

# KIC 006390914

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006390914-01	OBS	No	0.832471	131.960275	71.9	1.828	9.8	11.0	1.10	6398	1.09	5560.38
006390914-02	OBS	No	0.832483	131.531127	51.0	1.984	7.6	8.2	1.10	6398	0.92	5560.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006390914-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
006390914-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

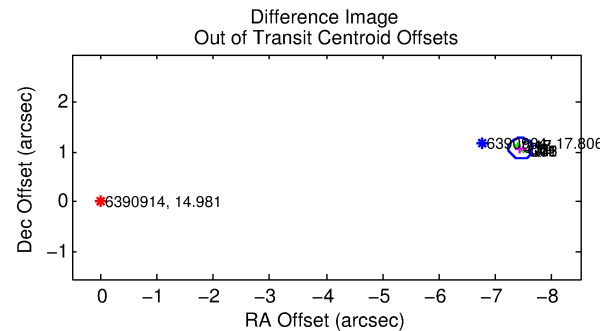
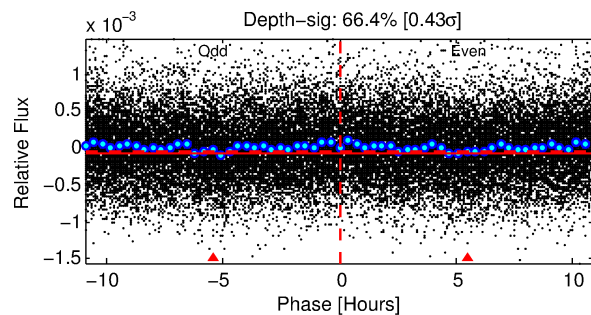
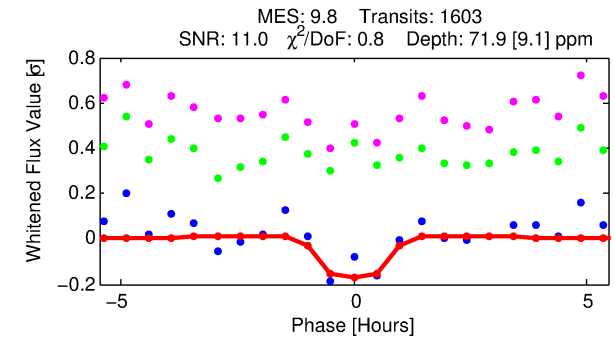
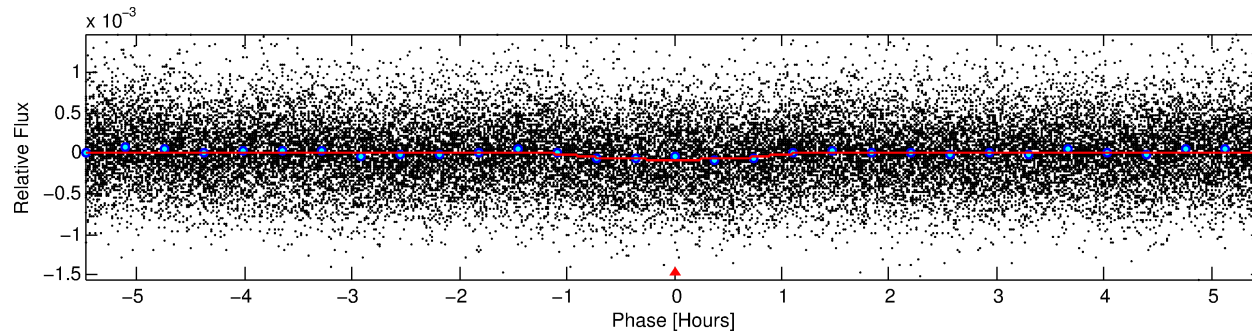
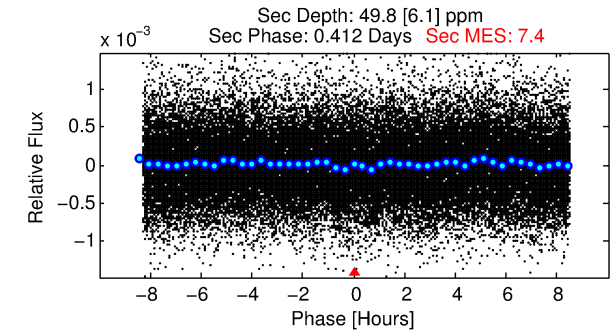
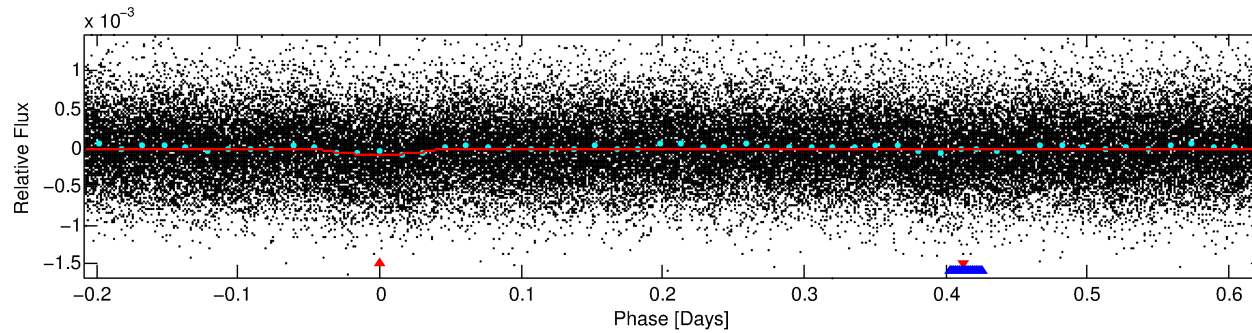
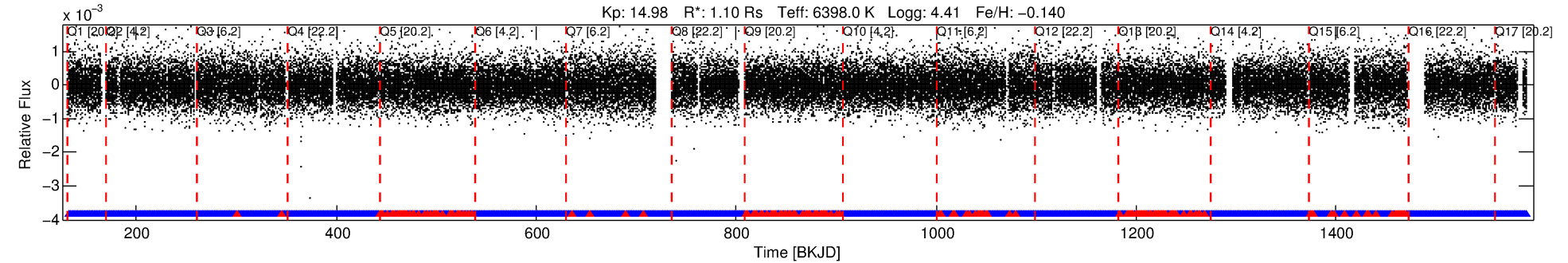
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006390914-01

No Significant Match Found

# DV One-Page Summary

KIC: 6390914 Candidate: 1 of 2 Period: 0.832 d



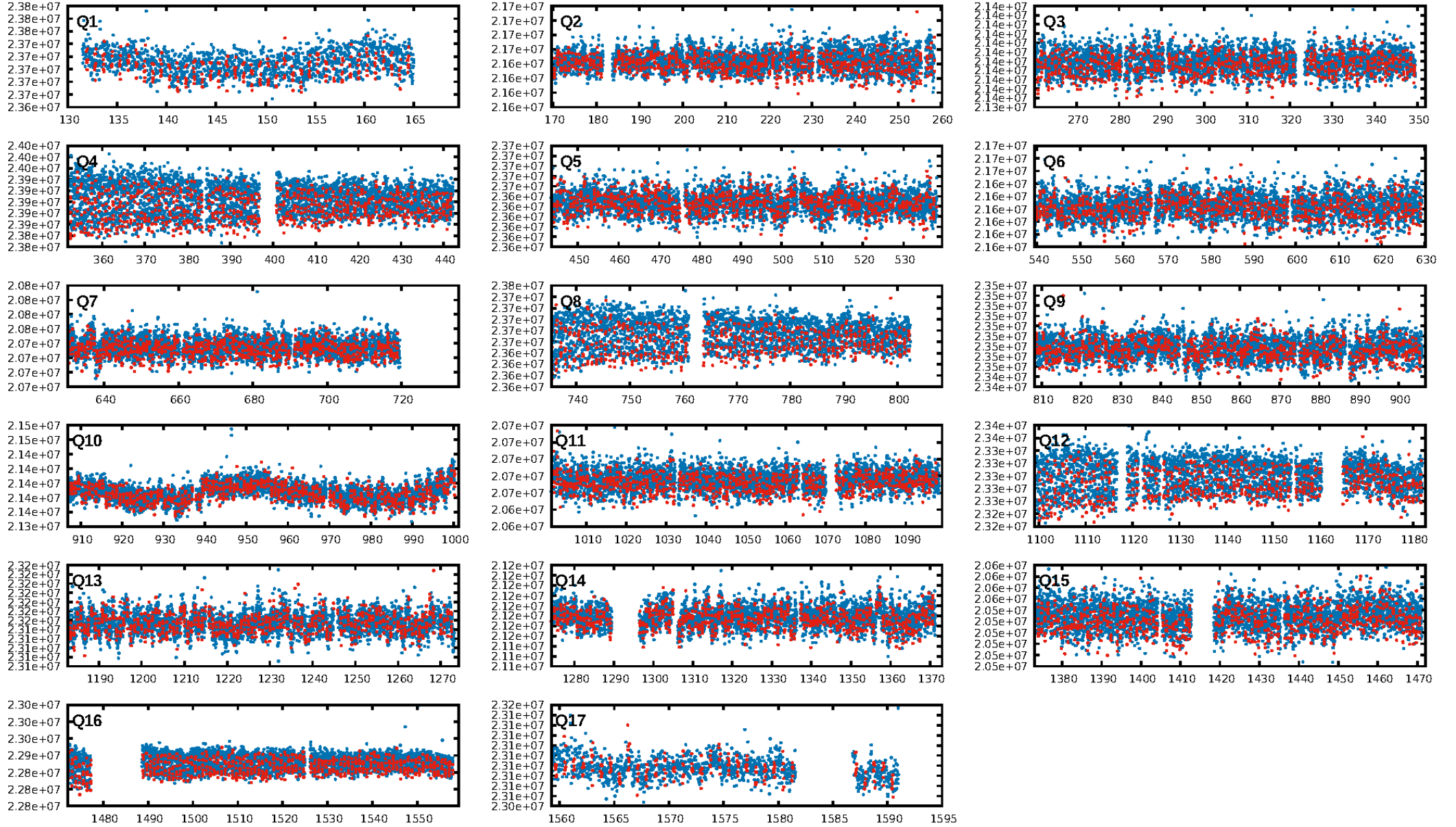
## DV Fit Results:

Period = 0.83247 [0.00001] d  
Epoch = 131.9603 [0.0023] BKJD  
Rp/R\* = 0.0091 [0.0045]  
a/R\* = 1.88 [3.71]  
b = 0.89 [0.63]  
Seff = 5560.38 [2344.37]  
Teq = 2202 [232] K  
Rp = 1.09 [0.65] Re  
a = 0.0181 [0.0050] AU  
Ag = 7.55 [8.07] [0.81σ]  
Teffp = 5644 [1419] K [2.39σ]

## DV Diagnostic Results:

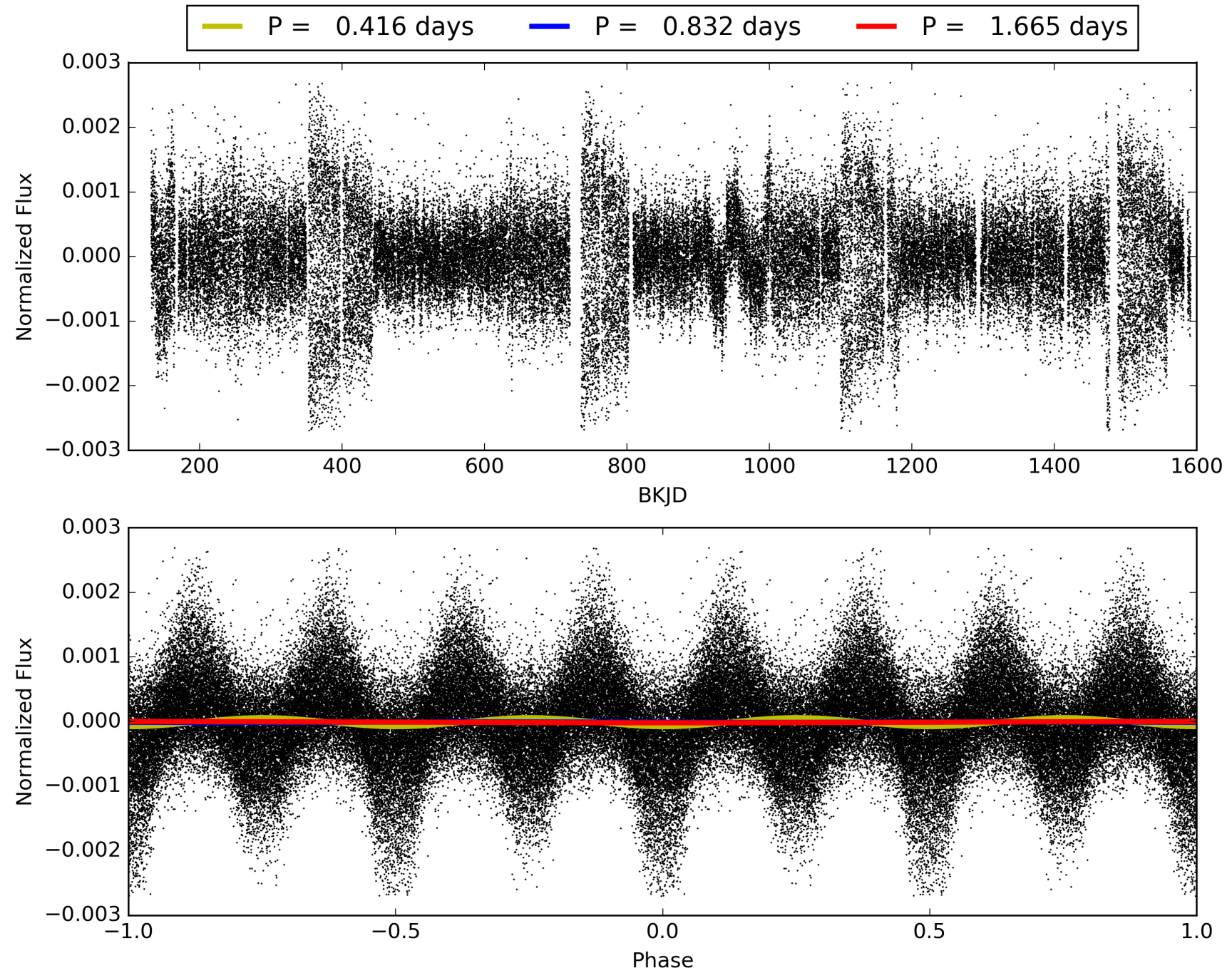
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.37e-25  
RollingBand-fgt: 0.89 [1356/1531]  
GhostDiagnostic-chr: -2.076  
Centroid-sig: 0.0%  
Centroid-so: 4.571 arcsec [4.12σ]  
OotOffset-rm: 7.516 arcsec [108.82σ]  
KicOffset-rm: 7.447 arcsec [106.56σ]  
OotOffset-st: 0/4/4/5 [13]  
KicOffset-st: 0/4/4/5 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006390914-01, PDC Light Curves



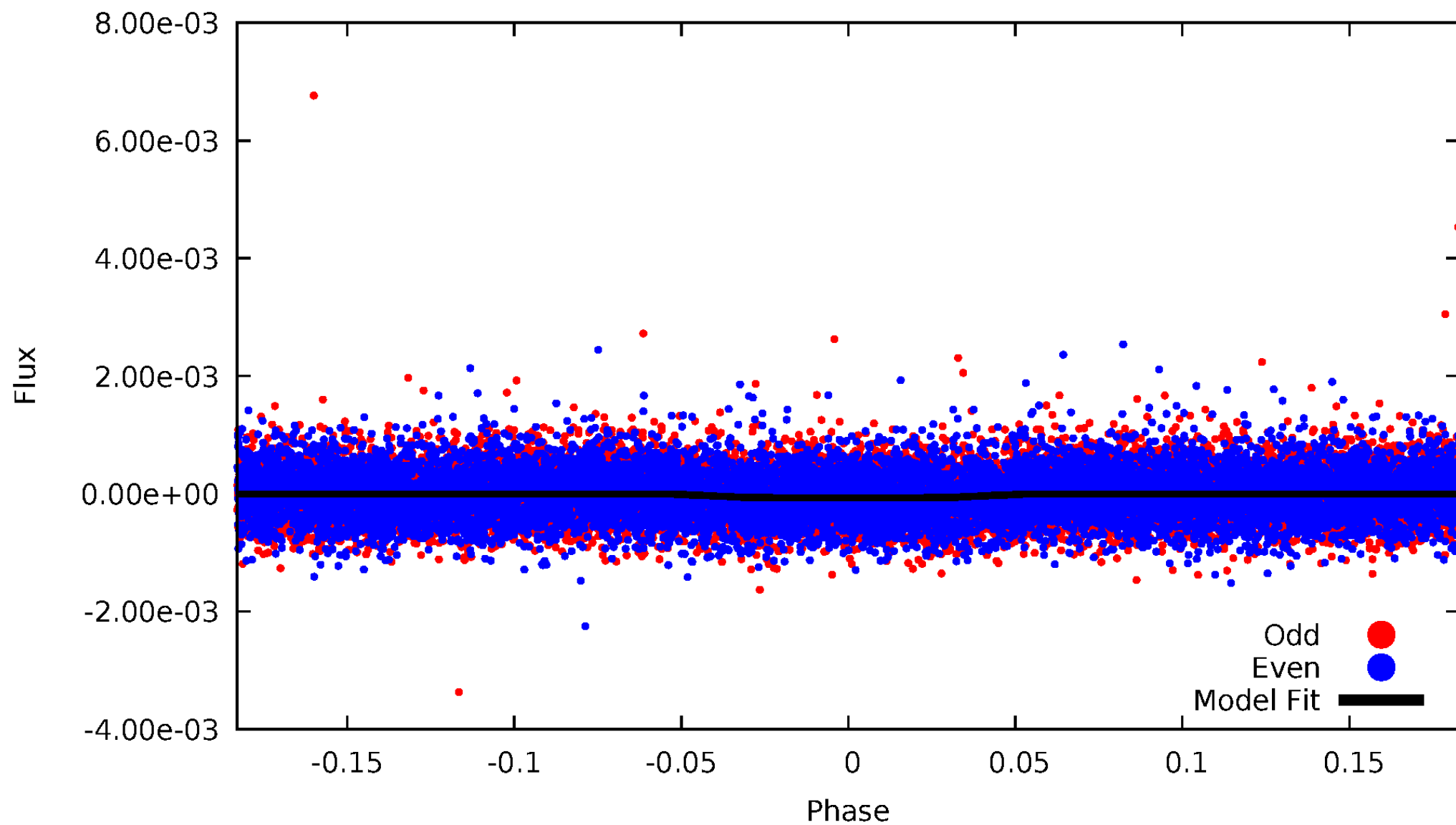


TCE 006390914-01



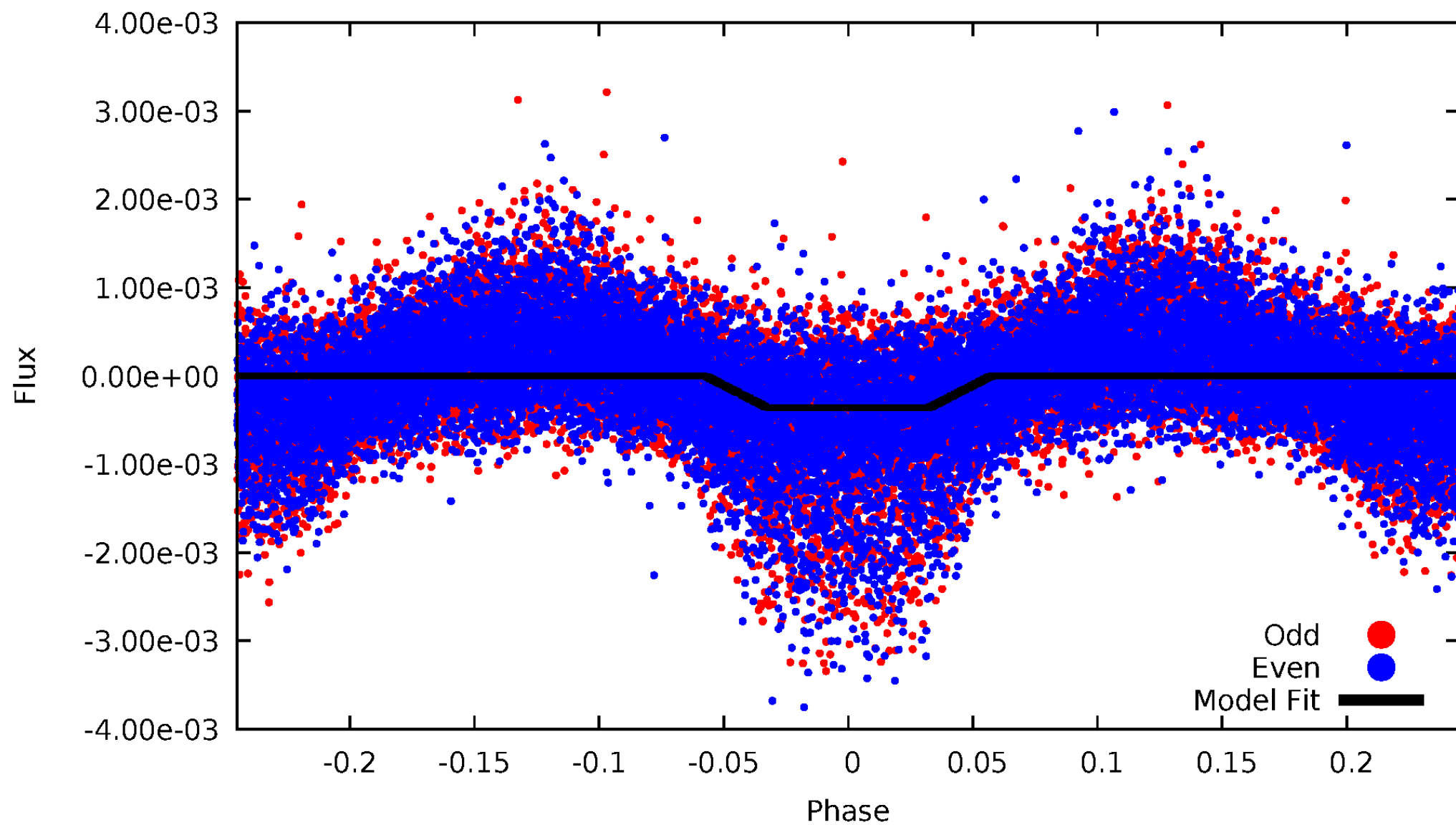
# DV Odd/Even

TCE 006390914-01



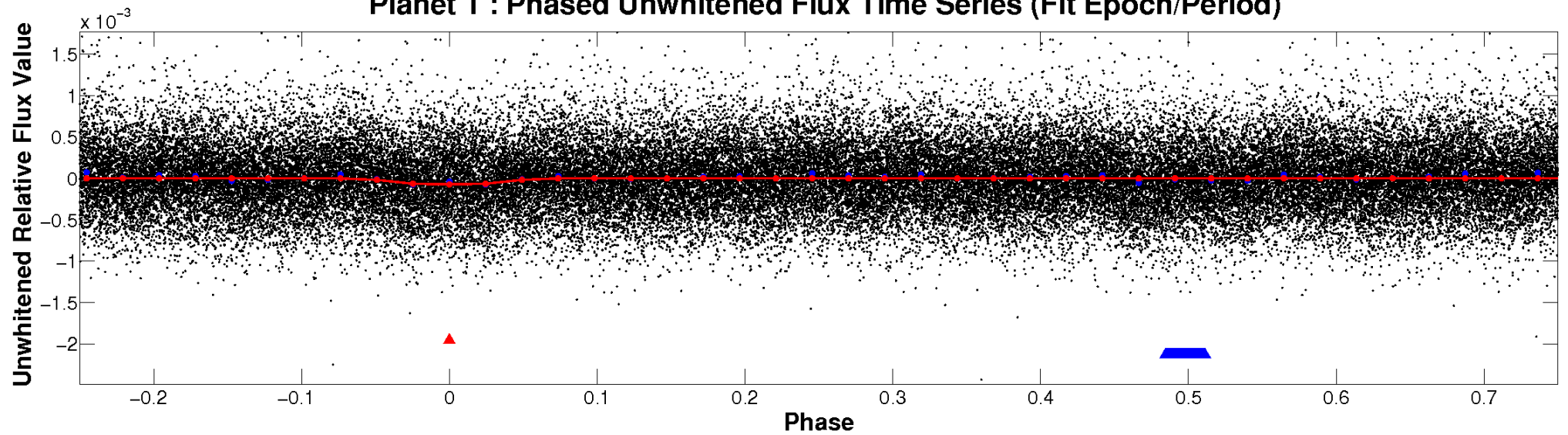
# ALT Odd/Even

TCE 006390914-01

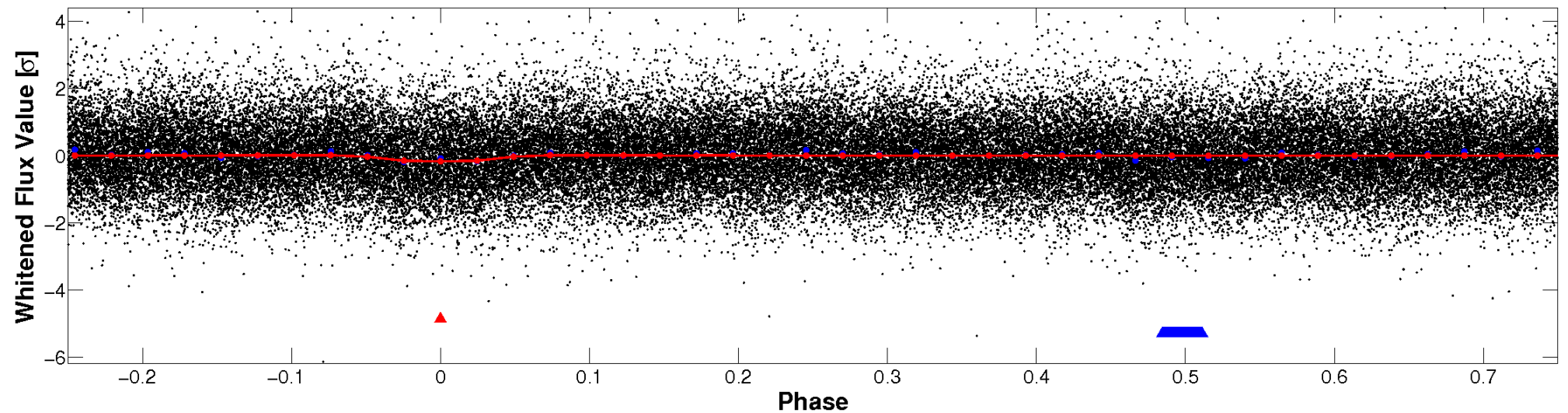


# Non-Whitened Vs. Whitened Light Curve

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



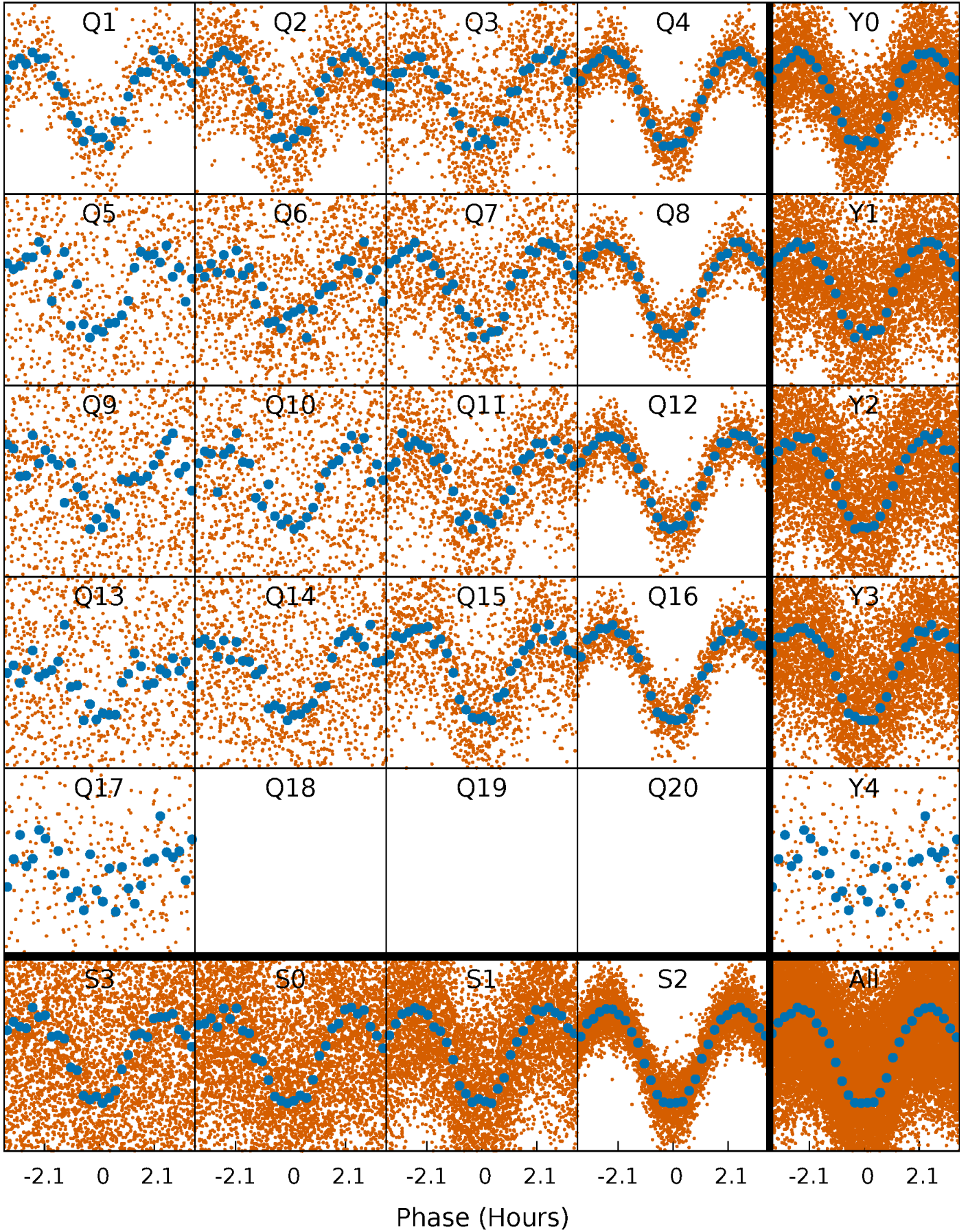
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

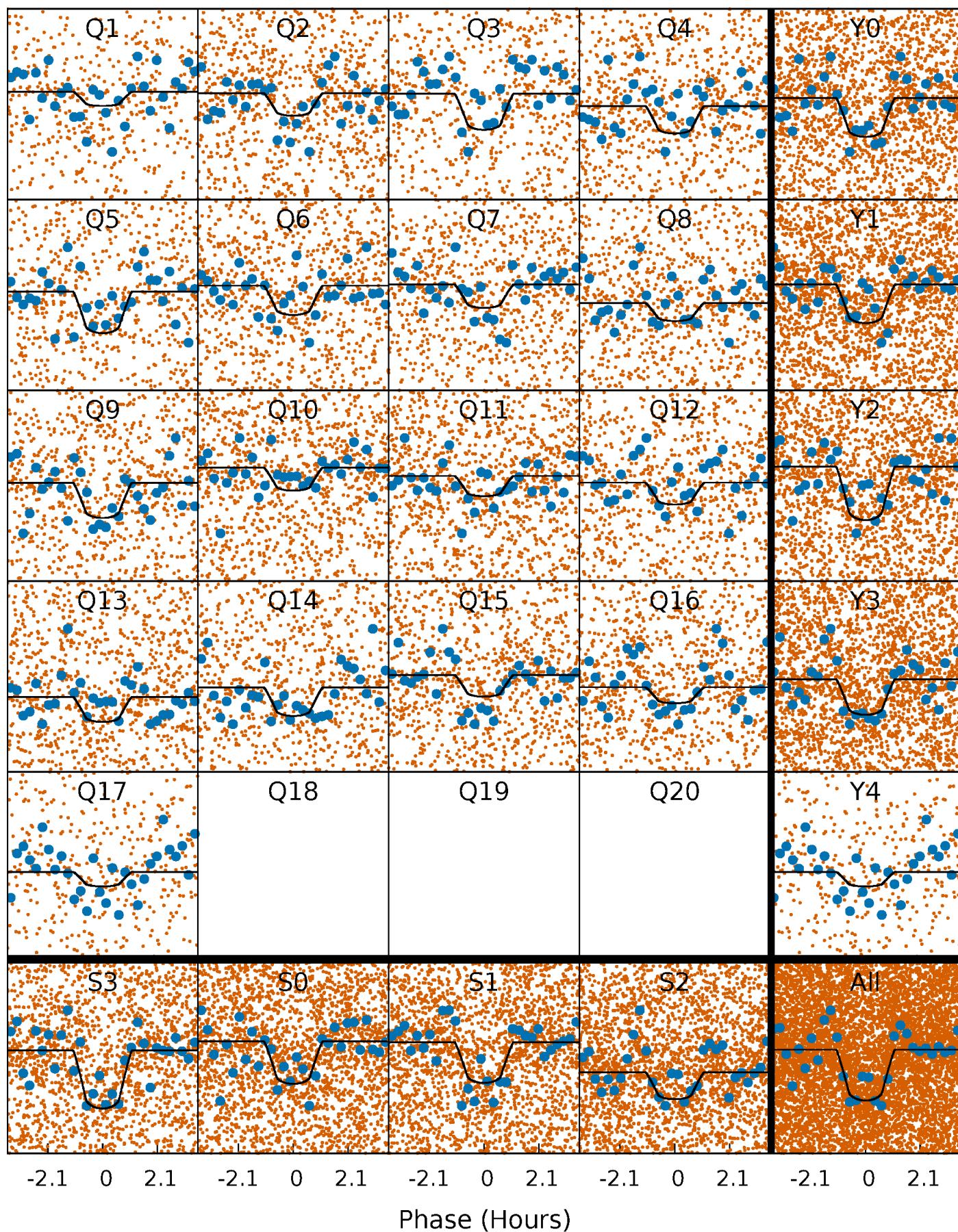
TCE 006390914-01   P= 0.832471 Days    $T_0=131.960275$  (BKJD)





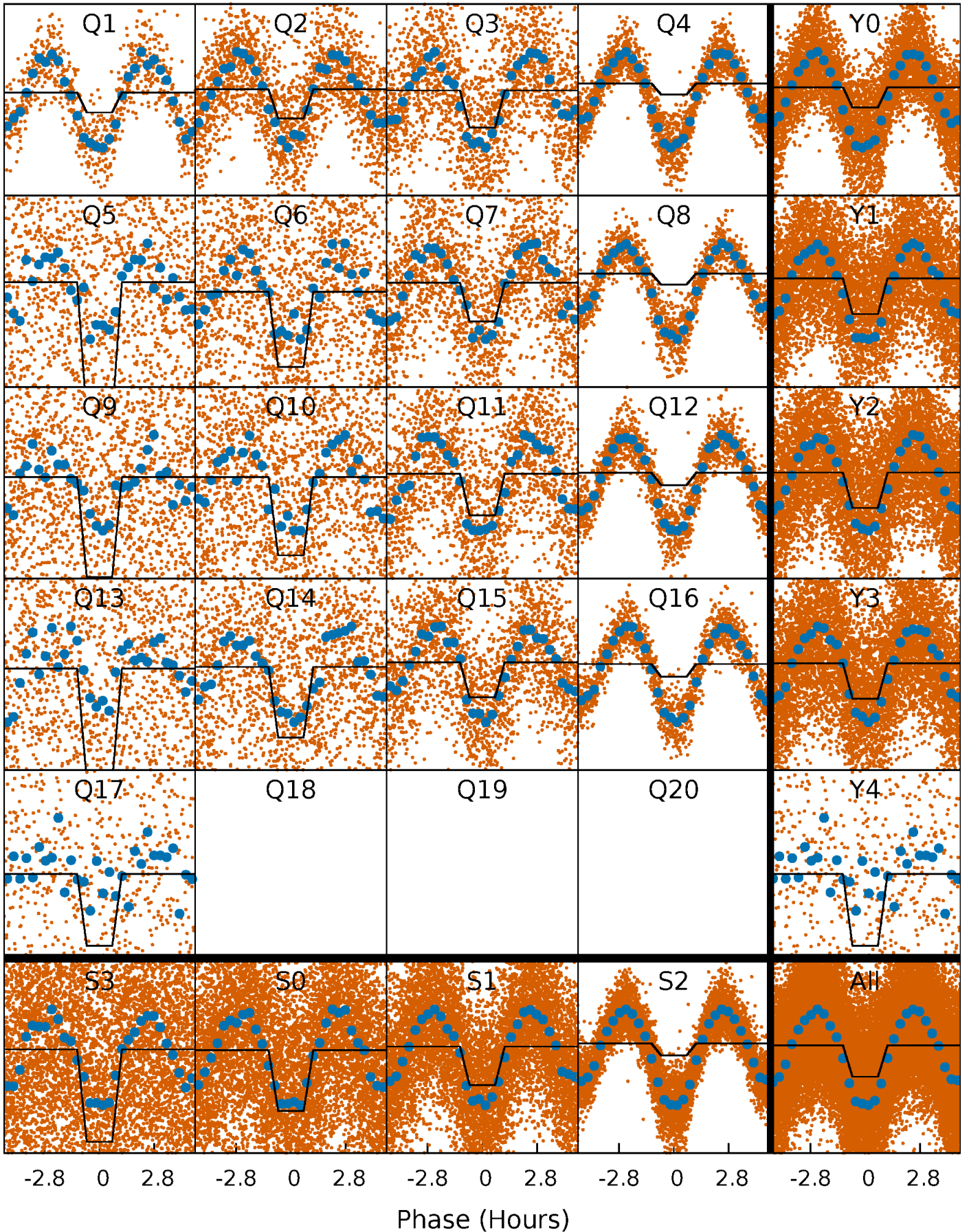
# DV Quarter-Phased Transit Curves

TCE 006390914-01 P= 0.832471 Days  $T_0=131.960275$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

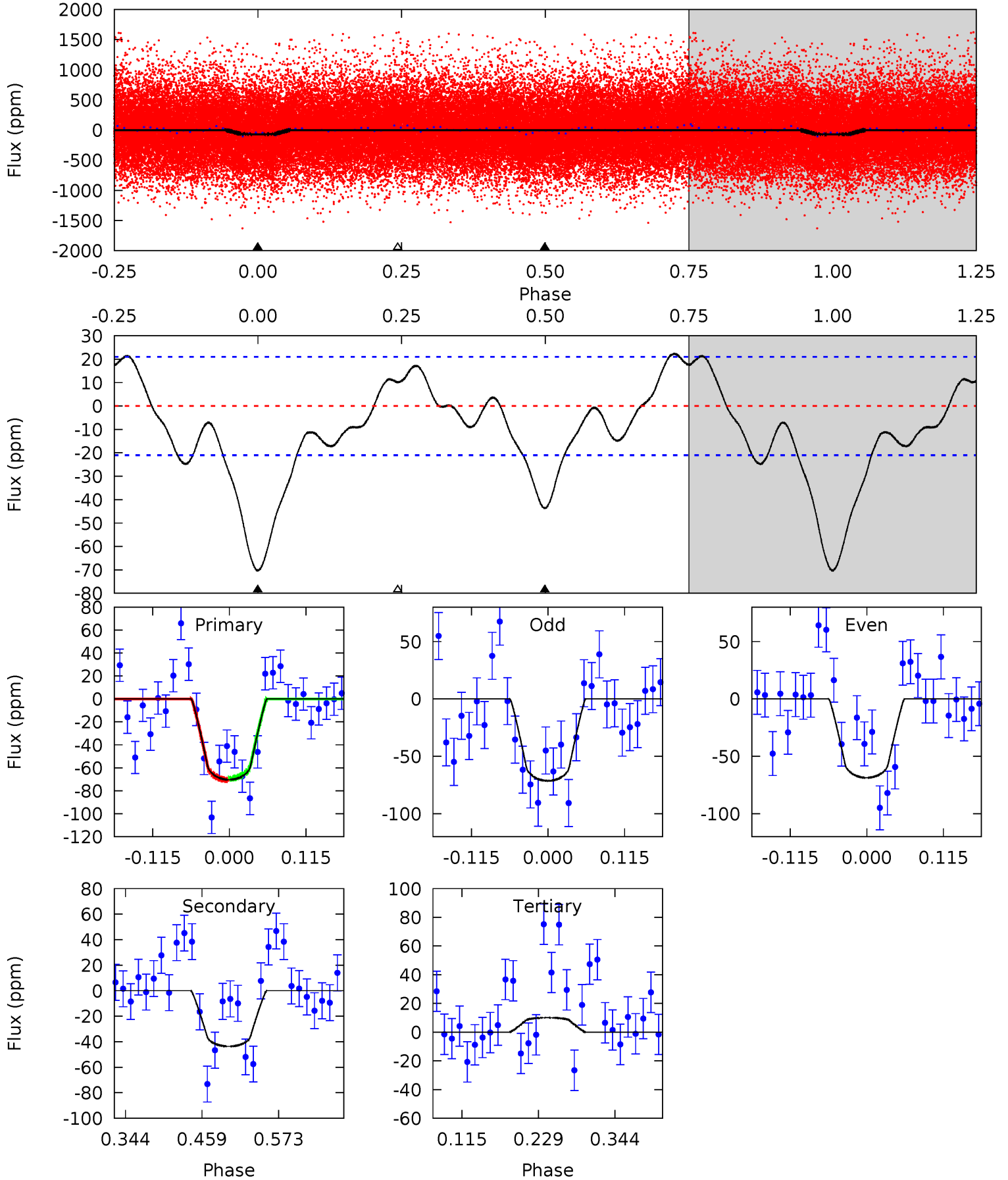
TCE 006390914-01 P= 0.832468 Days  $T_0=131.961689$  (BKJD)



# DV Model-Shift Uniqueness Test

006390914-01, P = 0.832471 Days, E = 131.127804 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
15.2	9.43	-2.18	0	4.54	1.58	2.80	17.4	15.2	11.6	9.43	0.29	1.14	0.24	0.15

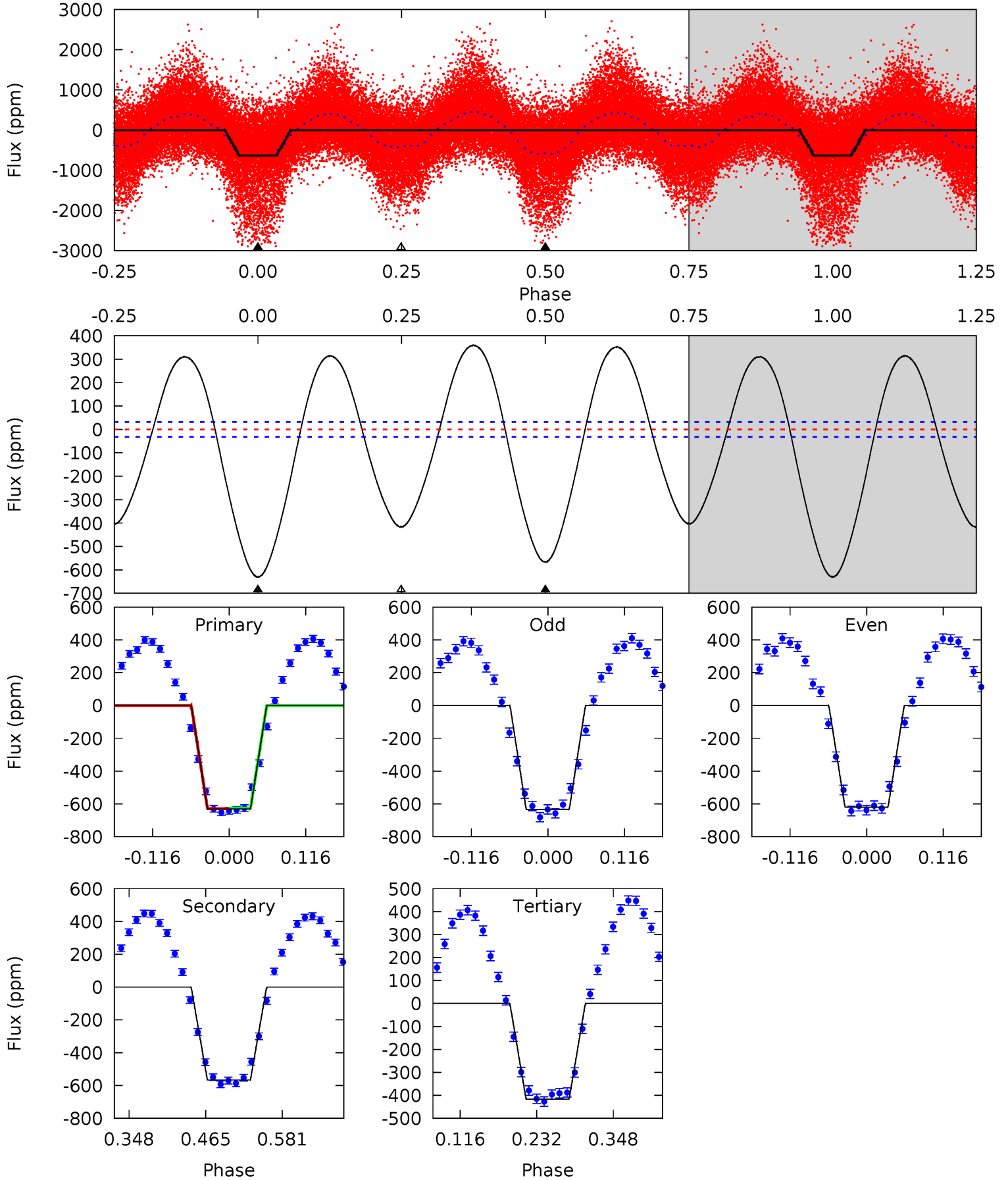




# Alt Model-Shift Uniqueness Test

006390914-01, P = 0.832468 Days, E = 131.129221 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
90.1	81.0	59.6	0	4.53	1.57	38.4	30.6	90.1	21.4	81.0	1.02	1.50	0.36	0.32





### Stellar Parameters For KIC 006390914

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6398^{+179}_{-246}$	$4.411^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.101^{+0.370}_{-0.123}$	$1.141^{+0.169}_{-0.152}$	$1.204^{+0.350}_{-0.639}$
	+3%/-4%	+2%/-5%	+179%/-214%	+34%/-11%	+15%/-13%	+29%/-53%
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 006390914-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-44 \pm 5$	$1.15^{+0.55}_{-0.57}$	$3121^{+223}_{-177}$	$5389^{+2229}_{-882}$	$5.883^{+16.462}_{-3.271}$
Alt.	$-567 \pm 7$	$2.36^{+0.70}_{-0.56}$	$3122^{+232}_{-167}$	$7227^{+1192}_{-894}$	$18^{+13}_{-7}$

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

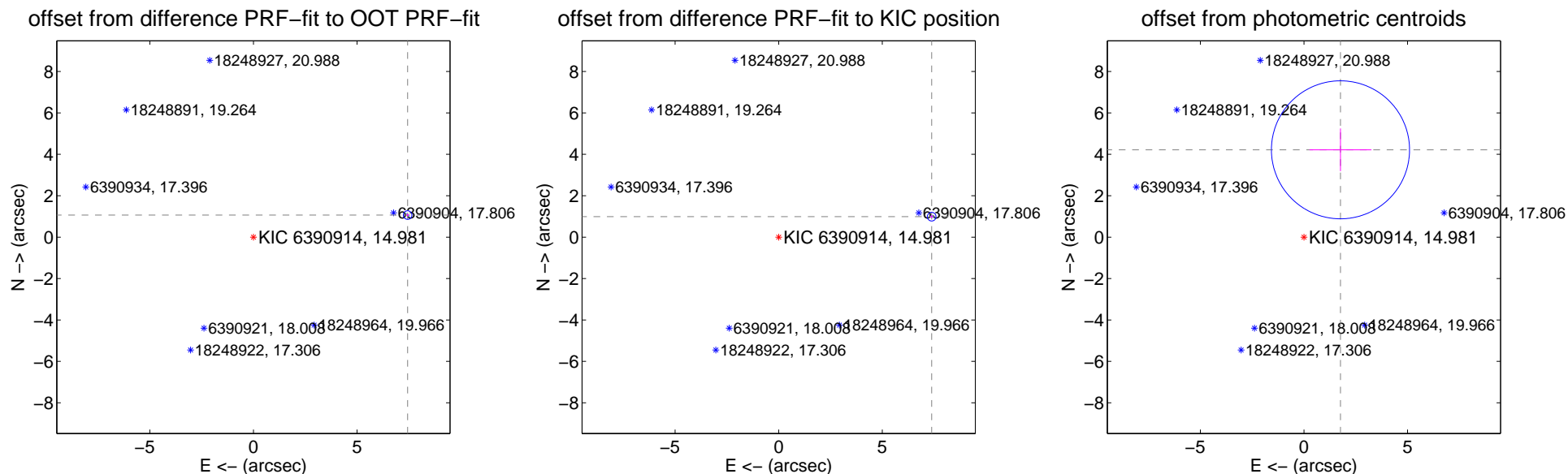
## DV Centroid Data

Supplemental centroid analysis for 006390914-01. Kepler magnitude: 14.98. Transit SNR 10.96

There are 13 quarters with good PRF difference image offsets

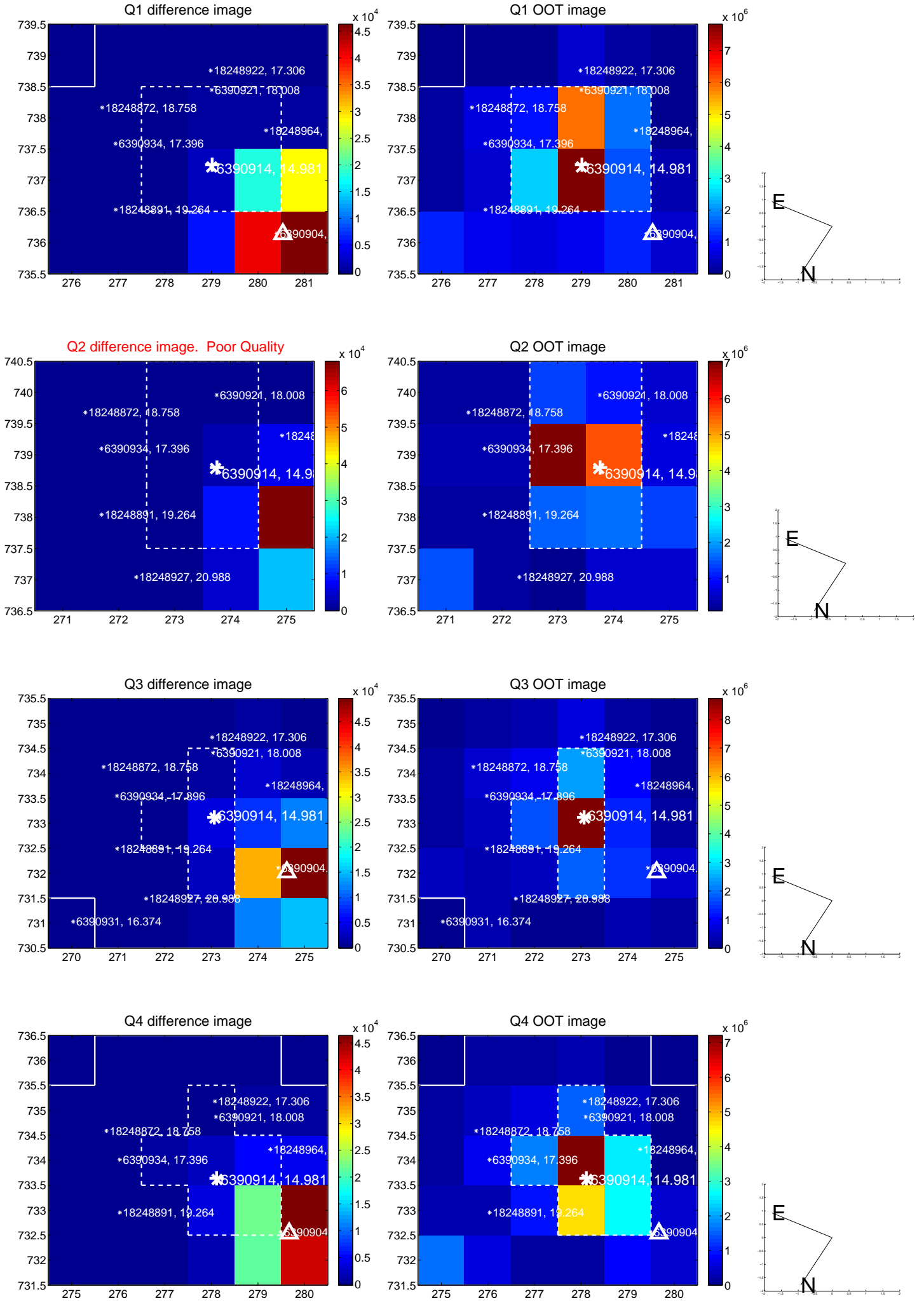
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.516 \pm 0.069$	108.82	$-7.440 \pm 0.069$	$1.066 \pm 0.068$
PRF-fit source offset from KIC position	$7.447 \pm 0.070$	106.56	$-7.381 \pm 0.070$	$0.989 \pm 0.067$
photometric centroid source offset	$4.57 \pm 1.11$	4.12	$-1.76 \pm 1.49$	$4.22 \pm 1.03$

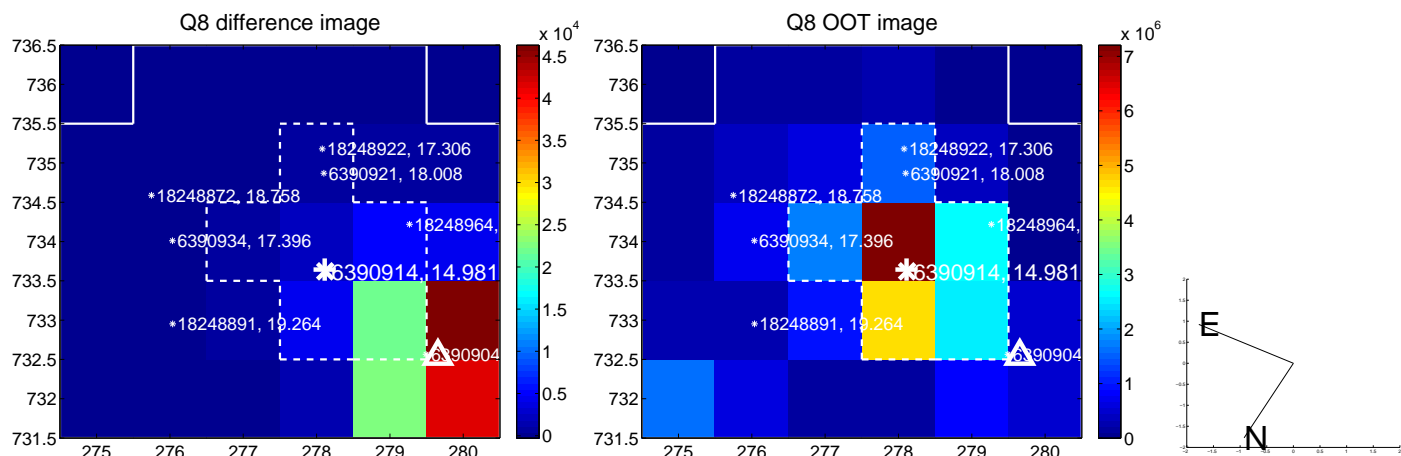
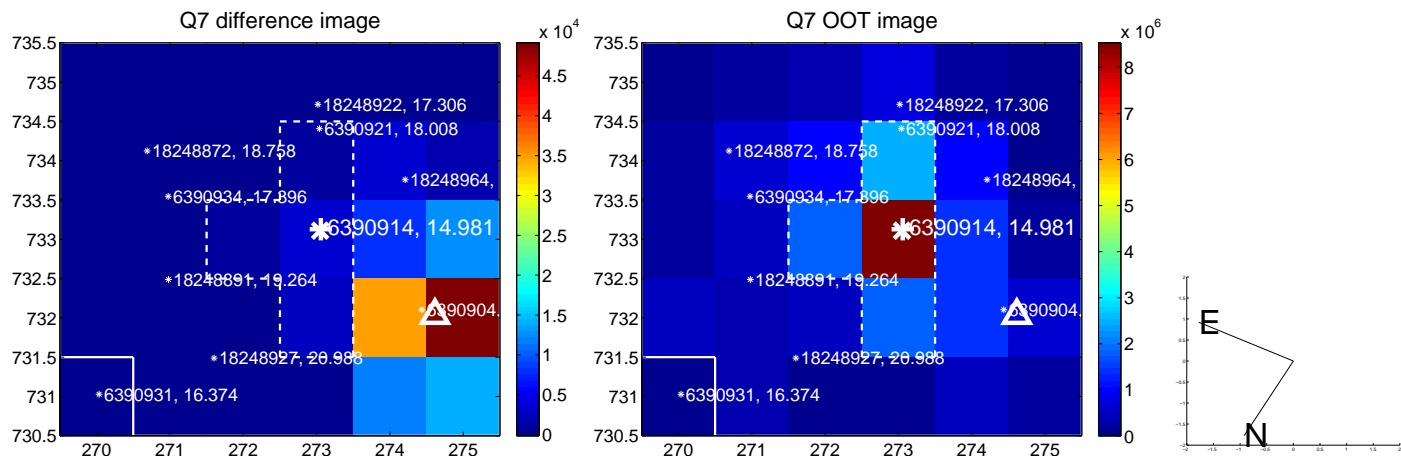
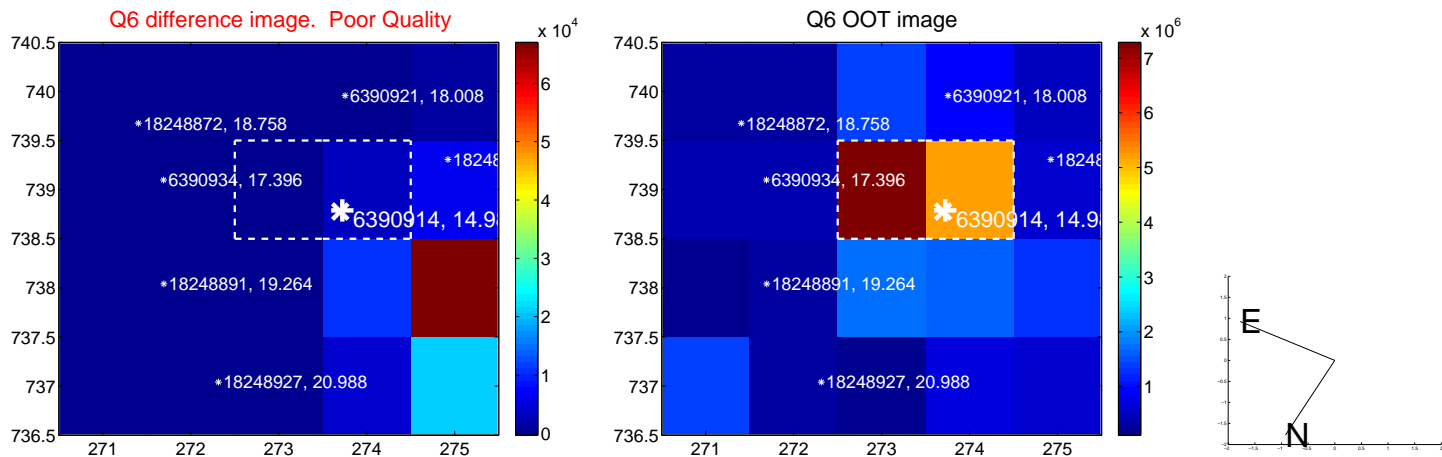
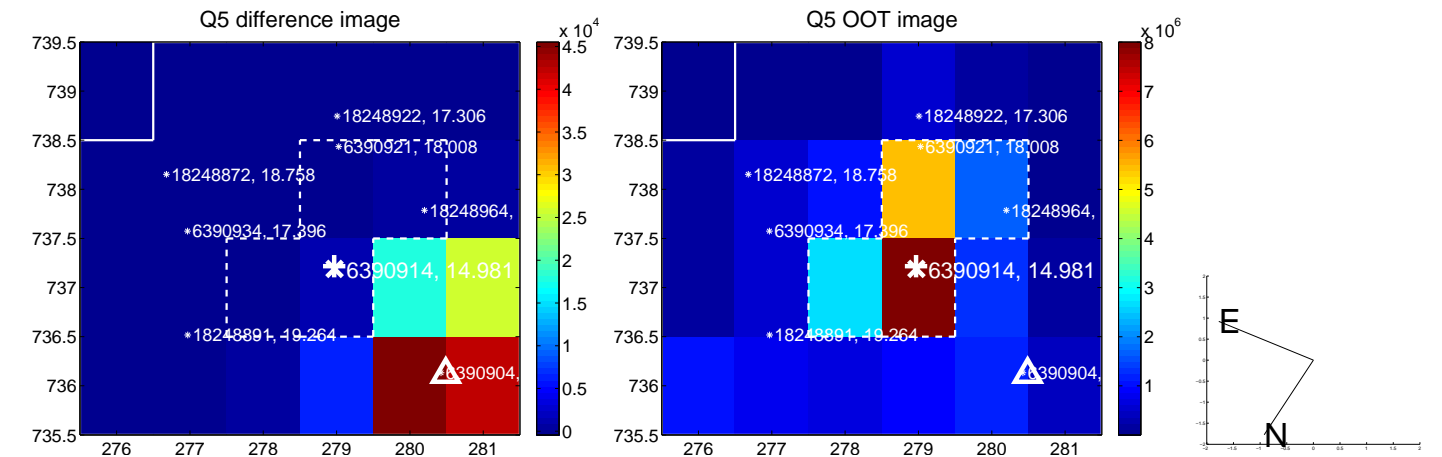


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

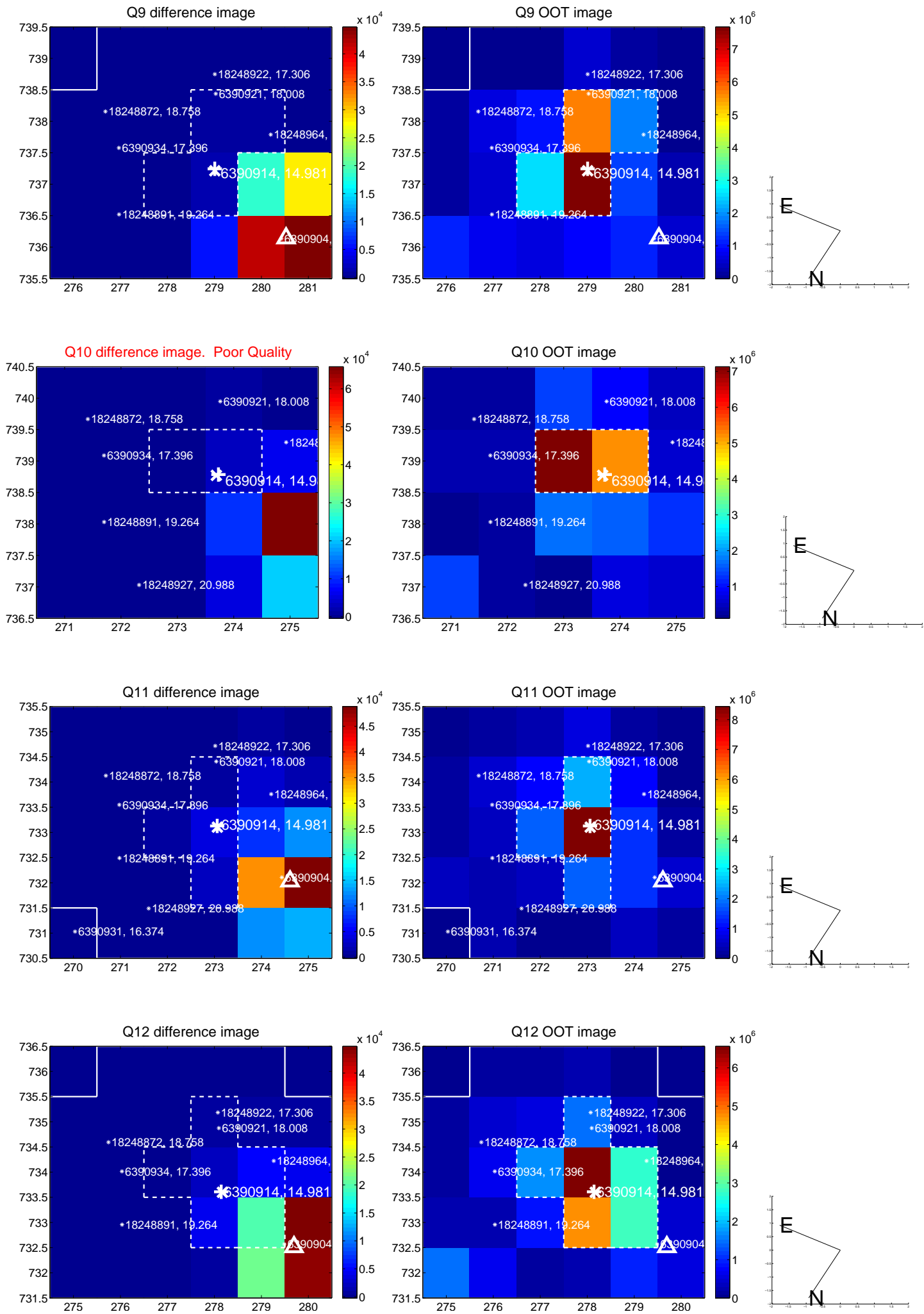


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

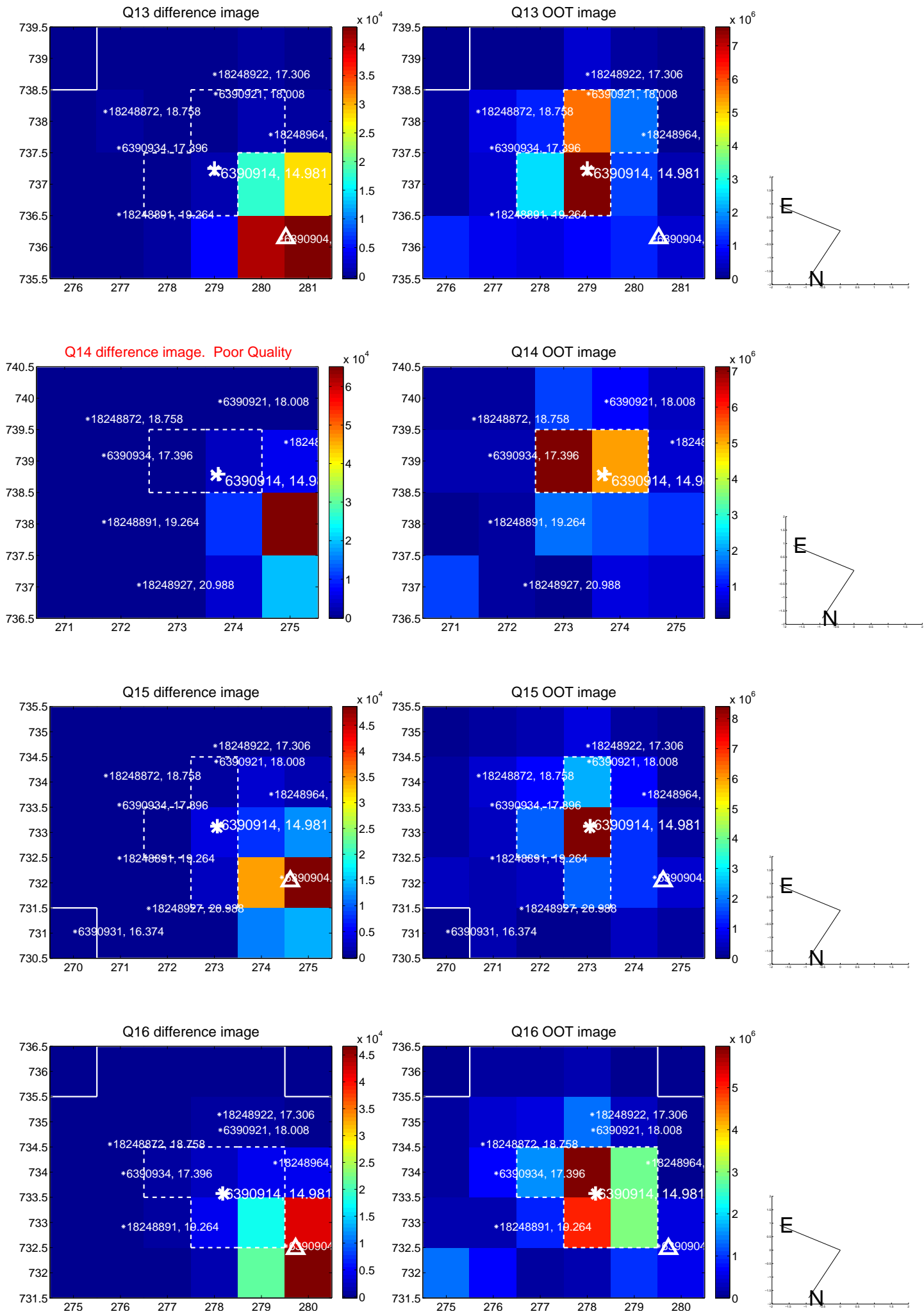




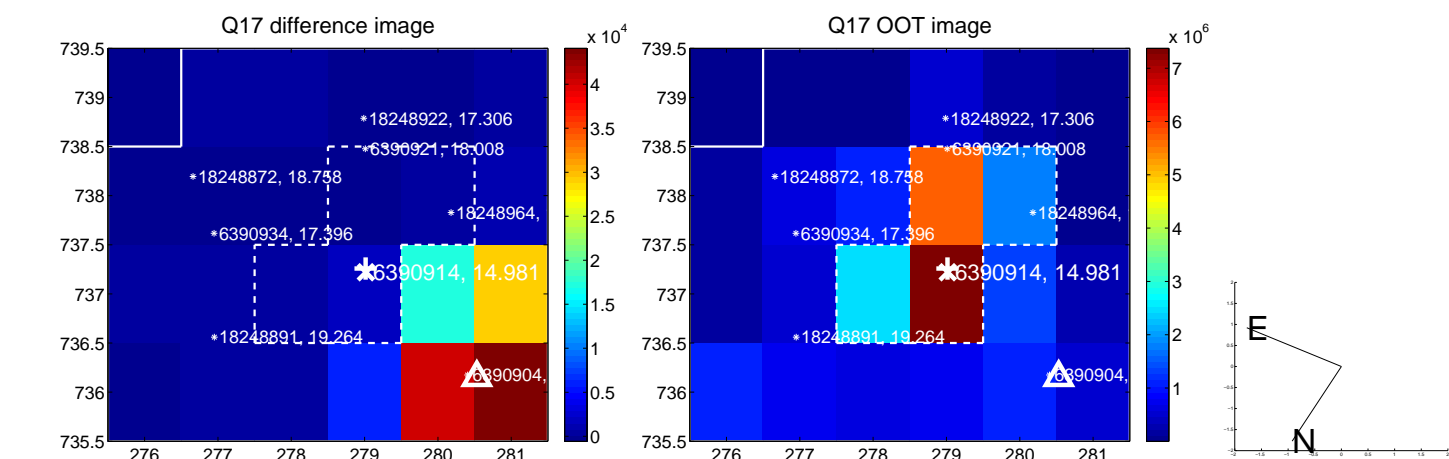
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



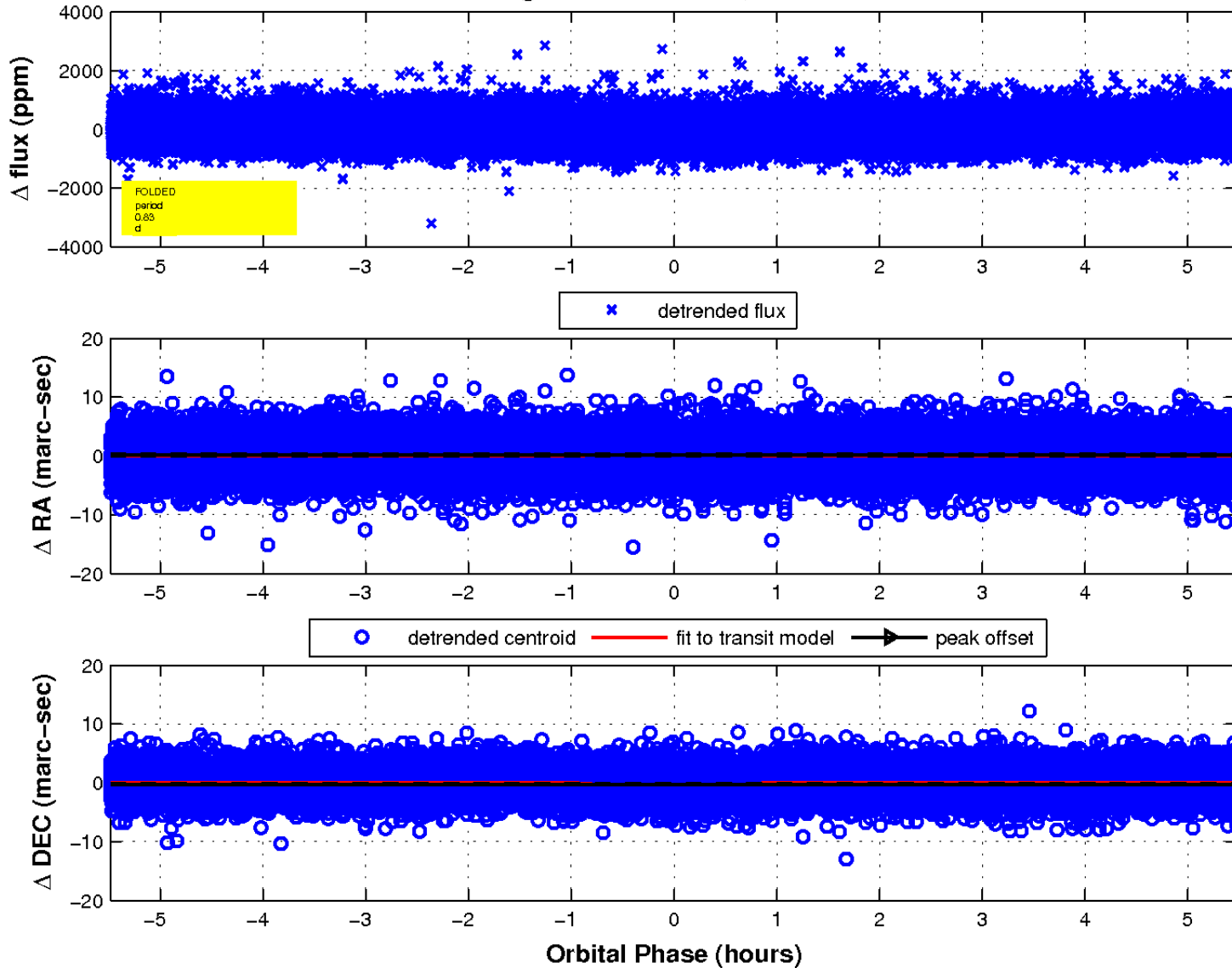
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

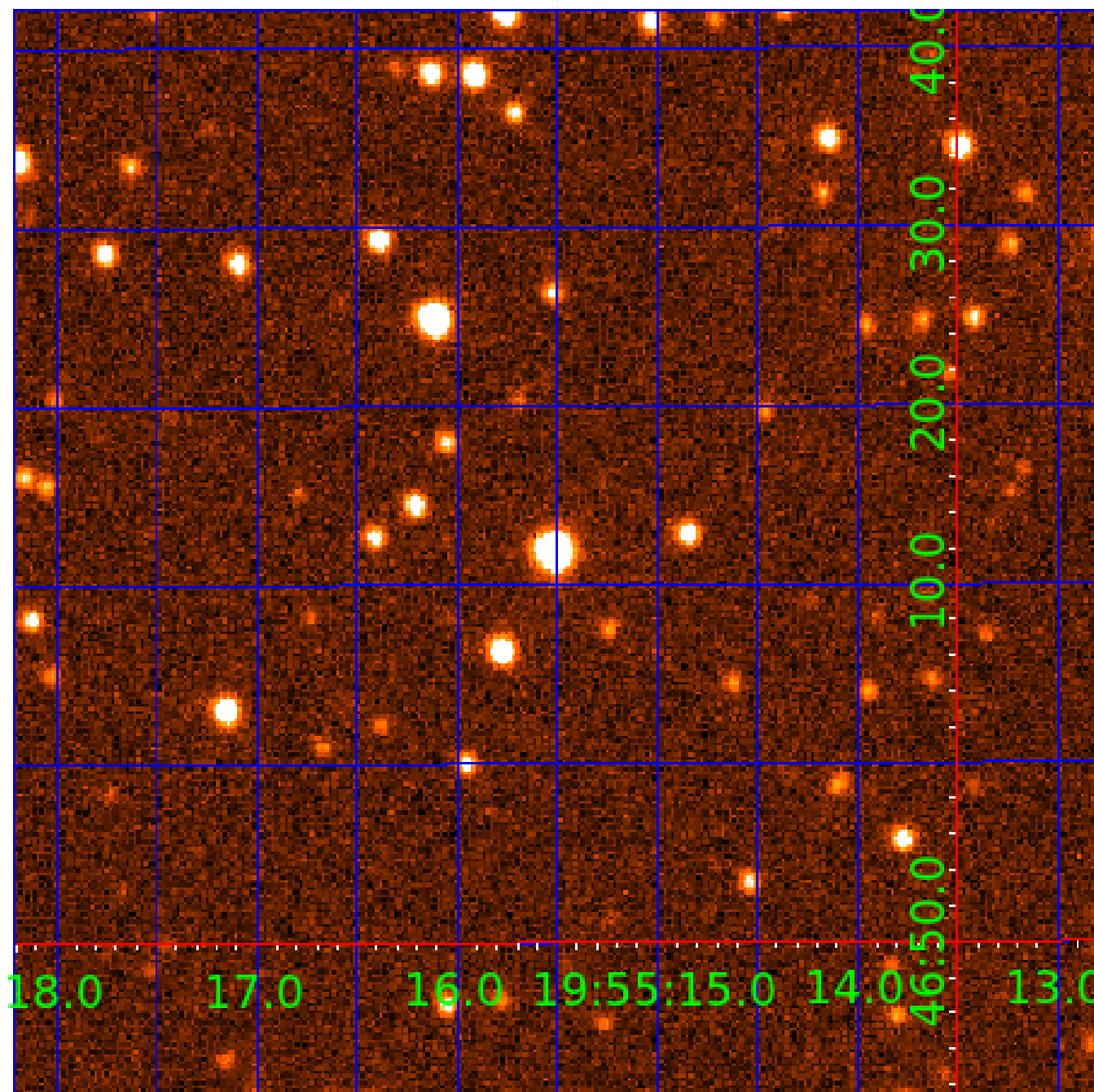


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 006390914

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006390914-01	OBS	No	0.832471	131.960275	71.9	1.828	9.8	11.0	1.10	6398	1.09	5560.38
006390914-02	OBS	No	0.832483	131.531127	51.0	1.984	7.6	8.2	1.10	6398	0.92	5560.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006390914-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
006390914-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

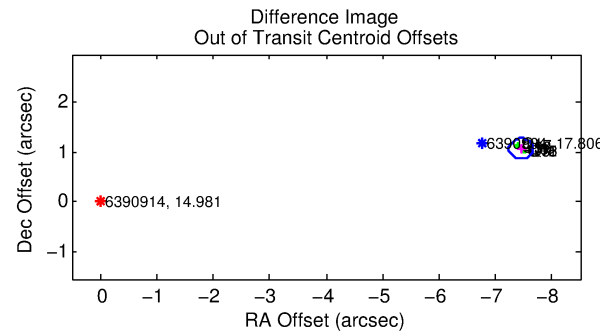
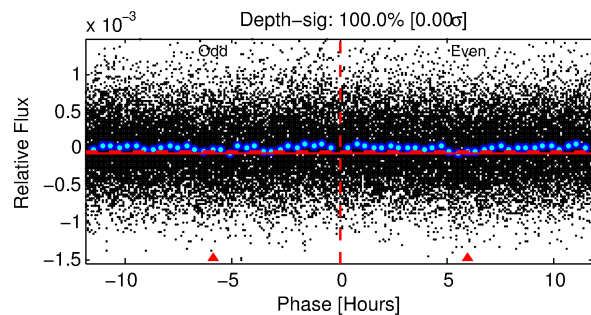
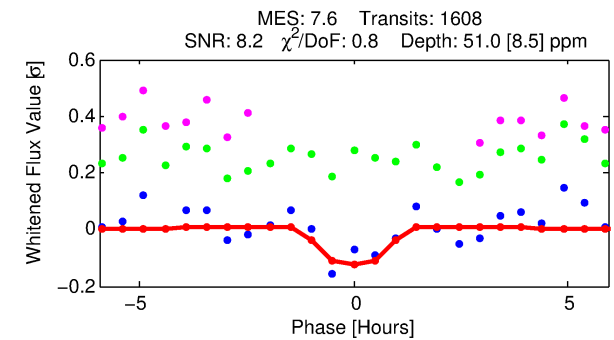
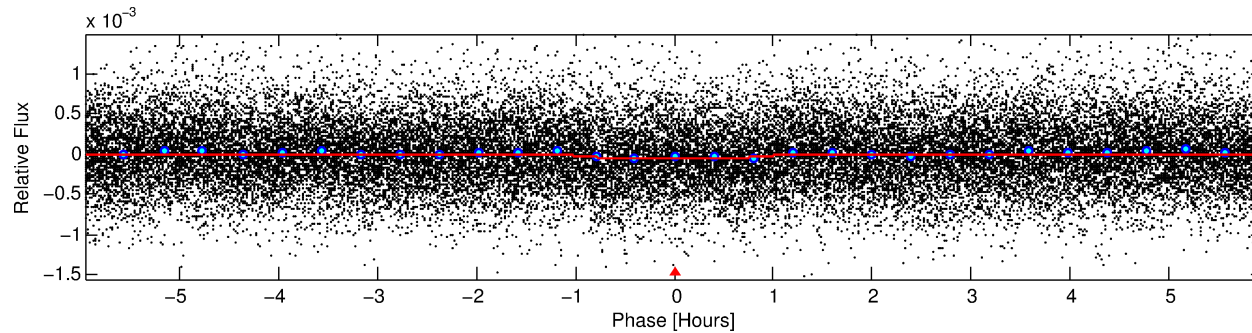
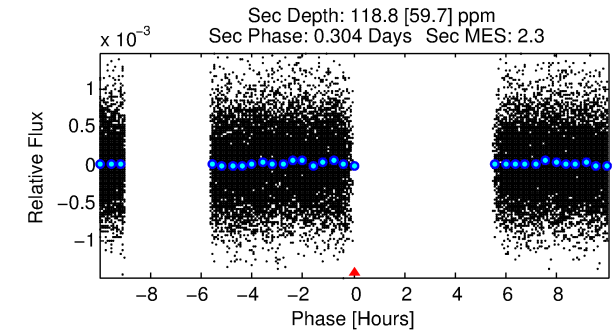
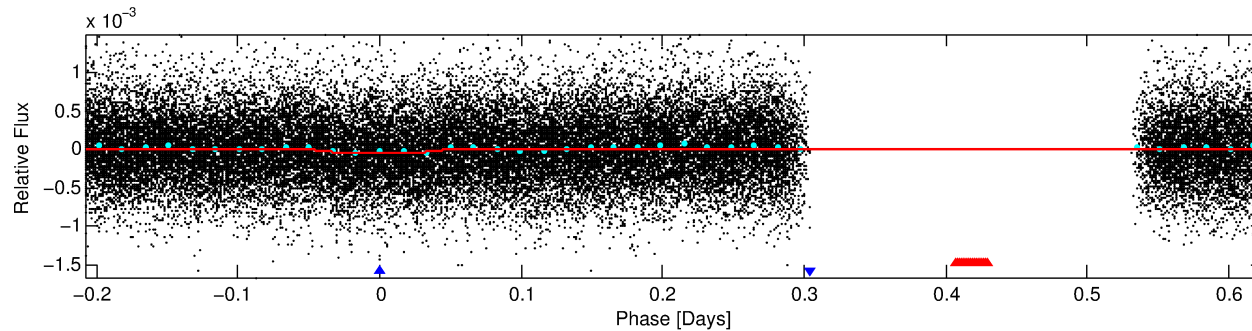
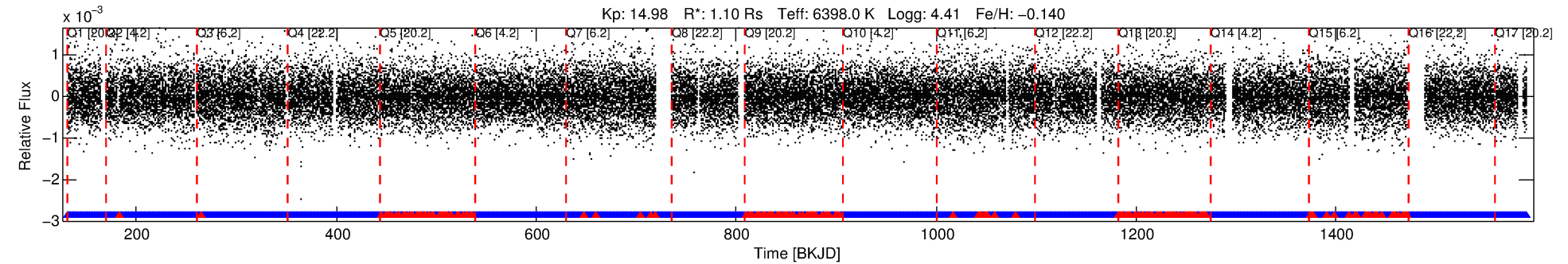
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006390914-02

No Significant Match Found

# DV One-Page Summary

KIC: 6390914 Candidate: 2 of 2 Period: 0.832 d



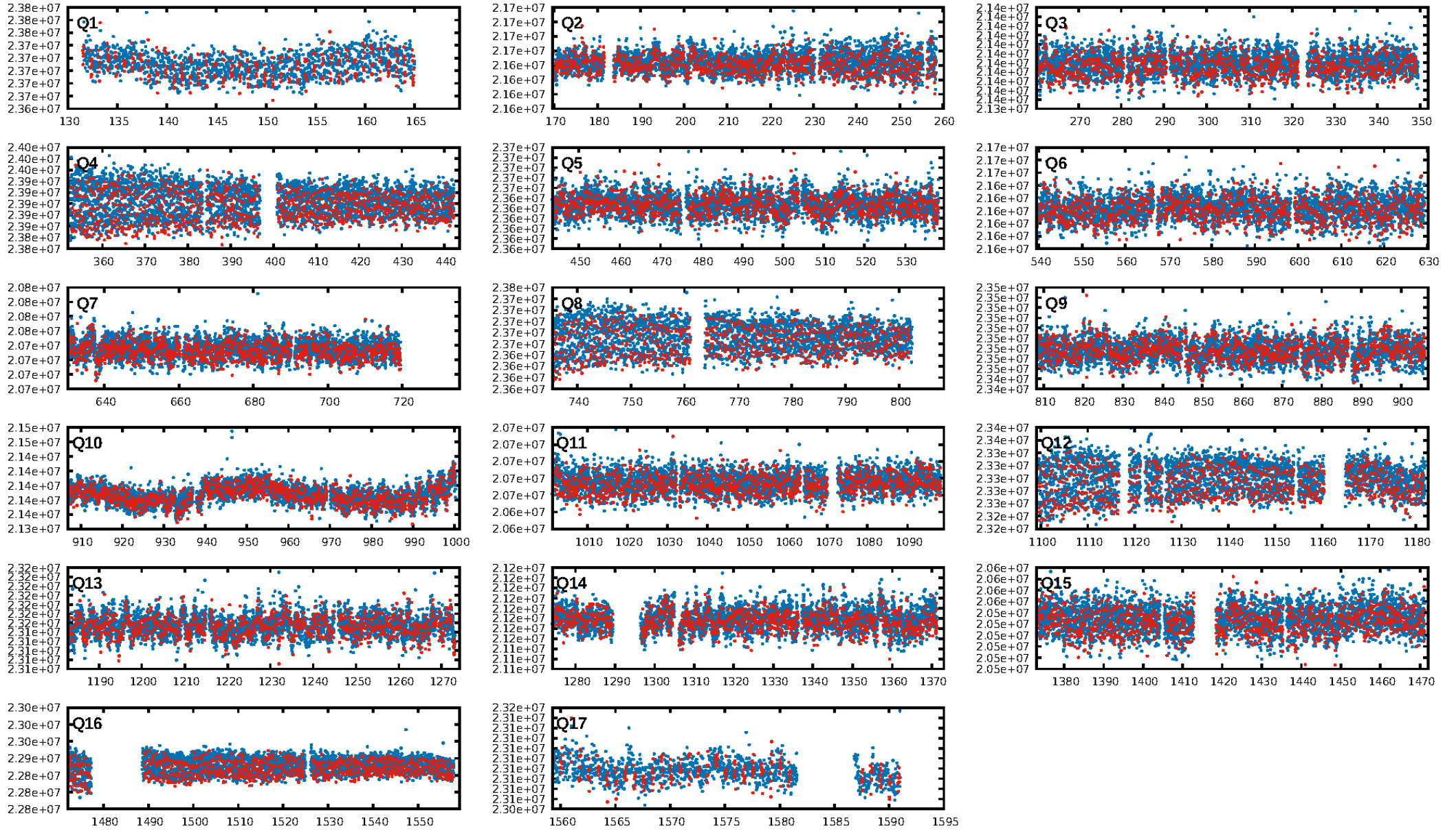
## DV Fit Results:

Period = 0.83248 [0.00001] d  
Epoch = 131.5311 [0.0033] BKJD  
Rp/R\* = 0.0077 [0.0047]  
a/R\* = 1.72 [3.96]  
b = 0.90 [0.73]  
Seff = 5560.26 [2344.33]  
Teq = 2202 [232] K  
Rp = 0.92 [0.65] Re  
a = 0.0181 [0.0050] AU  
Ag = 25.10 [34.81] [0.69σ]  
Teffp = 7620 [2552] K [2.11σ]

## DV Diagnostic Results:

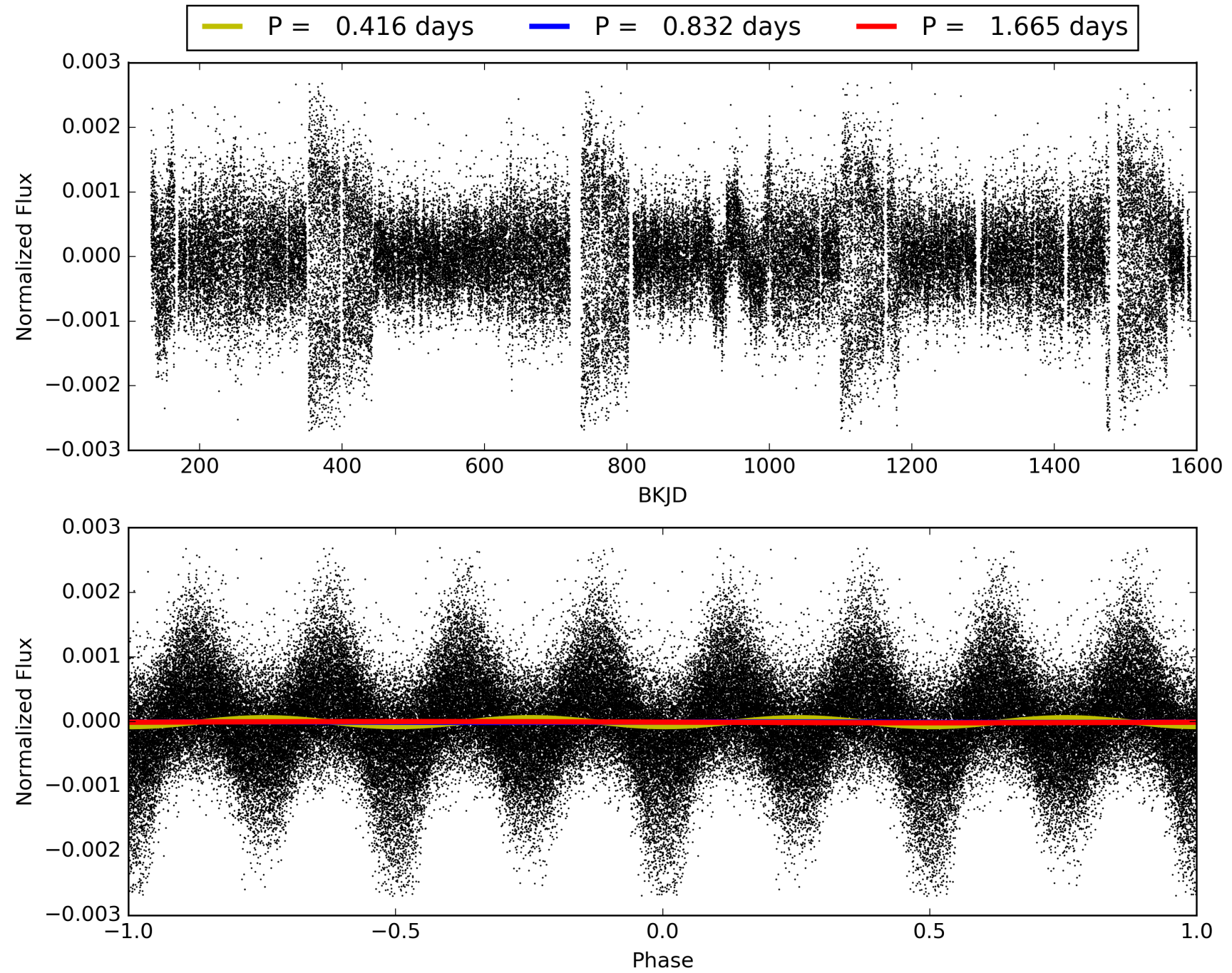
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.12e-17  
RollingBand-fgt: 0.88 [1345/1536]  
GhostDiagnostic-chr: -2.279  
Centroid-sig: 0.0%  
Centroid-so: 4.053 arcsec [2.80σ]  
OotOffset-rm: 7.520 arcsec [109.04σ]  
KicOffset-rm: 7.450 arcsec [106.68σ]  
OotOffset-st: 0/4/4/5 [13]  
KicOffset-st: 0/4/4/5 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006390914-02, PDC Light Curves





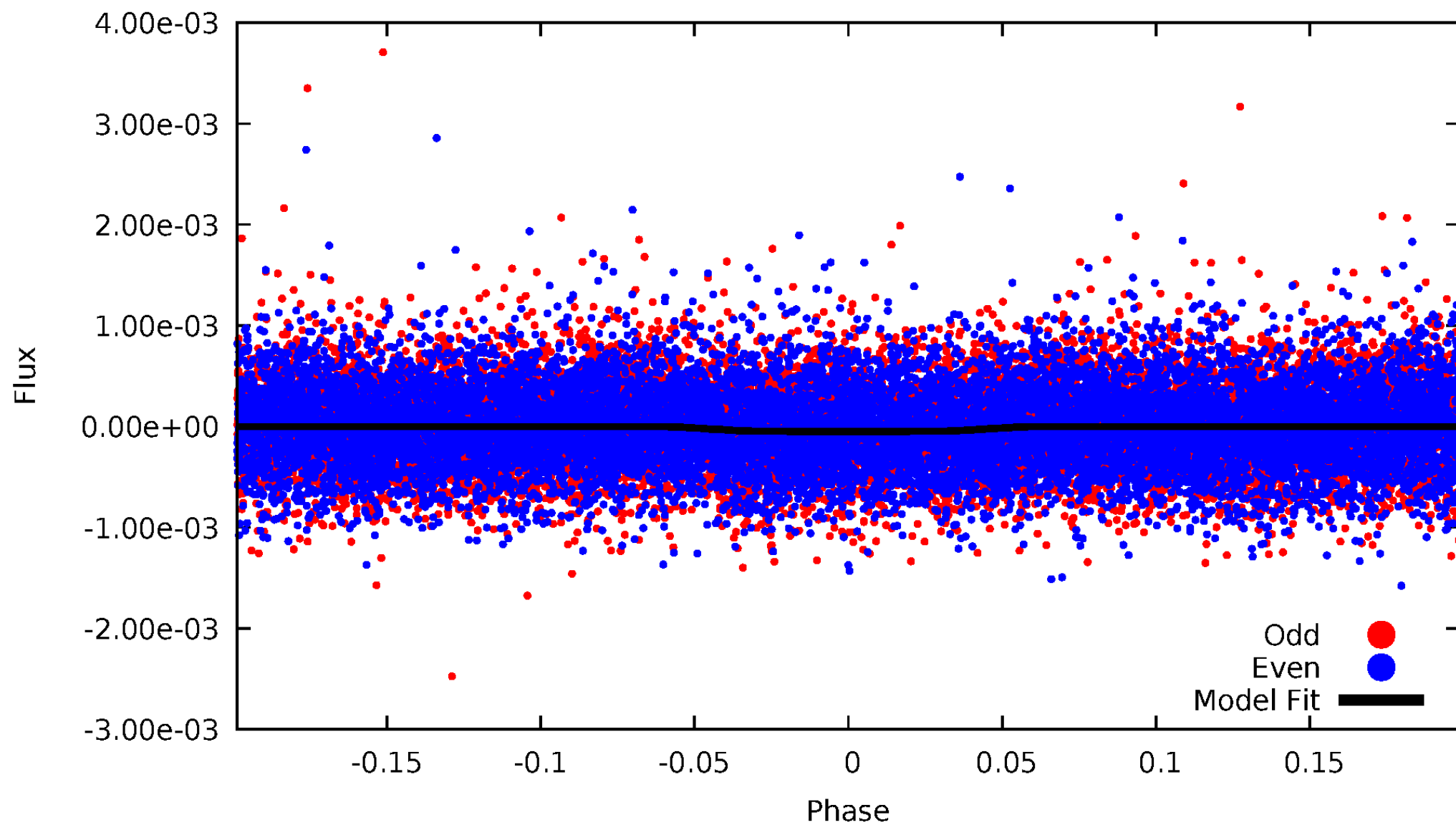
TCE 006390914-02





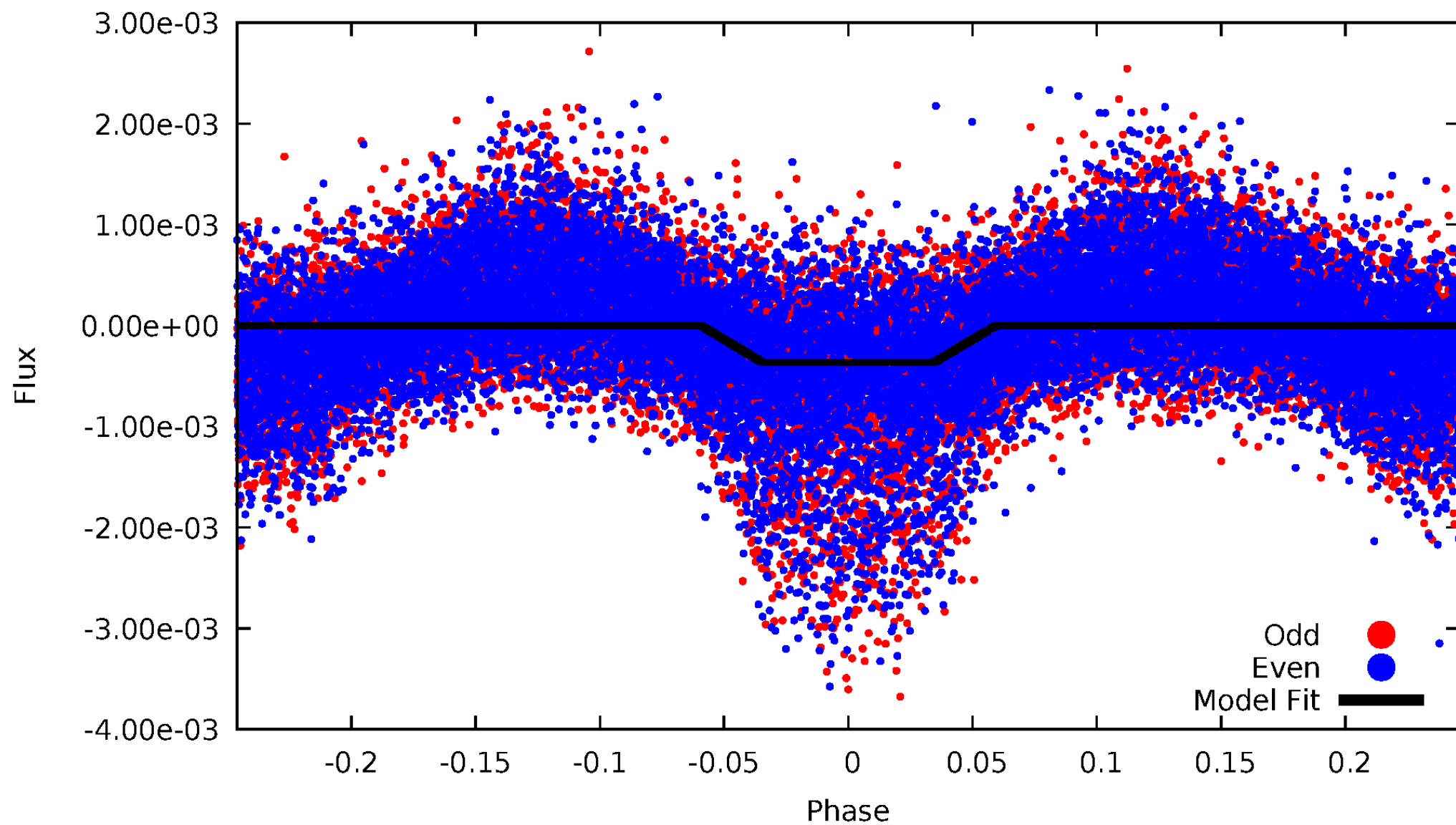
# DV Odd/Even

TCE 006390914-02



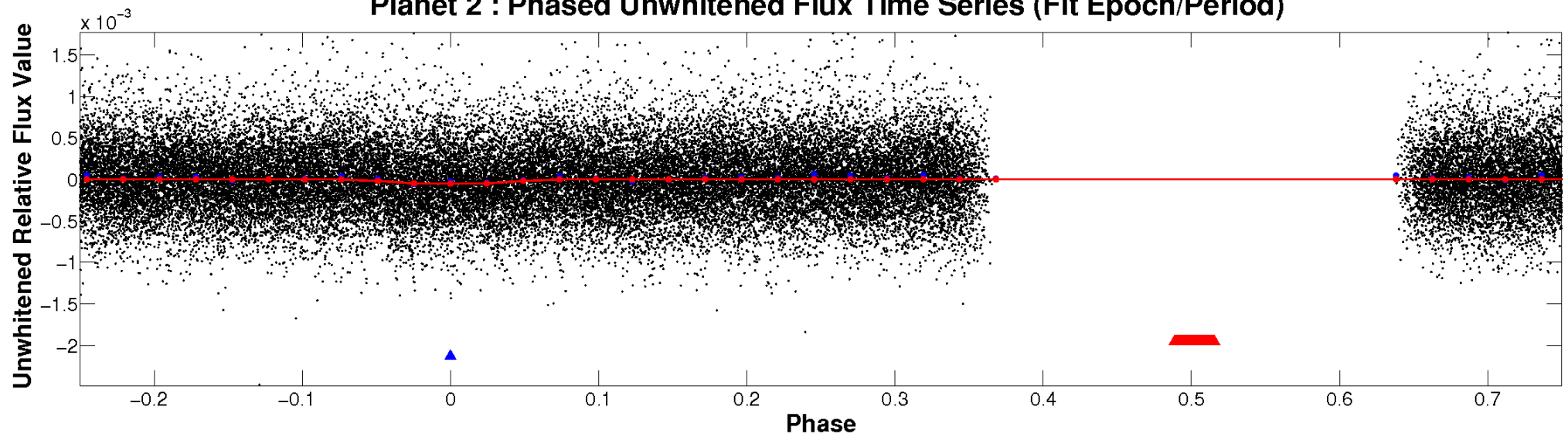
# ALT Odd/Even

TCE 006390914-02

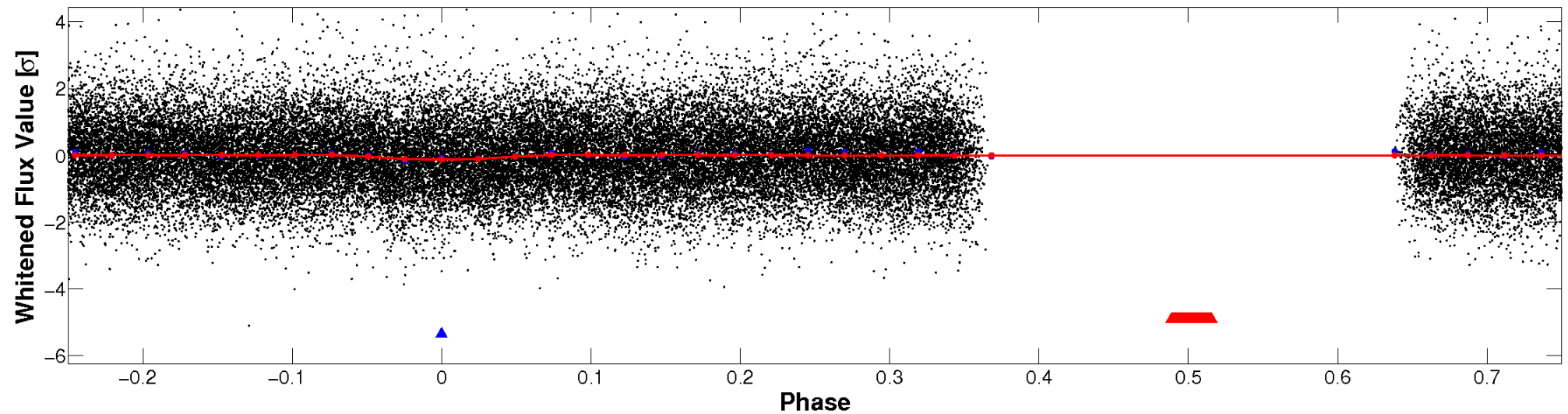


# Non-Whitened Vs. Whitened Light Curve

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

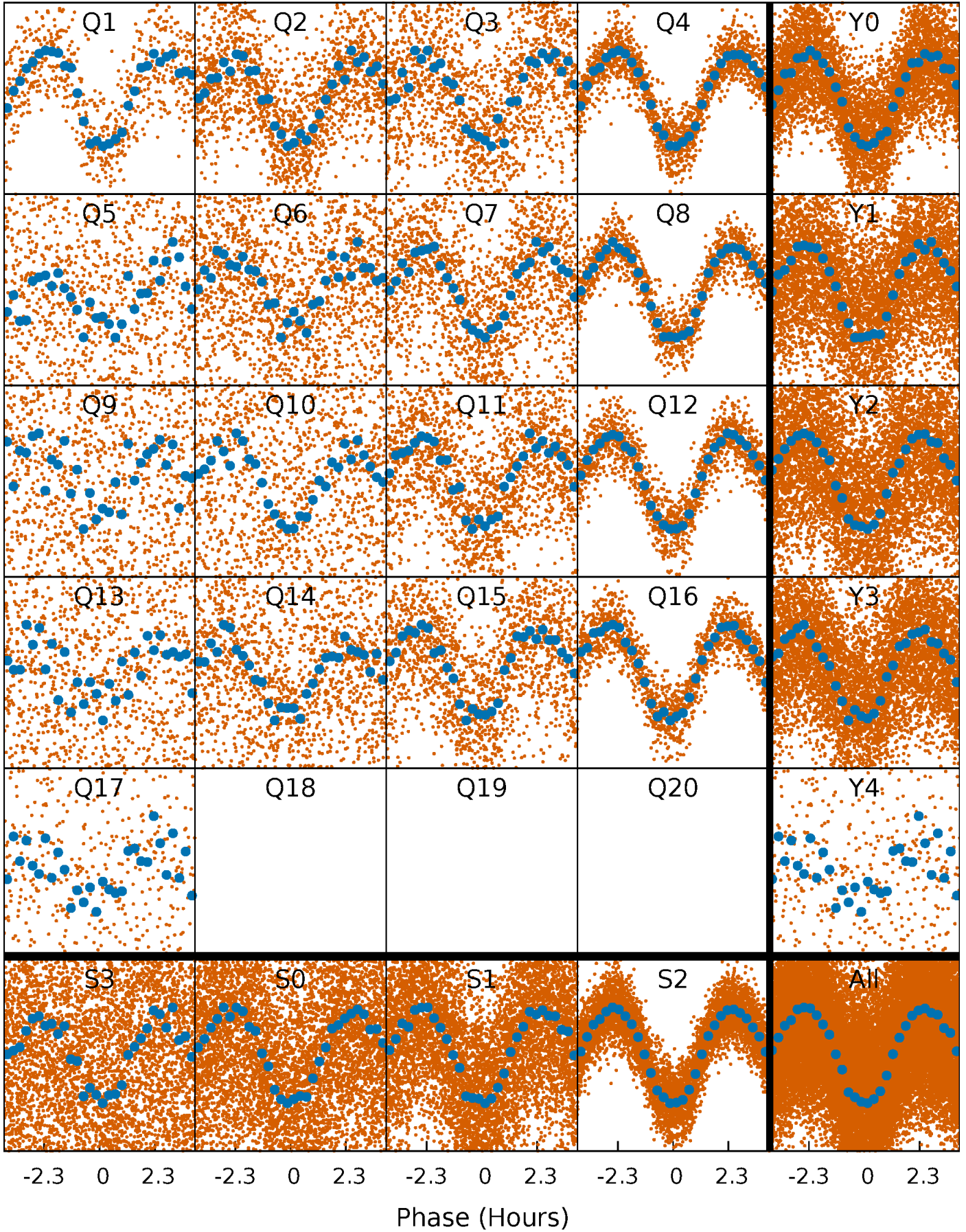


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

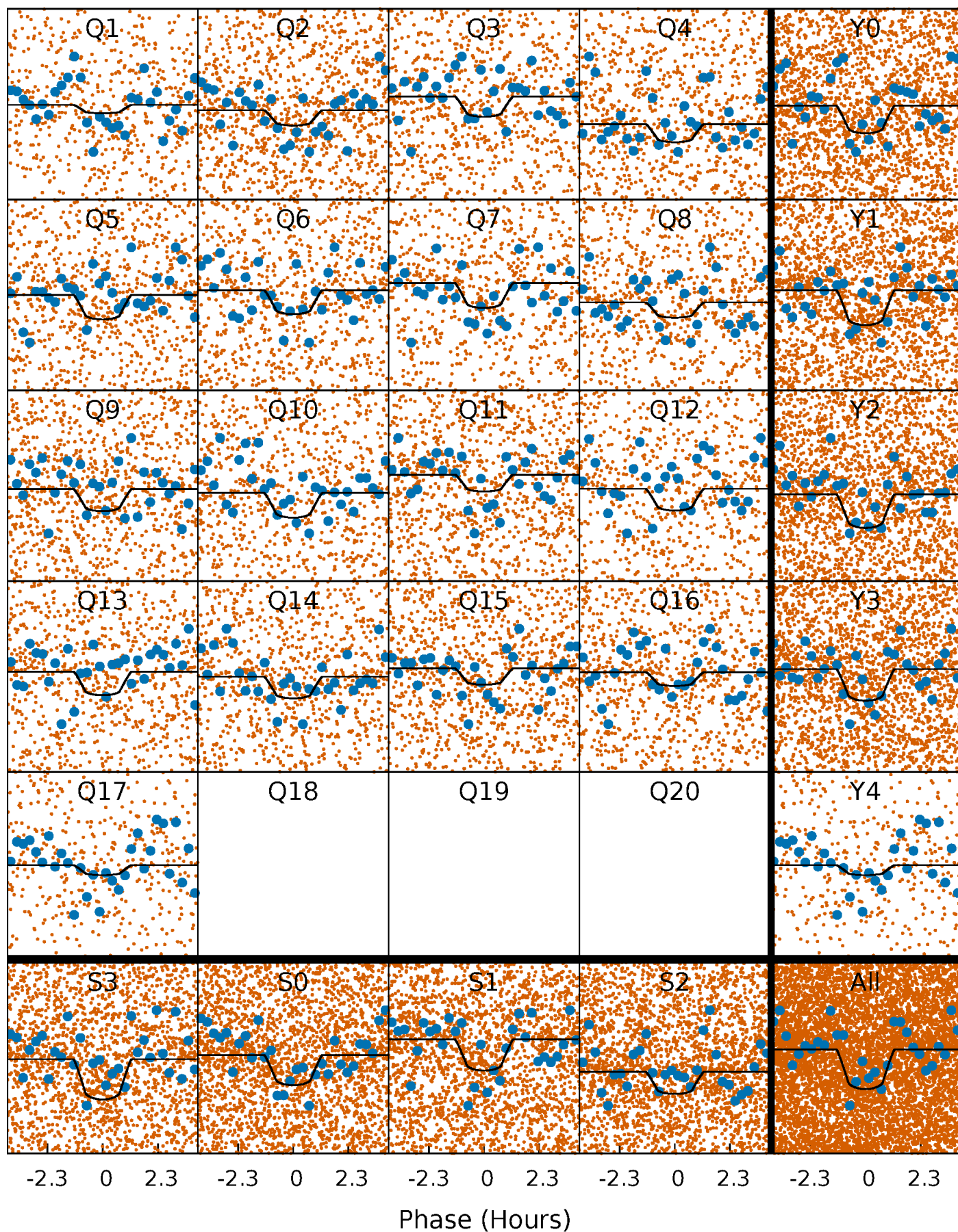
TCE 006390914-02 P= 0.832483 Days  $T_0=131.531127$  (BKJD)





# DV Quarter-Phased Transit Curves

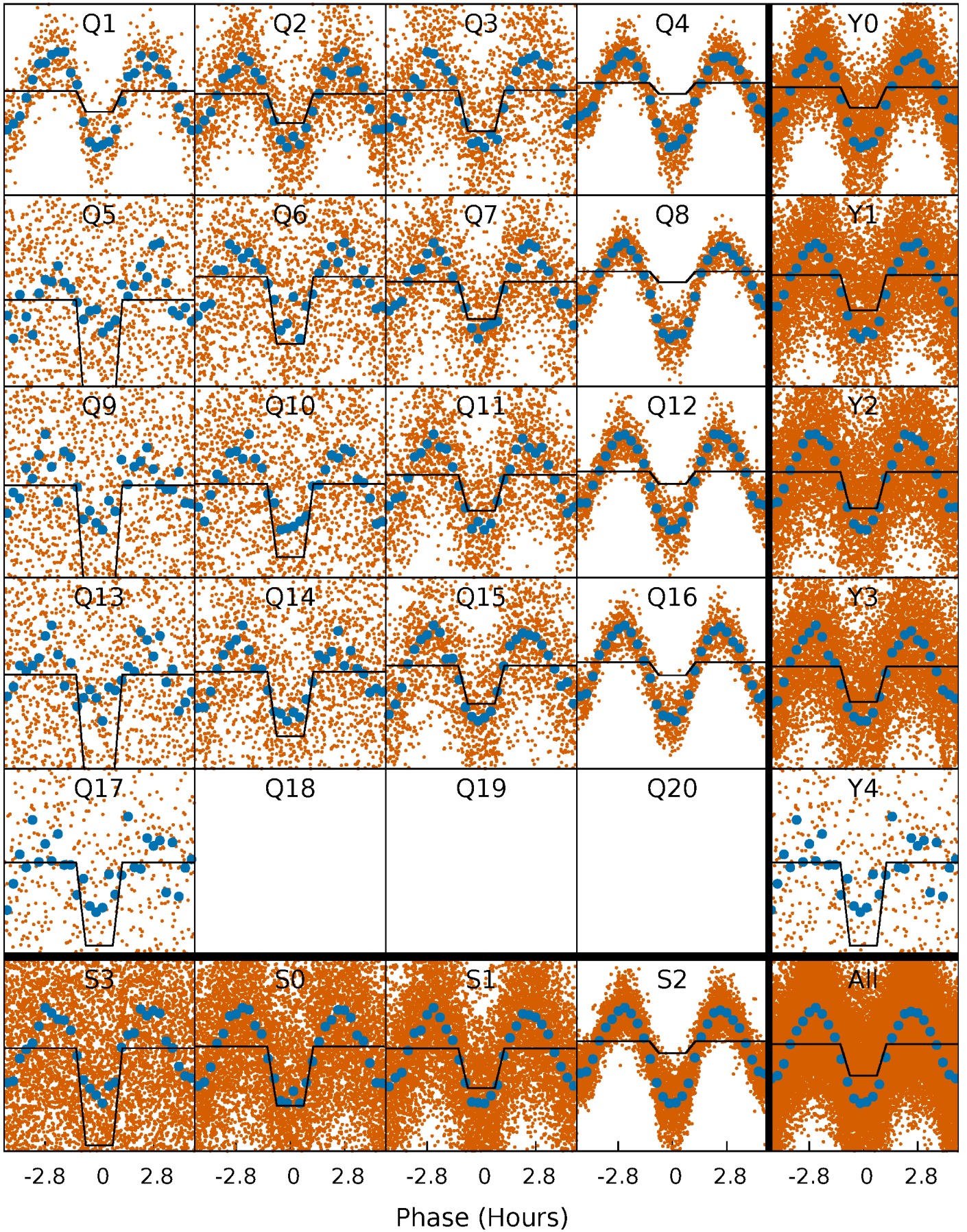
TCE 006390914-02 P= 0.832483 Days  $T_0=131.531127$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

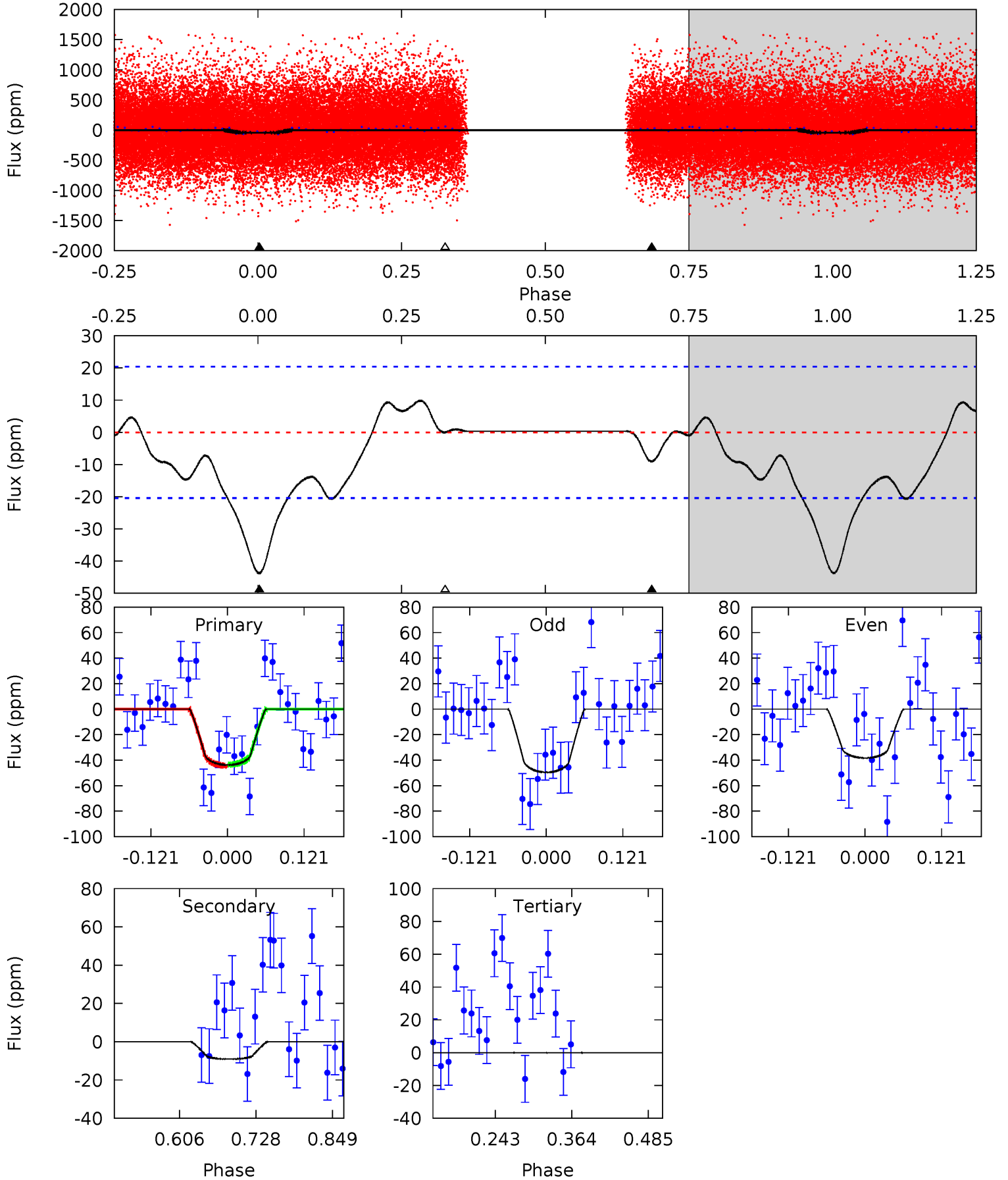
TCE 006390914-02   P= 0.832477 Days    $T_0=131.537016$  (BKJD)



# DV Model-Shift Uniqueness Test

006390914-02, P = 0.832483 Days, E = 130.698644 Days

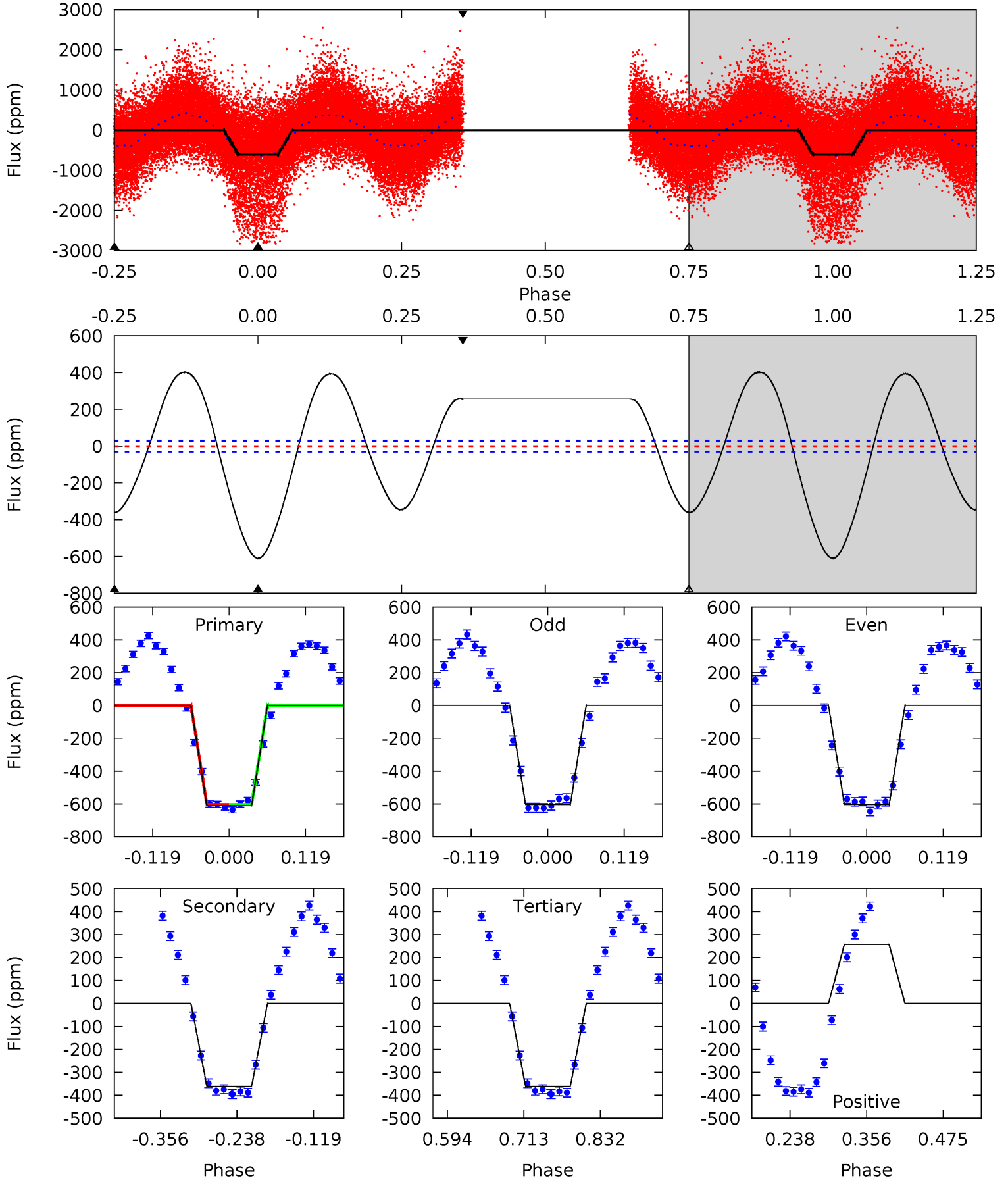
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.70	2.01	0.01	0	4.52	1.55	2.08	9.69	9.70	2.00	2.01	1.25	0.99	0.18	0.10



# Alt Model-Shift Uniqueness Test

006390914-02, P = 0.832477 Days, E = 130.704539 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
91.8	54.2	54.2	38.6	4.53	1.56	37.2	37.6	53.2	0.00	15.6	0.02	1.49	0.40	0.05



### Stellar Parameters For KIC 006390914

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6398^{+179}_{-246}$	$4.411^{+0.070}_{-0.210}$	$-0.140^{+0.250}_{-0.300}$	$1.101^{+0.370}_{-0.123}$	$1.141^{+0.169}_{-0.152}$	$1.204^{+0.350}_{-0.639}$
	+3%/-4%	+2%/-5%	+179%/-214%	+34%/-11%	+15%/-13%	+29%/-53%
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 006390914-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 5$	$0.97^{+0.64}_{-0.50}$	$3122^{+225}_{-167}$	$3990^{+1702}_{-964}$	$1.613^{+6.286}_{-1.104}$
Alt.	$-360 \pm 7$	$2.37^{+0.65}_{-0.59}$	$3131^{+221}_{-171}$	$6330^{+1077}_{-733}$	$11^{+8}_{-4}$

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

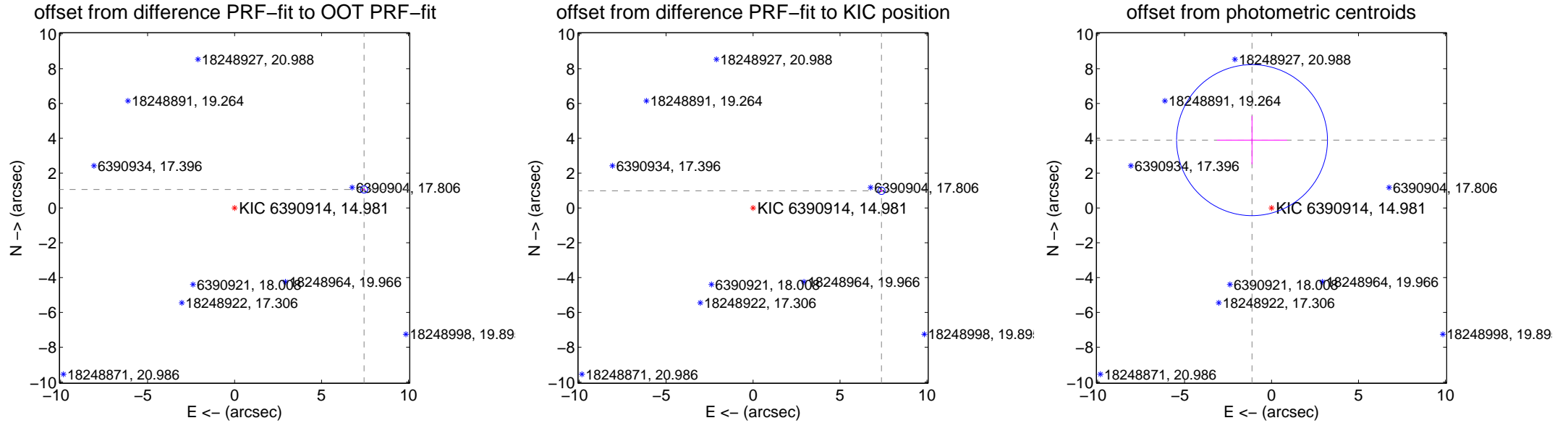
## DV Centroid Data

Supplemental centroid analysis for 006390914-02. Kepler magnitude: 14.98. Transit SNR 8.23

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

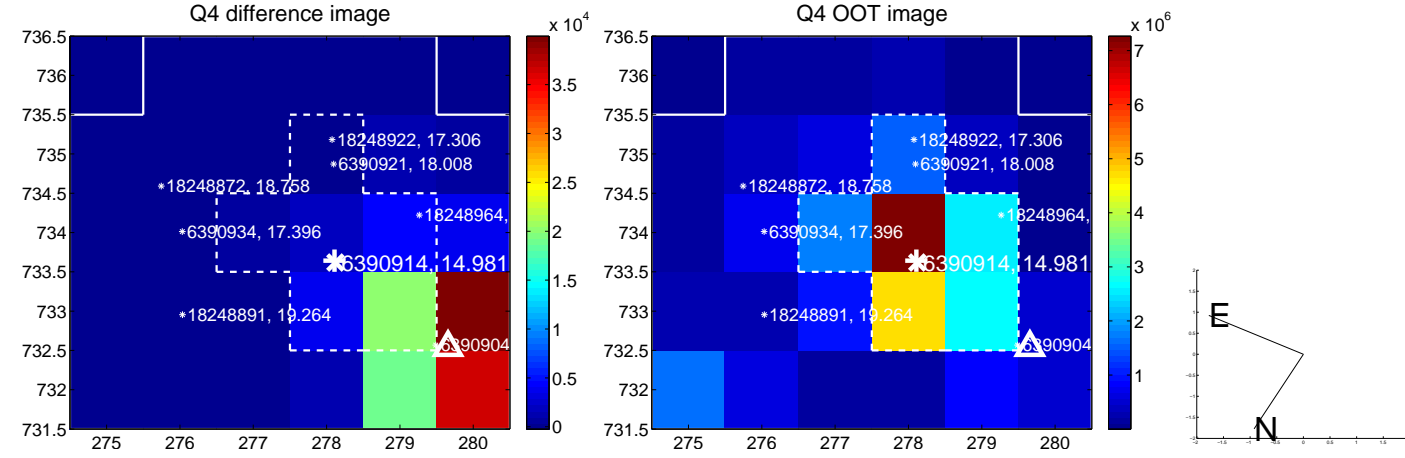
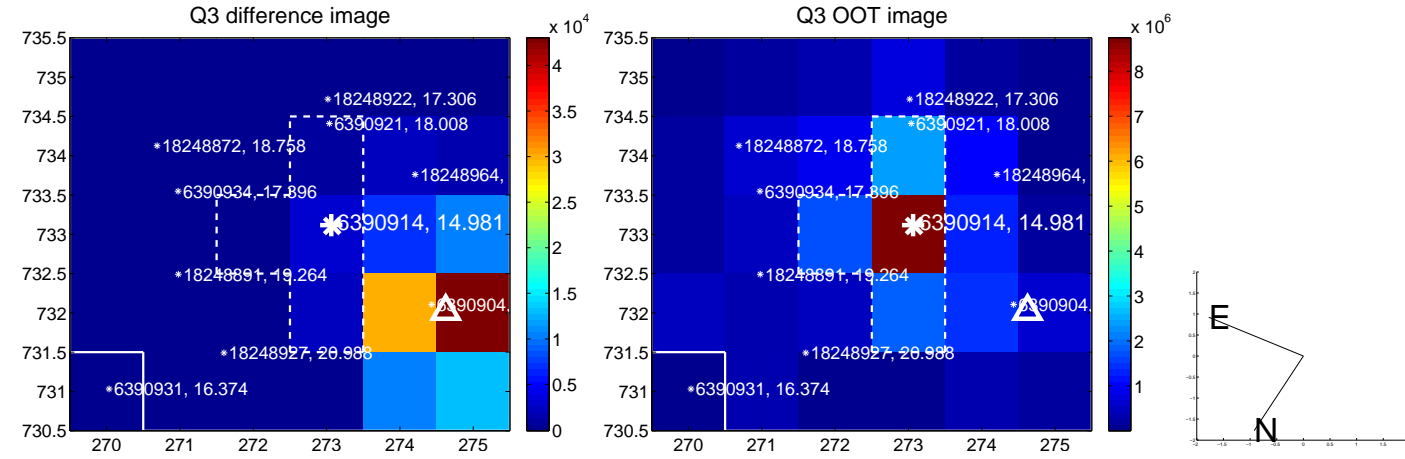
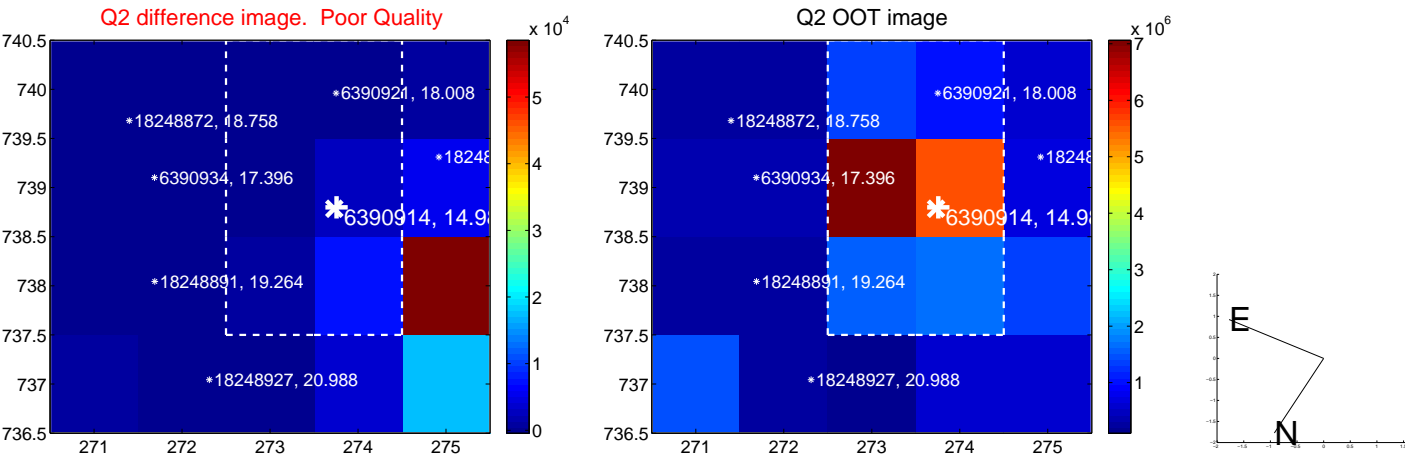
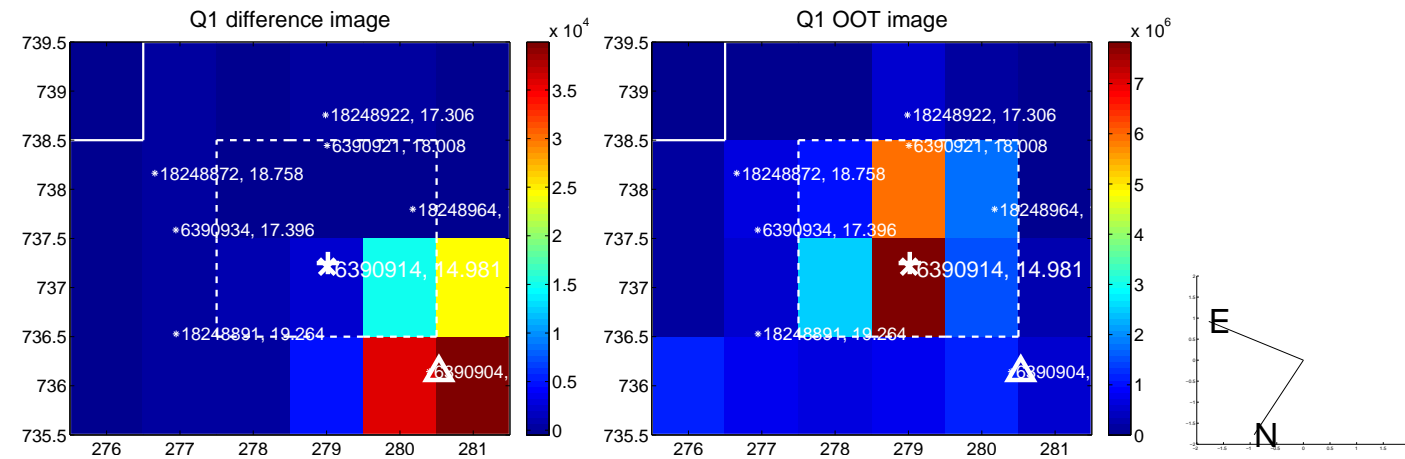
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>7.520 <math>\pm</math> 0.069</b>	<b>109.04</b>	-7.445 $\pm$ 0.069	1.062 $\pm$ 0.068
PRF-fit source offset from KIC position	<b>7.450 <math>\pm</math> 0.070</b>	<b>106.68</b>	-7.384 $\pm$ 0.070	0.983 $\pm$ 0.067
photometric centroid source offset	4.05 $\pm$ 1.45	2.80	1.12 $\pm$ 2.02	3.90 $\pm$ 1.39



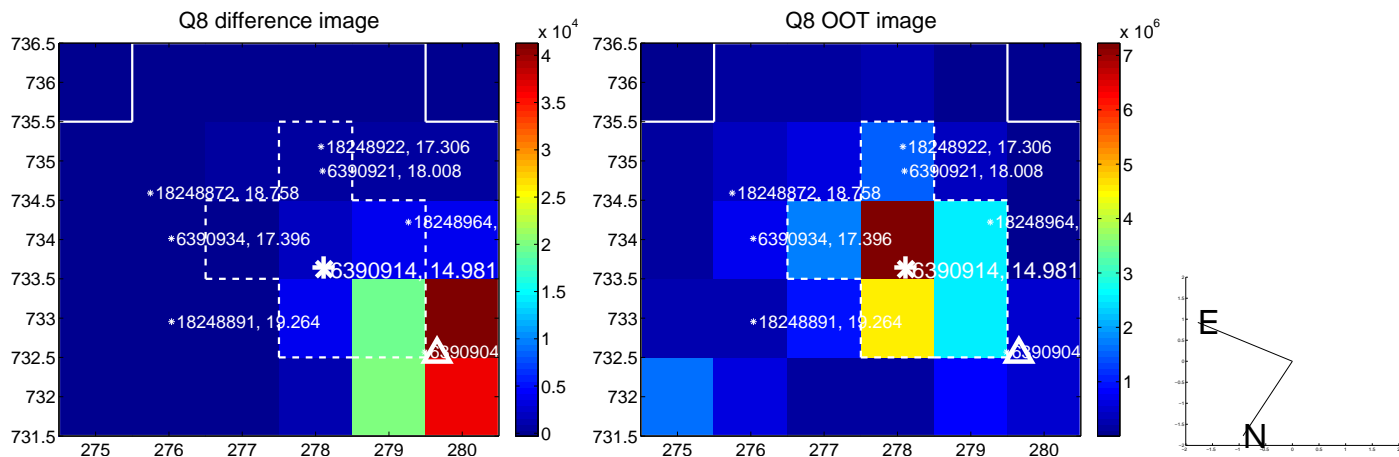
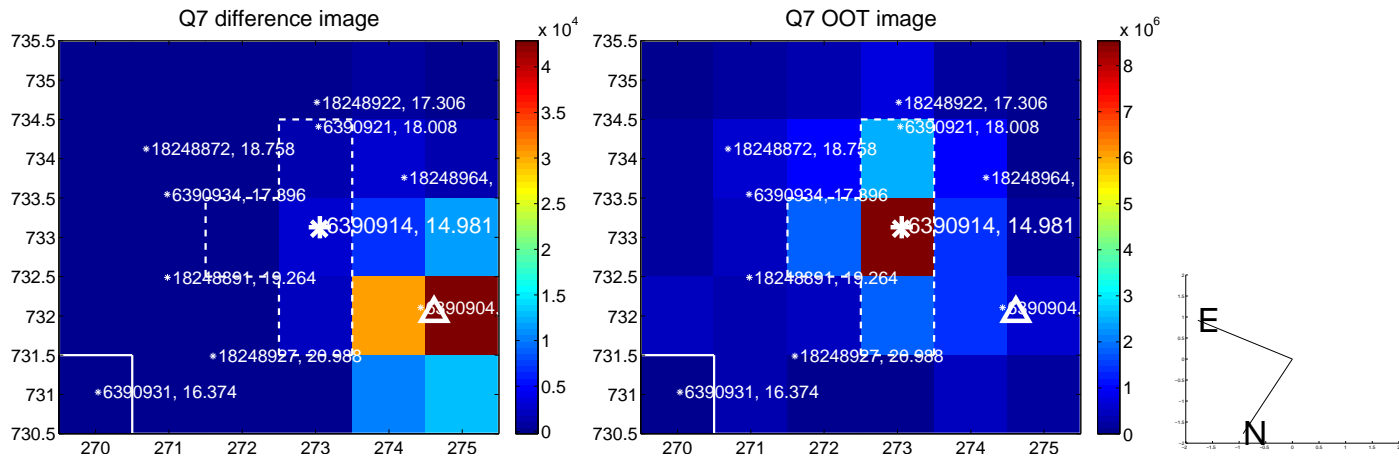
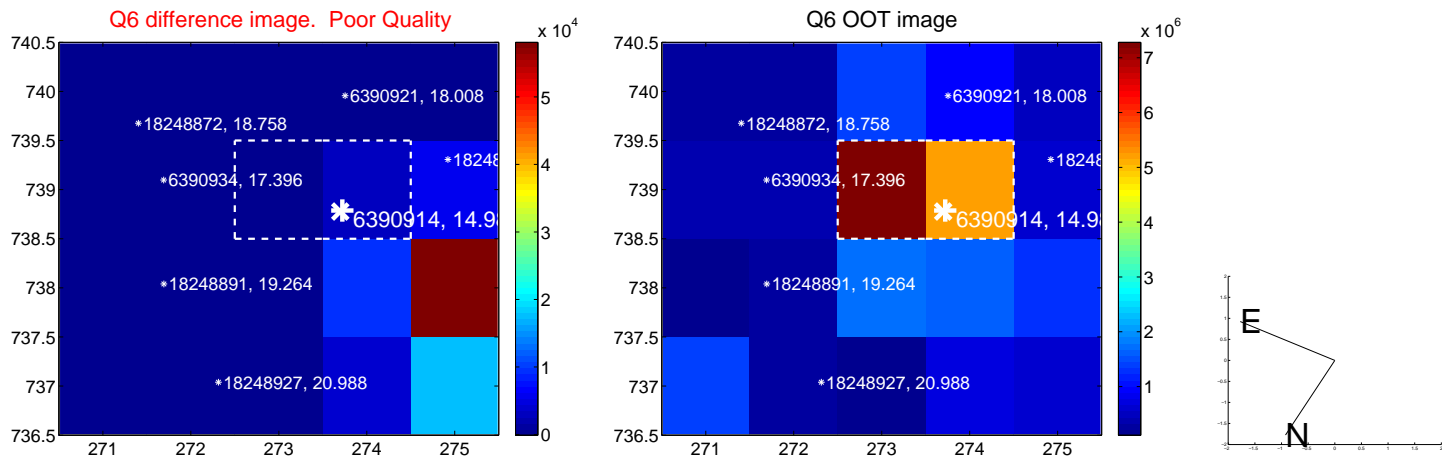
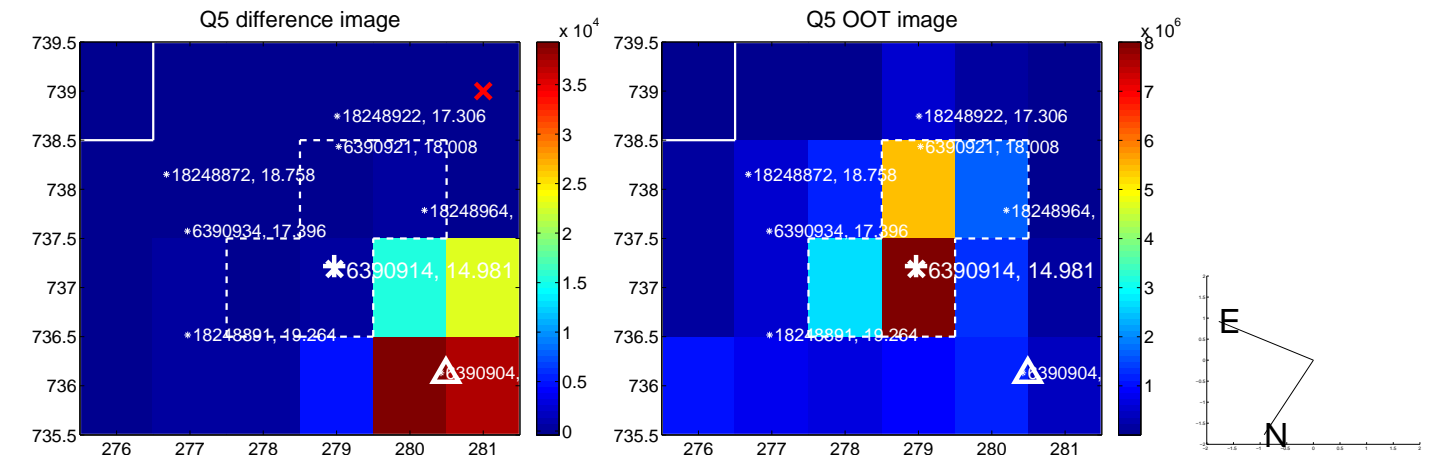
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



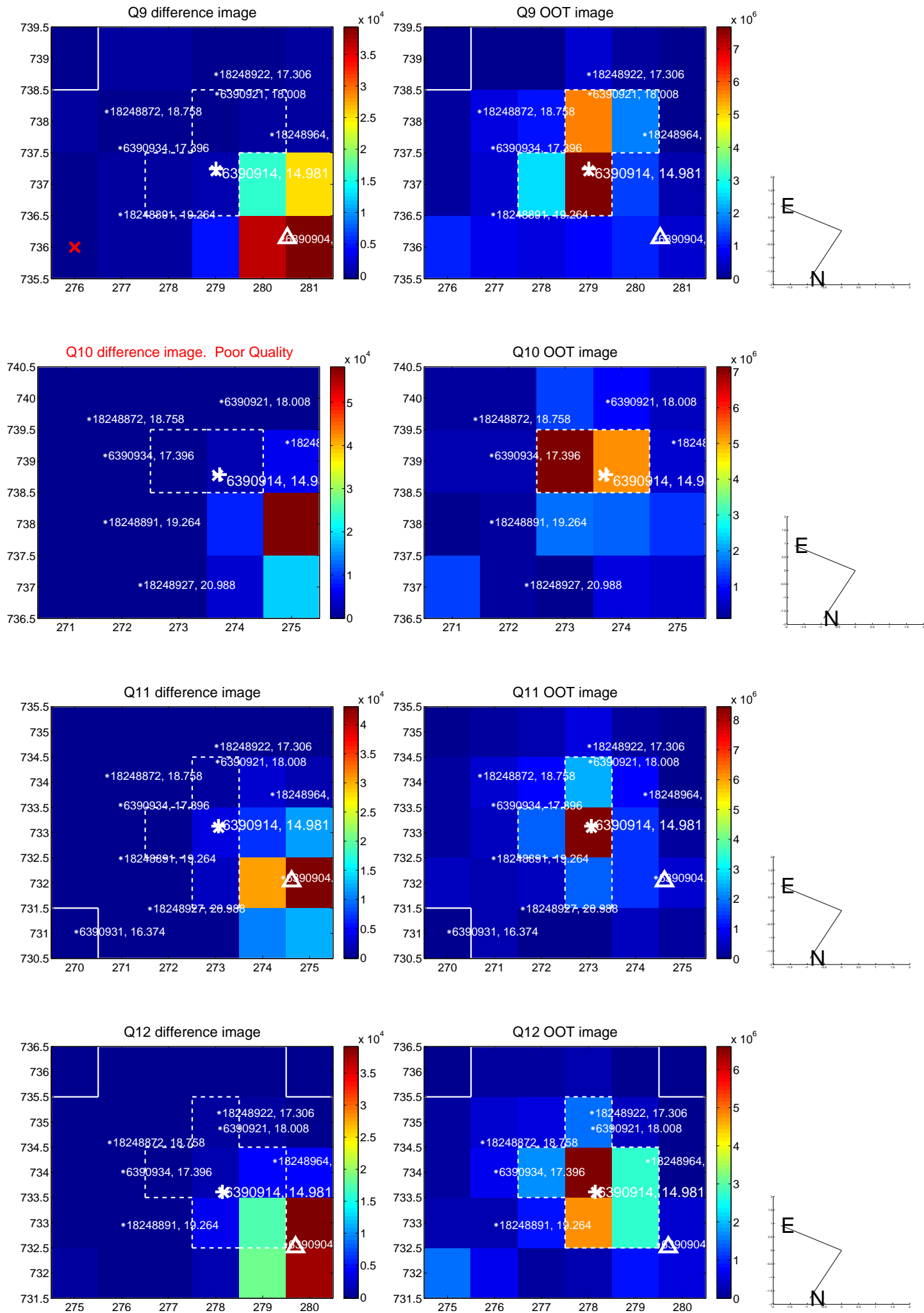
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



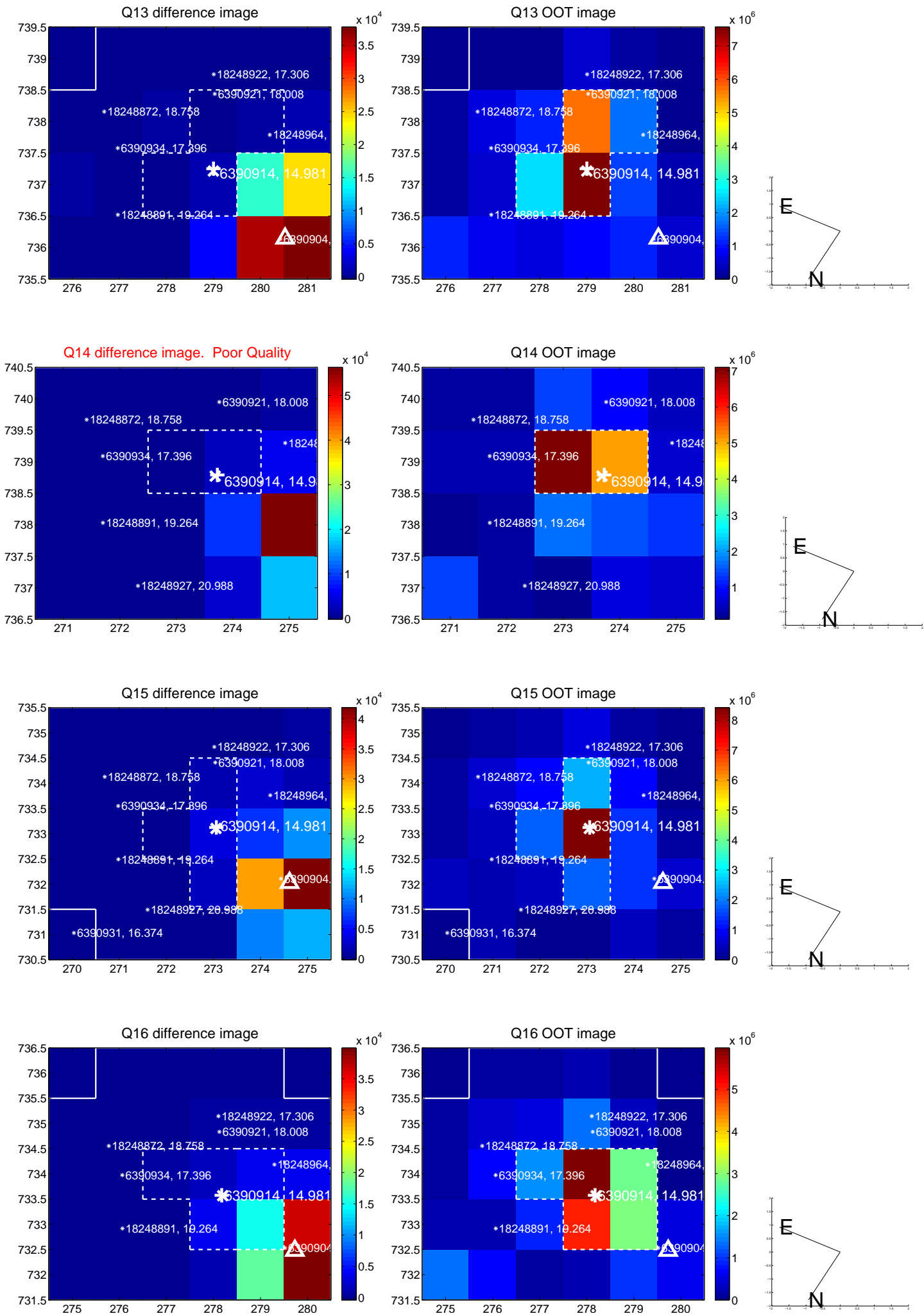
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



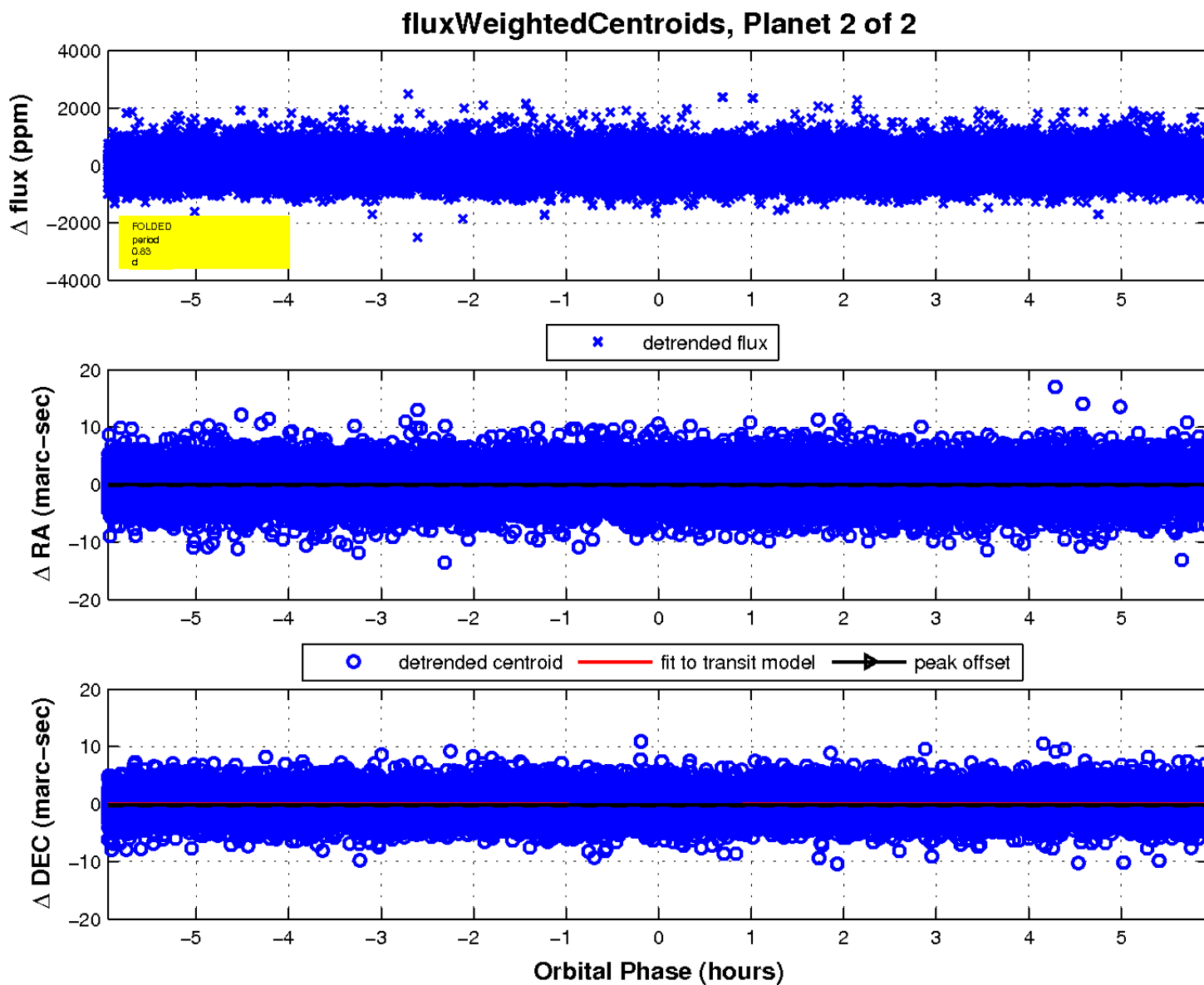
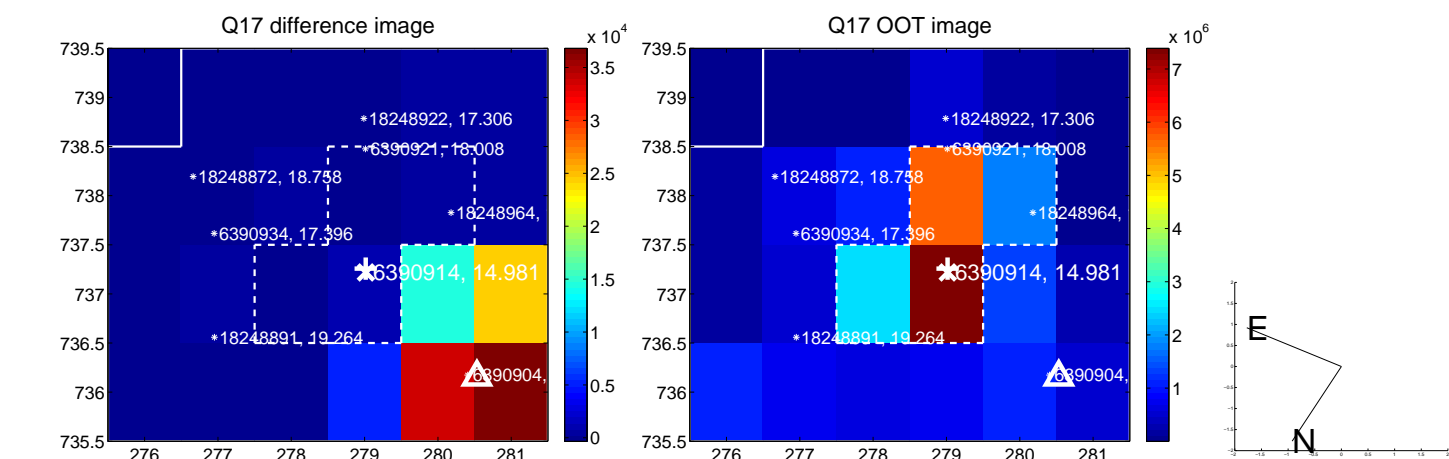
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

