

# KIC 008123197

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008123197-01	OBS	No	4.679694	133.785219	105.0	16.951	11.7	12.1	1.77	7176	2.27	2048.50
008123197-02	OBS	No	4.679937	135.358347	101.3	19.907	9.9	12.1	1.77	7176	1.95	2048.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008123197-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008123197-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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.

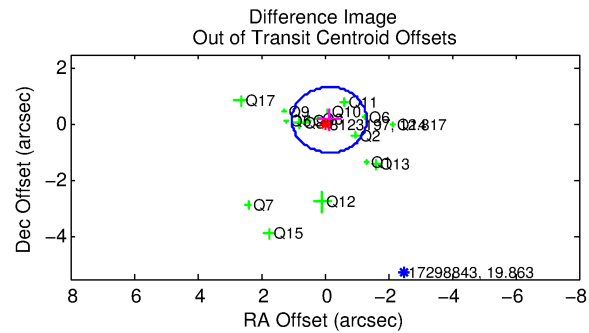
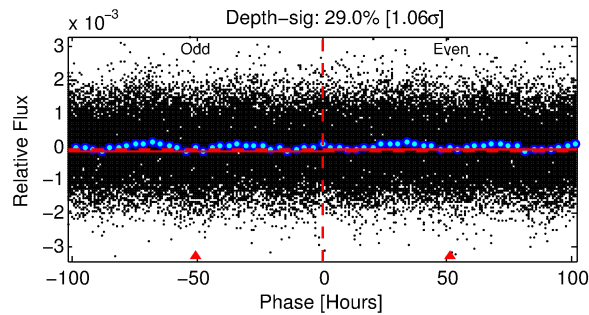
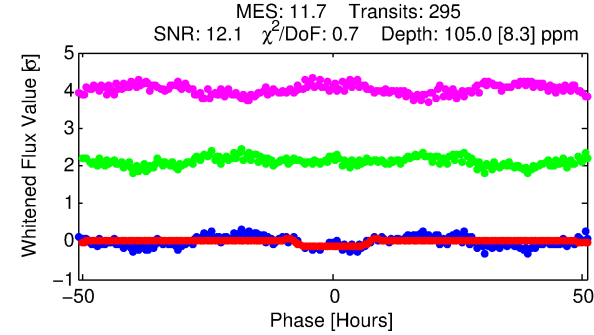
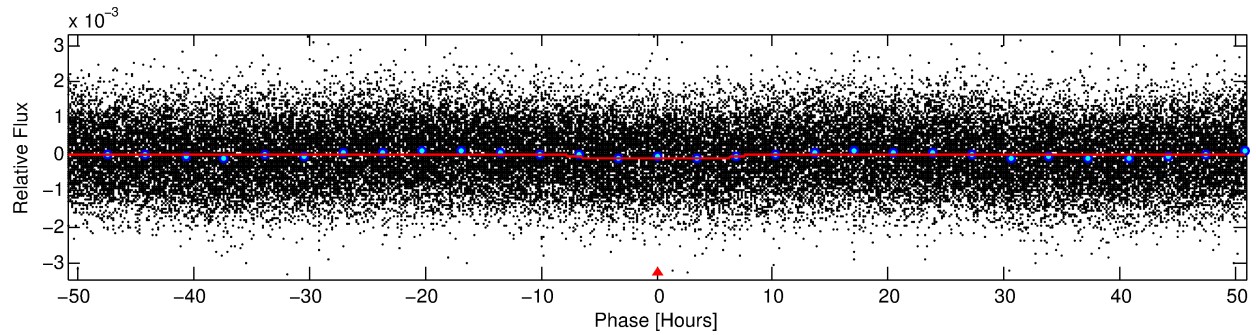
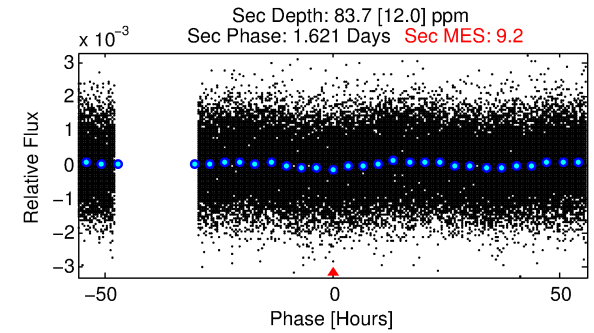
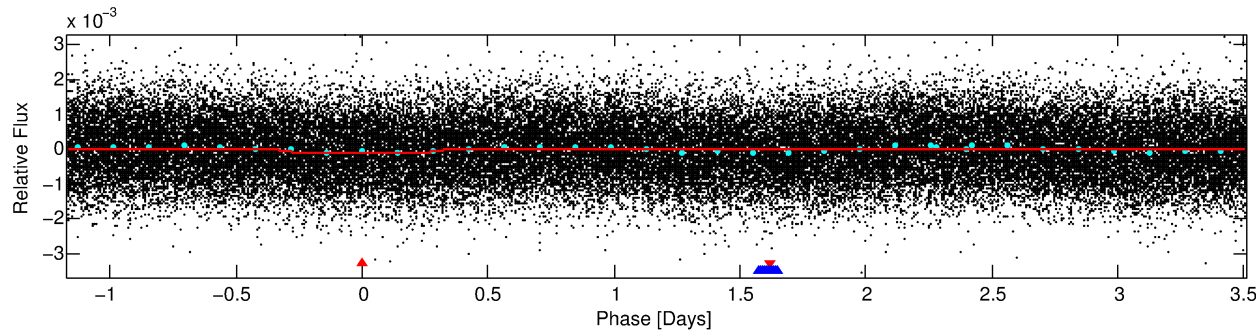
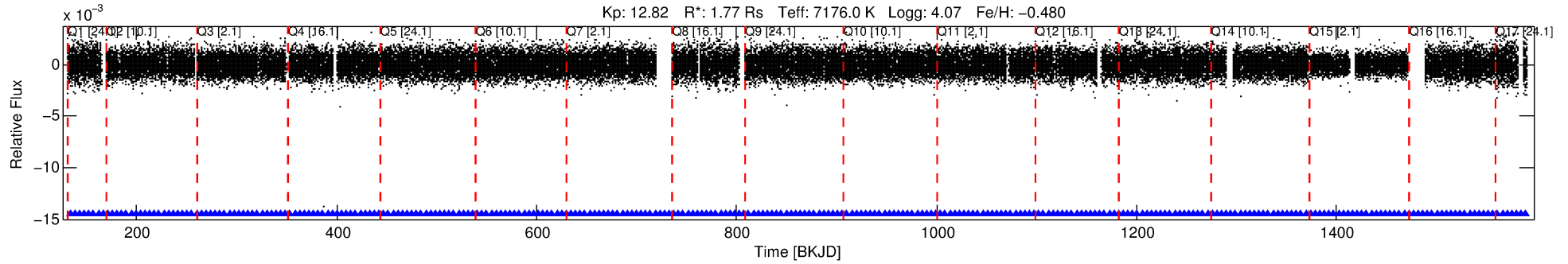
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008123197-01

No Significant Match Found

# DV One-Page Summary

KIC: 8123197 Candidate: 1 of 2 Period: 4.680 d



## DV Fit Results:

Period = 4.67969 [0.00012] d  
Epoch = 133.7852 [0.0210] BKJD  
Rp/R\* = 0.0117 [0.0006]  
a/R\* = 1.18 [0.07]  
b = 0.96 [0.02]  
Seff = 2048.50 [960.35]  
Teq = 1715 [201] K  
Rp = 2.27 [0.66] Re  
a = 0.0604 [0.0167] AU  
Ag = 32.72 [15.63] [2.03σ]  
Teffp = 6344 [378] K [10.82σ]

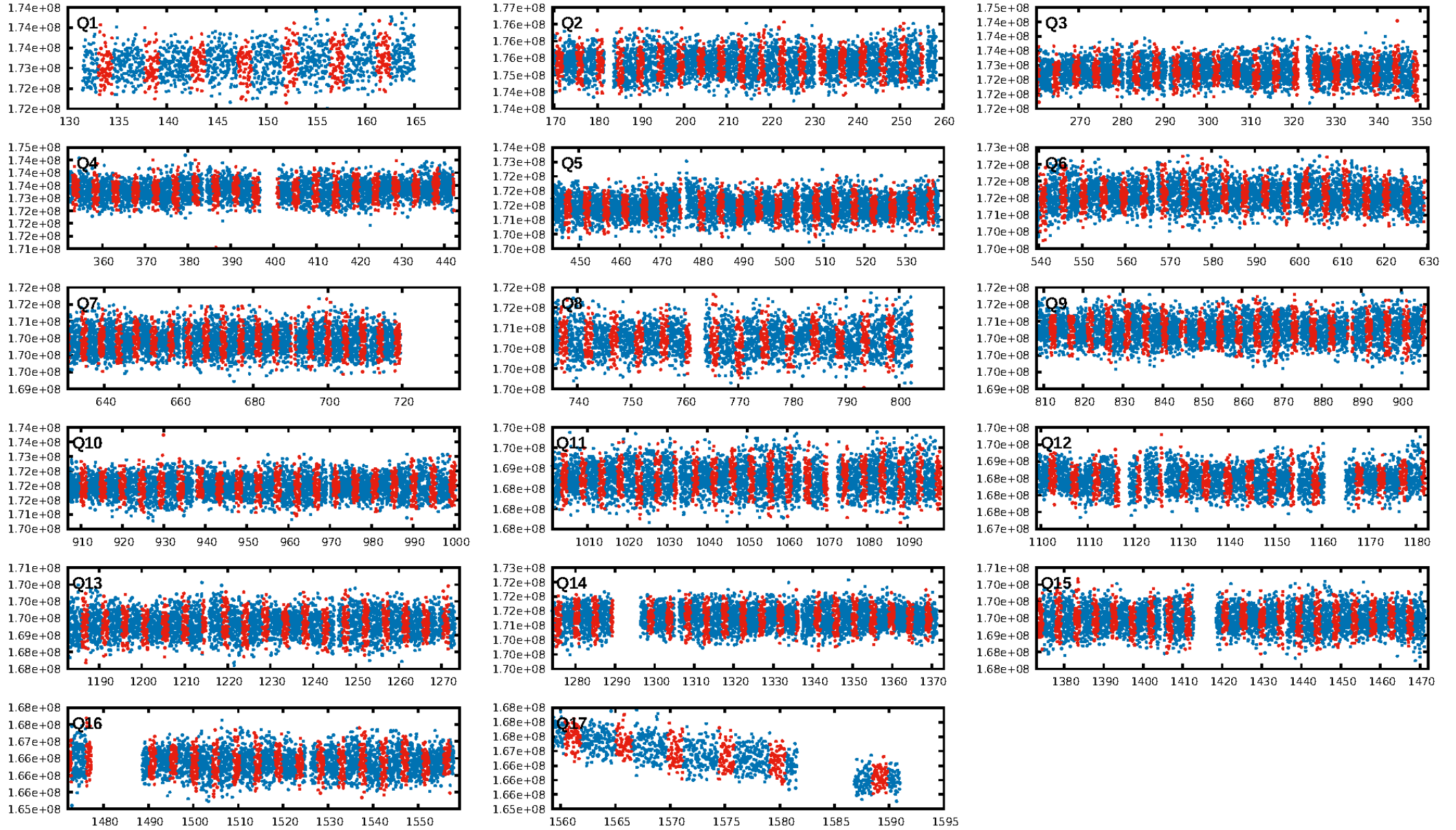
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.31e-22  
RollingBand-fgt: 1.00 [282/282]  
GhostDiagnostic-chr: 43.27  
Centroid-sig: 31.0%  
Centroid-so: 0.324 arcsec [1.38σ]  
OotOffset-rm: 0.221 arcsec [0.56σ]  
KicOffset-rm: 0.246 arcsec [0.66σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 0.65 [11/17]

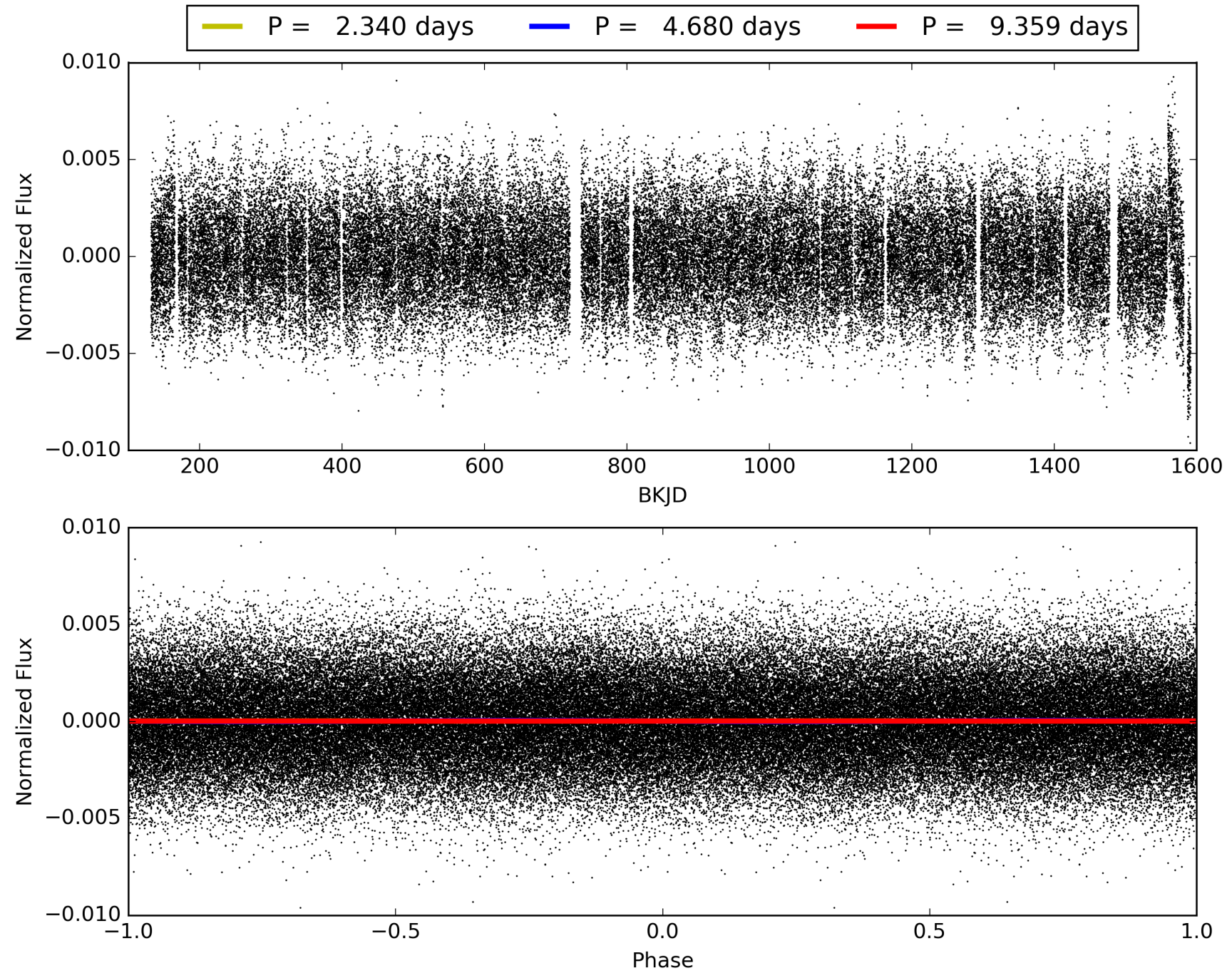
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:09:50 Z

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

# TCE 008123197-01, PDC Light Curves



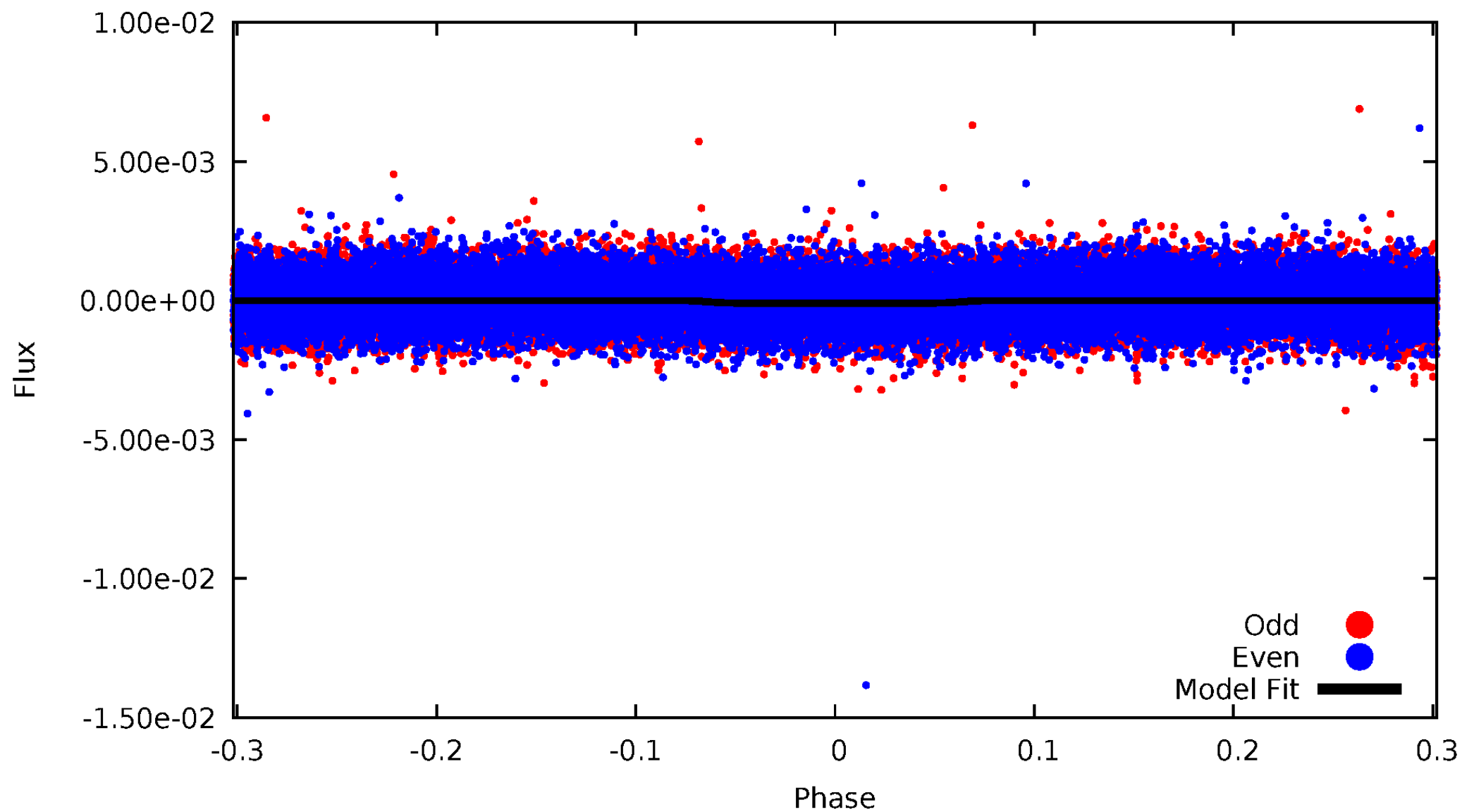
TCE 008123197-01





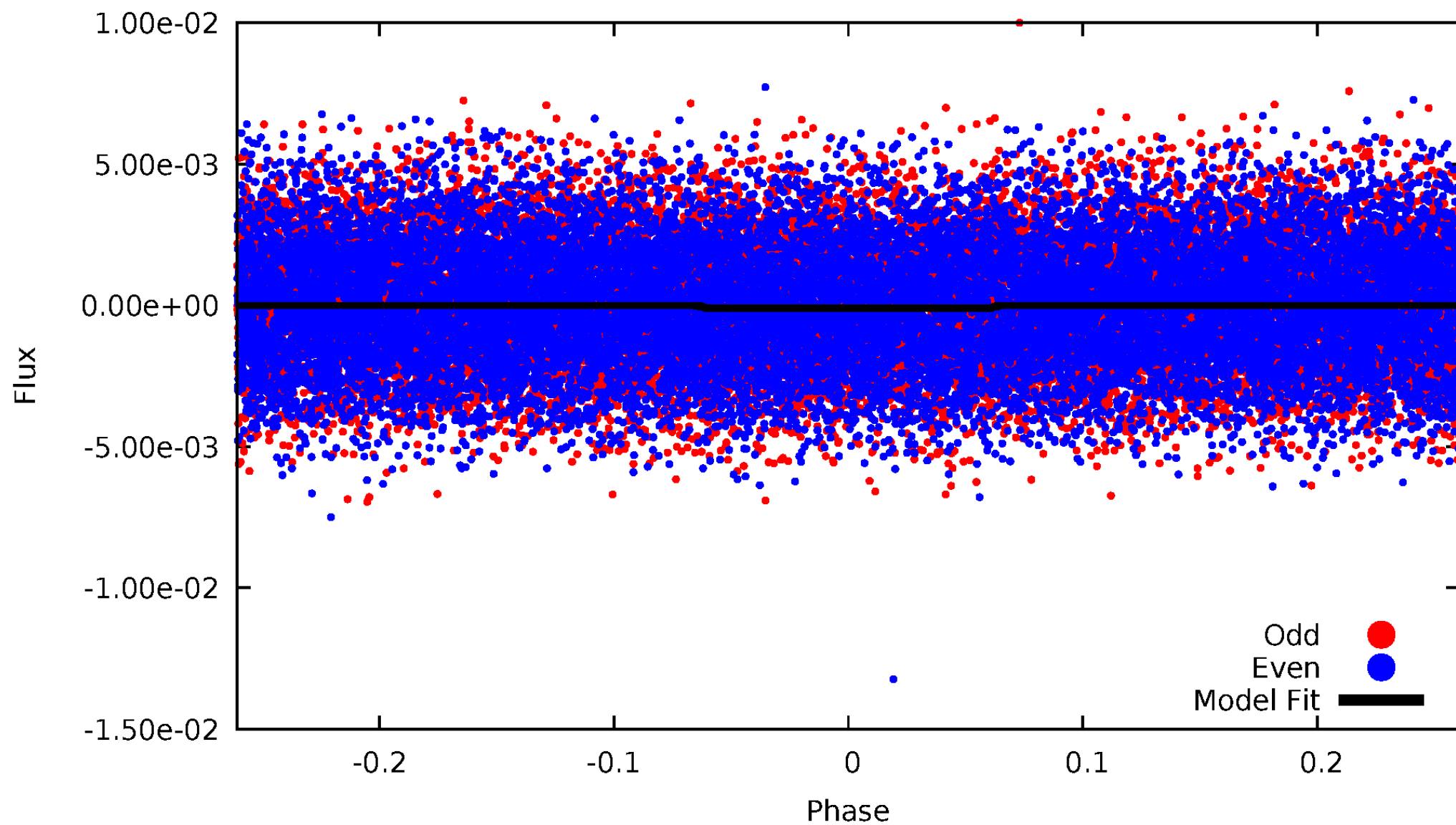
# DV Odd/Even

TCE 008123197-01



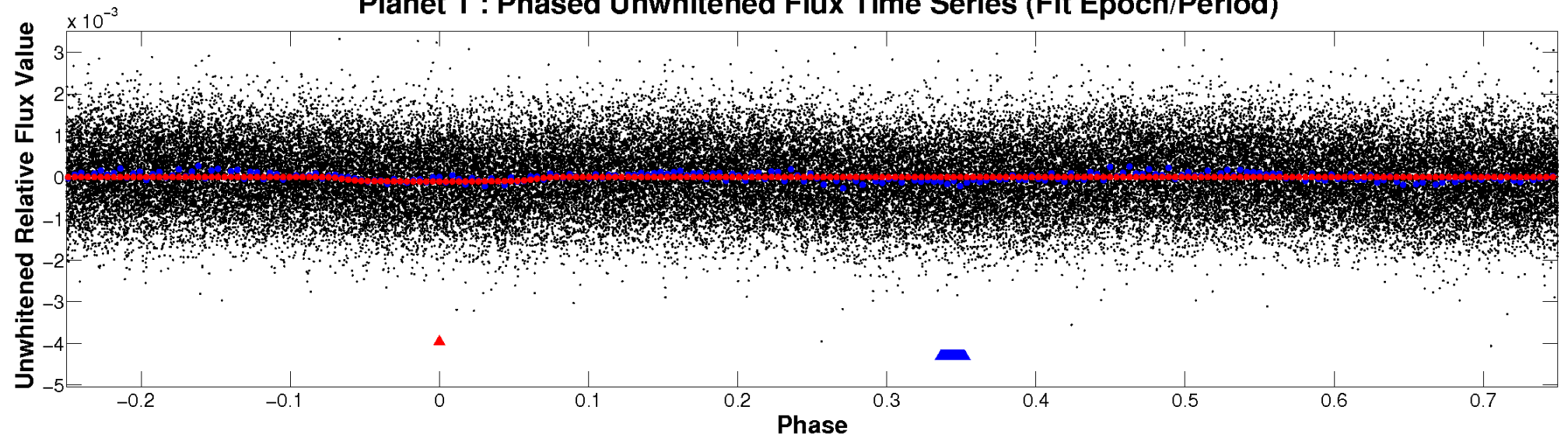
# ALT Odd/Even

TCE 008123197-01

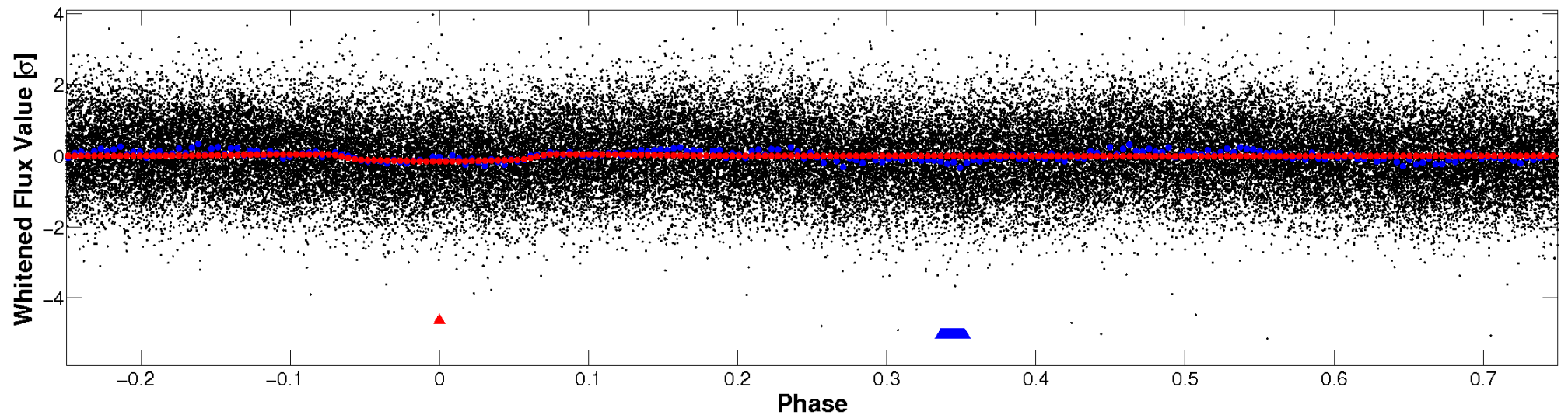


# Non-Whitened Vs. Whitened Light Curve

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

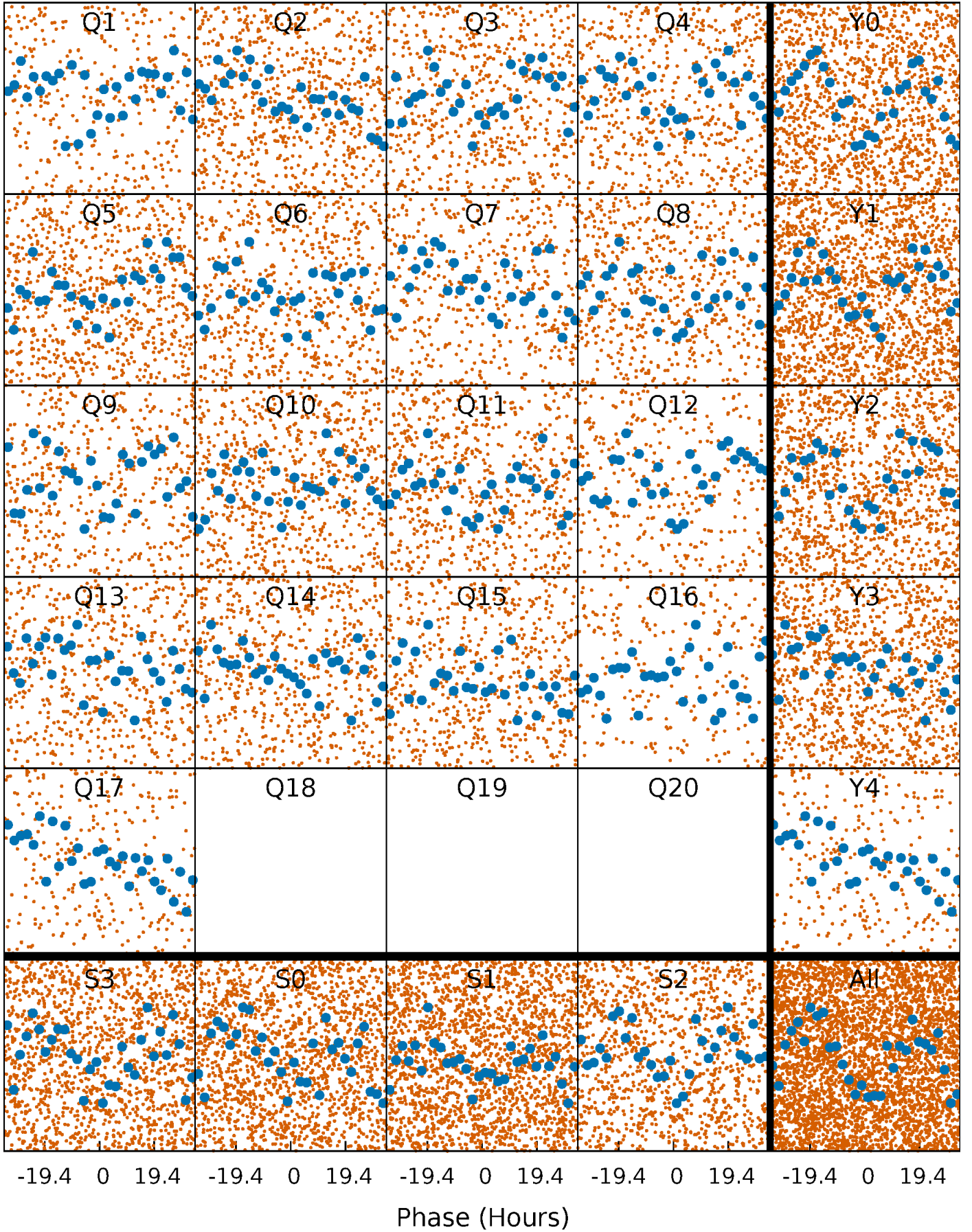


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

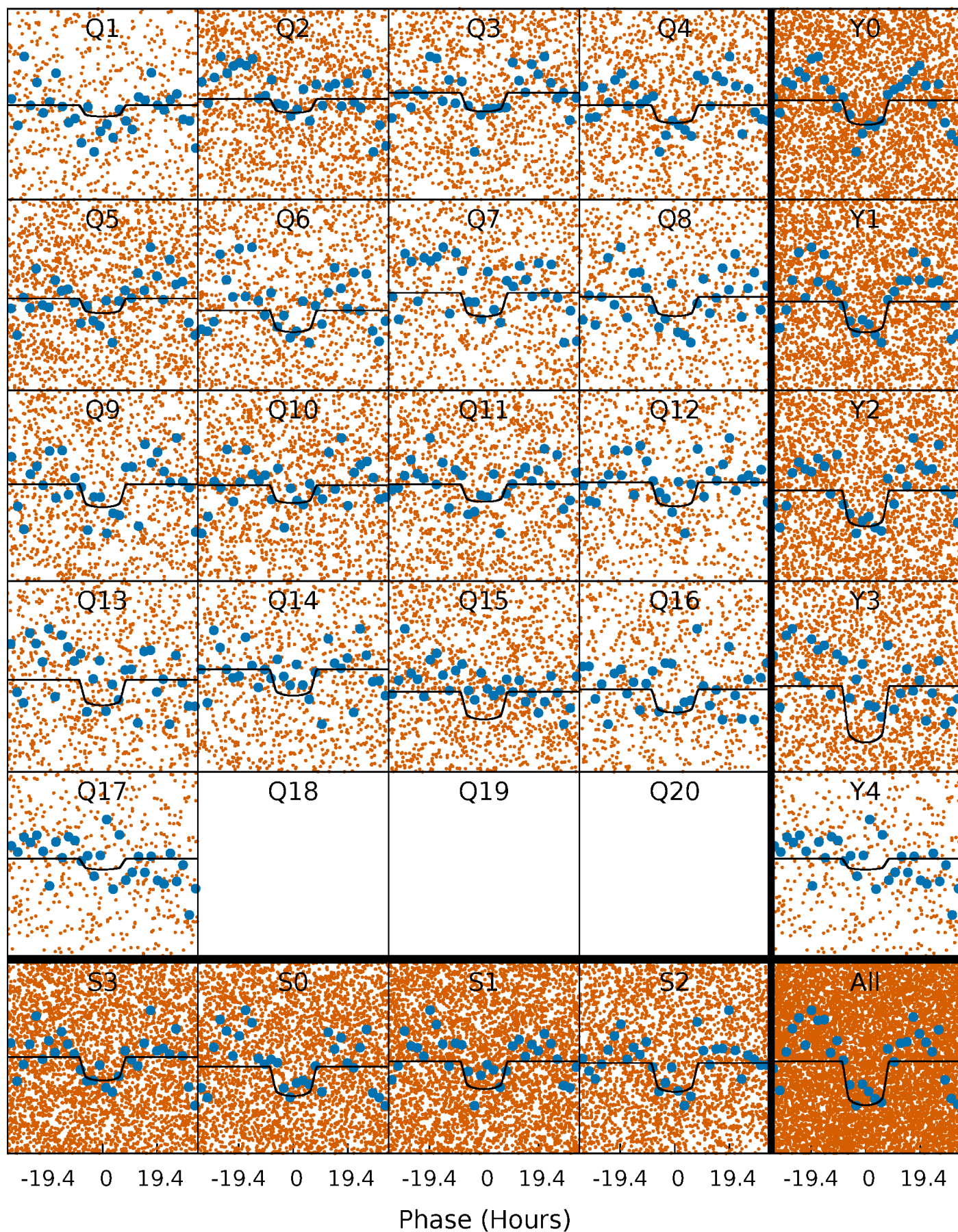
TCE 008123197-01   P= 4.679694 Days    $T_0=133.785219$  (BKJD)





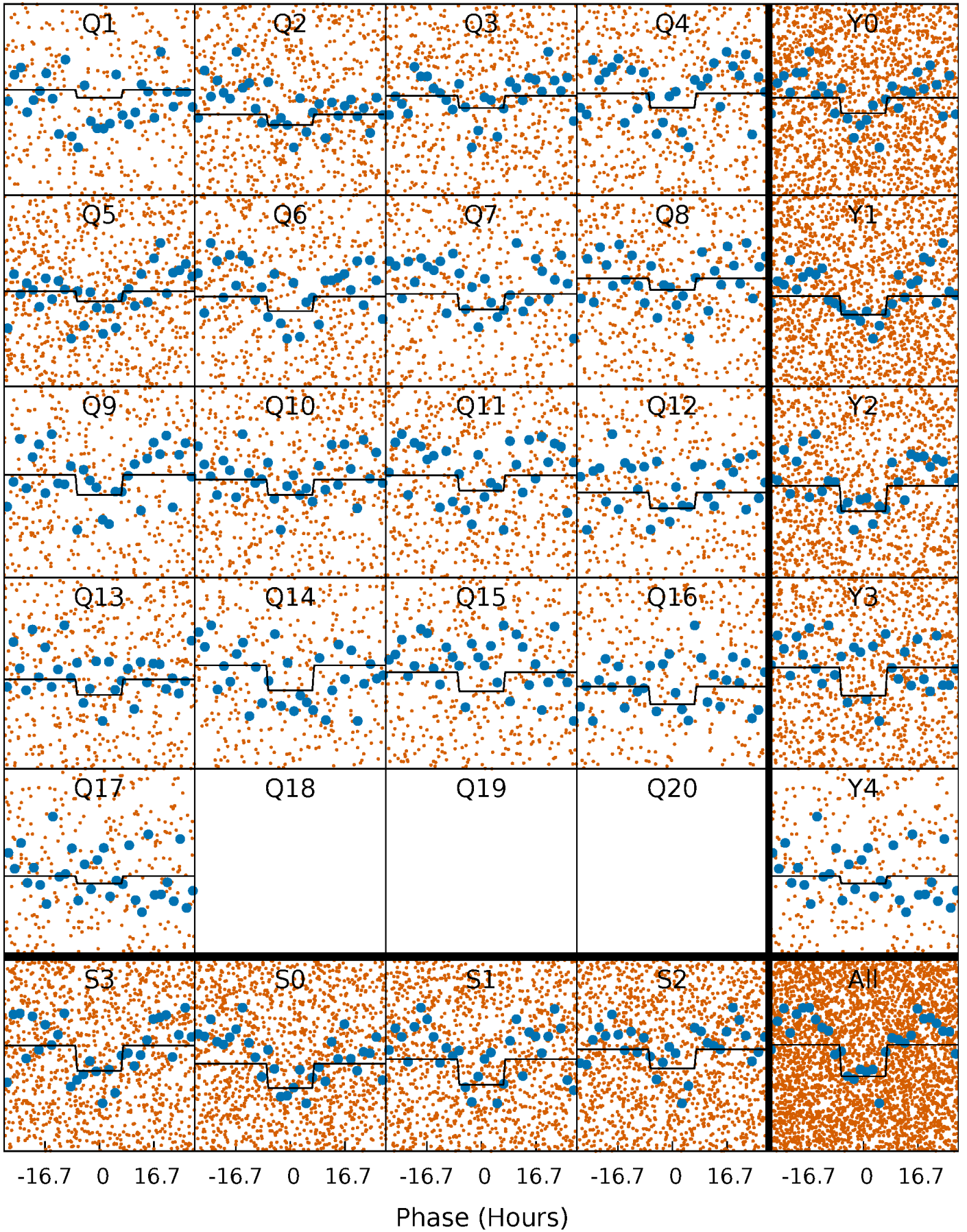
# DV Quarter-Phased Transit Curves

TCE 008123197-01 P= 4.679694 Days  $T_0=133.785219$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

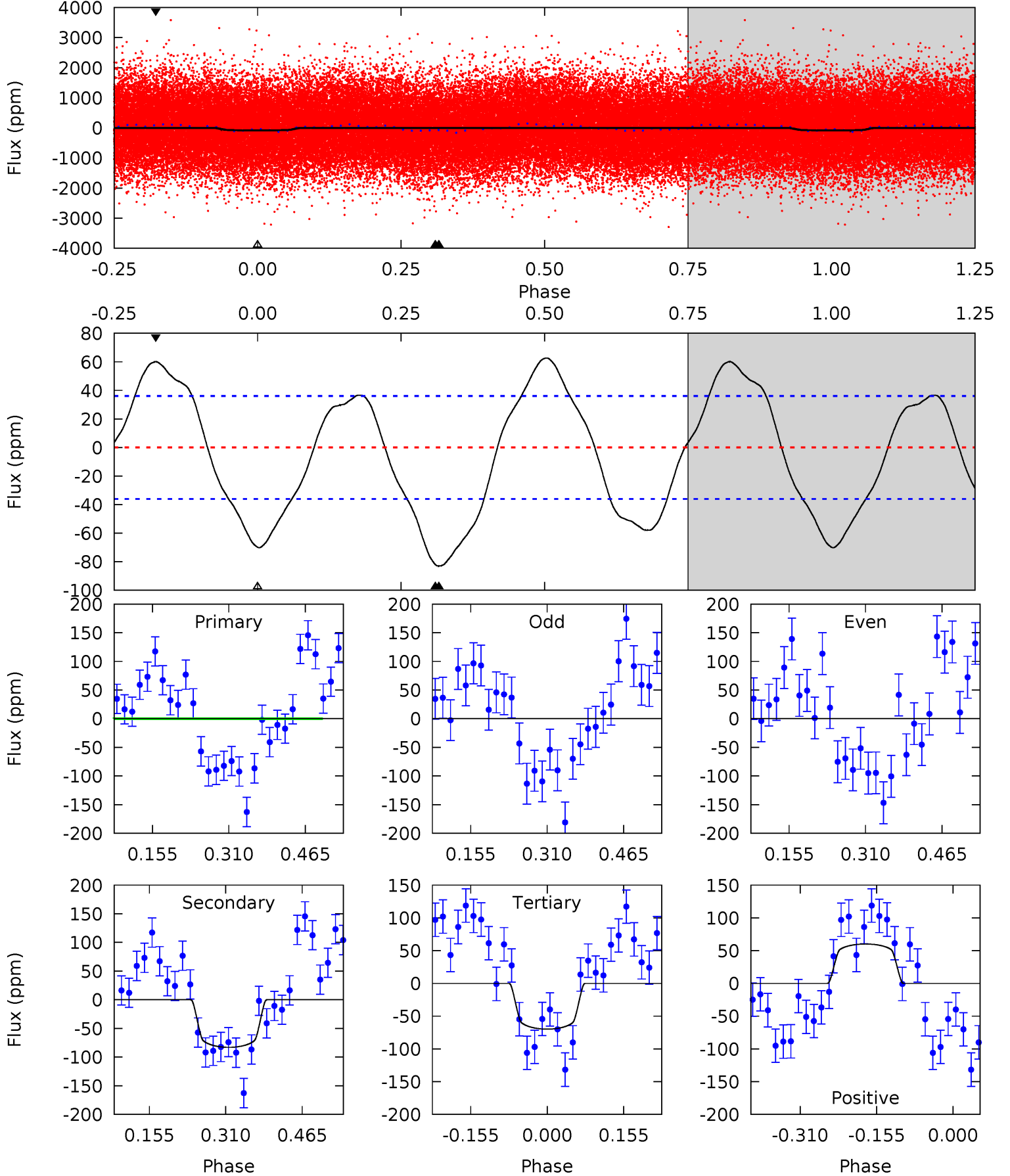
TCE 008123197-01 P= 4.679879 Days  $T_0=133.758064$  (BKJD)



# DV Model-Shift Uniqueness Test

008123197-01, P = 4.679694 Days, E = 129.105525 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	10.3	8.66	7.46	4.47	1.42	5.23	1.51	2.71	1.63	2.84	1.25	0.87	0.43	0.48

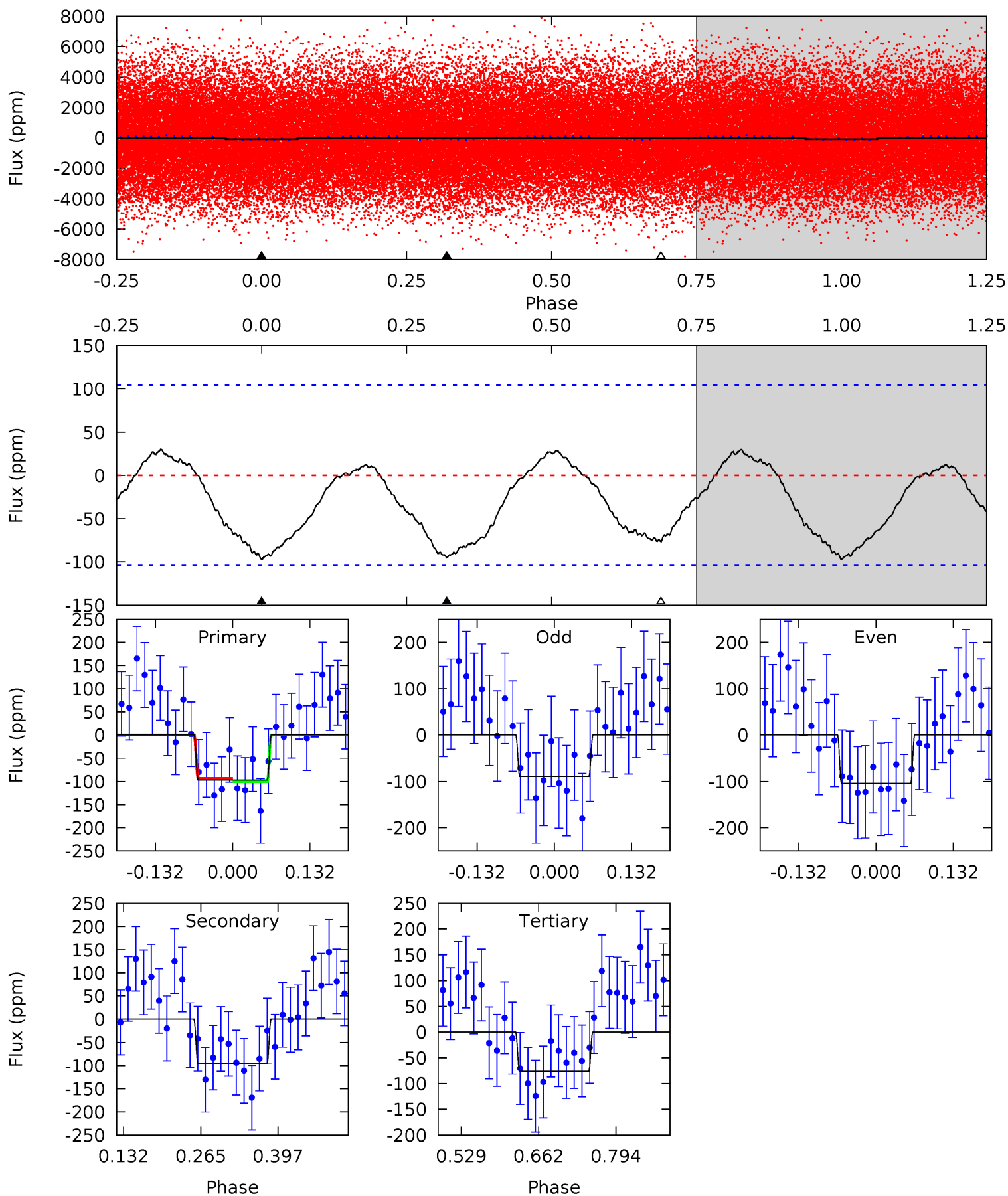




# Alt Model-Shift Uniqueness Test

008123197-01, P = 4.679879 Days, E = 129.078185 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
4.19	4.10	3.31	0	4.51	1.50	1.48	0.88	4.19	0.80	4.10	0.32	0.87	0.24	0.16





### Stellar Parameters For KIC 008123197

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7176^{+228}_{-279}$	$4.068^{+0.260}_{-0.160}$	$-0.480^{+0.250}_{-0.300}$	$1.774^{+0.456}_{-0.507}$	$1.342^{+0.191}_{-0.233}$	$0.338^{+0.521}_{-0.160}$
	+3%/-4%	+6%/-4%	+52%/-62%	+26%/-29%	+14%/-17%	+154%/-47%
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 008123197-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-83 \pm 8$	$2.21^{+0.38}_{-0.38}$	$2366^{+190}_{-193}$	$6245^{+325}_{-296}$	$34^{+14}_{-9}$
Alt.	$-95 \pm 23$	$1.86^{+0.32}_{-0.32}$	$2371^{+178}_{-201}$	$7079^{+600}_{-613}$	$53^{+31}_{-17}$

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

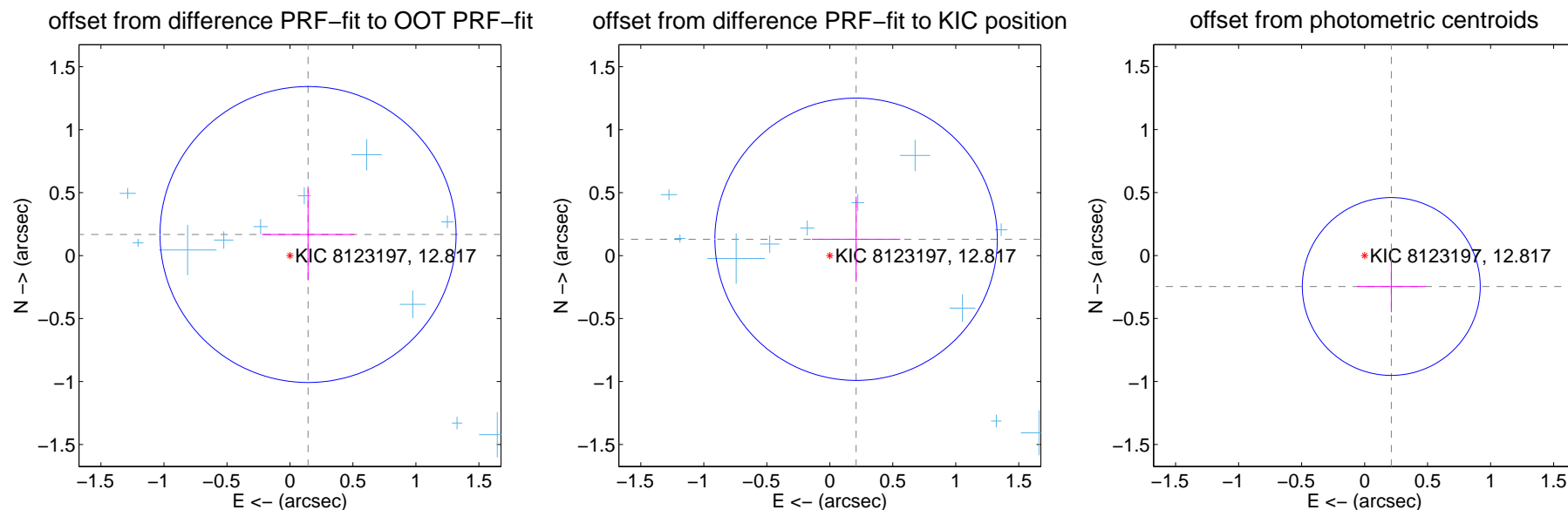
## DV Centroid Data

Supplemental centroid analysis for 008123197-01. Kepler magnitude: 12.82. Transit SNR 12.13

There are 12 quarters with good PRF difference image offsets

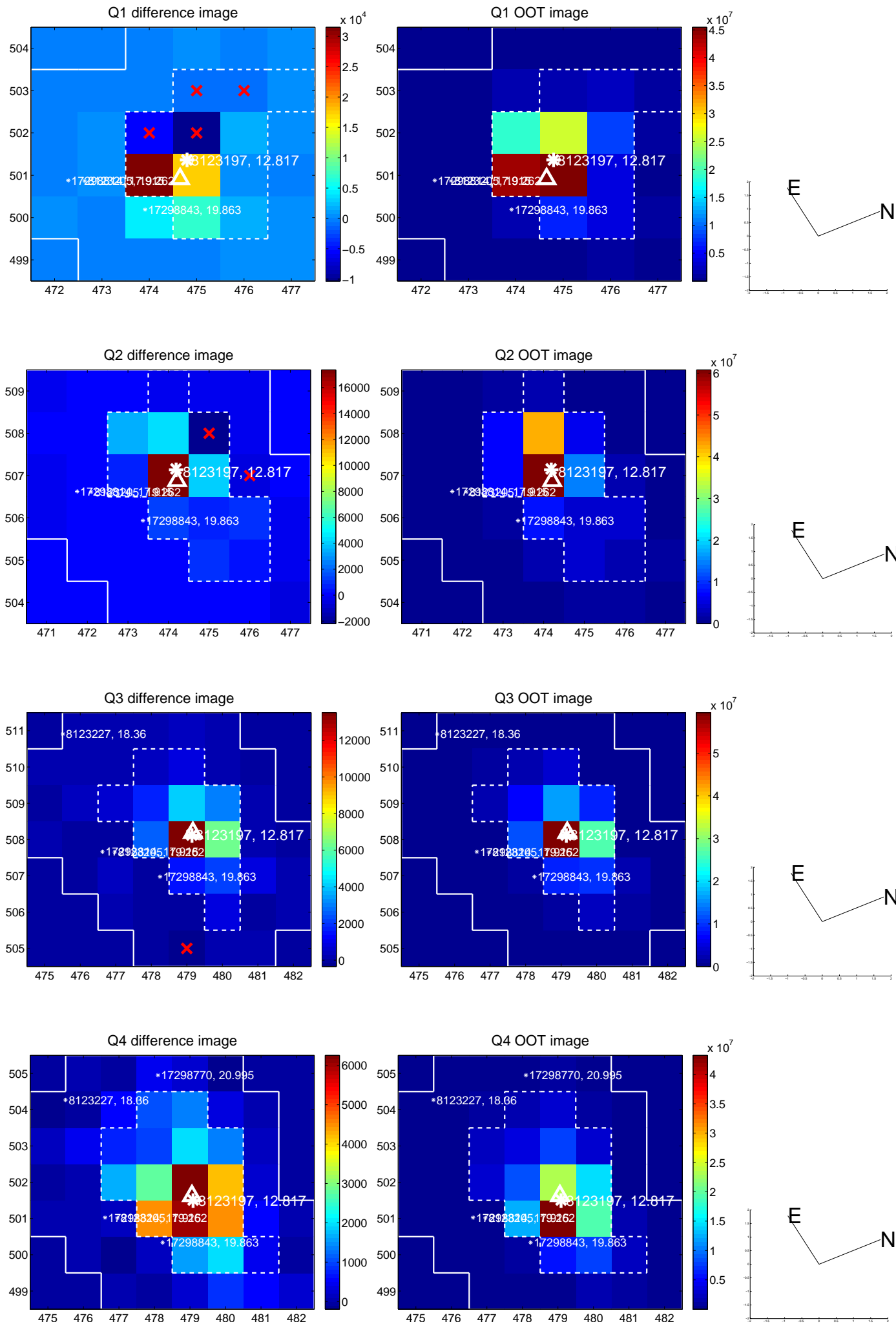
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.221 \pm 0.392$	0.56	$-0.144 \pm 0.367$	$0.167 \pm 0.364$
PRF-fit source offset from KIC position	$0.246 \pm 0.374$	0.66	$-0.209 \pm 0.351$	$0.130 \pm 0.338$
photometric centroid source offset	$0.32 \pm 0.24$	1.38	$-0.21 \pm 0.27$	$-0.25 \pm 0.20$

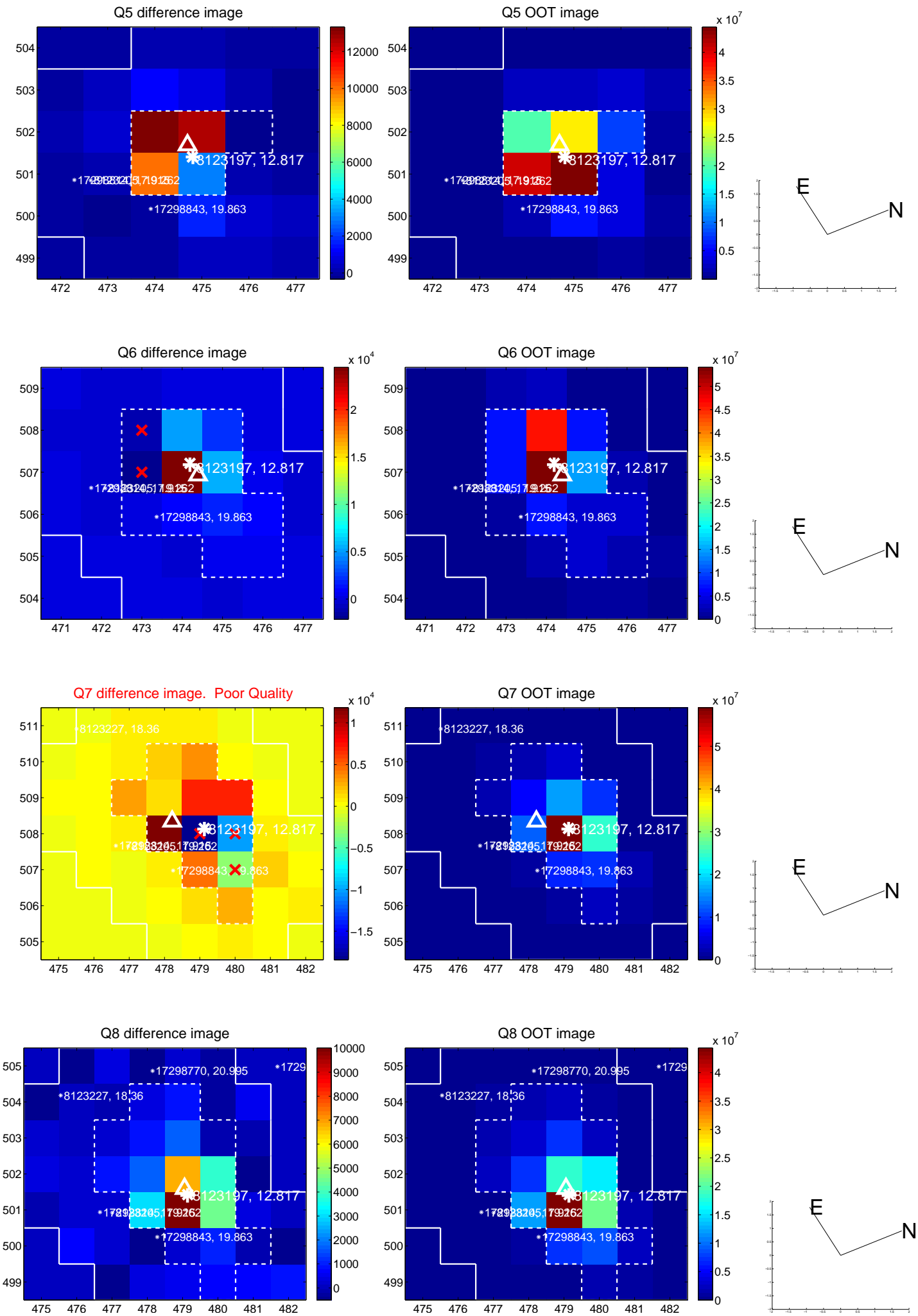


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

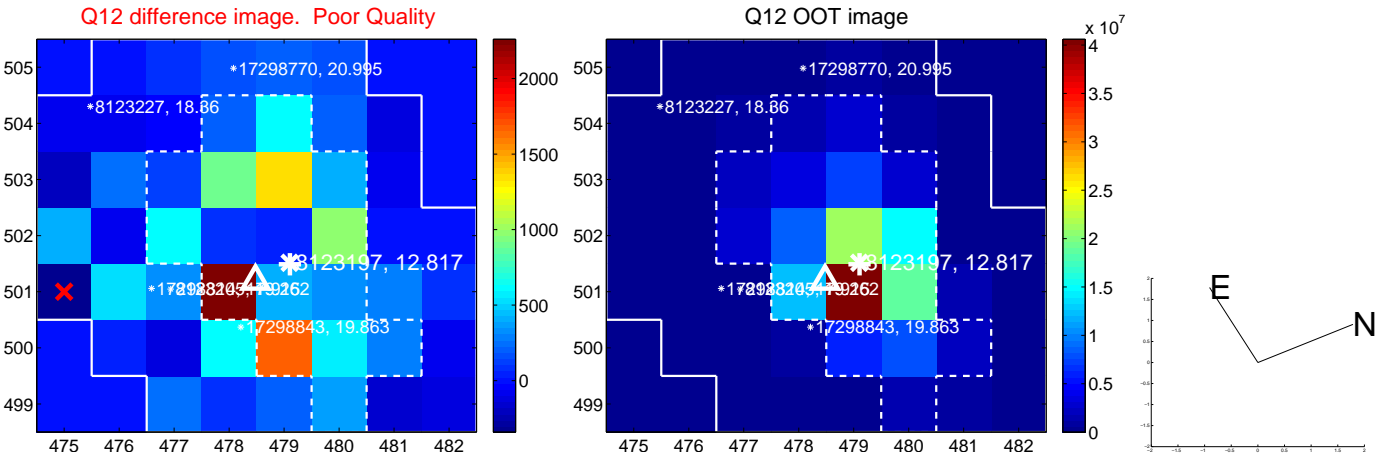
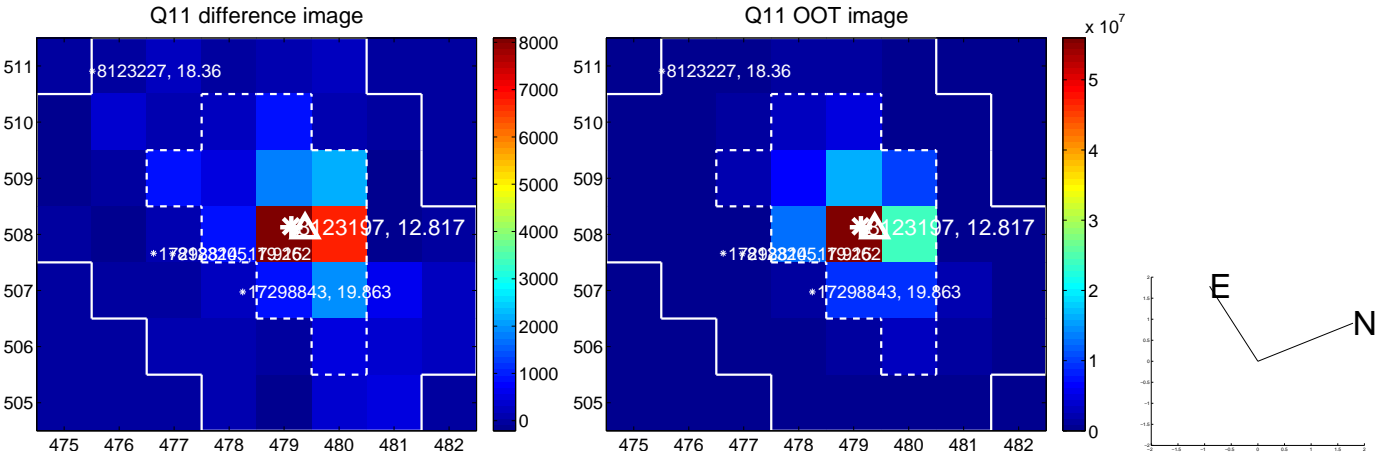
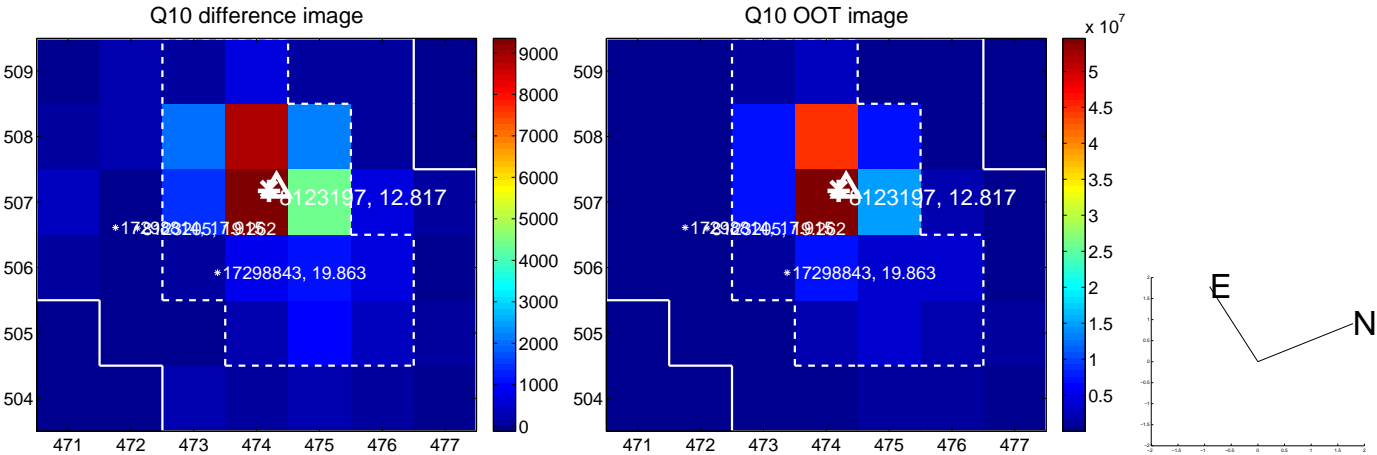
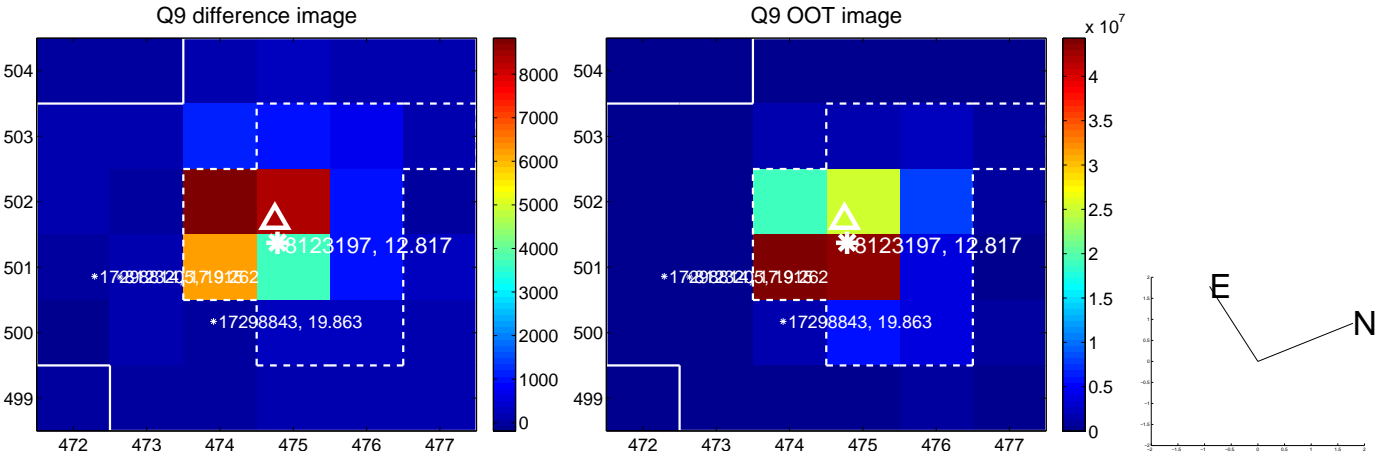


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



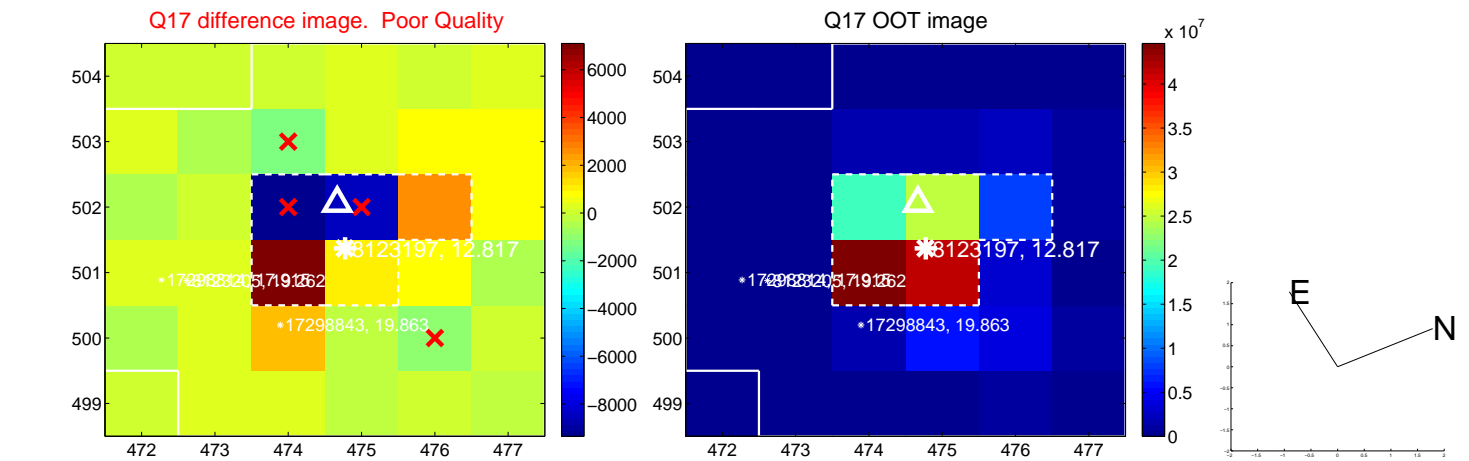


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

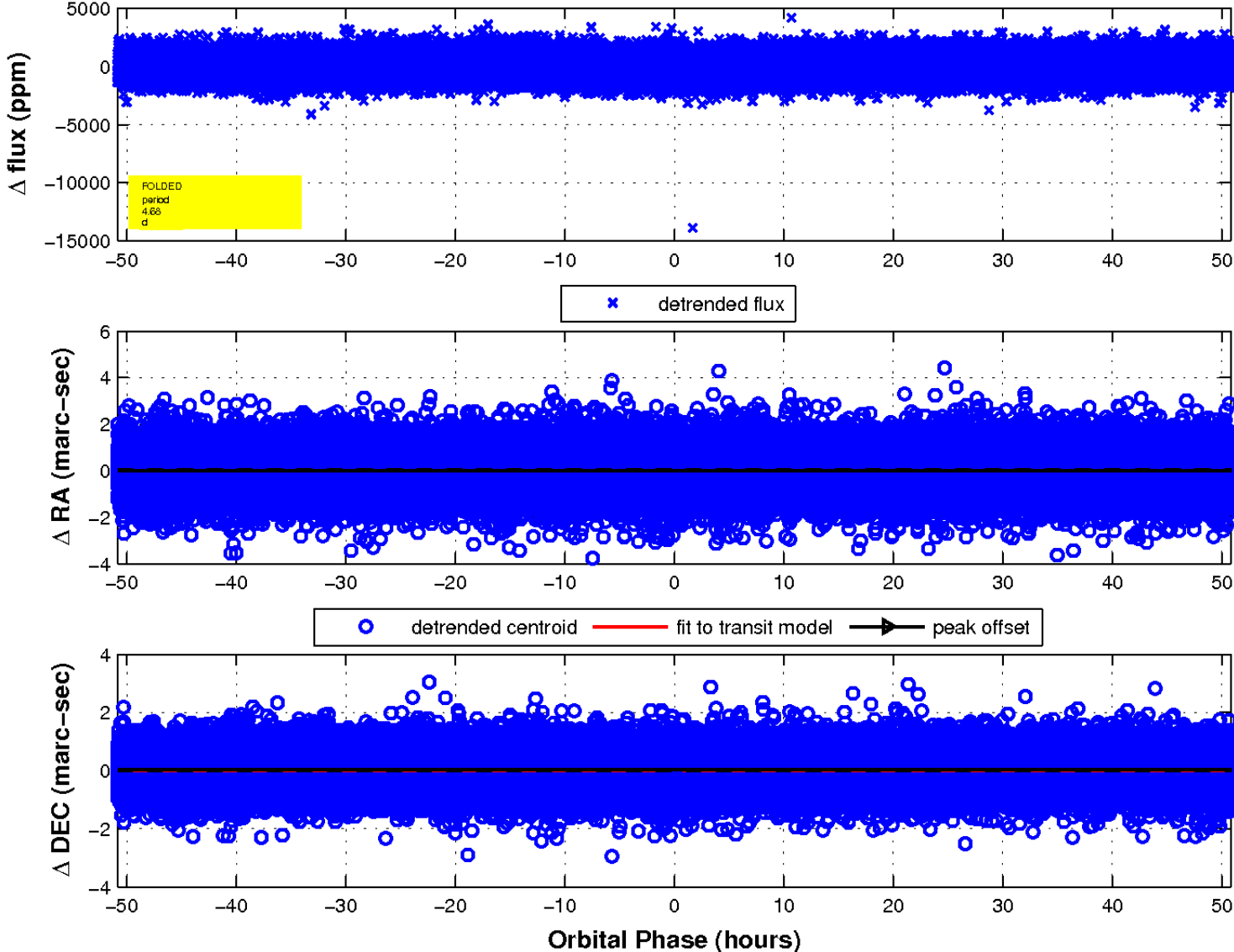




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

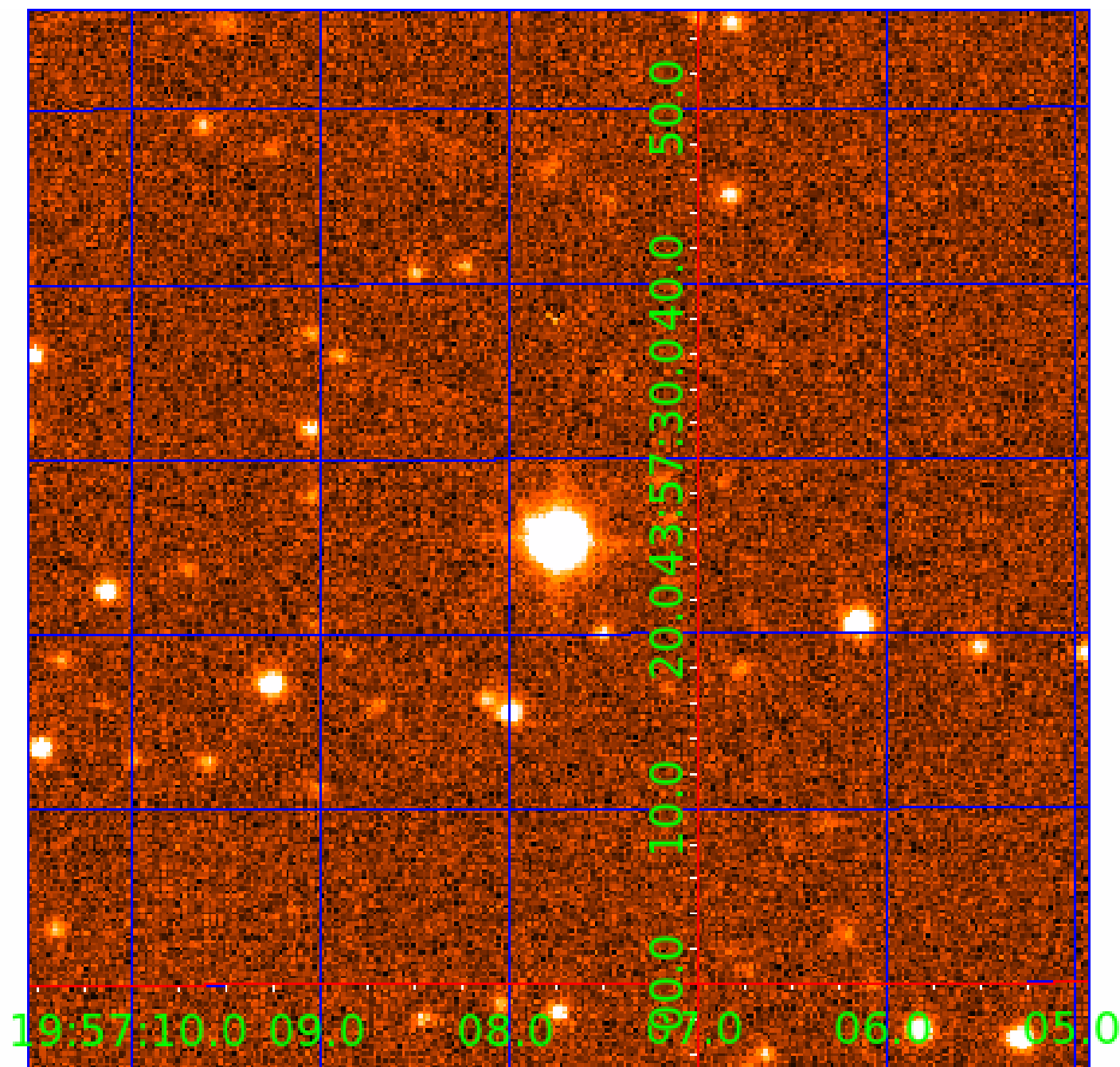


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 008123197

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008123197-01	OBS	No	4.679694	133.785219	105.0	16.951	11.7	12.1	1.77	7176	2.27	2048.50
008123197-02	OBS	No	4.679937	135.358347	101.3	19.907	9.9	12.1	1.77	7176	1.95	2048.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008123197-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008123197-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—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.

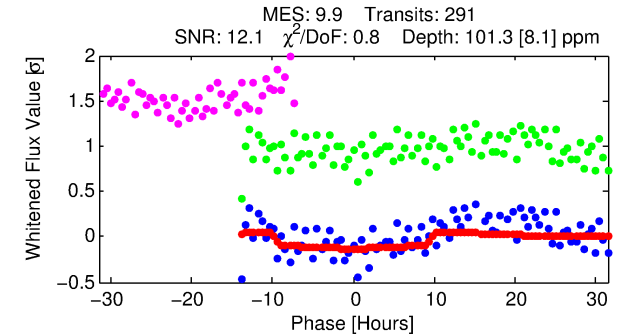
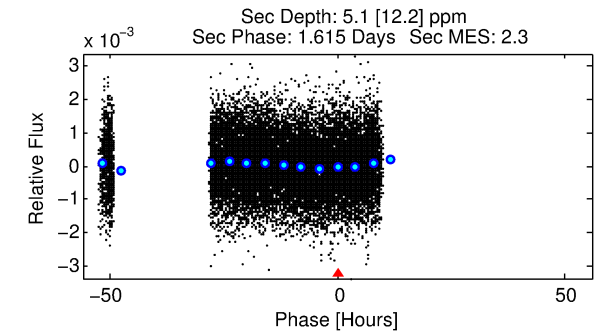
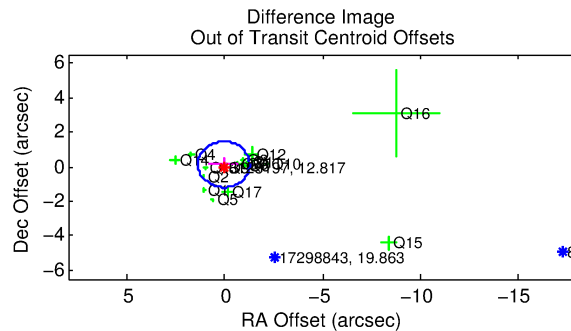
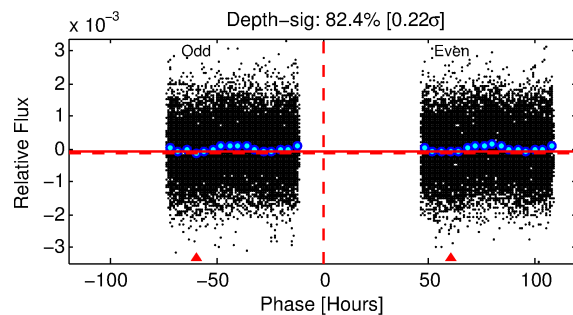
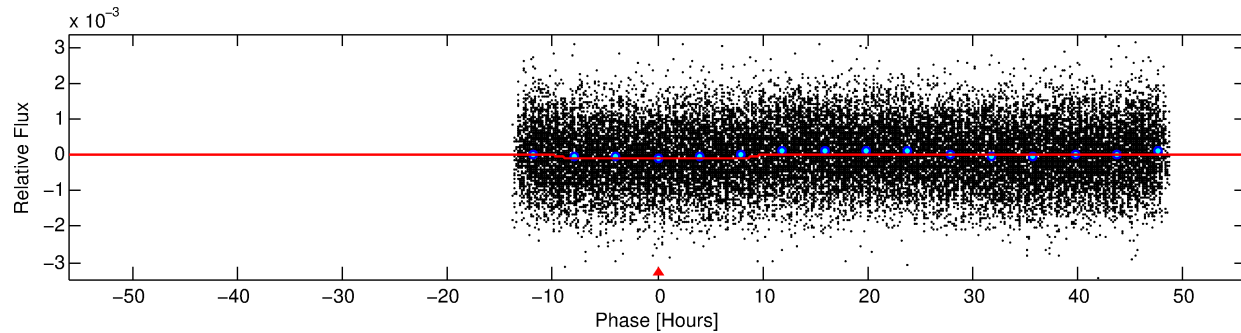
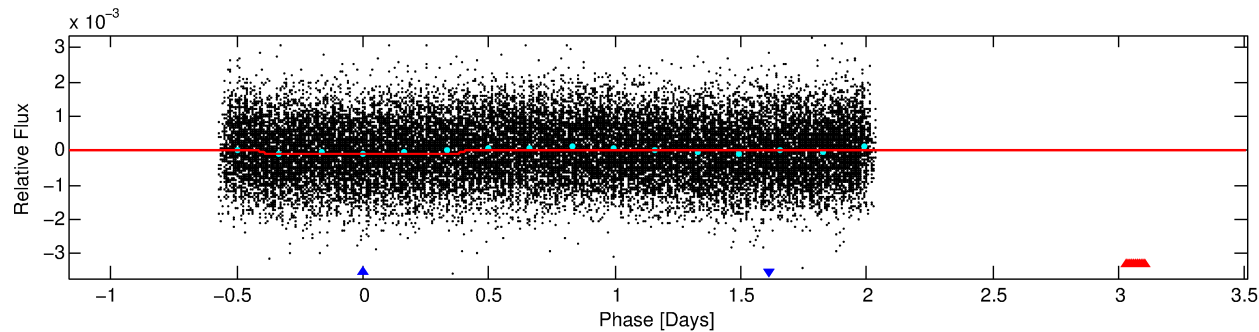
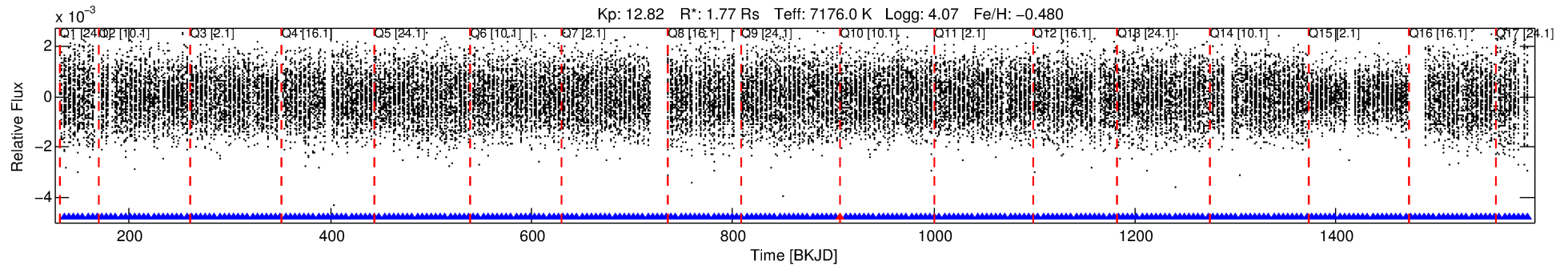
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008123197-02

No Significant Match Found

# DV One-Page Summary

KIC: 8123197 Candidate: 2 of 2 Period: 4.680 d



## DV Fit Results:

Period = 4.67994 [0.00009] d  
Epoch = 135.3583 [0.0146] BKJD  
Rp/R\* = 0.0101 [0.0023]  
a/R\* = 1.45 [1.05]  
b = 0.77 [0.71]  
Seff = 2048.36 [960.29]  
Teq = 1715 [201] K  
Rp = 1.95 [0.71] Re  
a = 0.0604 [0.0167] AU  
Ag = 2.67 [6.64] [0.25σ]  
Teffp = 3391 [2077] K [0.80σ]

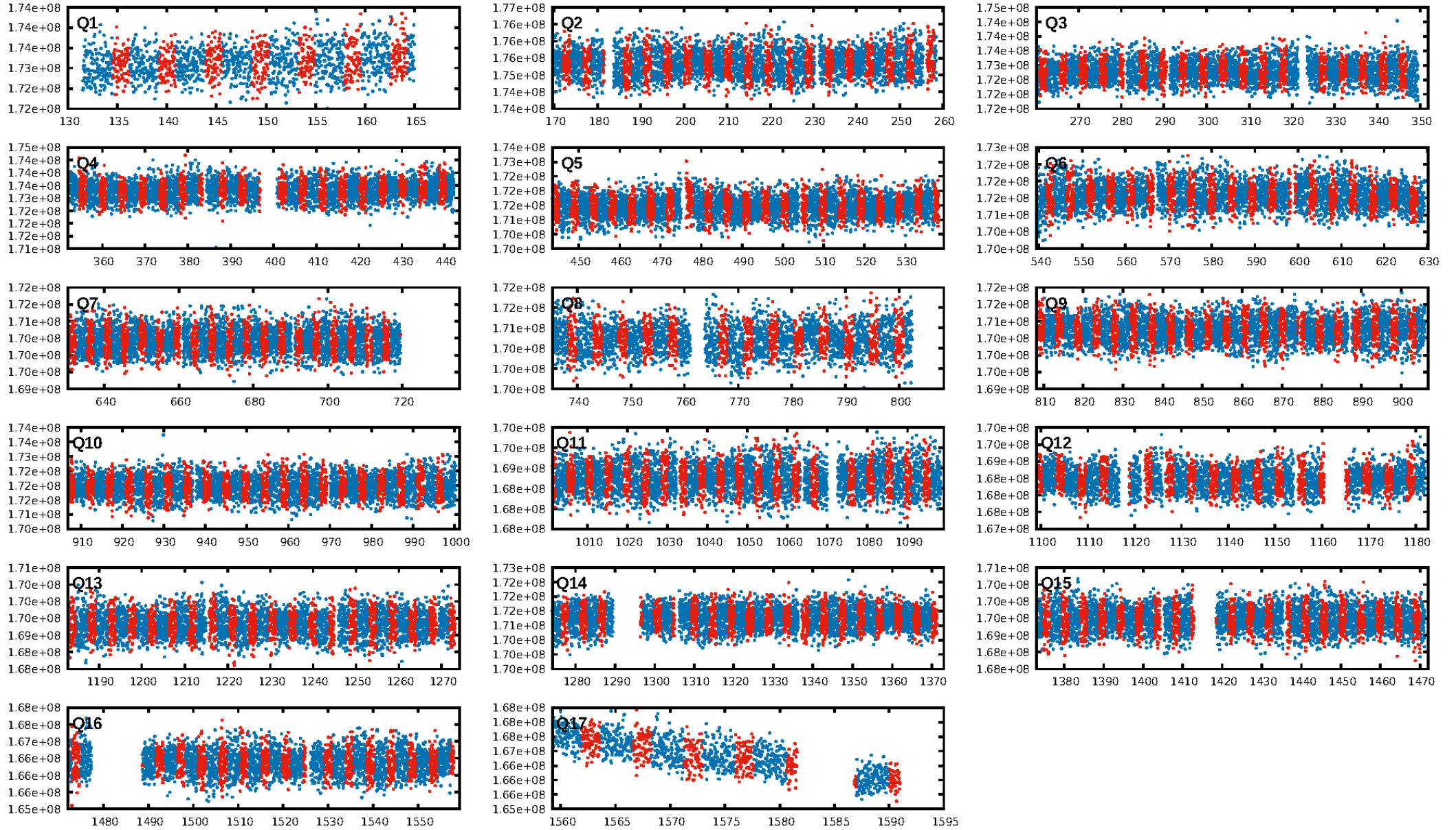
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.90e-16  
RollingBand-fgt: 1.00 [277/278]  
GhostDiagnostic-chr: 1.323  
Centroid-sig: 0.2%  
Centroid-so: 0.278 arcsec [1.31σ]  
OotOffset-rm: 0.138 arcsec [0.31σ]  
KicOffset-rm: 0.110 arcsec [0.29σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

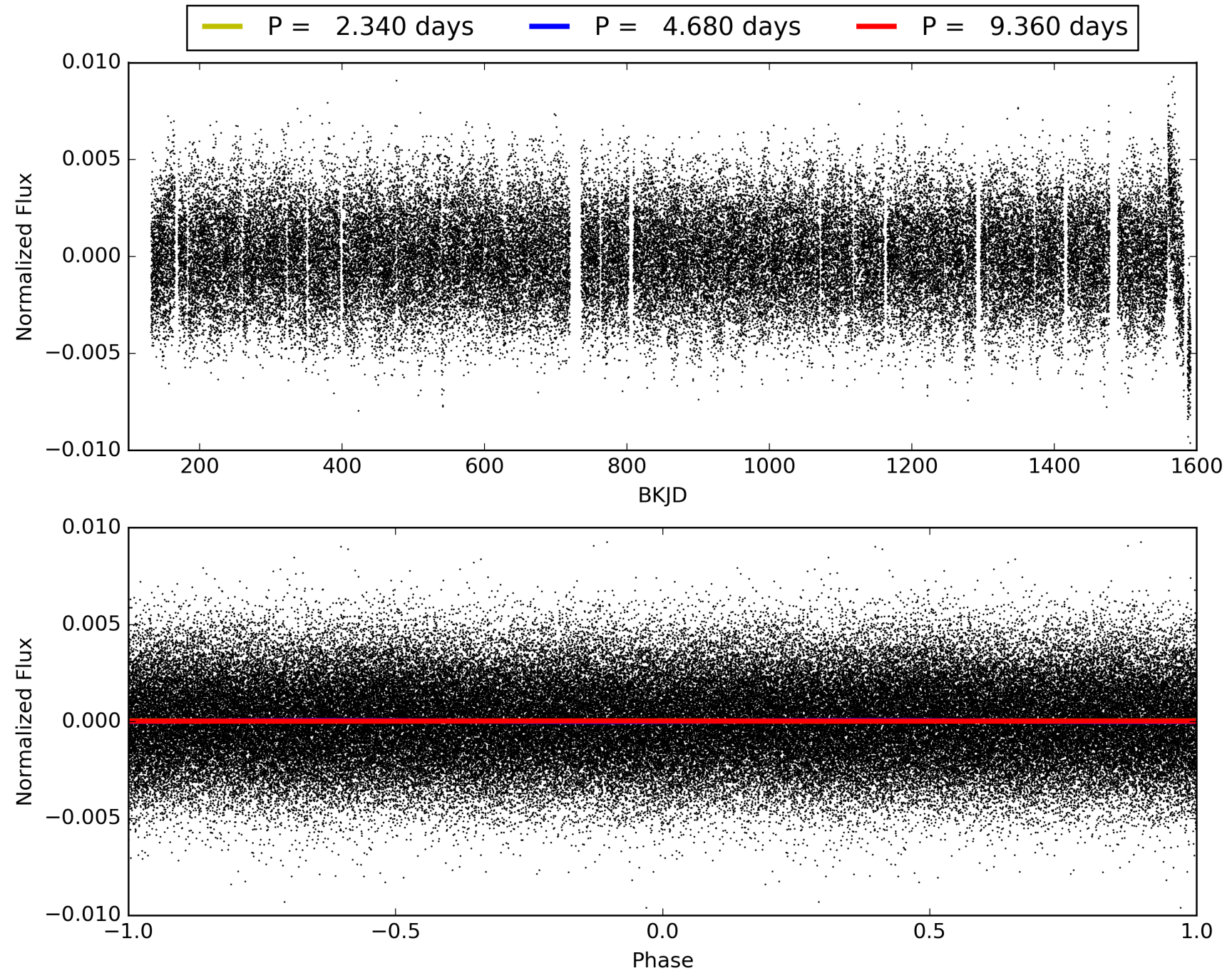
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:10:03 Z

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

# TCE 008123197-02, PDC Light Curves



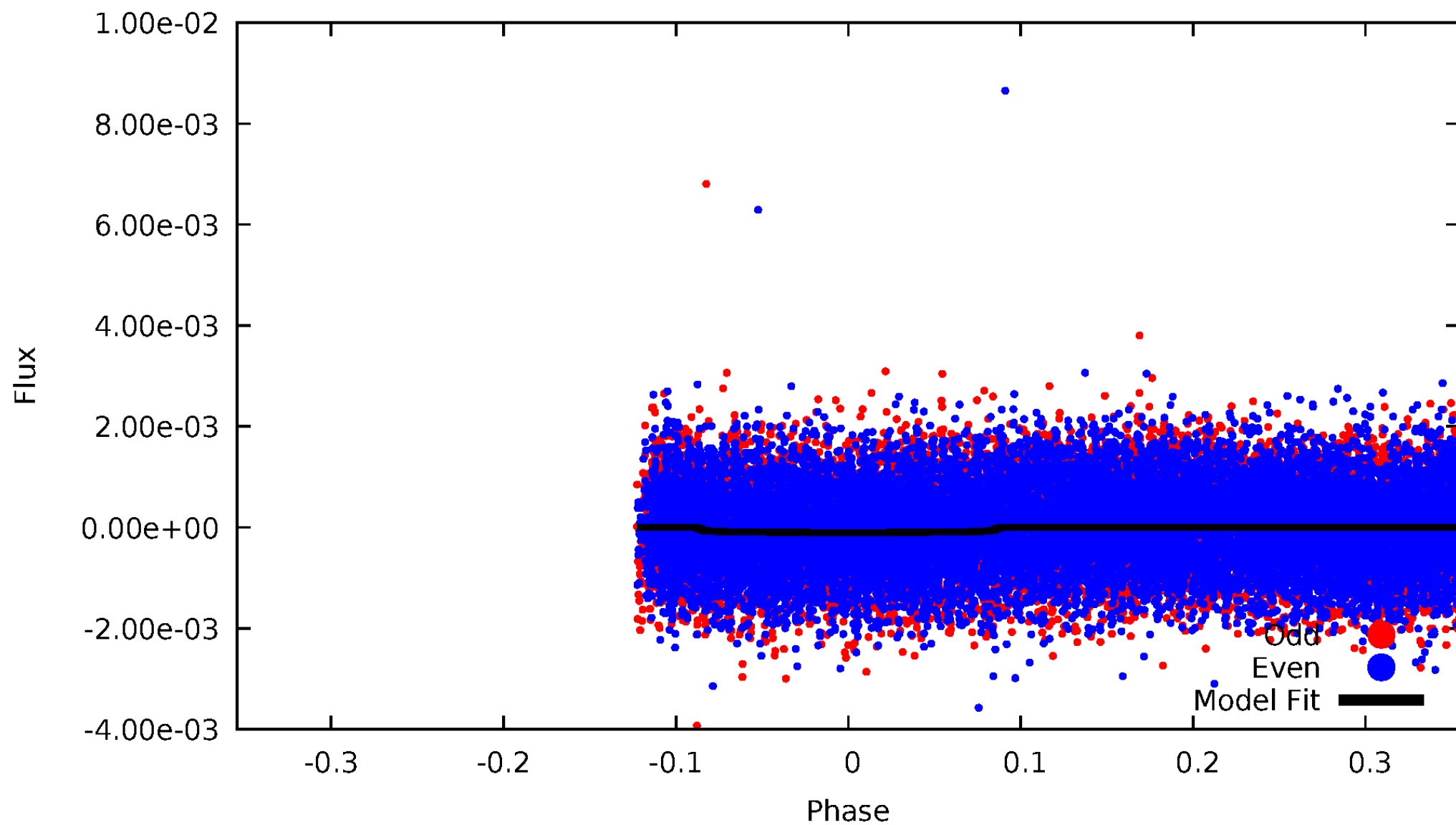
TCE 008123197-02





# DV Odd/Even

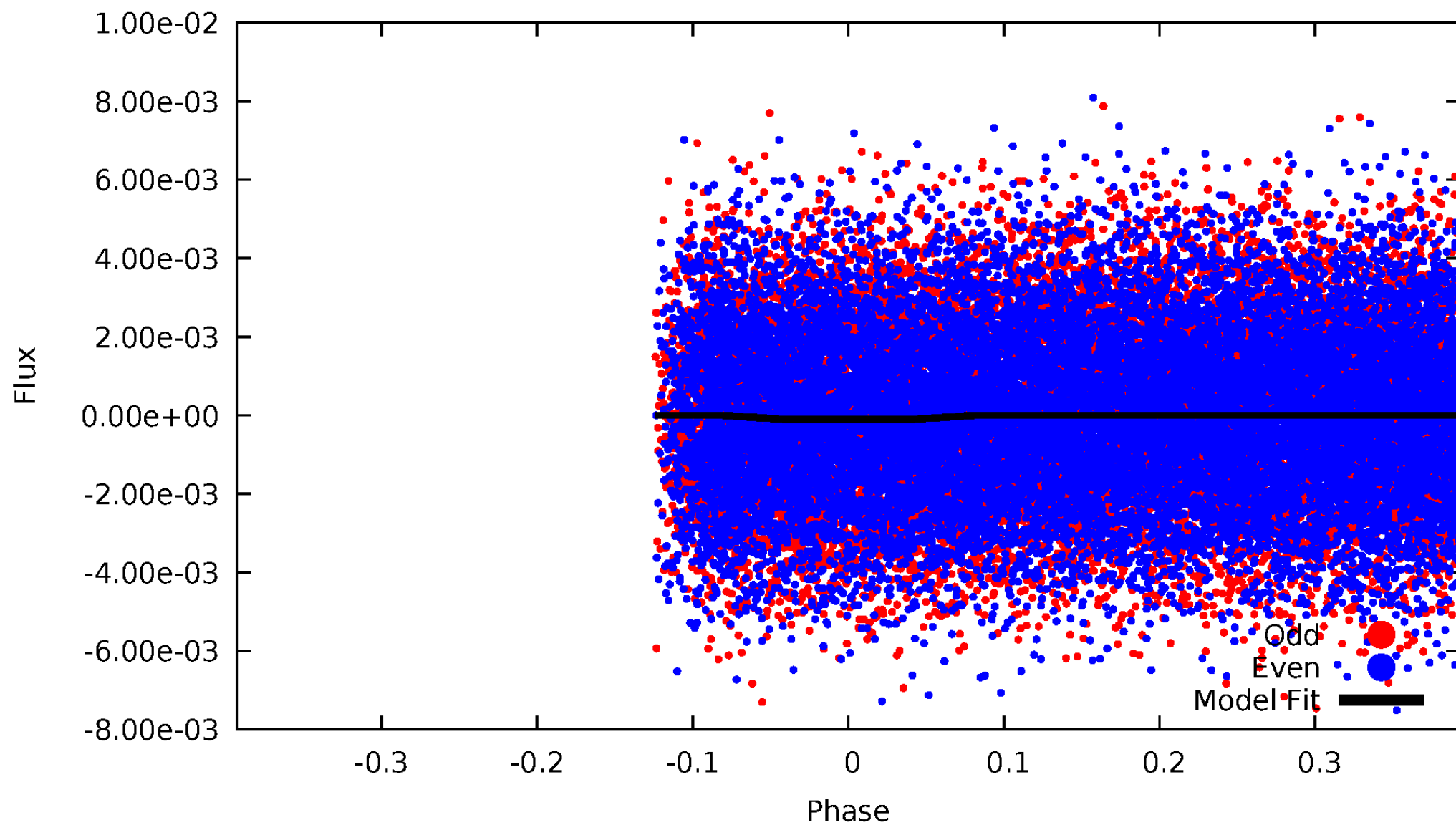
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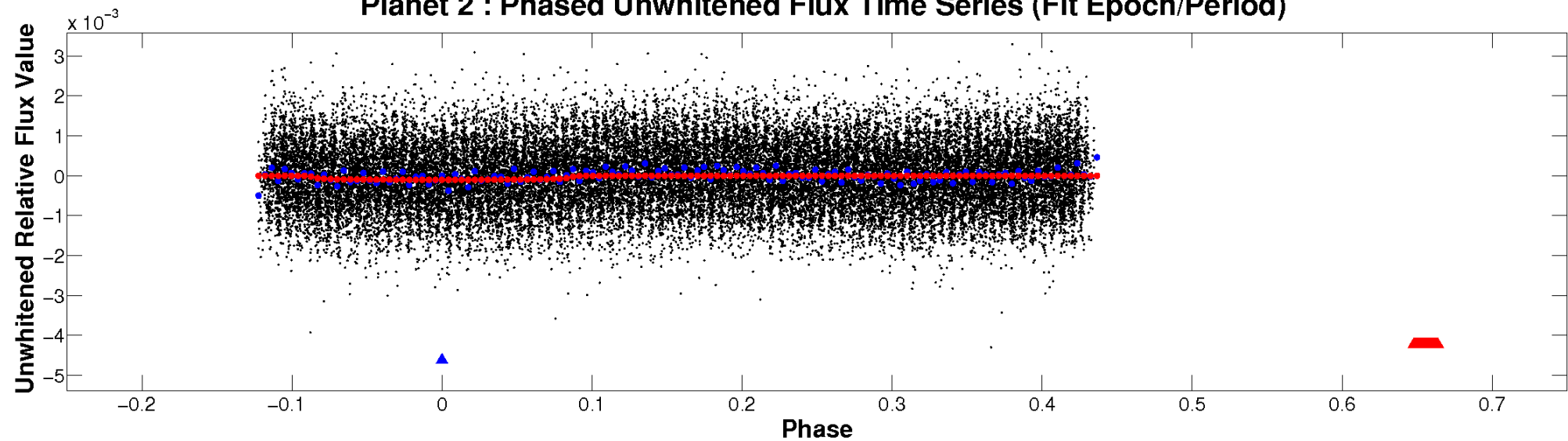
# ALT Odd/Even

TCE 008123197-02

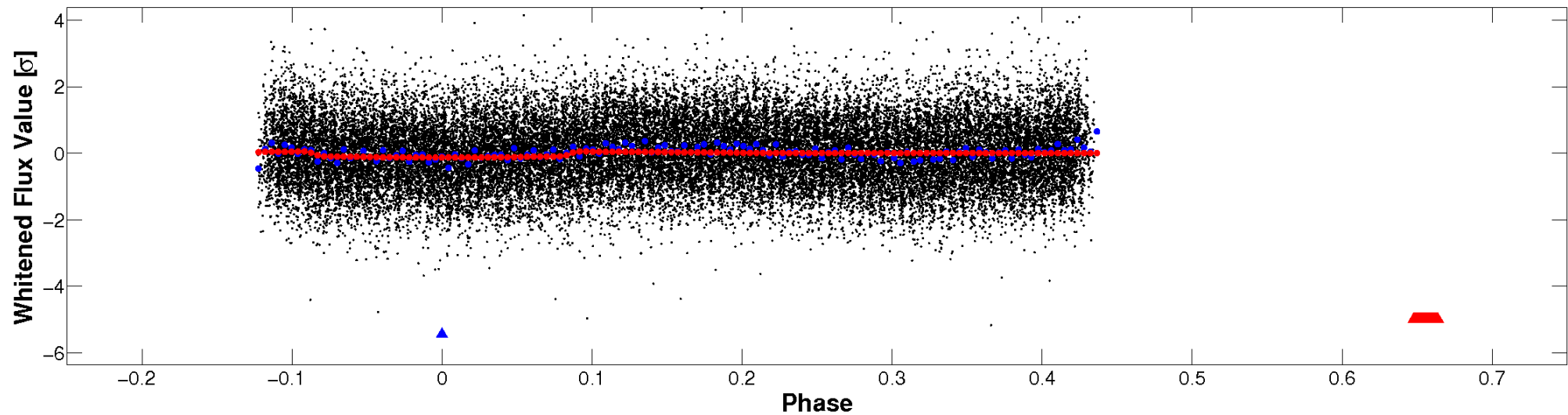


# Non-Whitened Vs. Whitened Light Curve

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

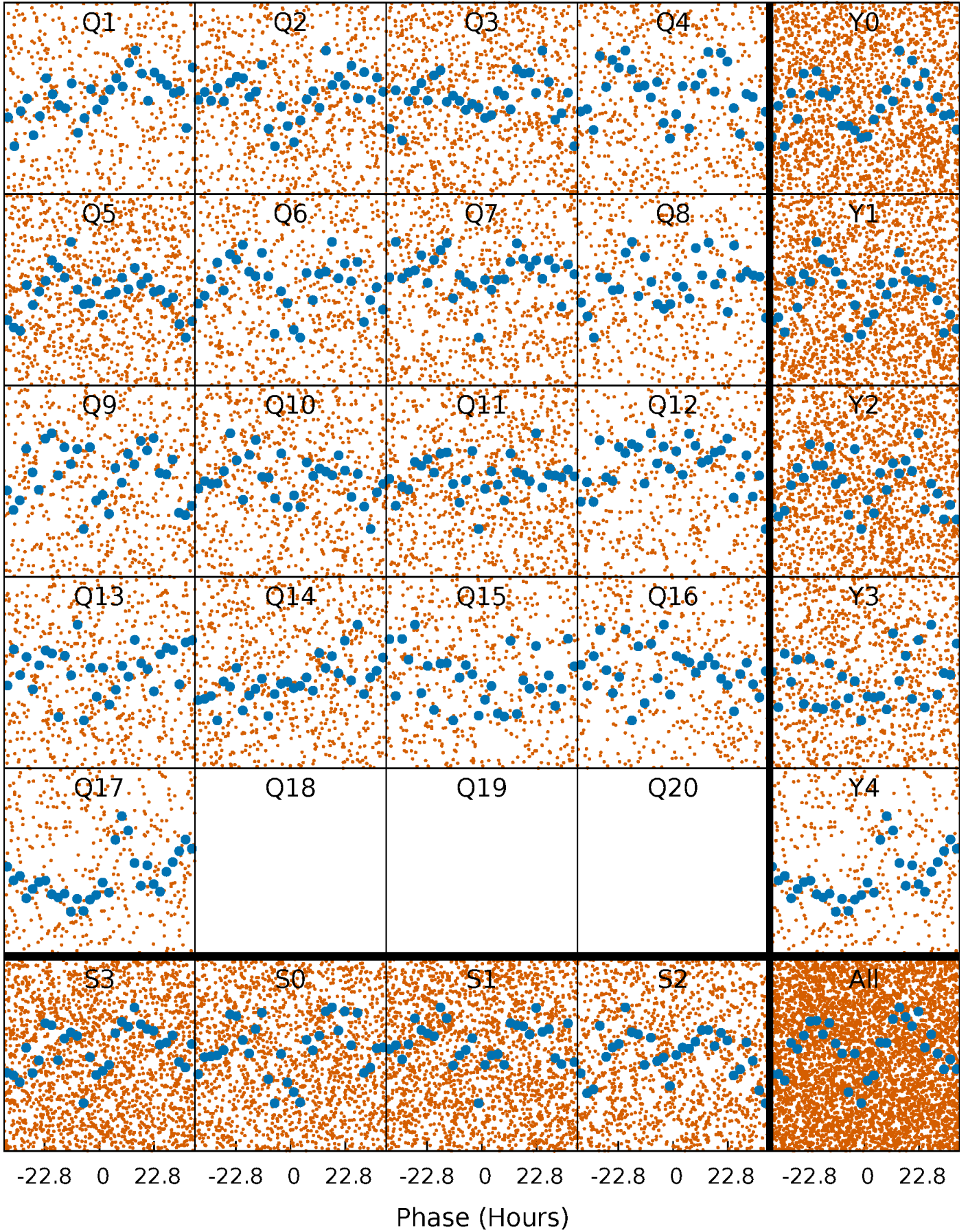


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



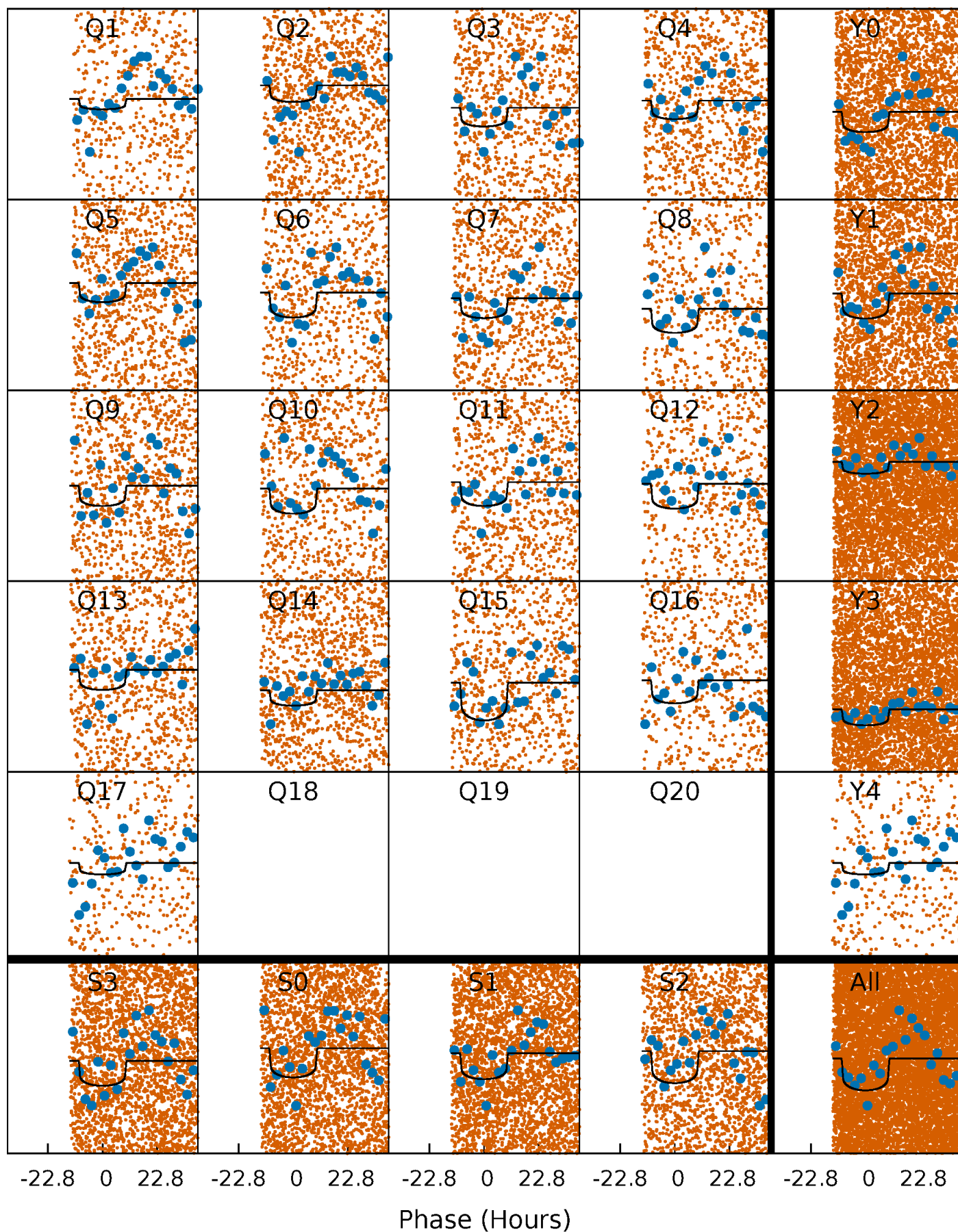
# PDC Quarter-Phased Transit Curves

TCE 008123197-02   P= 4.679937 Days    $T_0=135.358347$  (BKJD)



# DV Quarter-Phased Transit Curves

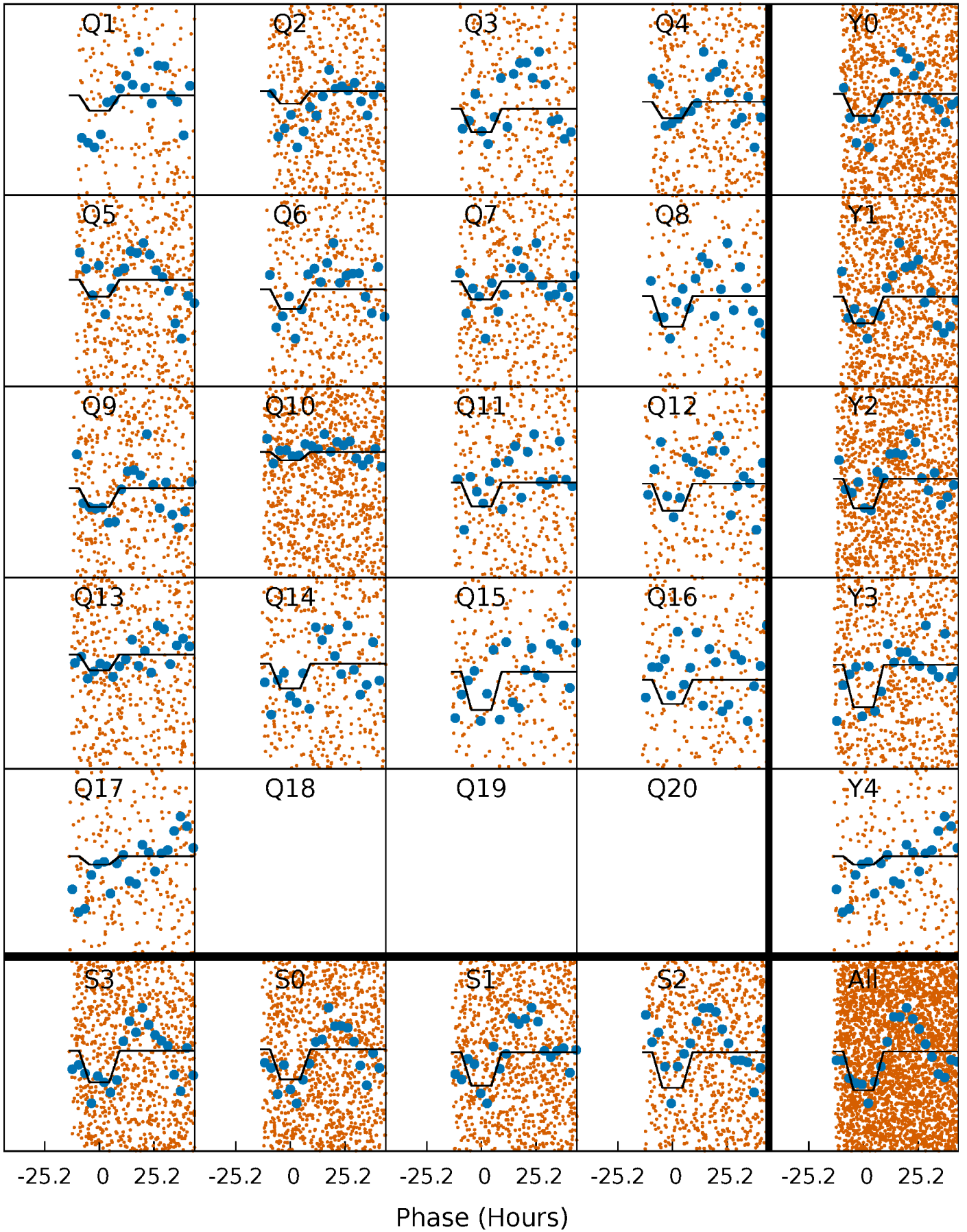
TCE 008123197-02   P= 4.679937 Days    $T_0=135.358347$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

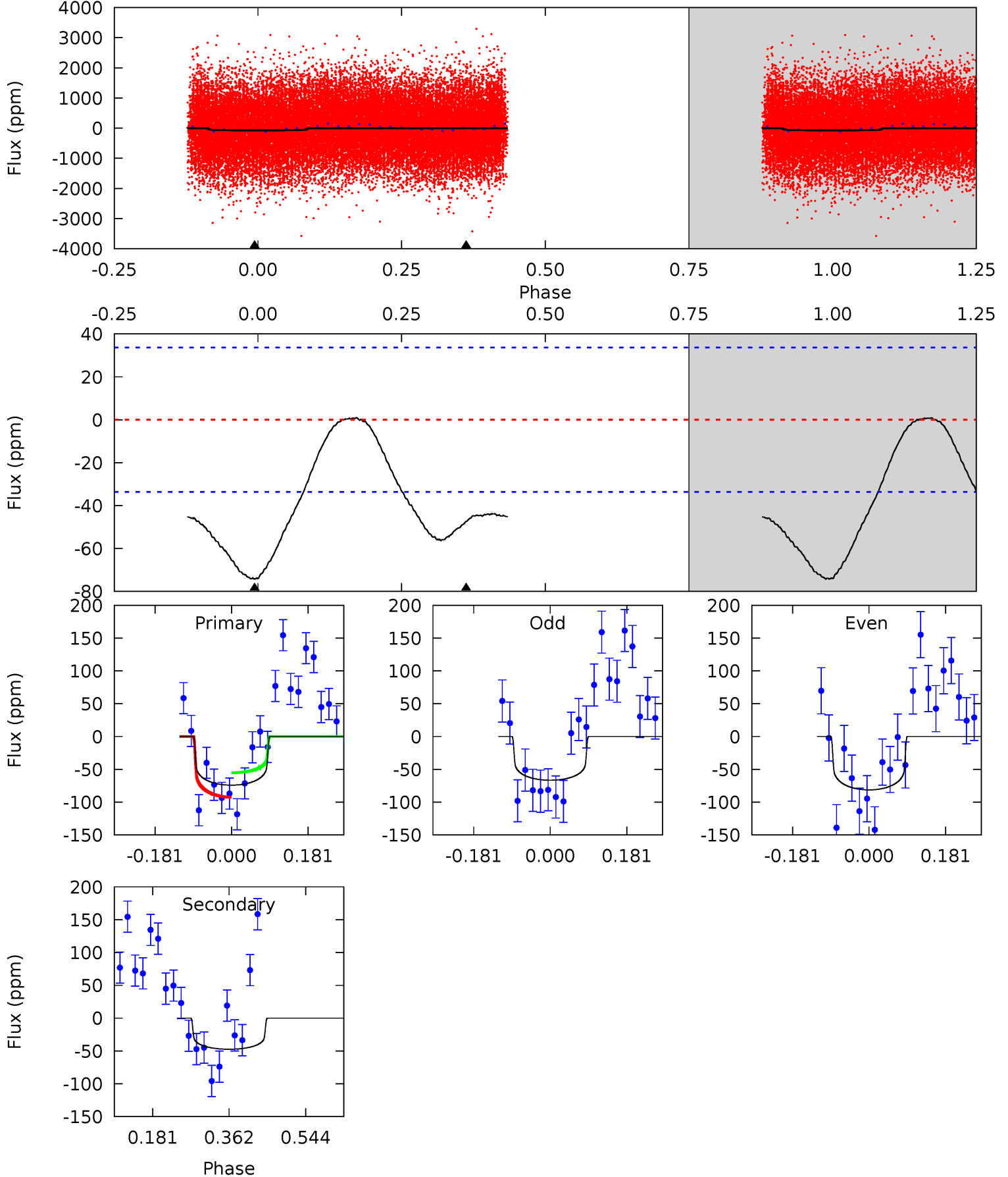
TCE 008123197-02     $P = 4.680280$  Days     $T_0 = 135.257790$  (BKJD)



# DV Model-Shift Uniqueness Test

008123197-02, P = 4.679937 Days, E = 130.678410 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
9.80	6.26	0	0	4.44	1.34	0.35	9.80	9.80	6.26	6.26	0.97	1.05	0.01	2.42

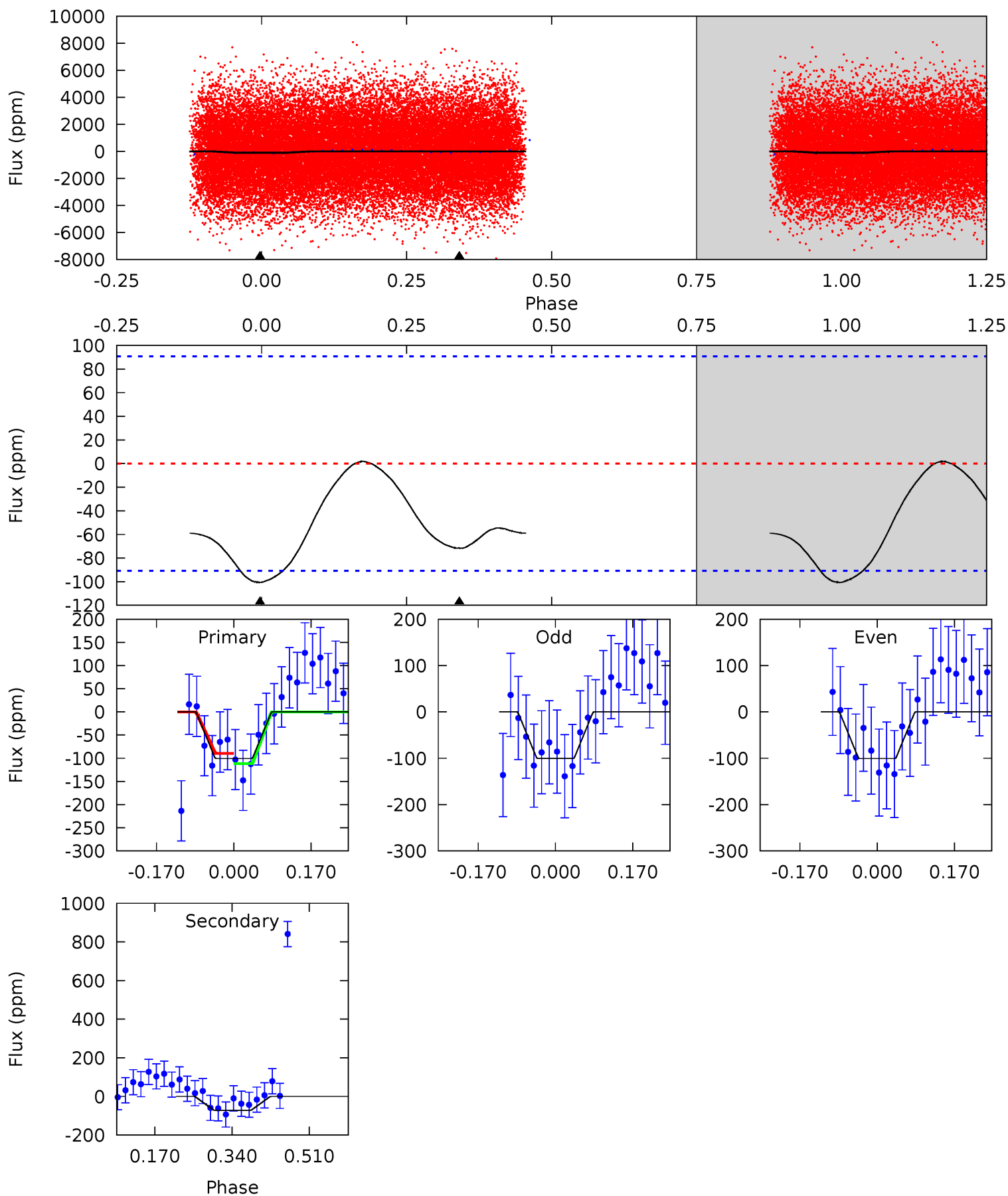




# Alt Model-Shift Uniqueness Test

008123197-02, P = 4.680280 Days, E = 130.577510 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
4.93	3.52	0	0	4.45	1.37	0.13	4.93	4.93	3.52	3.52	0.00	1.73	0.02	0.54



### Stellar Parameters For KIC 008123197

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7176^{+228}_{-279}$	$4.068^{+0.260}_{-0.160}$	$-0.480^{+0.250}_{-0.300}$	$1.774^{+0.456}_{-0.507}$	$1.342^{+0.191}_{-0.233}$	$0.338^{+0.521}_{-0.160}$
	+3%/-4%	+6%/-4%	+52%/-62%	+26%/-29%	+14%/-17%	+154%/-47%
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 008123197-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-47 \pm 8$	$1.90^{+0.53}_{-0.48}$	$2375^{+186}_{-193}$	$5860^{+851}_{-635}$	$26^{+21}_{-11}$
Alt.	$-72 \pm 20$	$1.92^{+0.55}_{-0.51}$	$2382^{+175}_{-217}$	$6469^{+1201}_{-865}$	$37^{+39}_{-16}$

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

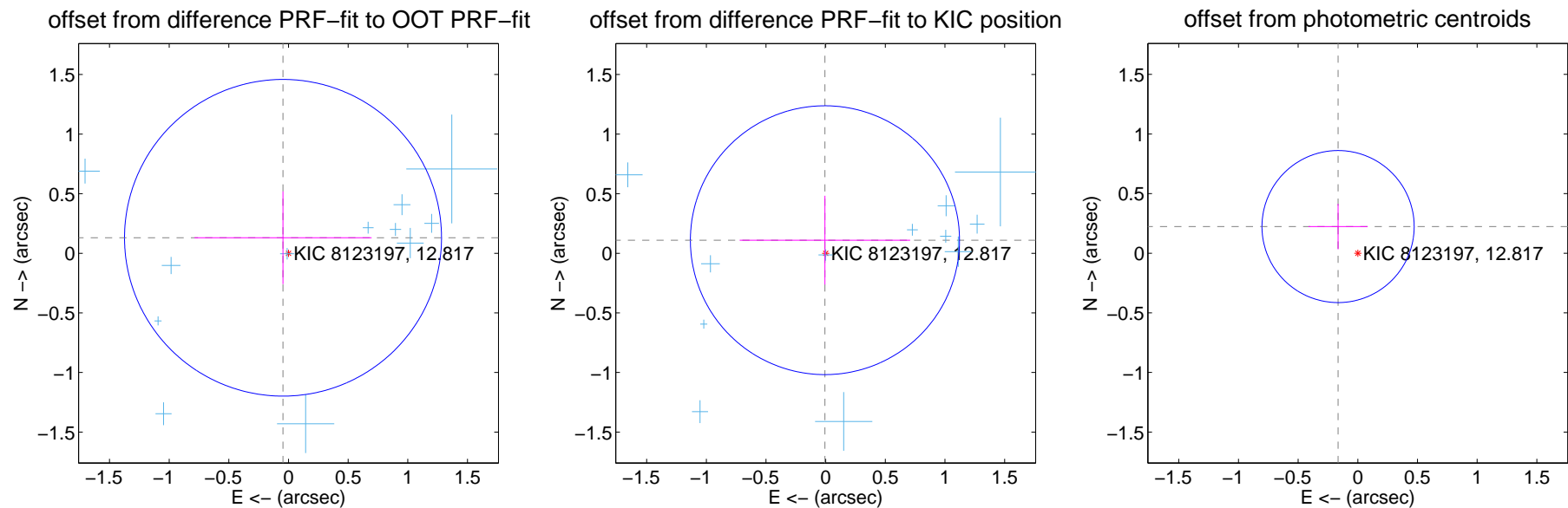
## DV Centroid Data

Supplemental centroid analysis for 008123197-02. Kepler magnitude: 12.82. Transit SNR 12.08

There are 14 quarters with good PRF difference image offsets

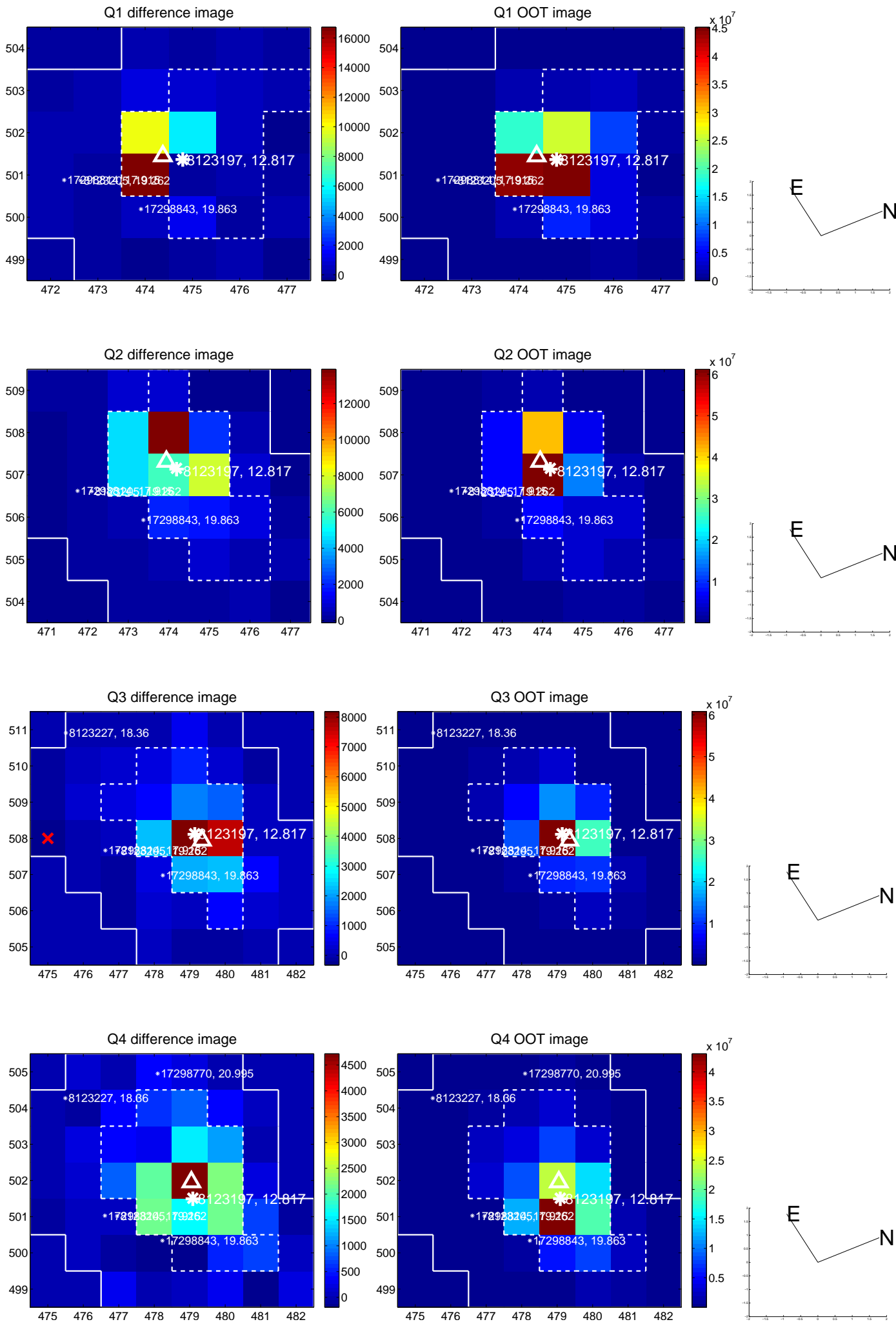
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.138 \pm 0.443$	0.31	$0.046 \pm 0.742$	$0.130 \pm 0.389$
PRF-fit source offset from KIC position	$0.110 \pm 0.376$	0.29	$0.006 \pm 0.715$	$0.110 \pm 0.373$
photometric centroid source offset	$0.28 \pm 0.21$	1.31	$0.17 \pm 0.25$	$0.22 \pm 0.19$

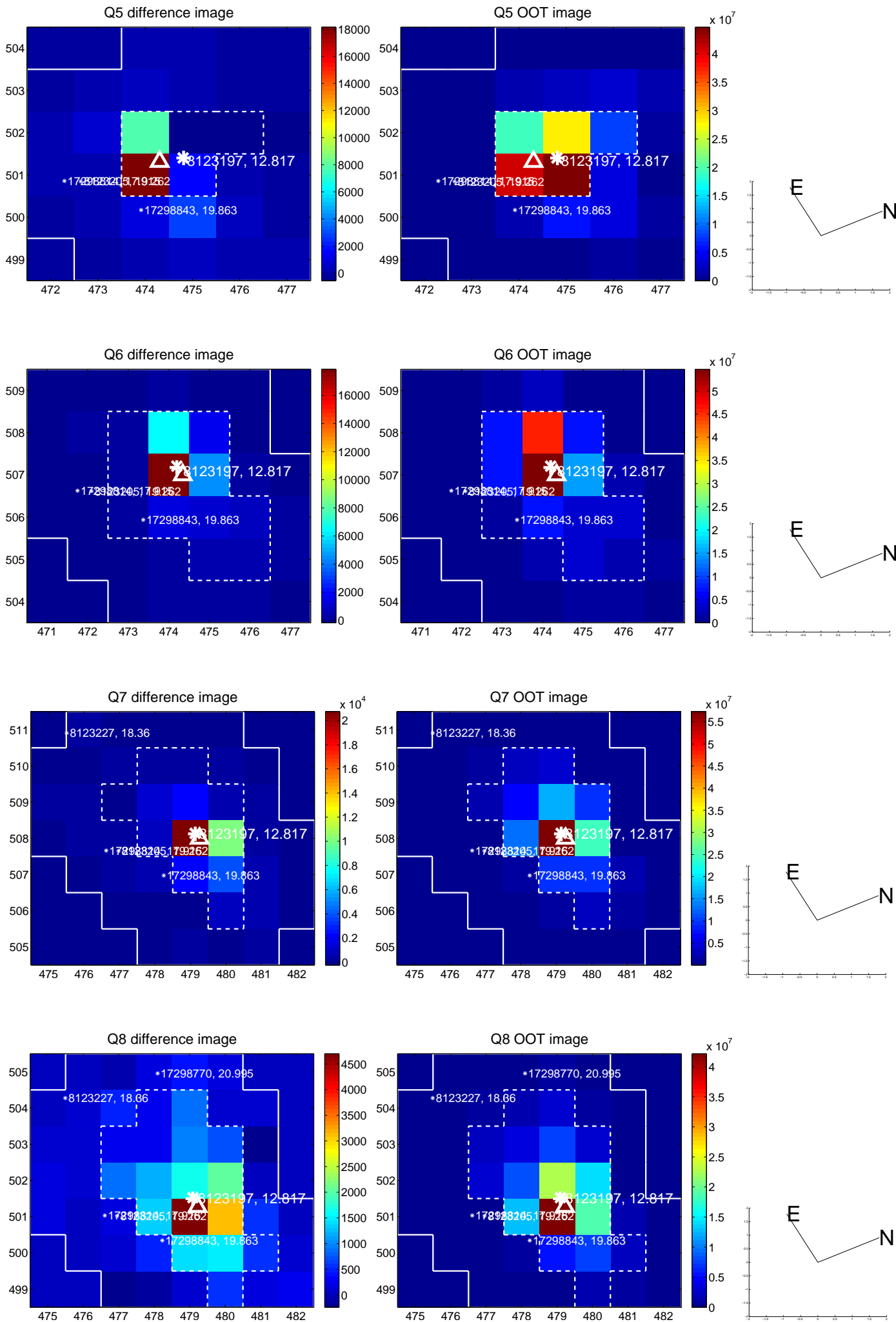


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

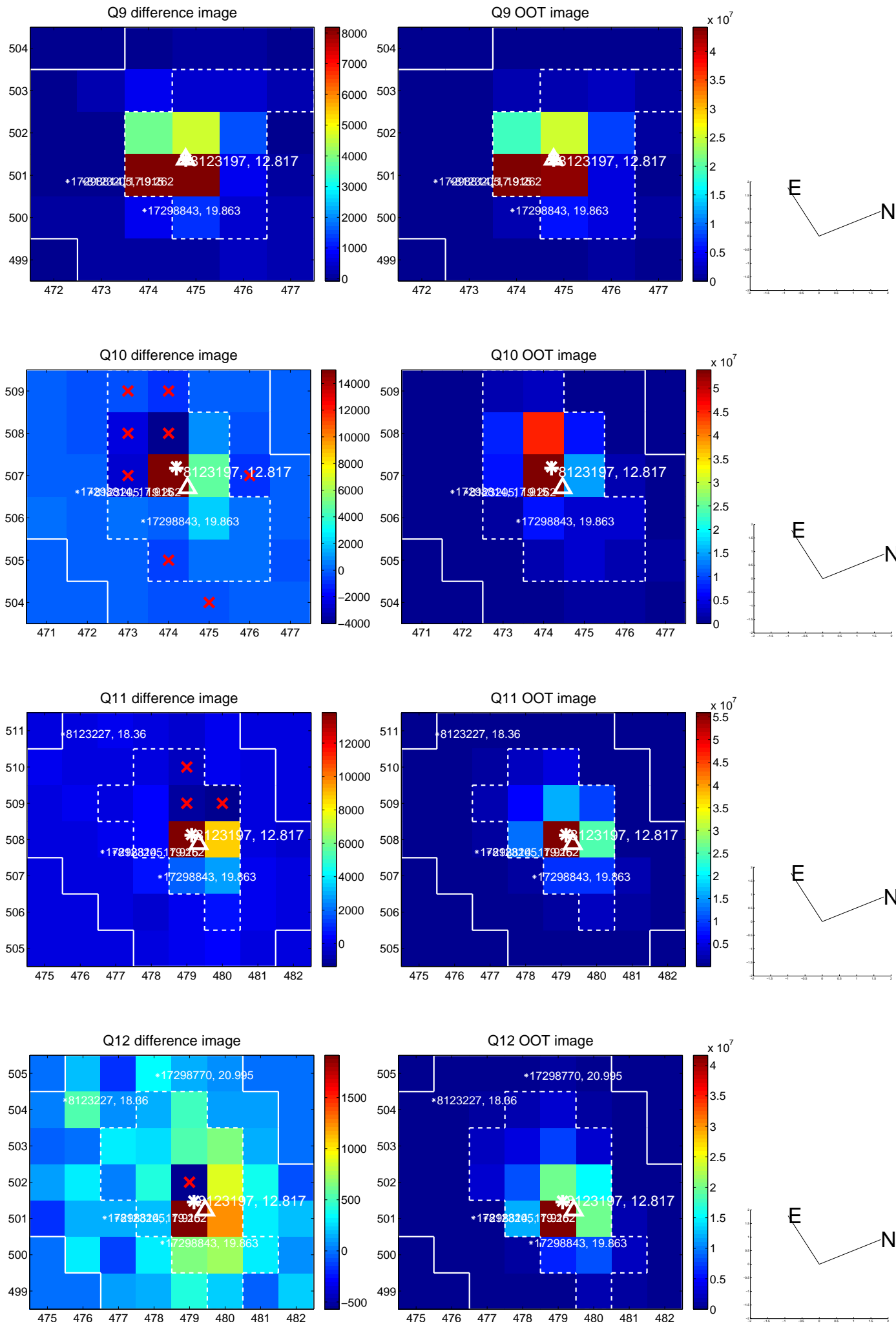
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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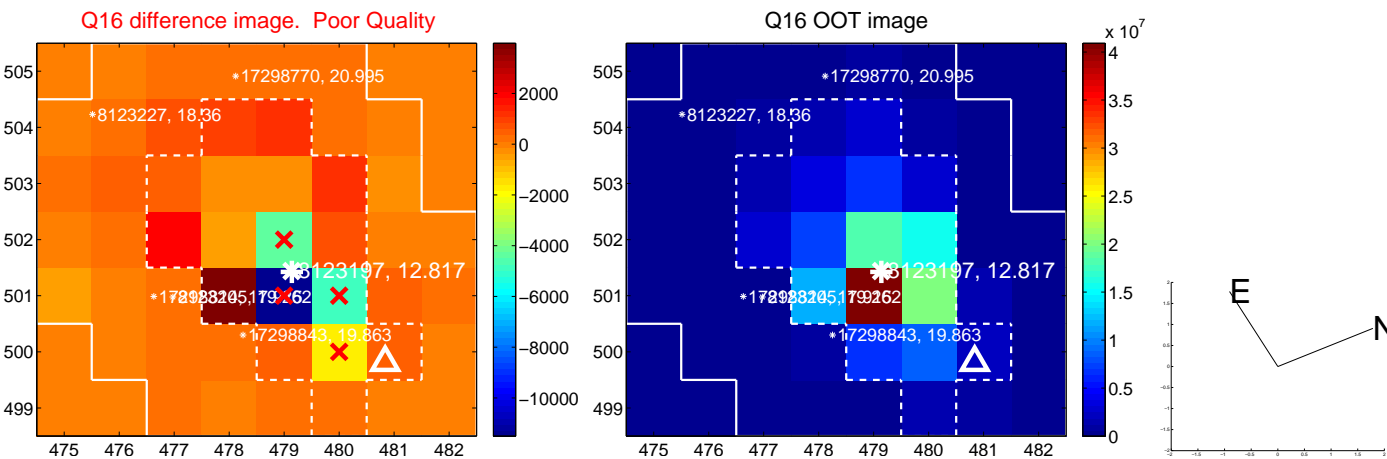
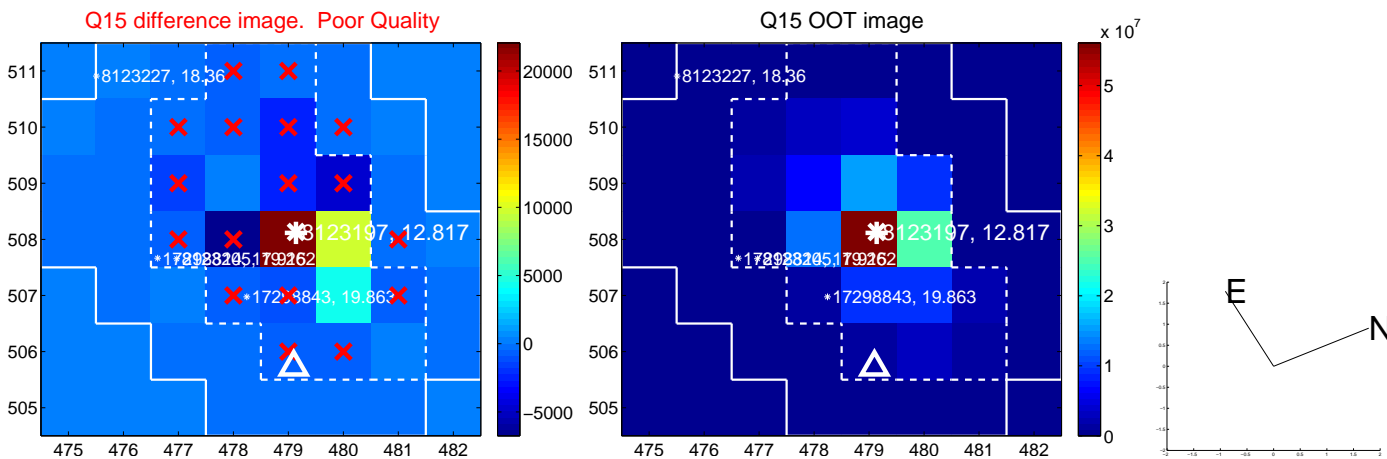
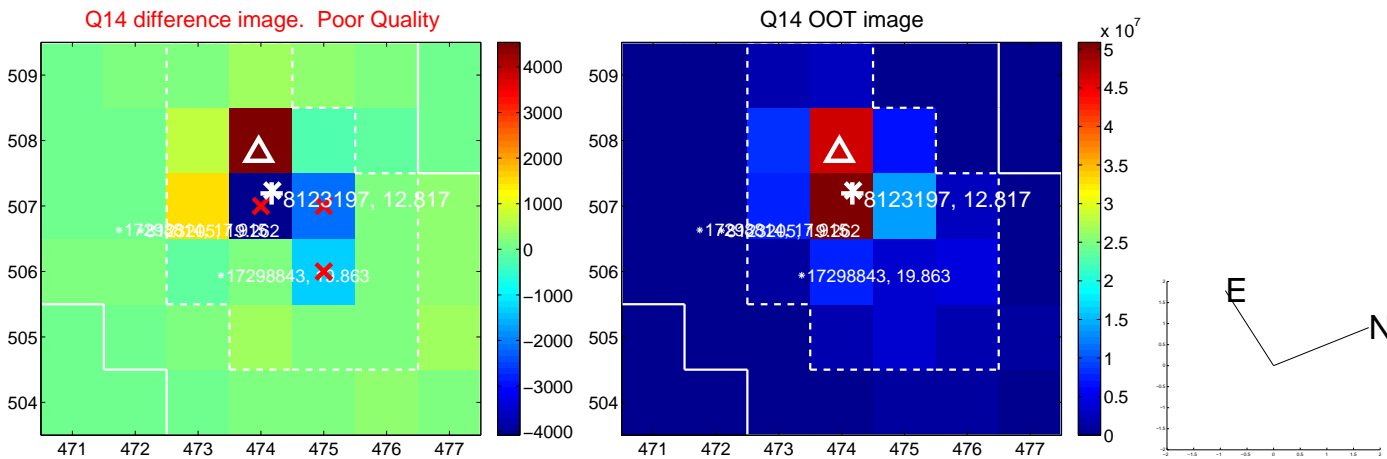
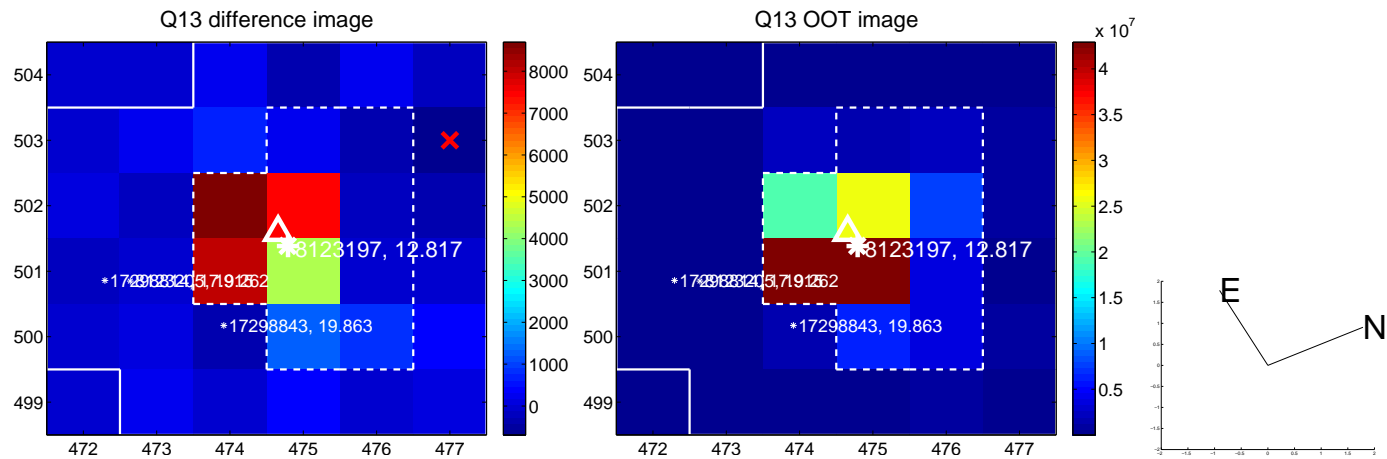


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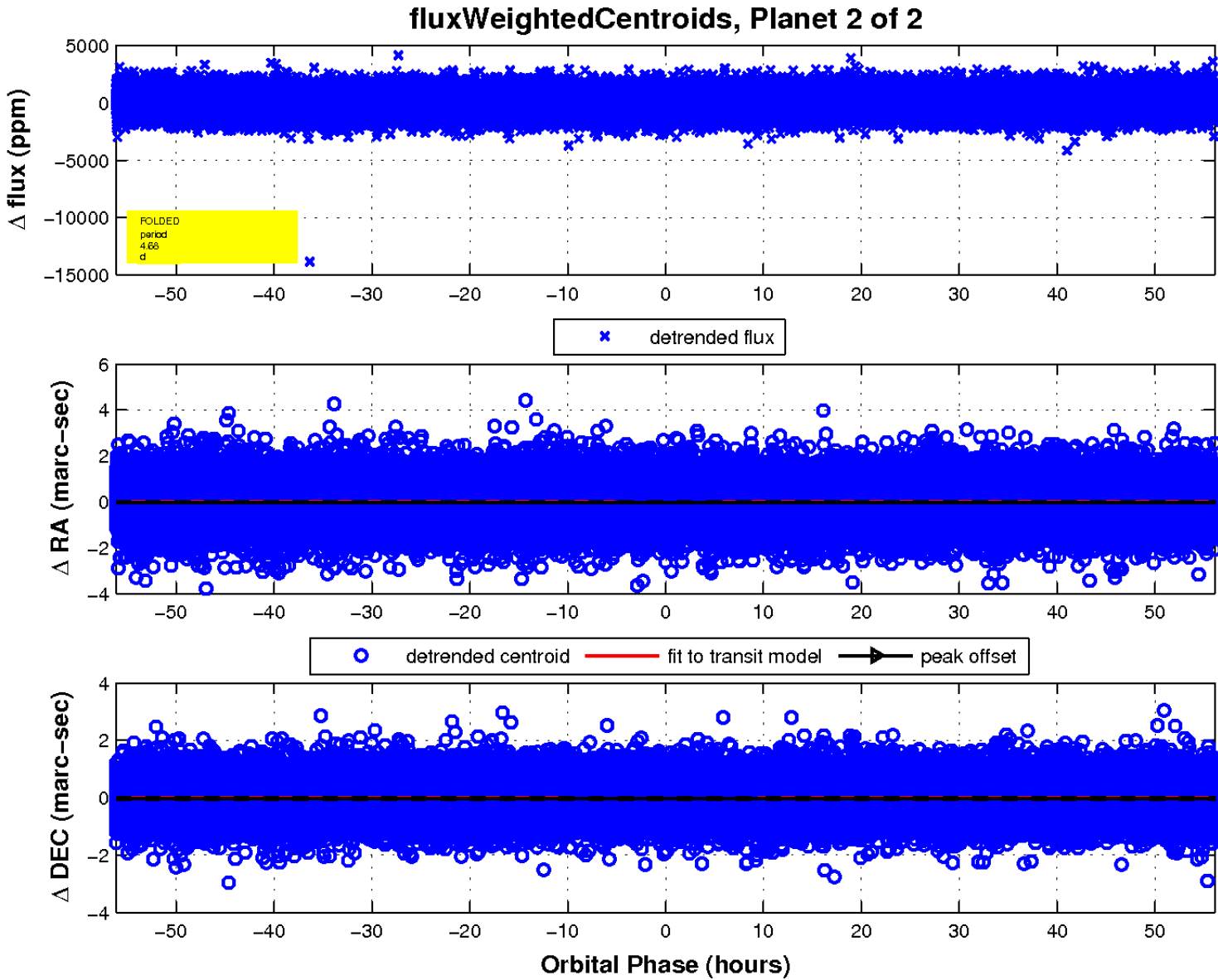
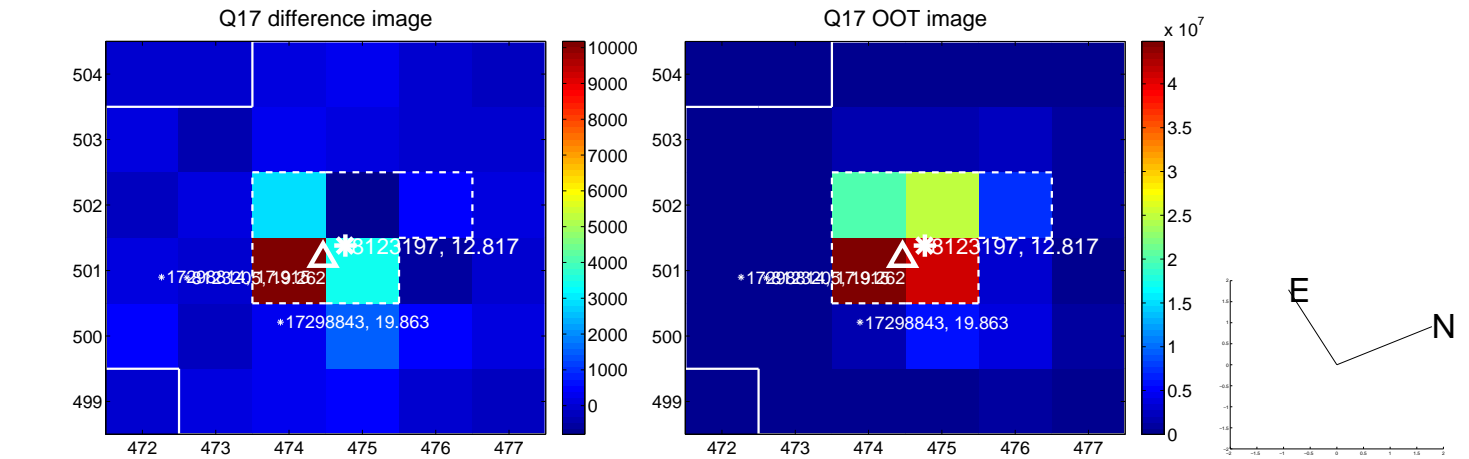




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

