T_0=133.941961$  (BKJD)





# DV Quarter-Phased Transit Curves

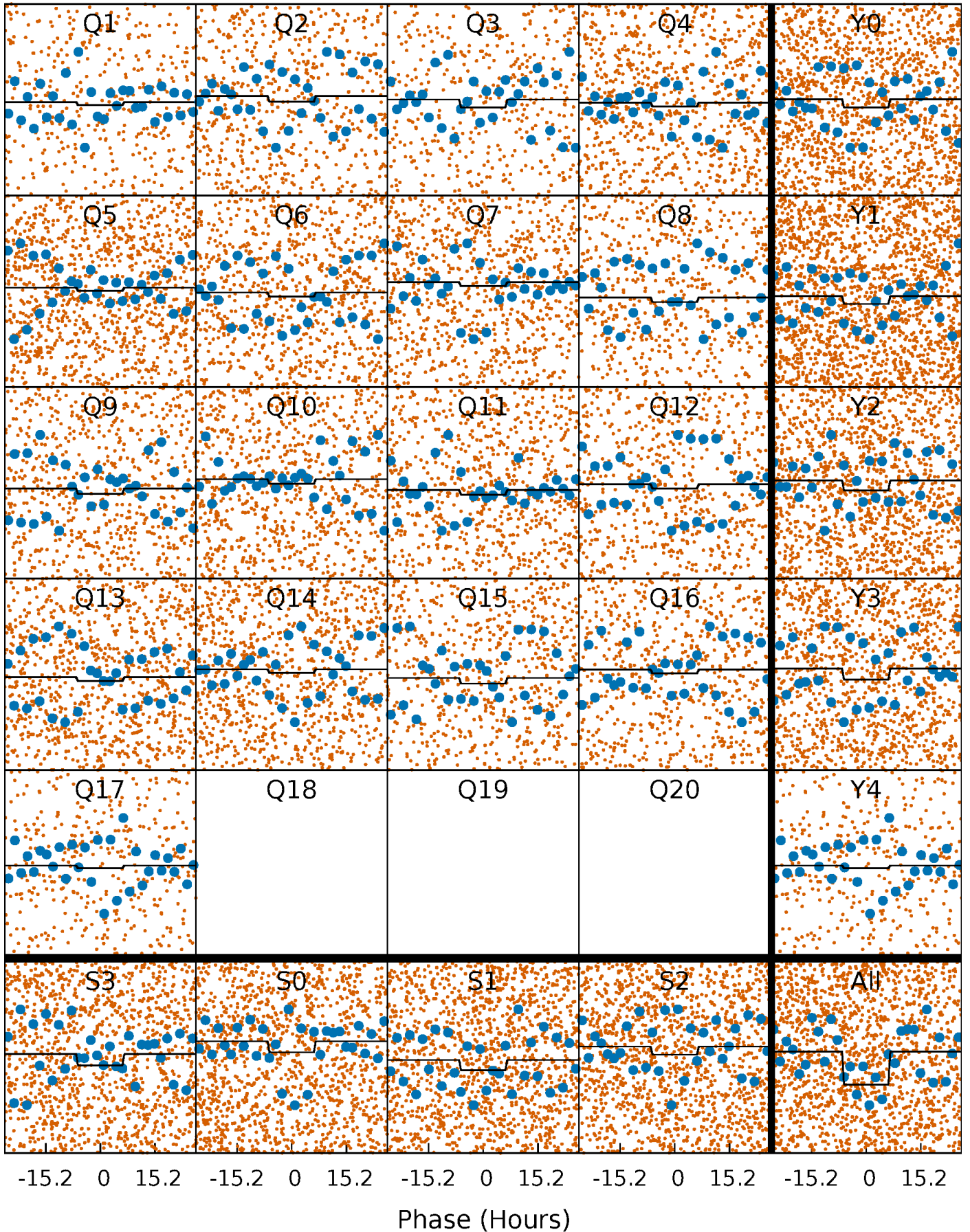
TCE 008424446-02   P= 2.827857 Days    $T_0=133.941961$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

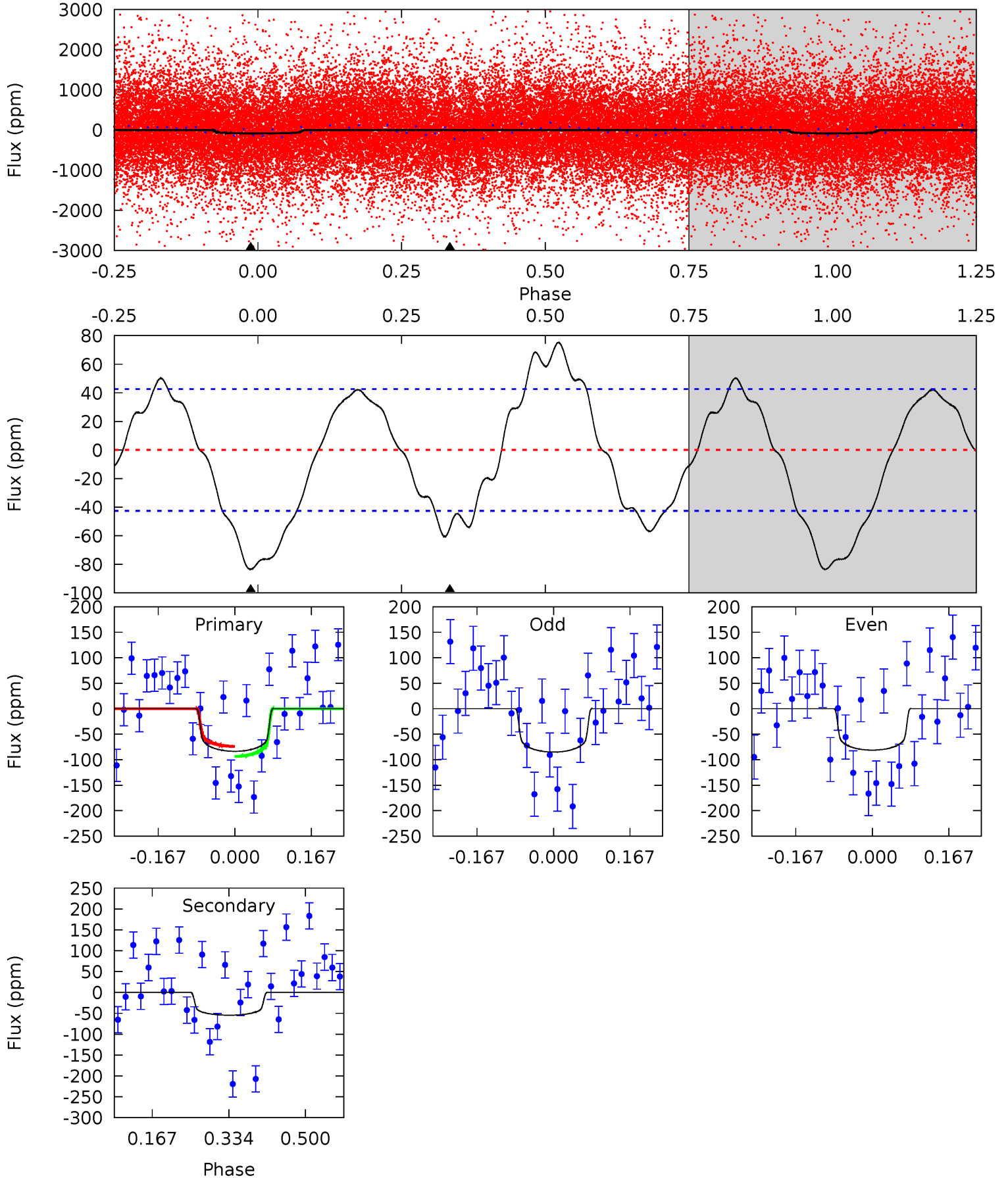
TCE 008424446-02   P= 2.827670 Days    $T_0=133.963099$  (BKJD)



# DV Model-Shift Uniqueness Test

008424446-02, P = 2.827857 Days, E = 131.114104 Days

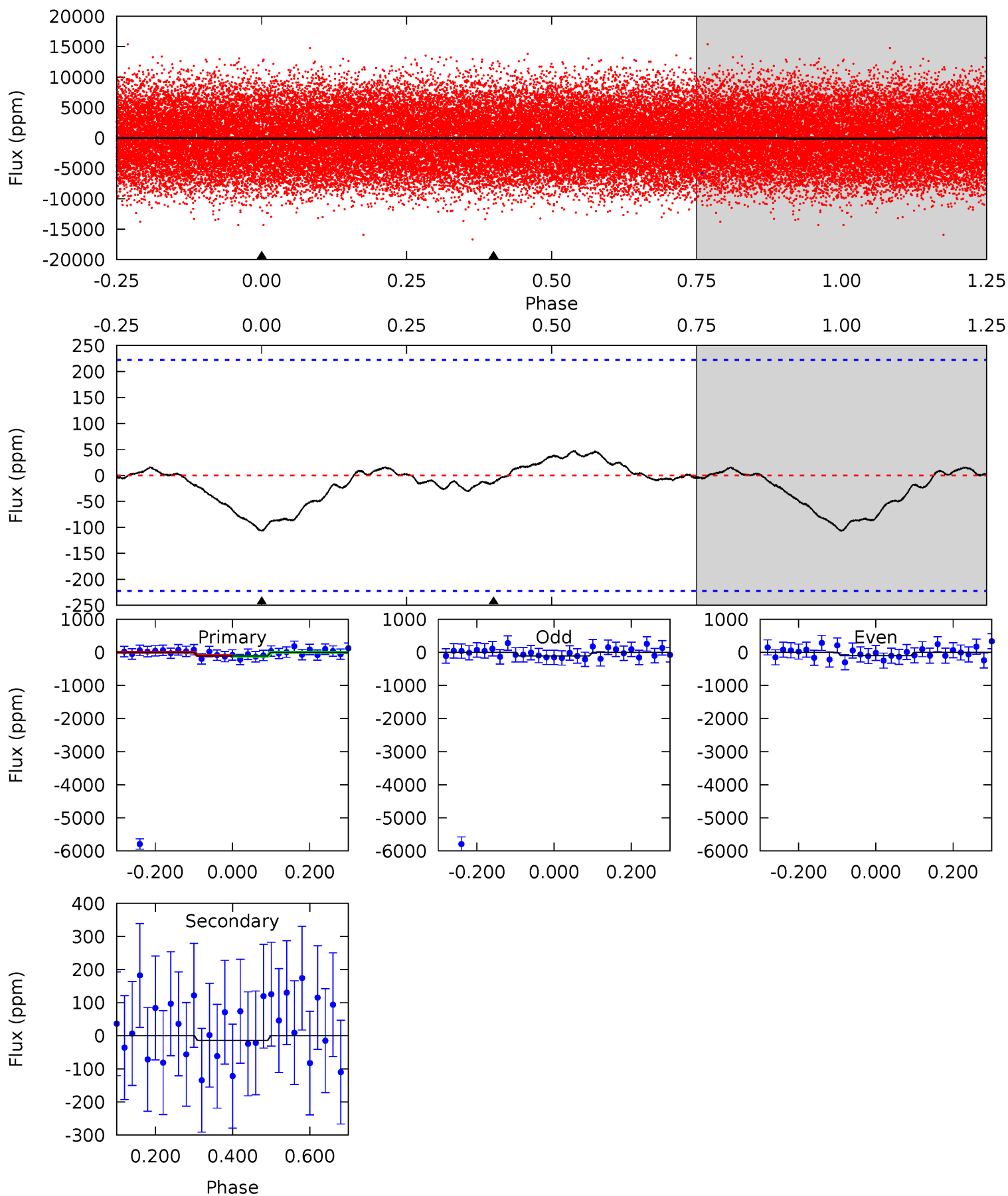
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.74	5.71	0	0	4.46	1.38	4.23	8.74	8.74	5.71	5.71	0.20	0.55	0.47	1.03



# Alt Model-Shift Uniqueness Test

008424446-02, P = 2.827670 Days, E = 131.135429 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
2.12	0.28	0	0	4.42	1.28	0.19	2.12	2.12	0.28	0.28	0.08	0.80	0.30	0.25



### Stellar Parameters For KIC 008424446

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6742^{+189}_{-284}$	$4.101^{+0.234}_{-0.175}$	$-0.260^{+0.250}_{-0.300}$	$1.686^{+0.485}_{-0.485}$	$1.315^{+0.194}_{-0.237}$	$0.387^{+0.497}_{-0.191}$
	+3%/-4%	+6%/-4%	+96%/-115%	+29%/-29%	+15%/-18%	+129%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008424446-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-55 \pm 10$	$1.84^{+0.36}_{-0.36}$	$2587^{+190}_{-202}$	$5715^{+523}_{-392}$	$17^{+9}_{-6}$
Alt.	$-14 \pm 50$	$1.84^{+0.40}_{-0.35}$	$2588^{+222}_{-206}$	$4269^{+1634}_{-9576}$	$4.233^{+14.997}_{-14.738}$

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



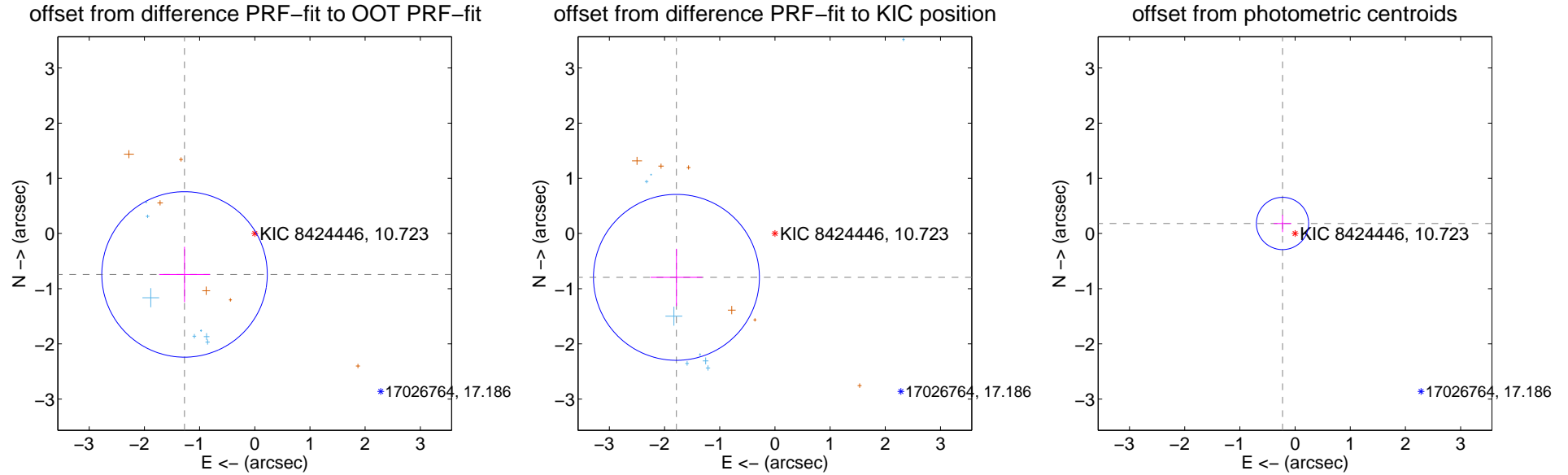
## DV Centroid Data

Supplemental centroid analysis for 008424446-02. **Kepler magnitude: 10.72.** Transit SNR 10.00

There are 10 quarters with good PRF difference image offsets

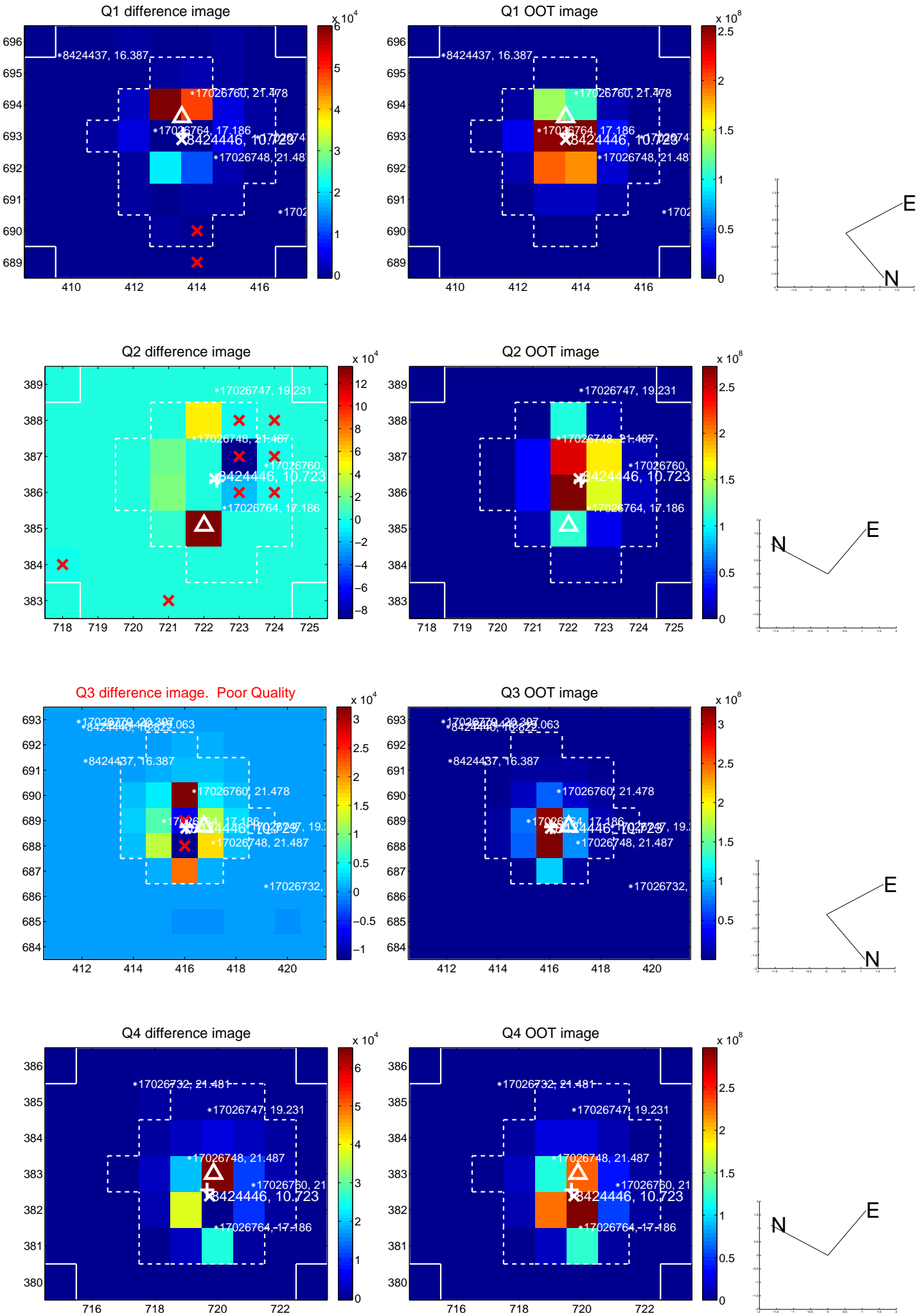
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.473 \pm 0.500$	2.95	$1.273 \pm 0.459$	$-0.741 \pm 0.502$
PRF-fit source offset from KIC position	<b><math>1.953 \pm 0.501</math></b>	<b>3.90</b>	$1.784 \pm 0.470$	$-0.794 \pm 0.518$
photometric centroid source offset	$0.29 \pm 0.16$	1.85	$0.23 \pm 0.16$	$0.18 \pm 0.16$

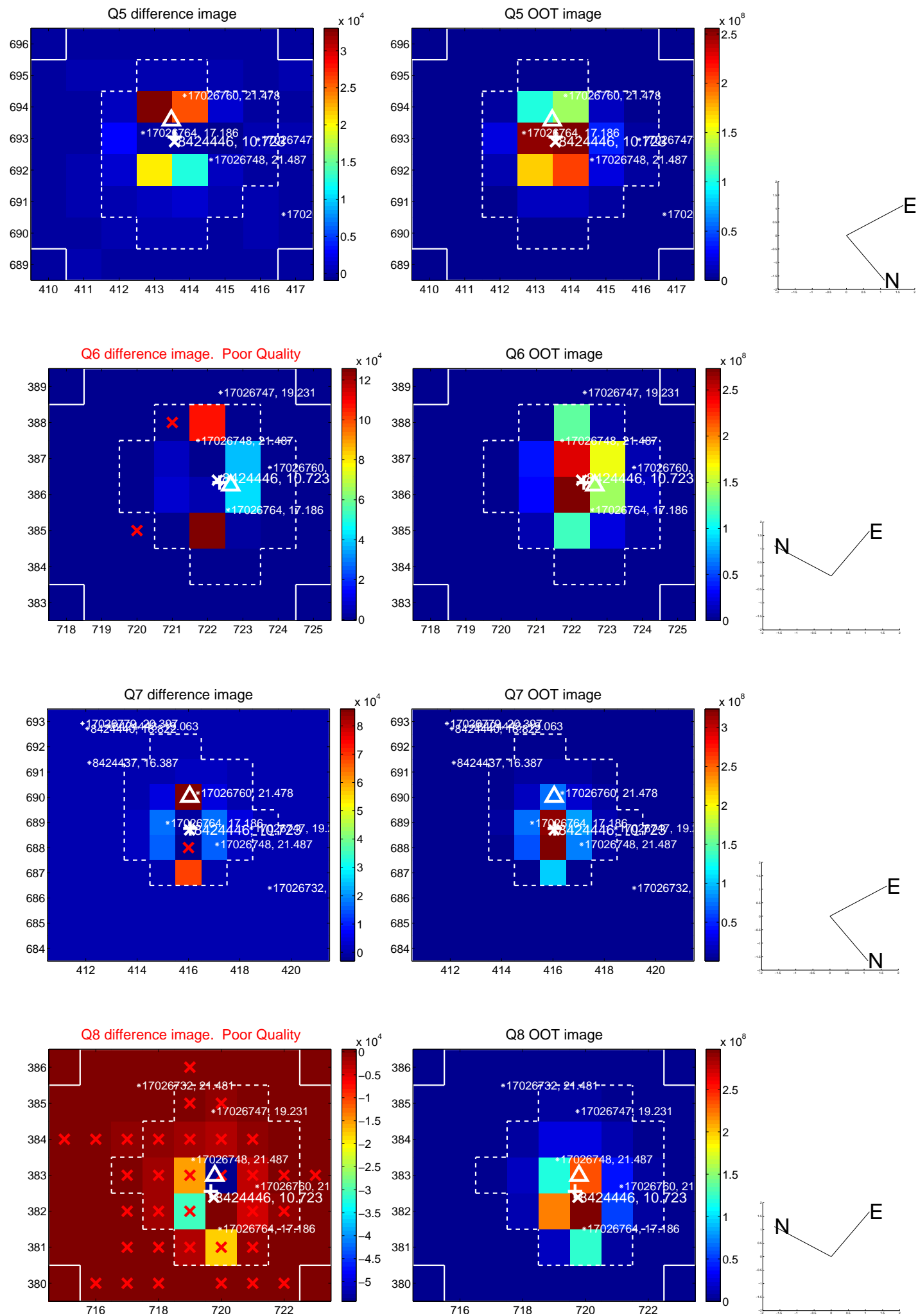


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

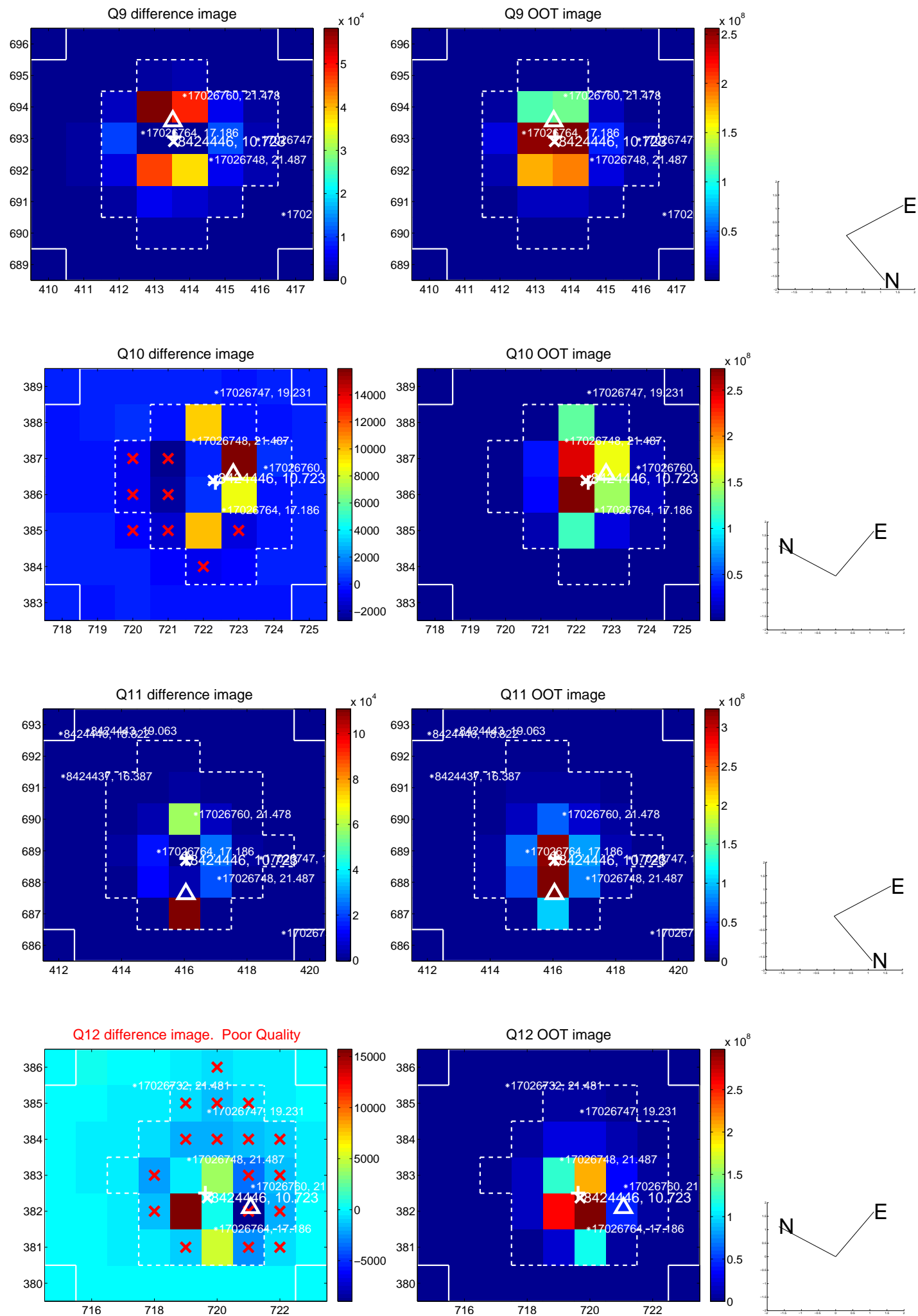
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



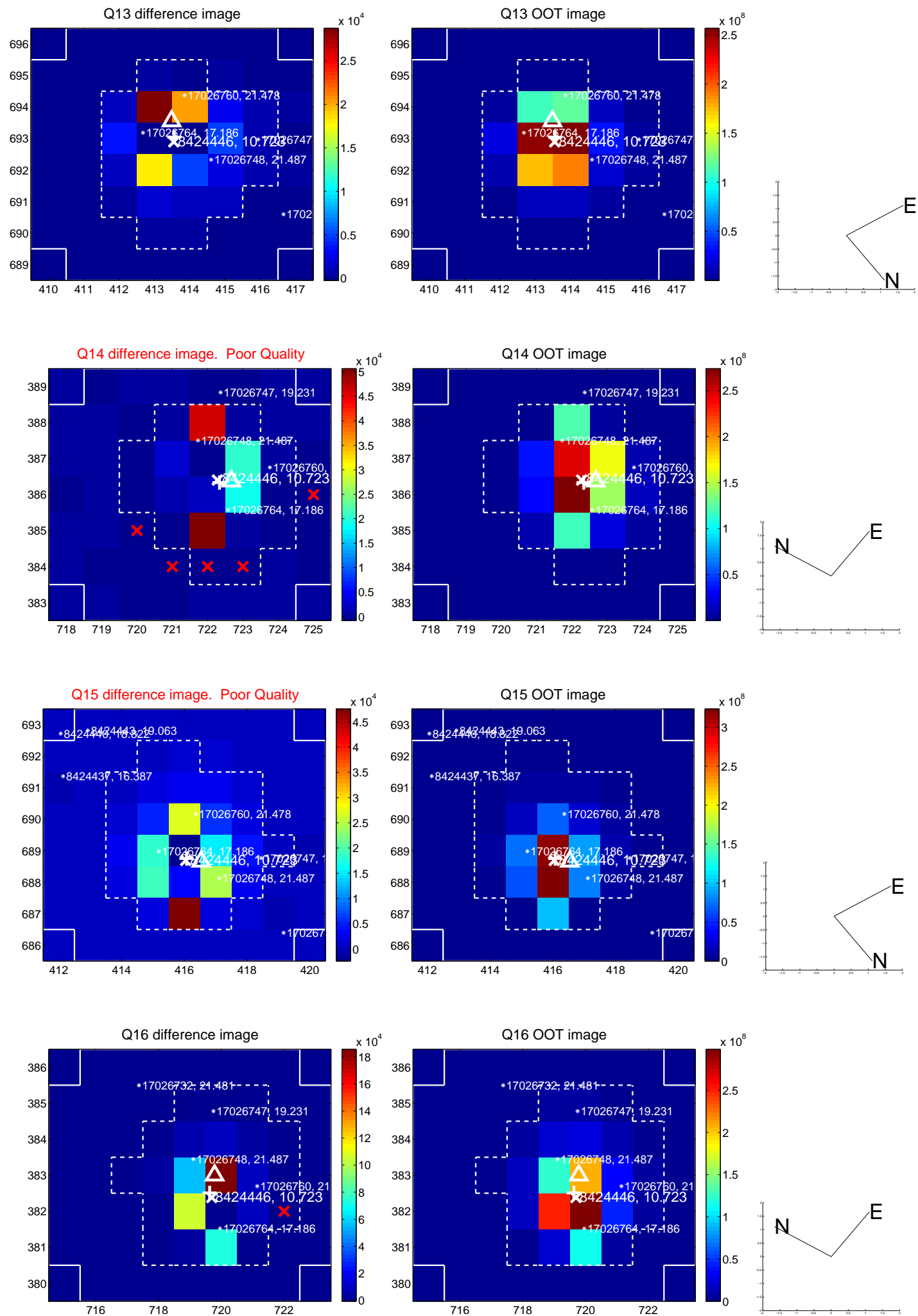
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

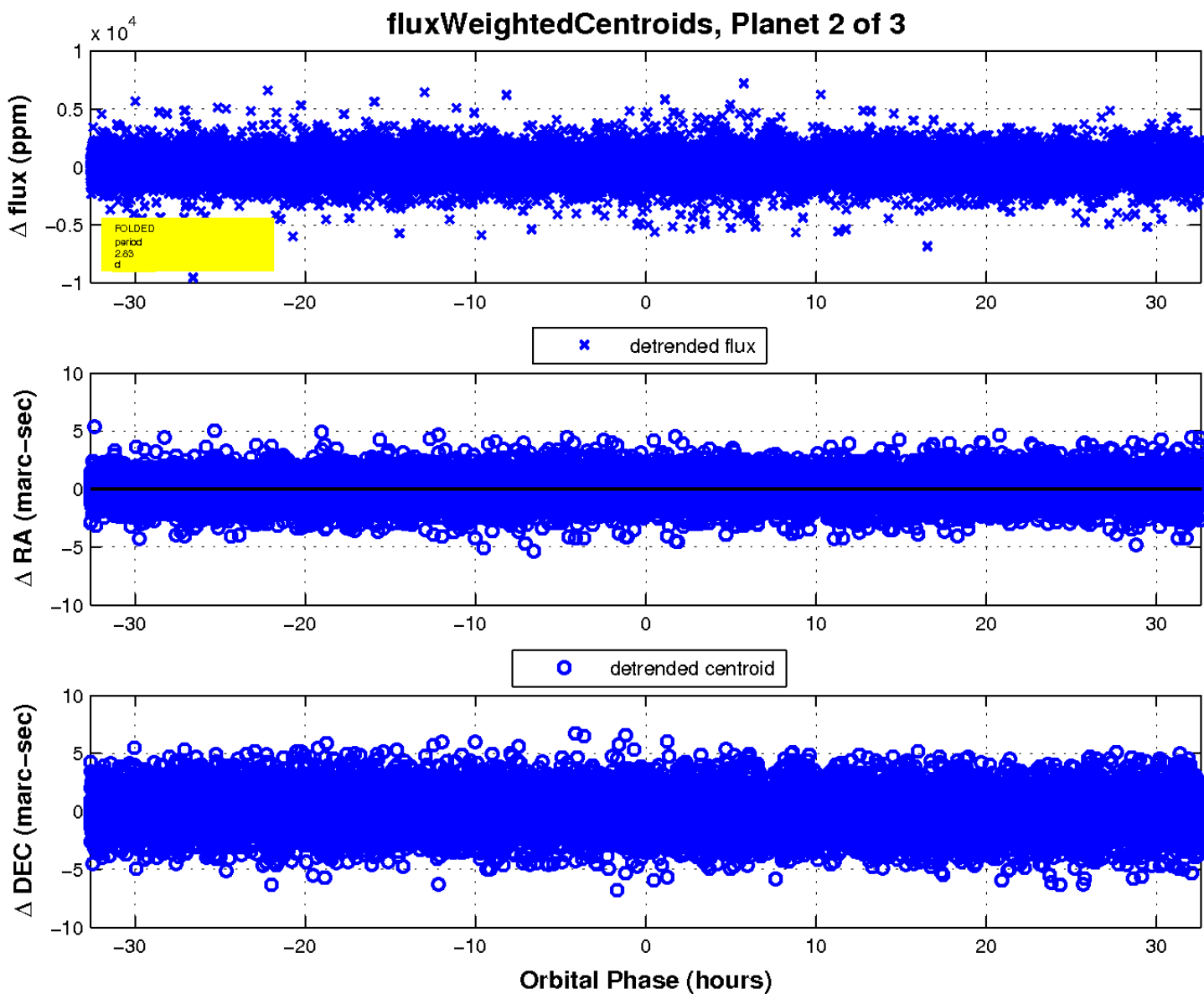
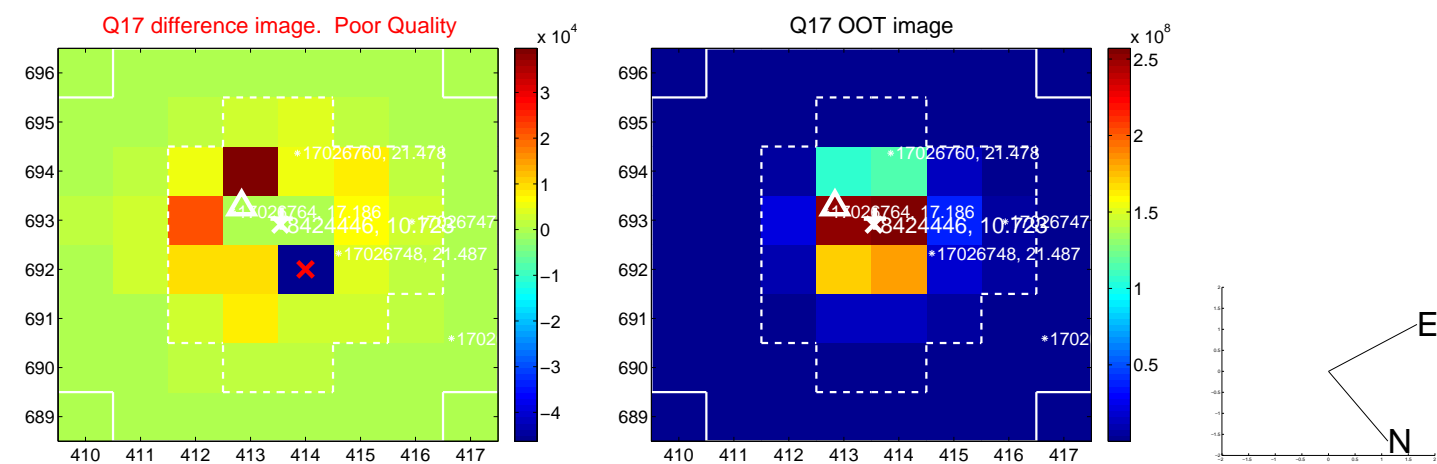


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



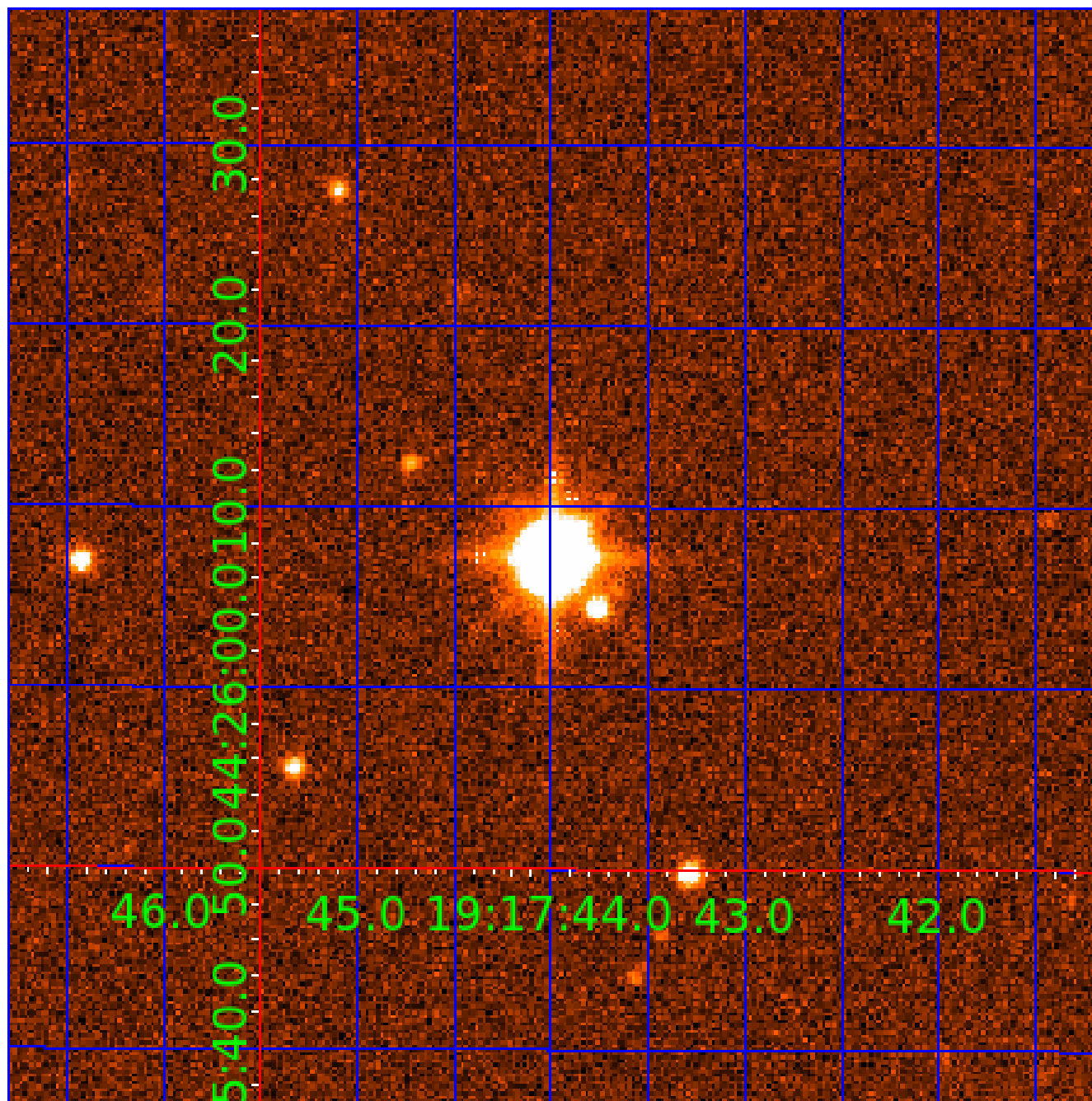


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008424446

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008424446-01	OBS	No	1.192268	131.987304	63.3	3.769	12.8	11.5	1.69	6742	1.56	9080.76
008424446-02	OBS	No	2.827857	133.941961	86.8	10.869	11.9	10.0	1.69	6742	1.83	2870.85
008424446-03	OBS	No	3.603311	133.457449	123.2	21.551	10.0	11.5	1.69	6742	2.23	2078.19

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008424446-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED
008424446-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
008424446-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_SATURATED

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

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

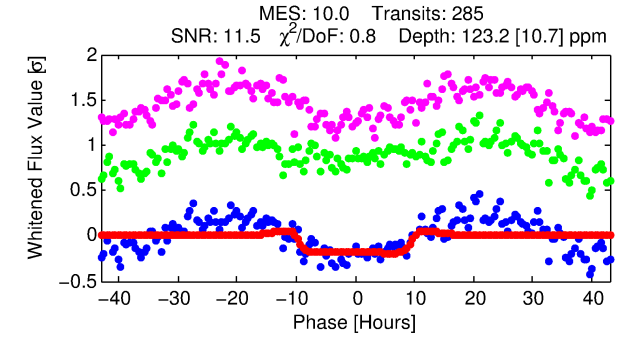
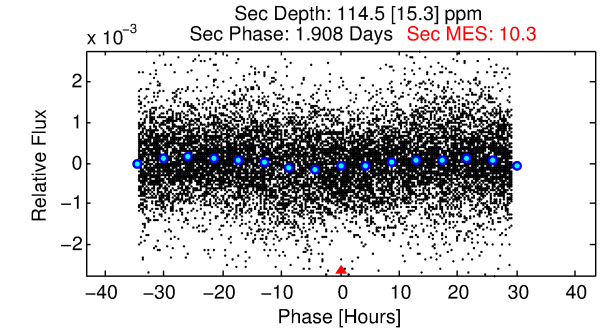
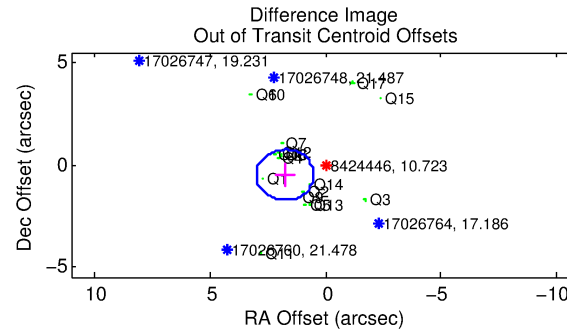
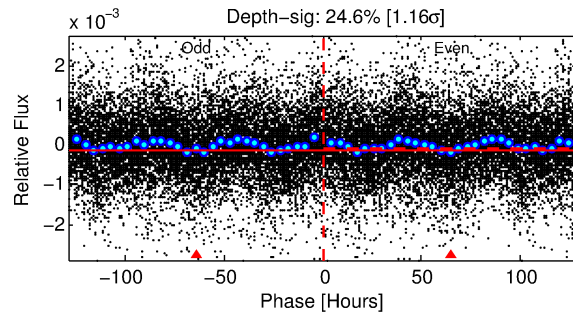
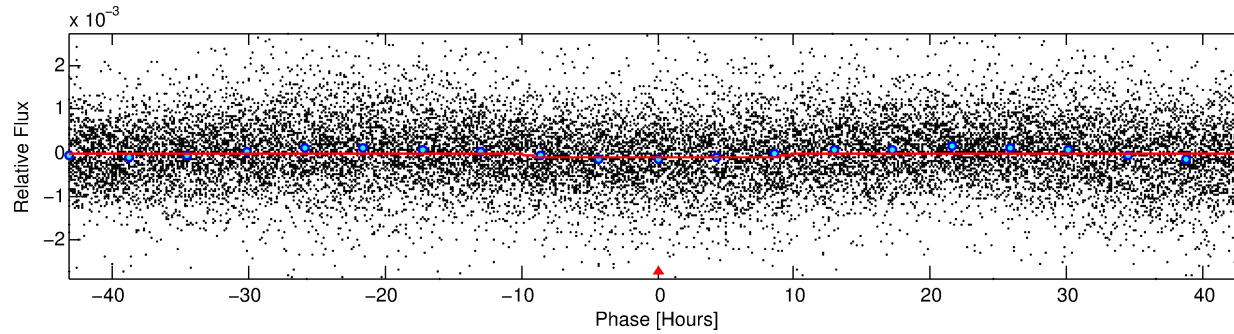
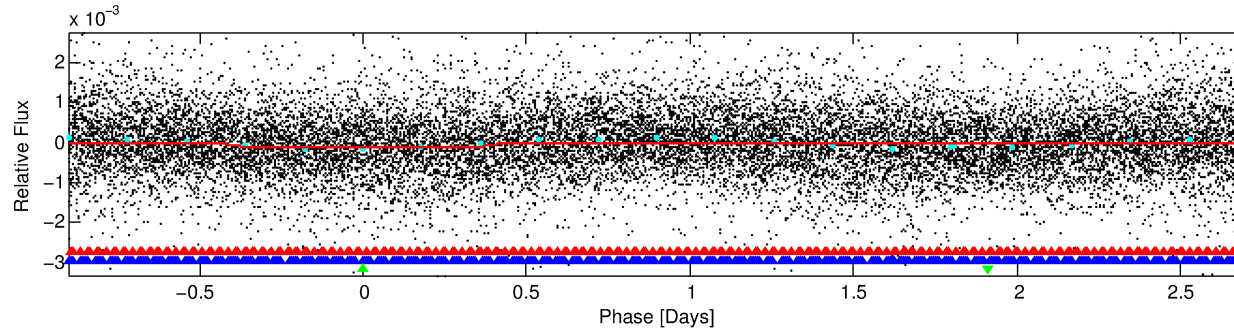
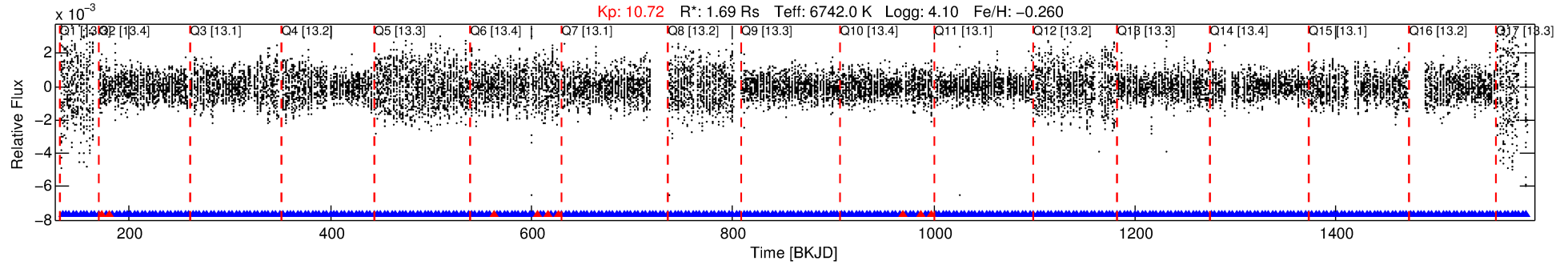
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008424446-03

No Significant Match Found

# DV One-Page Summary

KIC: 8424446 Candidate: 3 of 3 Period: 3.603 d



## DV Fit Results:

Period = 3.60331 [0.00012] d  
Epoch = 133.4574 [0.0266] BKJD  
Rp/R\* = 0.0121 [0.0012]  
a/R\* = 1.09 [0.09]  
b = 0.93 [0.08]  
Seff = 2078.19 [915.81]  
Teq = 1722 [190] K  
Rp = 2.23 [0.68] Re  
a = 0.0503 [0.0132] AU  
Ag = 32.13 [15.07] [2.06 $\sigma$ ]  
Teffp = 6337 [456] K [9.35 $\sigma$ ]

## DV Diagnostic Results:

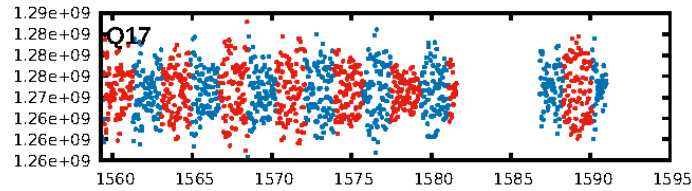
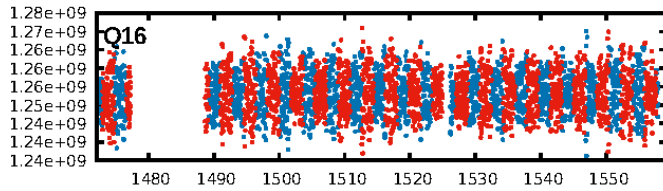
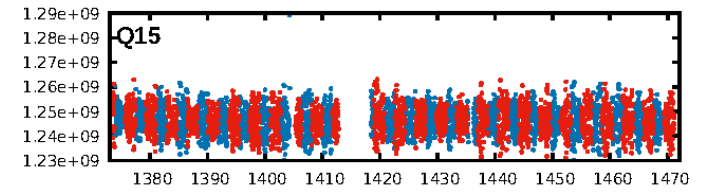
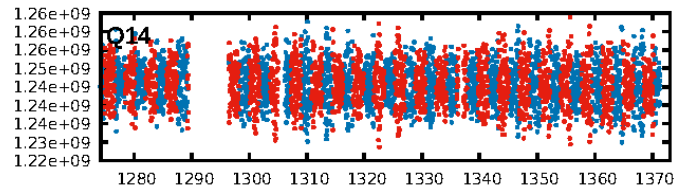
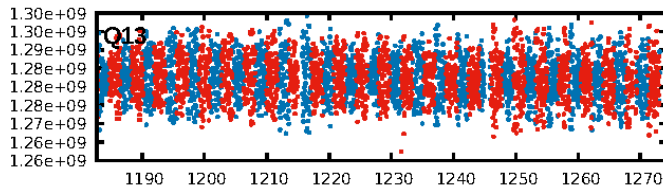
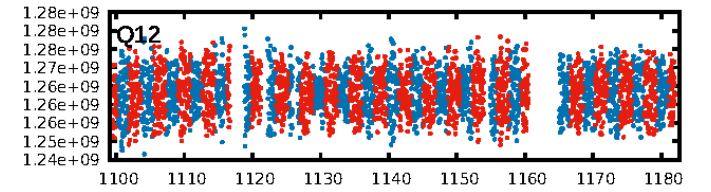
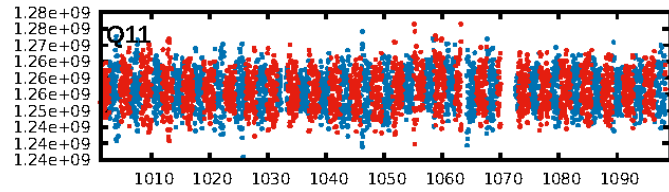
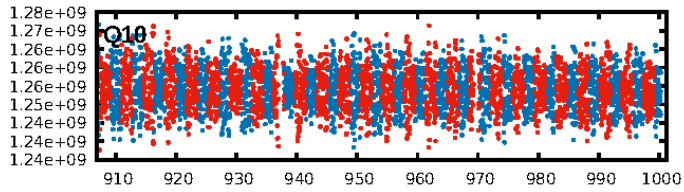
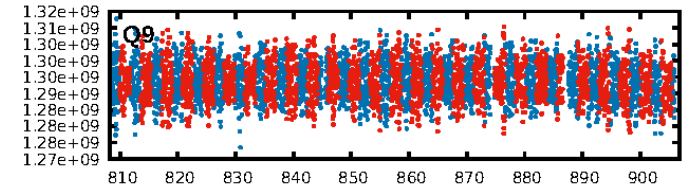
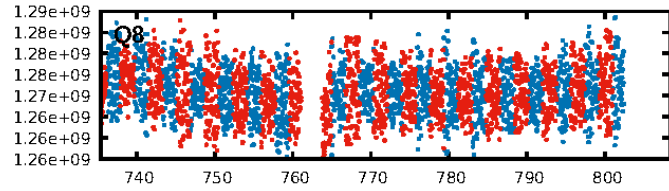
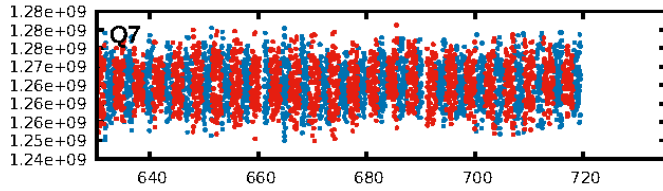
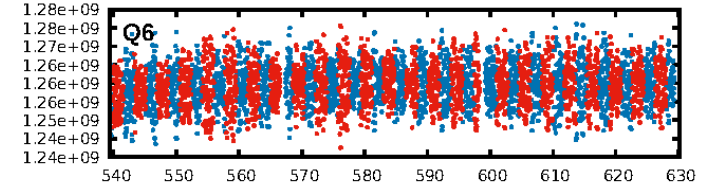
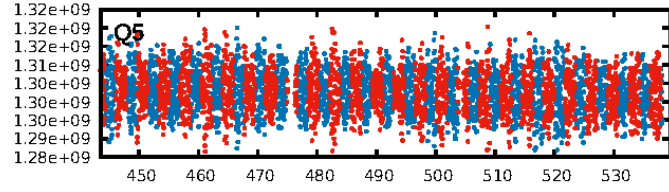
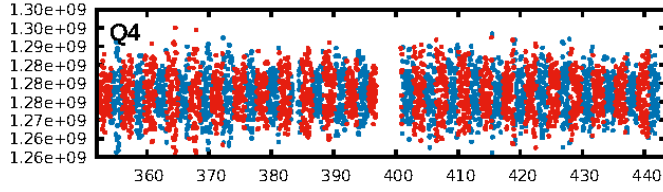
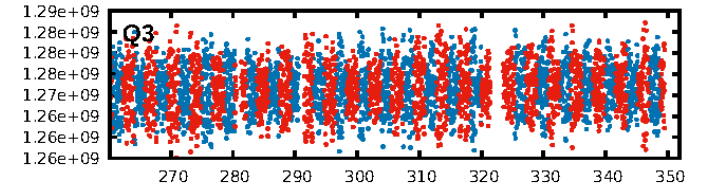
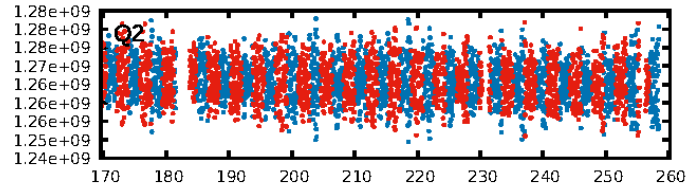
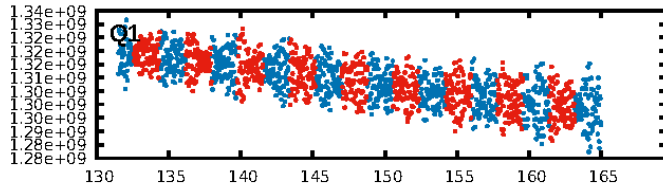
ShortPeriod-sig: 55.9% [0.77 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [264/273]  
GhostDiagnostic-chr: 1.492  
Centroid-sig: N/A  
Centroid-so: 0.280 arcsec [2.69 $\sigma$ ]  
OotOffset-rm: 1.820 arcsec [4.41 $\sigma$ ]  
KicOffset-rm: 2.036 arcsec [4.93 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.65 [11/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:25:23 Z

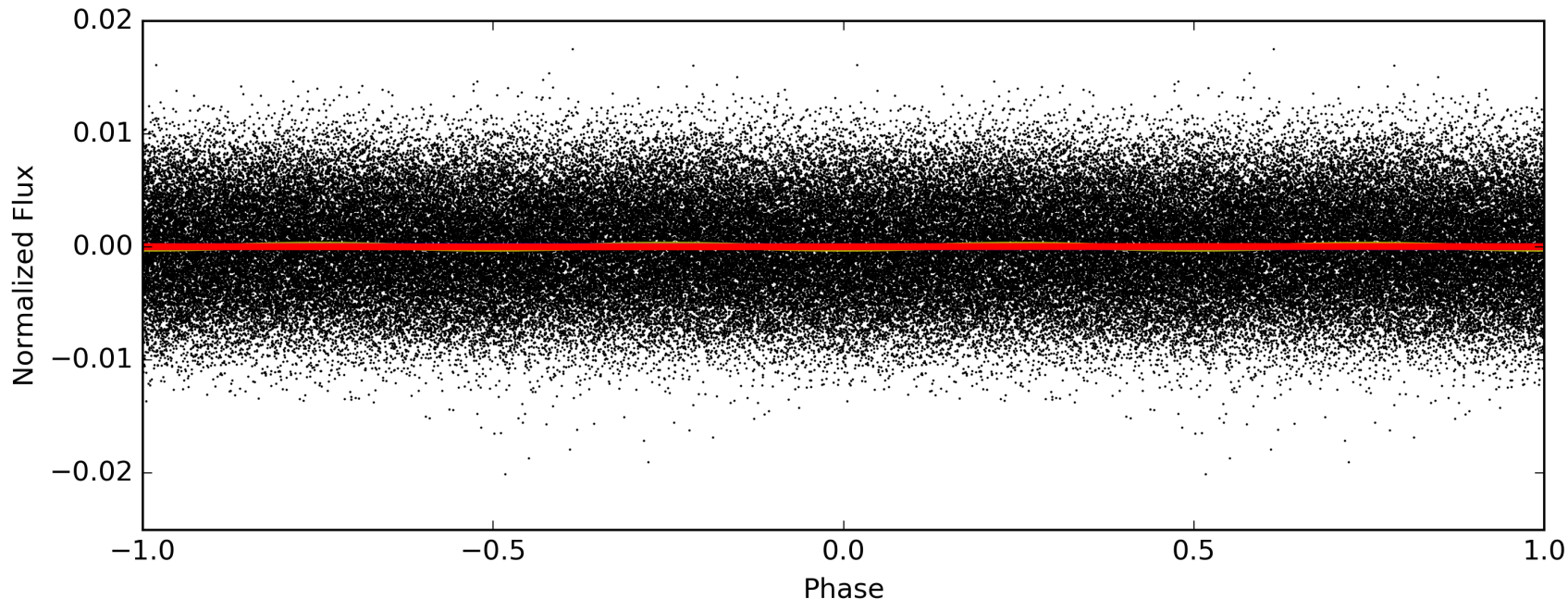
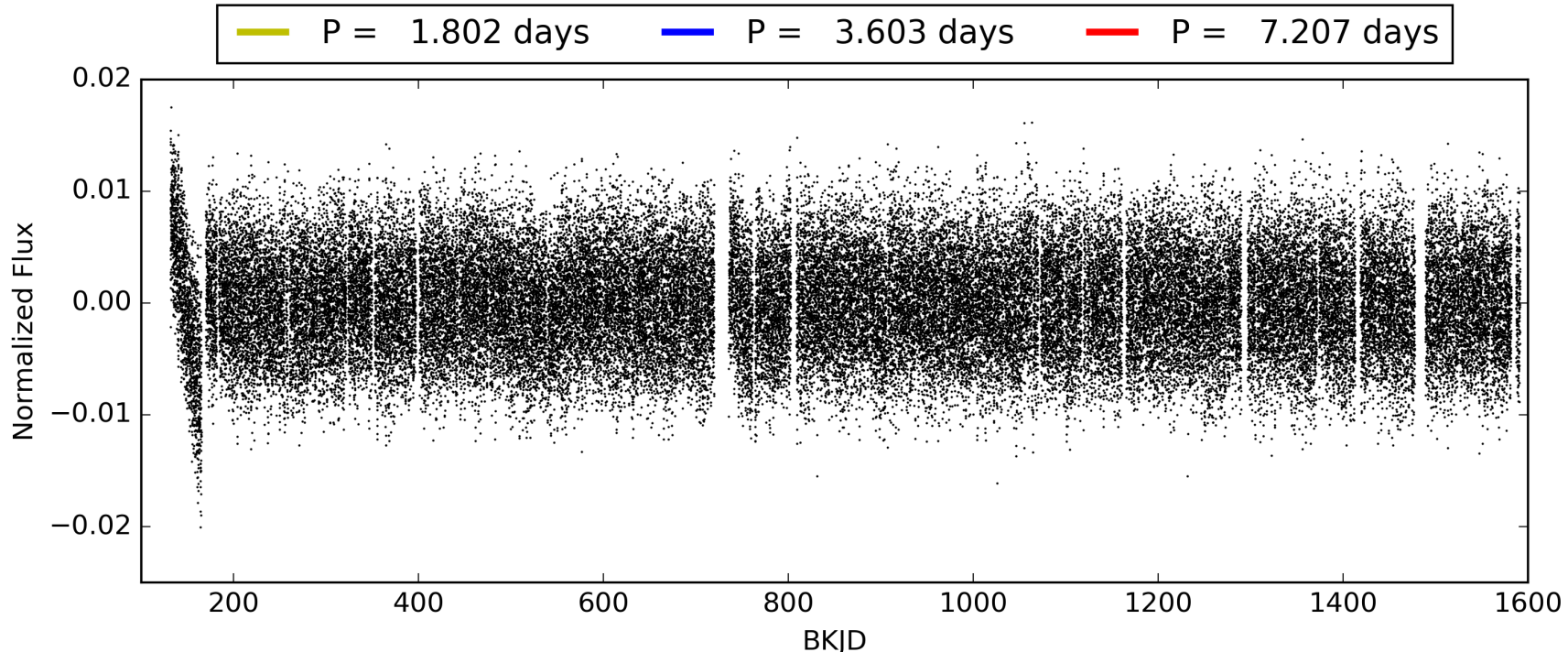
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008424446-03, PDC Light Curves

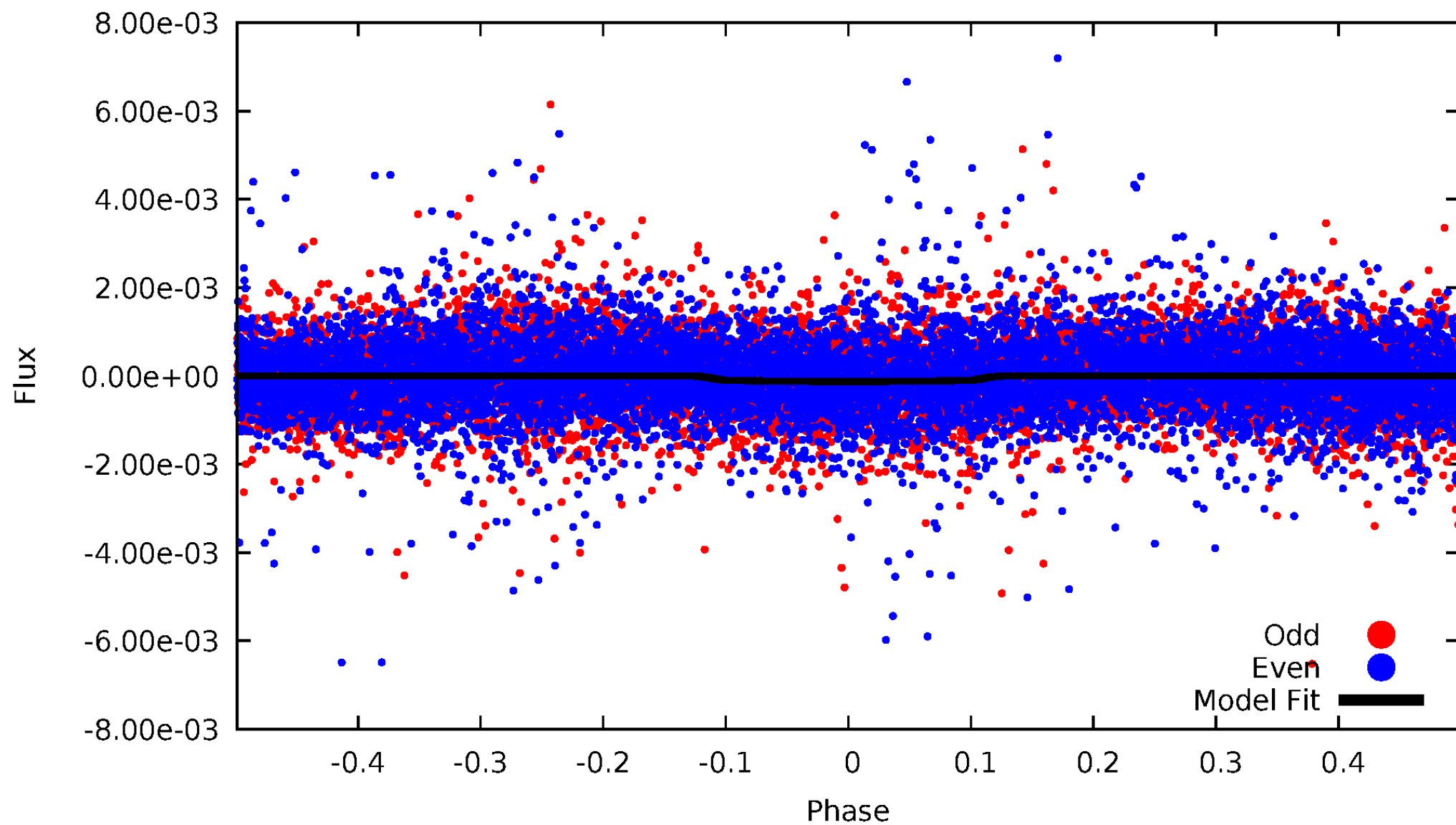


TCE 008424446-03



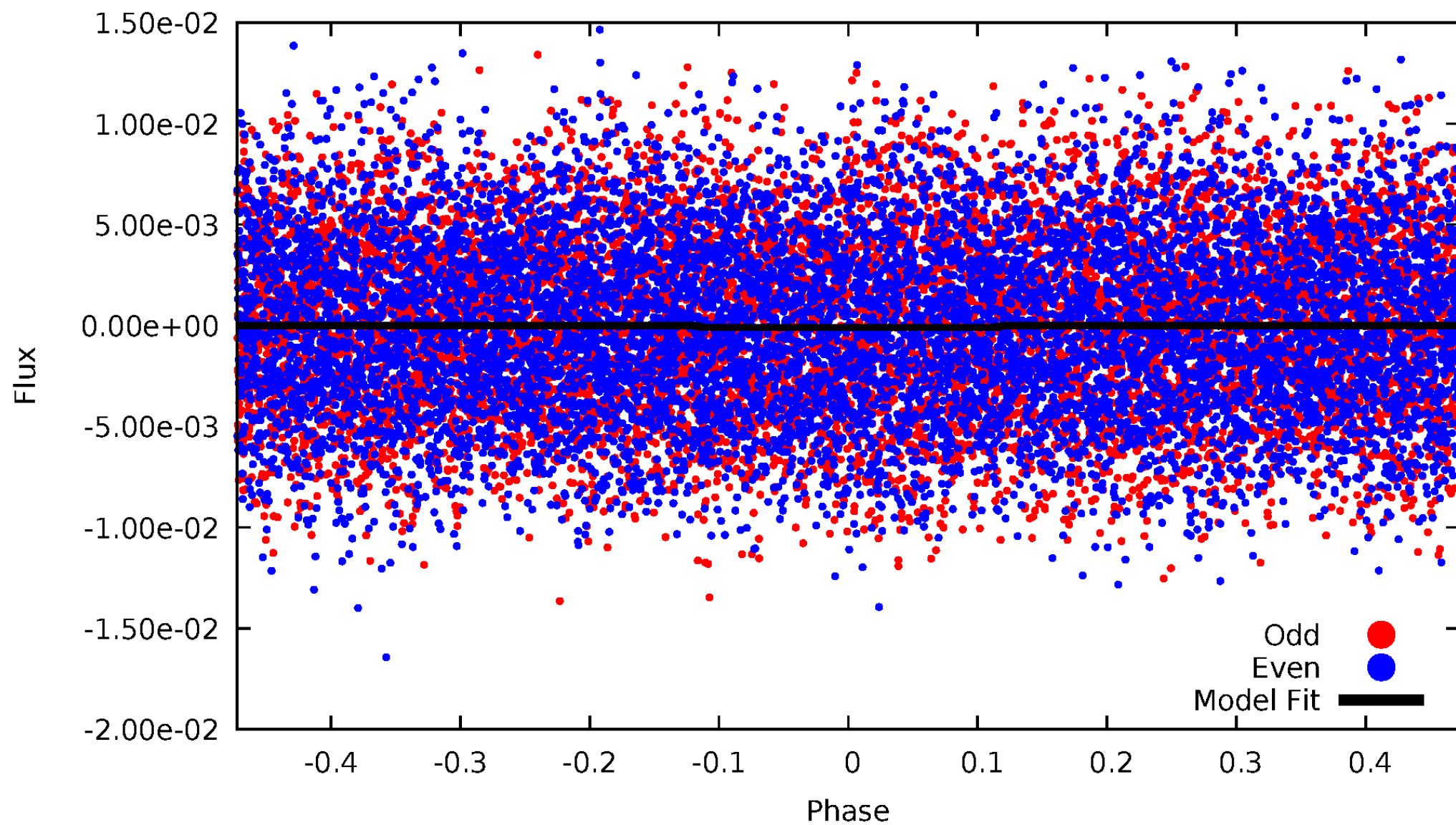
# DV Odd/Even

TCE 008424446-03



# ALT Odd/Even

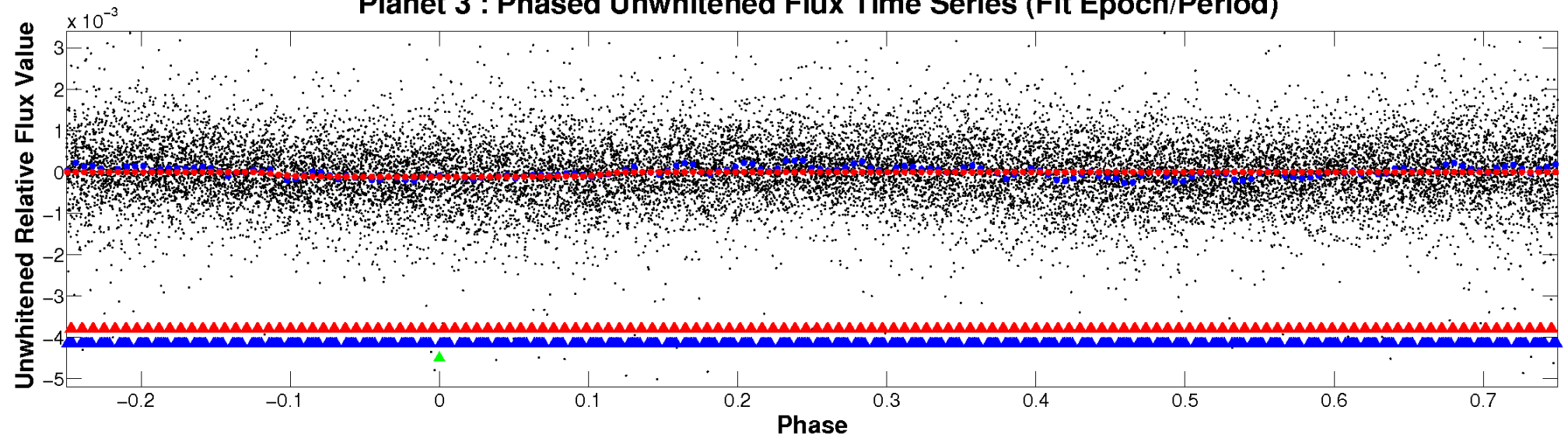
TCE 008424446-03



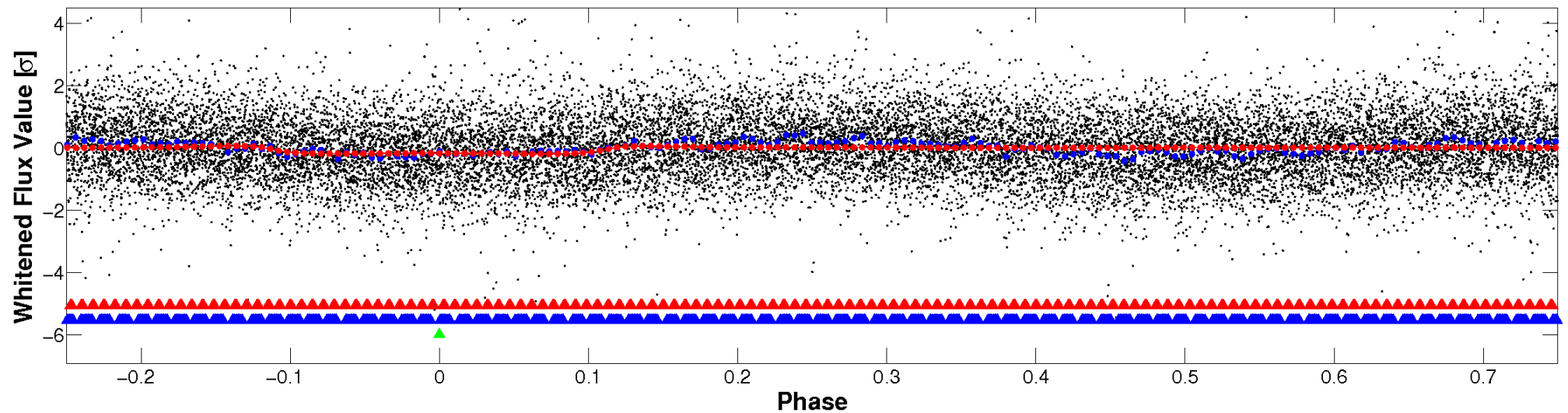


# Non-Whitened Vs. Whitened Light Curve

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

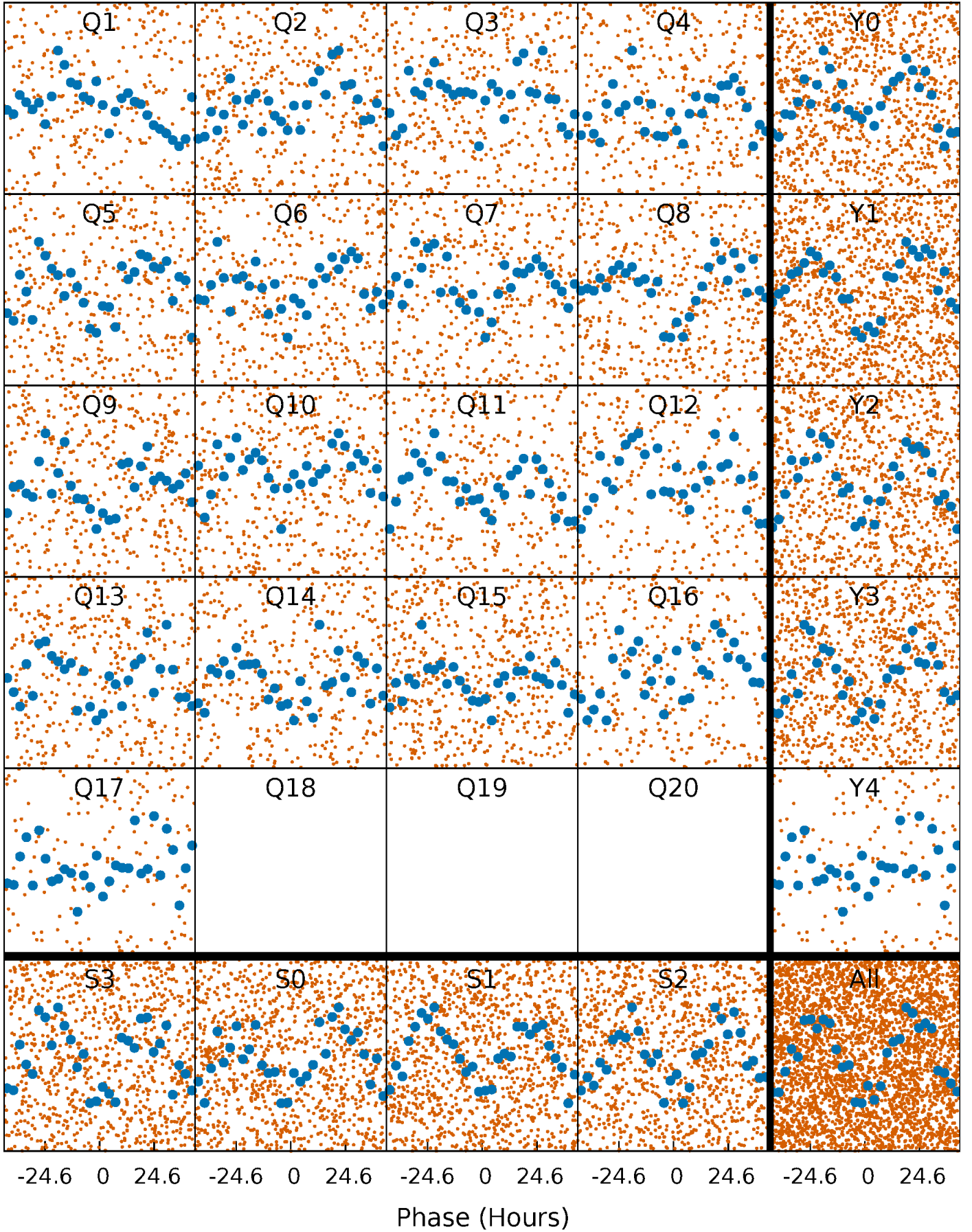


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



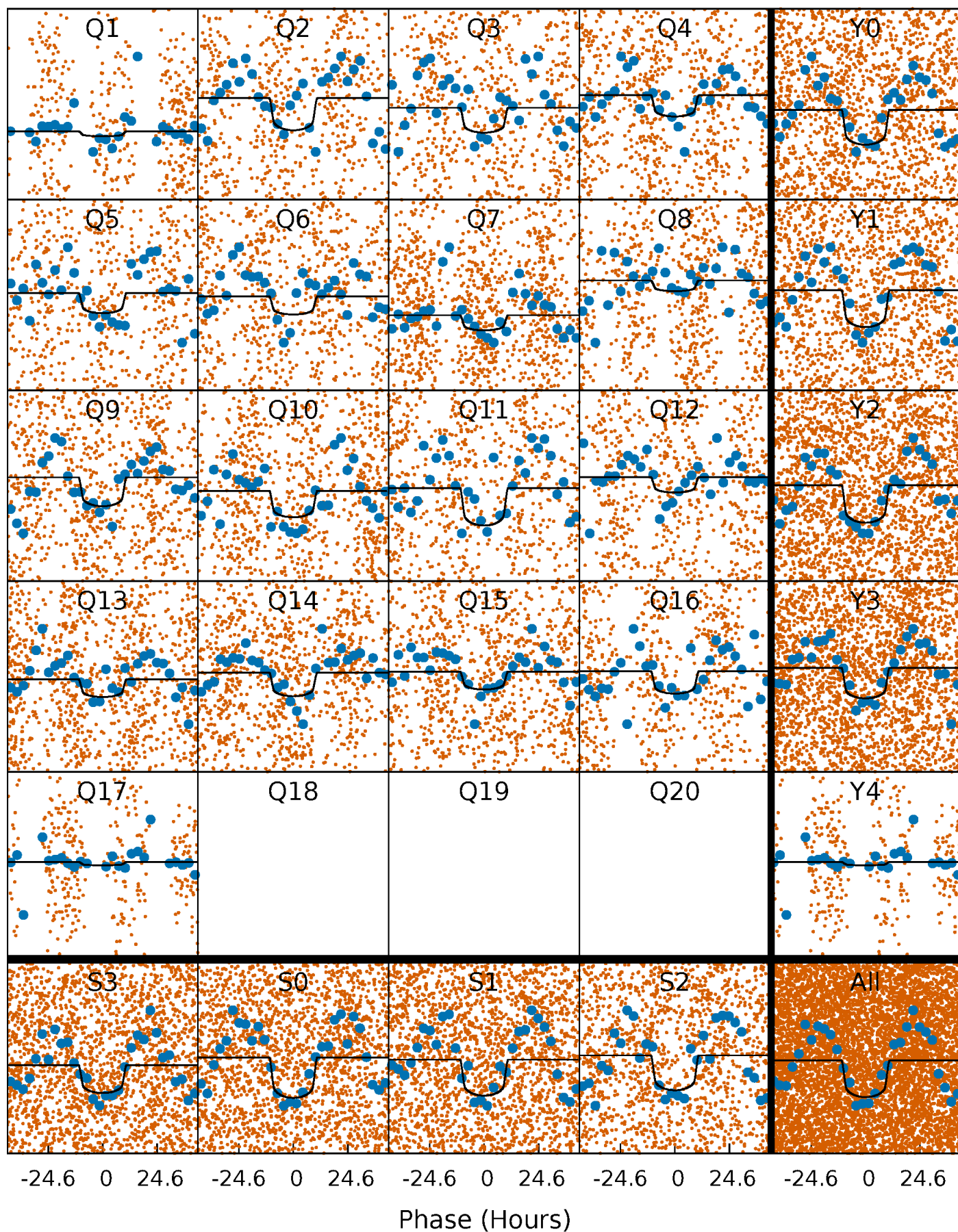
# PDC Quarter-Phased Transit Curves

TCE 008424446-03   P= 3.603311 Days    $T_0=133.457449$  (BKJD)



# DV Quarter-Phased Transit Curves

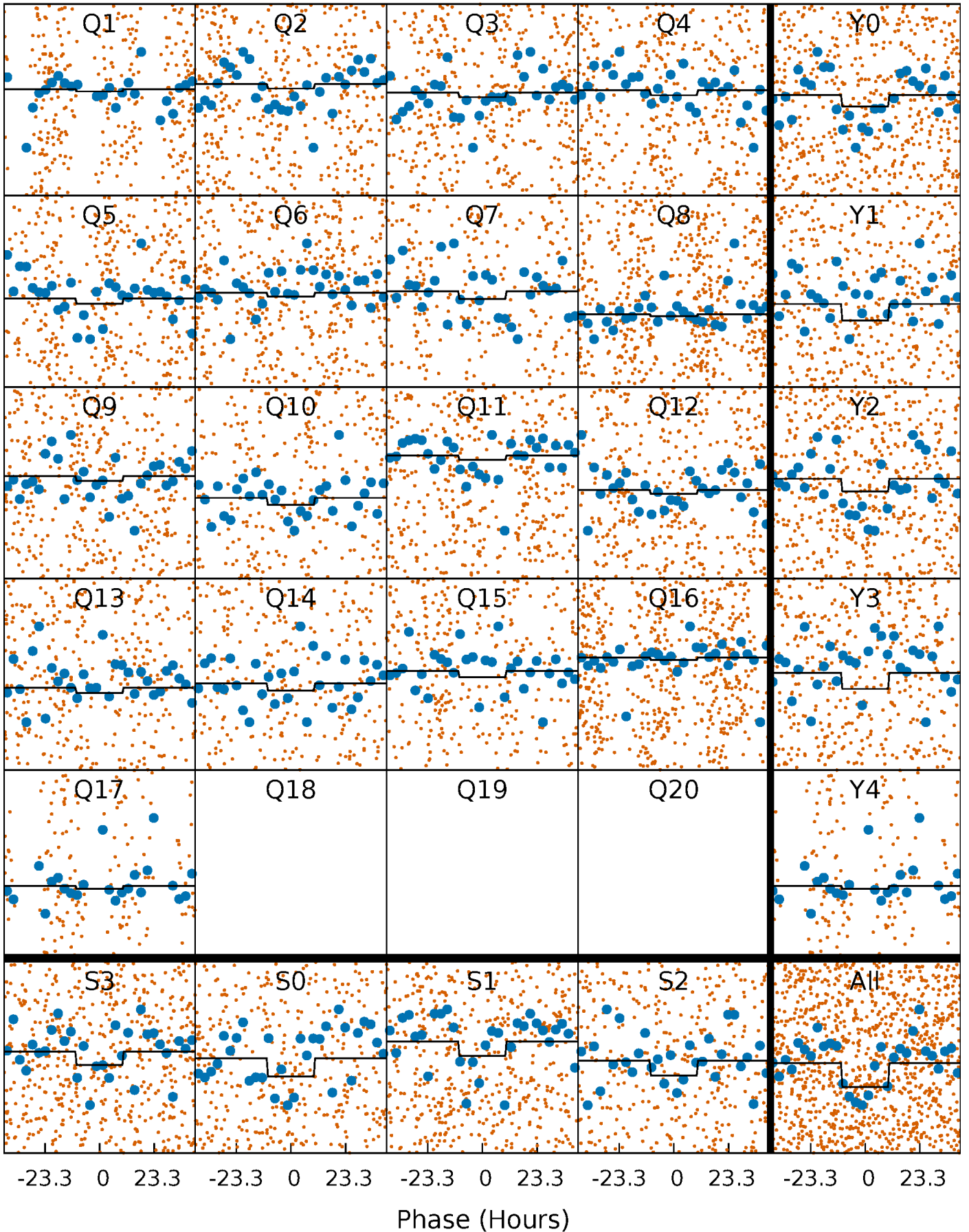
TCE 008424446-03 P= 3.603311 Days  $T_0=133.457449$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008424446-03 P= 3.603509 Days  $T_0=133.324529$  (BKJD)

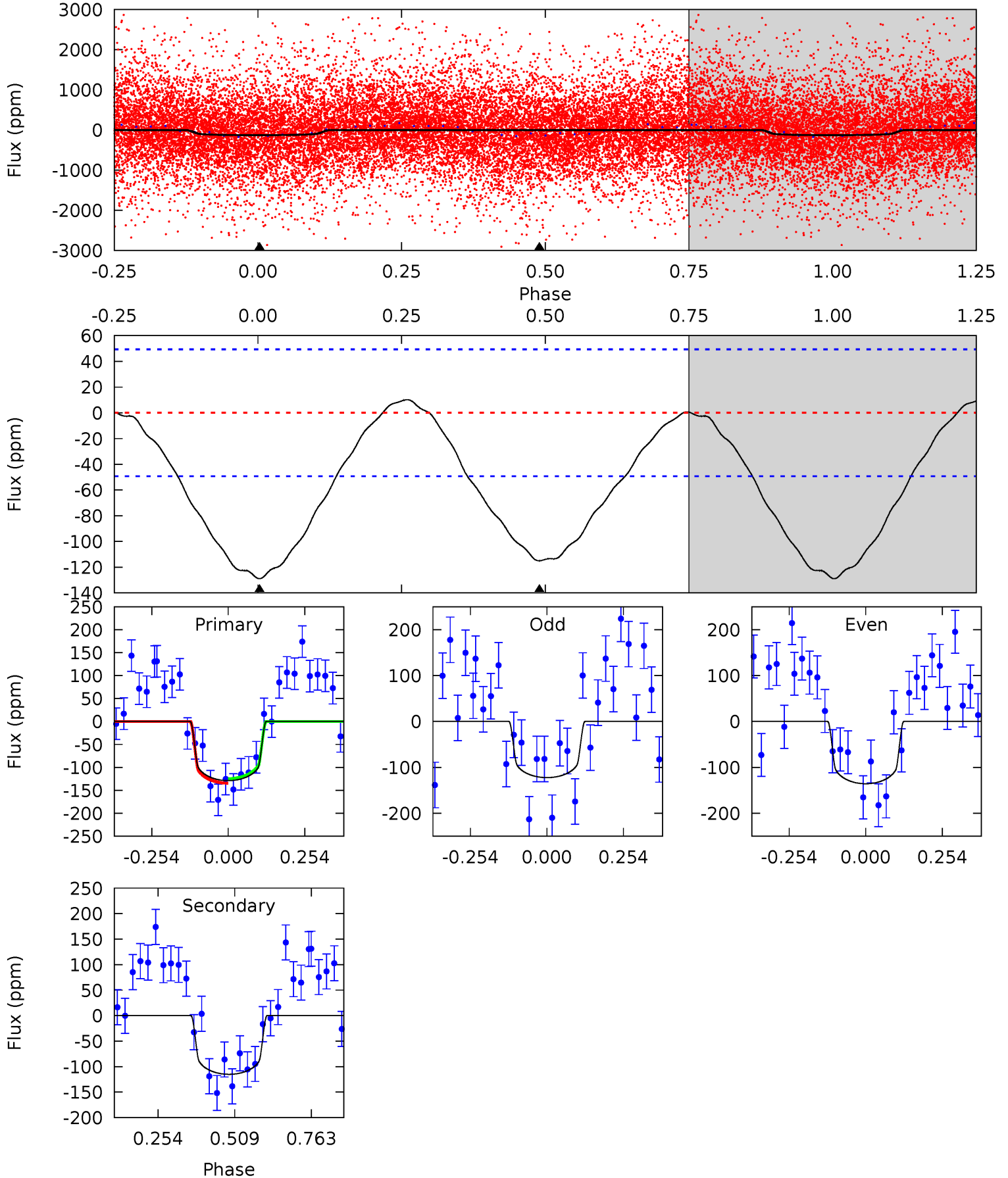




# DV Model-Shift Uniqueness Test

008424446-03, P = 3.603311 Days, E = 129.854138 Days

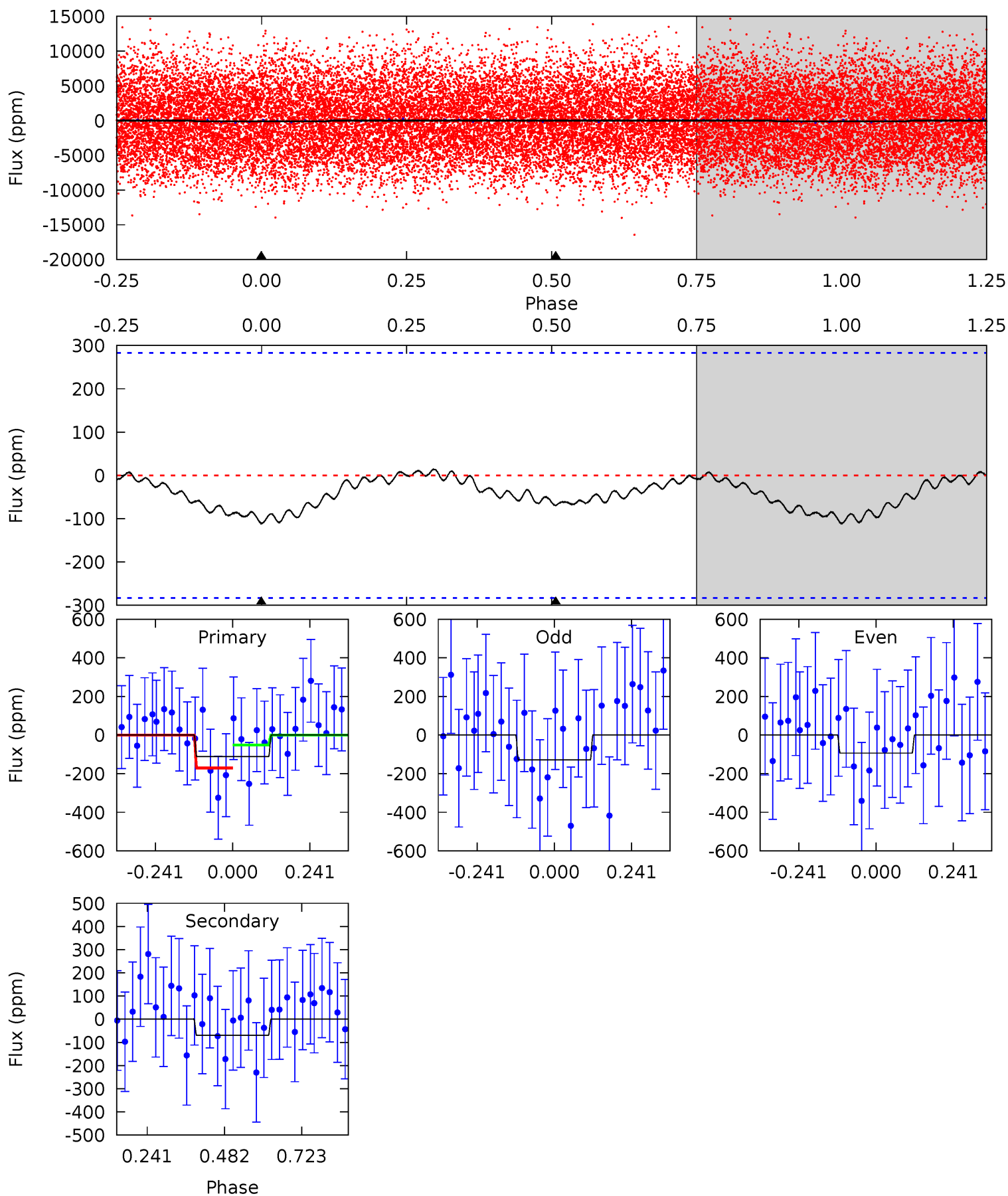
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	10.2	0	0	4.36	1.14	0.49	11.4	11.4	10.2	10.2	0.62	1.38	0.07	0.46



# Alt Model-Shift Uniqueness Test

008424446-03, P = 3.603509 Days, E = 129.721020 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
1.72	1.07	0	0	4.38	1.17	0.09	1.72	1.72	1.07	1.07	0.27	1.51	0.11	0.92



### Stellar Parameters For KIC 008424446

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6742^{+189}_{-284}$	$4.101^{+0.234}_{-0.175}$	$-0.260^{+0.250}_{-0.300}$	$1.686^{+0.485}_{-0.485}$	$1.315^{+0.194}_{-0.237}$	$0.387^{+0.497}_{-0.191}$
	+3%/-4%	+6%/-4%	+96%/-115%	+29%/-29%	+15%/-18%	+129%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008424446-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-115 \pm 11$	$2.23^{+0.44}_{-0.42}$	$2393^{+186}_{-201}$	$6263^{+495}_{-382}$	$33^{+16}_{-10}$
Alt.	$-69 \pm 65$	$1.76^{+0.37}_{-0.32}$	$2386^{+188}_{-185}$	$6248^{+1238}_{-2129}$	$32^{+33}_{-28}$

$T_{max}$  = 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

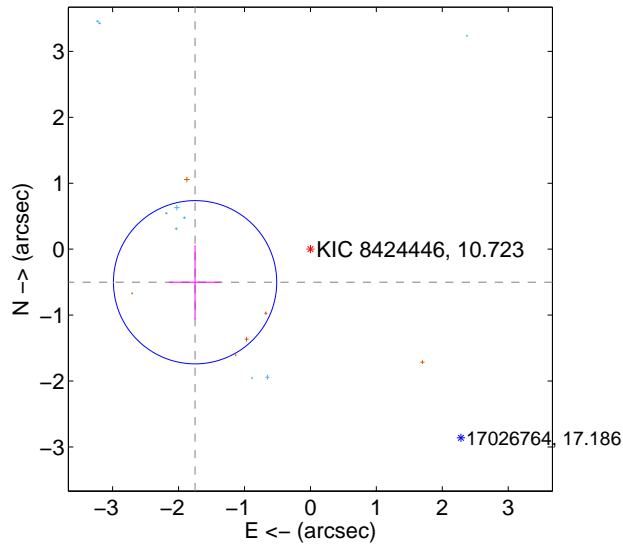
Supplemental centroid analysis for 008424446-03. **Kepler magnitude: 10.72**. Transit SNR 11.54

There are 11 quarters with good PRF difference image offsets

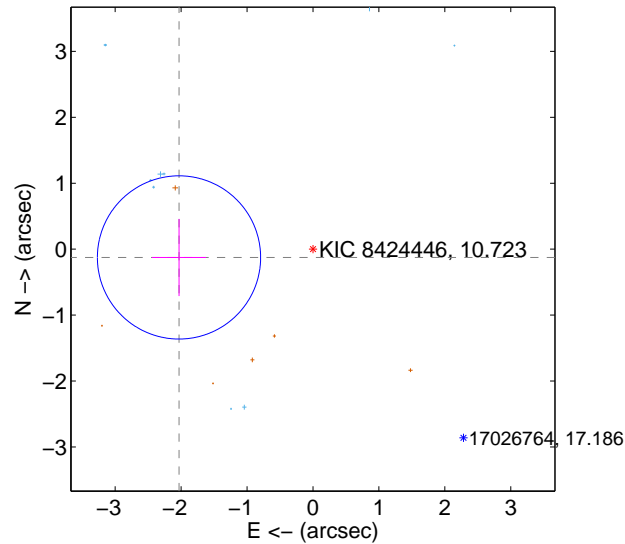
The direct PRF centroid is offset from the target star catalog position by about 0.49 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.820 \pm 0.413</math></b>	<b>4.41</b>	$1.750 \pm 0.392$	$-0.502 \pm 0.562$
PRF-fit source offset from KIC position	<b><math>2.036 \pm 0.413</math></b>	<b>4.93</b>	$2.032 \pm 0.409$	$-0.125 \pm 0.585$
photometric centroid source offset	$0.28 \pm 0.10$	2.69	$0.26 \pm 0.10$	$0.09 \pm 0.10$

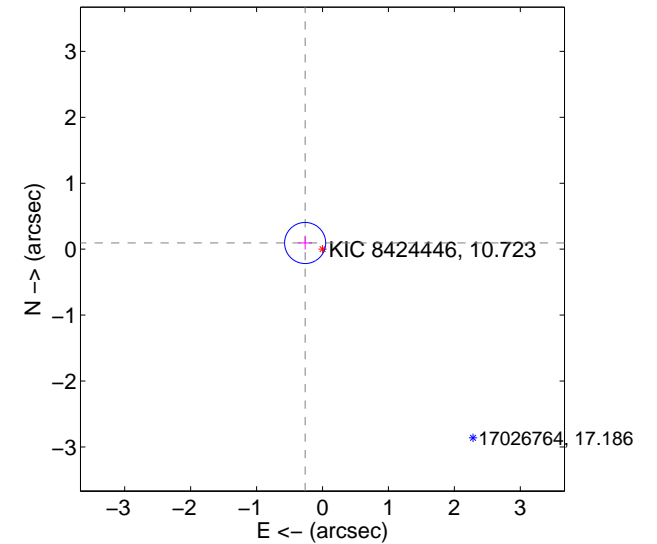
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

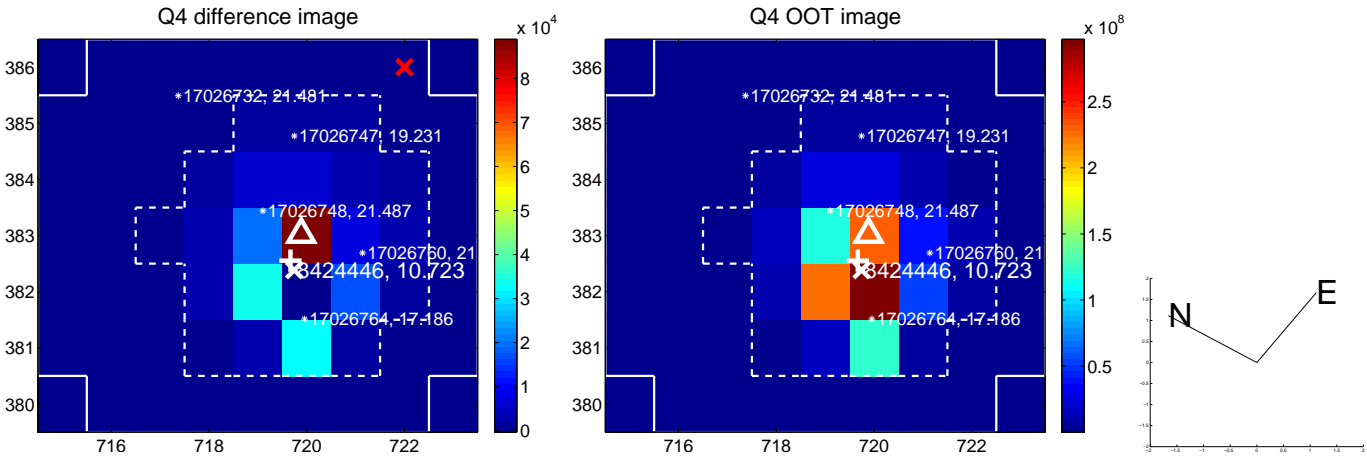
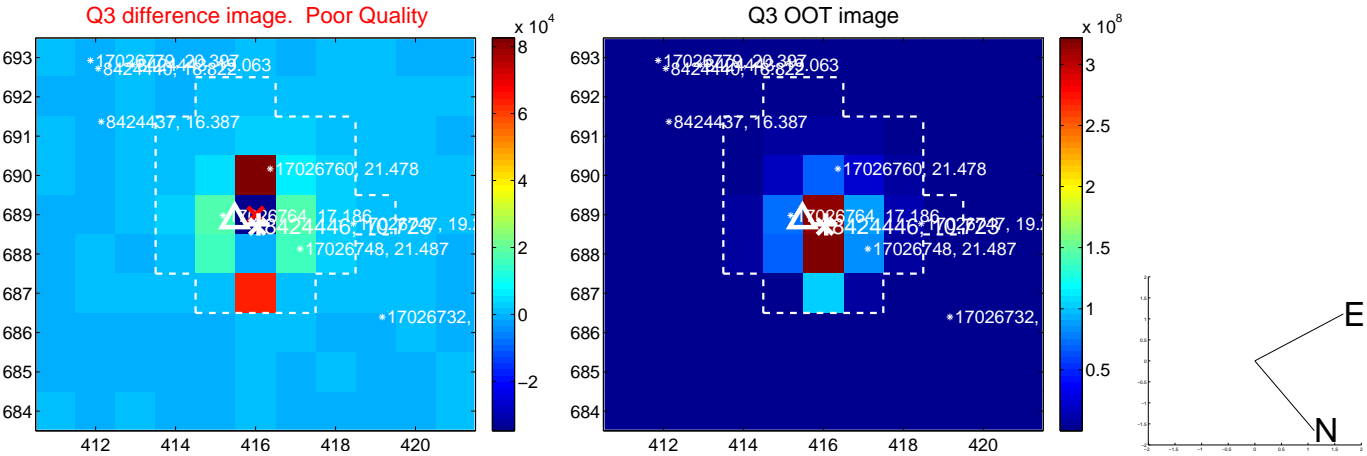
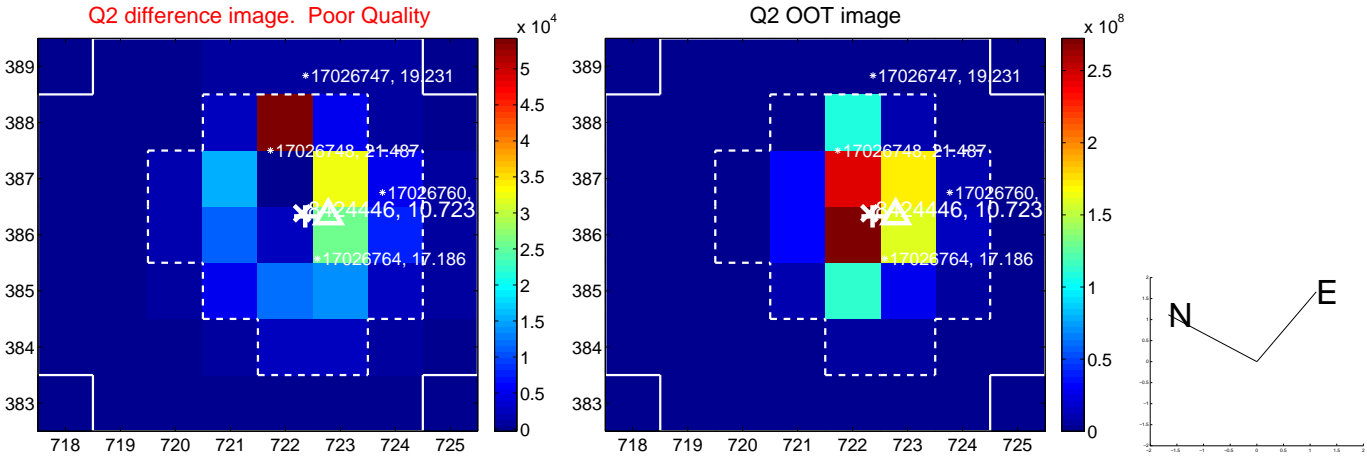
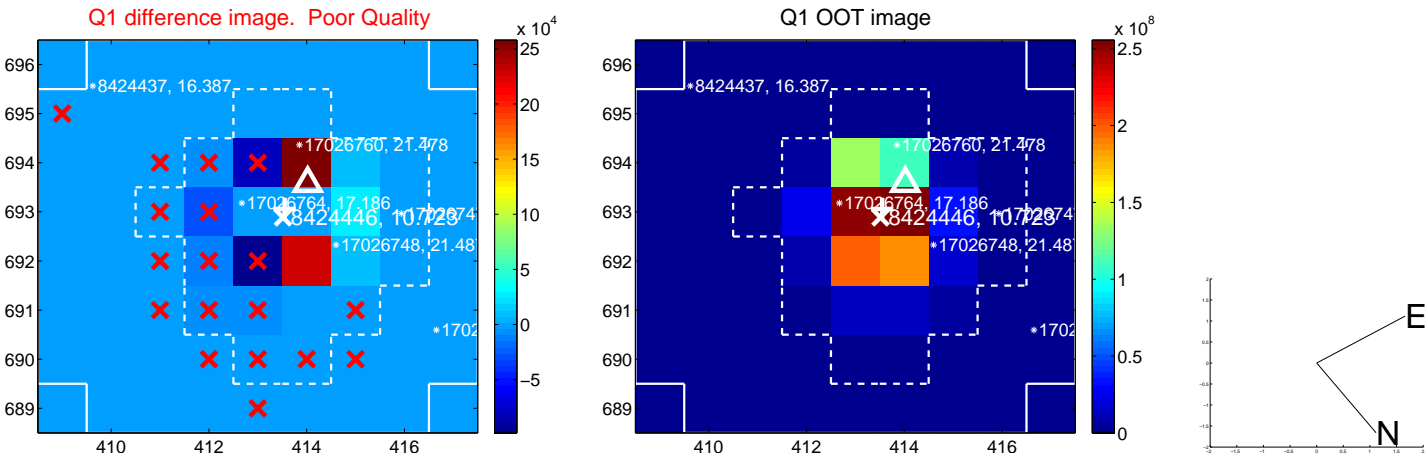


offset from photometric centroids



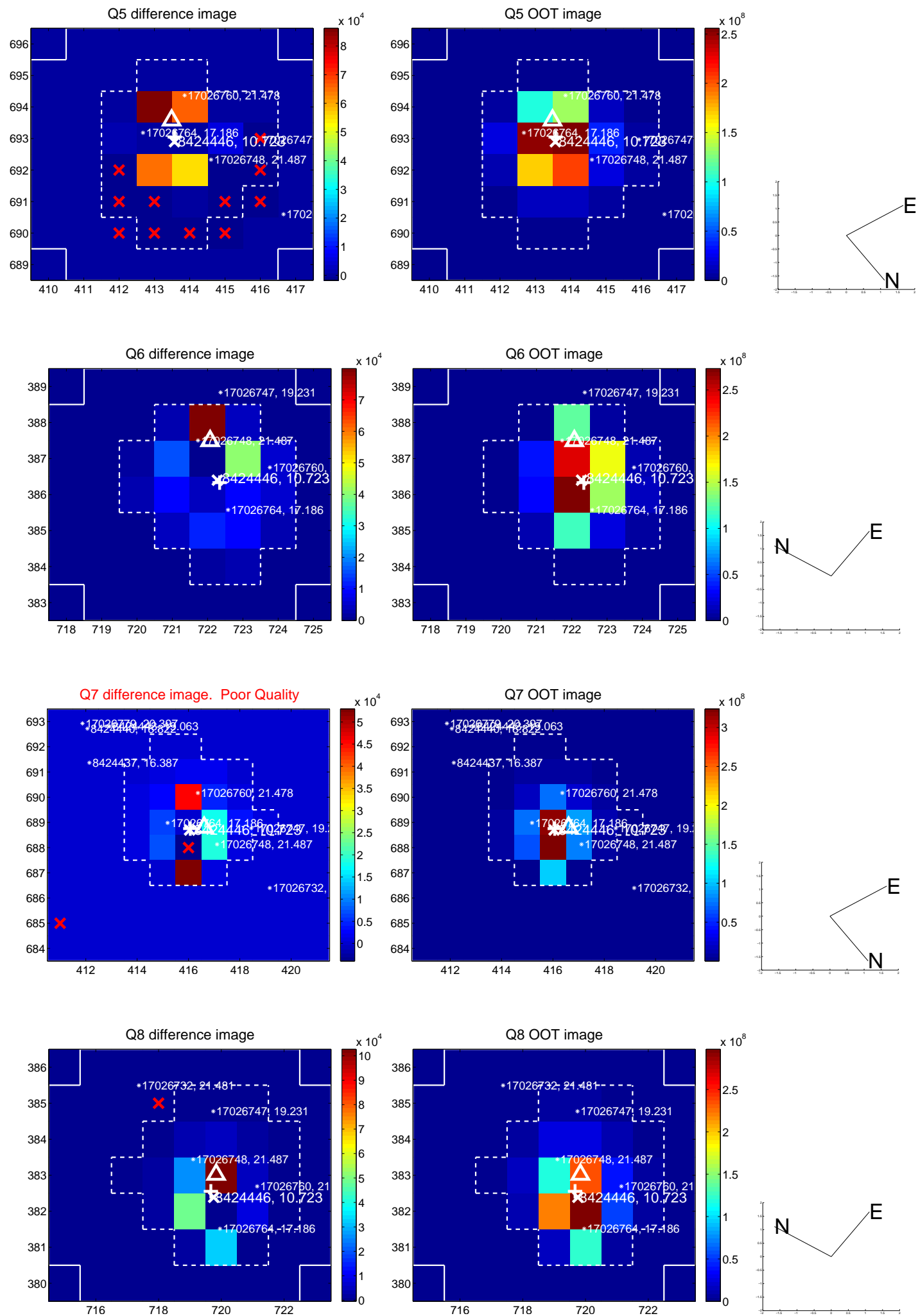
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

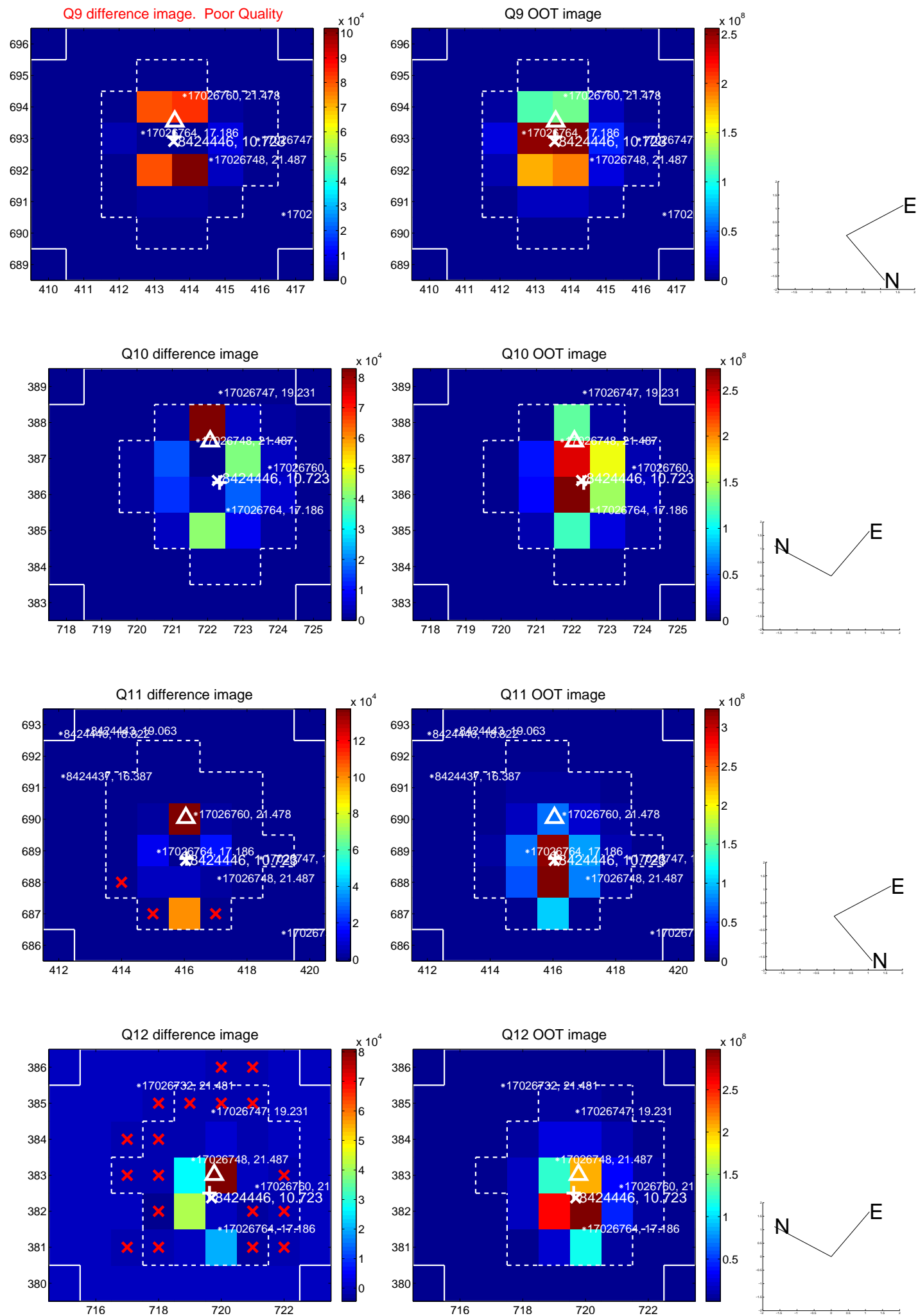




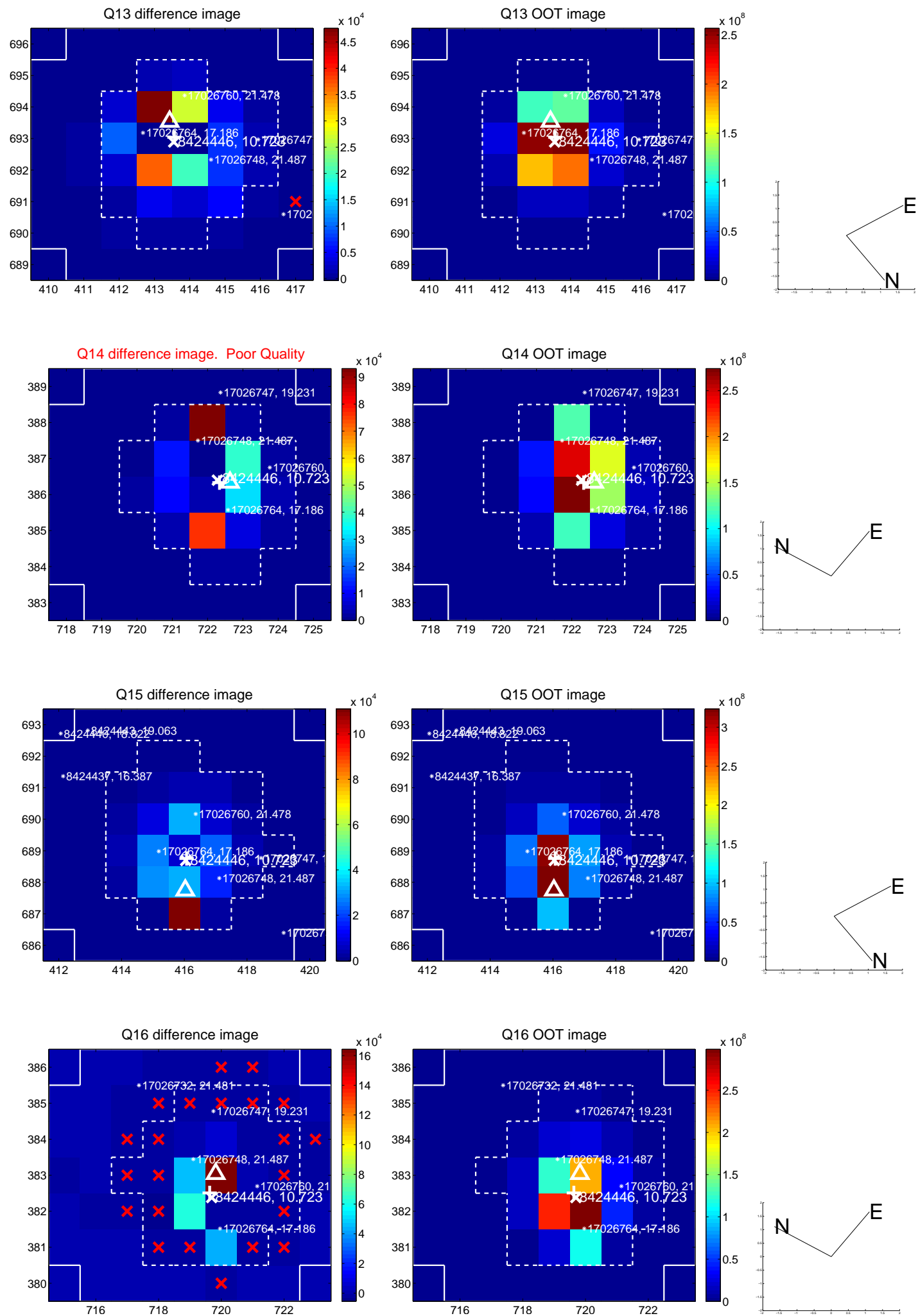
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



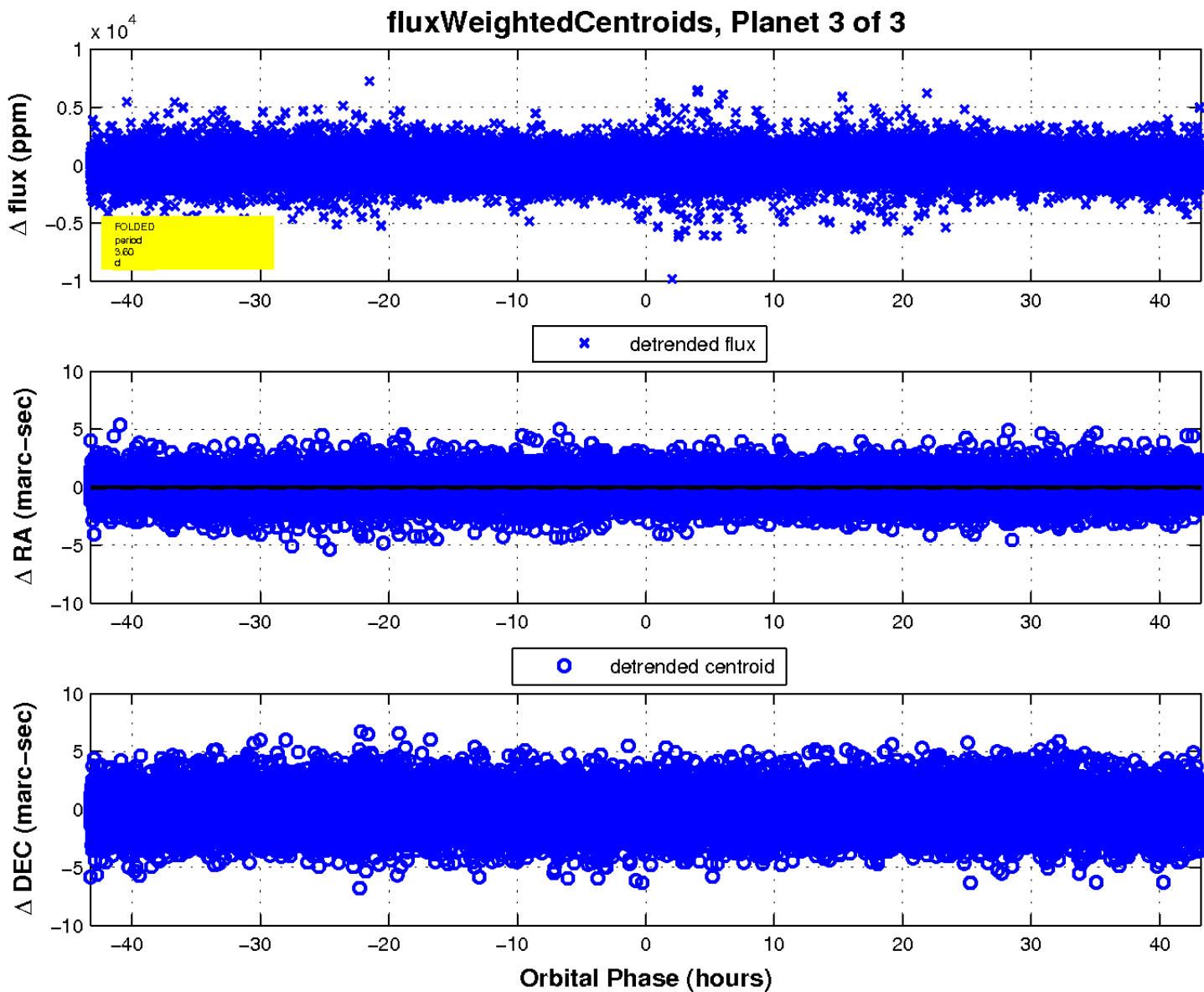
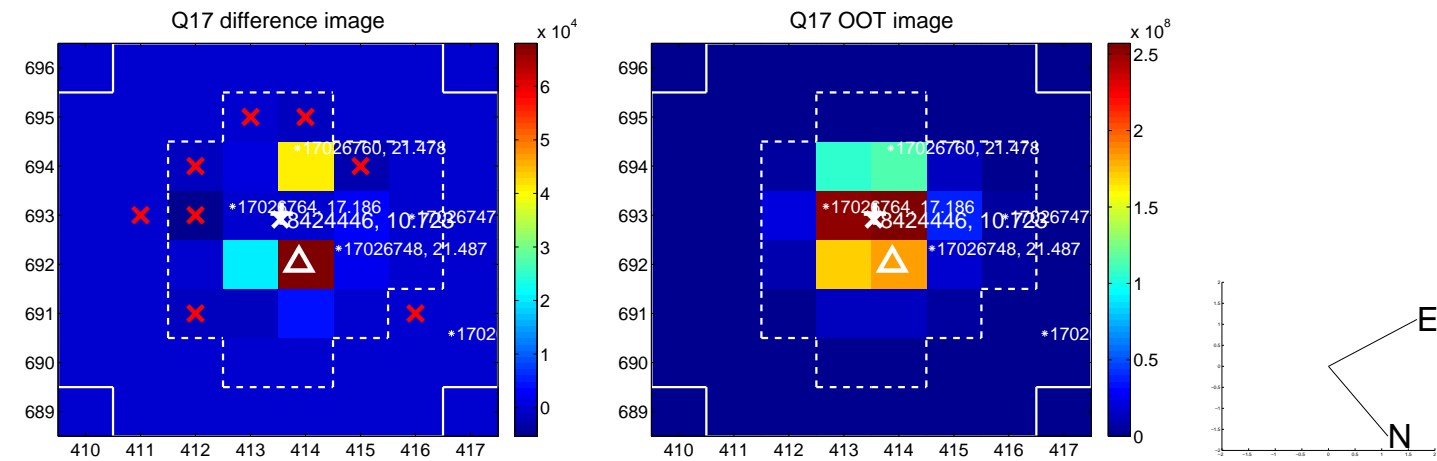
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

