

# KIC 008848942

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008848942-01	OBS	No	1.553707	132.422527	18.4	11.525	7.8	9.3	2.25	8050	0.98	18487.94
008848942-02	OBS	No	26.185331	148.076282	326.6	1.766	12.9	12.3	2.25	8050	4.13	427.86
008848942-03	OBS	No	18.562778	132.690471	260.8	3.067	10.7	11.8	2.25	8050	4.07	676.90
008848942-04	OBS	No	47.841326	150.570099	206.7	3.605	9.4	8.0	2.25	8050	3.67	191.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008848942-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
008848942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
008848942-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008848942-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

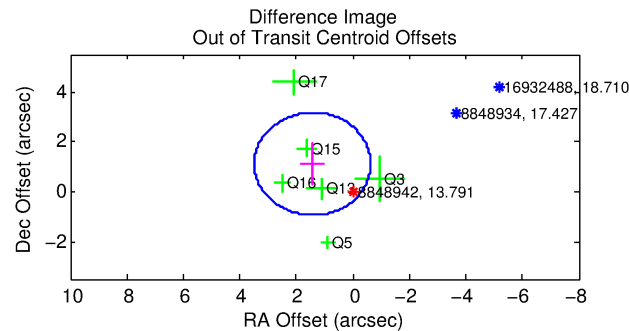
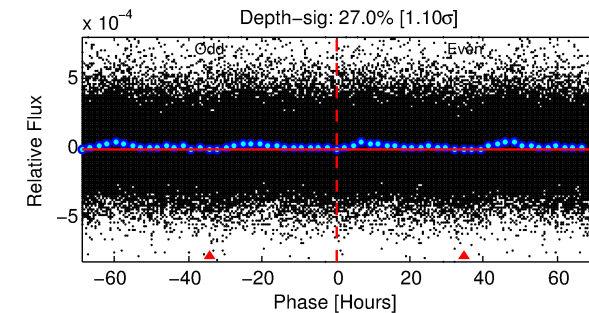
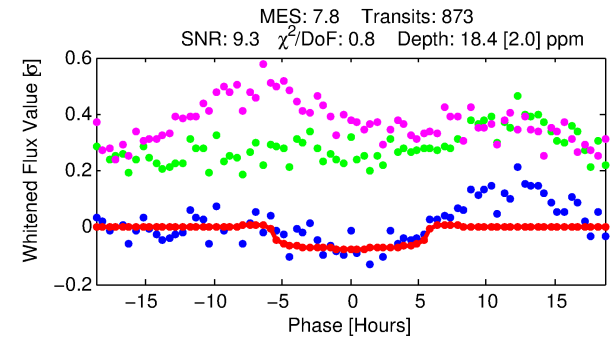
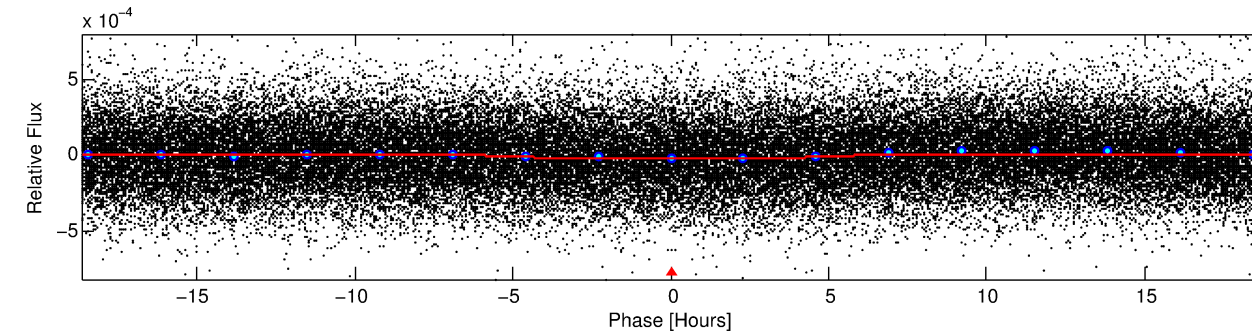
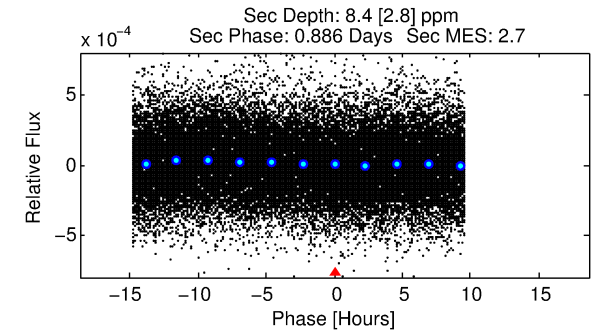
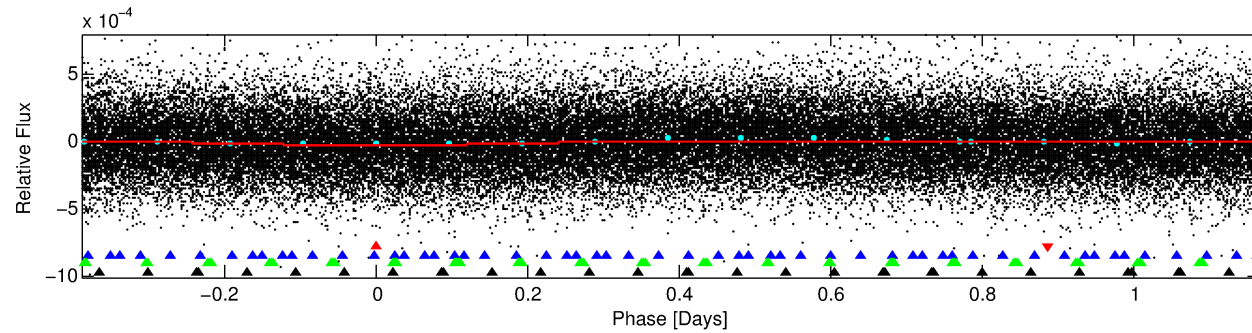
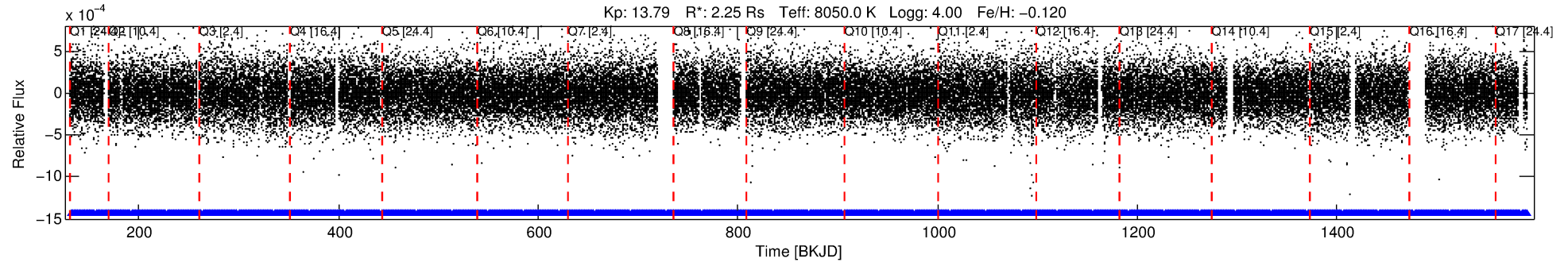
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008848942-01

No Significant Match Found

# DV One-Page Summary

KIC: 8848942 Candidate: 1 of 4 Period: 1.554 d



## DV Fit Results:

Period = 1.55371 [0.00003] d  
Epoch = 132.4225 [0.0101] BKJD  
Rp/R\* = 0.0040 [0.0058]  
a/R\* = 1.21 [3.27]  
b = 0.12 [68.52]  
Seff = 18487.94 [7195.95]  
Teq = 2973 [289] K  
Rp = 0.98 [1.44] Re  
a = 0.0322 [0.0075] AU  
Ag = 5.02 [14.79] [0.27σ]  
Teffp = 6881 [5040] K [0.77σ]

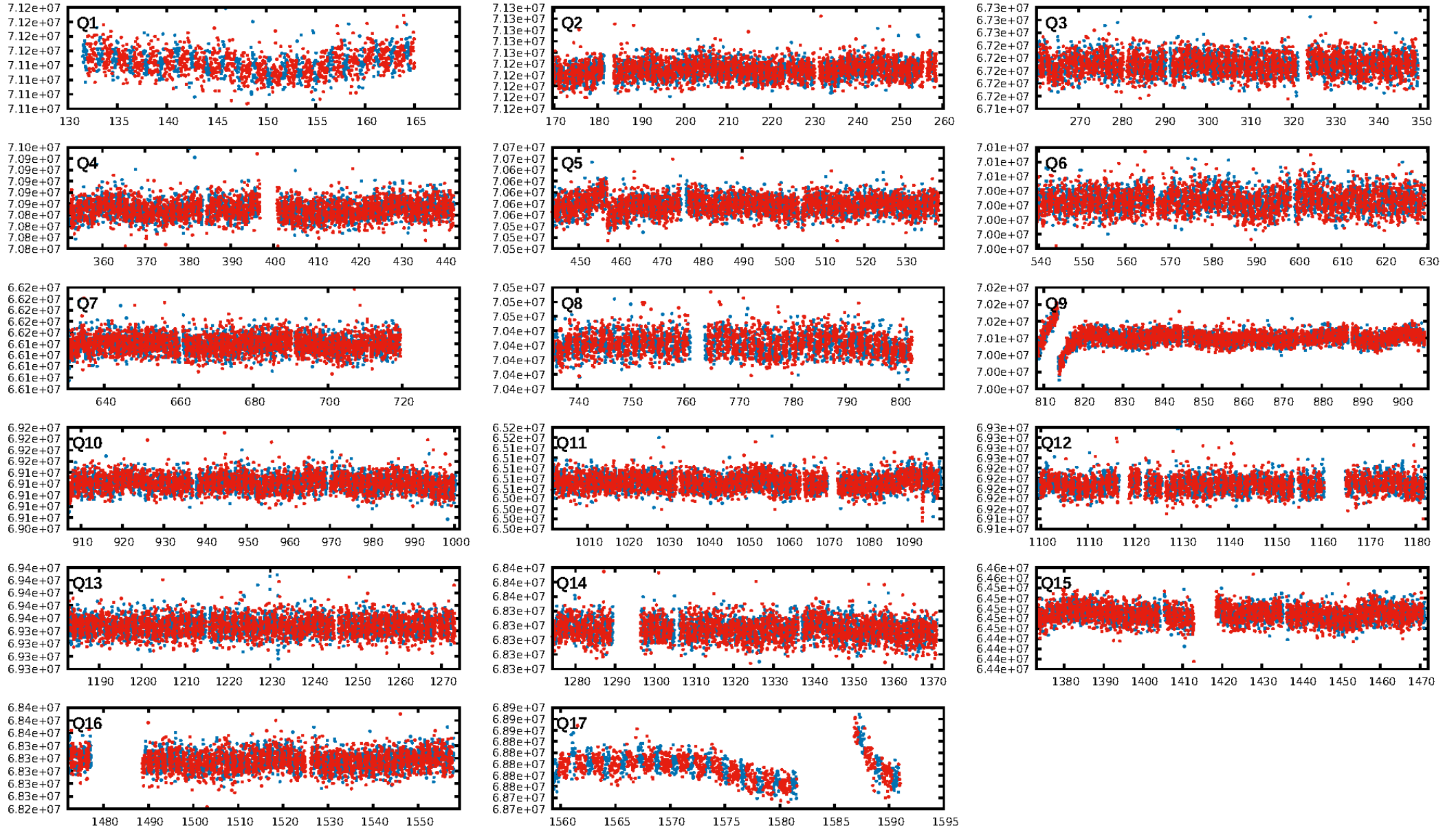
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [34.23σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.01e-33  
RollingBand-fgt: 1.00 [834/834]  
GhostDiagnostic-chr: 2.786  
Centroid-sig: 98.3%  
Centroid-so: 0.874 arcsec [0.51σ]  
OotOffset-rm: 1.814 arcsec [2.65σ]  
KicOffset-rm: 1.586 arcsec [1.92σ]  
OotOffset-st: 0/2/1/3 [6]  
KicOffset-st: 0/2/1/3 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:59:00 Z

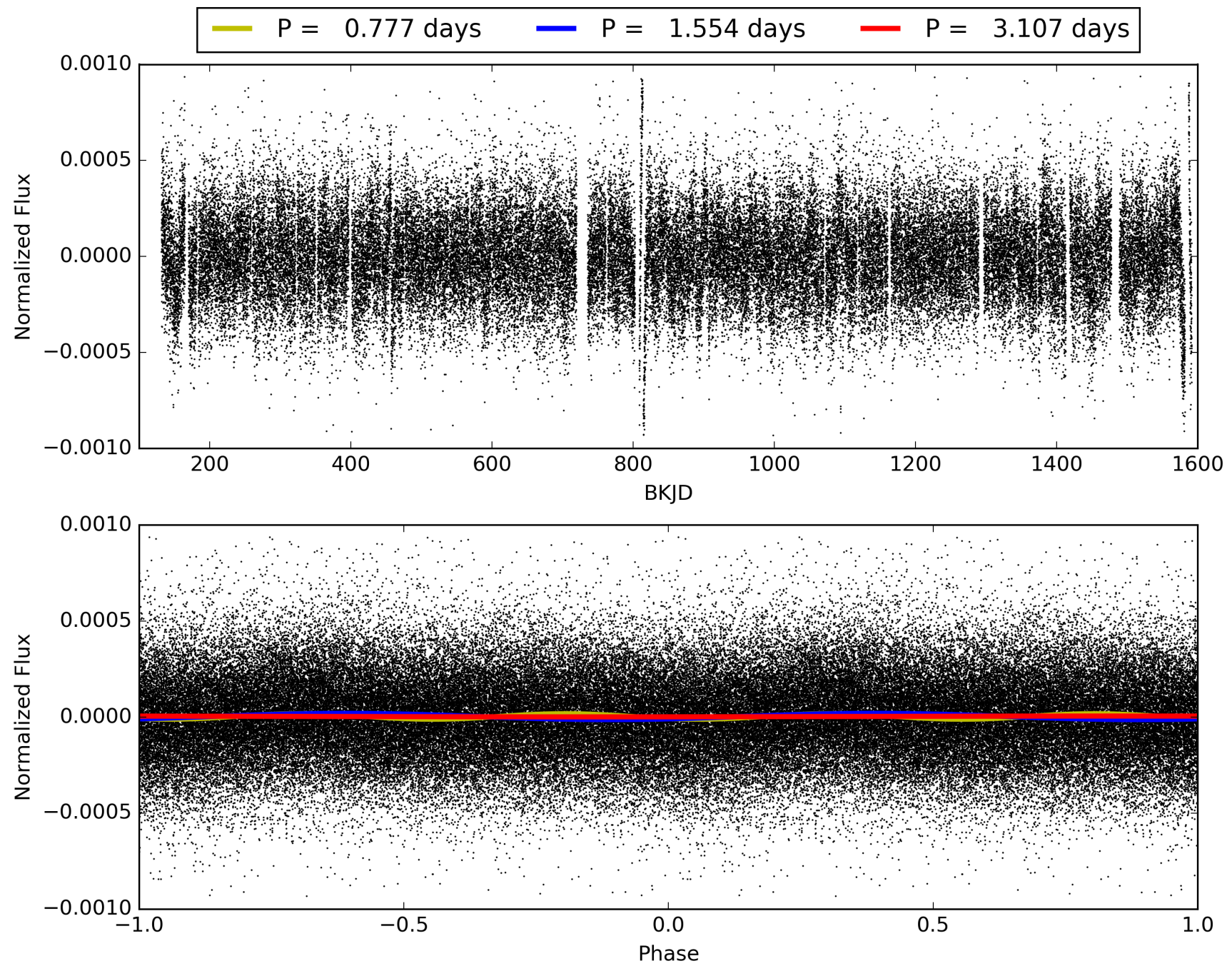
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008848942-01, PDC Light Curves





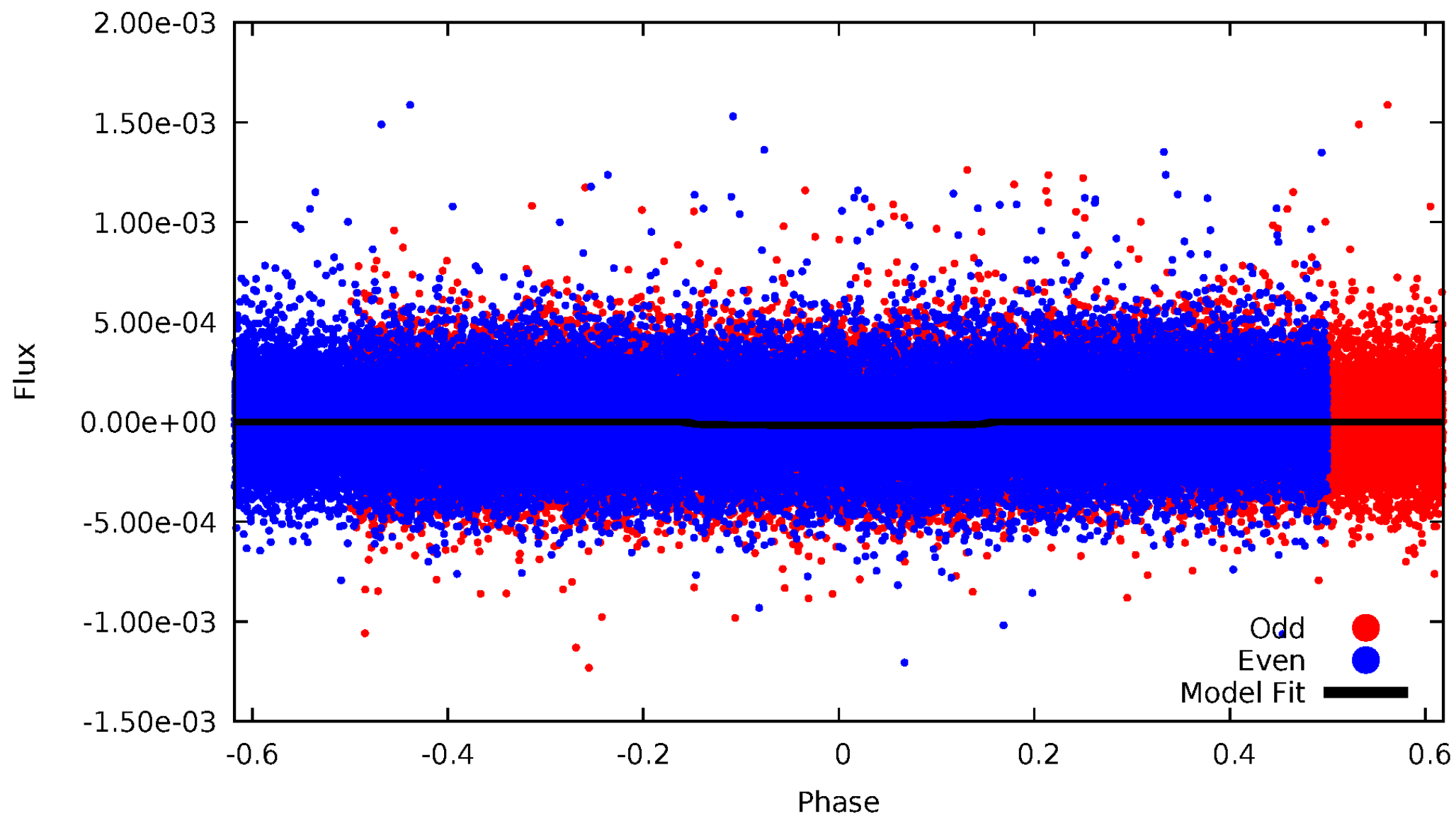
TCE 008848942-01





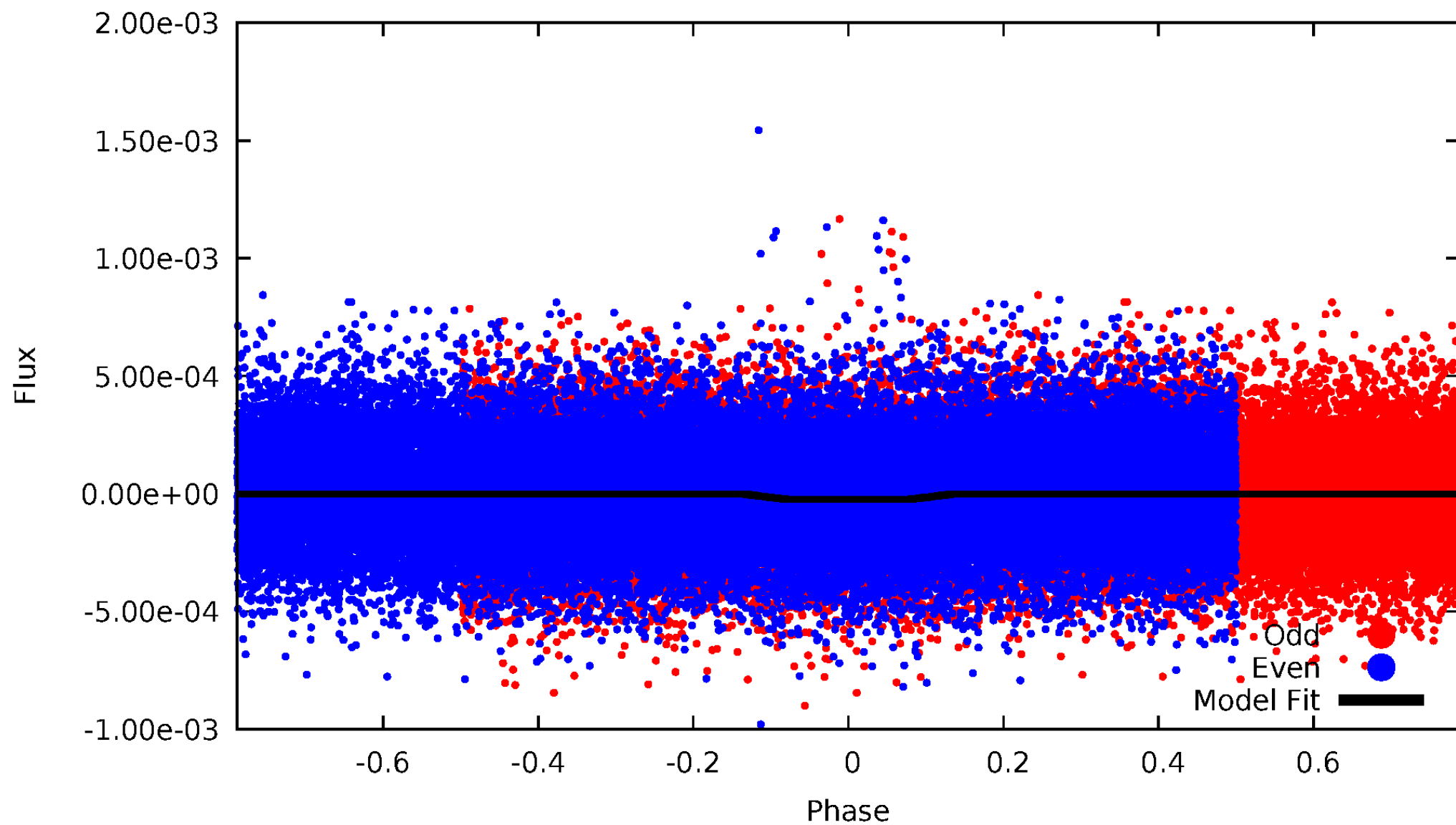
# DV Odd/Even

TCE 008848942-01

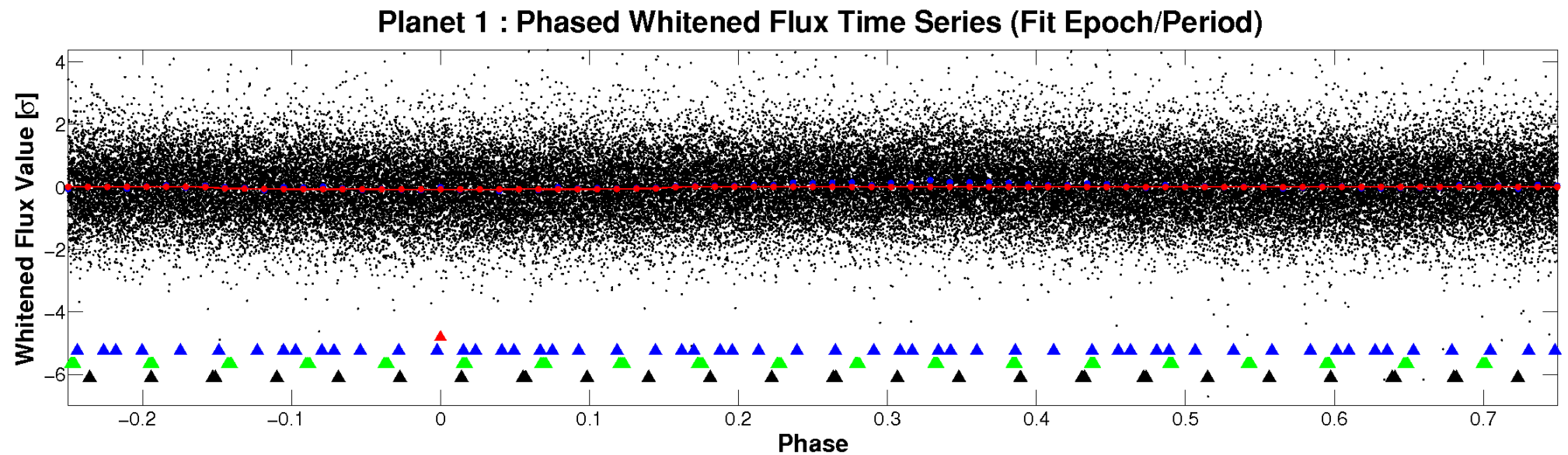
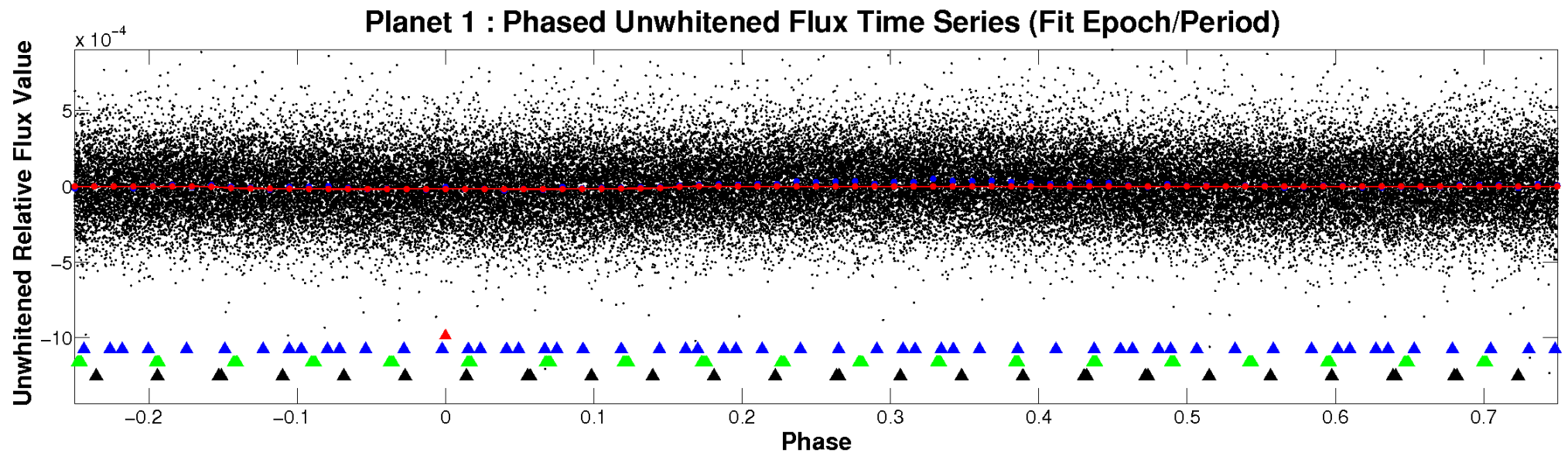


# ALT Odd/Even

TCE 008848942-01



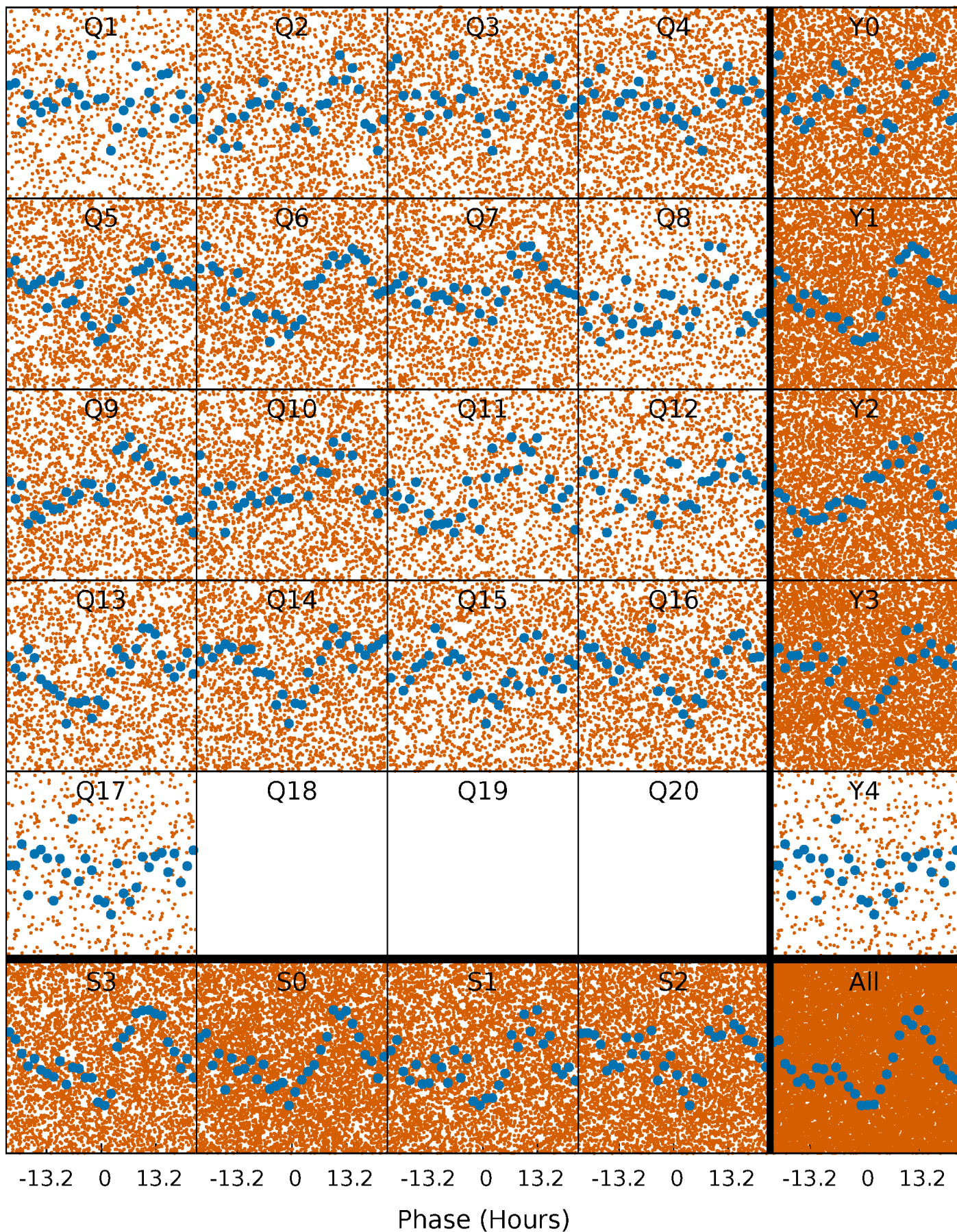
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

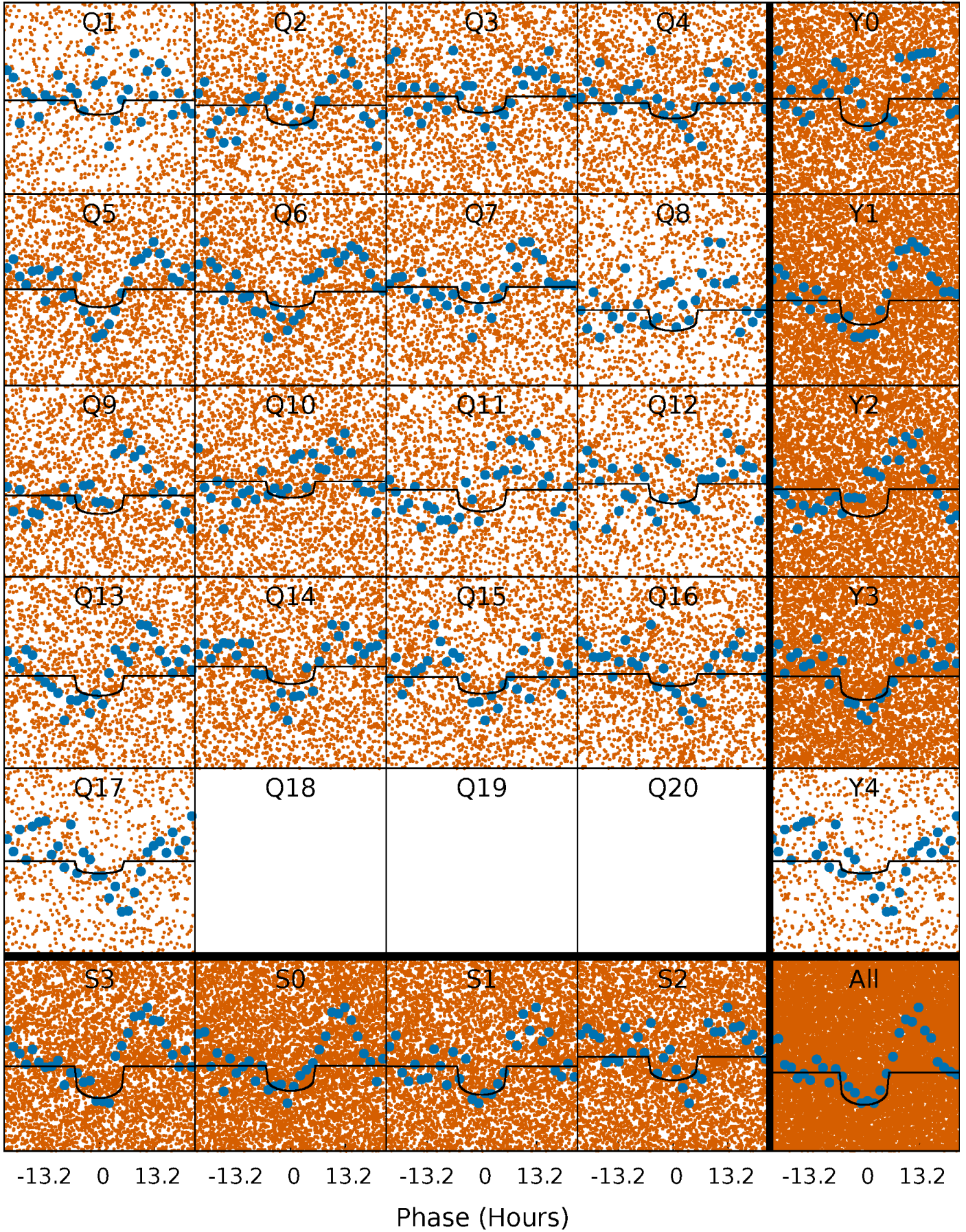
TCE 008848942-01   P= 1.553707 Days    $T_0=132.422528$  (BKJD)





# DV Quarter-Phased Transit Curves

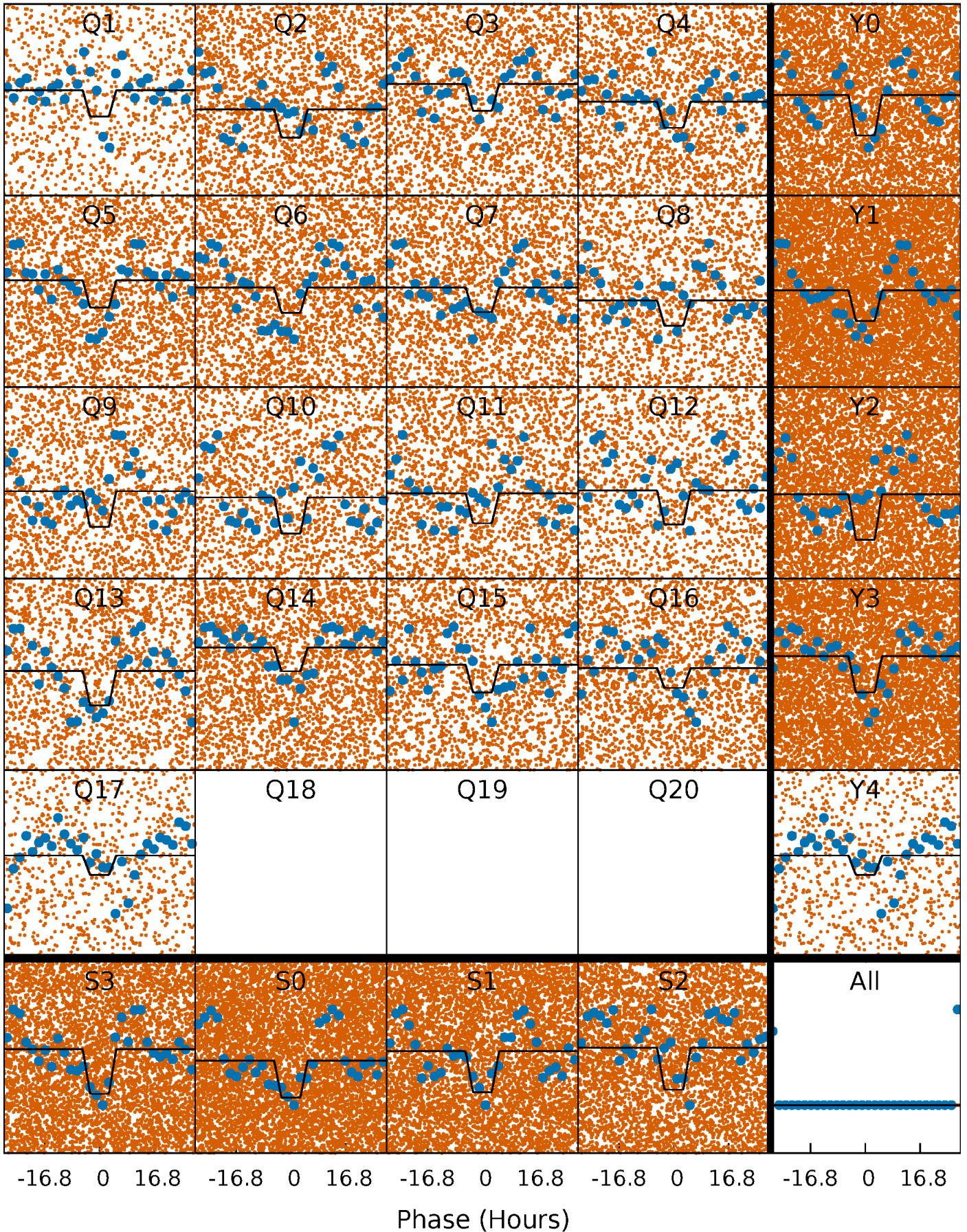
TCE 008848942-01 P= 1.553707 Days  $T_0=132.422528$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008848942-01 P= 1.553538 Days  $T_0=132.496514$  (BKJD)

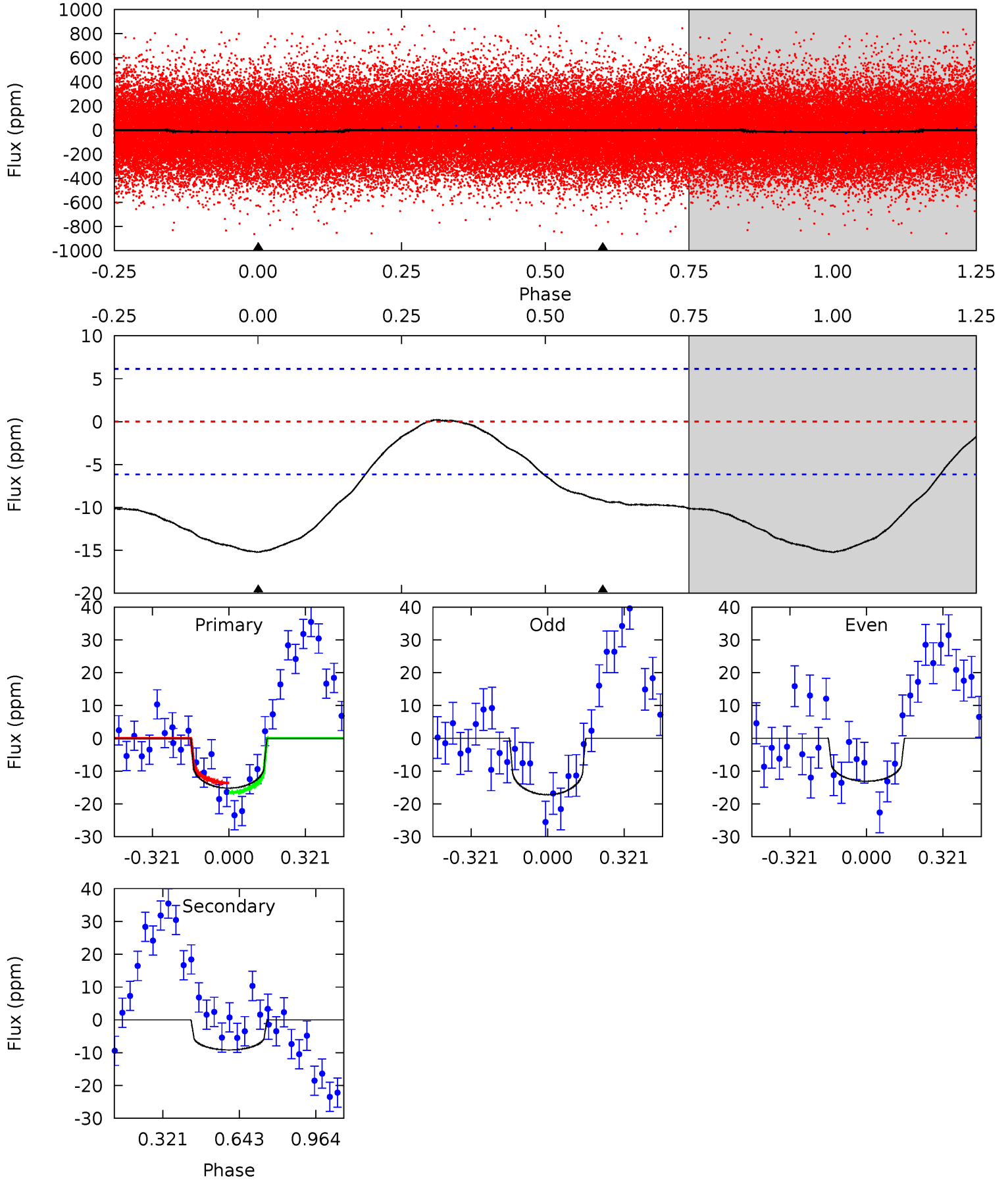




# DV Model-Shift Uniqueness Test

008848942-01, P = 1.553707 Days, E = 130.868821 Days

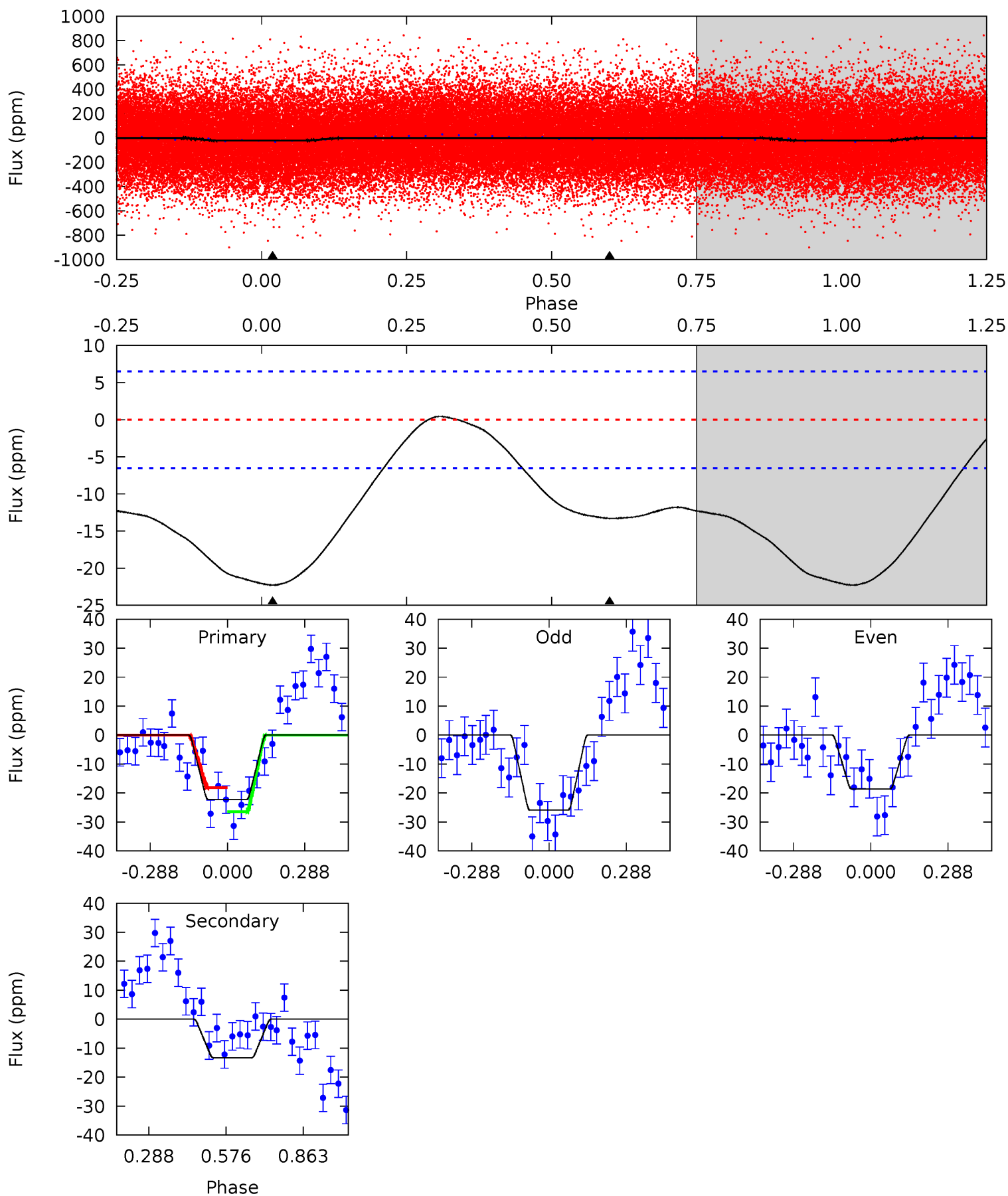
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.44	0	0	4.31	0.99	0.42	10.7	10.7	6.44	6.44	1.44	0.82	0.01	1.02



# Alt Model-Shift Uniqueness Test

008848942-01, P = 1.553538 Days, E = 130.942976 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
14.8	8.85	0	0	4.34	1.06	0.37	14.8	14.8	8.85	8.85	2.40	1.03	0.02	2.70



### Stellar Parameters For KIC 008848942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8050^{+224}_{-337}$	$3.996^{+0.198}_{-0.132}$	$-0.120^{+0.200}_{-0.300}$	$2.254^{+0.433}_{-0.596}$	$1.835^{+0.141}_{-0.330}$	$0.226^{+0.285}_{-0.089}$
	+3%/-4%	+5%/-3%	+167%/-250%	+19%/-26%	+8%/-18%	+126%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008848942-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-9 \pm 1$	$1.45^{+1.27}_{-0.95}$	$4119^{+262}_{-301}$	$5425^{+4515}_{-1593}$	$2.492^{+17.697}_{-1.806}$
Alt.	$-13 \pm 2$	$1.56^{+1.23}_{-1.00}$	$4129^{+265}_{-322}$	$5740^{+5078}_{-1539}$	$3.086^{+21.794}_{-2.148}$

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



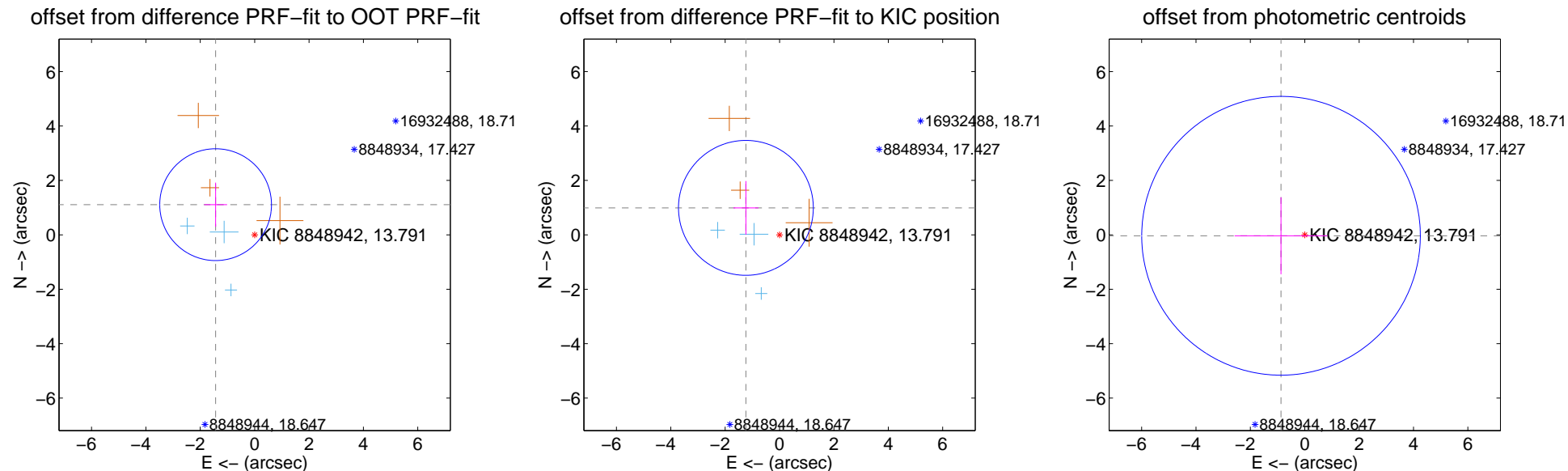
## DV Centroid Data

Supplemental centroid analysis for 008848942-01. Kepler magnitude: 13.79. Transit SNR 9.34

There are 3 quarters with good PRF difference image offsets

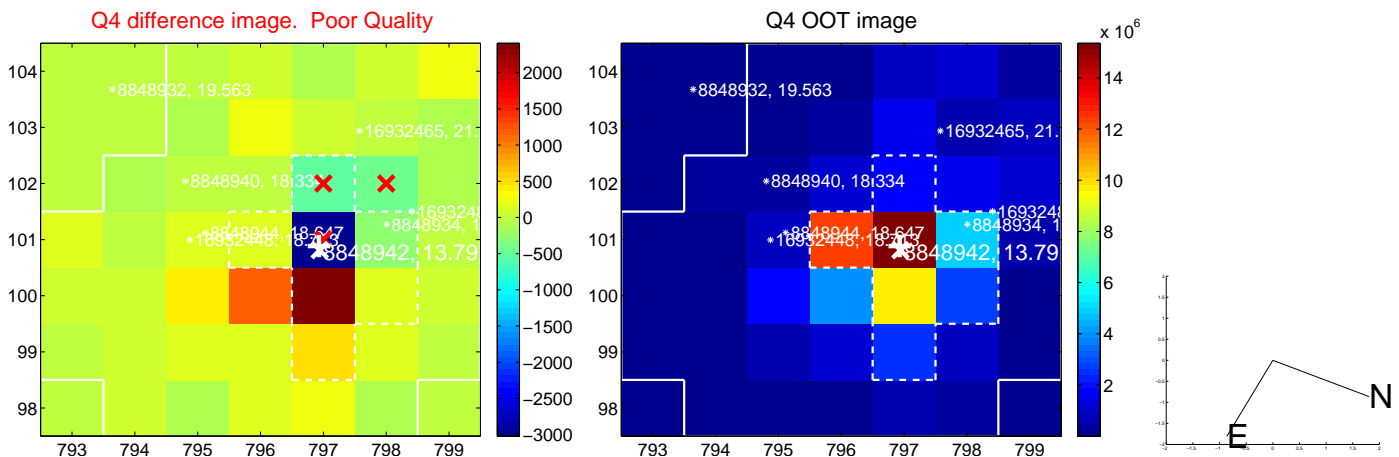
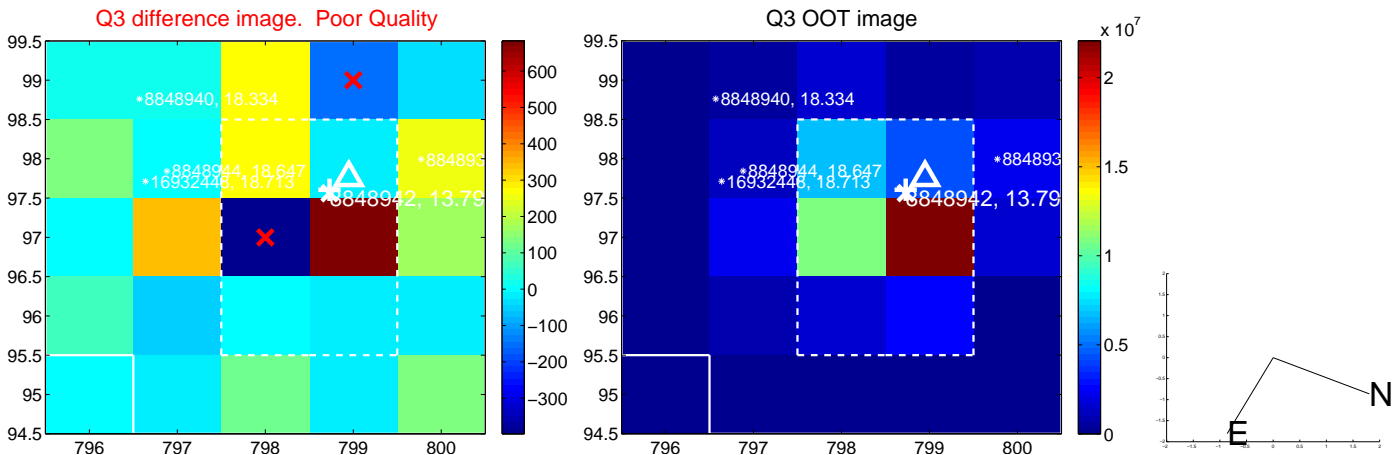
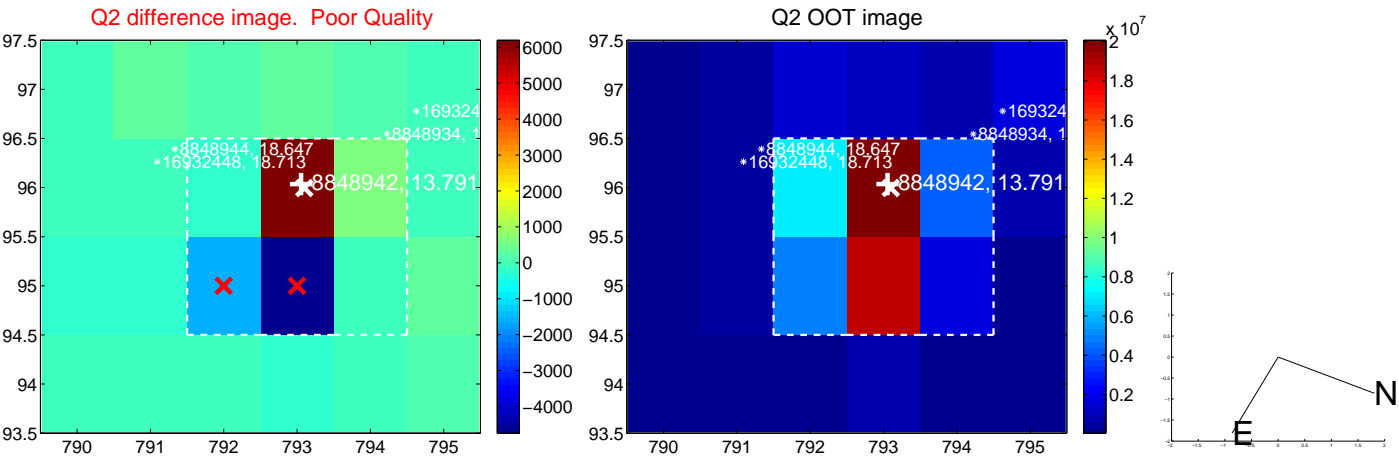
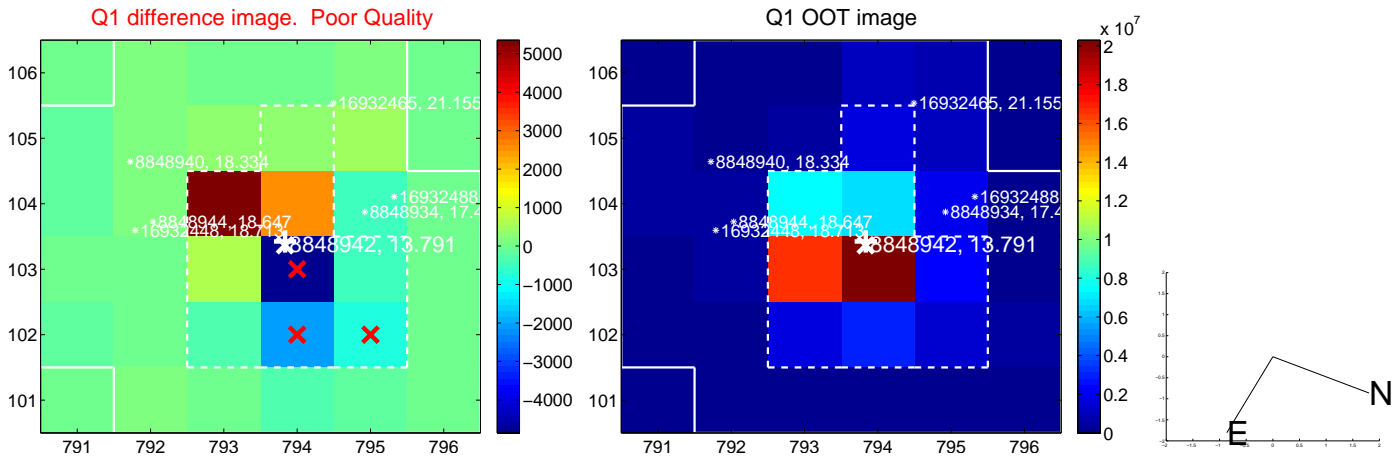
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.814 \pm 0.685$	2.65	$1.436 \pm 0.423$	$1.109 \pm 0.811$
PRF-fit source offset from KIC position	$1.586 \pm 0.826$	1.92	$1.238 \pm 0.460$	$0.991 \pm 0.987$
photometric centroid source offset	$0.87 \pm 1.71$	0.51	$0.87 \pm 1.71$	$-0.03 \pm 1.41$

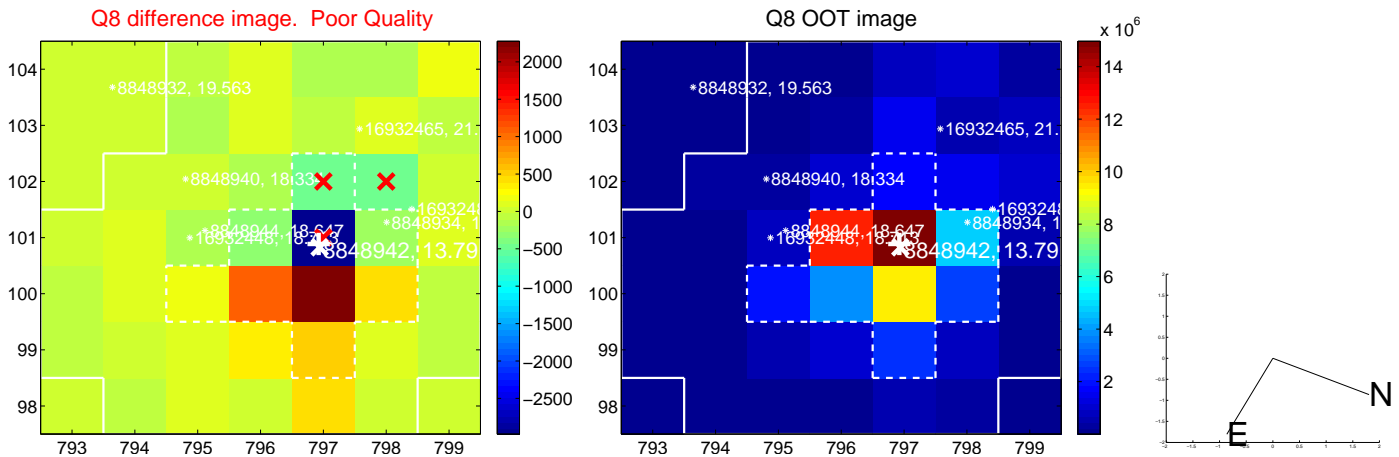
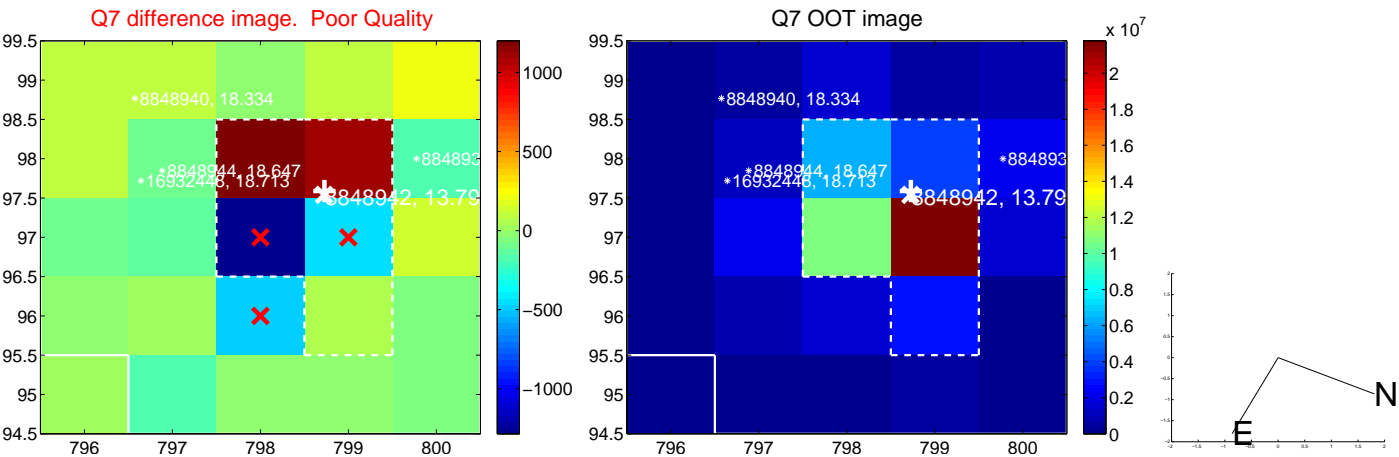
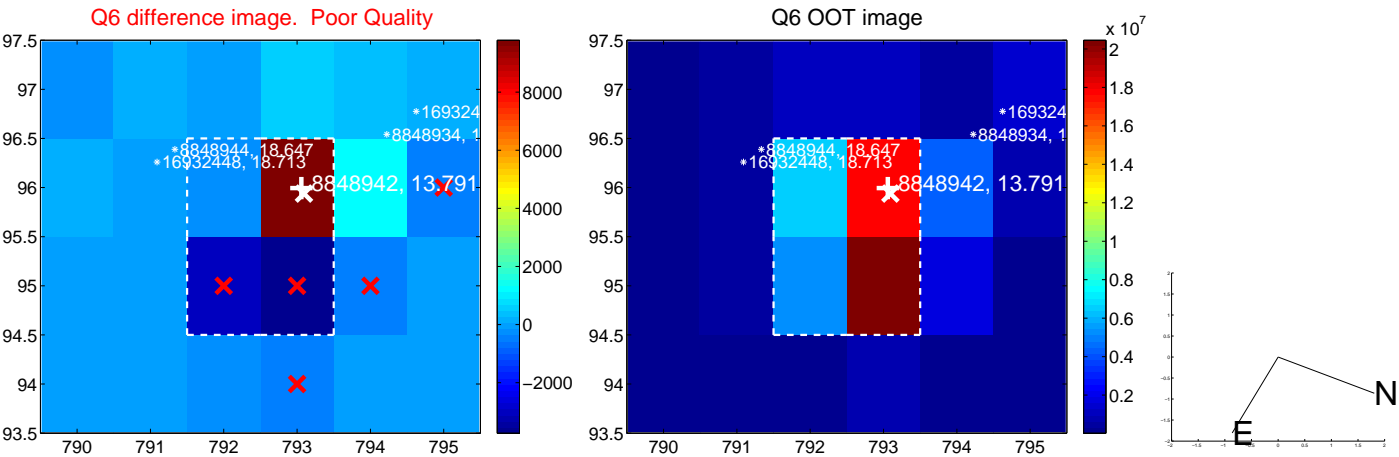
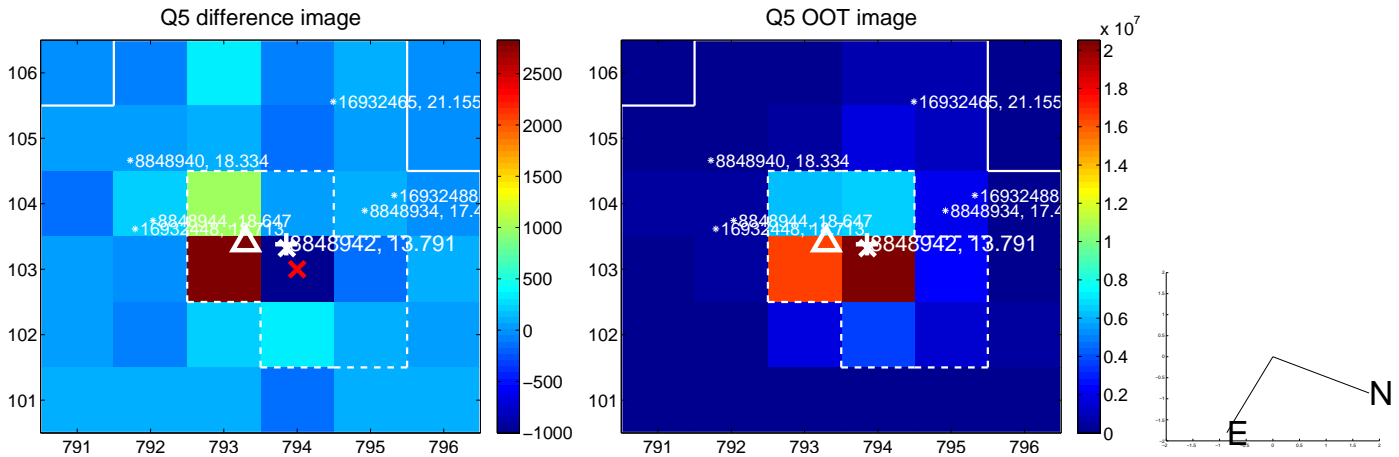


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

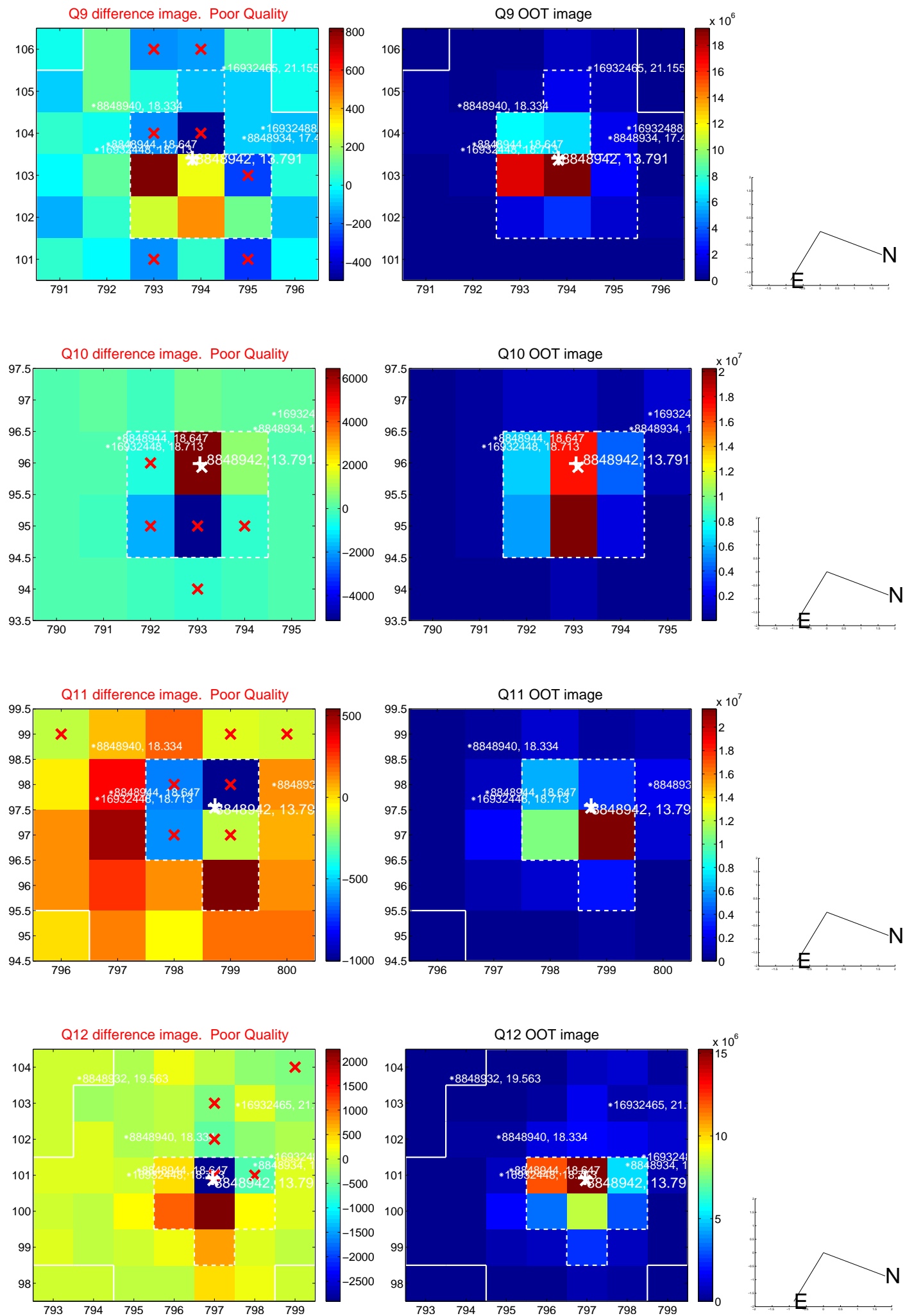


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

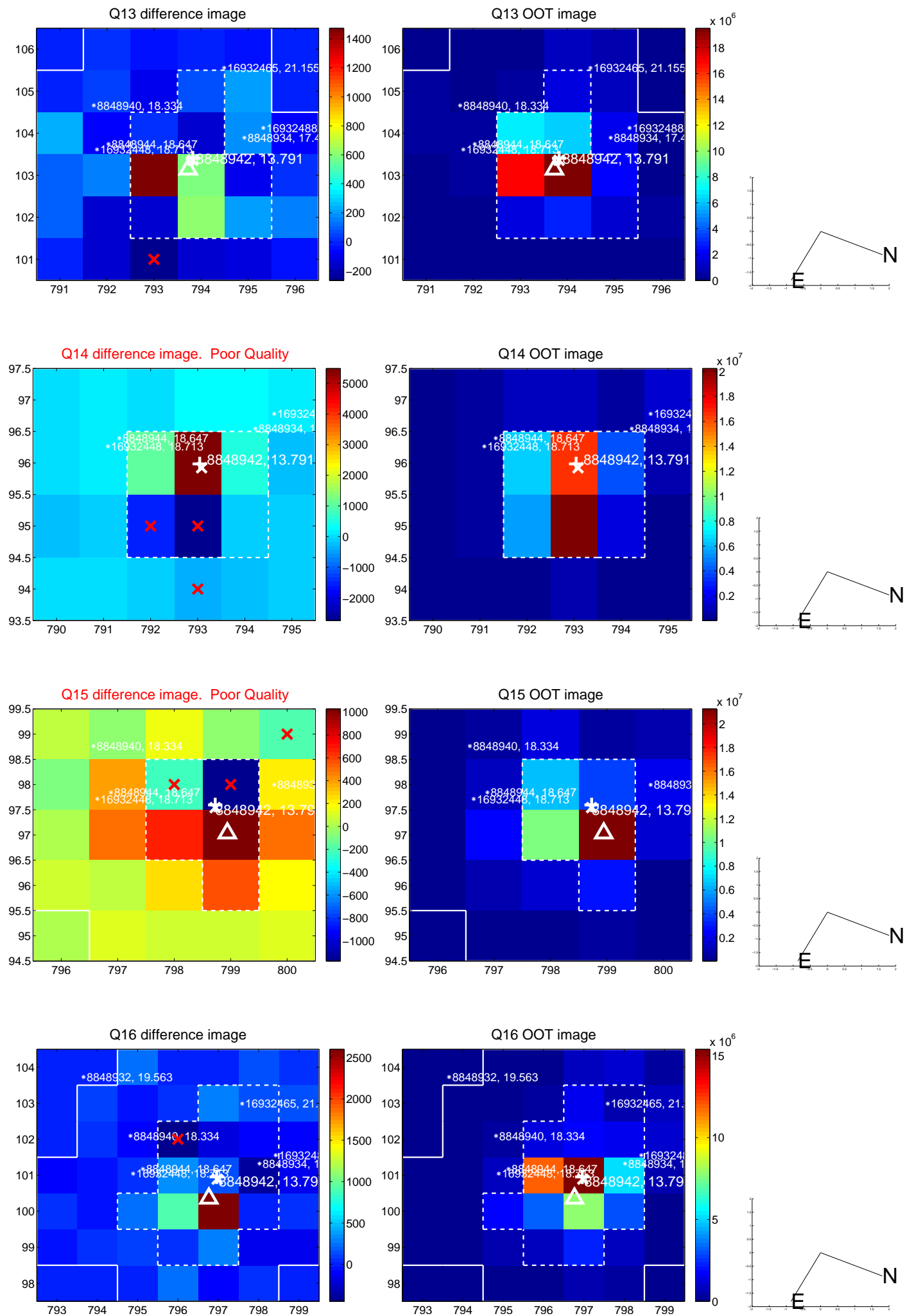




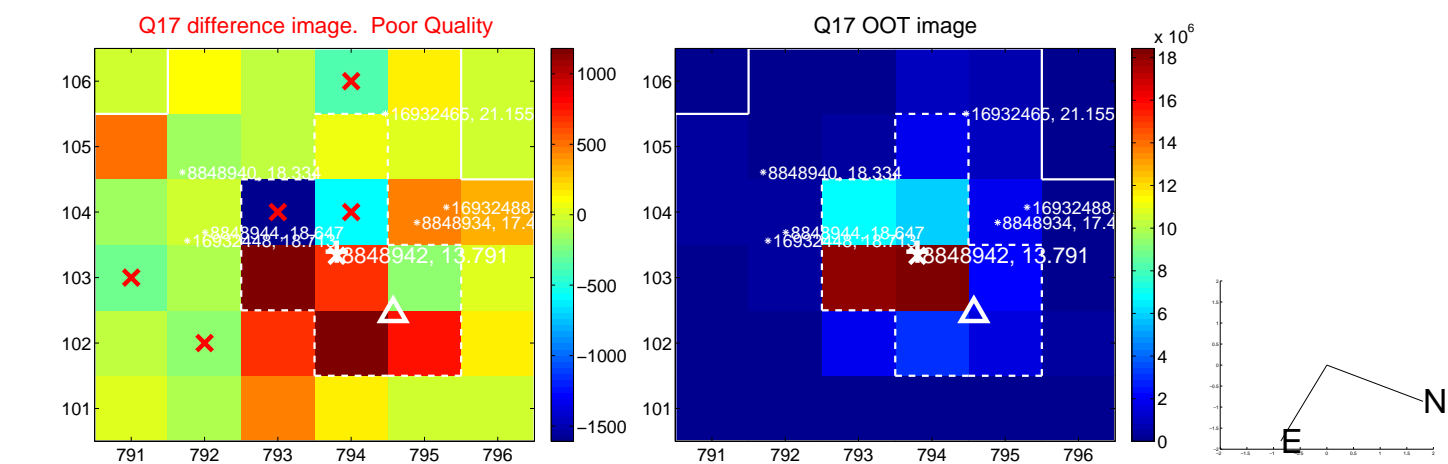
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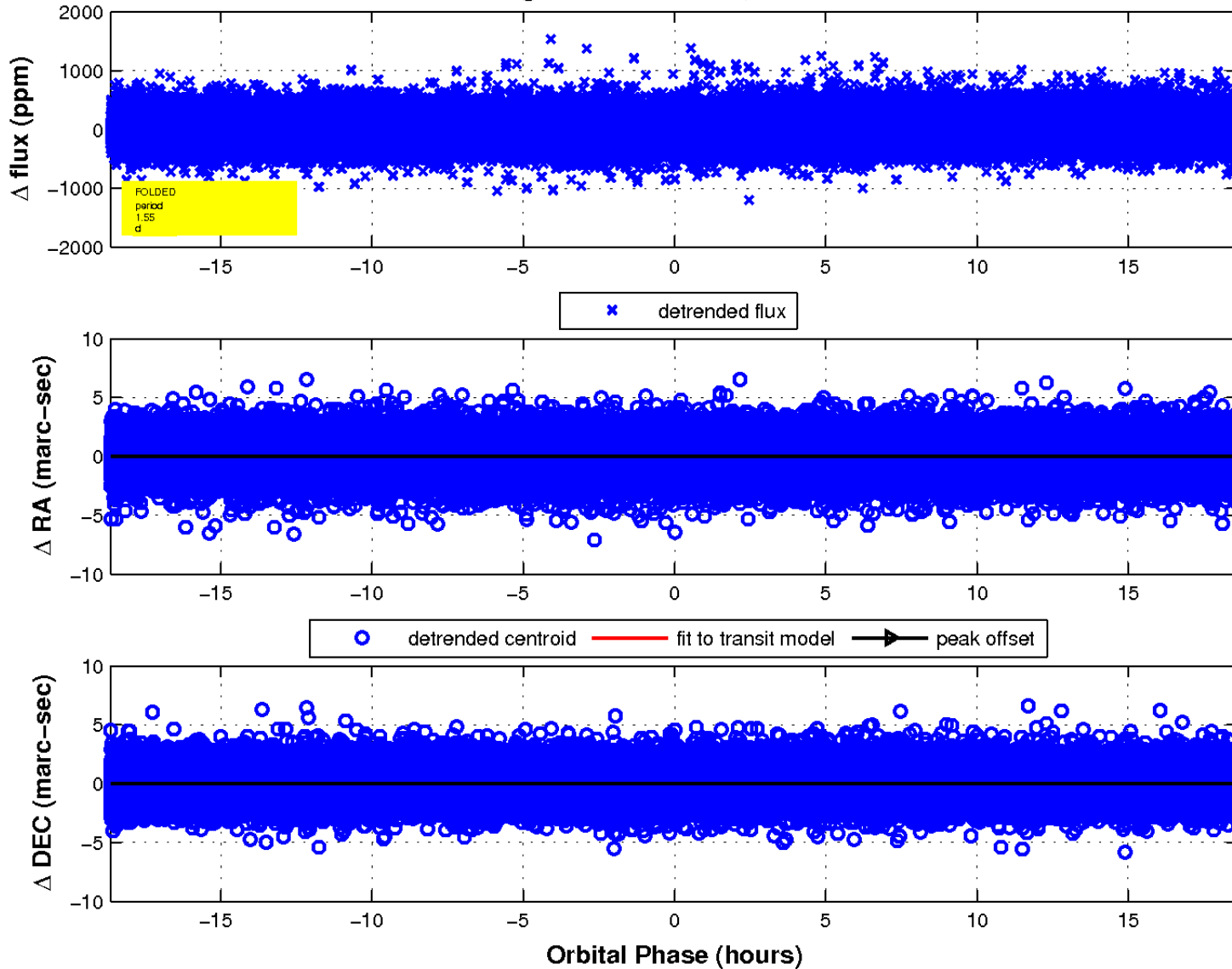
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

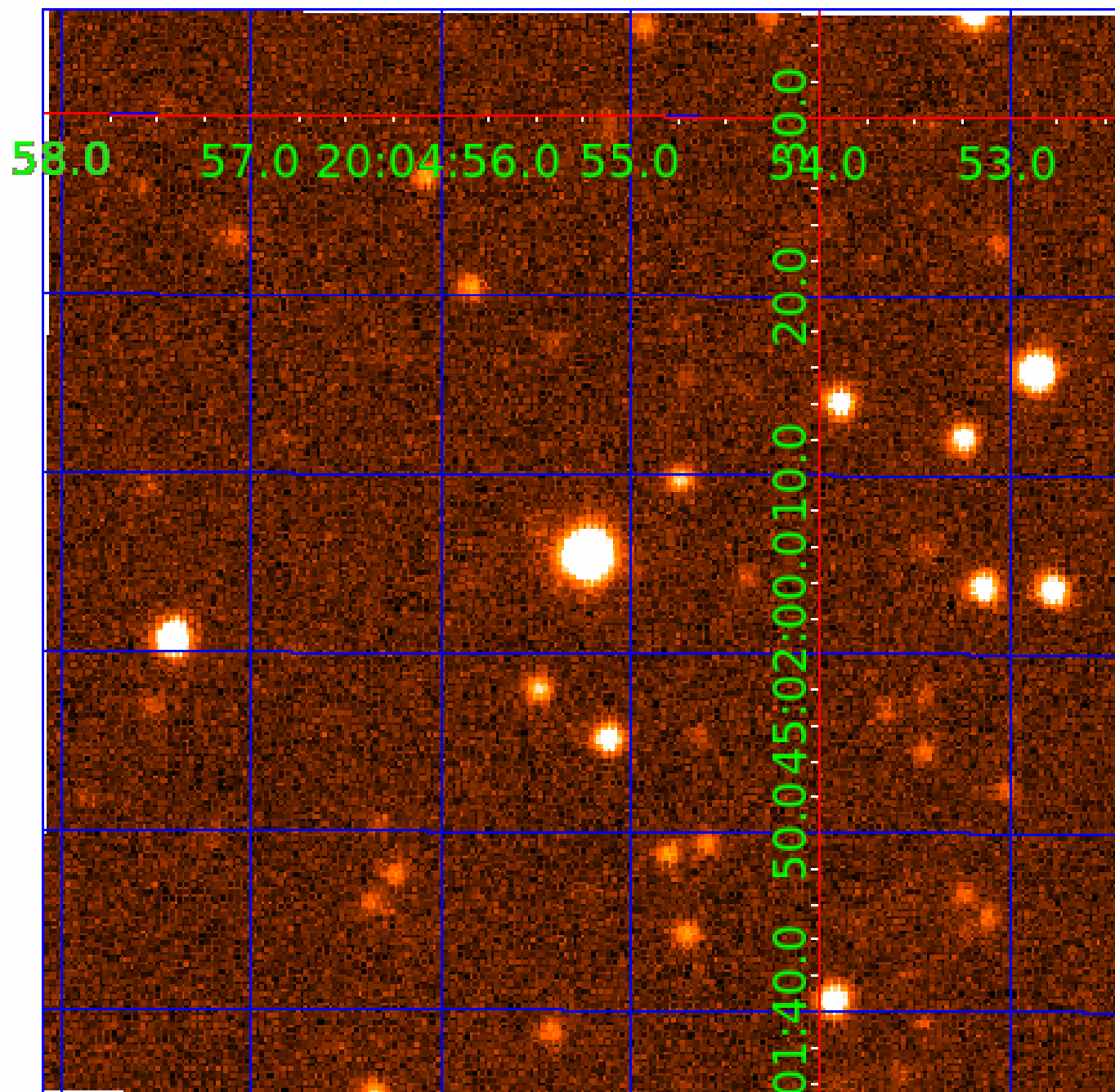


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



# KIC 008848942

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008848942-01	OBS	No	1.553707	132.422527	18.4	11.525	7.8	9.3	2.25	8050	0.98	18487.94
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008848942-03	OBS	No	18.562778	132.690471	260.8	3.067	10.7	11.8	2.25	8050	4.07	676.90
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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008848942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
008848942-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008848942-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

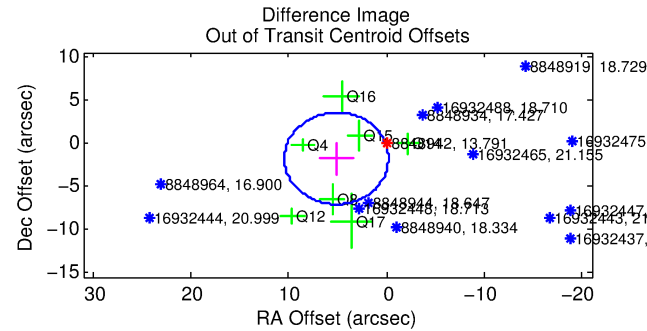
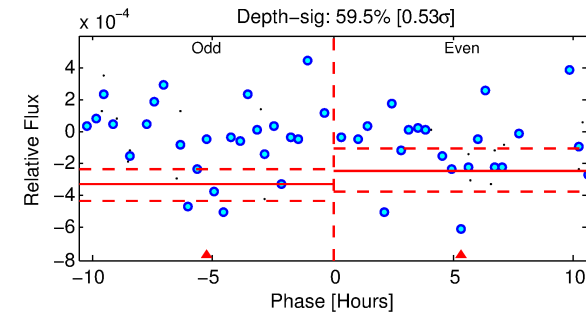
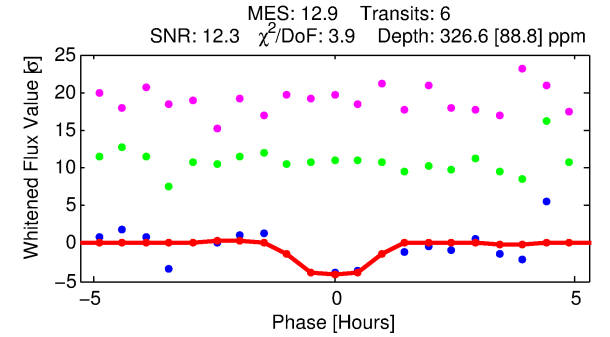
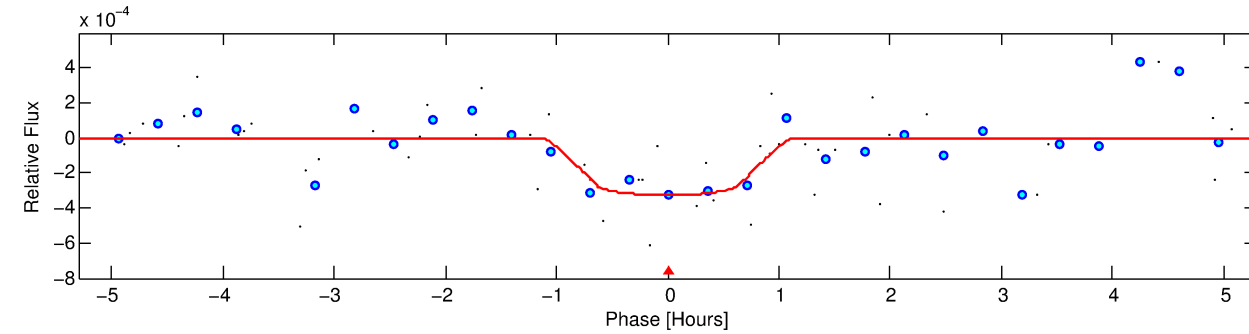
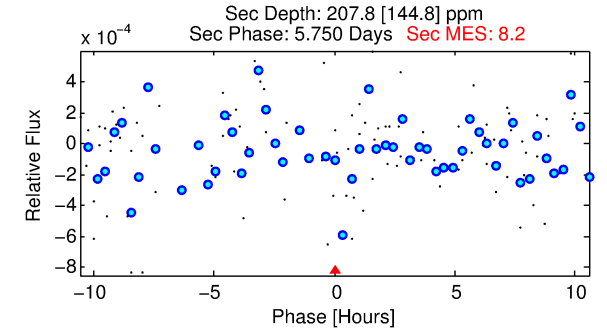
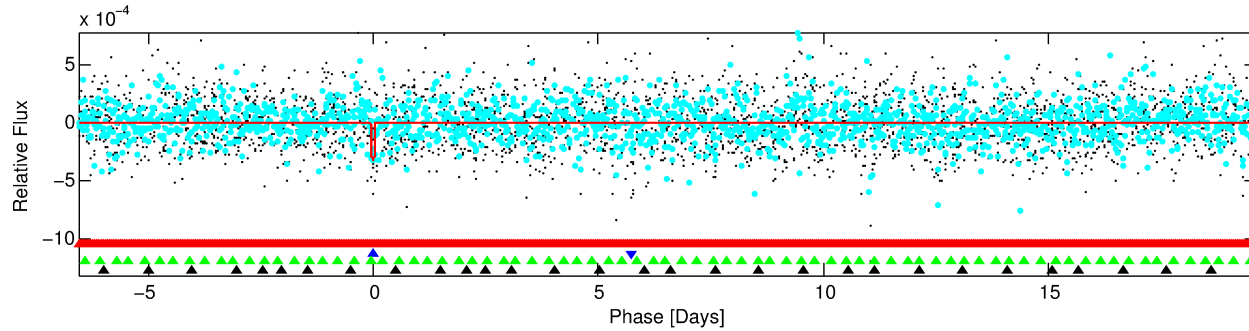
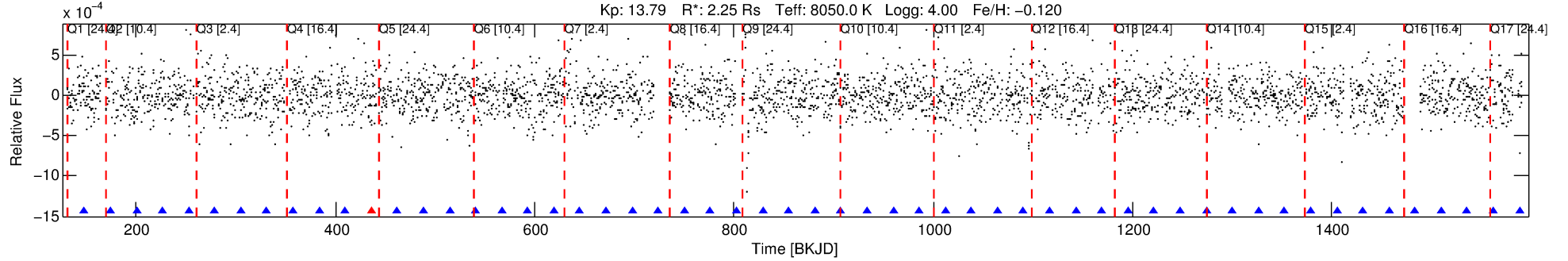
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008848942-02

No Significant Match Found

# DV One-Page Summary

KIC: 8848942 Candidate: 2 of 4 Period: 26.185 d



## DV Fit Results:

Period = 26.18533 [0.00042] d  
Epoch = 148.0763 [0.0124] BKJD  
Rp/R\* = 0.0168 [0.1868]  
a/R\* = 115.20 [7282.25]  
b = 0.01 [5388.03]  
Seff = 427.86 [166.53]  
Teq = 1160 [113] K  
Rp = 4.13 [45.95] Re  
a = 0.2114 [0.0492] AU  
Ag = 299.94 [6683.02] [0.04σ]  
Teffp = 7462 [41561] K [0.15σ]

## DV Diagnostic Results:

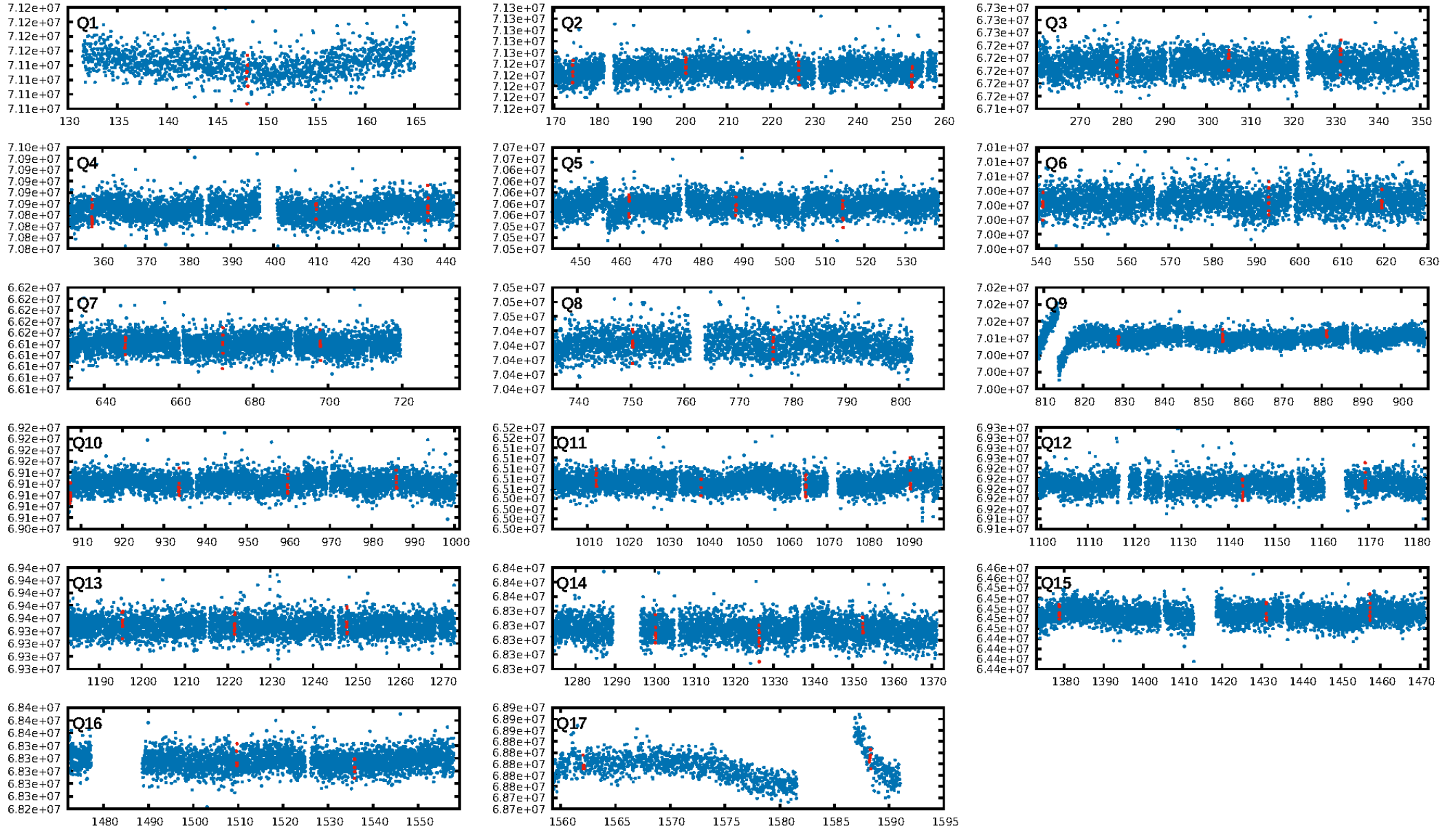
ShortPeriod-sig: 100.0% [51.70σ]  
LongPeriod-sig: 100.0% [129.49σ]  
ModelChiSquare2-sig: 52.6%  
ModelChiSquareGof-sig: 87.9%  
**Bootstrap-pfa: 5.97e-10**  
RollingBand-fgt: 0.83 [5/6]  
GhostDiagnostic-chr: 2.661  
Centroid-sig: 11.3%  
Centroid-so: 2.115 arcsec [2.48σ]  
**OotOffset-rm: 5.429 arcsec [3.07σ]**  
**KicOffset-rm: 5.301 arcsec [3.02σ]**  
OotOffset-st: 1/1/4/1 [7]  
KicOffset-st: 1/1/4/1 [7]  
DiffImageQuality-fgm: 0.14 [1/7]  
DiffImageOverlap-fno: 0.59 [10/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:59:11 Z

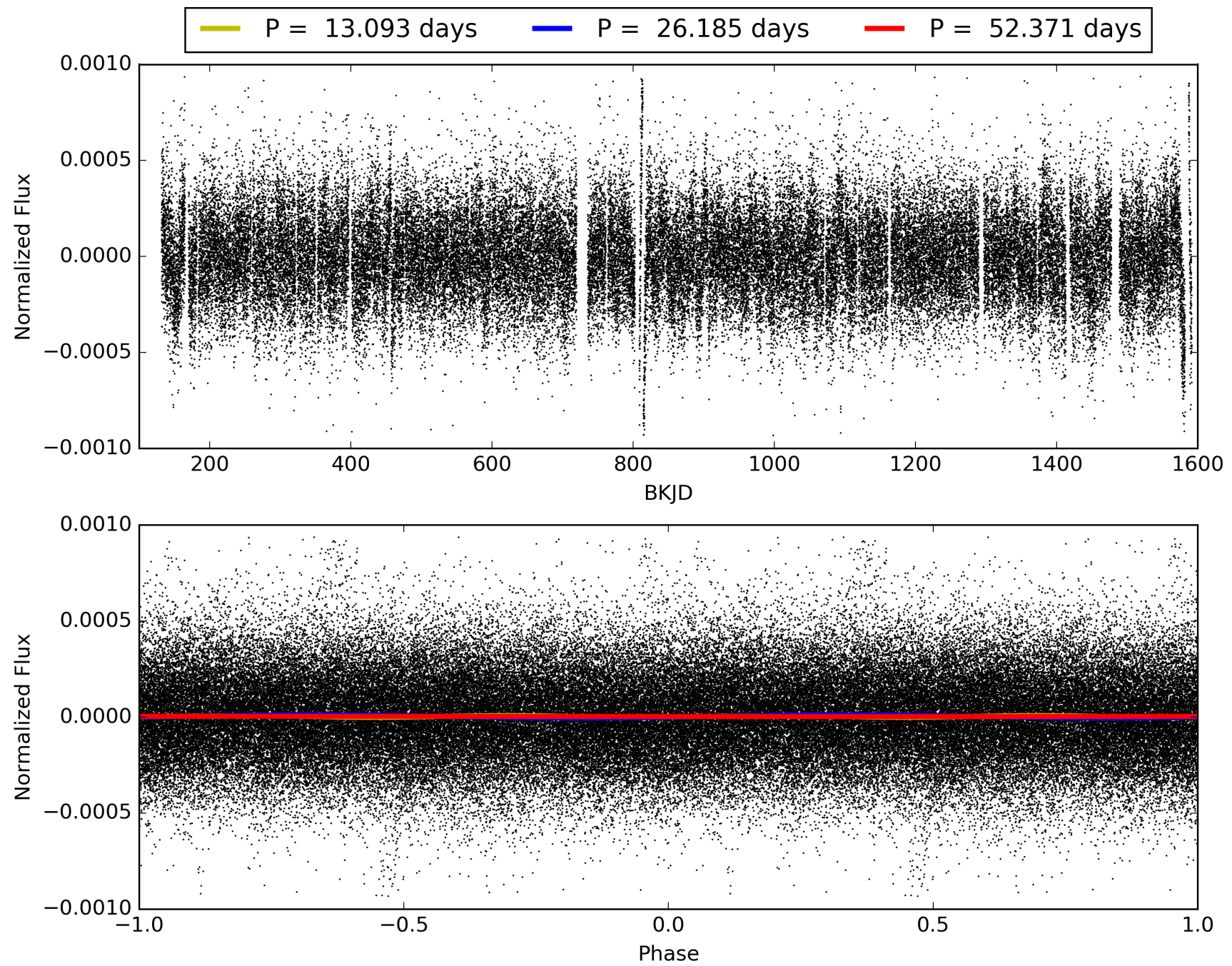
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008848942-02, PDC Light Curves

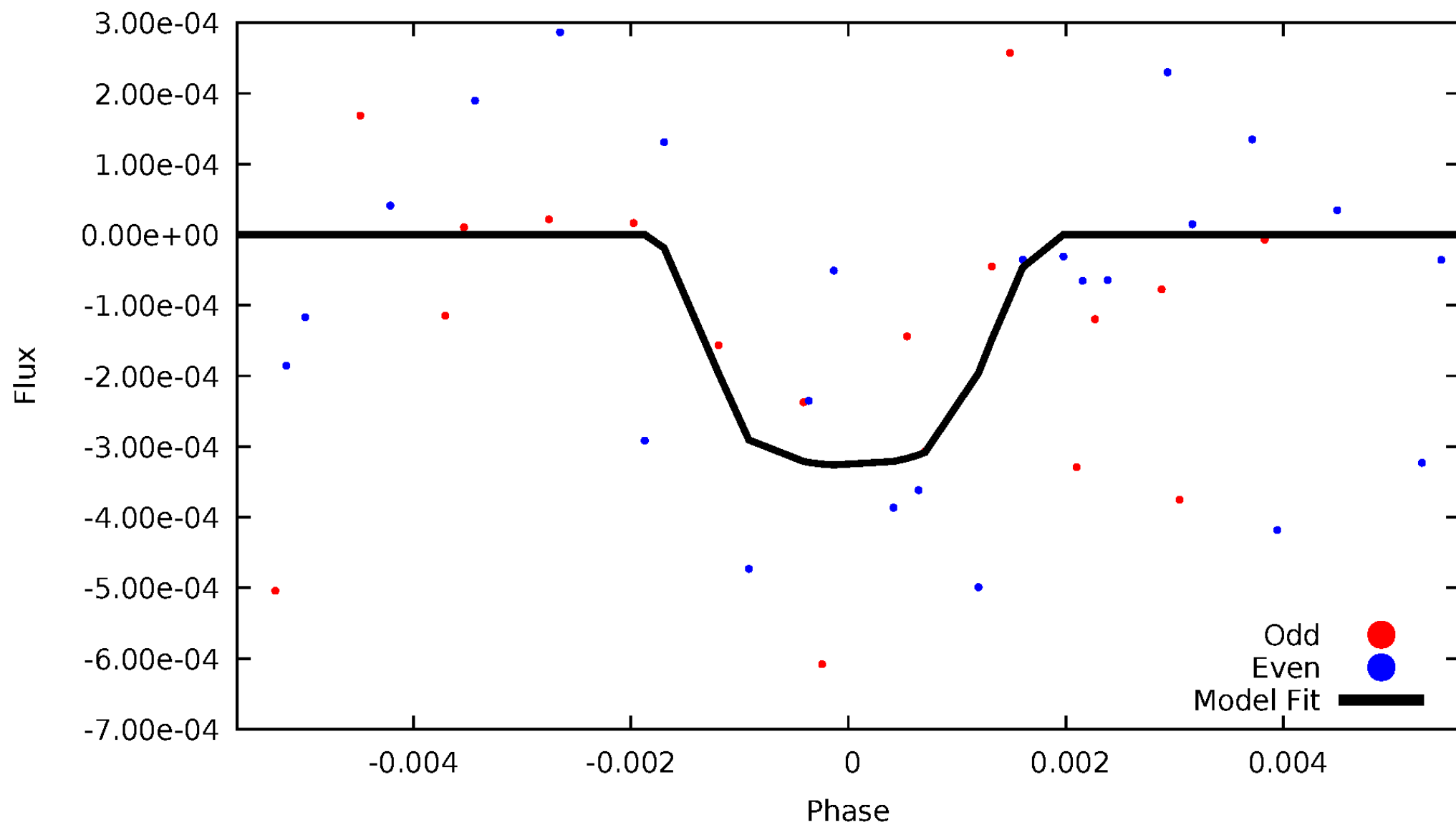


TCE 008848942-02



# DV Odd/Even

TCE 008848942-02



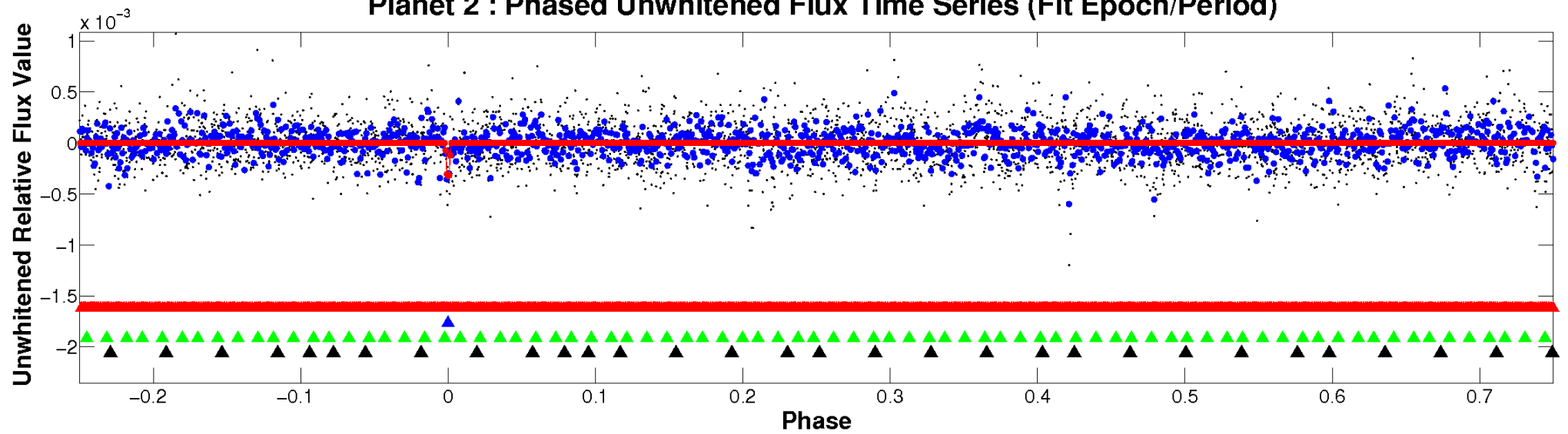


ALT Odd/Even

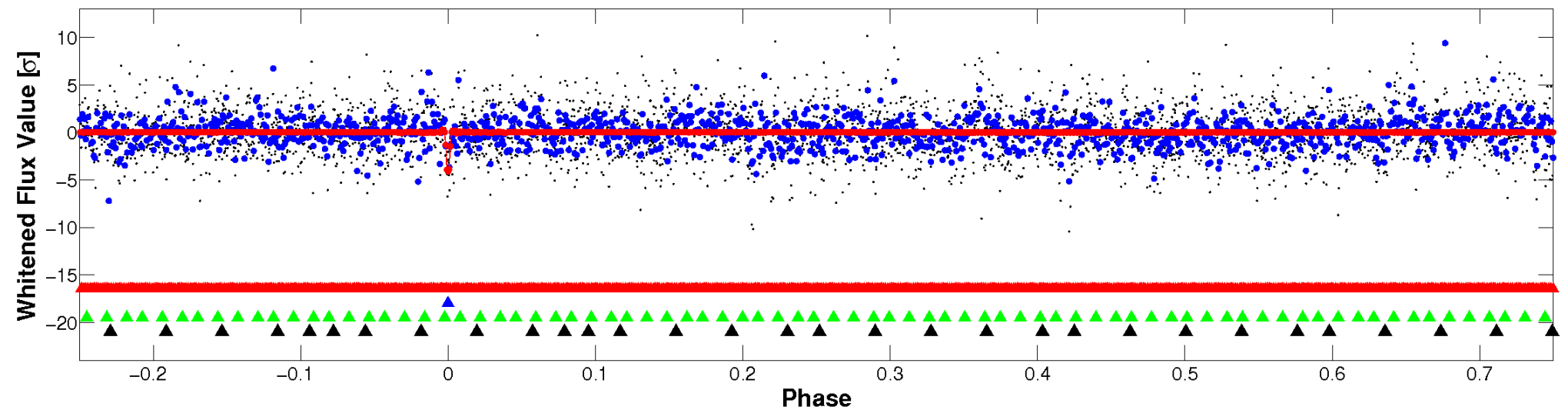
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



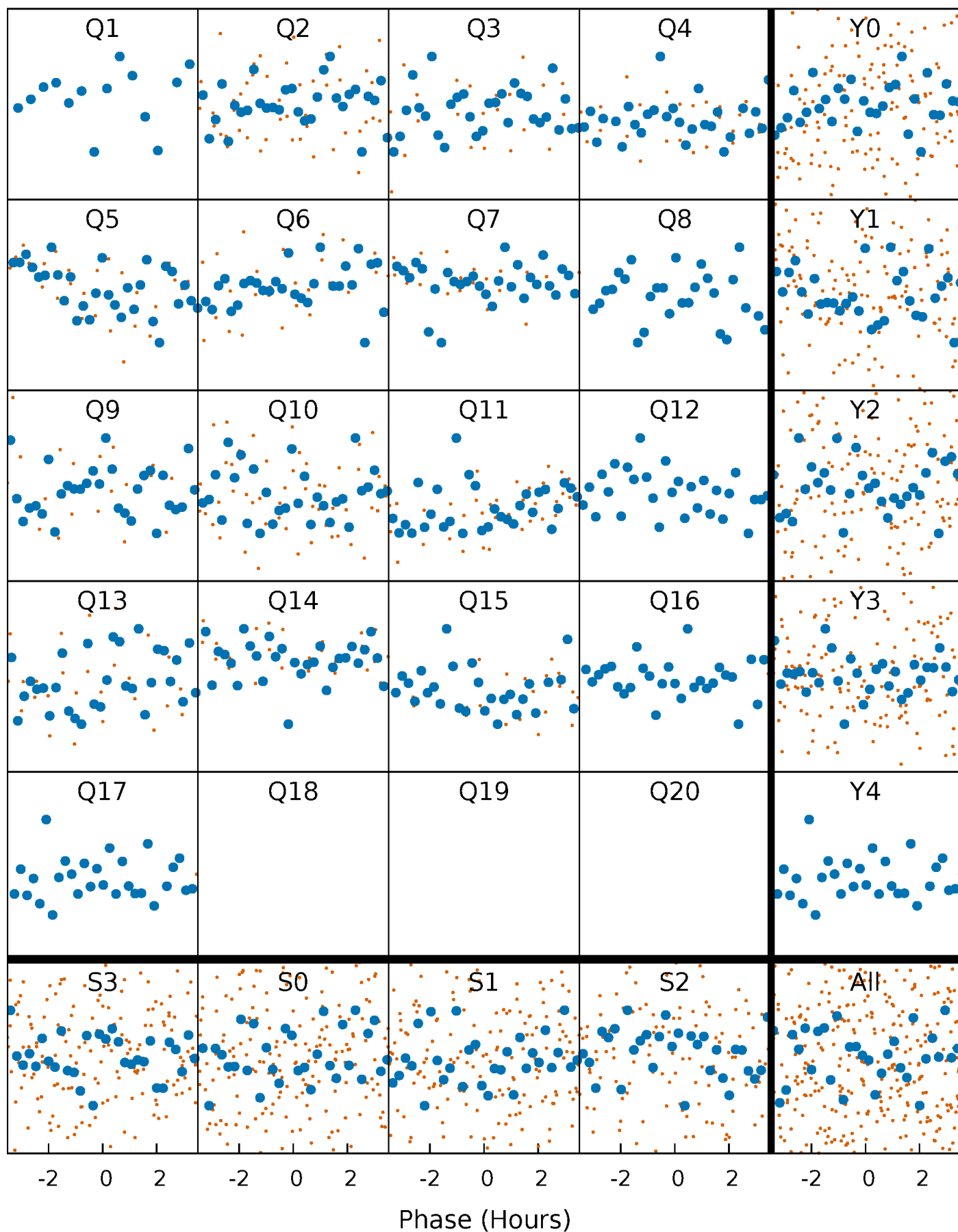
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





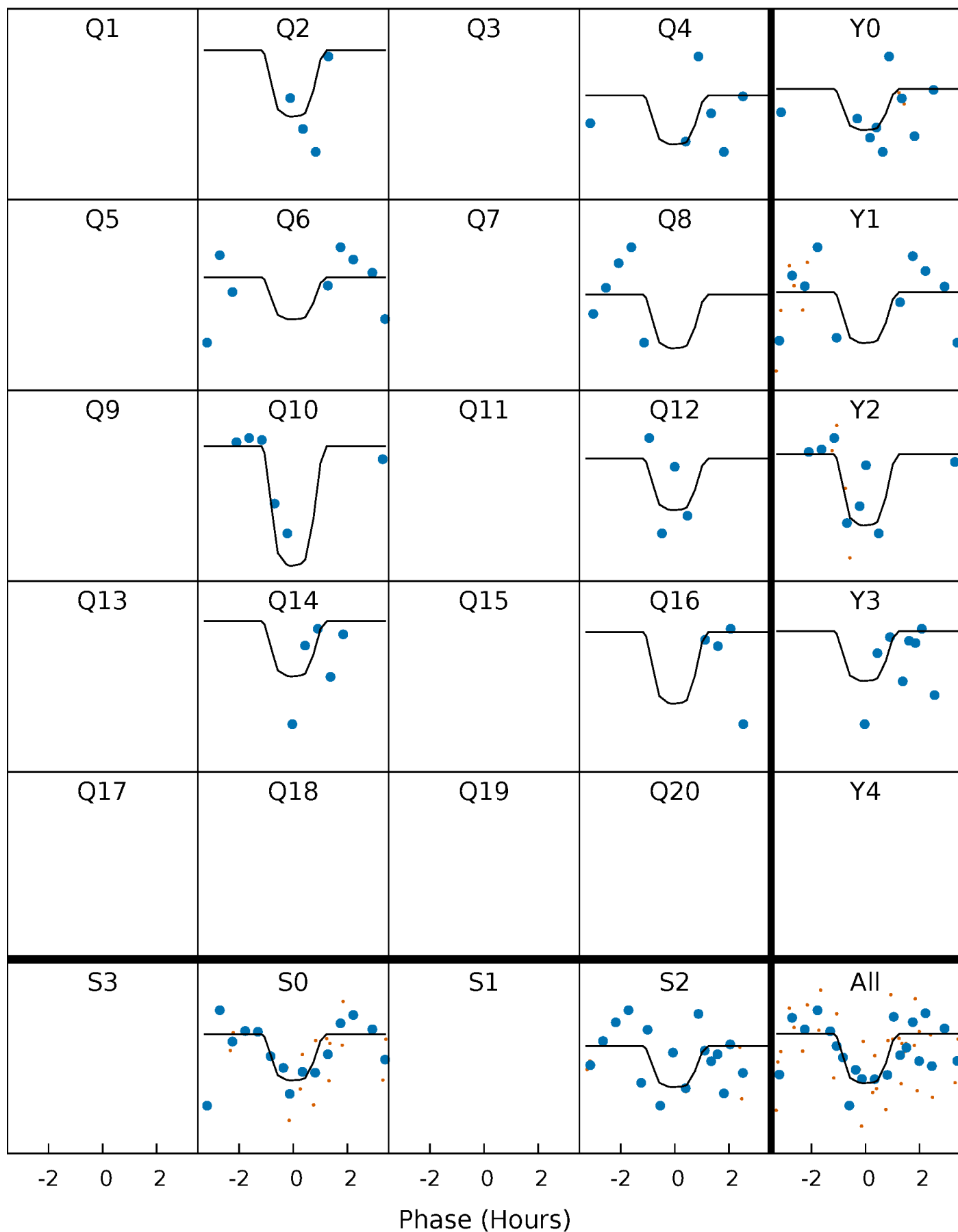
# PDC Quarter-Phased Transit Curves

TCE 008848942-02 P= 26.185331 Days  $T_0=148.076282$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008848942-02 P= 26.185331 Days  $T_0=148.076282$  (BKJD)

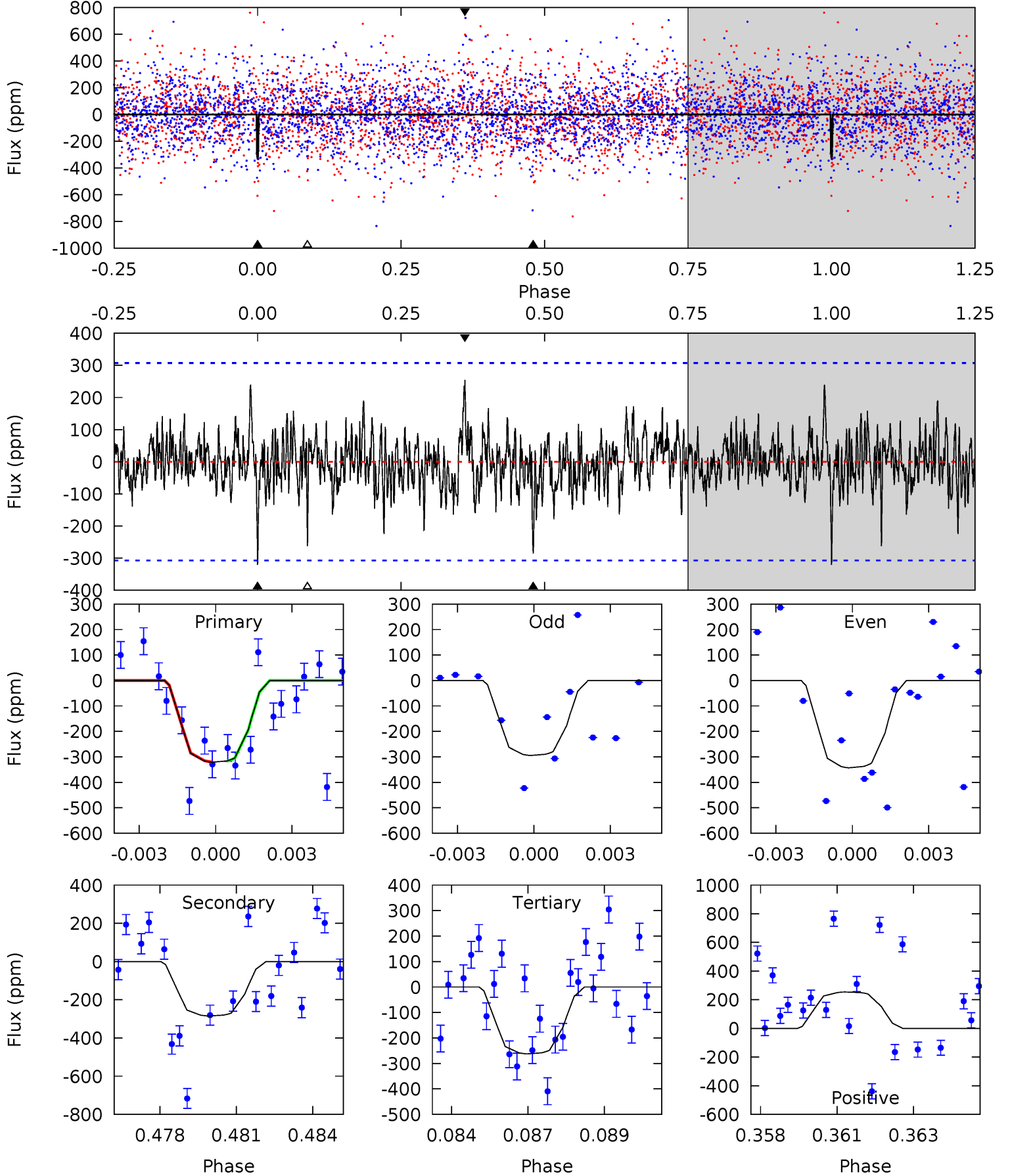


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

008848942-02,  $P = 26.185331$  Days,  $E = 121.890951$  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
5.50	4.88	4.50	4.36	5.27	2.99	1.14	1.00	1.14	0.39	0.53	0.41	1.02	0.44	0.02



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008848942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8050^{+224}_{-337}$	$3.996^{+0.198}_{-0.132}$	$-0.120^{+0.200}_{-0.300}$	$2.254^{+0.433}_{-0.596}$	$1.835^{+0.141}_{-0.330}$	$0.226^{+0.285}_{-0.089}$
	+3%/-4%	+5%/-3%	+167%/-250%	+19%/-26%	+8%/-18%	+126%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008848942-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-285 \pm 58$	$31.98^{+33.69}_{-22.28}$	$1602^{+110}_{-118}$	$3276^{+1806}_{-663}$	$6.589^{+72.430}_{-5.106}$
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  $A_{obs} \gg 1.0$



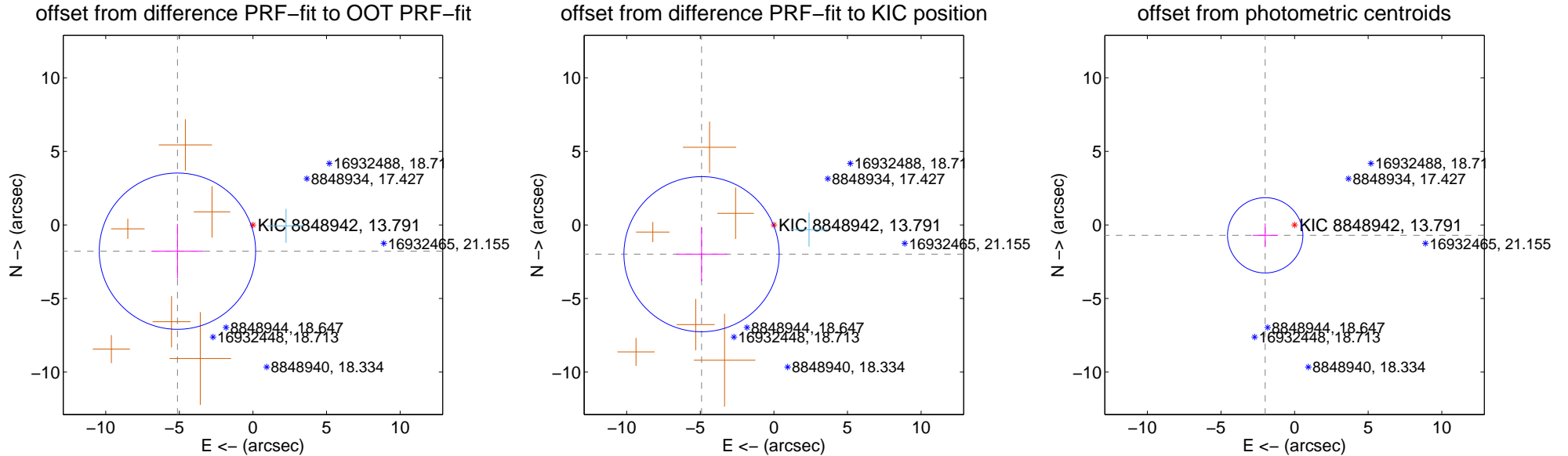
## DV Centroid Data

Supplemental centroid analysis for 008848942-02. Kepler magnitude: 13.79. Transit SNR 12.27

There are 1 quarters with good PRF difference image offsets

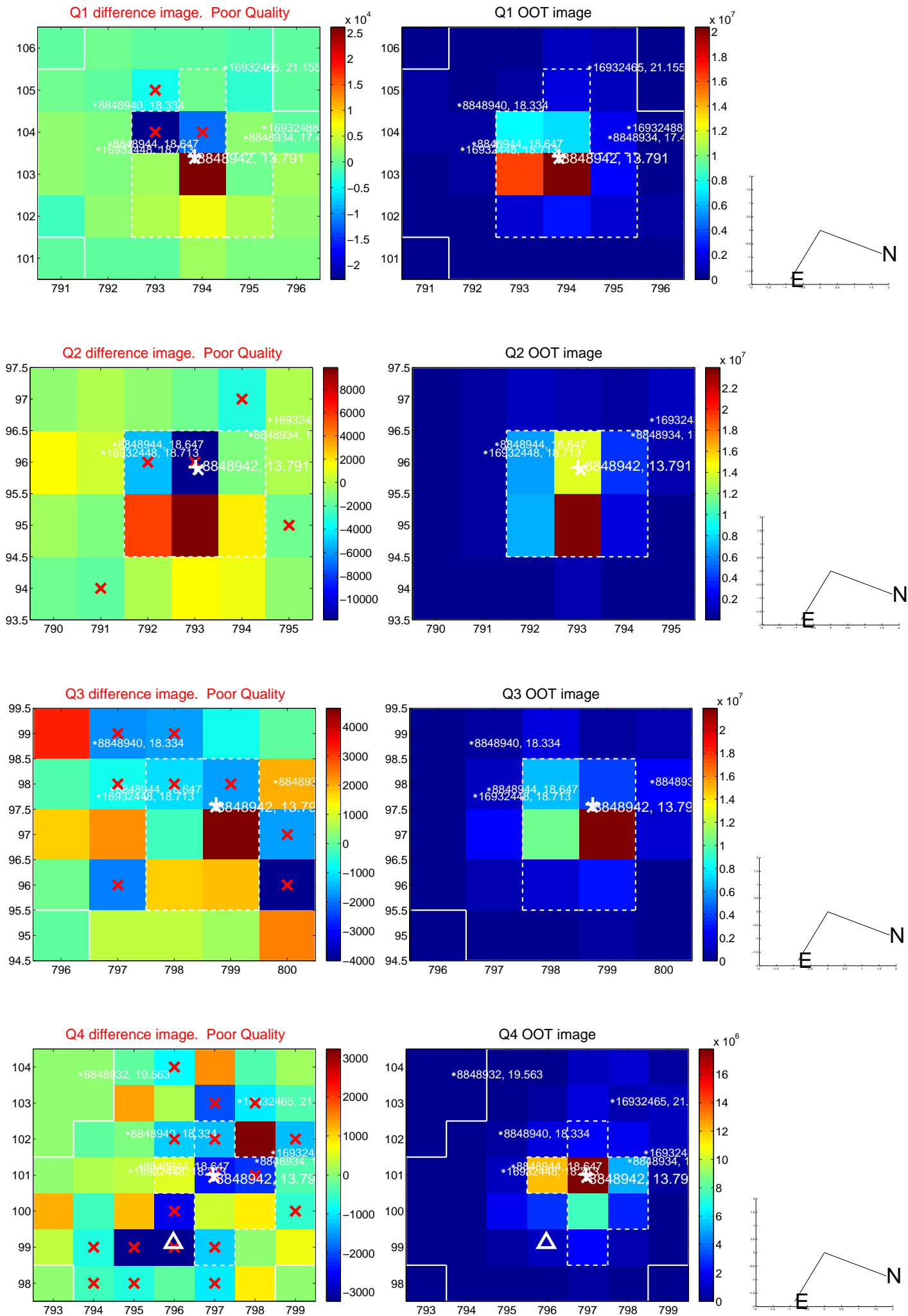
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.429 \pm 1.770$	3.07	$5.128 \pm 1.760$	$-1.783 \pm 1.854$
PRF-fit source offset from KIC position	$5.301 \pm 1.757$	3.02	$4.914 \pm 1.741$	$-1.988 \pm 1.853$
photometric centroid source offset	$2.12 \pm 0.85$	2.48	$1.99 \pm 0.86$	$-0.70 \pm 0.80$

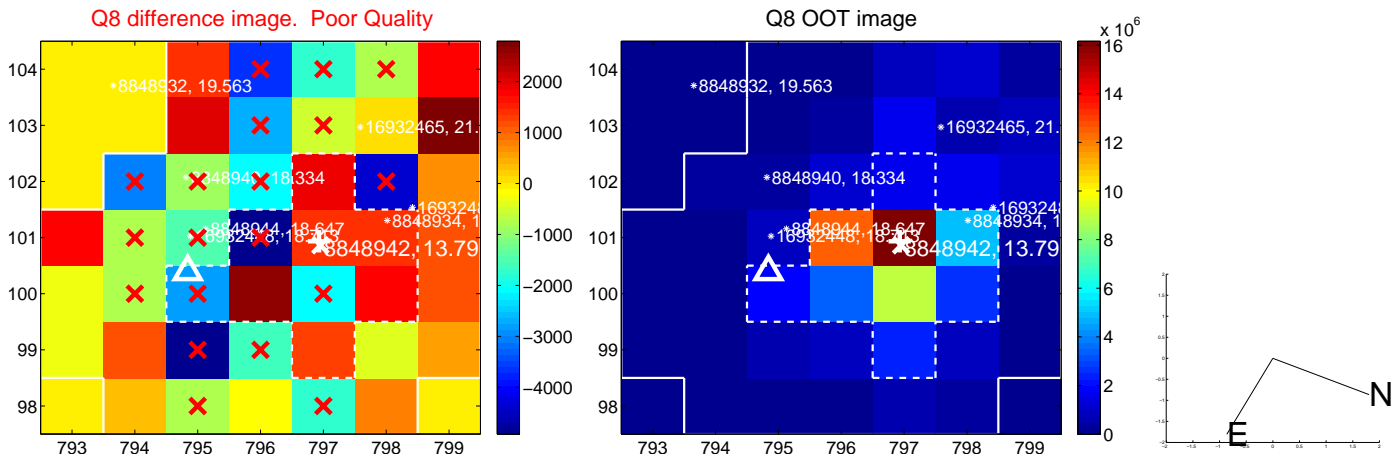
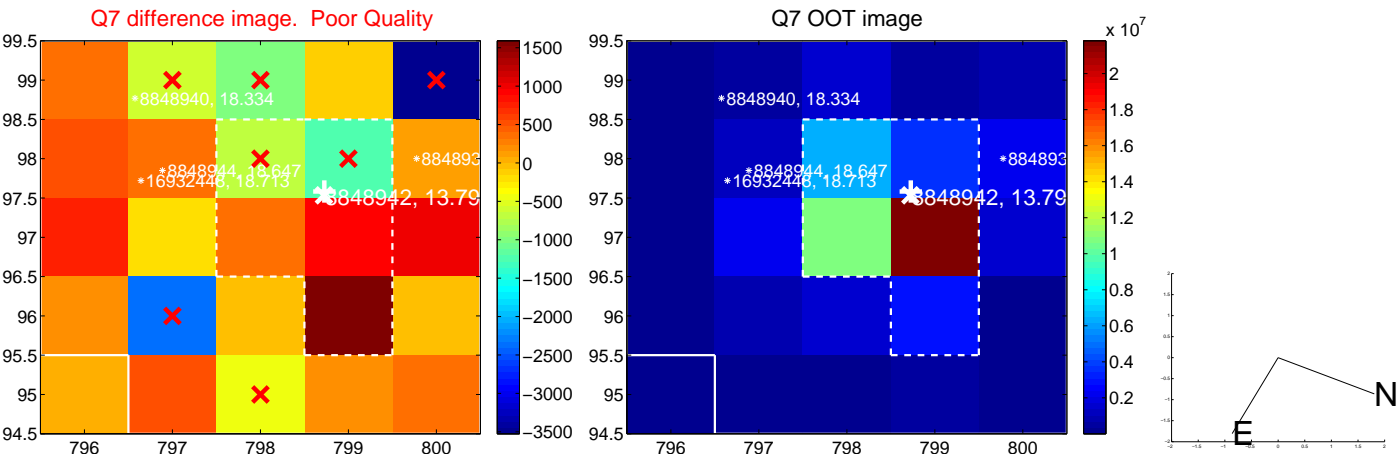
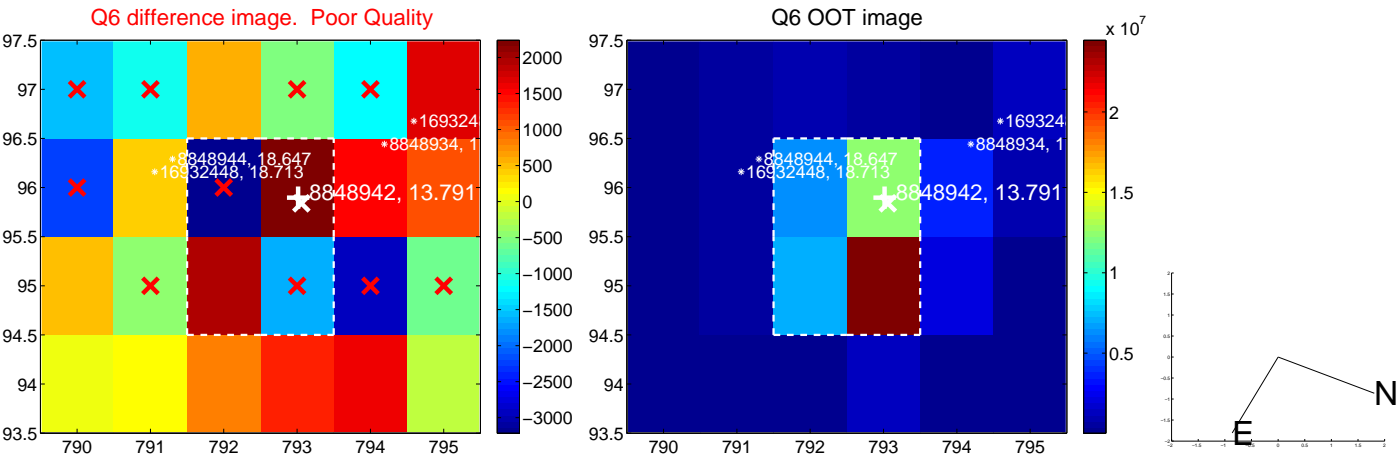
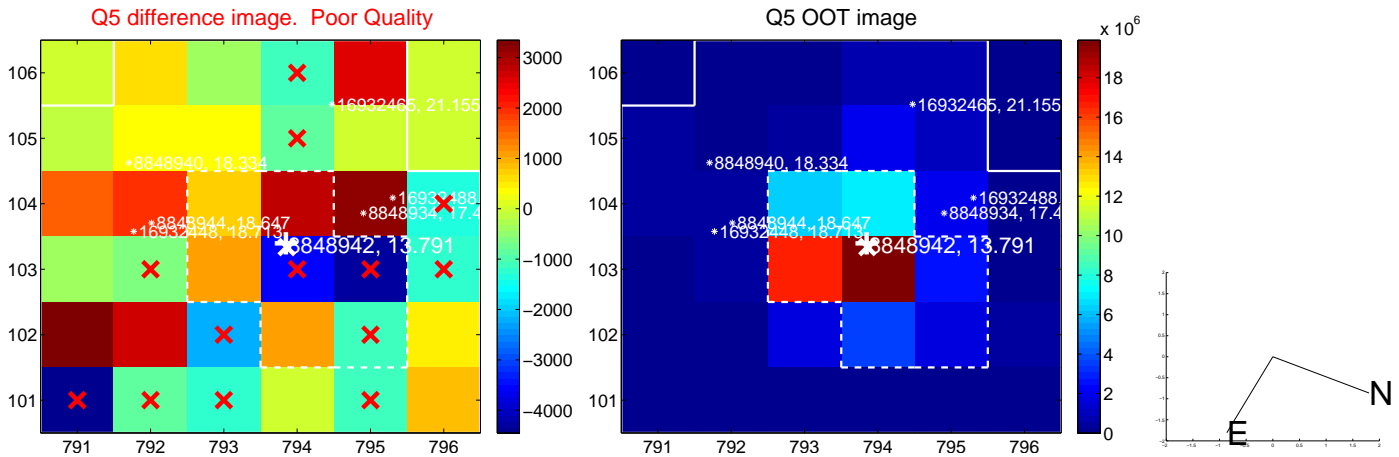


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

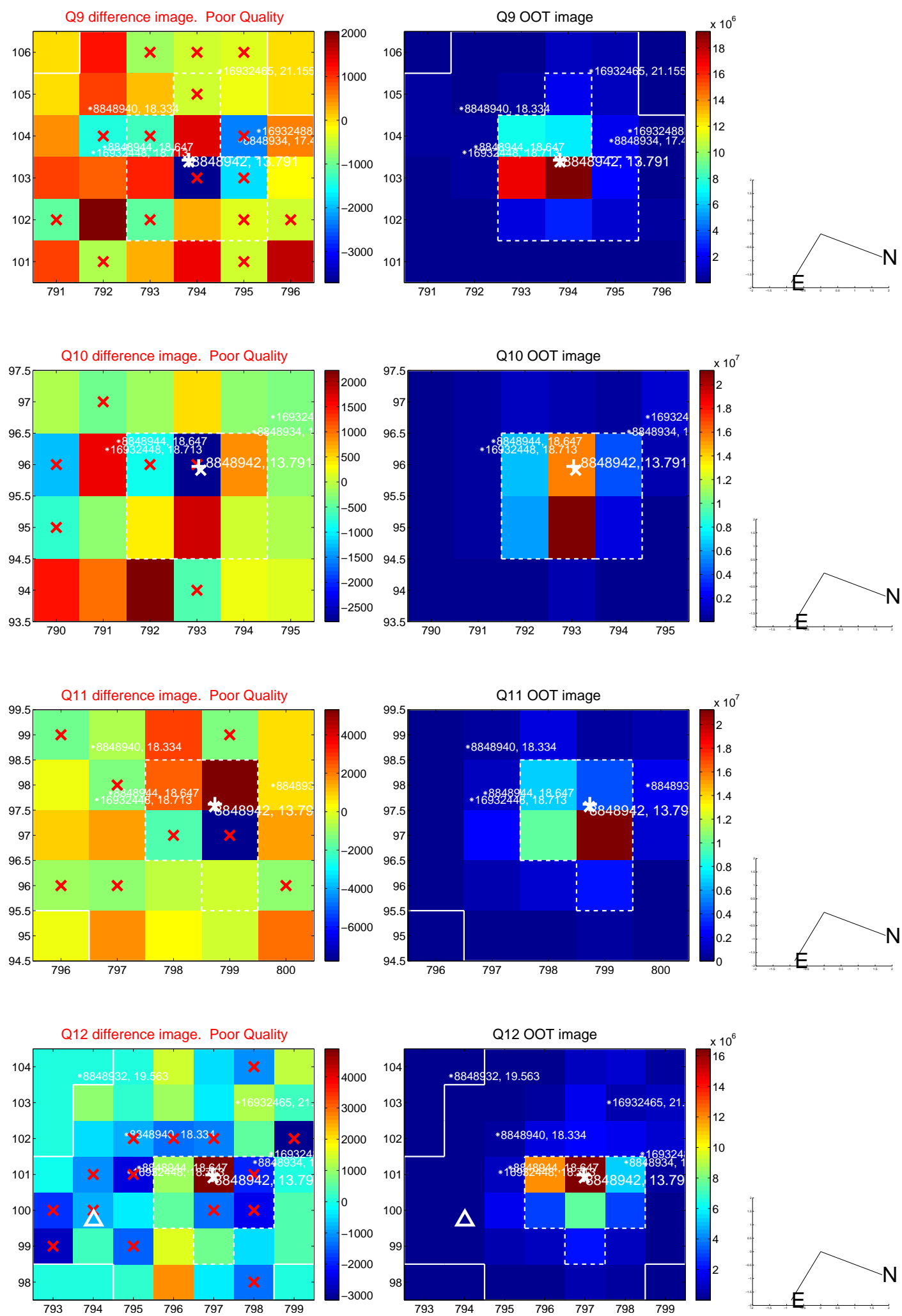
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

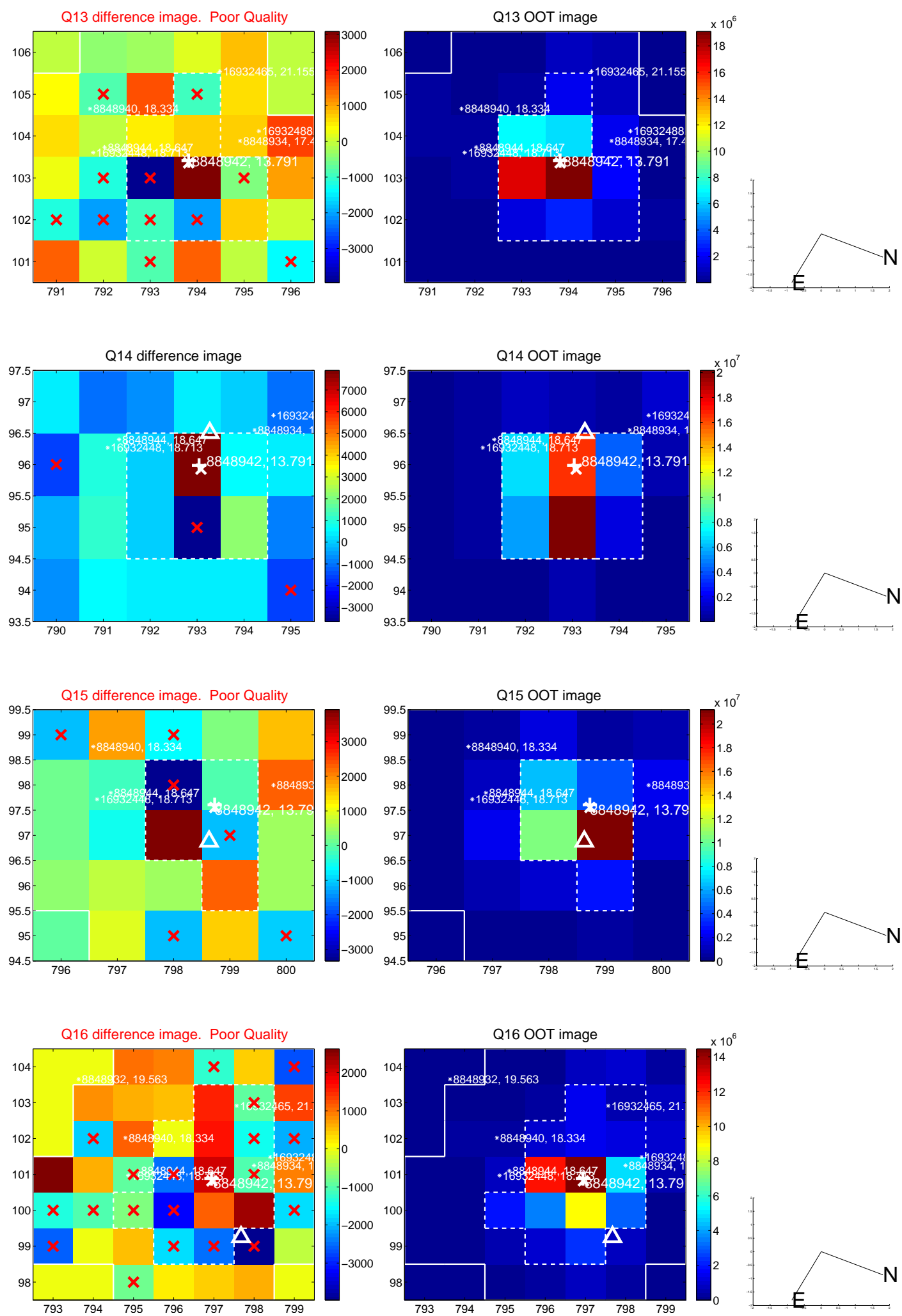


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

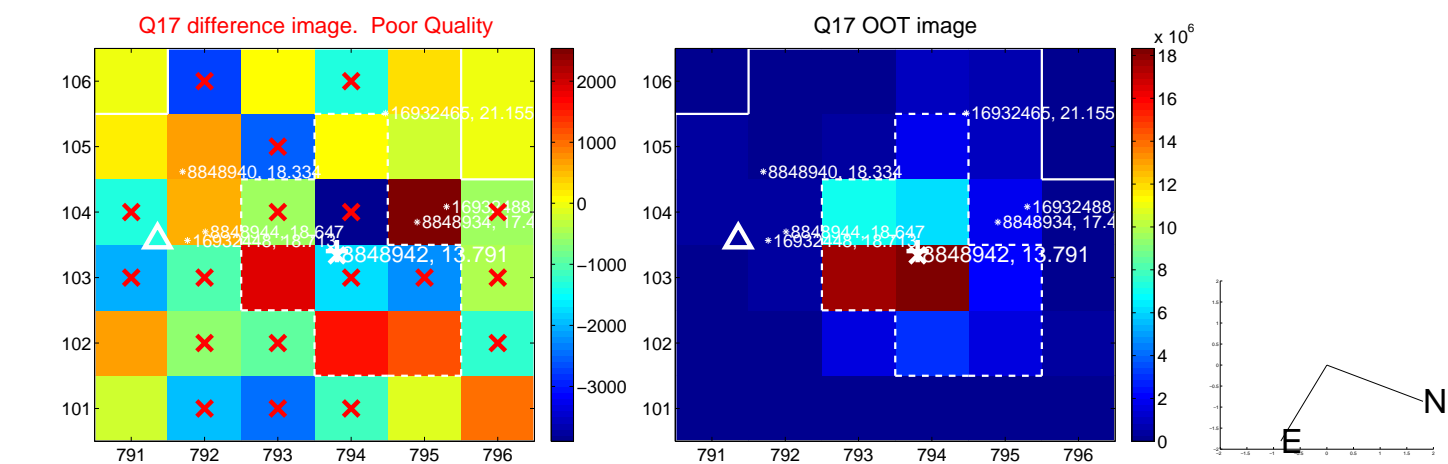




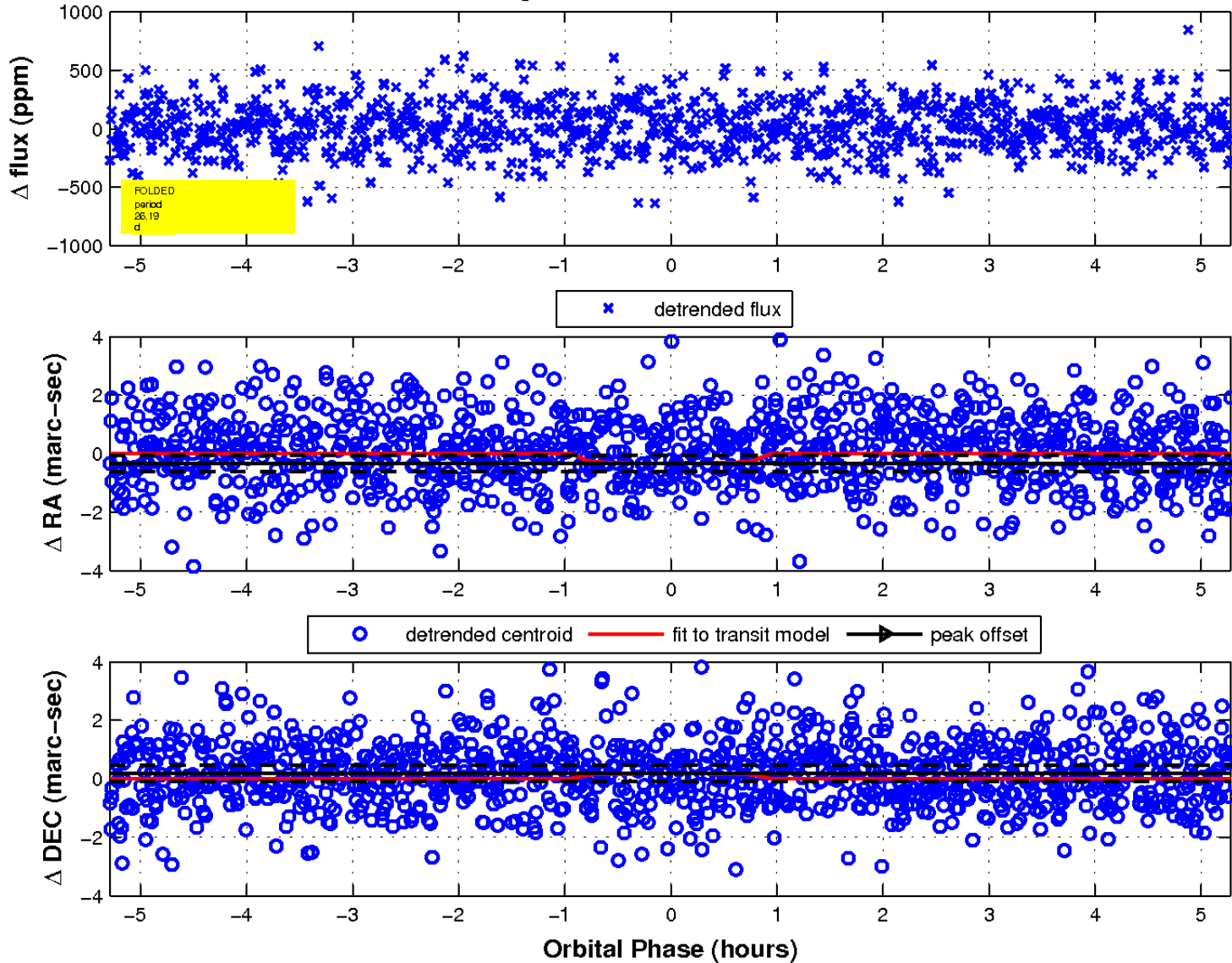
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

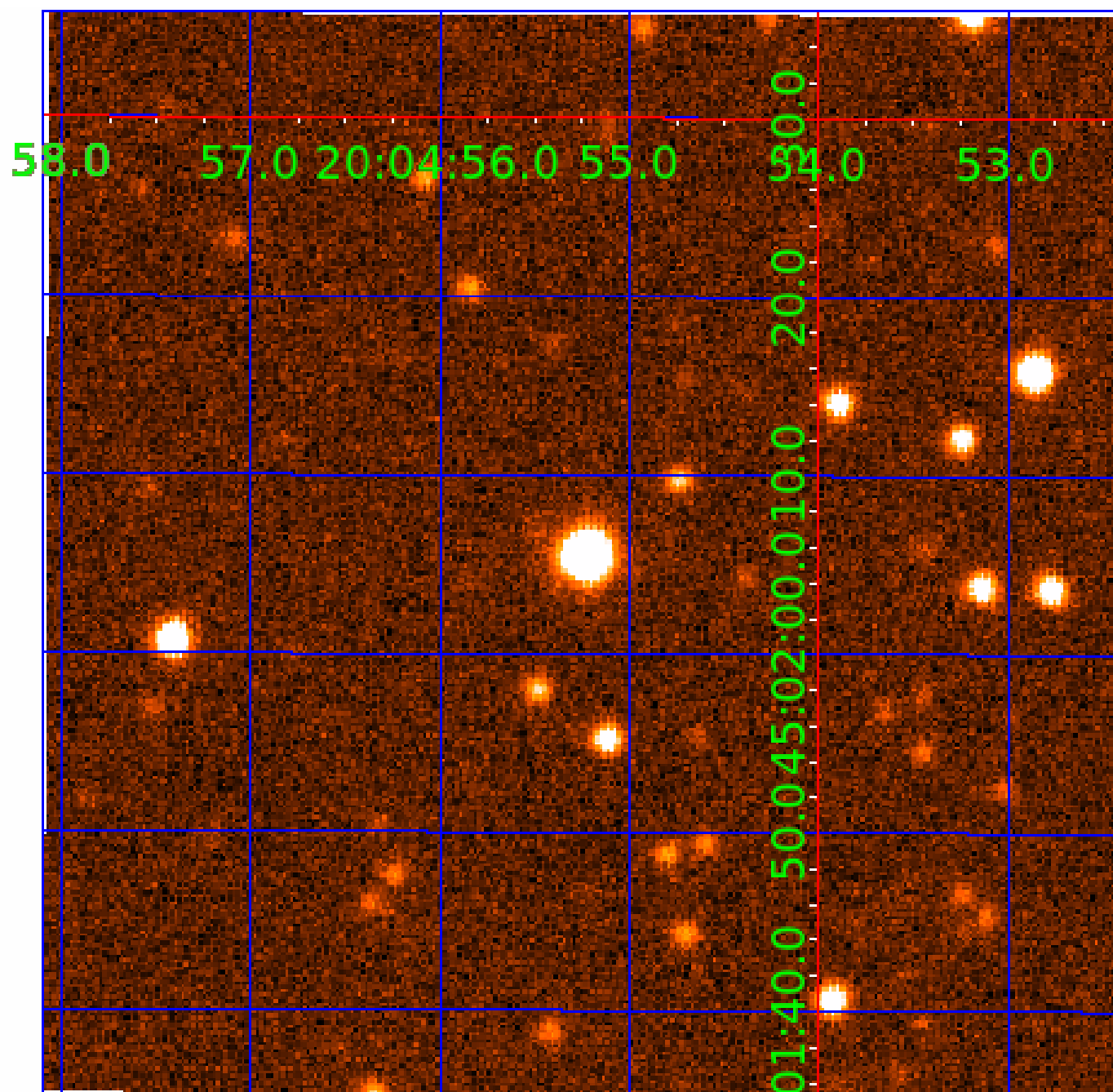


### fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



# KIC 008848942

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008848942-01	OBS	No	1.553707	132.422527	18.4	11.525	7.8	9.3	2.25	8050	0.98	18487.94
008848942-02	OBS	No	26.185331	148.076282	326.6	1.766	12.9	12.3	2.25	8050	4.13	427.86
008848942-03	OBS	No	18.562778	132.690471	260.8	3.067	10.7	11.8	2.25	8050	4.07	676.90
008848942-04	OBS	No	47.841326	150.570099	206.7	3.605	9.4	8.0	2.25	8050	3.67	191.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008848942-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
008848942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
008848942-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008848942-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

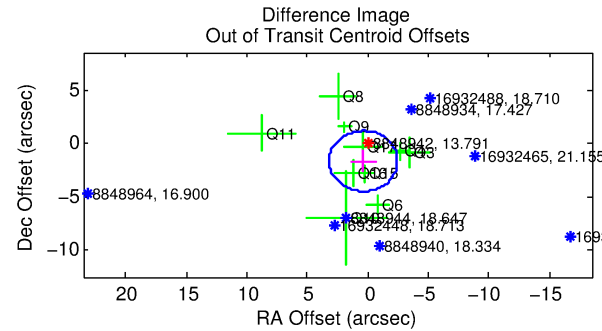
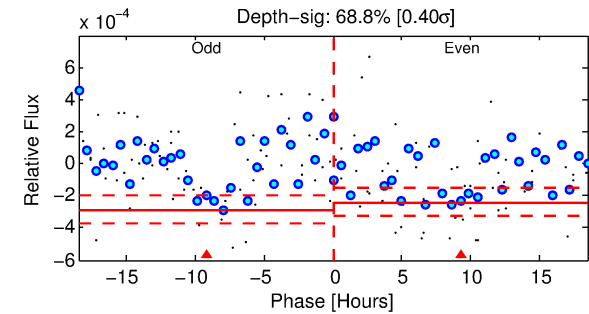
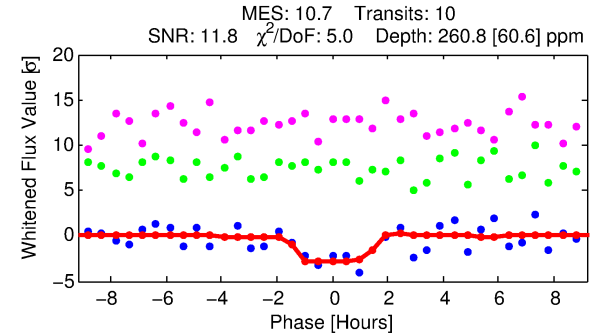
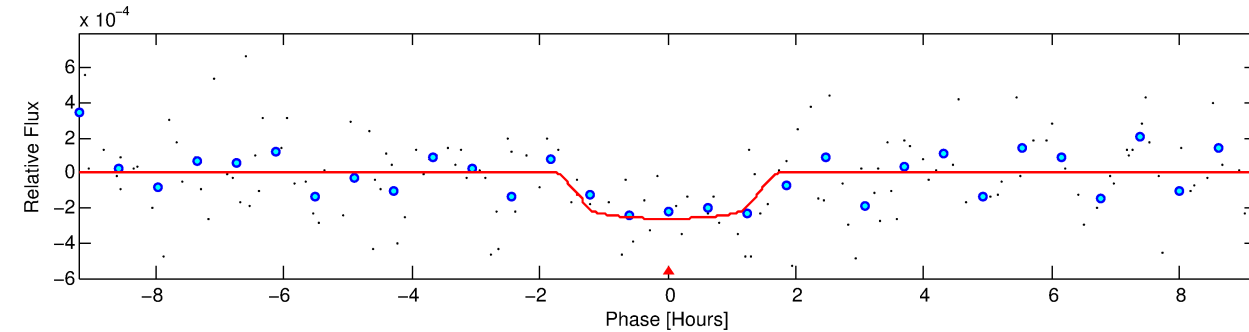
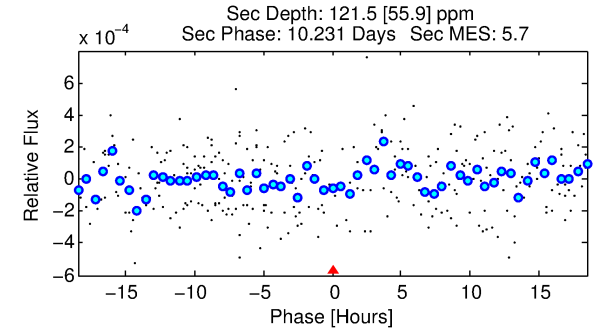
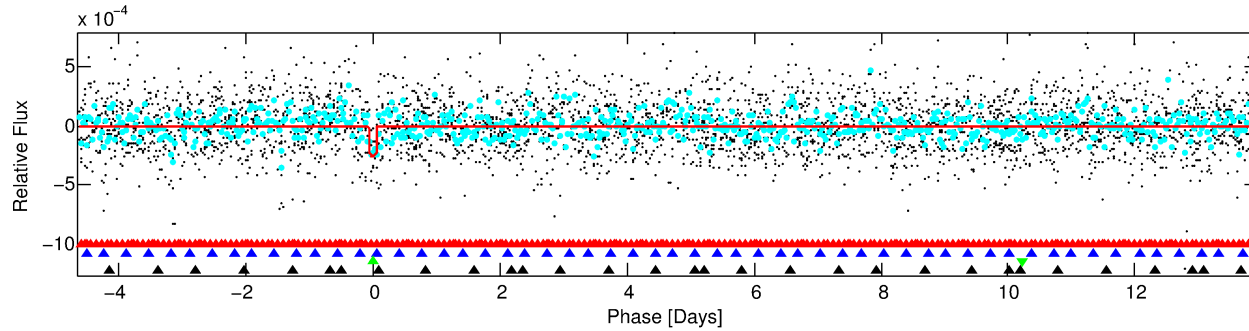
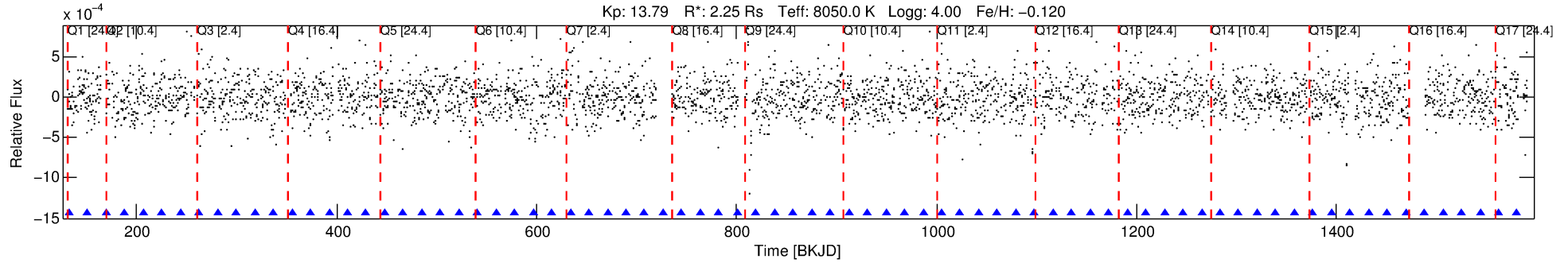
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008848942-03

No Significant Match Found

# DV One-Page Summary

KIC: 8848942 Candidate: 3 of 4 Period: 18.563 d



## DV Fit Results:

Period = 18.56278 [0.00042] d  
Epoch = 132.6905 [0.0187] BKJD  
Rp/R\* = 0.0165 [0.0238]  
a/R\* = 27.10 [231.74]  
b = 0.83 [3.22]  
Seff = 676.90 [263.46]  
Teff = 1301 [127] K  
Rp = 4.07 [5.95] Re  
a = 0.1680 [0.0391] AU  
Ag = 113.97 [334.31] [0.34 $\sigma$ ]  
Teffp = 6571 [4791] K [1.10 $\sigma$ ]

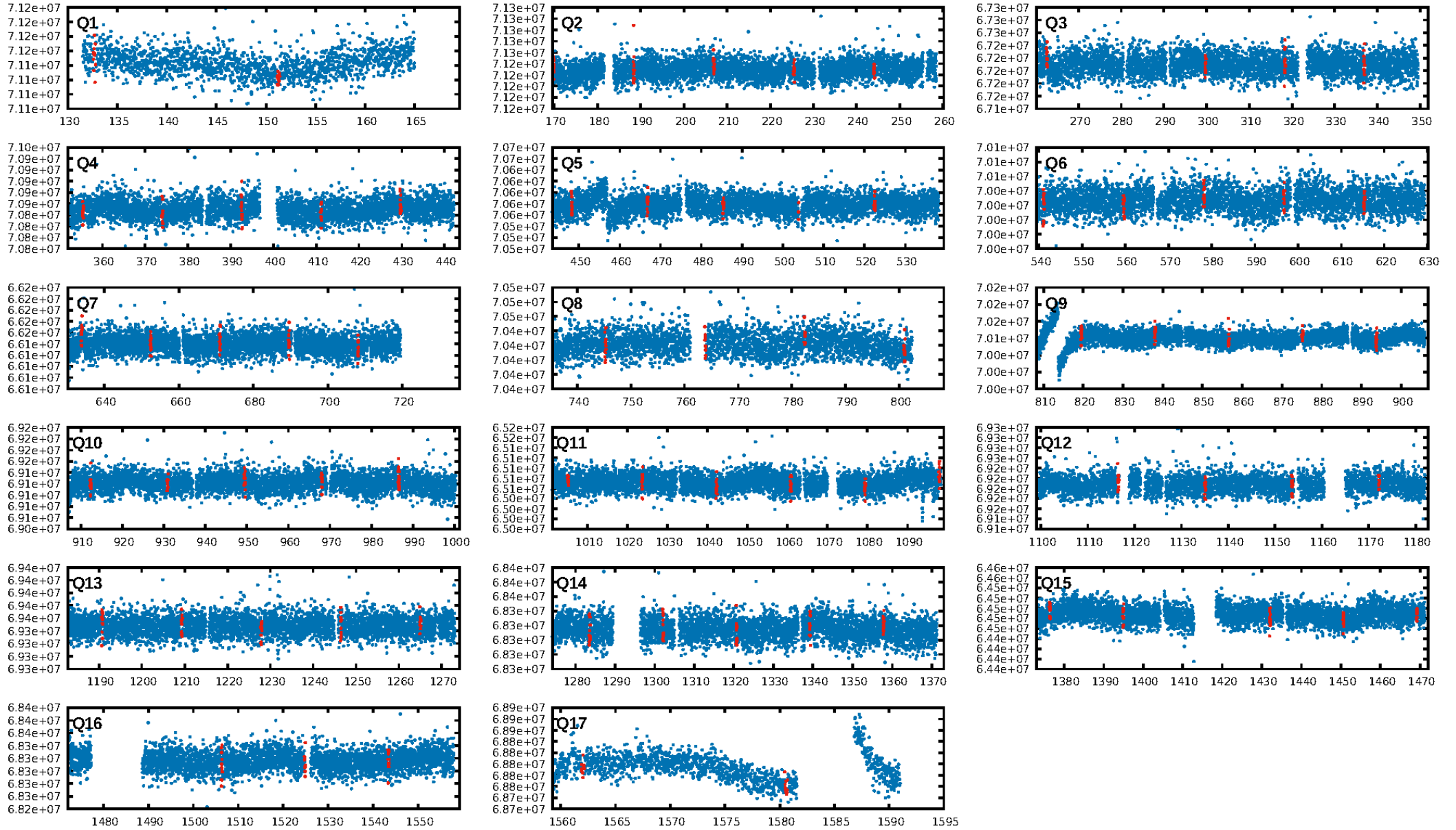
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.23 $\sigma$ ]  
LongPeriod-sig: 100.0% [51.70 $\sigma$ ]  
ModelChiSquare2-sig: 0.9%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: 1.27e-19  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 3.259  
Centroid-sig: 22.9%  
Centroid-so: 1.326 arcsec [1.94 $\sigma$ ]  
OotOffset-rm: 1.713 arcsec [1.82 $\sigma$ ]  
KicOffset-rm: 1.908 arcsec [1.99 $\sigma$ ]  
OotOffset-st: 2/3/3/2 [10]  
KicOffset-st: 2/3/3/2 [10]  
DiffImageQuality-fgm: 0.00 [0/10]  
DiffImageOverlap-fno: 0.35 [6/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:59:14 Z

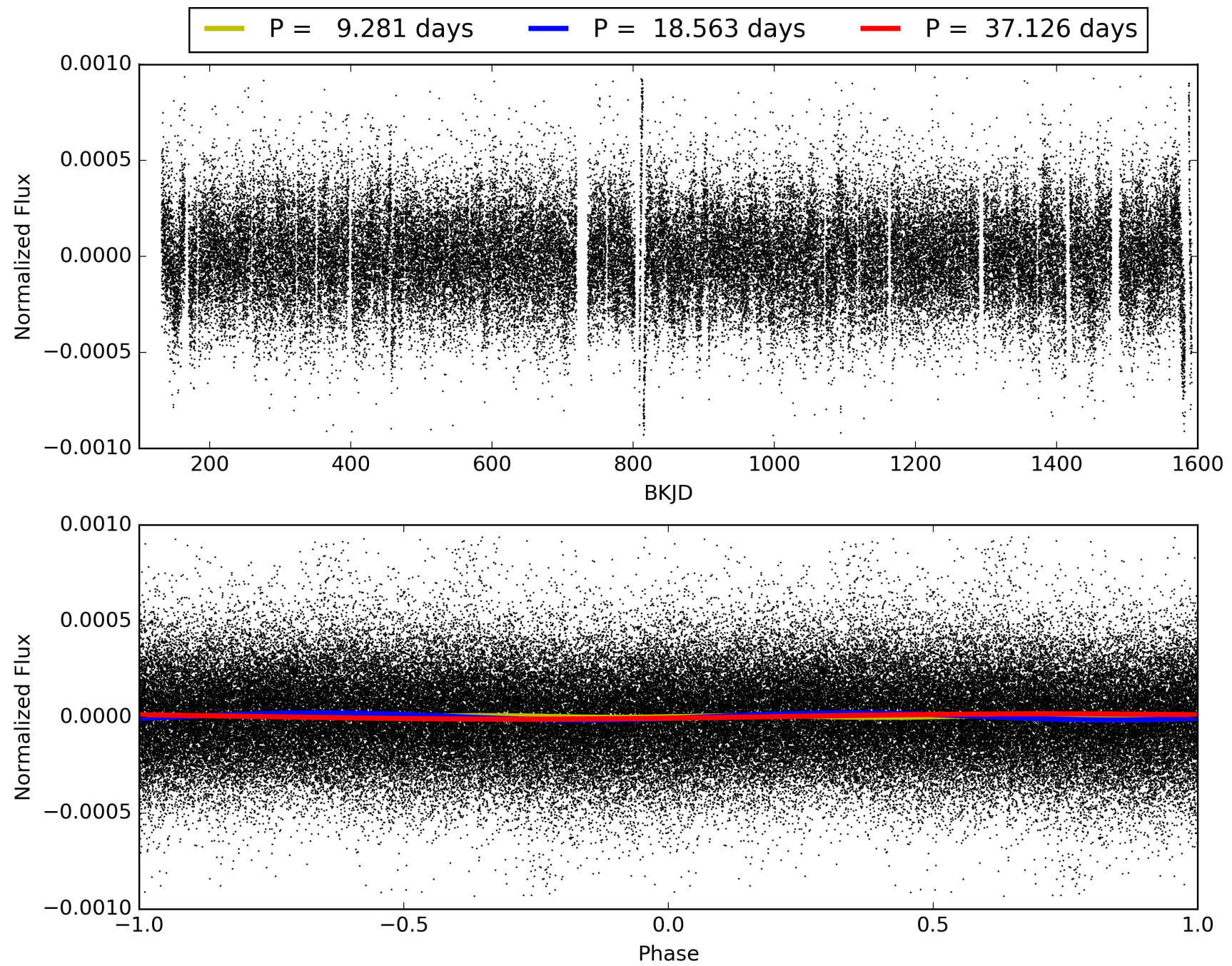
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008848942-03, PDC Light Curves



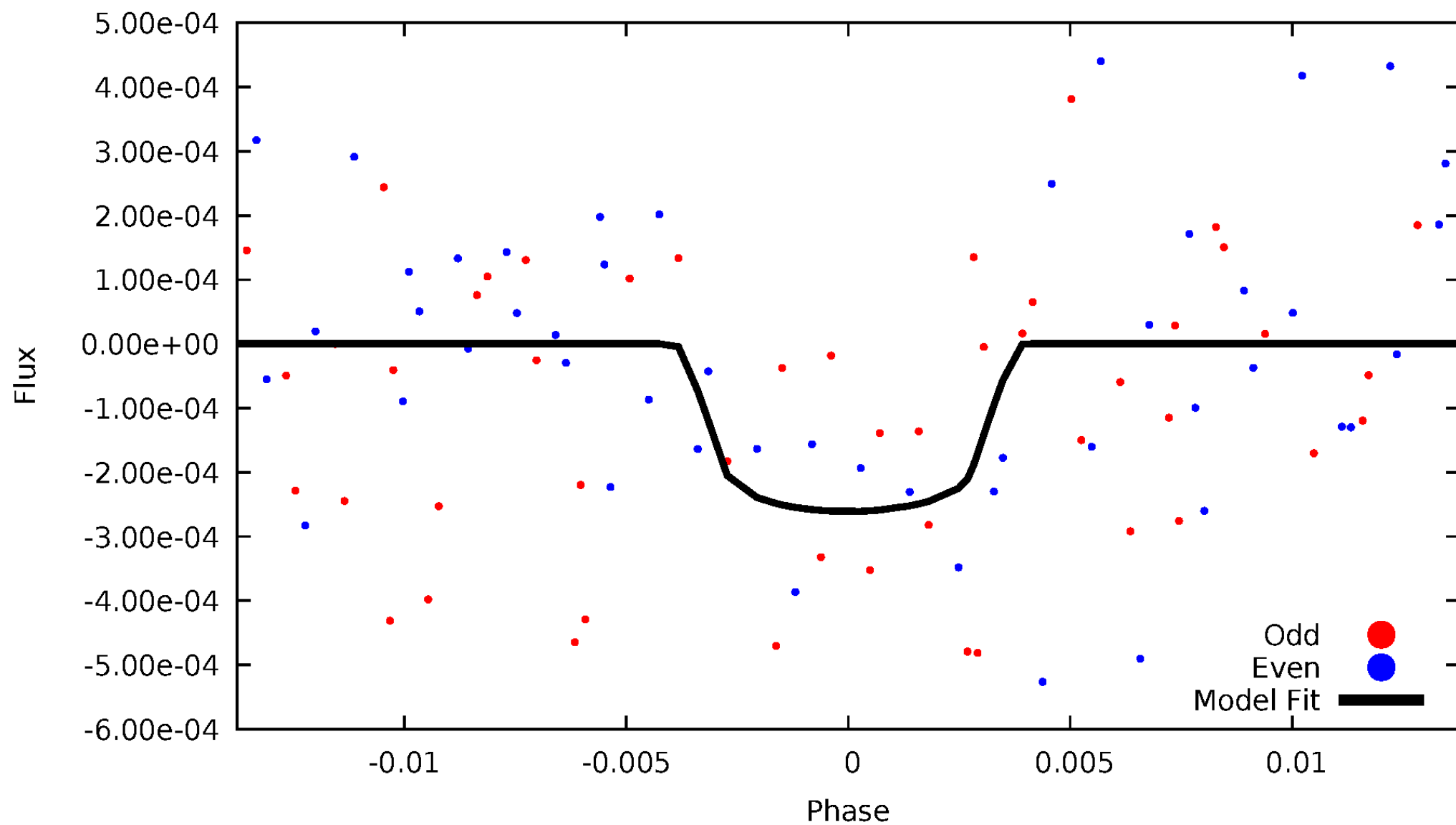


TCE 008848942-03



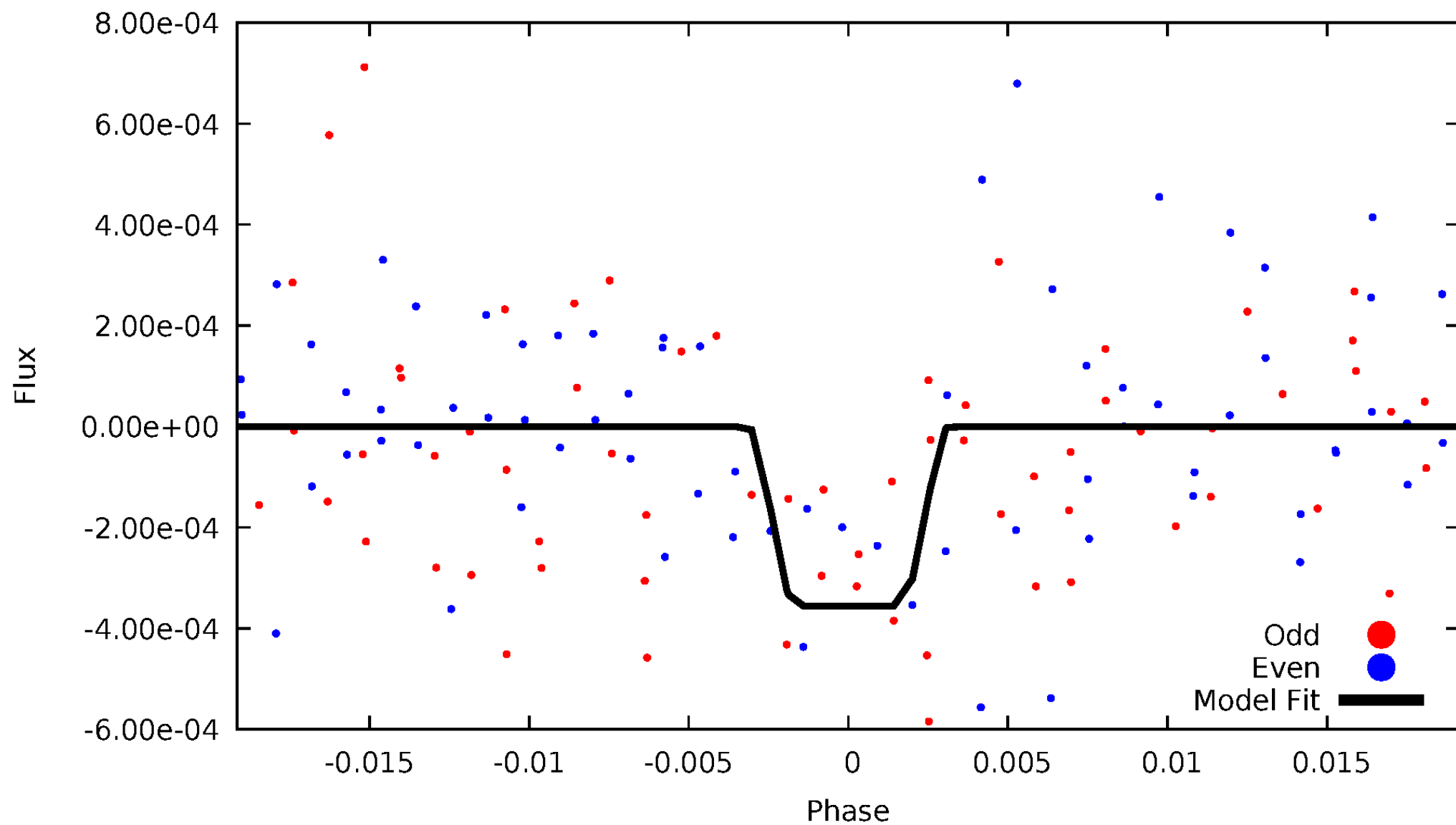
# DV Odd/Even

TCE 008848942-03



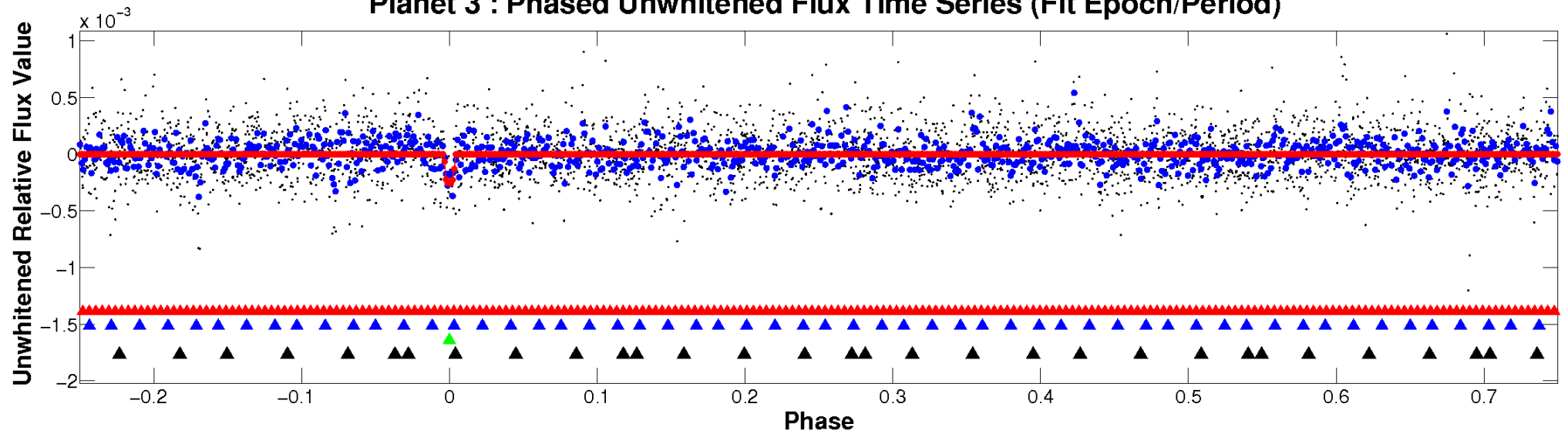
# ALT Odd/Even

TCE 008848942-03

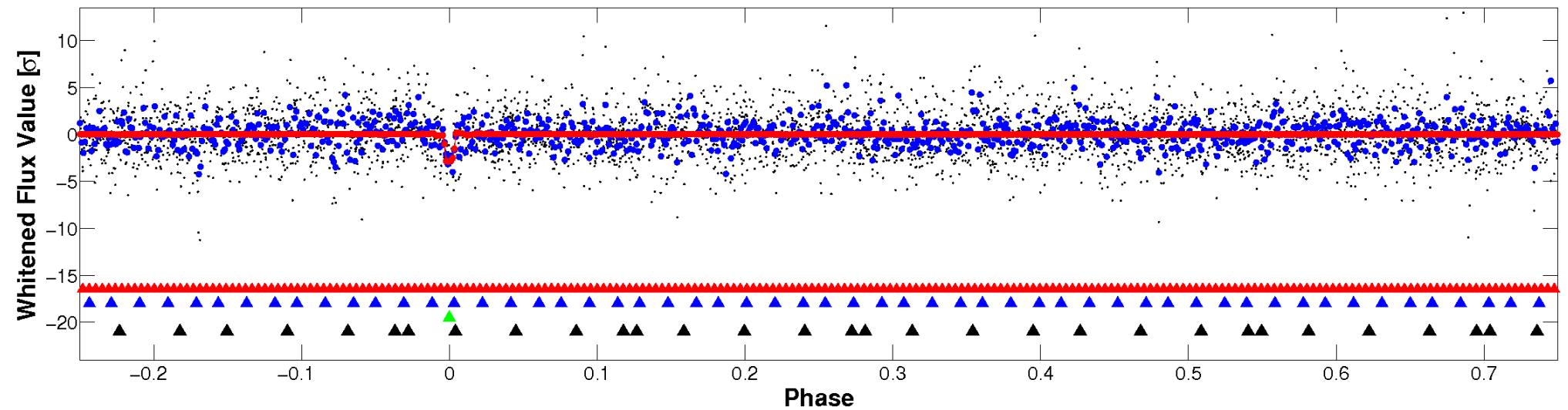


# Non-Whitened Vs. Whitened Light Curve

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

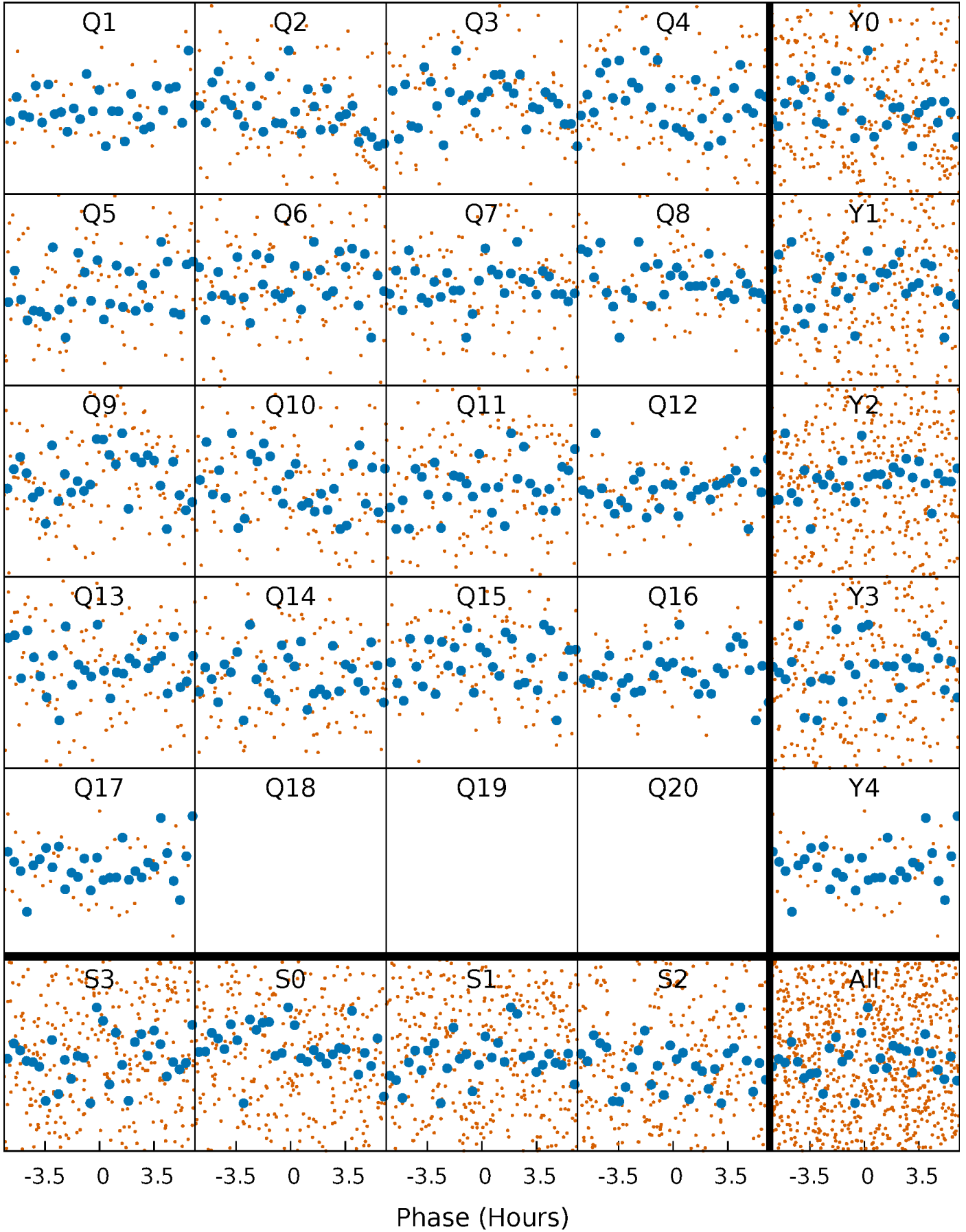


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



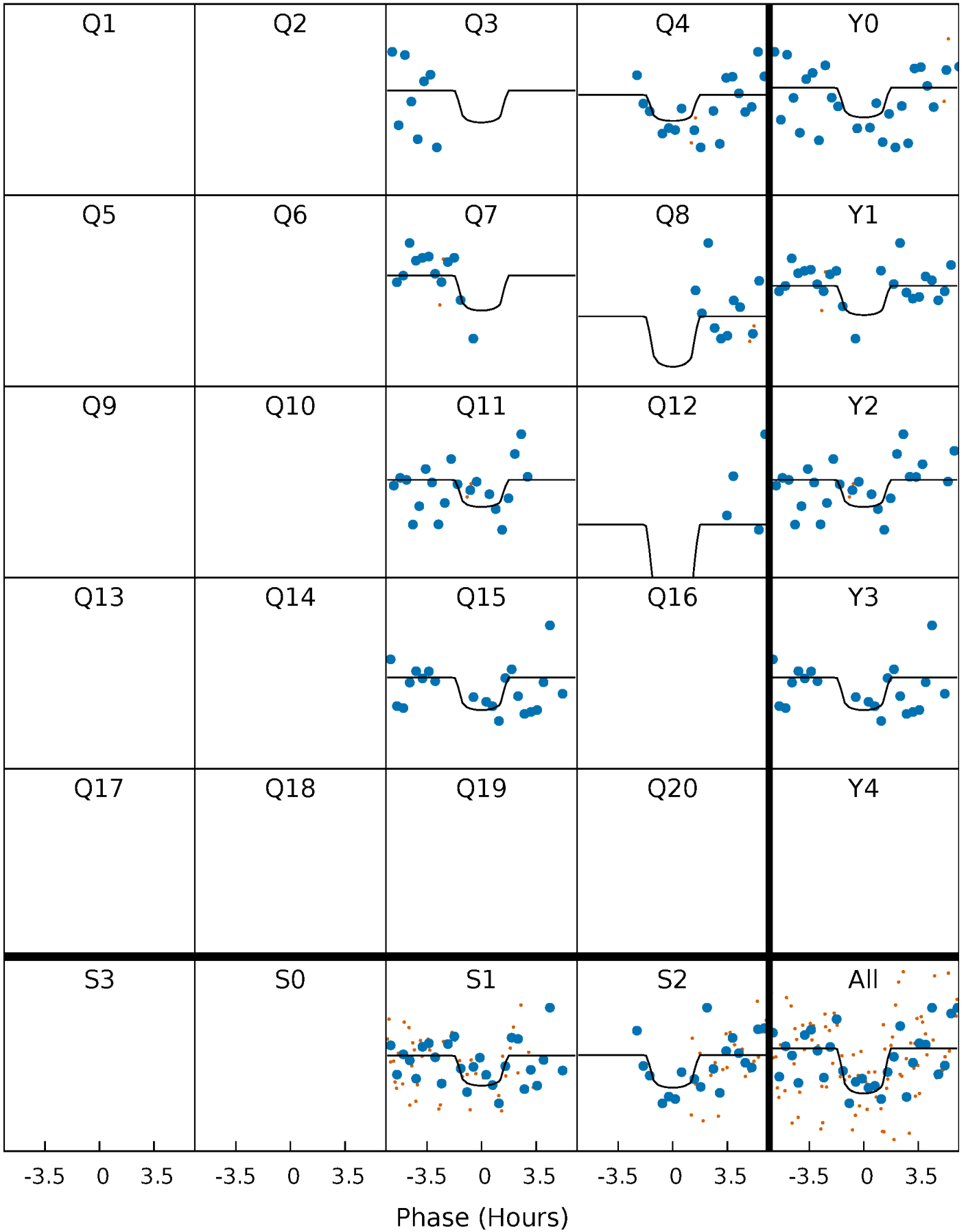
# PDC Quarter-Phased Transit Curves

TCE 008848942-03 P= 18.562778 Days  $T_0=132.690471$  (BKJD)



# DV Quarter-Phased Transit Curves

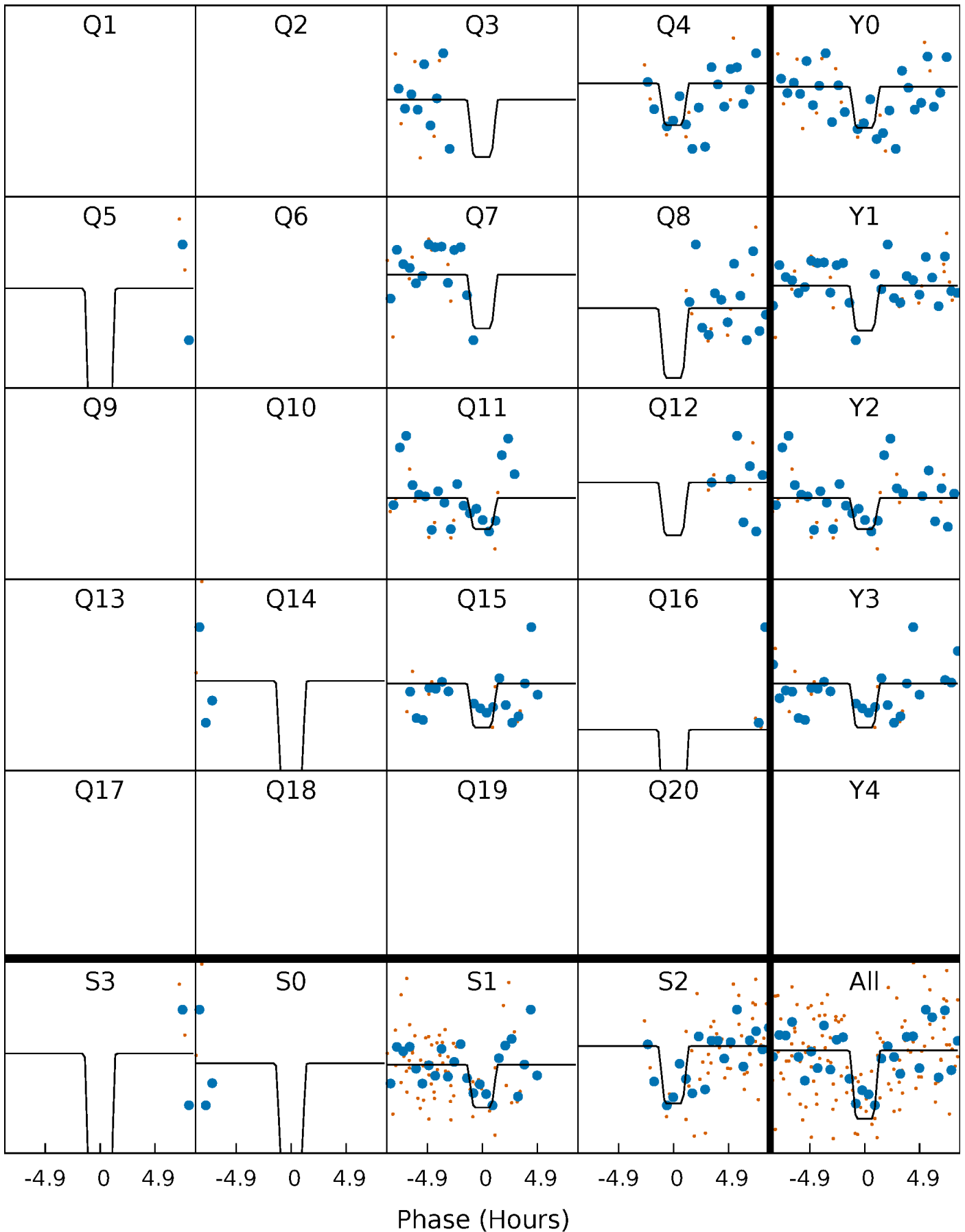
TCE 008848942-03   P= 18.562778 Days    $T_0=132.690471$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

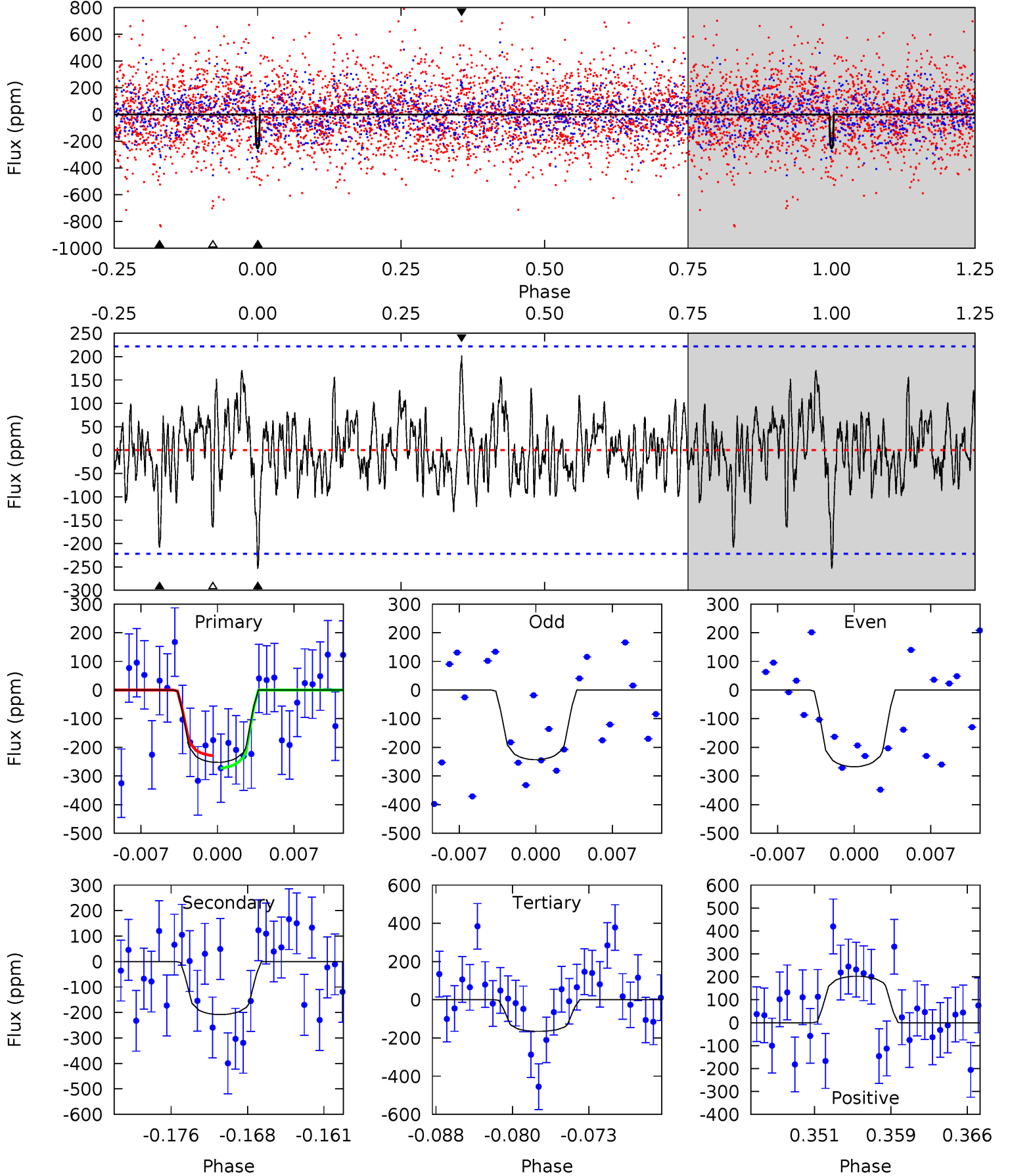
TCE 008848942-03     $P = 18.562859$  Days     $T_0 = 132.693555$  (BKJD)



# DV Model-Shift Uniqueness Test

008848942-03, P = 18.562778 Days, E = 114.127693 Days

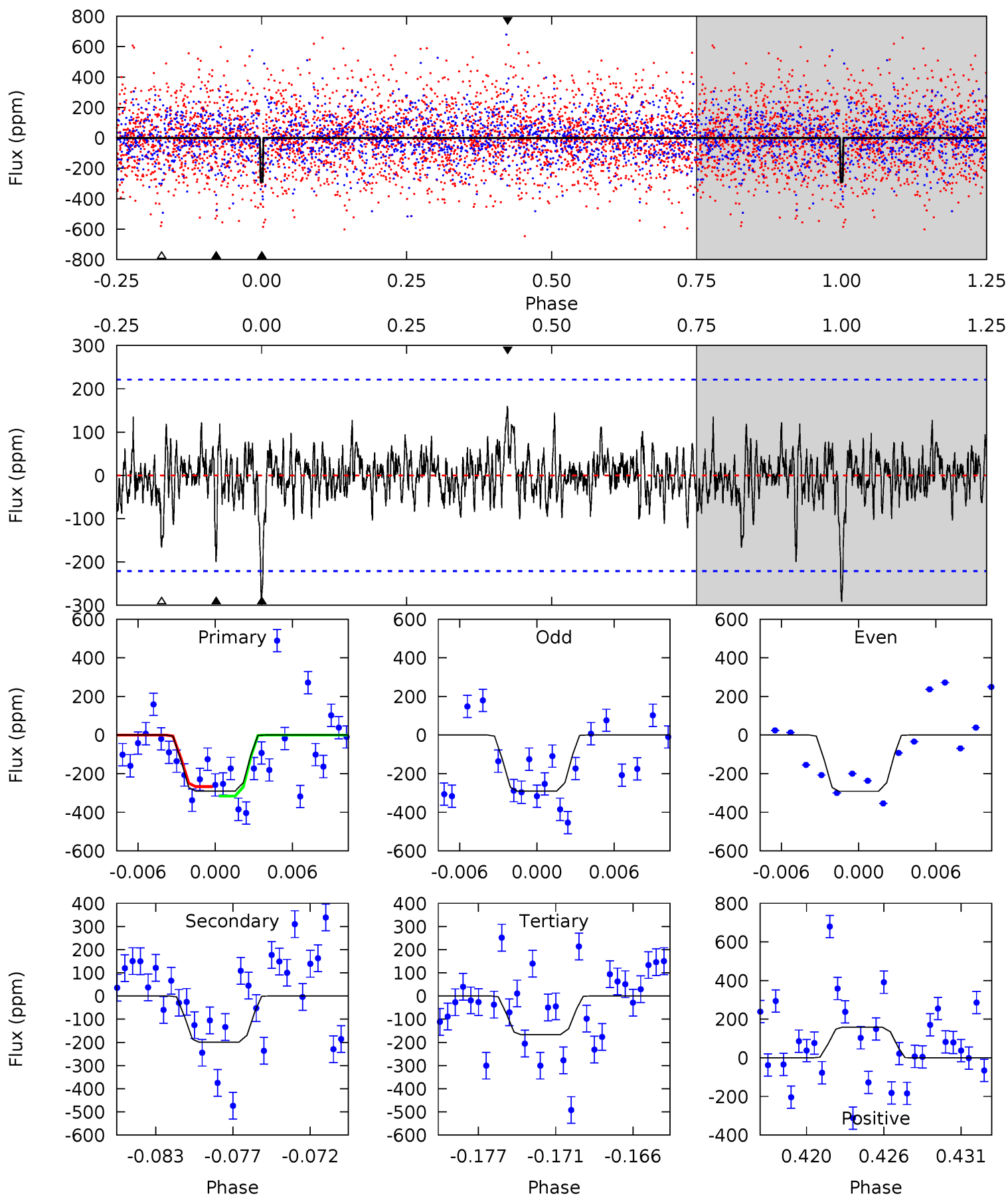
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.79	4.77	3.79	4.64	5.09	2.68	1.27	2.00	1.15	0.99	0.13	0.29	0.92	0.44	0.49



# Alt Model-Shift Uniqueness Test

008848942-03, P = 18.562859 Days, E = 114.130696 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
6.75	4.64	3.87	3.69	5.14	2.77	1.00	2.88	3.06	0.77	0.95	0.01	1.14	0.35	0.56



### Stellar Parameters For KIC 008848942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8050^{+224}_{-337}$	$3.996^{+0.198}_{-0.132}$	$-0.120^{+0.200}_{-0.300}$	$2.254^{+0.433}_{-0.596}$	$1.835^{+0.141}_{-0.330}$	$0.226^{+0.285}_{-0.089}$
	+3%/-4%	+5%/-3%	+167%/-250%	+19%/-26%	+8%/-18%	+126%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008848942-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-208 \pm 44$	$5.69^{+4.68}_{-3.61}$	$1793^{+123}_{-127}$	$5951^{+5468}_{-1413}$	$95^{+656}_{-68}$
Alt.	$-200 \pm 43$	$5.92^{+5.13}_{-3.76}$	$1797^{+116}_{-119}$	$5877^{+4945}_{-1424}$	$87^{+569}_{-64}$

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

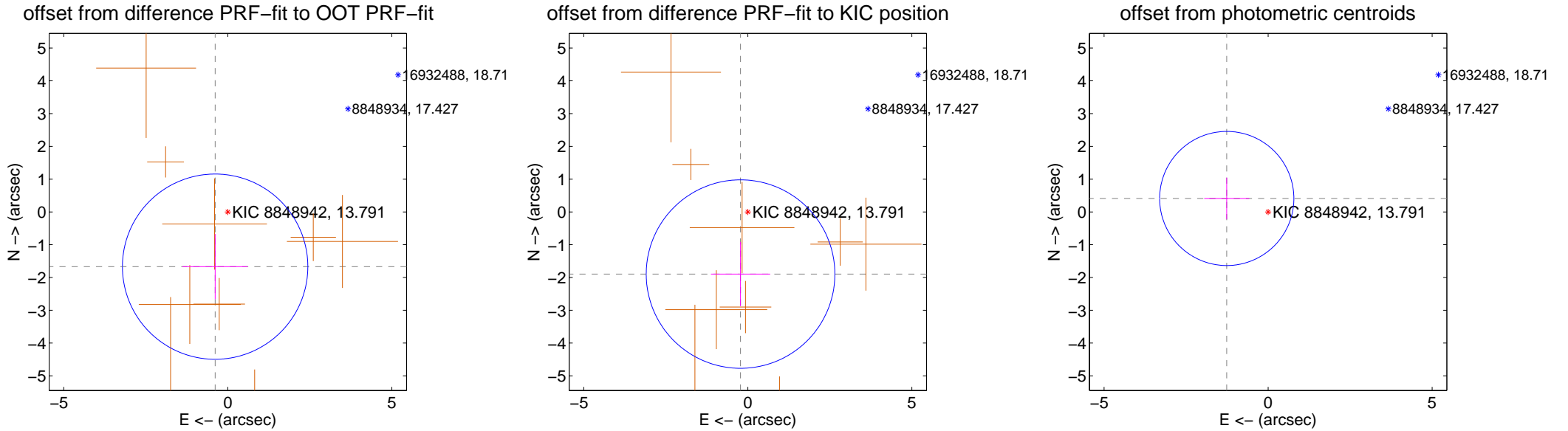
## DV Centroid Data

Supplemental centroid analysis for 008848942-03. Kepler magnitude: 13.79. Transit SNR 11.82

There are 0 quarters with good PRF difference image offsets

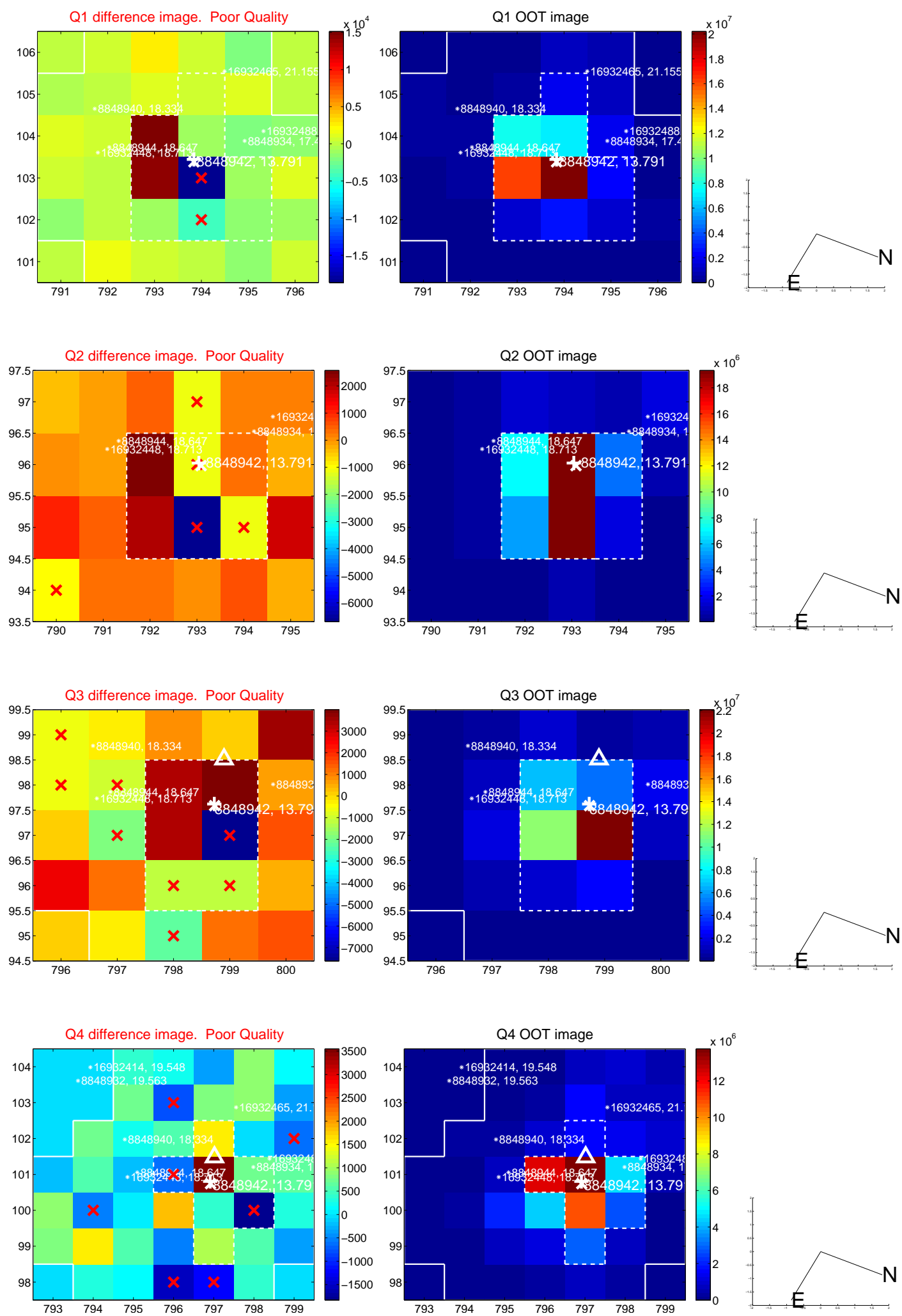
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.713 \pm 0.942$	1.82	$0.387 \pm 0.994$	$-1.669 \pm 0.996$
PRF-fit source offset from KIC position	$1.908 \pm 0.958$	1.99	$0.222 \pm 0.904$	$-1.895 \pm 0.980$
photometric centroid source offset	$1.33 \pm 0.68$	1.94	$1.26 \pm 0.69$	$0.41 \pm 0.64$



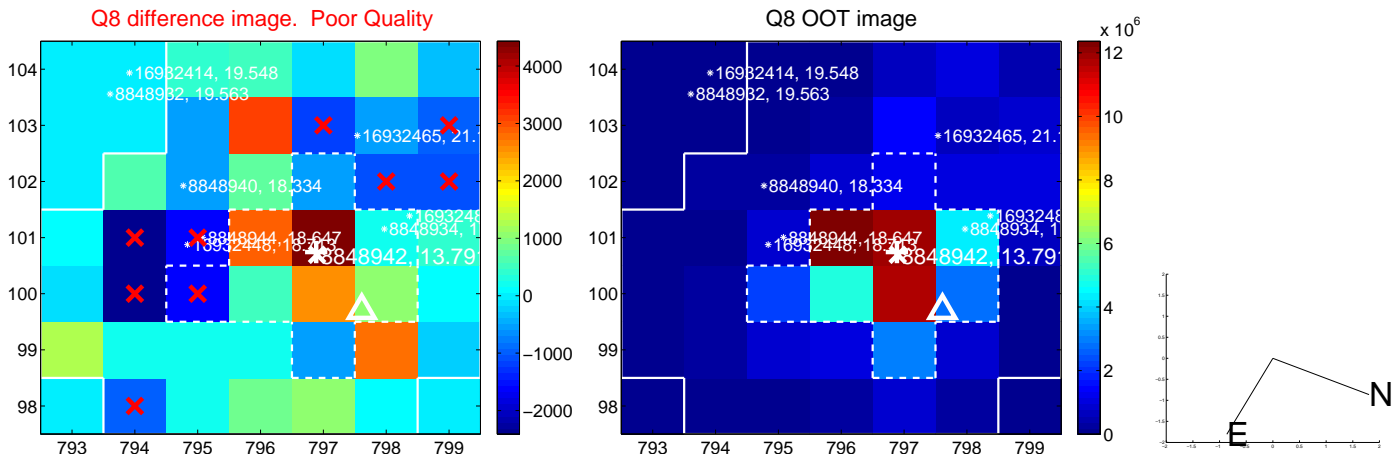
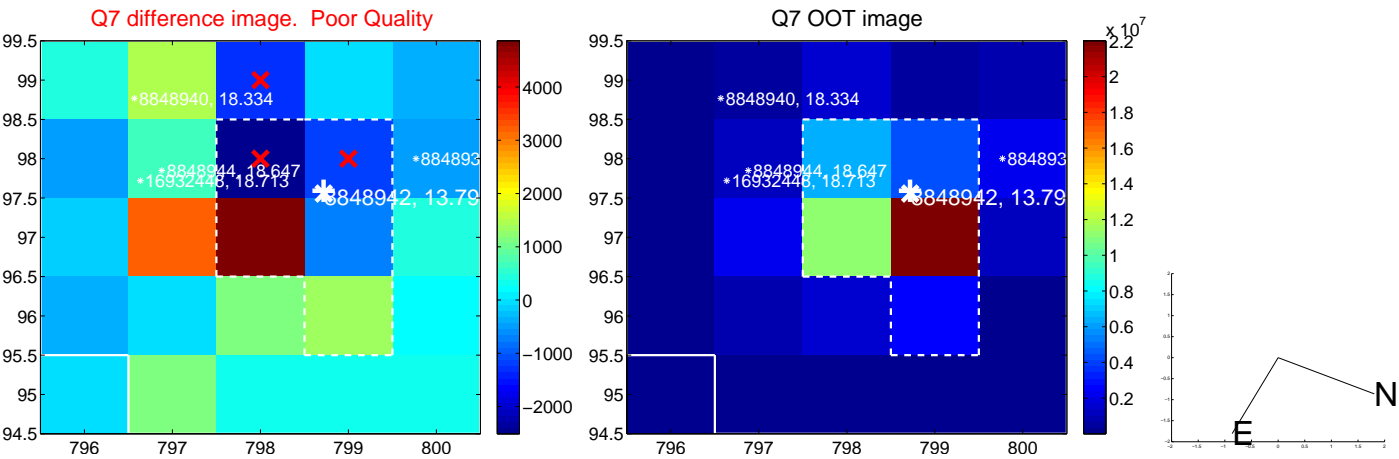
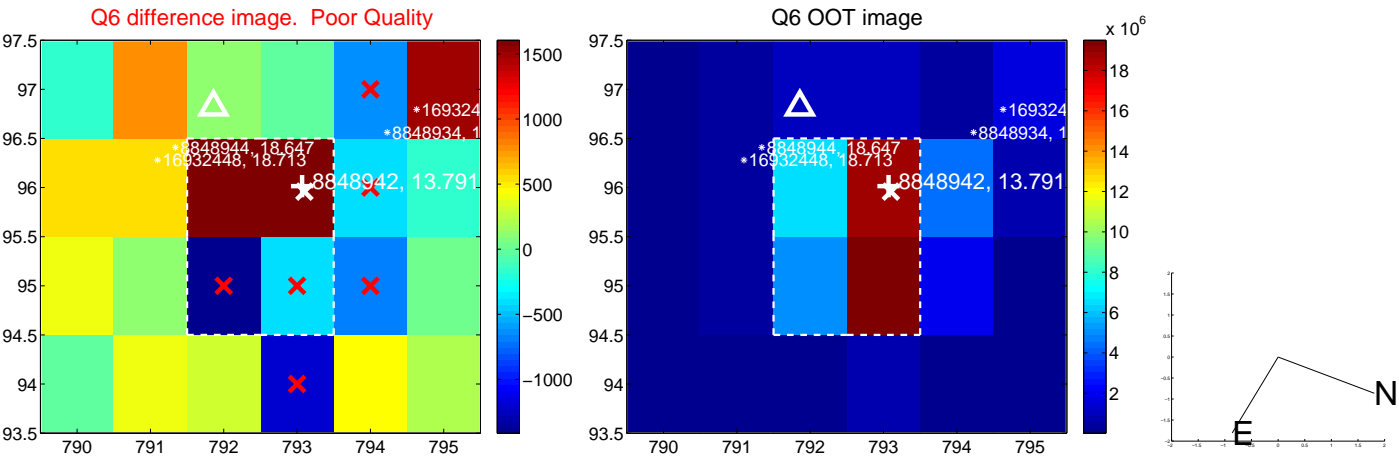
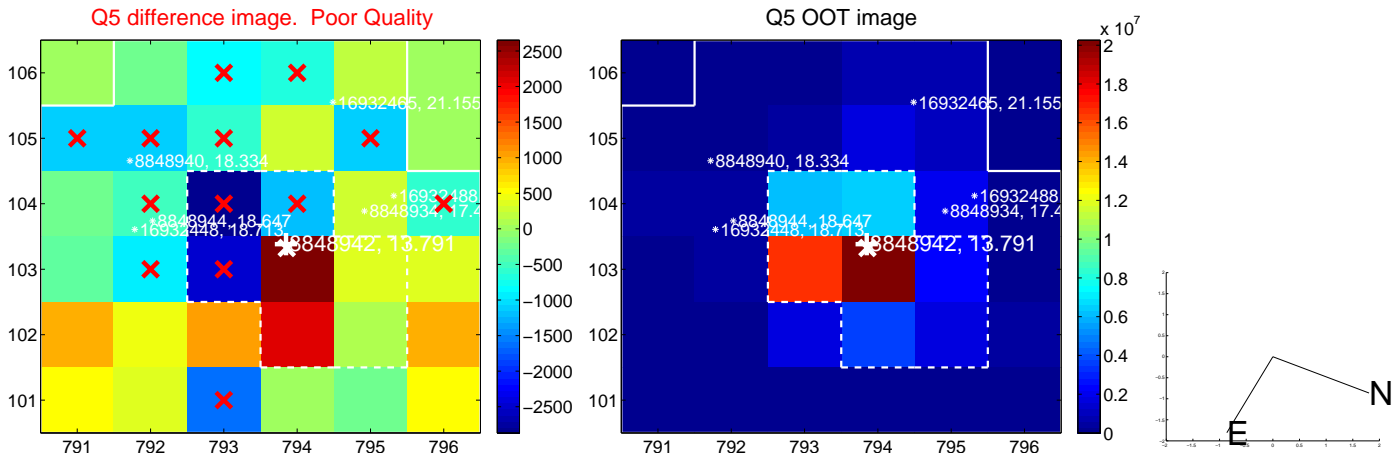
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

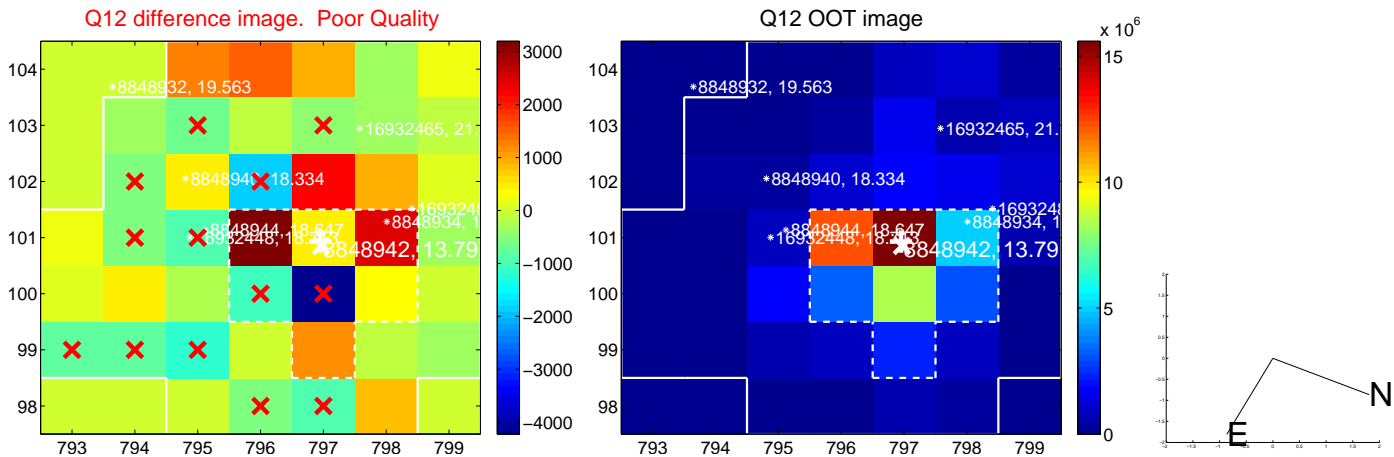
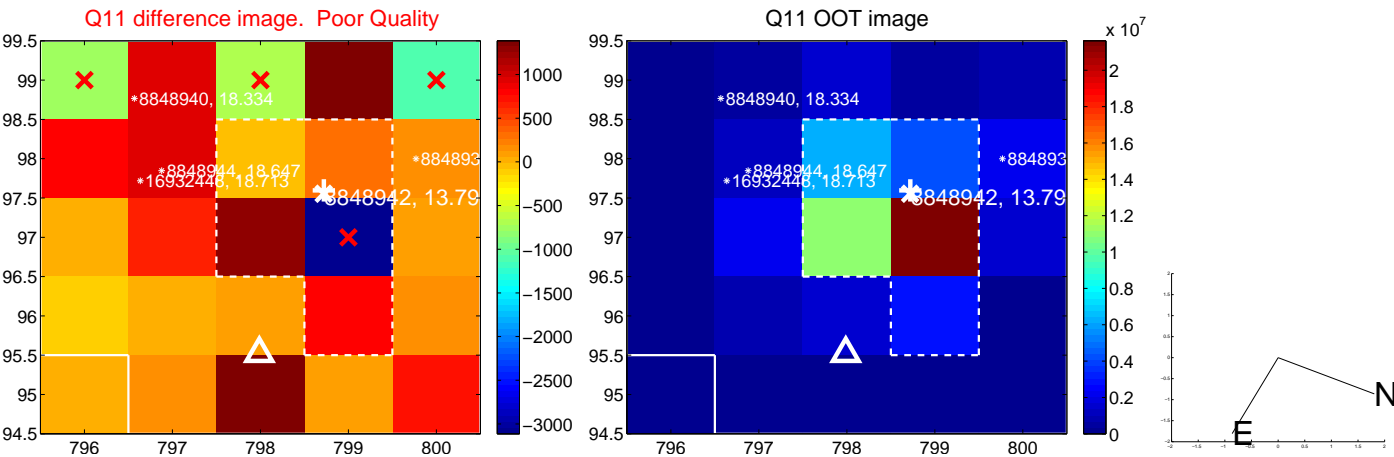
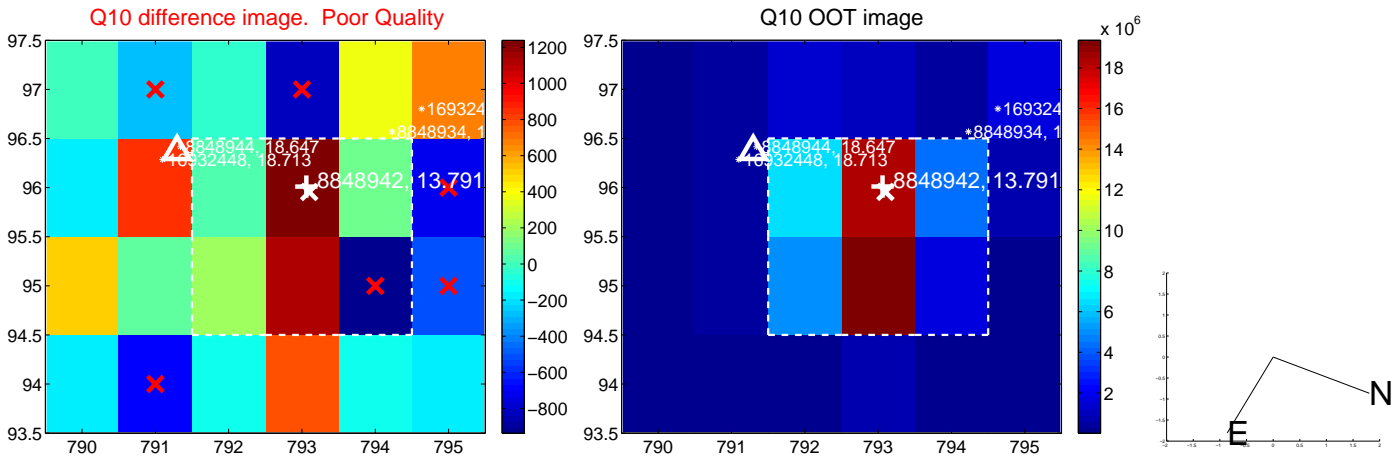
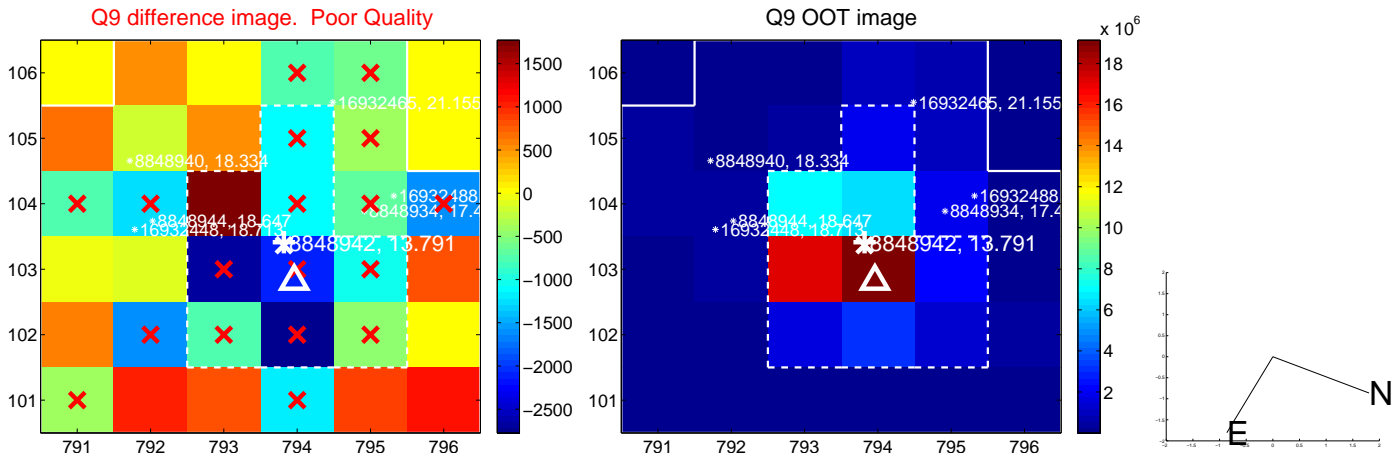




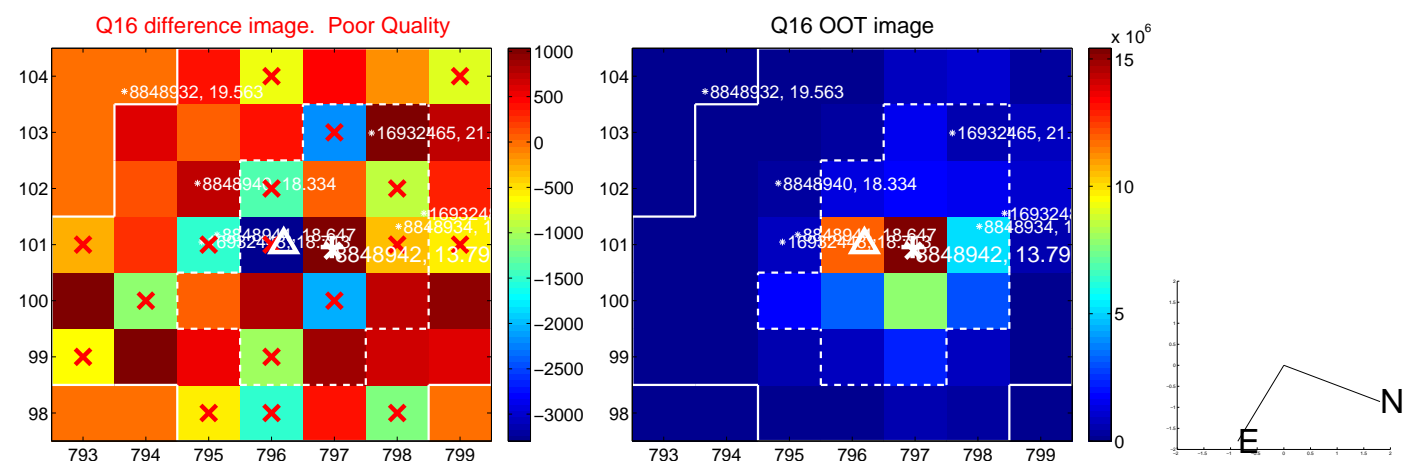
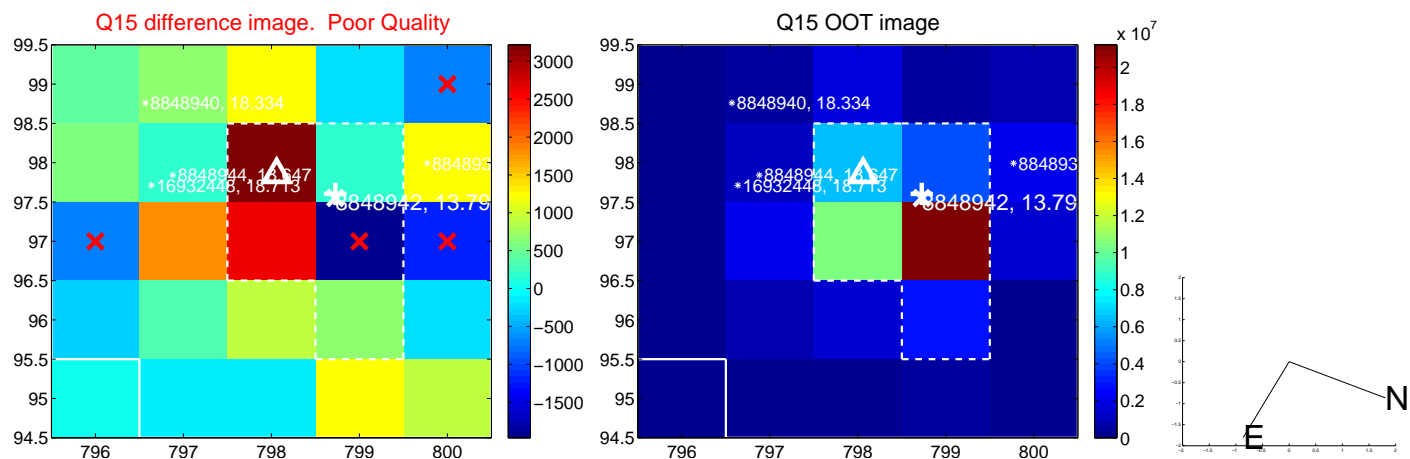
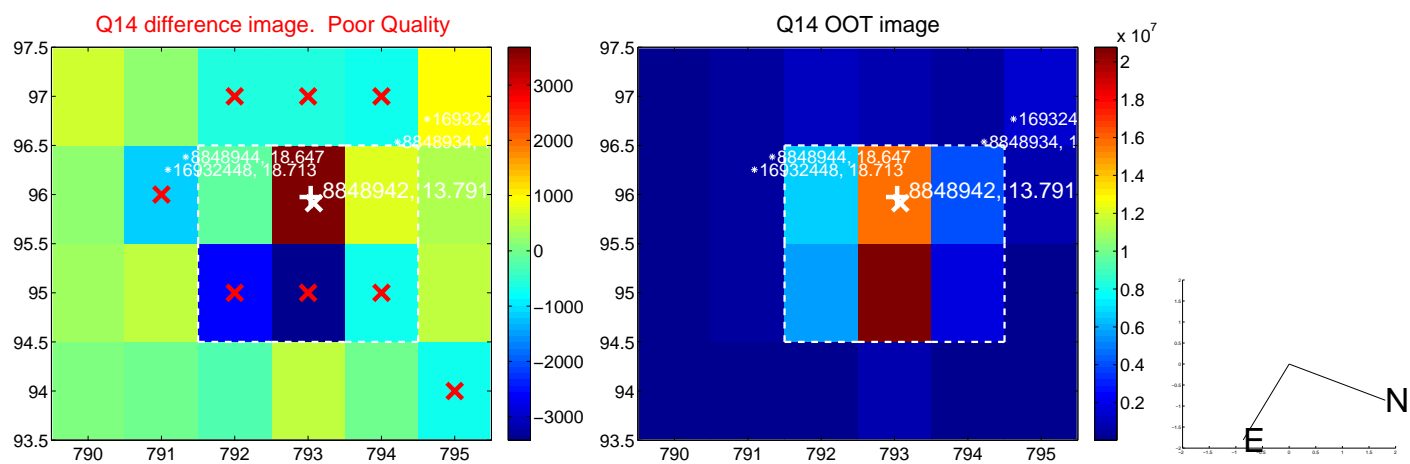
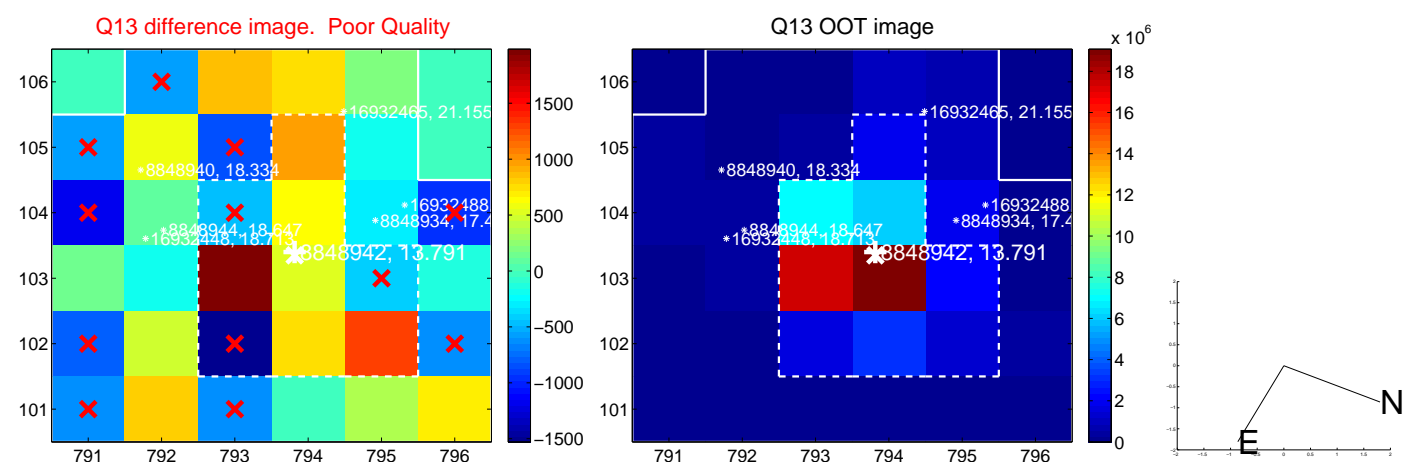
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



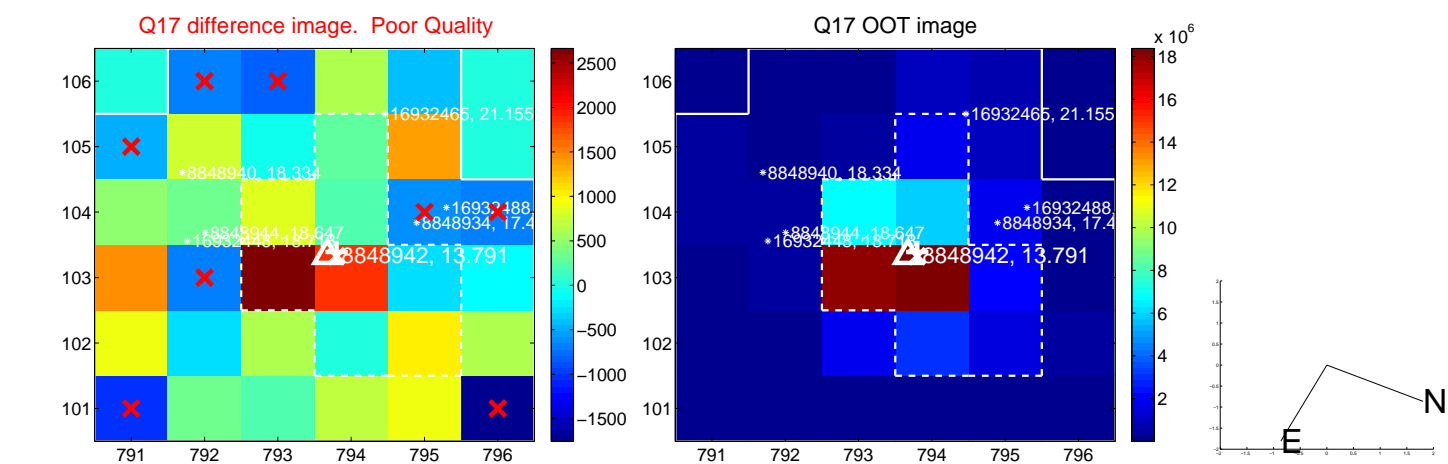
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



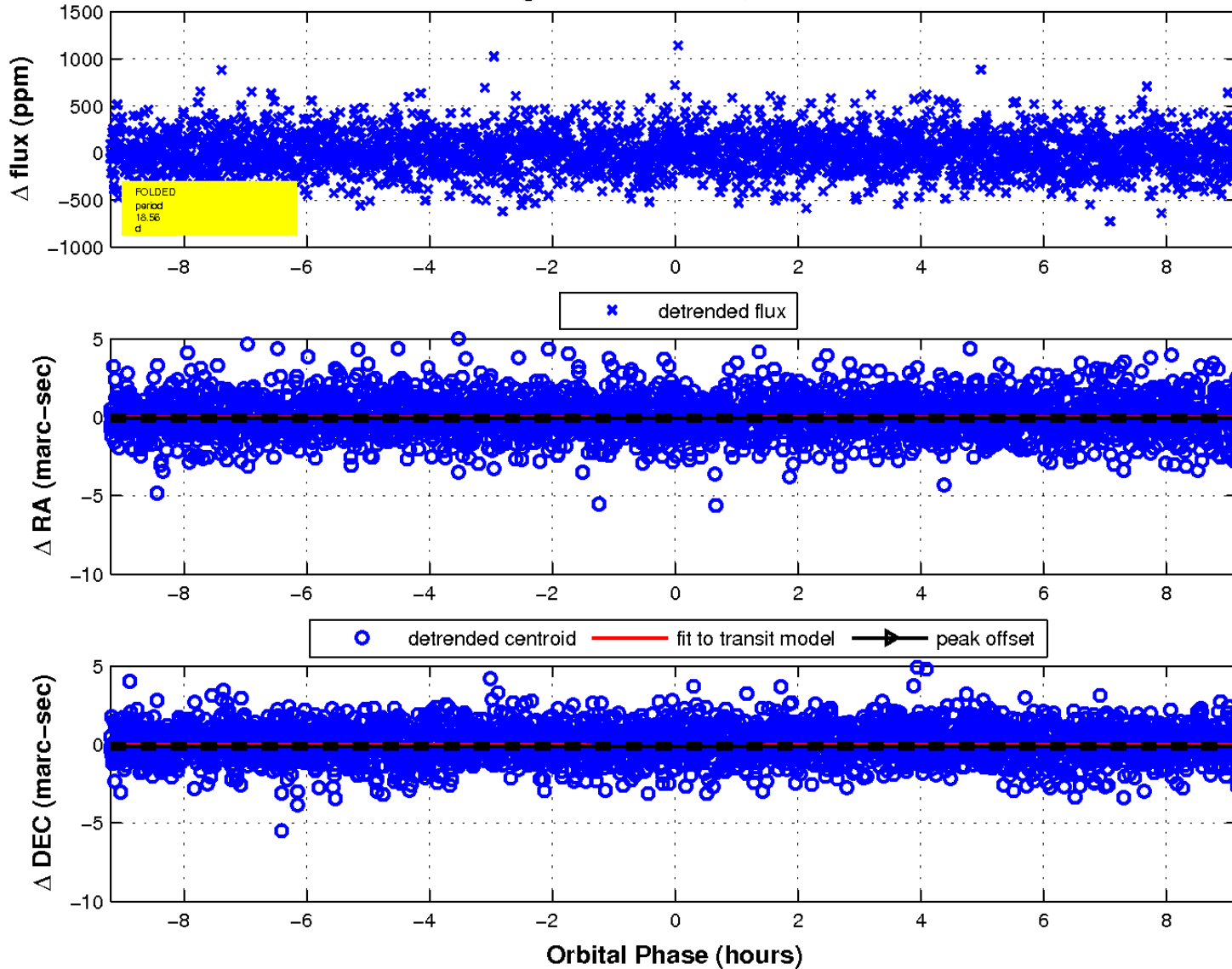
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

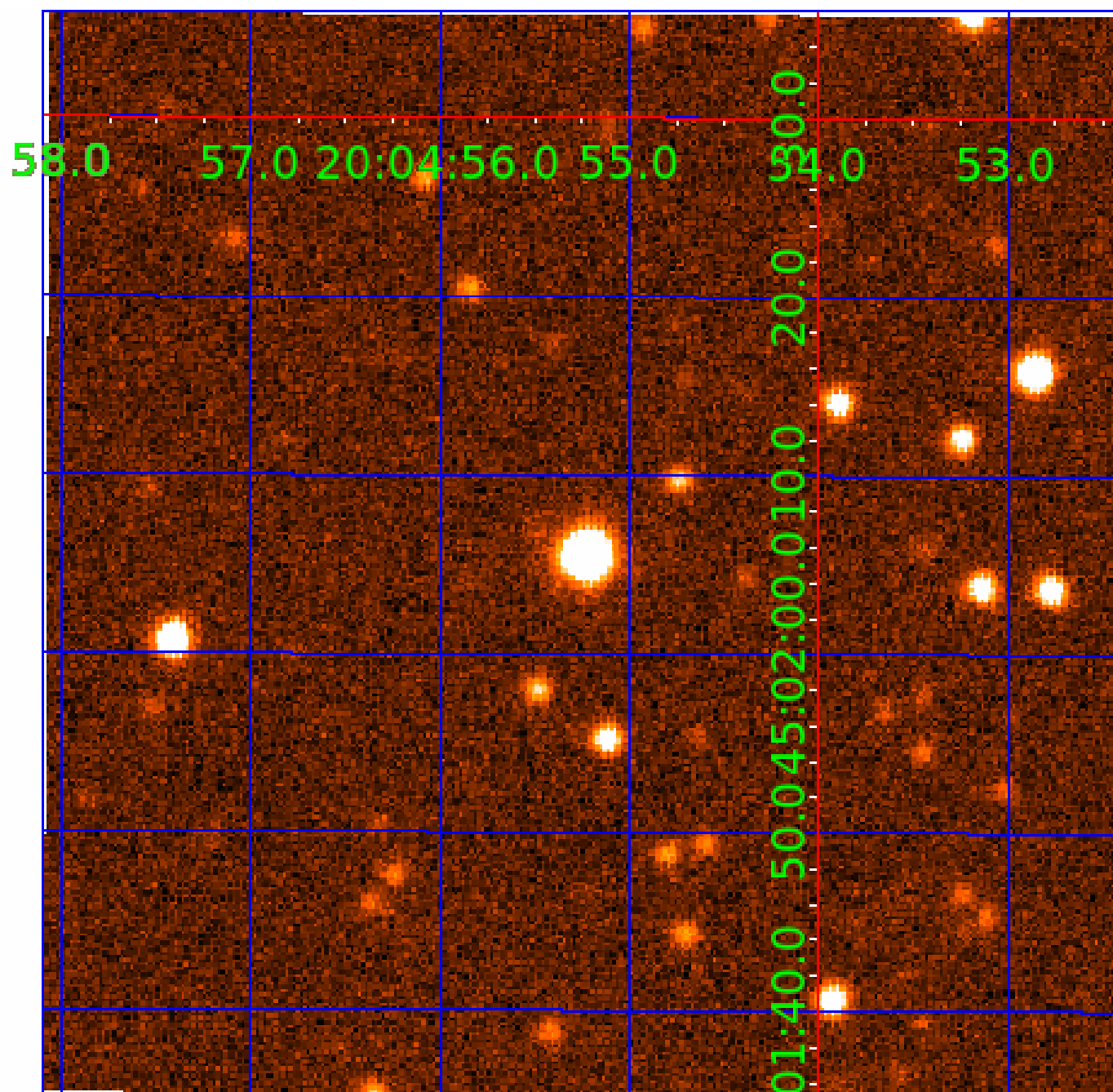


fluxWeightedCentroids, Planet 3 of 4



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# KIC 008848942

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008848942-01	OBS	No	1.553707	132.422527	18.4	11.525	7.8	9.3	2.25	8050	0.98	18487.94
008848942-02	OBS	No	26.185331	148.076282	326.6	1.766	12.9	12.3	2.25	8050	4.13	427.86
008848942-03	OBS	No	18.562778	132.690471	260.8	3.067	10.7	11.8	2.25	8050	4.07	676.90
008848942-04	OBS	No	47.841326	150.570099	206.7	3.605	9.4	8.0	2.25	8050	3.67	191.56

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008848942-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS
008848942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
008848942-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008848942-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

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

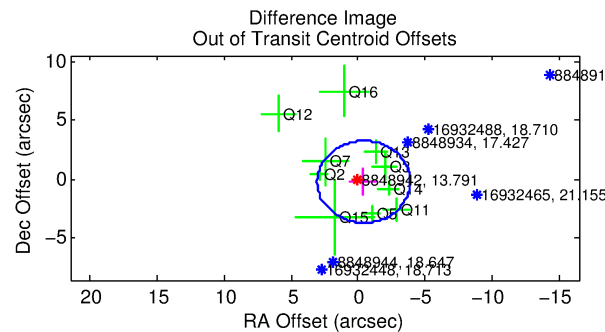
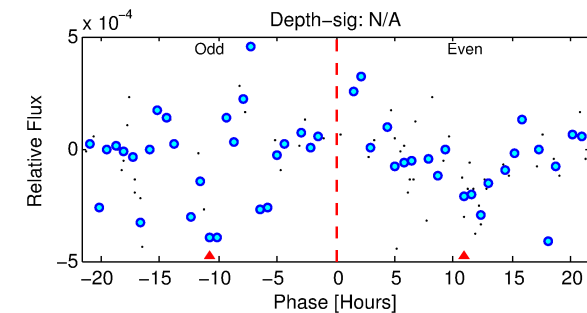
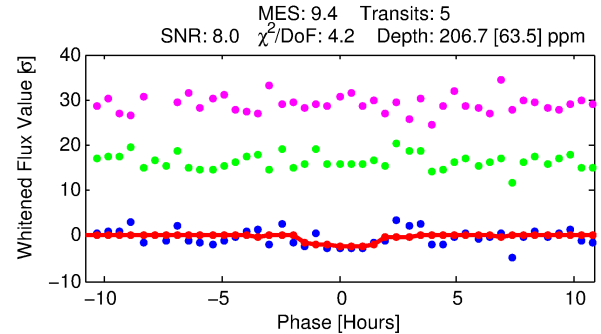
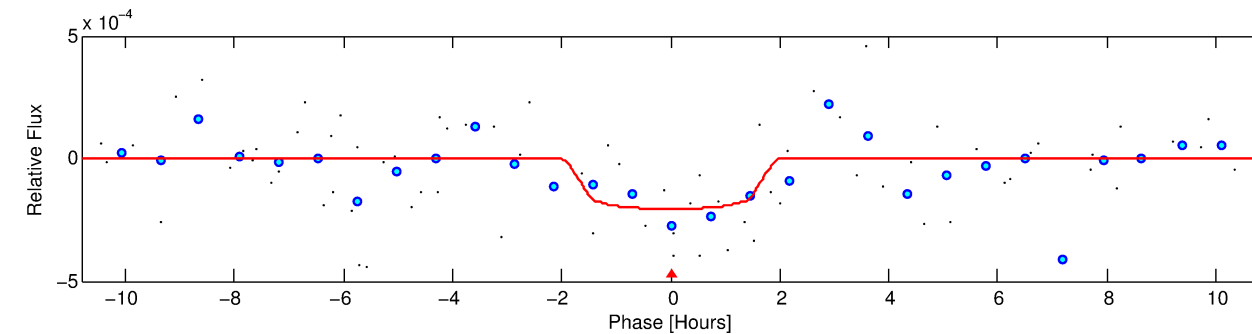
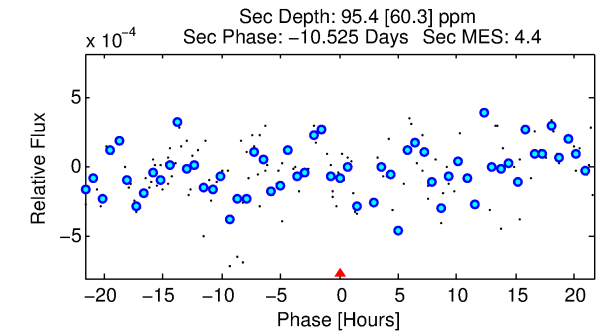
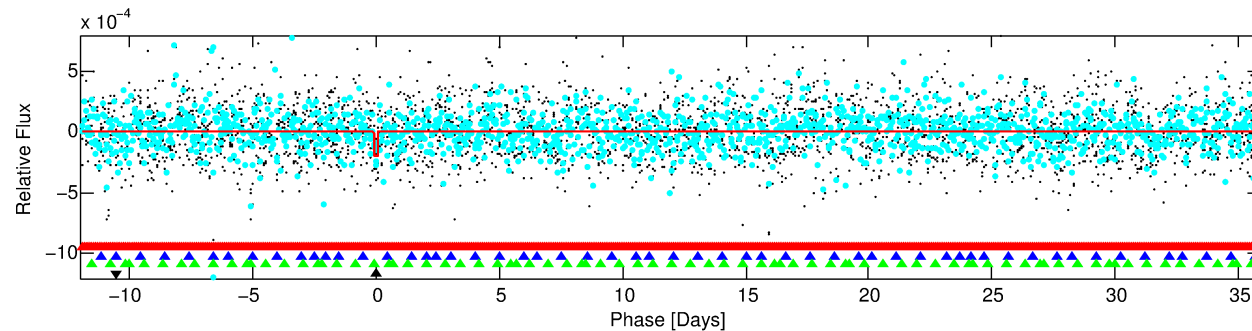
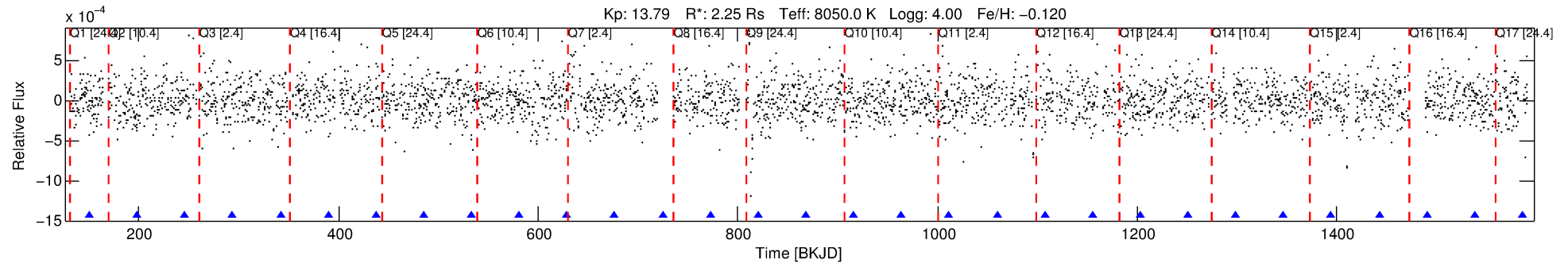
Ephemeris Match Information For 008848942-04

No Significant Match Found



# DV One-Page Summary

KIC: 8848942 Candidate: 4 of 4 Period: 47.841 d



## DV Fit Results:

Period = 47.84133 [0.00148] d  
Epoch = 150.5701 [0.0230] BKJD  
Rp/R\* = 0.0149 [0.0365]  
a/R\* = 55.43 [825.59]  
b = 0.86 [4.72]  
Seff = 191.56 [74.56]  
Teq = 949 [92] K  
Rp = 3.66 [9.04] Re  
a = 0.3159 [0.0735] AU  
Ag = 390.00 [1932.77] [0.20] $\sigma$   
Teffp = 6518 [8060] K [0.69] $\sigma$

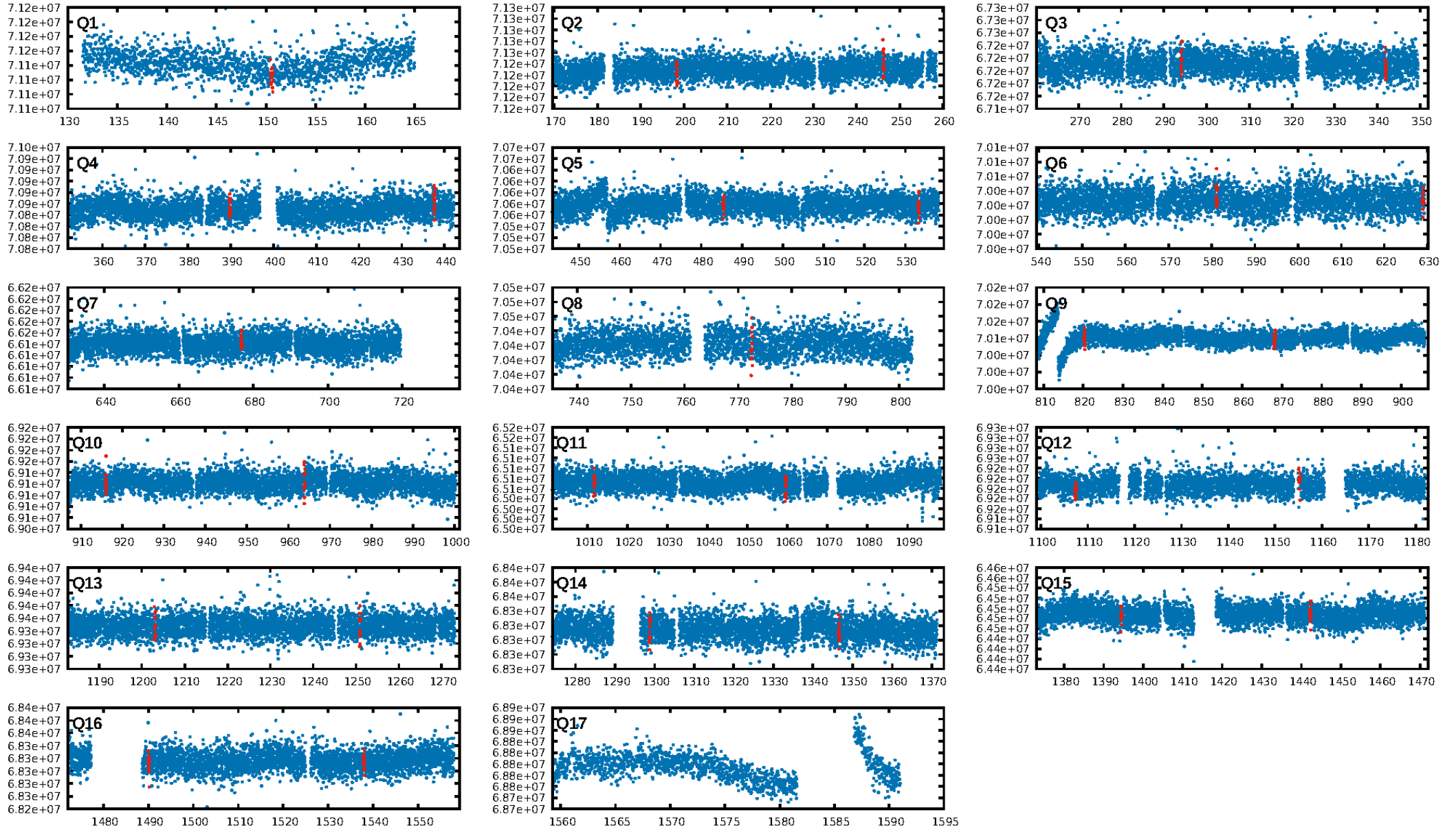
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [129.49] $\sigma$   
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 67.6%  
Bootstrap-pfa: 1.43e-14  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -1.725  
Centroid-sig: 0.1%  
Centroid-so: 2.511 arcsec [2.12] $\sigma$   
OotOffset-rm: 0.452 arcsec [0.39] $\sigma$   
KicOffset-rm: 0.734 arcsec [0.63] $\sigma$   
OotOffset-st: 2/4/2/2 [10]  
KicOffset-st: 2/4/2/2 [10]  
DiffImageQuality-fgm: 0.50 [5/10]  
DiffImageOverlap-fno: 0.44 [7/16]

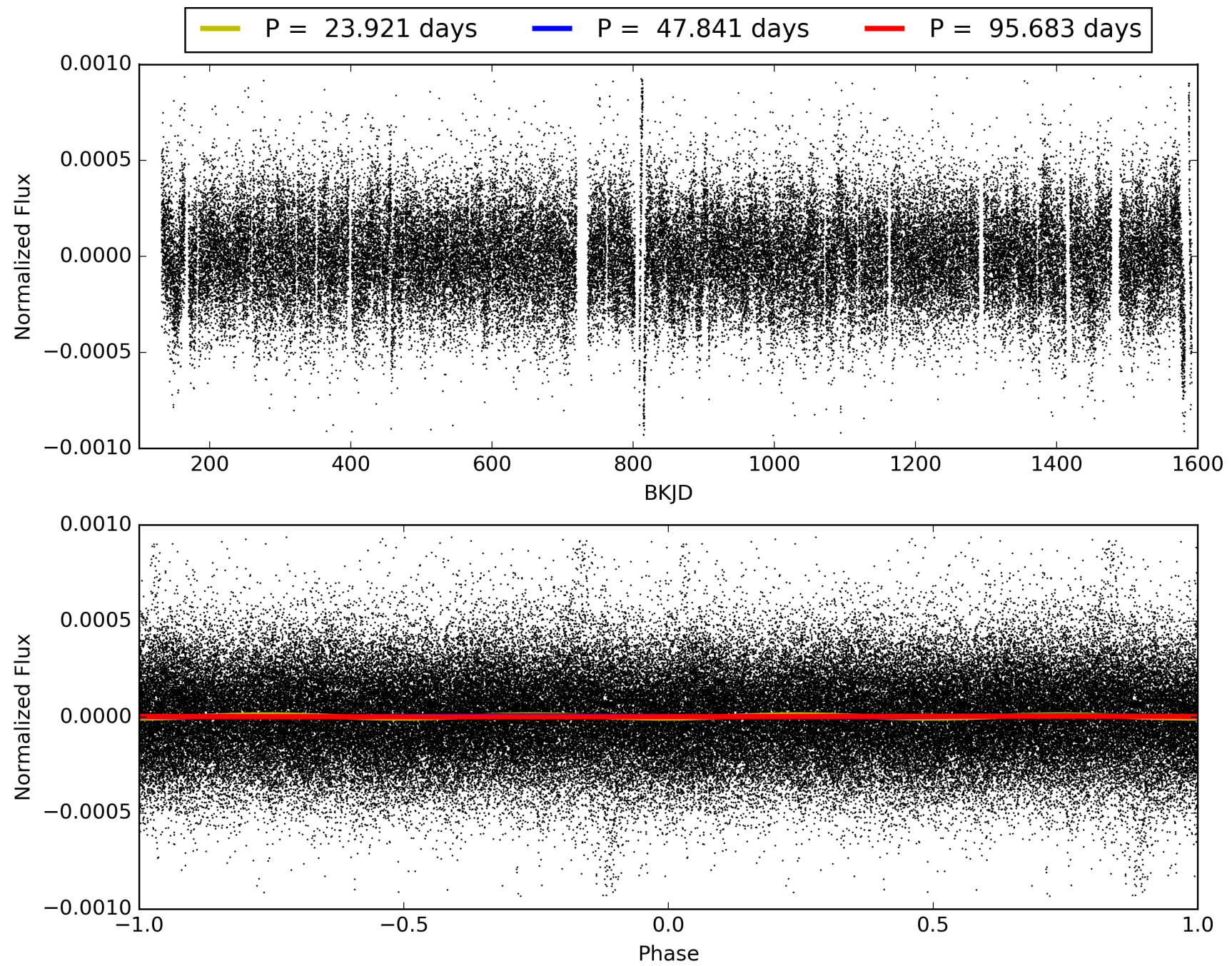
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:59:17 Z

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

# TCE 008848942-04, PDC Light Curves

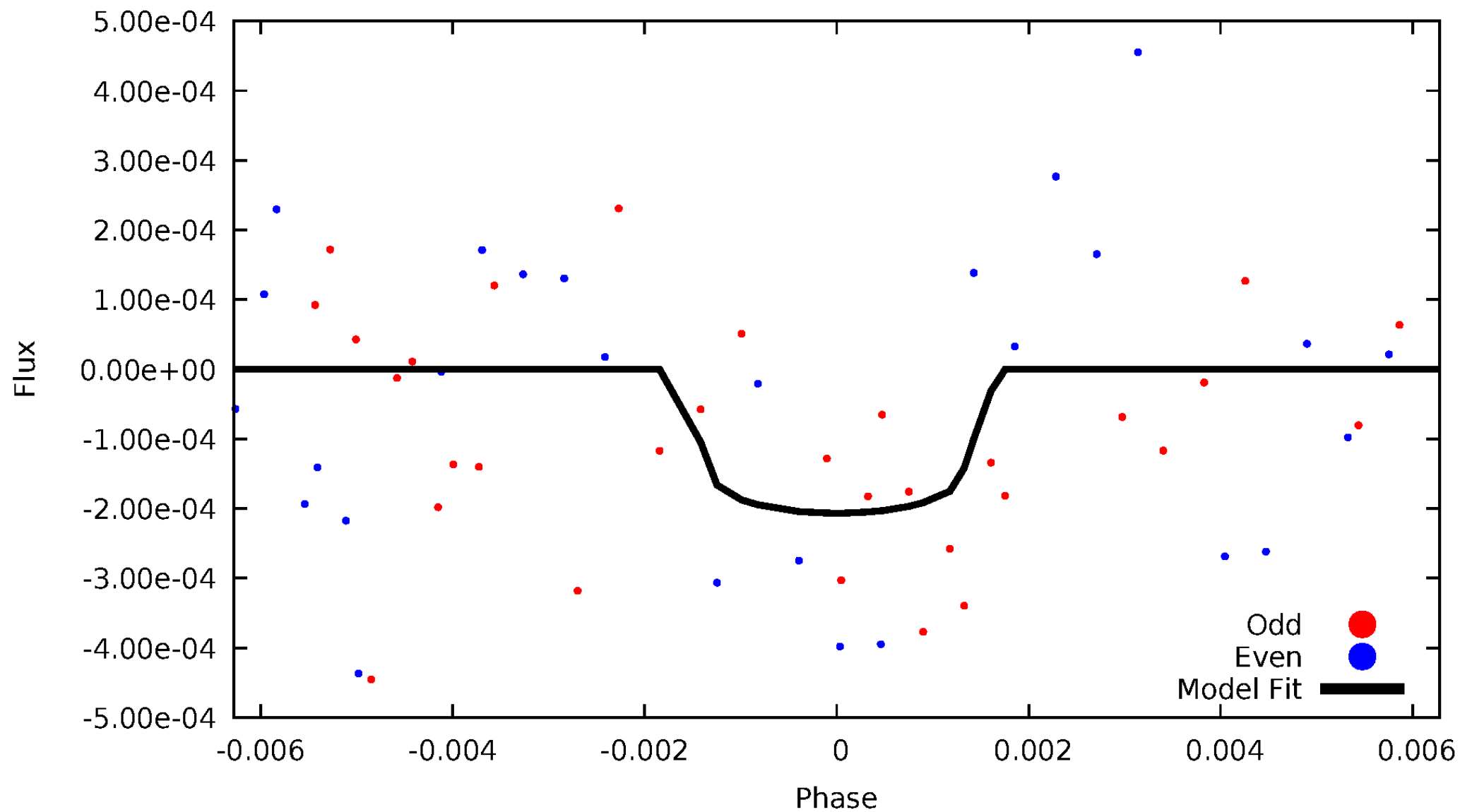


TCE 008848942-04



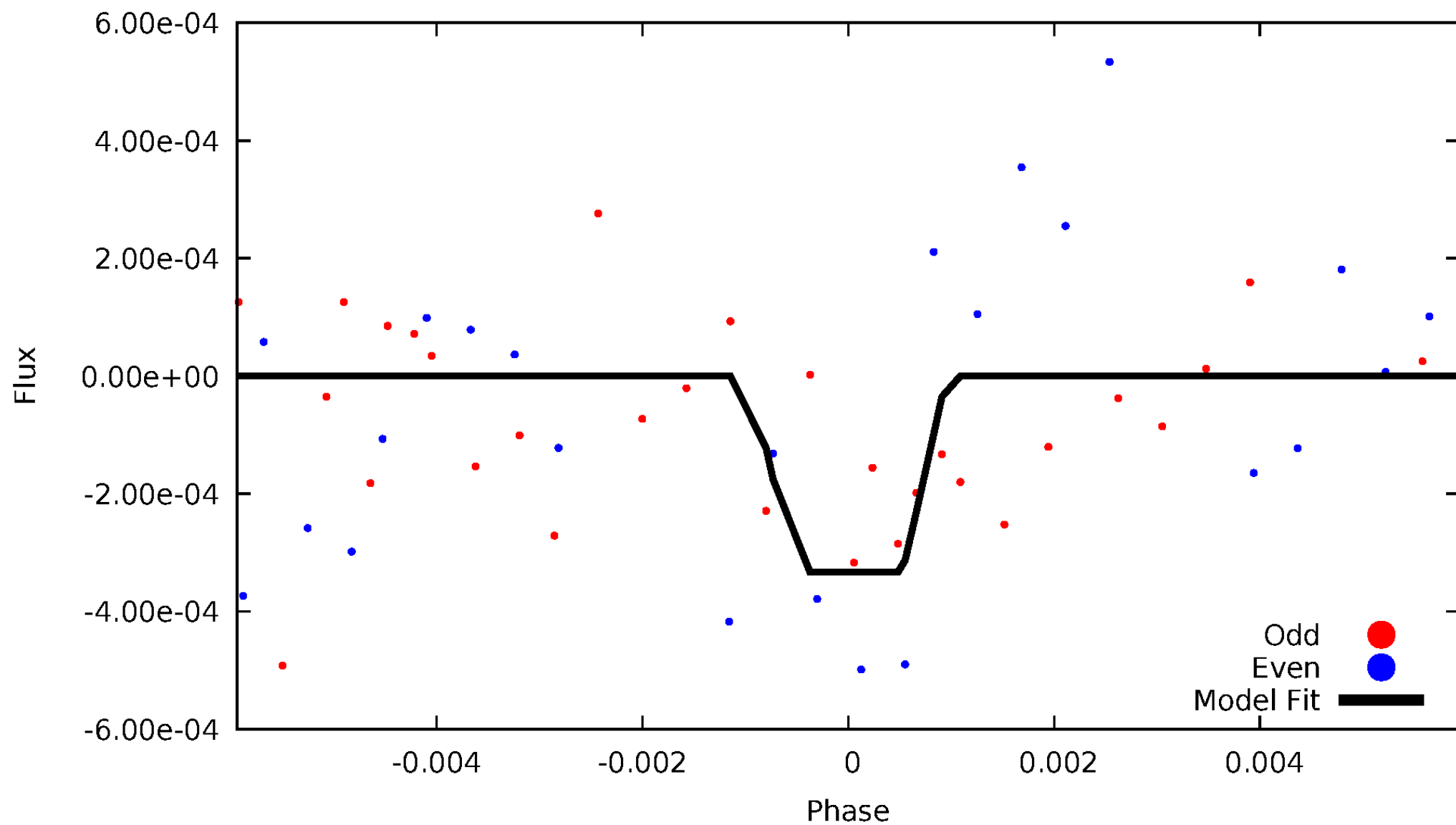
# DV Odd/Even

TCE 008848942-04



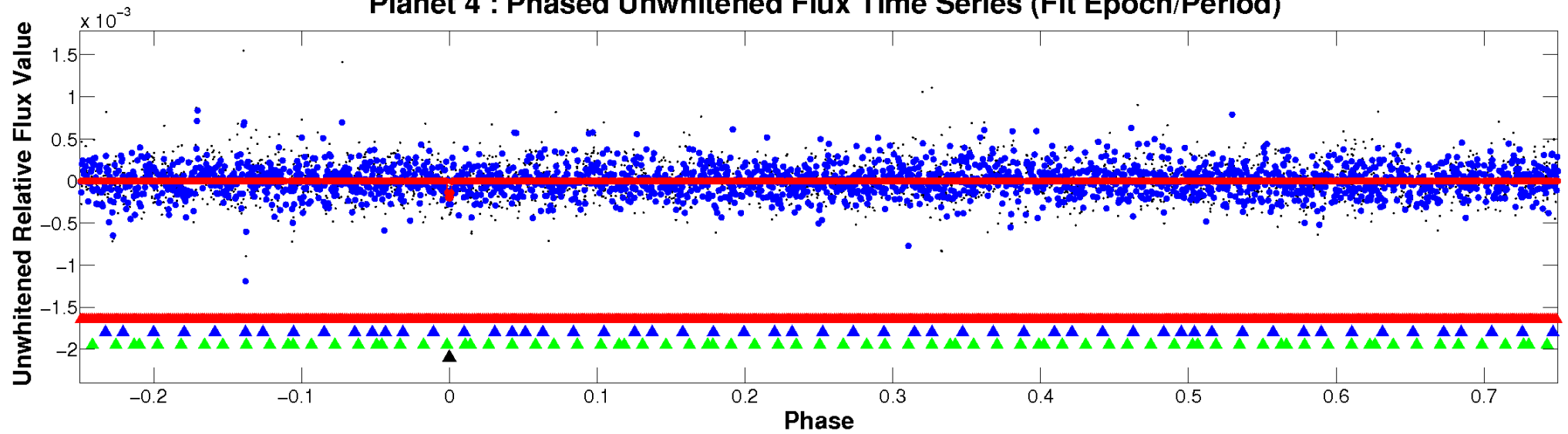
# ALT Odd/Even

TCE 008848942-04

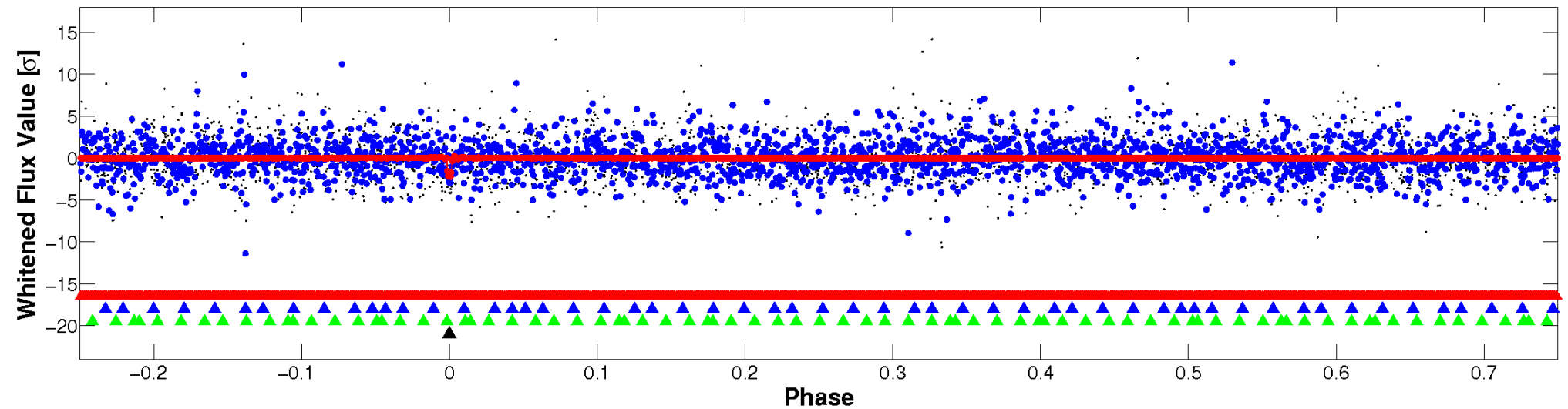


# Non-Whitened Vs. Whitened Light Curve

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



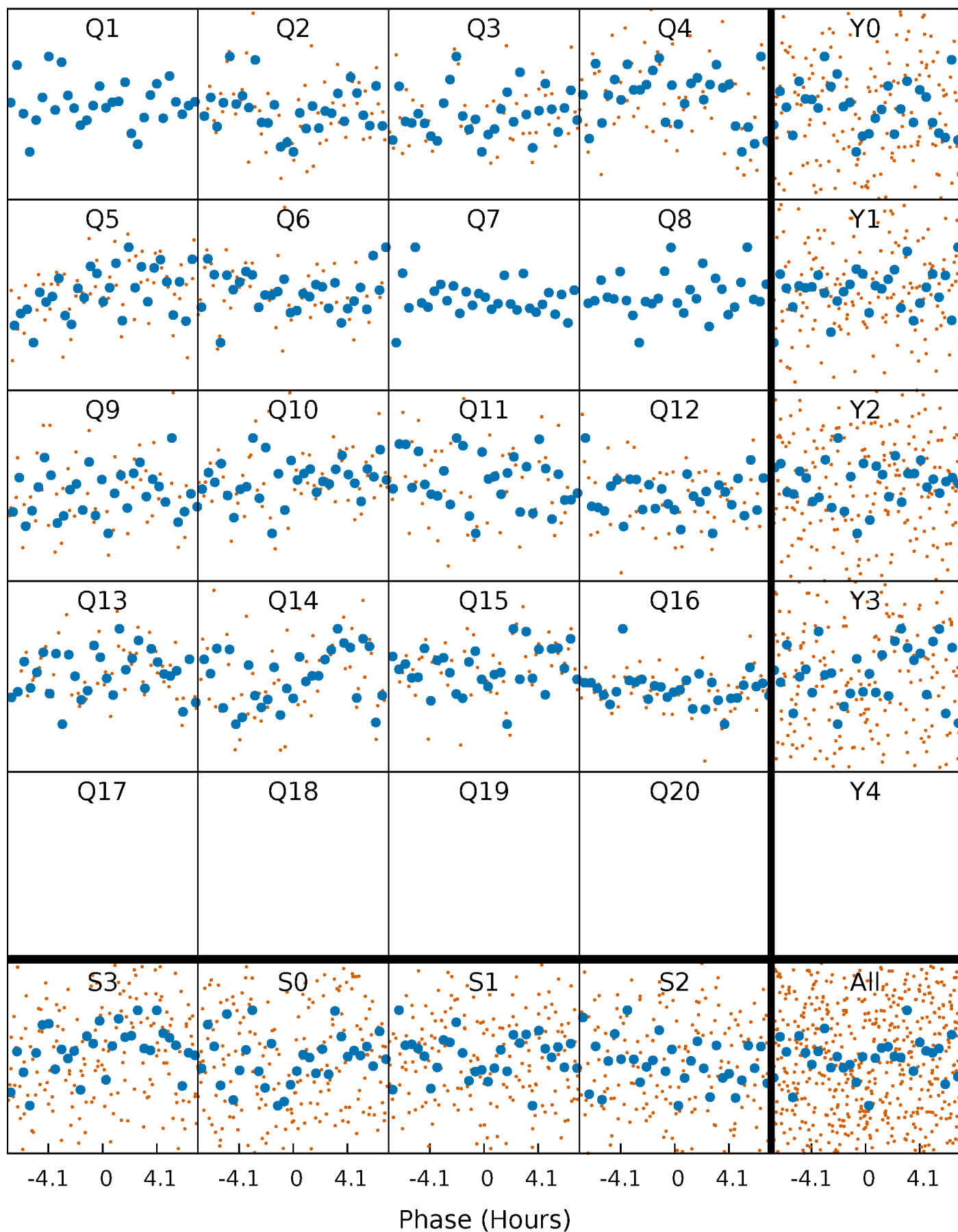
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

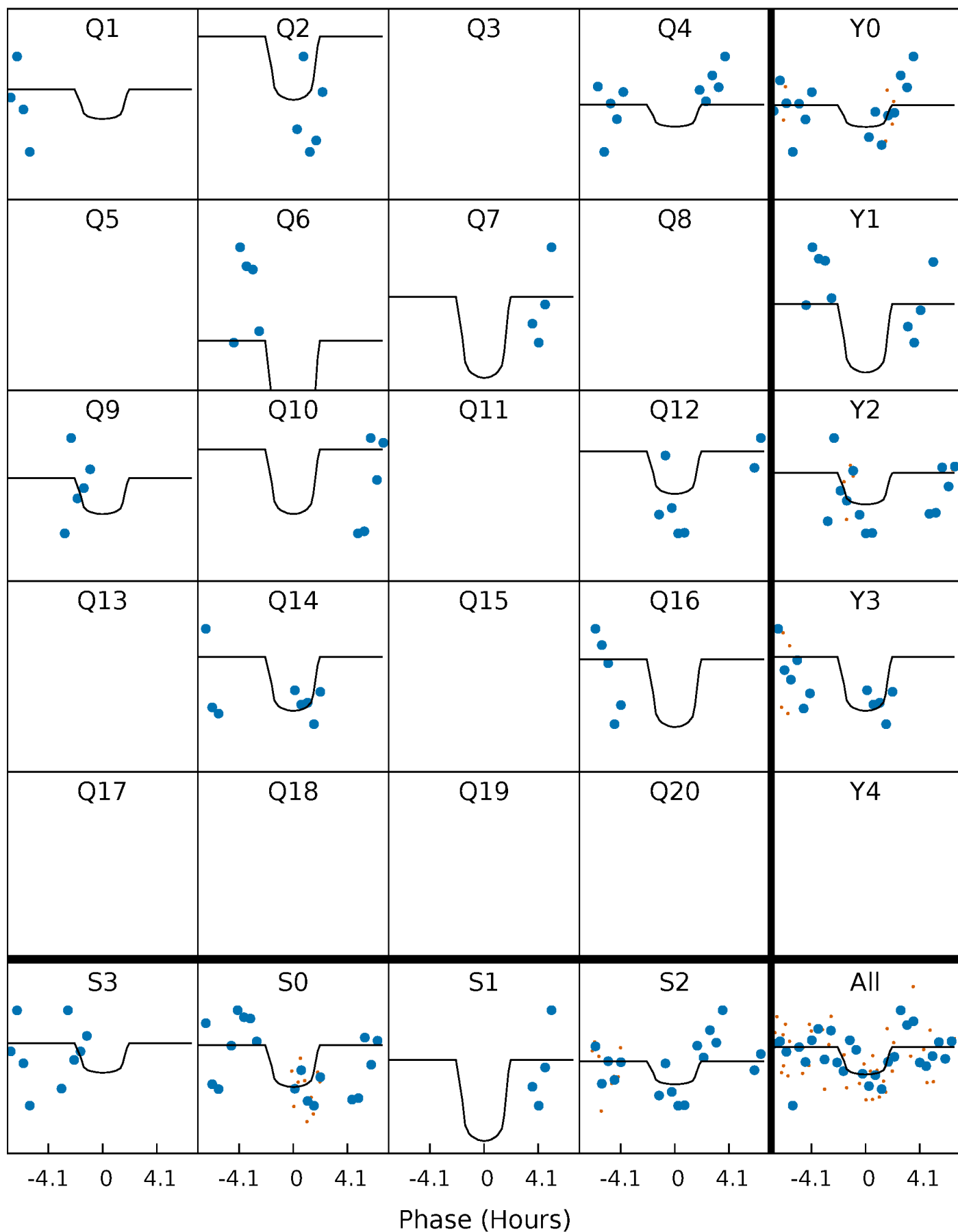
TCE 008848942-04     $P = 47.841326$  Days     $T_0 = 150.570099$  (BKJD)





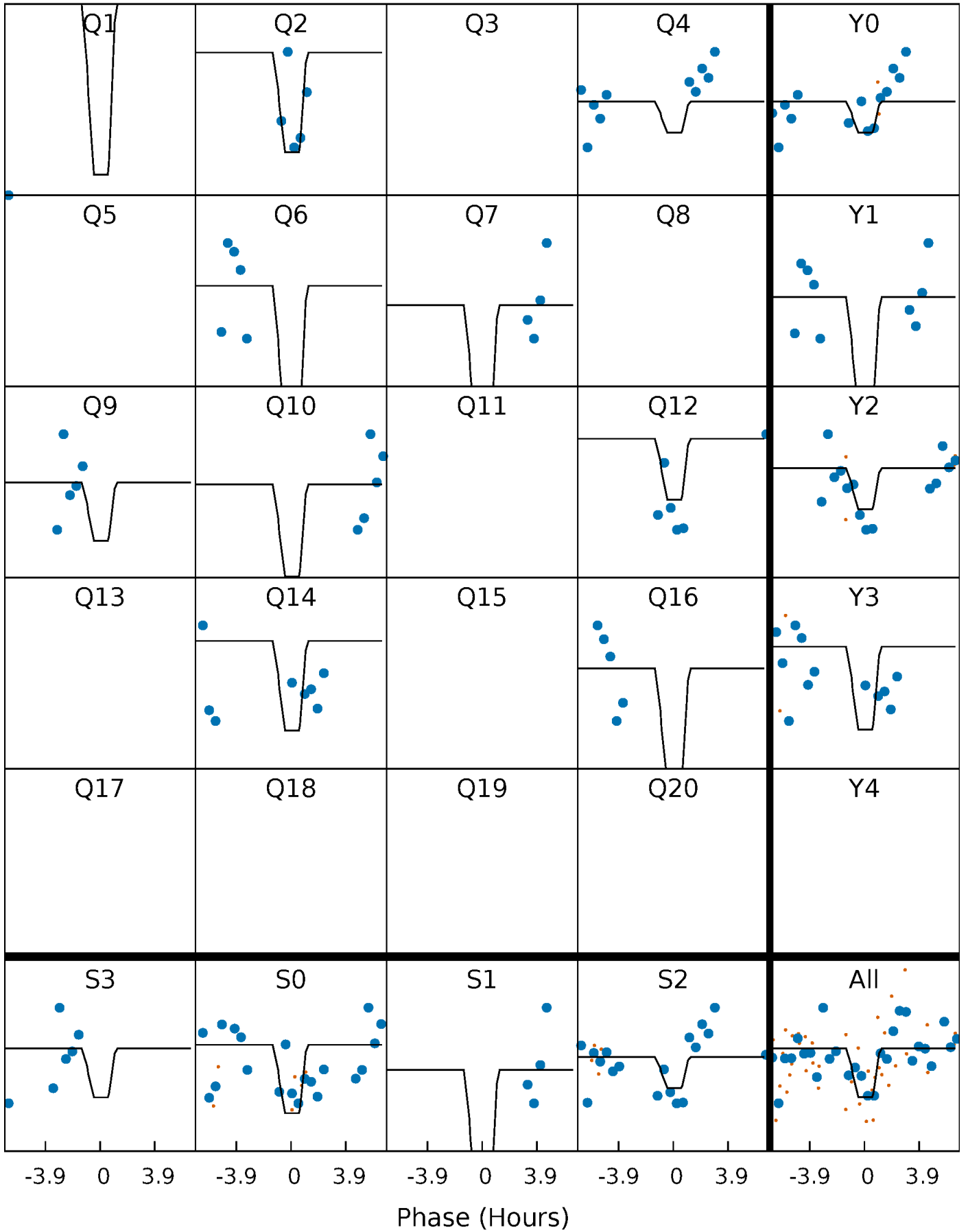
# DV Quarter-Phased Transit Curves

TCE 008848942-04   P= 47.841326 Days    $T_0=150.570099$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

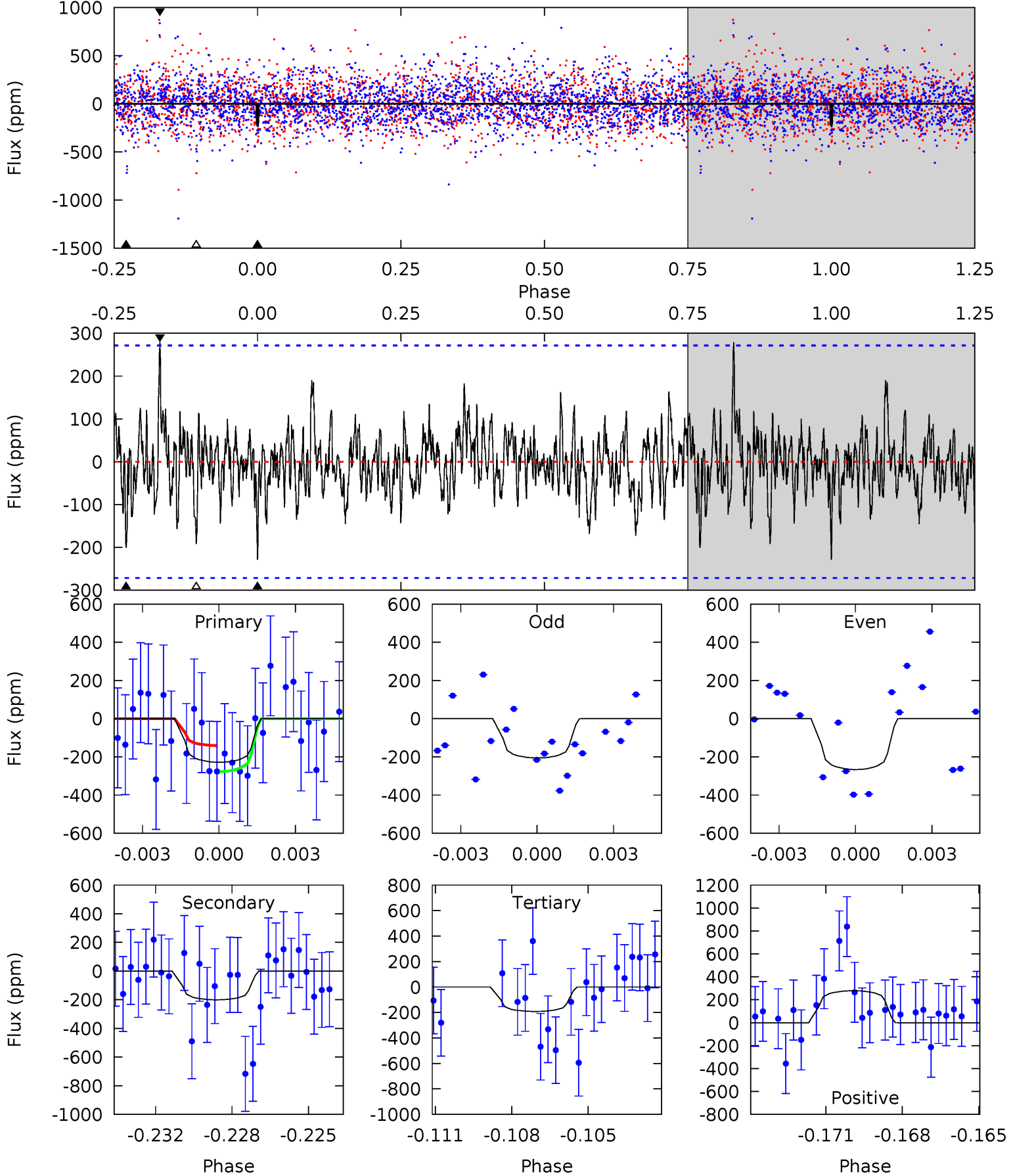
TCE 008848942-04 P= 47.838970 Days  $T_0=150.612913$  (BKJD)



# DV Model-Shift Uniqueness Test

008848942-04,  $P = 47.841326$  Days,  $E = 102.728773$  Days

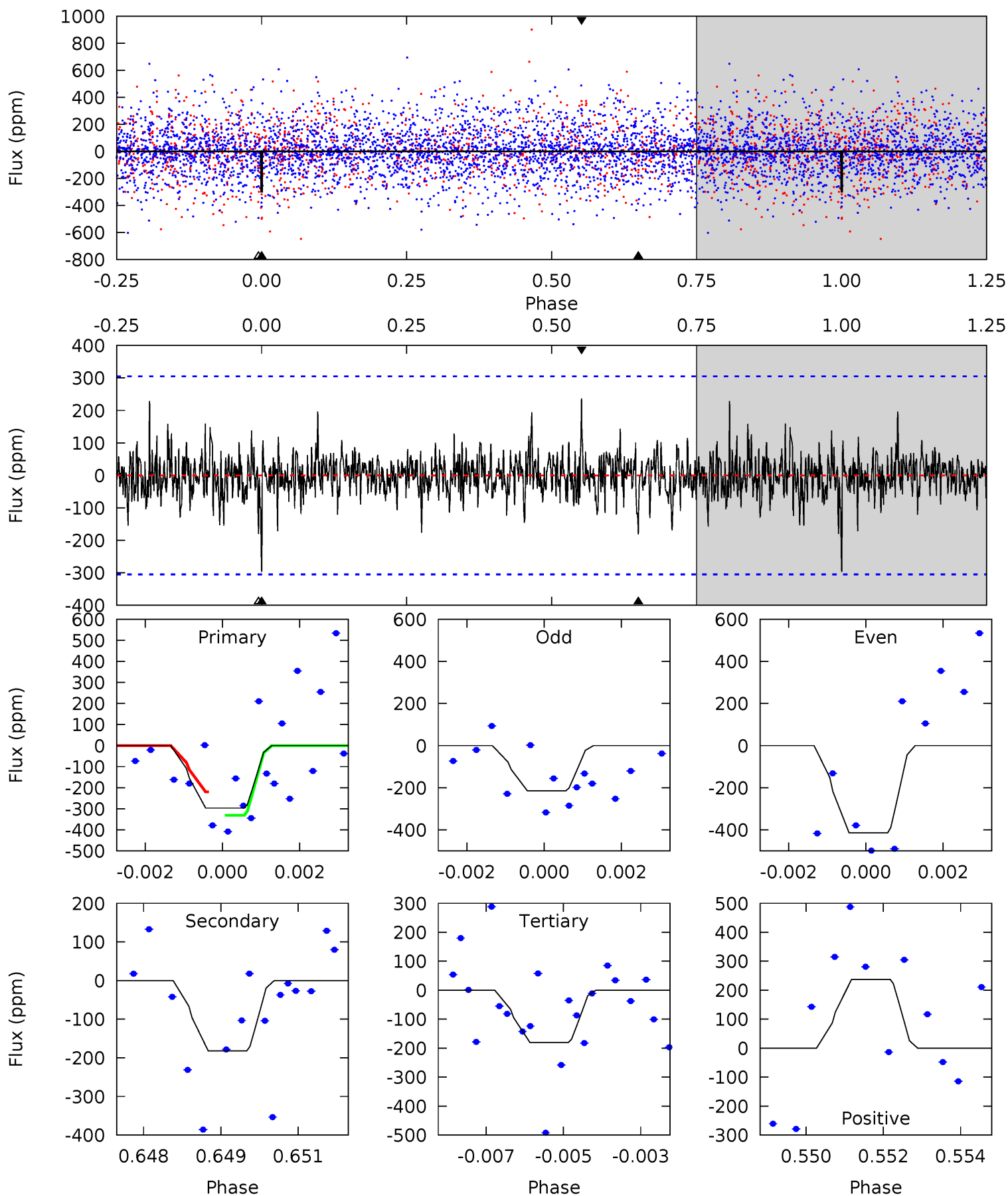
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.41	3.87	3.71	5.39	5.24	2.95	1.19	0.70	-0.98	0.16	-1.52	0.56	0.79	0.55	1.23



# Alt Model-Shift Uniqueness Test

008848942-04, P = 47.838970 Days, E = 102.773943 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
5.22	3.20	3.17	4.17	5.36	3.14	0.90	2.05	1.04	0.03	-0.98	1.71	1.30	0.44	0.90



### Stellar Parameters For KIC 008848942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8050^{+224}_{-337}$	$3.996^{+0.198}_{-0.132}$	$-0.120^{+0.200}_{-0.300}$	$2.254^{+0.433}_{-0.596}$	$1.835^{+0.141}_{-0.330}$	$0.226^{+0.285}_{-0.089}$
	+3%/-4%	+5%/-3%	+167%/-250%	+19%/-26%	+8%/-18%	+126%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008848942-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-200 \pm 52$	$7.19^{+7.62}_{-4.93}$	$1319^{+90}_{-102}$	$5368^{+5201}_{-1335}$	$203^{+1899}_{-157}$
Alt.	$-182 \pm 57$	$8.22^{+7.35}_{-5.66}$	$1317^{+81}_{-94}$	$4973^{+4016}_{-1153}$	$145^{+1200}_{-109}$

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

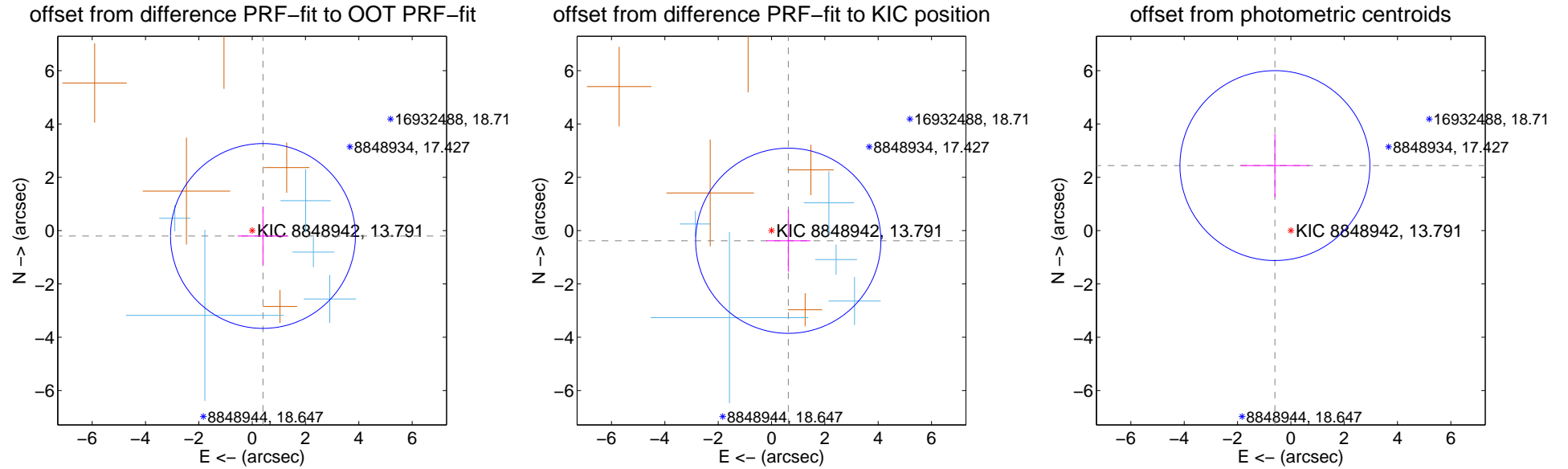
## DV Centroid Data

Supplemental centroid analysis for 008848942-04. Kepler magnitude: 13.79. Transit SNR 7.99

There are 5 quarters with good PRF difference image offsets

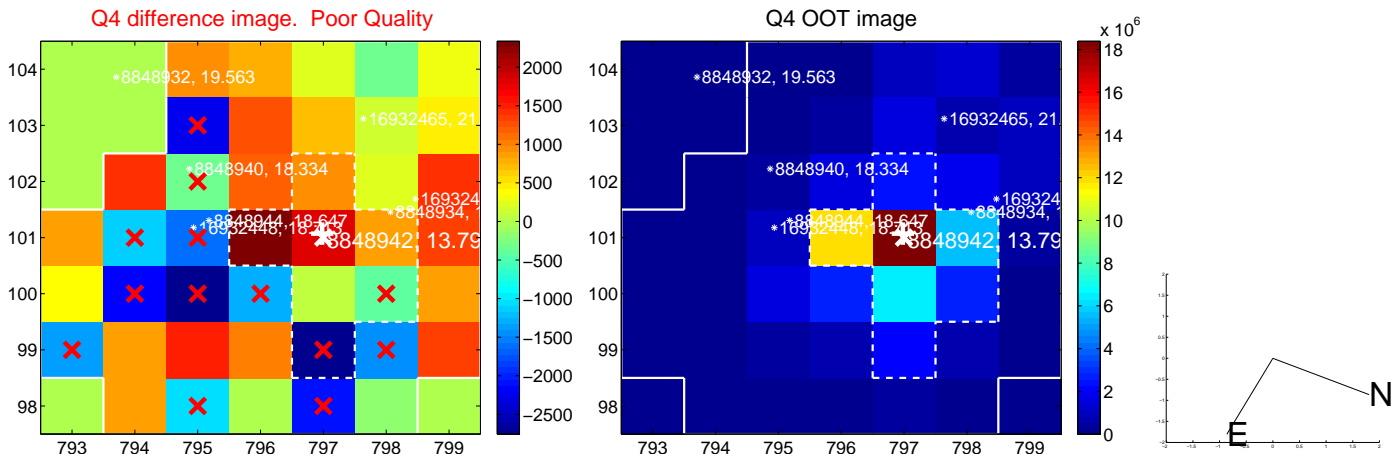
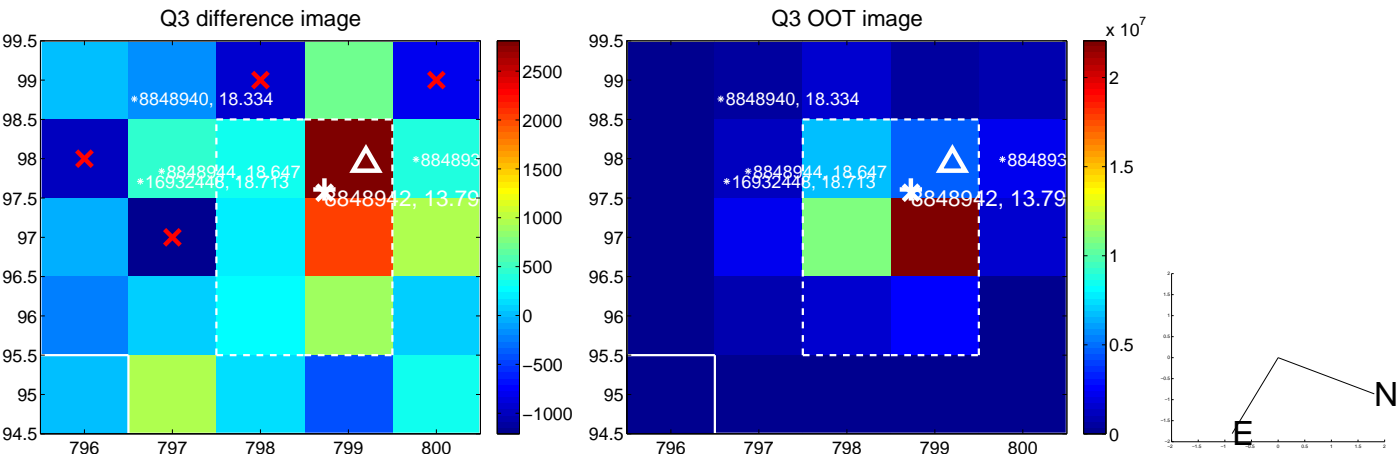
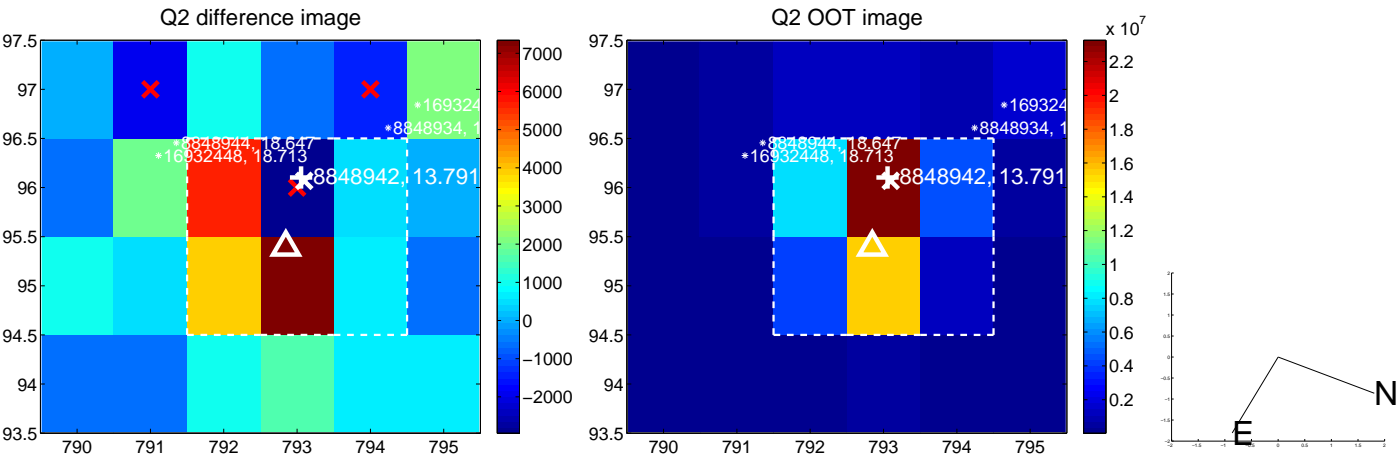
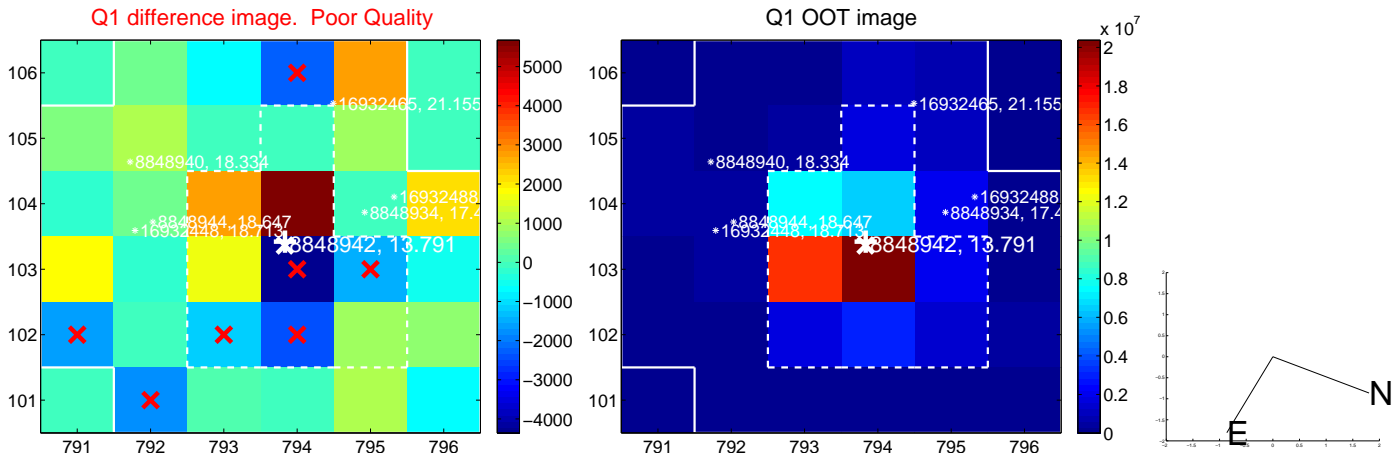
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.452 \pm 1.155$	0.39	$-0.405 \pm 0.949$	$-0.201 \pm 1.081$
PRF-fit source offset from KIC position	$0.734 \pm 1.157$	0.63	$-0.628 \pm 0.828$	$-0.380 \pm 1.154$
photometric centroid source offset	$2.51 \pm 1.19$	2.12	$0.60 \pm 1.29$	$2.44 \pm 1.18$



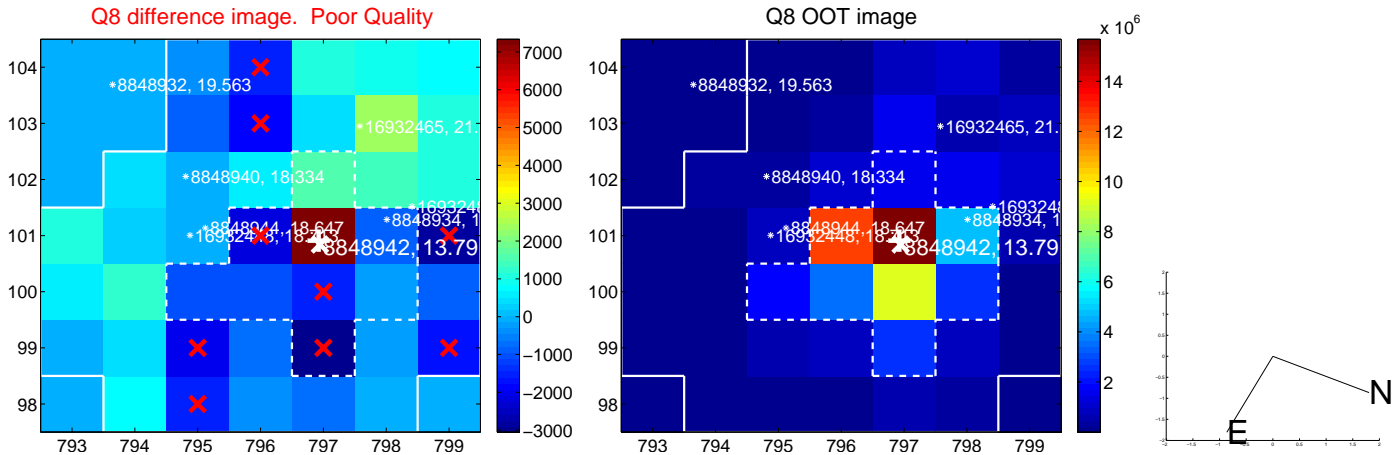
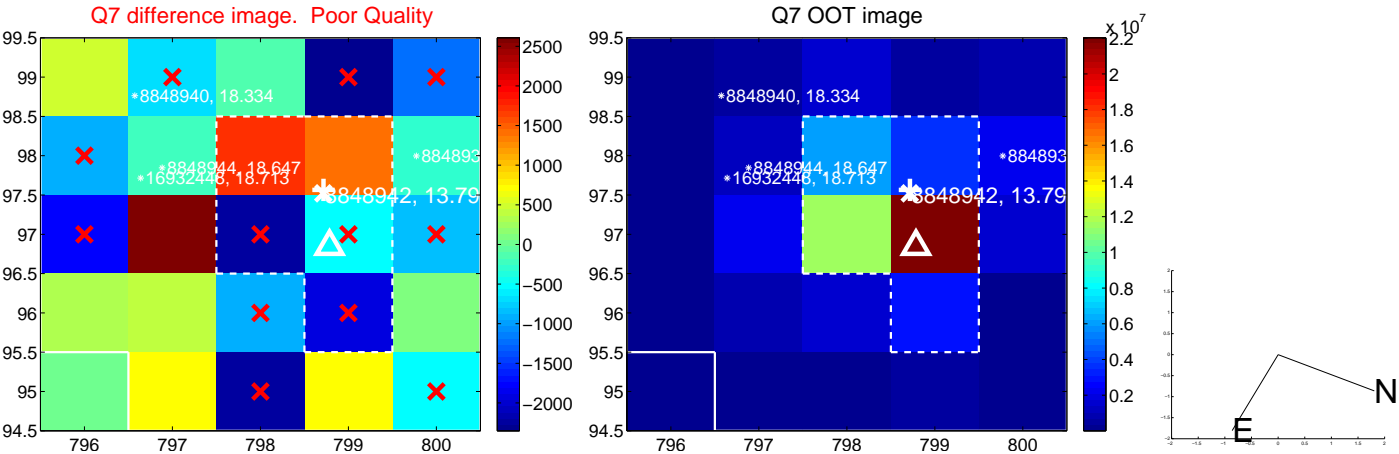
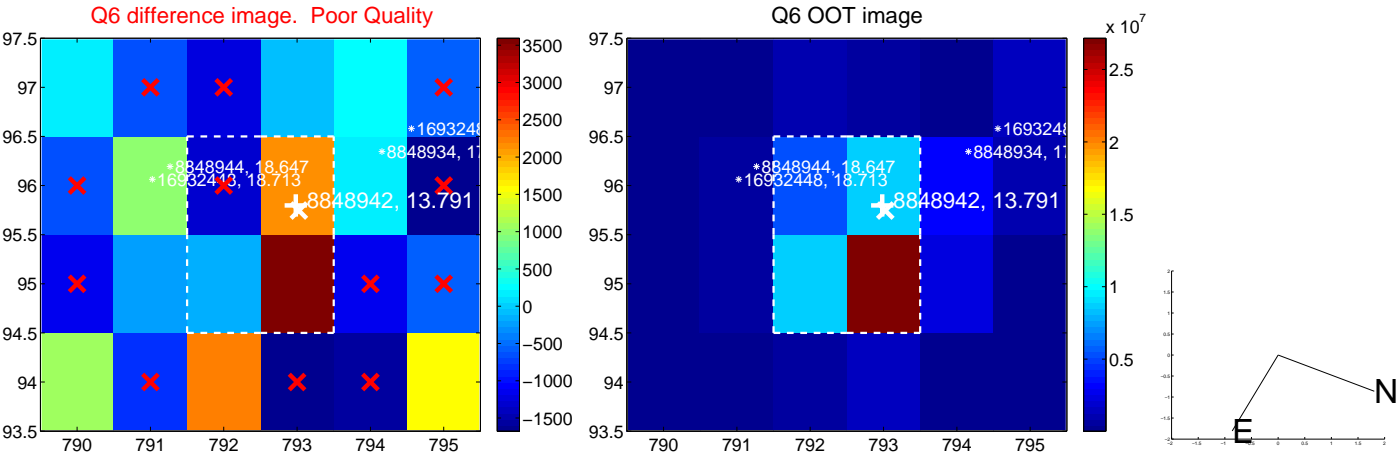
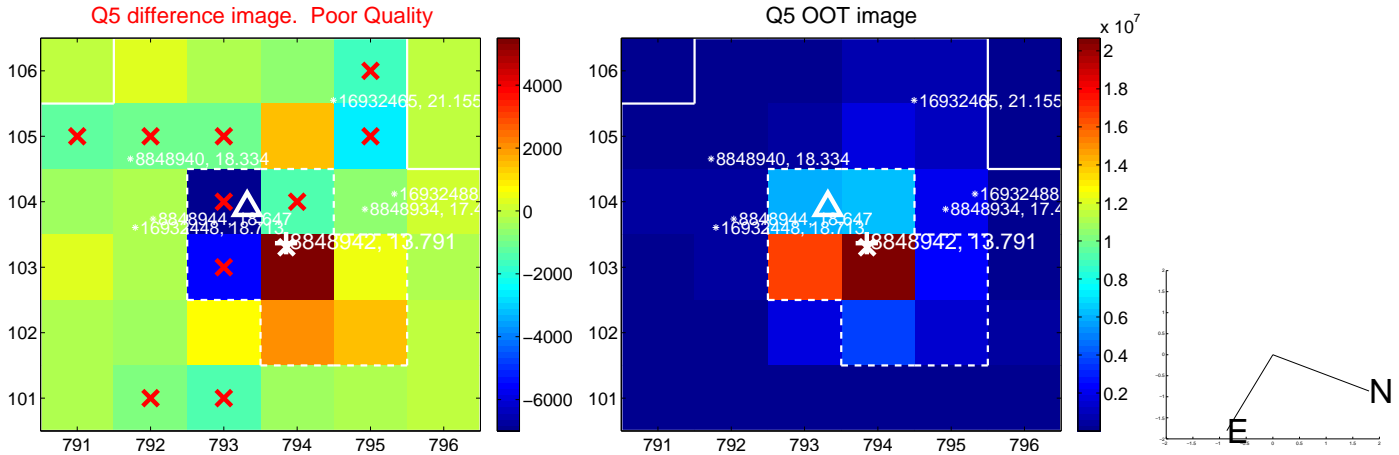
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

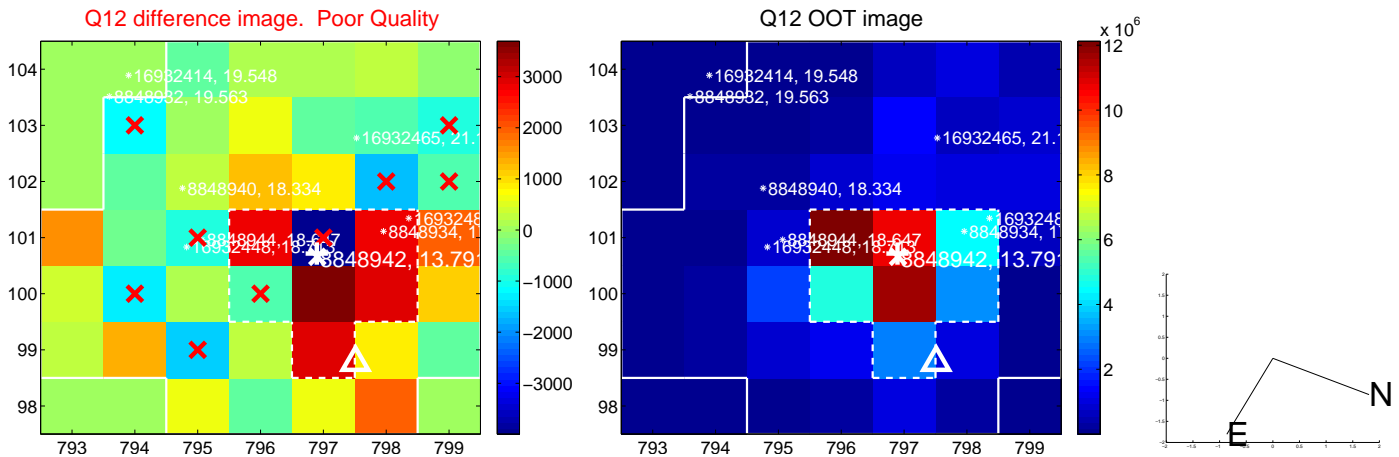
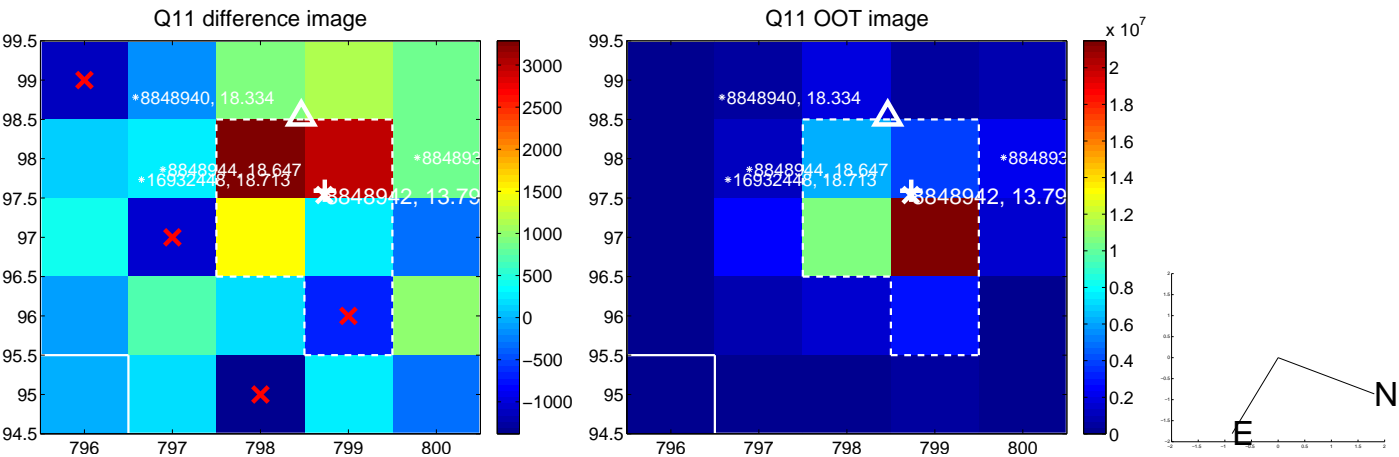
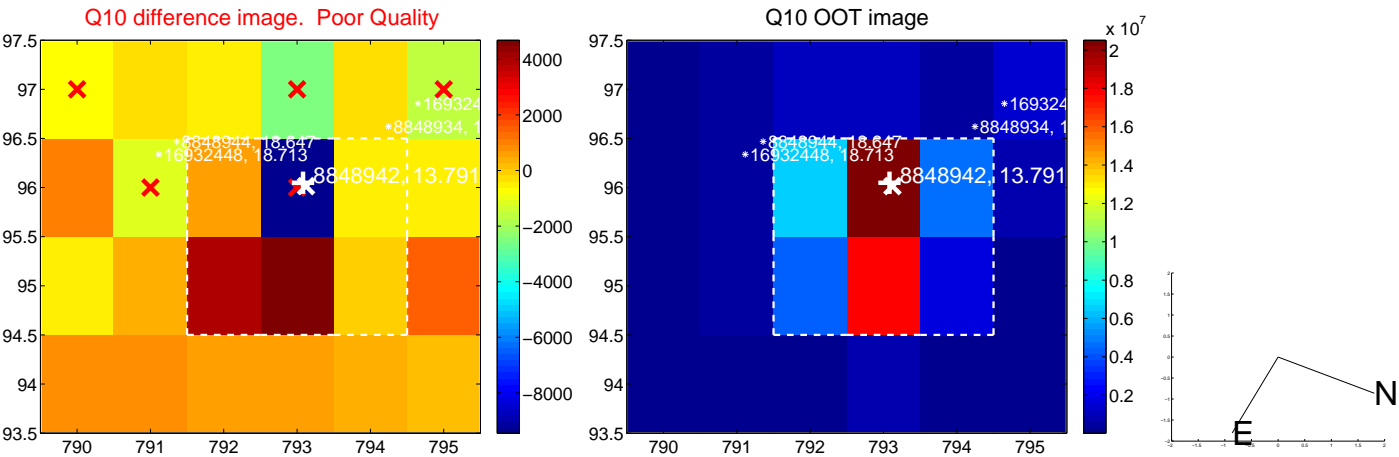
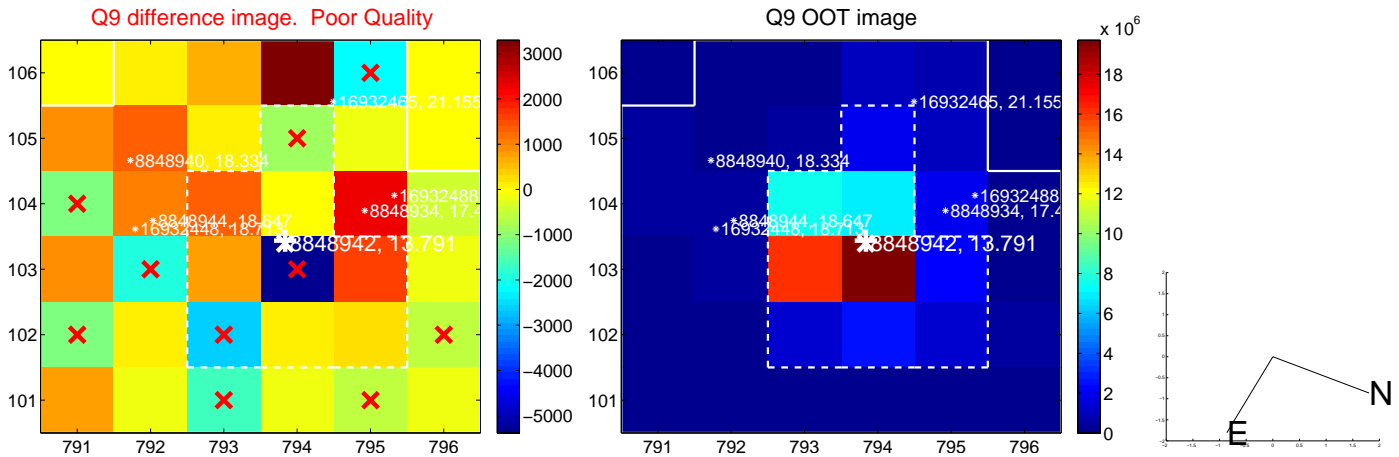




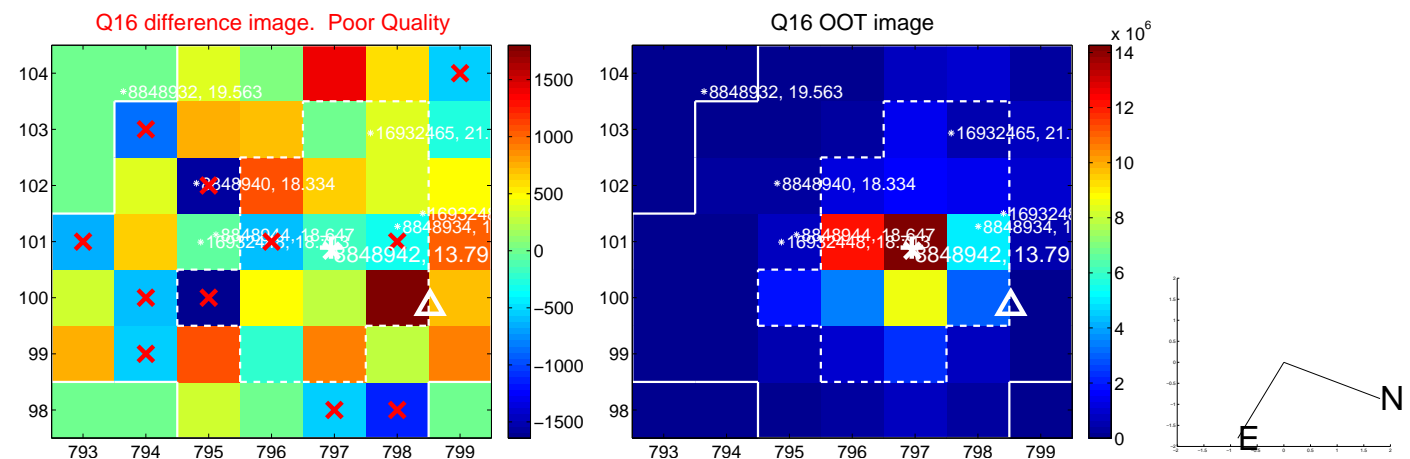
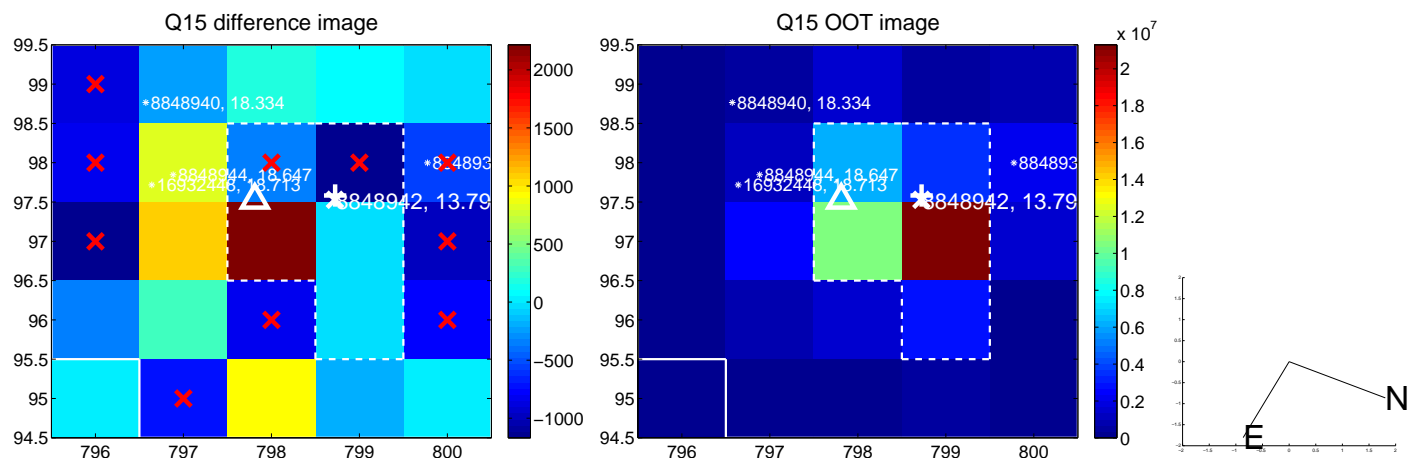
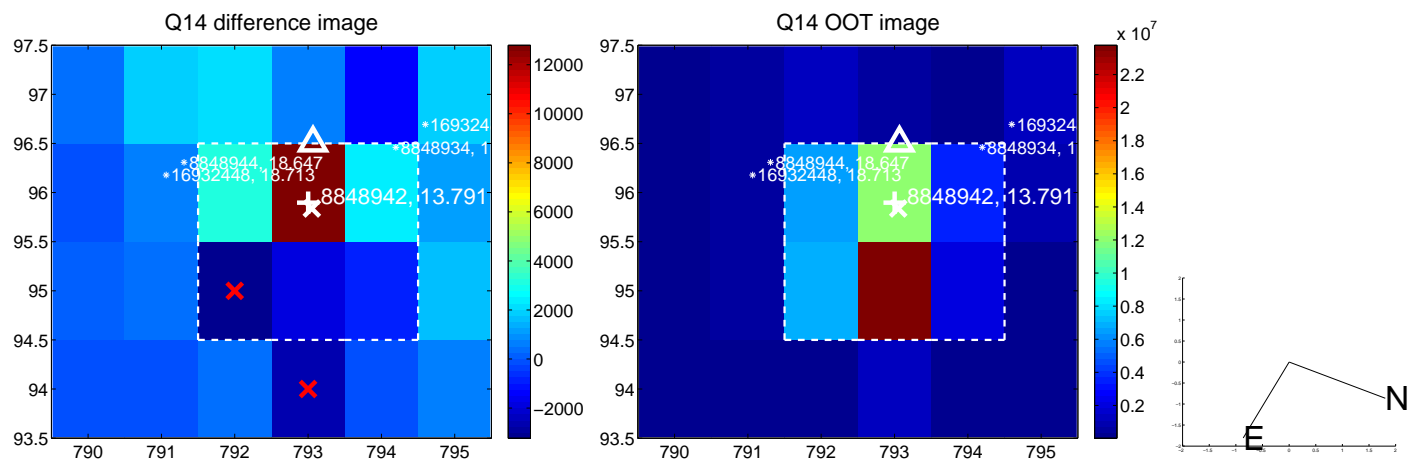
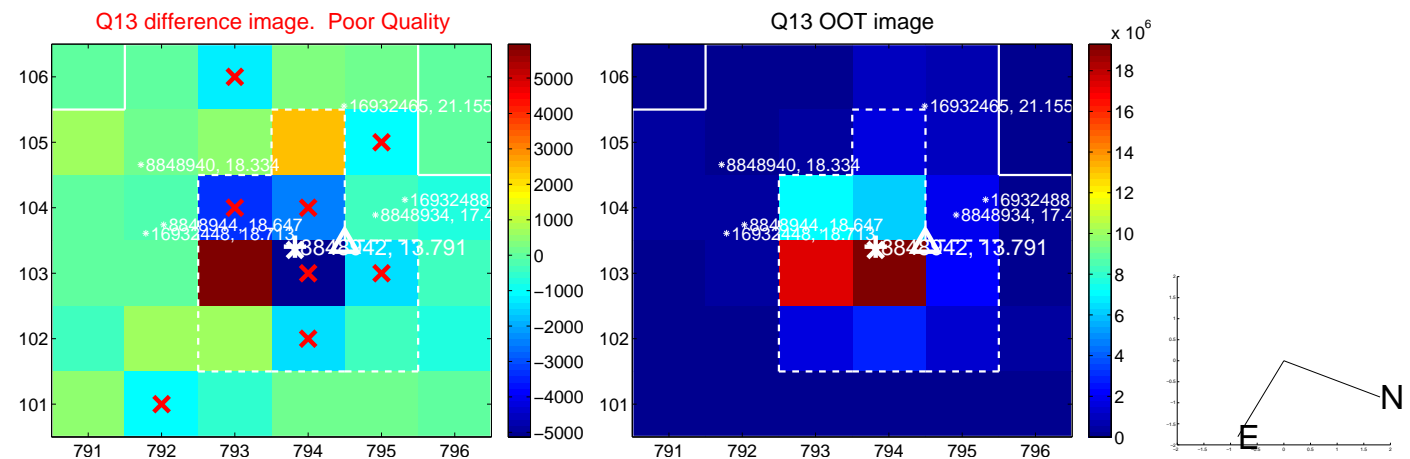
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



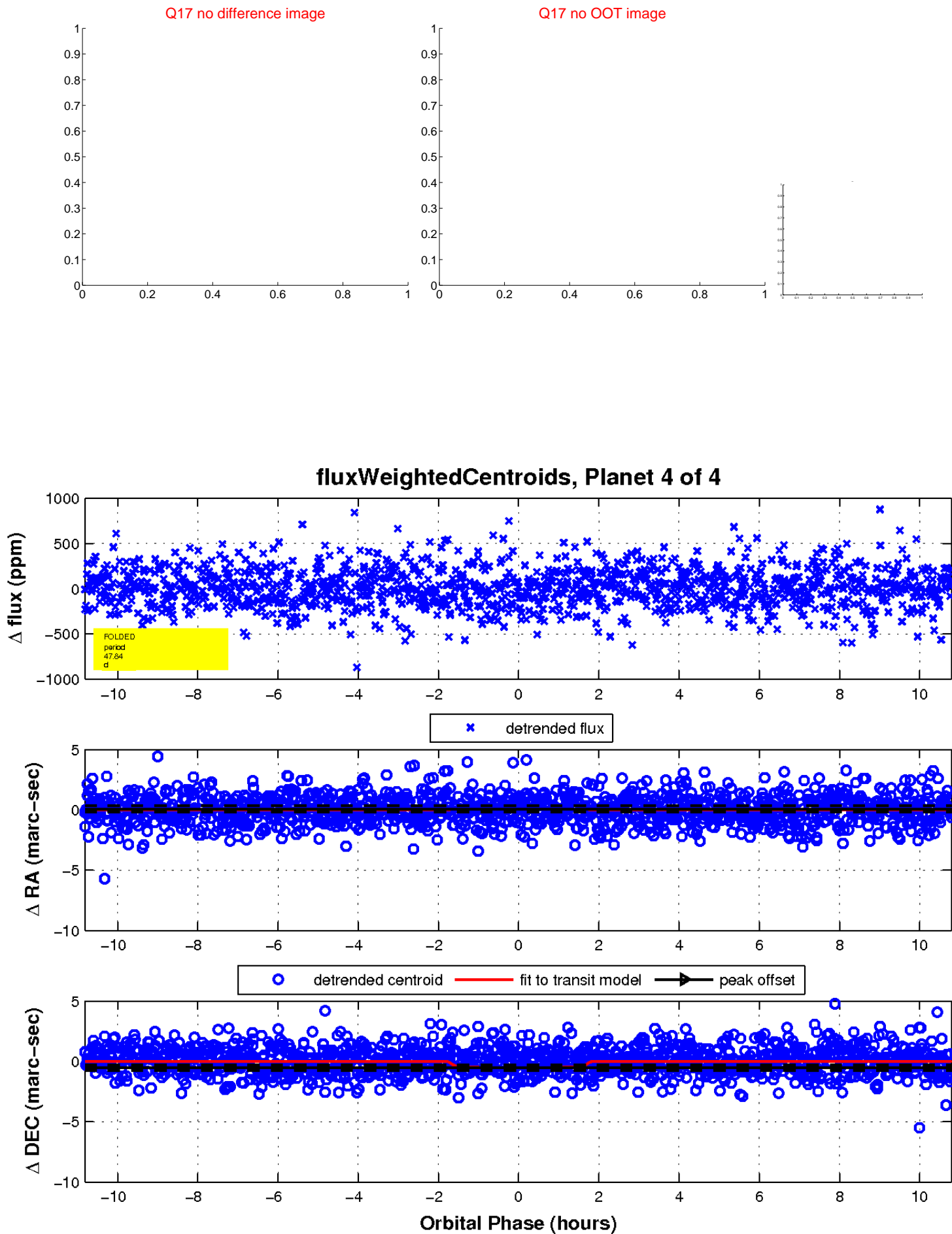
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

