

# KIC 005893839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005893839-01	OBS	No	8.429861	137.045312	60.5	11.511	9.5	9.6	2.50	5937	2.29	897.76
005893839-02	OBS	No	3.485744	134.731934	34.0	12.713	9.6	8.2	2.50	5937	1.83	2914.24
005893839-03	OBS	No	372.036713	265.517987	281.2	7.183	9.8	7.9	2.50	5937	4.94	5.76
005893839-04	OBS	No	512.462148	243.572315	451.6	12.693	8.1	8.0	2.50	5937	10.50	3.76
005893839-05	OBS	No	101.087025	165.024097	194.6	14.168	7.7	9.6	2.50	5937	7.07	32.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005893839-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

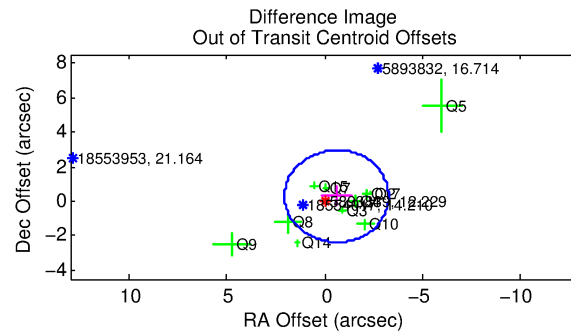
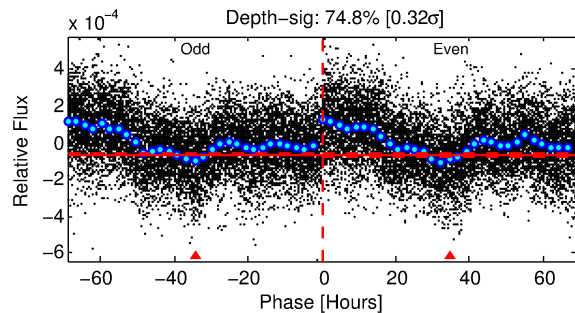
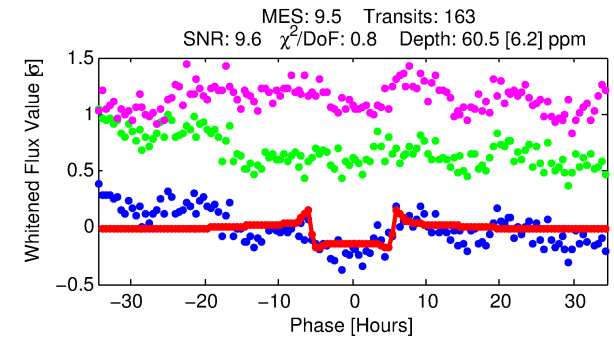
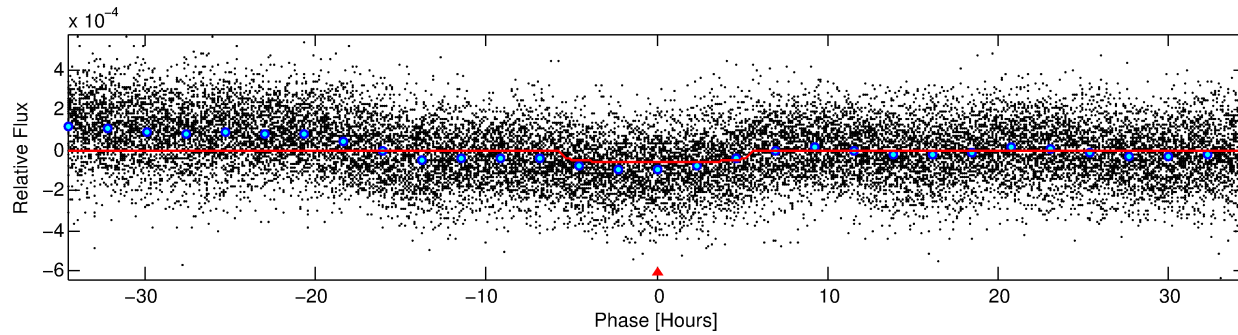
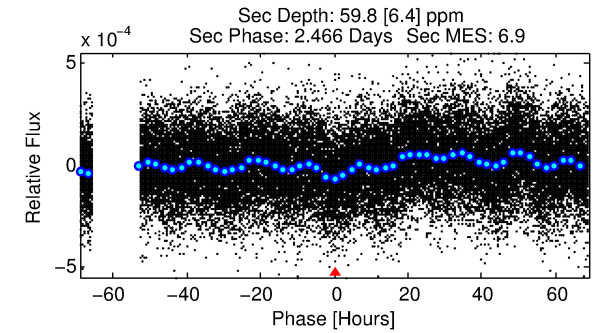
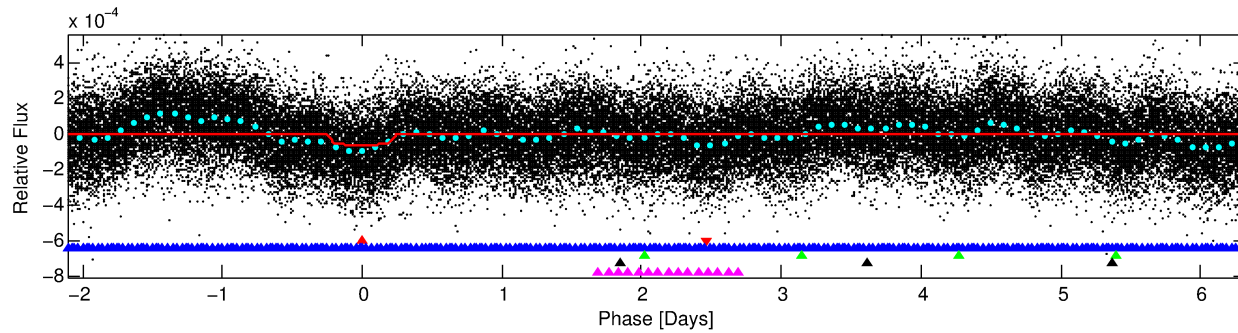
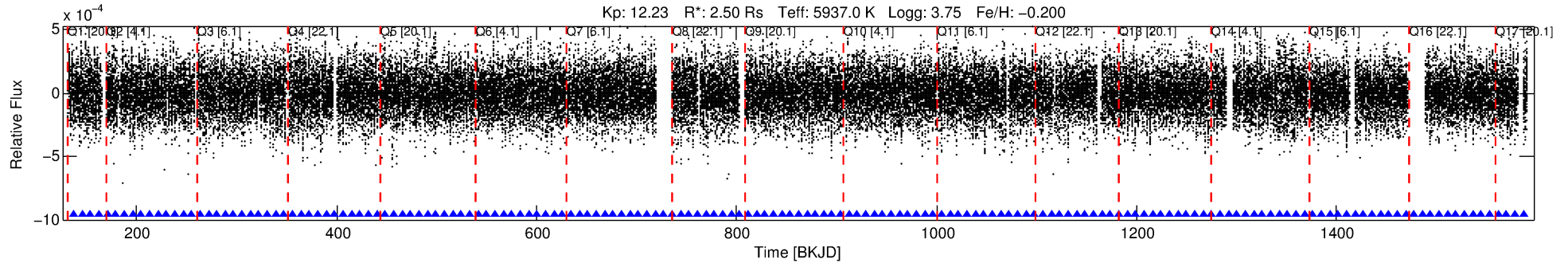
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005893839-01

No Significant Match Found

# DV One-Page Summary

KIC: 5893839 Candidate: 1 of 5 Period: 8.430 d



## DV Fit Results:

Period = 8.42986 [0.00007] d  
Epoch = 137.0453 [0.0062] BKJD  
Rp/R\* = 0.0084 [0.0008]  
a/R\* = 2.74 [0.92]  
b = 0.90 [0.08]  
Seff = 897.76 [516.33]  
Teq = 1396 [201] K  
Rp = 2.29 [0.91] Re  
a = 0.0882 [0.0311] AU  
Ag = 48.77 [28.79] [1.66σ]  
Teffp = 5703 [401] K [9.60σ]

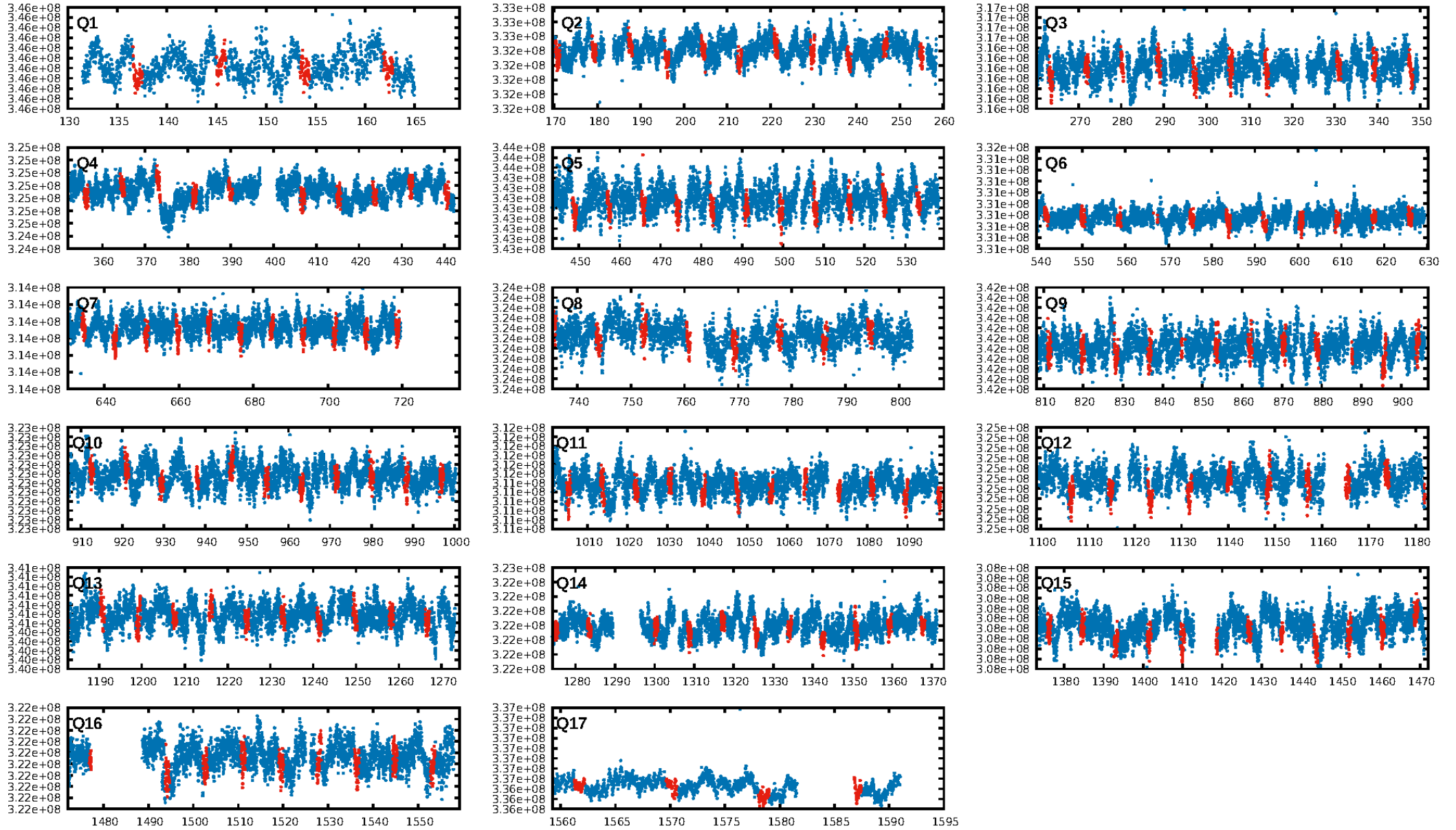
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.92σ]  
LongPeriod-sig: 100.0% [121.82σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.68e-12**  
RollingBand-fgt: 1.00 [155/155]  
GhostDiagnostic-chr: 1.64  
**Centroid-sig: 0.1%**  
Centroid-so: 1.072 arcsec [2.02σ]  
OotOffset-rm: 0.668 arcsec [0.75σ]  
KicOffset-rm: 0.642 arcsec [0.72σ]  
OotOffset-st: 3/3/2/3 [11]  
KicOffset-st: 3/3/2/3 [11]  
DiffImageQuality-fgm: 0.64 [7/11]  
DiffImageOverlap-fno: 0.94 [16/17]

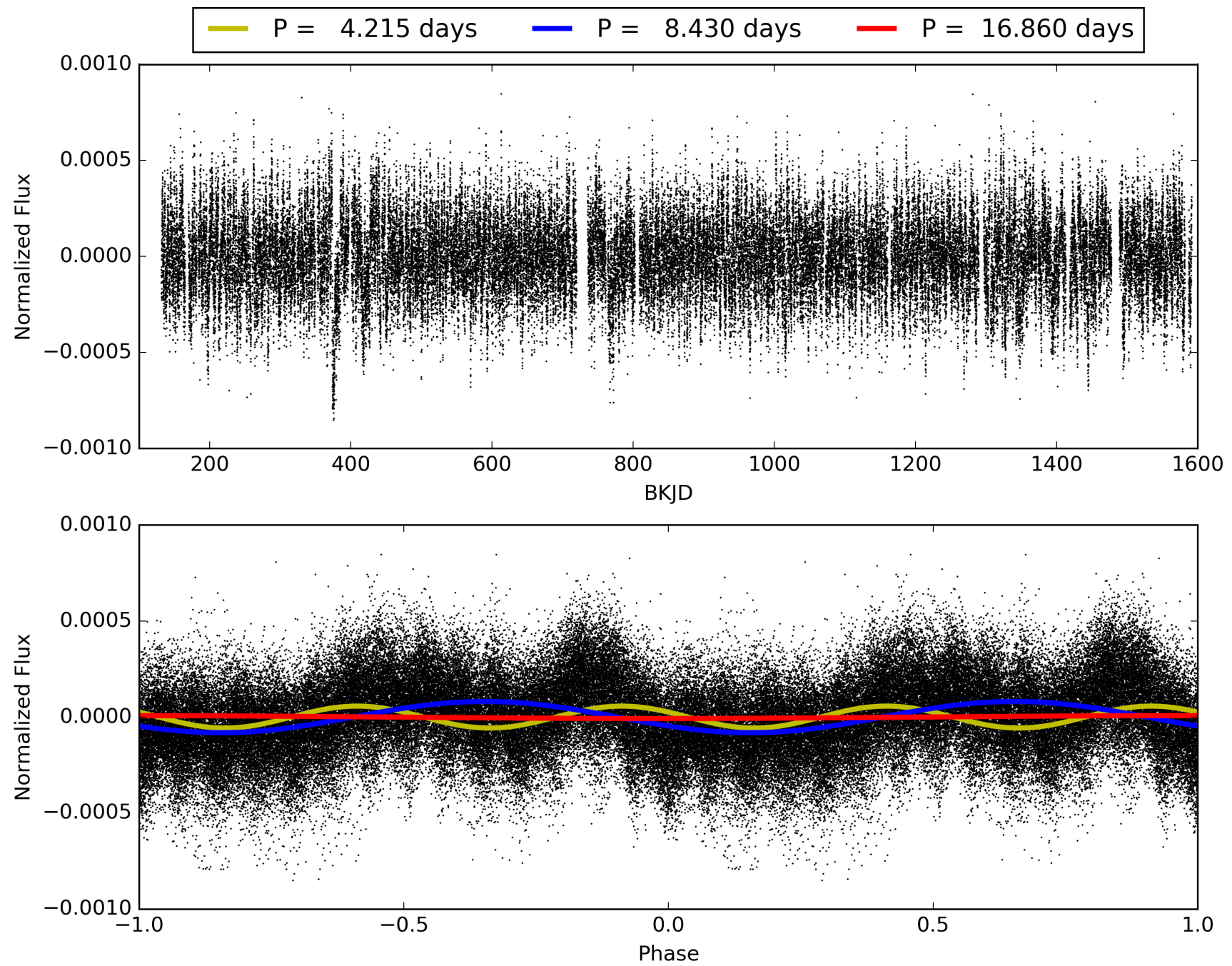
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:00:09 Z

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

# TCE 005893839-01, PDC Light Curves



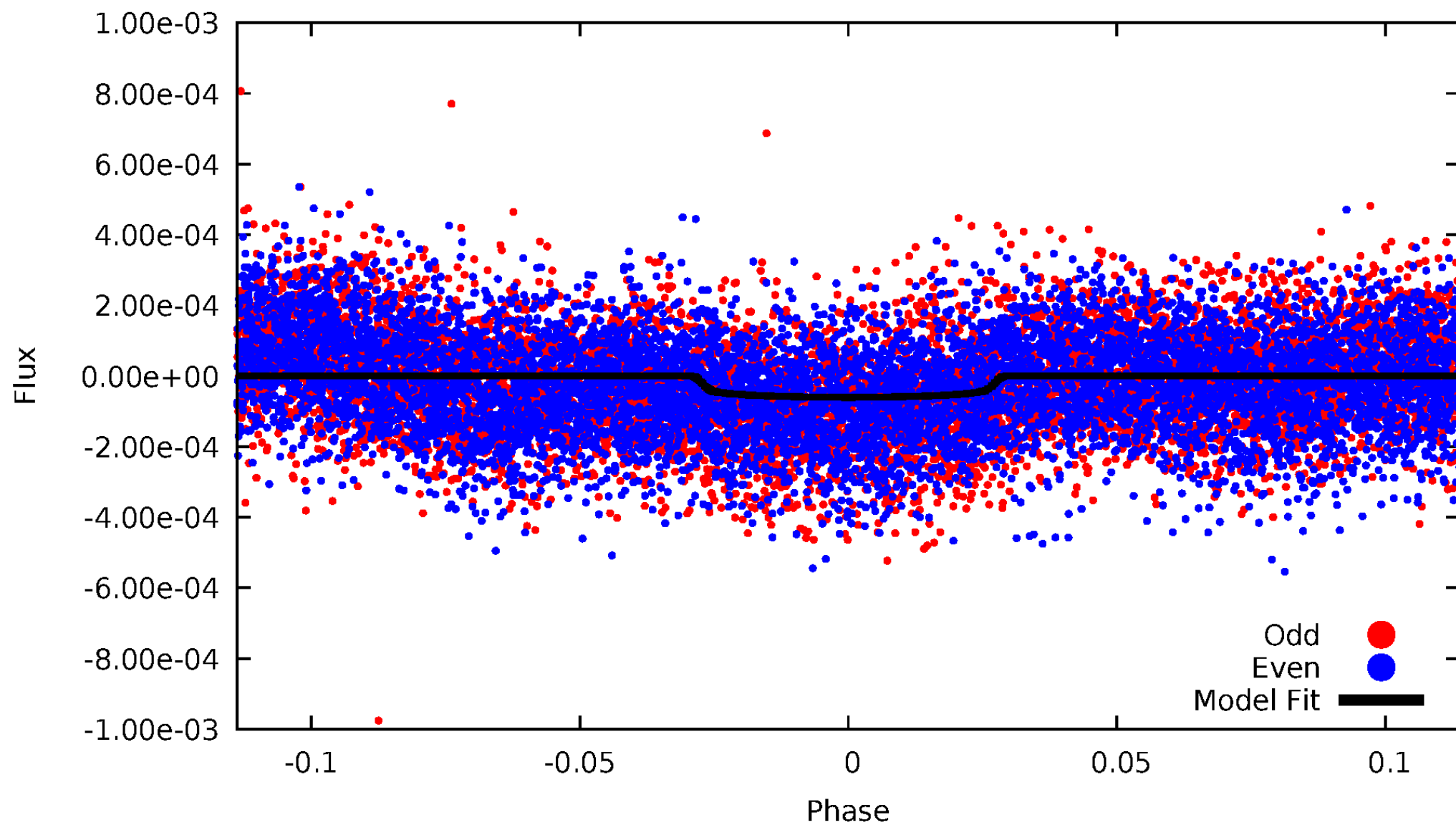
TCE 005893839-01





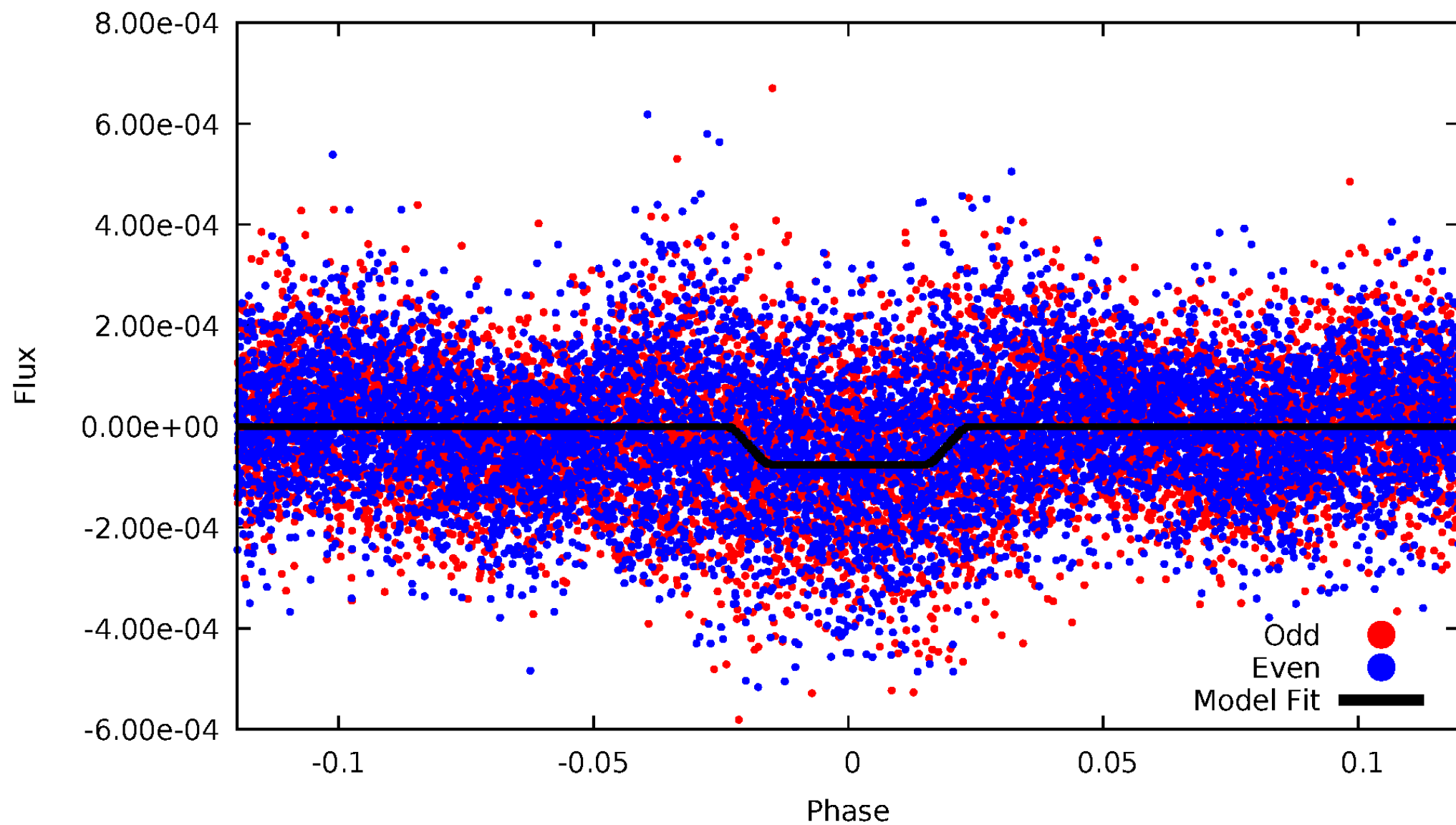
# DV Odd/Even

TCE 005893839-01

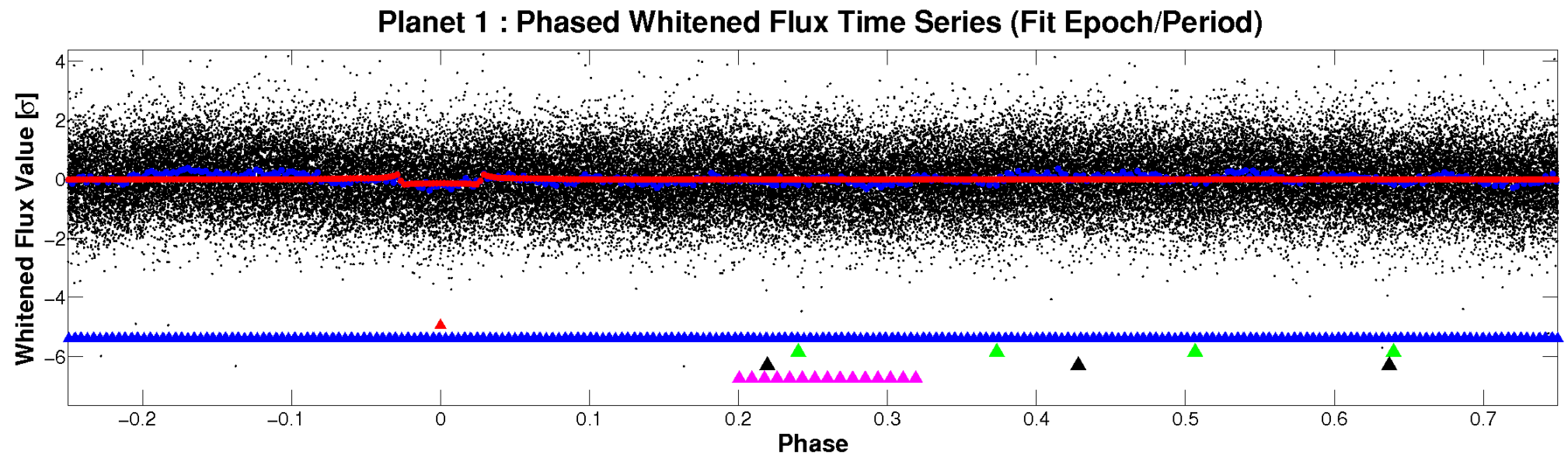
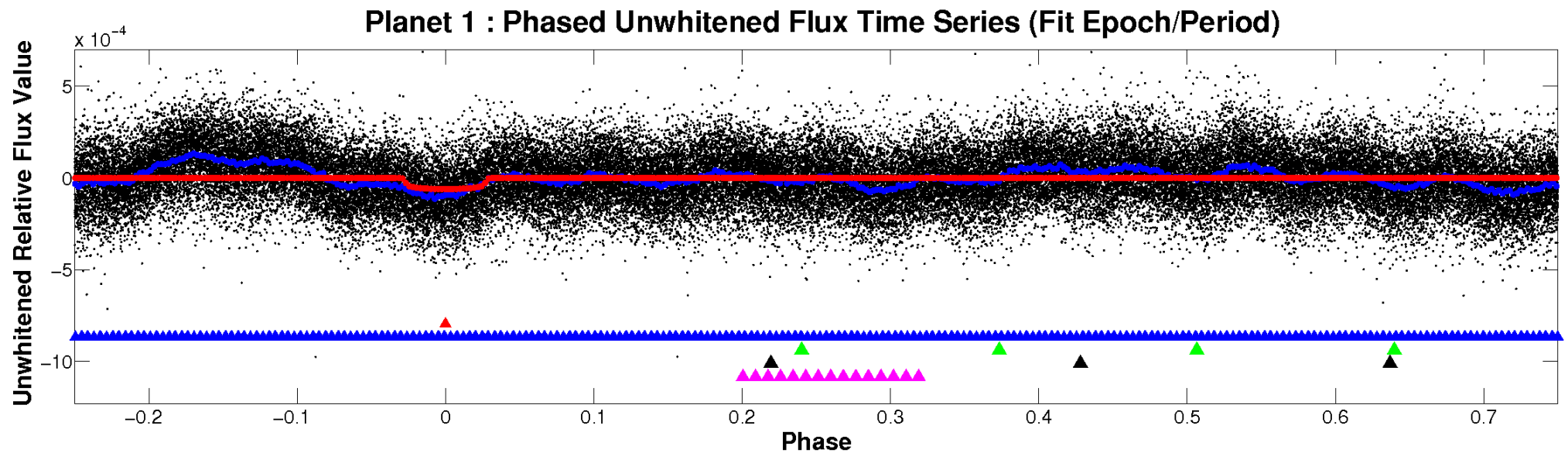


# ALT Odd/Even

TCE 005893839-01

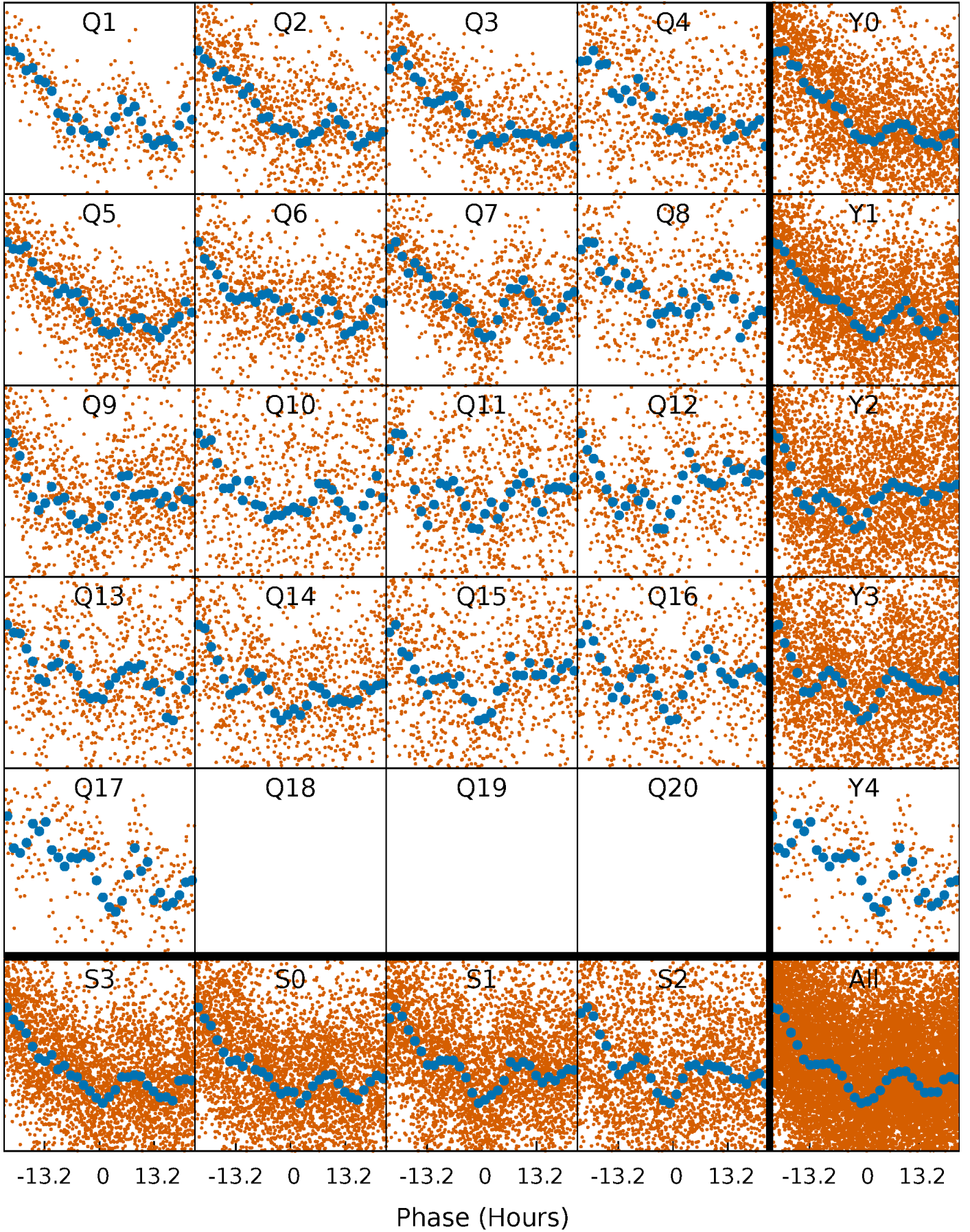


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

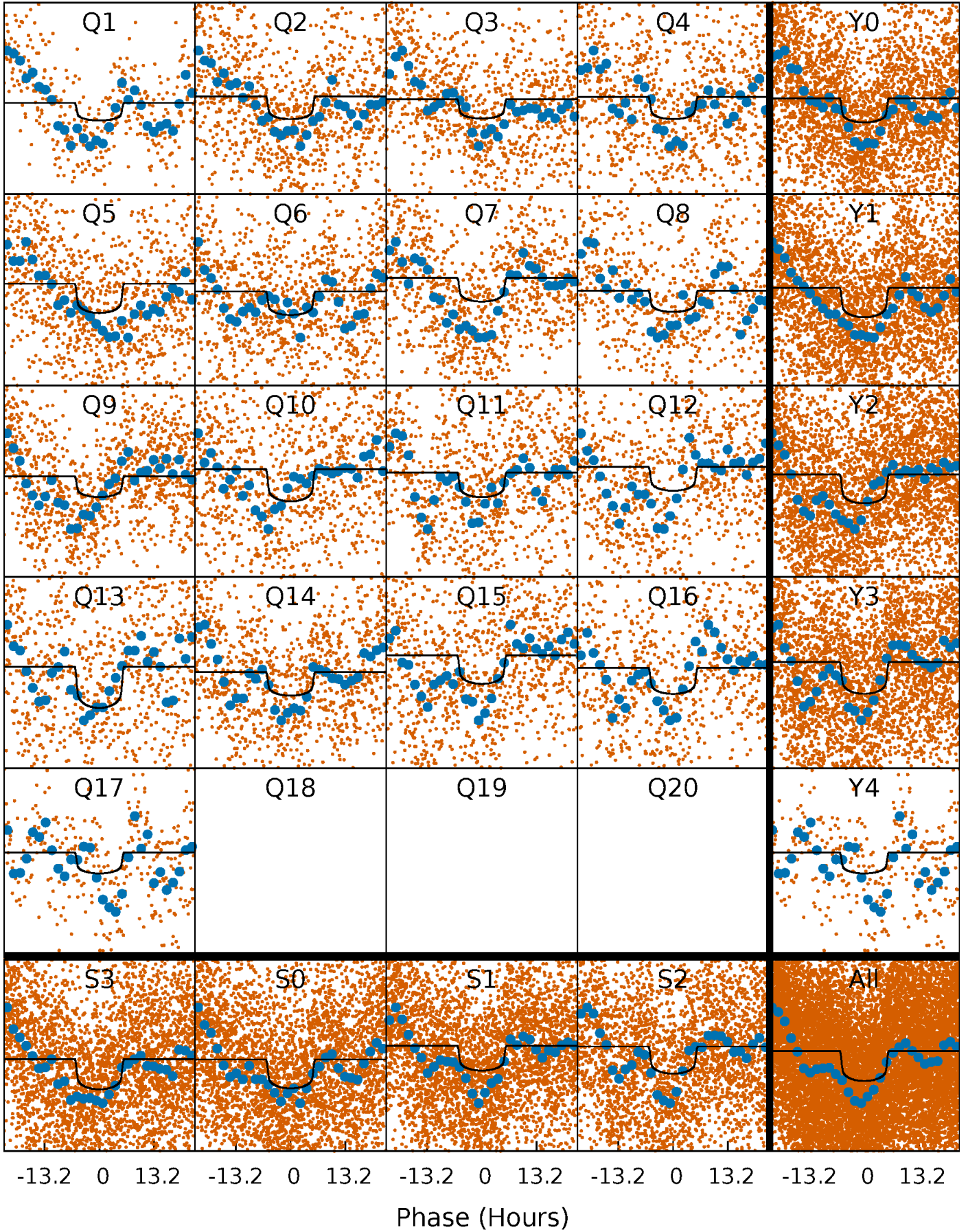
TCE 005893839-01   P= 8.429861 Days    $T_0=137.045312$  (BKJD)





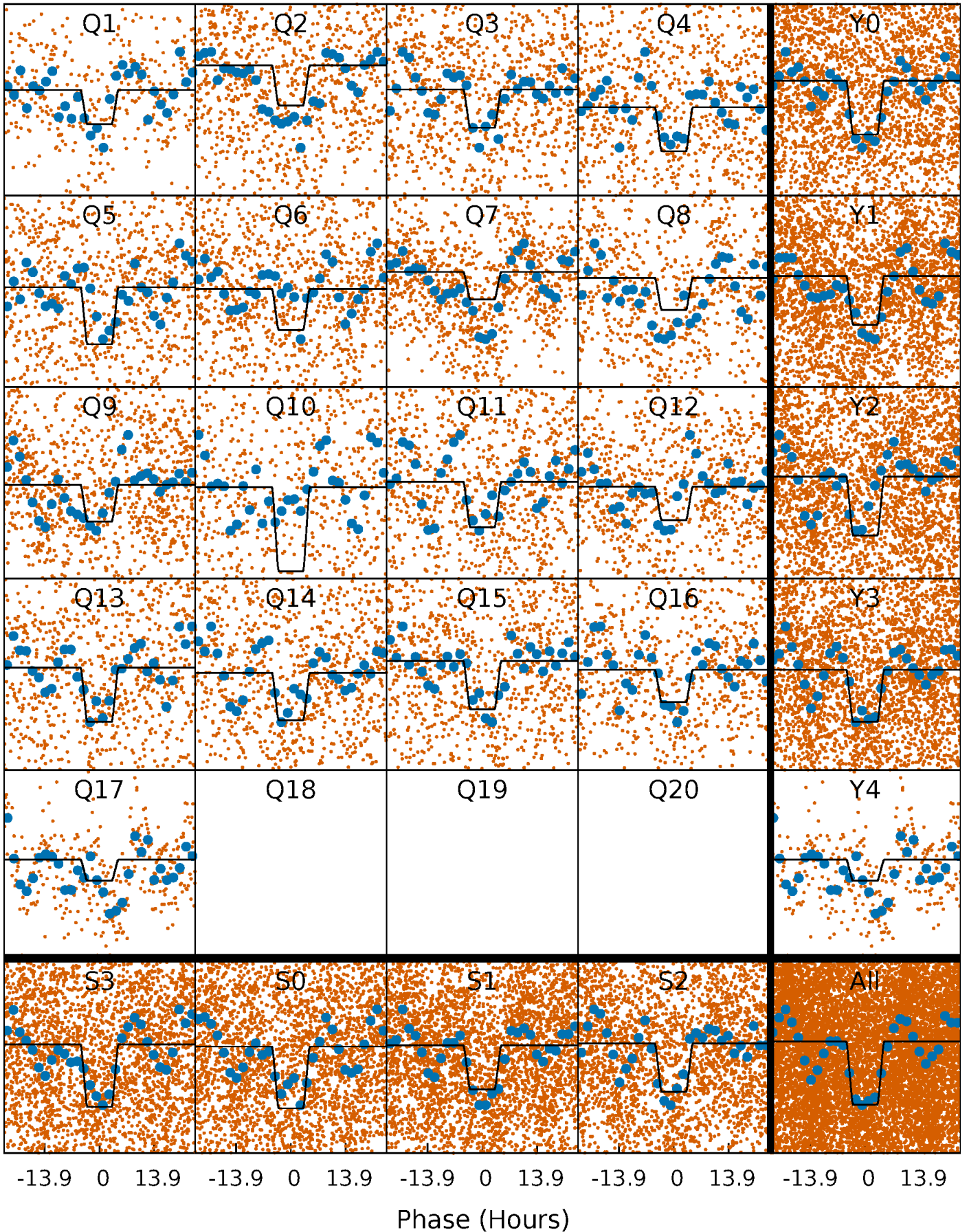
# DV Quarter-Phased Transit Curves

TCE 005893839-01   P= 8.429861 Days    $T_0=137.045312$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

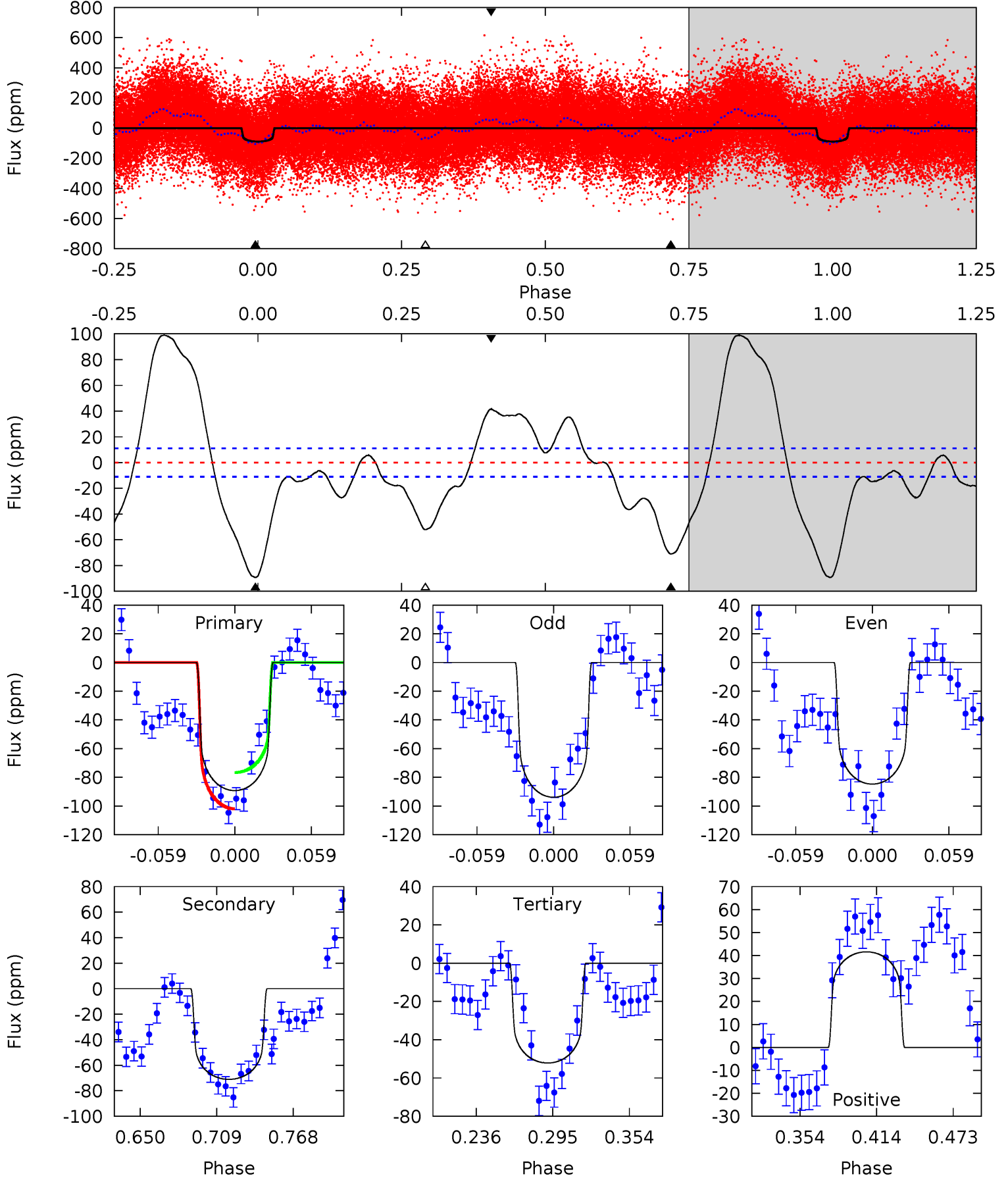
TCE 005893839-01 P= 8.429638 Days  $T_0=137.051009$  (BKJD)



# DV Model-Shift Uniqueness Test

005893839-01, P = 8.429861 Days, E = 128.615451 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
37.8	30.1	22.1	17.6	4.67	1.89	15.6	15.7	20.2	8.02	12.5	1.95	1.06	0.53	5.37

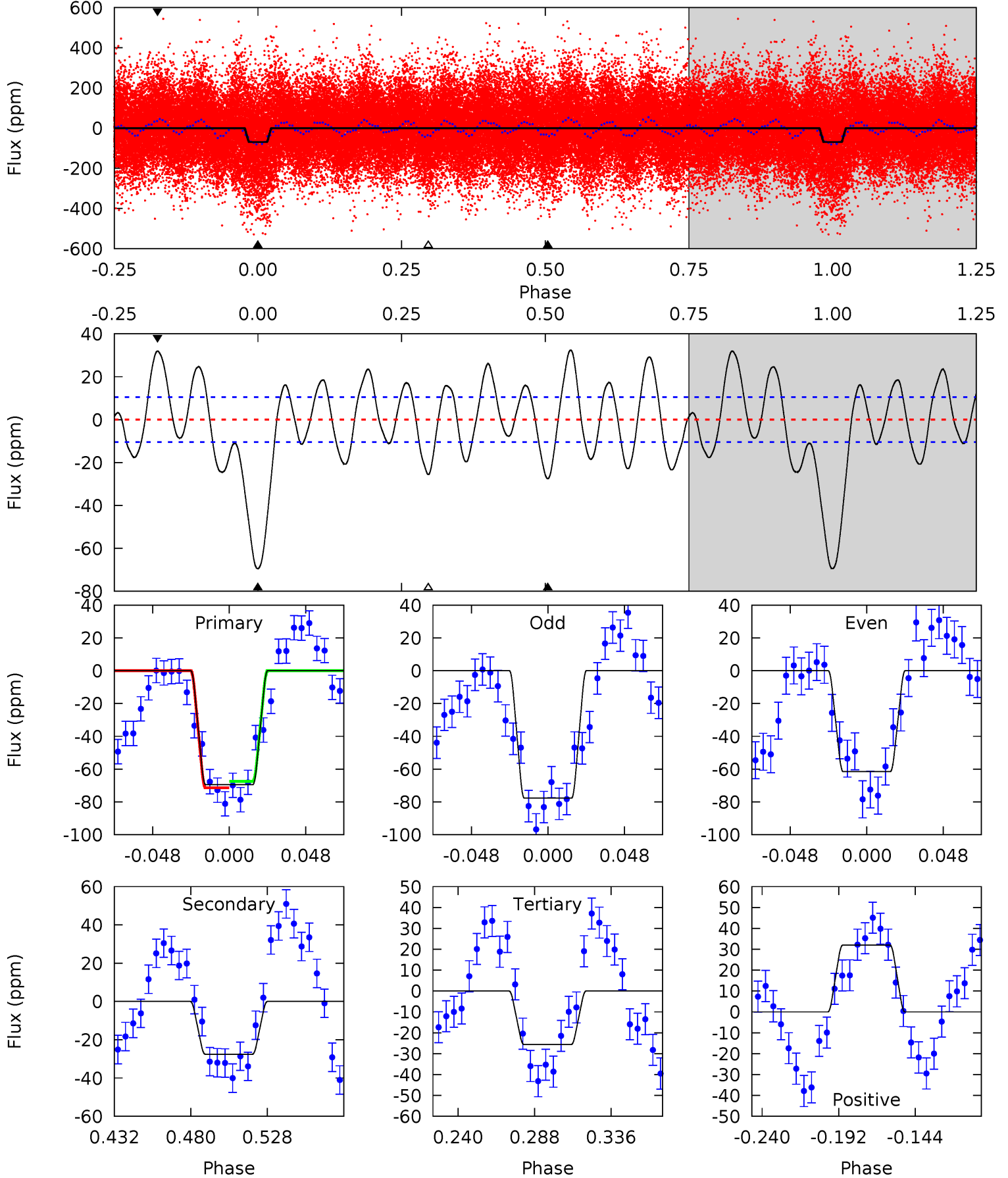




# Alt Model-Shift Uniqueness Test

005893839-01, P = 8.429638 Days, E = 128.621371 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
31.2	12.4	11.5	14.4	4.72	1.98	6.71	19.7	16.9	0.87	-1.97	3.63	1.00	0.32	0.89





### Stellar Parameters For KIC 005893839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5937^{+260}_{-213}$	$3.750^{+0.315}_{-0.105}$	$-0.200^{+0.350}_{-0.250}$	$2.504^{+0.415}_{-0.967}$	$1.285^{+0.206}_{-0.284}$	$0.115^{+0.261}_{-0.037}$
	+4%/-4%	+8%/-3%	+175%/-125%	+17%/-39%	+16%/-22%	+227%/-32%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005893839-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-71 \pm 2$	$2.23^{+0.40}_{-0.47}$	$1916^{+145}_{-167}$	$5959^{+403}_{-345}$	$63^{+34}_{-17}$
Alt.	$-28 \pm 2$	$2.35^{+0.38}_{-0.49}$	$1940^{+129}_{-189}$	$4733^{+266}_{-221}$	$22^{+11}_{-6}$

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

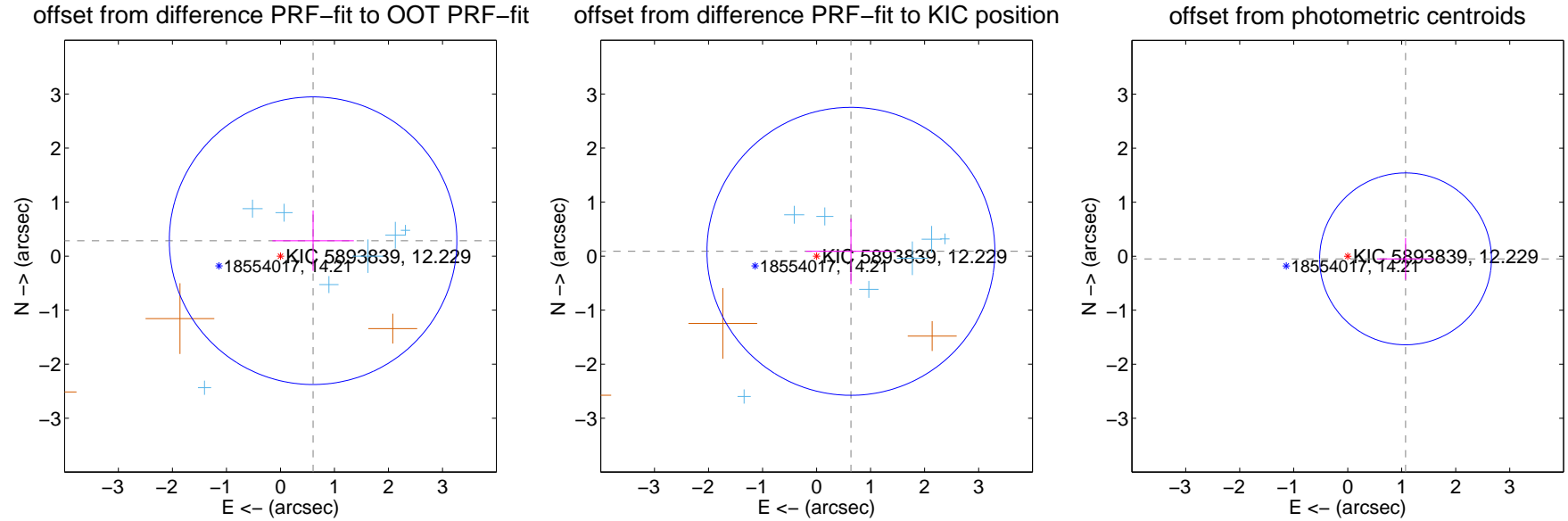
## DV Centroid Data

Supplemental centroid analysis for 005893839-01. Kepler magnitude: 12.23. Transit SNR 9.64

There are 7 quarters with good PRF difference image offsets

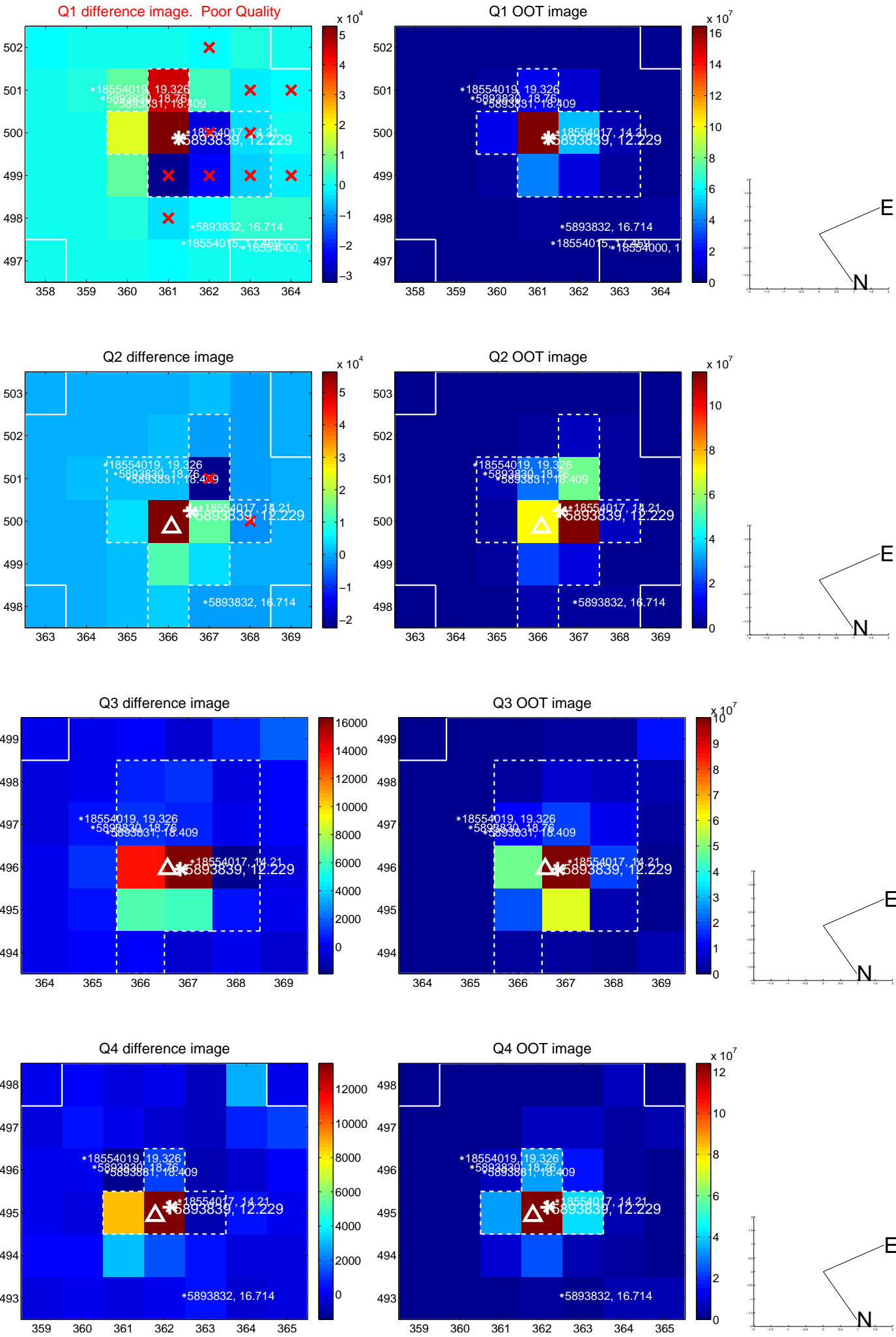
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.668 \pm 0.887$	0.75	$-0.604 \pm 0.755$	$0.285 \pm 0.559$
PRF-fit source offset from KIC position	$0.642 \pm 0.888$	0.72	$-0.636 \pm 0.835$	$0.089 \pm 0.606$
photometric centroid source offset	$1.07 \pm 0.53$	2.02	$-1.07 \pm 0.53$	$-0.05 \pm 0.38$

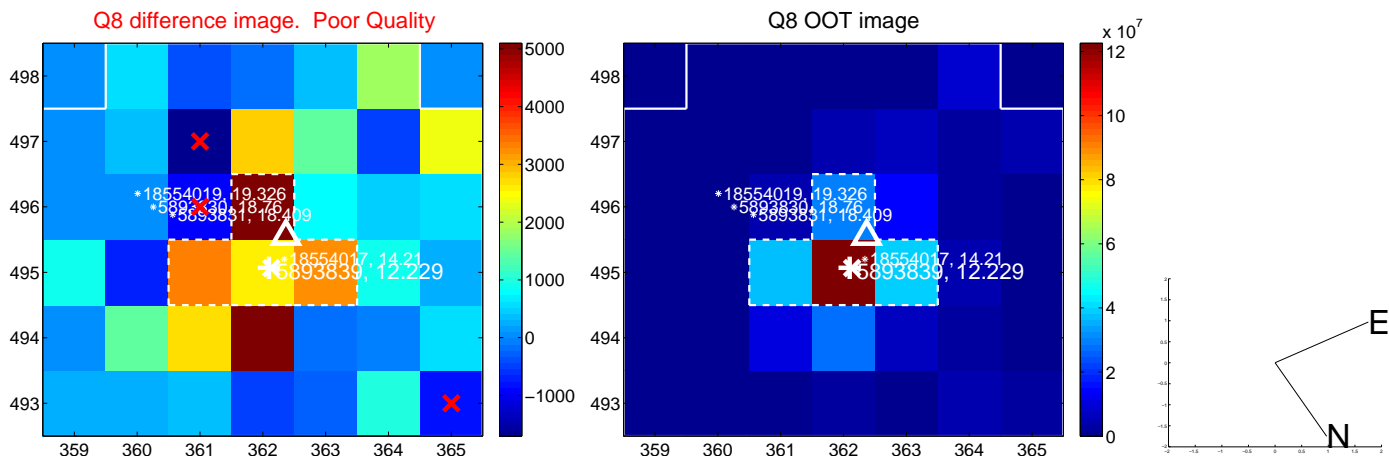
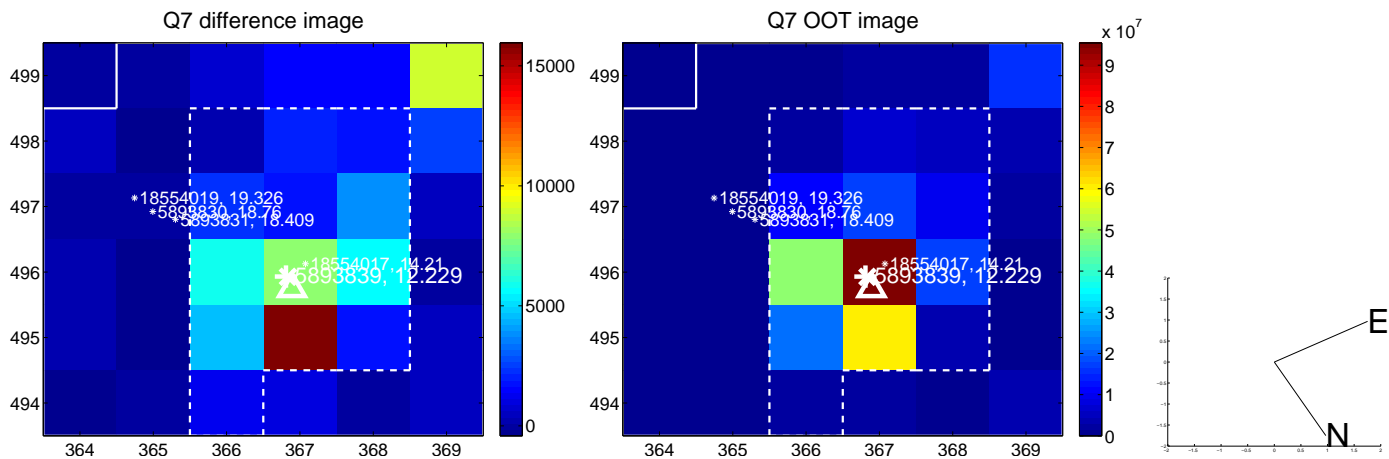
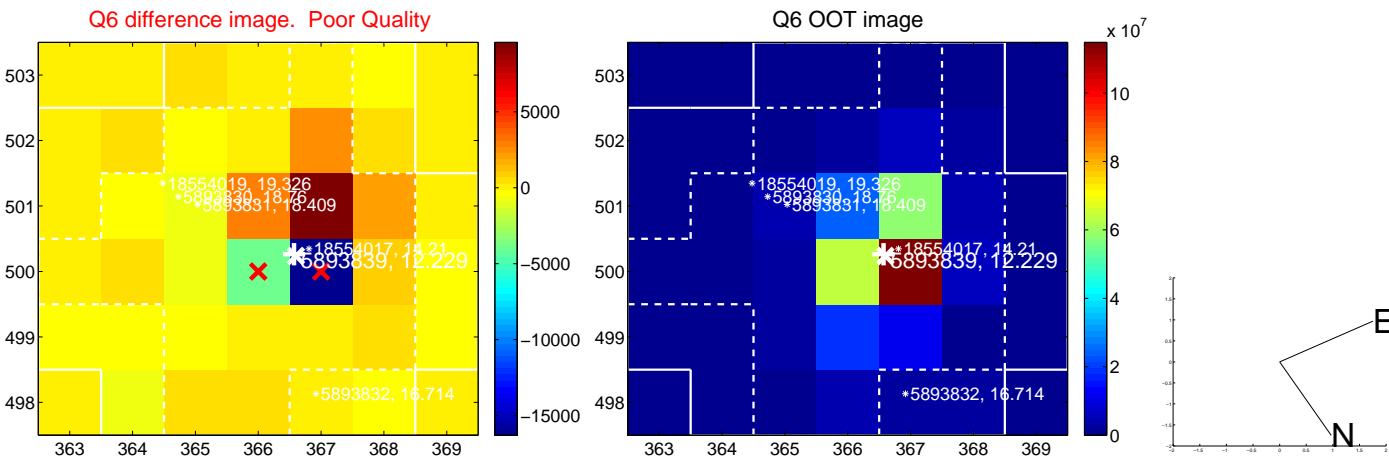
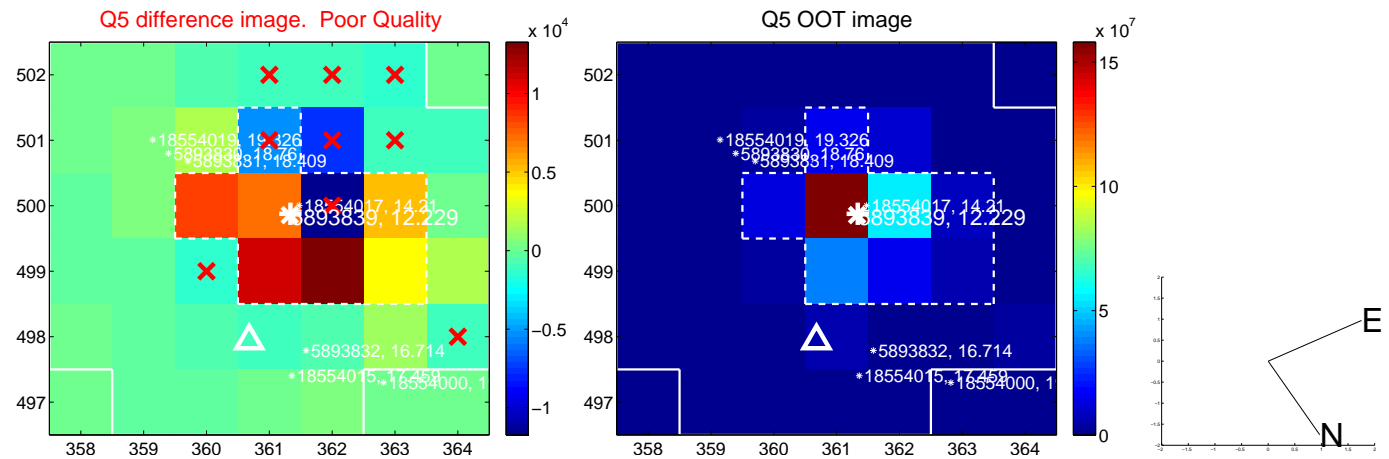


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

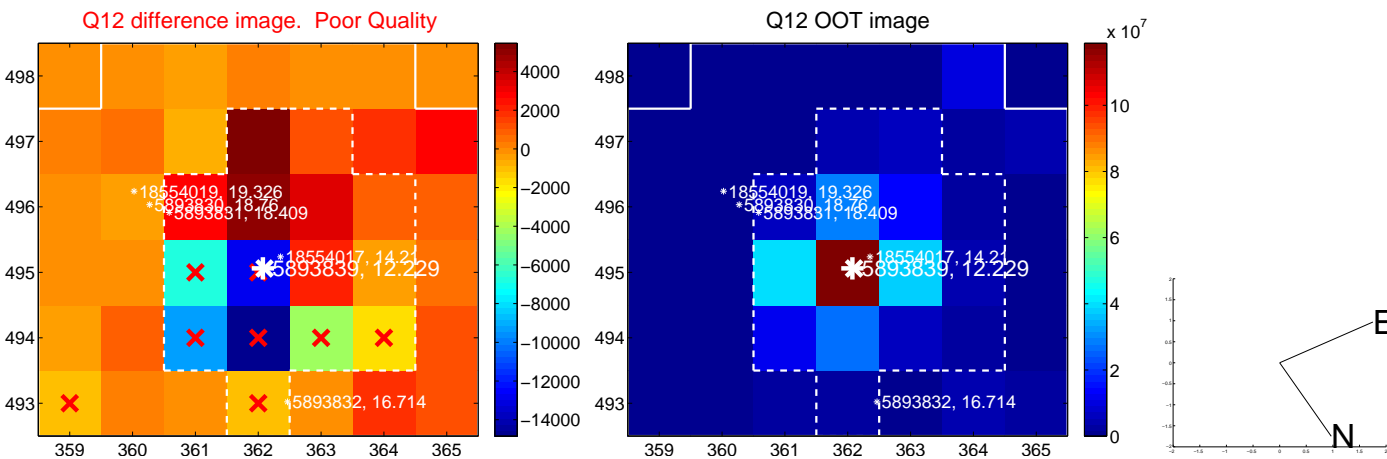
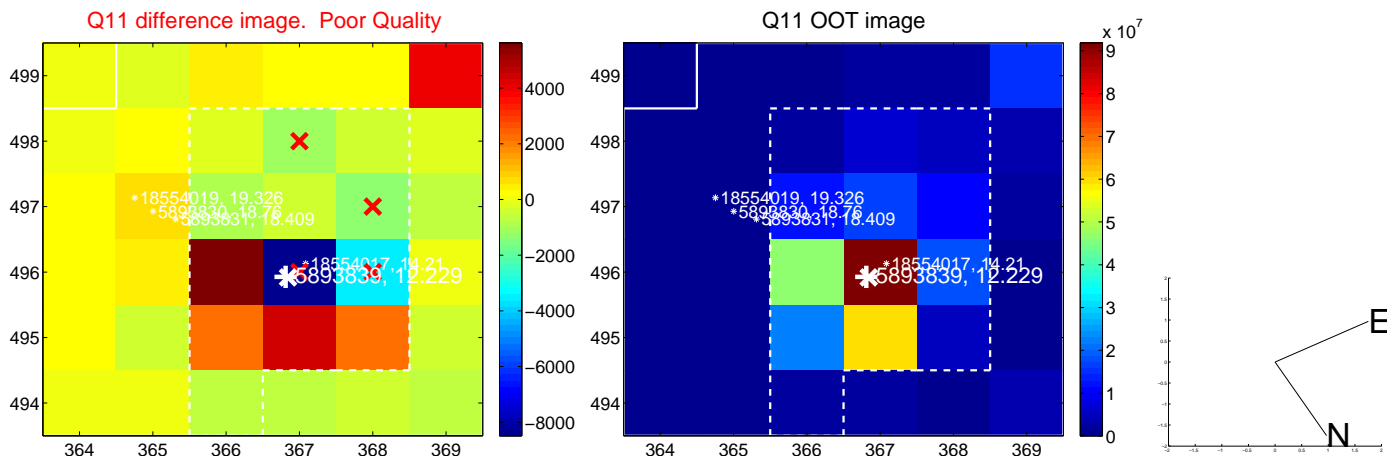
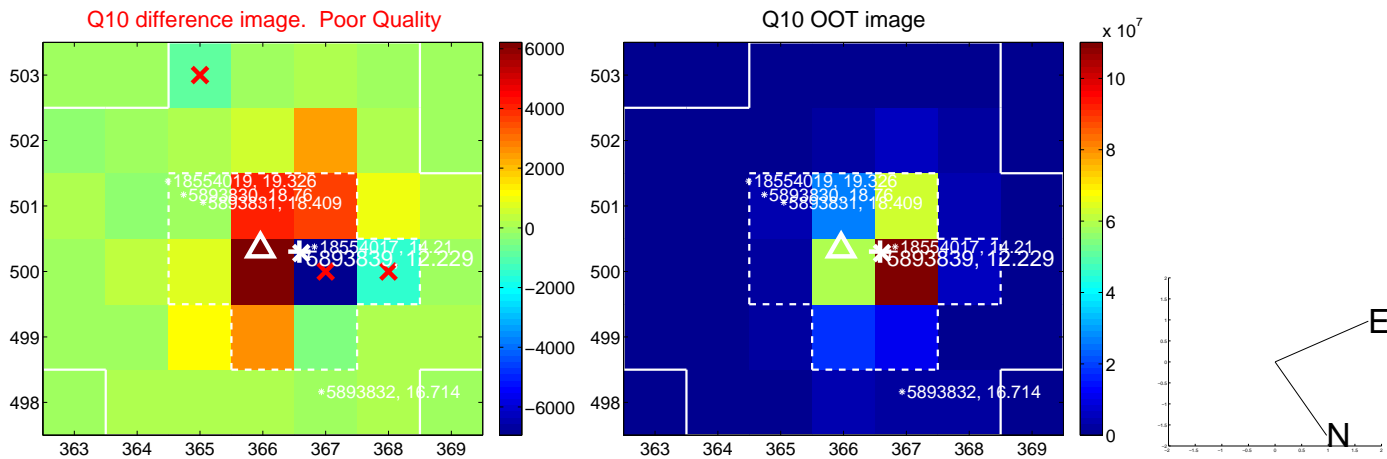
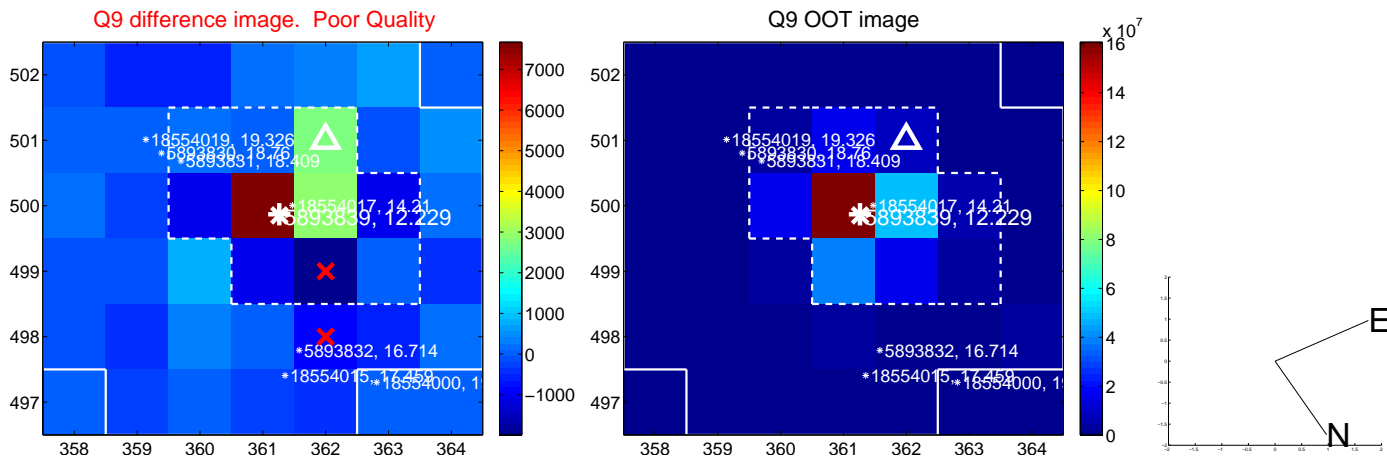


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

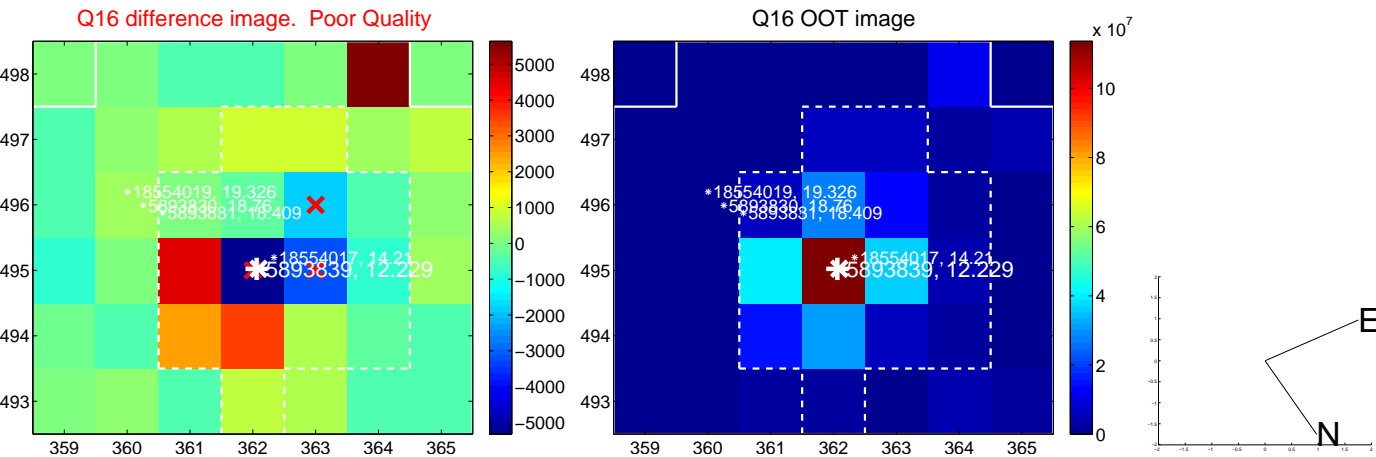
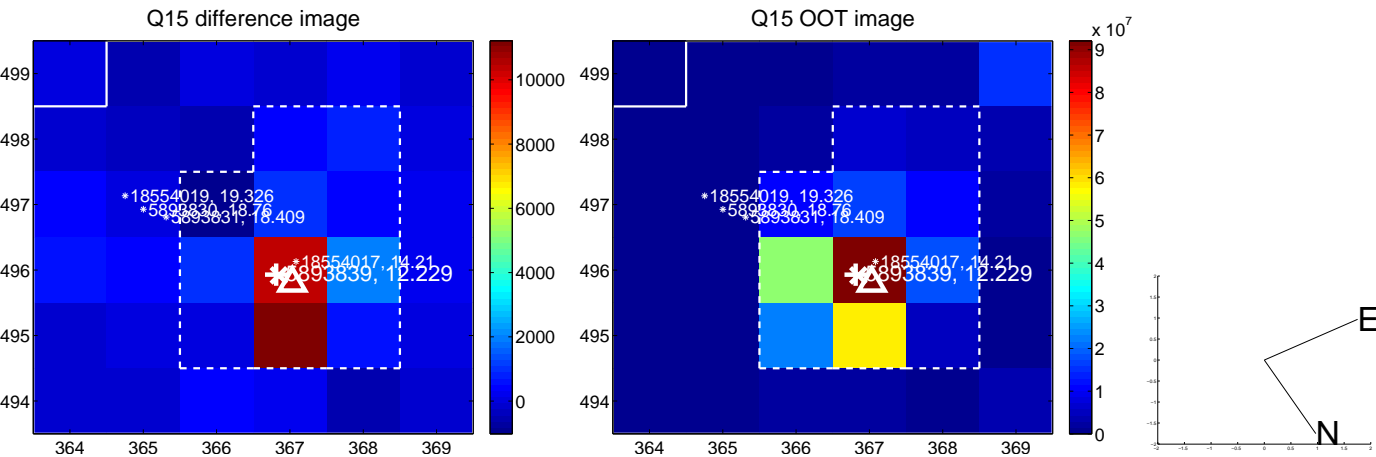
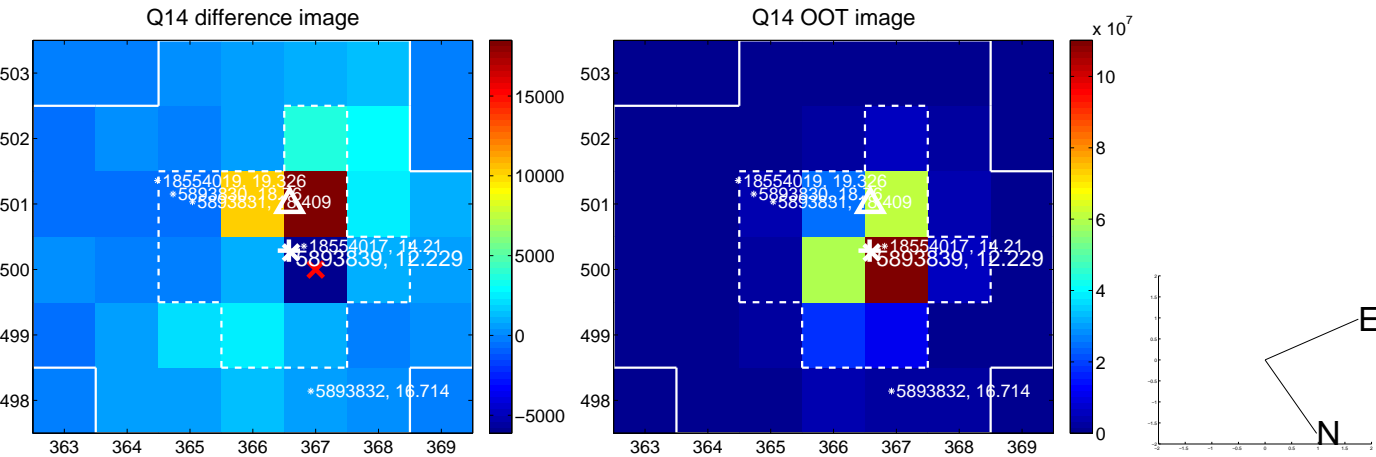
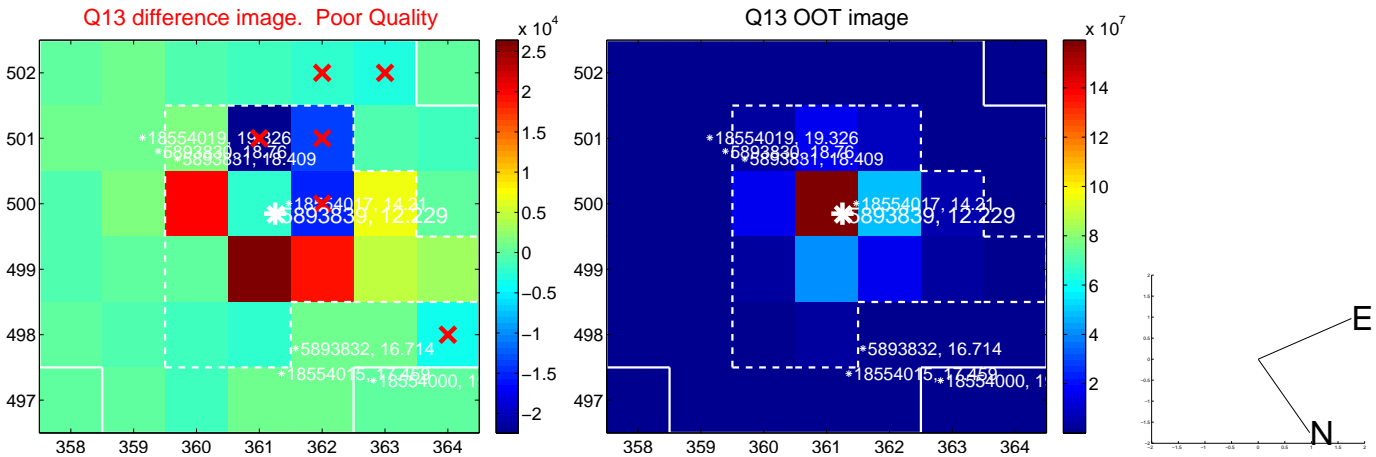




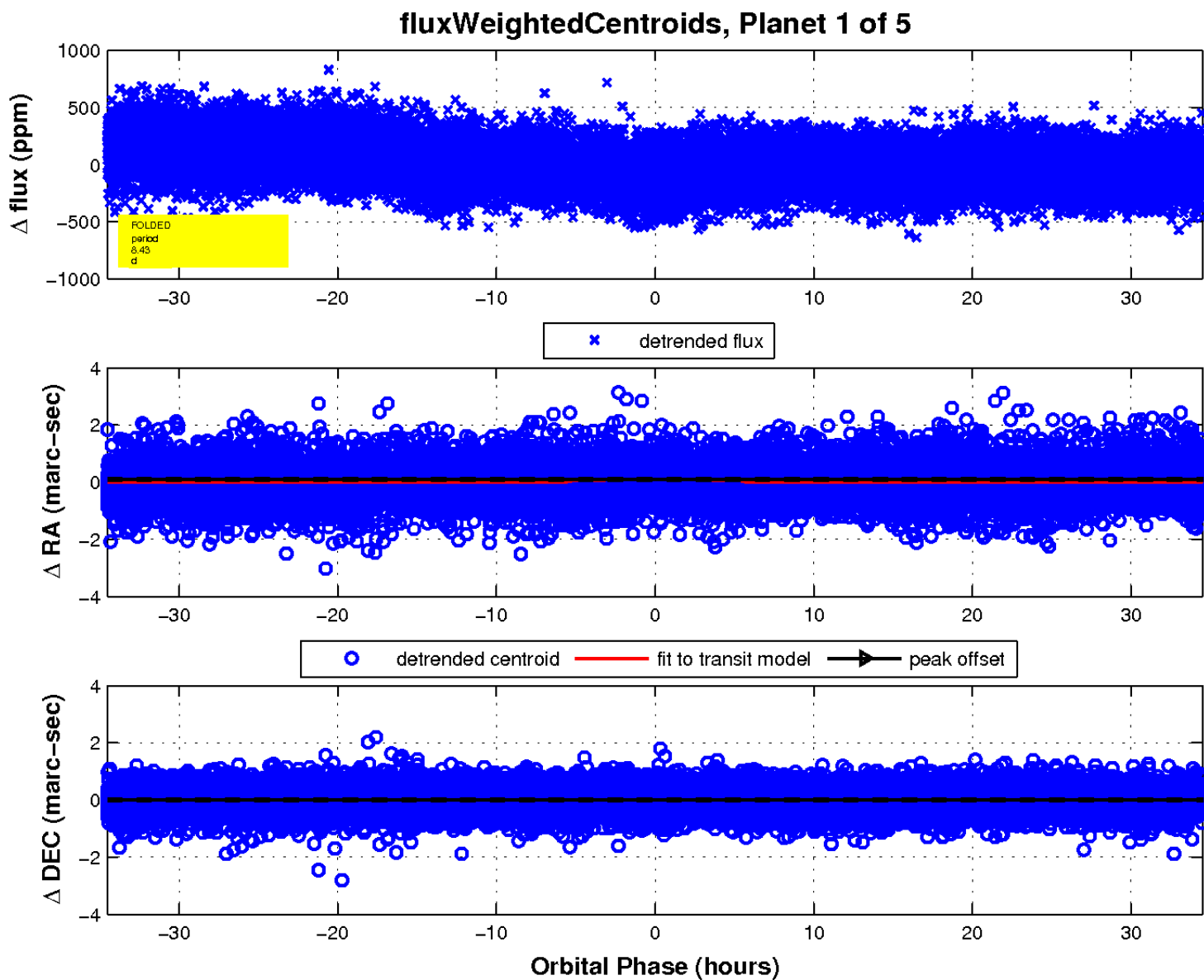
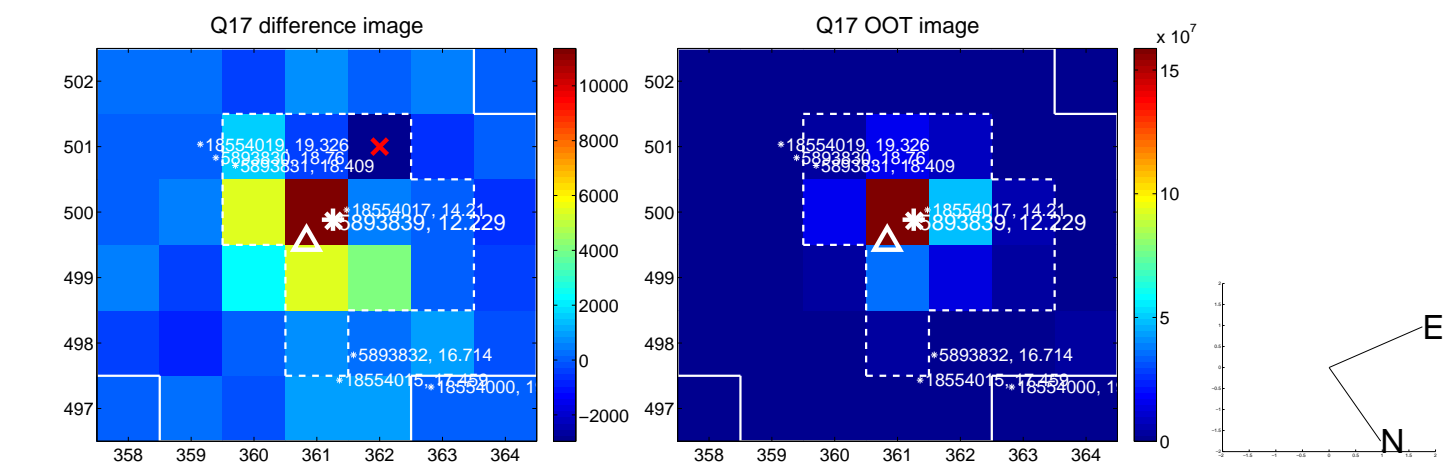
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

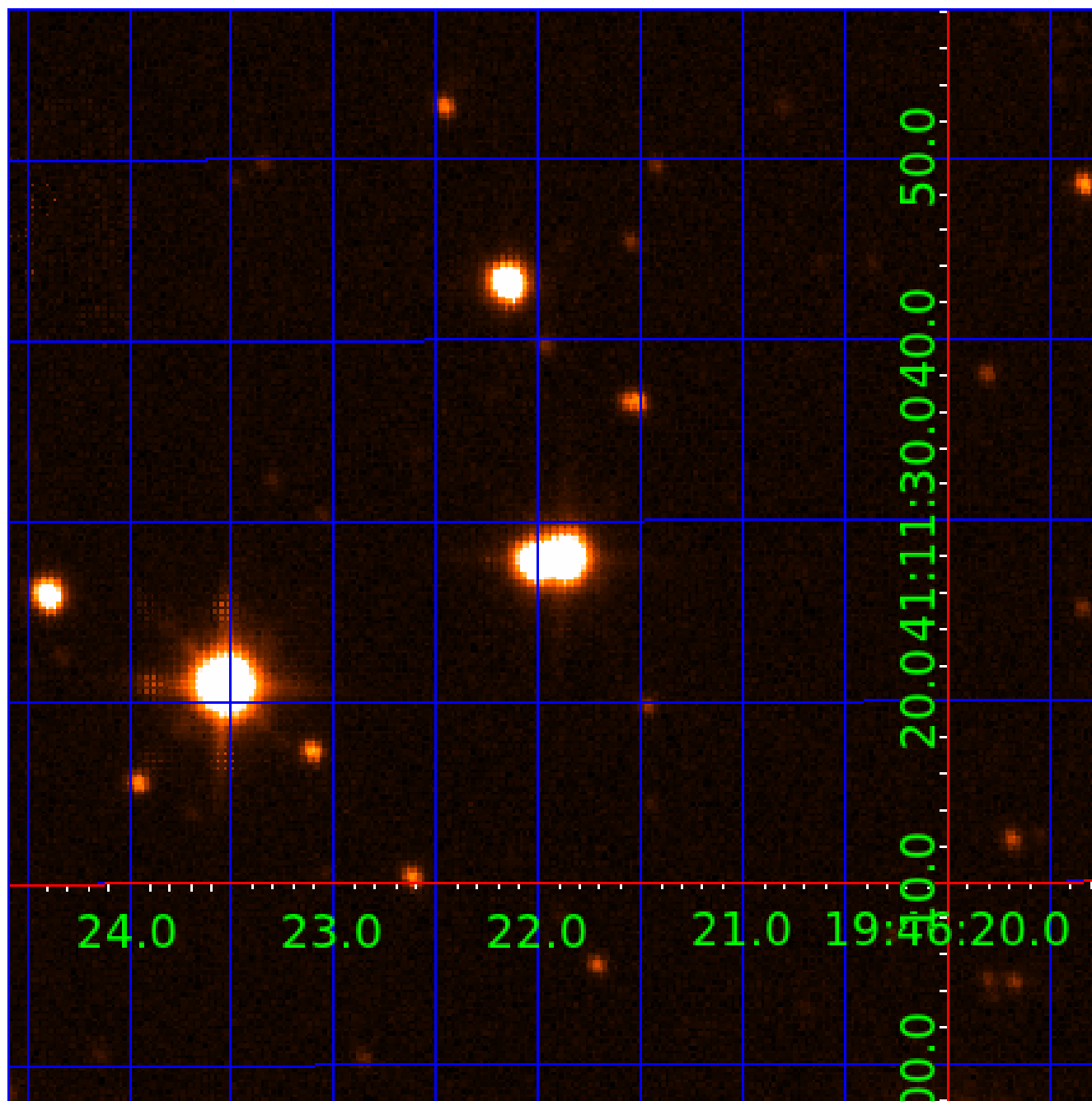


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005893839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005893839-01	OBS	No	8.429861	137.045312	60.5	11.511	9.5	9.6	2.50	5937	2.29	897.76
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005893839-04	OBS	No	512.462148	243.572315	451.6	12.693	8.1	8.0	2.50	5937	10.50	3.76
005893839-05	OBS	No	101.087025	165.024097	194.6	14.168	7.7	9.6	2.50	5937	7.07	32.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005893839-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

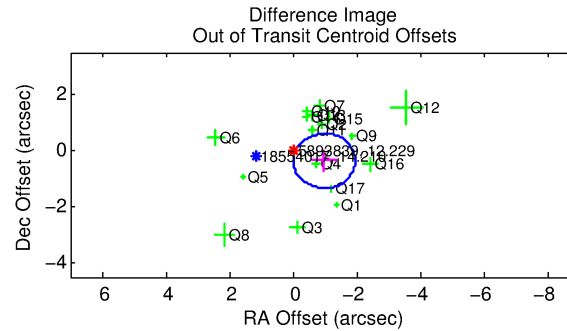
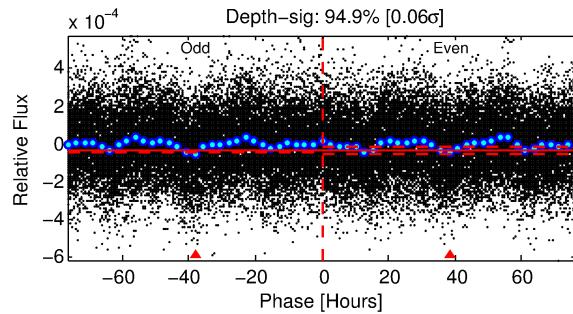
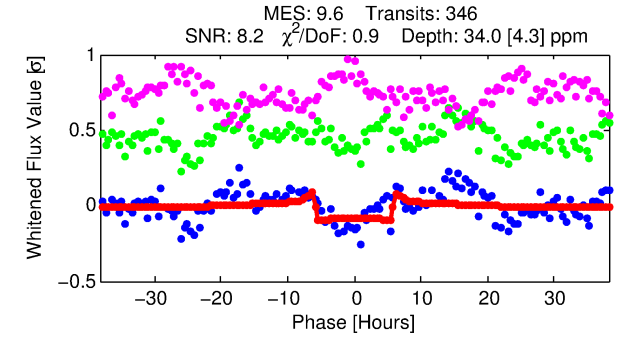
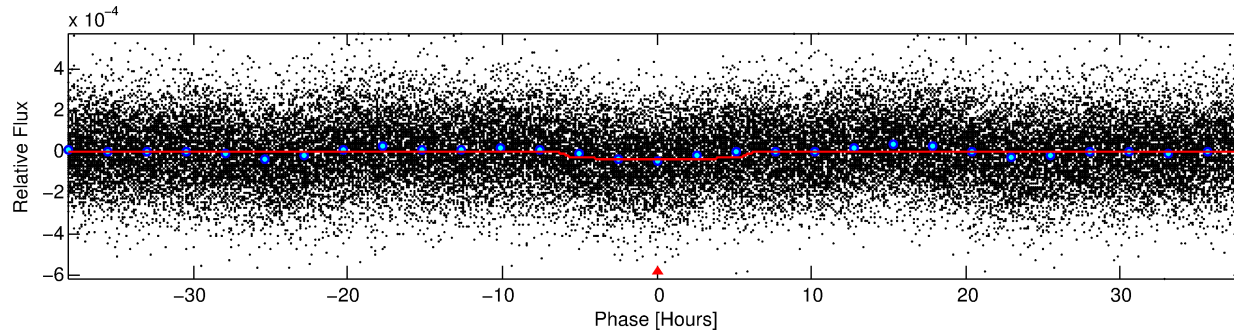
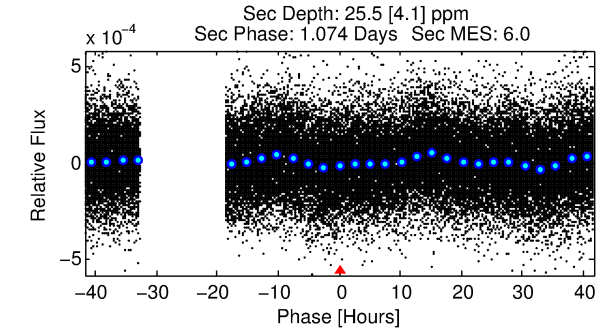
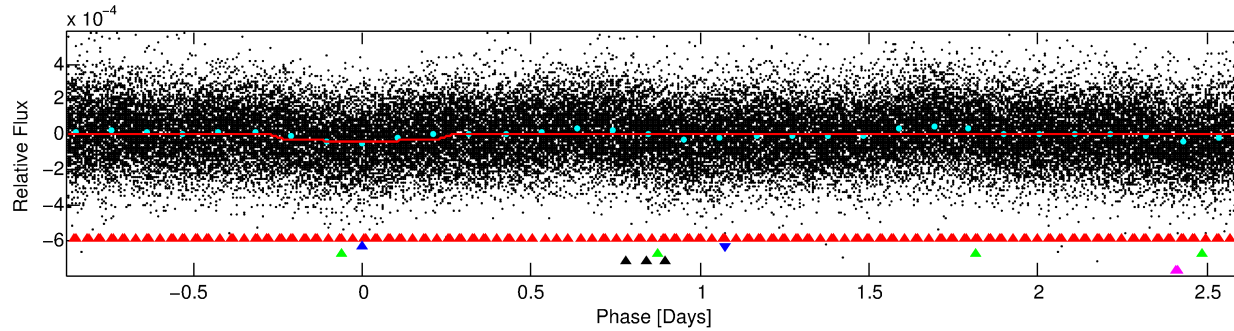
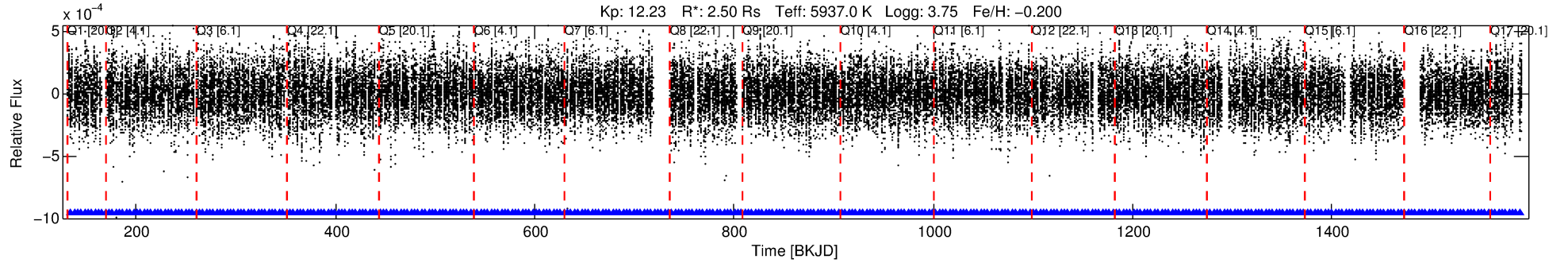
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005893839-02

No Significant Match Found

# DV One-Page Summary

KIC: 5893839 Candidate: 2 of 5 Period: 3.486 d



## DV Fit Results:

Period = 3.48574 [0.00004] d  
Epoch = 134.7319 [0.0074] BKJD  
Rp/R\* = 0.0067 [0.0006]  
a/R\* = 1.20 [0.11]  
b = 0.95 [0.03]  
Seff = 2914.24 [1676.08]  
Teq = 1874 [269] K  
Rp = 1.83 [0.72] Re  
a = 0.0489 [0.0173] AU  
Ag = 10.03 [5.98] [1.51σ]  
Teffp = 5156 [378] K [7.07σ]

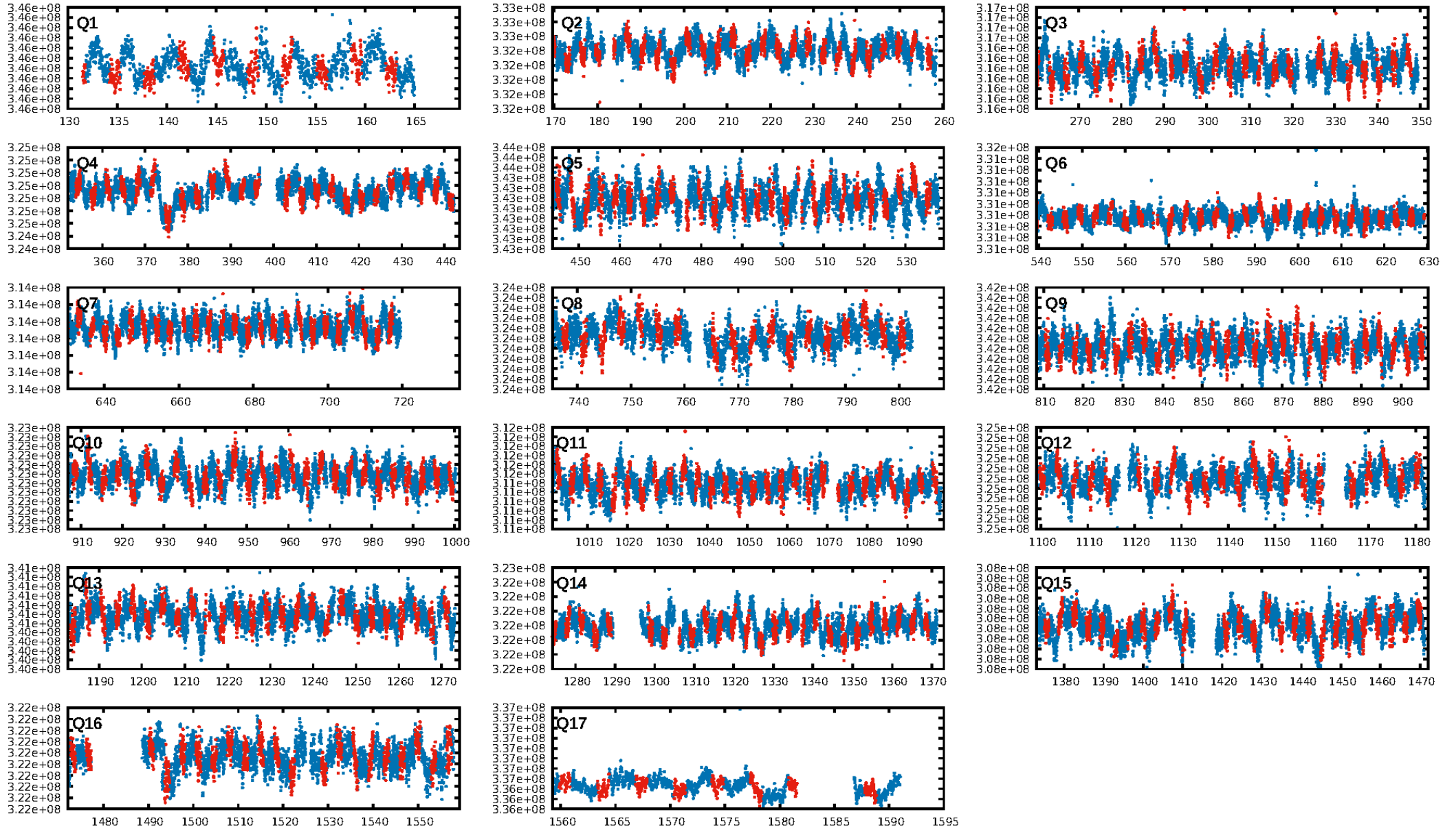
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.92σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.23e-10**  
RollingBand-fgt: 1.00 [330/330]  
GhostDiagnostic-chr: 2.668  
Centroid-sig: 10.2%  
Centroid-so: 0.520 arcsec [0.92σ]  
**OotOffset-rm: 1.048 arcsec [3.24σ]**  
**KicOffset-rm: 1.110 arcsec [3.34σ]**  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.88 [15/17]  
DiffImageOverlap-fno: 1.00 [17/17]

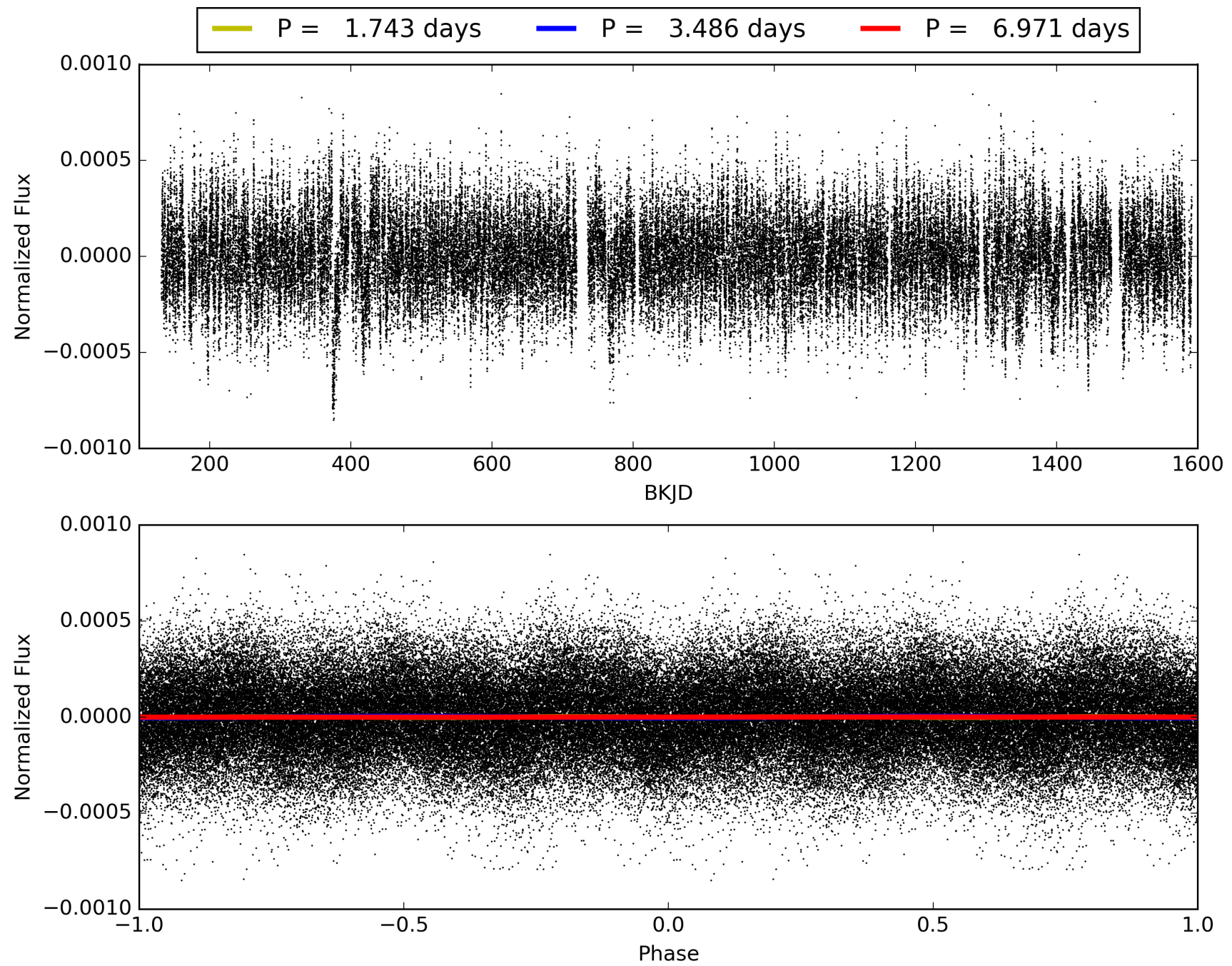
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:00:19 Z

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

# TCE 005893839-02, PDC Light Curves



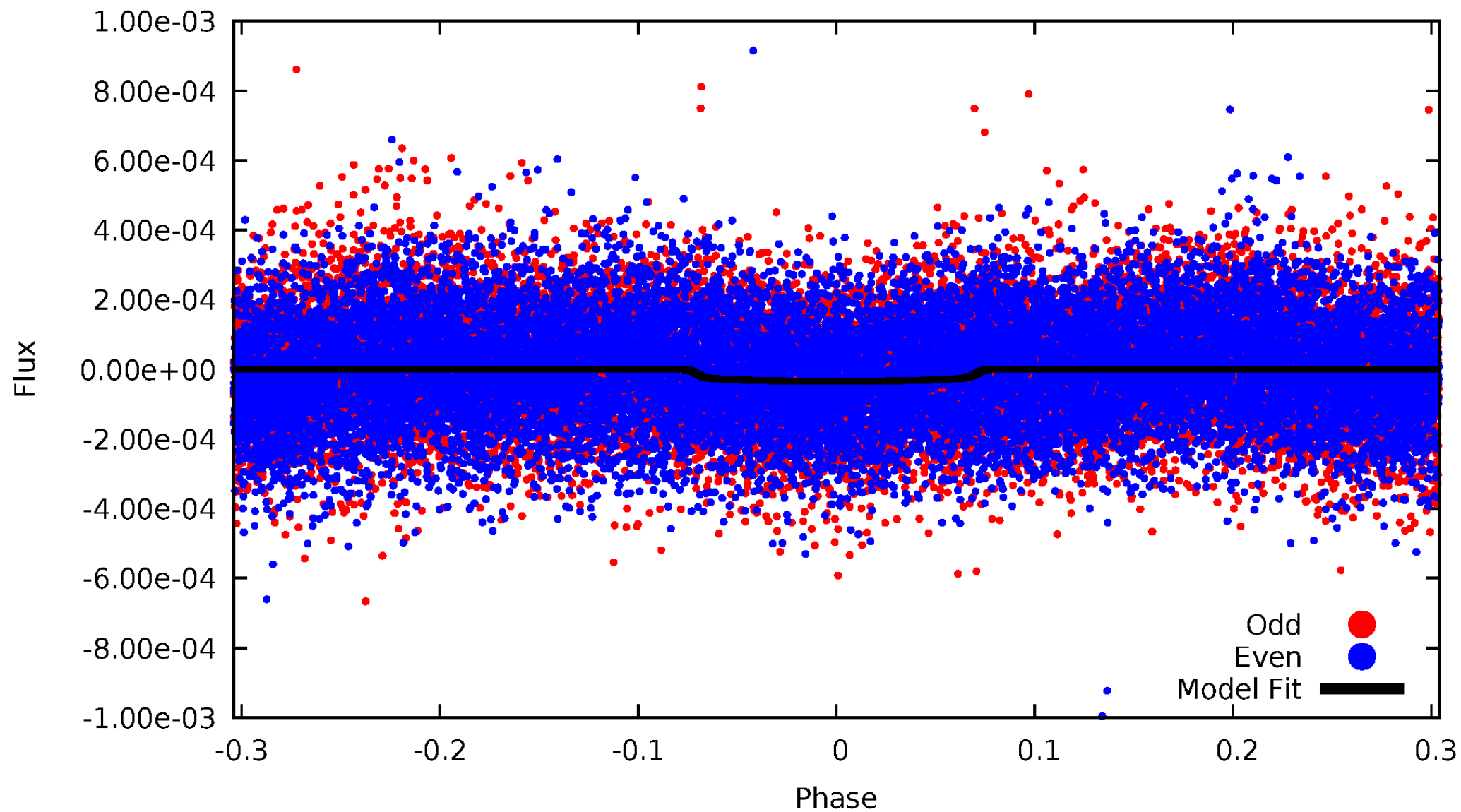
TCE 005893839-02





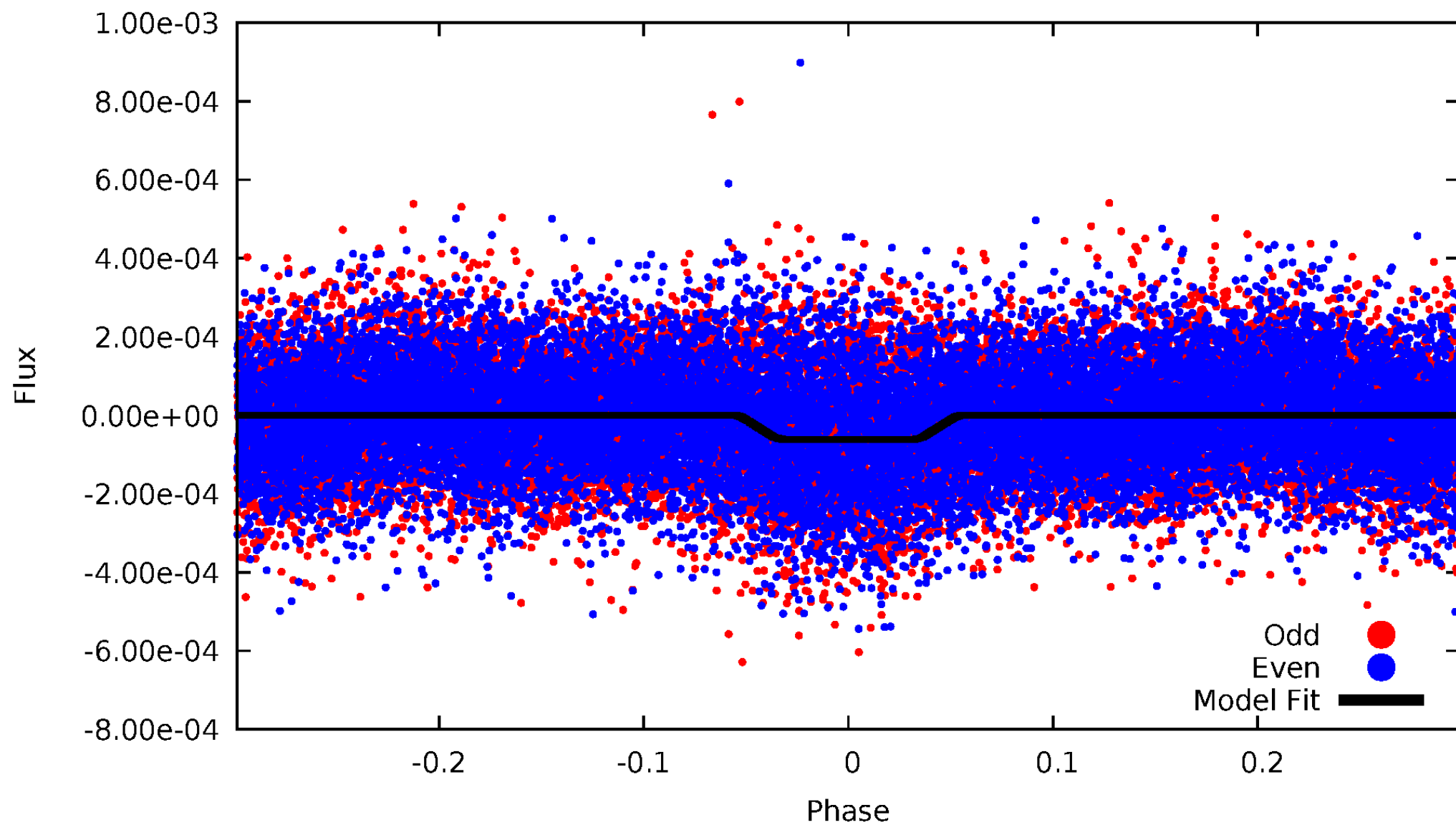
DV Odd/Even

TCE 005893839-02



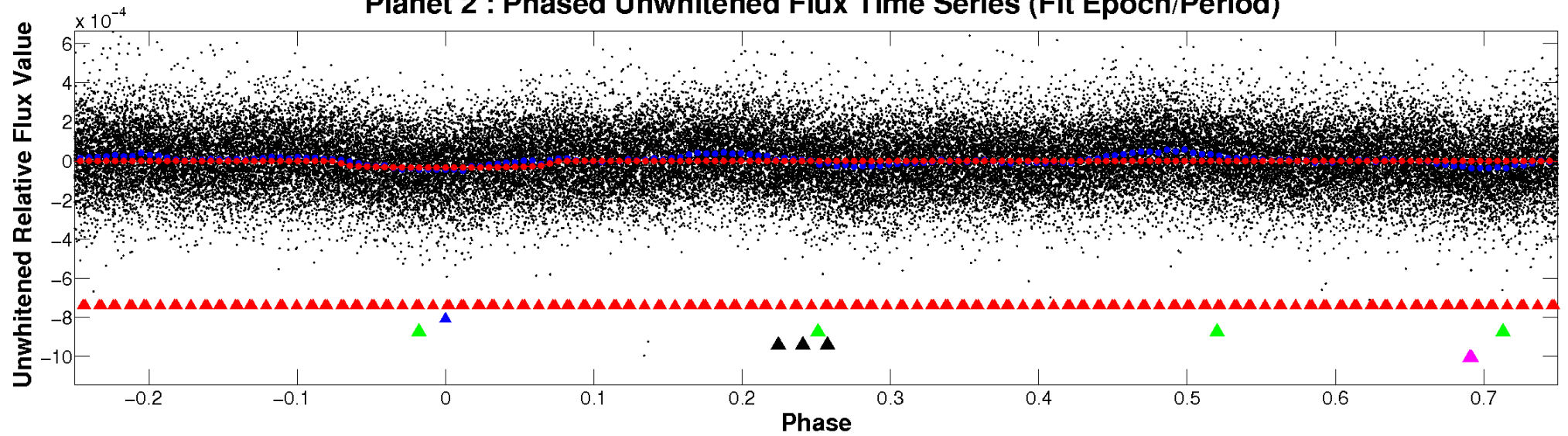
# ALT Odd/Even

TCE 005893839-02

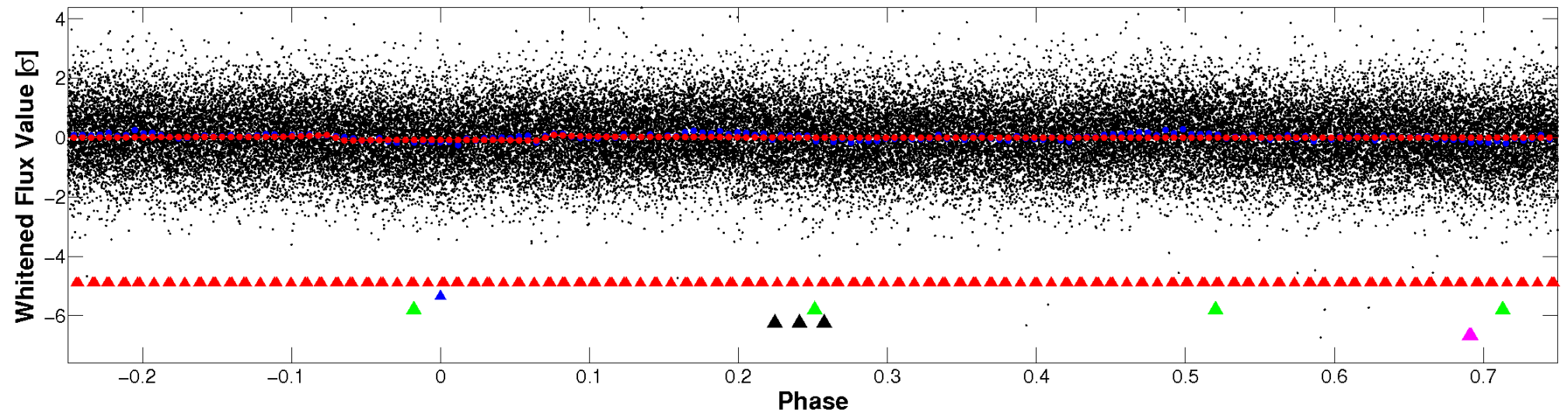


# Non-Whitened Vs. Whitened Light Curve

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



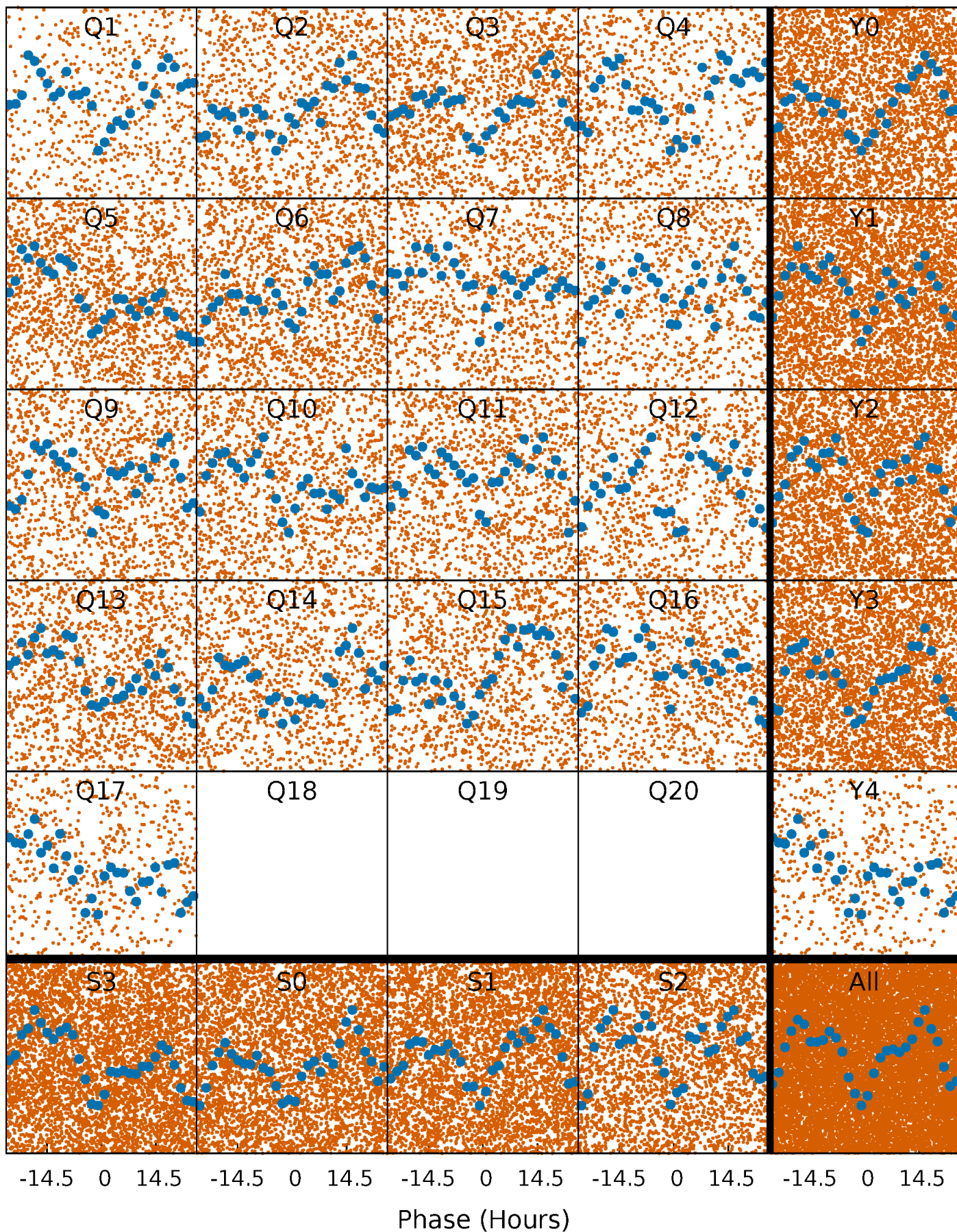
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

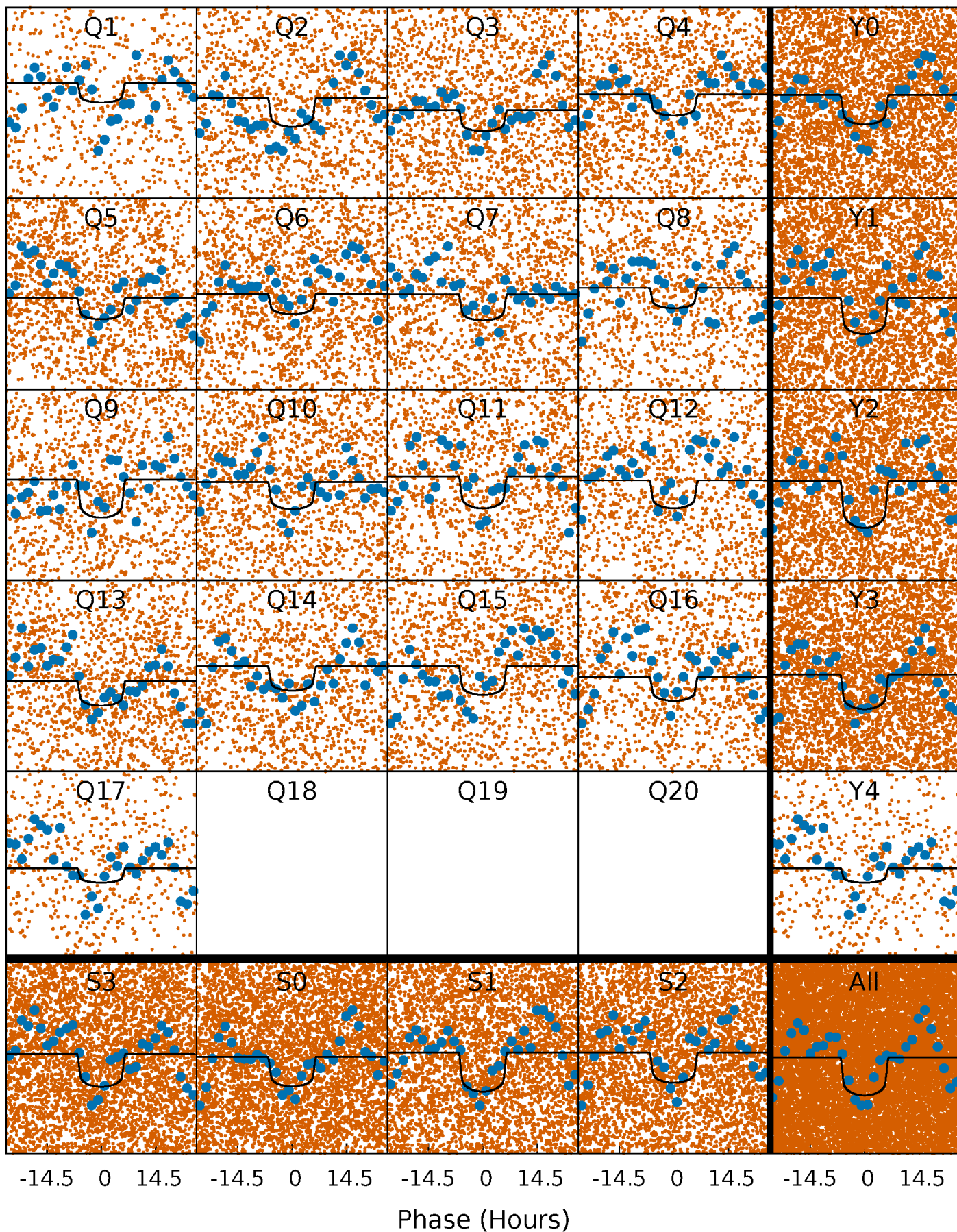
TCE 005893839-02   P= 3.485744 Days    $T_0=134.731934$  (BKJD)





# DV Quarter-Phased Transit Curves

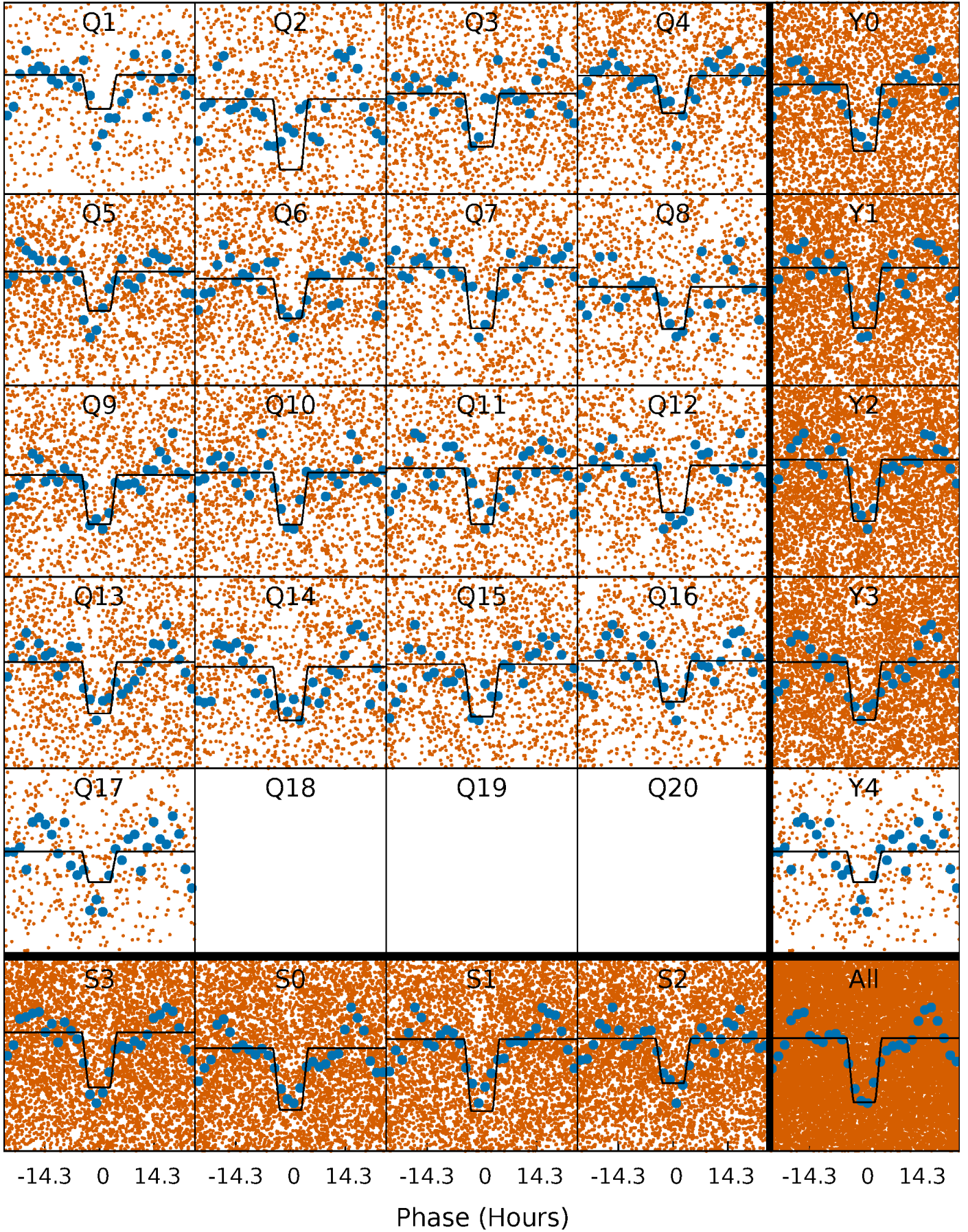
TCE 005893839-02     $P = 3.485744$  Days     $T_0 = 134.731934$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

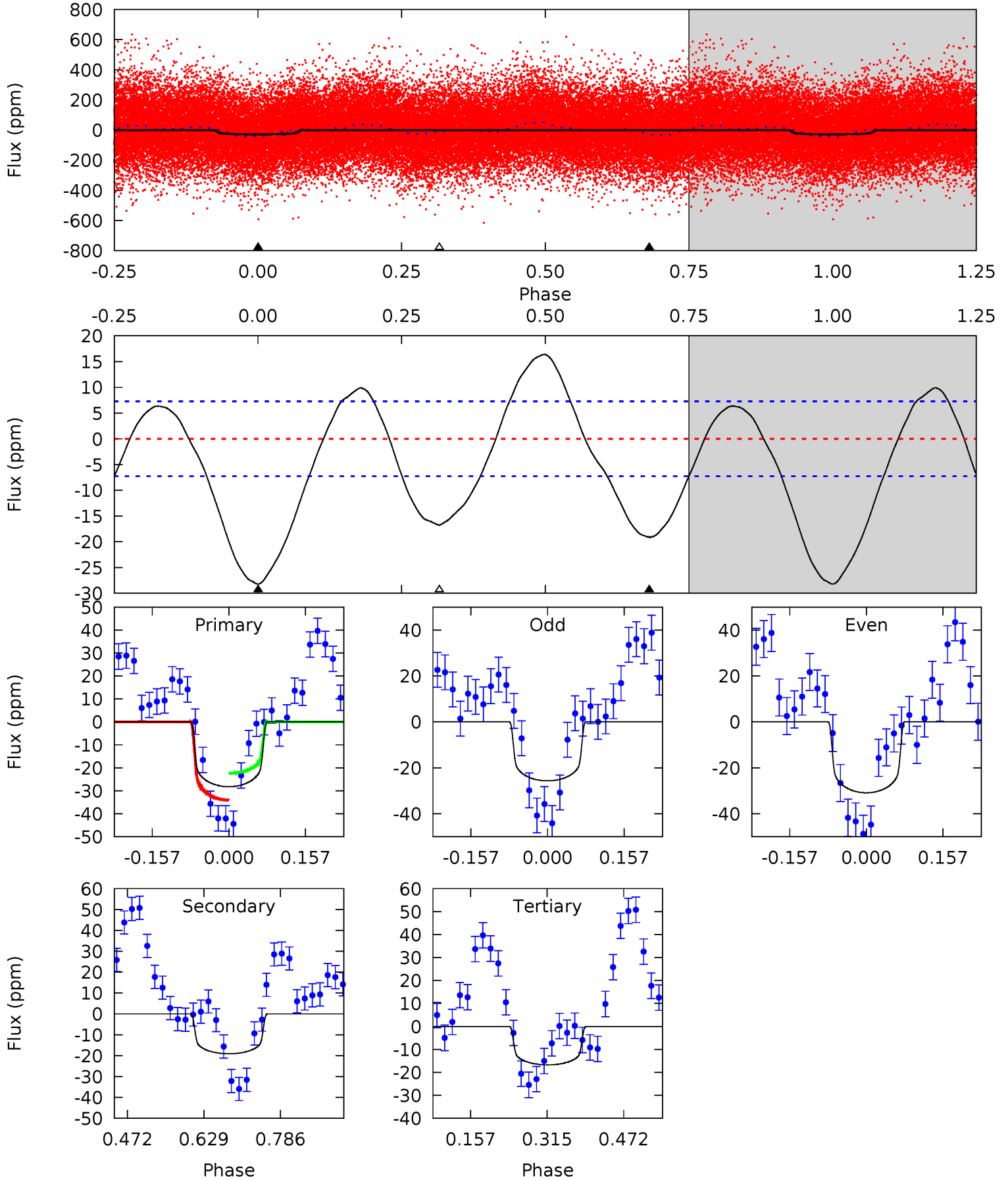
TCE 005893839-02 P= 3.485553 Days  $T_0=134.734630$  (BKJD)



# DV Model-Shift Uniqueness Test

005893839-02, P = 3.485744 Days, E = 131.246190 Days

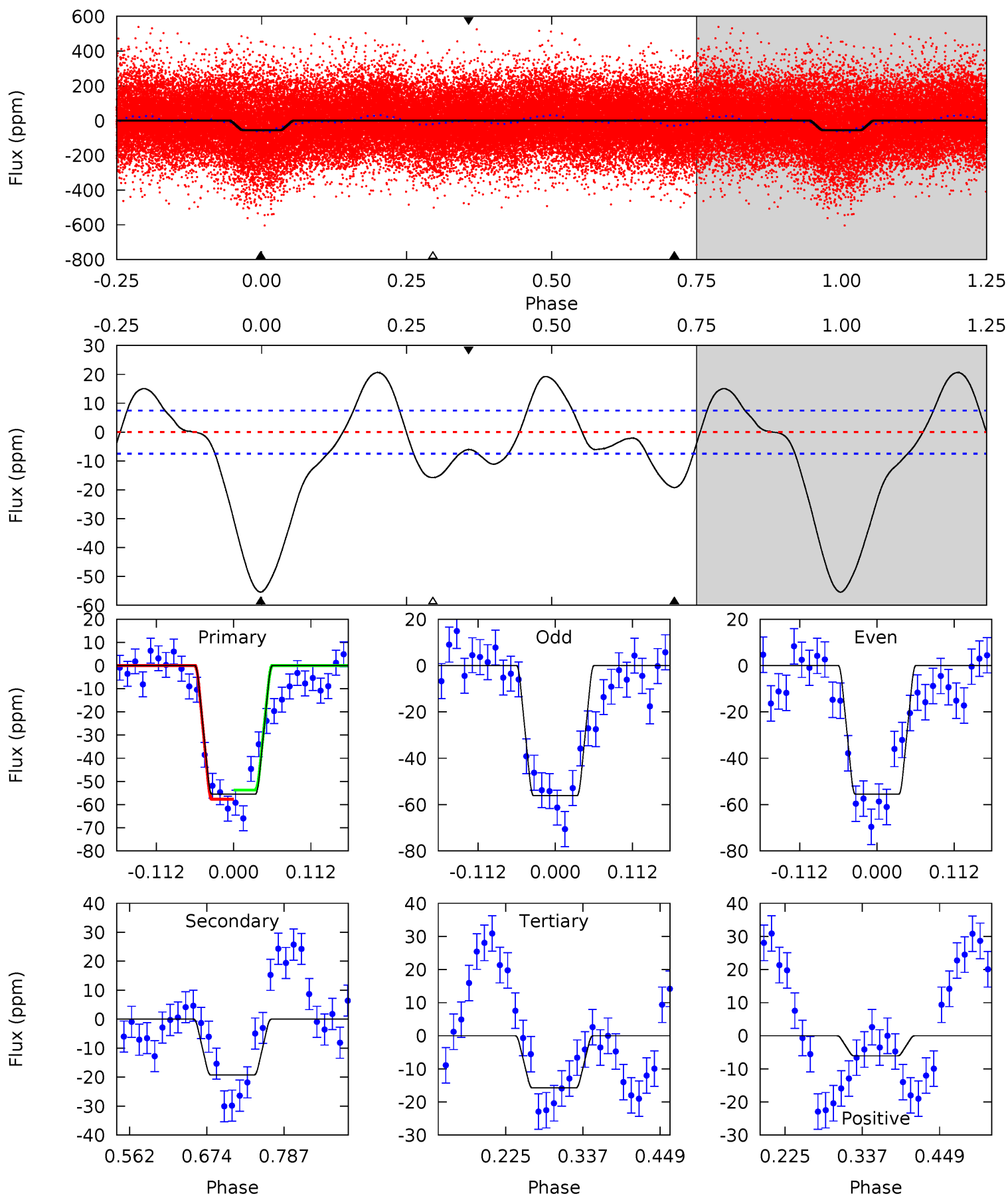
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	11.7	10.3	0	4.47	1.41	6.98	7.06	17.3	1.45	11.7	1.59	1.12	0.37	3.54



# Alt Model-Shift Uniqueness Test

005893839-02, P = 3.485553 Days, E = 131.249077 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
33.7	11.7	9.59	-3.70	4.54	1.59	6.58	24.1	37.4	2.10	15.4	0.19	1.04	0.27	1.18



### Stellar Parameters For KIC 005893839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5937^{+260}_{-213}$	$3.750^{+0.315}_{-0.105}$	$-0.200^{+0.350}_{-0.250}$	$2.504^{+0.415}_{-0.967}$	$1.285^{+0.206}_{-0.284}$	$0.115^{+0.261}_{-0.037}$
	+4%/-4%	+8%/-3%	+175%/-125%	+17%/-39%	+16%/-22%	+227%/-32%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005893839-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-19 \pm 2$	$1.80^{+0.25}_{-0.39}$	$2591^{+161}_{-242}$	$4888^{+275}_{-243}$	$8.076^{+4.222}_{-2.009}$
Alt.	$-19 \pm 2$	$2.09^{+0.29}_{-0.43}$	$2589^{+164}_{-256}$	$4584^{+225}_{-214}$	$6.011^{+3.189}_{-1.447}$

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



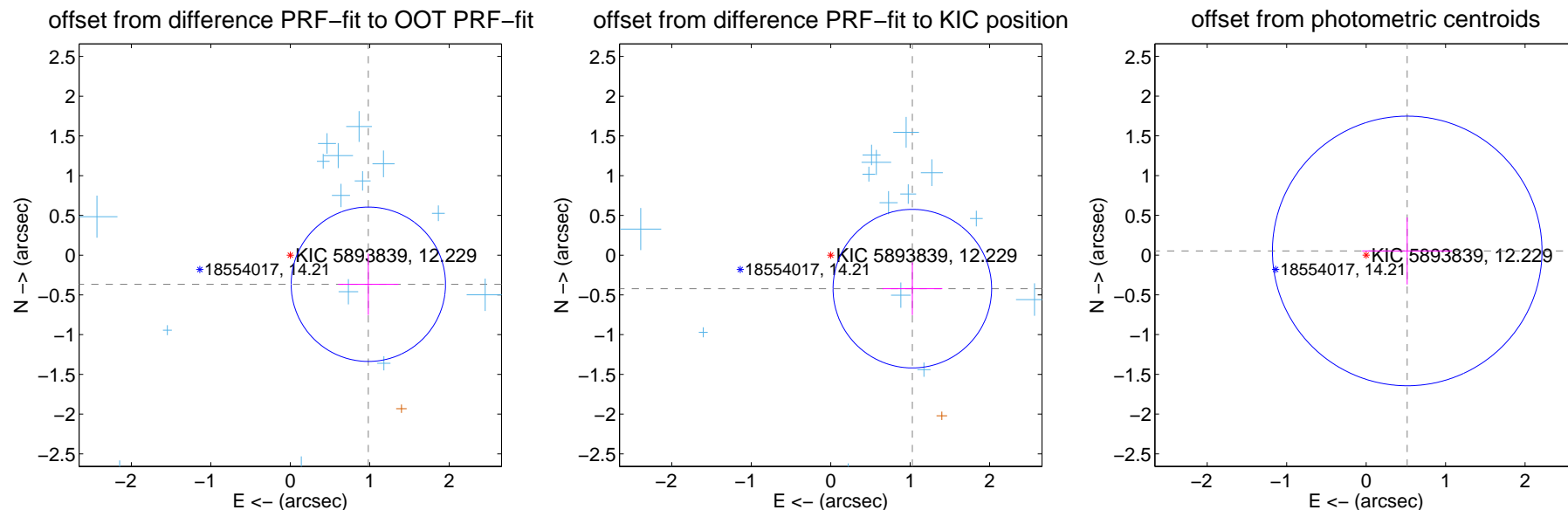
## DV Centroid Data

Supplemental centroid analysis for 005893839-02. Kepler magnitude: 12.23. Transit SNR 8.25

There are 15 quarters with good PRF difference image offsets

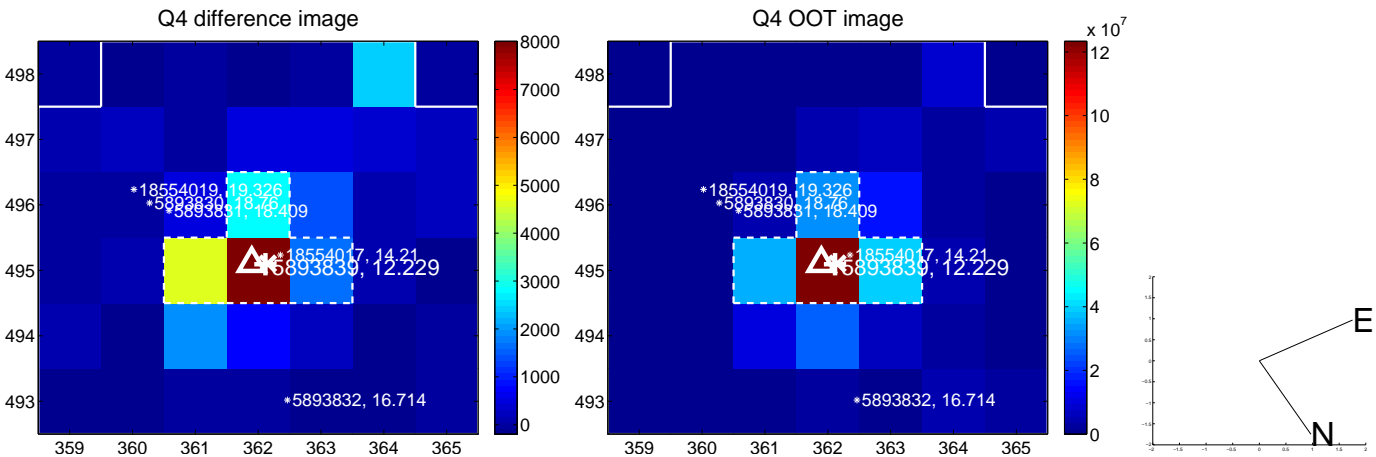
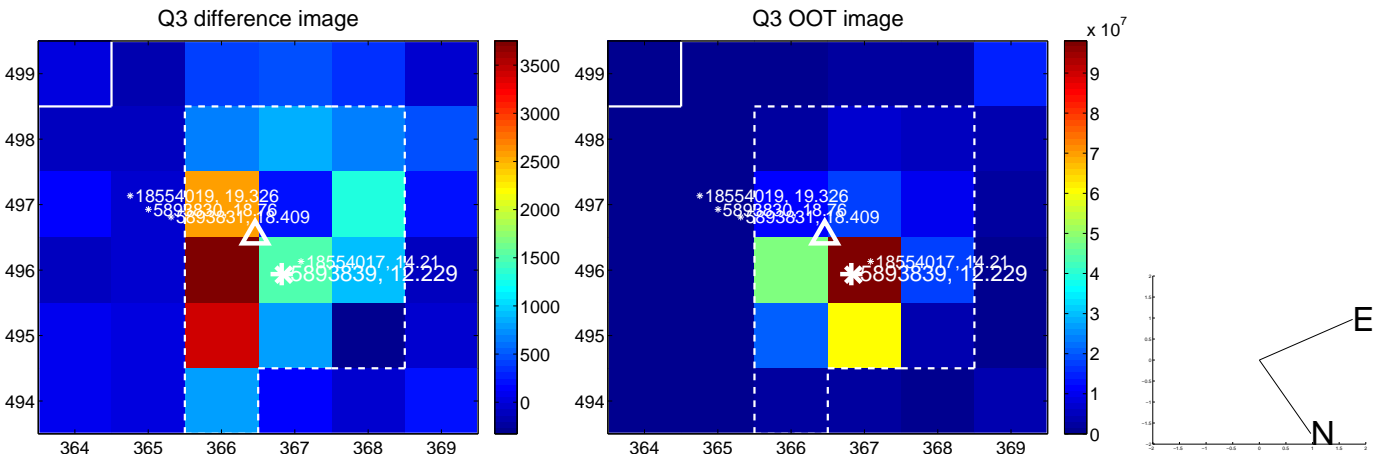
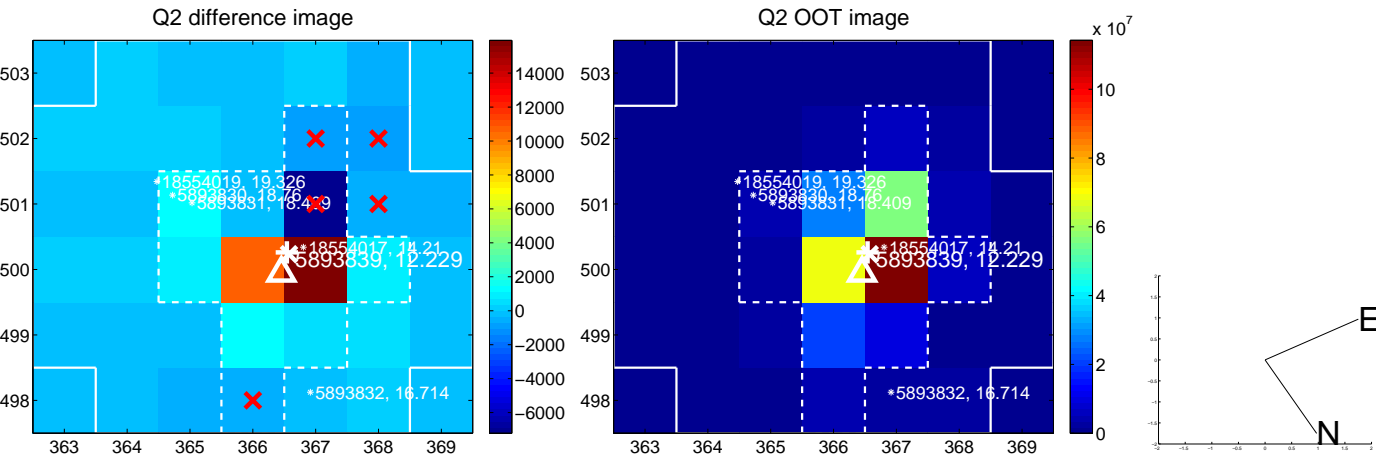
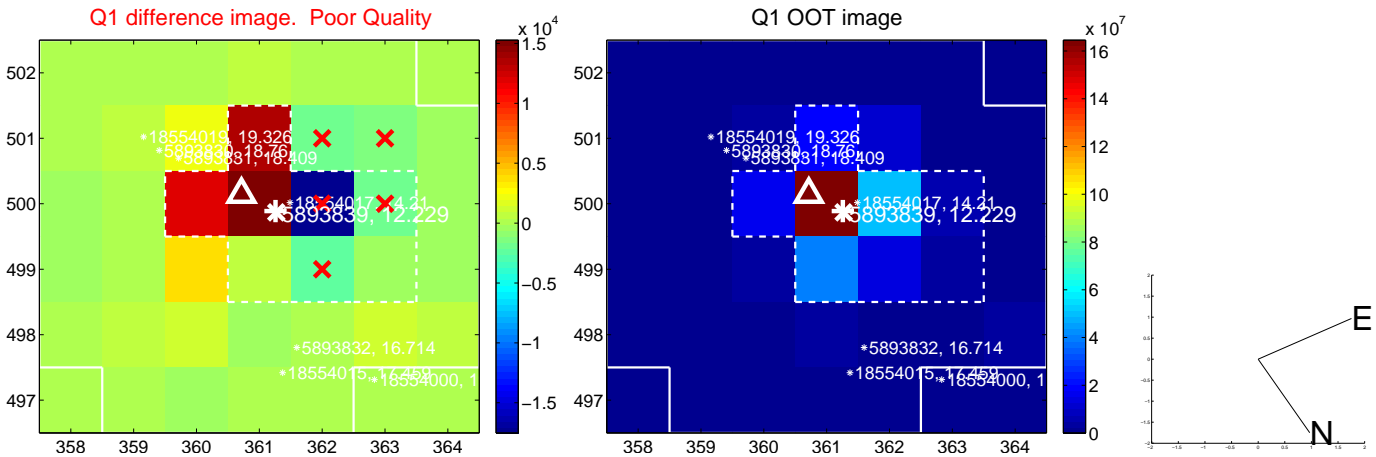
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.048 \pm 0.324$	3.24	$-0.982 \pm 0.380$	$-0.366 \pm 0.386$
PRF-fit source offset from KIC position	$1.110 \pm 0.332$	3.34	$-1.027 \pm 0.378$	$-0.421 \pm 0.331$
photometric centroid source offset	$0.52 \pm 0.57$	0.92	$-0.52 \pm 0.57$	$0.05 \pm 0.42$

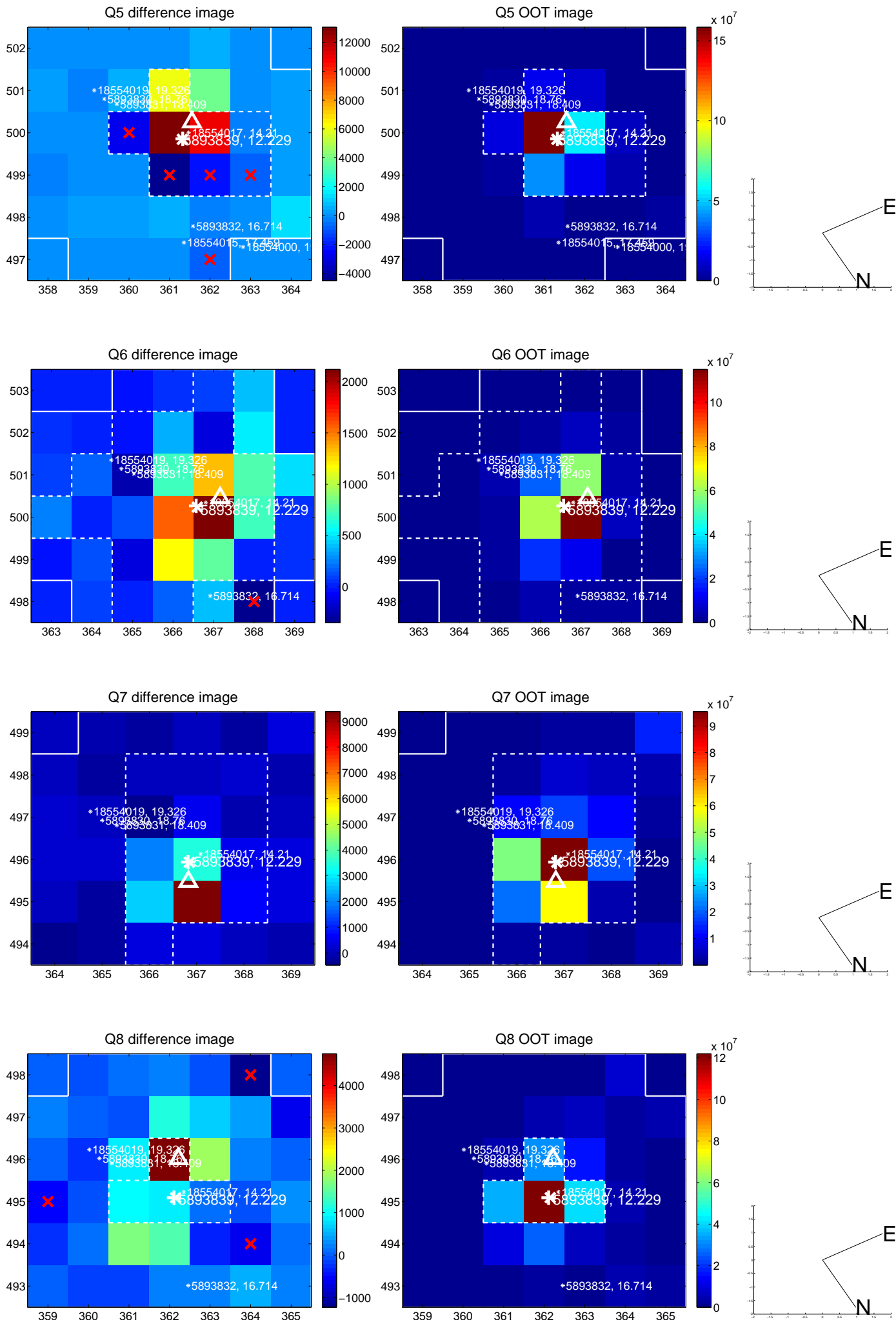


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

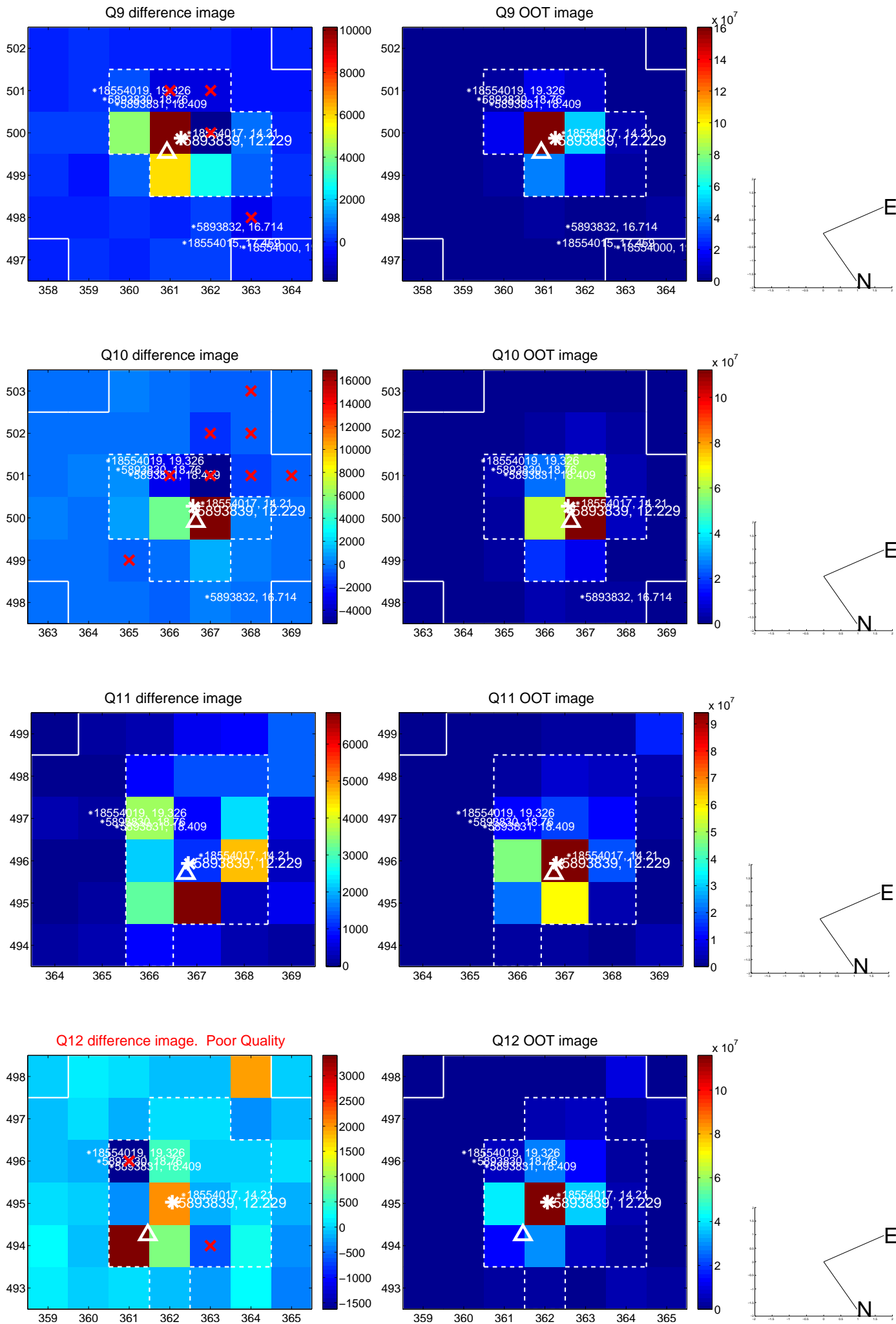
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



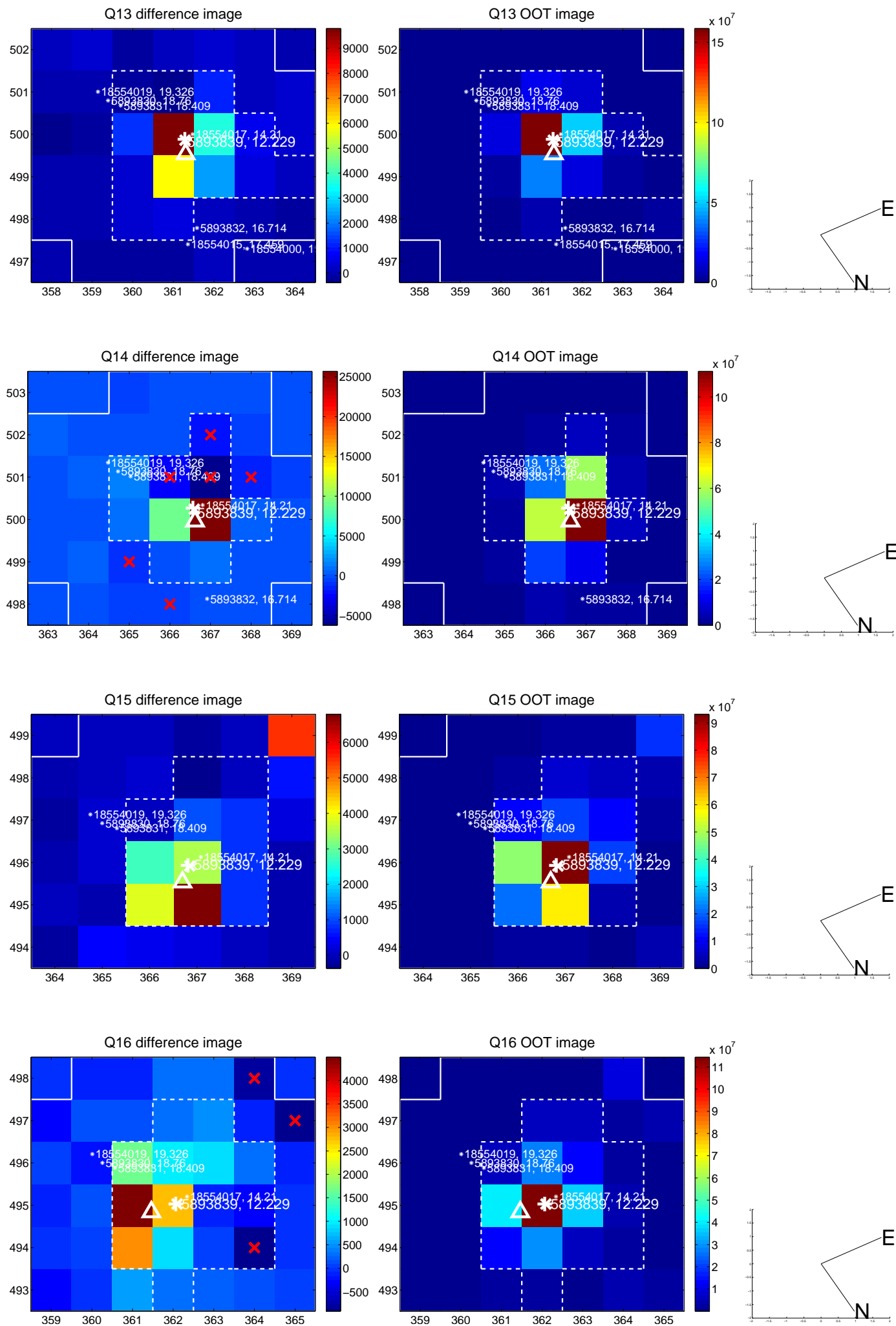
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

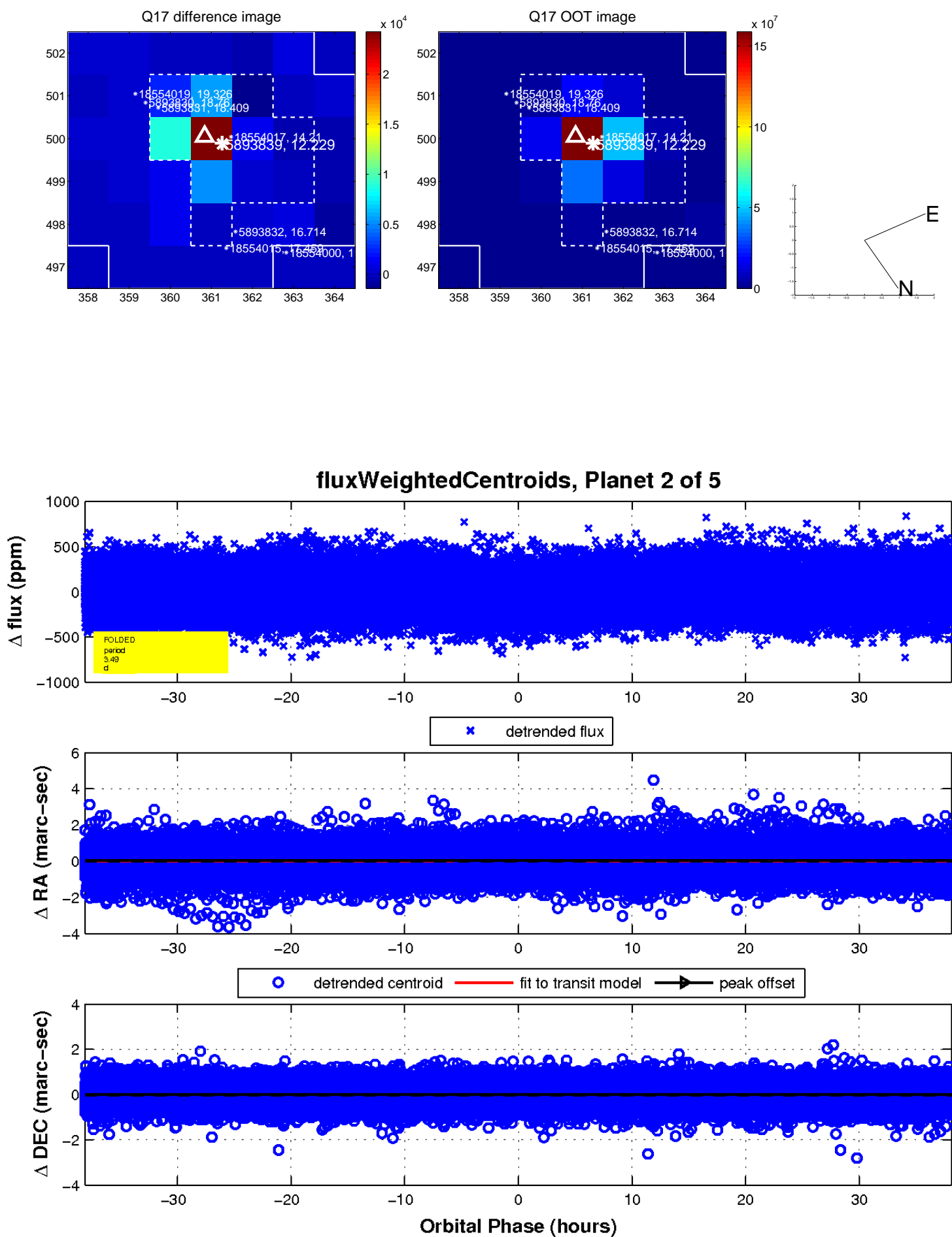


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



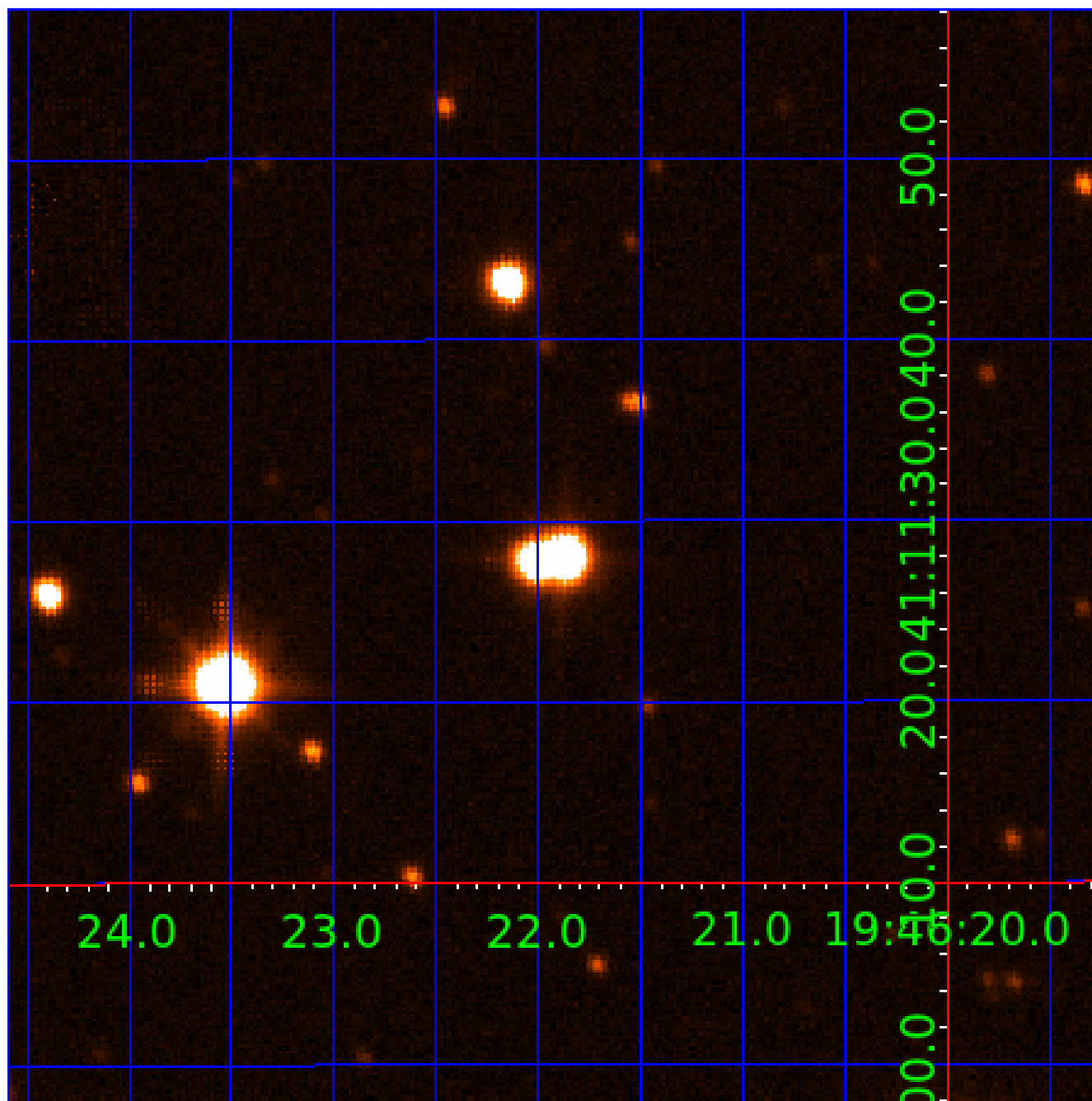


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005893839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005893839-01	OBS	No	8.429861	137.045312	60.5	11.511	9.5	9.6	2.50	5937	2.29	897.76
005893839-02	OBS	No	3.485744	134.731934	34.0	12.713	9.6	8.2	2.50	5937	1.83	2914.24
005893839-03	OBS	No	372.036713	265.517987	281.2	7.183	9.8	7.9	2.50	5937	4.94	5.76
005893839-04	OBS	No	512.462148	243.572315	451.6	12.693	8.1	8.0	2.50	5937	10.50	3.76
005893839-05	OBS	No	101.087025	165.024097	194.6	14.168	7.7	9.6	2.50	5937	7.07	32.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005893839-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

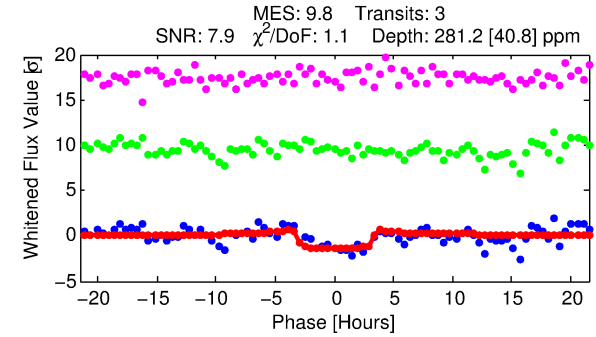
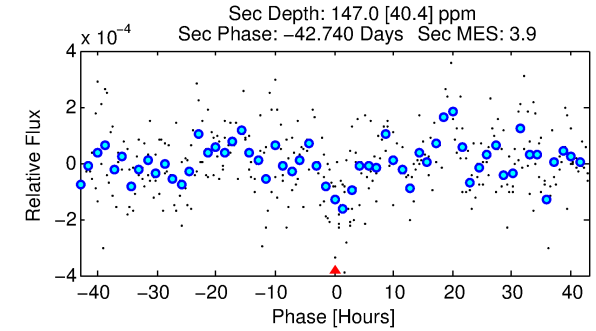
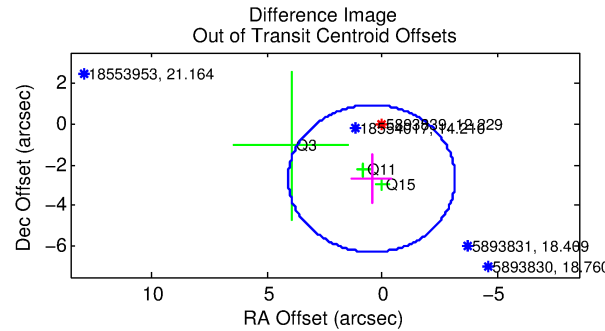
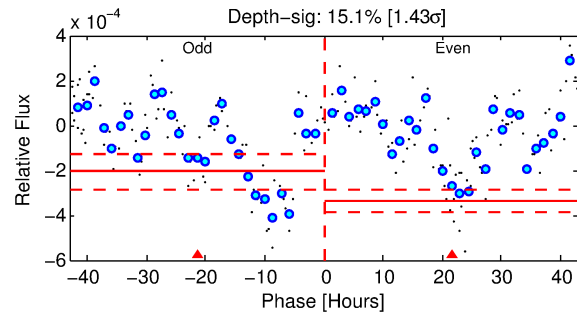
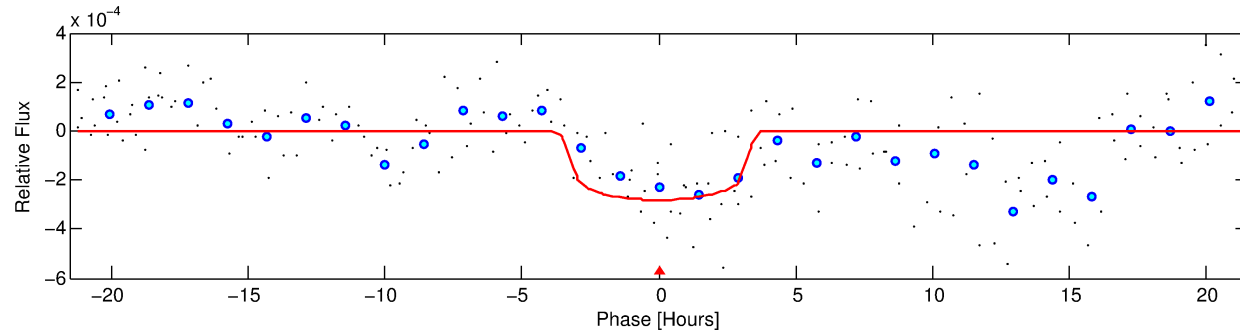
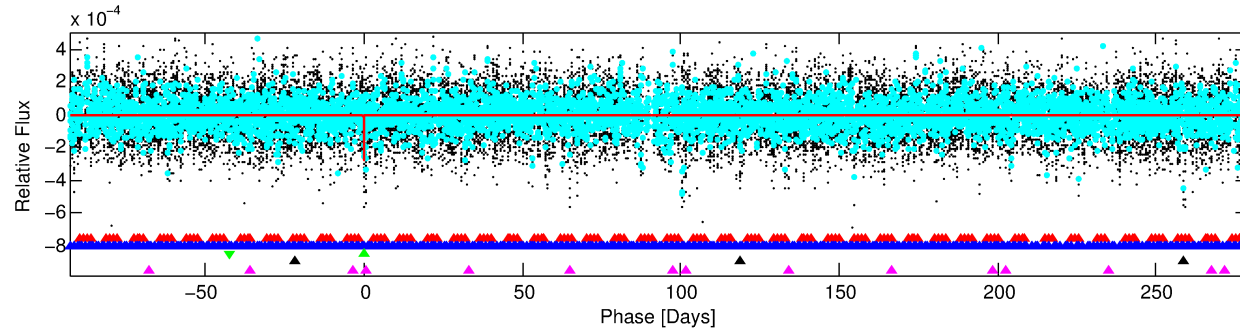
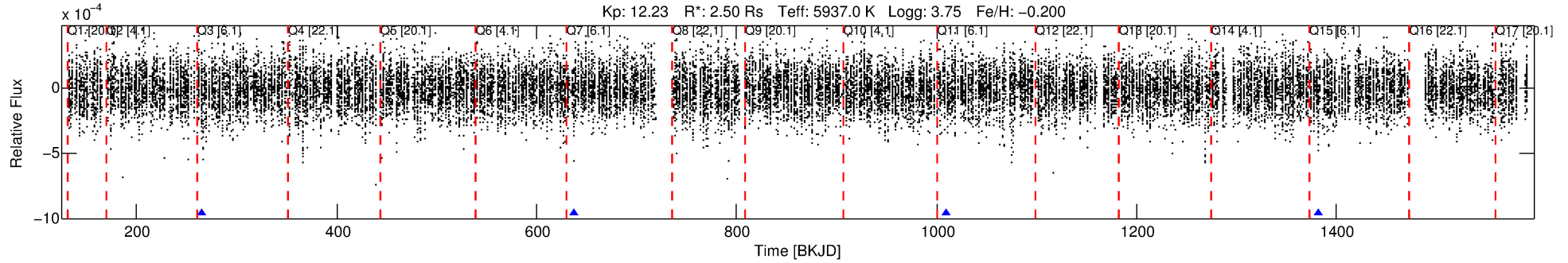
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005893839-03

No Significant Match Found

# DV One-Page Summary

KIC: 5893839 Candidate: 3 of 5 Period: 372.037 d



## DV Fit Results:

Period = 372.03671 [0.00504] d  
Epoch = 265.5180 [0.0113] BKJD  
Rp/R\* = 0.0181 [0.0033]  
a/R\* = 189.77 [154.13]  
b = 0.90 [0.18]  
Seff = 5.76 [3.31]  
Teq = 395 [57] K  
Rp = 4.94 [2.11] Re  
a = 1.1011 [0.3889] AU  
Ag = 4014.60 [2864.44] [1.40 $\sigma$ ]  
Teffp = 4861 [595] K [7.47 $\sigma$ ]

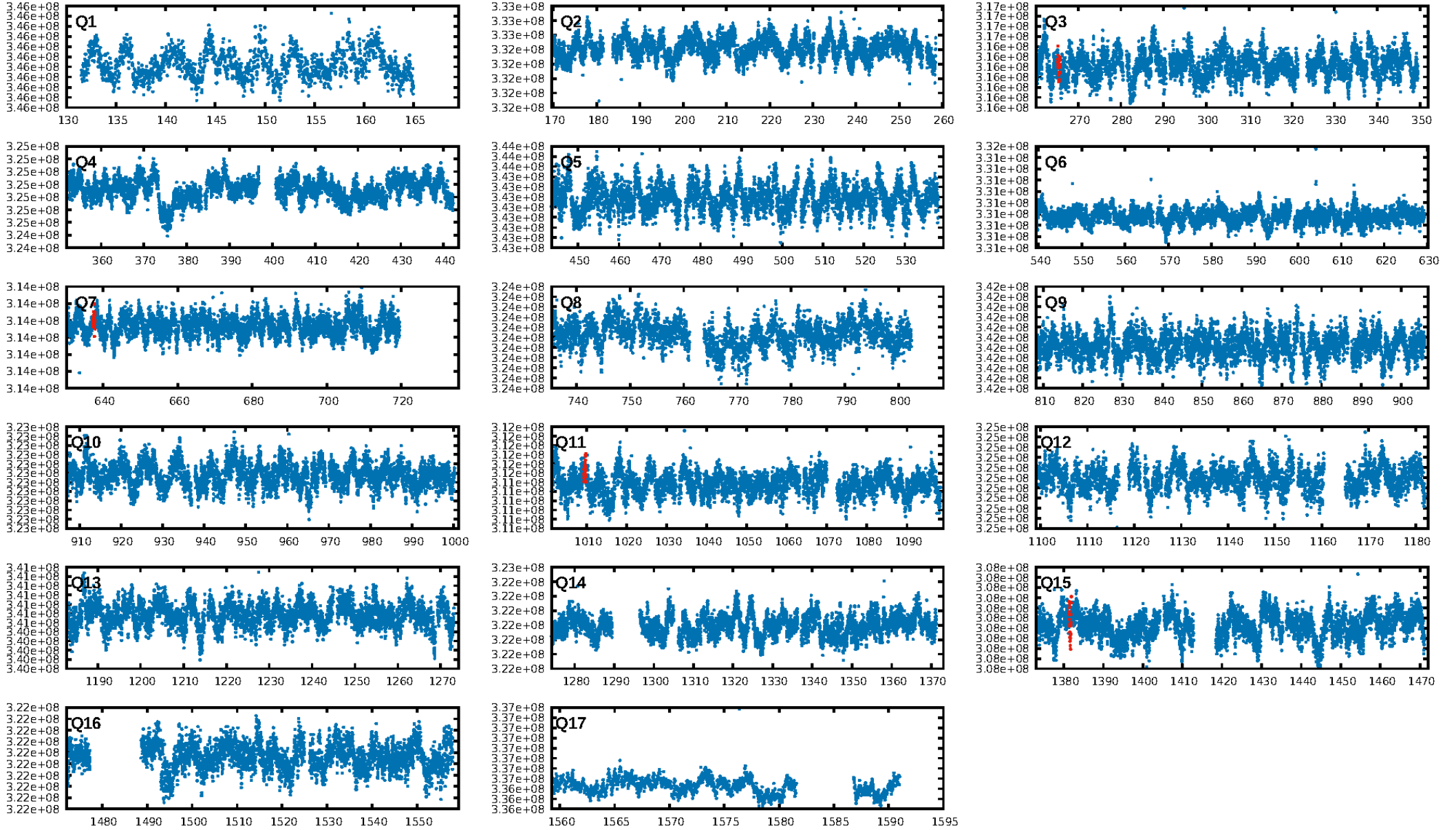
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [409.39 $\sigma$ ]  
LongPeriod-sig: 100.0% [231.09 $\sigma$ ]  
ModelChiSquare2-sig: 8.3%  
ModelChiSquareGof-sig: 96.0%  
**Bootstrap-pfa: 1.79e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.405  
Centroid-sig: 37.9%  
Centroid-so: 0.870 arcsec [0.66 $\sigma$ ]  
OotOffset-rm: 2.723 arcsec [2.27 $\sigma$ ]  
KicOffset-rm: 2.808 arcsec [2.33 $\sigma$ ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.50 [2/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:00:31 Z

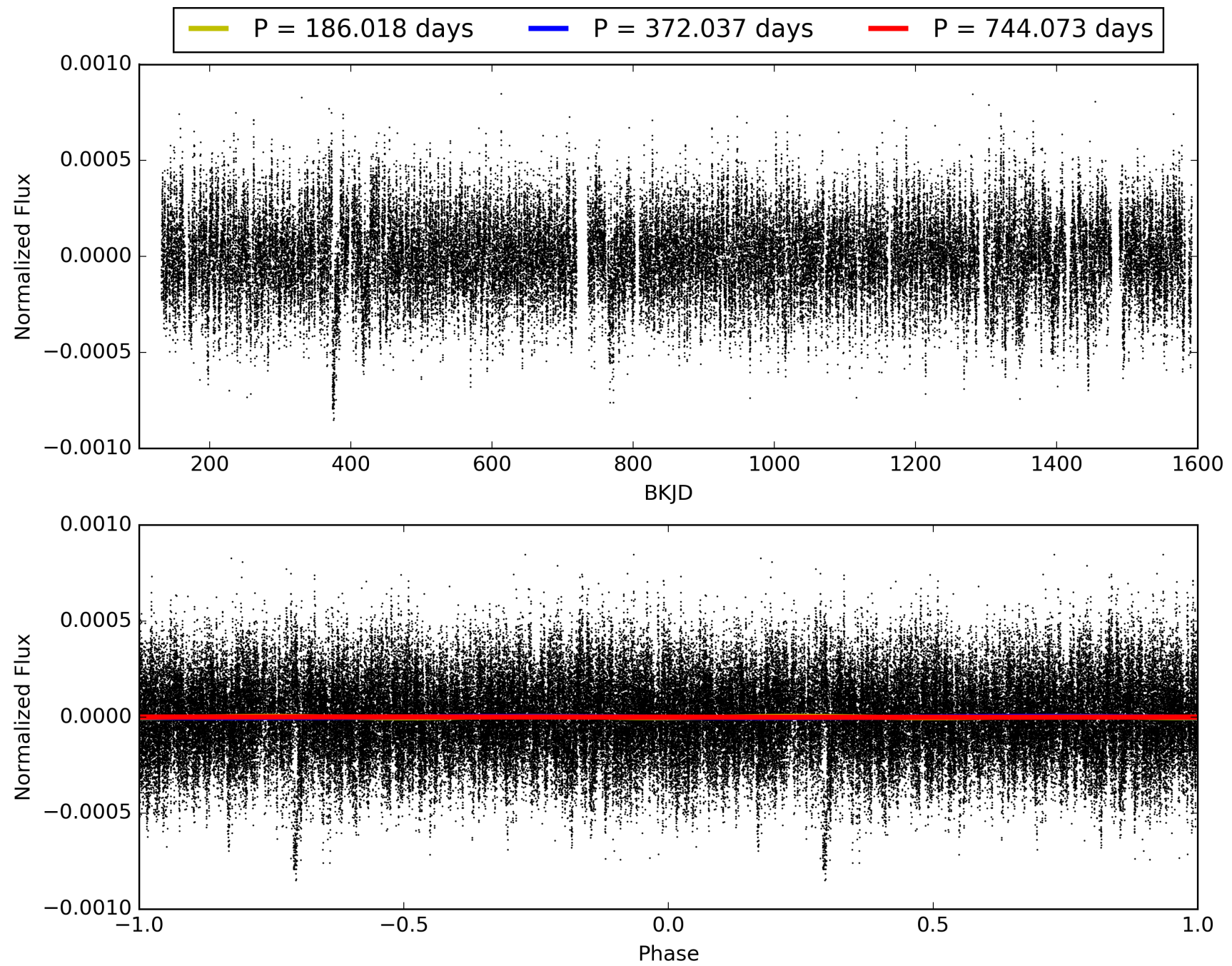
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# TCE 005893839-03, PDC Light Curves



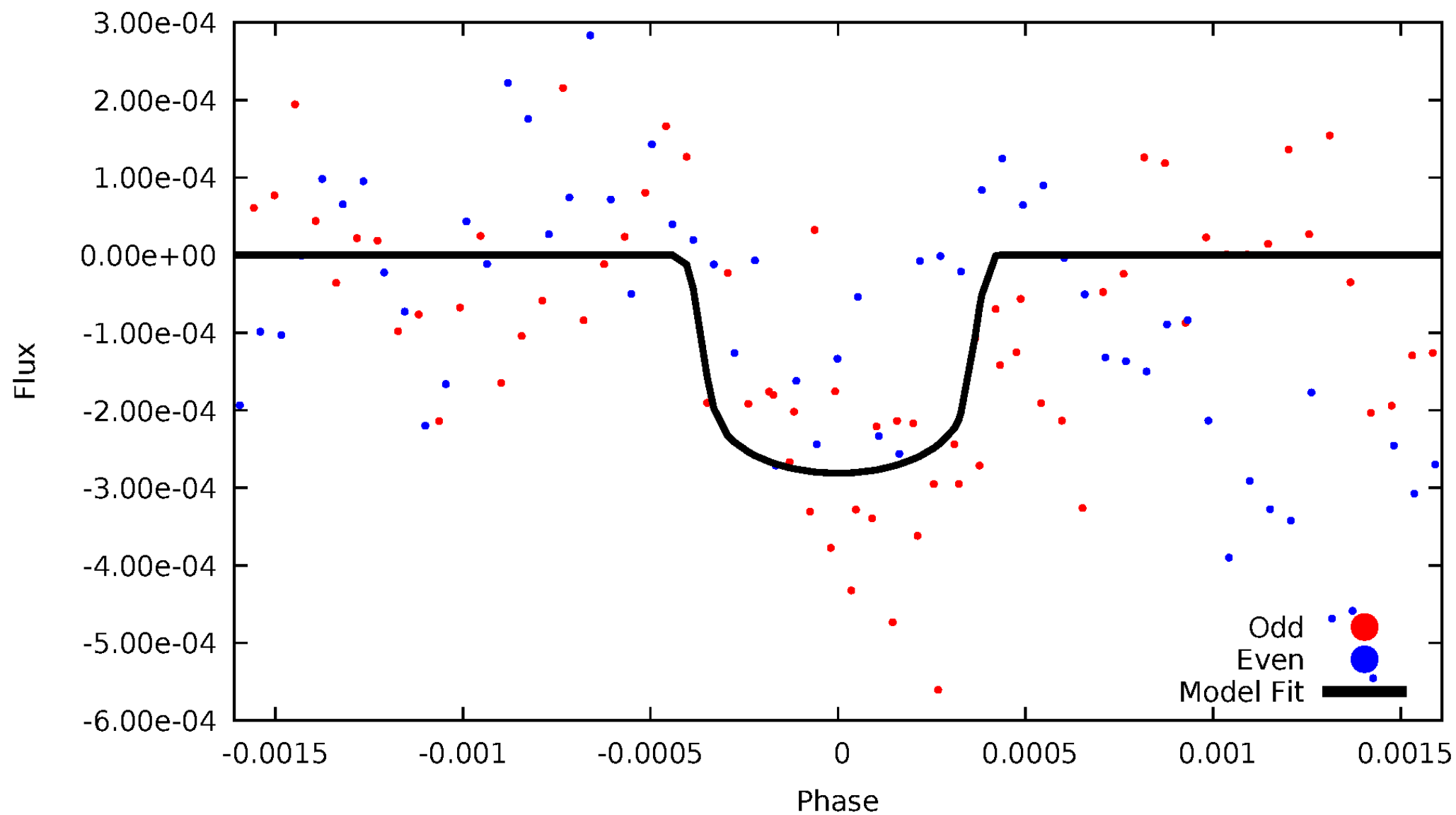


TCE 005893839-03



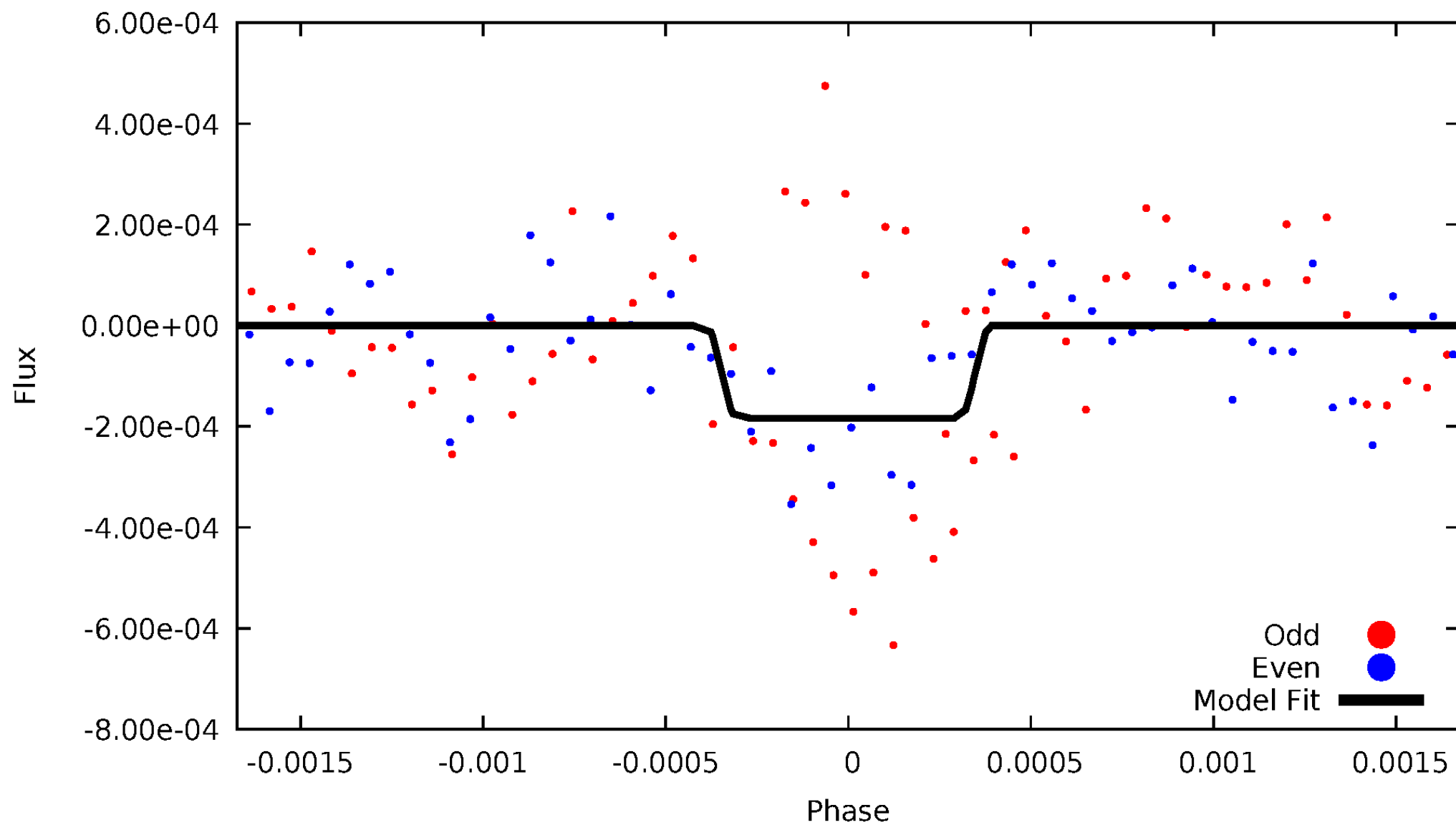
# DV Odd/Even

TCE 005893839-03

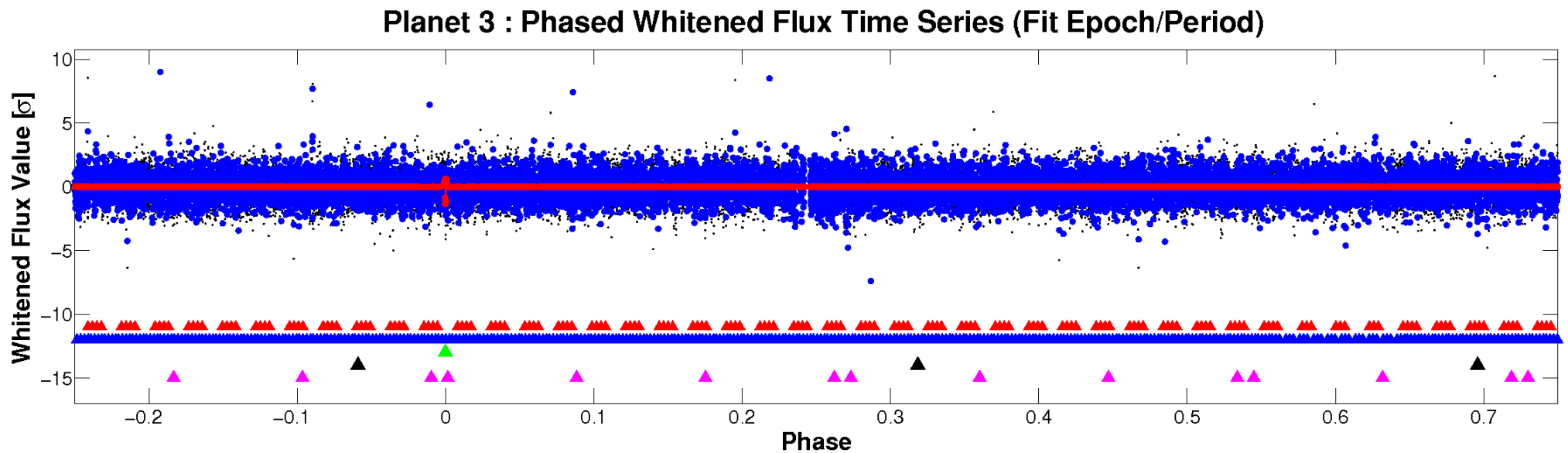
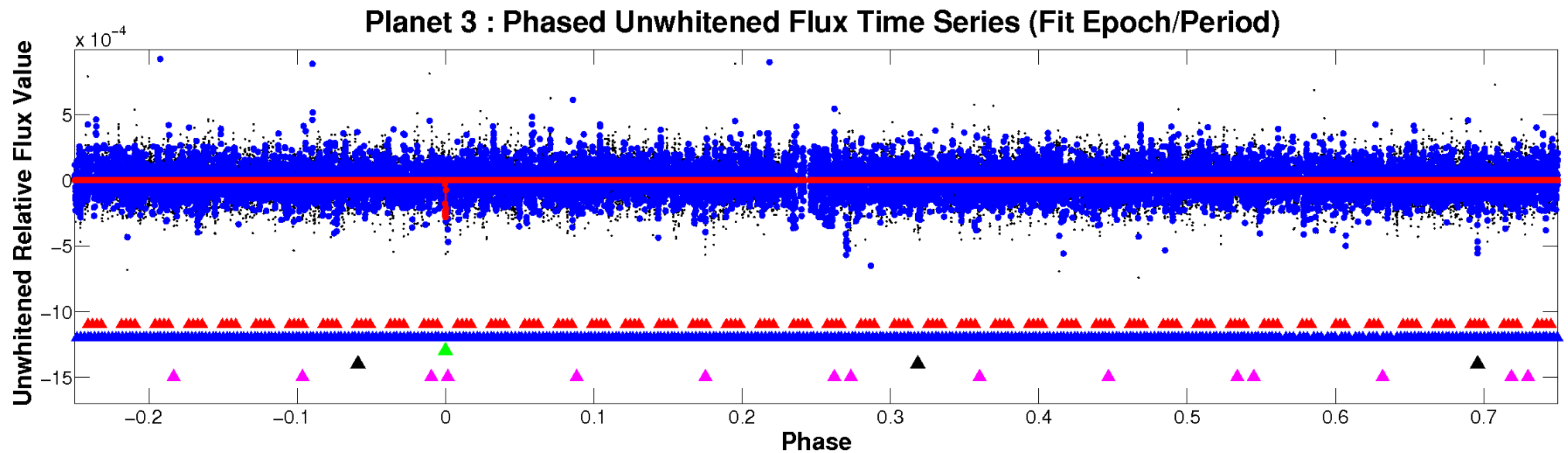


# ALT Odd/Even

TCE 005893839-03

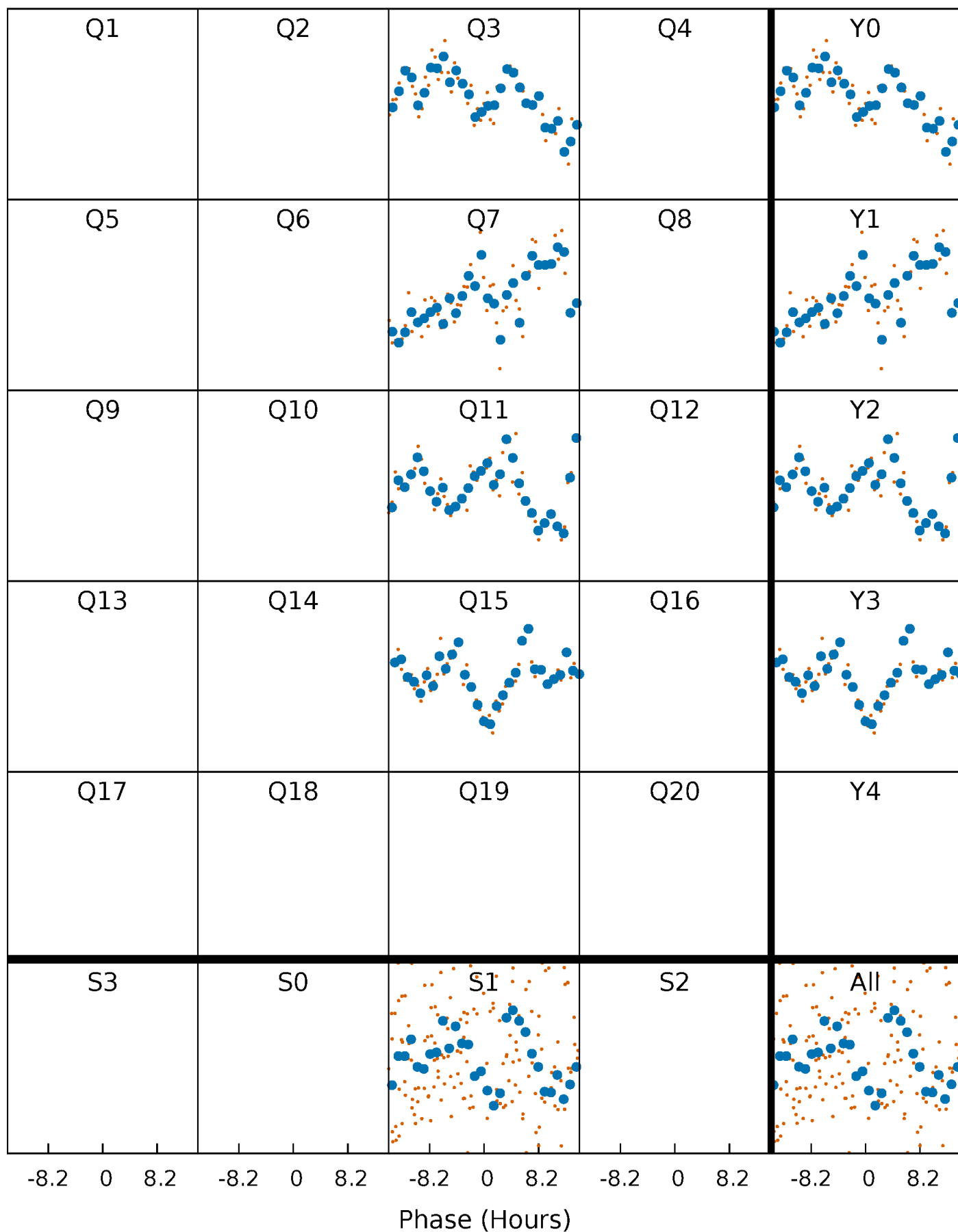


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

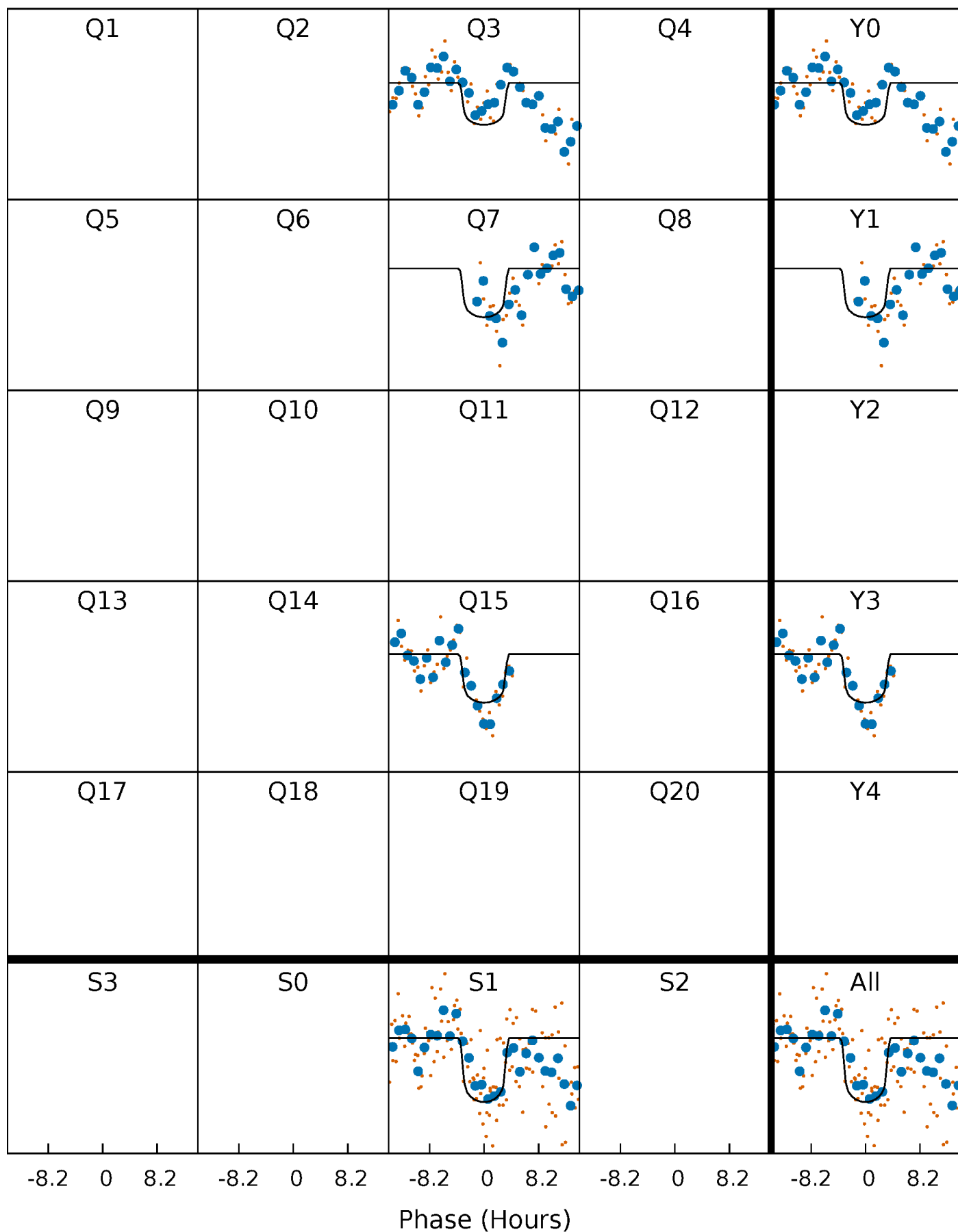
TCE 005893839-03     $P=372.036713$  Days     $T_0=265.517987$  (BKJD)





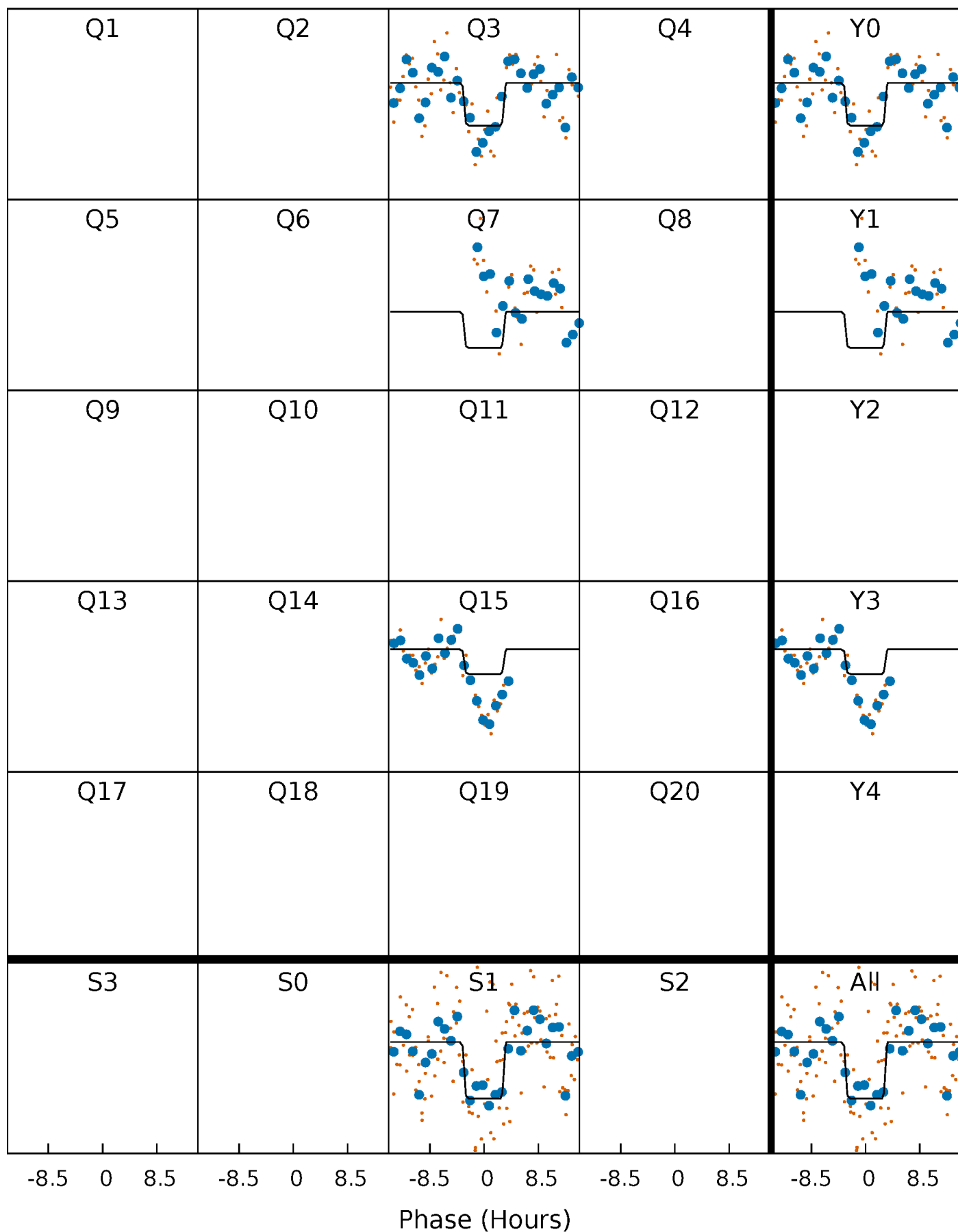
# DV Quarter-Phased Transit Curves

TCE 005893839-03     $P=372.036713$  Days     $T_0=265.517987$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

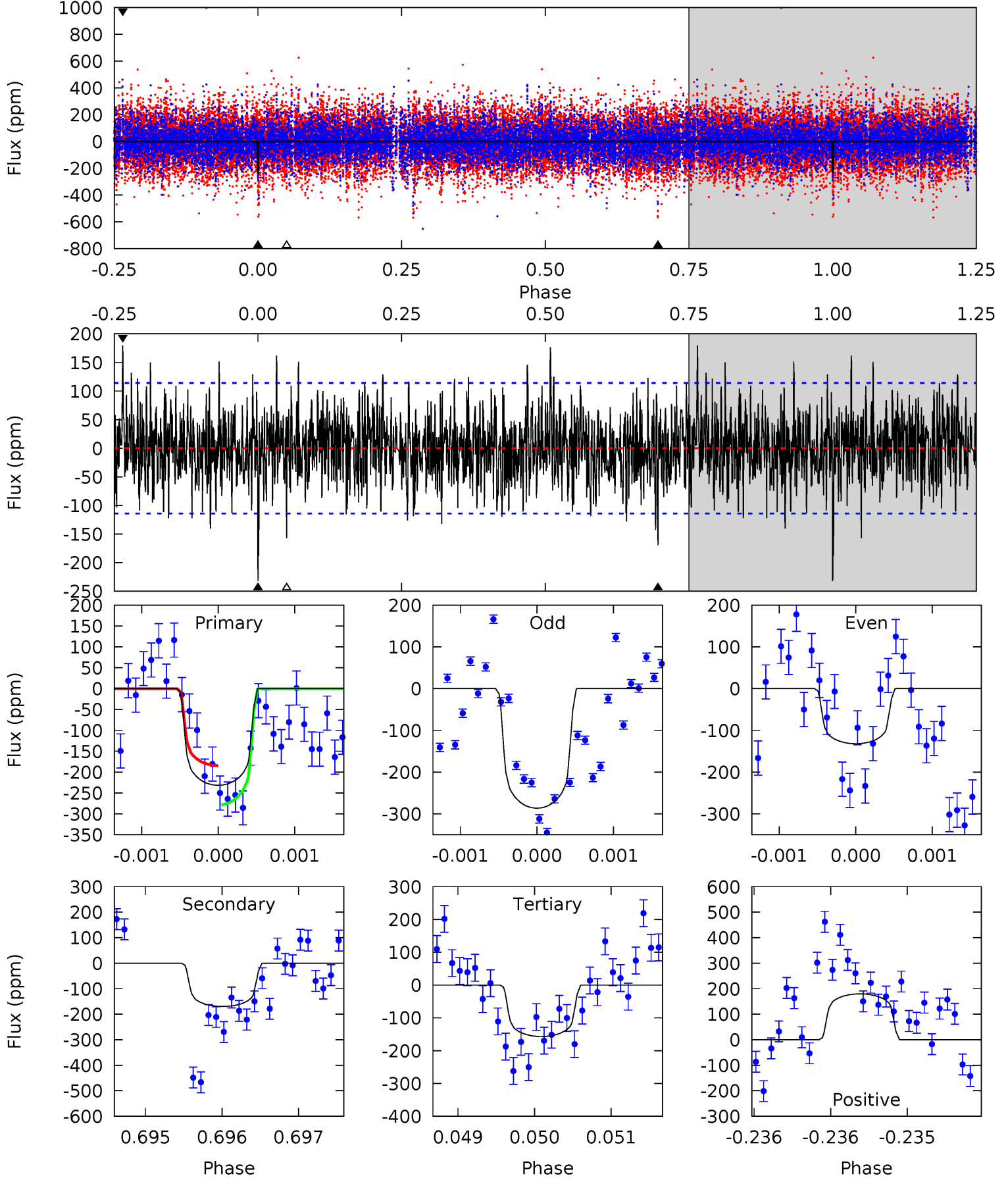
TCE 005893839-03     $P=372.040638$  Days     $T_0=265.514361$  (BKJD)



# DV Model-Shift Uniqueness Test

005893839-03, P = 372.036713 Days, E = 265.517987 Days

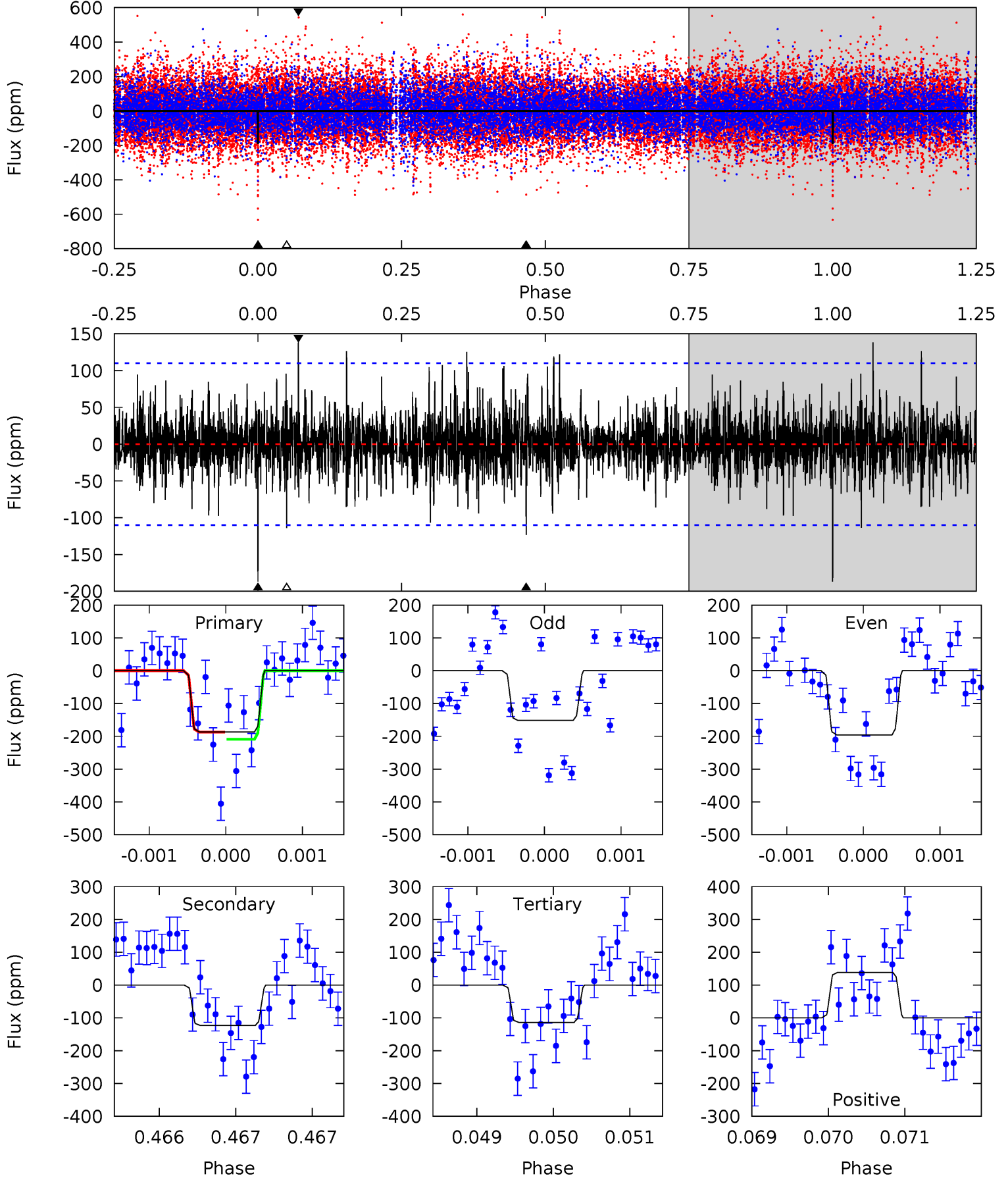
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	8.16	7.56	8.65	5.49	3.35	2.20	3.59	2.50	0.60	-0.49	3.63	0.88	0.44	2.25



# Alt Model-Shift Uniqueness Test

005893839-03, P = 372.040638 Days, E = 265.514361 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
9.32	6.15	5.68	6.91	5.50	3.36	1.42	3.65	2.41	0.48	-0.76	1.07	0.75	0.43	0.54



### Stellar Parameters For KIC 005893839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5937^{+260}_{-213}$	$3.750^{+0.315}_{-0.105}$	$-0.200^{+0.350}_{-0.250}$	$2.504^{+0.415}_{-0.967}$	$1.285^{+0.206}_{-0.284}$	$0.115^{+0.261}_{-0.037}$
	+4%/-4%	+8%/-3%	+175%/-125%	+17%/-39%	+16%/-22%	+227%/-32%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005893839-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-170 \pm 21$	$4.68^{+1.21}_{-1.23}$	$542^{+42}_{-49}$	$5128^{+561}_{-435}$	$5203^{+4128}_{-1881}$
Alt.	$-123 \pm 20$	$3.48^{+1.13}_{-1.08}$	$540^{+41}_{-52}$	$5393^{+867}_{-524}$	$6953^{+6594}_{-3075}$

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



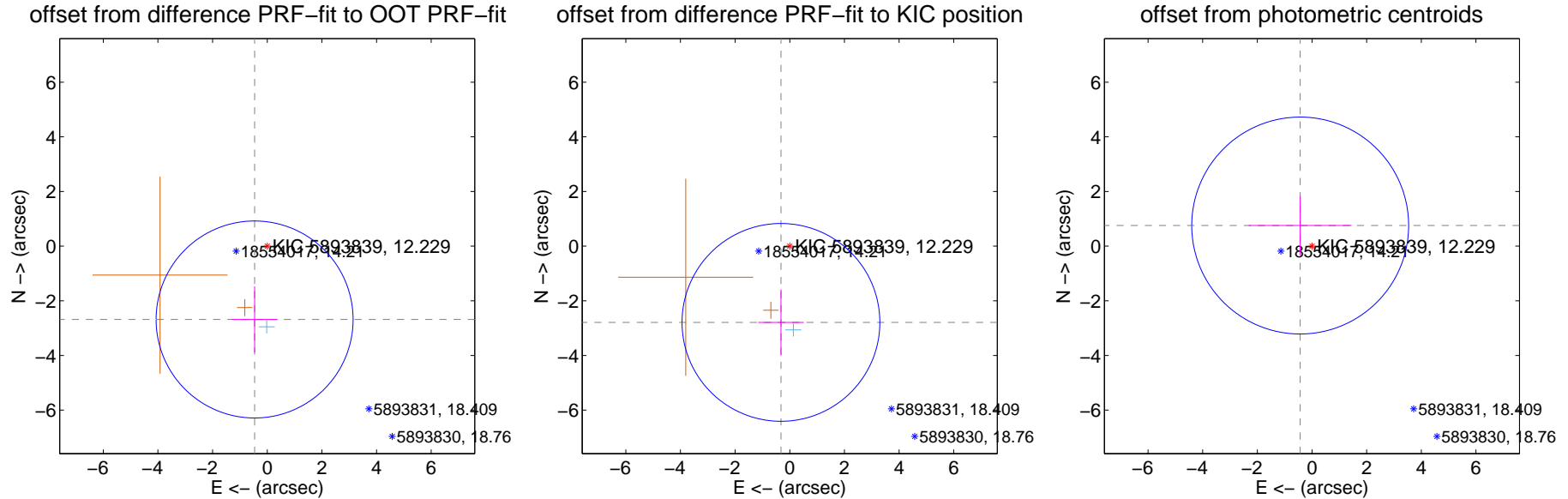
## DV Centroid Data

Supplemental centroid analysis for 005893839-03. Kepler magnitude: 12.23. Transit SNR 7.92

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.723 \pm 1.202$	2.27	$0.463 \pm 0.837$	$-2.684 \pm 1.211$
PRF-fit source offset from KIC position	$2.808 \pm 1.207$	2.33	$0.323 \pm 0.837$	$-2.790 \pm 1.211$
photometric centroid source offset	$0.87 \pm 1.32$	0.66	$0.43 \pm 1.88$	$0.75 \pm 1.08$



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.

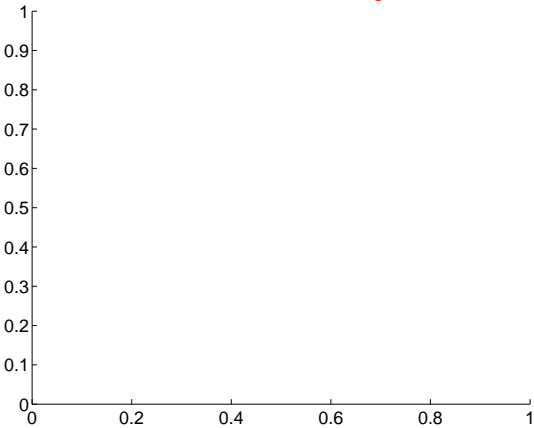
Q1 no difference image



Q1 no OOT image



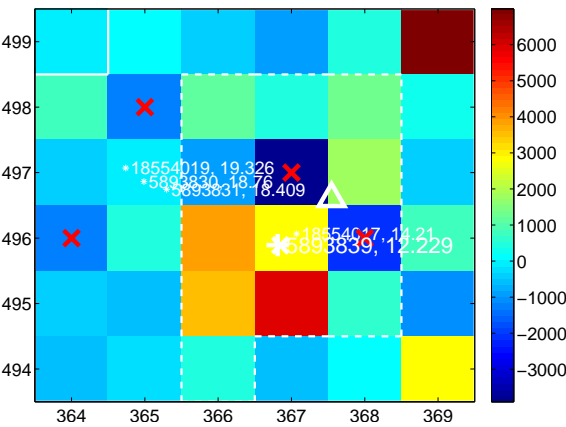
Q2 no difference image



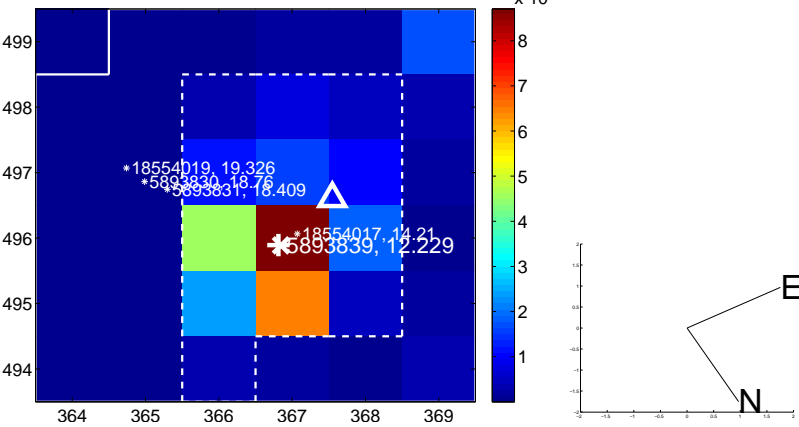
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

Q5 no difference image



Q5 no OOT image



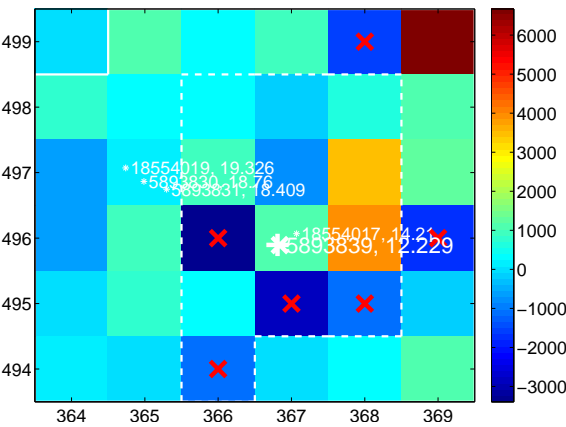
Q6 no difference image



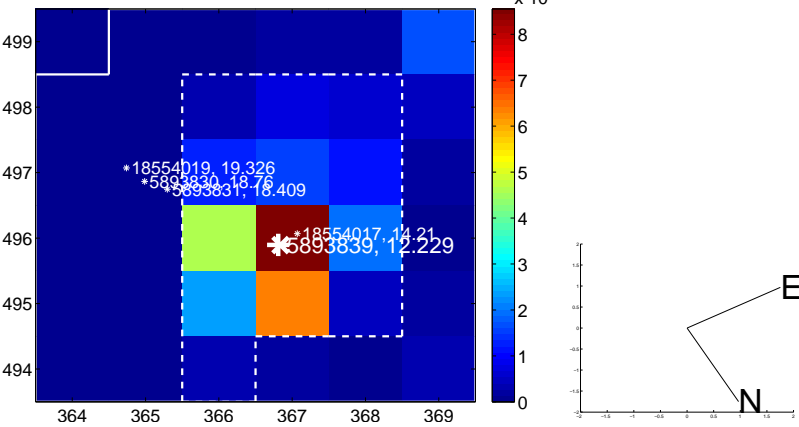
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



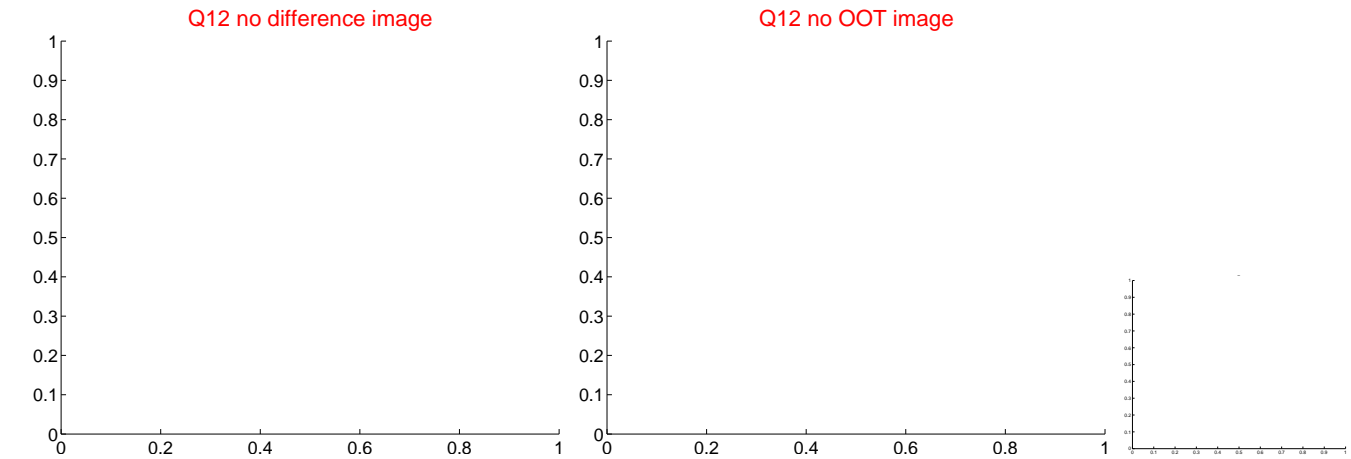
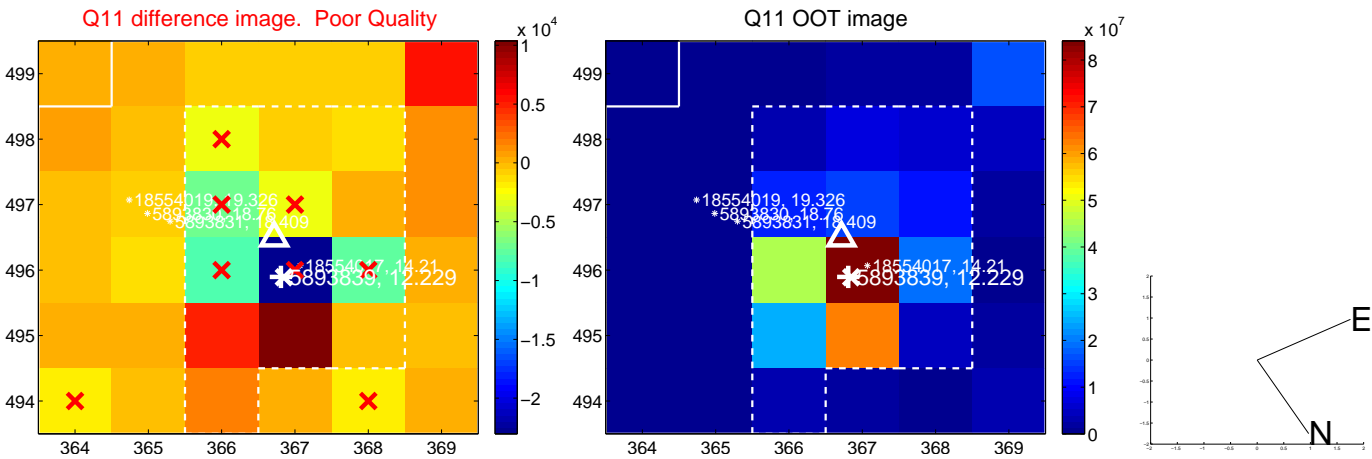
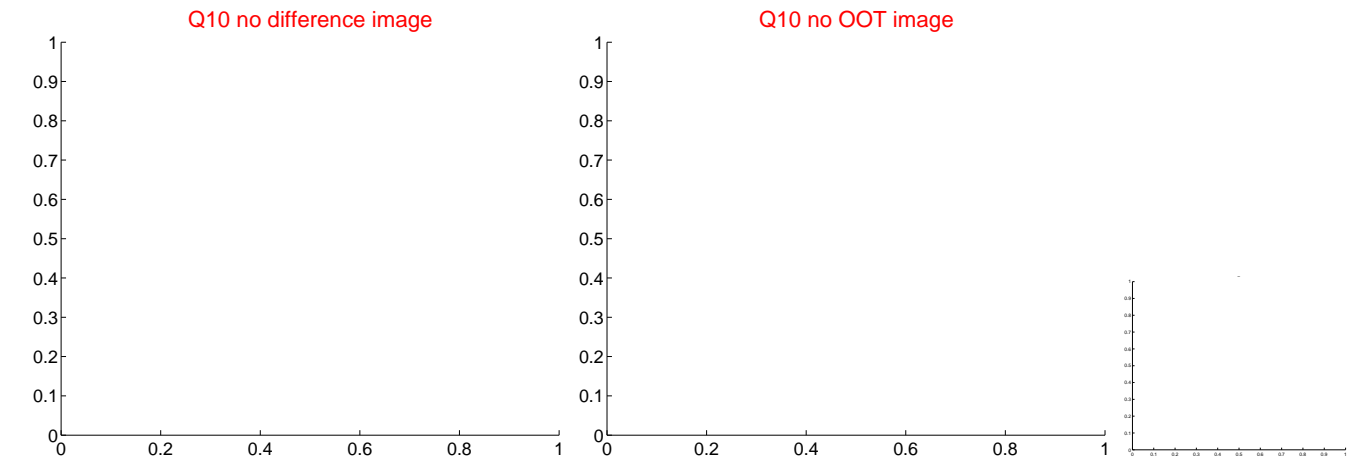
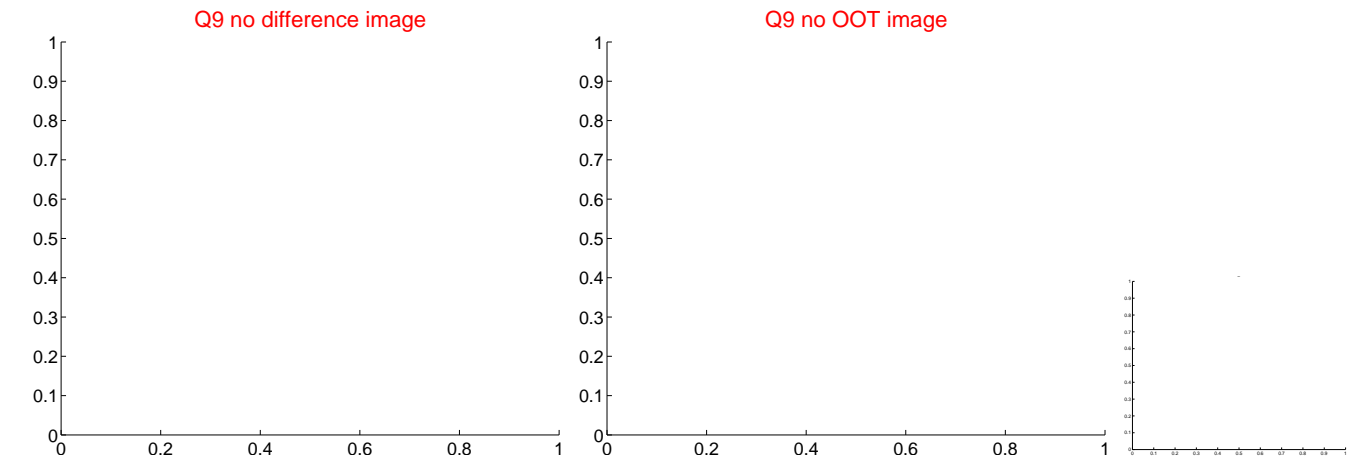
Q8 no difference image



Q8 no OOT image



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.

Q13 no difference image



Q13 no OOT image



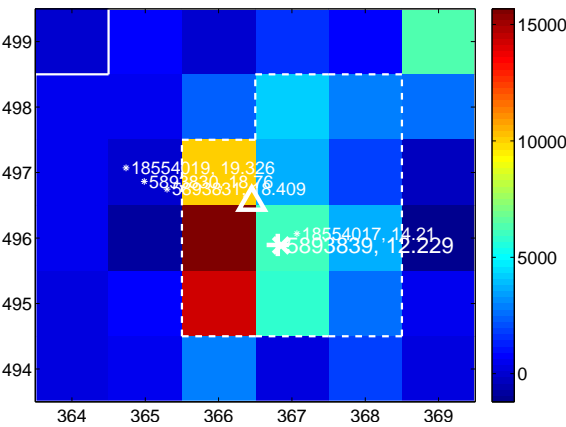
Q14 no difference image



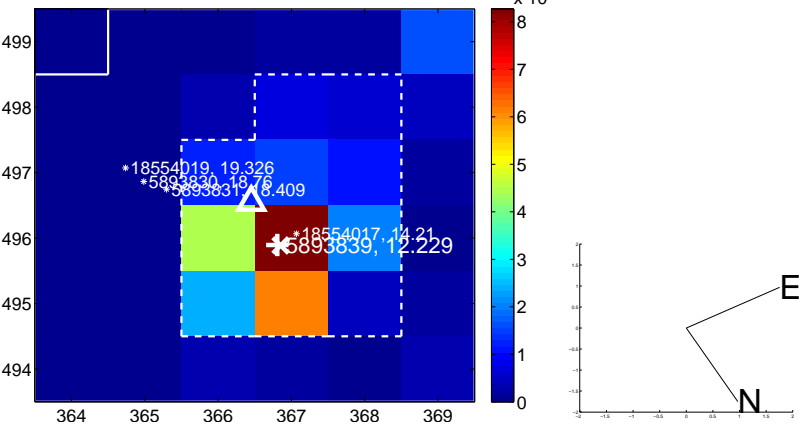
Q14 no OOT image



Q15 difference image



Q15 OOT image



Q16 no difference image

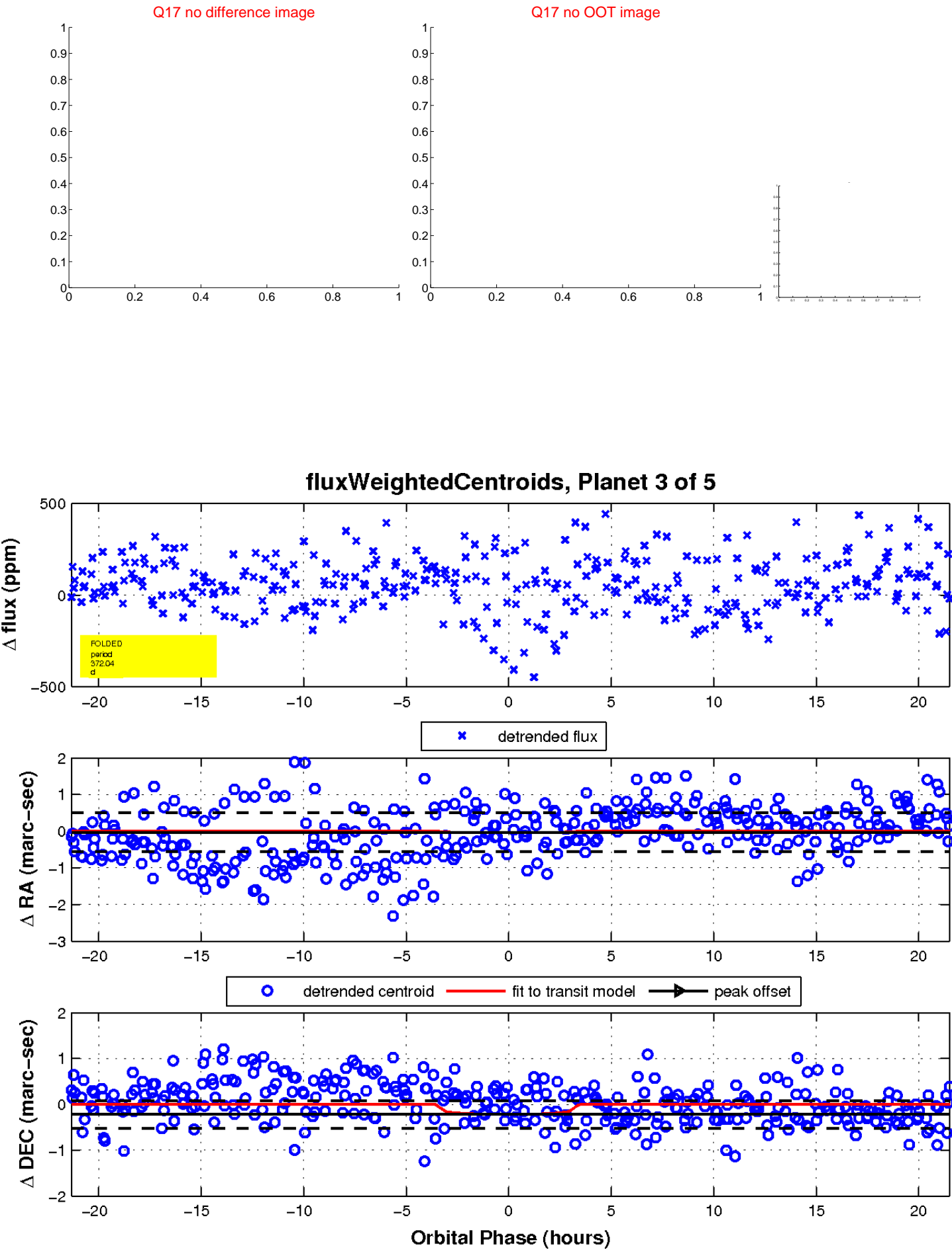


Q16 no OOT image



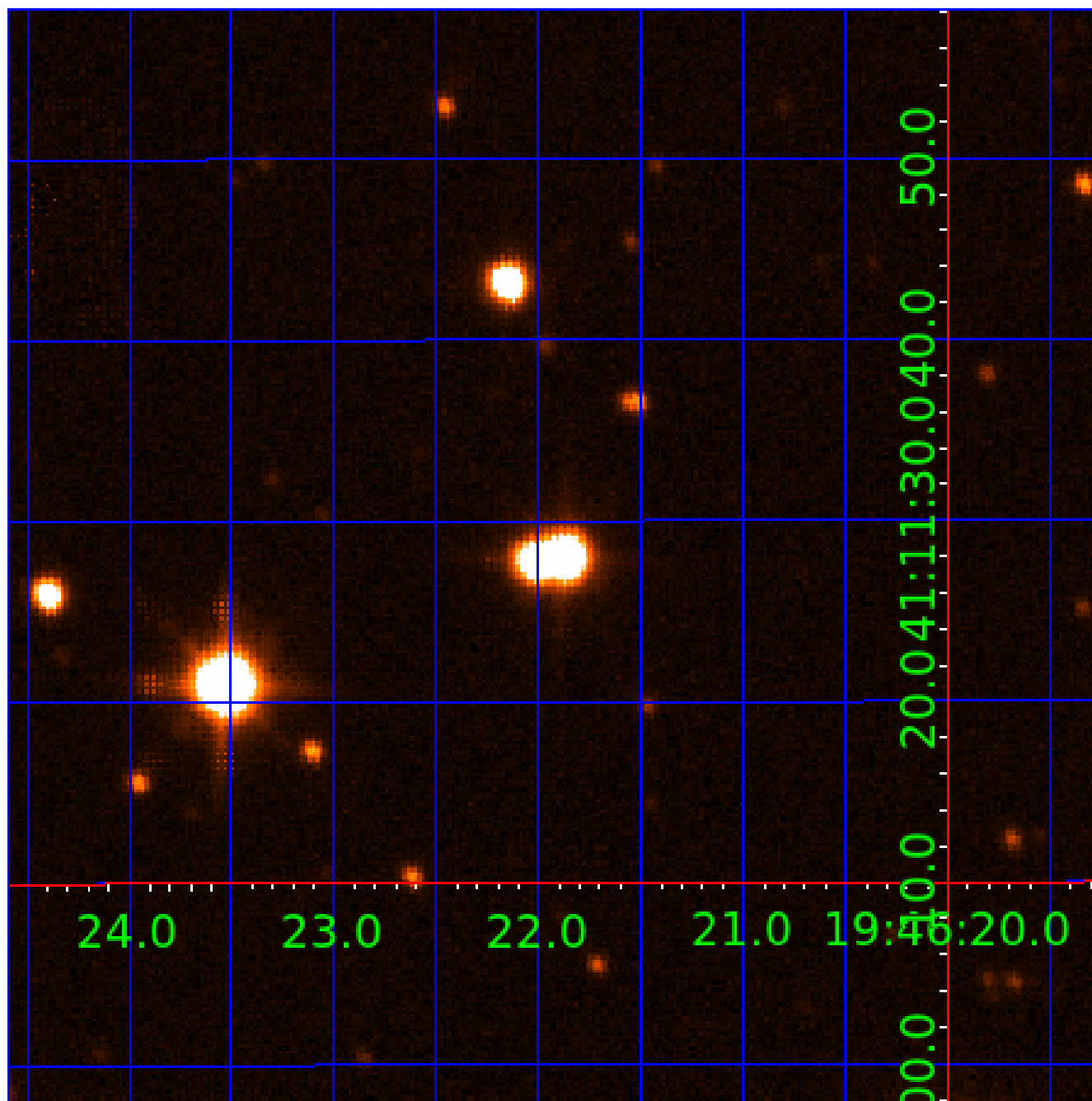


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005893839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005893839-01	OBS	No	8.429861	137.045312	60.5	11.511	9.5	9.6	2.50	5937	2.29	897.76
005893839-02	OBS	No	3.485744	134.731934	34.0	12.713	9.6	8.2	2.50	5937	1.83	2914.24
005893839-03	OBS	No	372.036713	265.517987	281.2	7.183	9.8	7.9	2.50	5937	4.94	5.76
005893839-04	OBS	No	512.462148	243.572315	451.6	12.693	8.1	8.0	2.50	5937	10.50	3.76
005893839-05	OBS	No	101.087025	165.024097	194.6	14.168	7.7	9.6	2.50	5937	7.07	32.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005893839-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

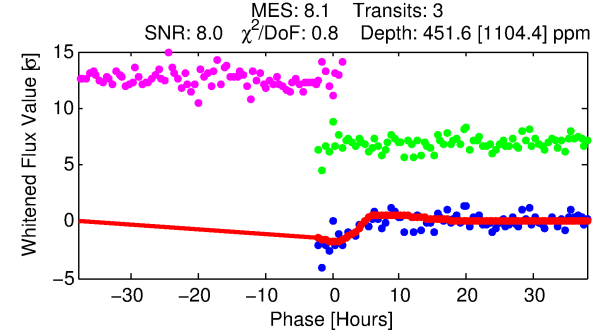
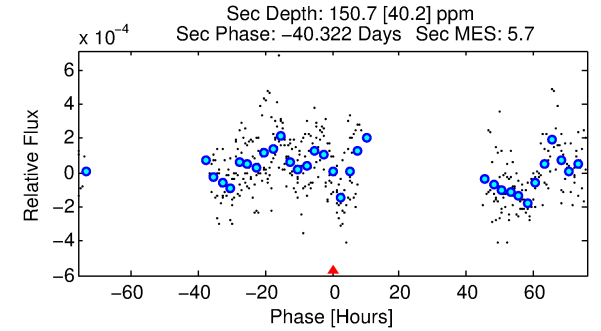
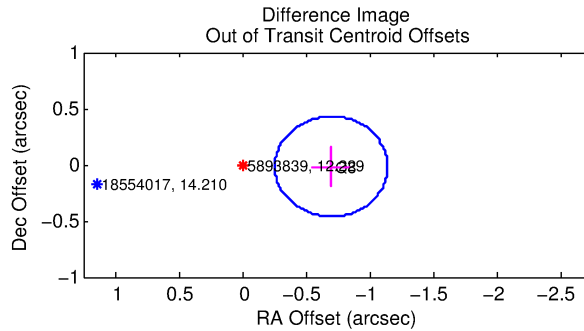
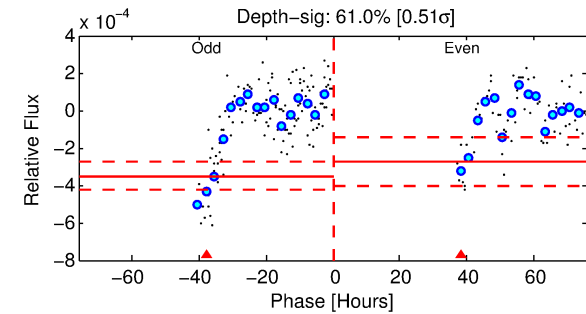
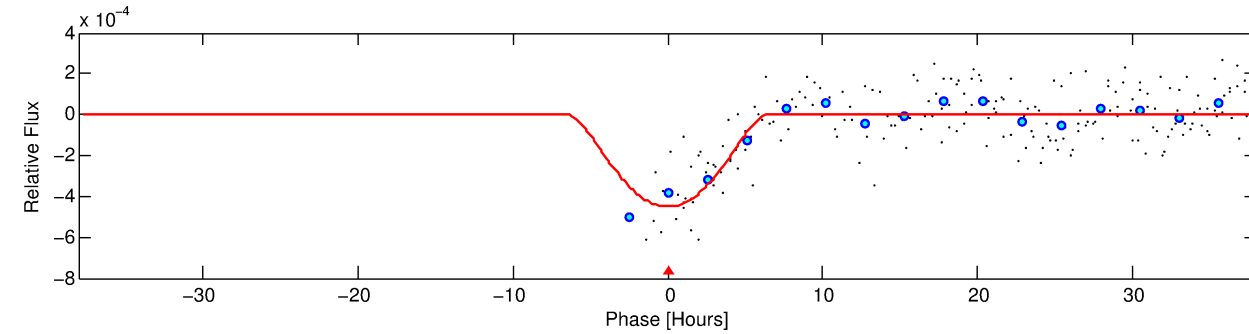
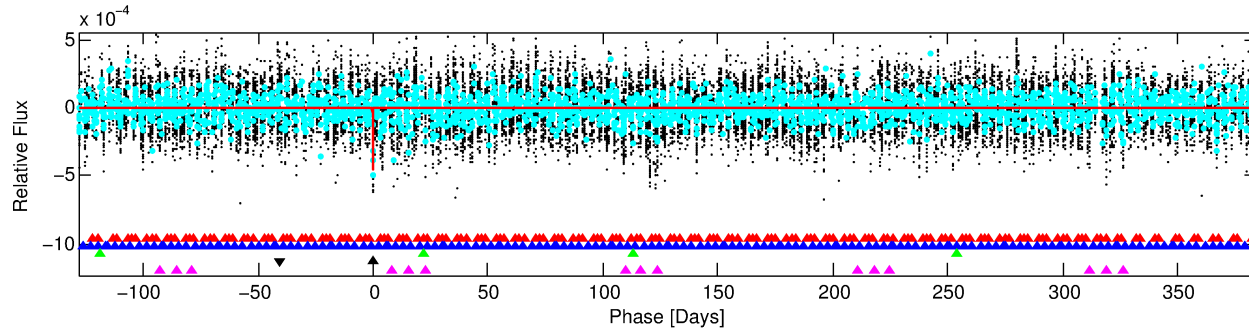
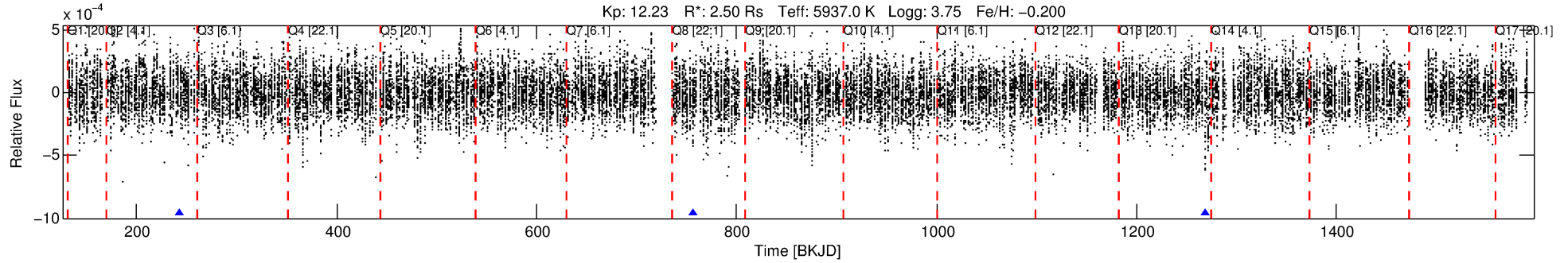
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005893839-04

No Significant Match Found

# DV One-Page Summary

KIC: 5893839 Candidate: 4 of 5 Period: 512.462 d



## DV Fit Results:

Period = 512.46215 [0.01856] d  
Epoch = 243.5723 [0.0461] BKJD  
Rp/R\* = 0.0384 [0.1032]  
a/R\* = 86.33 [55.57]  
b = 1.00 [0.09]  
Seff = 3.76 [2.16]  
Teq = 355 [51] K  
Rp = 10.50 [28.49] Re  
a = 1.3632 [0.4815] AU  
Ag = 1397.56 [7556.81] [0.18 $\sigma$ ]  
Teffp = 3356 [4515] K [0.66 $\sigma$ ]

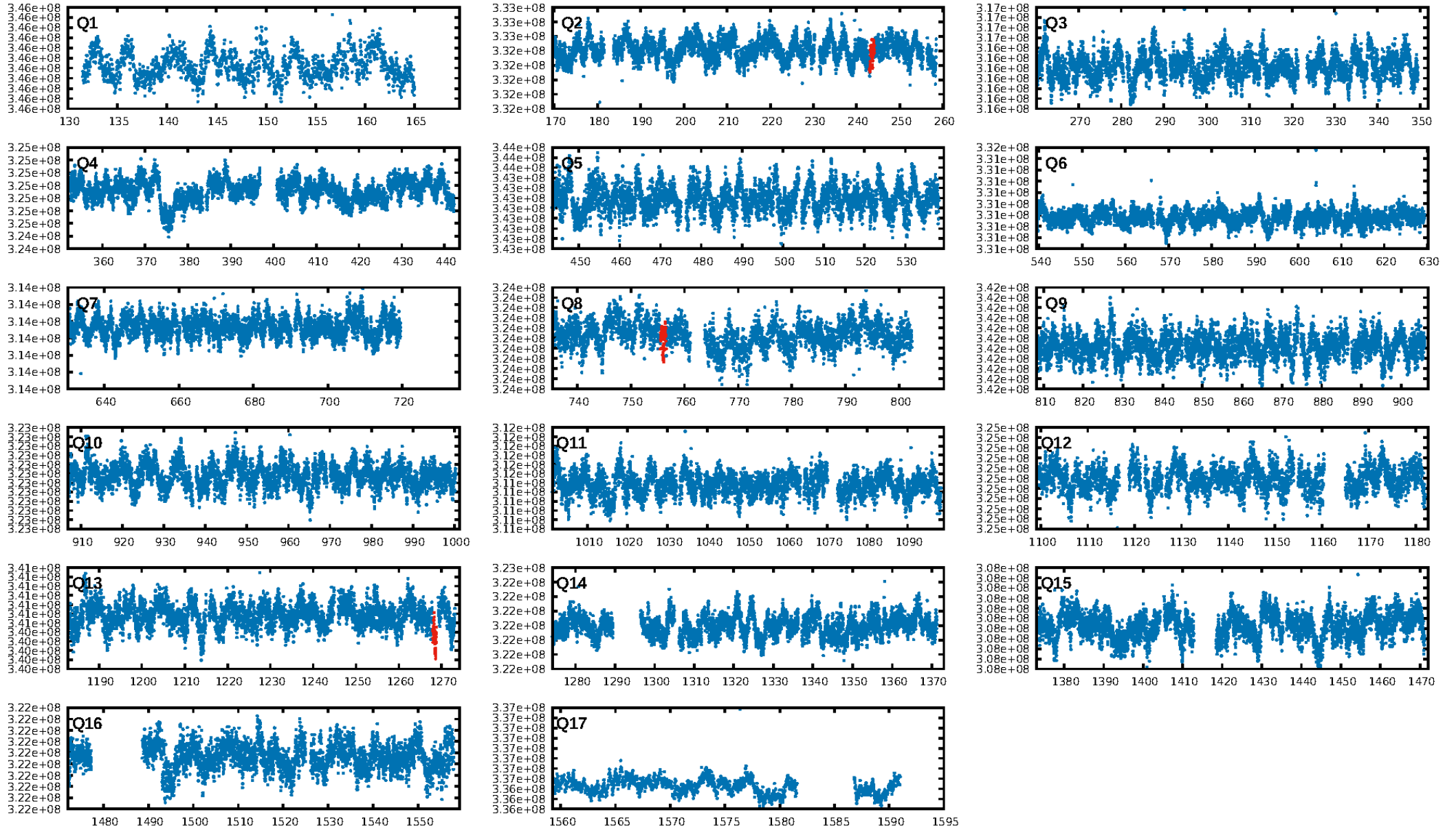
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [231.09 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 13.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.38e-07**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 9.424  
Centroid-sig: 56.0%  
Centroid-so: 0.199 arcsec [0.56 $\sigma$ ]  
**OotOffset-rm: 0.699 arcsec [4.71 $\sigma$ ]**  
**KicOffset-rm: 0.836 arcsec [5.62 $\sigma$ ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:00:37 Z

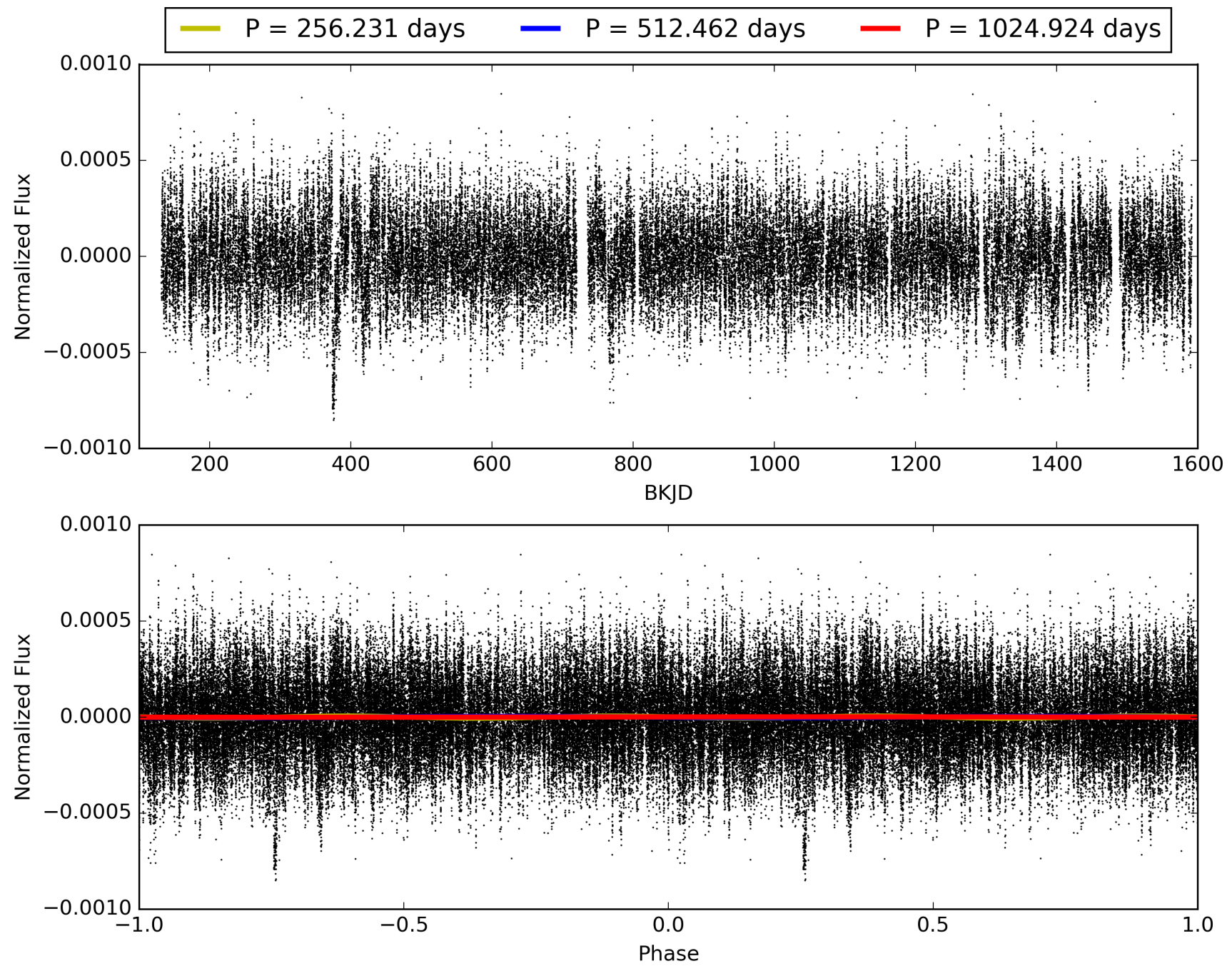
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005893839-04, PDC Light Curves



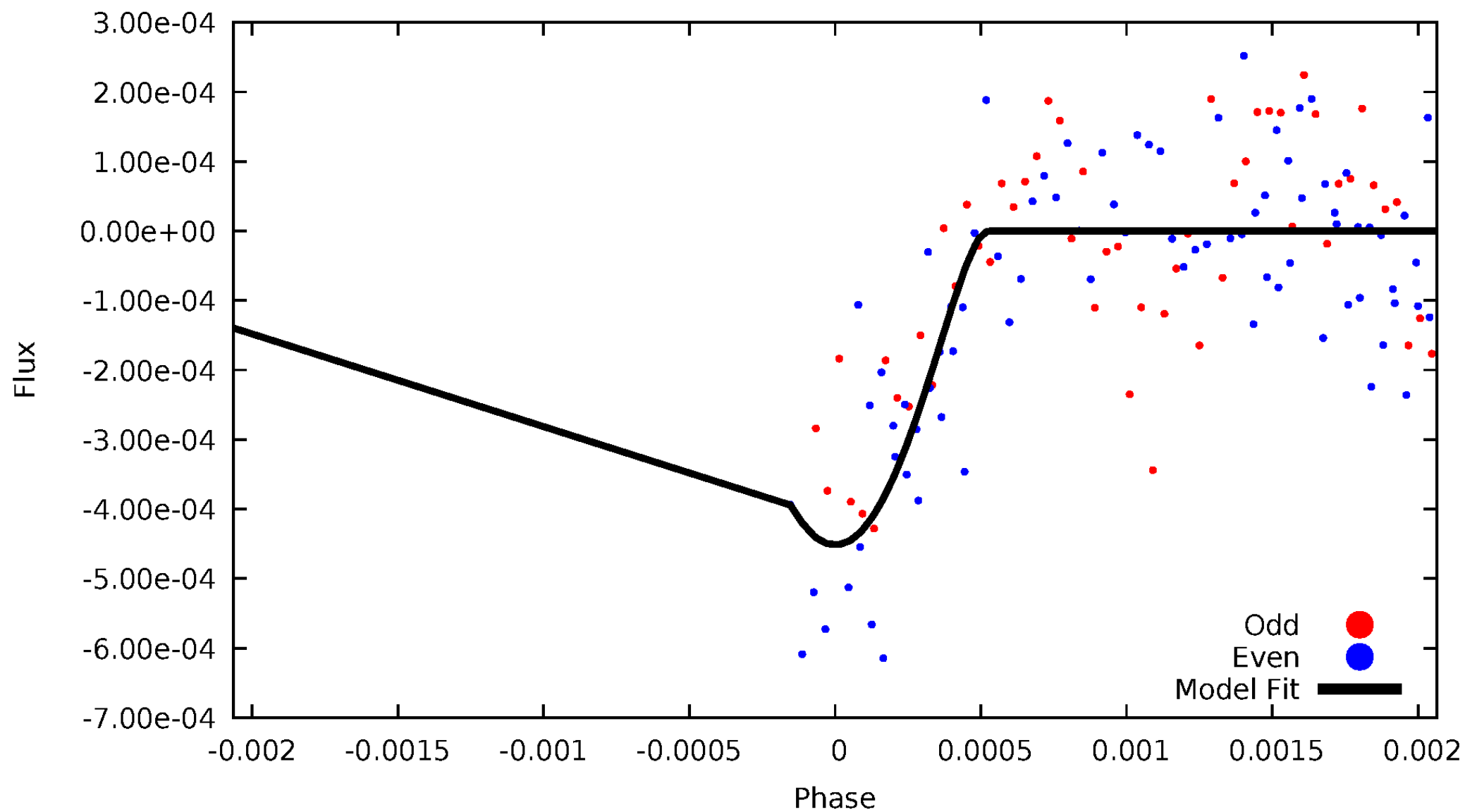


TCE 005893839-04



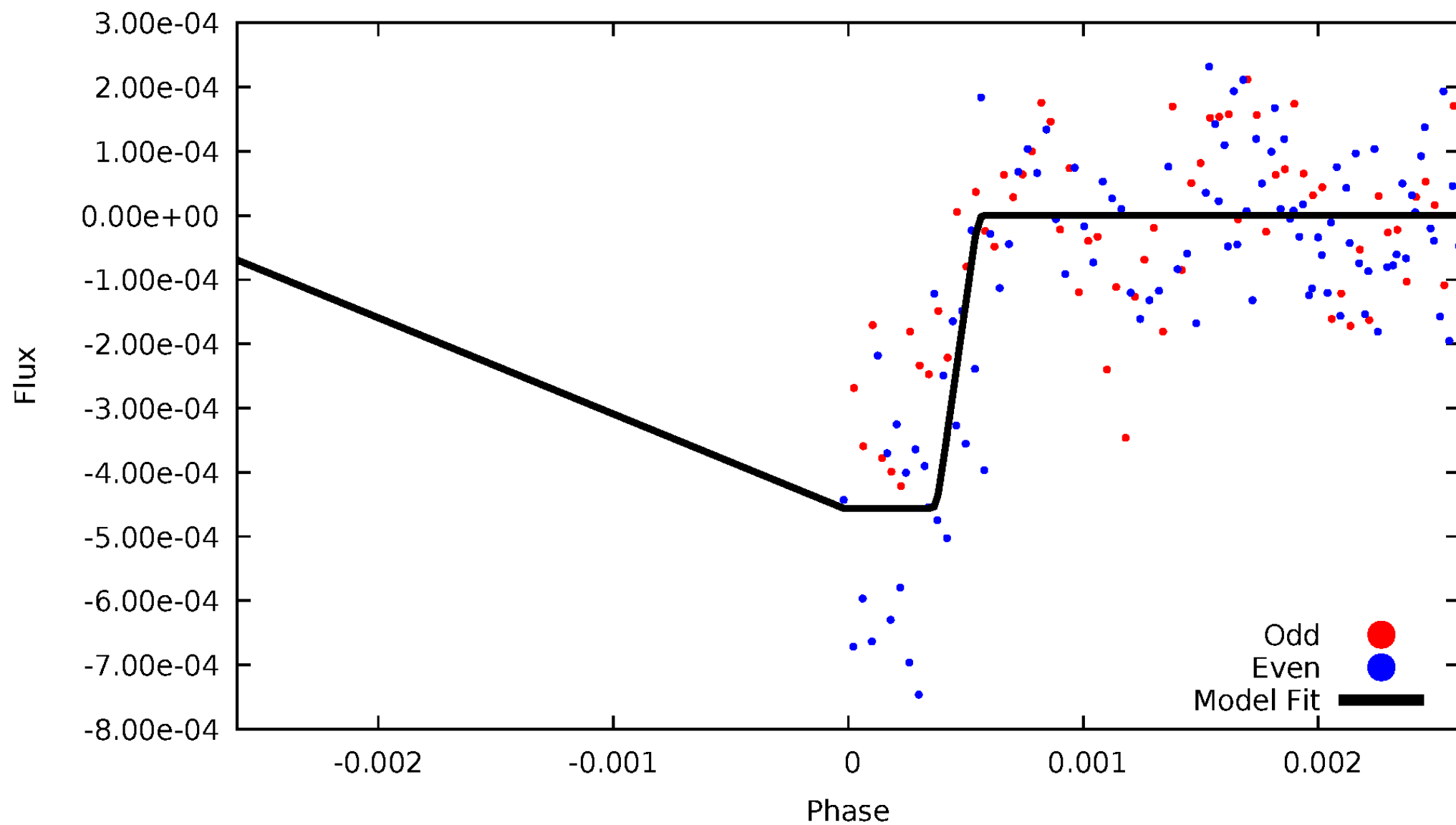
# DV Odd/Even

TCE 005893839-04



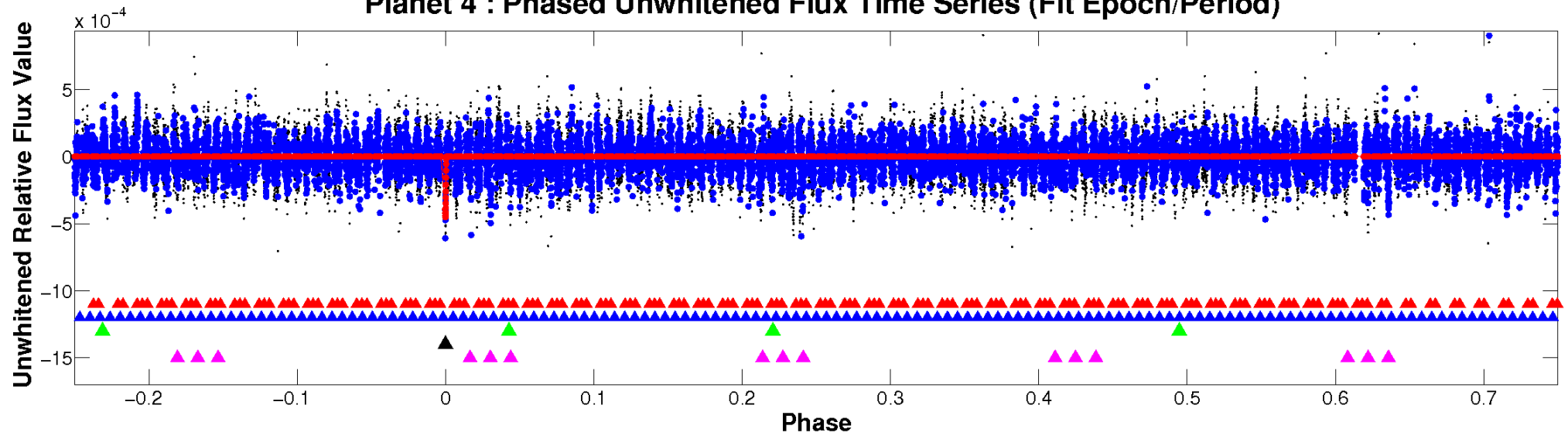
# ALT Odd/Even

TCE 005893839-04

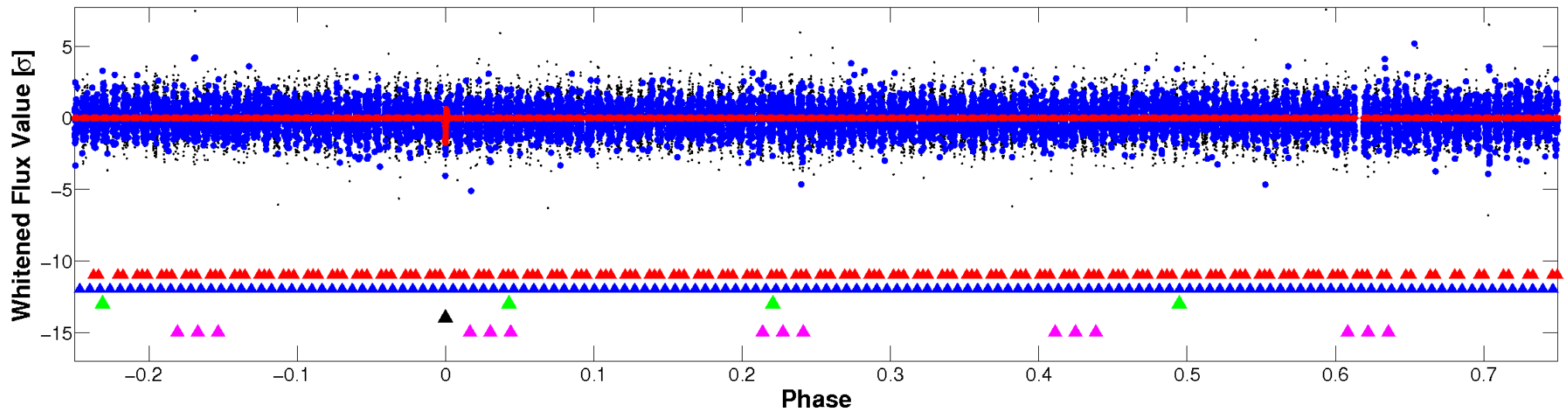


# Non-Whitened Vs. Whitened Light Curve

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

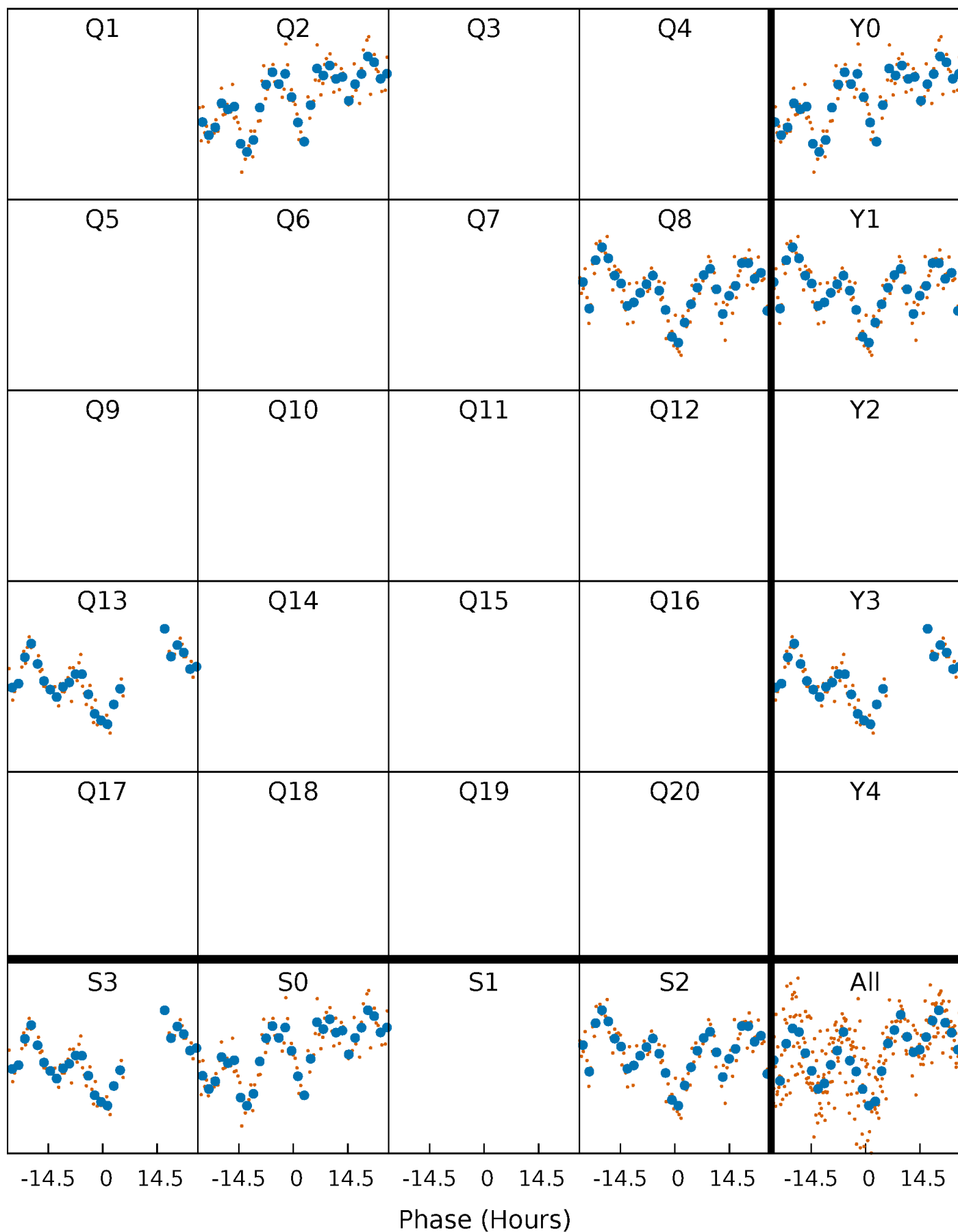


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



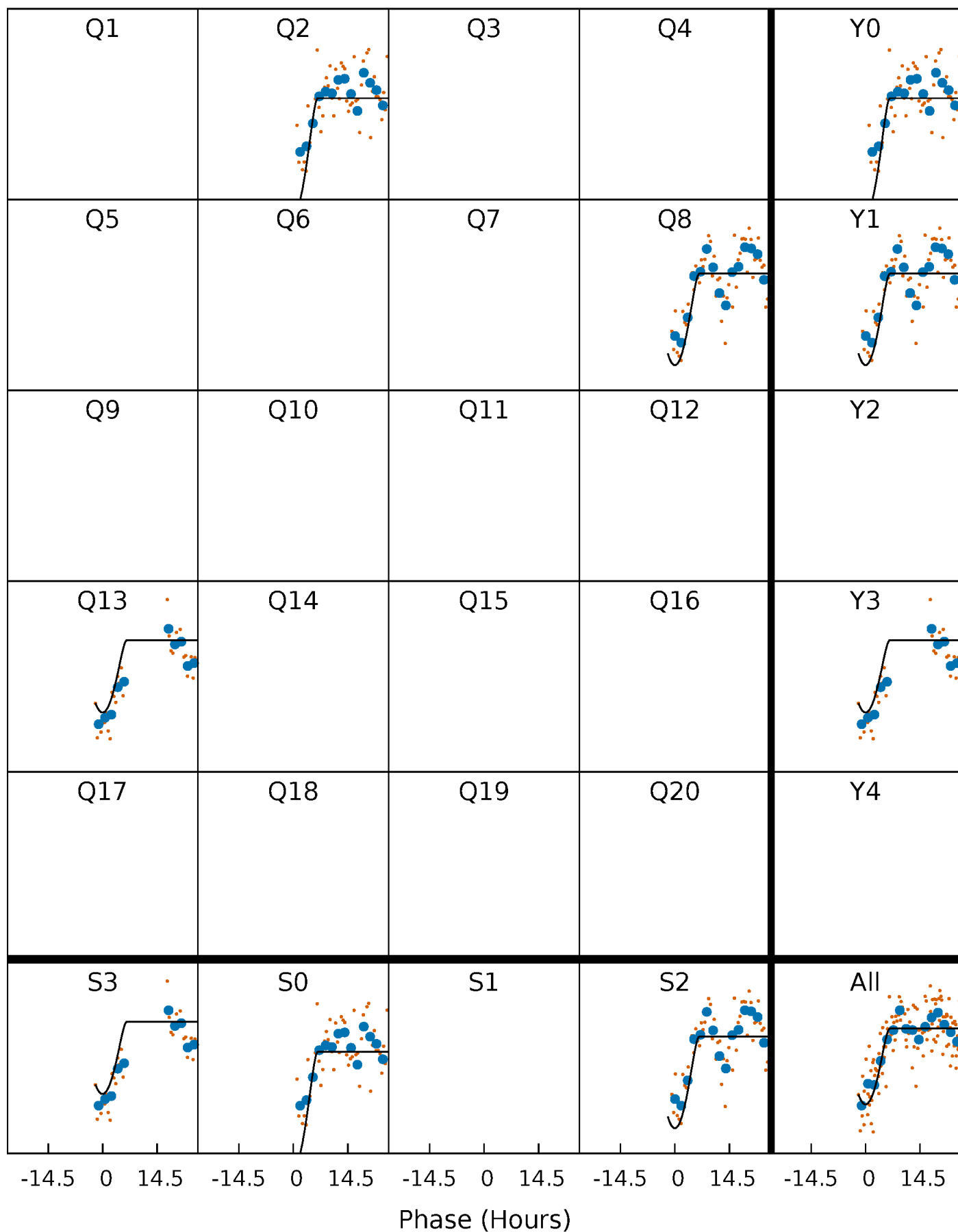
# PDC Quarter-Phased Transit Curves

TCE 005893839-04     $P=512.462148$  Days     $T_0=243.572315$  (BKJD)



# DV Quarter-Phased Transit Curves

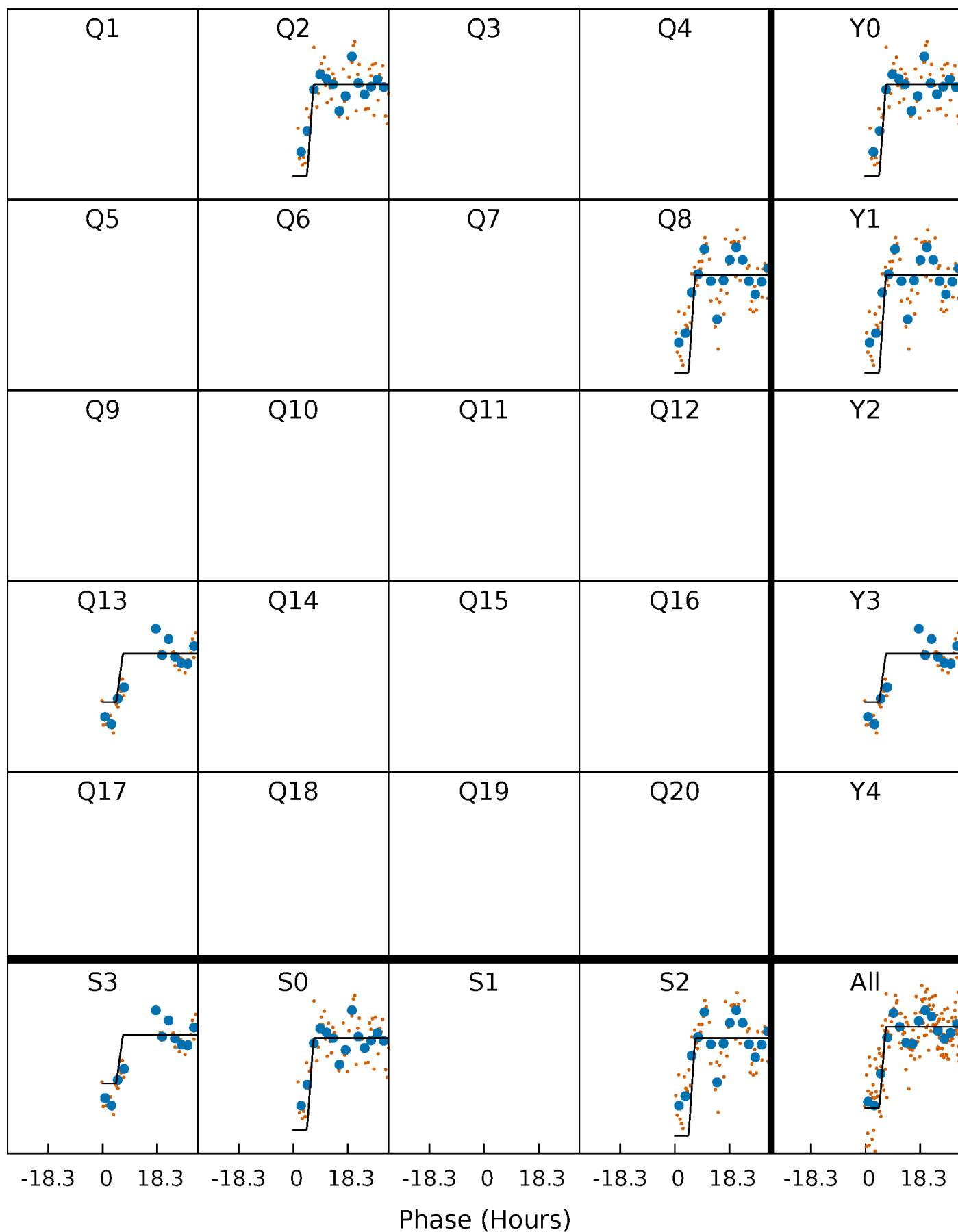
TCE 005893839-04     $P=512.462148$  Days     $T_0=243.572315$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

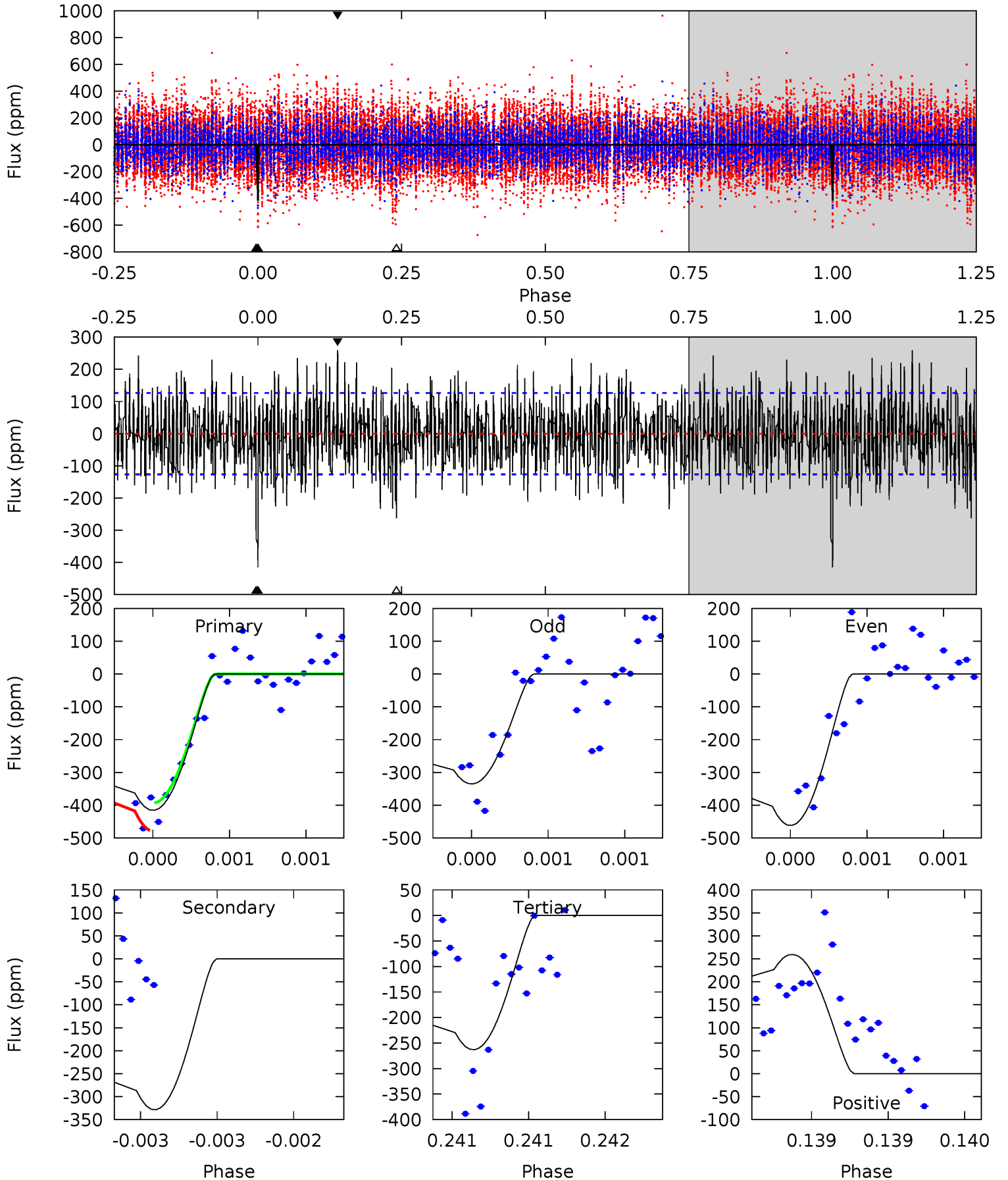
TCE 005893839-04 P=512.439629 Days  $T_0=243.548741$  (BKJD)



# DV Model-Shift Uniqueness Test

005893839-04, P = 512.462148 Days, E = 243.572315 Days

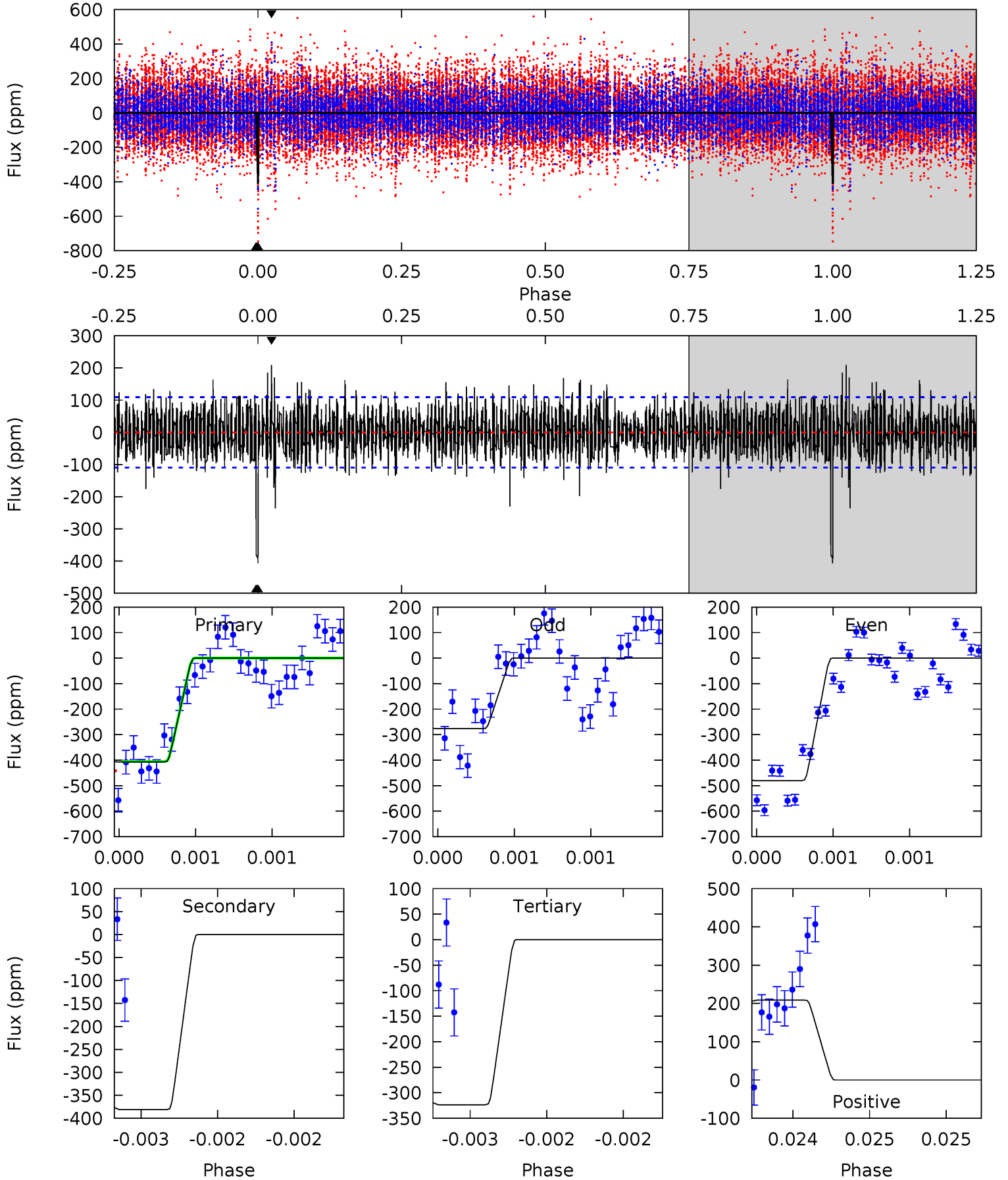
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	14.4	11.5	11.4	5.53	3.41	3.34	6.67	6.82	2.86	3.01	2.69	1.16	0.38	1.11



# Alt Model-Shift Uniqueness Test

005893839-04, P = 512.439629 Days, E = 243.548741 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
20.7	19.4	16.4	10.6	5.55	3.44	2.49	4.23	10.1	2.94	8.77	5.10	1.28	0.34	0.00



### Stellar Parameters For KIC 005893839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5937^{+260}_{-213}$	$3.750^{+0.315}_{-0.105}$	$-0.200^{+0.350}_{-0.250}$	$2.504^{+0.415}_{-0.967}$	$1.285^{+0.206}_{-0.284}$	$0.115^{+0.261}_{-0.037}$
	+4%/-4%	+8%/-3%	+175%/-125%	+17%/-39%	+16%/-22%	+227%/-32%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005893839-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-328 \pm 23$	$21.62^{+24.80}_{-14.80}$	$489^{+33}_{-51}$	$3310^{+1623}_{-631}$	$710^{+6082}_{-544}$
Alt.	$-381 \pm 20$	$20.18^{+19.92}_{-13.74}$	$489^{+34}_{-47}$	$3452^{+1898}_{-609}$	$960^{+8346}_{-722}$

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

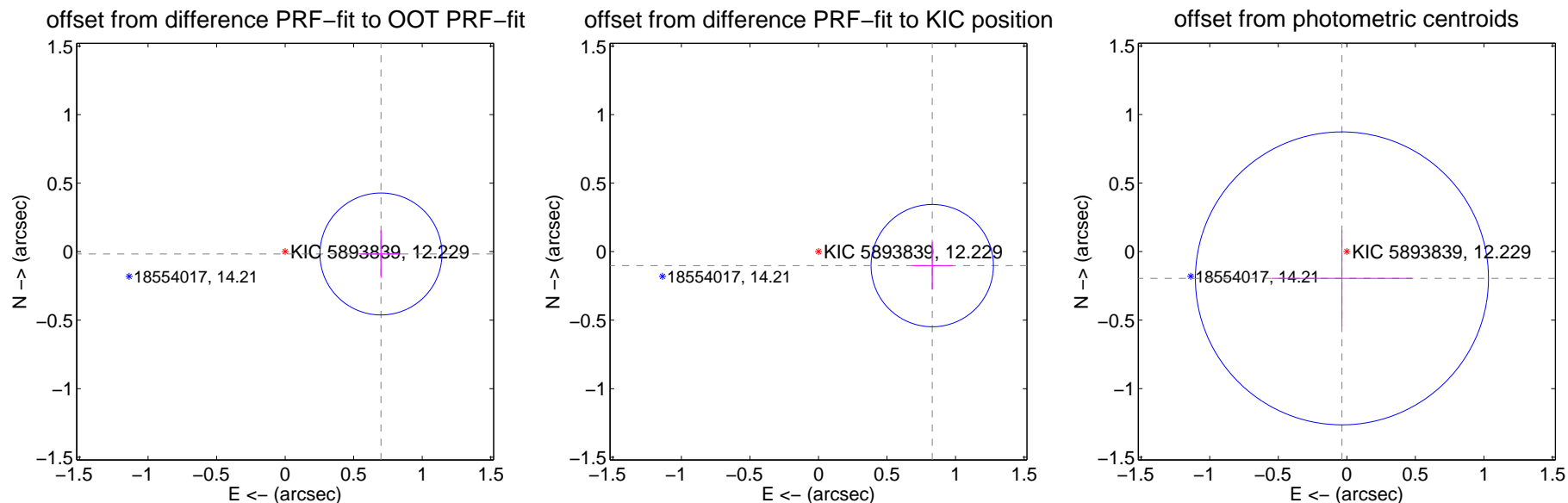
## DV Centroid Data

Supplemental centroid analysis for 005893839-04. Kepler magnitude: 12.23. Transit SNR 7.97

There are 1 quarters with good PRF difference image offsets

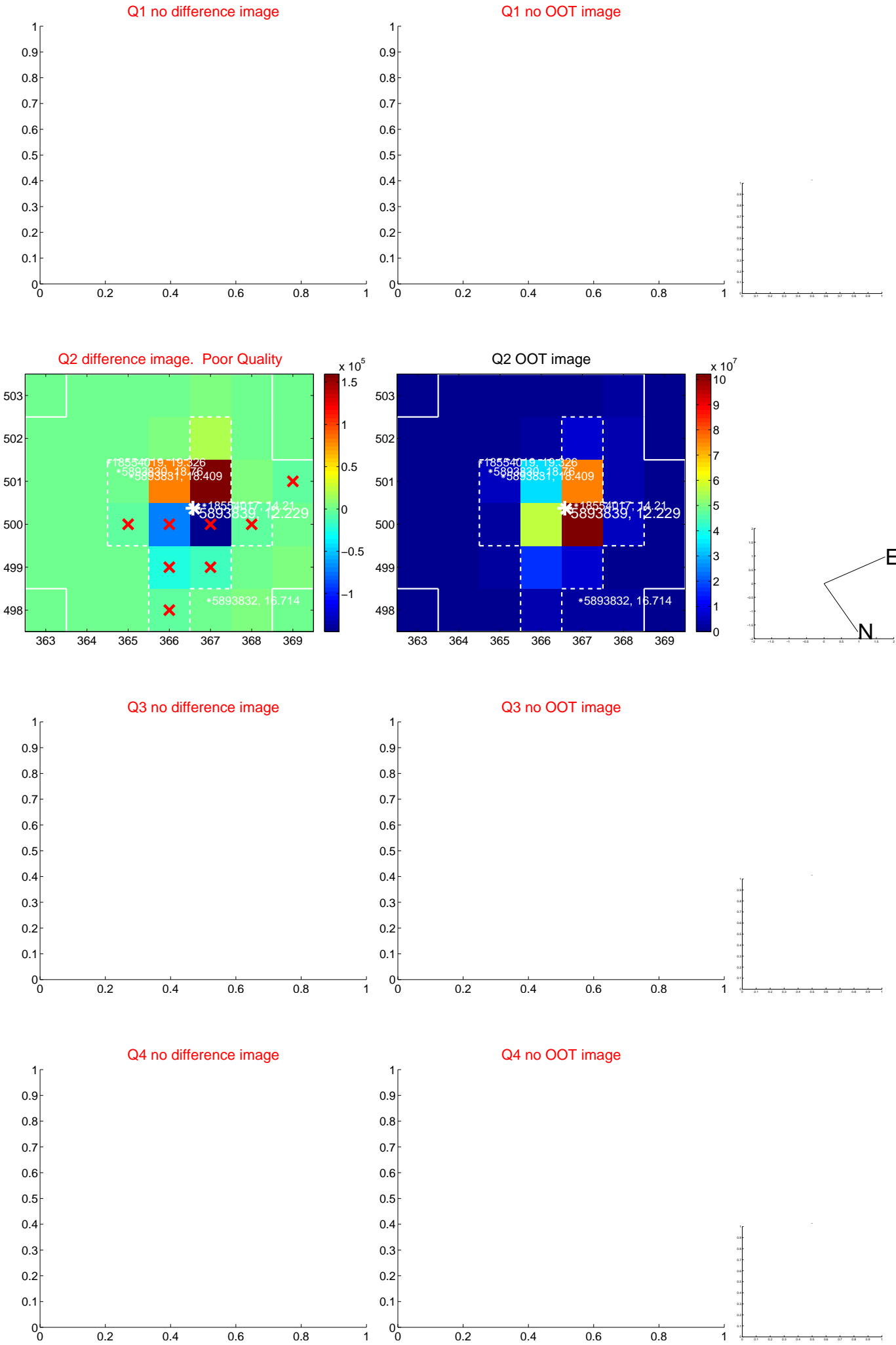
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.699 \pm 0.148$	4.71	$-0.699 \pm 0.148$	$-0.017 \pm 0.174$
PRF-fit source offset from KIC position	$0.836 \pm 0.149$	5.62	$-0.830 \pm 0.148$	$-0.102 \pm 0.174$
photometric centroid source offset	$0.20 \pm 0.36$	0.56	$0.04 \pm 0.51$	$-0.20 \pm 0.35$



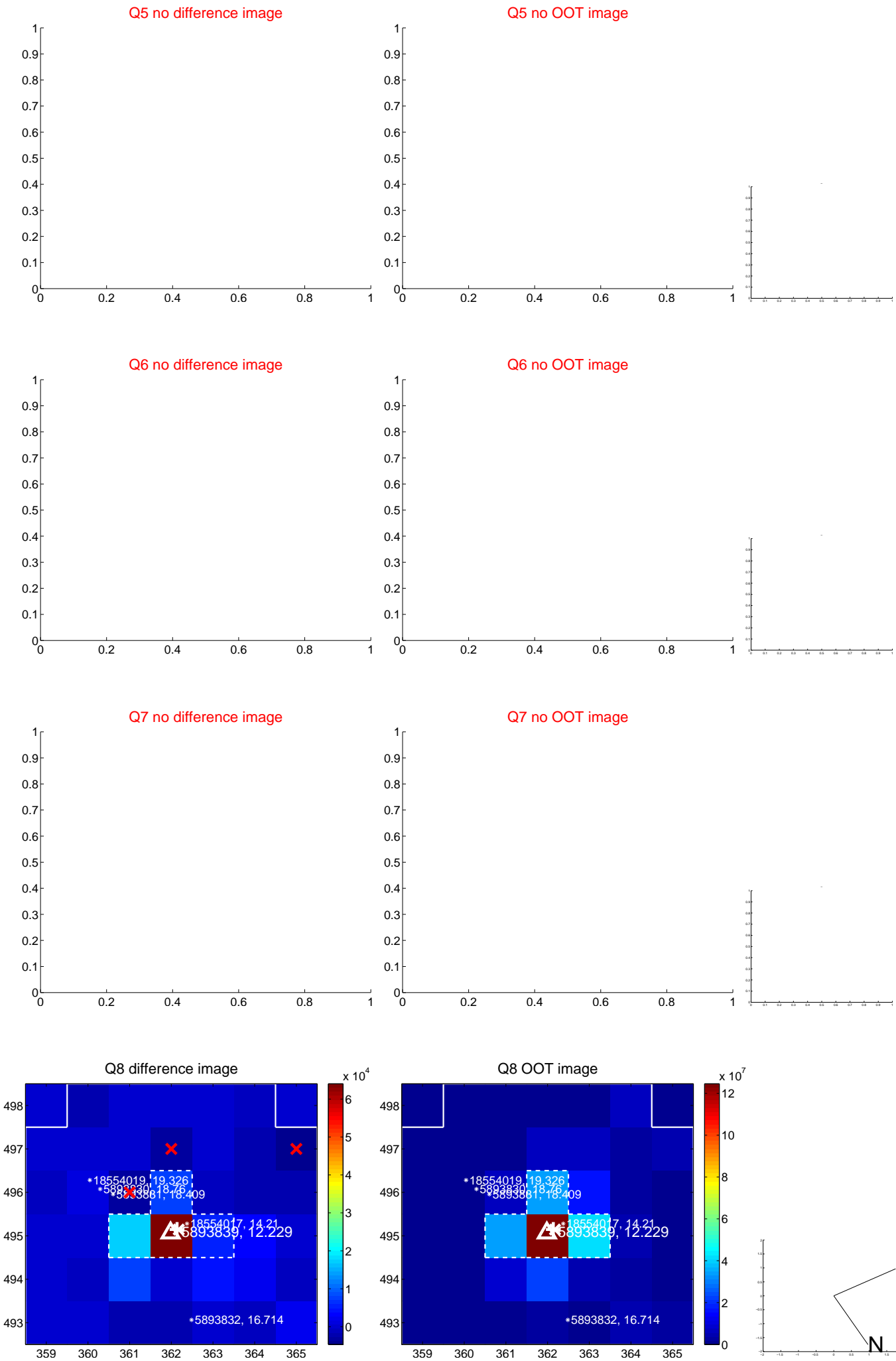
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

white ×: 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.



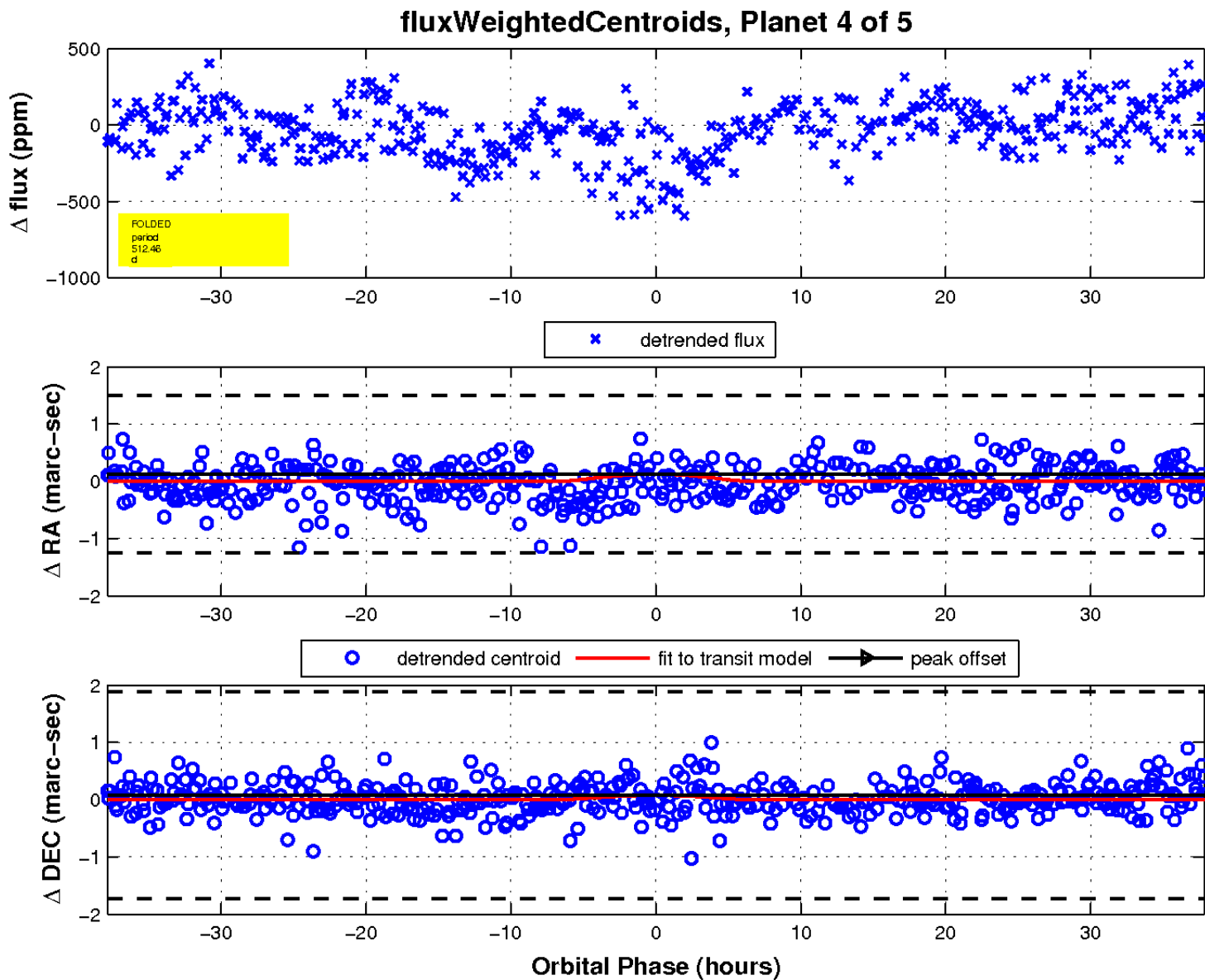
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

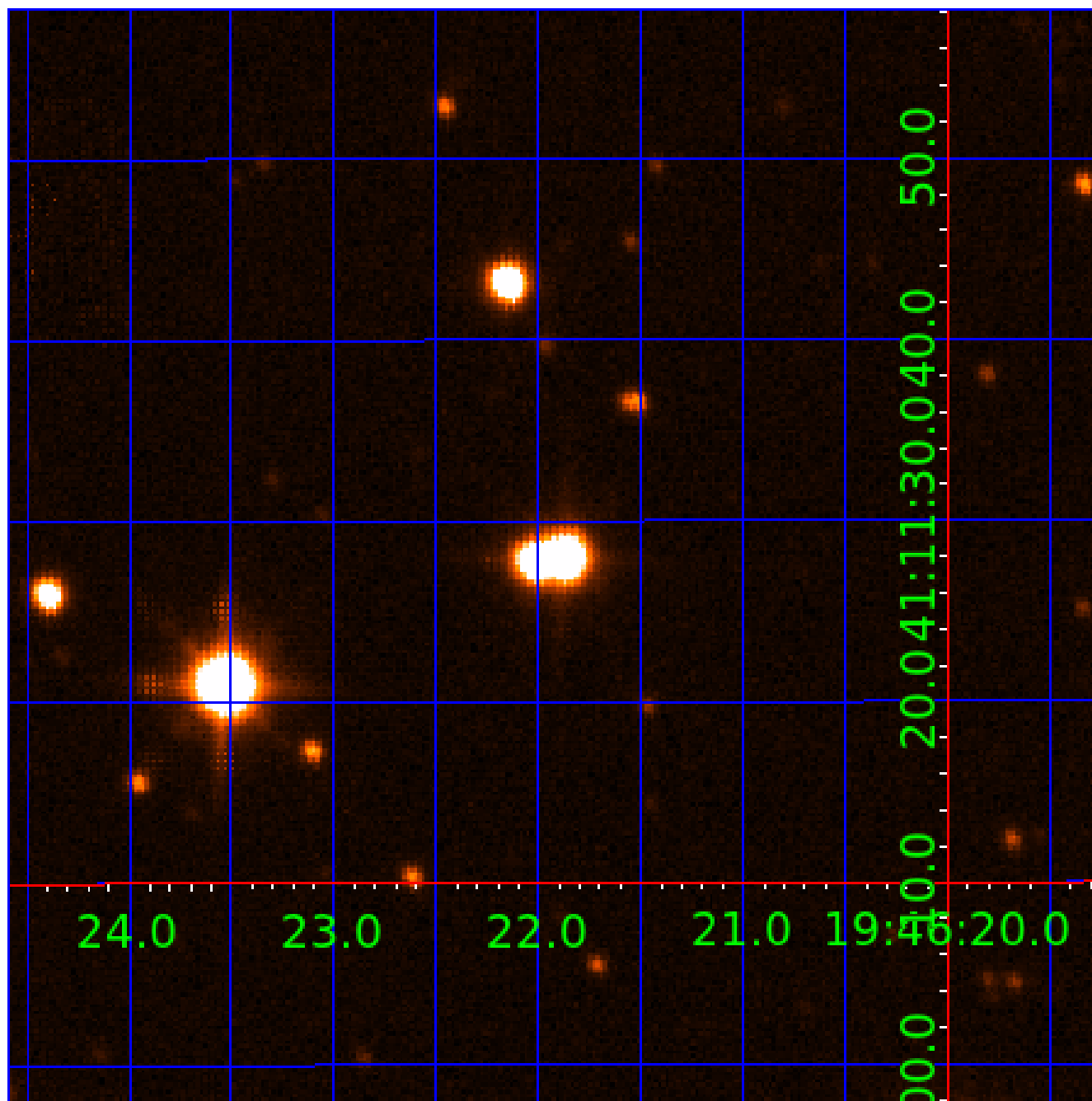


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005893839

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005893839-01	OBS	No	8.429861	137.045312	60.5	11.511	9.5	9.6	2.50	5937	2.29	897.76
005893839-02	OBS	No	3.485744	134.731934	34.0	12.713	9.6	8.2	2.50	5937	1.83	2914.24
005893839-03	OBS	No	372.036713	265.517987	281.2	7.183	9.8	7.9	2.50	5937	4.94	5.76
005893839-04	OBS	No	512.462148	243.572315	451.6	12.693	8.1	8.0	2.50	5937	10.50	3.76
005893839-05	OBS	No	101.087025	165.024097	194.6	14.168	7.7	9.6	2.50	5937	7.07	32.71

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005893839-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005893839-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005893839-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

**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.

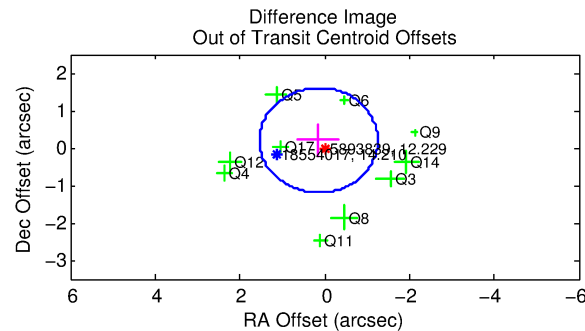
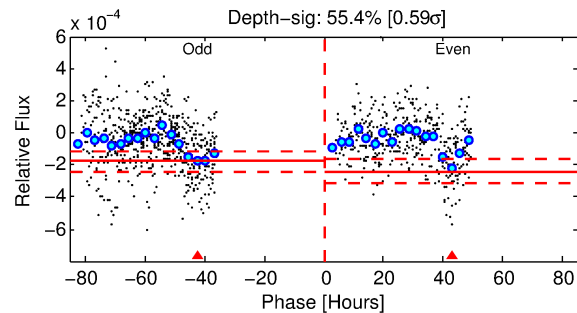
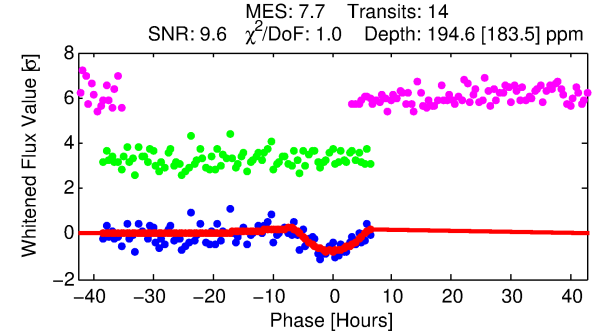
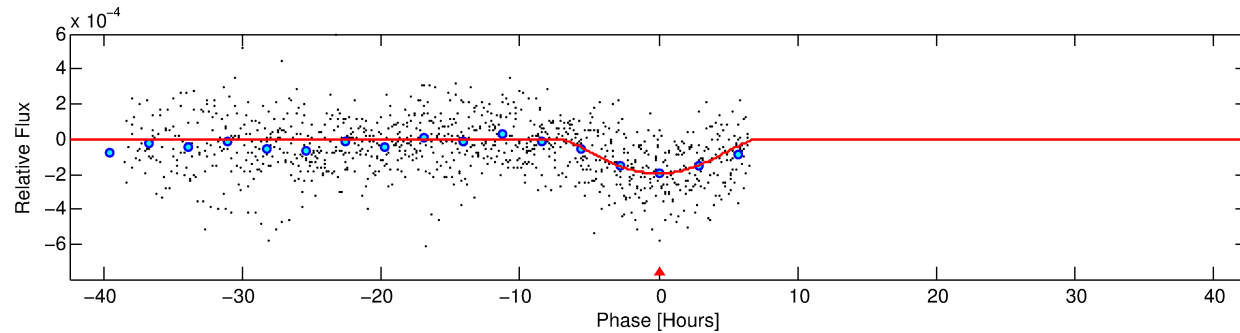
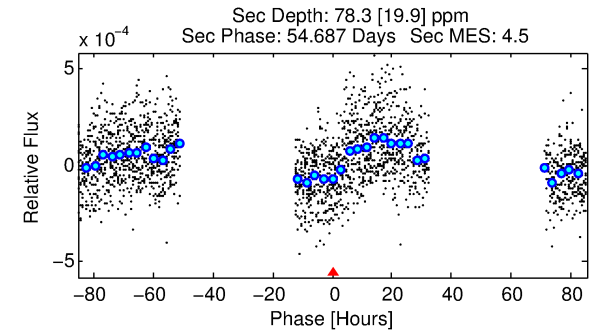
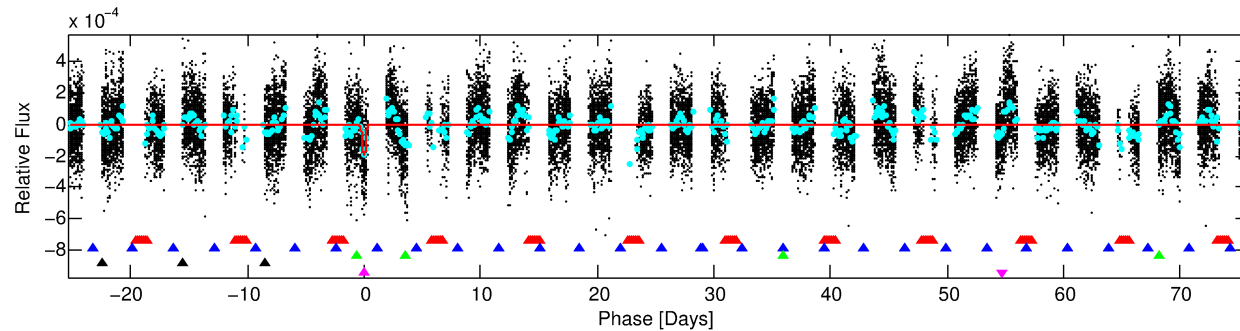
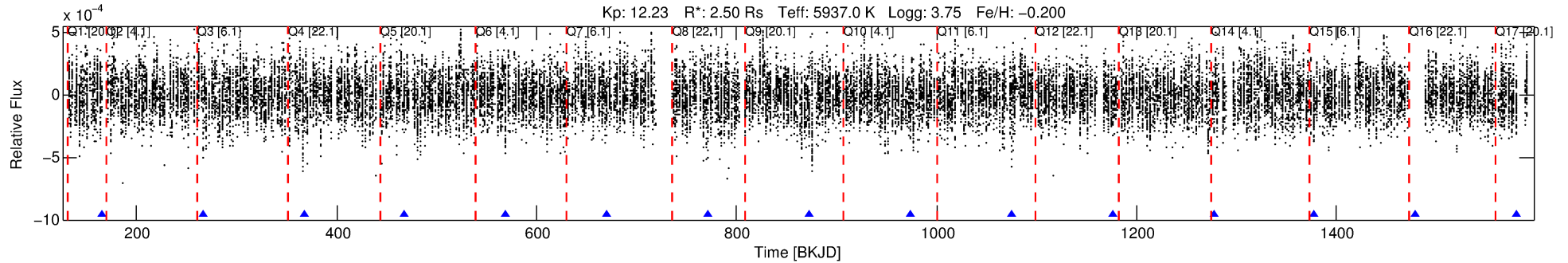
Ephemeris Match Information For 005893839-05

No Significant Match Found



# DV One-Page Summary

KIC: 5893839 Candidate: 5 of 5 Period: 101.087 d



## DV Fit Results:

Period = 101.08703 [0.00380] d  
Epoch = 165.0241 [0.0308] BKJD  
Rp/R\* = 0.0259 [0.0578]  
a/R\* = 12.52 [7.36]  
b = 1.00 [0.07]  
Seff = 32.71 [18.81]  
Teq = 610 [88] K  
Rp = 7.07 [16.03] Re  
a = 0.4619 [0.1631] AU  
Ag = 183.98 [829.73] [0.22σ]  
Teffp = 3472 [3889] K [0.74σ]

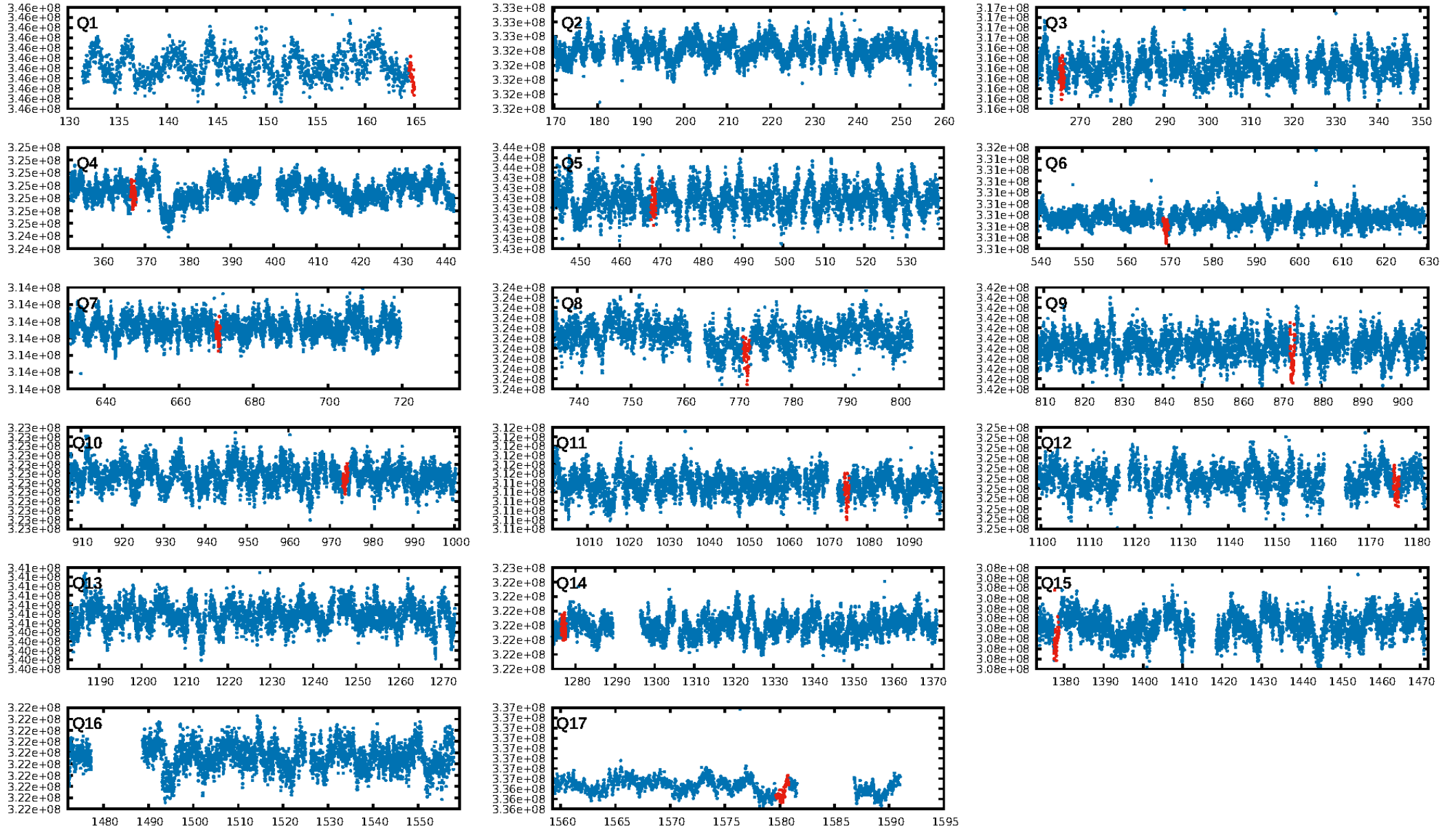
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [121.82σ]  
LongPeriod-sig: 100.0% [409.39σ]  
ModelChiSquare2-sig: 66.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 6.13e-08**  
RollingBand-fgt: 1.00 [12/12]  
GhostDiagnostic-chr: 53.73  
**Centroid-sig: 0.1%**  
Centroid-so: 1.459 arcsec [2.14σ]  
OotOffset-rm: 0.248 arcsec [0.53σ]  
KicOffset-rm: 0.159 arcsec [0.37σ]  
OotOffset-st: 2/2/3/3 [10]  
KicOffset-st: 2/2/3/3 [10]  
DiffImageQuality-fgm: 0.90 [9/10]  
DiffImageOverlap-fno: 0.00 [0/13]

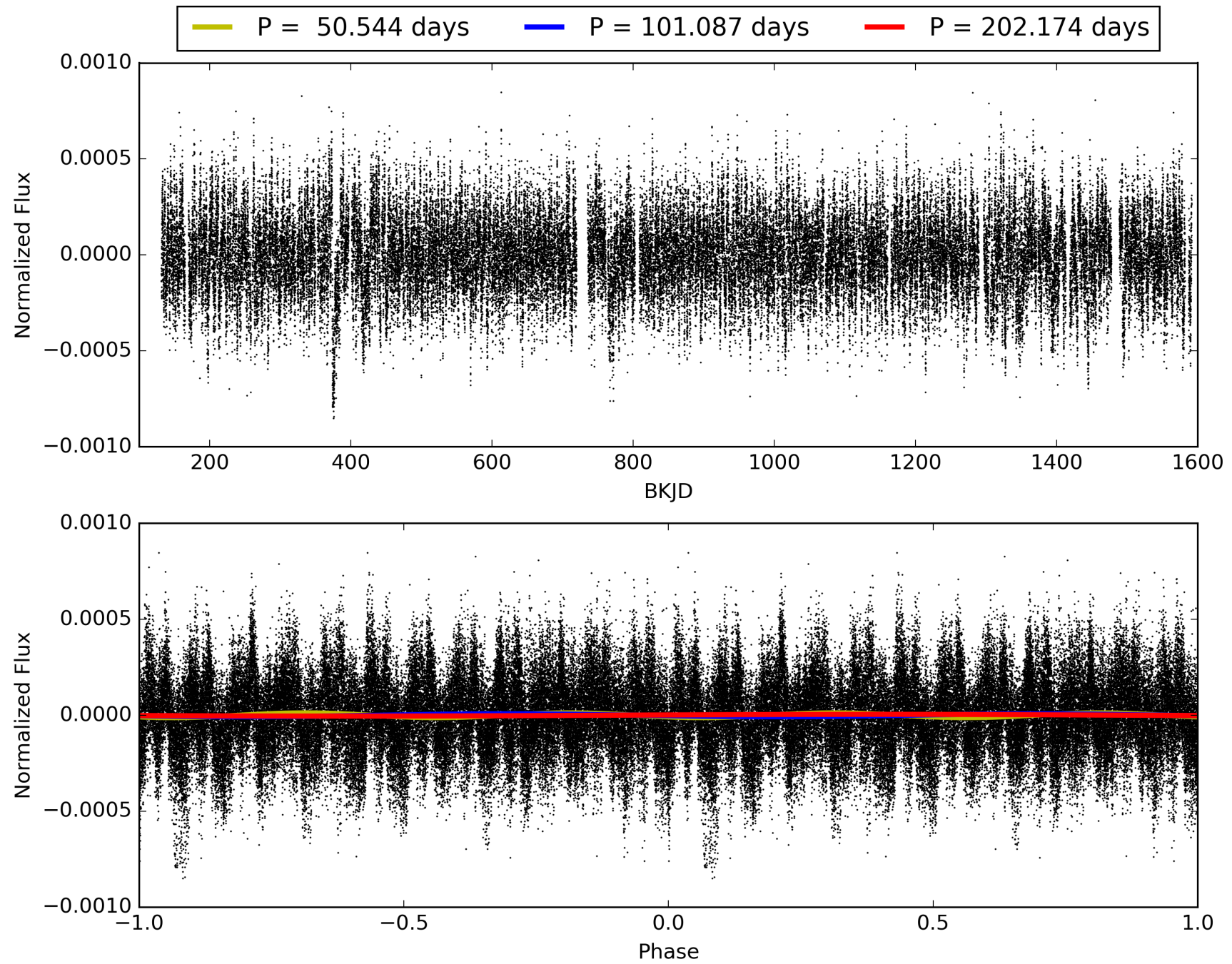
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:00:42 Z

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

# TCE 005893839-05, PDC Light Curves

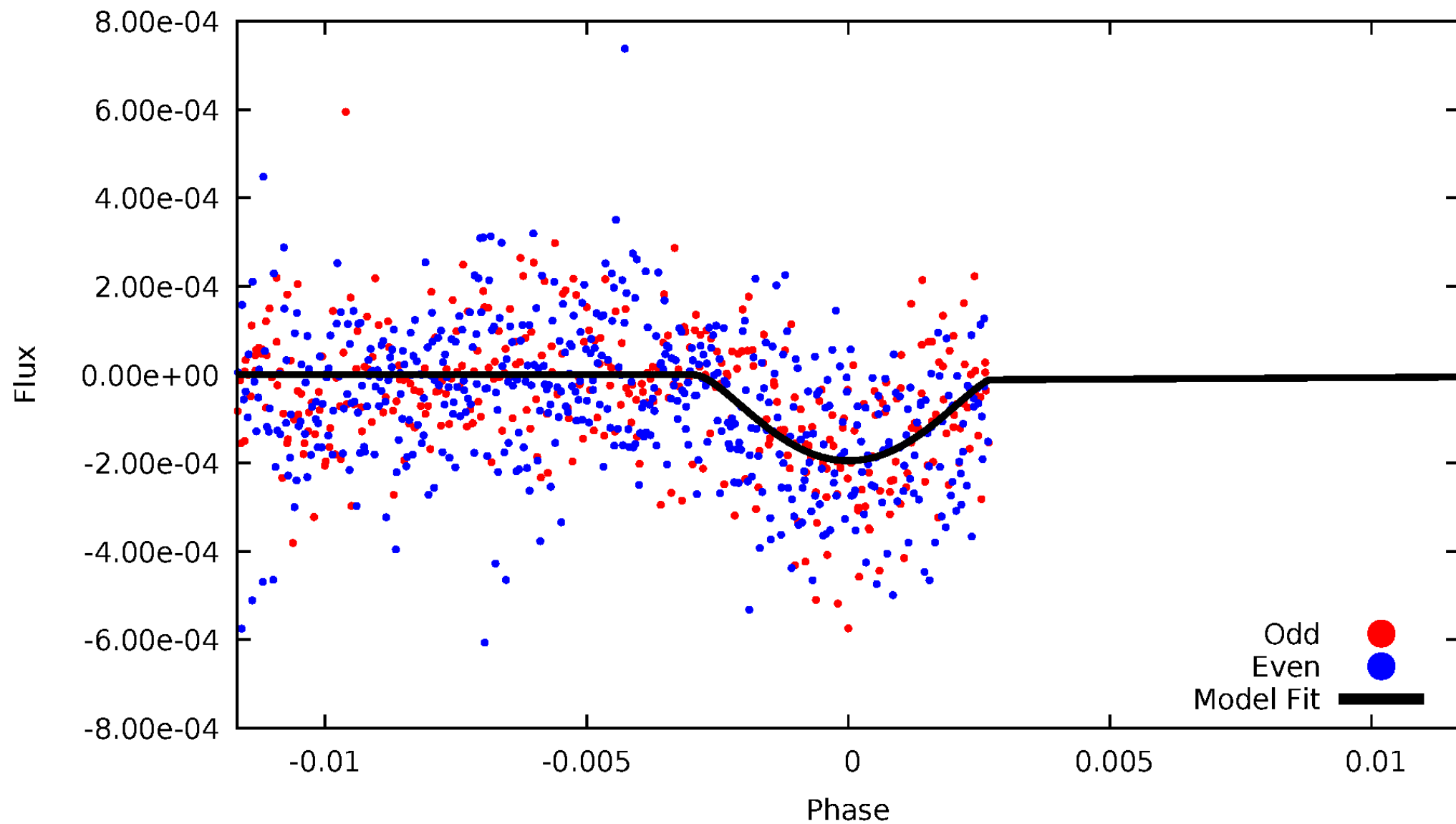


TCE 005893839-05



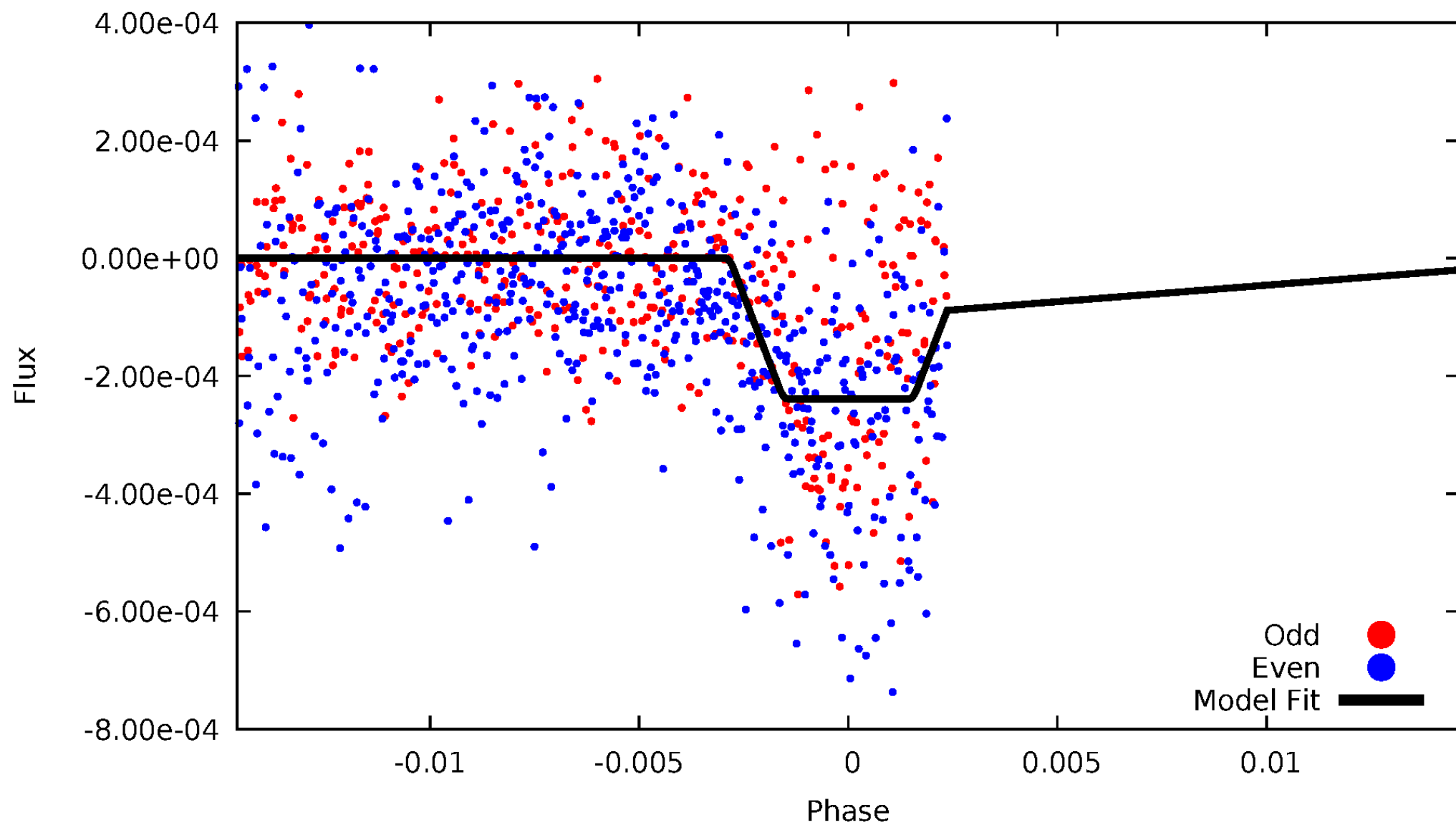
DV Odd/Even

TCE 005893839-05



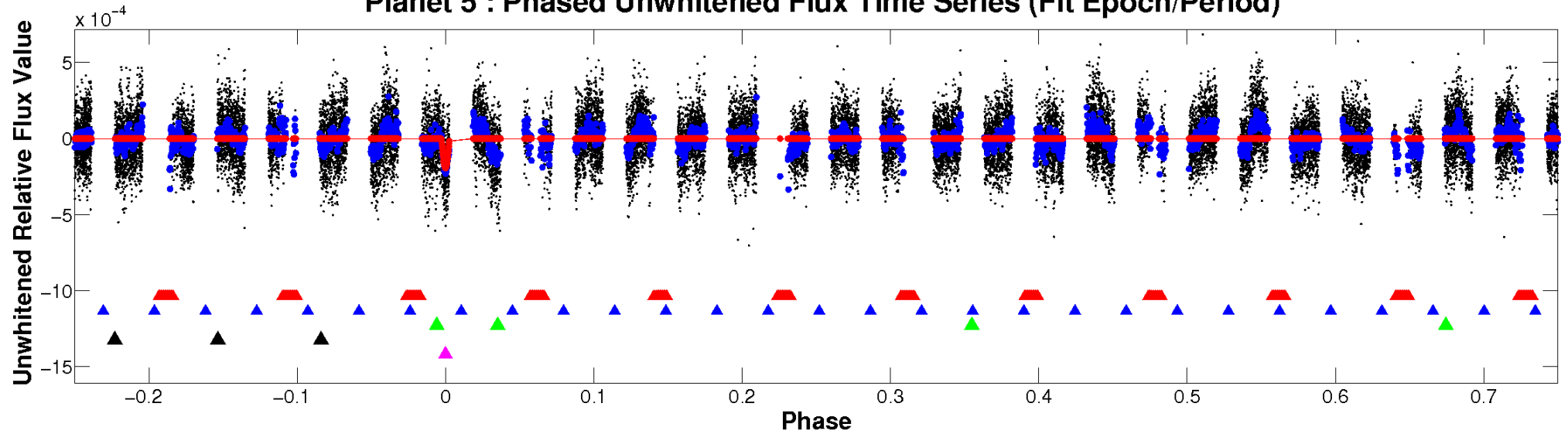
# ALT Odd/Even

TCE 005893839-05

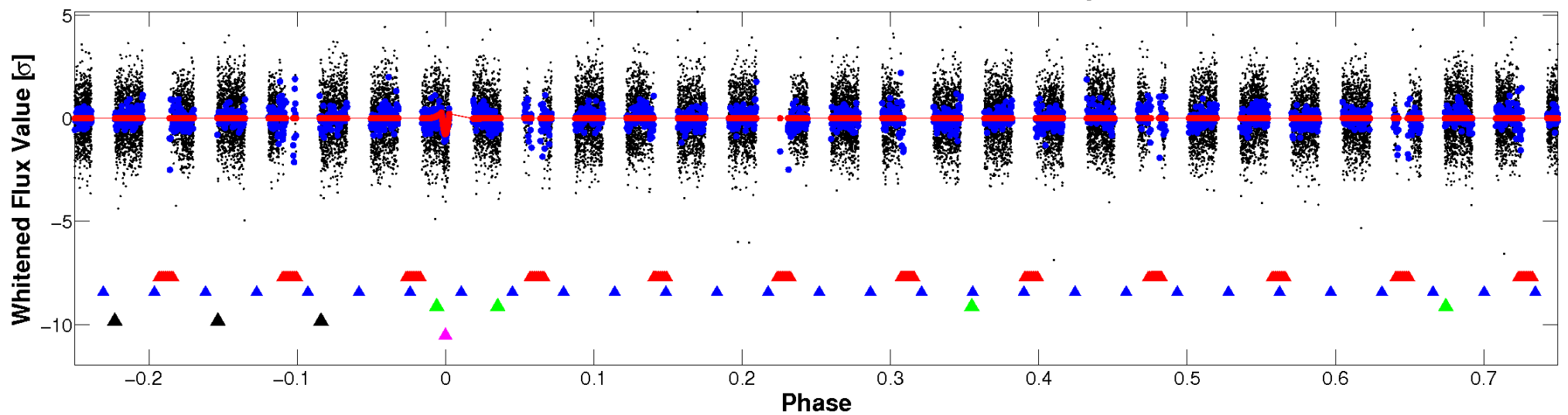


# Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



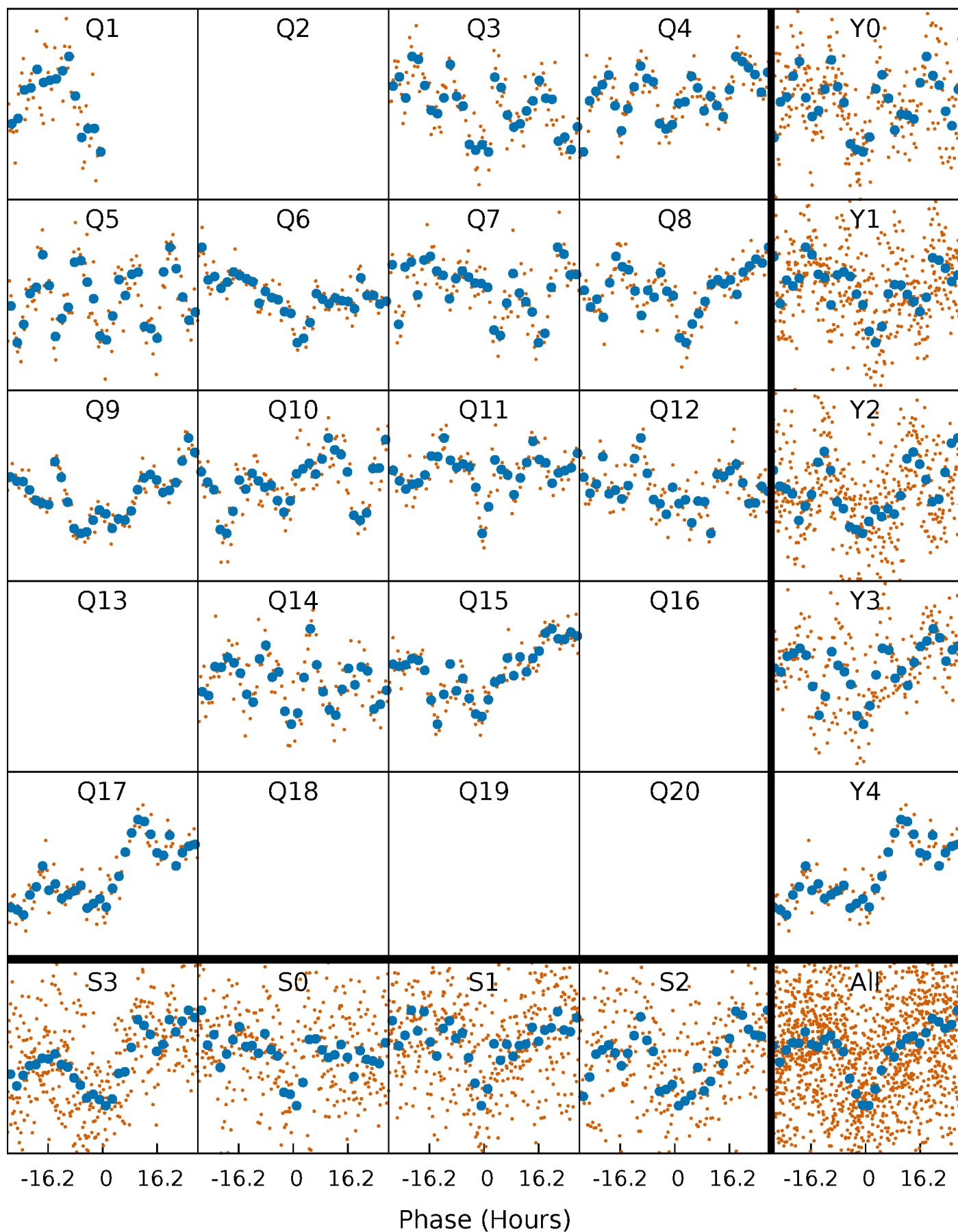
Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





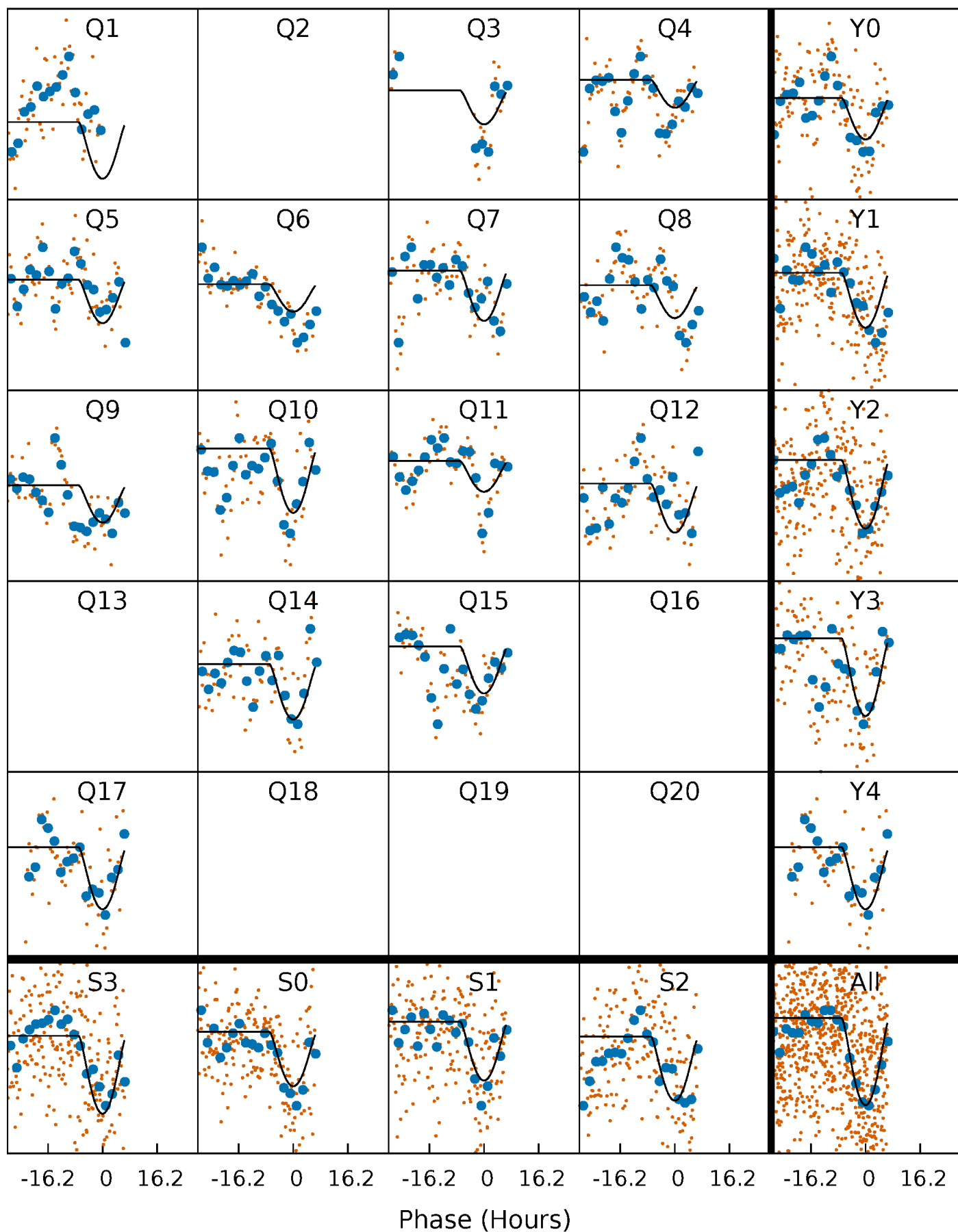
# PDC Quarter-Phased Transit Curves

TCE 005893839-05     $P=101.087025$  Days     $T_0=165.024097$  (BKJD)



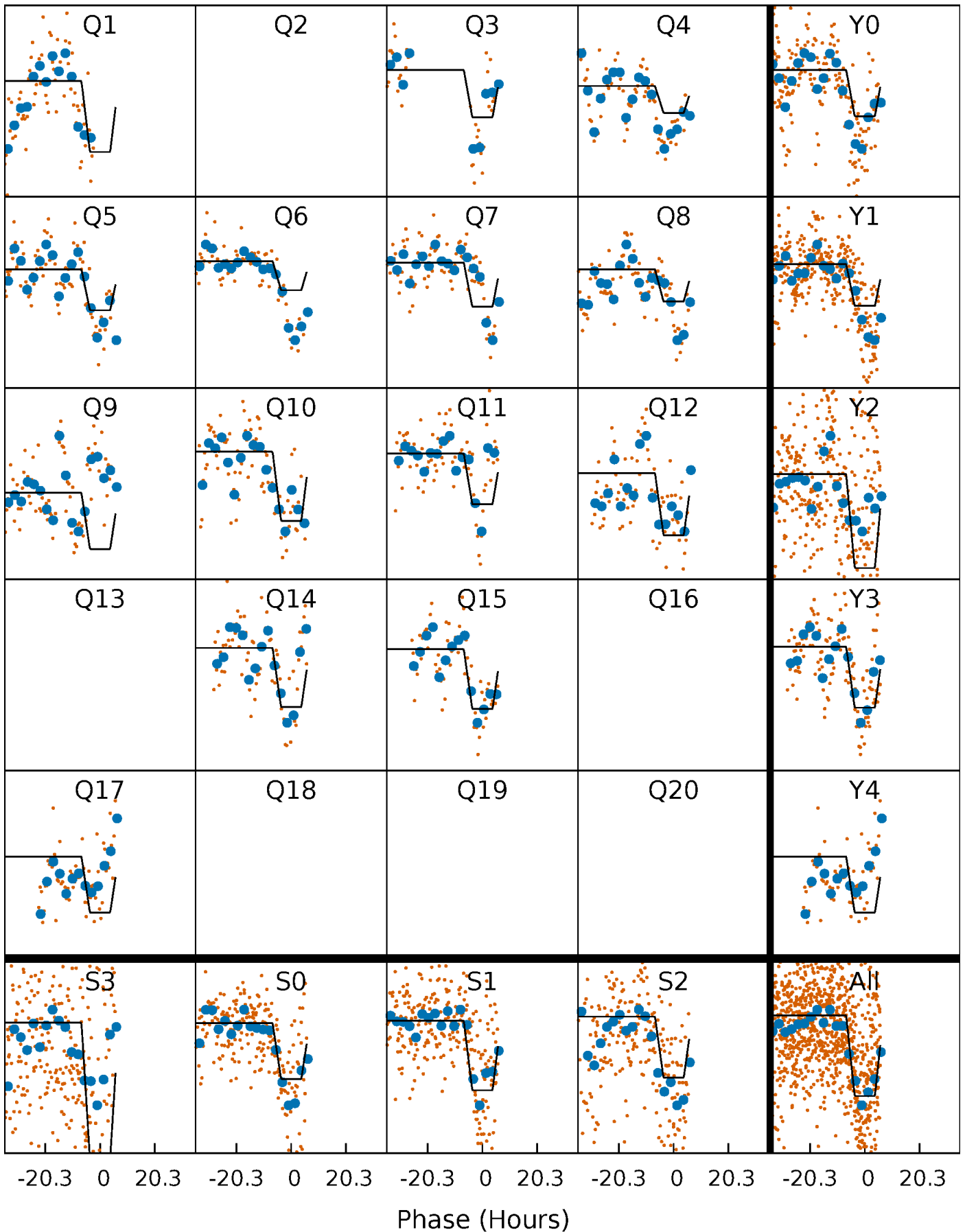
# DV Quarter-Phased Transit Curves

TCE 005893839-05     $P=101.087025$  Days     $T_0=165.024097$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

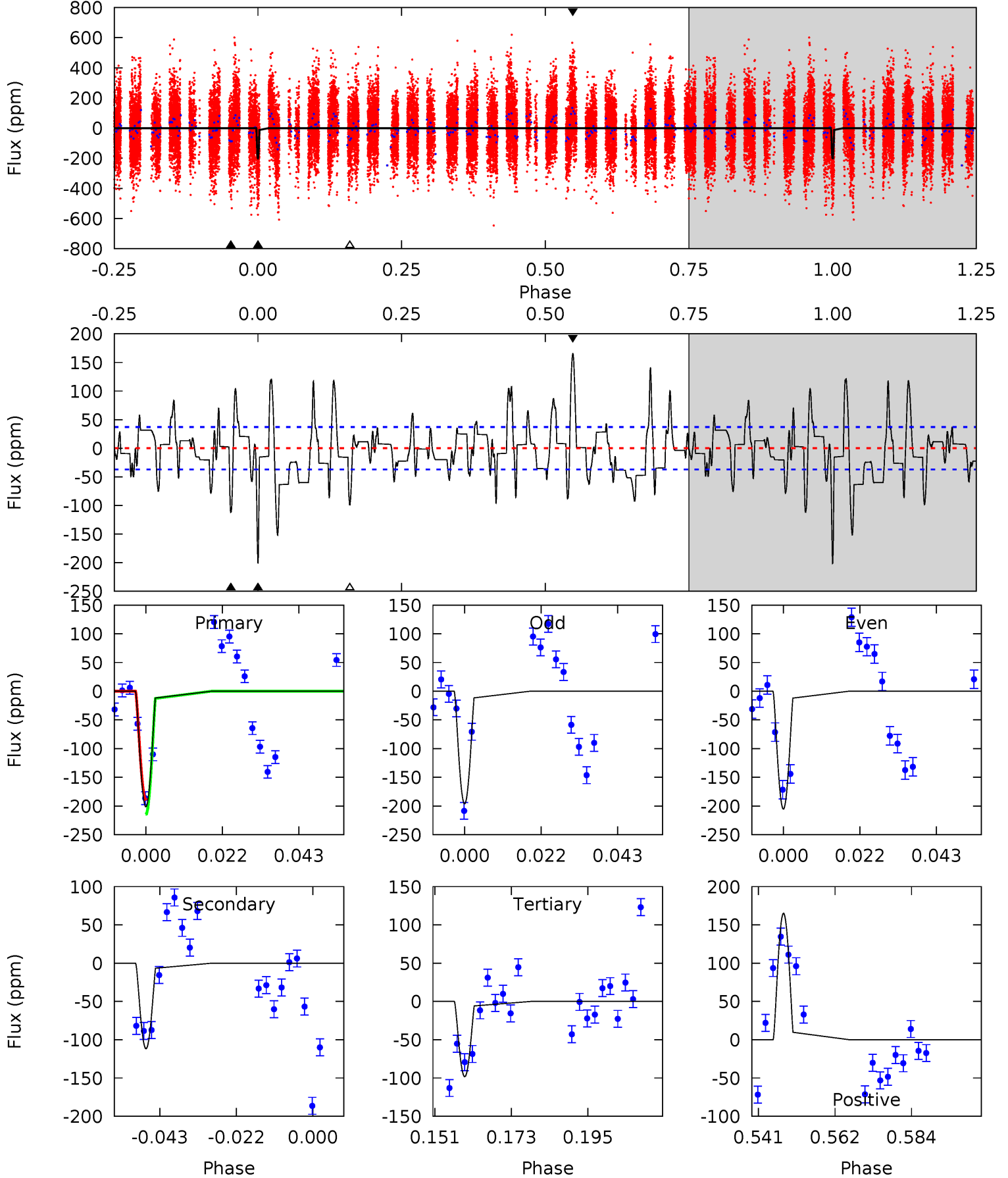
TCE 005893839-05     $P=101.083777$  Days     $T_0=165.087019$  (BKJD)



# DV Model-Shift Uniqueness Test

005893839-05, P = 101.087025 Days, E = 63.937072 Days

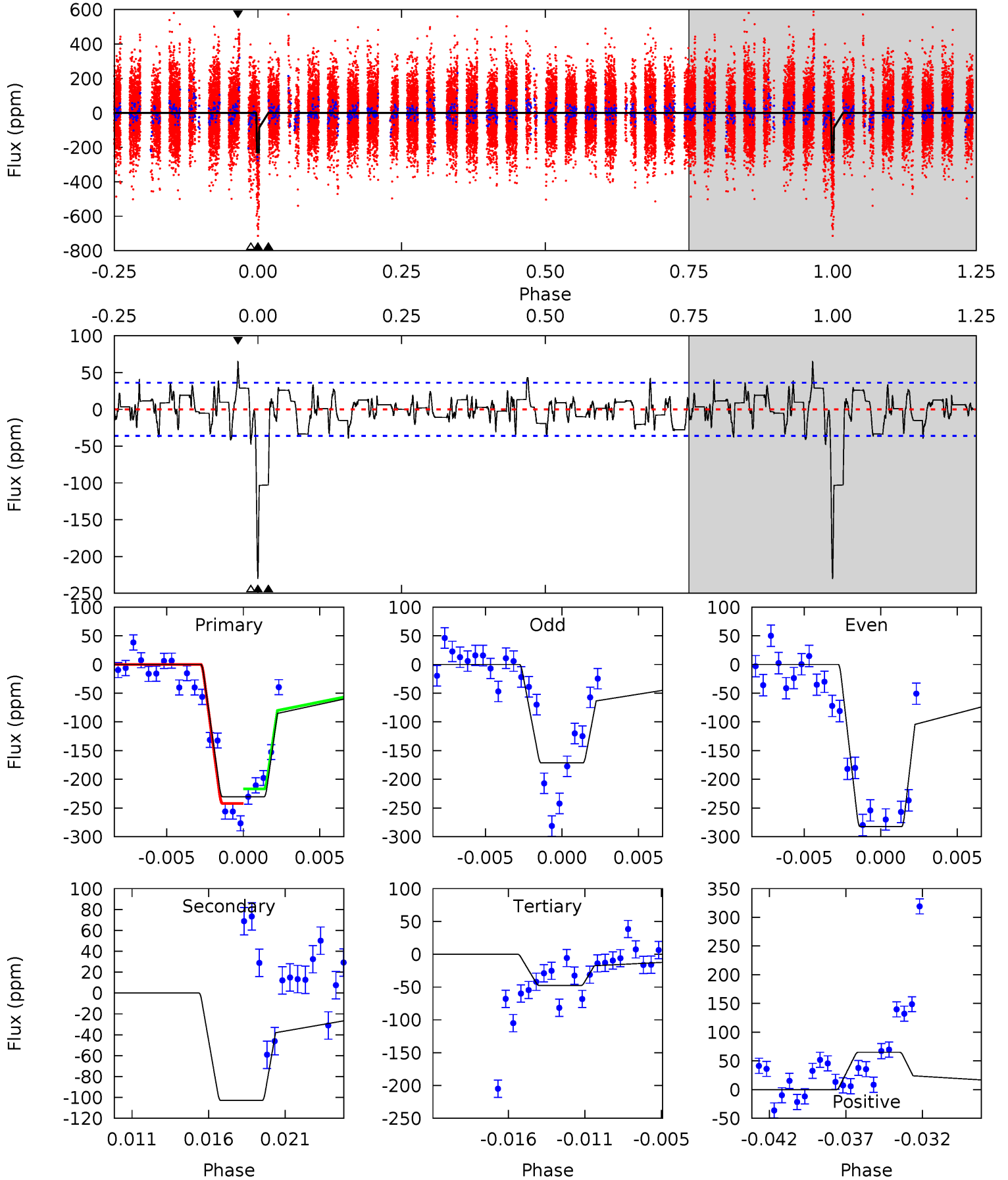
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	14.7	12.9	21.7	4.88	2.30	6.53	13.6	4.75	1.77	-7.03	0.58	1.01	0.45	1.65



# Alt Model-Shift Uniqueness Test

005893839-05, P = 101.083777 Days, E = 64.003242 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
32.8	14.6	6.77	9.23	5.15	2.79	2.24	26.0	23.5	7.86	5.40	7.87	1.01	0.22	1.79



### Stellar Parameters For KIC 005893839

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5937^{+260}_{-213}$	$3.750^{+0.315}_{-0.105}$	$-0.200^{+0.350}_{-0.250}$	$2.504^{+0.415}_{-0.967}$	$1.285^{+0.206}_{-0.284}$	$0.115^{+0.261}_{-0.037}$
	+4%/-4%	+8%/-3%	+175%/-125%	+17%/-39%	+16%/-22%	+227%/-32%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 005893839-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-112 \pm 8$	$12.83^{+12.89}_{-8.22}$	$837^{+60}_{-72}$	$3278^{+1470}_{-558}$	$81^{+580}_{-61}$
Alt.	$-103 \pm 7$	$11.57^{+12.58}_{-7.88}$	$840^{+60}_{-80}$	$3363^{+1822}_{-644}$	$92^{+817}_{-71}$

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



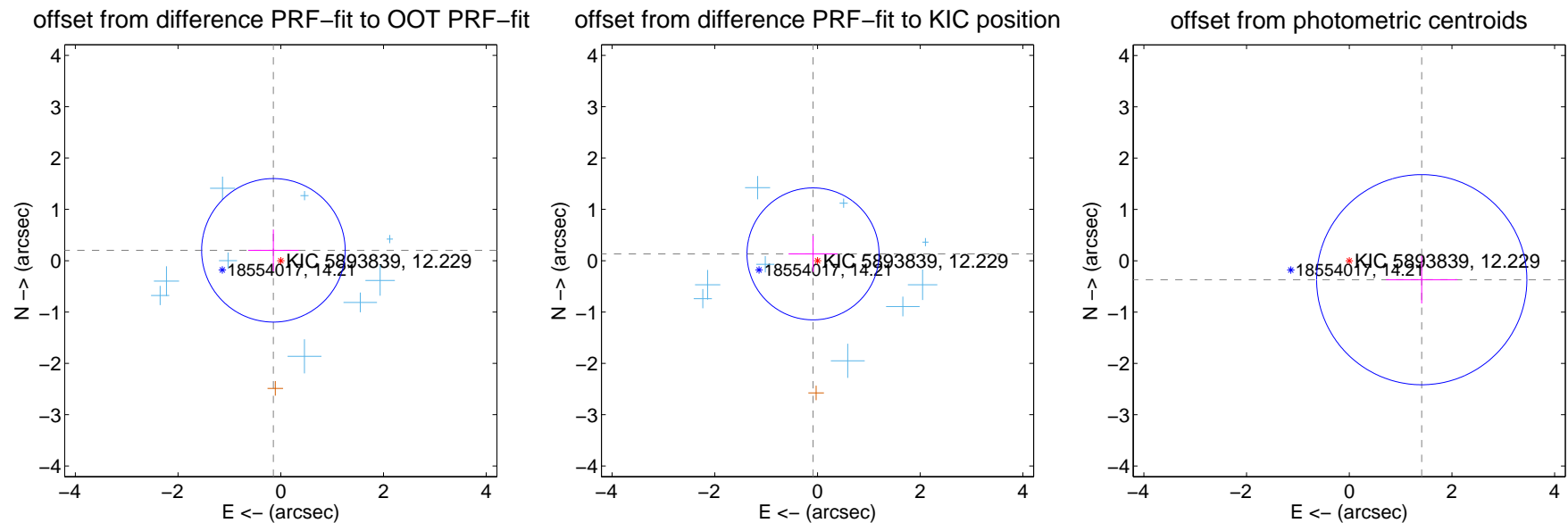
## DV Centroid Data

Supplemental centroid analysis for 005893839-05. Kepler magnitude: 12.23. Transit SNR 9.61

There are 9 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.248 \pm 0.466$	0.53	$0.144 \pm 0.493$	$0.202 \pm 0.407$
PRF-fit source offset from KIC position	$0.159 \pm 0.428$	0.37	$0.087 \pm 0.476$	$0.133 \pm 0.352$
photometric centroid source offset	$1.46 \pm 0.68$	2.14	$-1.41 \pm 0.69$	$-0.37 \pm 0.46$



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 are from the UKIRT catalog.

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

Q1 no difference image



Q1 no OOT image



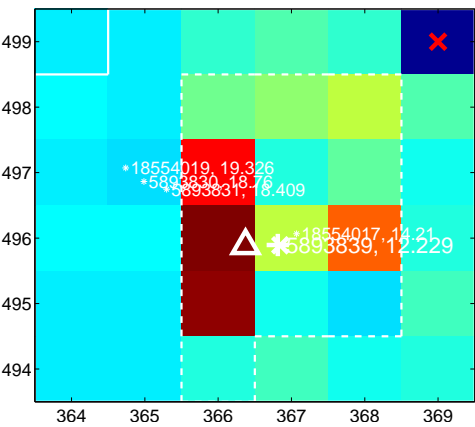
Q2 no difference image



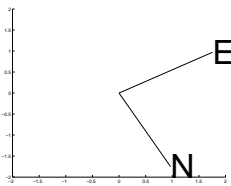
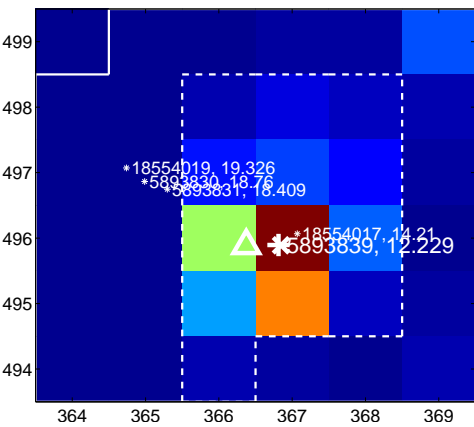
Q2 no OOT image



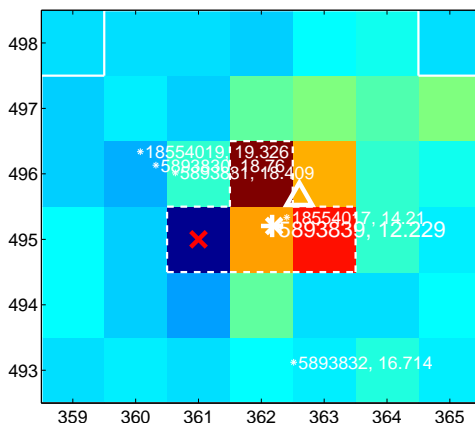
Q3 difference image



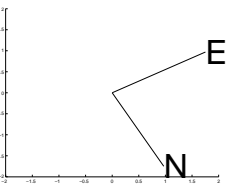
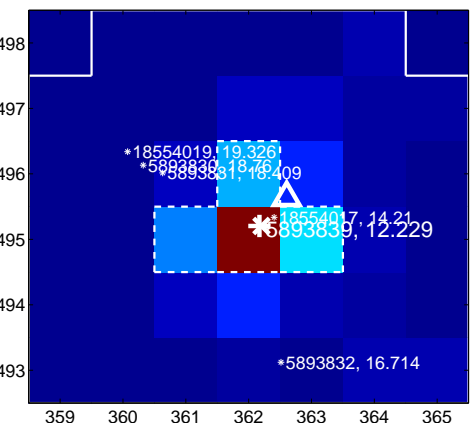
Q3 OOT image



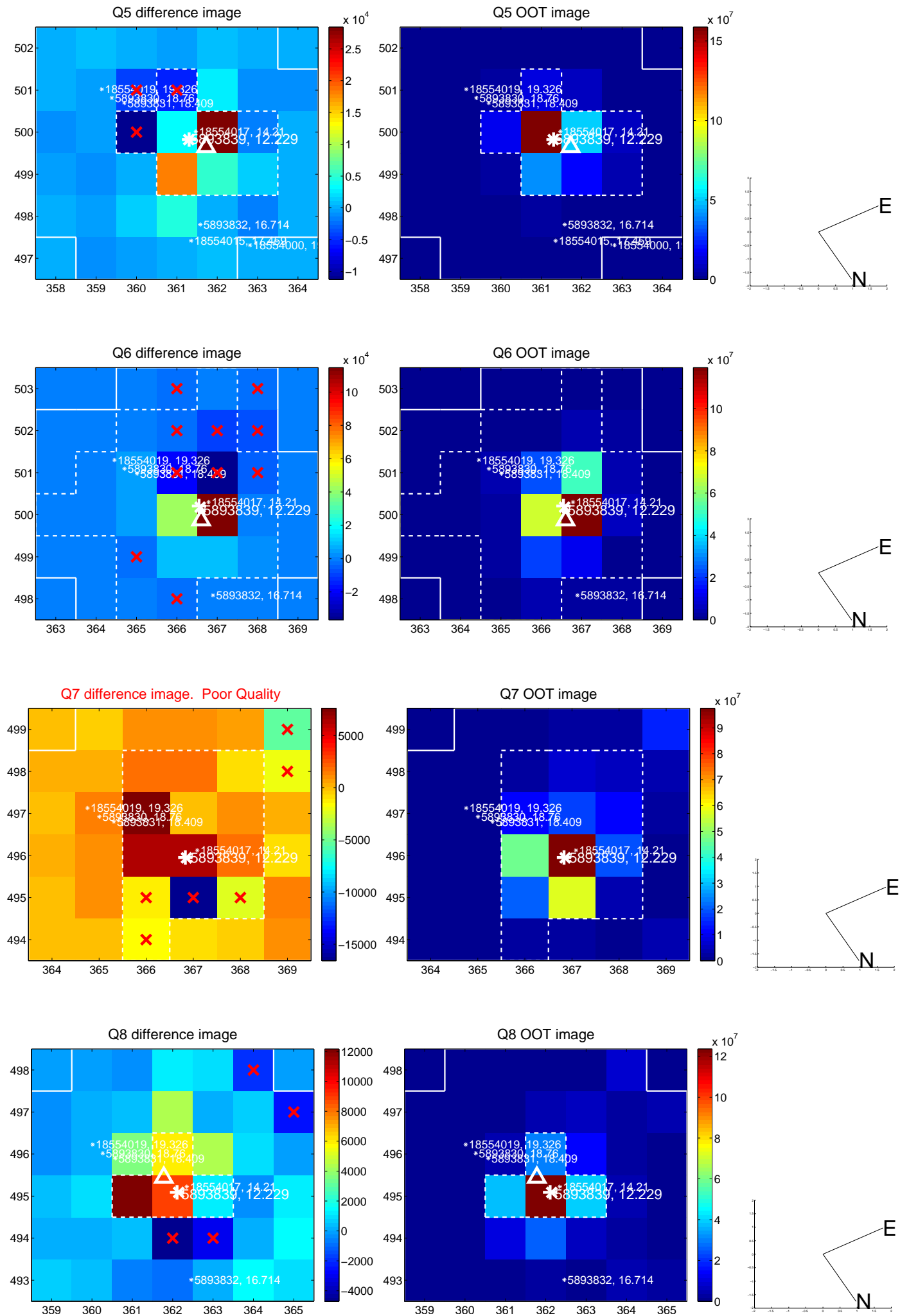
Q4 difference image



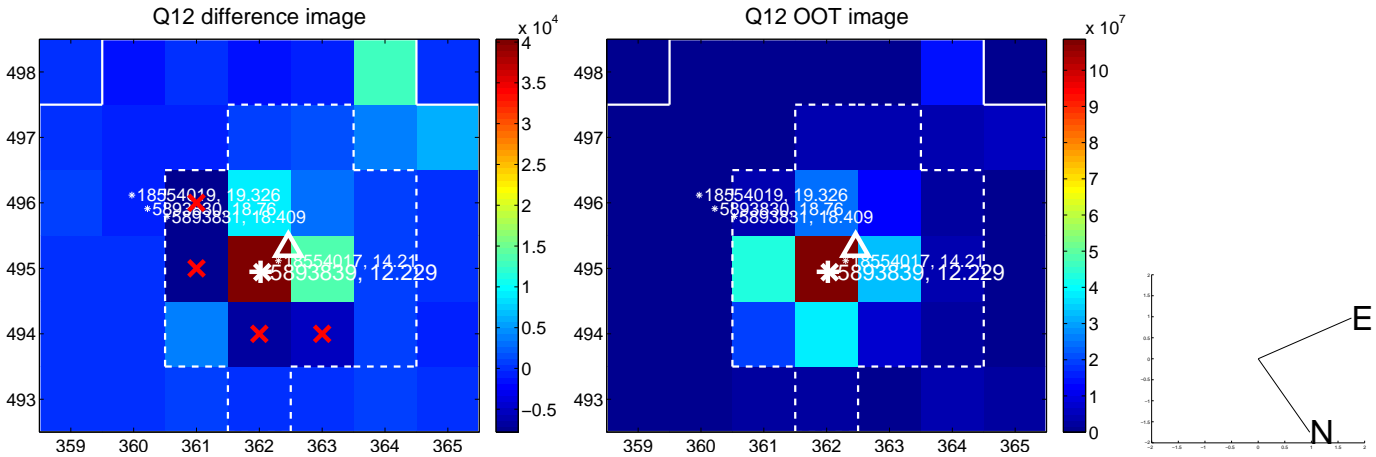
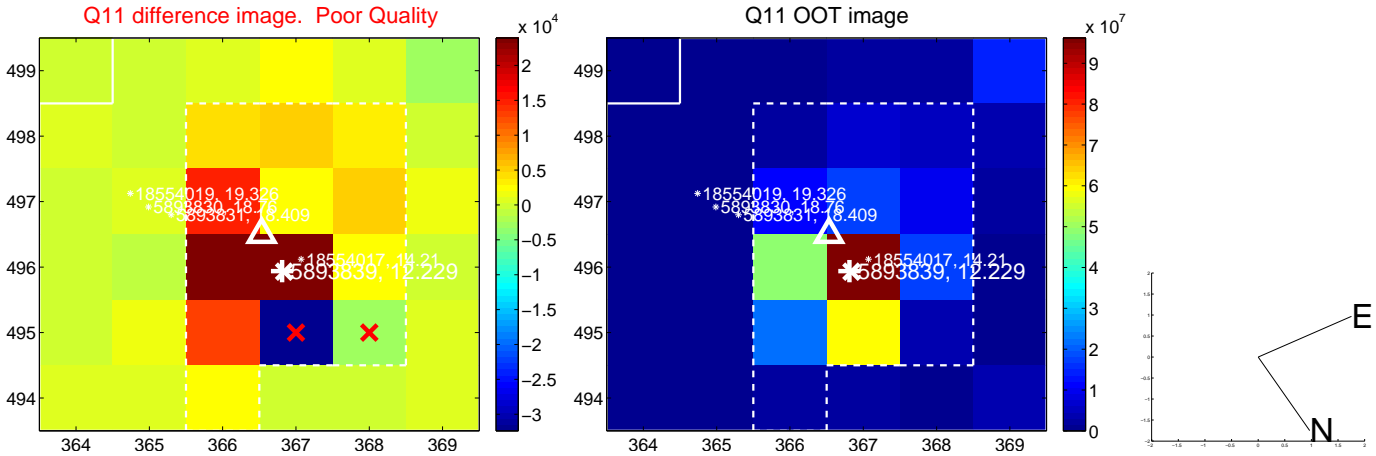
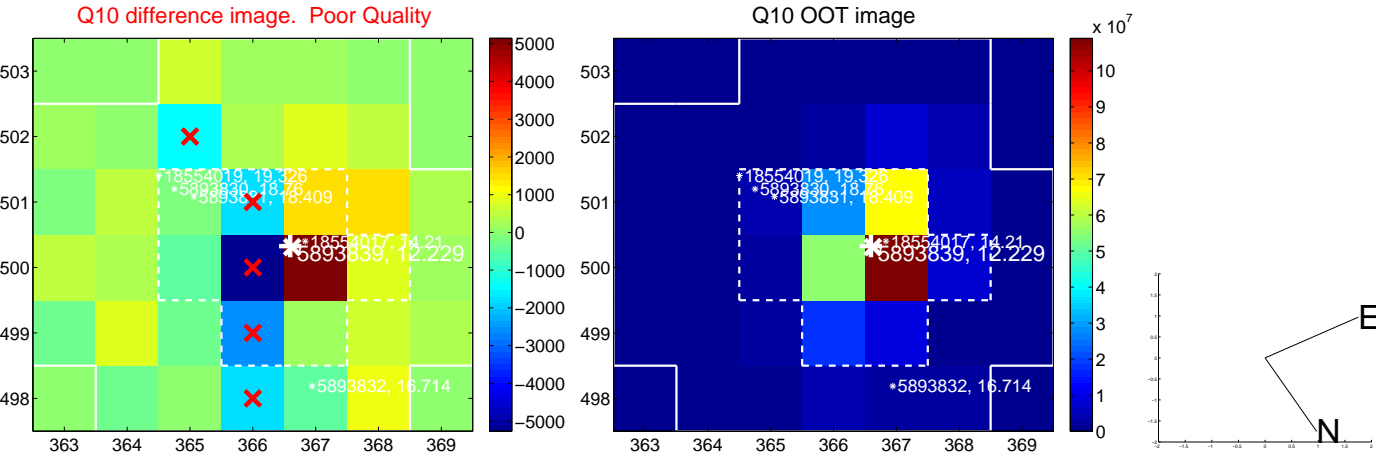
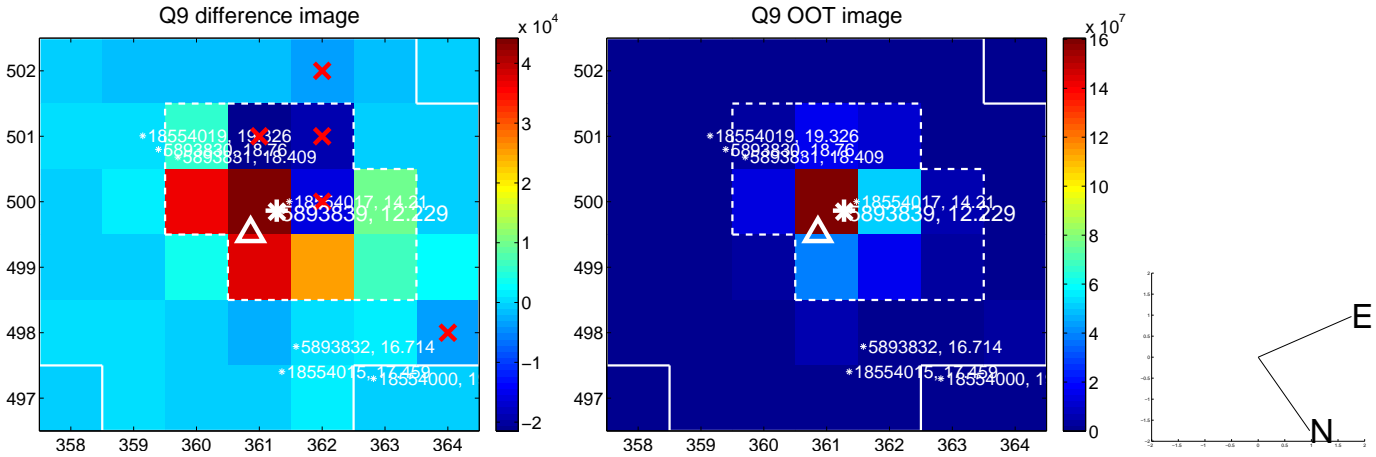
Q4 OOT image



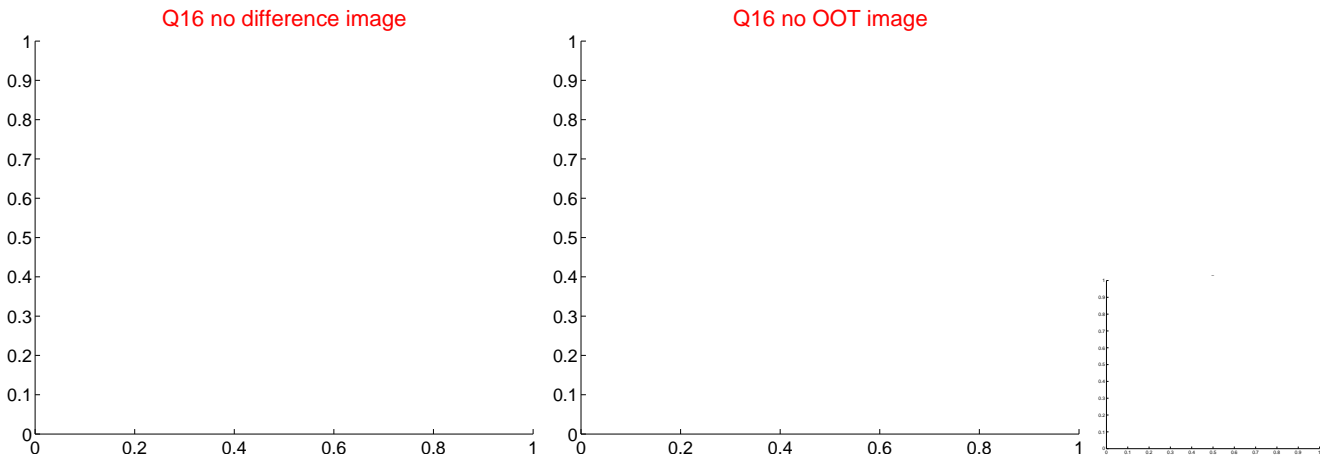
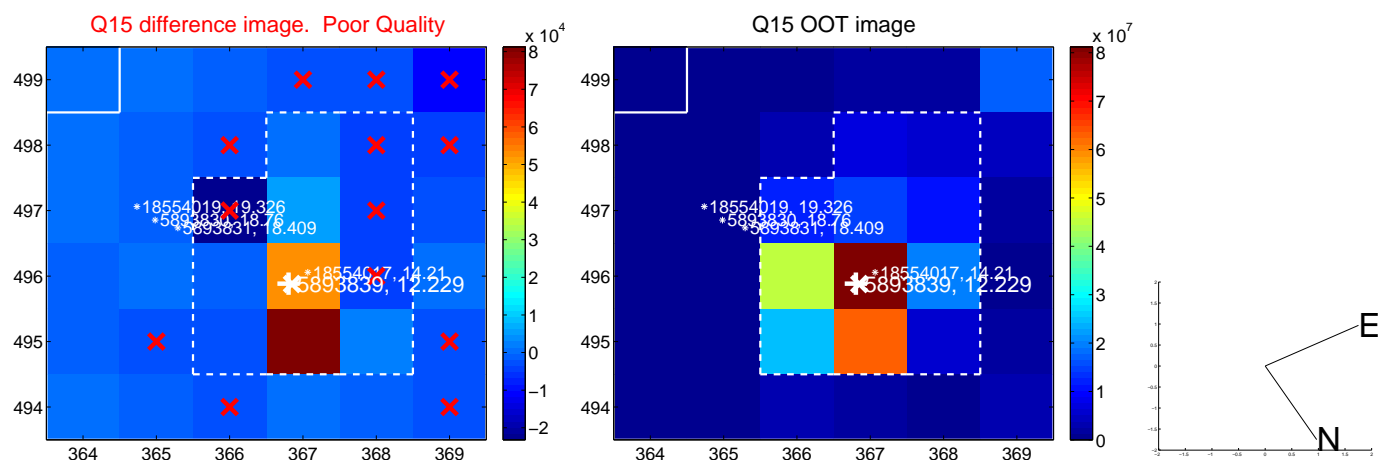
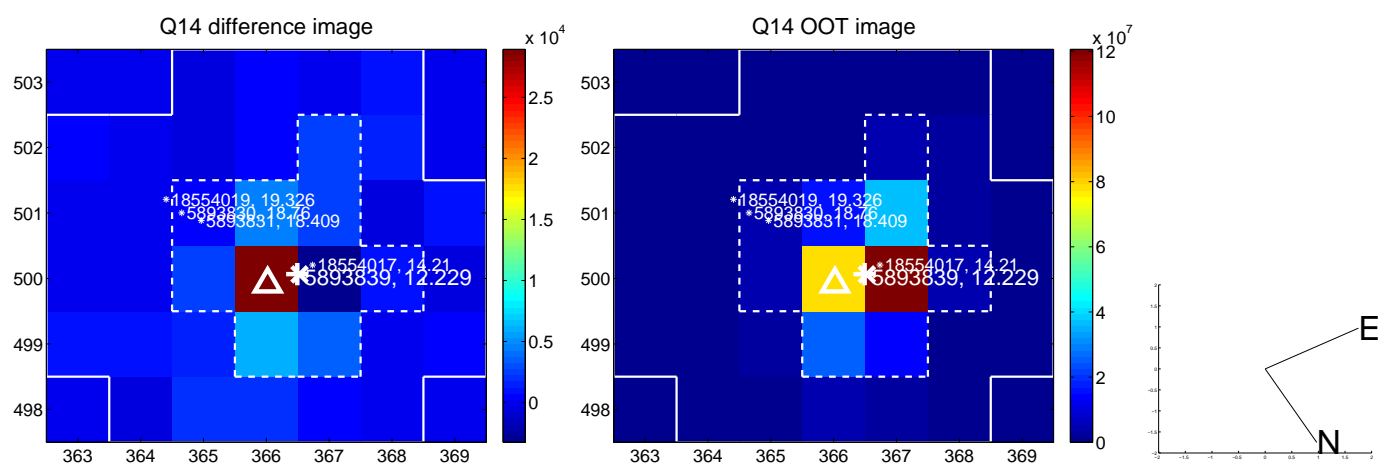
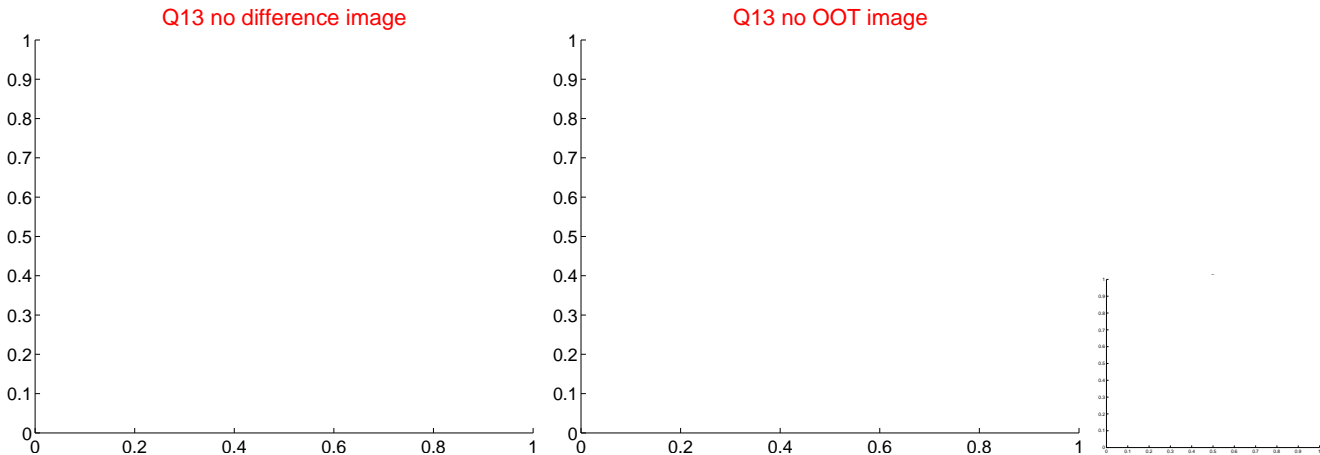
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



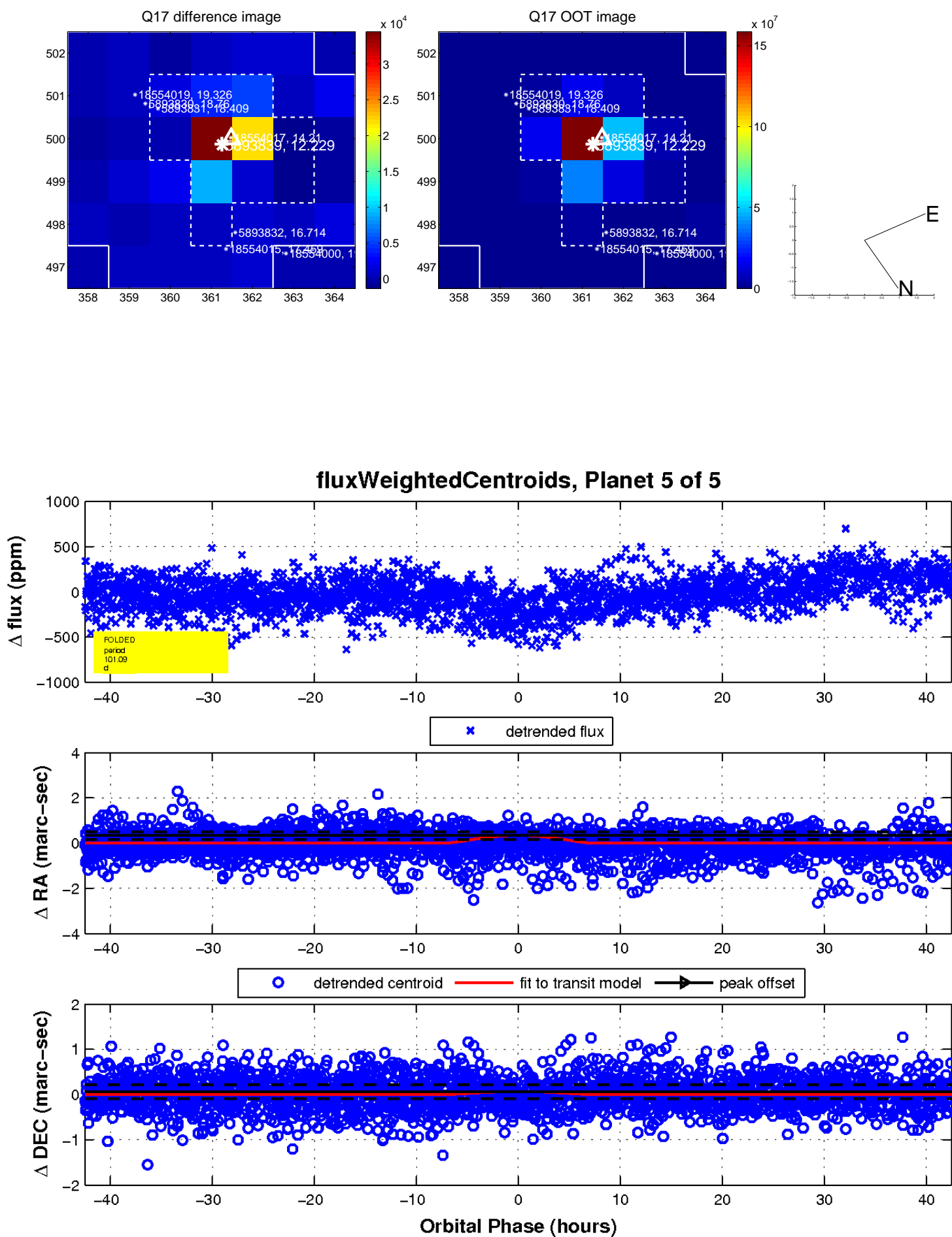
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

