

# KIC 005881893

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005881893-01	OBS	No	2.383548	131.696468	137.0	10.812	7.5	9.9	0.57	4500	0.83	145.84
005881893-02	OBS	No	152.211263	255.541617	1751.6	25.676	13.5	6.9	0.57	4500	3.07	0.57
005881893-03	OBS	No	143.098242	190.223426	1027.7	6.434	11.5	8.6	0.57	4500	2.05	0.62
005881893-04	OBS	No	137.442566	135.786622	663.0	2.561	9.2	5.3	0.57	4500	1.69	0.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005881893-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005881893-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
005881893-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
005881893-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

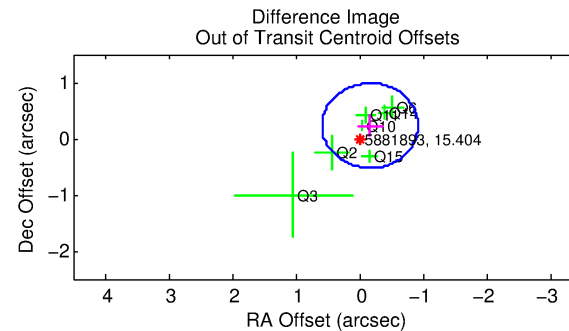
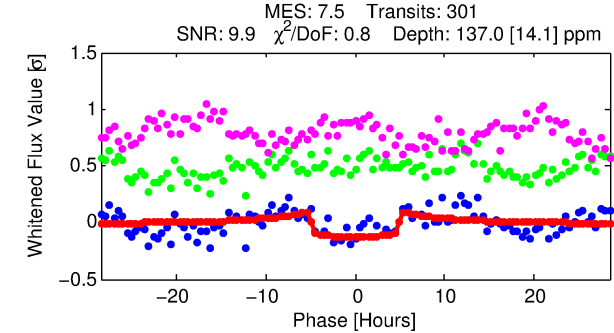
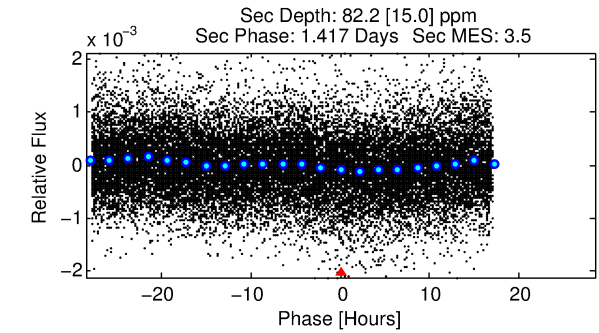
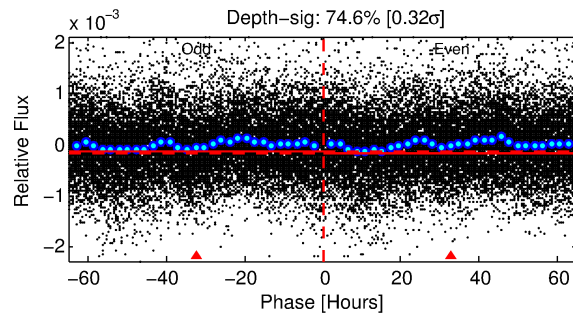
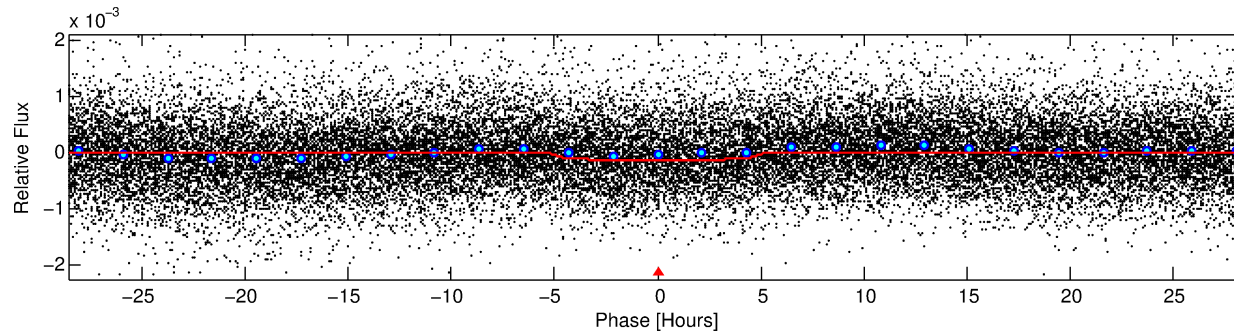
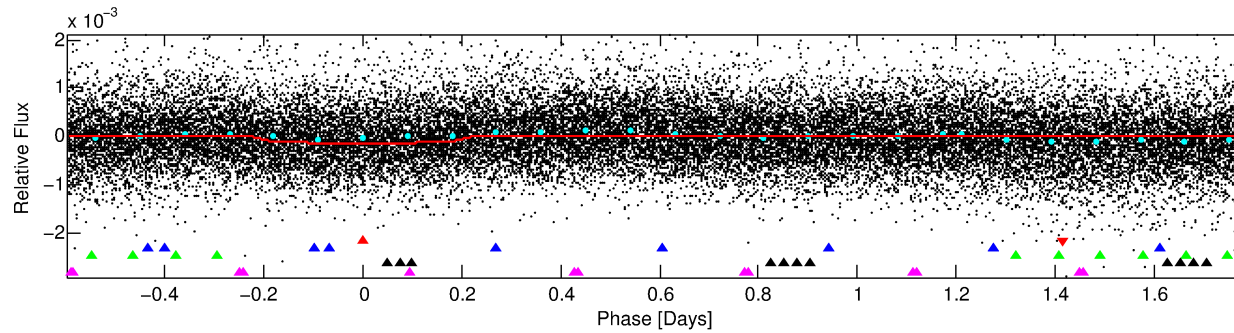
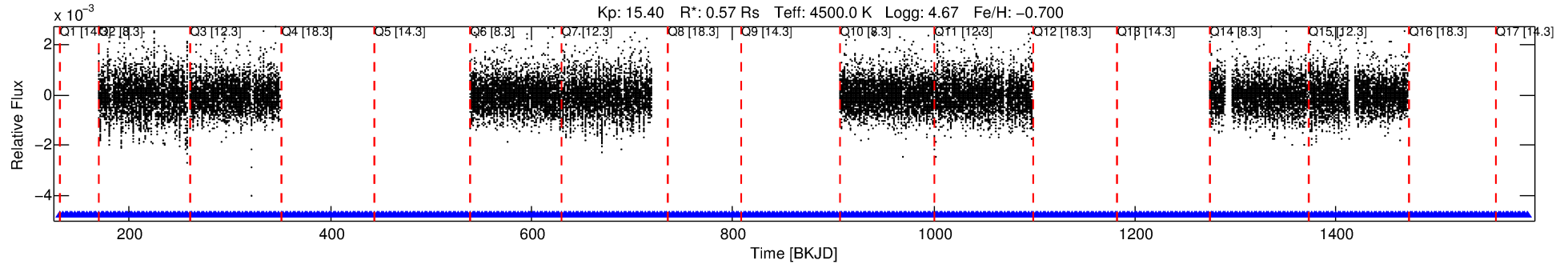
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005881893-01

No Significant Match Found

# DV One-Page Summary

KIC: 5881893 Candidate: 1 of 5 Period: 2.384 d



## DV Fit Results:

Period = 2.38355 [0.00003] d  
Epoch = 131.6965 [0.0080] BKJD  
Rp/R\* = 0.0133 [0.0017]  
a/R\* = 1.21 [0.17]  
b = 0.91 [0.09]  
Seff = 145.84 [24.26]  
Teq = 886 [37] K  
Rp = 0.83 [0.13] Re  
a = 0.0289 [0.0021] AU  
Ag = 54.05 [17.66] [3.00 $\sigma$ ]  
Teffp = 3715 [313] K [8.97 $\sigma$ ]

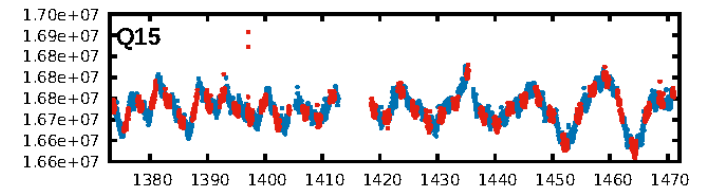
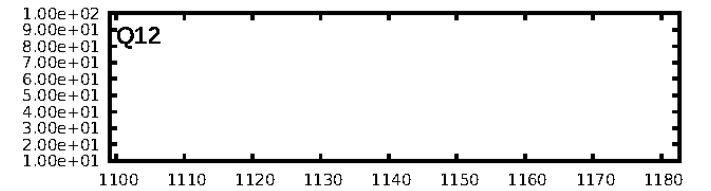
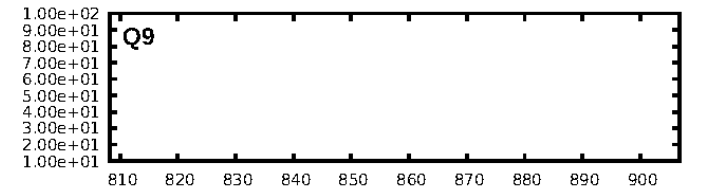
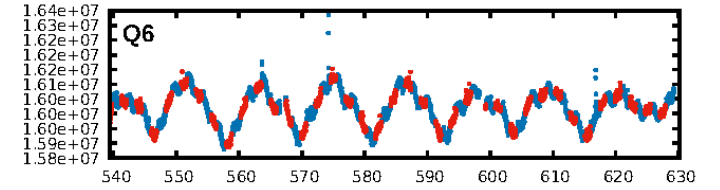
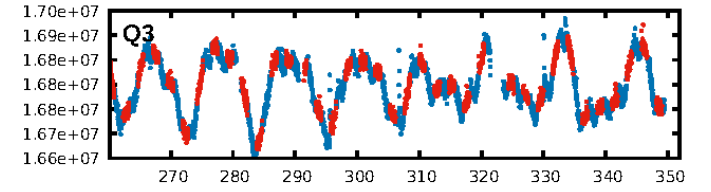
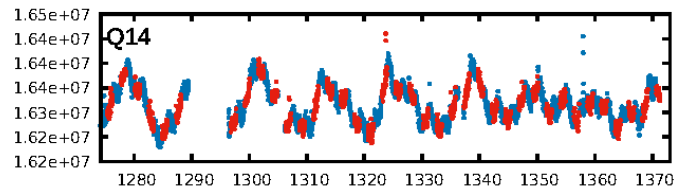
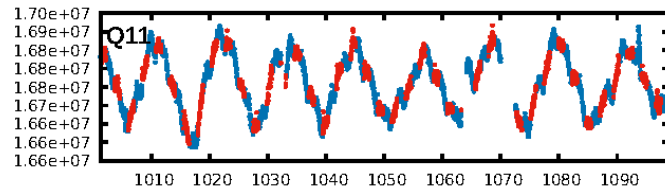
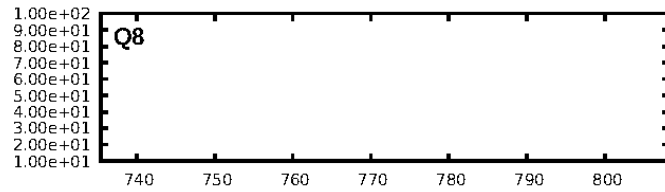
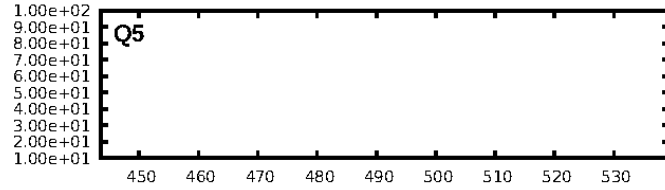
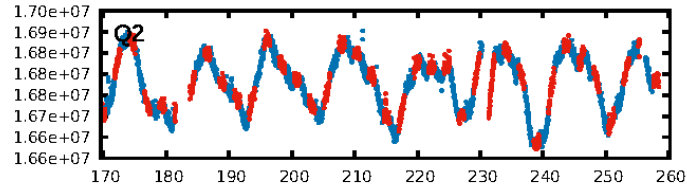
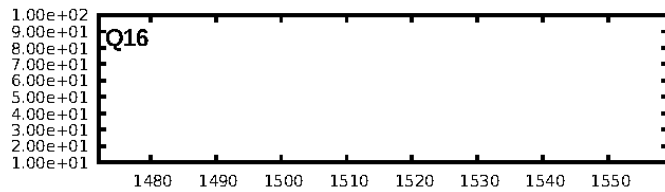
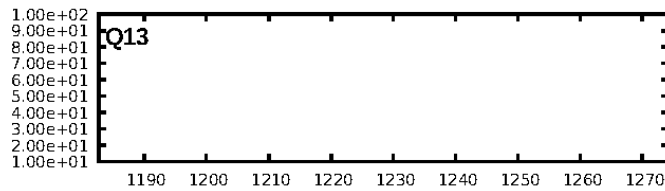
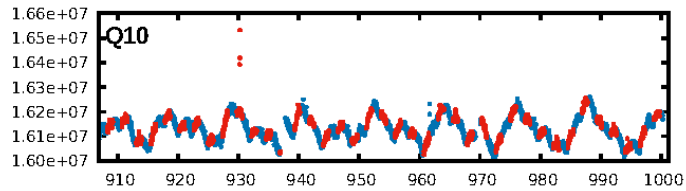
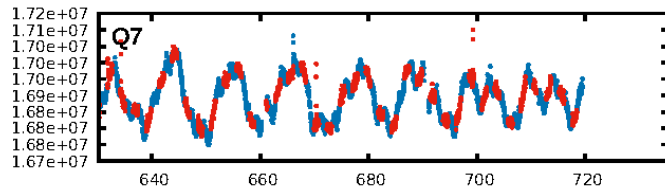
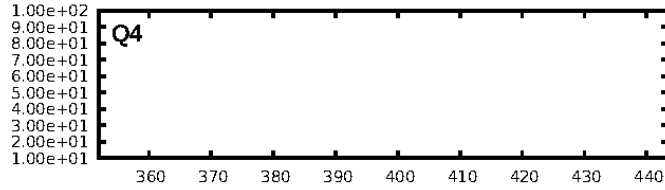
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [225.53 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 2.08e-09**  
RollingBand-fgt: 1.00 [301/301]  
GhostDiagnostic-chr: -3.284  
Centroid-sig: N/A  
Centroid-so: 0.301 arcsec [0.38 $\sigma$ ]  
OotOffset-rm: 0.284 arcsec [1.13 $\sigma$ ]  
KicOffset-rm: 0.433 arcsec [1.96 $\sigma$ ]  
OotOffset-st: 4/3/0/0 [7]  
KicOffset-st: 4/3/0/0 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 1.00 [8/8]

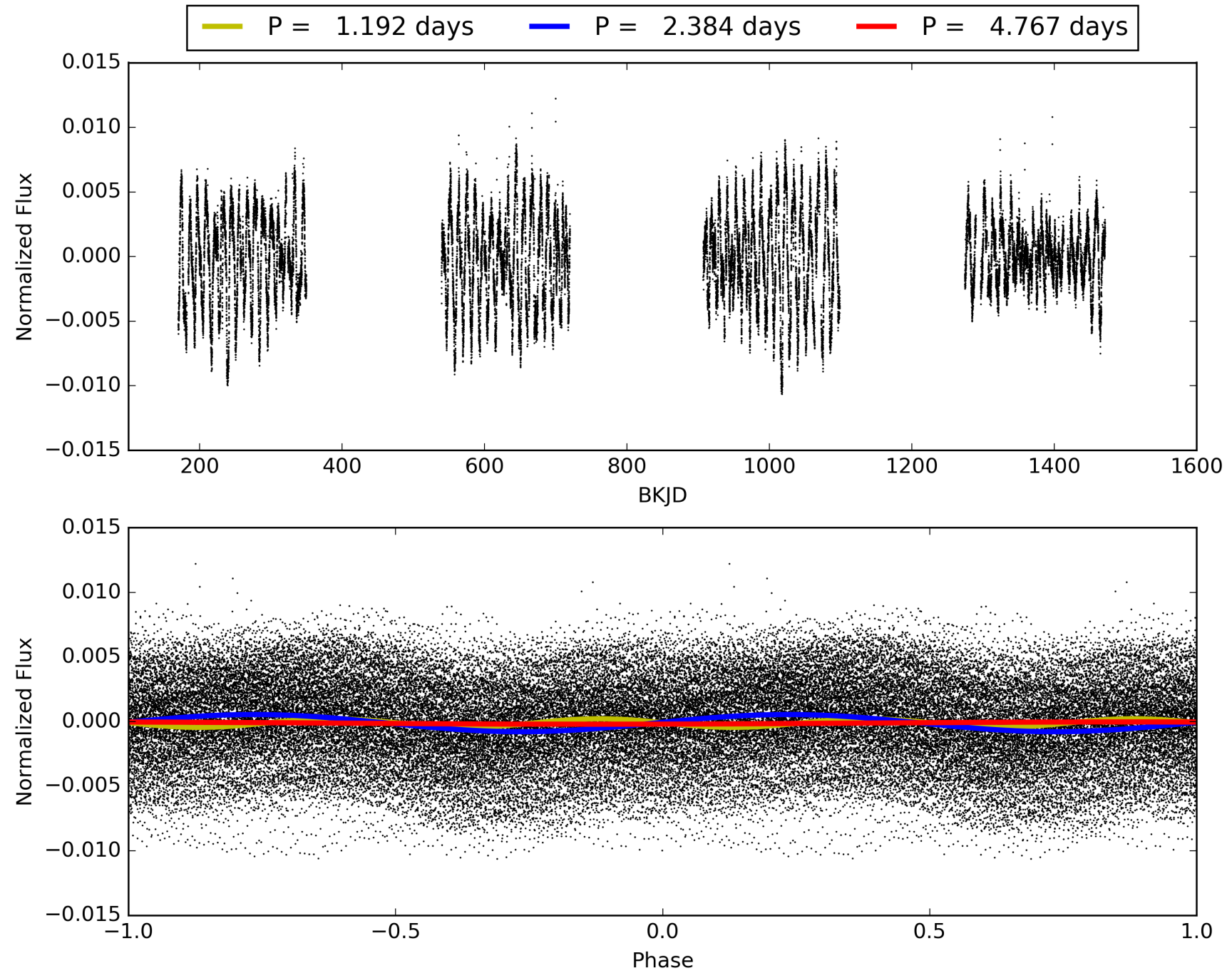
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:05:07 Z

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

# TCE 005881893-01, PDC Light Curves



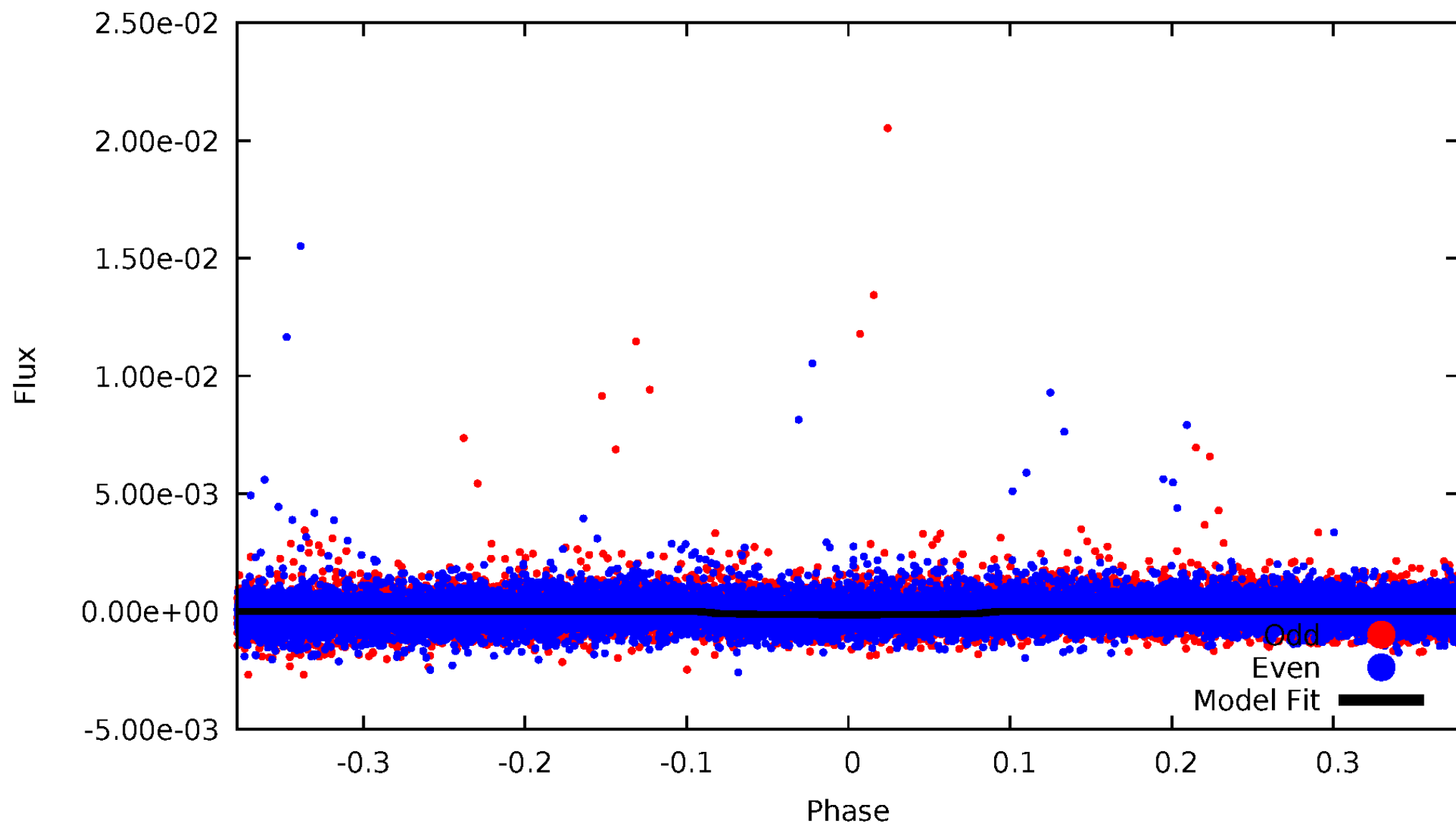
TCE 005881893-01





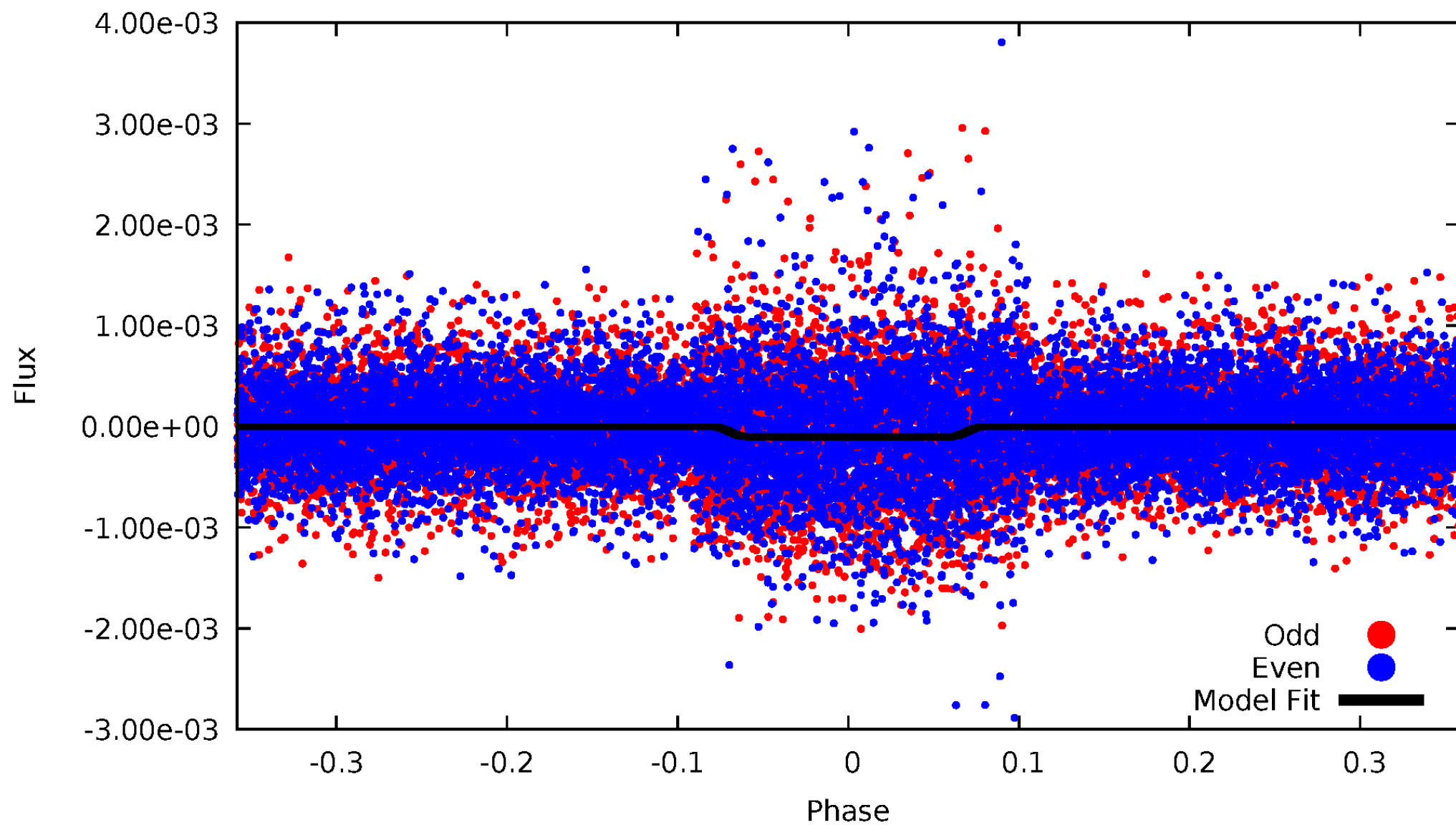
# DV Odd/Even

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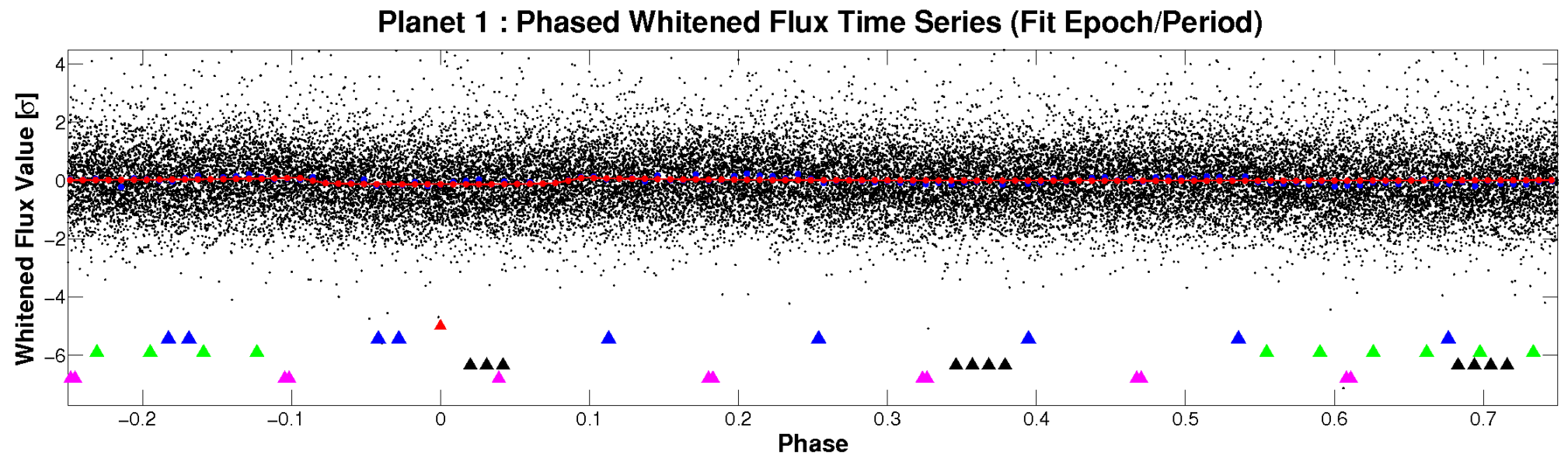
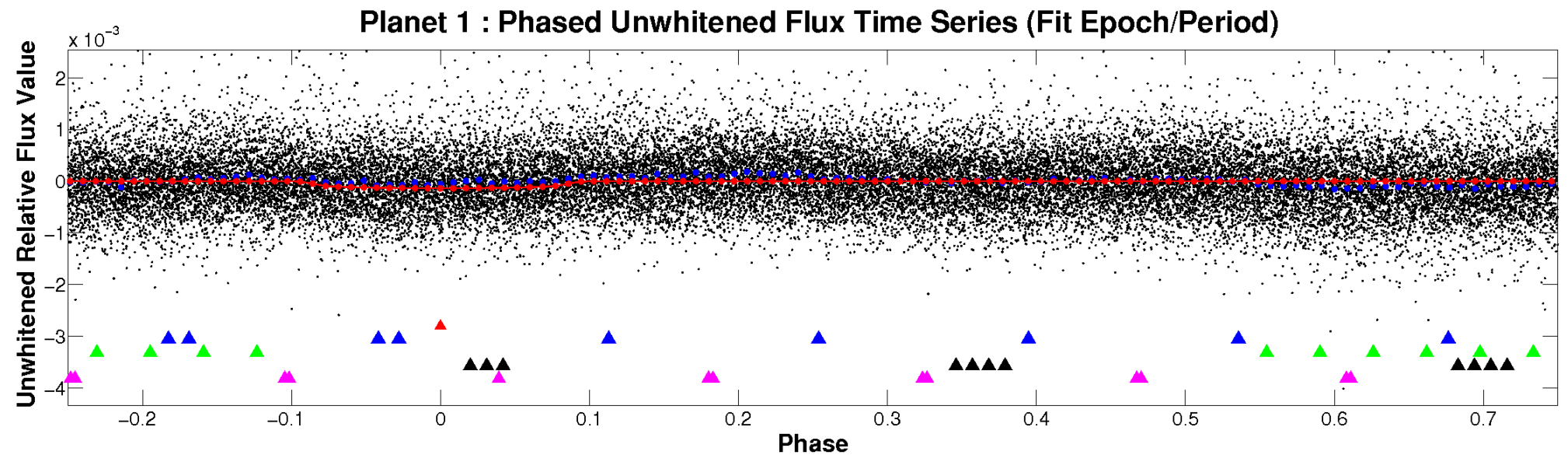


# ALT Odd/Even

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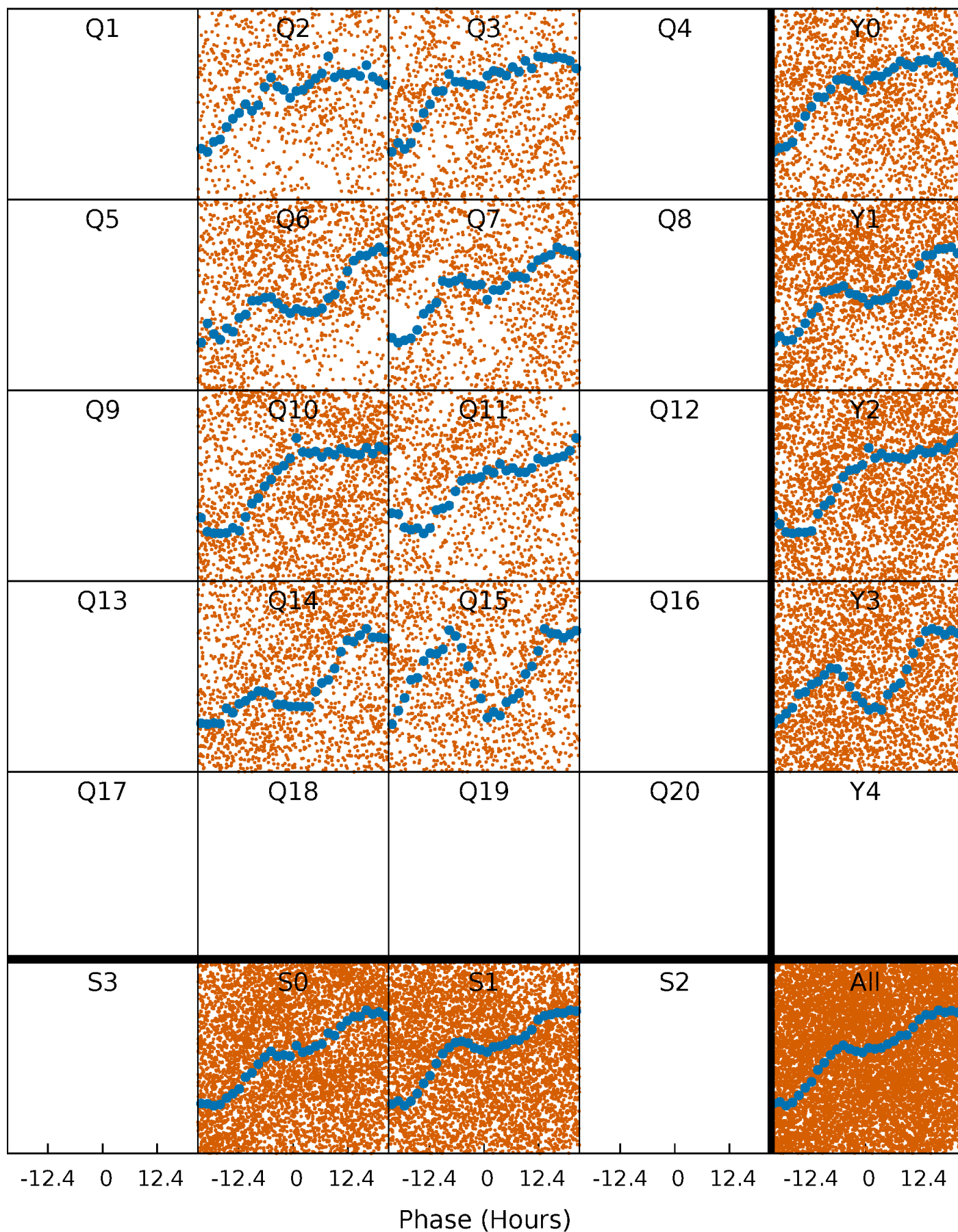


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

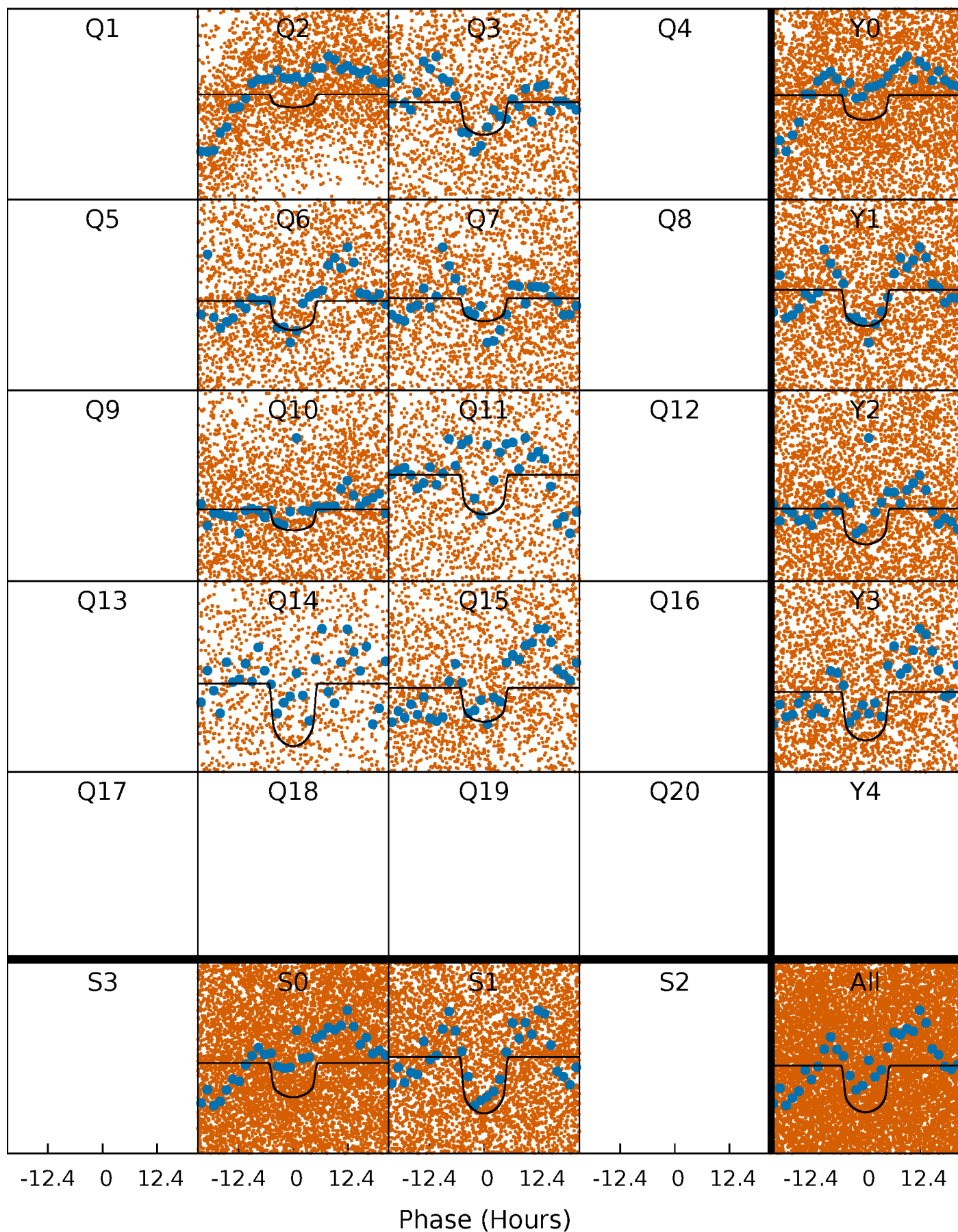
TCE 005881893-01 P= 2.383548 Days  $T_0=131.696468$  (BKJD)





# DV Quarter-Phased Transit Curves

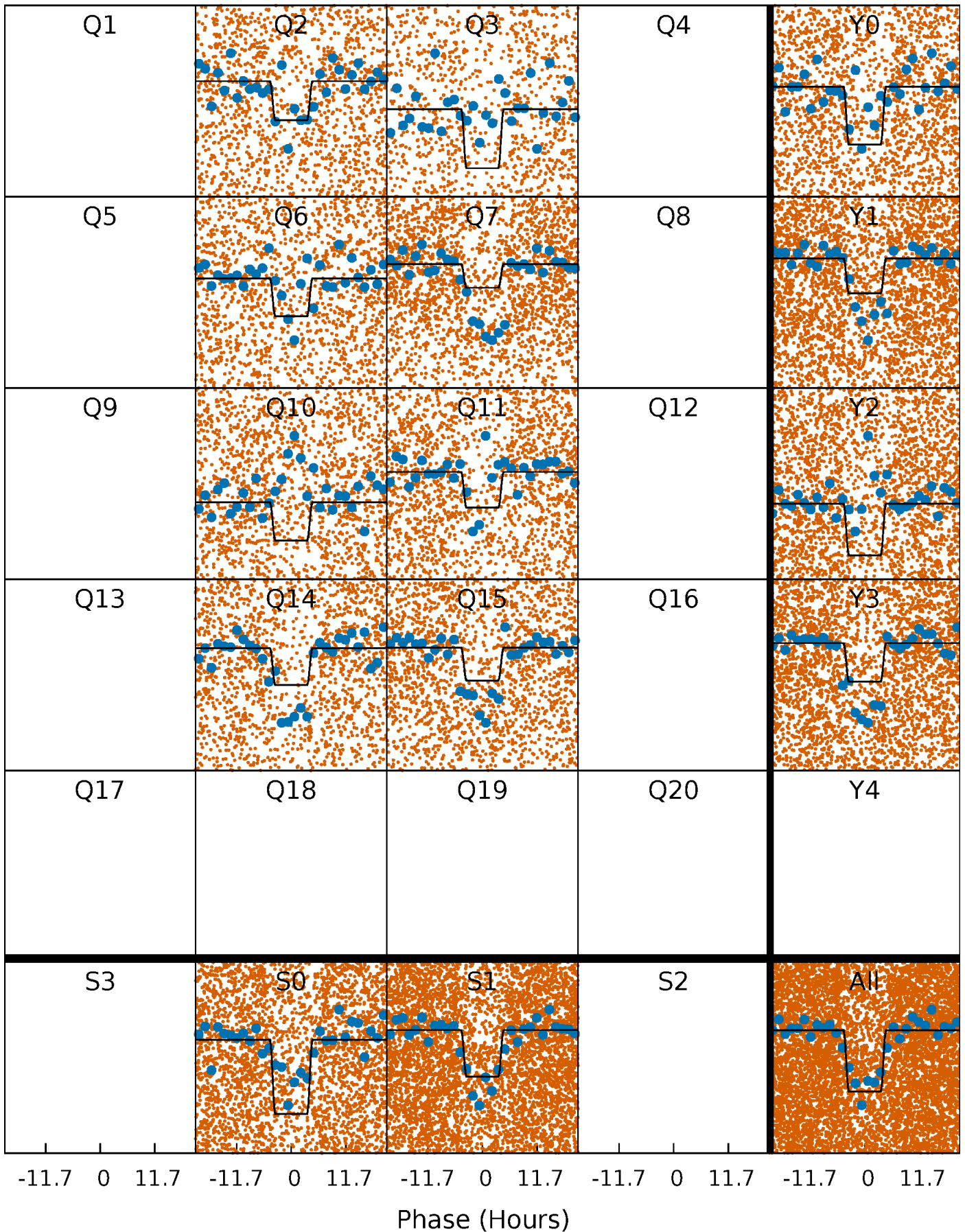
TCE 005881893-01   P= 2.383548 Days    $T_0=131.696468$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

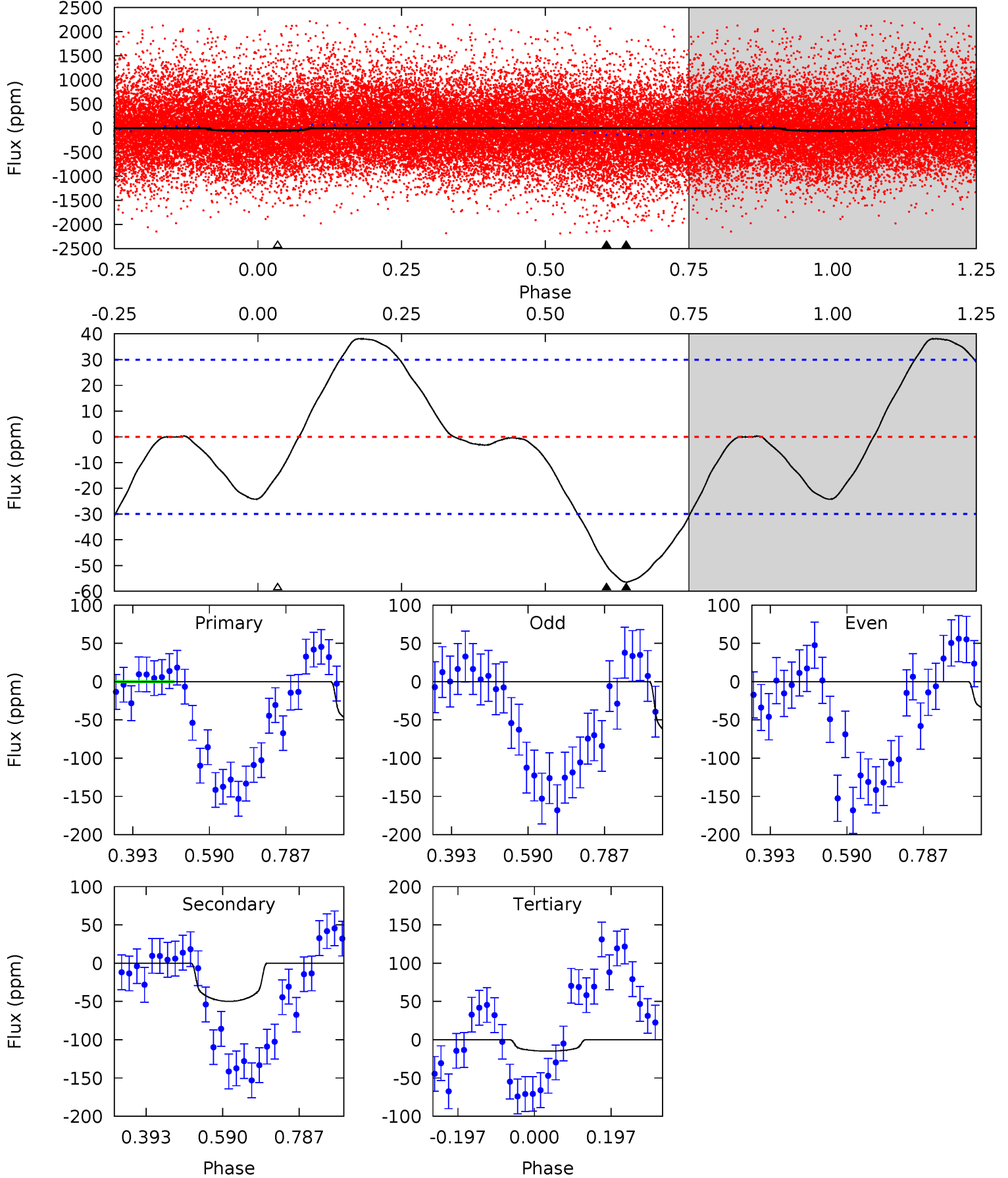
TCE 005881893-01 P= 2.383717 Days  $T_0=131.640094$  (BKJD)



# DV Model-Shift Uniqueness Test

005881893-01, P = 2.383548 Days, E = 131.696468 Days

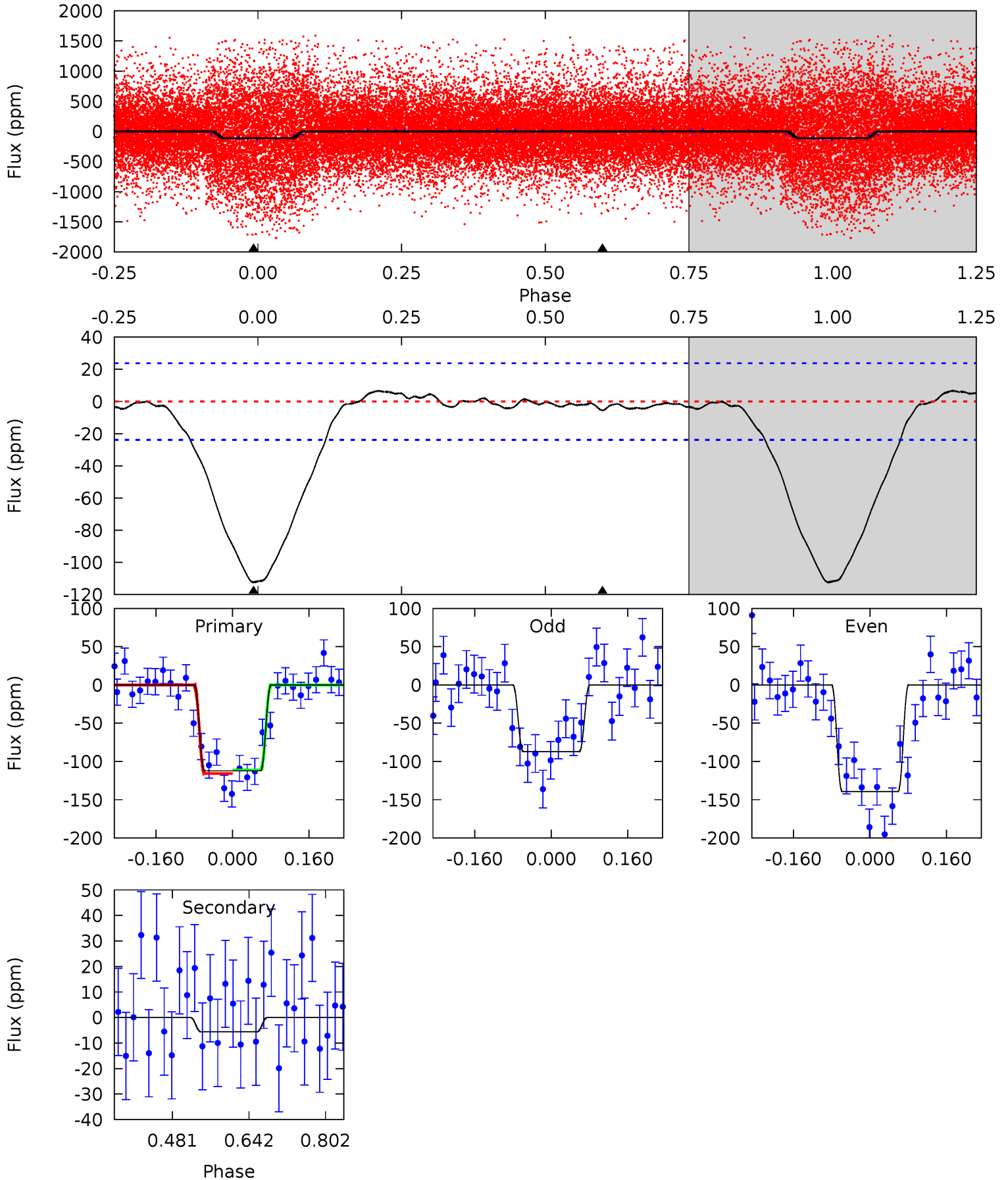
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.33	7.37	2.20	0	4.42	1.29	2.82	6.13	8.33	5.17	7.37	2.54	0.05	0.40	2.15



# Alt Model-Shift Uniqueness Test

005881893-01, P = 2.383717 Days, E = 131.640094 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
21.1	1.05	0	0	4.46	1.40	0.59	21.1	21.1	1.05	1.05	4.88	1.10	0.06	0.45



### Stellar Parameters For KIC 005881893

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4500^{+121}_{-148}$	$4.670^{+0.054}_{-0.027}$	$-0.700^{+0.300}_{-0.300}$	$0.575^{+0.046}_{-0.051}$	$0.564^{+0.054}_{-0.036}$	$4.173^{+1.053}_{-0.540}$
	+3%/-3%	+1%/-1%	+43%/-43%	+8%/-9%	+10%/-6%	+25%/-13%
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 005881893-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-50 \pm 7$	$0.83^{+0.11}_{-0.10}$	$1229^{+41}_{-45}$	$3574^{+196}_{-171}$	$34^{+10}_{-9}$
Alt.	$-6 \pm 5$	$0.63^{+0.11}_{-0.10}$	$1228^{+43}_{-45}$	$2800^{+312}_{-972}$	$6.531^{+6.896}_{-6.091}$

$T_{\text{max}}$  = 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

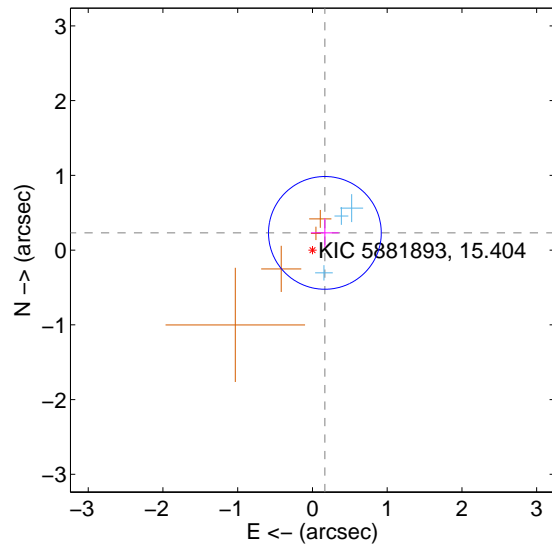
Supplemental centroid analysis for 005881893-01. Kepler magnitude: 15.40. Transit SNR 9.93

There are 3 quarters with good PRF difference image offsets

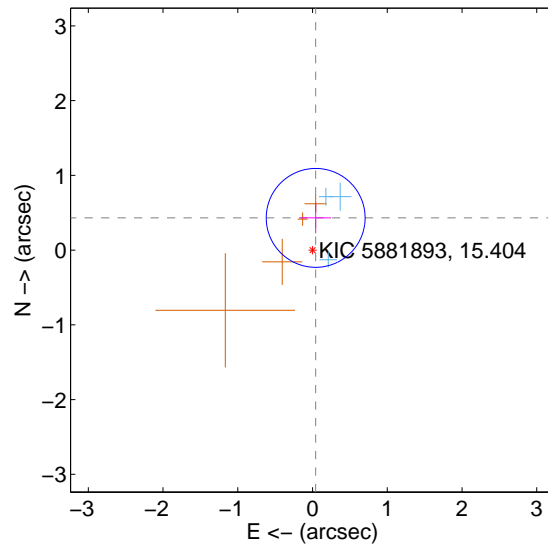
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.284 \pm 0.251$	1.13	$-0.167 \pm 0.187$	$0.230 \pm 0.193$
PRF-fit source offset from KIC position	$0.433 \pm 0.220$	1.96	$-0.042 \pm 0.206$	$0.431 \pm 0.206$
photometric centroid source offset	$0.30 \pm 0.80$	0.38	$0.30 \pm 0.80$	$0.00 \pm 0.71$

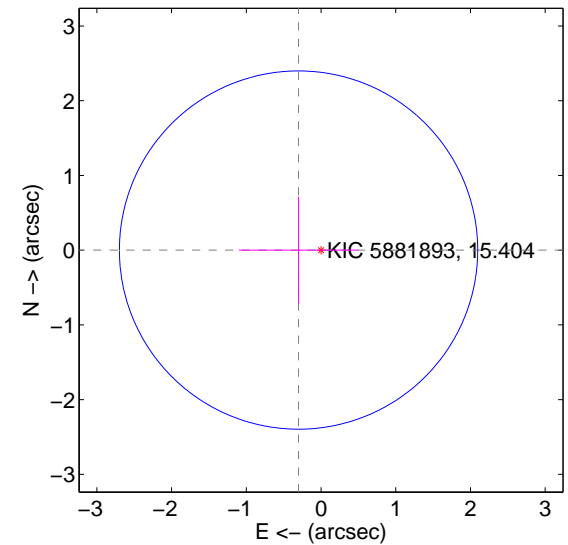
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



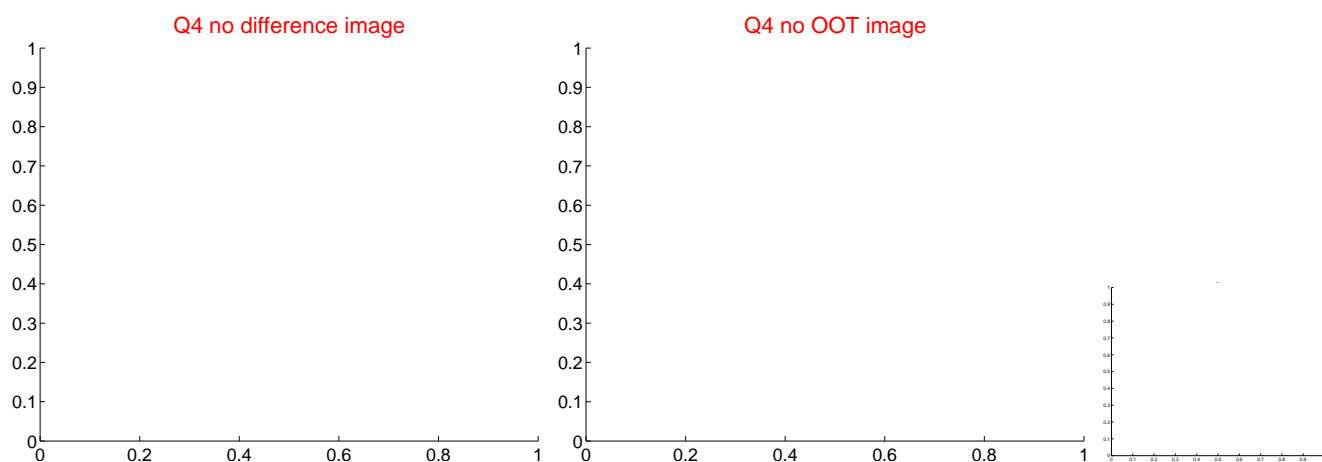
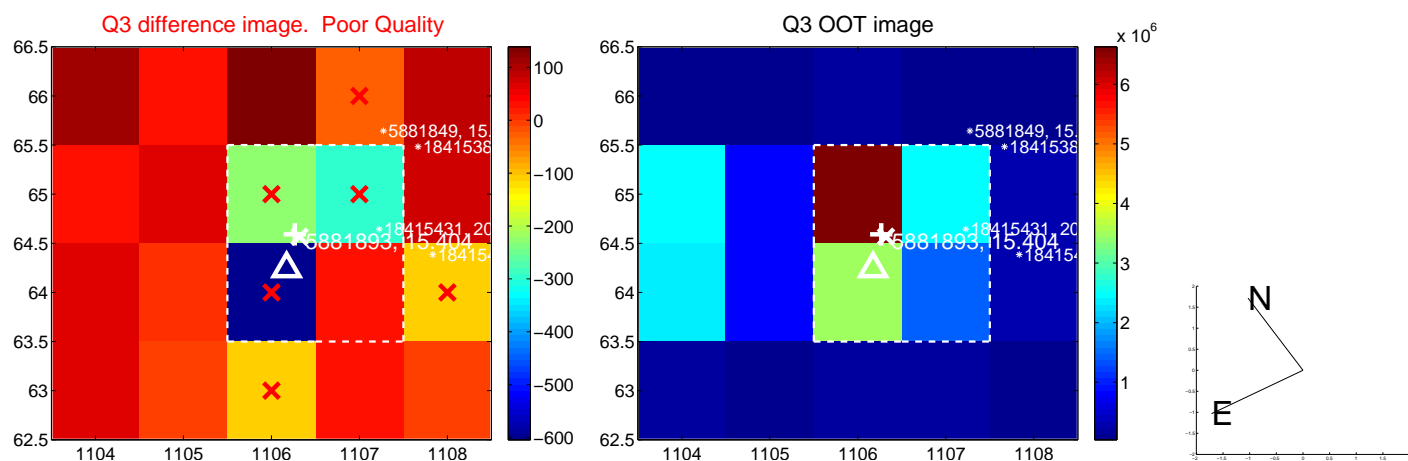
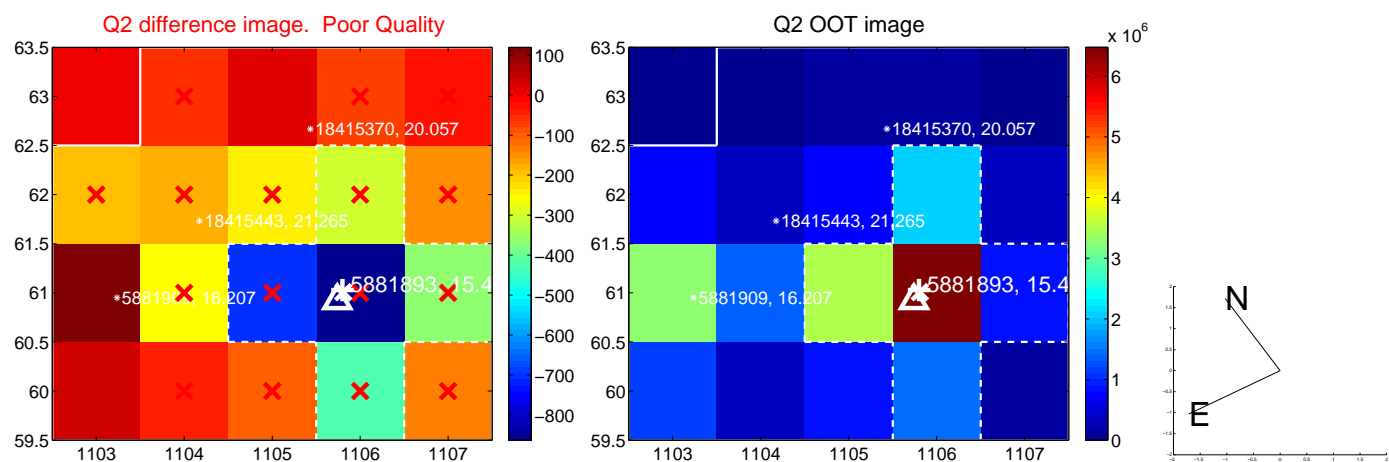
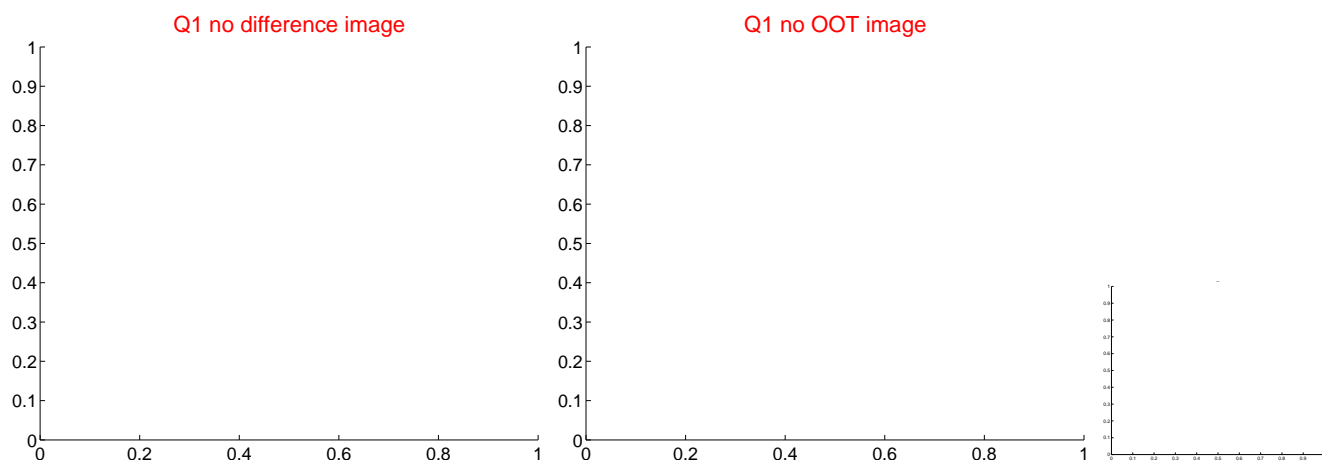
offset from photometric centroids



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.

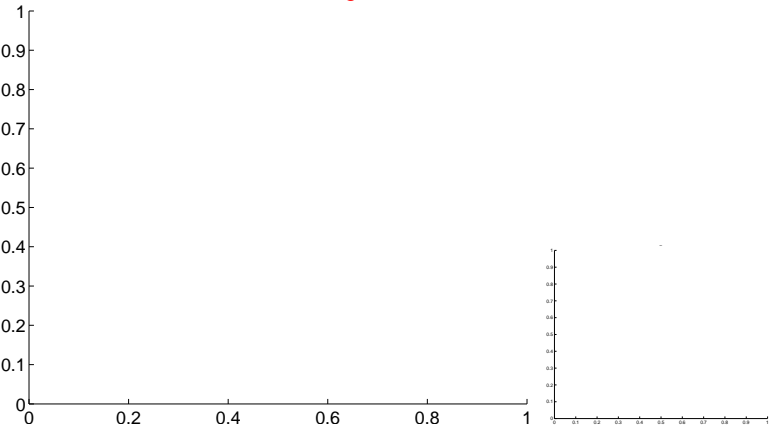


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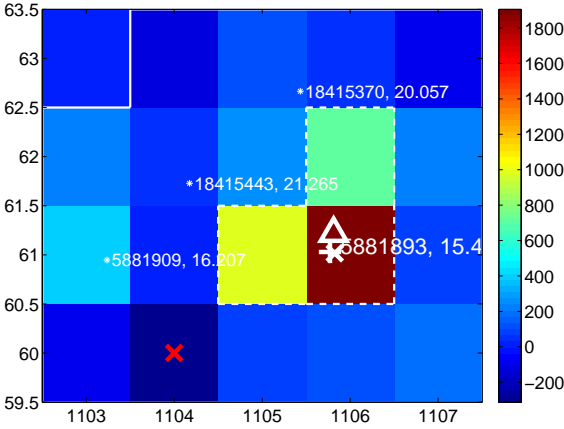
Q5 no difference image



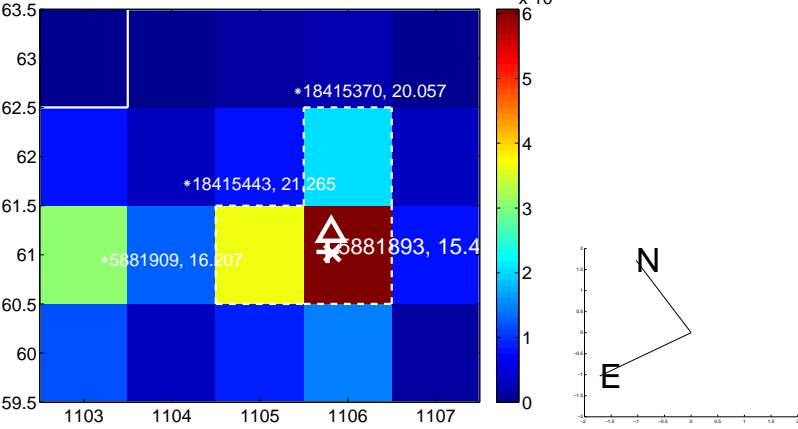
Q5 no OOT image



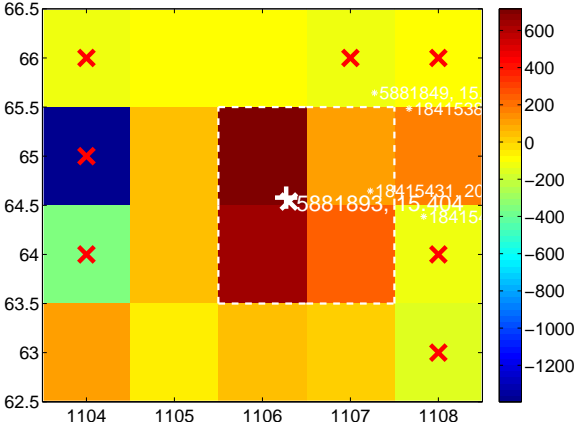
Q6 difference image



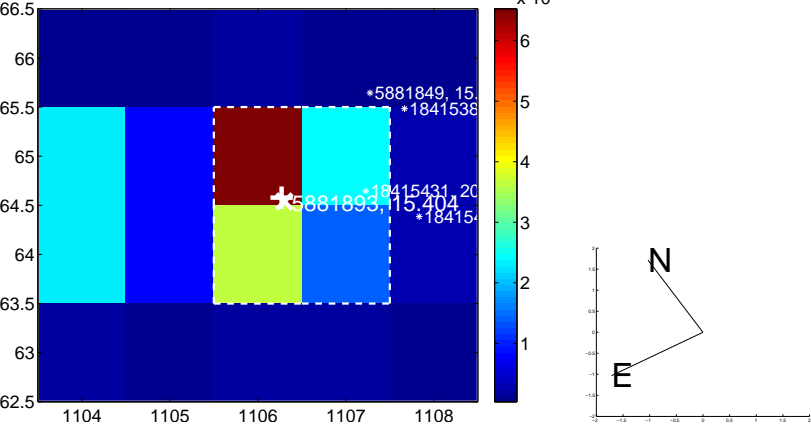
Q6 OOT image



Q7 difference image. Poor Quality



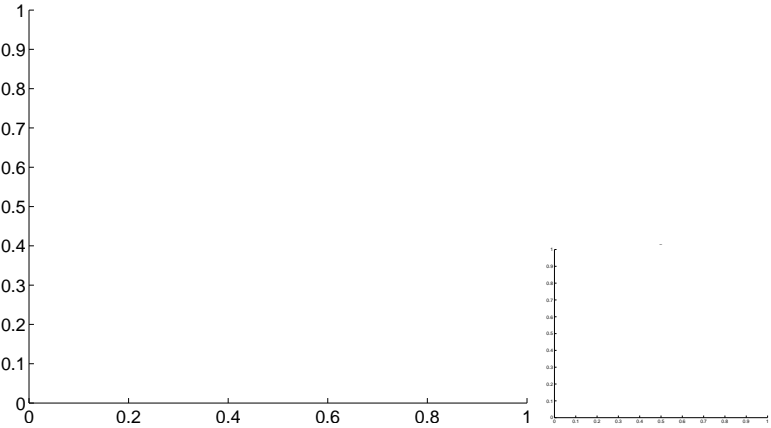
Q7 OOT image



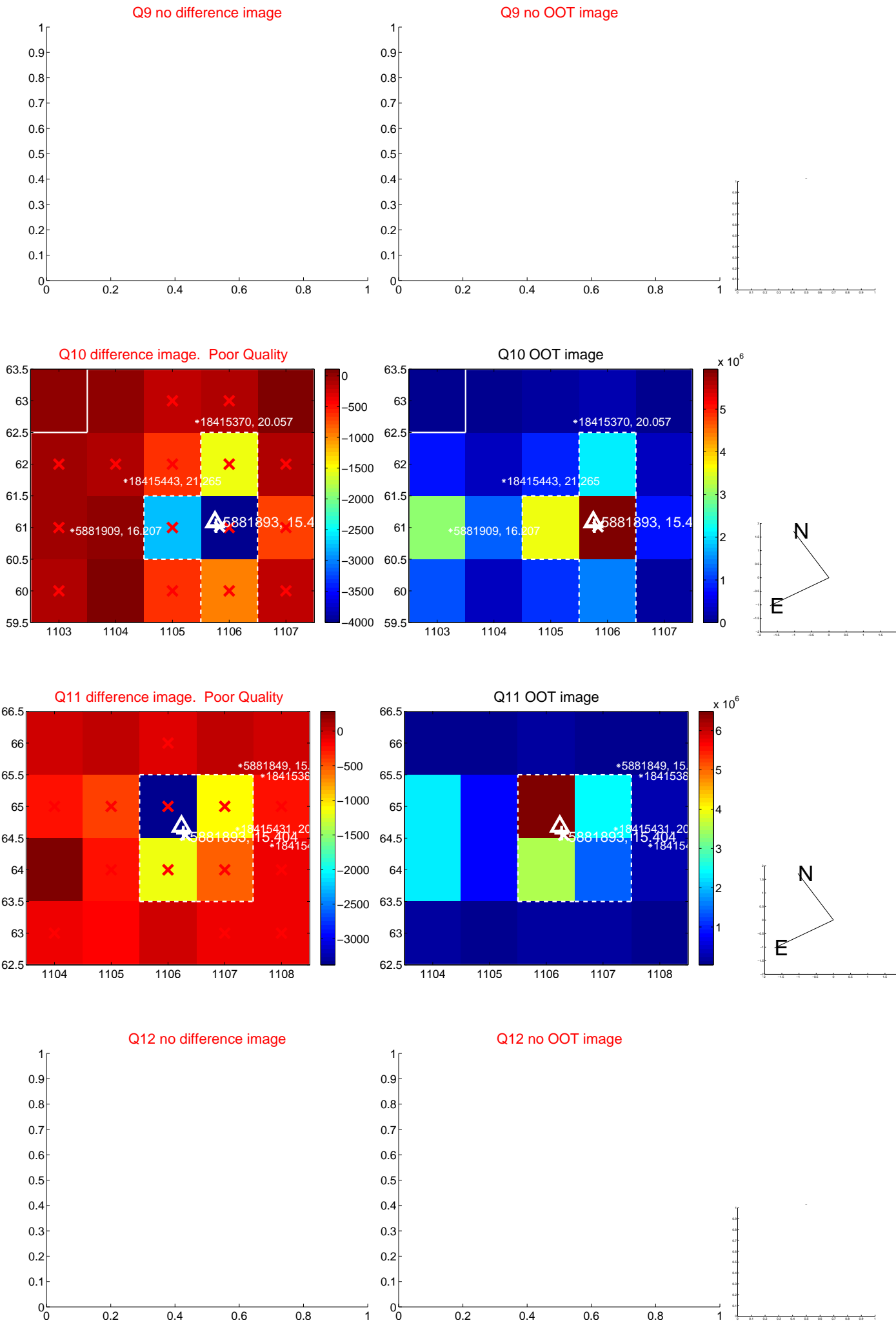
Q8 no difference image



Q8 no OOT image



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



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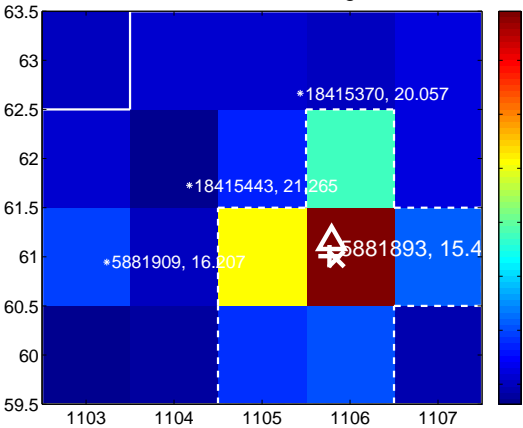
Q13 no difference image



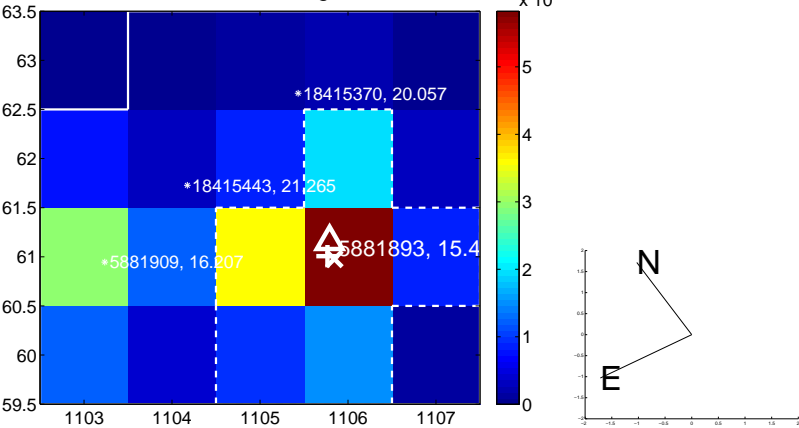
Q13 no OOT image



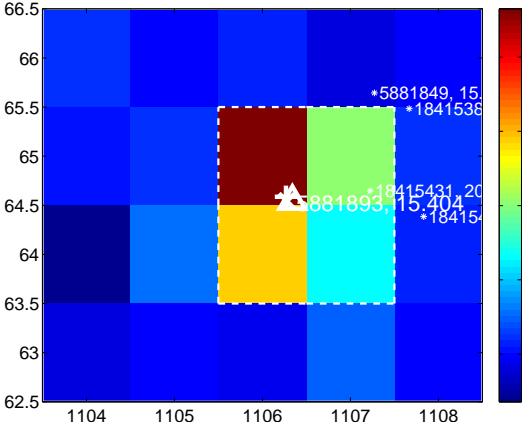
Q14 difference image



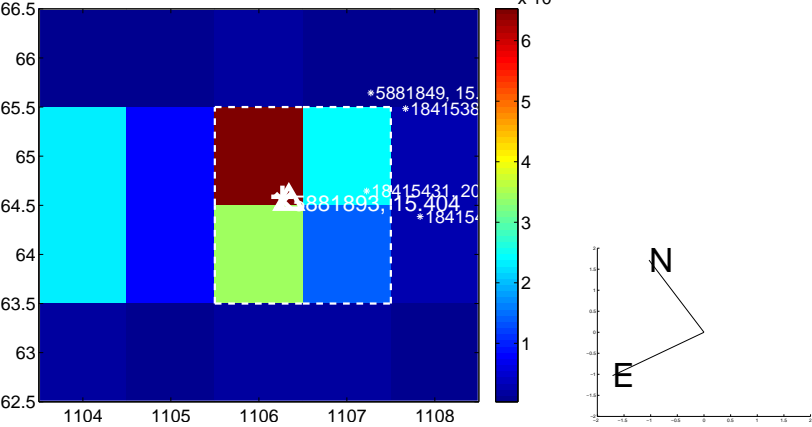
Q14 OOT image



Q15 difference image



Q15 OOT image



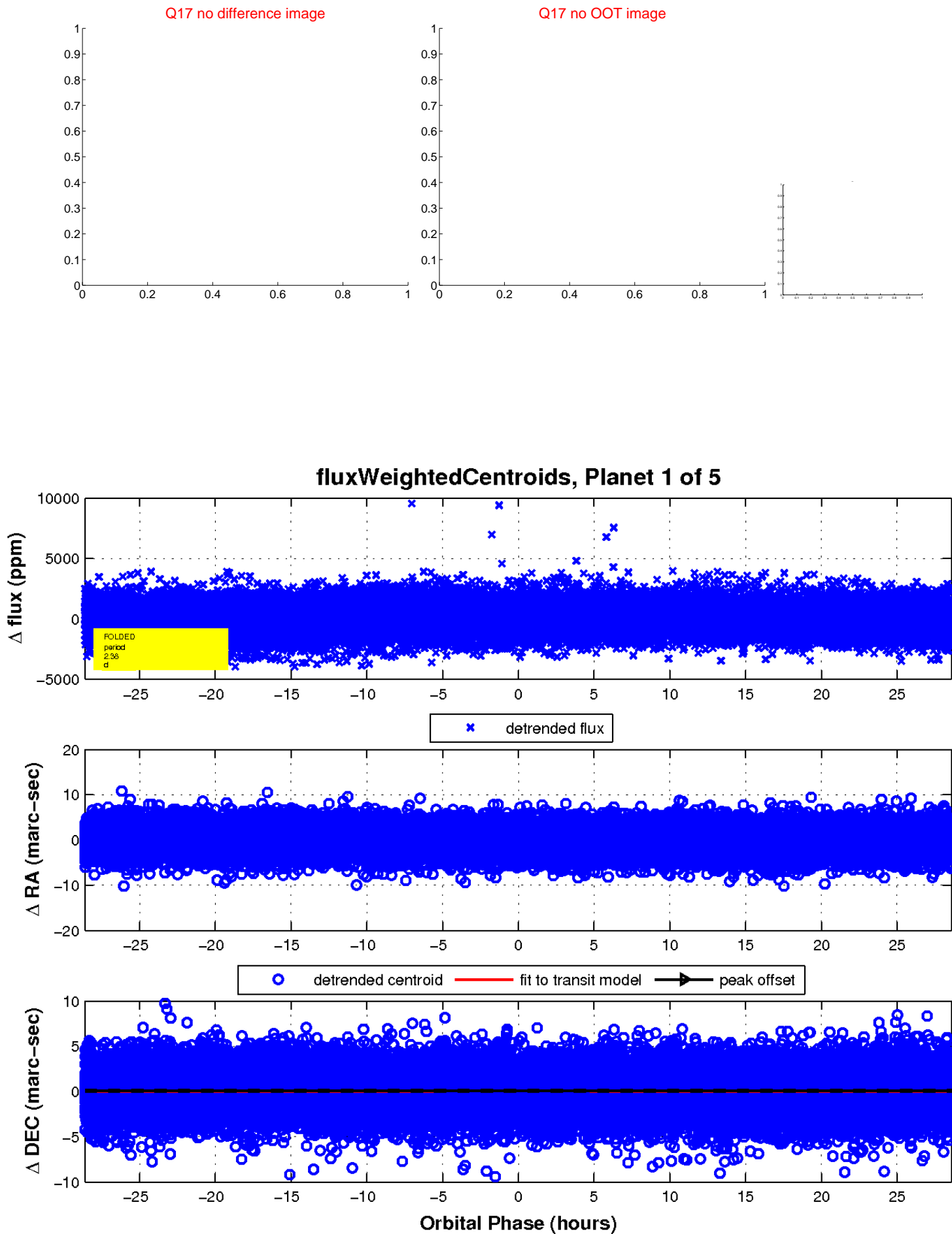
Q16 no difference image



Q16 no OOT image



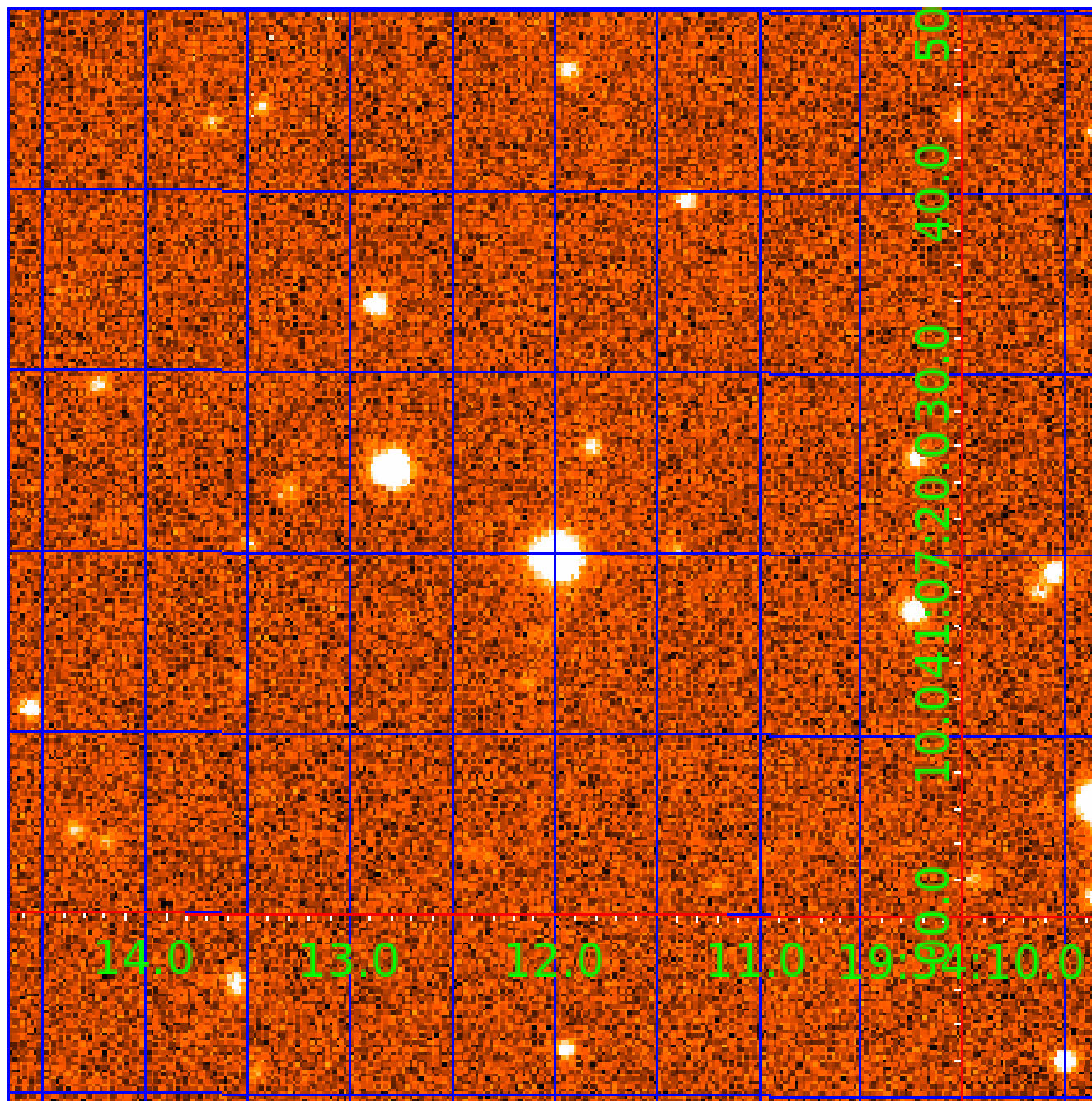
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 005881893

## Q1-17 DR25 TCE Parameters

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005881893-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
005881893-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

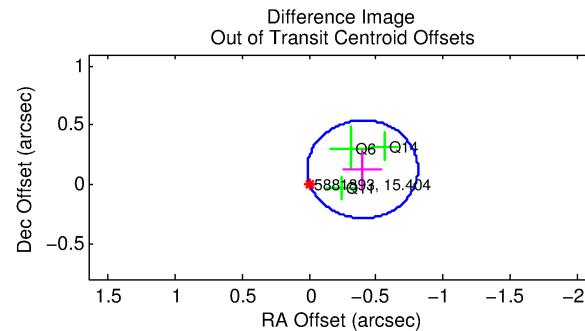
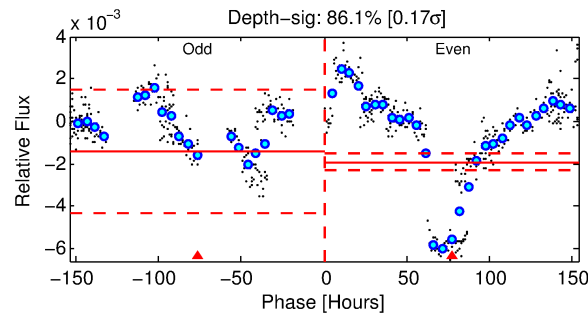
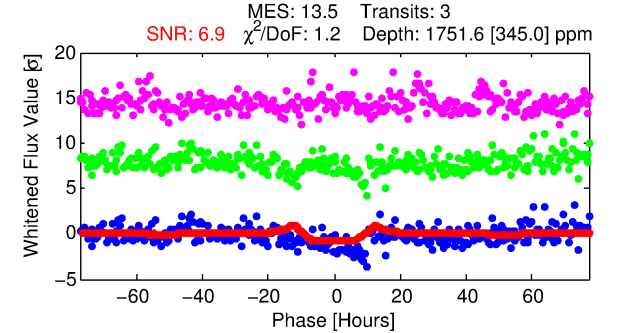
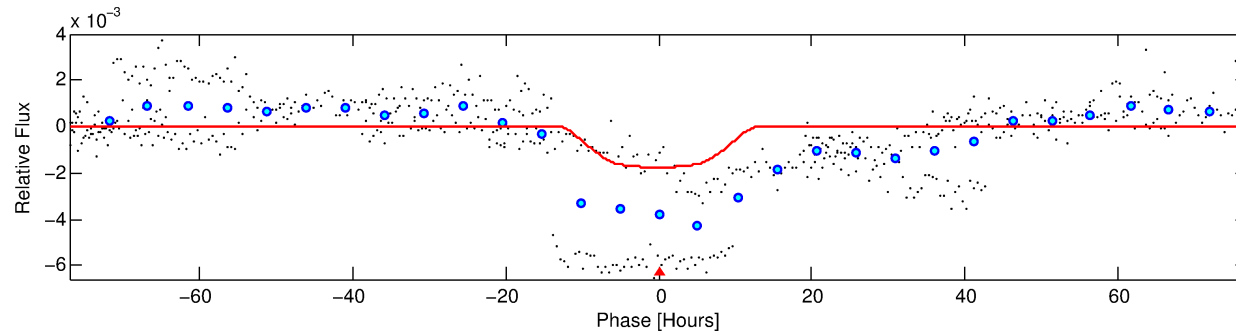
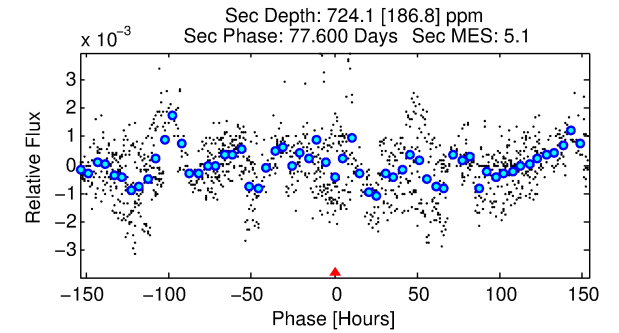
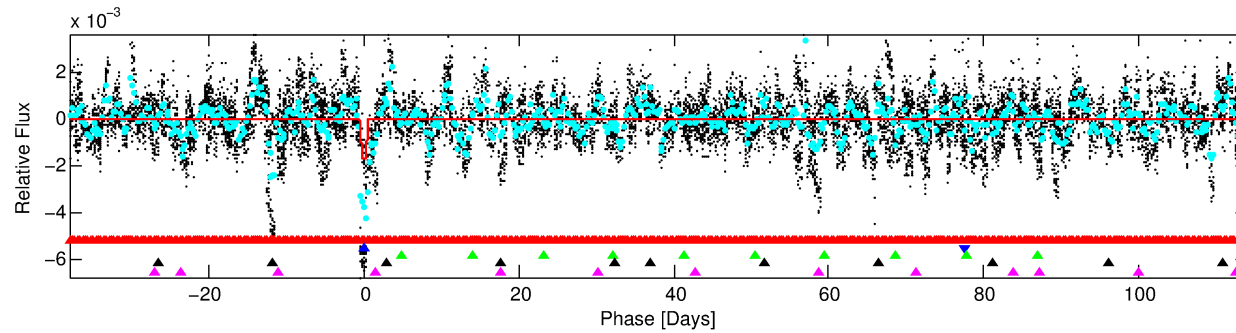
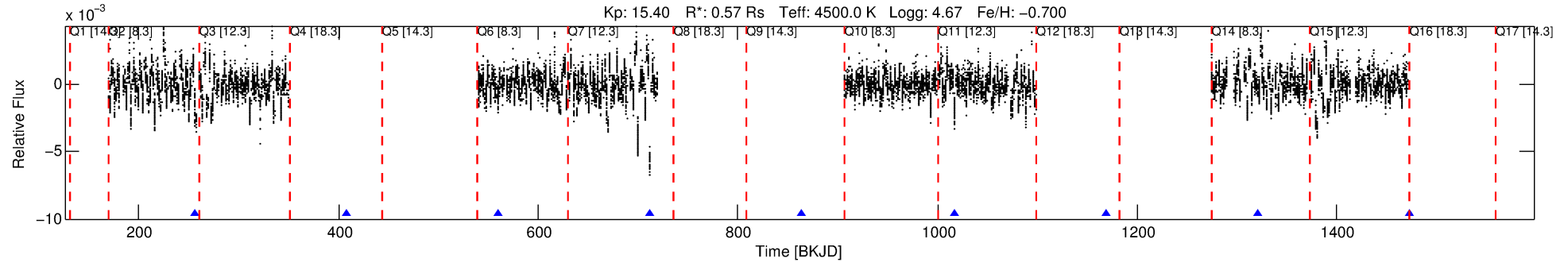
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005881893-02

No Significant Match Found

# DV One-Page Summary

KIC: 5881893 Candidate: 2 of 5 Period: 152.211 d



## DV Fit Results:

Period = 152.21126 [0.02491] d  
Epoch = 255.5416 [0.0896] BKJD  
Rp/R\* = 0.0489 [0.0054]  
a/R\* = 22.12 [3.28]  
b = 0.93 [0.02]  
Seff = 0.57 [0.10]  
Teq = 222 [9] K  
Rp = 3.07 [0.43] Re  
a = 0.4611 [0.0333] AU  
Ag = 8988.02 [3186.38] [2.82σ]  
Teffp = 3337 [304] K [10.25σ]

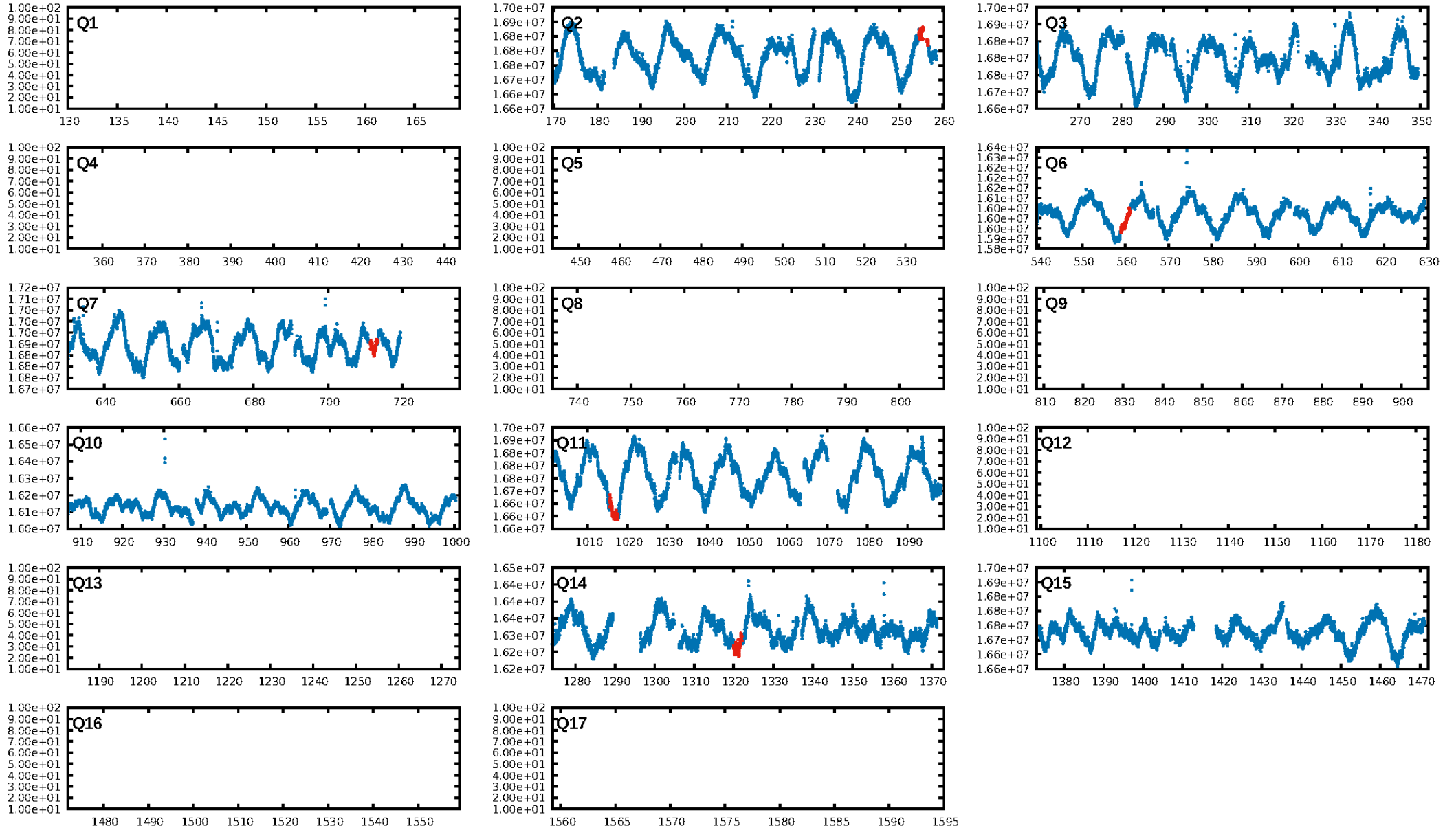
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.26σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 21.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.12e-20  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.302  
Centroid-sig: N/A  
Centroid-so: 0.622 arcsec [1.63σ]  
OotOffset-rm: 0.418 arcsec [3.04σ]  
KicOffset-rm: 0.480 arcsec [2.98σ]  
OotOffset-st: 2/1/0/0 [3]  
KicOffset-st: 2/1/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

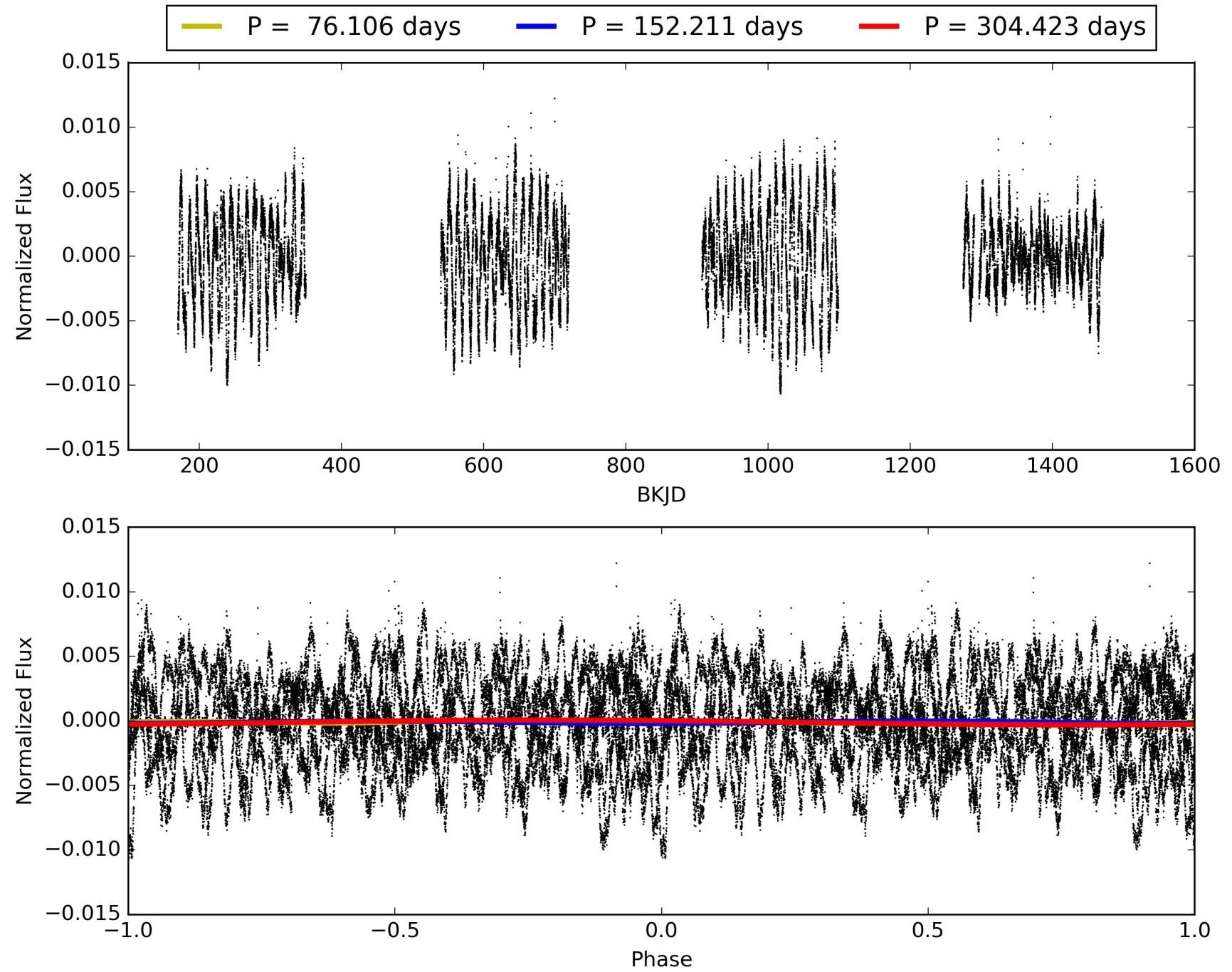
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:05:15 Z

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

# TCE 005881893-02, PDC Light Curves



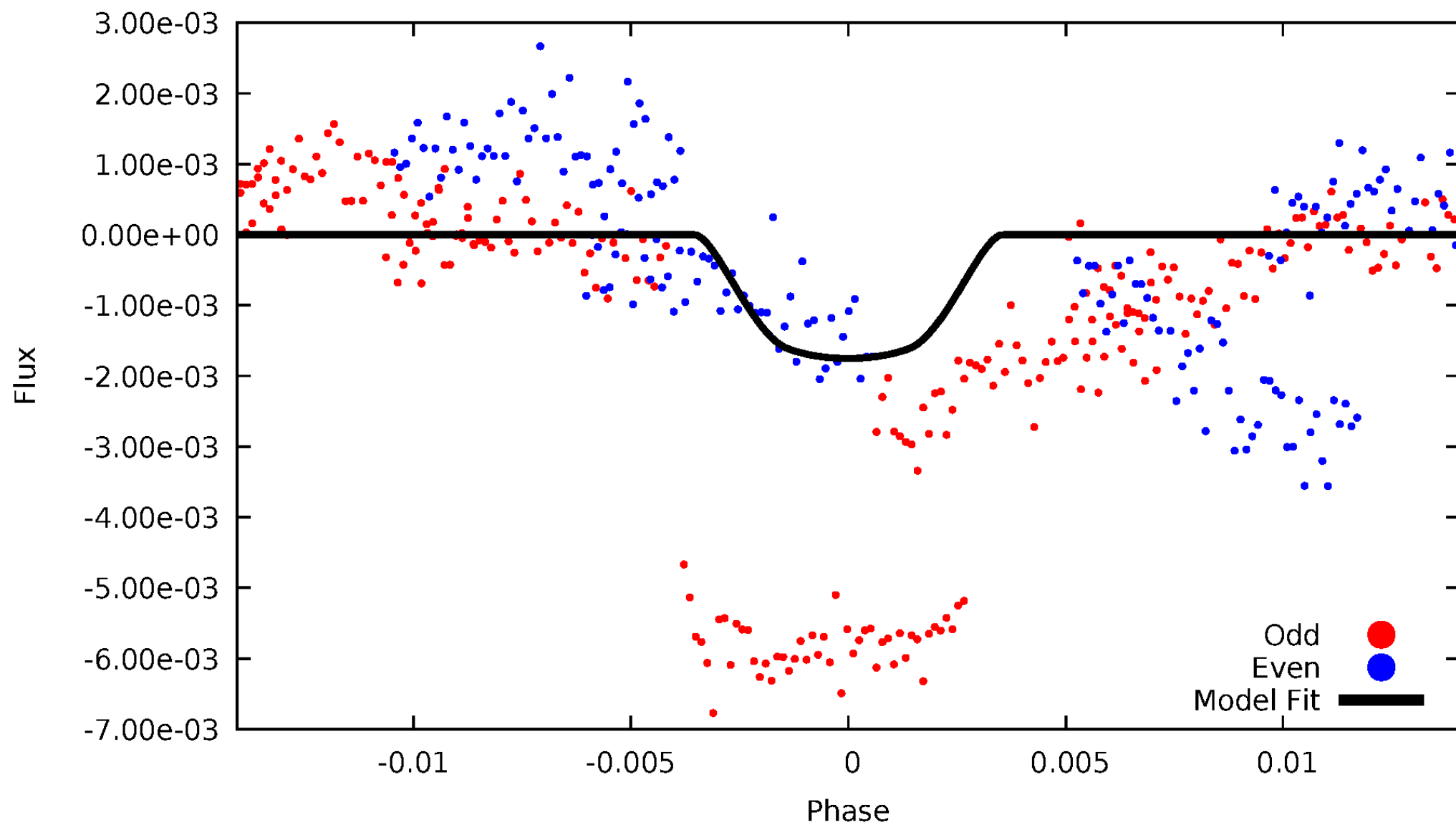
# TCE 005881893-02





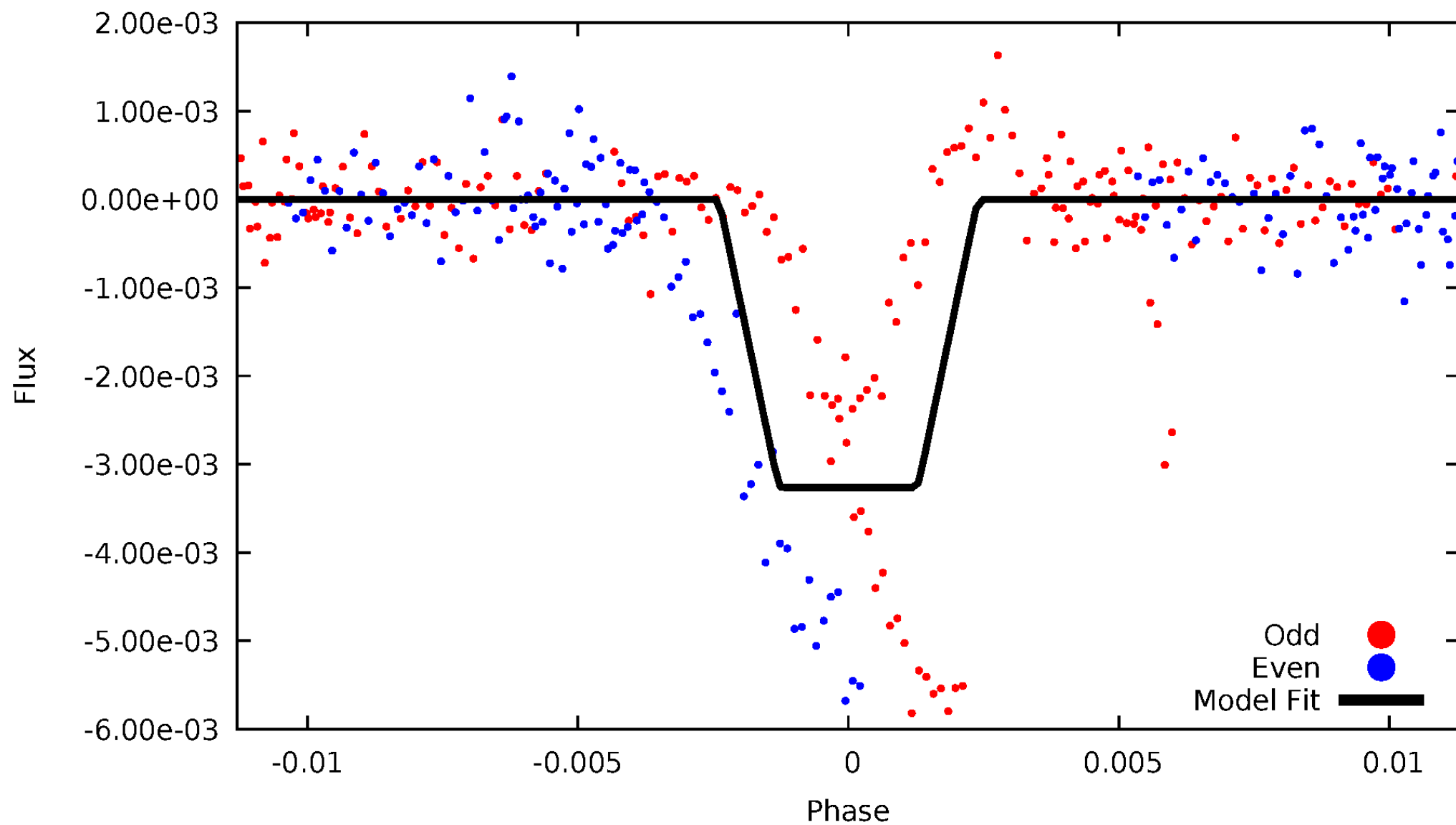
# DV Odd/Even

TCE 005881893-02



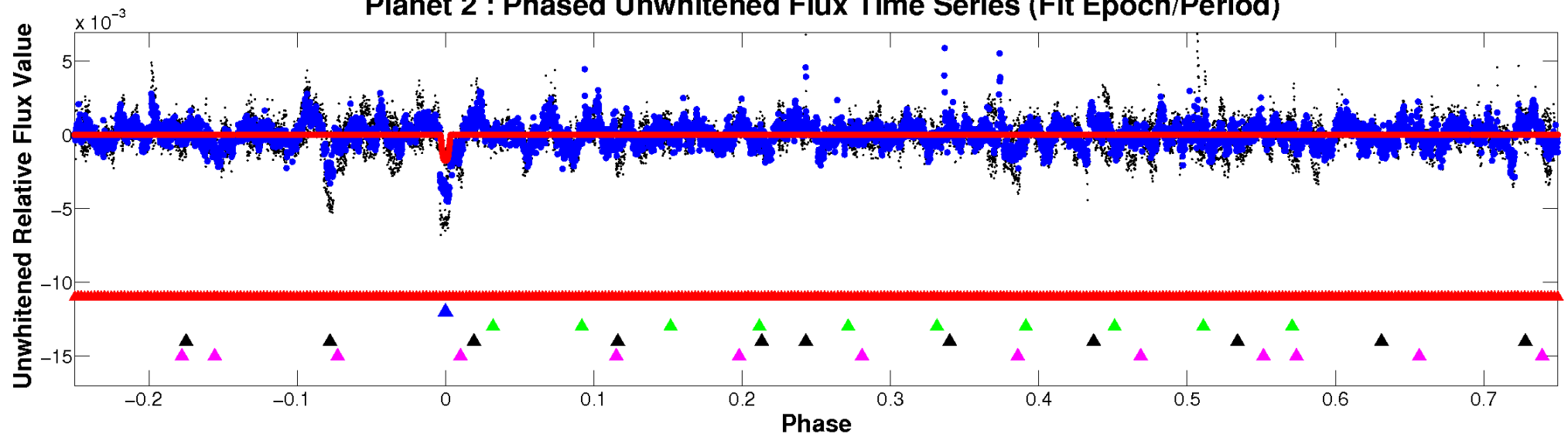
# ALT Odd/Even

TCE 005881893-02

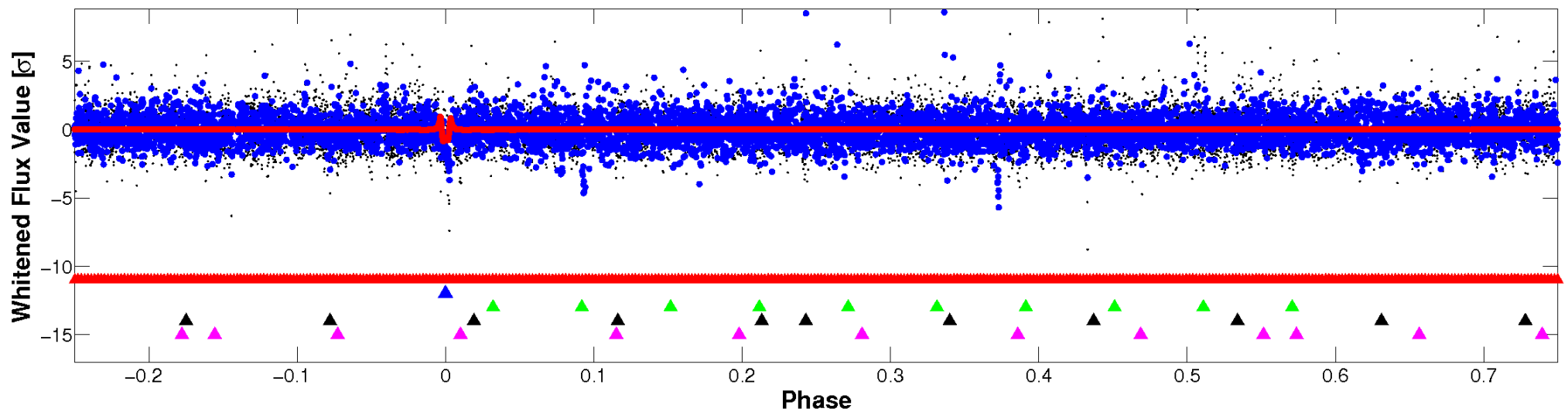


# Non-Whitened Vs. Whitened Light Curve

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

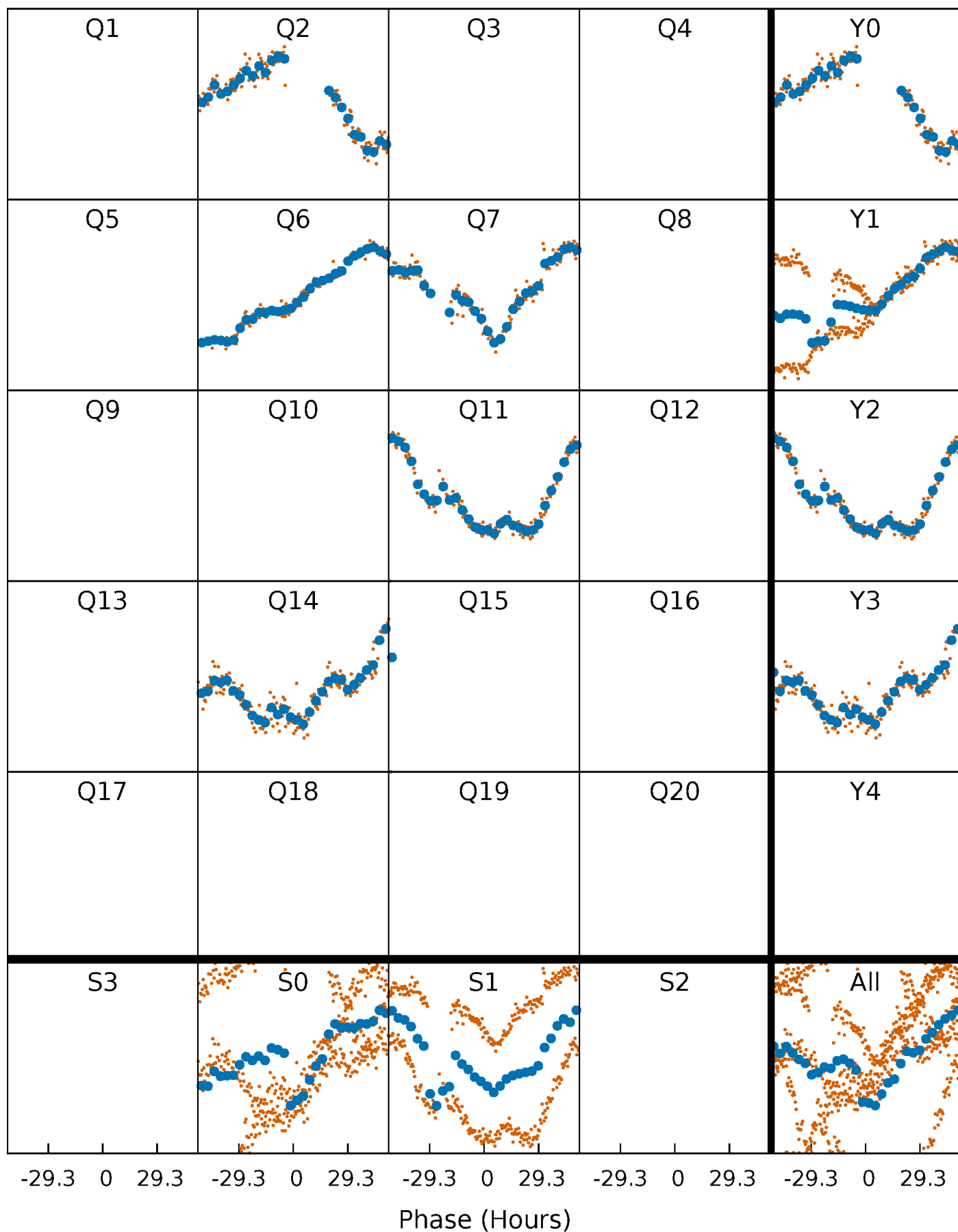


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



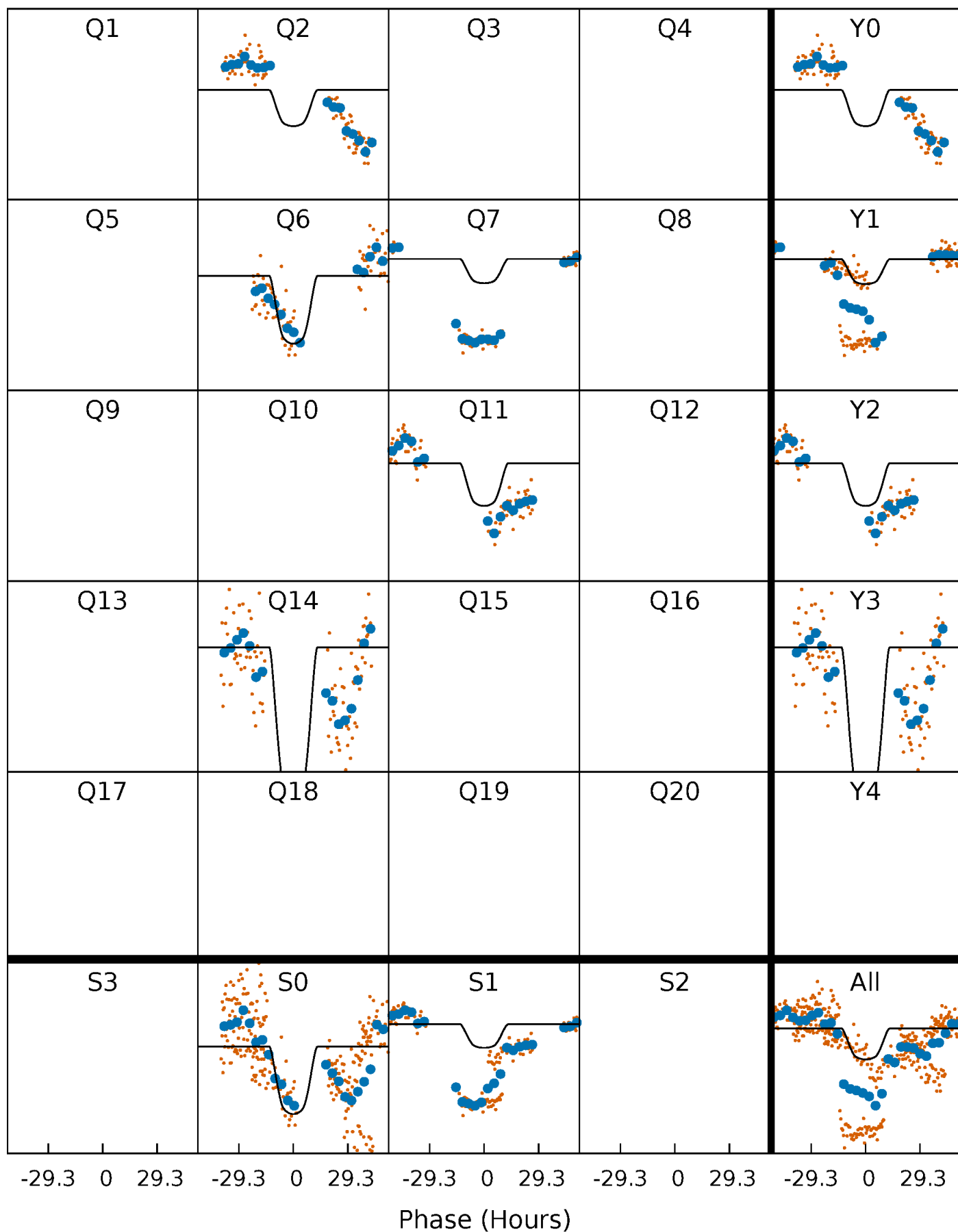
# PDC Quarter-Phased Transit Curves

TCE 005881893-02 P=152.211263 Days  $T_0=255.541617$  (BKJD)



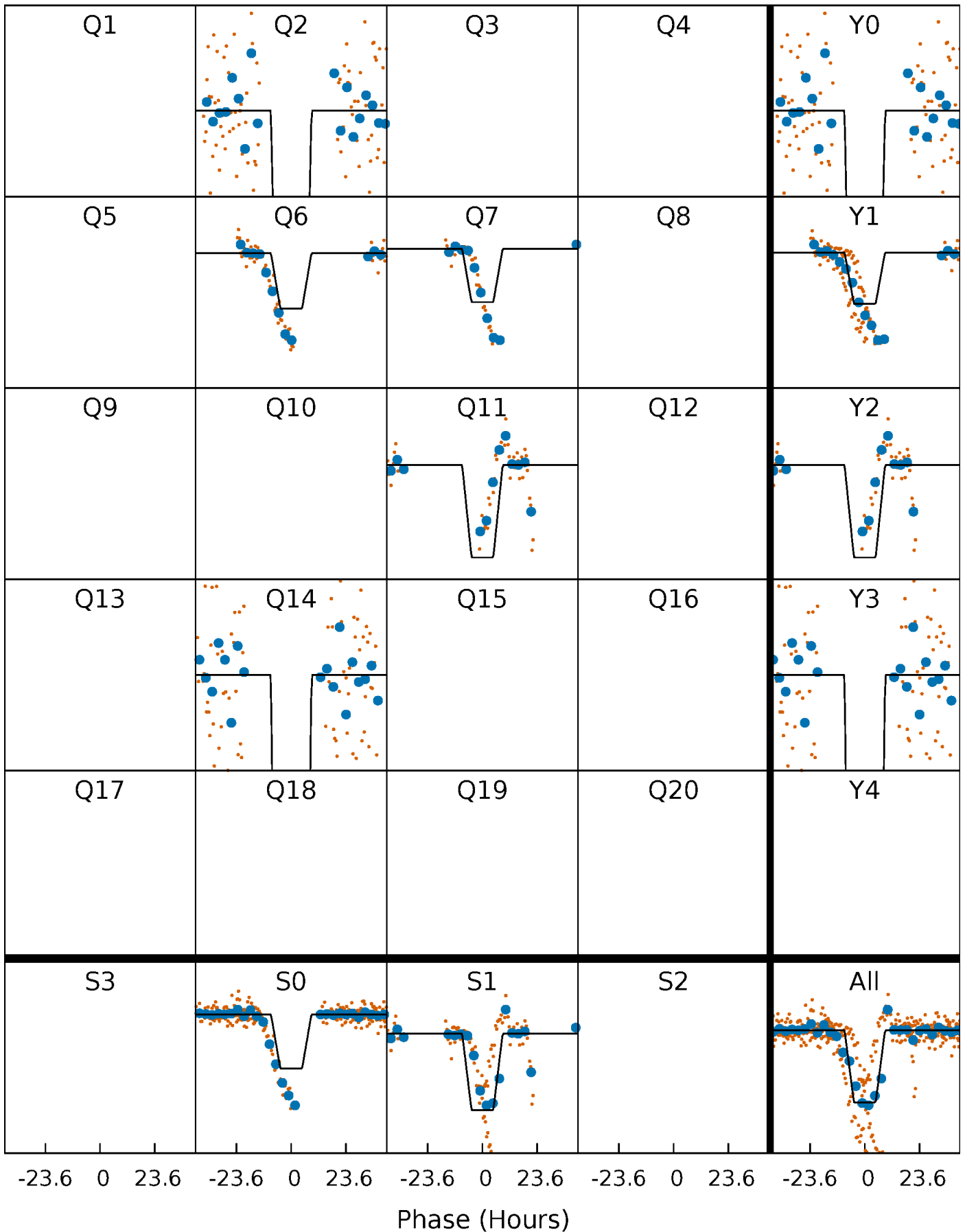
# DV Quarter-Phased Transit Curves

TCE 005881893-02 P=152.211263 Days  $T_0=255.541617$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005881893-02 P=152.243644 Days  $T_0=255.527820$  (BKJD)

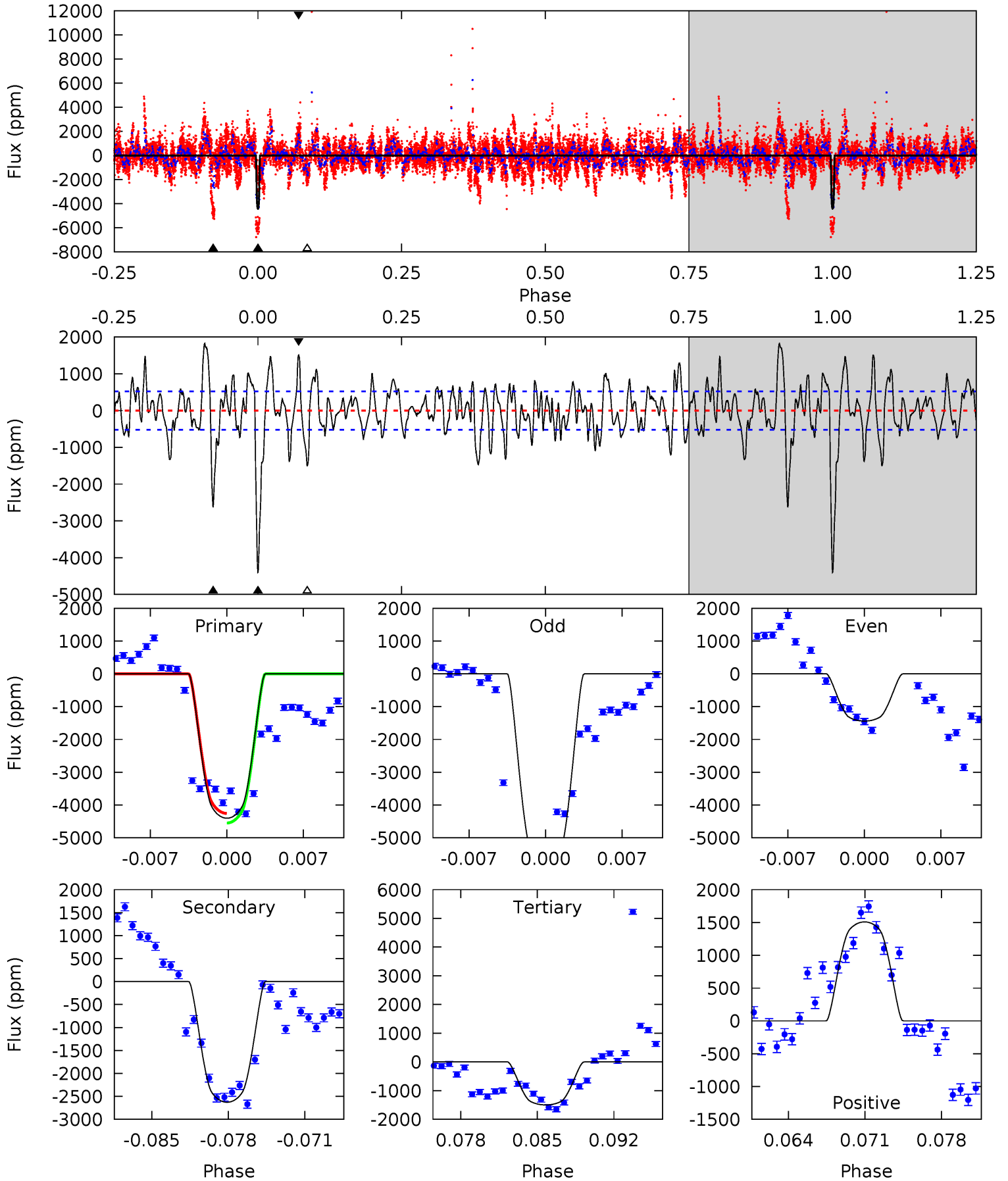




# DV Model-Shift Uniqueness Test

005881893-02, P = 152.211263 Days, E = 103.330354 Days

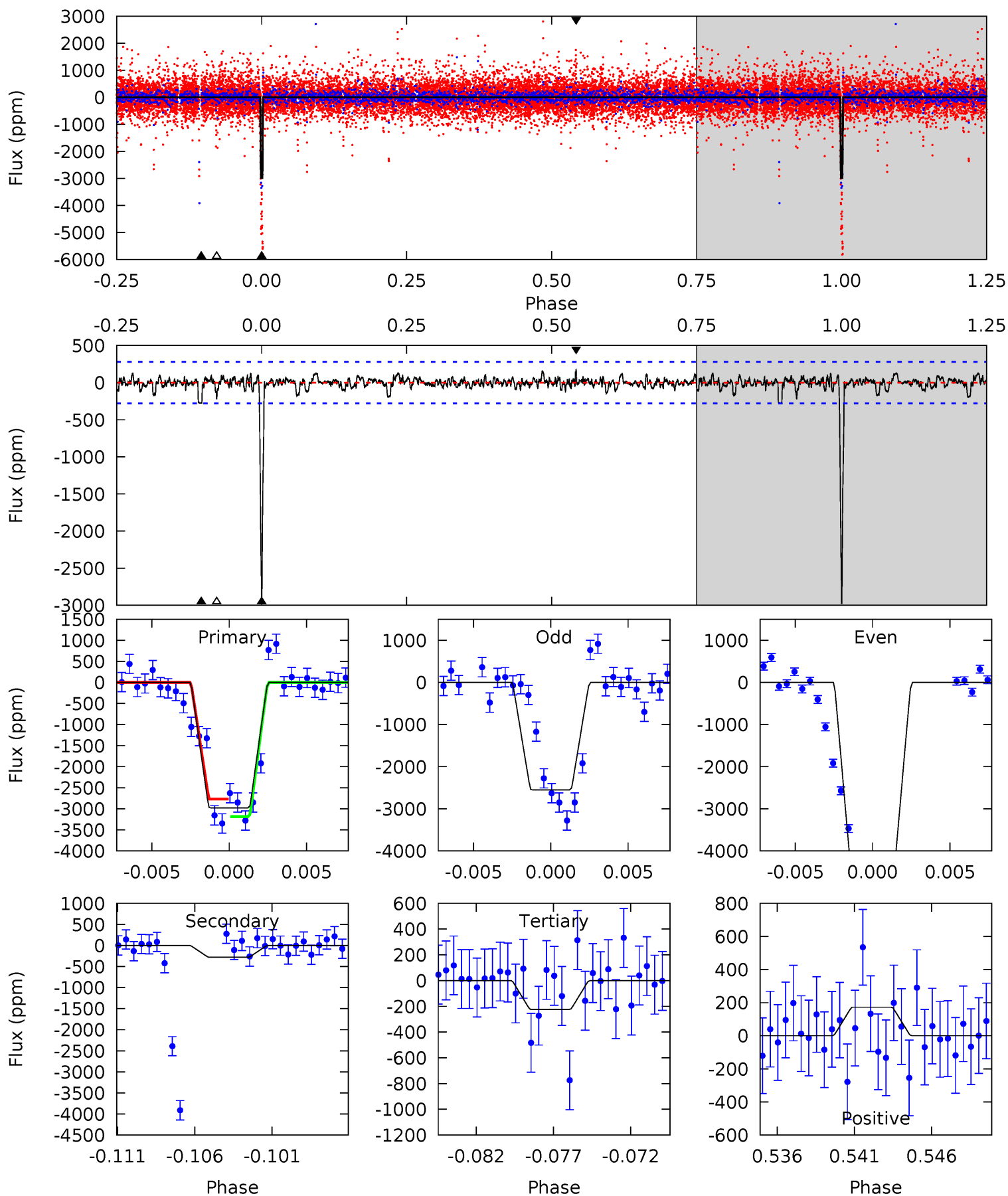
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.0	25.6	14.6	14.7	5.09	2.69	5.54	28.3	28.2	11.0	10.9	20.1	1.19	0.29	1.39



# Alt Model-Shift Uniqueness Test

005881893-02, P = 152.243644 Days, E = 103.284176 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
54.9	5.16	4.13	3.18	5.16	2.82	0.90	50.8	51.7	1.03	1.98	18.4	0.97	0.05	3.82



### Stellar Parameters For KIC 005881893

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4500^{+121}_{-148}$	$4.670^{+0.054}_{-0.027}$	$-0.700^{+0.300}_{-0.300}$	$0.575^{+0.046}_{-0.051}$	$0.564^{+0.054}_{-0.036}$	$4.173^{+1.053}_{-0.540}$
	+3%/-3%	+1%/-1%	+43%/-43%	+8%/-9%	+10%/-6%	+25%/-13%
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 005881893-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2628 \pm 102$	$3.02^{+0.39}_{-0.34}$	$308^{+10}_{-11}$	$4584^{+284}_{-229}$	$34215^{+8786}_{-7484}$
Alt.	$-280 \pm 54$	$3.56^{+0.38}_{-0.36}$	$308^{+10}_{-11}$	$2994^{+139}_{-131}$	$2593^{+831}_{-656}$

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

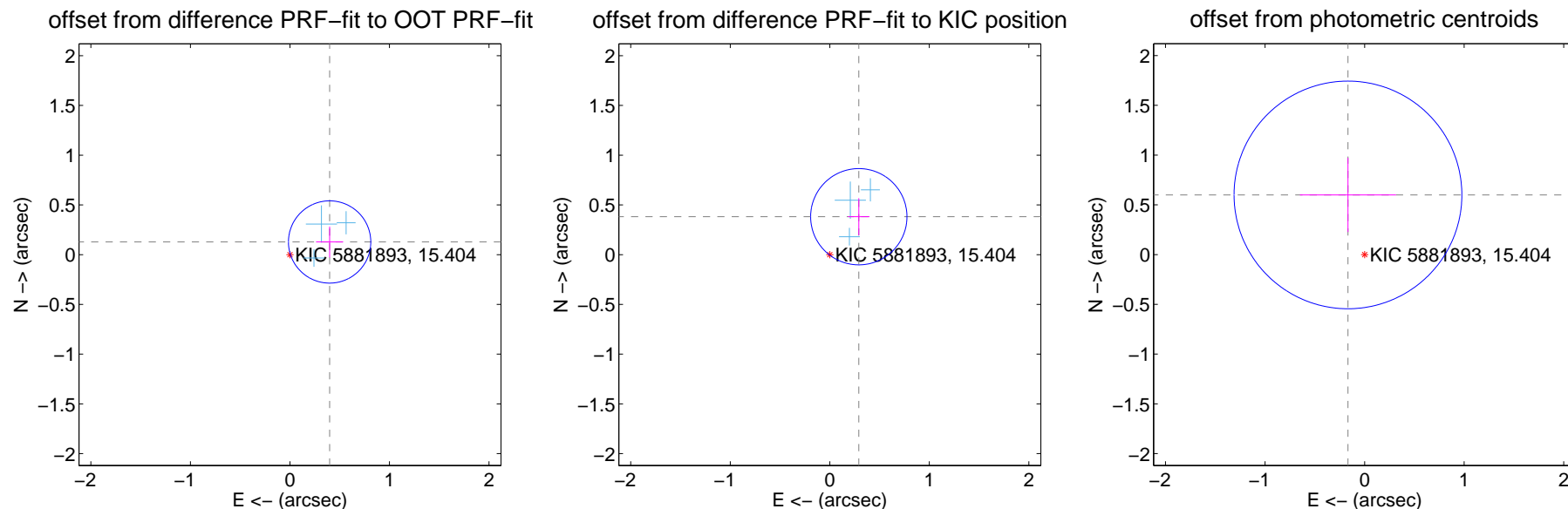
## DV Centroid Data

Supplemental centroid analysis for 005881893-02. Kepler magnitude: 15.40. Transit SNR 6.85

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.418 \pm 0.138$	3.04	$-0.399 \pm 0.136$	$0.127 \pm 0.155$
PRF-fit source offset from KIC position	$0.480 \pm 0.161$	2.98	$-0.291 \pm 0.107$	$0.381 \pm 0.186$
photometric centroid source offset	$0.62 \pm 0.38$	1.63	$0.17 \pm 0.48$	$0.60 \pm 0.37$



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.

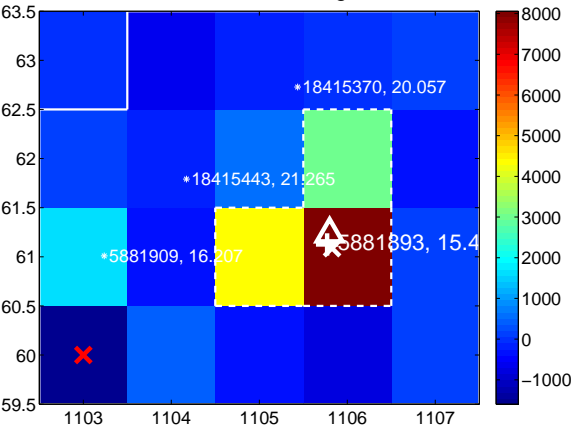
Q5 no difference image



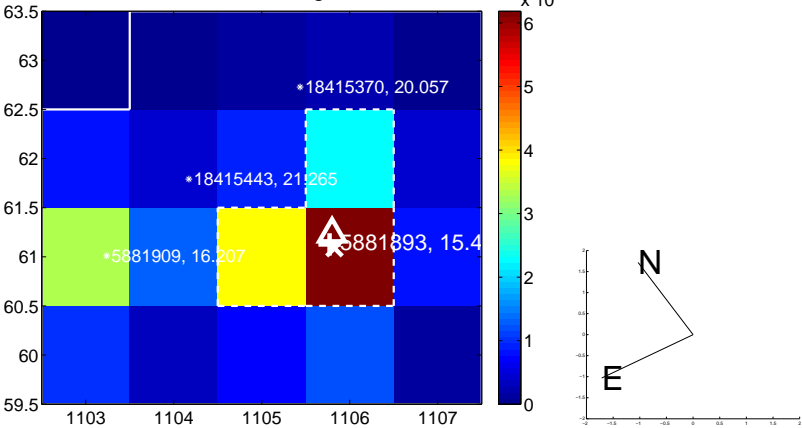
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image

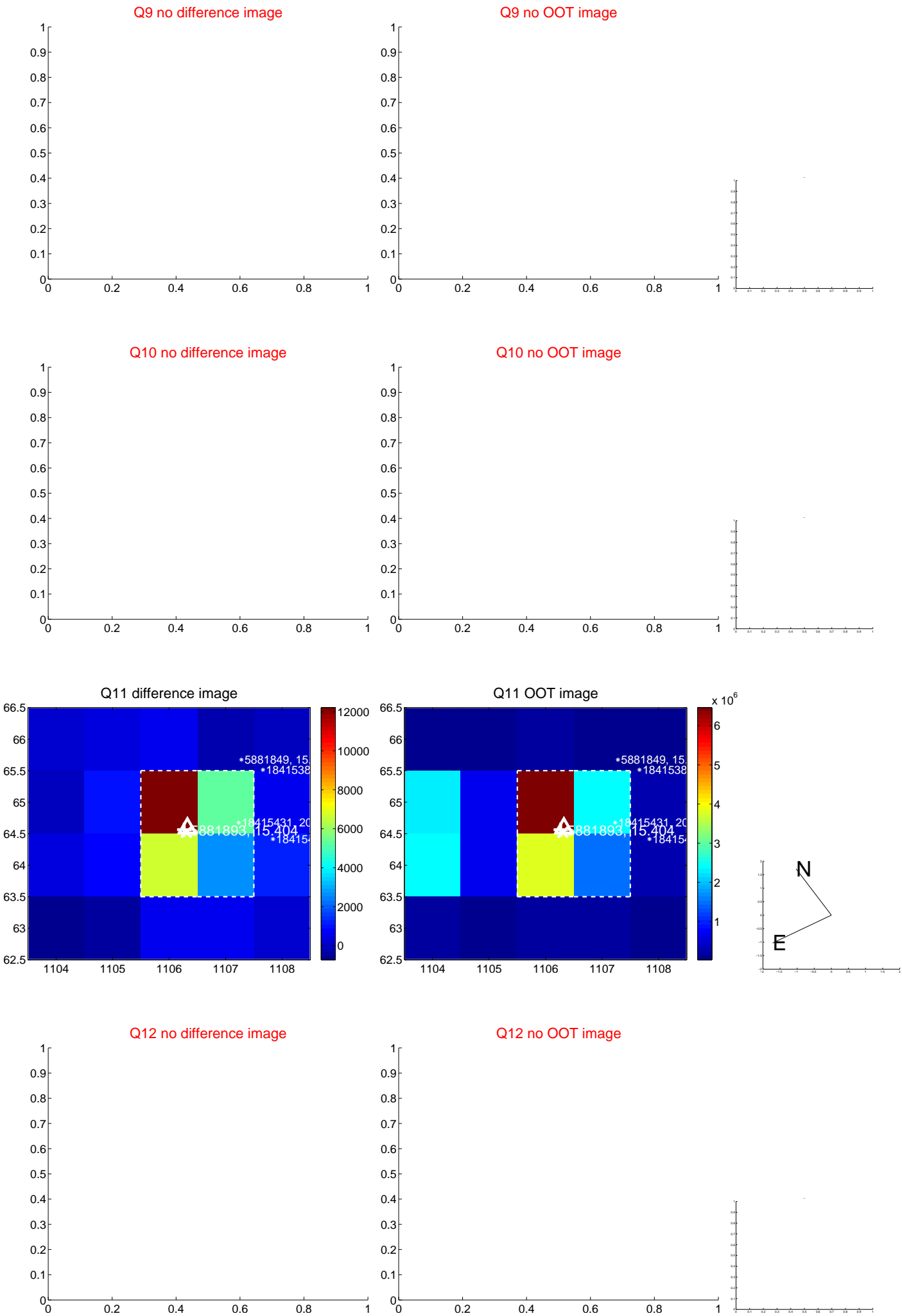


Q8 no OOT image



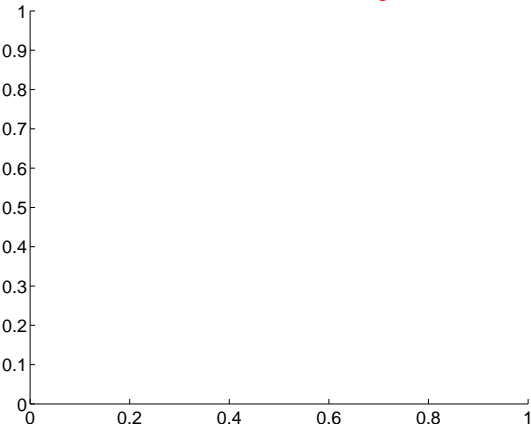


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

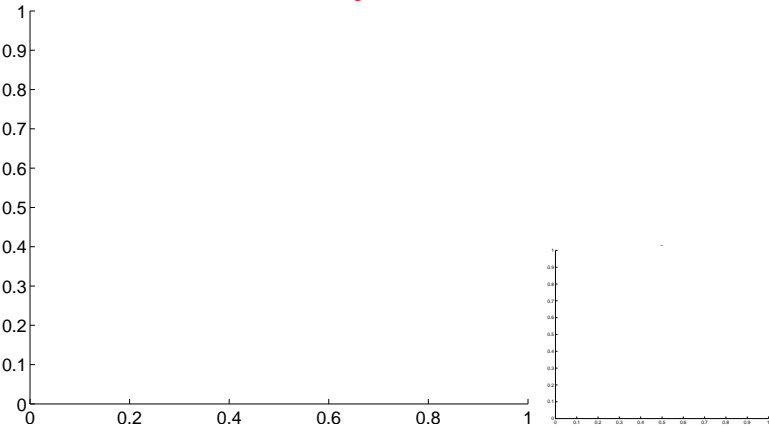


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

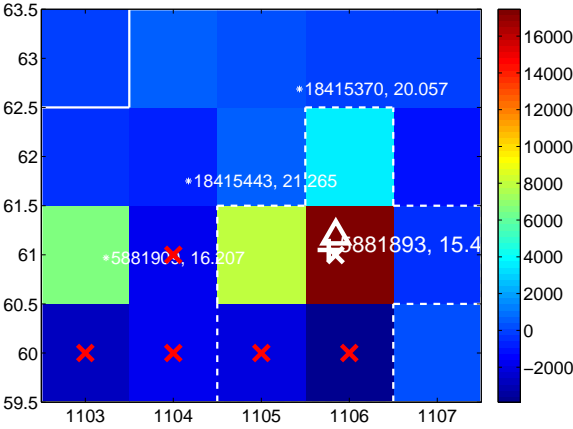
Q13 no difference image



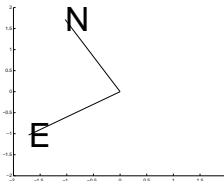
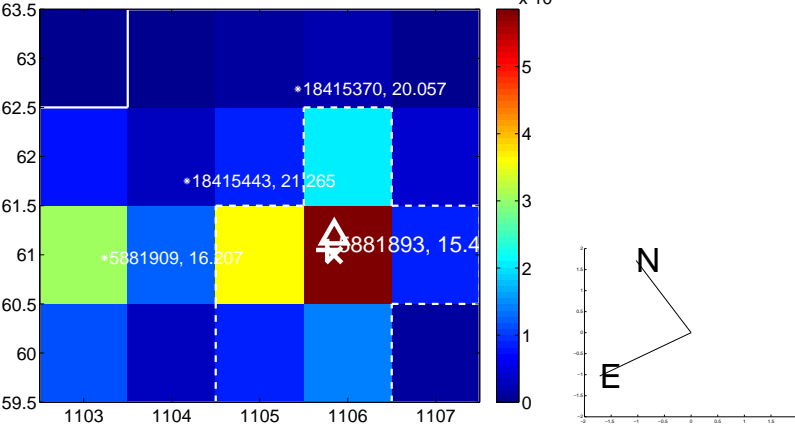
Q13 no OOT image



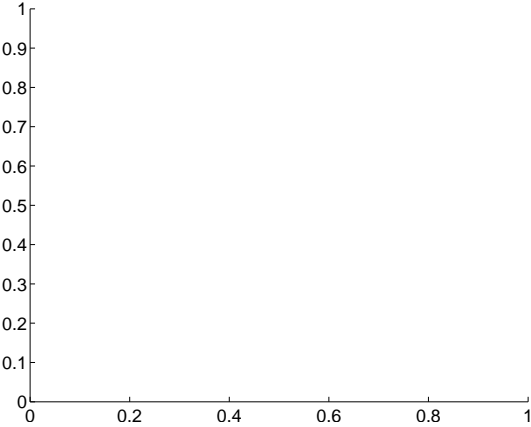
Q14 difference image



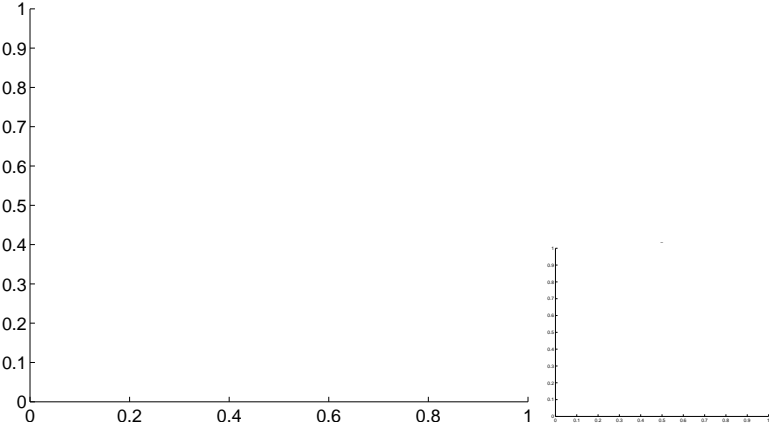
Q14 OOT image



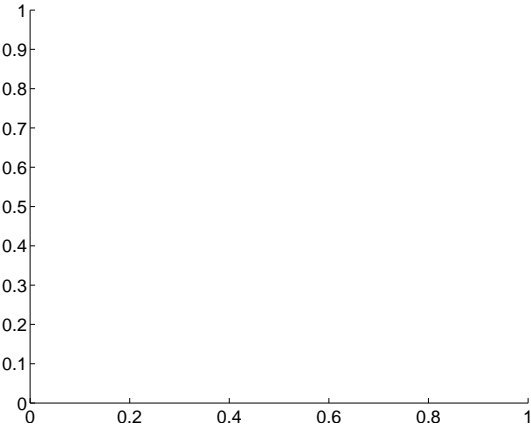
Q15 no difference image



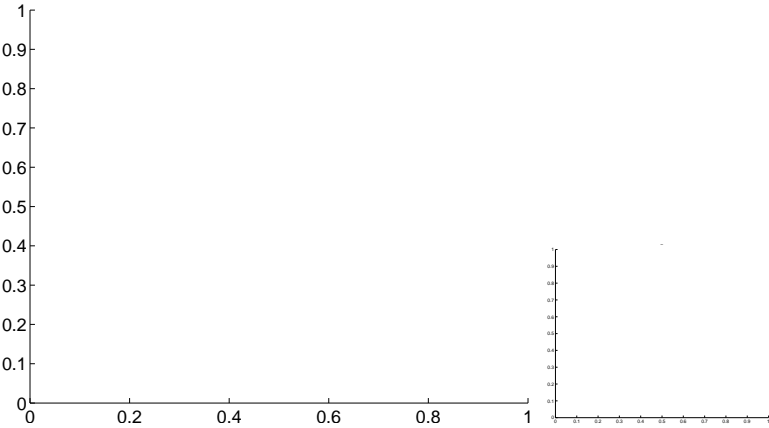
Q15 no OOT image



Q16 no difference image

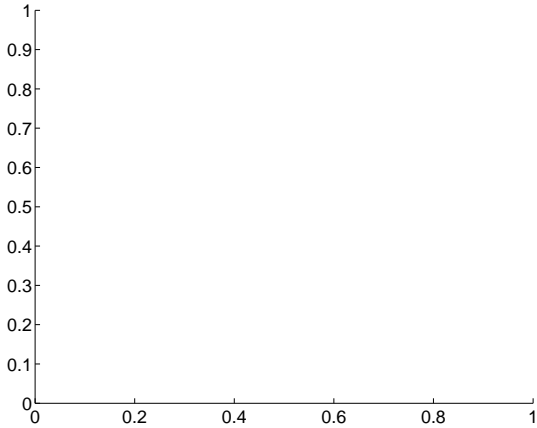


Q16 no OOT image

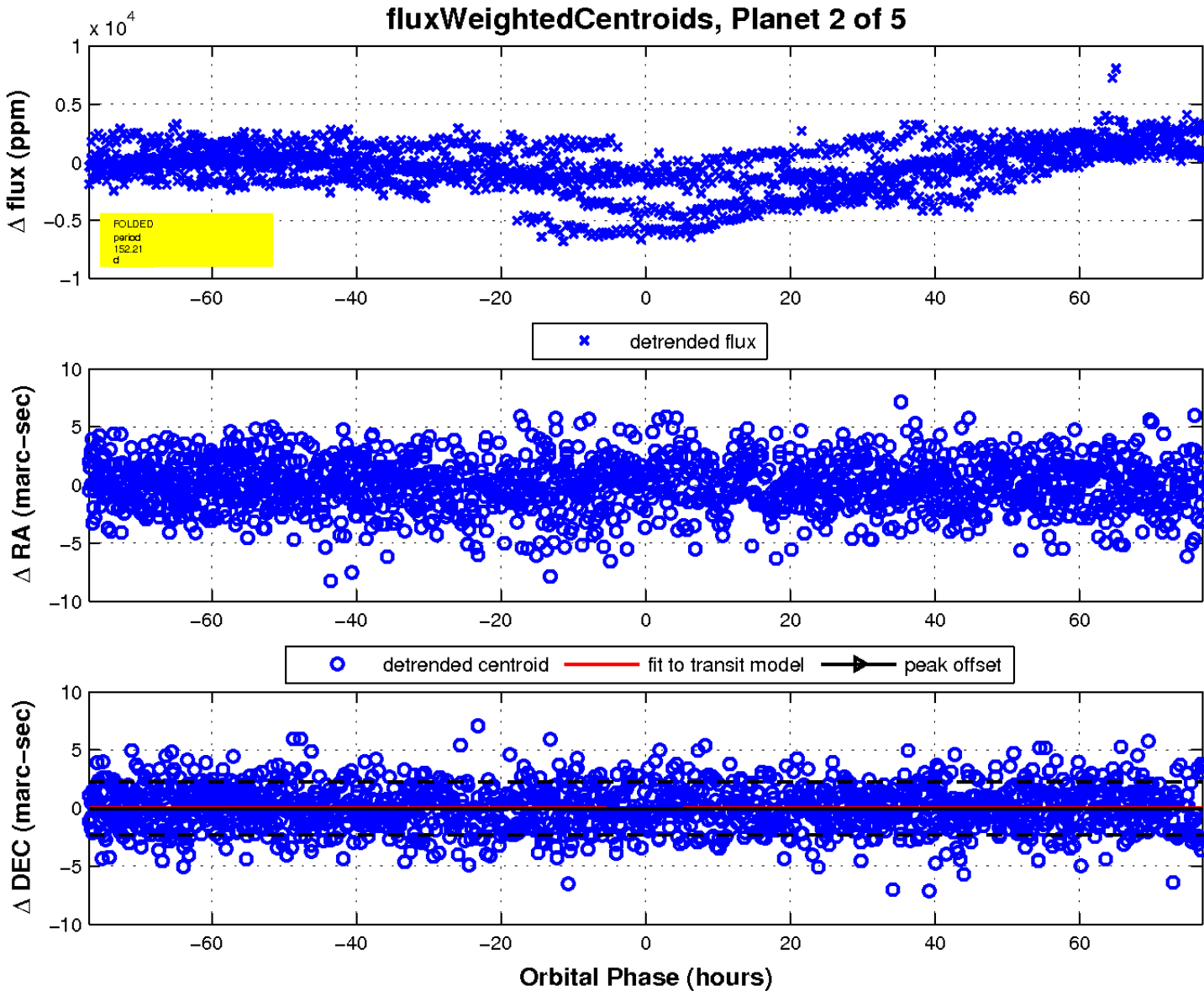
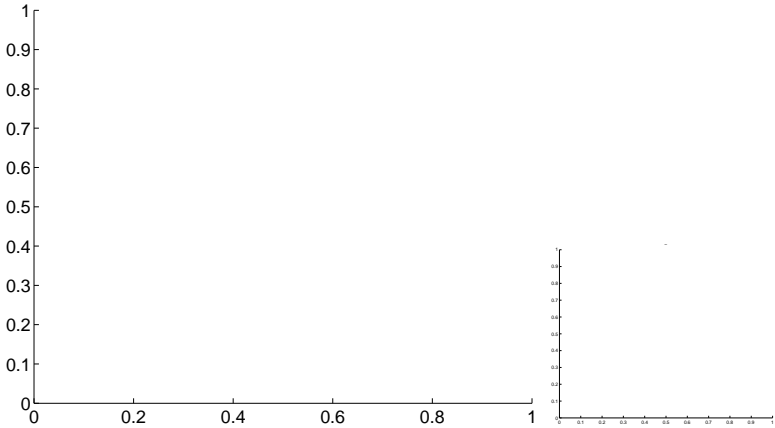


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

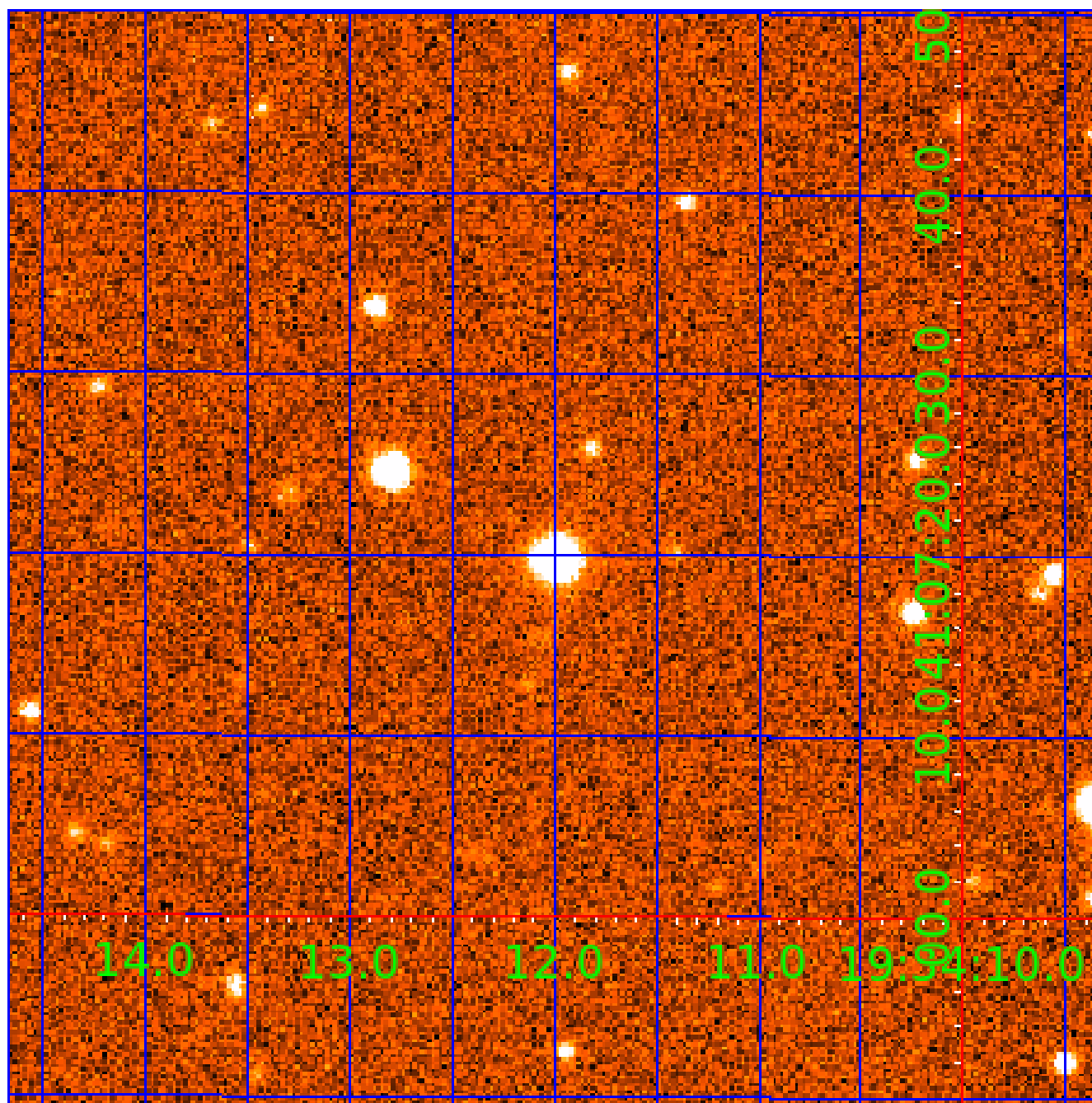


Q17 no OOT image



UKIRT Image

Declination



# KIC 005881893

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005881893-01	OBS	No	2.383548	131.696468	137.0	10.812	7.5	9.9	0.57	4500	0.83	145.84
005881893-02	OBS	No	152.211263	255.541617	1751.6	25.676	13.5	6.9	0.57	4500	3.07	0.57
005881893-03	OBS	No	143.098242	190.223426	1027.7	6.434	11.5	8.6	0.57	4500	2.05	0.62
005881893-04	OBS	No	137.442566	135.786622	663.0	2.561	9.2	5.3	0.57	4500	1.69	0.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005881893-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005881893-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
005881893-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
005881893-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

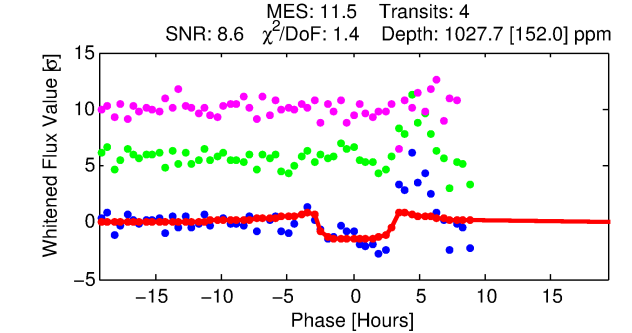
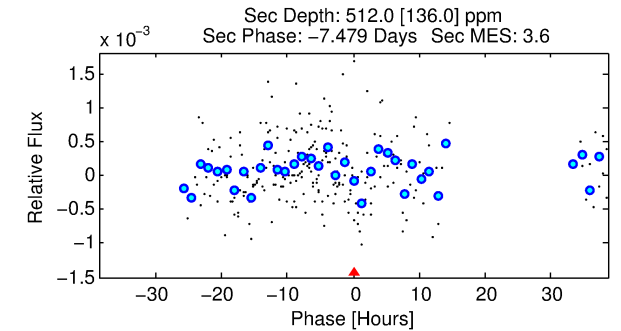
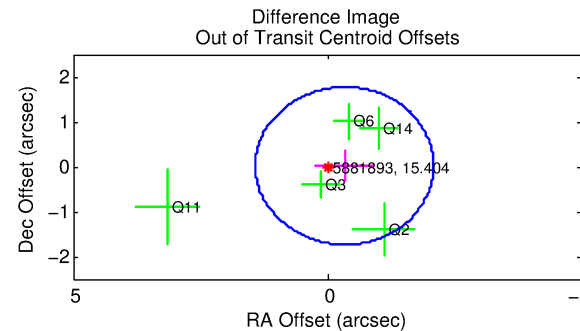
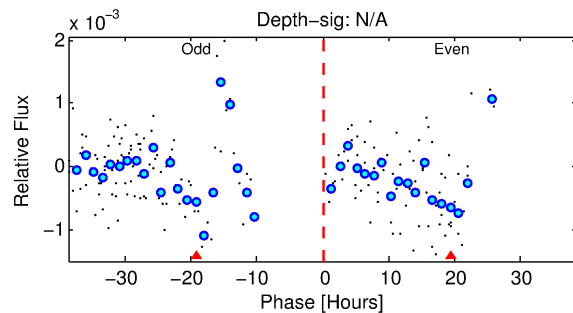
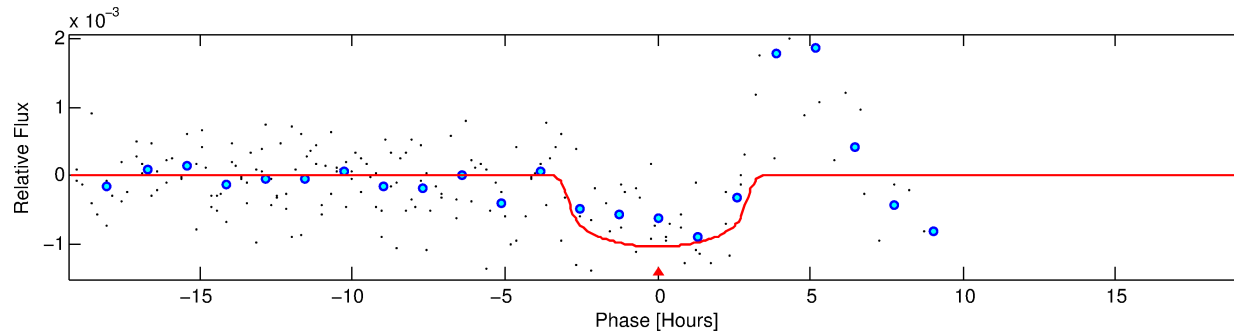
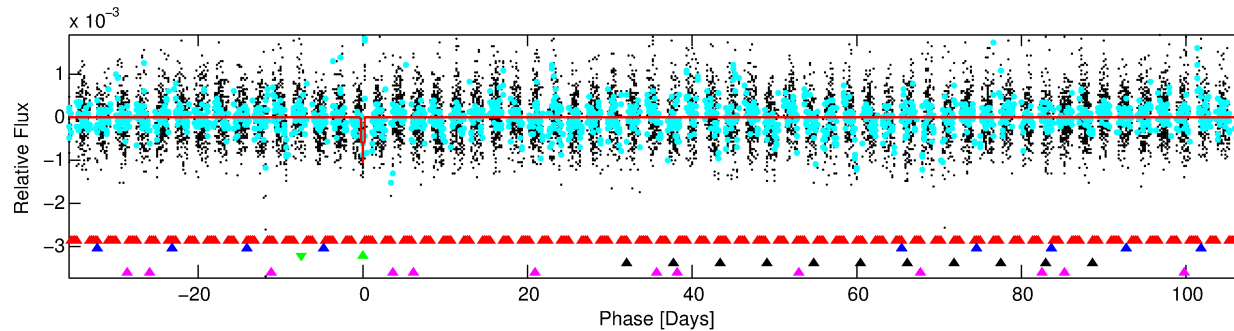
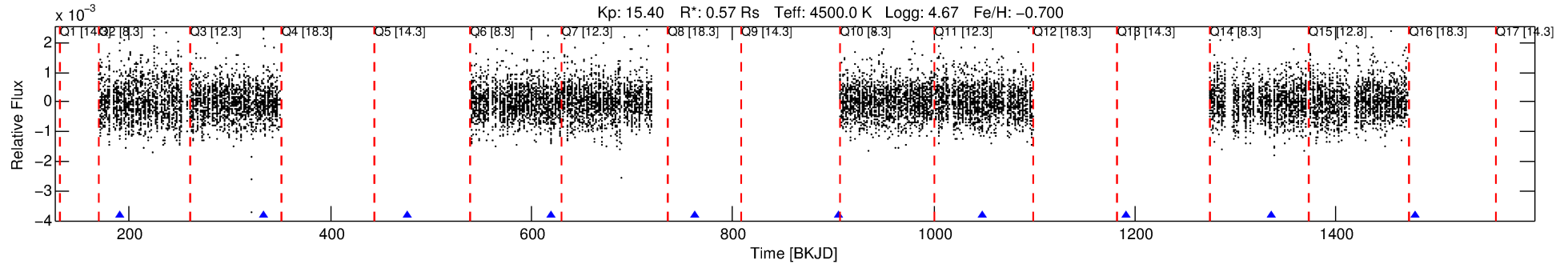
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005881893-03

No Significant Match Found

# DV One-Page Summary

KIC: 5881893 Candidate: 3 of 5 Period: 143.098 d



## DV Fit Results:

Period = 143.09824 [0.00560] d  
 Epoch = 190.2234 [0.0101] BKJD  
 Rp/R\* = 0.0327 [0.0122]  
 a/R\* = 113.03 [140.51]  
 b = 0.79 [0.60]  
 Seff = 0.62 [0.10]  
 Teq = 226 [9] K  
 Rp = 2.05 [0.79] Re  
 a = 0.4425 [0.0320] AU  
 Ag = 13073.13 [10465.31] [1.25σ]  
 Tefp = 3741 [753] K [4.67σ]

## DV Diagnostic Results:

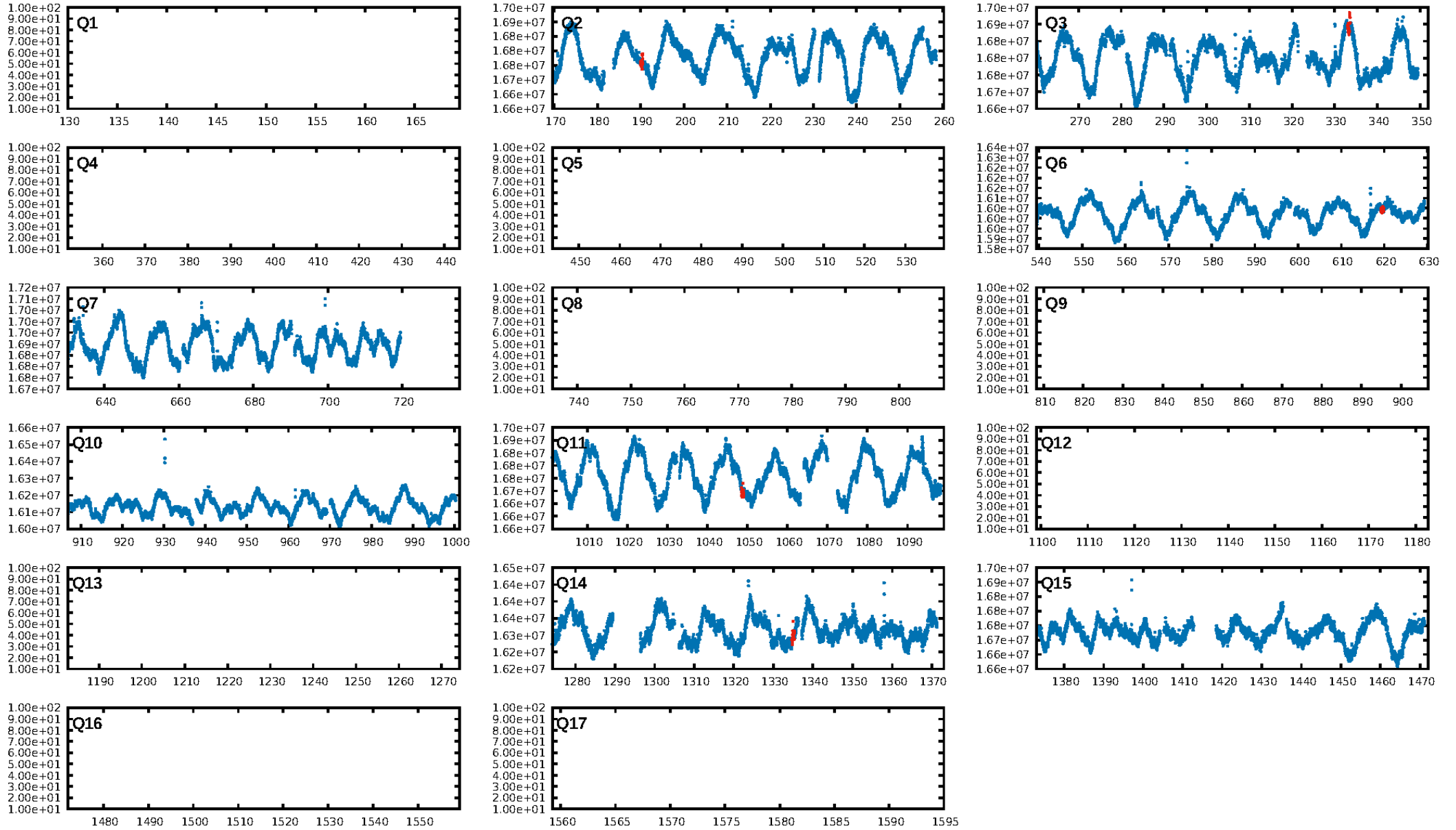
ShortPeriod-sig: 100.0% [19.60σ]  
 LongPeriod-sig: 100.0% [8.26σ]  
 ModelChiSquare2-sig: 95.5%  
 ModelChiSquareGof-sig: 94.0%  
 Bootstrap-pfa: 7.10e-17  
 RollingBand-fgt: 1.00 [4/4]  
 GhostDiagnostic-chr: -4.31  
 Centroid-sig: N/A  
 Centroid-so: 0.584 arcsec [0.56σ]  
 OotOffset-rm: 0.334 arcsec [0.57σ]  
 OotOffset-st: 3/2/0/0 [5]  
 KicOffset-rm: 0.198 arcsec [0.43σ]  
 KicOffset-st: 3/2/0/0 [5]  
 DiffImageQuality-fgm: 0.80 [4/5]  
 DiffImageOverlap-fno: 0.60 [3/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:05:18 Z

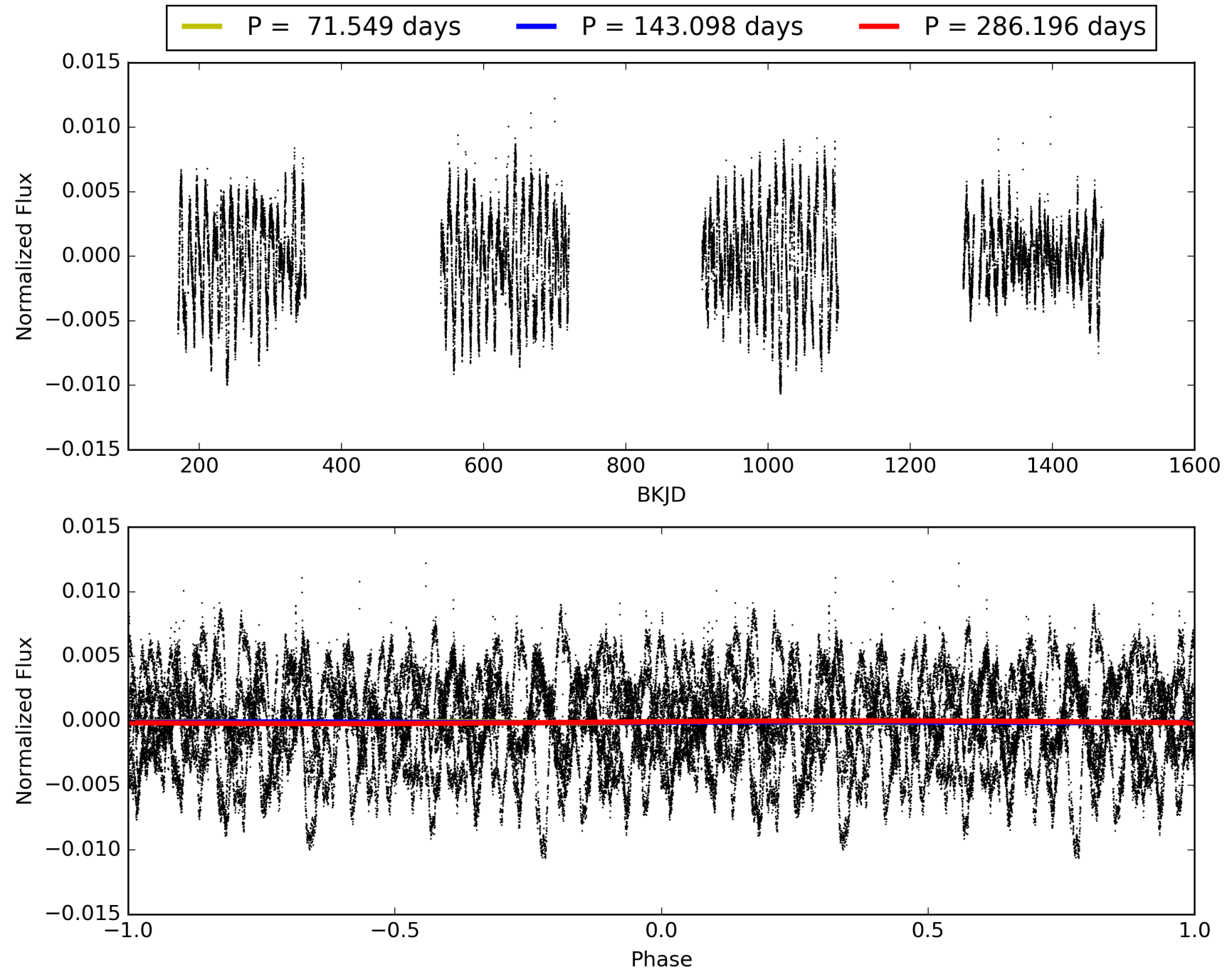
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005881893-03, PDC Light Curves

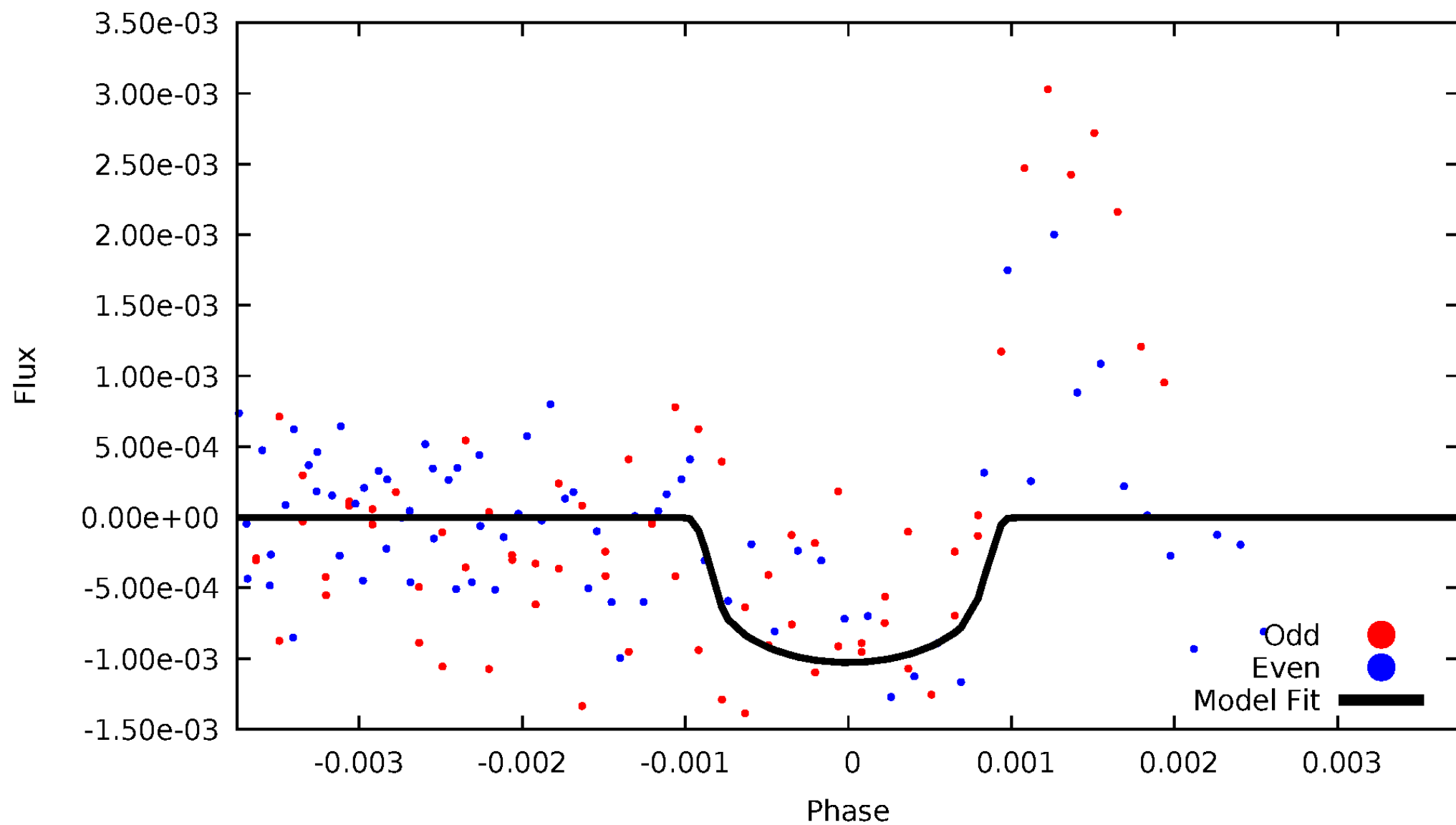


# TCE 005881893-03



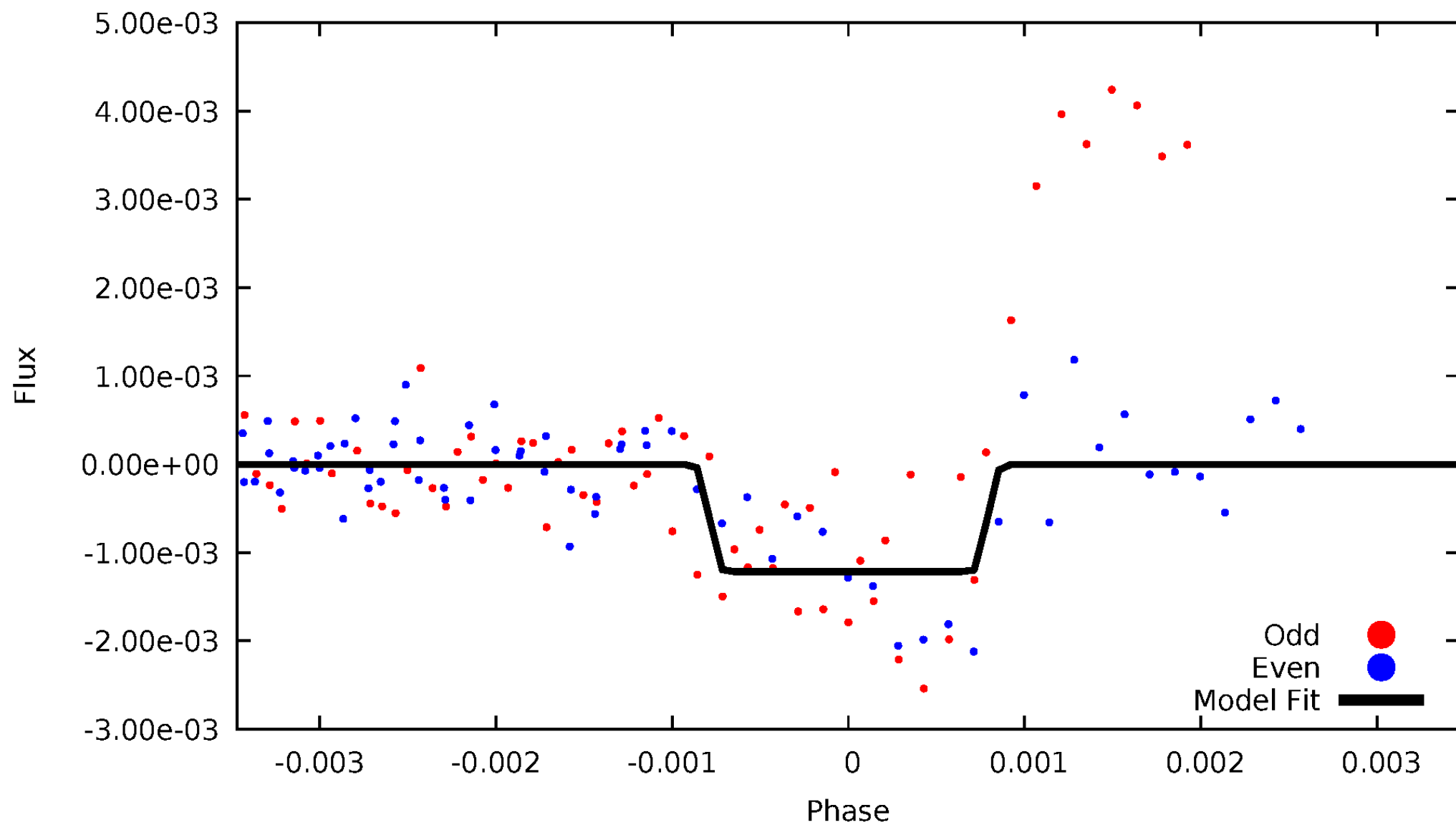
# DV Odd/Even

TCE 005881893-03



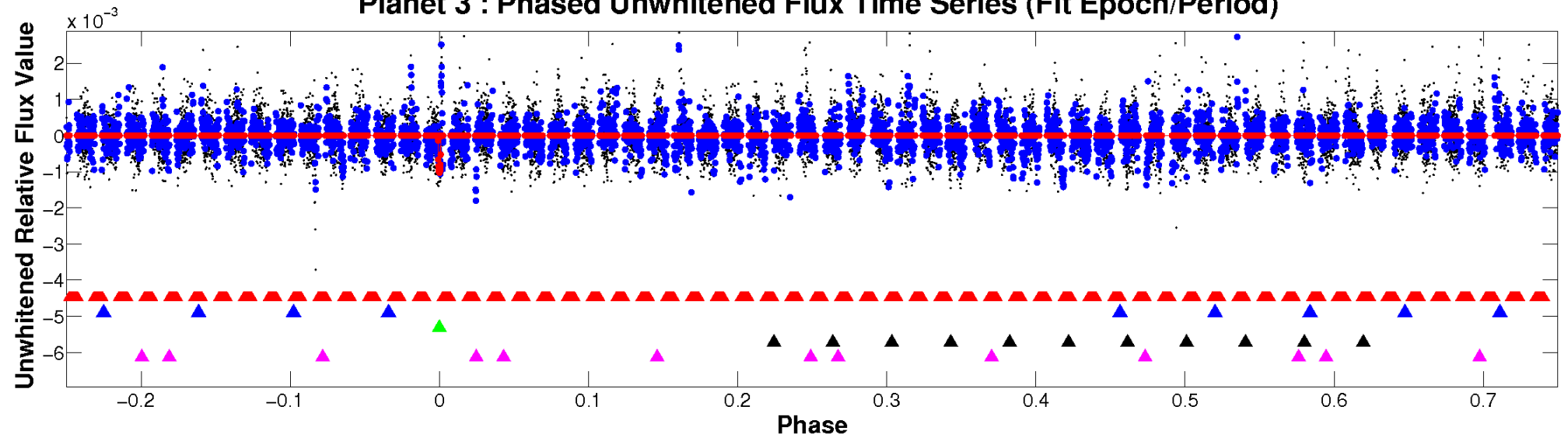
# ALT Odd/Even

TCE 005881893-03

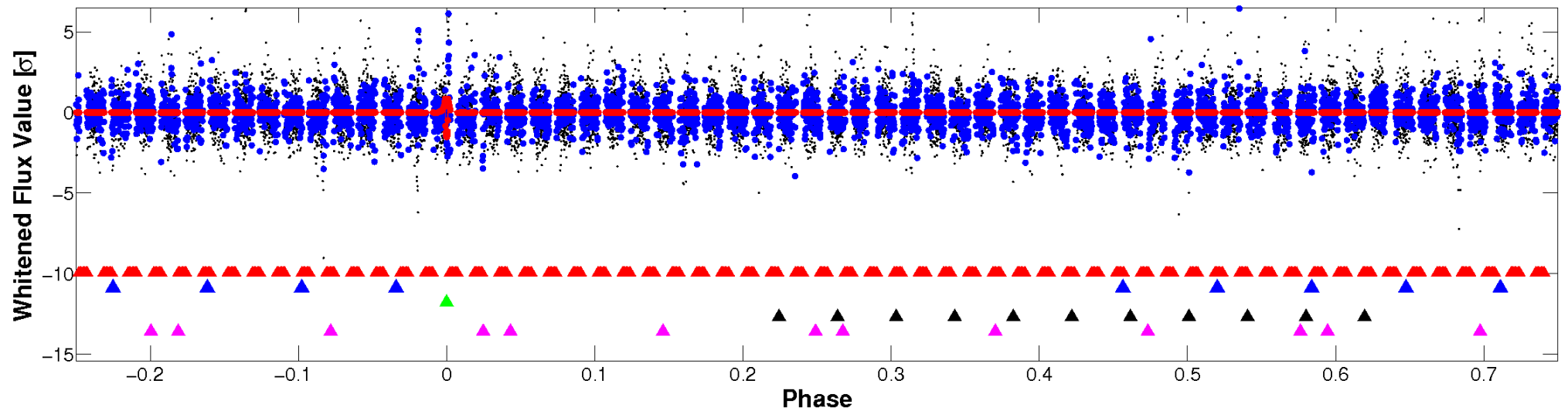


# Non-Whitened Vs. Whitened Light Curve

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

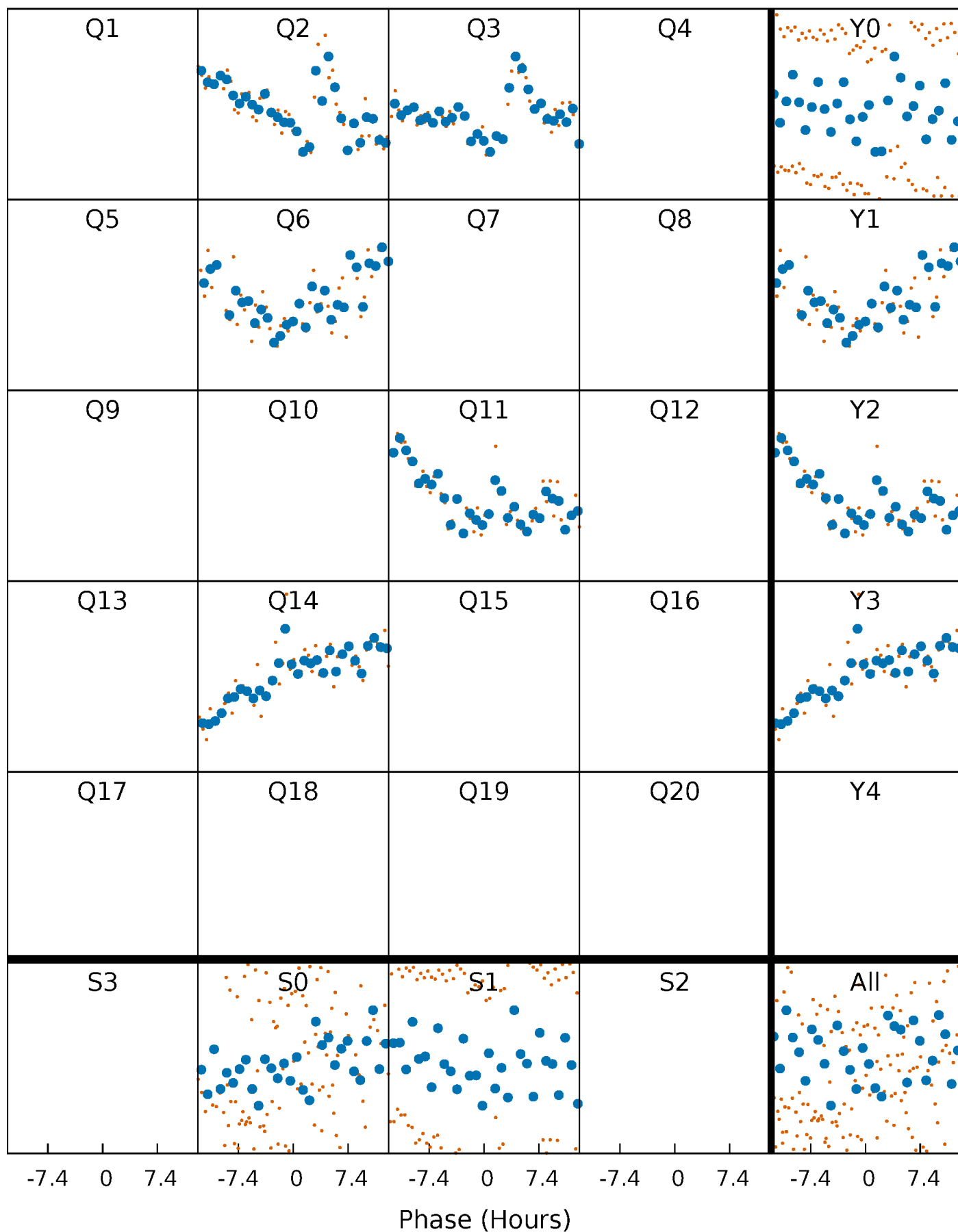


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

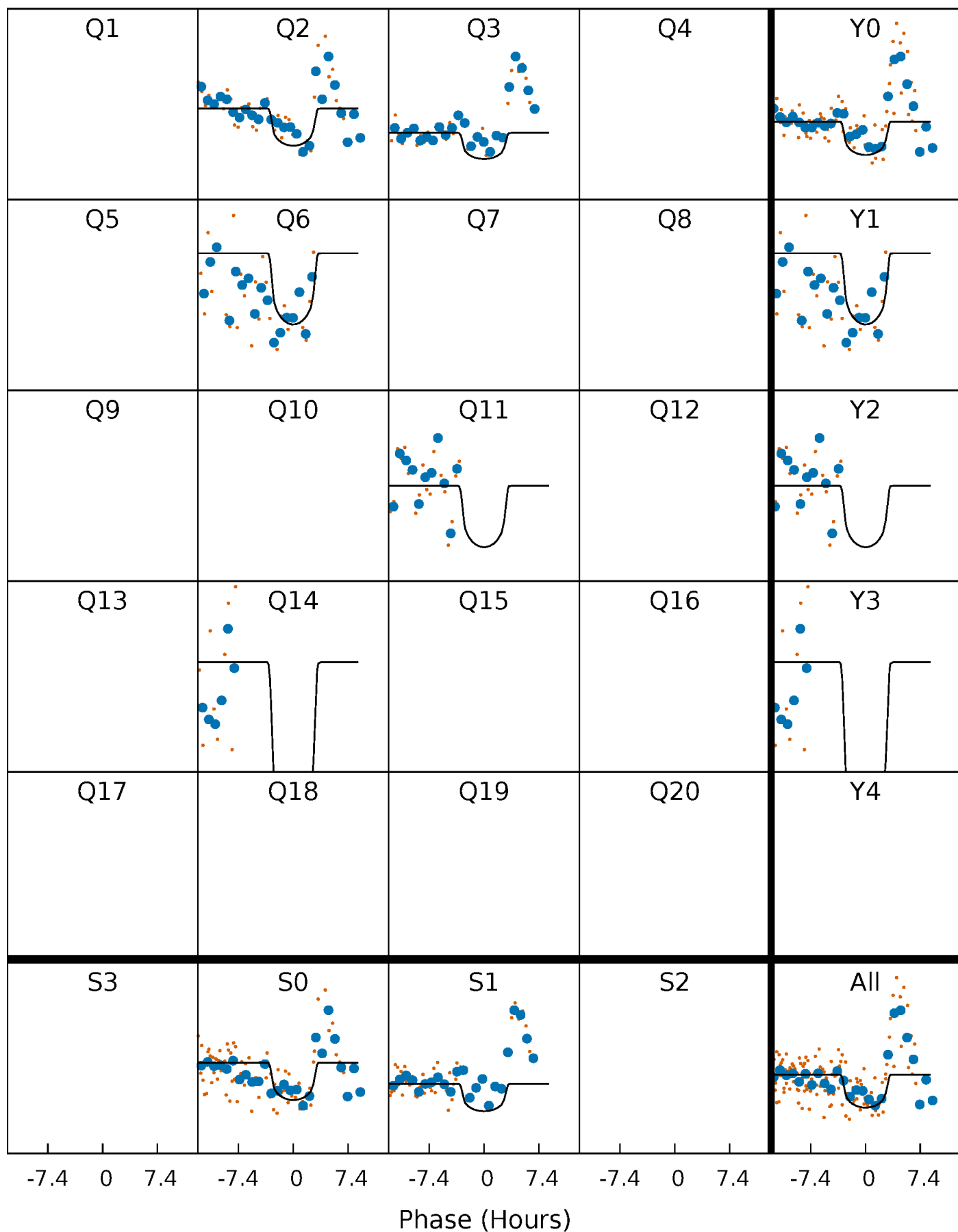
TCE 005881893-03 P=143.098242 Days  $T_0=190.223426$  (BKJD)





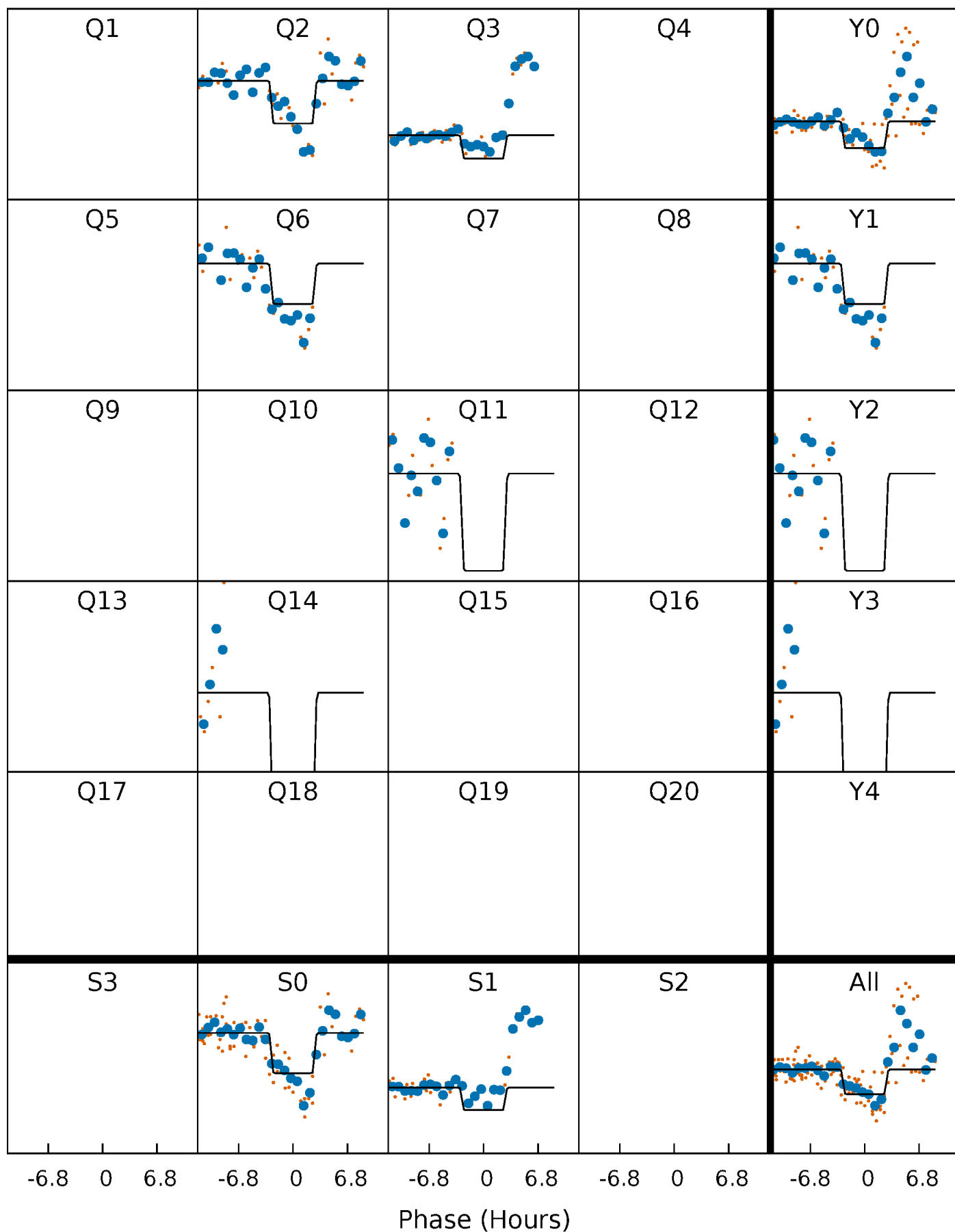
# DV Quarter-Phased Transit Curves

TCE 005881893-03 P=143.098242 Days  $T_0=190.223426$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

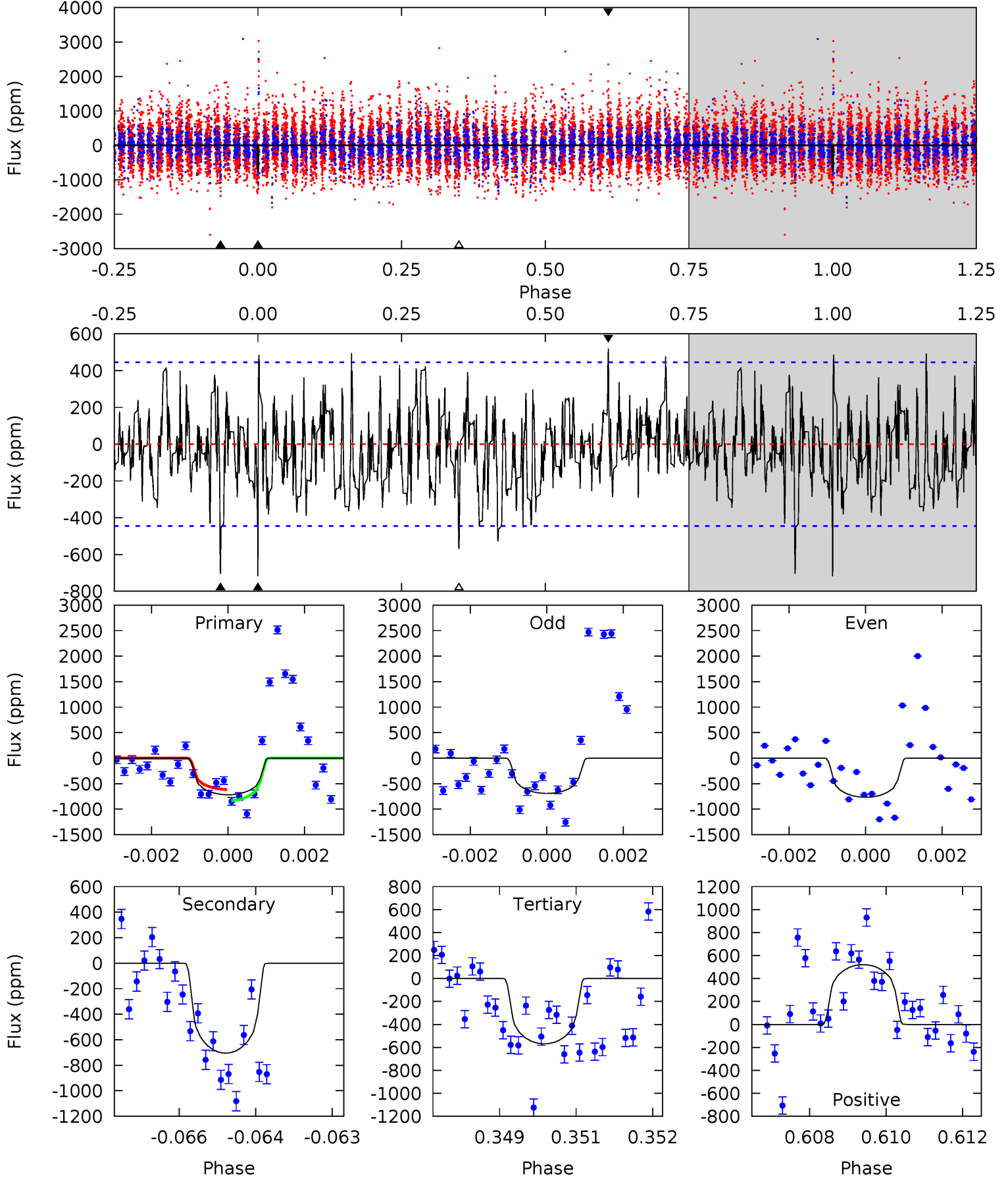
TCE 005881893-03 P=143.103085 Days  $T_0=190.220489$  (BKJD)



# DV Model-Shift Uniqueness Test

005881893-03,  $P = 143.098242$  Days,  $E = 47.125184$  Days

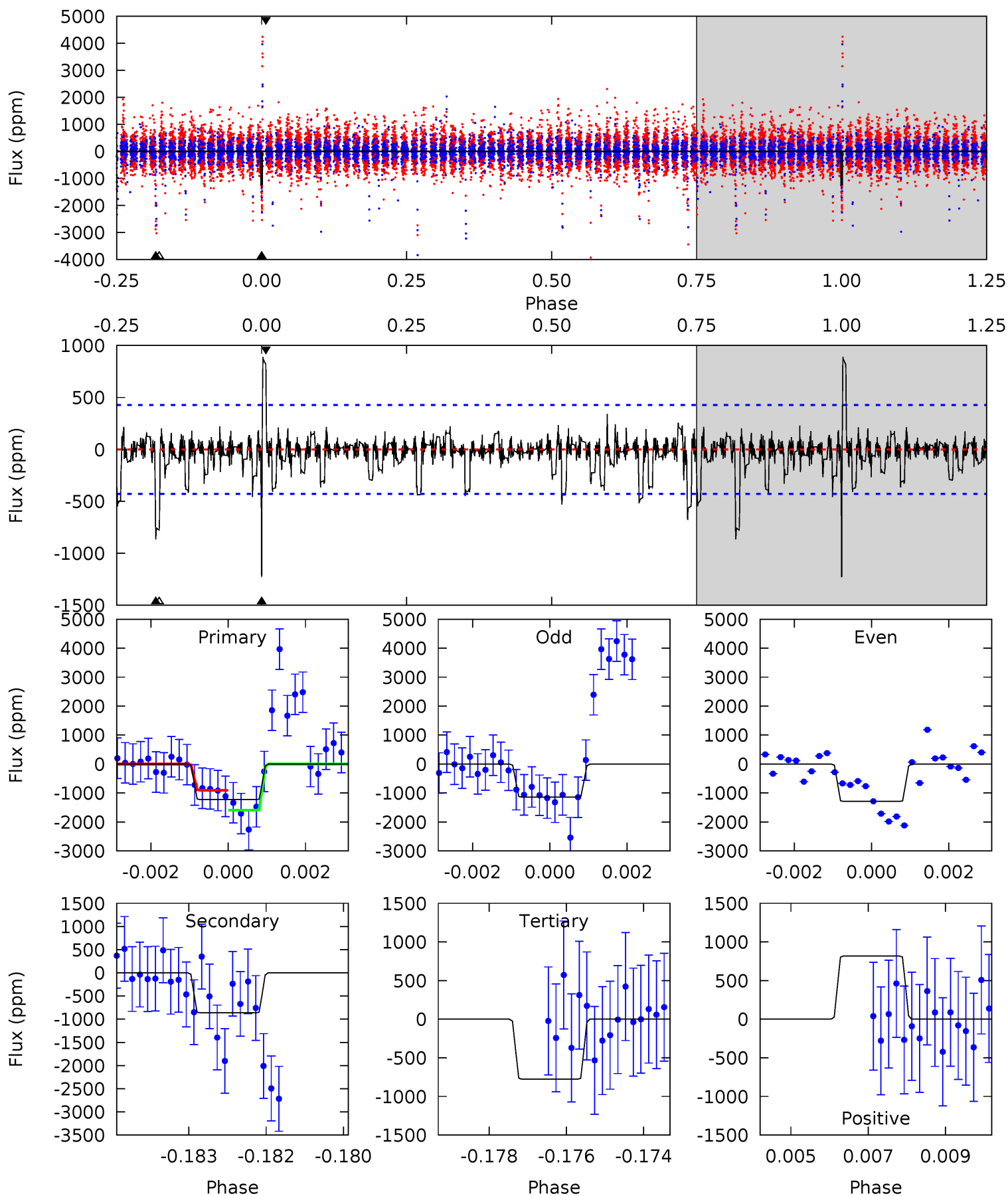
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.61	8.45	6.82	6.24	5.34	3.11	1.82	1.78	2.36	1.63	2.21	0.42	0.92	0.42	1.32



# Alt Model-Shift Uniqueness Test

005881893-03, P = 143.103085 Days, E = 47.117404 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
15.4	10.8	9.71	10.2	5.35	3.12	1.23	5.66	5.15	1.09	0.58	0.91	0.90	0.42	4.36



### Stellar Parameters For KIC 005881893

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4500^{+121}_{-148}$	$4.670^{+0.054}_{-0.027}$	$-0.700^{+0.300}_{-0.300}$	$0.575^{+0.046}_{-0.051}$	$0.564^{+0.054}_{-0.036}$	$4.173^{+1.053}_{-0.540}$
	+3%/-3%	+1%/-1%	+43%/-43%	+8%/-9%	+10%/-6%	+25%/-13%
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 005881893-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-705 \pm 83$	$2.03^{+0.77}_{-0.75}$	$314^{+11}_{-12}$	$4156^{+833}_{-444}$	$18752^{+27208}_{-8905}$
Alt.	$-863 \pm 80$	$2.18^{+0.83}_{-0.77}$	$314^{+9}_{-12}$	$4186^{+815}_{-438}$	$19862^{+26562}_{-9412}$

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

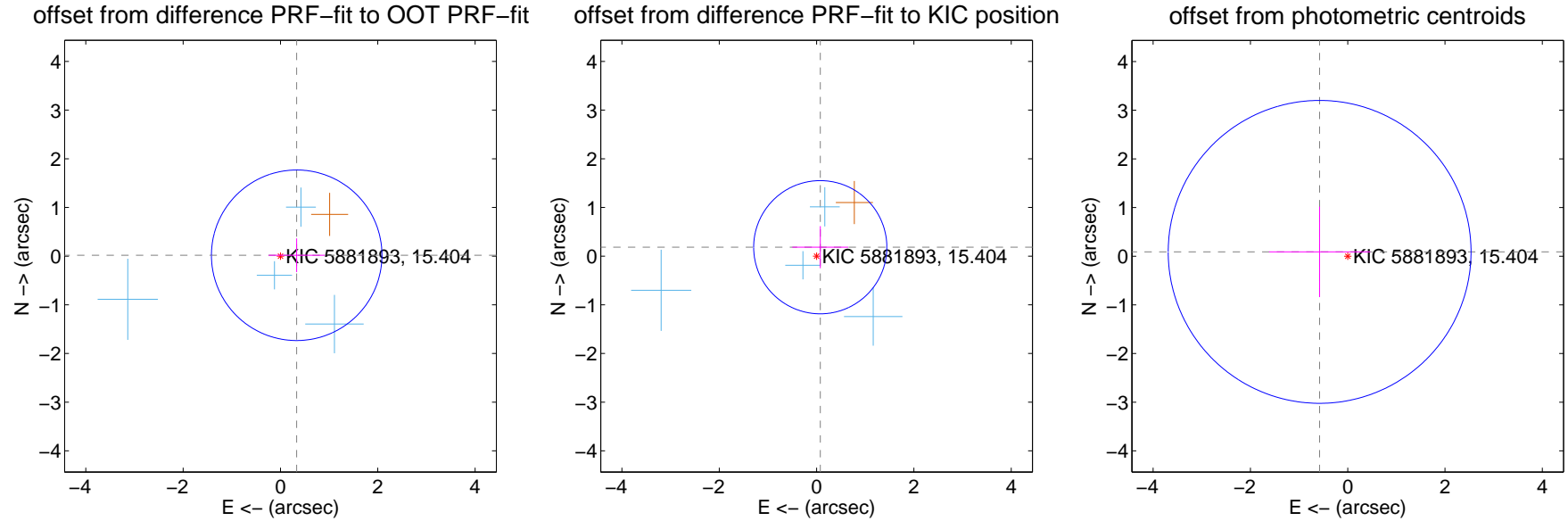
## DV Centroid Data

Supplemental centroid analysis for 005881893-03. Kepler magnitude: 15.40. Transit SNR 8.56

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.334 \pm 0.584$	0.57	$-0.334 \pm 0.575$	$0.018 \pm 0.347$
PRF-fit source offset from KIC position	$0.198 \pm 0.456$	0.43	$-0.076 \pm 0.574$	$0.183 \pm 0.433$
photometric centroid source offset	$0.58 \pm 1.04$	0.56	$0.58 \pm 1.04$	$0.09 \pm 0.93$



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.

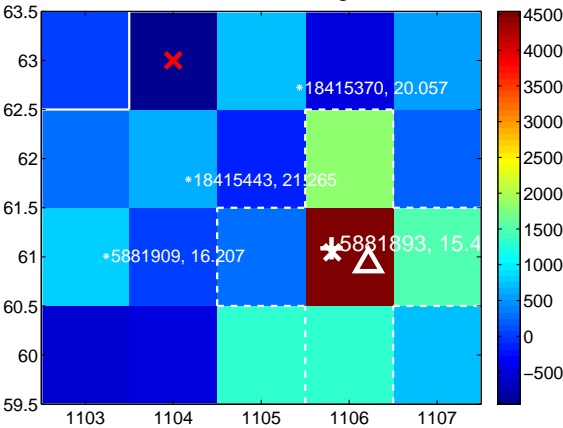
Q1 no difference image



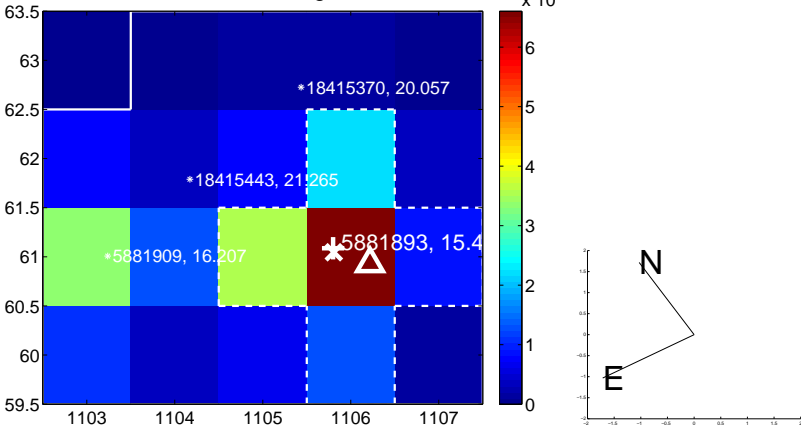
Q1 no OOT image



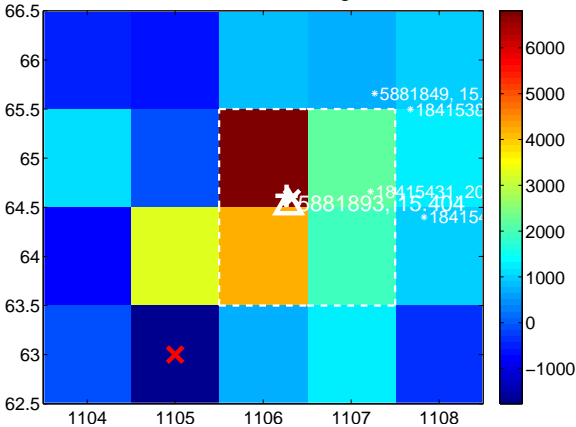
Q2 difference image



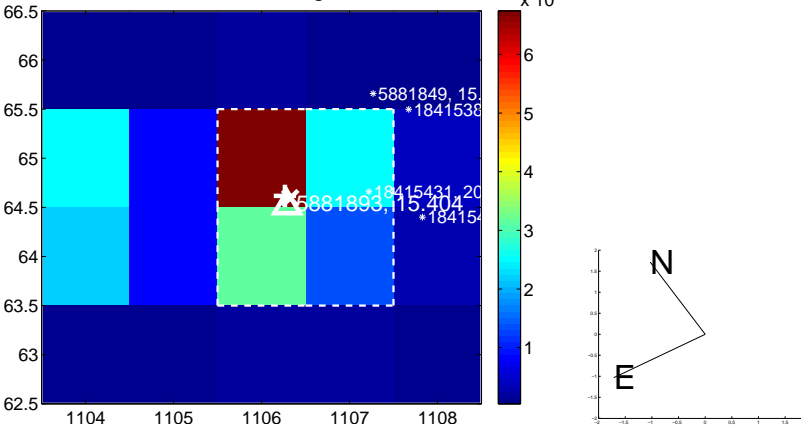
Q2 OOT image



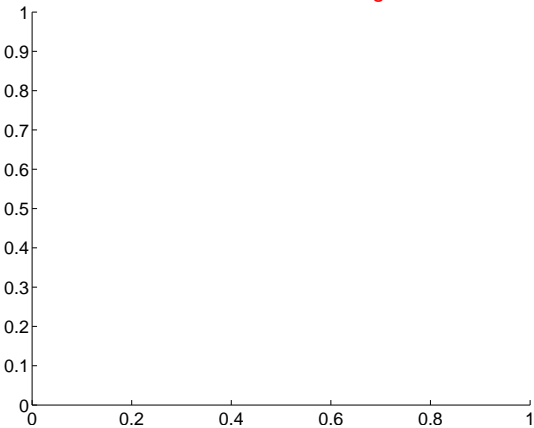
Q3 difference image



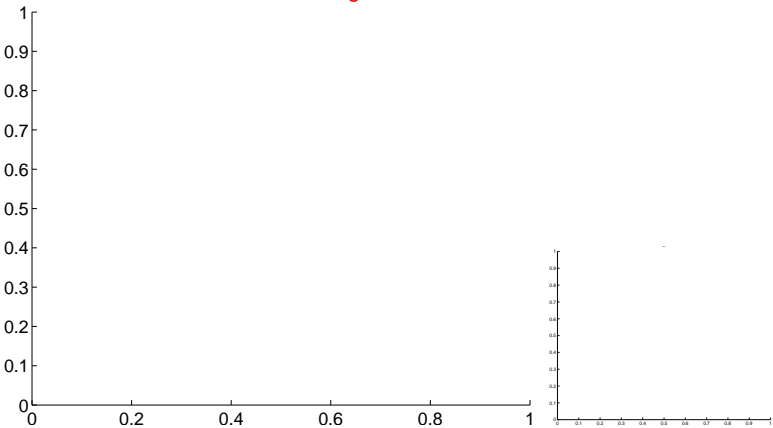
Q3 OOT image



Q4 no difference image



Q4 no OOT image





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

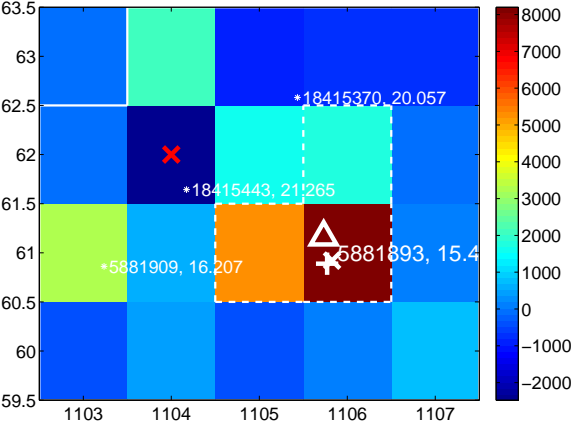
Q5 no difference image



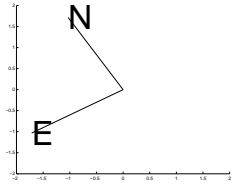
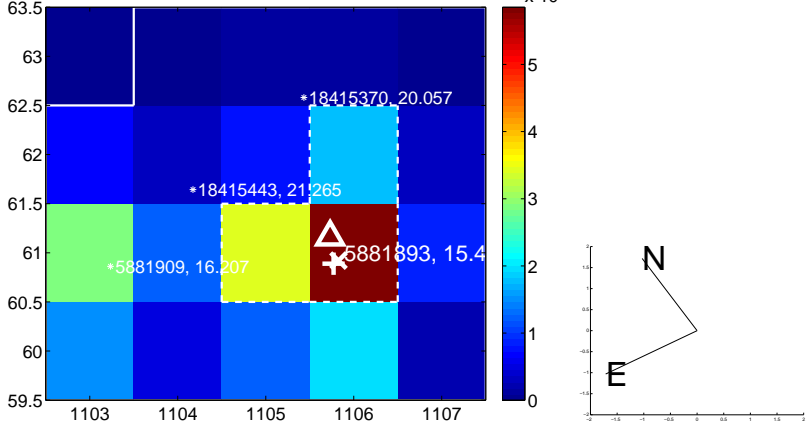
Q5 no OOT image



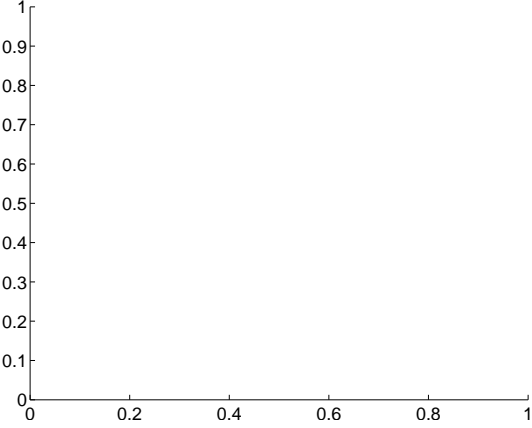
Q6 difference image



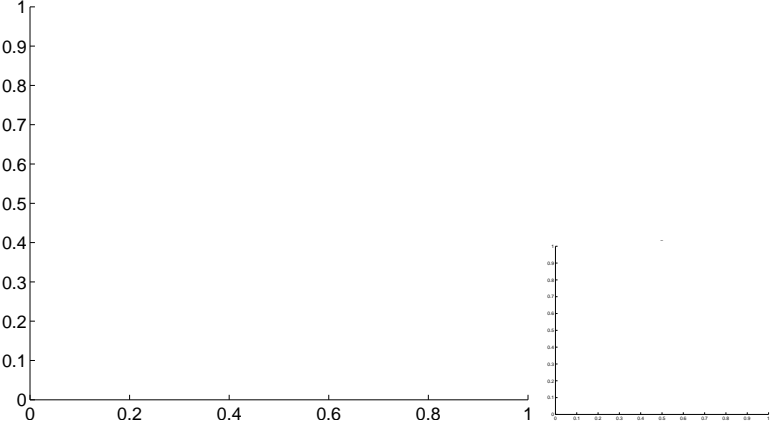
Q6 OOT image



Q7 no difference image



Q7 no OOT image



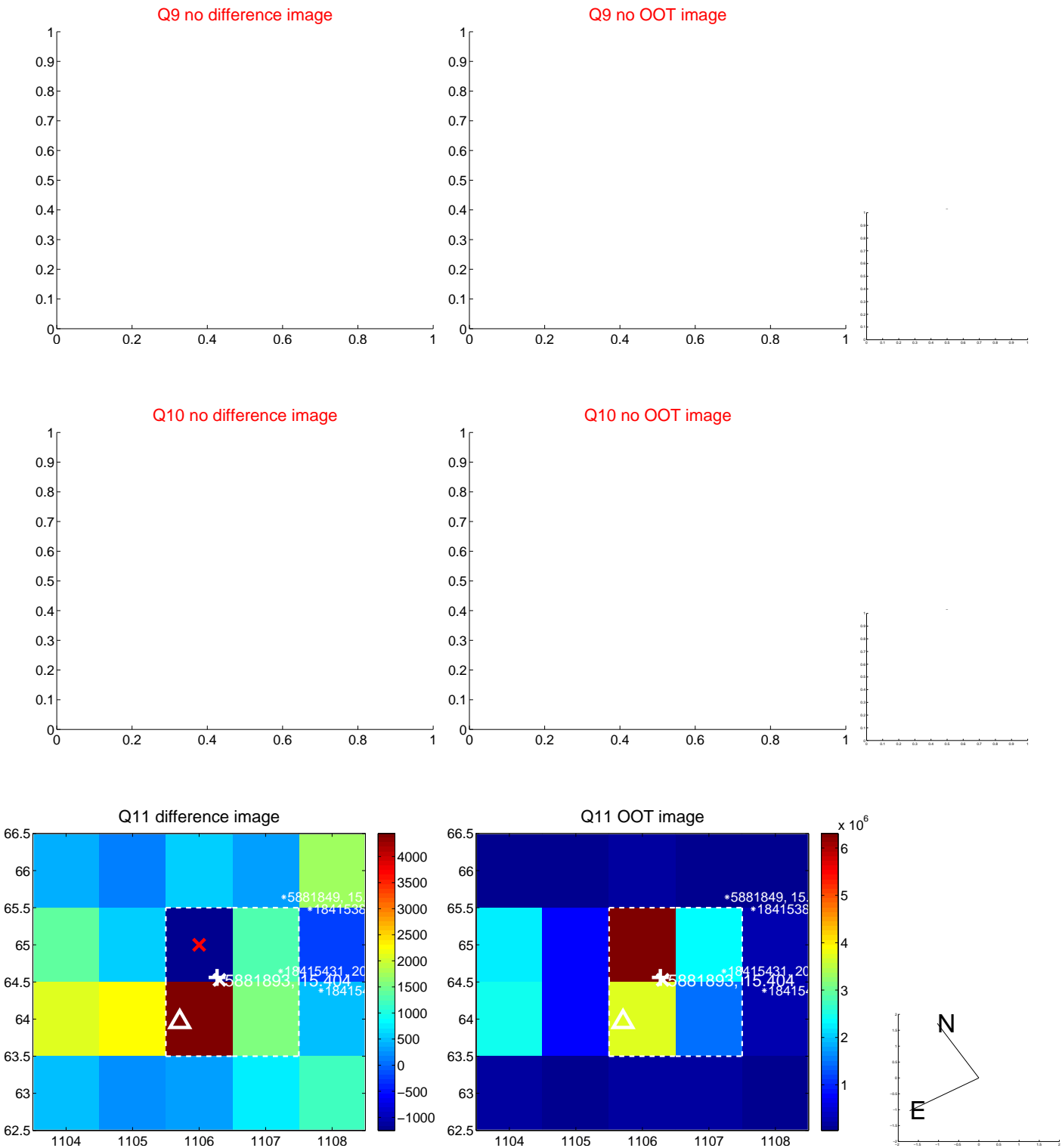
Q8 no difference image



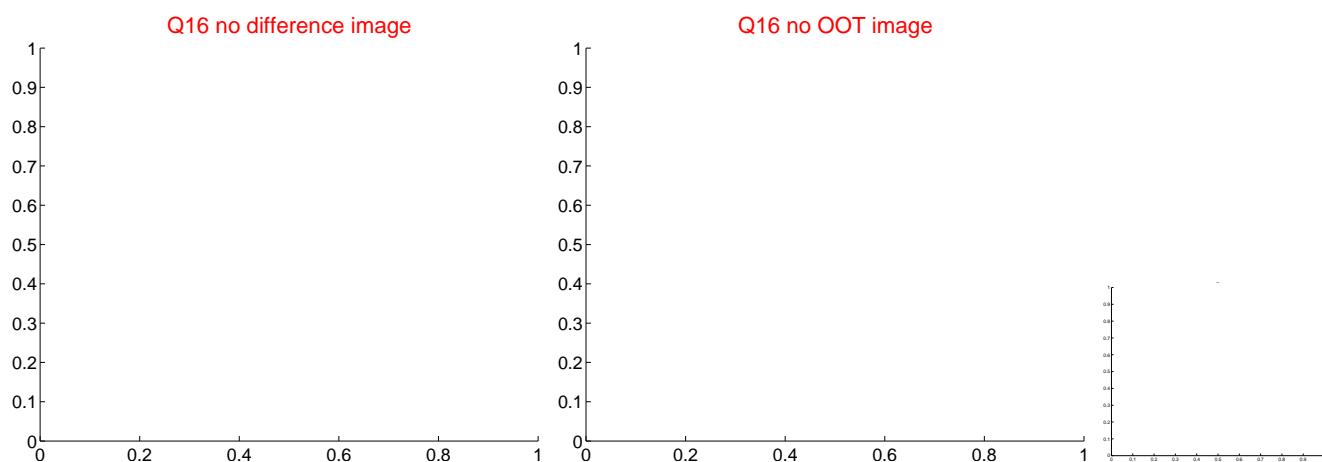
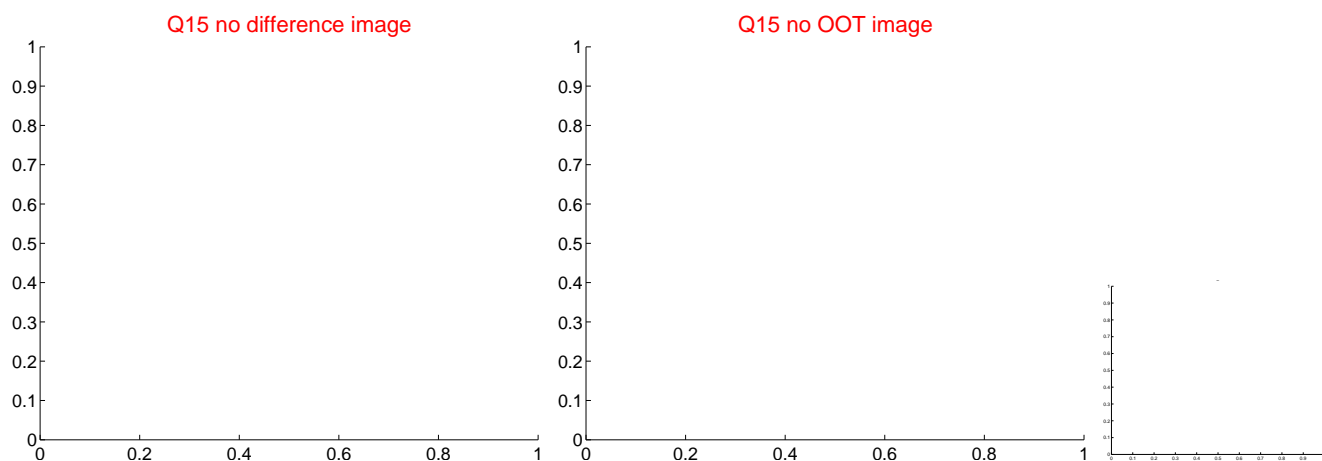
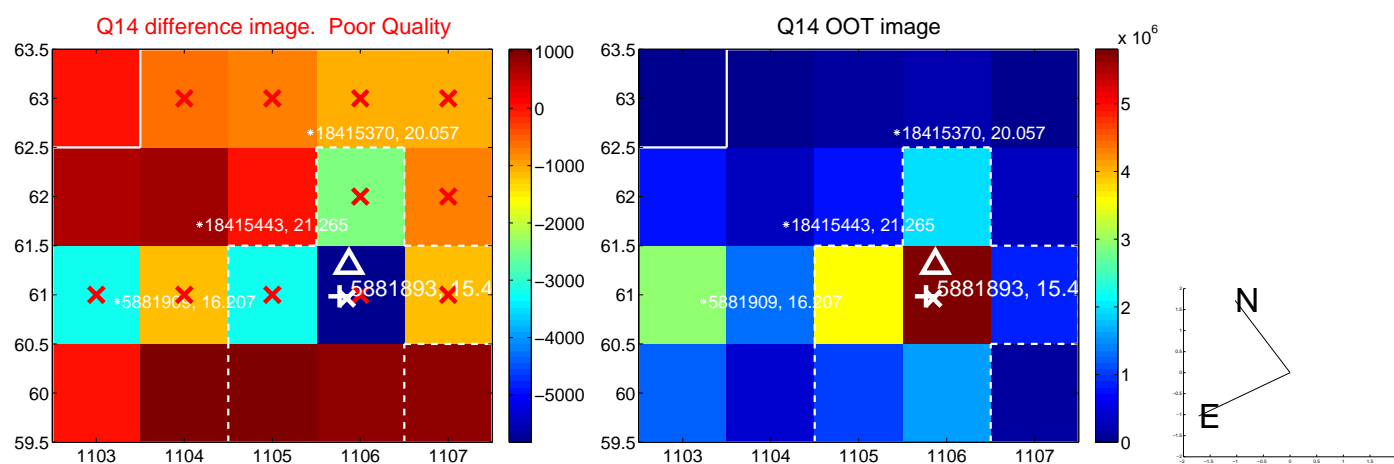
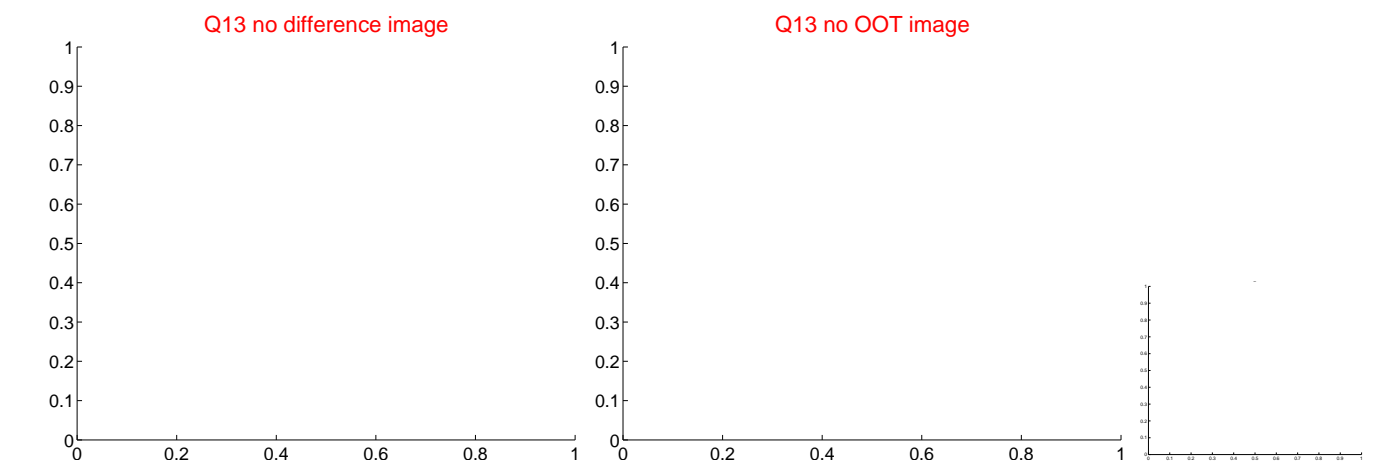
Q8 no OOT image



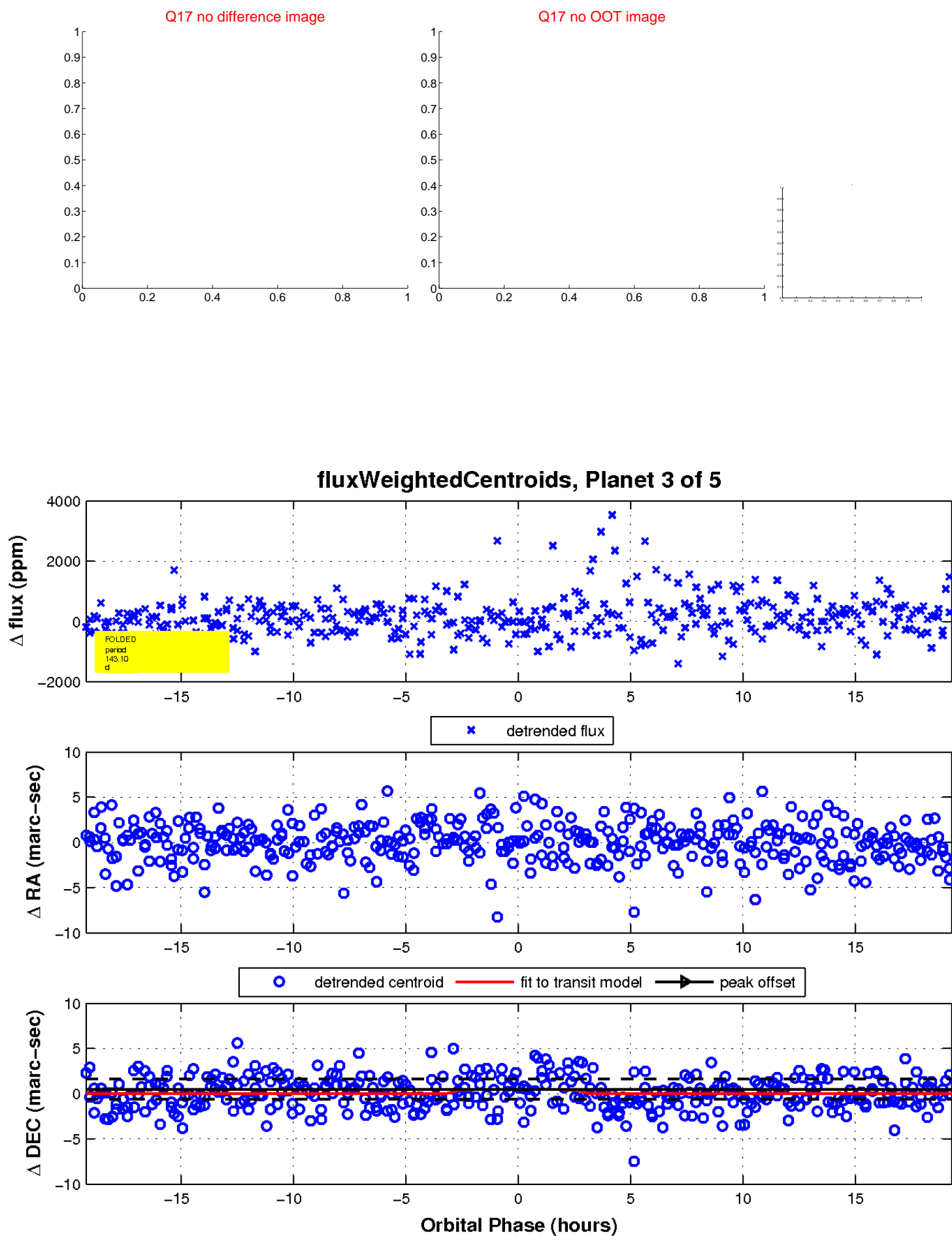
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

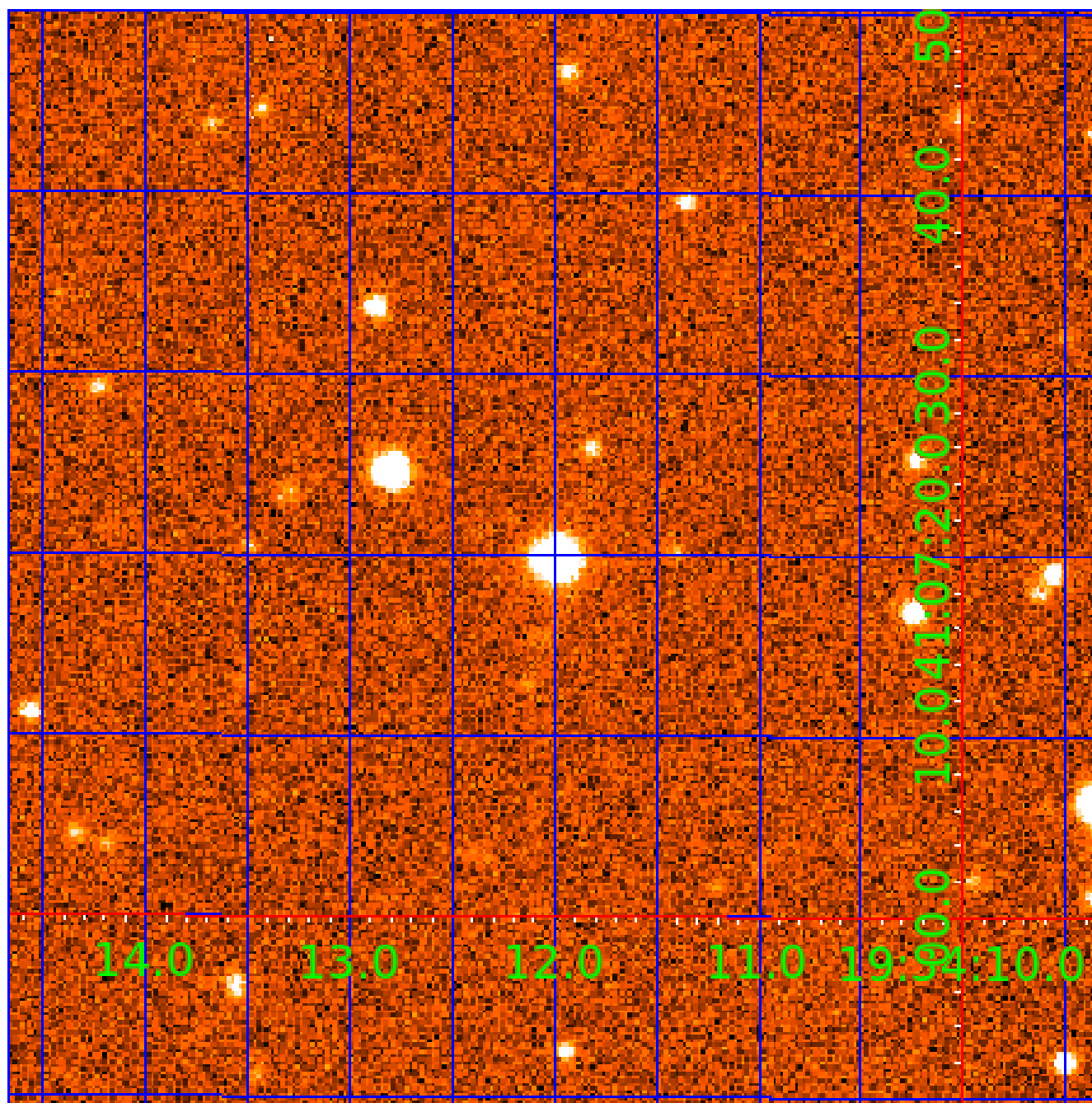


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005881893

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005881893-01	OBS	No	2.383548	131.696468	137.0	10.812	7.5	9.9	0.57	4500	0.83	145.84
005881893-02	OBS	No	152.211263	255.541617	1751.6	25.676	13.5	6.9	0.57	4500	3.07	0.57
005881893-03	OBS	No	143.098242	190.223426	1027.7	6.434	11.5	8.6	0.57	4500	2.05	0.62
005881893-04	OBS	No	137.442566	135.786622	663.0	2.561	9.2	5.3	0.57	4500	1.69	0.66

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005881893-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005881893-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS
005881893-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV
005881893-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

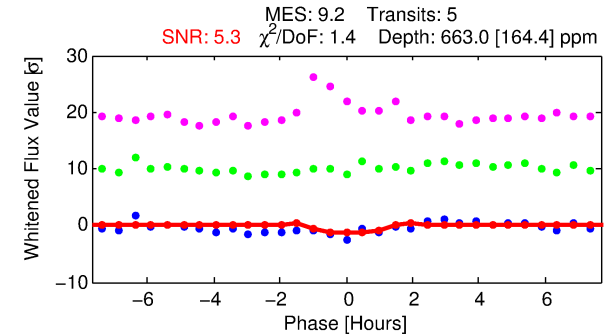
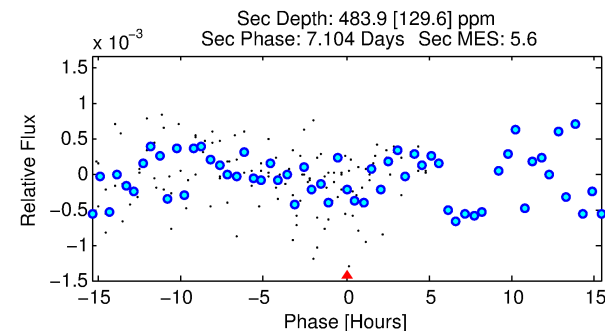
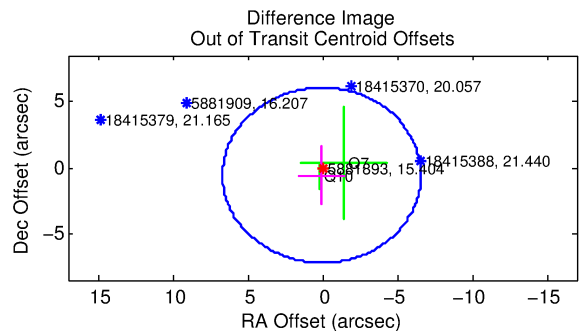
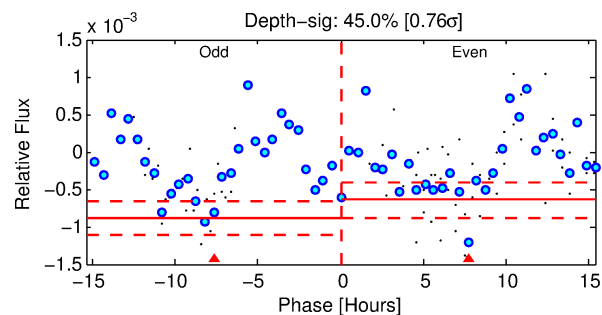
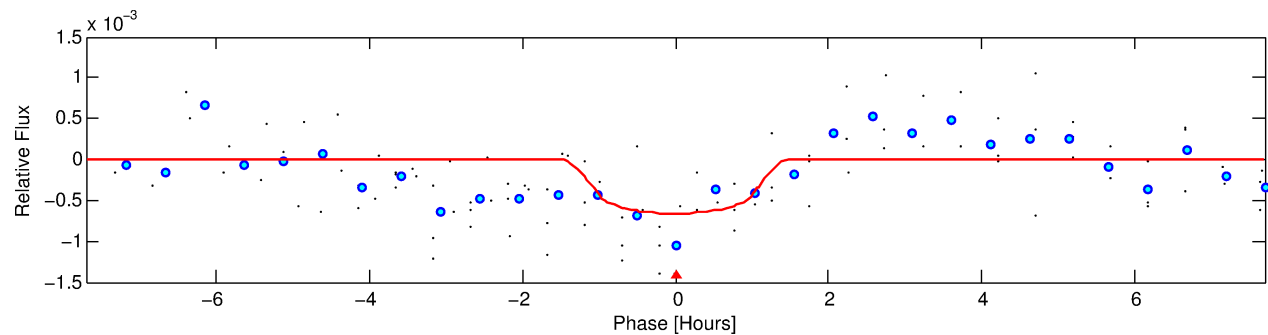
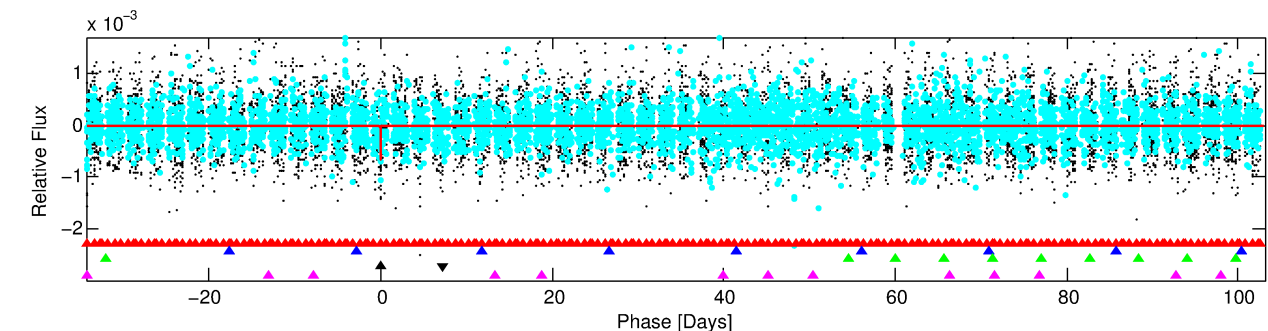
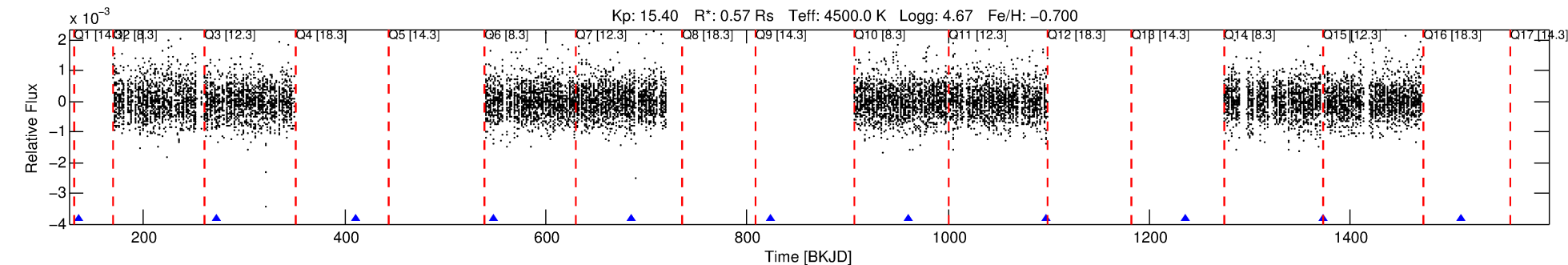
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005881893-04

No Significant Match Found

# DV One-Page Summary

KIC: 5881893 Candidate: 4 of 5 Period: 137.443 d



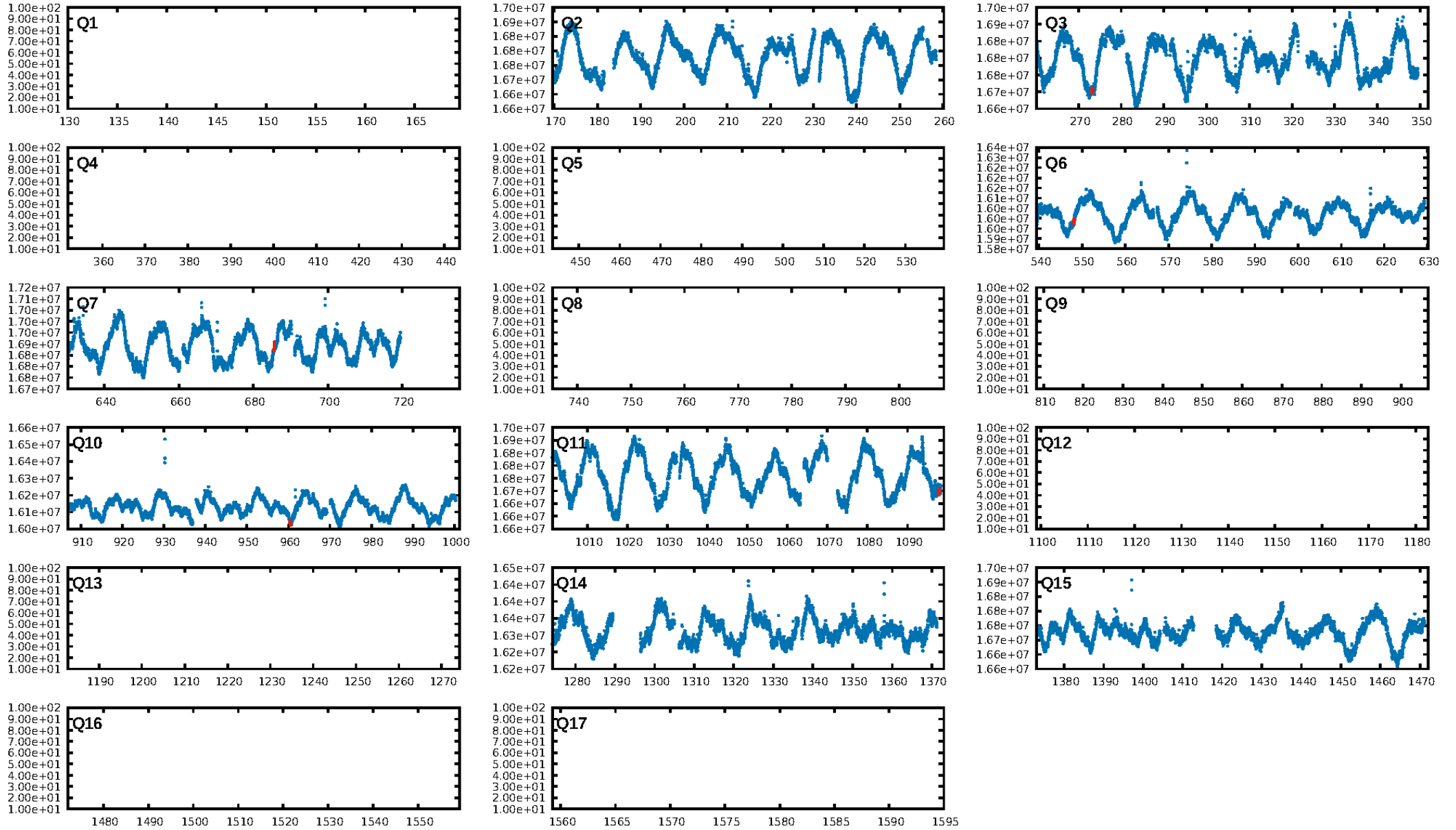
## DV Fit Results:

Period = 137.44257 [0.00304] d  
Epoch = 135.7866 [0.0148] BKJD  
Rp/R\* = 0.0269 [0.0522]  
a/R\* = 251.35 [1734.41]  
b = 0.82 [2.77]  
Seff = 0.65 [0.11]  
Teff = 229 [10] K  
Rp = 1.69 [3.28] Re  
a = 0.4307 [0.0311] AU  
Ag = 17314.27 [67289.14] [0.26 $\sigma$ ]  
Teffp = 4068 [3953] K [0.97 $\sigma$ ]

## DV Diagnostic Results:

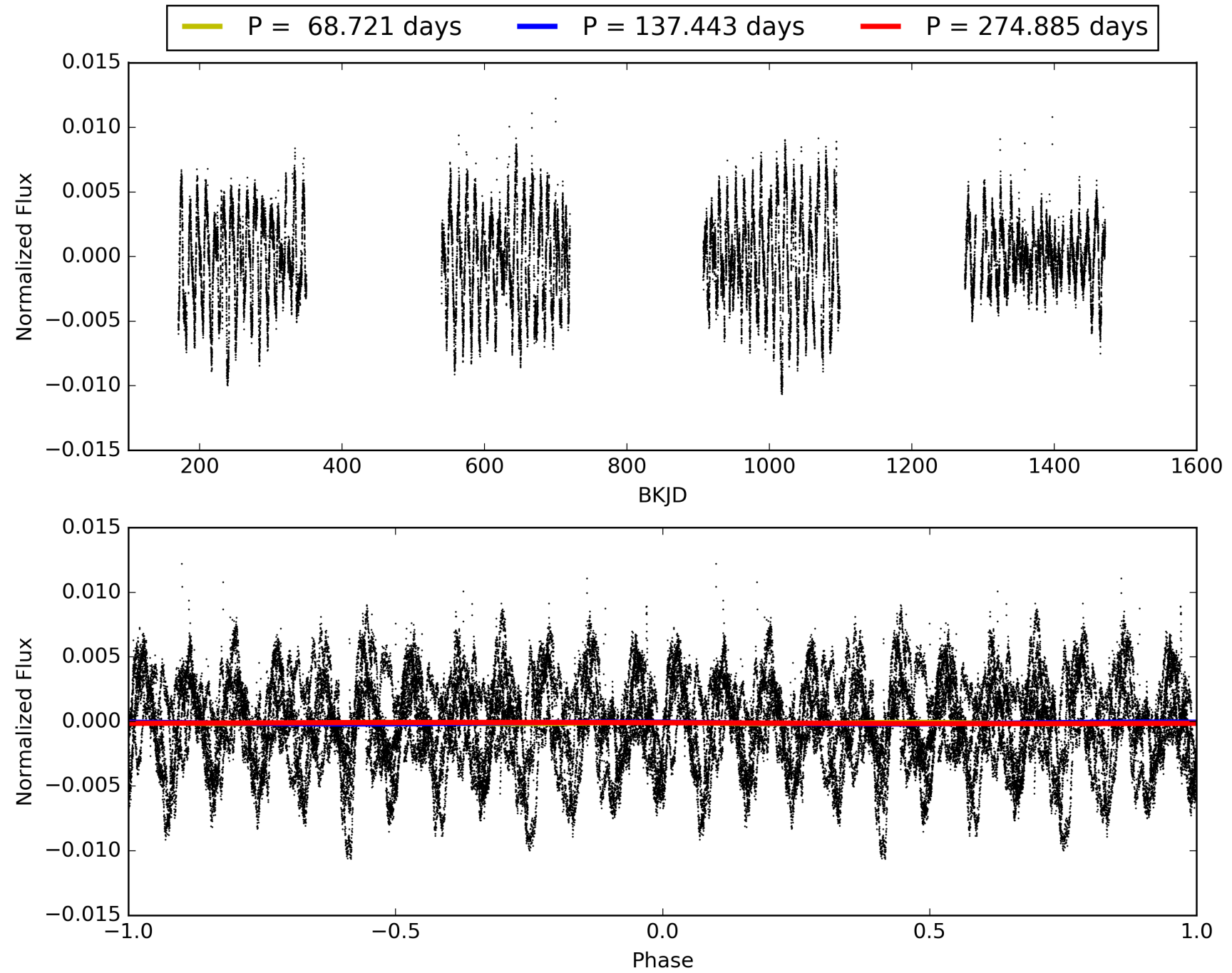
ShortPeriod-sig: 100.0% [131.49 $\sigma$ ]  
LongPeriod-sig: 100.0% [19.60 $\sigma$ ]  
ModelChiSquare2-sig: 97.3%  
ModelChiSquareGof-sig: 94.3%  
**Bootstrap-pfa: 4.52e-11**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 0.06785  
Centroid-sig: N/A  
Centroid-so: 2.057 arcsec [0.97 $\sigma$ ]  
OotOffset-rm: 0.576 arcsec [0.26 $\sigma$ ]  
KicOffset-rm: 0.469 arcsec [0.23 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [5/5]

# TCE 005881893-04, PDC Light Curves



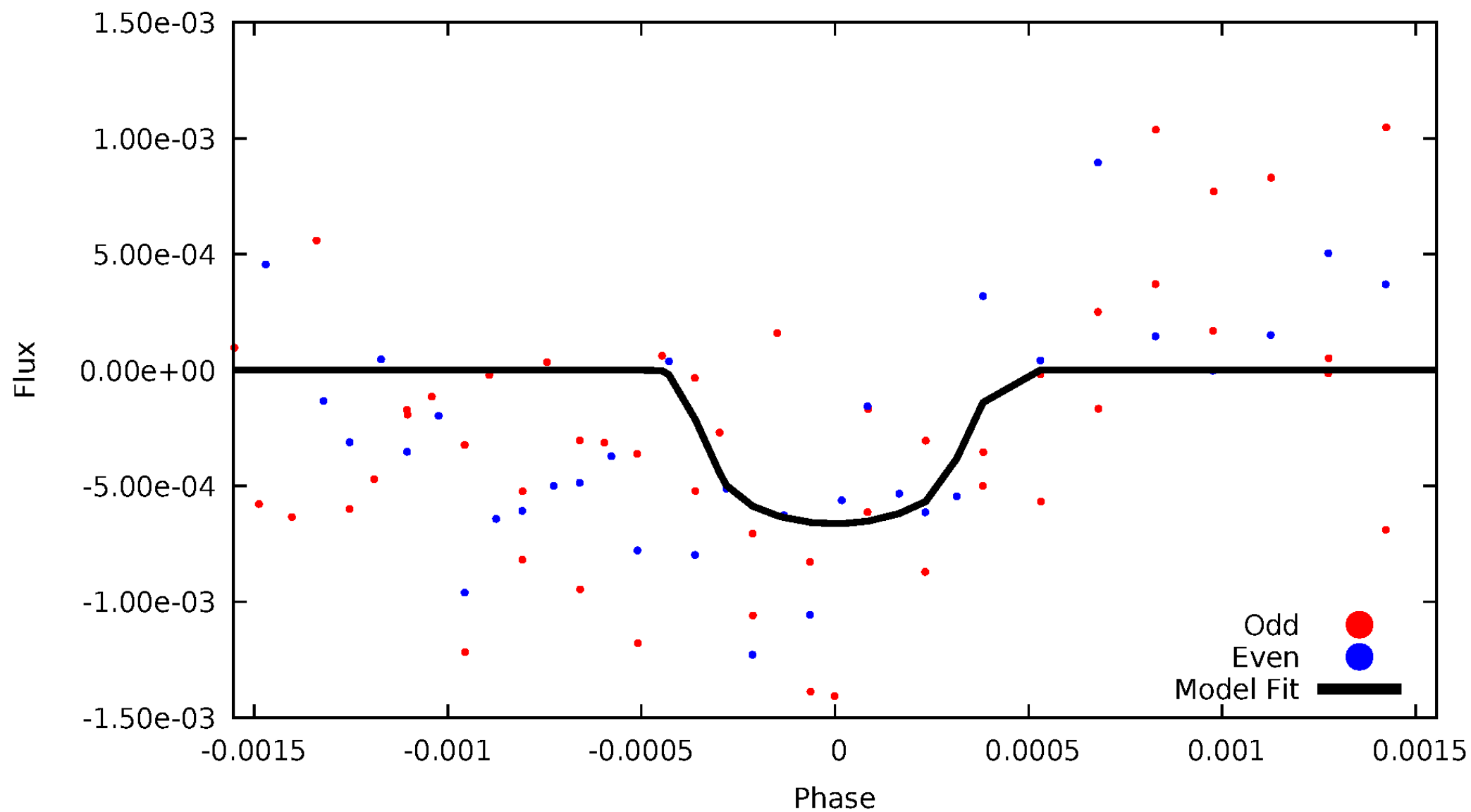


TCE 005881893-04



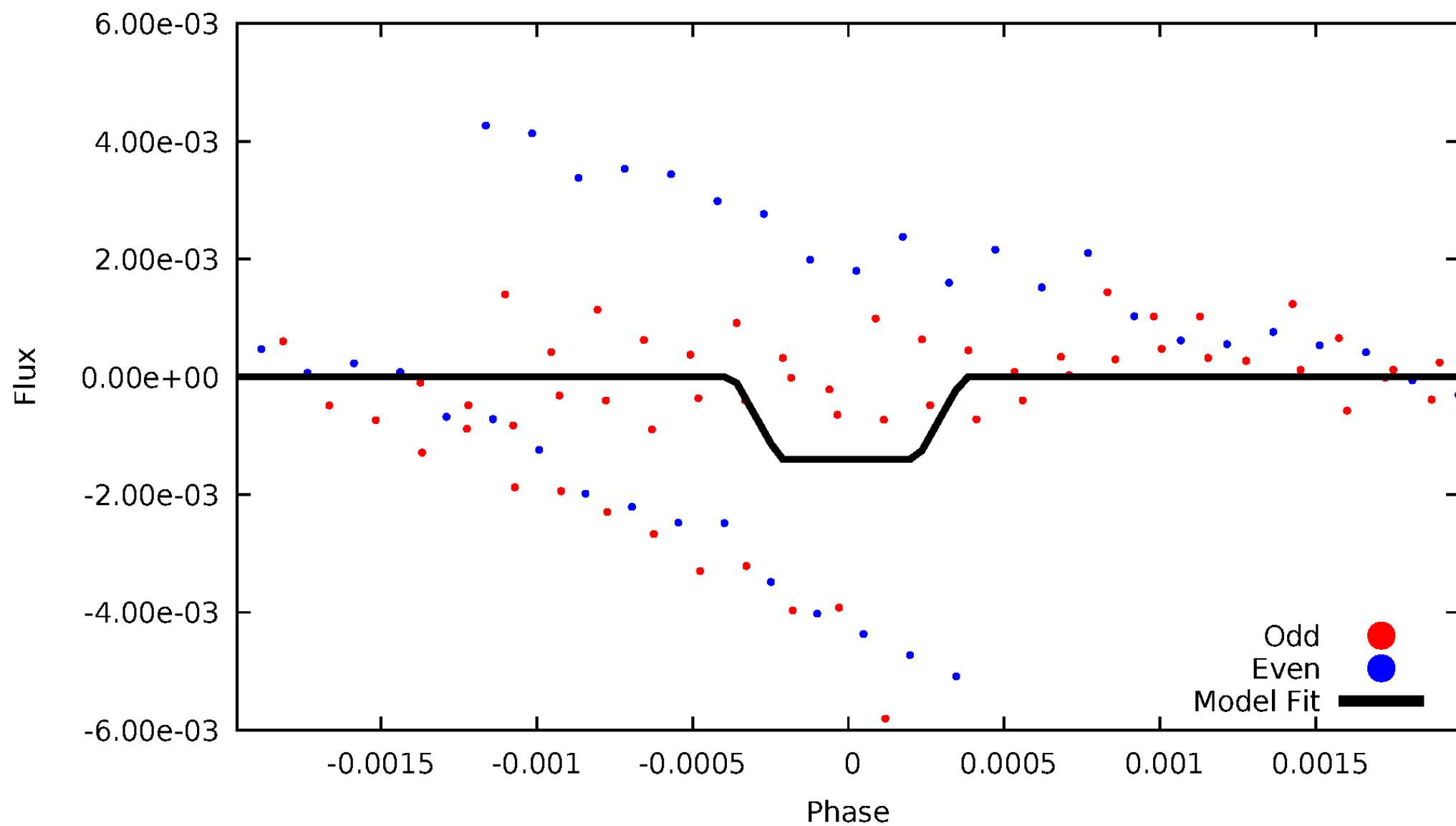
# DV Odd/Even

TCE 005881893-04



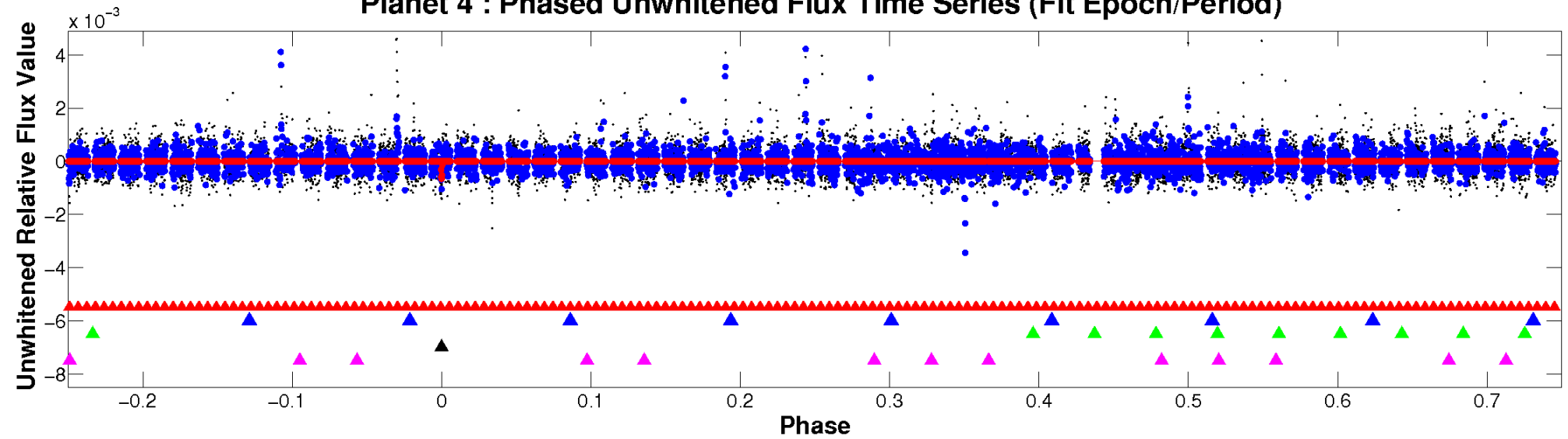
# ALT Odd/Even

TCE 005881893-04

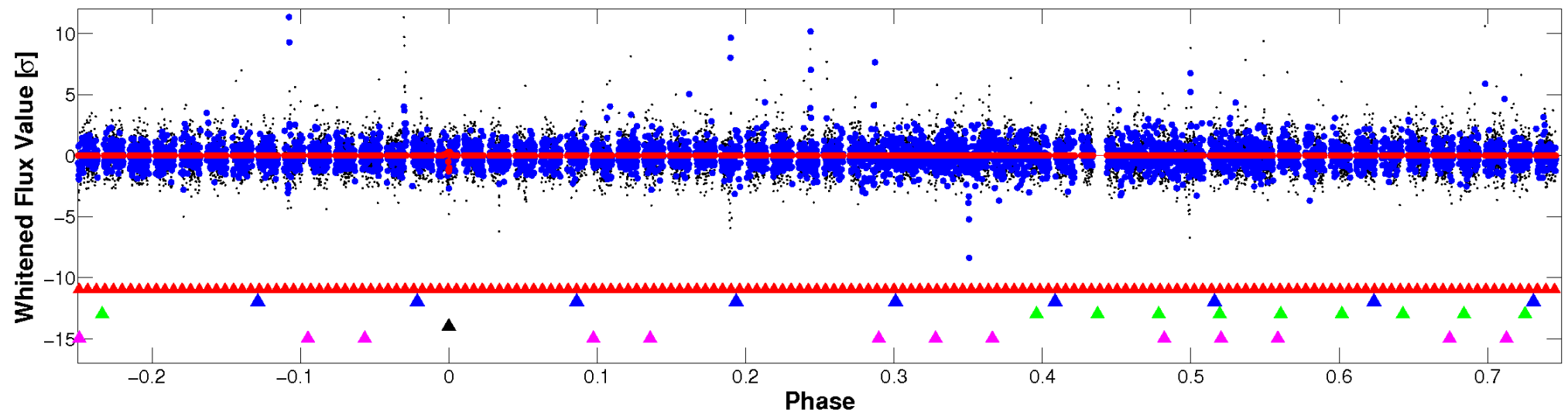


# Non-Whitened Vs. Whitened Light Curve

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

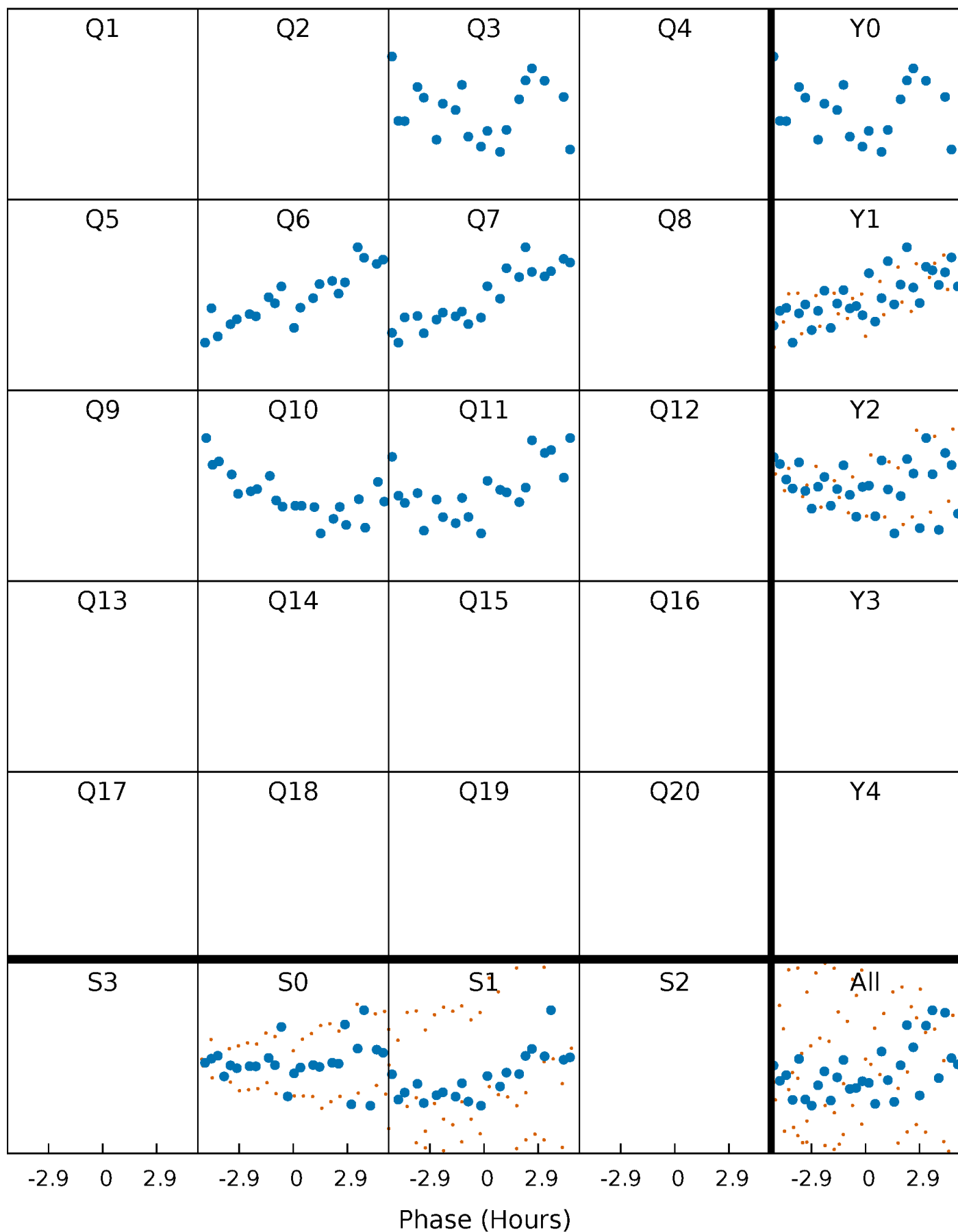


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 005881893-04   P=137.442566 Days    $T_0=135.786622$  (BKJD)



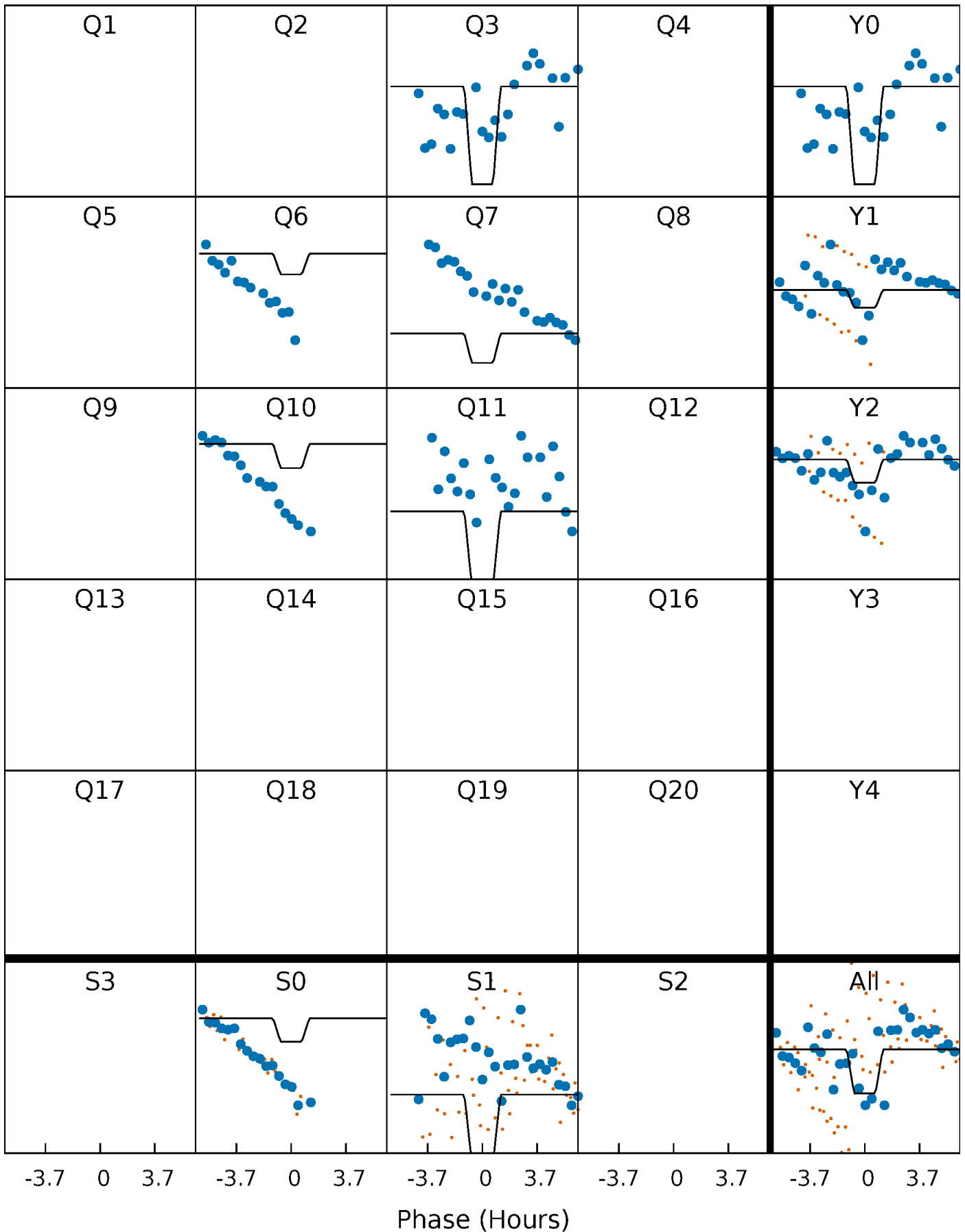
# DV Quarter-Phased Transit Curves

TCE 005881893-04 P=137.442566 Days  $T_0=135.786622$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

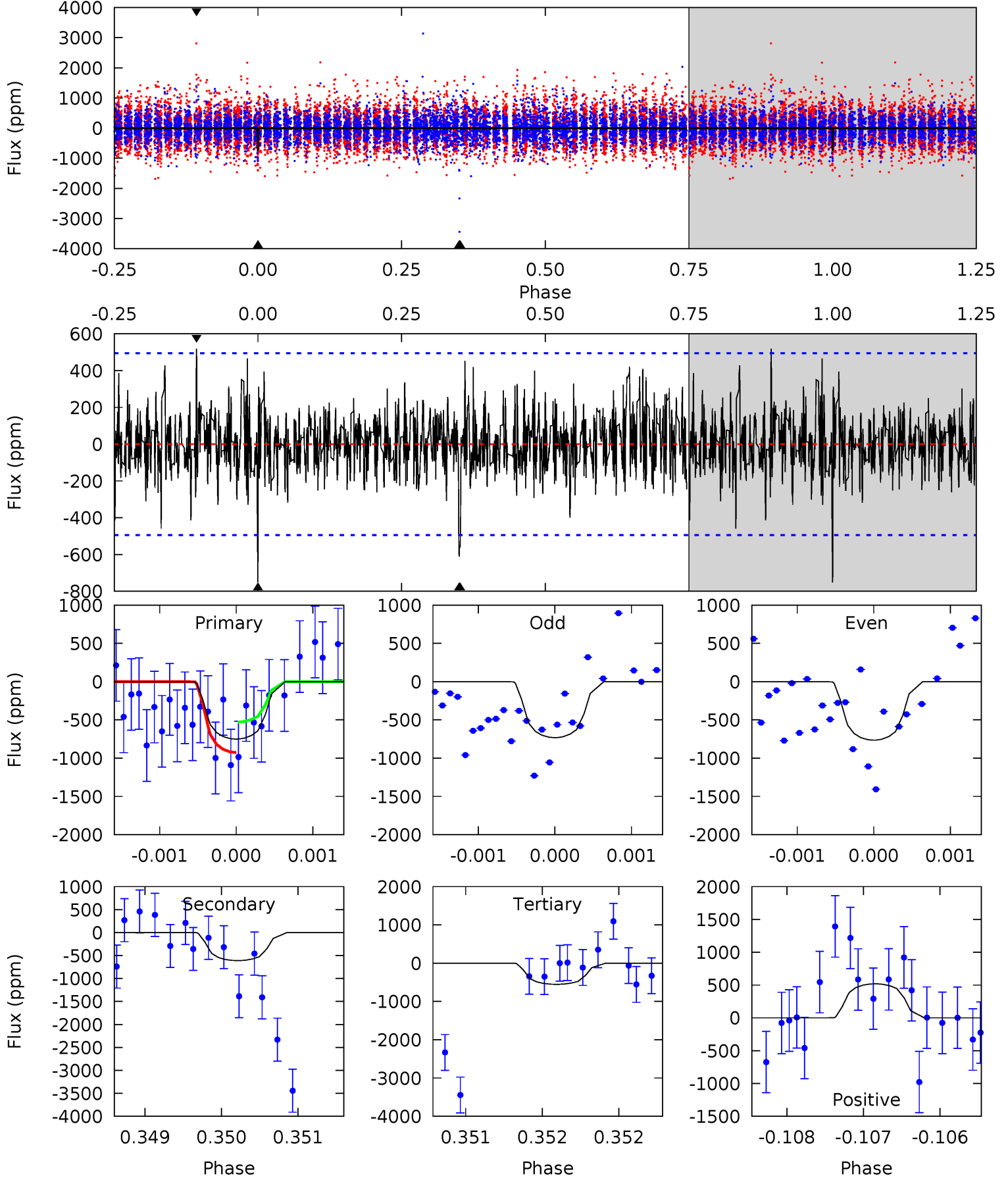
TCE 005881893-04 P=137.446595 Days  $T_0=135.758131$  (BKJD)



# DV Model-Shift Uniqueness Test

005881893-04, P = 137.442566 Days, E = 135.786622 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
8.33	6.78	6.13	5.76	5.48	3.34	1.40	2.20	2.57	0.64	1.02	0.18	0.92	0.41	2.18

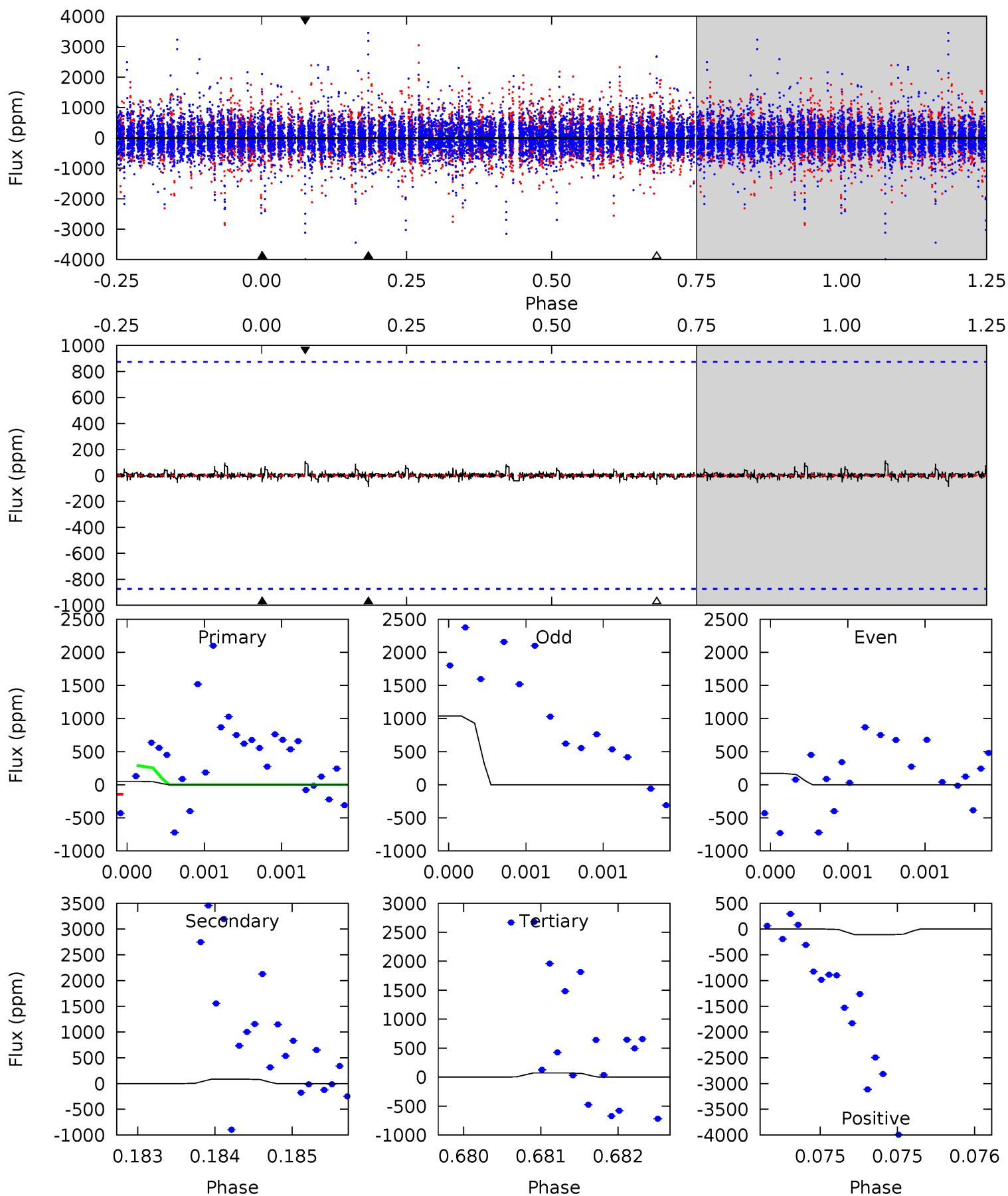




# Alt Model-Shift Uniqueness Test

005881893-04, P = 137.446595 Days, E = 135.758131 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.33	0.54	0.45	0.70	5.51	3.39	0.07	-0.12	-0.38	0.10	-0.16	3.38	2.71	0.56	0



### Stellar Parameters For KIC 005881893

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4500^{+121}_{-148}$	$4.670^{+0.054}_{-0.027}$	$-0.700^{+0.300}_{-0.300}$	$0.575^{+0.046}_{-0.051}$	$0.564^{+0.054}_{-0.036}$	$4.173^{+1.053}_{-0.540}$
	+3%/-3%	+1%/-1%	+43%/-43%	+8%/-9%	+10%/-6%	+25%/-13%
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 005881893-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-611 \pm 90$	$2.82^{+2.73}_{-1.86}$	$318^{+10}_{-11}$	$3630^{+1758}_{-685}$	$8139^{+56748}_{-6149}$
Alt.	$-86 \pm 158$	$3.32^{+3.04}_{-2.06}$	$318^{+11}_{-12}$	$2479^{+879}_{-4953}$	$552^{+4487}_{-1042}$

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

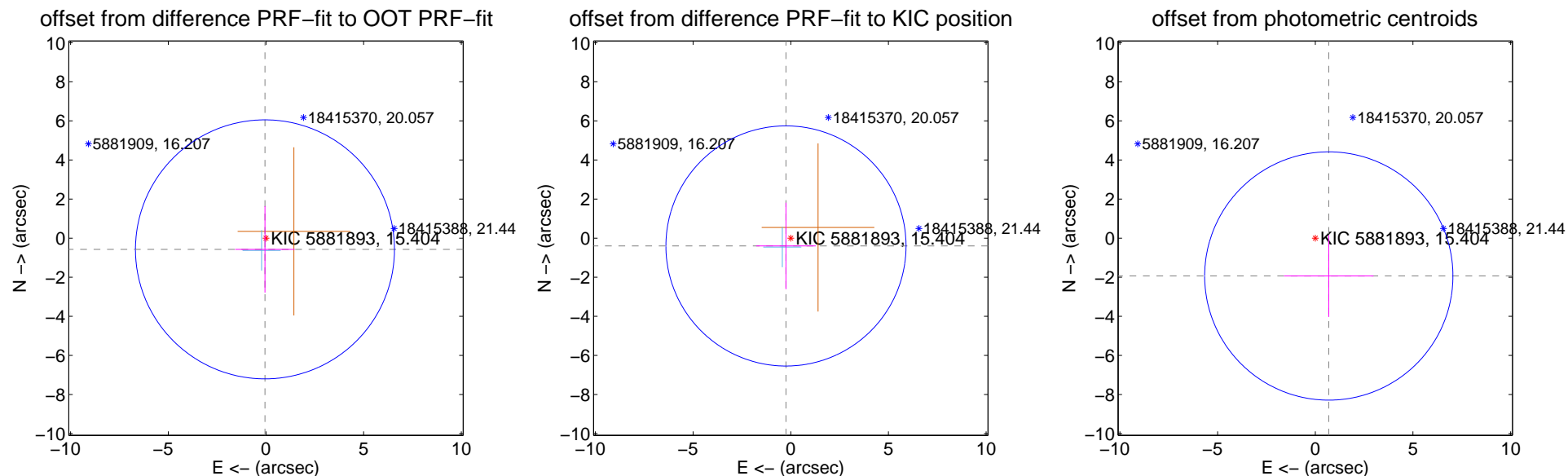
## DV Centroid Data

Supplemental centroid analysis for 005881893-04. Kepler magnitude: 15.40. Transit SNR 5.35

There are 1 quarters with good PRF difference image offsets

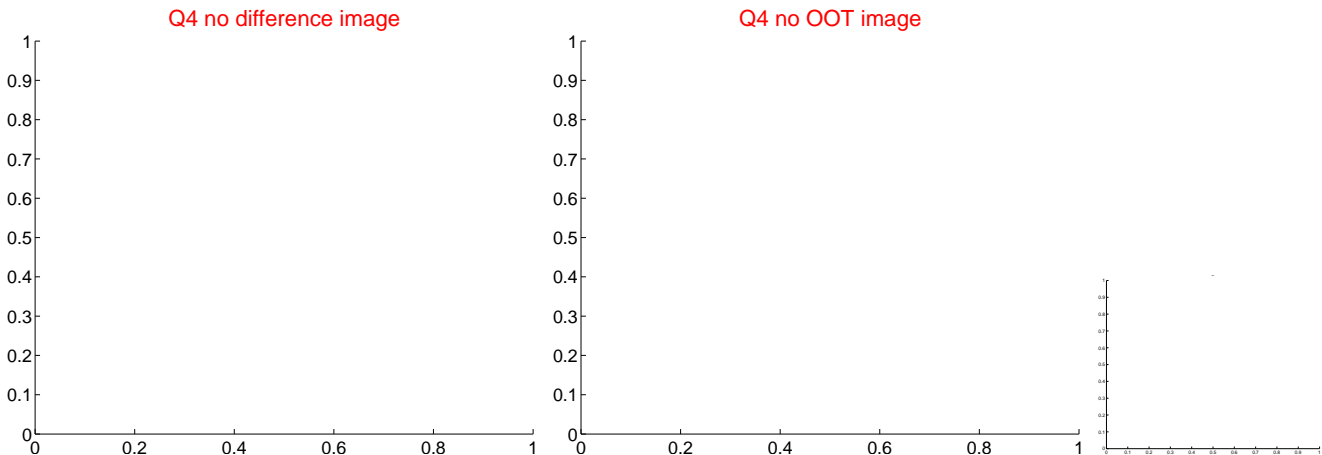
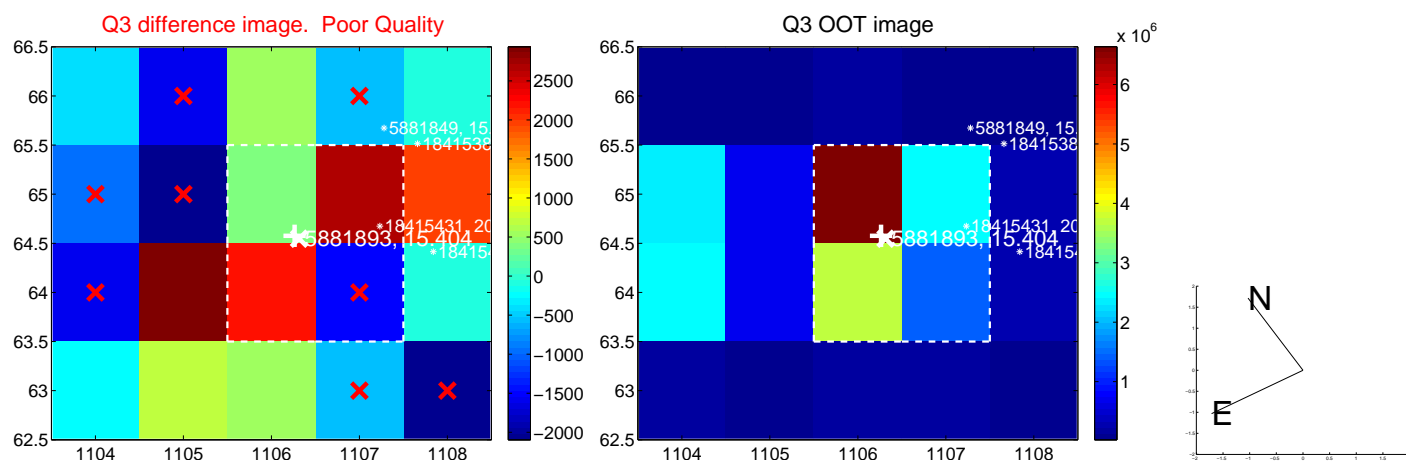
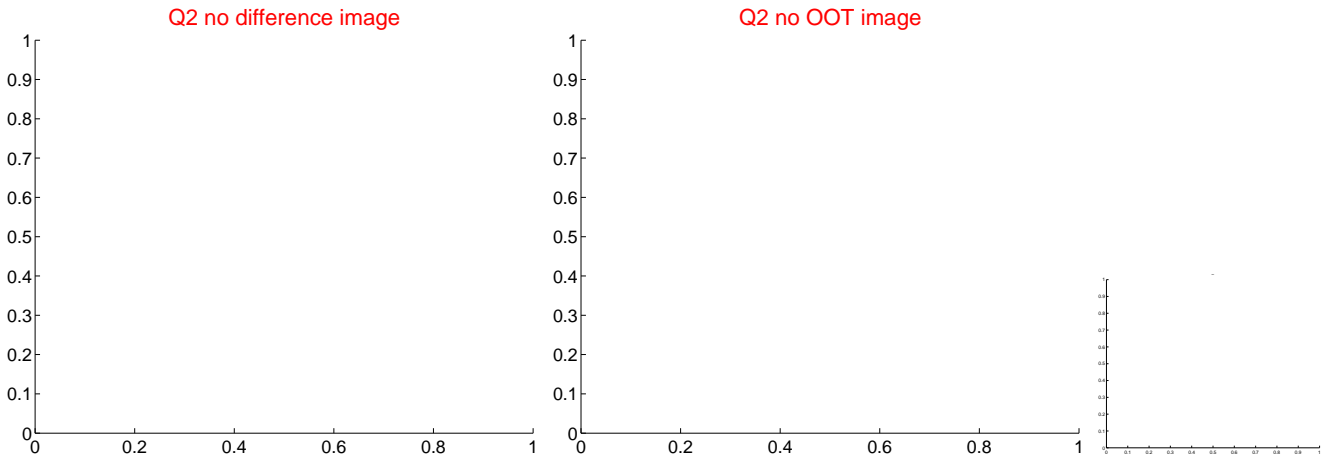
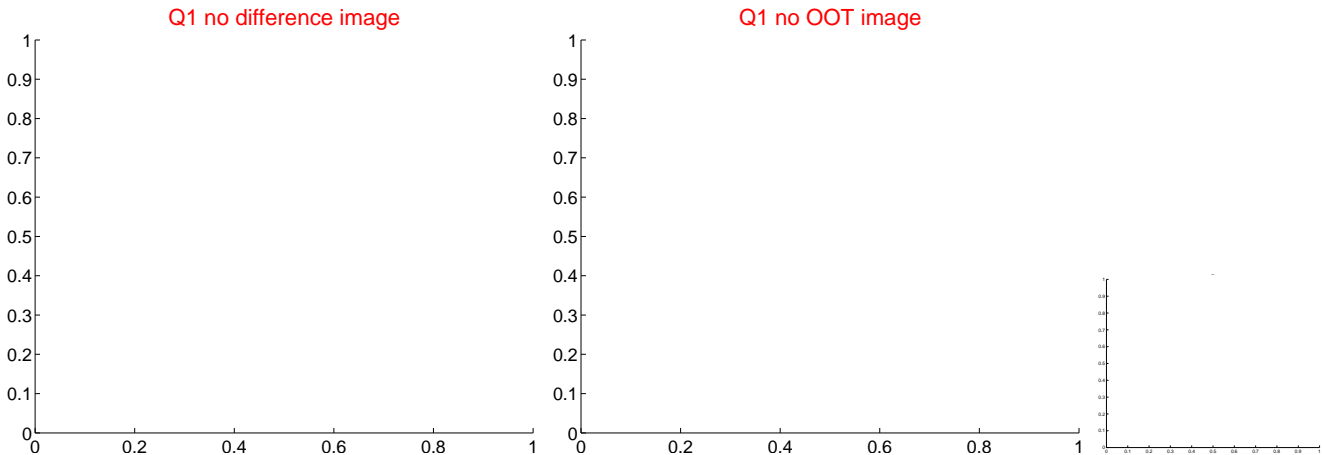
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.576 \pm 2.209$	0.26	$0.051 \pm 1.523$	$-0.574 \pm 2.214$
PRF-fit source offset from KIC position	$0.469 \pm 2.048$	0.23	$0.245 \pm 1.523$	$-0.400 \pm 2.214$
photometric centroid source offset	$2.06 \pm 2.12$	0.97	$-0.69 \pm 2.29$	$-1.94 \pm 2.10$

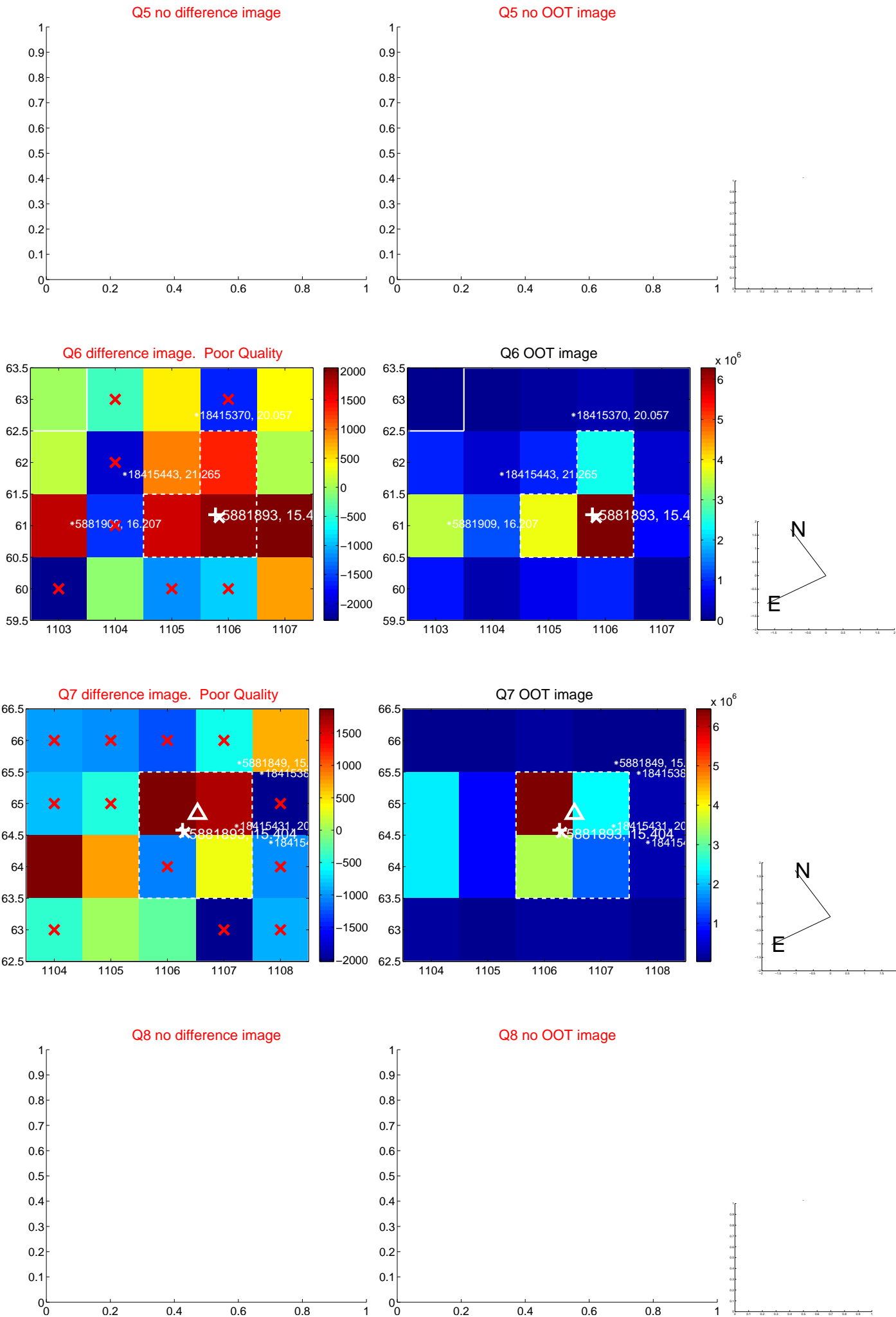


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

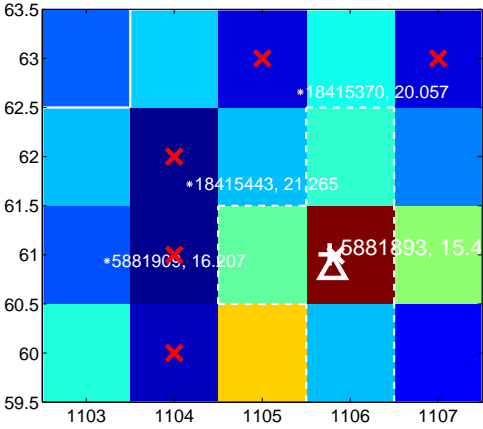
Q9 no difference image



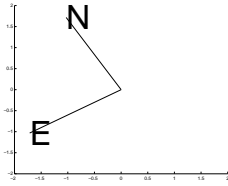
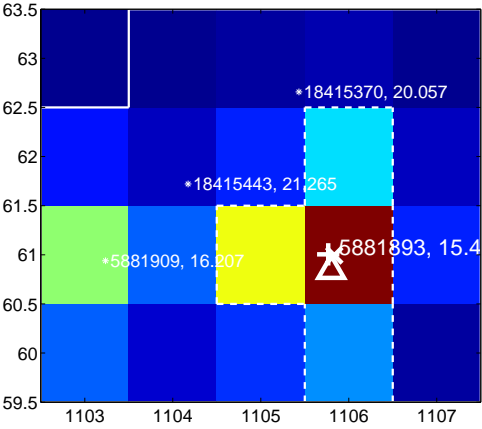
Q9 no OOT image



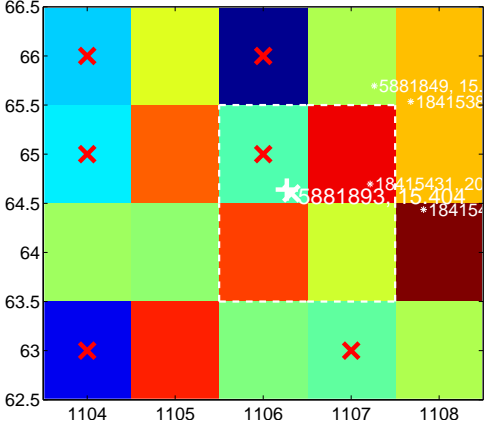
Q10 difference image



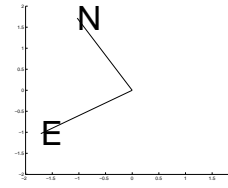
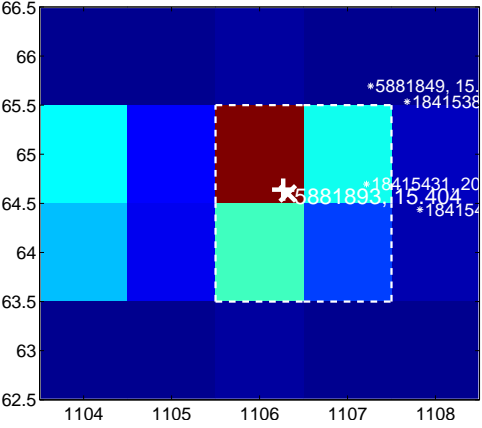
Q10 OOT image



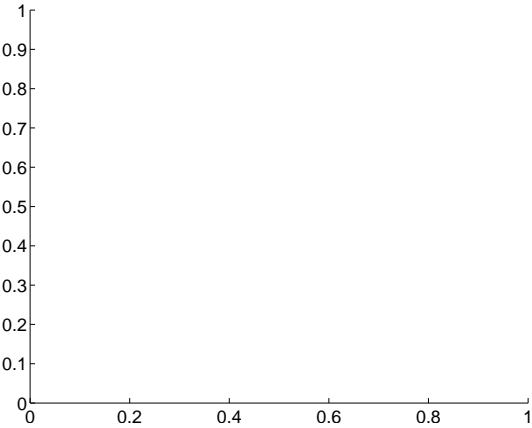
Q11 difference image. Poor Quality



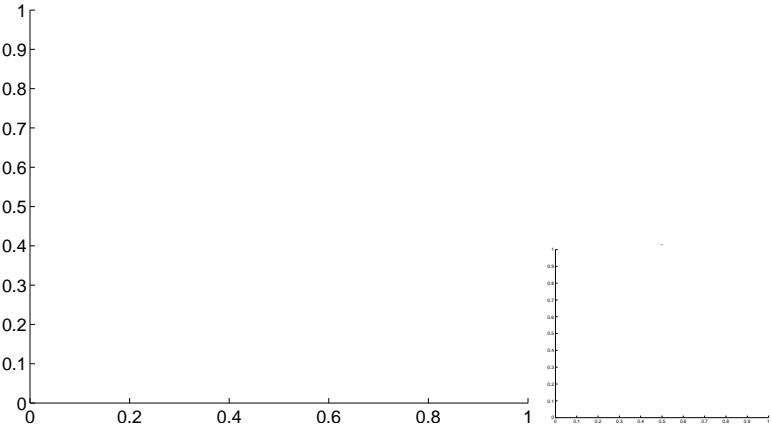
Q11 OOT image



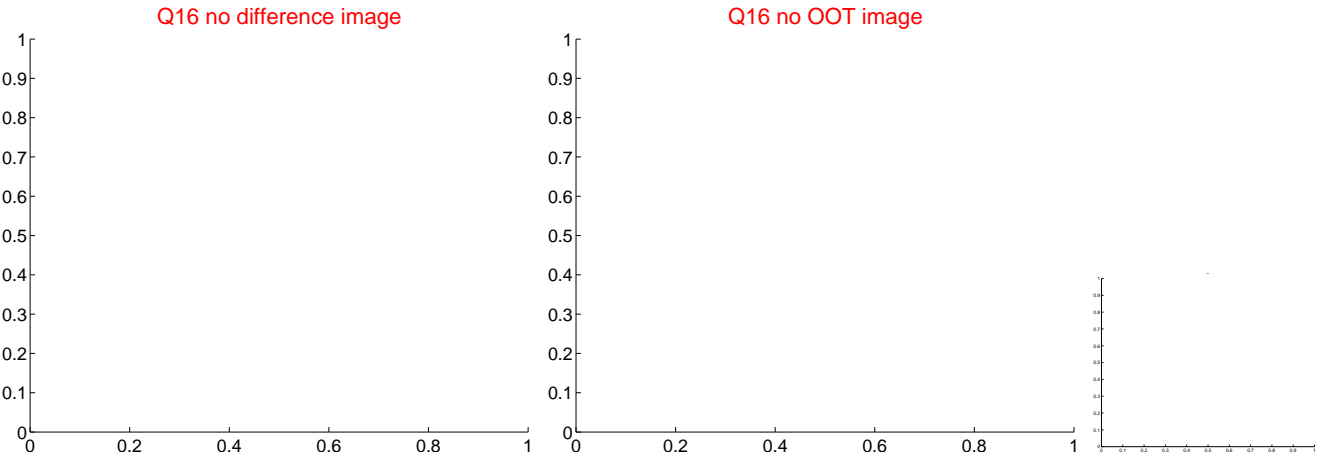
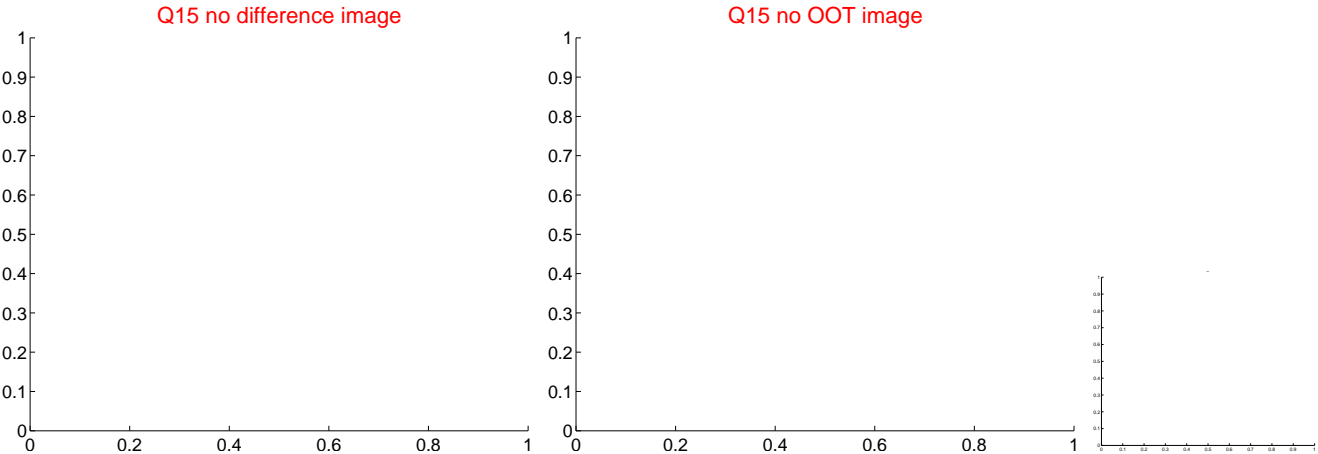
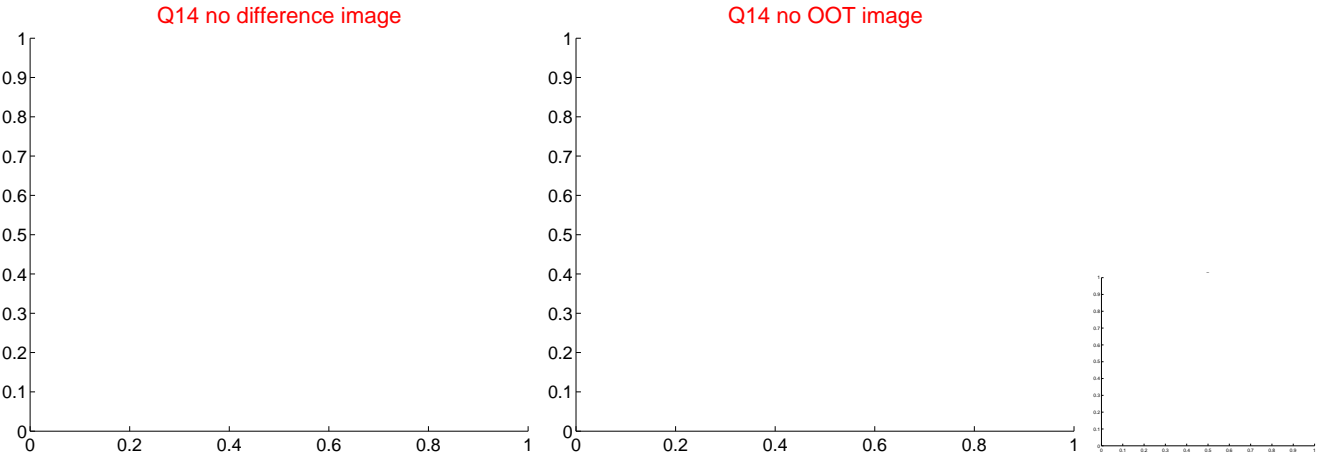
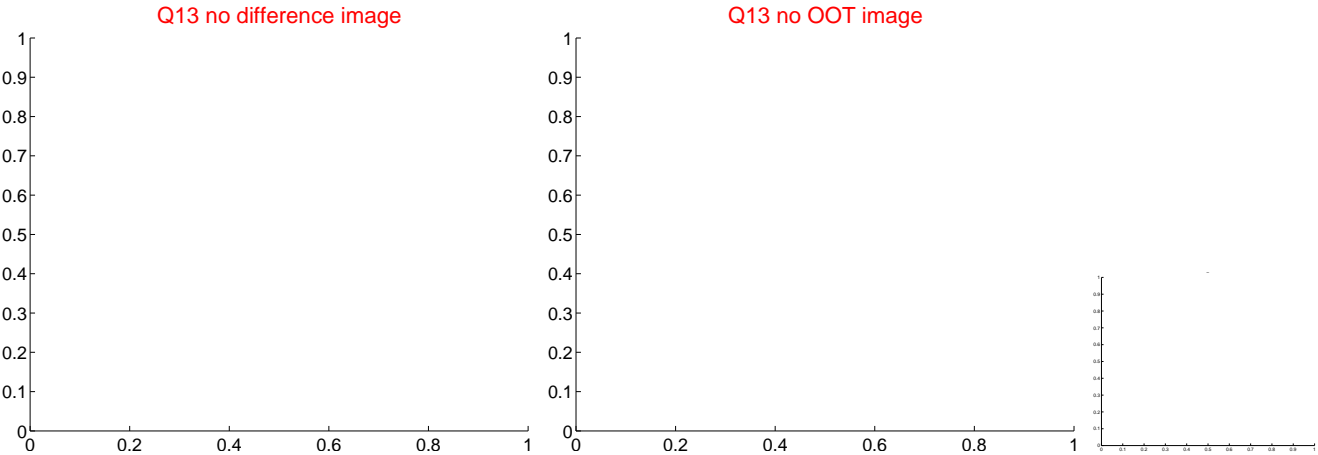
Q12 no difference image



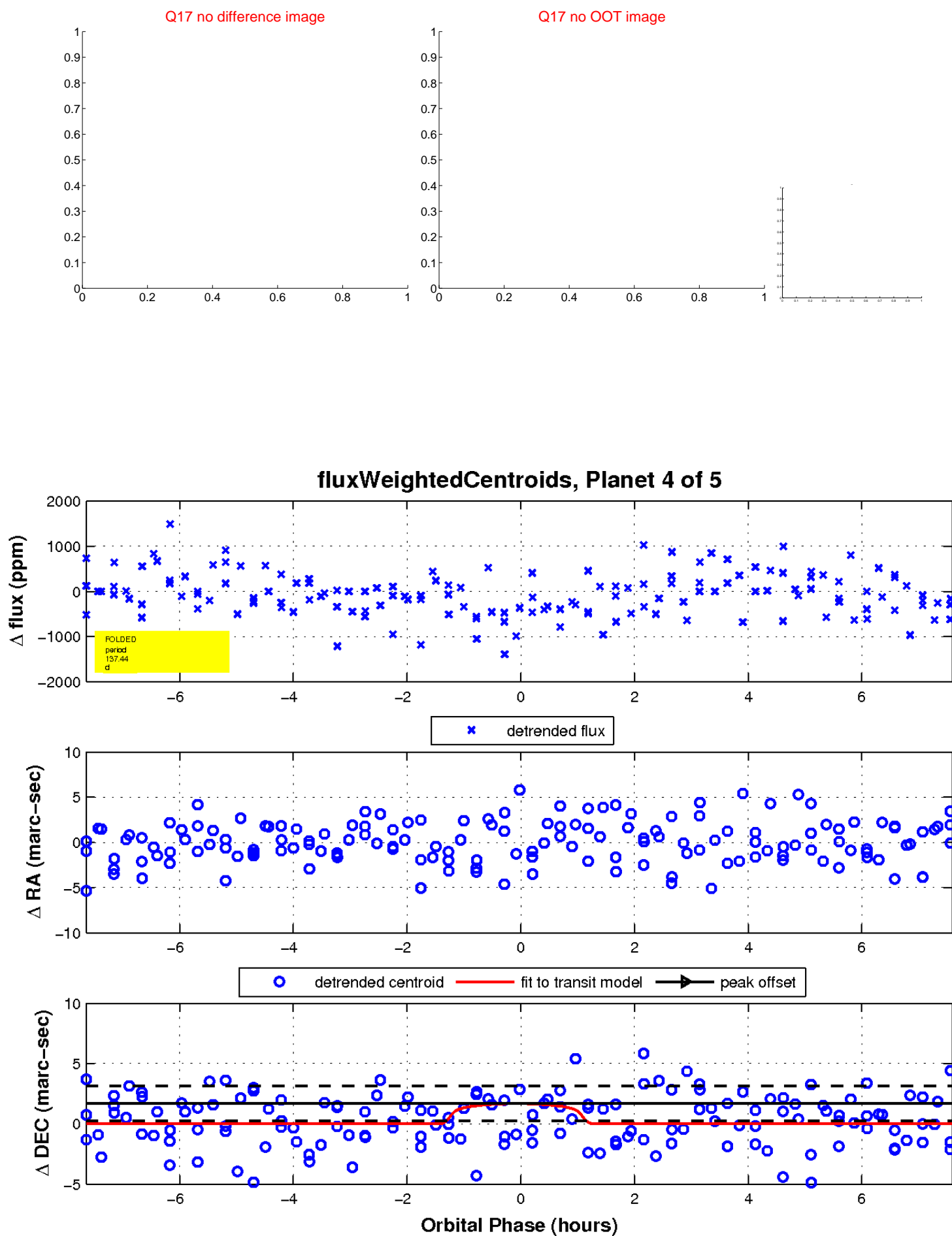
Q12 no OOT image



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.





UKIRT Image

Declination

