

# KIC 011137723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011137723-01	OBS	No	326.576428	155.057440	350.9	1.858	13.8	1.0	0.22	3274	0.44	0.02
011137723-02	OBS	No	374.280142	308.585110	2109.8	2.101	11.5	5.0	0.22	3274	2.04	0.01
011137723-03	OBS	No	367.502278	290.480542	3426.8	2.572	14.5	9.3	0.22	3274	1.31	0.01
011137723-04	OBS	No	303.387884	429.242015	2382.5	12.790	11.0	6.5	0.22	3274	1.09	0.02
011137723-05	OBS	No	404.145065	294.303180	3596.2	10.157	10.4	10.2	0.22	3274	1.32	0.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011137723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011137723-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
011137723-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV

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

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

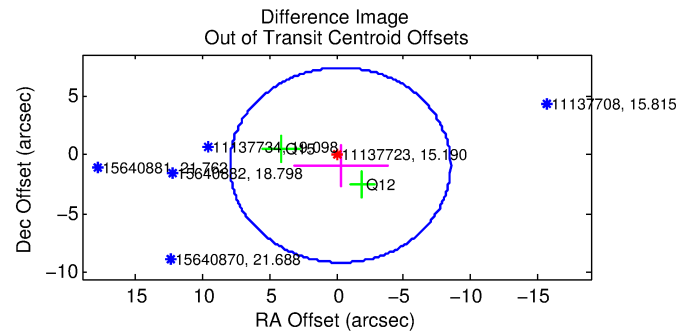
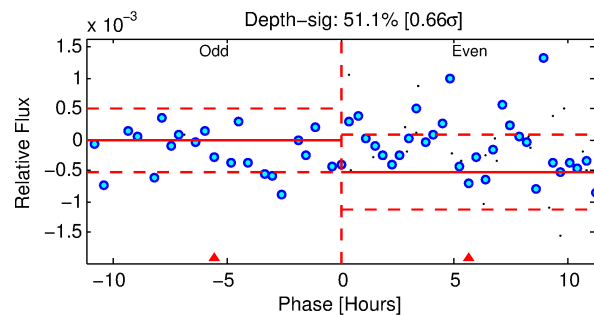
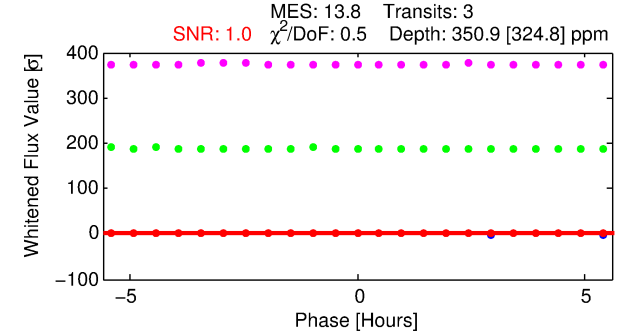
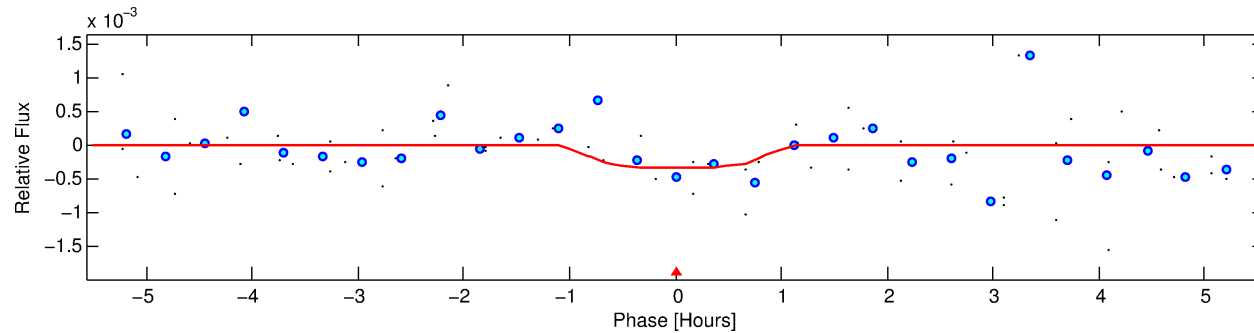
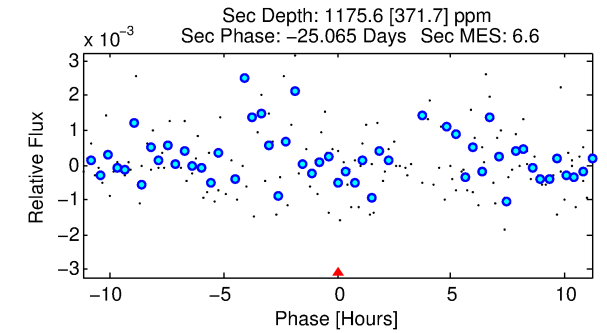
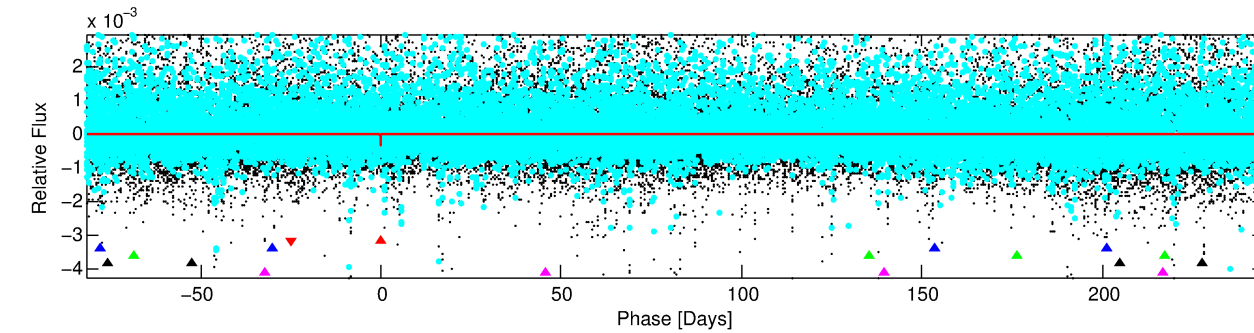
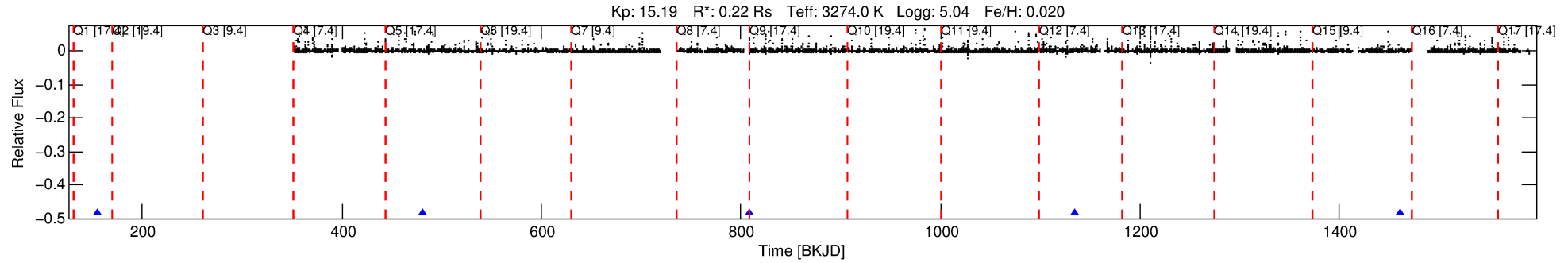
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011137723-01

No Significant Match Found

# DV One-Page Summary

KIC: 11137723 Candidate: 1 of 5 Period: 326.576 d



## DV Fit Results:

Period = 326.57643 [0.01328] d  
Epoch = 155.0574 [0.0404] BKJD  
Rp/R\* = 0.0181 [0.1252]  
a/R\* = 1045.67 [30732.41]  
b = 0.66 [25.69]  
Seff = 0.02 [0.00]  
Teq = 93 [3] K  
Rp = 0.44 [3.06] Re  
a = 0.5452 [0.0551] AU  
Ag = 982773.94 [13602695.36] [0.07]  
Teffp = 4507 [15595] K [0.28]

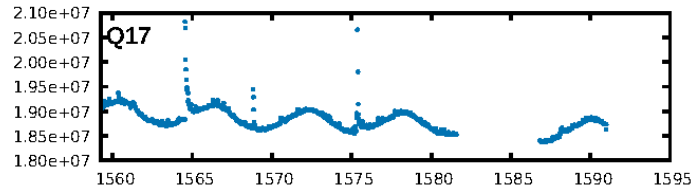
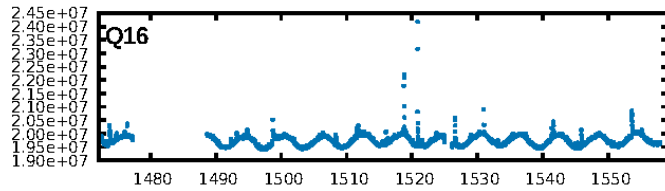
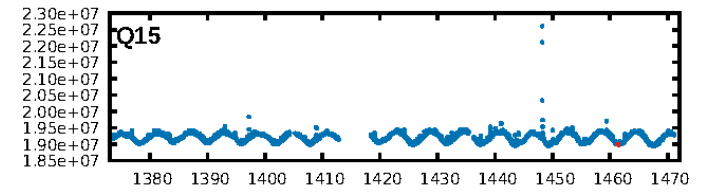
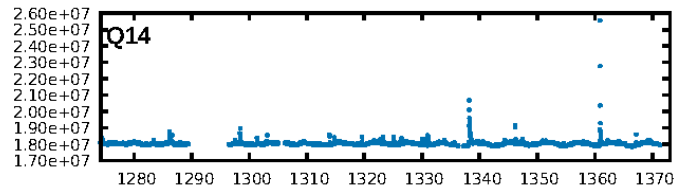
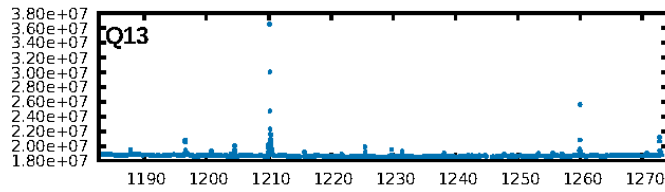
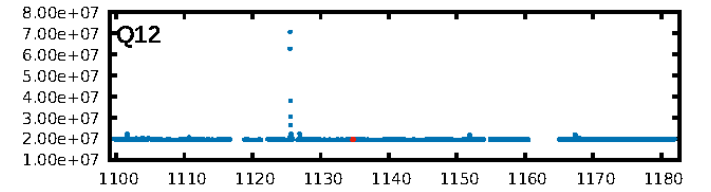
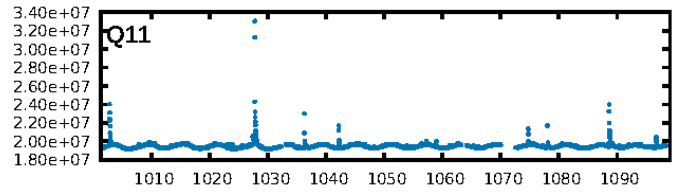
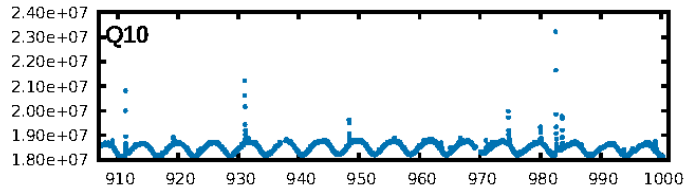
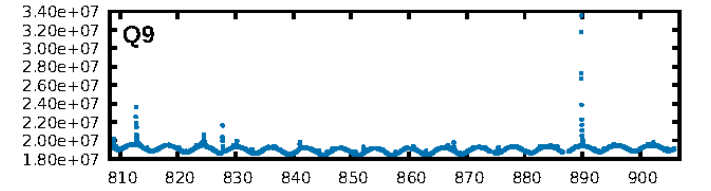
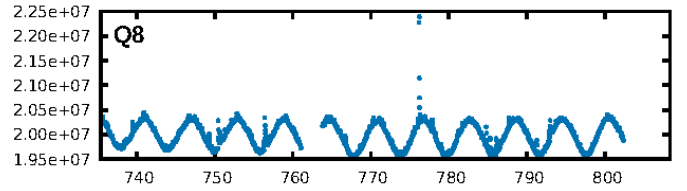
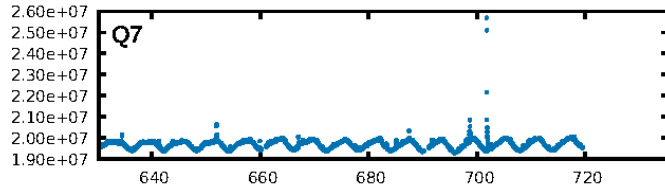
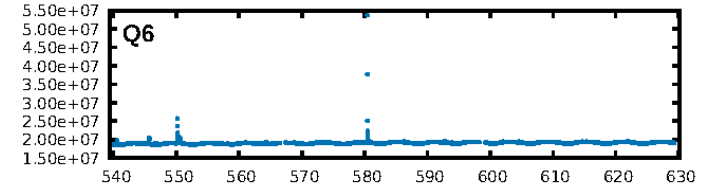
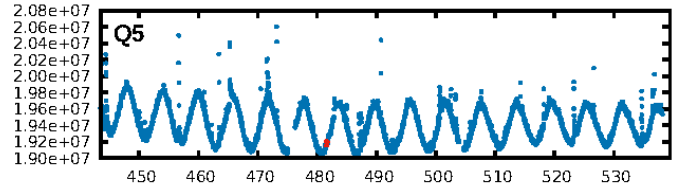
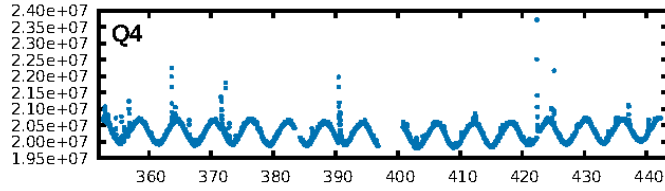
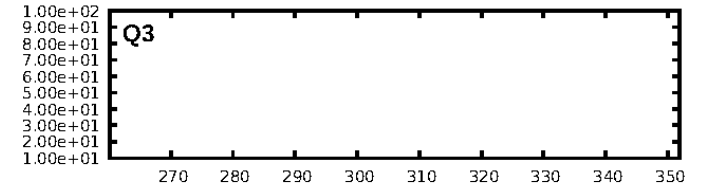
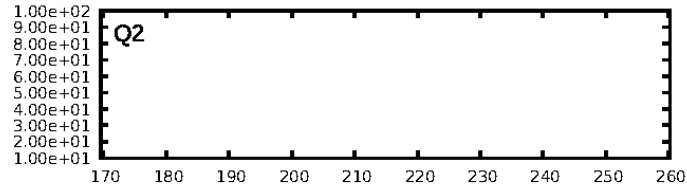
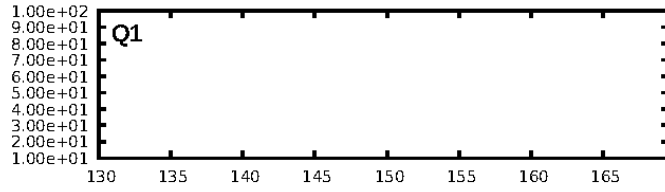
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.06σ]  
LongPeriod-sig: 100.0% [309.56σ]  
ModelChiSquare2-sig: 89.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.708  
Centroid-sig: 38.6%  
Centroid-so: 3.987 arcsec [0.73σ]  
OotOffset-rm: 0.915 arcsec [0.33σ]  
KicOffset-rm: 0.980 arcsec [0.49σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

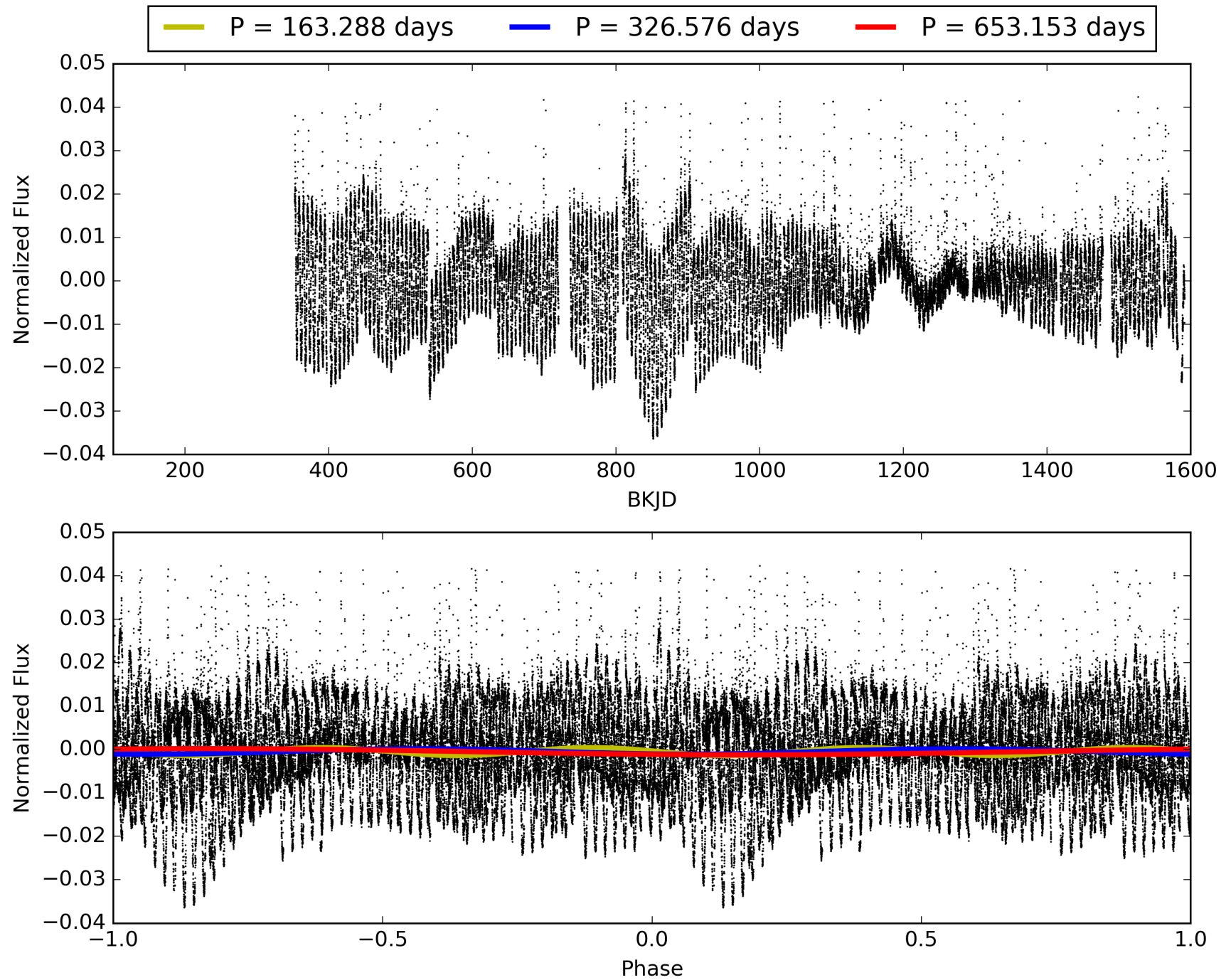
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:13:04 Z

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

# TCE 011137723-01, PDC Light Curves



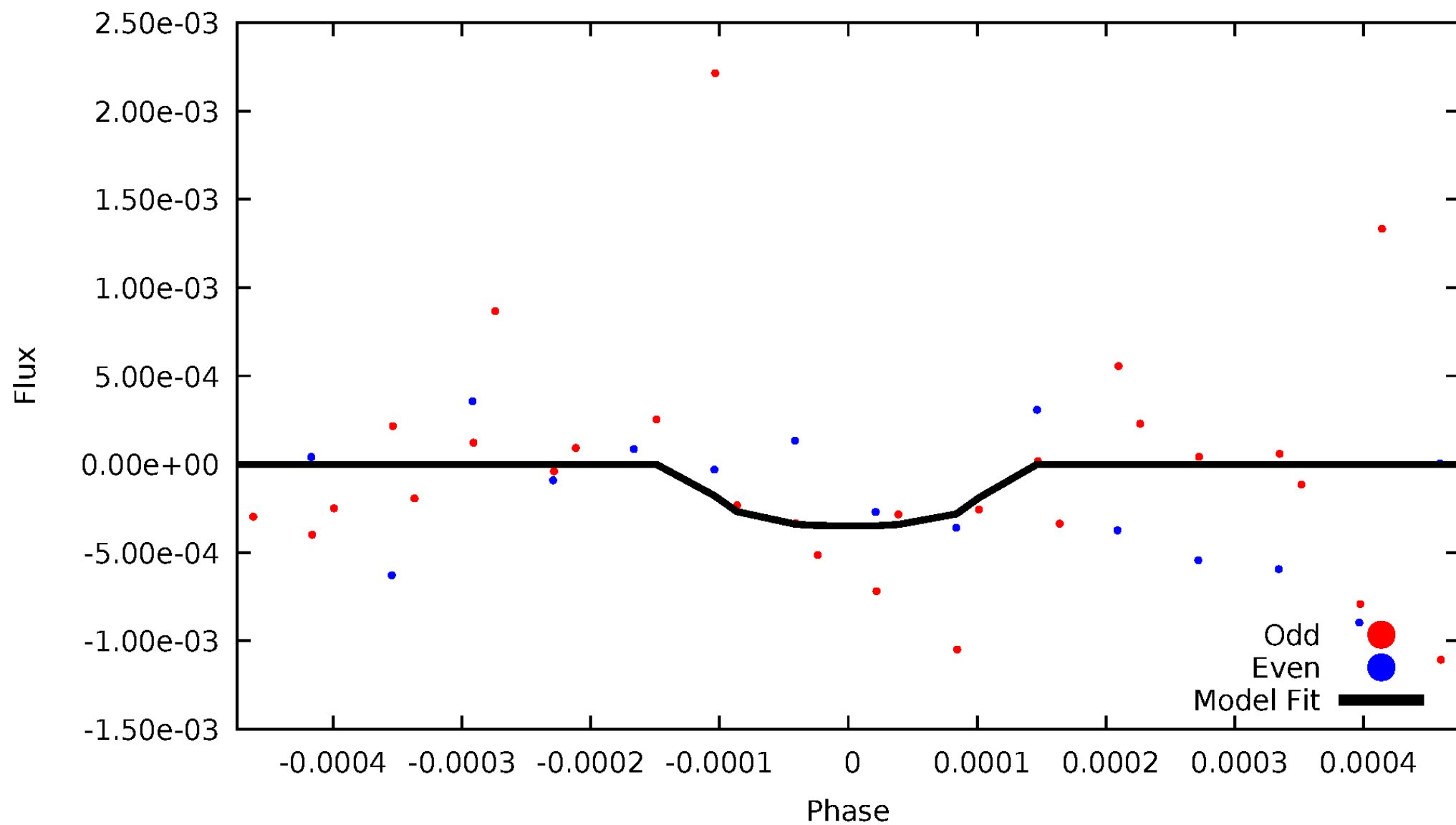
# TCE 011137723-01





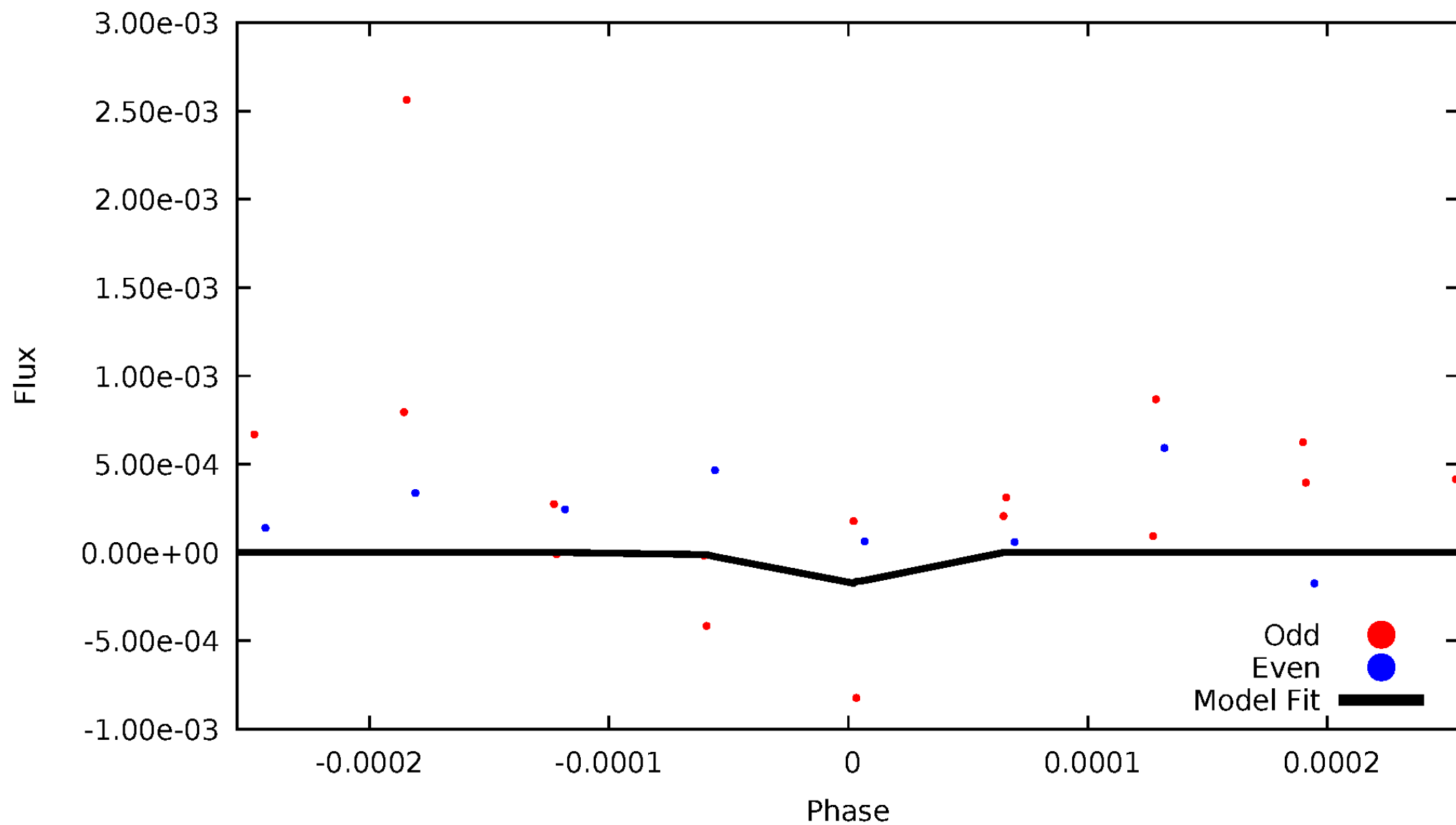
# DV Odd/Even

TCE 011137723-01



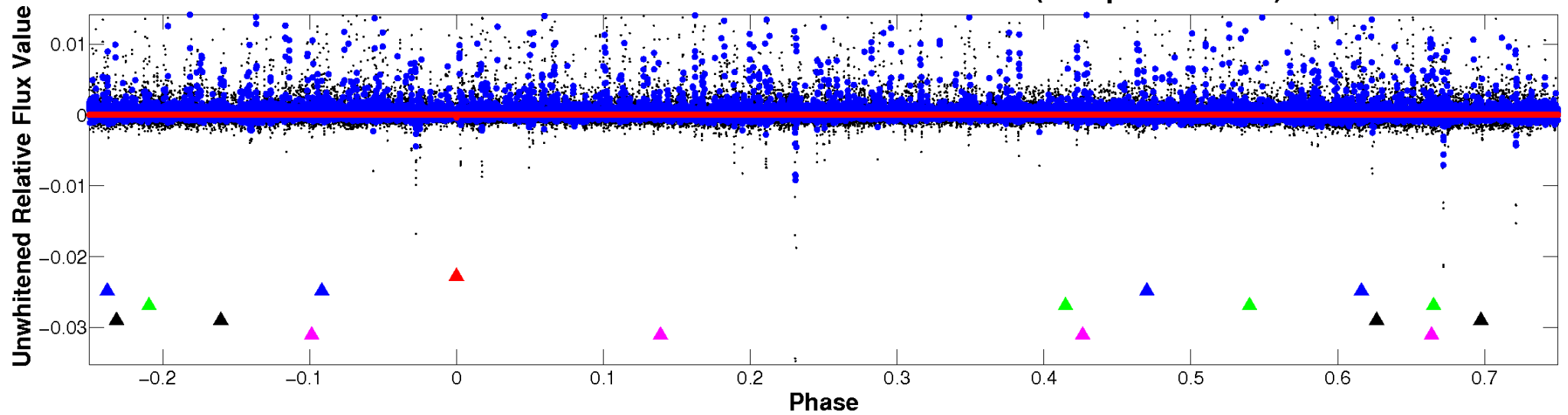
# ALT Odd/Even

TCE 011137723-01

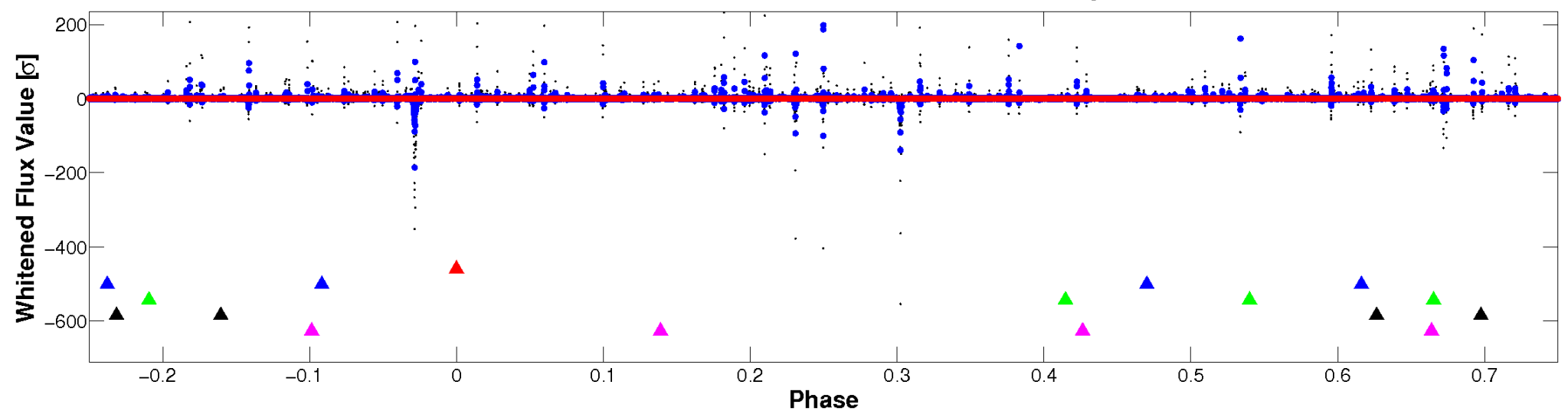


# Non-Whitened Vs. Whitened Light Curve

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

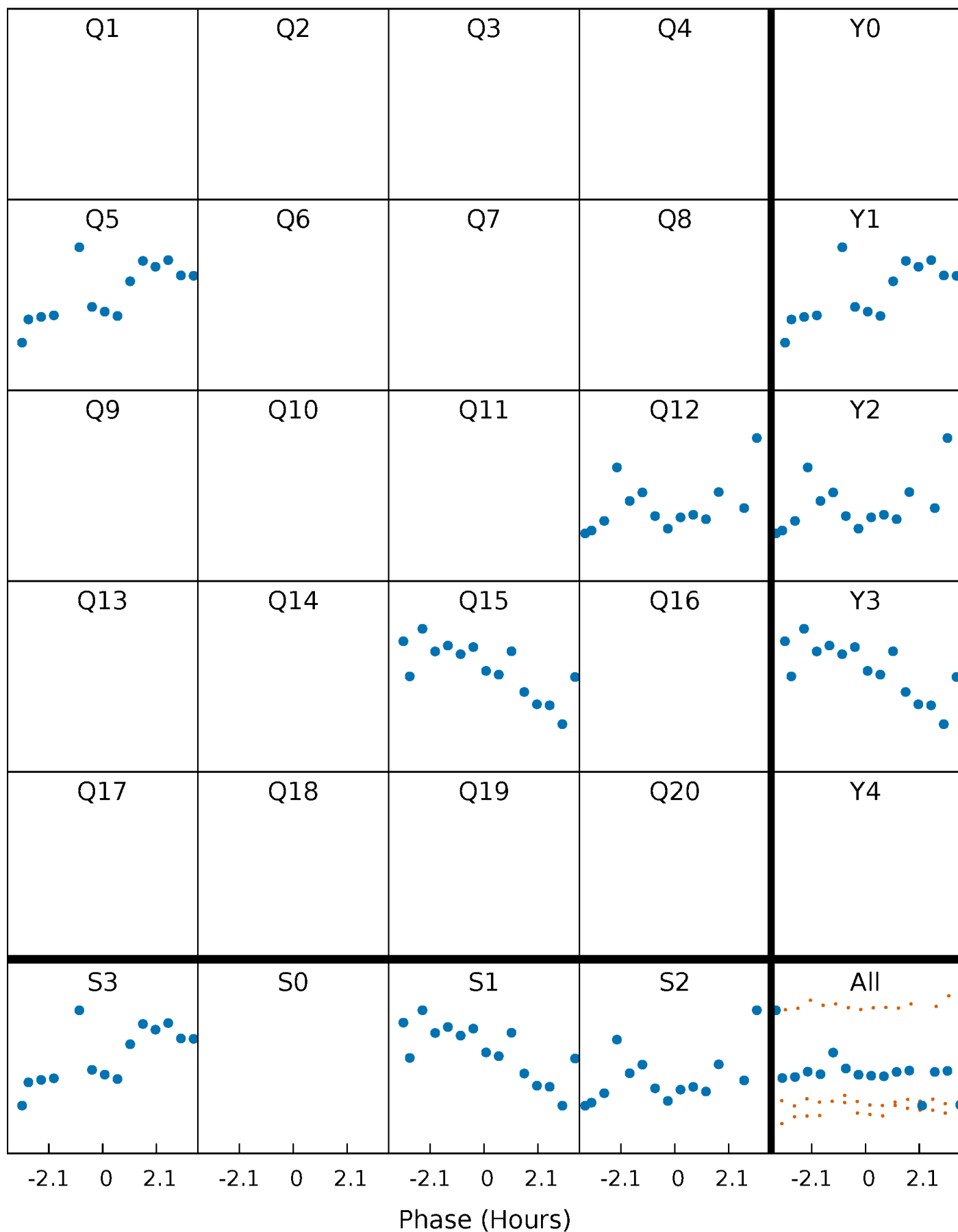


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



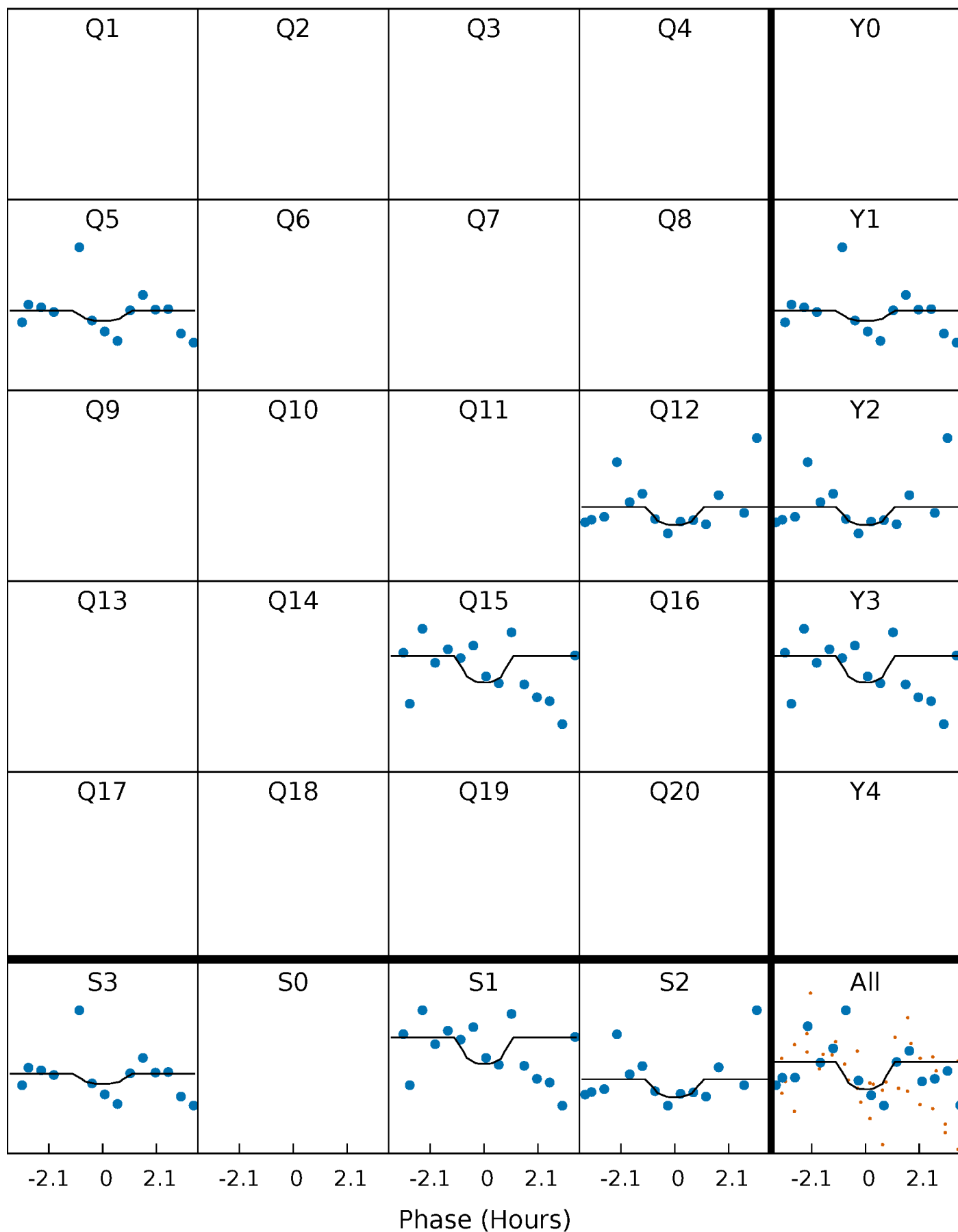
# PDC Quarter-Phased Transit Curves

TCE 011137723-01 P=326.576428 Days  $T_0=155.057440$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011137723-01 P=326.576428 Days  $T_0=155.057440$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011137723-01 P=326.569156 Days  $T_0=155.091207$  (BKJD)

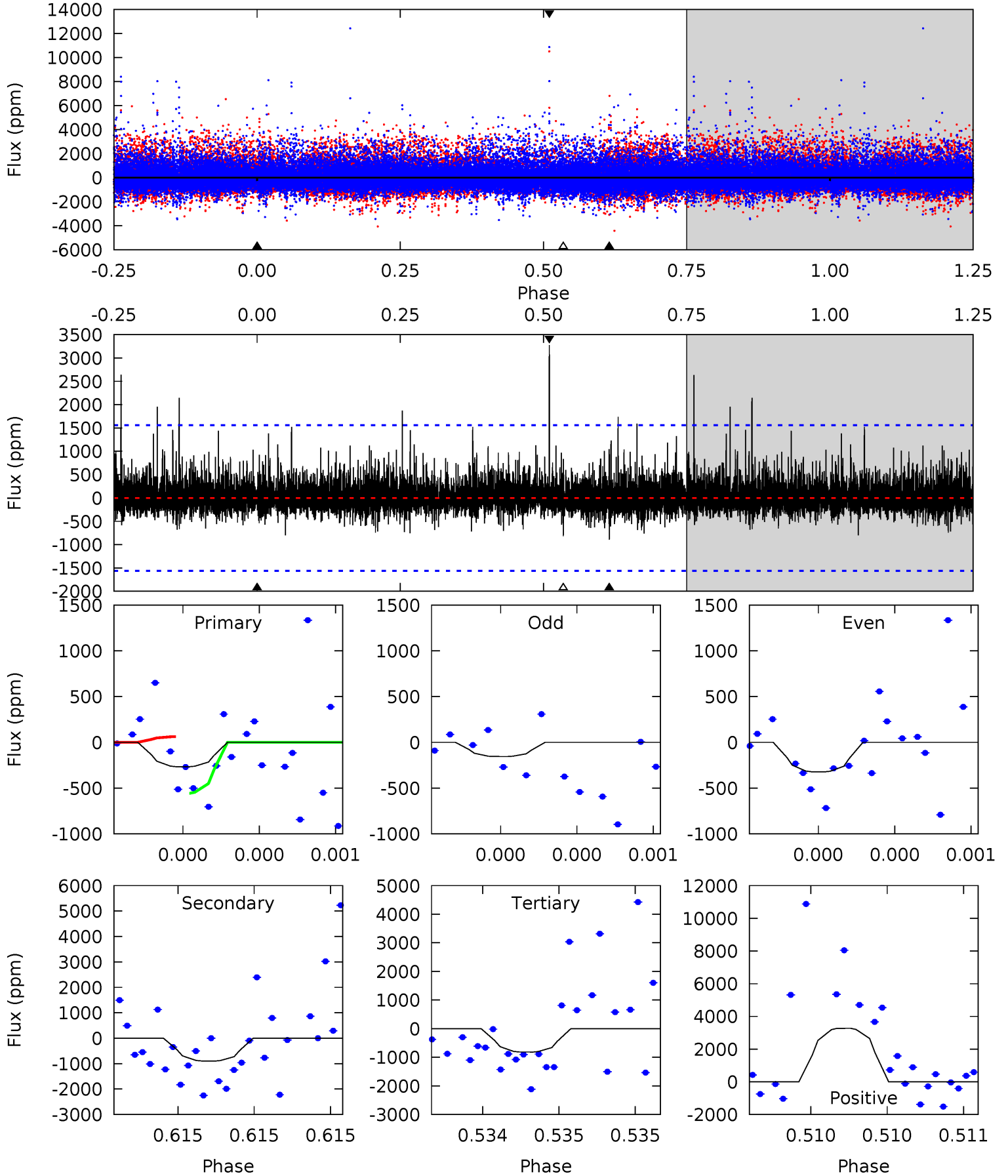




# DV Model-Shift Uniqueness Test

011137723-01, P = 326.576428 Days, E = 155.057440 Days

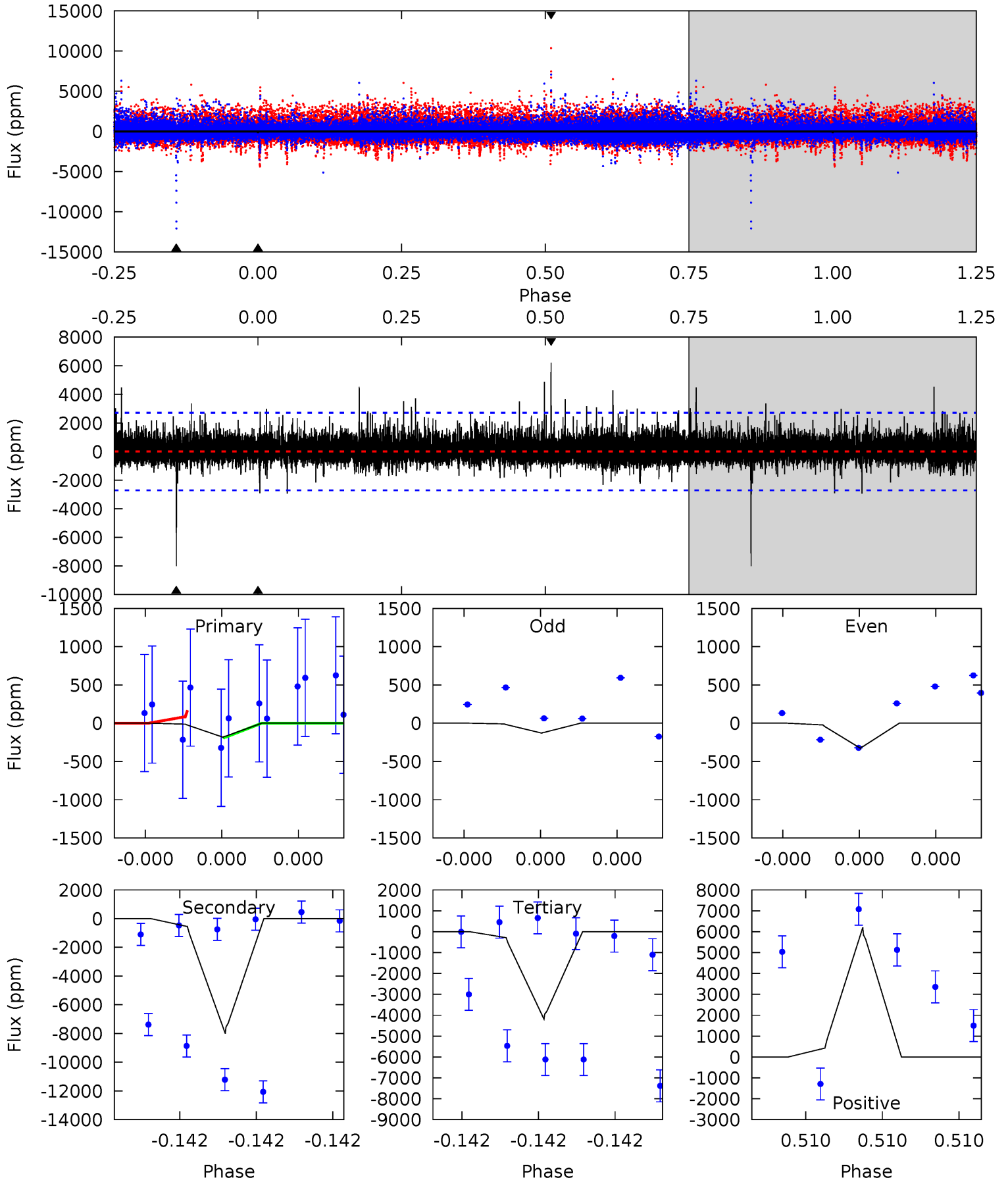
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.97	3.27	2.98	11.9	5.69	3.66	0.93	-2.01	-11.0	0.29	-8.67	0.10	1.05	0.79	0.89



# Alt Model-Shift Uniqueness Test

011137723-01, P = 326.569156 Days, E = 155.091207 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
0.40	17.2	8.99	13.3	5.81	3.84	1.23	-8.59	-12.9	8.18	3.88	0.18	-1.36	0.44	0.03



### Stellar Parameters For KIC 011137723

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3274^{+42}_{-32}$	$5.044^{+0.044}_{-0.044}$	$0.020^{+0.100}_{-0.100}$	$0.224^{+0.032}_{-0.026}$	$0.202^{+0.042}_{-0.026}$	$25.440^{+6.603}_{-5.245}$
	+1%/-1%	+1%/-1%	+500%/-500%	+14%/-12%	+21%/-13%	+26%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 011137723-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-896 \pm 274$	$2.12^{+2.32}_{-1.40}$	$129^{+3}_{-3}$	$2457^{+831}_{-386}$	$31516^{+243478}_{-24542}$
Alt.	$-8012 \pm 467$	$2.23^{+2.04}_{-1.54}$	$130^{+3}_{-3}$	$3290^{+1679}_{-570}$	$272833^{+2531048}_{-198381}$

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

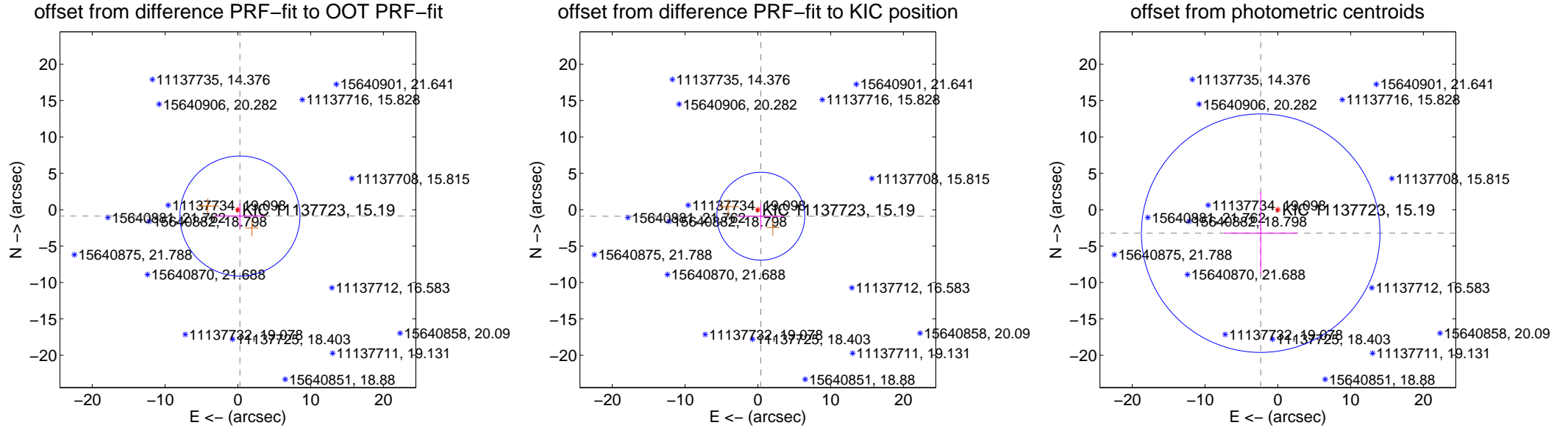
## DV Centroid Data

Supplemental centroid analysis for 011137723-01. Kepler magnitude: 15.19. Transit SNR 0.99

There are 0 quarters with good PRF difference image offsets

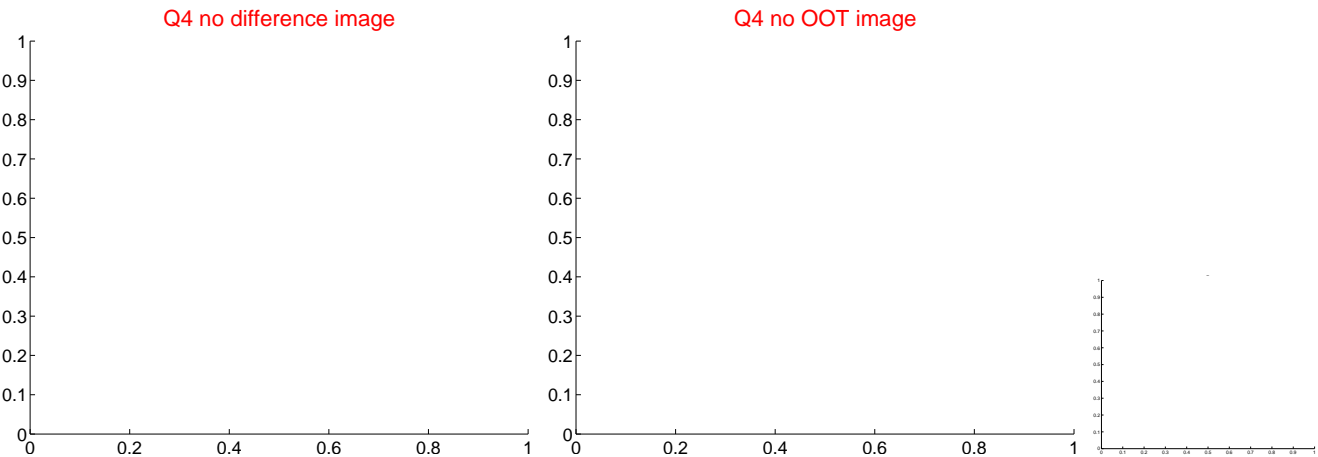
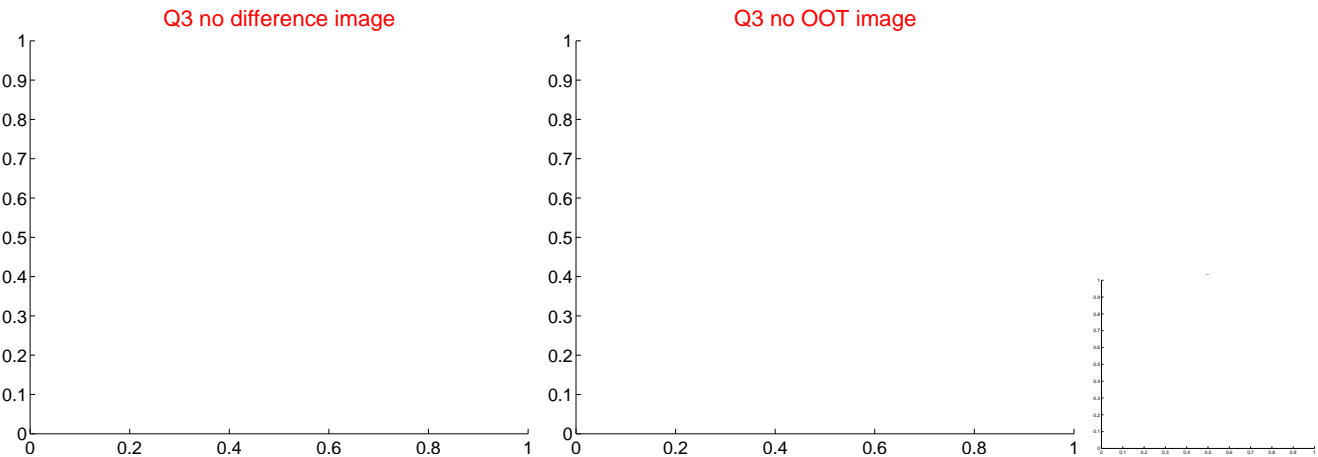
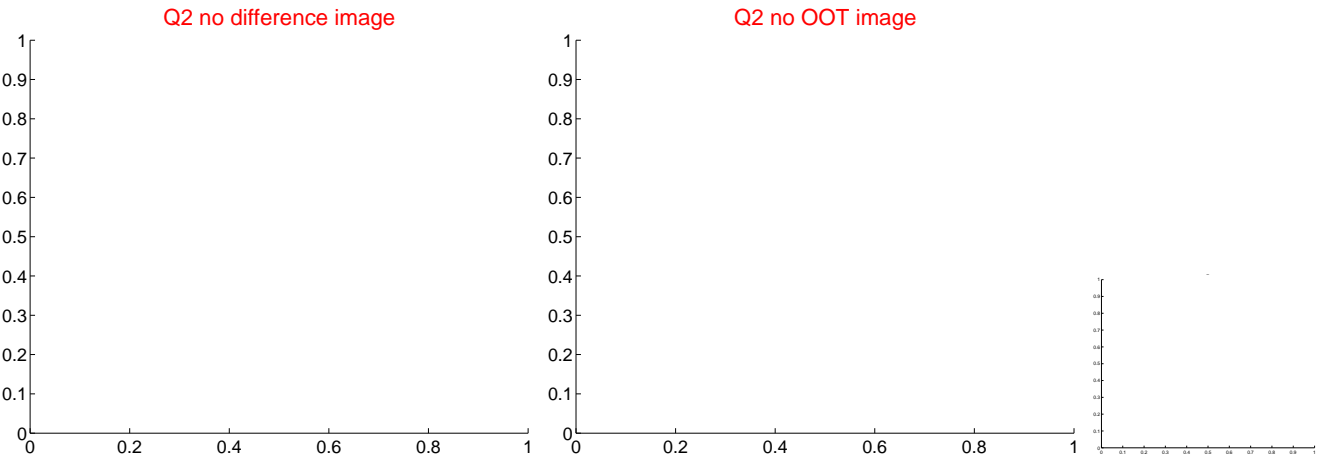
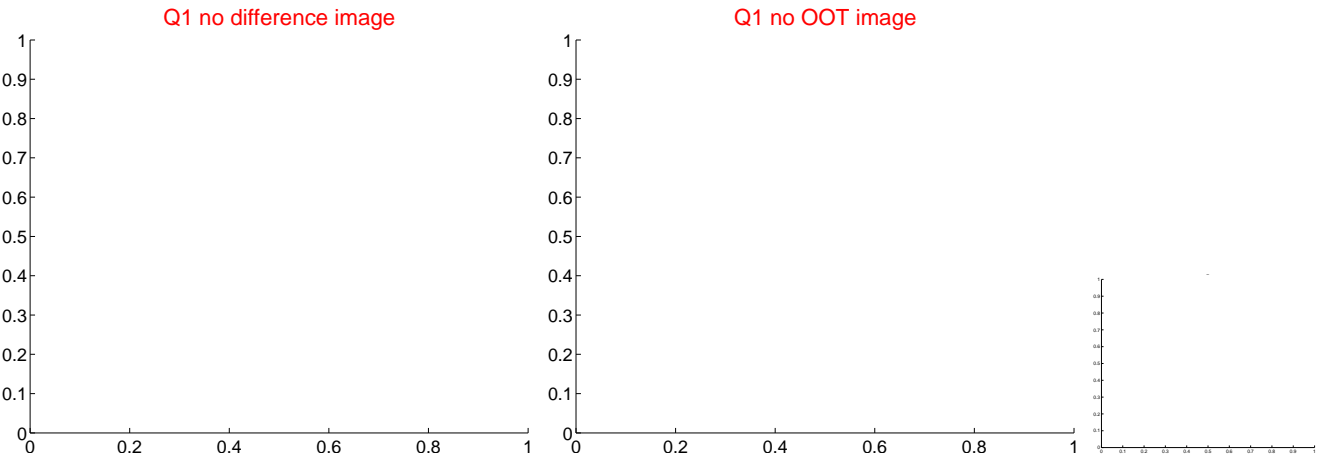
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.915 \pm 2.749$	0.33	$-0.288 \pm 3.491$	$-0.869 \pm 1.740$
PRF-fit source offset from KIC position	$0.980 \pm 2.013$	0.49	$-0.407 \pm 3.191$	$-0.891 \pm 1.665$
photometric centroid source offset	$3.99 \pm 5.46$	0.73	$2.35 \pm 4.99$	$-3.22 \pm 5.70$

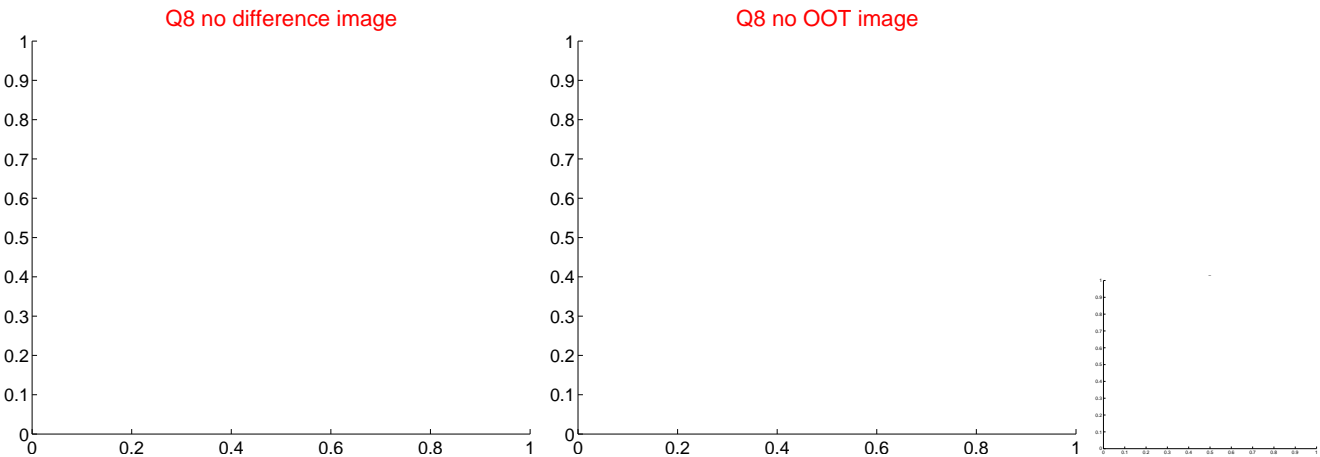
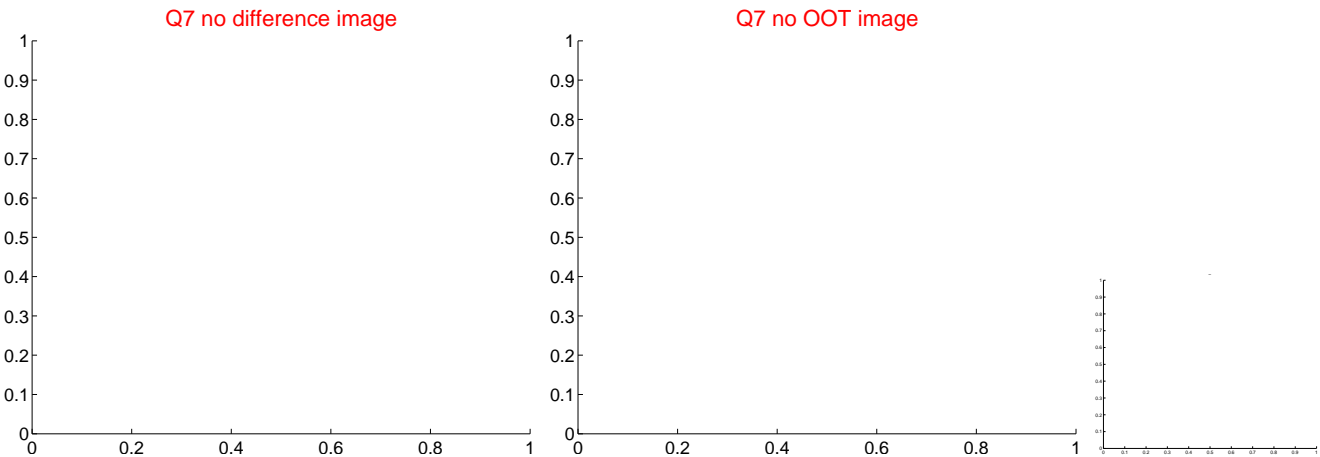
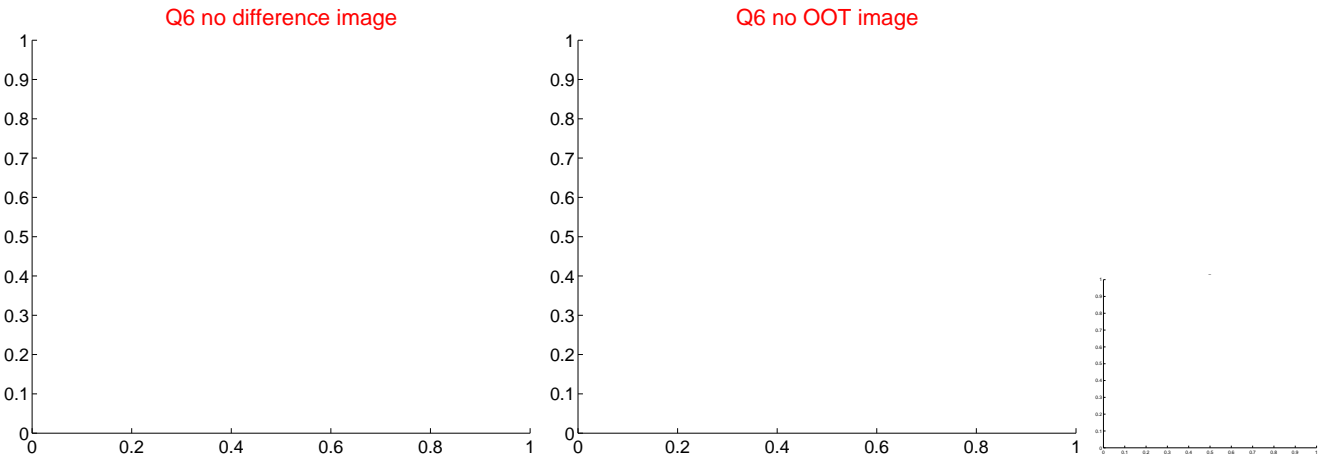
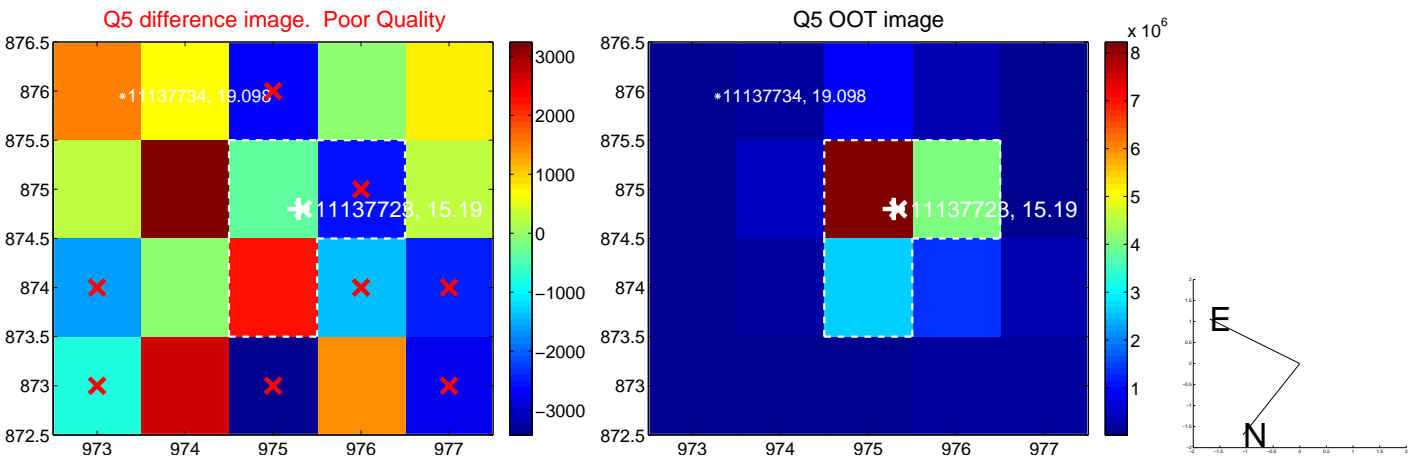


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

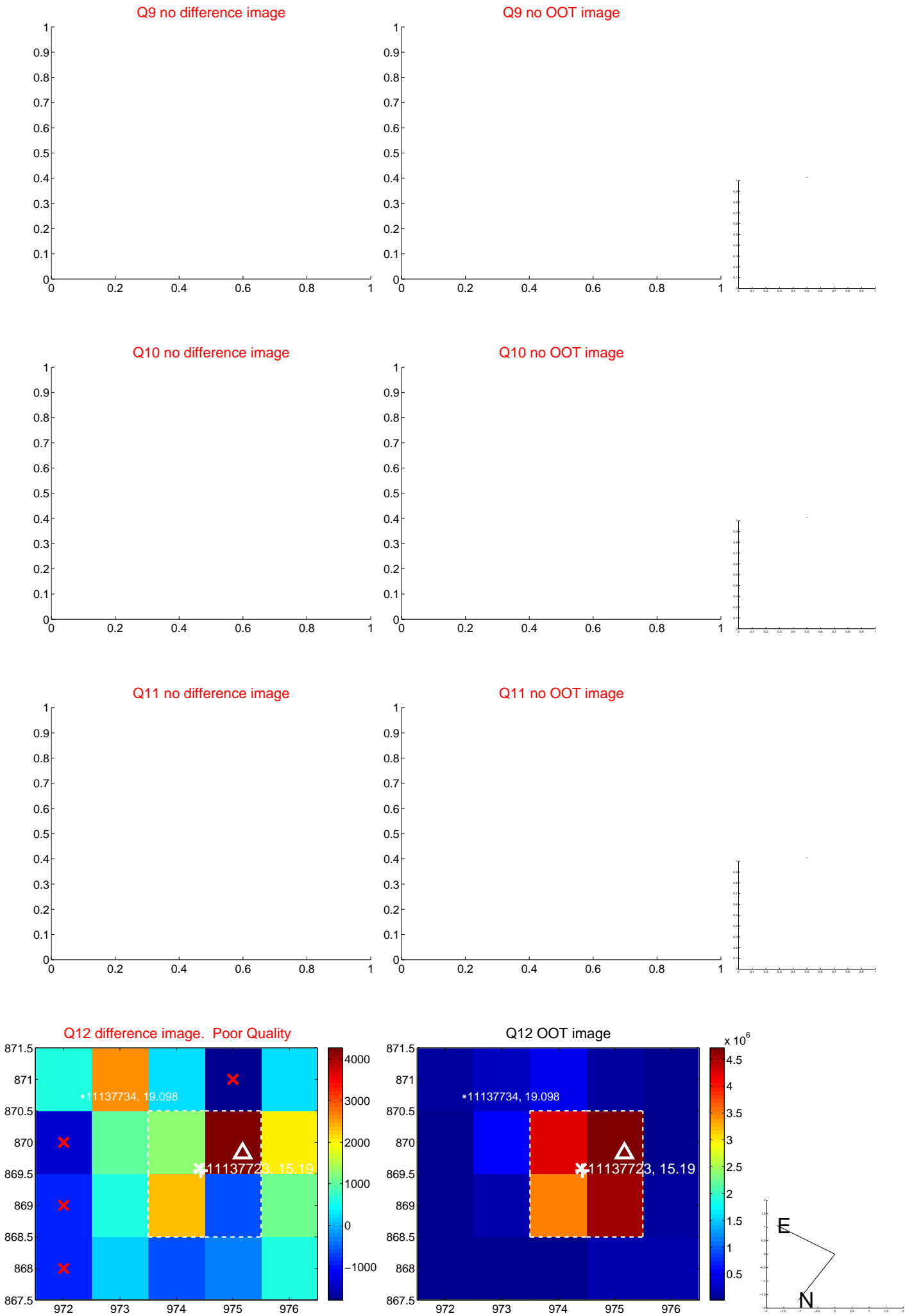


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

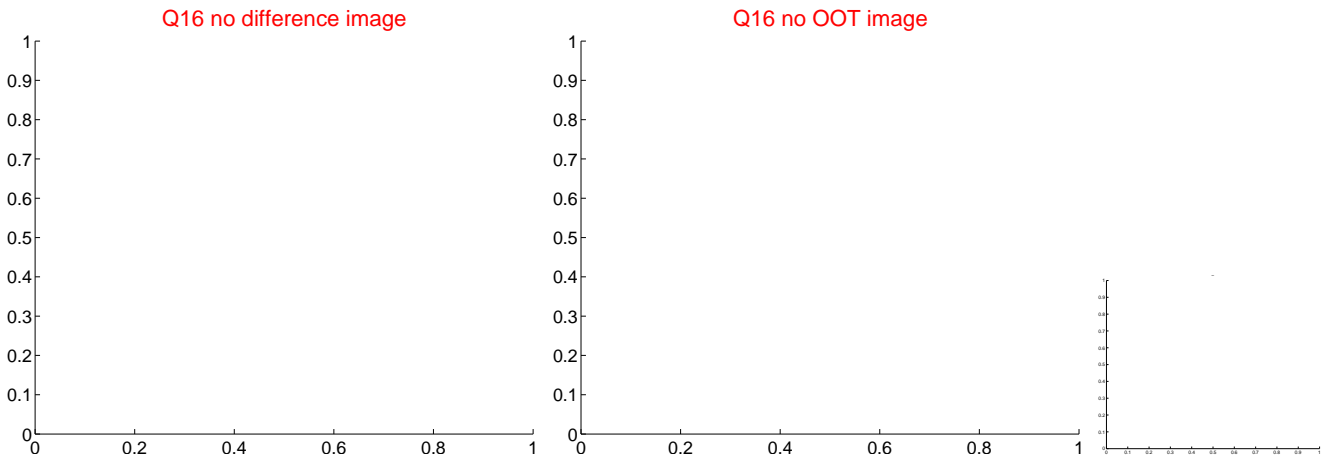
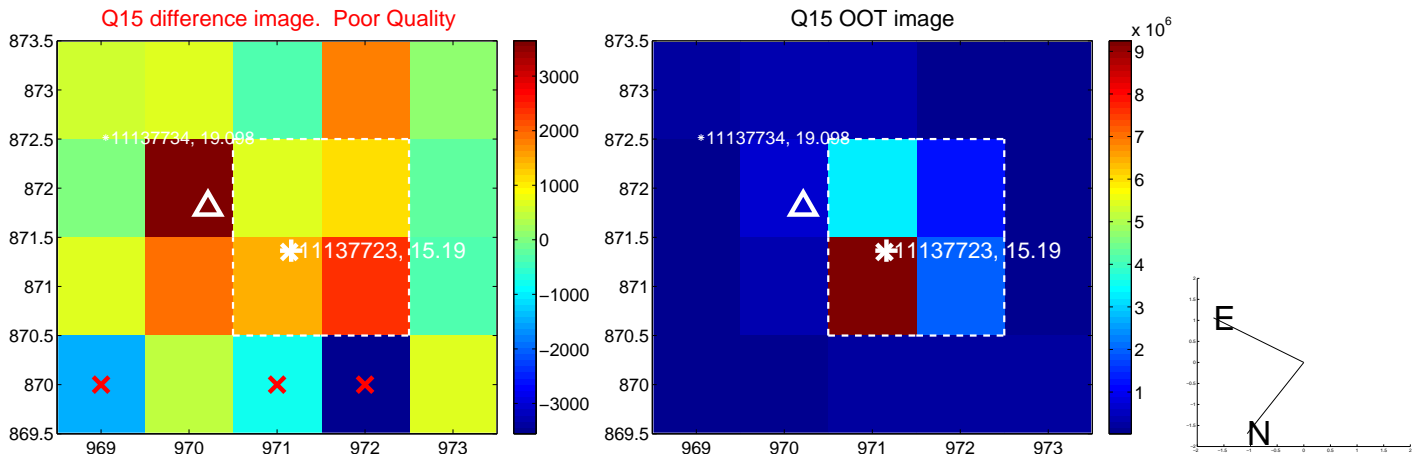
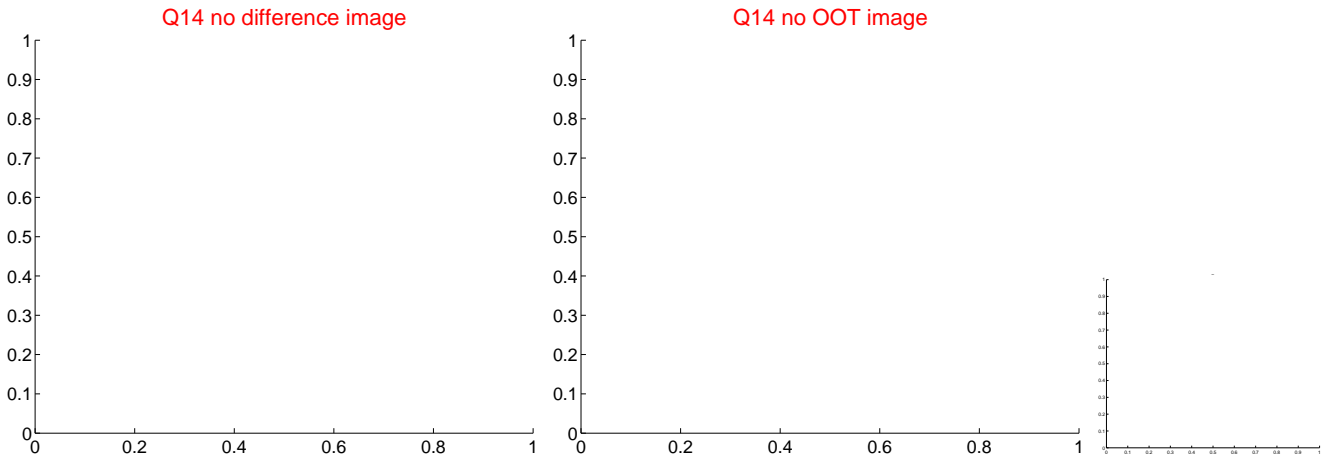
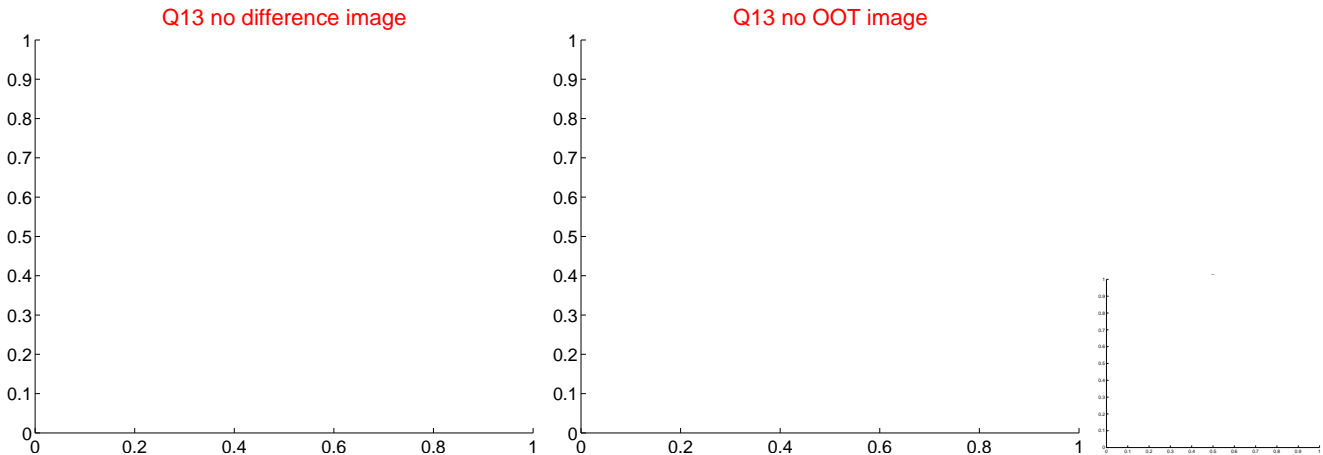




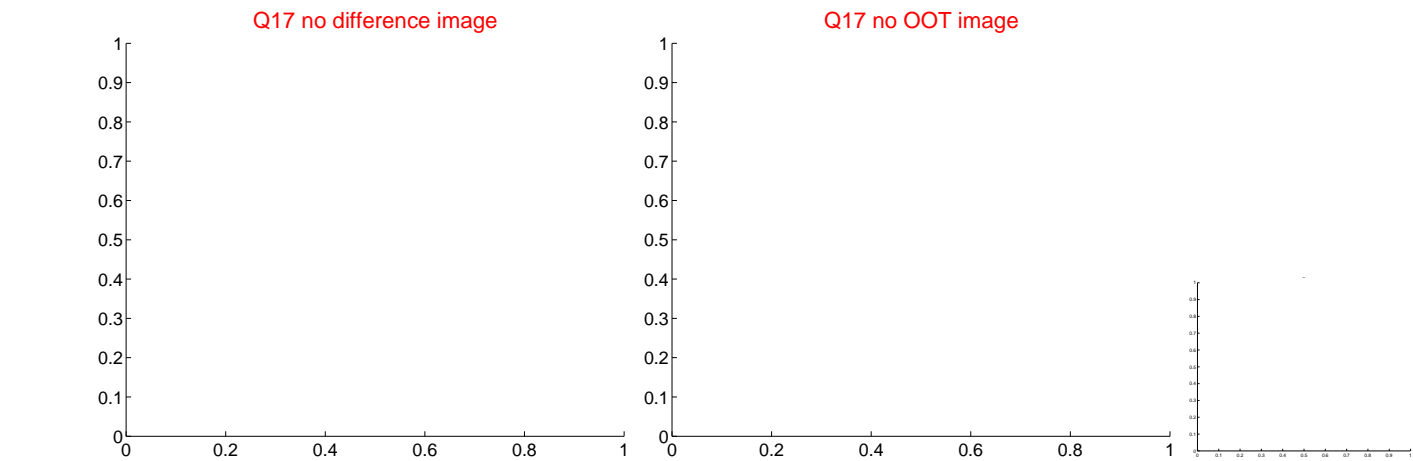
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



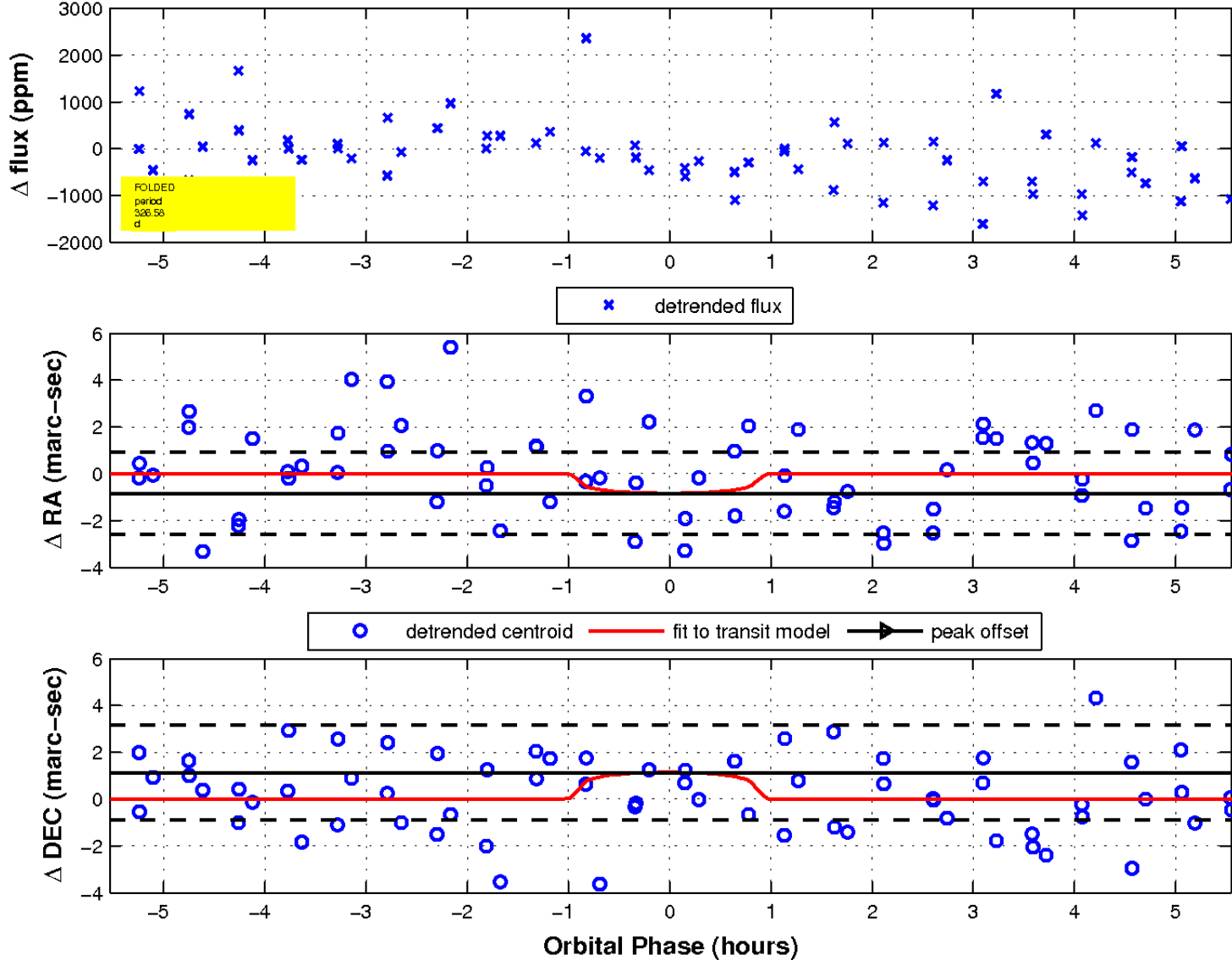
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

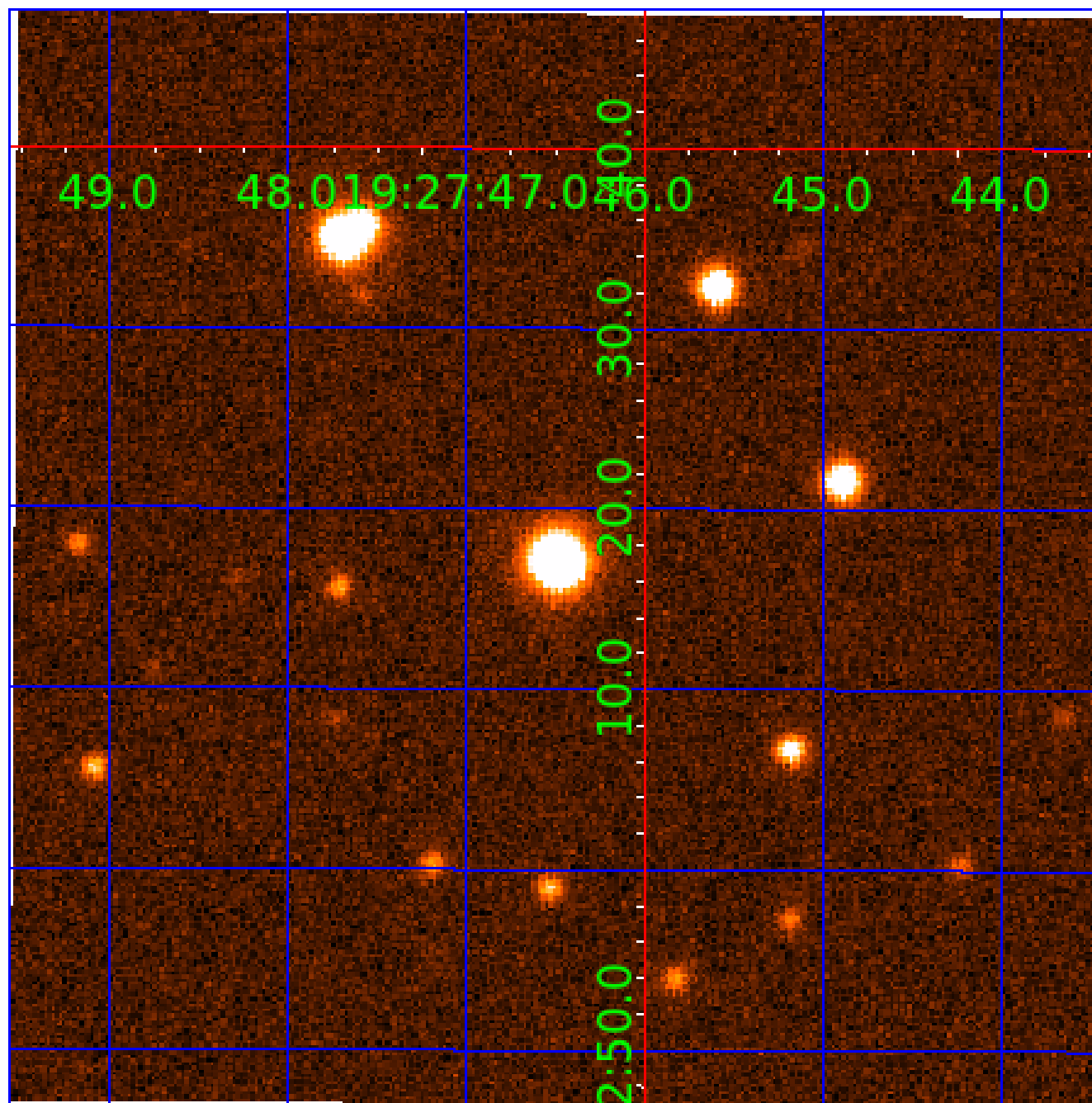


fluxWeightedCentroids, Planet 1 of 5



UKIRT Image

Declination



# KIC 011137723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011137723-01	OBS	No	326.576428	155.057440	350.9	1.858	13.8	1.0	0.22	3274	0.44	0.02
011137723-02	OBS	No	374.280142	308.585110	2109.8	2.101	11.5	5.0	0.22	3274	2.04	0.01
011137723-03	OBS	No	367.502278	290.480542	3426.8	2.572	14.5	9.3	0.22	3274	1.31	0.01
011137723-04	OBS	No	303.387884	429.242015	2382.5	12.790	11.0	6.5	0.22	3274	1.09	0.02
011137723-05	OBS	No	404.145065	294.303180	3596.2	10.157	10.4	10.2	0.22	3274	1.32	0.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011137723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011137723-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
011137723-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV

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

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

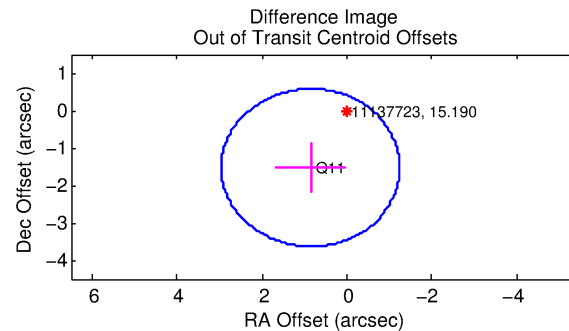
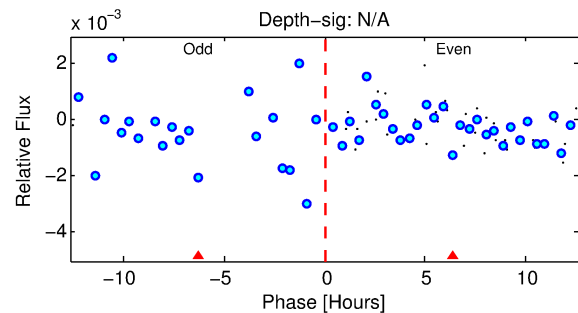
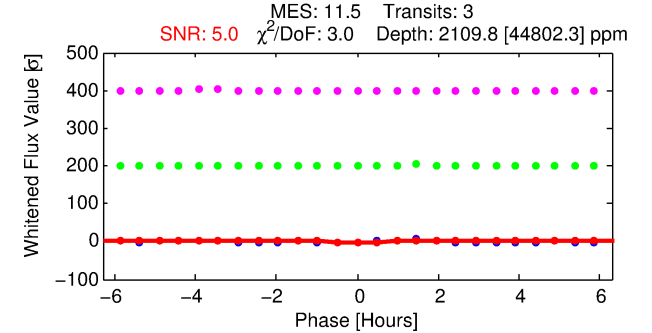
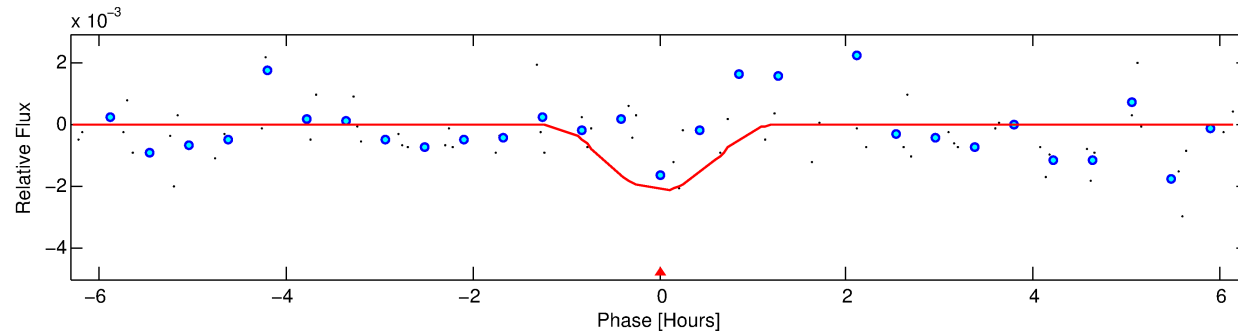
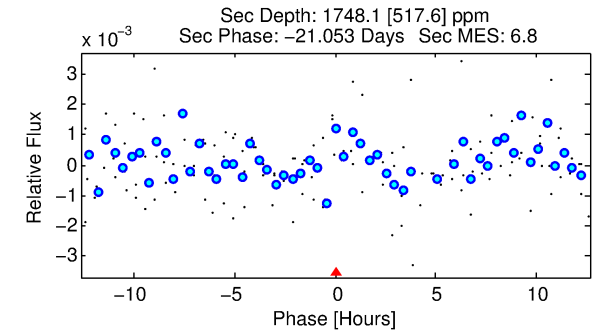
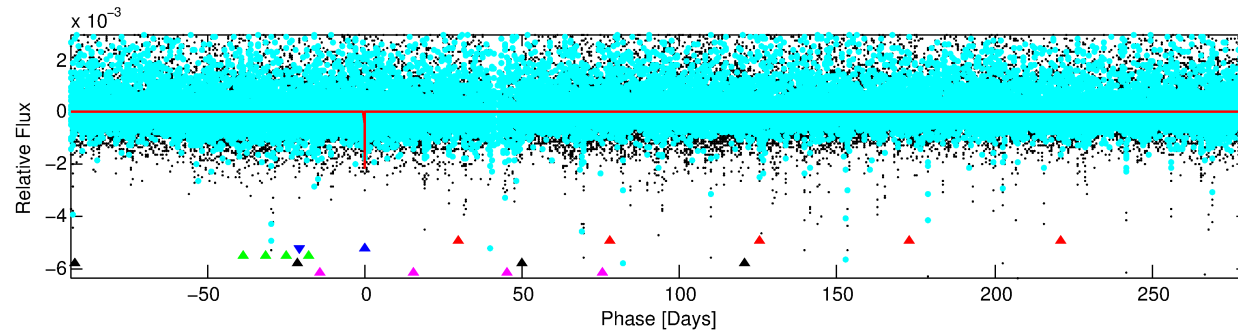
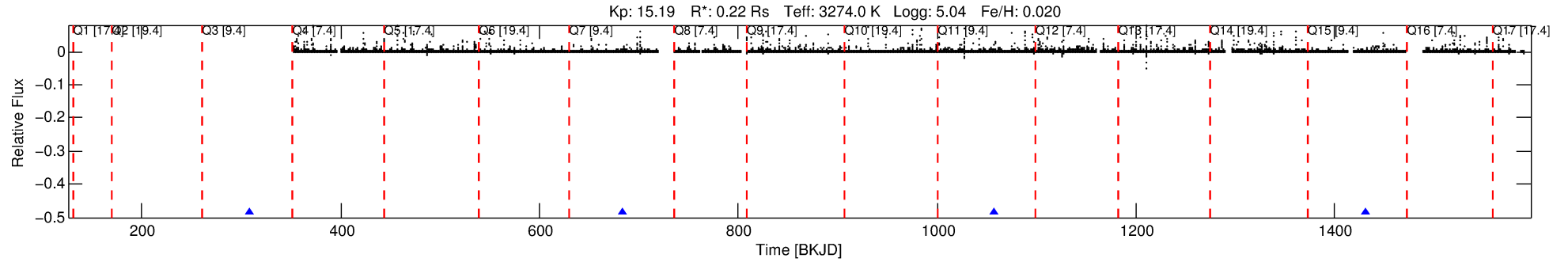
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011137723-02

No Significant Match Found

# DV One-Page Summary

KIC: 11137723 Candidate: 2 of 5 Period: 374.280 d



## DV Fit Results:

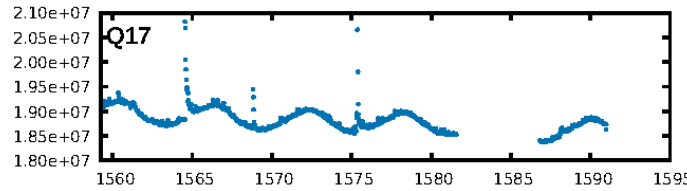
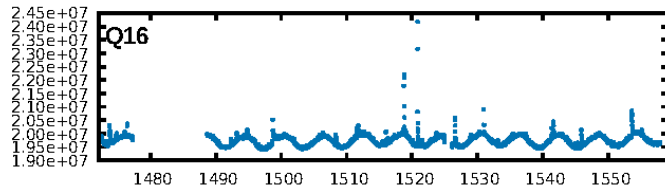
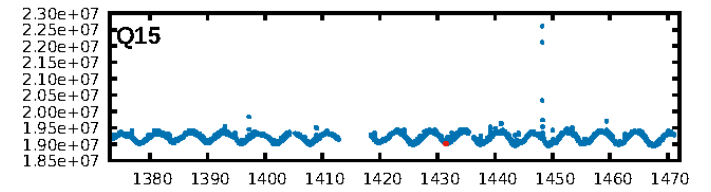
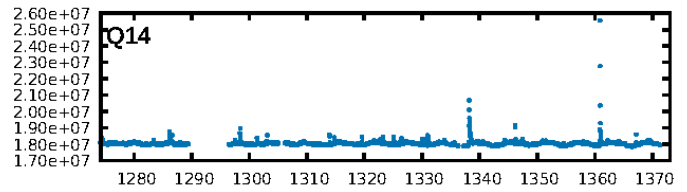
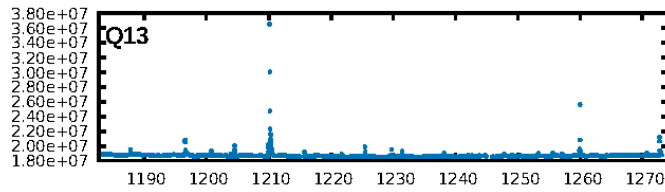
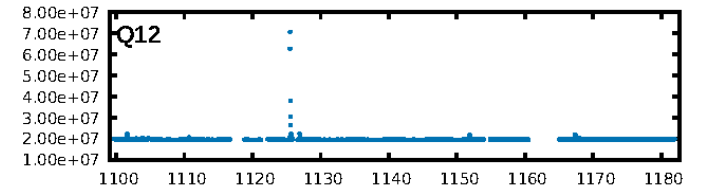
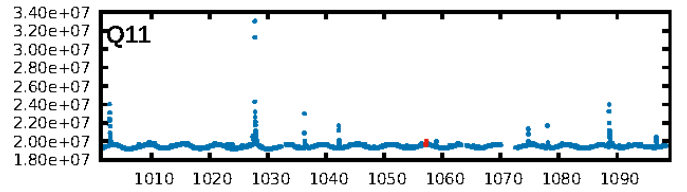
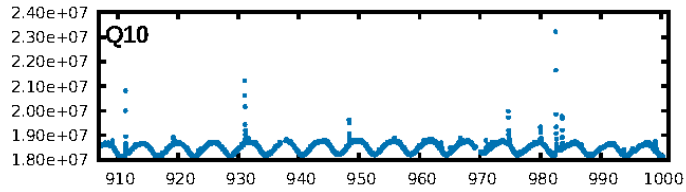
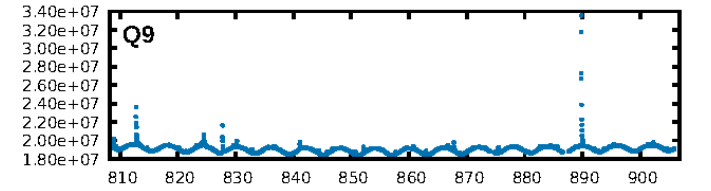
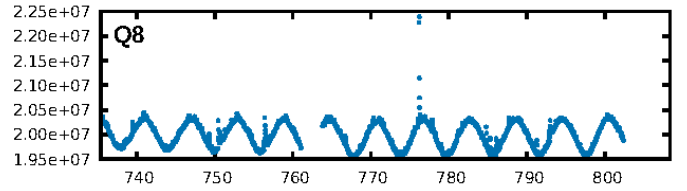
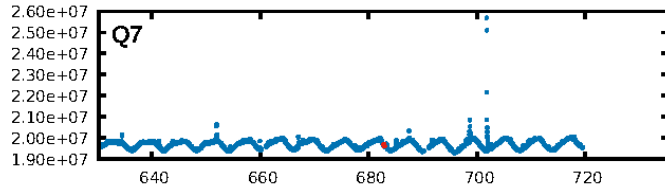
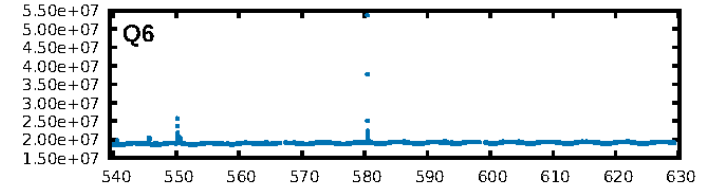
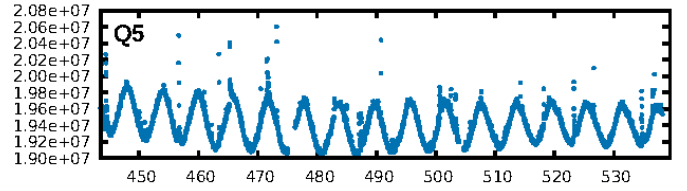
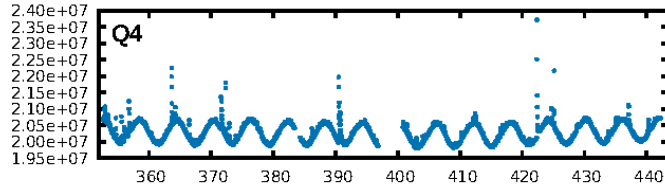
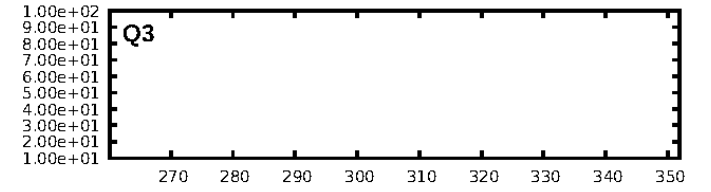
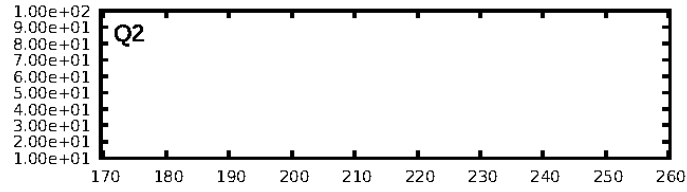
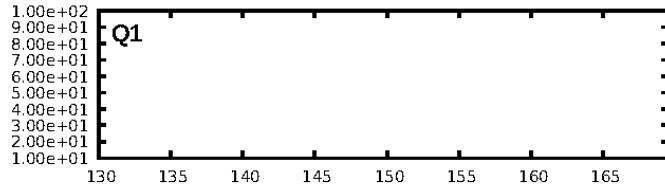
Period = 374.28014 [0.01205] d  
Epoch = 308.5851 [0.0270] BKJD  
Rp/R\* = 0.0834 [4.9890]  
a/R\* = 567.08 [6951.36]  
b = 1.00 [5.87]  
Seff = 0.01 [0.00]  
Teq = 88 [3] K  
Rp = 2.04 [121.95] Re  
a = 0.5970 [0.0603] AU  
Ag = 82545.55 [9879453.80] [0.01σ]  
Teffp = 2319 [69374] K [0.03σ]

## DV Diagnostic Results:

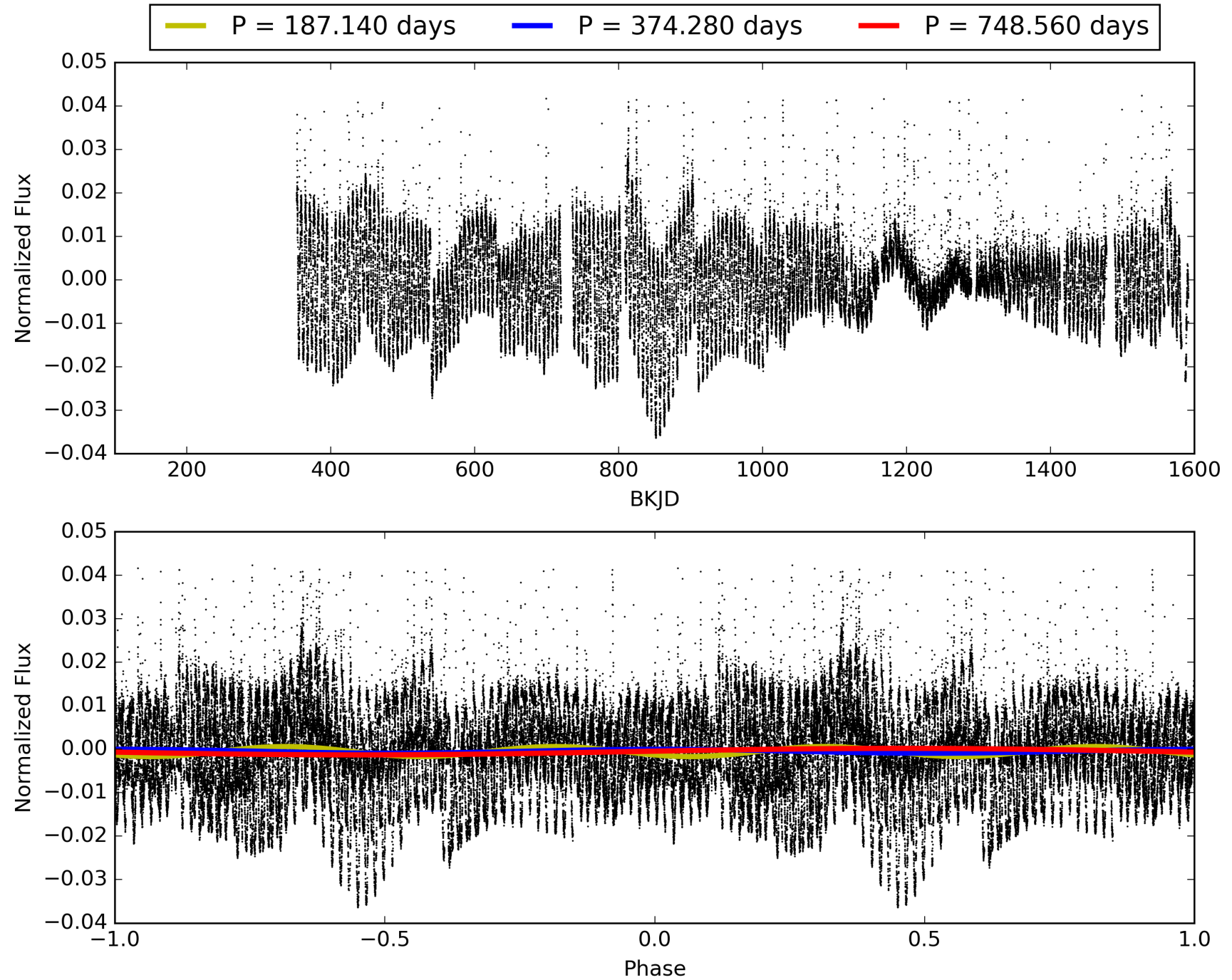
ShortPeriod-sig: 100.0% [48.98σ]  
LongPeriod-sig: 100.0% [69.11σ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 0.2%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.403  
Centroid-sig: 46.1%  
Centroid-so: 0.663 arcsec [0.64σ]  
OotOffset-rm: 1.750 arcsec [2.49σ]  
KicOffset-rm: 1.808 arcsec [2.59σ]  
OotOffset-st: 0.1/0/0 [1]  
KicOffset-st: 0.1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]



# TCE 011137723-02, PDC Light Curves

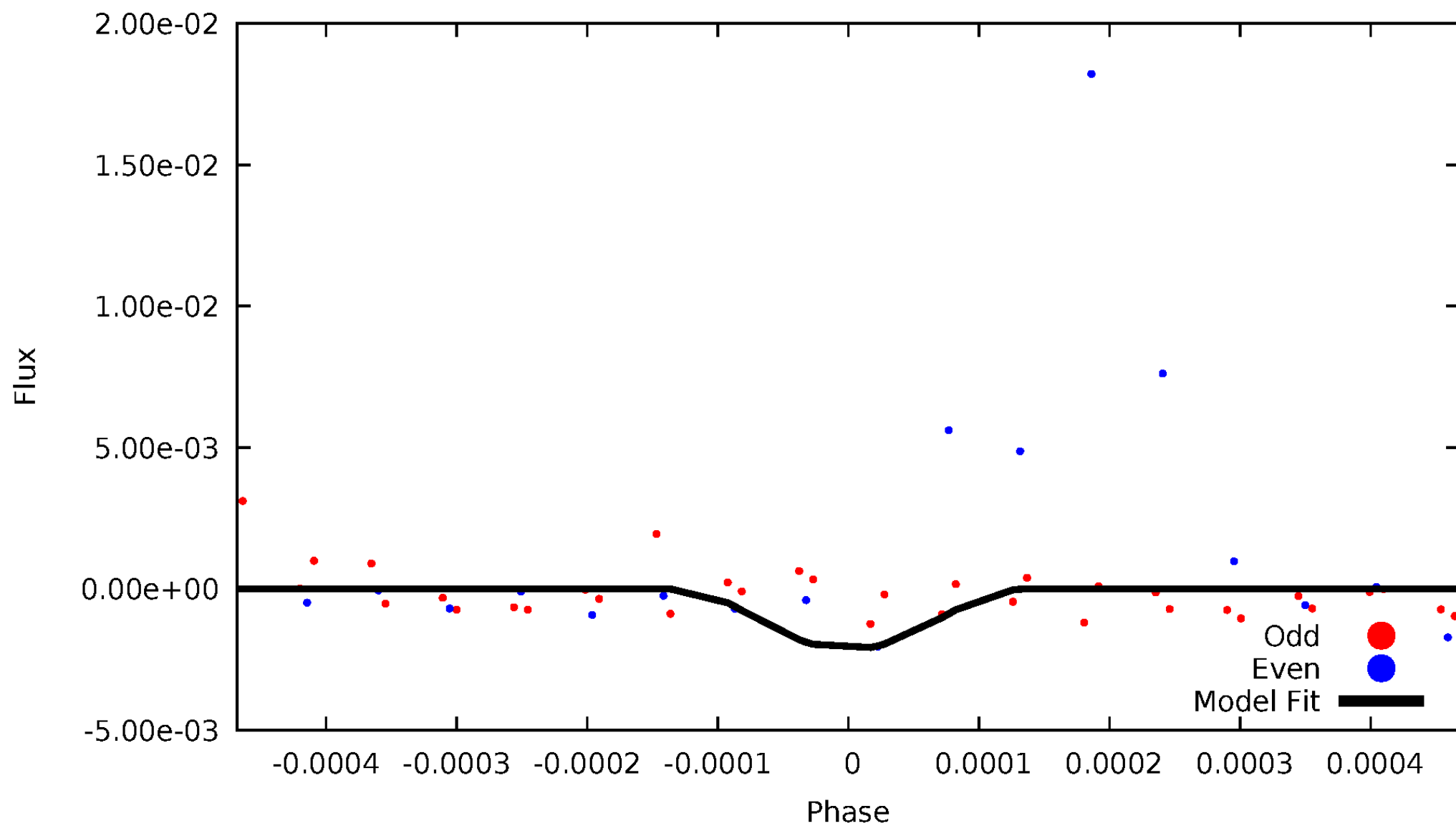


# TCE 011137723-02



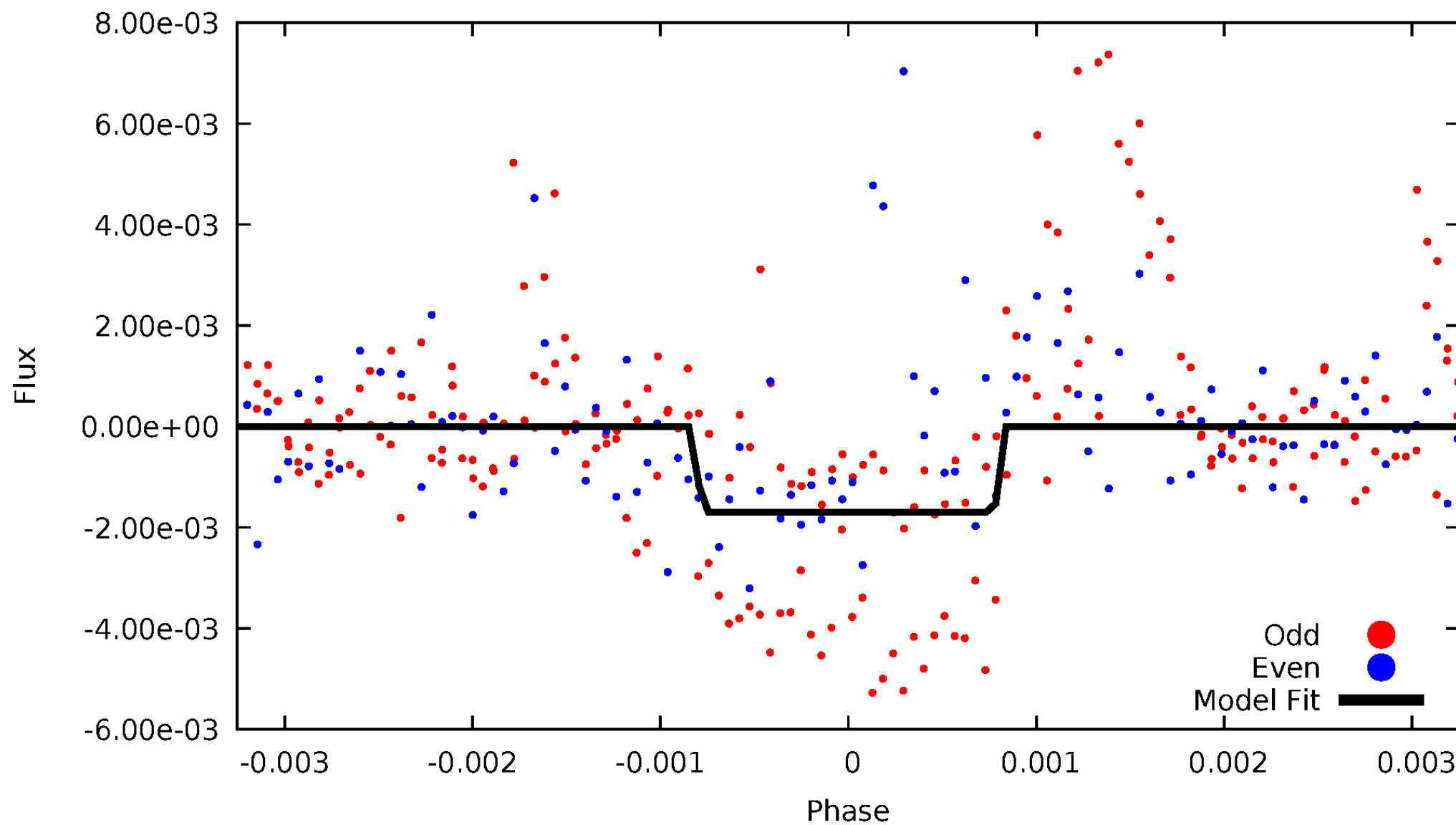
# DV Odd/Even

TCE 011137723-02



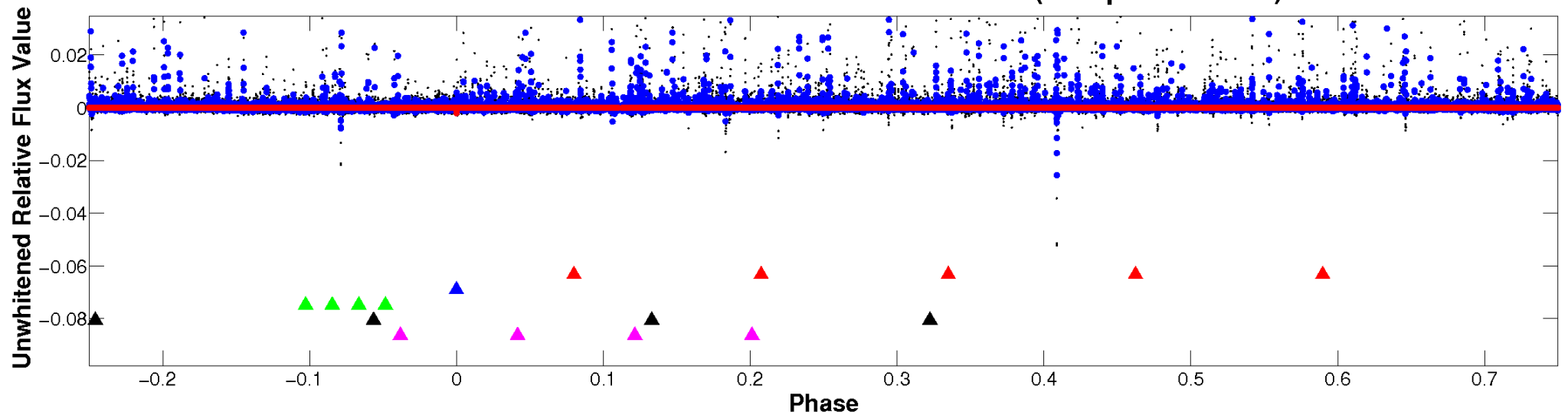
# ALT Odd/Even

TCE 011137723-02

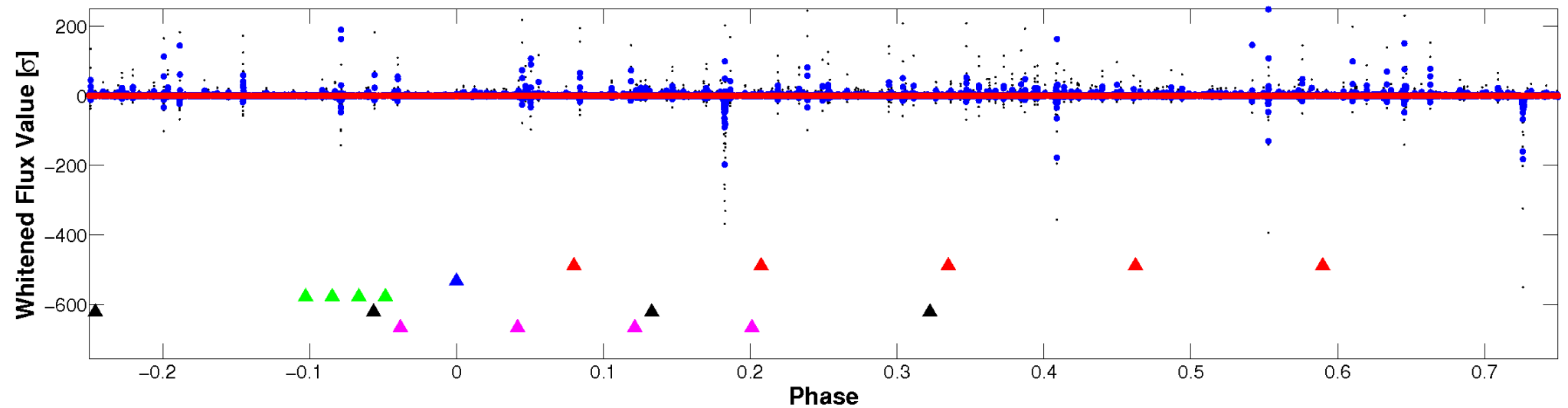


# Non-Whitened Vs. Whitened Light Curve

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

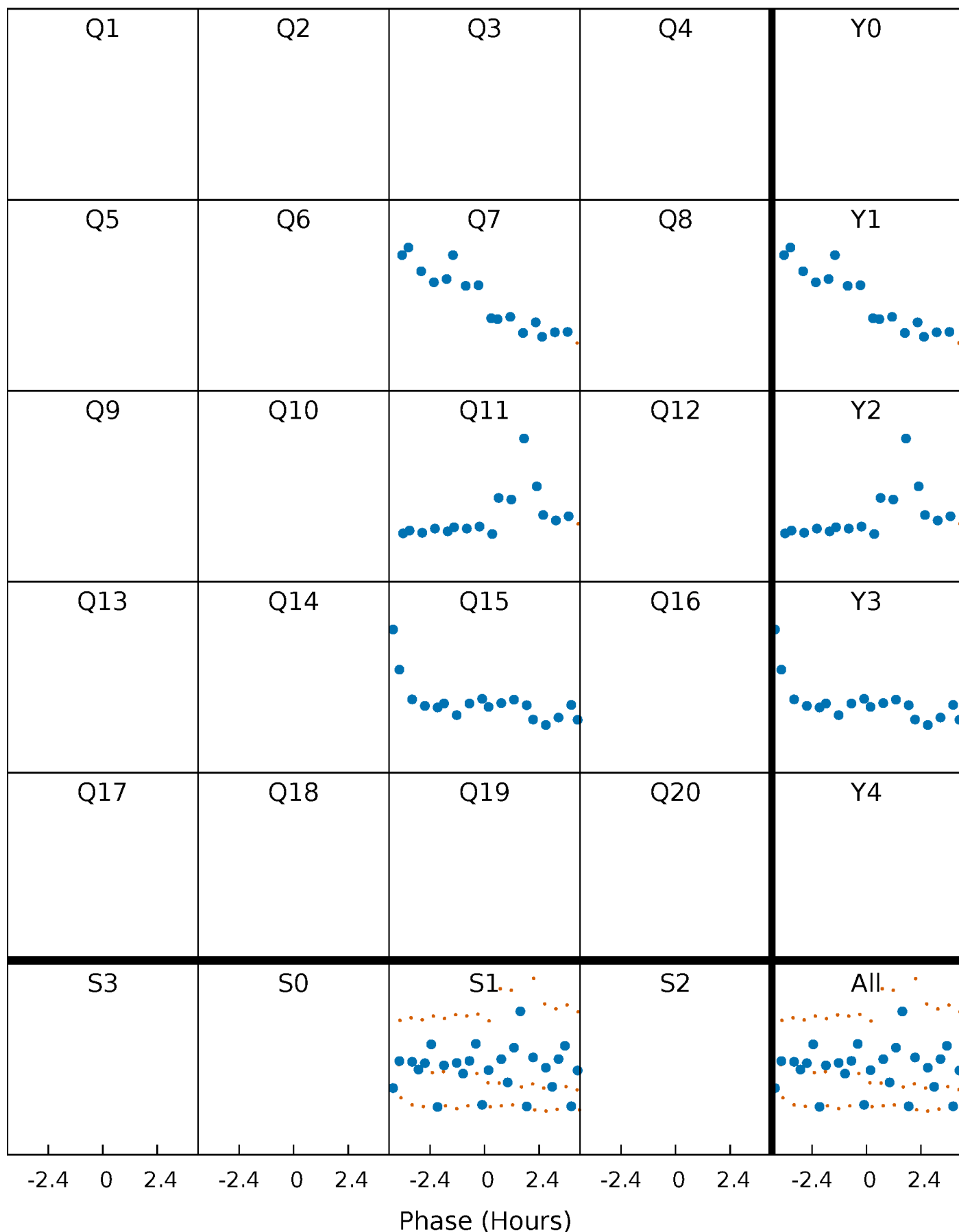


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

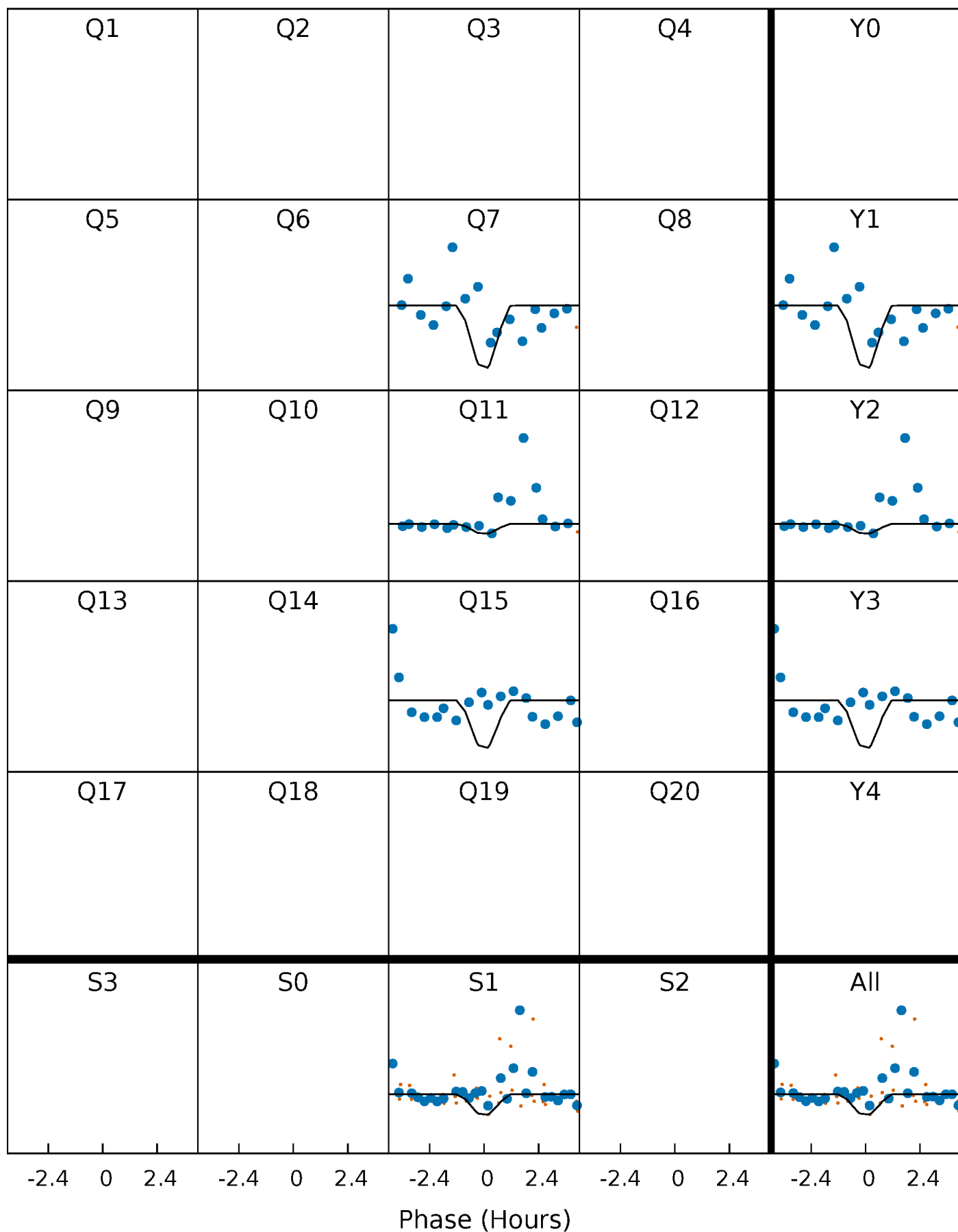
TCE 011137723-02 P=374.280142 Days  $T_0=308.585110$  (BKJD)





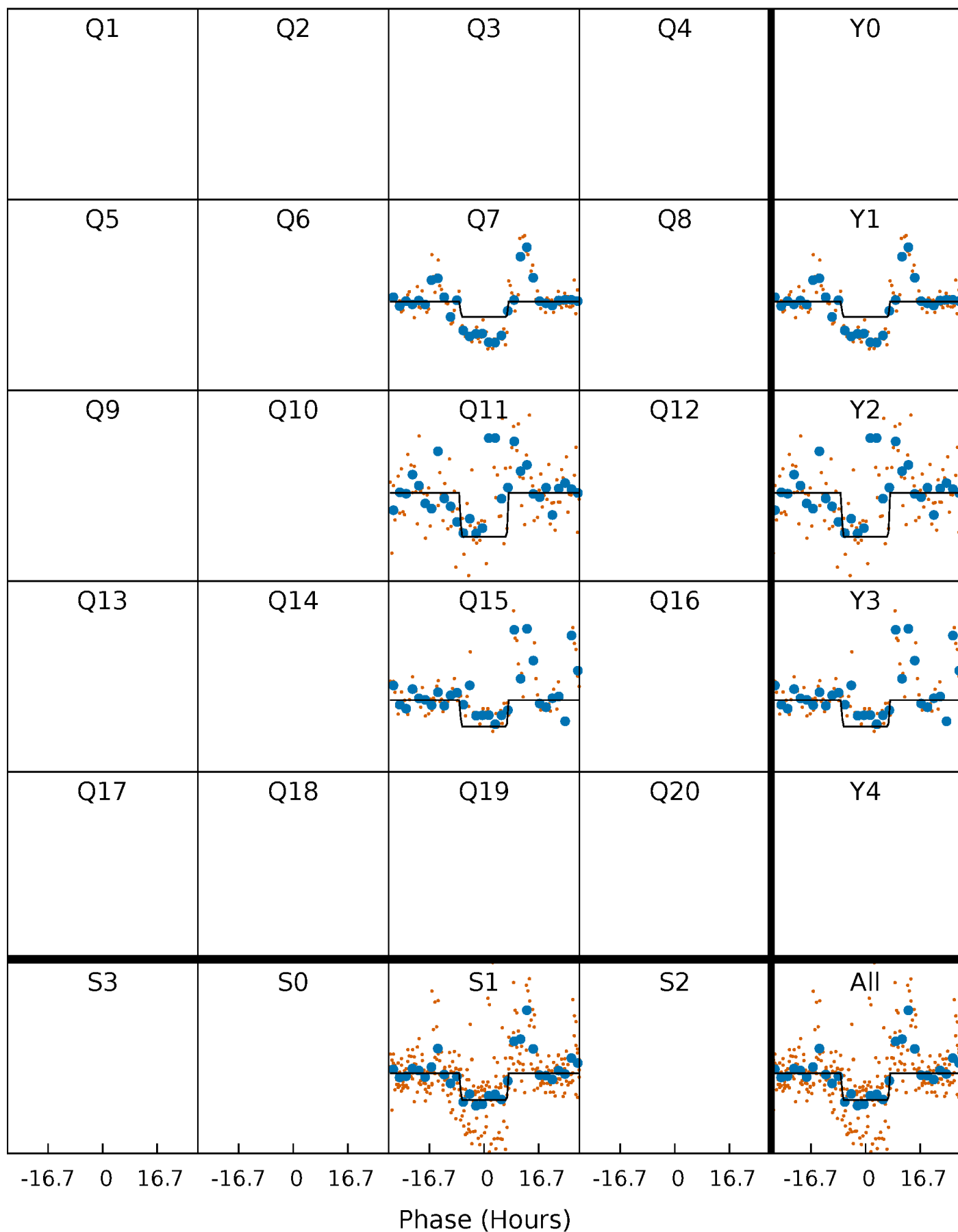
# DV Quarter-Phased Transit Curves

TCE 011137723-02     $P=374.280142$  Days     $T_0=308.585110$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

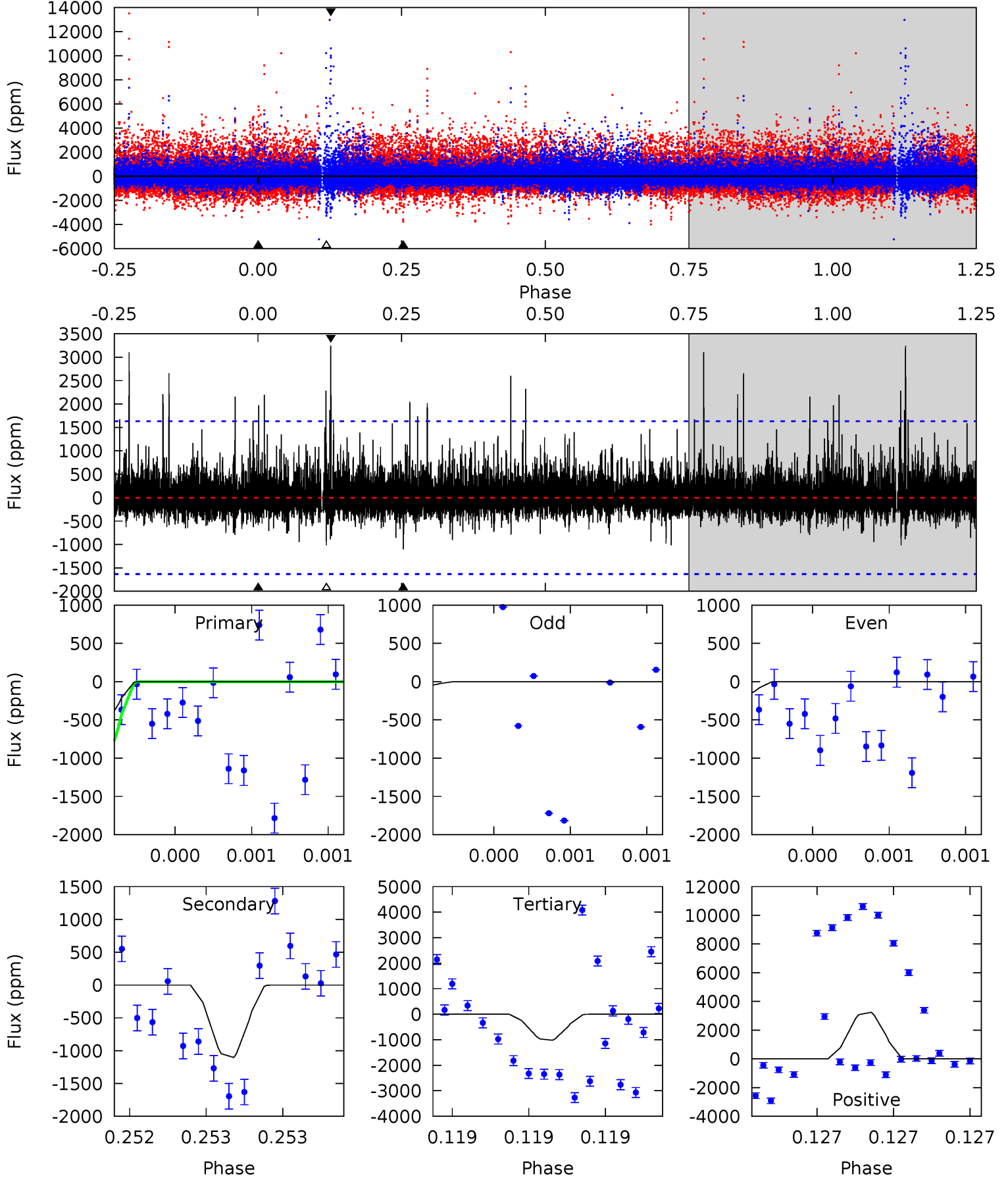
TCE 011137723-02     $P=374.301952$  Days     $T_0=308.521318$  (BKJD)



# DV Model-Shift Uniqueness Test

011137723-02, P = 374.280142 Days, E = 308.585110 Days

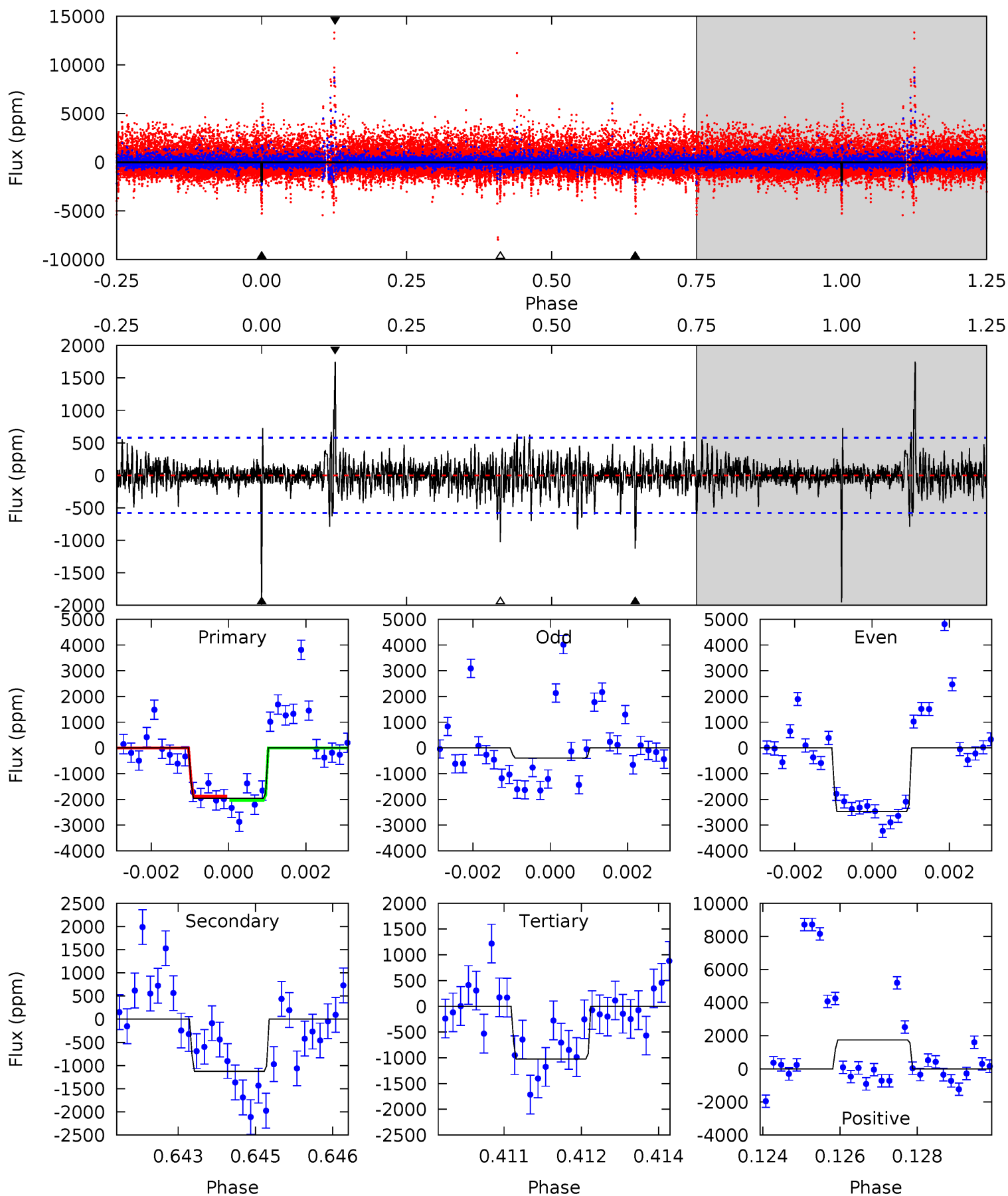
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.04	3.84	3.54	11.3	5.68	3.64	1.03	-1.50	-9.24	0.29	-7.44	0.06	2.52	0.75	1.91



# Alt Model-Shift Uniqueness Test

011137723-02, P = 374.301952 Days, E = 308.521318 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
18.1	10.4	9.48	16.2	5.36	3.15	1.61	8.61	1.92	0.95	-5.74	5.98	2.30	0.47	0.77



### Stellar Parameters For KIC 011137723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3274^{+42}_{-32}$	$5.044^{+0.044}_{-0.044}$	$0.020^{+0.100}_{-0.100}$	$0.224^{+0.032}_{-0.026}$	$0.202^{+0.042}_{-0.026}$	$25.440^{+6.603}_{-5.245}$
	+1%/-1%	+1%/-1%	+500%/-500%	+14%/-12%	+21%/-13%	+26%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 011137723-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1103 \pm 288$	$89.56^{+87.48}_{-65.45}$	$124^{+3}_{-3}$	$1267^{+287}_{-119}$	$26^{+367}_{-20}$
Alt.	$-1126 \pm 108$	$84.48^{+87.23}_{-61.23}$	$124^{+3}_{-3}$	$1284^{+269}_{-119}$	$30^{+349}_{-23}$

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

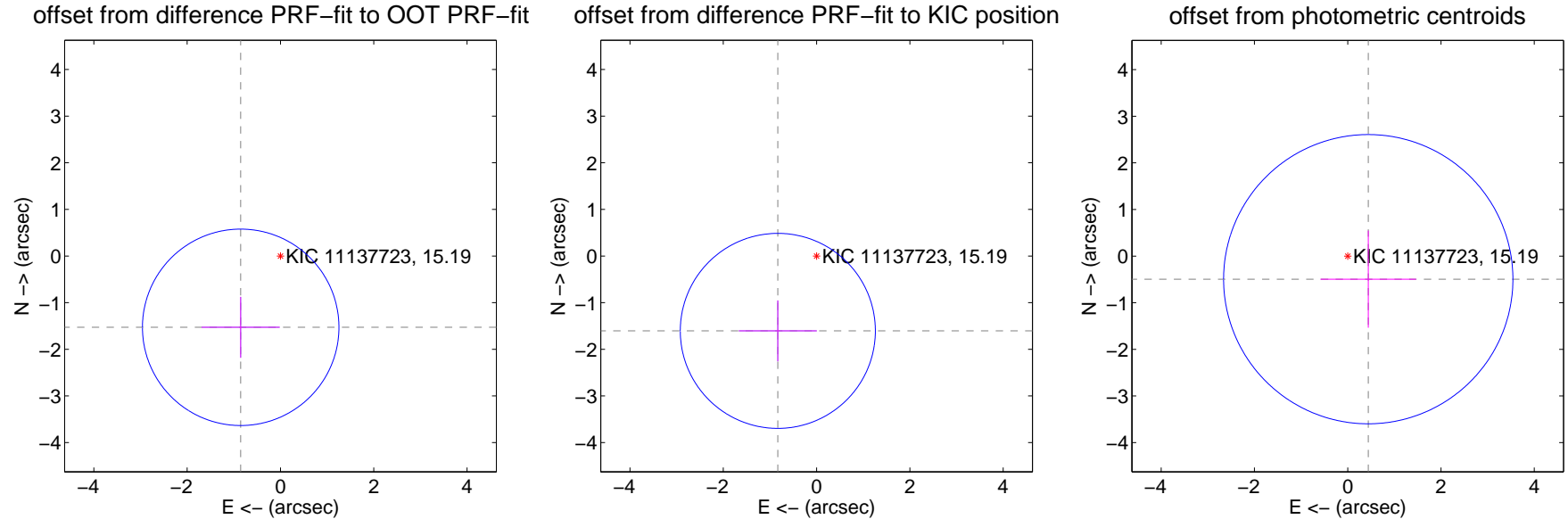
## DV Centroid Data

Supplemental centroid analysis for 011137723-02. Kepler magnitude: 15.19. Transit SNR 5.04

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.750 \pm 0.702$	2.49	$0.852 \pm 0.837$	$-1.529 \pm 0.654$
PRF-fit source offset from KIC position	$1.808 \pm 0.697$	2.59	$0.831 \pm 0.837$	$-1.605 \pm 0.654$
photometric centroid source offset	$0.66 \pm 1.03$	0.64	$-0.44 \pm 1.03$	$-0.50 \pm 1.04$



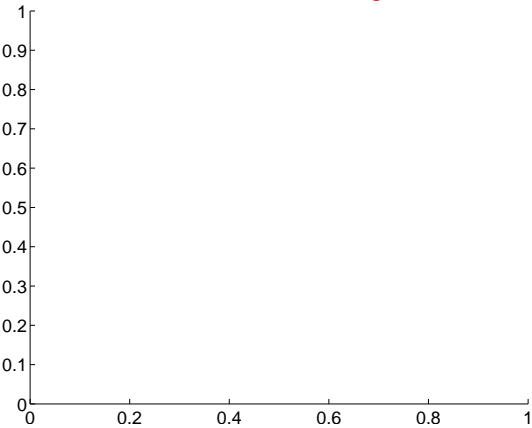
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

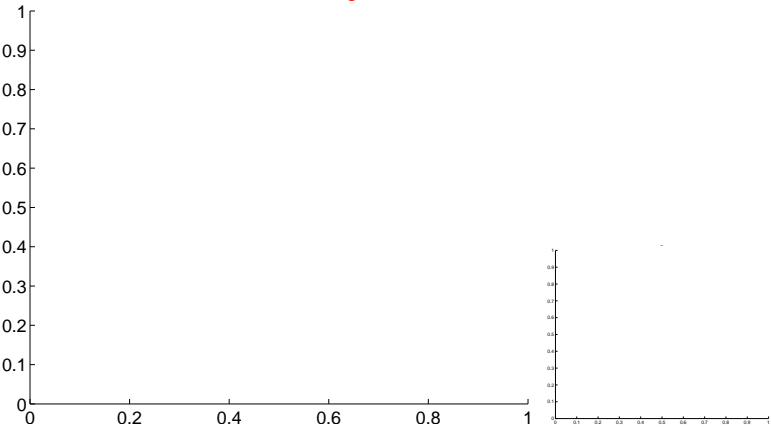


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

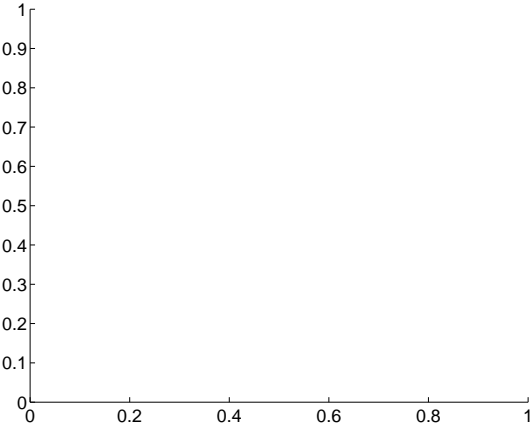
Q5 no difference image



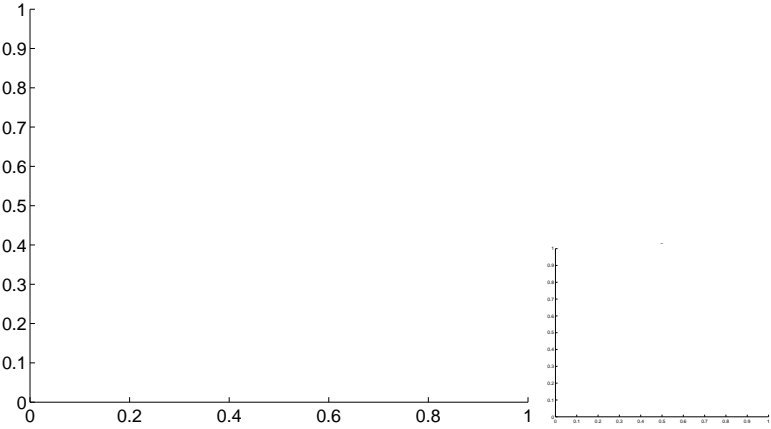
Q5 no OOT image



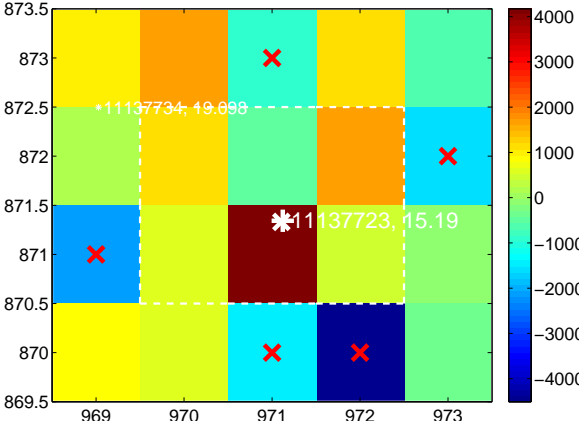
Q6 no difference image



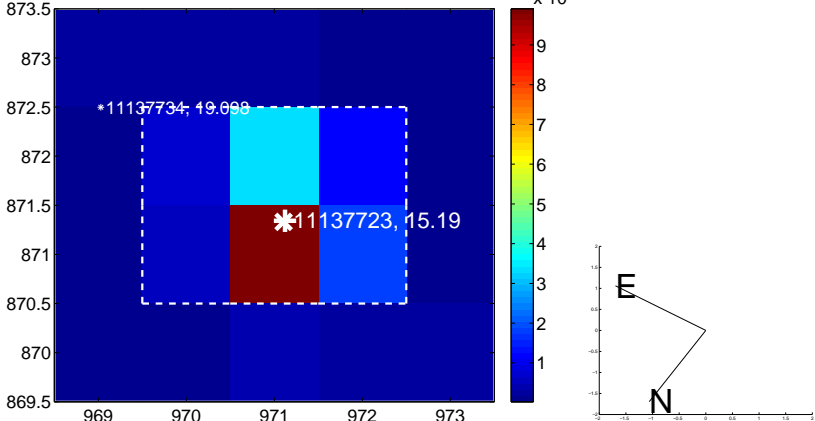
Q6 no OOT image



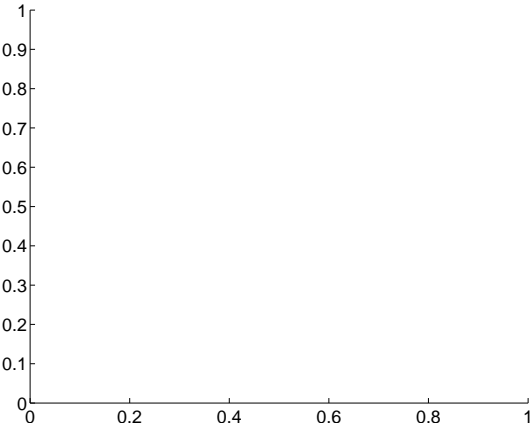
Q7 difference image. Poor Quality



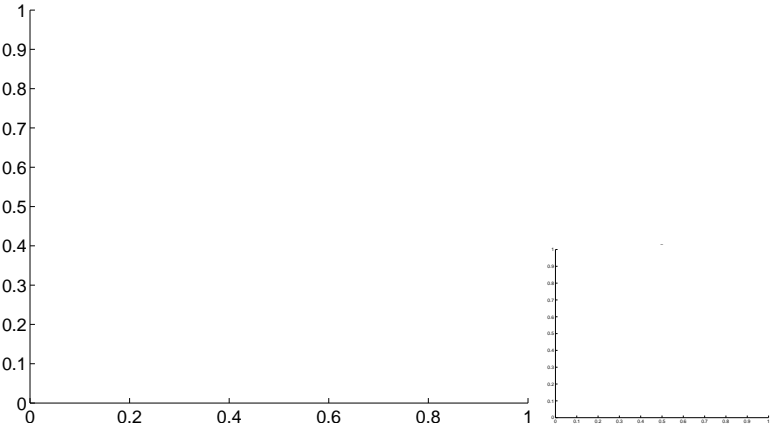
Q7 OOT image



Q8 no difference image

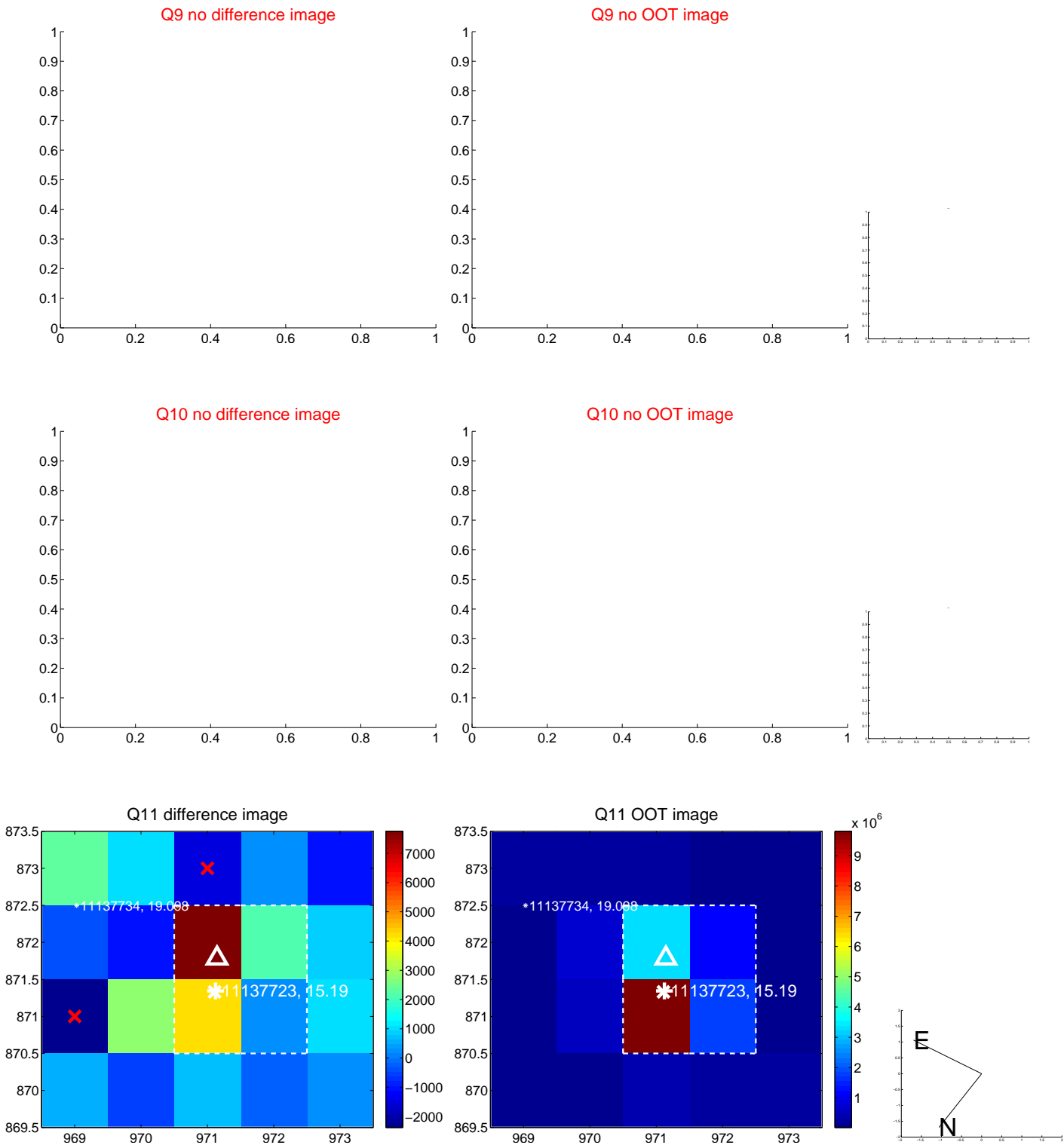


Q8 no OOT image

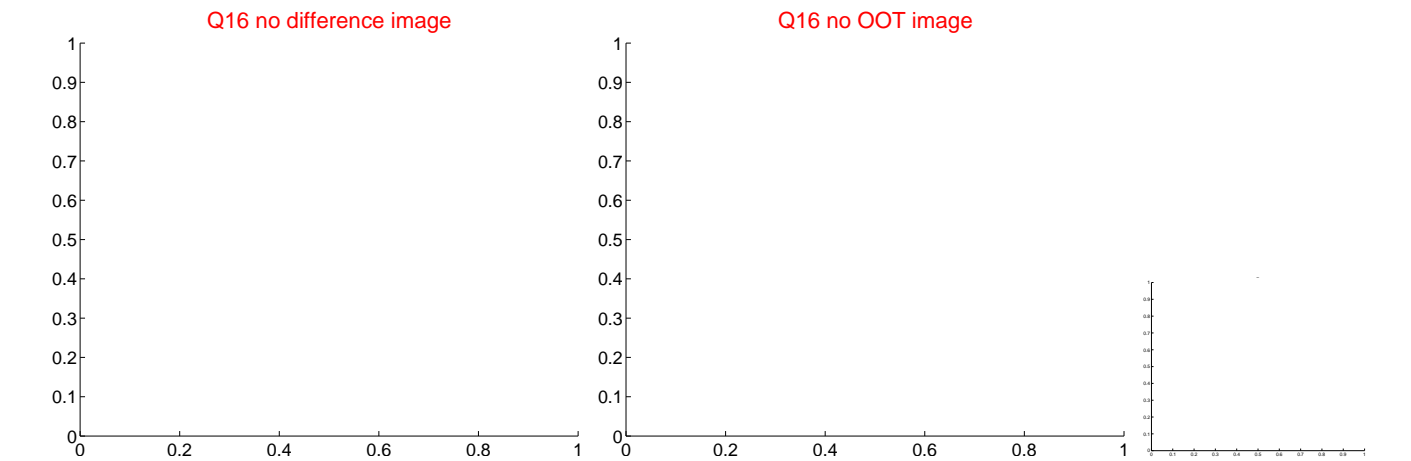
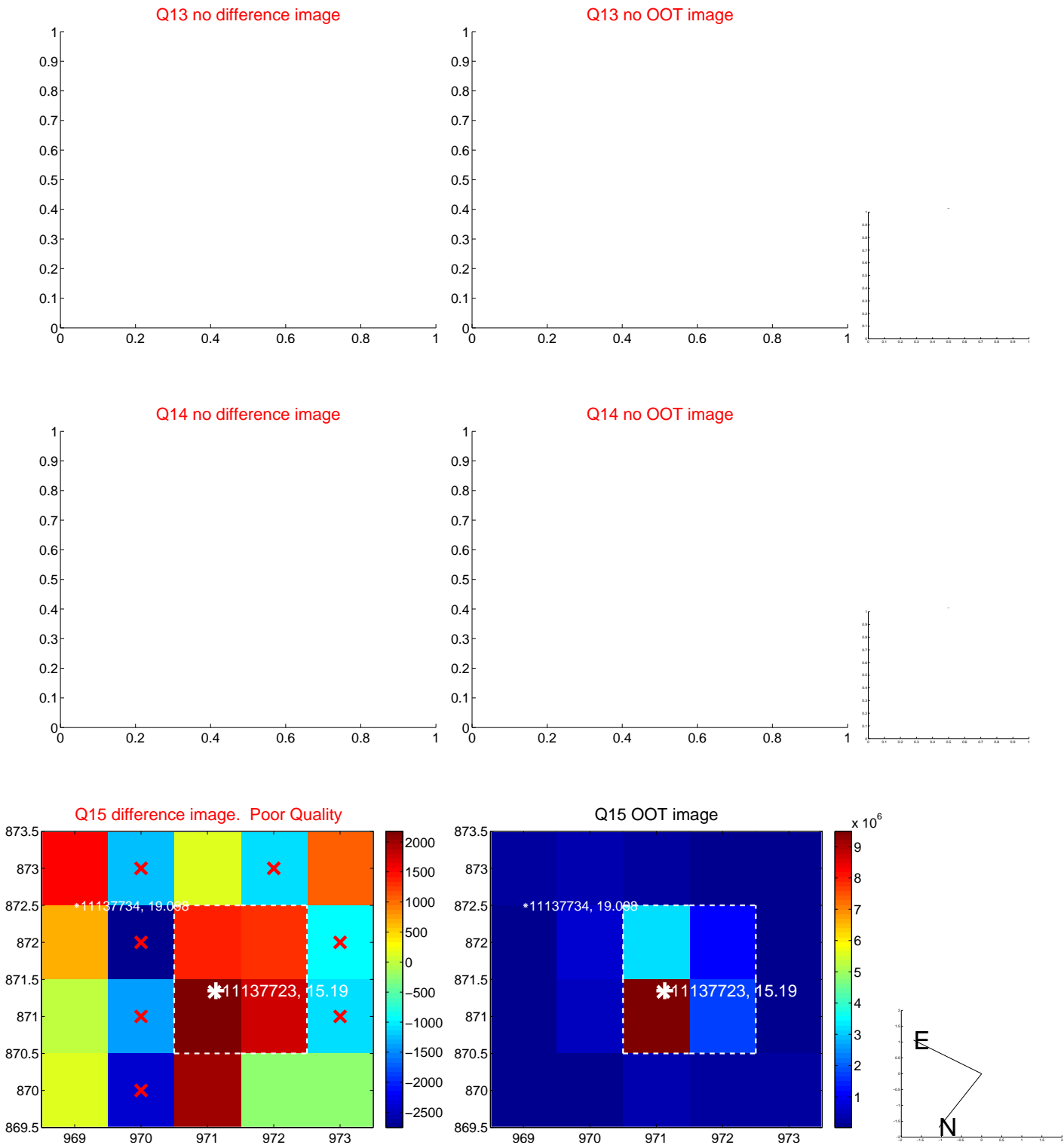




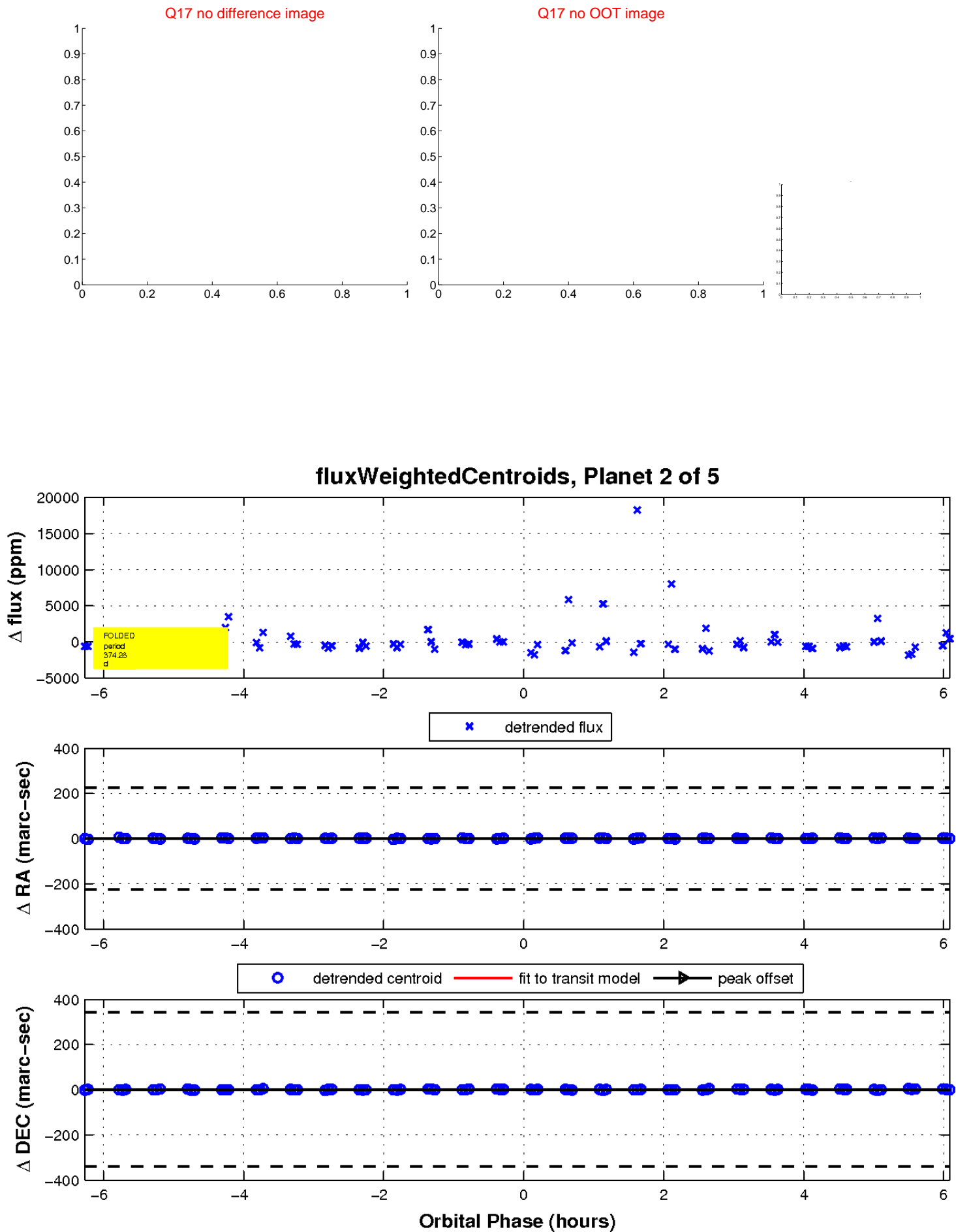
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

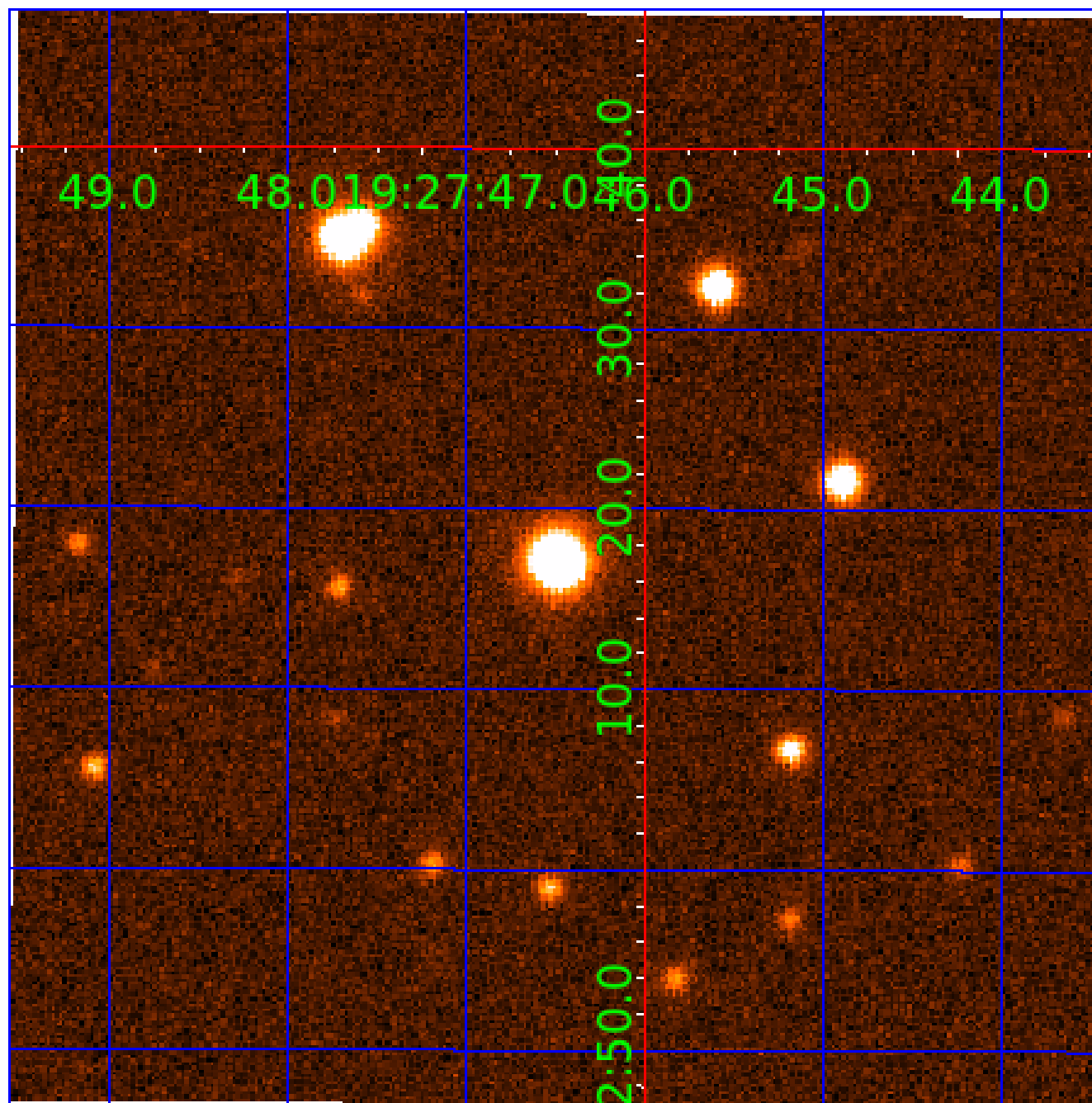


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011137723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011137723-01	OBS	No	326.576428	155.057440	350.9	1.858	13.8	1.0	0.22	3274	0.44	0.02
011137723-02	OBS	No	374.280142	308.585110	2109.8	2.101	11.5	5.0	0.22	3274	2.04	0.01
011137723-03	OBS	No	367.502278	290.480542	3426.8	2.572	14.5	9.3	0.22	3274	1.31	0.01
011137723-04	OBS	No	303.387884	429.242015	2382.5	12.790	11.0	6.5	0.22	3274	1.09	0.02
011137723-05	OBS	No	404.145065	294.303180	3596.2	10.157	10.4	10.2	0.22	3274	1.32	0.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011137723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011137723-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
011137723-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV

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

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

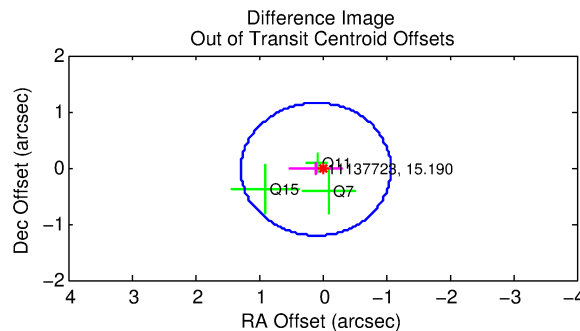
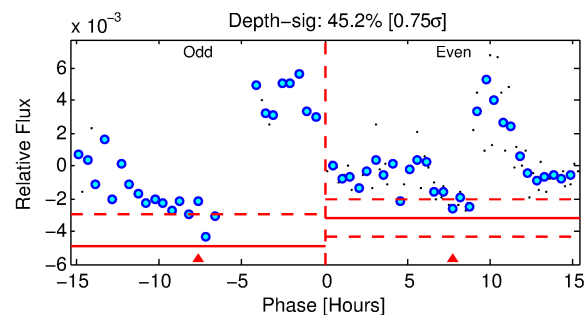
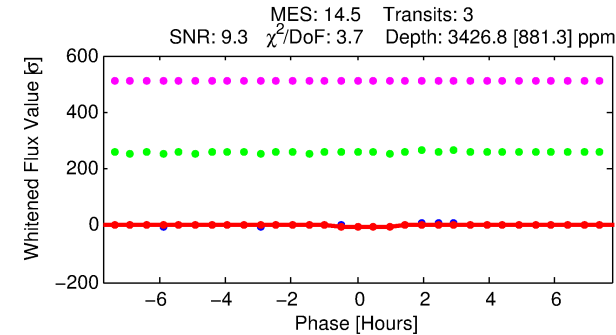
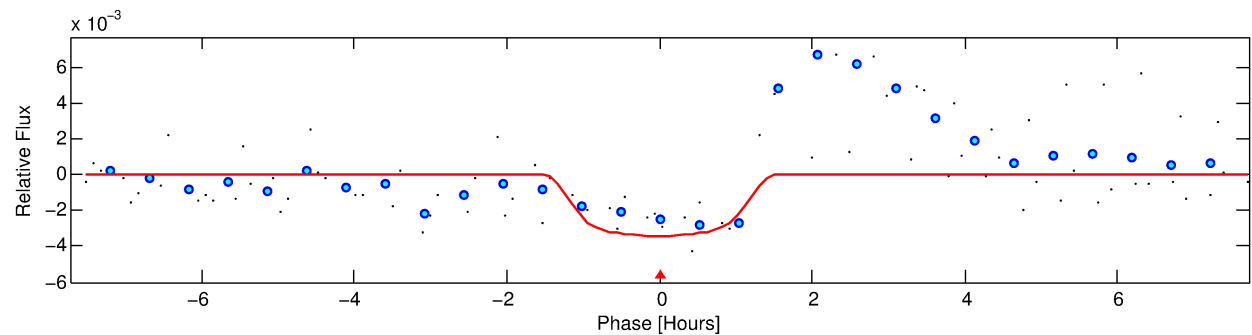
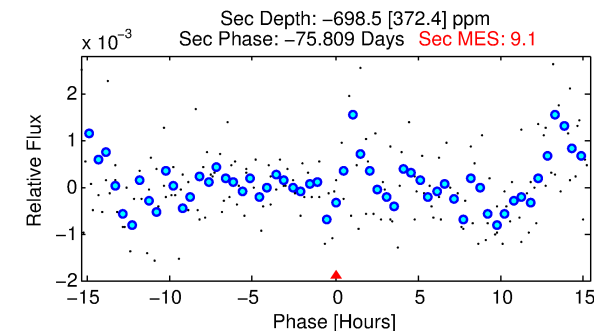
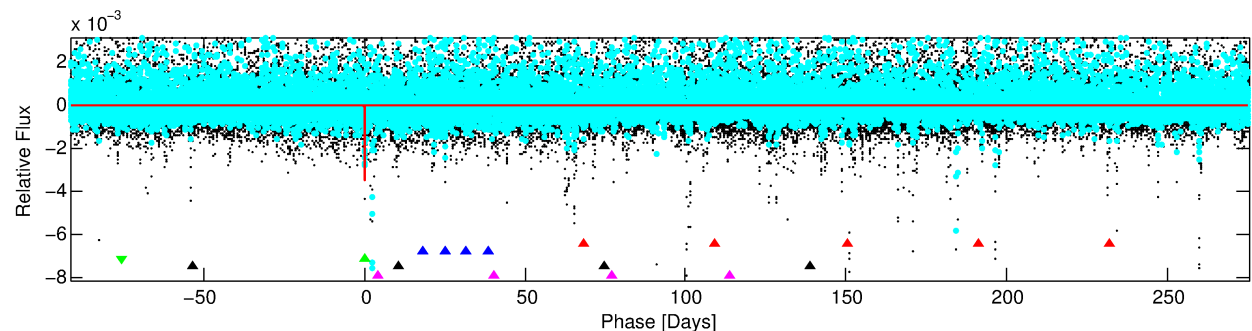
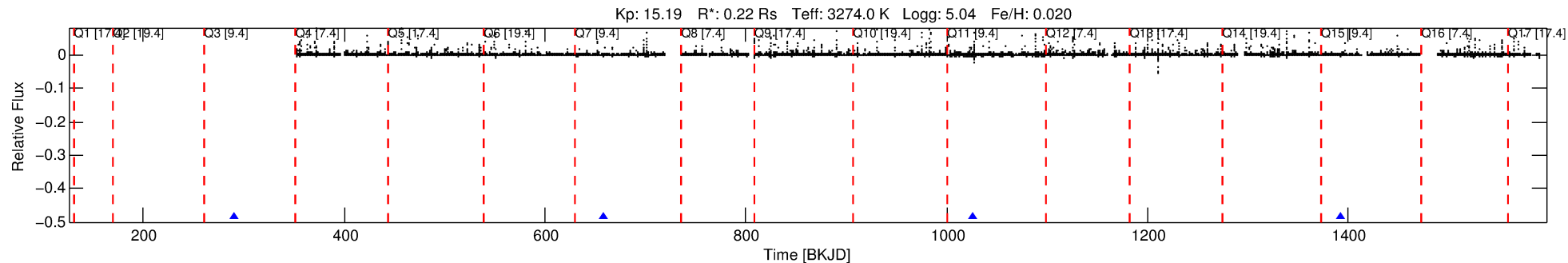
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011137723-03

No Significant Match Found

# DV One-Page Summary

KIC: 11137723 Candidate: 3 of 5 Period: 367.502 d



## DV Fit Results:

Period = 367.50228 [0.00736] d  
Epoch = 290.4805 [0.0183] BKJD  
Rp/R\* = 0.0536 [0.1125]  
a/R\* = 1097.11 [9785.53]  
b = 0.32 [25.45]  
Seff = 0.01 [0.00]  
Teq = 89 [3] K  
Rp = 1.31 [2.76] Re  
a = 0.5898 [0.0596] AU  
Ag = N/A  
Teffp = N/A

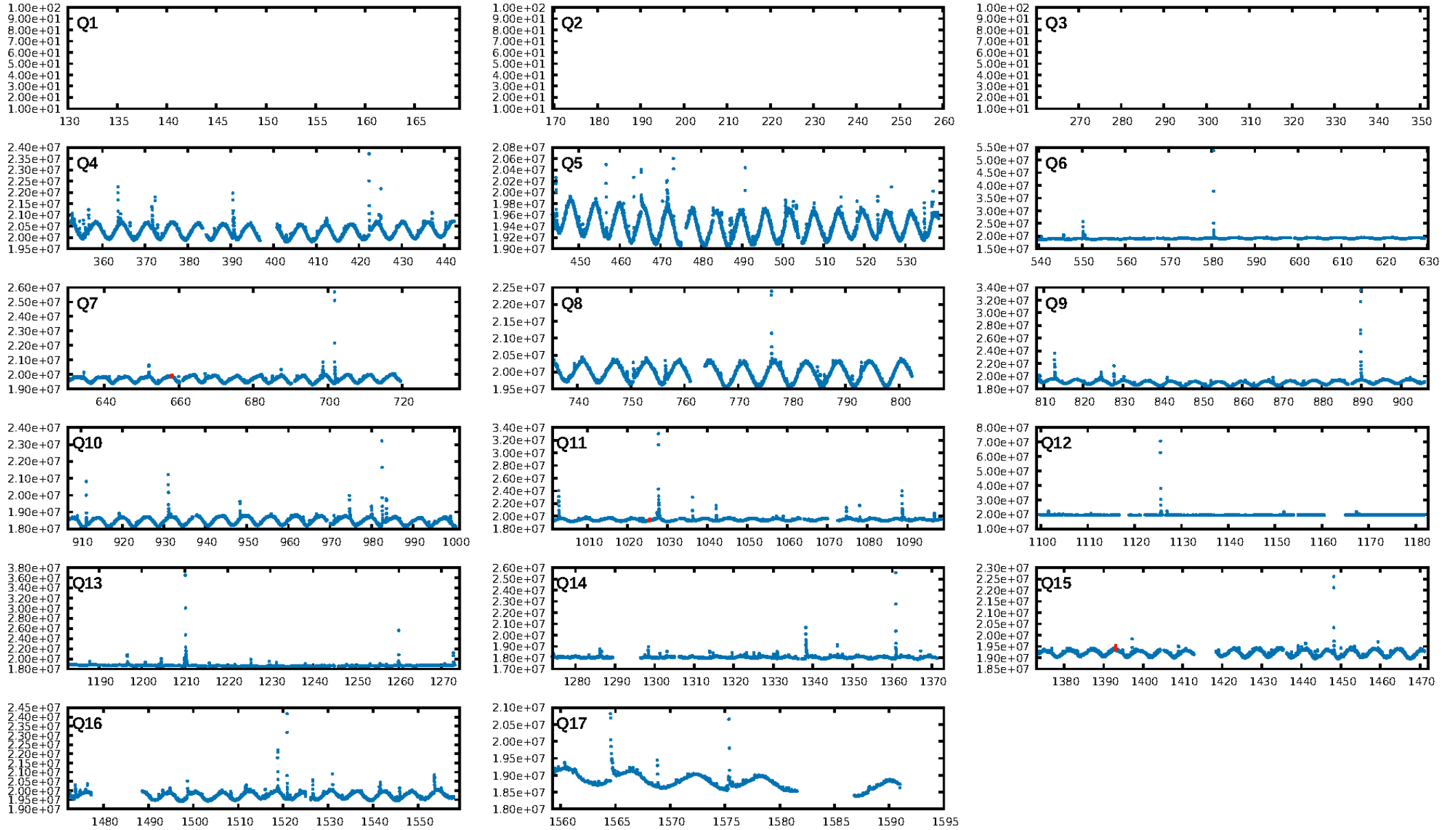
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [309.56σ]  
LongPeriod-sig: 100.0% [48.98σ]  
ModelChiSquare2-sig: 17.1%  
ModelChiSquareGof-sig: 2.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.764  
Centroid-sig: 28.5%  
Centroid-so: 0.553 arcsec [1.14σ]  
OotOffset-rm: 0.107 arcsec [0.27σ]  
KicOffset-rm: 0.189 arcsec [0.87σ]  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

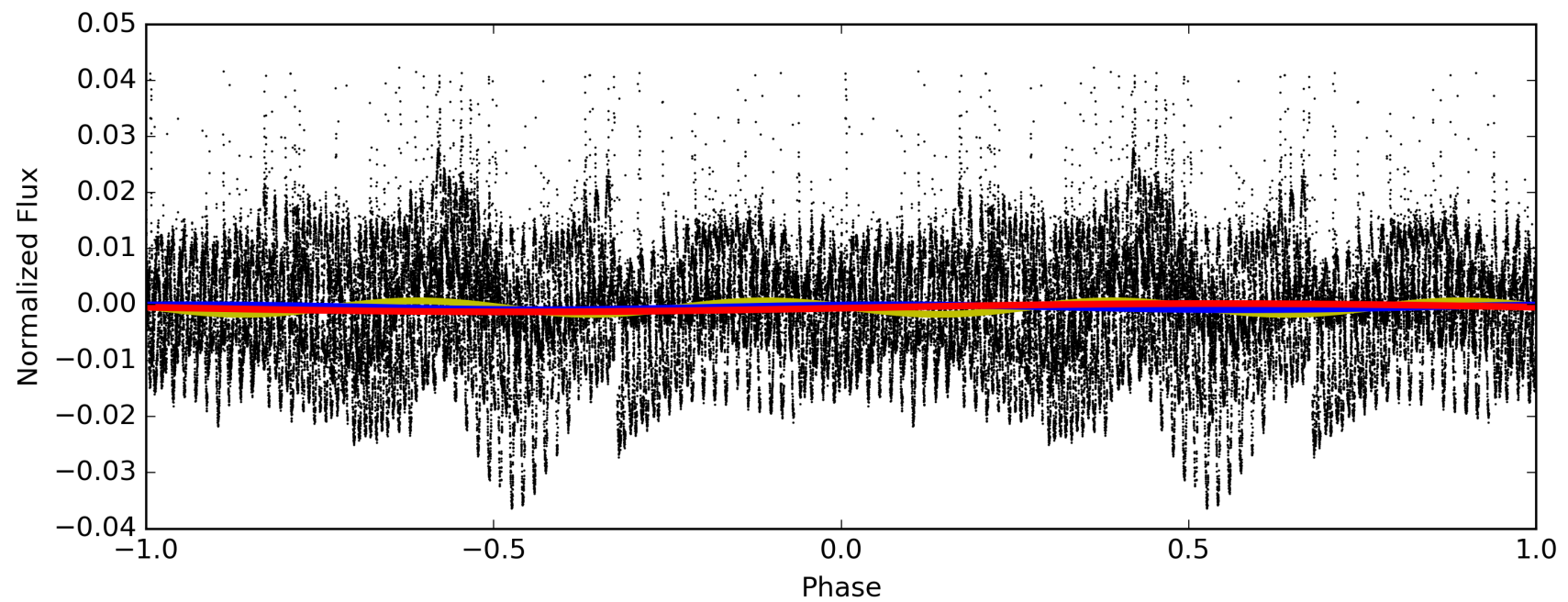
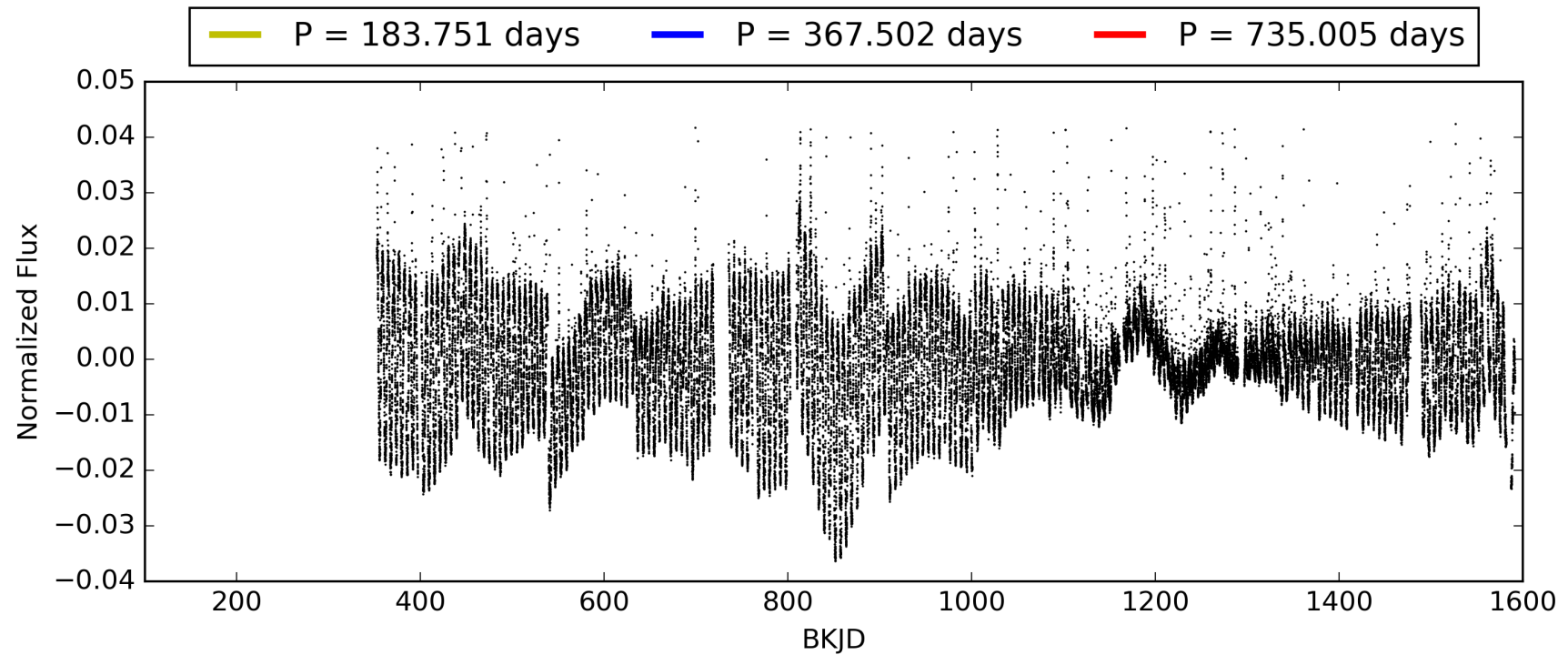
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:13:41 Z

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

# TCE 011137723-03, PDC Light Curves



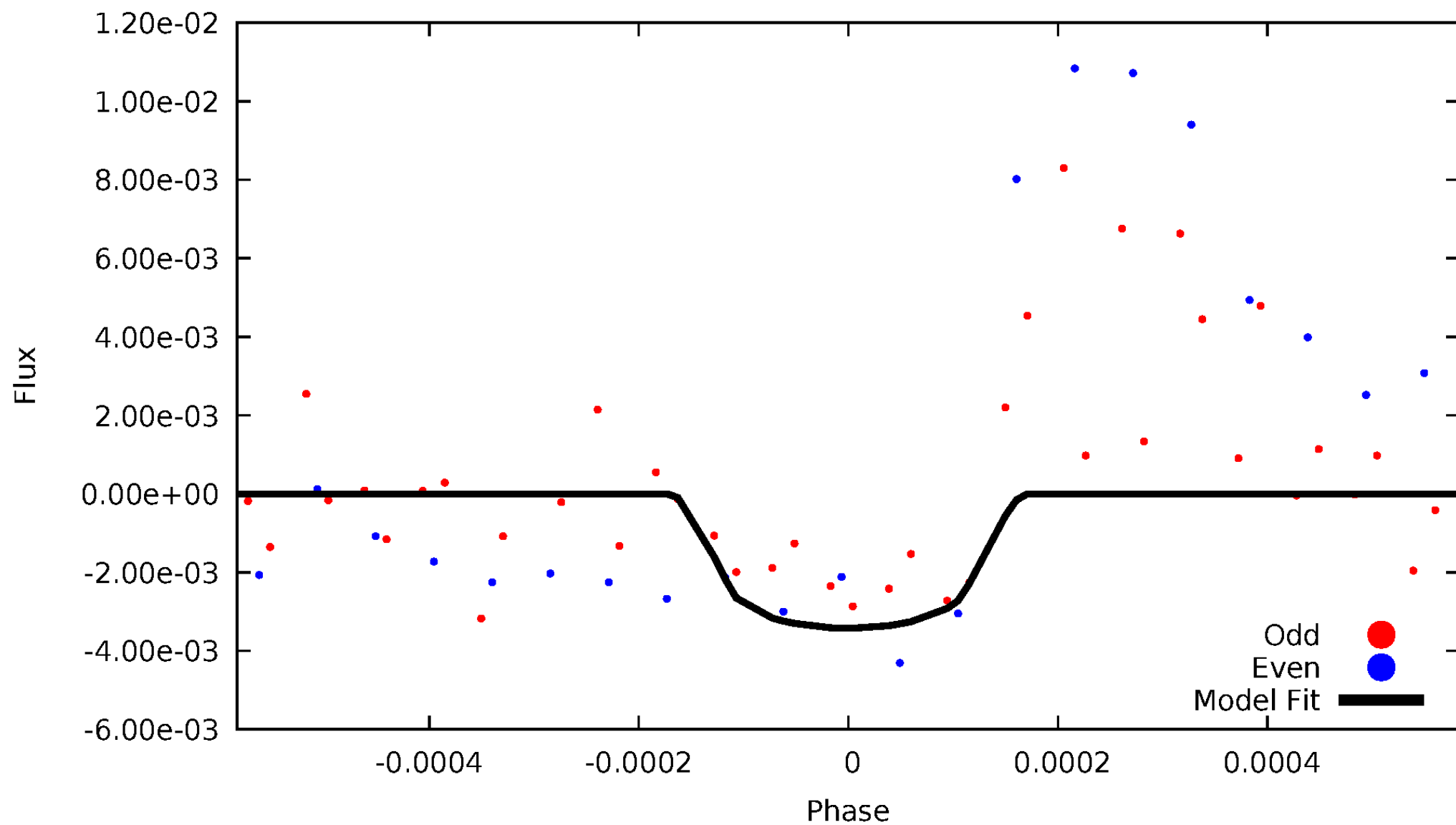
TCE 011137723-03





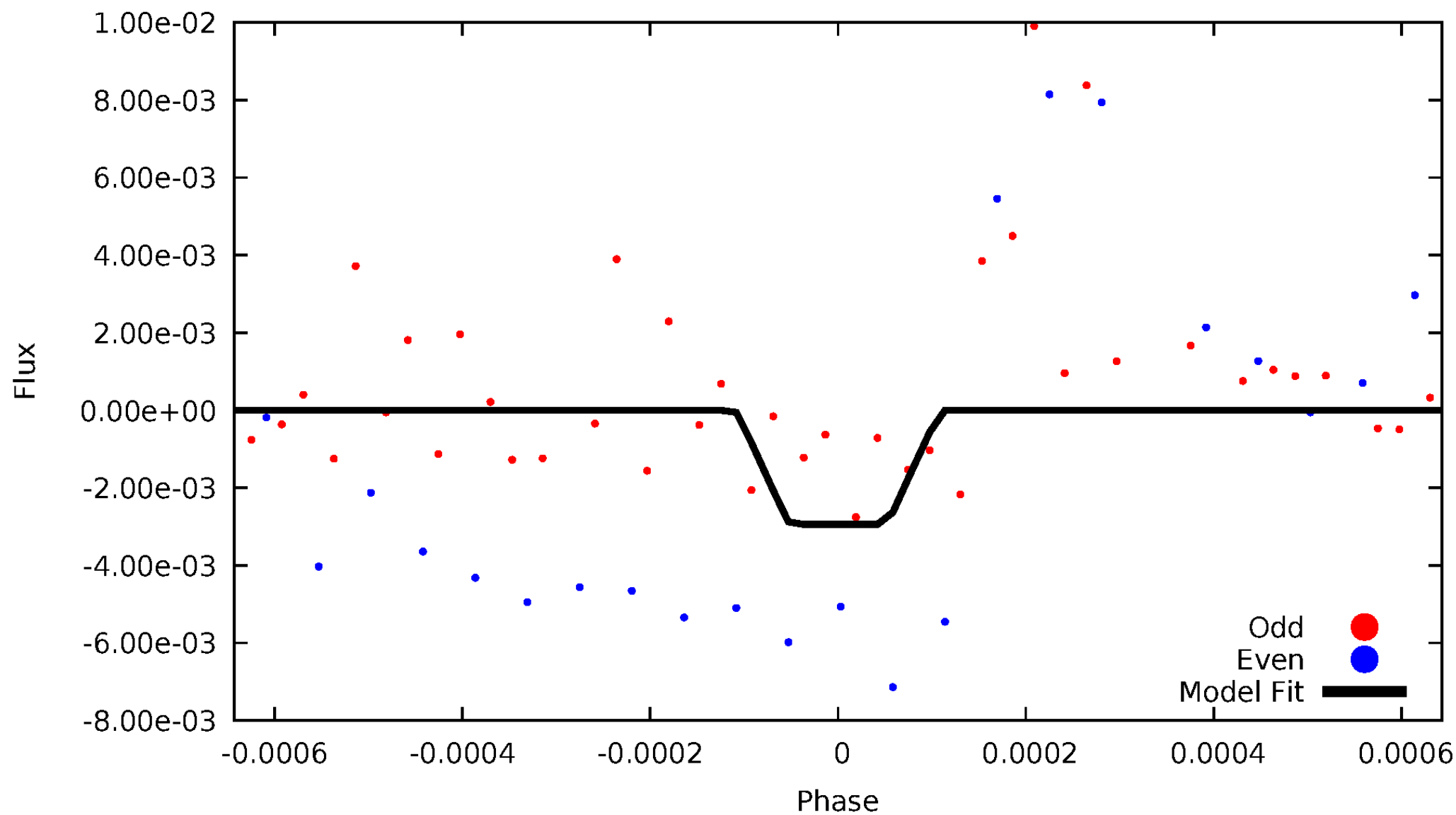
# DV Odd/Even

TCE 011137723-03



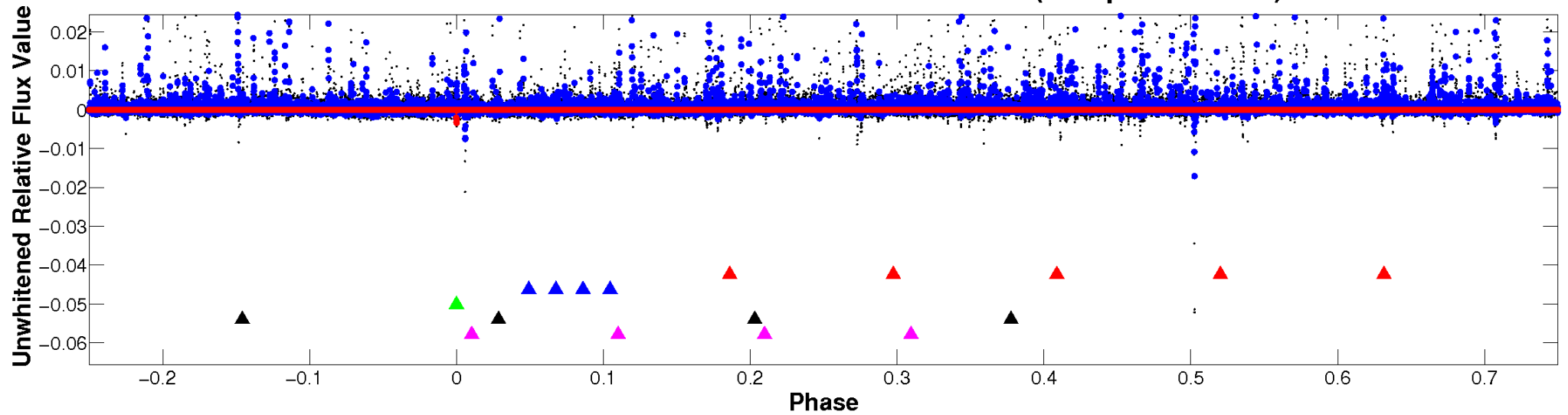
# ALT Odd/Even

TCE 011137723-03

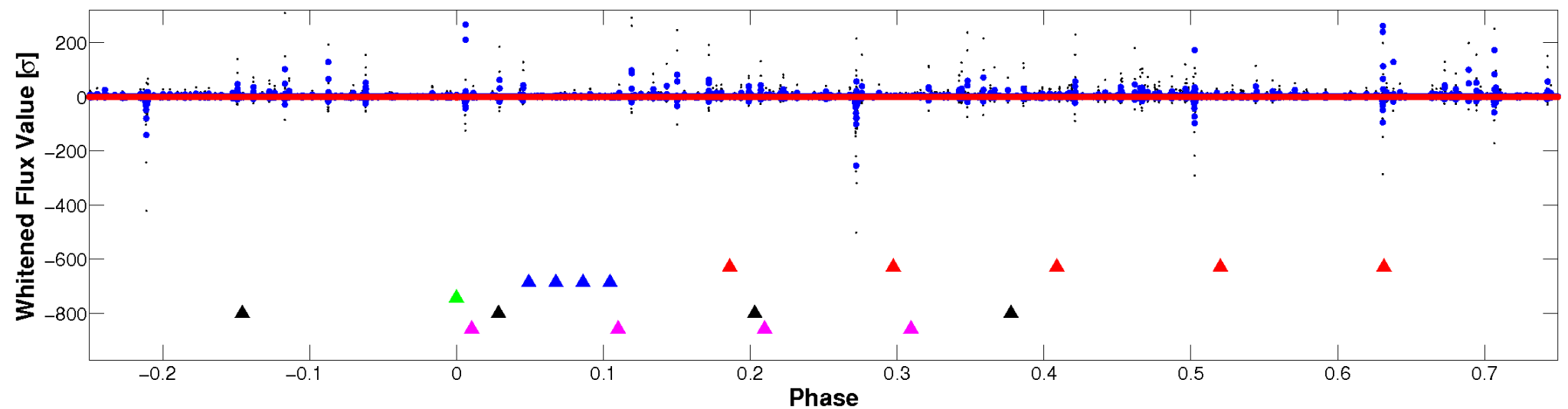


# Non-Whitened Vs. Whitened Light Curve

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

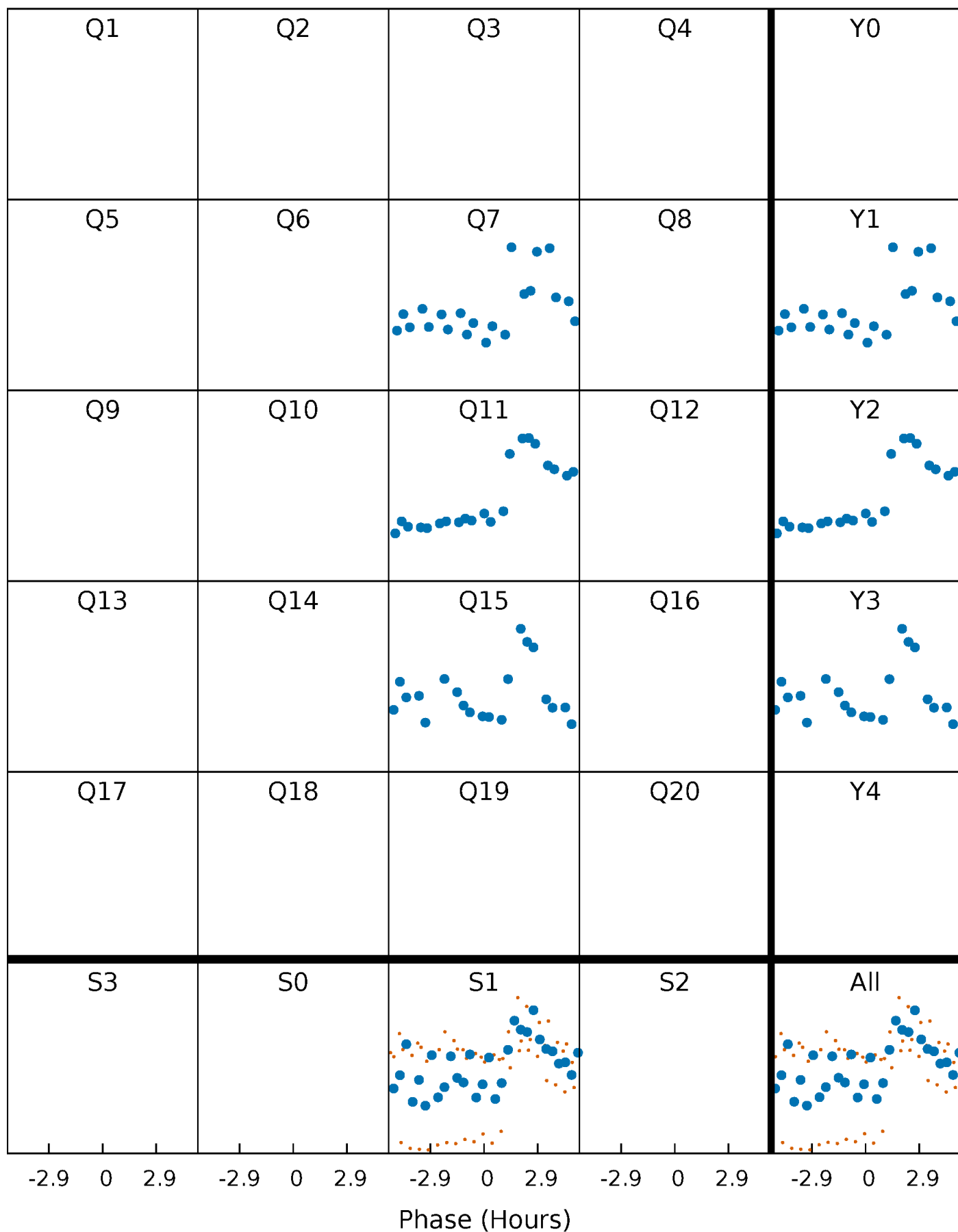


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



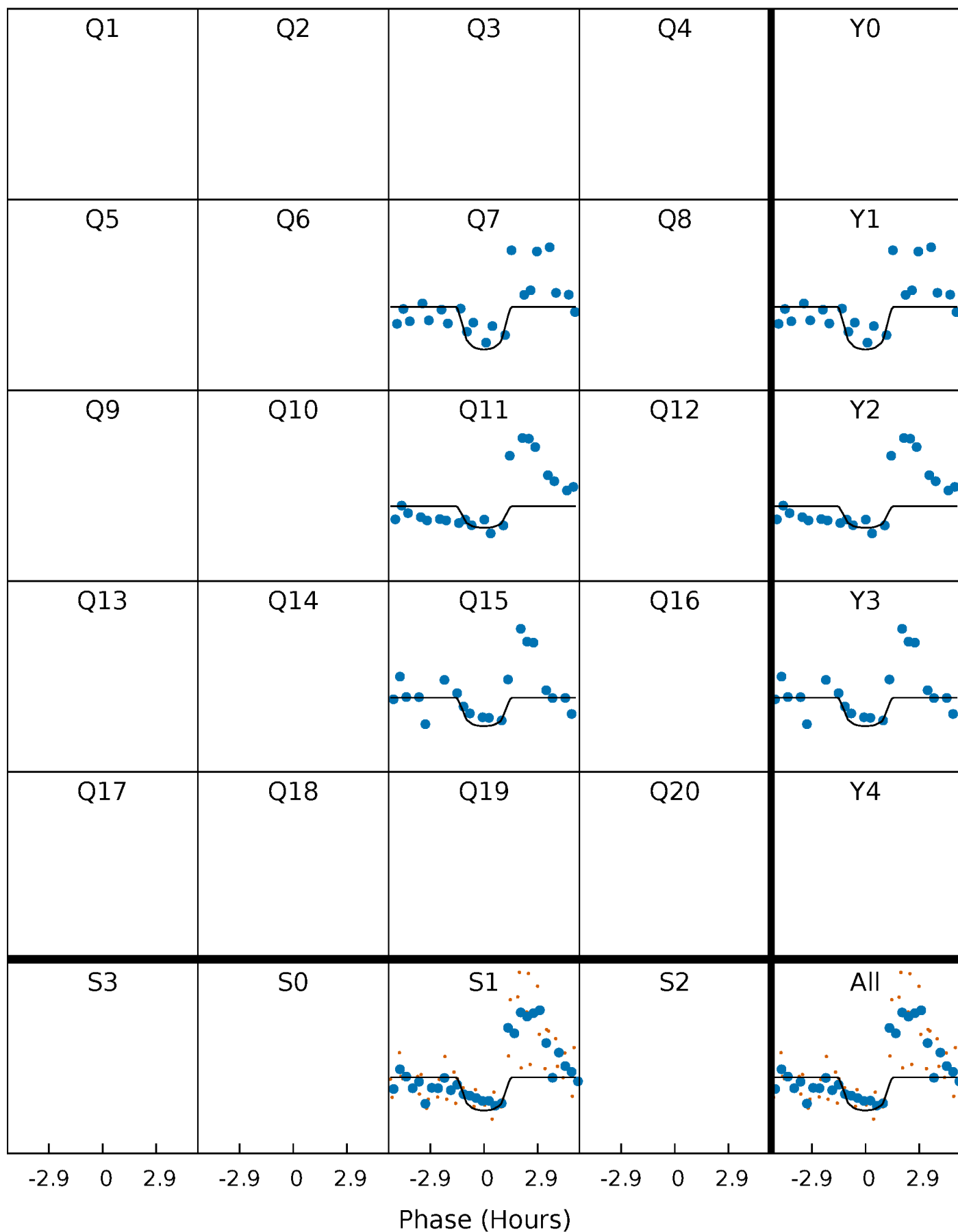
# PDC Quarter-Phased Transit Curves

TCE 011137723-03 P=367.502277 Days  $T_0=290.480542$  (BKJD)



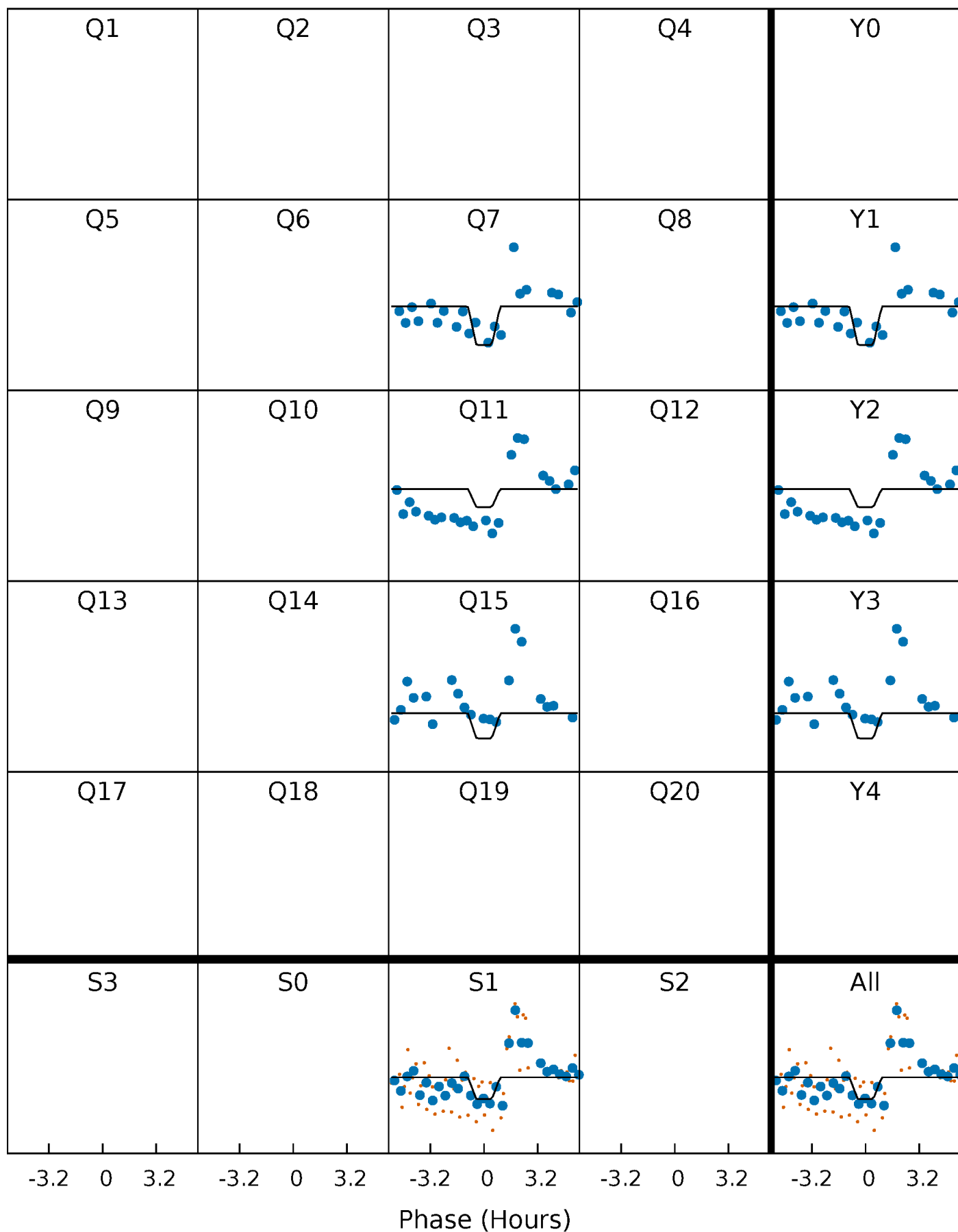
# DV Quarter-Phased Transit Curves

TCE 011137723-03     $P=367.502277$  Days     $T_0=290.480542$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

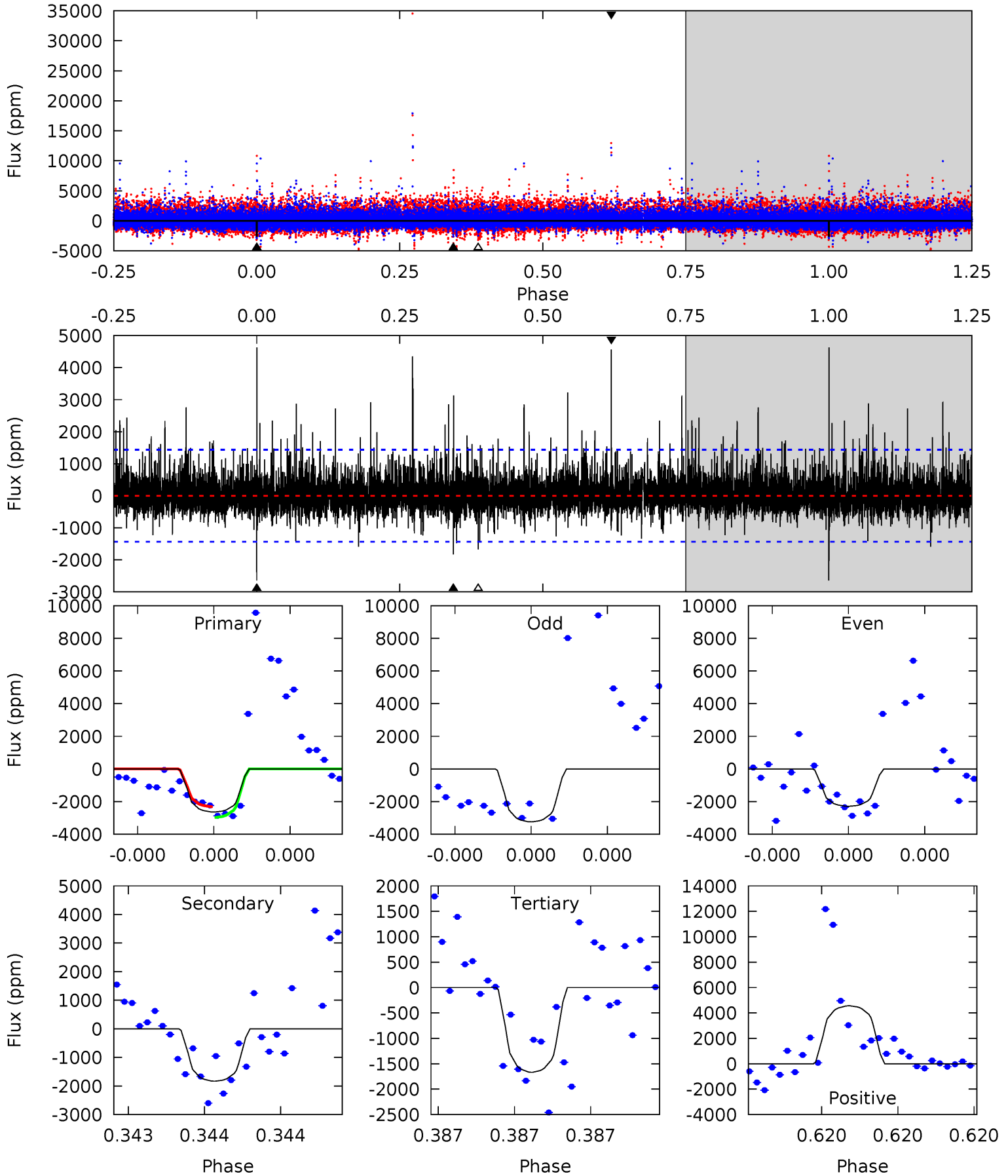
TCE 011137723-03     $P=367.504388$  Days     $T_0=290.472961$  (BKJD)



# DV Model-Shift Uniqueness Test

011137723-03, P = 367.502277 Days, E = 290.480542 Days

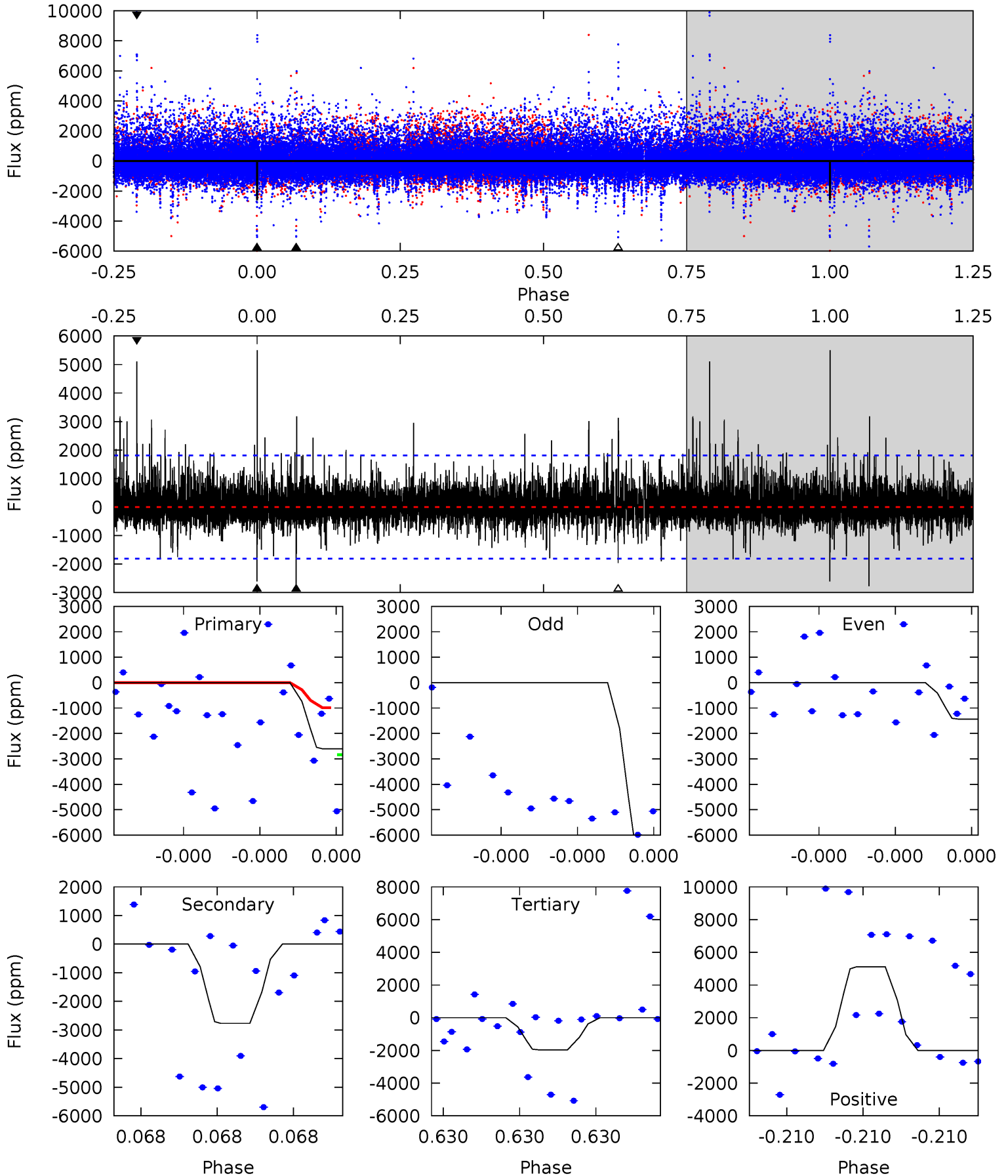
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	7.17	6.54	17.9	5.63	3.56	1.83	3.81	-7.53	0.64	-10.7	0.38	1.10	0.64	1.30



# Alt Model-Shift Uniqueness Test

011137723-03, P = 367.504388 Days, E = 290.472961 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
8.25	8.77	6.22	16.2	5.73	3.71	1.50	2.02	-7.92	2.55	-7.39	5.31	1.37	0.66	2.79





### Stellar Parameters For KIC 011137723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3274^{+42}_{-32}$	$5.044^{+0.044}_{-0.044}$	$0.020^{+0.100}_{-0.100}$	$0.224^{+0.032}_{-0.026}$	$0.202^{+0.042}_{-0.026}$	$25.440^{+6.603}_{-5.245}$
	+1%/-1%	+1%/-1%	+500%/-500%	+14%/-12%	+21%/-13%	+26%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 011137723-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1830 \pm 255$	$2.66^{+2.27}_{-1.78}$	$124^{+3}_{-3}$	$2534^{+899}_{-315}$	$47070^{+392660}_{-32108}$
Alt.	$-2770 \pm 316$	$2.53^{+2.30}_{-1.71}$	$125^{+3}_{-3}$	$2730^{+1027}_{-409}$	$87124^{+697228}_{-63540}$

$T_{max}$  = 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

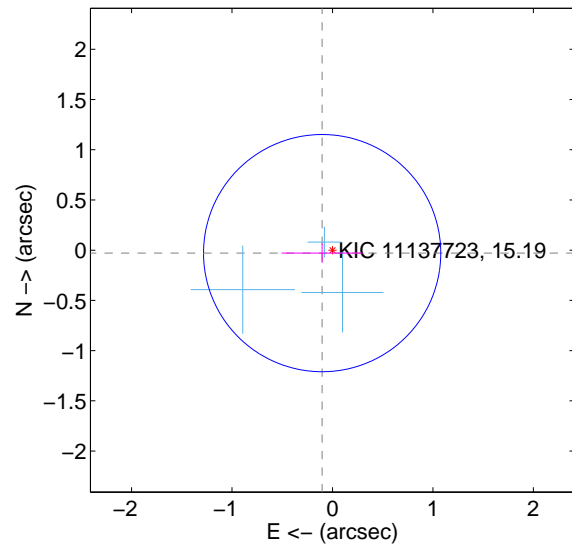
Supplemental centroid analysis for 011137723-03. Kepler magnitude: 15.19. Transit SNR 9.27

There are 3 quarters with good PRF difference image offsets

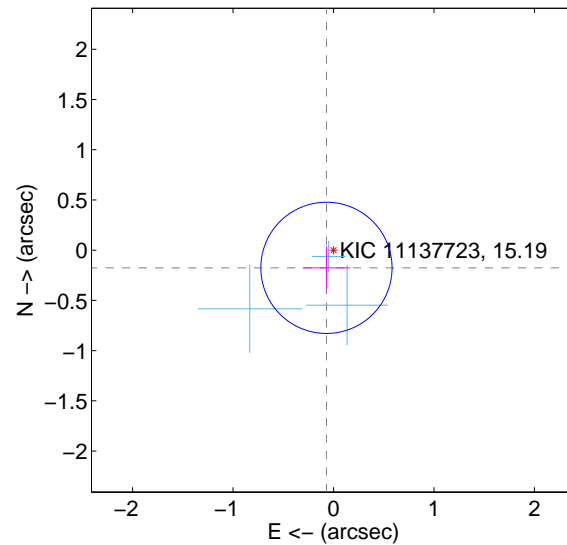
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.107 \pm 0.394$	0.27	$0.103 \pm 0.404$	$-0.029 \pm 0.096$
PRF-fit source offset from KIC position	$0.189 \pm 0.218$	0.87	$0.070 \pm 0.237$	$-0.176 \pm 0.215$
photometric centroid source offset	$0.55 \pm 0.48$	1.14	$-0.41 \pm 0.49$	$0.37 \pm 0.48$

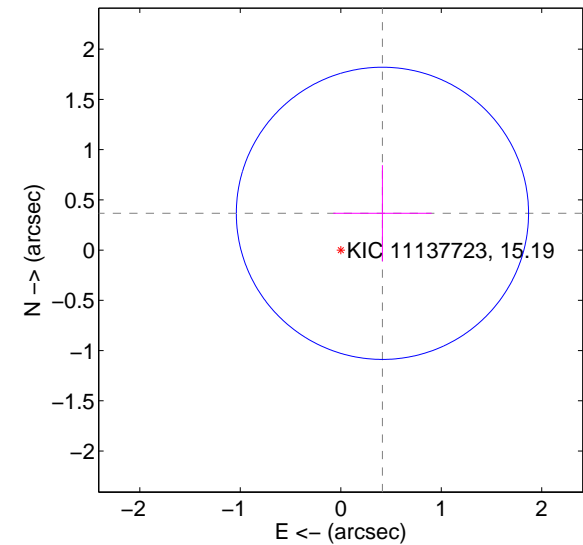
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

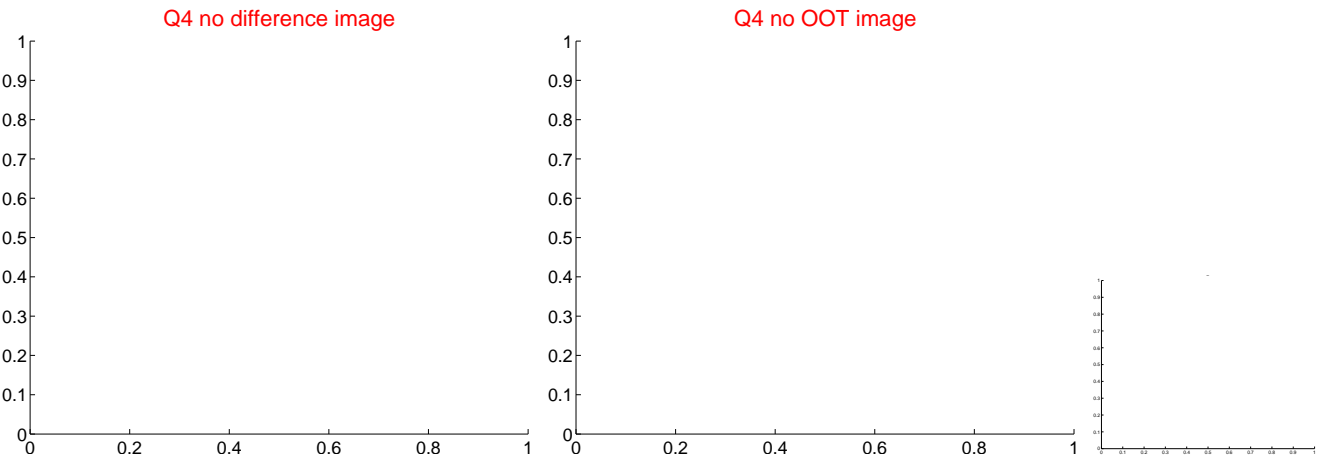
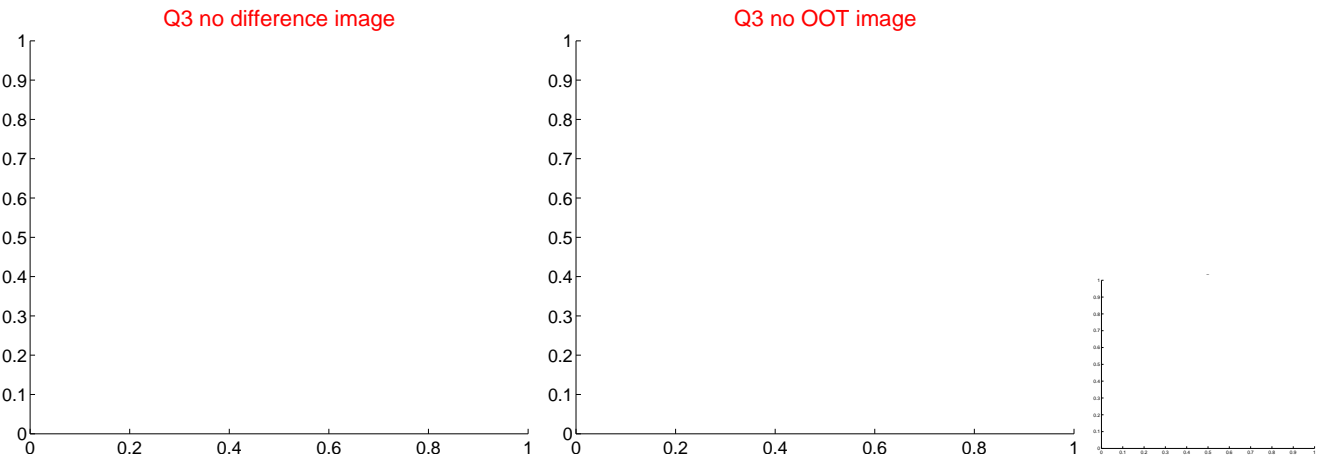
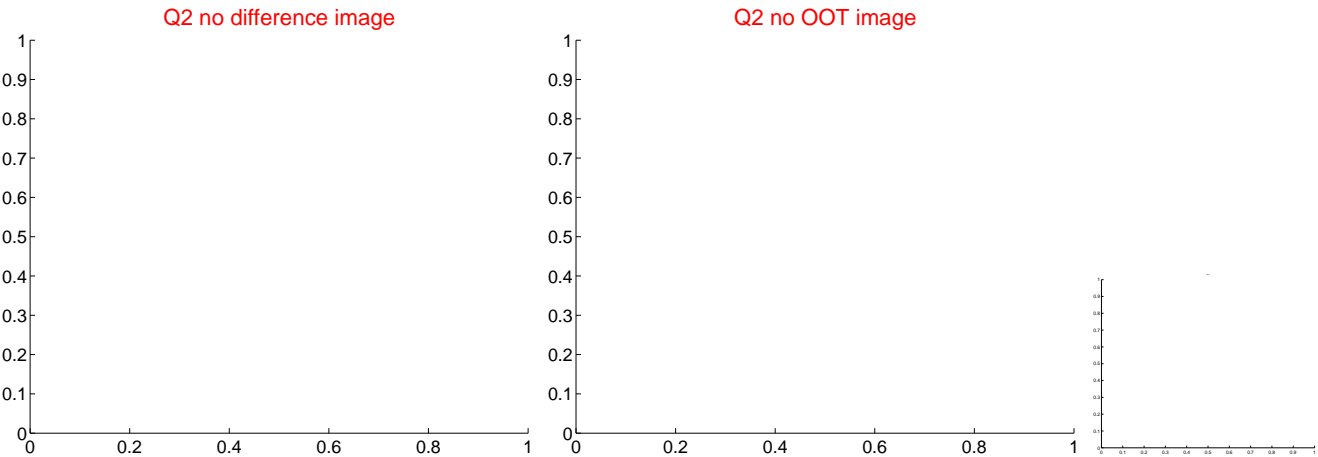
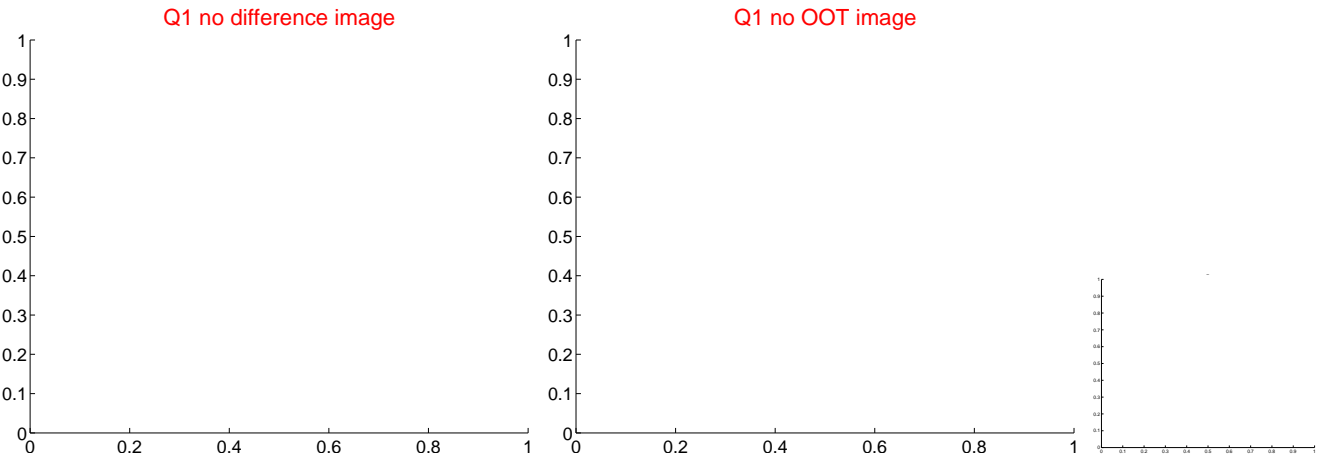


offset from photometric centroids

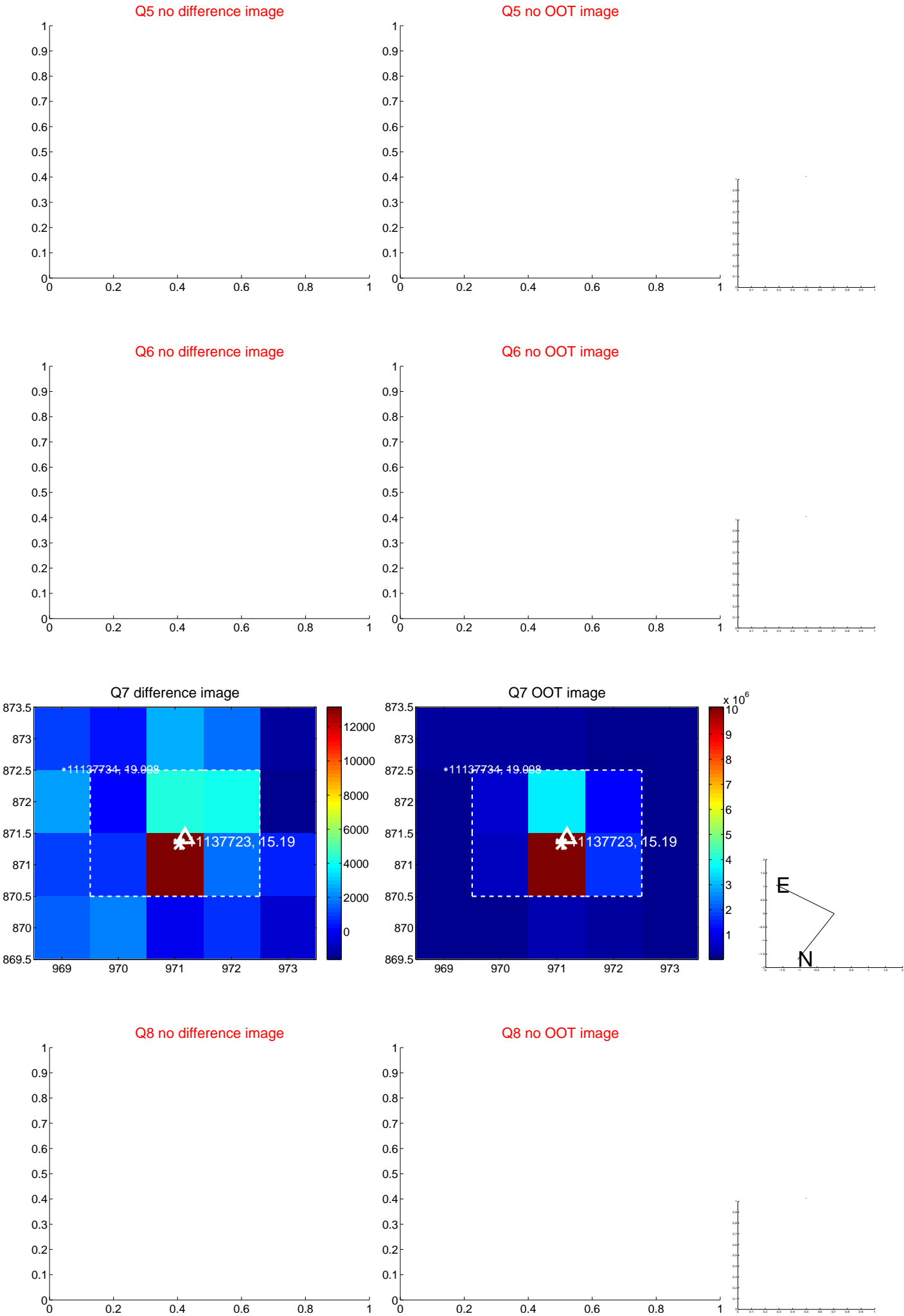


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

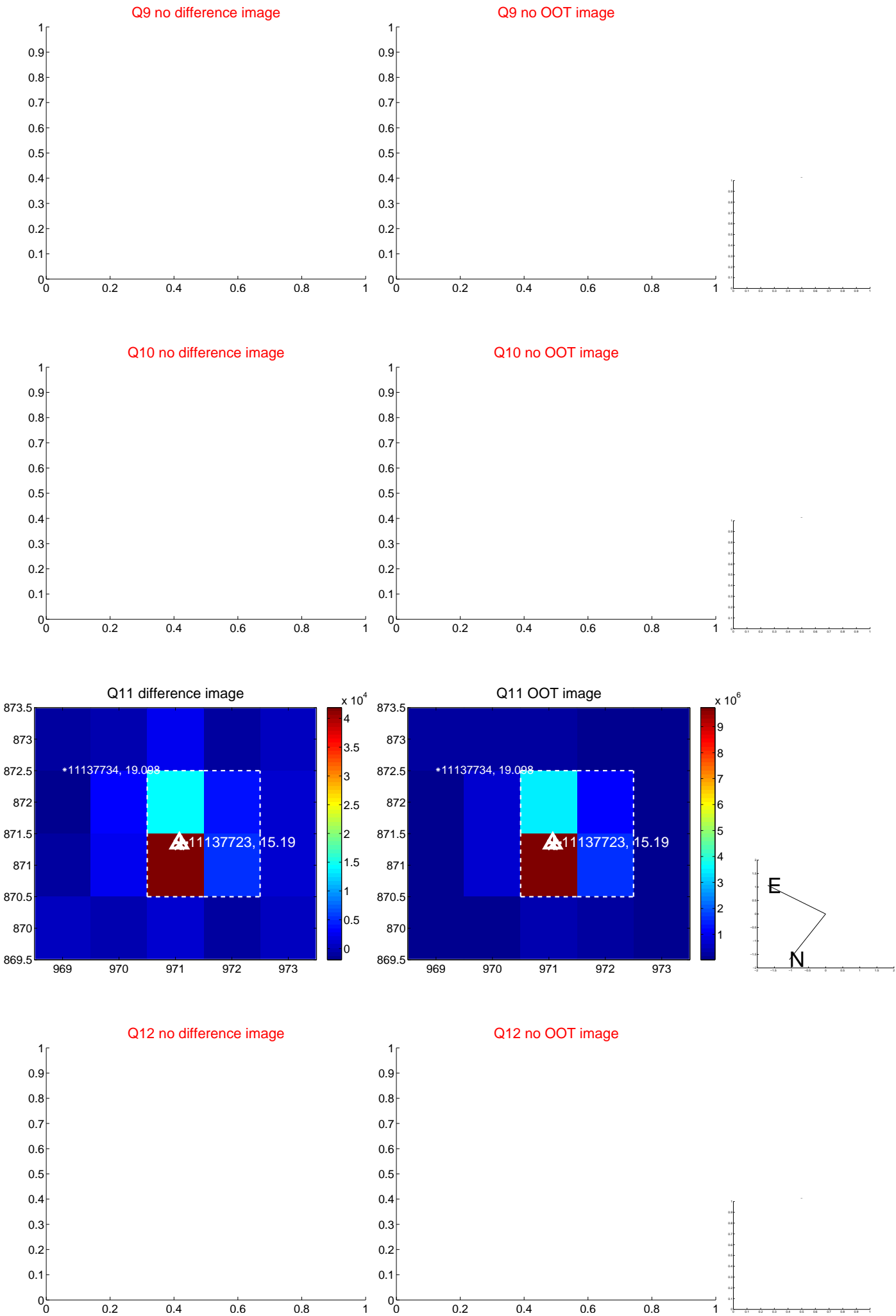
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



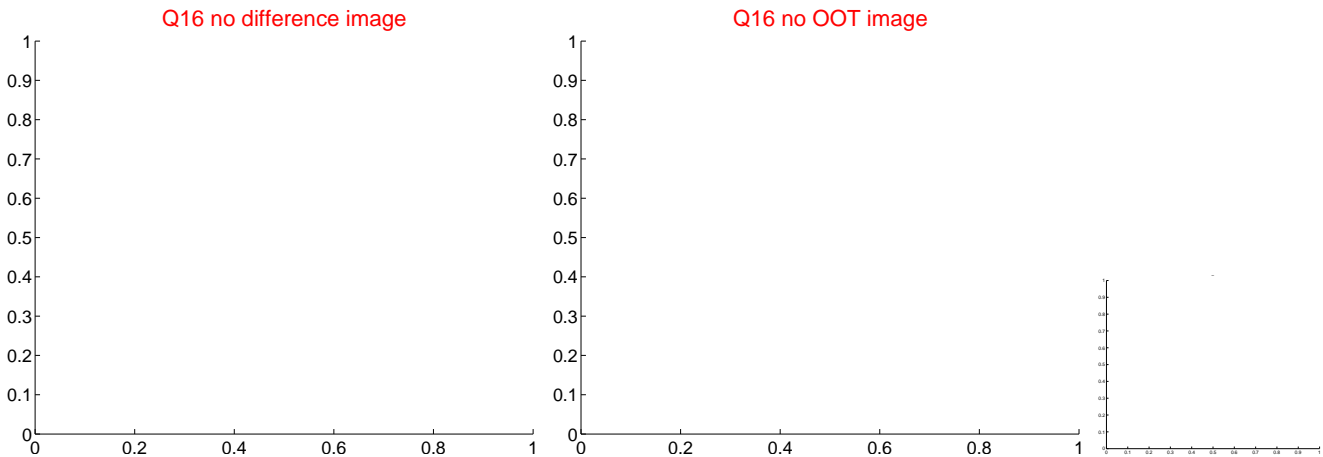
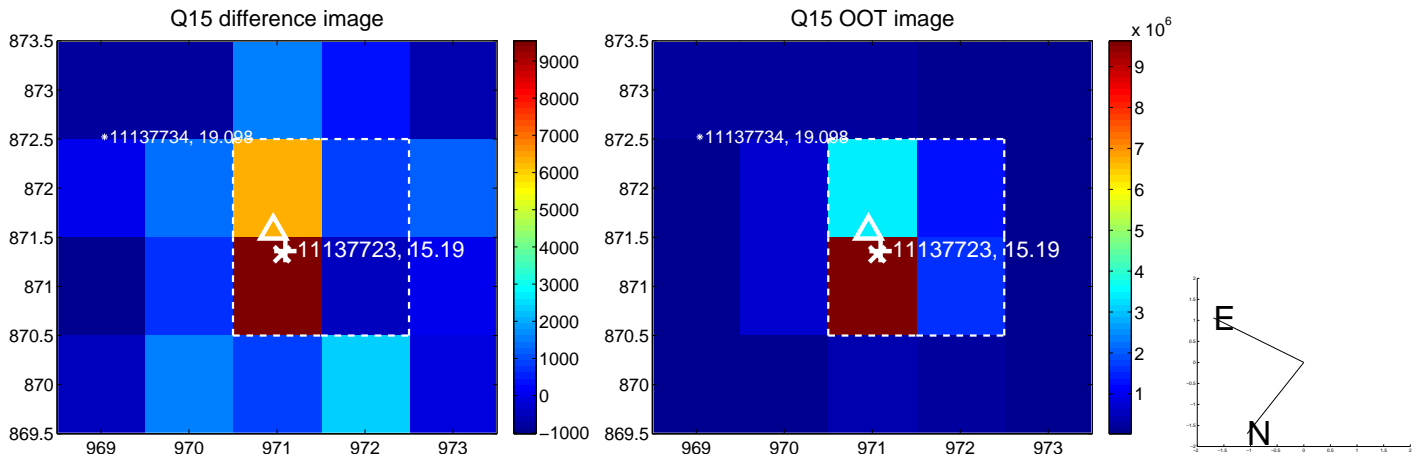
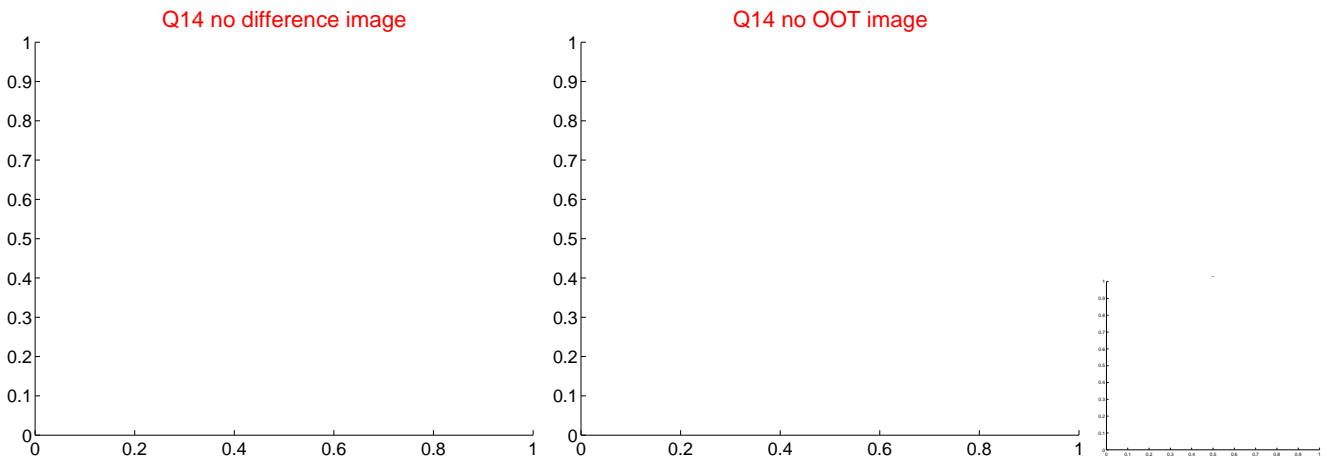
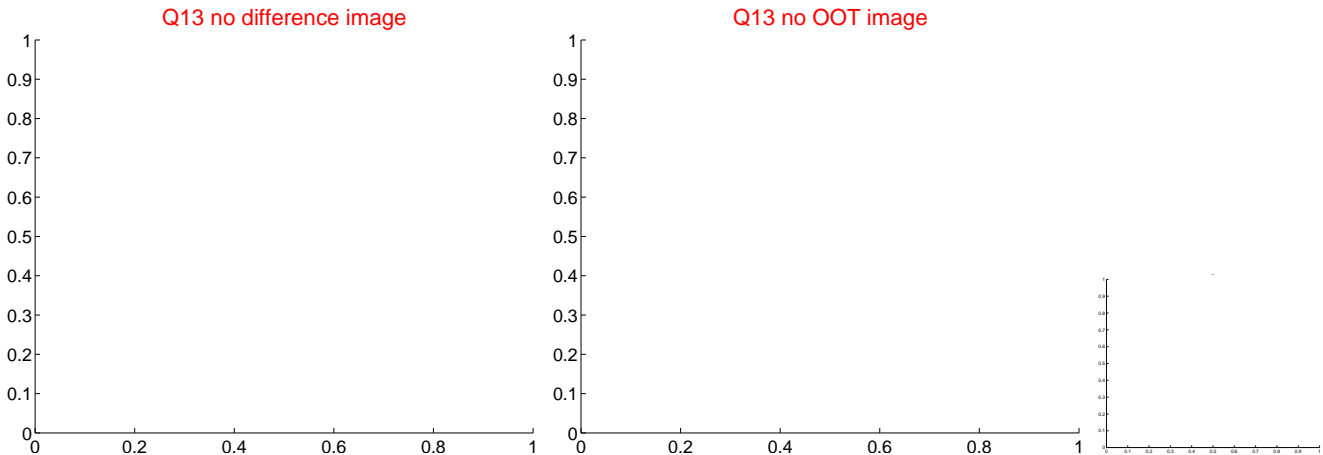
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



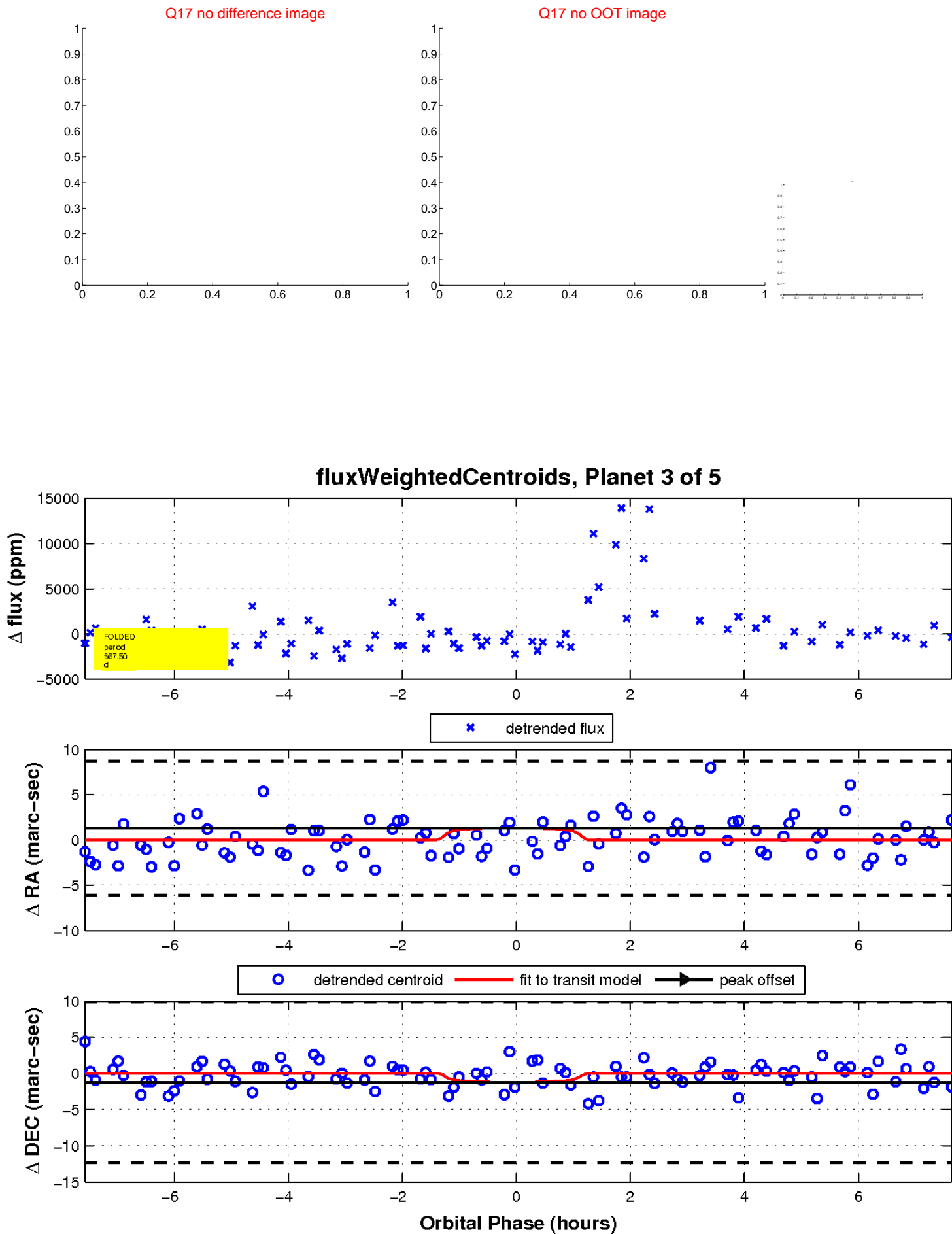
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

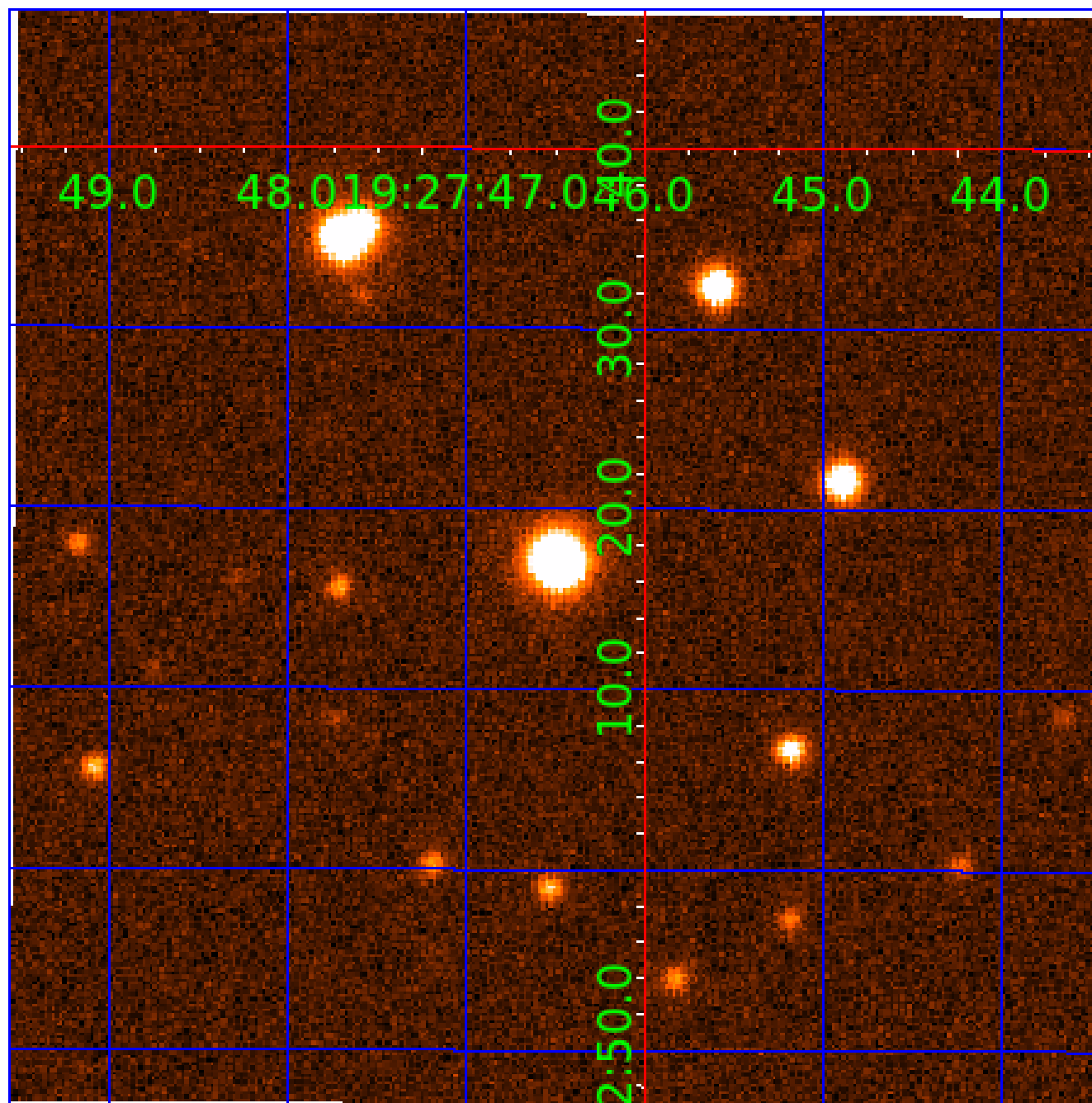


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011137723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011137723-01	OBS	No	326.576428	155.057440	350.9	1.858	13.8	1.0	0.22	3274	0.44	0.02
011137723-02	OBS	No	374.280142	308.585110	2109.8	2.101	11.5	5.0	0.22	3274	2.04	0.01
011137723-03	OBS	No	367.502278	290.480542	3426.8	2.572	14.5	9.3	0.22	3274	1.31	0.01
011137723-04	OBS	No	303.387884	429.242015	2382.5	12.790	11.0	6.5	0.22	3274	1.09	0.02
011137723-05	OBS	No	404.145065	294.303180	3596.2	10.157	10.4	10.2	0.22	3274	1.32	0.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011137723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011137723-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
011137723-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV

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

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

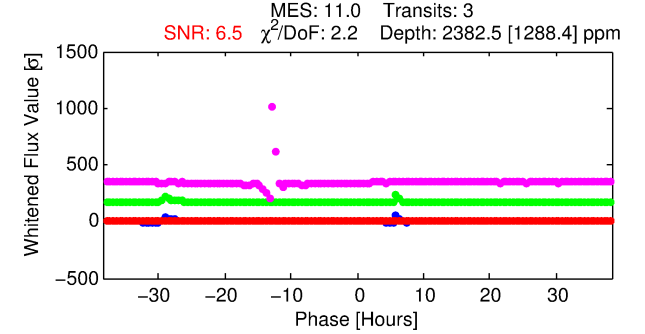
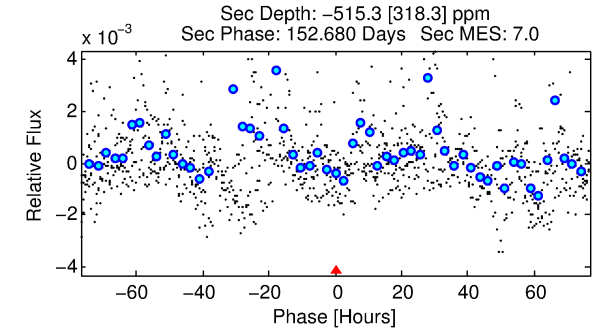
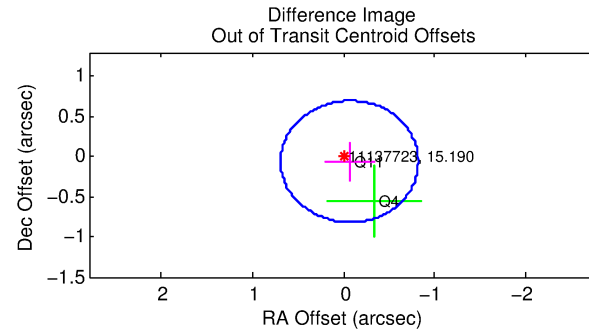
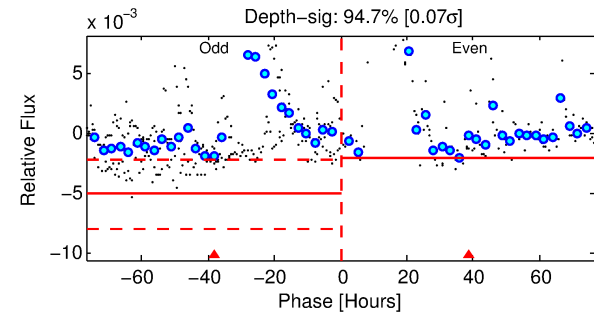
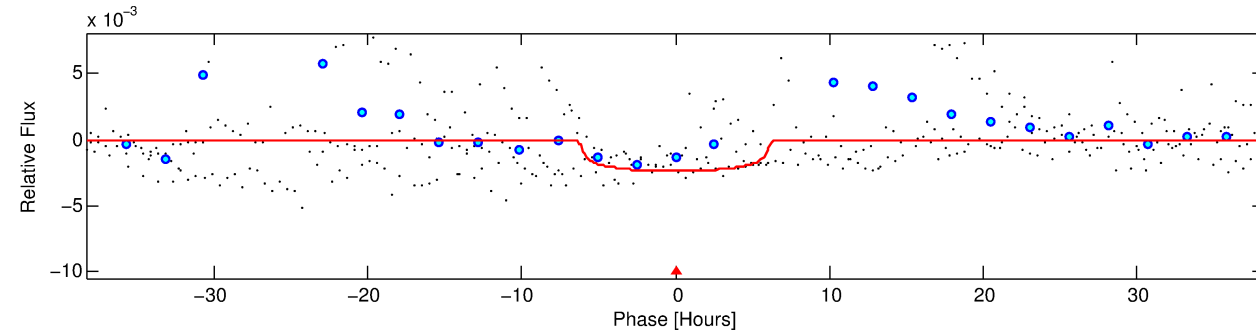
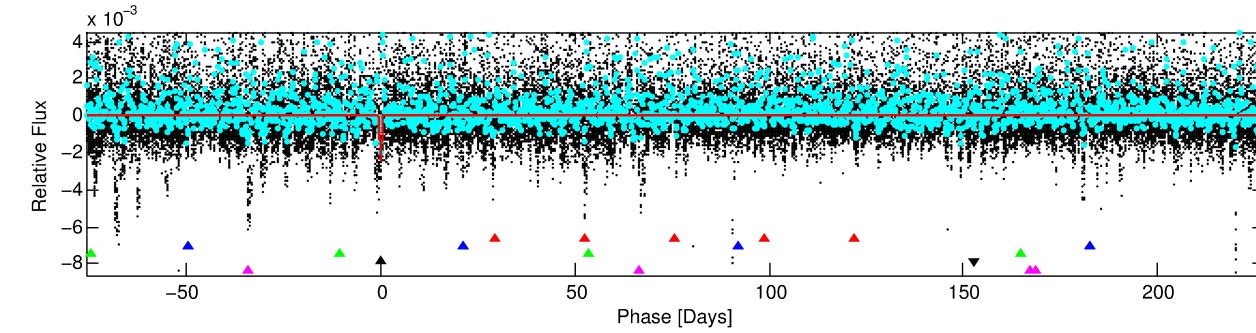
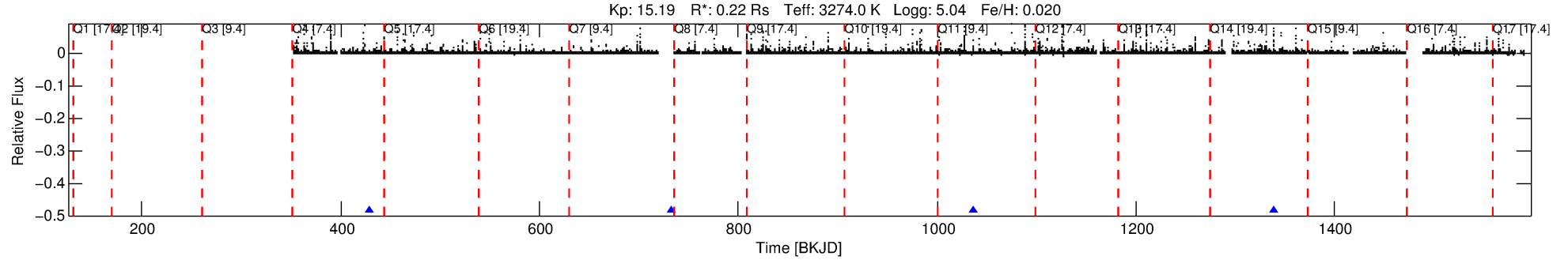
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011137723-04

No Significant Match Found

# DV One-Page Summary

KIC: 11137723 Candidate: 4 of 5 Period: 303.388 d



## DV Fit Results:

Period = 303.38788 [0.01796] d  
Epoch = 429.2420 [0.0347] BKJD  
Rp/R\* = 0.0447 [0.0338]  
a/R\* = 178.95 [505.57]  
b = 0.34 [7.33]  
Seff = 0.02 [0.00]  
Teq = 95 [3] K  
Rp = 1.09 [0.84] Re  
a = 0.5190 [0.0524] AU  
Ag = N/A  
Teffp = N/A

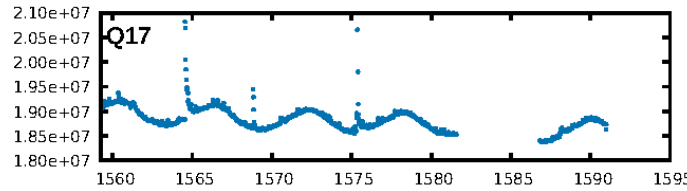
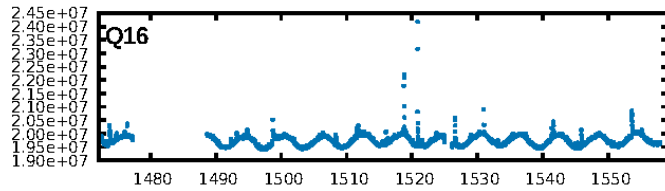
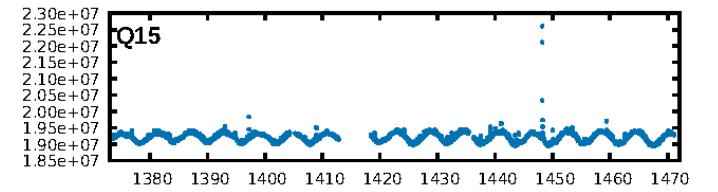
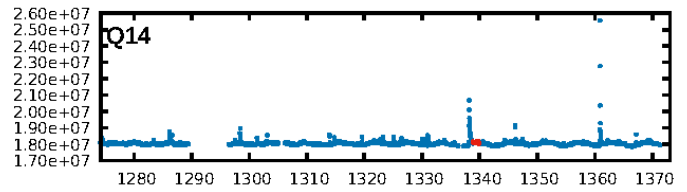
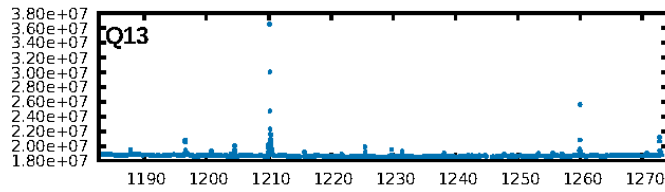
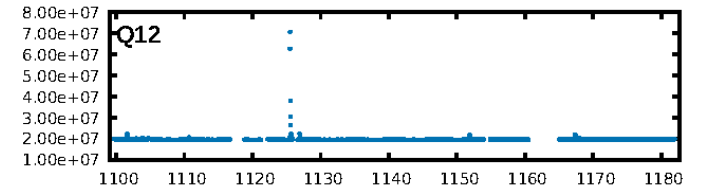
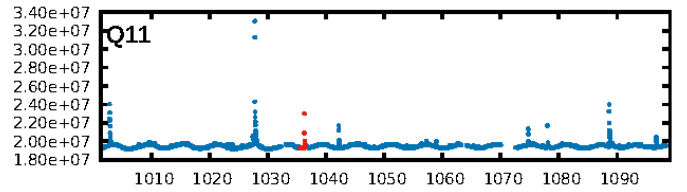
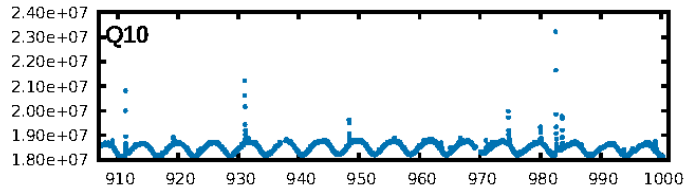
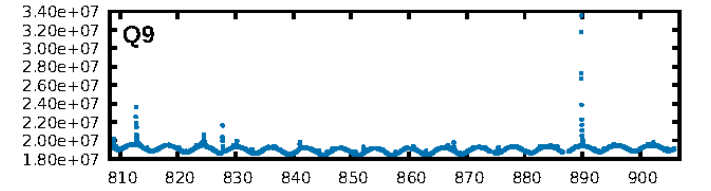
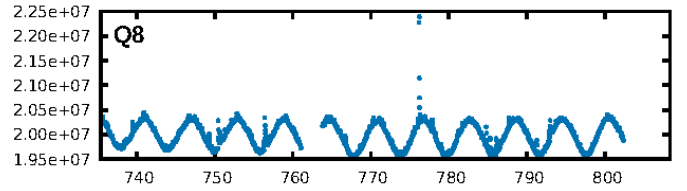
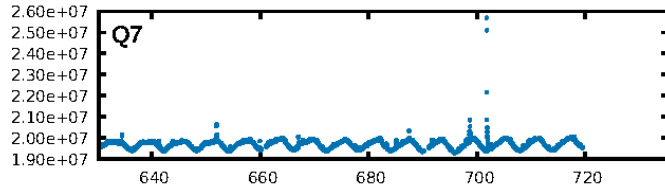
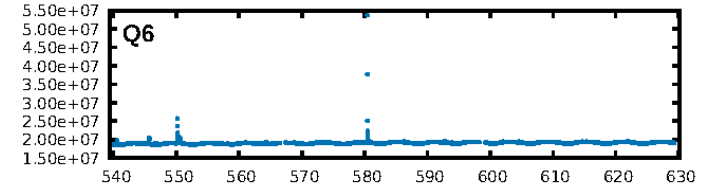
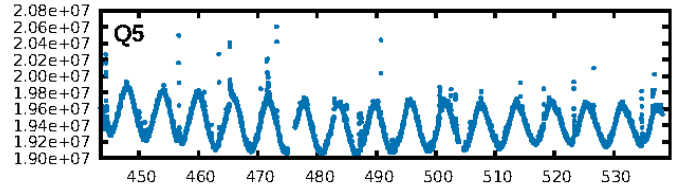
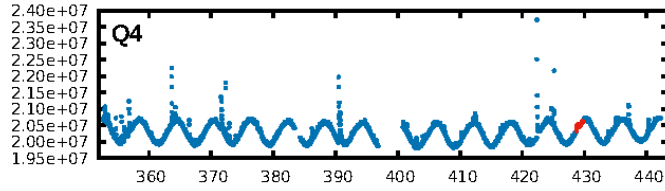
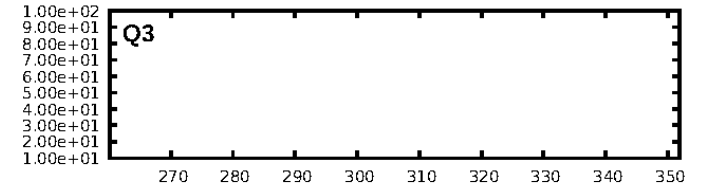
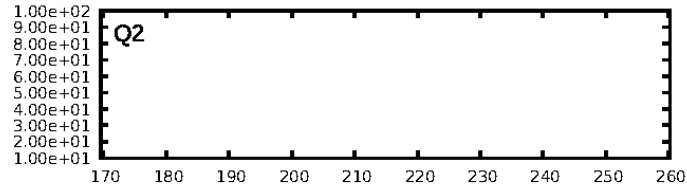
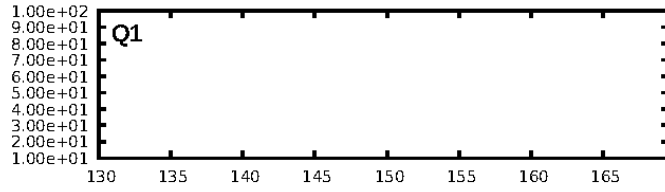
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [43.06 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 24.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.3621  
Centroid-sig: 35.7%  
Centroid-so: 0.266 arcsec [0.74 $\sigma$ ]  
OotOffset-rm: 0.091 arcsec [0.36 $\sigma$ ]  
KicOffset-rm: 0.212 arcsec [0.76 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

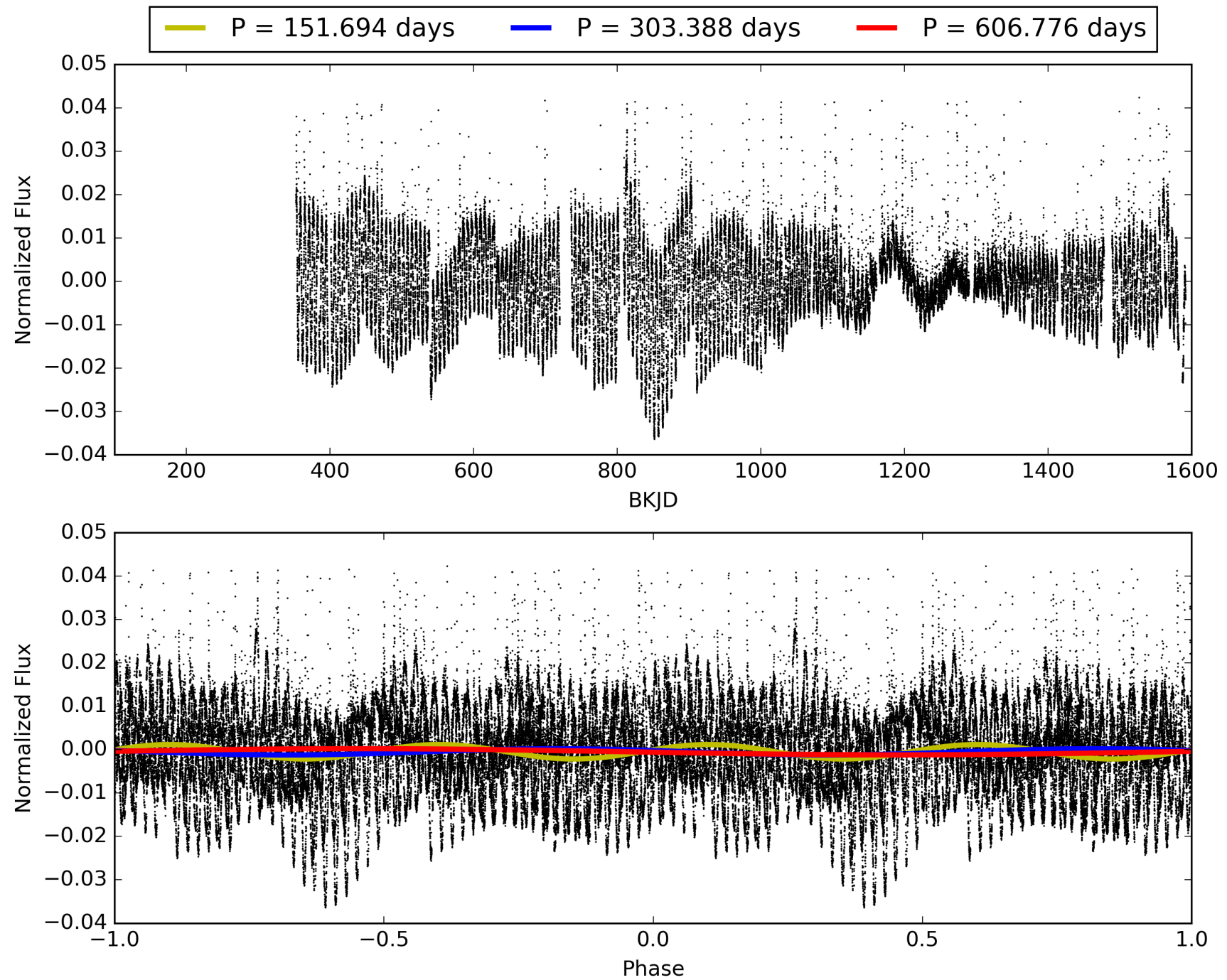
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:13:48 Z

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

# TCE 011137723-04, PDC Light Curves

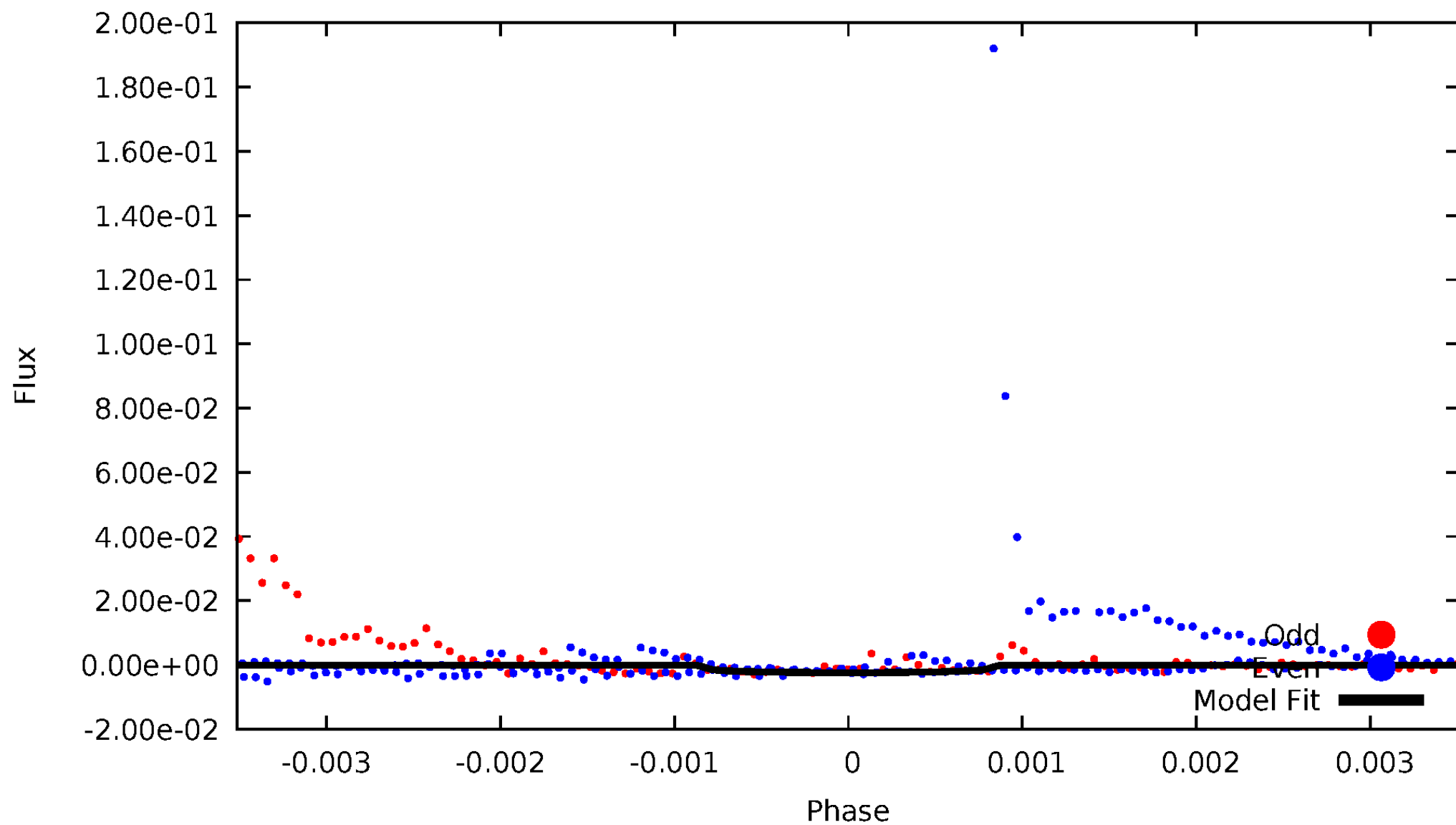


# TCE 011137723-04



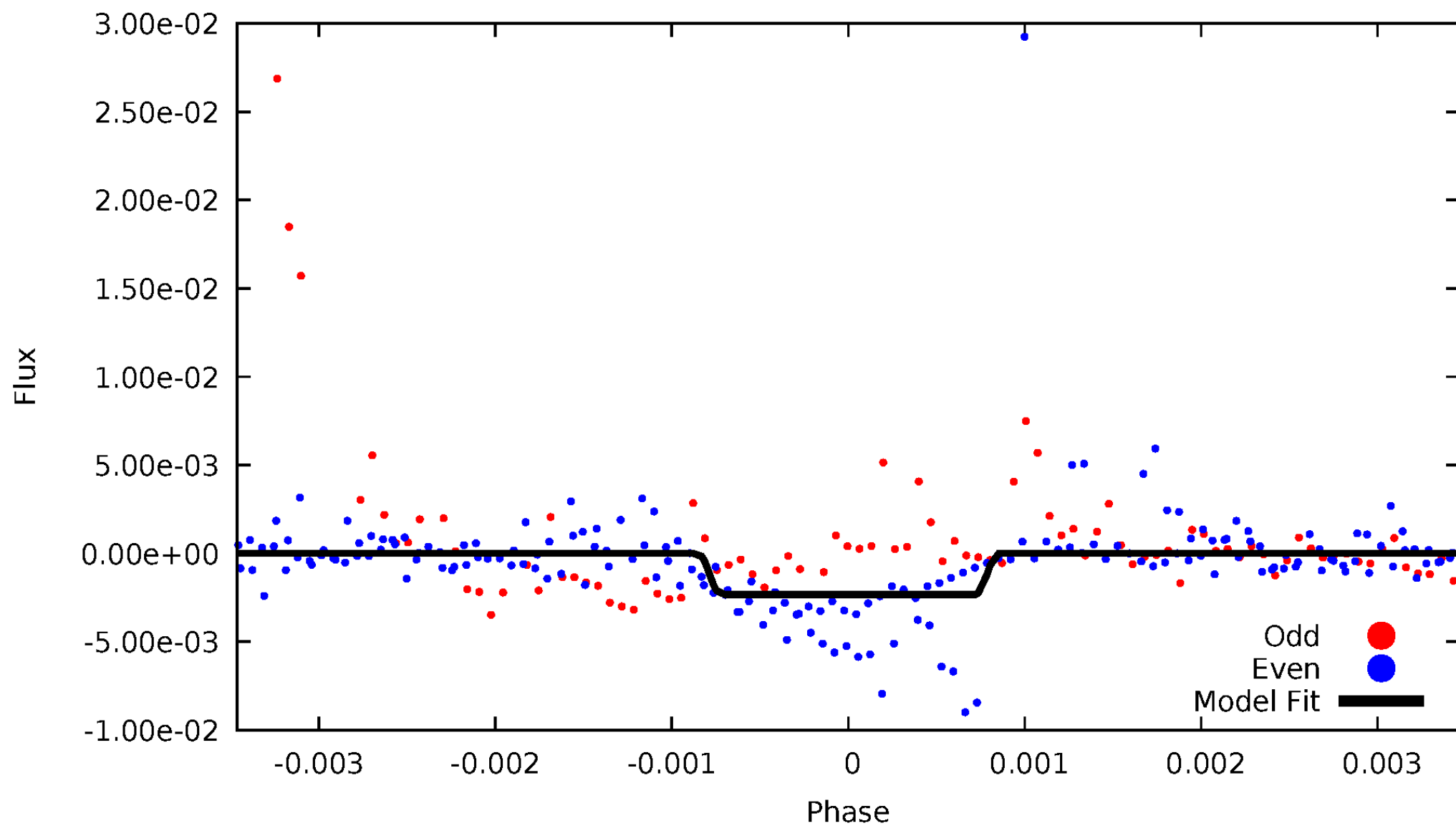
# DV Odd/Even

TCE 011137723-04



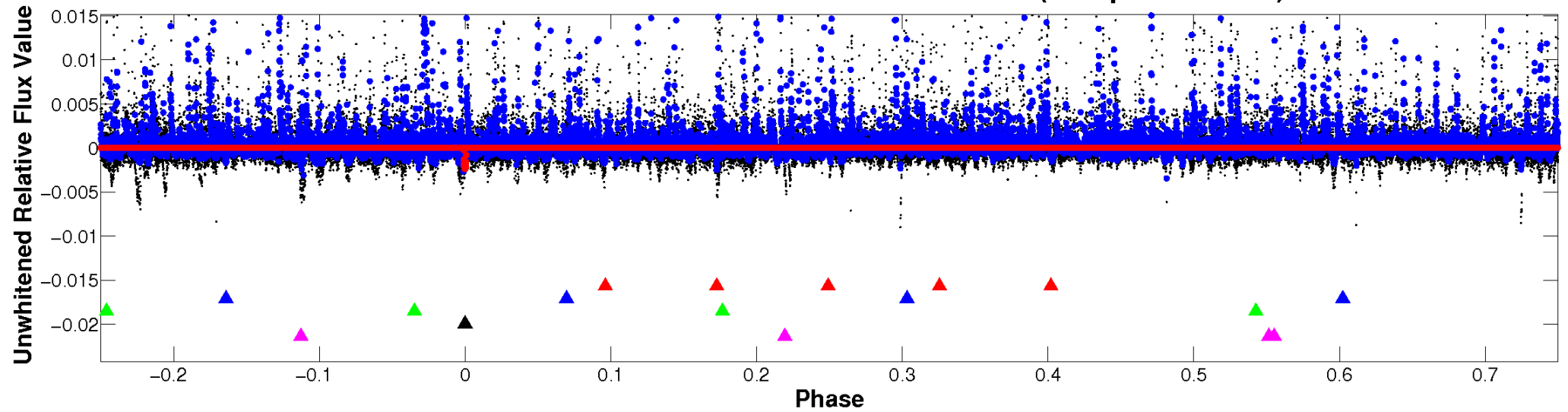
# ALT Odd/Even

TCE 011137723-04

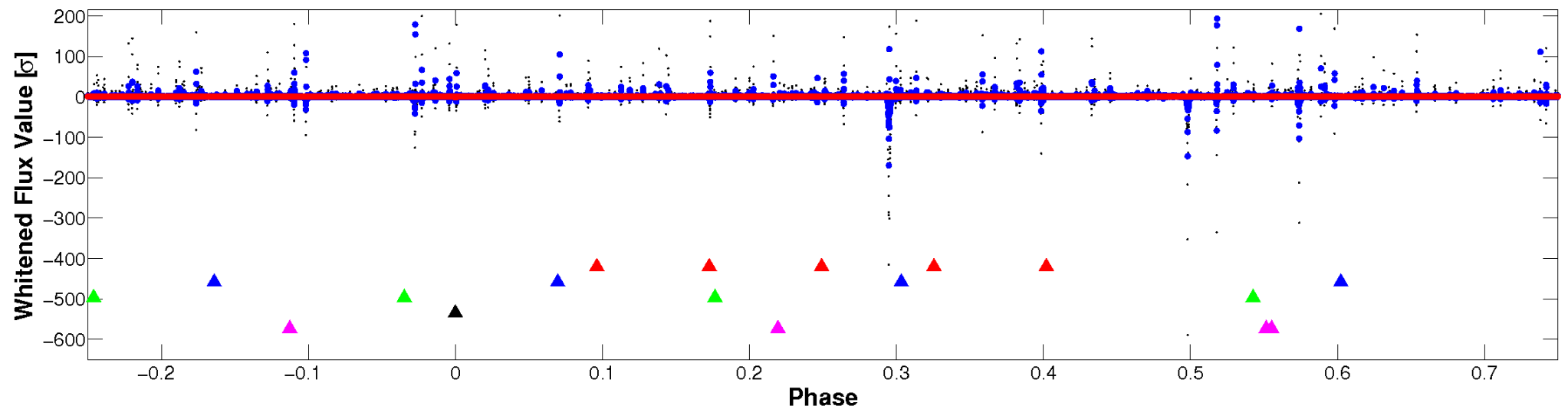


# Non-Whitened Vs. Whitened Light Curve

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

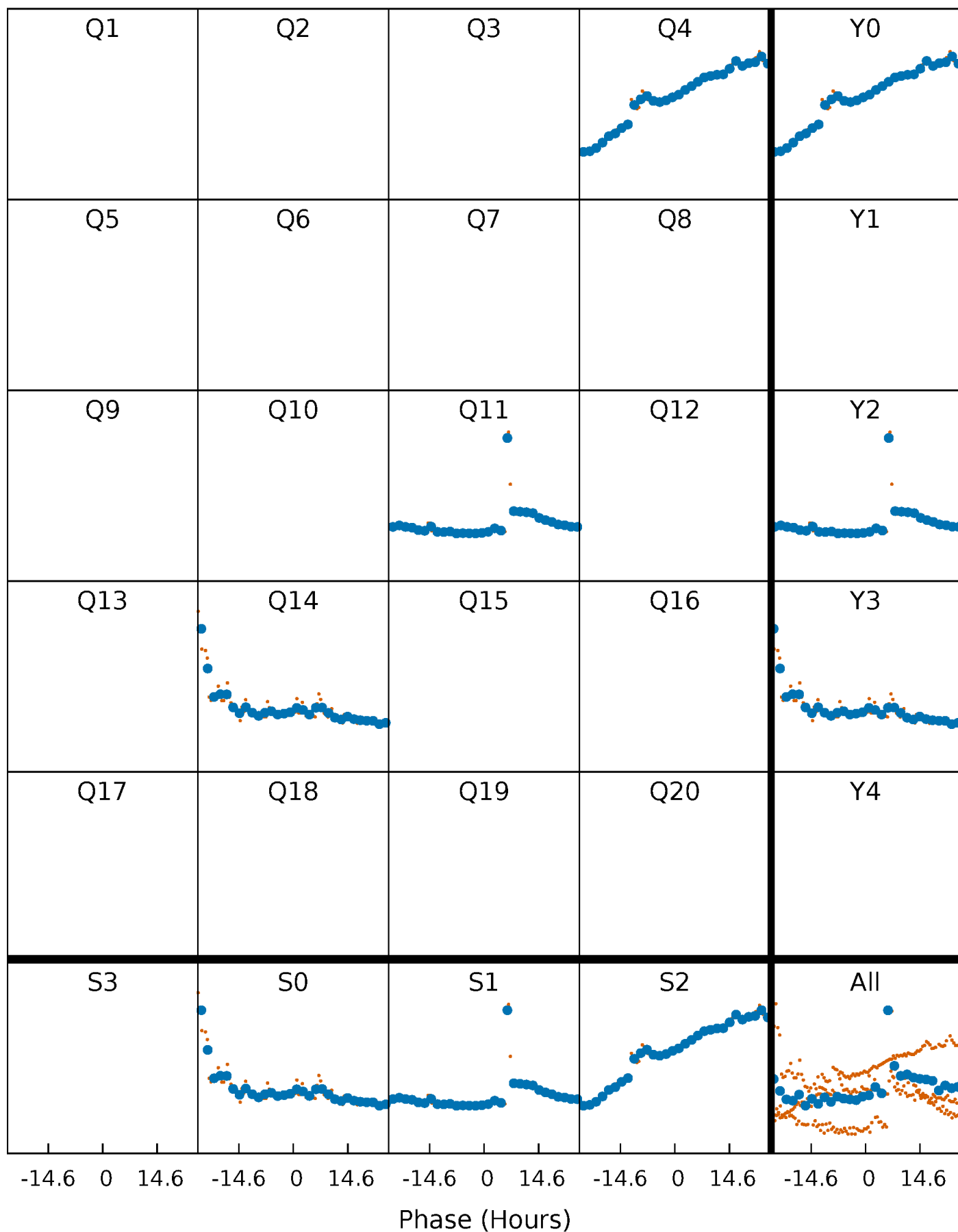


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

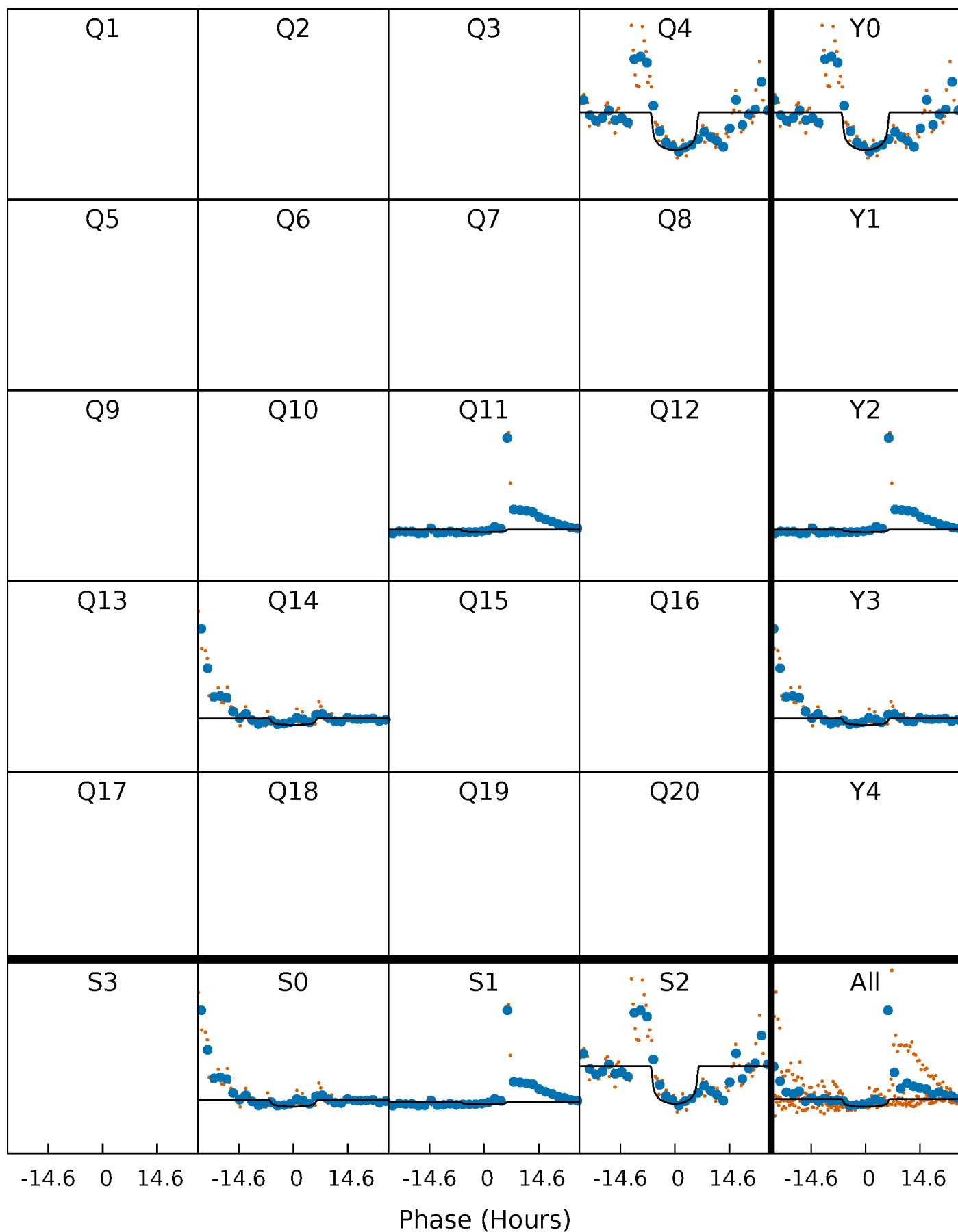
TCE 011137723-04 P=303.387884 Days  $T_0=429.242015$  (BKJD)





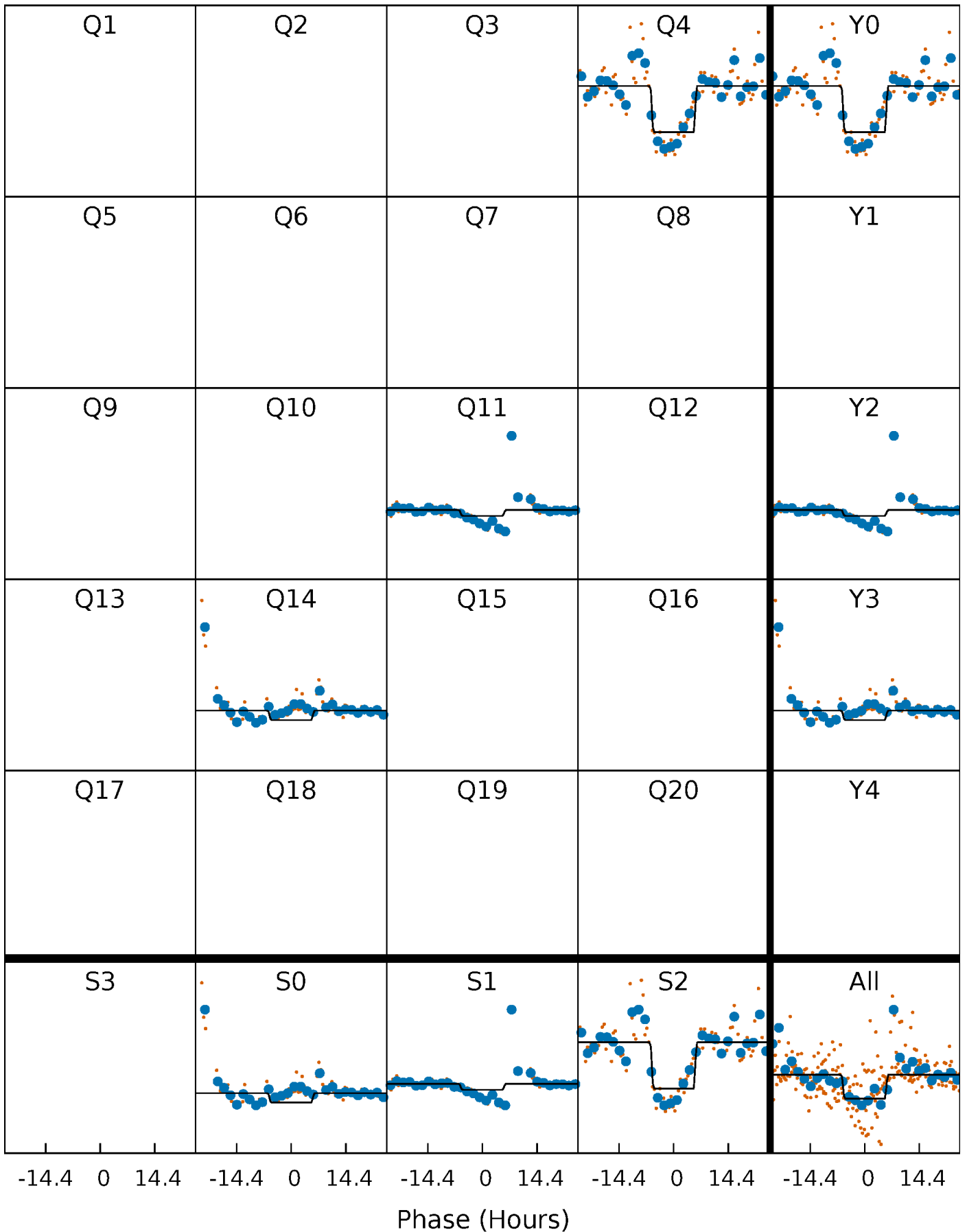
# DV Quarter-Phased Transit Curves

TCE 011137723-04 P=303.387884 Days  $T_0=429.242015$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

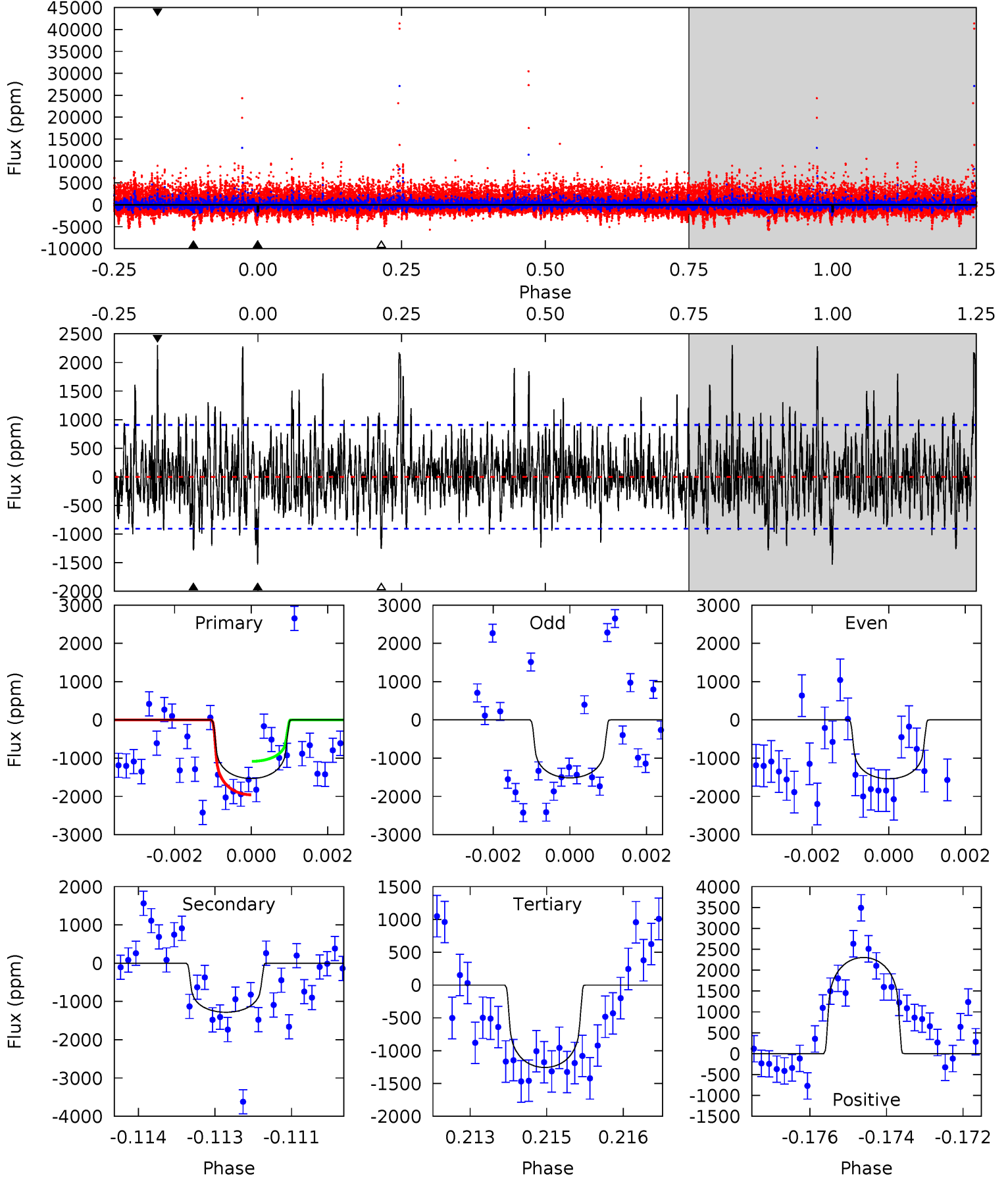
TCE 011137723-04     $P=303.377065$  Days     $T_0=429.254914$  (BKJD)



# DV Model-Shift Uniqueness Test

011137723-04, P = 303.387884 Days, E = 125.854131 Days

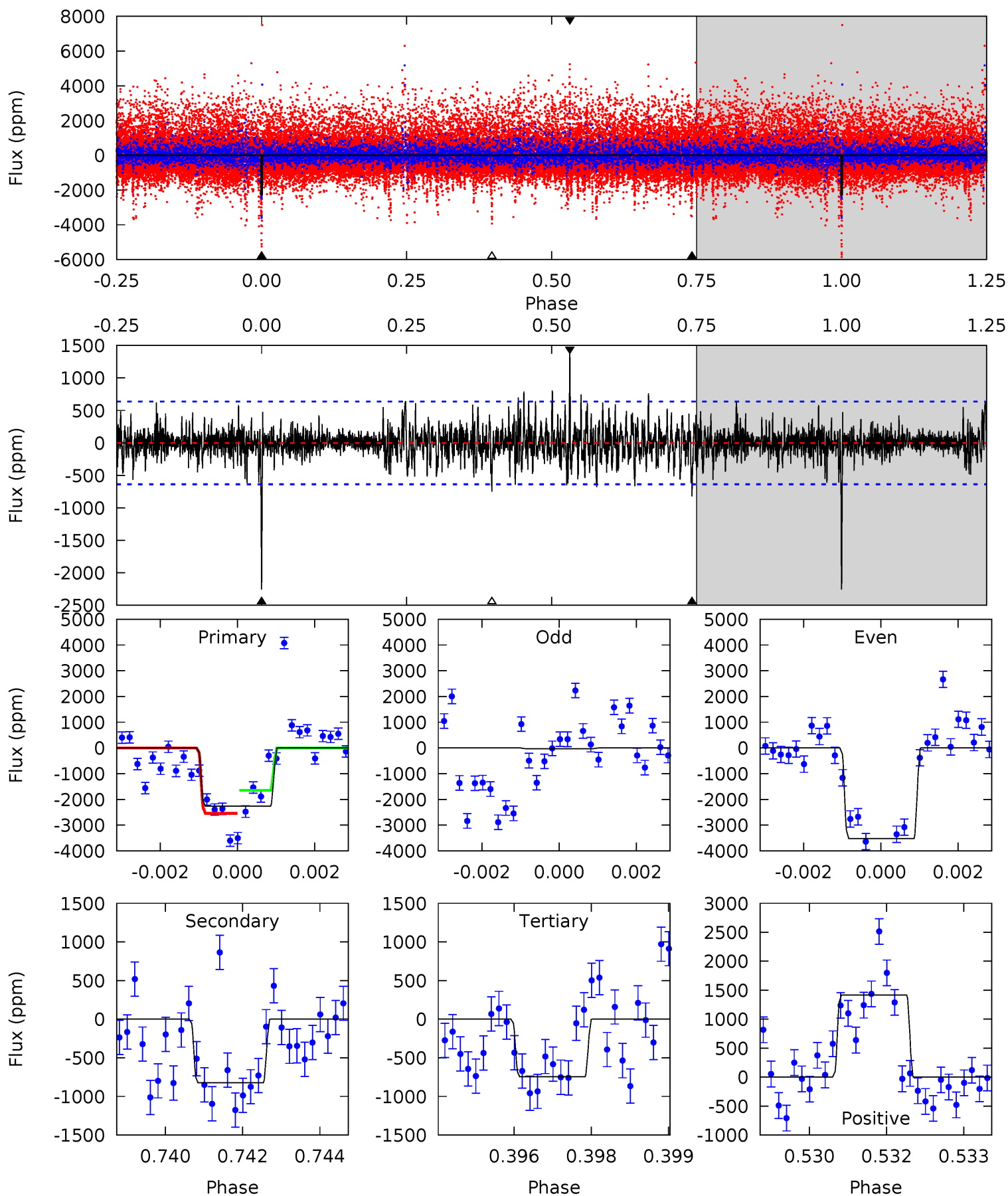
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.04	7.57	7.41	13.6	5.35	3.13	2.65	1.62	-4.56	0.16	-6.02	0.03	0.46	0.60	2.60



# Alt Model-Shift Uniqueness Test

011137723-04, P = 303.377065 Days, E = 125.877849 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
19.0	6.93	6.28	11.9	5.36	3.14	1.62	12.7	7.05	0.65	-4.98	12.8	0.96	0.39	3.73



### Stellar Parameters For KIC 011137723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3274^{+42}_{-32}$	$5.044^{+0.044}_{-0.044}$	$0.020^{+0.100}_{-0.100}$	$0.224^{+0.032}_{-0.026}$	$0.202^{+0.042}_{-0.026}$	$25.440^{+6.603}_{-5.245}$
	+1%/-1%	+1%/-1%	+500%/-500%	+14%/-12%	+21%/-13%	+26%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 011137723-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1283 \pm 169$	$1.18^{+0.80}_{-0.71}$	$133^{+3}_{-3}$	$2987^{+991}_{-365}$	$131223^{+689959}_{-82408}$
Alt.	$-824 \pm 119$	$1.32^{+0.78}_{-0.80}$	$133^{+3}_{-3}$	$2756^{+832}_{-321}$	$72292^{+374158}_{-44987}$

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

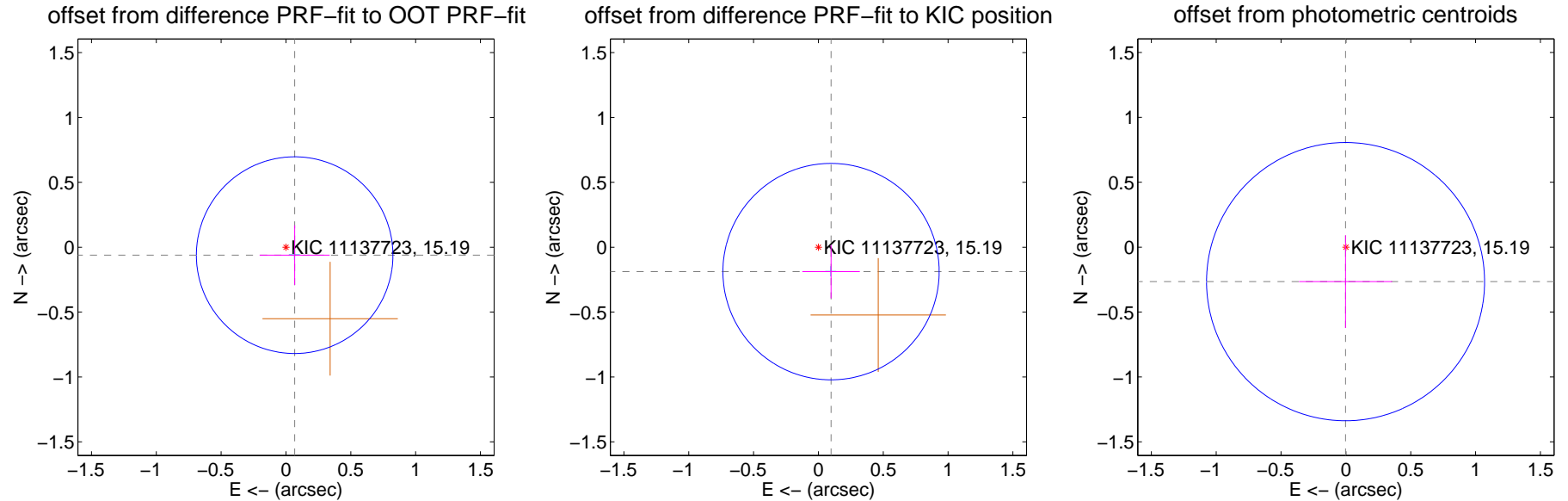
## DV Centroid Data

Supplemental centroid analysis for 011137723-04. Kepler magnitude: 15.19. Transit SNR 6.53

There are 1 quarters with good PRF difference image offsets

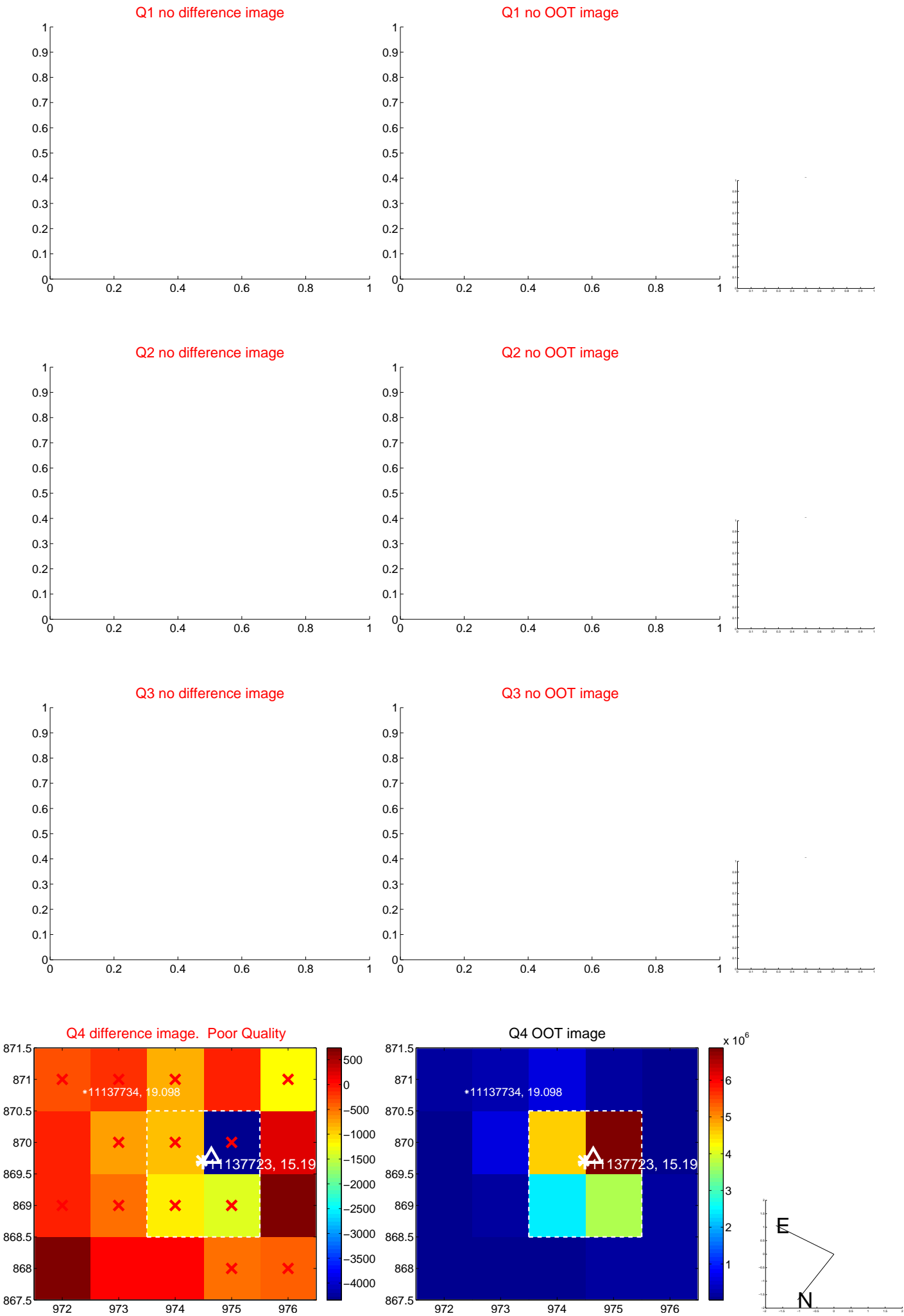
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.091 \pm 0.253$	0.36	$-0.067 \pm 0.270$	$-0.061 \pm 0.230$
PRF-fit source offset from KIC position	$0.212 \pm 0.278$	0.76	$-0.097 \pm 0.222$	$-0.188 \pm 0.205$
photometric centroid source offset	$0.27 \pm 0.36$	0.74	$0.00 \pm 0.36$	$-0.27 \pm 0.36$

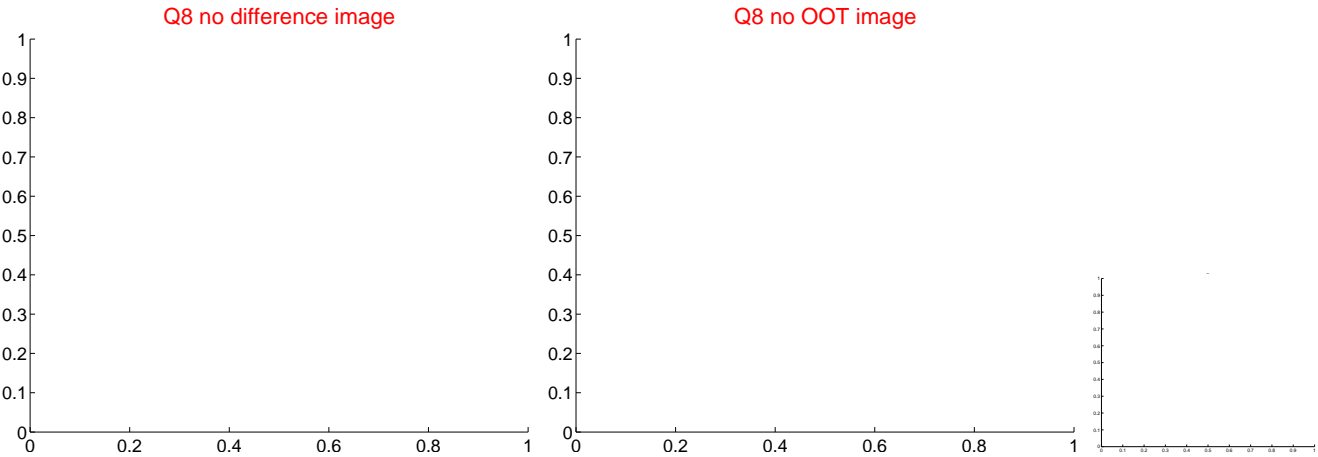
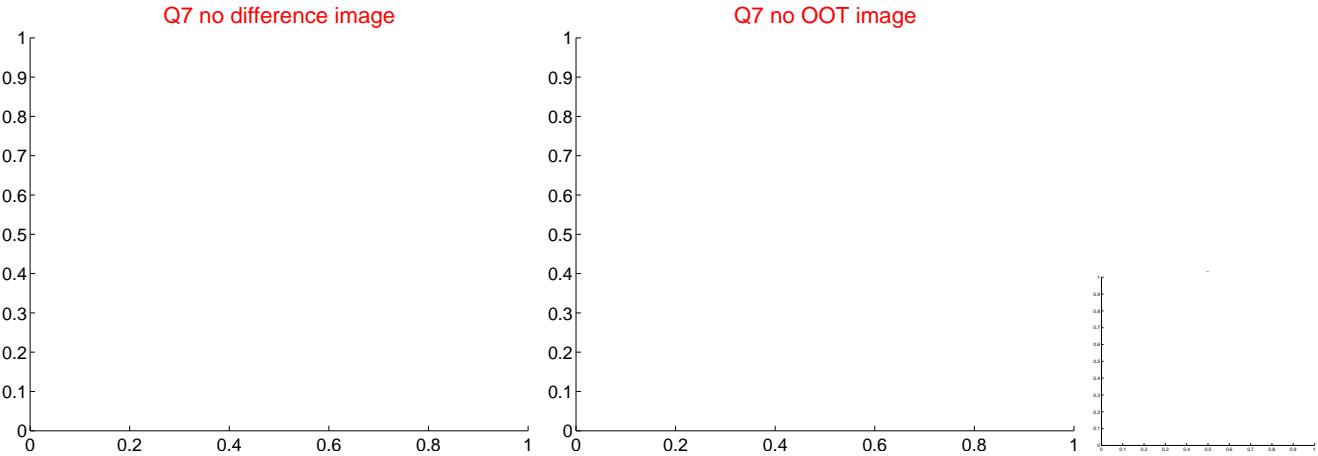
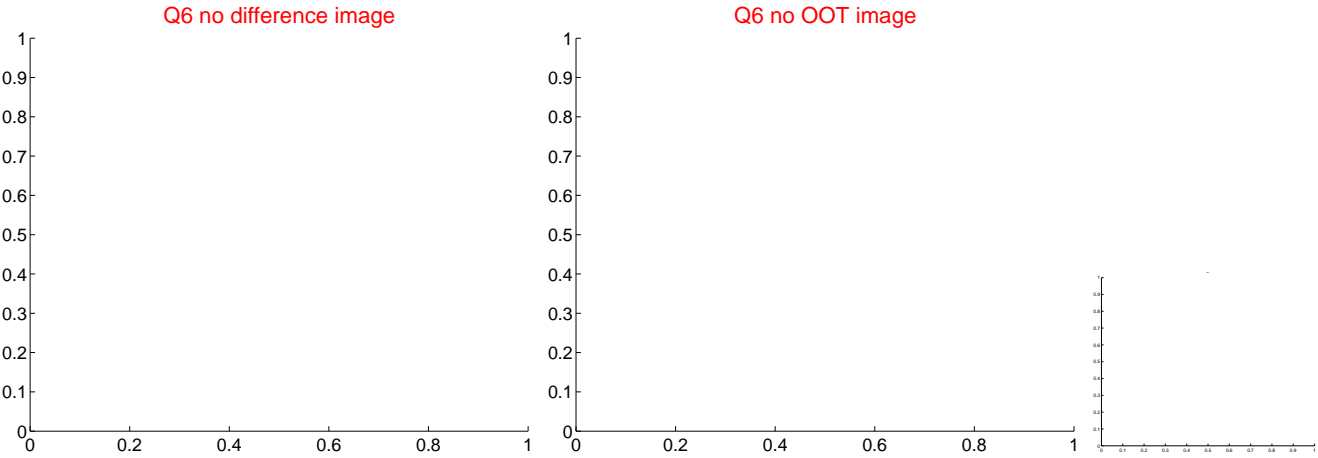
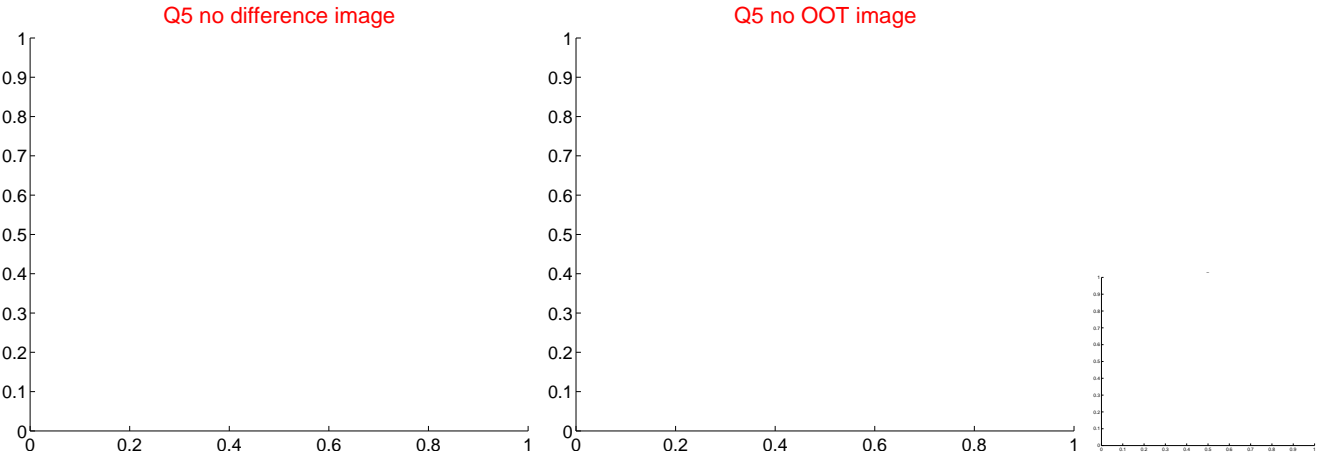


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

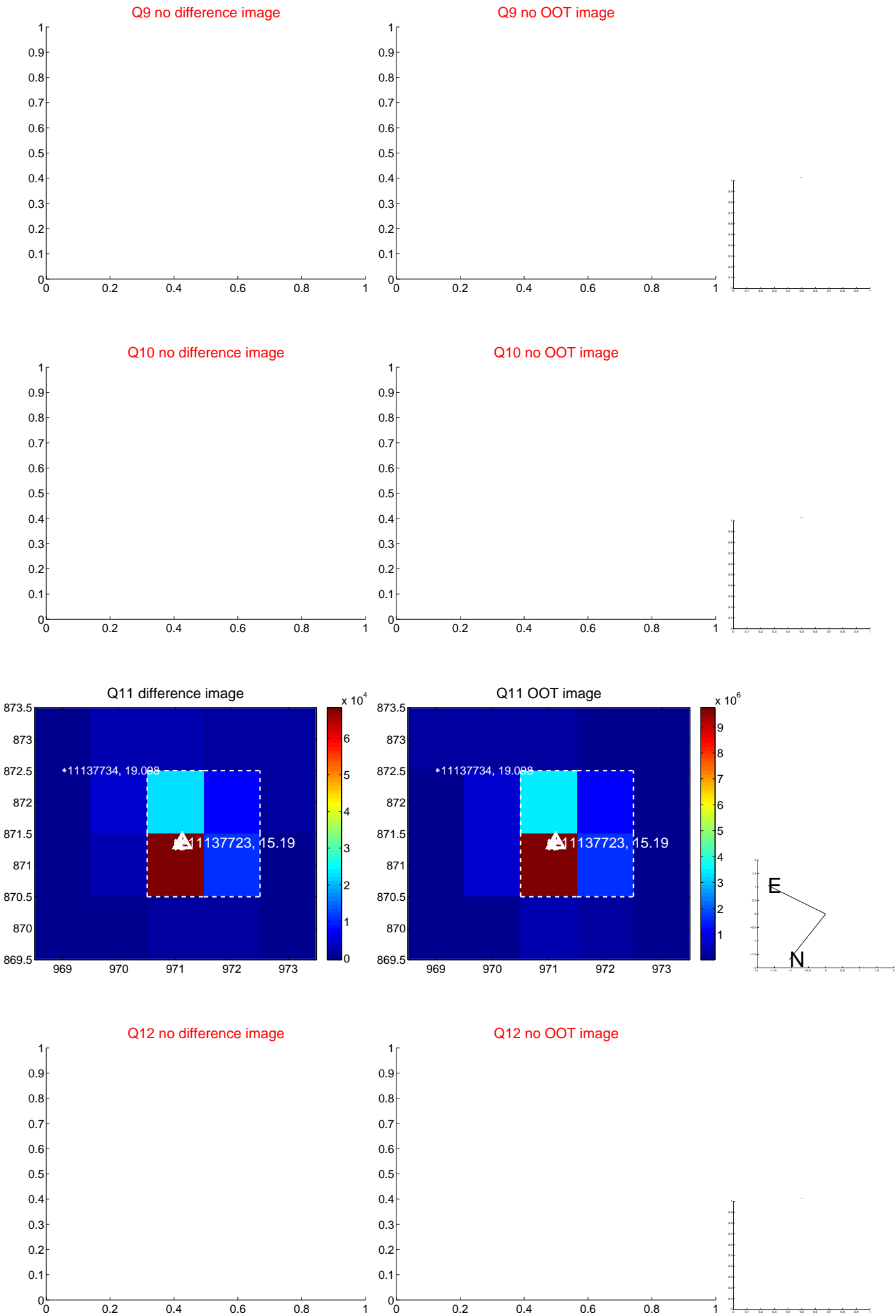


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

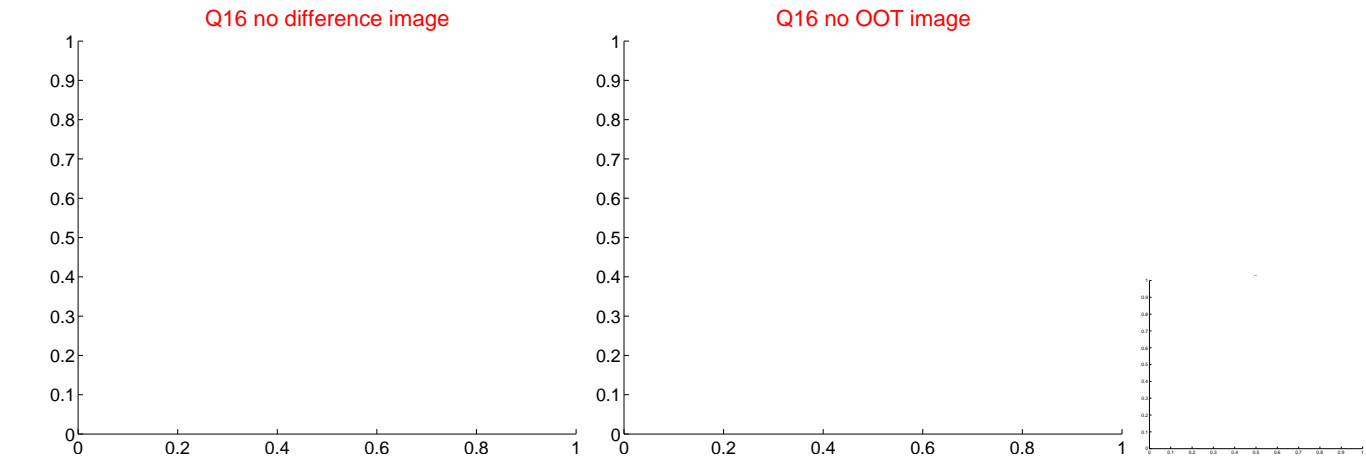
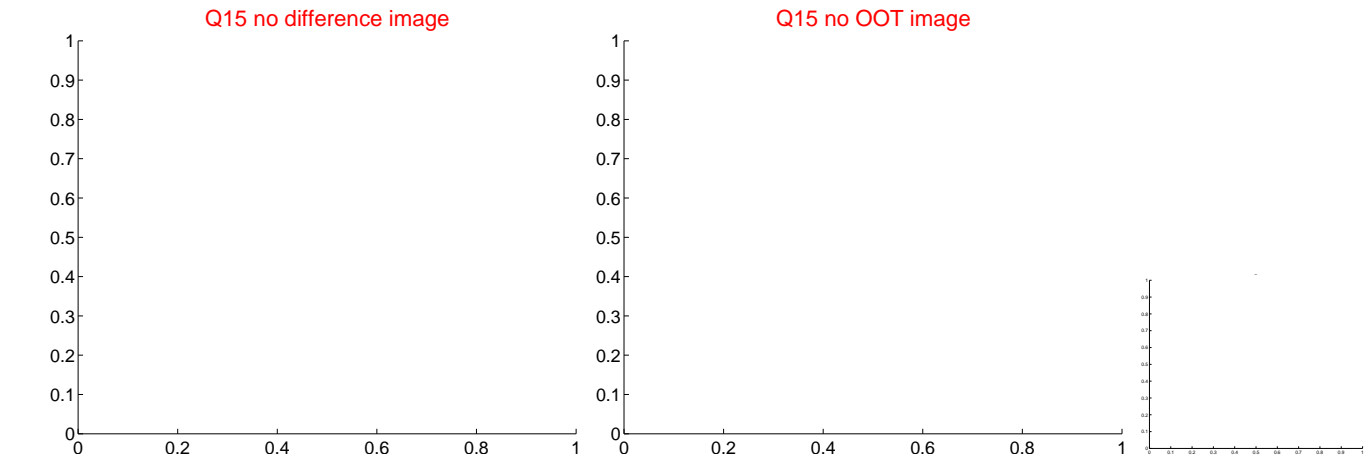
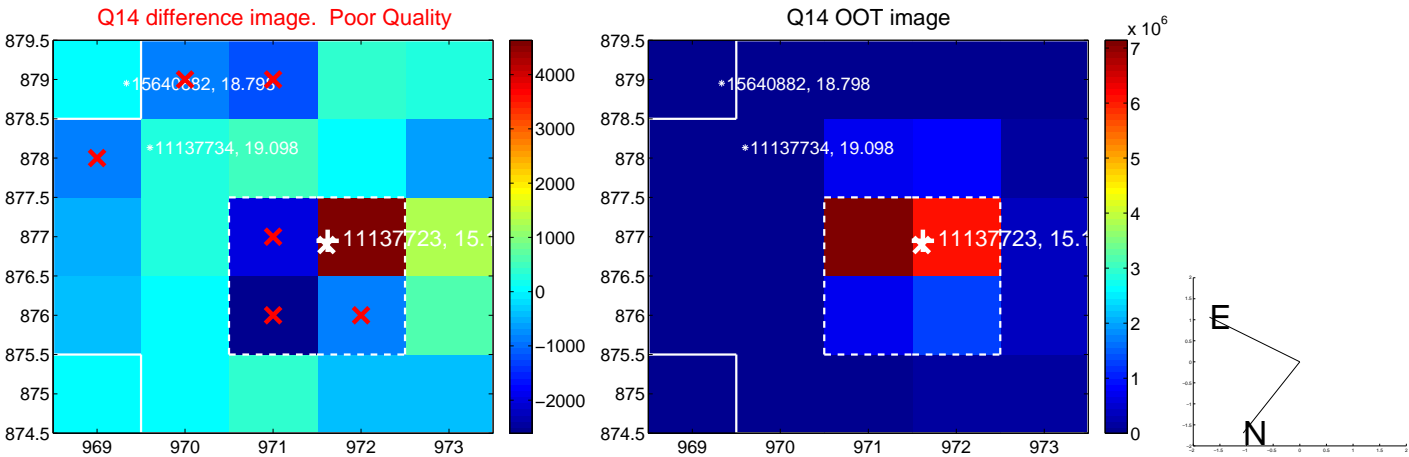
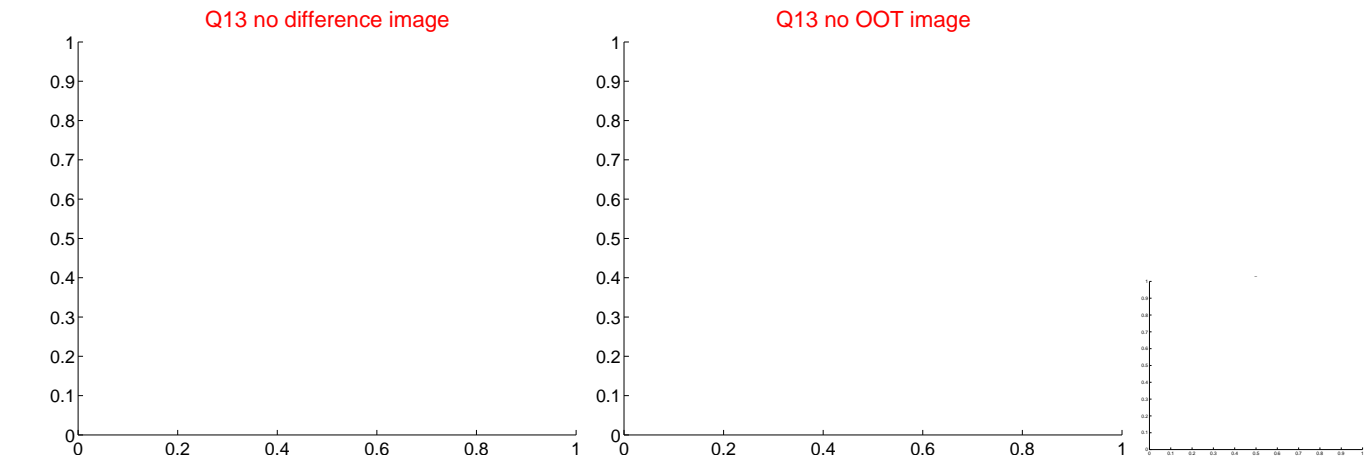




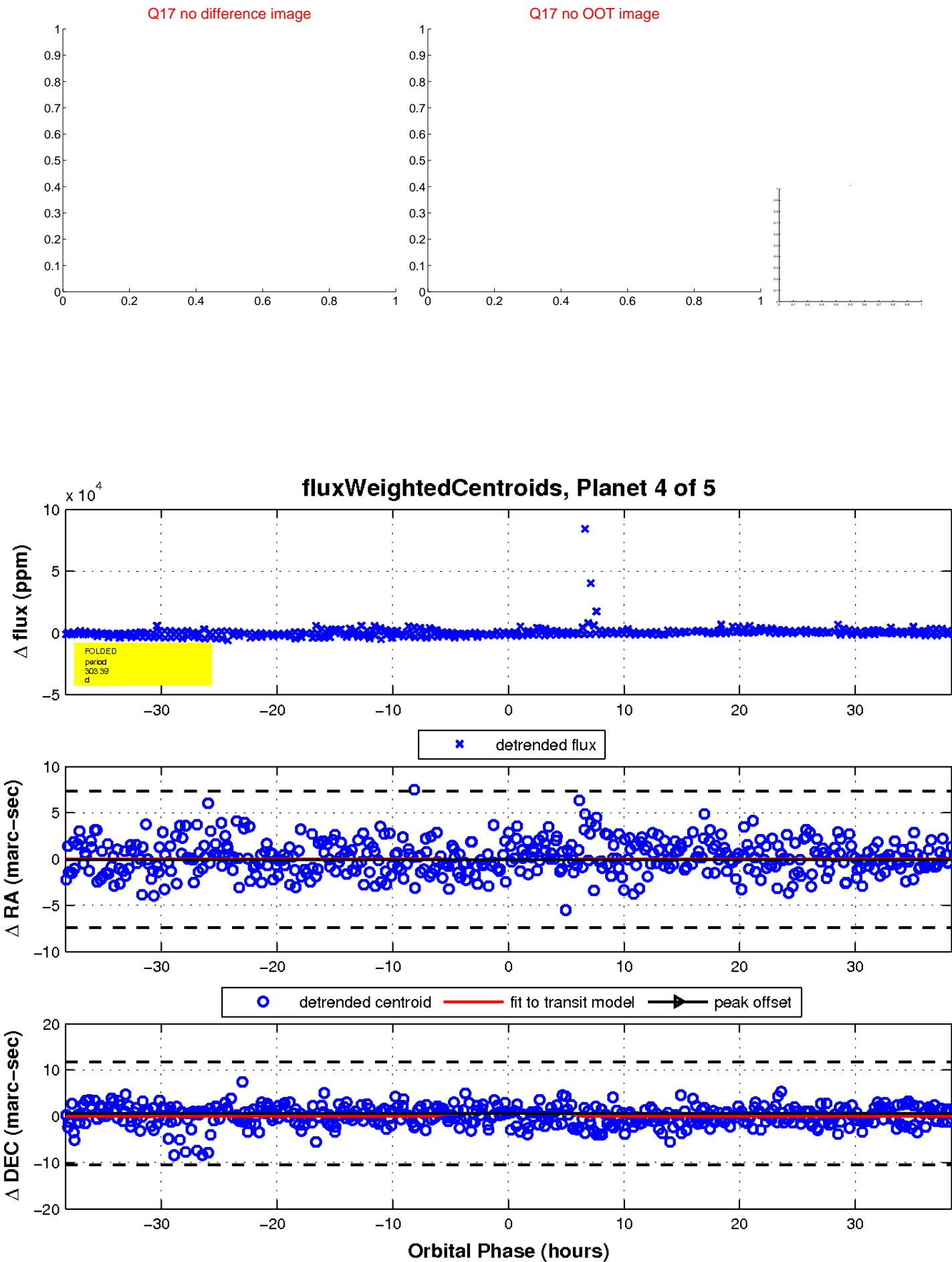
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

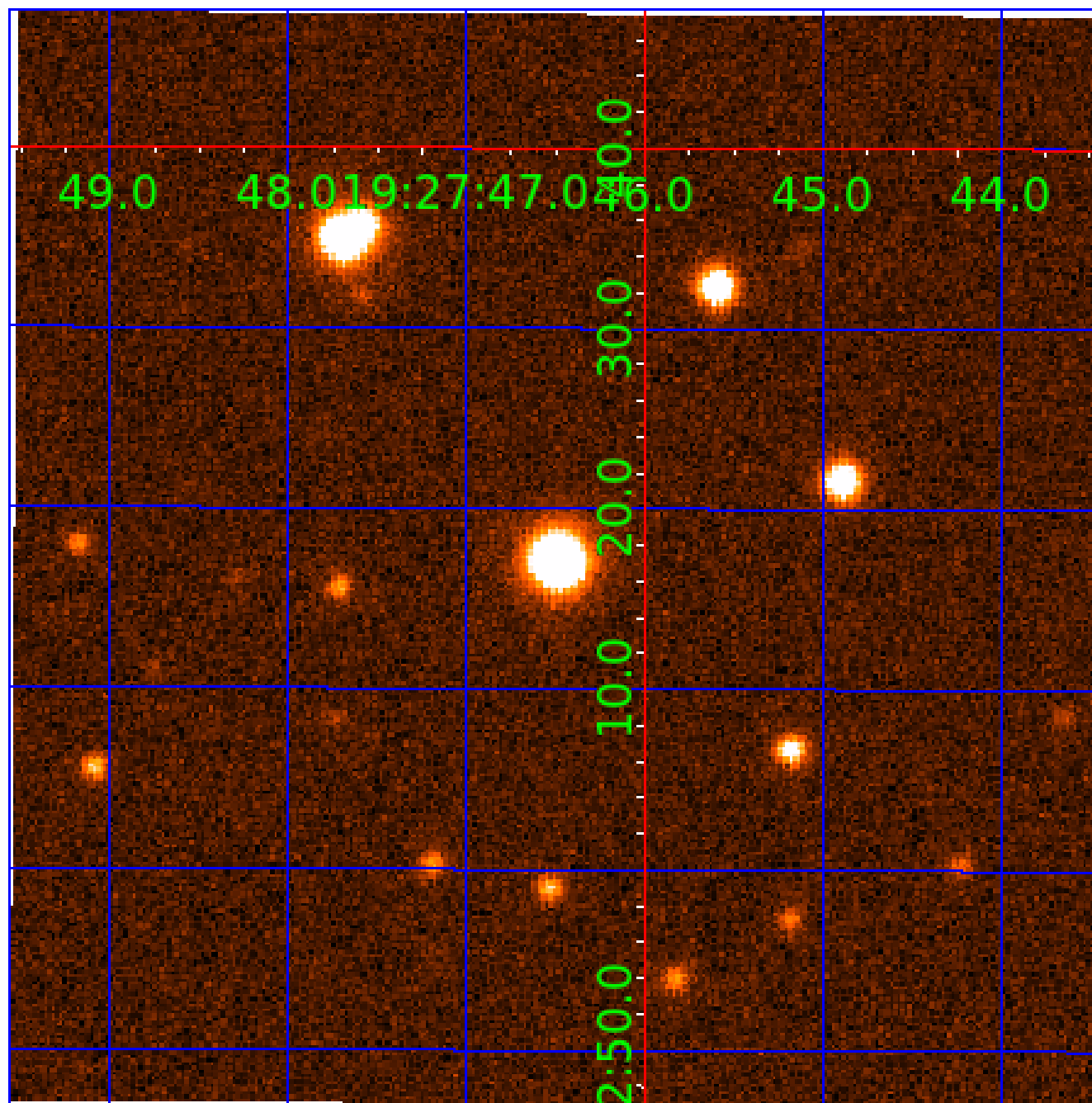


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011137723

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011137723-01	OBS	No	326.576428	155.057440	350.9	1.858	13.8	1.0	0.22	3274	0.44	0.02
011137723-02	OBS	No	374.280142	308.585110	2109.8	2.101	11.5	5.0	0.22	3274	2.04	0.01
011137723-03	OBS	No	367.502278	290.480542	3426.8	2.572	14.5	9.3	0.22	3274	1.31	0.01
011137723-04	OBS	No	303.387884	429.242015	2382.5	12.790	11.0	6.5	0.22	3274	1.09	0.02
011137723-05	OBS	No	404.145065	294.303180	3596.2	10.157	10.4	10.2	0.22	3274	1.32	0.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011137723-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011137723-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
011137723-04	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011137723-05	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV

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

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

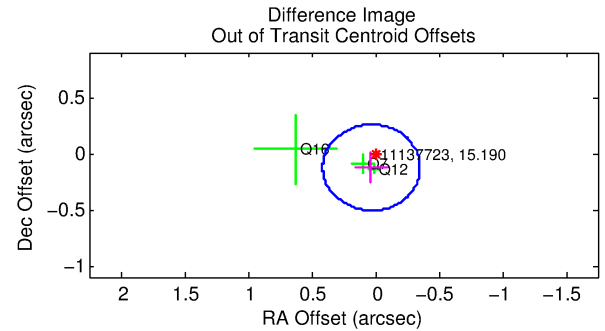
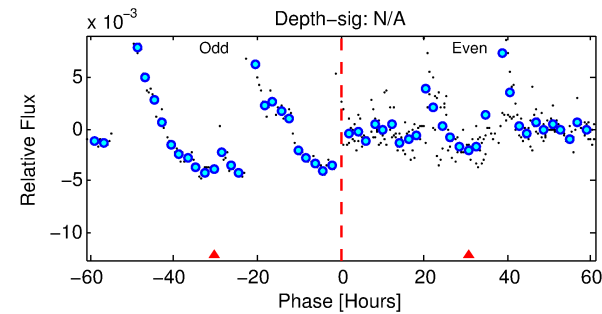
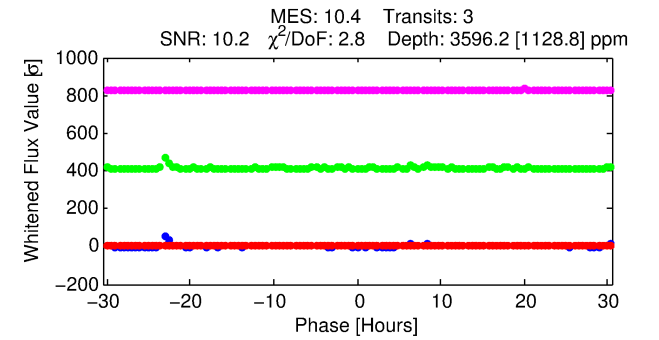
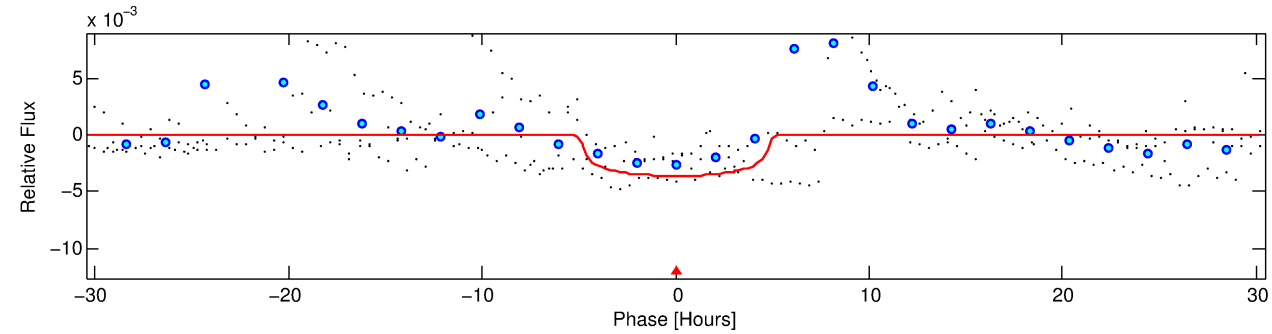
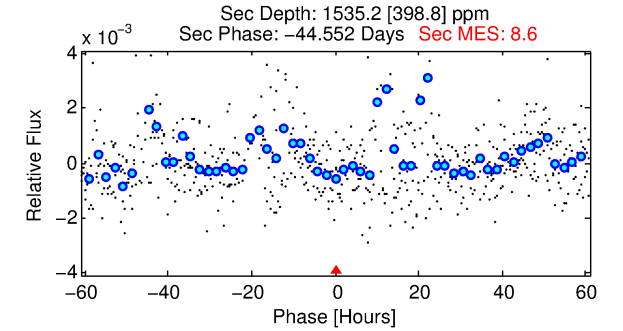
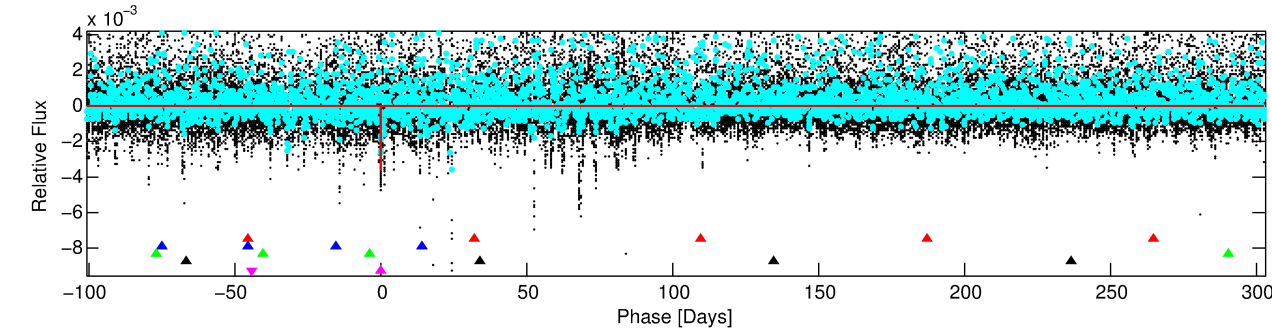
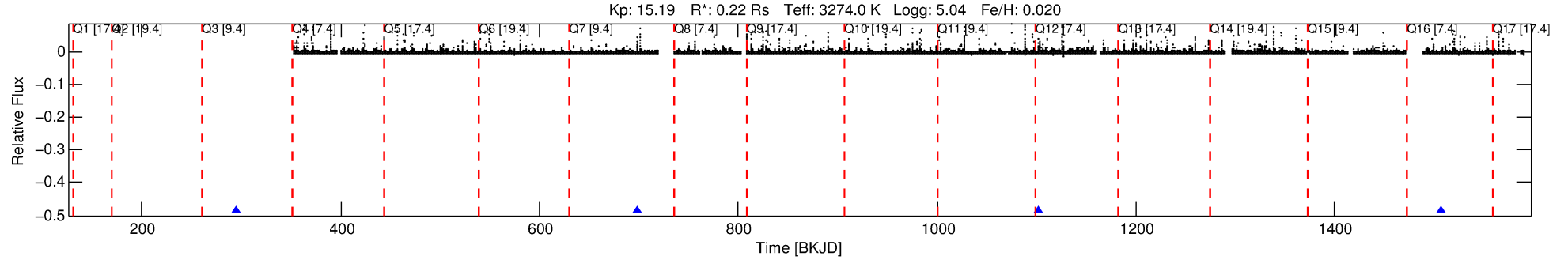
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011137723-05

No Significant Match Found

# DV One-Page Summary

KIC: 11137723 Candidate: 5 of 5 Period: 404.145 d



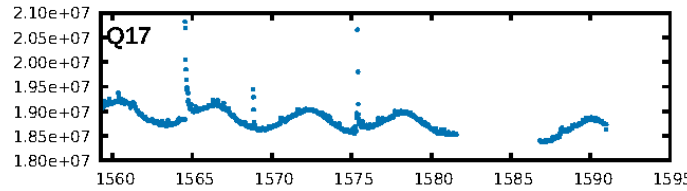
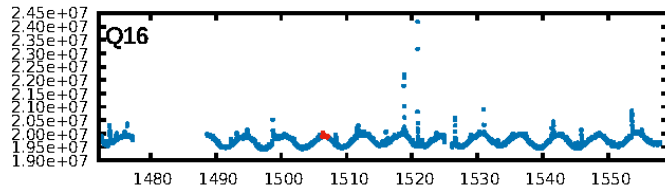
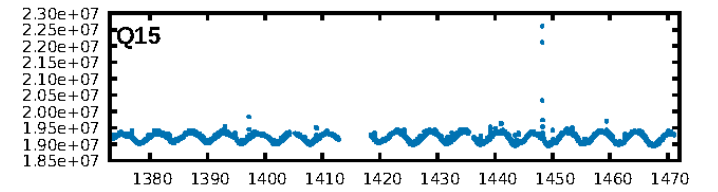
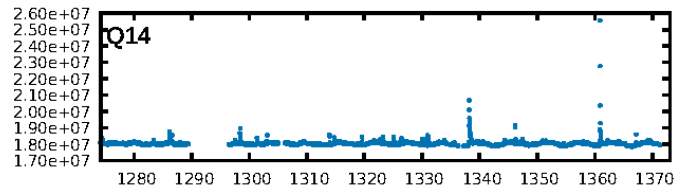
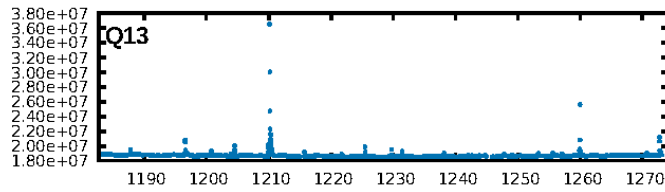
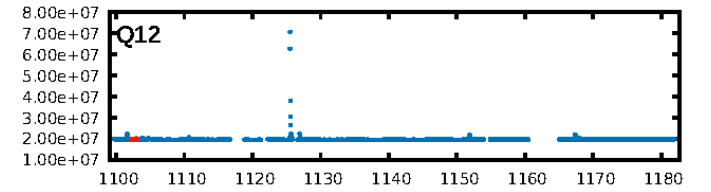
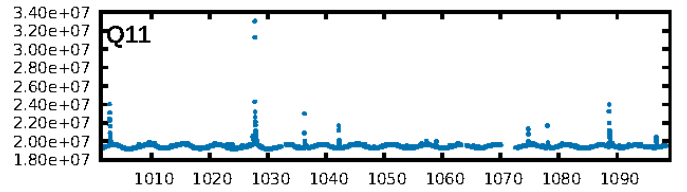
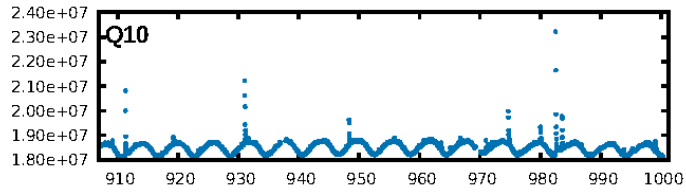
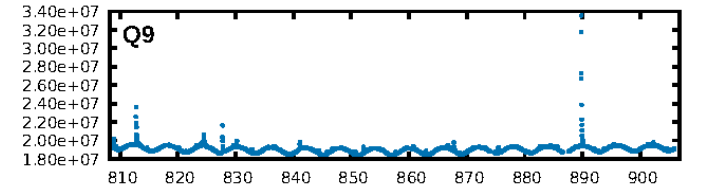
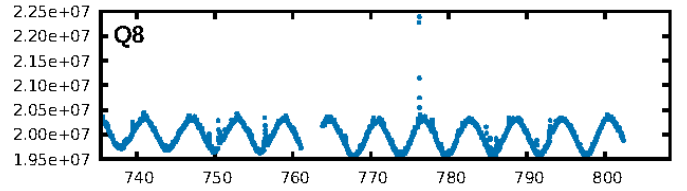
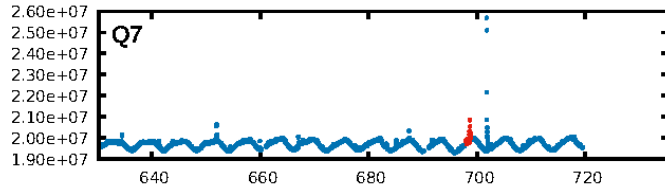
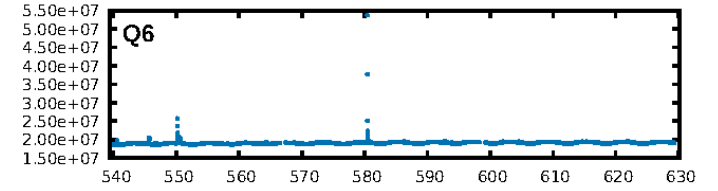
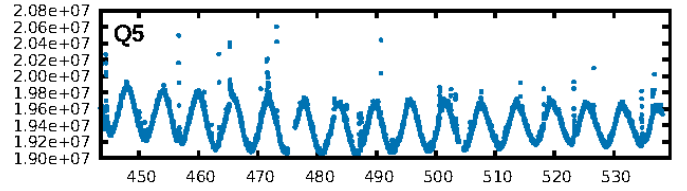
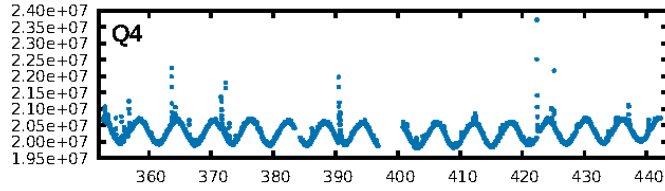
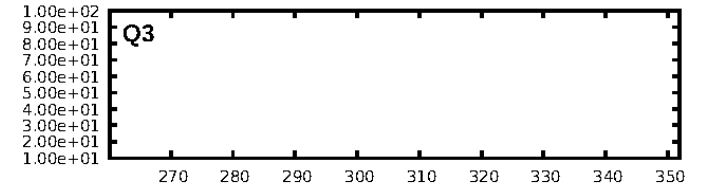
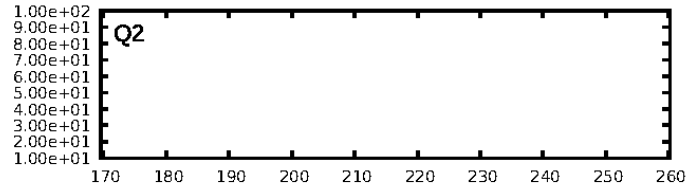
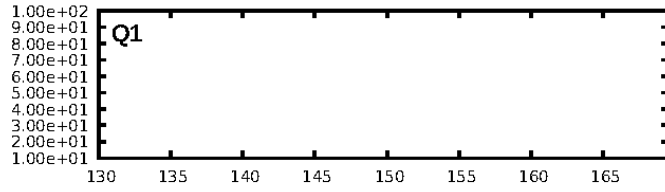
## DV Fit Results:

Period = 404.14506 [0.01522] d  
Epoch = 294.3032 [0.0349] BKJD  
Rp/R\* = 0.0542 [0.0293]  
a/R\* = 320.23 [678.40]  
b = 0.04 [54.78]  
Seff = 0.01 [0.00]  
Teff = 86 [3] K  
Rp = 1.32 [0.74] Re  
a = 0.6284 [0.0635] AU  
Ag = 190177.31 [212755.14] [0.89σ]  
Teffp = 2784 [775] K [3.48σ]

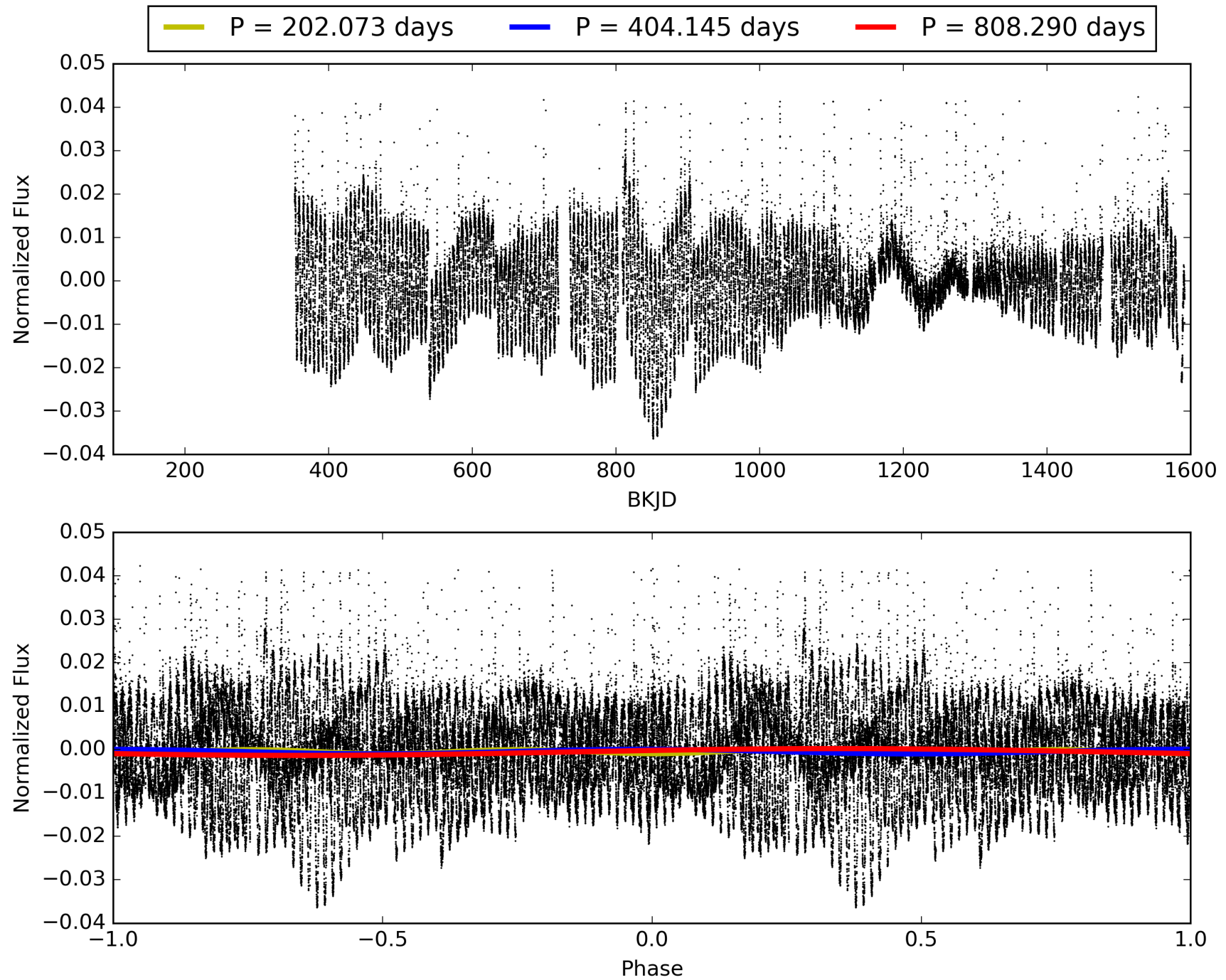
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.11σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 13.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 48.36  
Centroid-sig: 30.3%  
Centroid-so: 0.275 arcsec [1.00σ]  
OotOffset-rm: 0.129 arcsec [1.01σ]  
OotOffset-st: 0.1/2/0 [3]  
KicOffset-rm: 0.095 arcsec [0.59σ]  
KicOffset-st: 0.1/2/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 011137723-05, PDC Light Curves



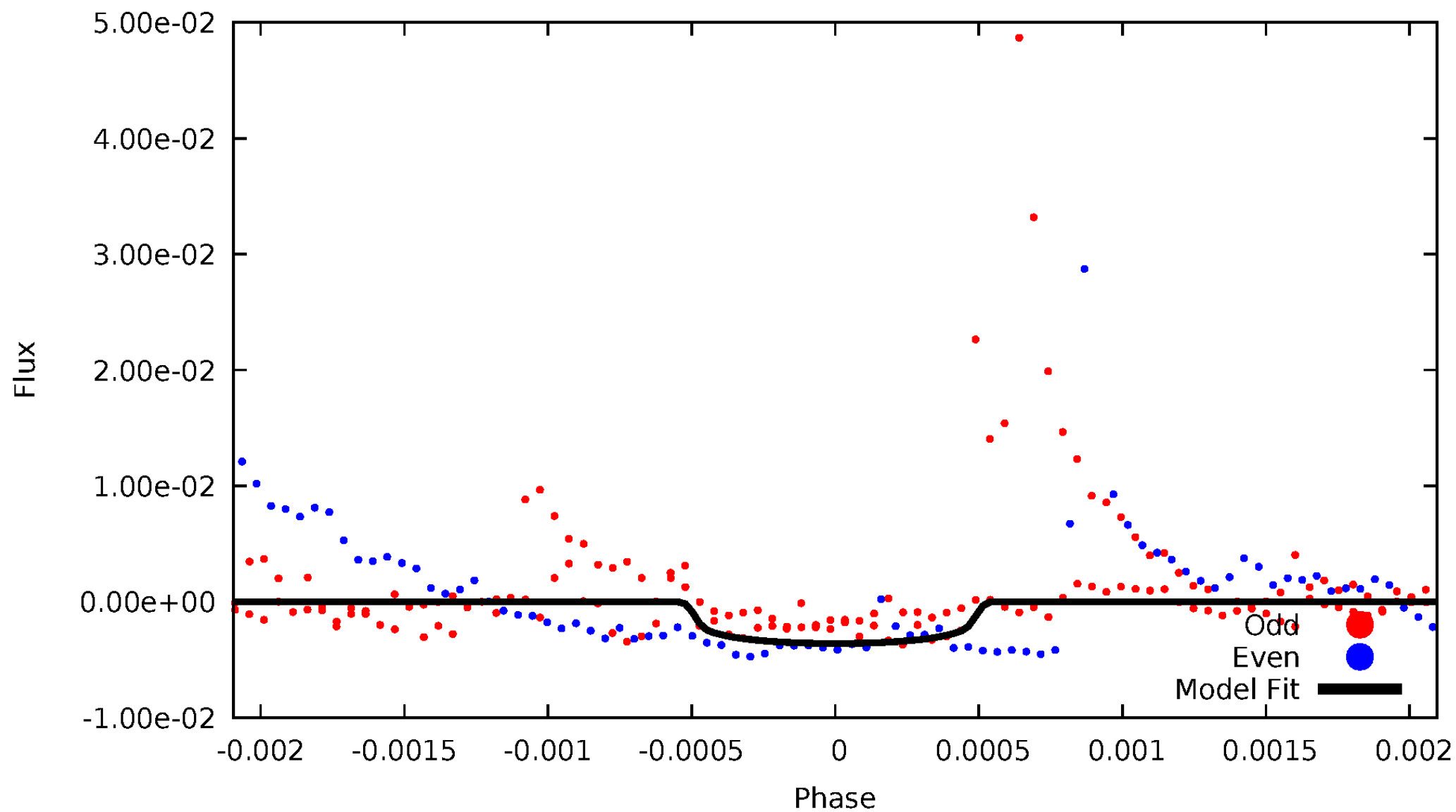
# TCE 011137723-05





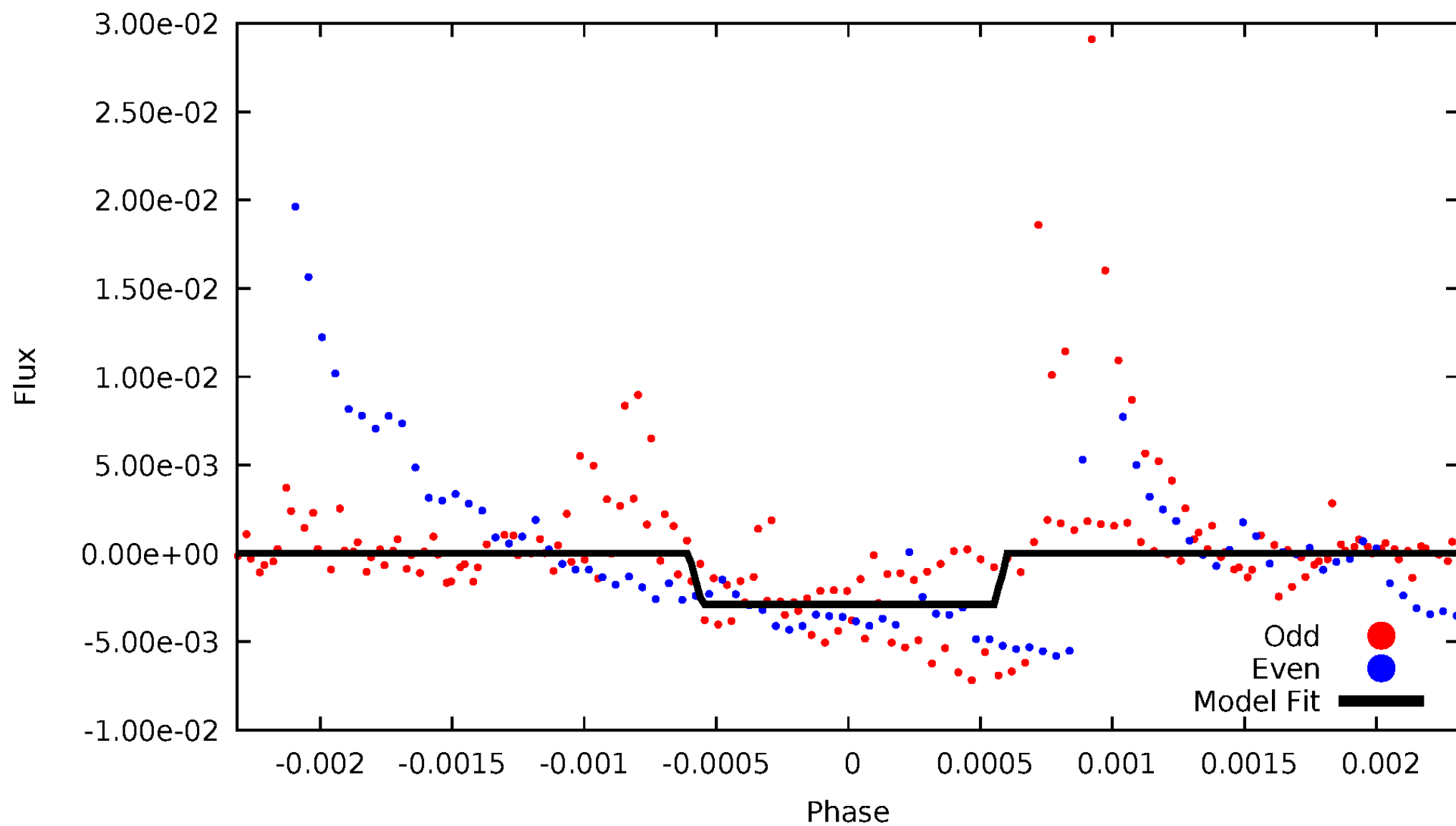
# DV Odd/Even

TCE 011137723-05



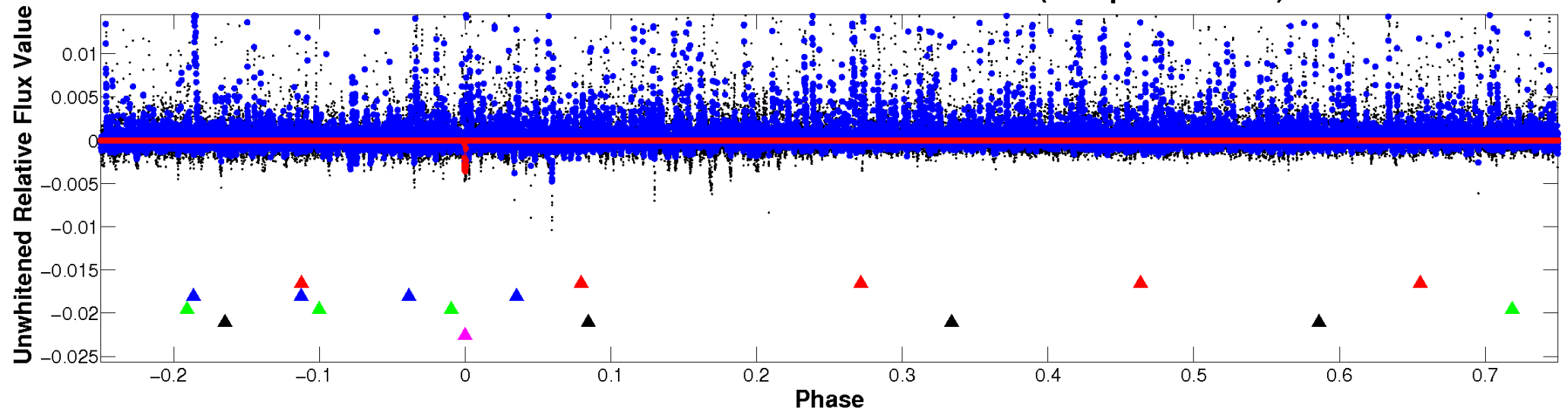
# ALT Odd/Even

TCE 011137723-05

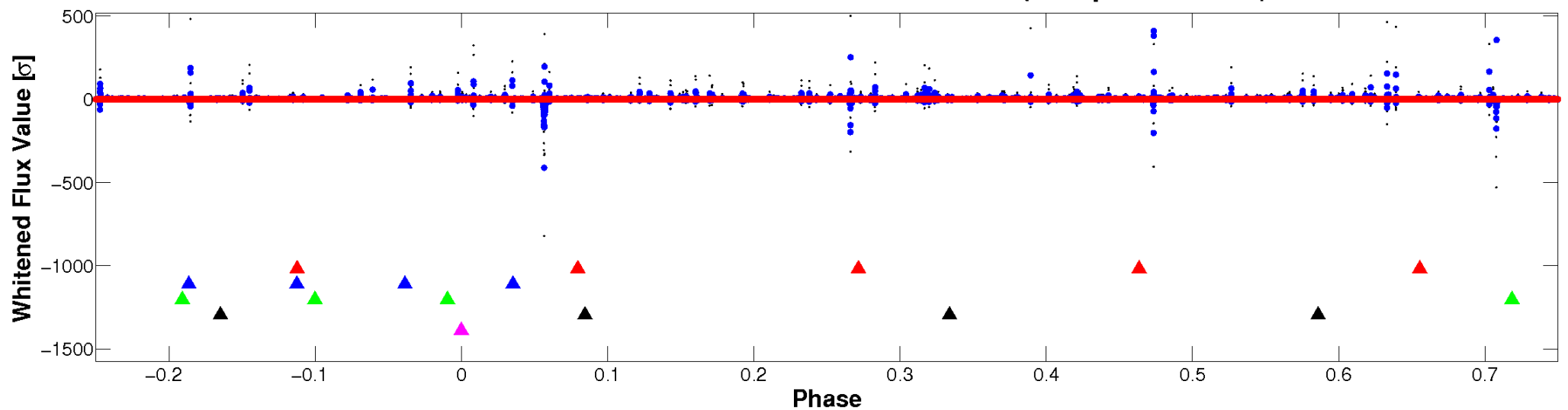


# Non-Whitened Vs. Whitened Light Curve

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

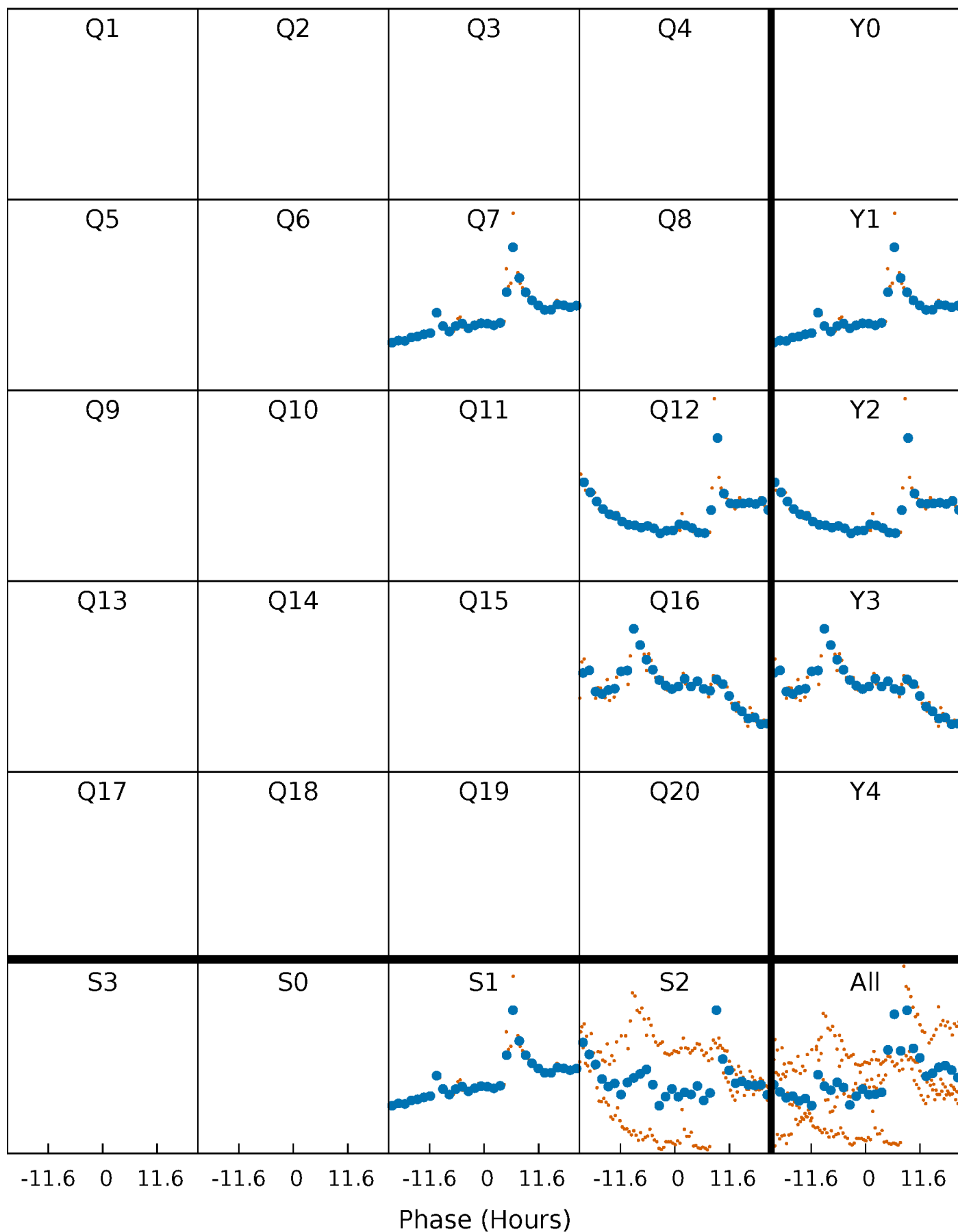


**Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



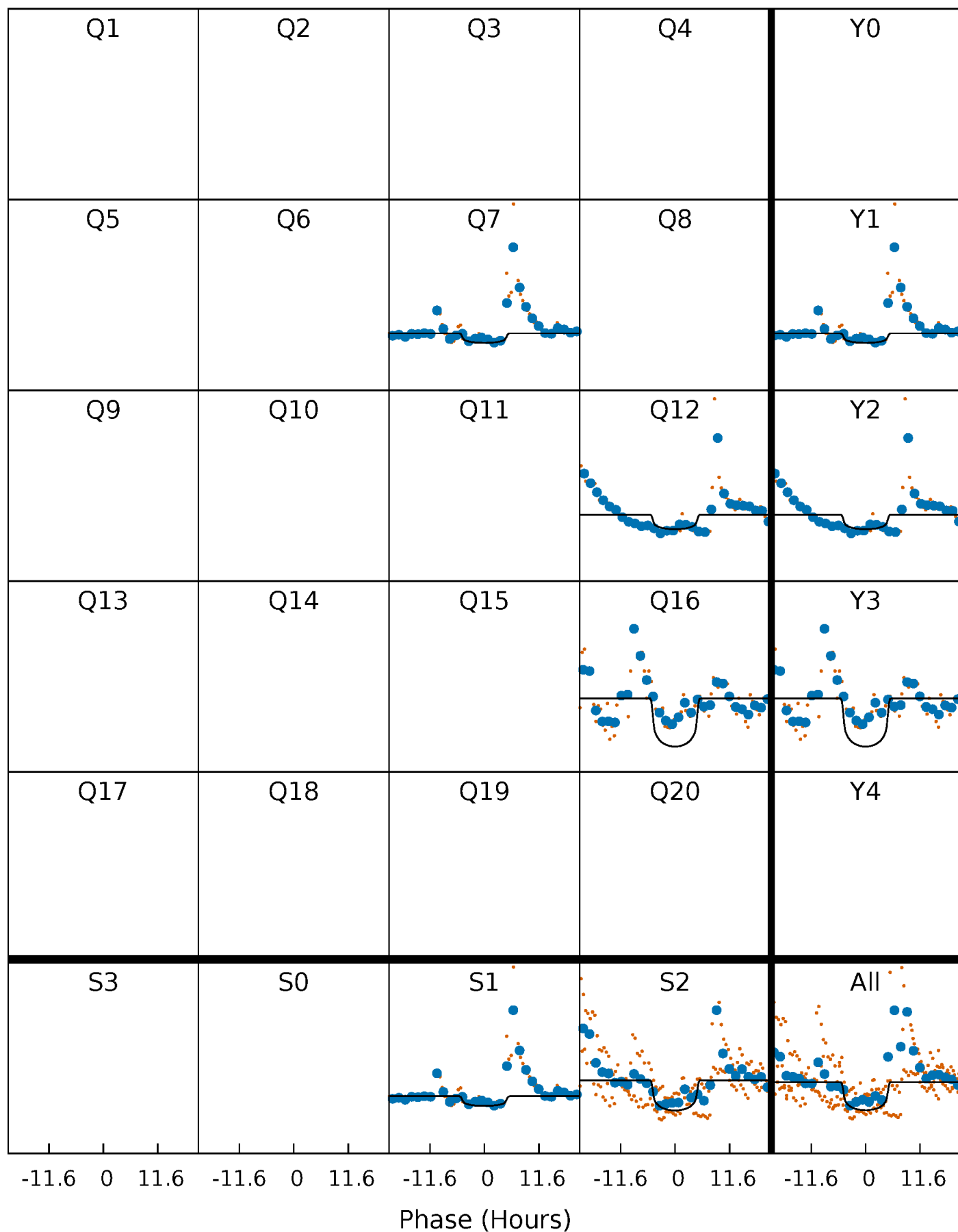
# PDC Quarter-Phased Transit Curves

TCE 011137723-05     $P=404.145065$  Days     $T_0=294.303179$  (BKJD)



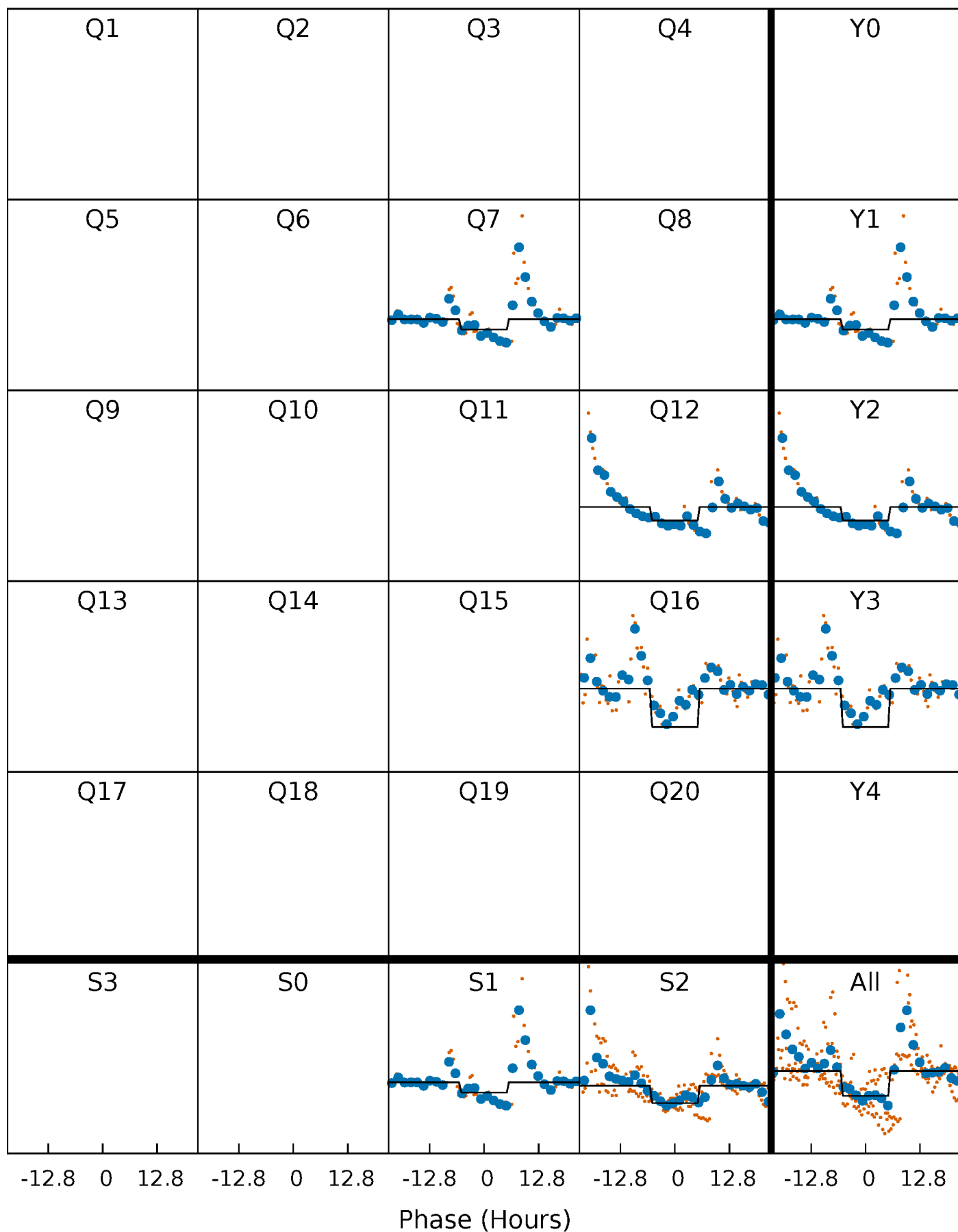
# DV Quarter-Phased Transit Curves

TCE 011137723-05     $P=404.145065$  Days     $T_0=294.303179$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

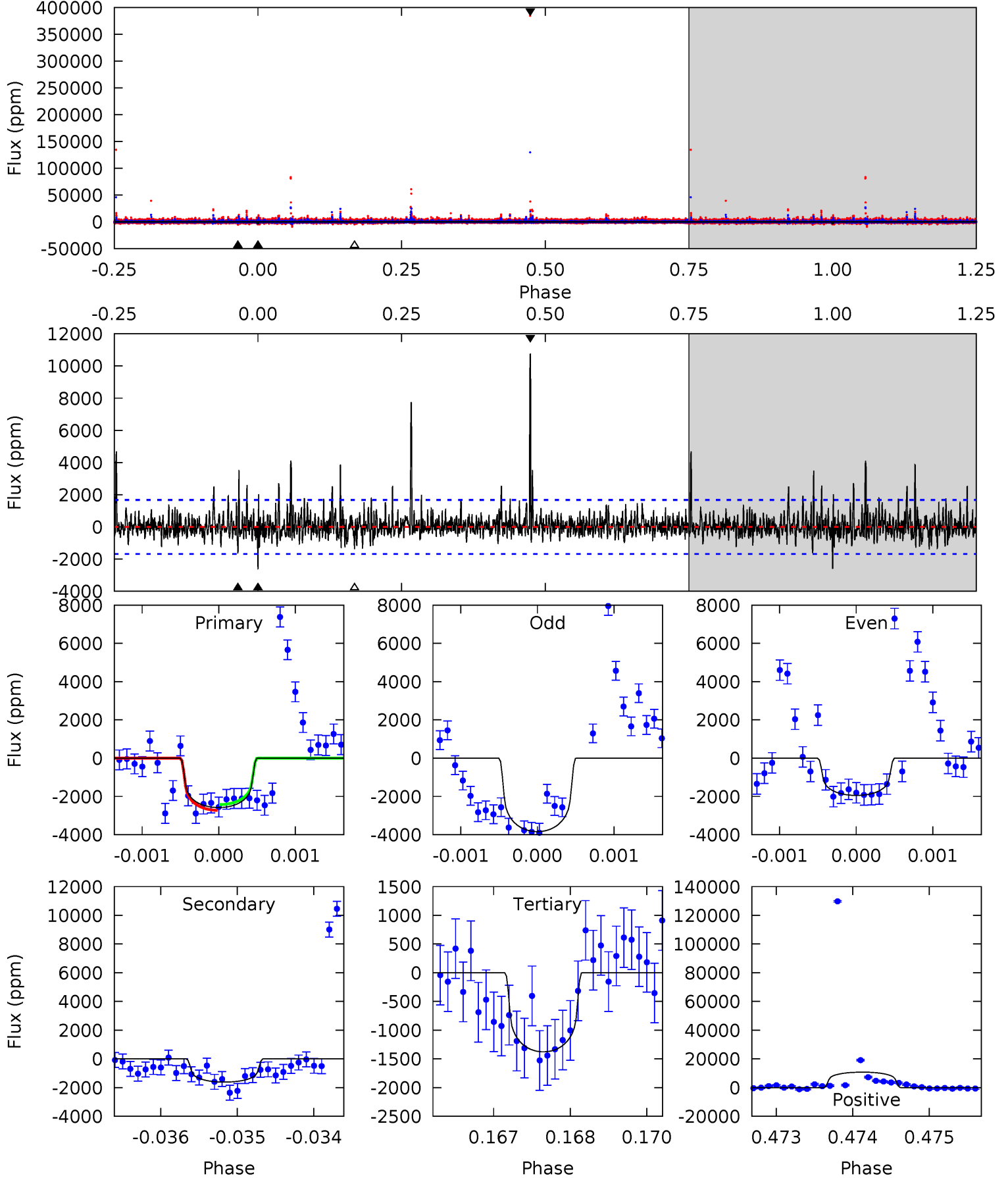
TCE 011137723-05     $P=404.209873$  Days     $T_0=294.144790$  (BKJD)



# DV Model-Shift Uniqueness Test

011137723-05, P = 404.145065 Days, E = 294.303179 Days

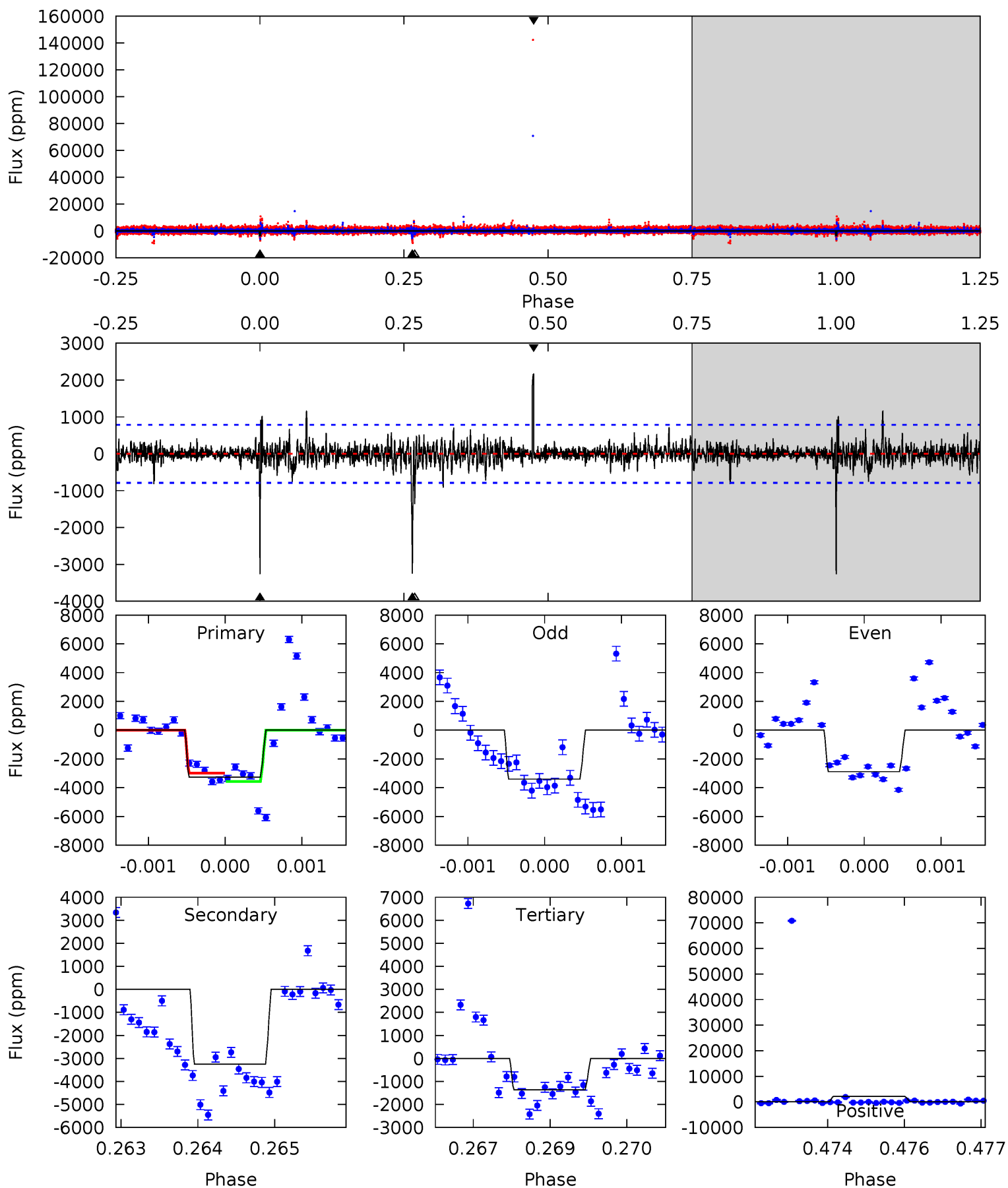
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.37	5.24	4.47	34.9	5.44	3.27	2.15	3.90	-26.5	0.78	-29.6	0.49	1.17	0.81	0.49



# Alt Model-Shift Uniqueness Test

011137723-05, P = 404.209873 Days, E = 294.144790 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
22.5	22.4	9.38	15.0	5.42	3.25	1.33	13.1	7.48	13.0	7.35	1.47	0.88	0.40	2.04





### Stellar Parameters For KIC 011137723

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3274^{+42}_{-32}$	$5.044^{+0.044}_{-0.044}$	$0.020^{+0.100}_{-0.100}$	$0.224^{+0.032}_{-0.026}$	$0.202^{+0.042}_{-0.026}$	$25.440^{+6.603}_{-5.245}$
	+1%/-1%	+1%/-1%	+500%/-500%	+14%/-12%	+21%/-13%	+26%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 011137723-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1617 \pm 308$	$1.34^{+0.71}_{-0.70}$	$121^{+3}_{-3}$	$2997^{+750}_{-335}$	$198112^{+656094}_{-117229}$
Alt.	$-3245 \pm 145$	$1.39^{+0.76}_{-0.67}$	$121^{+3}_{-3}$	$3294^{+764}_{-391}$	$368147^{+957574}_{-212646}$

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

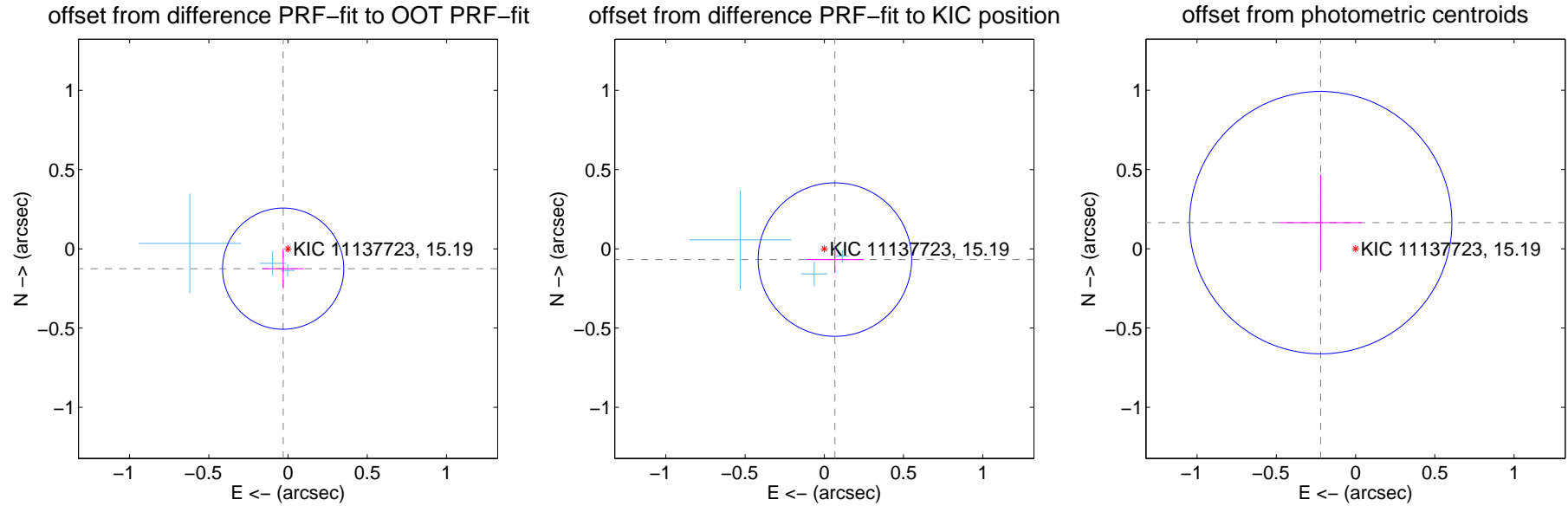
## DV Centroid Data

Supplemental centroid analysis for 011137723-05. Kepler magnitude: 15.19. Transit SNR 10.16

There are 3 quarters with good PRF difference image offsets

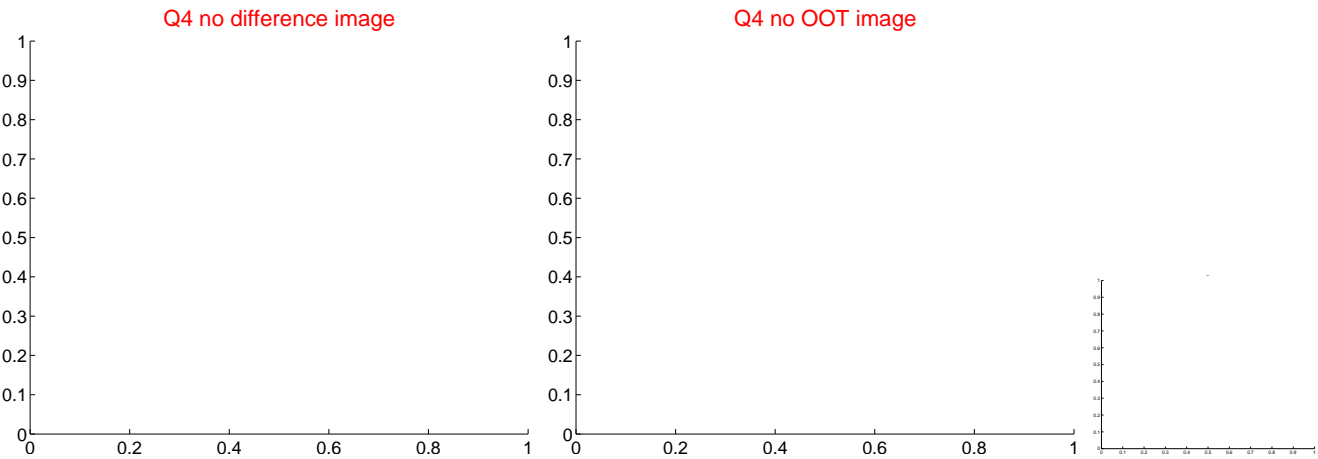
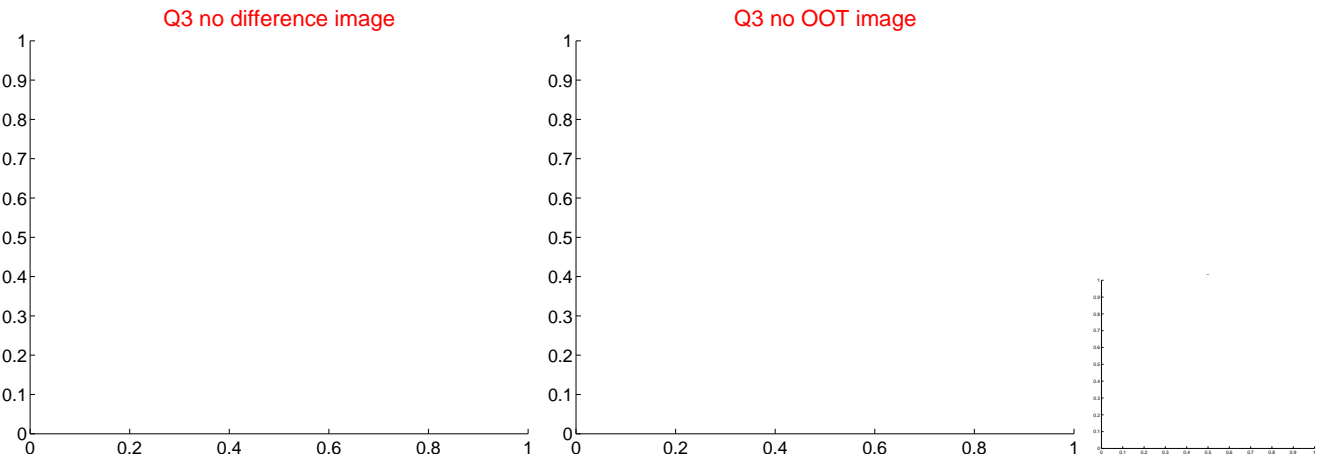
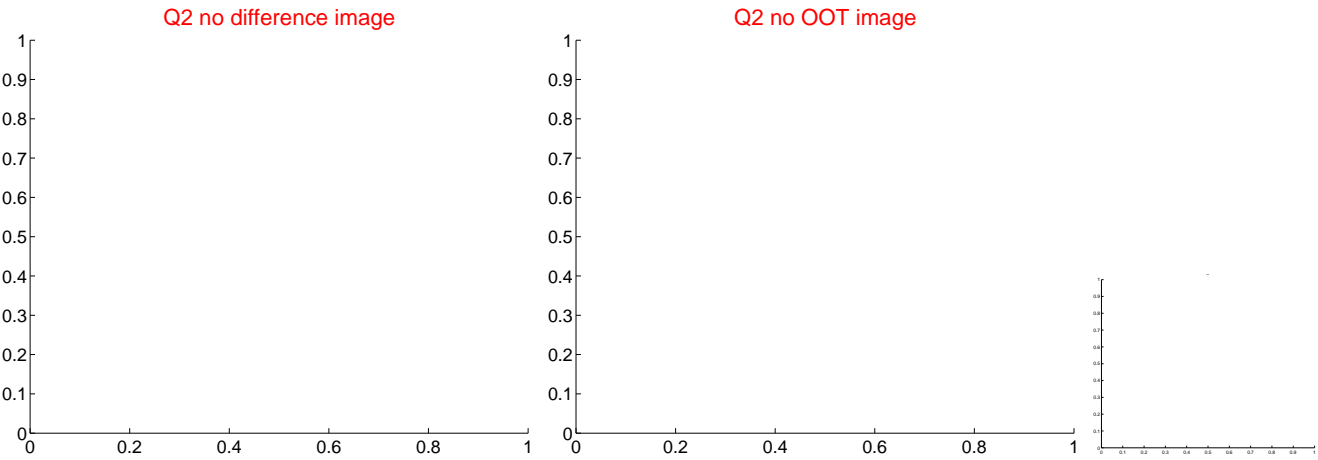
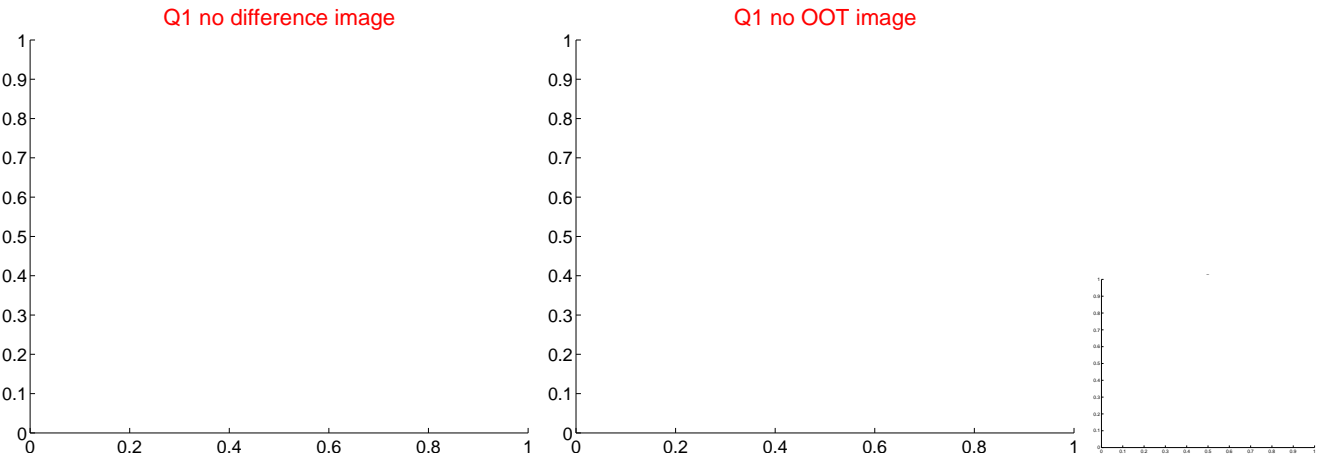
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.129 \pm 0.127$	1.01	$0.031 \pm 0.130$	$-0.125 \pm 0.127$
PRF-fit source offset from KIC position	$0.095 \pm 0.161$	0.59	$-0.067 \pm 0.184$	$-0.068 \pm 0.083$
photometric centroid source offset	$0.27 \pm 0.28$	1.00	$0.22 \pm 0.26$	$0.16 \pm 0.30$

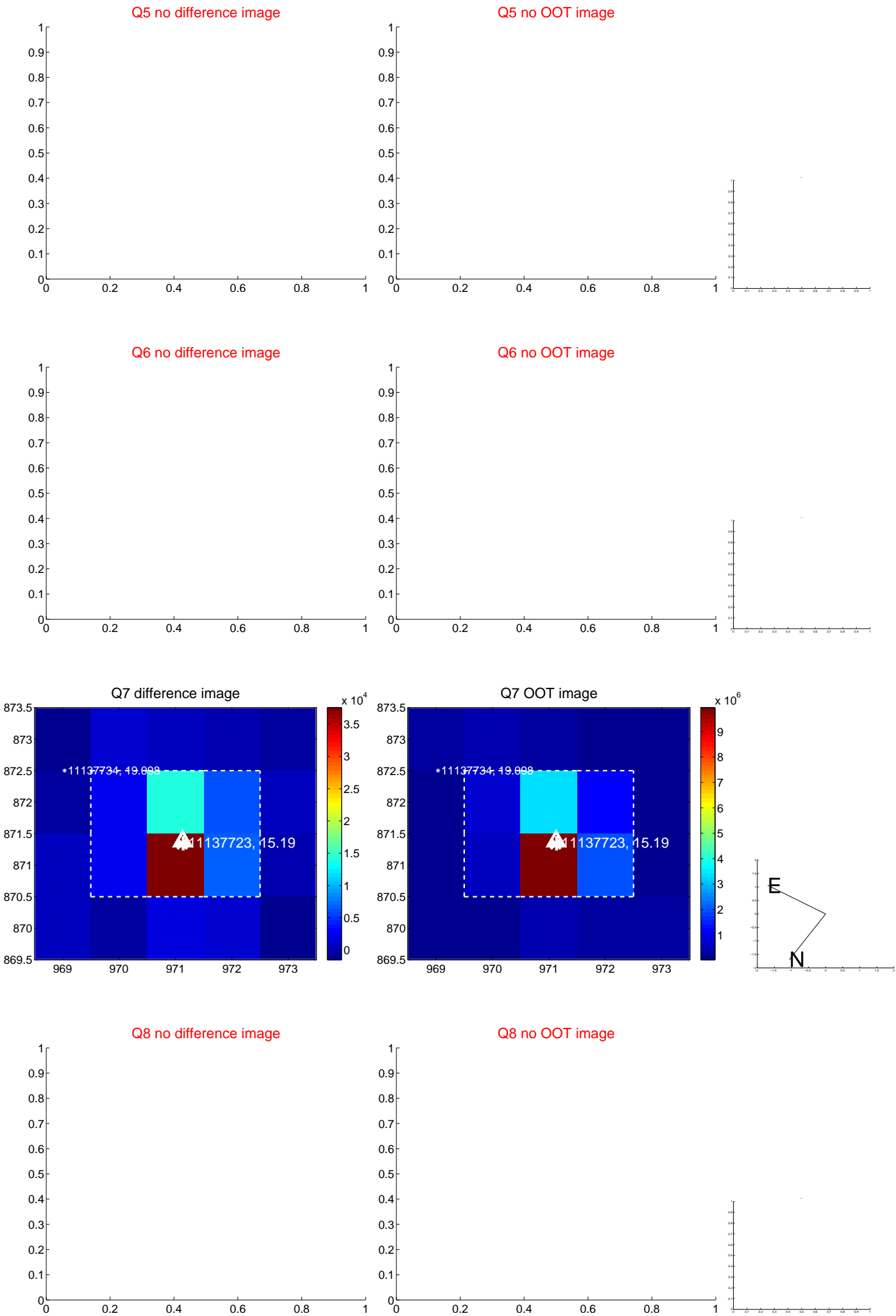


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

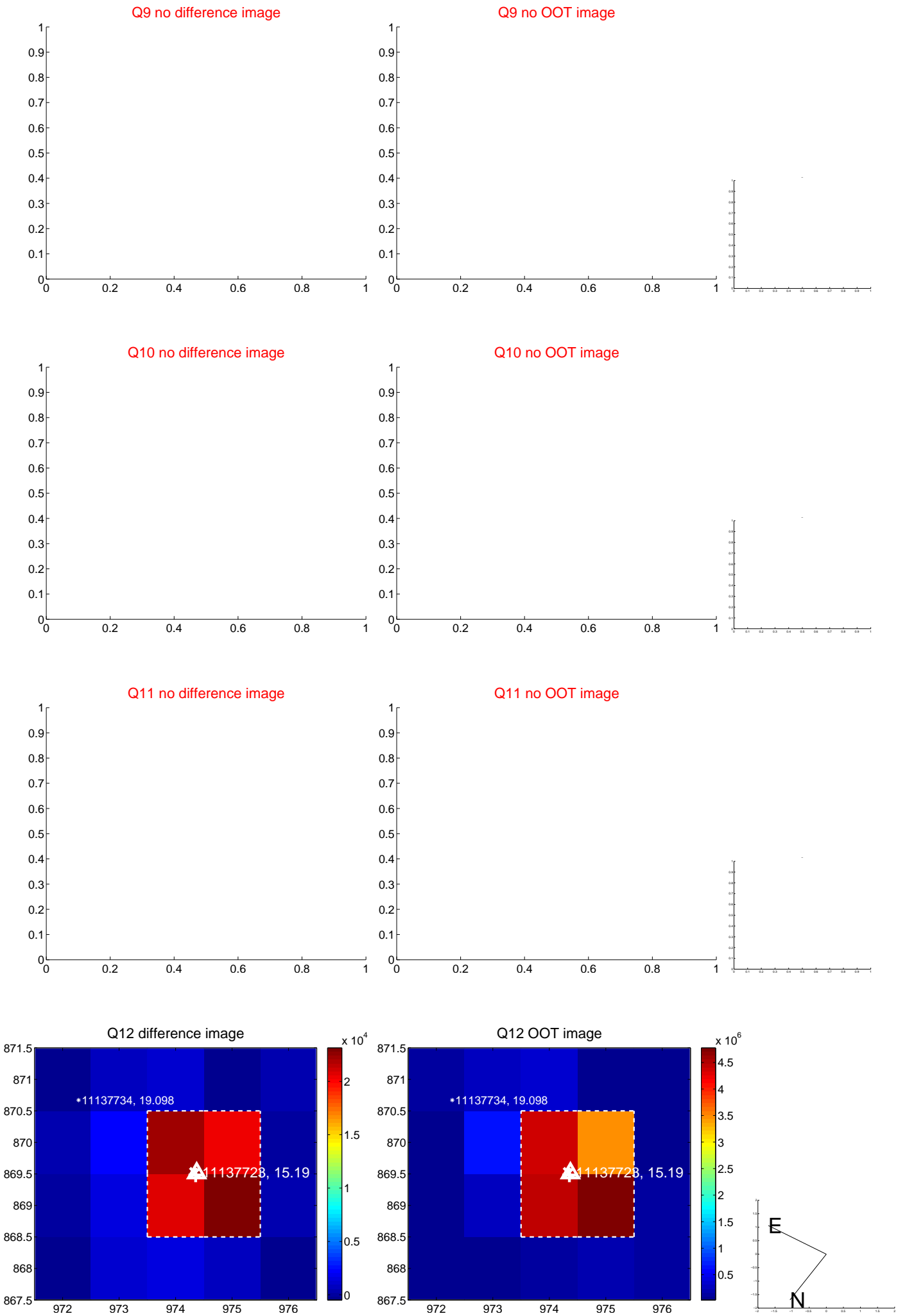
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



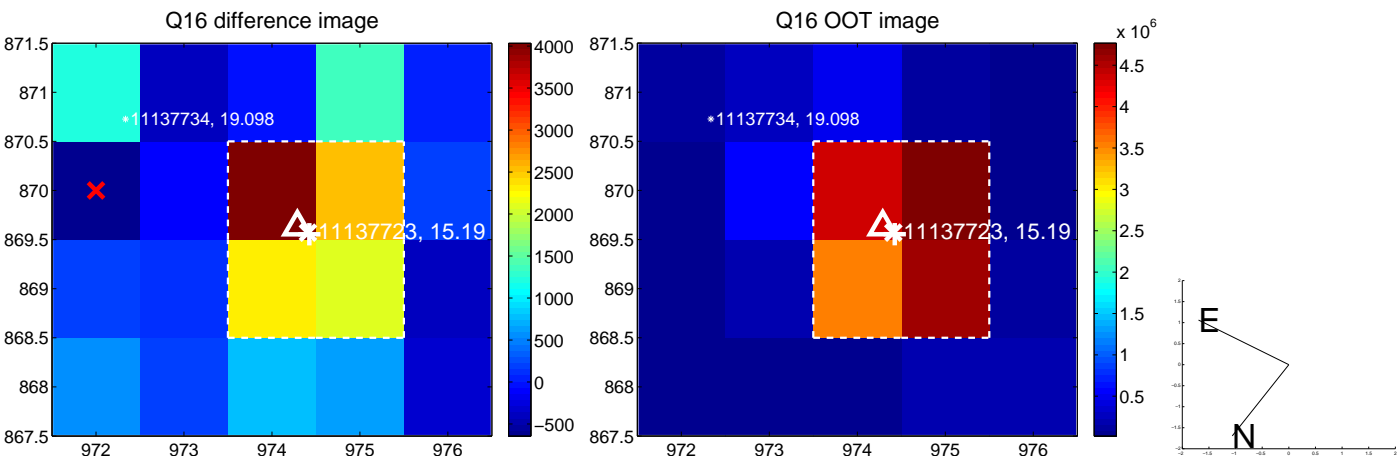
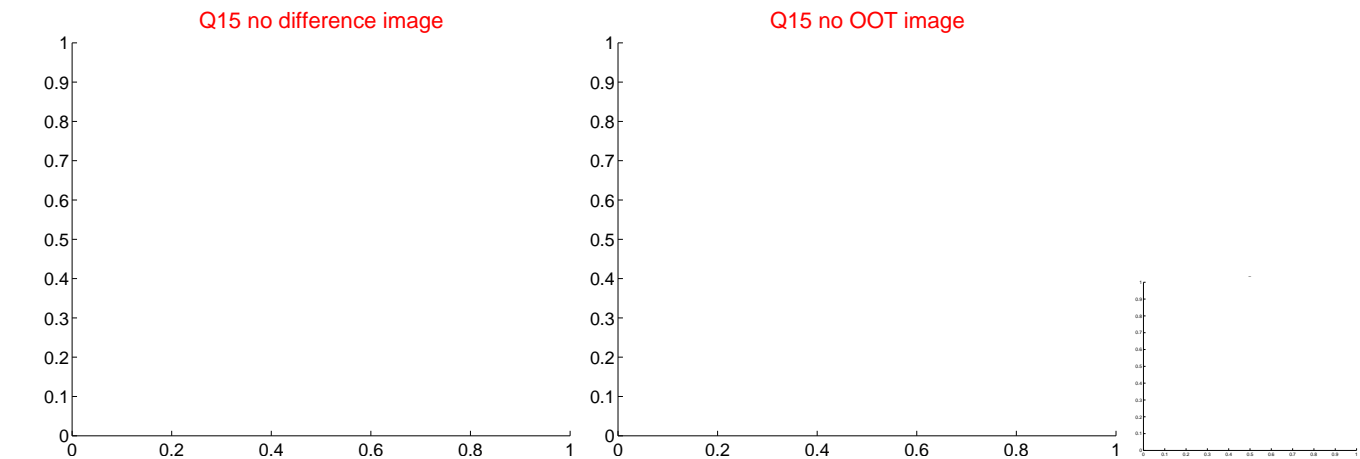
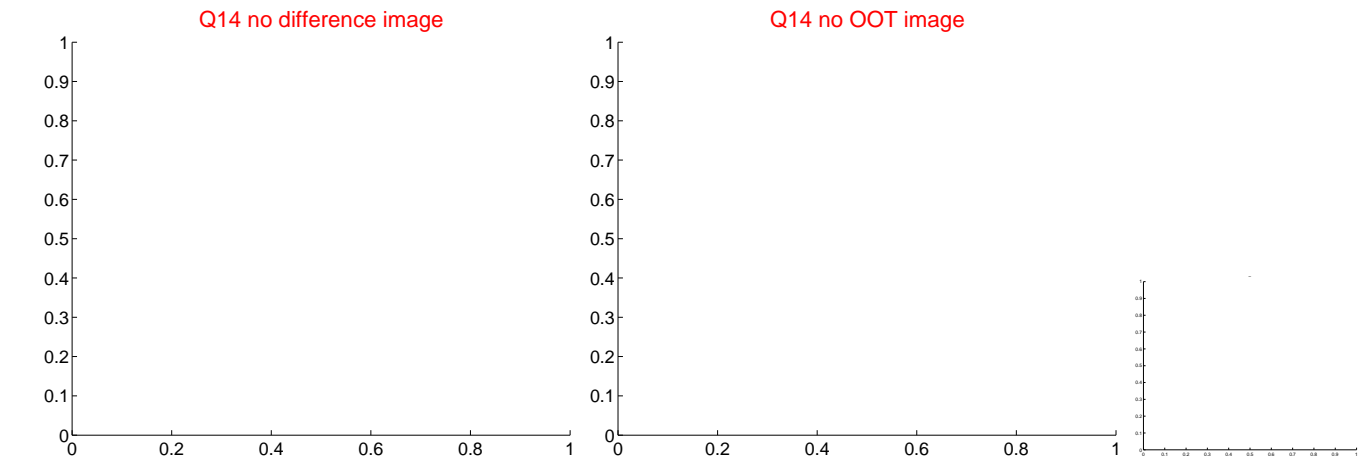
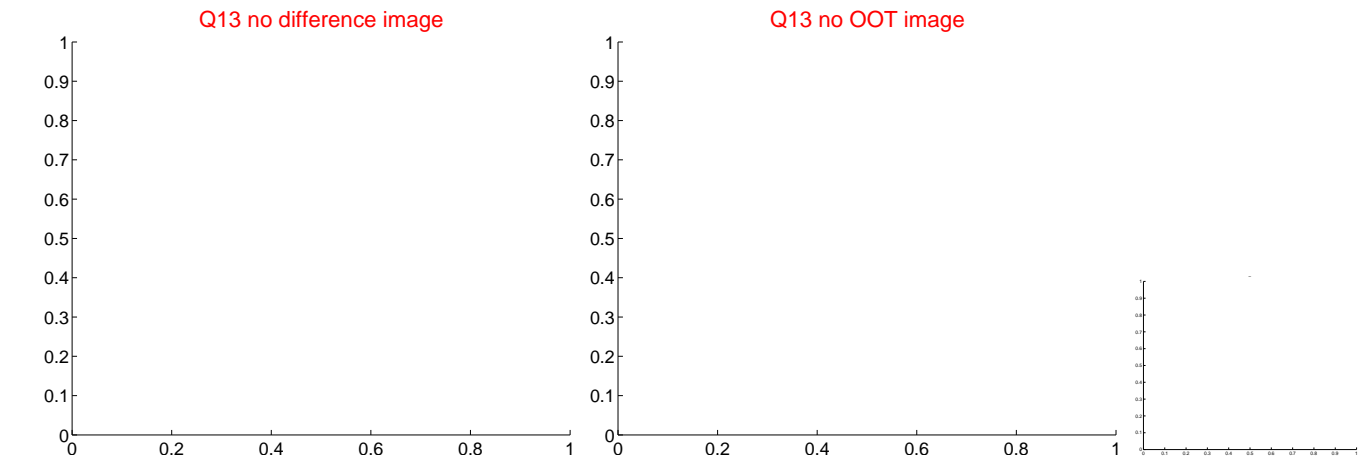
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



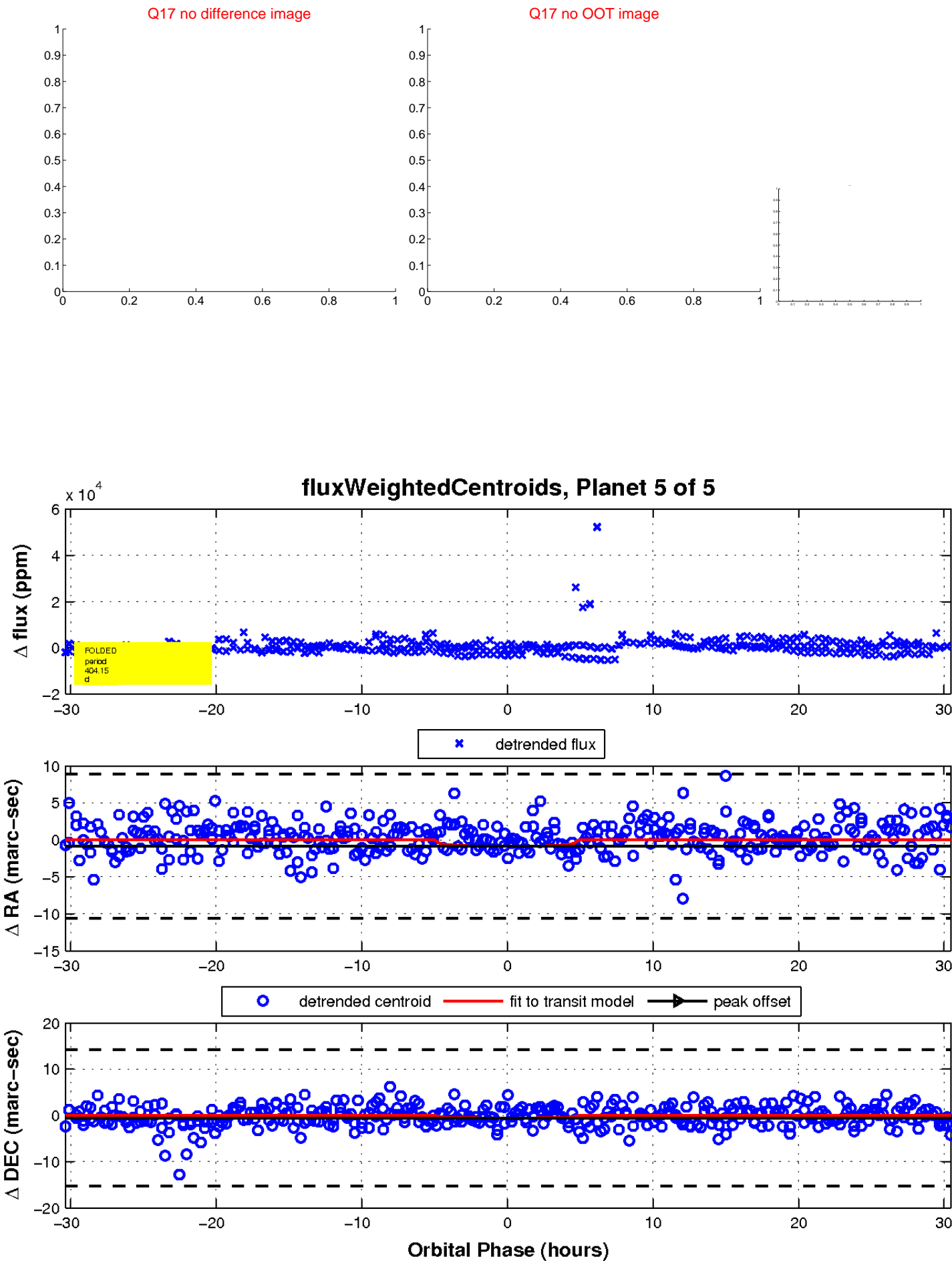
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

