

# KIC 011233743

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011233743-01	OBS	No	1.410992	131.840538	0.0	7.314	9.2	0.0	1.82	7228	0.00	10548.02
011233743-02	OBS	No	243.255890	142.290777	231.4	7.120	7.5	7.5	1.82	7228	3.11	10.99
011233743-03	OBS	No	237.388938	368.366230	237.8	9.262	7.7	7.1	1.82	7228	3.07	11.36
011233743-04	OBS	No	314.784858	135.183304	199.2	6.438	7.4	6.5	1.82	7228	2.75	7.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011233743-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011233743-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011233743-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011233743-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

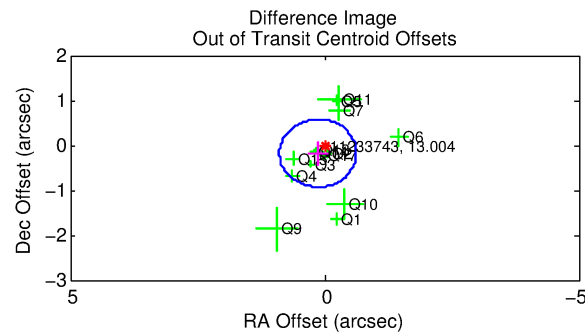
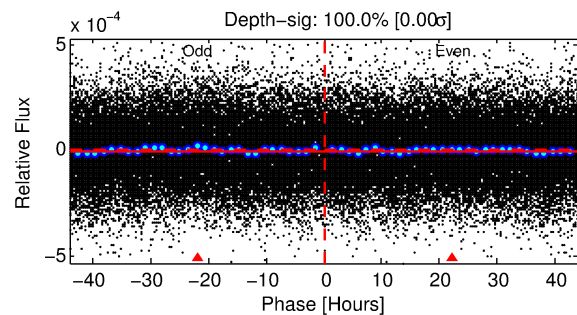
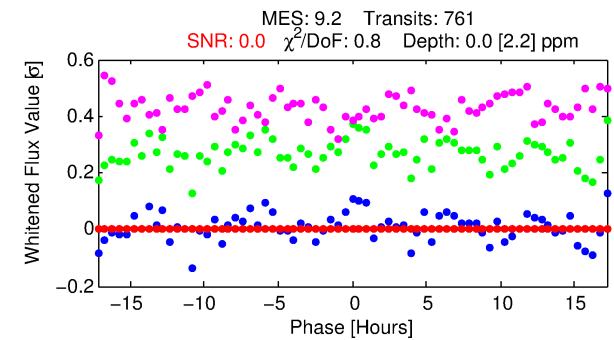
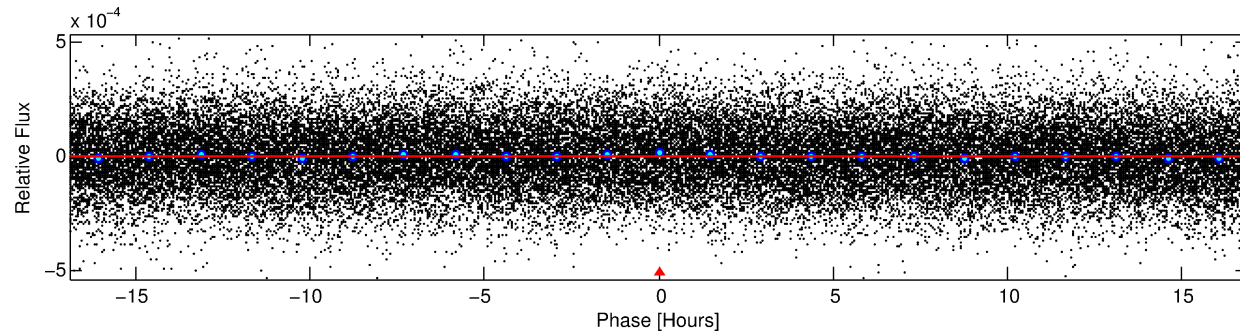
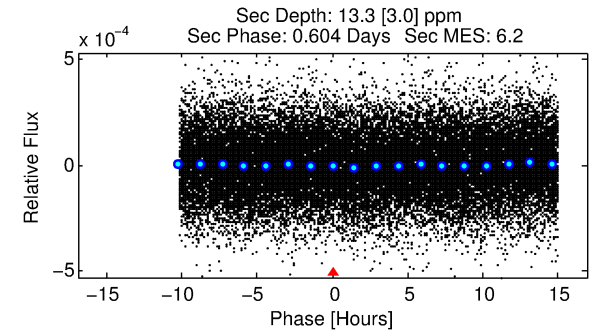
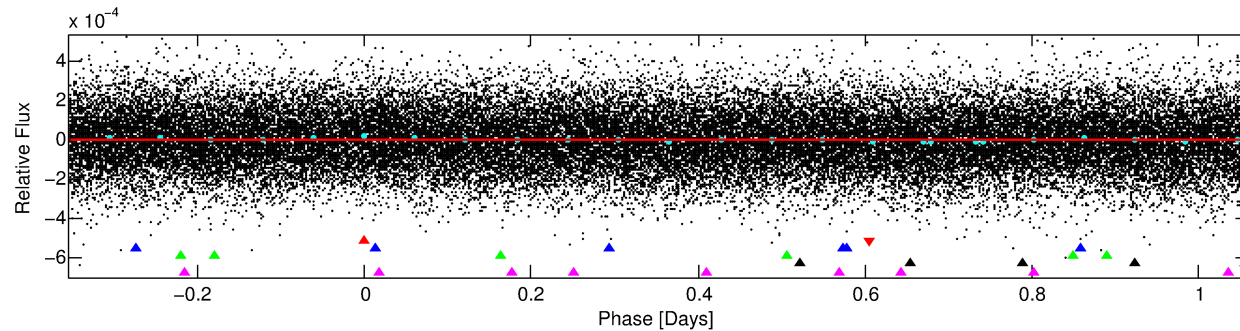
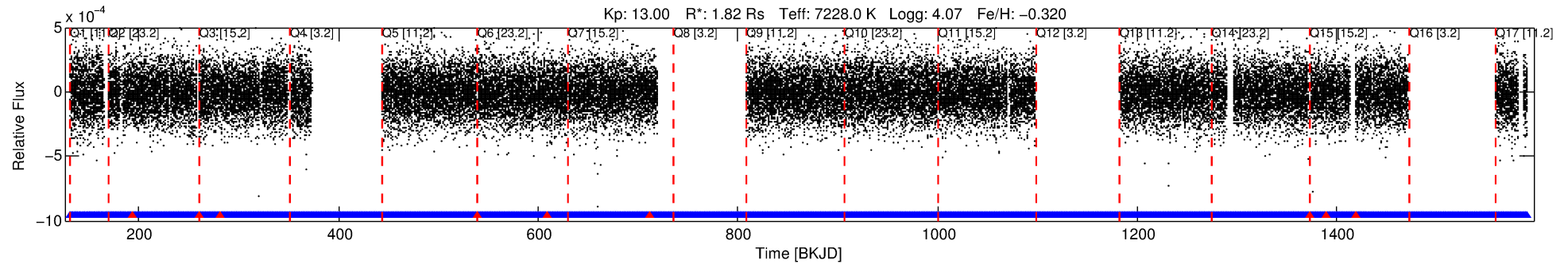
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011233743-01

No Significant Match Found

# DV One-Page Summary

KIC: 11233743 Candidate: 1 of 5 Period: 1.411 d



## DV Fit Results:

Period = 1.41099 [255.04800] d  
Epoch = 131.8405 [67871.9405] BKJD  
Rp/R\* = 0.0000 [0.8548]  
a/R\* = 1.48 [940657.41]  
b = 0.48 [274491.57]  
Seff = 10548.02 [2542188.50]  
Teq = 2584 [155703] K  
Rp = 0.00 [169.50] Re  
a = 0.0277 [3.3339] AU  
Ag = 108047582.43 [160656944212354.65] [0.00σ]  
Teffp = 407346 [151428963704] K [0.00σ]

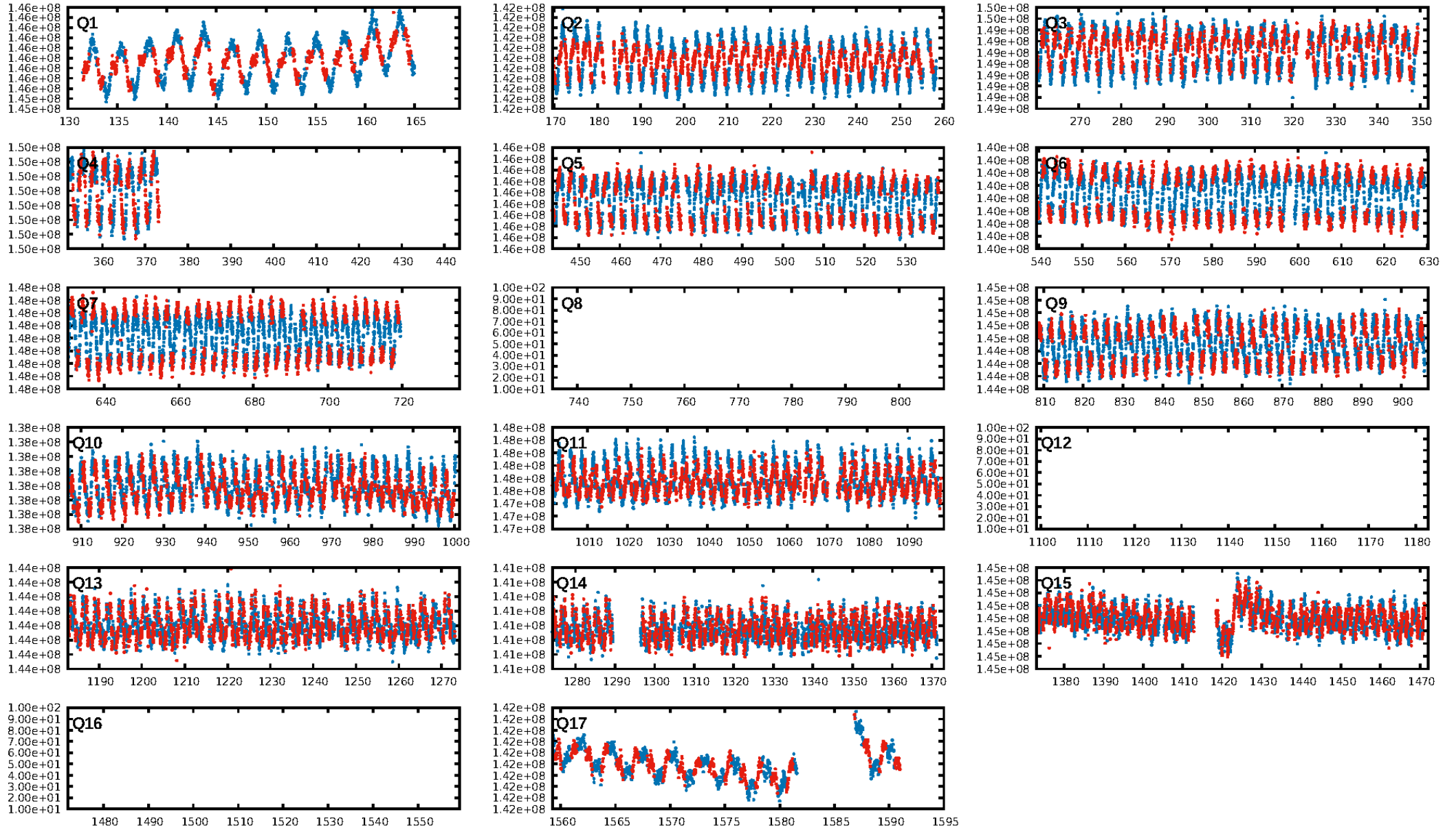
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [341.75σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.23e-12**  
RollingBand-fgt: 0.99 [694/703]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OutOffset-rm: 0.222 arcsec [0.88σ]  
OutOffset-rm: 0.256 arcsec [1.10σ]  
OutOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.71 [10/14]  
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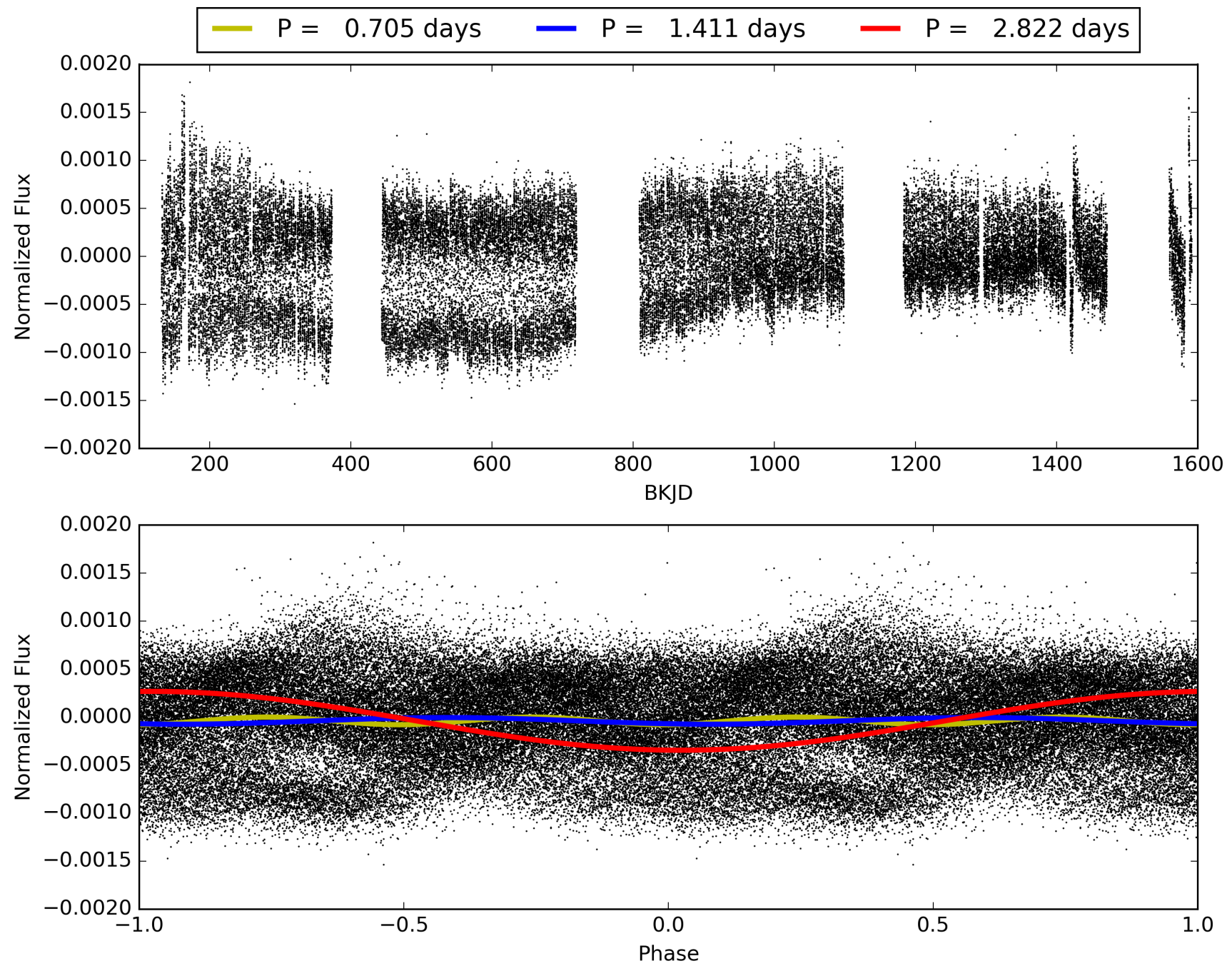
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:05:51 Z

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

# TCE 011233743-01, PDC Light Curves



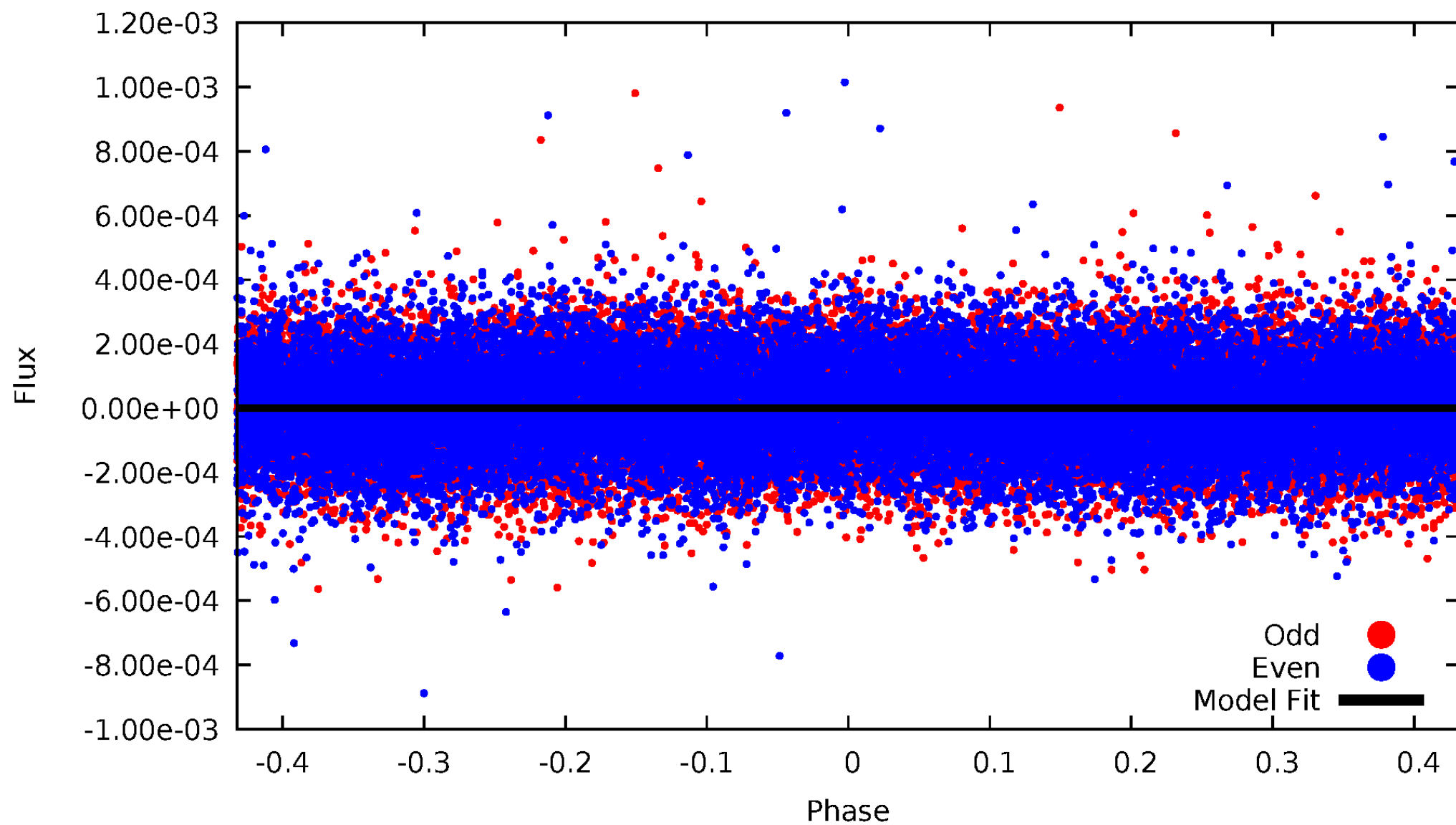
TCE 011233743-01





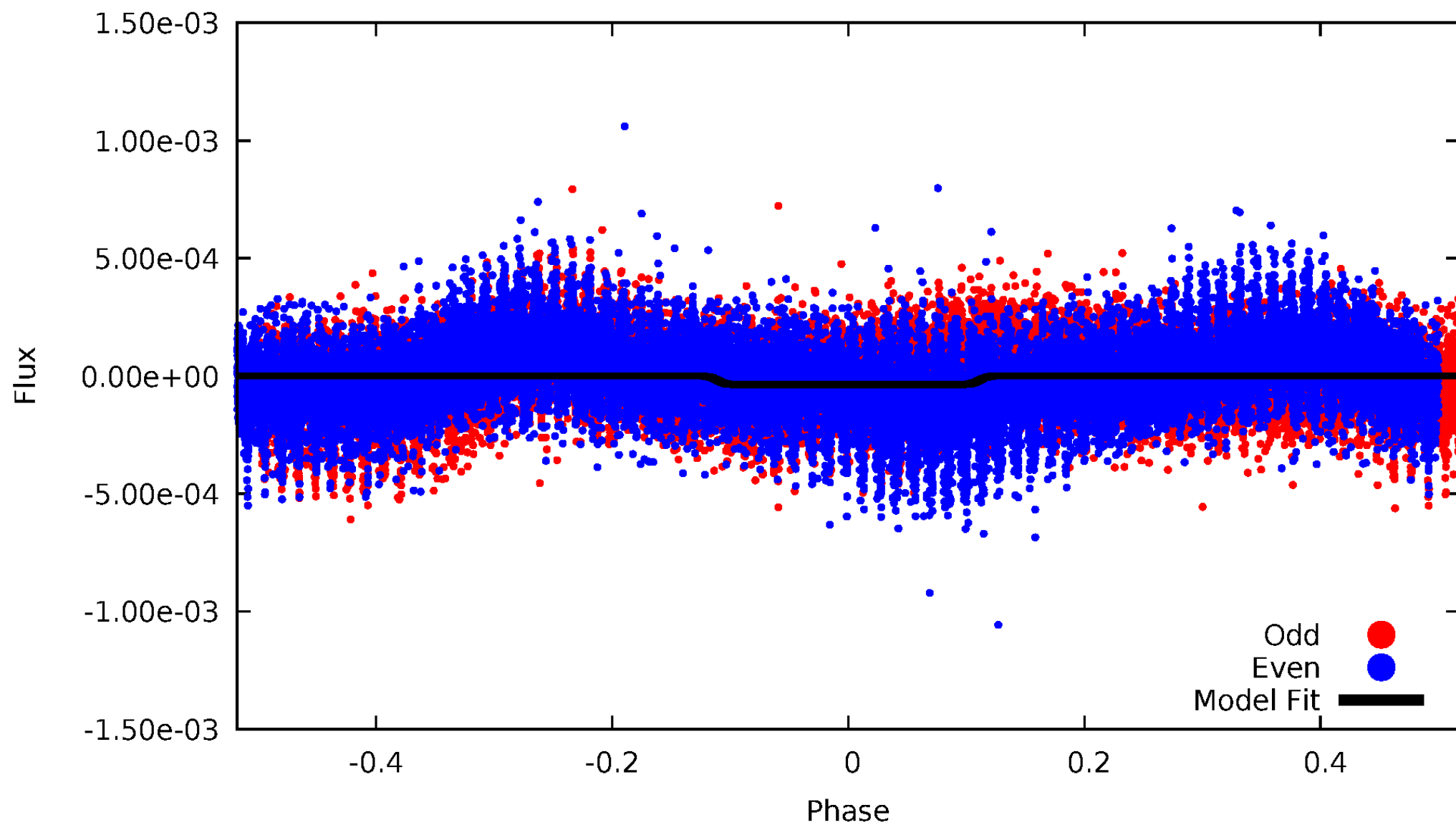
# DV Odd/Even

TCE 011233743-01



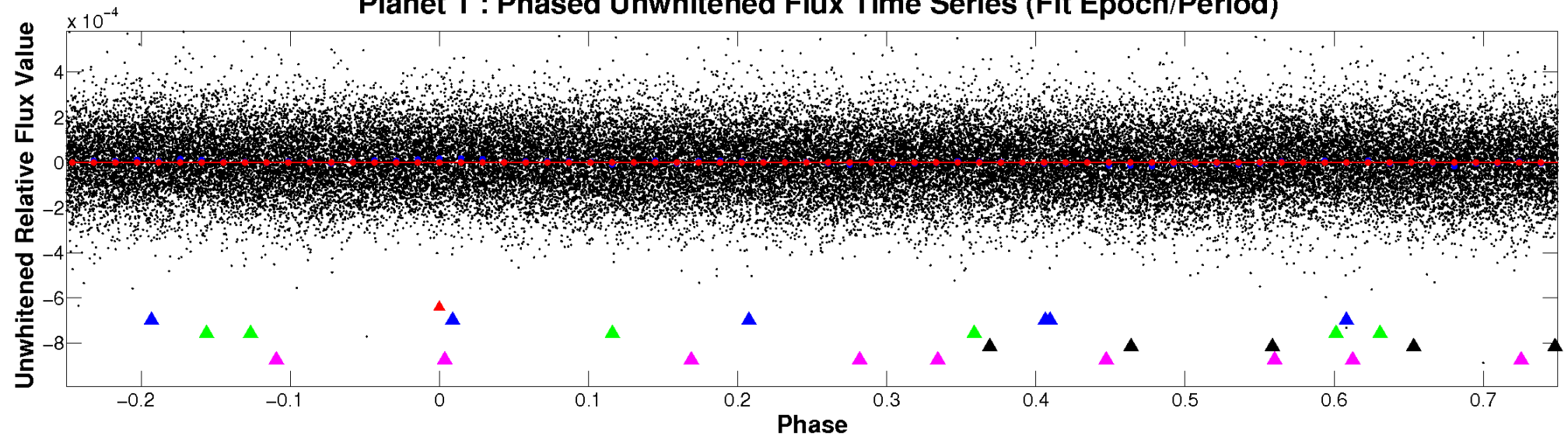
# ALT Odd/Even

TCE 011233743-01

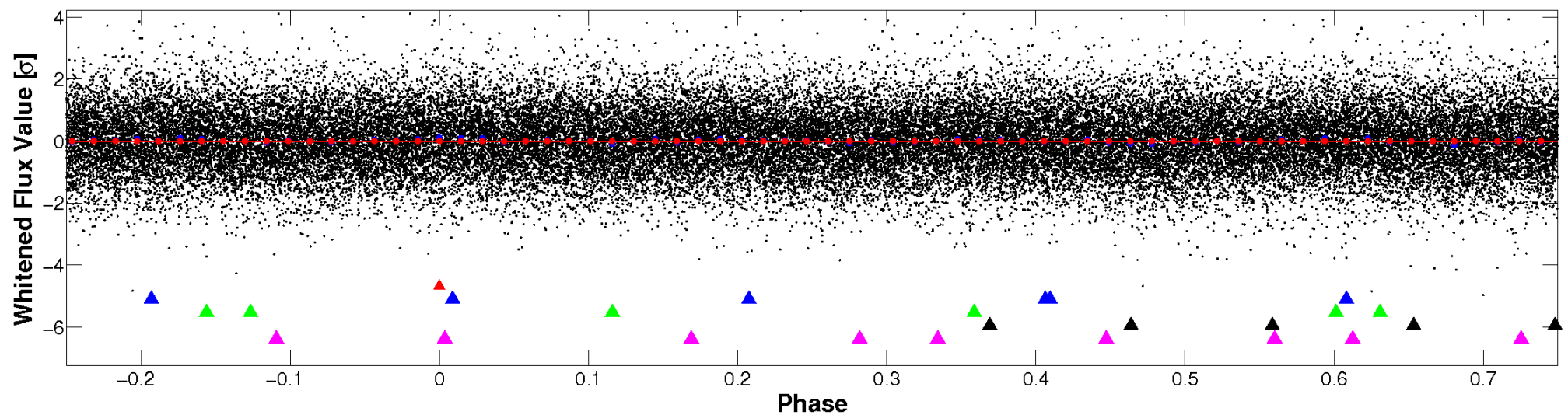


# Non-Whitened Vs. Whitened Light Curve

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

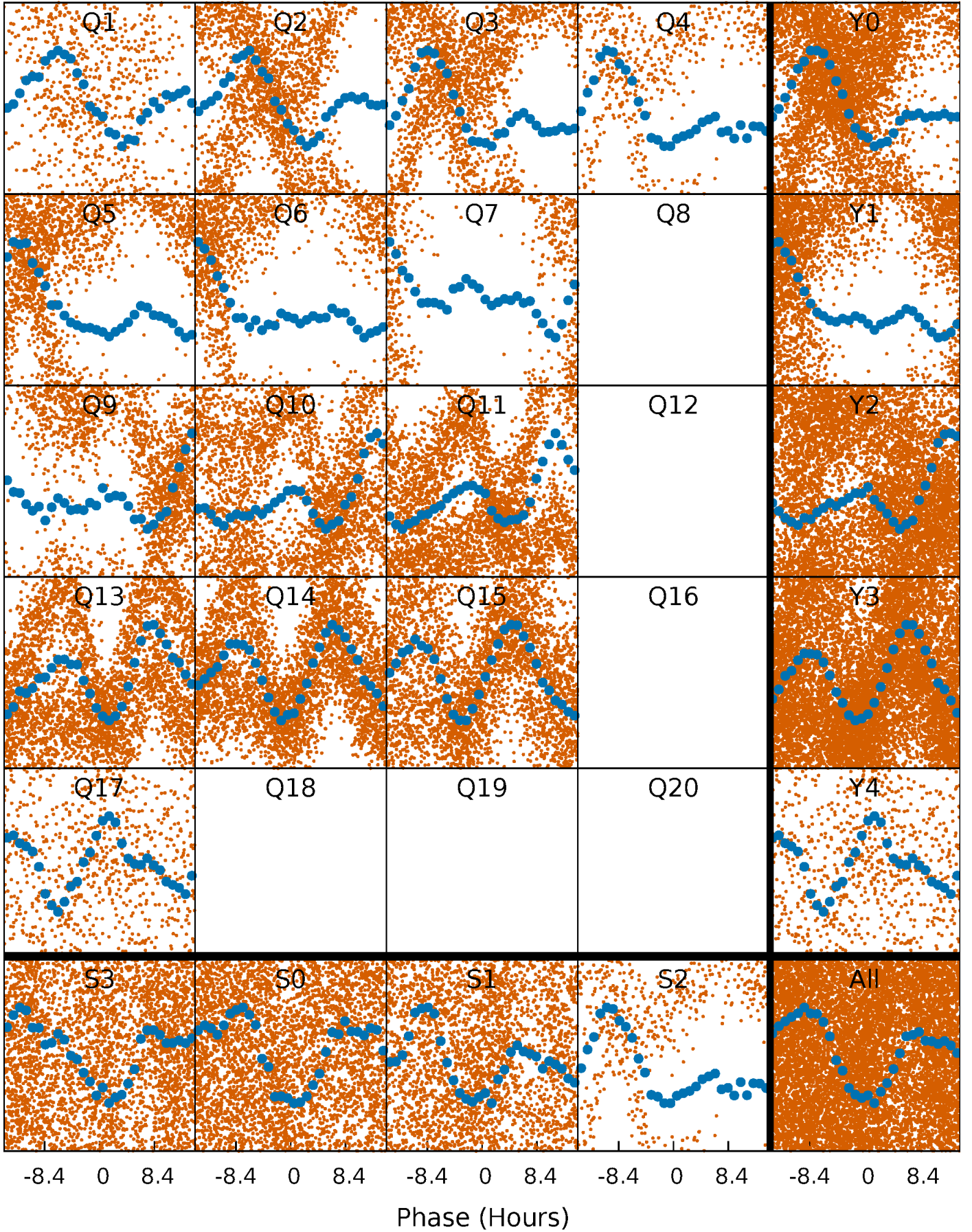


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

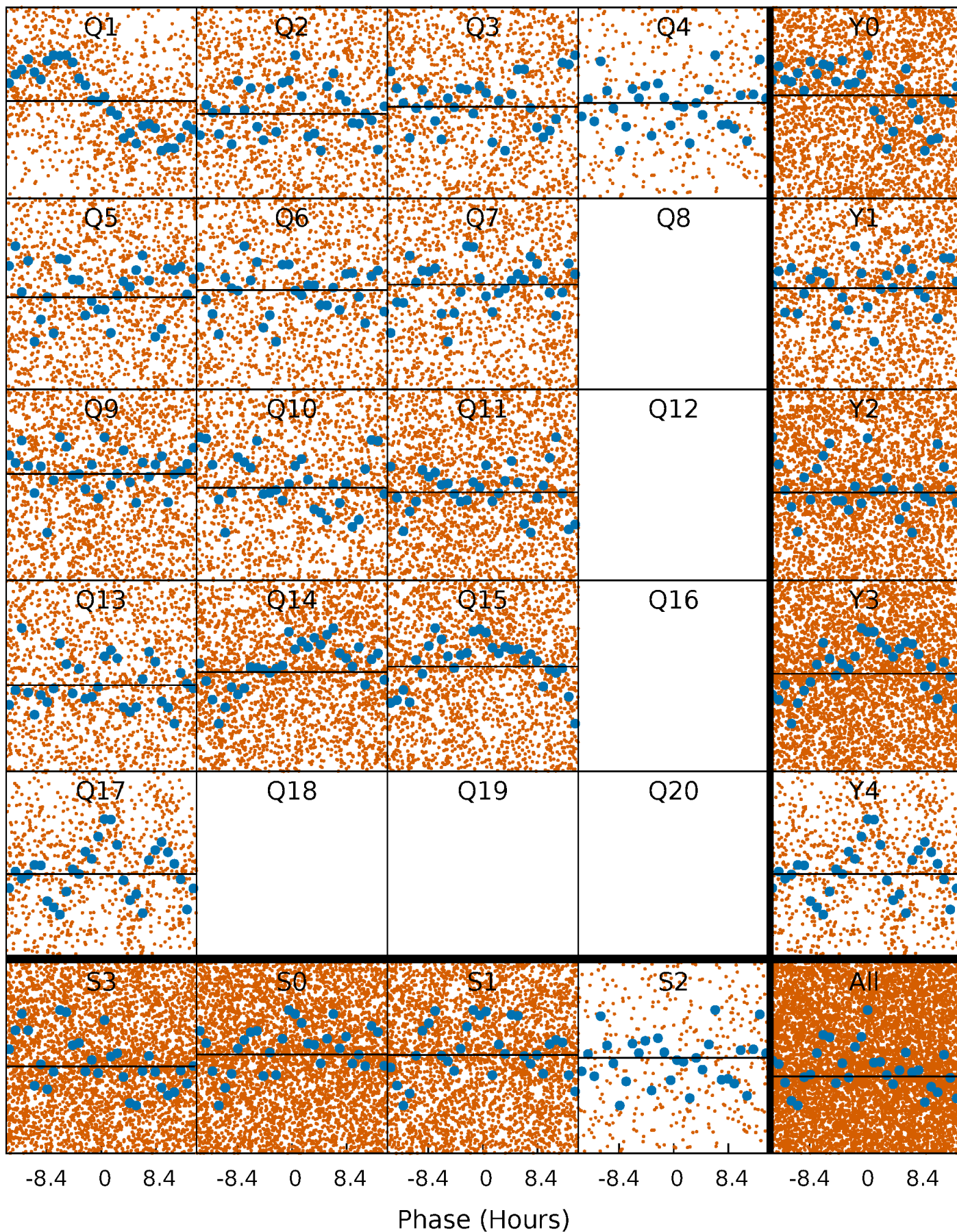
TCE 011233743-01 P= 1.410992 Days  $T_0=131.840538$  (BKJD)





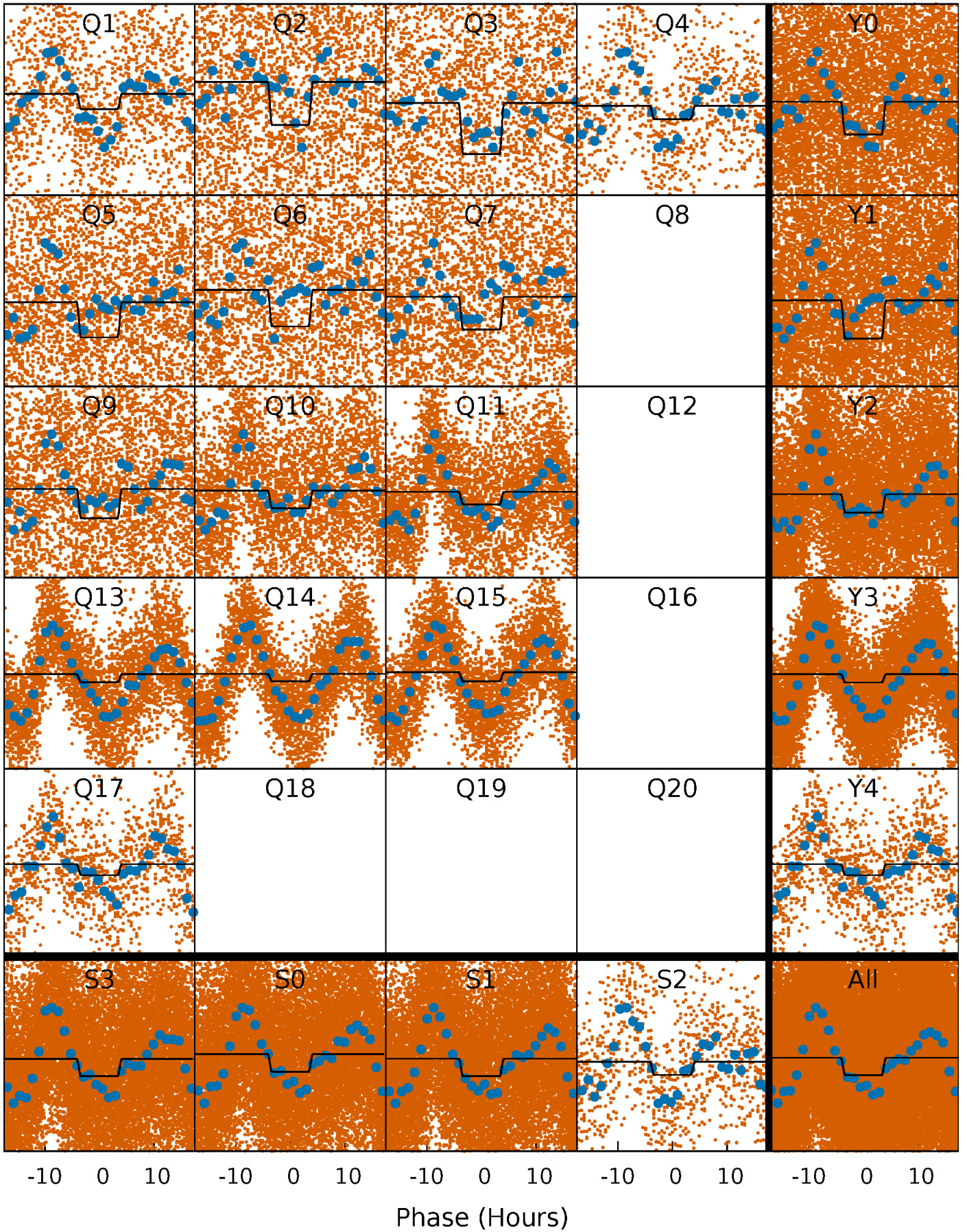
# DV Quarter-Phased Transit Curves

TCE 011233743-01 P= 1.410992 Days  $T_0=131.840538$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

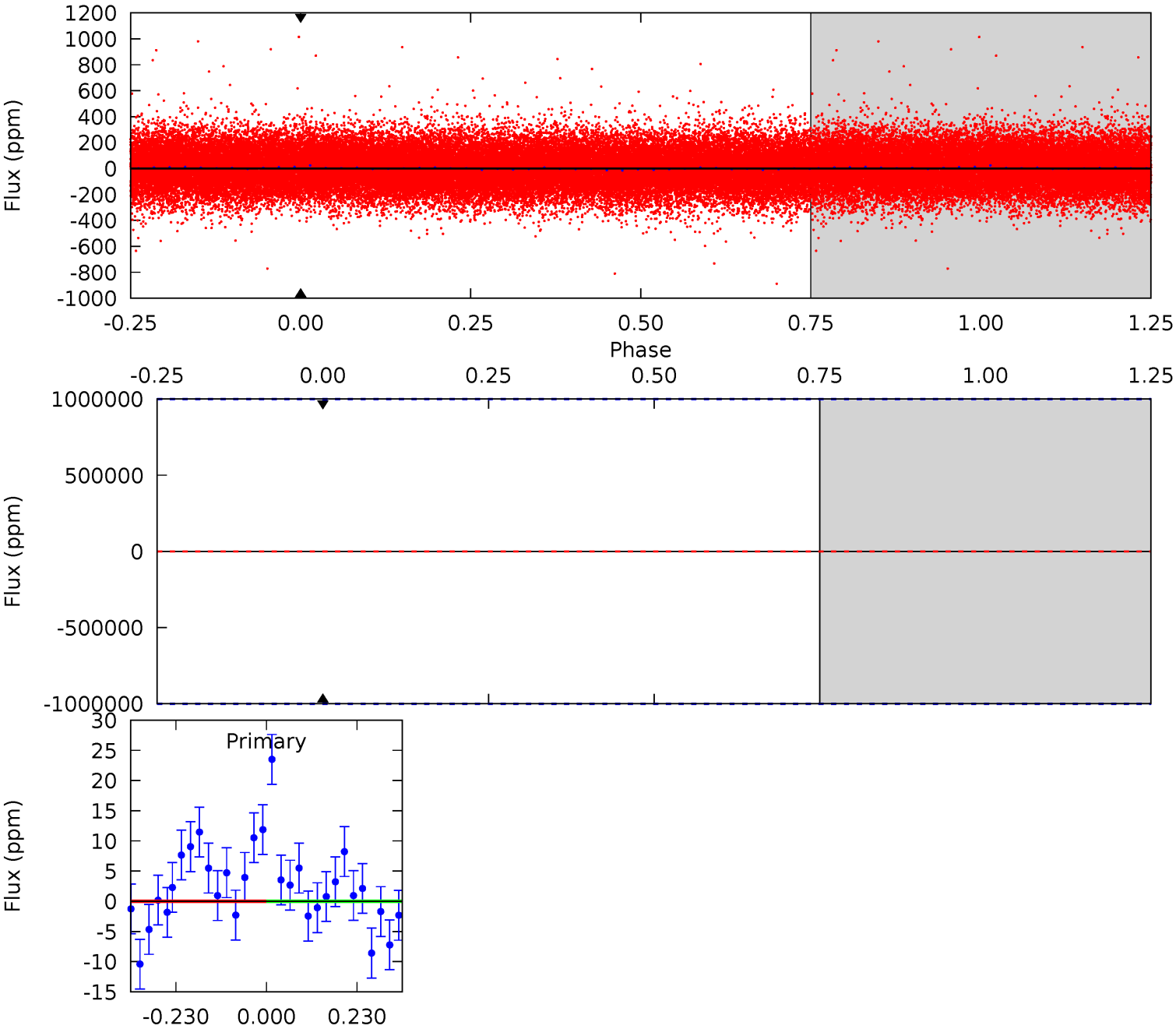
TCE 011233743-01 P= 1.409897 Days  $T_0=131.962971$  (BKJD)



DV Model-Shift Uniqueness Test

011233743-01, P = 1.410992 Days, E = 130.429546 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	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0

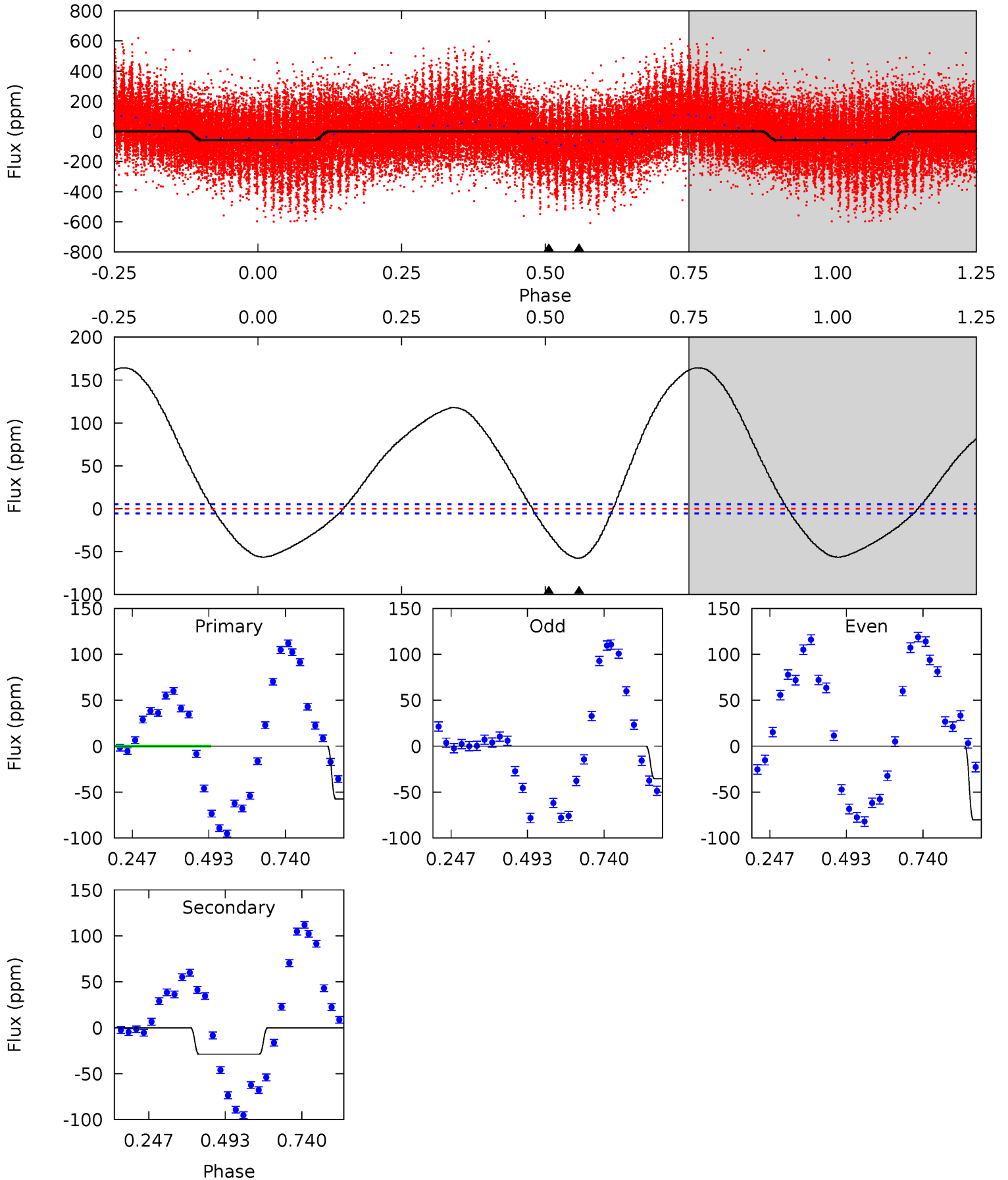




# Alt Model-Shift Uniqueness Test

011233743-01, P = 1.409897 Days, E = 130.553074 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
47.1	23.5	0	0	4.37	1.16	46.1	47.1	47.1	23.5	23.5	17.7	1.45	0.74	8.26





### Stellar Parameters For KIC 011233743

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7228^{+228}_{-304}$	$4.071^{+0.209}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$1.817^{+0.489}_{-0.537}$	$1.419^{+0.204}_{-0.249}$	$0.333^{+0.398}_{-0.158}$
	+3%/-4%	+5%/-4%	+94%/-94%	+27%/-30%	+14%/-18%	+119%/-47%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011233743-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$113.20^{+124.17}_{-81.28}$	$738^{+369}_{-178}$	$2475^{+4071}_{-8522}$	$1.633^{+4486.415}_{-2592.136}$
Alt.	$-29 \pm 1$	$107.46^{+133.46}_{-73.80}$	$717^{+326}_{-154}$	$1577^{+620}_{-3313}$	$0.573^{+7.690}_{-0.497}$

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

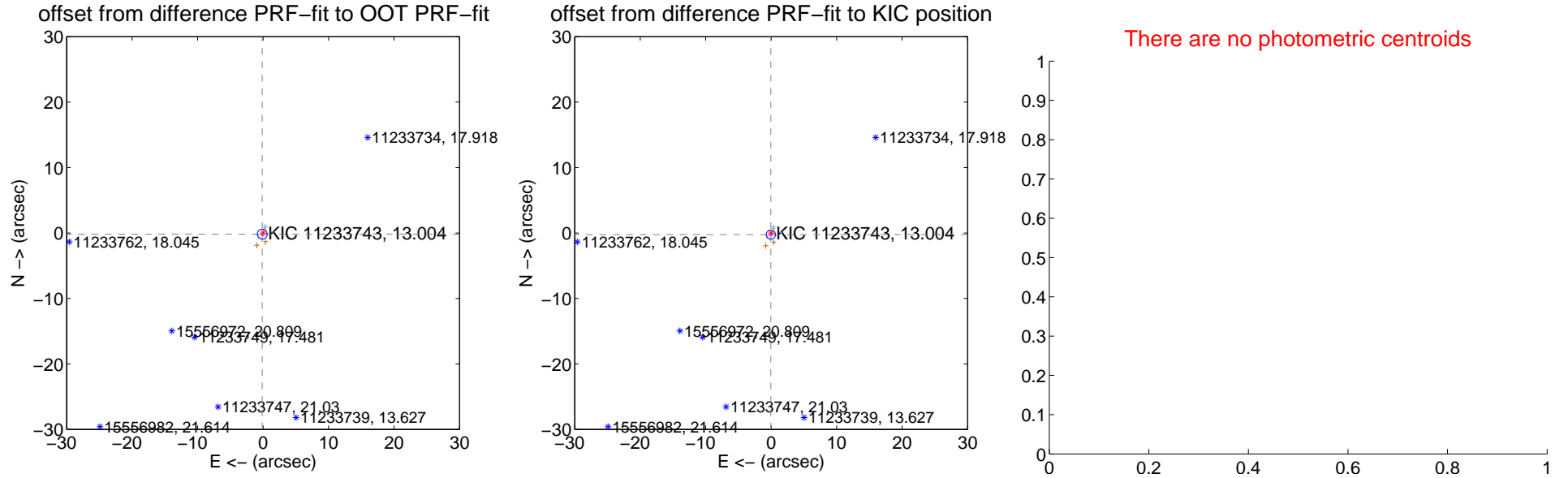
## DV Centroid Data

Supplemental centroid analysis for 011233743-01. Kepler magnitude: 13.00. Transit SNR 0.00

There are 10 quarters with good PRF difference image offsets

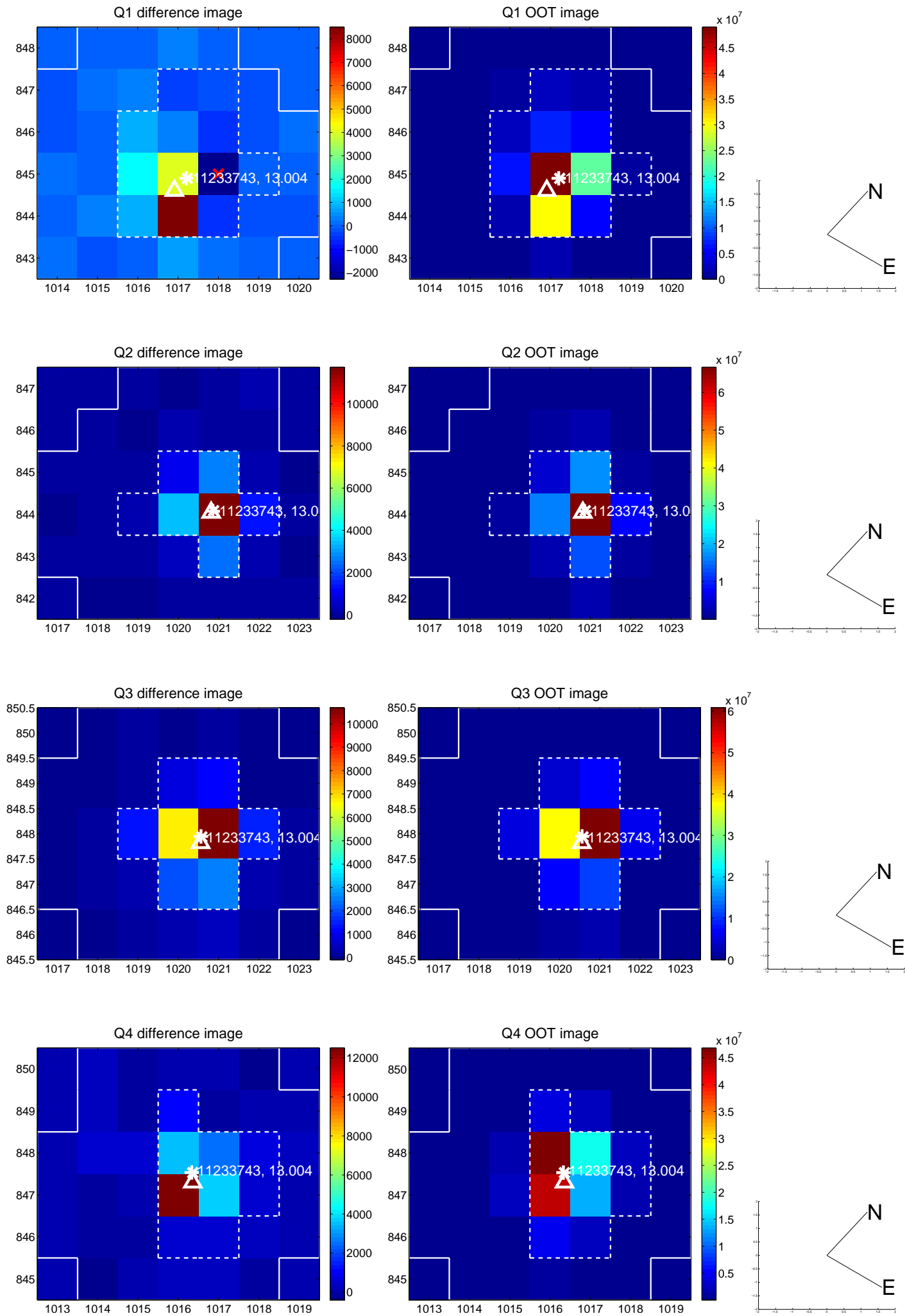
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.222 \pm 0.252$	0.88	$0.132 \pm 0.174$	$-0.179 \pm 0.242$
PRF-fit source offset from KIC position	$0.256 \pm 0.233$	1.10	$0.047 \pm 0.155$	$-0.251 \pm 0.228$
photometric centroid source offset	—	—	—	—

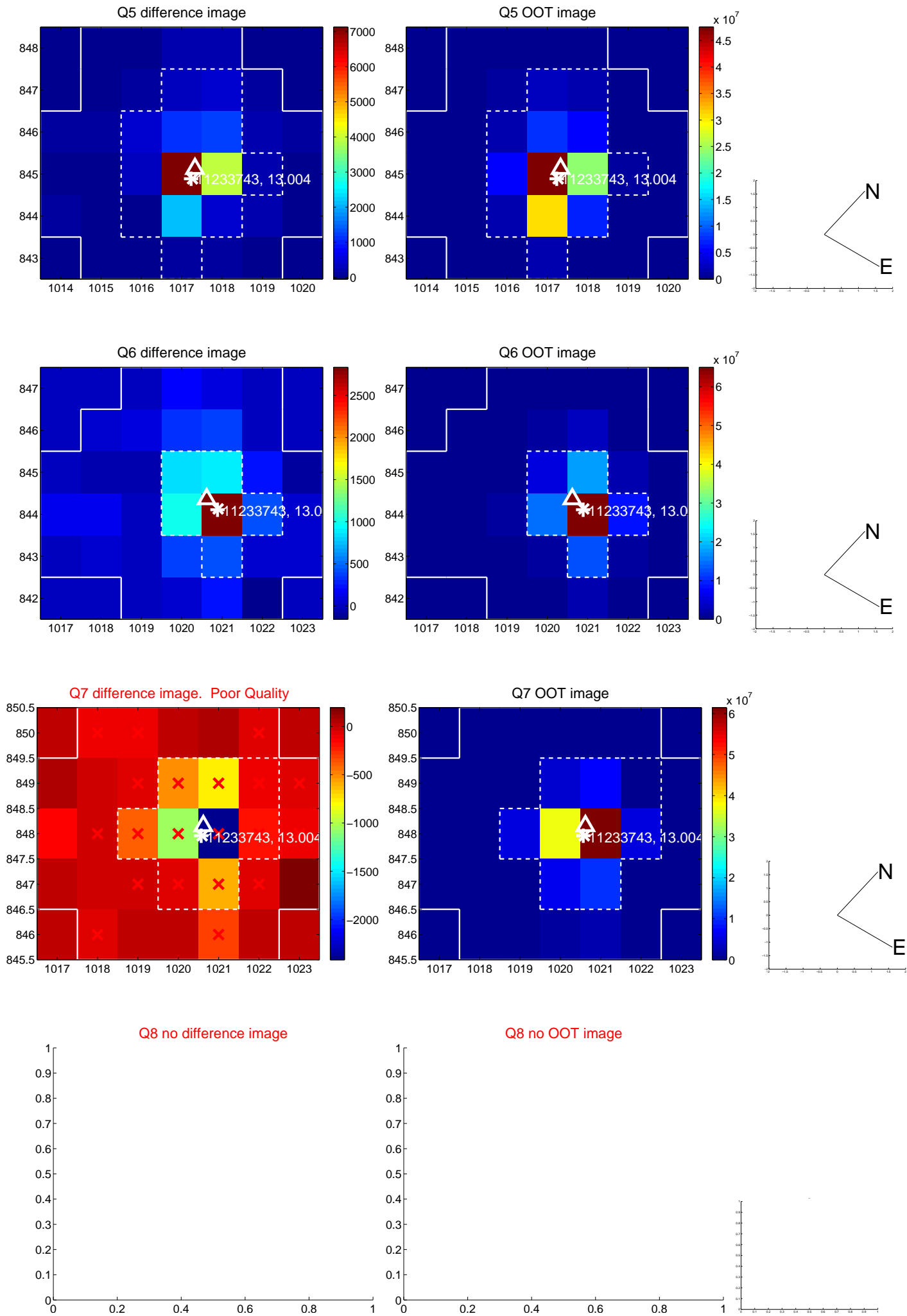


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

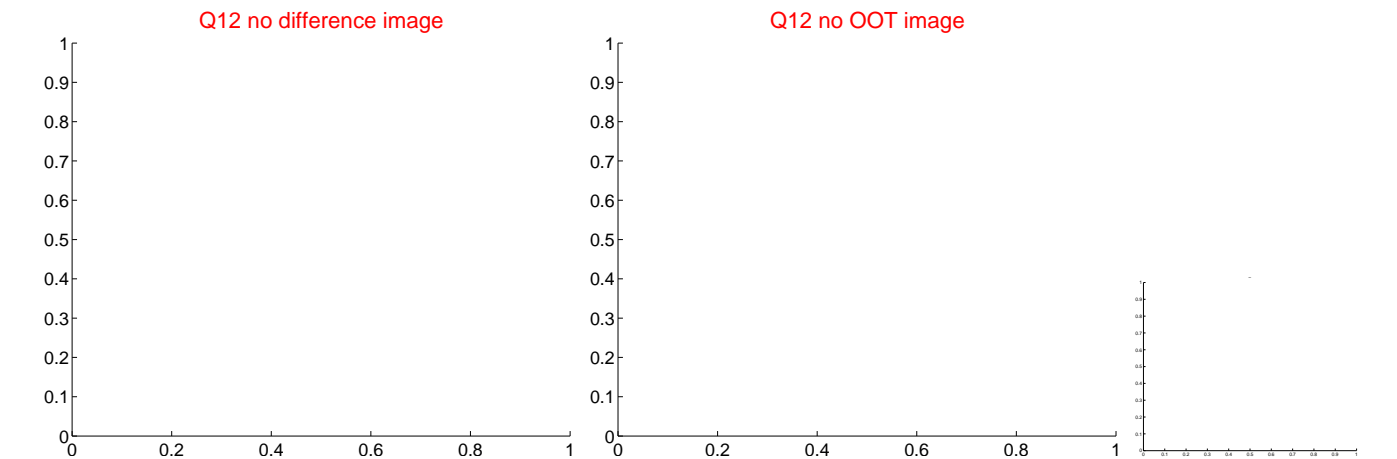
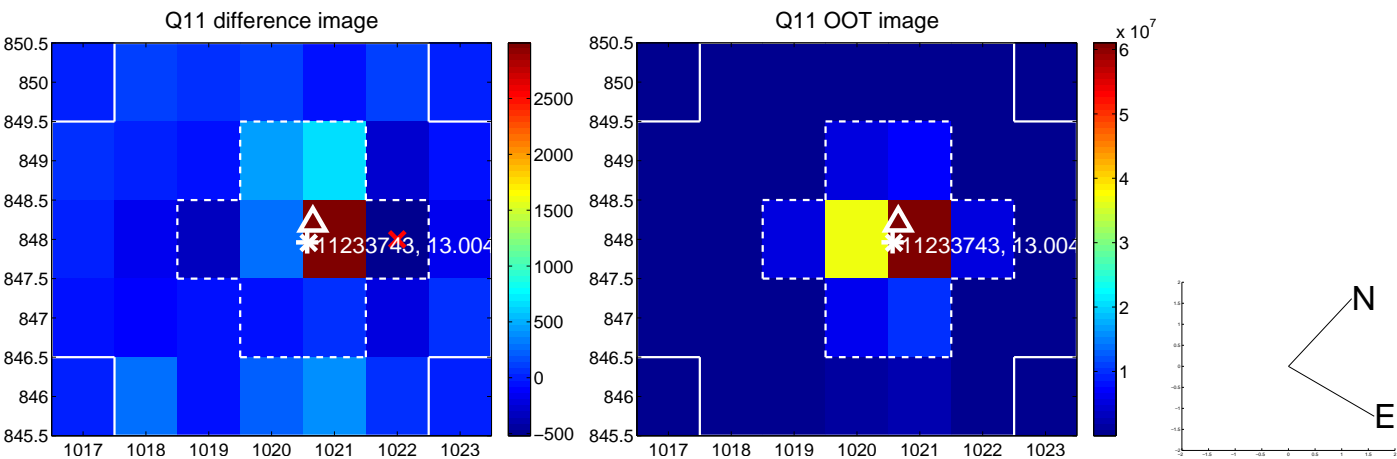
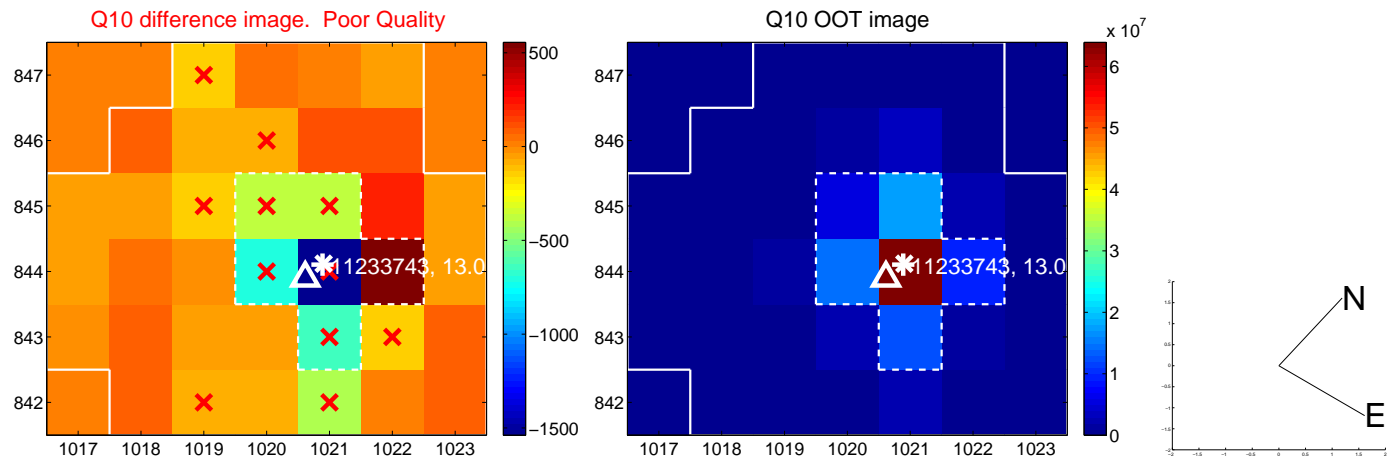
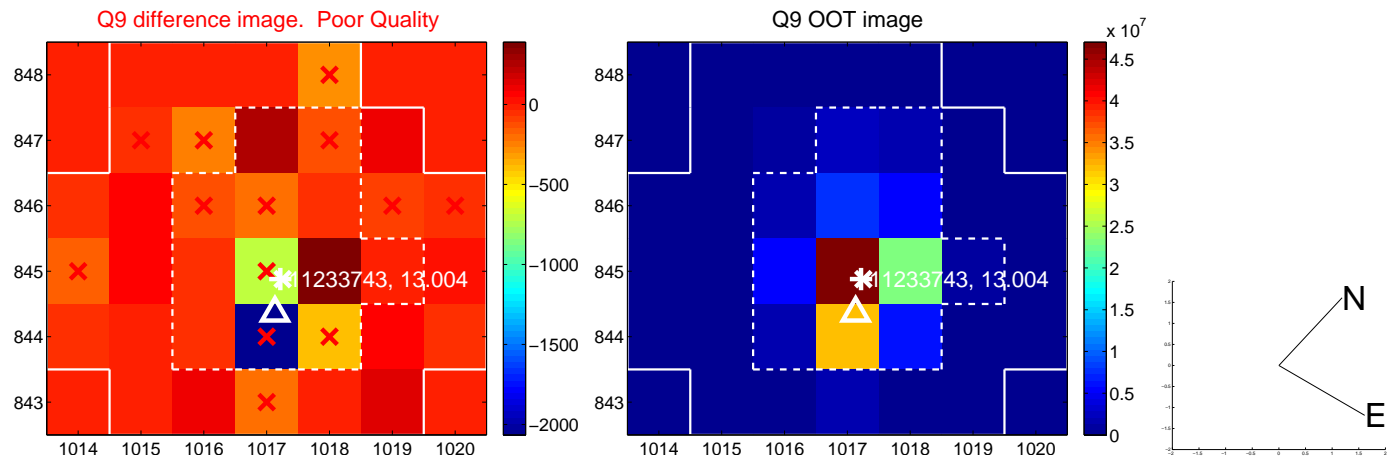


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

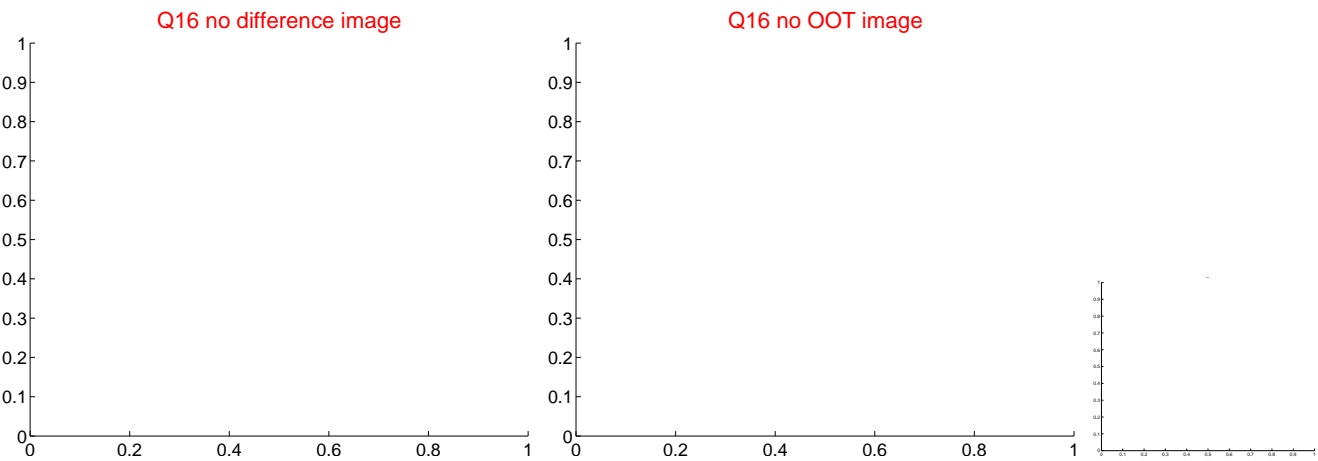
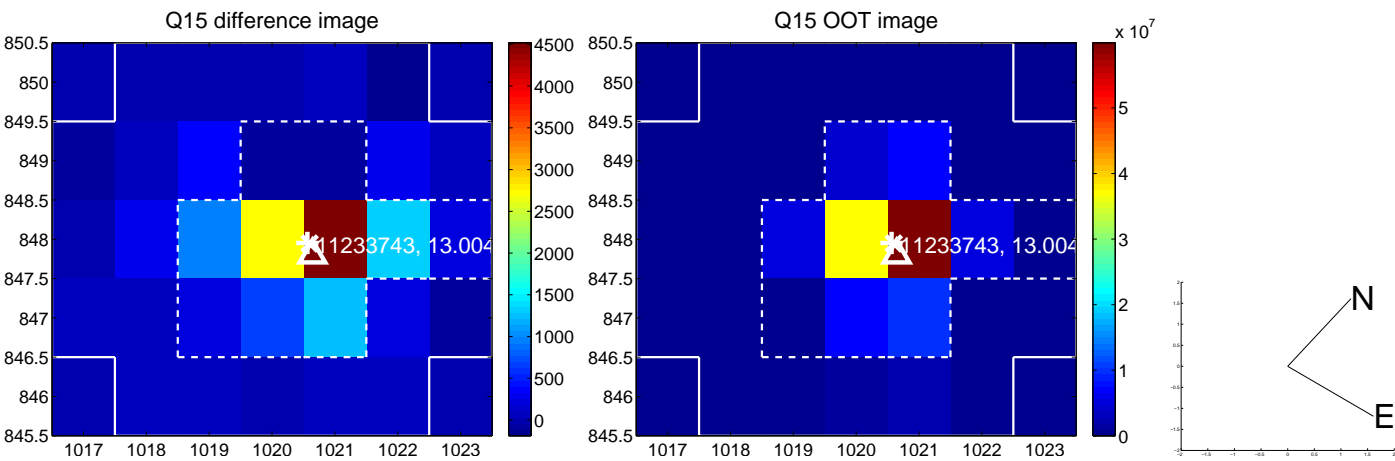
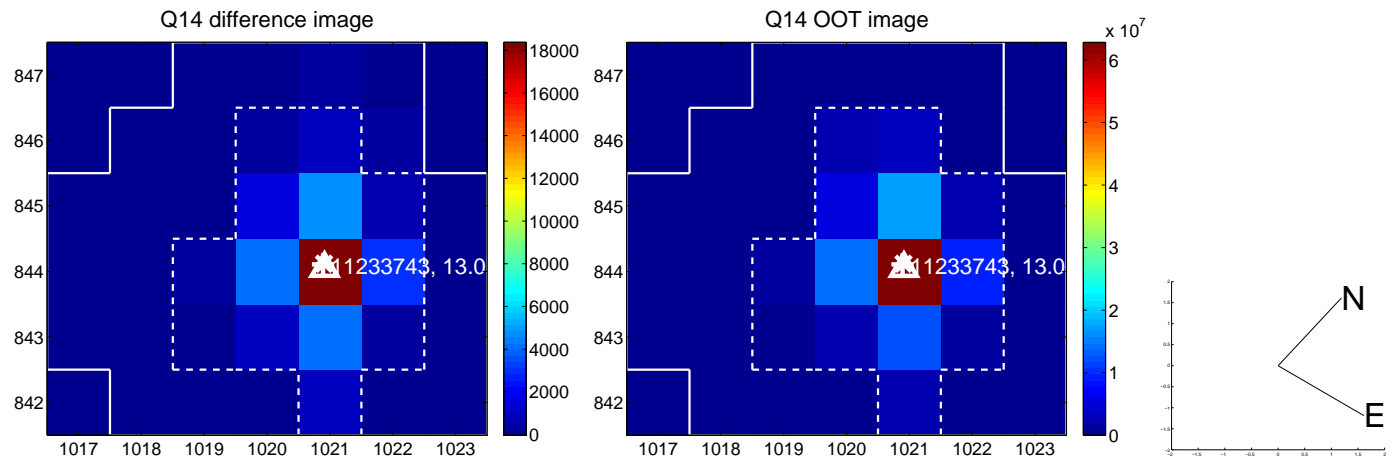
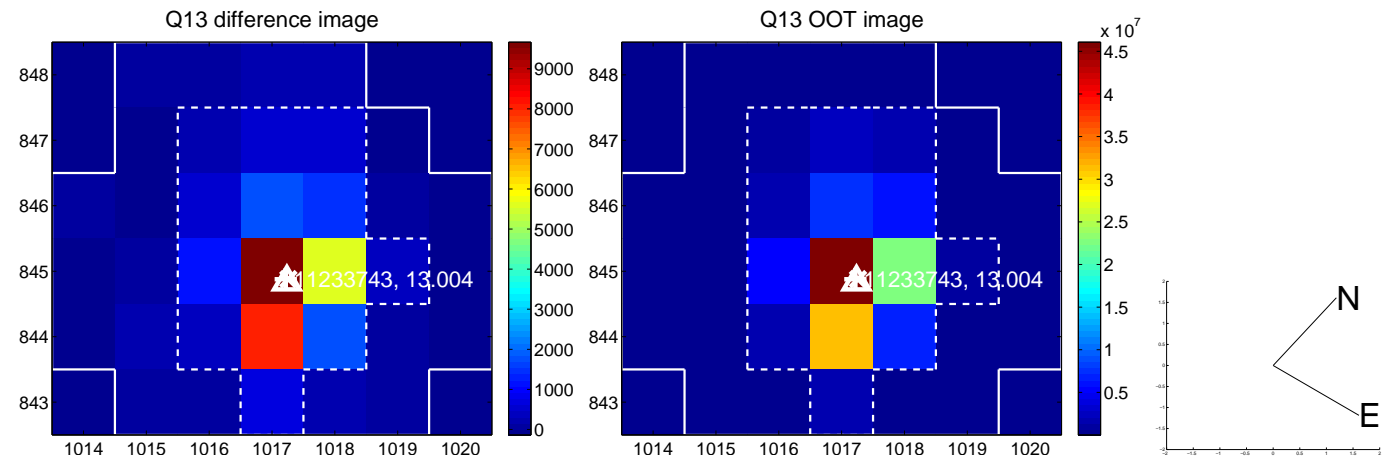




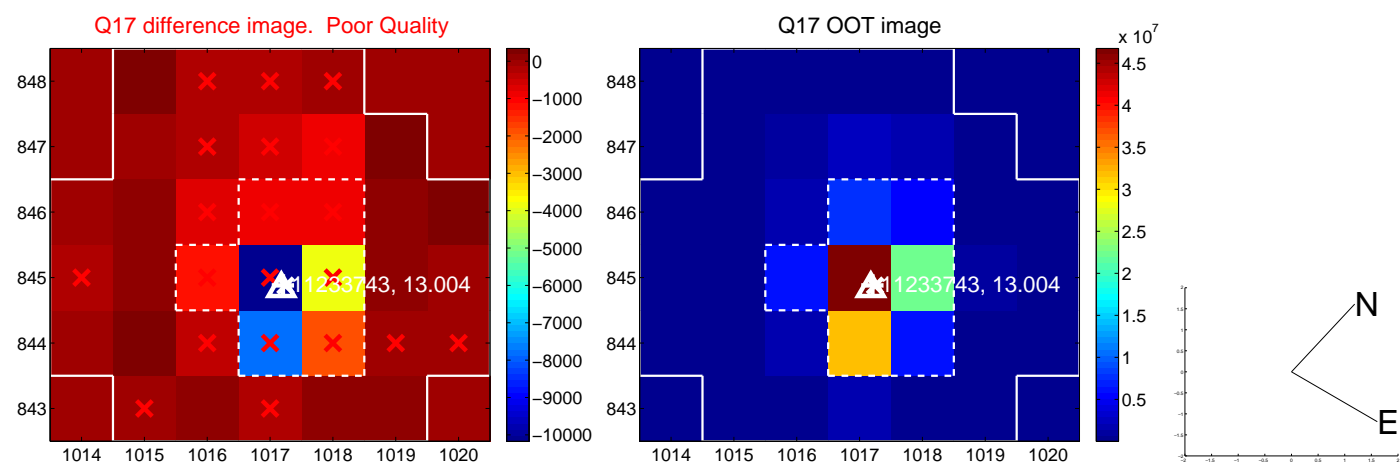
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



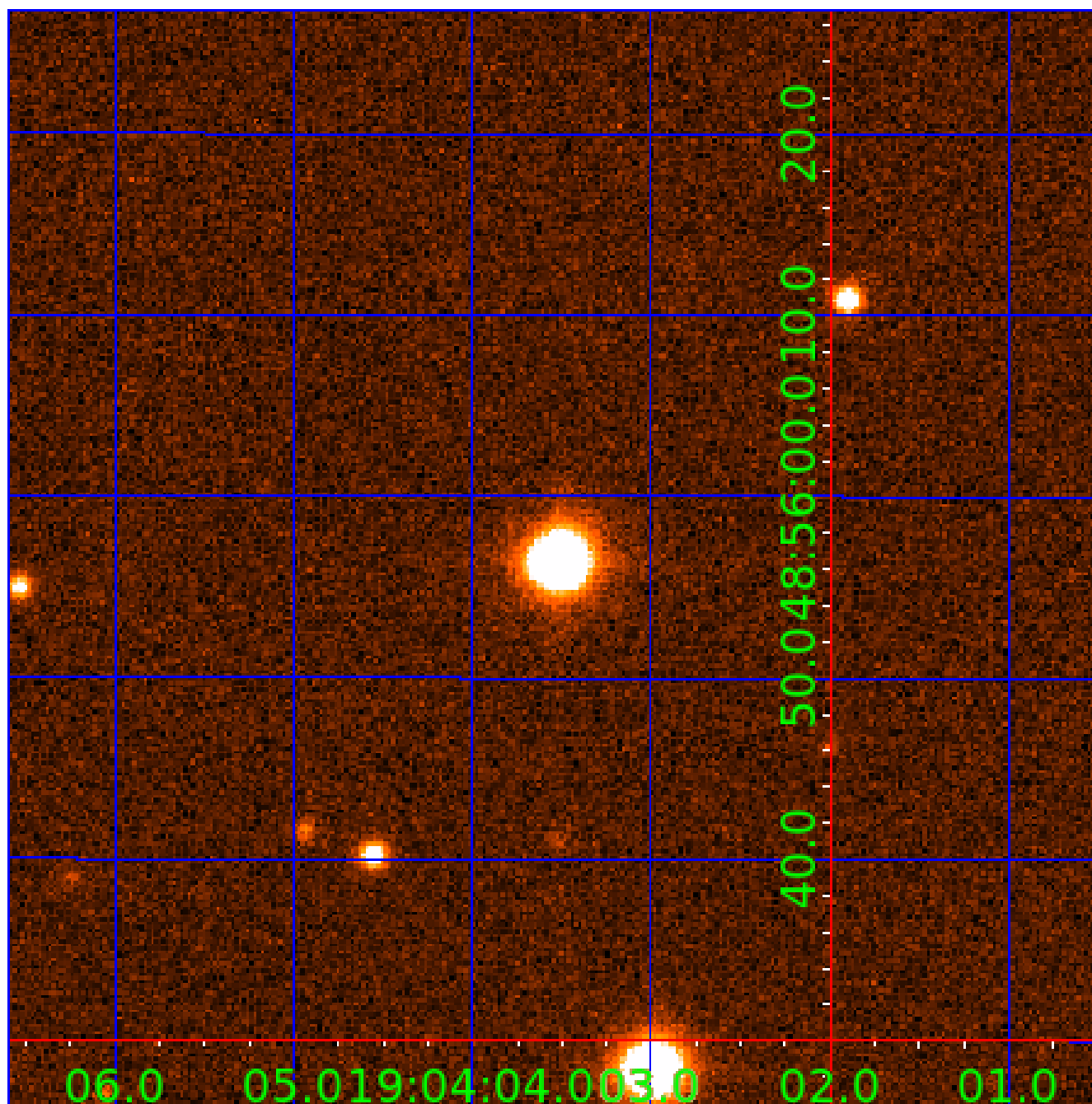
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 011233743

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011233743-01	OBS	No	1.410992	131.840538	0.0	7.314	9.2	0.0	1.82	7228	0.00	10548.02
011233743-02	OBS	No	243.255890	142.290777	231.4	7.120	7.5	7.5	1.82	7228	3.11	10.99
011233743-03	OBS	No	237.388938	368.366230	237.8	9.262	7.7	7.1	1.82	7228	3.07	11.36
011233743-04	OBS	No	314.784858	135.183304	199.2	6.438	7.4	6.5	1.82	7228	2.75	7.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011233743-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011233743-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011233743-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011233743-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

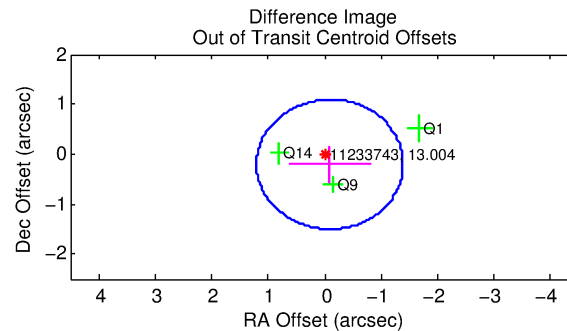
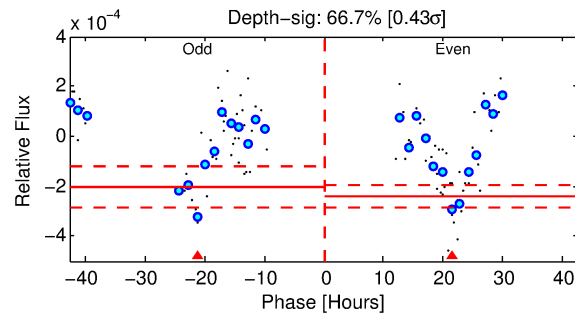
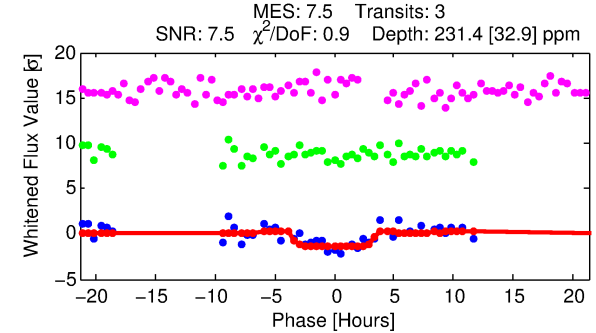
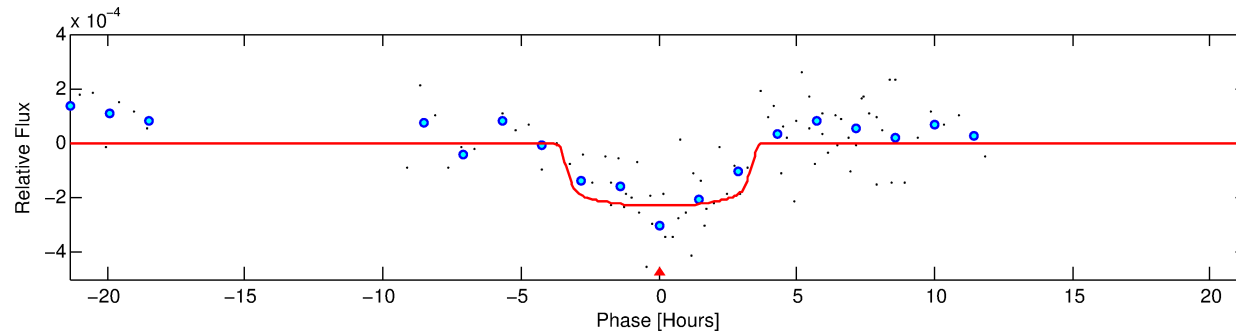
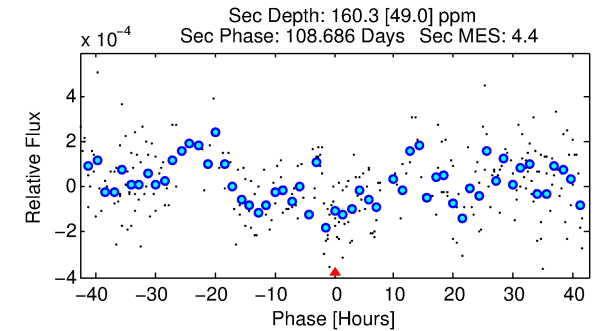
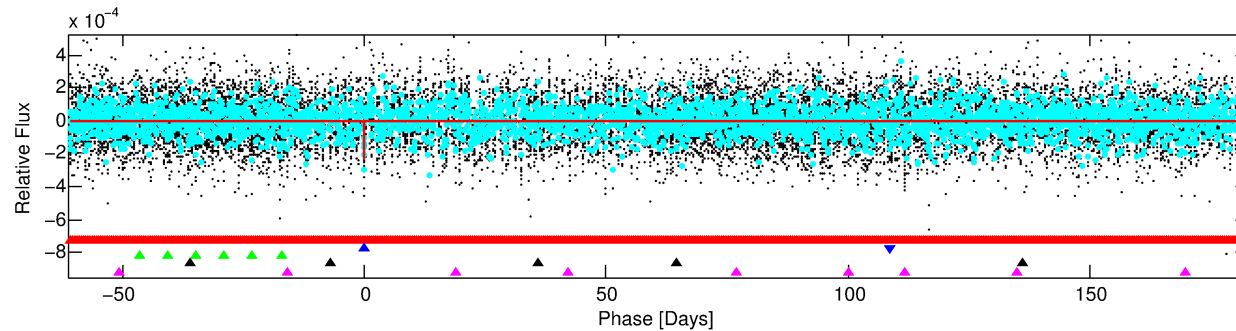
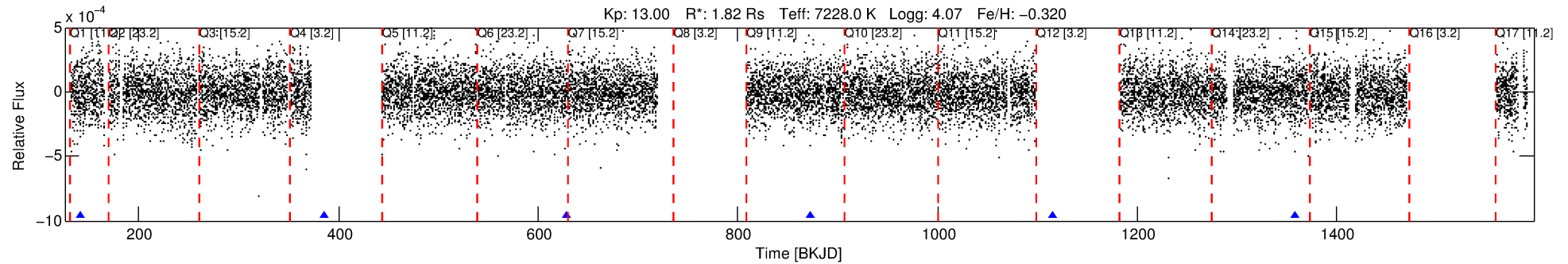
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011233743-02

No Significant Match Found

# DV One-Page Summary

KIC: 11233743 Candidate: 2 of 5 Period: 243.256 d



## DV Fit Results:

Period = 243.25589 [0.00535] d  
Epoch = 142.2908 [0.0167] BKJD  
Rp/R\* = 0.0157 [0.0074]  
a/R\* = 144.63 [424.55]  
b = 0.85 [0.95]  
Seff = 10.99 [4.53]  
Teq = 464 [48] K  
Rp = 3.11 [1.73] Re  
a = 0.8570 [0.2177] AU  
Ag = 6693.30 [7100.65] [0.94 $\sigma$ ]  
Teffp = 6493 [1633] K [3.69 $\sigma$ ]

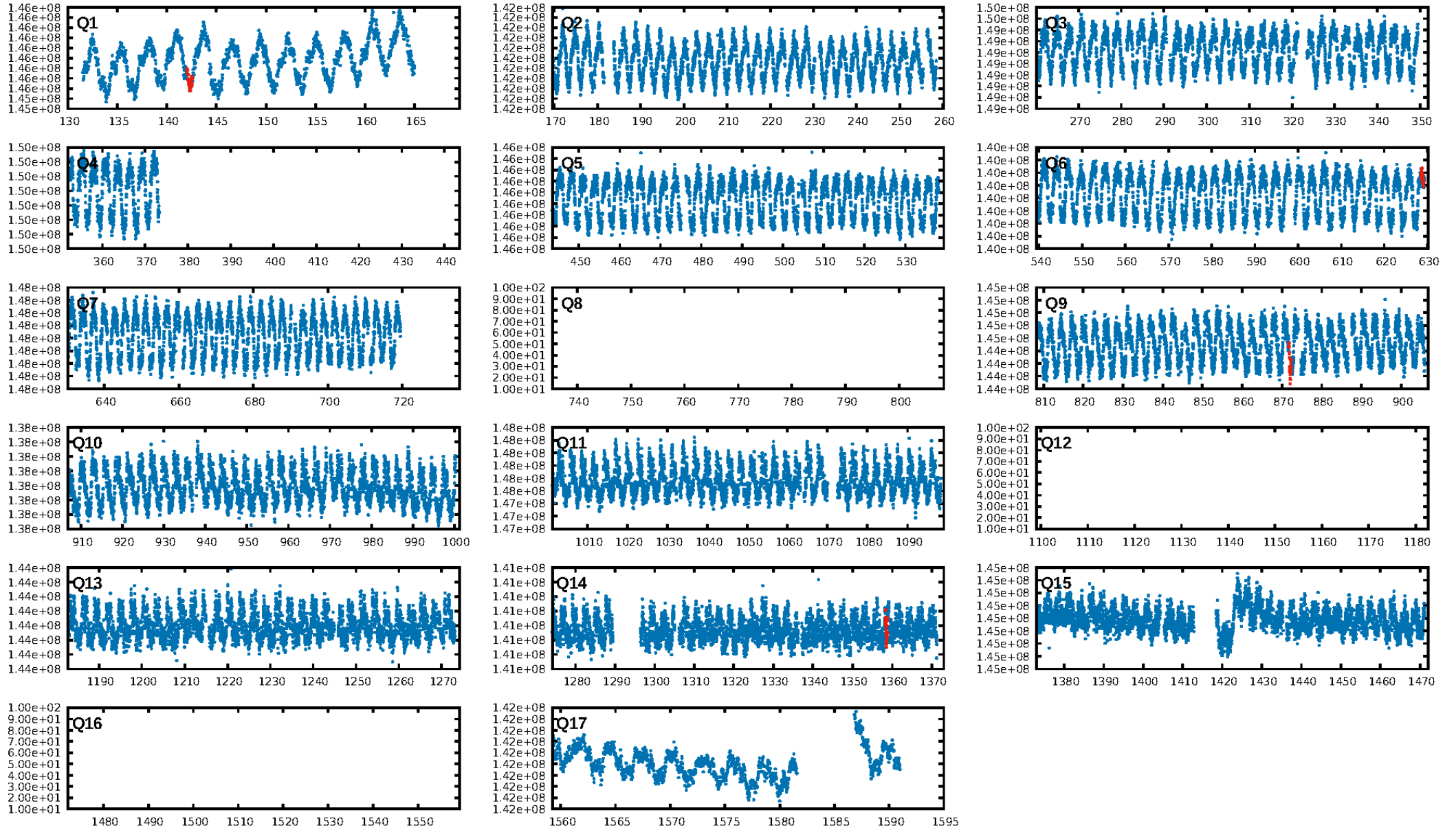
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.05 $\sigma$ ]  
LongPeriod-sig: 100.0% [178.85 $\sigma$ ]  
ModelChiSquare2-sig: 89.9%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 8.57e-08**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -4.95  
**Centroid-sig: 0.0%**  
**Centroid-so: 3.447 arcsec [3.03 $\sigma$ ]**  
OotOffset-rm: 0.224 arcsec [0.52 $\sigma$ ]  
KicOffset-rm: 0.322 arcsec [0.62 $\sigma$ ]  
OotOffset-st: 1/0/0/2 [3]  
KicOffset-st: 1/0/0/2 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

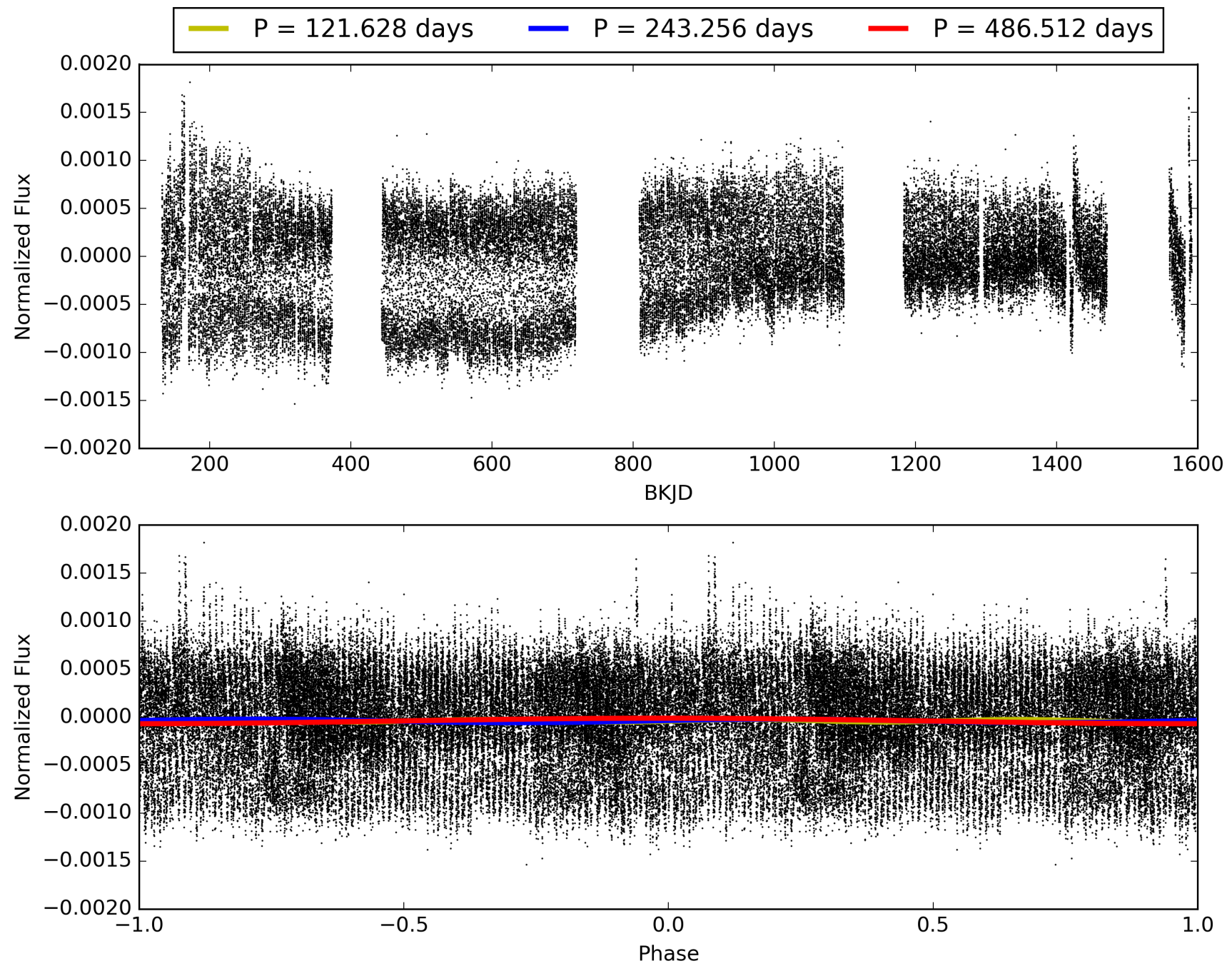
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:06:02 Z

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

# TCE 011233743-02, PDC Light Curves

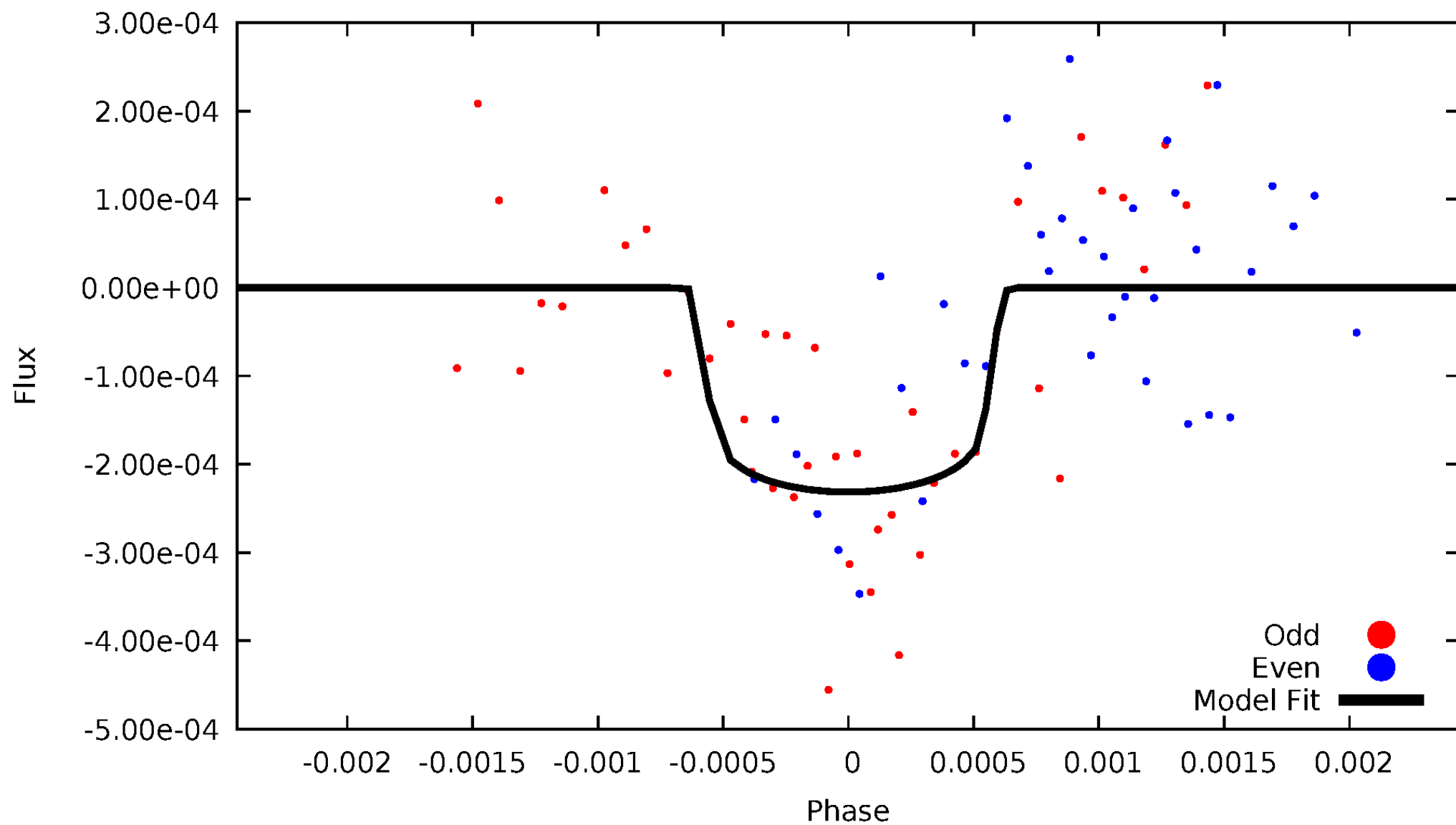


TCE 011233743-02



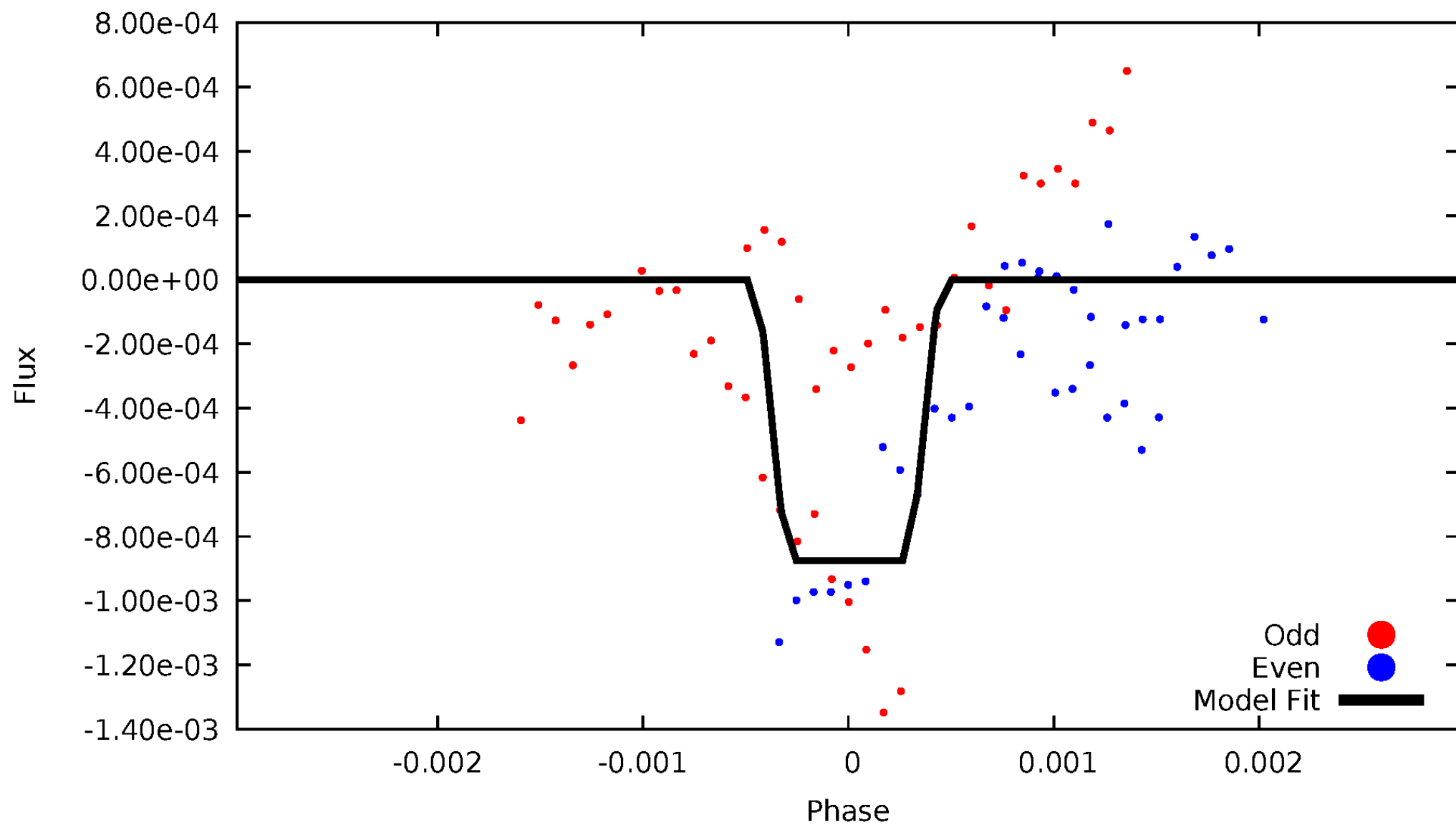
# DV Odd/Even

TCE 011233743-02



# ALT Odd/Even

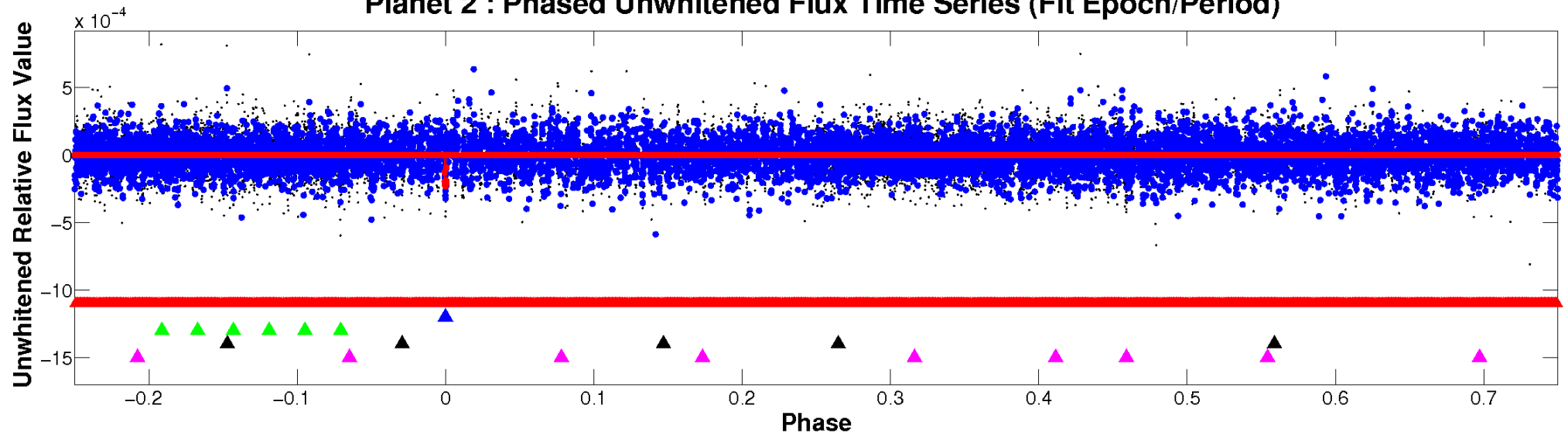
TCE 011233743-02



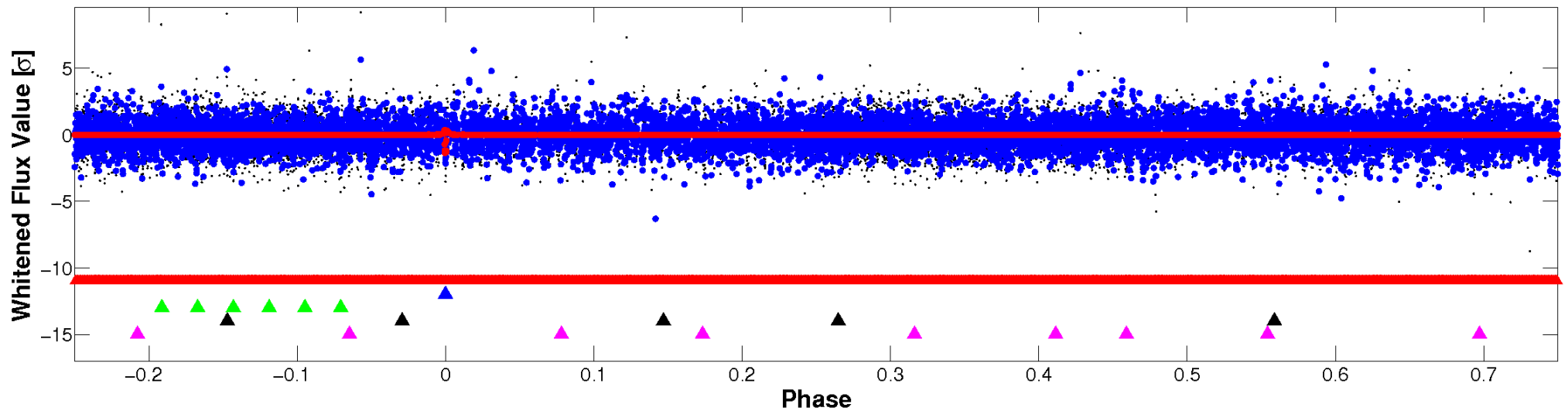


# Non-Whitened Vs. Whitened Light Curve

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

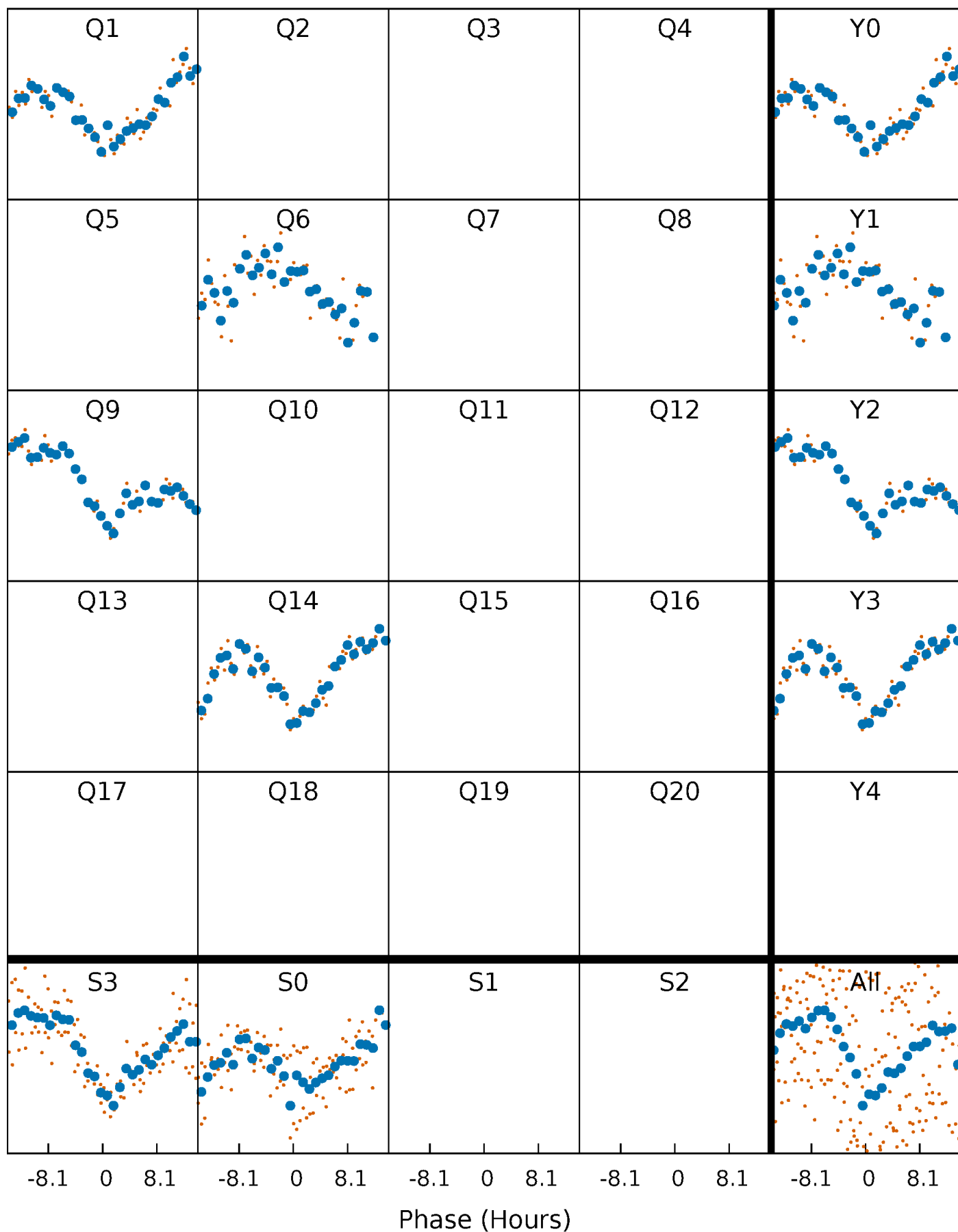


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



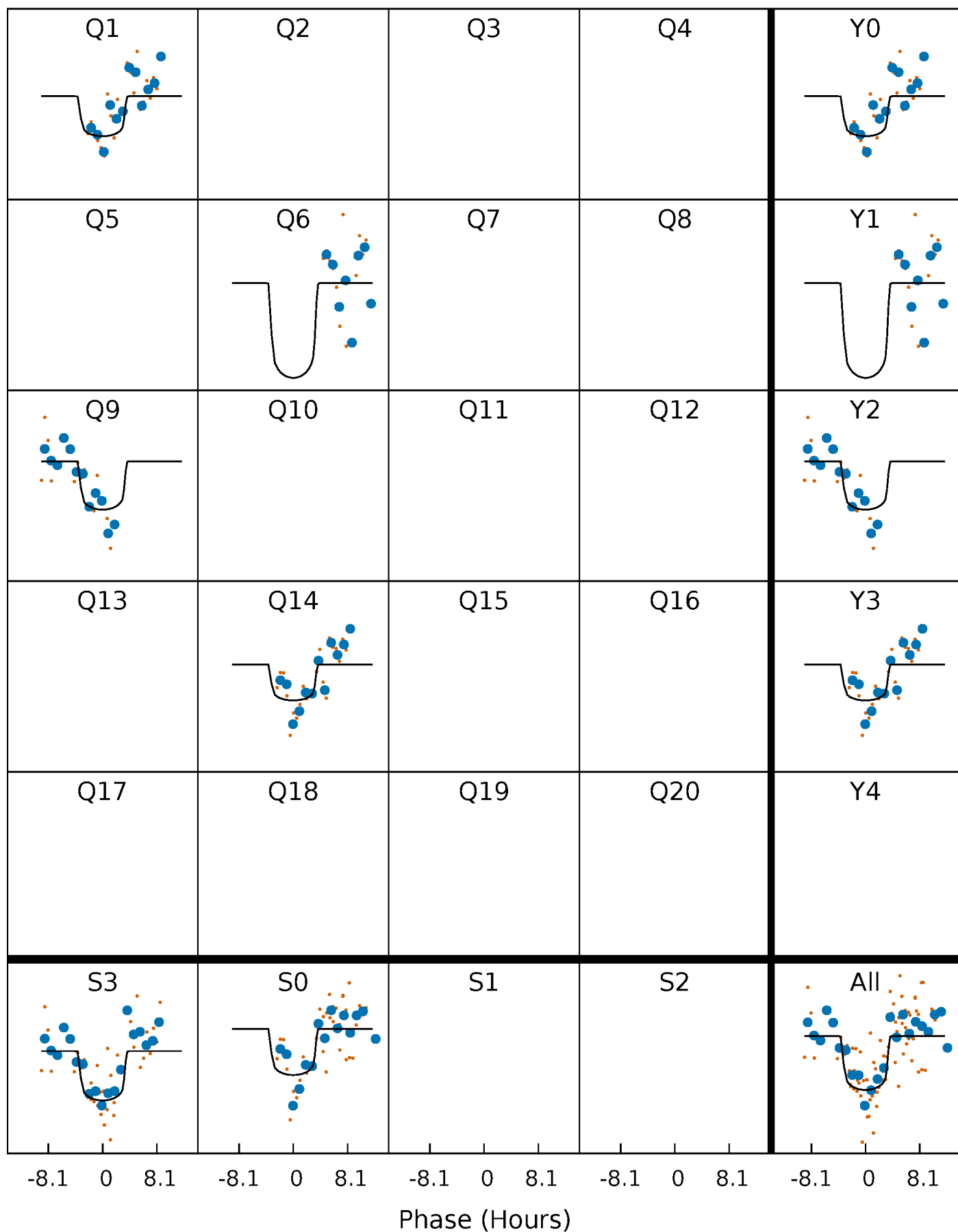
# PDC Quarter-Phased Transit Curves

TCE 011233743-02     $P=243.255890$  Days     $T_0=142.290777$  (BKJD)



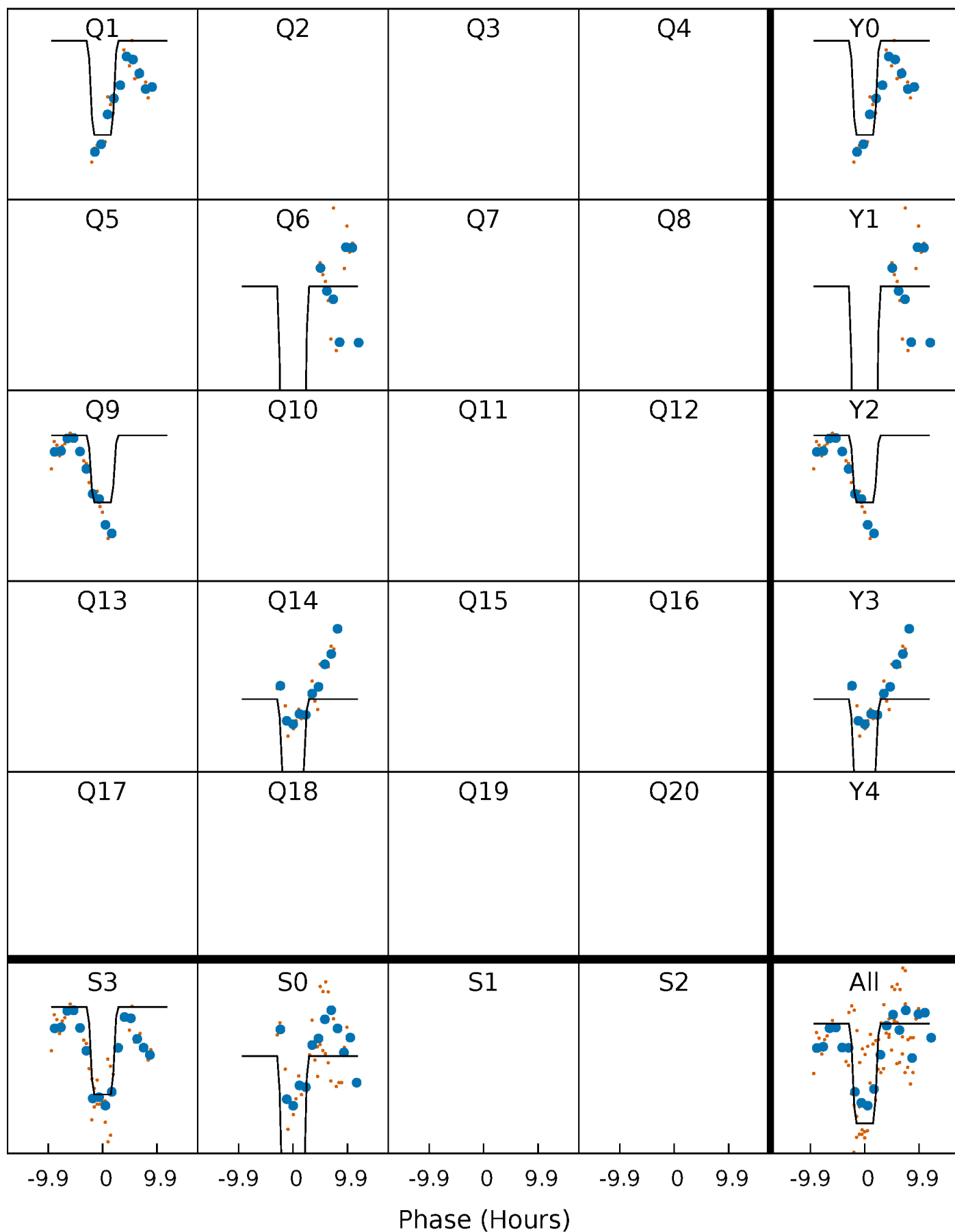
# DV Quarter-Phased Transit Curves

TCE 011233743-02 P=243.255890 Days  $T_0=142.290777$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

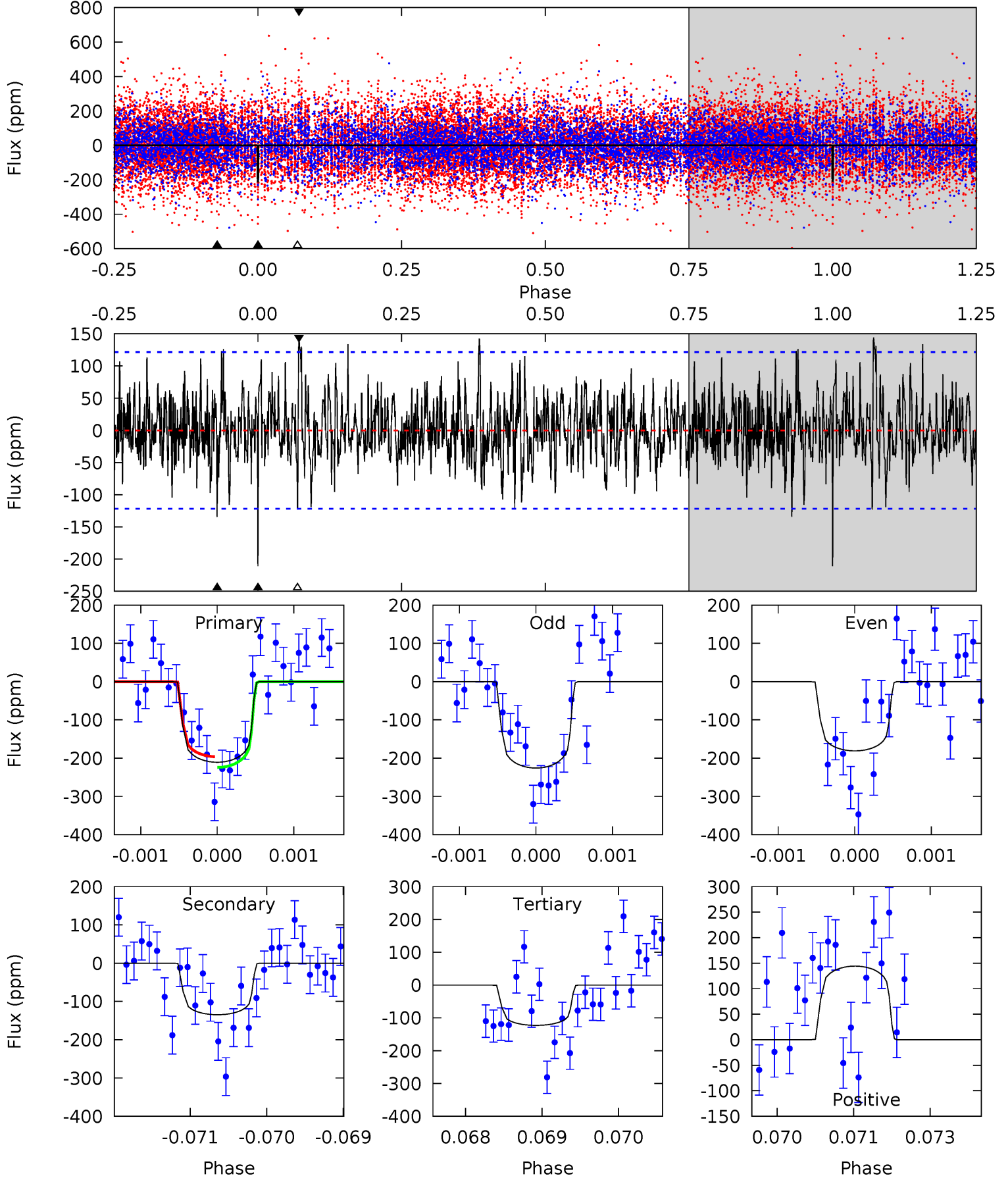
TCE 011233743-02 P=243.261532 Days  $T_0=142.281348$  (BKJD)



# DV Model-Shift Uniqueness Test

011233743-02, P = 243.255890 Days, E = 142.290777 Days

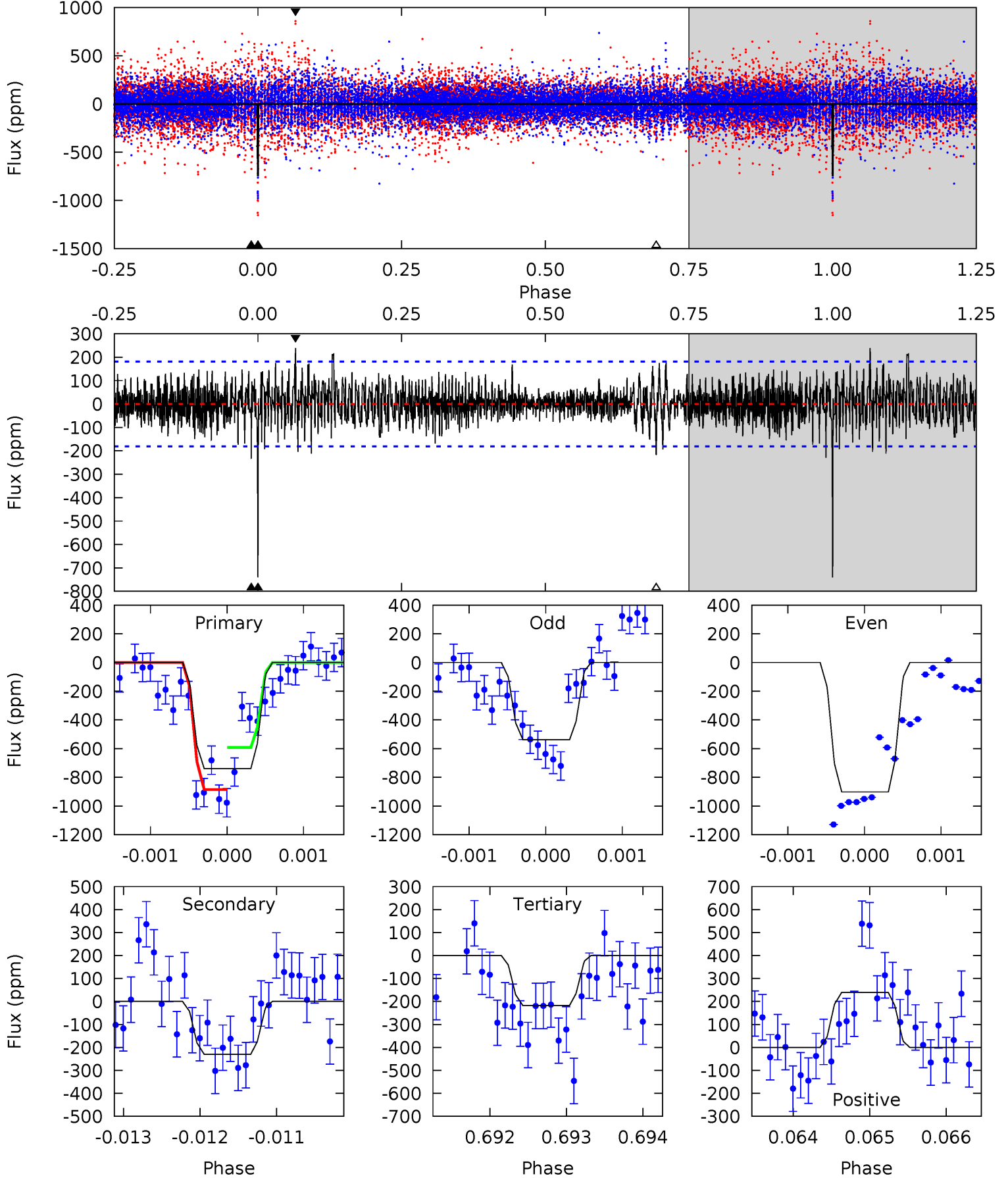
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.37	5.99	5.47	6.42	5.41	3.23	1.79	3.90	2.95	0.52	-0.43	0.96	0.94	0.41	0.62



# Alt Model-Shift Uniqueness Test

011233743-02, P = 243.261532 Days, E = 142.281348 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
22.4	6.95	6.59	7.23	5.48	3.34	1.66	15.8	15.2	0.36	-0.28	5.77	0.78	0.24	4.43





### Stellar Parameters For KIC 011233743

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7228^{+228}_{-304}$	$4.071^{+0.209}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$1.817^{+0.489}_{-0.537}$	$1.419^{+0.204}_{-0.249}$	$0.333^{+0.398}_{-0.158}$
	+3%/-4%	+5%/-4%	+94%/-94%	+27%/-30%	+14%/-18%	+119%/-47%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011233743-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-135 \pm 22$	$3.03^{+1.61}_{-1.39}$	$645^{+53}_{-55}$	$6101^{+2467}_{-996}$	$5778^{+13581}_{-3387}$
Alt.	$-230 \pm 33$	$5.79^{+1.85}_{-1.65}$	$647^{+49}_{-52}$	$5162^{+767}_{-486}$	$2708^{+2670}_{-1086}$

$T_{max}$  = 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

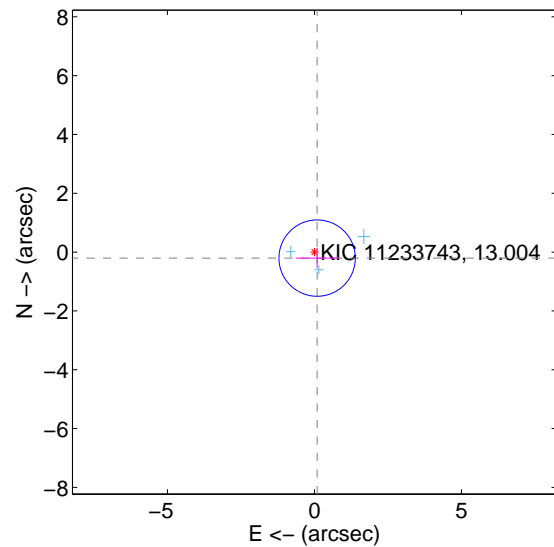
Supplemental centroid analysis for 011233743-02. Kepler magnitude: 13.00. Transit SNR 7.46

There are 3 quarters with good PRF difference image offsets

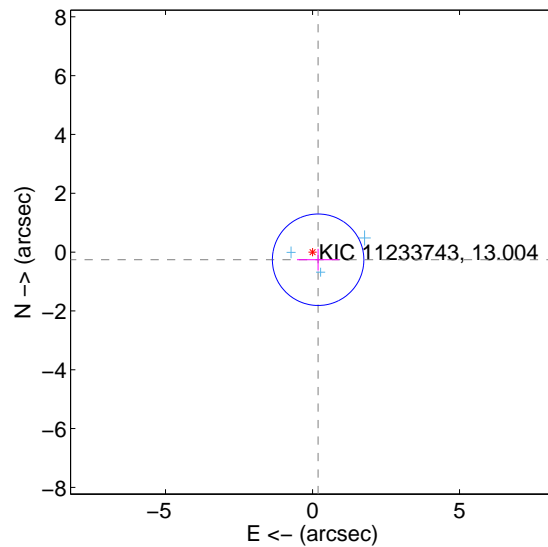
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.224 \pm 0.433$	0.52	$-0.091 \pm 0.715$	$-0.204 \pm 0.350$
PRF-fit source offset from KIC position	$0.322 \pm 0.518$	0.62	$-0.190 \pm 0.718$	$-0.260 \pm 0.370$
photometric centroid source offset	$3.45 \pm 1.14$	3.03	$-1.56 \pm 1.14$	$3.07 \pm 1.14$

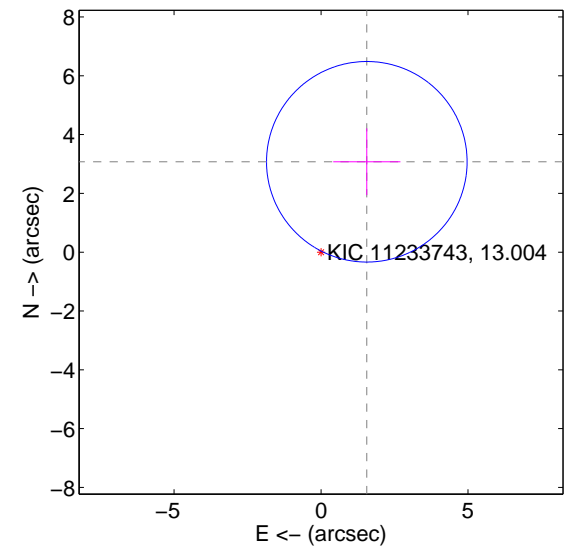
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

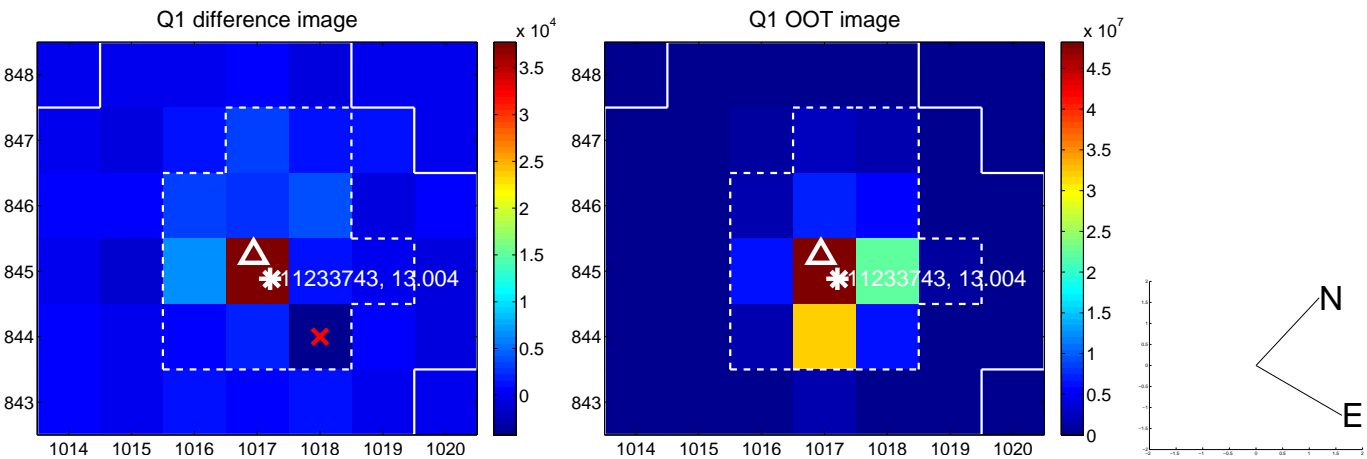


offset from photometric centroids



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.

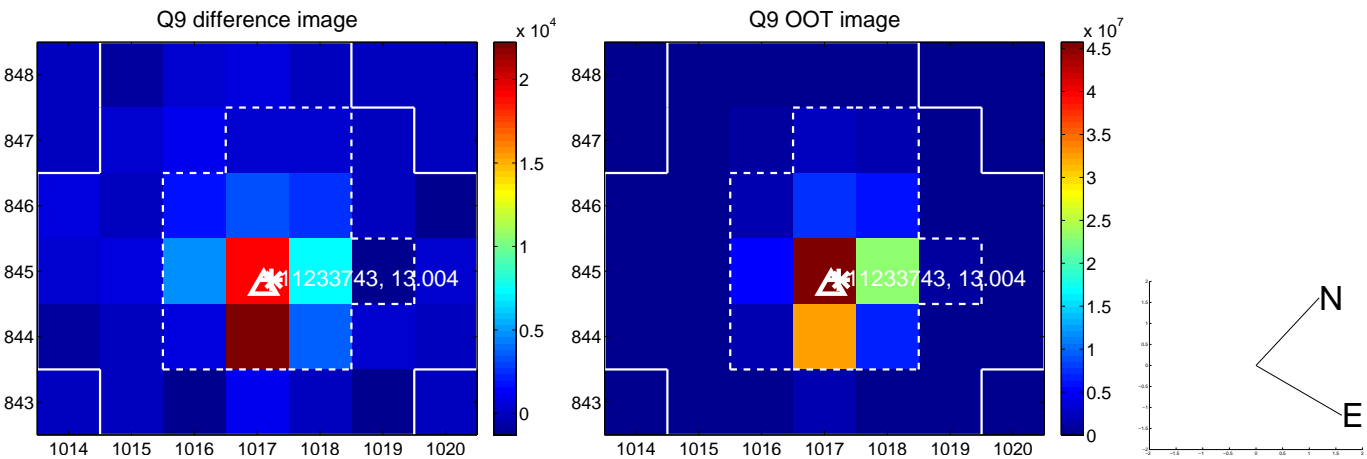
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



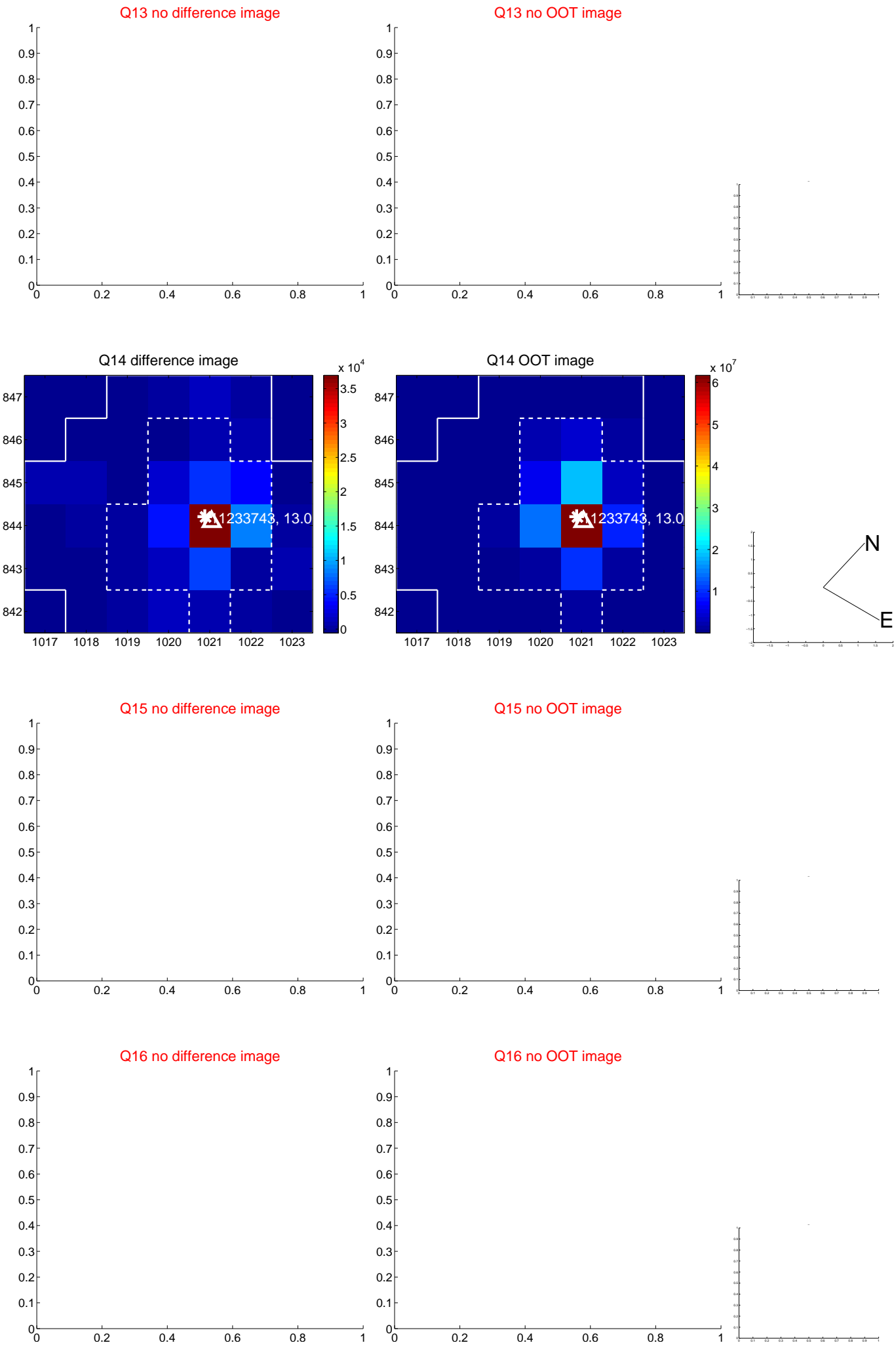
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

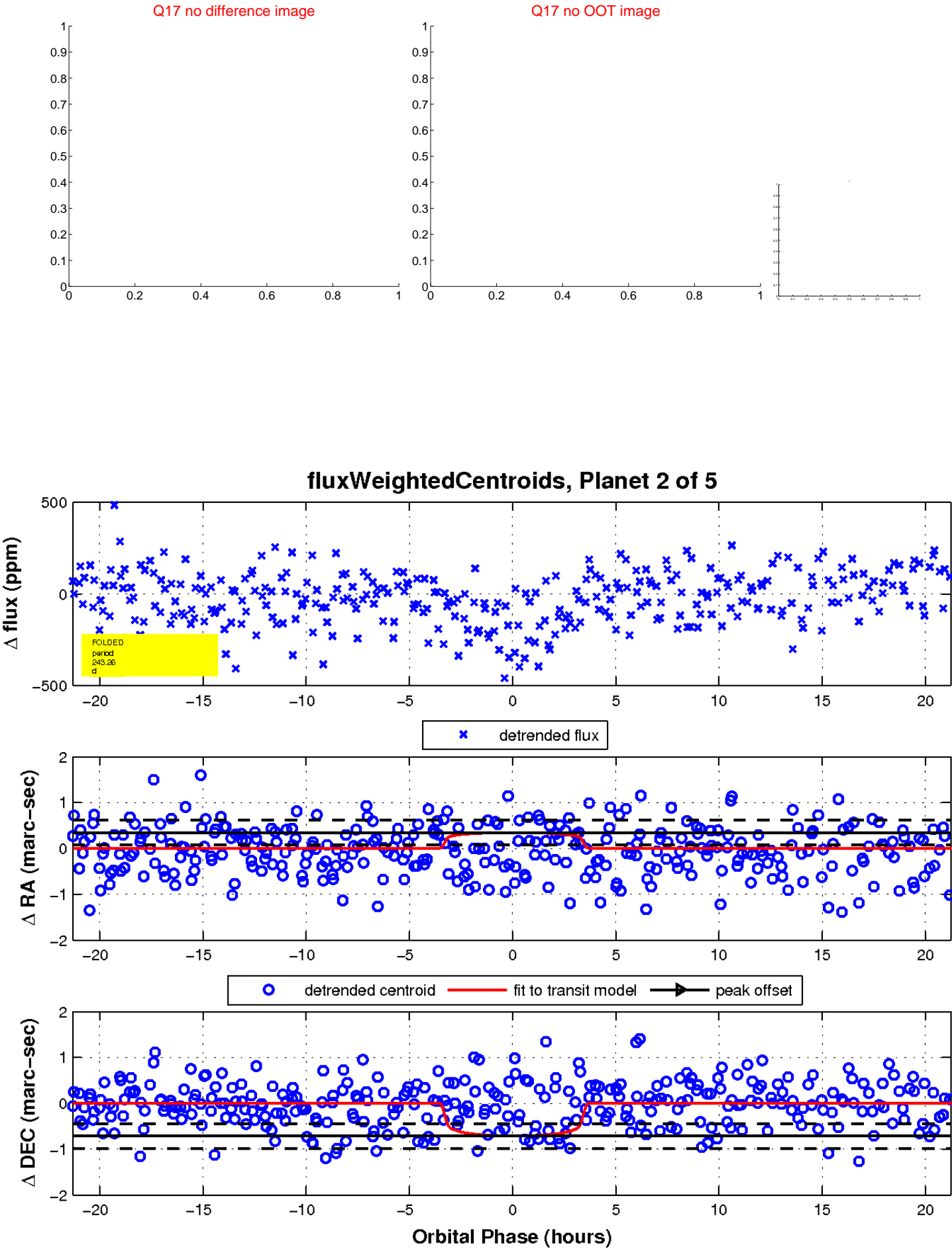


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



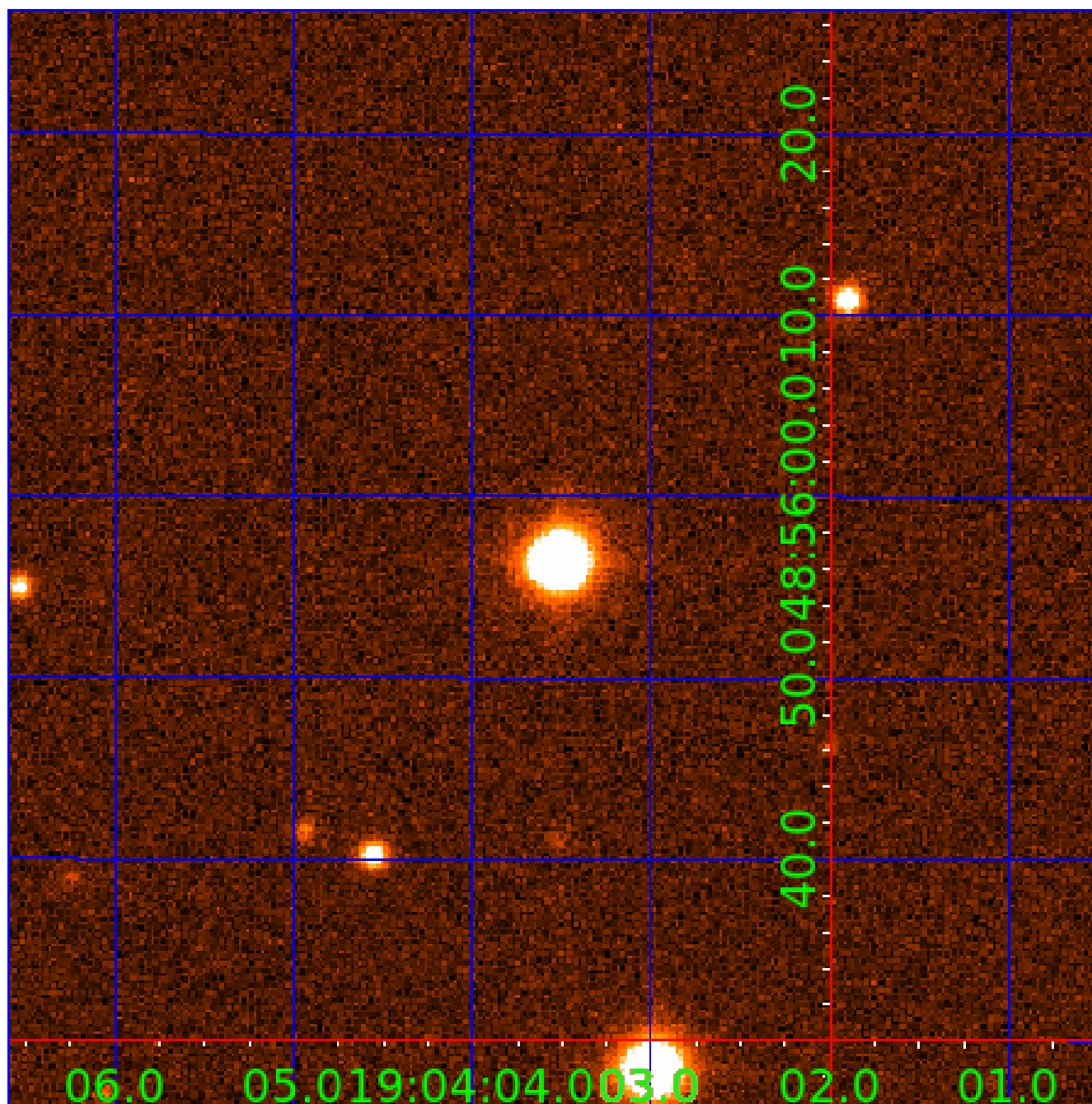


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011233743

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011233743-01	OBS	No	1.410992	131.840538	0.0	7.314	9.2	0.0	1.82	7228	0.00	10548.02
011233743-02	OBS	No	243.255890	142.290777	231.4	7.120	7.5	7.5	1.82	7228	3.11	10.99
011233743-03	OBS	No	237.388938	368.366230	237.8	9.262	7.7	7.1	1.82	7228	3.07	11.36
011233743-04	OBS	No	314.784858	135.183304	199.2	6.438	7.4	6.5	1.82	7228	2.75	7.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011233743-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011233743-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011233743-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011233743-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

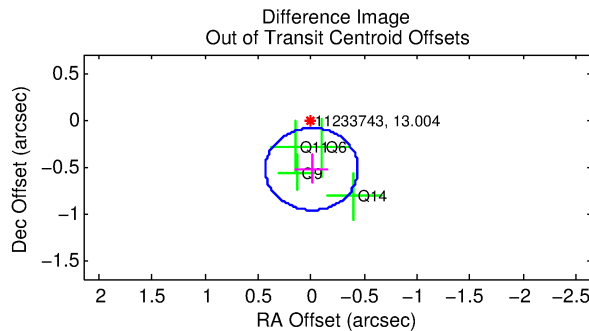
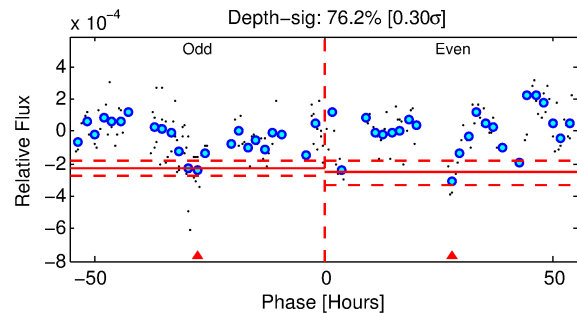
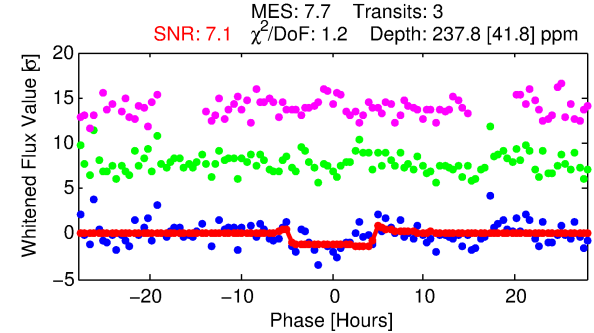
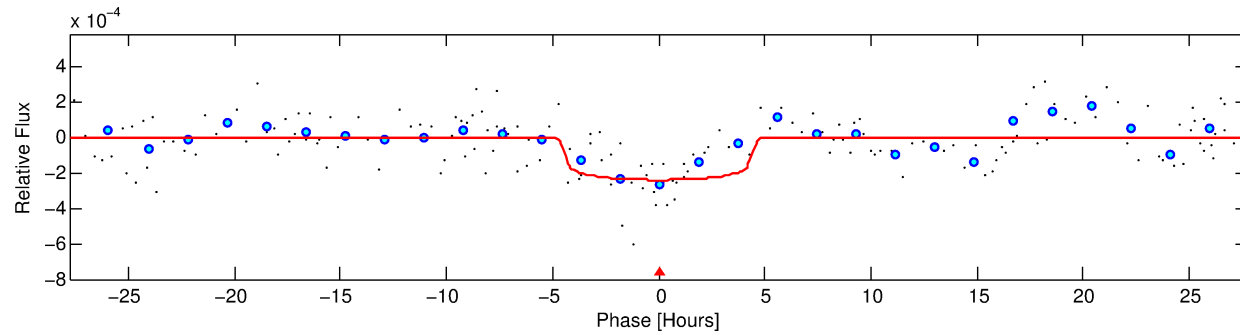
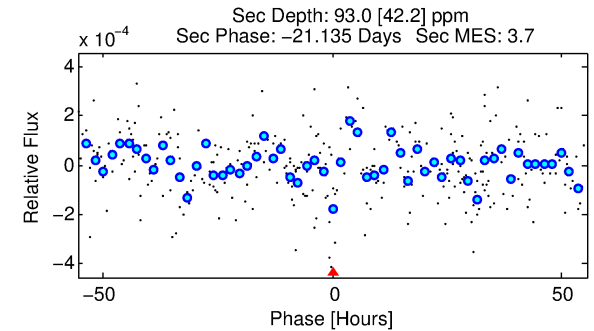
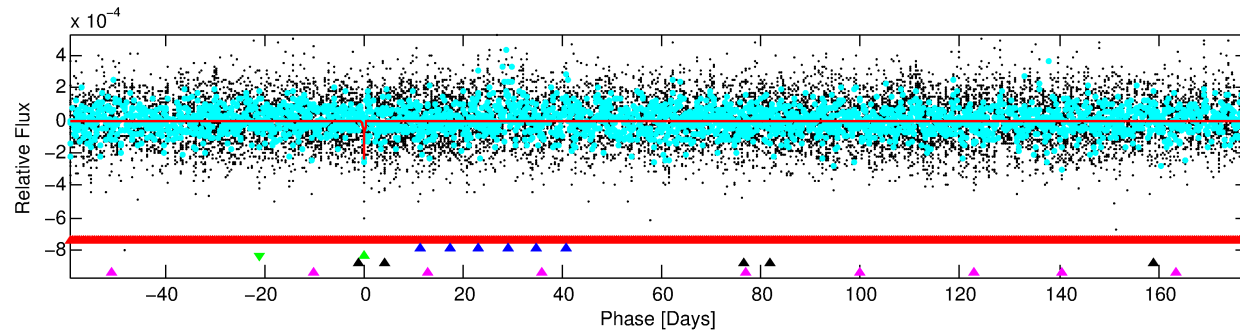
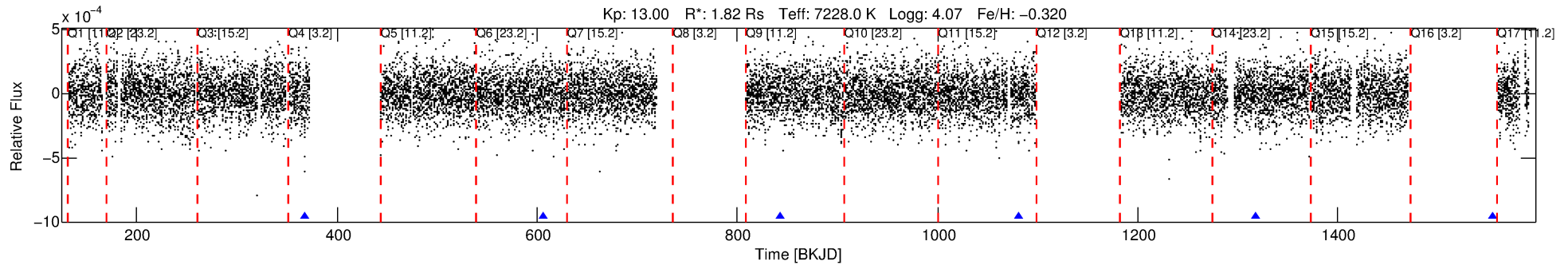
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011233743-03

No Significant Match Found

# DV One-Page Summary

KIC: 11233743 Candidate: 3 of 5 Period: 237.389 d



## DV Fit Results:

Period = 237.38894 [0.00732] d  
Epoch = 368.3662 [0.0228] BKJD  
Rp/R\* = 0.0155 [0.0048]  
a/R\* = 127.09 [228.24]  
b = 0.78 [0.89]  
Seff = 11.36 [4.68]  
Teff = 468 [48] K  
Rp = 3.07 [1.31] Re  
a = 0.8432 [0.2142] AU  
Ag = 3864.25 [3308.37] [1.17σ]  
Teffp = 5706 [1123] K [4.66σ]

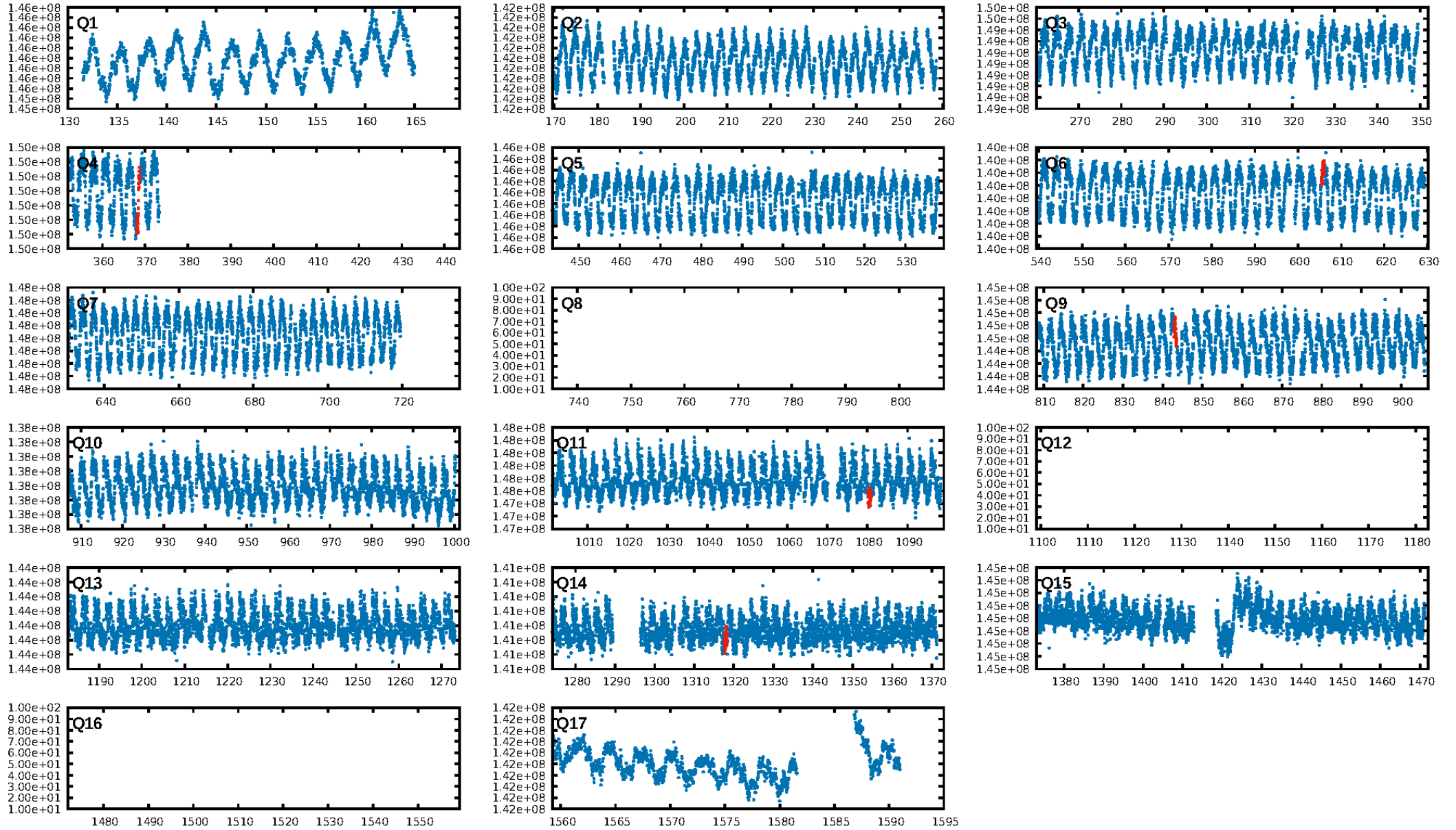
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [174.80σ]  
LongPeriod-sig: 100.0% [12.05σ]  
ModelChiSquare2-sig: 69.3%  
ModelChiSquareGof-sig: 99.5%  
**Bootstrap-pfa: 2.58e-08**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -0.2158  
Centroid-sig: 20.6%  
Centroid-so: 1.046 arcsec [1.26σ]  
**OotOffset-rm: 0.526 arcsec [3.60σ]**  
**KicOffset-rm: 0.597 arcsec [3.84σ]**  
OotOffset-st: 2/1/0/1 [4]  
KicOffset-st: 2/1/0/1 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.00 [0/5]

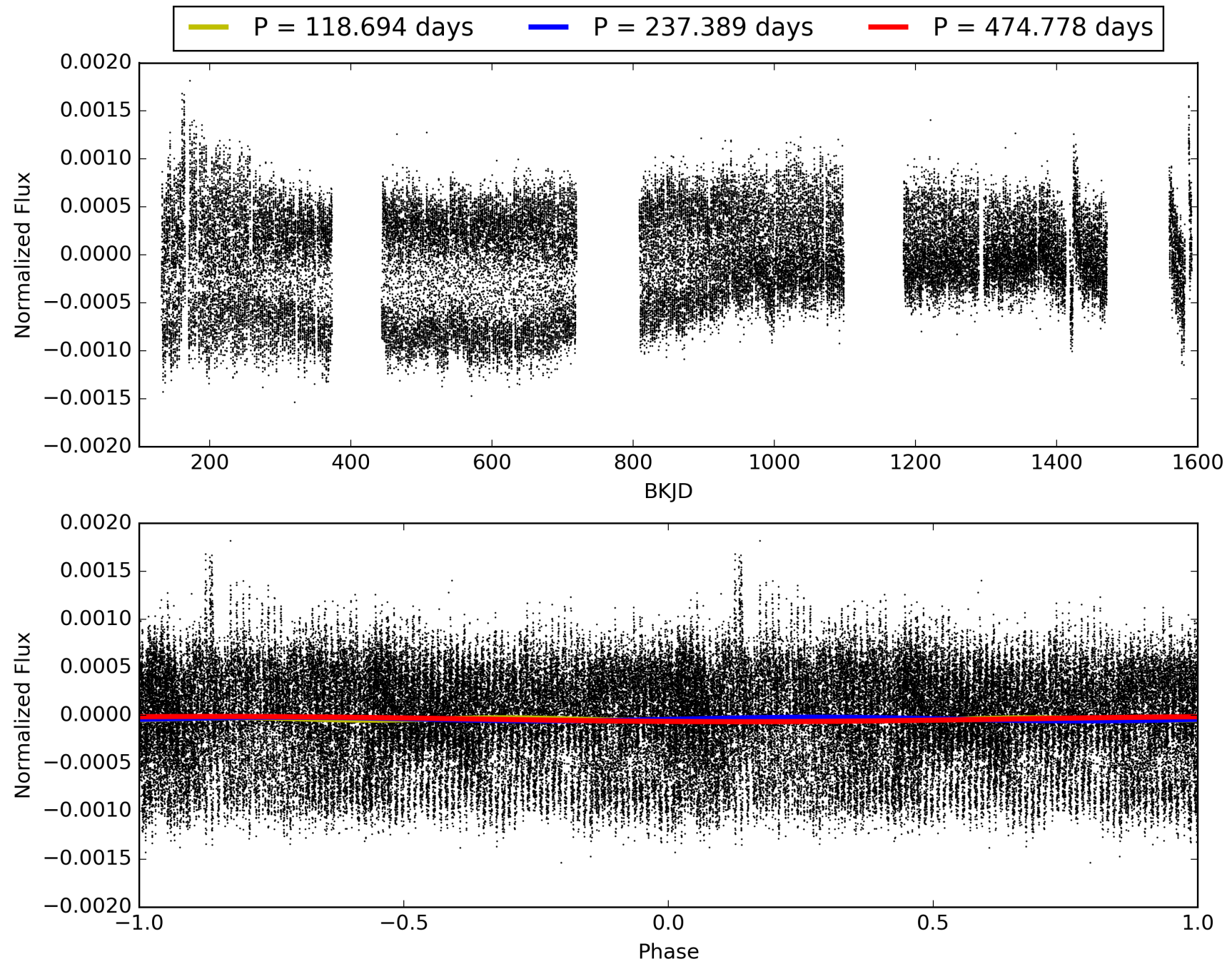
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:06:06 Z

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

# TCE 011233743-03, PDC Light Curves



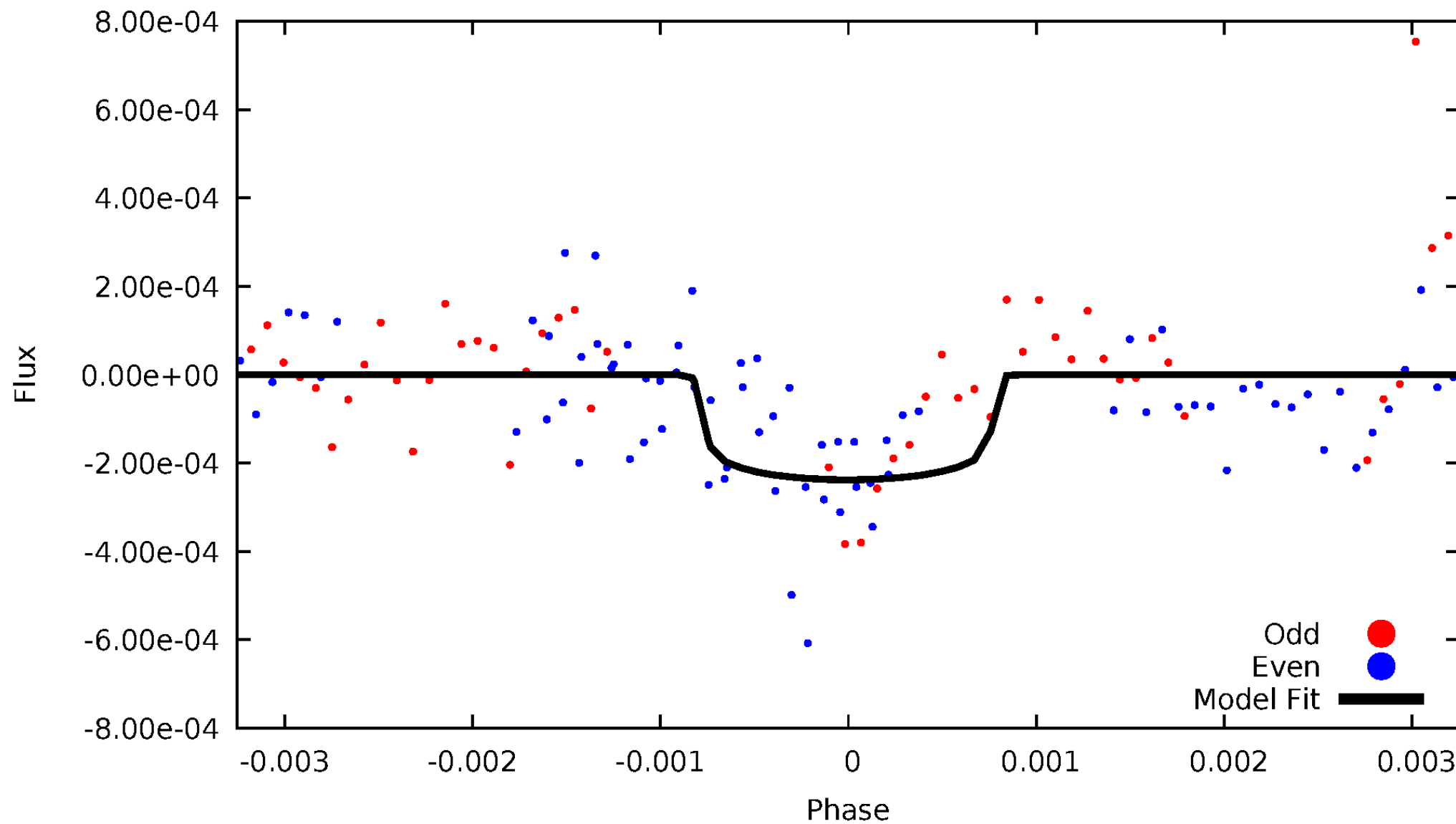
TCE 011233743-03





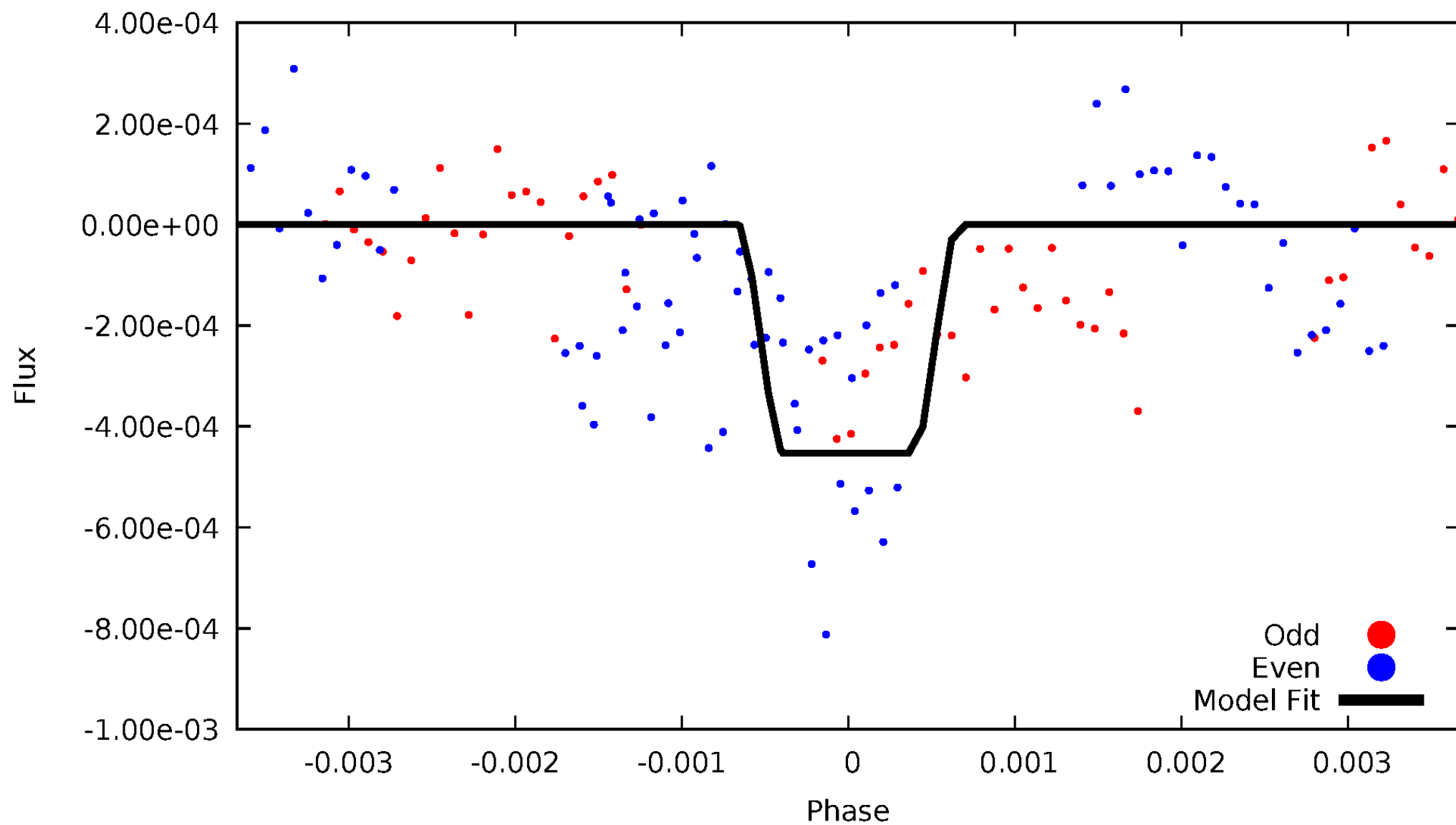
# DV Odd/Even

TCE 011233743-03



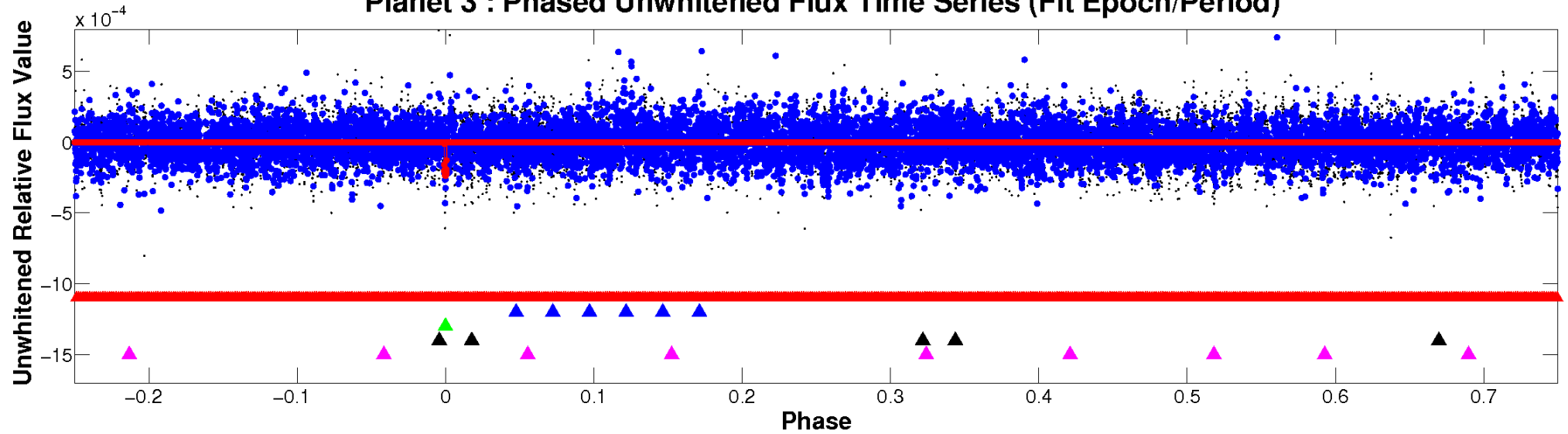
# ALT Odd/Even

TCE 011233743-03

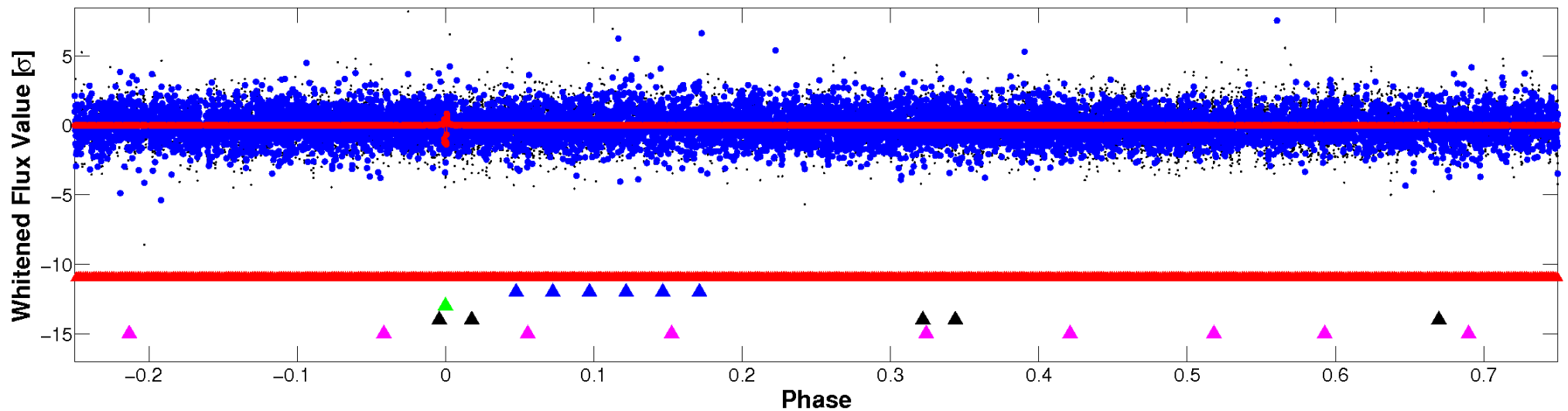


# Non-Whitened Vs. Whitened Light Curve

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

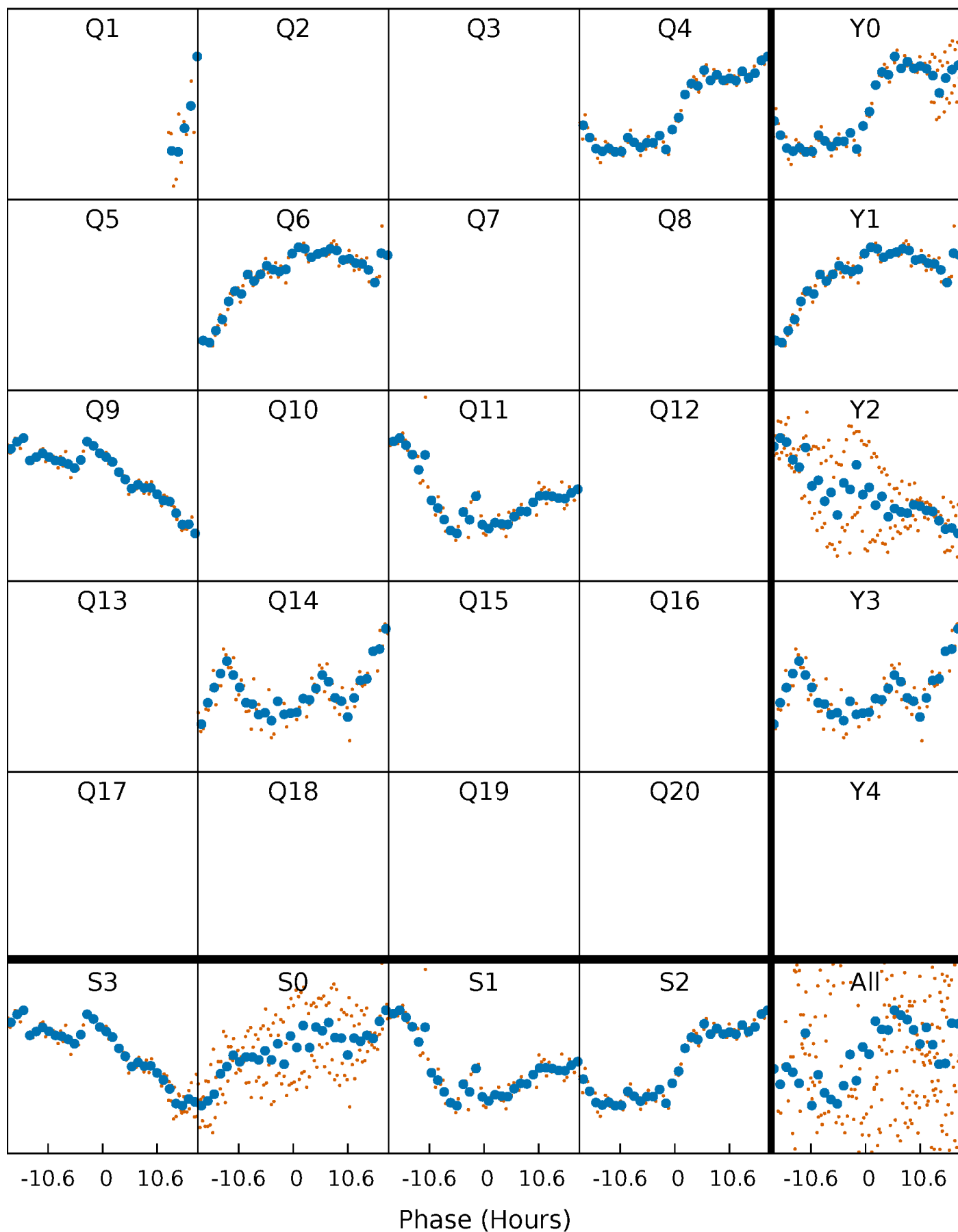


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



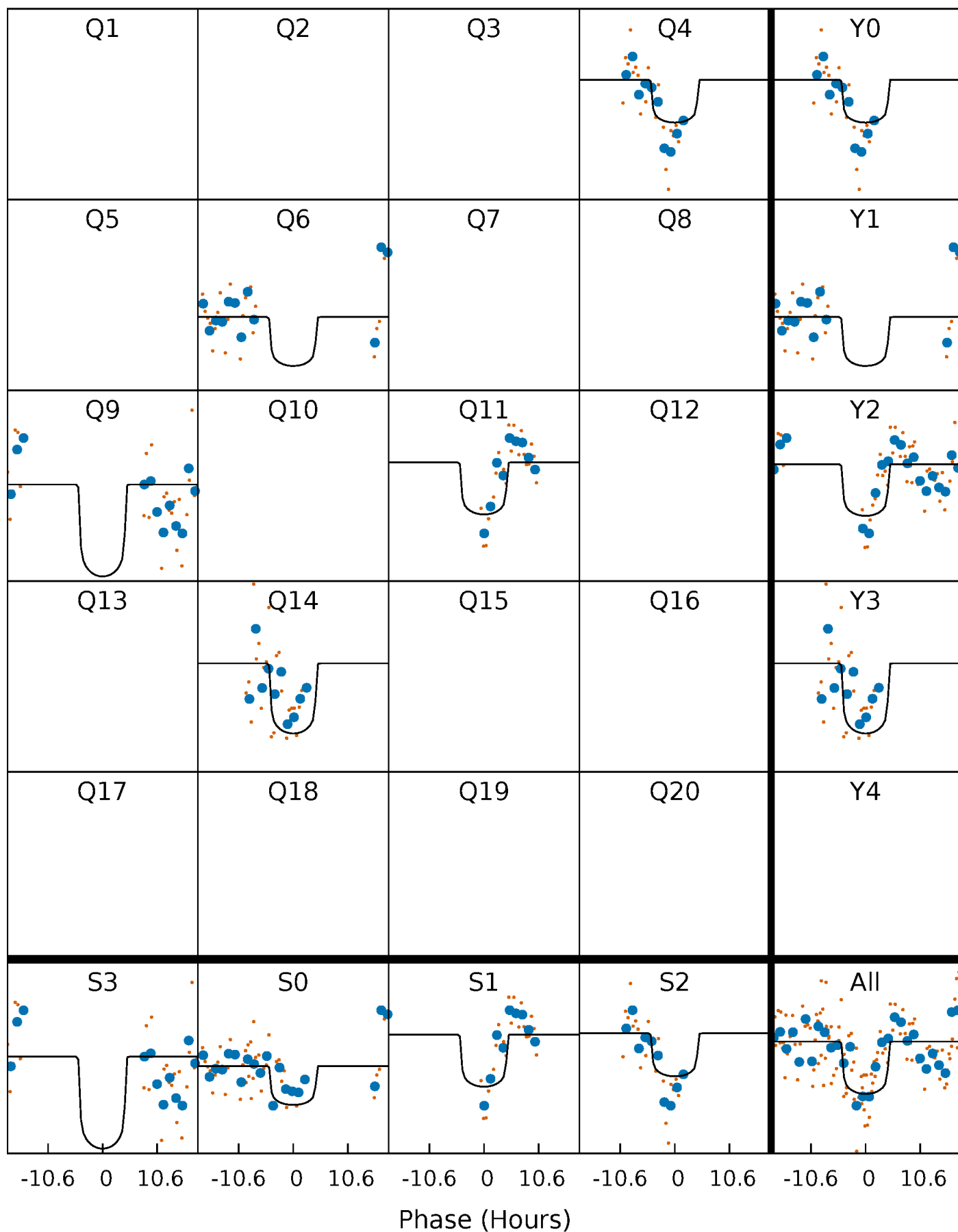
# PDC Quarter-Phased Transit Curves

TCE 011233743-03     $P=237.388938$  Days     $T_0=368.366230$  (BKJD)



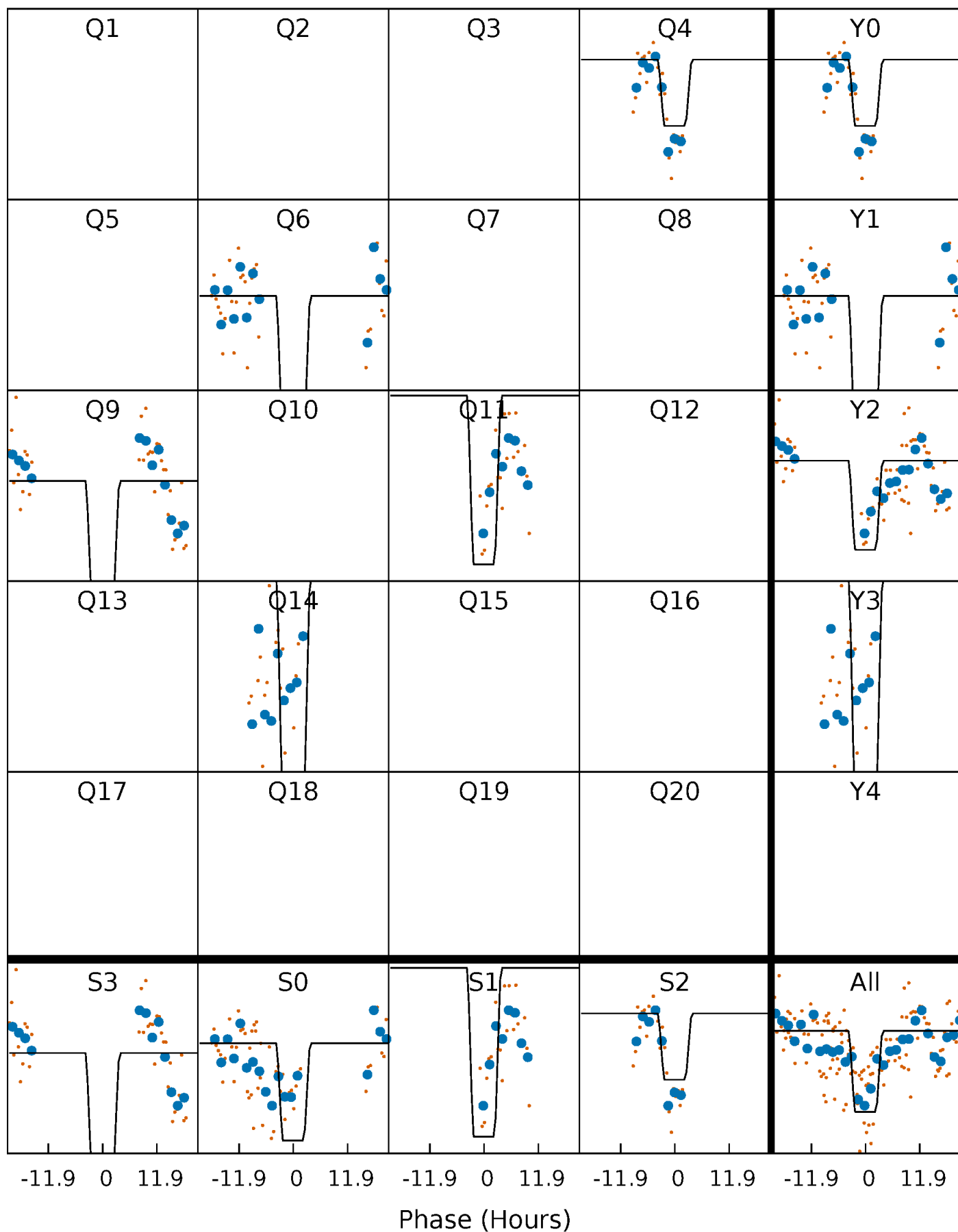
# DV Quarter-Phased Transit Curves

TCE 011233743-03     $P=237.388938$  Days     $T_0=368.366230$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

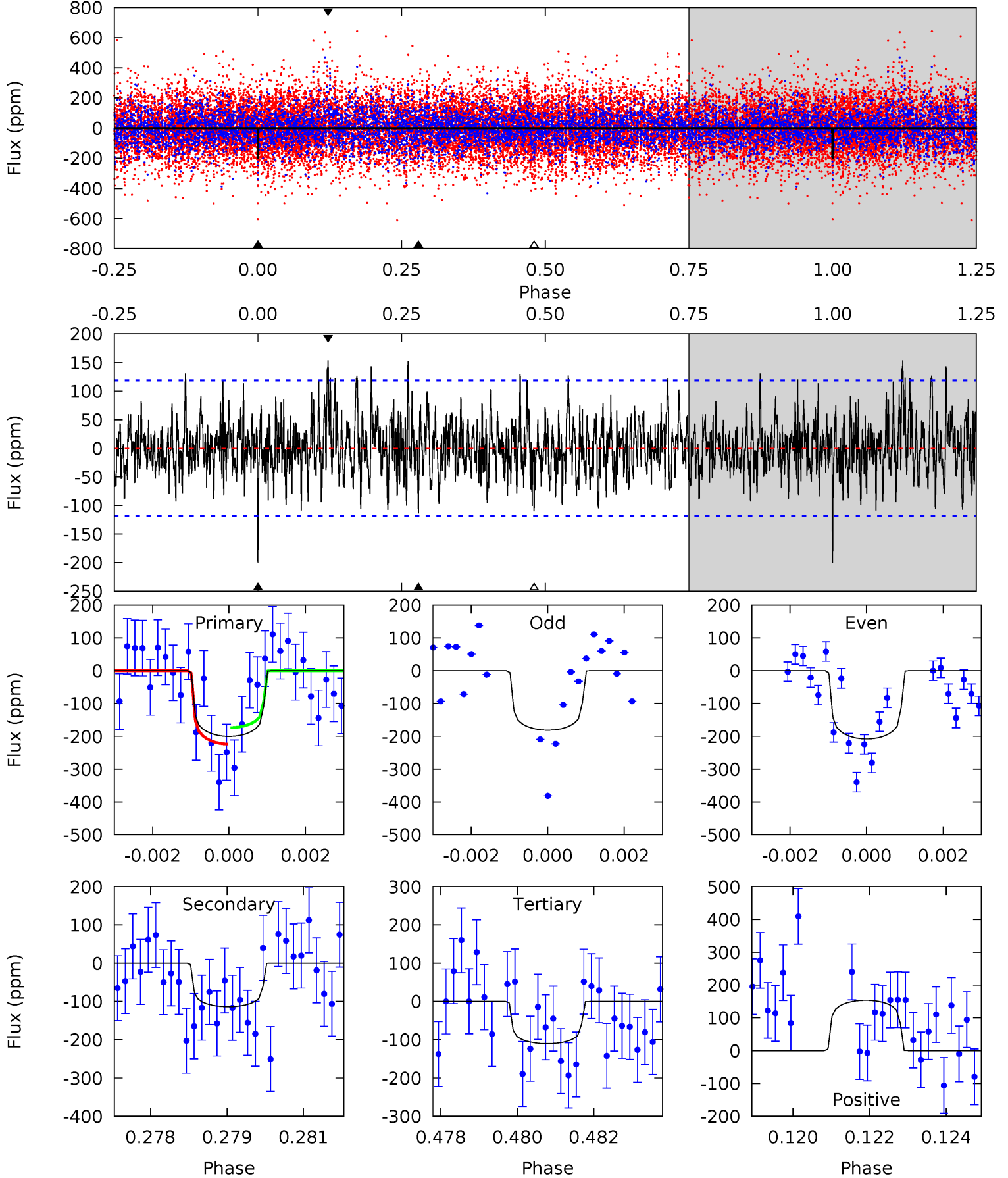
TCE 011233743-03     $P=237.399435$  Days     $T_0=368.346814$  (BKJD)



# DV Model-Shift Uniqueness Test

011233743-03, P = 237.388938 Days, E = 130.977292 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
9.03	5.13	4.97	6.93	5.36	3.14	1.83	4.06	2.11	0.16	-1.80	0.55	1.12	0.43	1.13

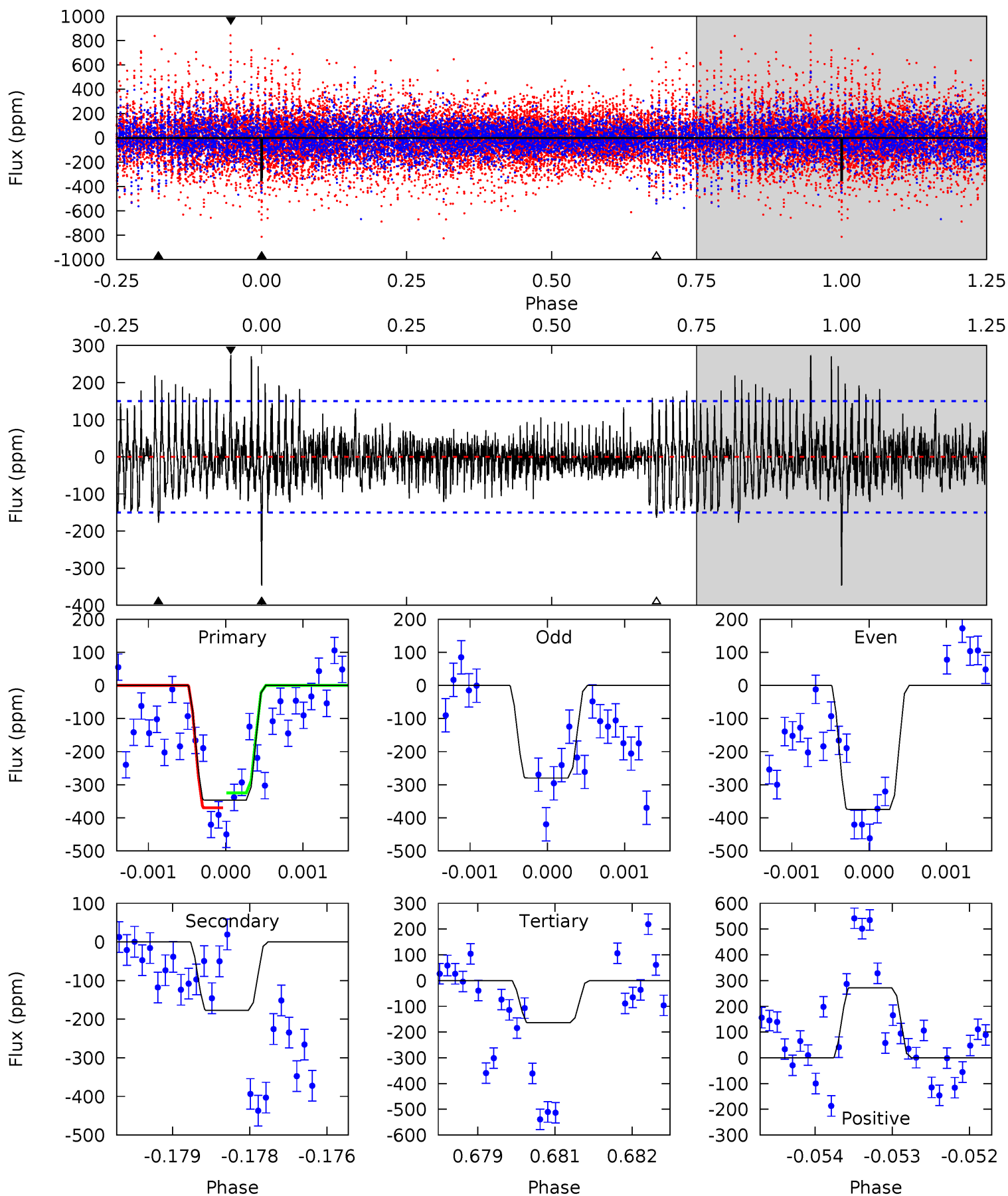




# Alt Model-Shift Uniqueness Test

011233743-03, P = 237.399435 Days, E = 130.947379 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
12.4	6.36	5.88	9.76	5.40	3.20	1.91	6.56	2.68	0.48	-3.41	1.52	1.22	0.44	0.81



### Stellar Parameters For KIC 011233743

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7228^{+228}_{-304}$	$4.071^{+0.209}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$1.817^{+0.489}_{-0.537}$	$1.419^{+0.204}_{-0.249}$	$0.333^{+0.398}_{-0.158}$
	+3%/-4%	+5%/-4%	+94%/-94%	+27%/-30%	+14%/-18%	+119%/-47%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011233743-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-114 \pm 22$	$3.06^{+1.04}_{-1.03}$	$648^{+54}_{-50}$	$5891^{+1267}_{-795}$	$4693^{+5654}_{-2246}$
Alt.	$-177 \pm 28$	$4.13^{+1.28}_{-1.12}$	$650^{+52}_{-54}$	$5647^{+837}_{-555}$	$4025^{+3495}_{-1687}$

$T_{\text{max}}$  = 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

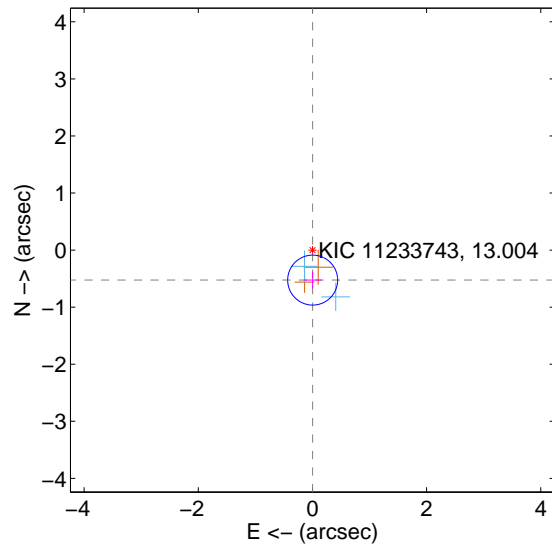
Supplemental centroid analysis for 011233743-03. Kepler magnitude: 13.00. Transit SNR 7.07

There are 2 quarters with good PRF difference image offsets

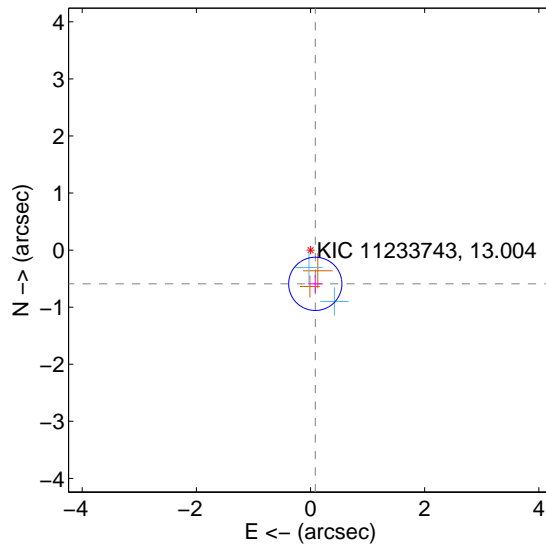
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.526 \pm 0.146$	3.60	$-0.004 \pm 0.158$	$-0.526 \pm 0.146$
PRF-fit source offset from KIC position	$0.597 \pm 0.155$	3.84	$-0.083 \pm 0.130$	$-0.592 \pm 0.156$
photometric centroid source offset	$1.05 \pm 0.83$	1.26	$0.94 \pm 0.83$	$-0.46 \pm 0.82$

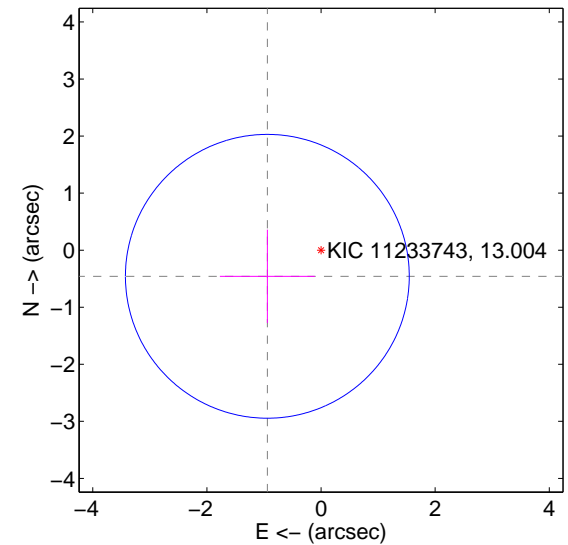
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

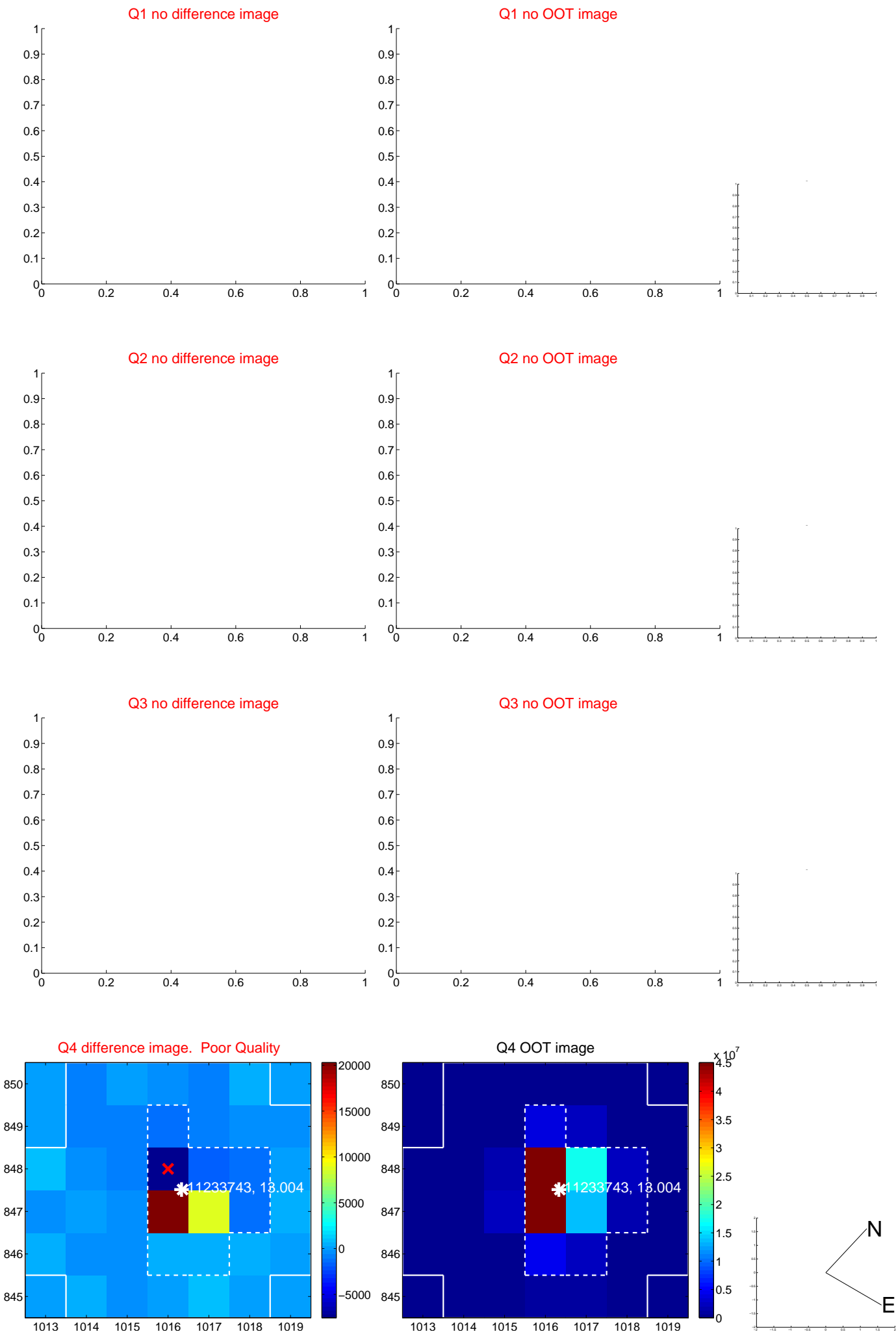


offset from photometric centroids

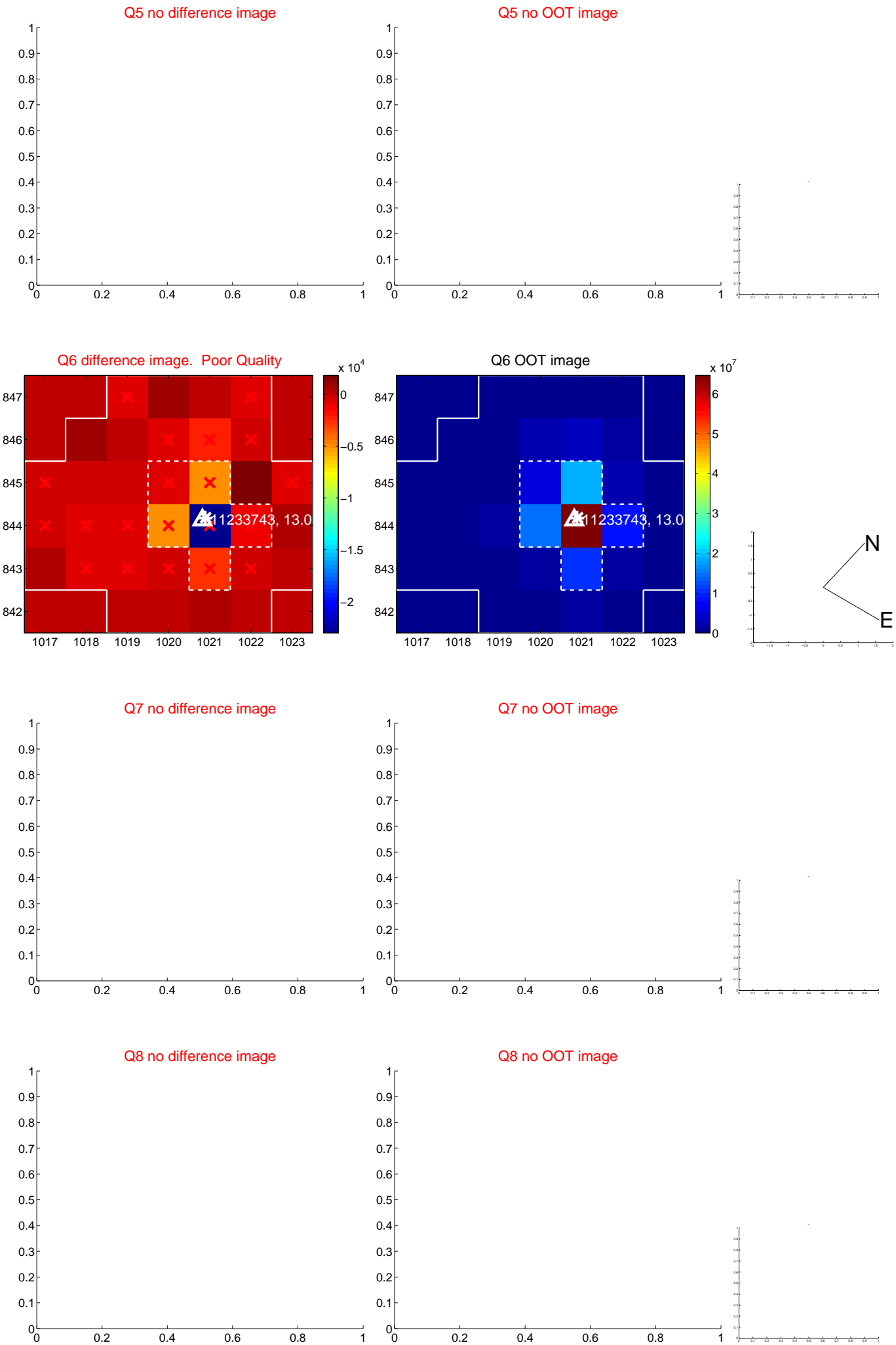


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

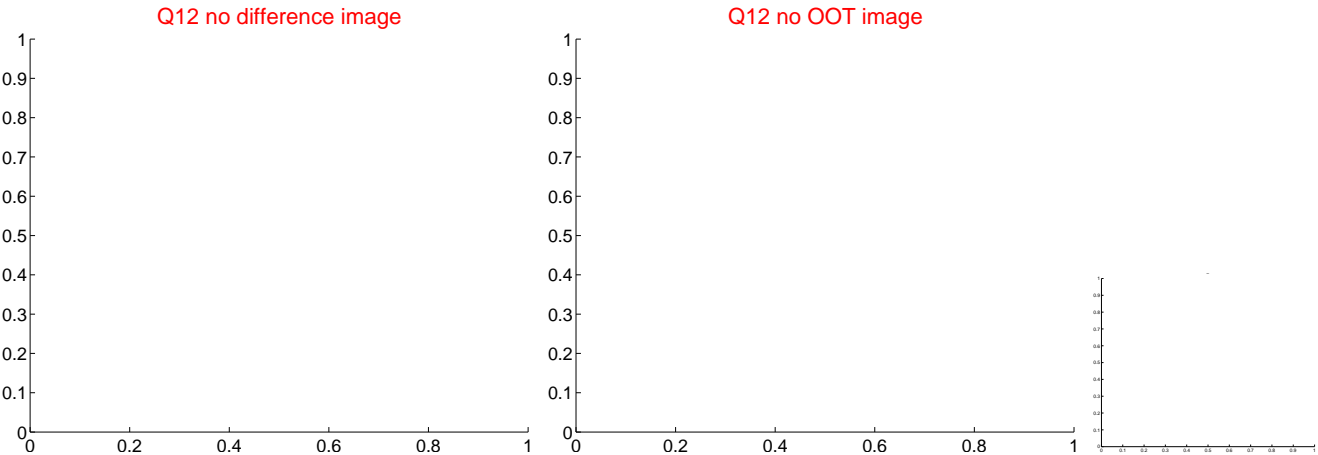
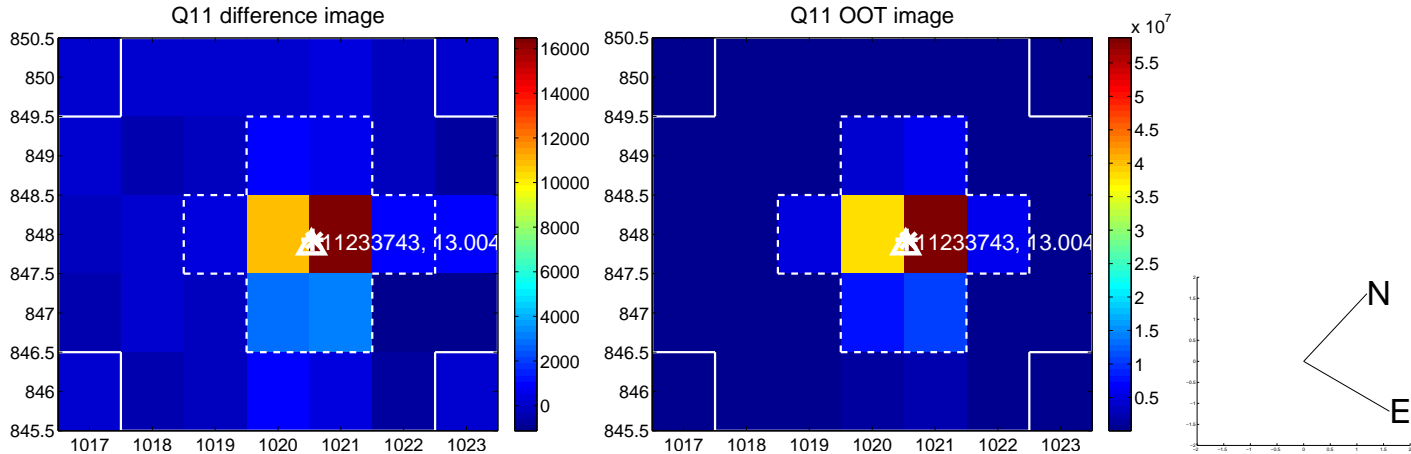
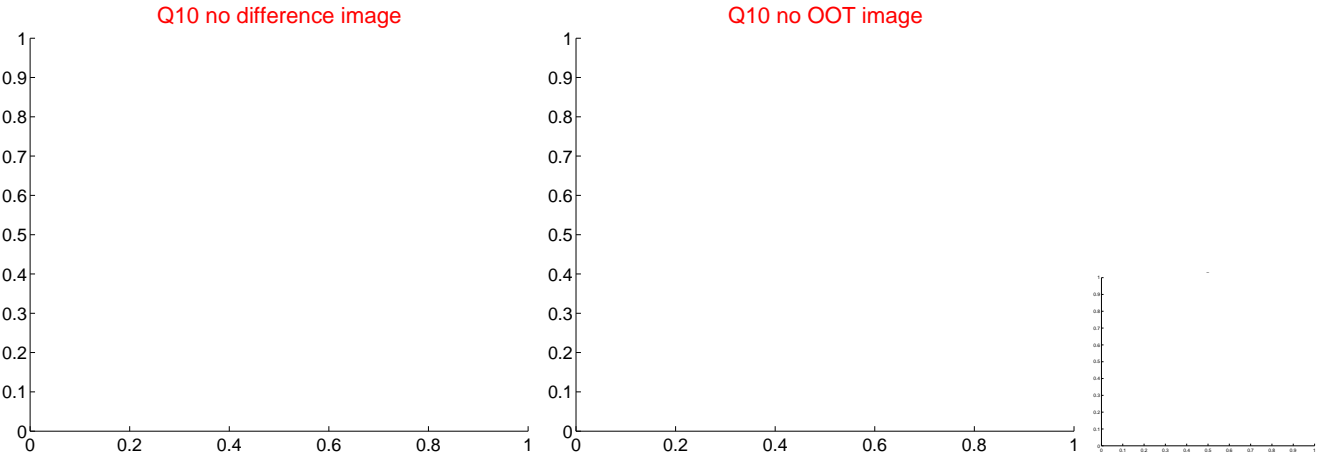
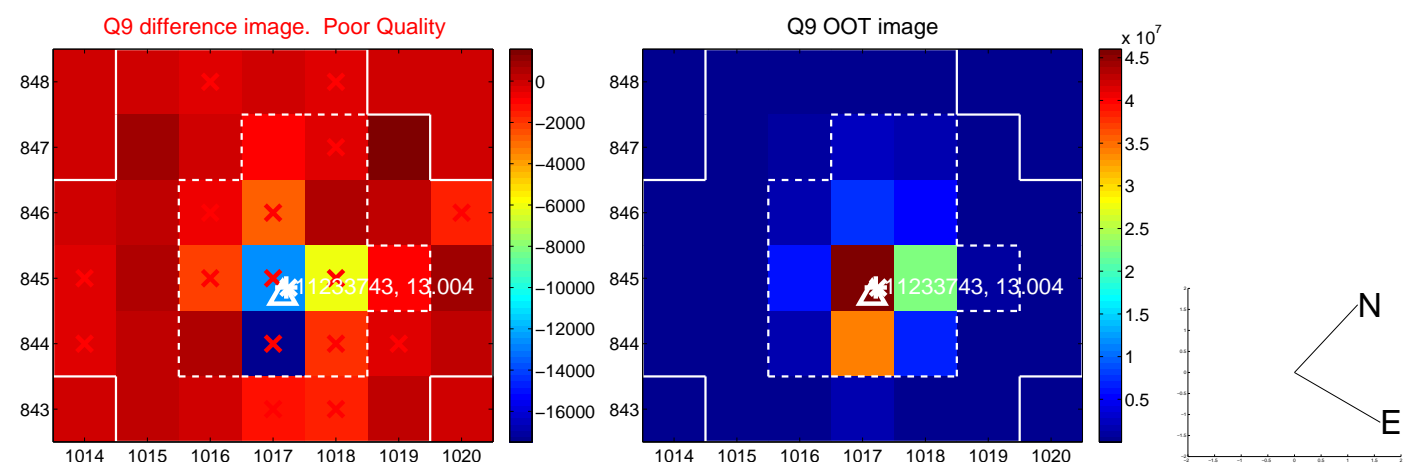
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



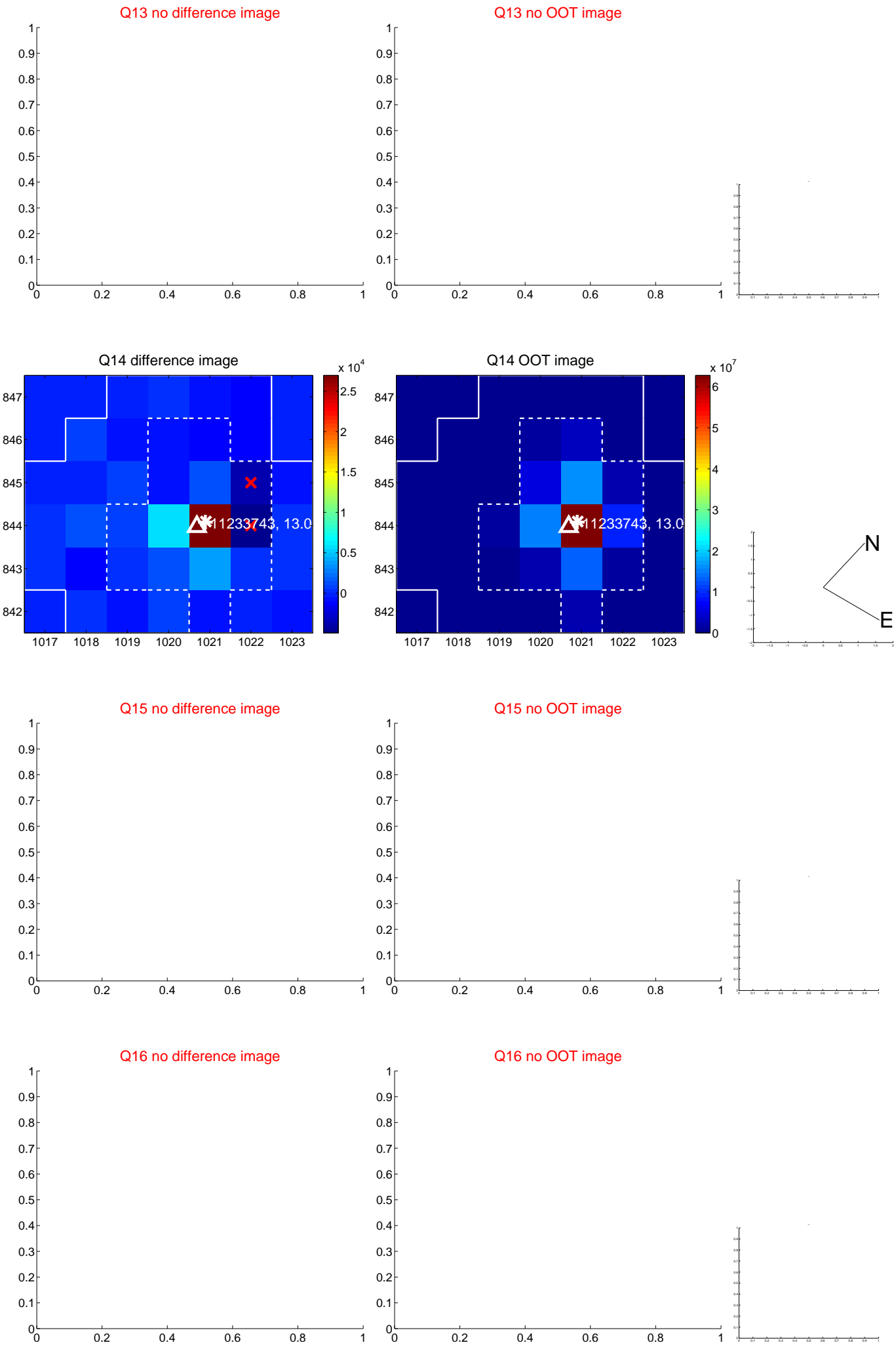
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

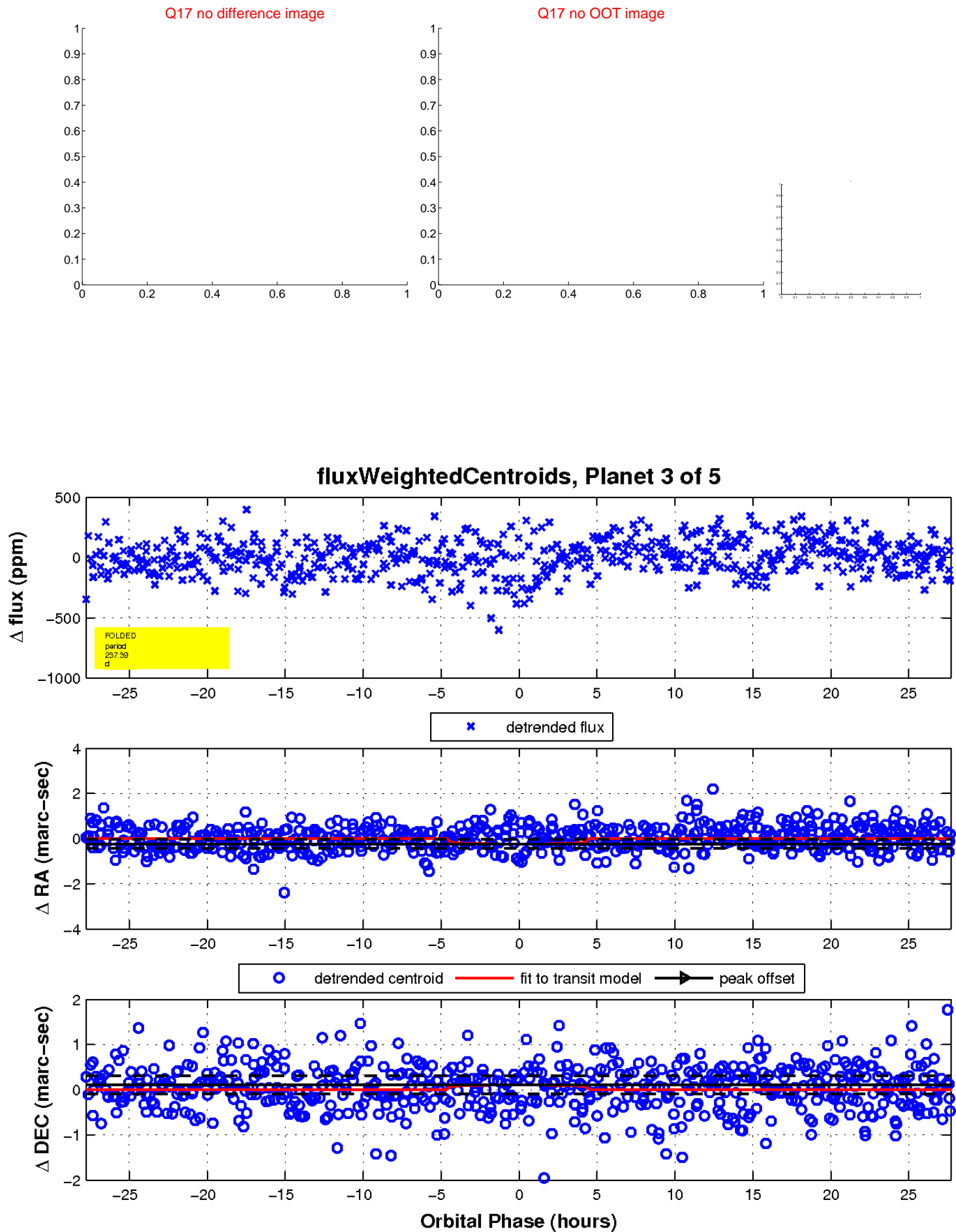


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



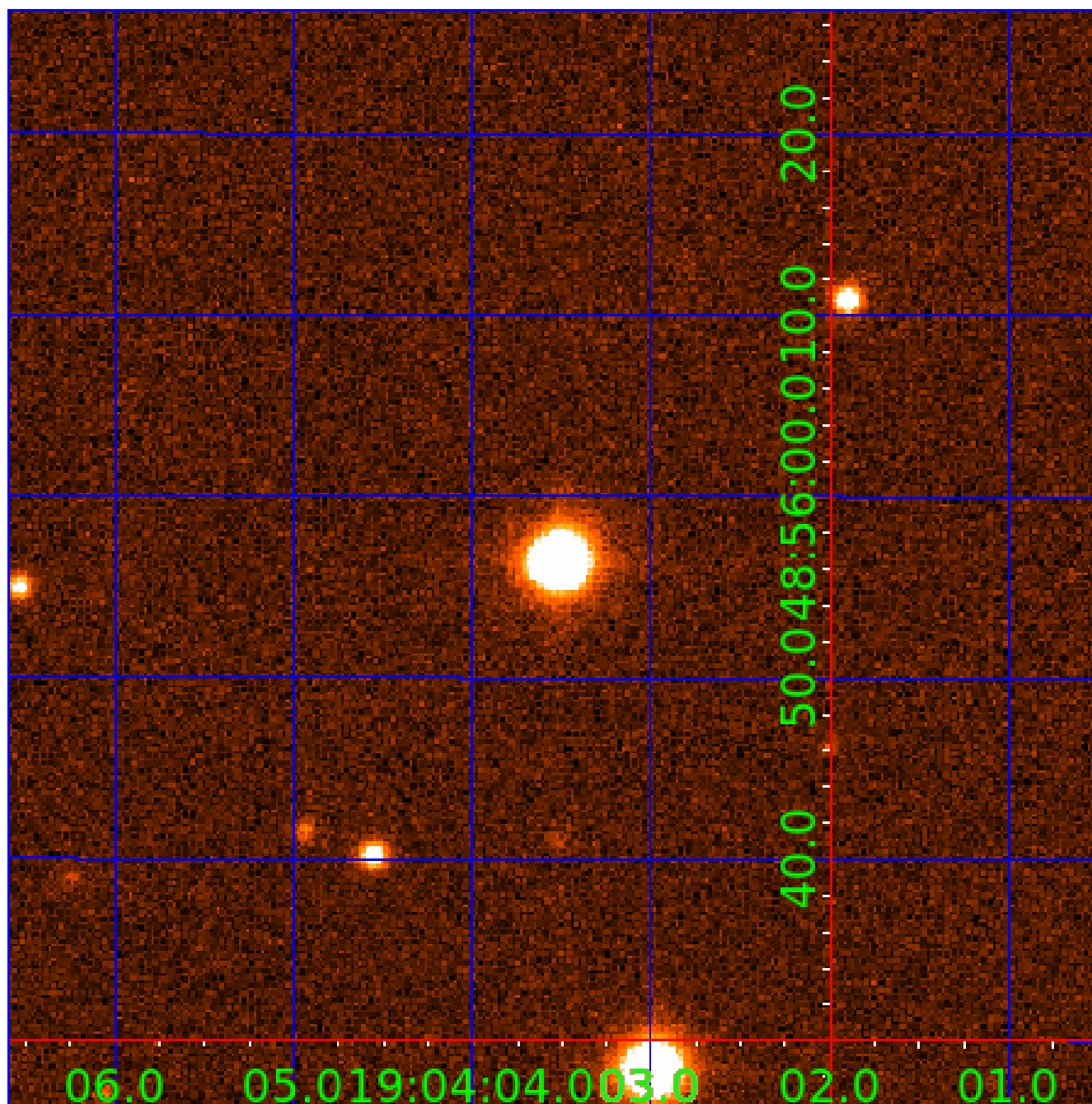


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011233743

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011233743-01	OBS	No	1.410992	131.840538	0.0	7.314	9.2	0.0	1.82	7228	0.00	10548.02
011233743-02	OBS	No	243.255890	142.290777	231.4	7.120	7.5	7.5	1.82	7228	3.11	10.99
011233743-03	OBS	No	237.388938	368.366230	237.8	9.262	7.7	7.1	1.82	7228	3.07	11.36
011233743-04	OBS	No	314.784858	135.183304	199.2	6.438	7.4	6.5	1.82	7228	2.75	7.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011233743-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011233743-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011233743-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
011233743-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

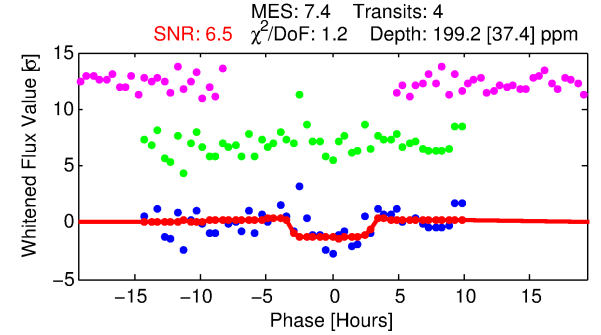
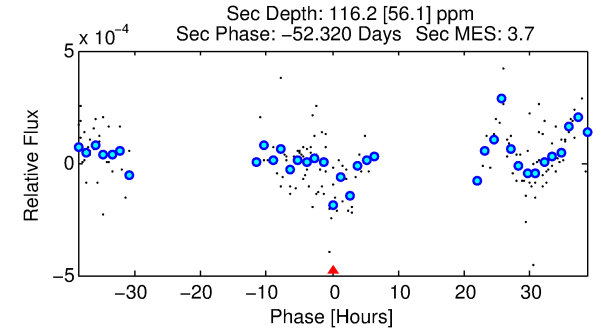
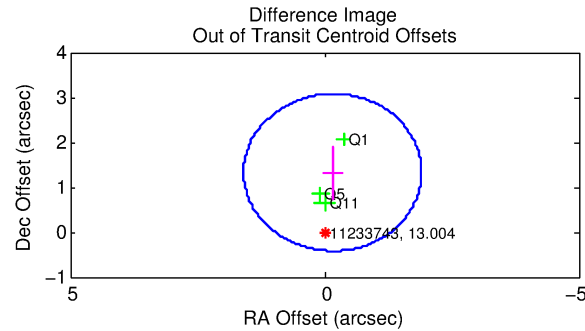
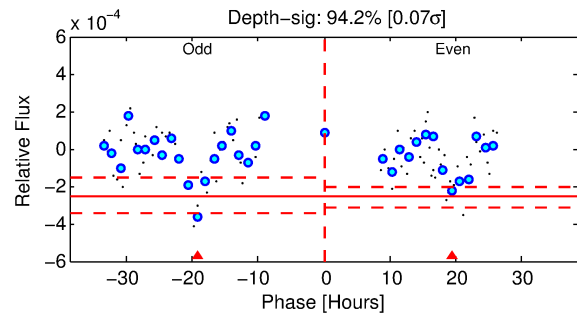
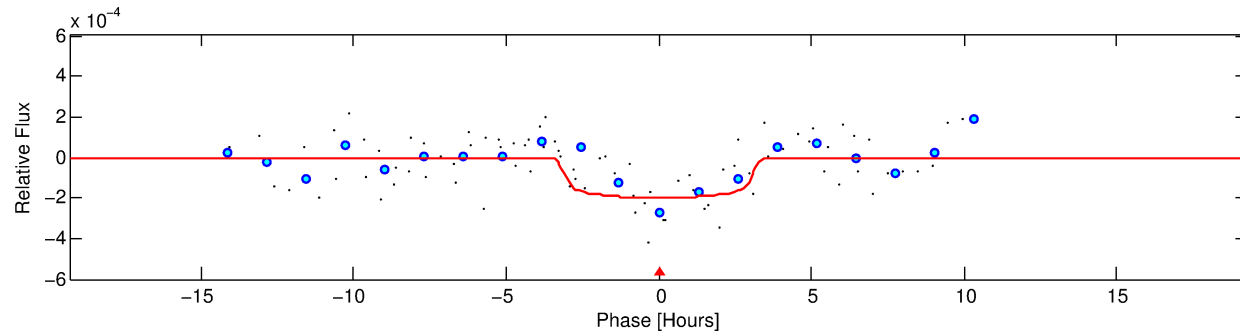
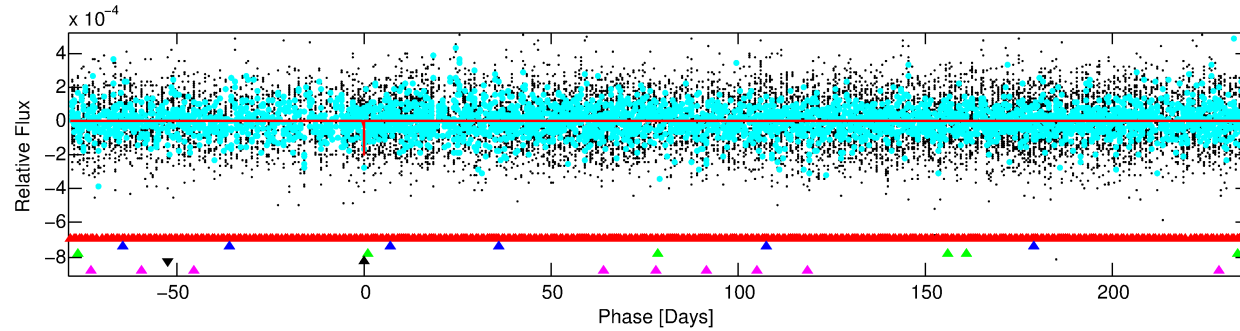
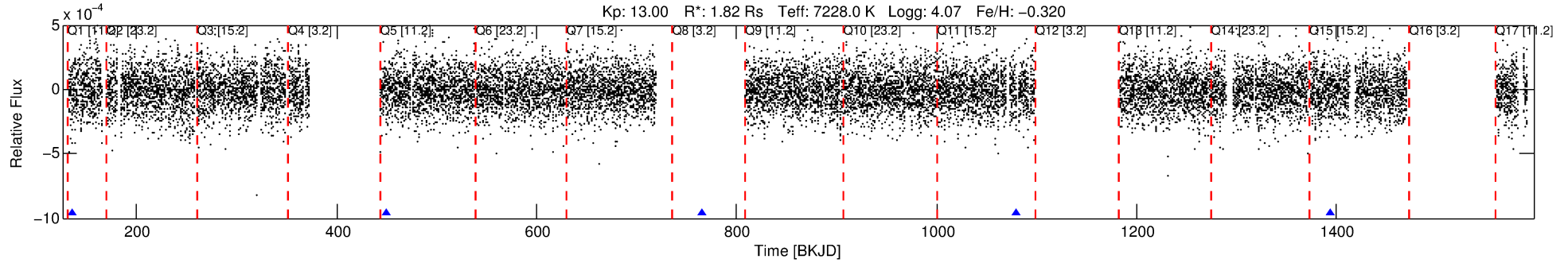
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011233743-04

No Significant Match Found

# DV One-Page Summary

KIC: 11233743 Candidate: 4 of 5 Period: 314.785 d



## DV Fit Results:

Period = 314.78486 [0.00676] d  
Epoch = 135.1833 [0.0140] BKJD  
Rp/R\* = 0.0138 [0.0146]  
a/R\* = 275.05 [1788.39]  
b = 0.70 [4.81]  
Seff = 7.80 [3.21]  
Teq = 426 [44] K  
Rp = 2.75 [3.01] Re  
a = 1.0177 [0.2586] AU  
Ag = 8785.02 [19314.34] [0.45 $\sigma$ ]  
Teffp = 6378 [3464] K [1.72 $\sigma$ ]

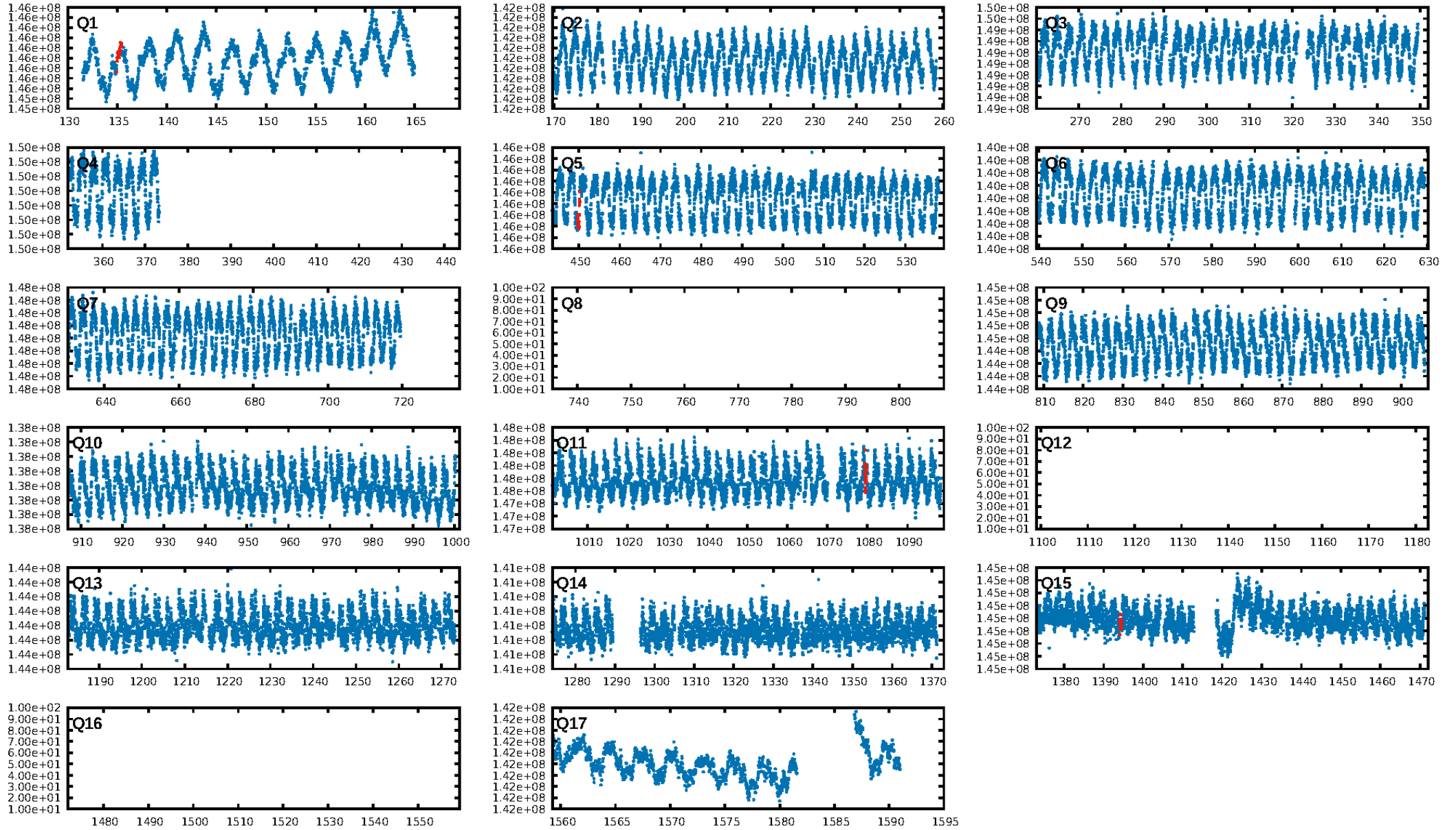
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [178.85 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 42.9%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 5.68e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.365  
Centroid-sig: 77.1%  
Centroid-so: 0.714 arcsec [0.52 $\sigma$ ]  
OotOffset-rm: 1.336 arcsec [2.29 $\sigma$ ]  
OotOffset-st: 0/1/0/2 [3]  
KicOffset-rm: 1.301 arcsec [2.22 $\sigma$ ]  
KicOffset-st: 0/1/0/2 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.00 [0/4]

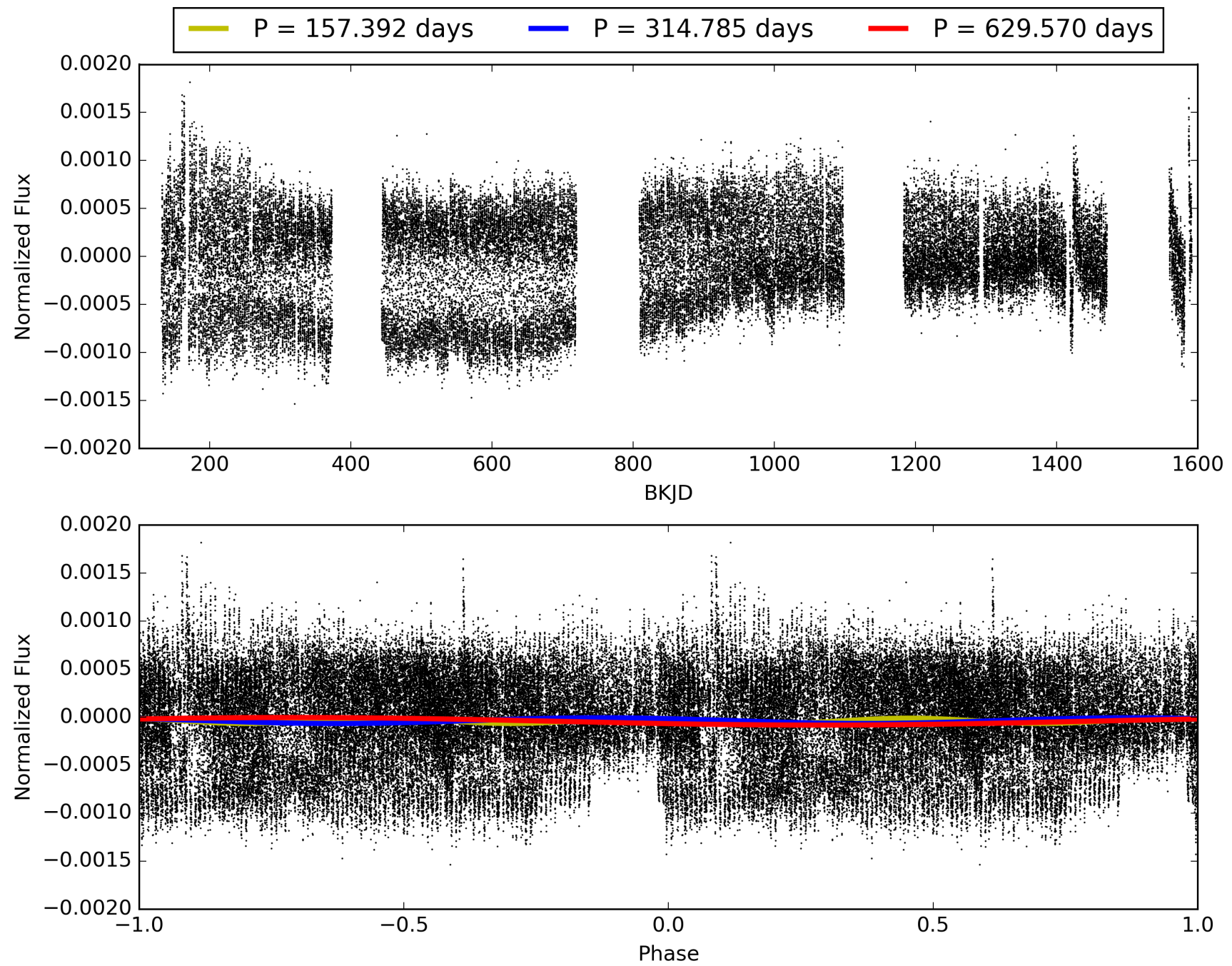
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 15:06:12 Z

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

# TCE 011233743-04, PDC Light Curves



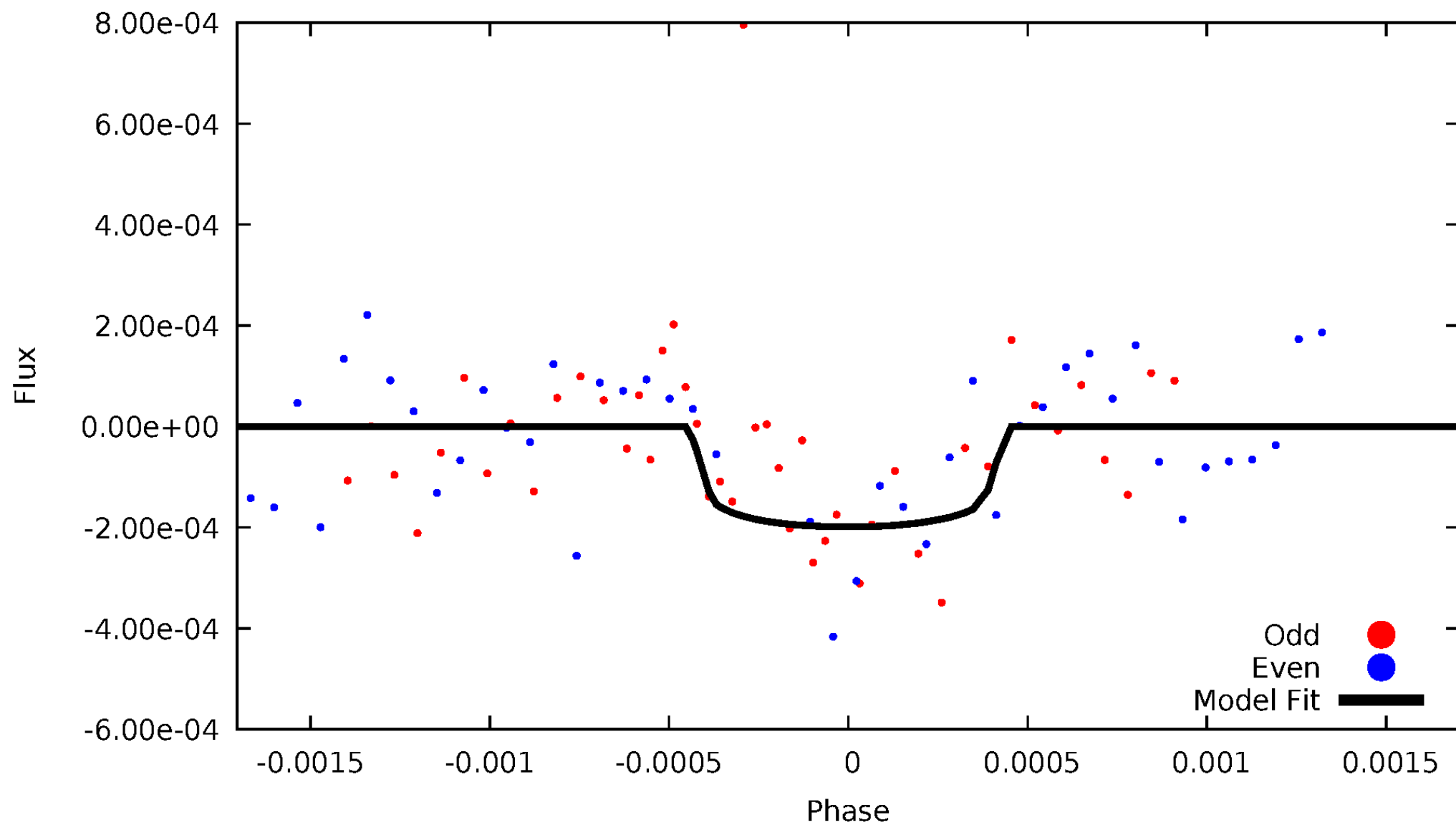
TCE 011233743-04





# DV Odd/Even

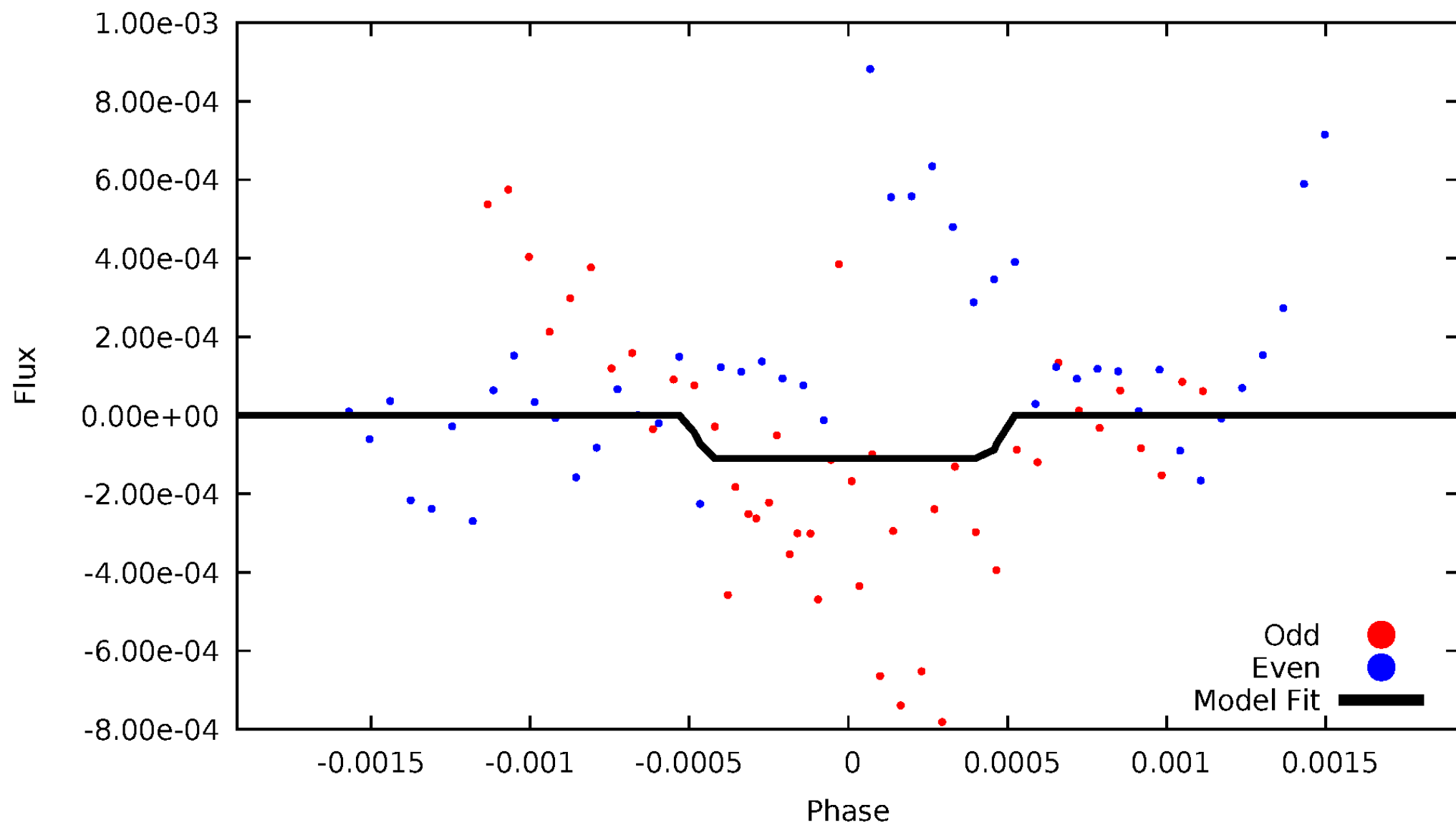
TCE 011233743-04





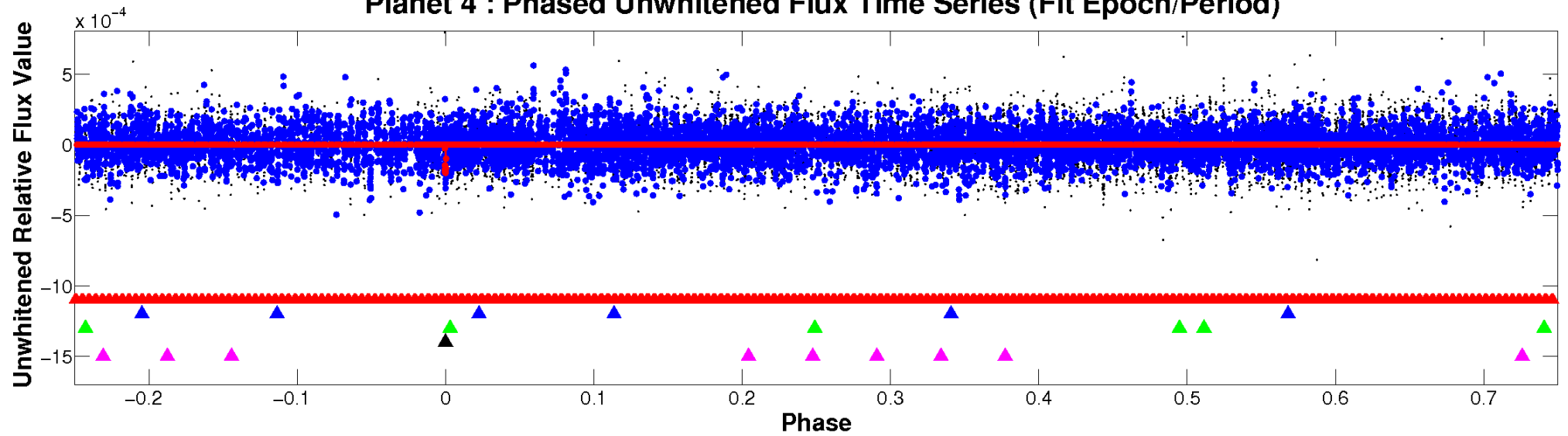
# ALT Odd/Even

TCE 011233743-04

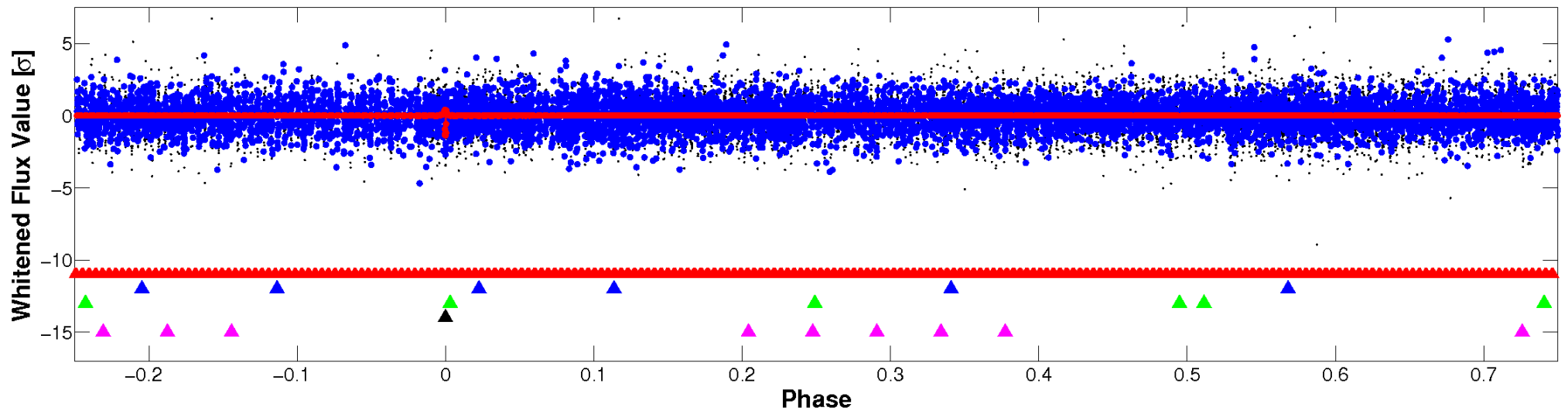


# Non-Whitened Vs. Whitened Light Curve

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

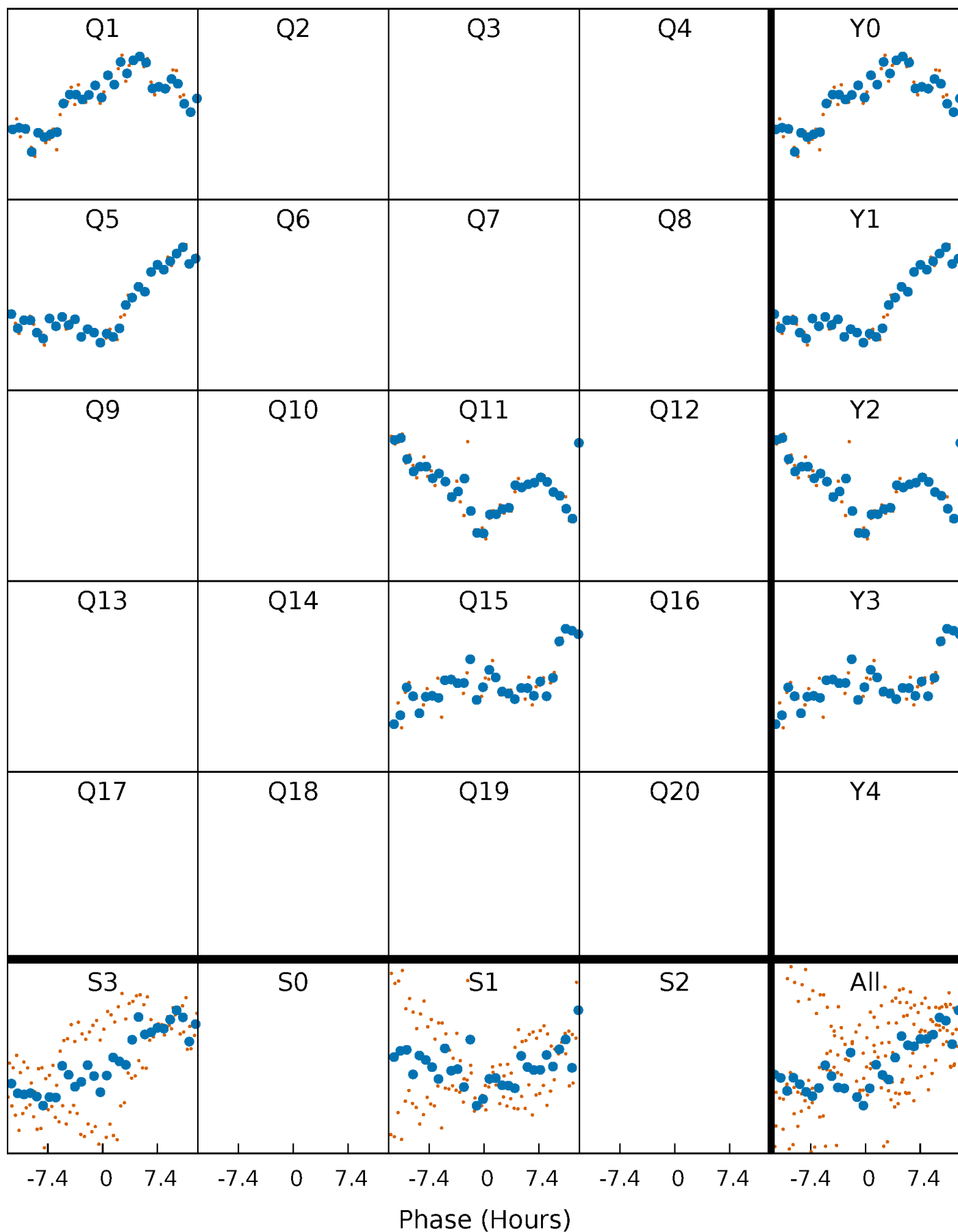


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



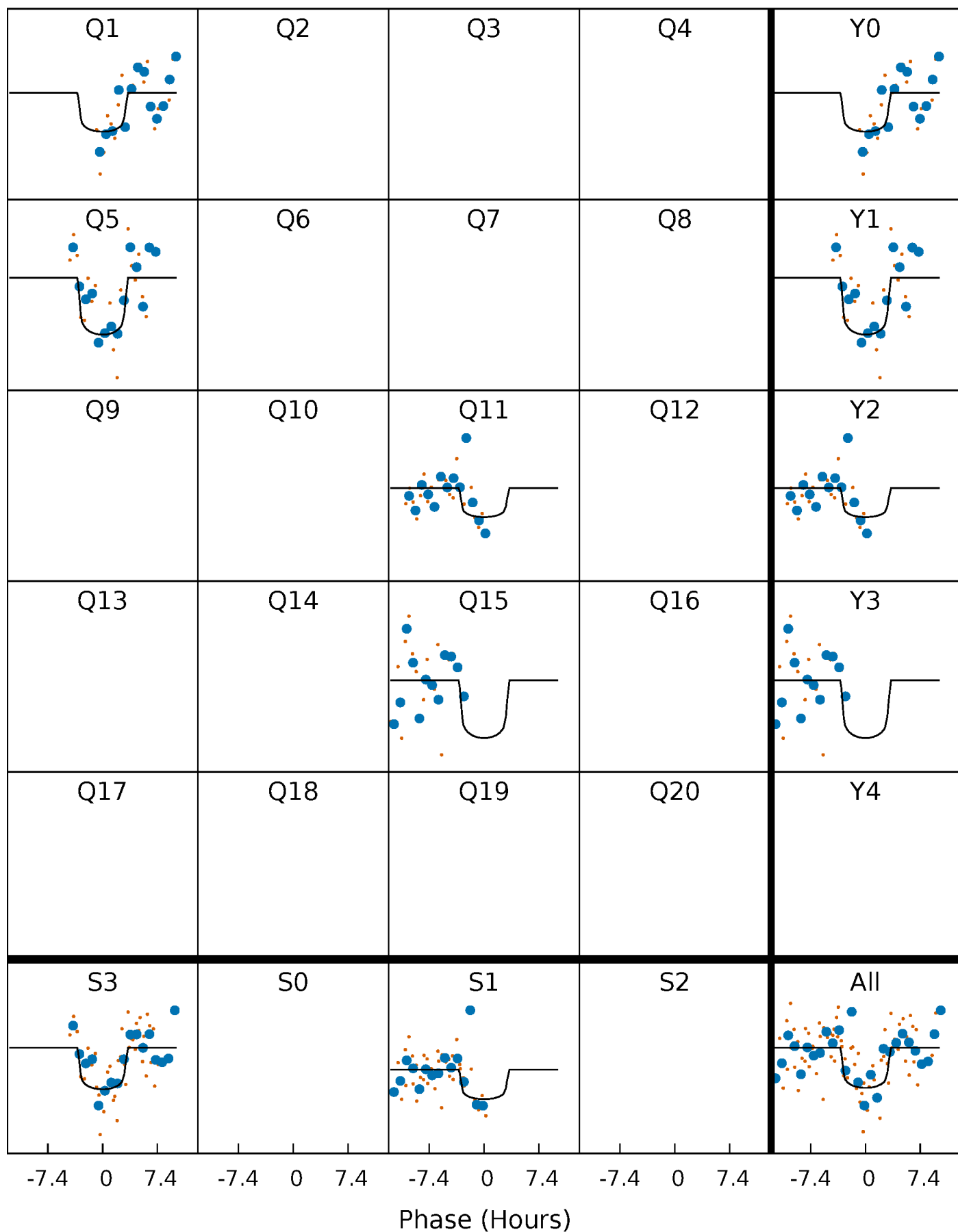
# PDC Quarter-Phased Transit Curves

TCE 011233743-04     $P=314.784858$  Days     $T_0=135.183304$  (BKJD)



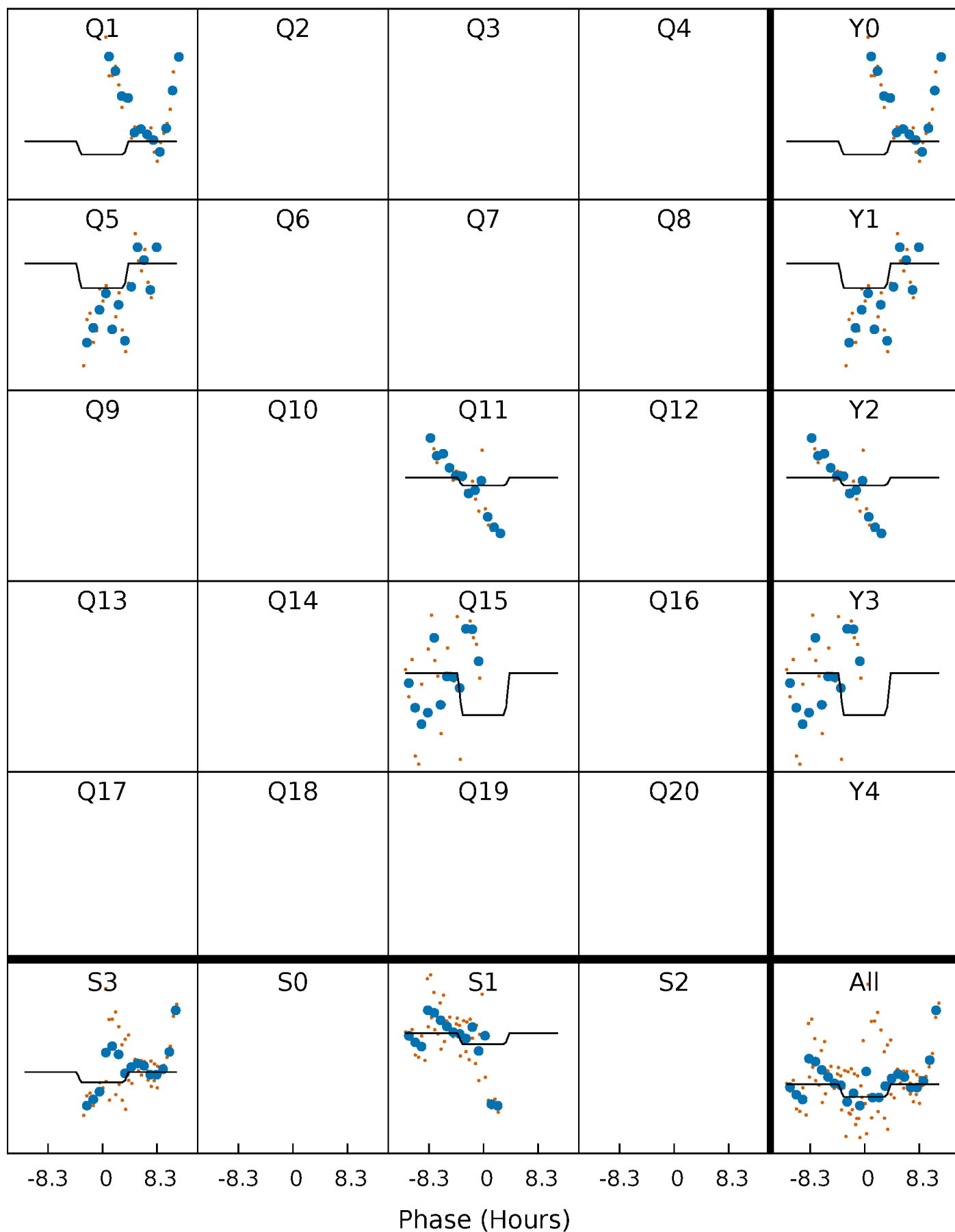
# DV Quarter-Phased Transit Curves

TCE 011233743-04 P=314.784858 Days  $T_0=135.183304$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

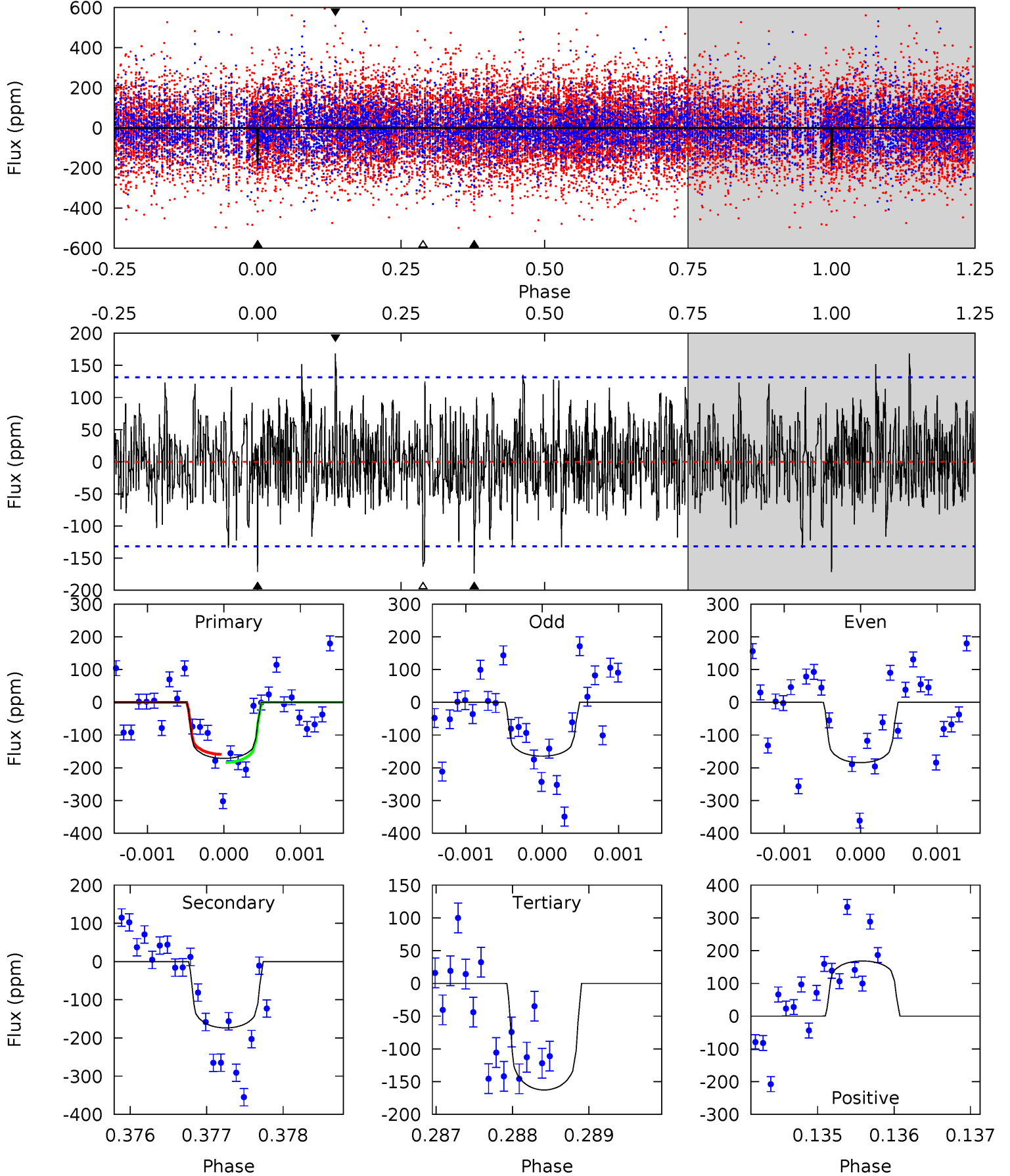
TCE 011233743-04 P=314.775735 Days  $T_0=135.127962$  (BKJD)



# DV Model-Shift Uniqueness Test

011233743-04, P = 314.784858 Days, E = 135.183304 Days

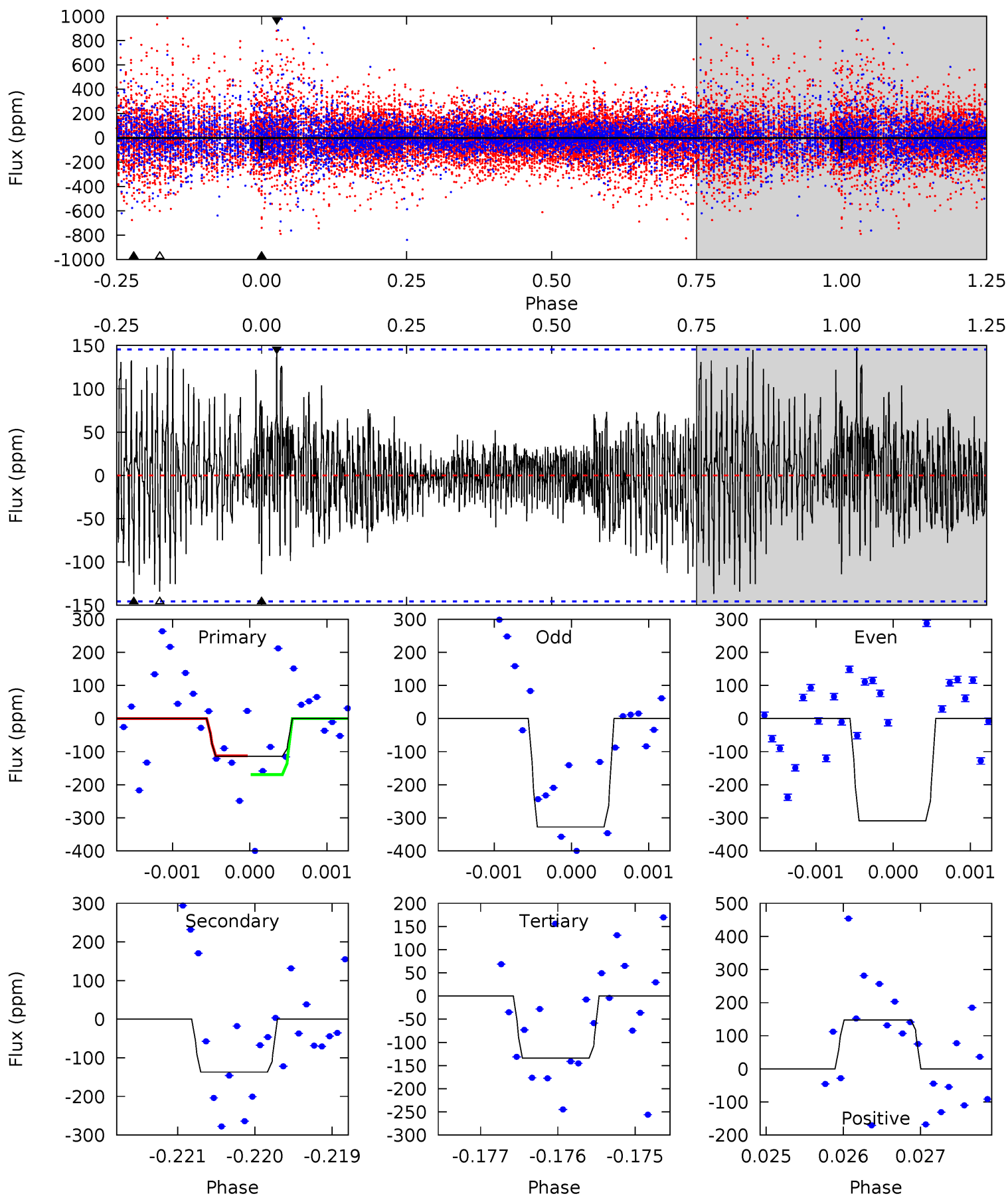
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.12	7.21	6.76	7.00	5.46	3.31	1.74	0.36	0.12	0.46	0.22	0.40	1.07	0.49	0.52



# Alt Model-Shift Uniqueness Test

011233743-04, P = 314.775735 Days, E = 135.127962 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
4.28	5.14	5.03	5.55	5.46	3.31	1.35	-0.75	-1.27	0.11	-0.41	0.34	-0.03	0.52	1.05





### Stellar Parameters For KIC 011233743

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7228^{+228}_{-304}$	$4.071^{+0.209}_{-0.171}$	$-0.320^{+0.300}_{-0.300}$	$1.817^{+0.489}_{-0.537}$	$1.419^{+0.204}_{-0.249}$	$0.333^{+0.398}_{-0.158}$
	+3%/-4%	+5%/-4%	+94%/-94%	+27%/-30%	+14%/-18%	+119%/-47%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011233743-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-174 \pm 24$	$3.26^{+2.75}_{-2.12}$	$592^{+44}_{-47}$	$6336^{+6483}_{-1549}$	$9155^{+69902}_{-6467}$
Alt.	$-137 \pm 27$	$2.94^{+2.60}_{-1.83}$	$593^{+46}_{-47}$	$6257^{+5227}_{-1507}$	$8819^{+54012}_{-6245}$

$T_{max}$  = 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

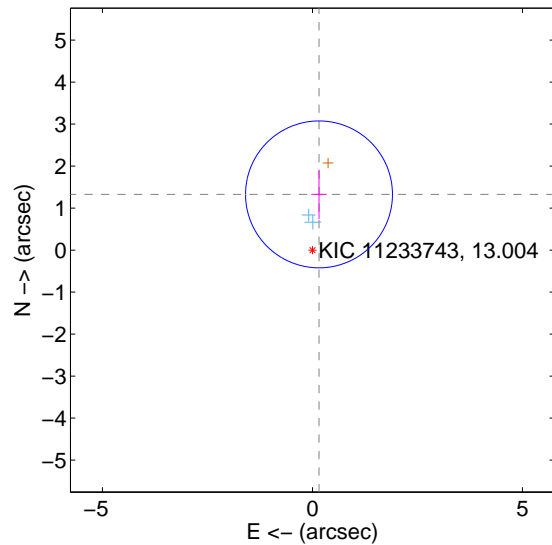
Supplemental centroid analysis for 011233743-04. Kepler magnitude: 13.00. Transit SNR 6.53

There are 2 quarters with good PRF difference image offsets

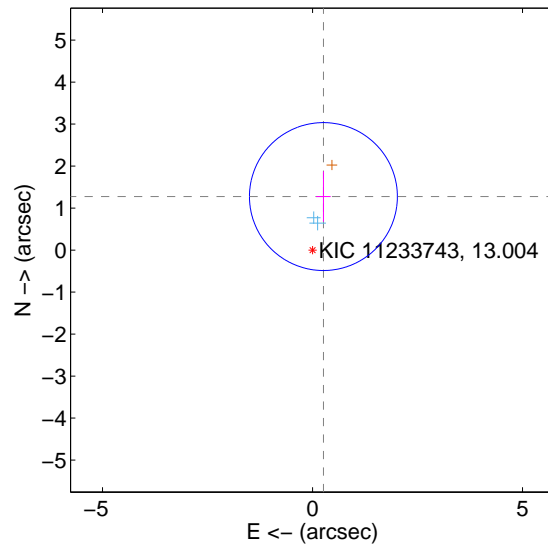
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.336 \pm 0.583$	2.29	$-0.156 \pm 0.182$	$1.326 \pm 0.587$
PRF-fit source offset from KIC position	$1.301 \pm 0.587$	2.22	$-0.259 \pm 0.173$	$1.275 \pm 0.598$
photometric centroid source offset	$0.71 \pm 1.36$	0.52	$0.71 \pm 1.36$	$-0.10 \pm 1.31$

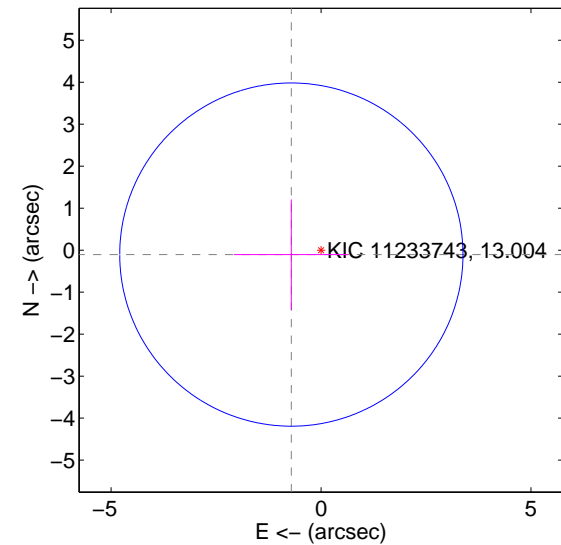
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

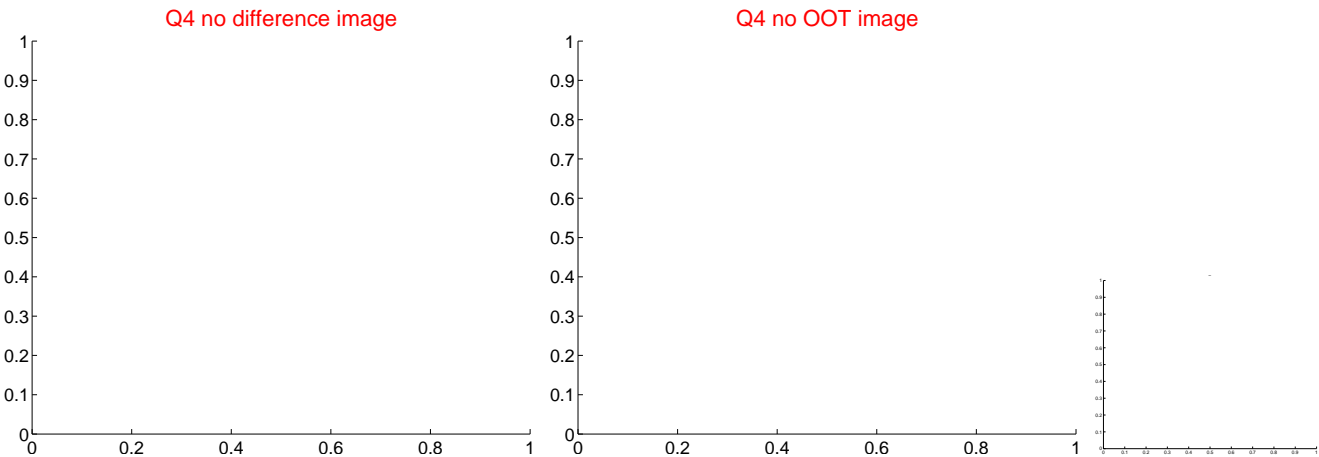
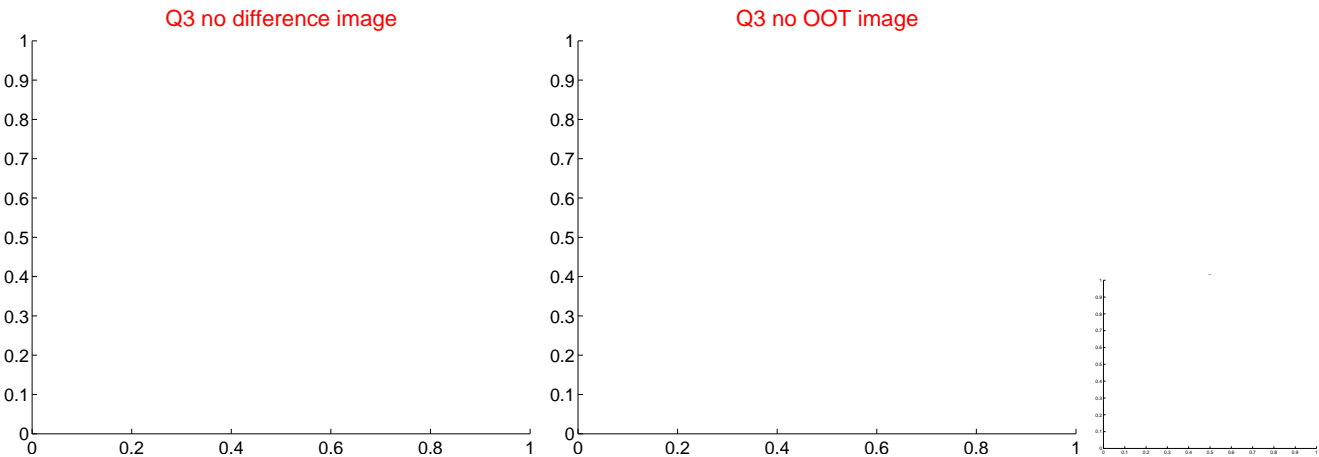
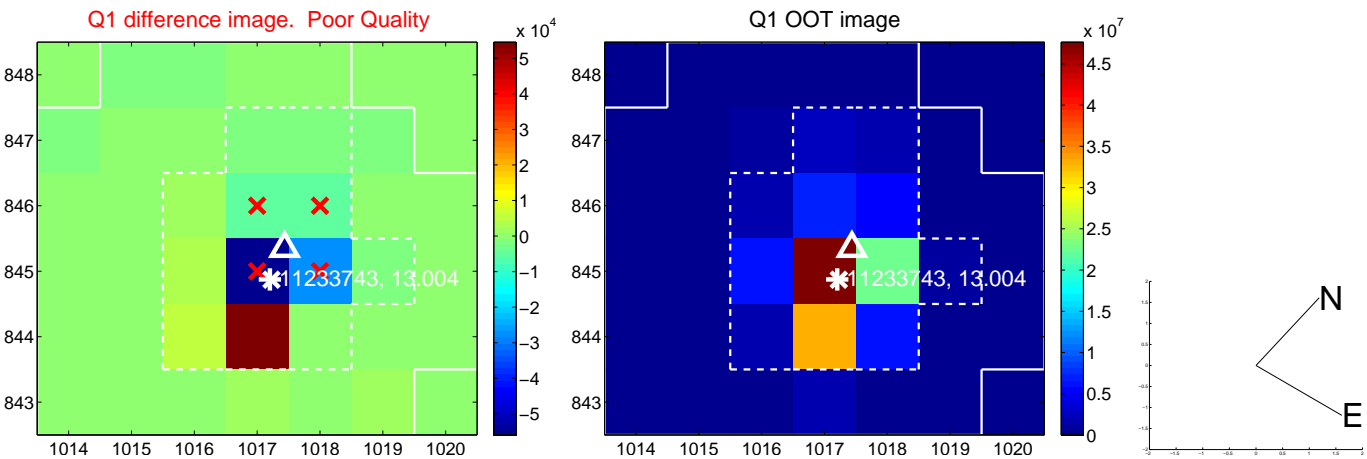


offset from photometric centroids

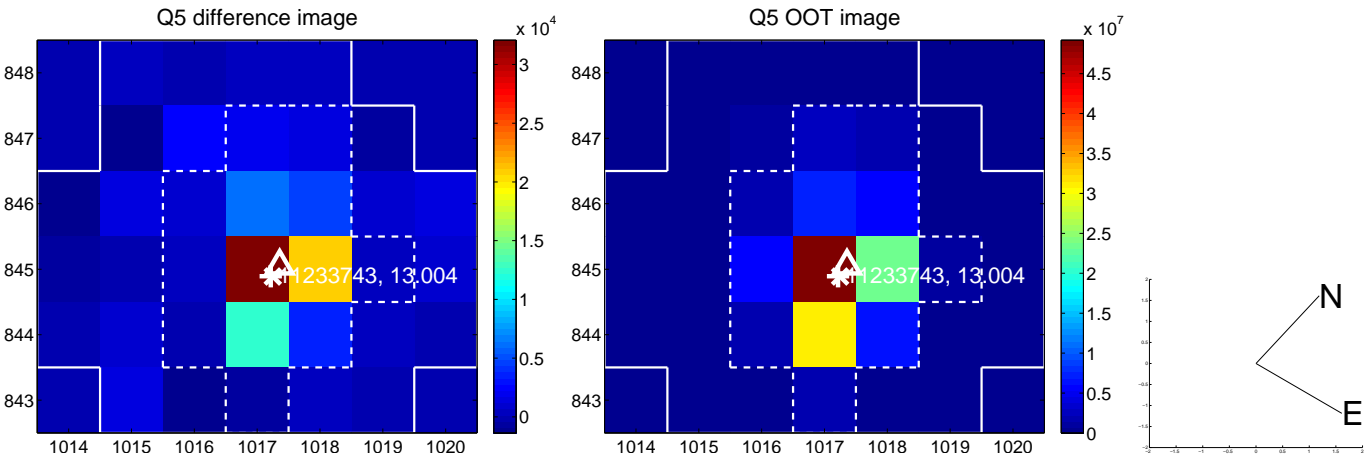


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

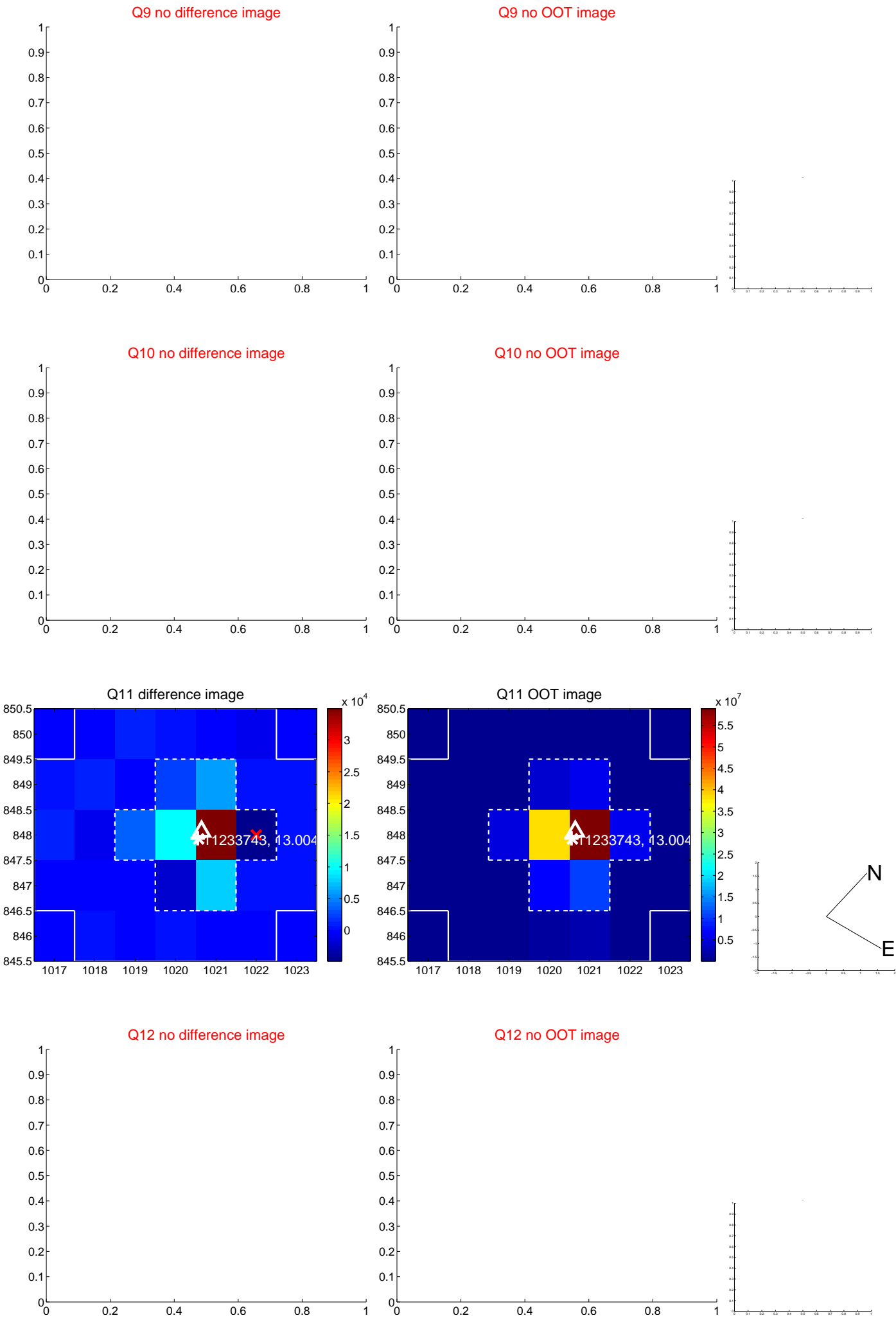
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



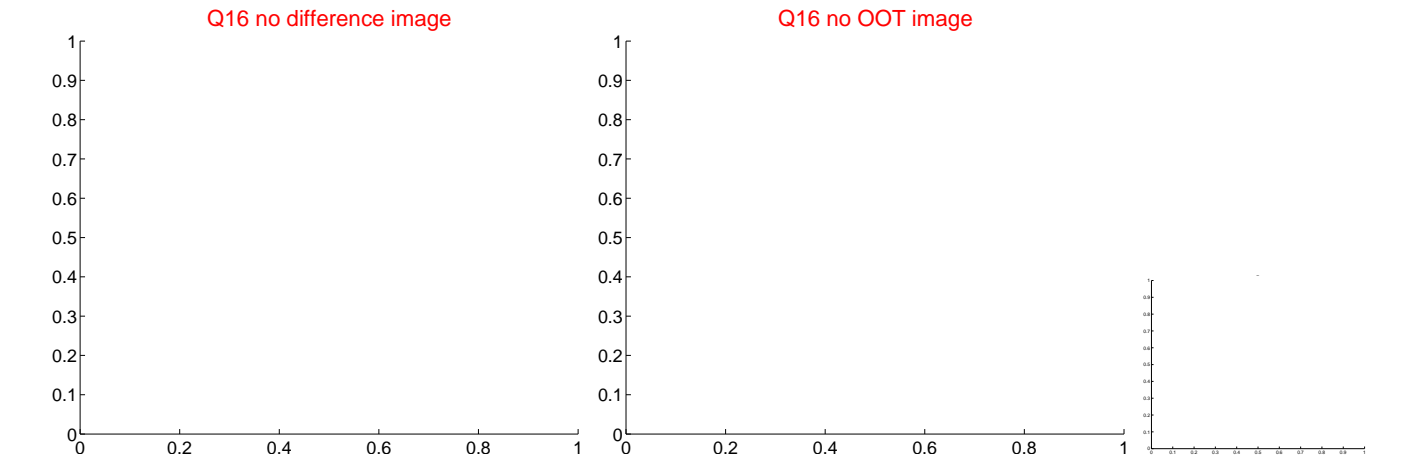
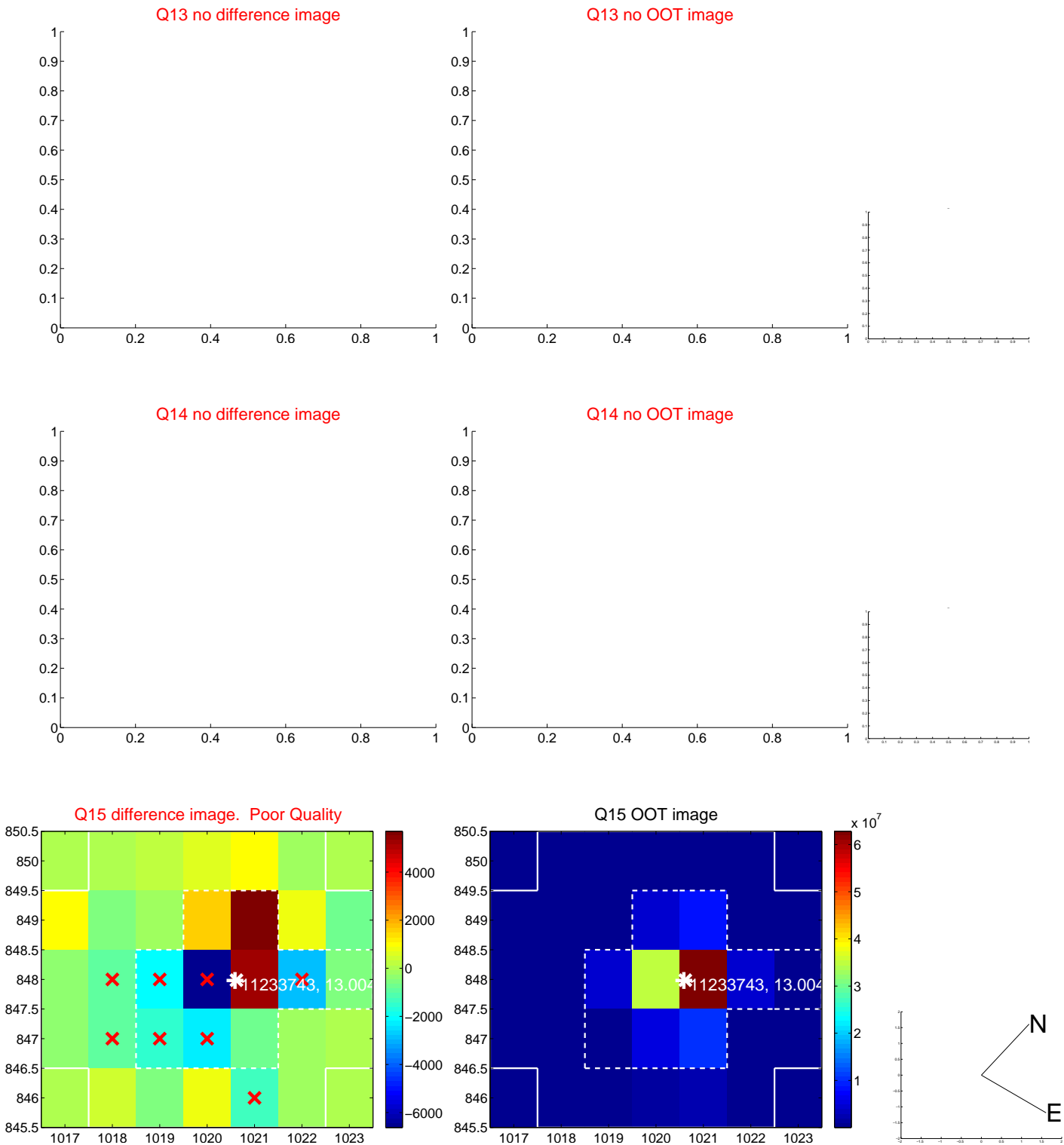
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



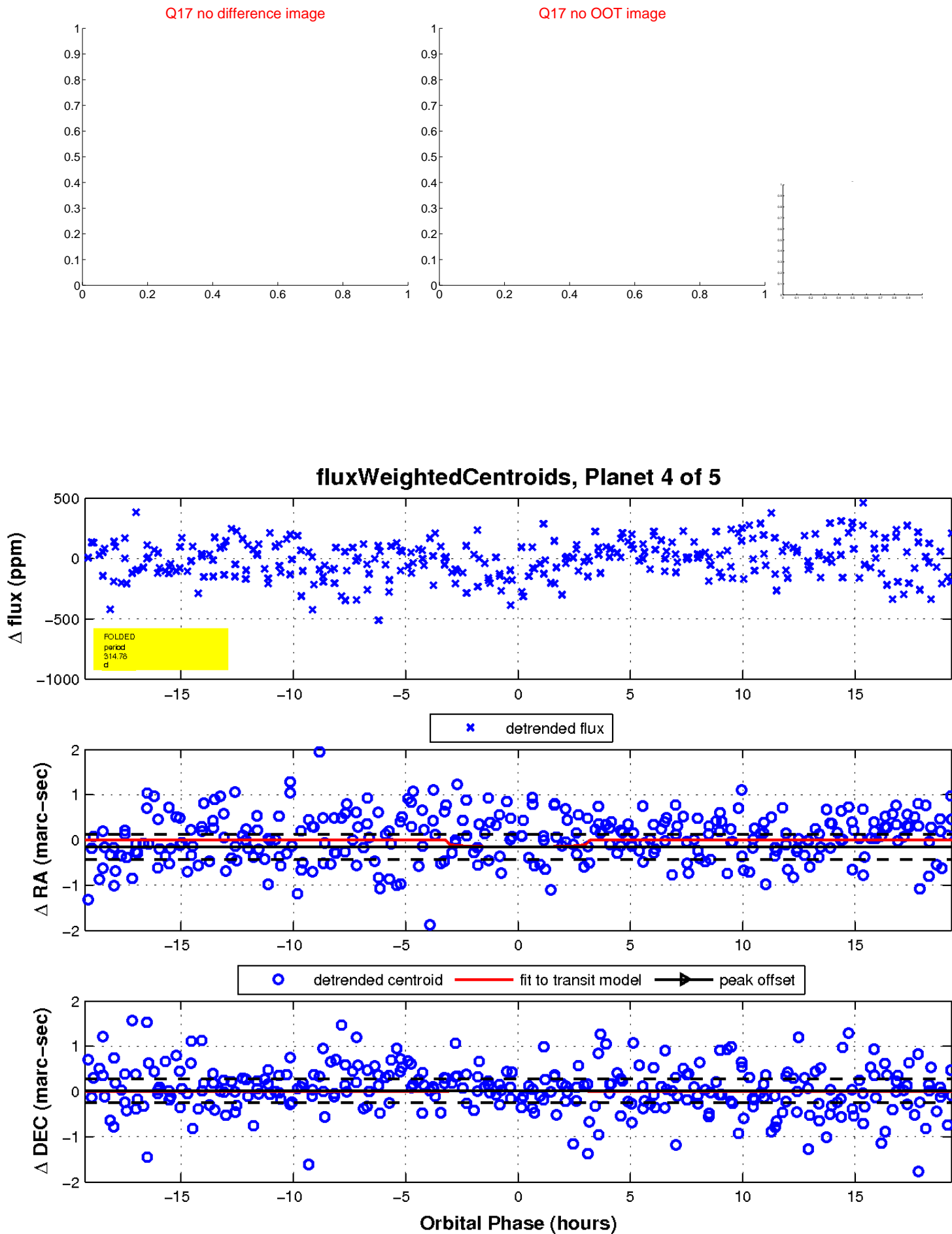
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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

