

# KIC 008893443

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008893443-01	OBS	No	1.342351	131.869868	30.2	6.047	8.0	5.3	1.95	7346	1.24	12611.93
008893443-02	OBS	No	175.159571	291.869904	985.6	5.975	10.2	7.9	1.95	7346	11.36	19.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008893443-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008893443-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

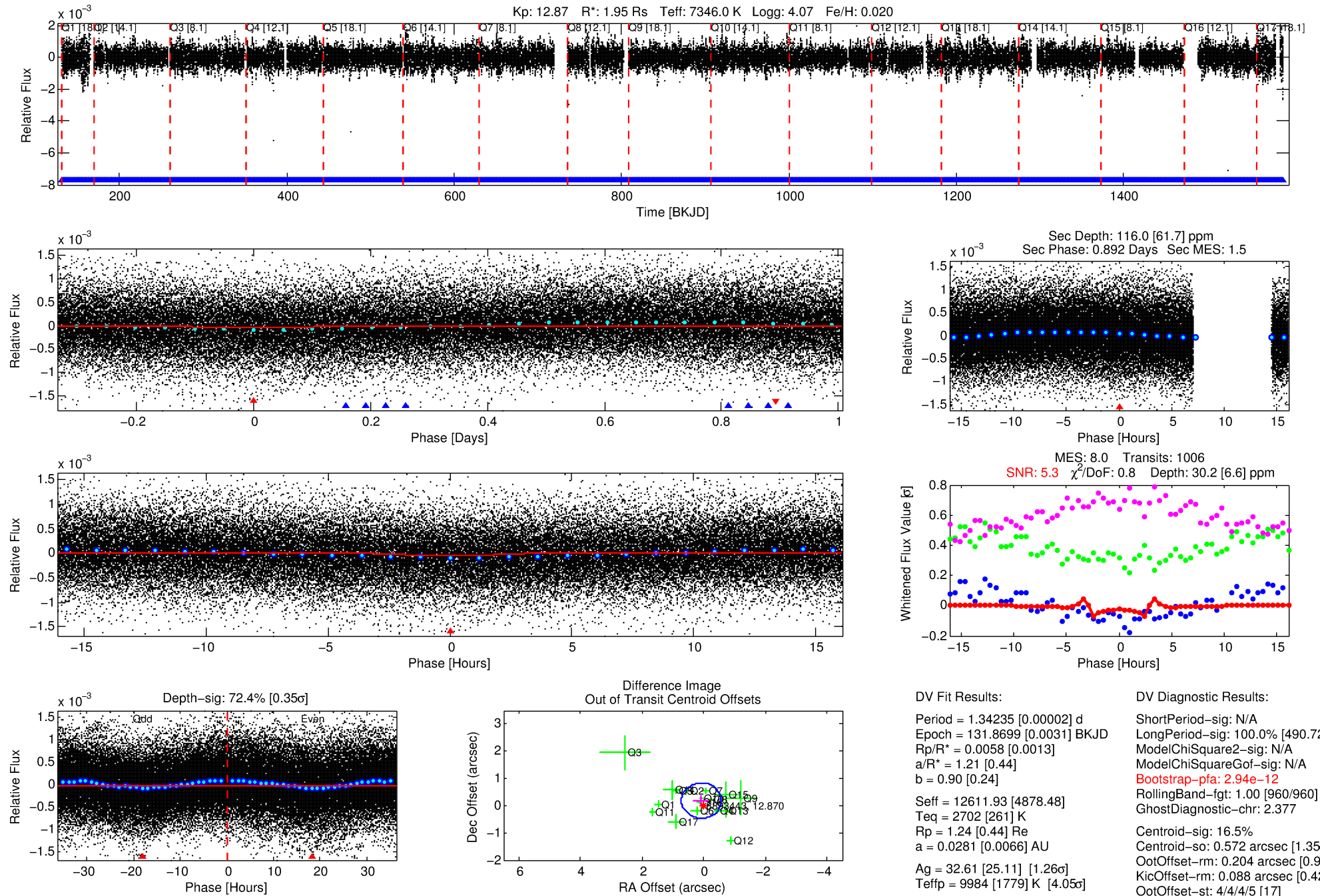
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008893443-01

No Significant Match Found

# DV One-Page Summary

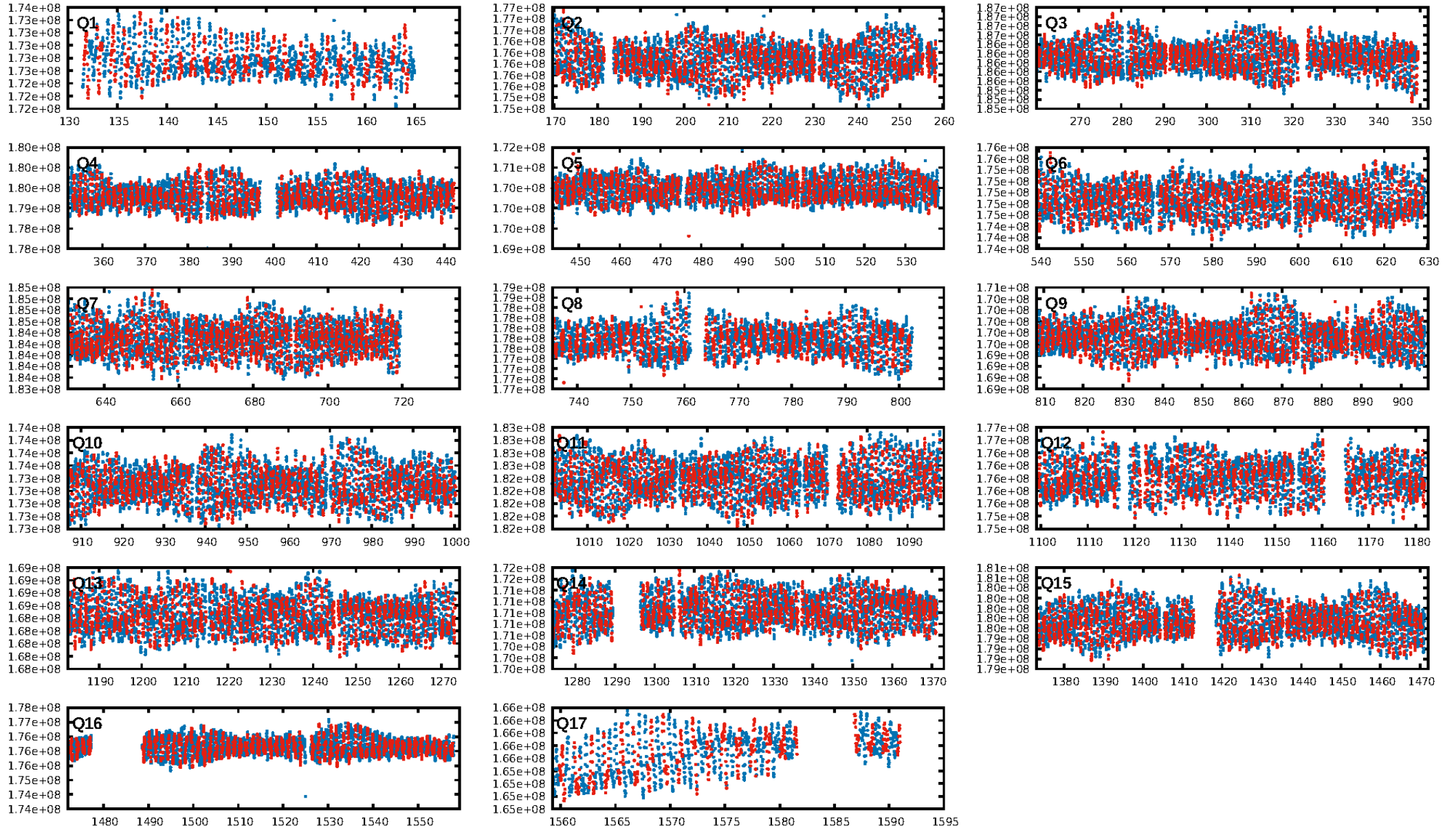
KIC: 8893443 Candidate: 1 of 2 Period: 1.342 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:04:40 Z

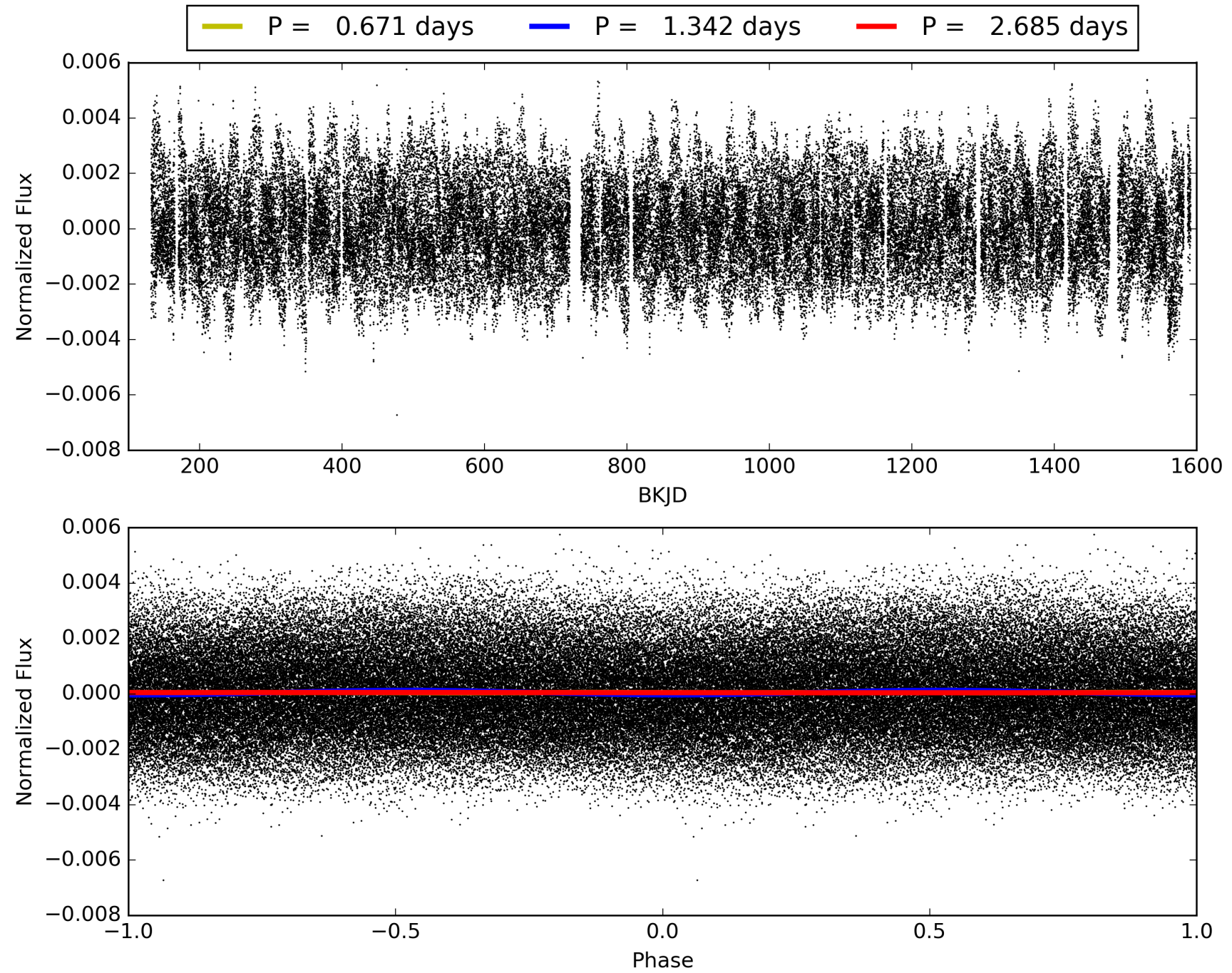
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008893443-01, PDC Light Curves



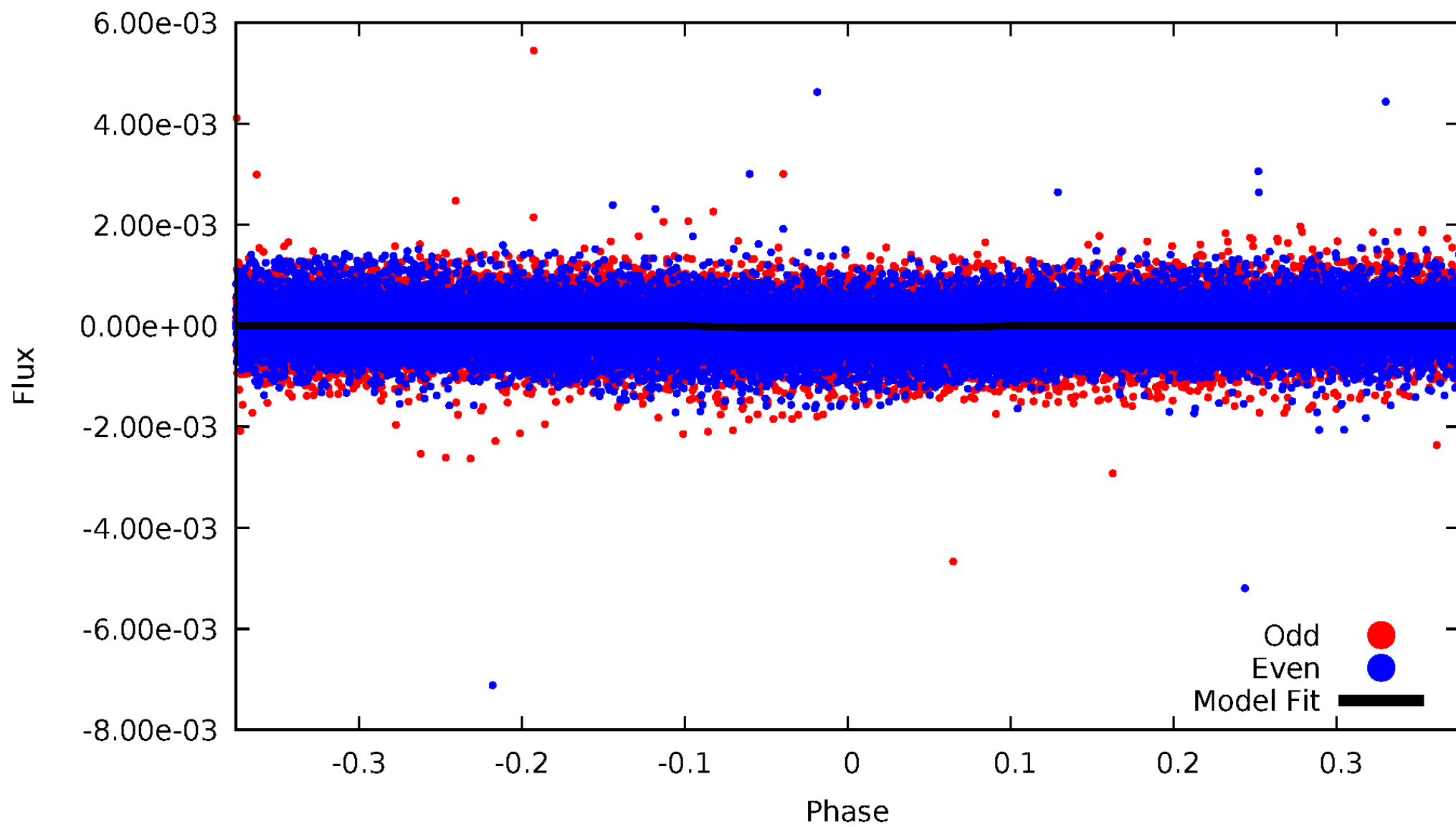


TCE 008893443-01



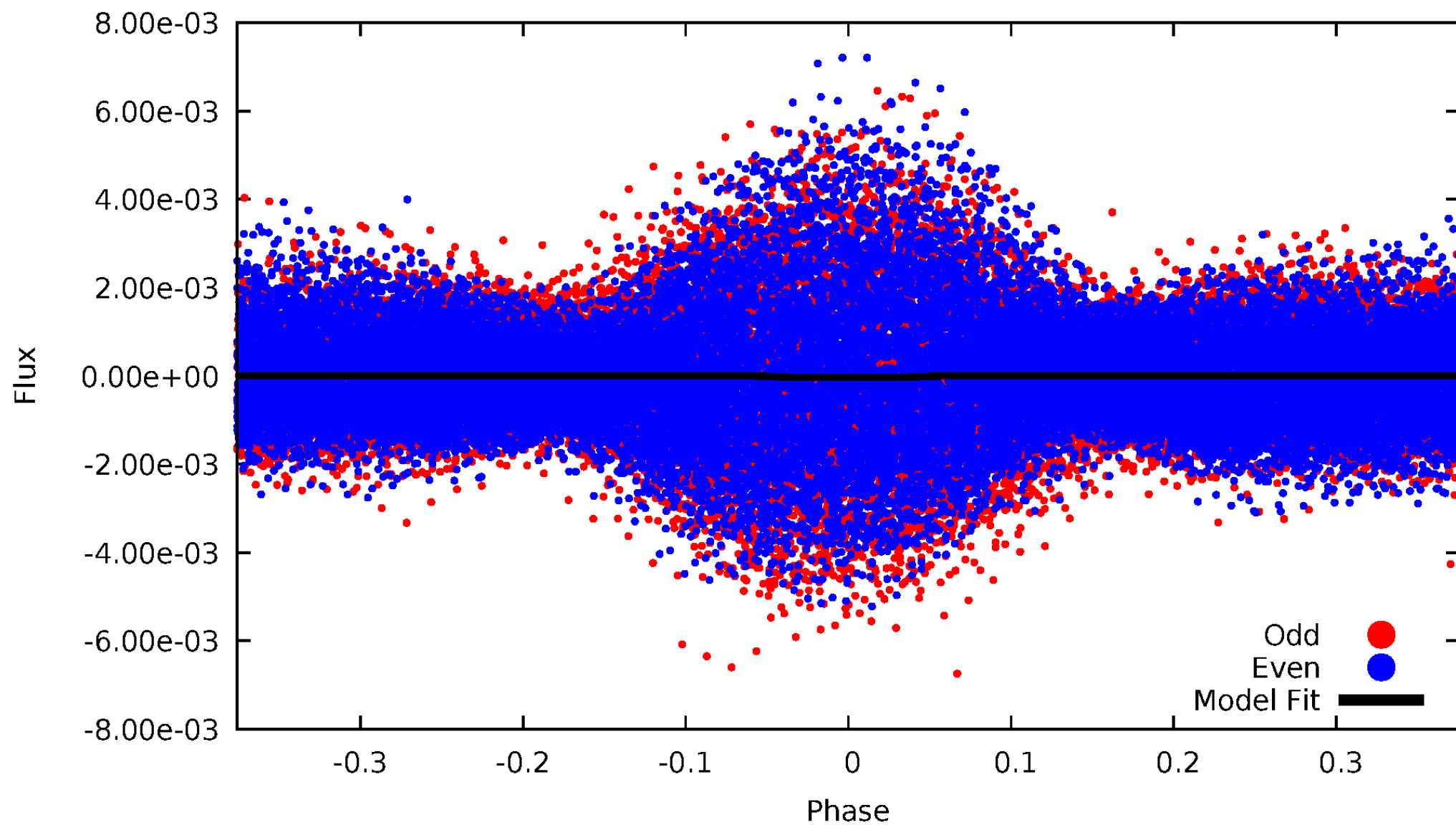
# DV Odd/Even

TCE 008893443-01

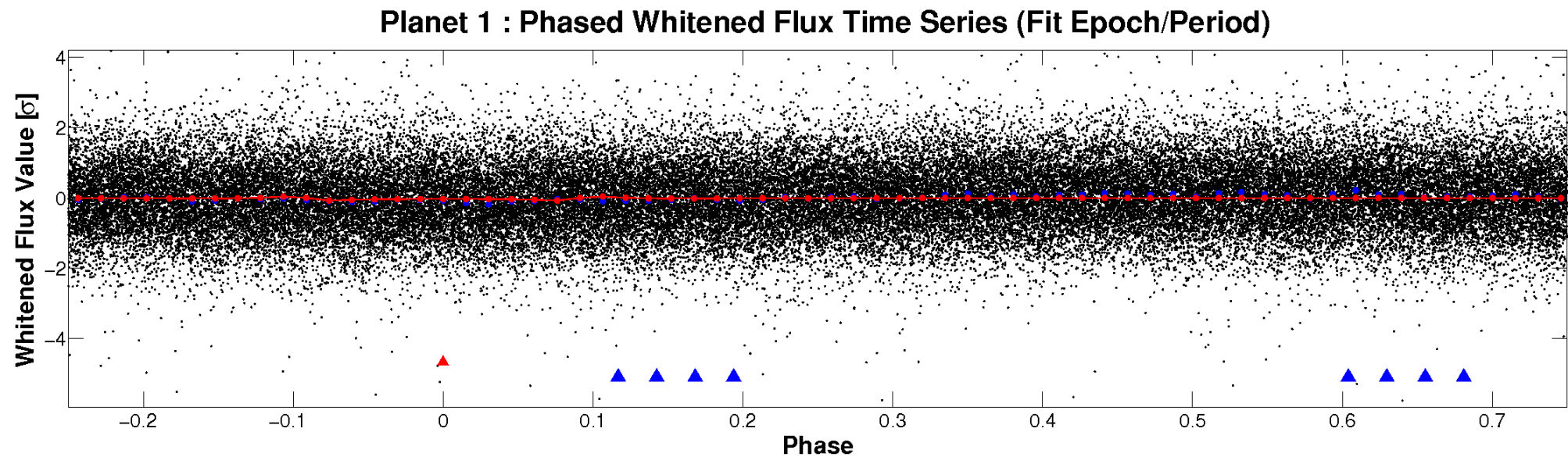
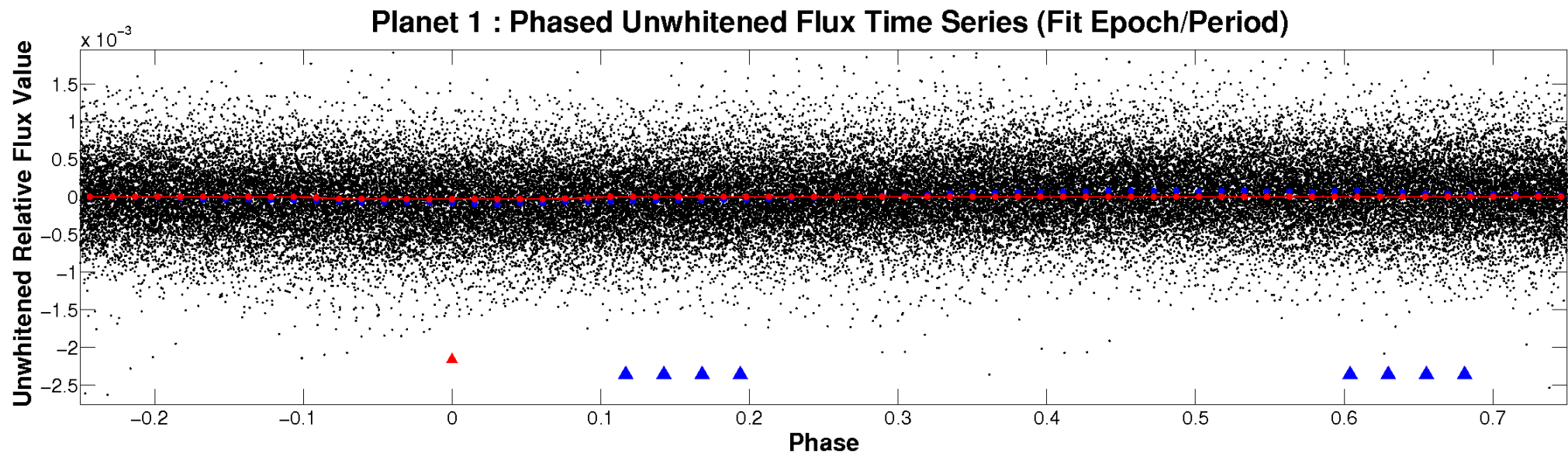


# ALT Odd/Even

TCE 008893443-01



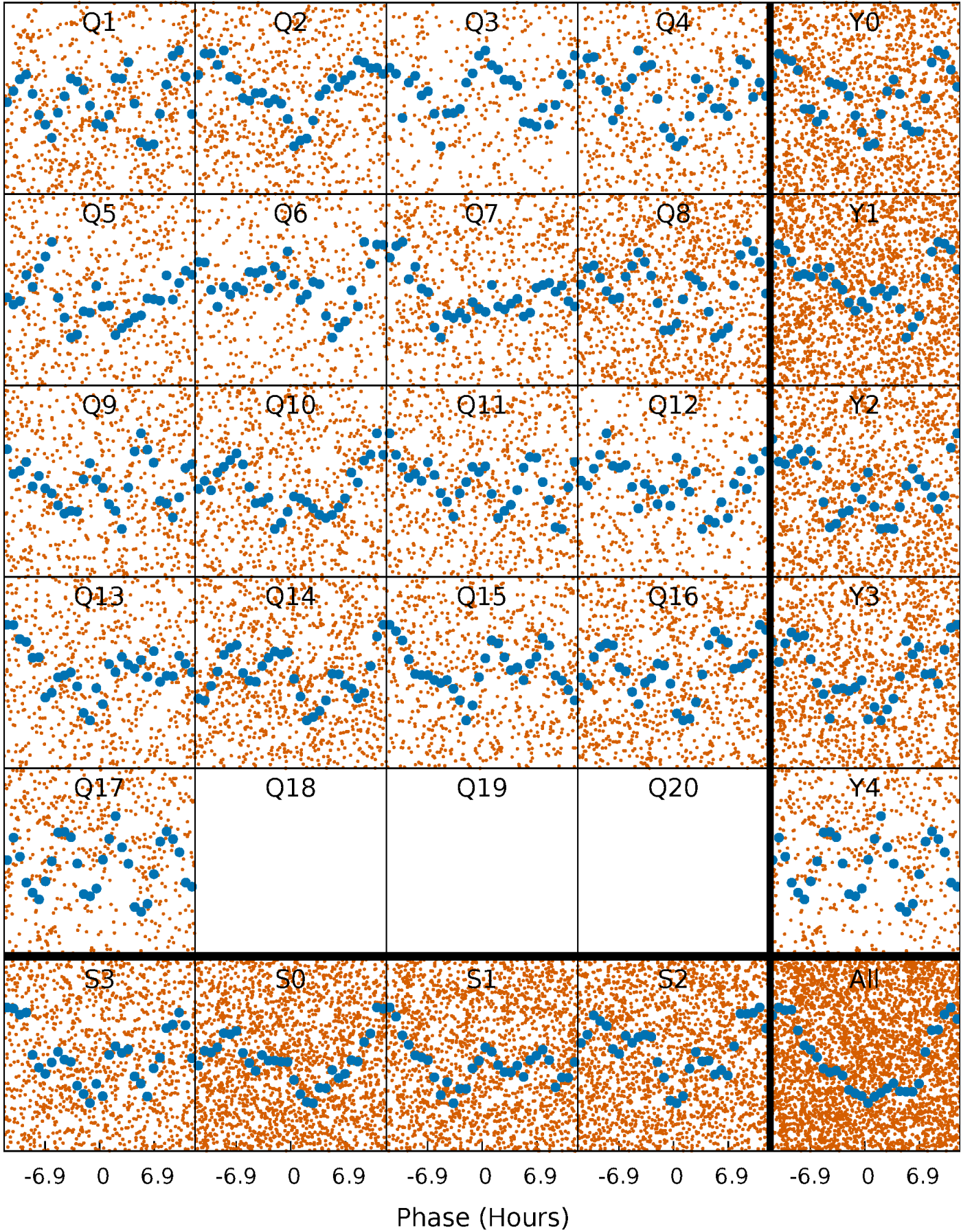
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

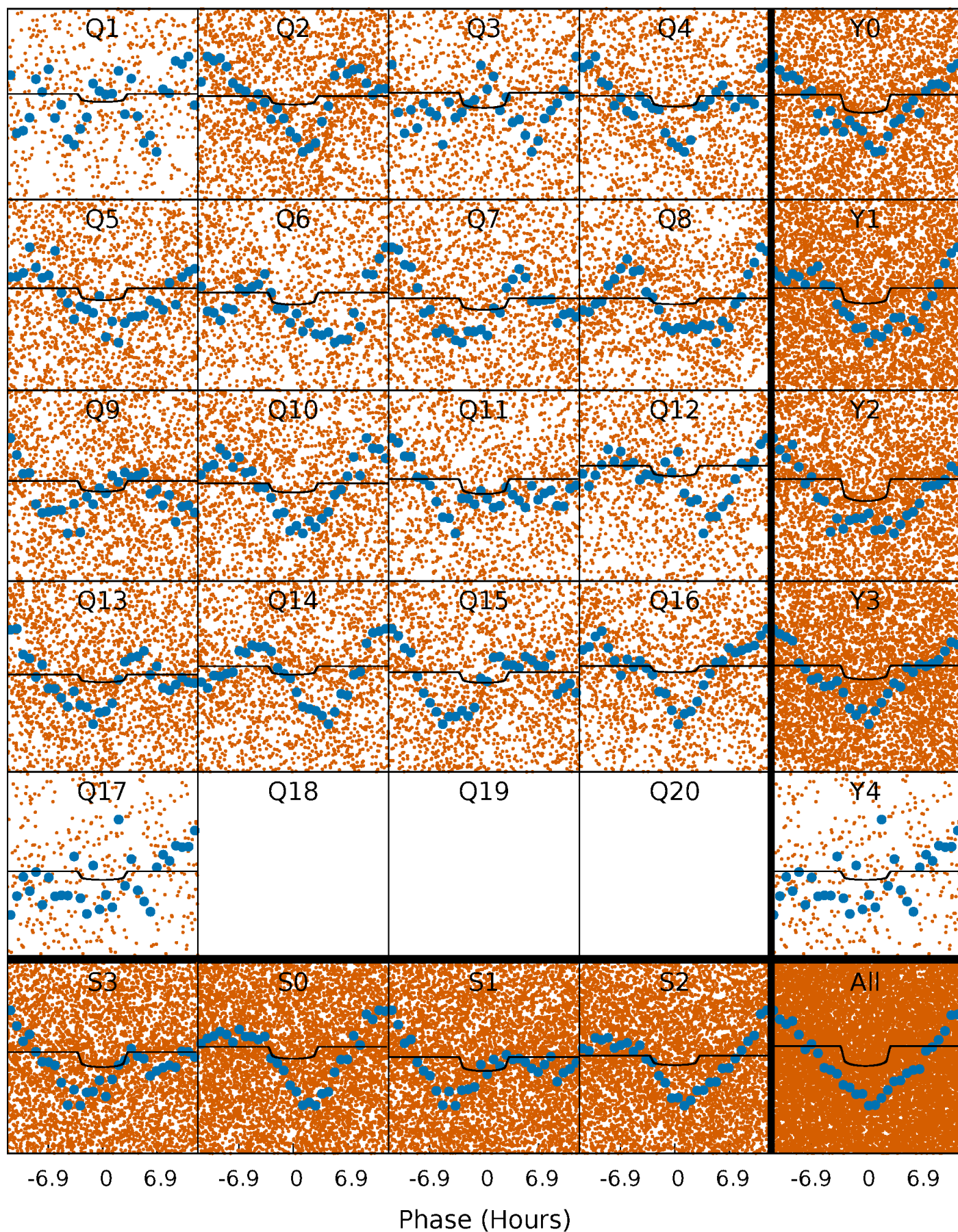
TCE 008893443-01   P= 1.342351 Days    $T_0=131.869868$  (BKJD)





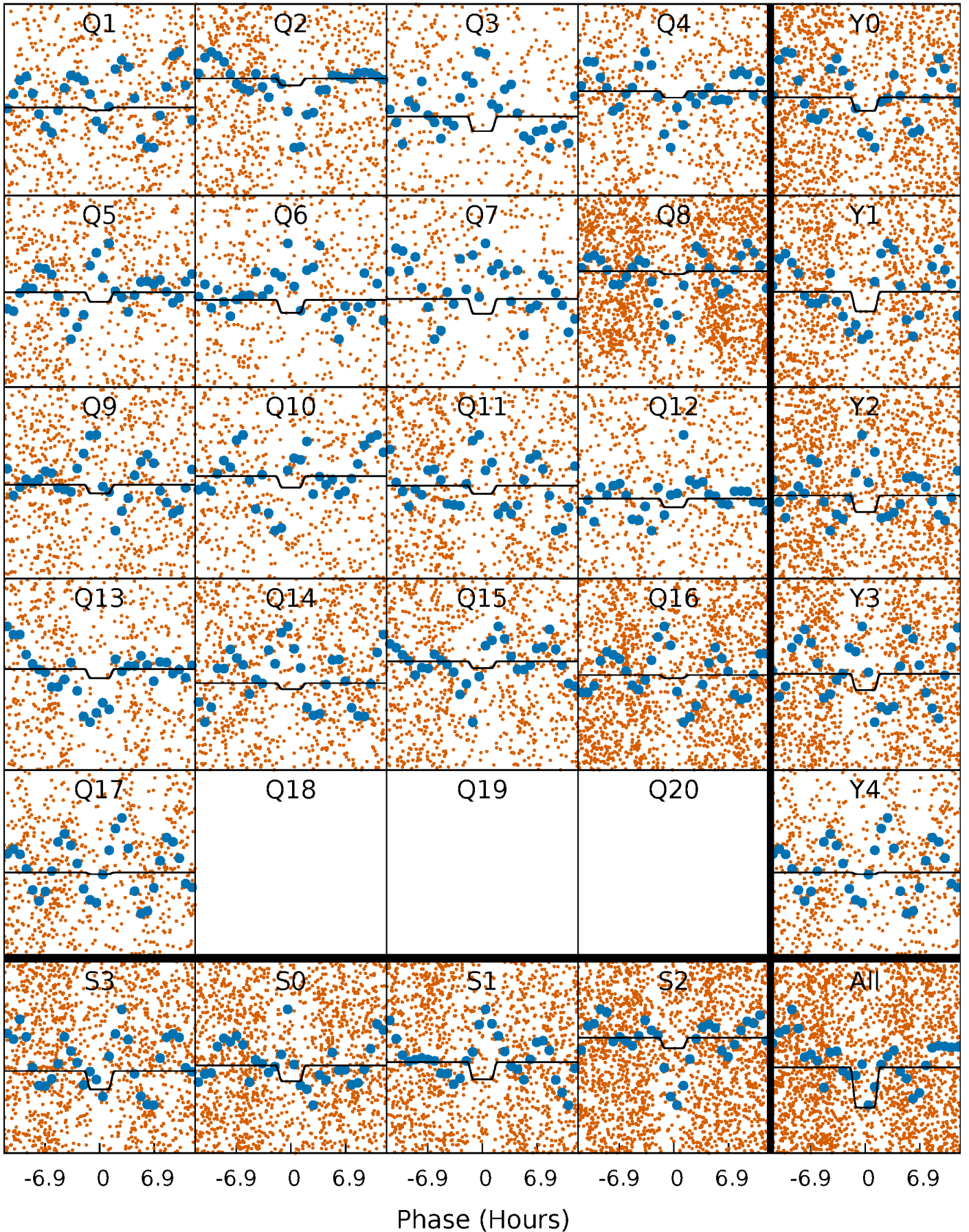
# DV Quarter-Phased Transit Curves

TCE 008893443-01 P= 1.342351 Days  $T_0=131.869868$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008893443-01 P= 1.342338 Days  $T_0=131.870335$  (BKJD)

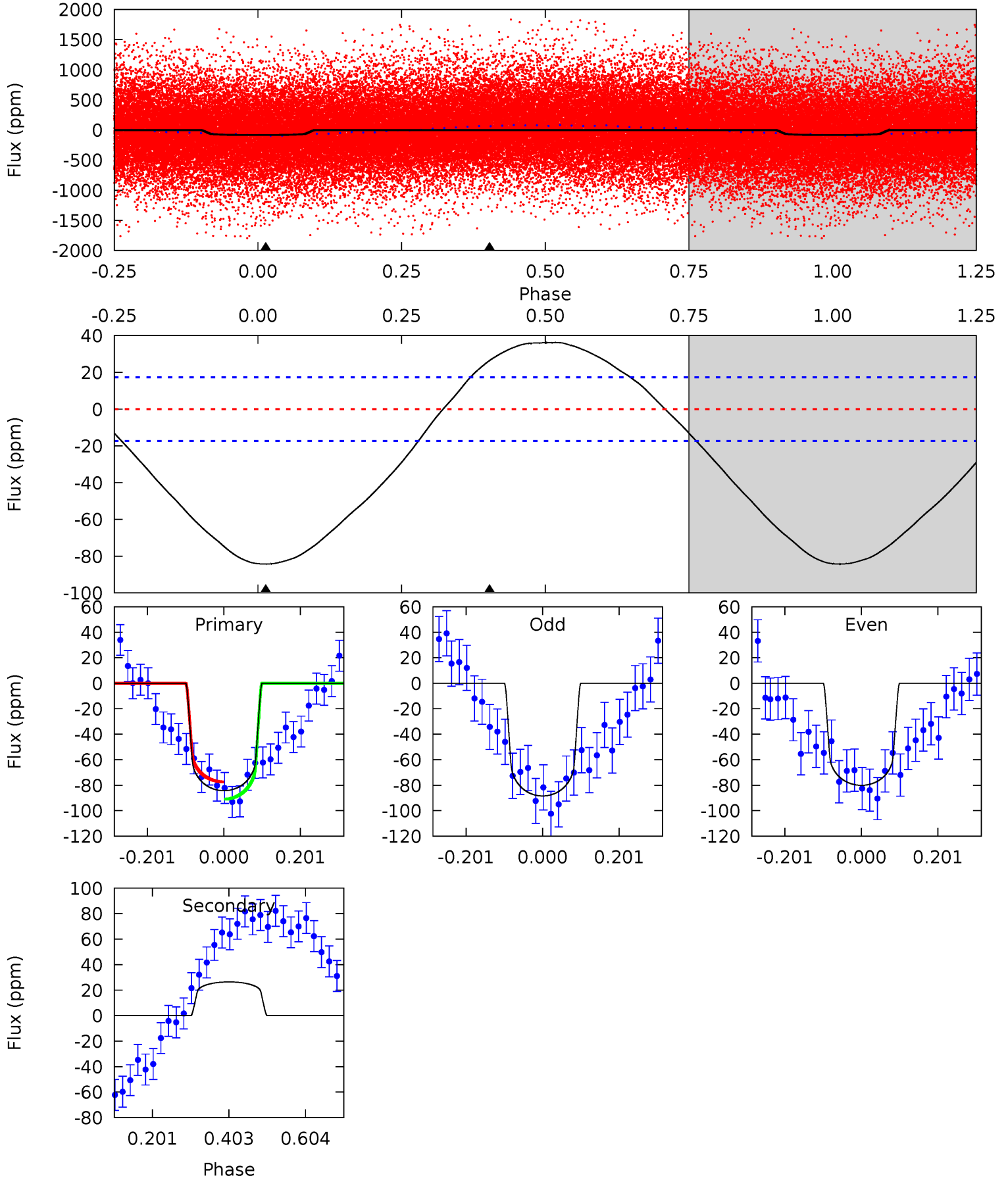




# DV Model-Shift Uniqueness Test

008893443-01, P = 1.342351 Days, E = 130.527517 Days

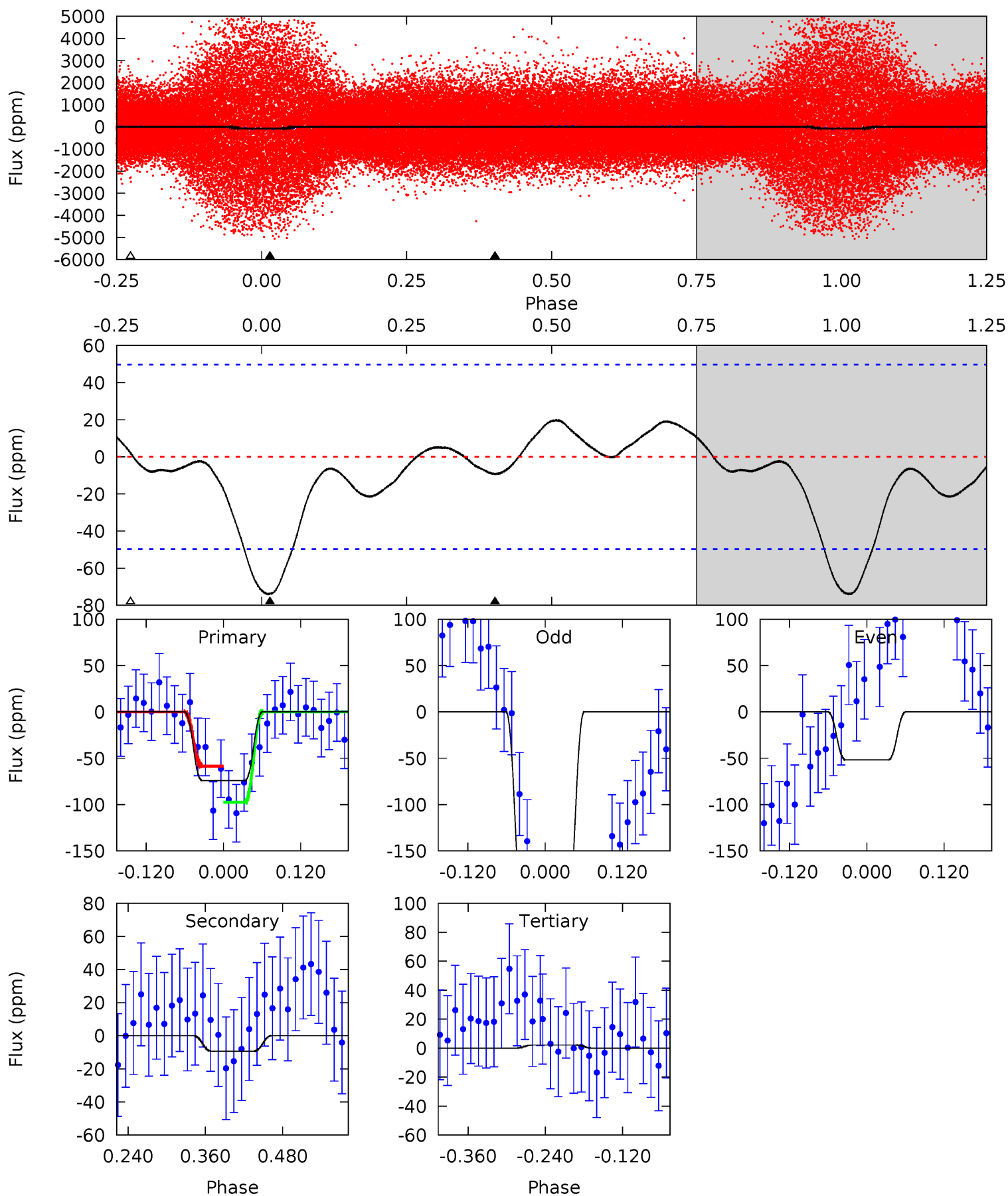
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.5	-6.74	0	0	4.42	1.28	4.56	21.5	21.5	-6.74	-6.74	1.06	1.31	0.30	1.75



# Alt Model-Shift Uniqueness Test

008893443-01, P = 1.342338 Days, E = 130.527997 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
6.74	0.85	-0.19	0	4.53	1.55	1.05	6.94	6.74	1.04	0.85	6.93	0.18	0.21	1.77





### Stellar Parameters For KIC 008893443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7346^{+203}_{-330}$	$4.071^{+0.153}_{-0.187}$	$0.020^{+0.200}_{-0.350}$	$1.951^{+0.547}_{-0.448}$	$1.635^{+0.187}_{-0.281}$	$0.310^{+0.280}_{-0.147}$
	+3%/-4%	+4%/-5%	+1000%/-1750%	+28%/-23%	+11%/-17%	+90%/-47%
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 008893443-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$26 \pm 4$	$1.24^{+0.34}_{-0.31}$	$3787^{+283}_{-278}$	$-6880^{+701}_{-1142}$	$-7.348^{+3.026}_{-5.480}$
Alt.	$-9 \pm 11$	$1.13^{+0.34}_{-0.29}$	$3774^{+306}_{-271}$	$5244^{+1583}_{-9325}$	$2.797^{+5.101}_{-3.244}$

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

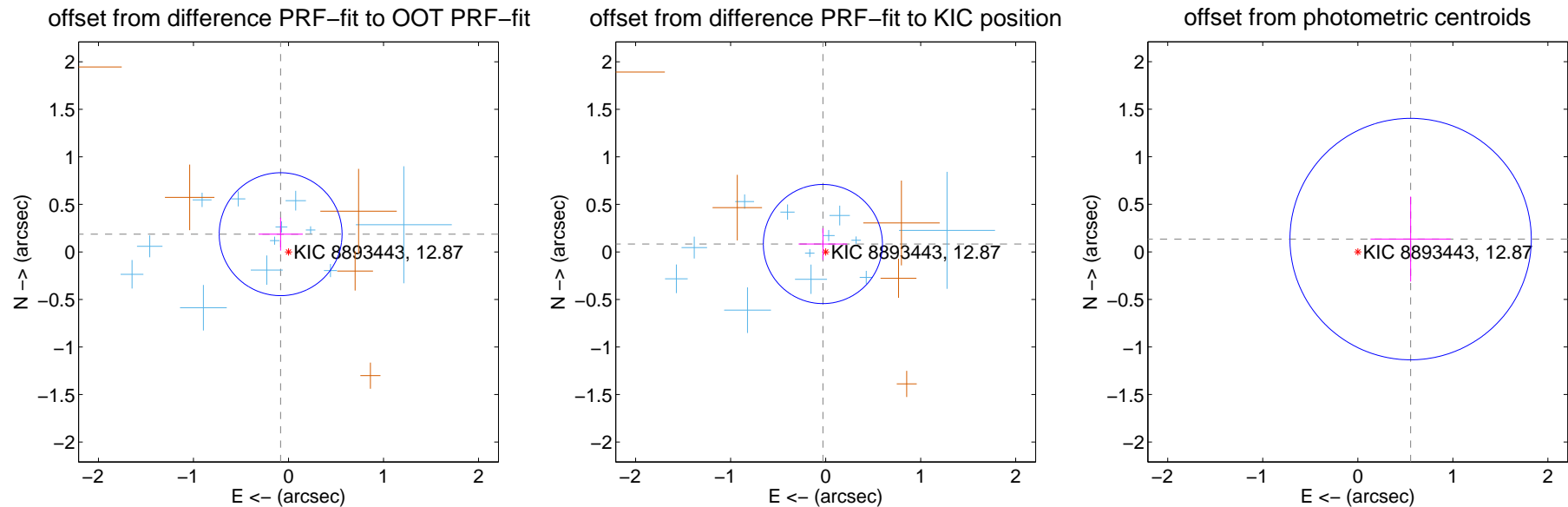
## DV Centroid Data

Supplemental centroid analysis for 008893443-01. Kepler magnitude: 12.87. Transit SNR 5.33

There are 12 quarters with good PRF difference image offsets

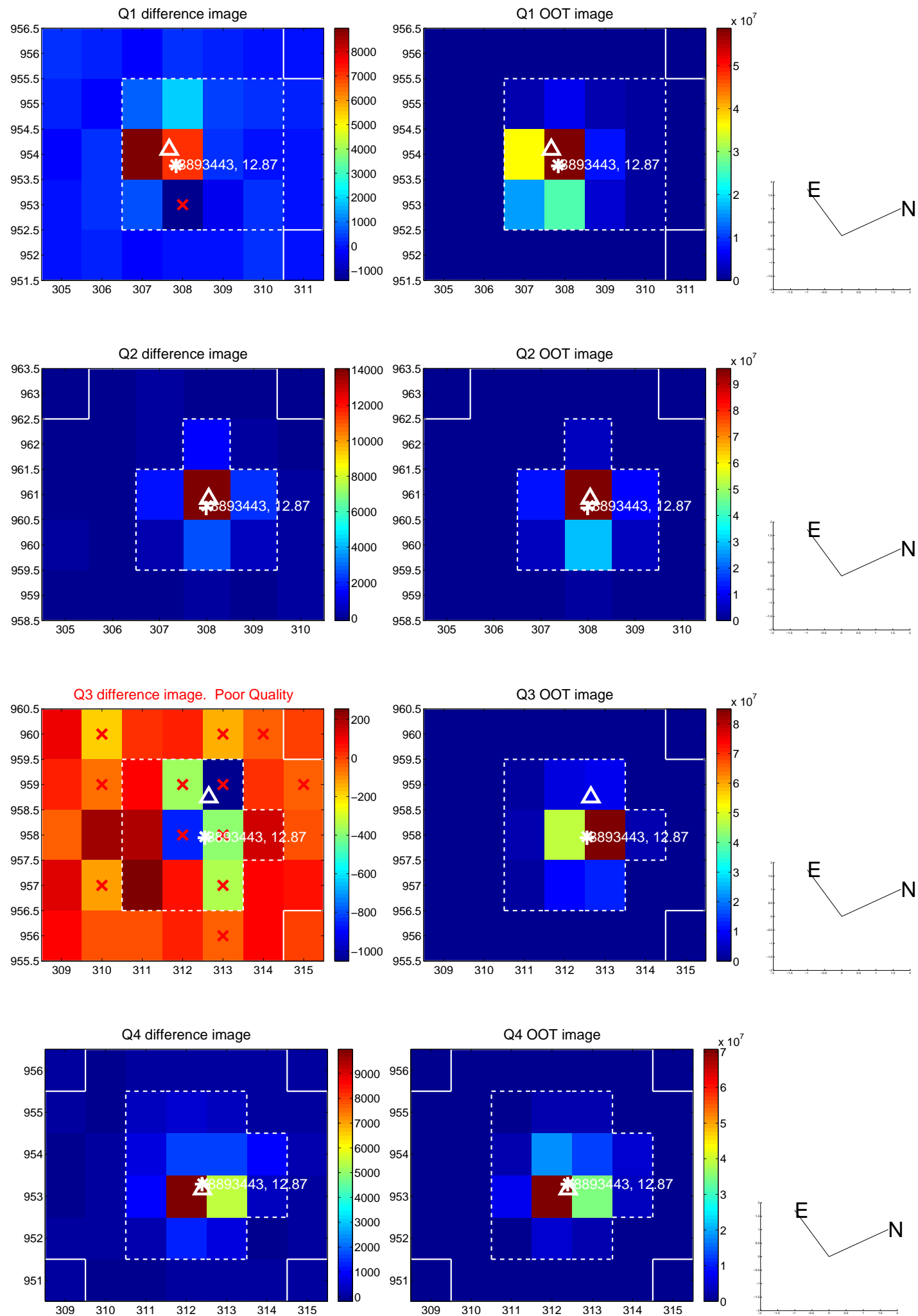
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.204 \pm 0.216$	0.95	$0.083 \pm 0.232$	$0.187 \pm 0.172$
PRF-fit source offset from KIC position	$0.088 \pm 0.209$	0.42	$0.029 \pm 0.256$	$0.083 \pm 0.167$
photometric centroid source offset	$0.57 \pm 0.42$	1.35	$-0.56 \pm 0.42$	$0.13 \pm 0.45$

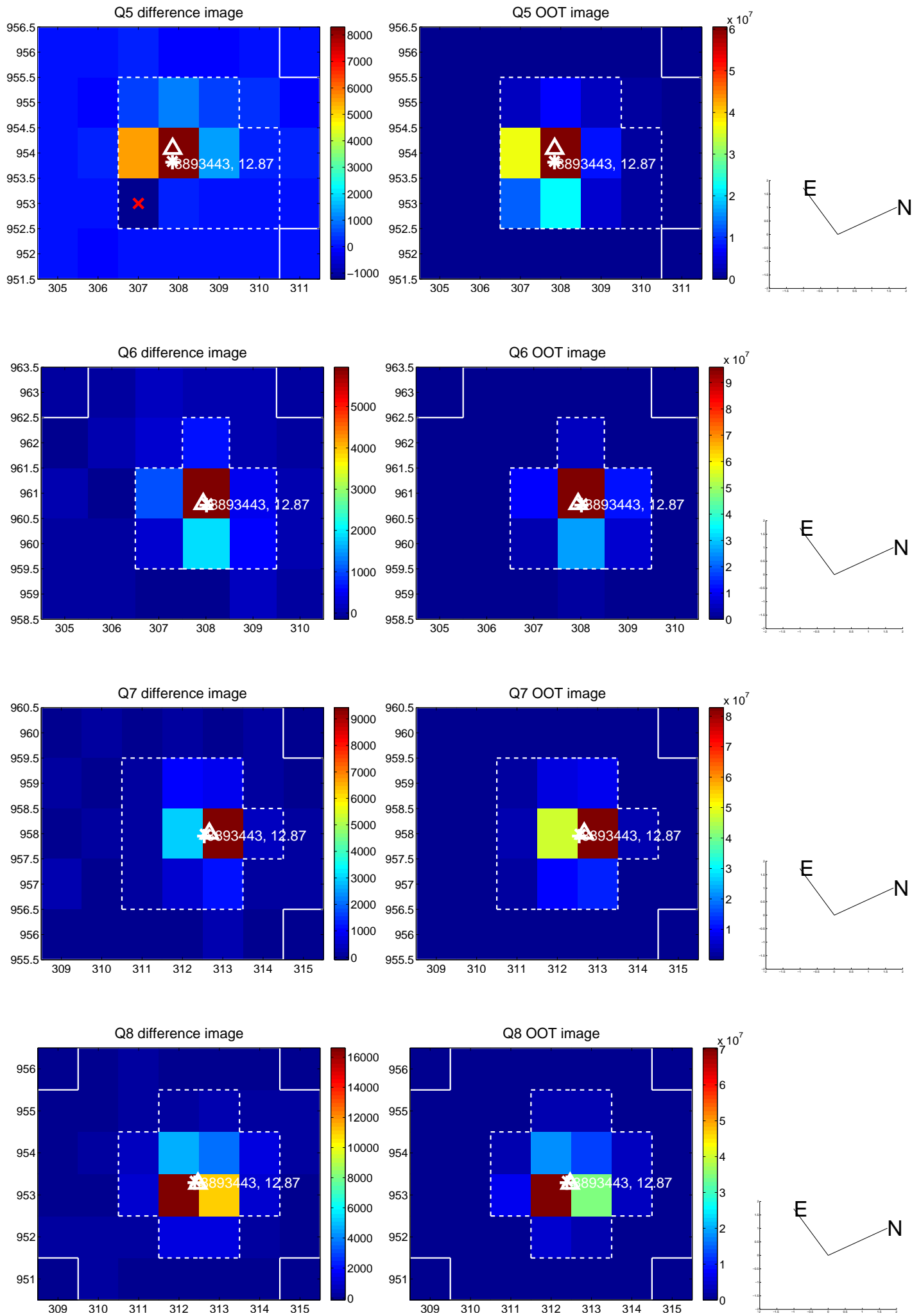


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

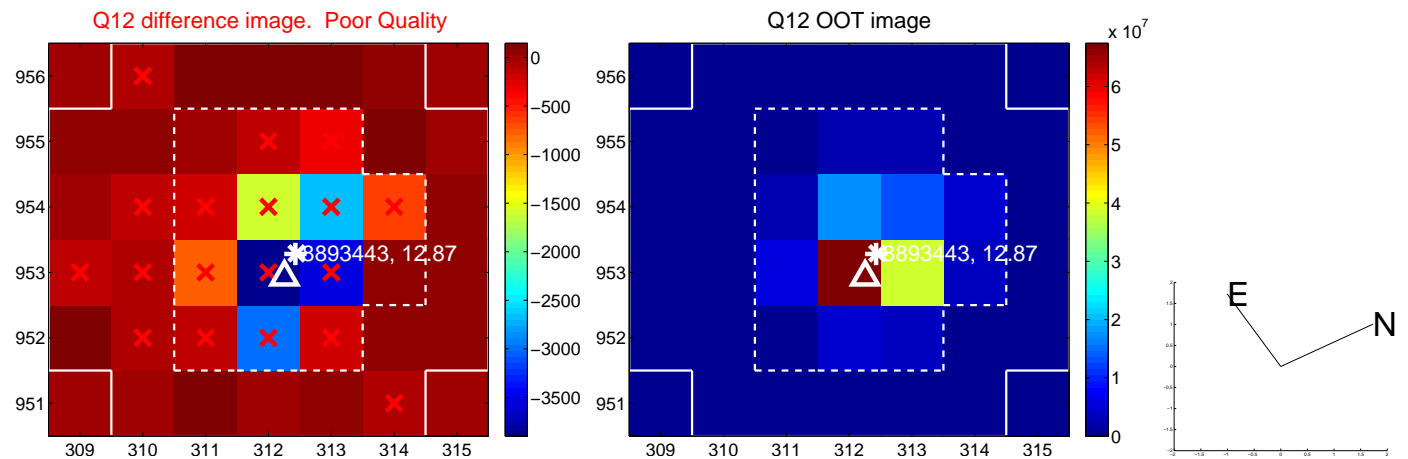
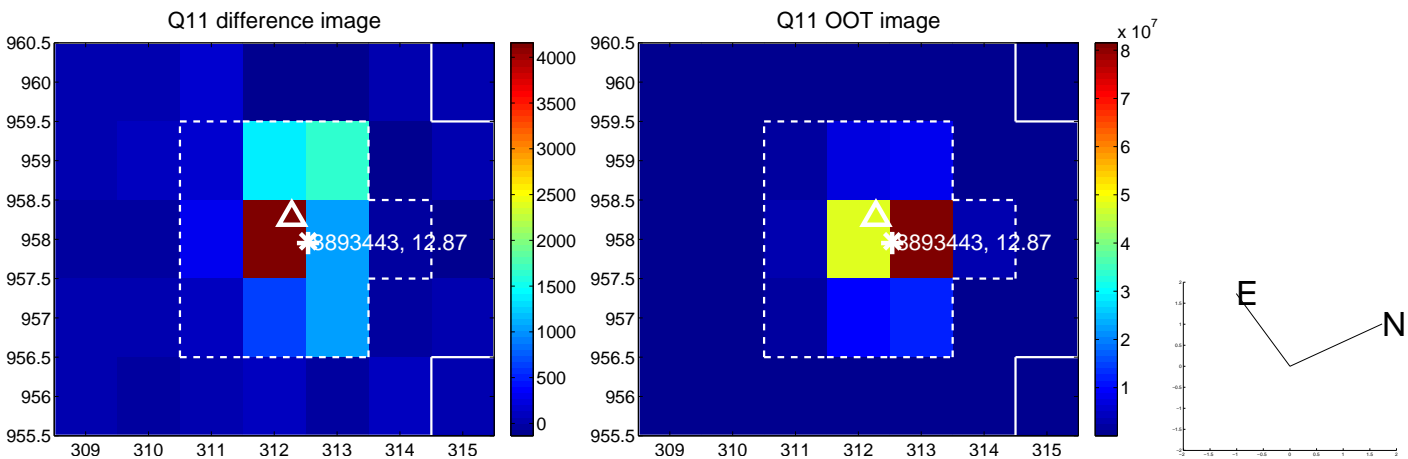
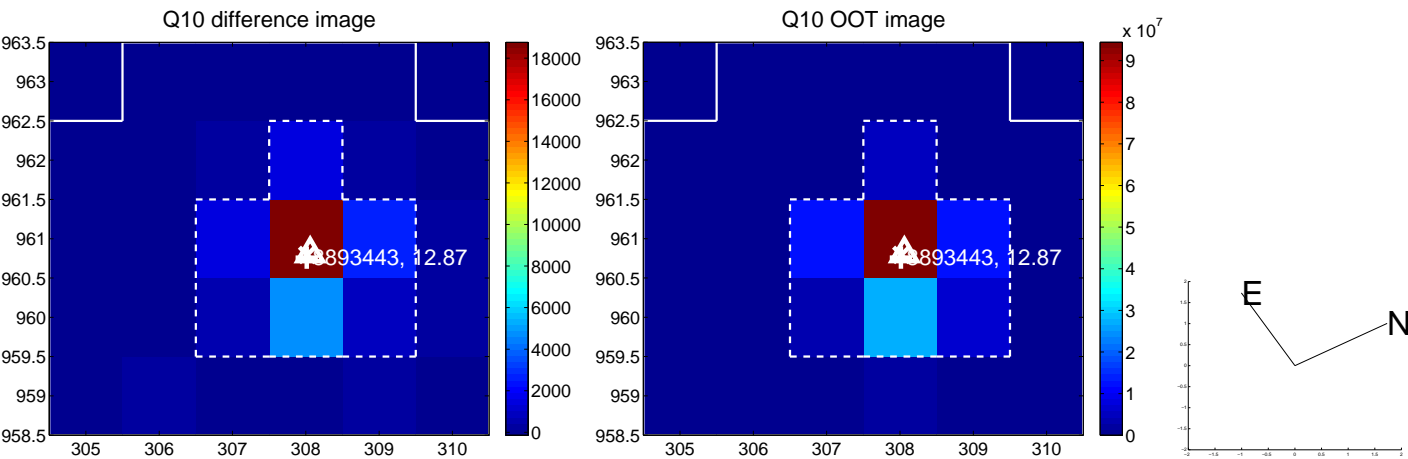
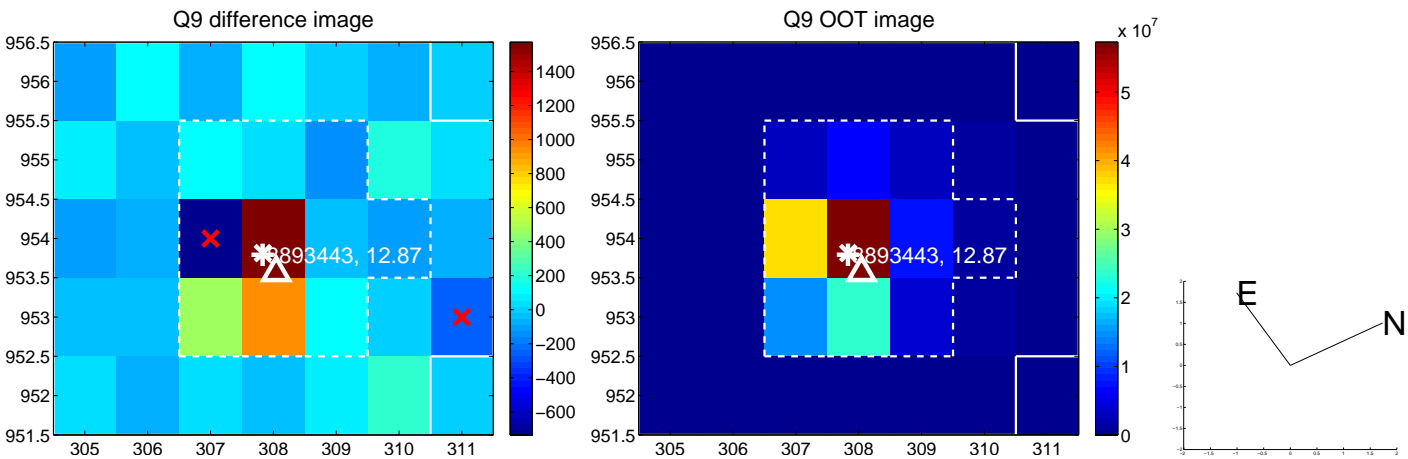


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

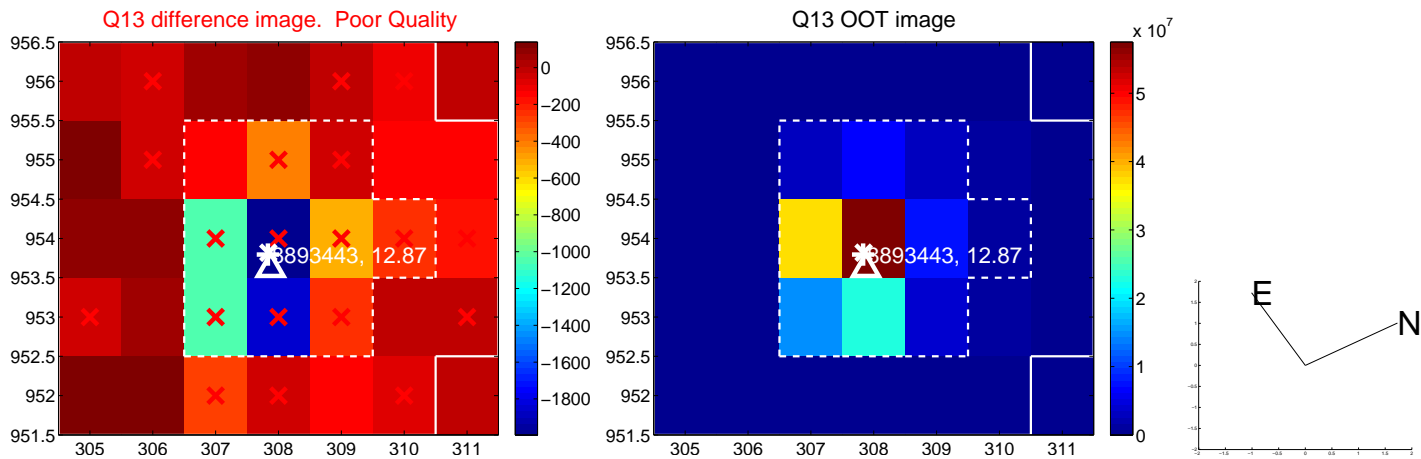




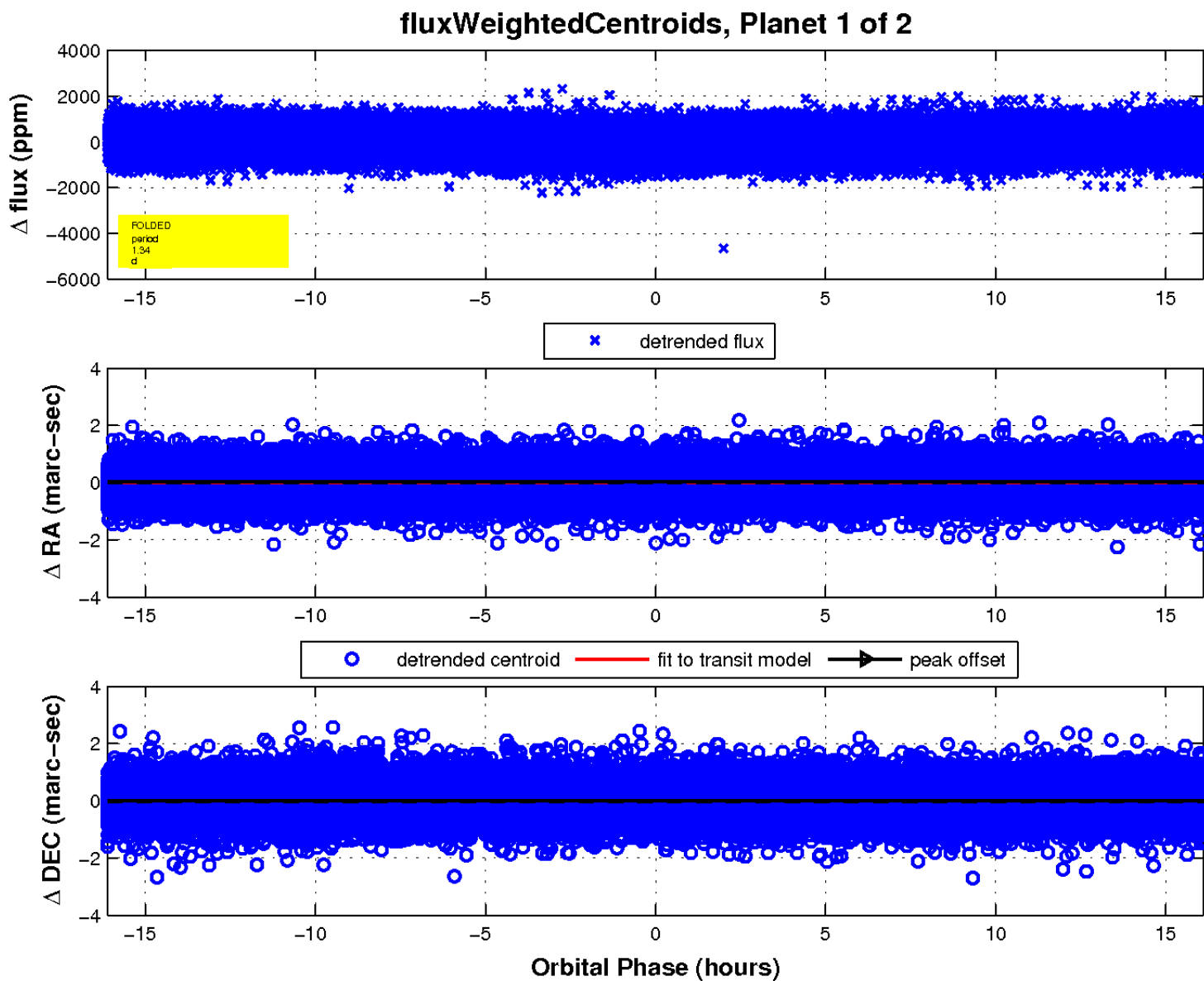
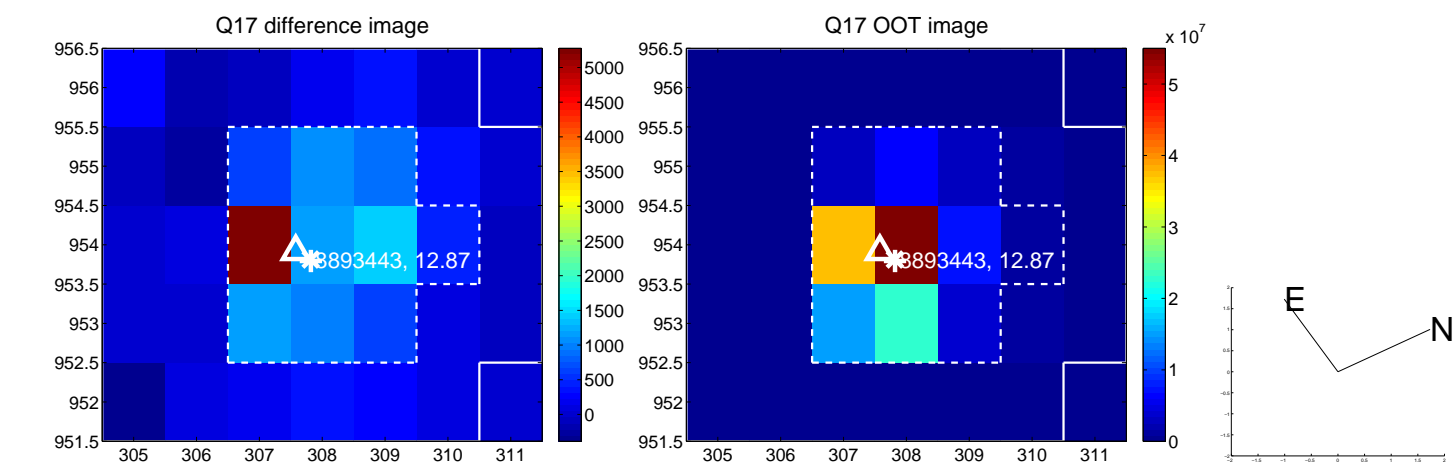
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

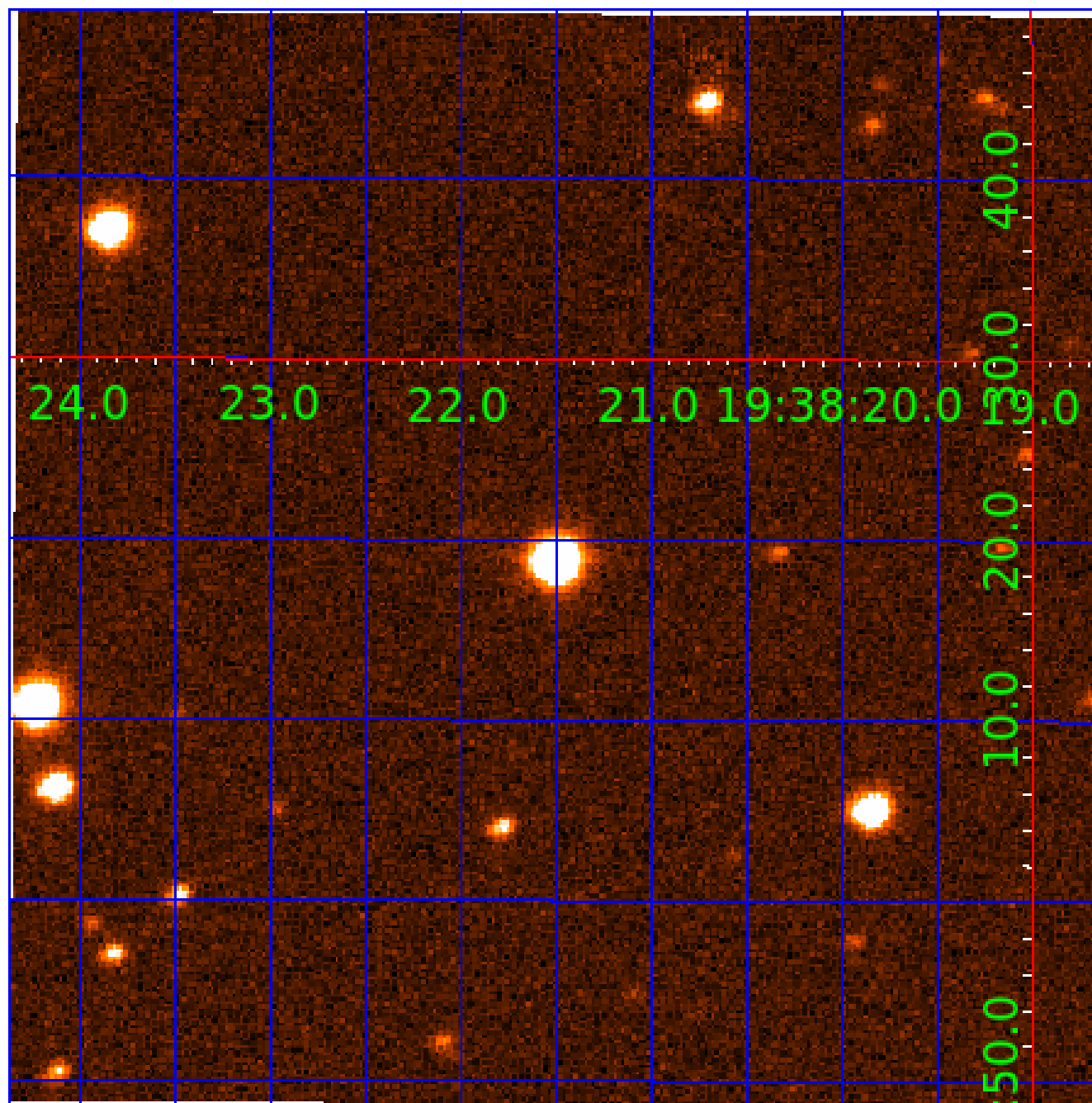


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008893443

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008893443-01	OBS	No	1.342351	131.869868	30.2	6.047	8.0	5.3	1.95	7346	1.24	12611.93
008893443-02	OBS	No	175.159571	291.869904	985.6	5.975	10.2	7.9	1.95	7346	11.36	19.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008893443-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
008893443-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

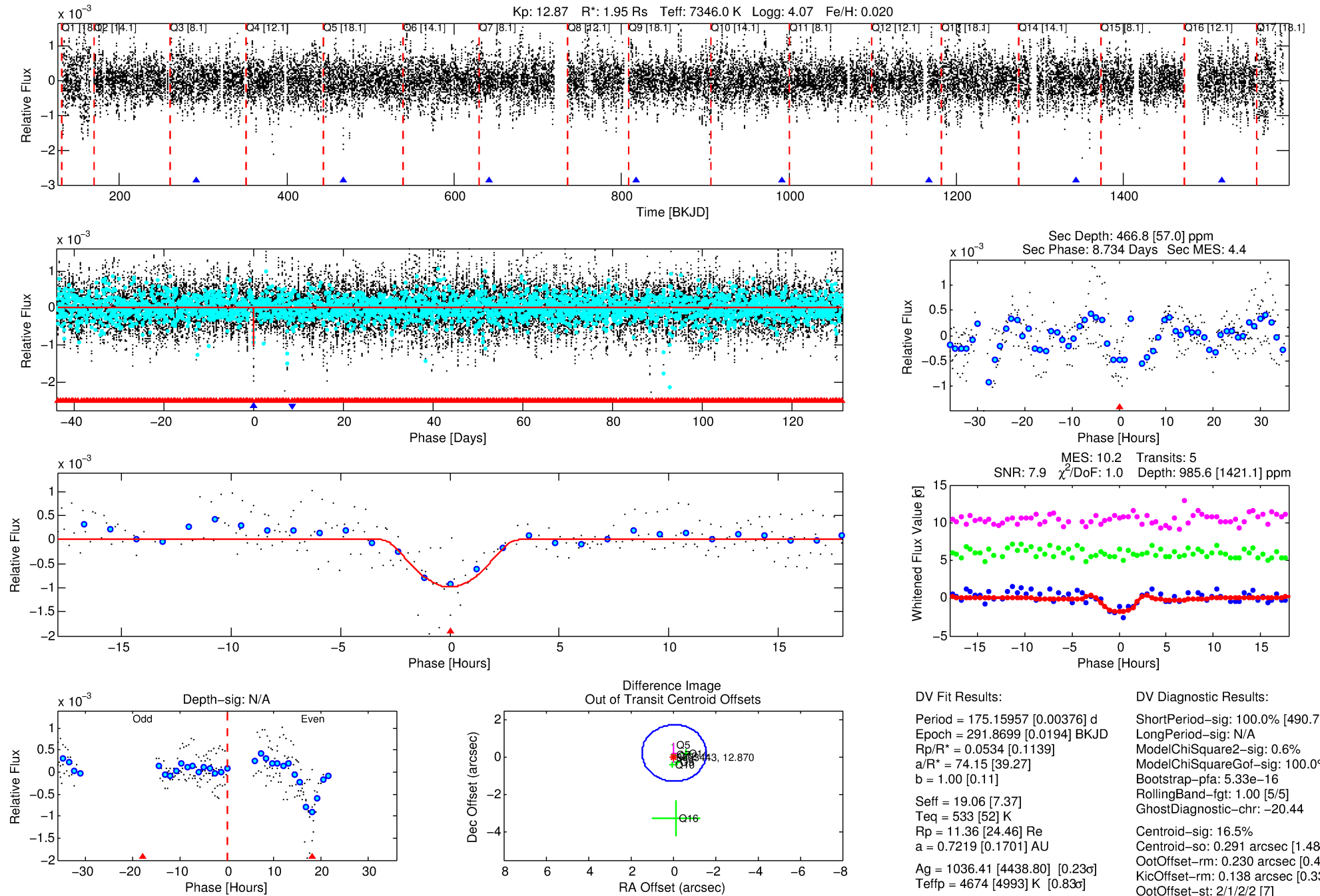
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008893443-02

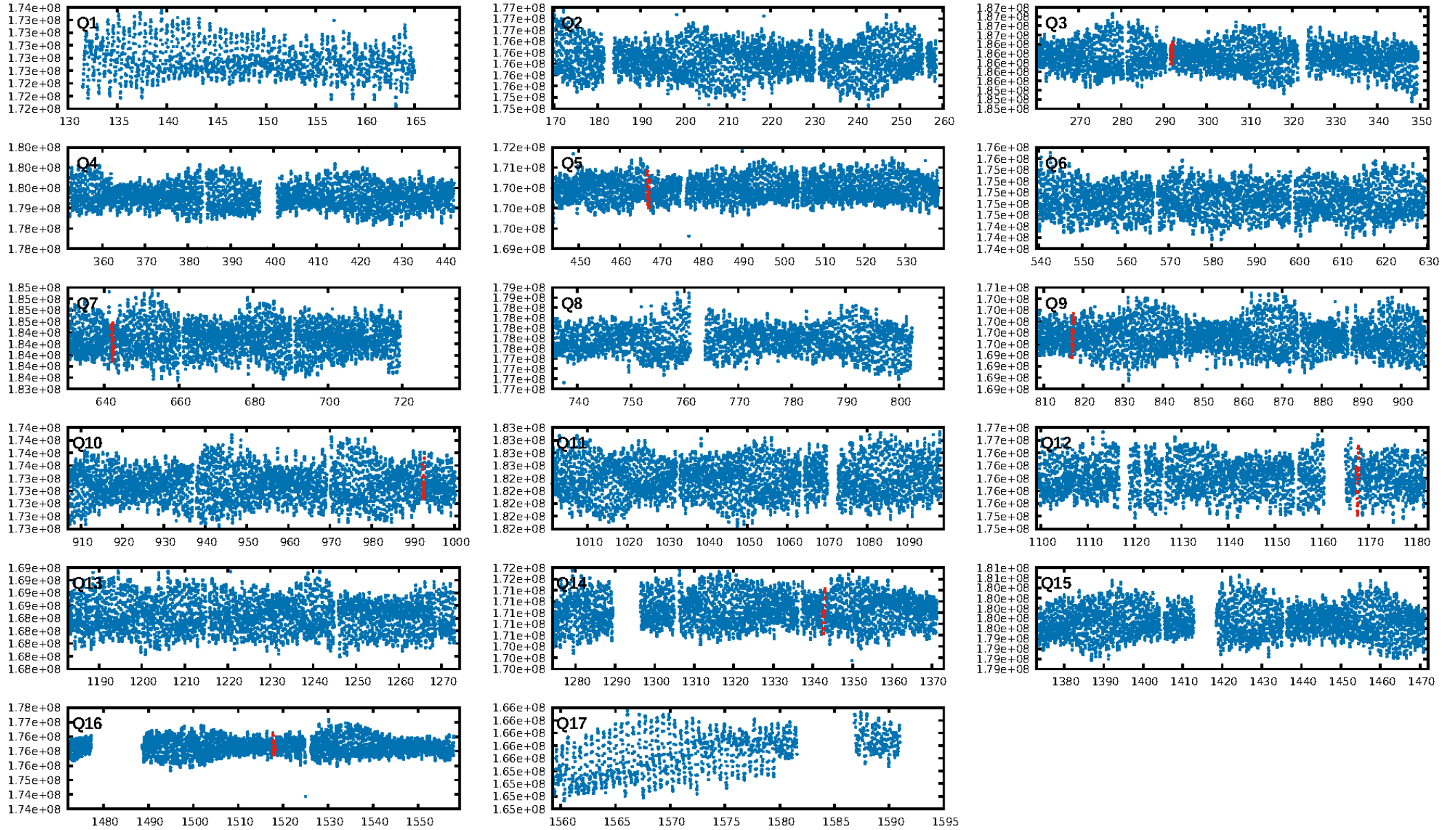
No Significant Match Found

# DV One-Page Summary

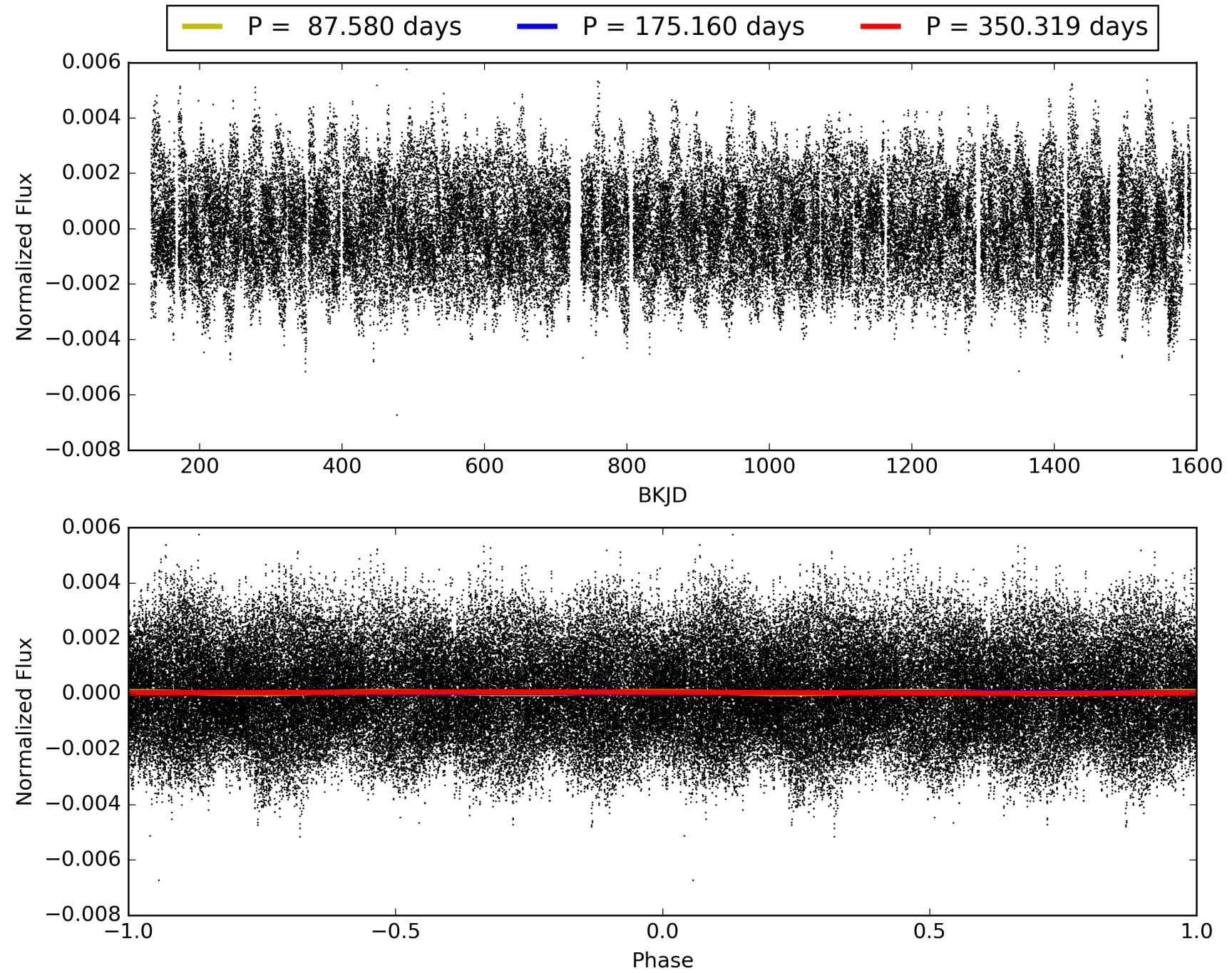
KIC: 8893443 Candidate: 2 of 2 Period: 175.160 d



# TCE 008893443-02, PDC Light Curves



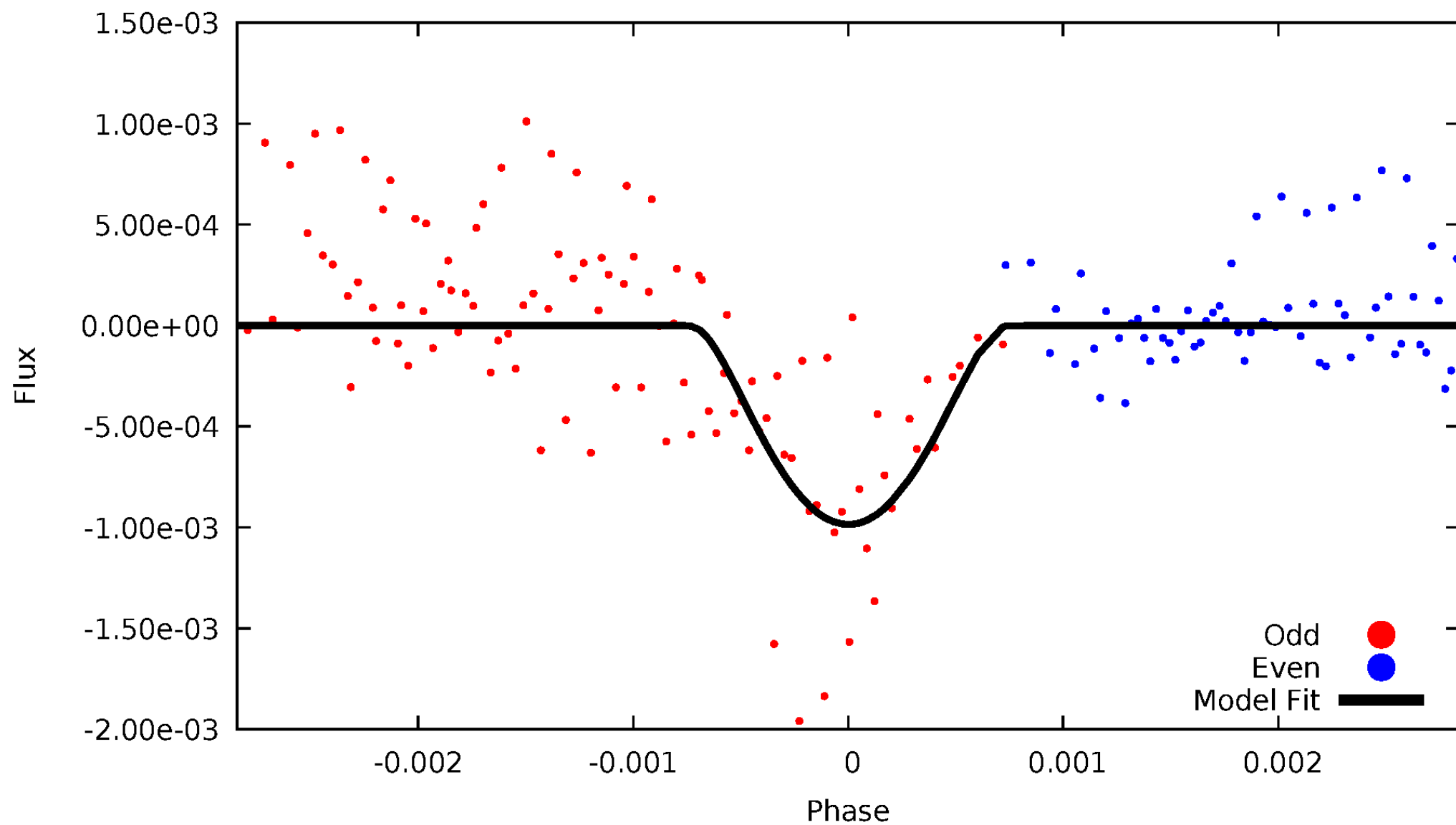
# TCE 008893443-02





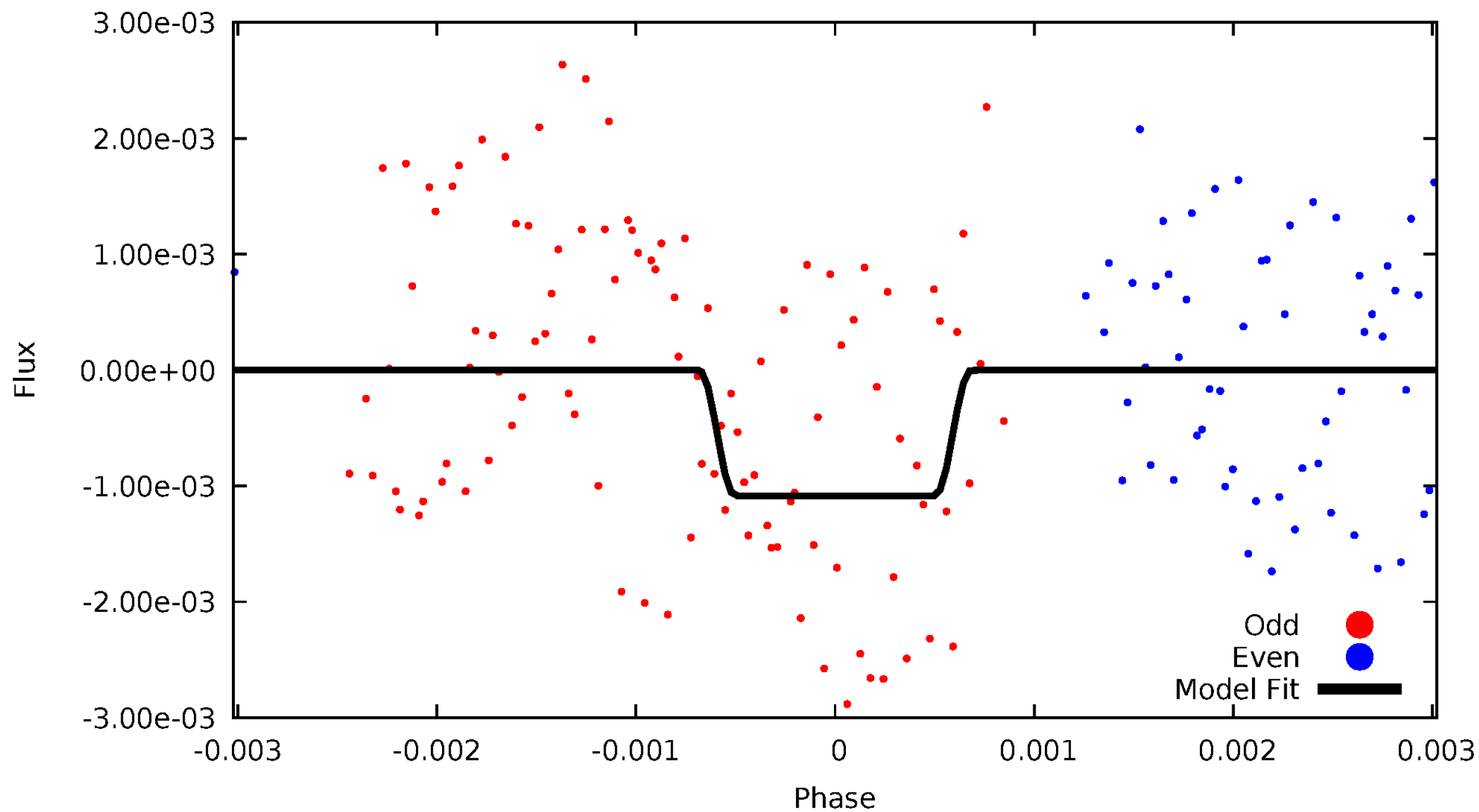
# DV Odd/Even

TCE 008893443-02



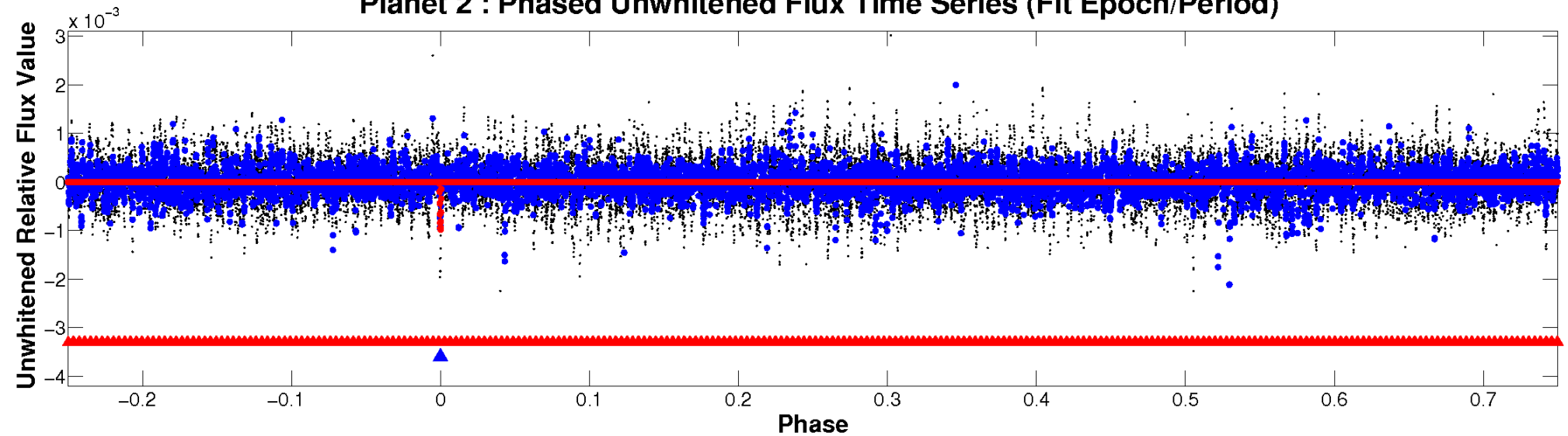
# ALT Odd/Even

TCE 008893443-02

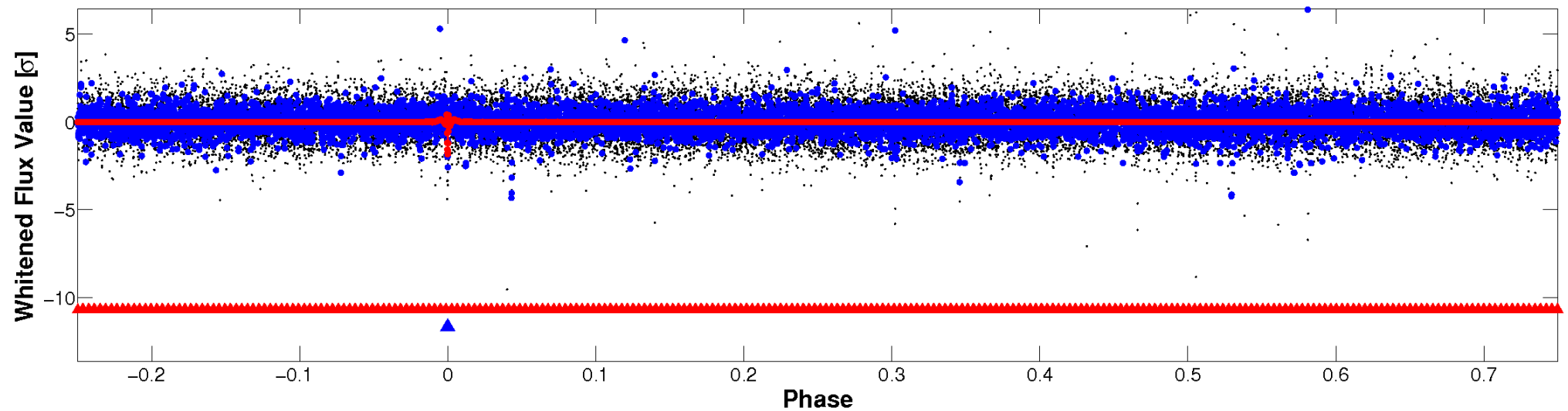


# Non-Whitened Vs. Whitened Light Curve

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

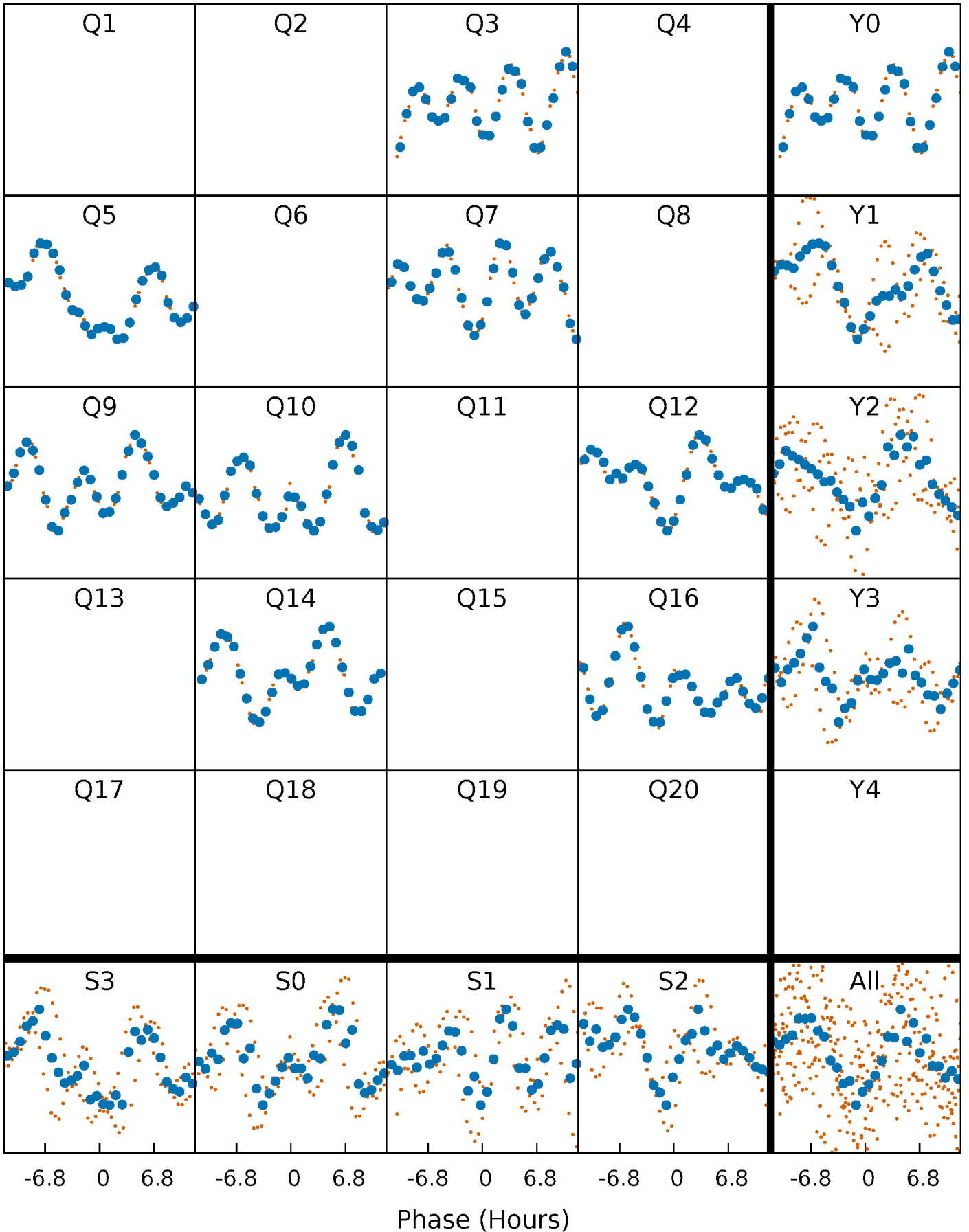


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



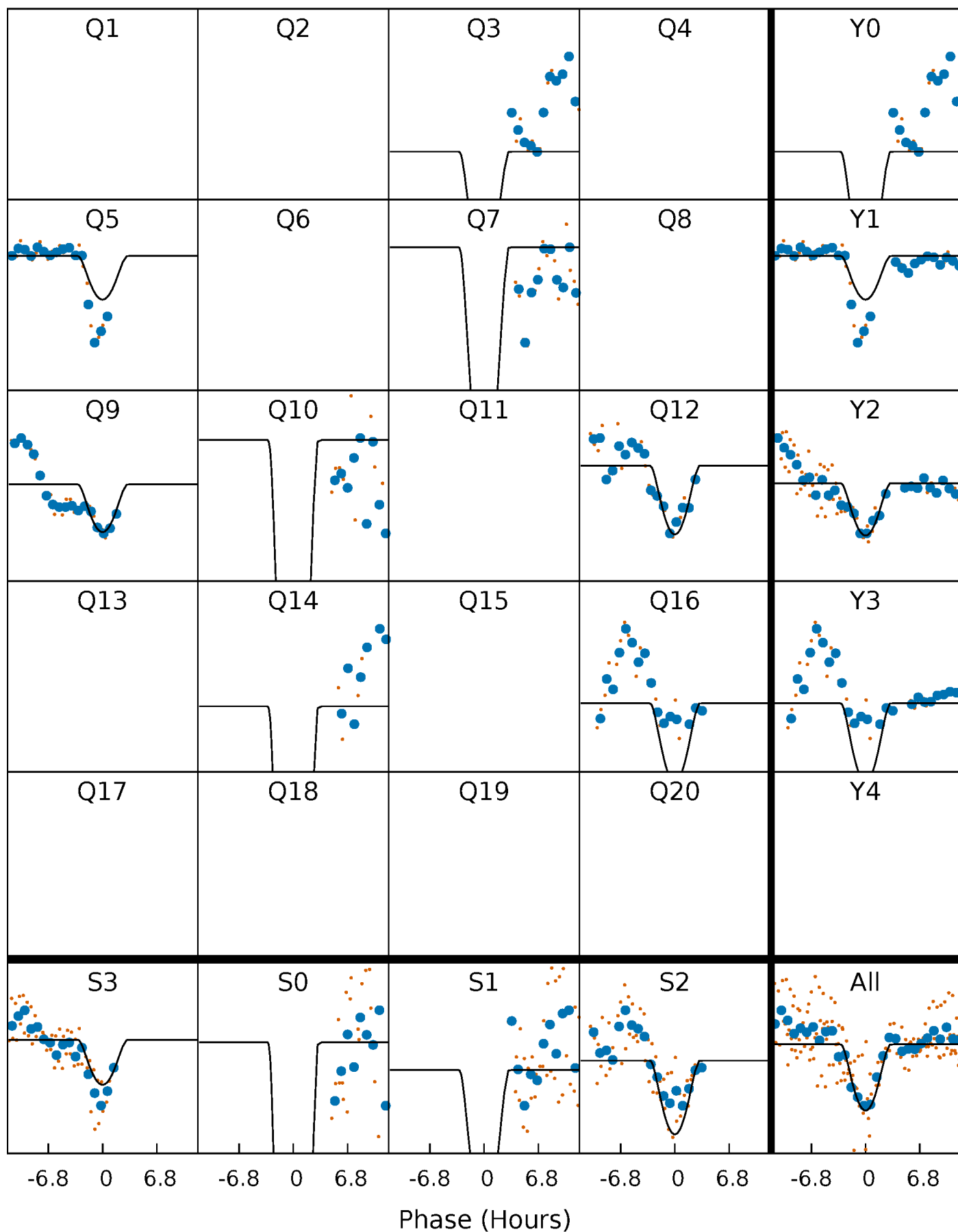
# PDC Quarter-Phased Transit Curves

TCE 008893443-02     $P=175.159571$  Days     $T_0=291.869904$  (BKJD)



# DV Quarter-Phased Transit Curves

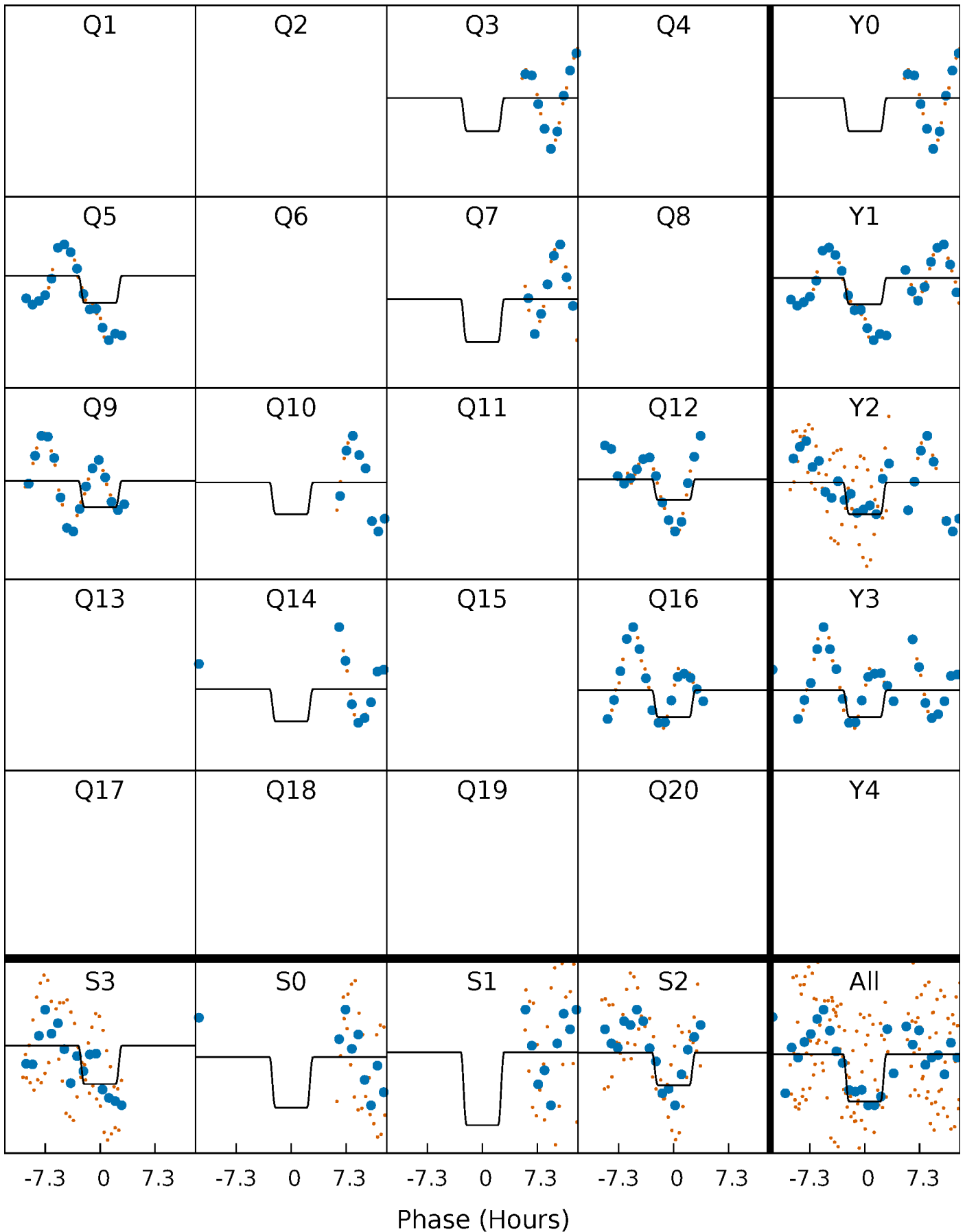
TCE 008893443-02 P=175.159571 Days  $T_0=291.869904$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

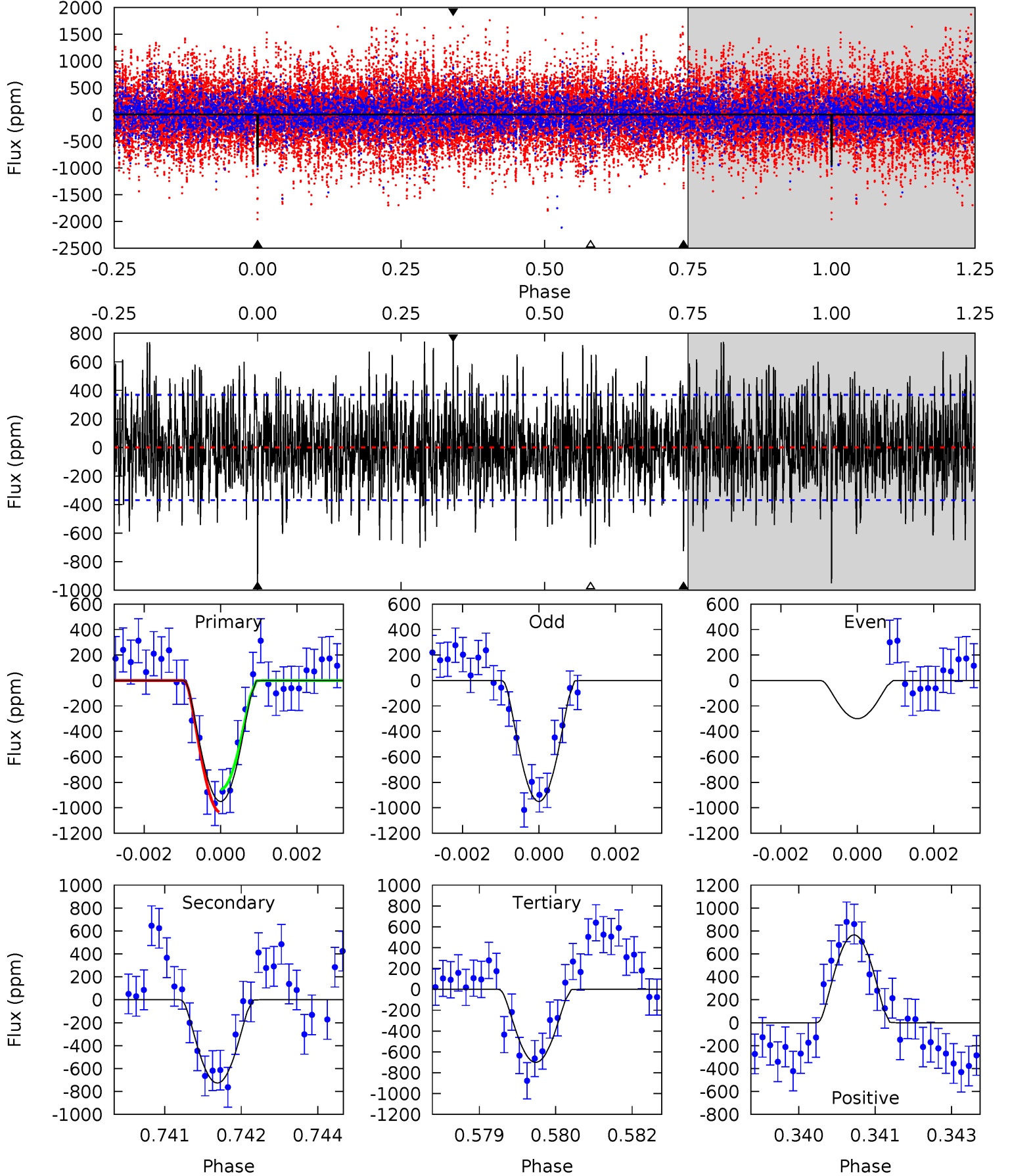
TCE 008893443-02 P=175.169590 Days  $T_0=291.777296$  (BKJD)



# DV Model-Shift Uniqueness Test

008893443-02, P = 175.159571 Days, E = 116.710333 Days

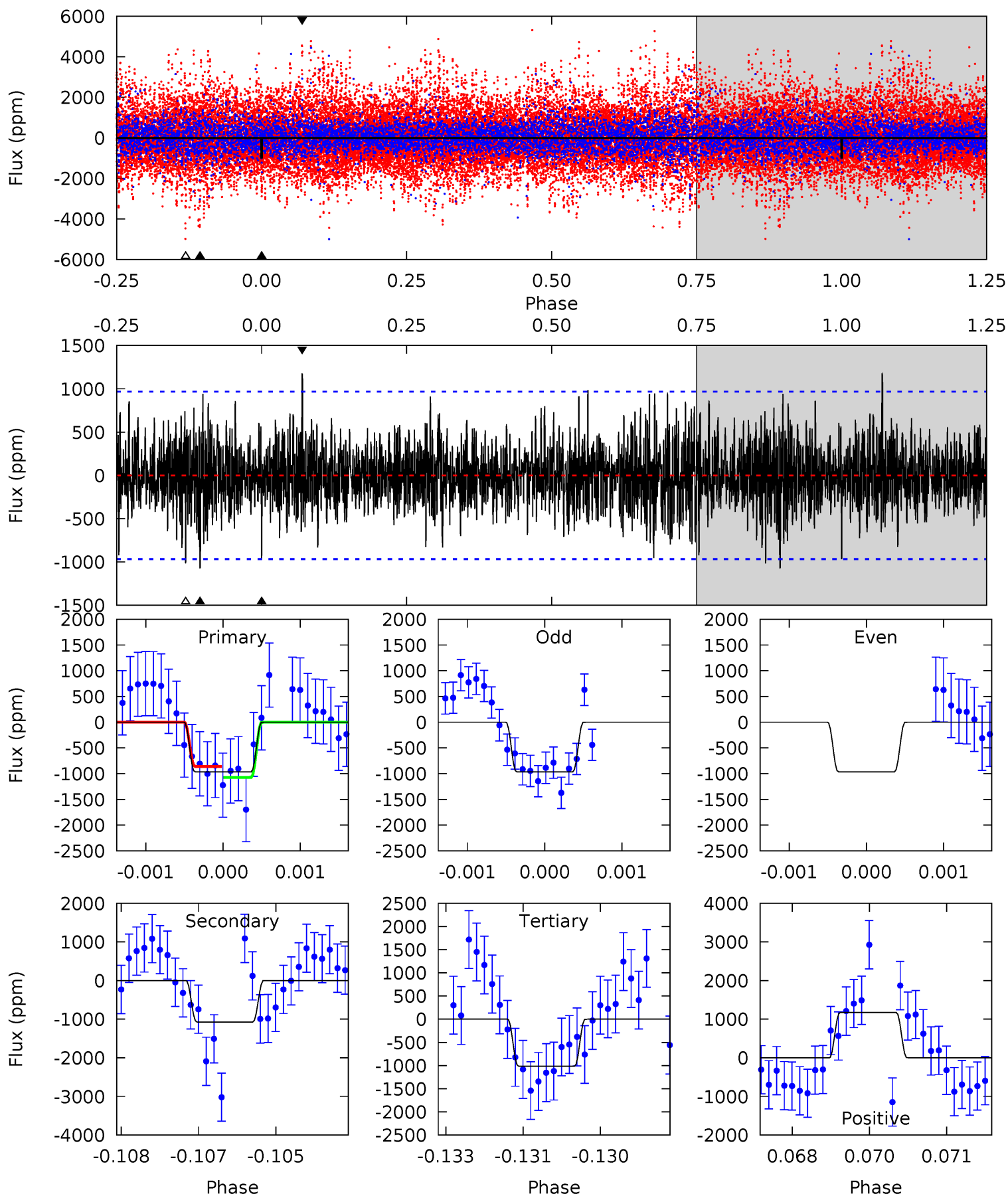
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	10.6	10.2	11.2	5.37	3.17	3.32	3.63	2.70	0.37	-0.57	1.54	1.05	0.45	1.29



# Alt Model-Shift Uniqueness Test

008893443-02, P = 175.169590 Days, E = 116.607706 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
5.39	5.98	5.66	6.56	5.40	3.20	1.77	-0.28	-1.17	0.32	-0.58	0	1.04	0.52	0.60



### Stellar Parameters For KIC 008893443

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7346^{+203}_{-330}$	$4.071^{+0.153}_{-0.187}$	$0.020^{+0.200}_{-0.350}$	$1.951^{+0.547}_{-0.448}$	$1.635^{+0.187}_{-0.281}$	$0.310^{+0.280}_{-0.147}$
	+3%/-4%	+4%/-5%	+1000%/-1750%	+28%/-23%	+11%/-17%	+90%/-47%
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 008893443-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-727 \pm 69$	$21.48^{+19.90}_{-14.28}$	$744^{+56}_{-56}$	$4041^{+2496}_{-799}$	$431^{+3589}_{-312}$
Alt.	$-1073 \pm 179$	$19.21^{+18.48}_{-13.64}$	$744^{+52}_{-54}$	$4579^{+3743}_{-1048}$	$841^{+9133}_{-640}$

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

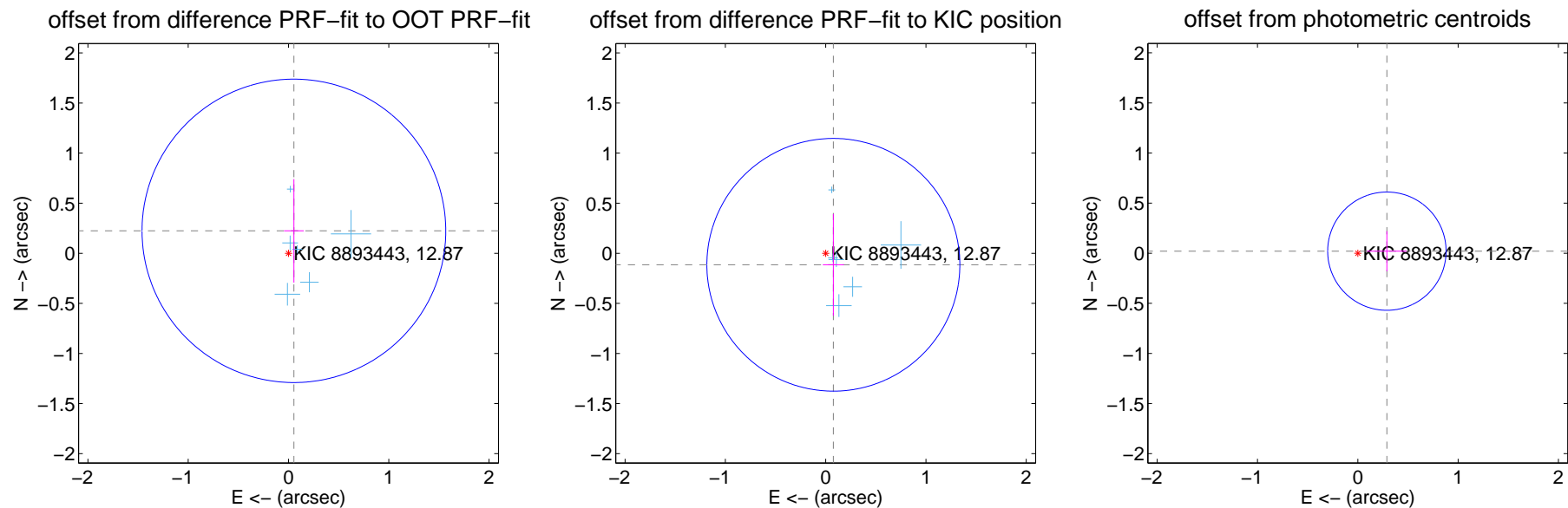
## DV Centroid Data

Supplemental centroid analysis for 008893443-02. Kepler magnitude: 12.87. Transit SNR 7.93

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.230 \pm 0.505$	0.46	$-0.054 \pm 0.098$	$0.224 \pm 0.517$
PRF-fit source offset from KIC position	$0.138 \pm 0.420$	0.33	$-0.077 \pm 0.105$	$-0.115 \pm 0.508$
photometric centroid source offset	$0.29 \pm 0.20$	1.48	$-0.29 \pm 0.20$	$0.02 \pm 0.20$



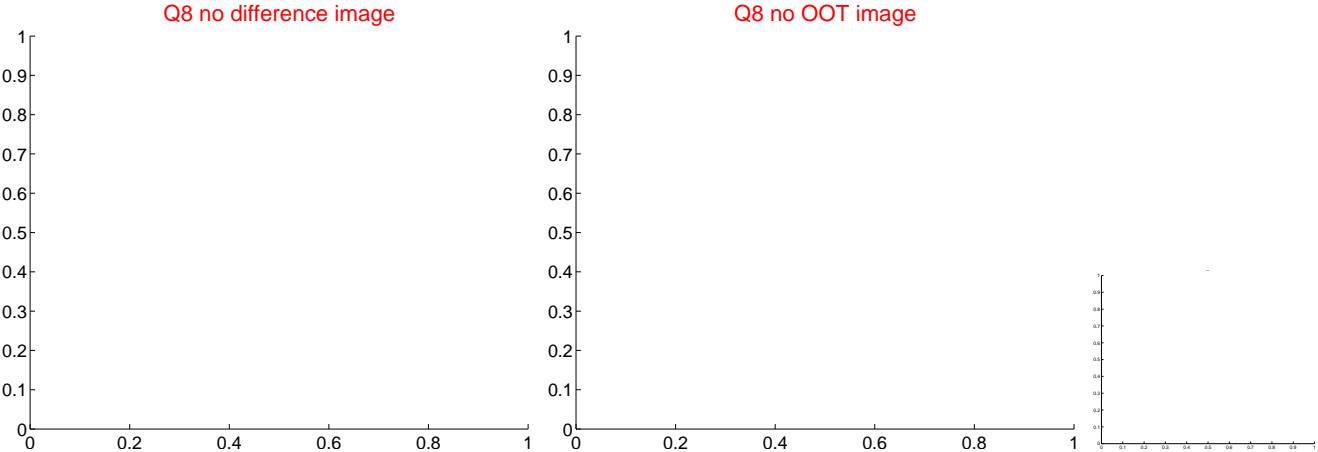
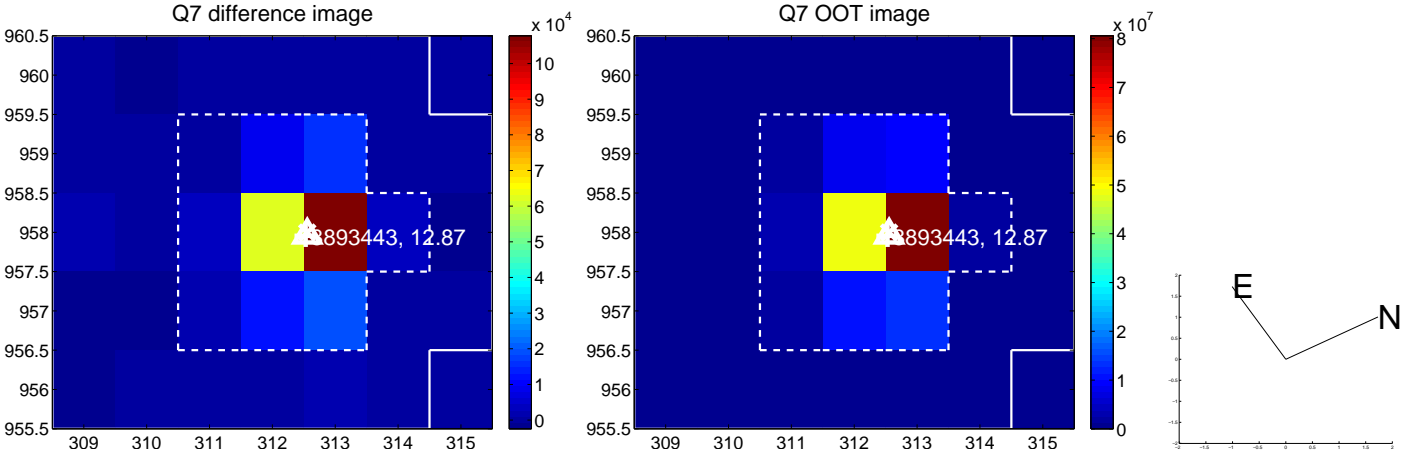
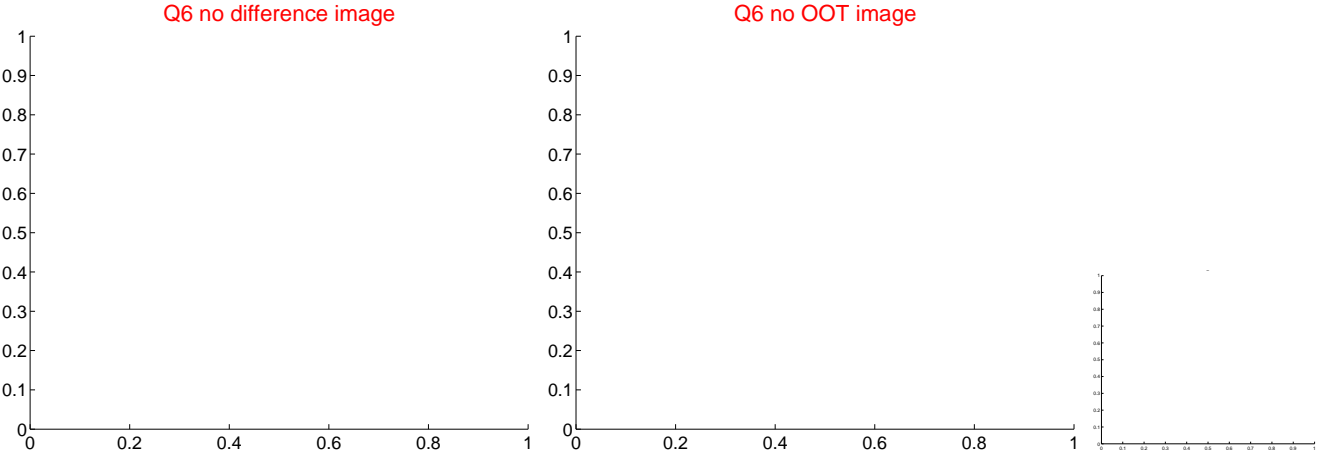
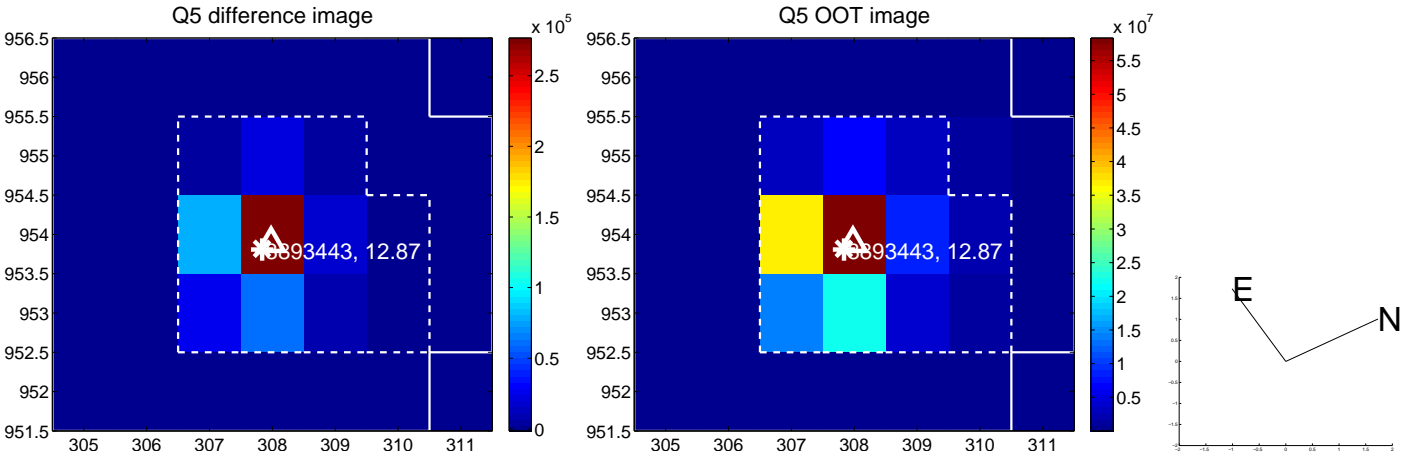
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

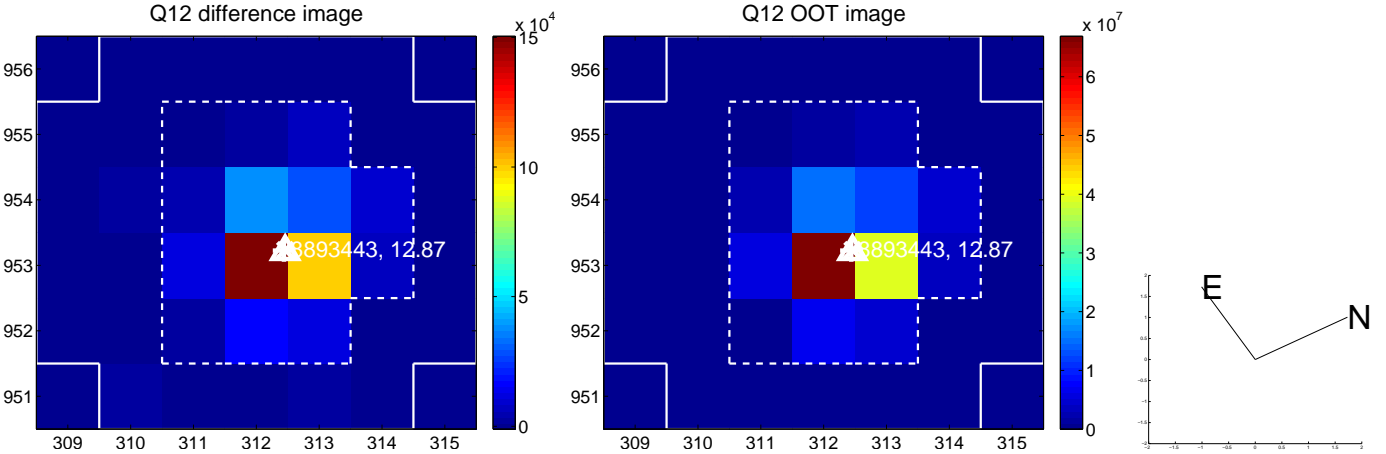
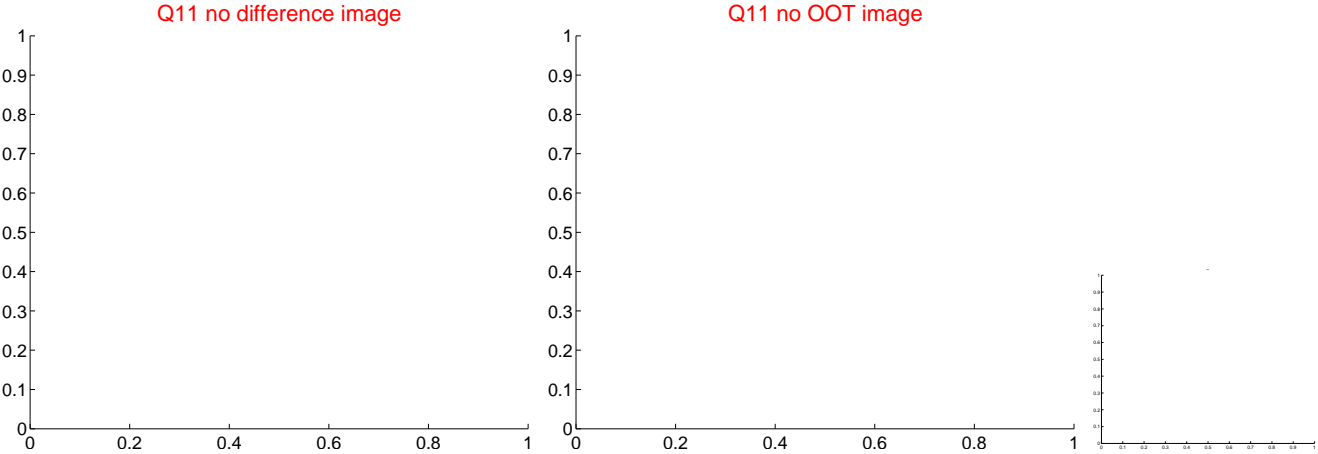
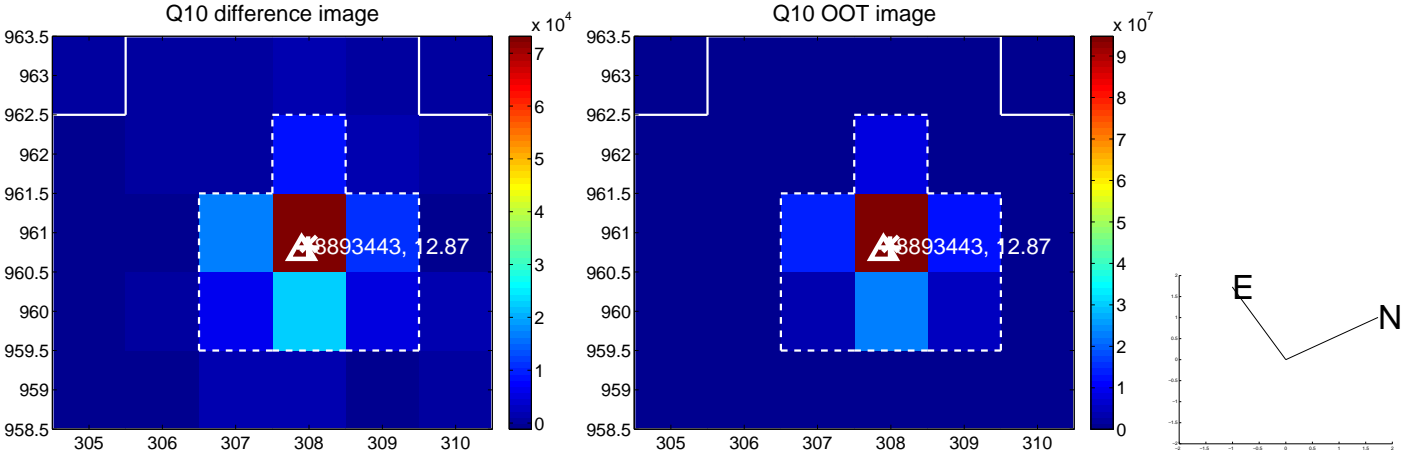
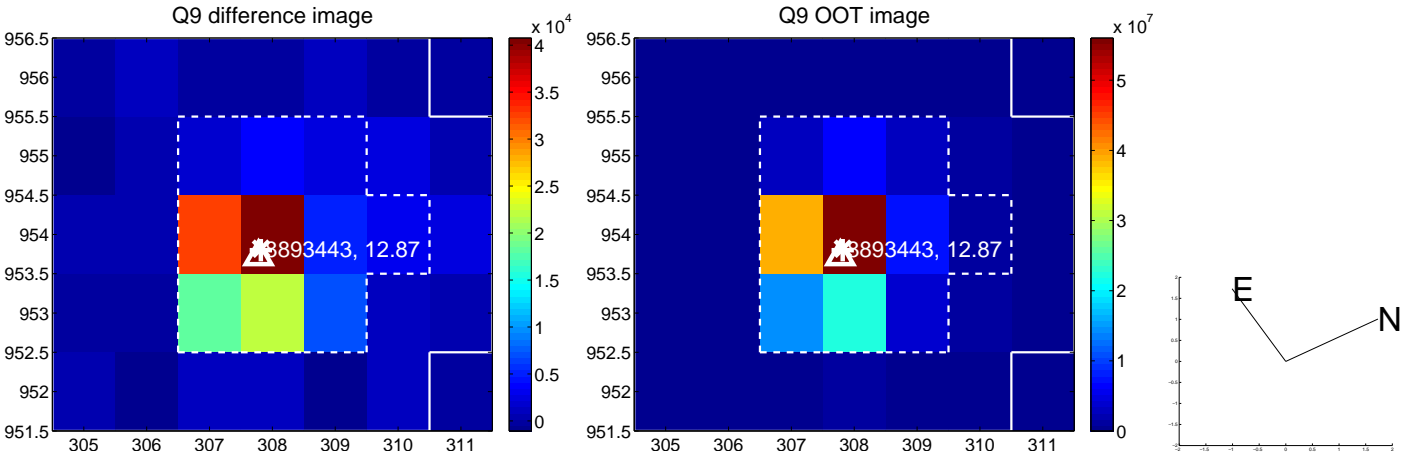




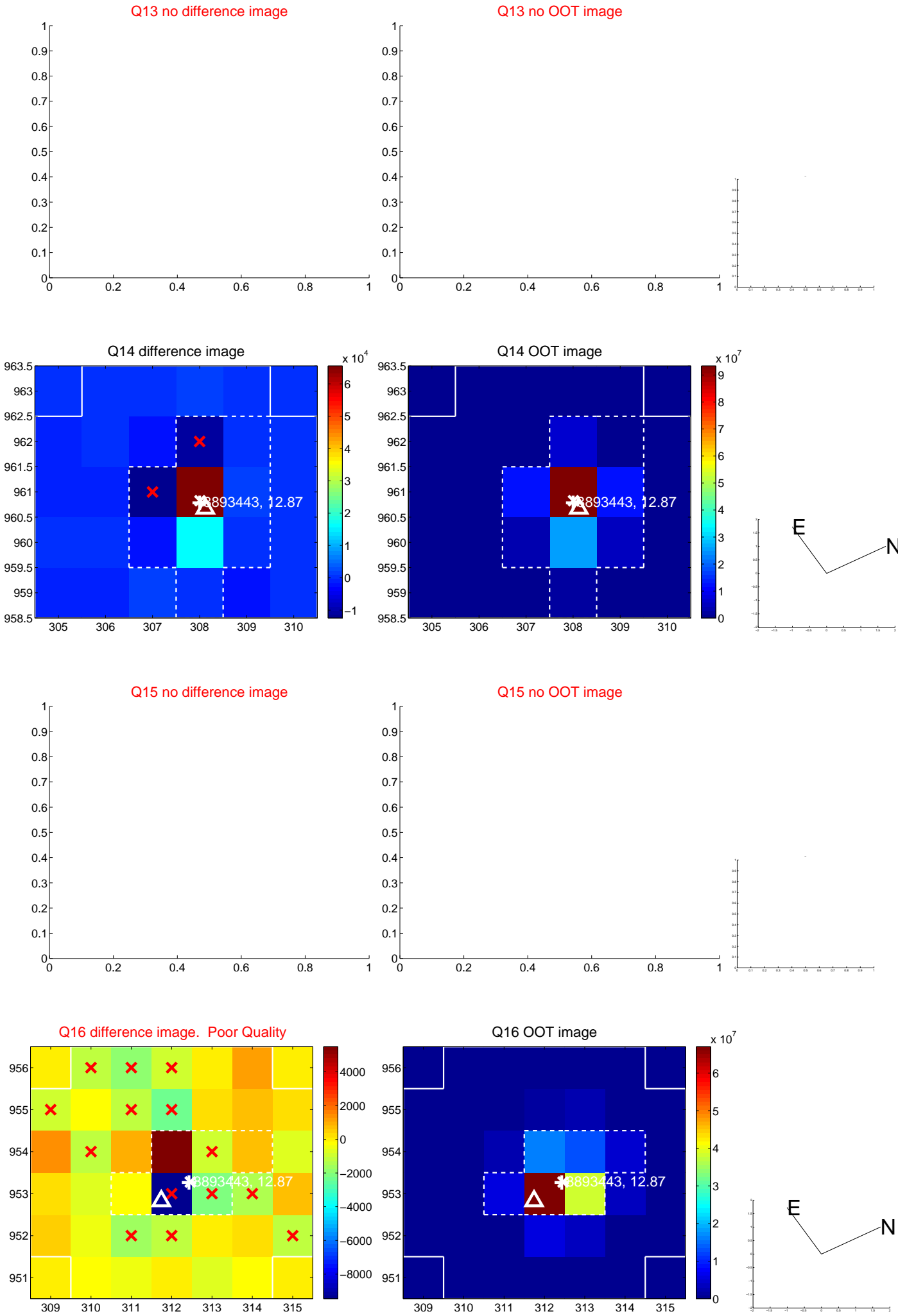
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



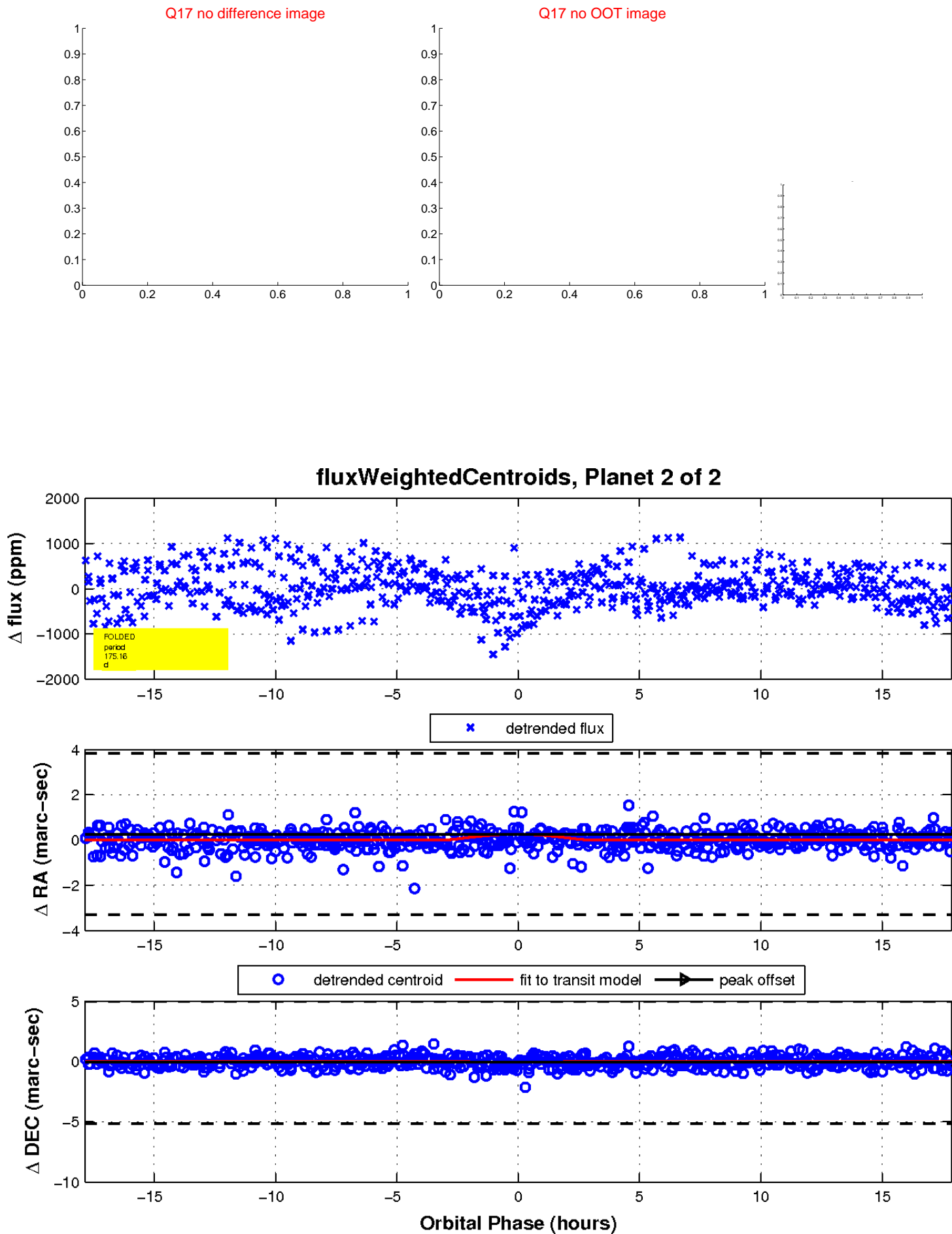
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

