

# KIC 003847660

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003847660-01	OBS	No	2.812090	134.211793	25.3	7.394	9.6	8.5	2.79	6809	1.63	6800.01
003847660-02	OBS	No	2.811980	132.549319	31.8	11.534	8.7	9.3	2.79	6809	3.15	6800.36
003847660-03	OBS	No	4.758623	131.597072	47.7	12.437	8.1	7.6	2.79	6809	2.24	3372.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003847660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003847660-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
003847660-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

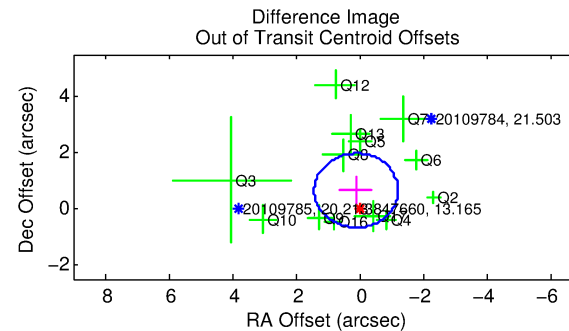
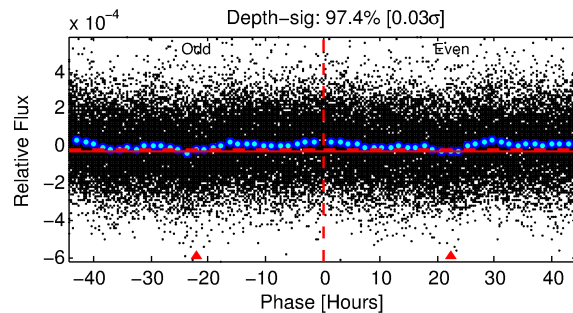
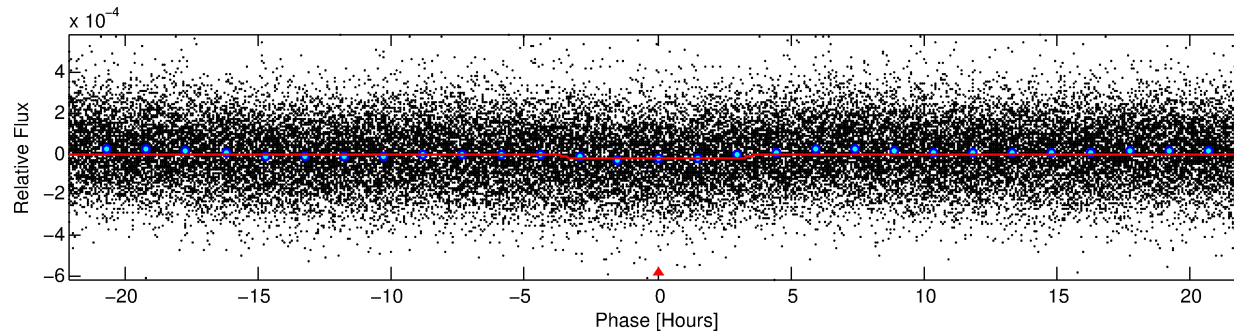
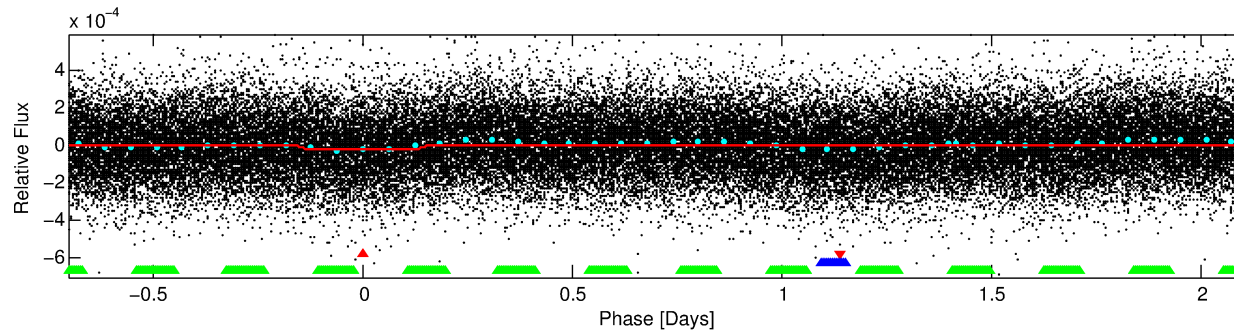
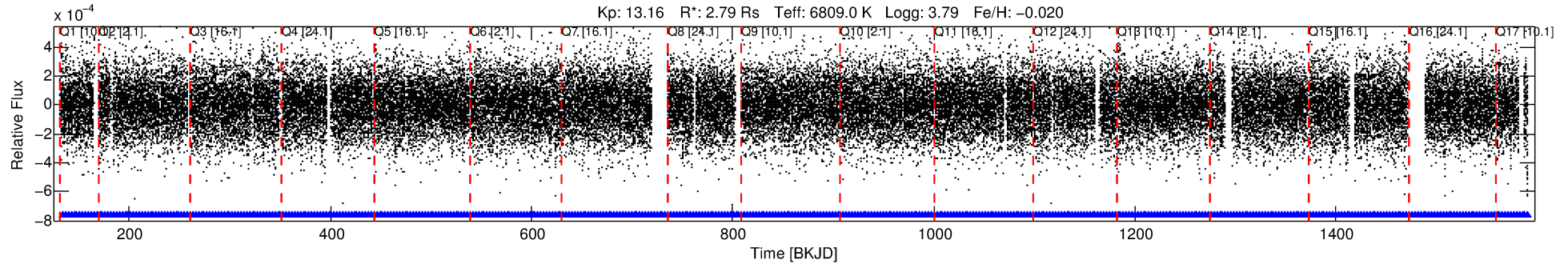
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003847660-01

No Significant Match Found

# DV One-Page Summary

KIC: 3847660 Candidate: 1 of 3 Period: 2.812 d



## DV Fit Results:

Period = 2.81209 [0.00003] d  
Epoch = 134.2118 [0.0064] BKJD  
Rp/R\* = 0.0054 [0.0013]  
a/R\* = 1.60 [1.38]  
b = 0.90 [0.30]  
Seff = 6800.01 [3394.27]  
Teq = 2316 [289] K  
Rp = 1.63 [0.68] Re  
a = 0.0469 [0.0146] AU  
Ag = 12.97 [8.89] [1.35 $\sigma$ ]  
Teffp = 6794 [869] K [4.89 $\sigma$ ]

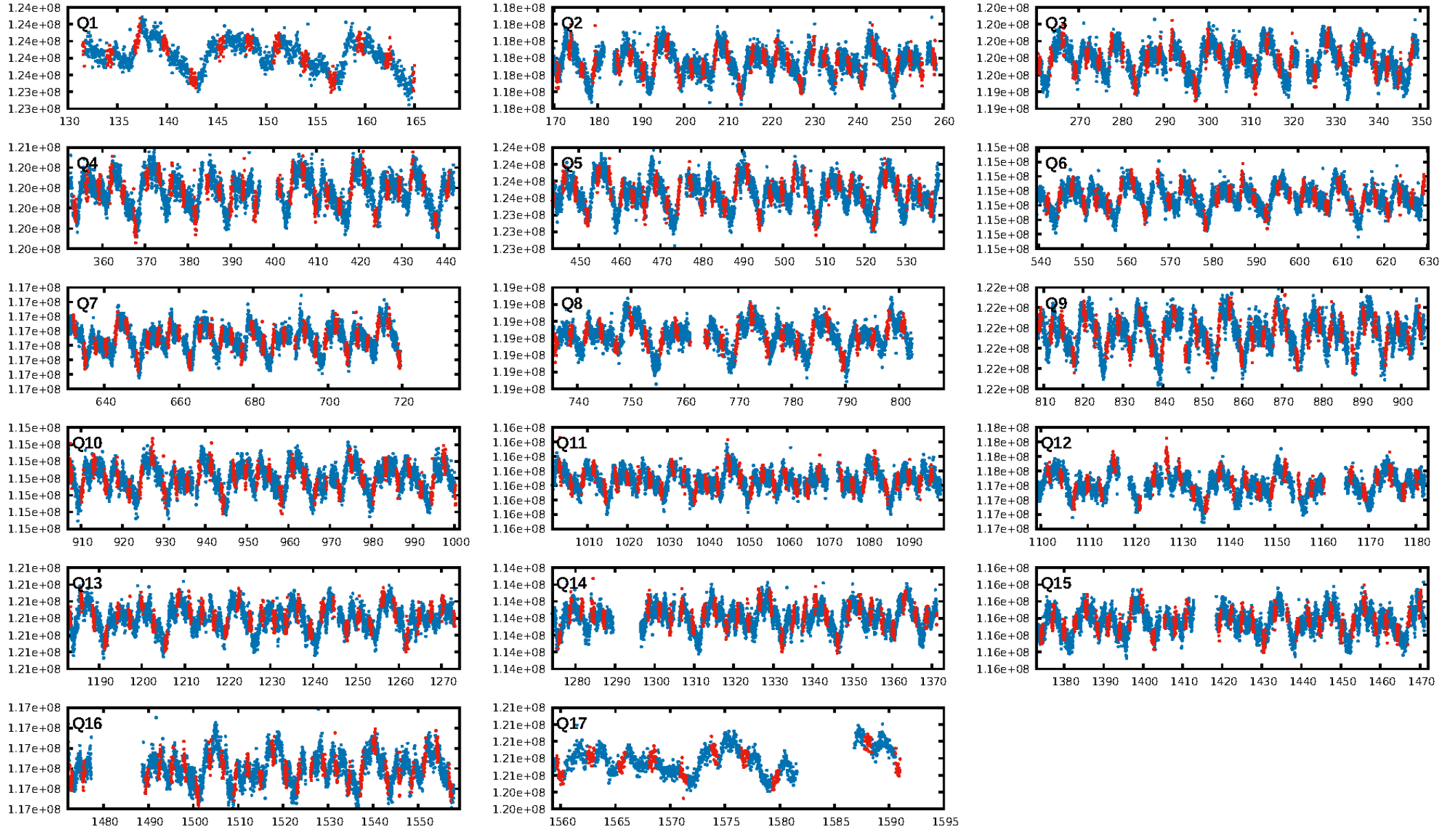
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 99.9% [3.23 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.09e-14  
RollingBand-fgt: 1.00 [464/464]  
GhostDiagnostic-chr: 4.446  
Centroid-sig: 20.6%  
Centroid-so: 1.144 arcsec [1.09 $\sigma$ ]  
OotOffset-rm: 0.659 arcsec [1.50 $\sigma$ ]  
KicOffset-rm: 0.654 arcsec [1.53 $\sigma$ ]  
OotOffset-st: 3/2/4/4 [13]  
KicOffset-st: 3/2/4/4 [13]  
DiffImageQuality-fgm: 0.69 [9/13]  
DiffImageOverlap-fno: 1.00 [17/17]

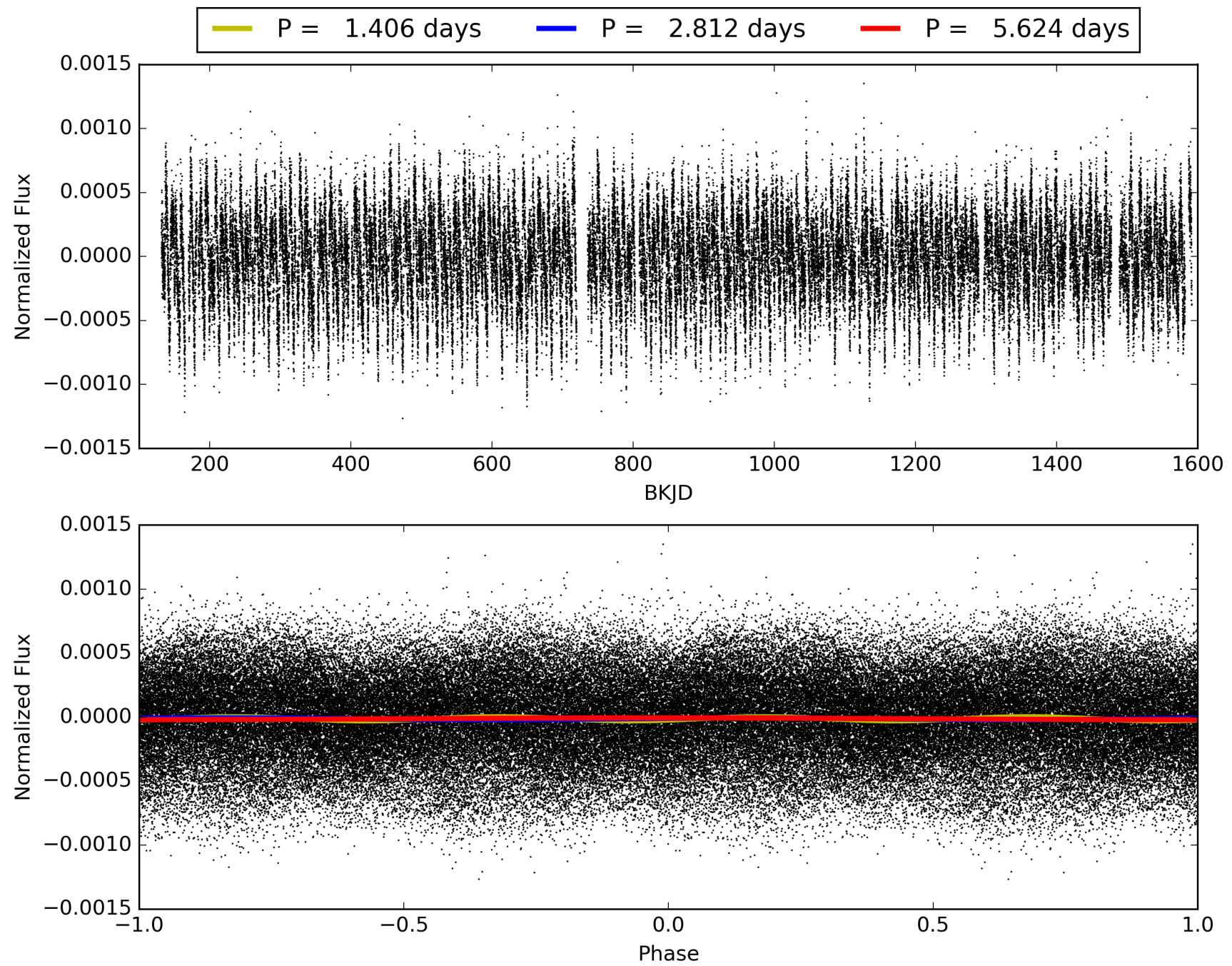
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:16:35 Z

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

# TCE 003847660-01, PDC Light Curves



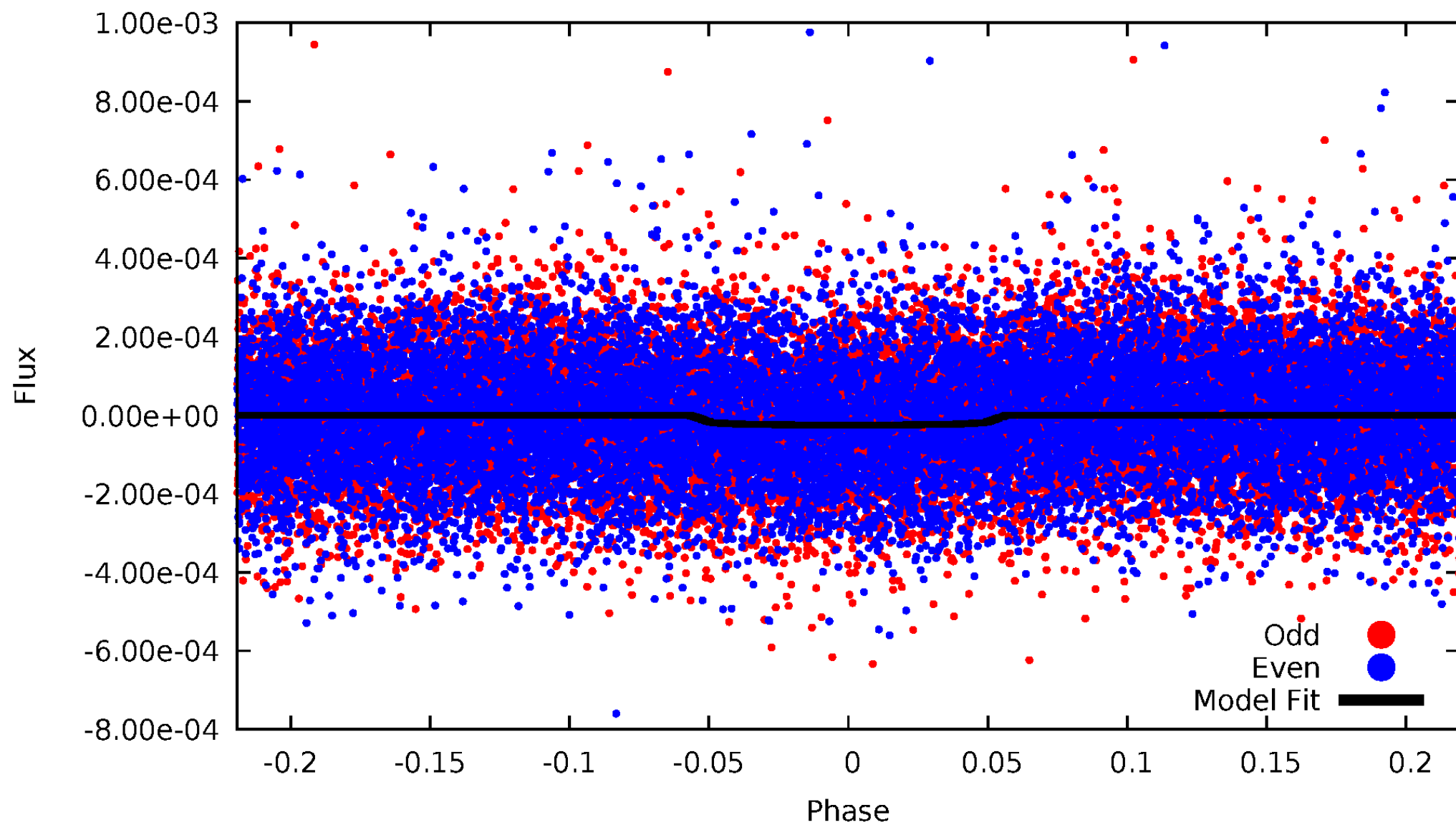
TCE 003847660-01





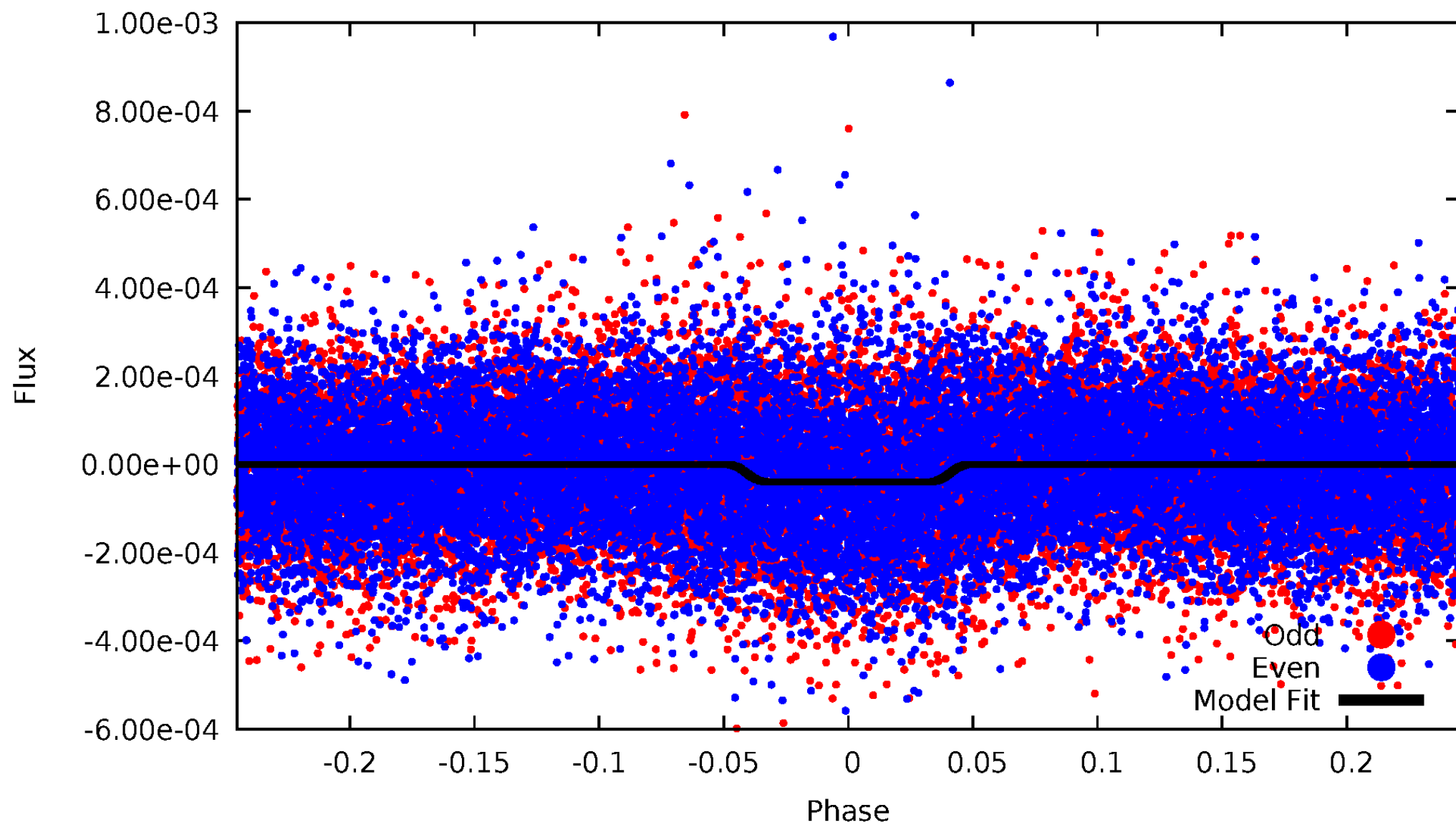
# DV Odd/Even

TCE 003847660-01



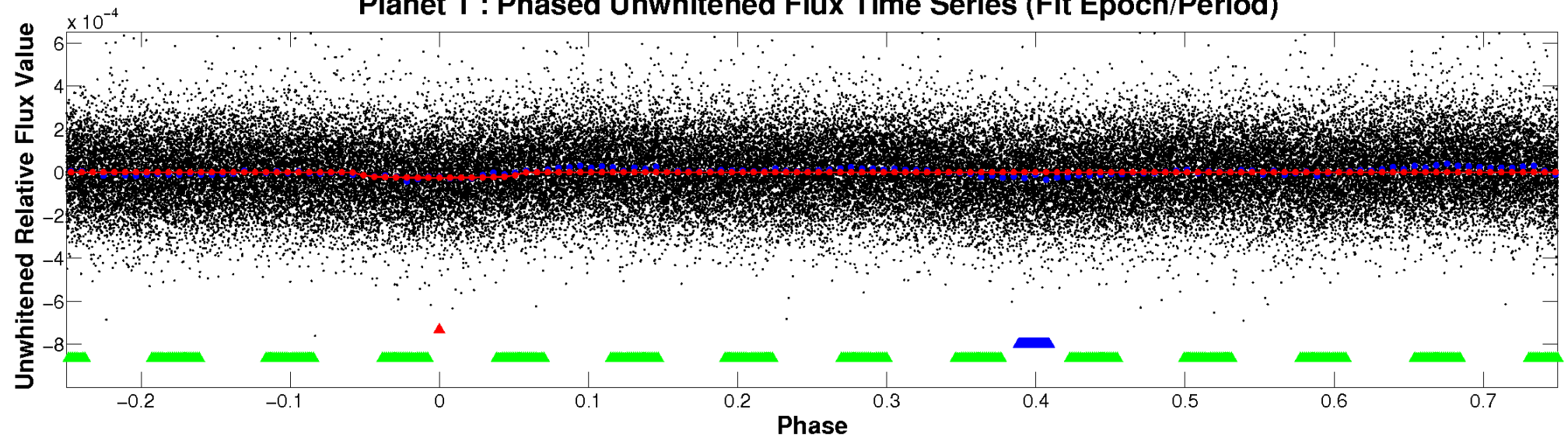
# ALT Odd/Even

TCE 003847660-01

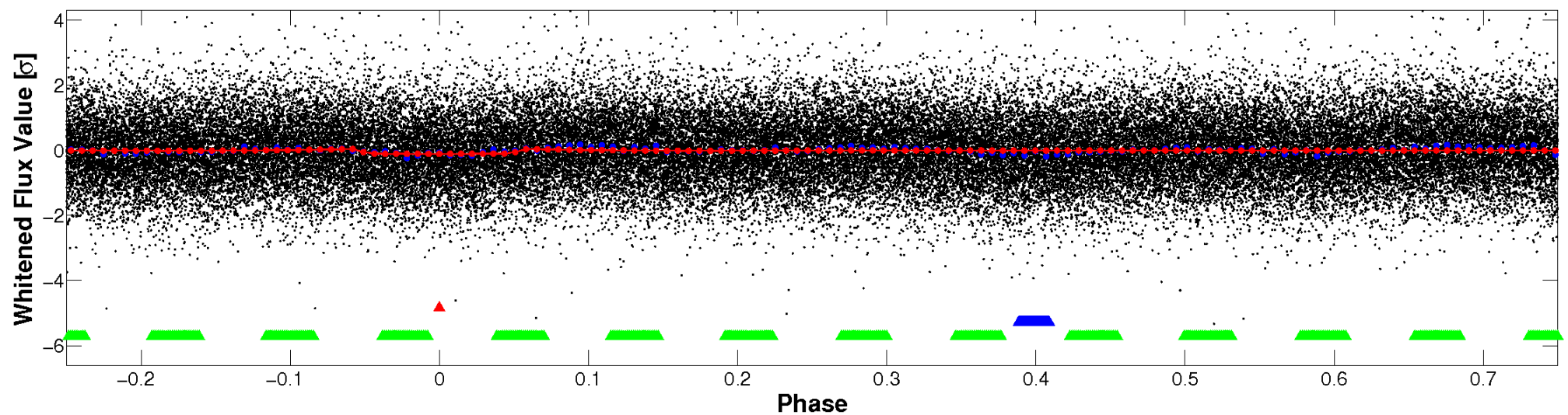


# Non-Whitened Vs. Whitened Light Curve

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

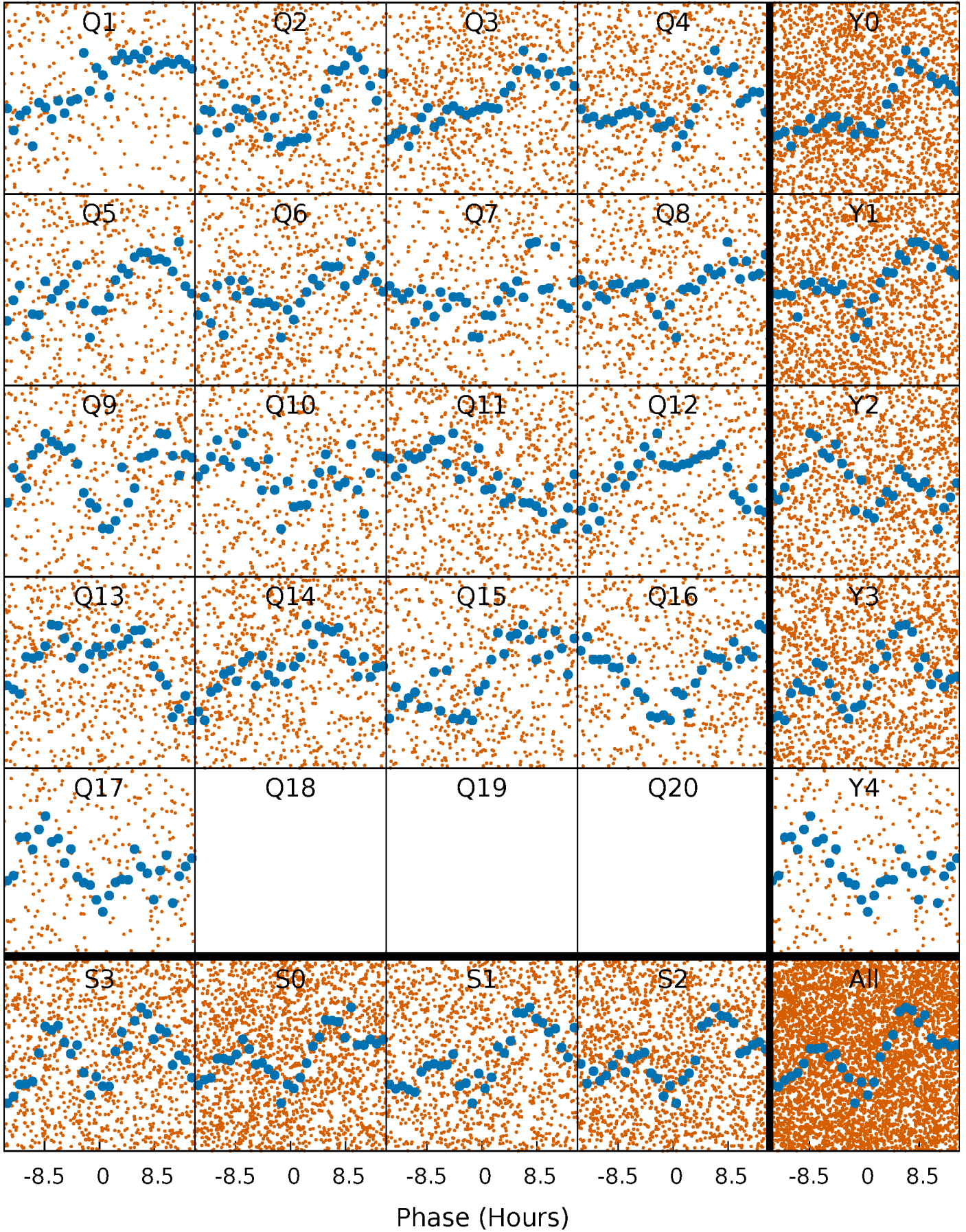


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

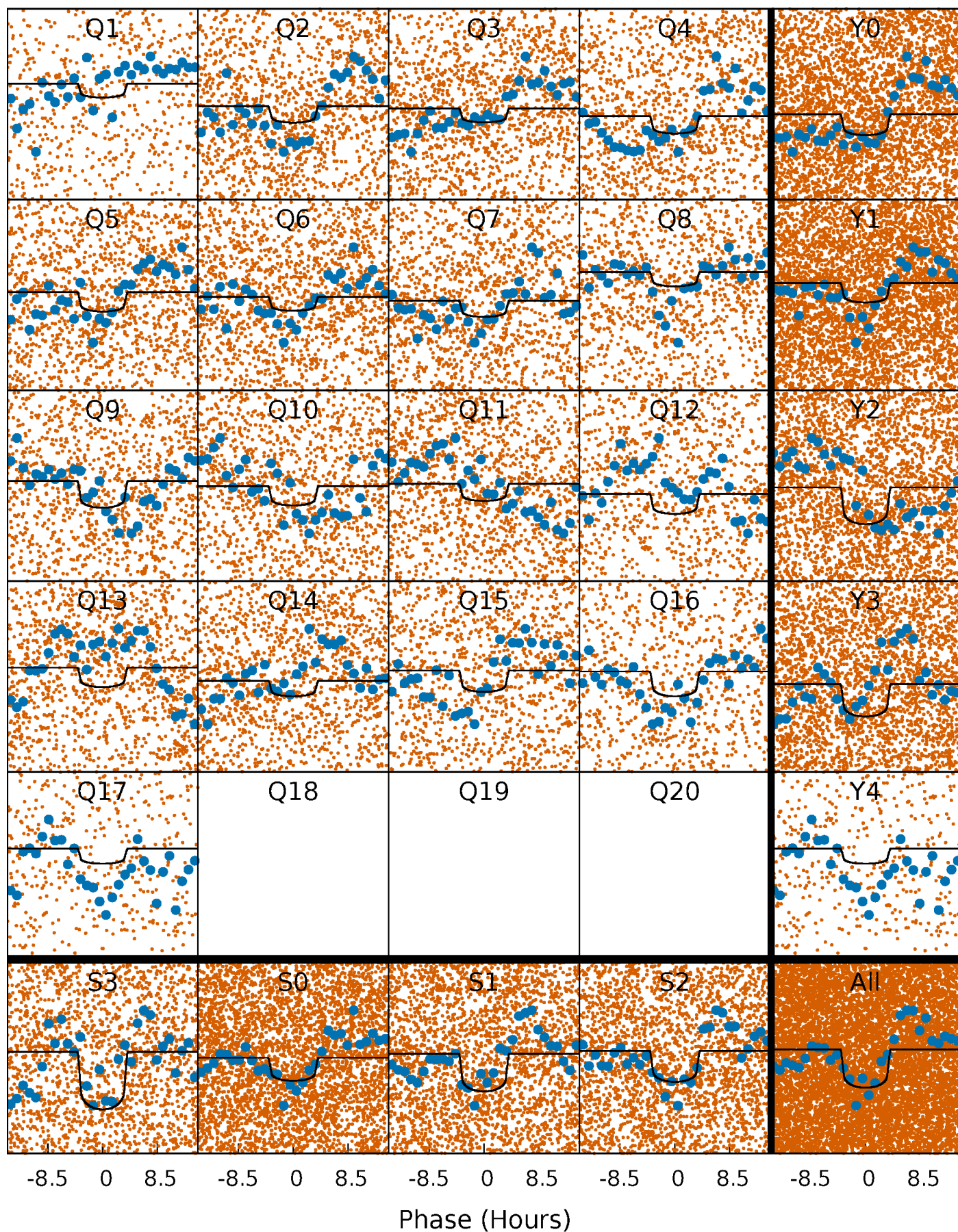
TCE 003847660-01 P= 2.812090 Days  $T_0=134.211793$  (BKJD)





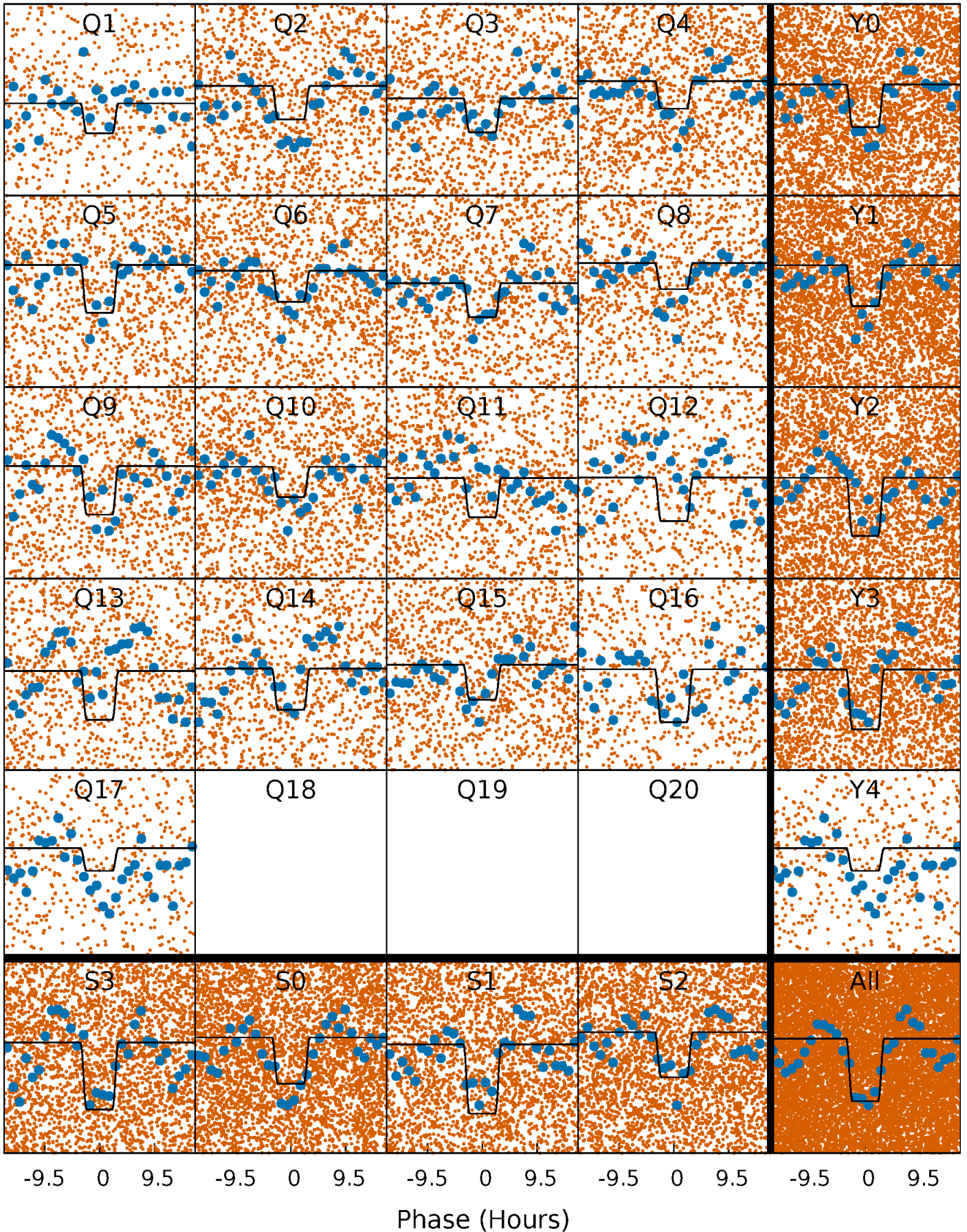
# DV Quarter-Phased Transit Curves

TCE 003847660-01 P= 2.812090 Days  $T_0=134.211793$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003847660-01 P= 2.811982 Days  $T_0=134.223695$  (BKJD)

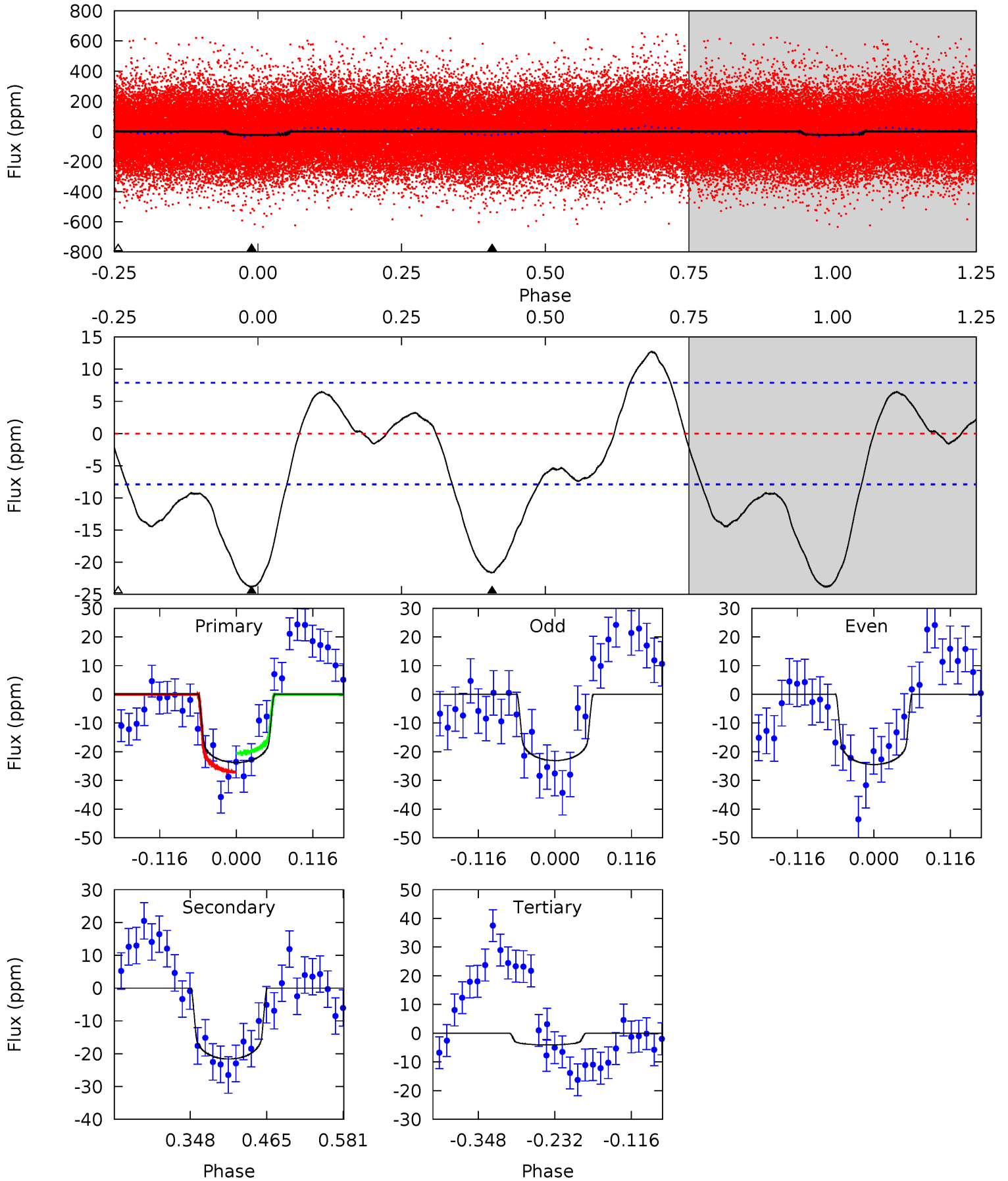




# DV Model-Shift Uniqueness Test

003847660-01, P = 2.812090 Days, E = 131.399703 Days

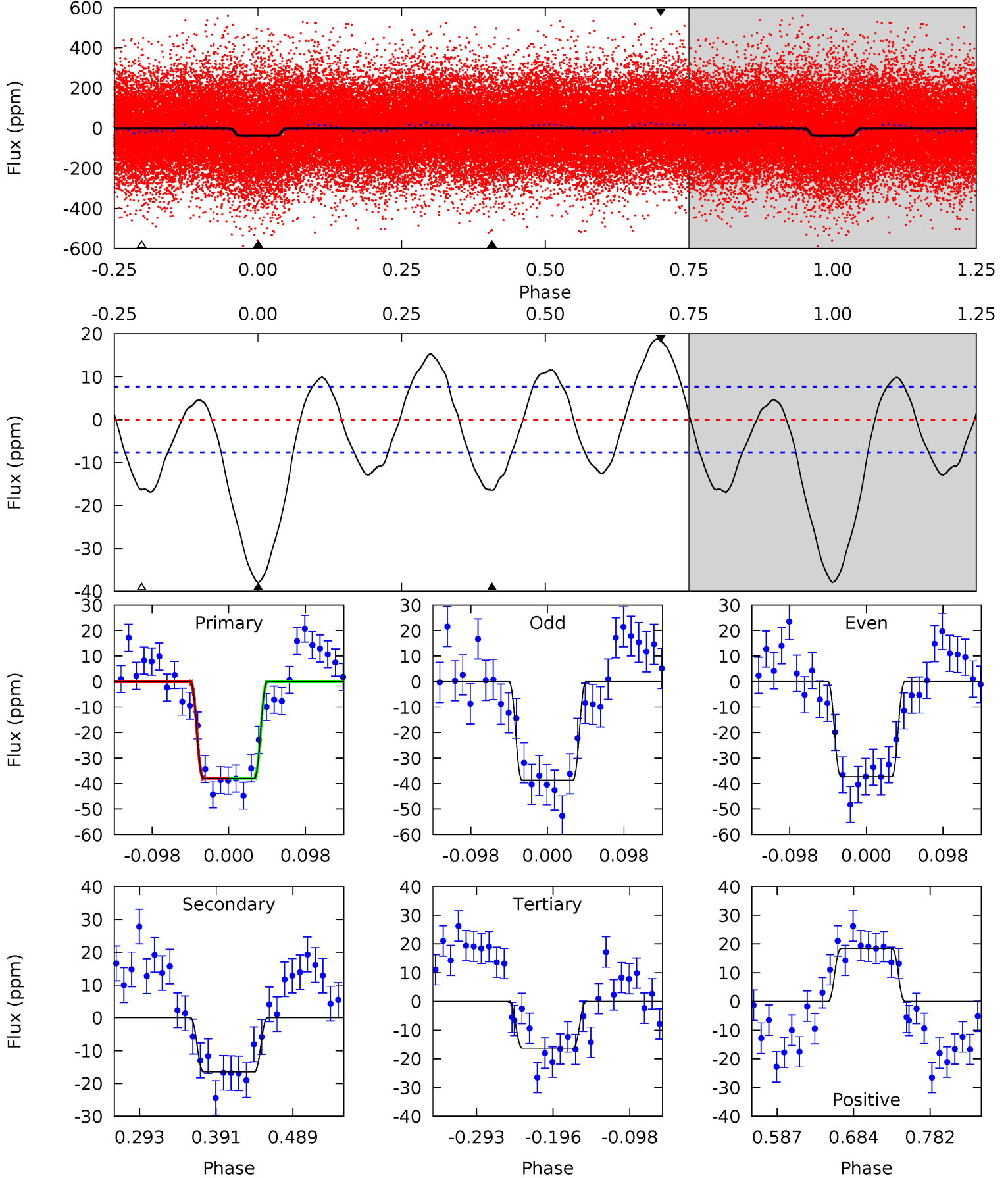
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	12.4	2.34	0	4.53	1.57	4.29	11.3	13.7	10.1	12.4	0.39	0.85	0.35	1.89



# Alt Model-Shift Uniqueness Test

003847660-01, P = 2.811982 Days, E = 131.411713 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
22.4	9.76	9.65	10.9	4.57	1.66	6.05	12.8	11.5	0.11	-1.19	0.43	0.92	0.33	0.00





### Stellar Parameters For KIC 003847660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6809^{+163}_{-244}$	$3.788^{+0.273}_{-0.097}$	$-0.020^{+0.250}_{-0.300}$	$2.786^{+0.444}_{-0.962}$	$1.737^{+0.155}_{-0.362}$	$0.113^{+0.234}_{-0.035}$
	+2%/-4%	+7%/-3%	+1250%/-1500%	+16%/-35%	+9%/-21%	+207%/-31%
Source	PHO1	FLK73	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 003847660-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-22±2	$1.51^{+0.49}_{-0.43}$	$3181^{+178}_{-268}$	$6307^{+1164}_{-728}$	$11^{+11}_{-5}$
Alt.	-16±2	$1.79^{+0.53}_{-0.48}$	$3169^{+199}_{-295}$	$5389^{+713}_{-495}$	$6.136^{+5.023}_{-2.422}$

$T_{max}$  = 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

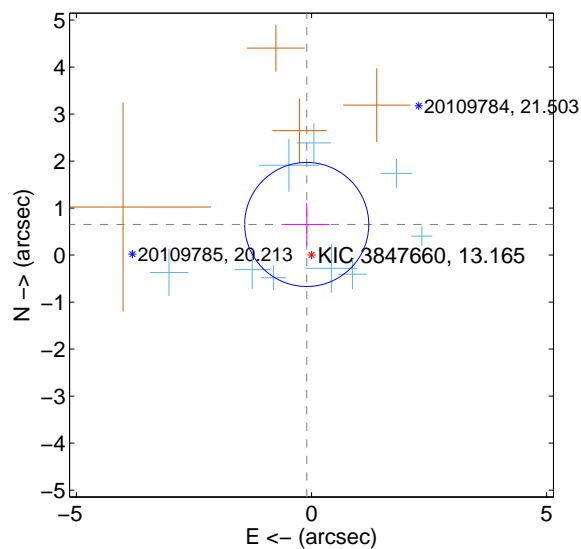
Supplemental centroid analysis for 003847660-01. Kepler magnitude: 13.16. Transit SNR 8.48

There are 9 quarters with good PRF difference image offsets

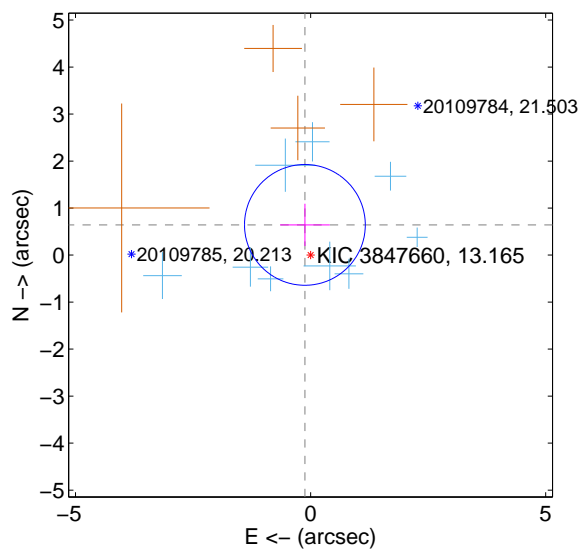
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.659 \pm 0.440$	1.50	$0.102 \pm 0.487$	$0.652 \pm 0.456$
PRF-fit source offset from KIC position	$0.654 \pm 0.428$	1.53	$0.121 \pm 0.529$	$0.643 \pm 0.449$
photometric centroid source offset	$1.14 \pm 1.05$	1.09	$-0.50 \pm 0.87$	$-1.03 \pm 1.09$

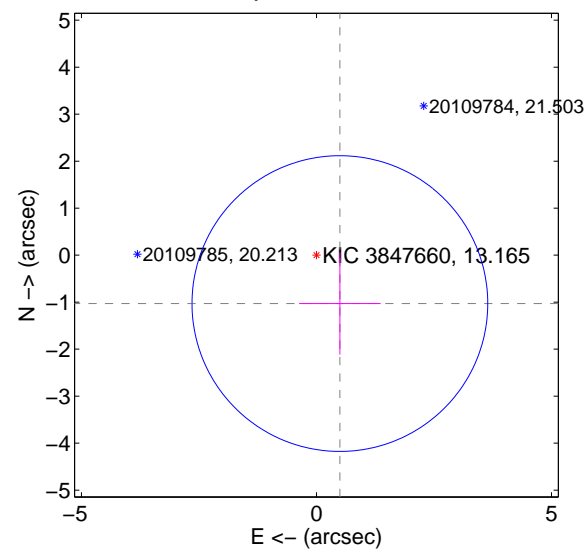
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

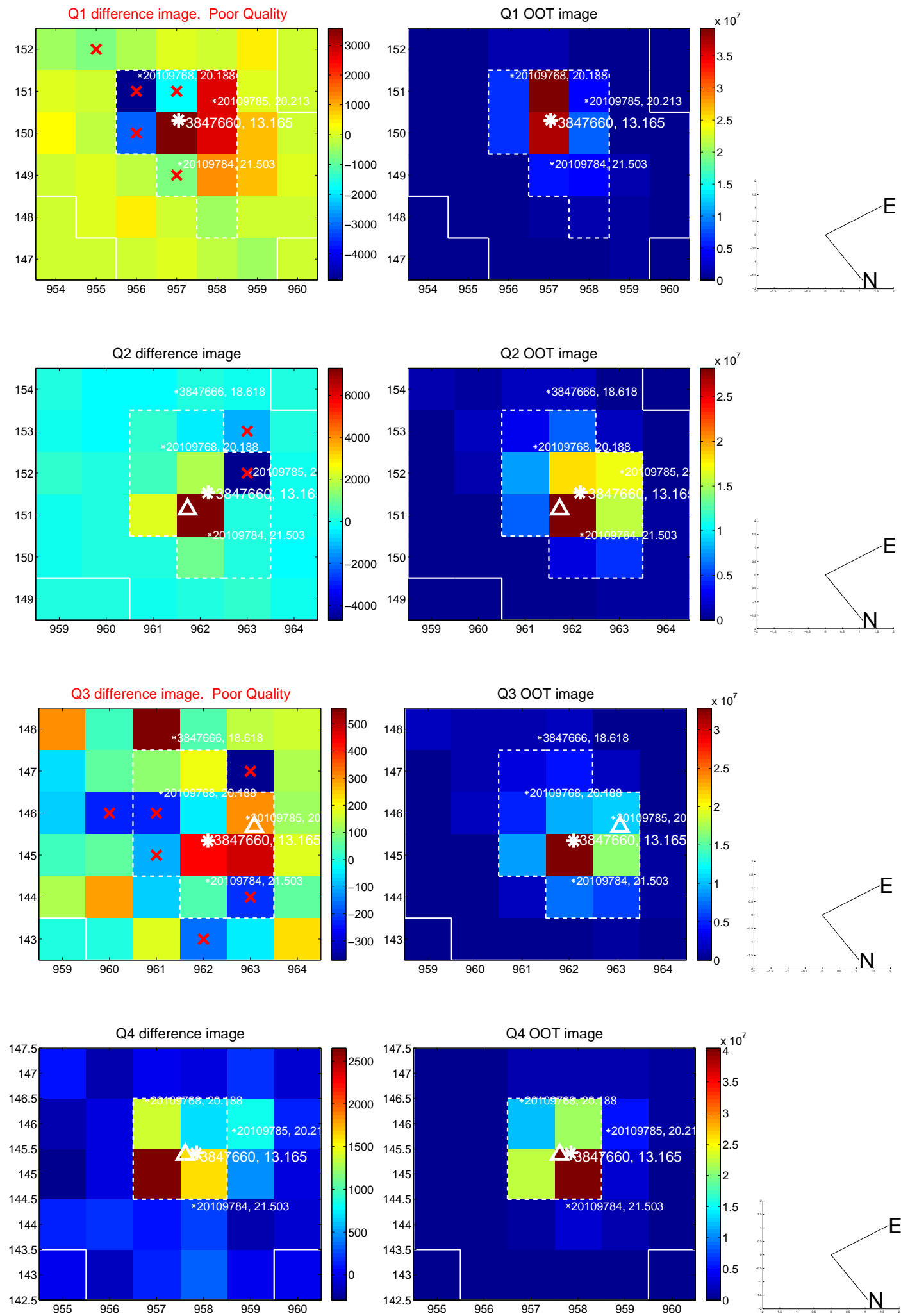


offset from photometric centroids

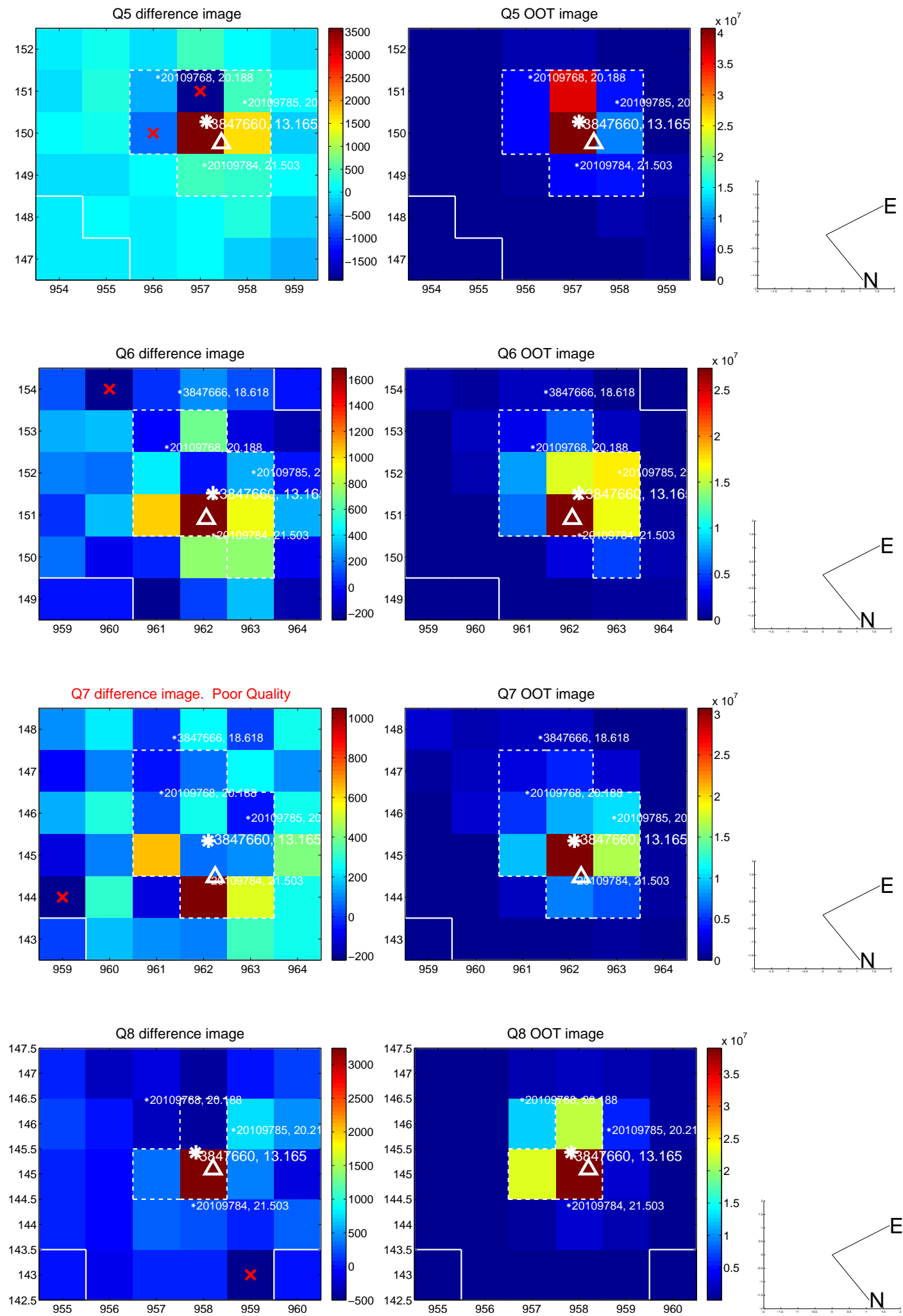


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

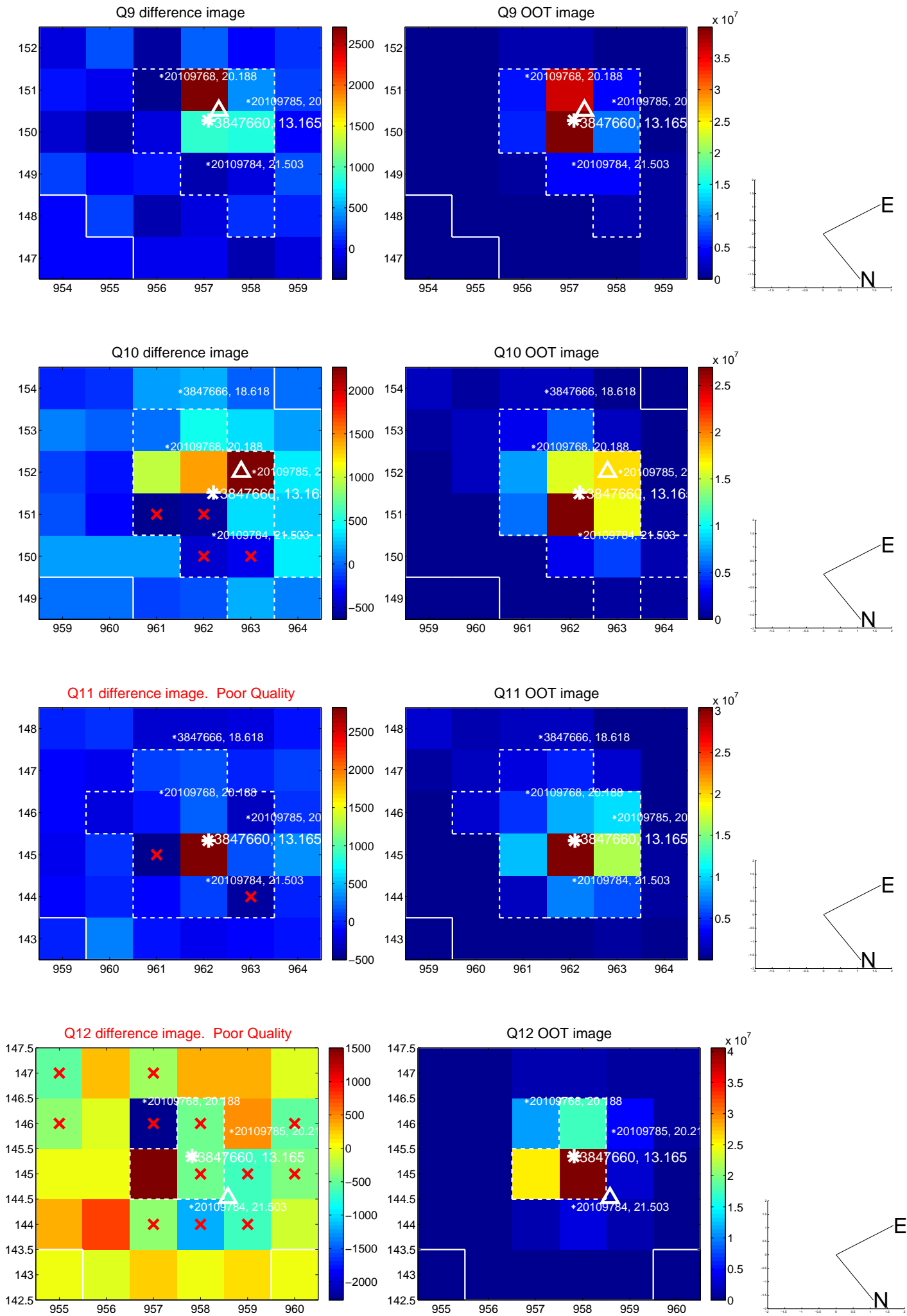


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

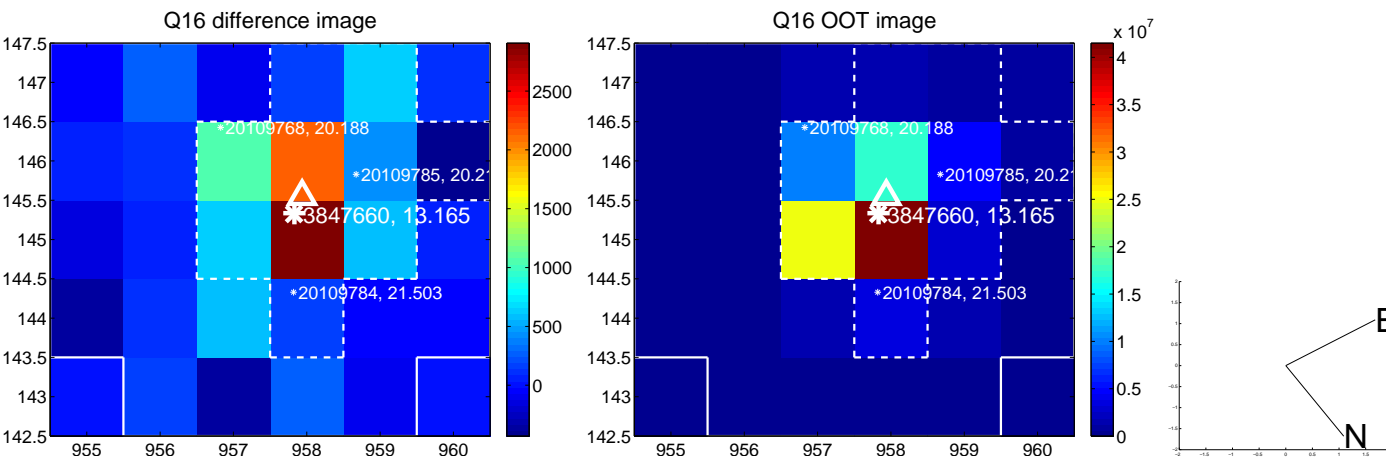
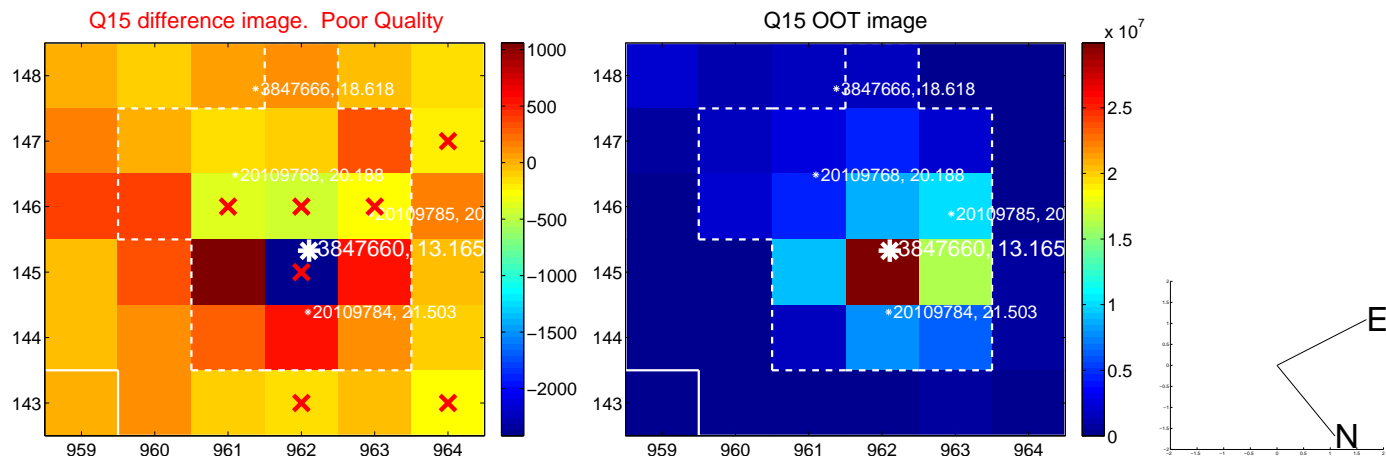
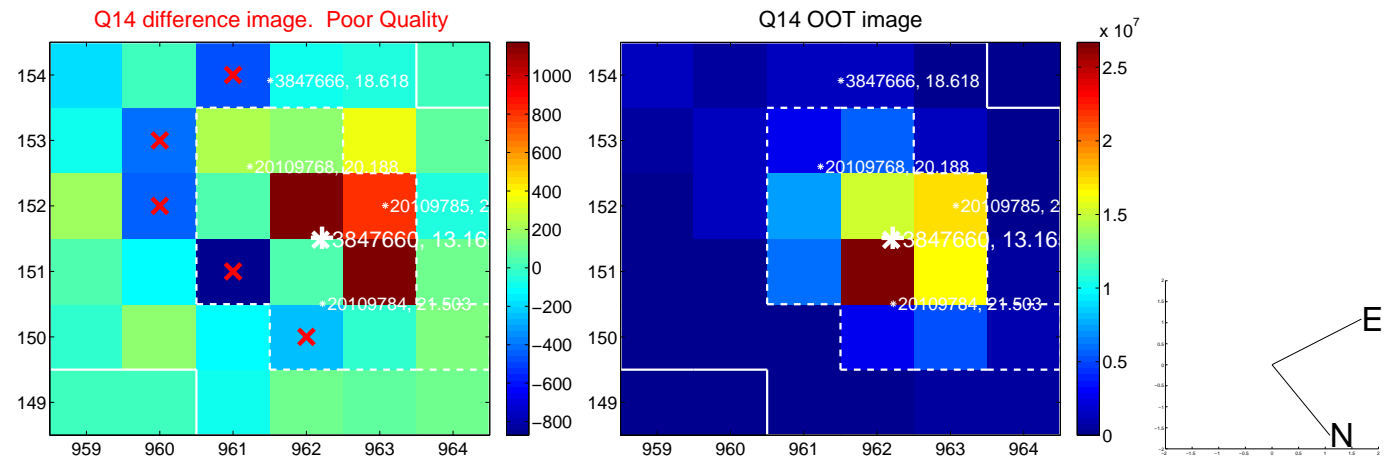
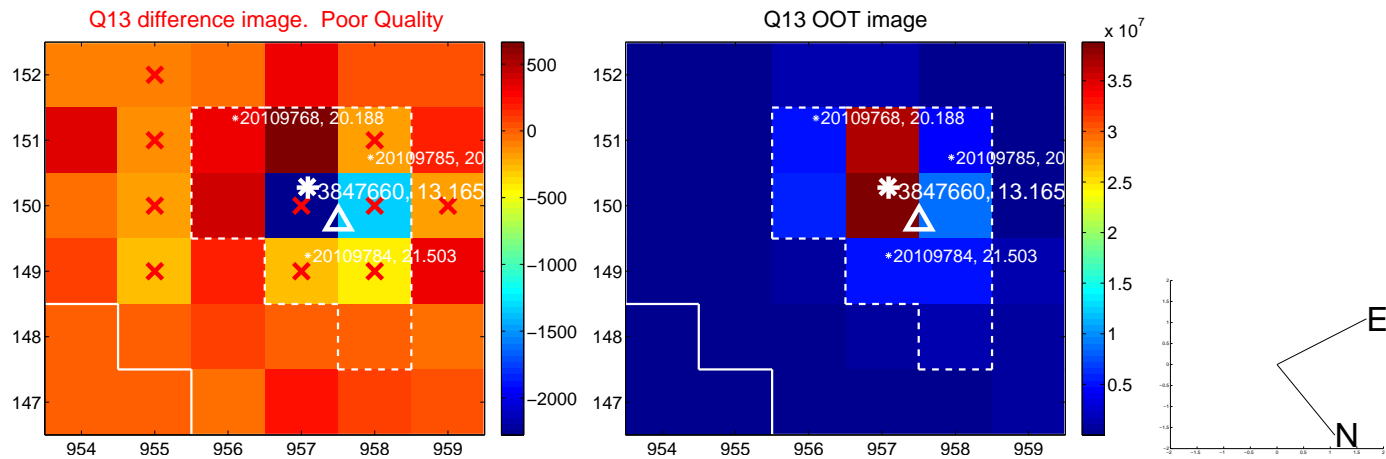




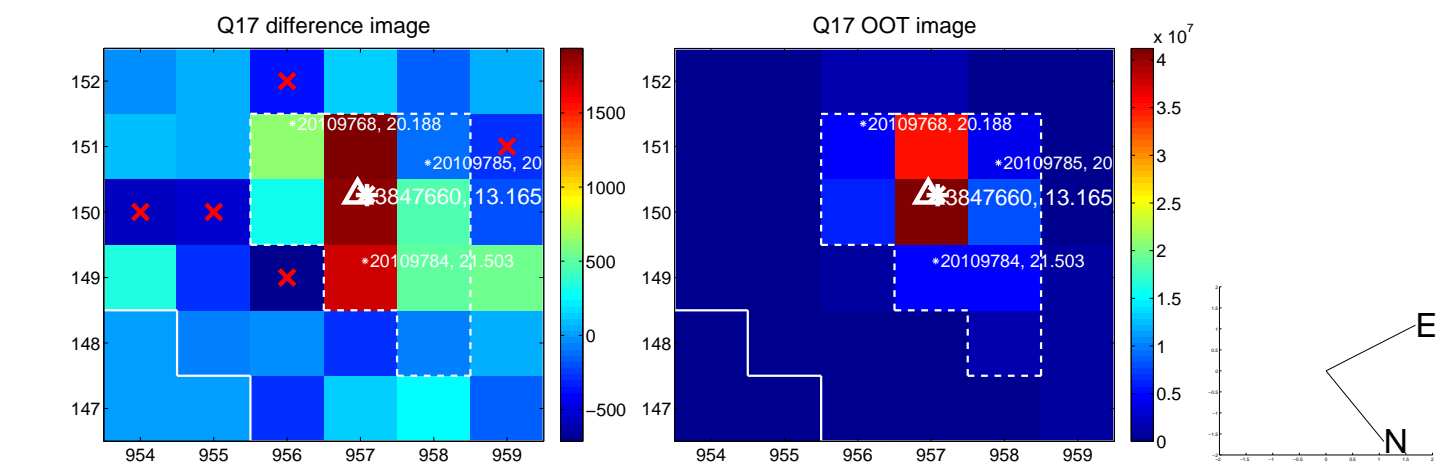
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



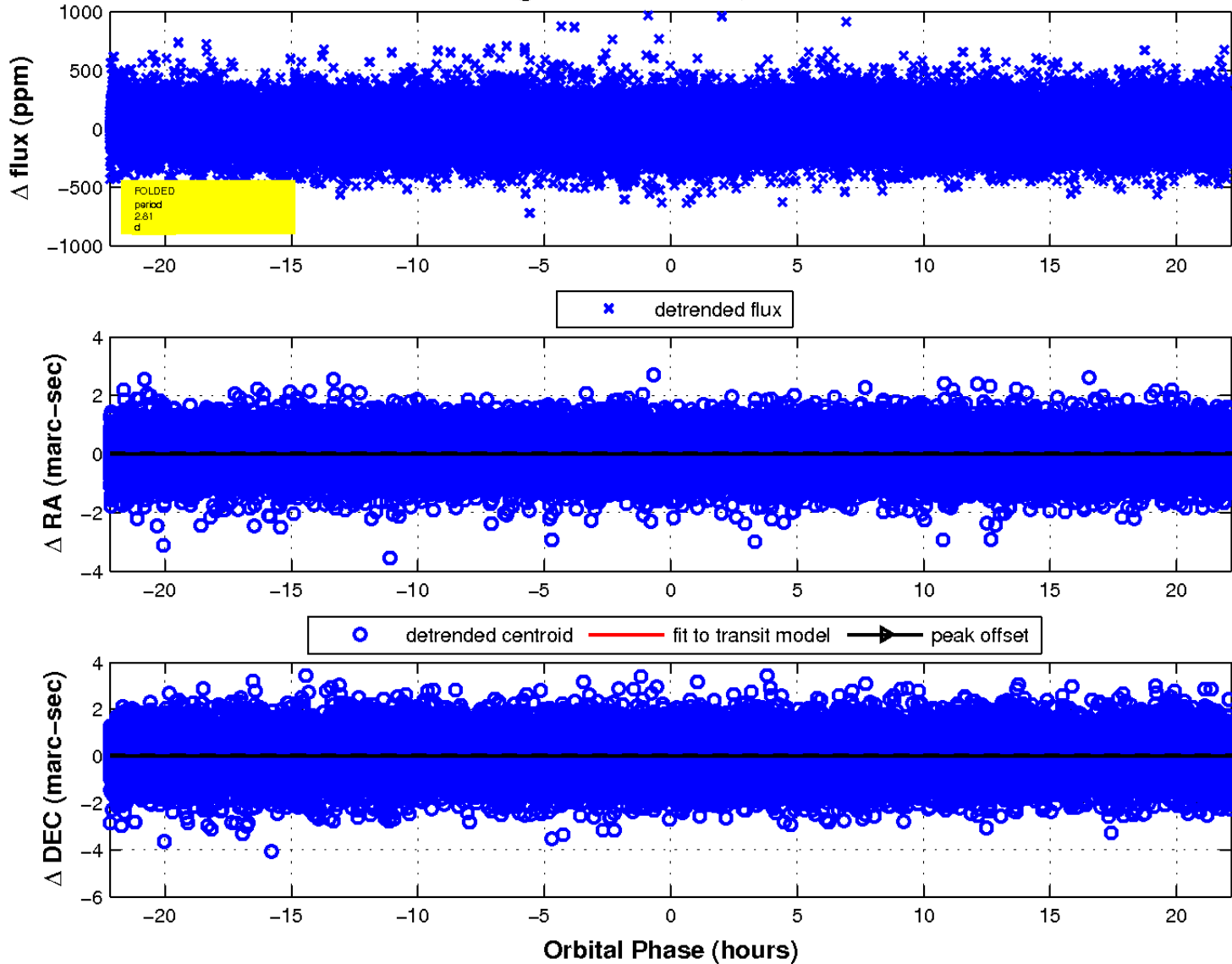
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

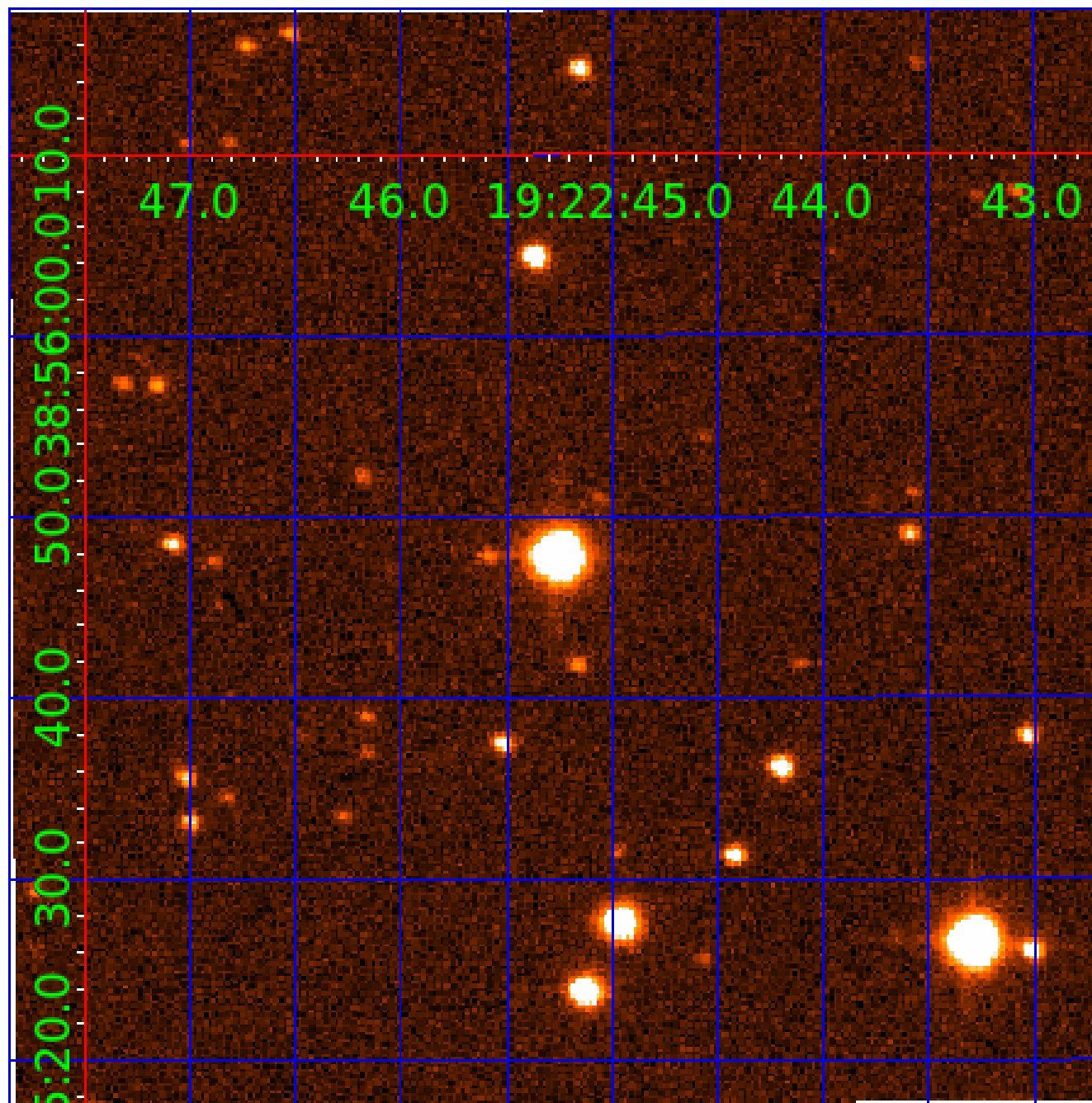


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 003847660

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003847660-01	OBS	No	2.812090	134.211793	25.3	7.394	9.6	8.5	2.79	6809	1.63	6800.01
003847660-02	OBS	No	2.811980	132.549319	31.8	11.534	8.7	9.3	2.79	6809	3.15	6800.36
003847660-03	OBS	No	4.758623	131.597072	47.7	12.437	8.1	7.6	2.79	6809	2.24	3372.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003847660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003847660-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
003847660-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

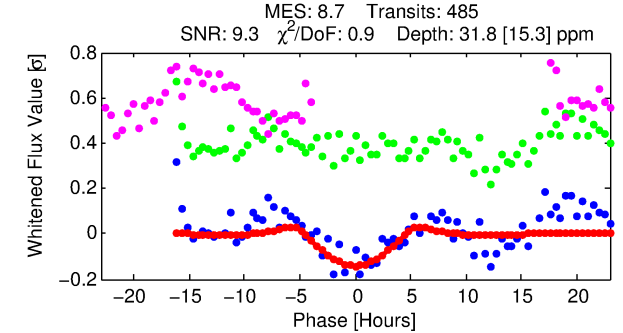
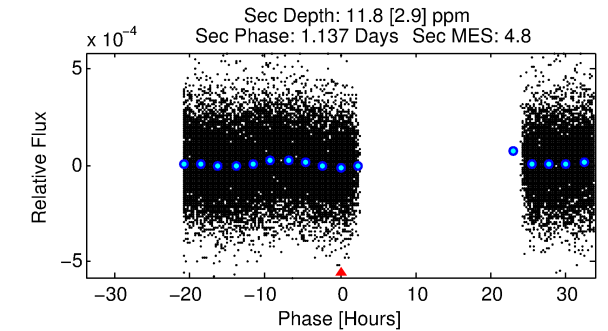
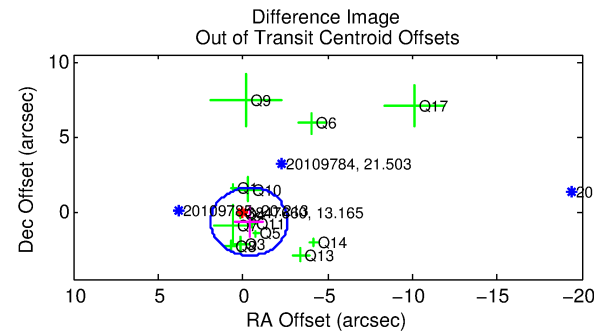
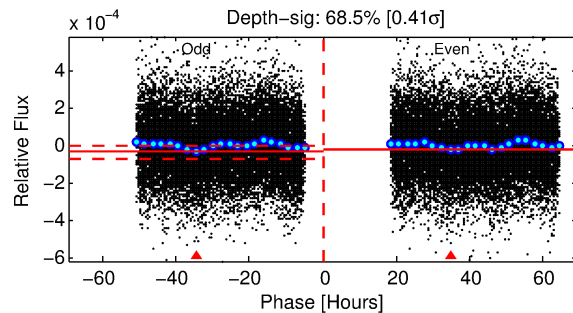
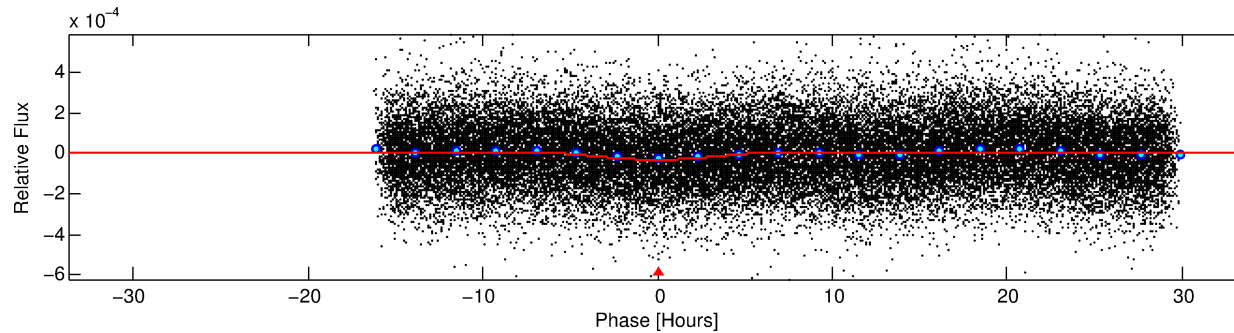
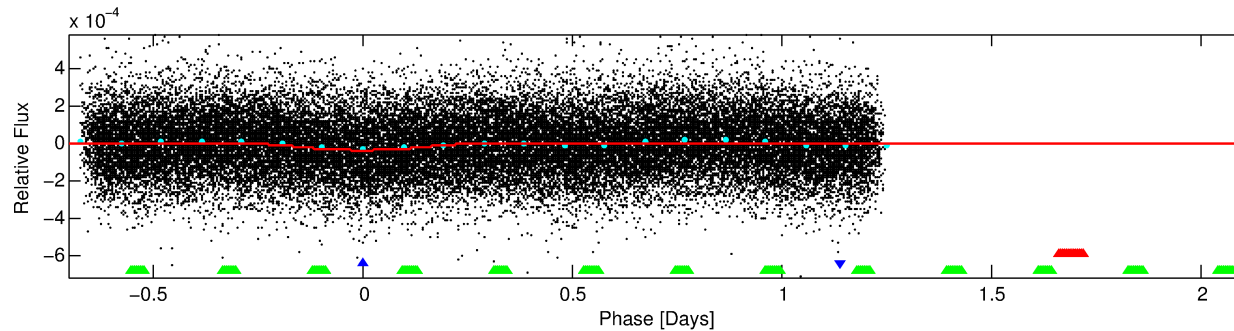
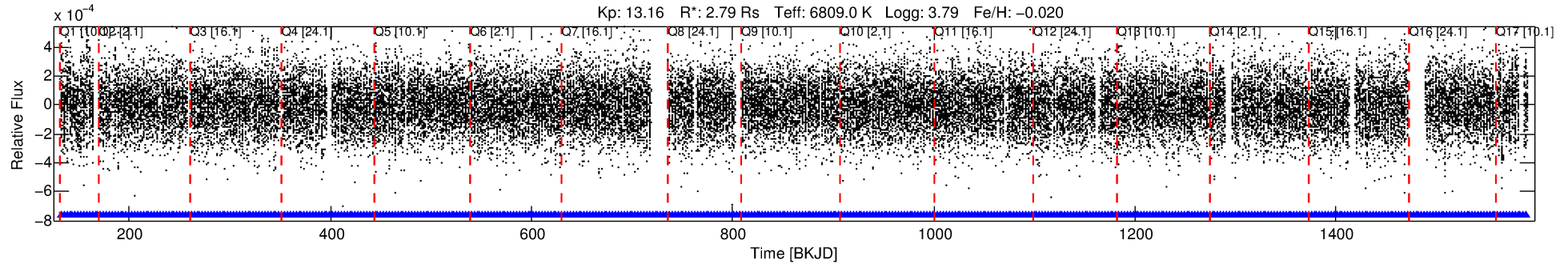
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003847660-02

No Significant Match Found

# DV One-Page Summary

KIC: 3847660 Candidate: 2 of 3 Period: 2.812 d



## DV Fit Results:

Period = 2.81198 [0.00008] d  
Epoch = 132.5493 [0.0228] BKJD  
Rp/R\* = 0.0104 [0.0216]  
a/R\* = 1.04 [0.02]  
b = 1.00 [0.03]  
Teff = 6800.36 [3394.45]  
Teq = 2316 [289] K  
Rp = 3.15 [6.64] Re  
a = 0.0469 [0.0146] AU  
Ag = 1.44 [6.04] [0.07 $\sigma$ ]  
Teffp = 3921 [4089] K [0.39 $\sigma$ ]

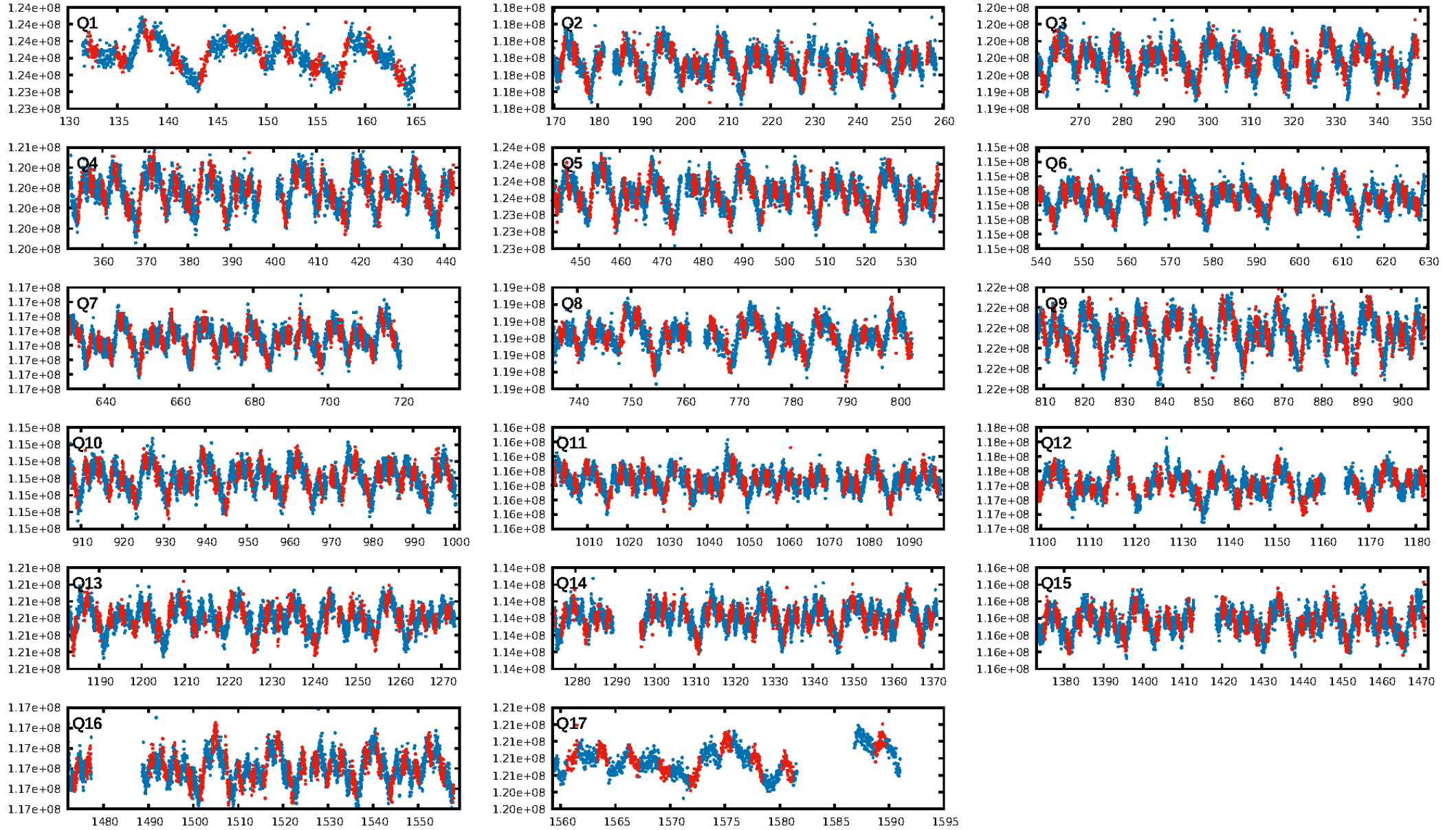
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.07e-16  
RollingBand-fgt: 1.00 [464/464]  
GhostDiagnostic-chr: 1.975  
Centroid-sig: 42.5%  
Centroid-so: 0.778 arcsec [0.91 $\sigma$ ]  
OotOffset-rm: 0.768 arcsec [1.01 $\sigma$ ]  
KicOffset-rm: 0.793 arcsec [1.02 $\sigma$ ]  
OotOffset-st: 3/3/2/5 [13]  
KicOffset-st: 3/3/2/5 [13]  
DiffImageQuality-fgm: 0.31 [4/13]  
DiffImageOverlap-fno: 1.00 [17/17]

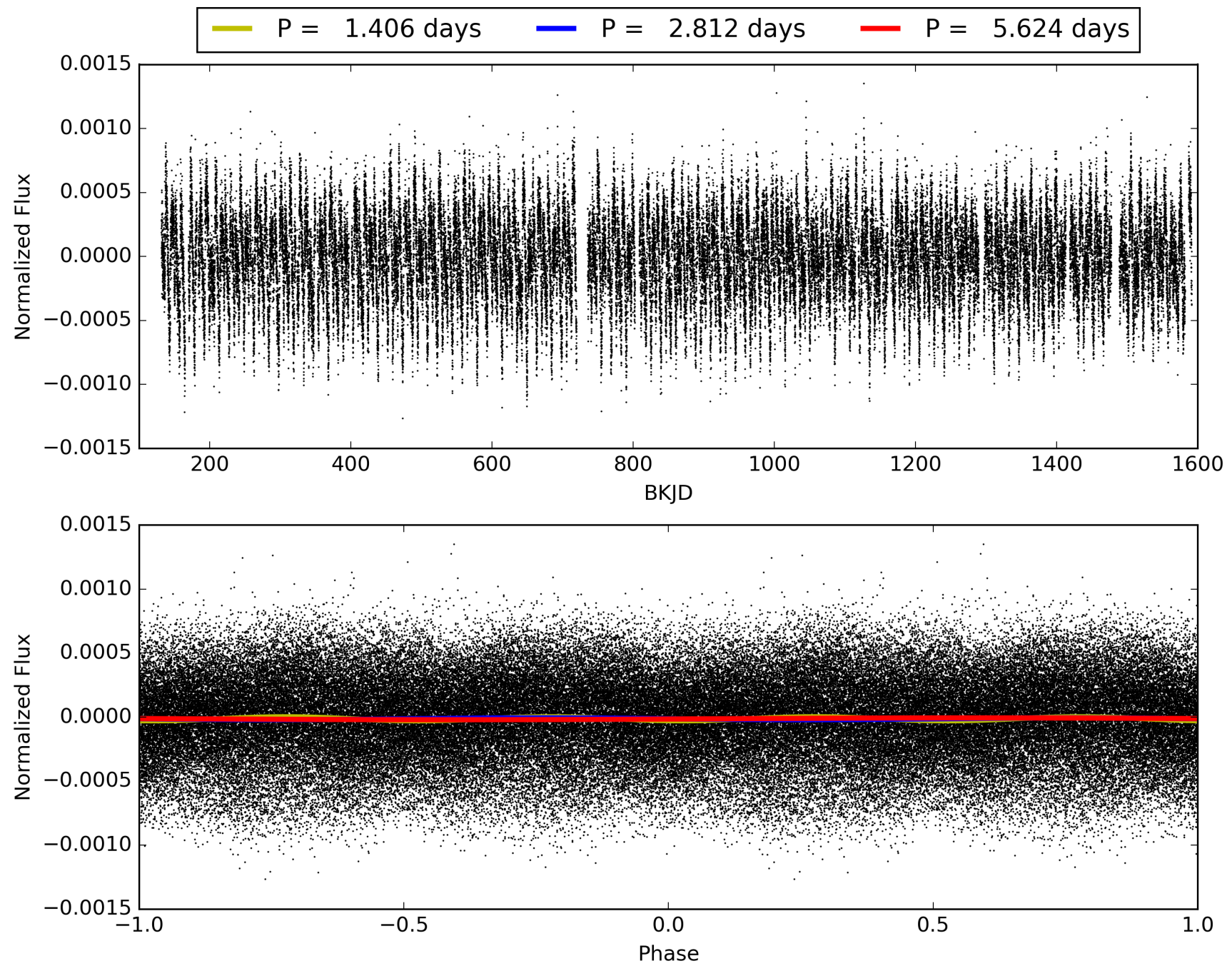
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:16:46 Z

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

# TCE 003847660-02, PDC Light Curves



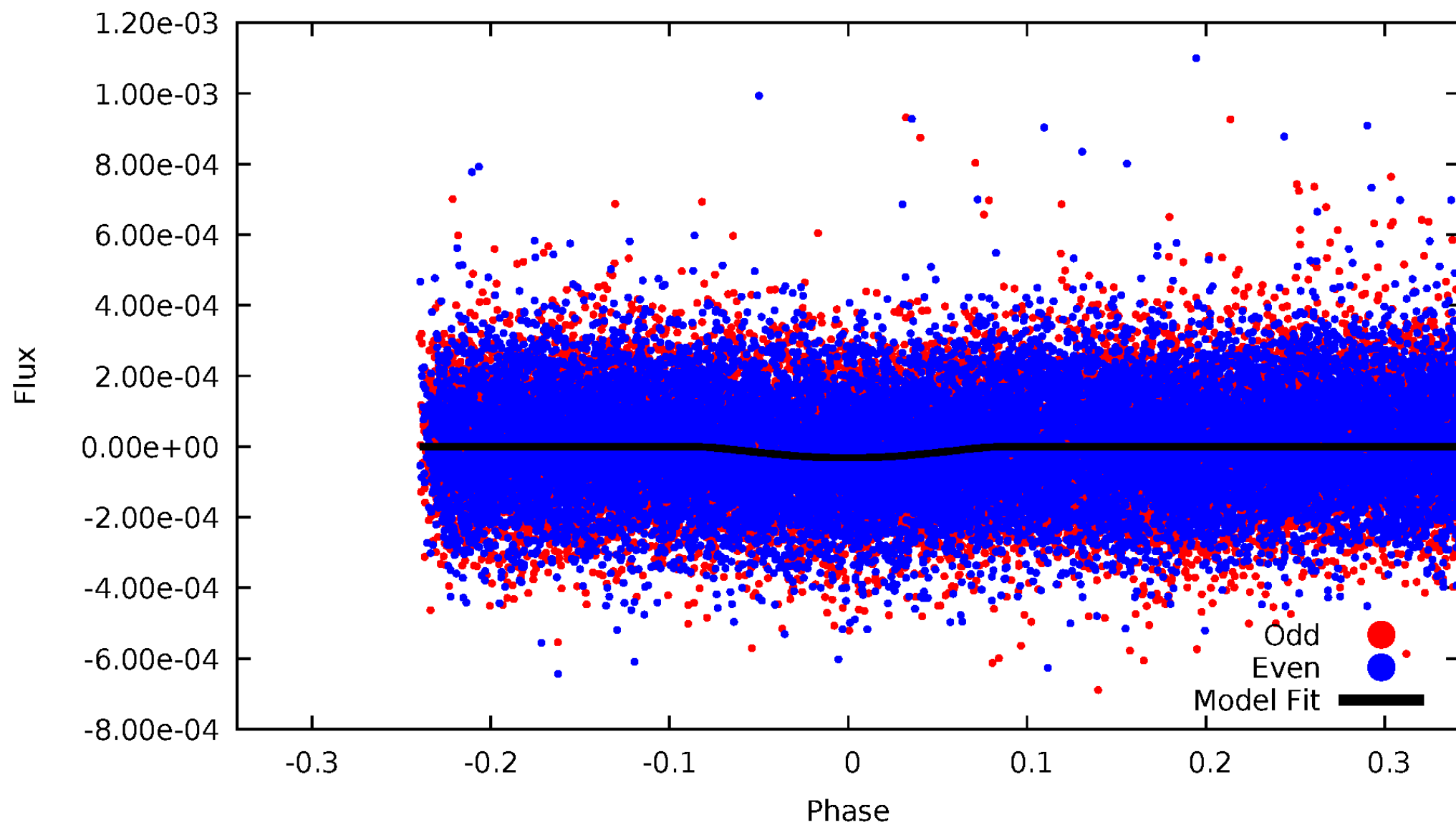
TCE 003847660-02





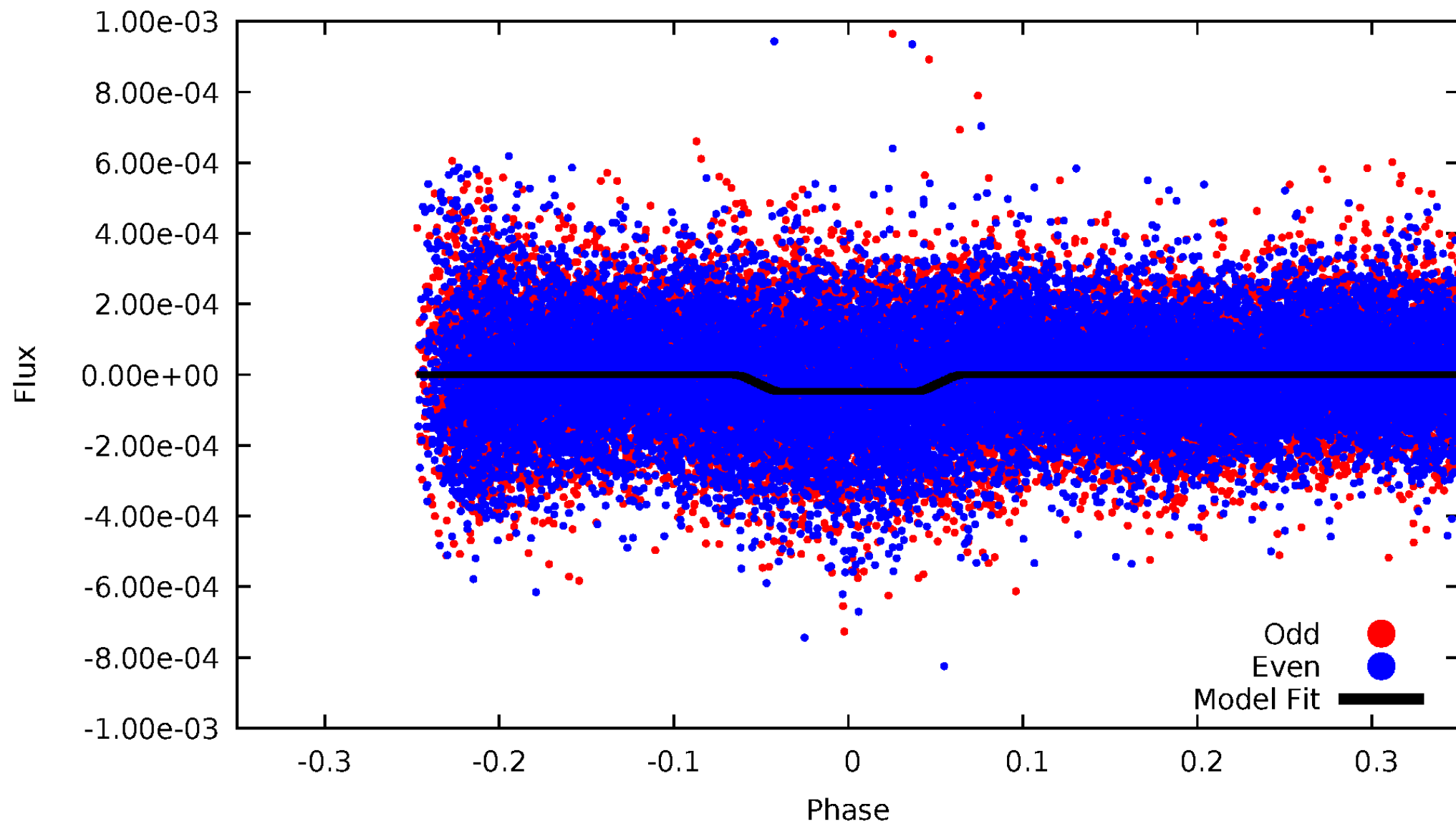
# DV Odd/Even

TCE 003847660-02



# ALT Odd/Even

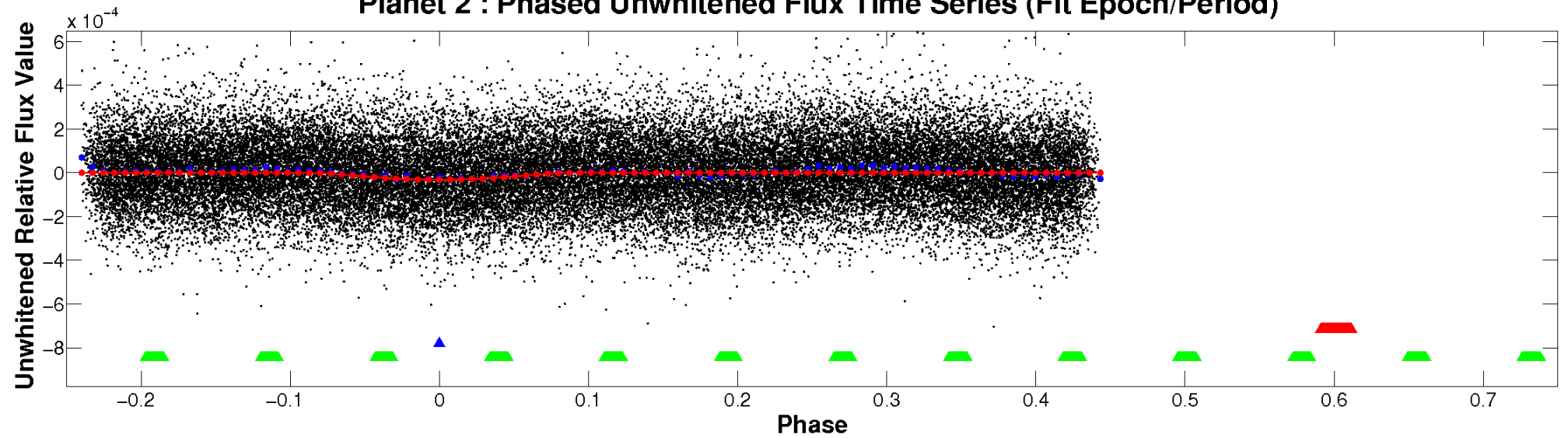
TCE 003847660-02



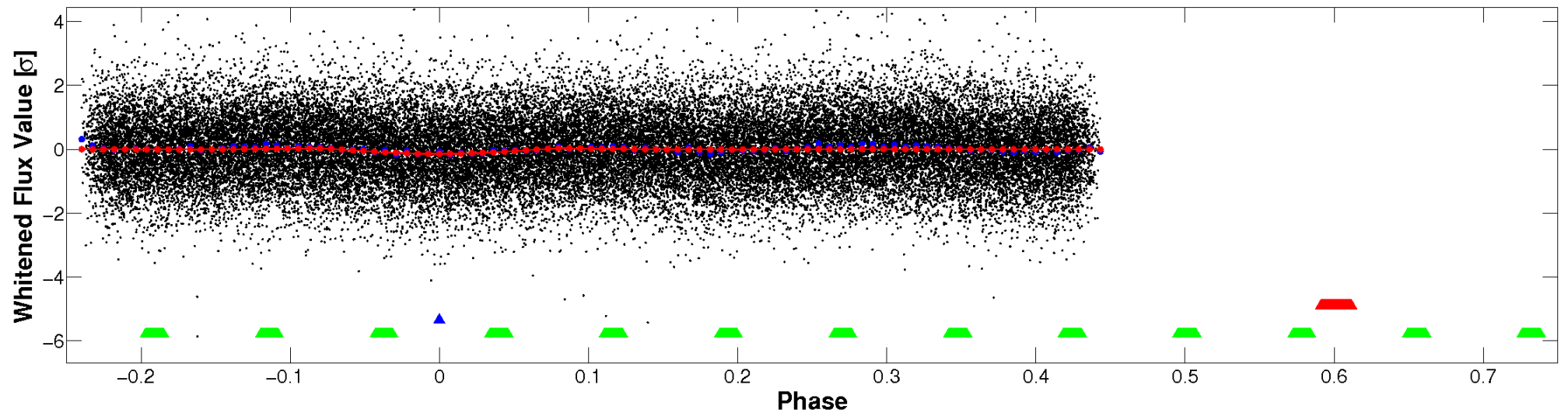


# Non-Whitened Vs. Whitened Light Curve

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

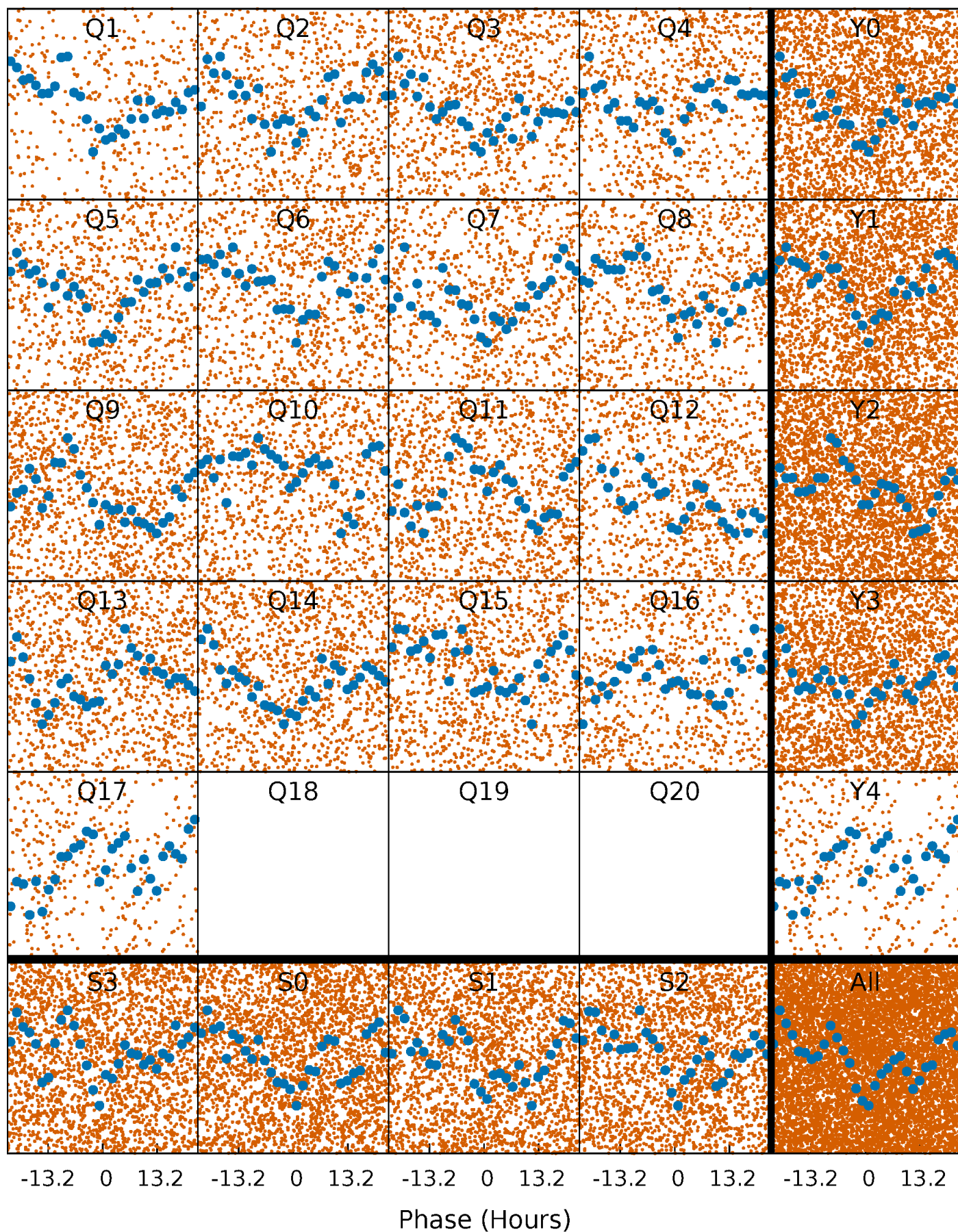


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

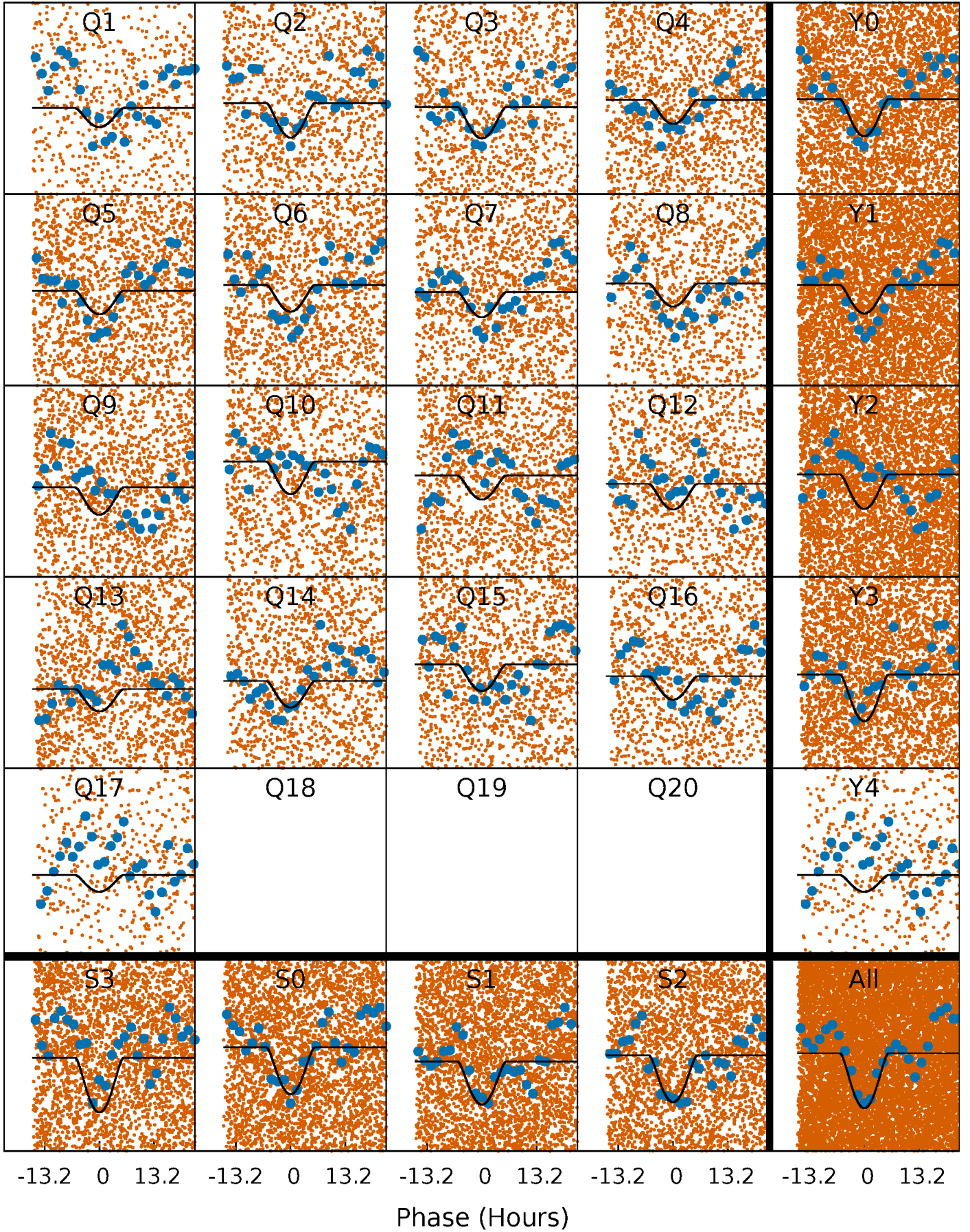
TCE 003847660-02 P= 2.811980 Days  $T_0=132.549319$  (BKJD)





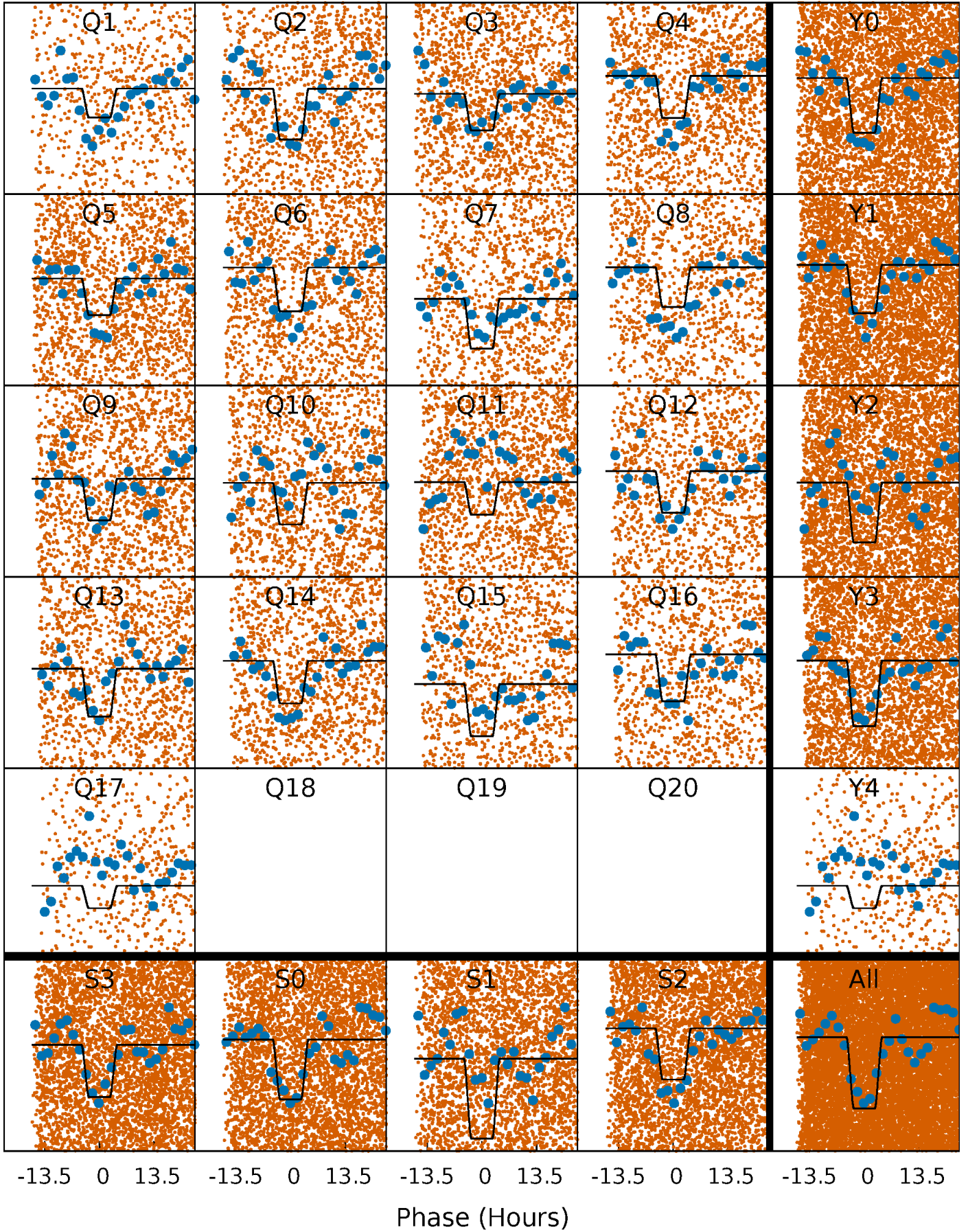
# DV Quarter-Phased Transit Curves

TCE 003847660-02   P= 2.811980 Days    $T_0=132.549319$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003847660-02   P= 2.811891 Days    $T_0=132.570542$  (BKJD)

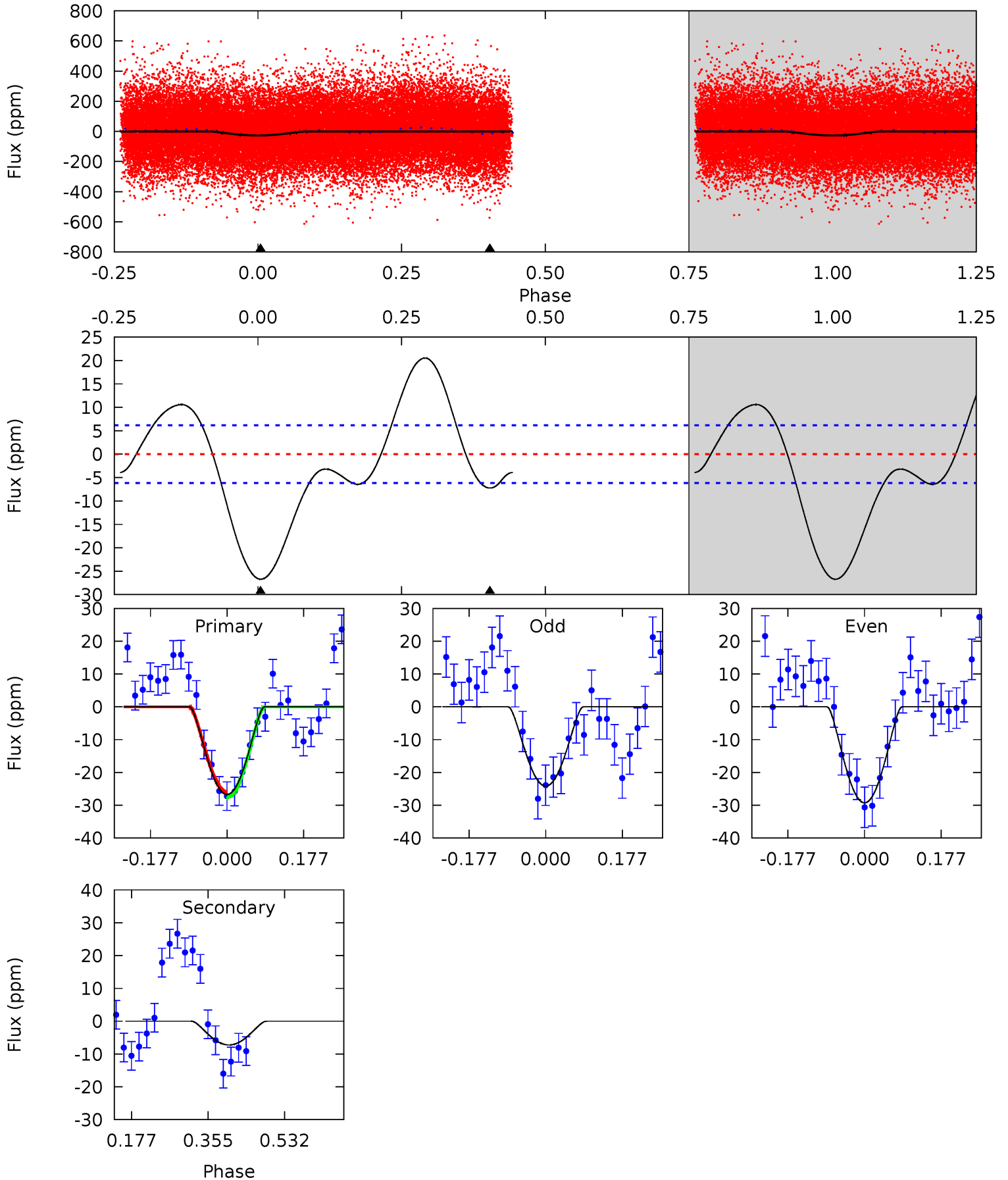




# DV Model-Shift Uniqueness Test

003847660-02, P = 2.811980 Days, E = 129.737339 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
19.2	5.22	0	0	4.44	1.35	2.82	19.2	19.2	5.22	5.22	1.83	1.11	0.43	0.59

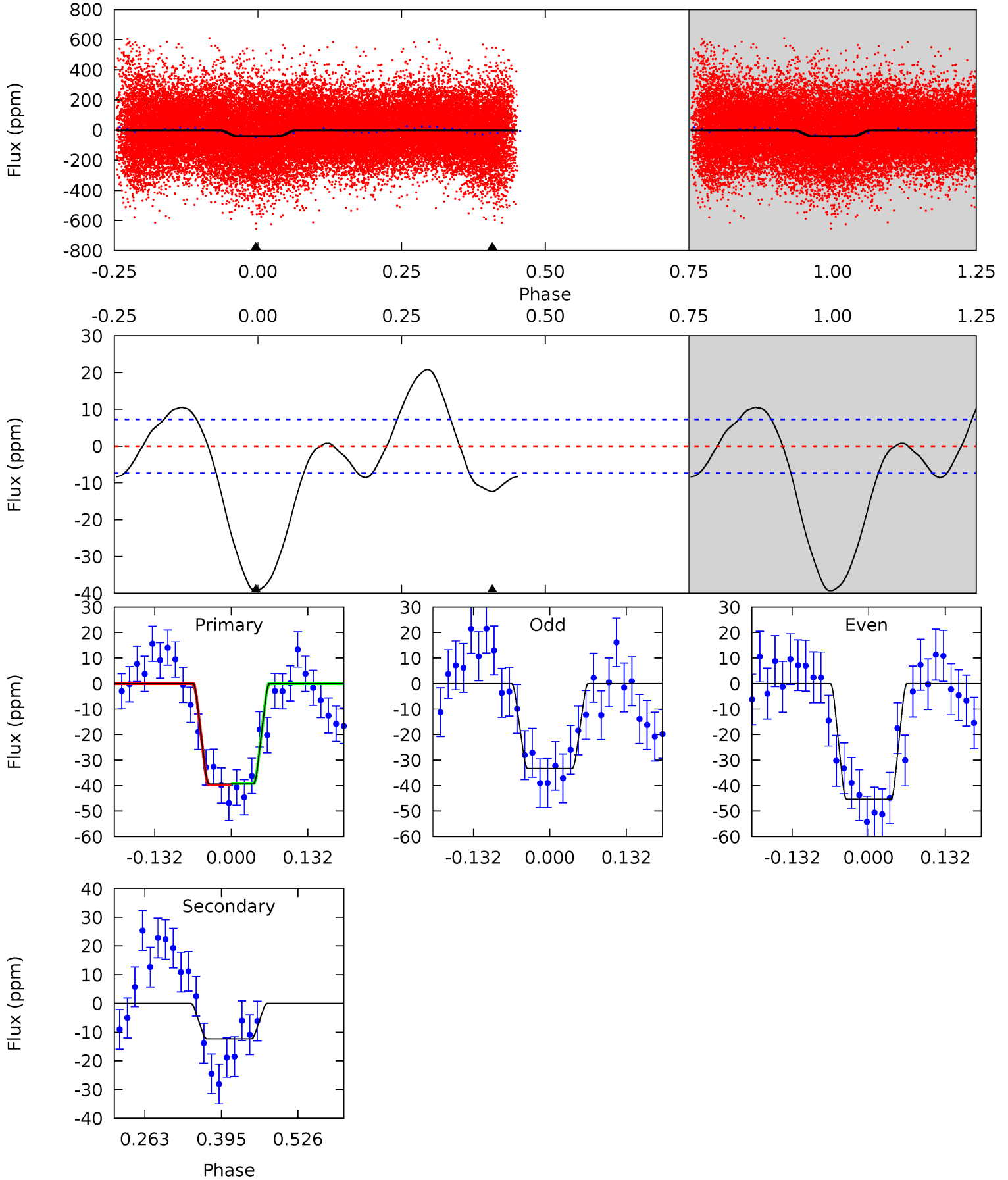




# Alt Model-Shift Uniqueness Test

003847660-02, P = 2.811891 Days, E = 129.758651 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
24.3	7.60	0	0	4.51	1.51	4.51	24.3	24.3	7.60	7.60	3.69	0.96	0.35	0.15



### Stellar Parameters For KIC 003847660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6809^{+163}_{-244}$	$3.788^{+0.273}_{-0.097}$	$-0.020^{+0.250}_{-0.300}$	$2.786^{+0.444}_{-0.962}$	$1.737^{+0.155}_{-0.362}$	$0.113^{+0.234}_{-0.035}$
	+2%/-4%	+7%/-3%	+1250%/-1500%	+16%/-35%	+9%/-21%	+207%/-31%
Source	PHO1	FLK73	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 003847660-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-7\pm1$	$5.58^{+5.40}_{-3.84}$	$3181^{+192}_{-262}$	$-2328^{+6885}_{-760}$	$0.275^{+2.582}_{-0.205}$
Alt.	$-12\pm2$	$5.13^{+5.24}_{-3.58}$	$3172^{+193}_{-266}$	$3061^{+2167}_{-5972}$	$0.544^{+5.237}_{-0.403}$

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

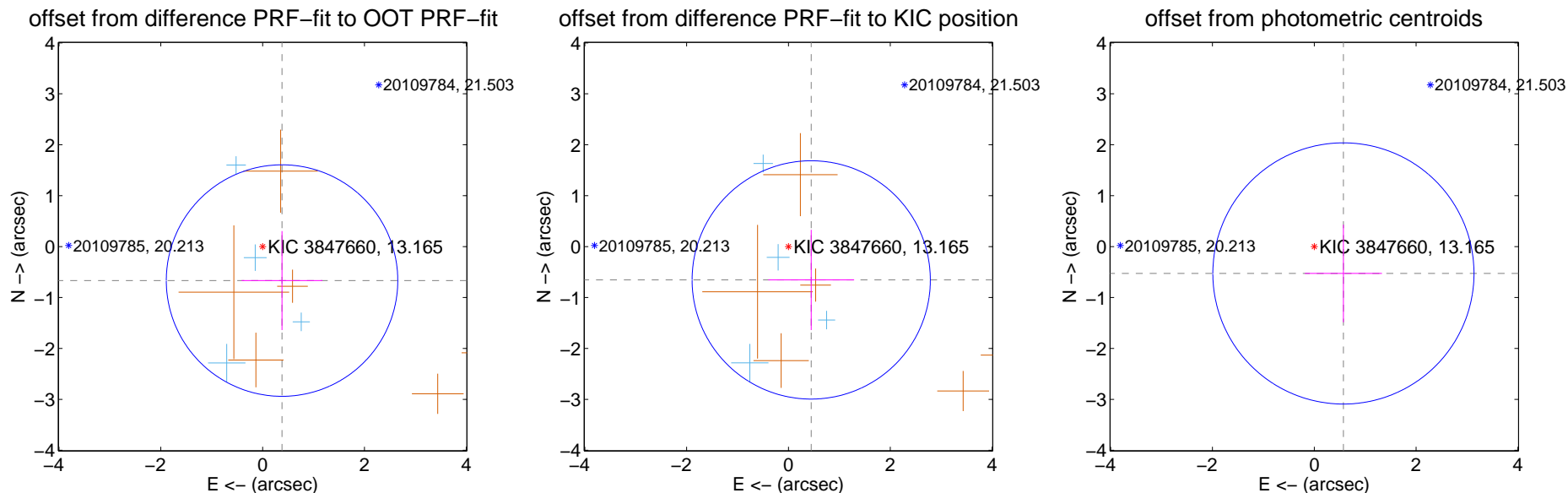
## DV Centroid Data

Supplemental centroid analysis for 003847660-02. Kepler magnitude: 13.16. Transit SNR 9.34

There are 4 quarters with good PRF difference image offsets

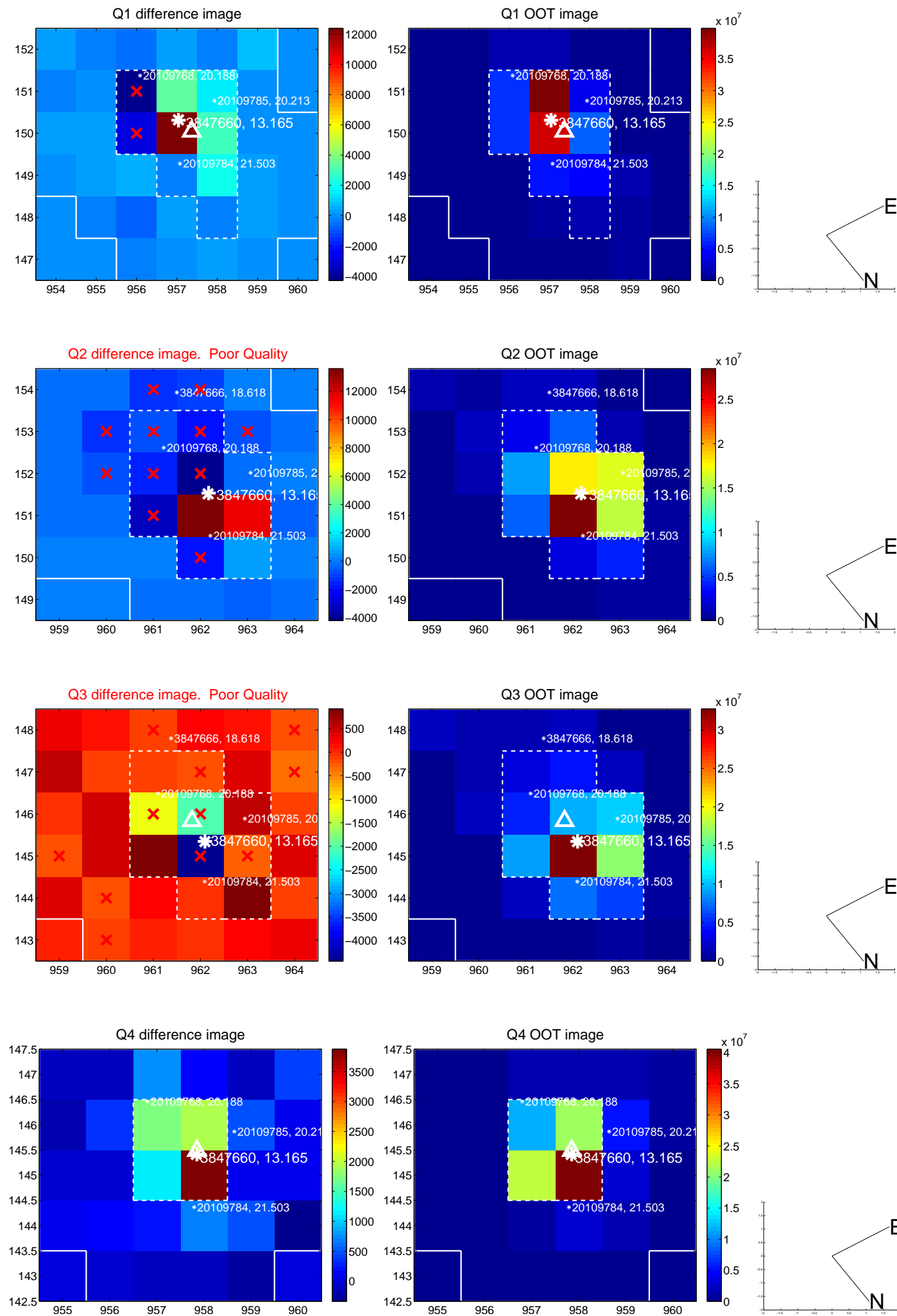
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.768 \pm 0.758$	1.01	$-0.381 \pm 0.793$	$-0.667 \pm 0.973$
PRF-fit source offset from KIC position	$0.793 \pm 0.780$	1.02	$-0.447 \pm 0.843$	$-0.655 \pm 0.985$
photometric centroid source offset	$0.78 \pm 0.85$	0.91	$-0.57 \pm 0.76$	$-0.53 \pm 0.96$

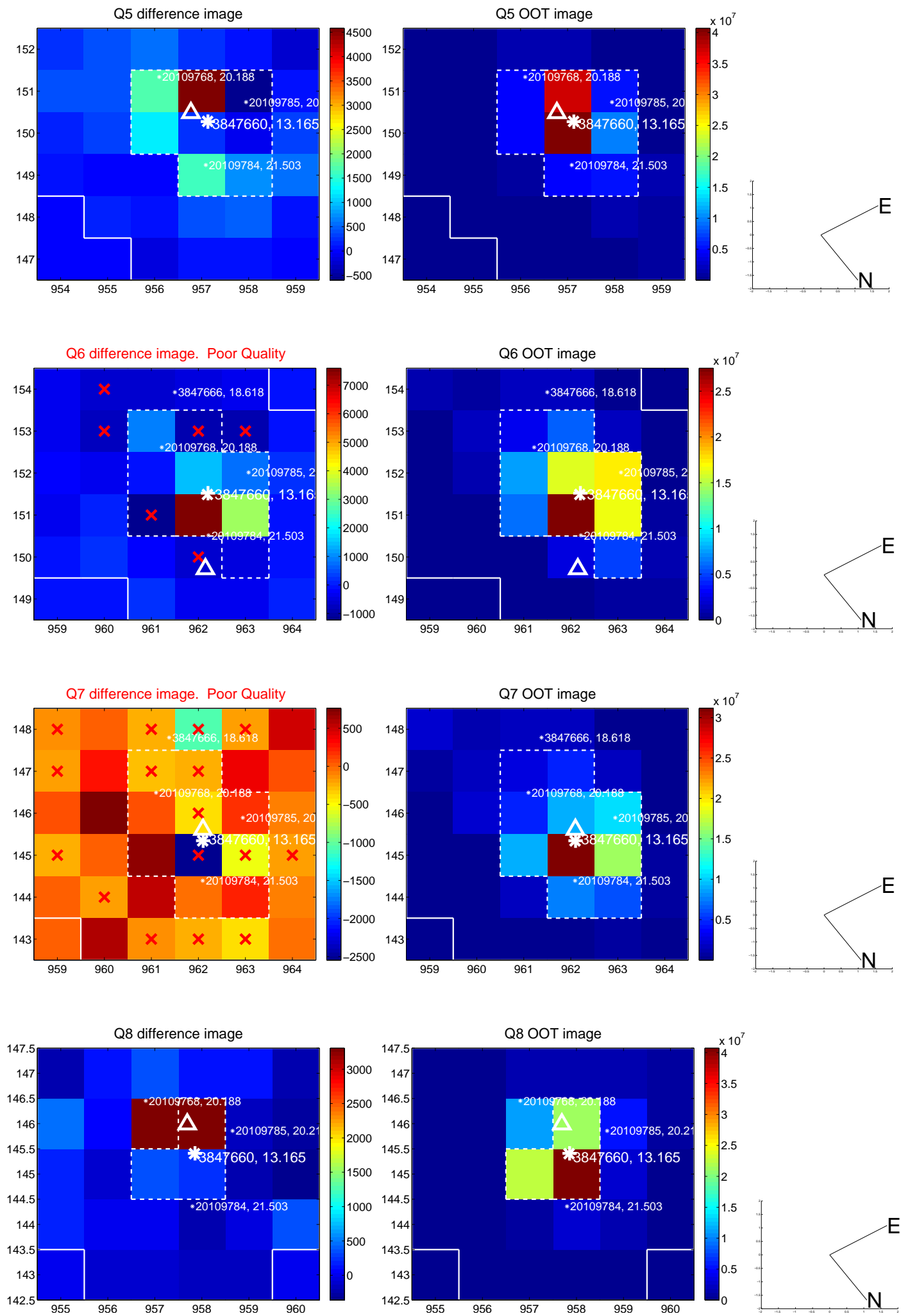


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

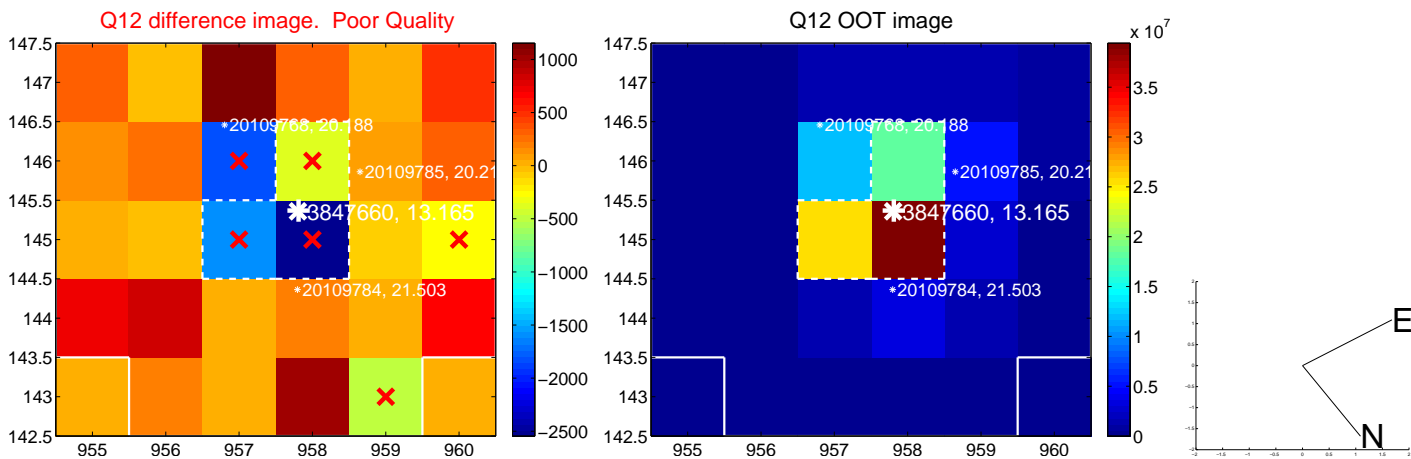
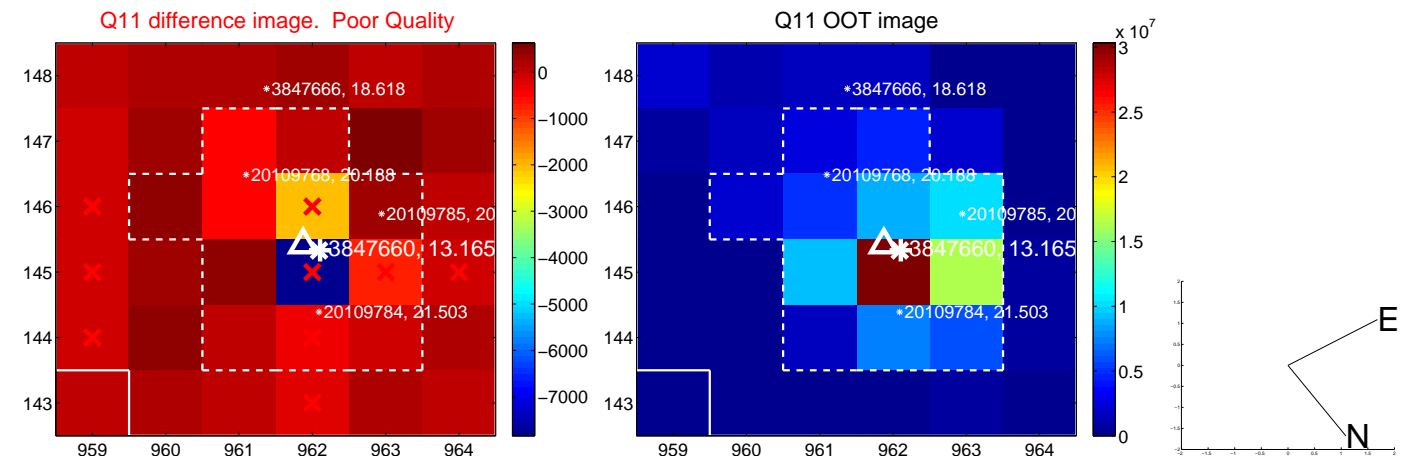
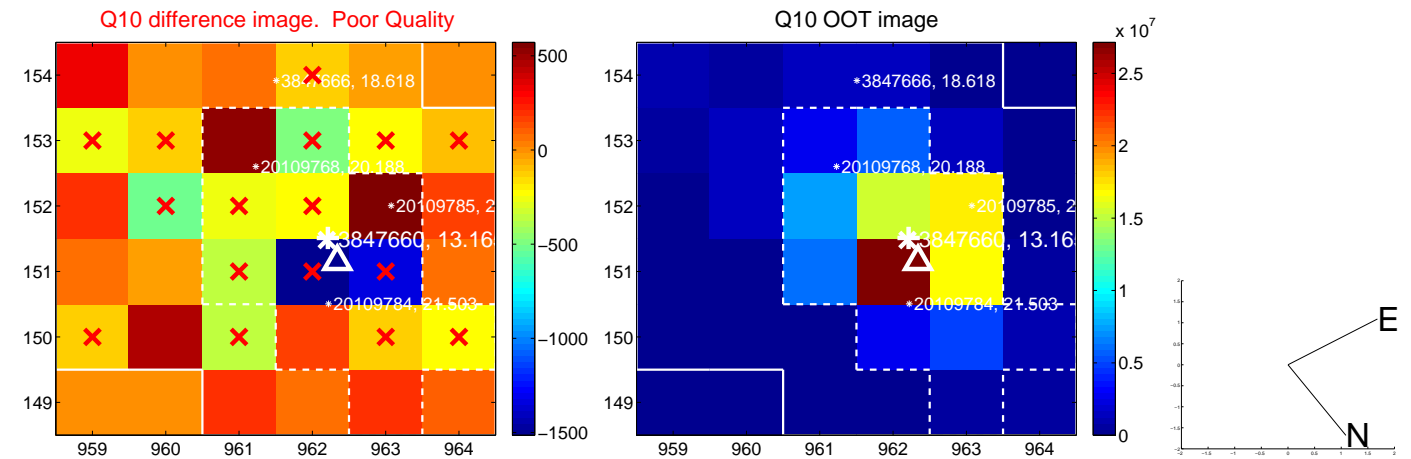
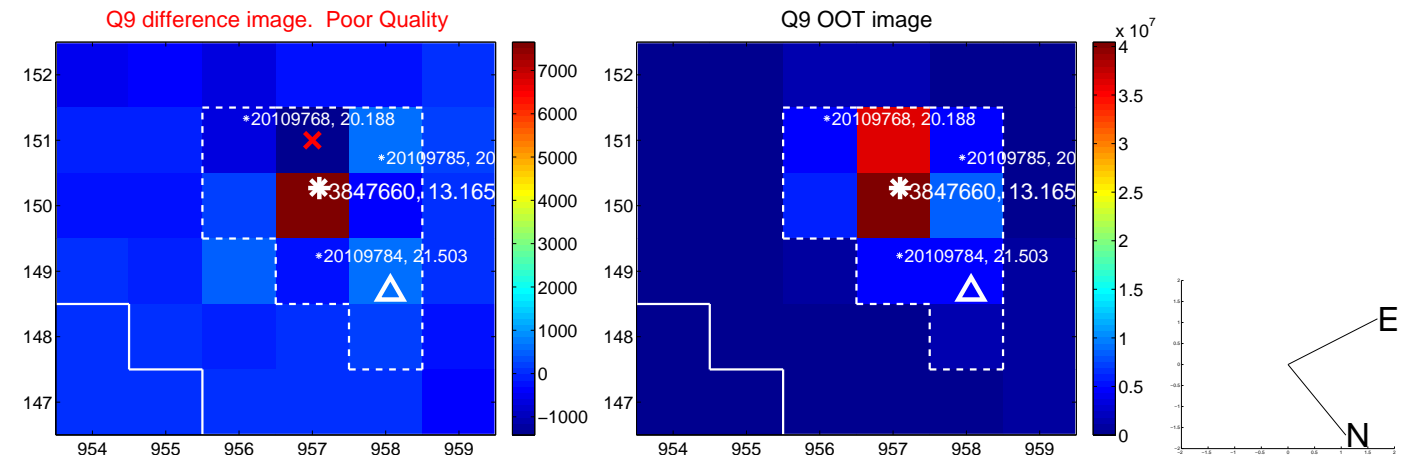


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

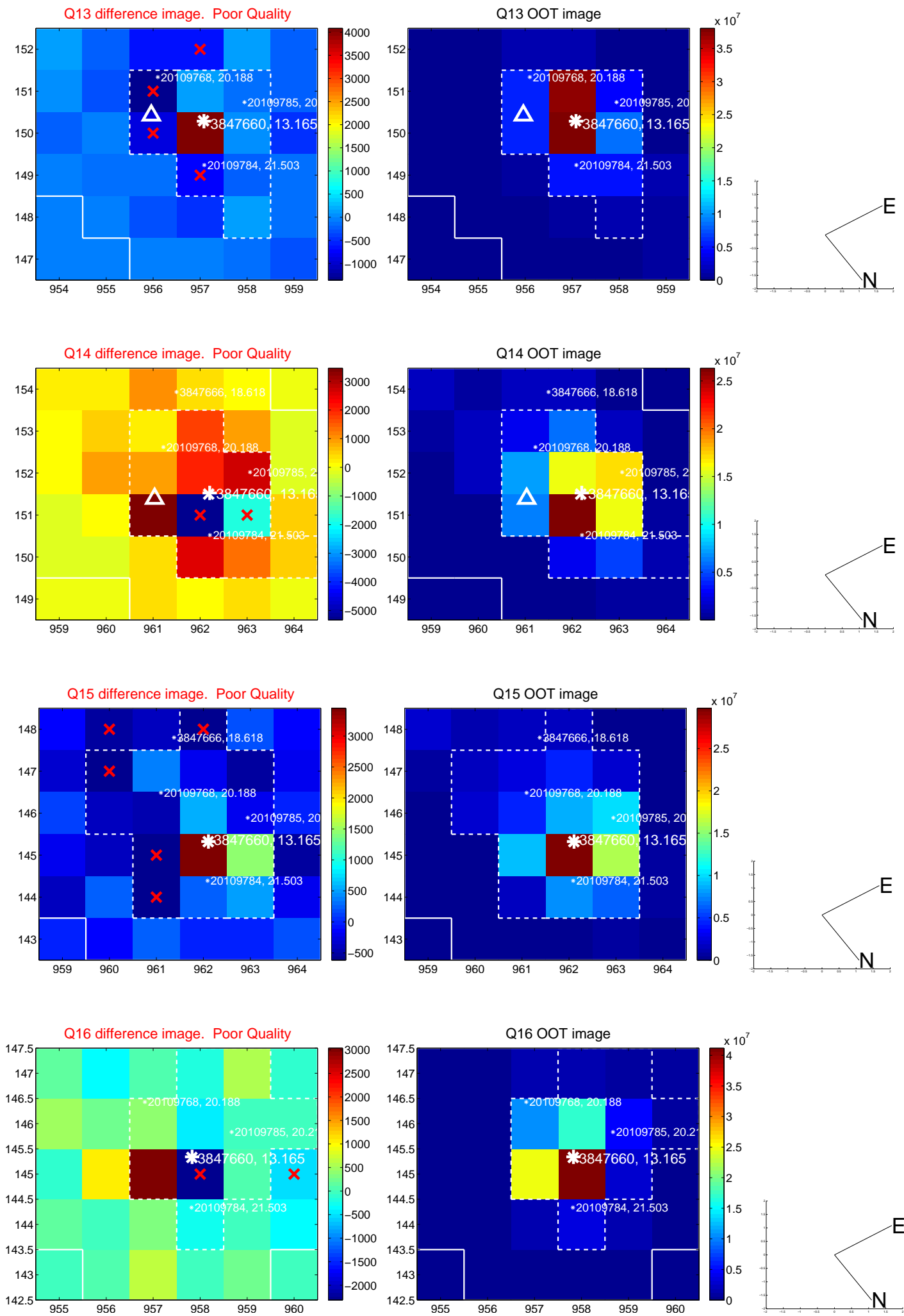




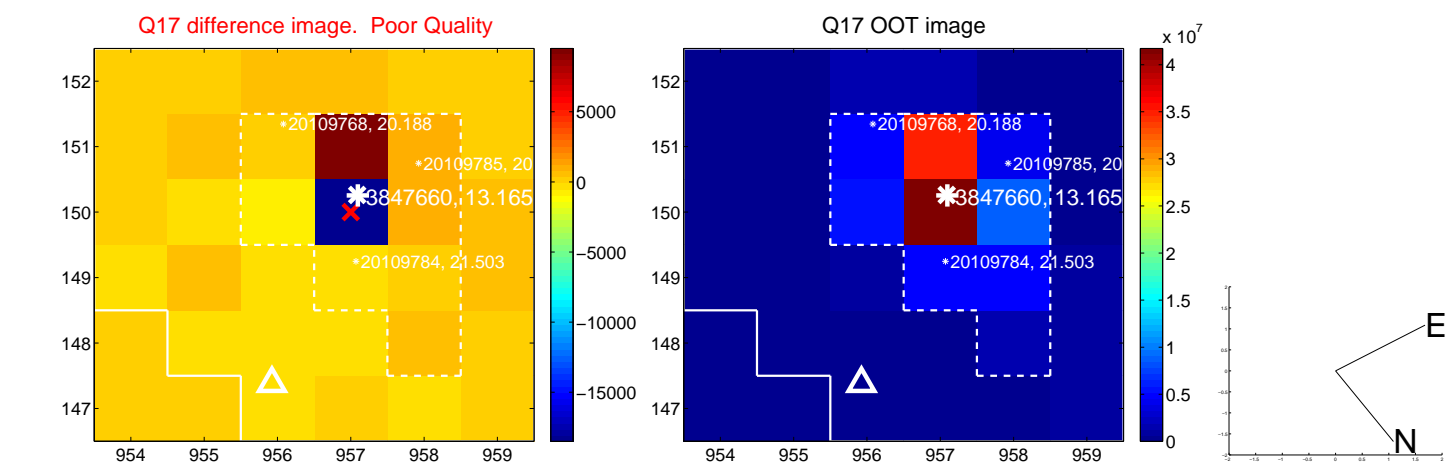
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



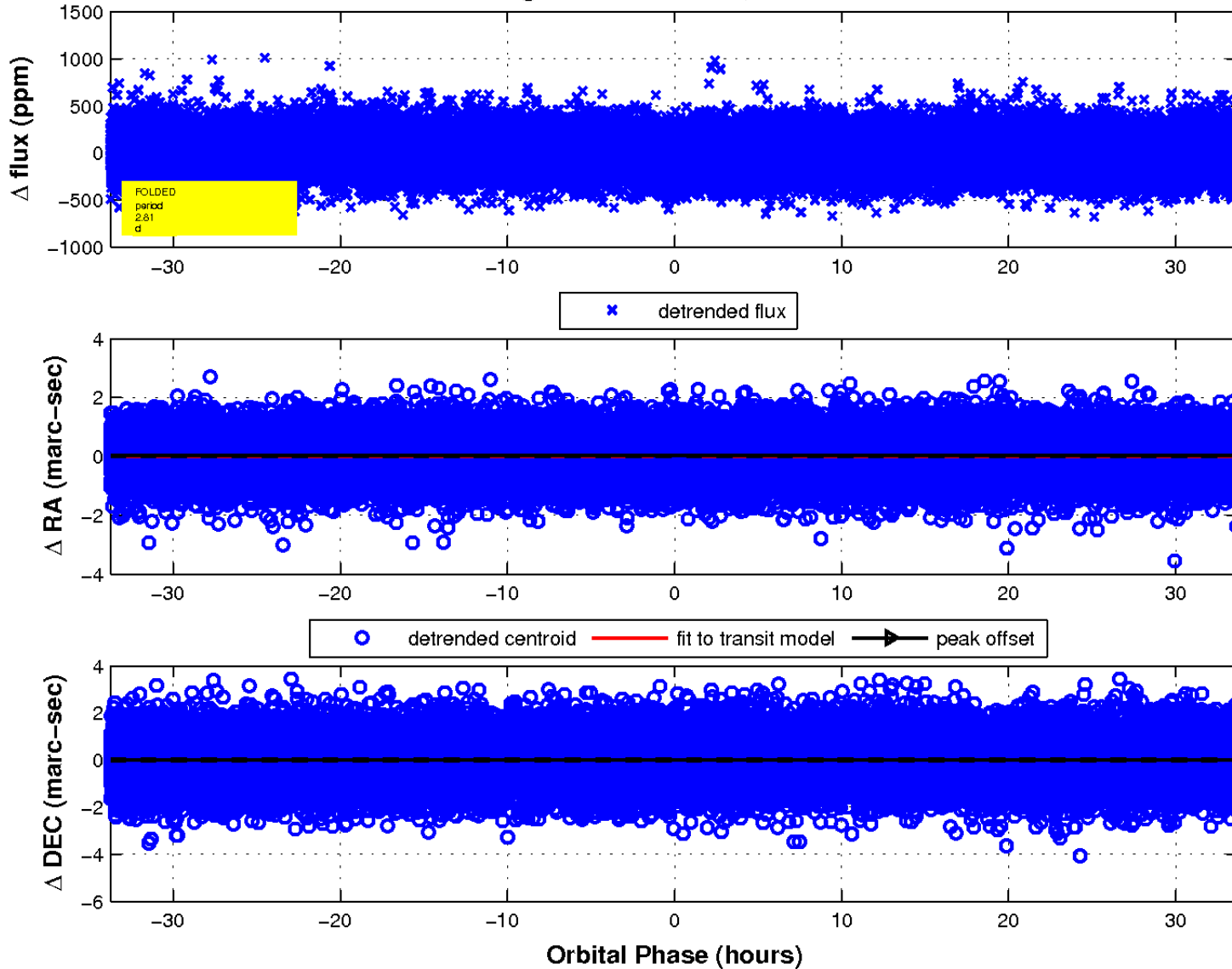
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

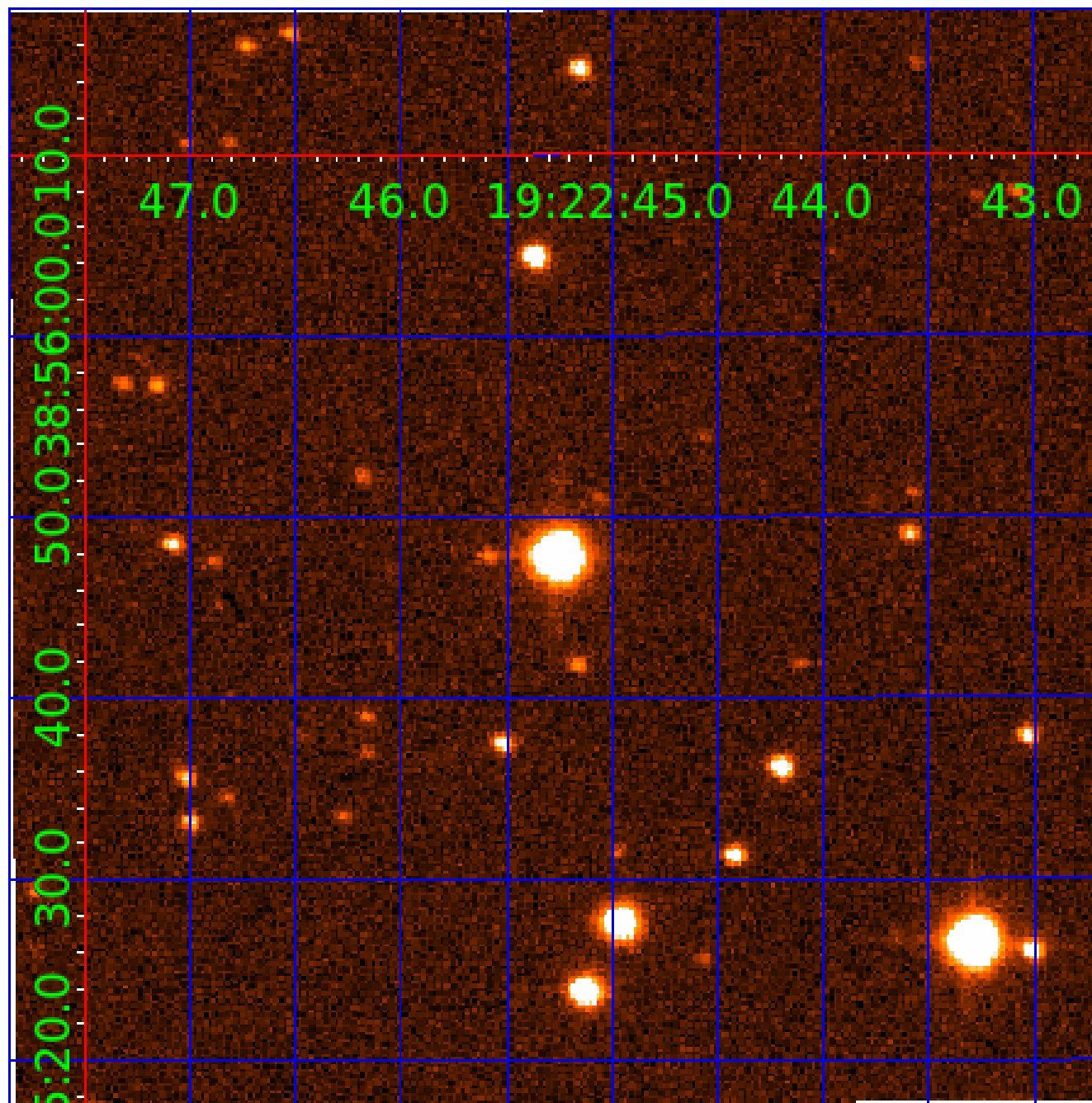


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 003847660

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003847660-01	OBS	No	2.812090	134.211793	25.3	7.394	9.6	8.5	2.79	6809	1.63	6800.01
003847660-02	OBS	No	2.811980	132.549319	31.8	11.534	8.7	9.3	2.79	6809	3.15	6800.36
003847660-03	OBS	No	4.758623	131.597072	47.7	12.437	8.1	7.6	2.79	6809	2.24	3372.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003847660-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
003847660-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
003847660-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

**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.

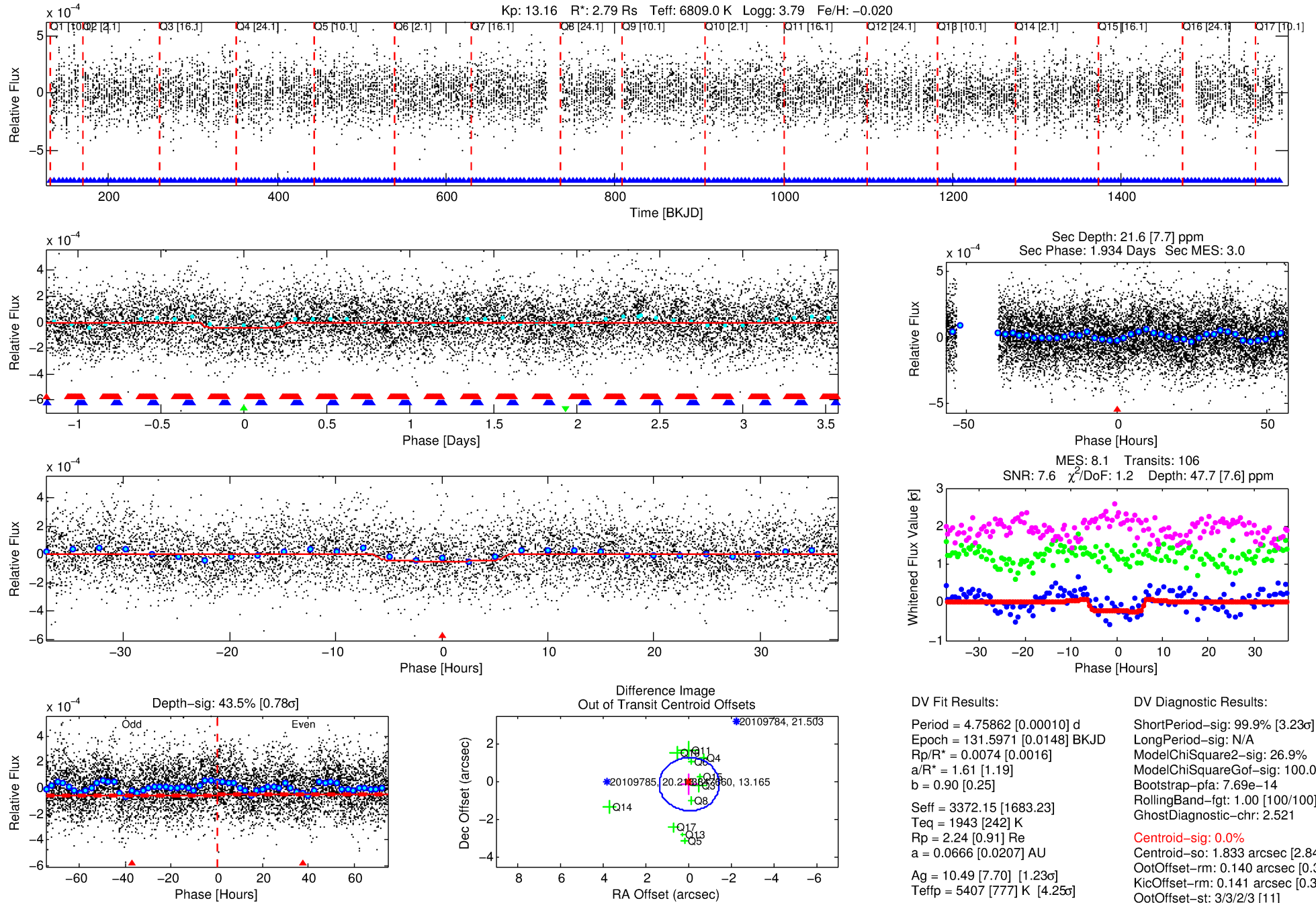
Ephemeris Match Information For 003847660-03

No Significant Match Found



# DV One-Page Summary

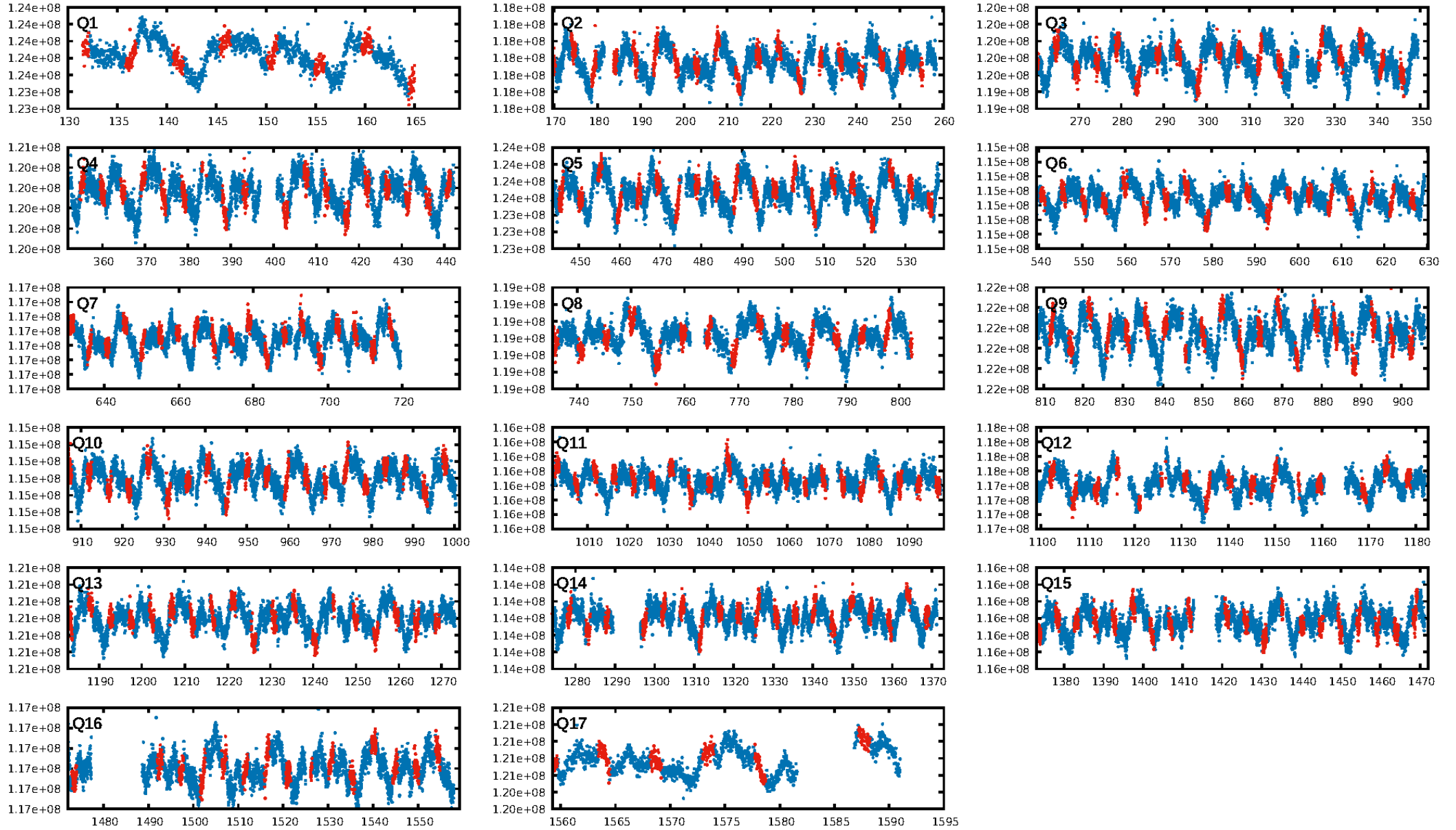
KIC: 3847660 Candidate: 3 of 3 Period: 4.759 d



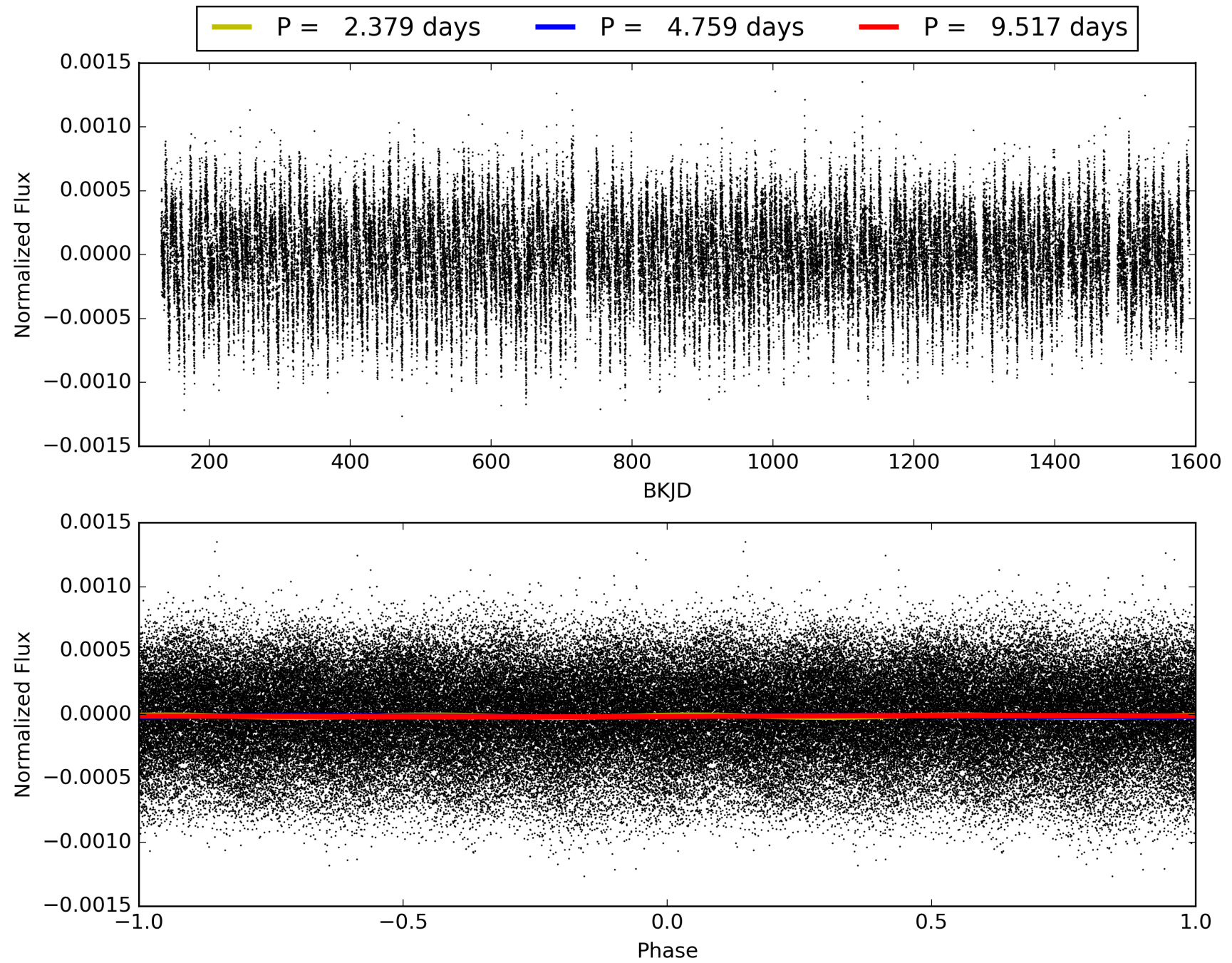
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:16:56 Z

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

# TCE 003847660-03, PDC Light Curves

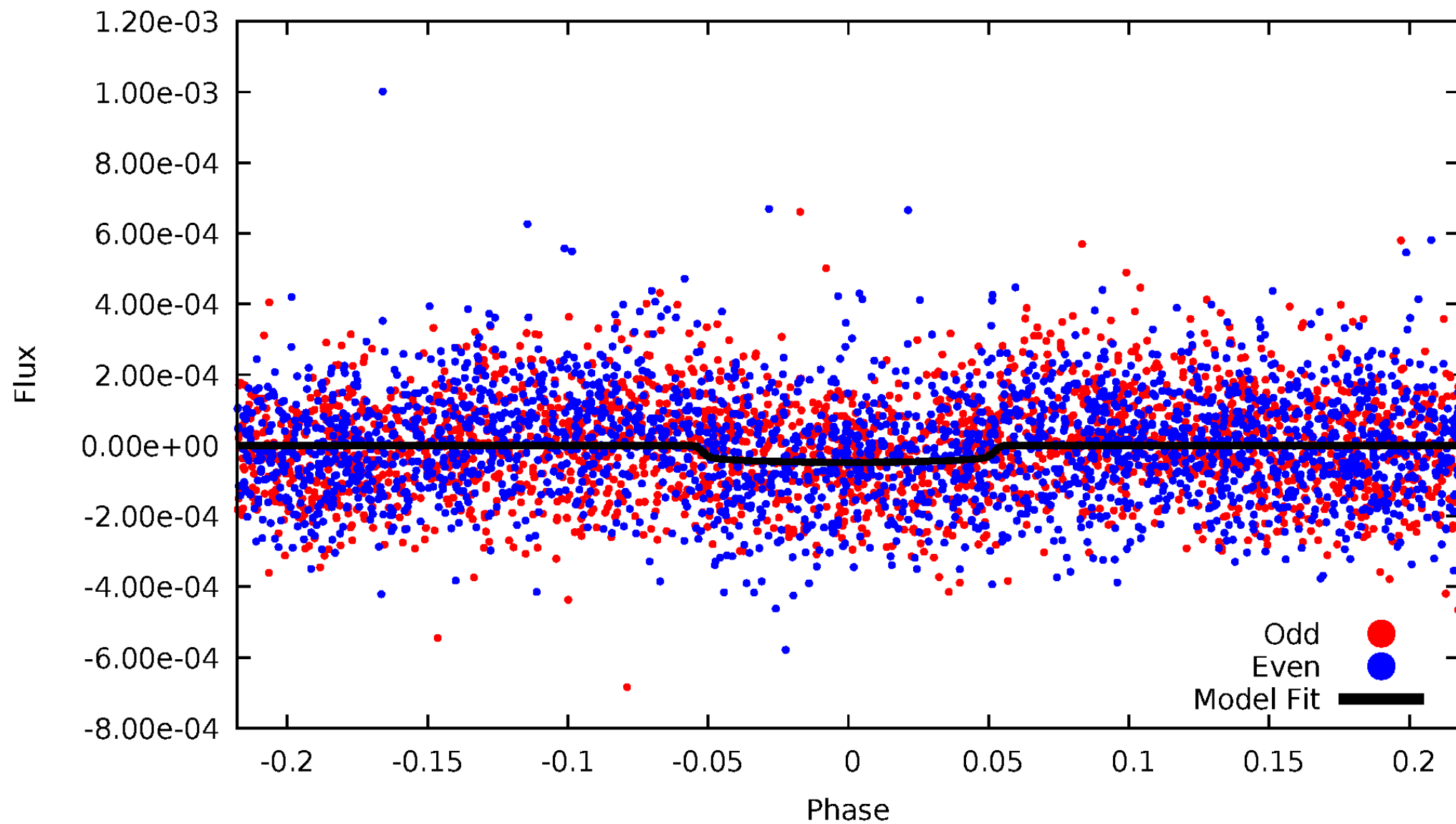


TCE 003847660-03



# DV Odd/Even

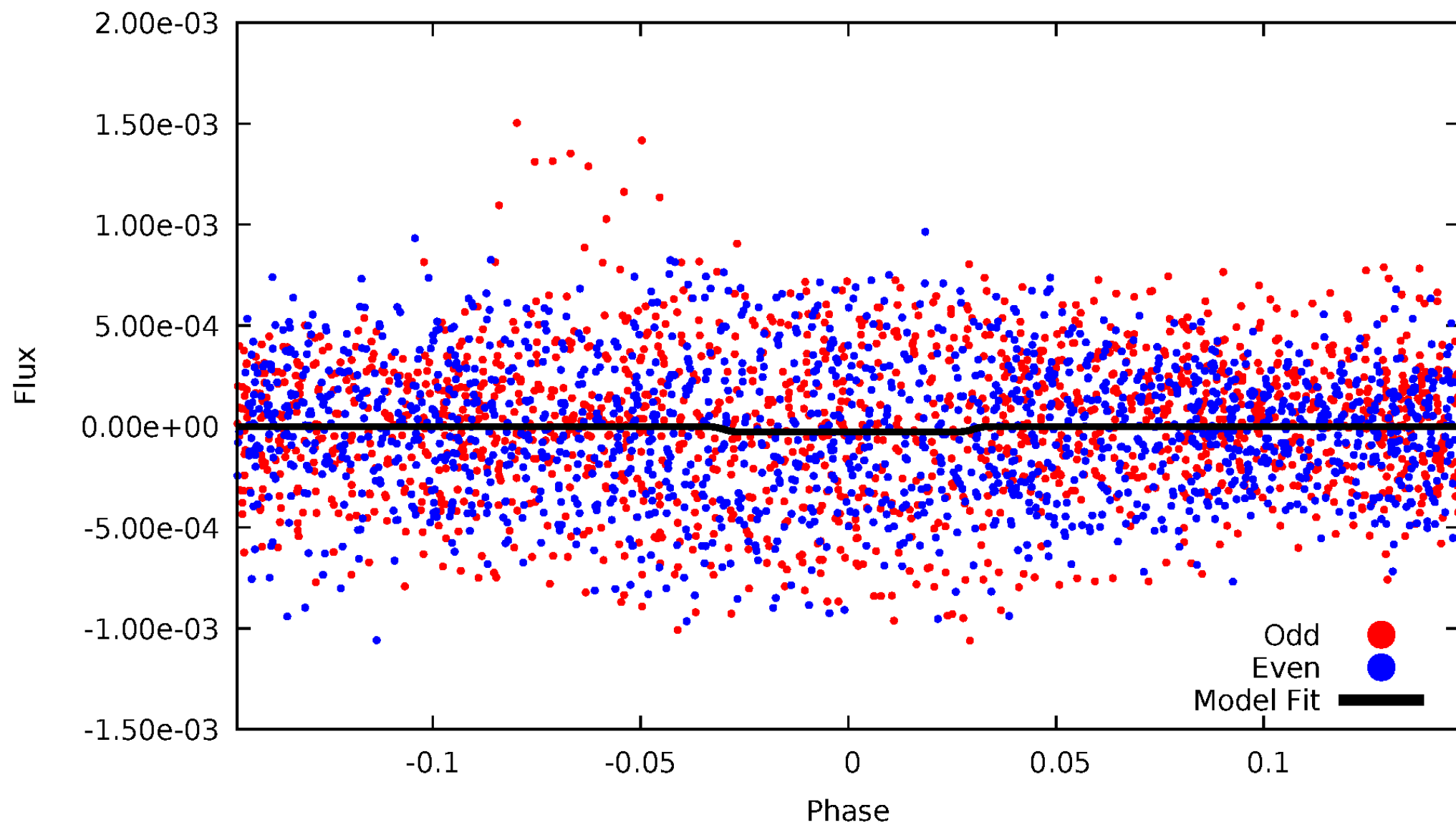
TCE 003847660-03





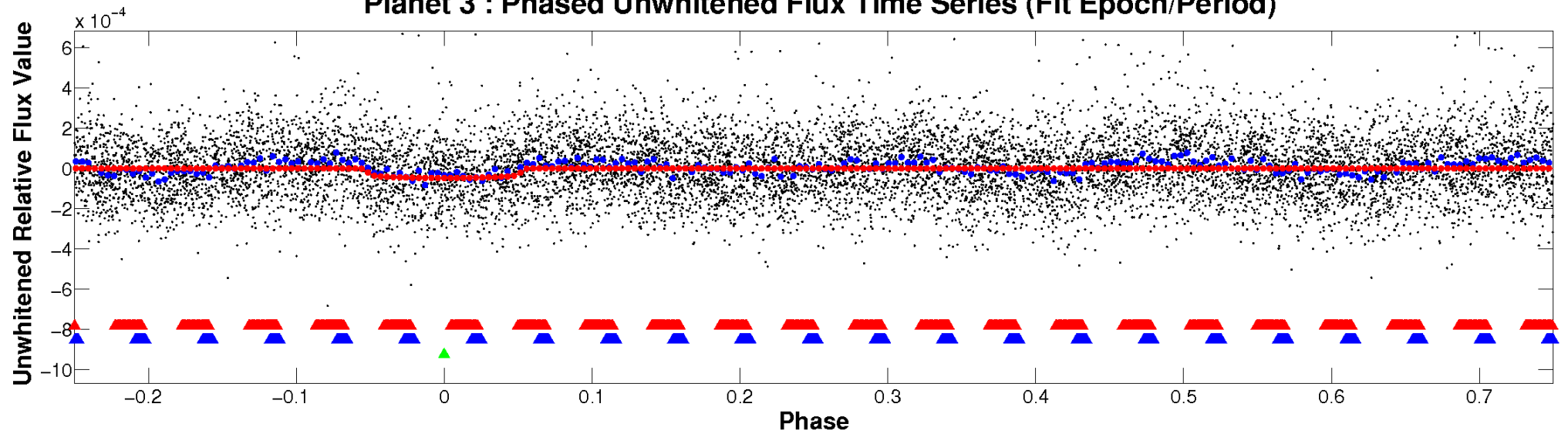
# ALT Odd/Even

TCE 003847660-03

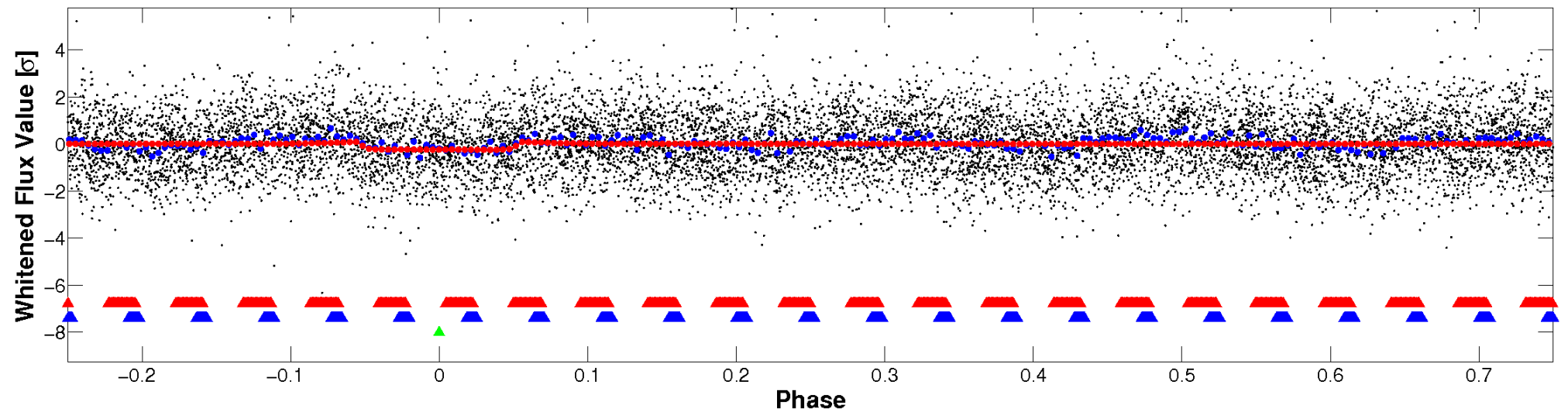


# Non-Whitened Vs. Whitened Light Curve

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



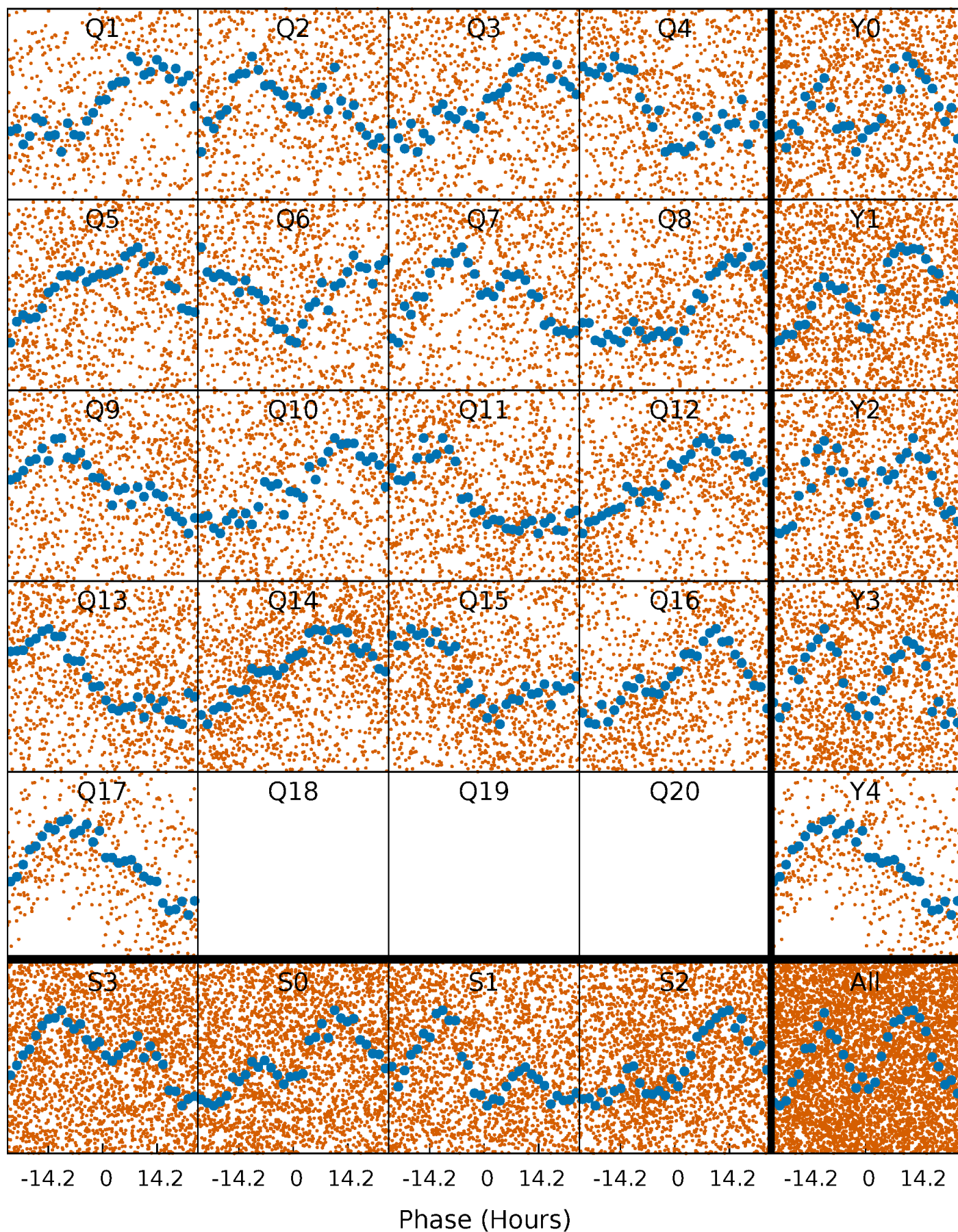
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





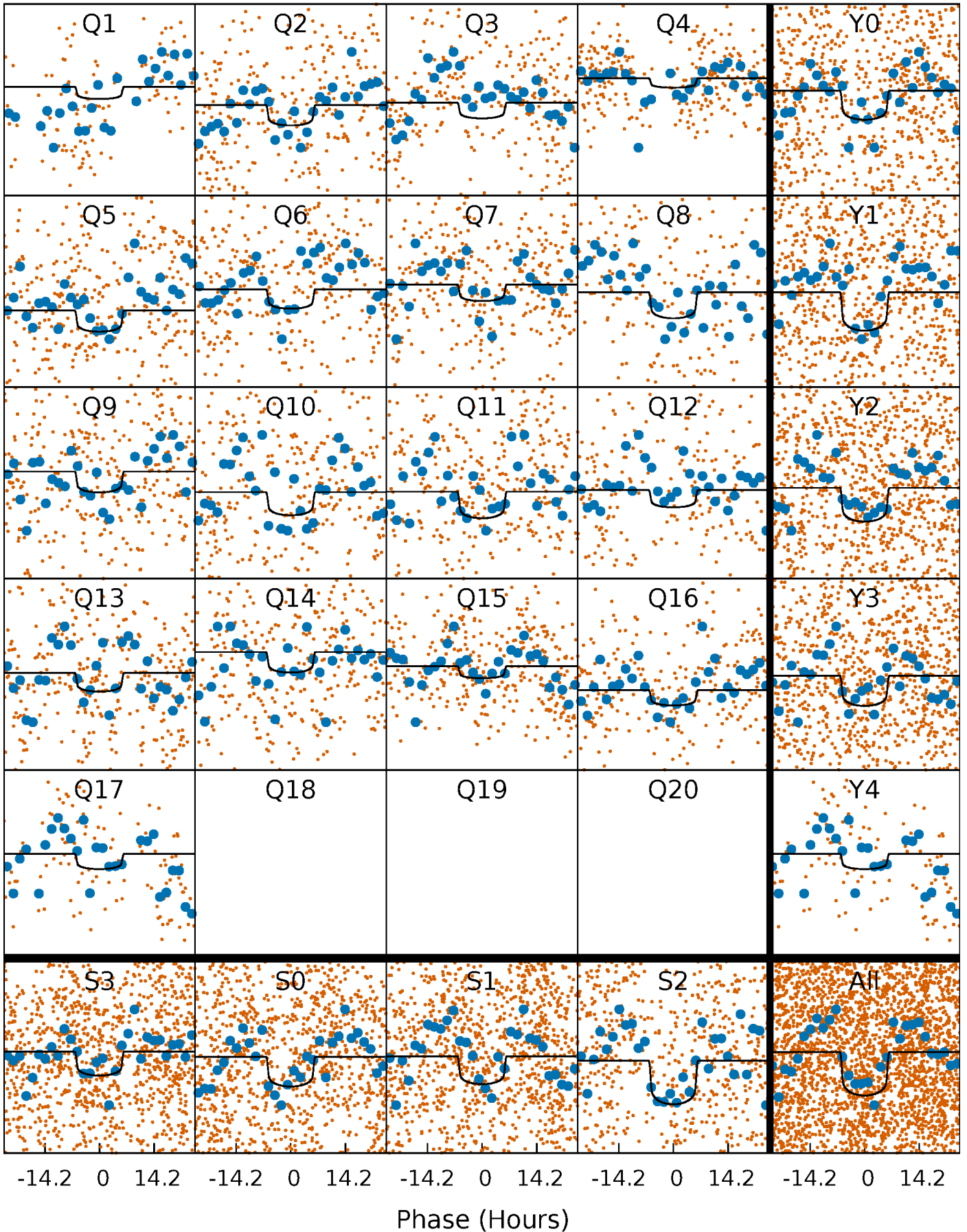
# PDC Quarter-Phased Transit Curves

TCE 003847660-03 P= 4.758623 Days  $T_0=131.597072$  (BKJD)



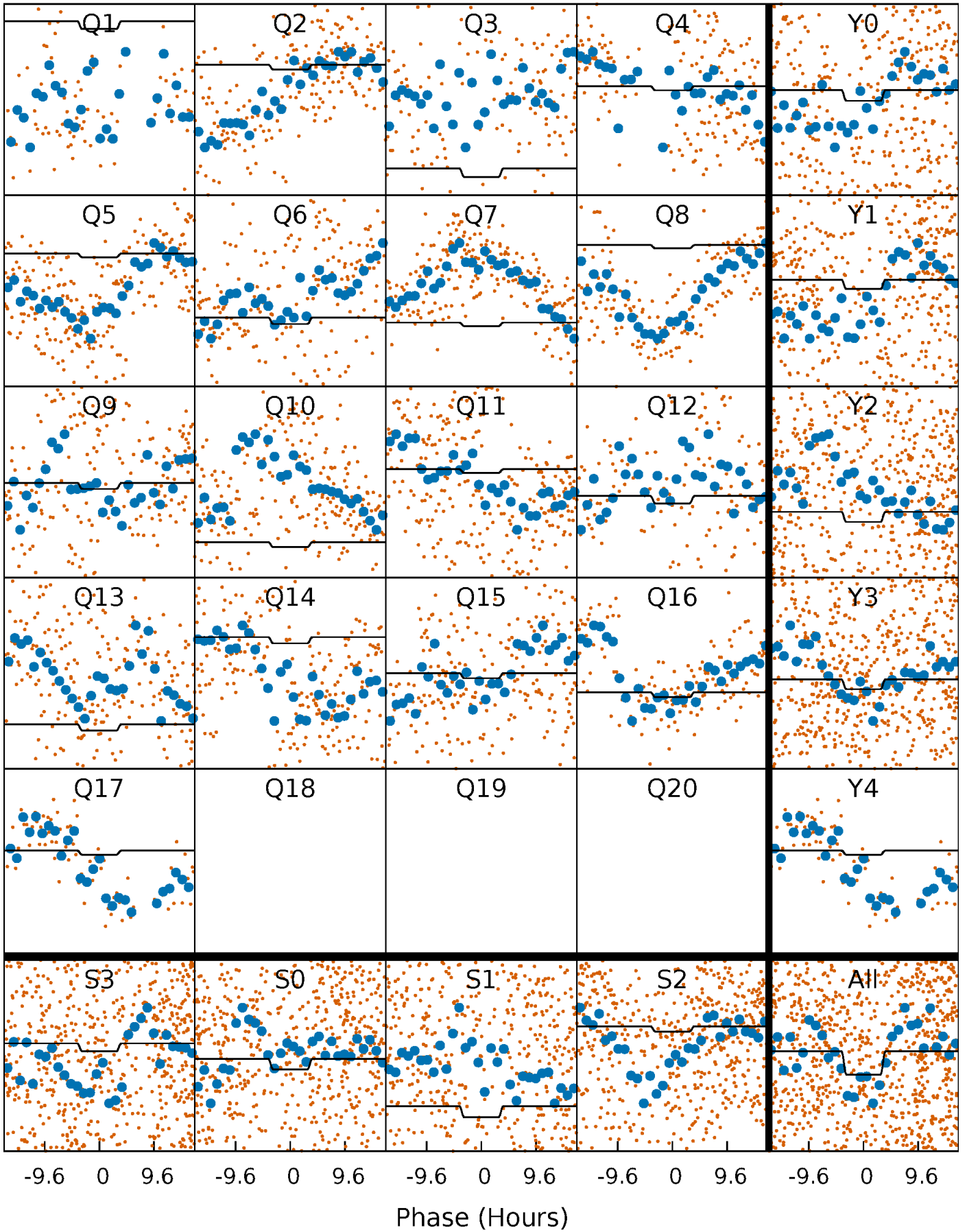
# DV Quarter-Phased Transit Curves

TCE 003847660-03 P= 4.758623 Days  $T_0=131.597072$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 003847660-03 P= 4.758640 Days  $T_0=131.608406$  (BKJD)

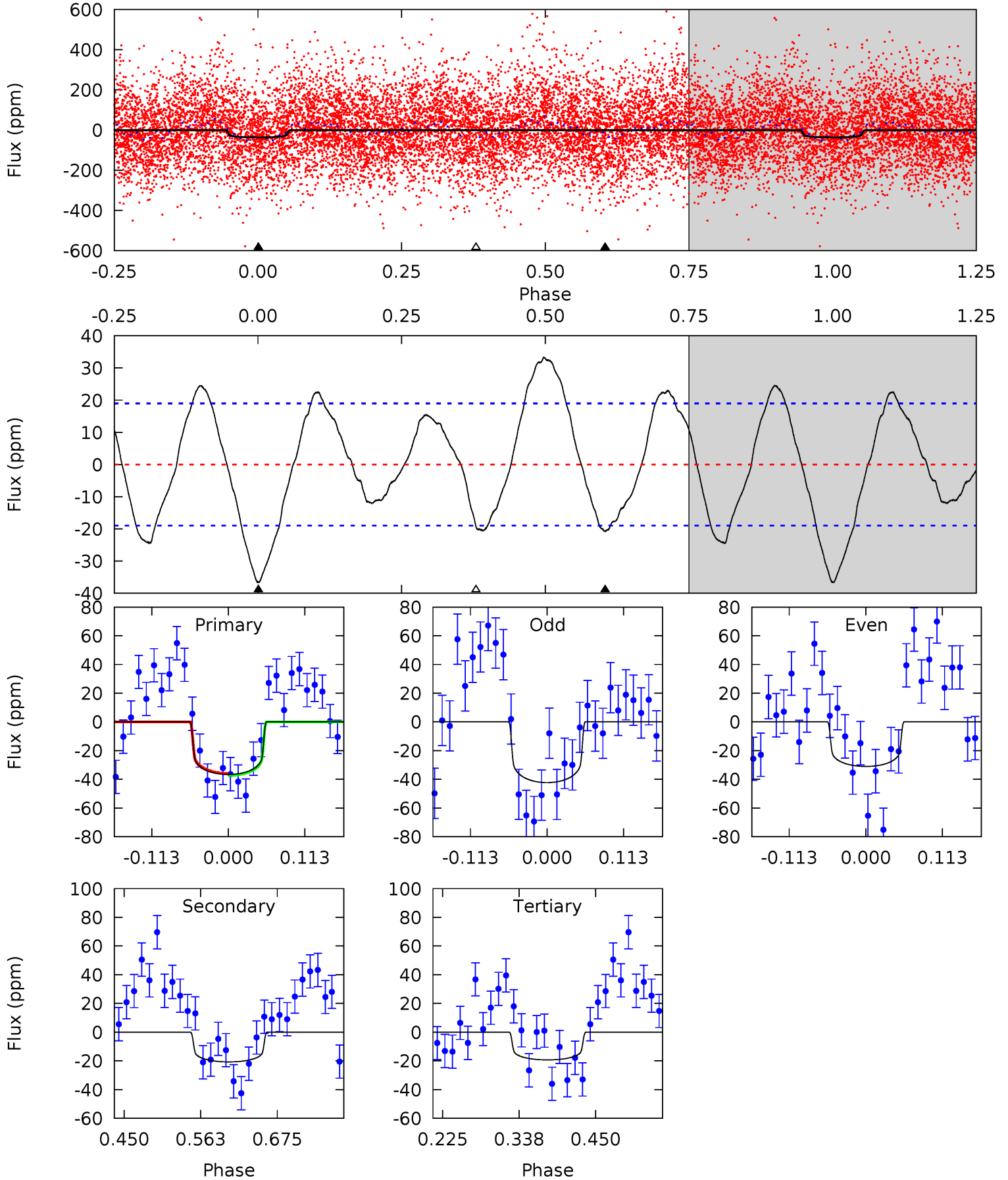




# DV Model-Shift Uniqueness Test

003847660-03, P = 4.758623 Days, E = 131.597072 Days

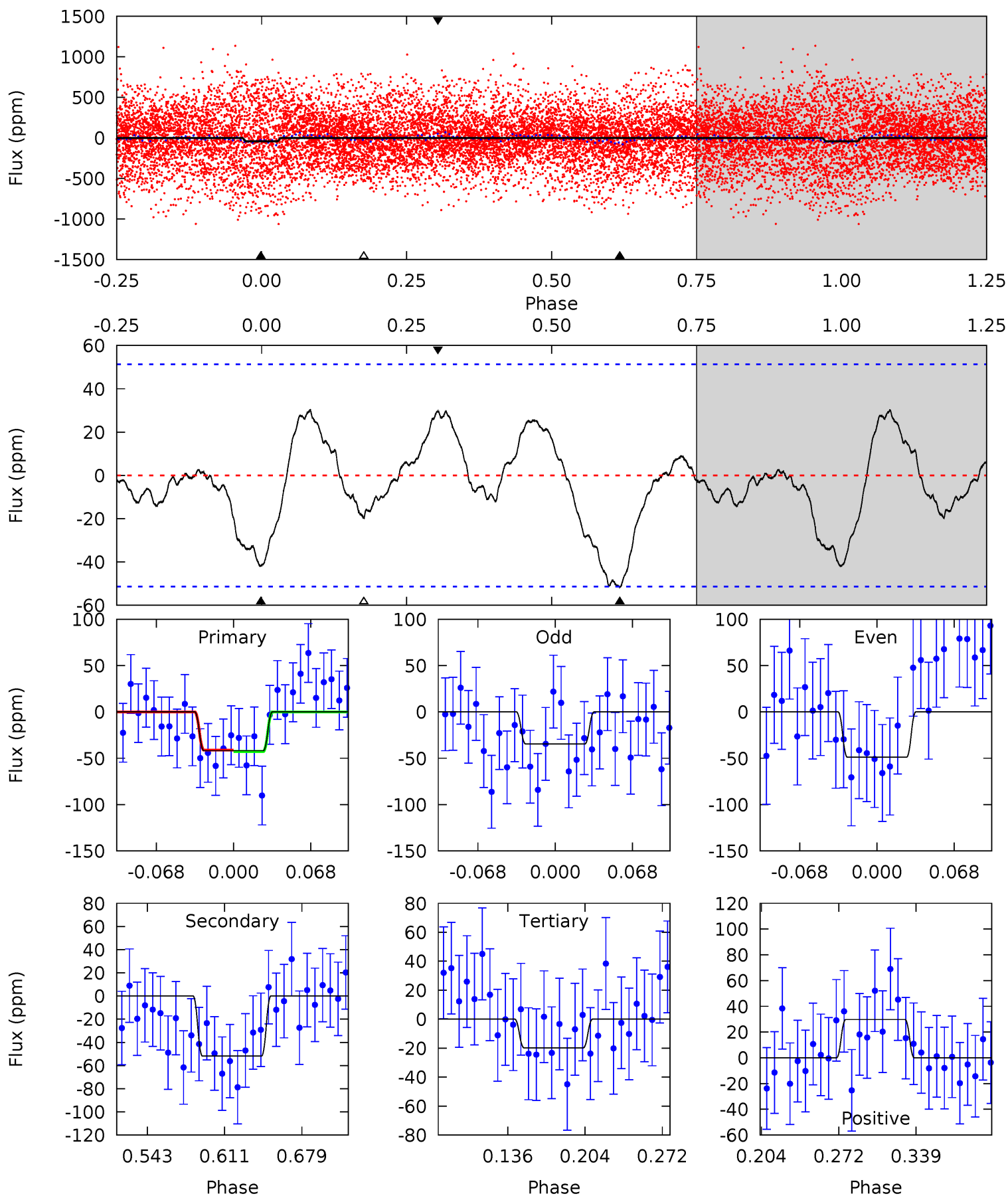
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.76	4.96	4.62	0	4.54	1.59	3.24	4.14	8.76	0.33	4.96	1.35	0.88	0.48	0.16



# Alt Model-Shift Uniqueness Test

003847660-03, P = 4.758640 Days, E = 131.608406 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
3.79	4.68	1.79	2.69	4.65	1.83	1.19	2.01	1.10	2.90	1.99	0.64	1.62	0.37	0.06





### Stellar Parameters For KIC 003847660

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6809^{+163}_{-244}$	$3.788^{+0.273}_{-0.097}$	$-0.020^{+0.250}_{-0.300}$	$2.786^{+0.444}_{-0.962}$	$1.737^{+0.155}_{-0.362}$	$0.113^{+0.234}_{-0.035}$
	+2%/-4%	+7%/-3%	+1250%/-1500%	+16%/-35%	+9%/-21%	+207%/-31%
Source	PHO1	FLK73	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 003847660-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-21 \pm 4$	$2.10^{+0.60}_{-0.55}$	$2661^{+167}_{-230}$	$5295^{+757}_{-484}$	$11^{+10}_{-5}$
Alt.	$-52 \pm 11$	$1.49^{+0.53}_{-0.49}$	$2662^{+162}_{-226}$	$8088^{+2615}_{-1267}$	$54^{+71}_{-25}$

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

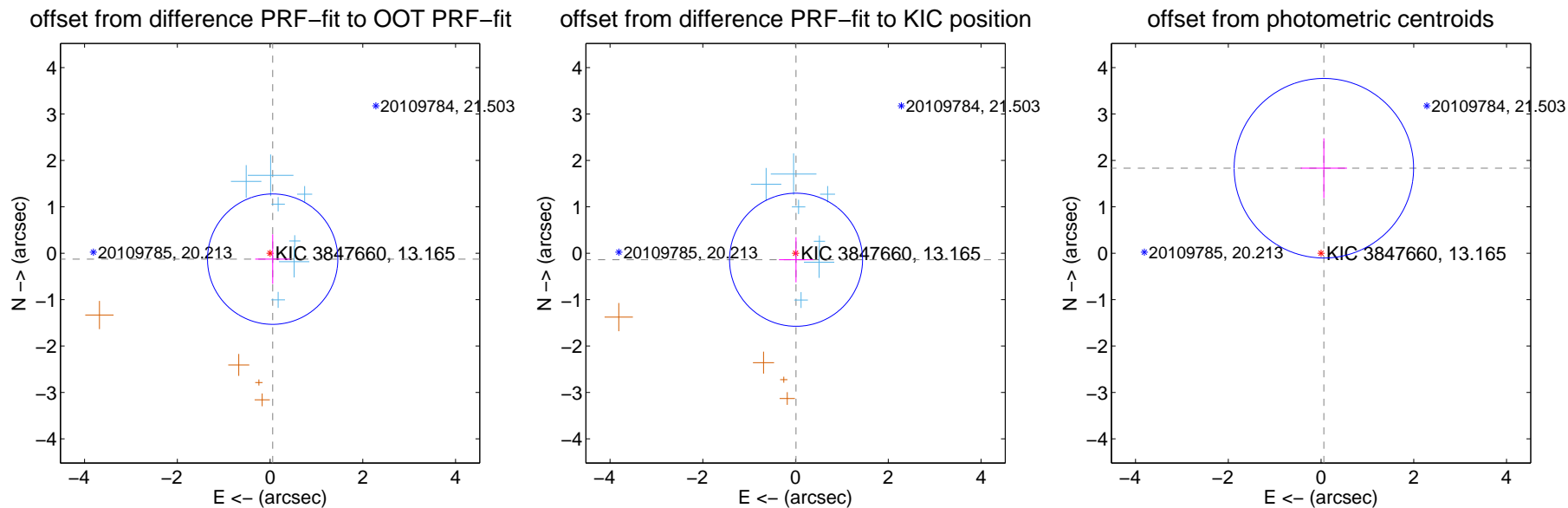
## DV Centroid Data

Supplemental centroid analysis for 003847660-03. Kepler magnitude: 13.16. Transit SNR 7.59

There are 7 quarters with good PRF difference image offsets

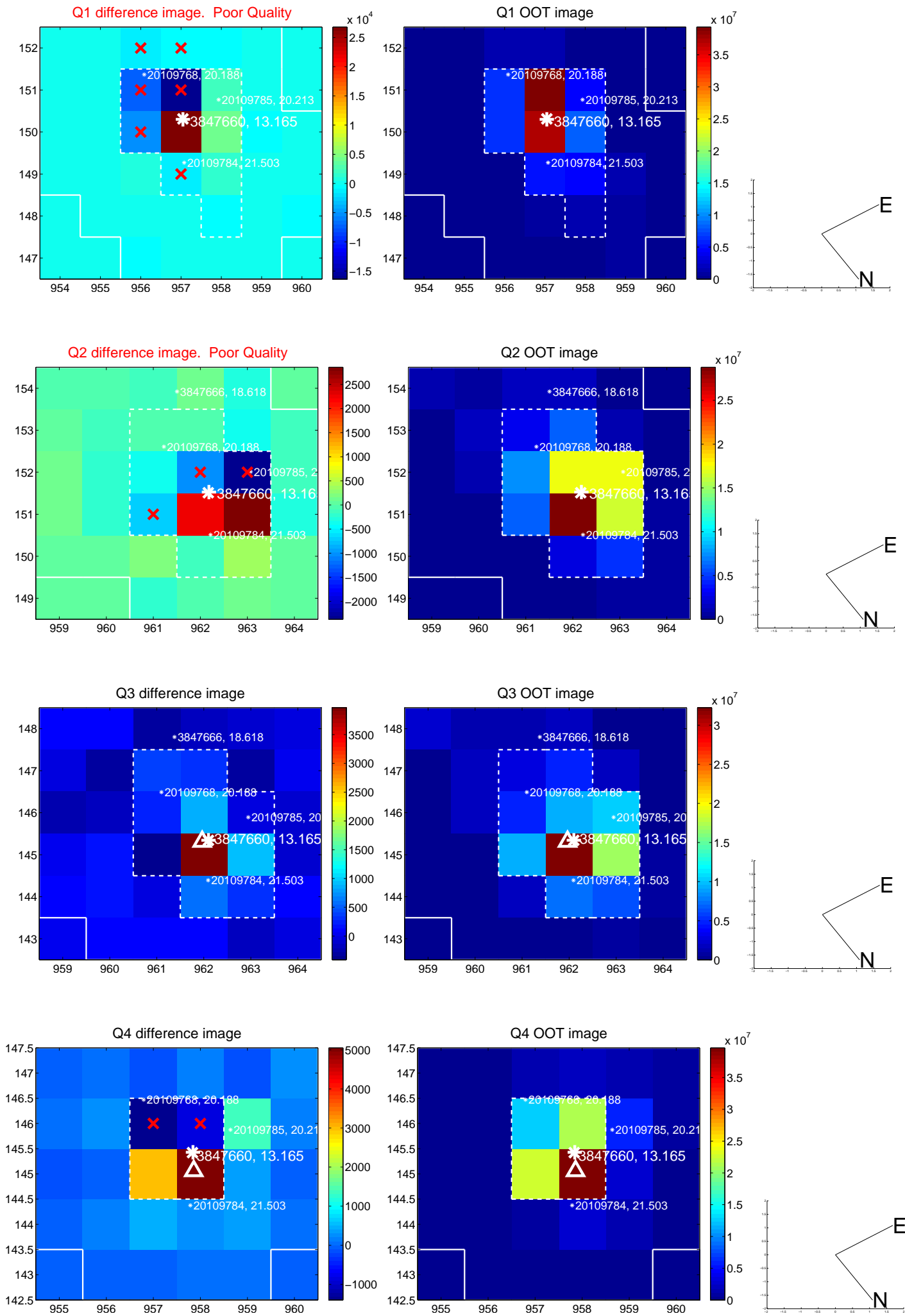
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.140 \pm 0.468$	0.30	$-0.056 \pm 0.376$	$-0.128 \pm 0.533$
PRF-fit source offset from KIC position	$0.141 \pm 0.478$	0.30	$-0.011 \pm 0.369$	$-0.141 \pm 0.487$
photometric centroid source offset	$1.83 \pm 0.64$	2.84	$-0.06 \pm 0.50$	$1.83 \pm 0.65$

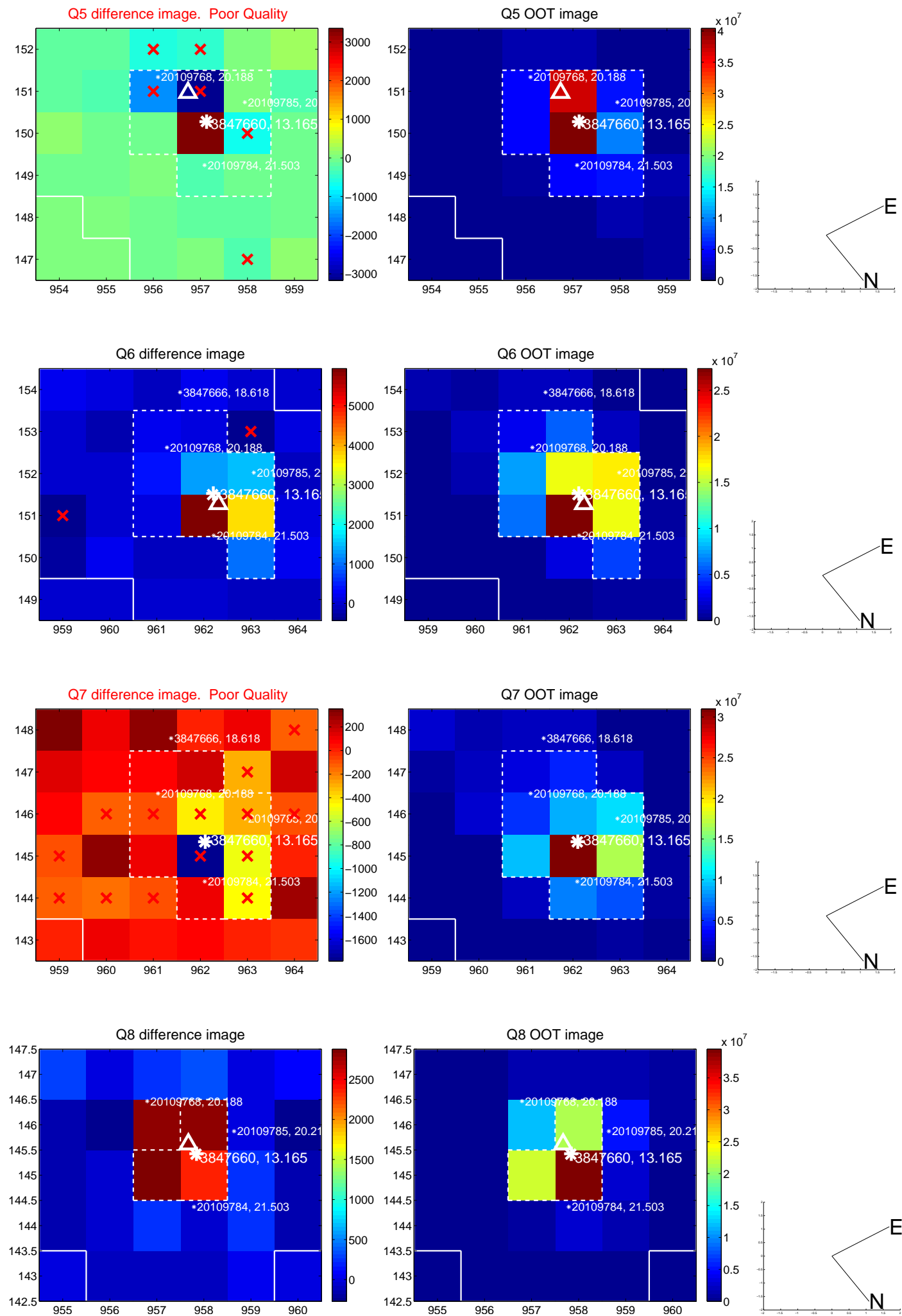


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

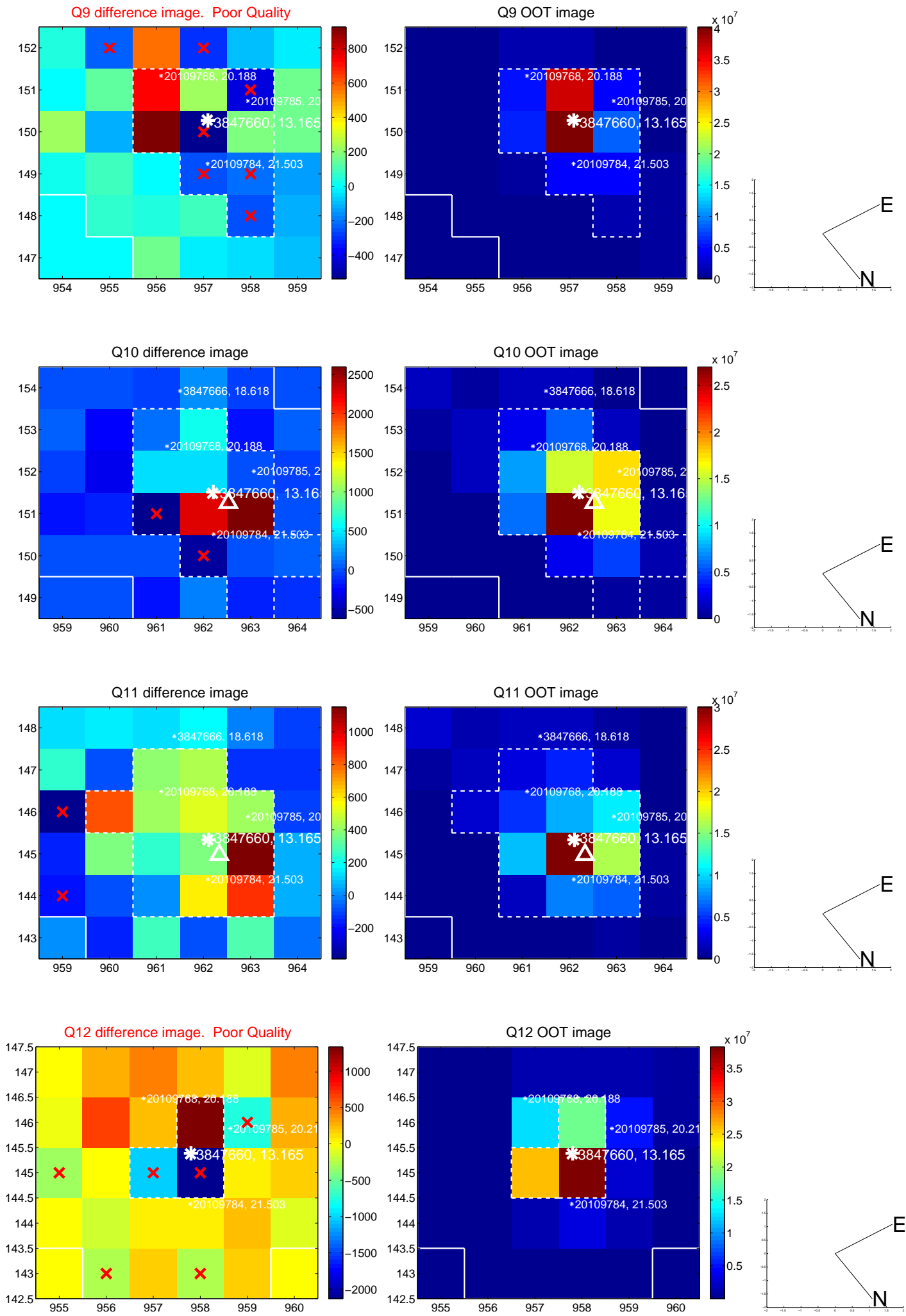
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

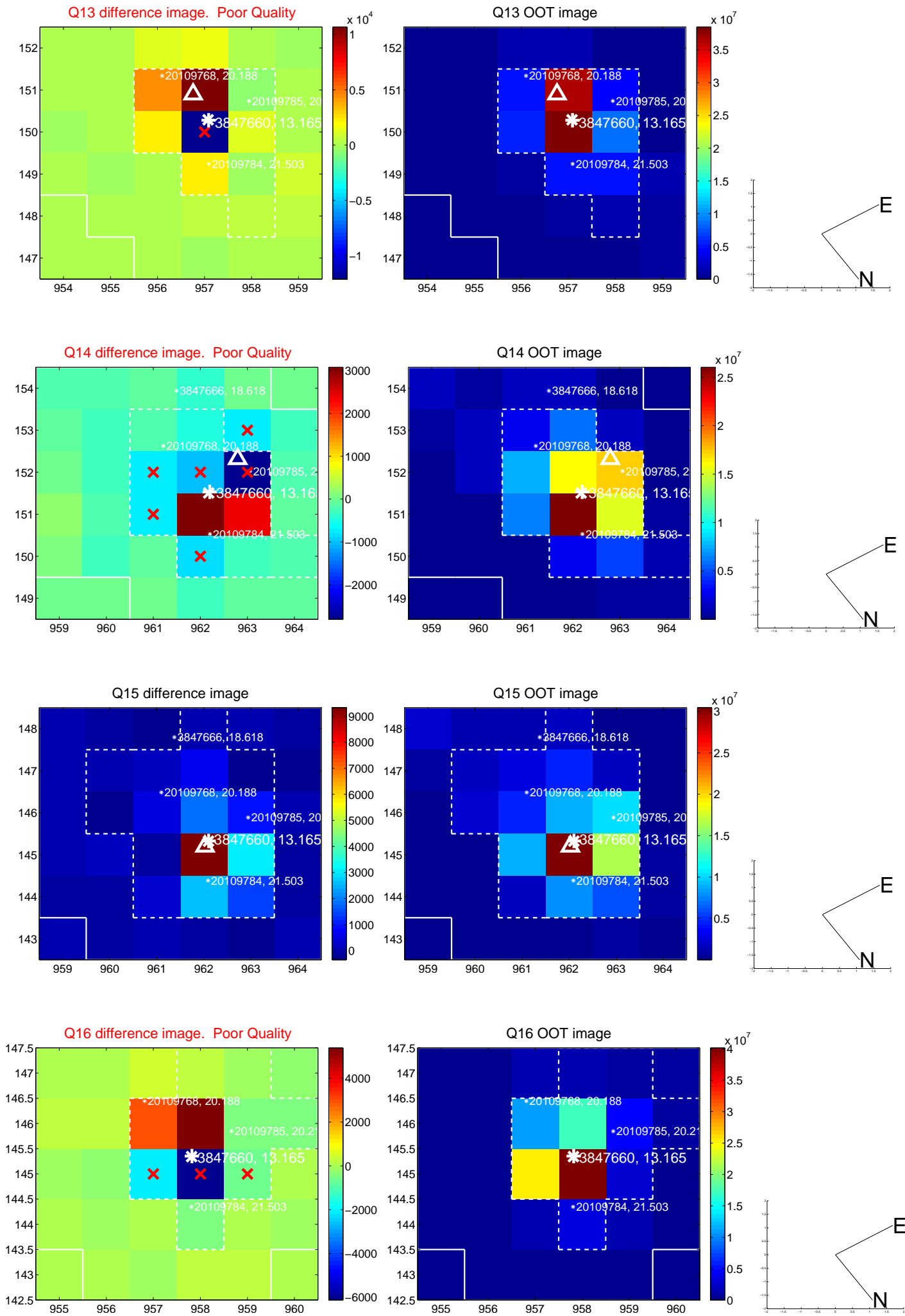


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

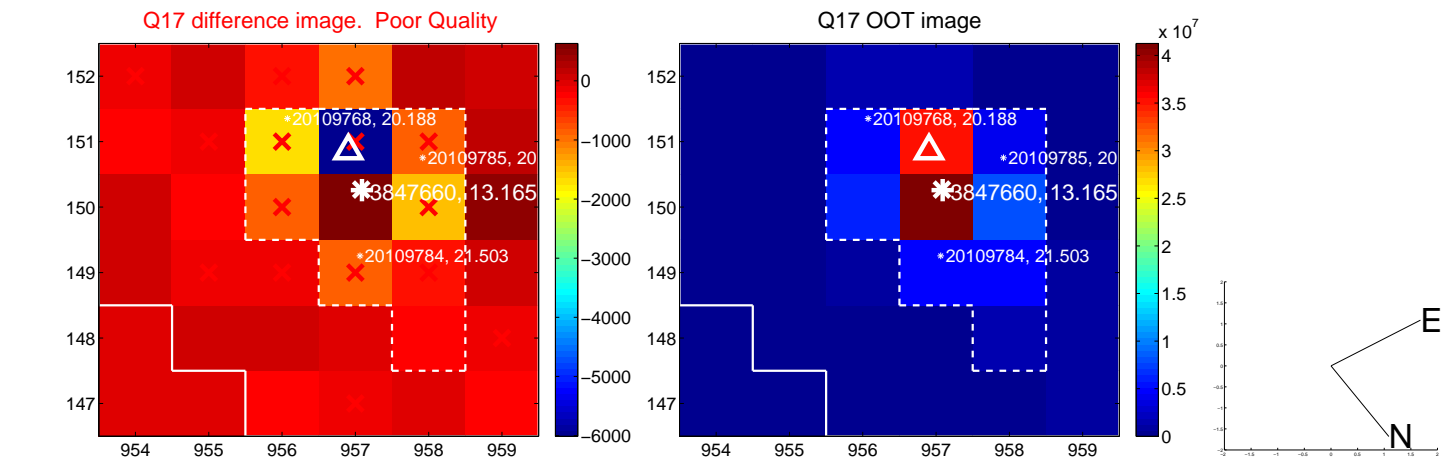




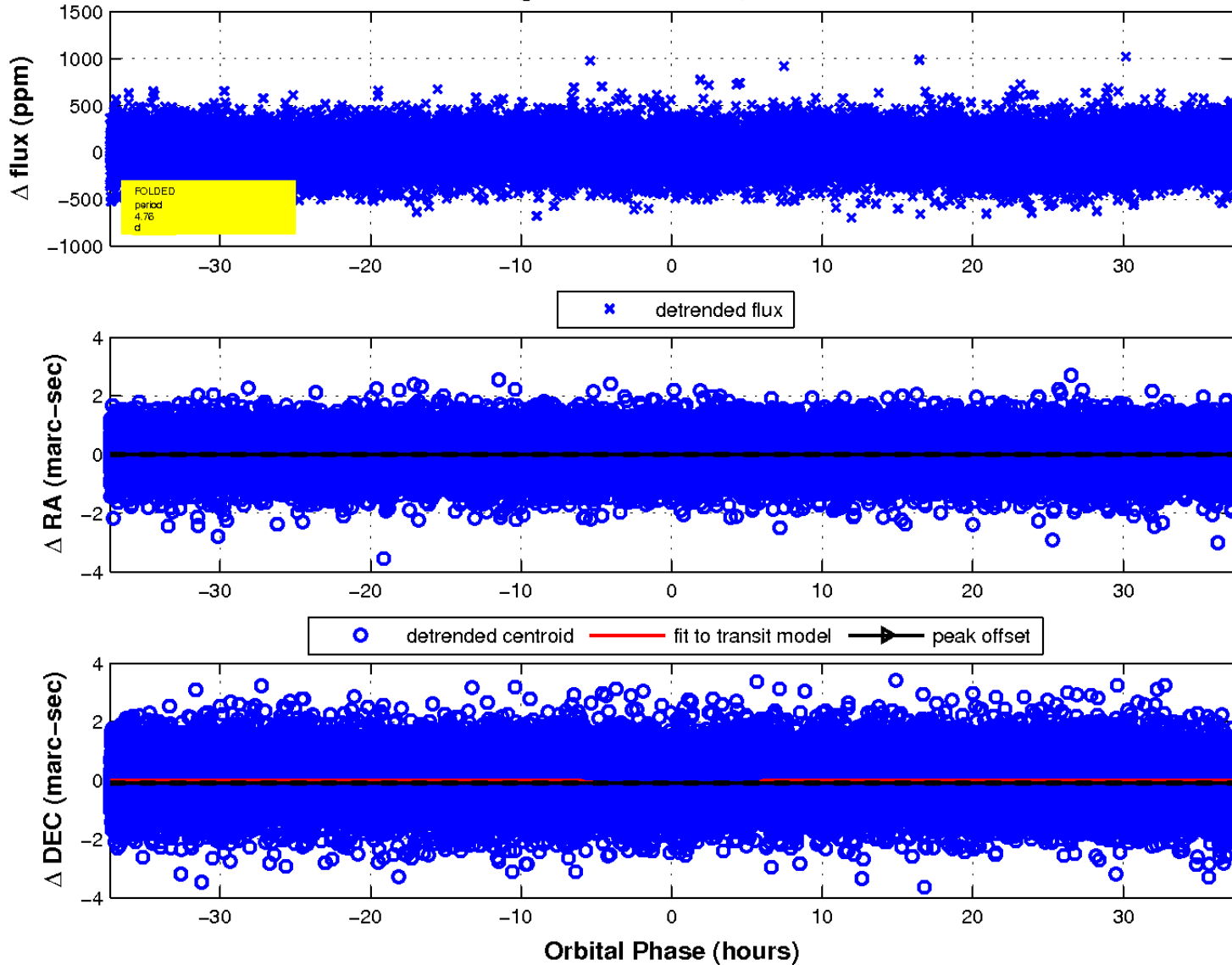
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

