

# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

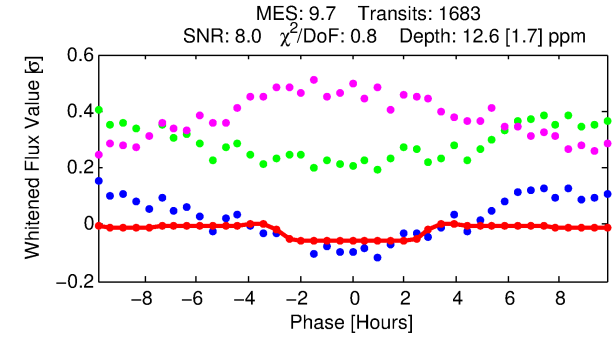
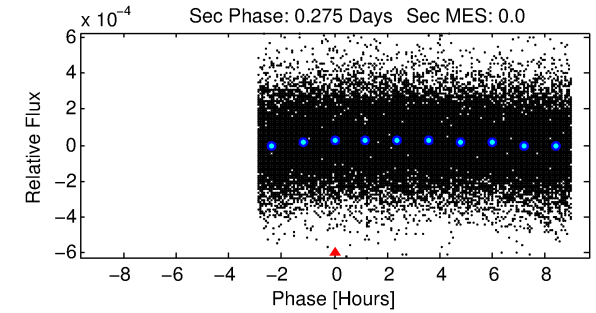
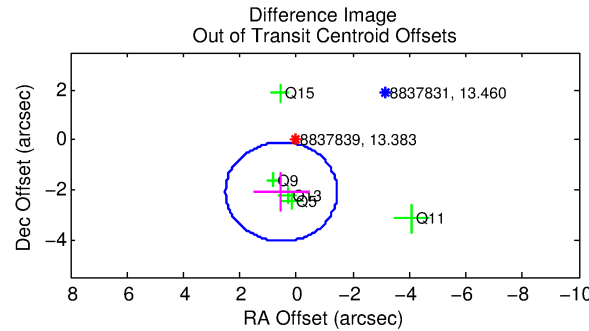
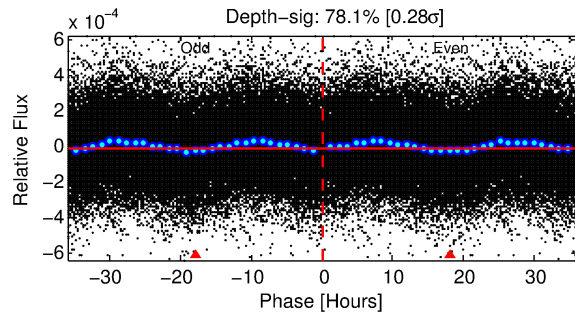
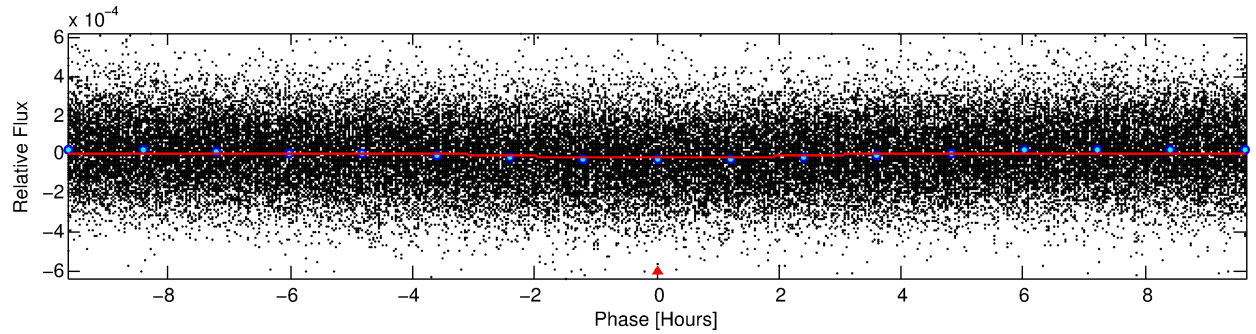
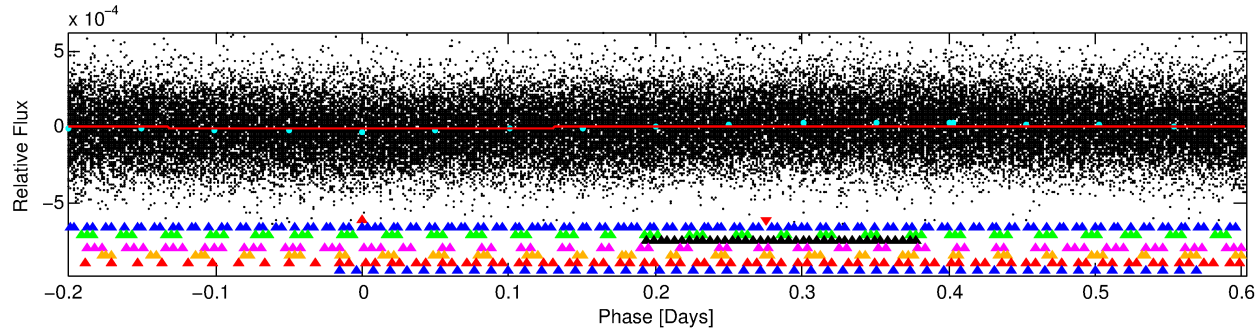
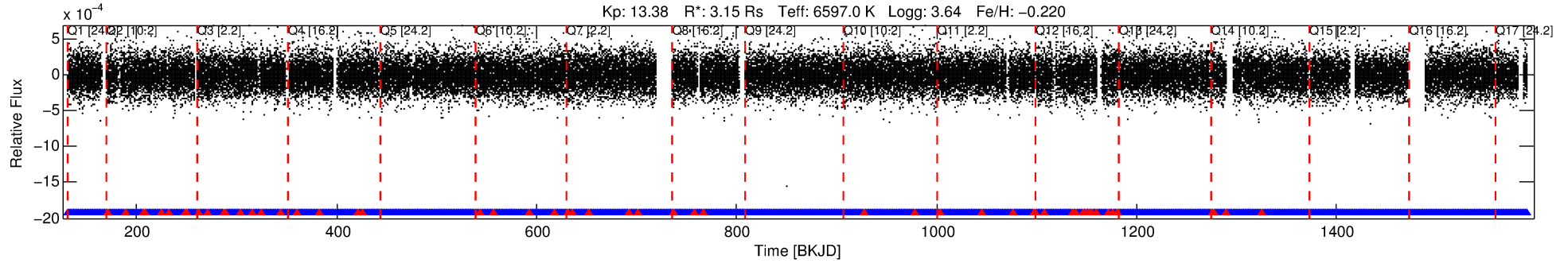
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-01

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 1 of 8 Period: 0.804 d



## DV Fit Results:

Period = 0.80371 [0.00002] d  
Epoch = 131.7318 [0.0068] BKJD  
Rp/R\* = 0.0037 [0.0033]  
a/R\* = 1.05 [0.56]  
b = 0.88 [1.37]  
Seff = 43447.27 [25270.76]  
Teq = 3681 [535] K  
Rp = 1.28 [1.23] Re  
a = 0.0197 [0.0071] AU  
Ag = N/A  
Teffp = N/A

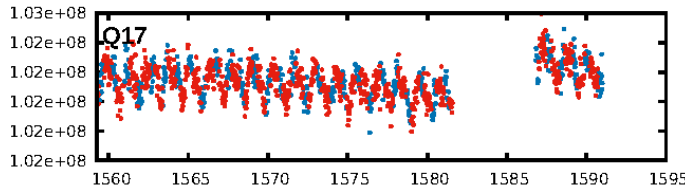
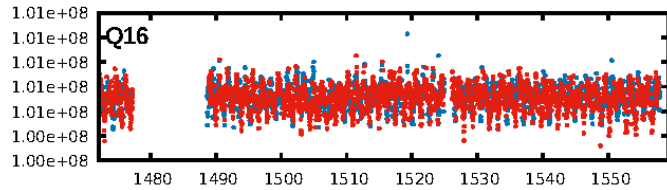
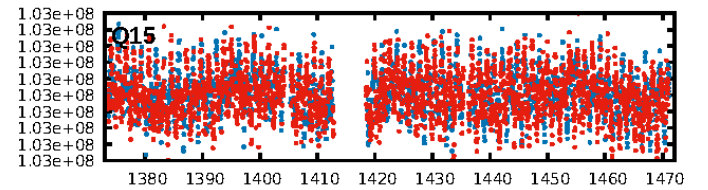
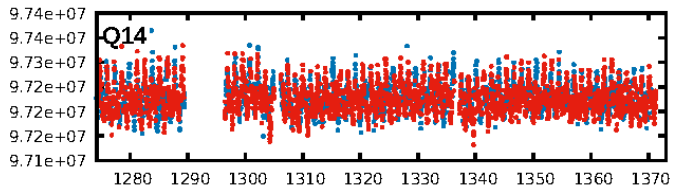
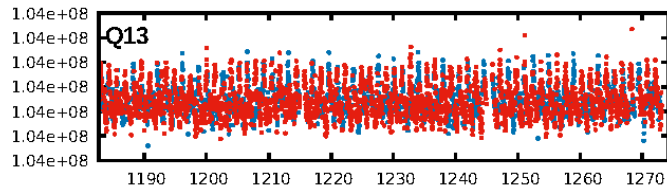
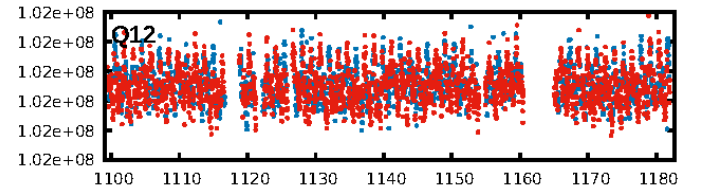
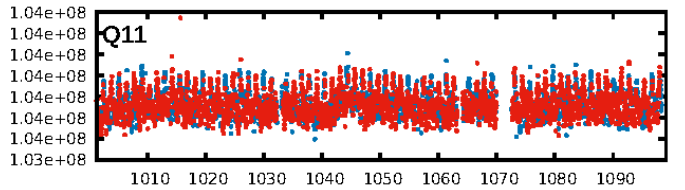
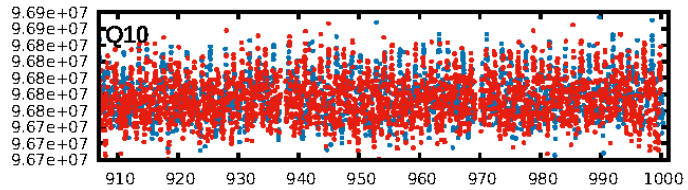
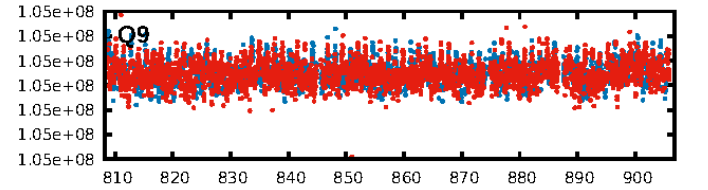
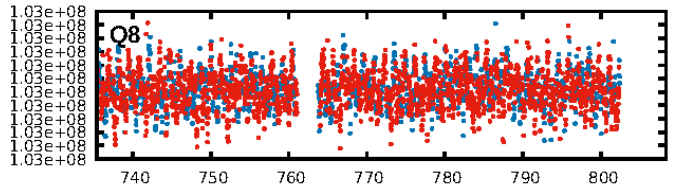
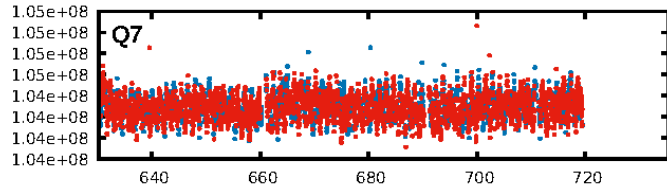
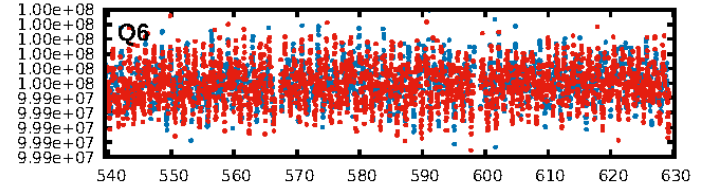
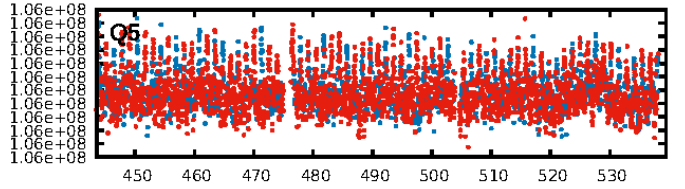
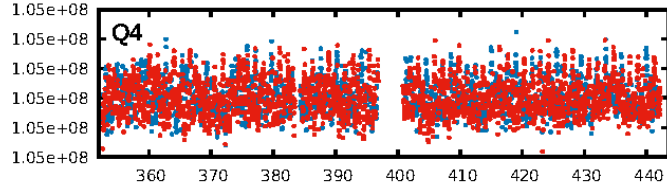
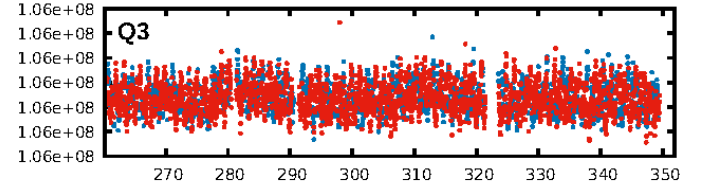
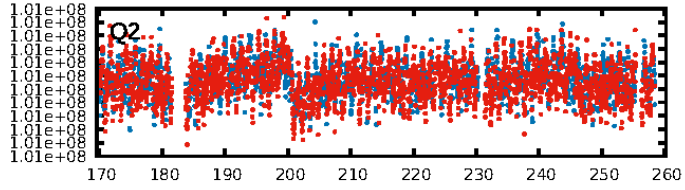
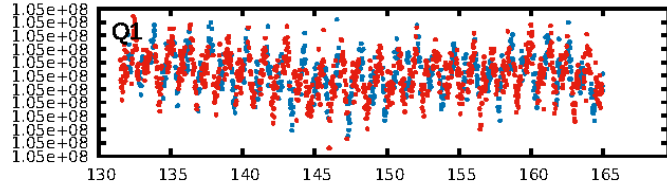
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [41.11 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.50e-24  
RollingBand-fgt: 0.97 [1552/1607]  
GhostDiagnostic-chr: 1.913  
Centroid-sig: 1.9%  
Centroid-so: 2.238 arcsec [1.73 $\sigma$ ]  
OotOffset-rm: 2.152 arcsec [3.26 $\sigma$ ]  
KicOffset-rm: 2.102 arcsec [3.37 $\sigma$ ]  
OotOffset-st: 0/2/0/3 [5]  
KicOffset-st: 0/2/0/3 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:58:48 Z

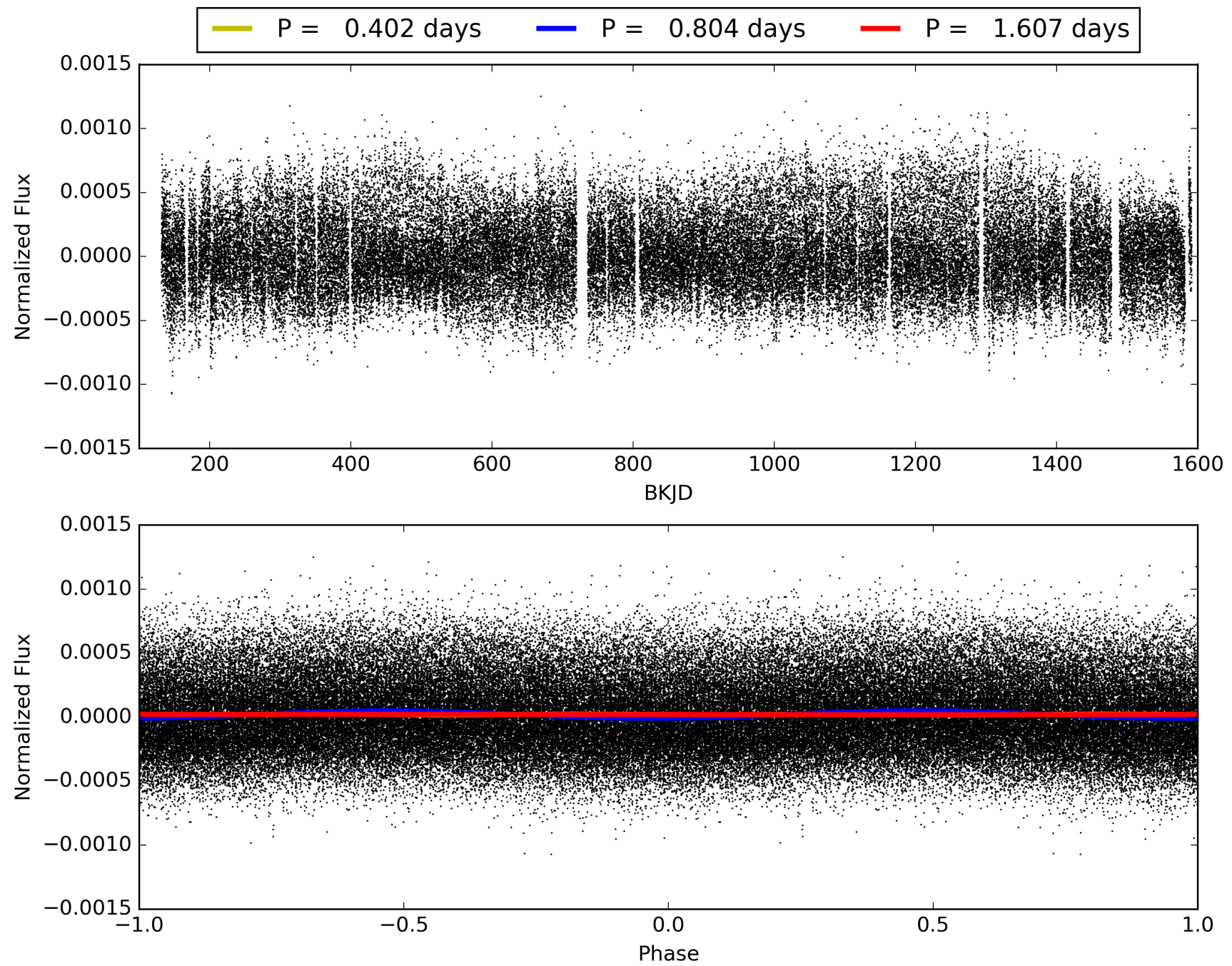
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

## TCE 008837839-01, PDC Light Curves





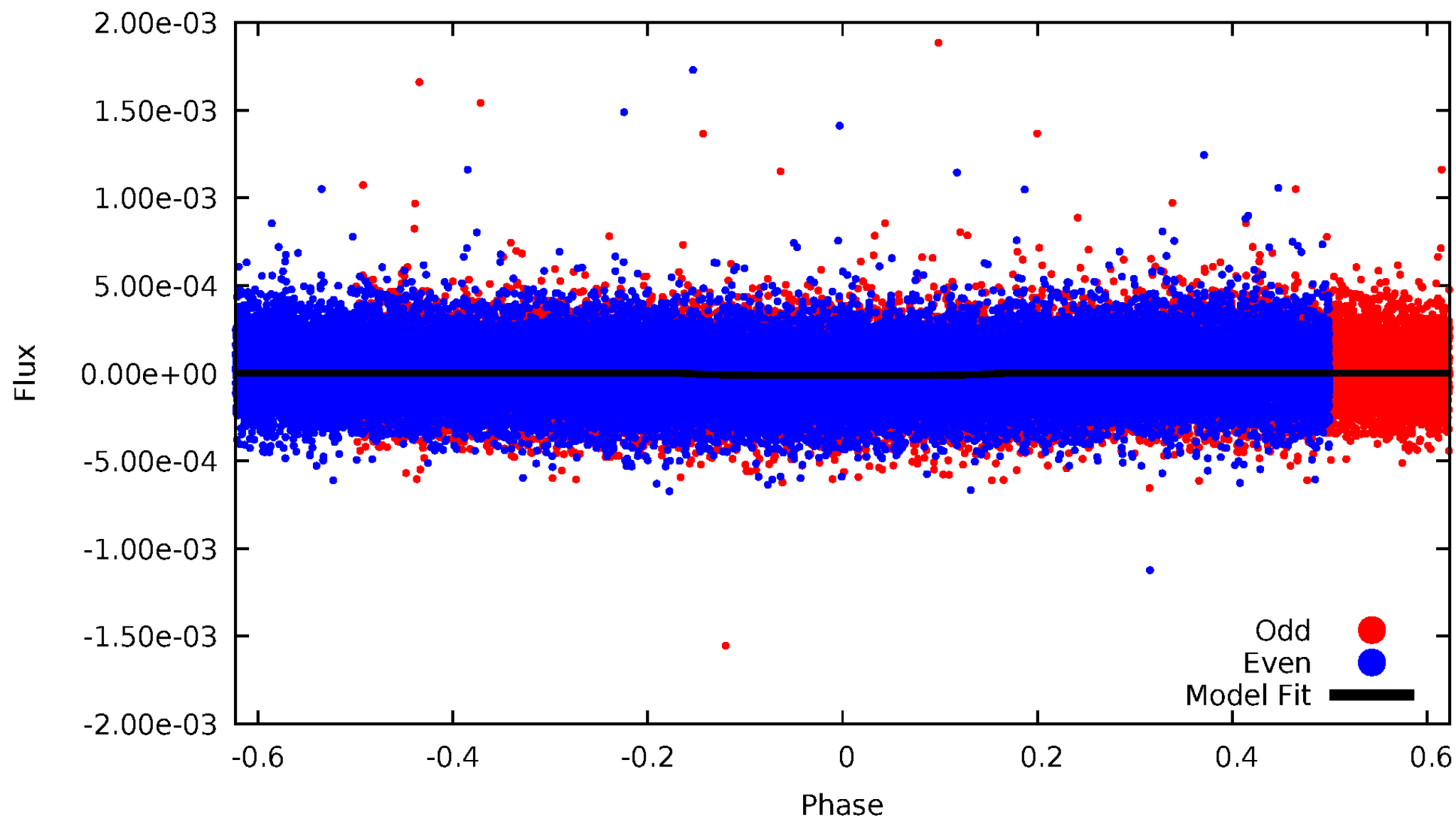
TCE 008837839-01





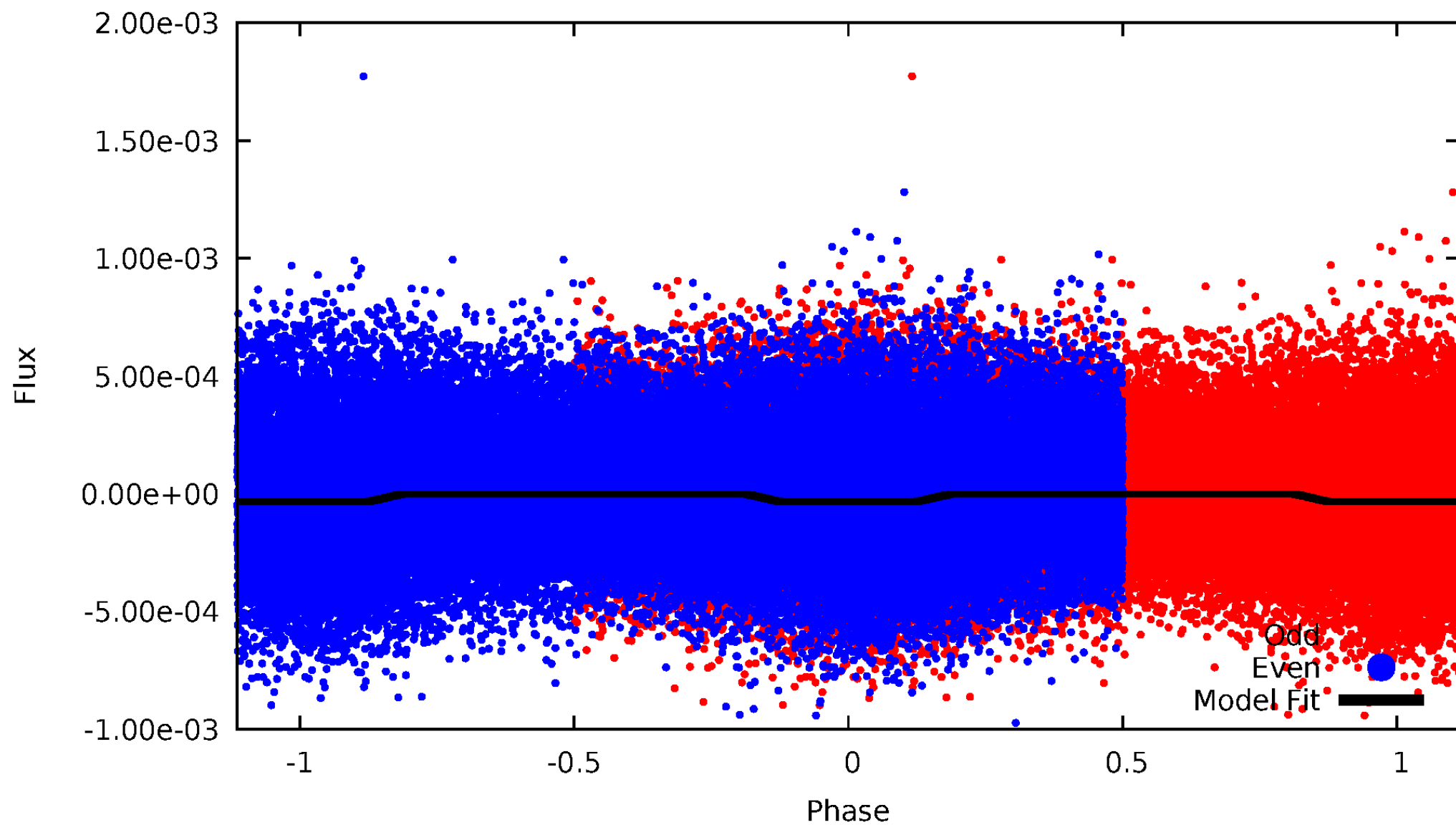
# DV Odd/Even

TCE 008837839-01



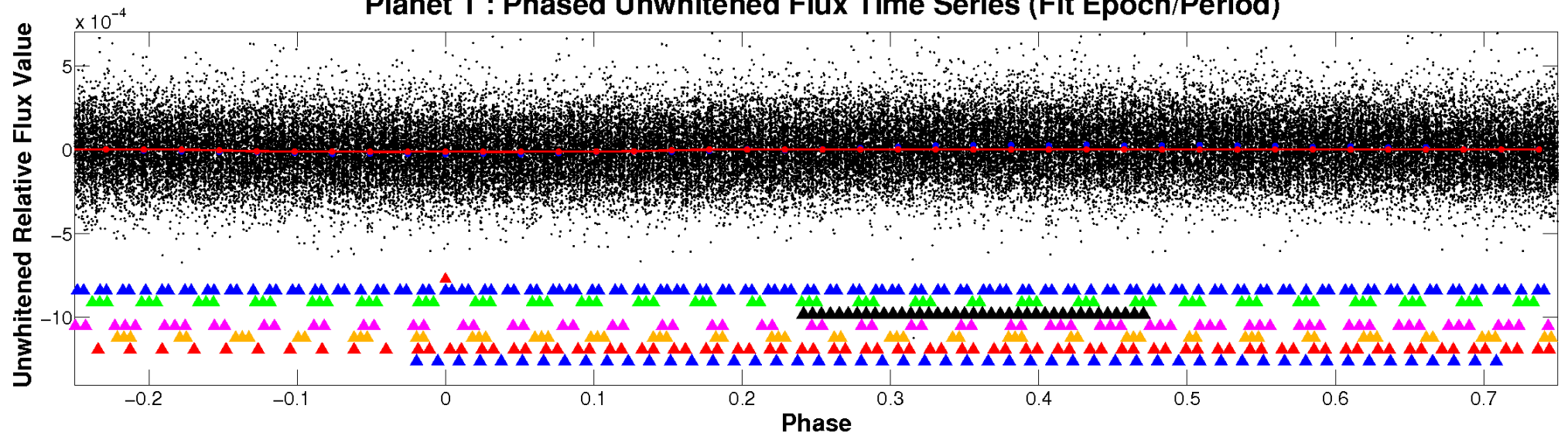
# ALT Odd/Even

TCE 008837839-01

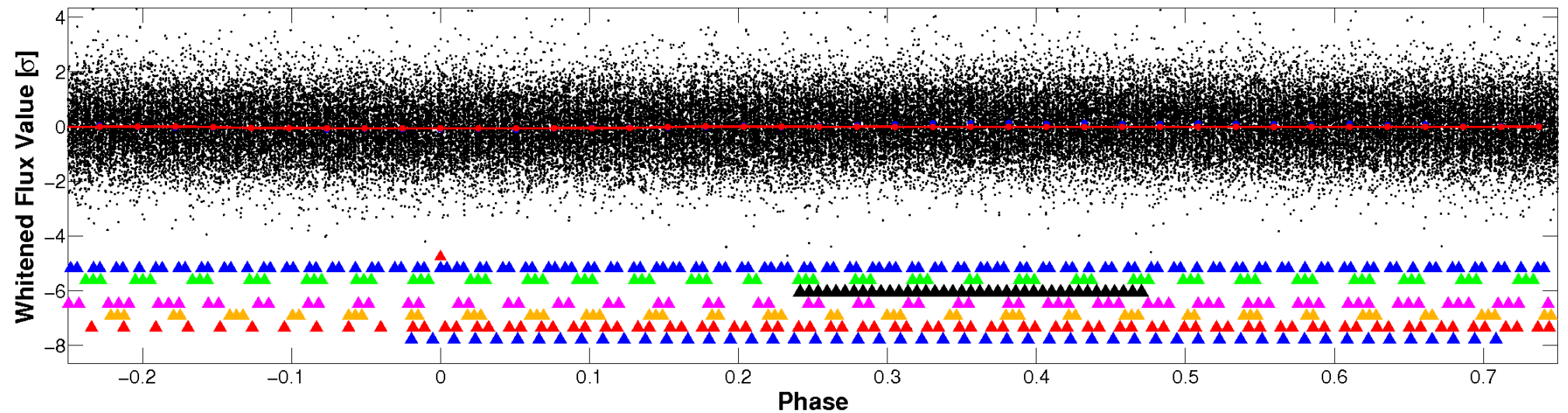


# Non-Whitened Vs. Whitened Light Curve

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



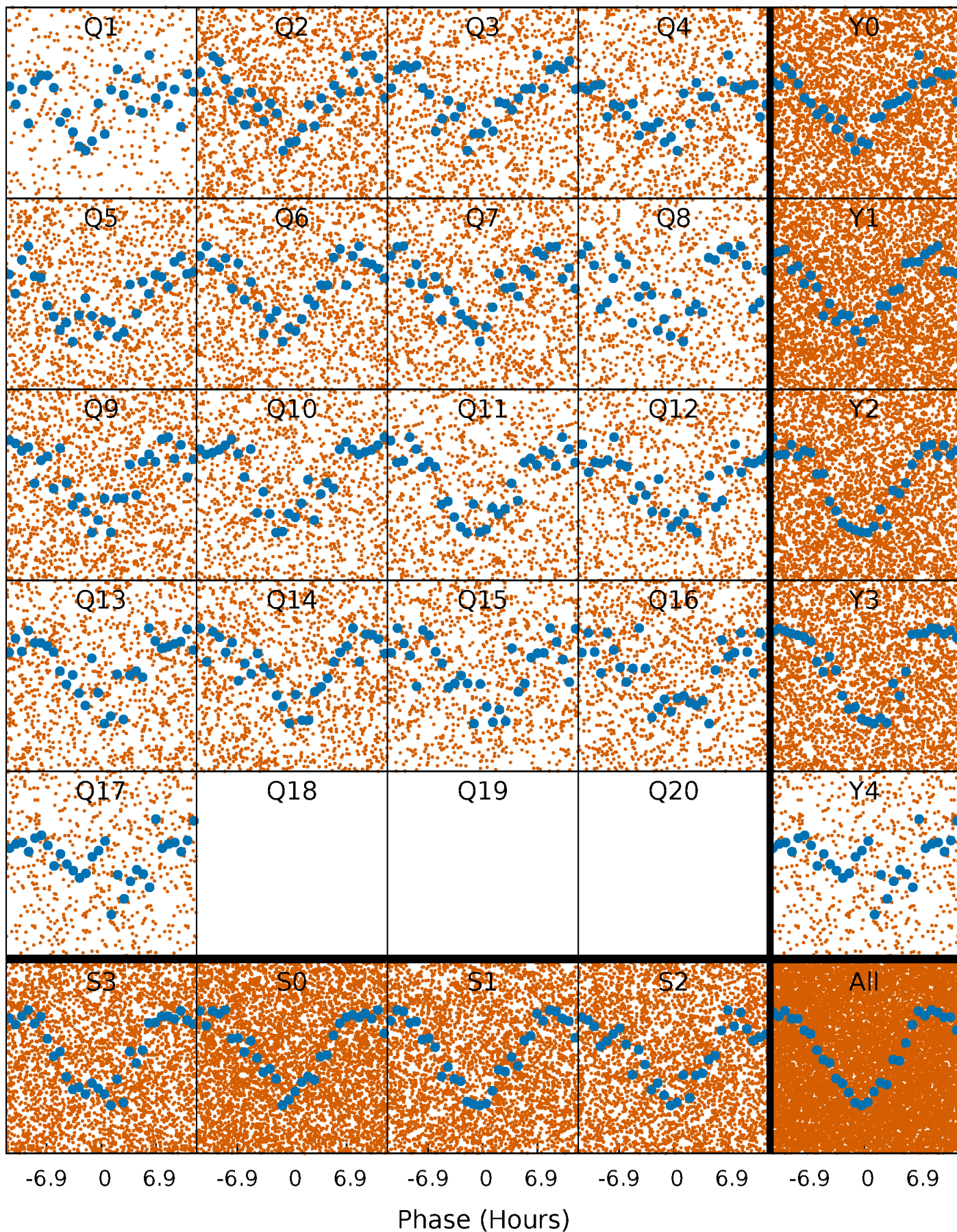
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

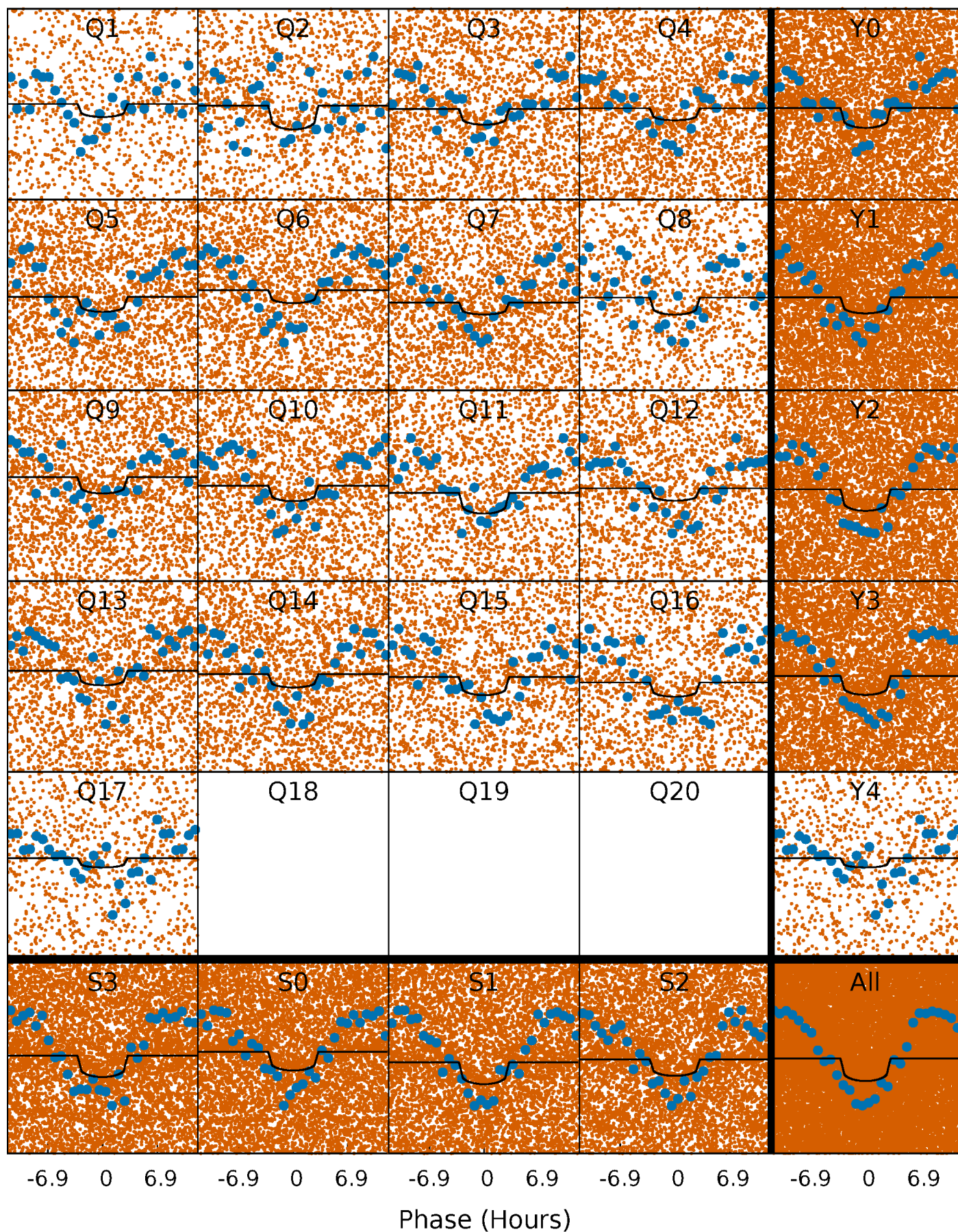
TCE 008837839-01 P= 0.803712 Days  $T_0=131.731755$  (BKJD)





# DV Quarter-Phased Transit Curves

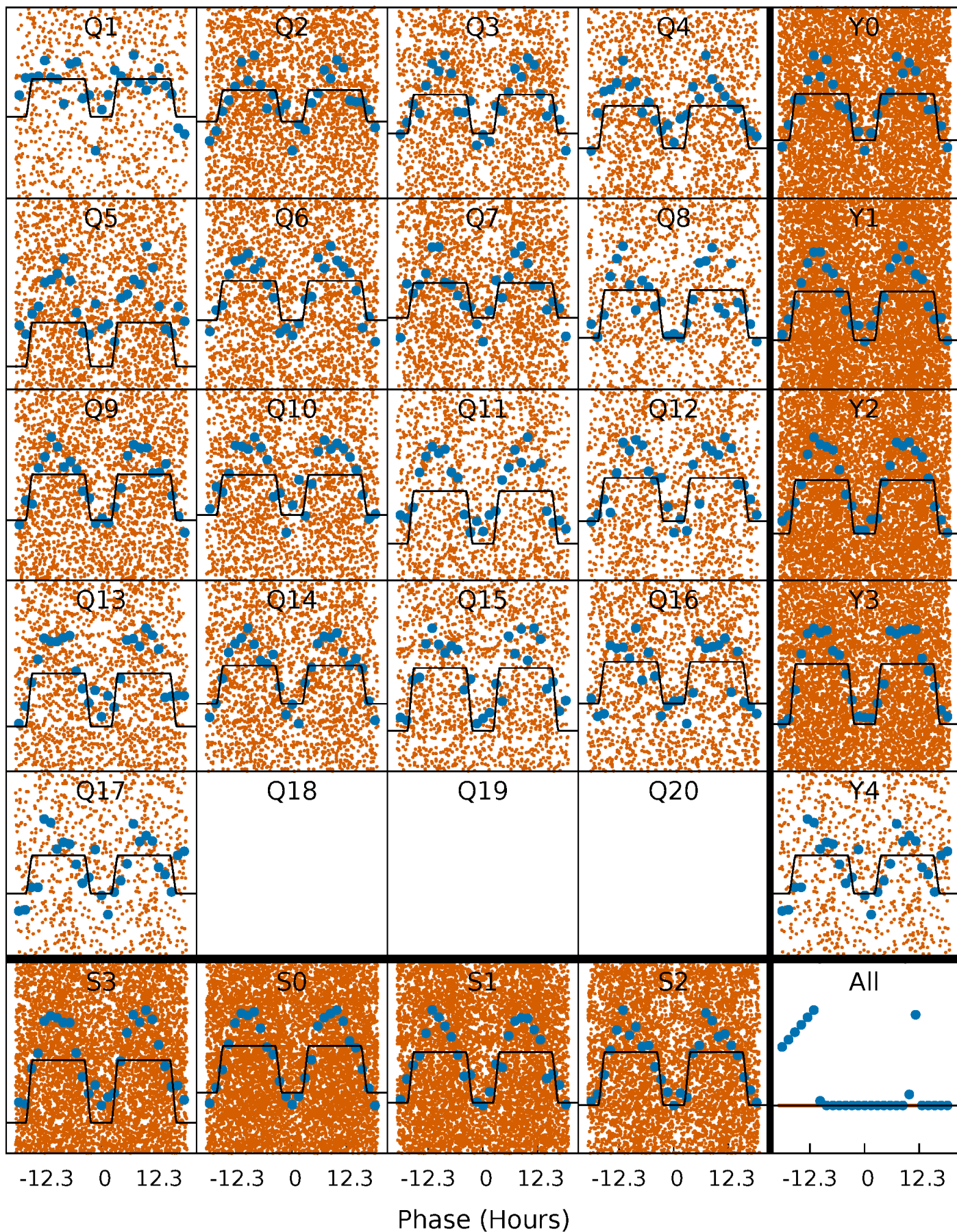
TCE 008837839-01 P= 0.803712 Days  $T_0=131.731755$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008837839-01 P= 0.803749 Days  $T_0=131.691395$  (BKJD)

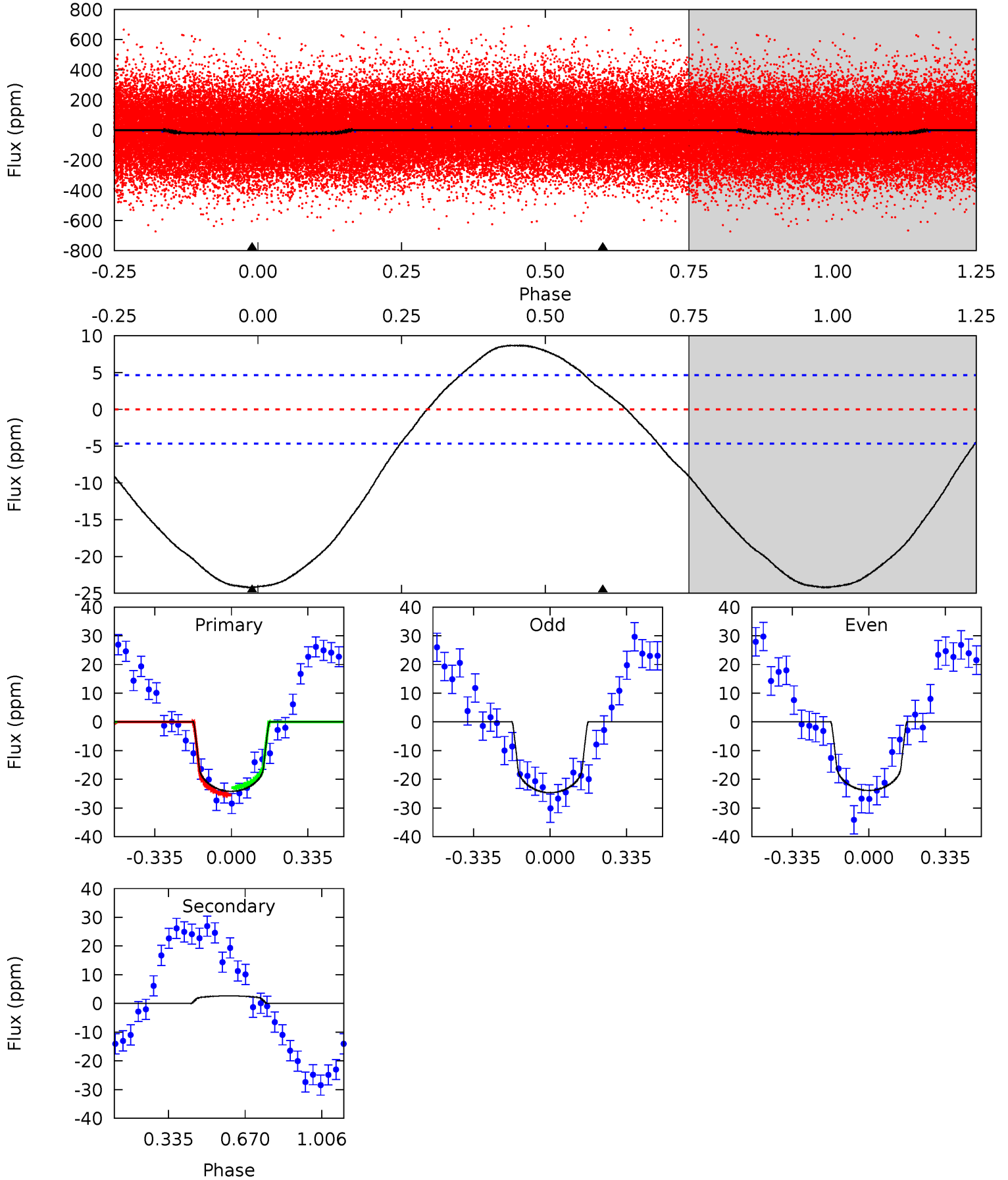




# DV Model-Shift Uniqueness Test

008837839-01, P = 0.803712 Days, E = 130.928043 Days

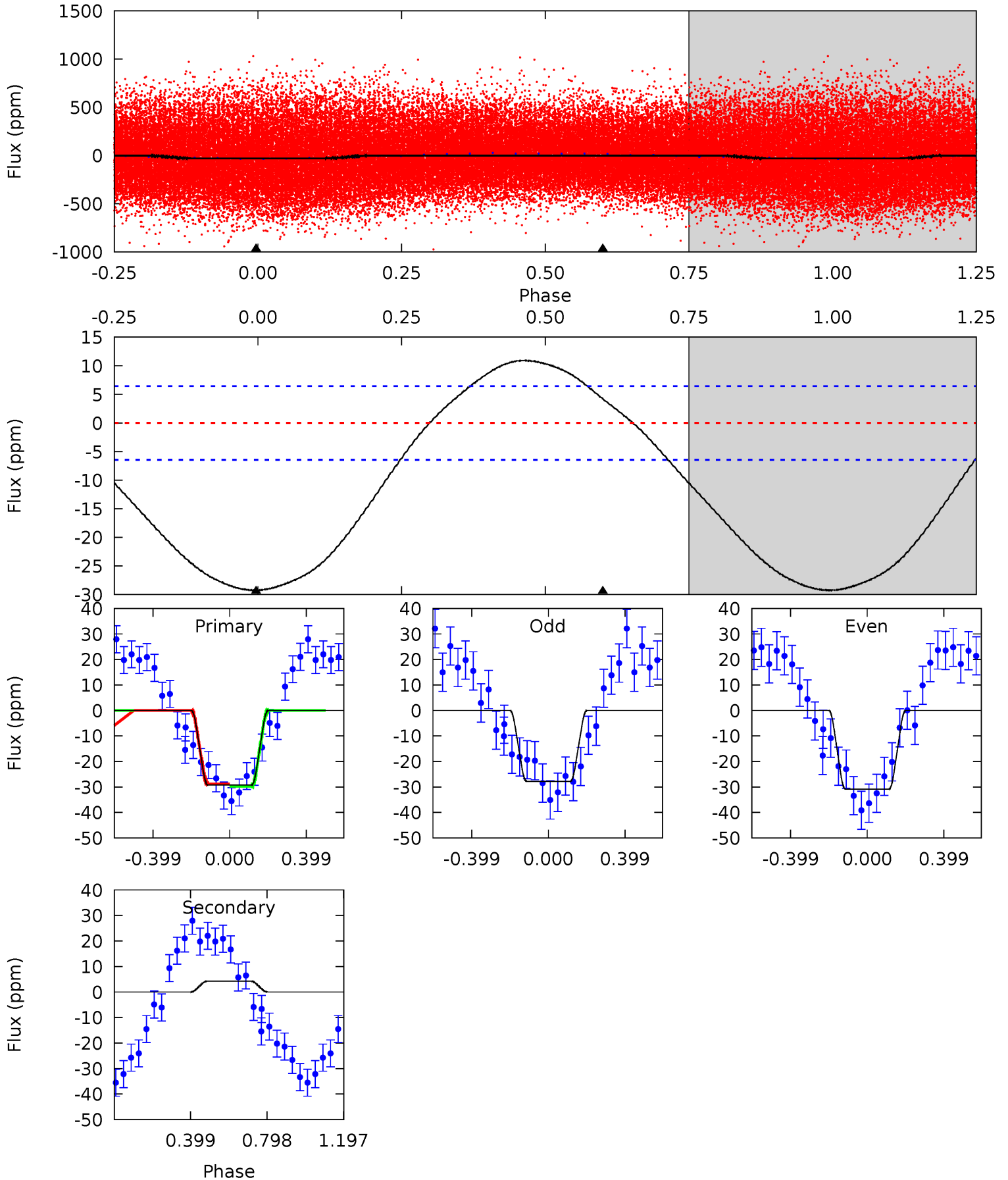
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.4	-2.43	0	0	4.30	0.96	2.48	22.4	22.4	-2.43	-2.43	0.35	0.96	0.26	1.15



# Alt Model-Shift Uniqueness Test

008837839-01, P = 0.803749 Days, E = 130.887646 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
19.4	-2.80	0	0	4.27	0.84	2.11	19.4	19.4	-2.80	-2.80	1.00	0.51	0.27	0.29



### Stellar Parameters For KIC 008837839

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$3\pm 1$	$1.30^{+1.10}_{-0.79}$	$5031^{+295}_{-460}$	$-4940^{+429}_{-1751}$	$-0.296^{+0.215}_{-1.547}$
Alt.	$4\pm 2$	$1.83^{+1.14}_{-0.96}$	$5050^{+265}_{-444}$	$-4910^{+405}_{-1280}$	$-0.258^{+0.171}_{-1.065}$

$T_{max}$  = 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

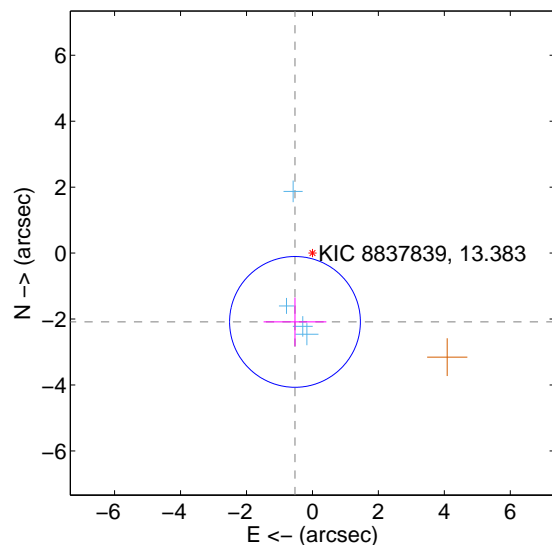
Supplemental centroid analysis for 008837839-01. Kepler magnitude: 13.38. Transit SNR 7.98

There are 4 quarters with good PRF difference image offsets

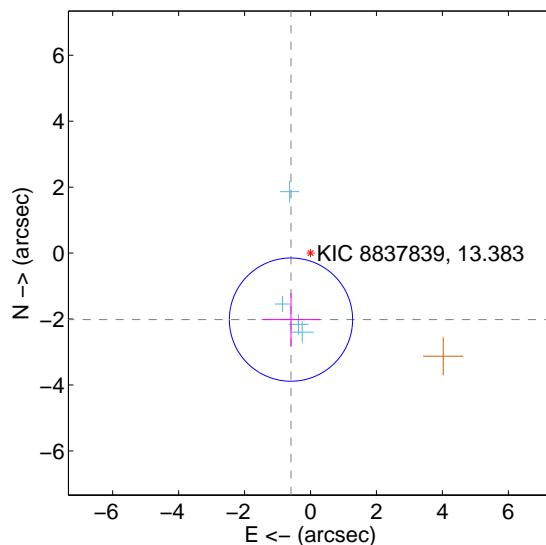
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.152 \pm 0.661</math></b>	<b>3.26</b>	$0.529 \pm 0.953$	$-2.086 \pm 0.738$
PRF-fit source offset from KIC position	<b><math>2.102 \pm 0.623</math></b>	<b>3.37</b>	$0.593 \pm 0.885$	$-2.017 \pm 0.808$
photometric centroid source offset	$2.24 \pm 1.29$	1.73	$-1.67 \pm 1.38$	$1.49 \pm 1.17$

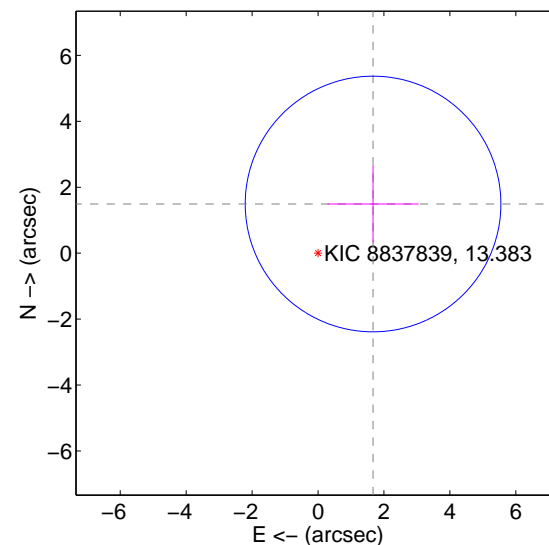
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

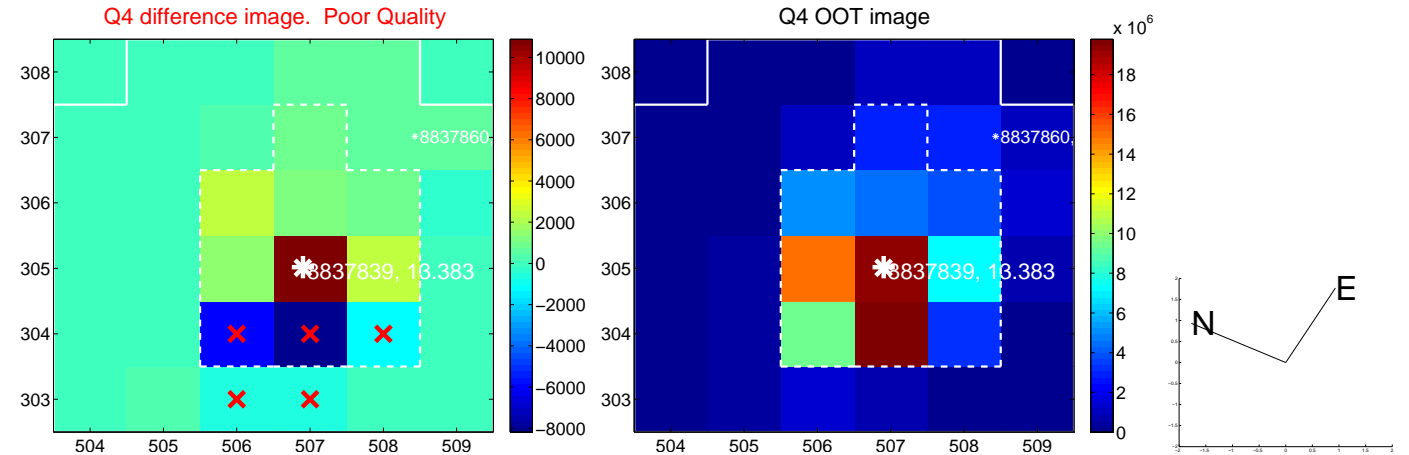
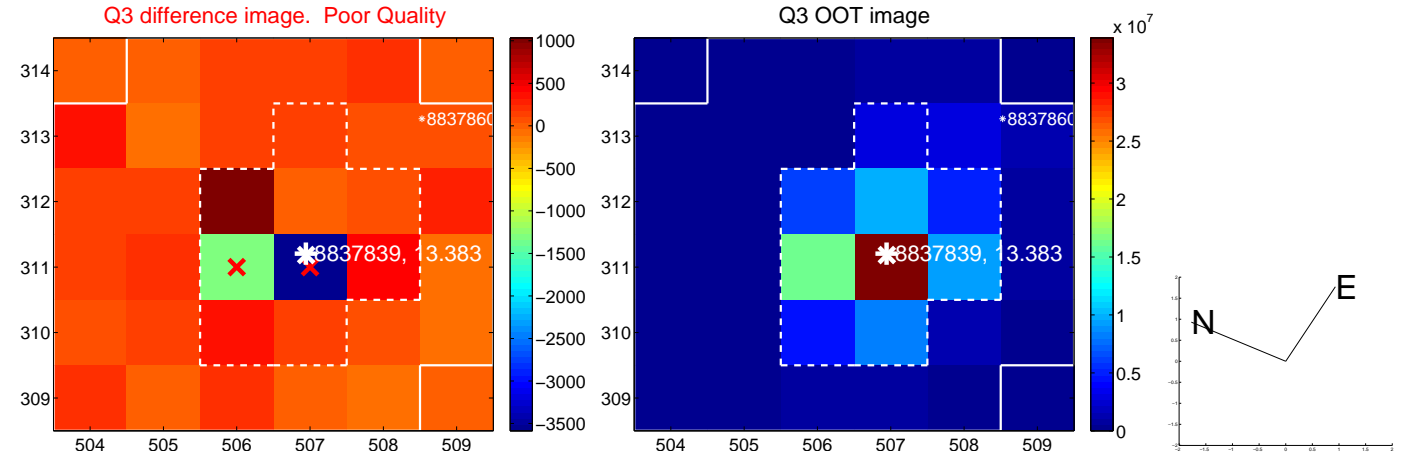
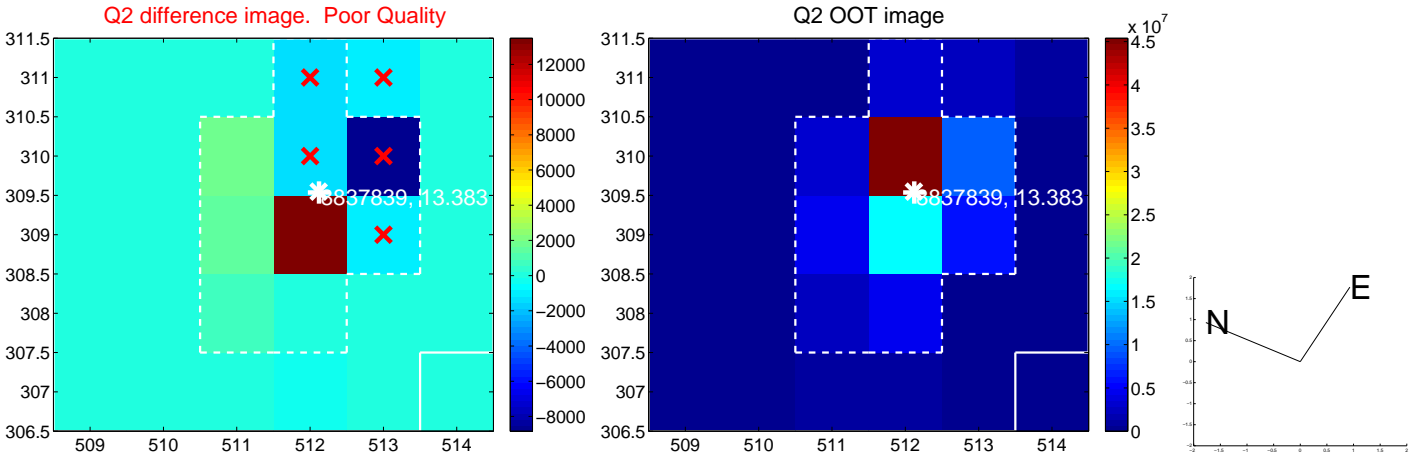
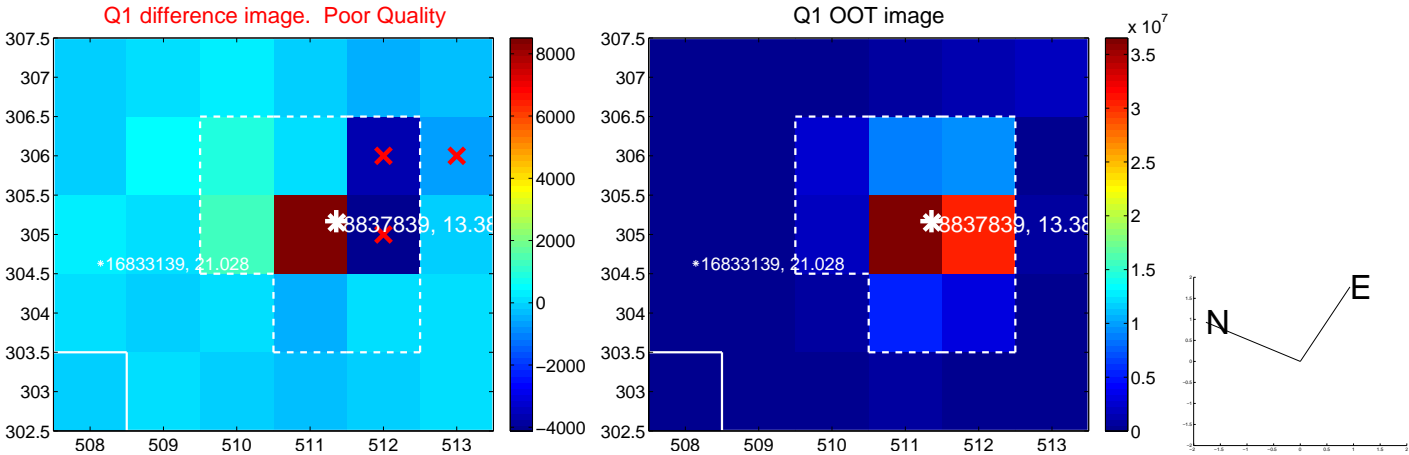


offset from photometric centroids

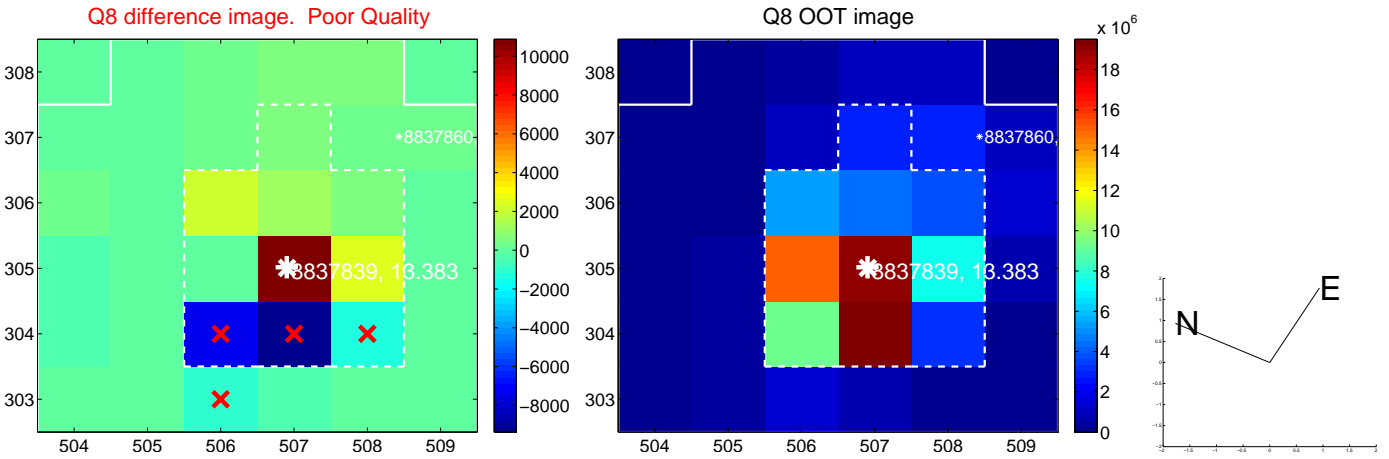
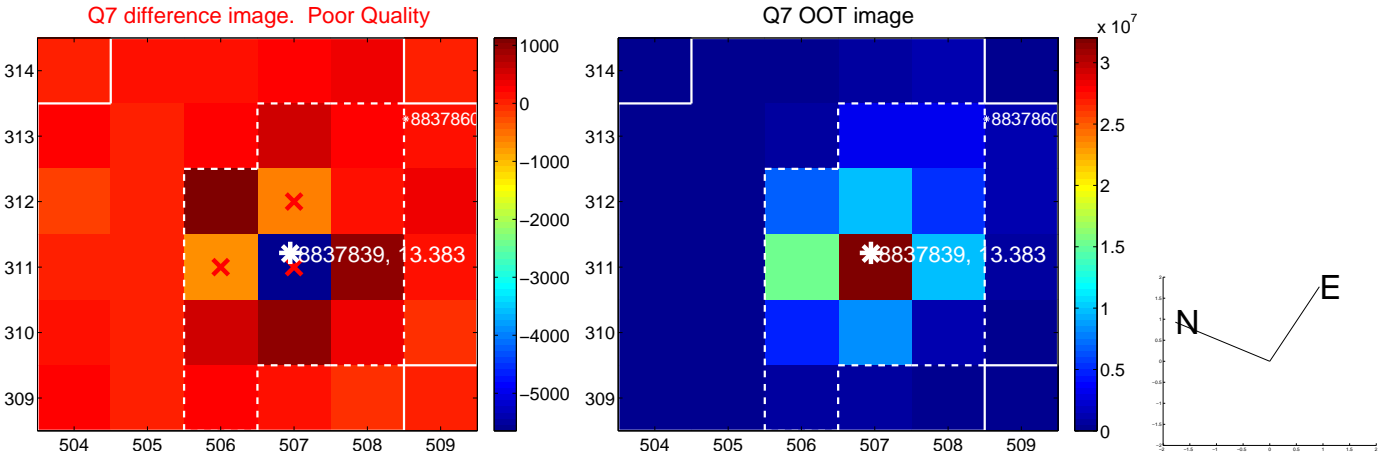
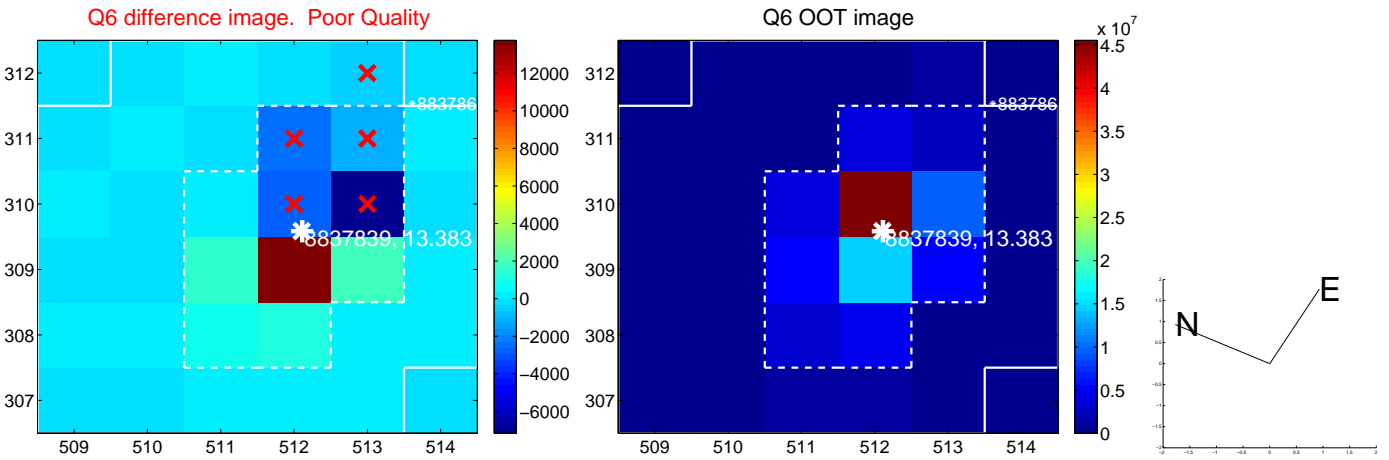
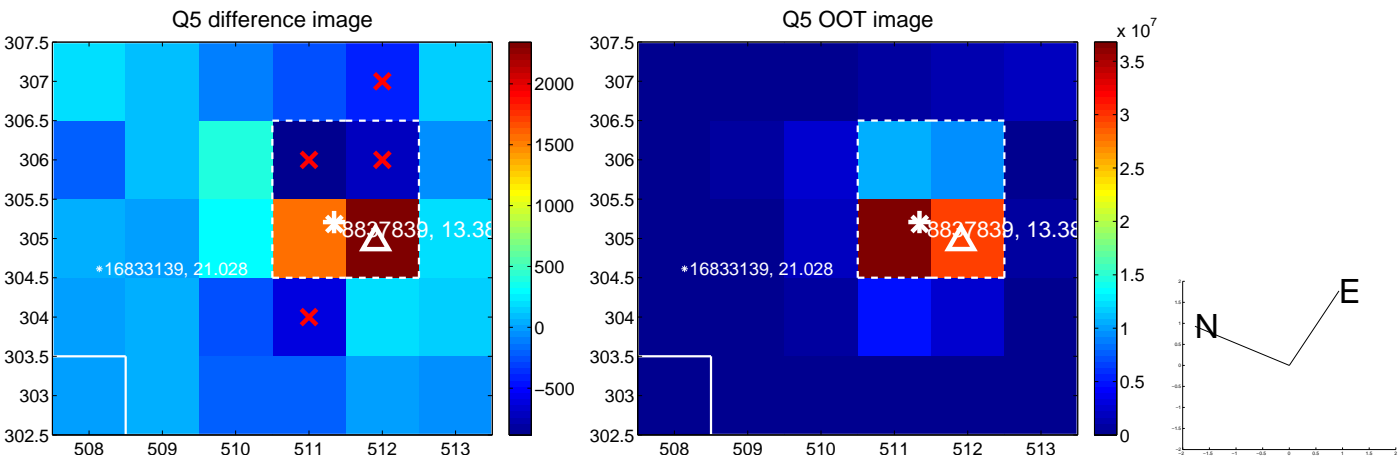


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

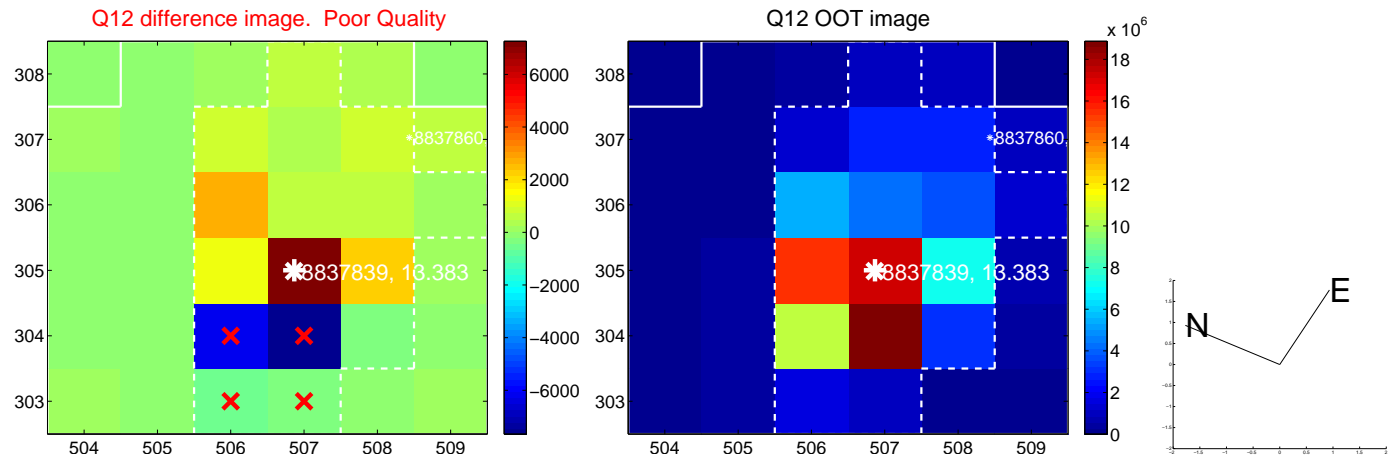
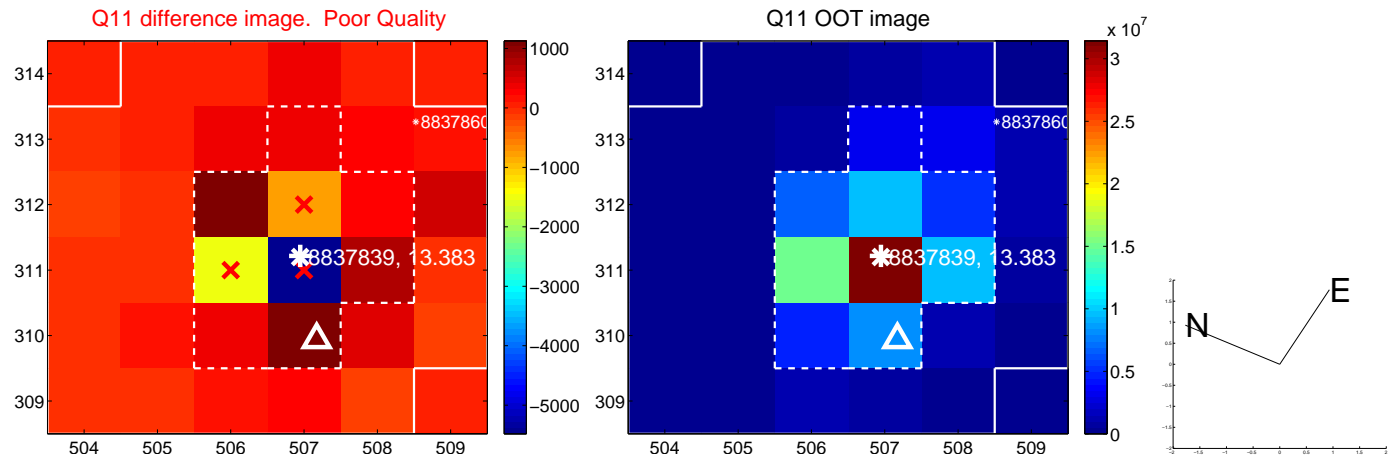
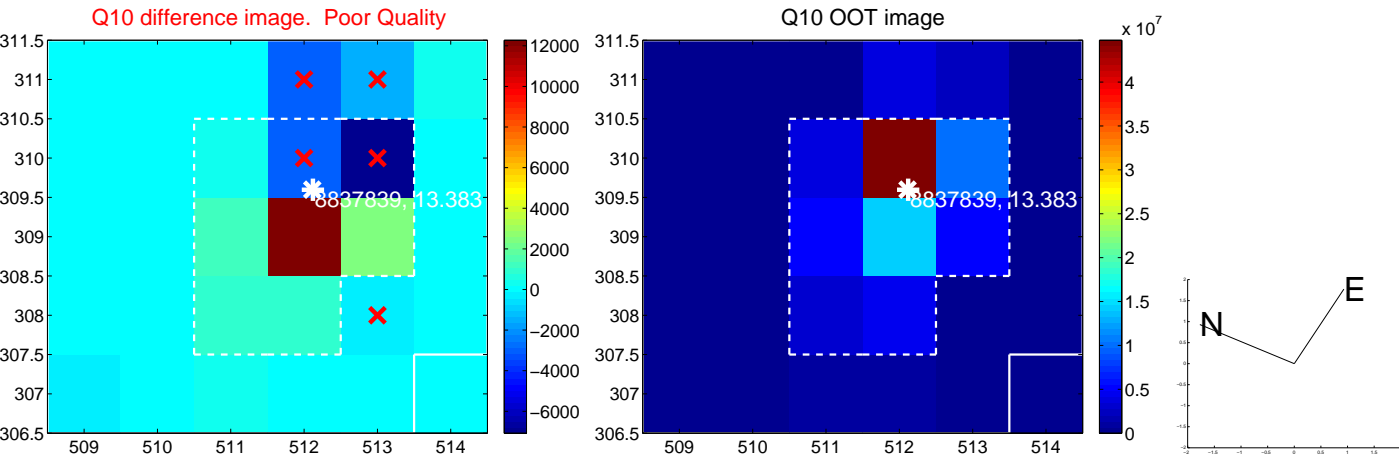
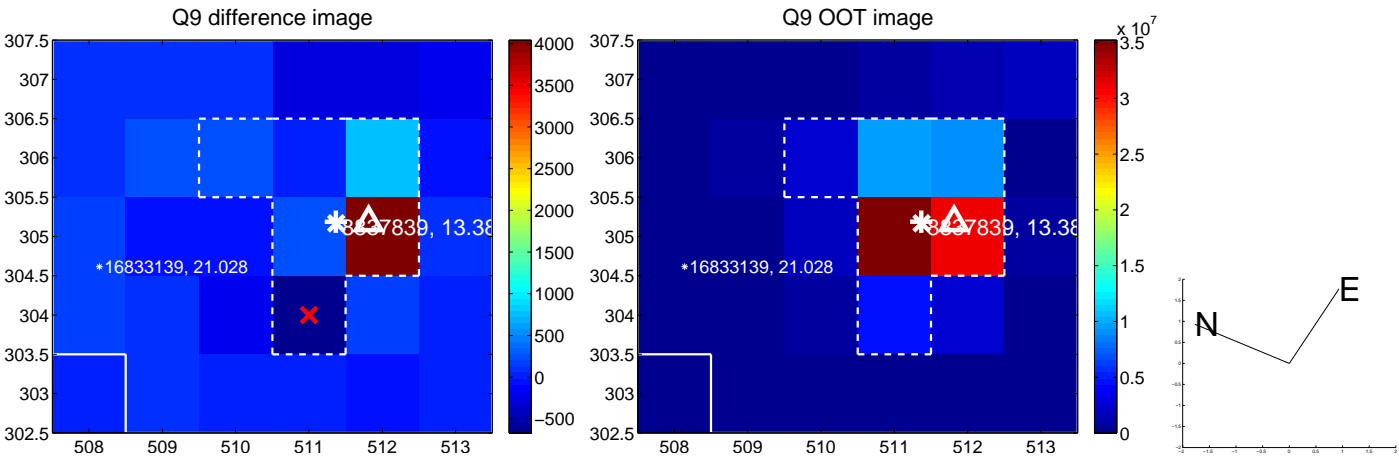


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

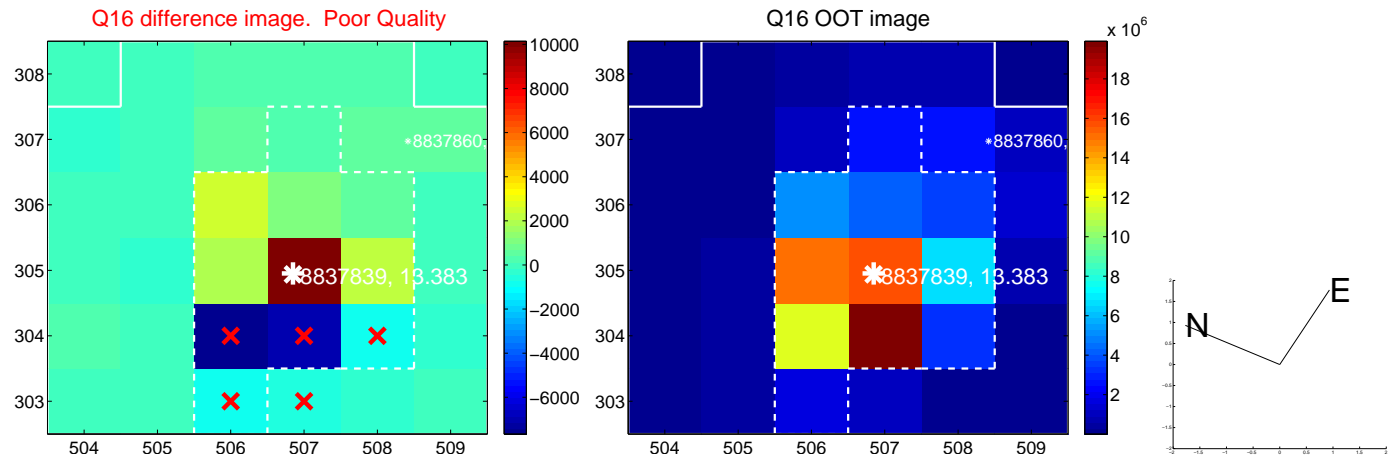
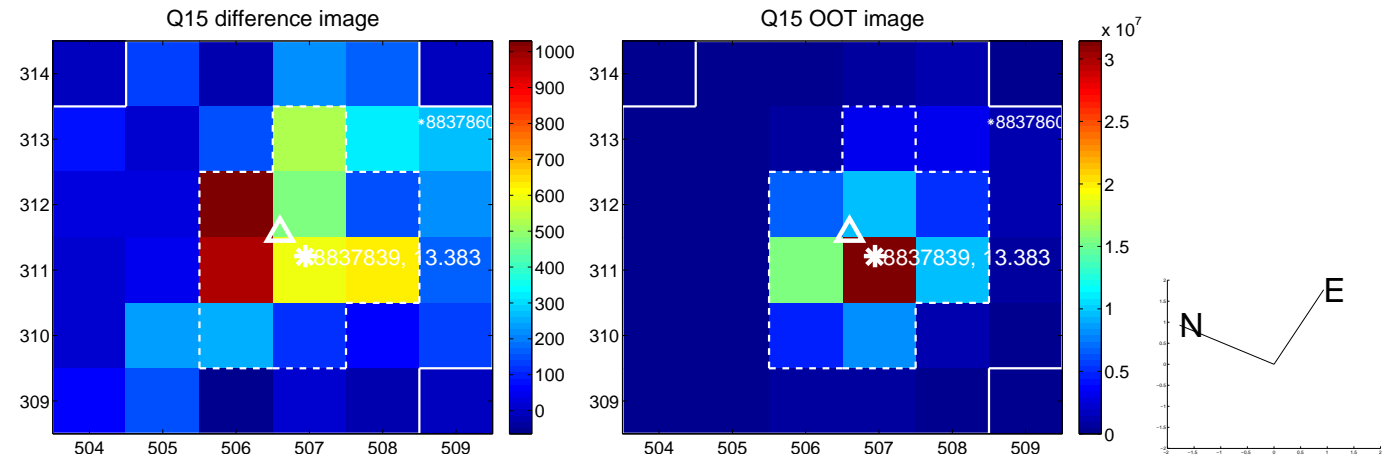
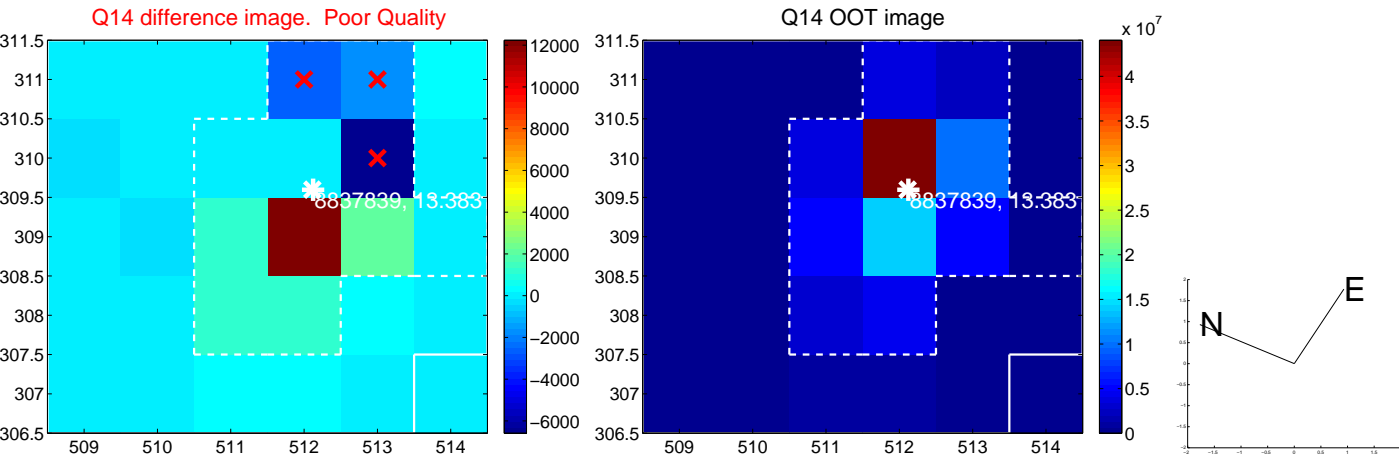
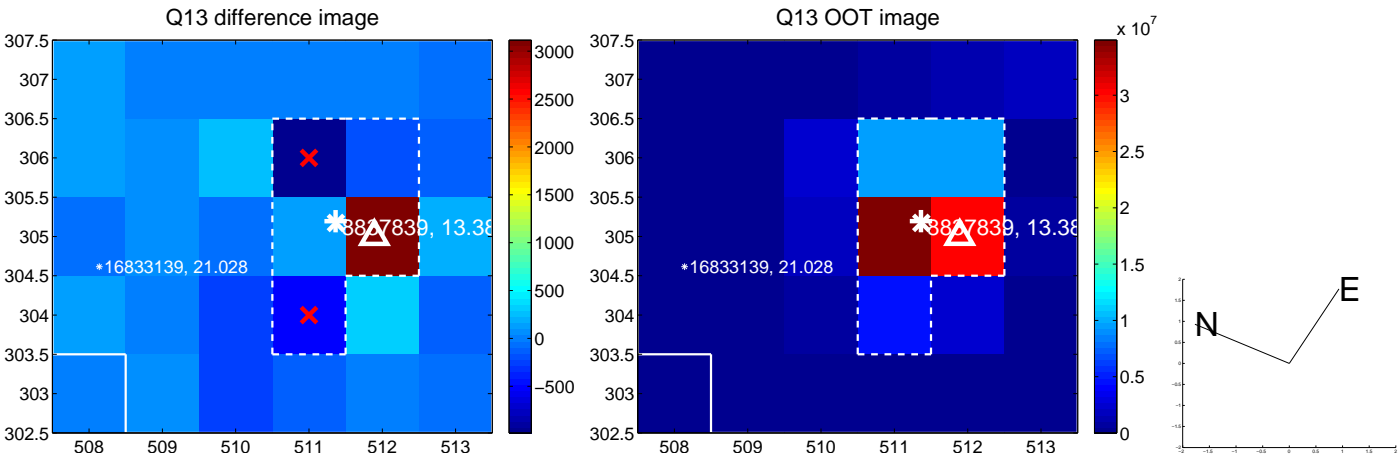




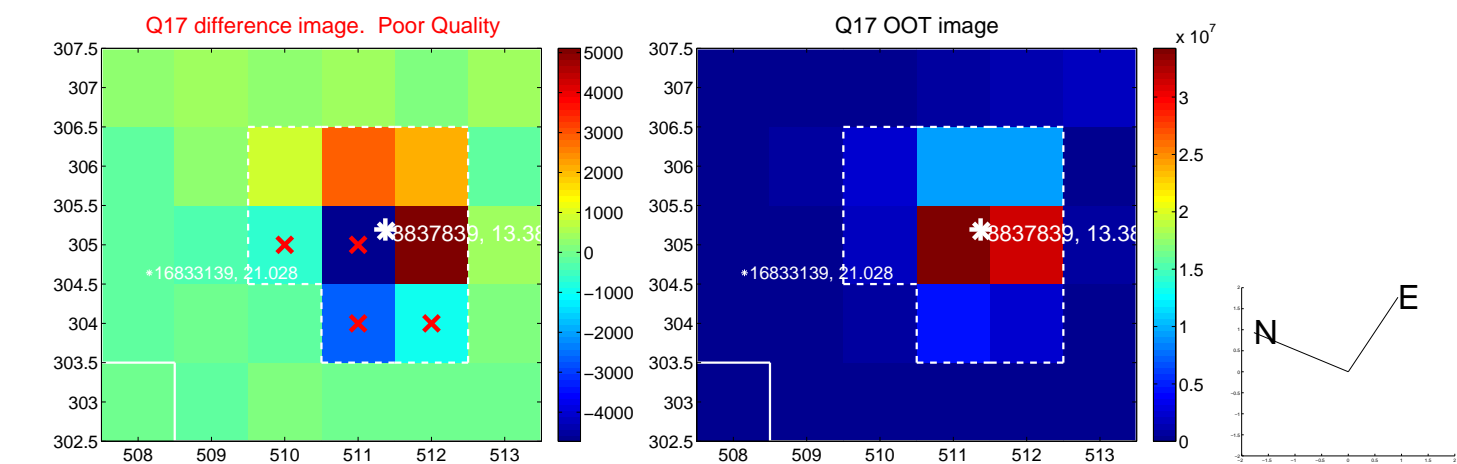
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



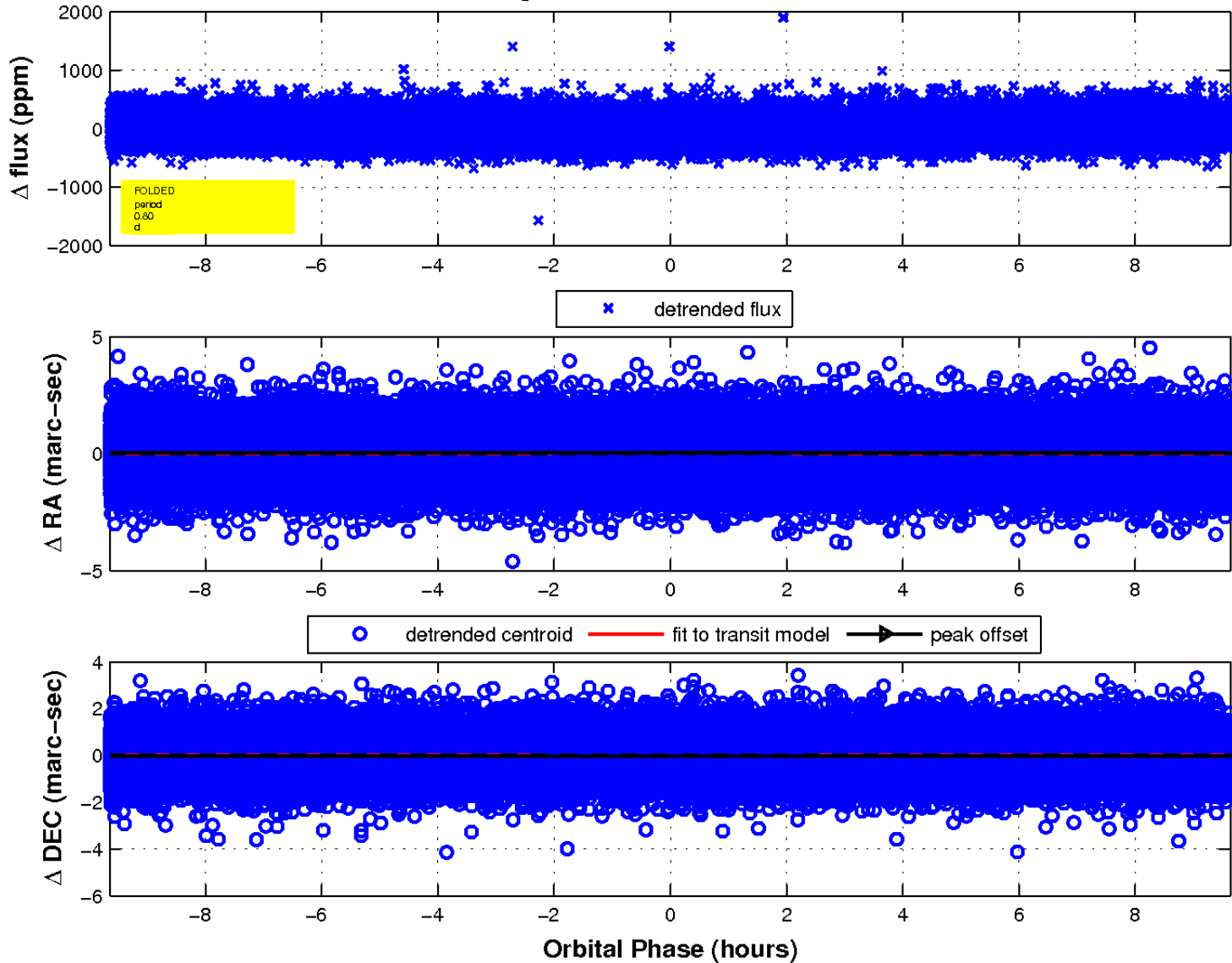
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

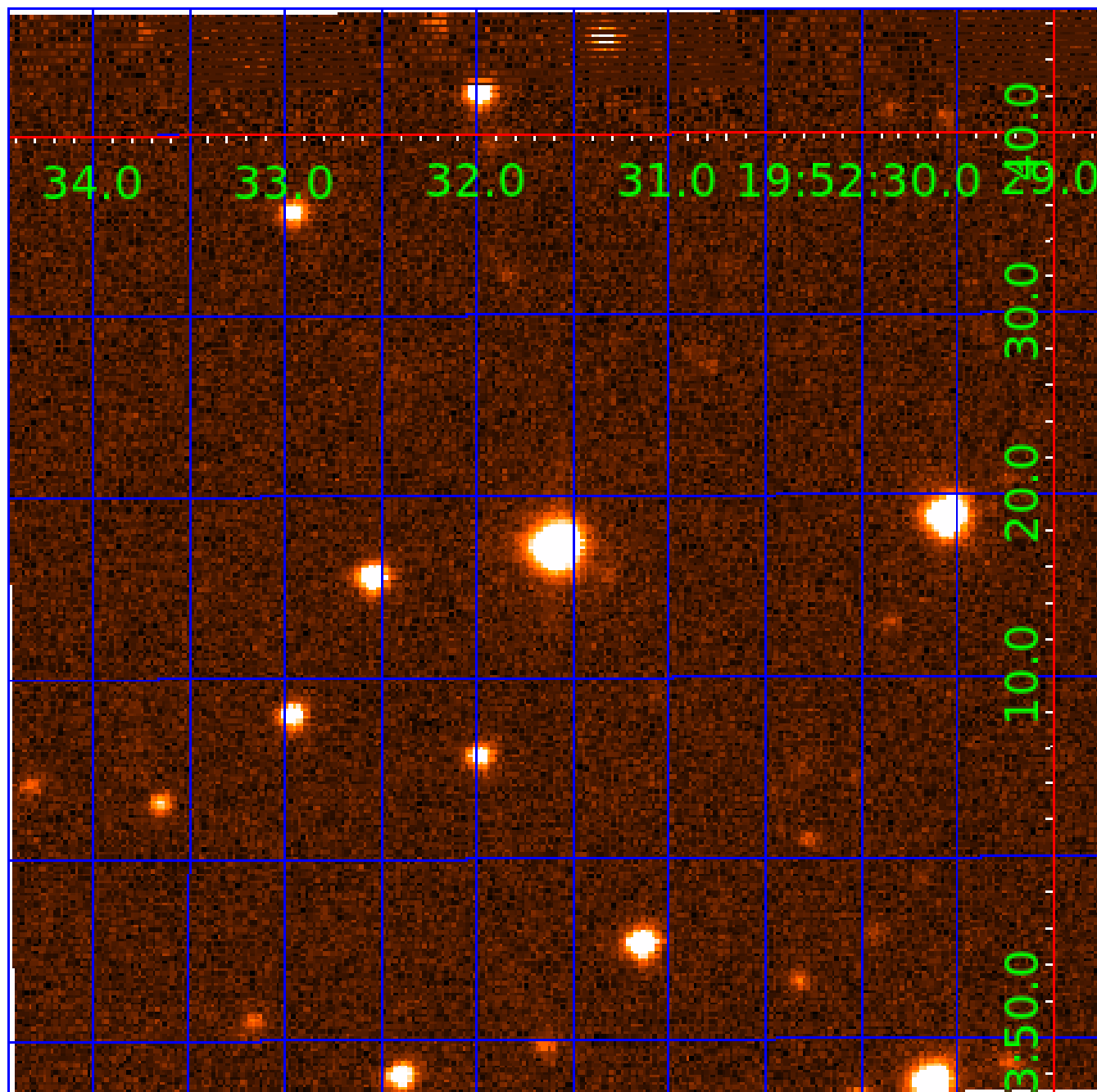


fluxWeightedCentroids, Planet 1 of 8



UKIRT Image

Declination



# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

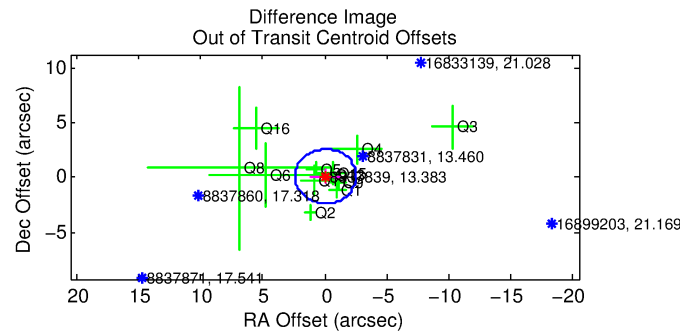
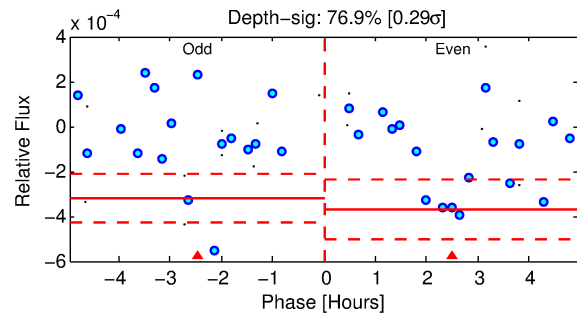
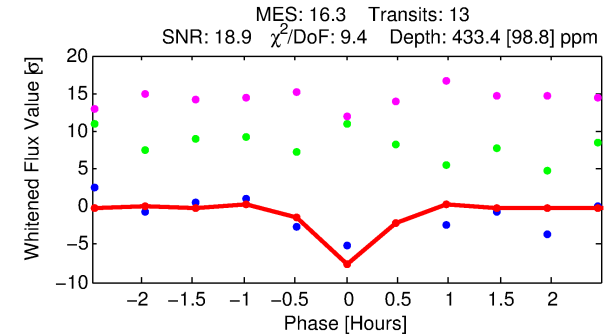
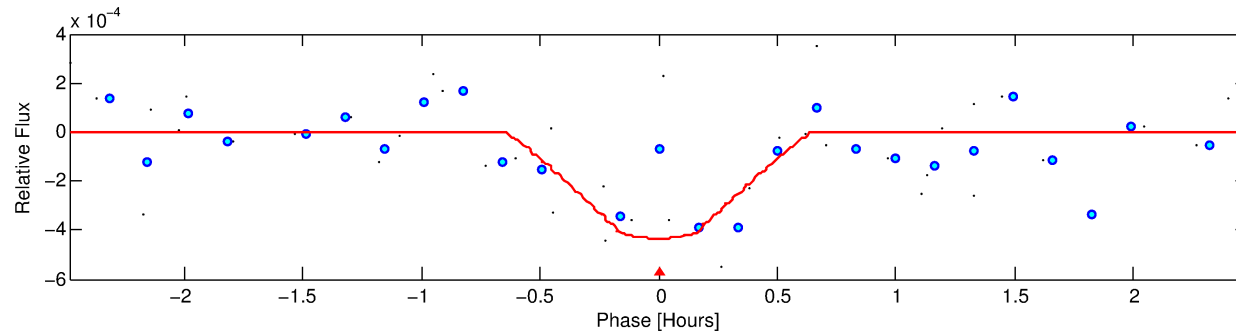
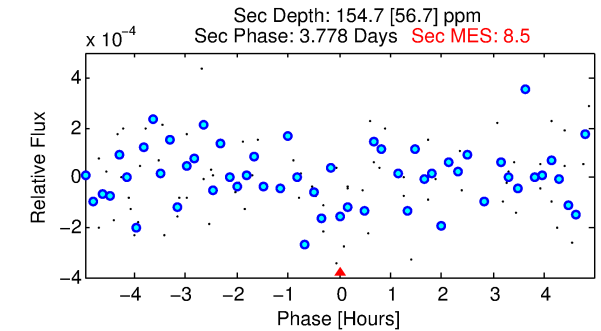
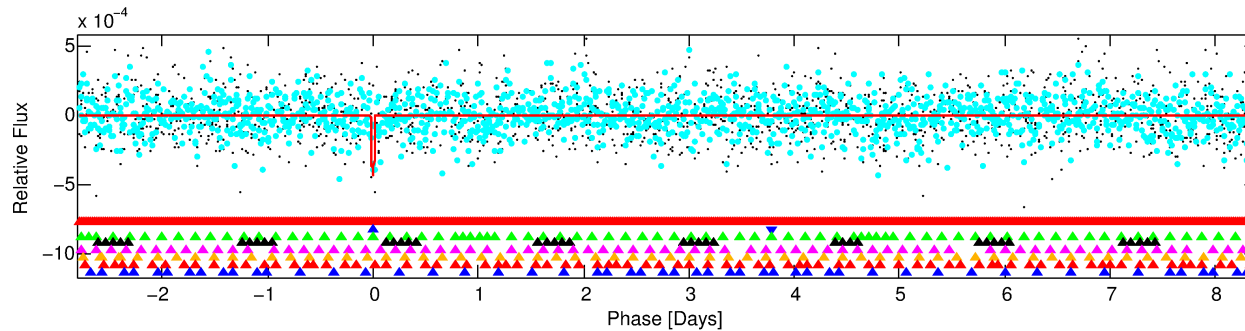
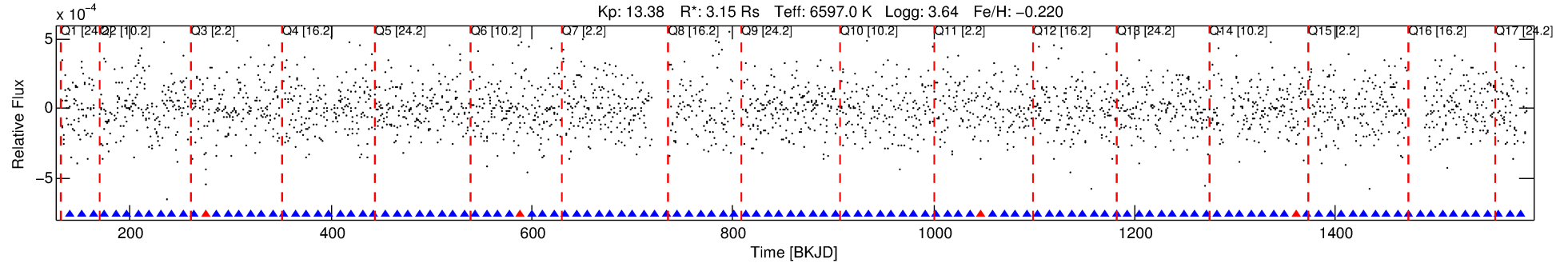
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-02

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 2 of 8 Period: 11.194 d



## DV Fit Results:

Period = 11.19368 [0.00005] d  
Epoch = 140.8675 [0.0033] BKJD  
Rp/R\* = 0.0194 [0.0328]  
a/R\* = 105.34 [926.29]  
b = 0.01 [1227.46]  
Seff = 1296.58 [754.15]  
Teq = 1530 [222] K  
Rp = 6.69 [11.56] Re  
a = 0.1141 [0.0410] AU  
Ag = 24.77 [85.25] [0.28 $\sigma$ ]  
Teffp = 5278 [4482] K [0.84 $\sigma$ ]

## DV Diagnostic Results:

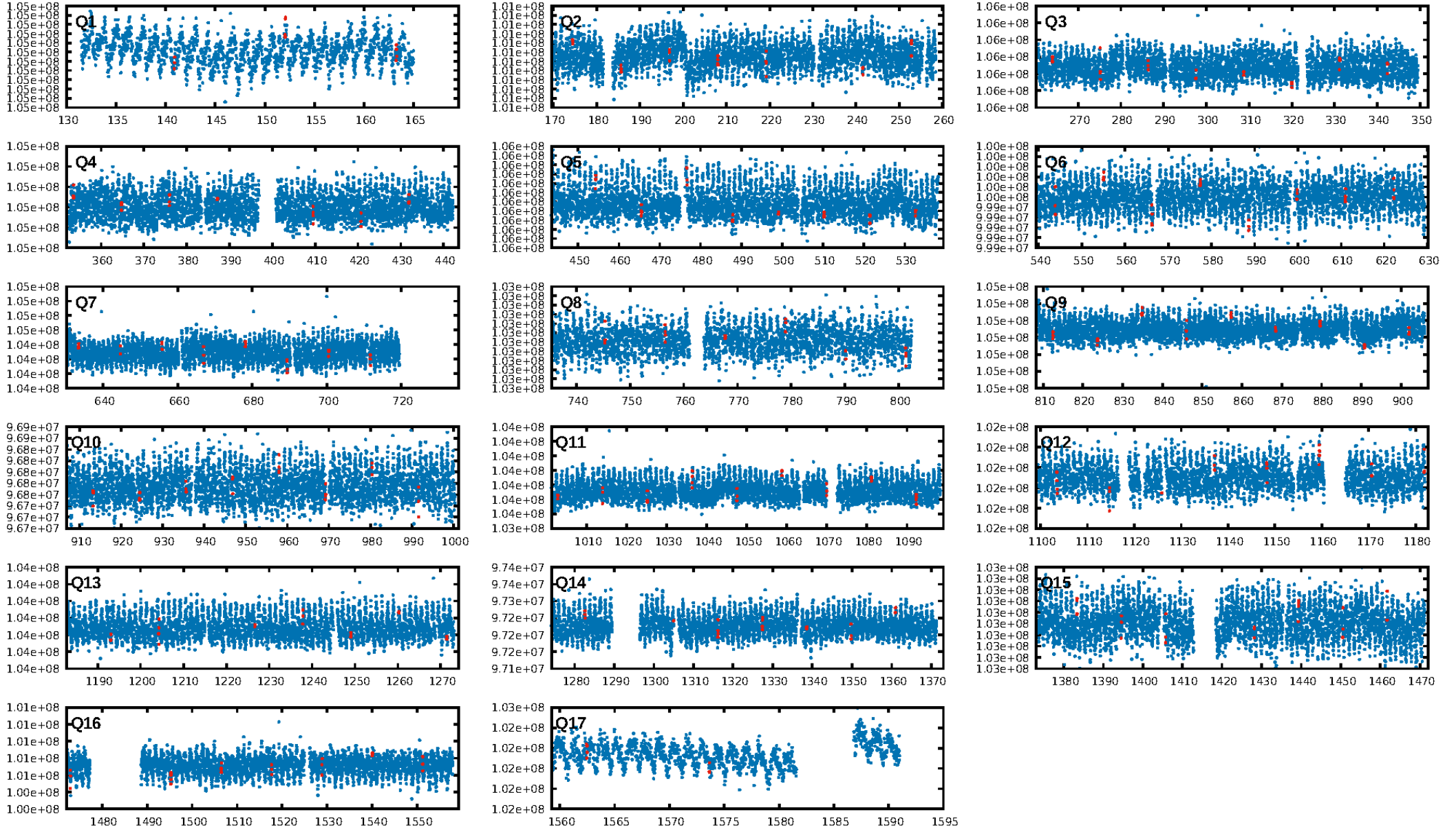
ShortPeriod-sig: 100.0% [41.11 $\sigma$ ]  
LongPeriod-sig: 100.0% [107.71 $\sigma$ ]  
ModelChiSquare2-sig: 0.4%  
ModelChiSquareGof-sig: 12.4%  
Bootstrap-pfa: 1.57e-16  
RollingBand-fgt: 0.69 [9/13]  
GhostDiagnostic-chr: -0.3388  
Centroid-sig: 0.3%  
Centroid-so: 1.114 arcsec [2.78 $\sigma$ ]  
OotOffset-rm: 0.138 arcsec [0.17 $\sigma$ ]  
KicOffset-rm: 0.191 arcsec [0.26 $\sigma$ ]  
OotOffset-st: 2/3/3/4 [12]  
KicOffset-st: 2/3/3/4 [12]  
DiffImageQuality-fgm: 0.25 [3/12]  
DiffImageOverlap-fno: 0.53 [9/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:00 Z

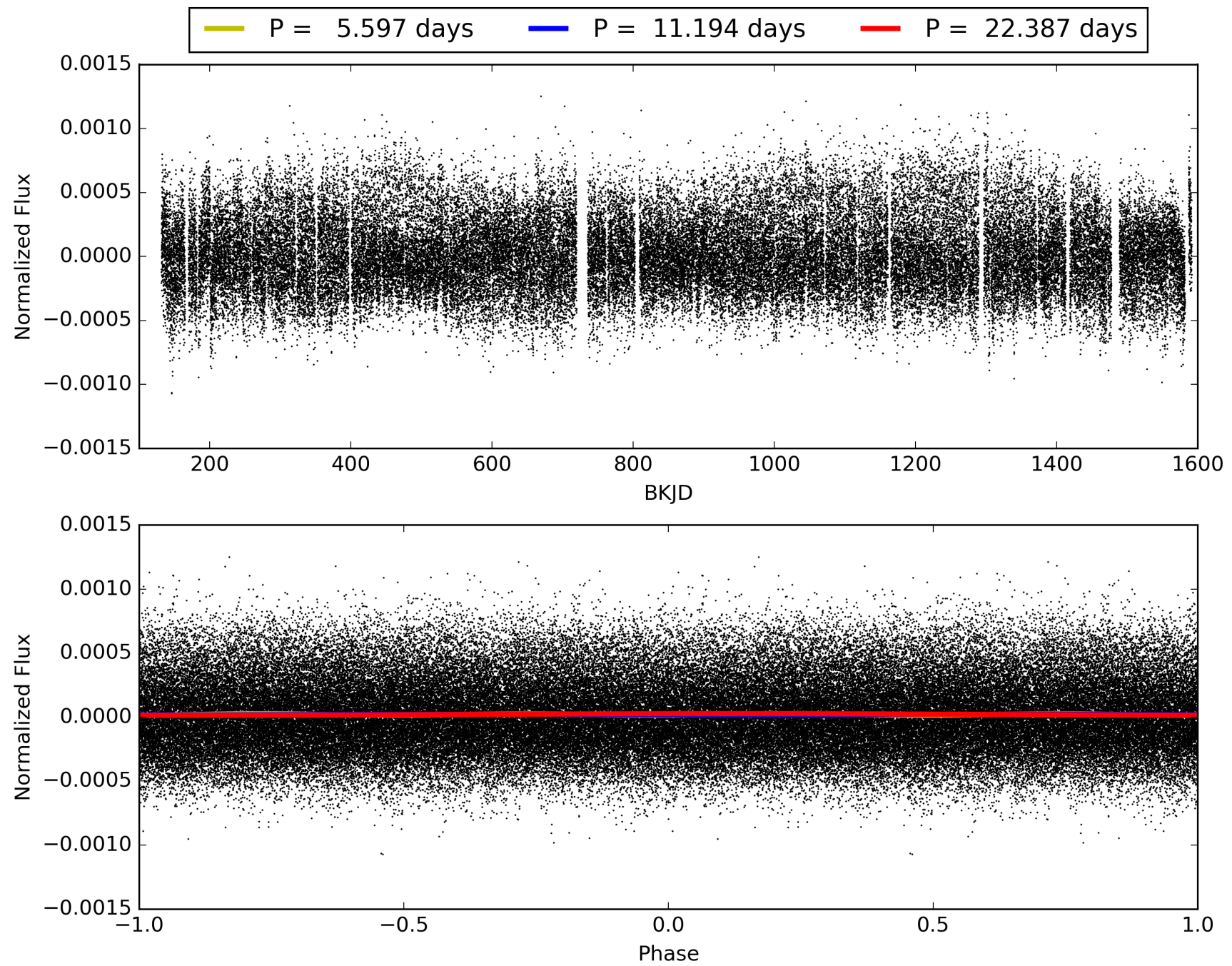
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008837839-02, PDC Light Curves

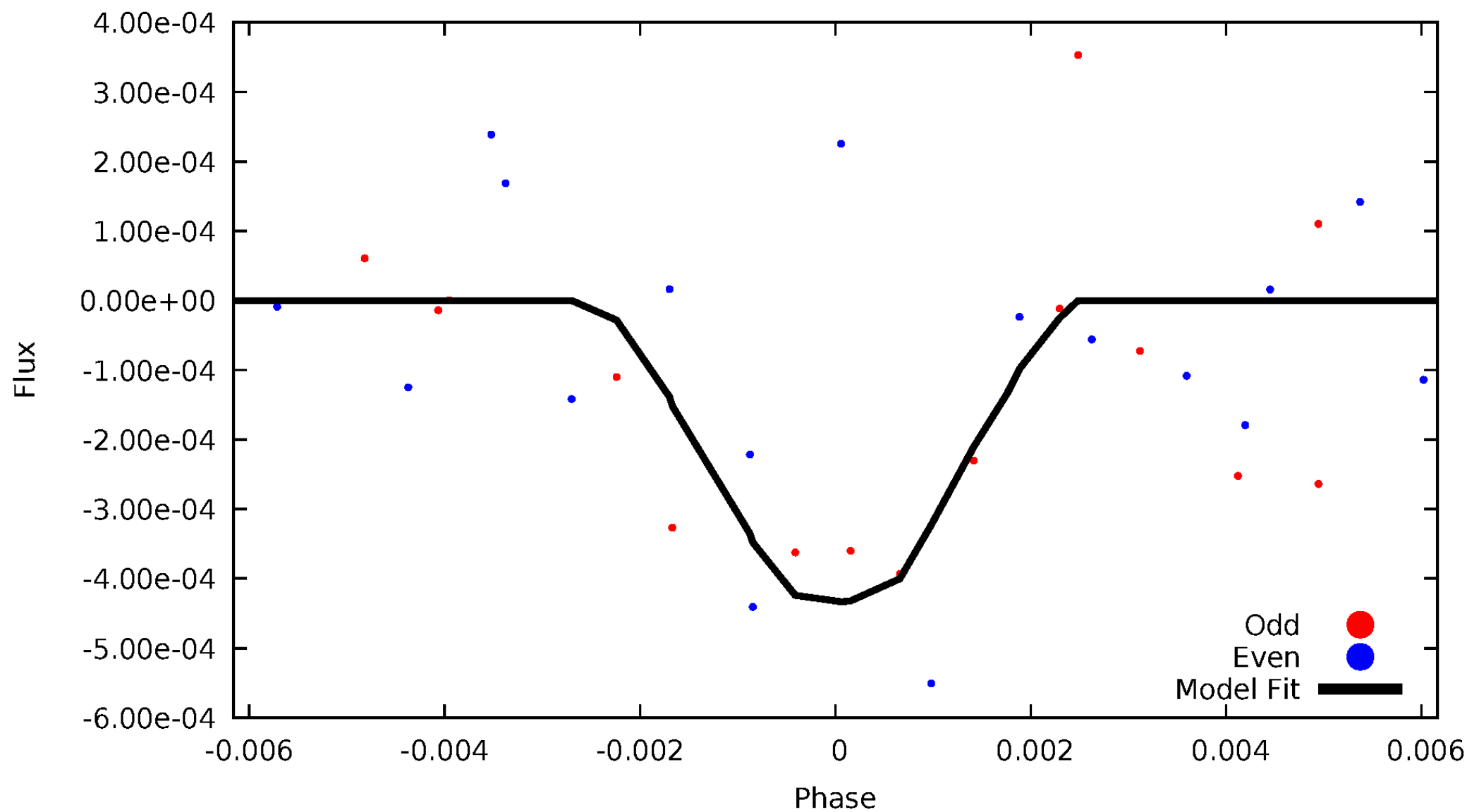


TCE 008837839-02



# DV Odd/Even

TCE 008837839-02



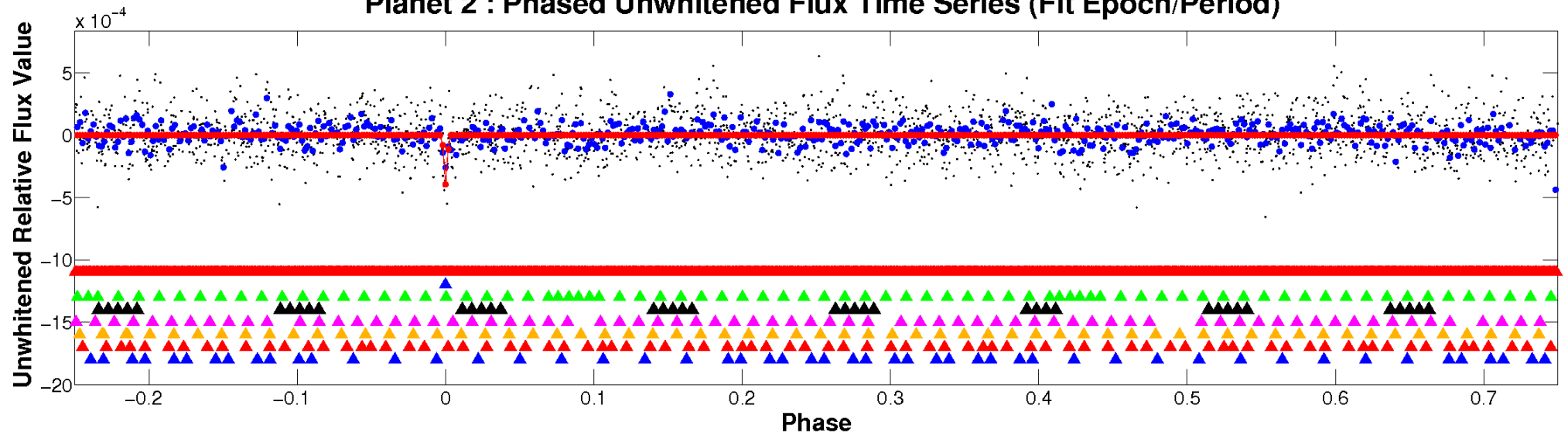


ALT Odd/Even

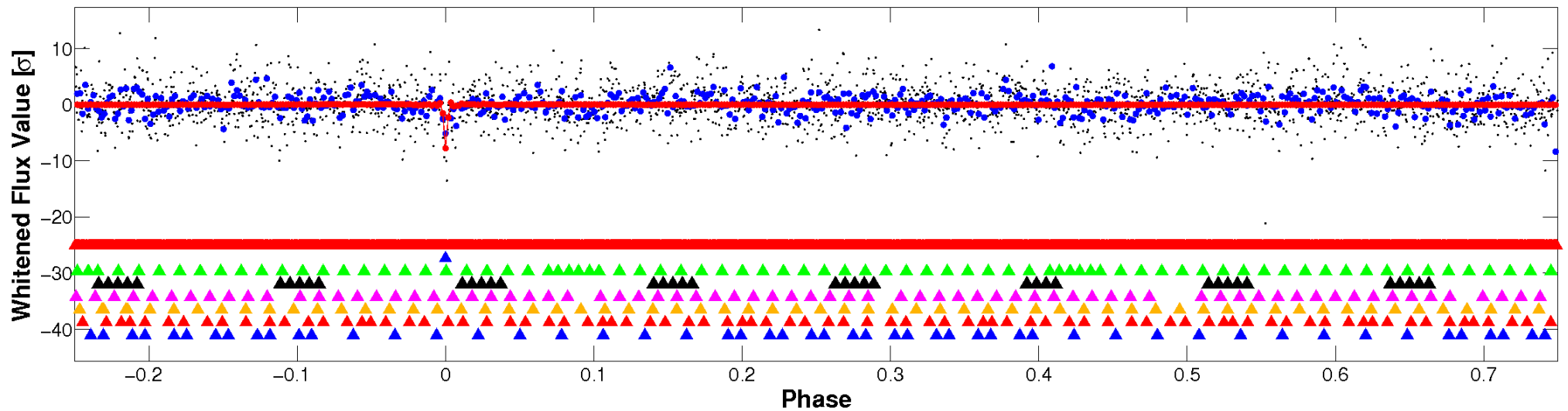
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



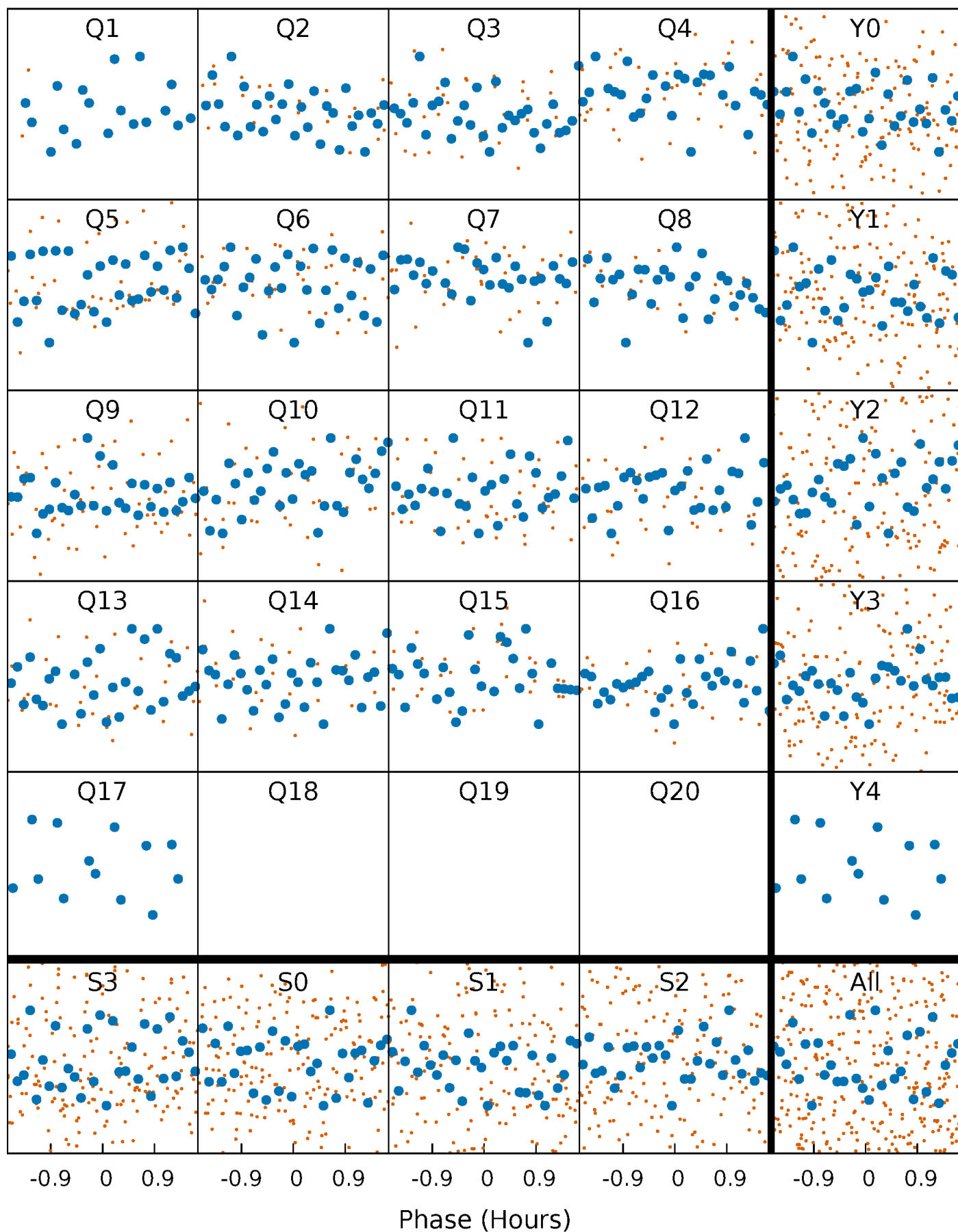
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





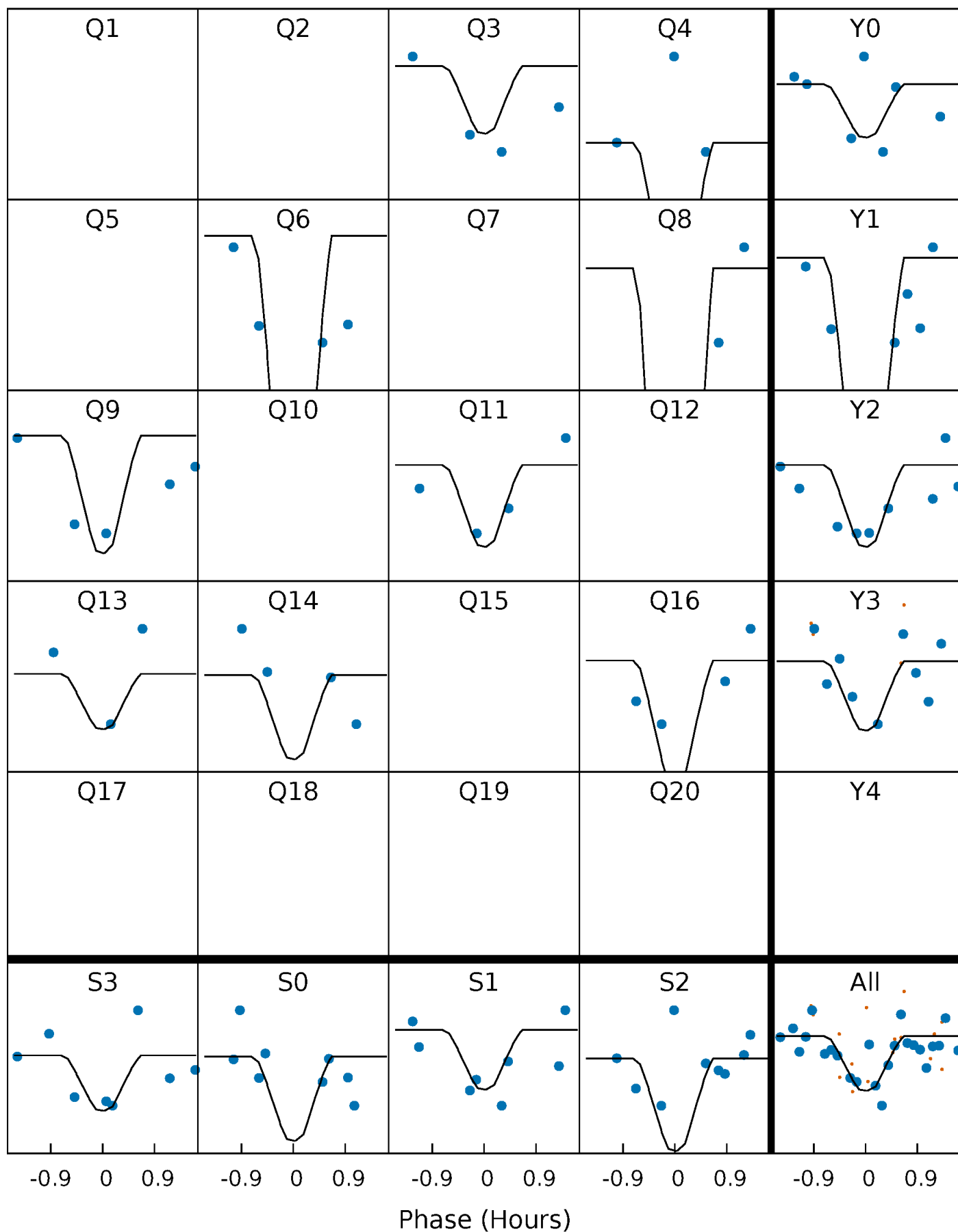
# PDC Quarter-Phased Transit Curves

TCE 008837839-02   P= 11.193676 Days    $T_0=140.867514$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008837839-02 P= 11.193676 Days  $T_0=140.867514$  (BKJD)

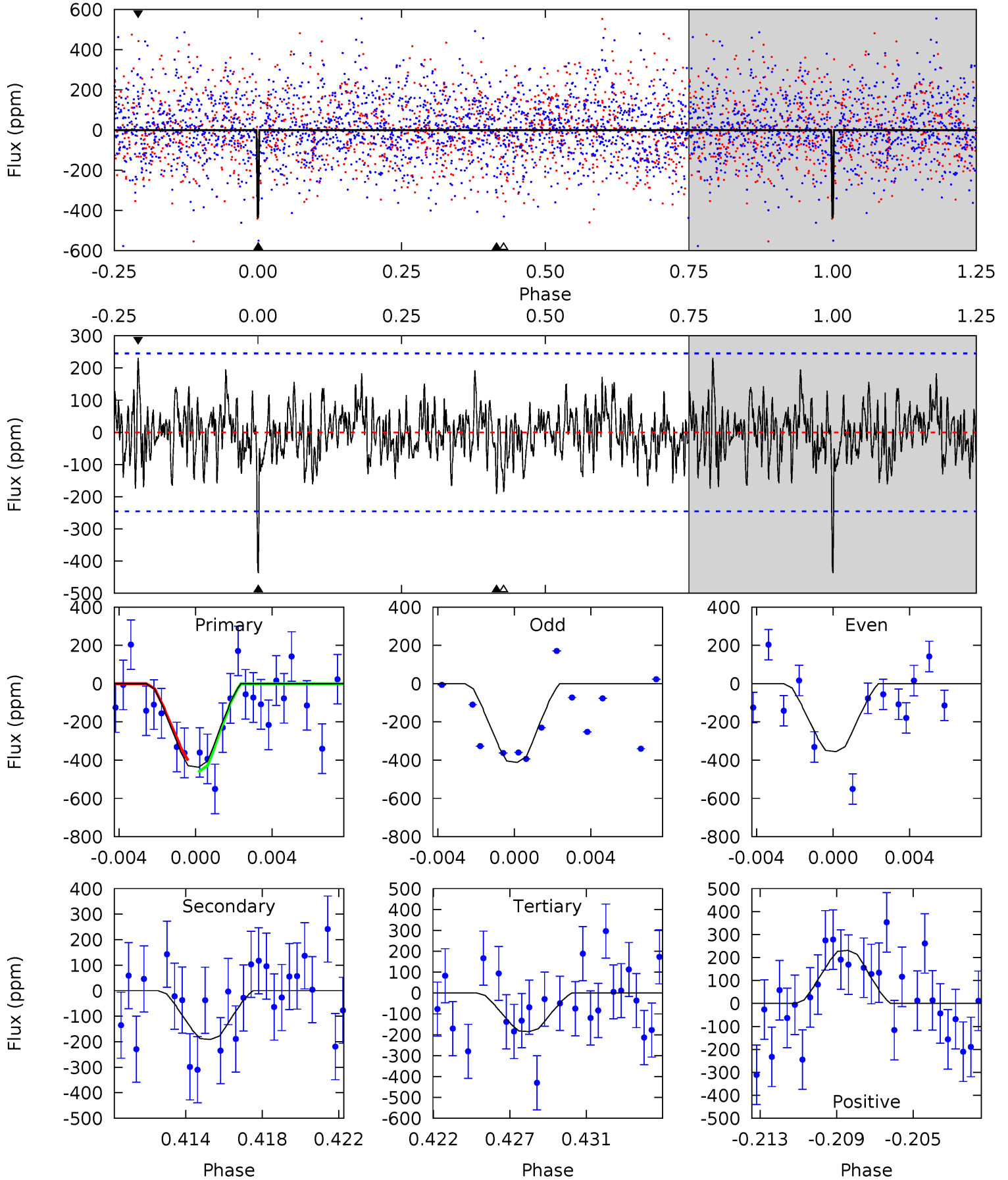


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008837839-02, P = 11.193676 Days, E = 129.673838 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
9.25	4.05	3.91	4.89	5.19	2.86	1.41	5.34	4.36	0.14	-0.84	0.60	0.76	0.35	0.62



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-191 \pm 47$	$10.11^{+9.22}_{-7.17}$	$2092^{+114}_{-175}$	$4470^{+3793}_{-910}$	$13^{+147}_{-10}$
Alt.	N/A	N/A	N/A	N/A	N/A

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



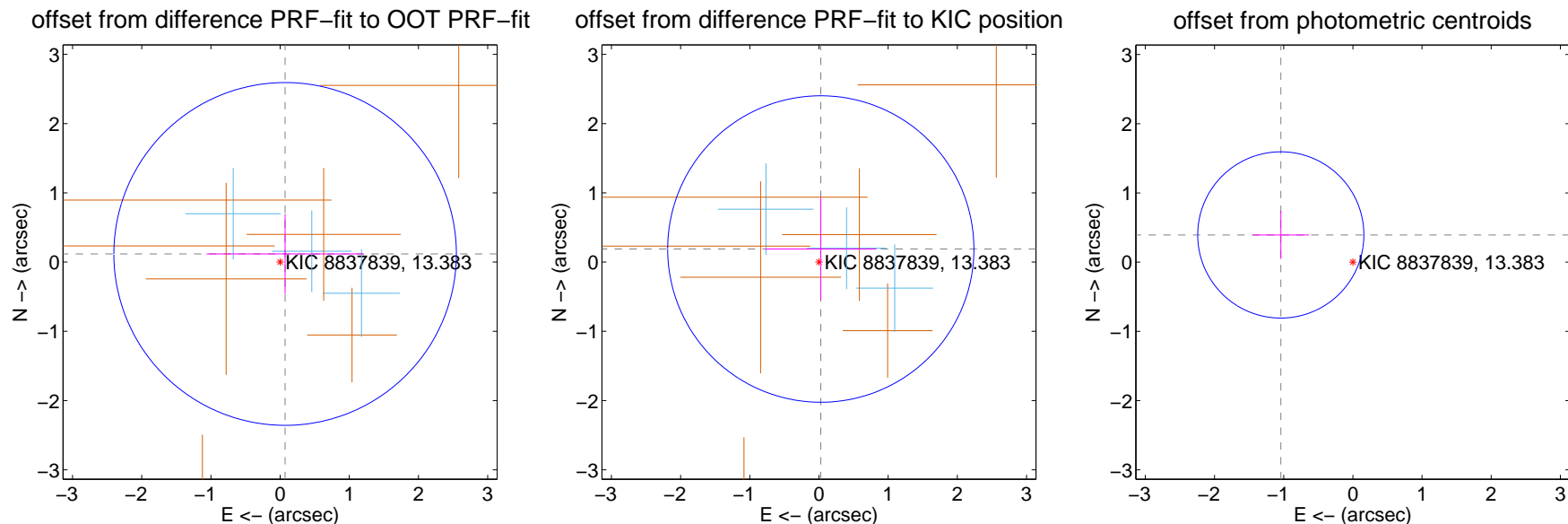
## DV Centroid Data

Supplemental centroid analysis for 008837839-02. Kepler magnitude: 13.38. Transit SNR 18.86

There are 3 quarters with good PRF difference image offsets

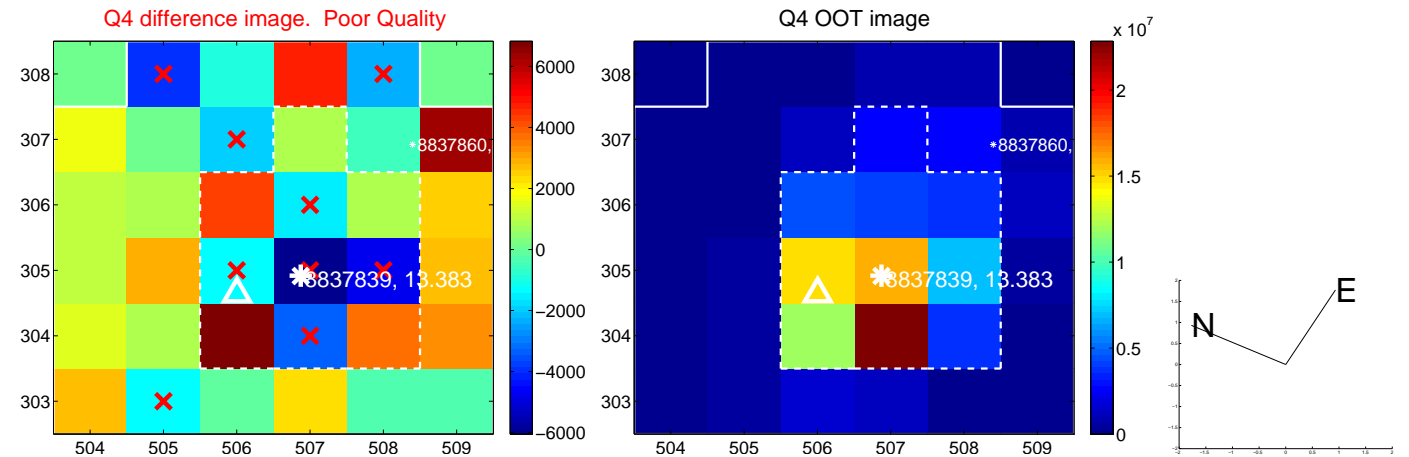
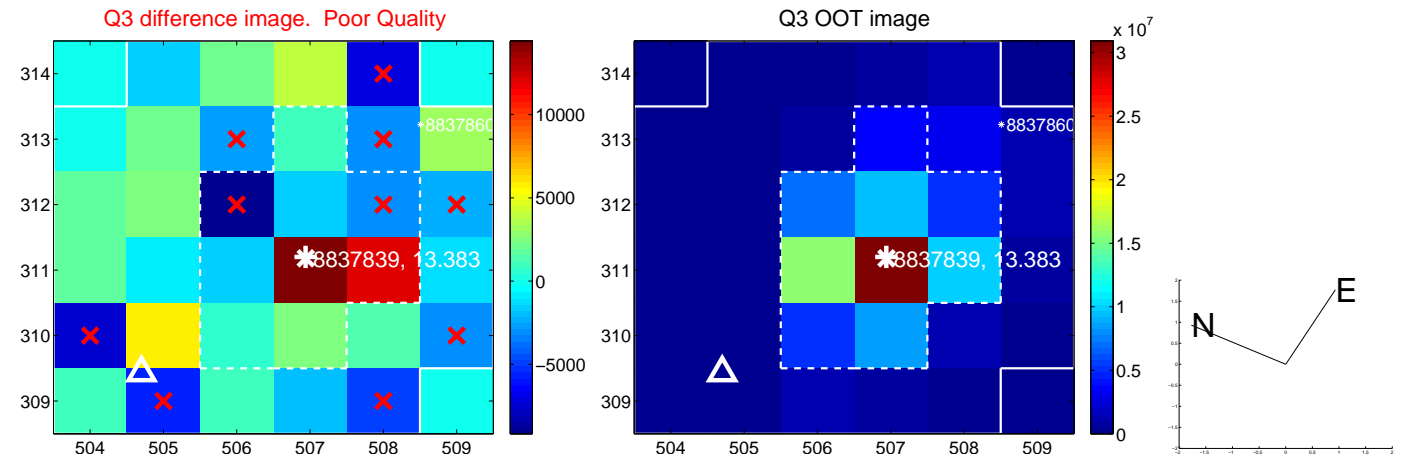
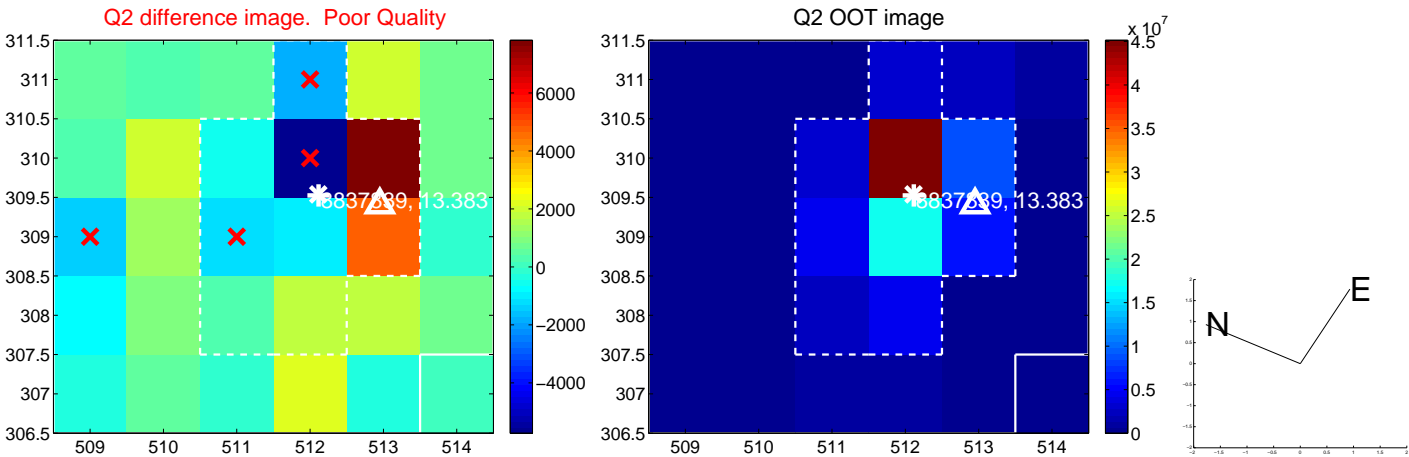
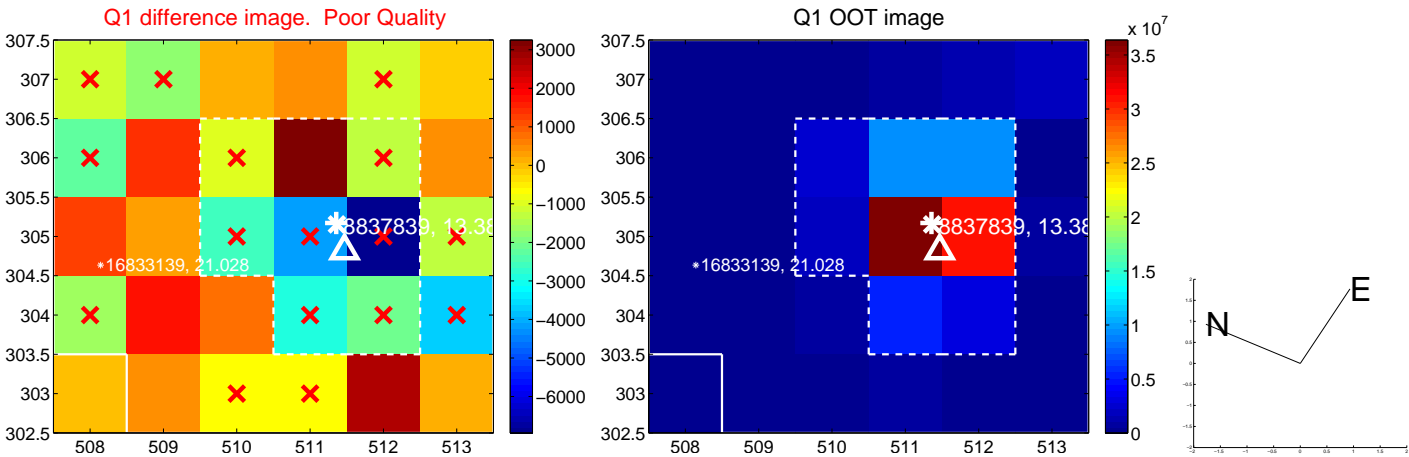
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.138 \pm 0.825$	0.17	$-0.072 \pm 1.135$	$0.118 \pm 0.576$
PRF-fit source offset from KIC position	$0.191 \pm 0.738$	0.26	$-0.026 \pm 0.802$	$0.189 \pm 0.736$
photometric centroid source offset	$1.11 \pm 0.40$	2.78	$1.04 \pm 0.41$	$0.39 \pm 0.35$

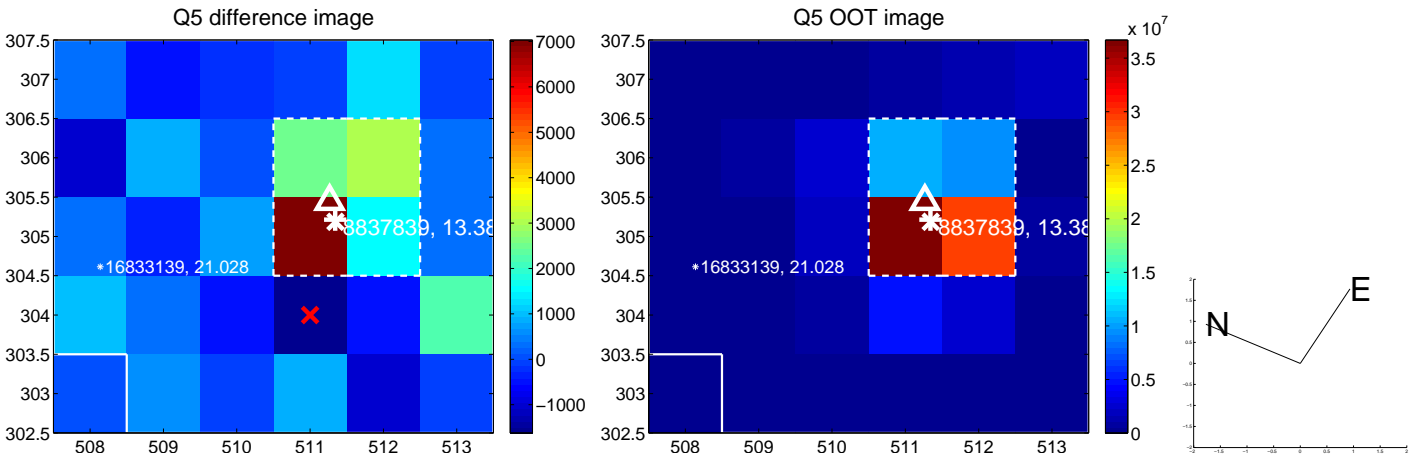


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

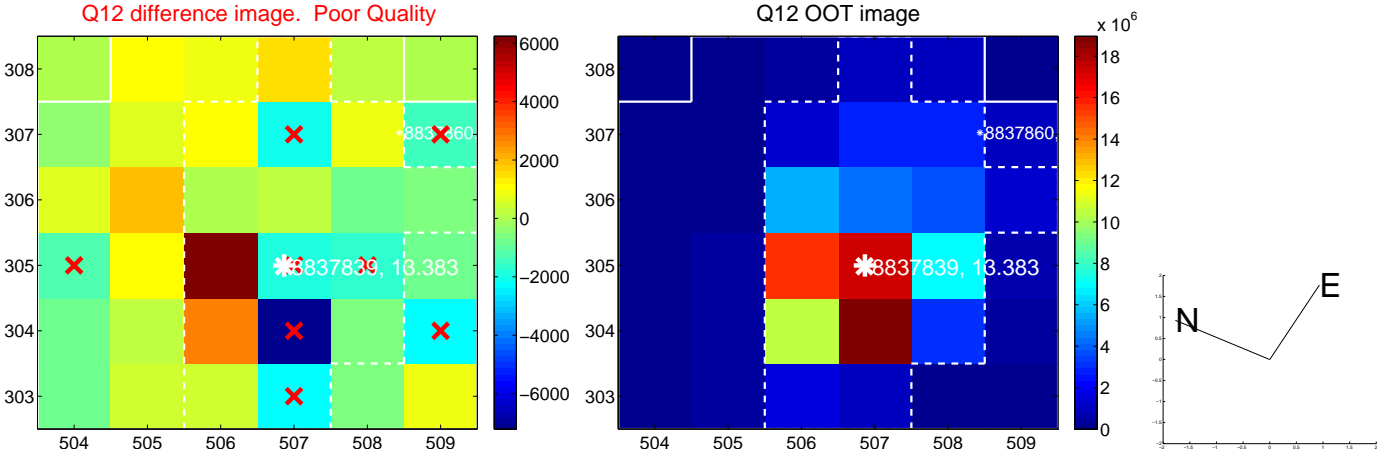
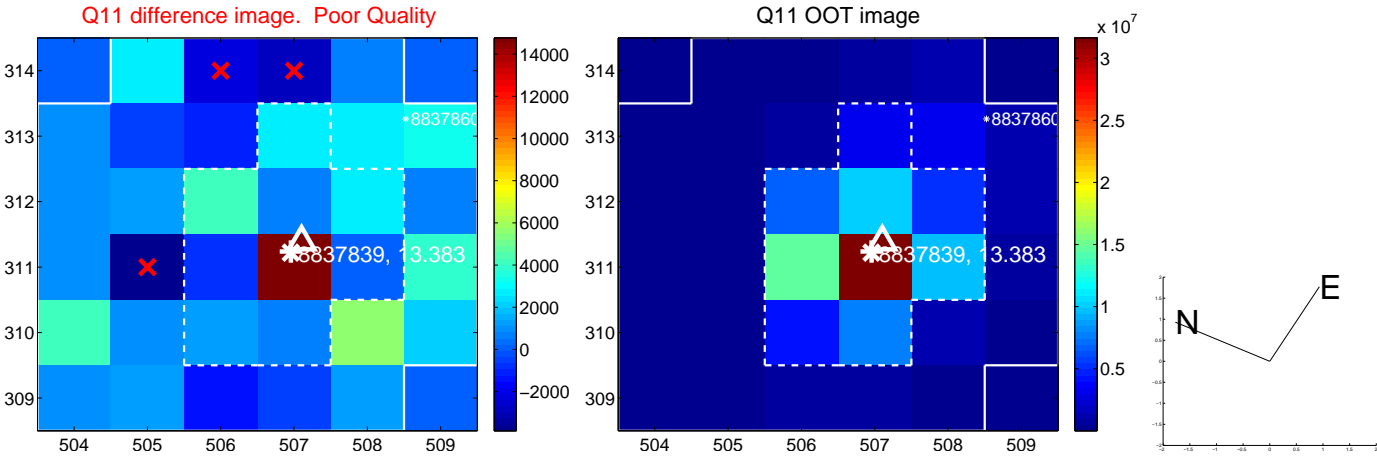
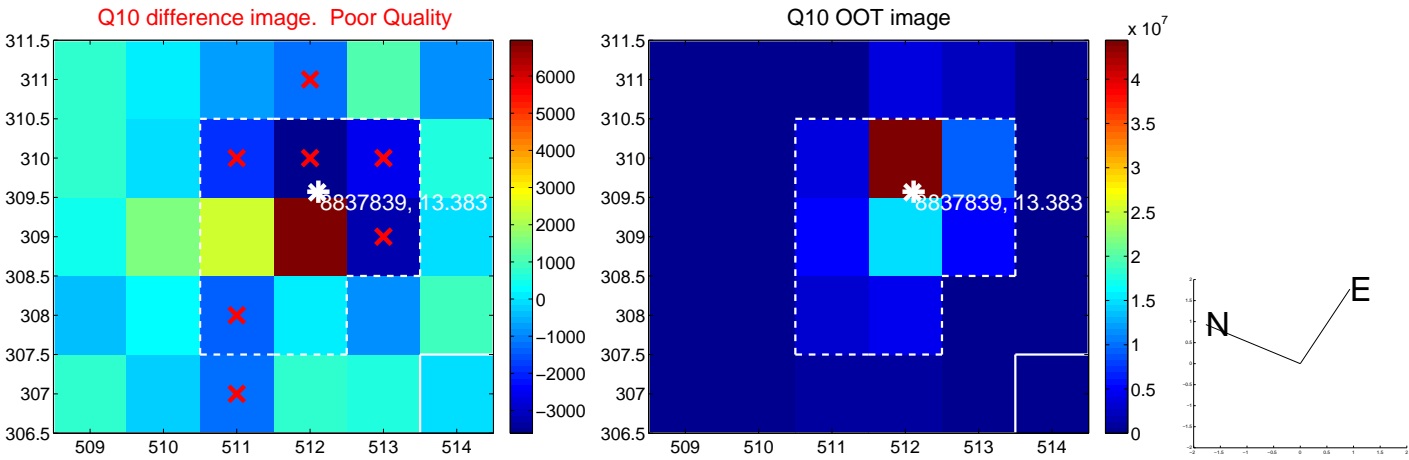
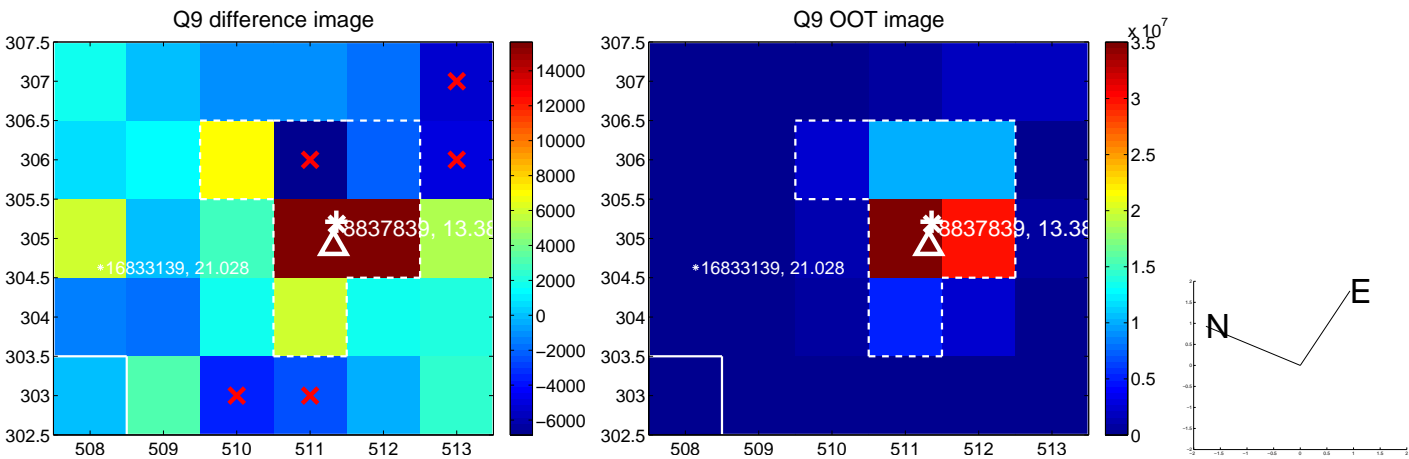
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

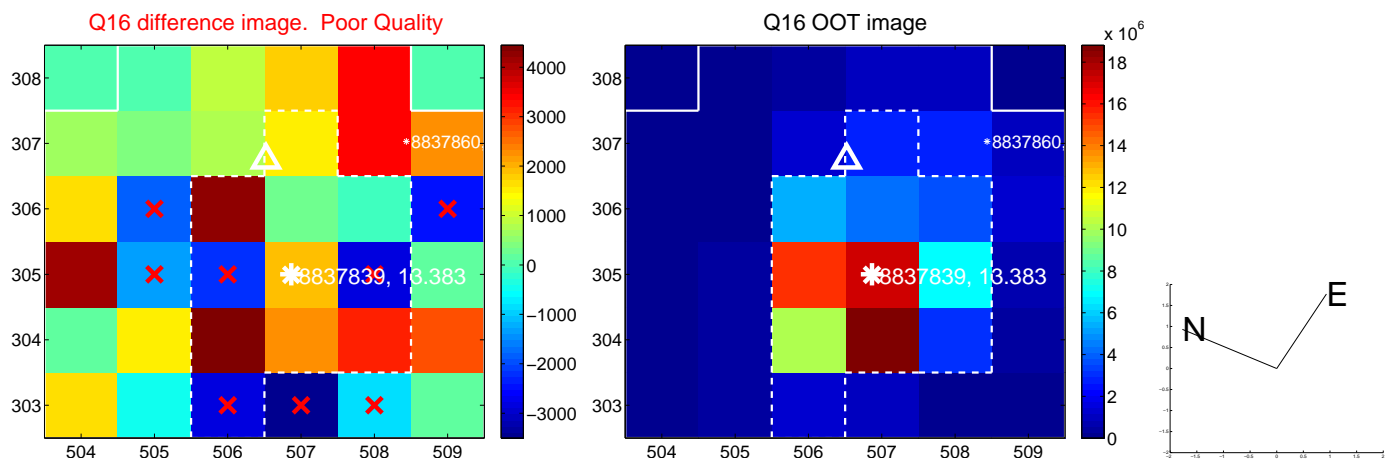
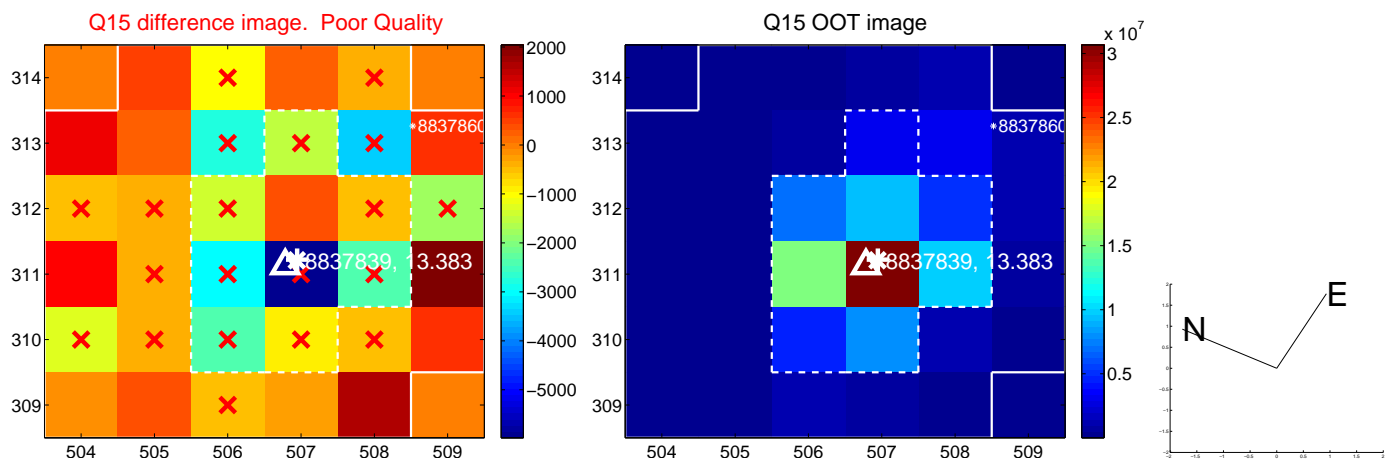
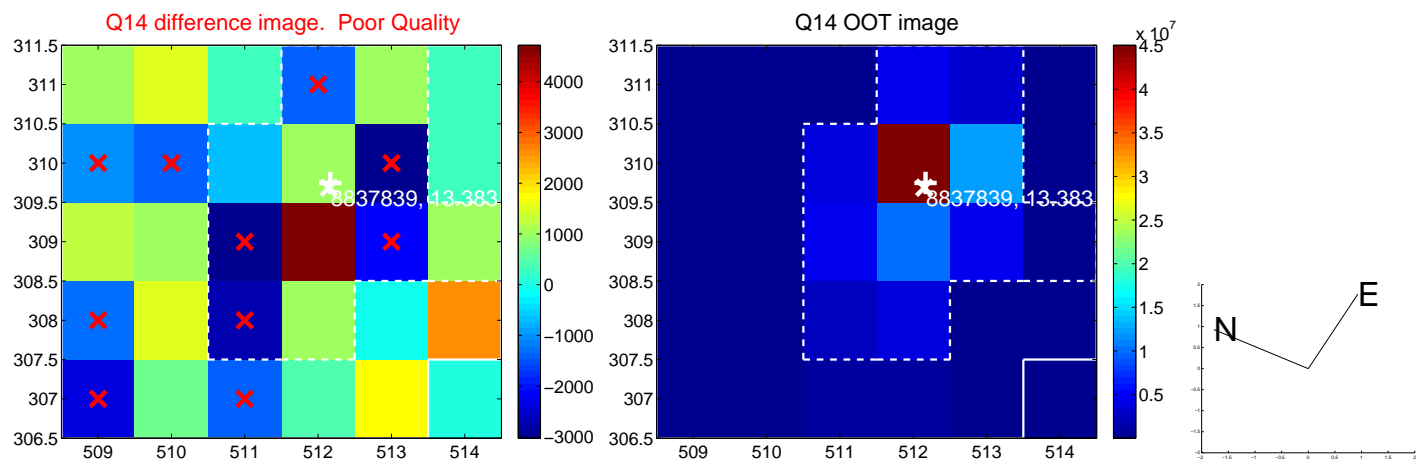
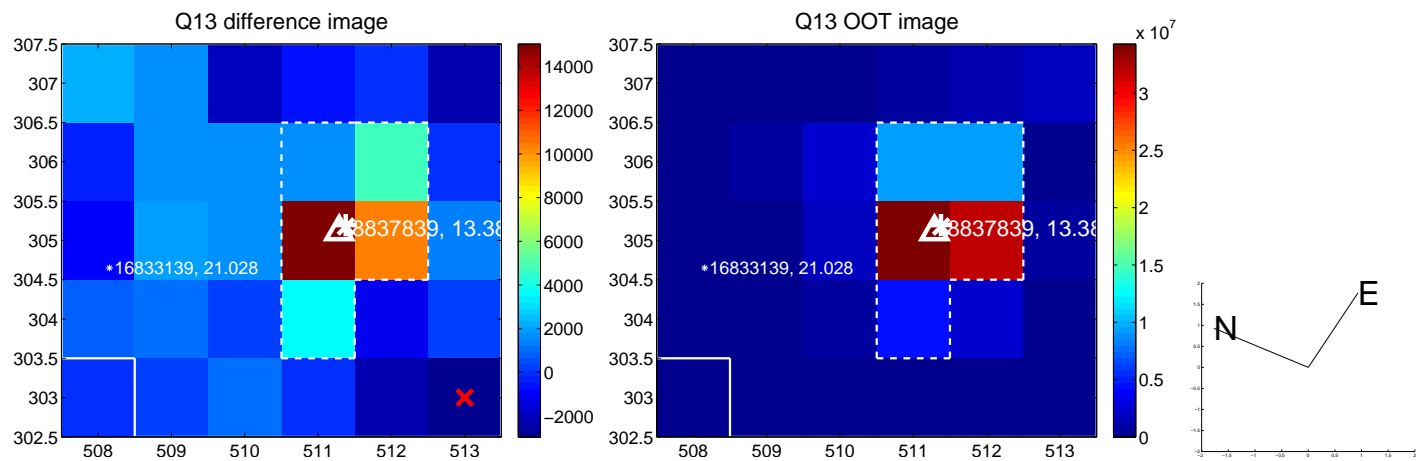


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

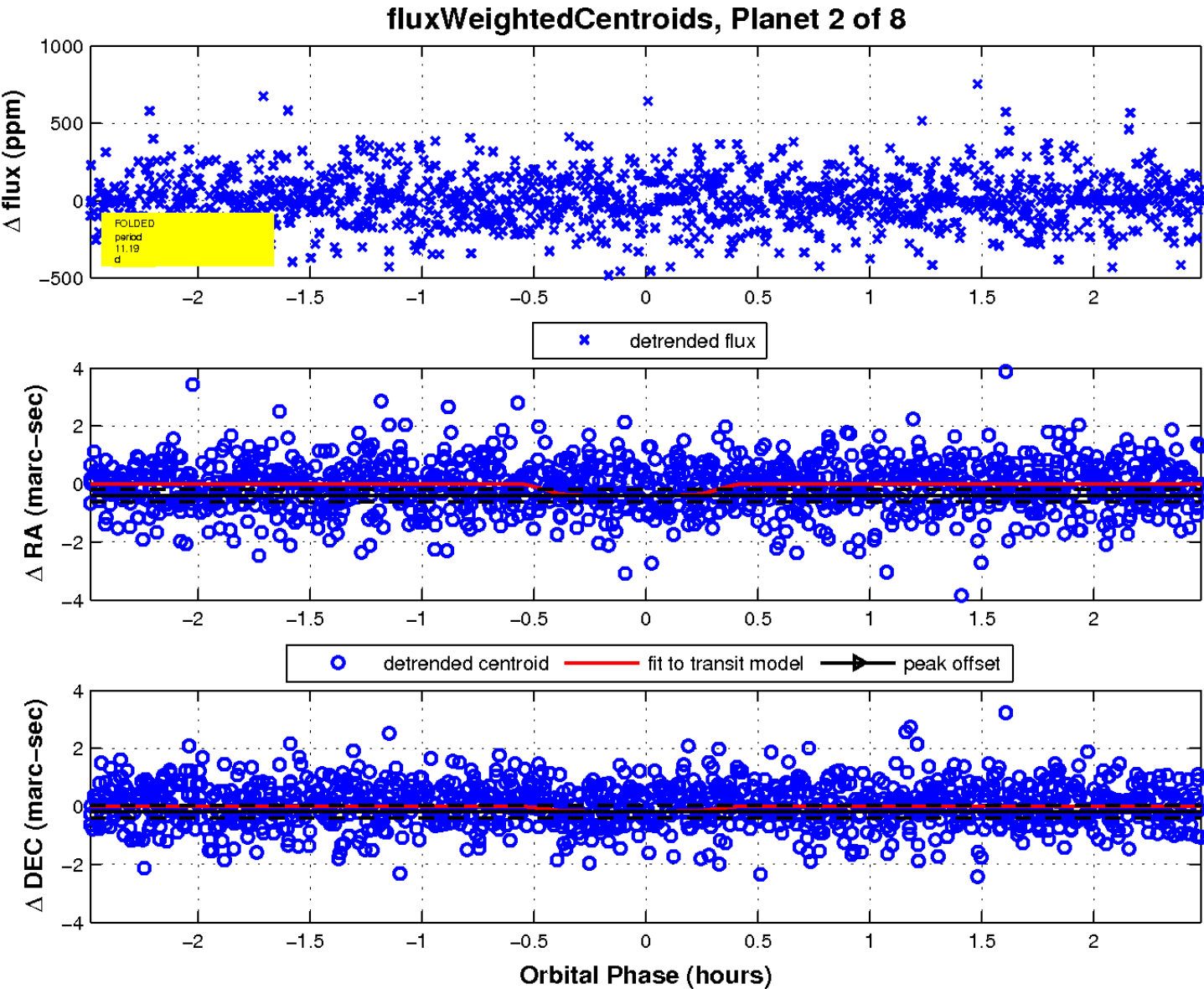
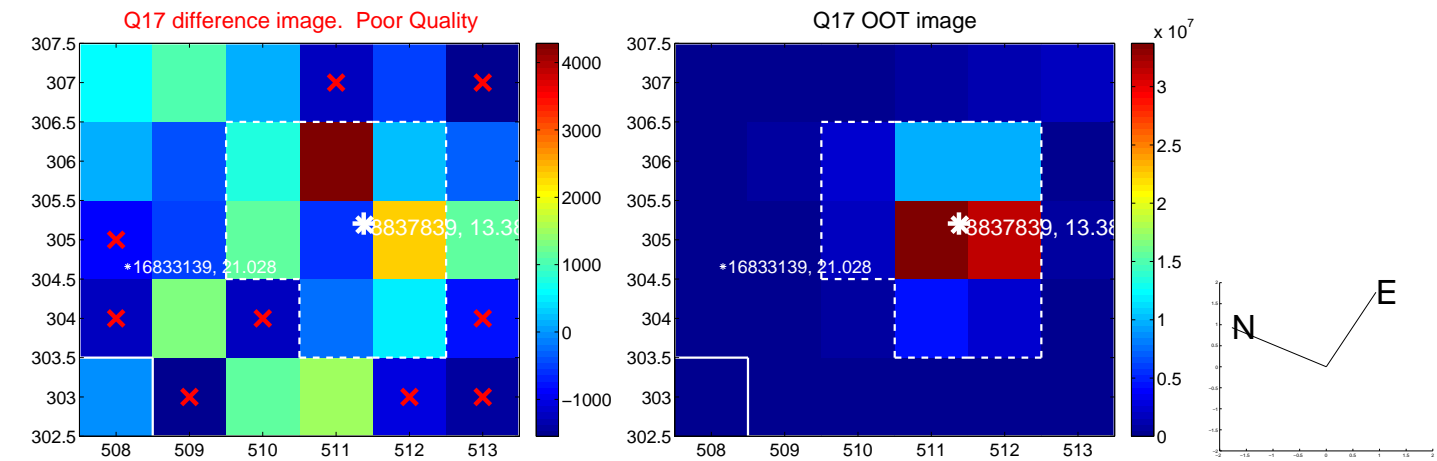




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

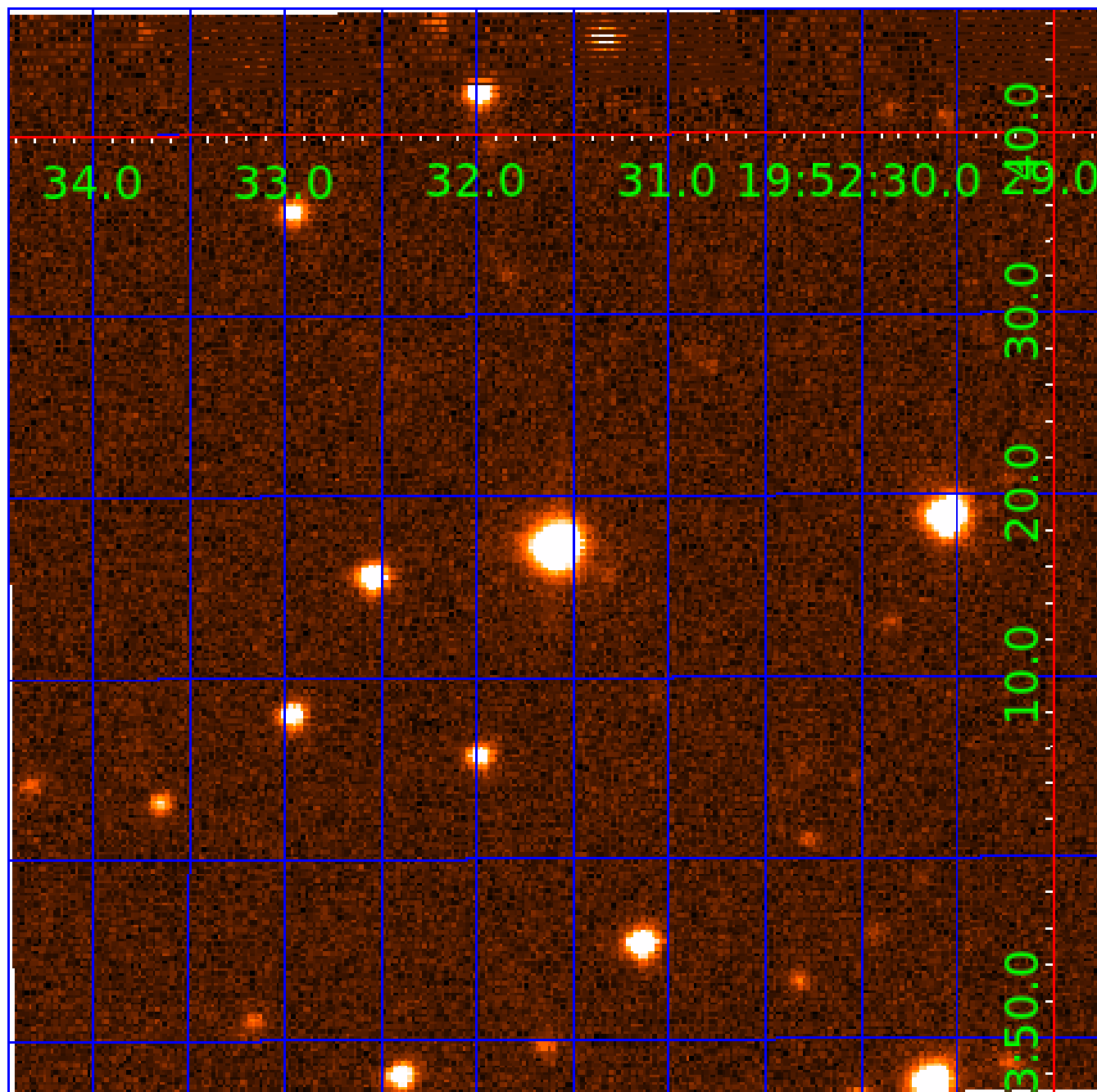


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

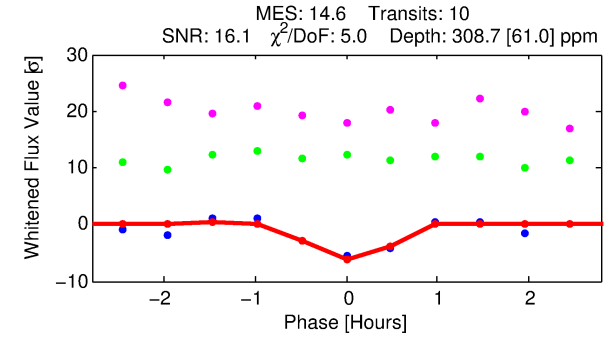
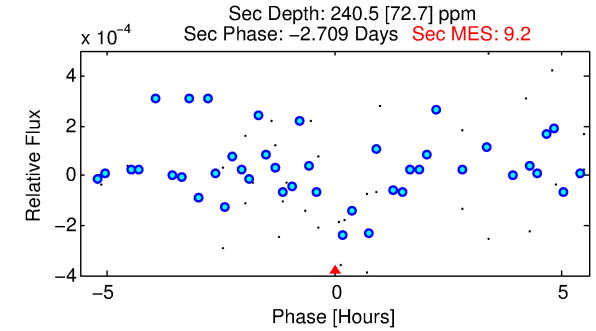
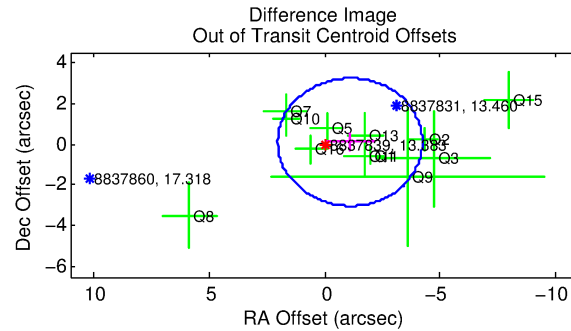
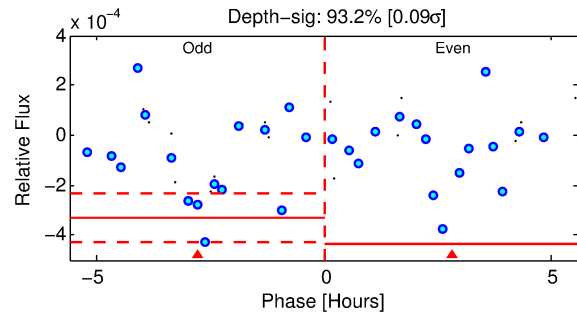
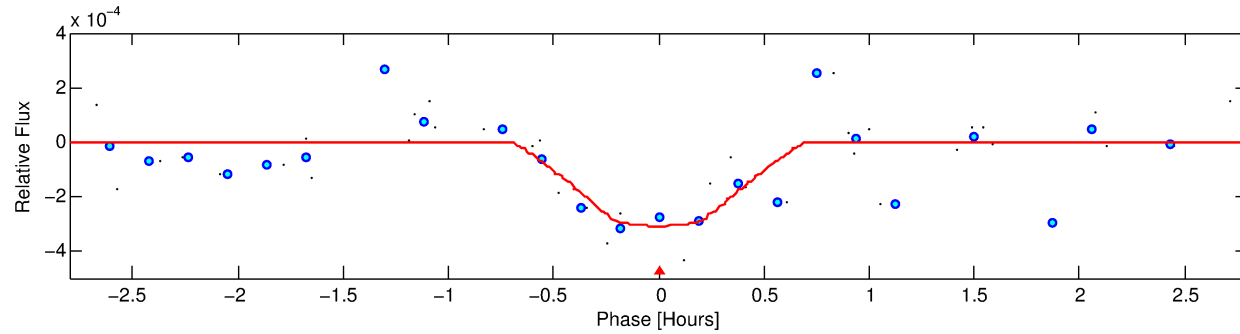
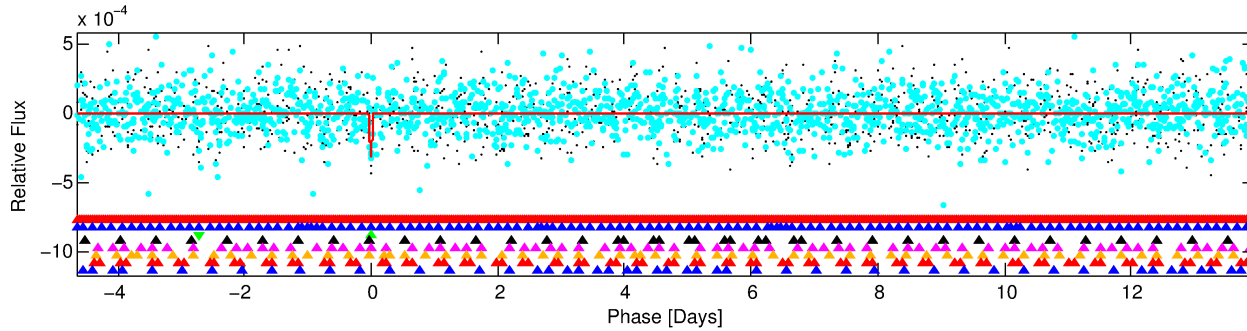
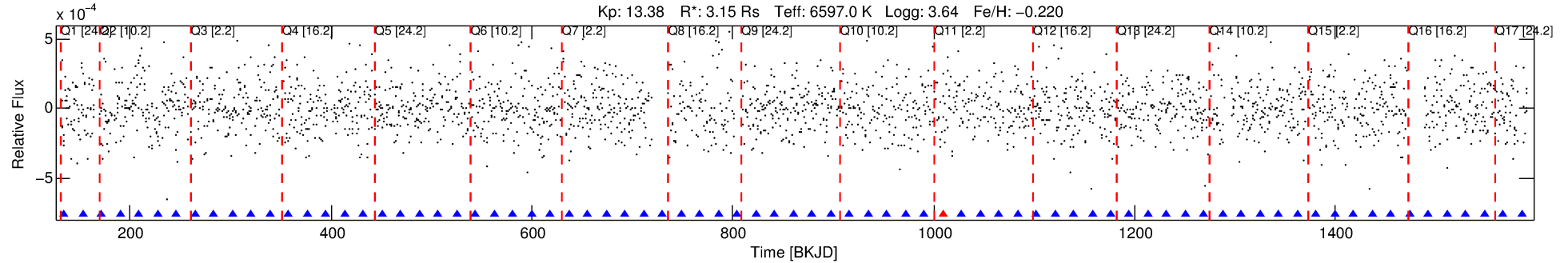
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-03

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 3 of 8 Period: 18.605 d



## DV Fit Results:

Period = 18.60459 [0.00012] d  
Epoch = 134.5435 [0.0048] BKJD  
Rp/R\* = 0.0168 [0.0267]  
a/R\* = 134.84 [1143.47]  
b = 0.50 [12.98]  
Seff = 658.57 [383.05]  
Teq = 1292 [188] K  
Rp = 5.78 [9.46] Re  
a = 0.1601 [0.0575] AU  
Ag = 101.46 [329.62] [0.30σ]  
Teffp = 6339 [5072] K [0.99σ]

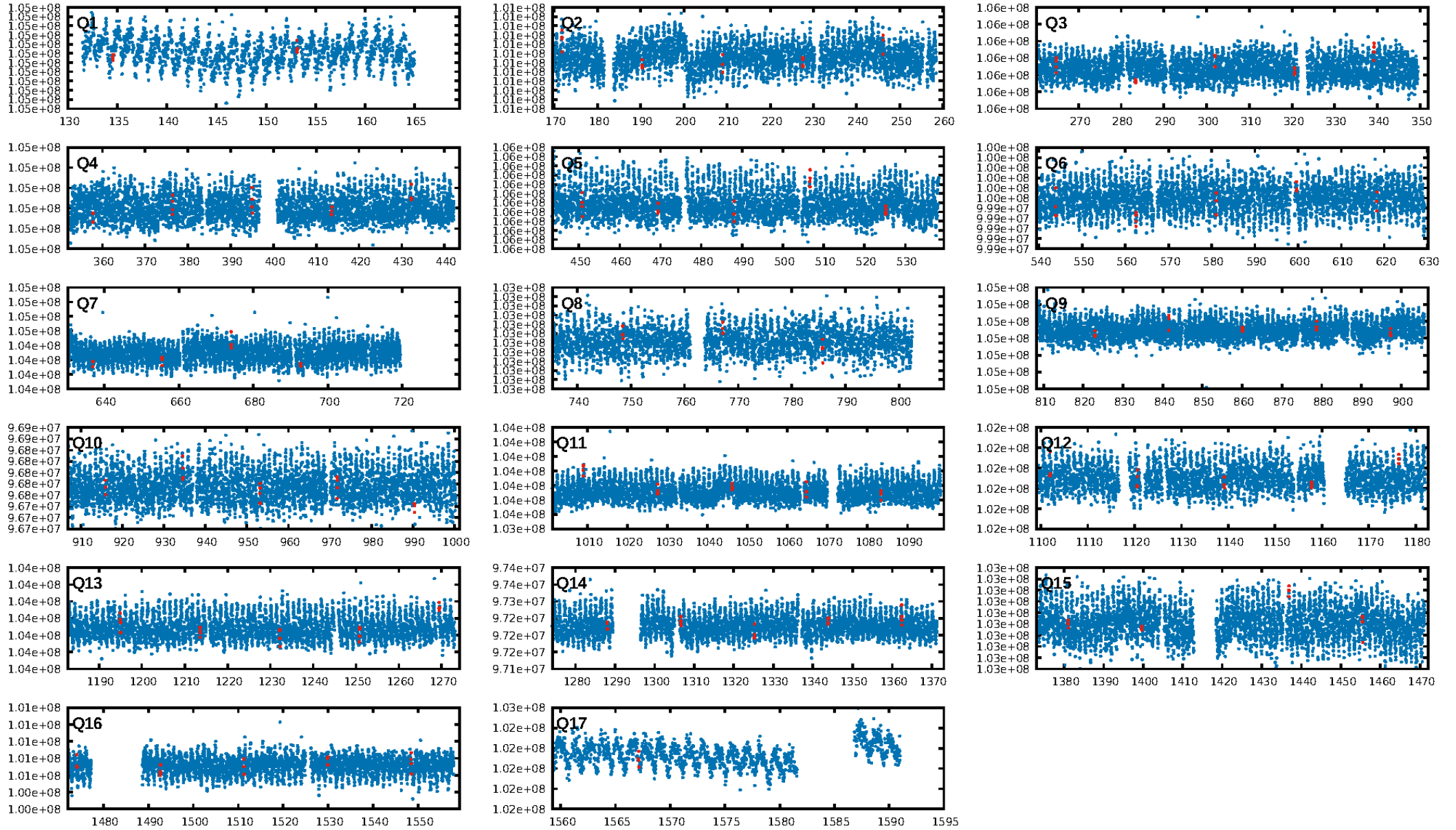
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.37σ]  
LongPeriod-sig: 100.0% [11.57σ]  
ModelChiSquare2-sig: 1.0%  
ModelChiSquareGof-sig: 16.6%  
Bootstrap-pfa: 3.66e-13  
RollingBand-fgt: 0.89 [8/9]  
GhostDiagnostic-chr: -0.4405  
Centroid-sig: 13.0%  
Centroid-so: 0.677 arcsec [1.16σ]  
OotOffset-rm: 1.102 arcsec [1.06σ]  
KicOffset-rm: 1.067 arcsec [1.09σ]  
OotOffset-st: 2/4/2/4 [12]  
KicOffset-st: 2/4/2/4 [12]  
DiffImageQuality-fgm: 0.25 [3/12]  
DiffImageOverlap-fno: 0.47 [8/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:03 Z

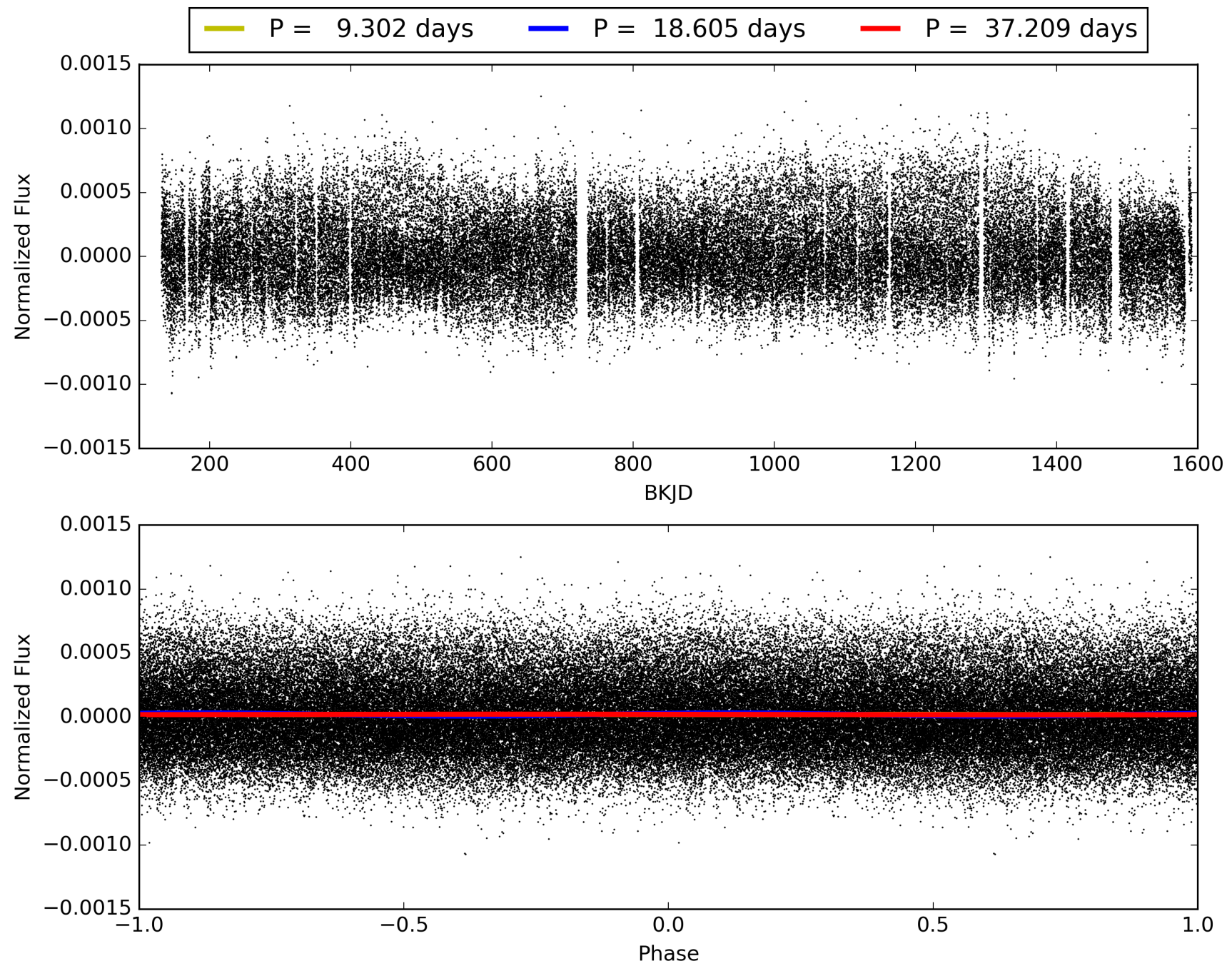
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008837839-03, PDC Light Curves



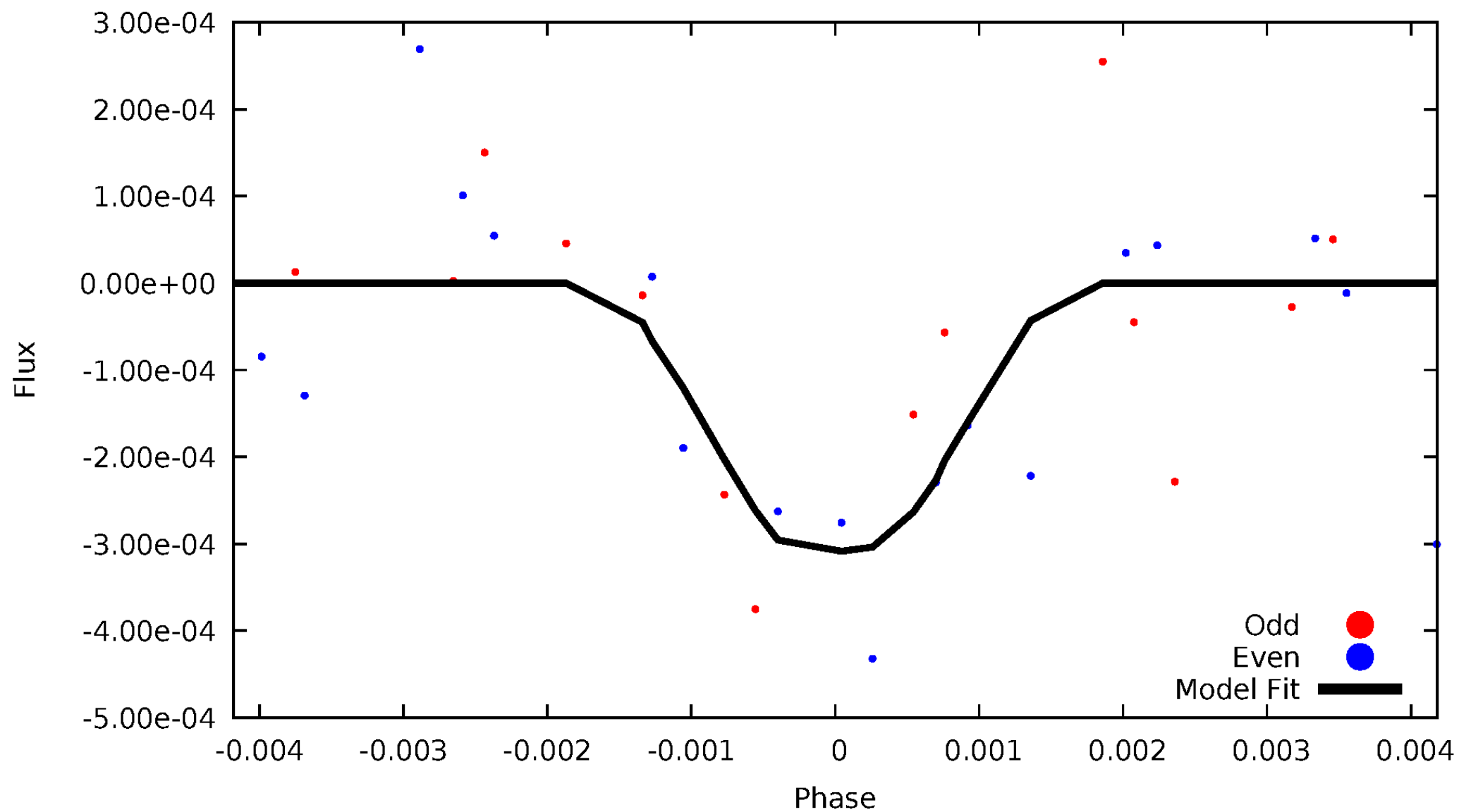


# TCE 008837839-03



# DV Odd/Even

TCE 008837839-03



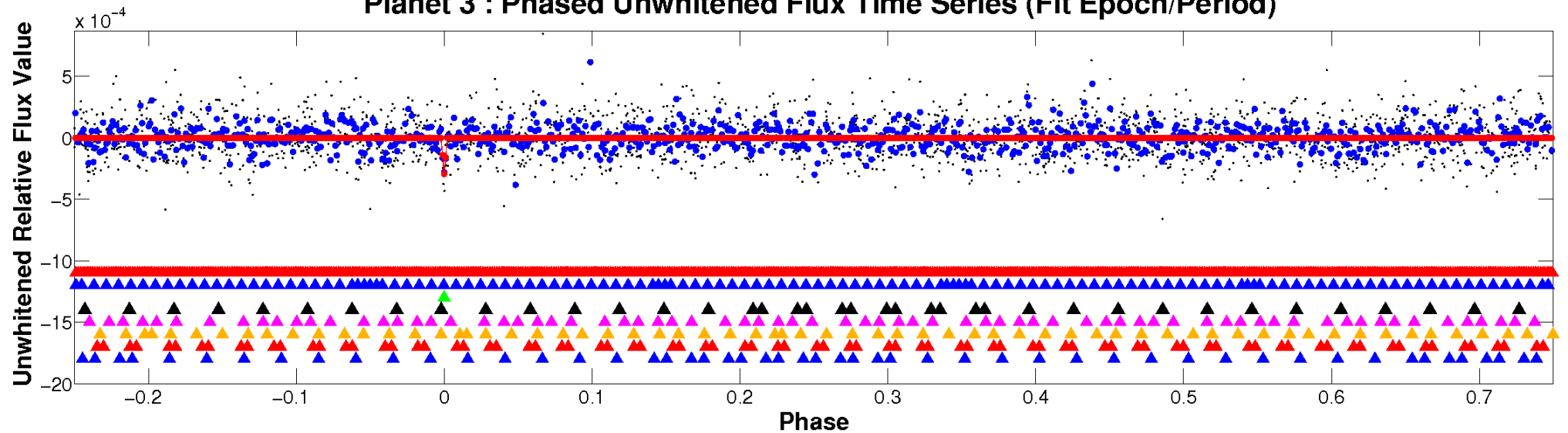


ALT Odd/Even

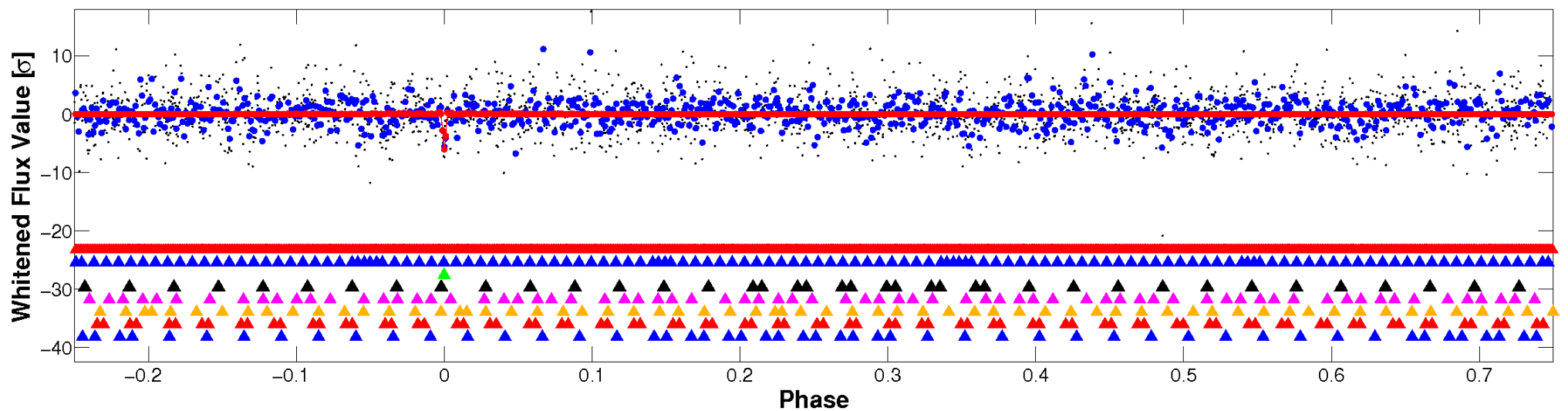
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

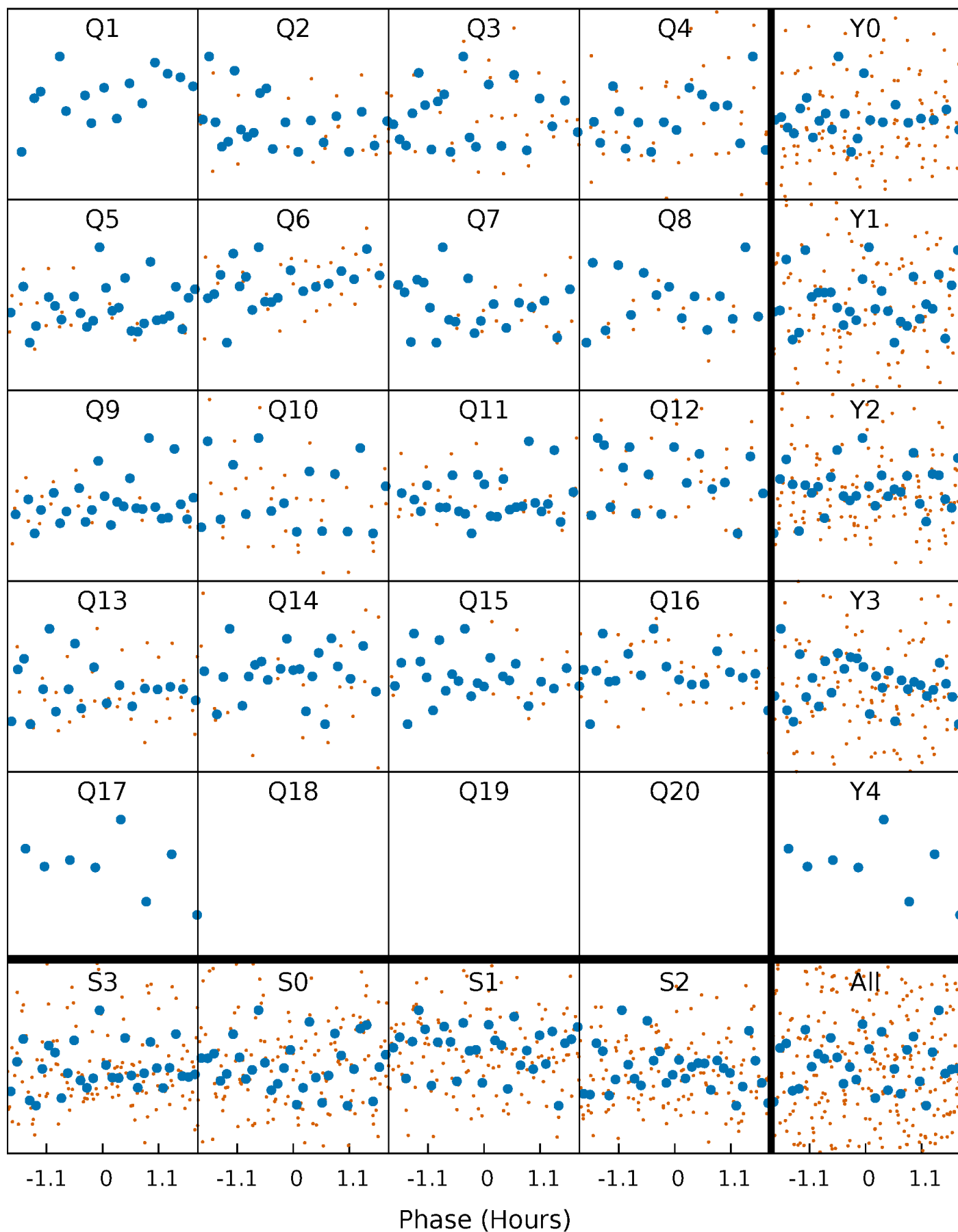


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

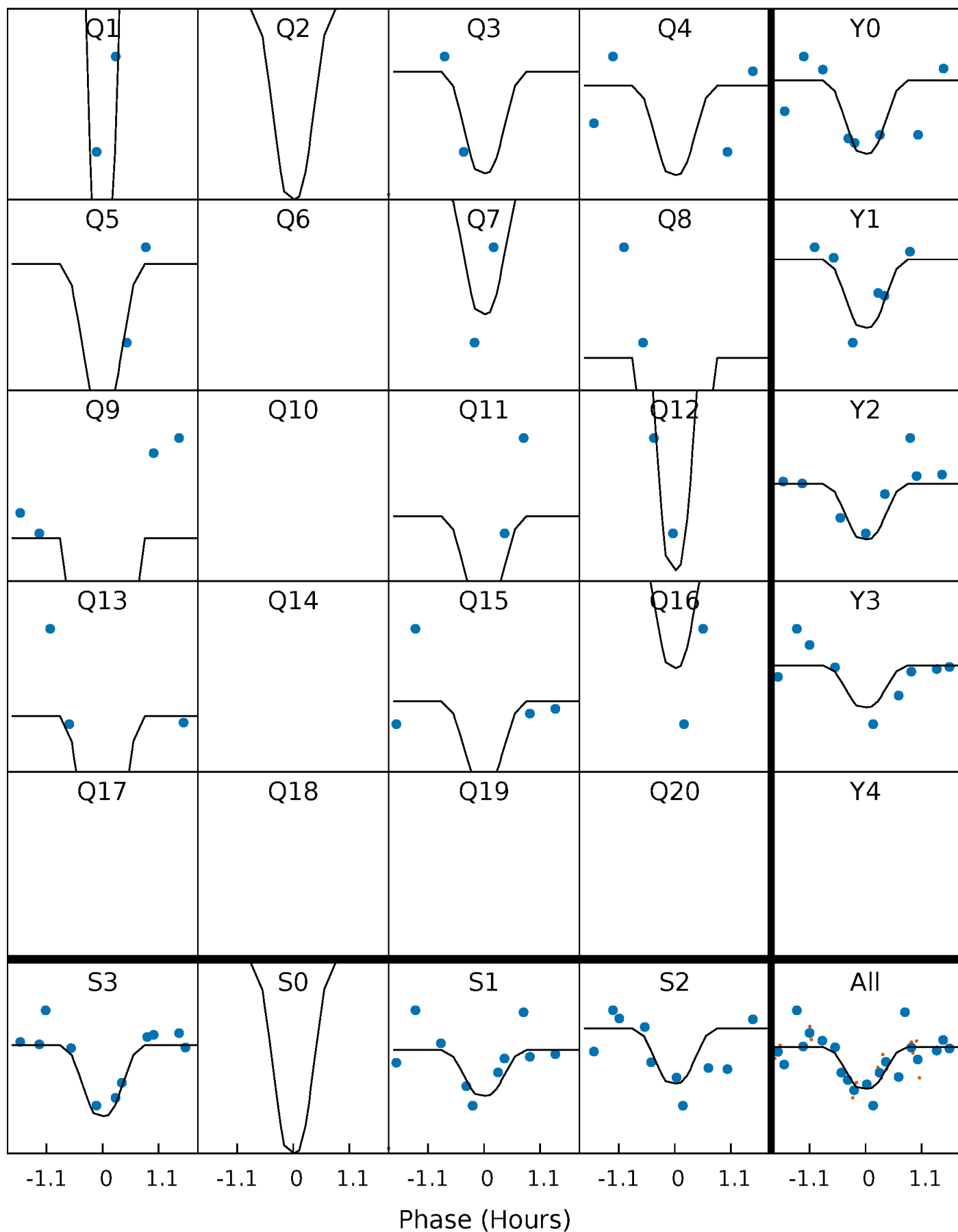
TCE 008837839-03   P= 18.604590 Days    $T_0=134.543548$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 008837839-03 P= 18.604590 Days  $T_0=134.543548$  (BKJD)

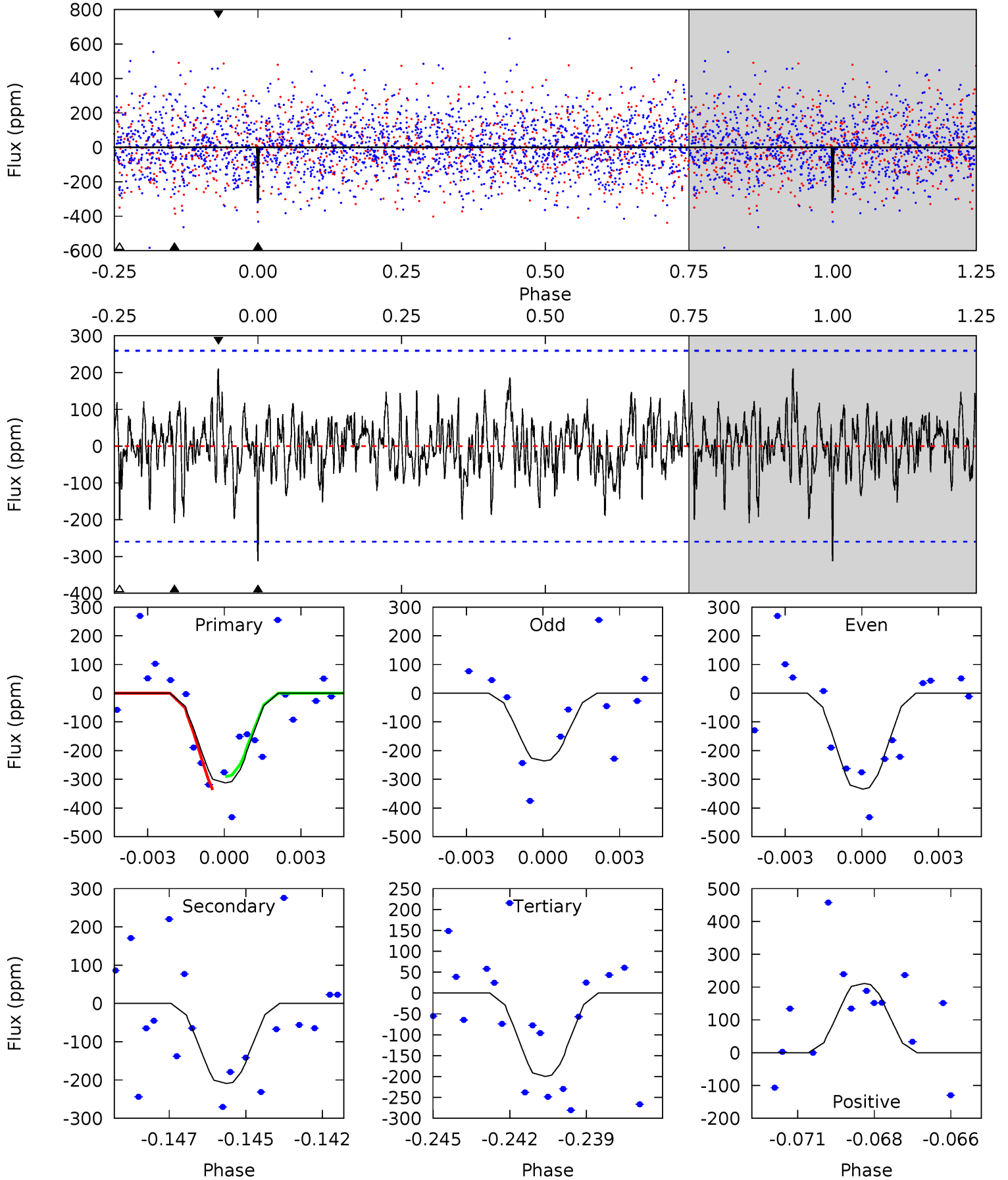


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008837839-03, P = 18.604590 Days, E = 115.938958 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.36	4.26	4.06	4.29	5.28	3.01	1.30	2.30	2.07	0.19	-0.03	0.98	1.11	0.40	0.46



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-209 \pm 49$	$7.70^{+7.81}_{-5.05}$	$1762^{+103}_{-158}$	$5111^{+3904}_{-1217}$	$48^{+367}_{-36}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

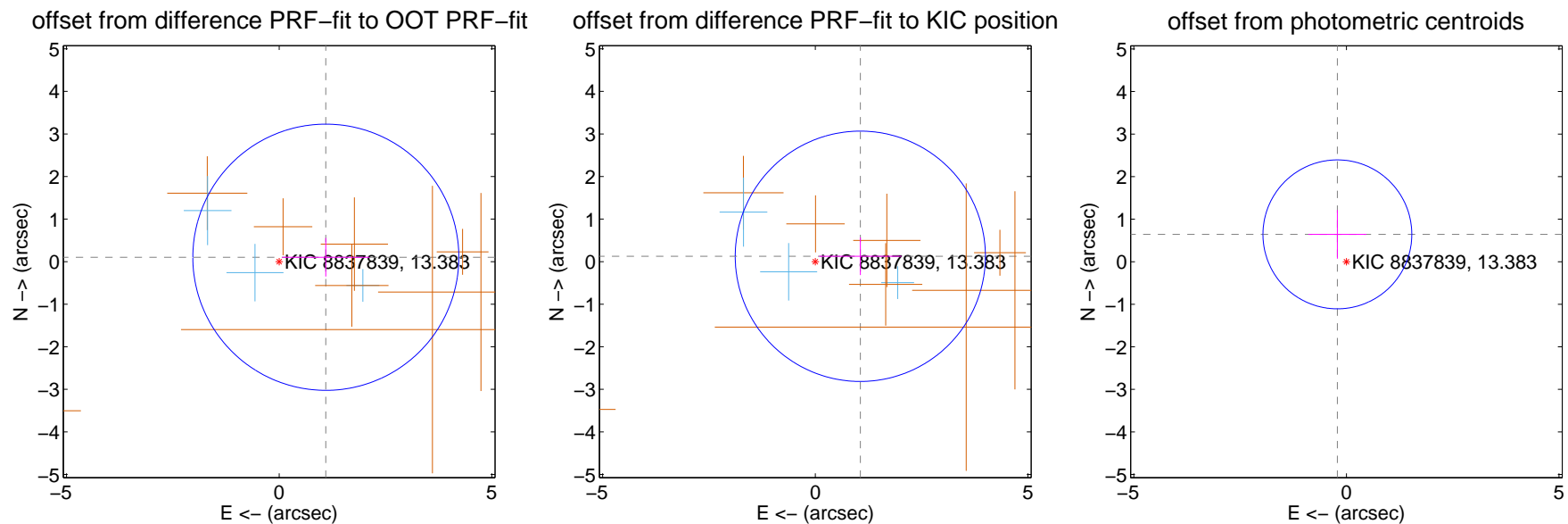
## DV Centroid Data

Supplemental centroid analysis for 008837839-03. Kepler magnitude: 13.38. Transit SNR 16.14

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

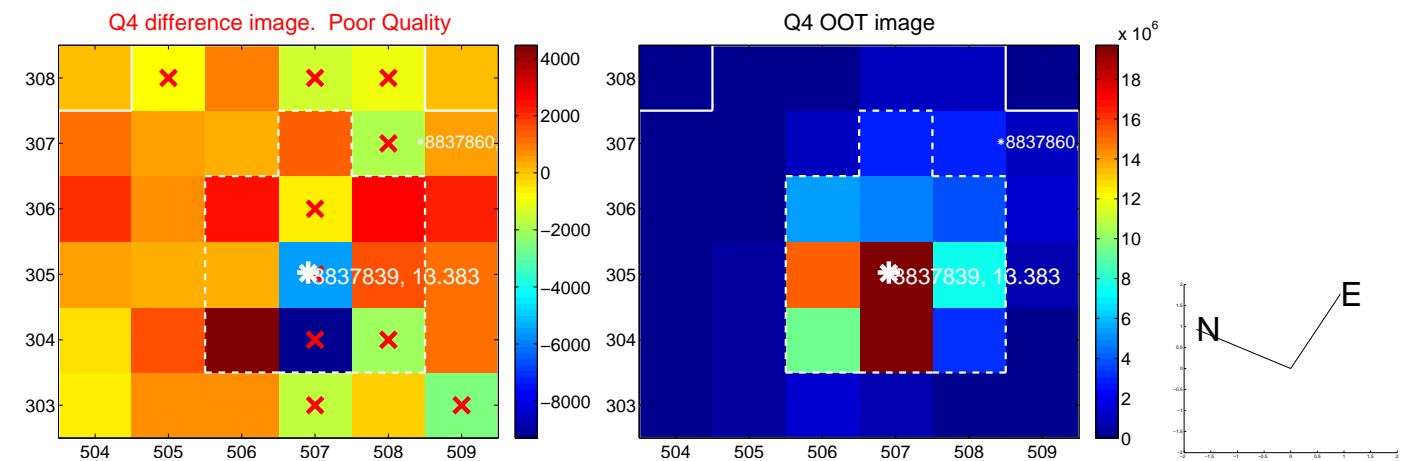
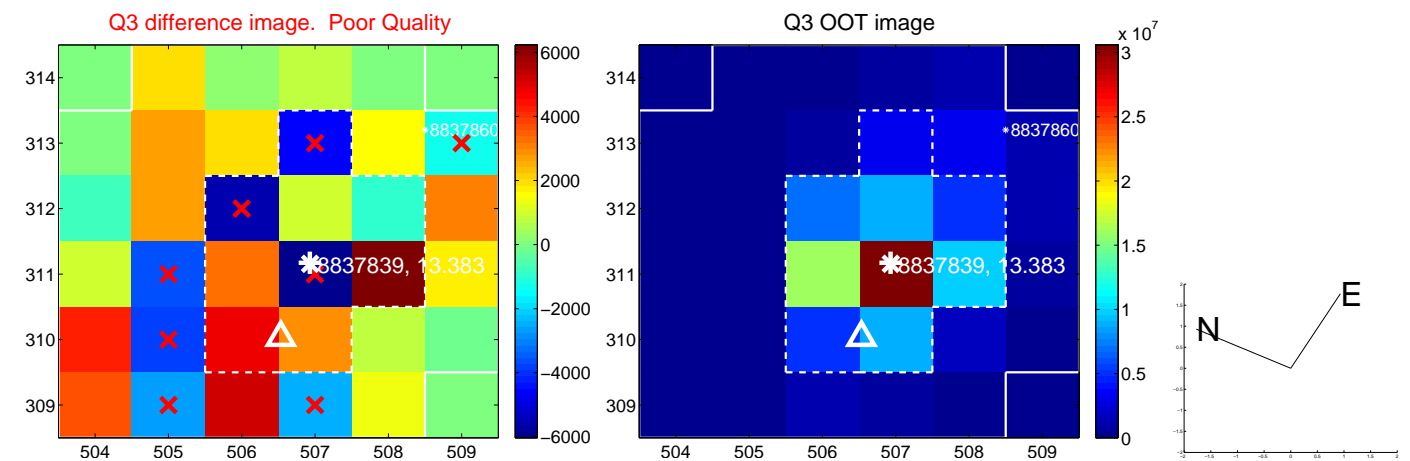
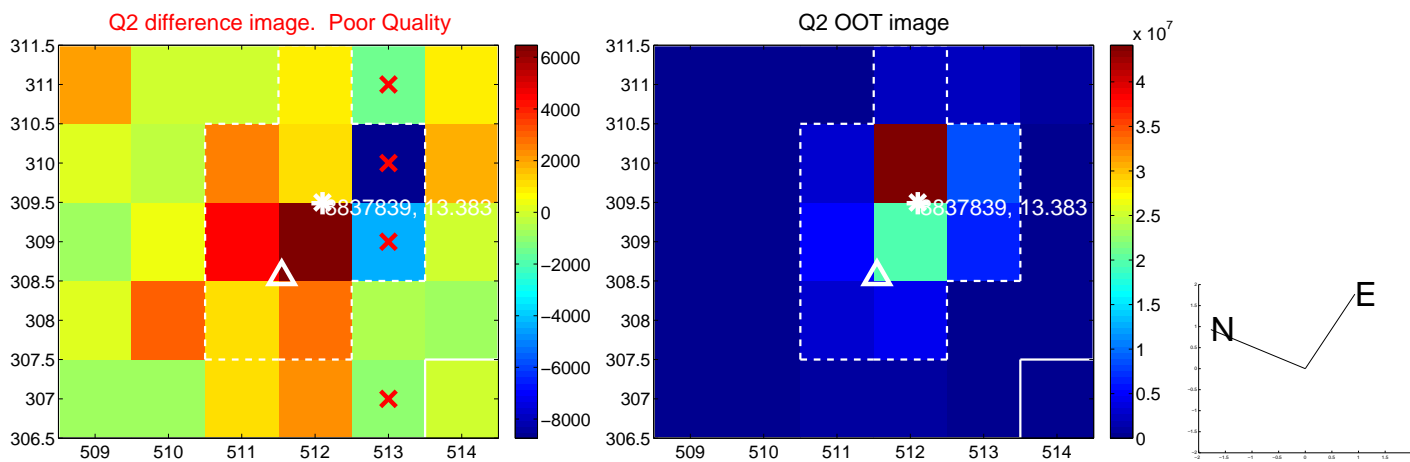
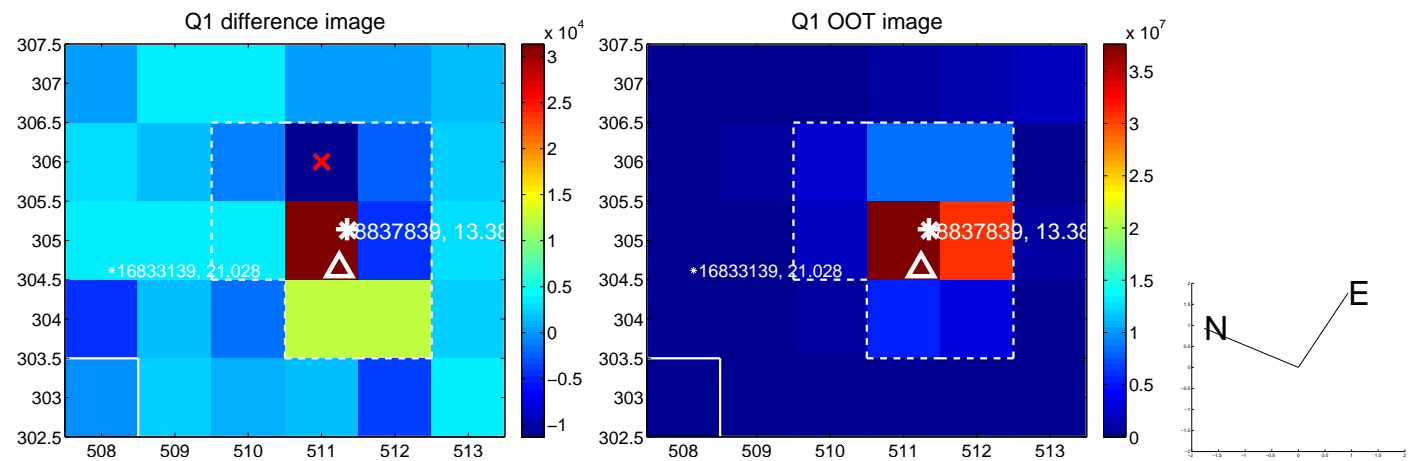
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.102 \pm 1.042$	1.06	$-1.098 \pm 1.029$	$0.103 \pm 0.452$
PRF-fit source offset from KIC position	$1.067 \pm 0.980$	1.09	$-1.059 \pm 0.966$	$0.126 \pm 0.442$
photometric centroid source offset	$0.68 \pm 0.58$	1.16	$0.21 \pm 0.68$	$0.64 \pm 0.57$



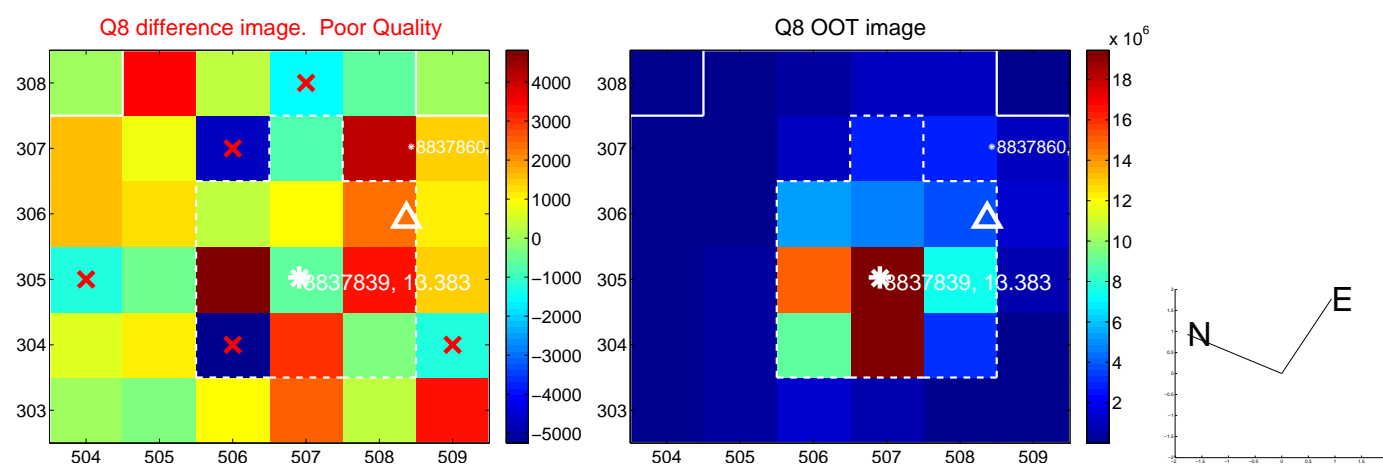
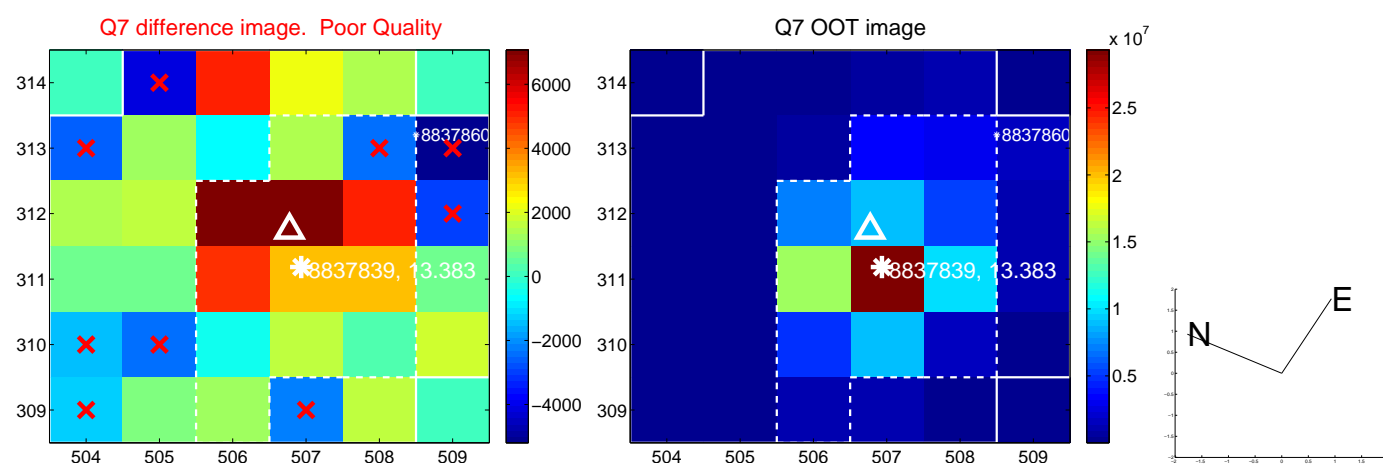
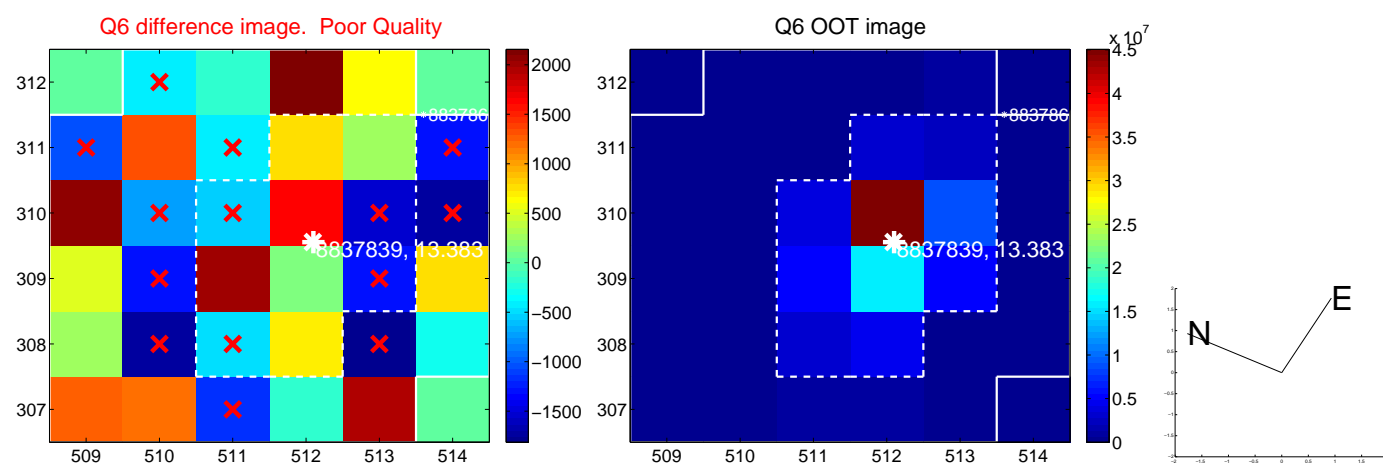
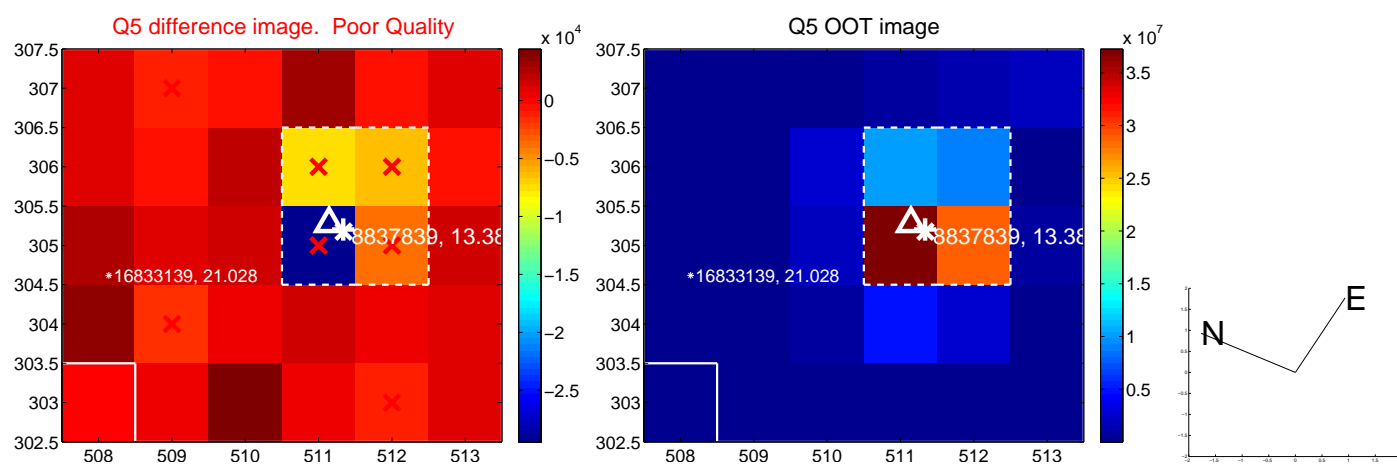
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



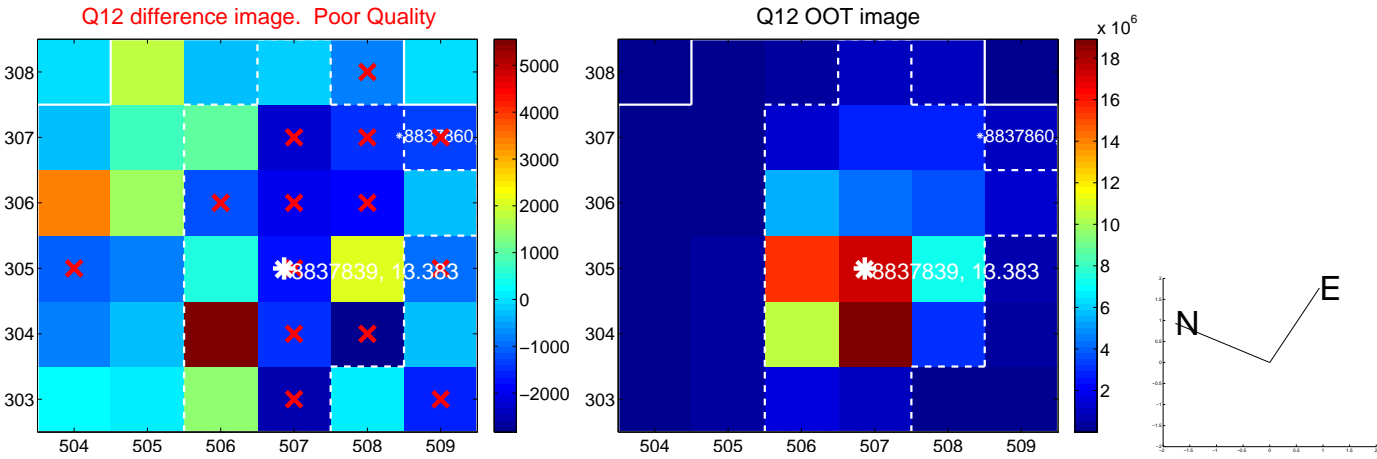
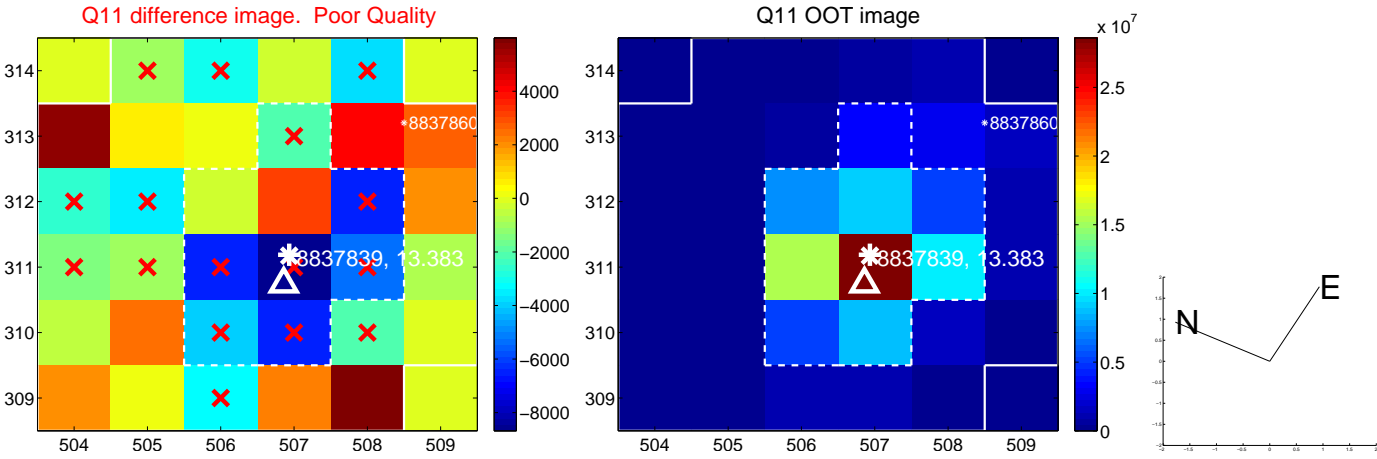
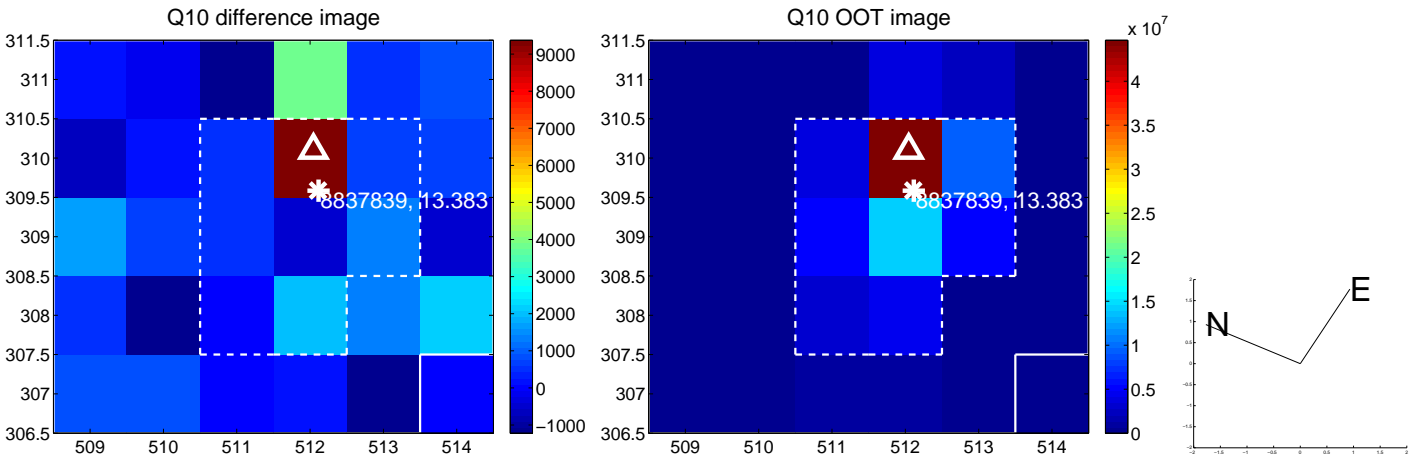
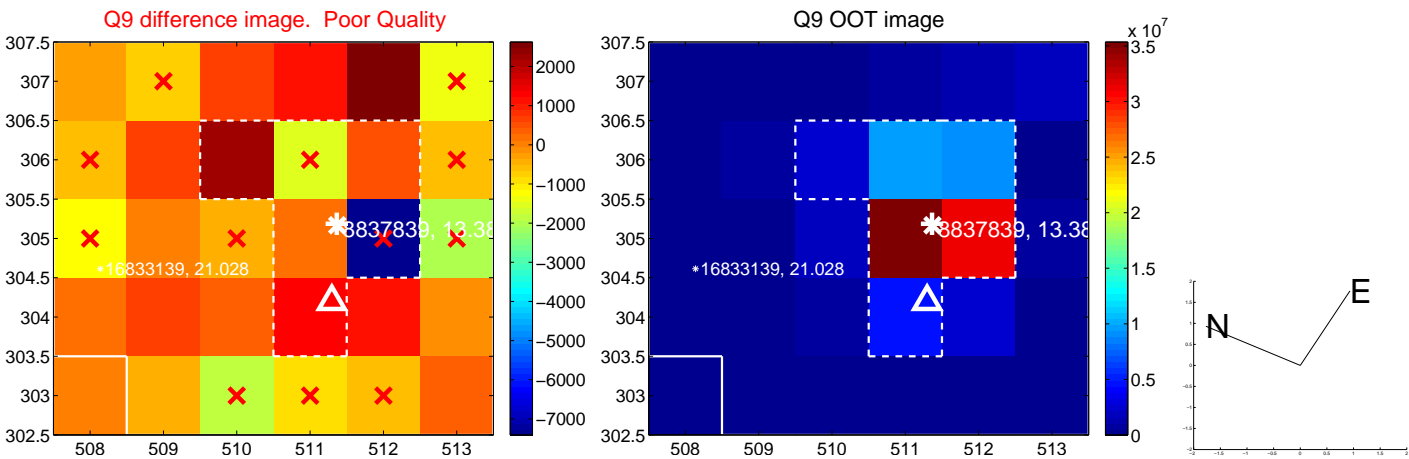
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



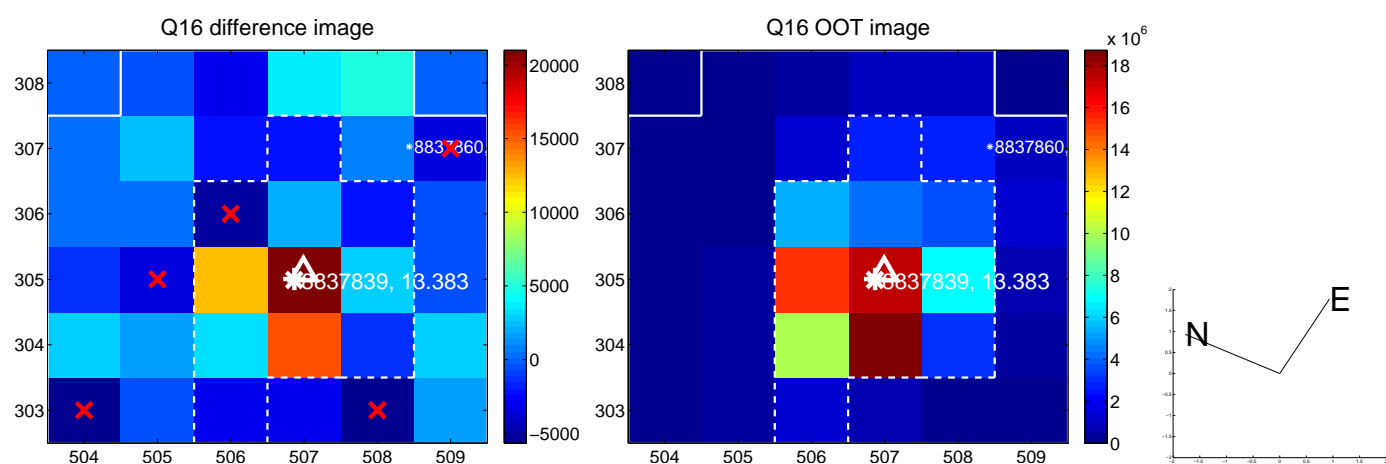
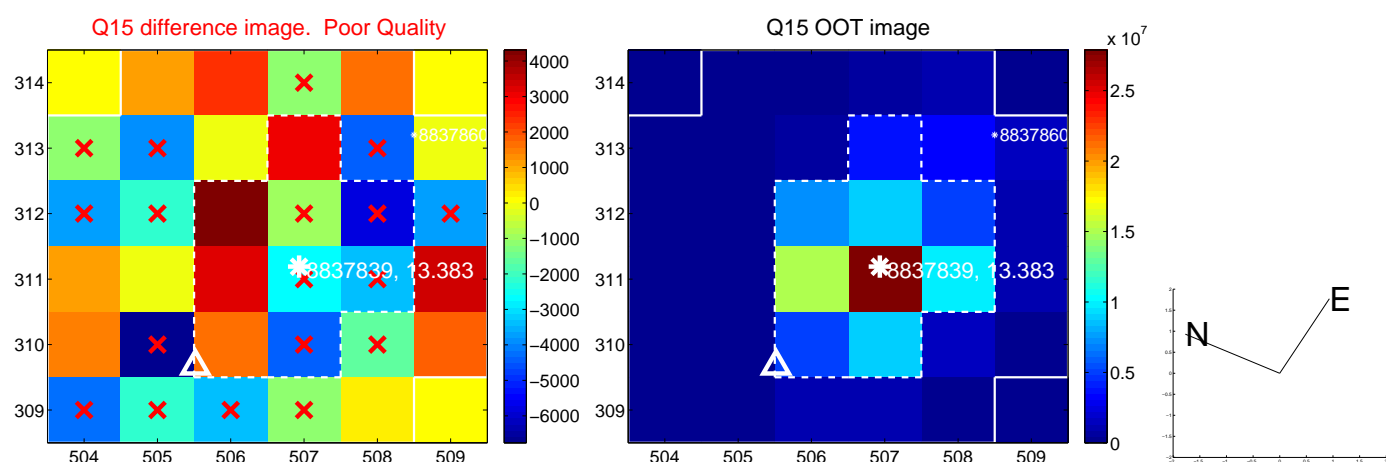
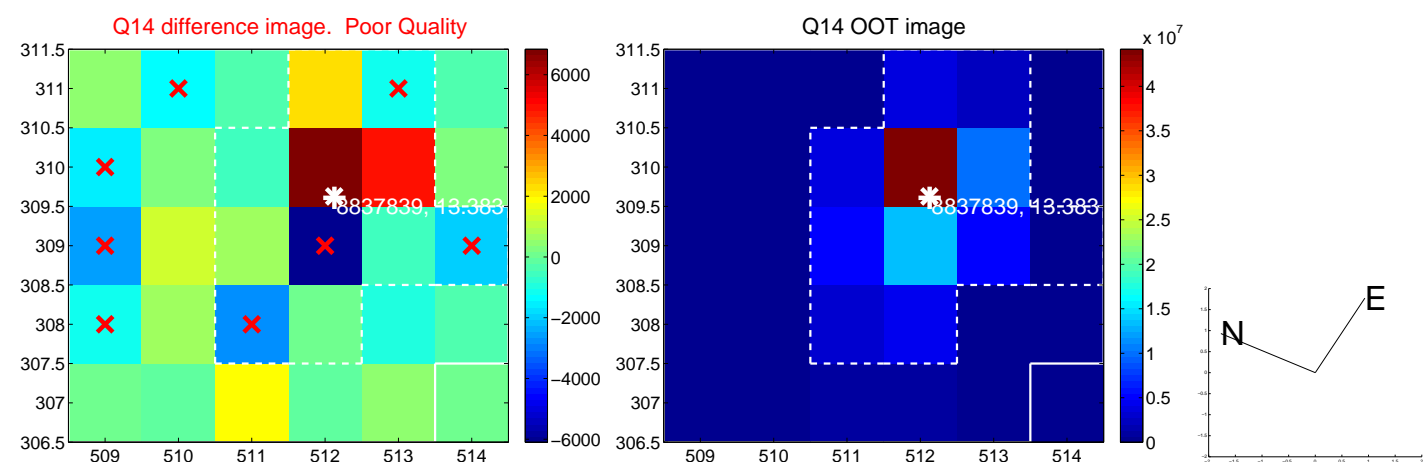
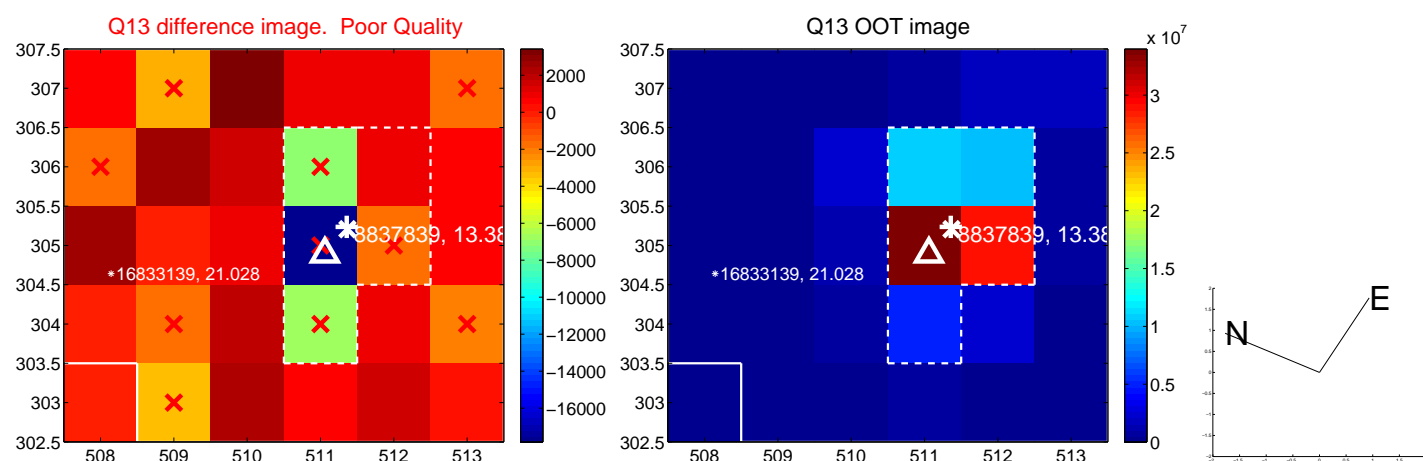
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



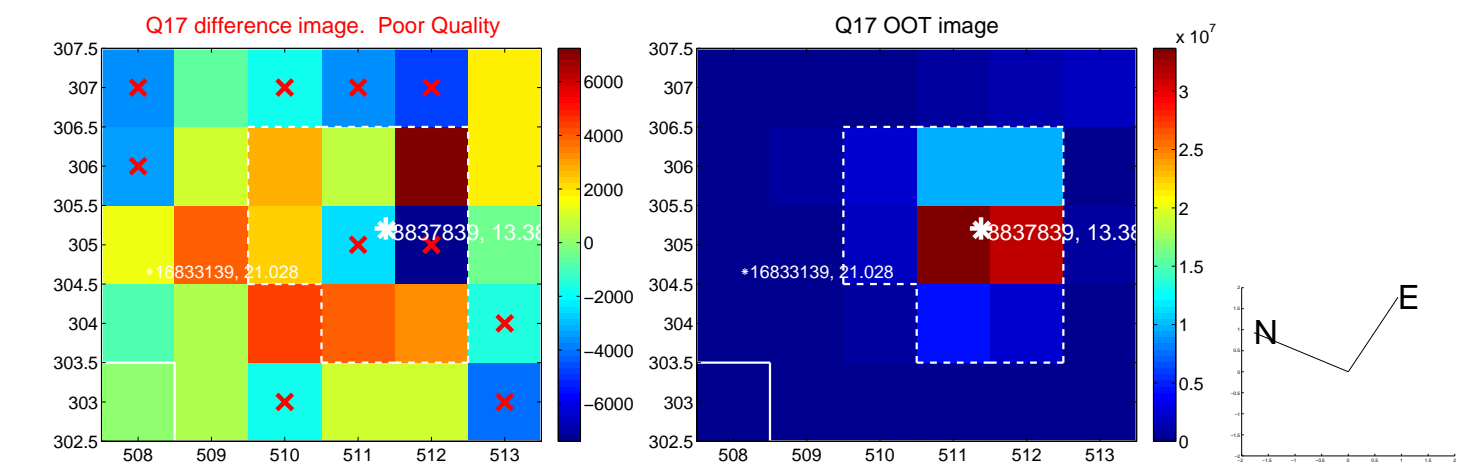
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



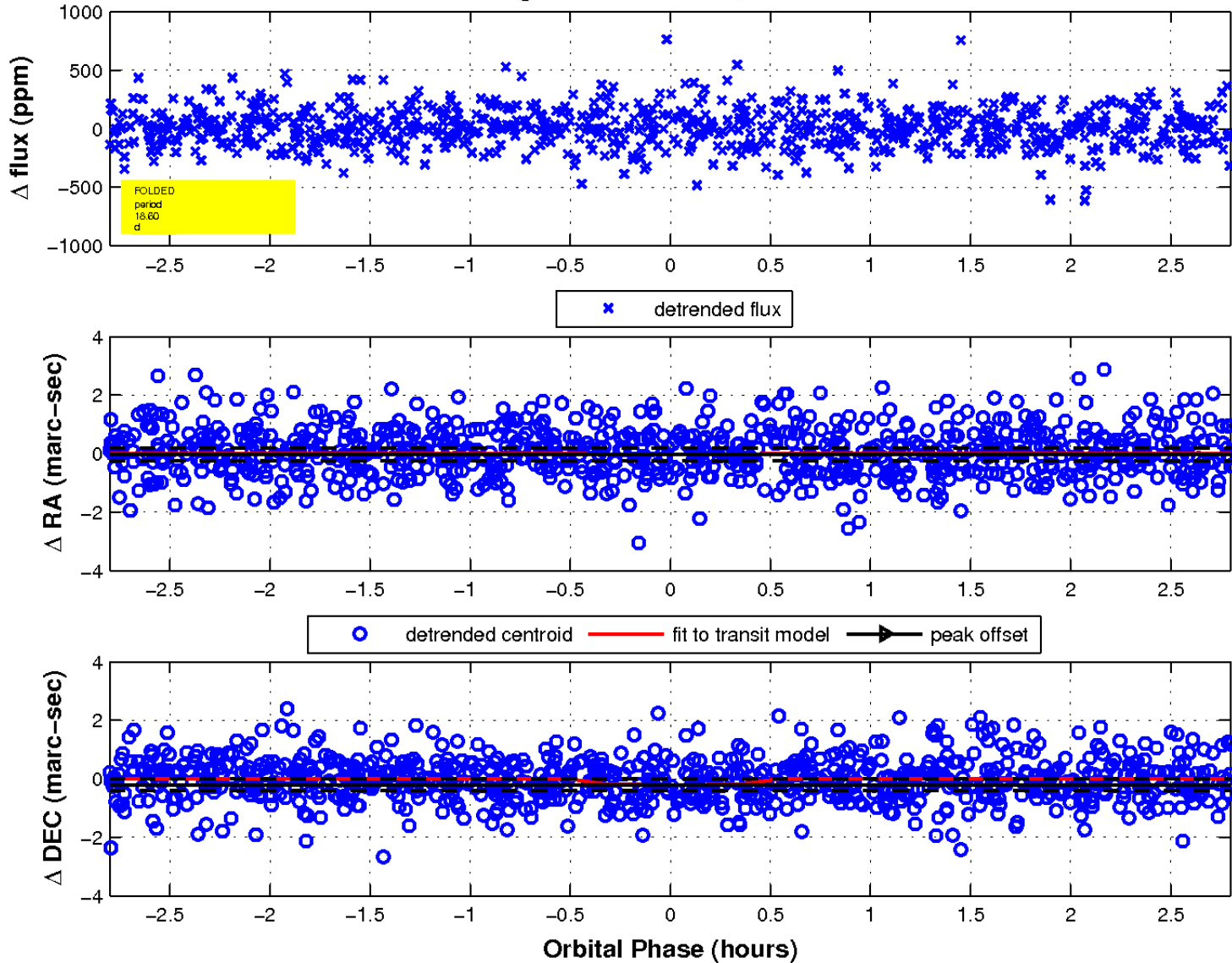
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

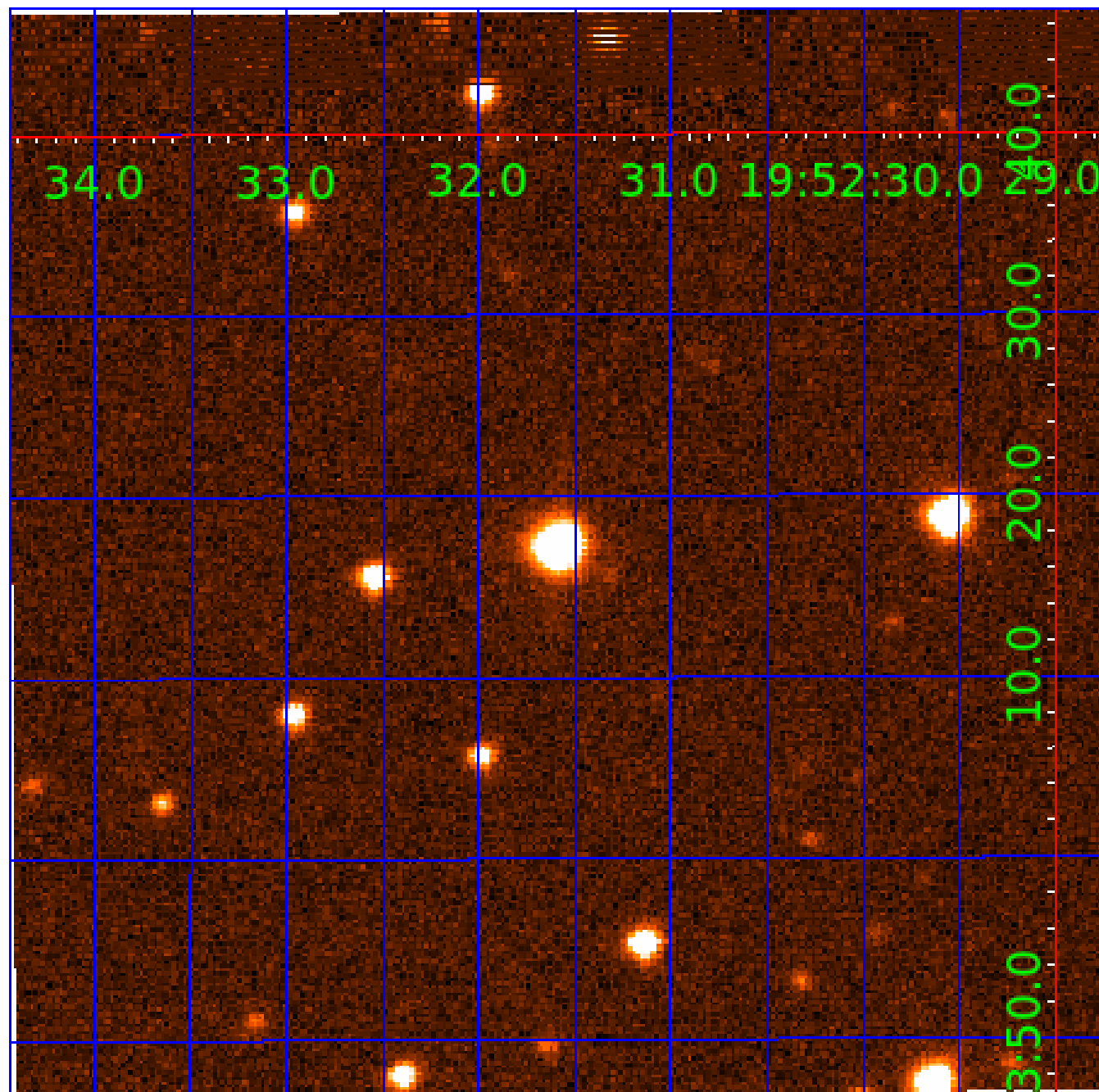


fluxWeightedCentroids, Planet 3 of 8



UKIRT Image

Declination





# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

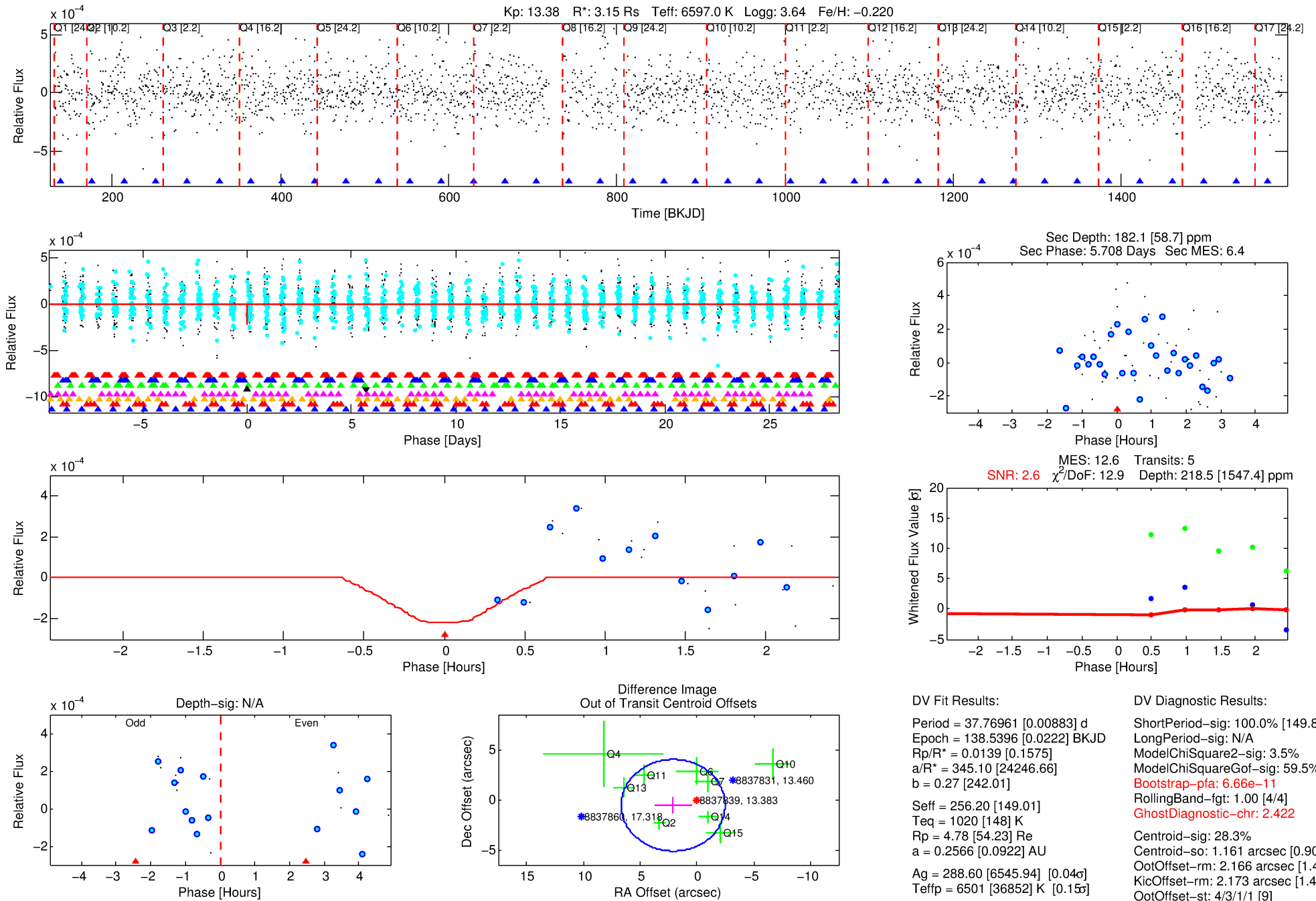
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-04

No Significant Match Found

# DV One-Page Summary

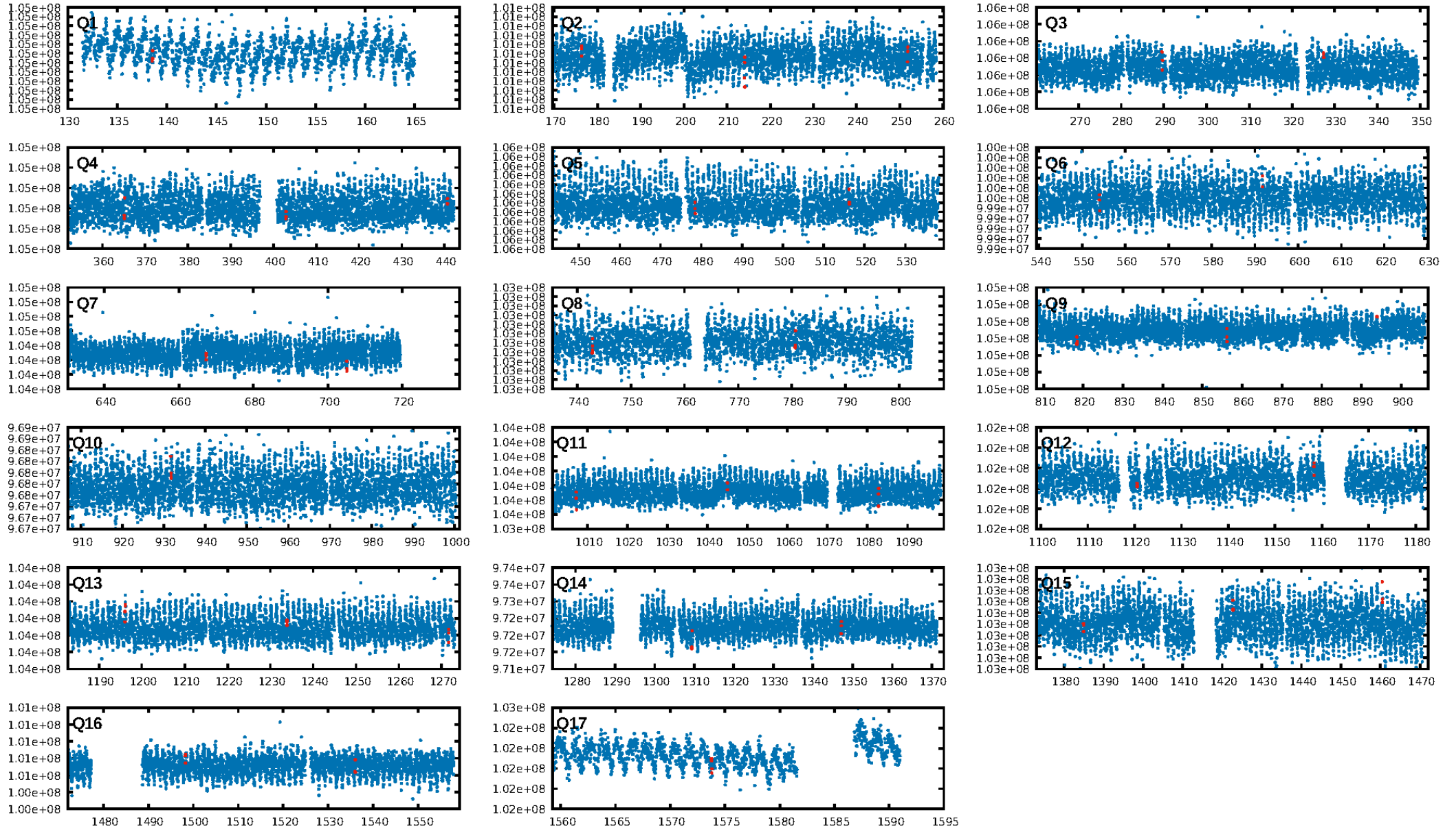
KIC: 8837839 Candidate: 4 of 8 Period: 37.770 d



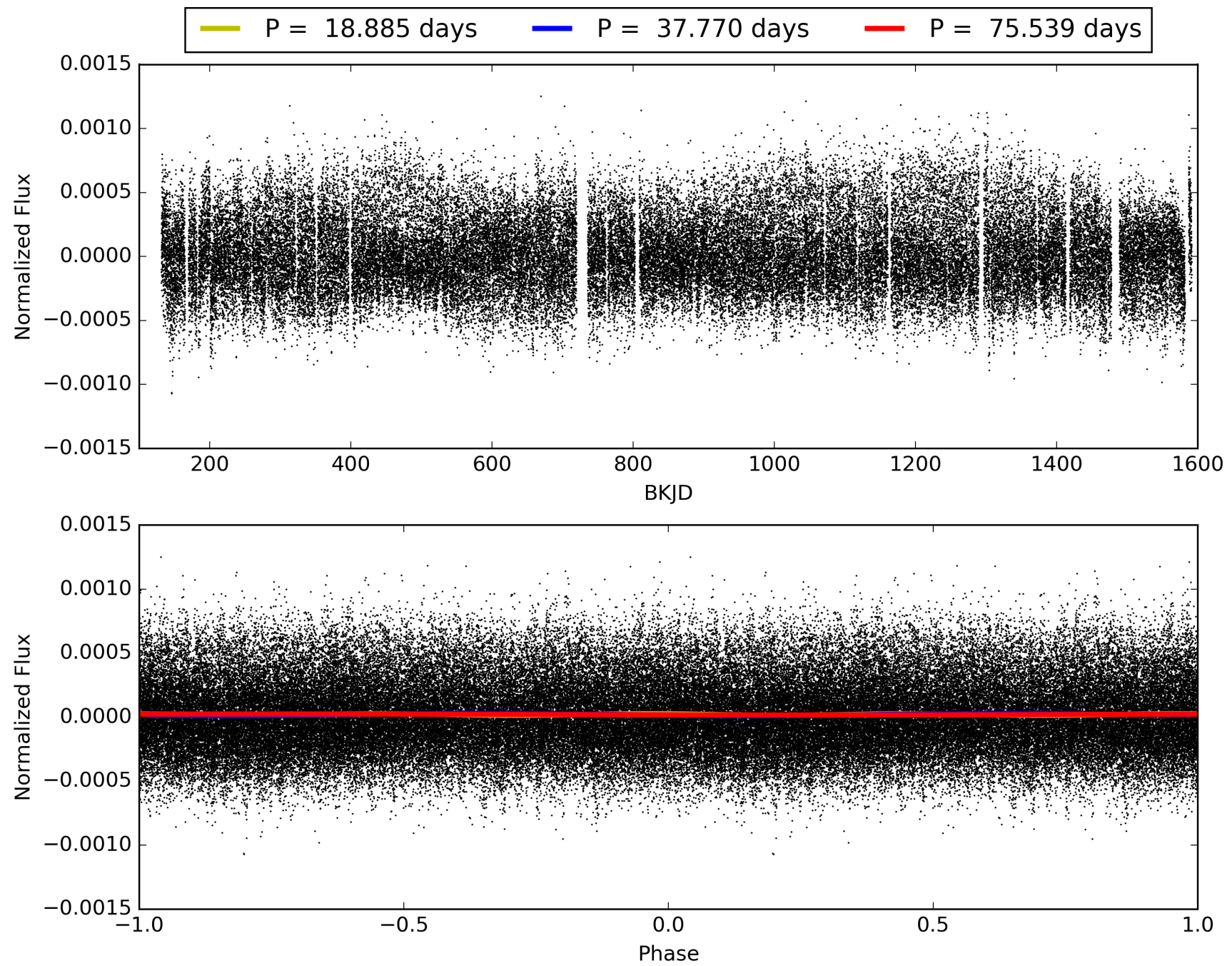
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:06 Z

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# TCE 008837839-04, PDC Light Curves

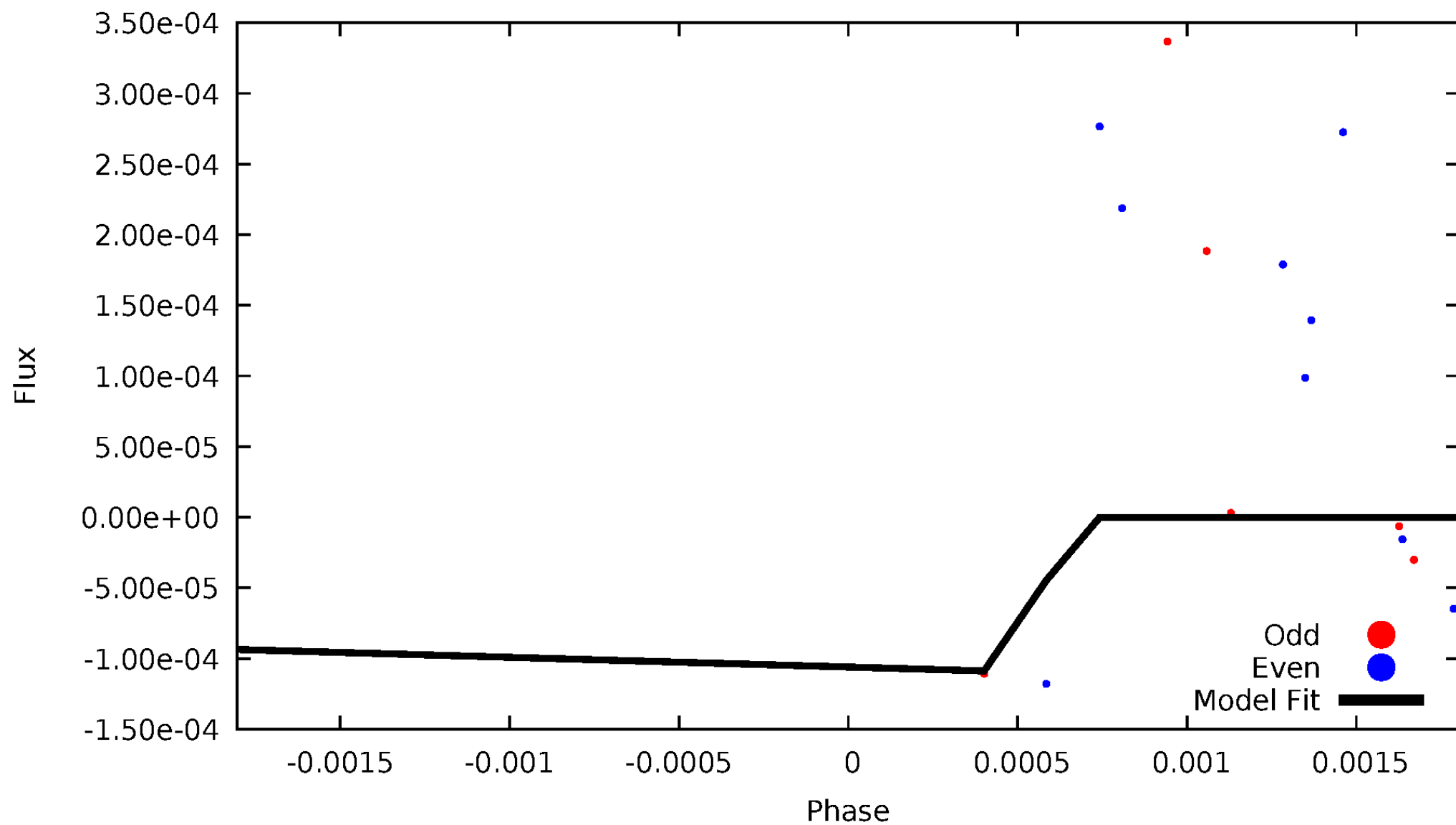


TCE 008837839-04



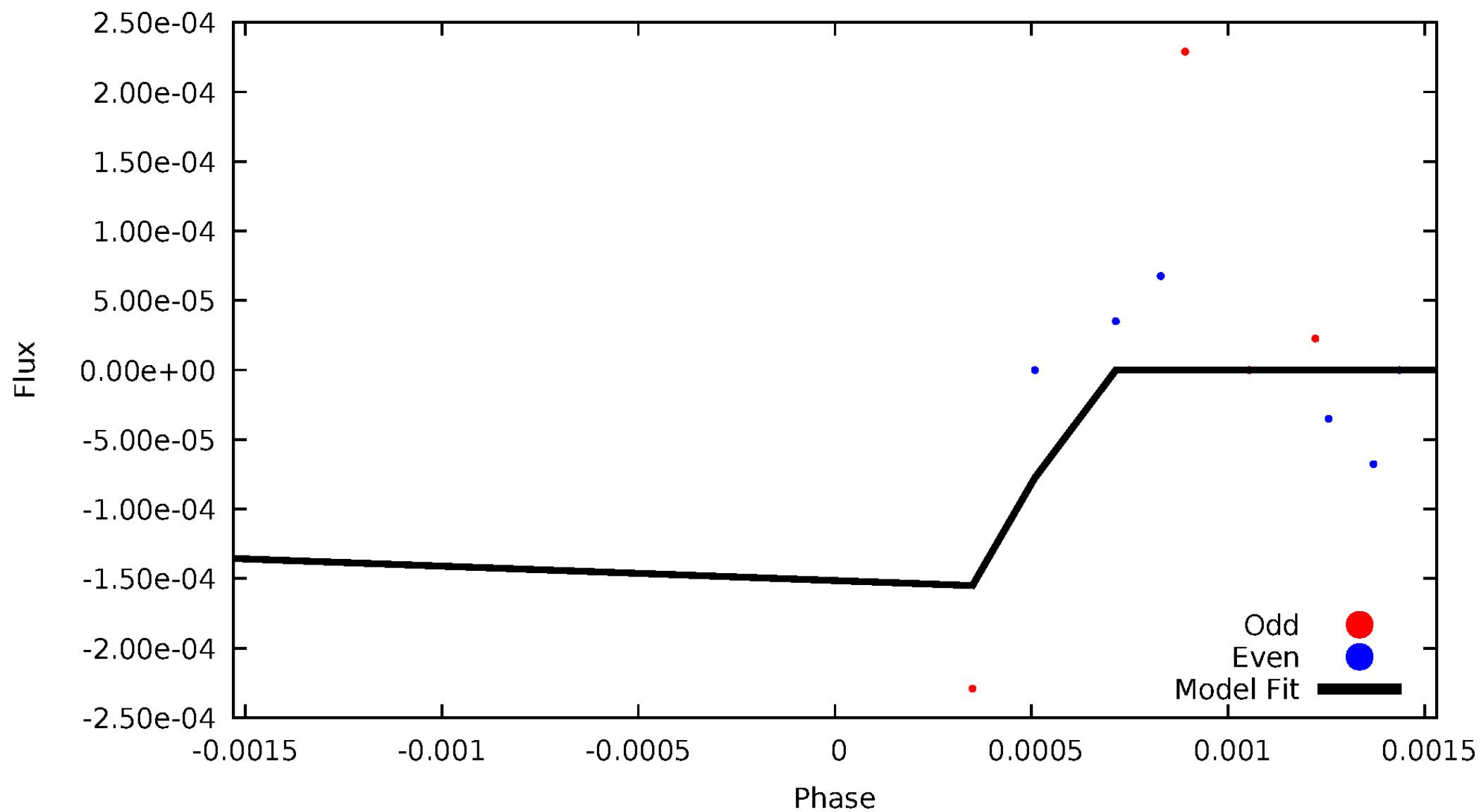
# DV Odd/Even

TCE 008837839-04



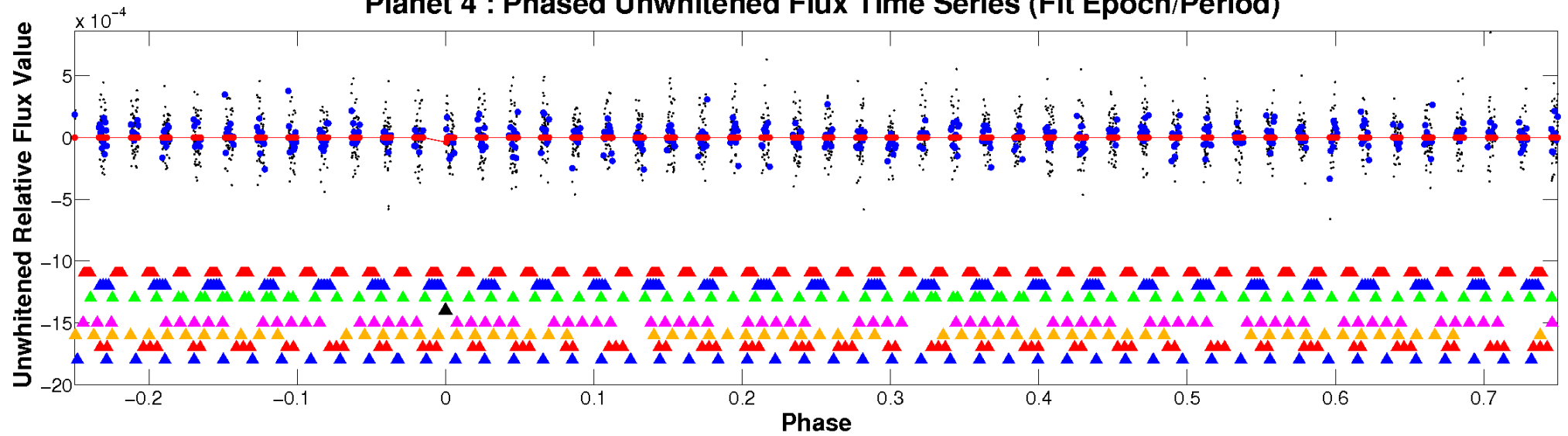
# ALT Odd/Even

TCE 008837839-04

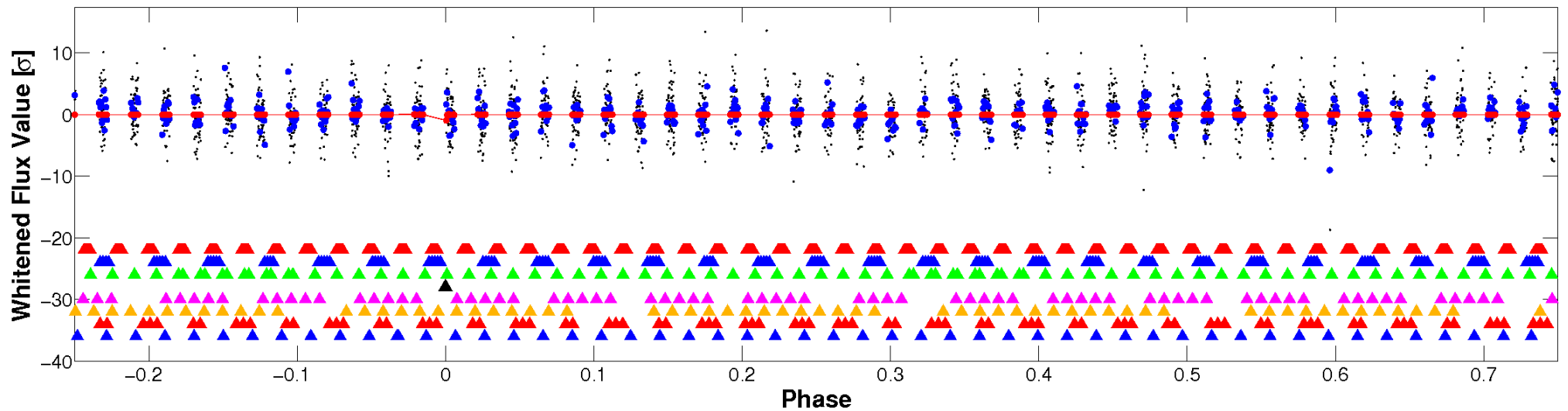


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



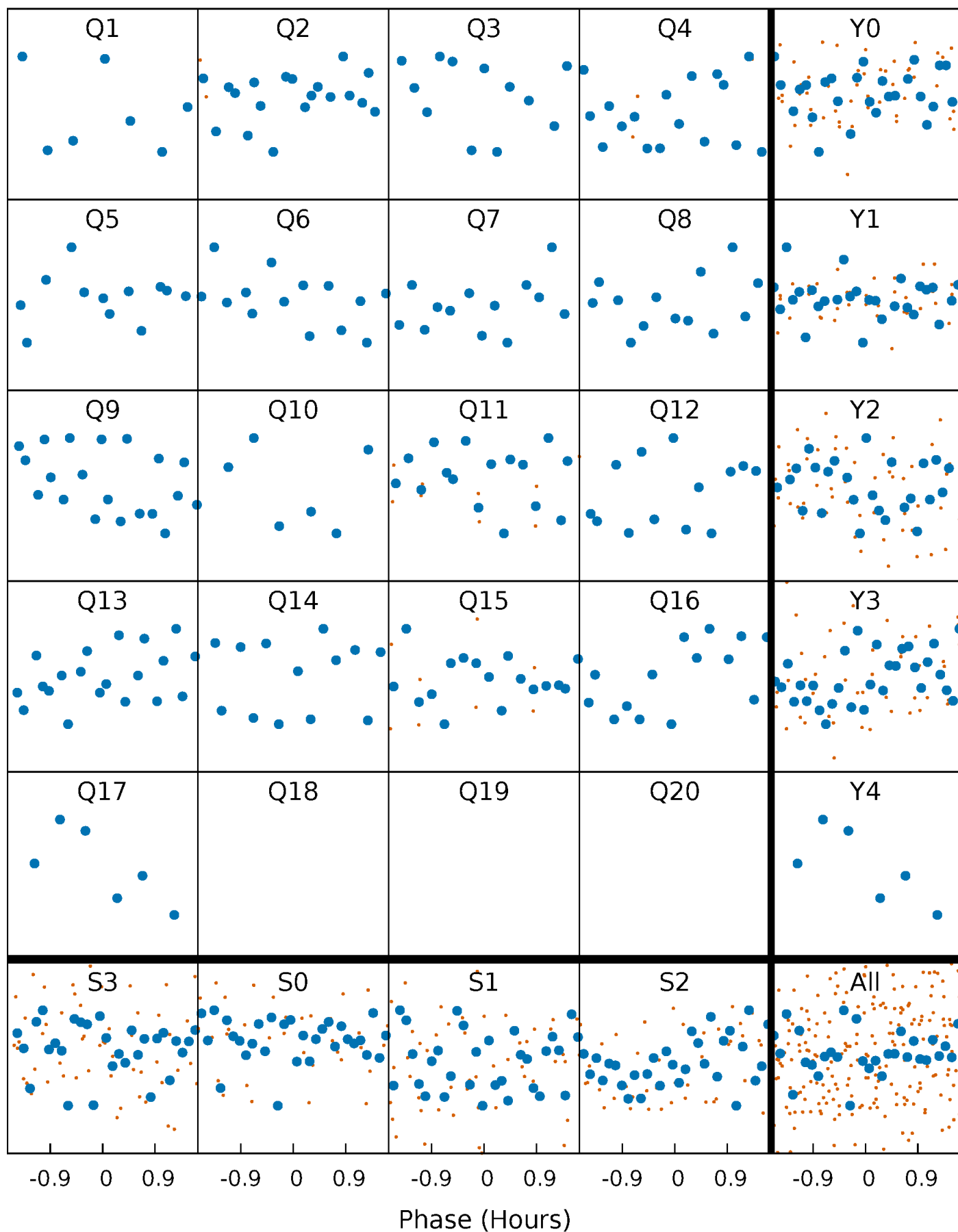
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

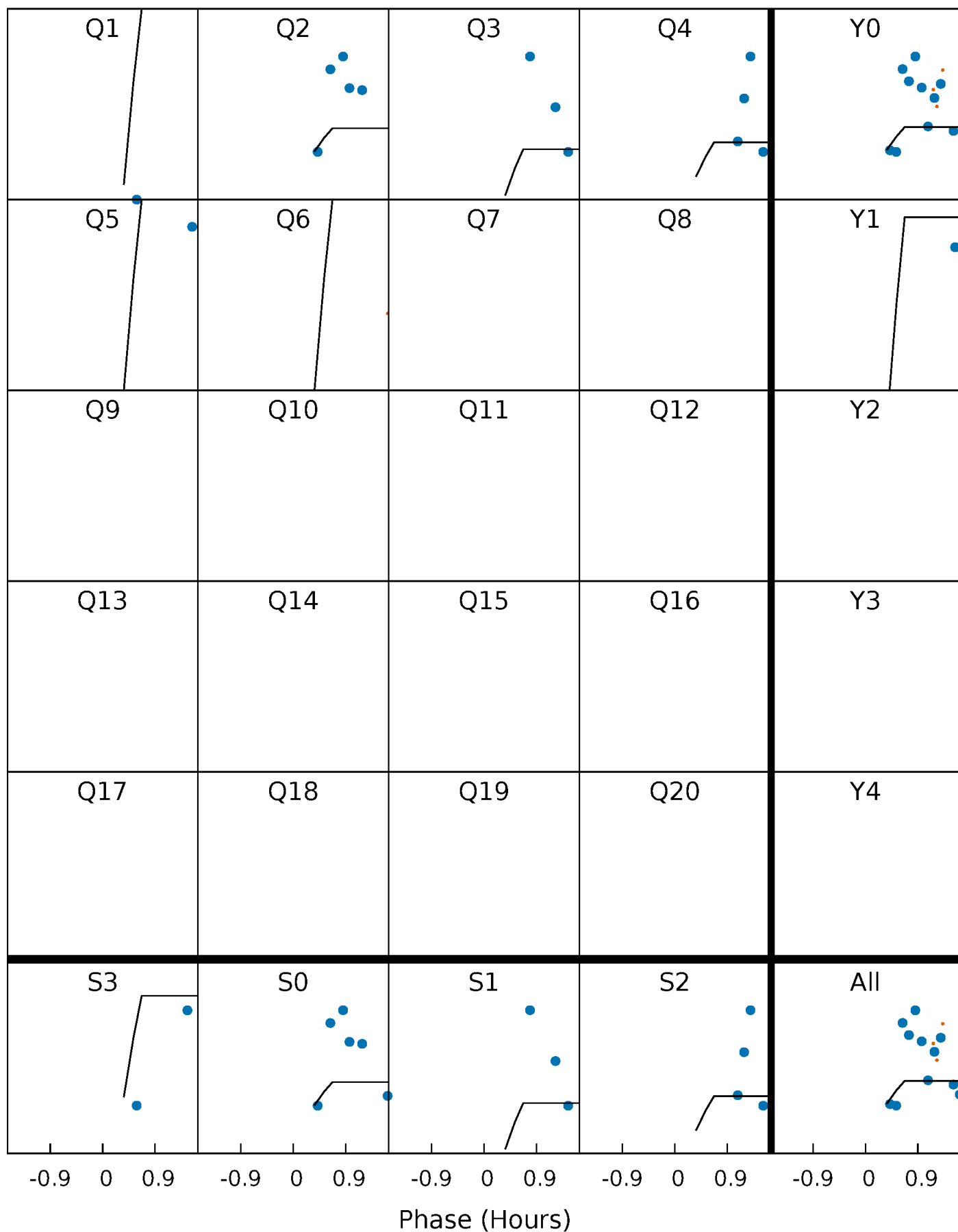
TCE 008837839-04   P= 37.769609 Days    $T_0=138.539642$  (BKJD)





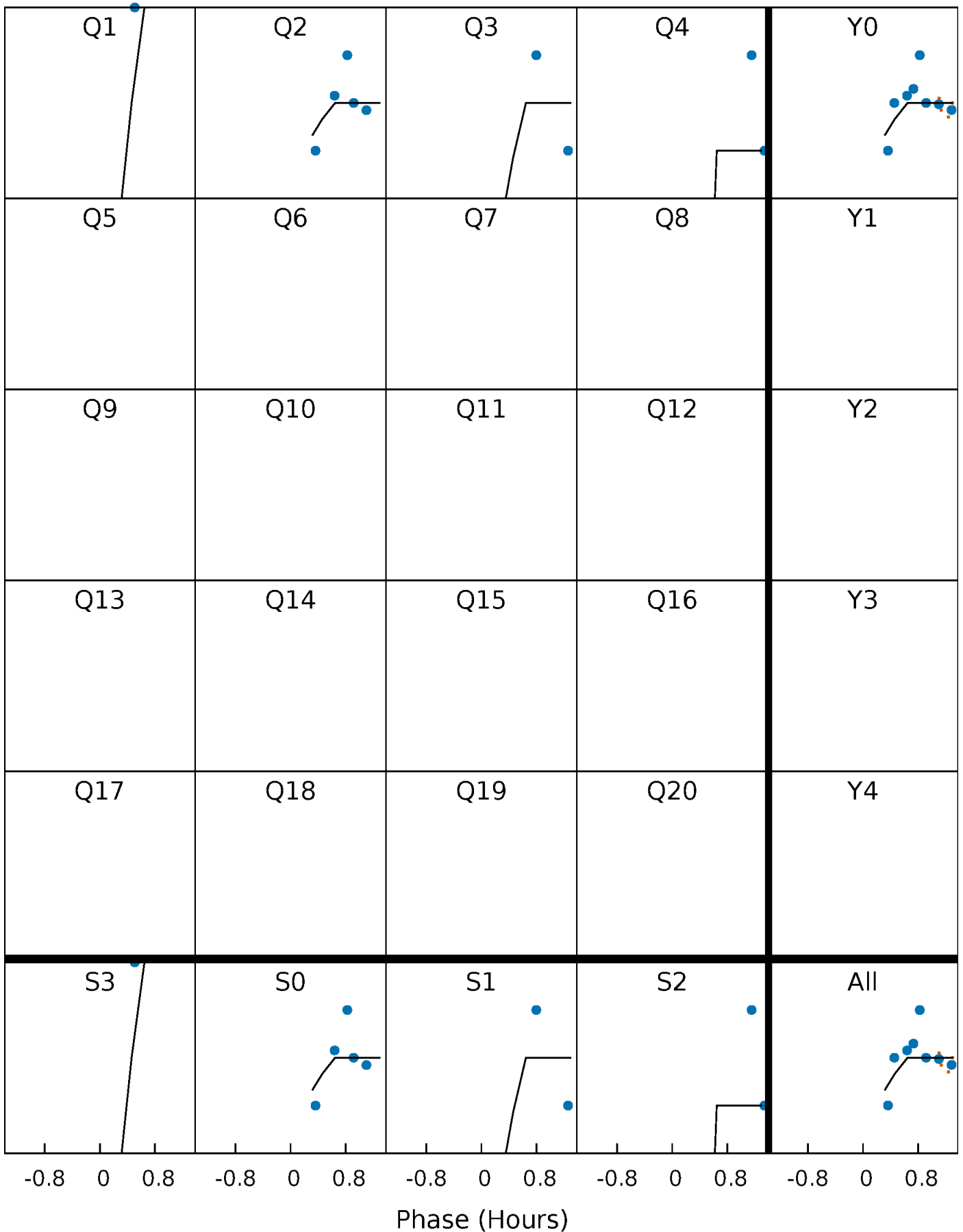
# DV Quarter-Phased Transit Curves

TCE 008837839-04 P= 37.769609 Days  $T_0=138.539642$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

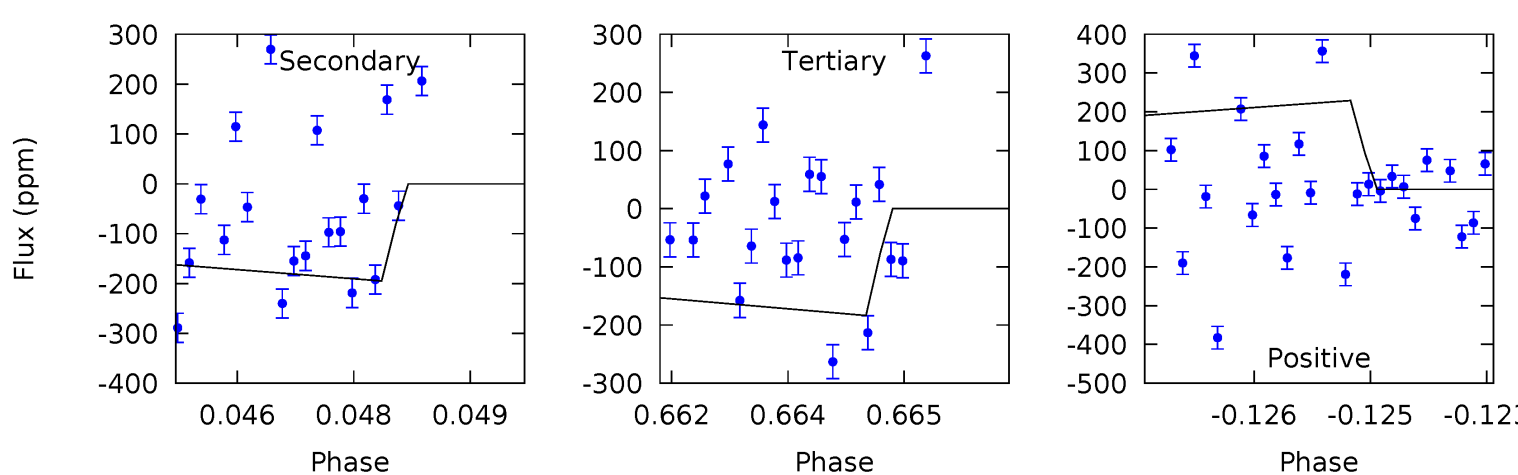
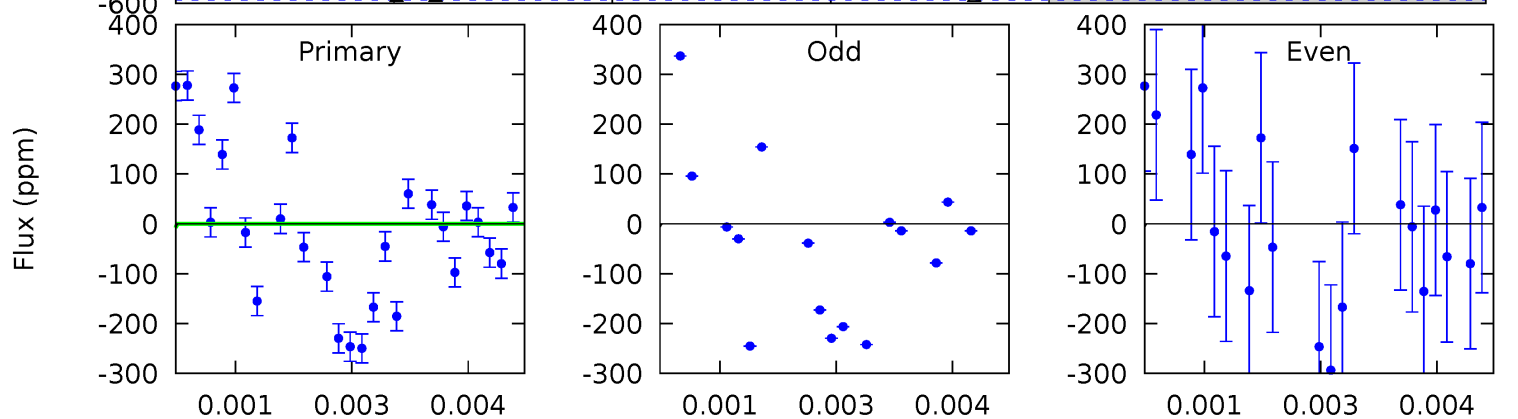
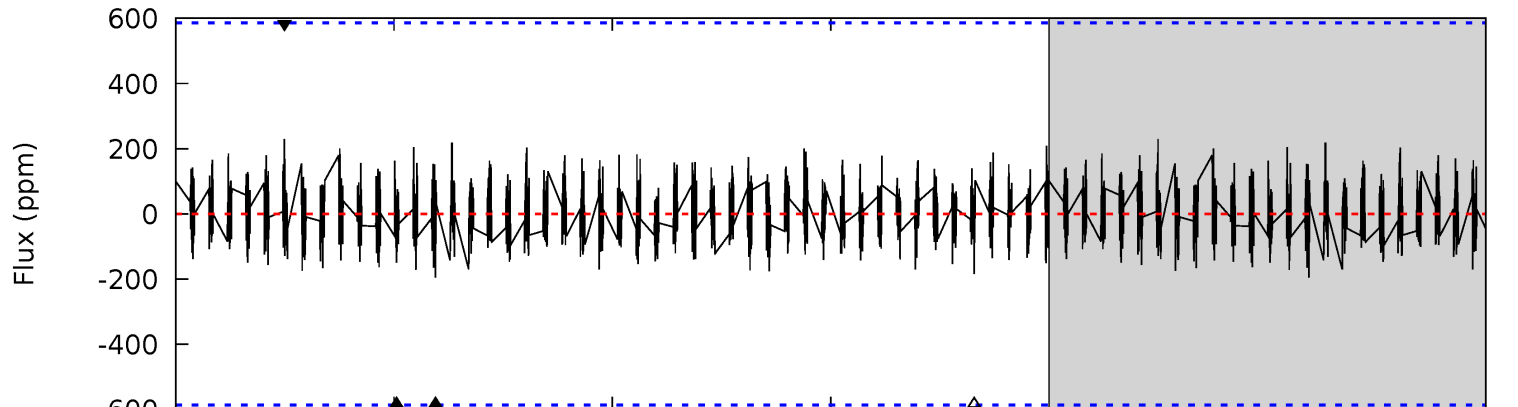
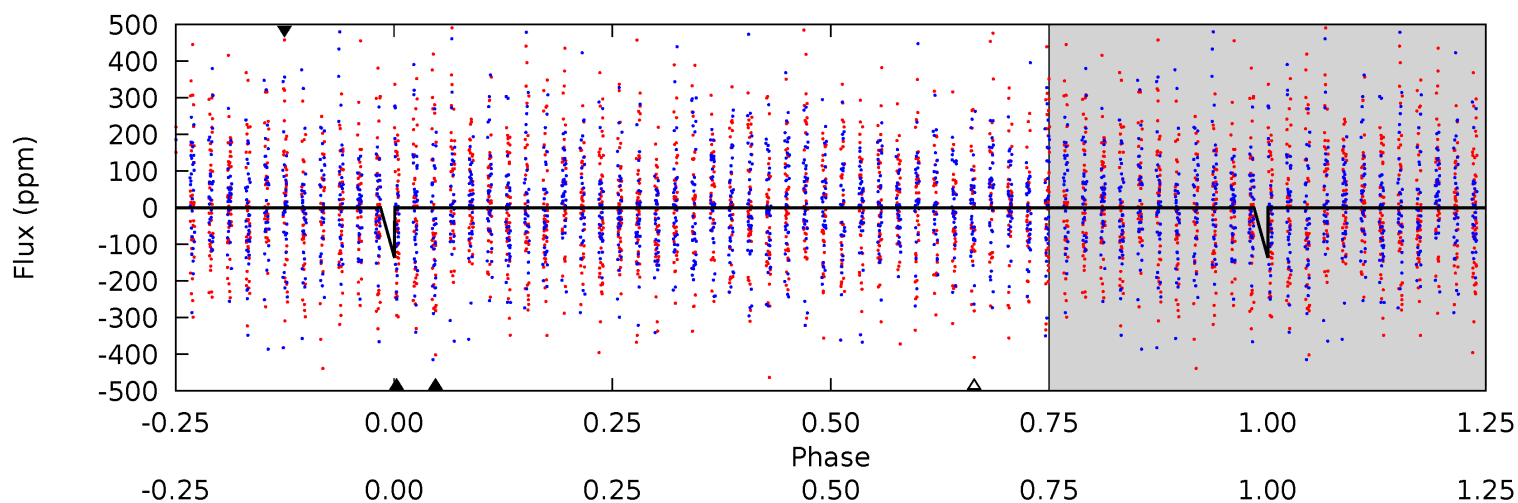
TCE 008837839-04 P= 37.768700 Days  $T_0=138.542510$  (BKJD)



# DV Model-Shift Uniqueness Test

008837839-04, P = 37.769609 Days, E = 100.770033 Days

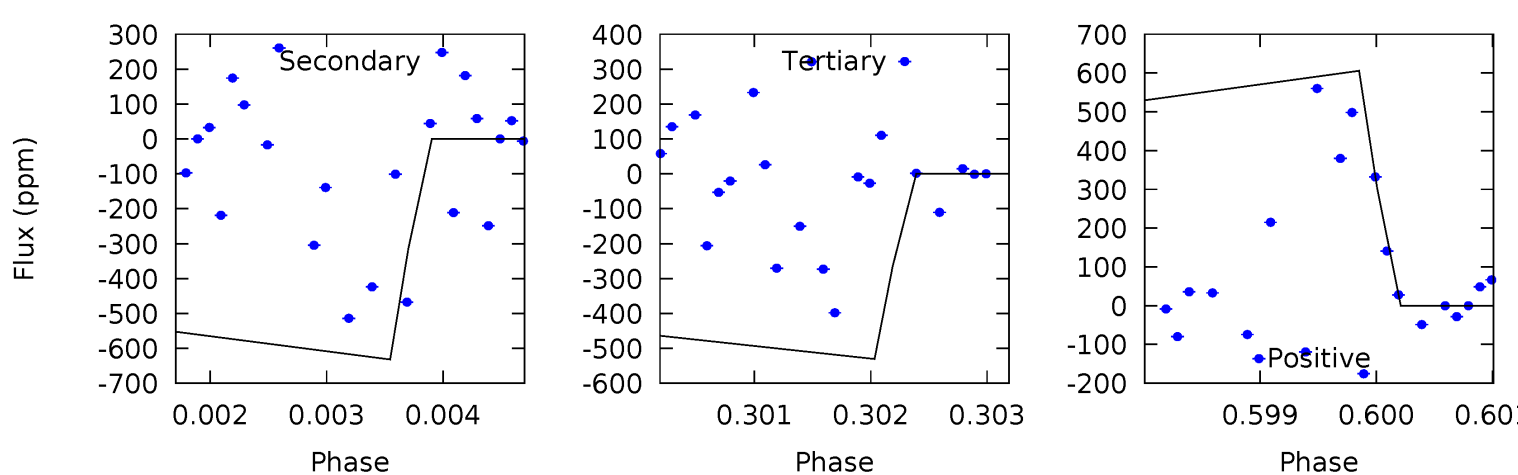
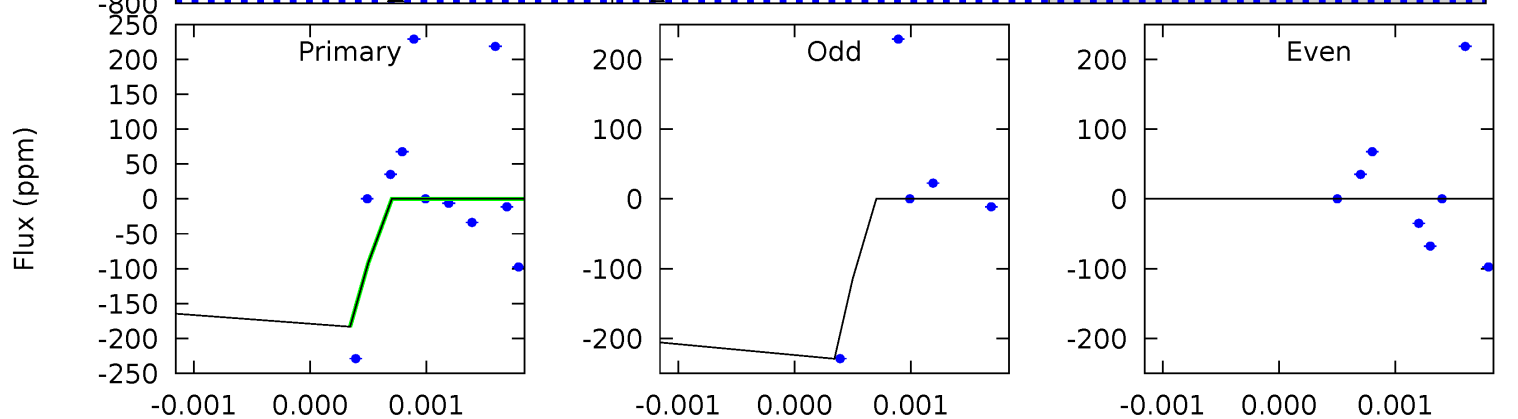
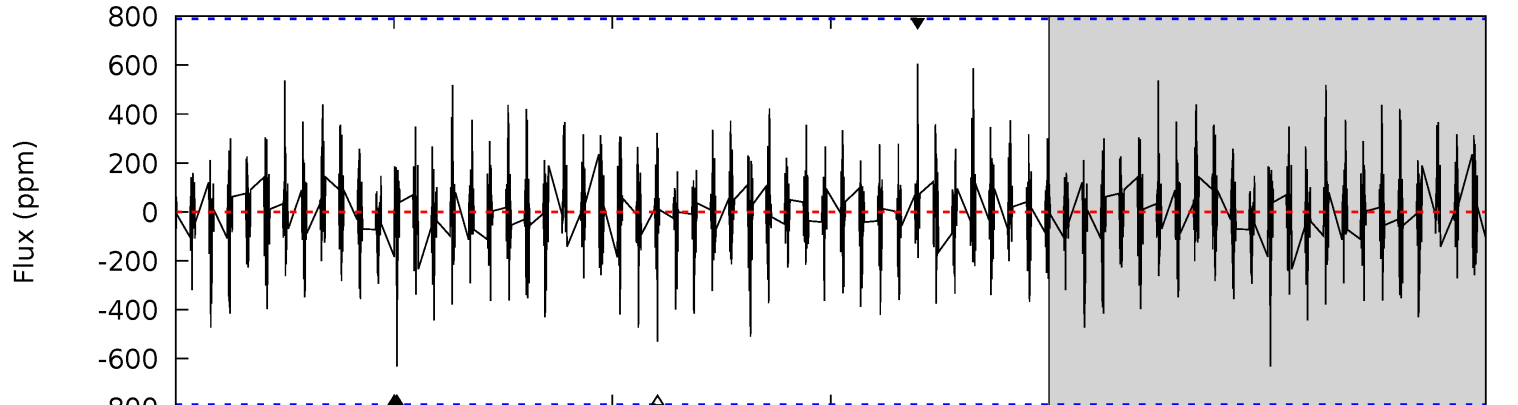
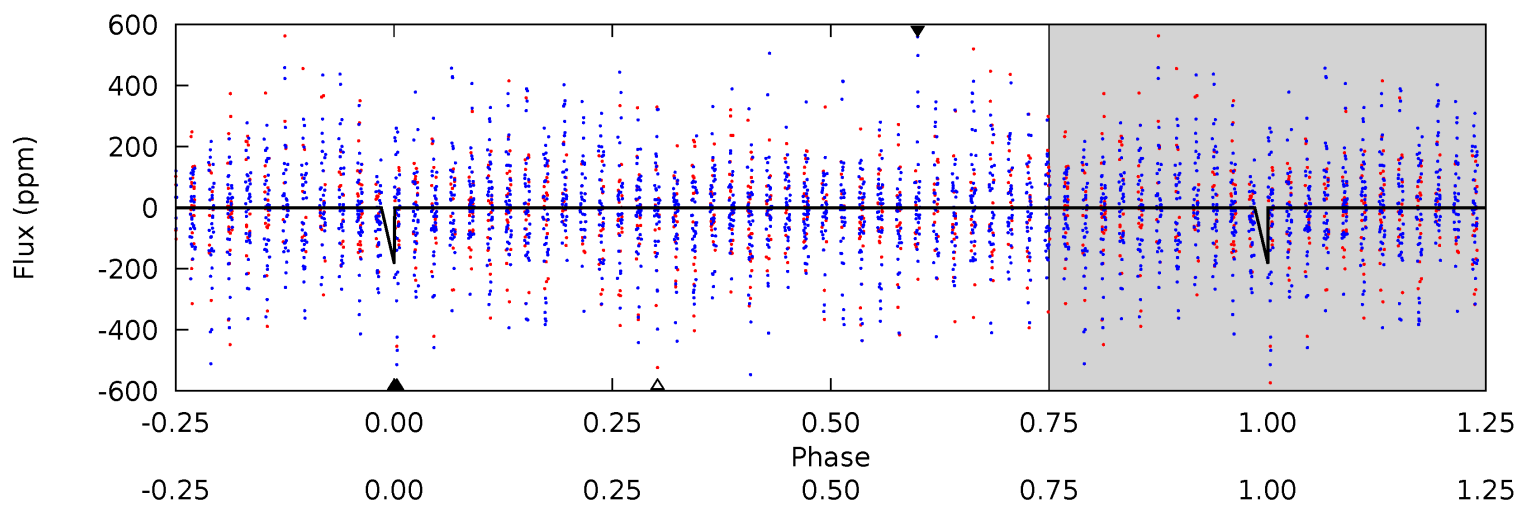
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.25	1.79	1.69	2.10	5.38	3.18	0.61	-0.44	-0.85	0.10	-0.31	0.04	0	0.54	0



# Alt Model-Shift Uniqueness Test

008837839-04, P = 37.768700 Days, E = 100.773810 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
1.26	4.36	3.66	4.18	5.45	3.29	0.92	-2.40	-2.92	0.70	0.18	0	0	0.49	0



### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-195 \pm 109$	$35.04^{+39.50}_{-24.77}$	$1391^{+81}_{-126}$	$2916^{+1467}_{-653}$	$4.795^{+57.537}_{-3.893}$
Alt.	$-632 \pm 145$	$37.45^{+40.03}_{-26.28}$	$1394^{+77}_{-121}$	$3545^{+2028}_{-721}$	$17^{+159}_{-13}$

$T_{\text{max}}$  = 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

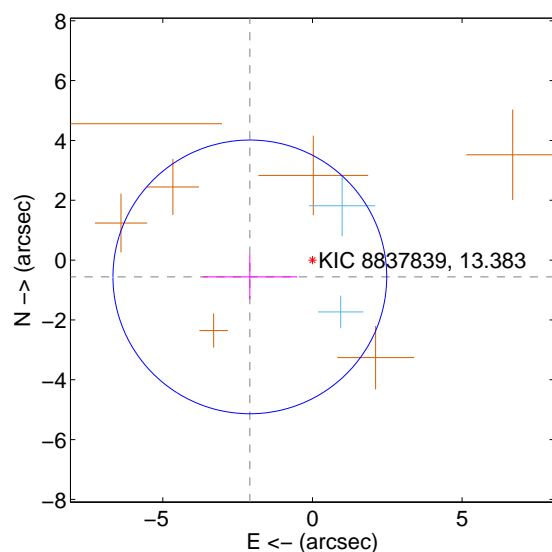
Supplemental centroid analysis for 008837839-04. Kepler magnitude: 13.38. Transit SNR 2.55

There are 2 quarters with good PRF difference image offsets

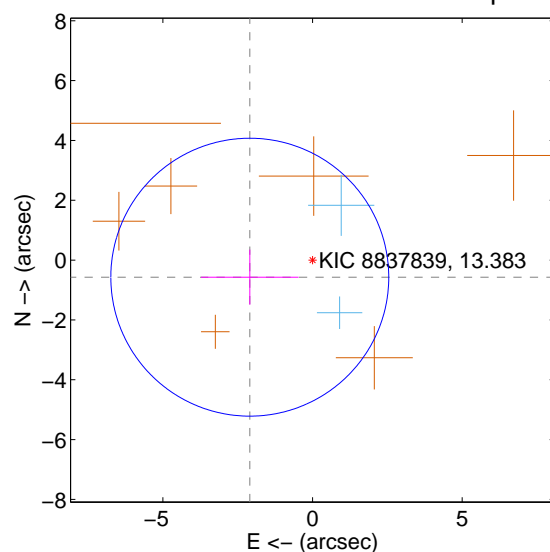
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.166 \pm 1.525$	1.42	$2.092 \pm 1.586$	$-0.561 \pm 0.745$
PRF-fit source offset from KIC position	$2.173 \pm 1.548$	1.40	$2.097 \pm 1.631$	$-0.571 \pm 0.920$
photometric centroid source offset	$1.16 \pm 1.29$	0.90	$0.65 \pm 1.42$	$0.96 \pm 1.22$

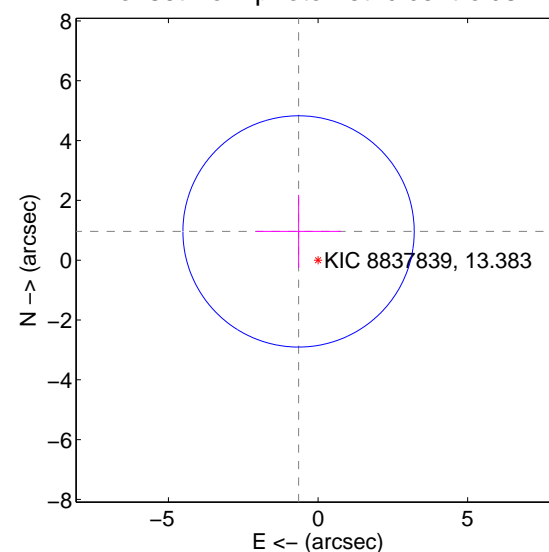
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

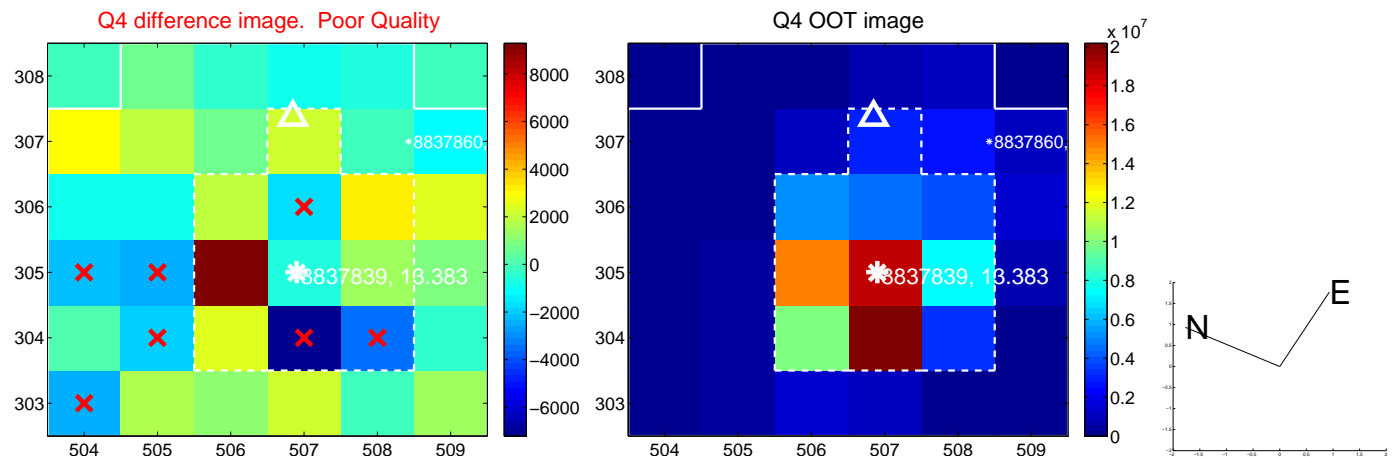
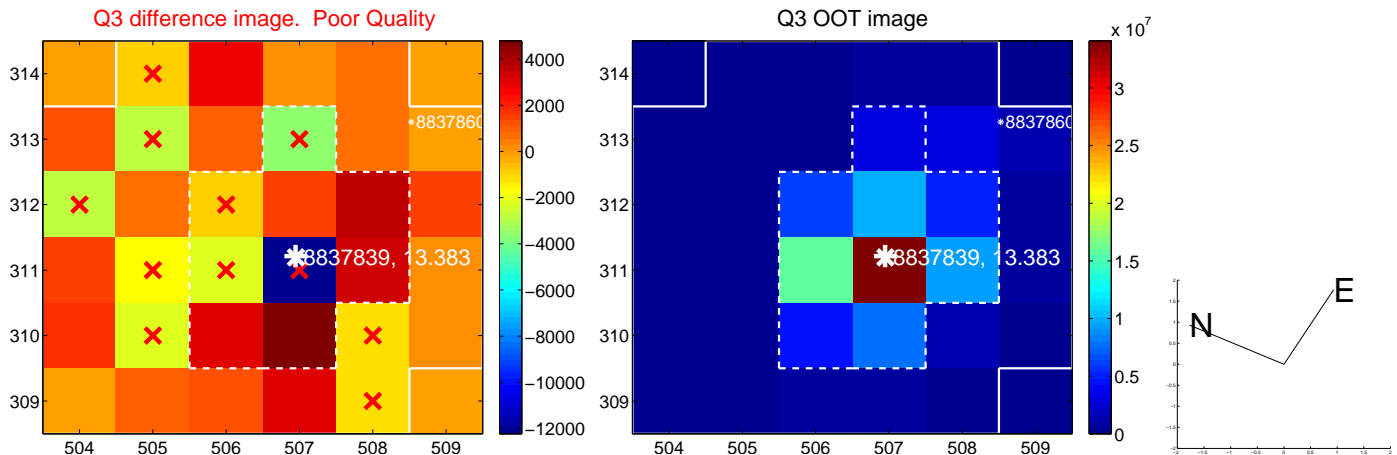
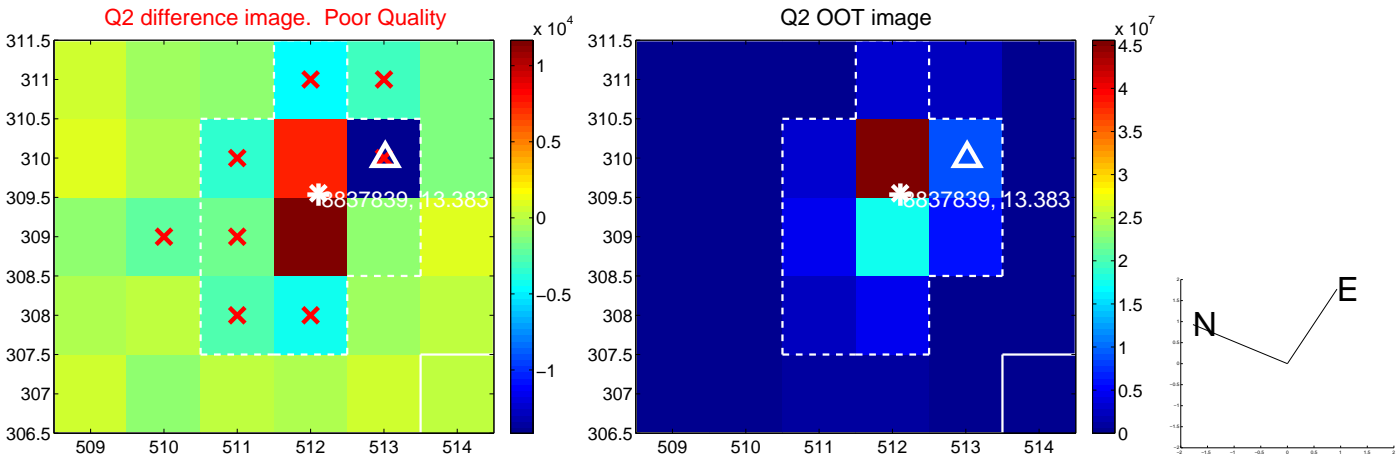
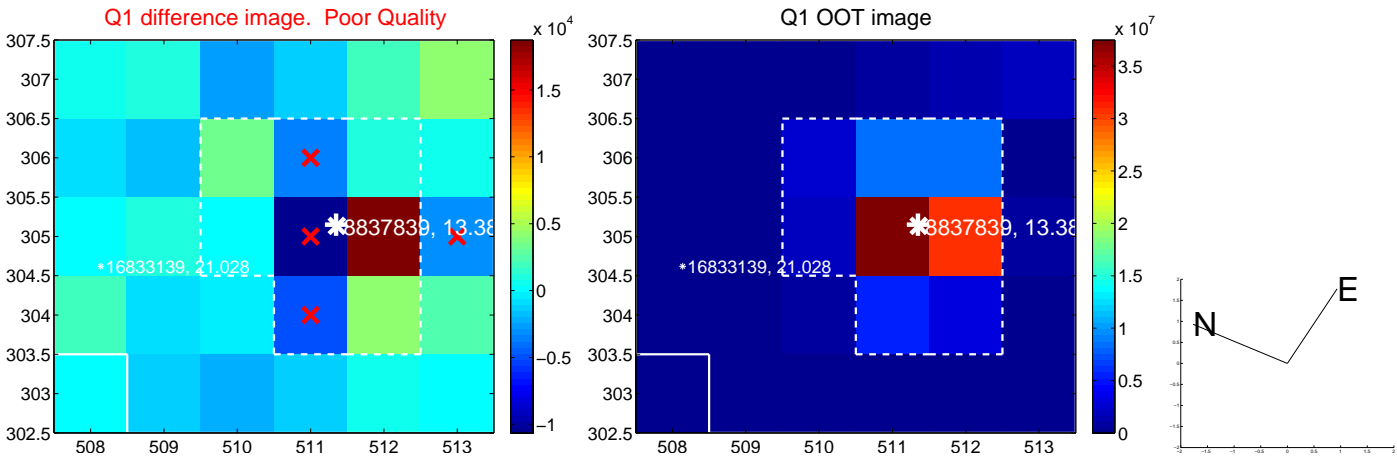


offset from photometric centroids

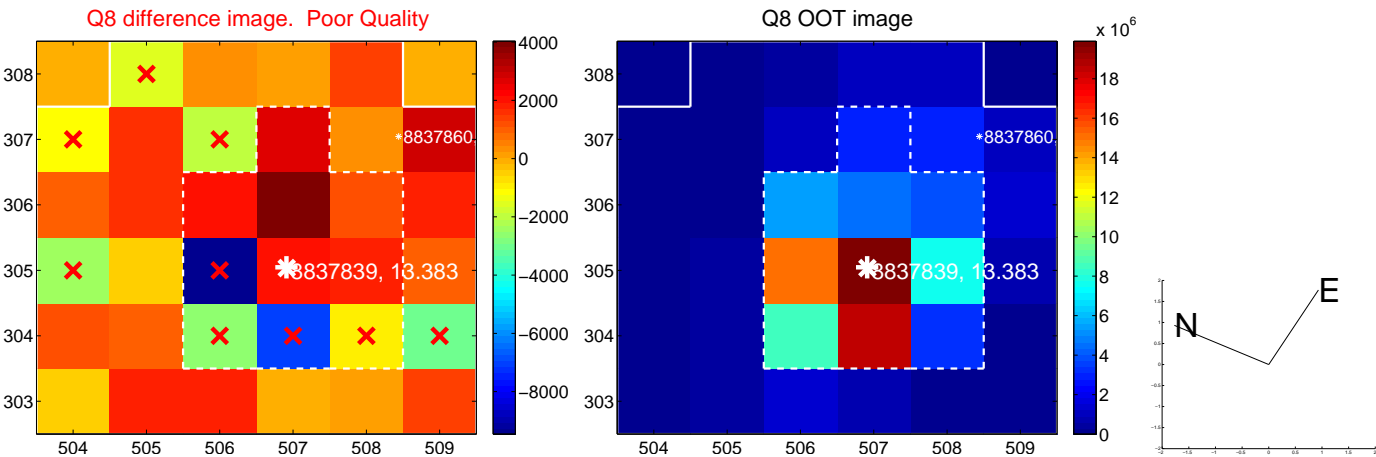
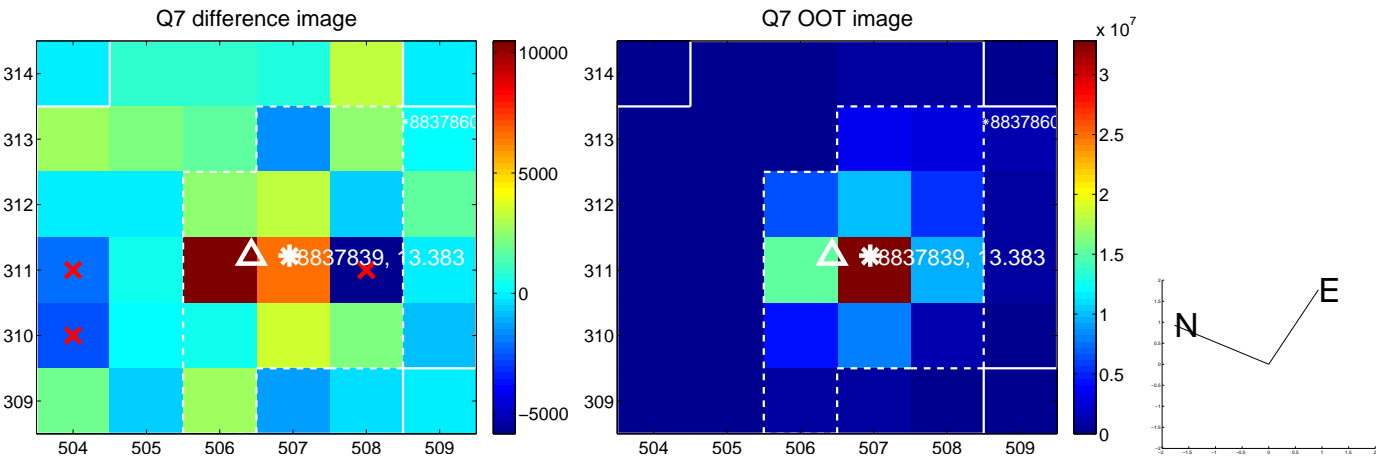
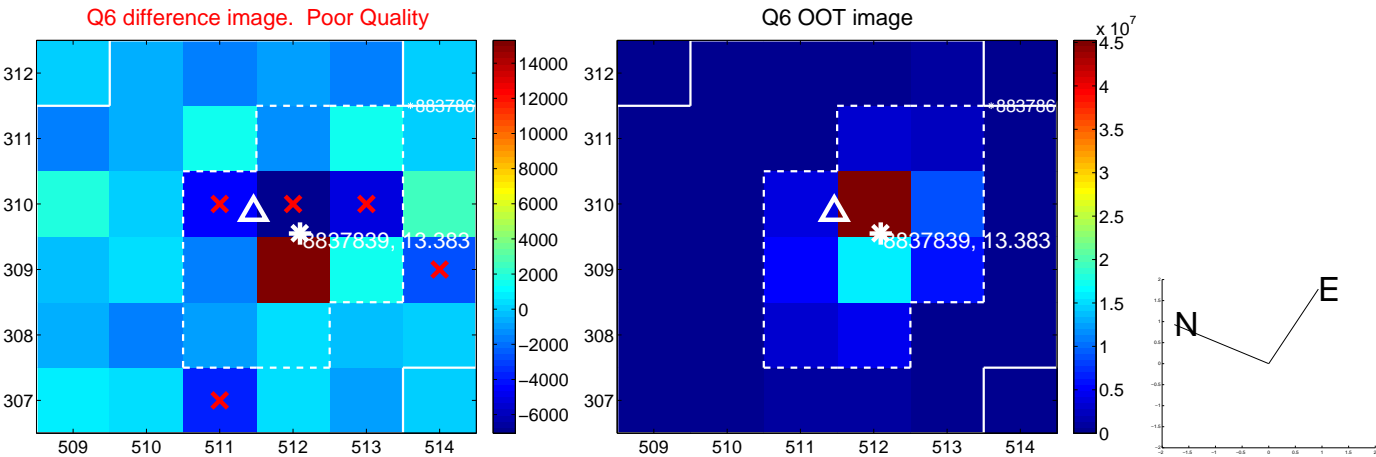
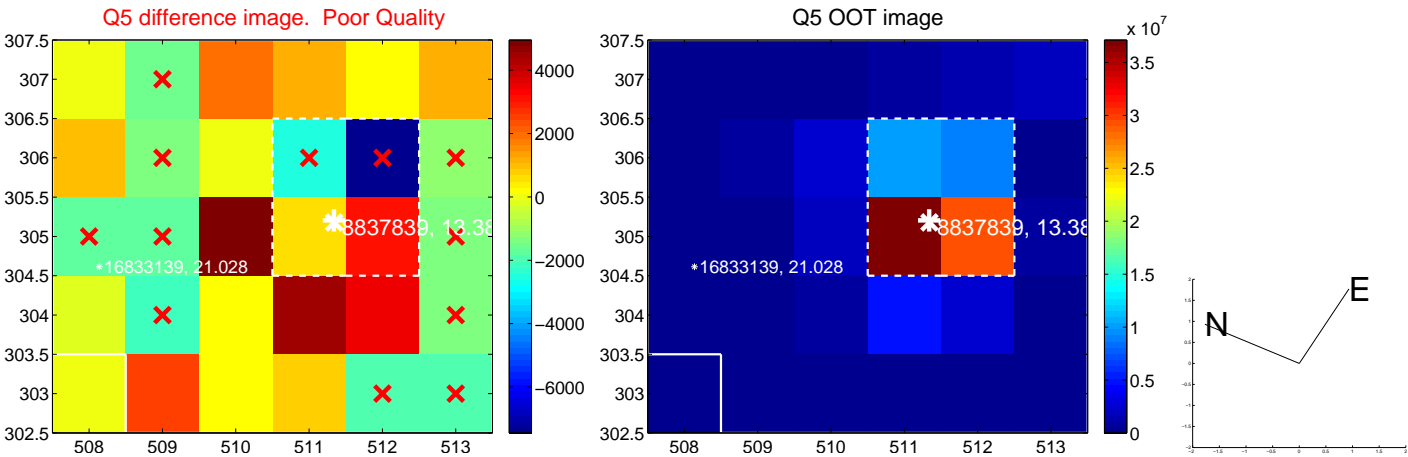


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

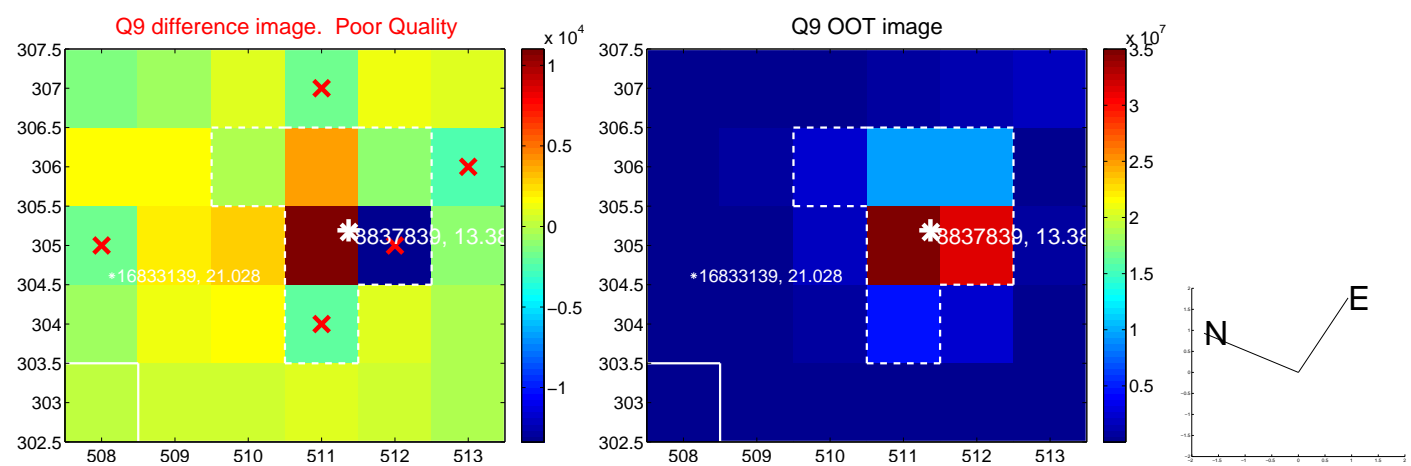


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

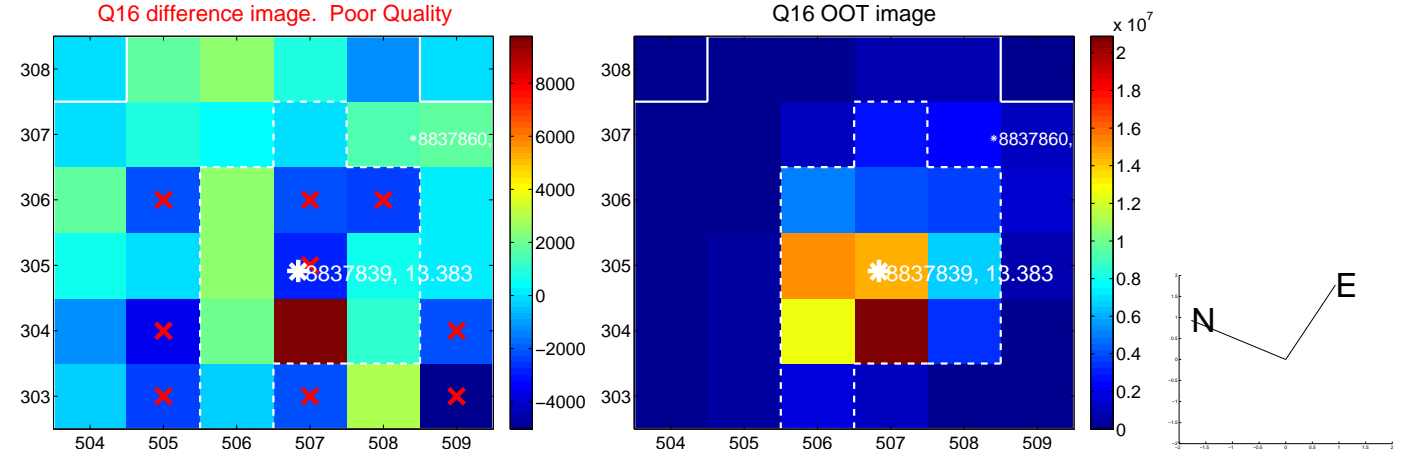
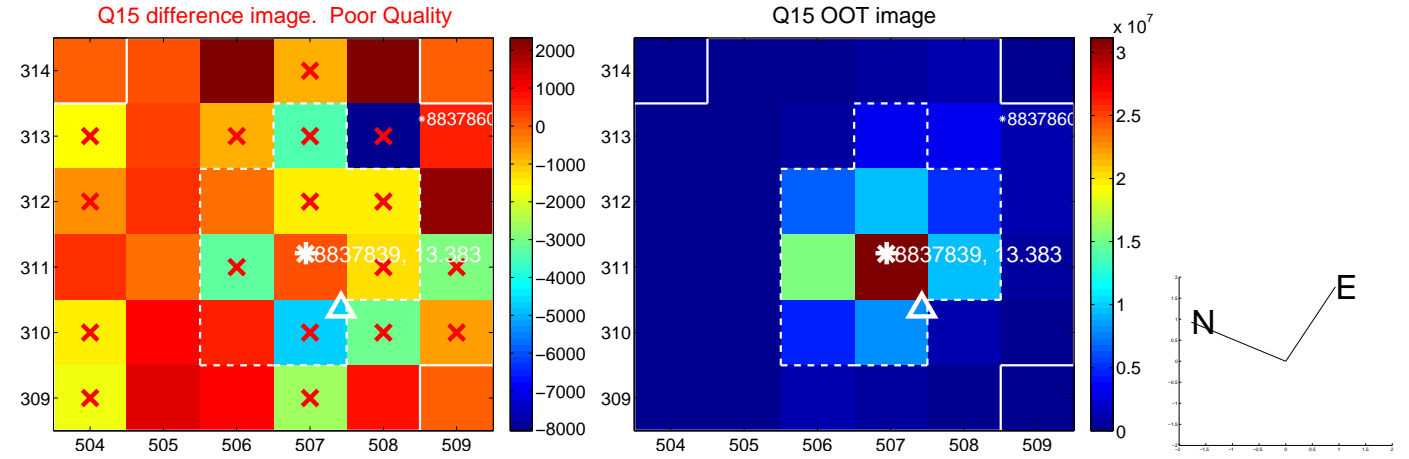
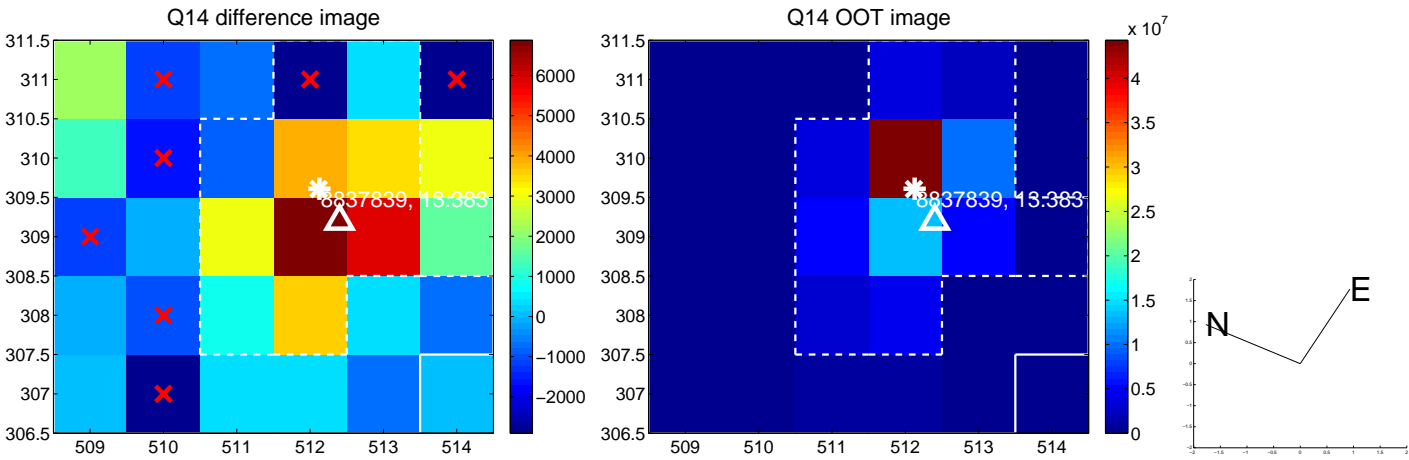
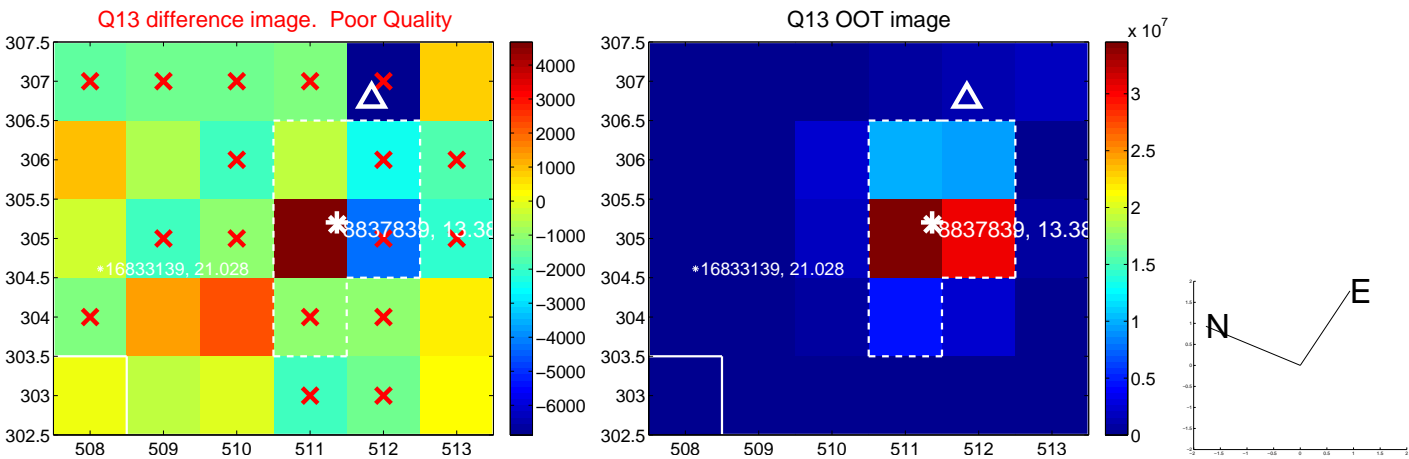




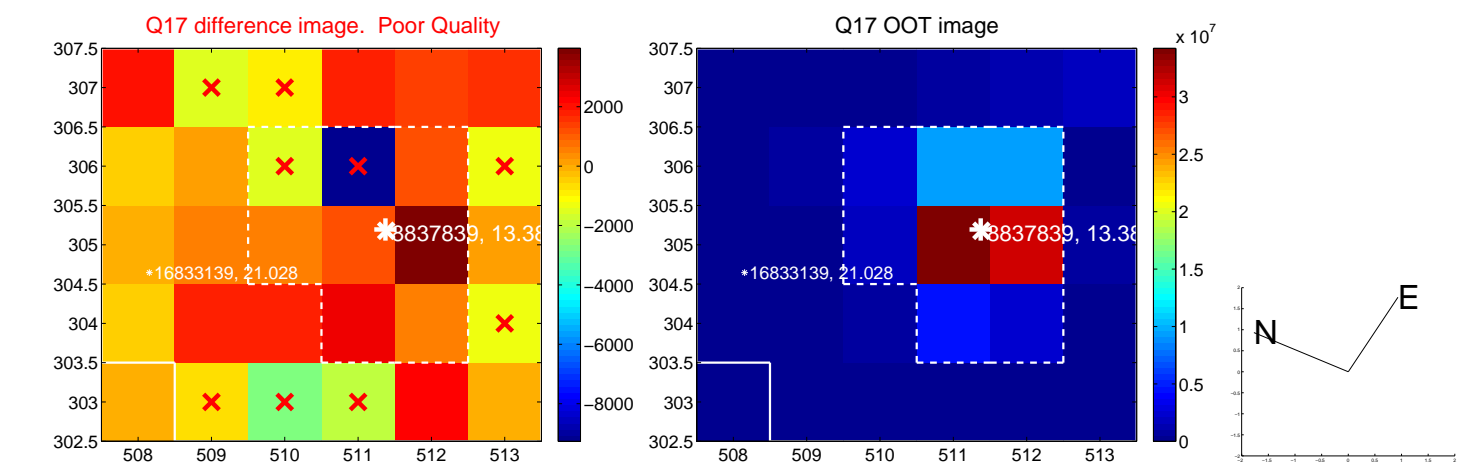
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



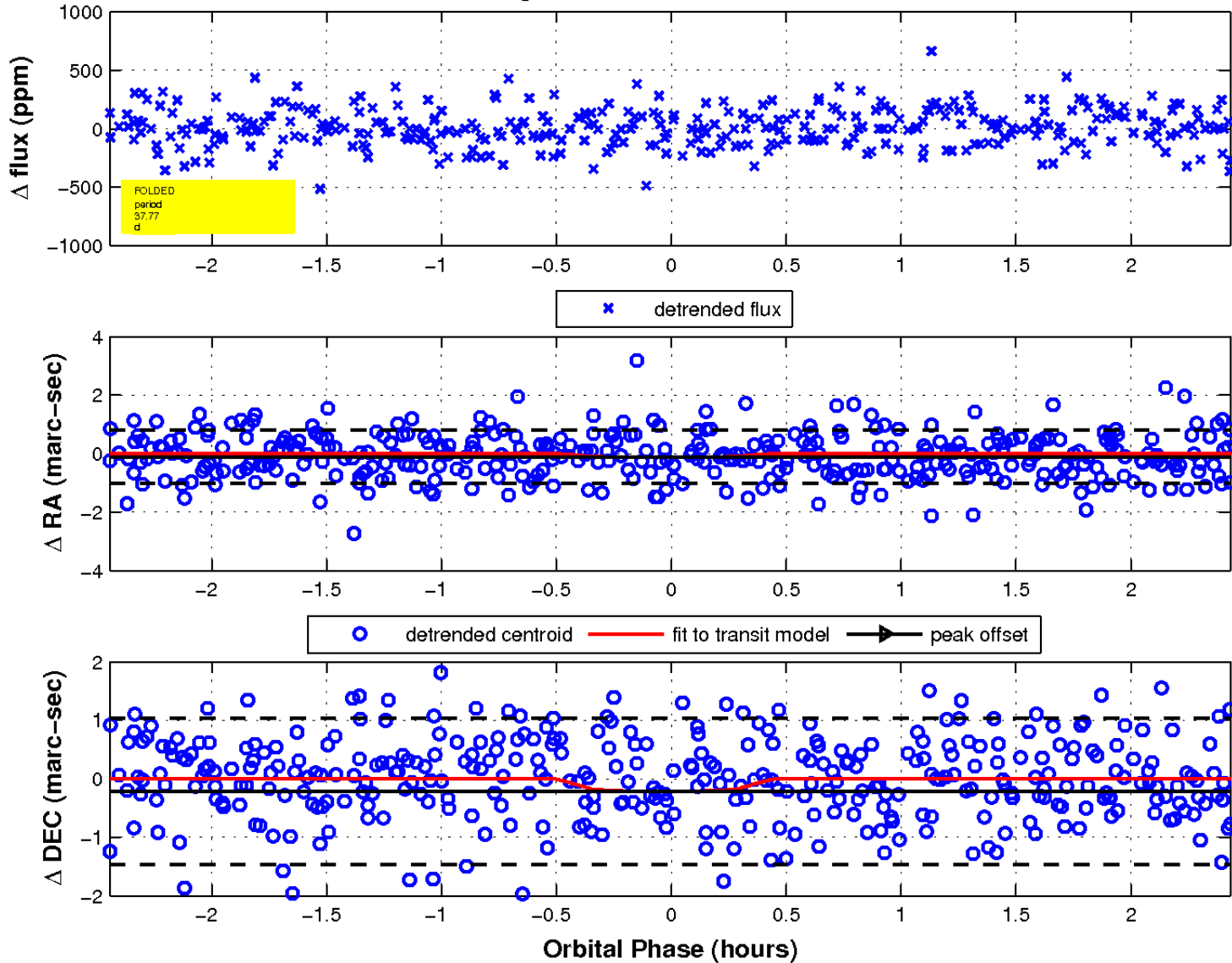
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

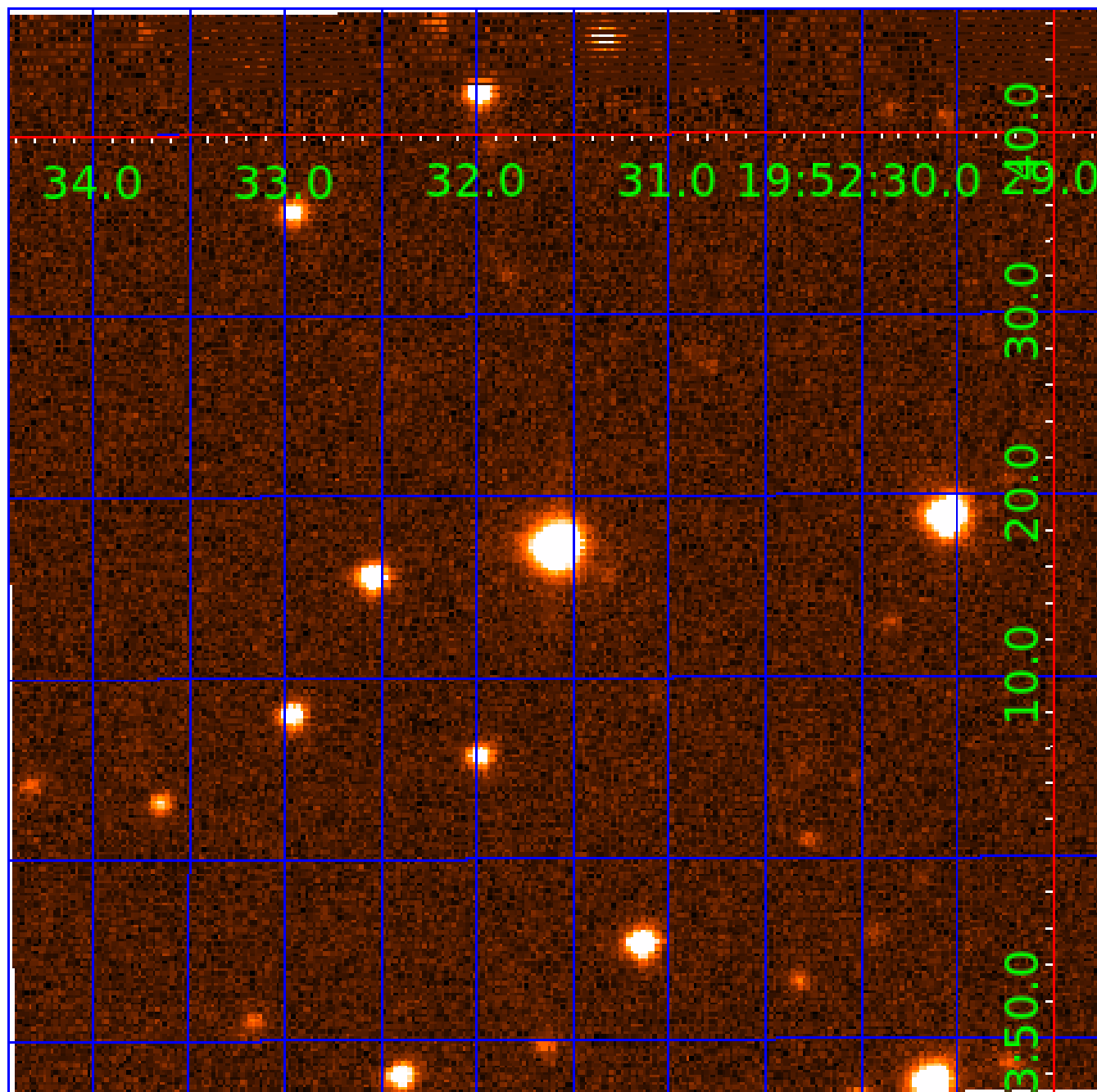


### fluxWeightedCentroids, Planet 4 of 8



UKIRT Image

Declination



# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

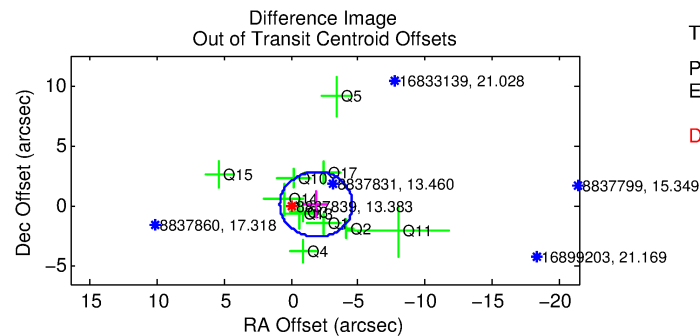
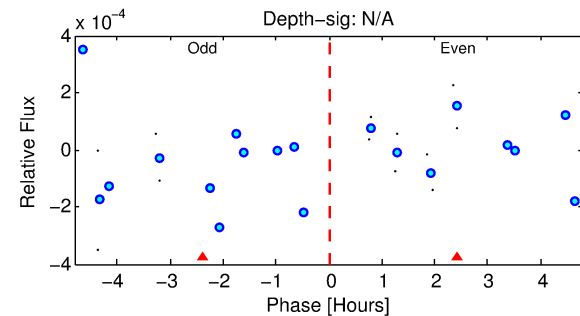
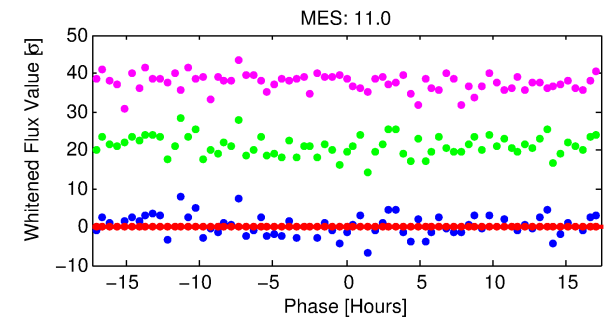
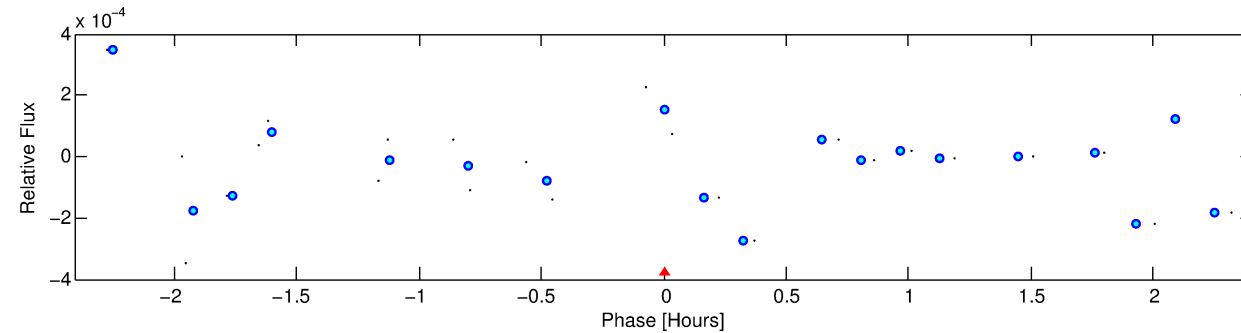
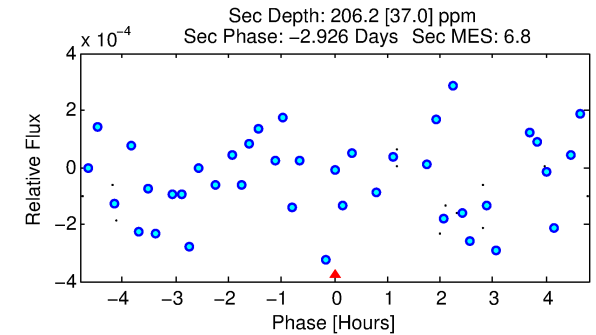
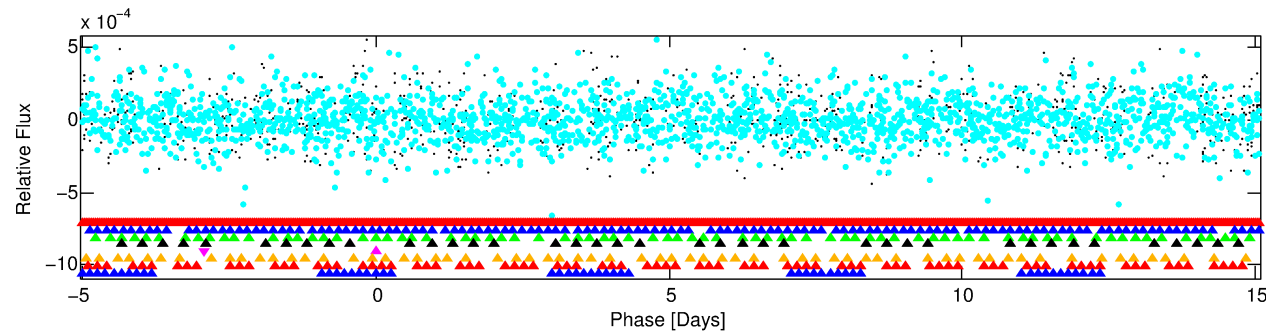
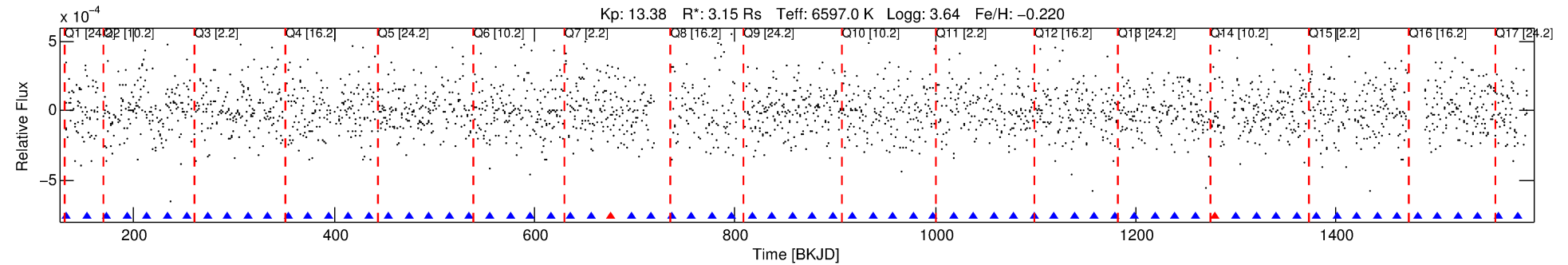
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-05

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 5 of 8 Period: 20.120 d



## TPS TCE Results:

Period = 20.11977 d  
Epoch = 132.8633 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

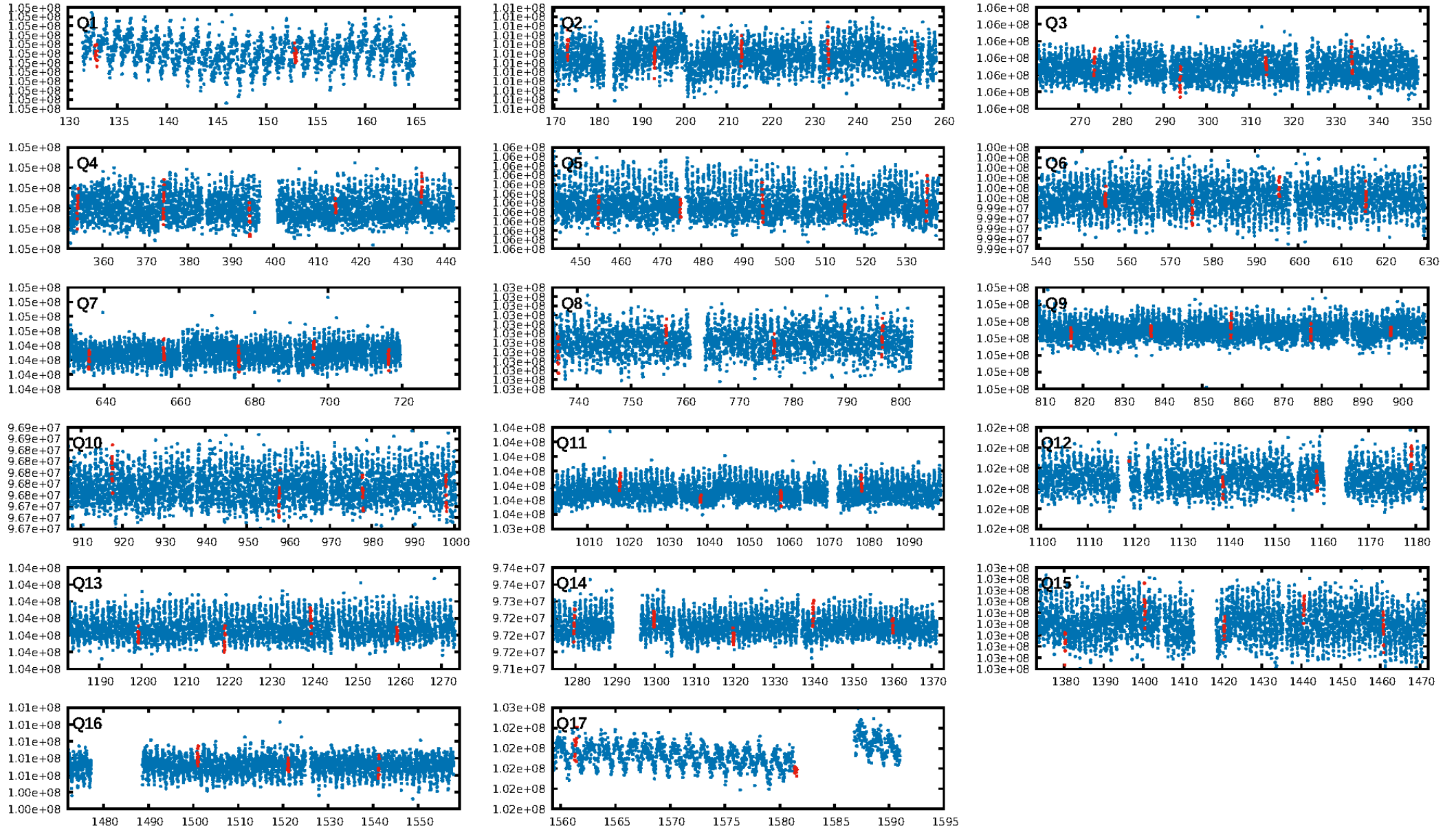
ShortPeriod-sig: 100.0% [11.57σ]  
LongPeriod-sig: 100.0% [18.36σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.31e-13  
RollingBand-fgt: 0.67 [4/6]  
GhostDiagnostic-chr: 1.472

Centroid-sig: 40.0%  
Centroid-so: 1.306 arcsec [0.91σ]  
OotOffset-rm: 1.868 arcsec [2.06σ]  
KicOffset-rm: 1.775 arcsec [2.02σ]  
OotOffset-st: 3/3/1/4 [11]  
KicOffset-st: 3/3/1/4 [11]  
DiffImageQuality-fgm: 0.09 [1/11]  
DiffImageOverlap-fno: 0.18 [3/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:09 Z

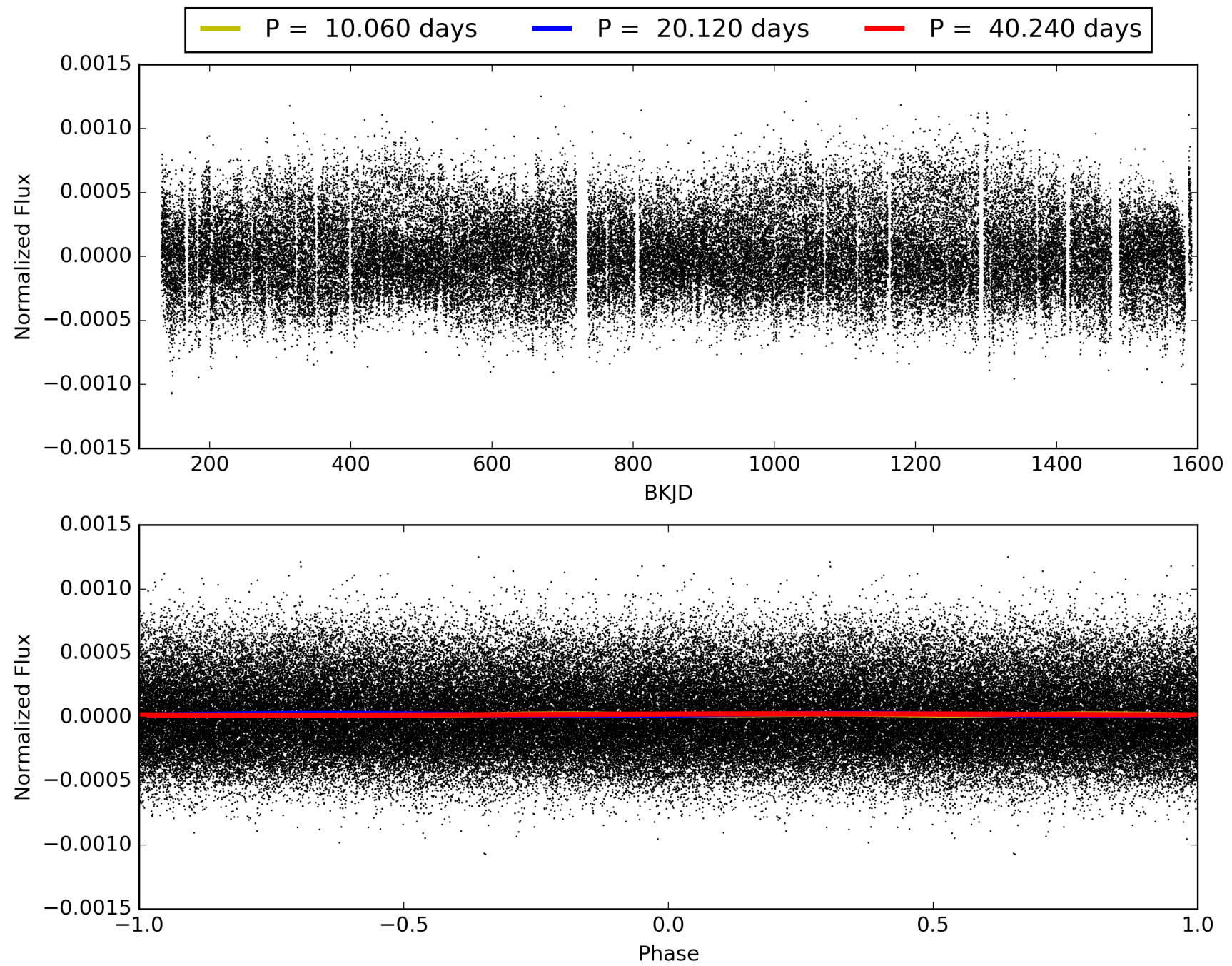
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008837839-05, PDC Light Curves





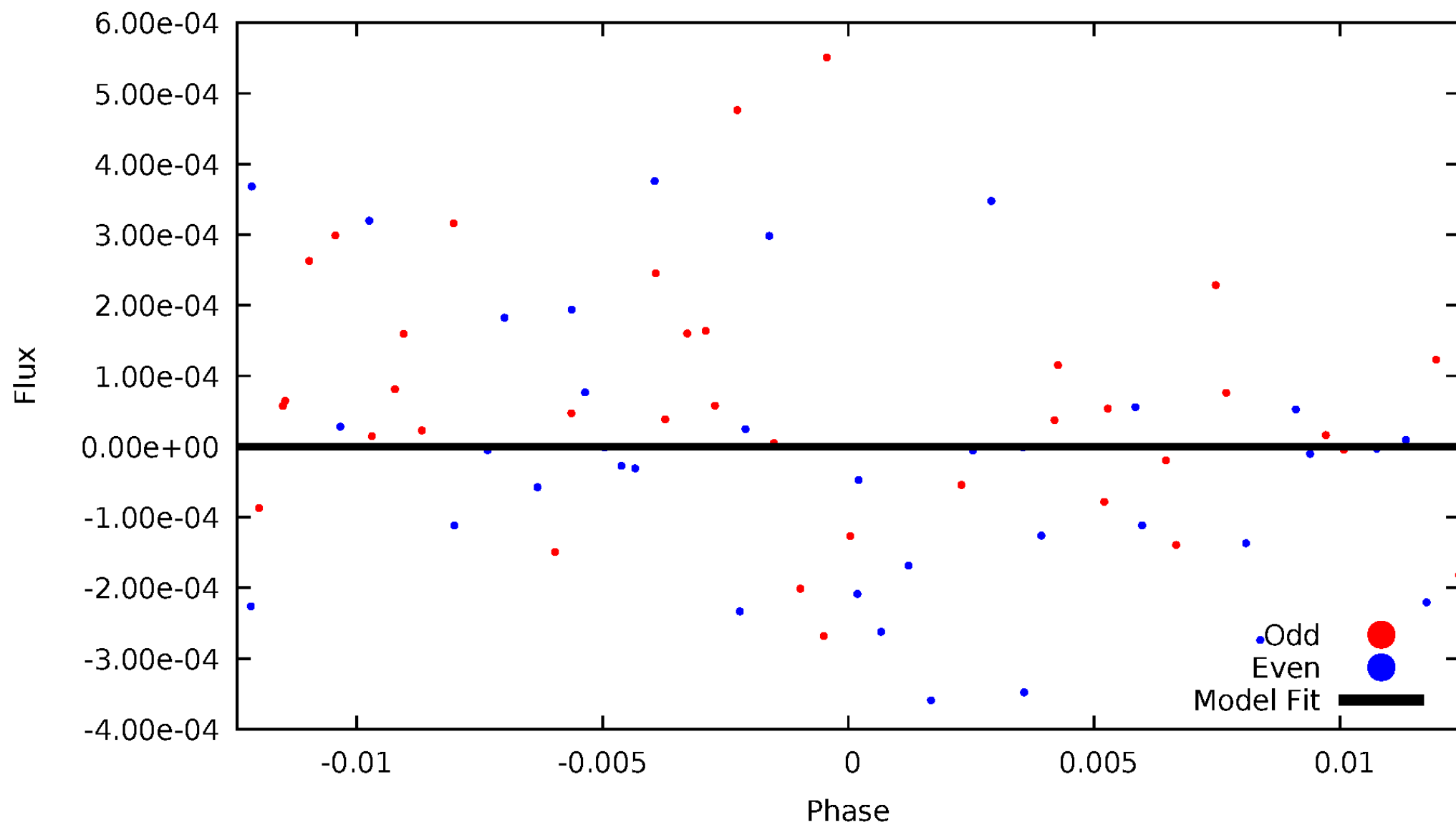
TCE 008837839-05





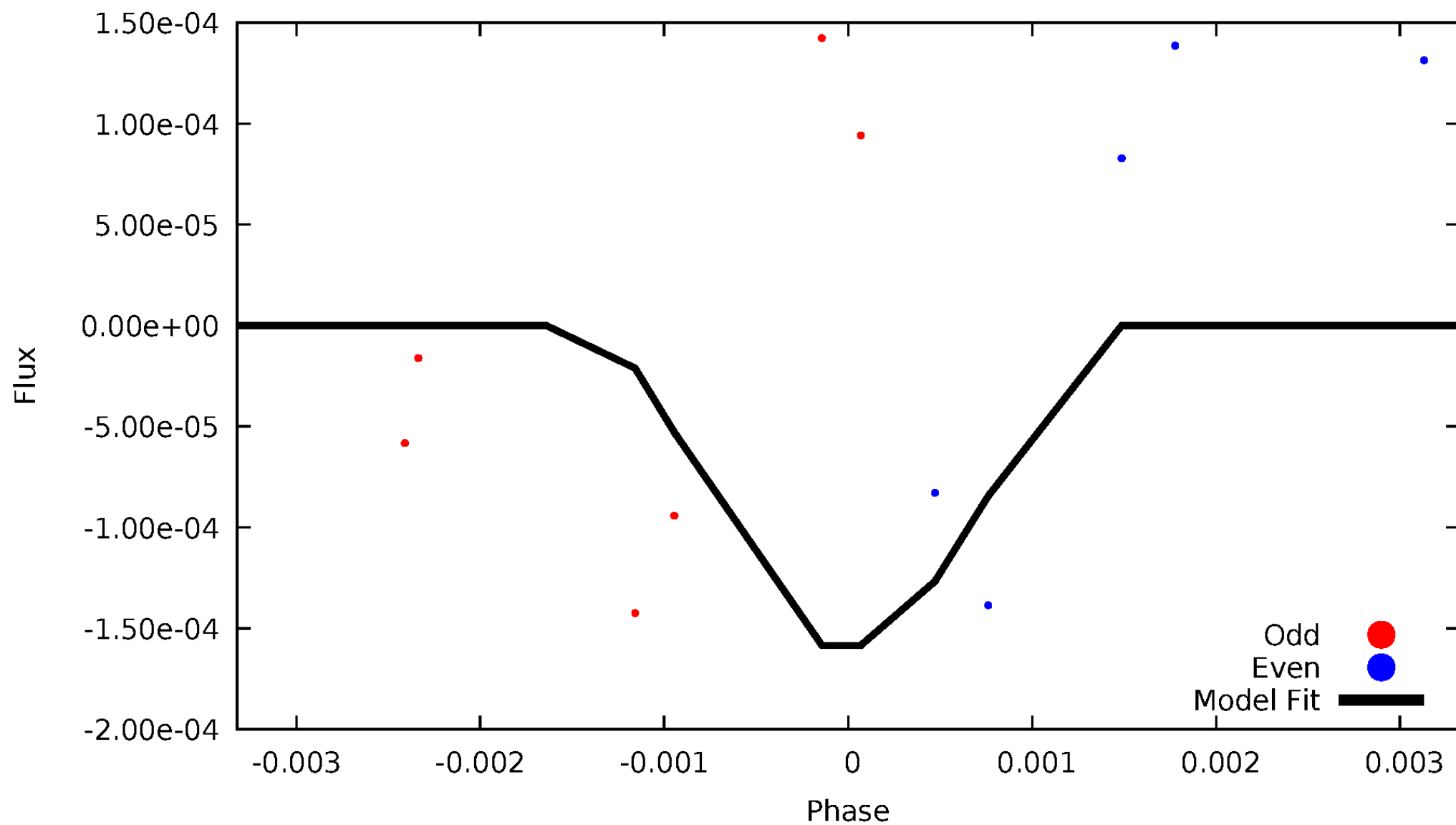
# DV Odd/Even

TCE 008837839-05

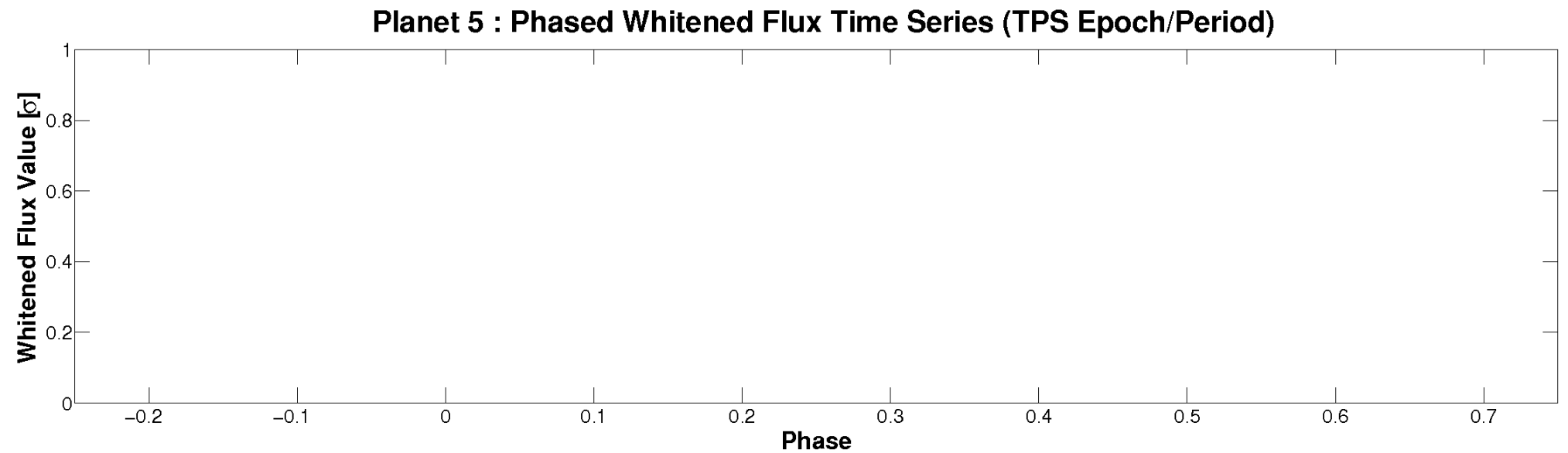
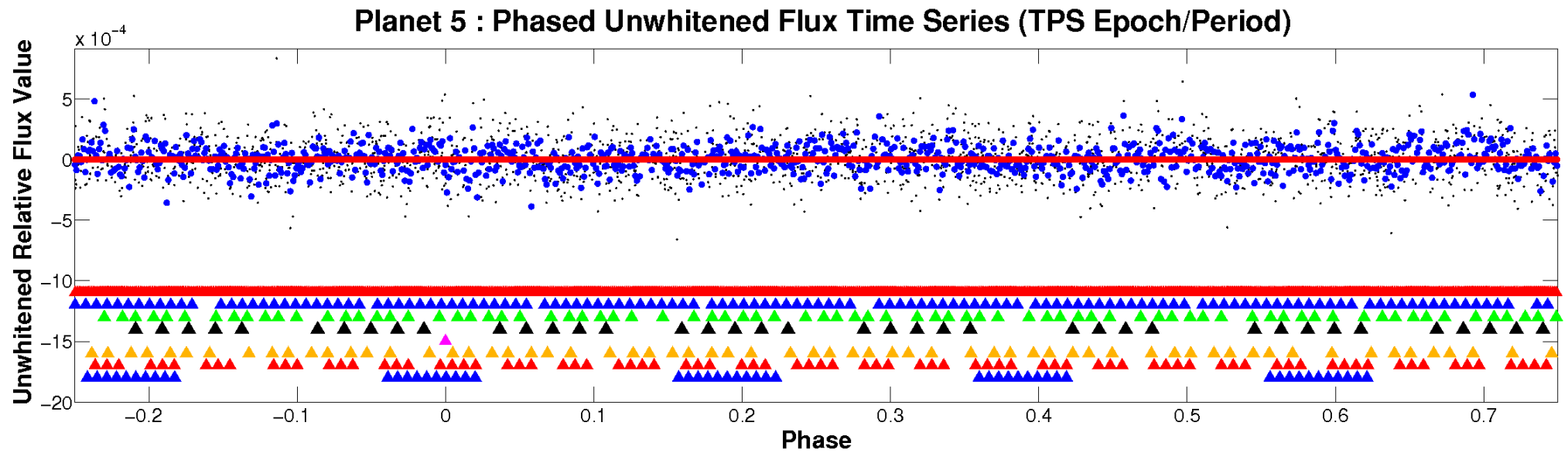


# ALT Odd/Even

TCE 008837839-05

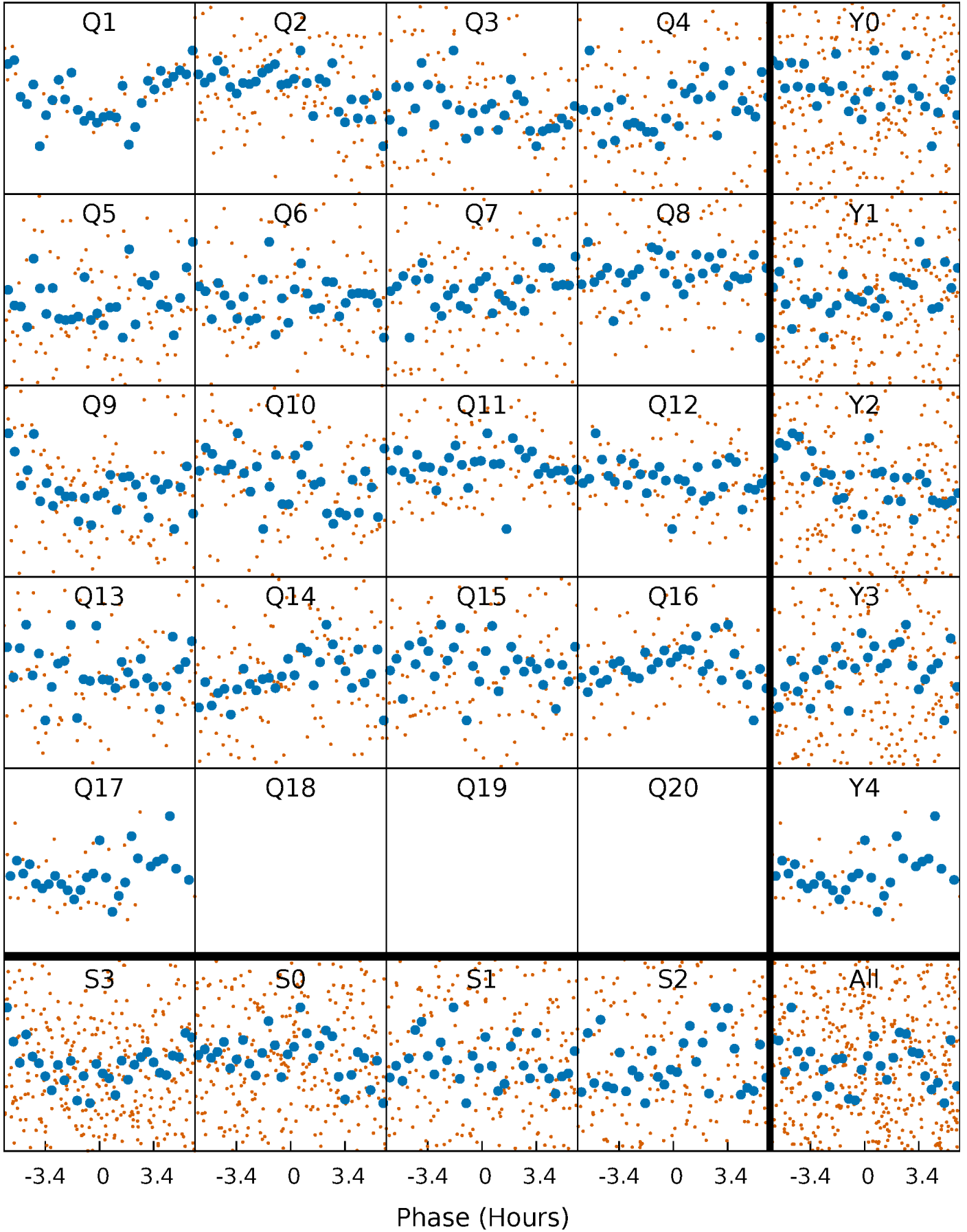


# Non-Whitened Vs. Whitened Light Curve



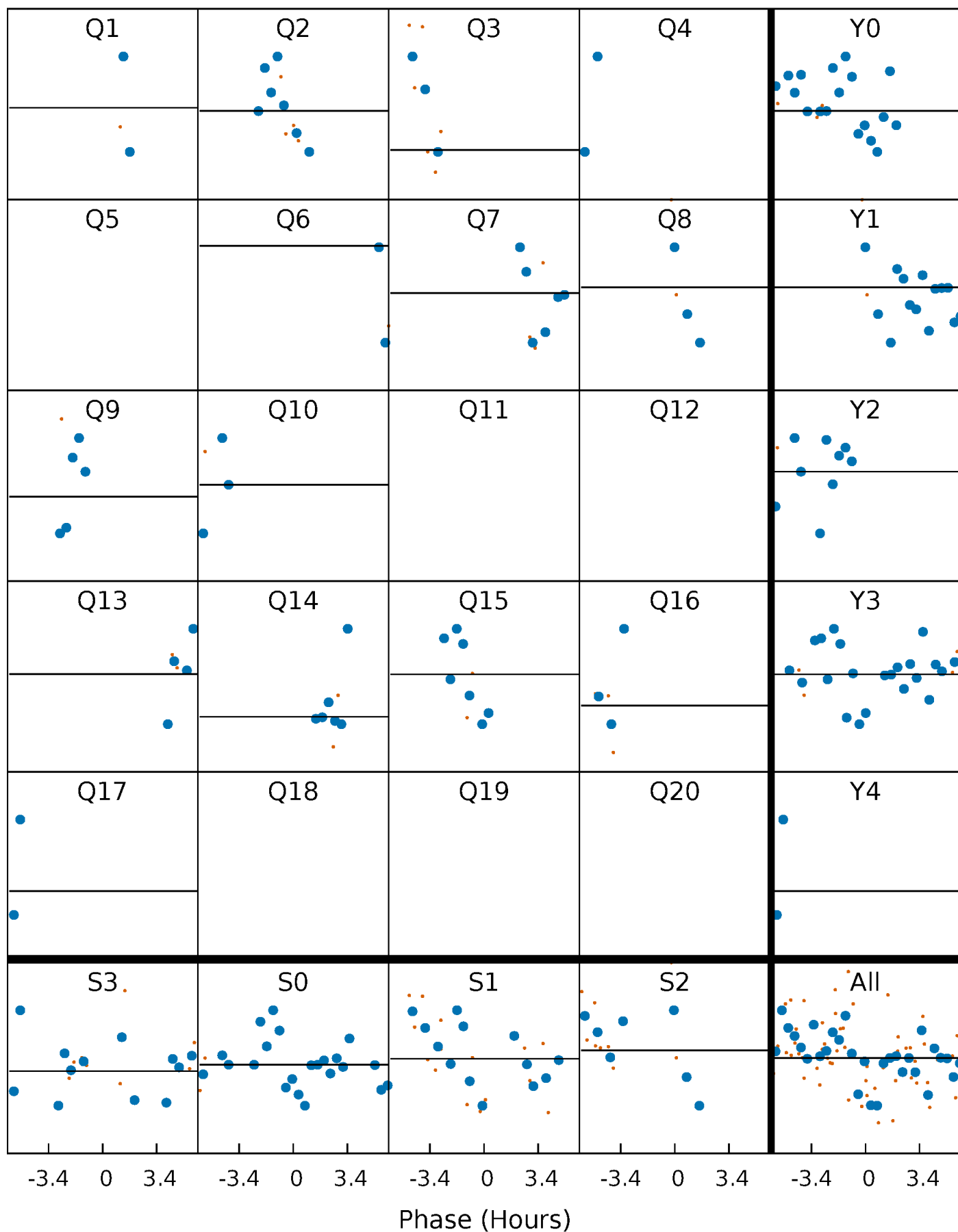
# PDC Quarter-Phased Transit Curves

TCE 008837839-05     $P = 20.119771$  Days     $T_0 = 132.863277$  (BKJD)



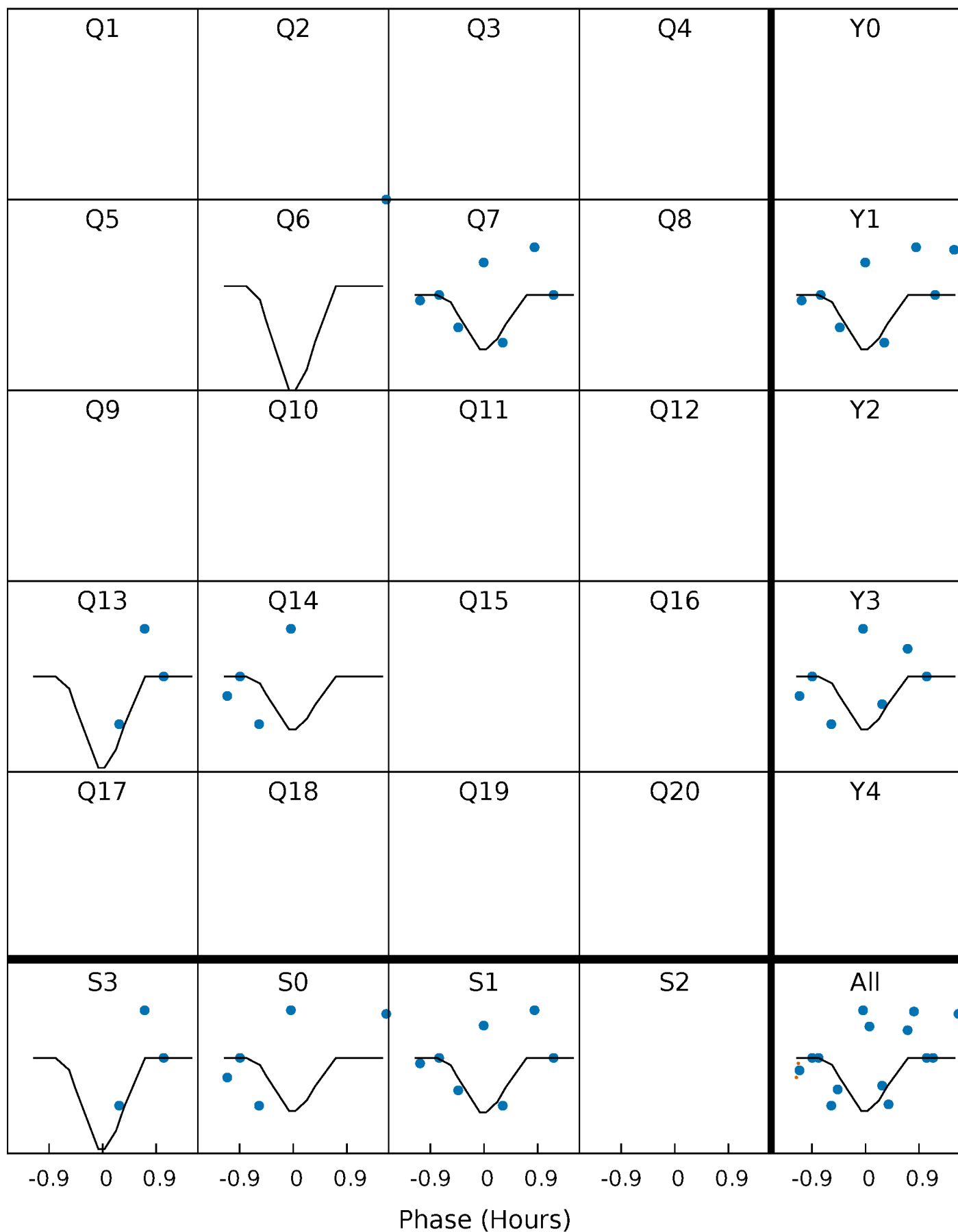
# DV Quarter-Phased Transit Curves

TCE 008837839-05     $P = 20.119771$  Days     $T_0 = 132.863277$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

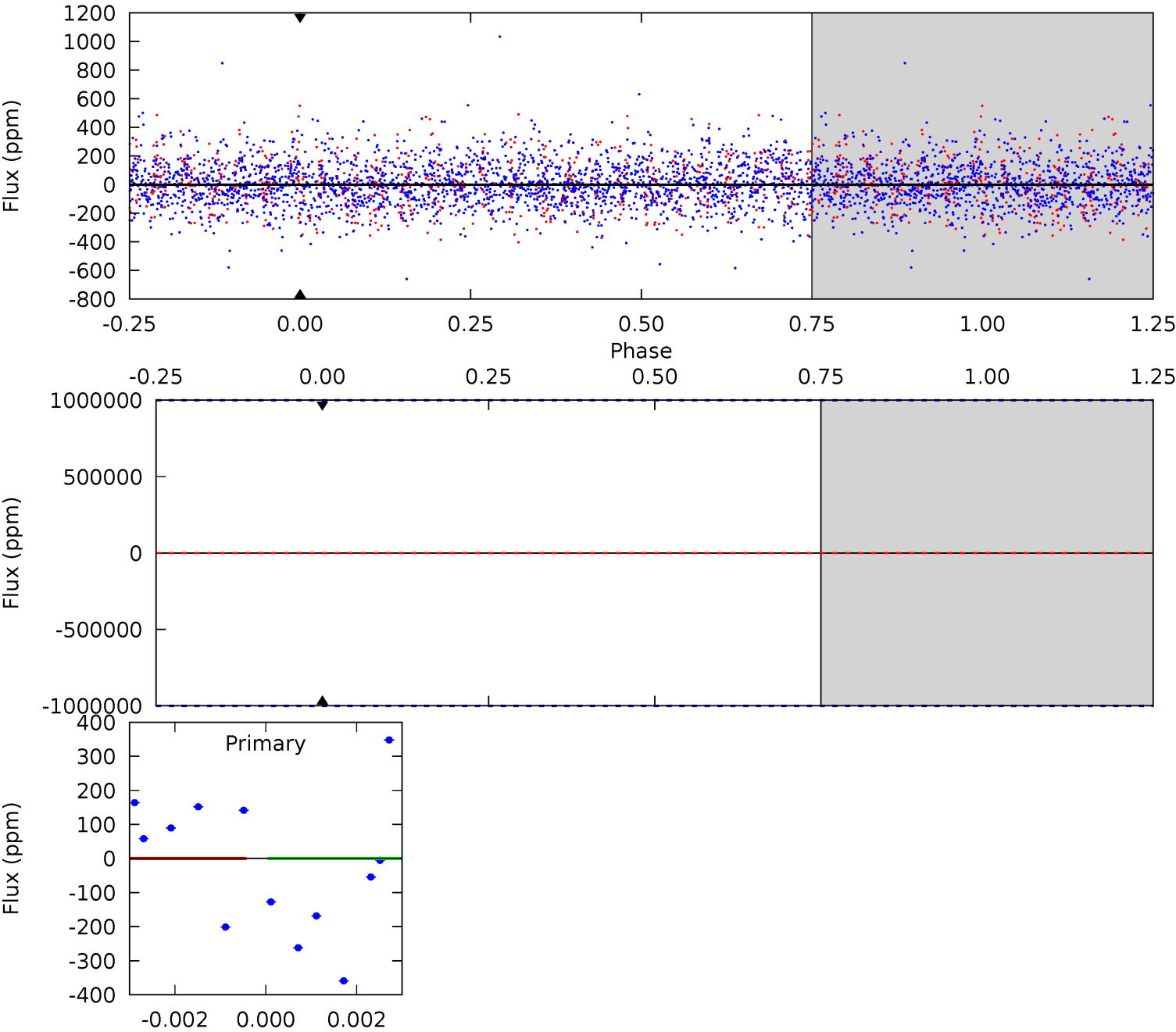
TCE 008837839-05 P= 20.119771 Days  $T_0=133.016484$  (BKJD)



# DV Model-Shift Uniqueness Test

008837839-05, P = 20.119771 Days, E = 112.743506 Days

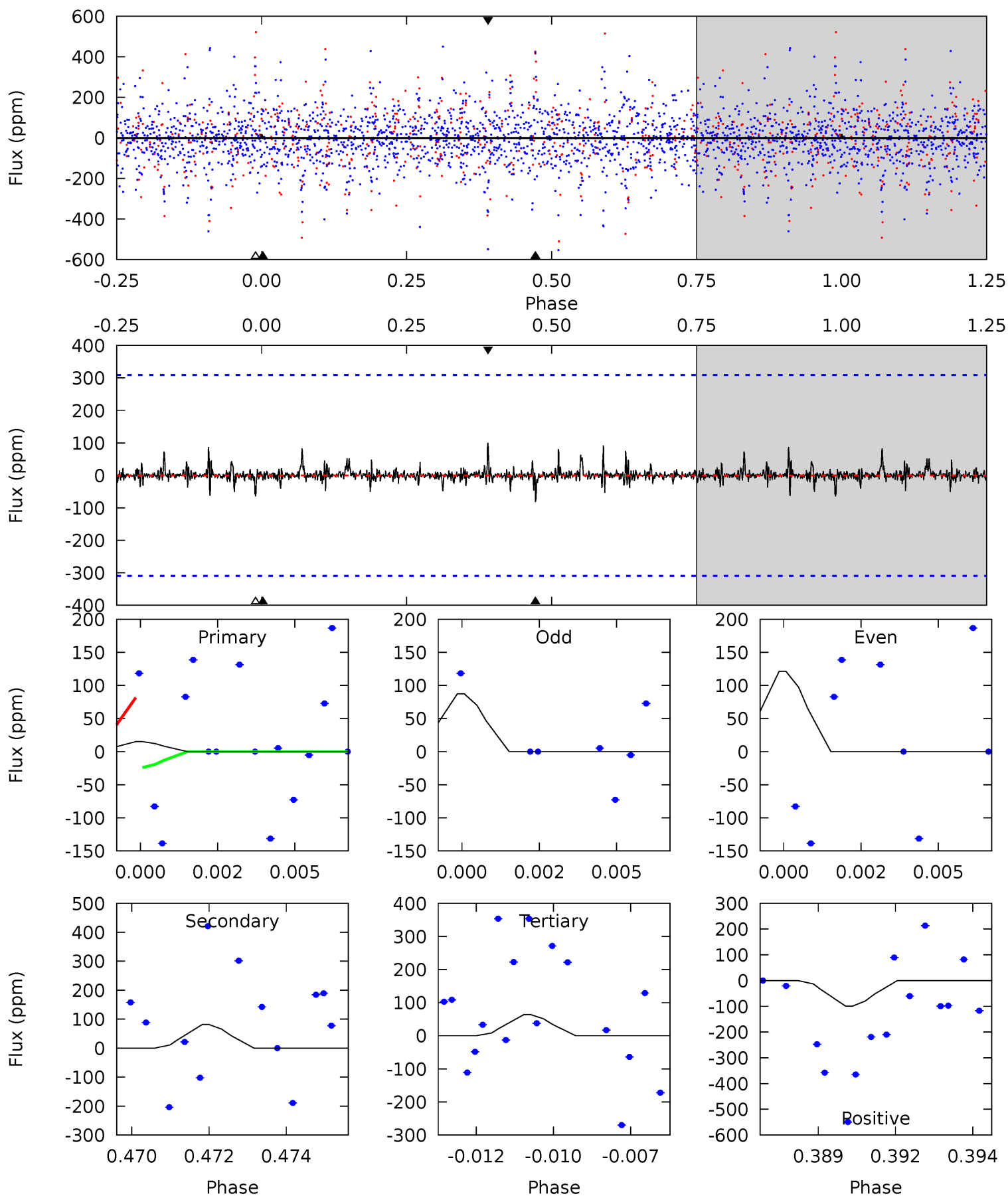
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008837839-05, P = 20.119771 Days, E = 112.896713 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.26	1.40	1.09	1.70	5.29	3.03	0.26	-0.84	-1.44	0.30	-0.30	0.27	1.00	0.55	0.44





### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$23.80^{+26.84}_{-16.39}$	$1712^{+102}_{-162}$	$-5641^{+31367}_{-21998}$	$-66.570^{+4608.380}_{-5079.694}$
Alt.	$-82 \pm 58$	$22.60^{+24.20}_{-15.19}$	$1720^{+96}_{-165}$	$2829^{+1497}_{-4517}$	$1.943^{+21.244}_{-1.657}$

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

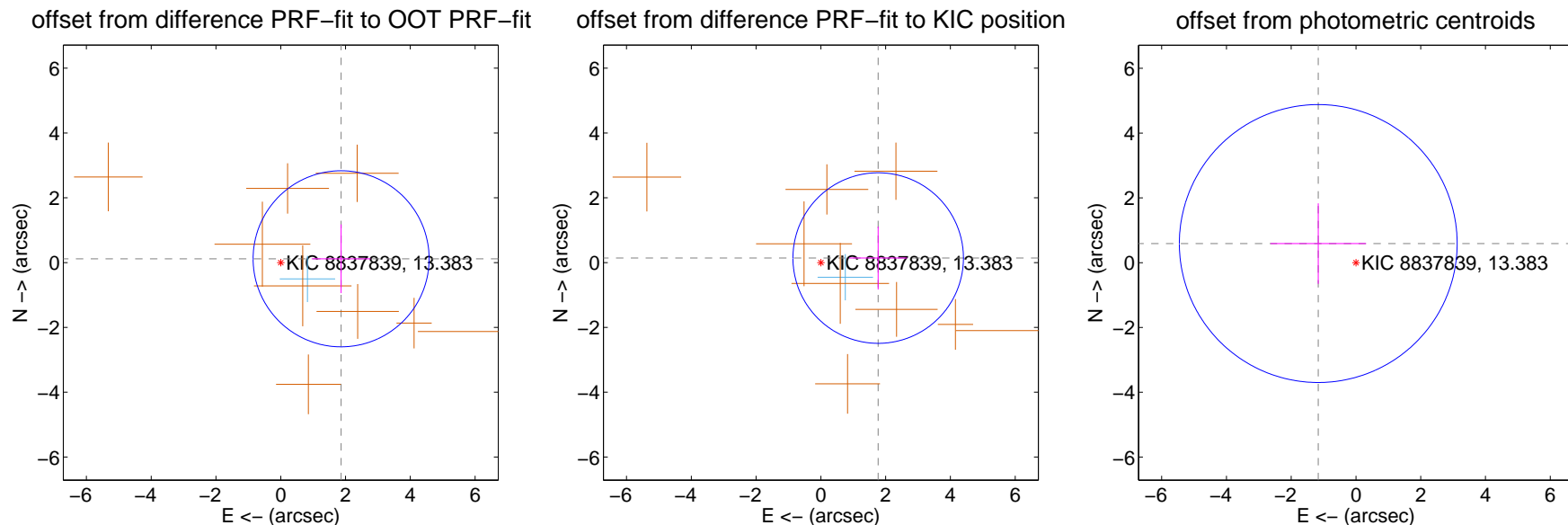
## DV Centroid Data

Supplemental centroid analysis for 008837839-05. Kepler magnitude: 13.38. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

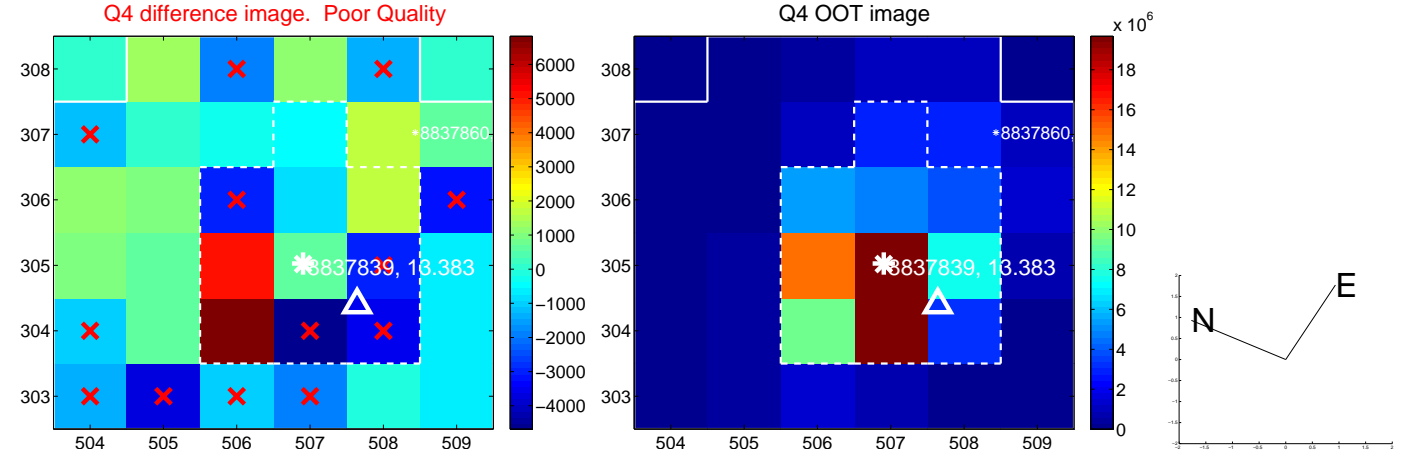
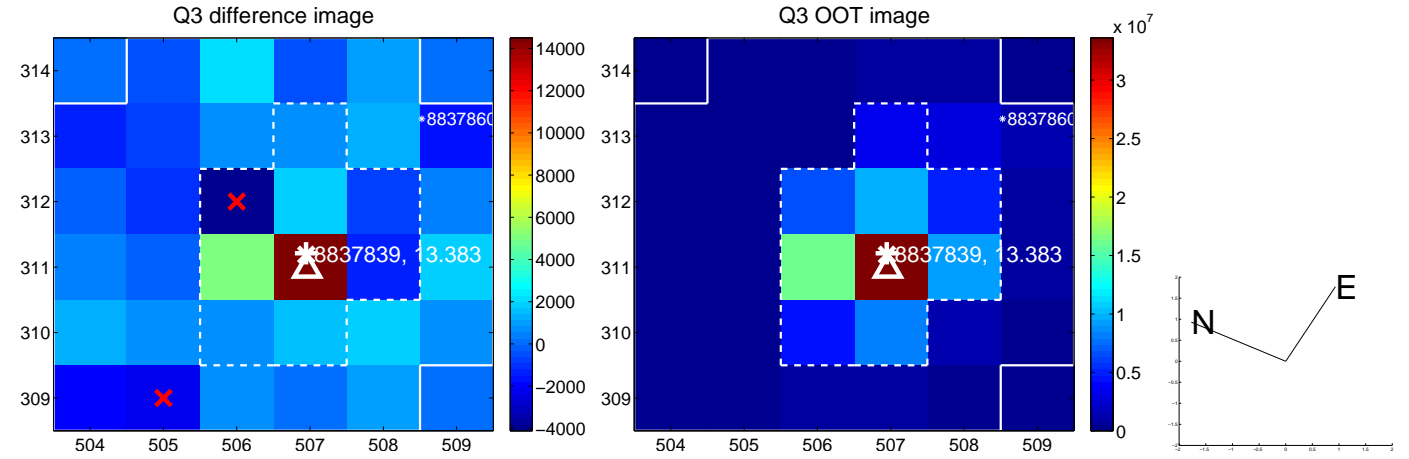
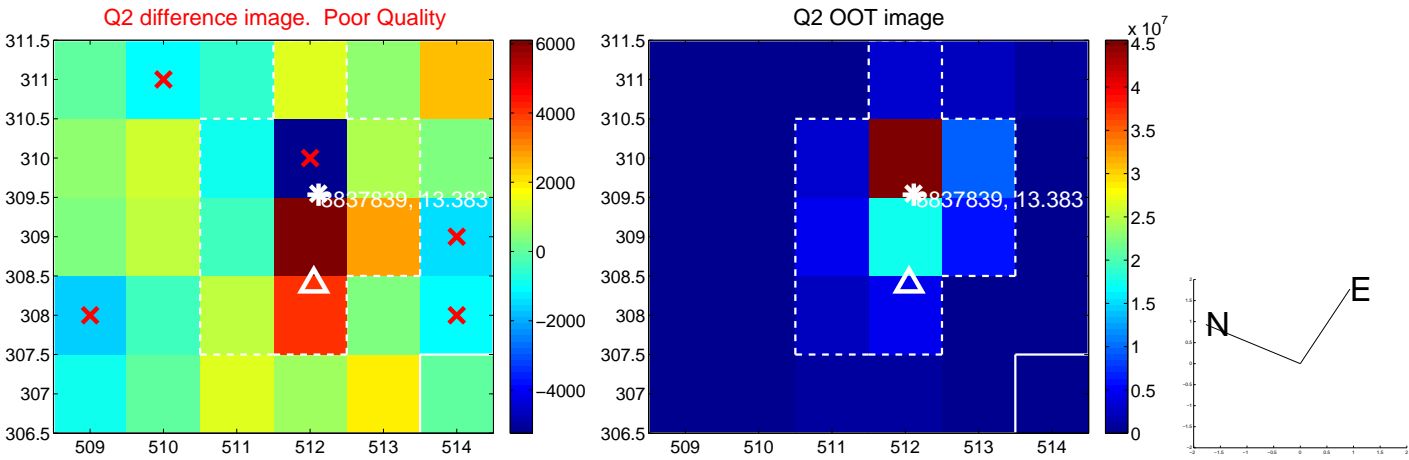
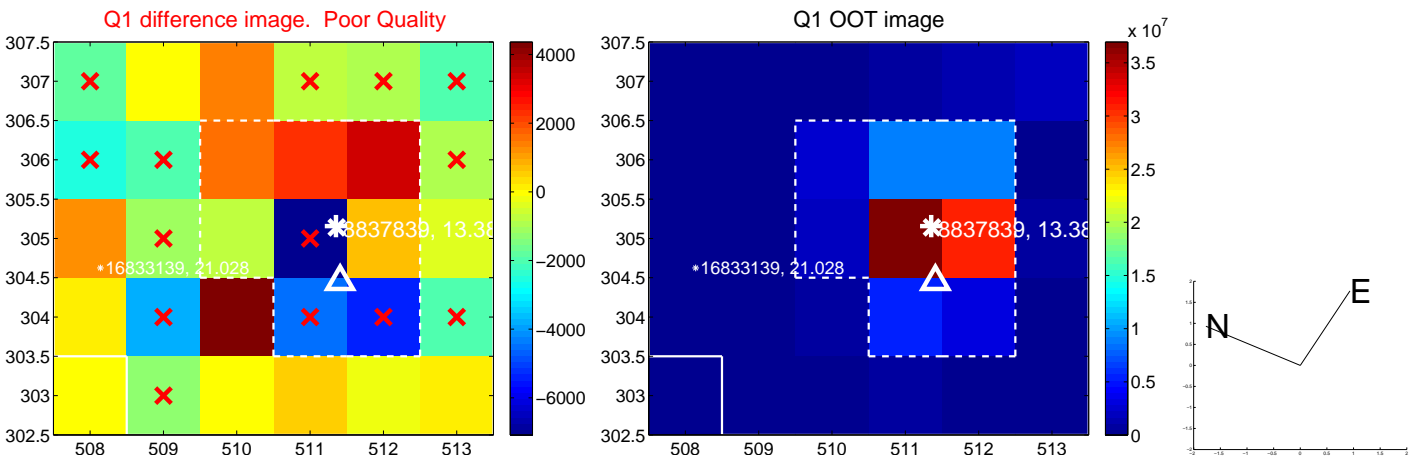
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.868 \pm 0.906$	2.06	$-1.864 \pm 0.909$	$0.117 \pm 1.060$
PRF-fit source offset from KIC position	$1.775 \pm 0.877$	2.02	$-1.770 \pm 0.895$	$0.140 \pm 0.970$
photometric centroid source offset	$1.31 \pm 1.43$	0.91	$1.16 \pm 1.47$	$0.59 \pm 1.24$

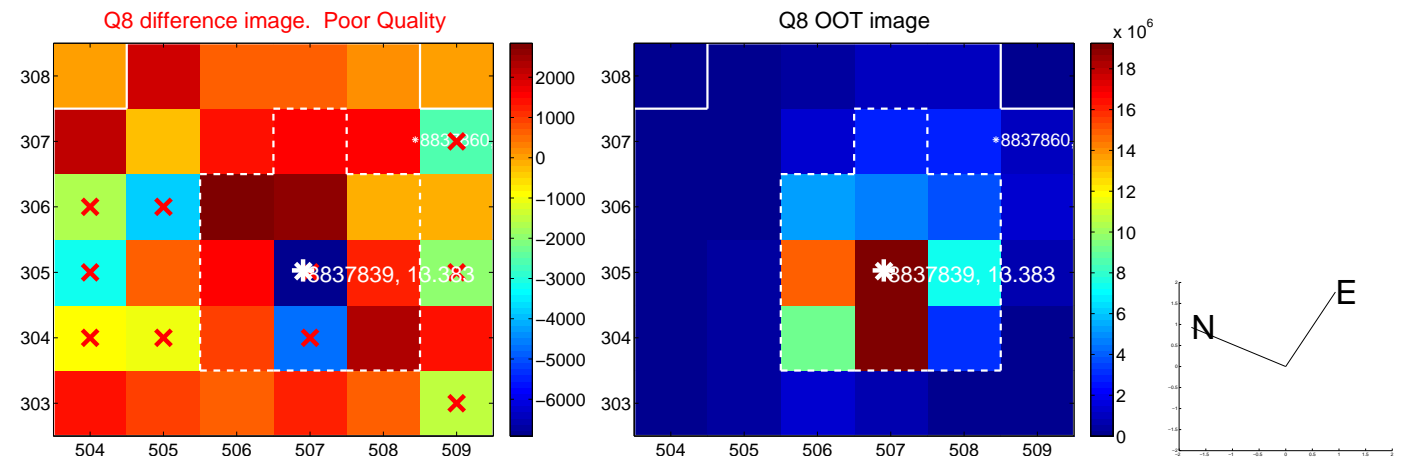
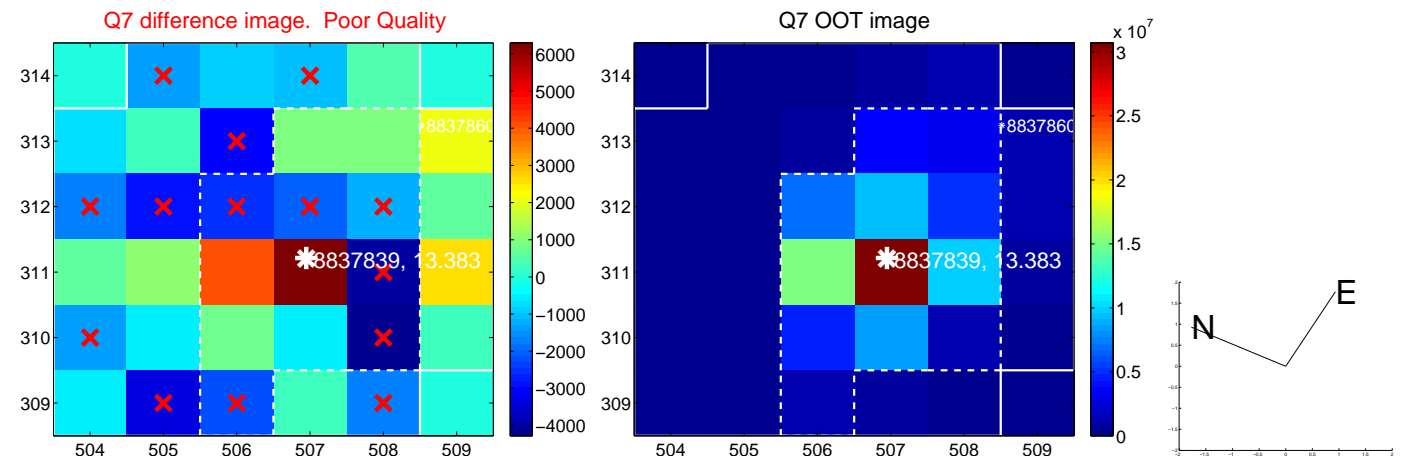
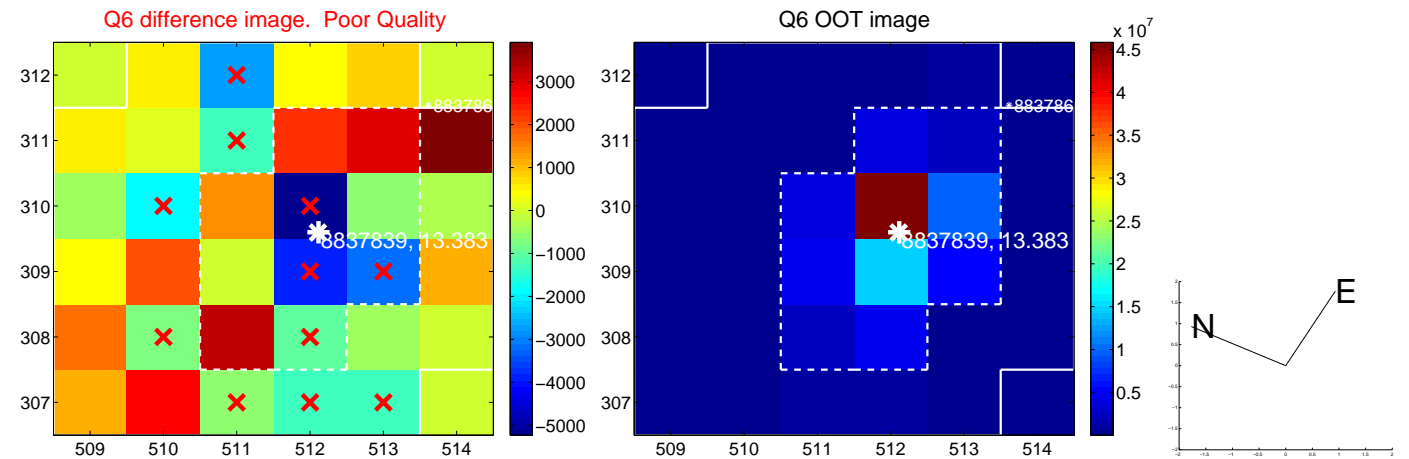
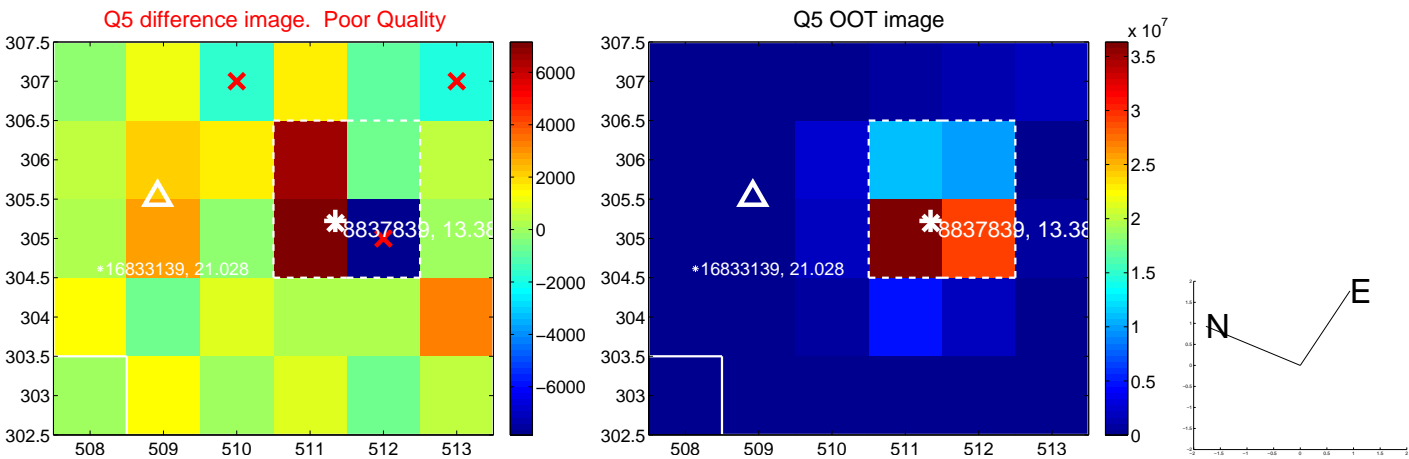


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

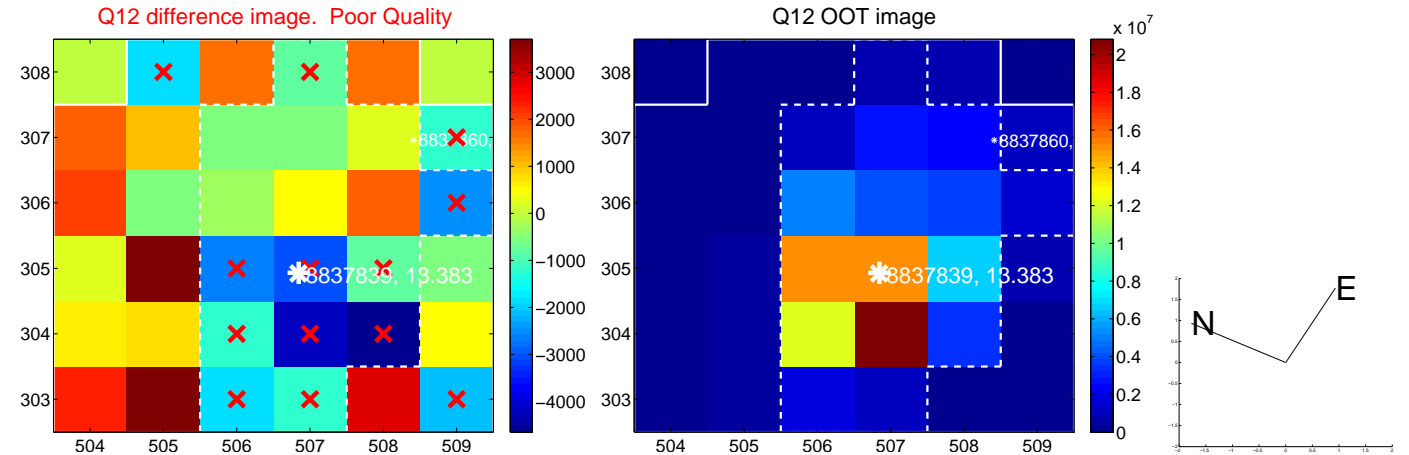
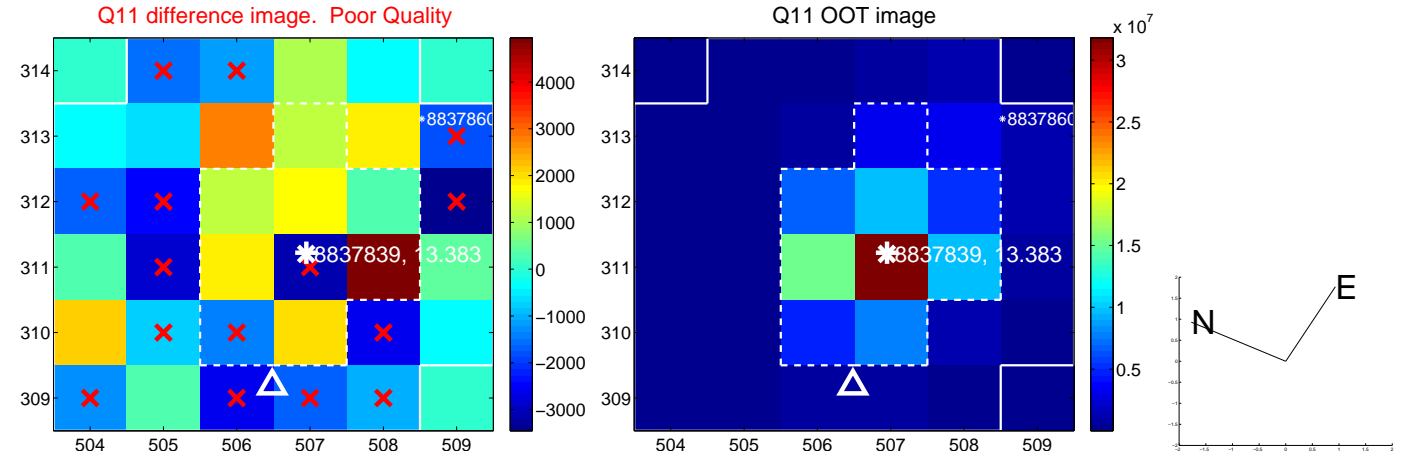
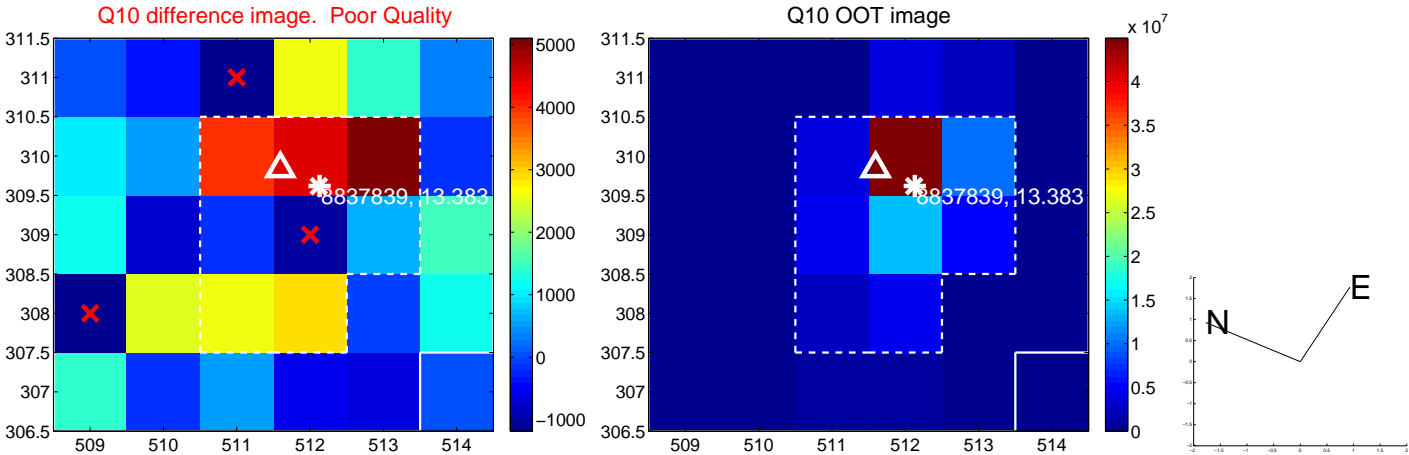
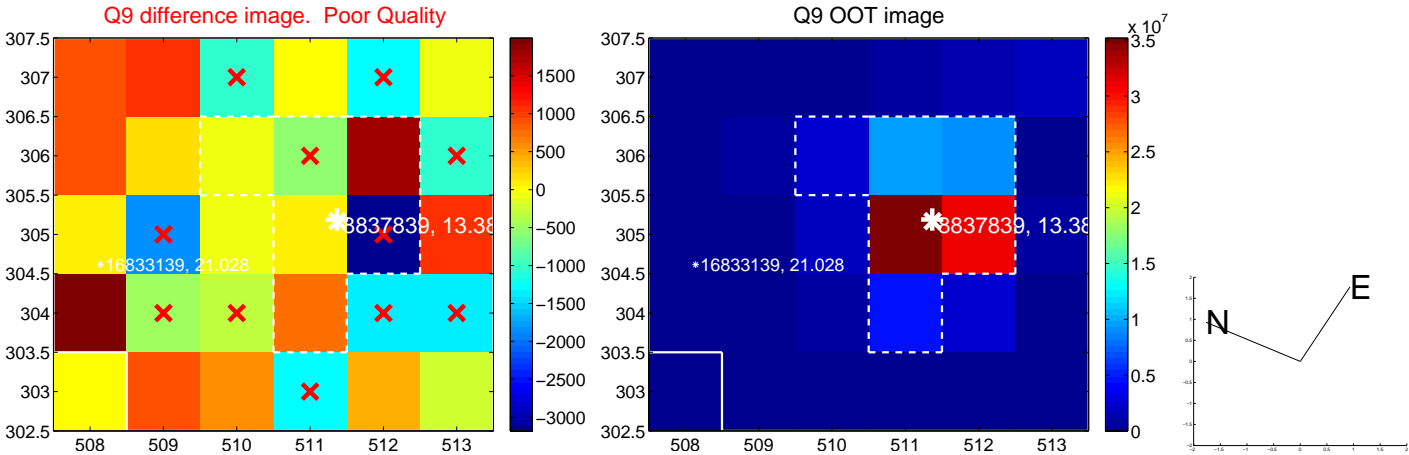
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



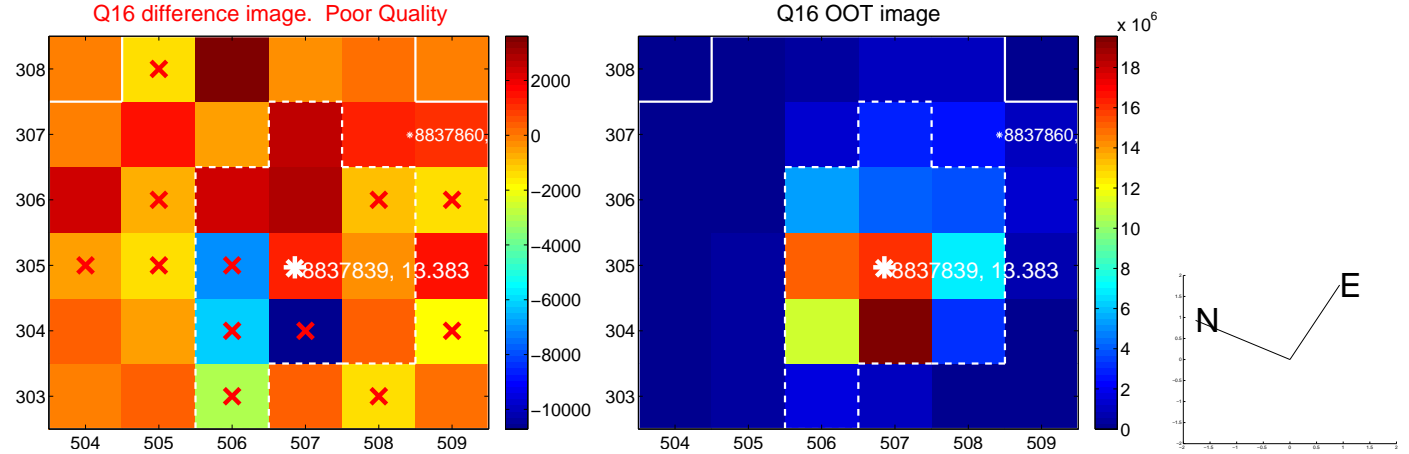
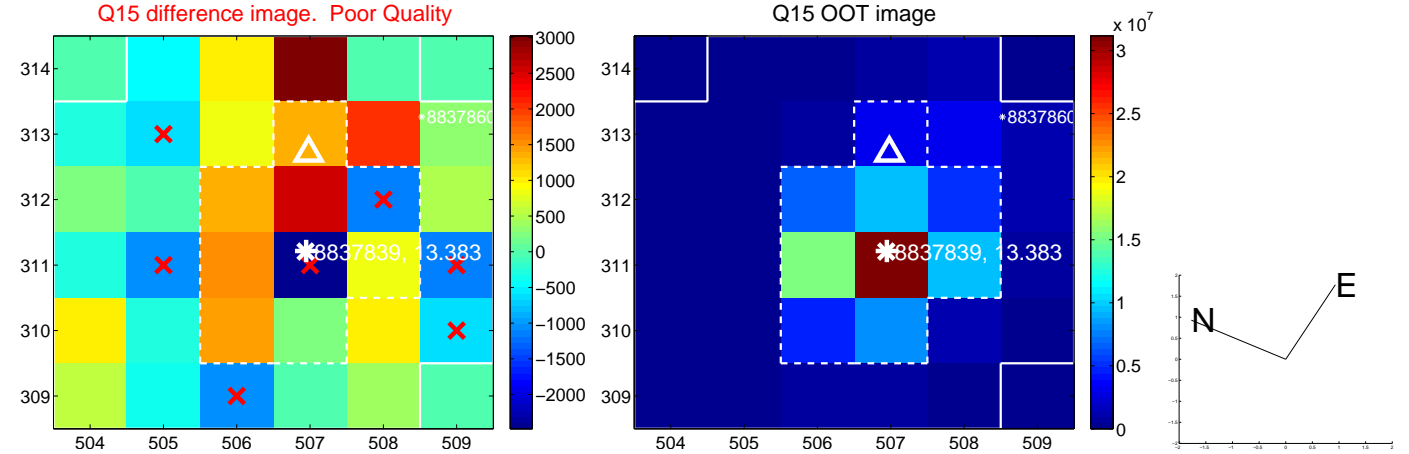
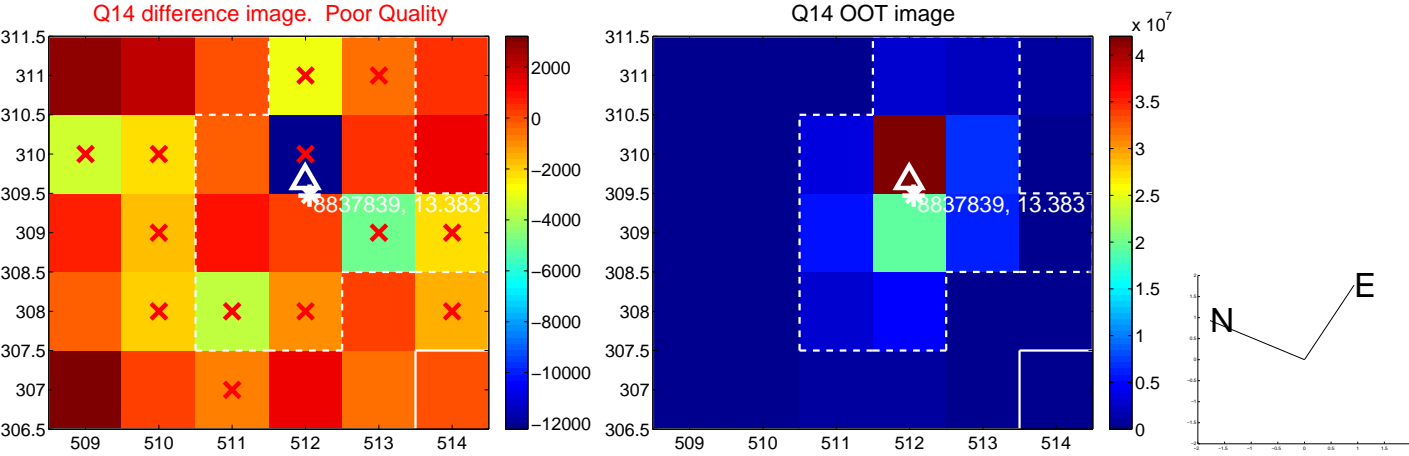
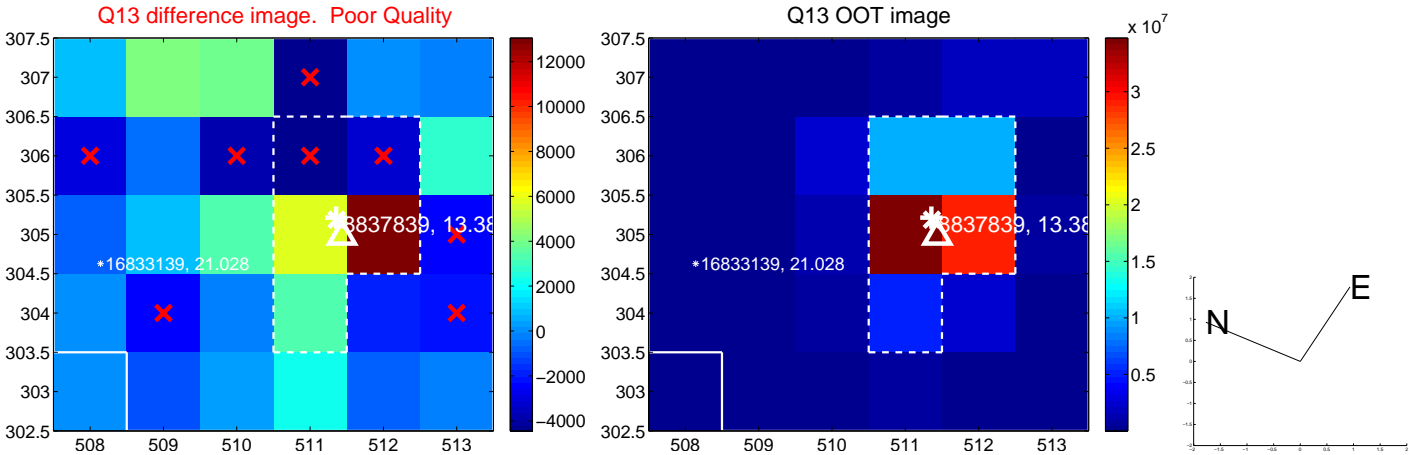
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



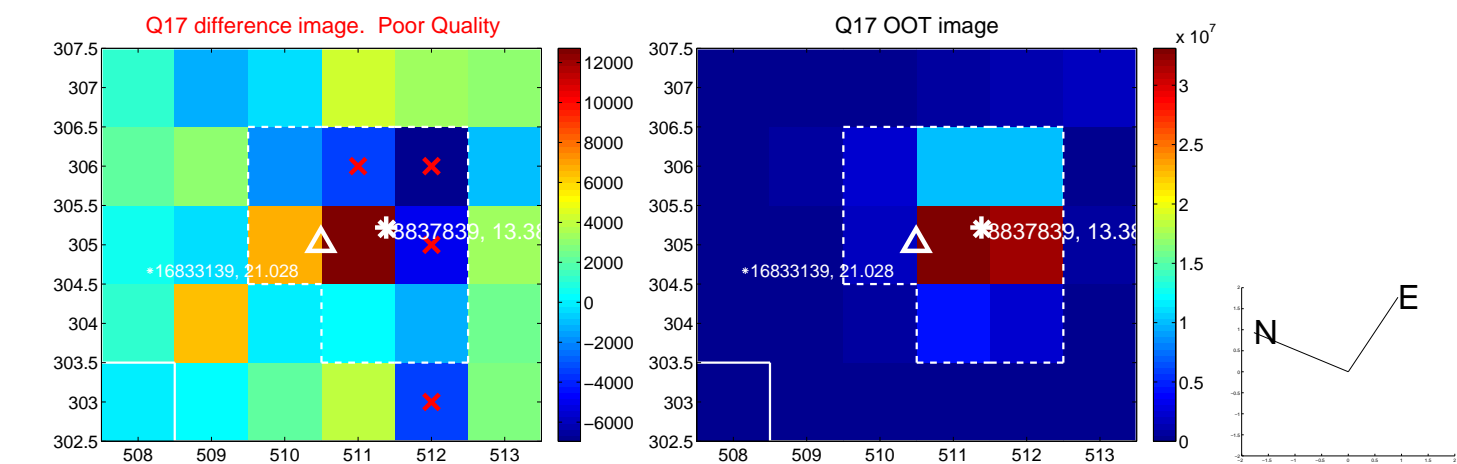
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



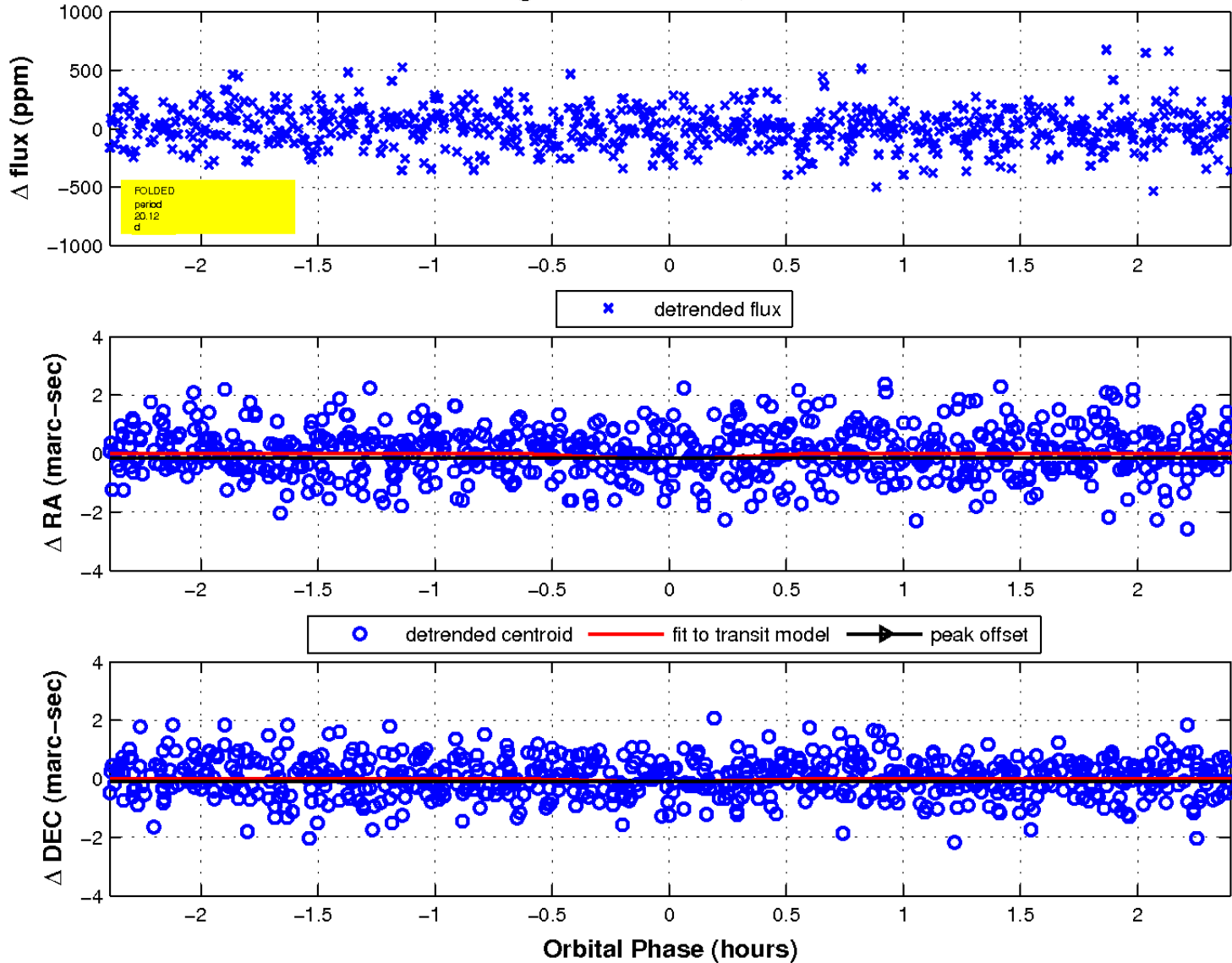
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

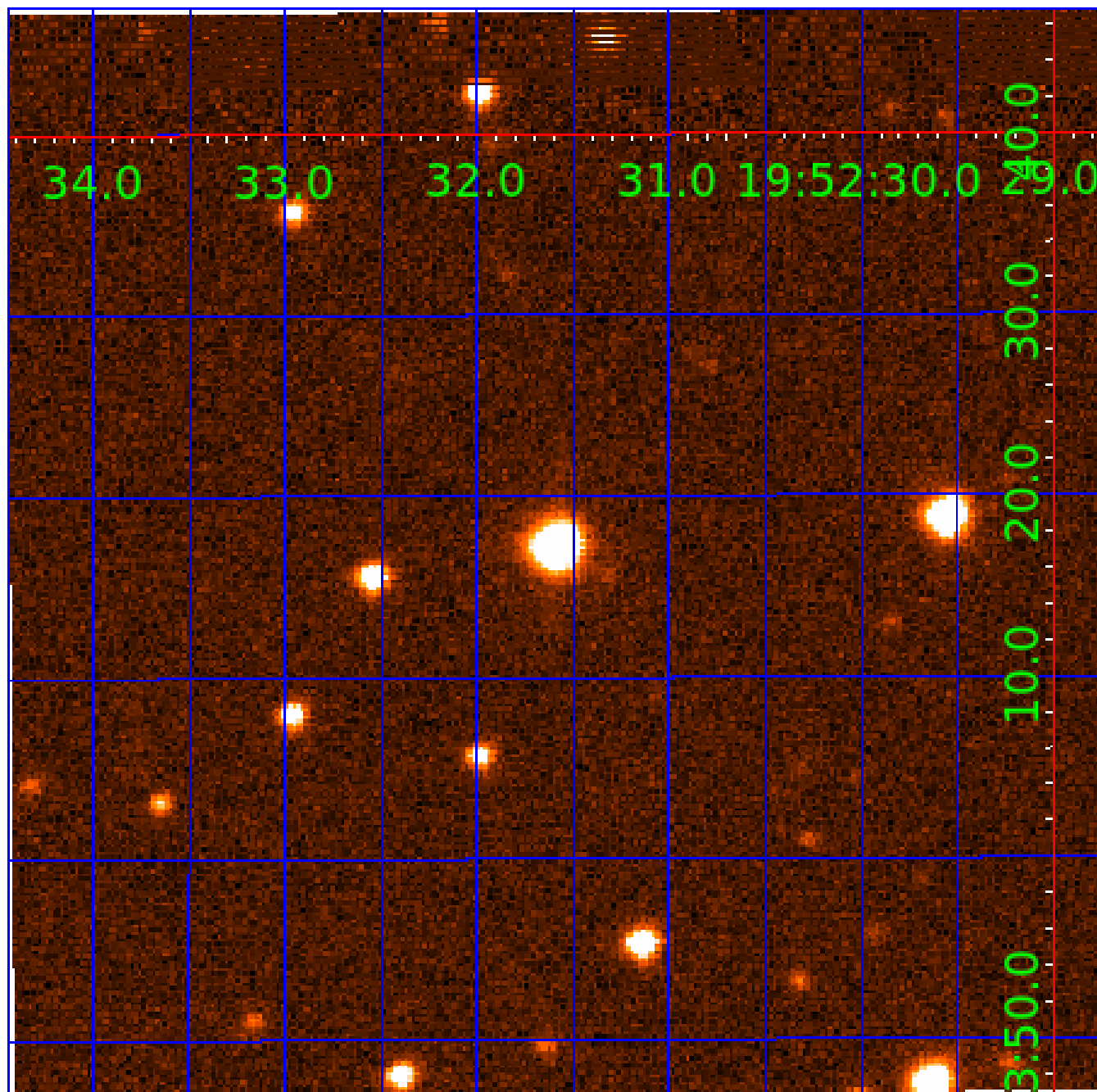


fluxWeightedCentroids, Planet 5 of 8



UKIRT Image

Declination





# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

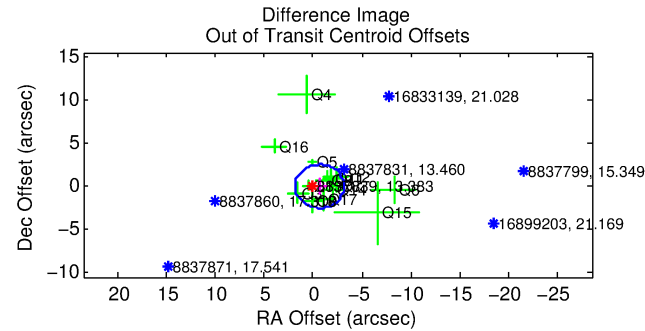
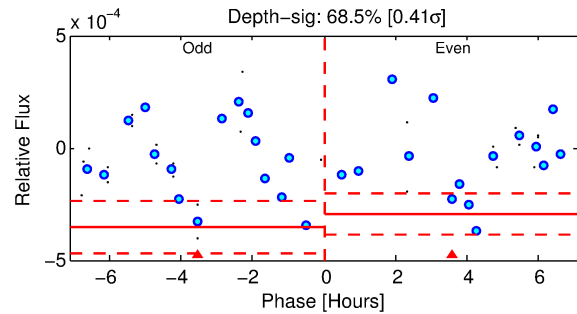
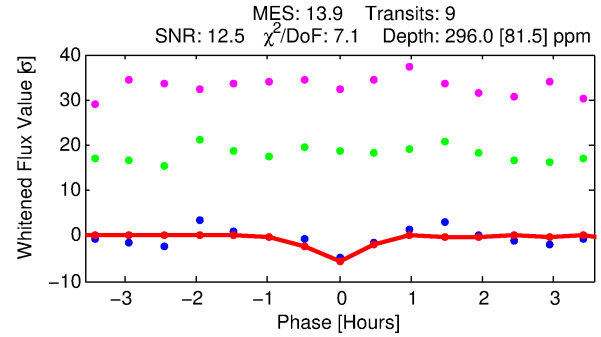
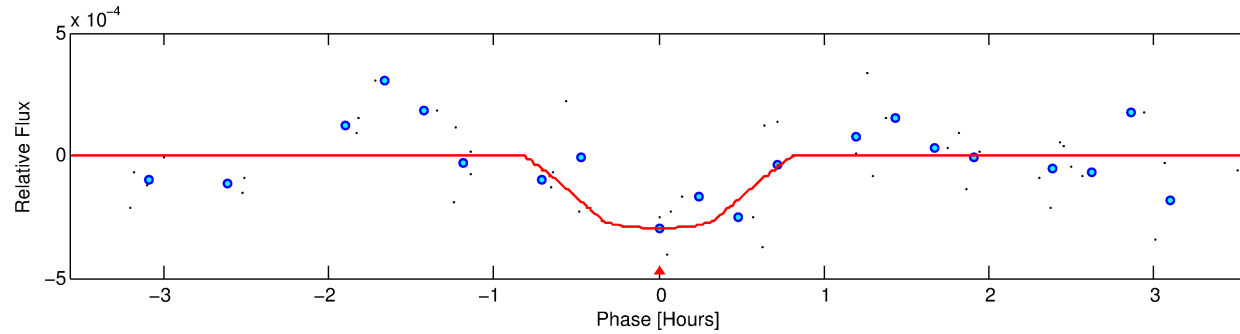
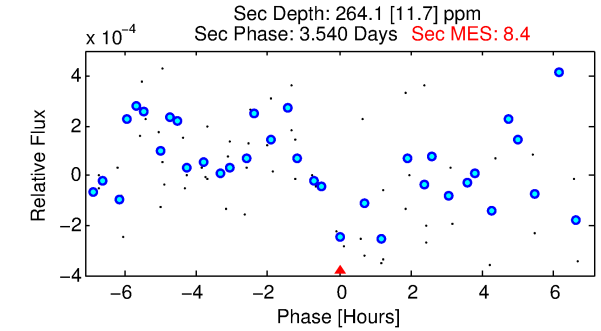
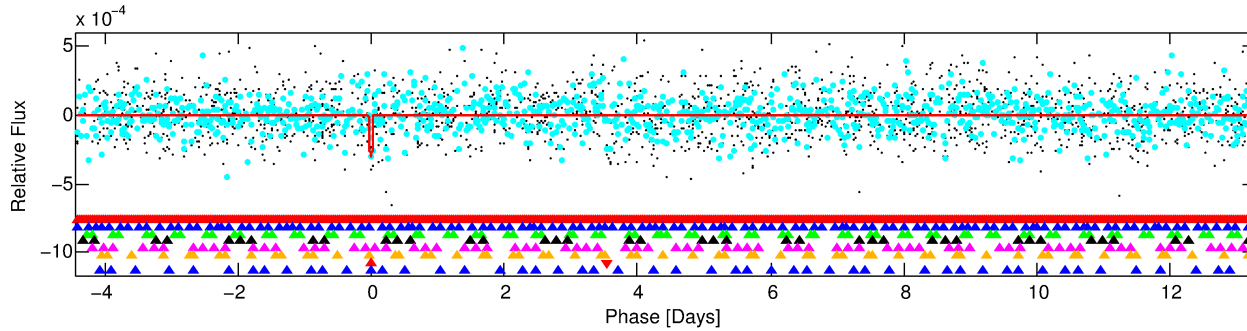
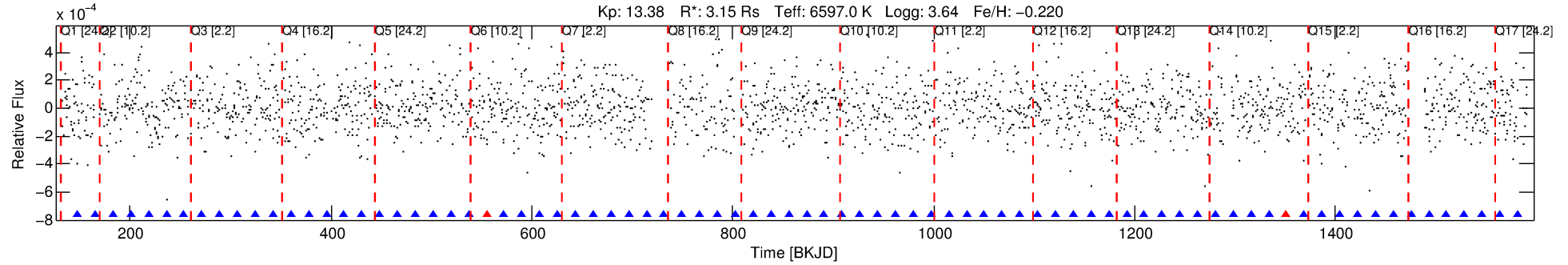
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008837839-07

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 7 of 8 Period: 17.699 d



## DV Fit Results:

Period = 17.69900 [0.00024] d  
Epoch = 147.7973 [0.0098] BKJD  
Rp/R\* = 0.0162 [0.0395]  
a/R\* = 106.28 [1374.73]  
b = 0.40 [27.68]  
Seff = 703.88 [409.41]  
Teq = 1313 [191] K  
Rp = 5.58 [13.75] Re  
a = 0.1548 [0.0556] AU  
Ag = 111.94 [549.20] [0.20 $\sigma$ ]  
Teffp = 6605 [8049] K [0.66 $\sigma$ ]

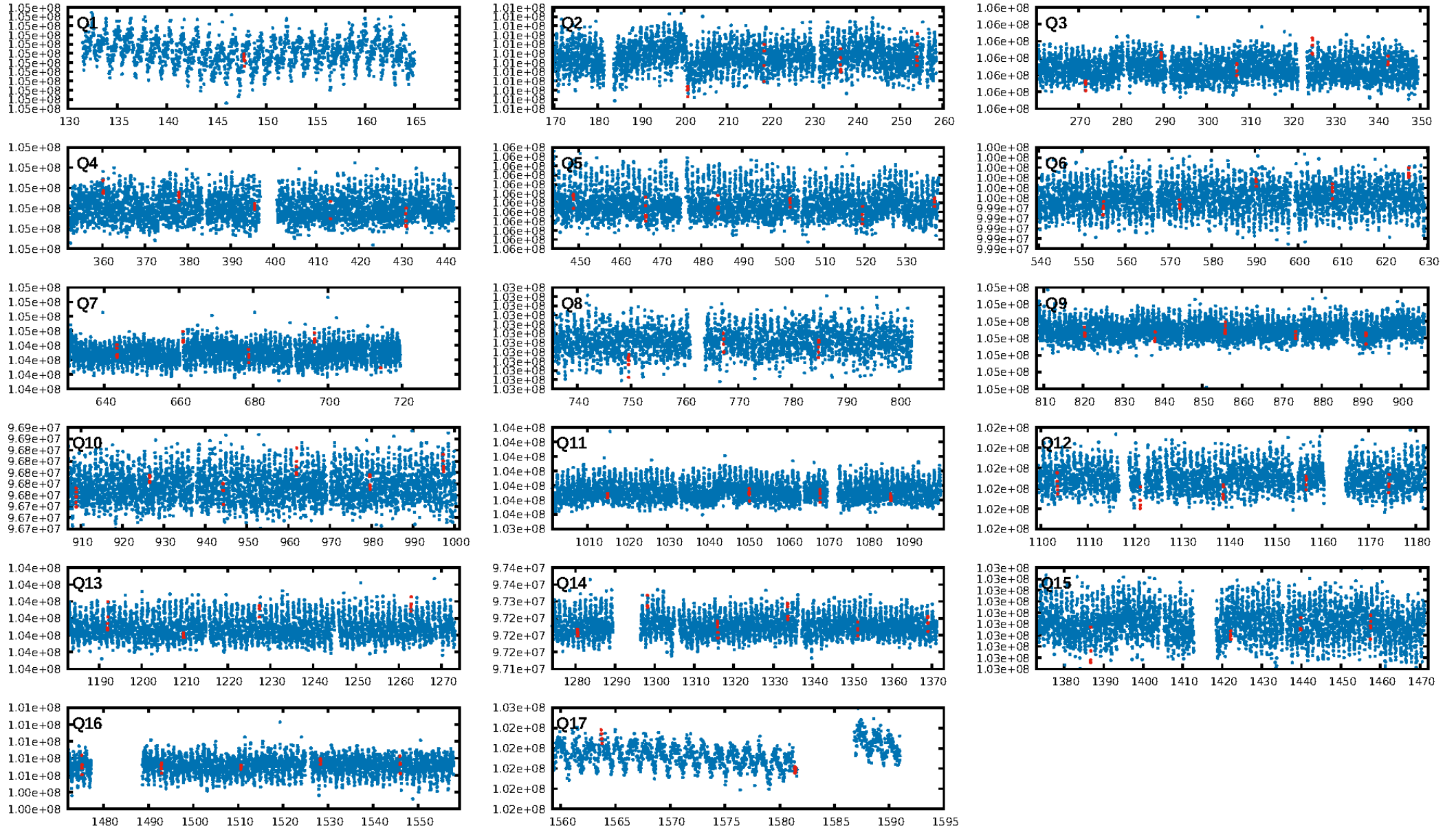
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [107.71 $\sigma$ ]  
LongPeriod-sig: 100.0% [14.37 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.1%  
Bootstrap-pfa: 2.89e-12  
RollingBand-fgt: 0.78 [7/9]  
GhostDiagnostic-chr: -1.324  
Centroid-sig: 34.7%  
Centroid-so: 0.543 arcsec [0.87 $\sigma$ ]  
OotOffset-rm: 0.657 arcsec [0.78 $\sigma$ ]  
KicOffset-rm: 0.584 arcsec [0.69 $\sigma$ ]  
OotOffset-st: 2/4/4/4 [14]  
KicOffset-st: 2/4/4/4 [14]  
DiffImageQuality-fgm: 0.07 [1/14]  
DiffImageOverlap-fno: 0.24 [4/17]

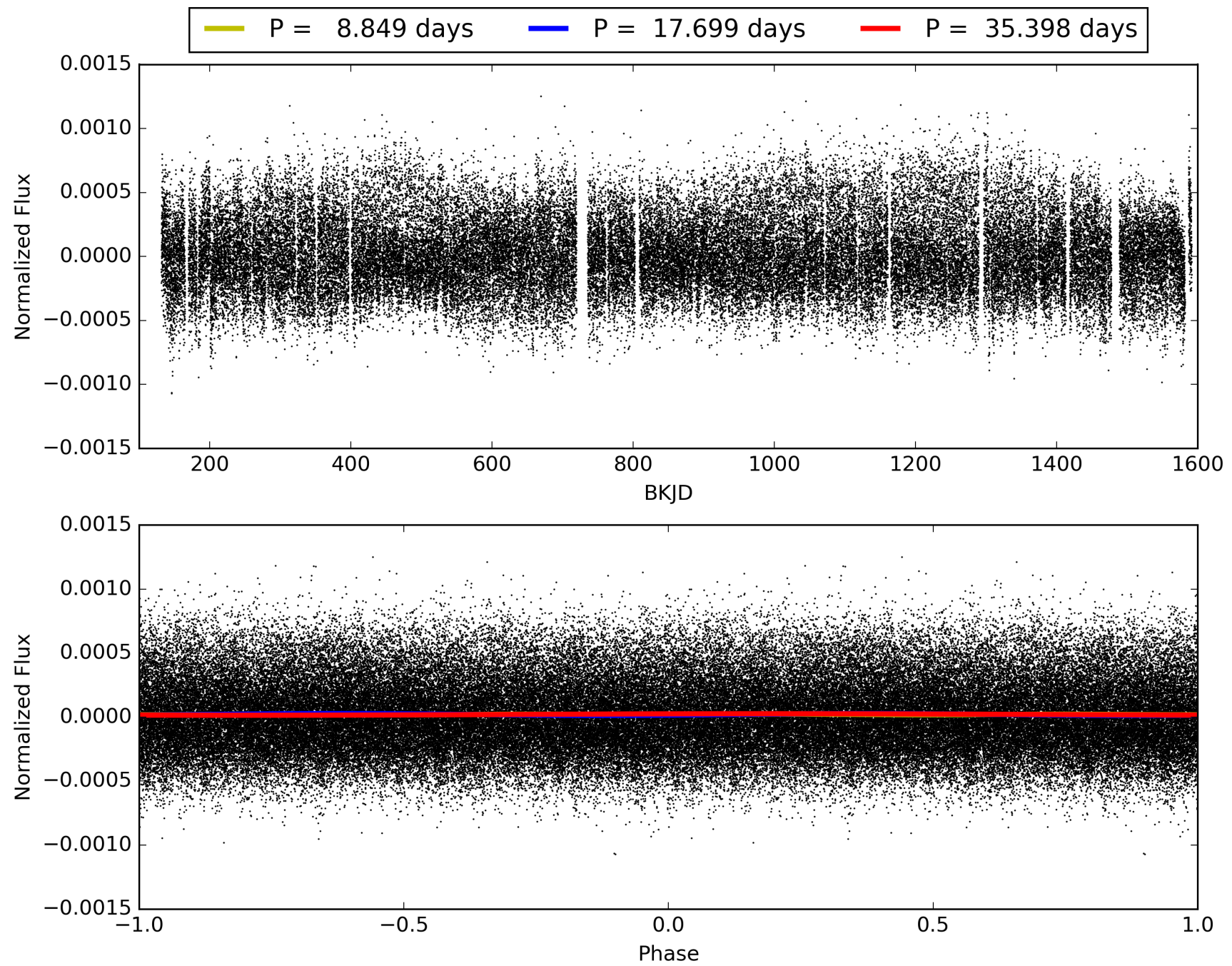
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:14 Z

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

# TCE 008837839-07, PDC Light Curves

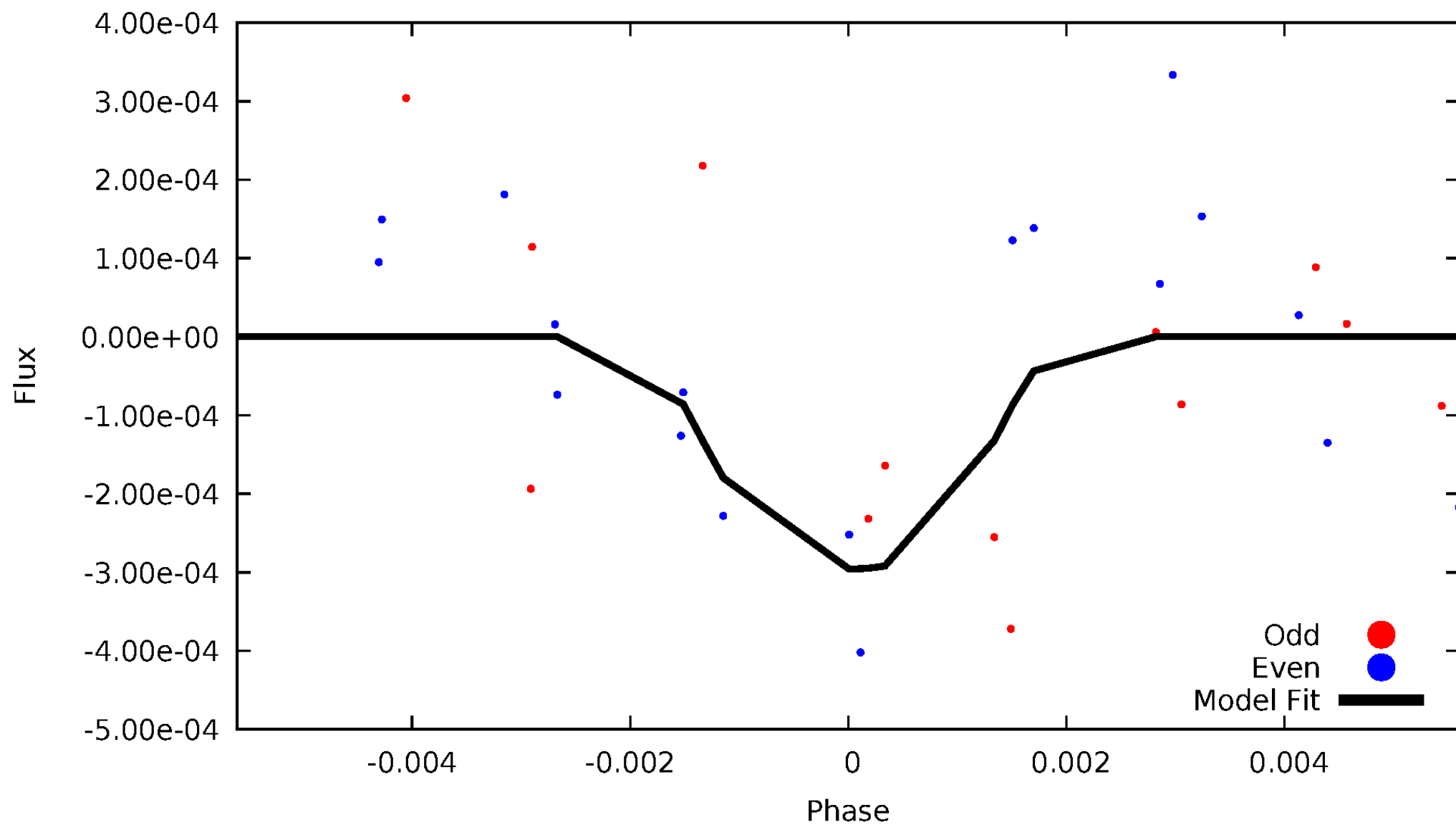


TCE 008837839-07



# DV Odd/Even

TCE 008837839-07



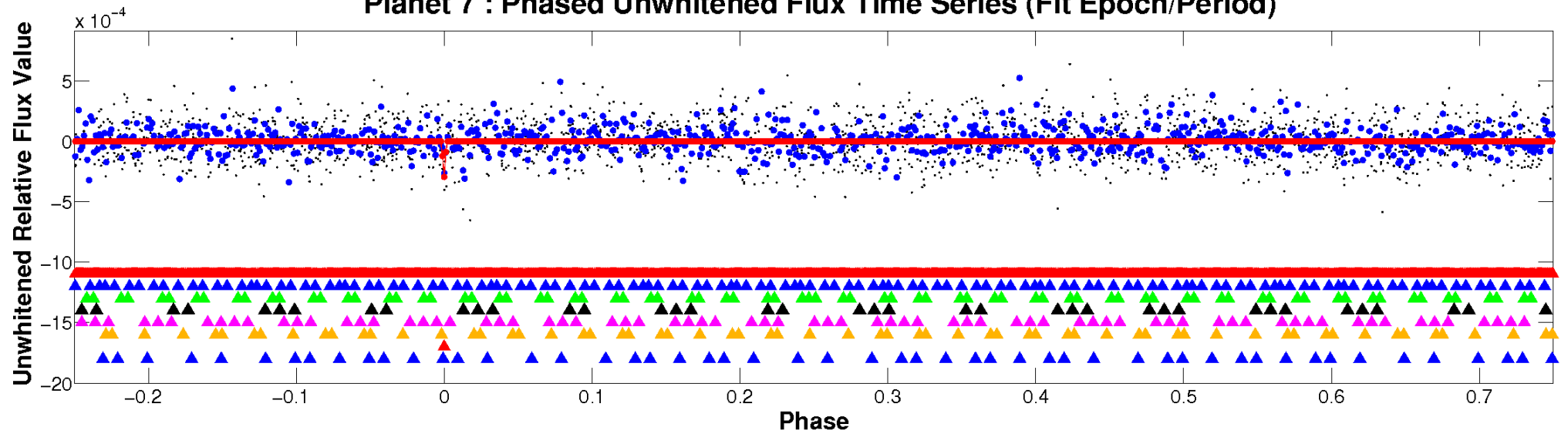


ALT Odd/Even

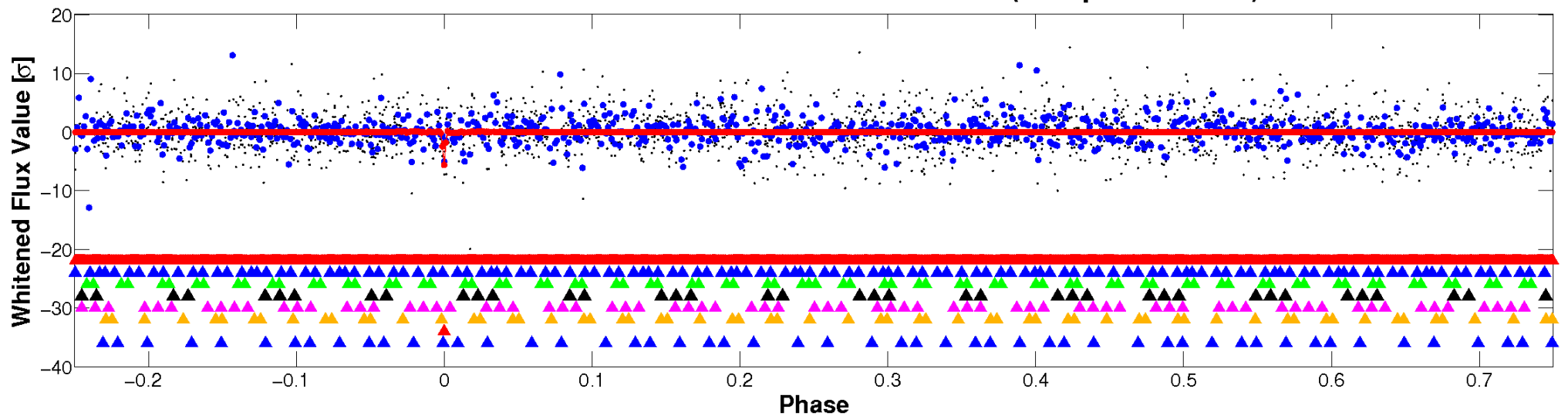
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



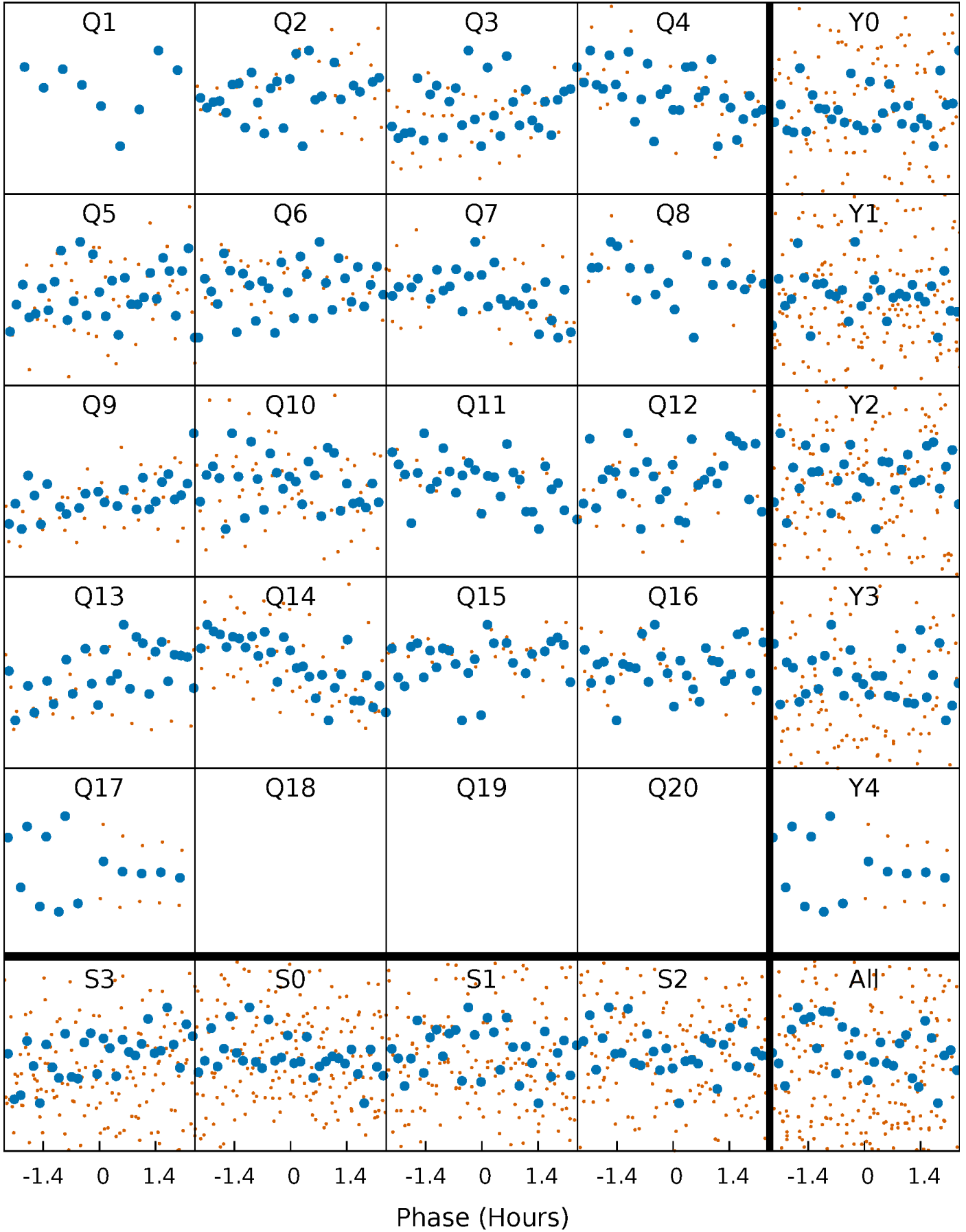
## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)





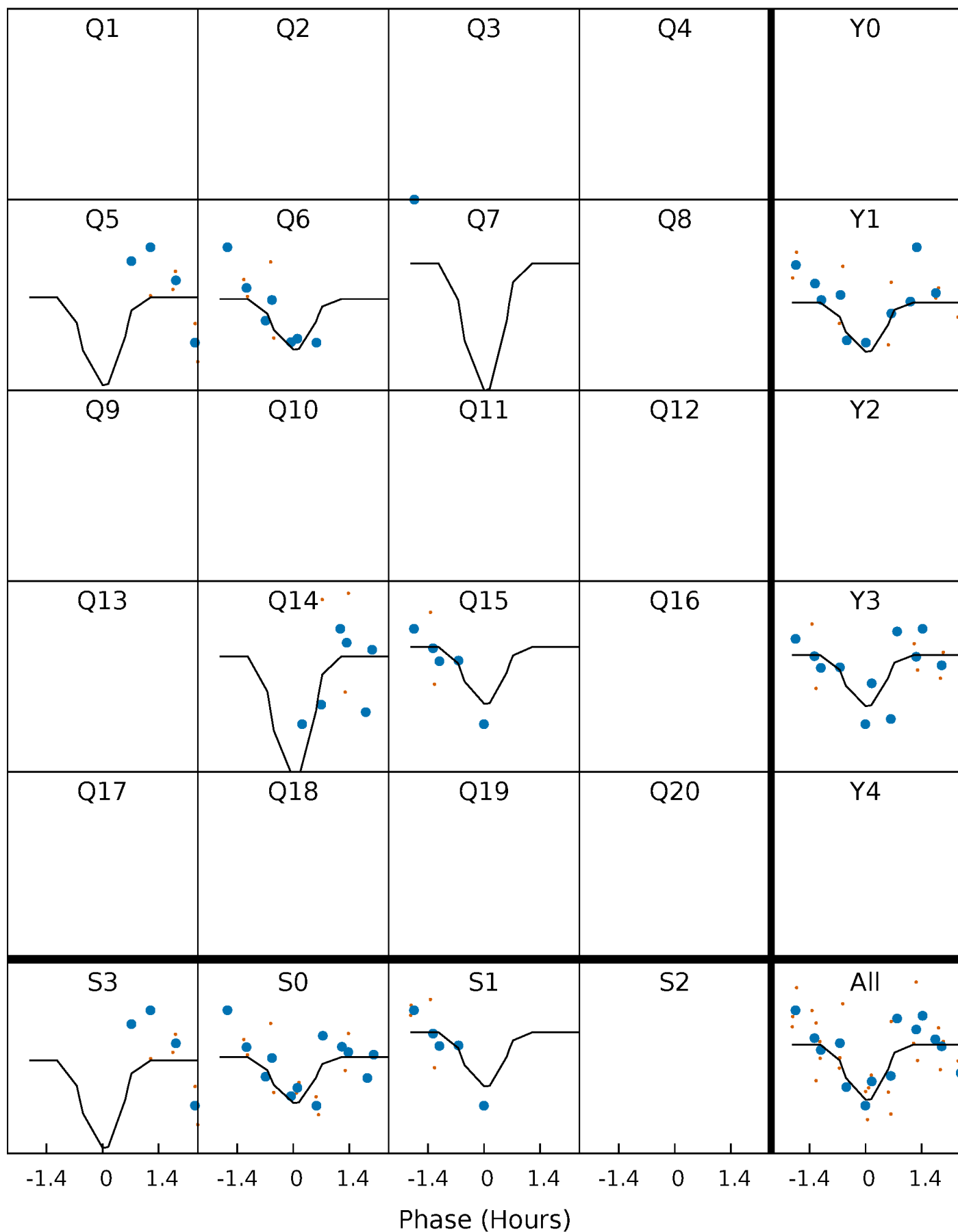
# PDC Quarter-Phased Transit Curves

TCE 008837839-07     $P = 17.698999$  Days     $T_0 = 147.797264$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008837839-07 P= 17.698999 Days  $T_0=147.797264$  (BKJD)

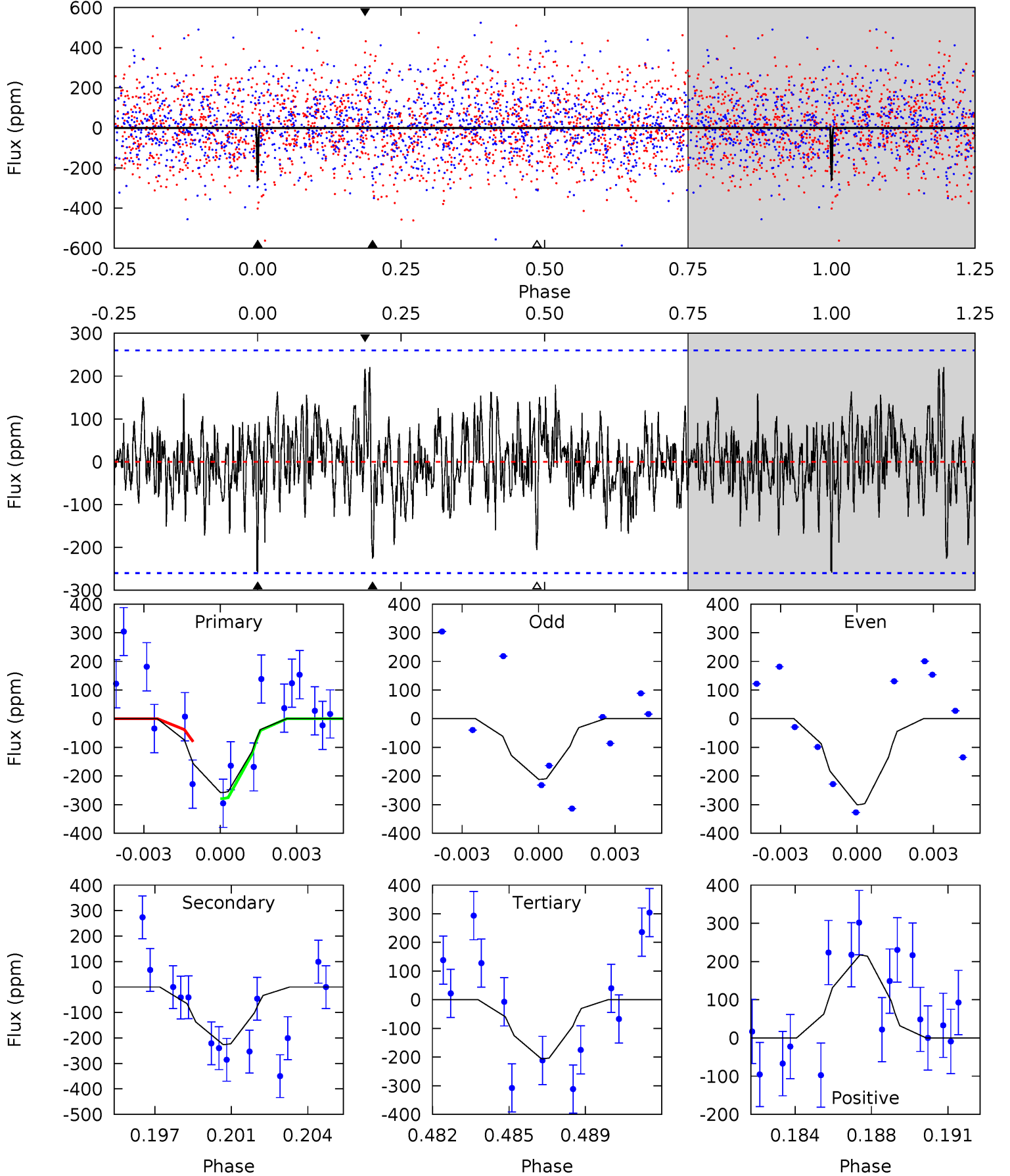


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008837839-07,  $P = 17.698999$  Days,  $E = 130.098265$  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
5.20	4.55	4.15	4.37	5.24	2.94	1.31	1.05	0.83	0.40	0.18	0.88	0.97	0.46	1.86



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-226 \pm 50$	$10.99^{+10.87}_{-7.69}$	$1800^{+103}_{-166}$	$4469^{+3648}_{-954}$	$24^{+242}_{-18}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

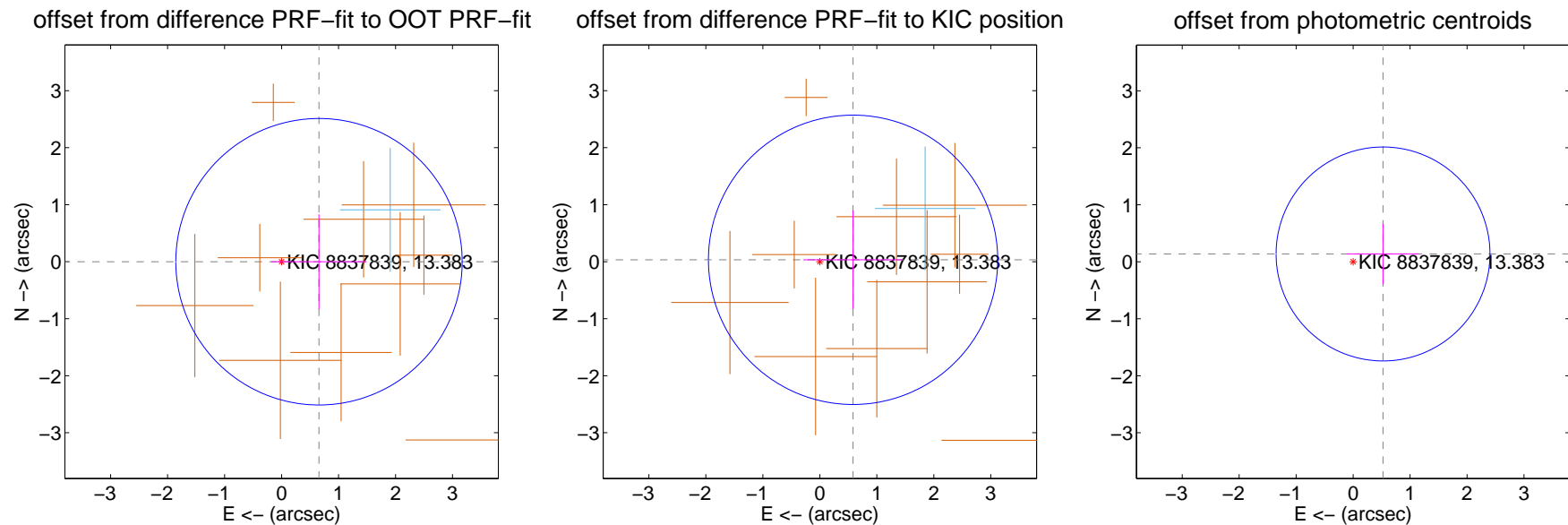
## DV Centroid Data

Supplemental centroid analysis for 008837839-07. Kepler magnitude: 13.38. Transit SNR 12.51

There are 1 quarters with good PRF difference image offsets

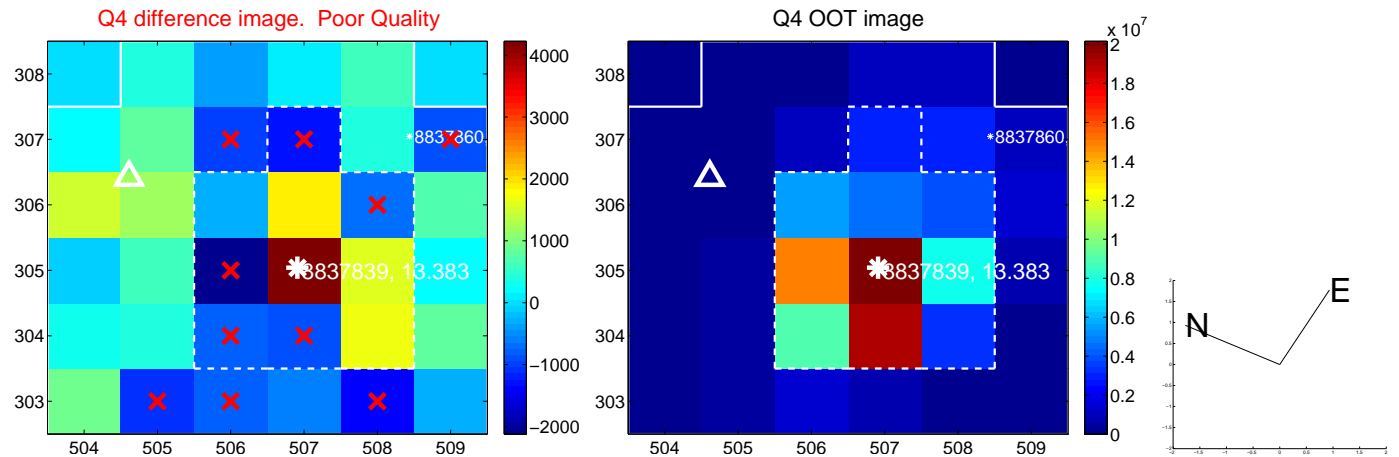
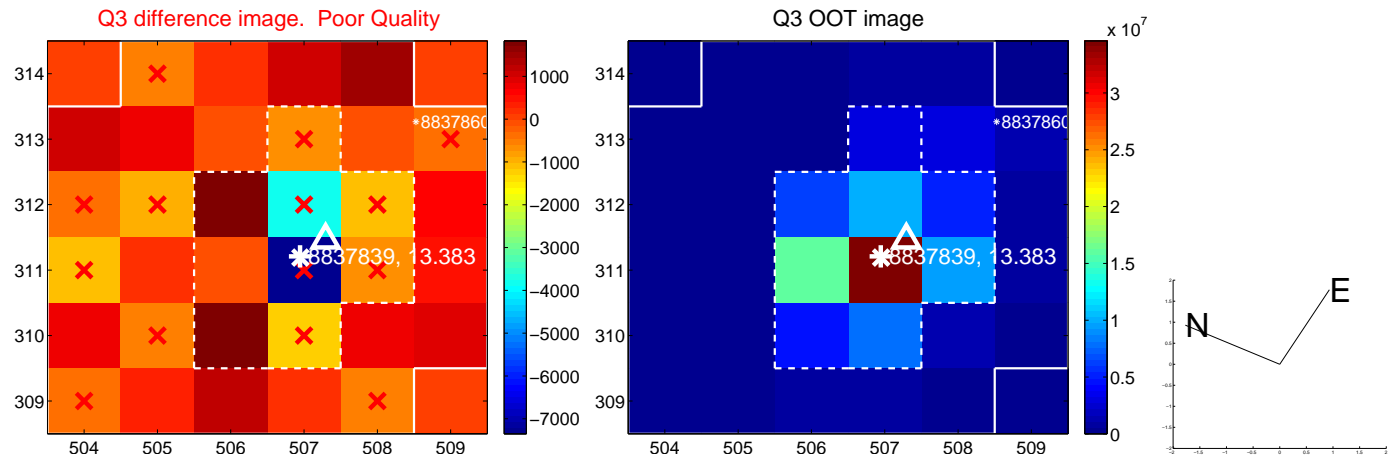
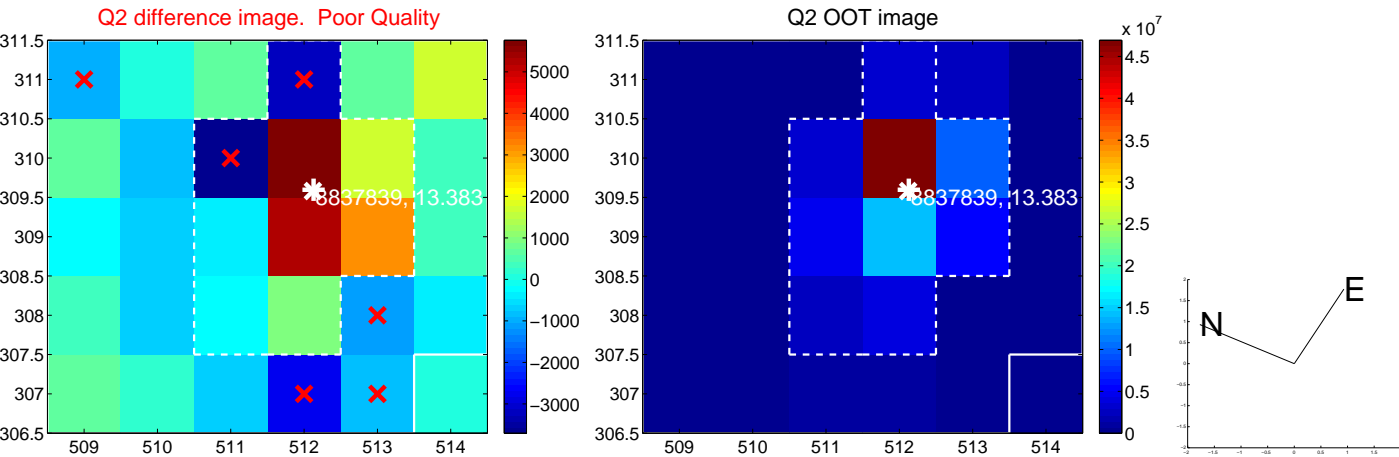
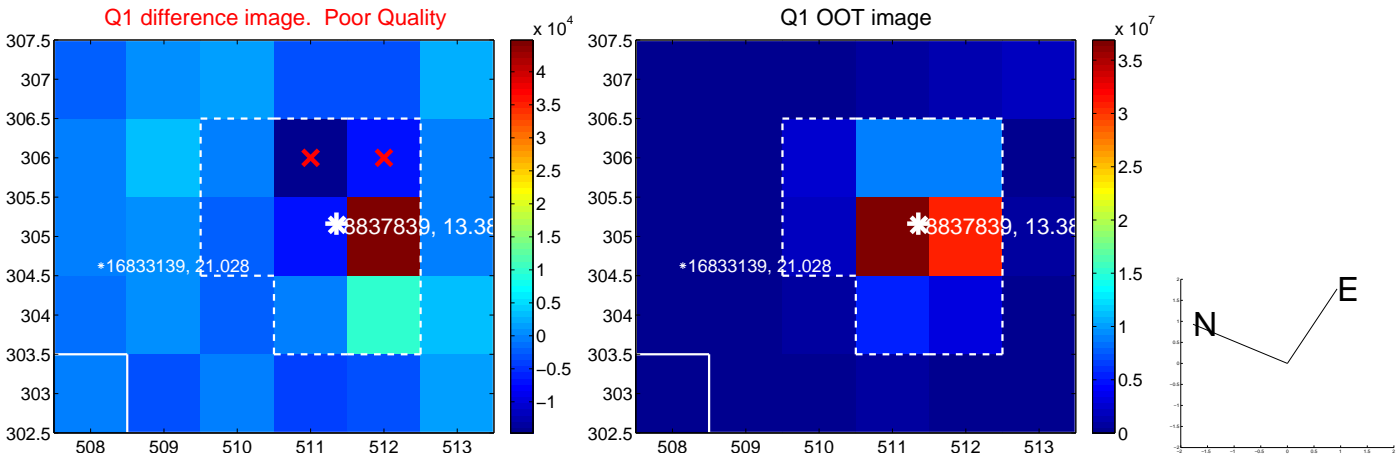
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.657 \pm 0.838$	0.78	$-0.657 \pm 0.837$	$-0.001 \pm 0.831$
PRF-fit source offset from KIC position	$0.584 \pm 0.846$	0.69	$-0.583 \pm 0.872$	$0.033 \pm 0.864$
photometric centroid source offset	$0.54 \pm 0.63$	0.87	$-0.53 \pm 0.63$	$0.14 \pm 0.53$



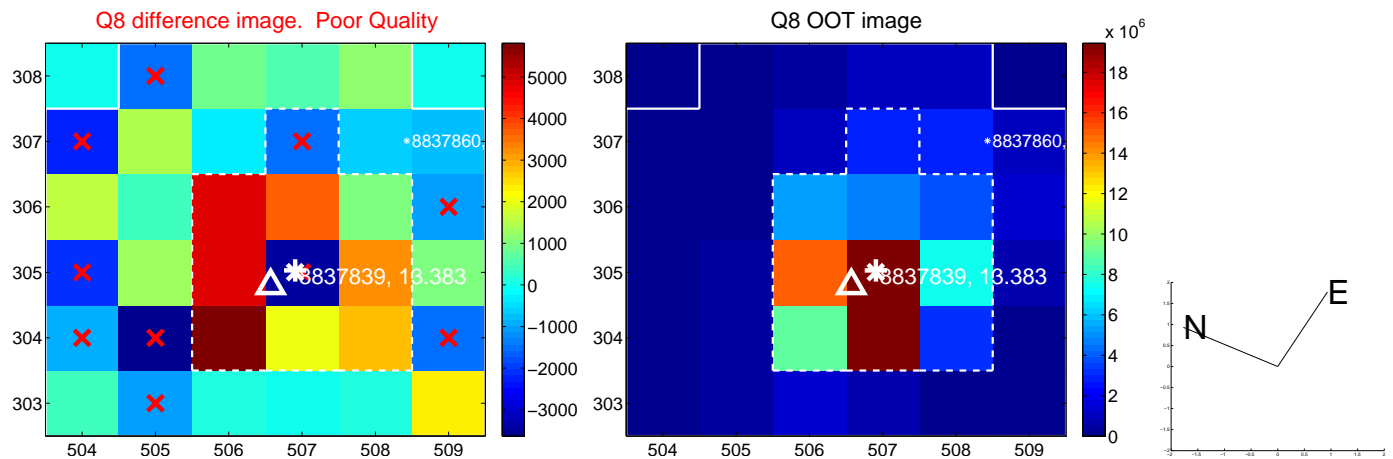
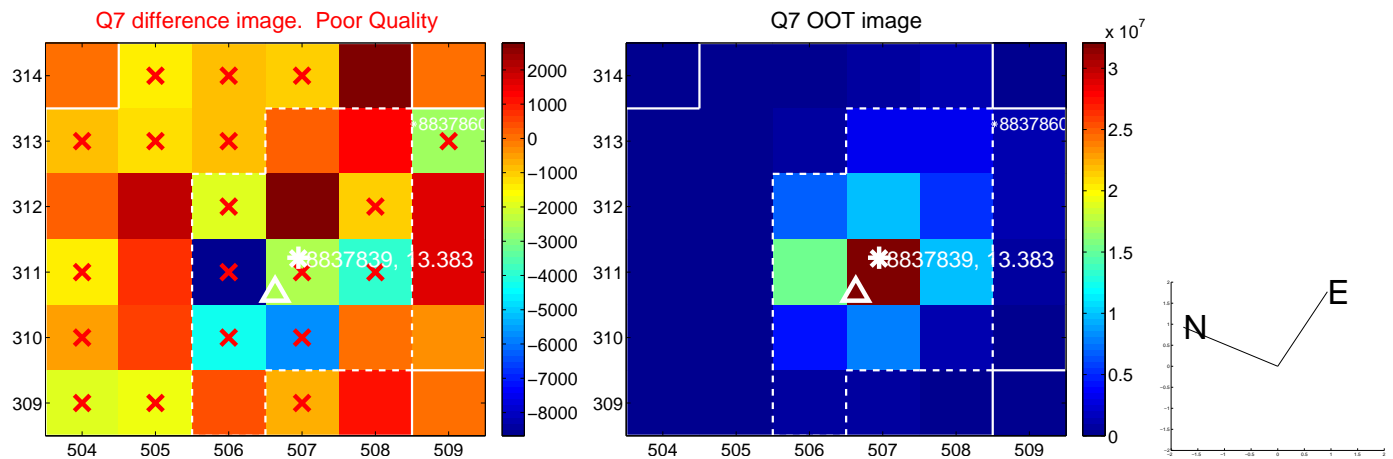
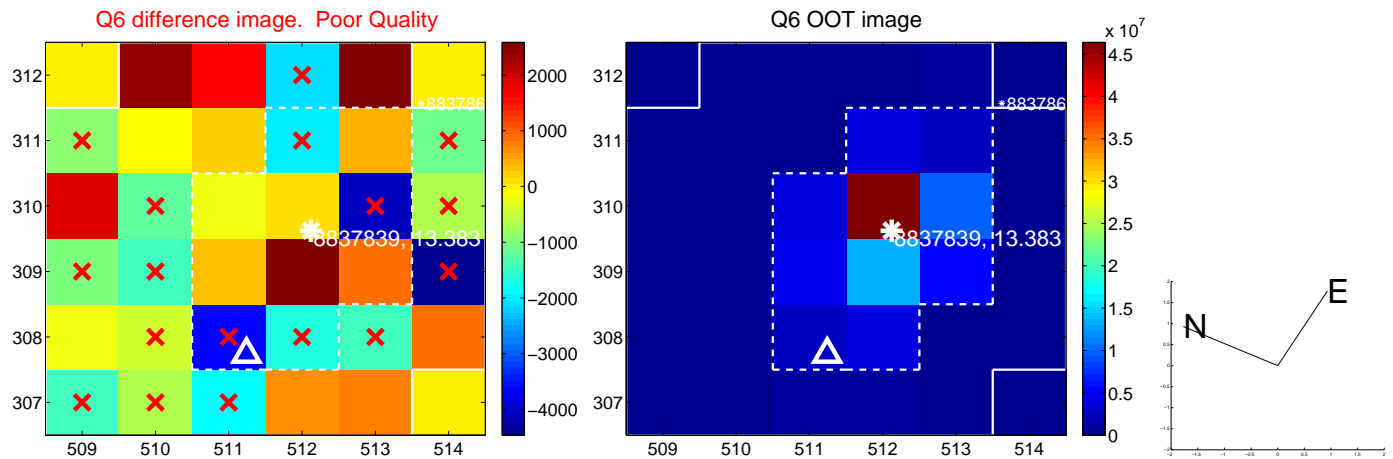
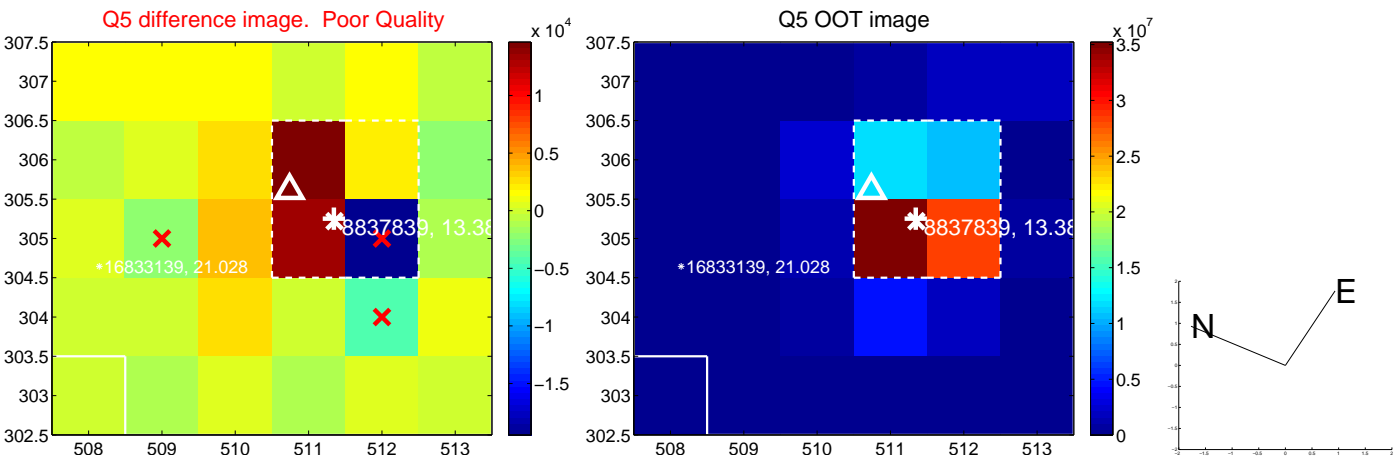
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

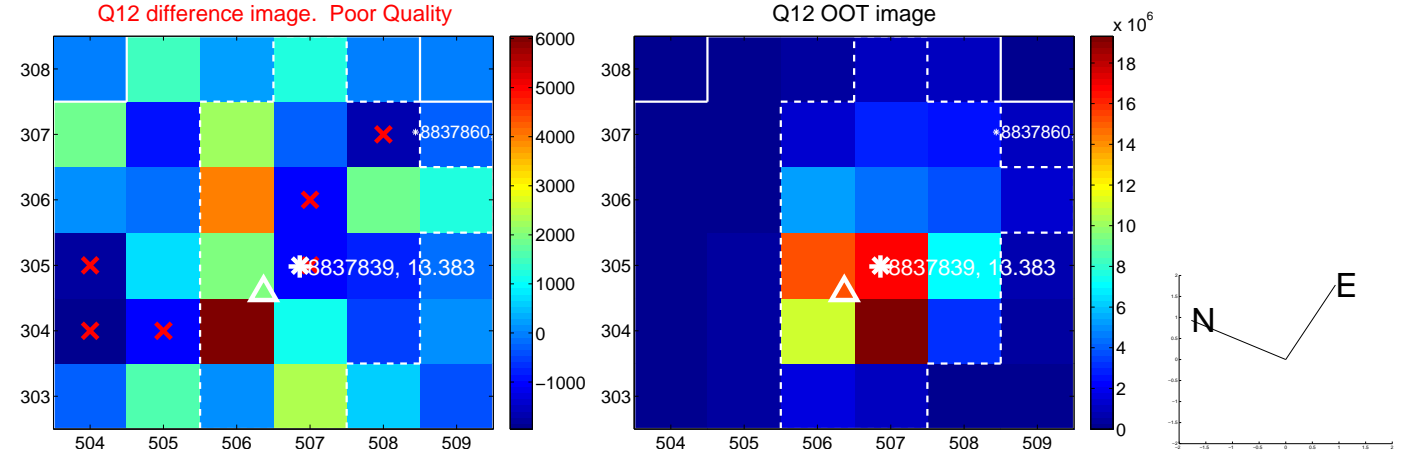
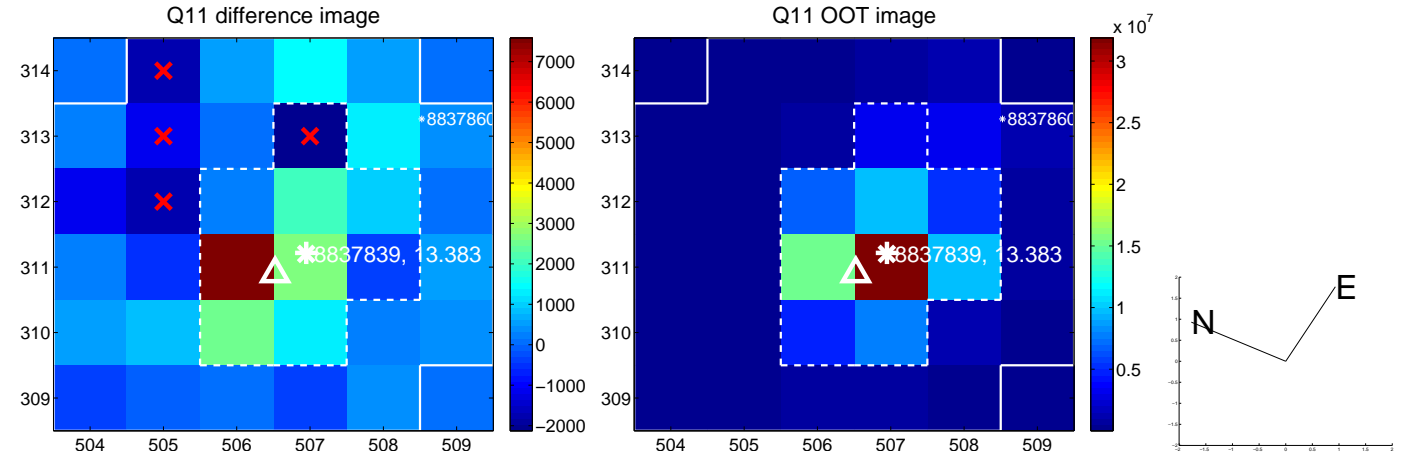
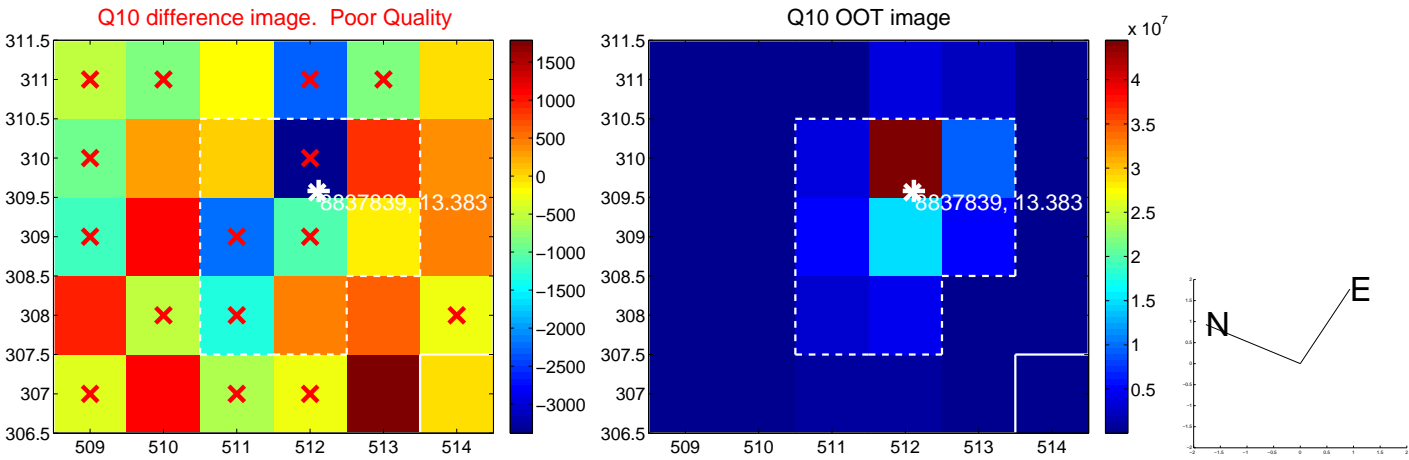
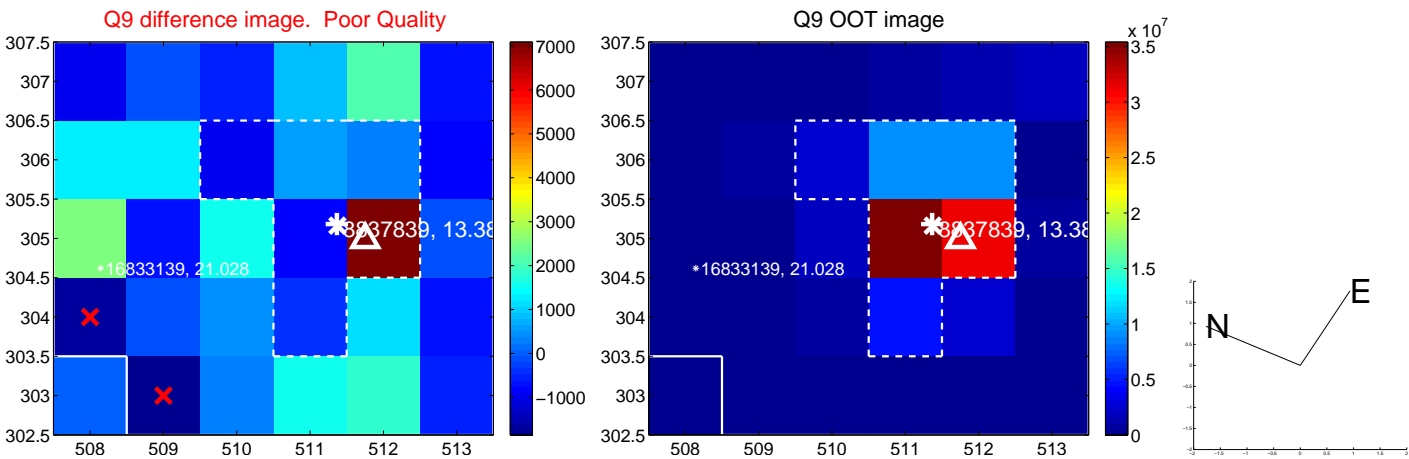




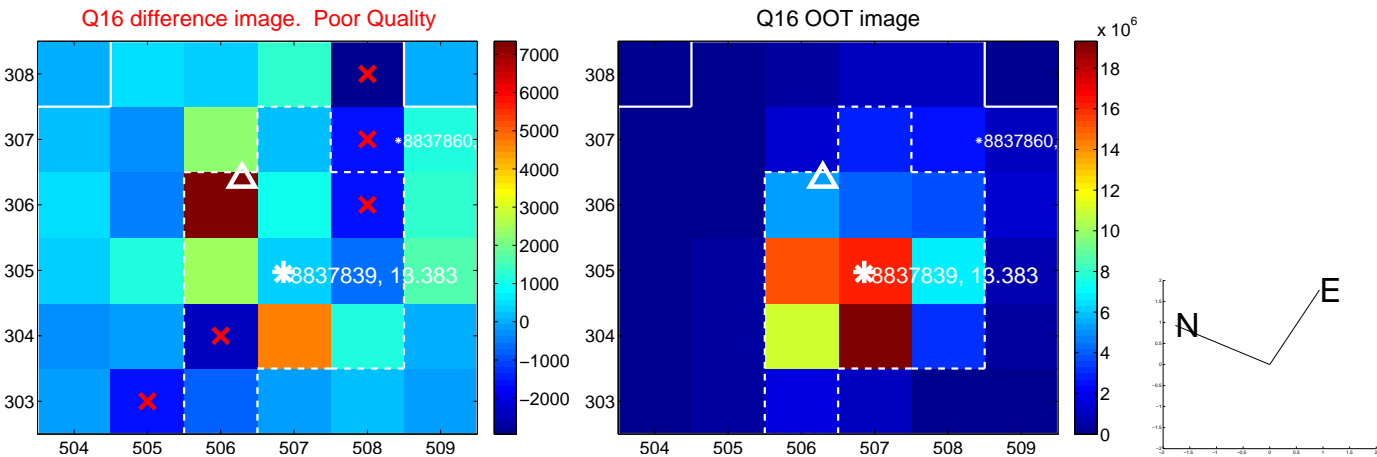
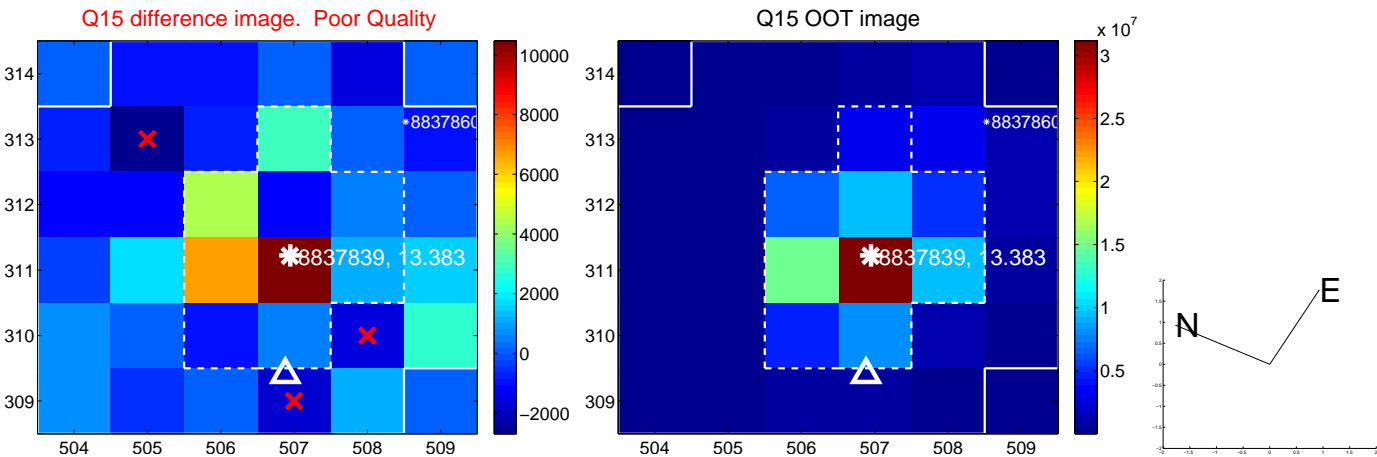
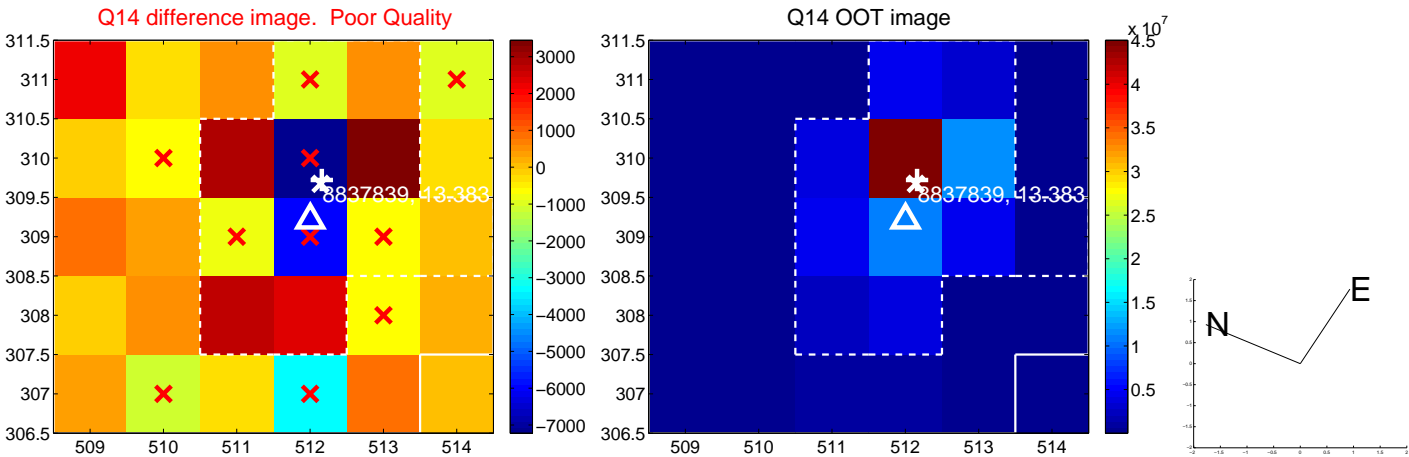
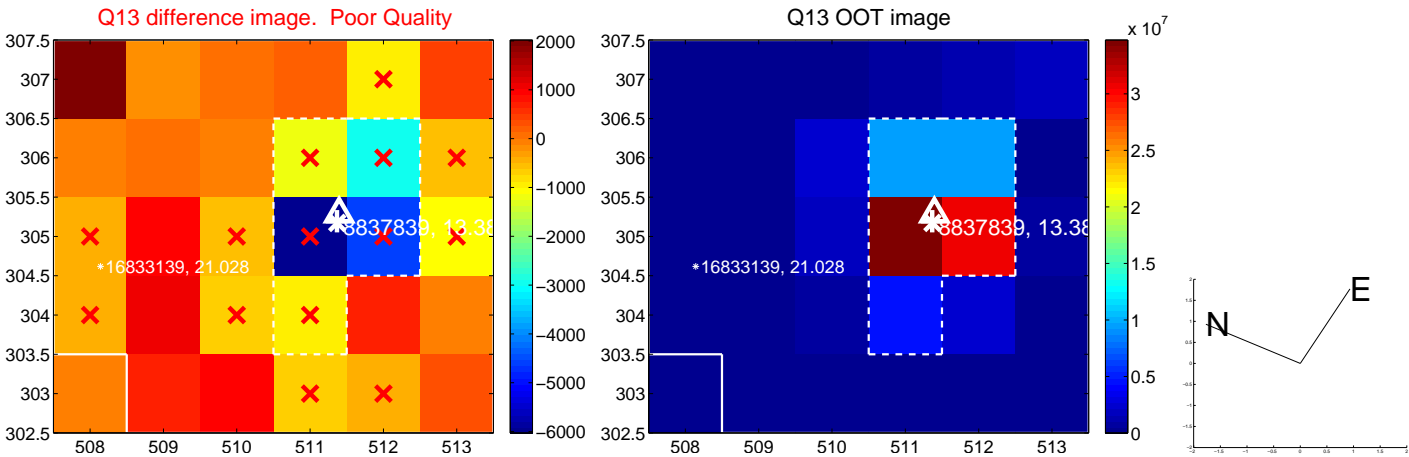
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



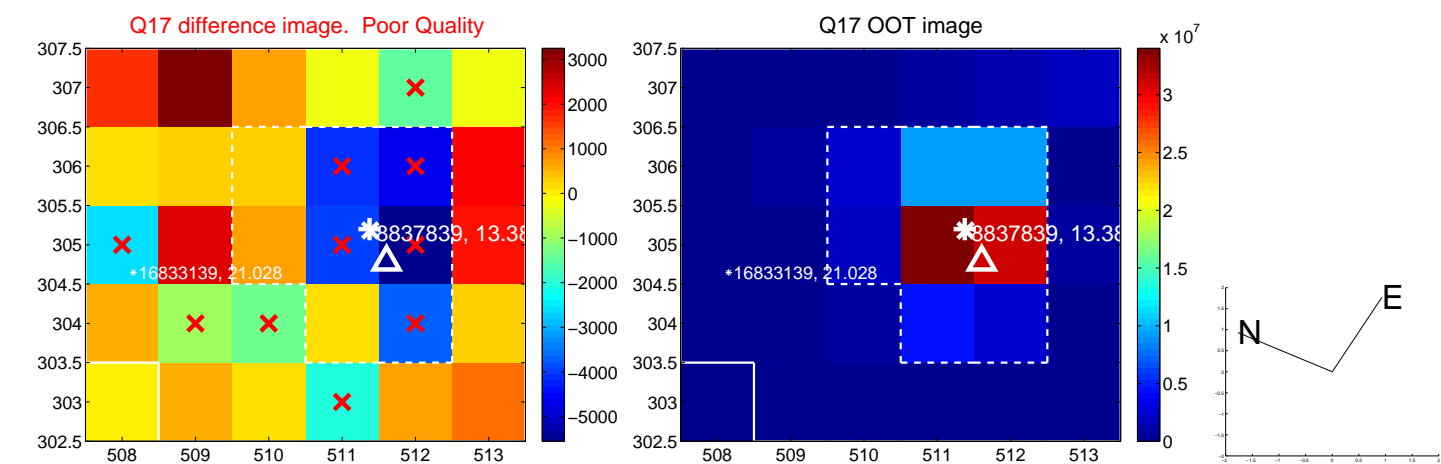
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



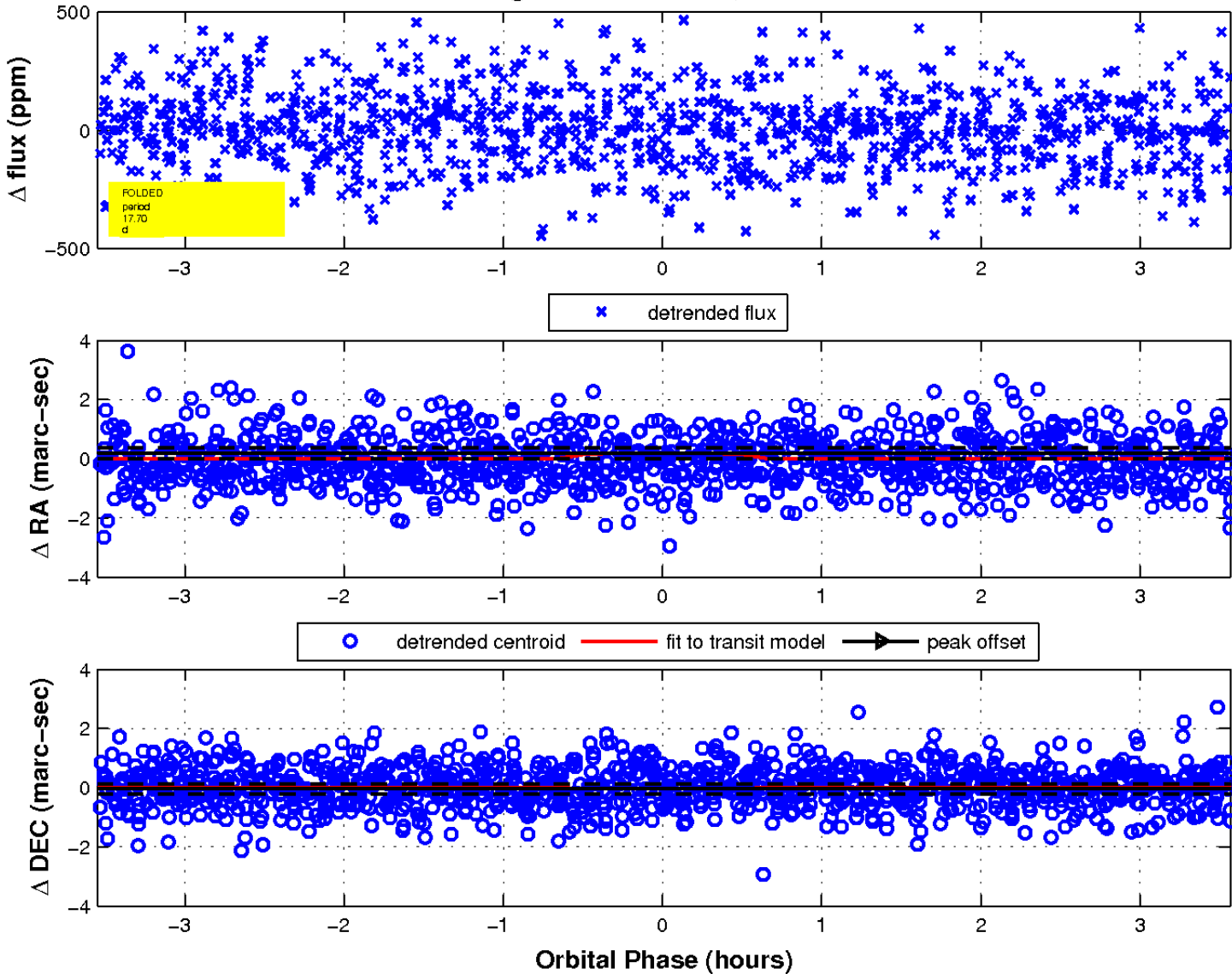
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

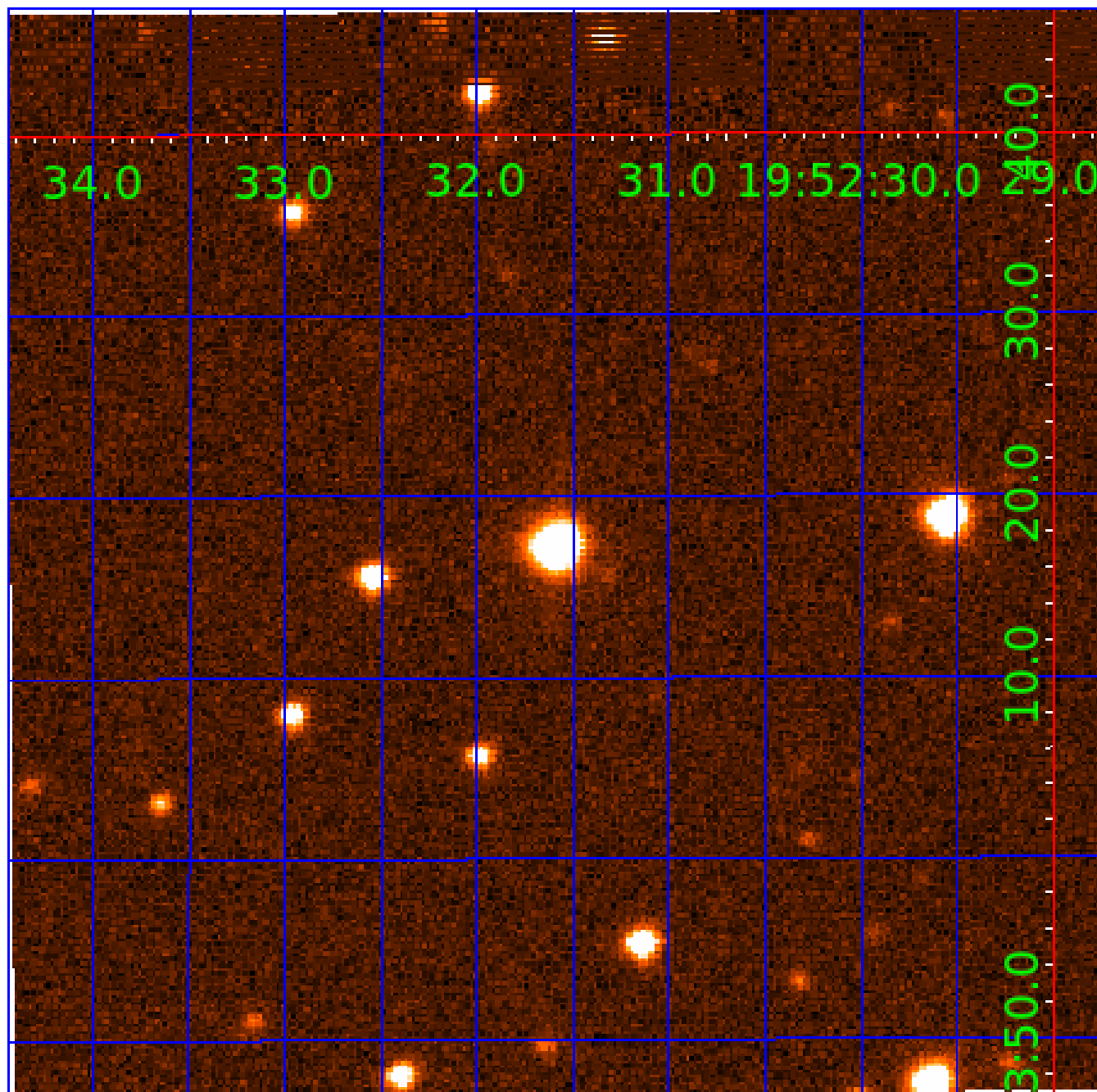


fluxWeightedCentroids, Planet 7 of 8



UKIRT Image

Declination



# KIC 008837839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008837839-01	OBS	No	0.803712	131.731755	12.6	6.009	9.7	8.0	3.15	6597	1.28	43447.27
008837839-02	OBS	No	11.193676	140.867514	433.4	0.828	16.3	18.9	3.15	6597	6.69	1296.58
008837839-03	OBS	No	18.604590	134.543548	308.7	0.933	14.6	16.1	3.15	6597	5.78	658.57
008837839-04	OBS	No	37.769609	138.539642	218.5	0.818	12.6	2.6	3.15	6597	4.78	256.20
008837839-05	OBS	No	20.119771	132.863277	479.6	3.000	11.0	-1.0	3.15	6597	6.96	593.29
008837839-07	OBS	No	17.698999	147.797264	296.0	1.190	13.9	12.5	3.15	6597	5.58	703.88
008837839-08	OBS	No	28.141386	137.342066	310.1	1.308	10.5	12.5	3.15	6597	5.82	379.29

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008837839-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008837839-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008837839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
008837839-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
008837839-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS

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

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

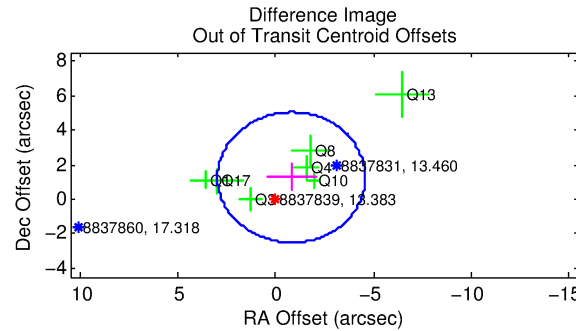
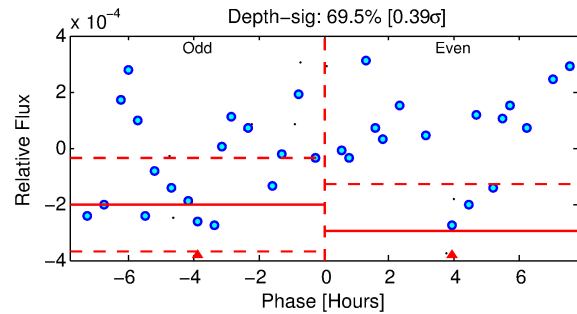
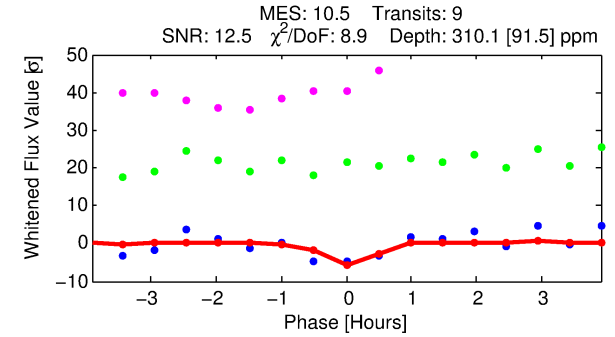
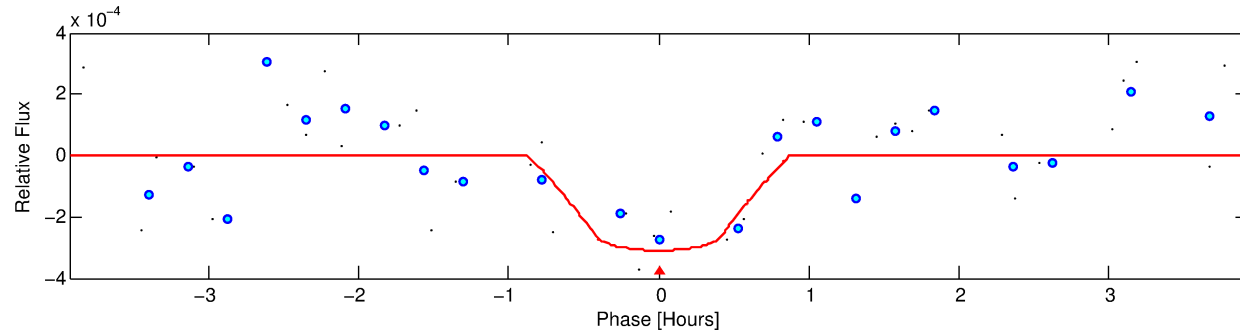
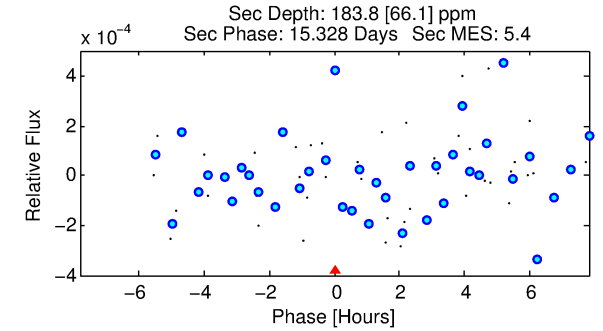
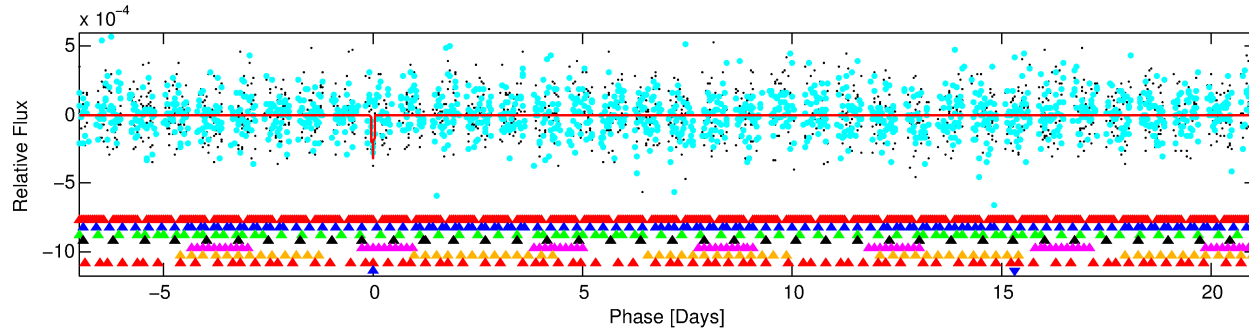
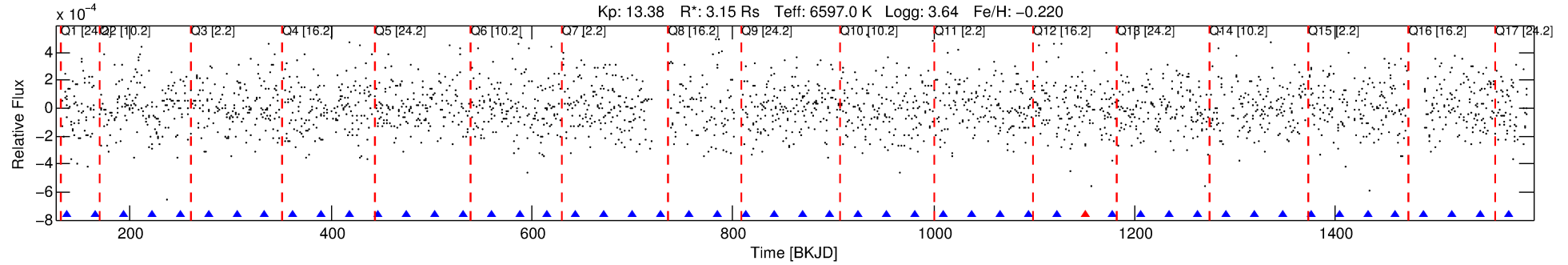
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008837839-08

No Significant Match Found

# DV One-Page Summary

KIC: 8837839 Candidate: 8 of 8 Period: 28.141 d



## DV Fit Results:

Period = 28.14139 [0.00209] d  
Epoch = 137.3421 [0.0779] BKJD  
Rp/R\* = 0.0169 [0.0328]  
a/R\* = 138.07 [1438.29]  
b = 0.57 [12.40]  
Seff = 379.29 [220.61]  
Teq = 1125 [164] K  
Rp = 5.82 [11.50] Re  
a = 0.2109 [0.0758] AU  
Ag = 132.60 [521.50] [0.25 $\sigma$ ]  
Teffp = 5904 [5747] K [0.83 $\sigma$ ]

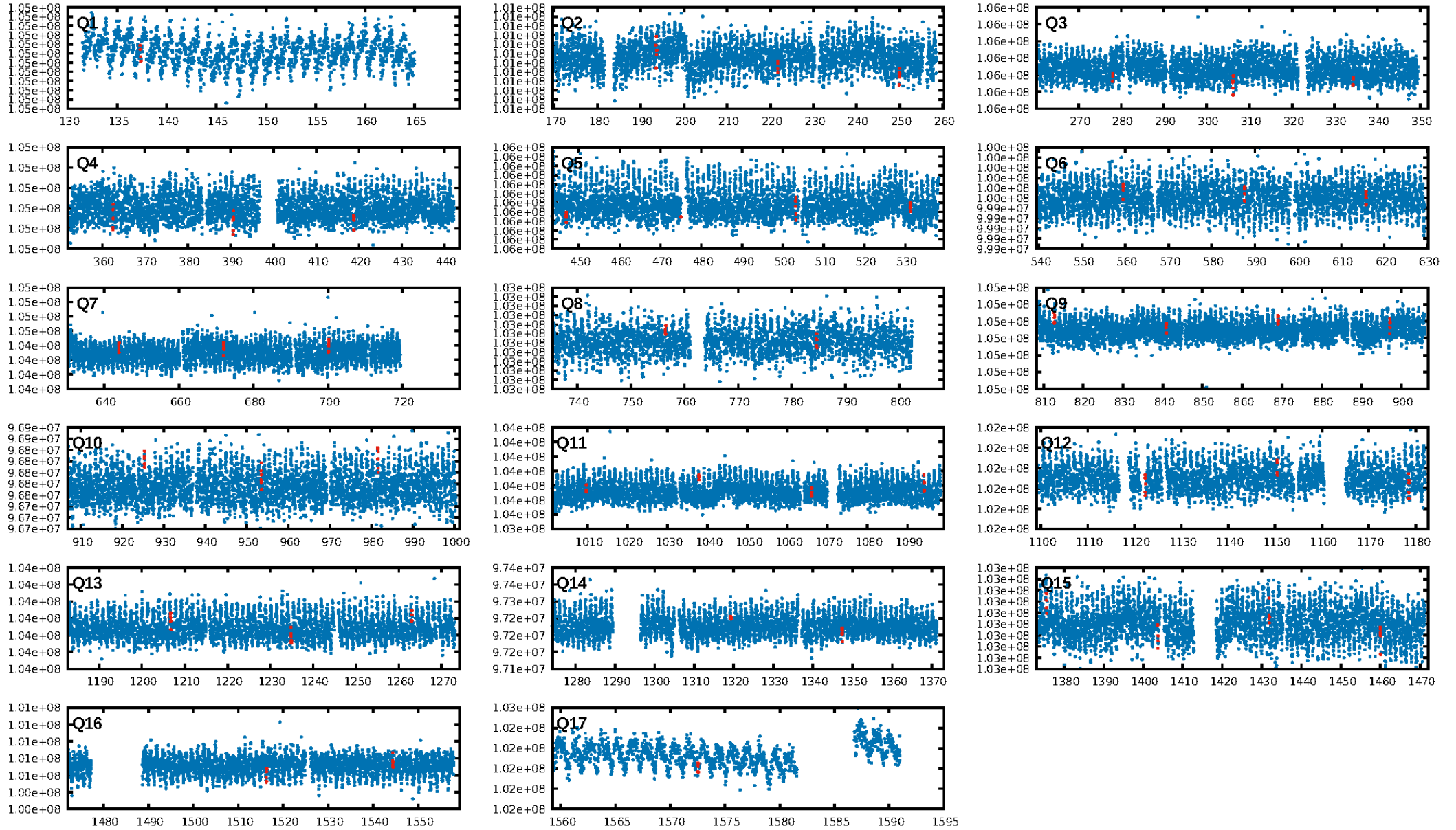
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.80 $\sigma$ ]  
LongPeriod-sig: 100.0% [149.84 $\sigma$ ]  
ModelChiSquare2-sig: 13.3%  
ModelChiSquareGof-sig: 78.4%  
**Bootstrap-pfa: 3.49e-08**  
RollingBand-fgt: 0.89 [8/9]  
**GhostDiagnostic-chr: -1.613**  
Centroid-sig: 27.4%  
Centroid-so: 0.739 arcsec [1.09 $\sigma$ ]  
OotOffset-rm: 1.496 arcsec [1.19 $\sigma$ ]  
OotOffset-st: 1/1/2/3 [7]  
KicOffset-rm: 1.497 arcsec [1.64 $\sigma$ ]  
KicOffset-st: 1/1/2/3 [7]  
DiffImageQuality-fgm: 0.14 [1/7]  
DiffImageOverlap-fno: 0.19 [3/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 16:59:17 Z

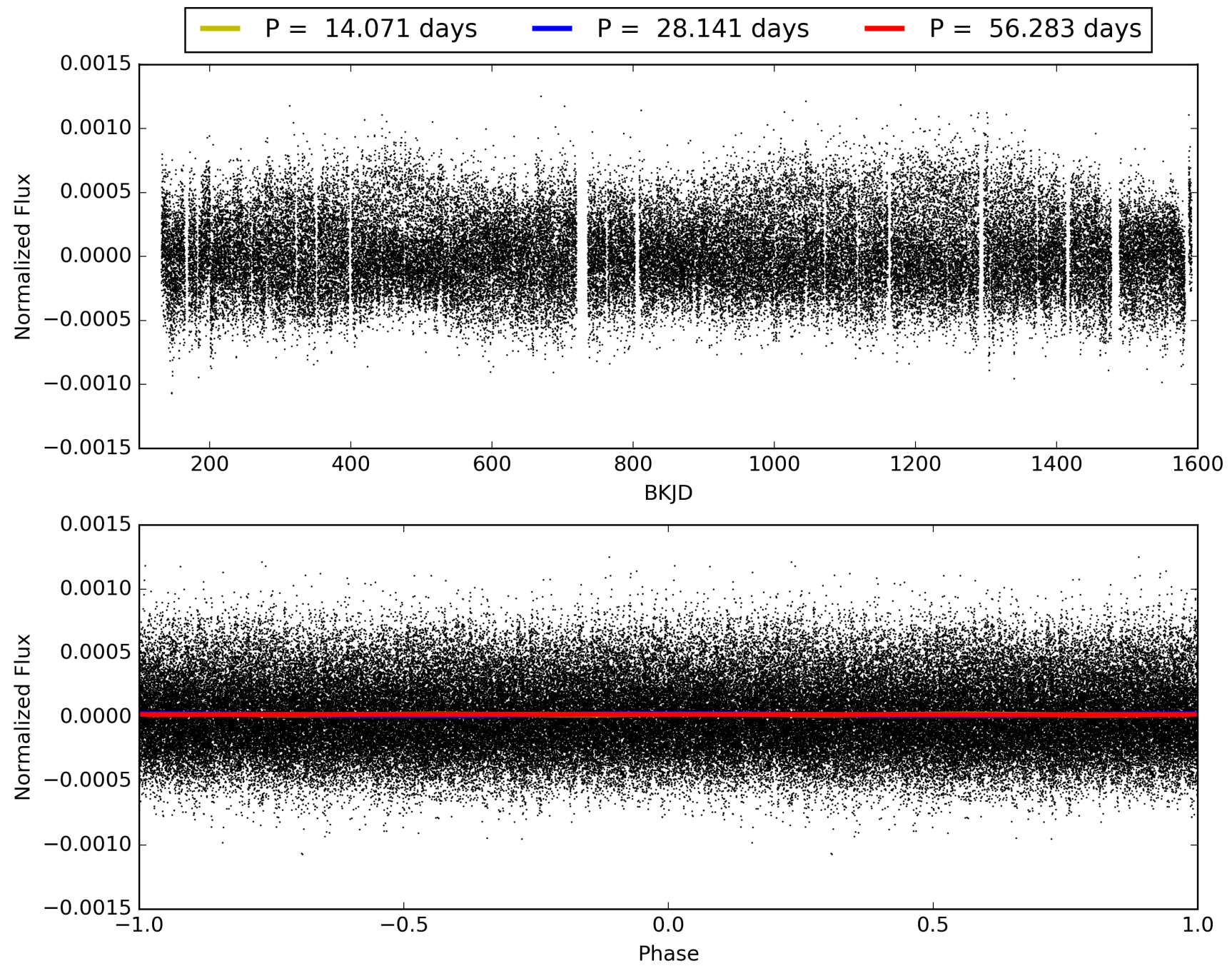
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008837839-08, PDC Light Curves



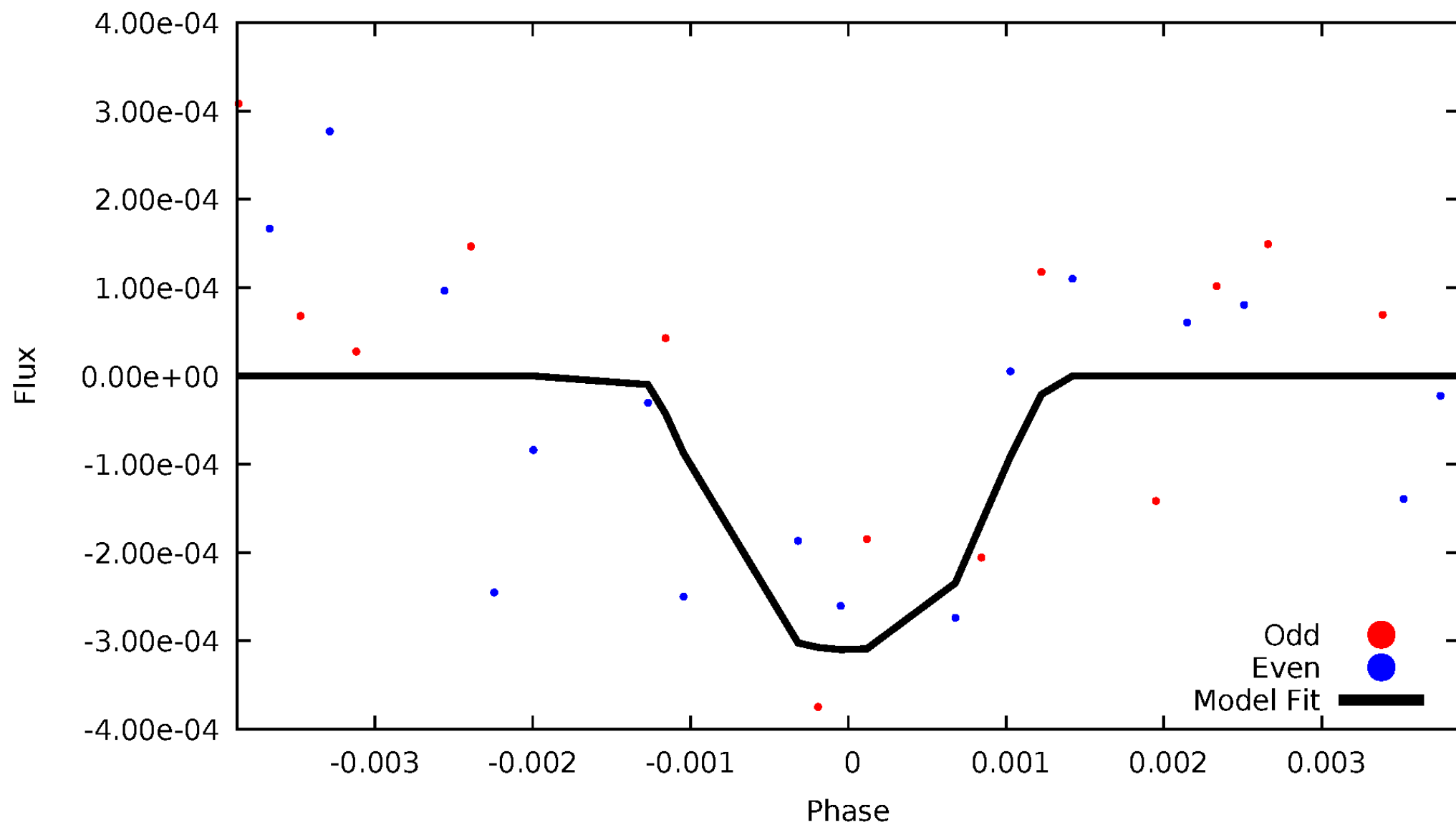


TCE 008837839-08



# DV Odd/Even

TCE 008837839-08



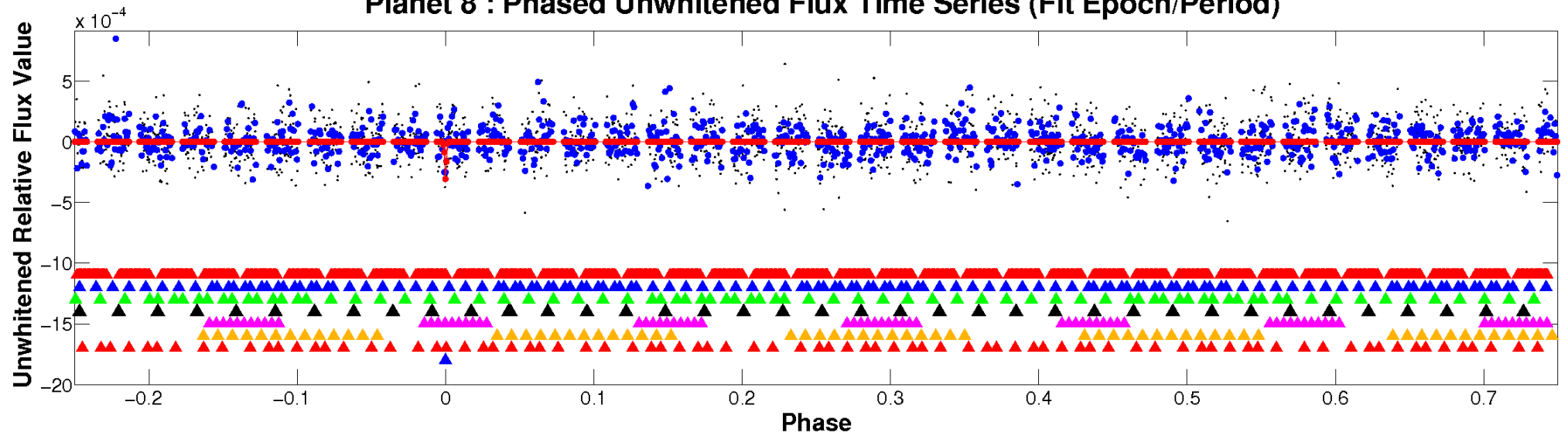


ALT Odd/Even

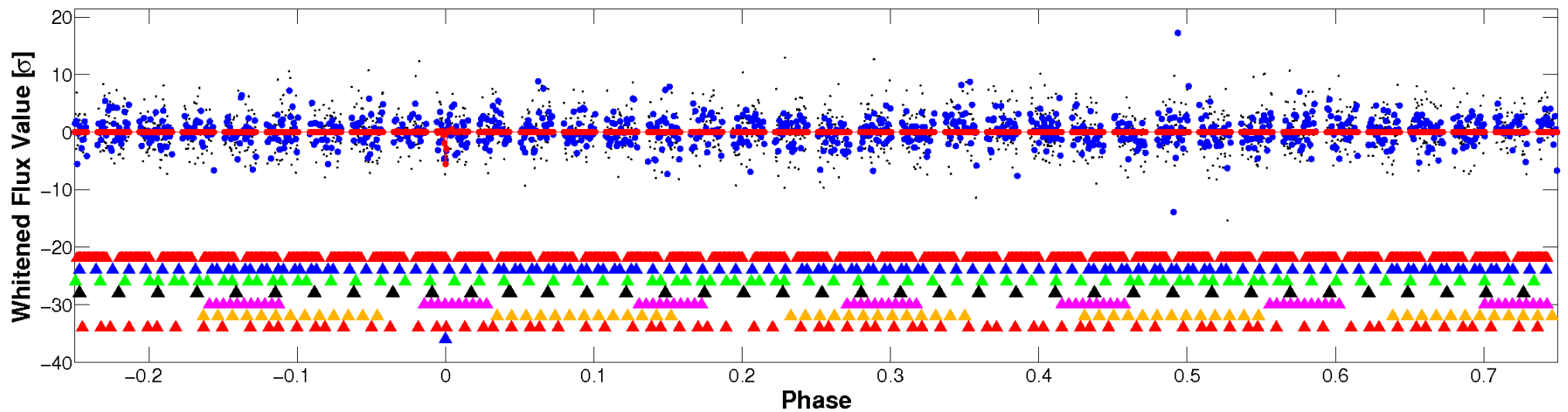
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

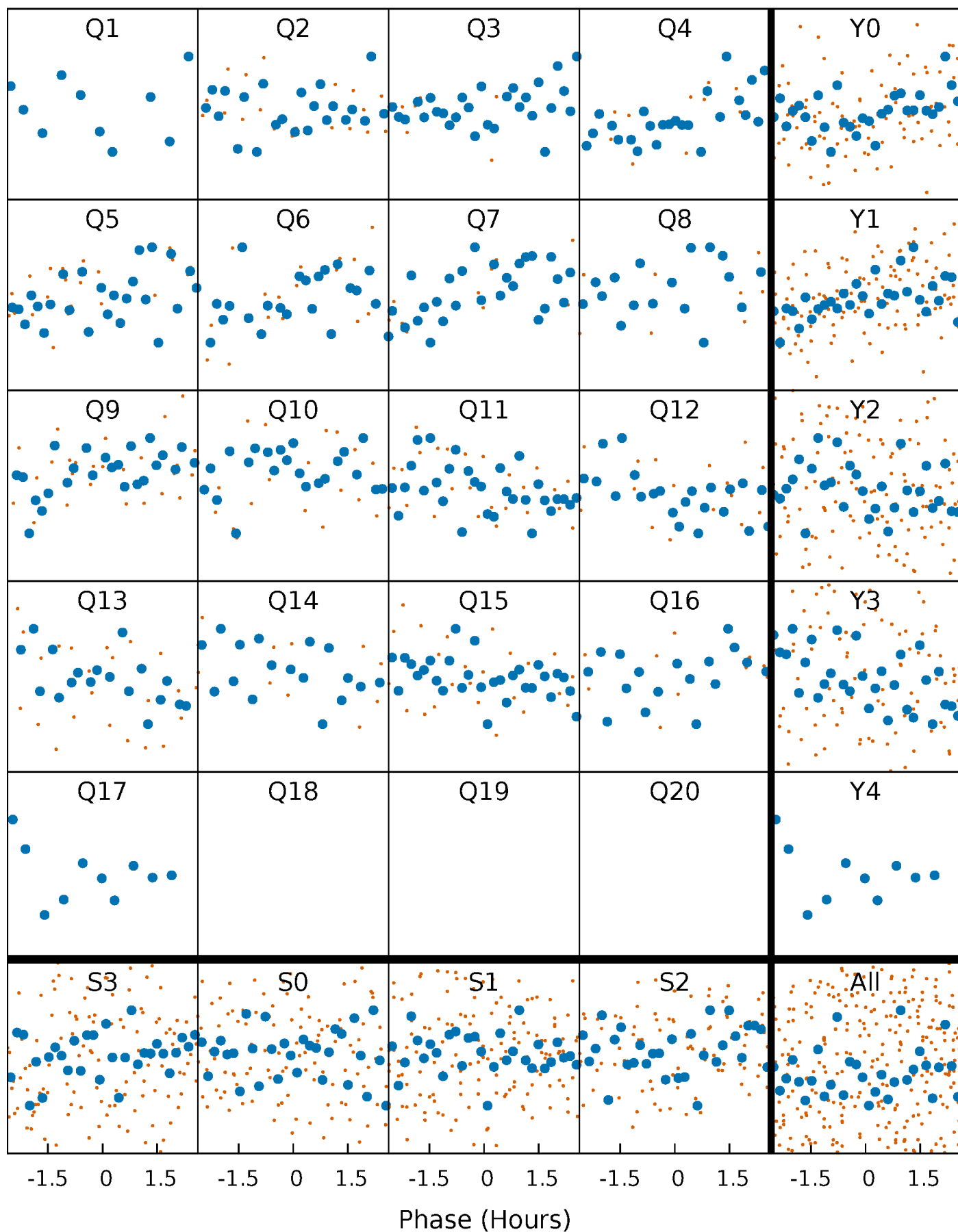


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



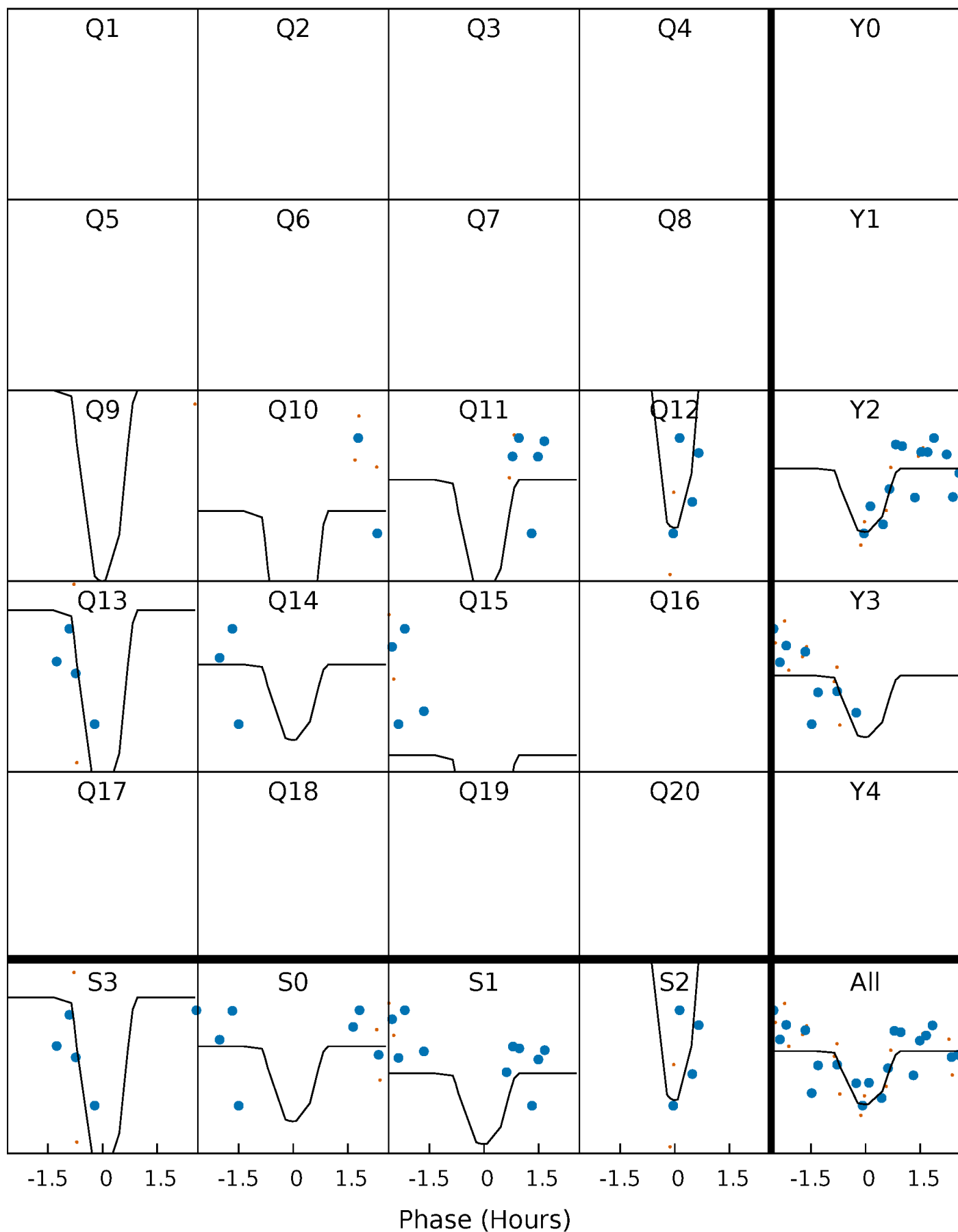
# PDC Quarter-Phased Transit Curves

TCE 008837839-08   P= 28.141386 Days    $T_0=137.342066$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008837839-08   P= 28.141386 Days    $T_0=137.342066$  (BKJD)



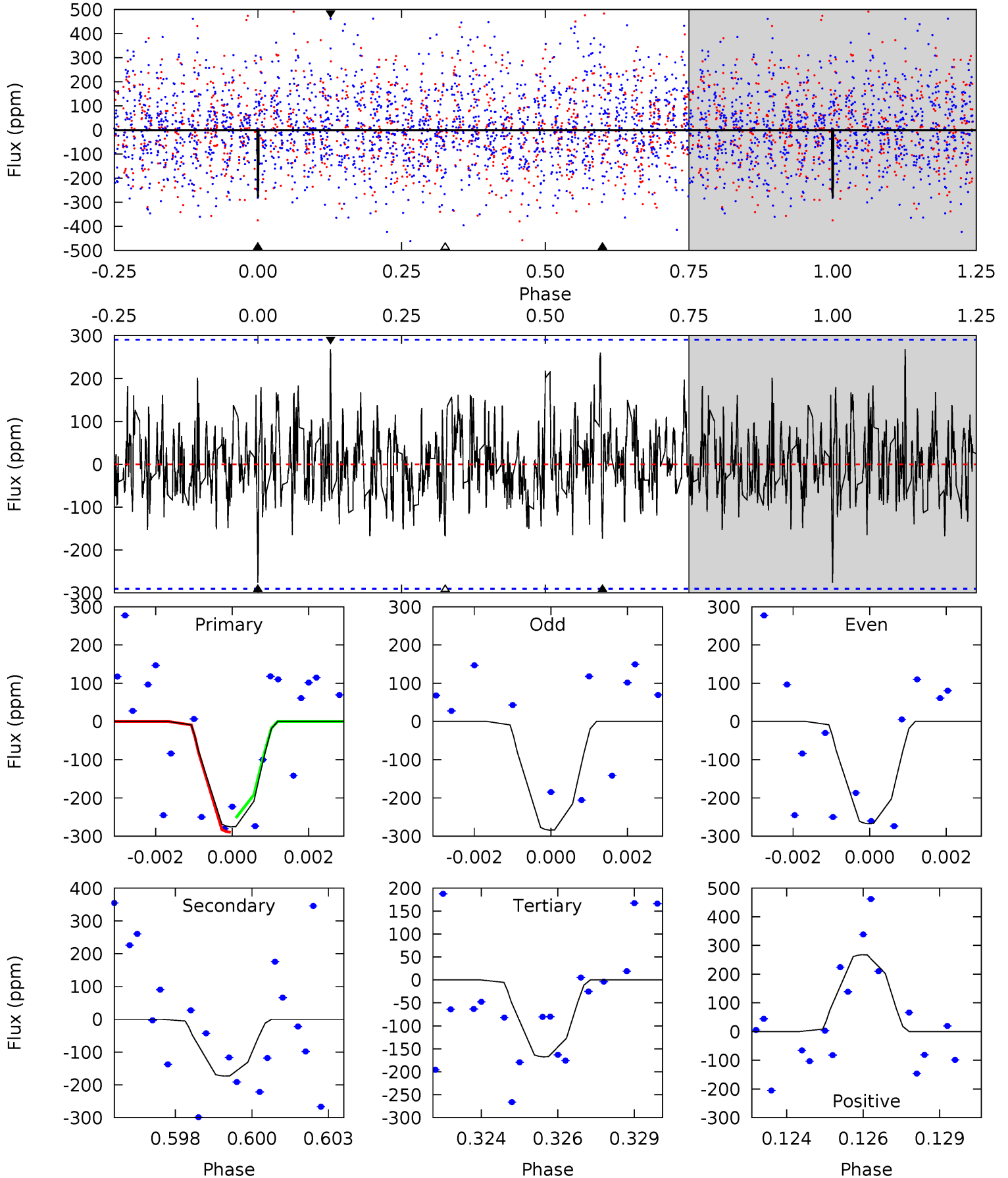
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

008837839-08, P = 28.141386 Days, E = 109.200680 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
5.03	3.16	3.06	4.88	5.29	3.04	1.26	1.97	0.14	0.10	-1.72	0.14	1.05	0.49	0.35



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008837839

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+178}_{-198}$	$3.639^{+0.332}_{-0.078}$	$-0.220^{+0.300}_{-0.250}$	$3.153^{+0.399}_{-1.198}$	$1.578^{+0.225}_{-0.338}$	$0.071^{+0.164}_{-0.019}$
	+3%/-3%	+9%/-2%	+136%/-114%	+13%/-38%	+14%/-21%	+231%/-26%
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 008837839-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-173 \pm 55$	$9.57^{+9.39}_{-6.73}$	$1535^{+89}_{-137}$	$4556^{+3560}_{-1044}$	$46^{+443}_{-35}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

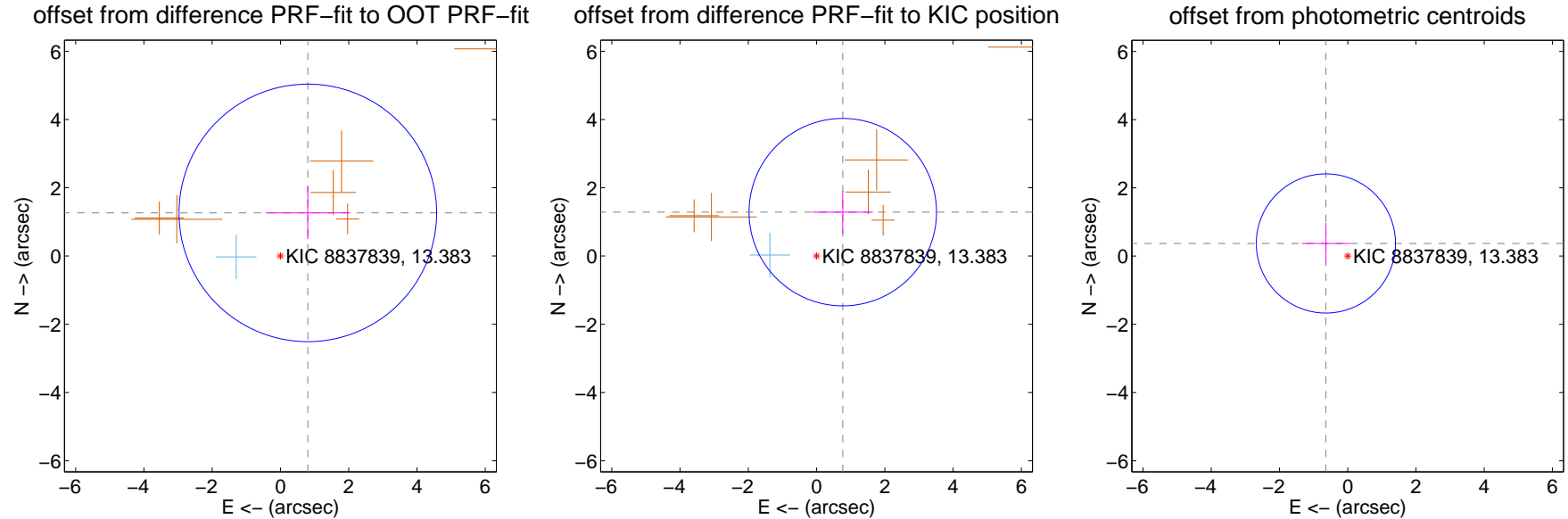
## DV Centroid Data

Supplemental centroid analysis for 008837839-08. Kepler magnitude: 13.38. Transit SNR 12.45

There are 1 quarters with good PRF difference image offsets

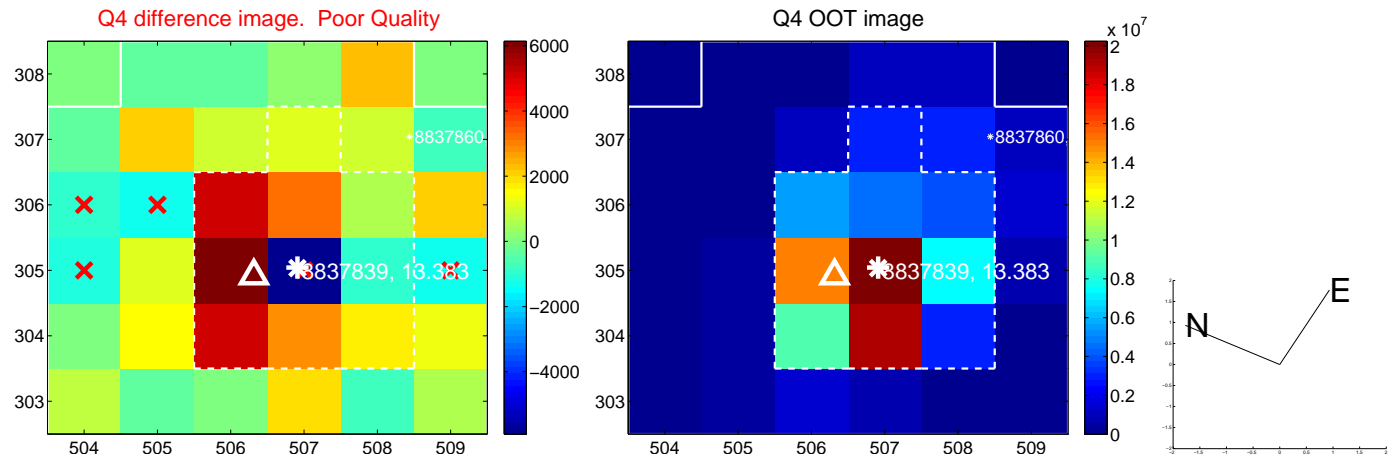
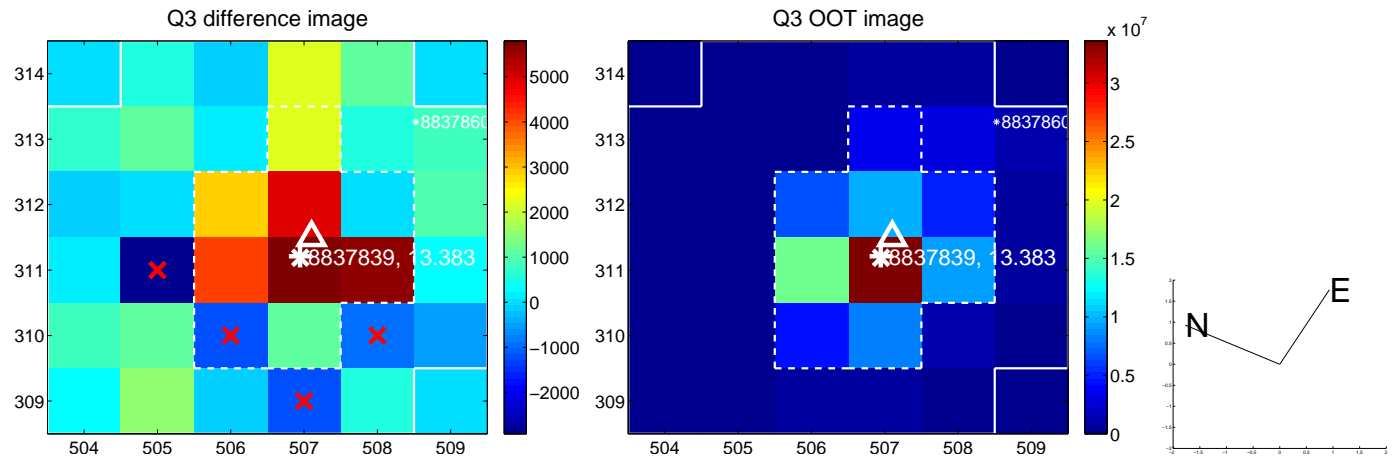
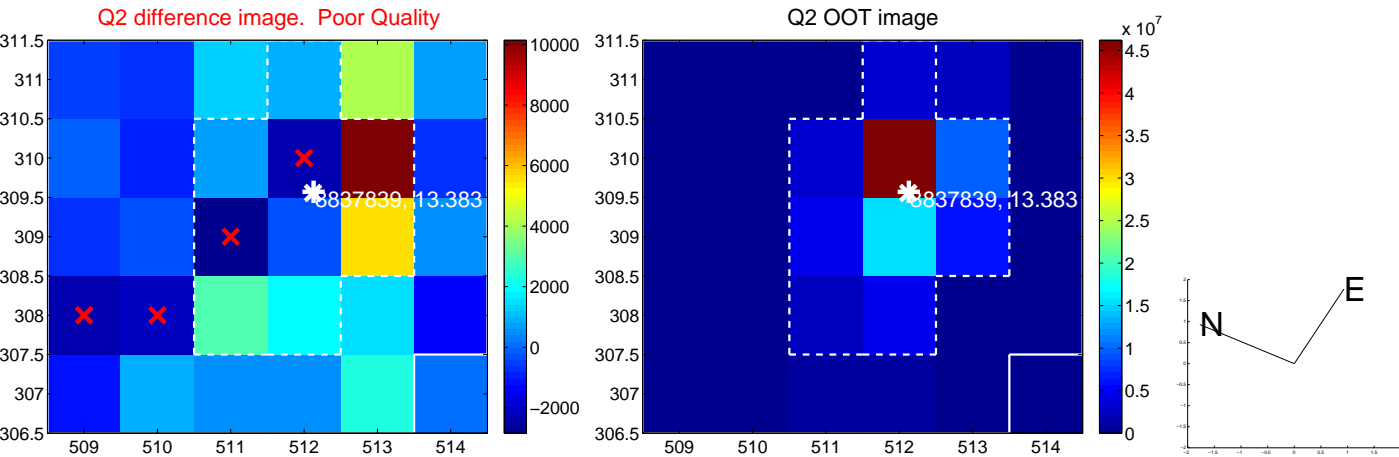
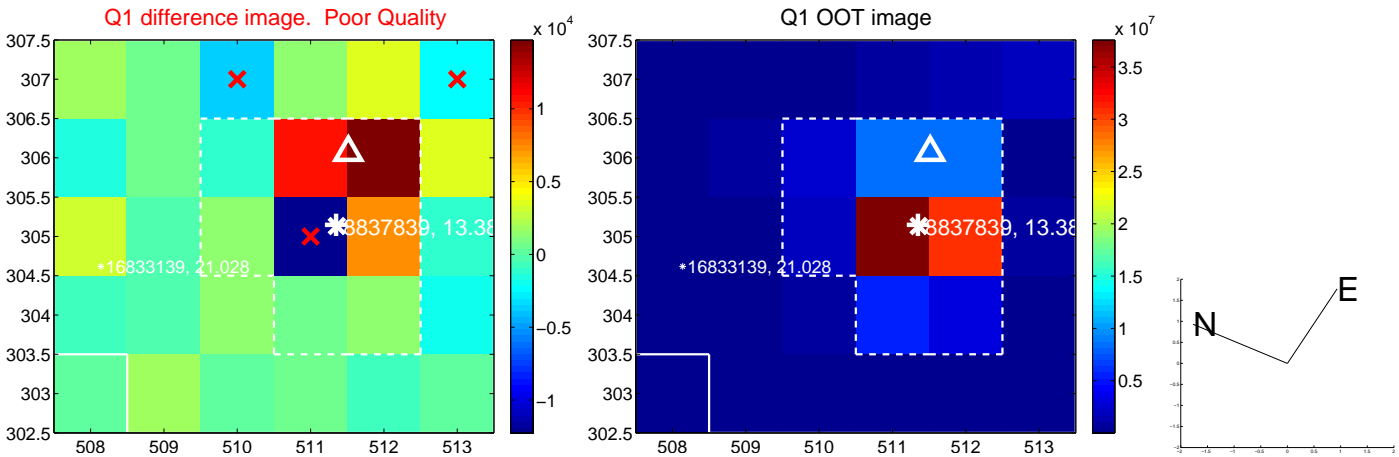
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.496 \pm 1.258$	1.19	$-0.801 \pm 1.238$	$1.264 \pm 0.769$
PRF-fit source offset from KIC position	$1.497 \pm 0.915$	1.64	$-0.767 \pm 0.883$	$1.286 \pm 0.624$
photometric centroid source offset	$0.74 \pm 0.68$	1.09	$0.64 \pm 0.70$	$0.37 \pm 0.60$

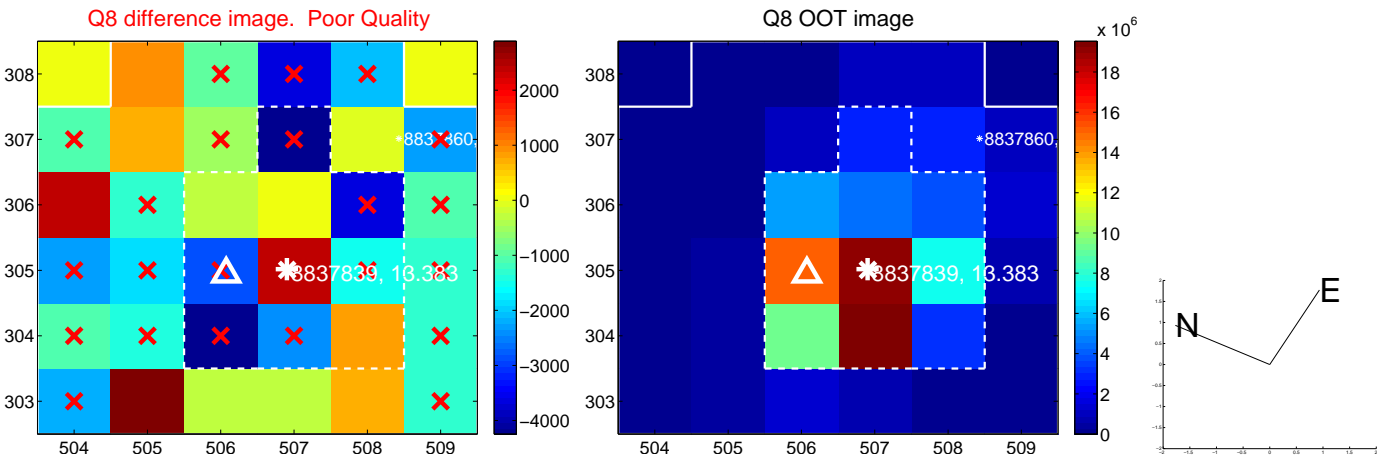
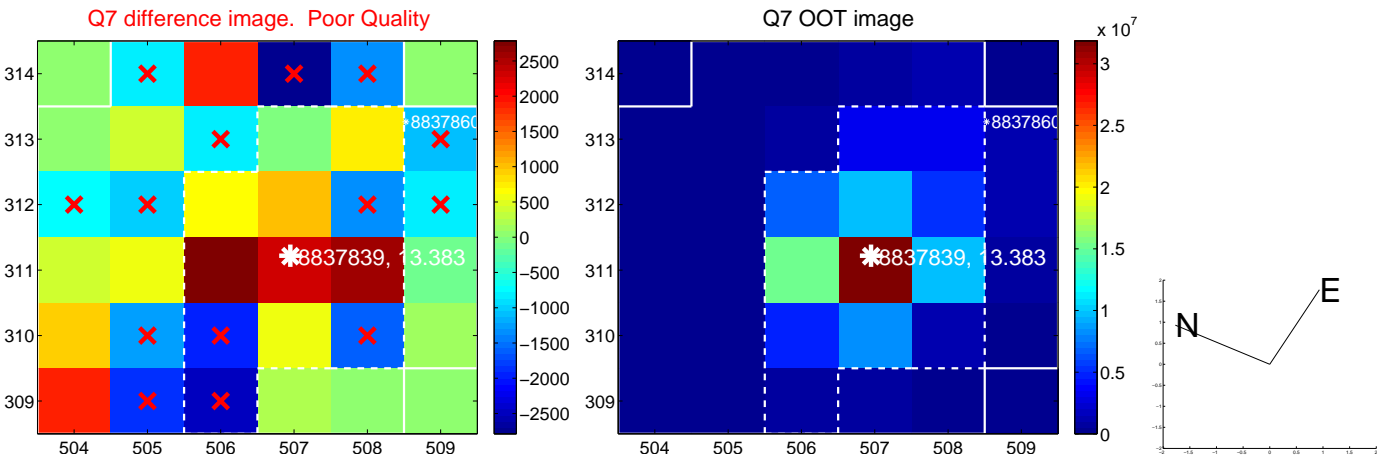
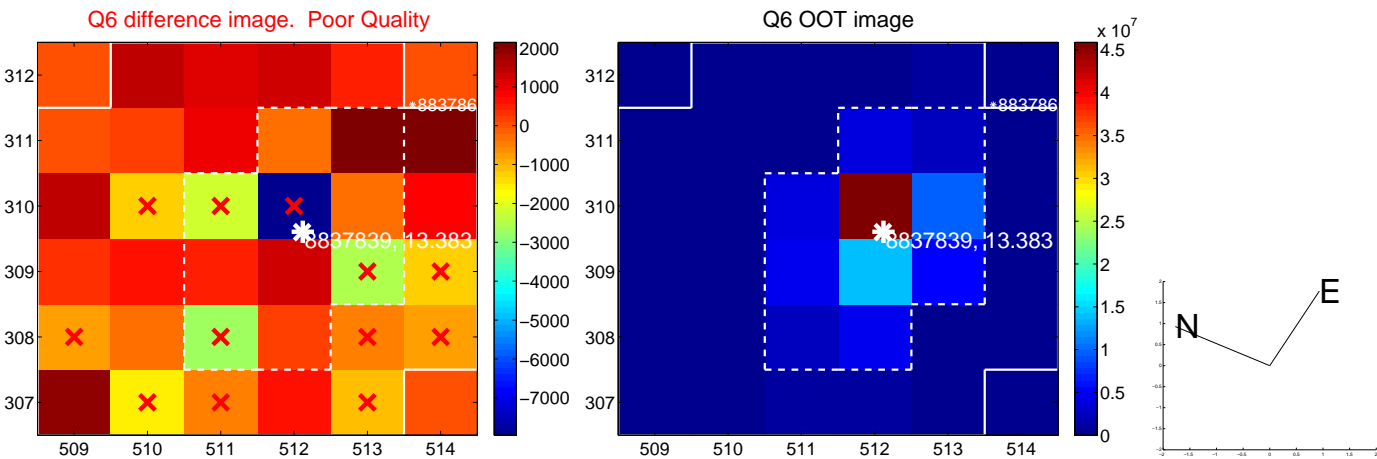
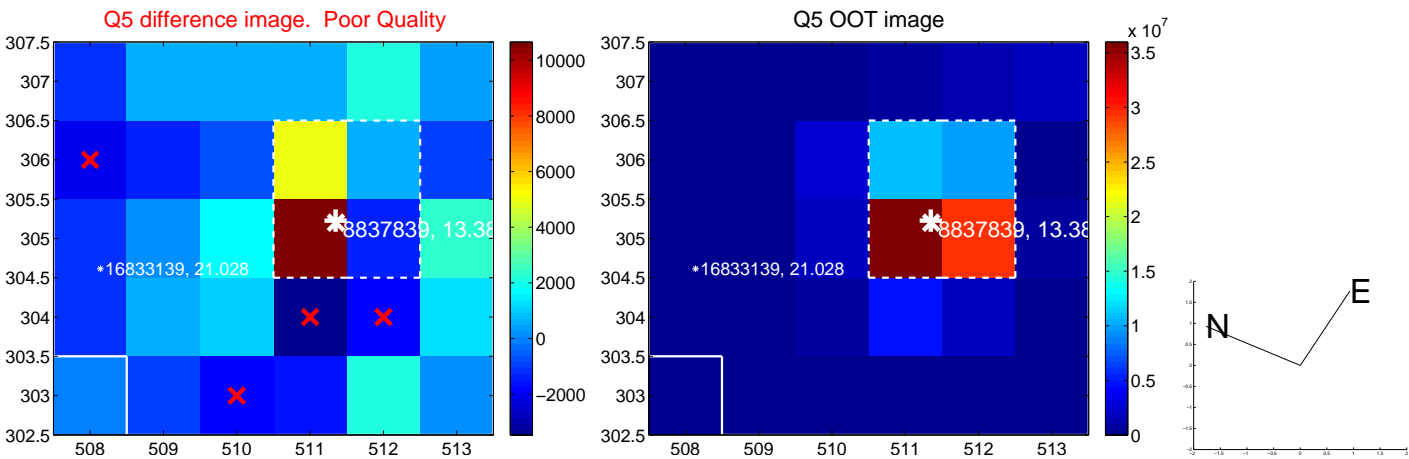


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

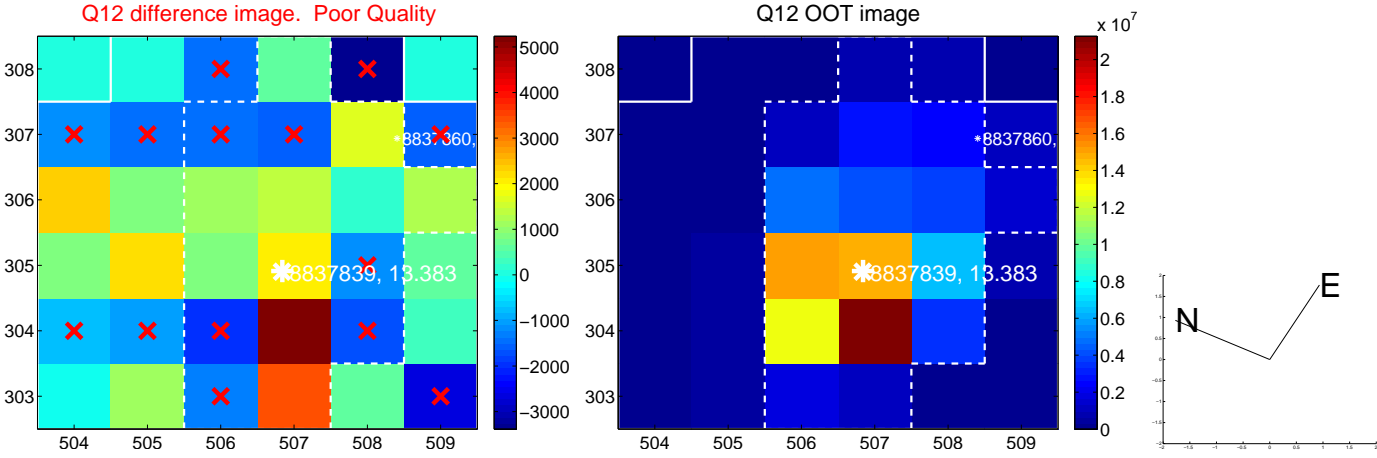
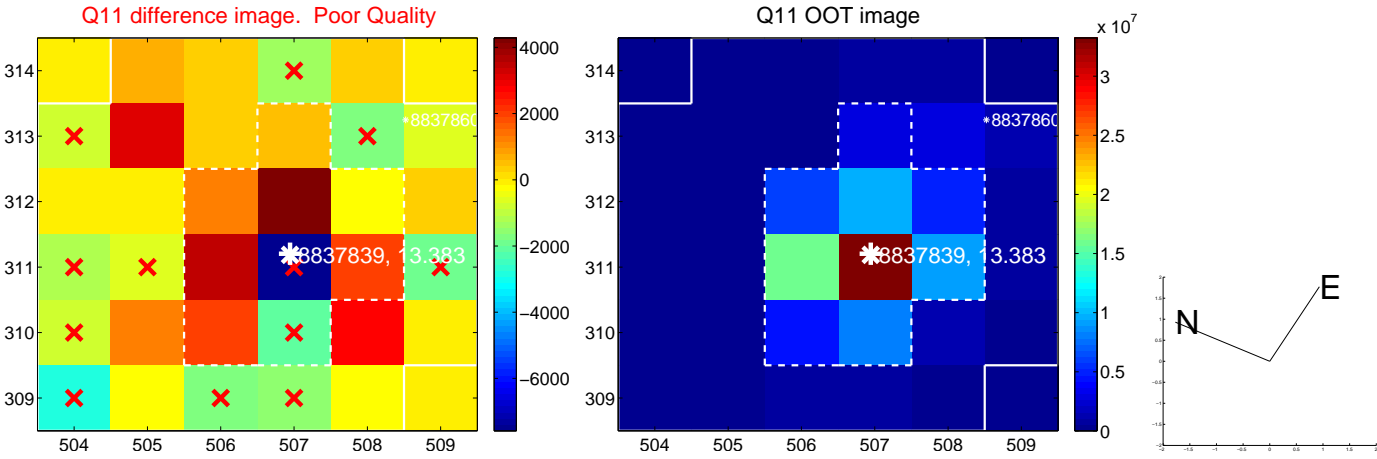
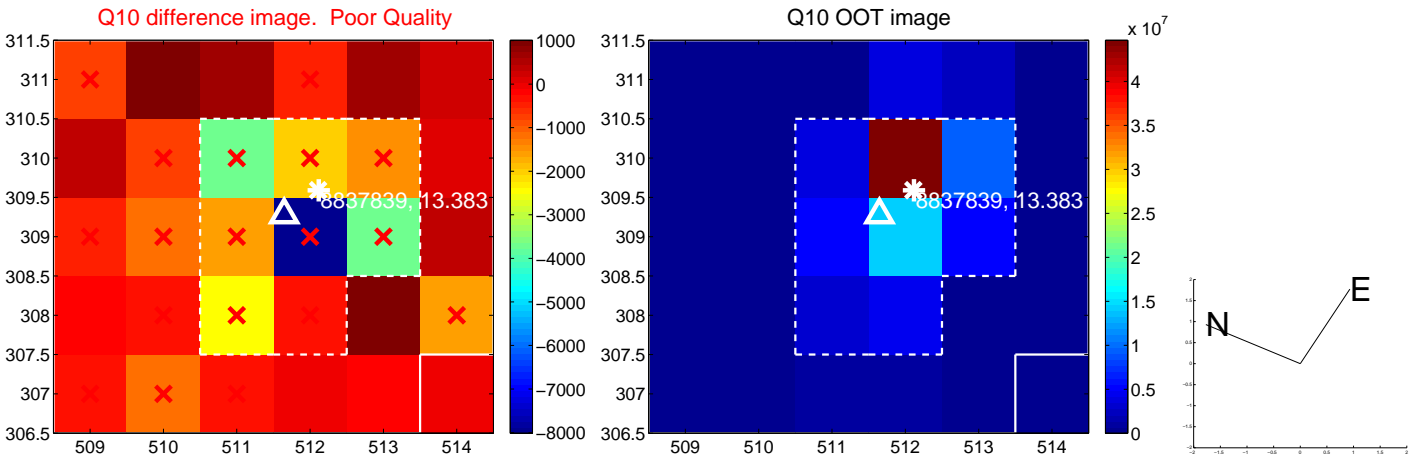
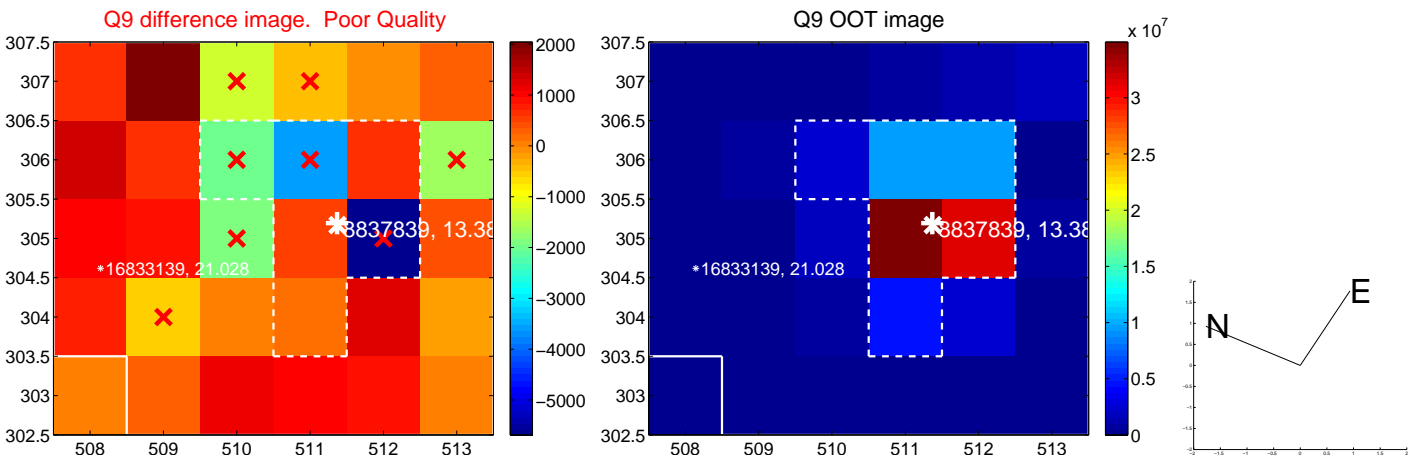
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



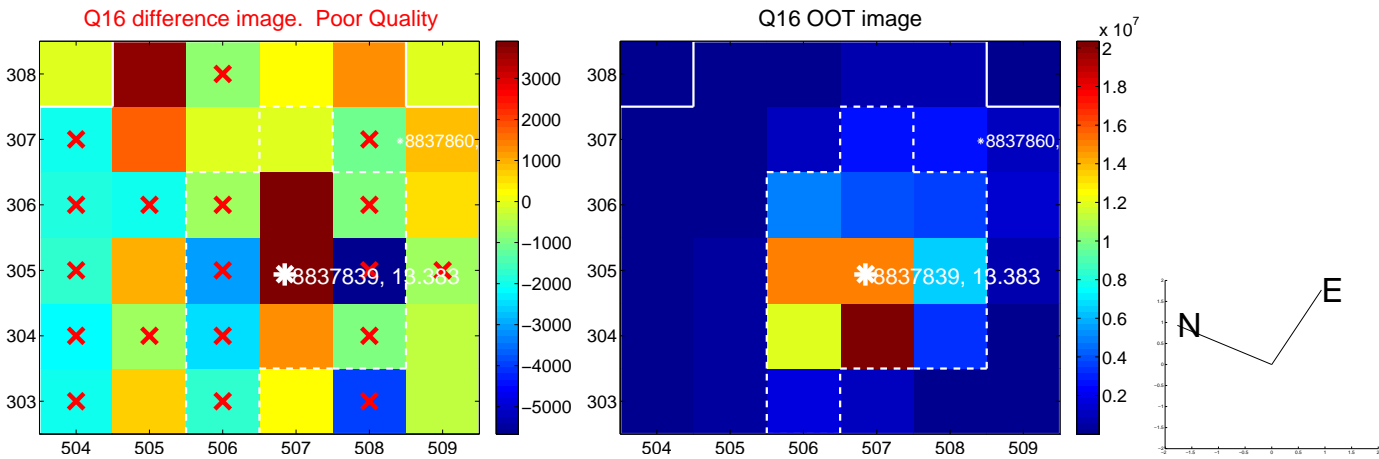
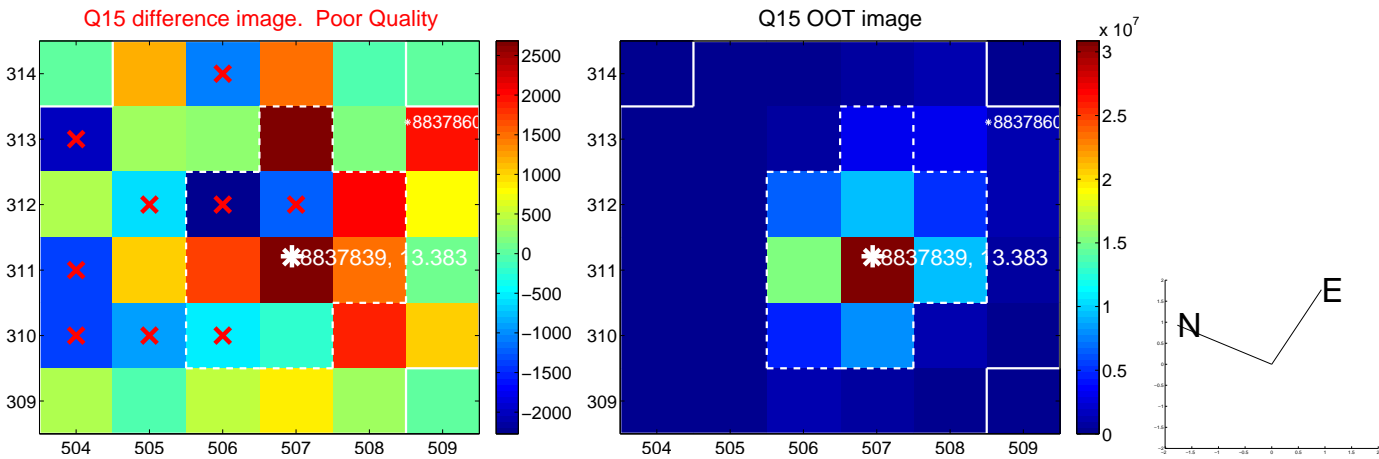
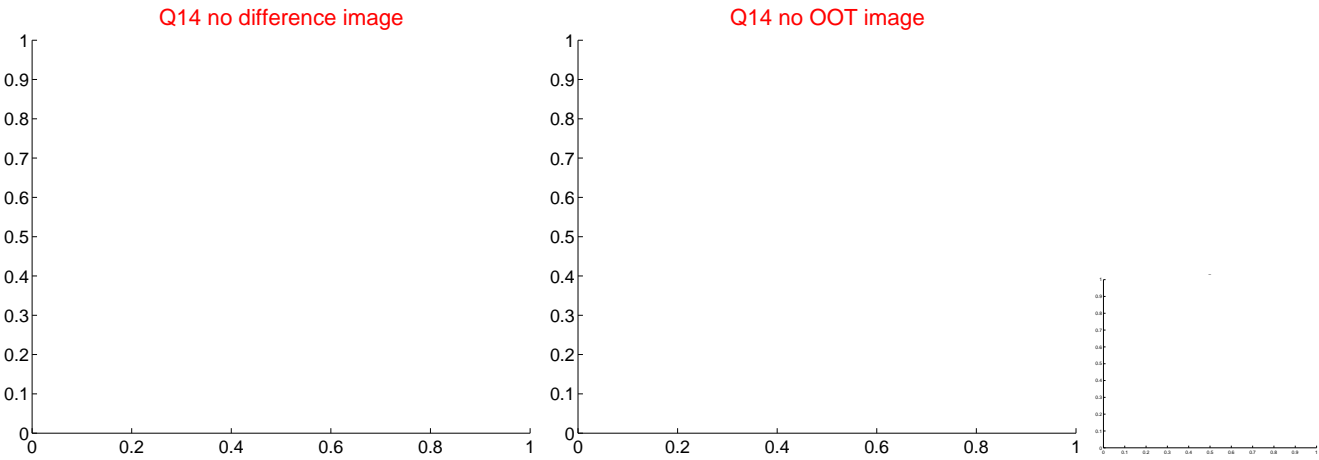
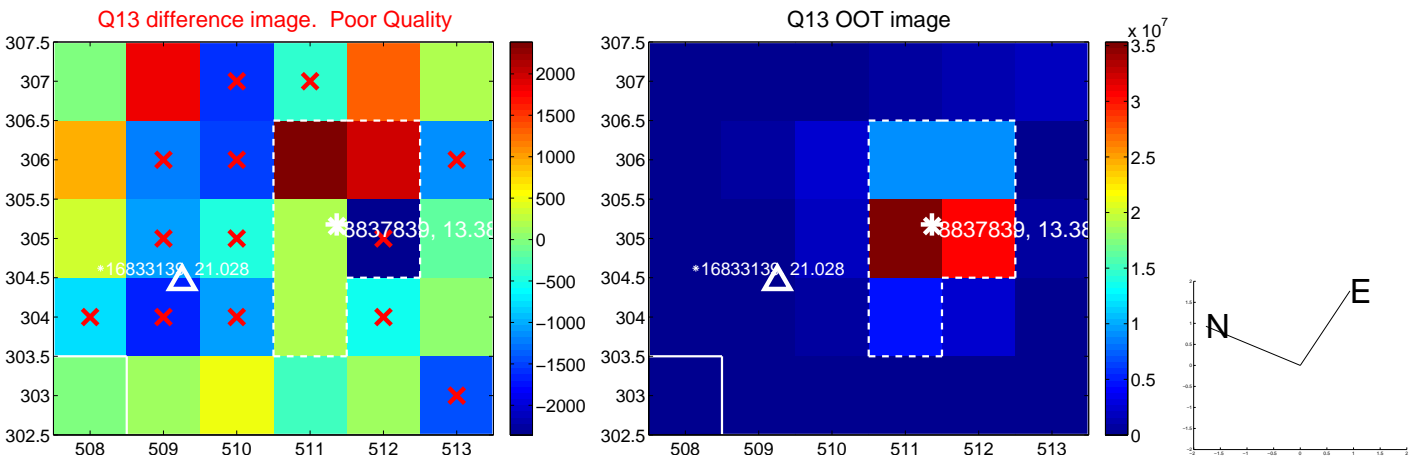
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

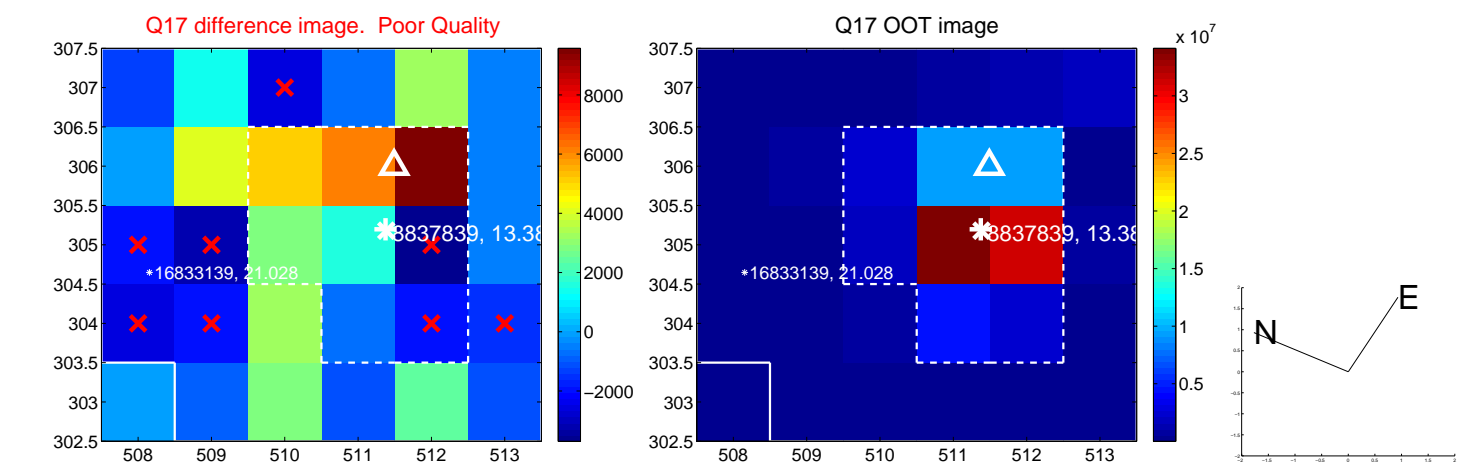


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

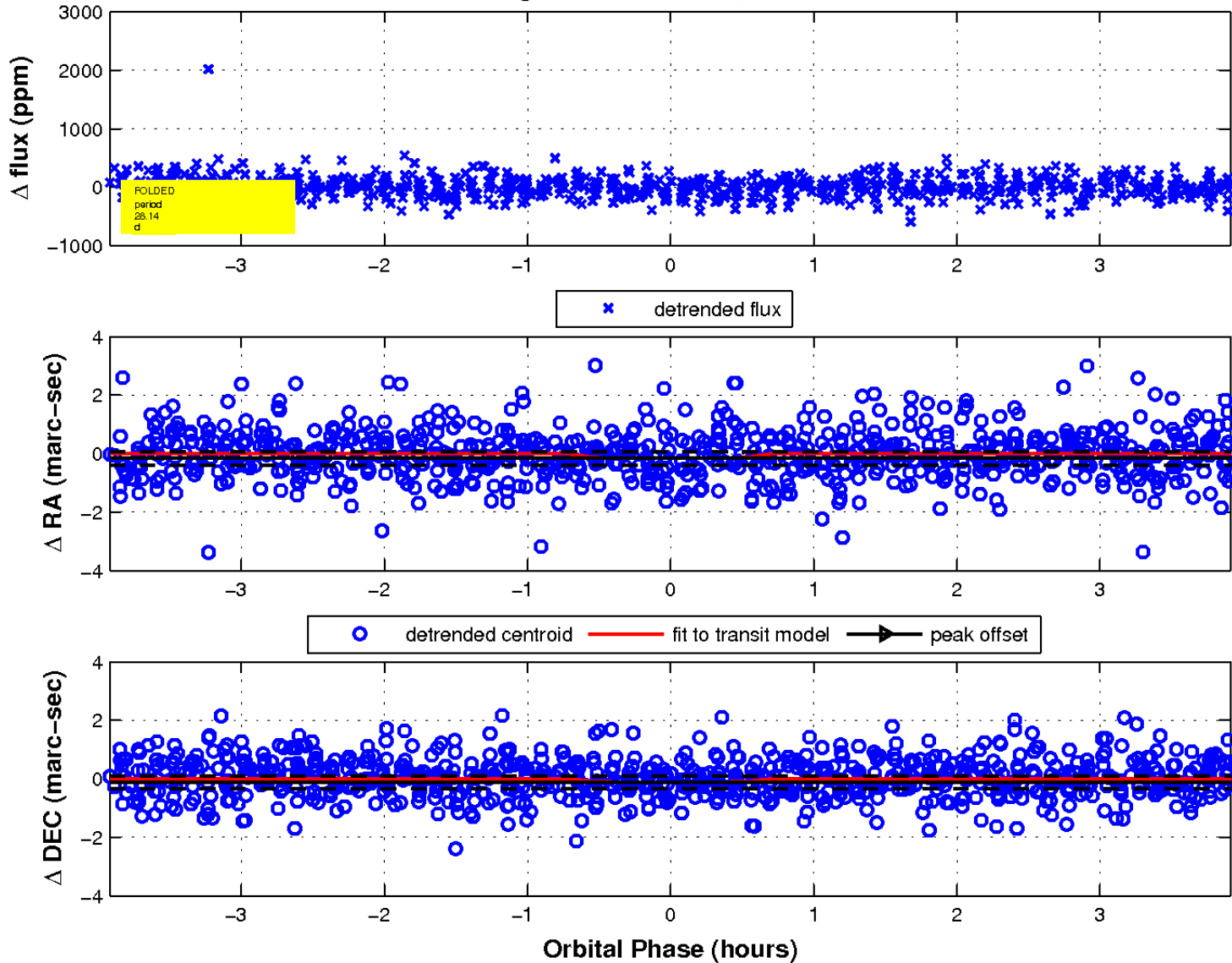




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 8 of 8



UKIRT Image

Declination

