

# KIC 008840083

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008840083-01	OBS	No	5.167059	133.121405	46.9	9.776	13.1	12.0	2.27	6420	1.83	1857.18
008840083-02	OBS	No	5.166931	133.890570	0.0	1.466	10.8	0.0	2.27	6420	0.04	1857.24
008840083-03	OBS	No	1.721776	132.656644	25.4	12.317	11.2	11.5	2.27	6420	1.15	8039.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008840083-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
008840083-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
008840083-03	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

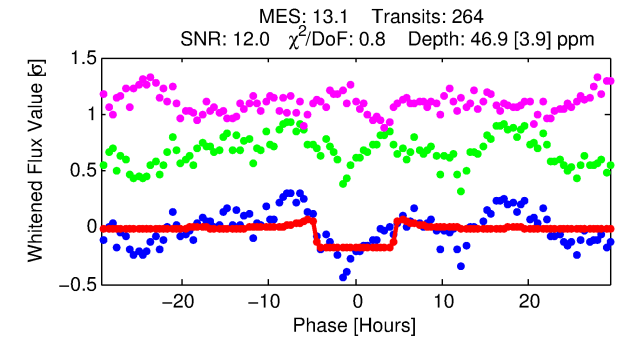
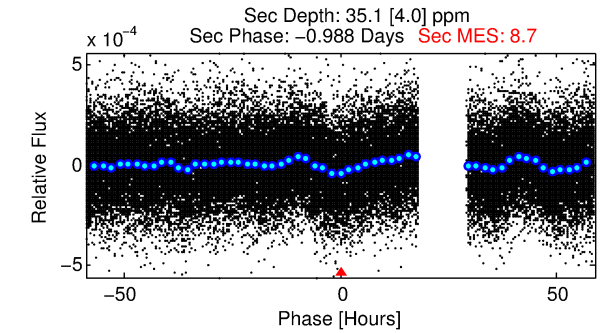
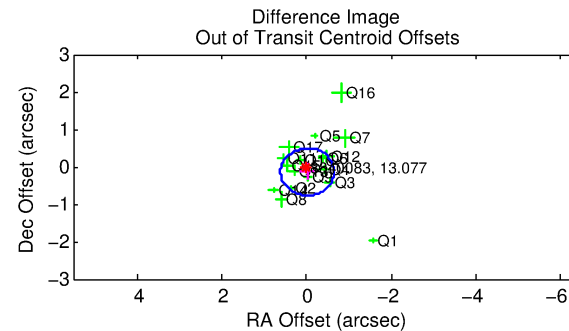
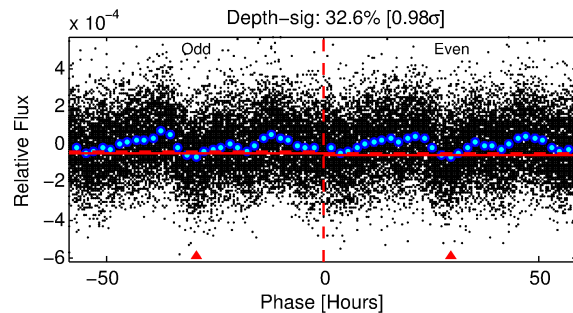
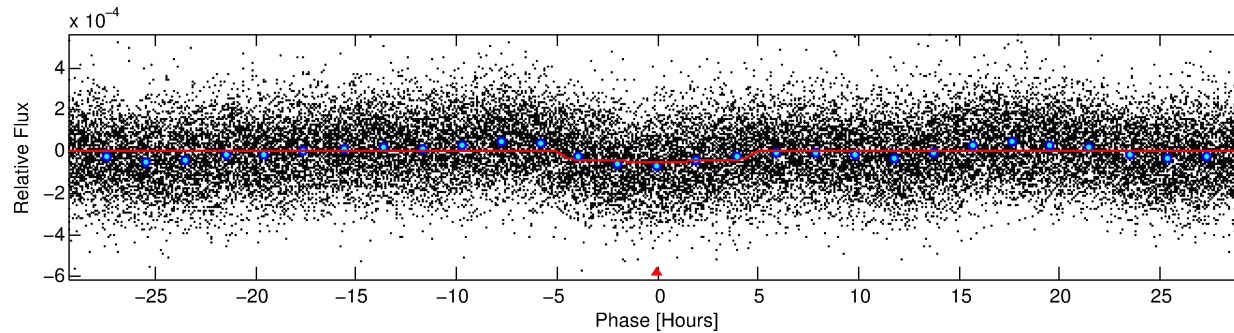
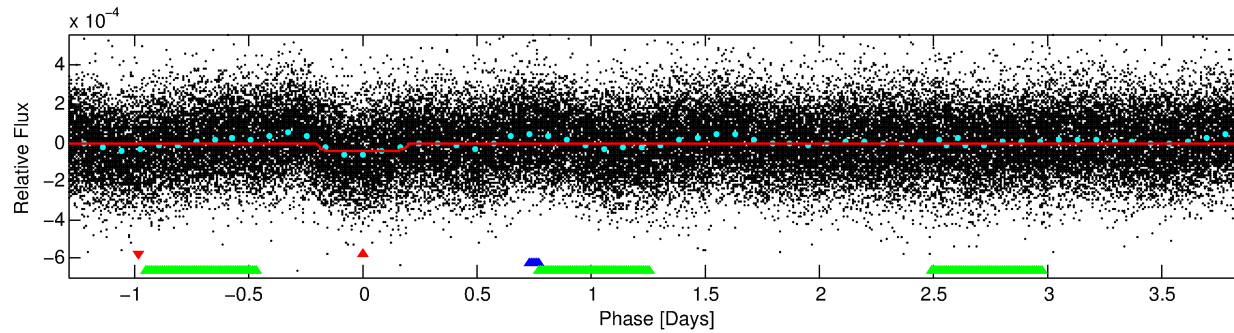
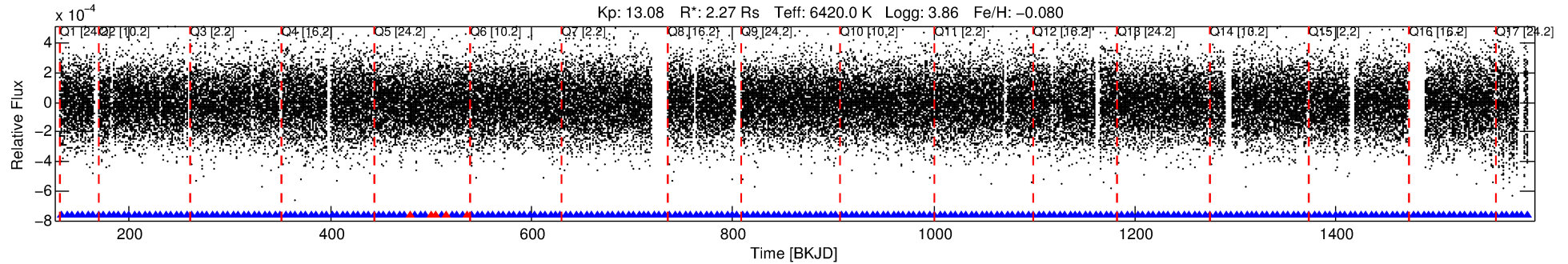
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008840083-01

No Significant Match Found

# DV One-Page Summary

KIC: 8840083 Candidate: 1 of 3 Period: 5.167 d



## DV Fit Results:

Period = 5.16706 [0.00005] d  
Epoch = 133.1214 [0.0062] BKJD  
Rp/R\* = 0.0074 [0.0009]  
a/R\* = 2.02 [1.05]  
b = 0.91 [0.14]  
Seff = 1857.18 [904.20]  
Teq = 1674 [204] K  
Rp = 1.83 [0.64] Re  
a = 0.0650 [0.0196] AU  
Ag = 24.45 [13.43] [1.75 $\sigma$ ]  
Teffp = 5755 [441] K [8.40 $\sigma$ ]

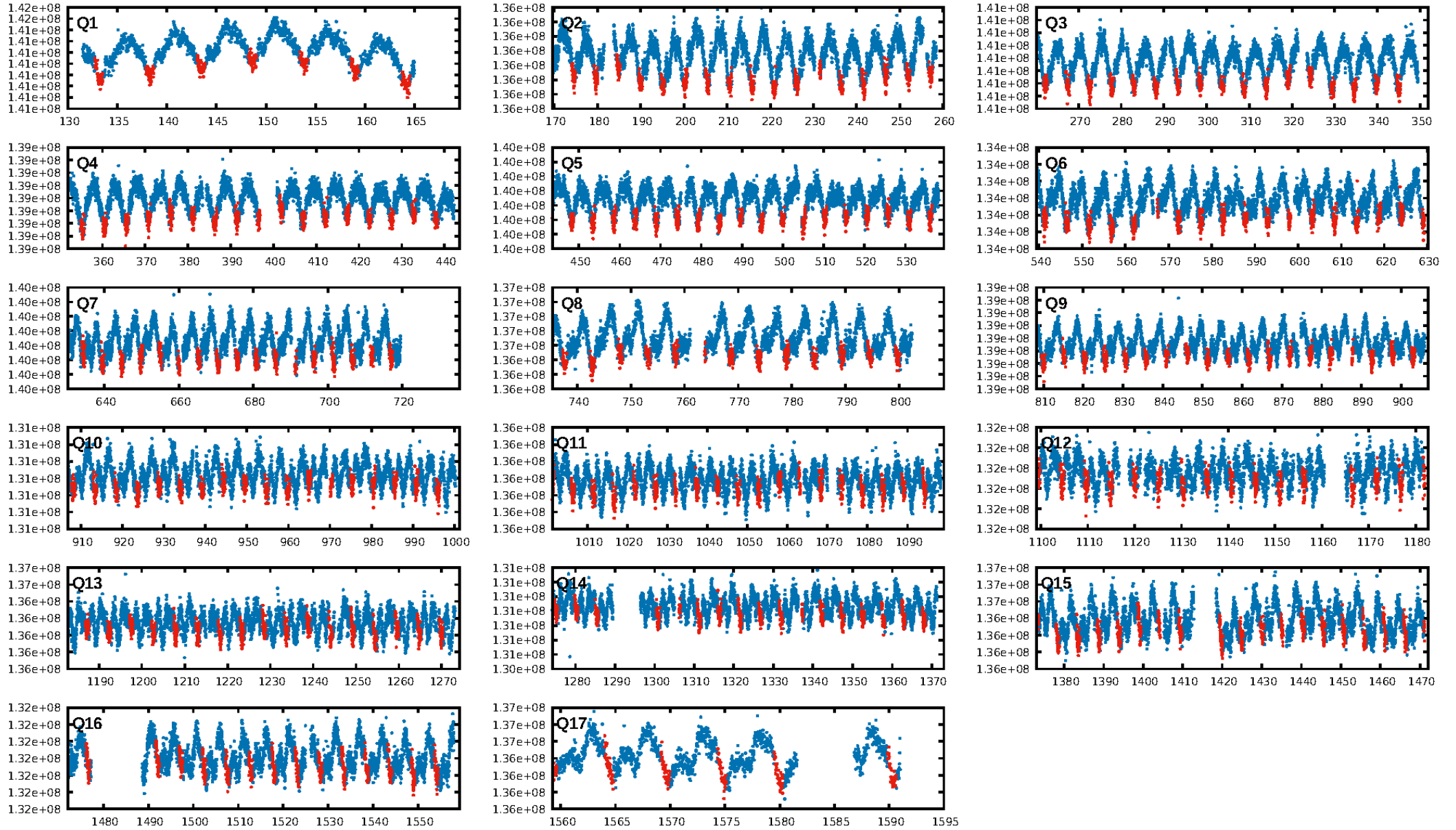
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgm: 0.98 [246/251]  
GhostDiagnostic-chr: 3.204  
Centroid-sig: 0.0%  
Centroid-so: 1.286 arcsec [1.92 $\sigma$ ]  
OotOffset-rm: 0.141 arcsec [0.67 $\sigma$ ]  
KicOffset-rm: 0.131 arcsec [0.62 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

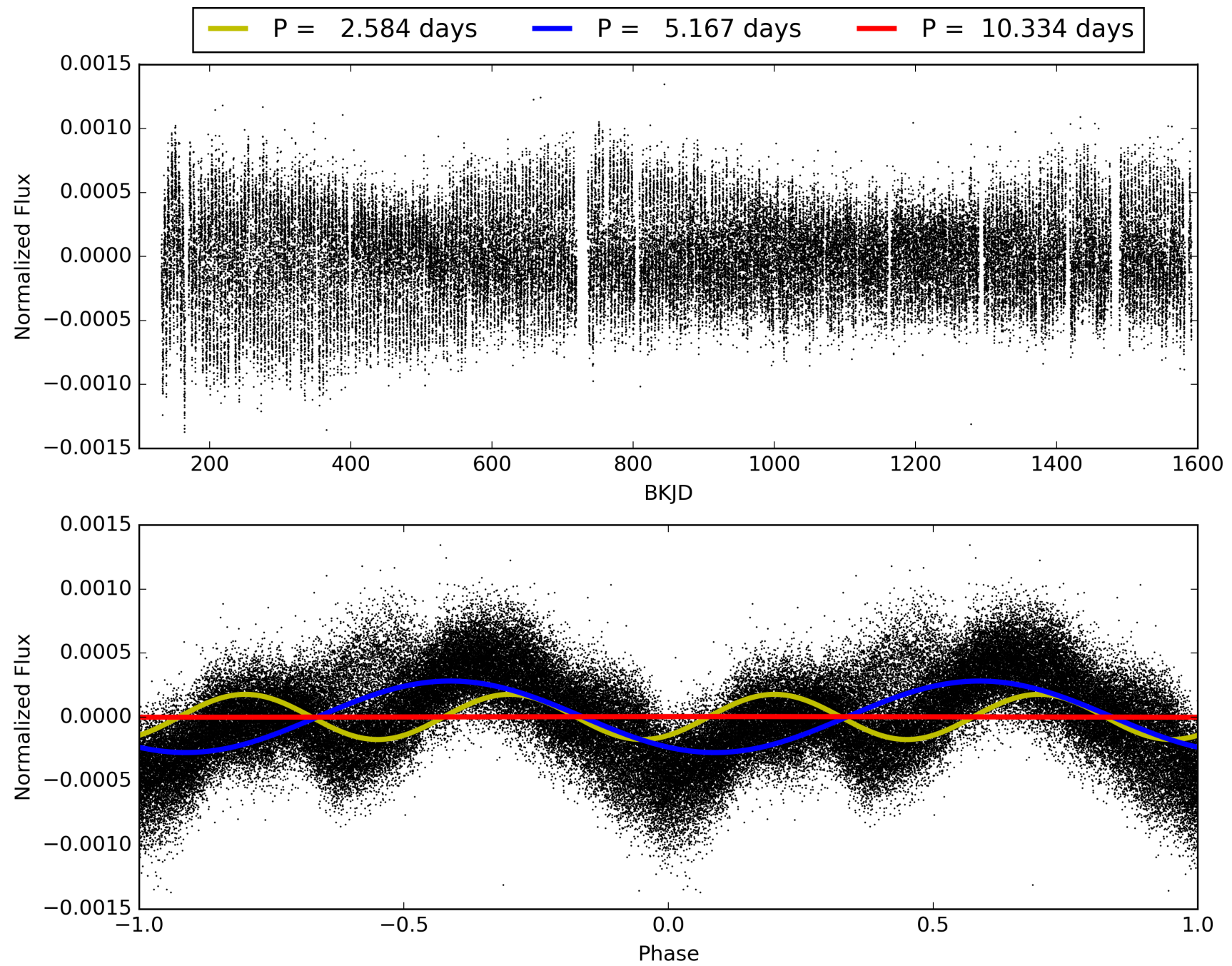
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:35:50 Z

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

# TCE 008840083-01, PDC Light Curves



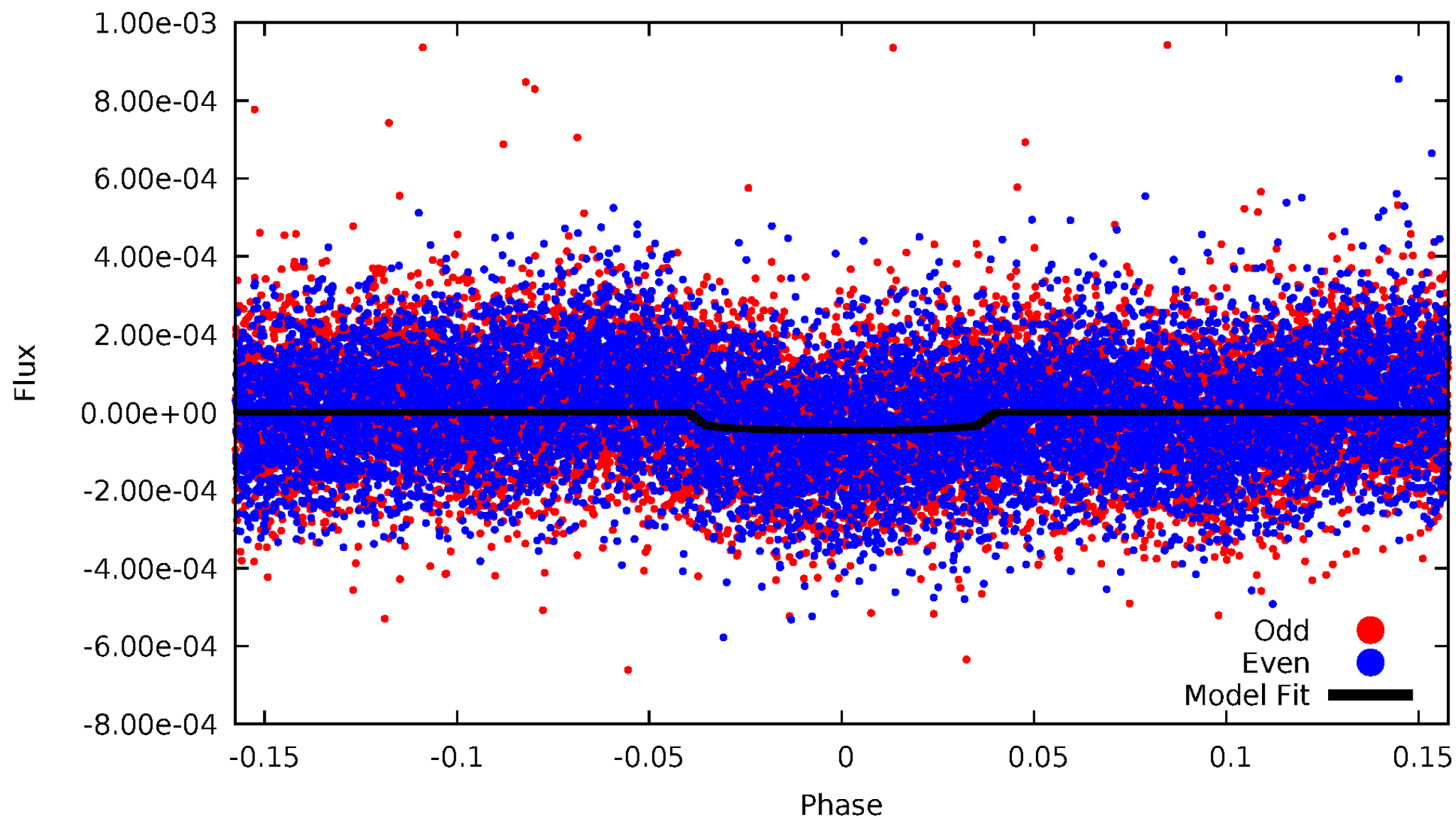
TCE 008840083-01





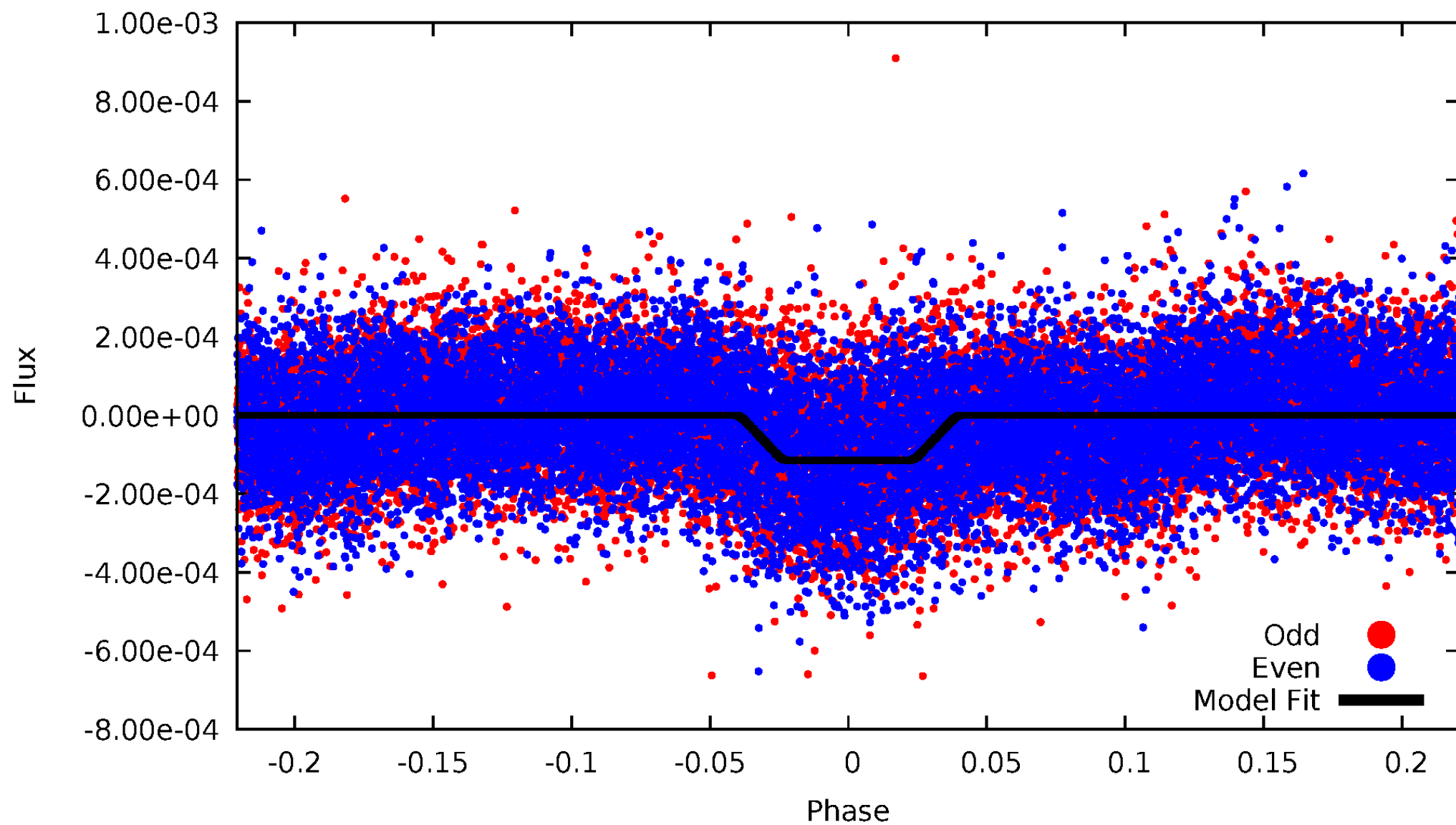
# DV Odd/Even

TCE 008840083-01

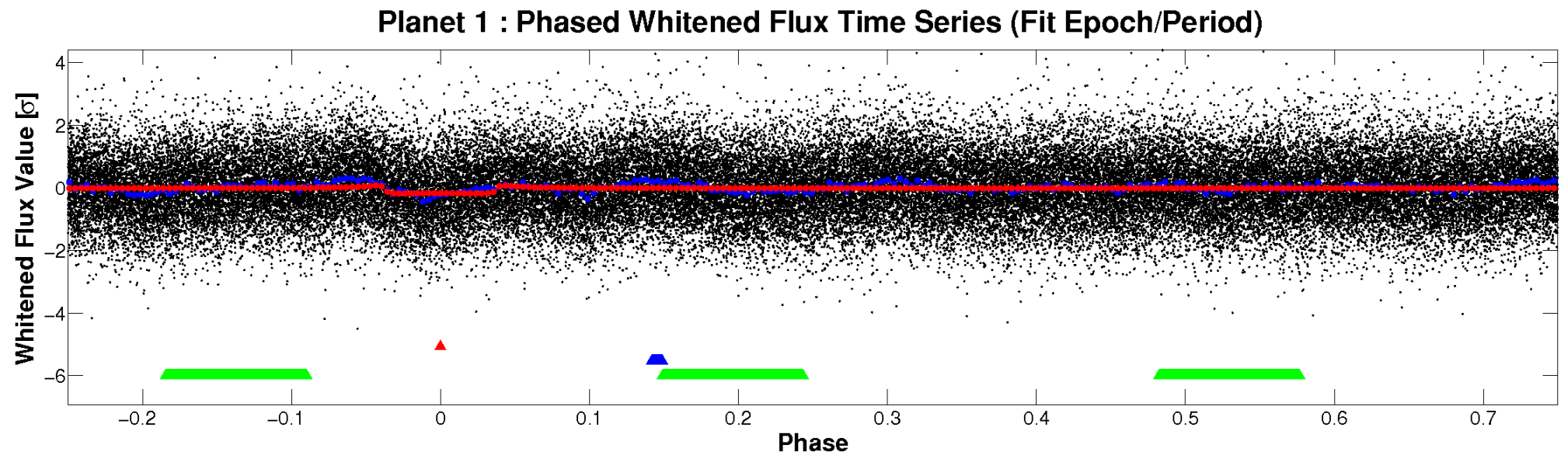
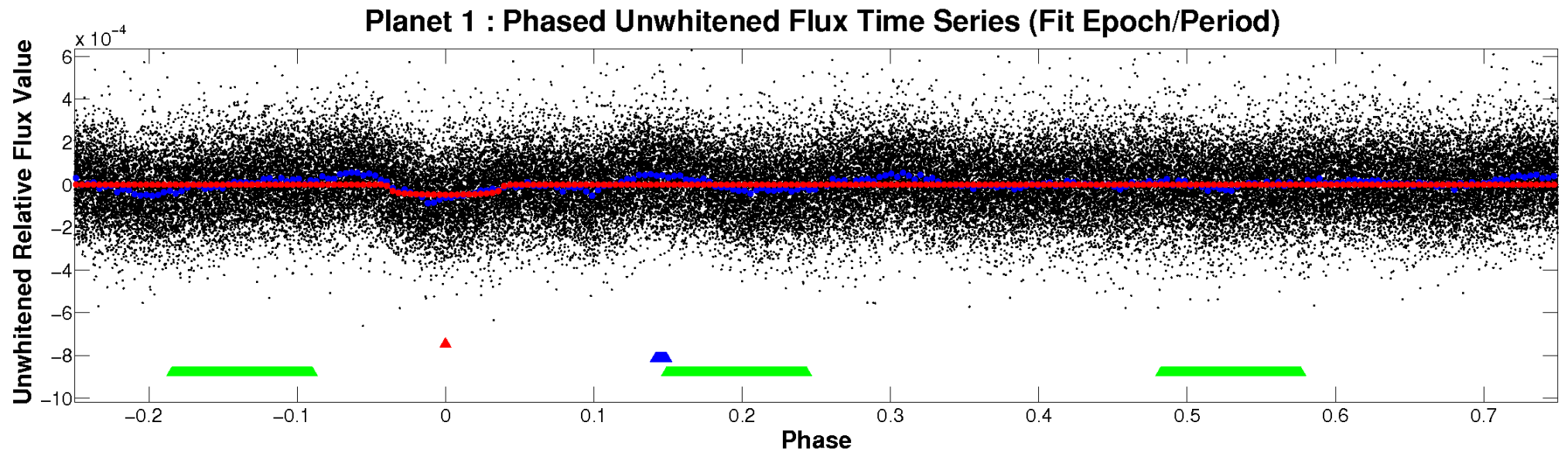


# ALT Odd/Even

TCE 008840083-01

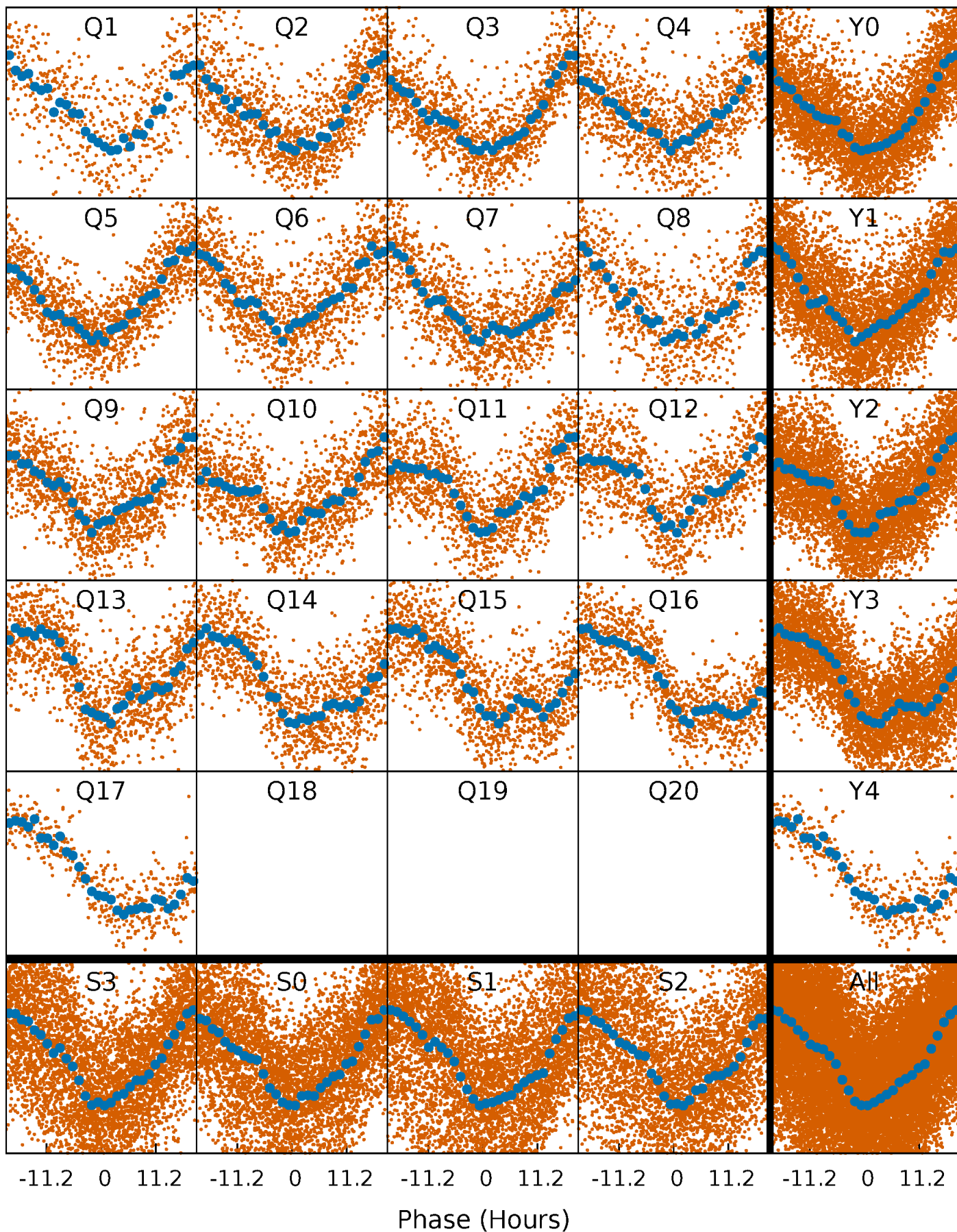


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

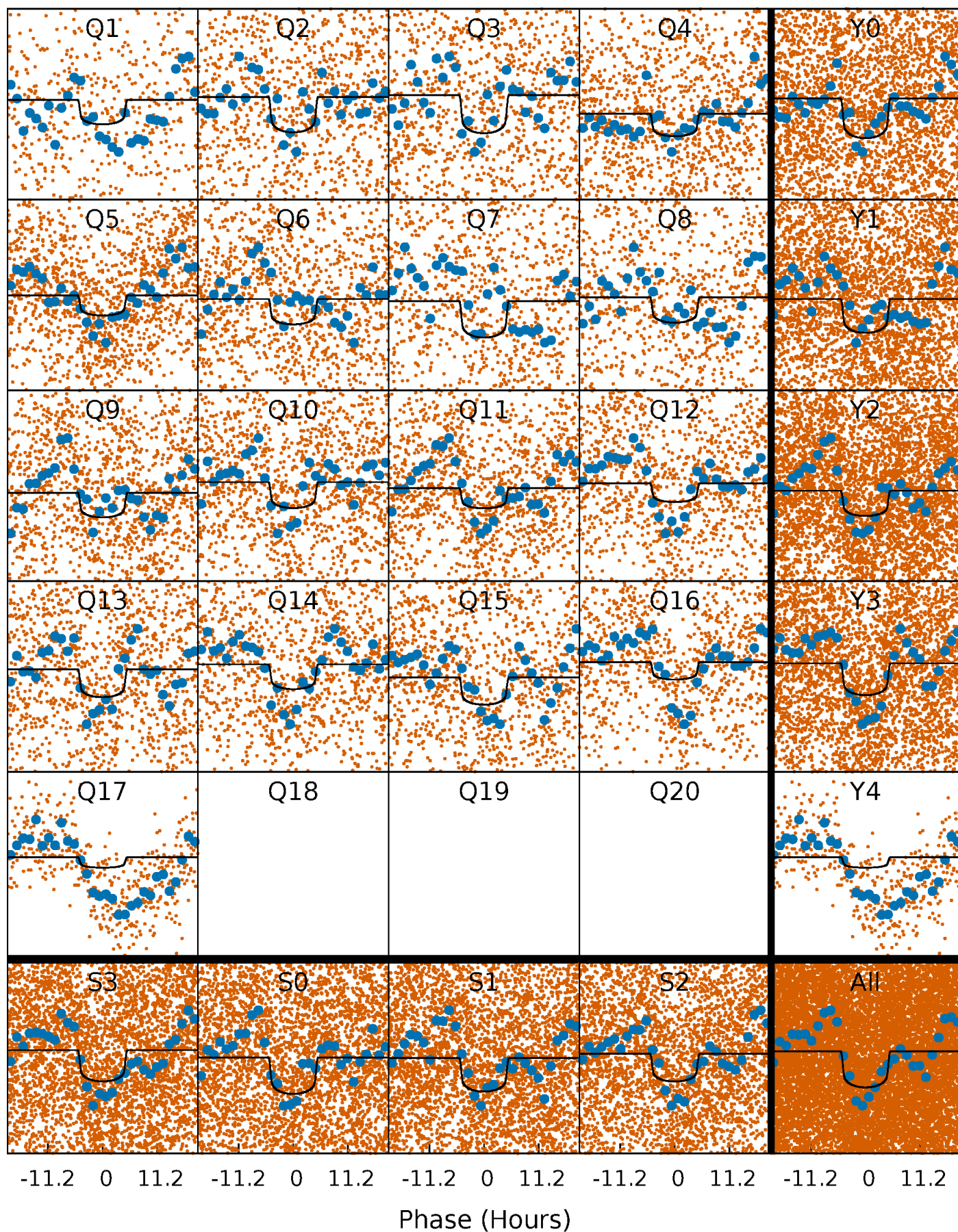
TCE 008840083-01 P= 5.167059 Days  $T_0=133.121405$  (BKJD)





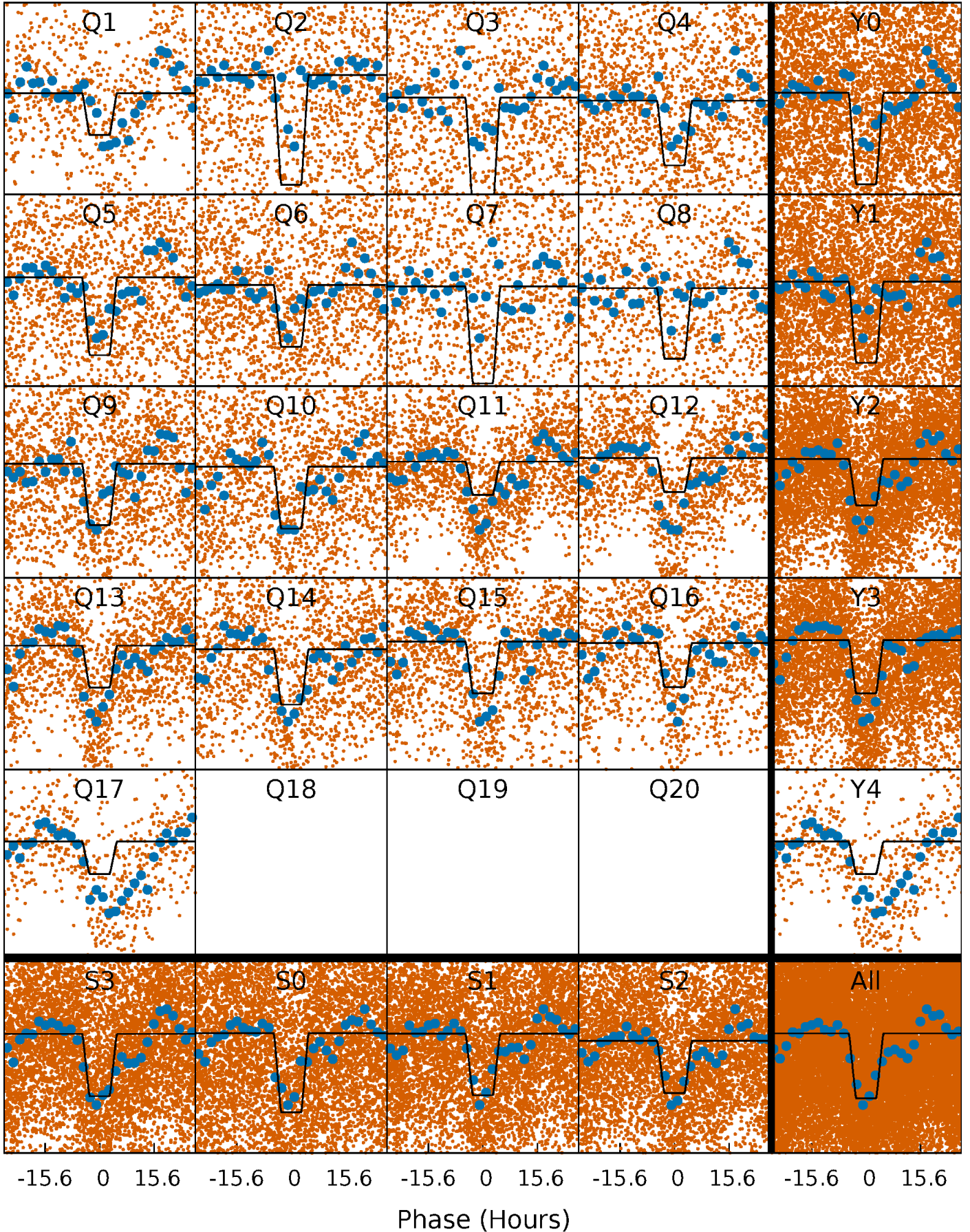
# DV Quarter-Phased Transit Curves

TCE 008840083-01 P= 5.167059 Days  $T_0=133.121405$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008840083-01 P= 5.167320 Days  $T_0=133.077192$  (BKJD)

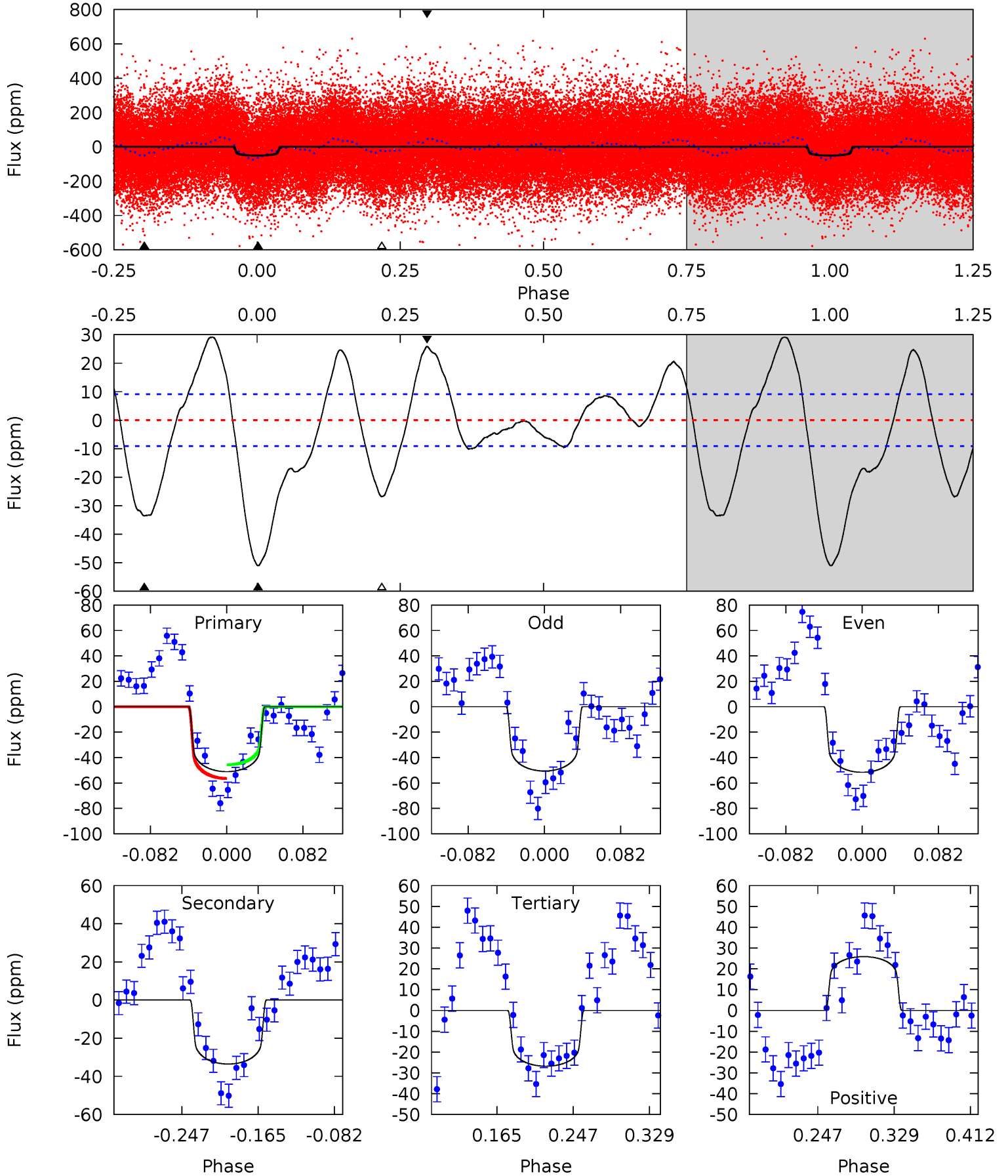




# DV Model-Shift Uniqueness Test

008840083-01, P = 5.167059 Days, E = 127.954346 Days

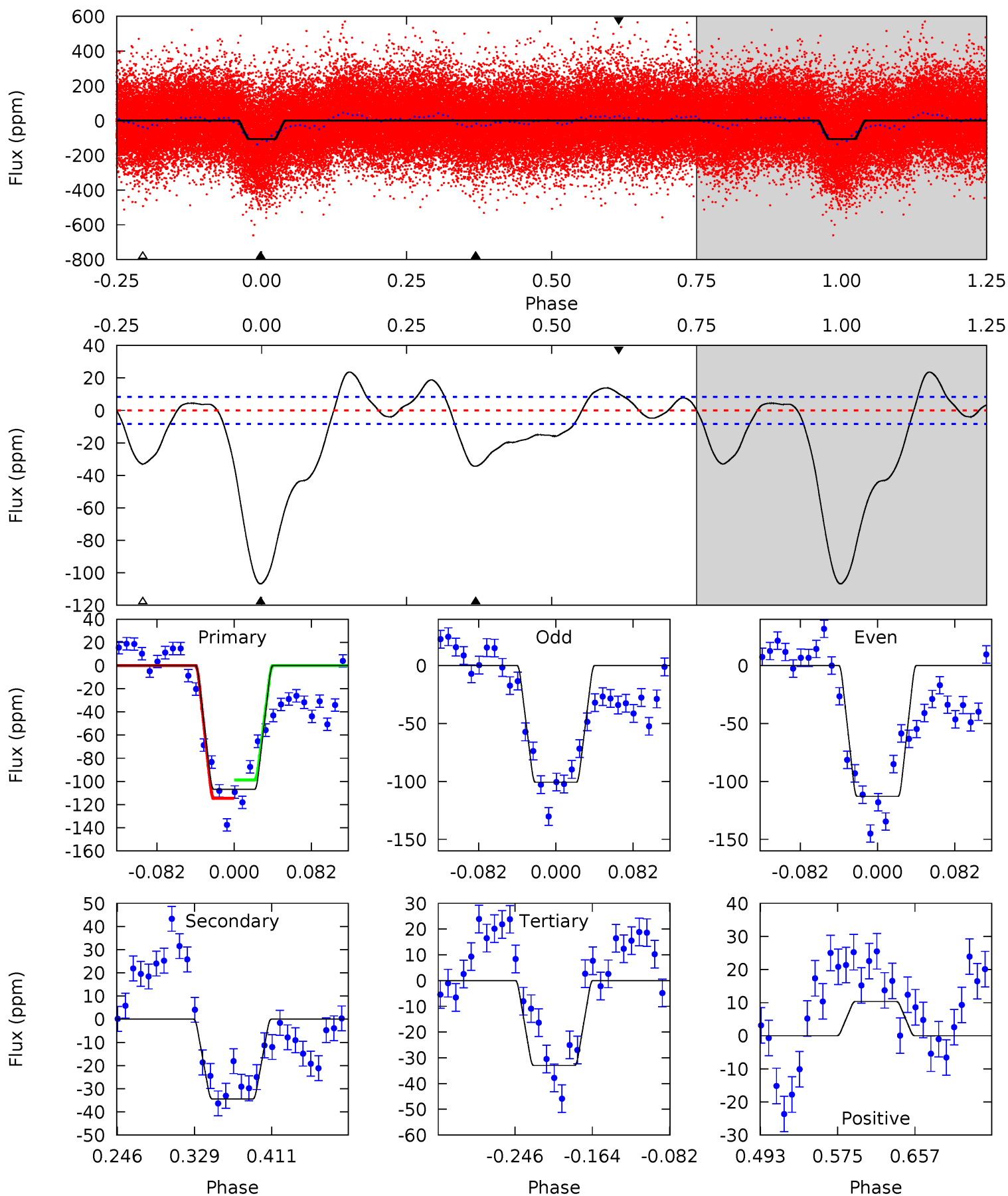
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.9	17.0	13.6	13.1	4.61	1.74	6.45	12.3	12.8	3.42	3.89	0.26	0.94	0.36	2.75



# Alt Model-Shift Uniqueness Test

008840083-01, P = 5.167320 Days, E = 127.909872 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
59.1	19.0	18.3	5.73	4.61	1.74	7.83	40.9	53.4	0.77	13.3	3.37	0.99	0.18	4.38





### Stellar Parameters For KIC 008840083

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6420^{+194}_{-194}$	$3.863^{+0.273}_{-0.117}$	$-0.080^{+0.300}_{-0.250}$	$2.271^{+0.491}_{-0.737}$	$1.375^{+0.235}_{-0.258}$	$0.165^{+0.296}_{-0.059}$
	+3%/-3%	+7%/-3%	+375%/-312%	+22%/-32%	+17%/-19%	+179%/-36%
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 008840083-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-34 \pm 2$	$1.78^{+0.35}_{-0.36}$	$2314^{+147}_{-196}$	$5692^{+365}_{-367}$	$25^{+13}_{-7}$
Alt.	$-34 \pm 2$	$2.55^{+0.43}_{-0.43}$	$2304^{+163}_{-188}$	$4838^{+259}_{-205}$	$12^{+6}_{-3}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

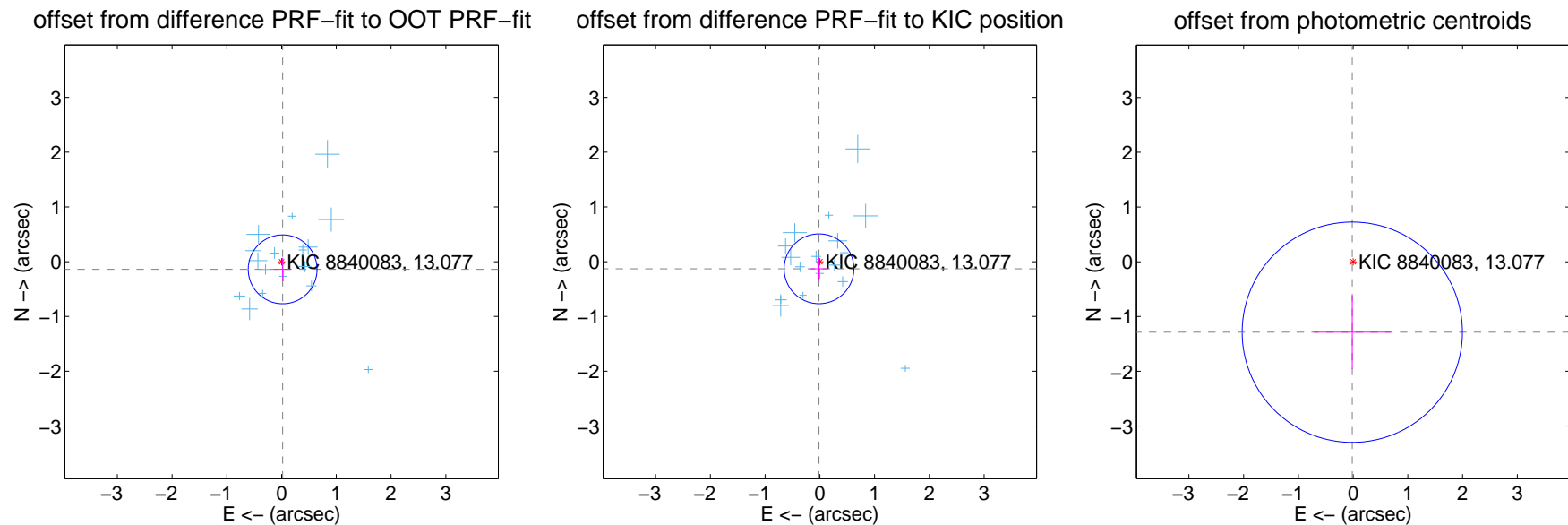
## DV Centroid Data

Supplemental centroid analysis for 008840083-01. Kepler magnitude: 13.08. Transit SNR 11.98

There are 17 quarters with good PRF difference image offsets

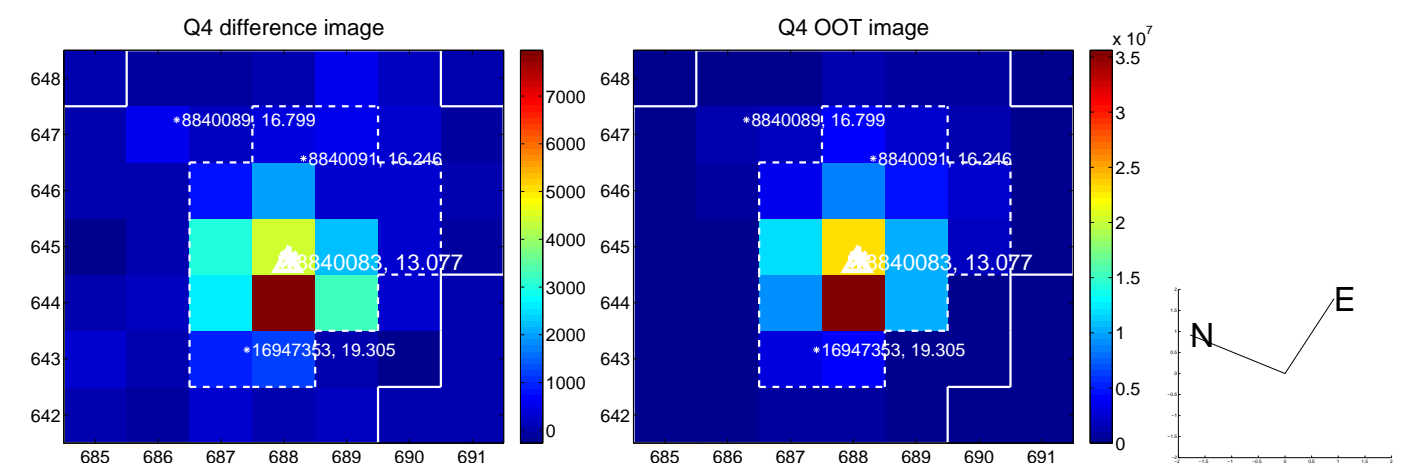
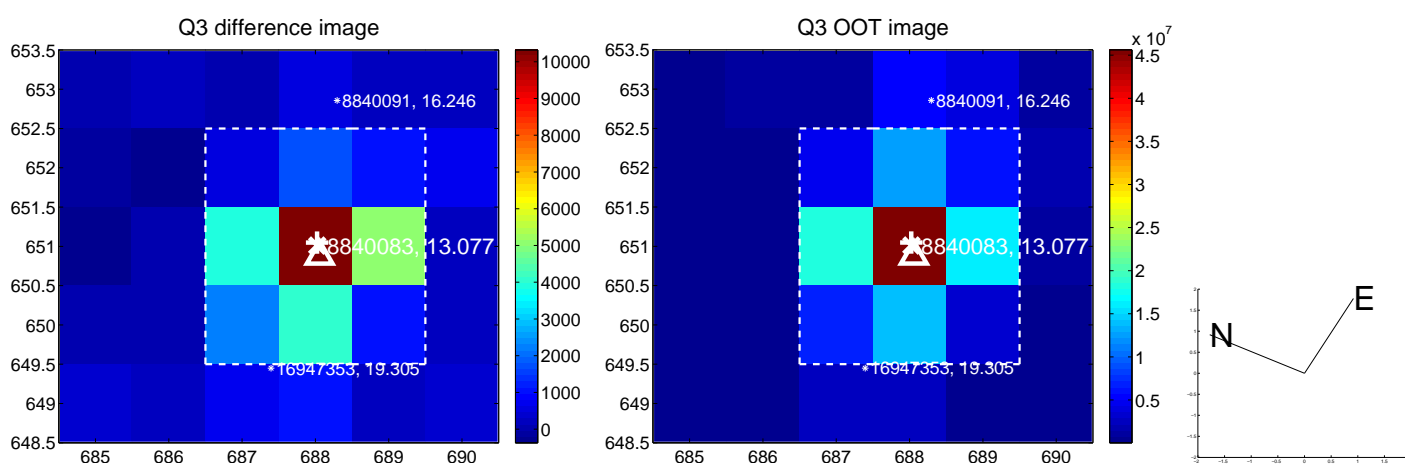
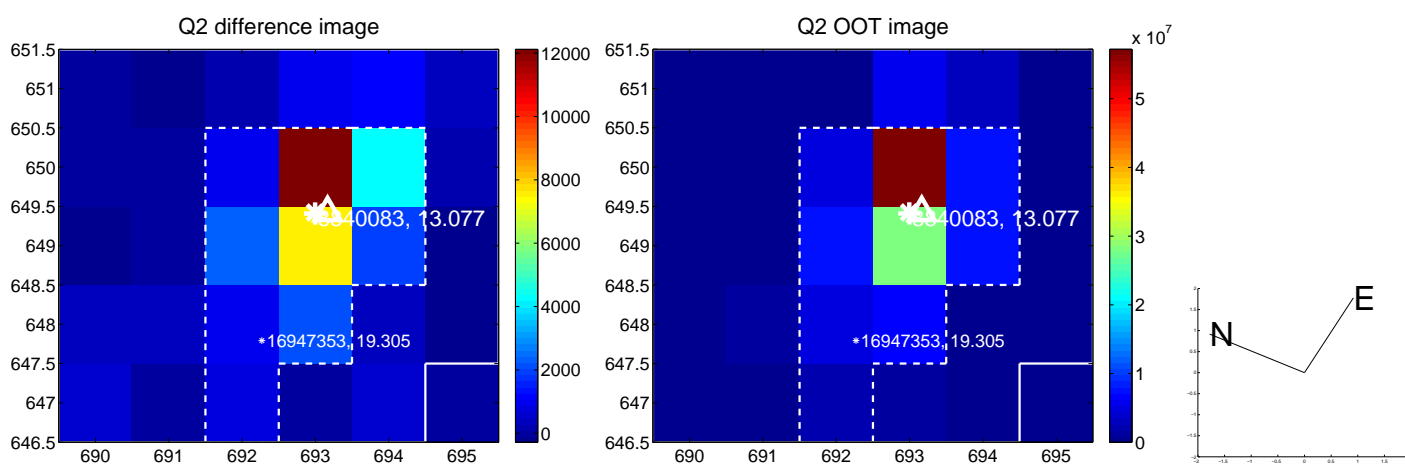
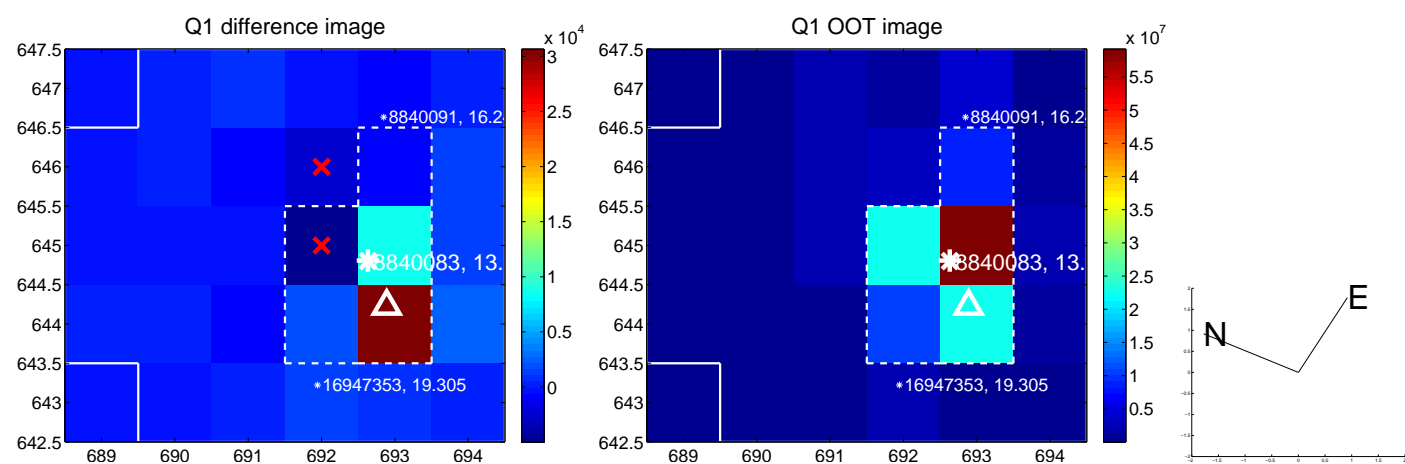
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.141 \pm 0.209$	0.67	$-0.020 \pm 0.153$	$-0.139 \pm 0.210$
PRF-fit source offset from KIC position	$0.131 \pm 0.212$	0.62	$0.015 \pm 0.164$	$-0.130 \pm 0.213$
photometric centroid source offset	$1.29 \pm 0.67$	1.92	$0.02 \pm 0.70$	$-1.29 \pm 0.67$

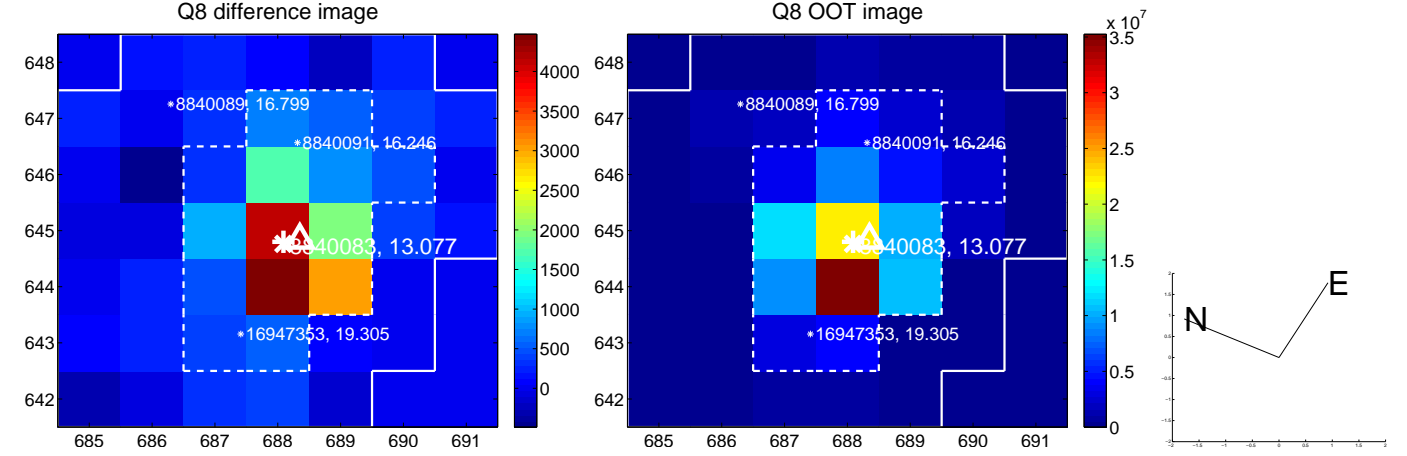
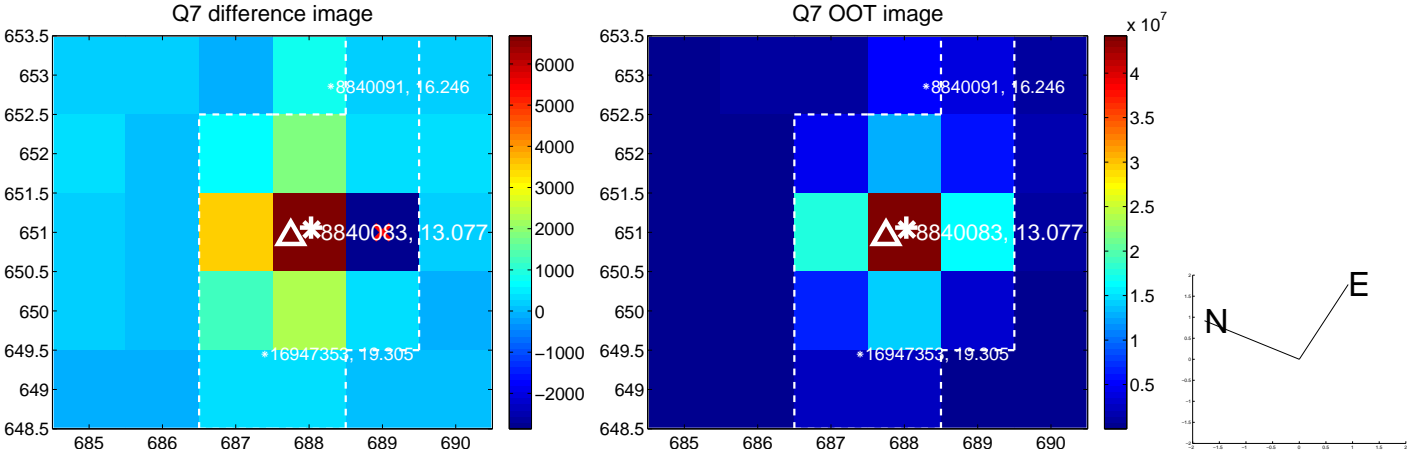
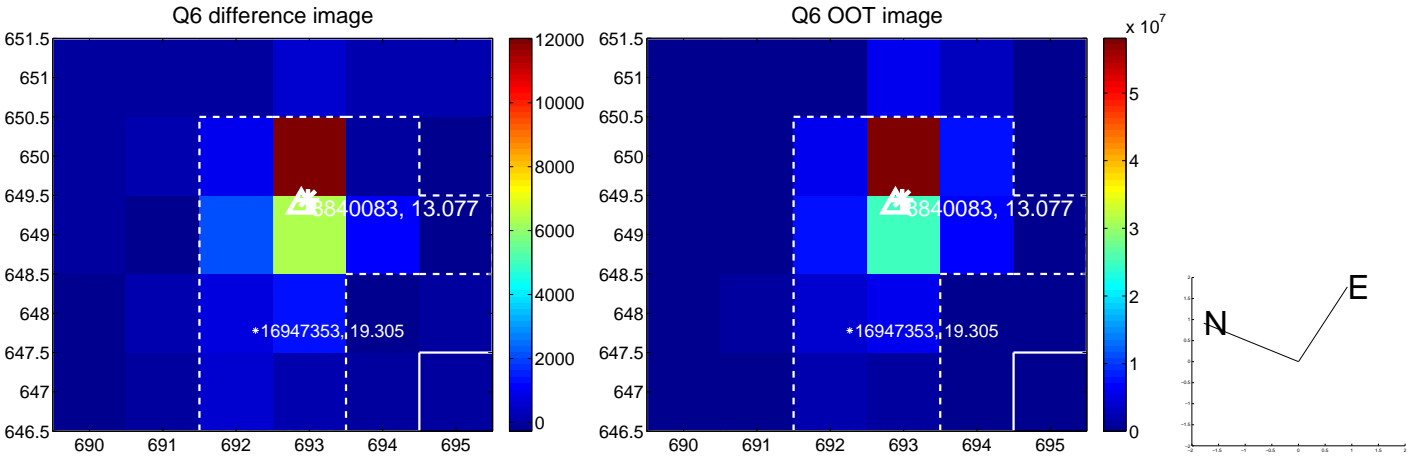
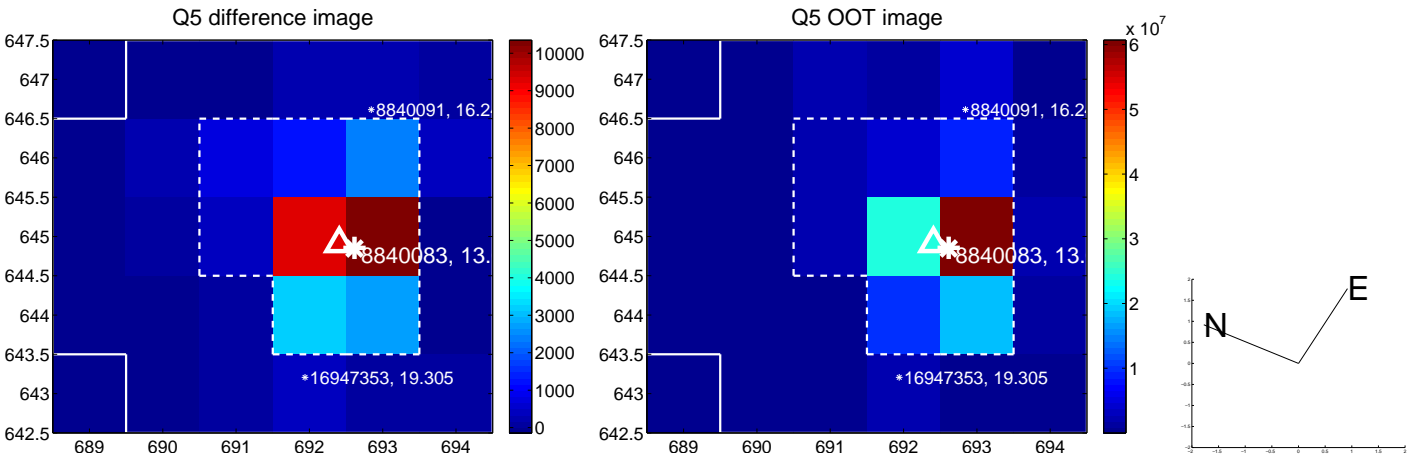


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

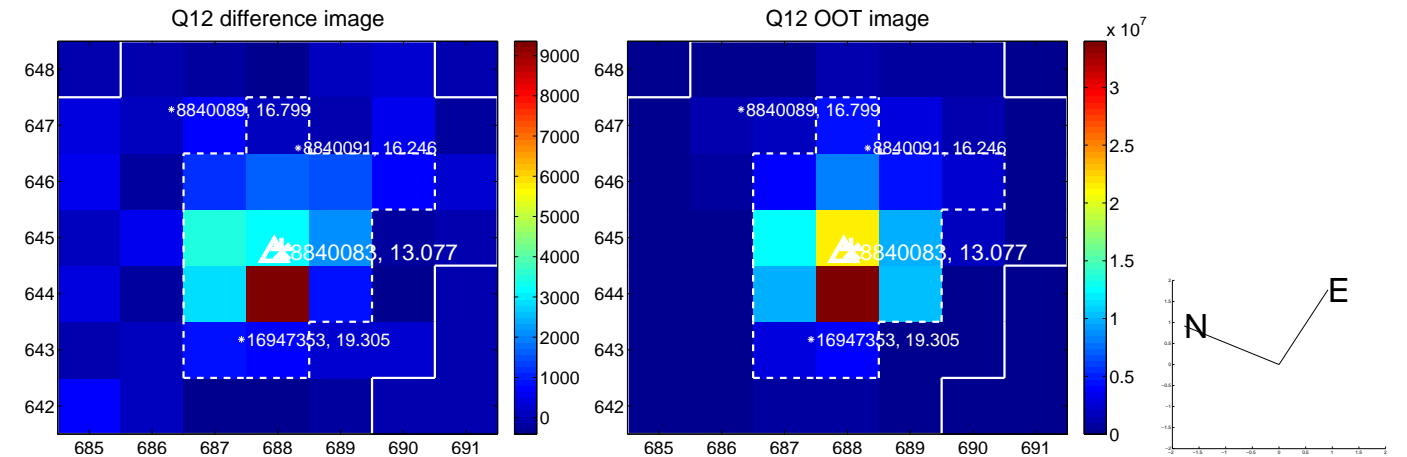
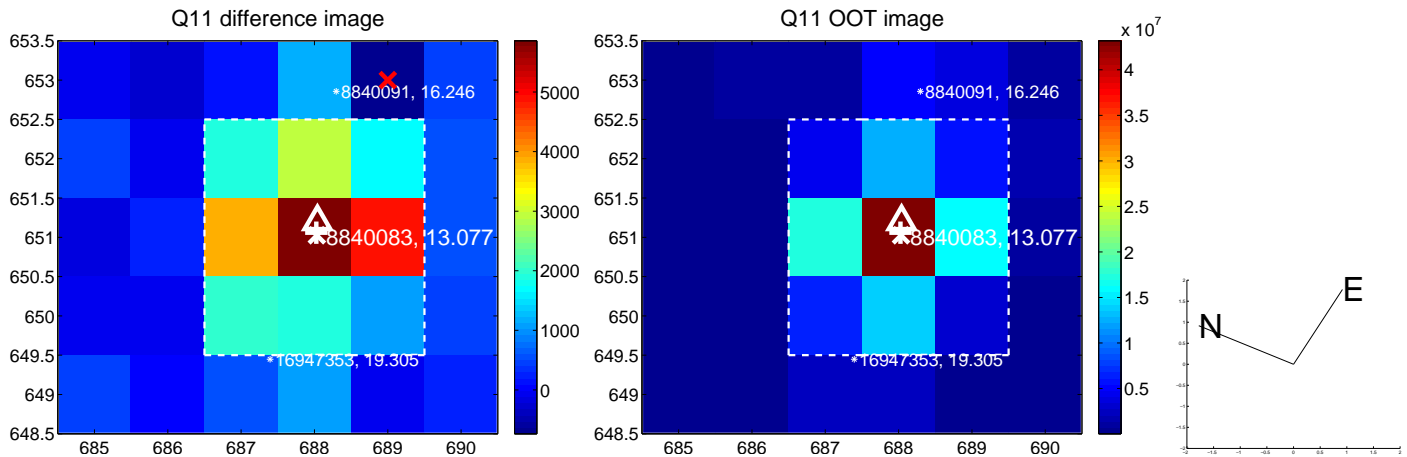
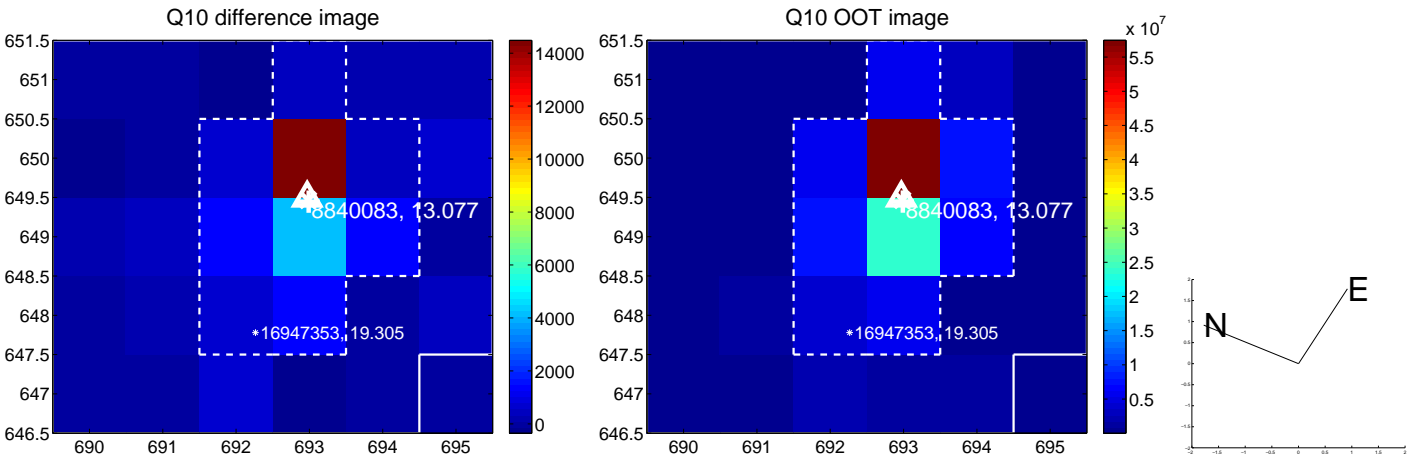
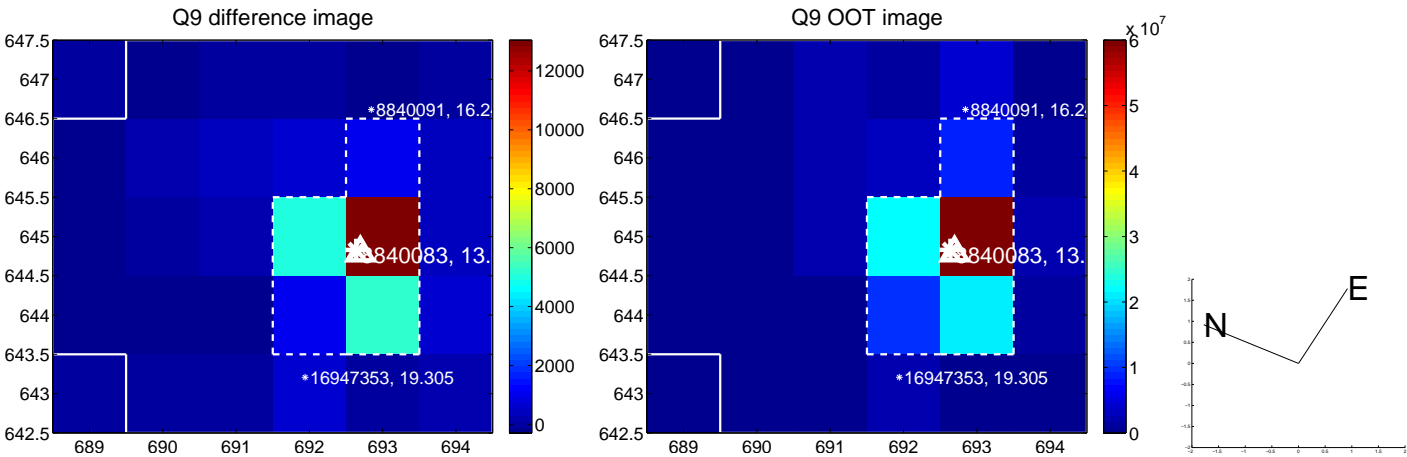


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

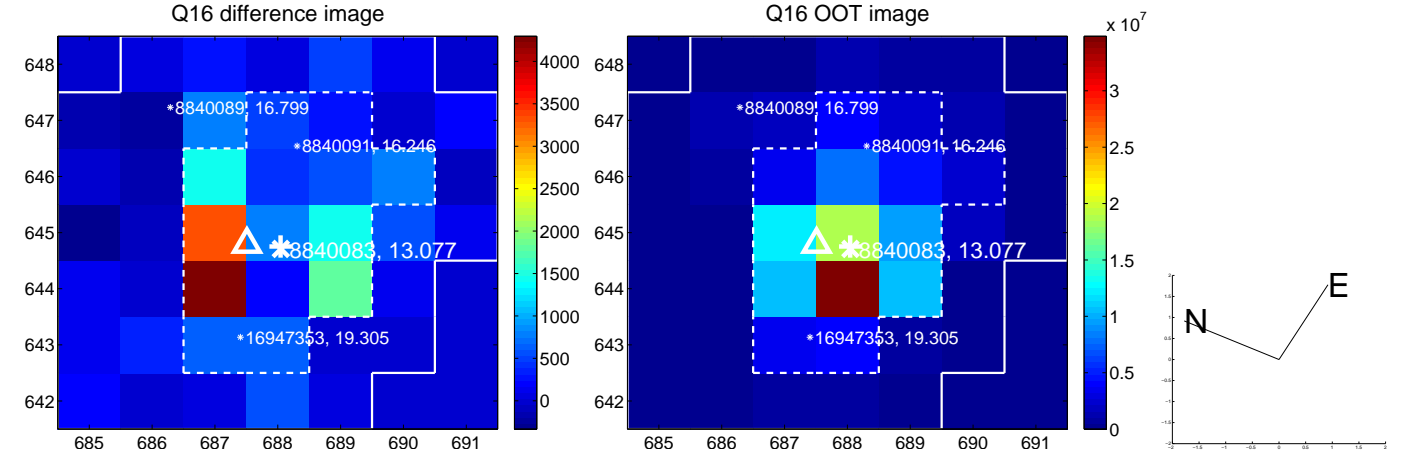
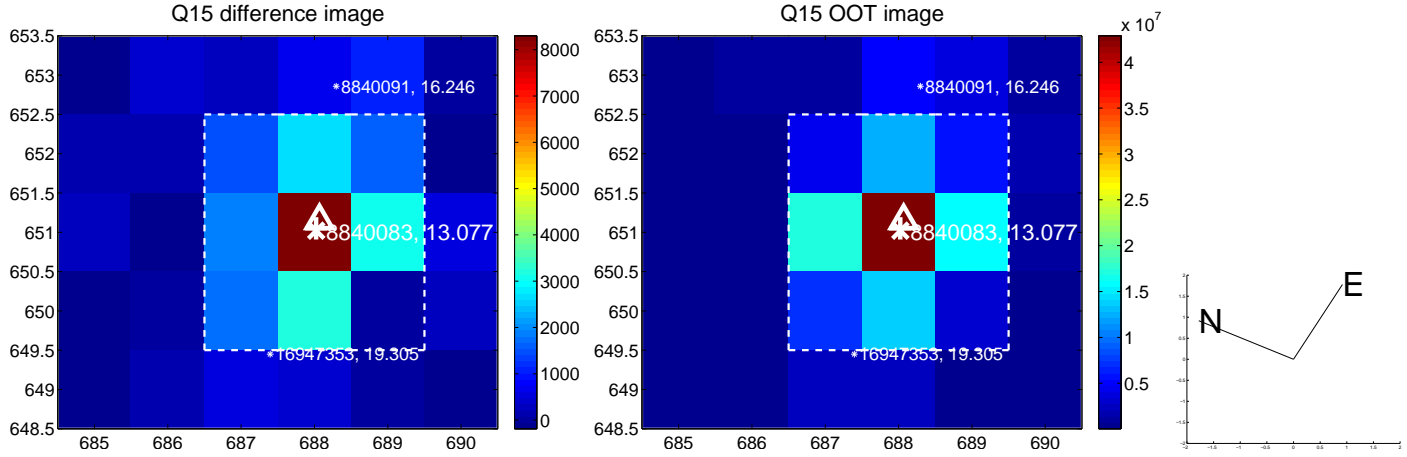
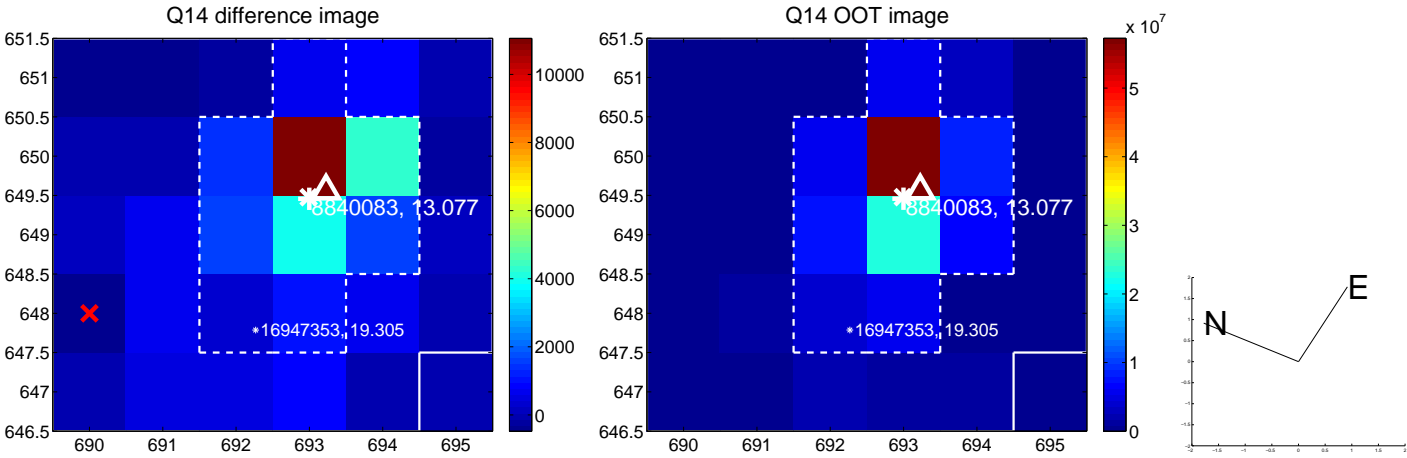
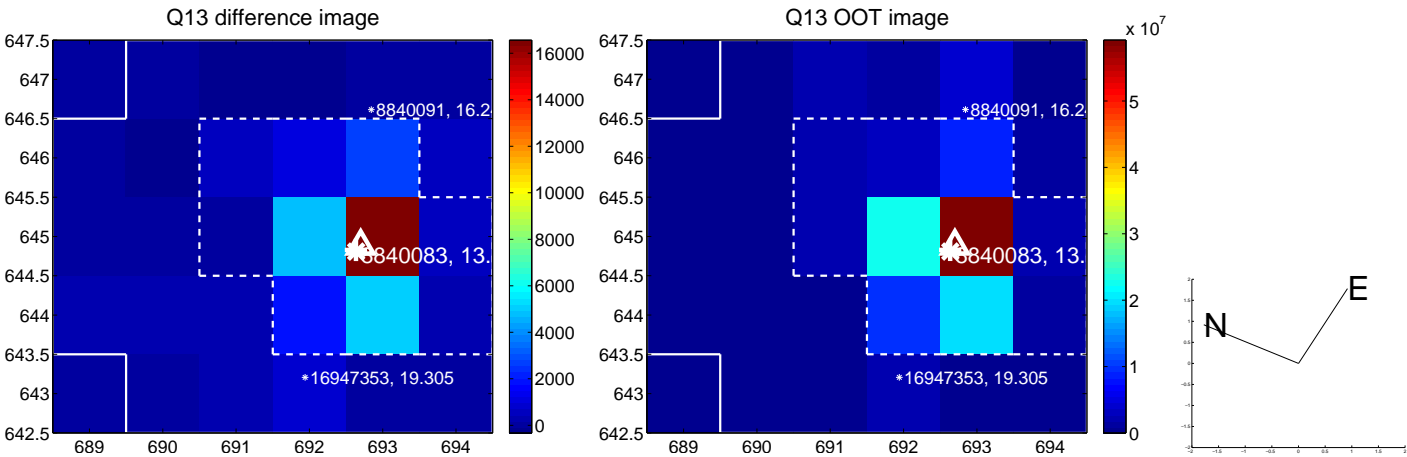




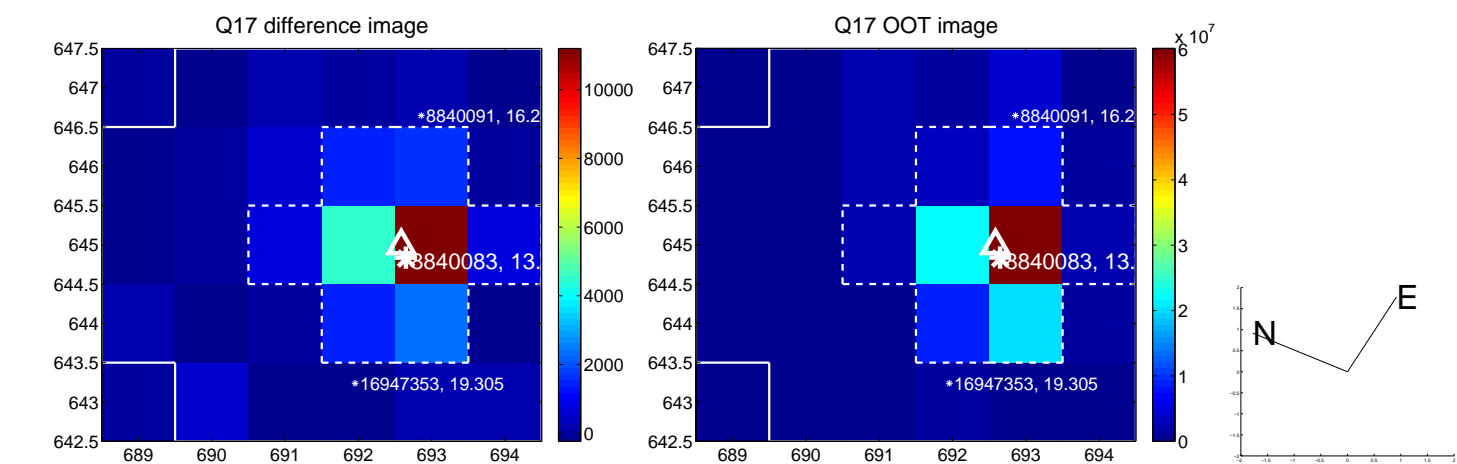
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



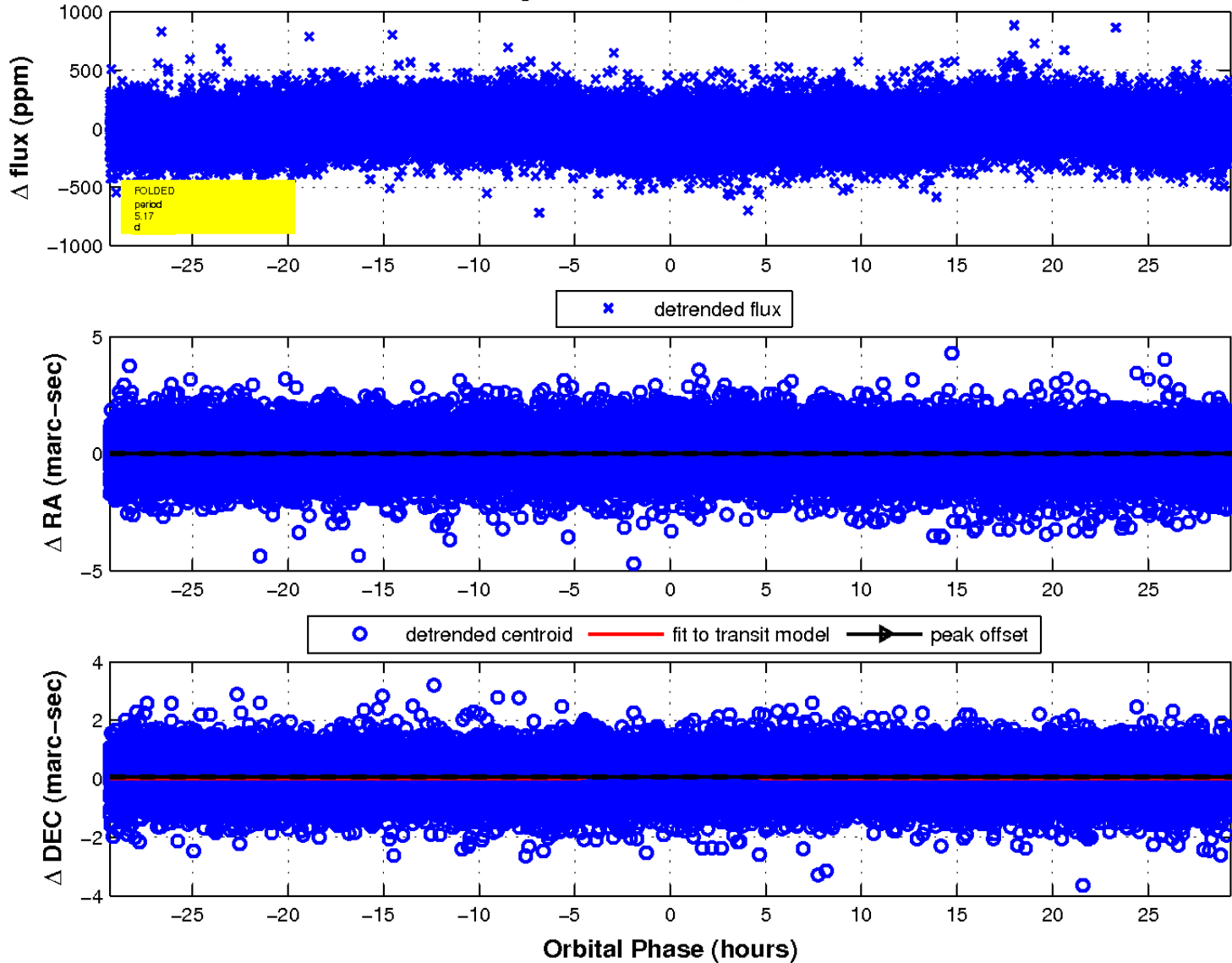
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

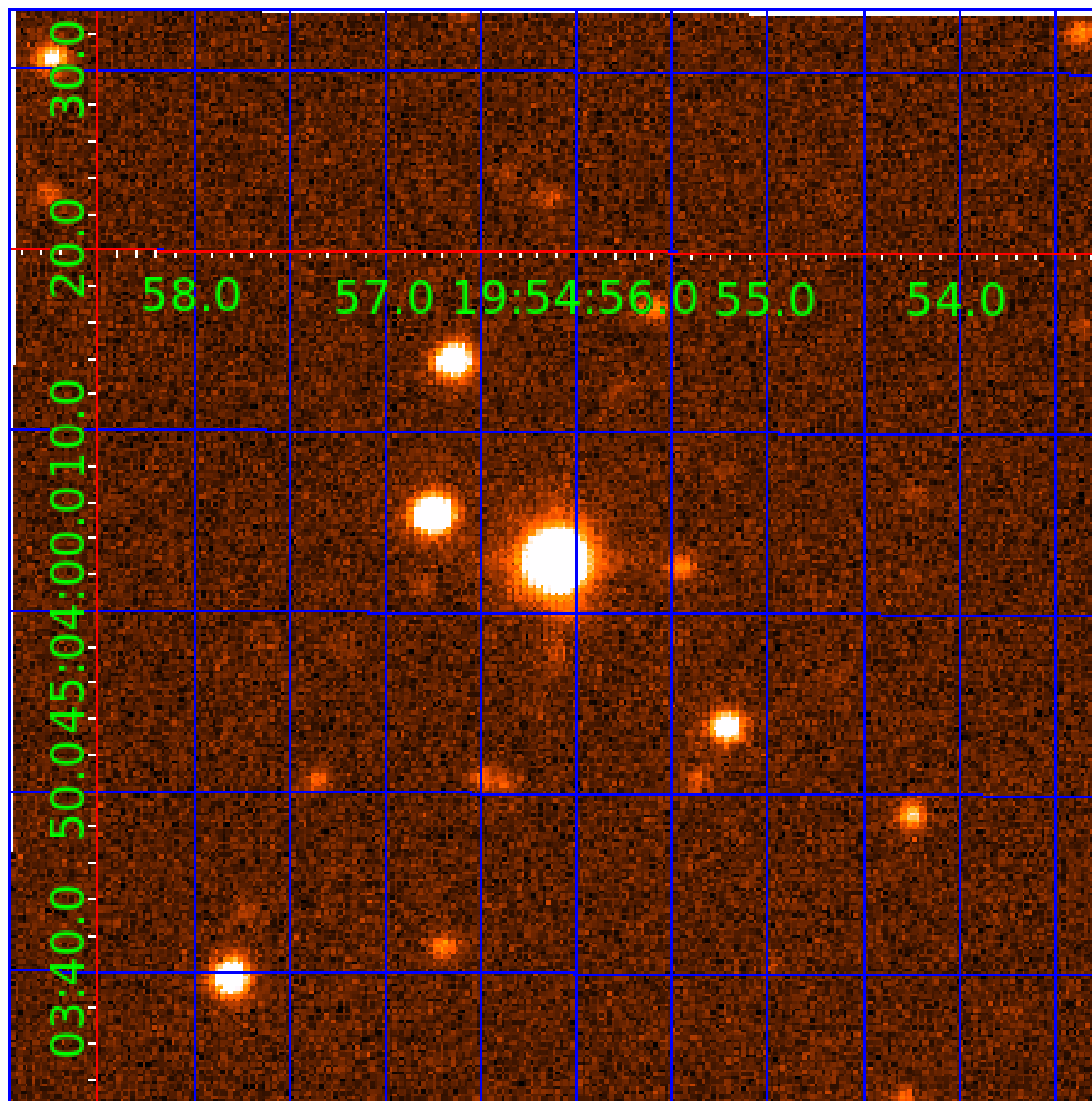


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 008840083

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008840083-01	OBS	No	5.167059	133.121405	46.9	9.776	13.1	12.0	2.27	6420	1.83	1857.18
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008840083-03	OBS	No	1.721776	132.656644	25.4	12.317	11.2	11.5	2.27	6420	1.15	8039.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008840083-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
008840083-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
008840083-03	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

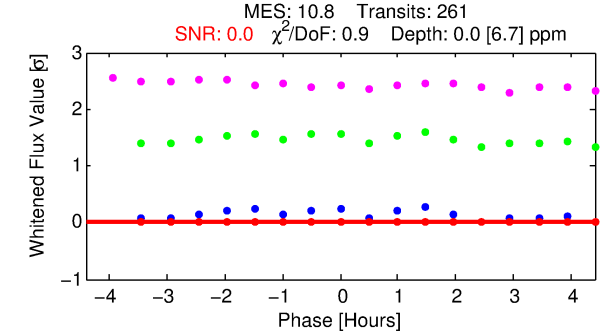
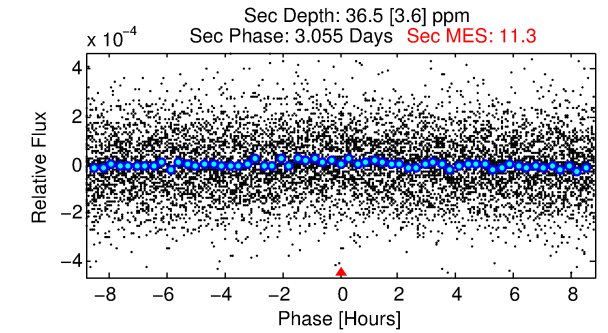
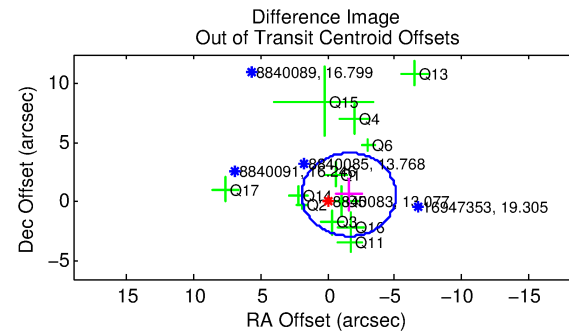
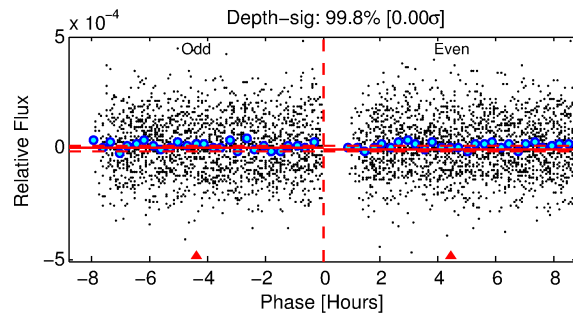
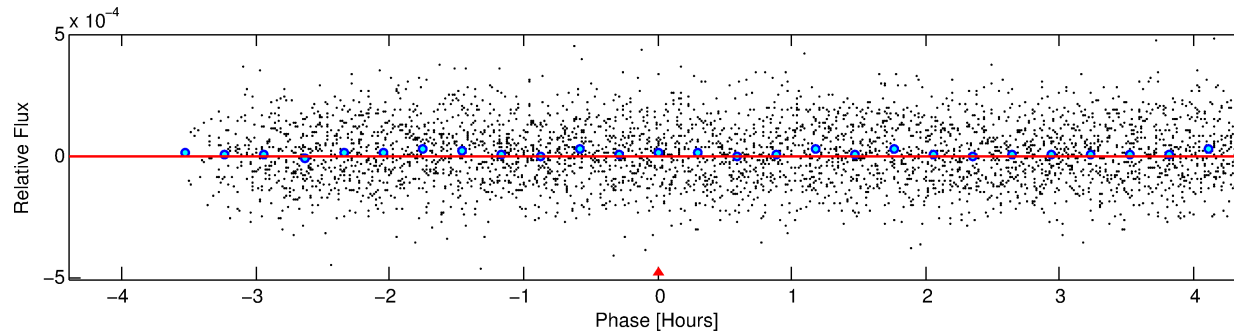
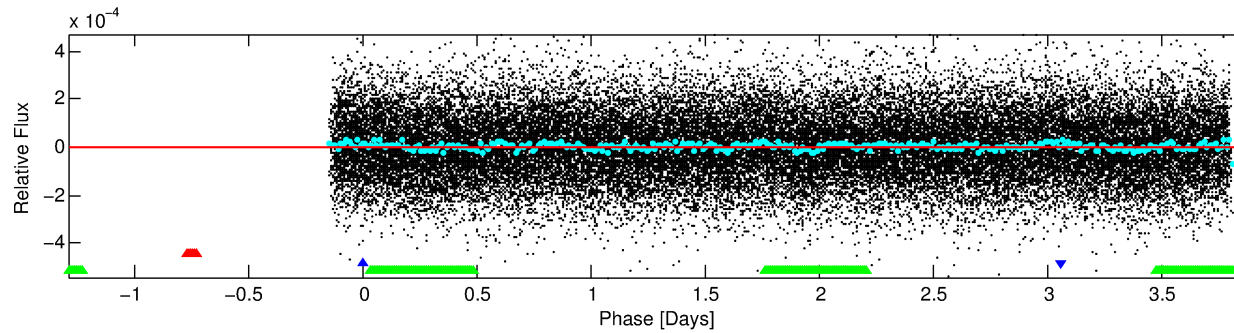
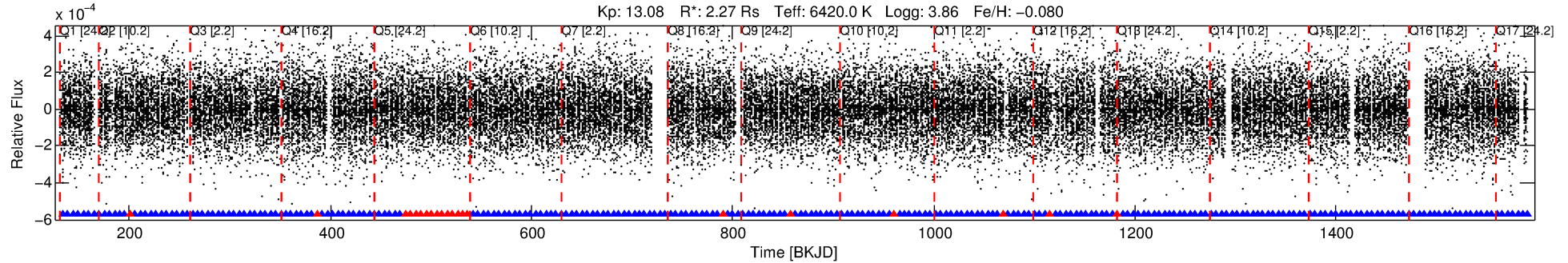
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008840083-02

No Significant Match Found

# DV One-Page Summary

KIC: 8840083 Candidate: 2 of 3 Period: 5.167 d



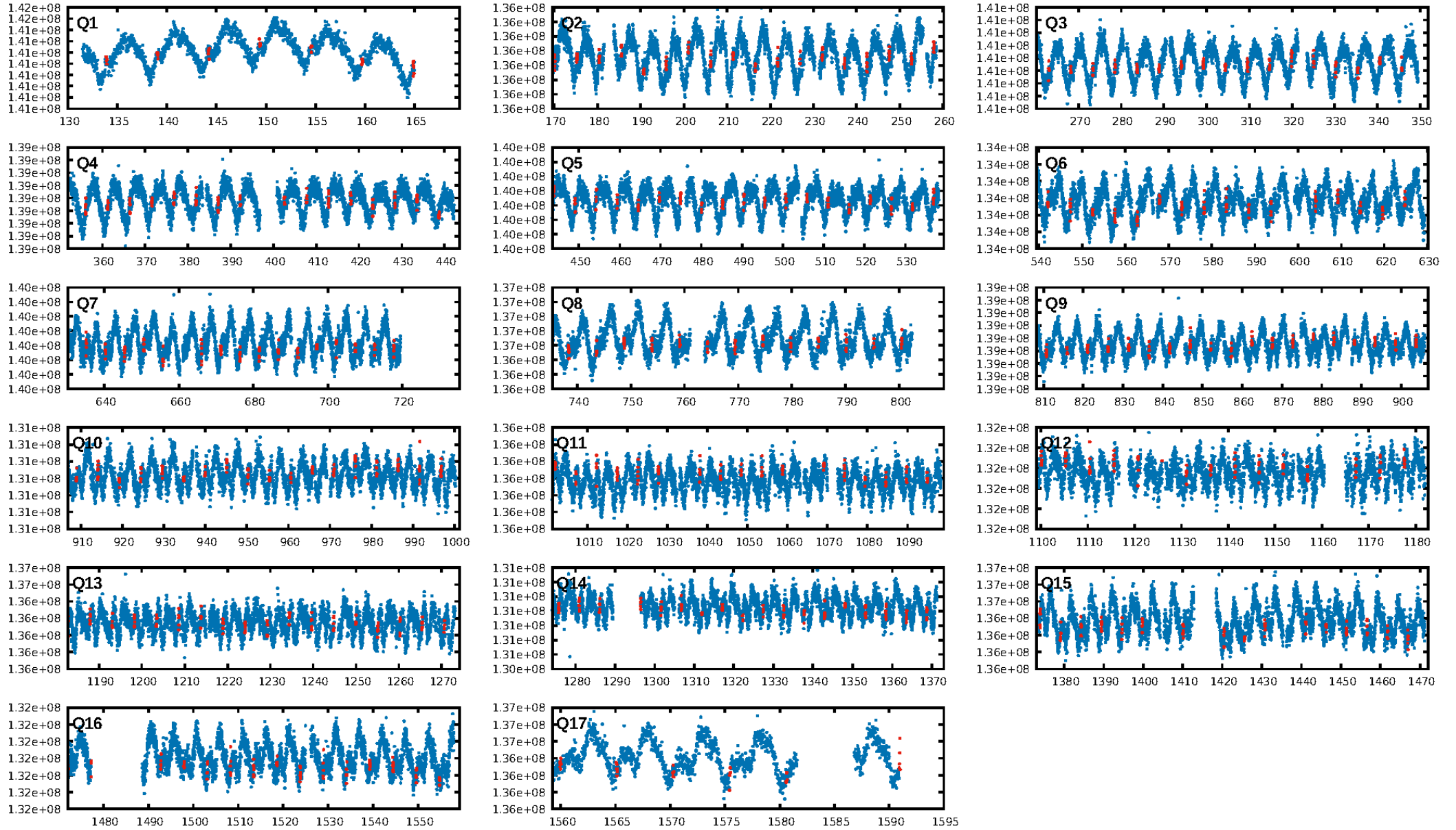
## DV Fit Results:

Period = 5.16693 [0.06318] d  
Epoch = 133.8906 [8.2522] BKJD  
Rp/R\* = 0.0002 [0.0250]  
a/R\* = 10.05 [717.08]  
b = 0.93 [14.05]  
Seff = 1857.24 [904.74]  
Teq = 1674 [204] K  
Rp = 0.04 [6.21] Re  
a = 0.0650 [0.0196] AU  
Ag = 48954.76 [14583245.59] [0.00σ]  
Teffp = 38498 [2867083] K [0.01σ]

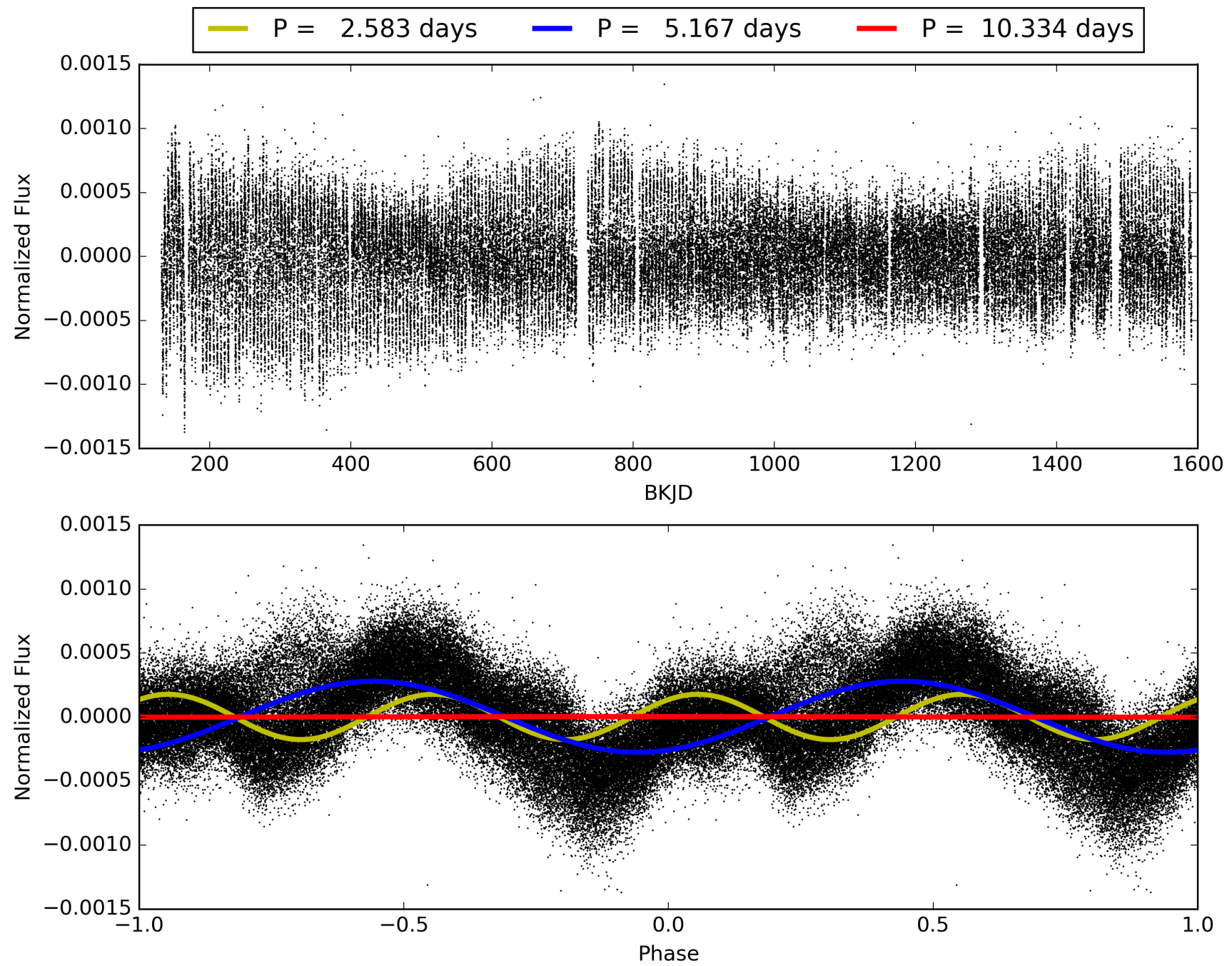
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.67σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.92 [227/248]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 1.710 arcsec [1.46σ]  
KicOffset-rm: 1.596 arcsec [1.48σ]  
OotOffset-st: 3/3/2/4 [12]  
KicOffset-st: 3/3/2/4 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 0.06 [1/17]

# TCE 008840083-02, PDC Light Curves

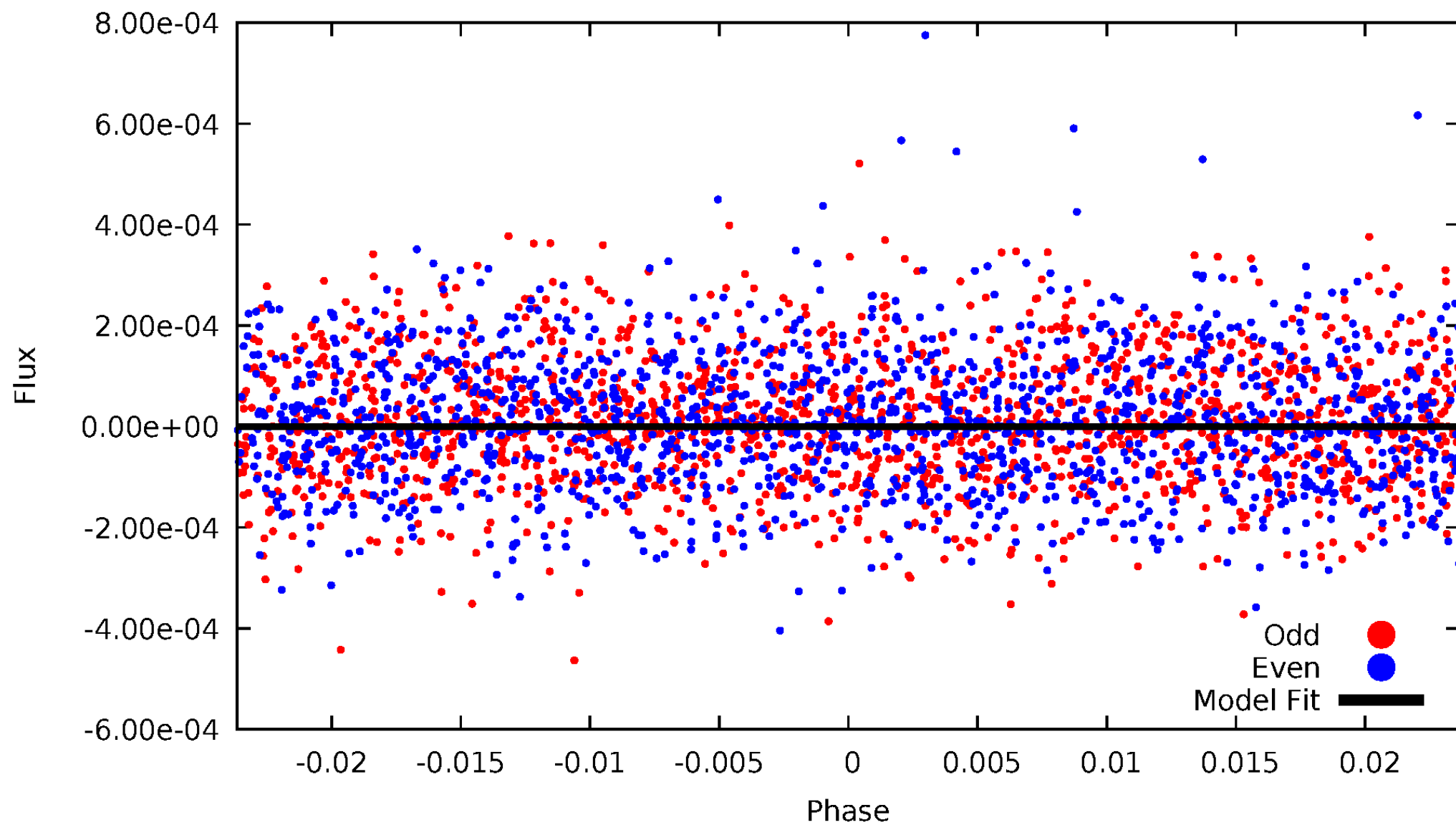


TCE 008840083-02



# DV Odd/Even

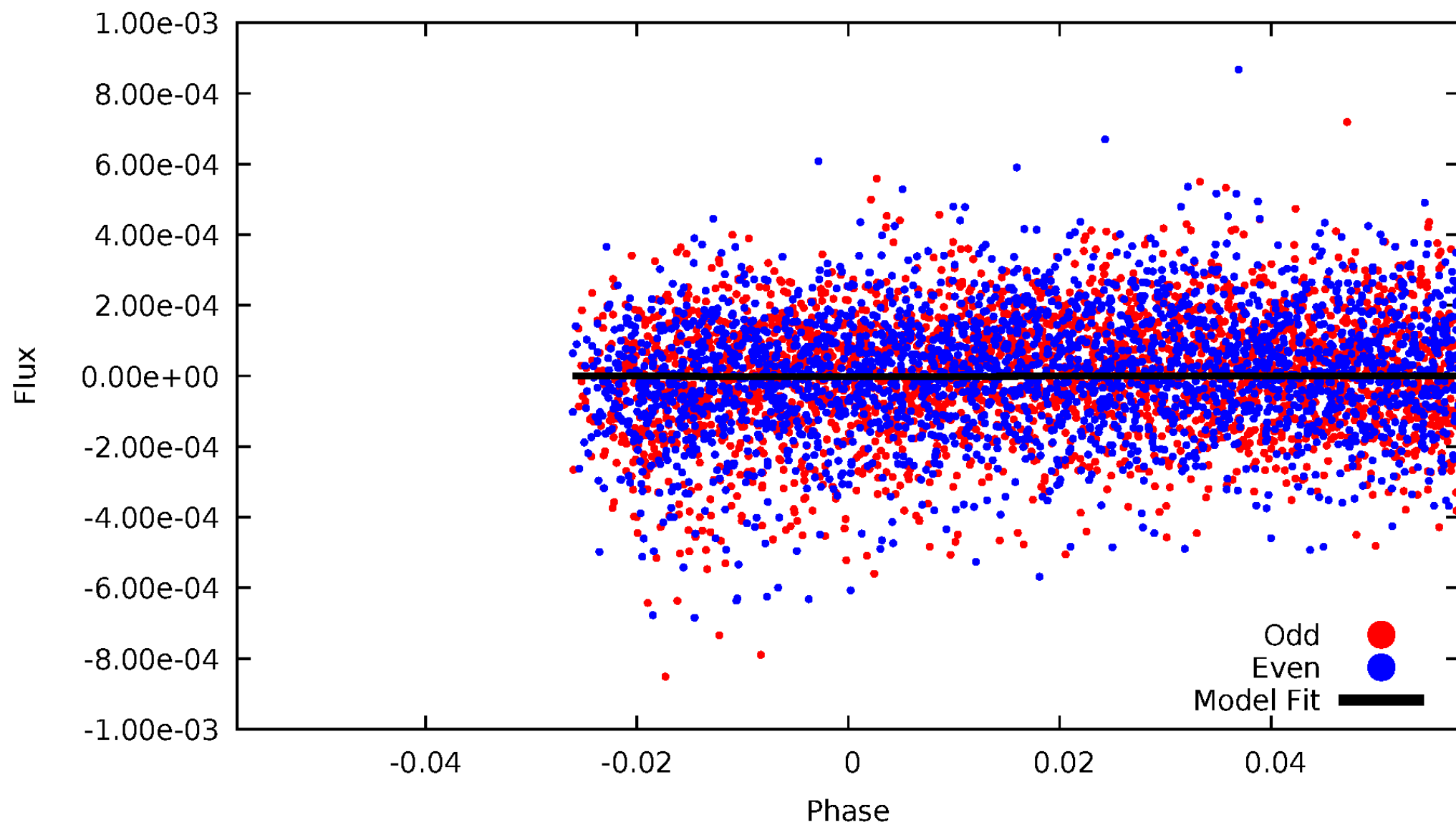
TCE 008840083-02





# ALT Odd/Even

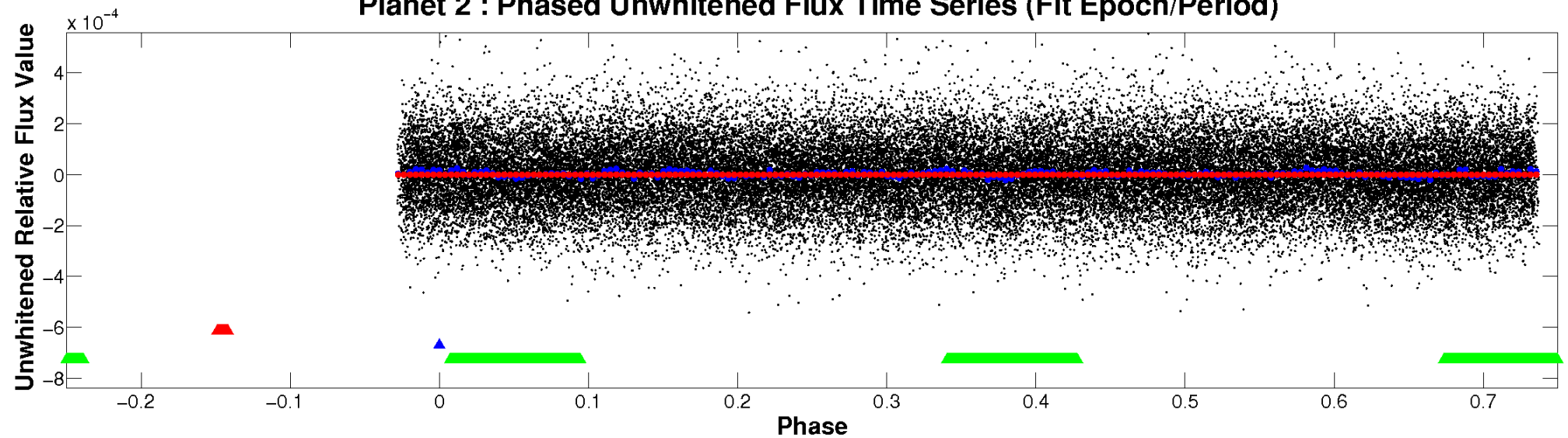
TCE 008840083-02



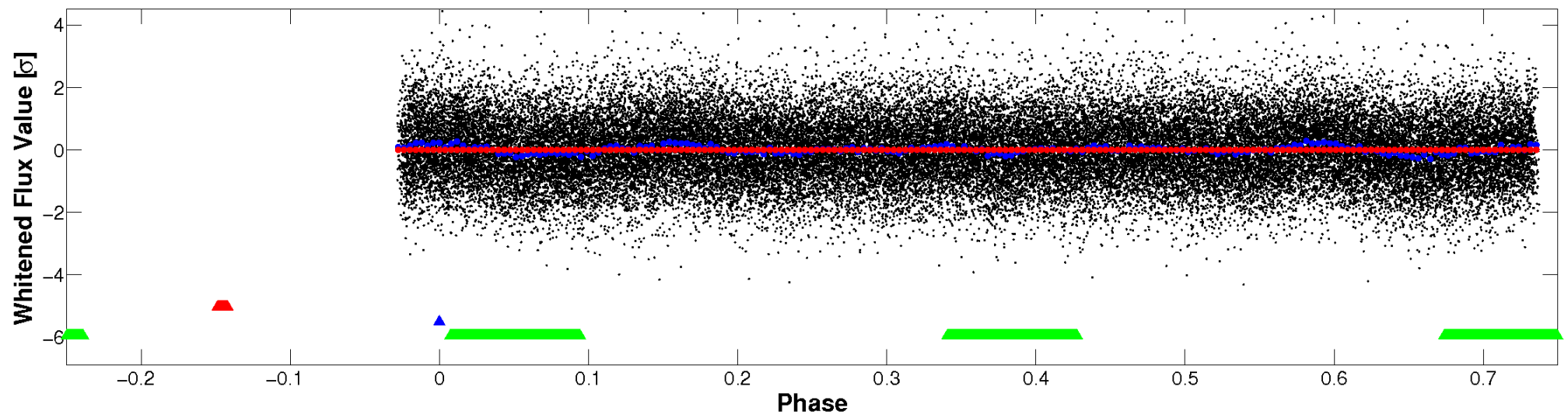


# Non-Whitened Vs. Whitened Light Curve

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

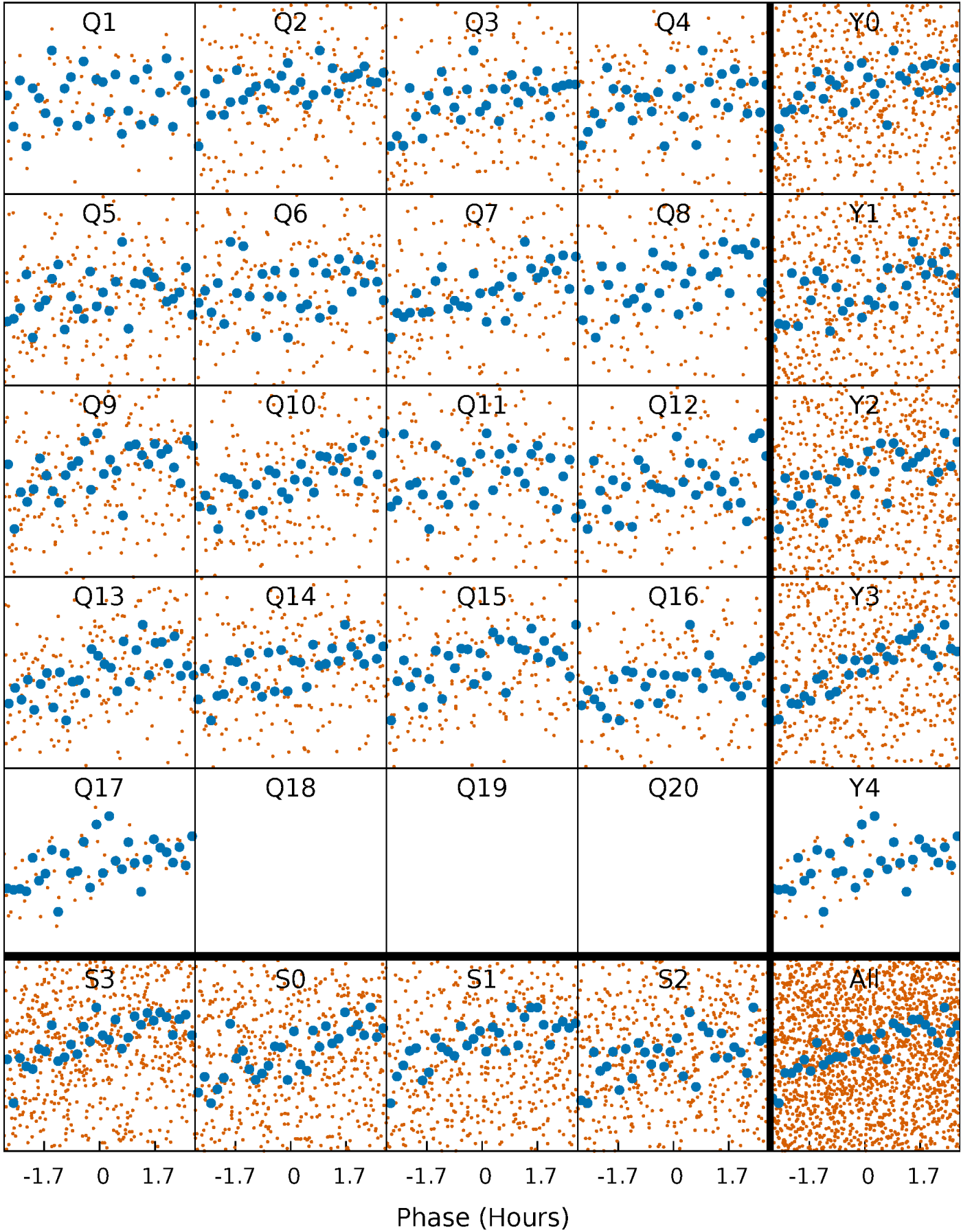


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



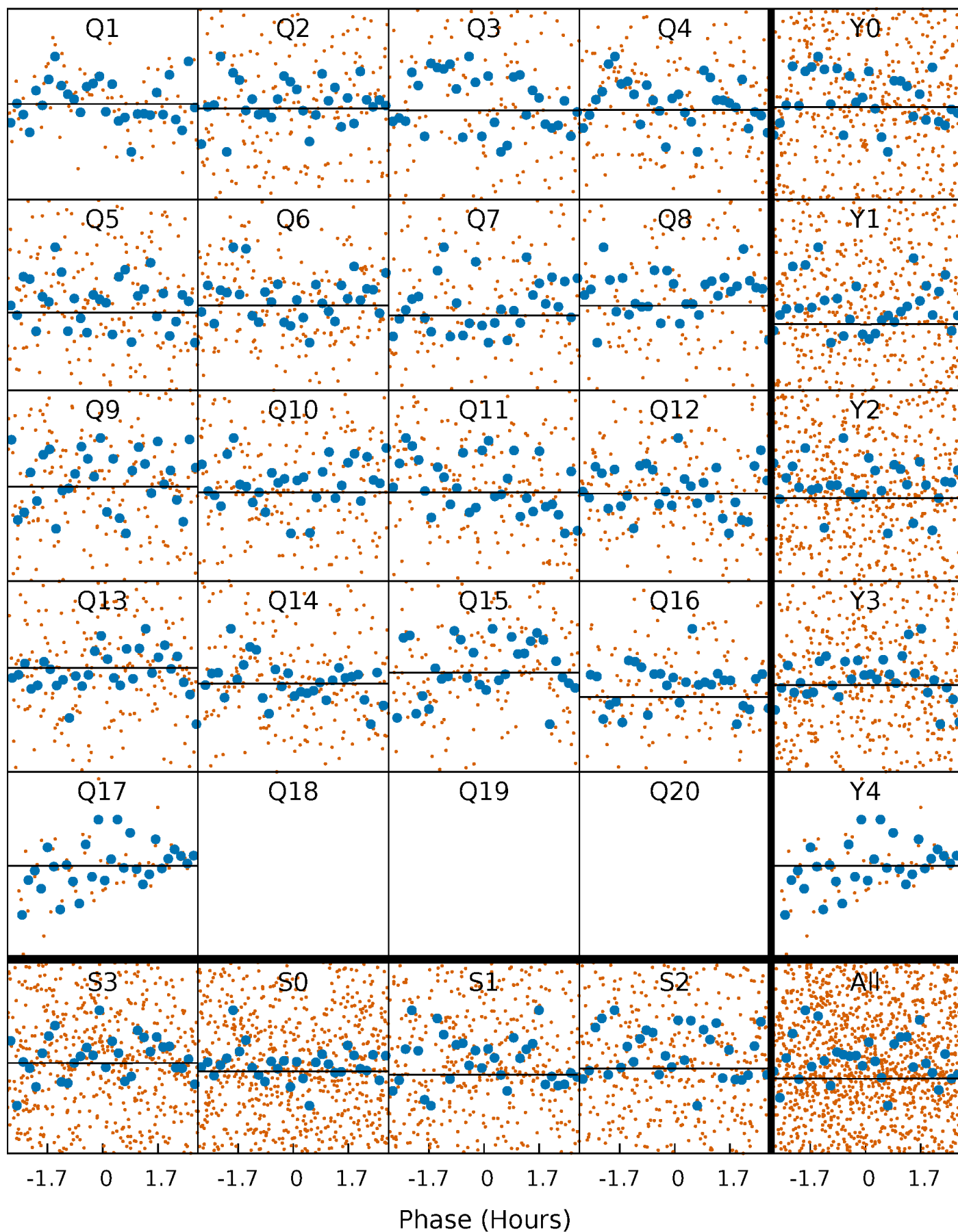
# PDC Quarter-Phased Transit Curves

TCE 008840083-02   P= 5.166931 Days    $T_0=133.890570$  (BKJD)



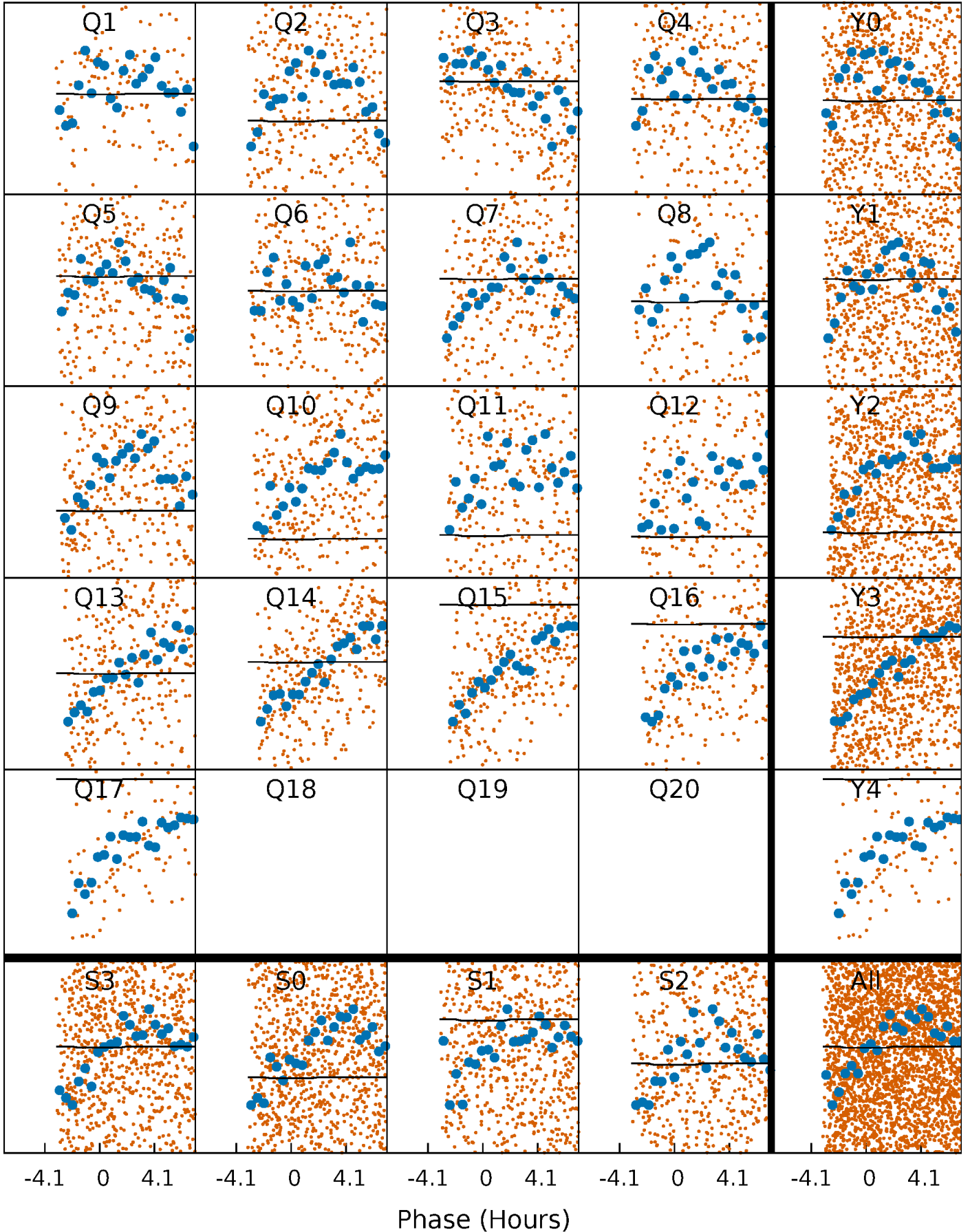
# DV Quarter-Phased Transit Curves

TCE 008840083-02 P= 5.166931 Days  $T_0=133.890570$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

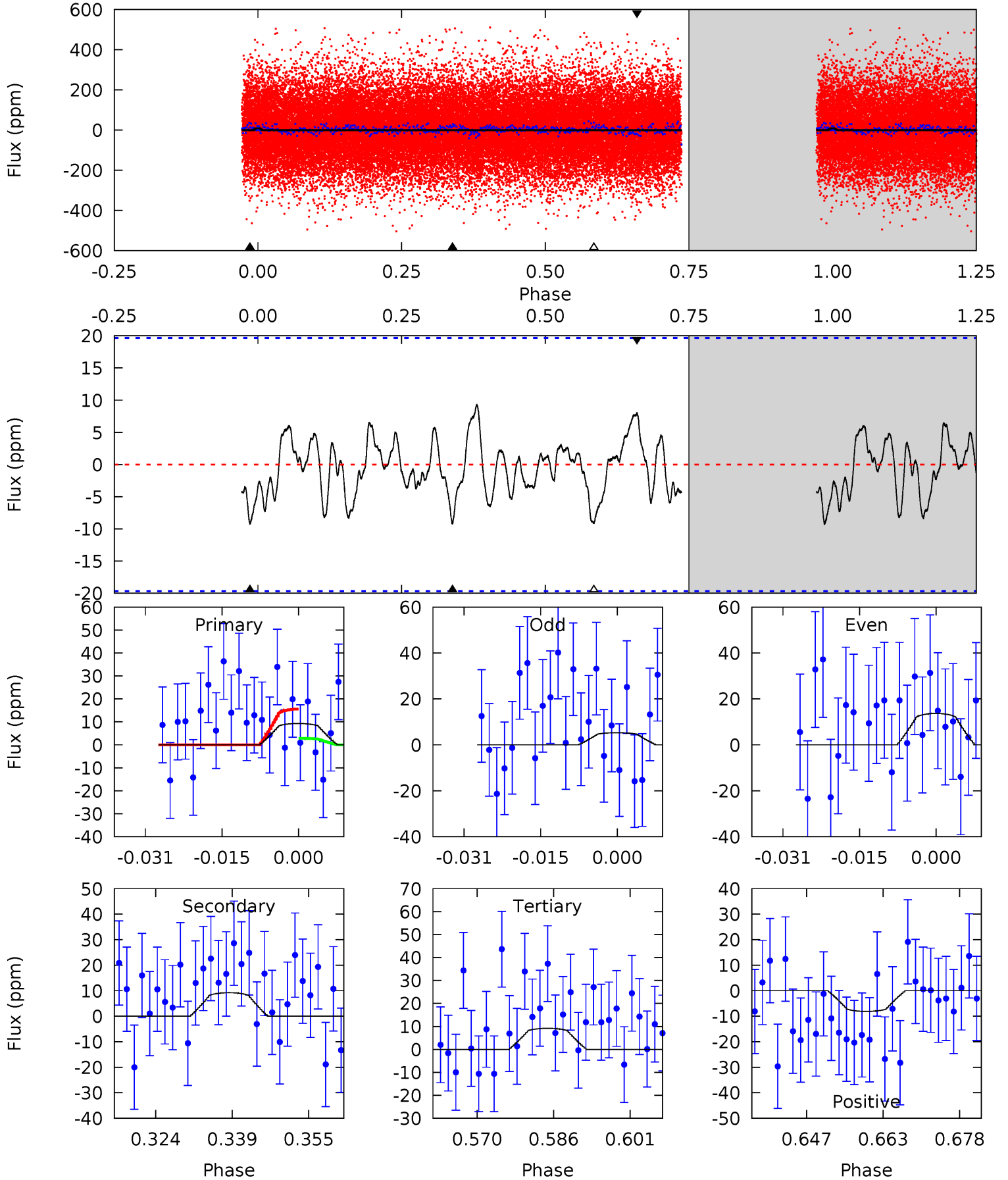
TCE 008840083-02   P= 5.166926 Days    $T_0=133.879847$  (BKJD)



# DV Model-Shift Uniqueness Test

008840083-02, P = 5.166931 Days, E = 128.723639 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
2.34	2.31	2.30	2.04	4.94	2.42	0.98	0.04	0.30	0.01	0.27	1.06	2.40	0.50	1.61

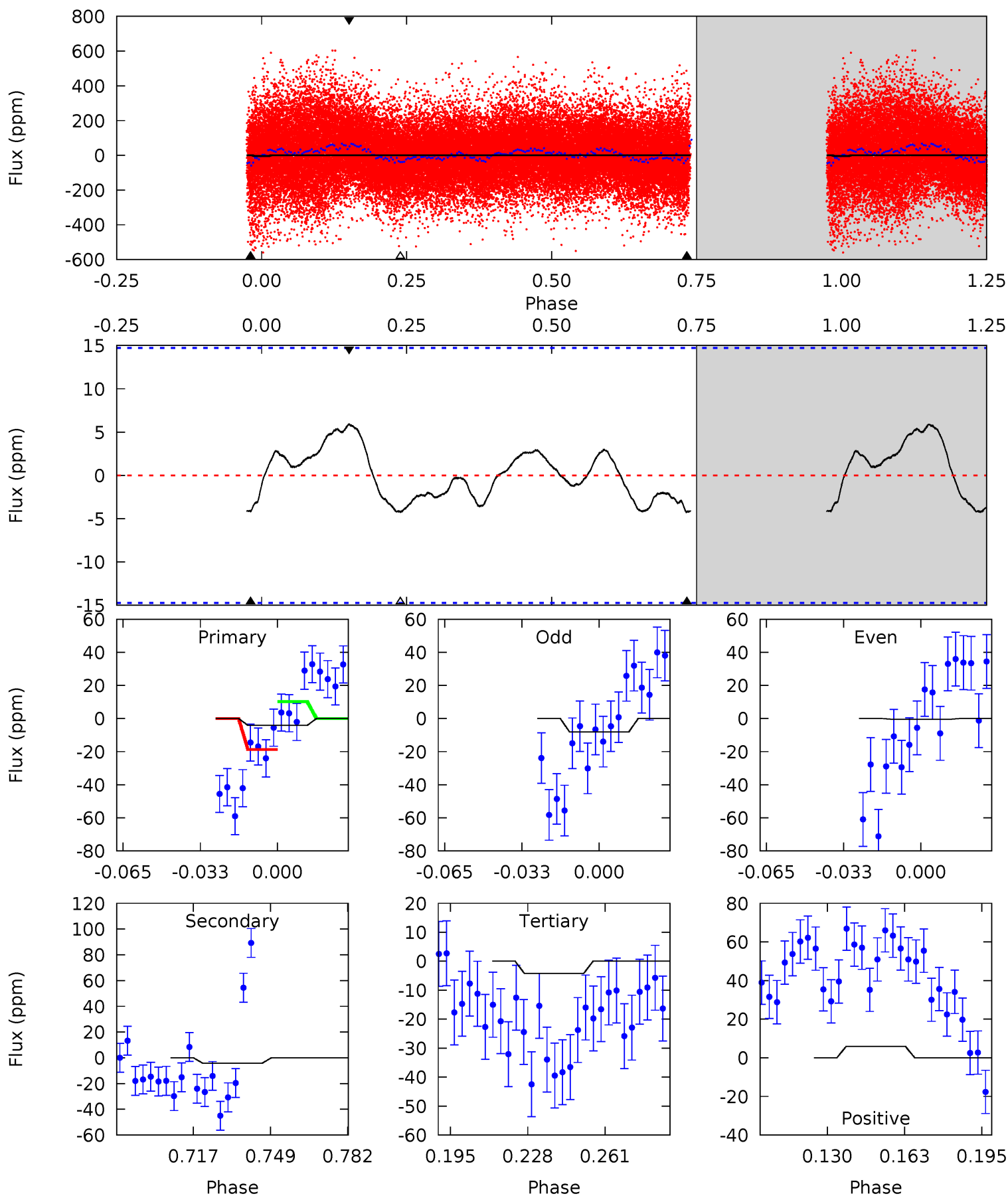




# Alt Model-Shift Uniqueness Test

008840083-02, P = 5.166926 Days, E = 128.712921 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
1.35	1.38	1.37	1.92	4.79	2.14	0.88	-0.02	-0.57	0.01	-0.54	1.25	-0.33	0.58	1.42





### Stellar Parameters For KIC 008840083

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6420^{+194}_{-194}$	$3.863^{+0.273}_{-0.117}$	$-0.080^{+0.300}_{-0.250}$	$2.271^{+0.491}_{-0.737}$	$1.375^{+0.235}_{-0.258}$	$0.165^{+0.296}_{-0.059}$
	+3%/-3%	+7%/-3%	+375%/-312%	+22%/-32%	+17%/-19%	+179%/-36%
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 008840083-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 4$	$4.02^{+4.38}_{-2.78}$	$2299^{+152}_{-178}$	$3096^{+1862}_{-5299}$	$1.201^{+12.751}_{-0.963}$
Alt.	$-4 \pm 3$	$3.92^{+4.15}_{-2.73}$	$2301^{+169}_{-193}$	$2495^{+1804}_{-5102}$	$0.491^{+7.002}_{-0.426}$

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

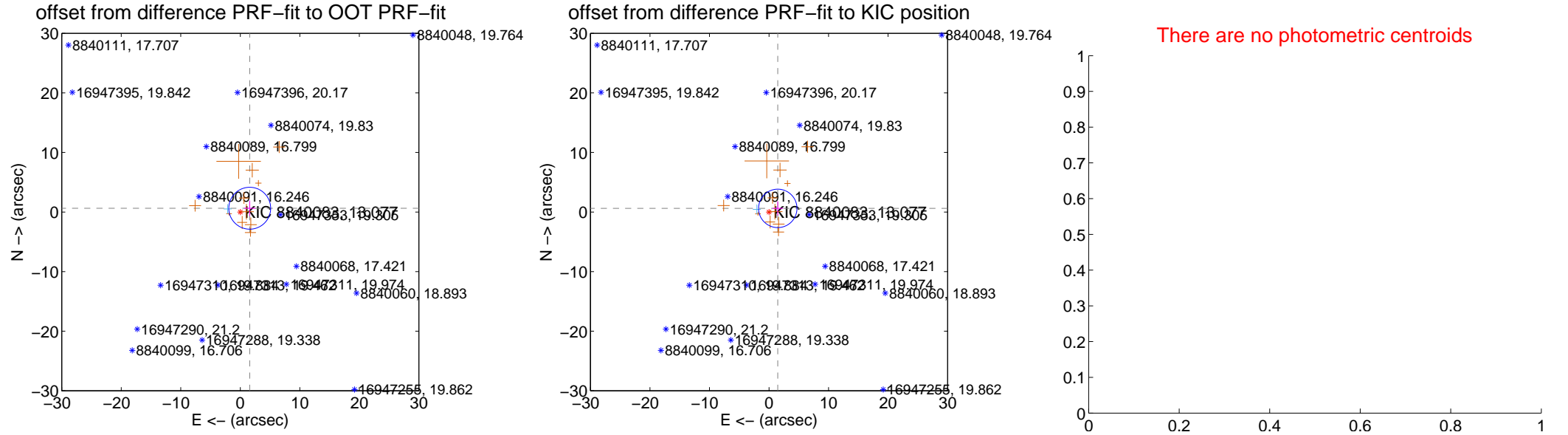
## DV Centroid Data

Supplemental centroid analysis for 008840083-02. Kepler magnitude: 13.08. Transit SNR 0.00

There are 1 quarters with good PRF difference image offsets

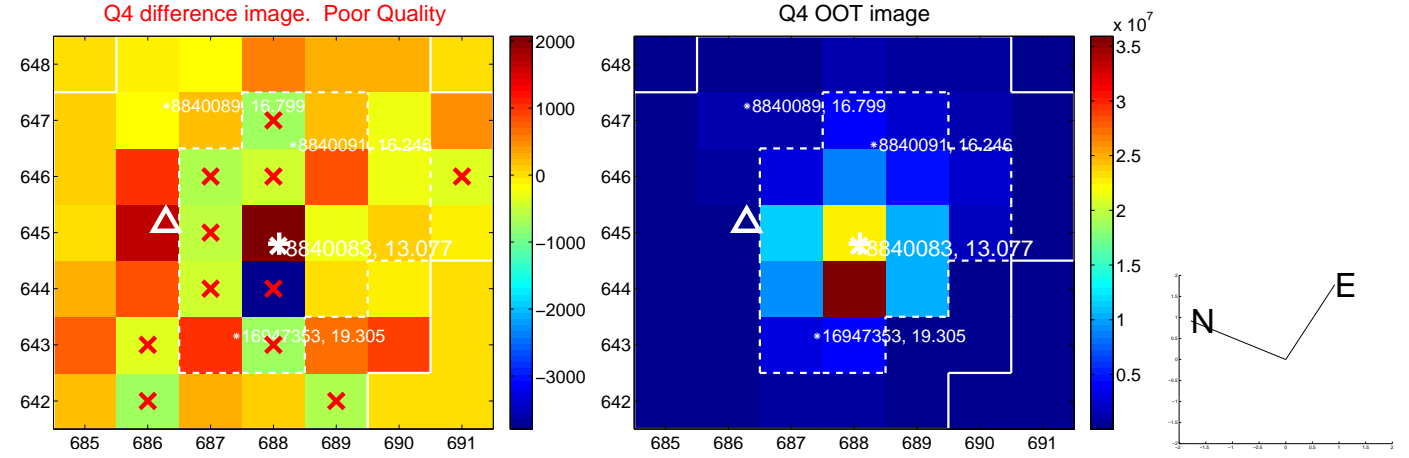
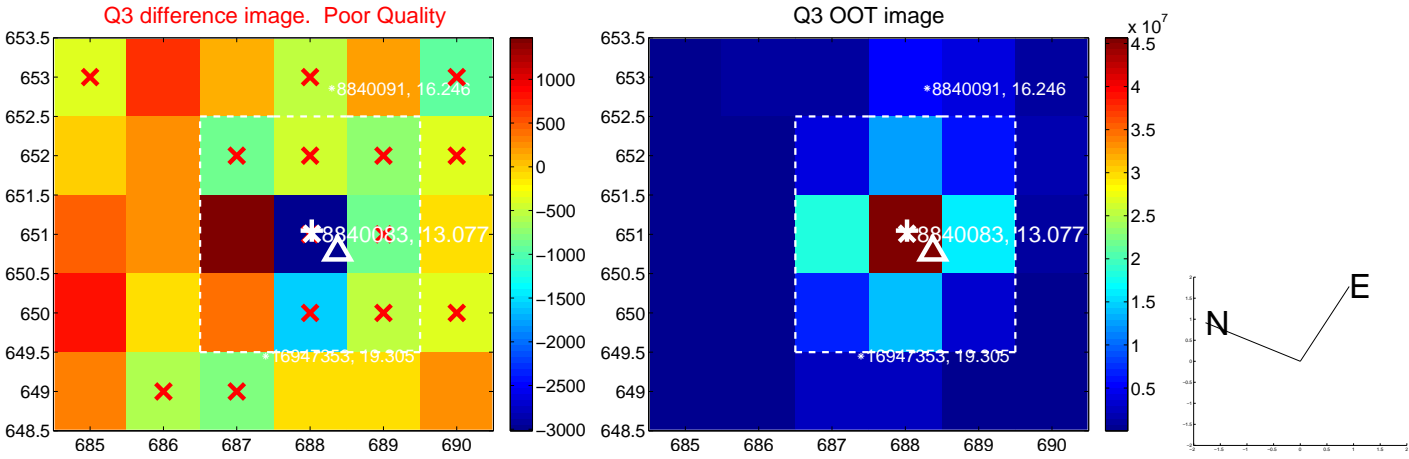
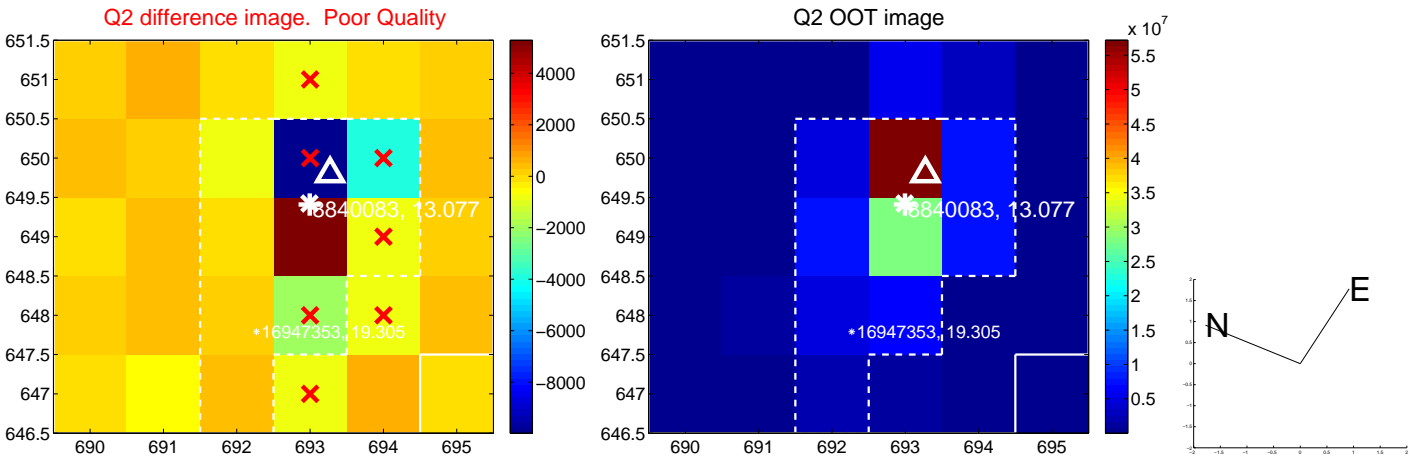
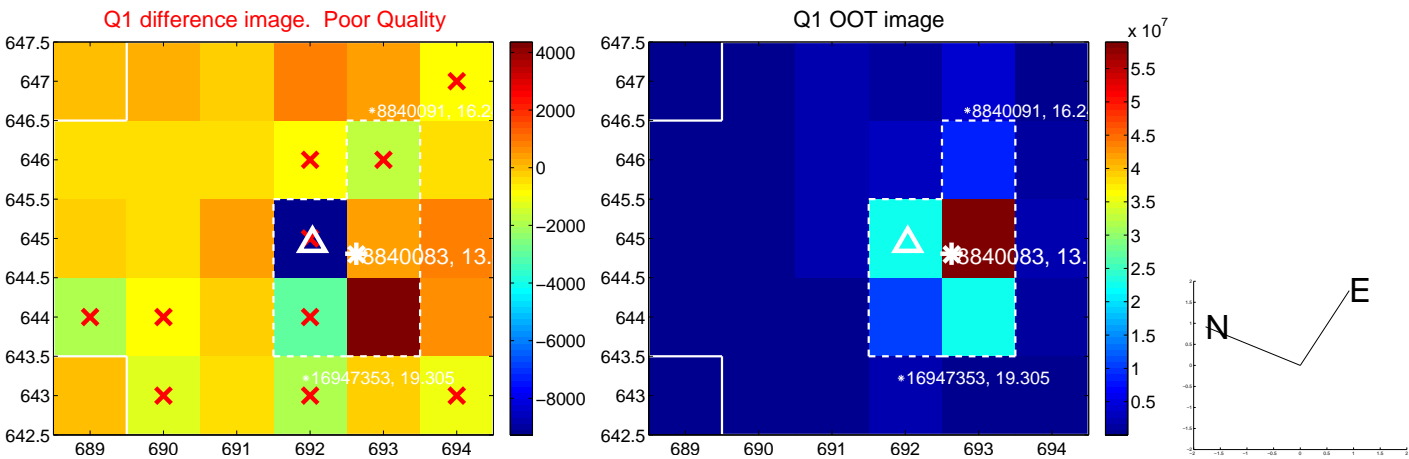
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.710 \pm 1.172$	1.46	$-1.586 \pm 0.963$	$0.639 \pm 1.285$
PRF-fit source offset from KIC position	$1.596 \pm 1.075$	1.48	$-1.473 \pm 0.883$	$0.613 \pm 1.196$
photometric centroid source offset	—	—	—	—

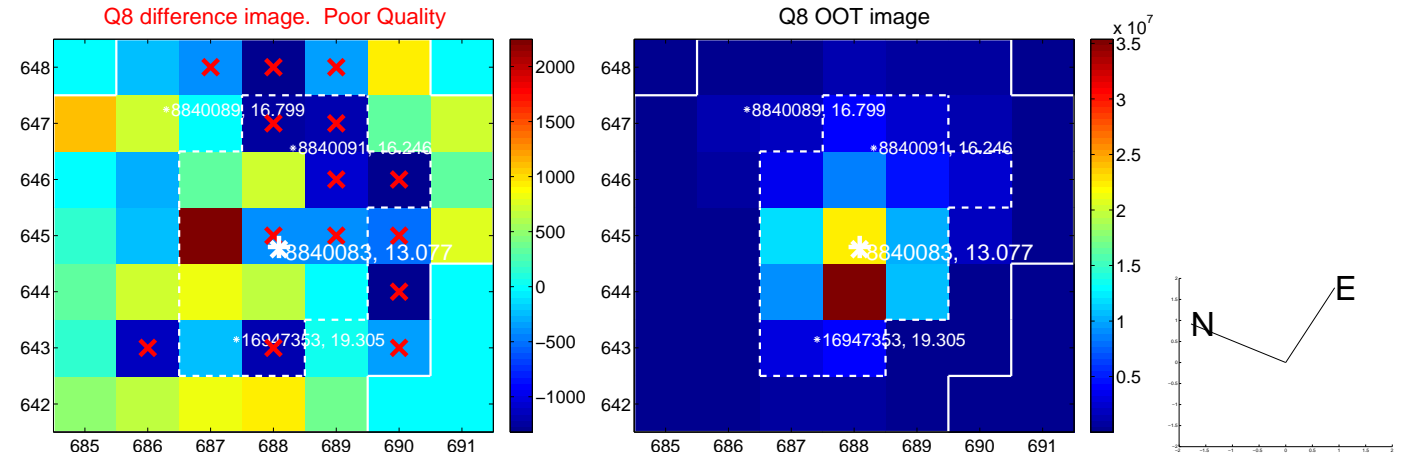
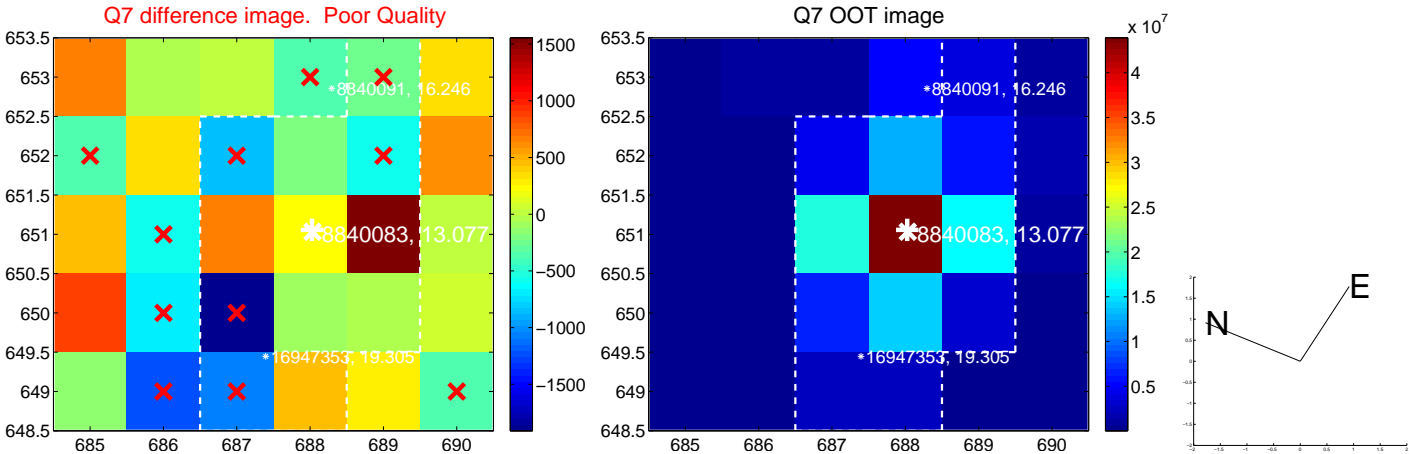
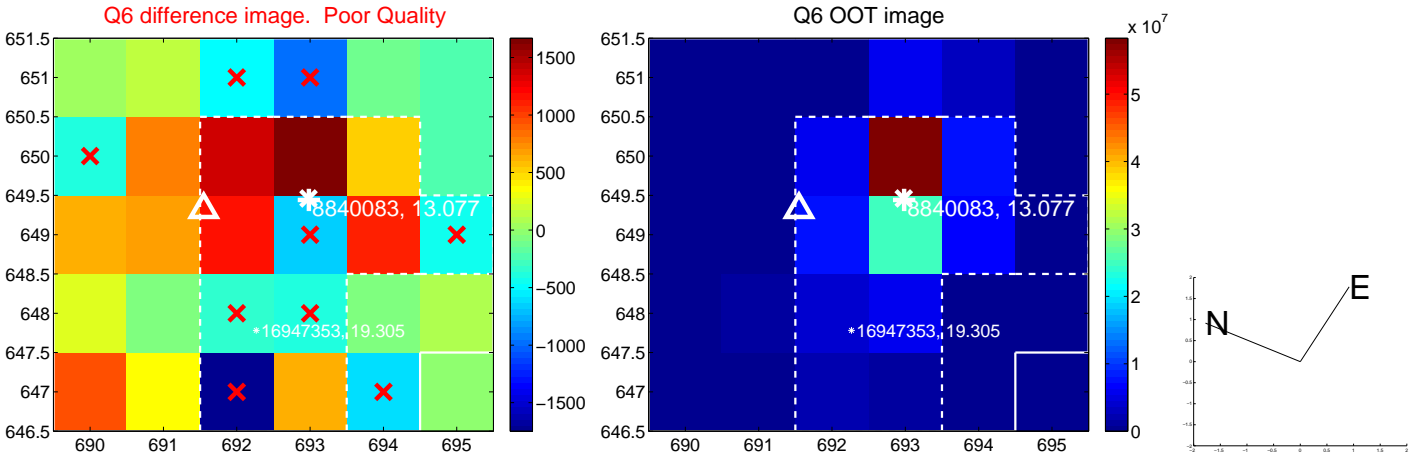
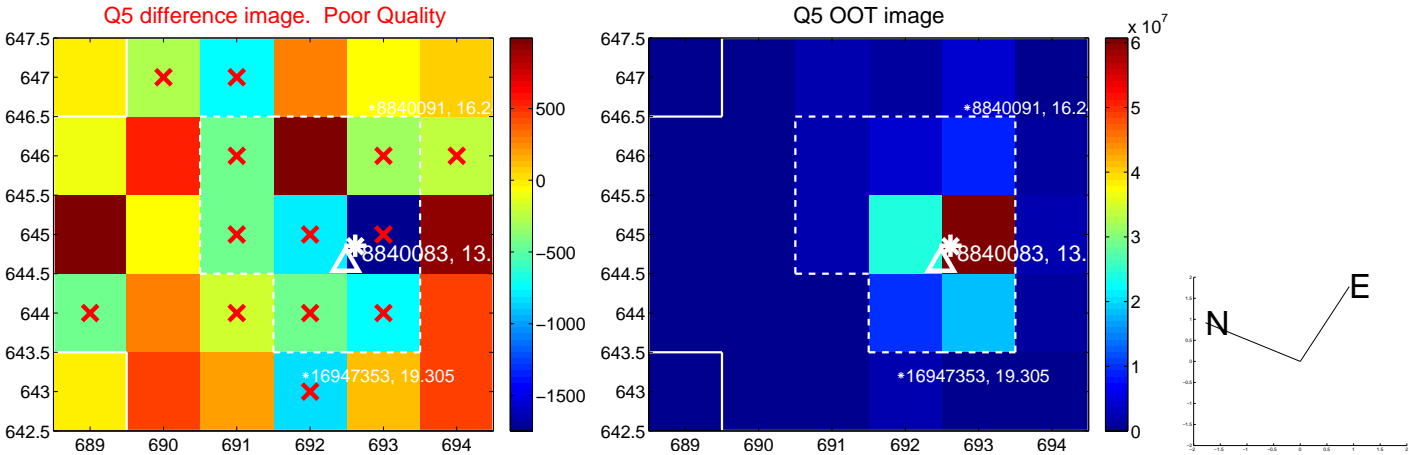


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

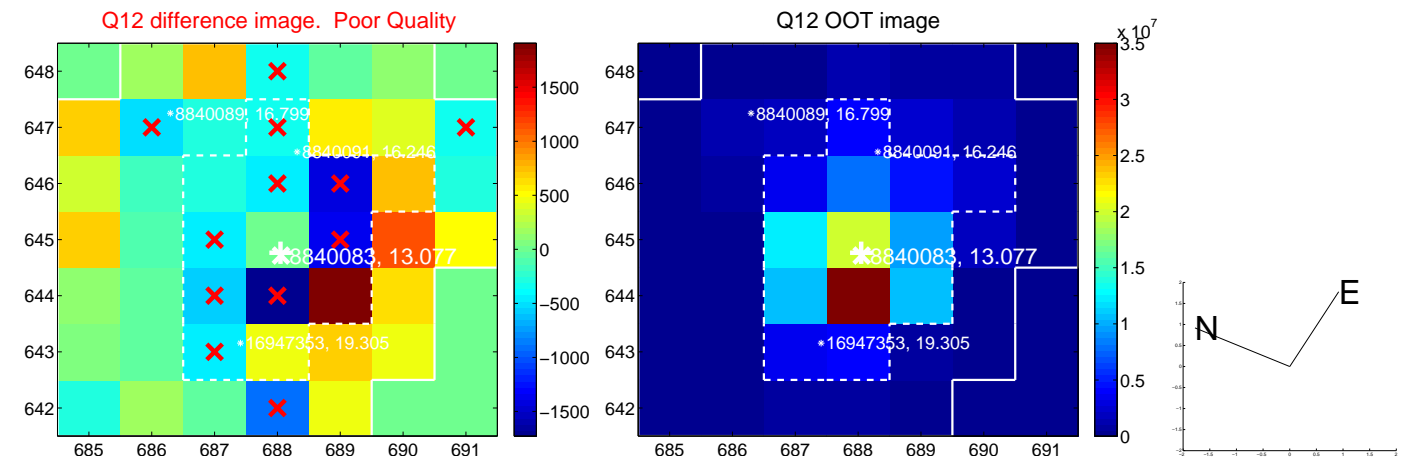
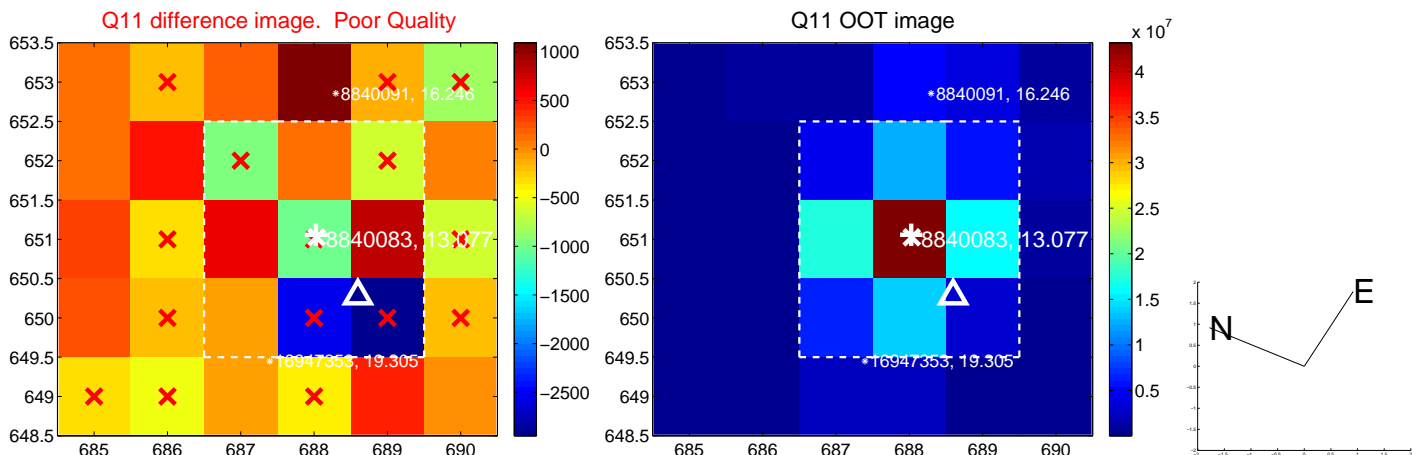
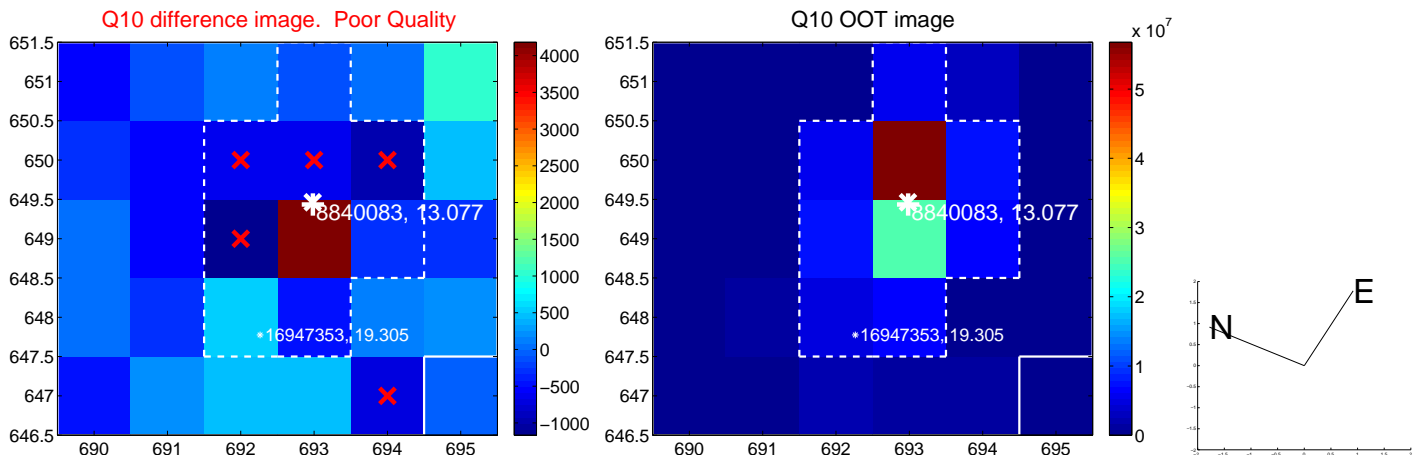
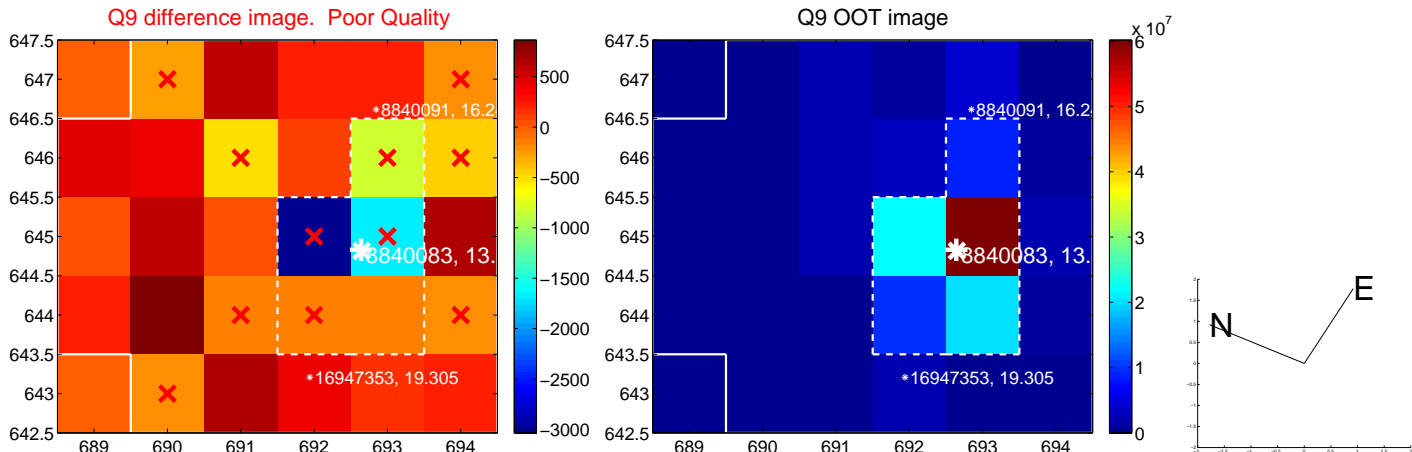
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

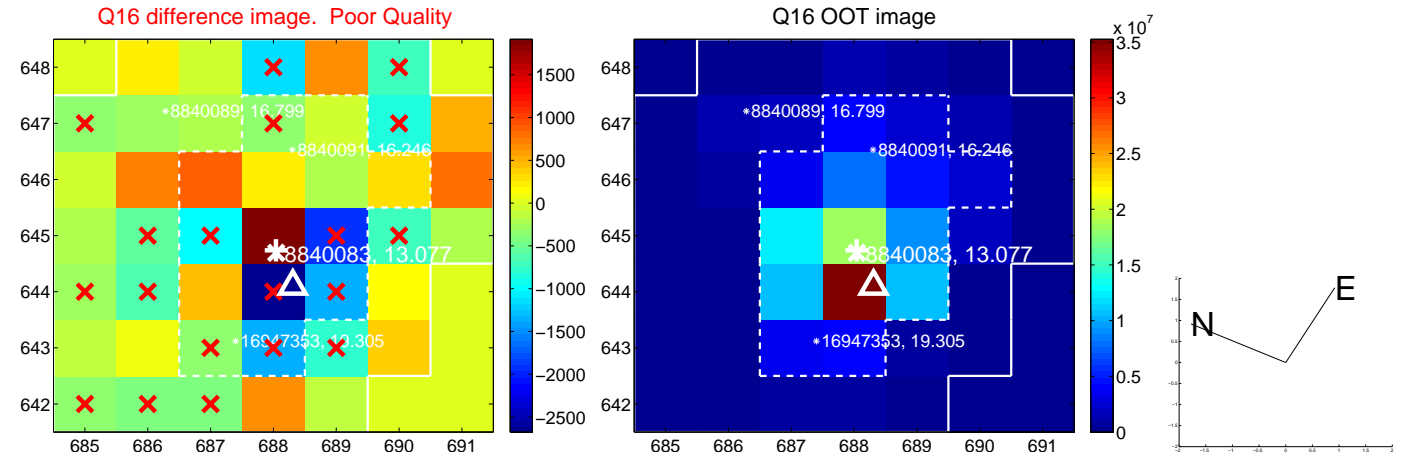
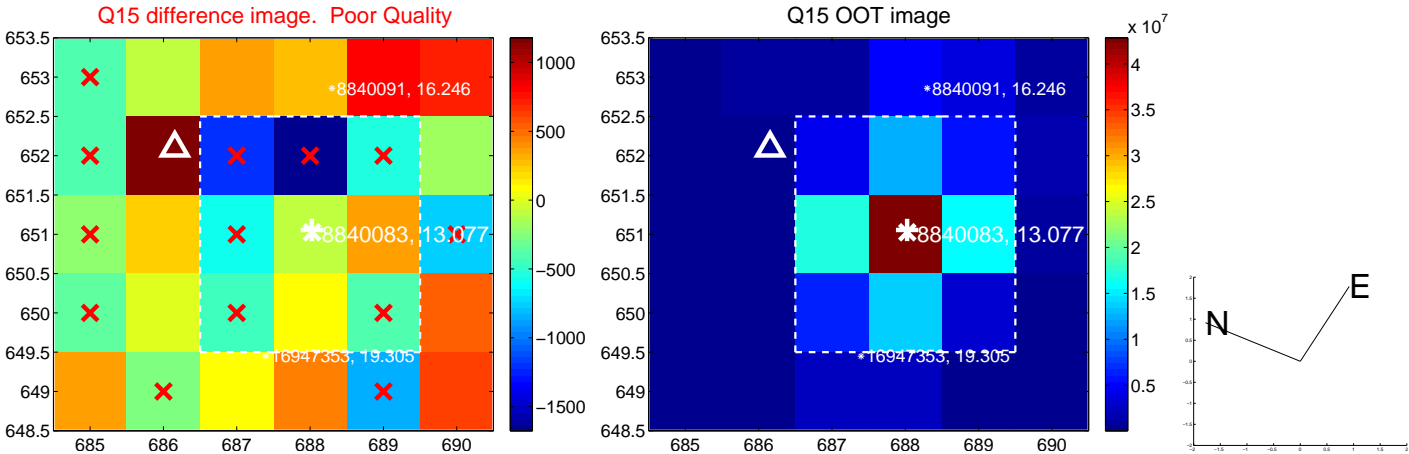
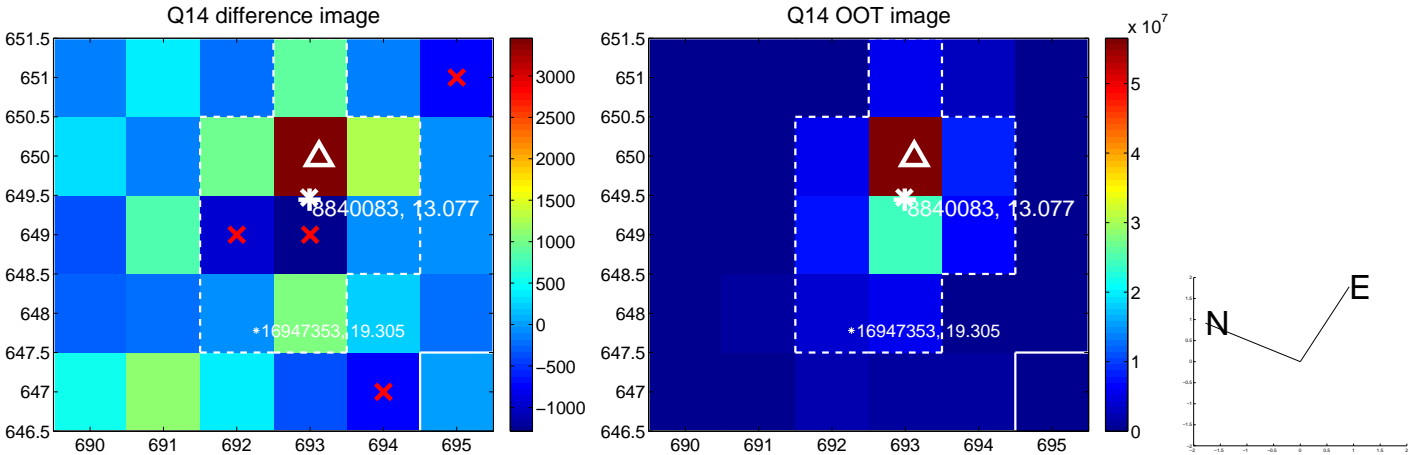
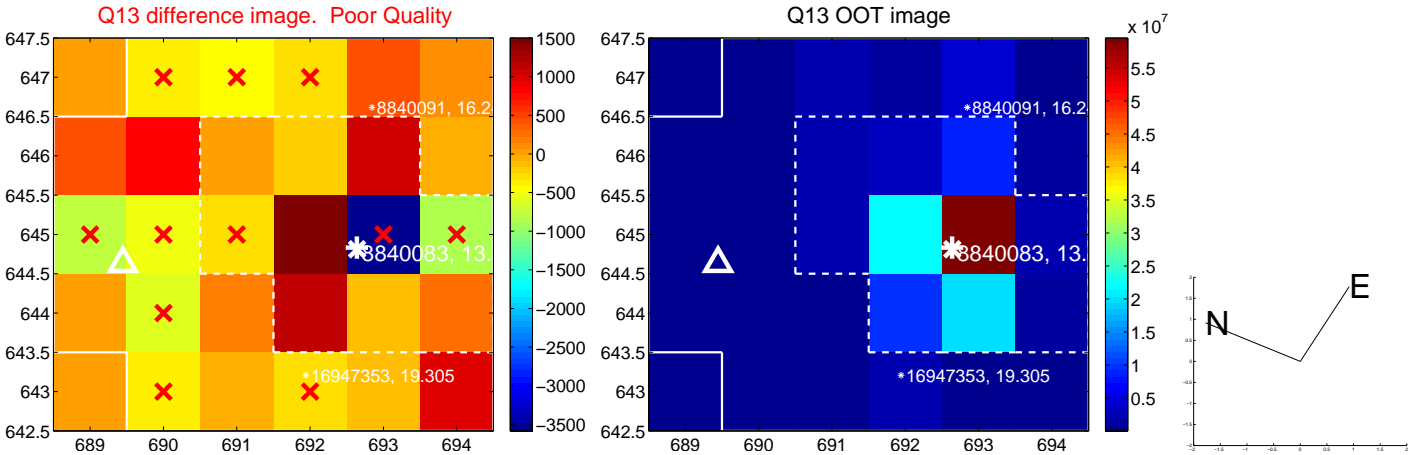


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

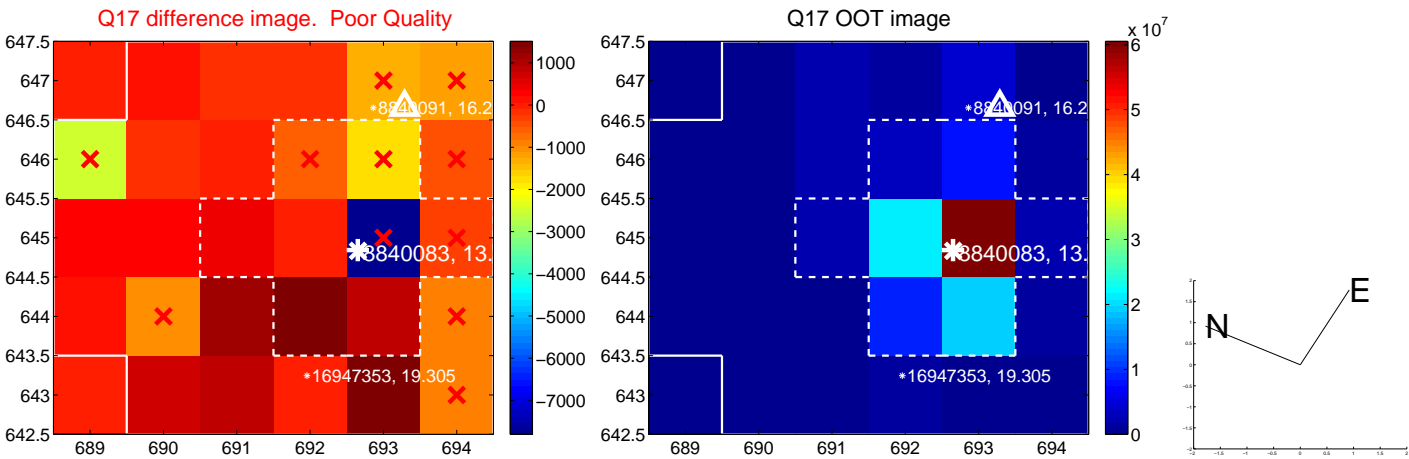




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



folded centroid time series figure for this object.

Declination

# KIC 008840083

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008840083-01	OBS	No	5.167059	133.121405	46.9	9.776	13.1	12.0	2.27	6420	1.83	1857.18
008840083-02	OBS	No	5.166931	133.890570	0.0	1.466	10.8	0.0	2.27	6420	0.04	1857.24
008840083-03	OBS	No	1.721776	132.656644	25.4	12.317	11.2	11.5	2.27	6420	1.15	8039.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008840083-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
008840083-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_MEAS
008840083-03	OBS	FP	0.00	1	0	0	0	LPP_DV

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

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

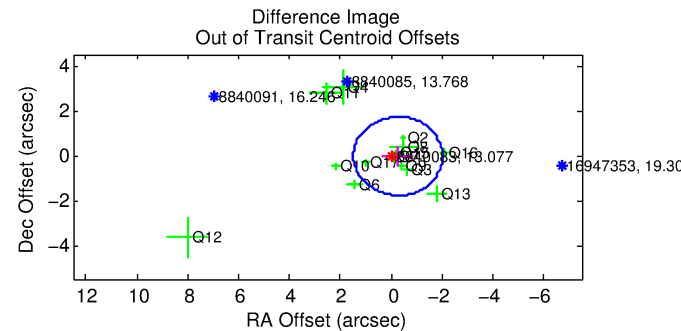
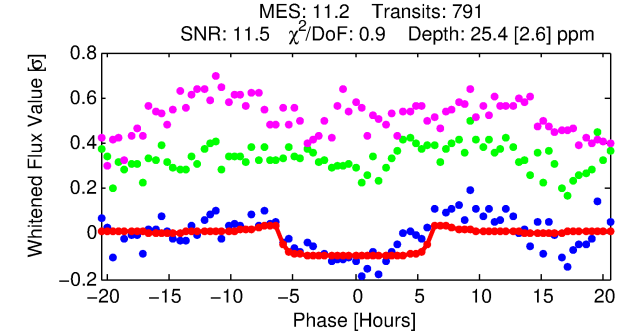
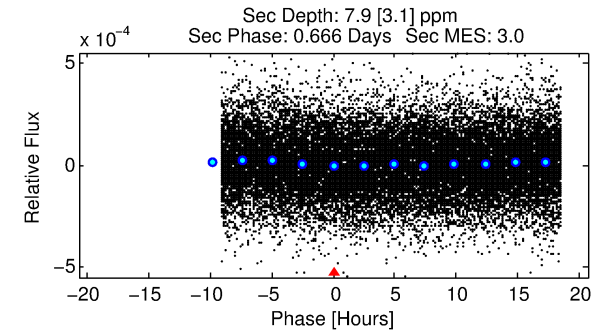
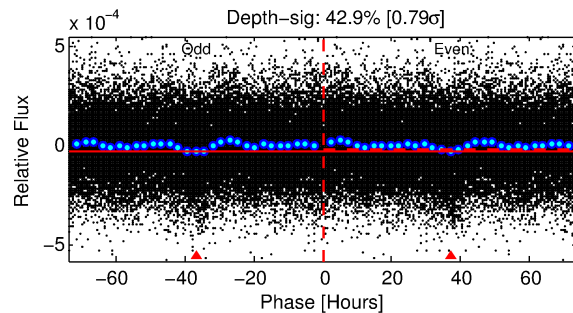
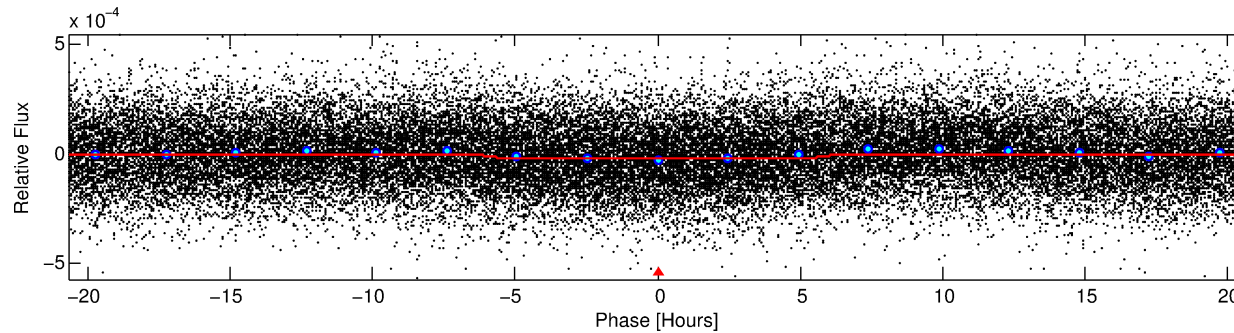
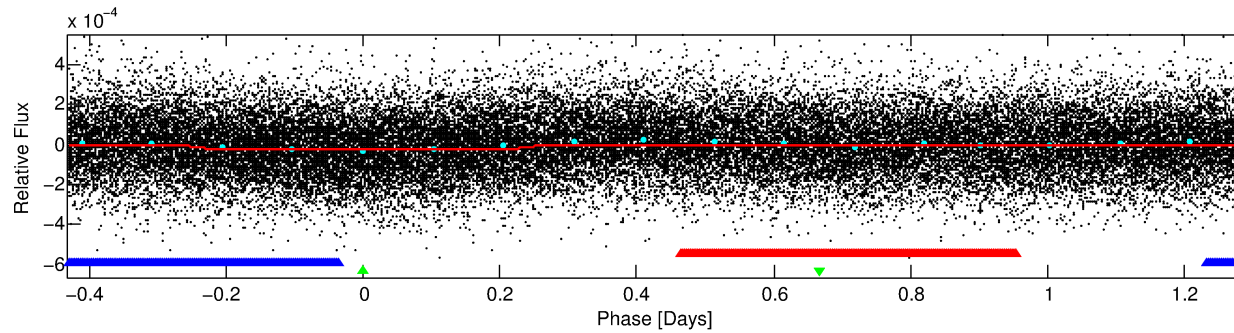
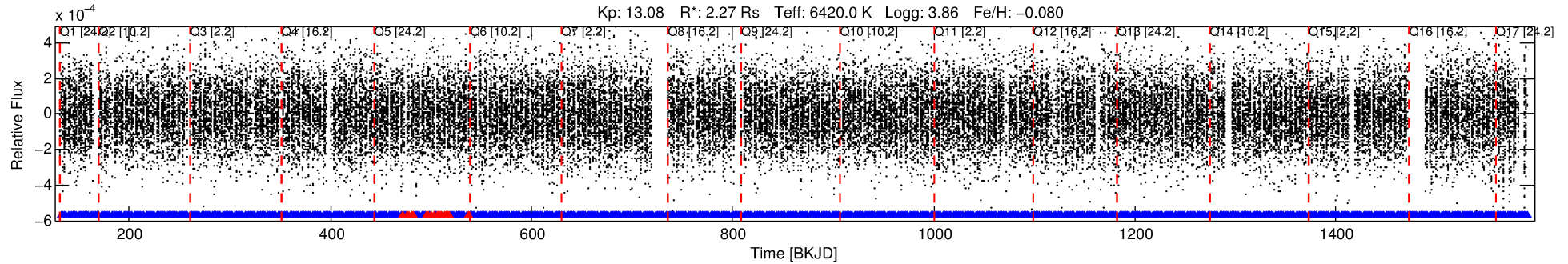
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008840083-03

No Significant Match Found

# DV One-Page Summary

KIC: 8840083 Candidate: 3 of 3 Period: 1.722 d



## DV Fit Results:

Period = 1.72178 [0.00002] d  
Epoch = 132.6566 [0.0061] BKJD  
Rp/R\* = 0.0047 [0.0033]  
a/R\* = 1.24 [1.59]  
b = 0.22 [16.54]  
Seff = 8039.15 [3913.99]  
Teq = 2415 [294] K  
Rp = 1.15 [0.90] Re  
a = 0.0312 [0.0094] AU  
Ag = 3.21 [4.97] [0.44 $\sigma$ ]  
Teffp = 4995 [1850] K [1.38 $\sigma$ ]

## DV Diagnostic Results:

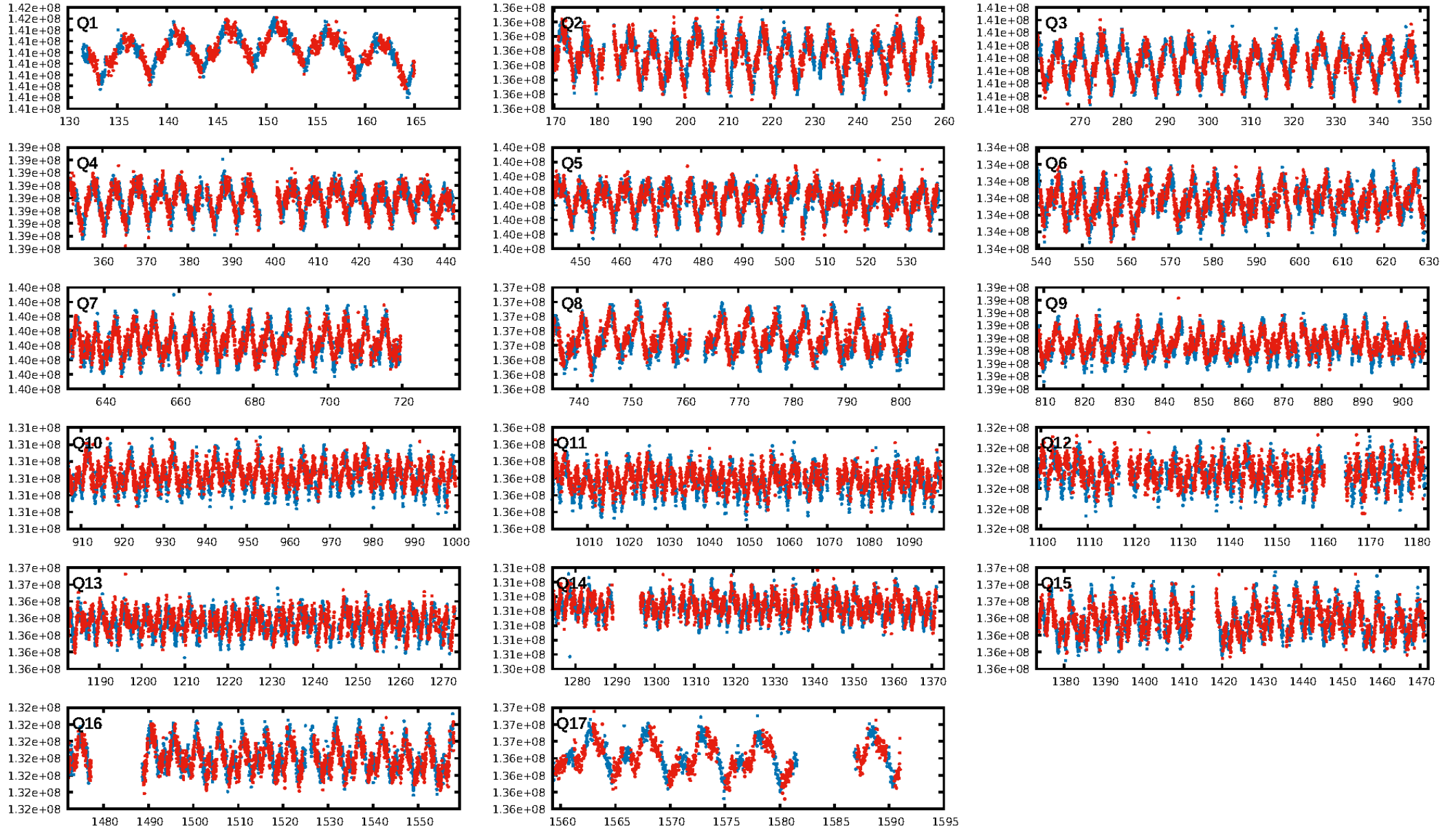
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.67 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.98 [738/756]  
GhostDiagnostic-chr: 1.428  
Centroid-sig: 5.6%  
Centroid-so: 0.945 arcsec [1.46 $\sigma$ ]  
OotOffset-rm: 0.270 arcsec [0.46 $\sigma$ ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-rm: 0.251 arcsec [0.39 $\sigma$ ]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 0.36 [5/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:36:09 Z

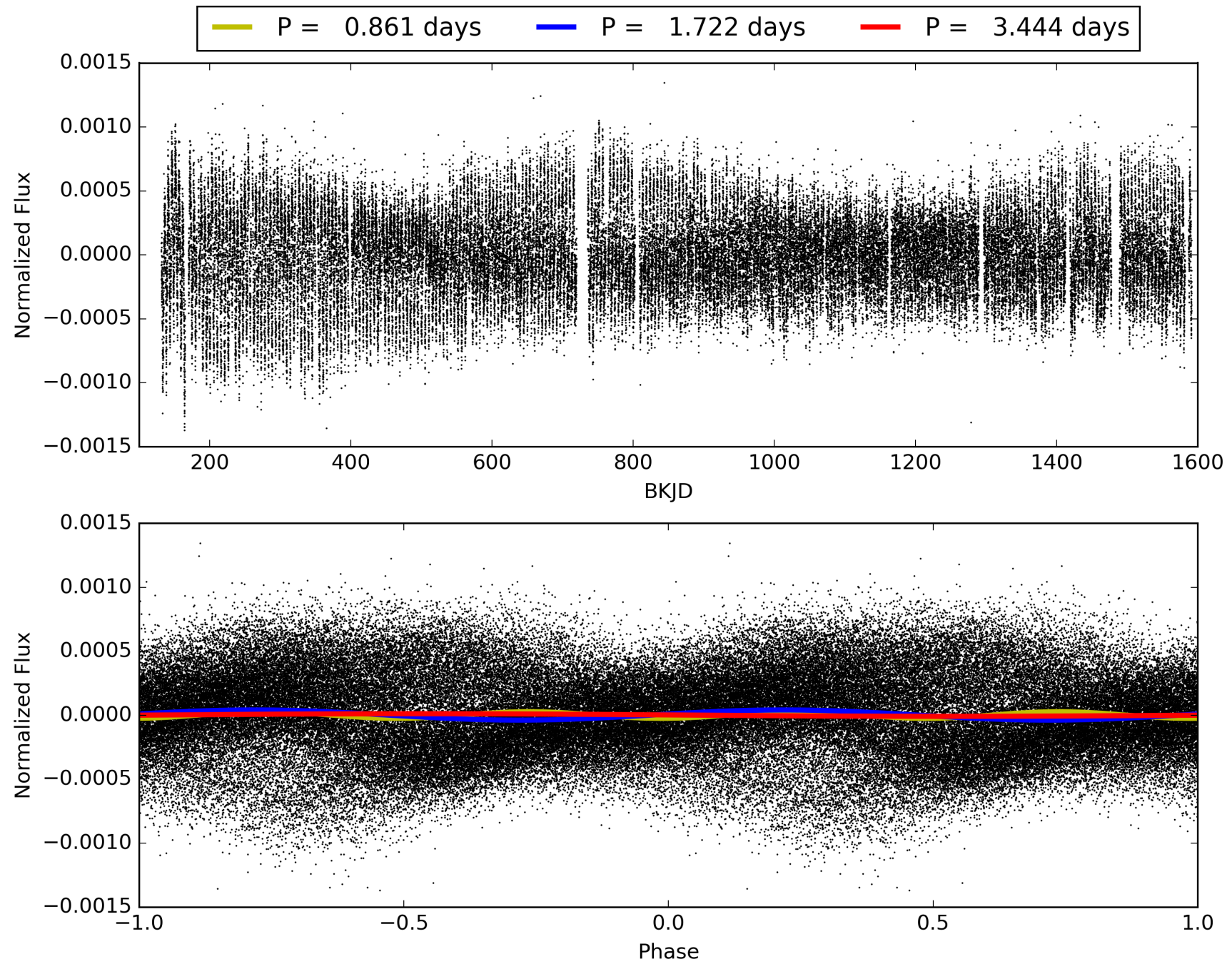
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008840083-03, PDC Light Curves

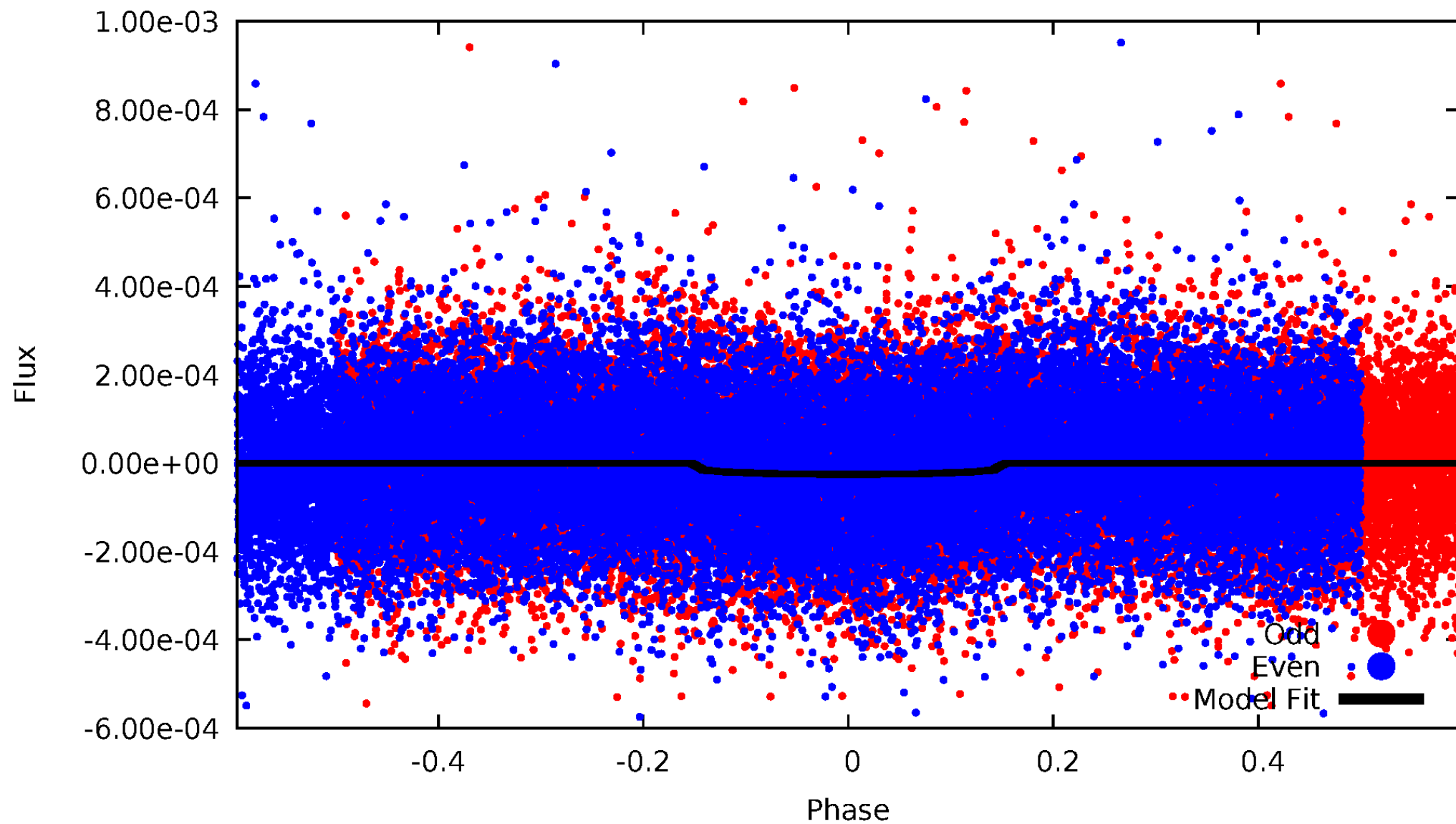


TCE 008840083-03



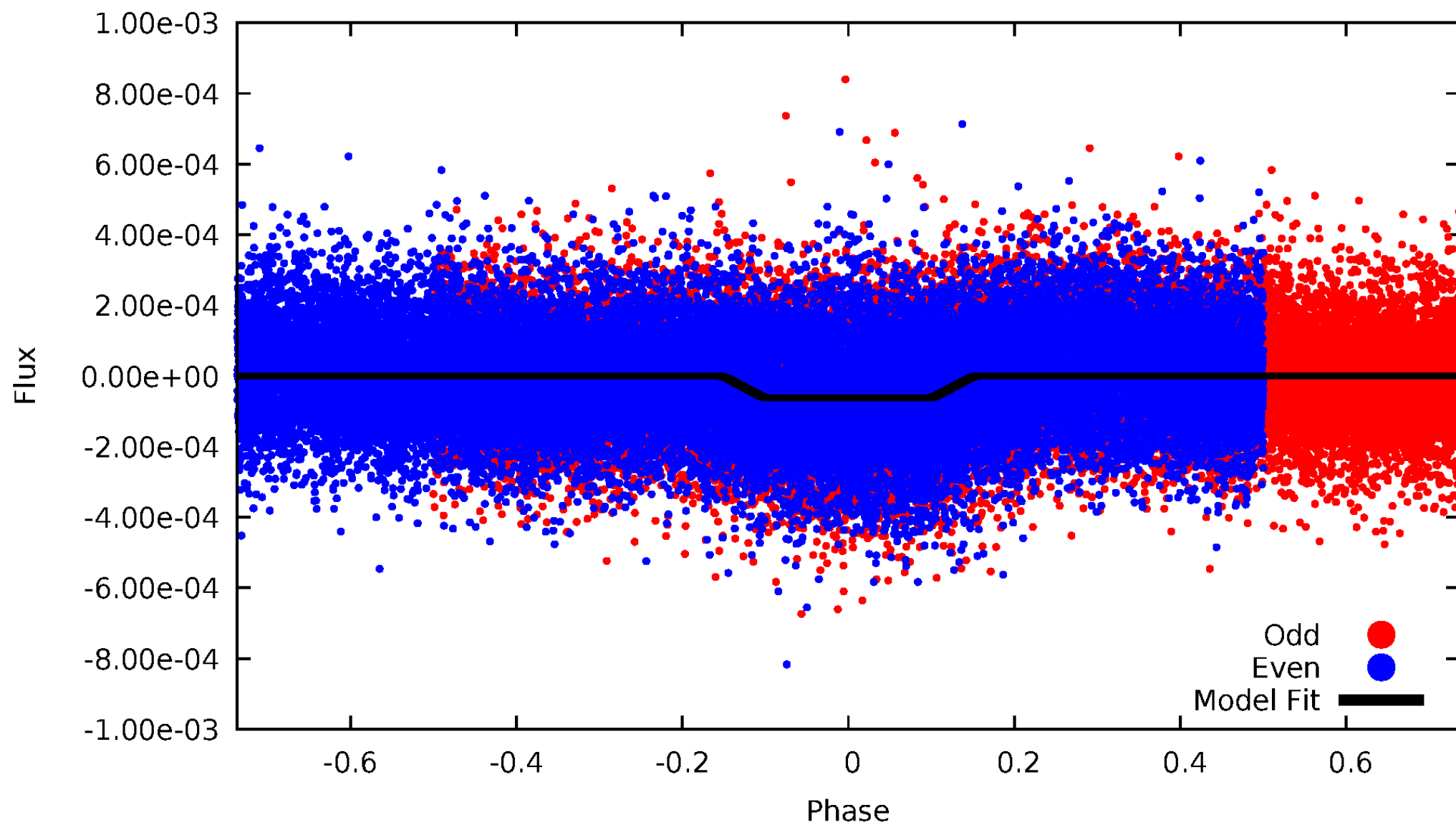
# DV Odd/Even

TCE 008840083-03



# ALT Odd/Even

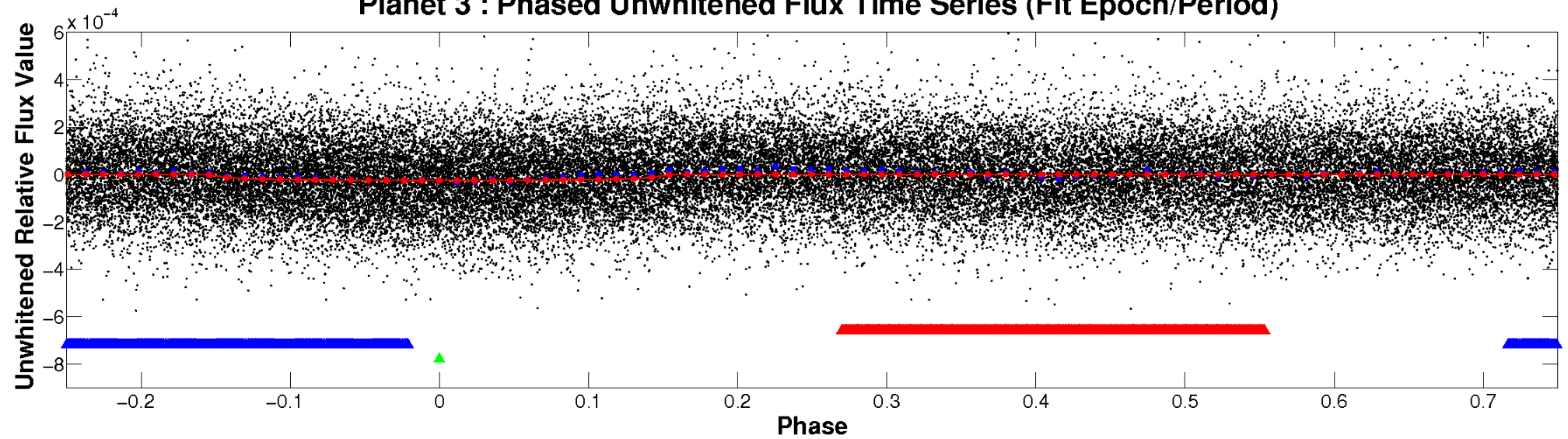
TCE 008840083-03



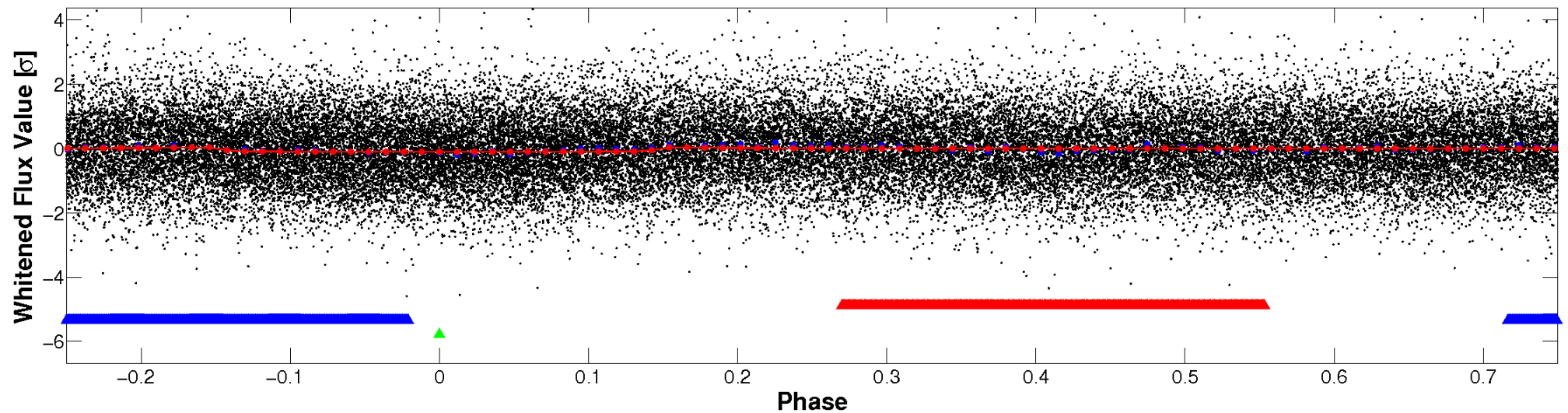


# Non-Whitened Vs. Whitened Light Curve

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

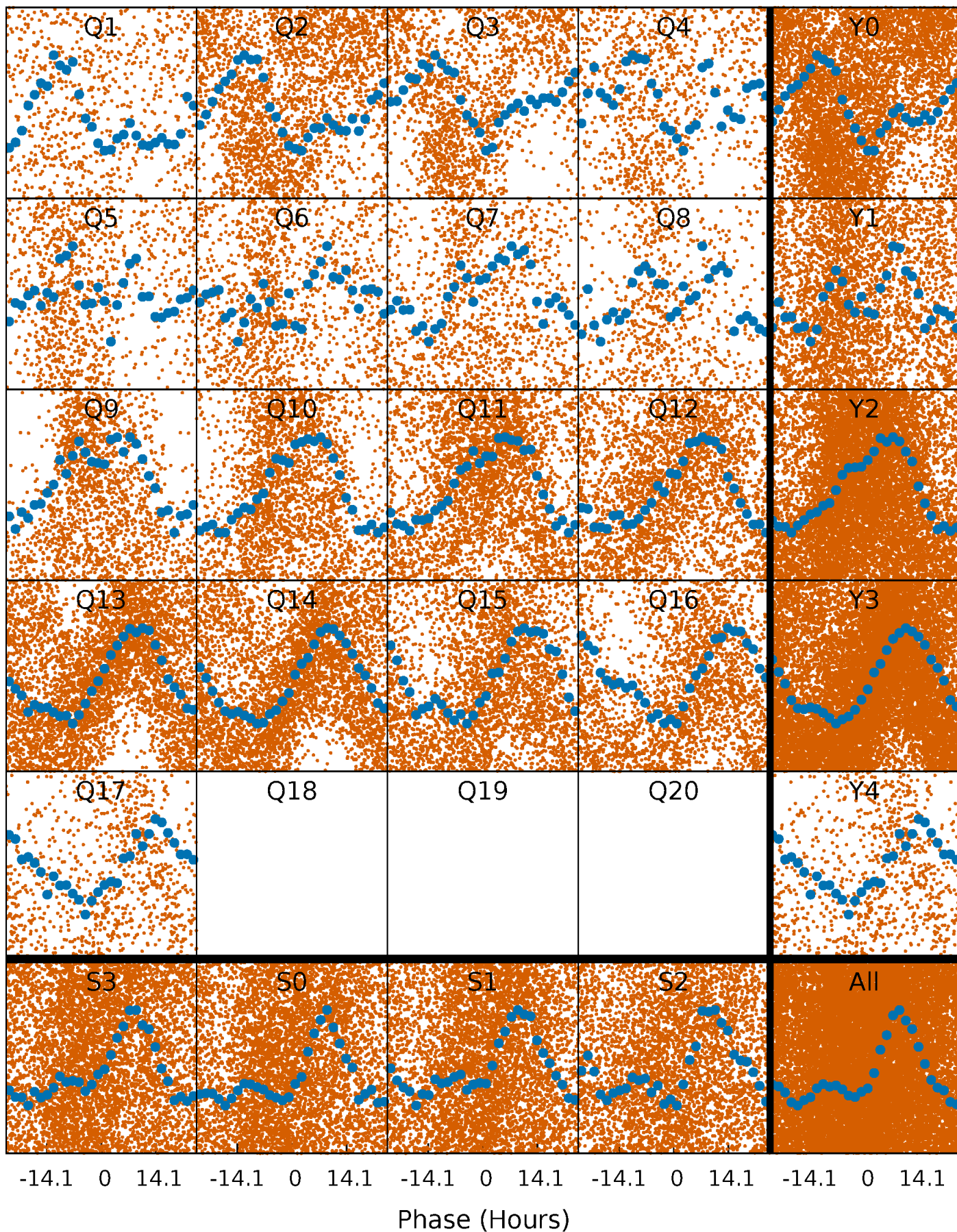


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

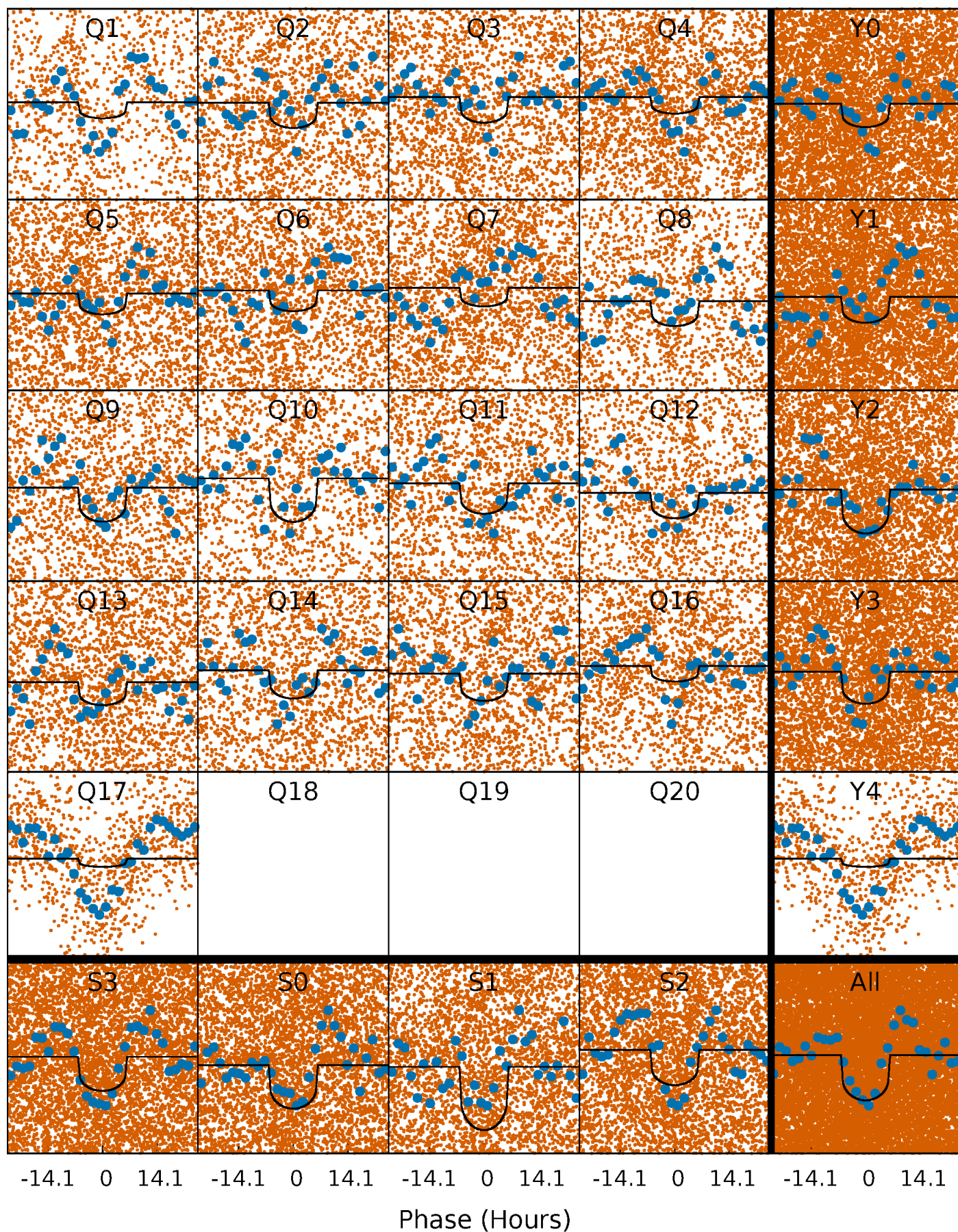
TCE 008840083-03 P= 1.721776 Days  $T_0=132.656644$  (BKJD)





# DV Quarter-Phased Transit Curves

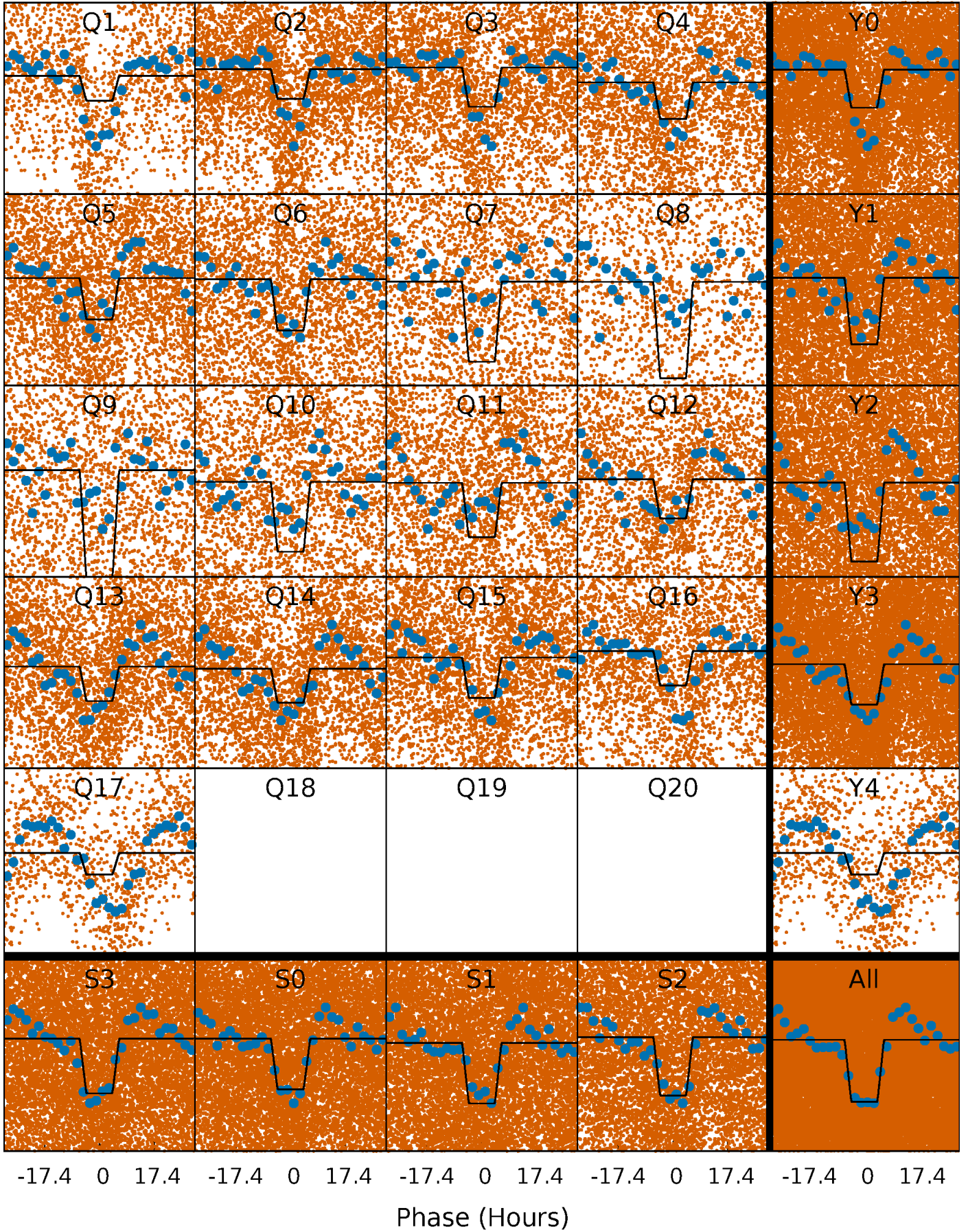
TCE 008840083-03 P= 1.721776 Days  $T_0=132.656644$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

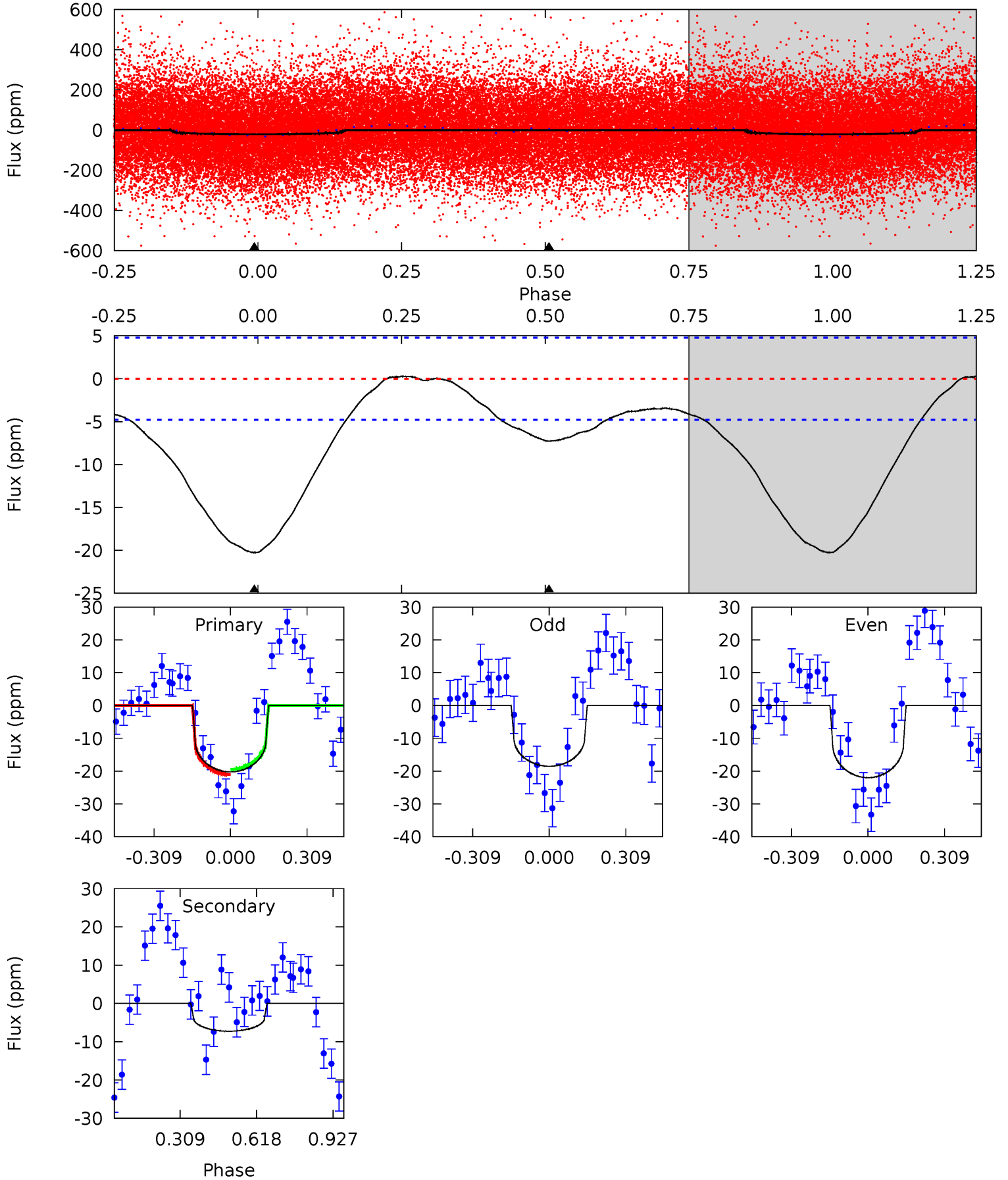
TCE 008840083-03 P= 1.721652 Days  $T_0=132.640226$  (BKJD)



# DV Model-Shift Uniqueness Test

008840083-03, P = 1.721776 Days, E = 130.934868 Days

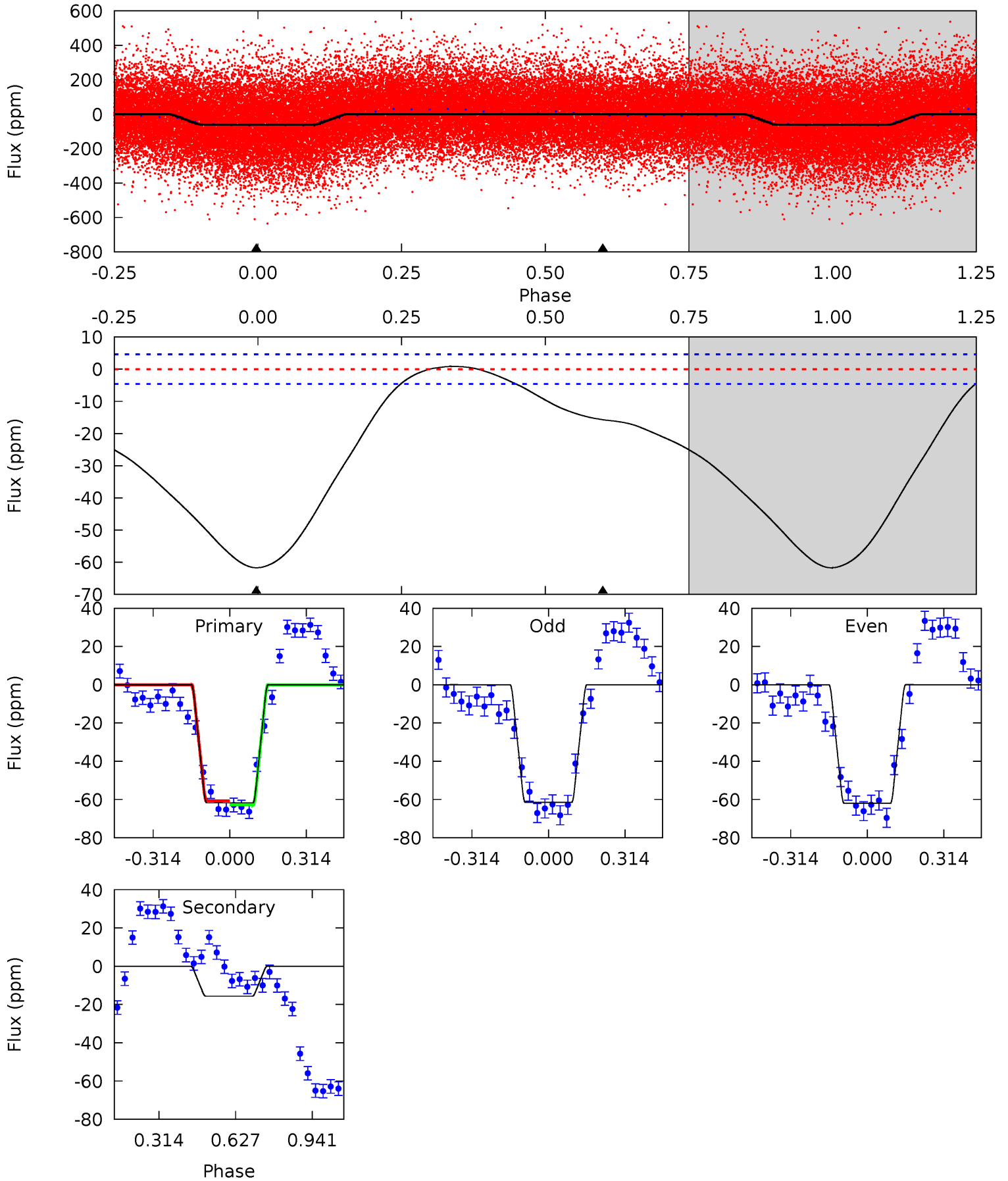
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	6.57	0	0	4.32	1.02	1.89	18.3	18.3	6.57	6.57	1.56	0.83	0.01	0.69



# Alt Model-Shift Uniqueness Test

008840083-03, P = 1.721652 Days, E = 130.918574 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
58.0	14.8	0	0	4.32	1.01	1.63	58.0	58.0	14.8	14.8	0.20	1.15	0.01	0.94



### Stellar Parameters For KIC 008840083

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6420^{+194}_{-194}$	$3.863^{+0.273}_{-0.117}$	$-0.080^{+0.300}_{-0.250}$	$2.271^{+0.491}_{-0.737}$	$1.375^{+0.235}_{-0.258}$	$0.165^{+0.296}_{-0.059}$
	+3%/-3%	+7%/-3%	+375%/-312%	+22%/-32%	+17%/-19%	+179%/-36%
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 008840083-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-7 \pm 1$	$1.11^{+0.81}_{-0.63}$	$3313^{+229}_{-266}$	$4787^{+2495}_{-1018}$	$3.062^{+13.171}_{-2.045}$
Alt.	$-16 \pm 1$	$1.87^{+0.93}_{-0.83}$	$3338^{+207}_{-293}$	$4527^{+1396}_{-650}$	$2.390^{+4.949}_{-1.257}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

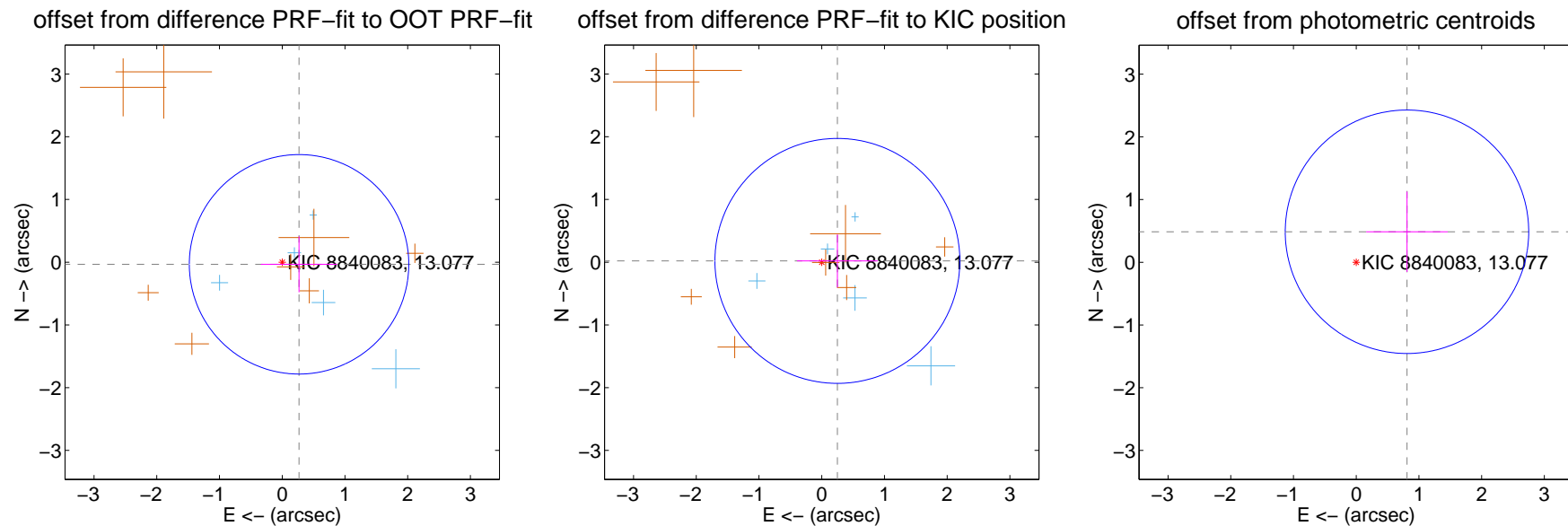
## DV Centroid Data

Supplemental centroid analysis for 008840083-03. Kepler magnitude: 13.08. Transit SNR 11.46

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

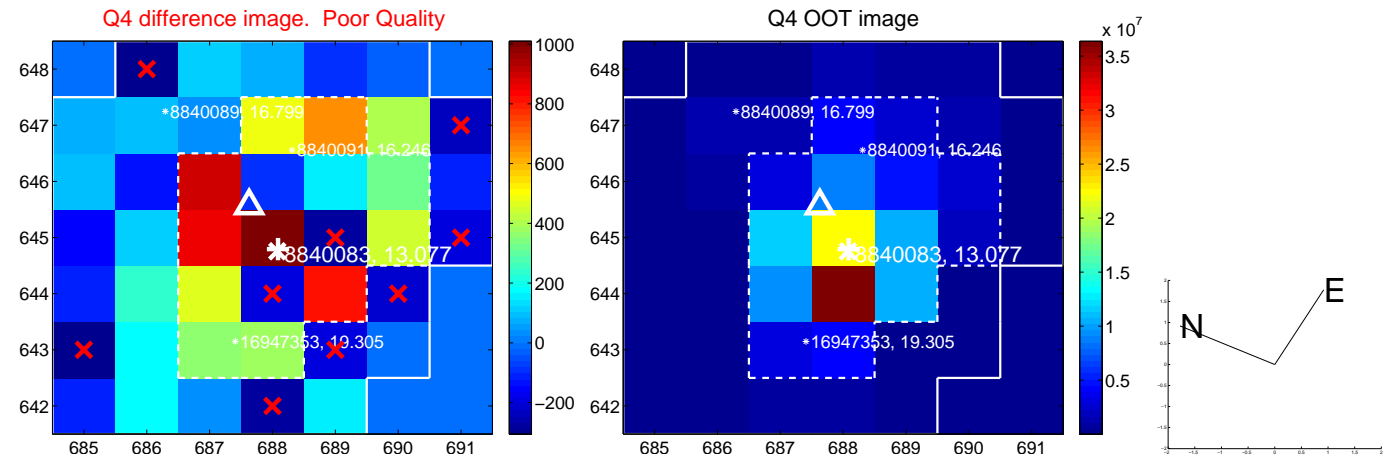
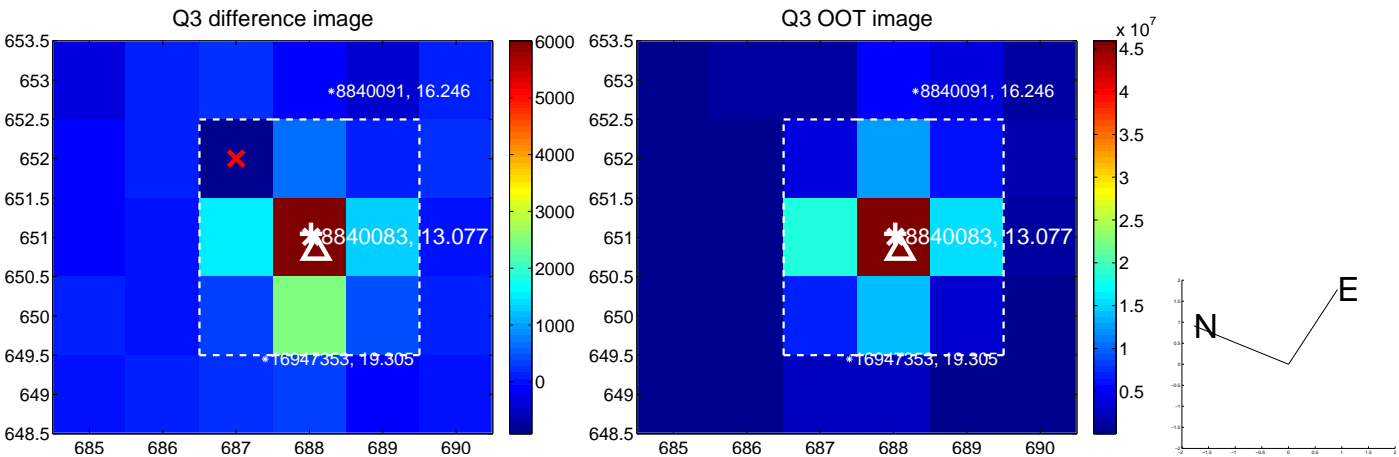
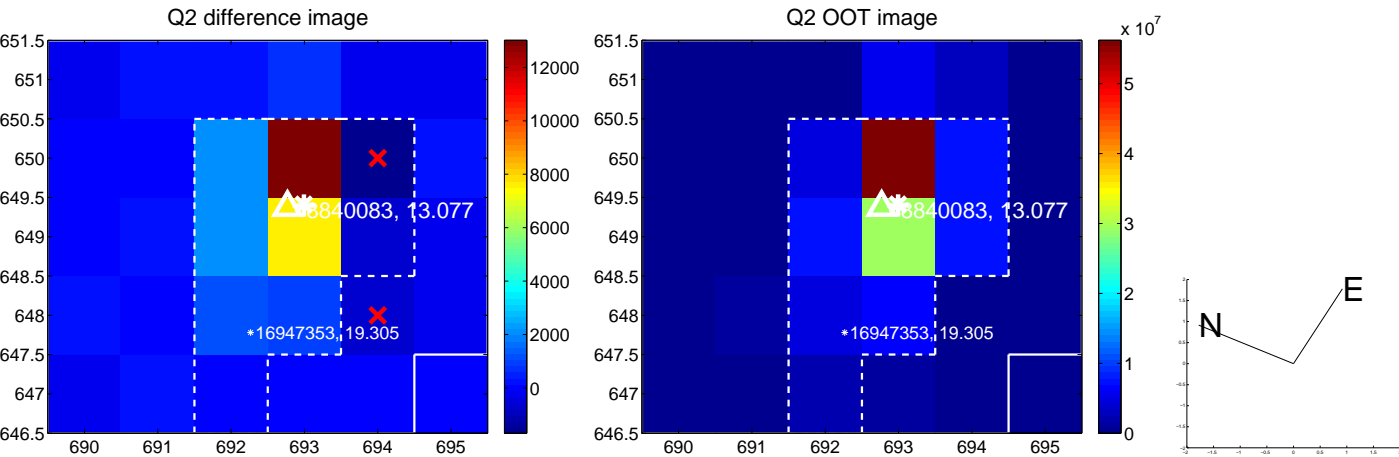
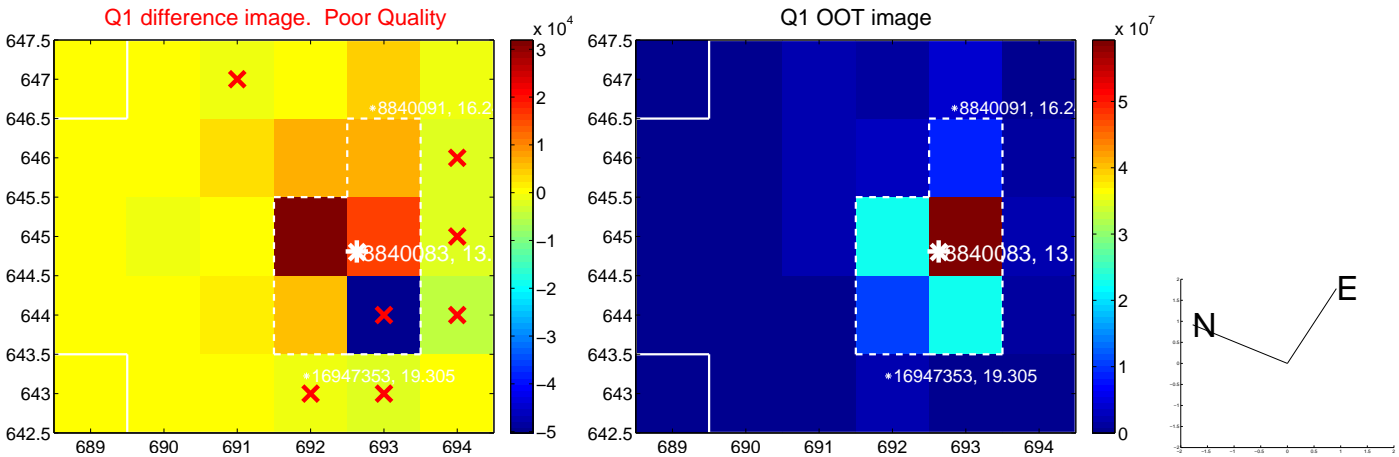
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.270 \pm 0.583$	0.46	$-0.268 \pm 0.607$	$-0.034 \pm 0.446$
PRF-fit source offset from KIC position	$0.251 \pm 0.651$	0.39	$-0.250 \pm 0.644$	$0.021 \pm 0.423$
photometric centroid source offset	$0.94 \pm 0.65$	1.46	$-0.81 \pm 0.65$	$0.49 \pm 0.64$



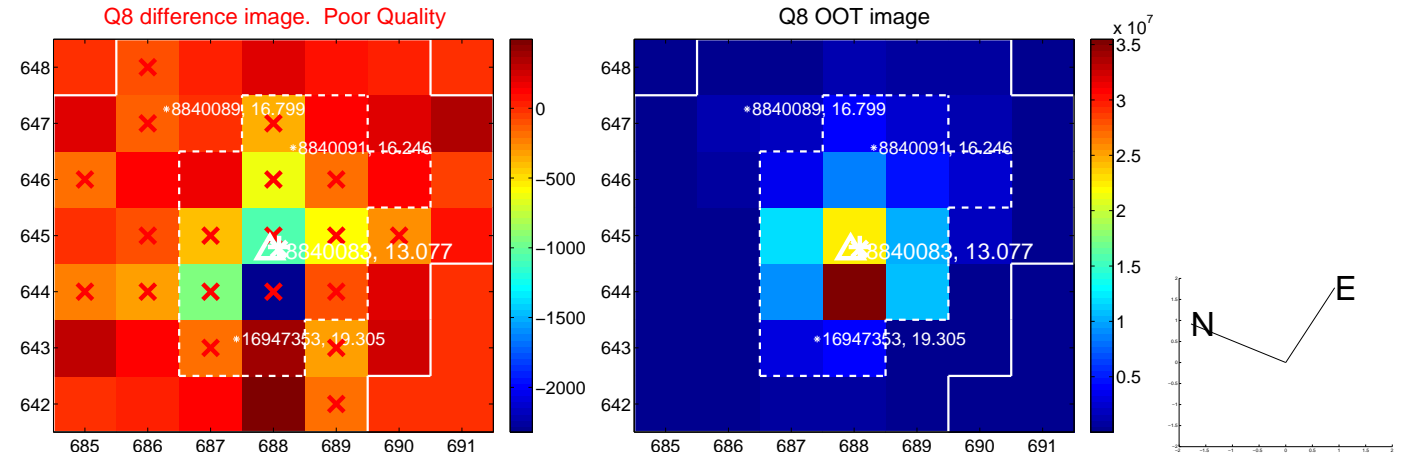
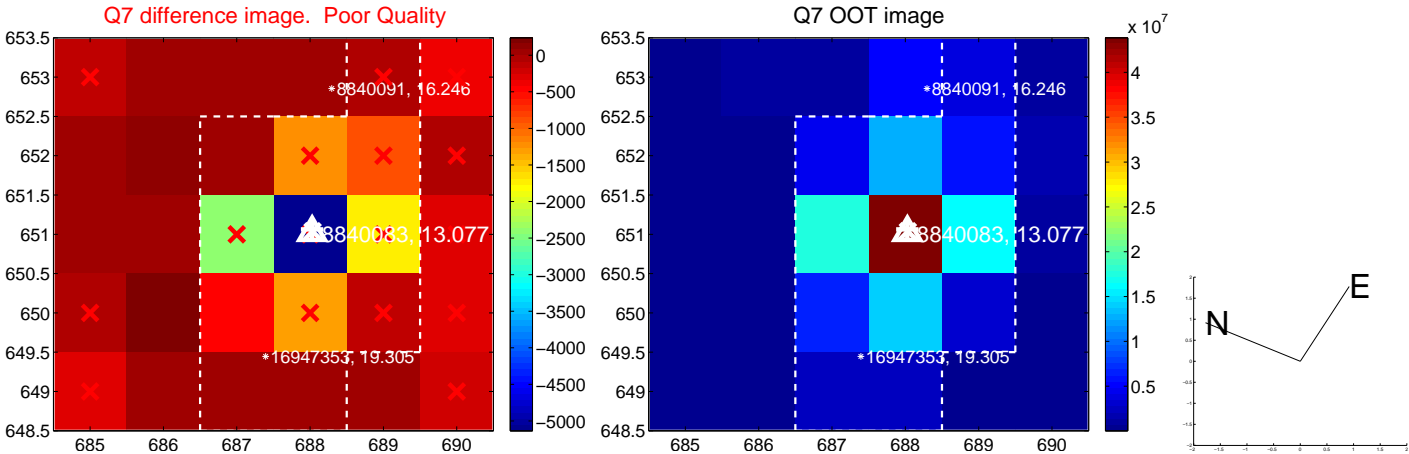
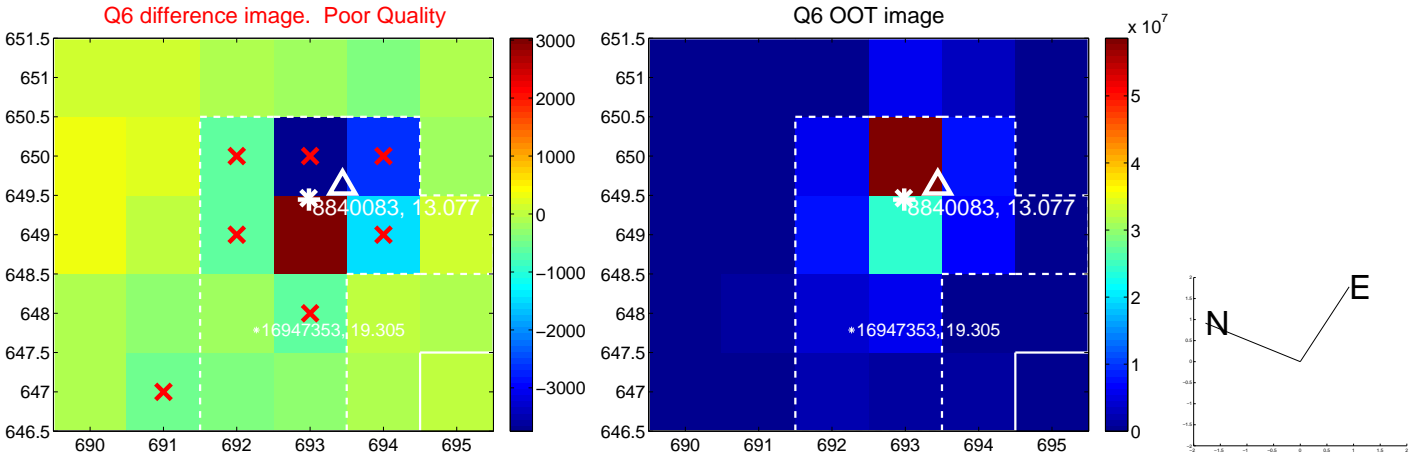
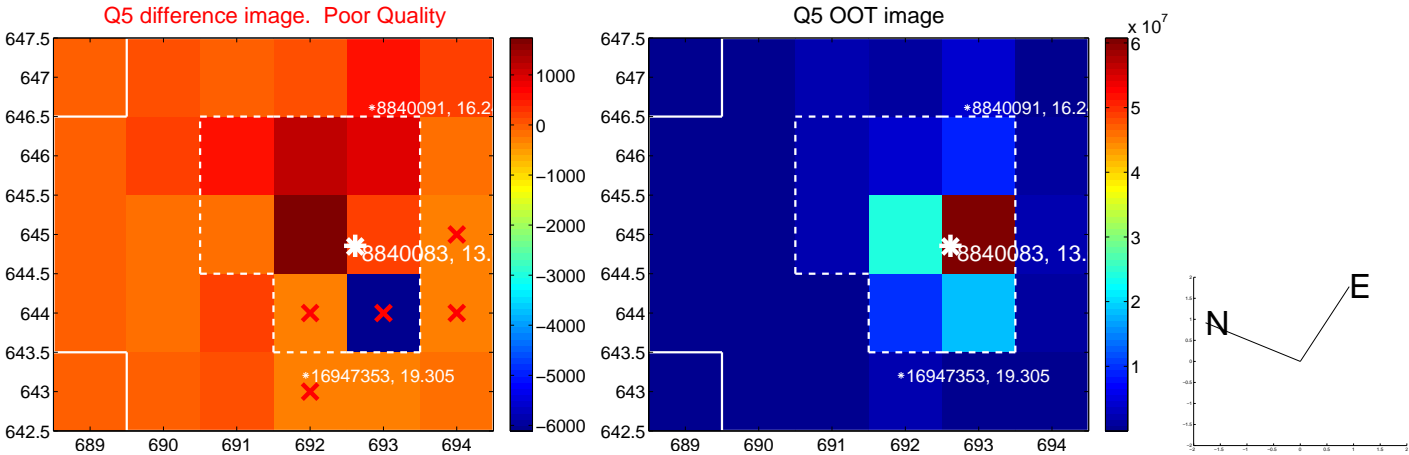
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



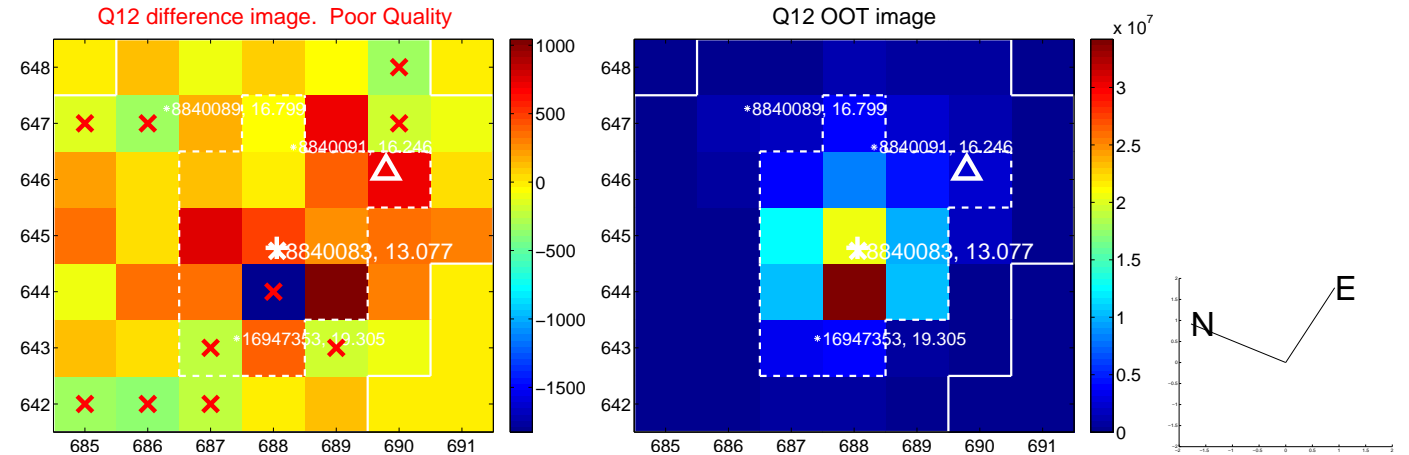
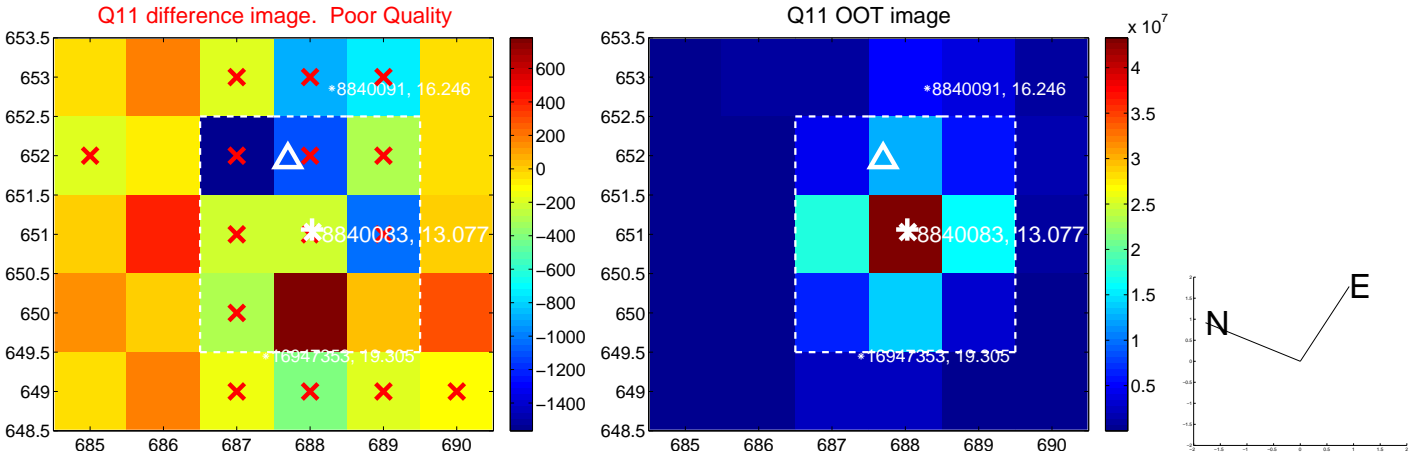
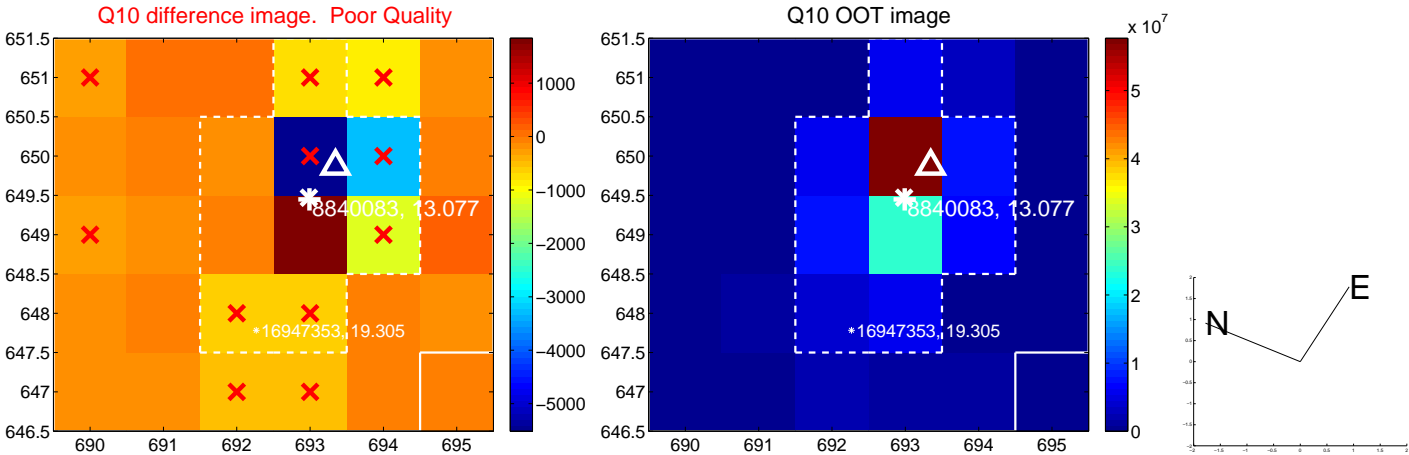
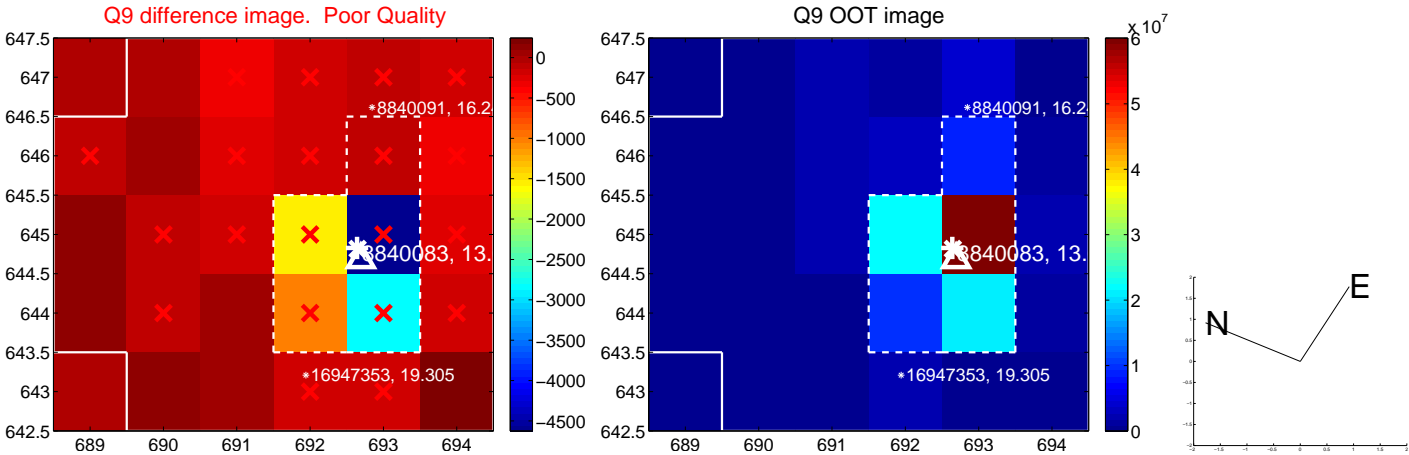
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



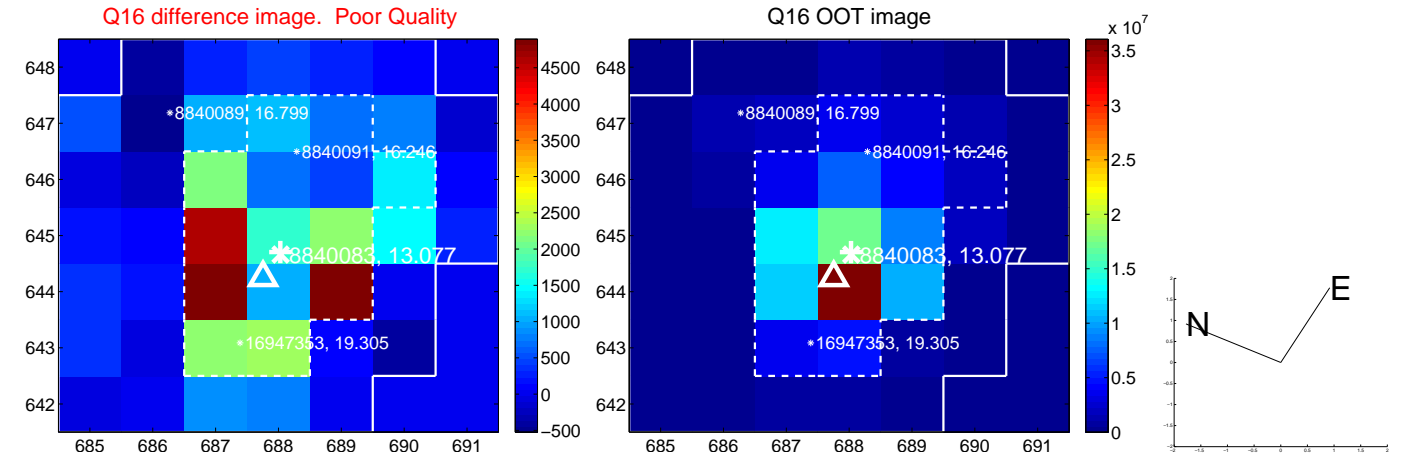
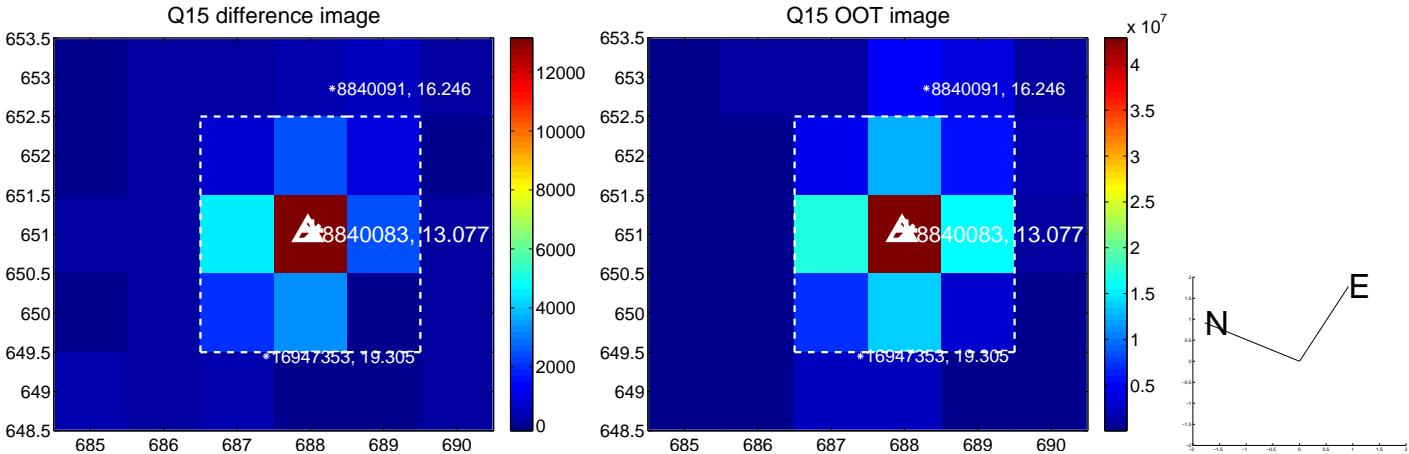
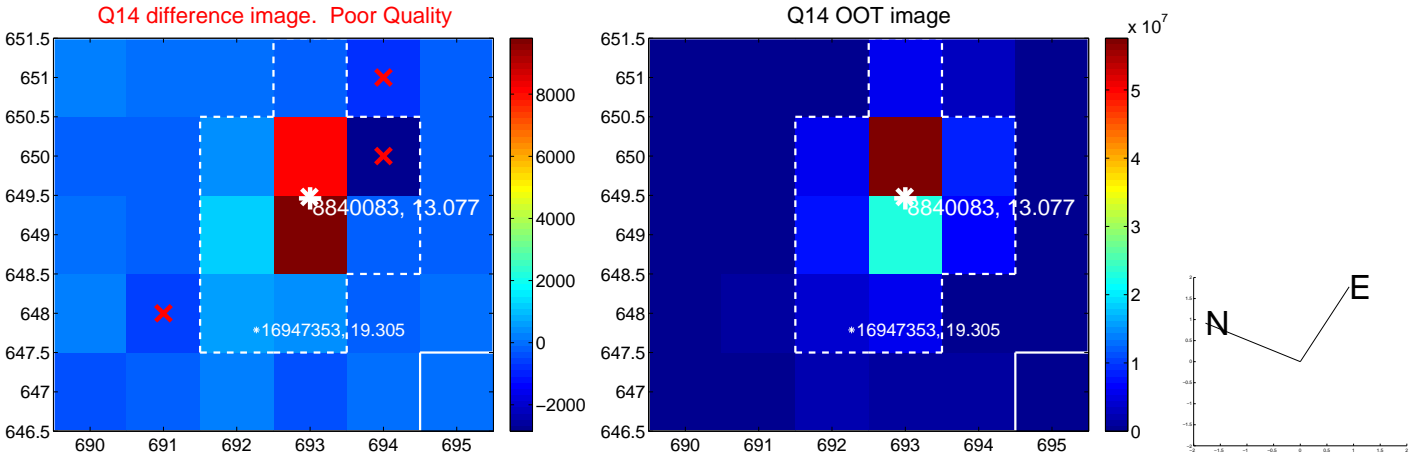
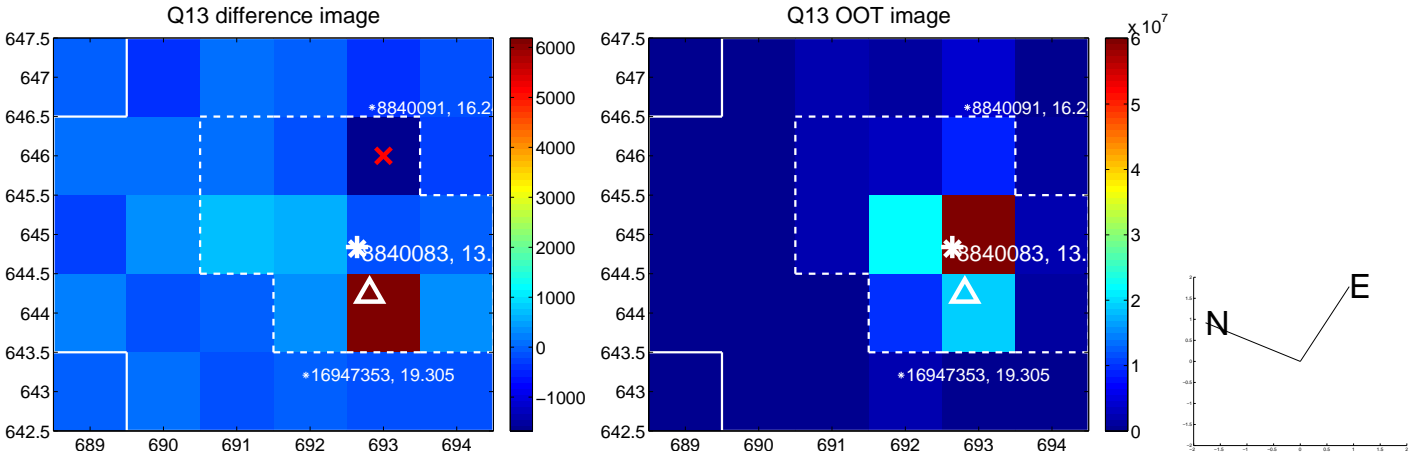
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



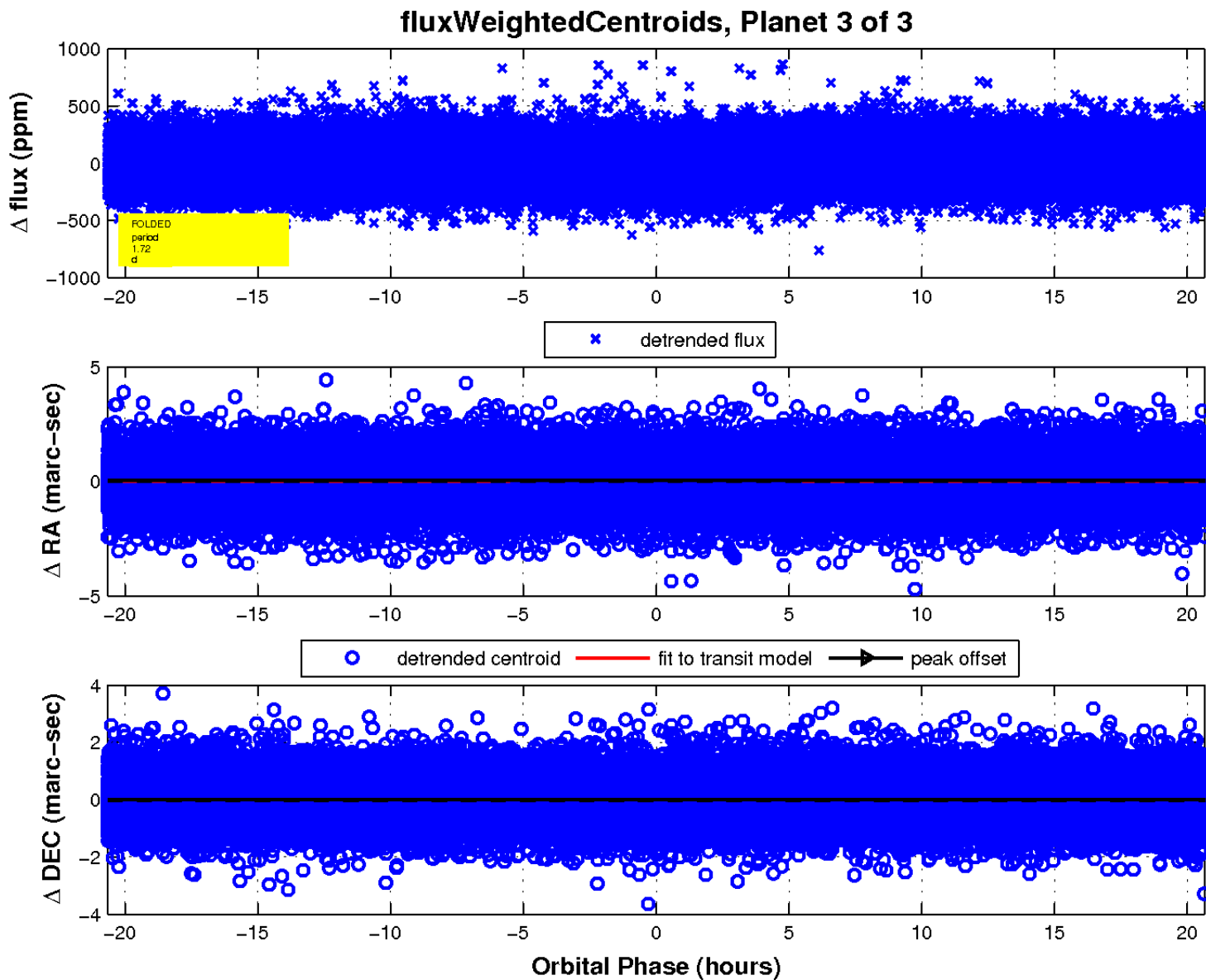
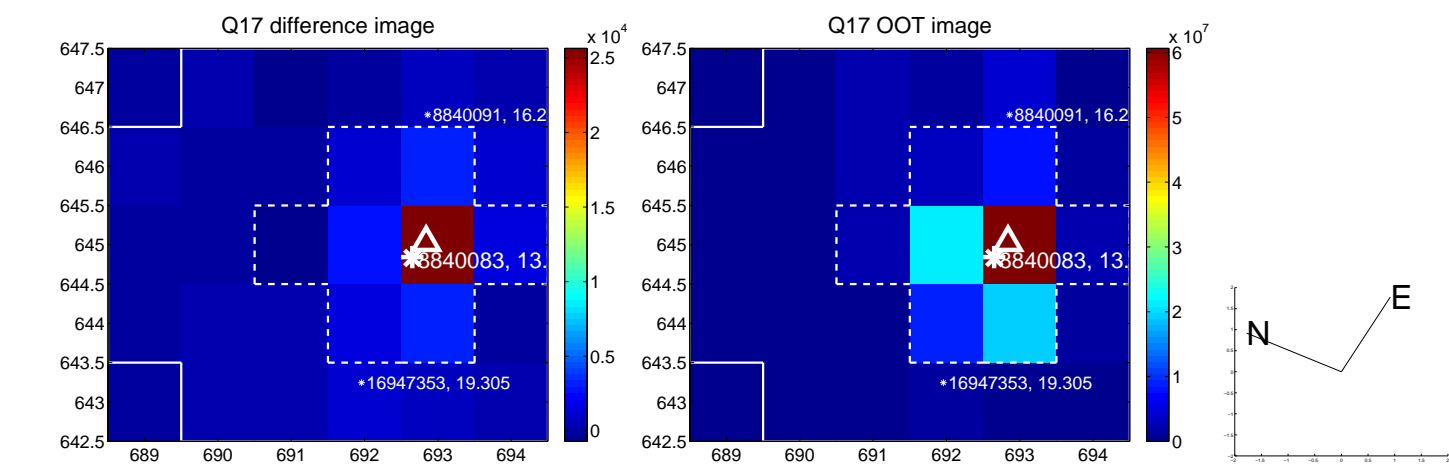
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

