

# KIC 004850843

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004850843-01	OBS	No	1.179618	132.232356	44.2	4.994	7.8	7.2	1.09	6338	0.84	3308.25
004850843-02	OBS	No	138.103693	172.543007	575.7	14.950	8.4	8.0	1.09	6338	2.98	5.78
004850843-03	OBS	No	97.701777	208.096962	891.7	2.128	7.6	7.9	1.09	6338	4.11	9.16

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004850843-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
004850843-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004850843-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

**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.

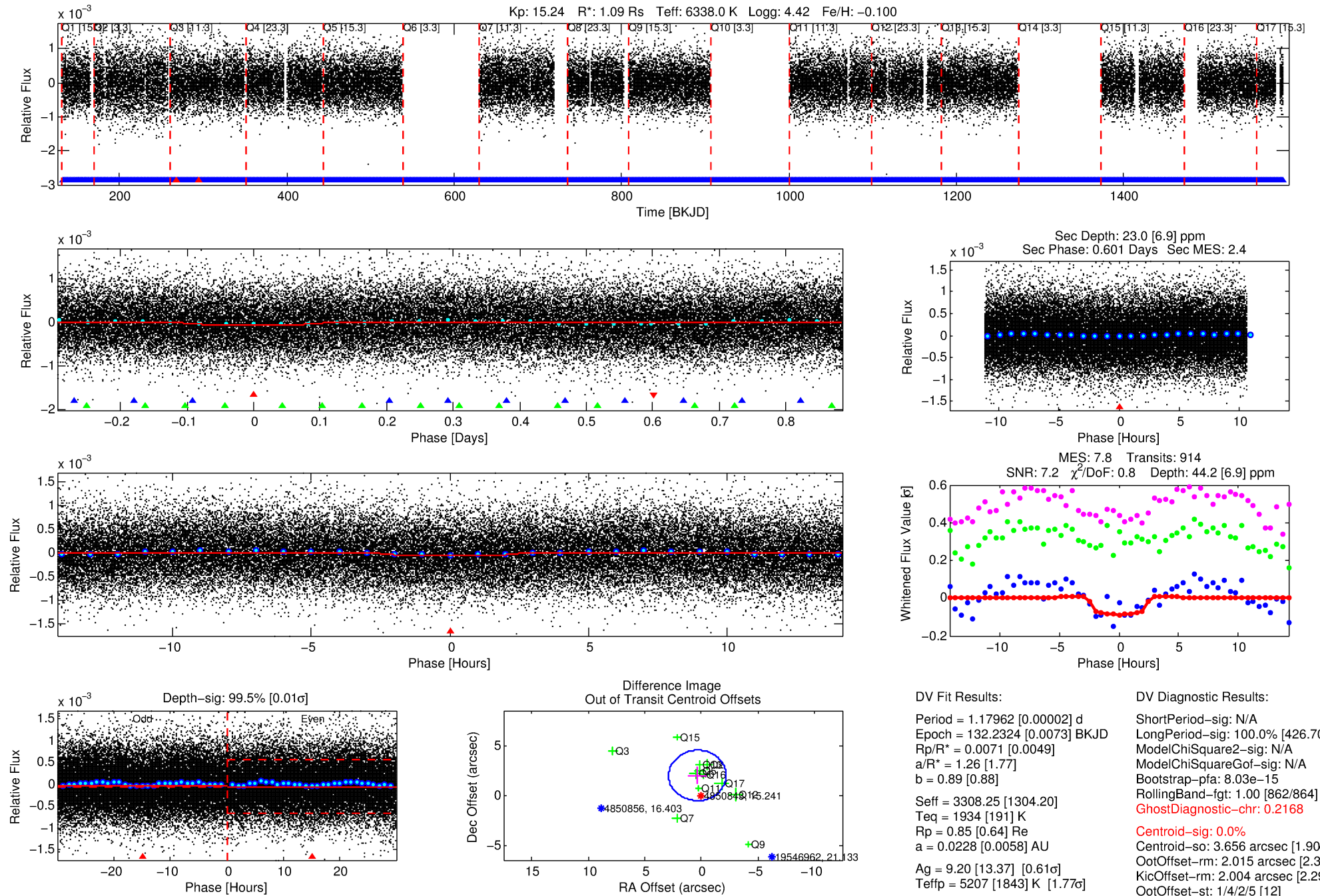
## Ephemeris Match Information For 004850843-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
004850843-01	4850843	004938893-01	4938893	1:1	243.4	-61	-2	15.47	15.24	1.30	Col-Anomaly	1	2.87	0.05

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 4850843 Candidate: 1 of 3 Period: 1.180 d



## DV Fit Results:

Period = 1.17962 [0.00002] d  
Epoch = 132.2324 [0.0073] BKJD  
Rp/R\* = 0.0071 [0.0049]  
a/R\* = 1.26 [1.77]  
b = 0.89 [0.88]  
Seff = 3308.25 [1304.20]  
Teff = 1934 [191] K  
Rp = 0.85 [0.64] Re  
a = 0.0228 [0.0058] AU  
Ag = 9.20 [13.37] [0.61 $\sigma$ ]  
Teffp = 5207 [1843] K [1.77 $\sigma$ ]

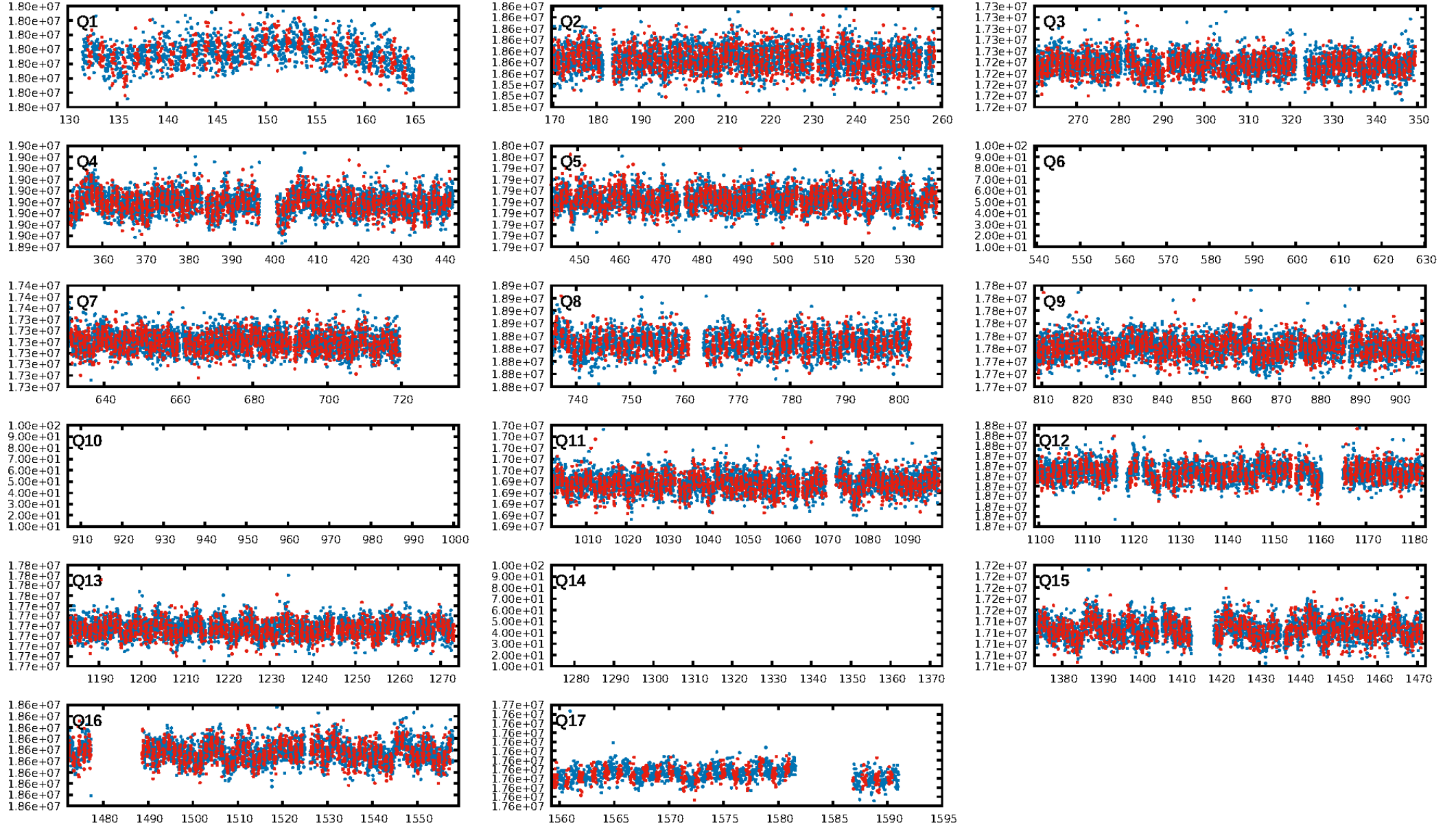
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [426.70 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.03e-15  
RollingBand-fgt: 1.00 [862/864]  
**GhostDiagnostic-chr: 0.2168**  
Centroid-sig: 0.0%  
Centroid-so: 3.656 arcsec [1.90 $\sigma$ ]  
OotOffset-rm: 2.015 arcsec [2.39 $\sigma$ ]  
KicOffset-rm: 2.004 arcsec [2.29 $\sigma$ ]  
OotOffset-st: 1/4/2/5 [12]  
KicOffset-st: 1/4/2/5 [12]  
DiffImageQuality-fgm: 0.17 [2/12]  
DiffImageOverlap-fno: 1.00 [14/14]

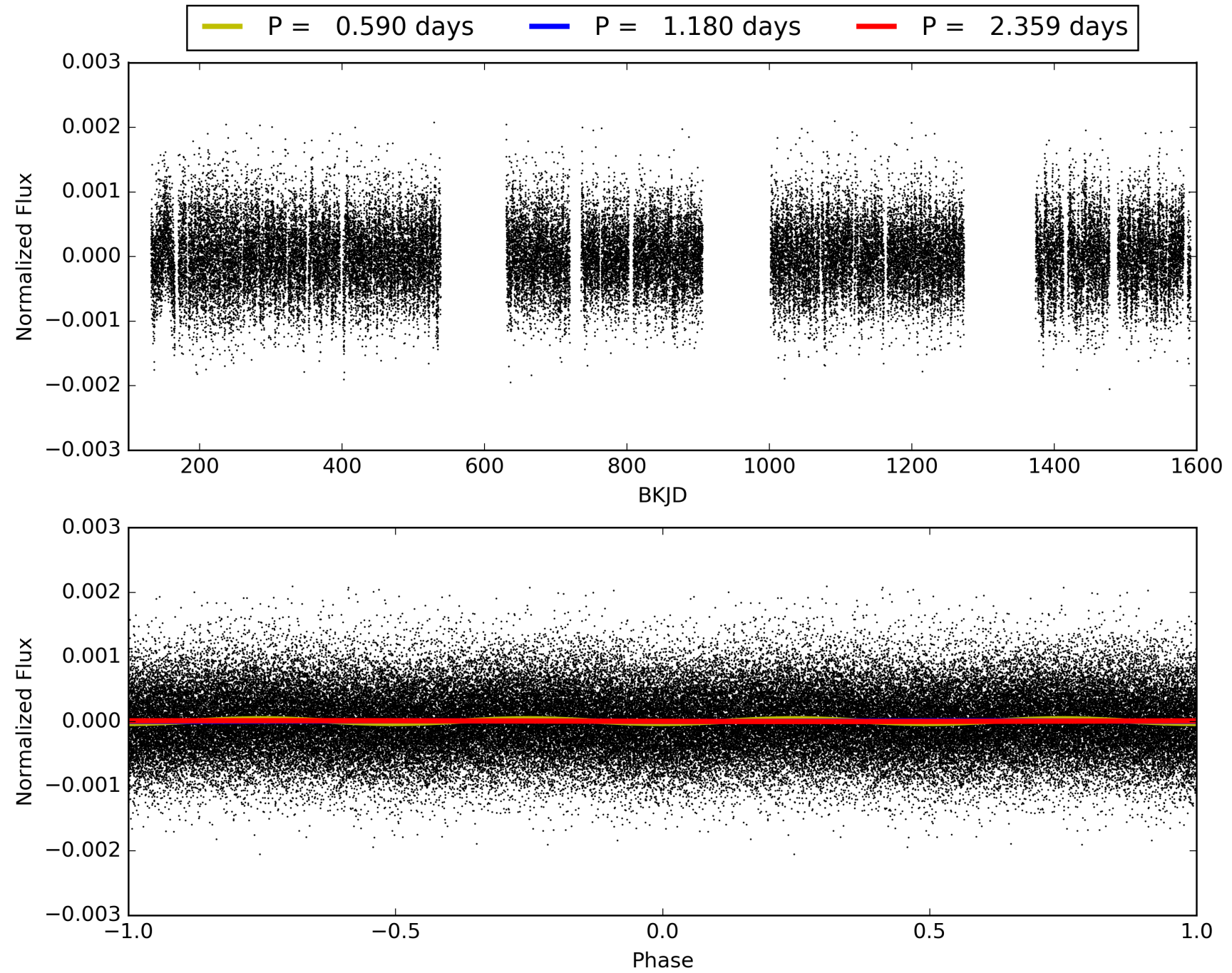
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:01:21 Z

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

# TCE 004850843-01, PDC Light Curves



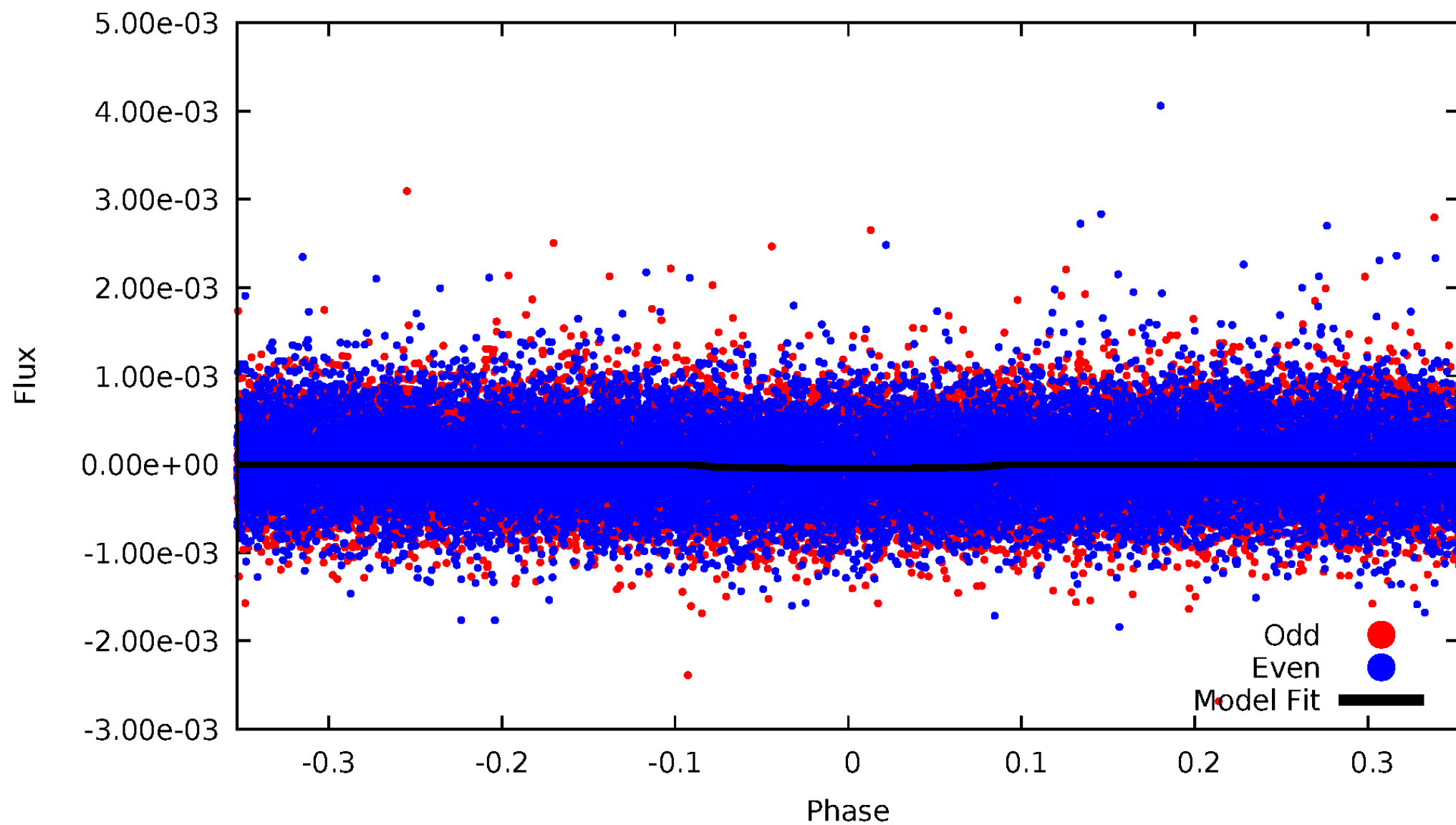
TCE 004850843-01





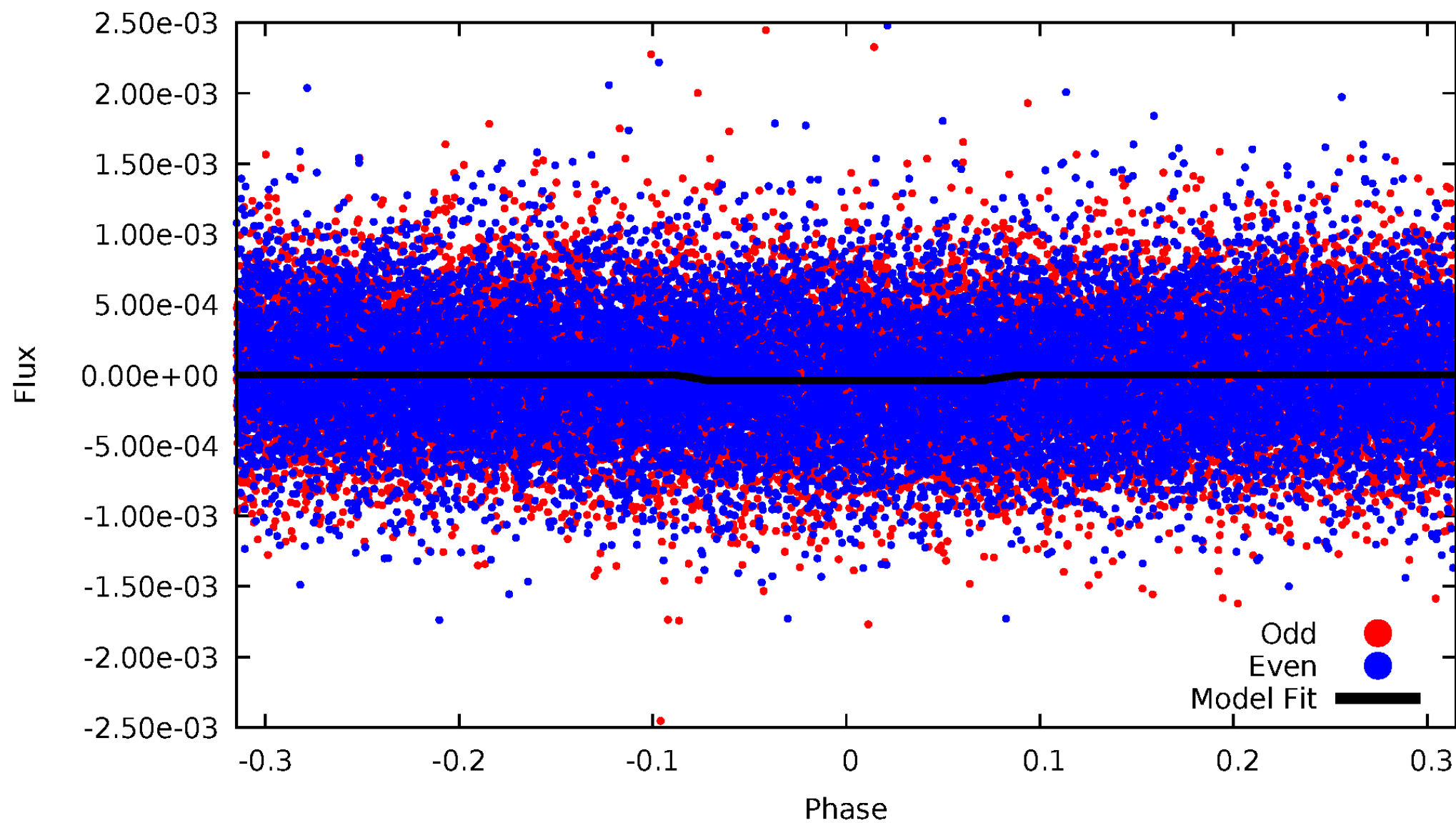
# DV Odd/Even

TCE 004850843-01



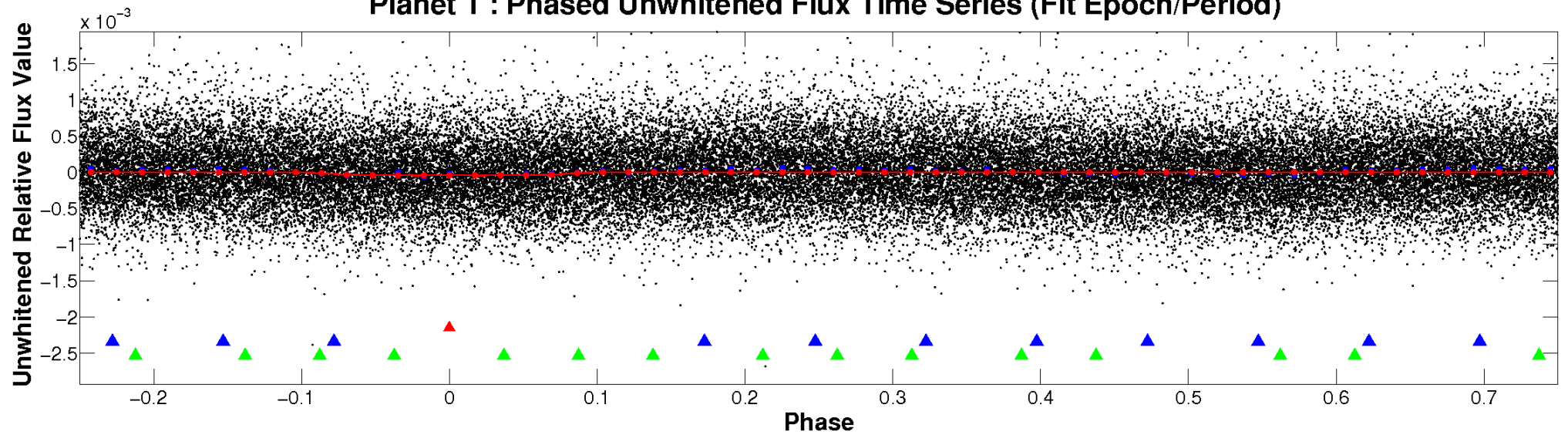
# ALT Odd/Even

TCE 004850843-01

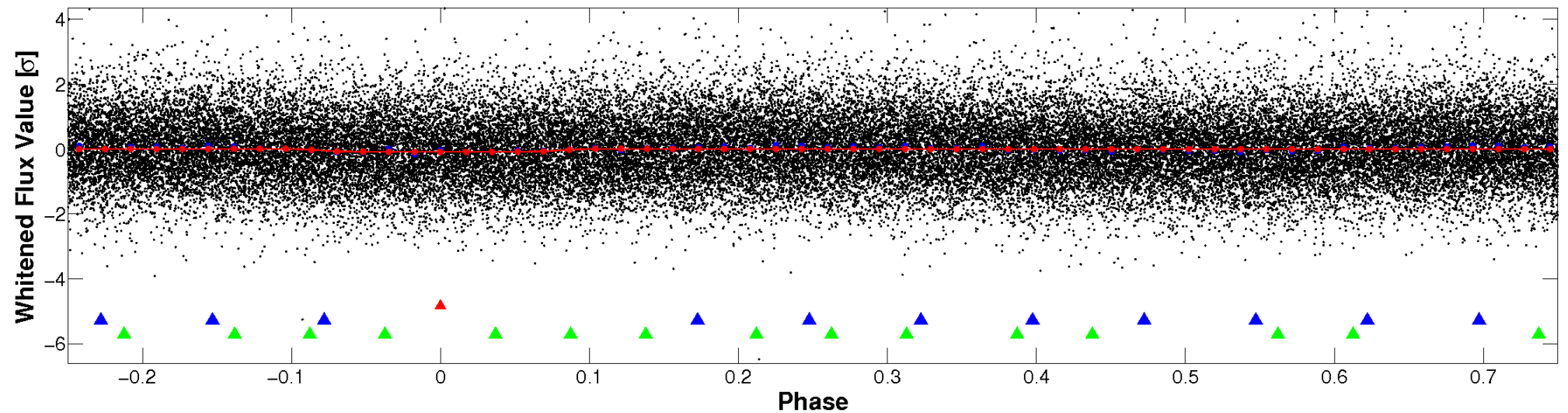


# Non-Whitened Vs. Whitened Light Curve

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

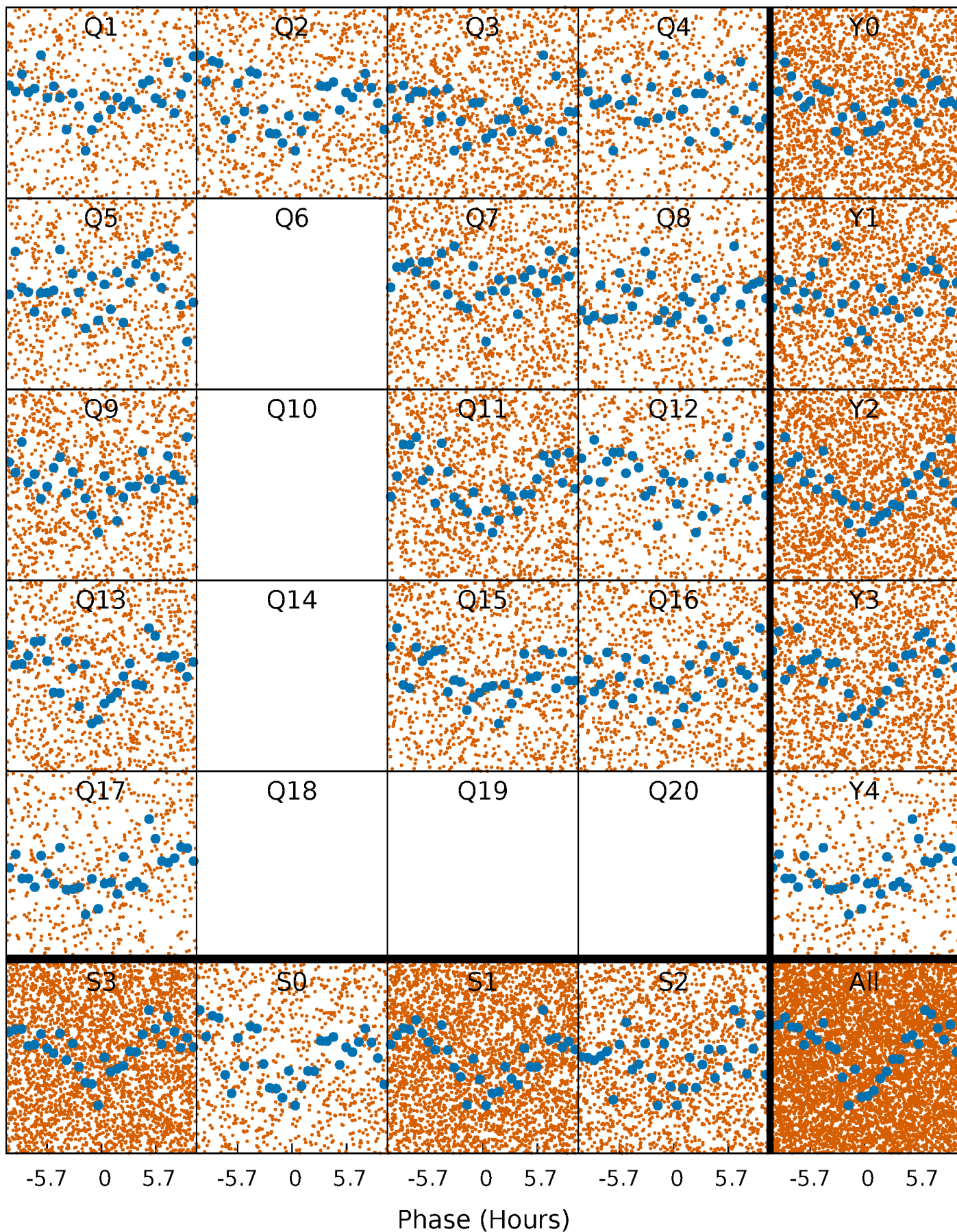


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

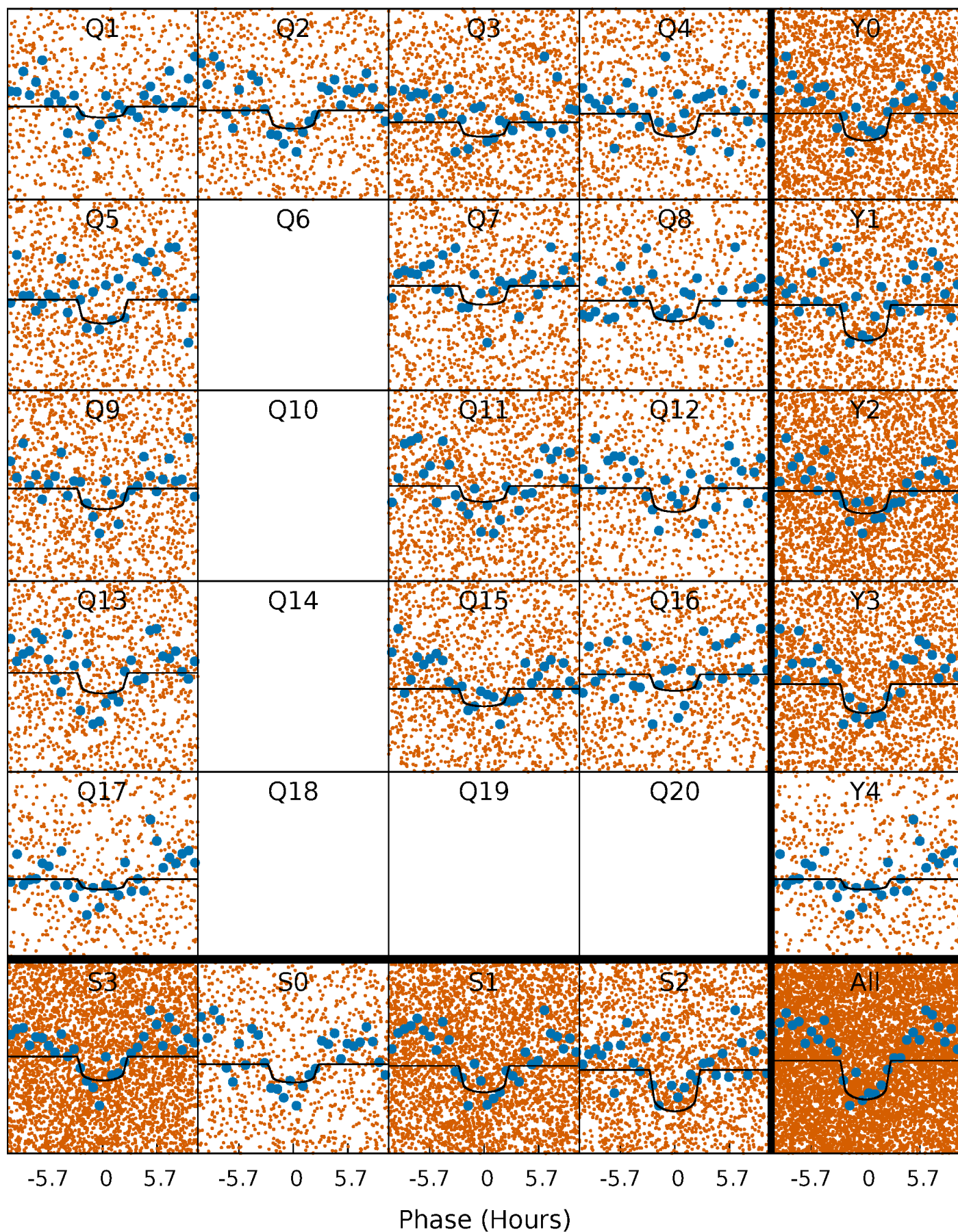
TCE 004850843-01 P= 1.179618 Days  $T_0=132.232356$  (BKJD)





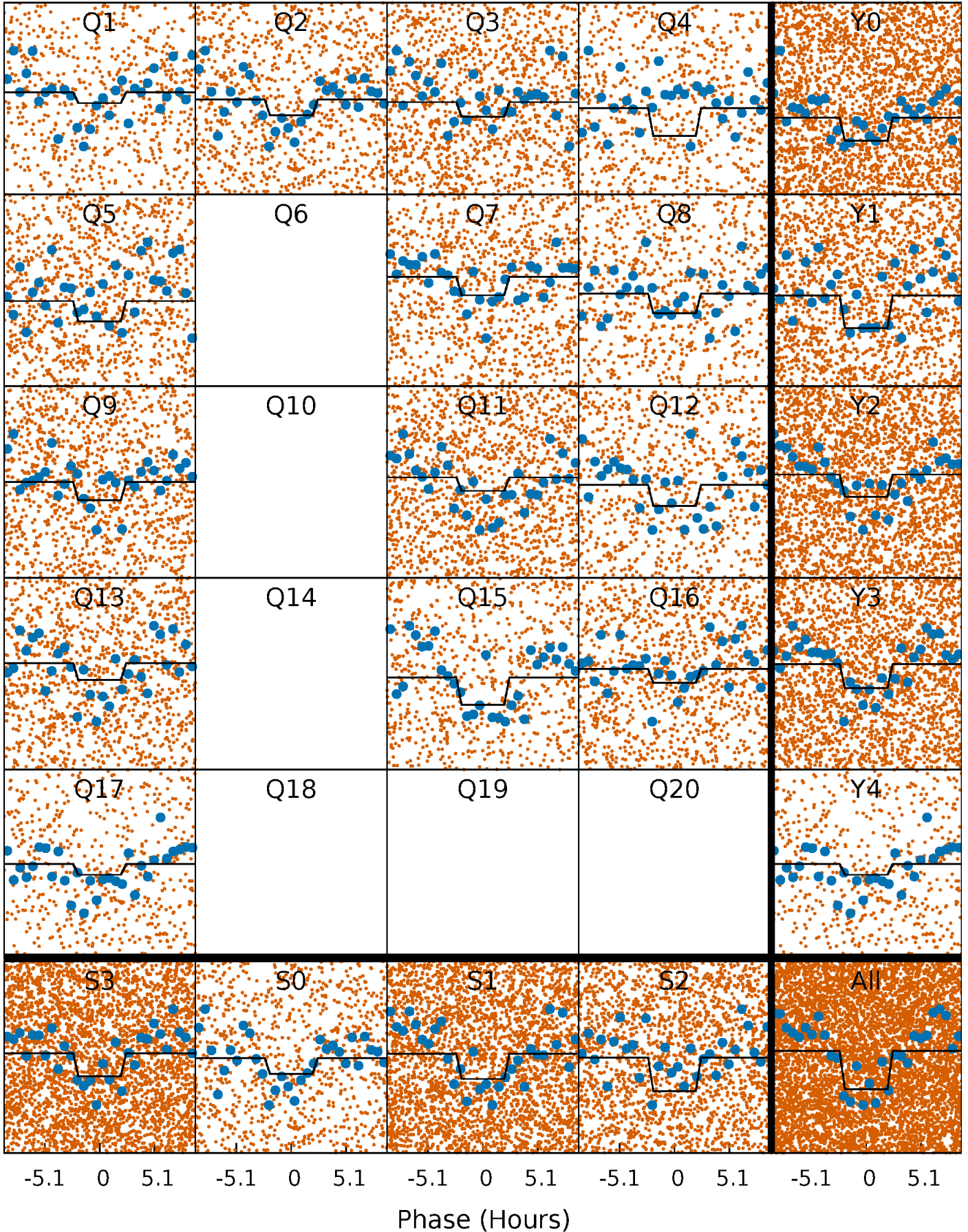
# DV Quarter-Phased Transit Curves

TCE 004850843-01 P= 1.179618 Days  $T_0=132.232356$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

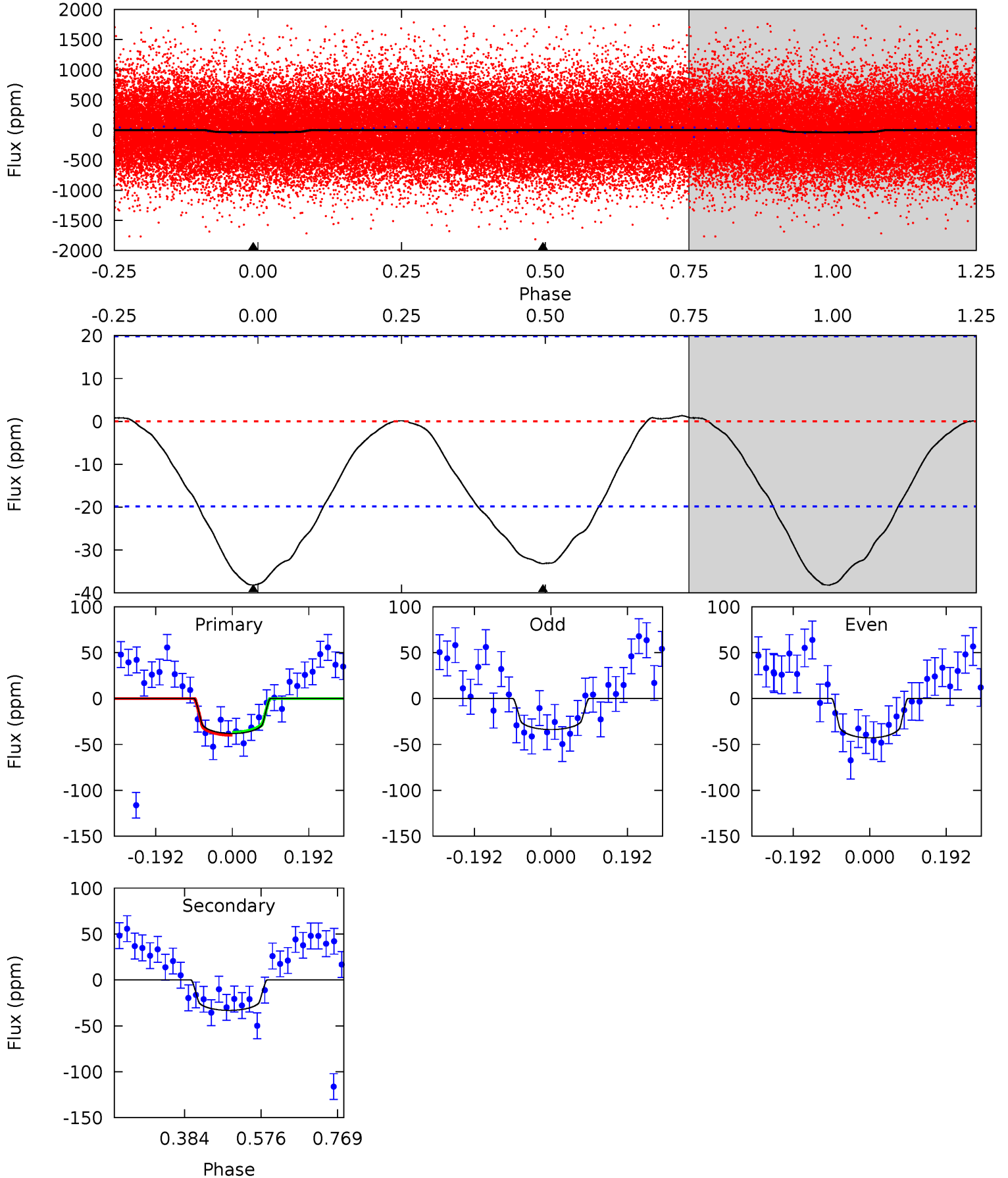
TCE 004850843-01 P= 1.179605 Days  $T_0=132.240188$  (BKJD)



# DV Model-Shift Uniqueness Test

004850843-01, P = 1.179618 Days, E = 131.052738 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.51	7.40	0	0	4.43	1.30	0.32	8.51	8.51	7.40	7.40	1.01	0.97	0.03	0.36

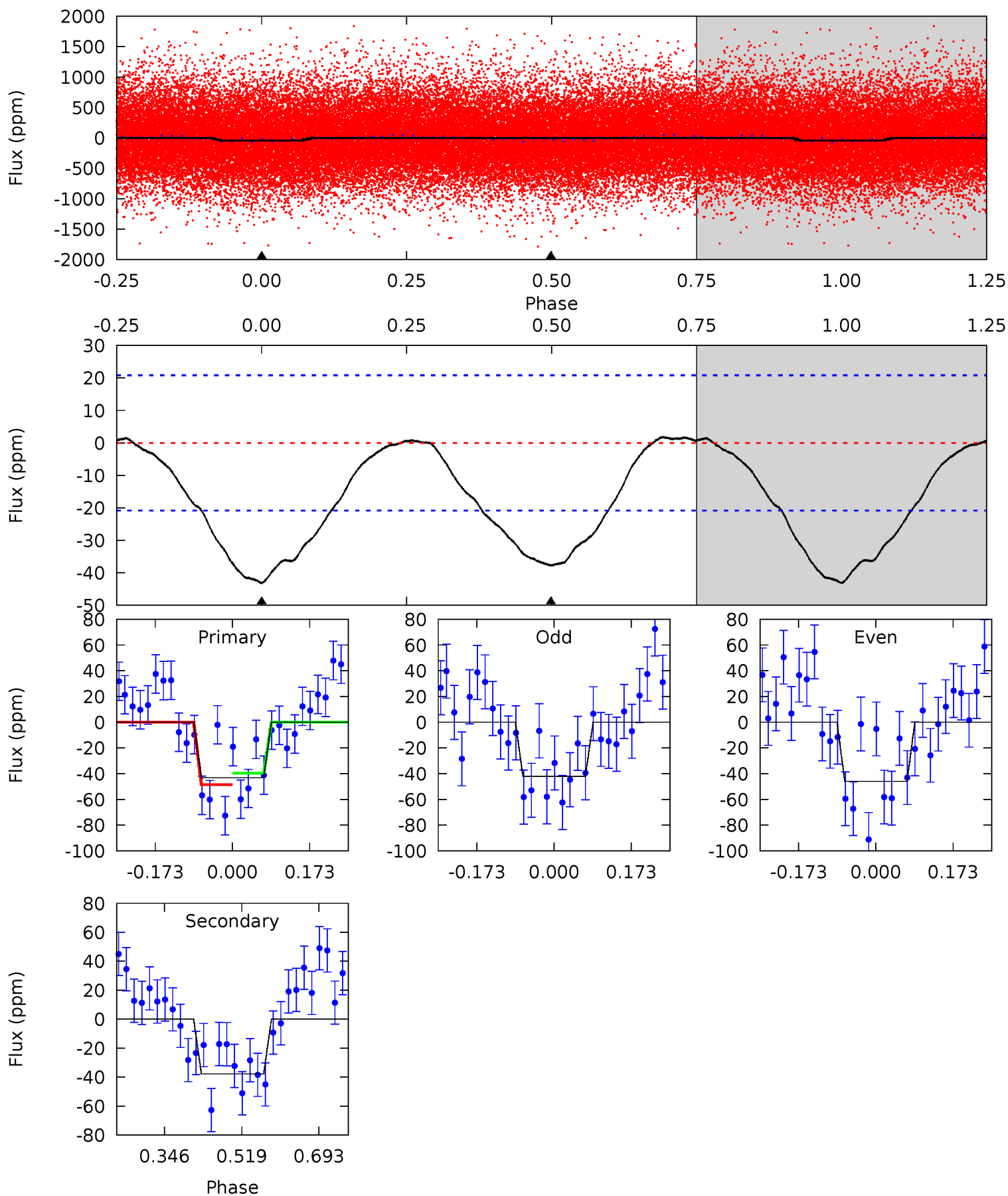




# Alt Model-Shift Uniqueness Test

004850843-01, P = 1.179605 Days, E = 131.060583 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
9.22	8.07	0	0	4.45	1.36	0.51	9.22	9.22	8.07	8.07	0.41	0.87	0.04	0.93





### Stellar Parameters For KIC 004850843

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+178}_{-245}$	$4.418^{+0.065}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.091^{+0.335}_{-0.134}$	$1.137^{+0.154}_{-0.154}$	$1.233^{+0.354}_{-0.660}$
	+3%/-4%	+1%/-4%	+250%/-300%	+31%/-12%	+14%/-14%	+29%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004850843-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-33 \pm 4$	$0.92^{+0.63}_{-0.53}$	$2732^{+202}_{-143}$	$5577^{+3294}_{-1143}$	$11^{+50}_{-7}$
Alt.	$-38 \pm 5$	$0.84^{+0.58}_{-0.49}$	$2749^{+192}_{-144}$	$6006^{+4255}_{-1285}$	$15^{+74}_{-10}$

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

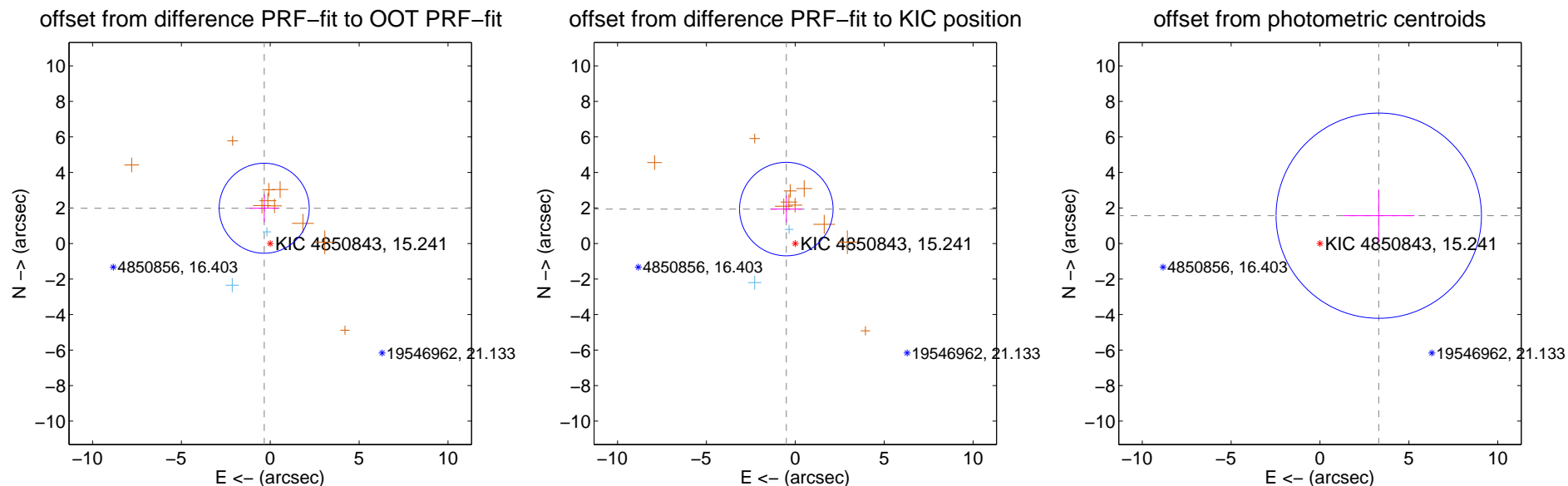
## DV Centroid Data

Supplemental centroid analysis for 004850843-01. Kepler magnitude: 15.24. Transit SNR 7.22

There are 2 quarters with good PRF difference image offsets

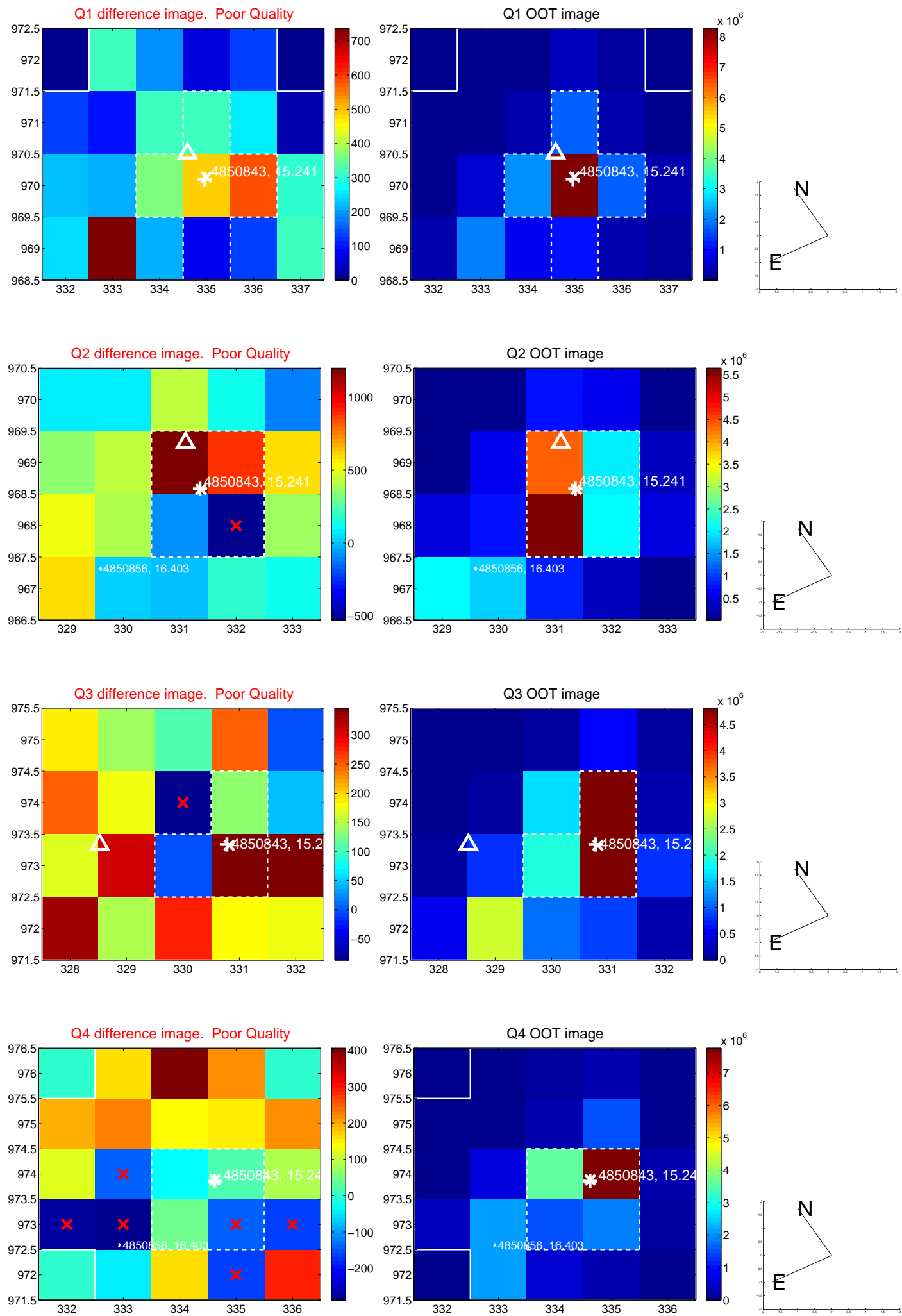
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.015 \pm 0.845$	2.39	$0.342 \pm 0.816$	$1.985 \pm 0.771$
PRF-fit source offset from KIC position	$2.004 \pm 0.877$	2.29	$0.507 \pm 0.891$	$1.939 \pm 0.750$
photometric centroid source offset	$3.66 \pm 1.93$	1.90	$-3.30 \pm 2.01$	$1.57 \pm 1.49$

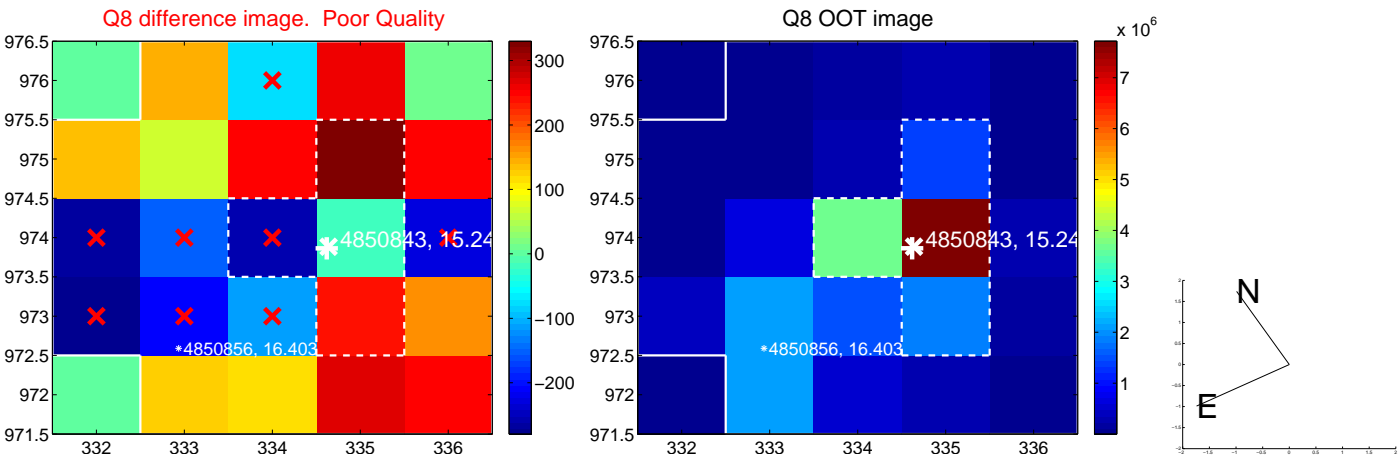
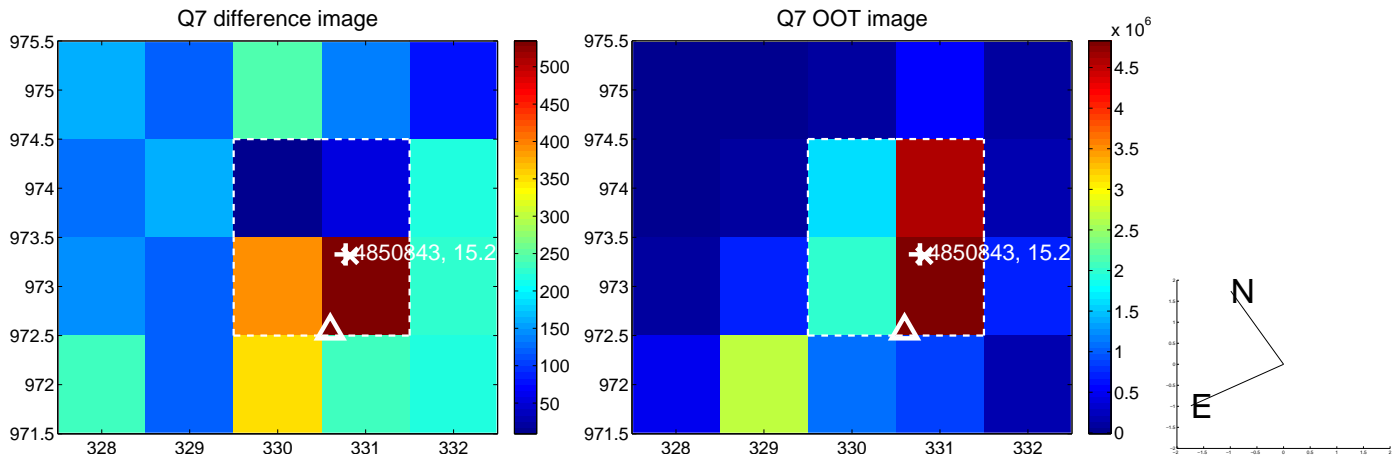
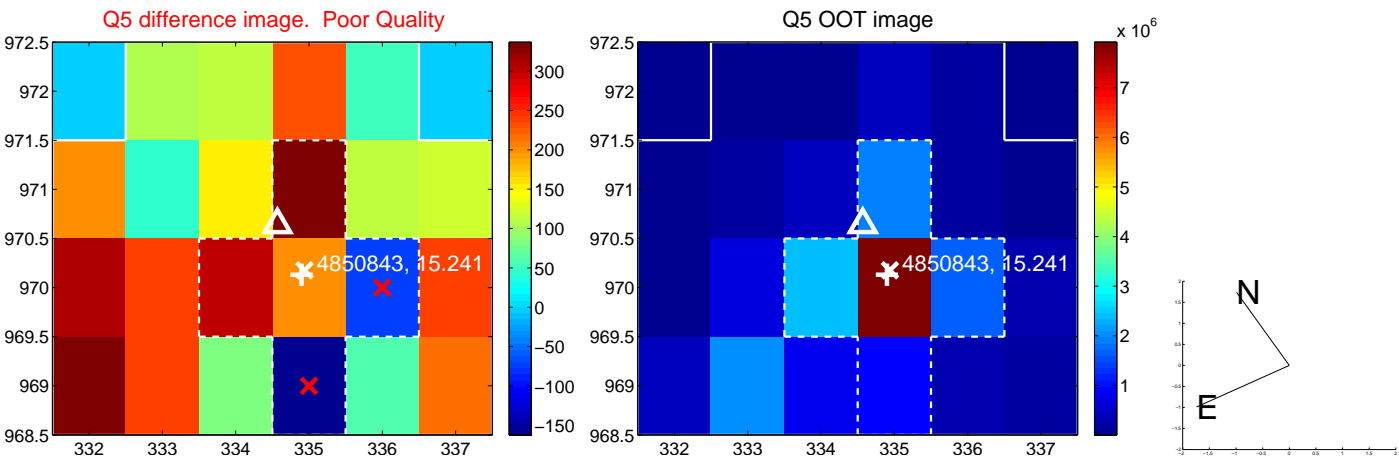


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

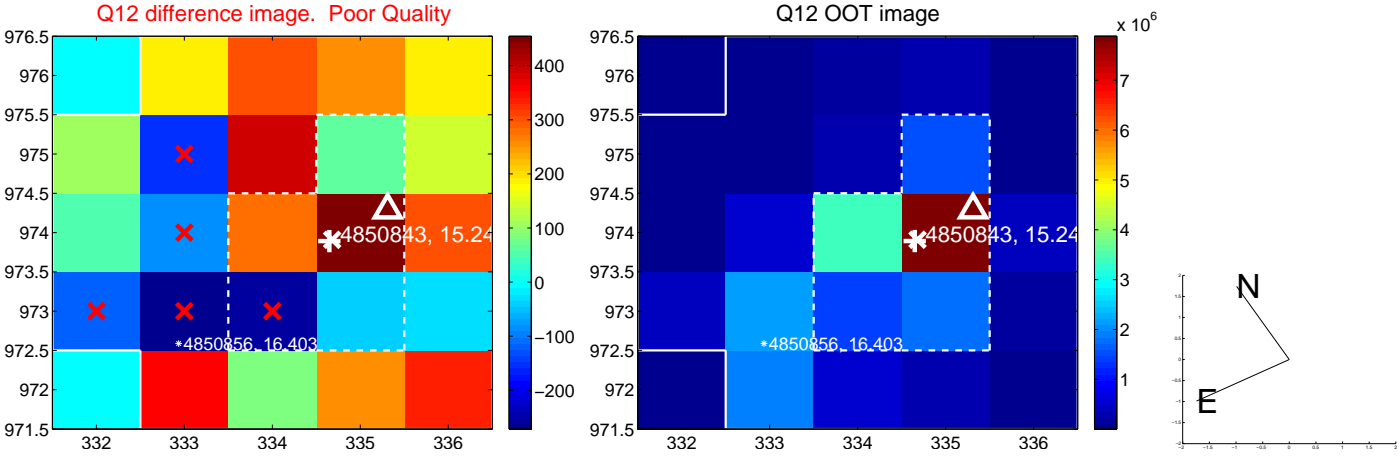
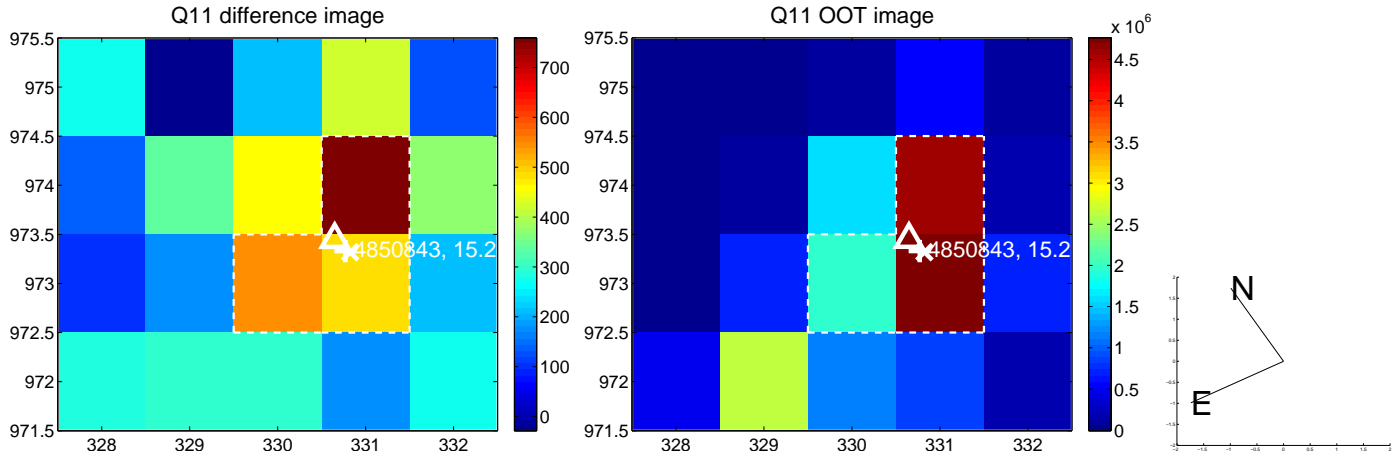
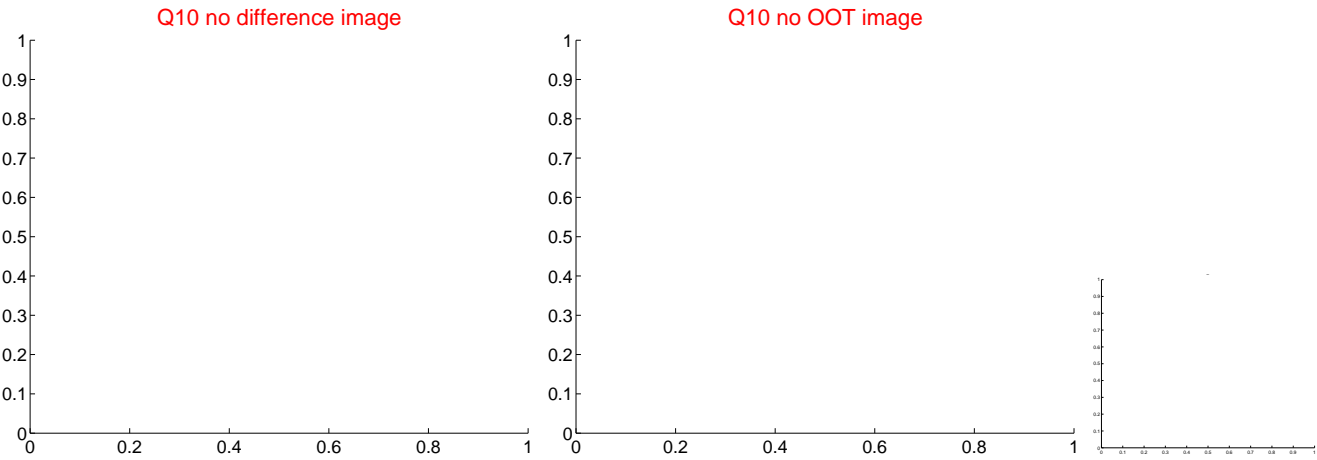
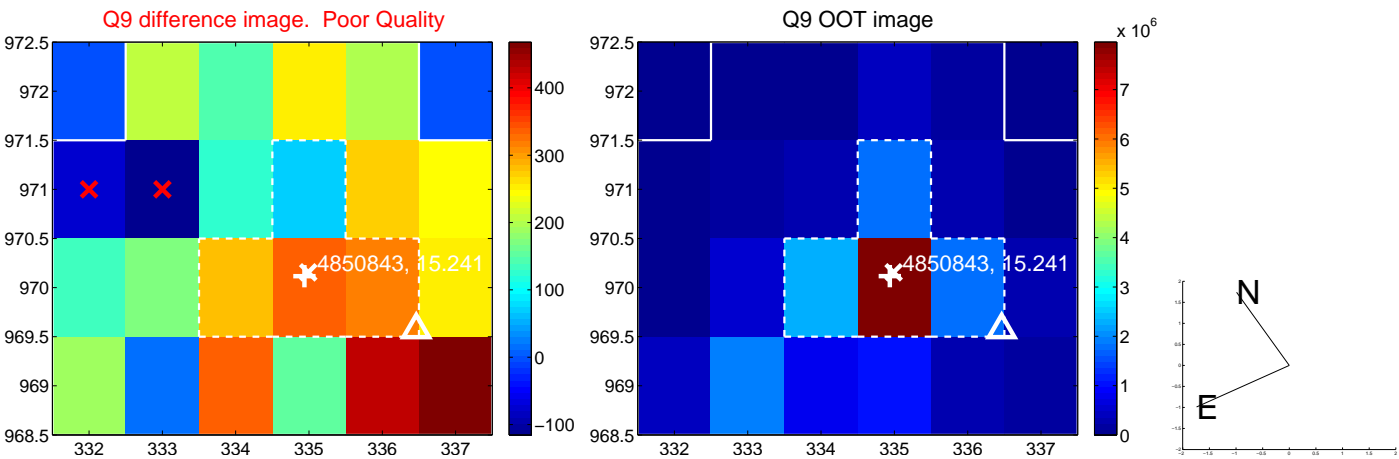


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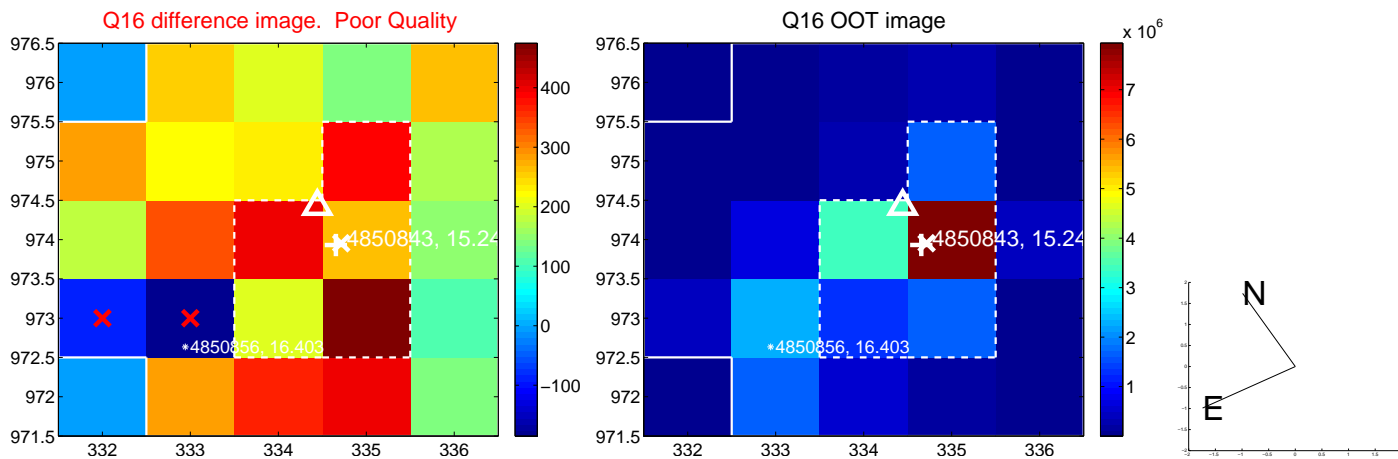
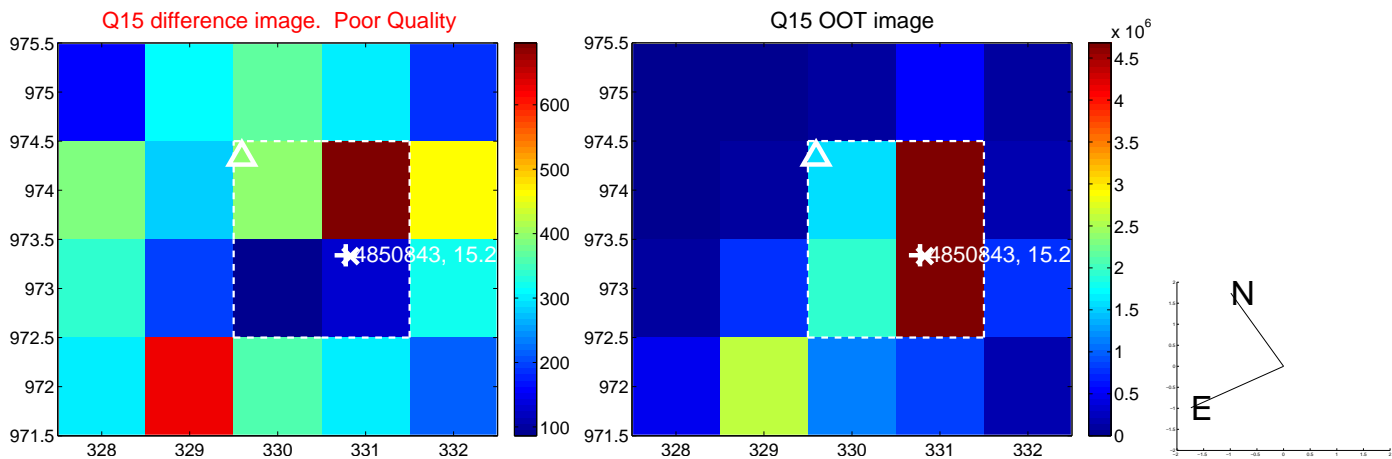
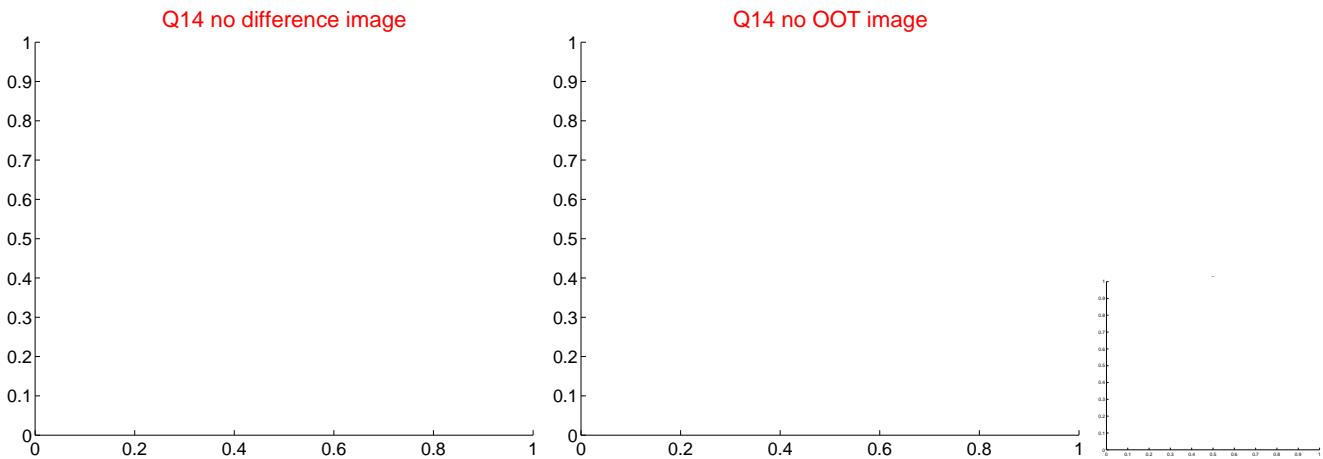
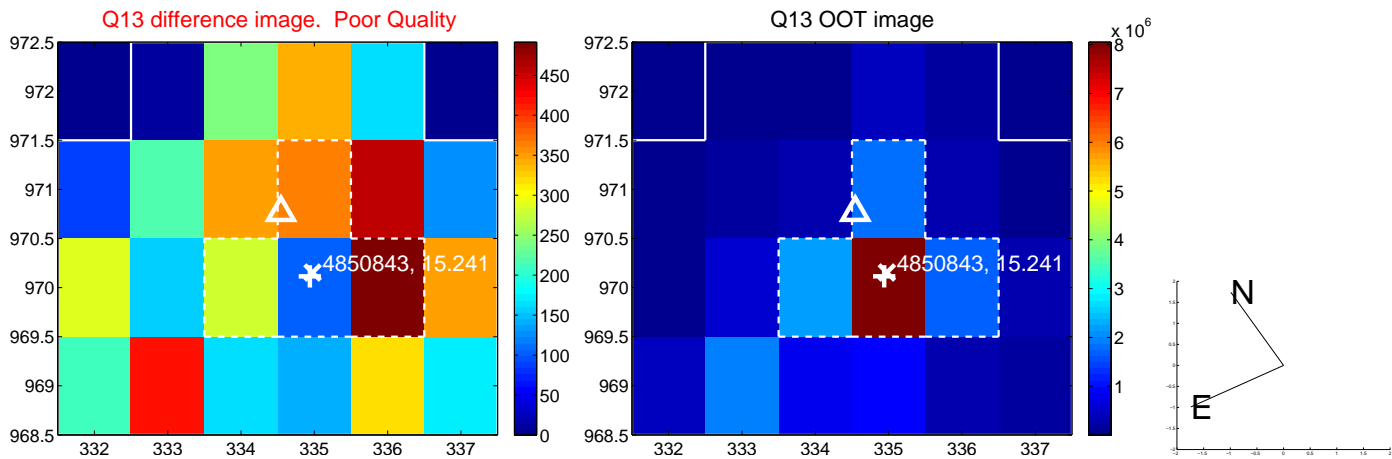




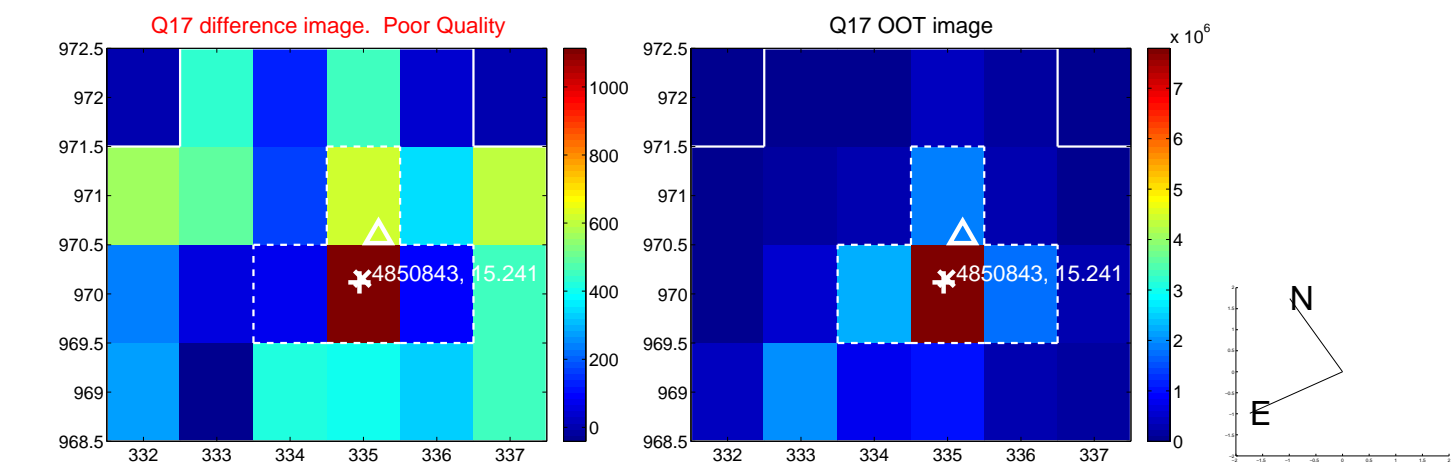
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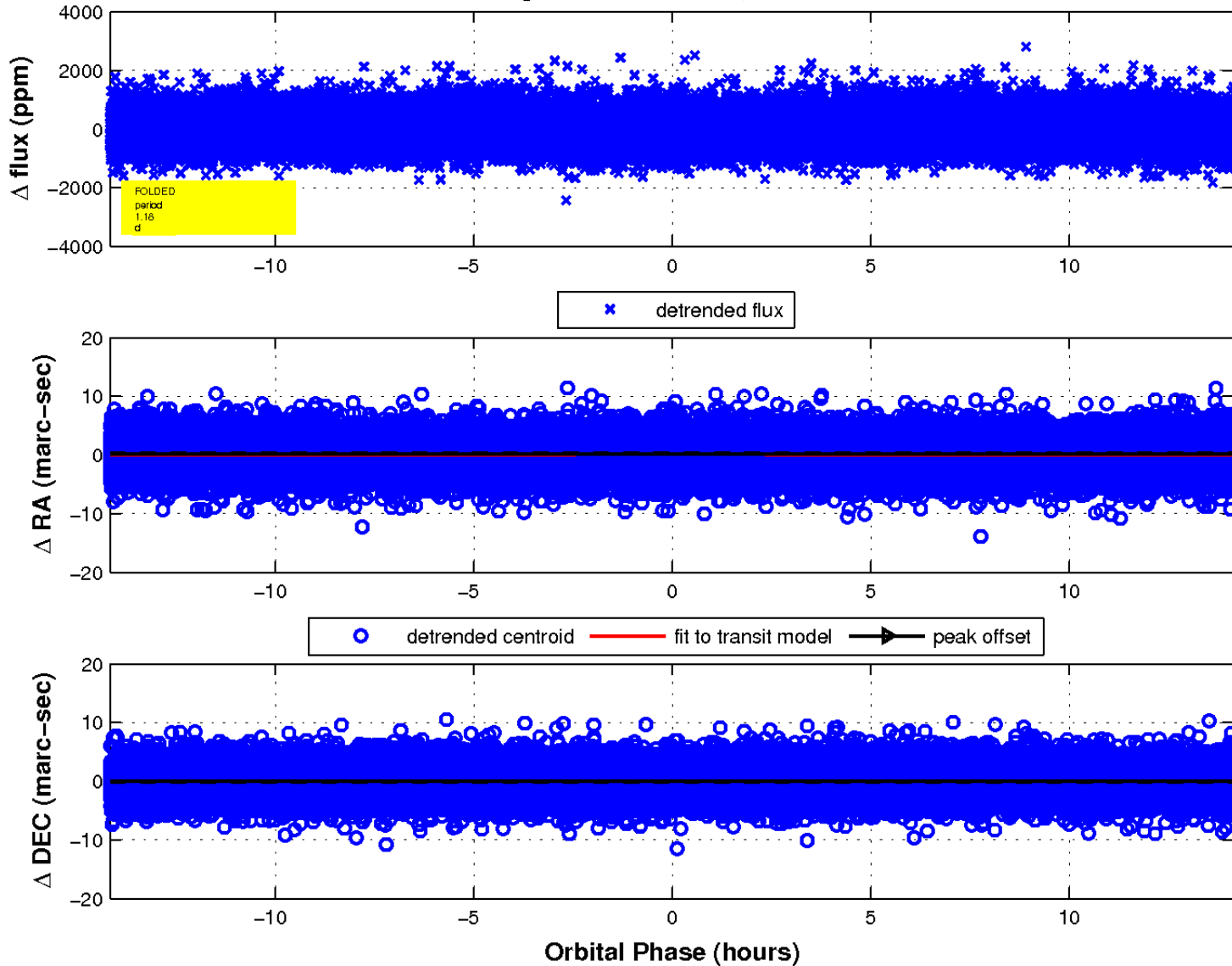
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

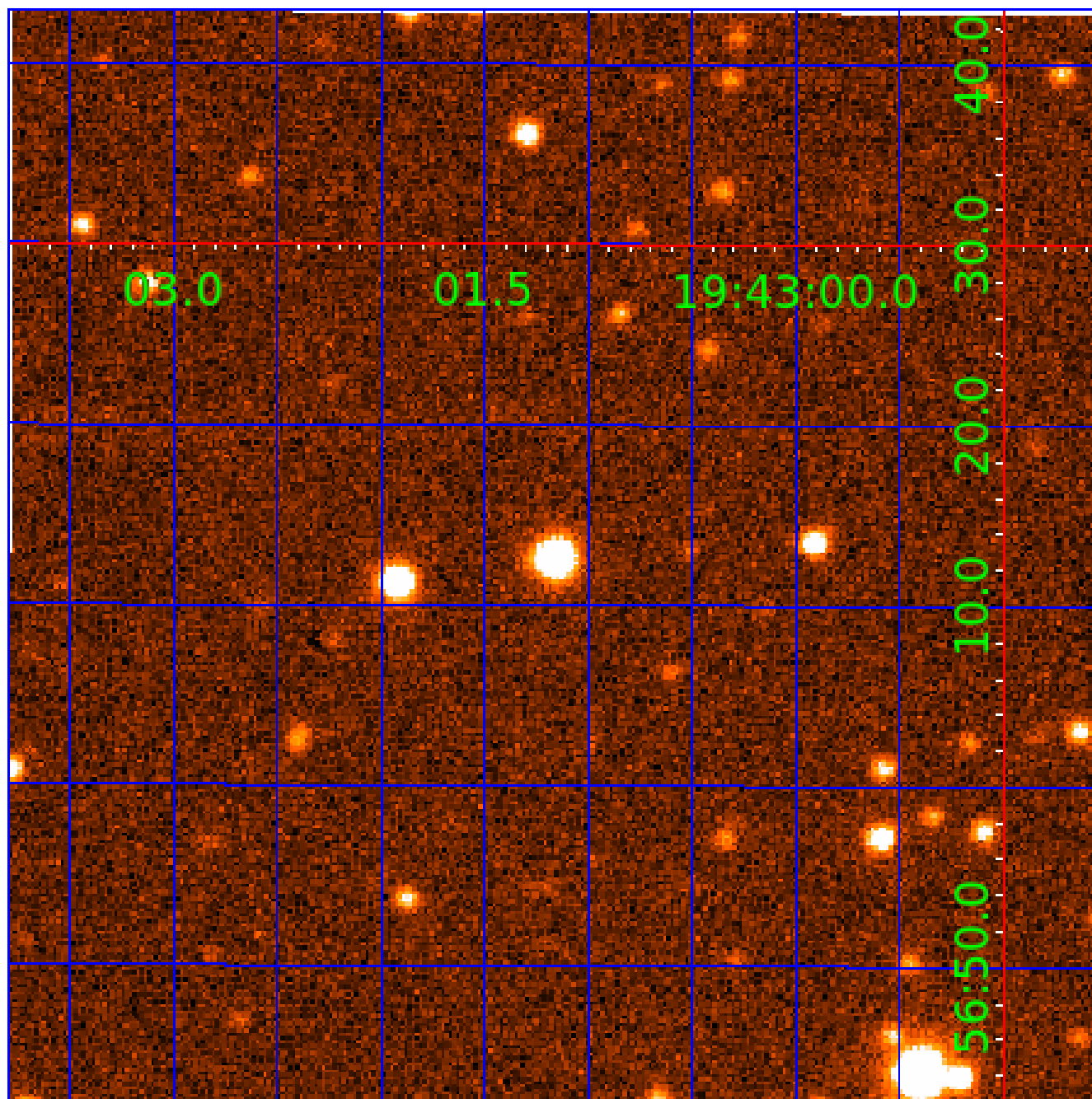


fluxWeightedCentroids, Planet 1 of 3



# UKIRT Image

Declination





# KIC 004850843

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004850843-01	OBS	No	1.179618	132.232356	44.2	4.994	7.8	7.2	1.09	6338	0.84	3308.25
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004850843-03	OBS	No	97.701777	208.096962	891.7	2.128	7.6	7.9	1.09	6338	4.11	9.16

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004850843-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
004850843-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004850843-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

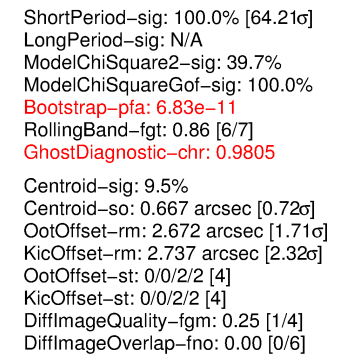
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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.

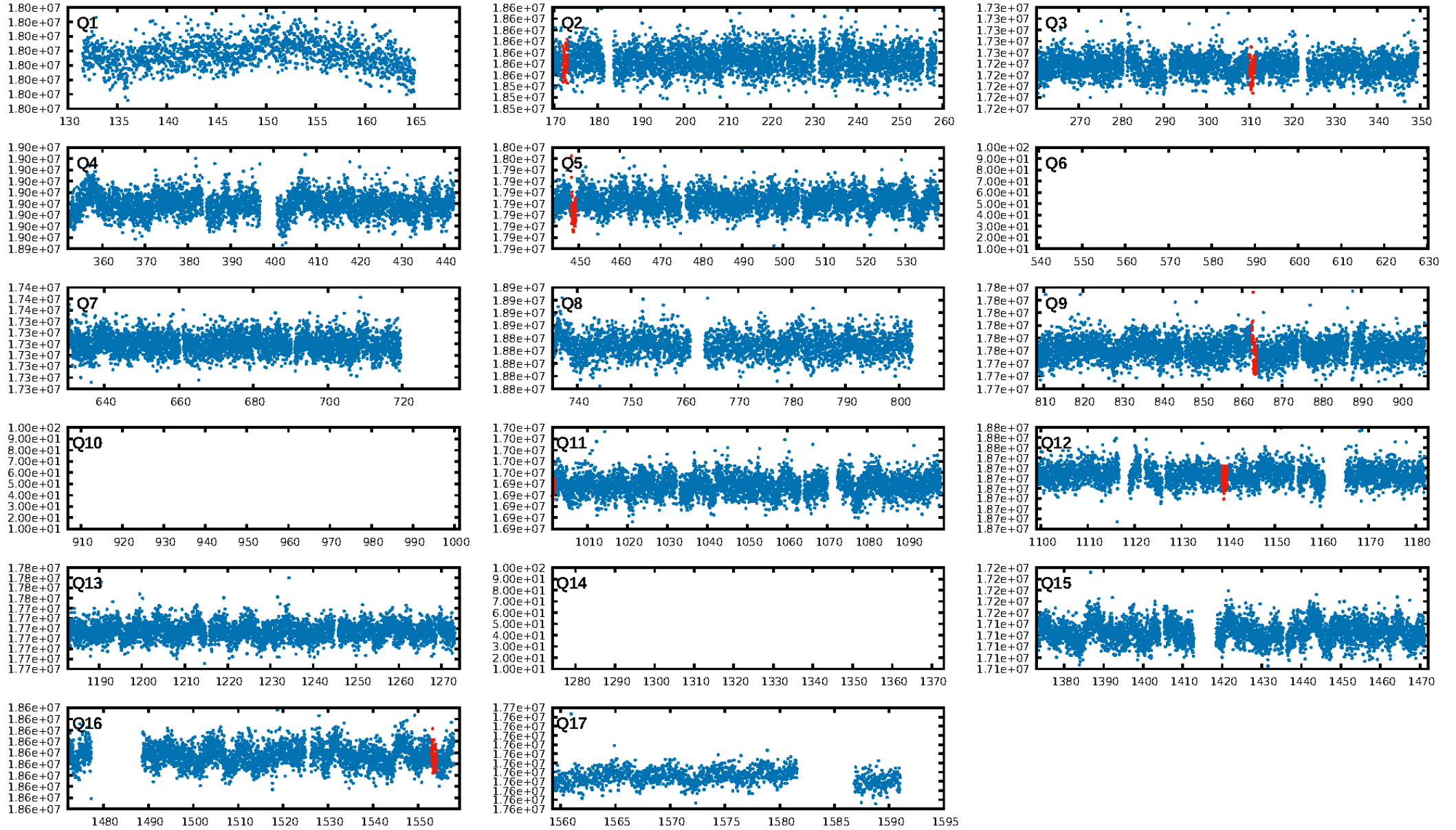
## Ephemeris Match Information For 004850843-02

No Significant Match Found

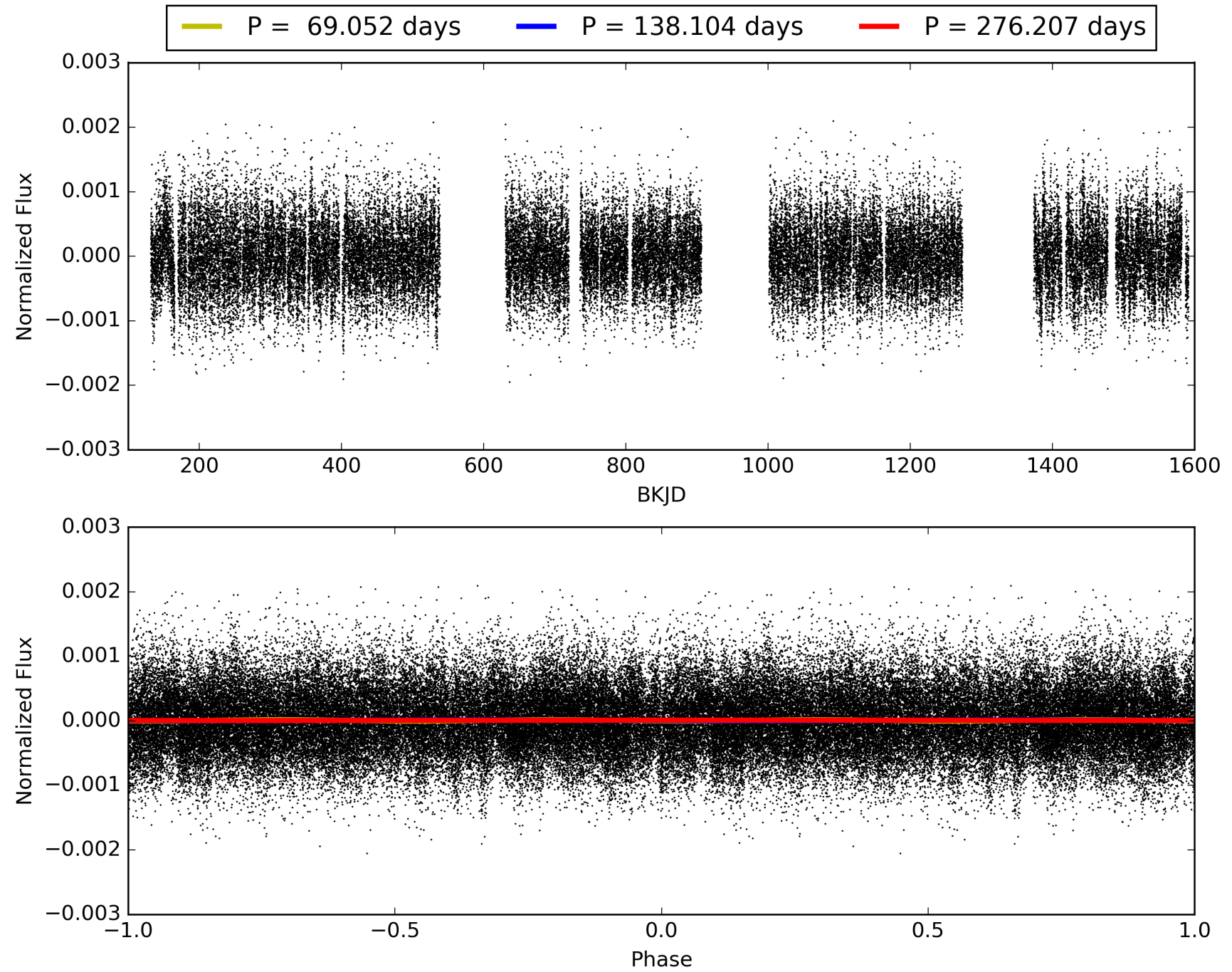
KIC: 4850843    Candidate: 2 of 3    Period: 138.104 d



# TCE 004850843-02, PDC Light Curves



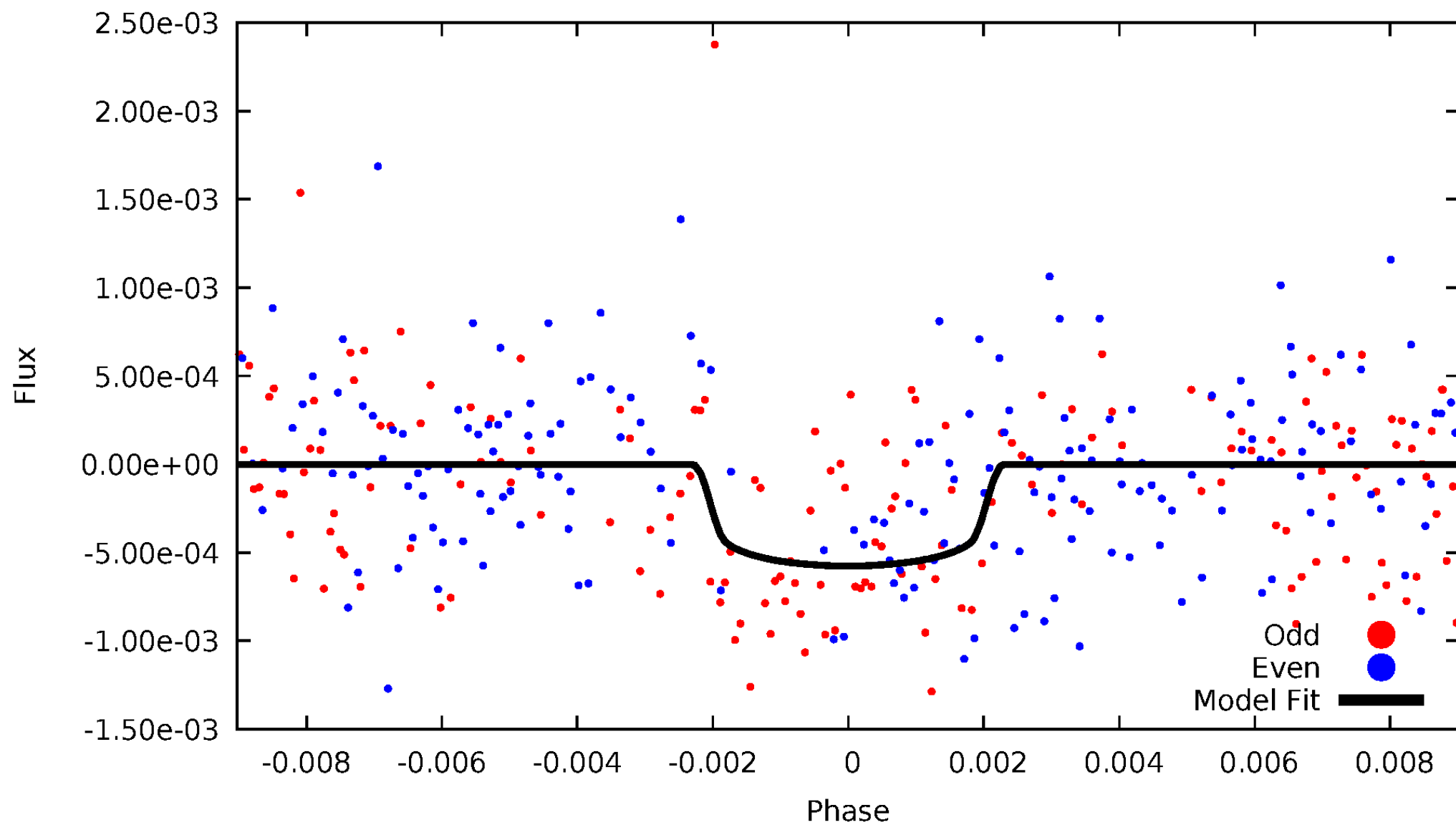
# TCE 004850843-02





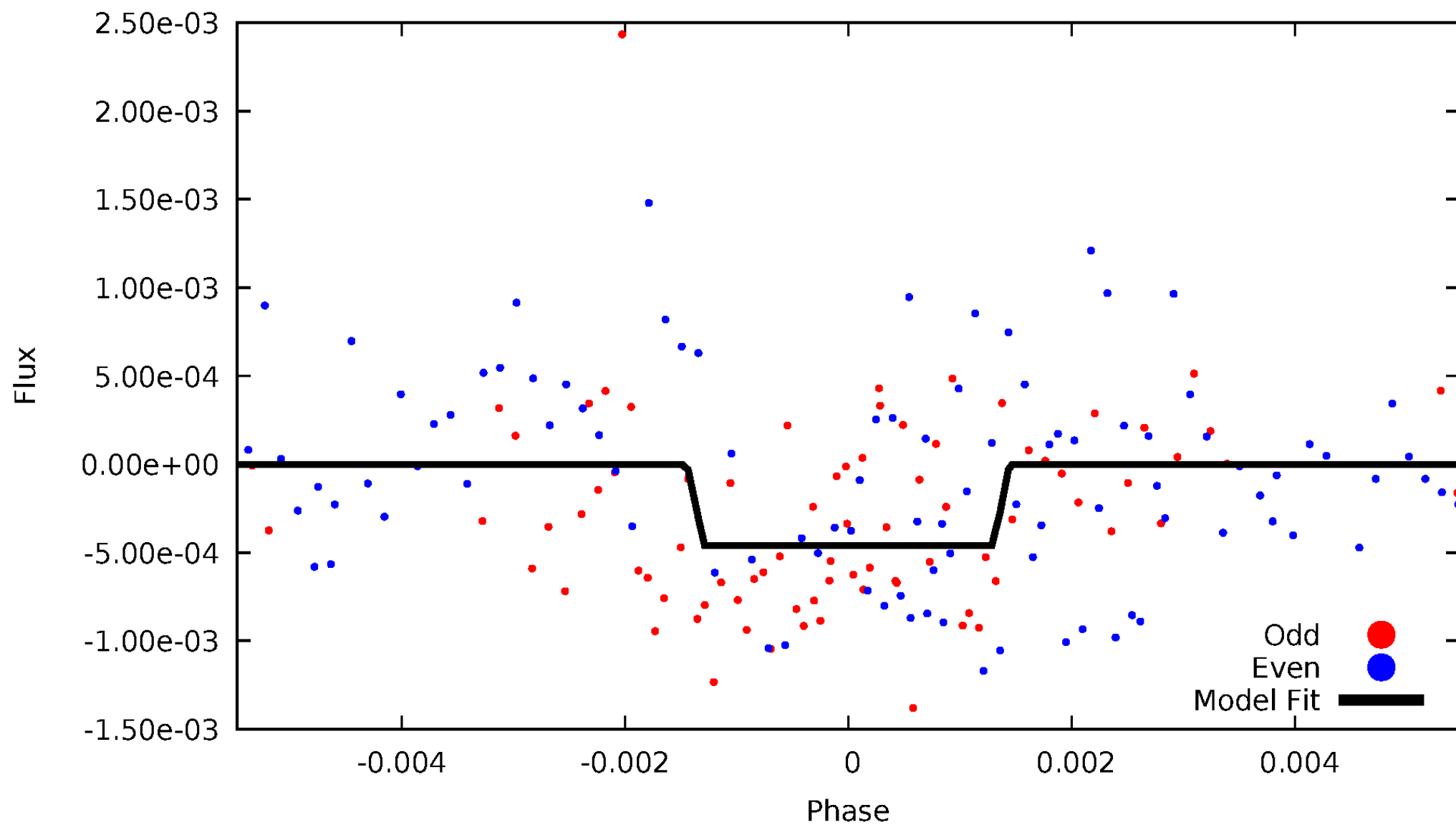
# DV Odd/Even

TCE 004850843-02



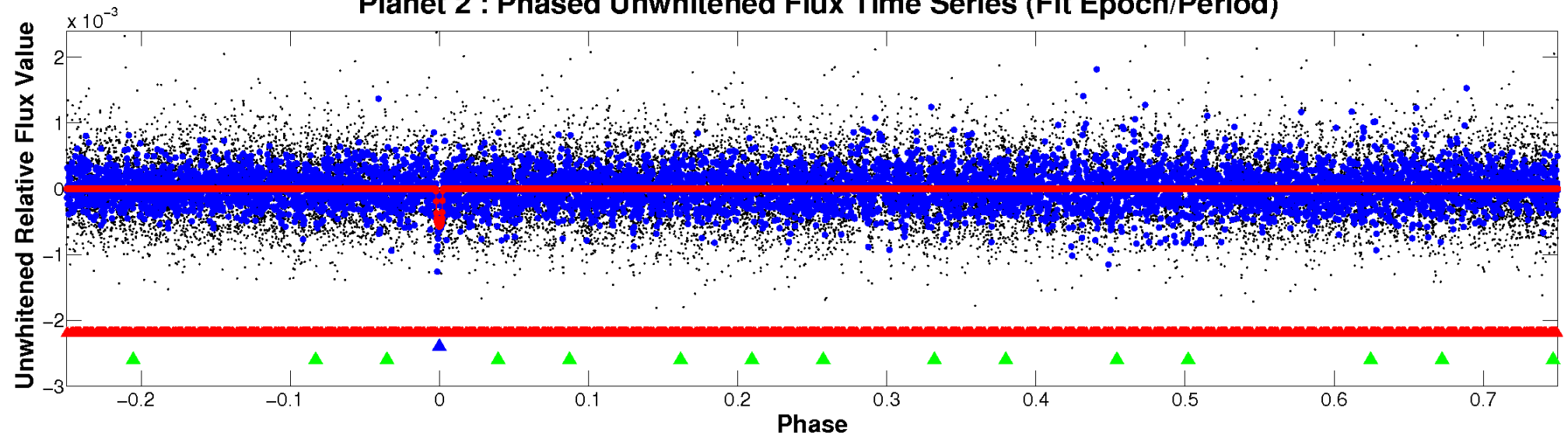
# ALT Odd/Even

TCE 004850843-02

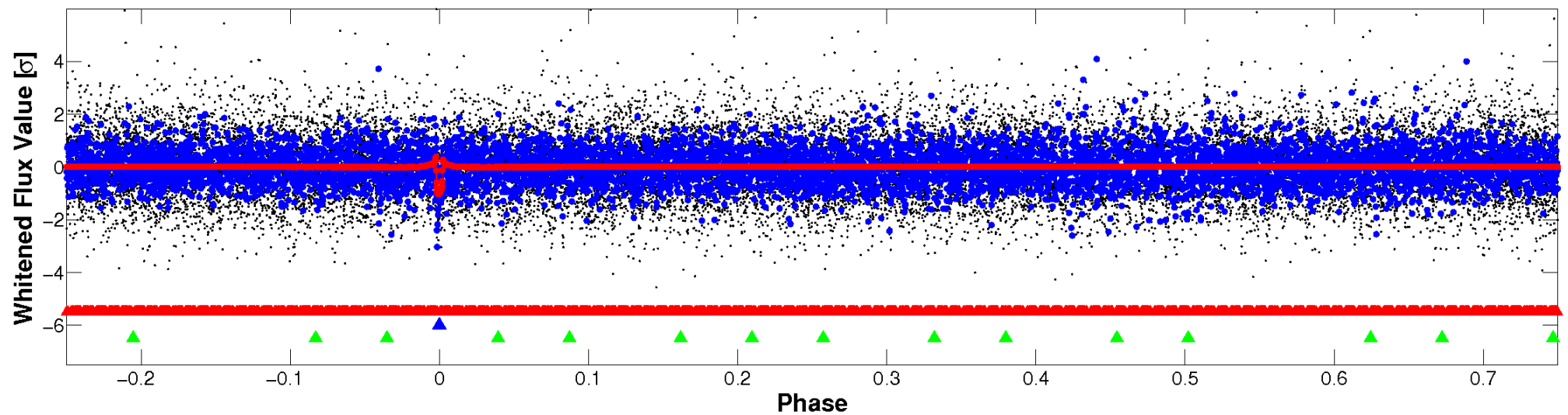


# Non-Whitened Vs. Whitened Light Curve

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



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



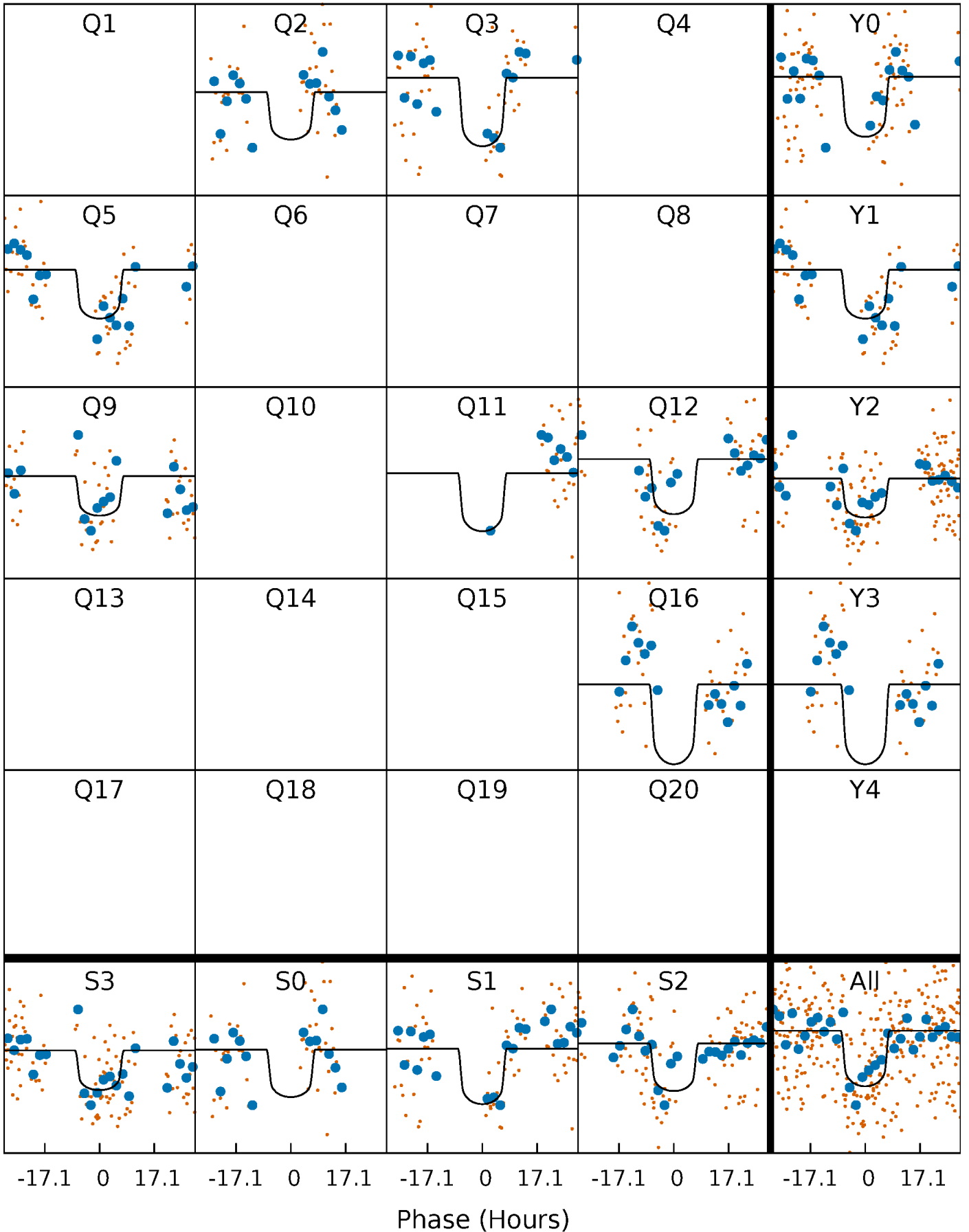
# PDC Quarter-Phased Transit Curves

TCE 004850843-02 P=138.103693 Days  $T_0=172.543007$  (BKJD)



# DV Quarter-Phased Transit Curves

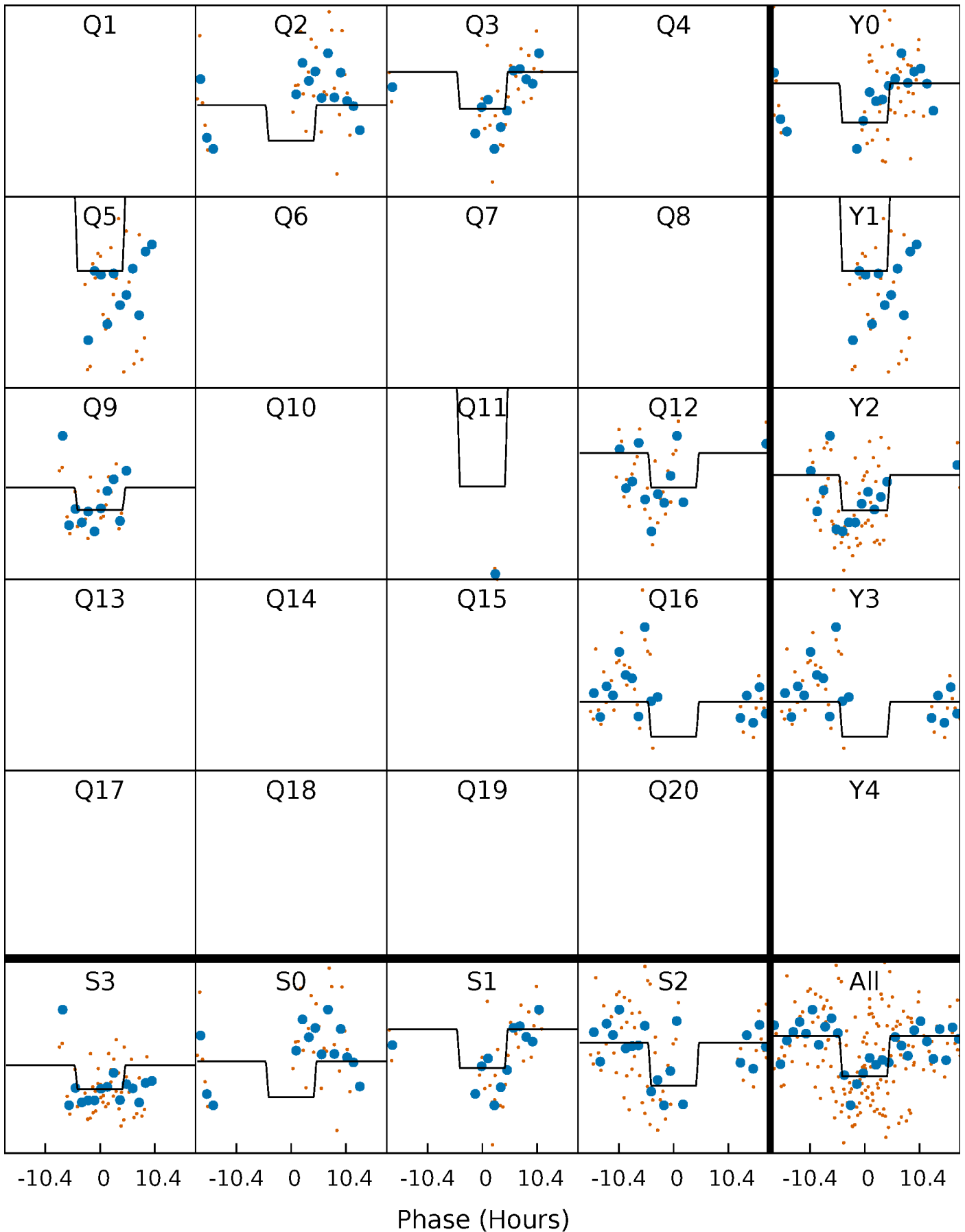
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# Alt. Detrend Quarter-Phased Transit Curves

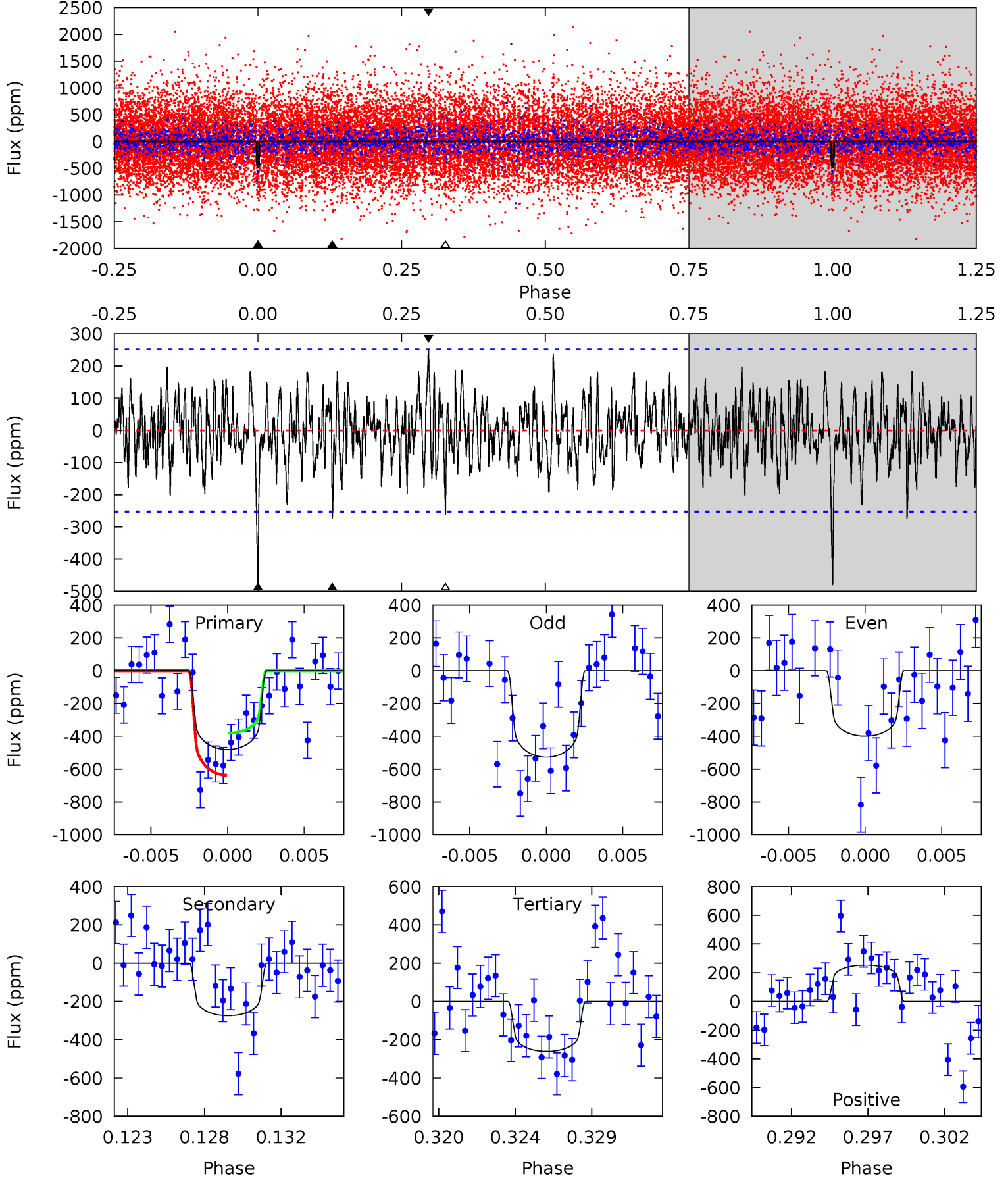
TCE 004850843-02 P=138.083187 Days  $T_0=172.653268$  (BKJD)



# DV Model-Shift Uniqueness Test

004850843-02, P = 138.103693 Days, E = 34.439314 Days

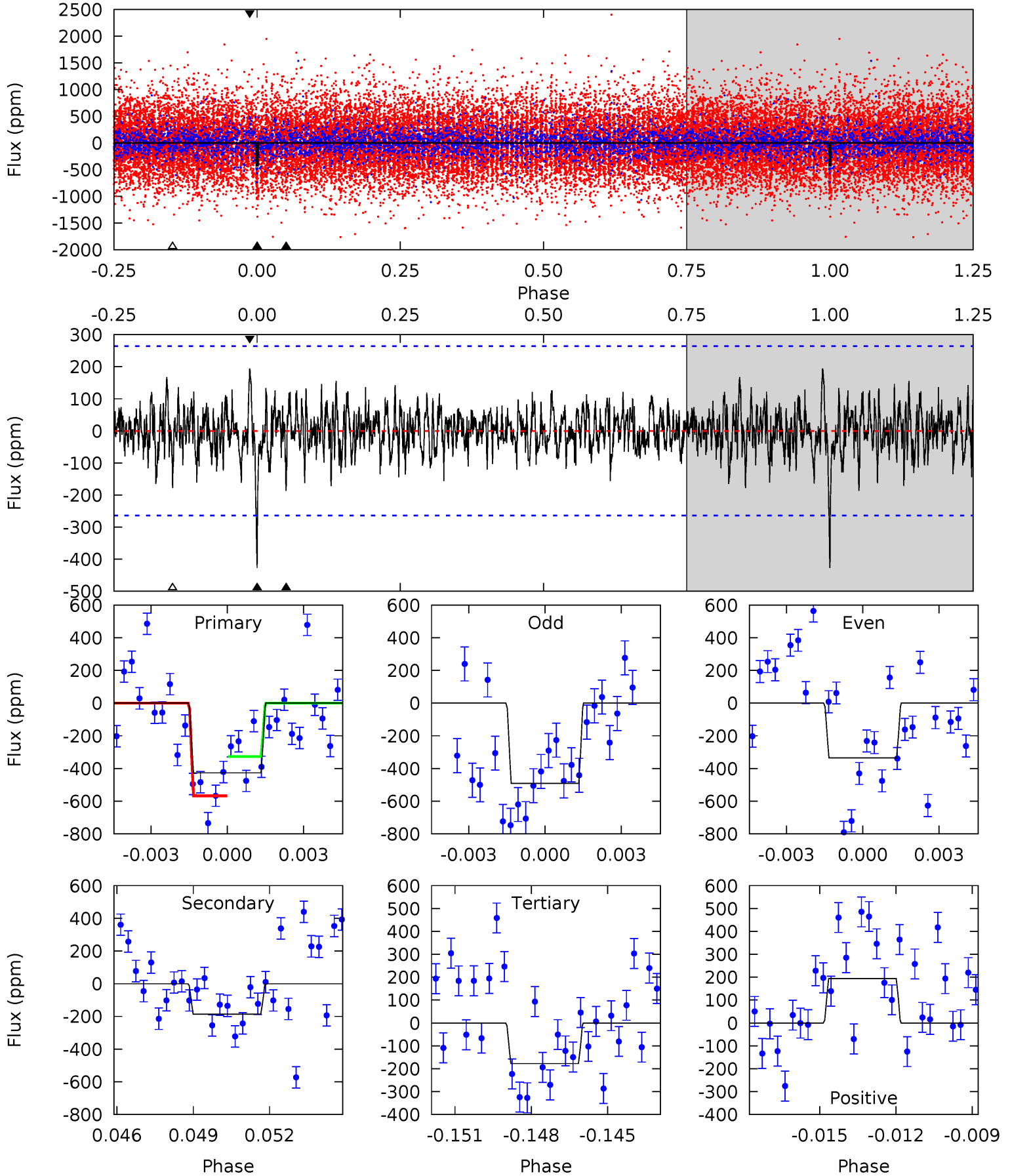
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.86	5.62	5.35	5.19	5.17	2.84	1.63	4.50	4.67	0.27	0.44	1.28	0.72	0.34	2.57



# Alt Model-Shift Uniqueness Test

004850843-02,  $P = 138.083187$  Days,  $E = 34.570081$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.50	3.72	3.54	3.87	5.26	2.98	1.04	4.97	4.63	0.18	-0.15	1.53	0.84	0.31	2.36



### Stellar Parameters For KIC 004850843

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+178}_{-245}$	$4.418^{+0.065}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.091^{+0.335}_{-0.134}$	$1.137^{+0.154}_{-0.154}$	$1.233^{+0.354}_{-0.660}$
	+3%/-4%	+1%/-4%	+250%/-300%	+31%/-12%	+14%/-14%	+29%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004850843-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-274 \pm 49$	$3.07^{+0.65}_{-0.49}$	$562^{+37}_{-30}$	$5178^{+452}_{-379}$	$4499^{+2269}_{-1390}$
Alt.	$-187 \pm 50$	$2.64^{+0.66}_{-0.52}$	$561^{+42}_{-31}$	$5081^{+539}_{-440}$	$4067^{+2708}_{-1548}$

$T_{max}$  = 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

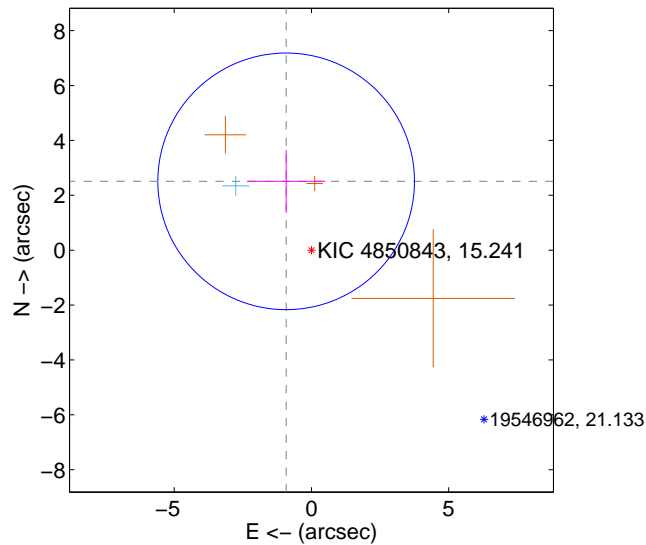
Supplemental centroid analysis for 004850843-02. Kepler magnitude: 15.24. Transit SNR 7.95

There are 1 quarters with good PRF difference image offsets

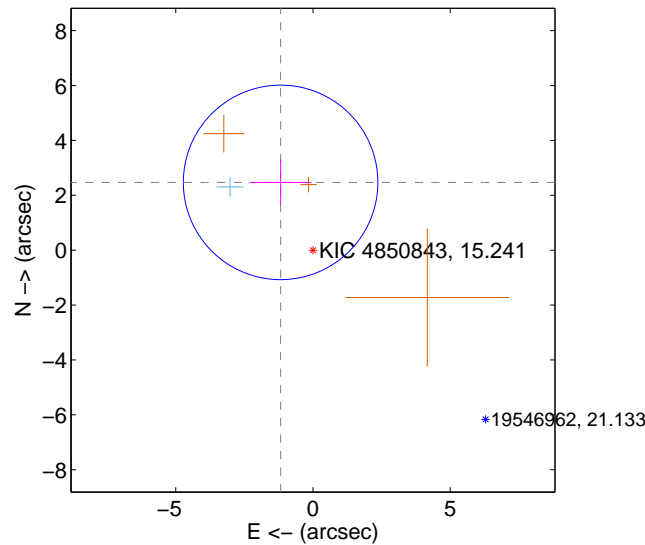
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.672 \pm 1.559$	1.71	$0.922 \pm 1.431$	$2.508 \pm 1.142$
PRF-fit source offset from KIC position	$2.737 \pm 1.181$	2.32	$1.180 \pm 1.118$	$2.470 \pm 0.843$
photometric centroid source offset	$0.67 \pm 0.92$	0.72	$-0.16 \pm 1.28$	$-0.65 \pm 0.90$

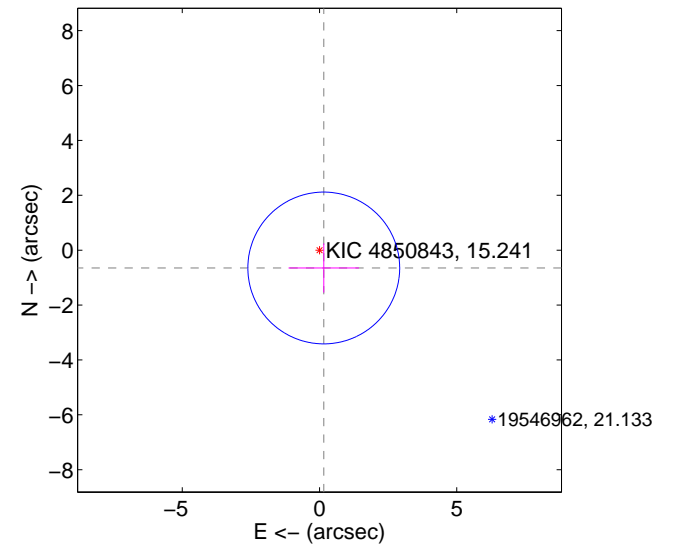
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

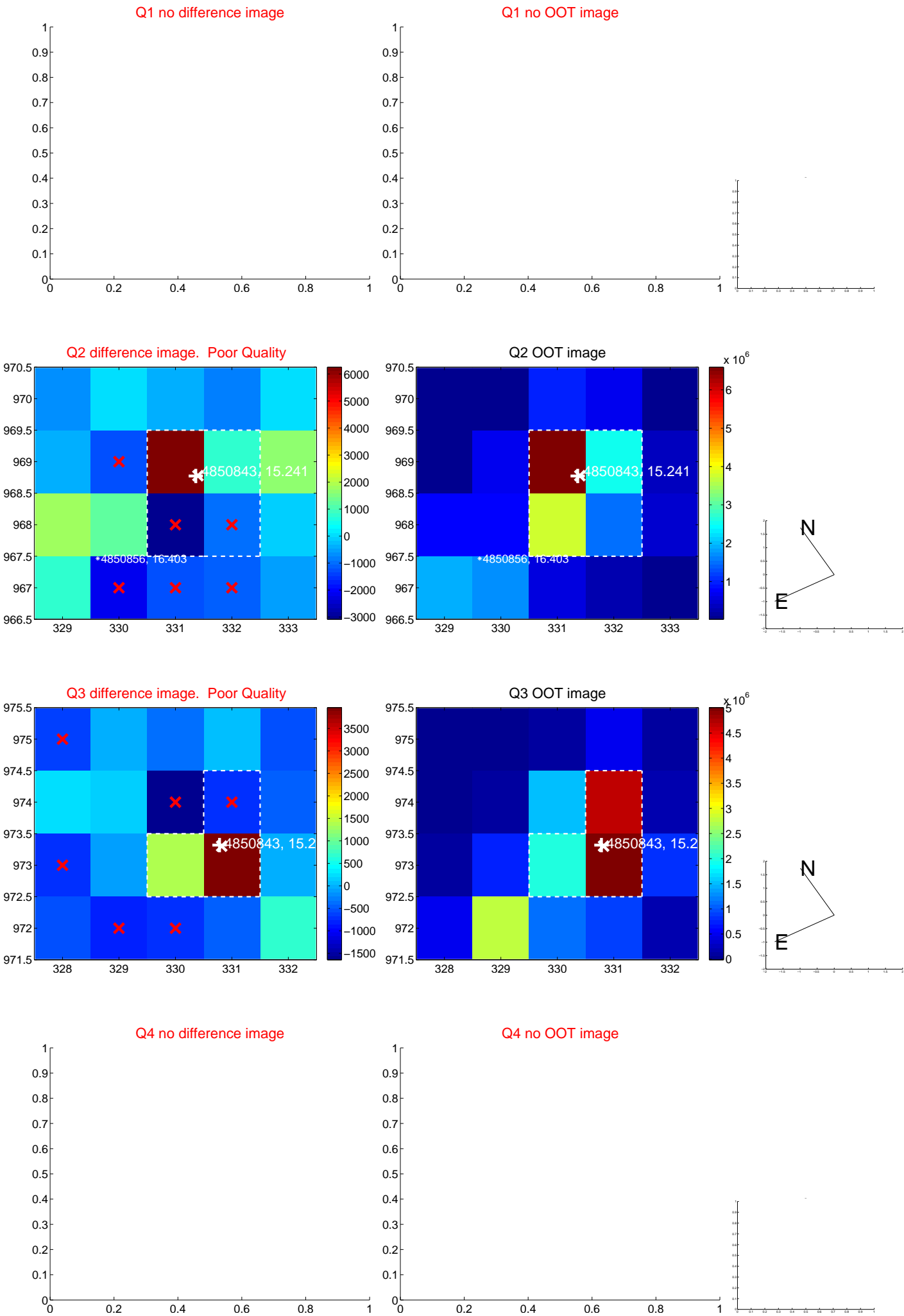


offset from photometric centroids



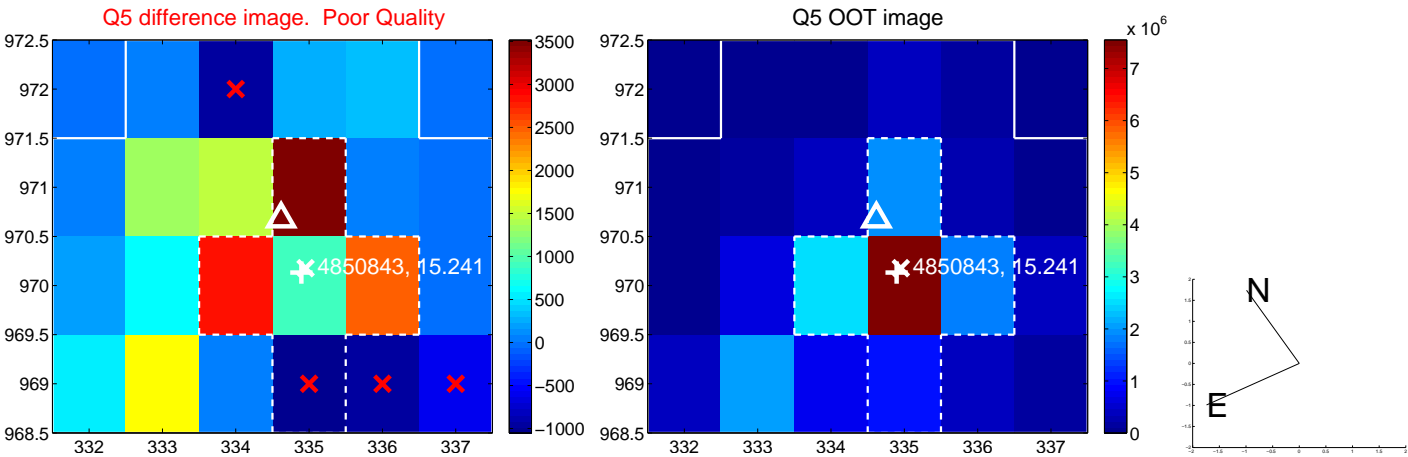
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

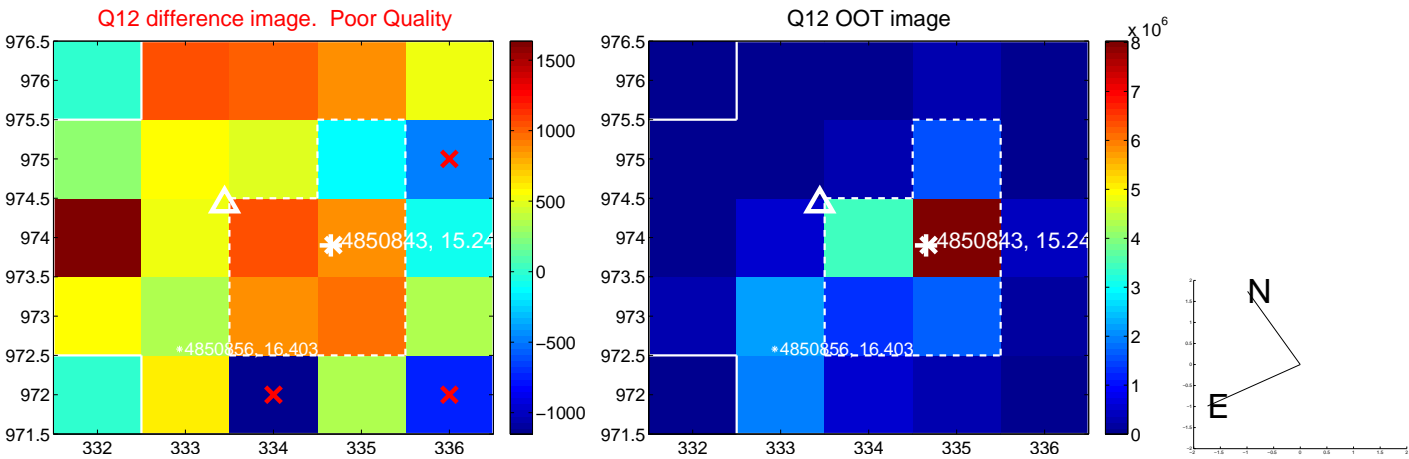
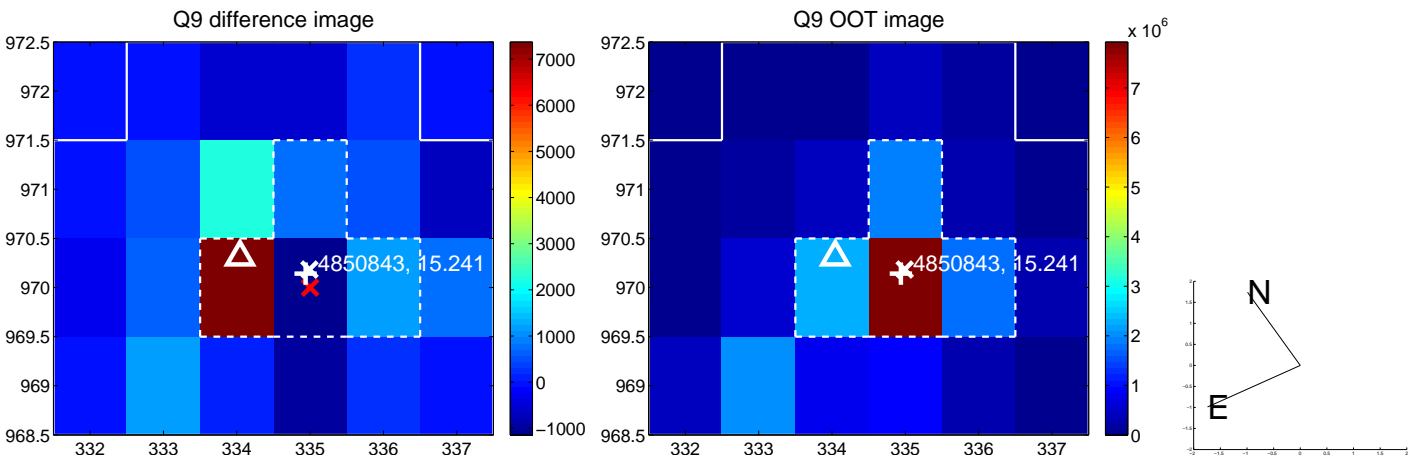




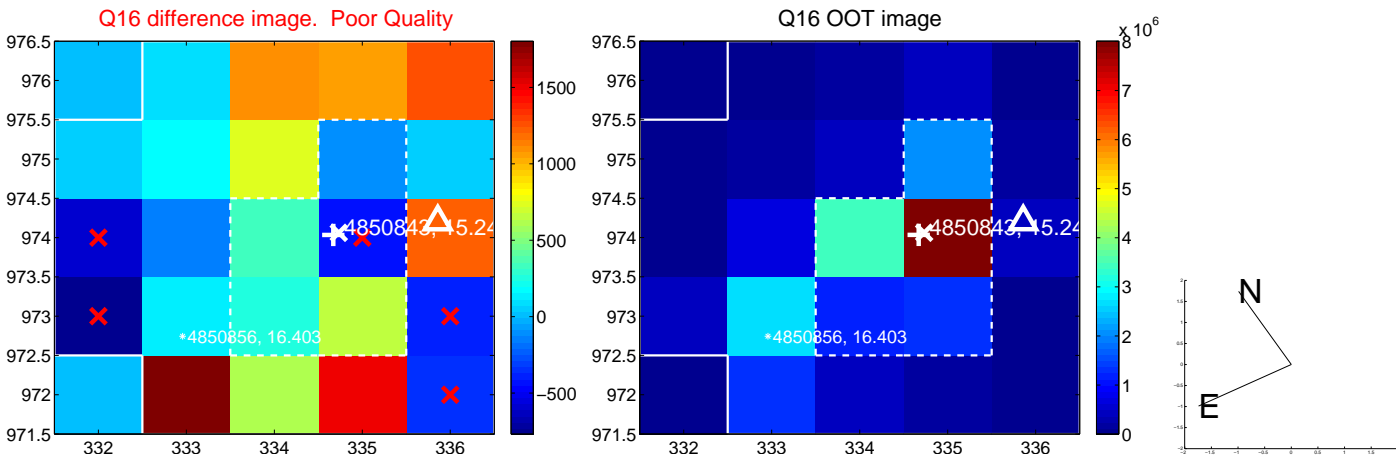
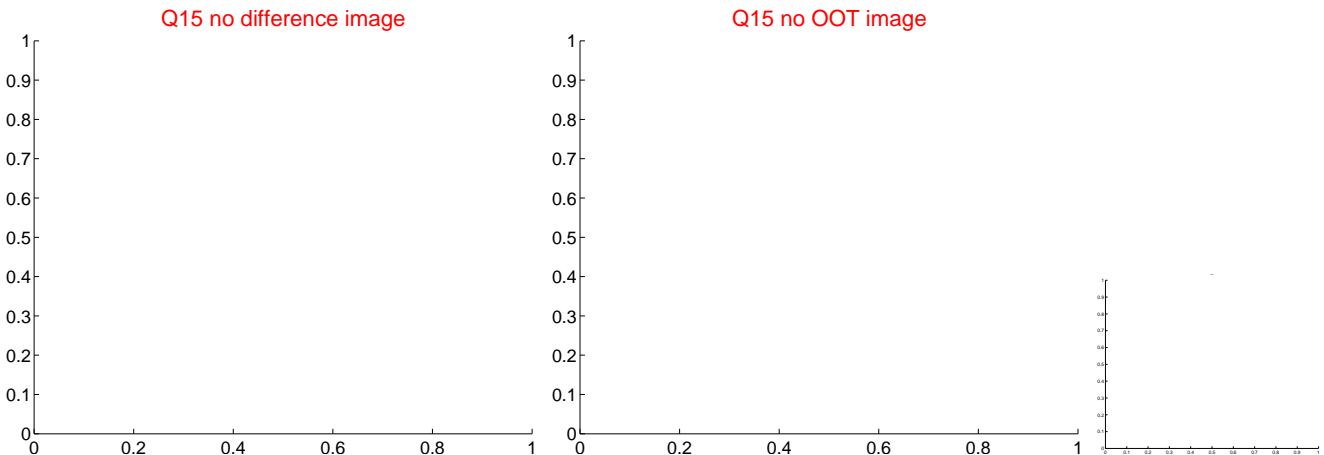
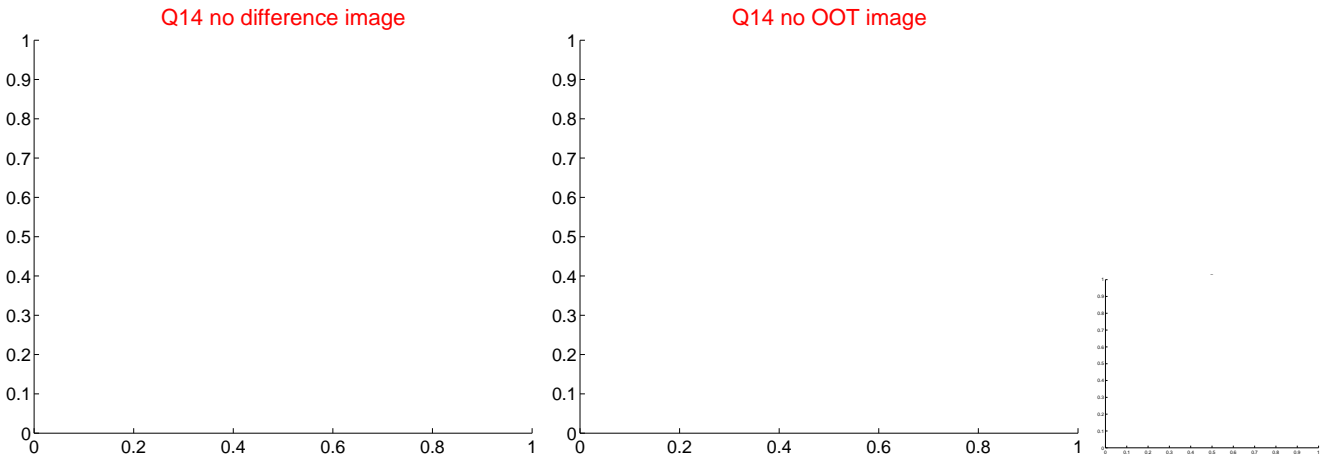
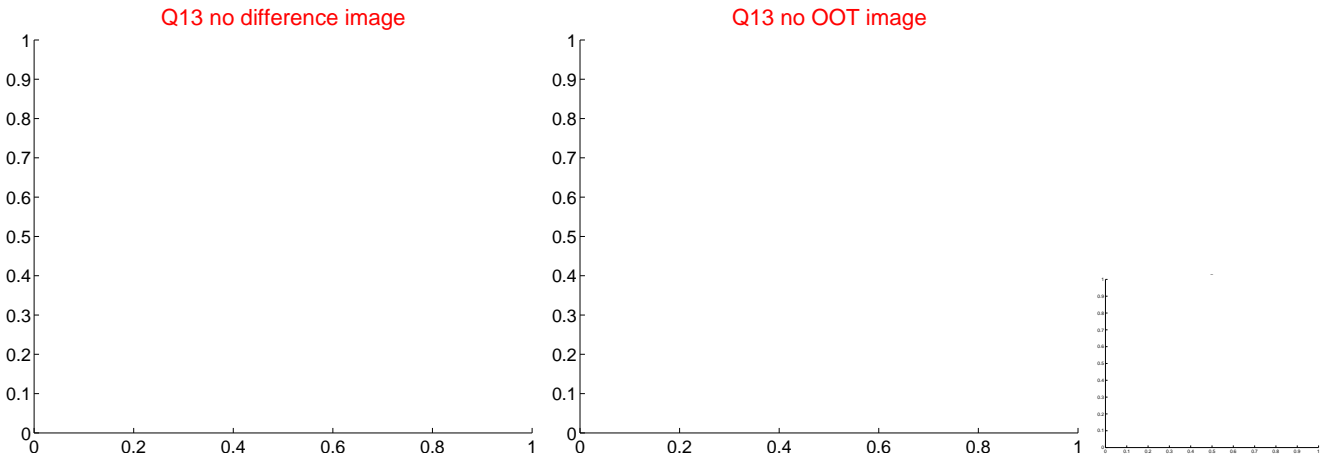
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



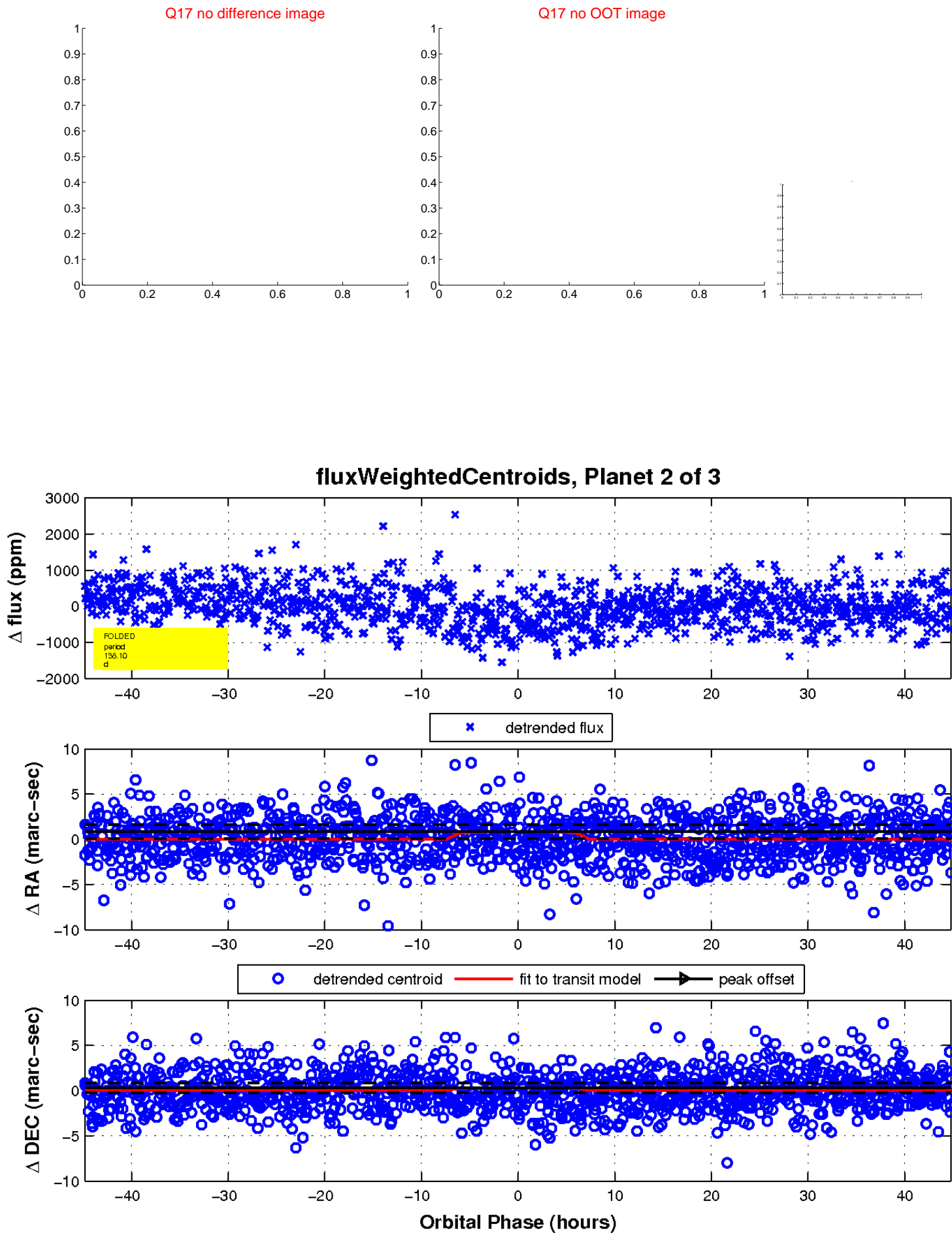
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

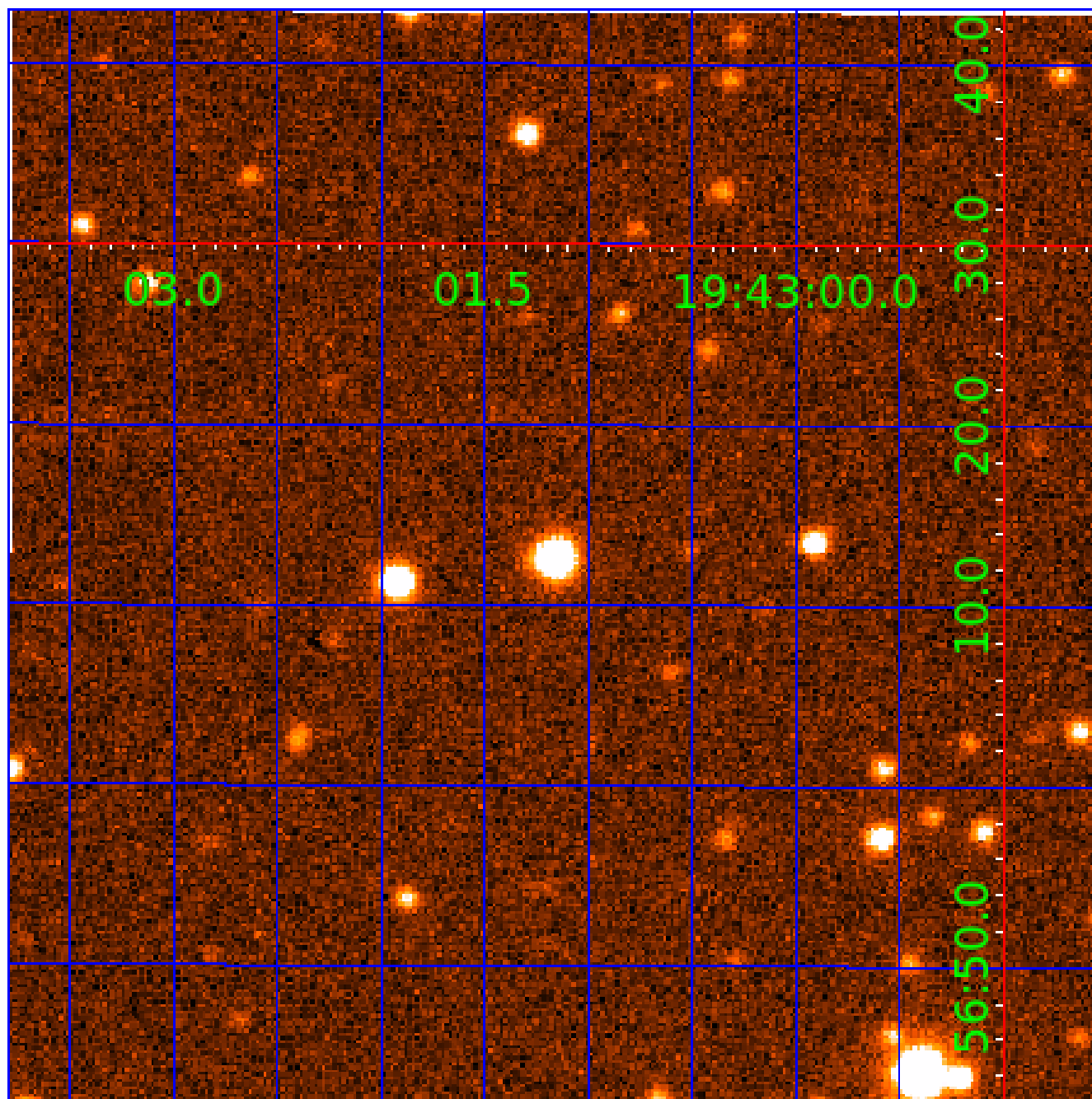


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 004850843

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004850843-01	OBS	No	1.179618	132.232356	44.2	4.994	7.8	7.2	1.09	6338	0.84	3308.25
004850843-02	OBS	No	138.103693	172.543007	575.7	14.950	8.4	8.0	1.09	6338	2.98	5.78
004850843-03	OBS	No	97.701777	208.096962	891.7	2.128	7.6	7.9	1.09	6338	4.11	9.16

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004850843-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—HALO_GHOST—EPHEM_MATCH
004850843-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004850843-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

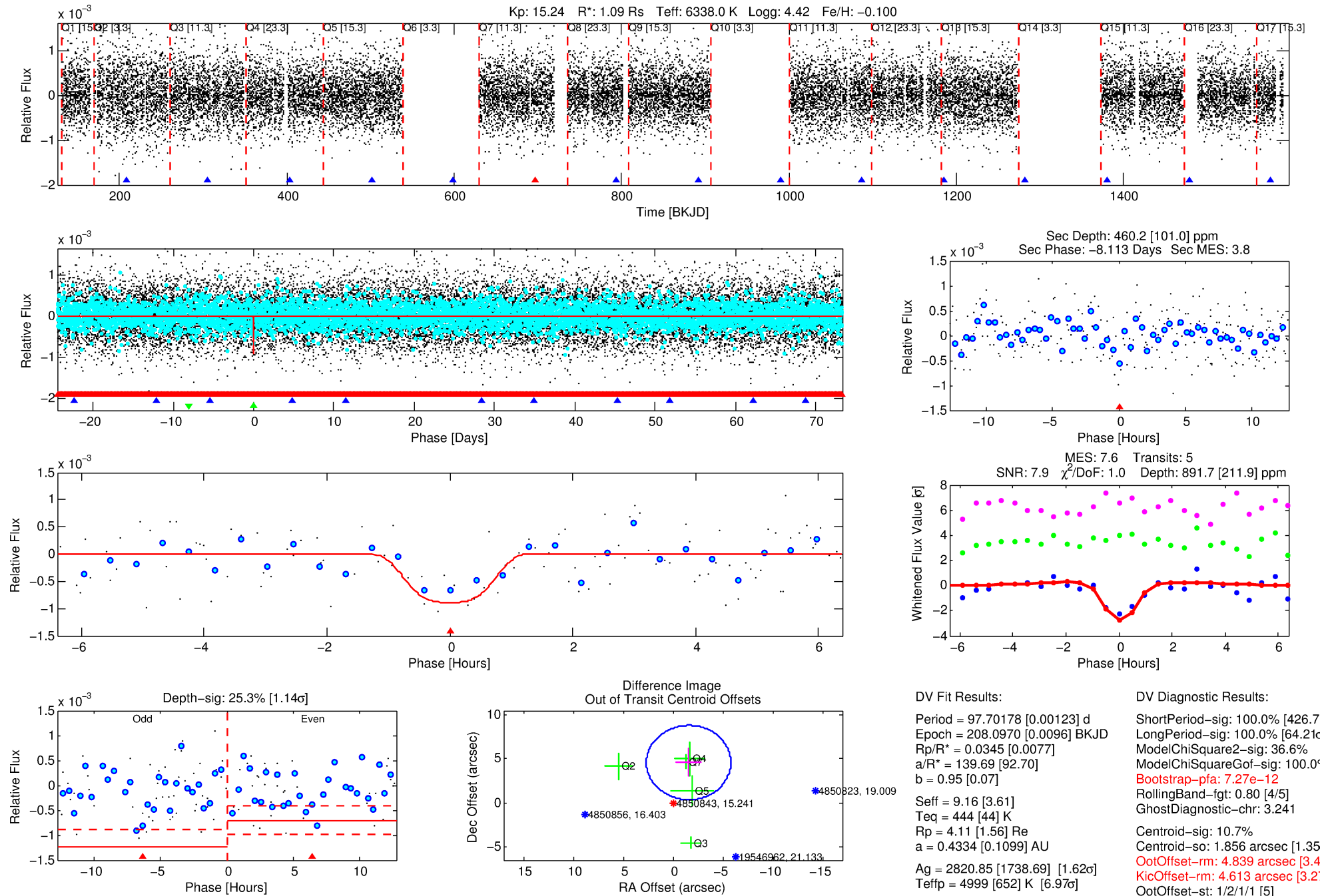
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004850843-03

No Significant Match Found

# DV One-Page Summary

KIC: 4850843 Candidate: 3 of 3 Period: 97.702 d



## DV Fit Results:

Period = 97.70178 [0.00123] d  
 Epoch = 208.0970 [0.0096] BKJD  
 Rp/R\* = 0.0345 [0.0077]  
 a/R\* = 139.69 [92.70]  
 b = 0.95 [0.07]  
 Seff = 9.16 [3.61]  
 Teq = 444 [44] K  
 Rp = 4.11 [1.56] Re  
 a = 0.4334 [0.1099] AU  
 Ag = 2820.85 [1738.69] [1.62σ]  
 Tefp = 4999 [652] K [6.97σ]

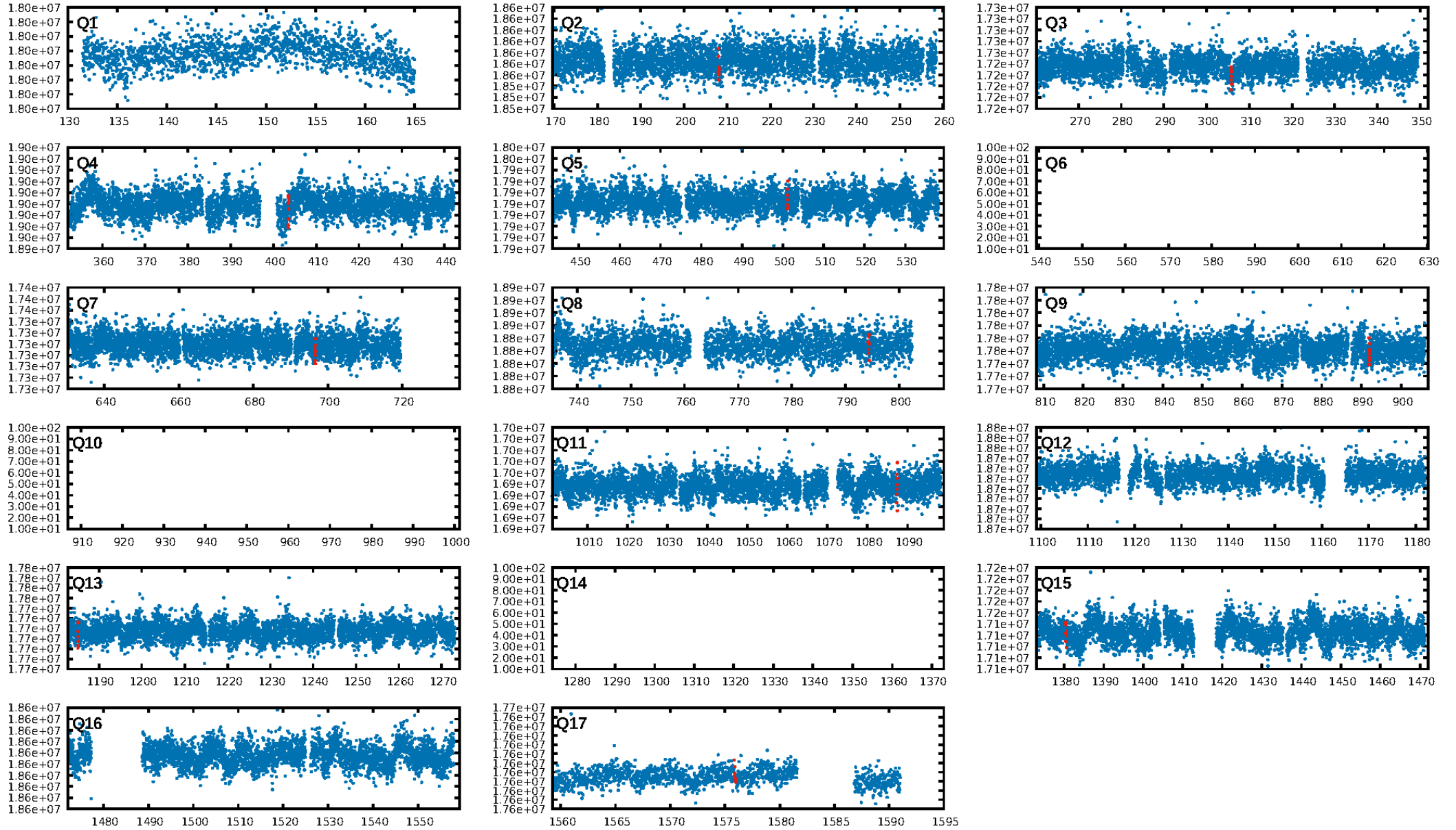
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [426.70σ]  
 LongPeriod-sig: 100.0% [64.21σ]  
 ModelChiSquare2-sig: 36.6%  
 ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 7.27e-12**  
 RollingBand-fgt: 0.80 [4/5]  
 GhostDiagnostic-chr: 3.241  
 Centroid-sig: 10.7%  
 Centroid-so: 1.856 arcsec [1.35σ]  
**OotOffset-rm: 4.839 arcsec [3.43σ]**  
**KicOffset-rm: 4.613 arcsec [3.27σ]**  
 OotOffset-st: 1/2/1/1 [5]  
 KicOffset-st: 1/2/1/1 [5]  
 DiffImageQuality-fgm: 0.00 [0/5]  
 DiffImageOverlap-fno: 0.10 [1/10]

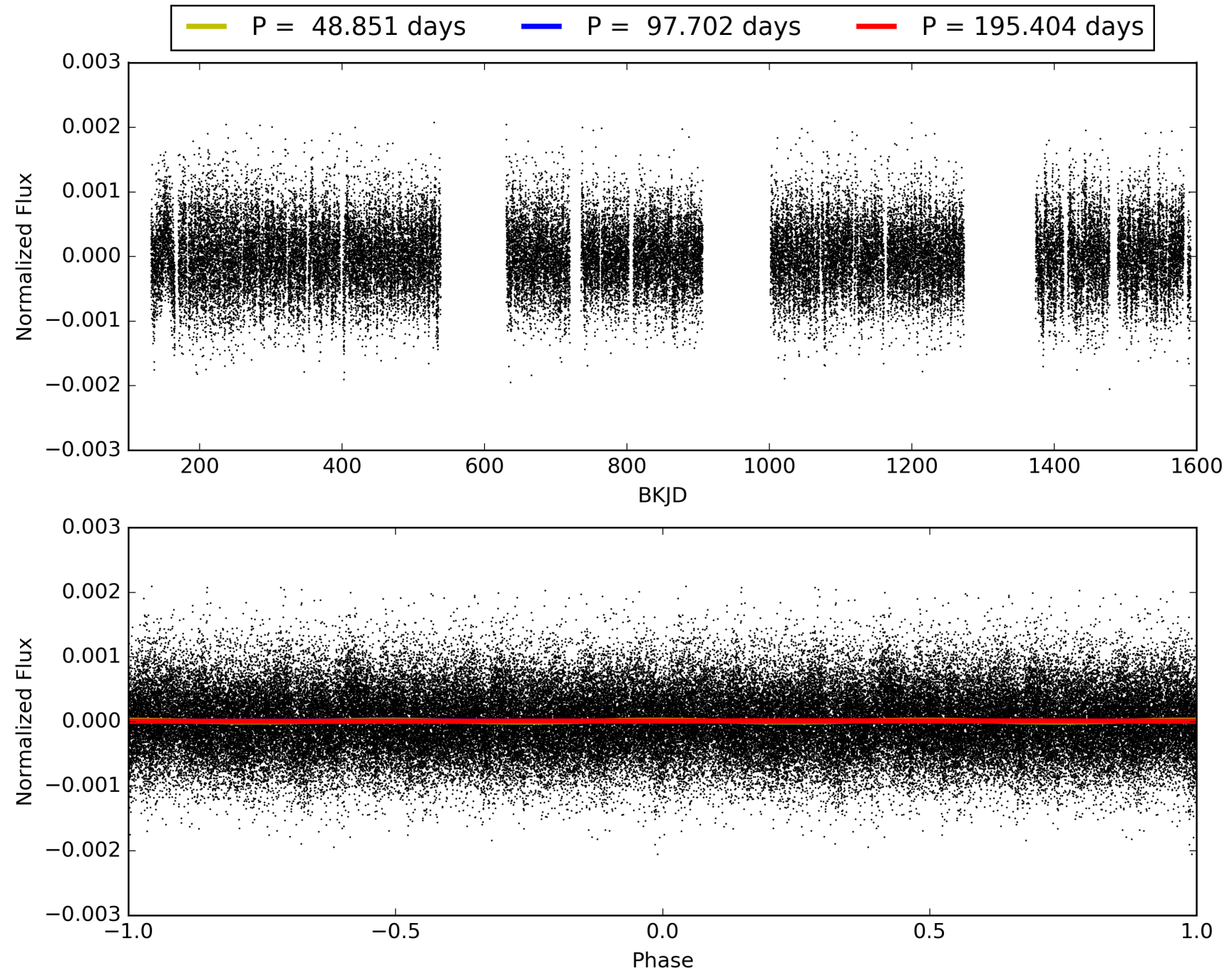
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:01:37 Z

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

# TCE 004850843-03, PDC Light Curves

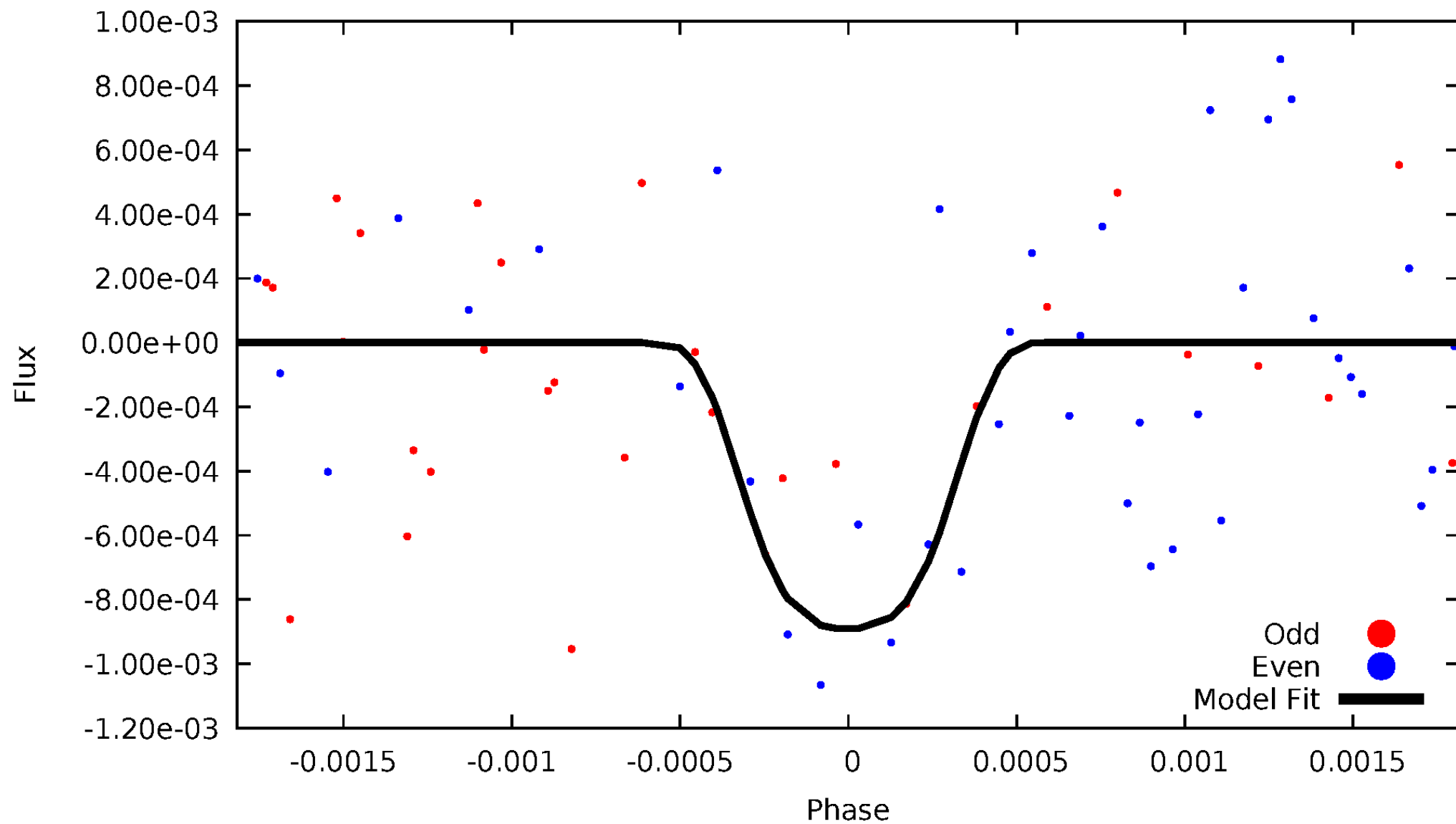


TCE 004850843-03



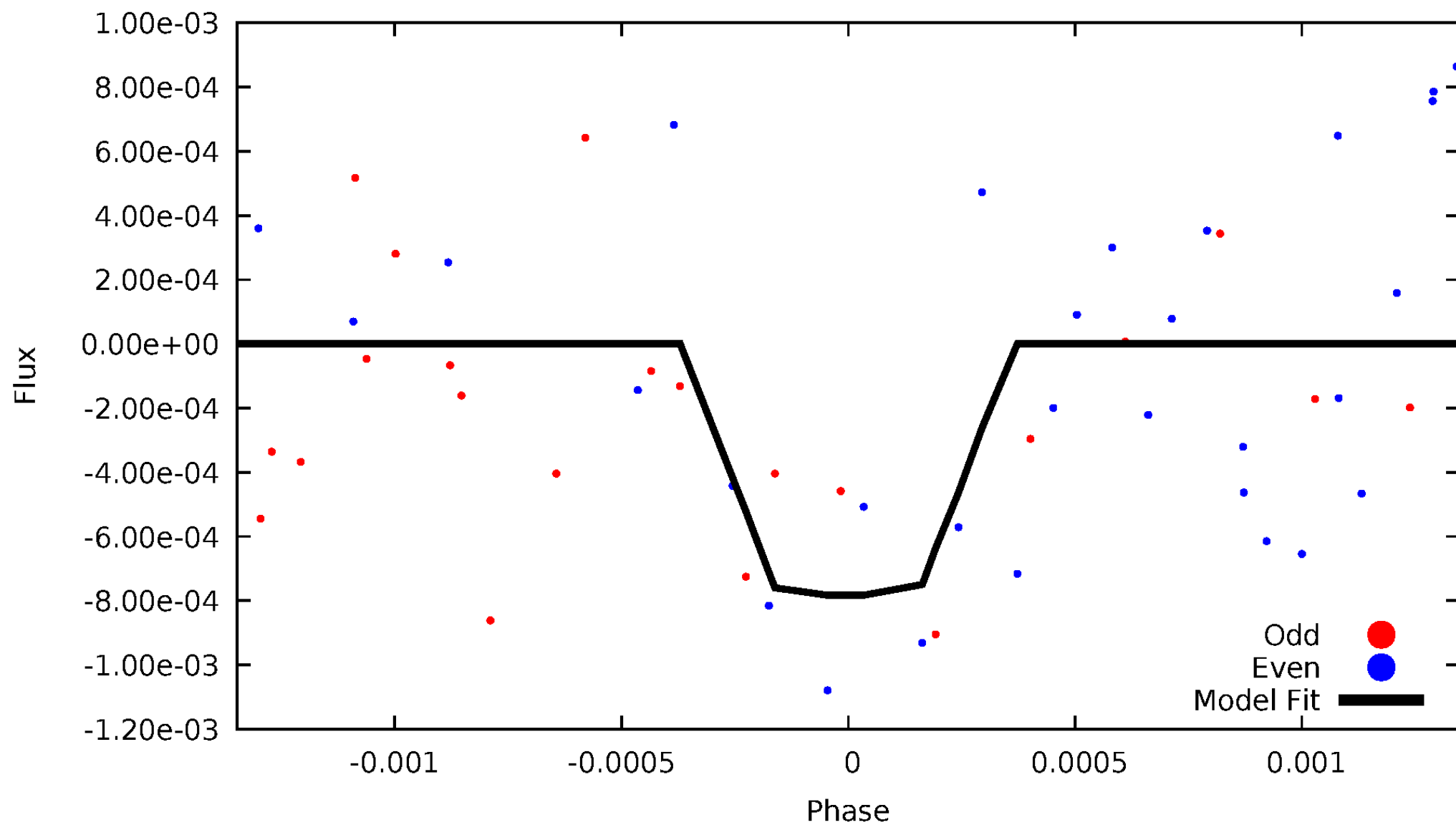
# DV Odd/Even

TCE 004850843-03



# ALT Odd/Even

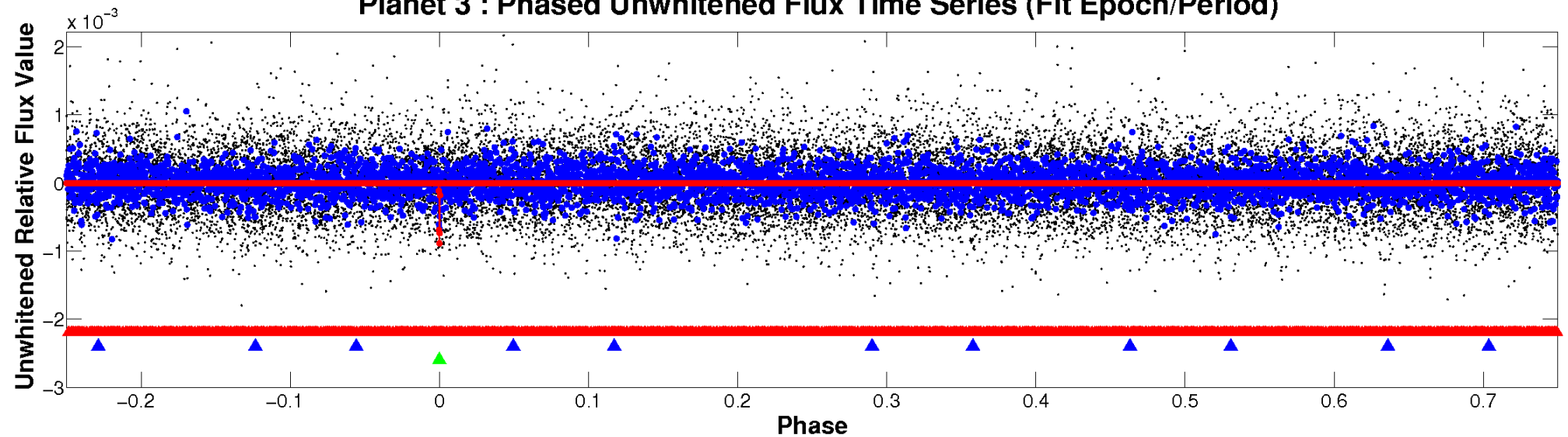
TCE 004850843-03



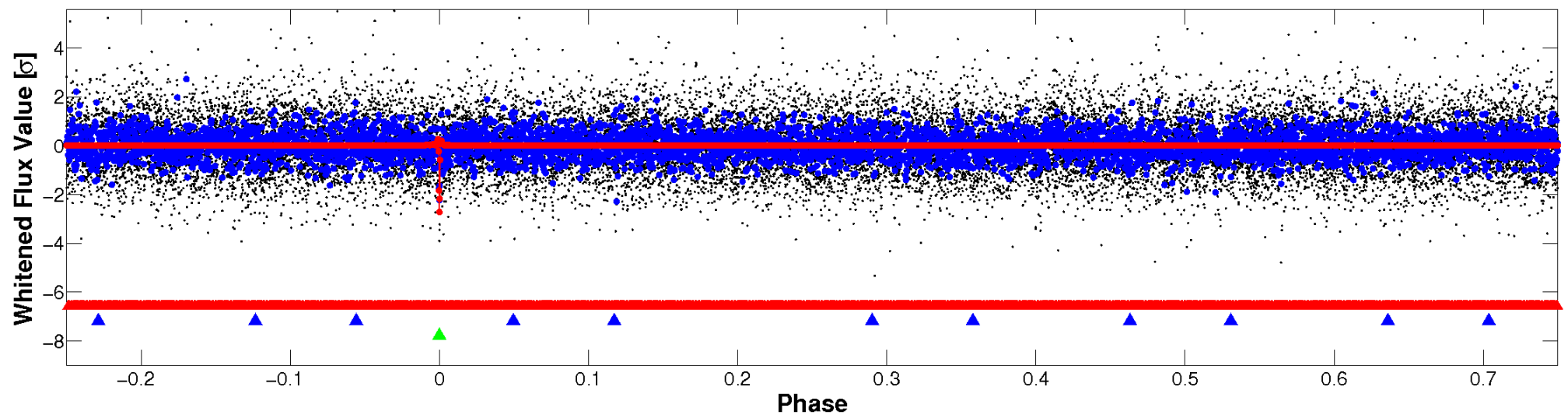


# Non-Whitened Vs. Whitened Light Curve

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

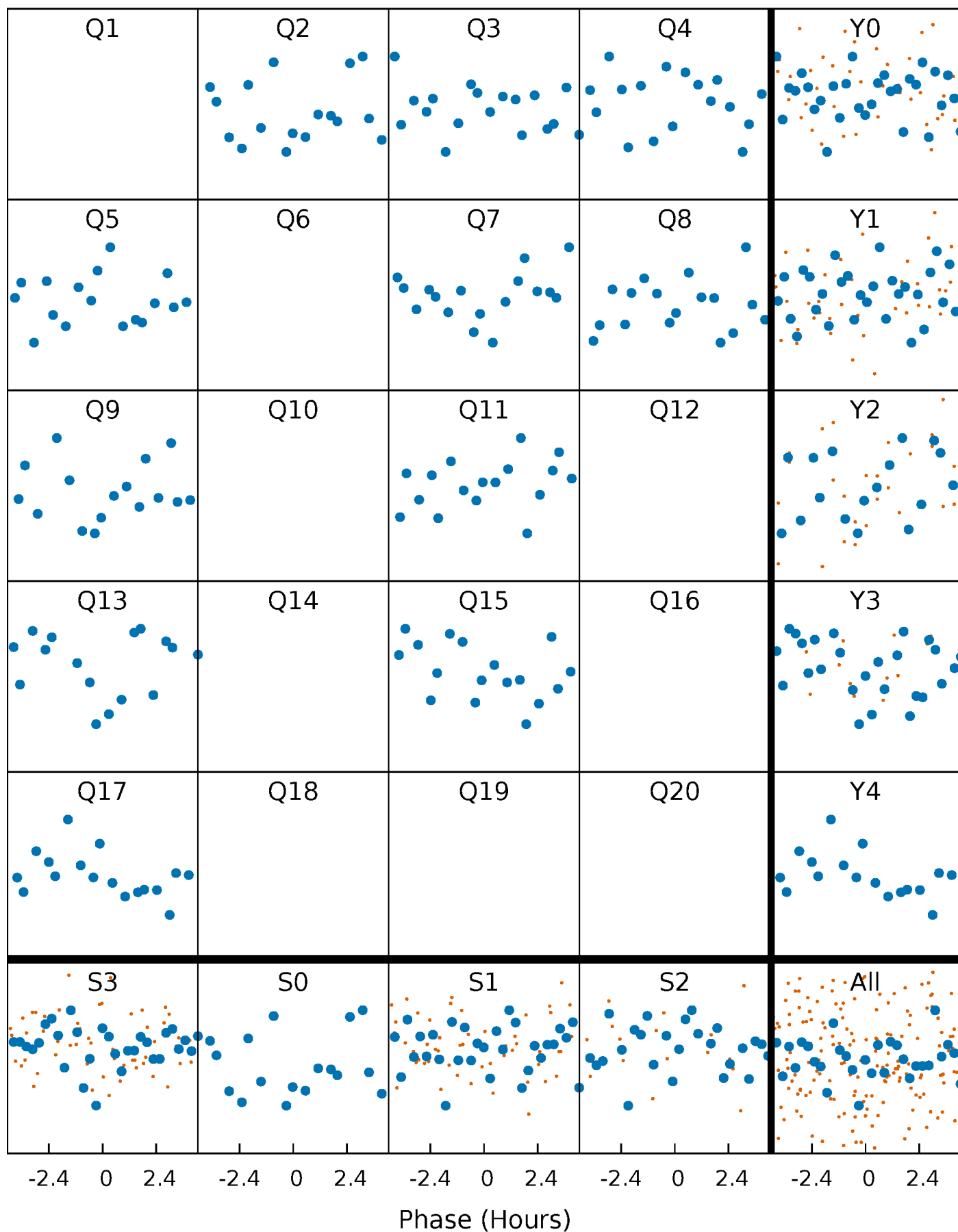


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



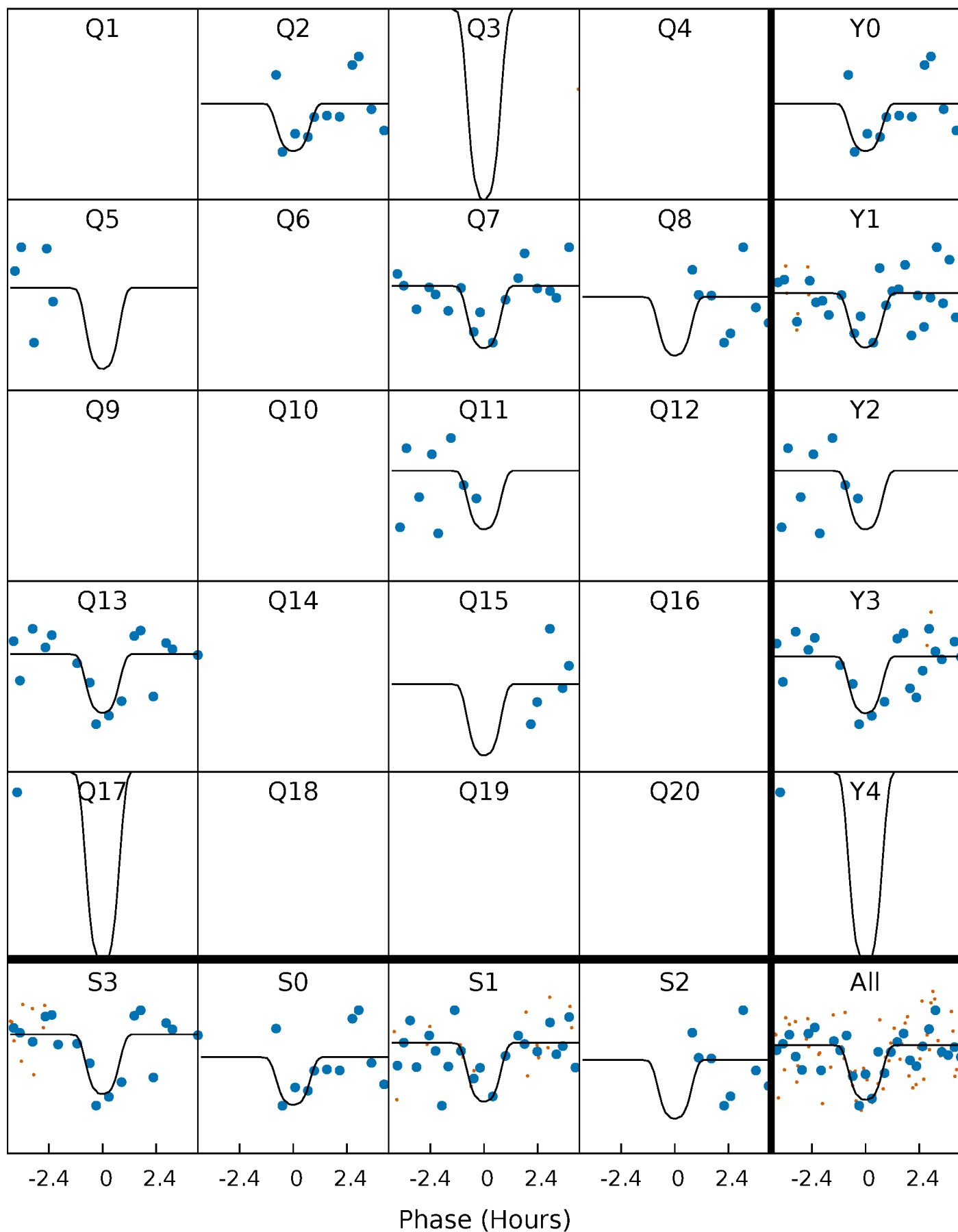
# PDC Quarter-Phased Transit Curves

TCE 004850843-03 P= 97.701777 Days  $T_0=208.096962$  (BKJD)



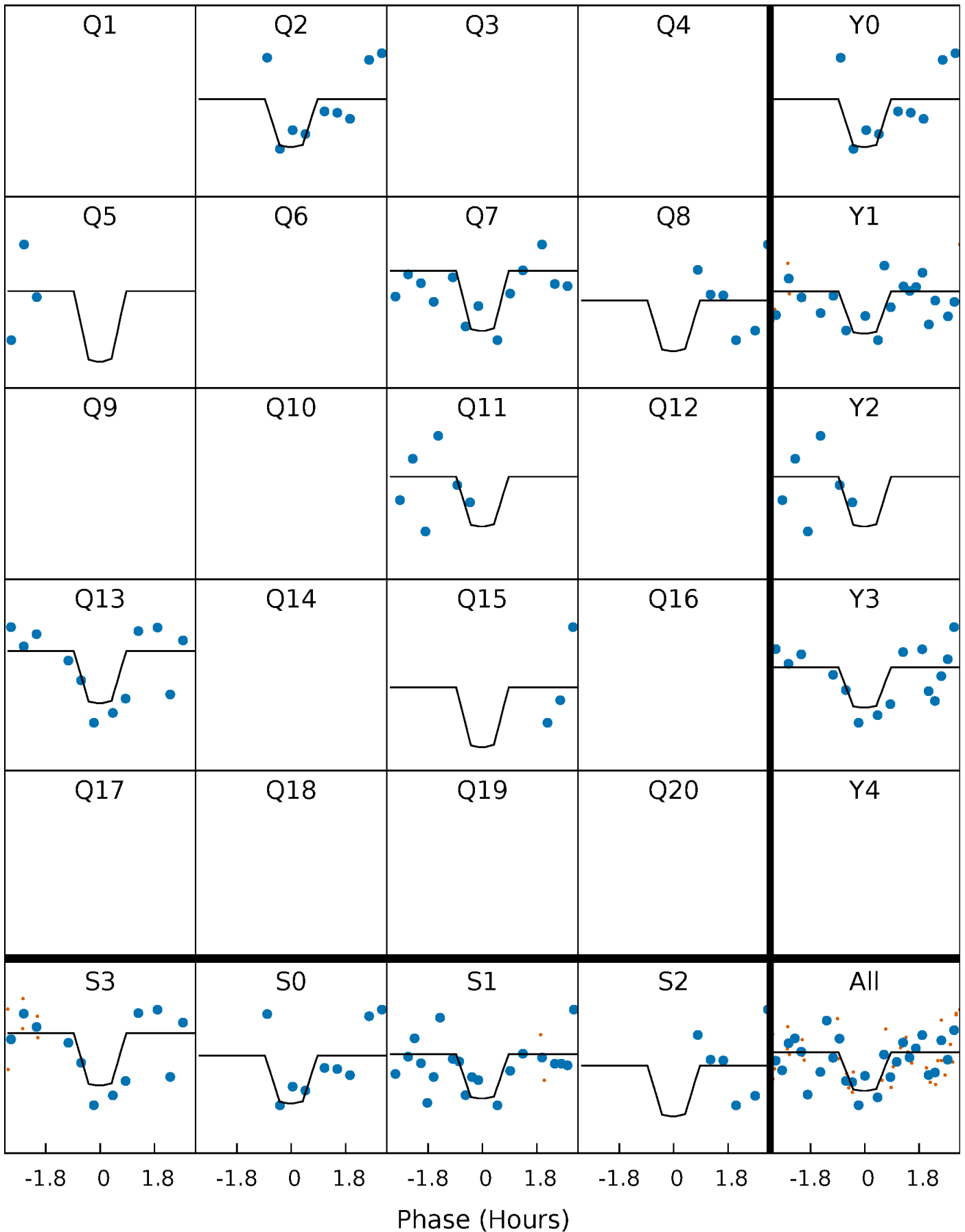
# DV Quarter-Phased Transit Curves

TCE 004850843-03   P= 97.701777 Days    $T_0=208.096962$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

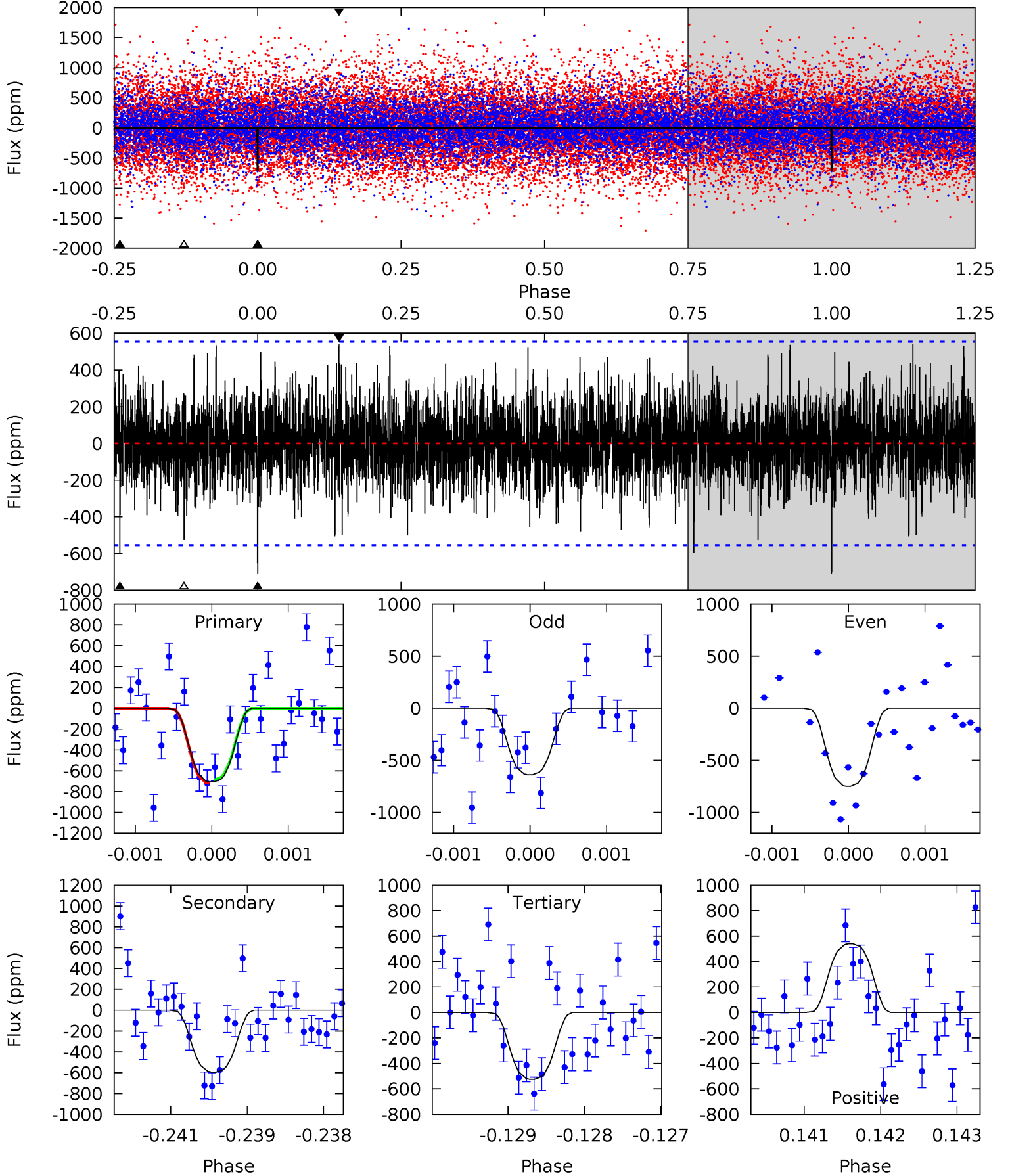
TCE 004850843-03 P= 97.701470 Days  $T_0=208.096497$  (BKJD)



# DV Model-Shift Uniqueness Test

004850843-03, P = 97.701777 Days, E = 110.395185 Days

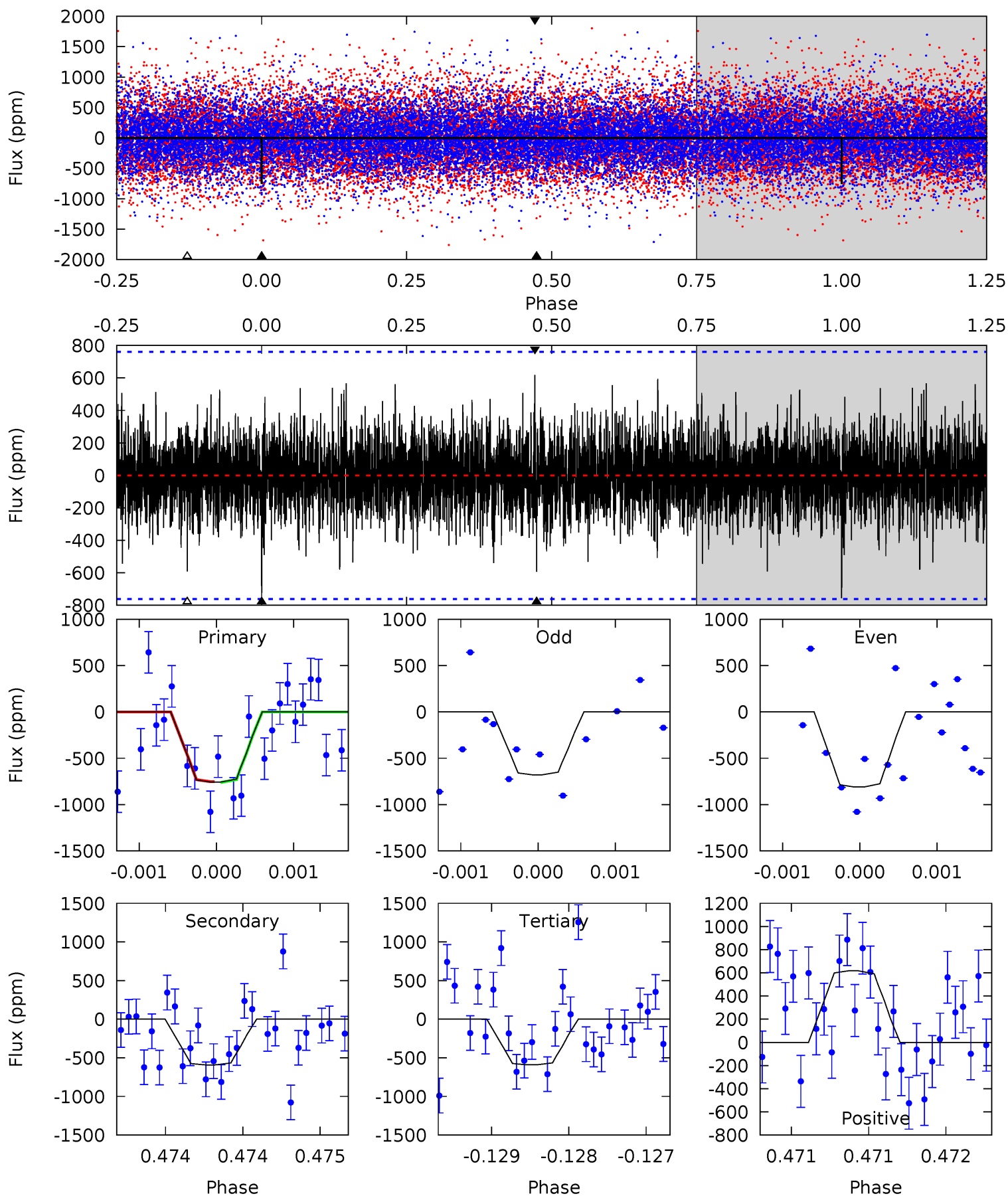
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.95	5.84	5.15	5.30	5.44	3.28	1.43	1.79	1.65	0.68	0.54	0.52	0.68	0.43	0.16



# Alt Model-Shift Uniqueness Test

004850843-03, P = 97.701470 Days, E = 110.395027 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	4.31	4.30	4.49	5.53	3.42	1.14	1.21	1.02	0.01	-0.18	0.47	1.06	0.45	0.03





### Stellar Parameters For KIC 004850843

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+178}_{-245}$	$4.418^{+0.065}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.091^{+0.335}_{-0.134}$	$1.137^{+0.154}_{-0.154}$	$1.233^{+0.354}_{-0.660}$
	+3%/-4%	+1%/-4%	+250%/-300%	+31%/-12%	+14%/-14%	+29%/-54%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004850843-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-594 \pm 102$	$4.24^{+1.10}_{-1.01}$	$627^{+43}_{-31}$	$5352^{+663}_{-486}$	$3375^{+2421}_{-1338}$
Alt.	$-592 \pm 138$	$3.52^{+1.06}_{-1.02}$	$630^{+43}_{-33}$	$5839^{+1013}_{-700}$	$4763^{+4583}_{-2032}$

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

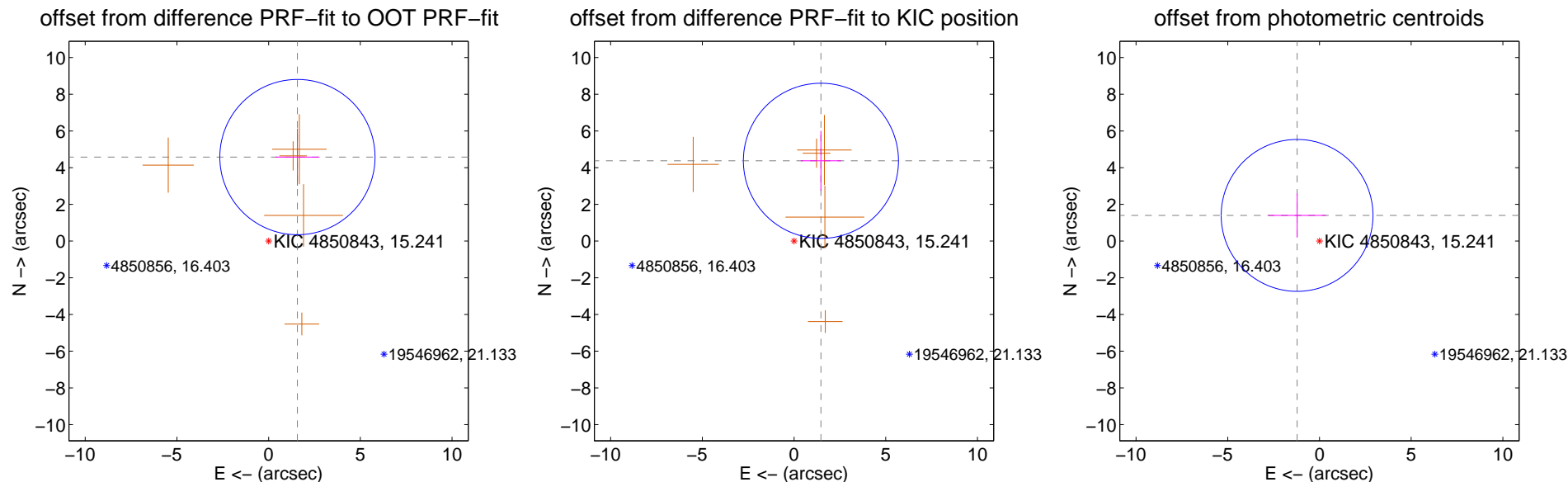
## DV Centroid Data

Supplemental centroid analysis for 004850843-03. Kepler magnitude: 15.24. Transit SNR 7.90

There are 0 quarters with good PRF difference image offsets

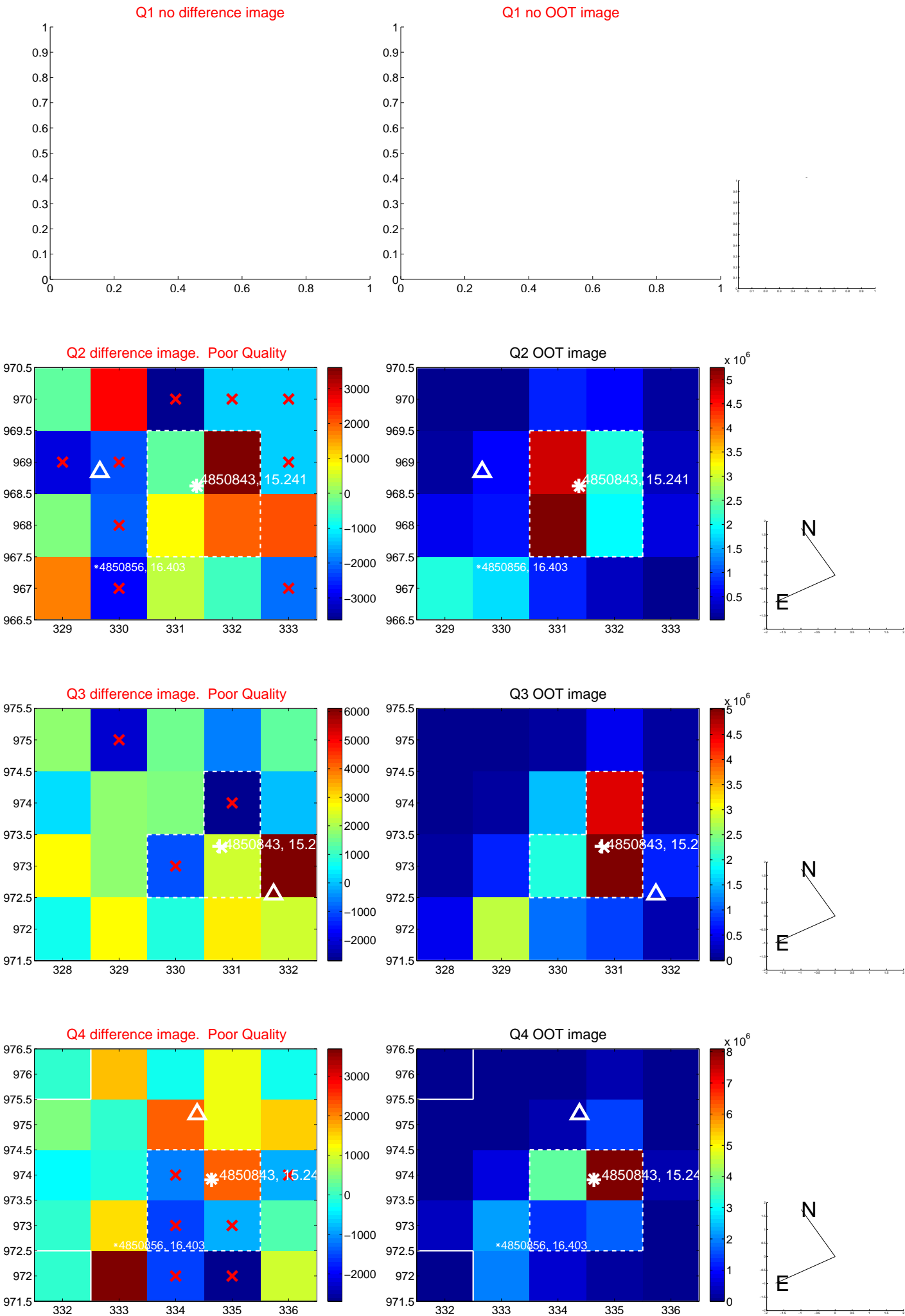
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.839 \pm 1.410$	3.43	$-1.570 \pm 1.203$	$4.577 \pm 1.557$
PRF-fit source offset from KIC position	$4.613 \pm 1.409$	3.27	$-1.466 \pm 1.102$	$4.373 \pm 1.636$
photometric centroid source offset	$1.86 \pm 1.38$	1.35	$1.22 \pm 1.57$	$1.40 \pm 1.21$

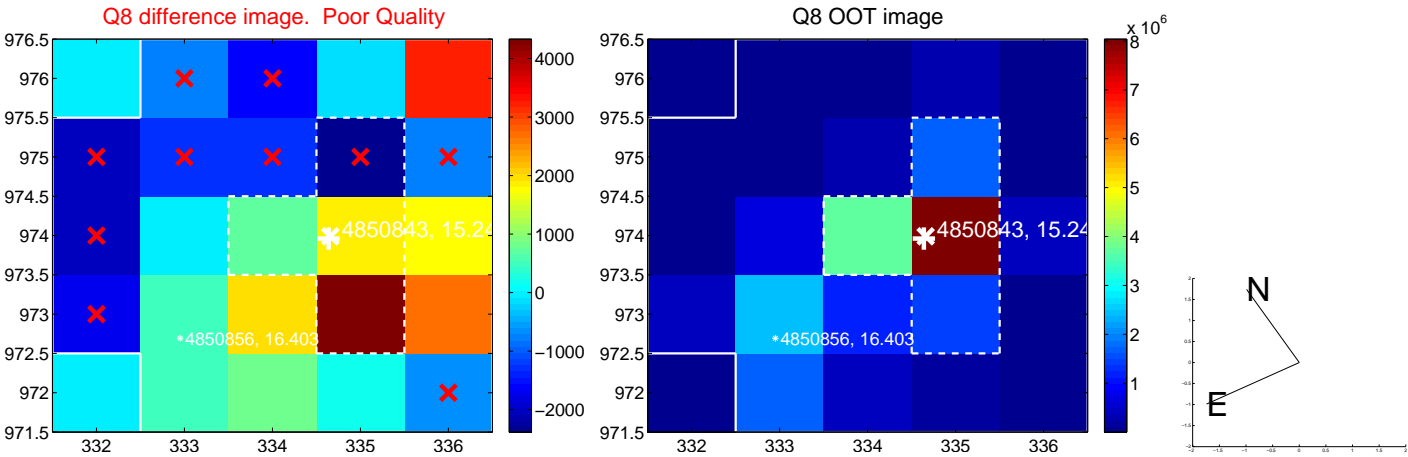
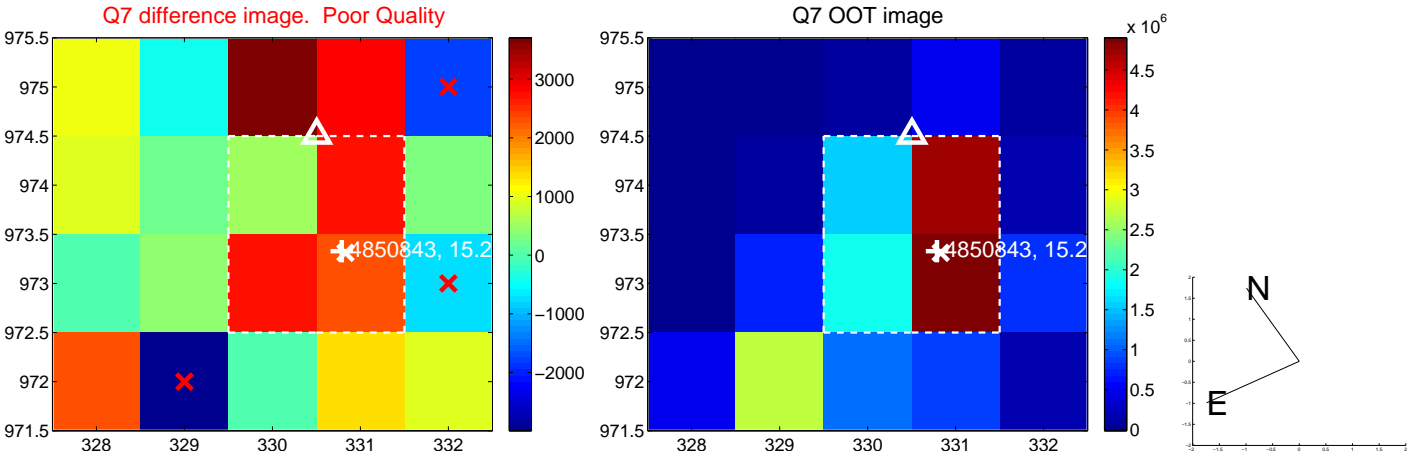
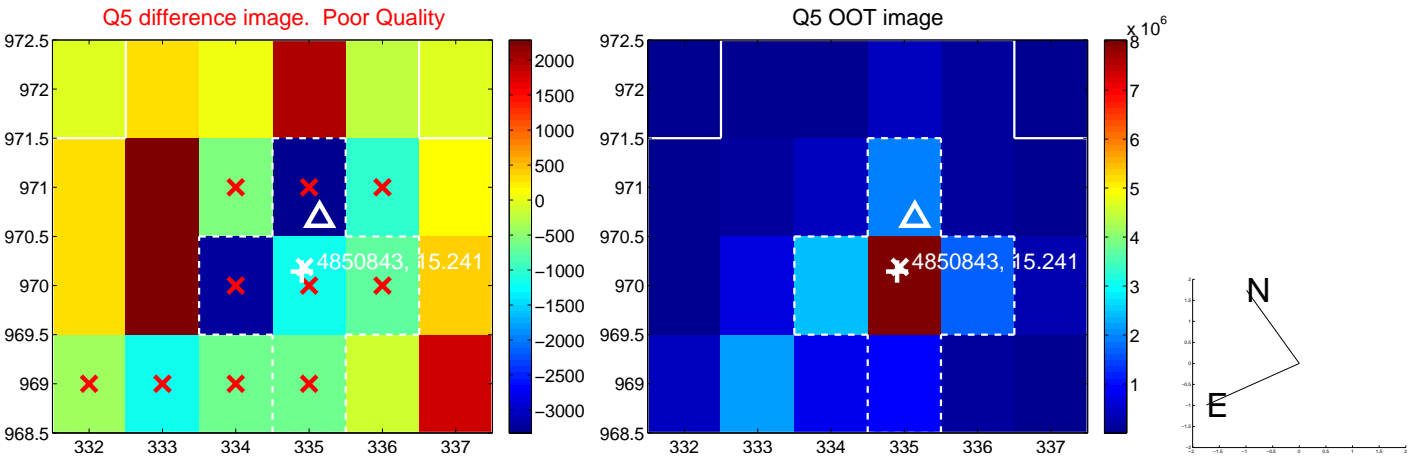


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

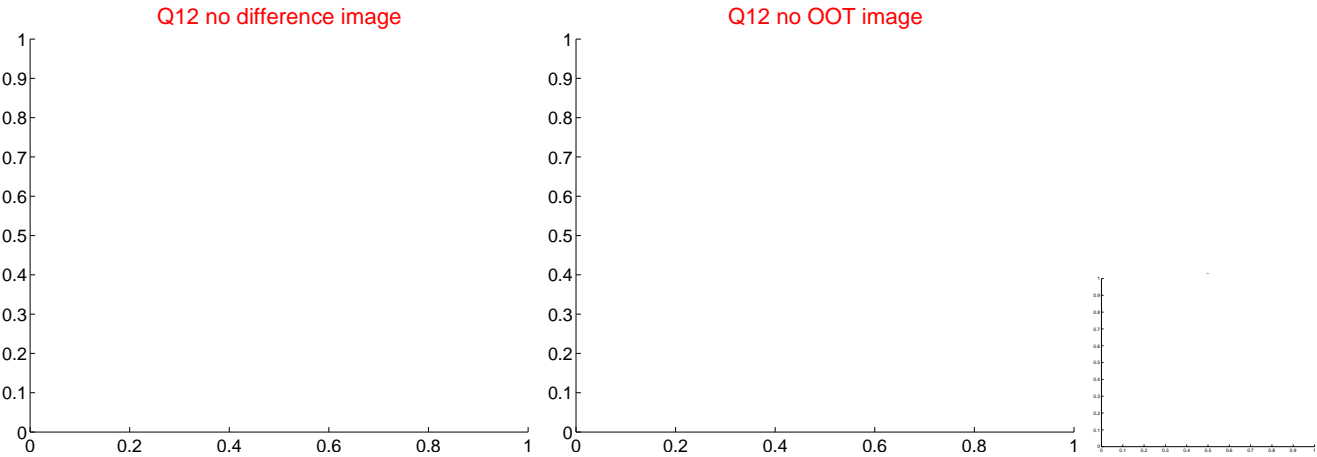
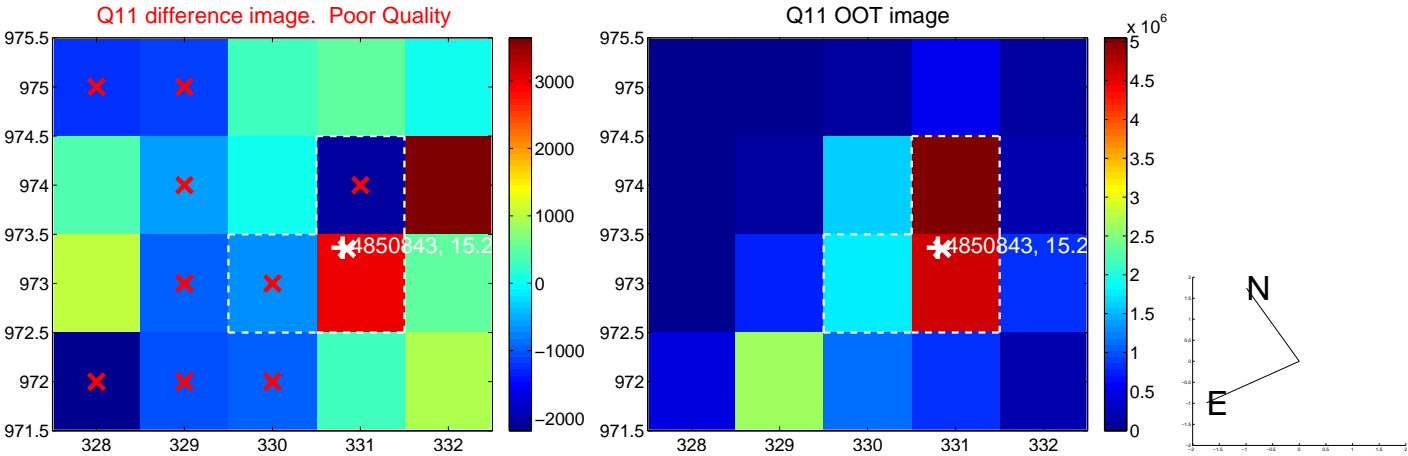
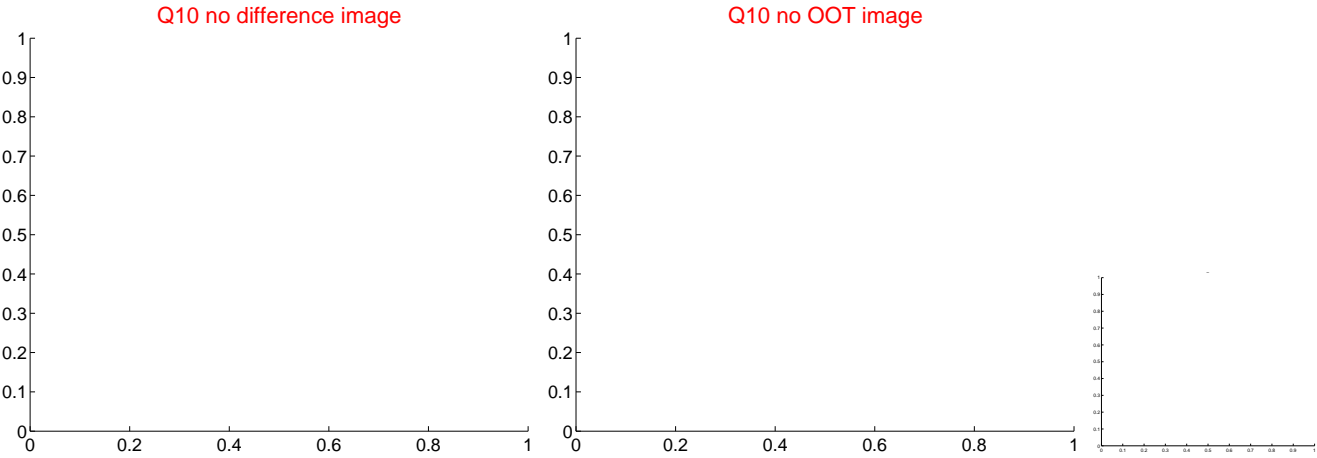
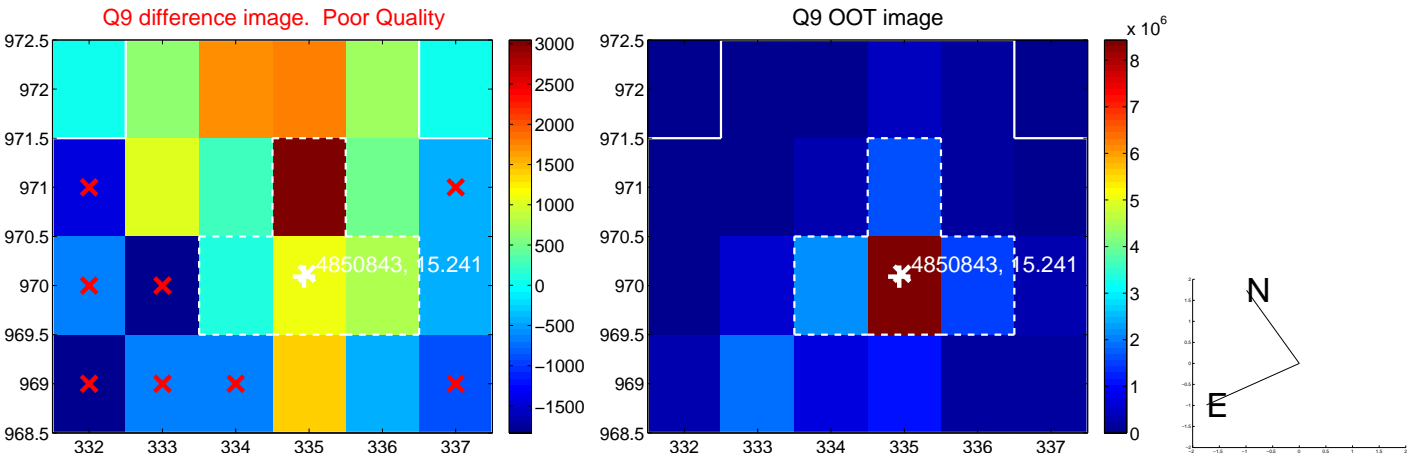
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



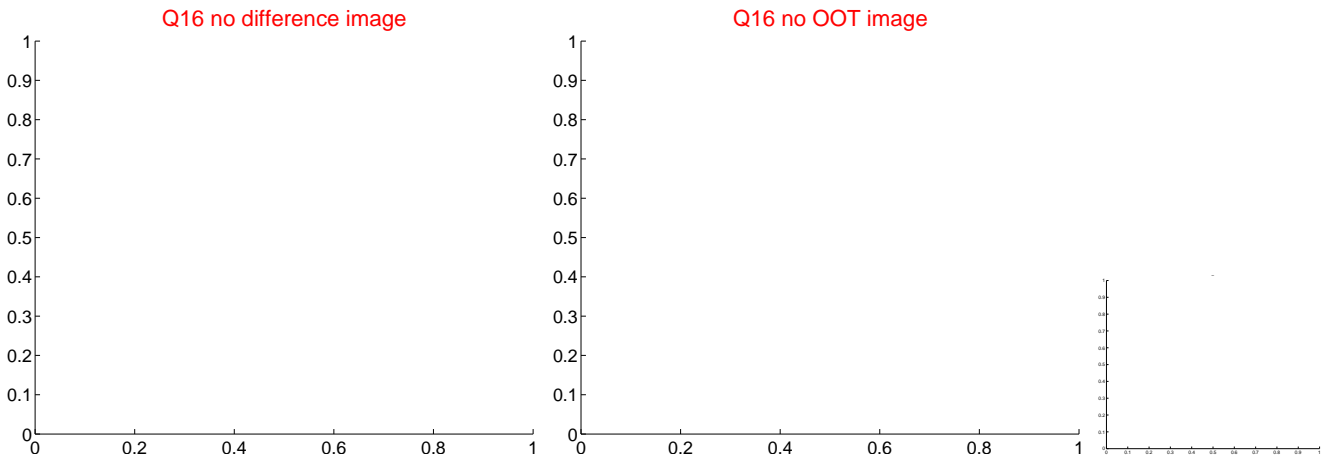
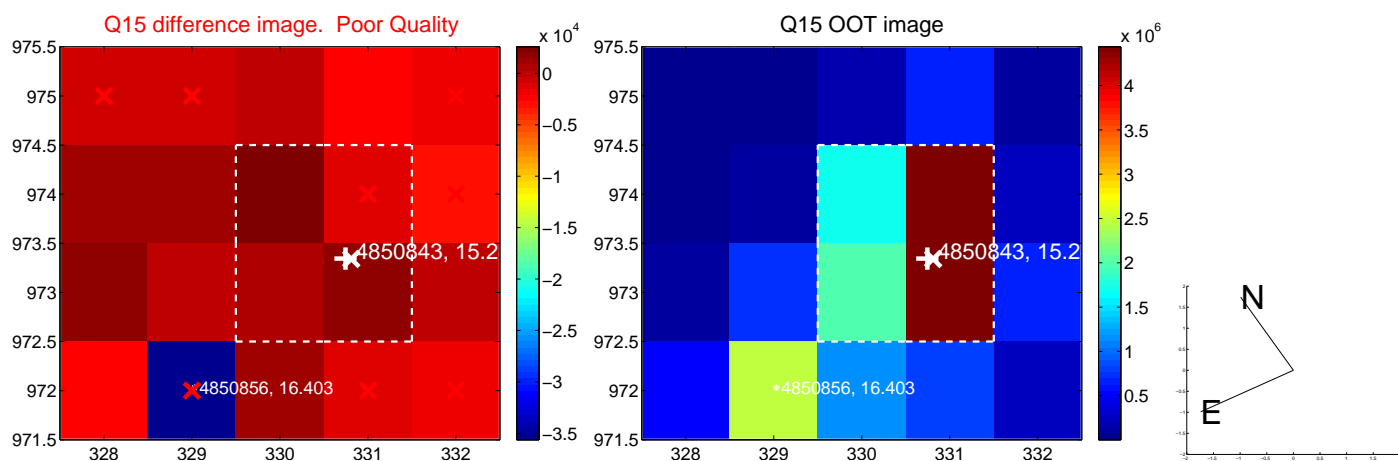
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



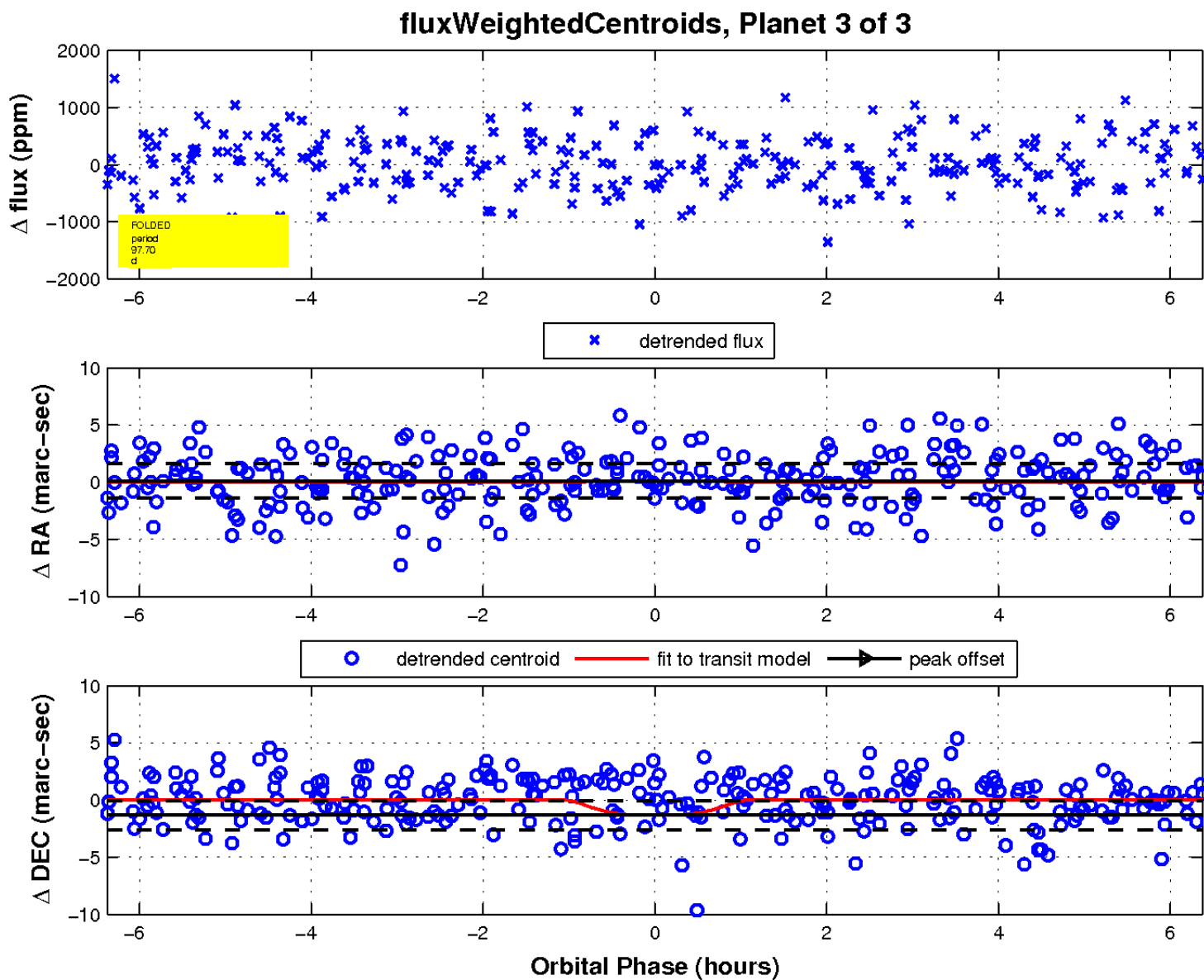
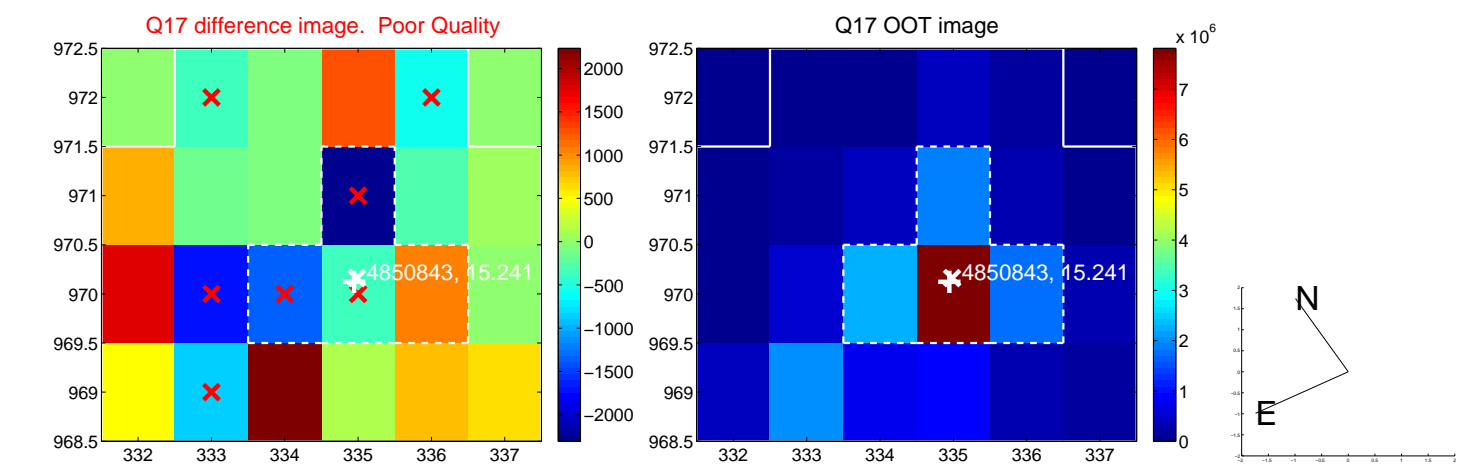
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

