

# KIC 008240861

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240861-01	OBS	No	0.898563	132.310994	439691.0	1.500	2701.3	-1.0	1.30	6338	60.69	7031.44
008240861-02	OBS	6999.01	0.898579	131.832869	418205.5	1.500	794.9	-1.0	1.30	6338	25.81	7031.28
008240861-03	OBS	No	3.369242	134.705440	2444.7	12.500	52.1	-1.0	1.30	6338	6.45	1207.07
008240861-04	OBS	No	4.493996	135.304825	2245.6	15.000	74.2	-1.0	1.30	6338	6.18	822.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240861-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
008240861-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_NOFITS
008240861-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
008240861-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—NO_FITS—CENT_NOFITS

**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 008240861-01

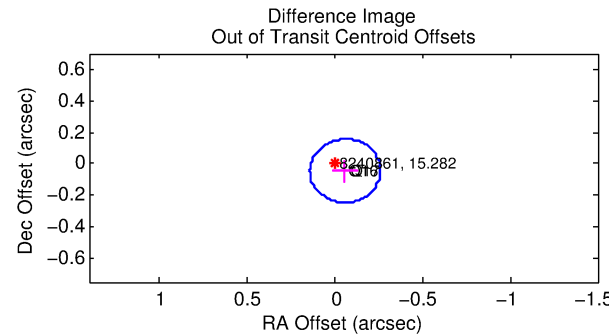
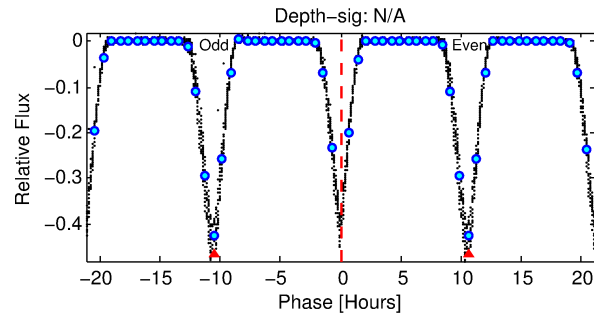
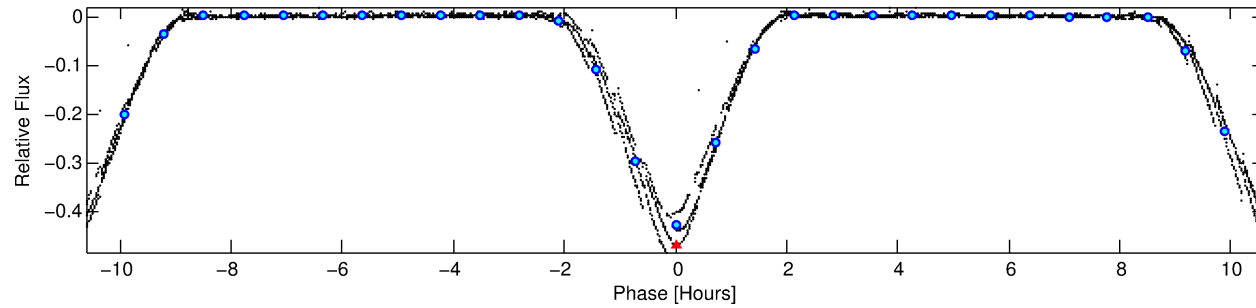
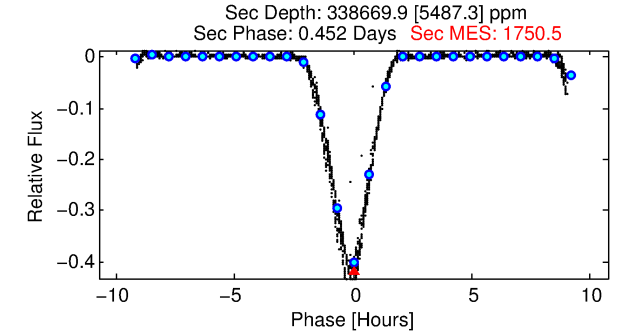
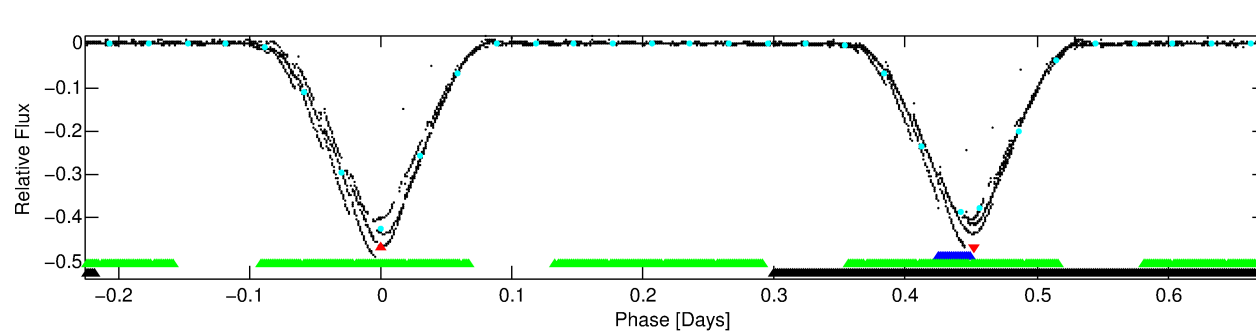
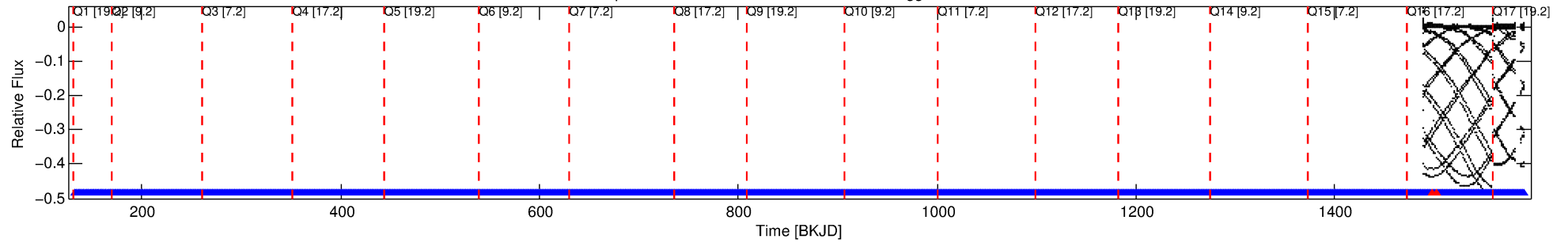
No Significant Match Found

# DV One-Page Summary

KIC: 8240861 Candidate: 1 of 4 Period: 0.899 d

KOI: K06999 Corr: No Ephemeris Match

Kp: 15.28 R\*: 1.30 Rs Teff: 6338.0 K Logg: 4.24 Fe/H: -0.220



## TPS TCE Results:

Period = 0.89856 d  
Epoch = 132.3110 BKJD

DV fit results are unavailable

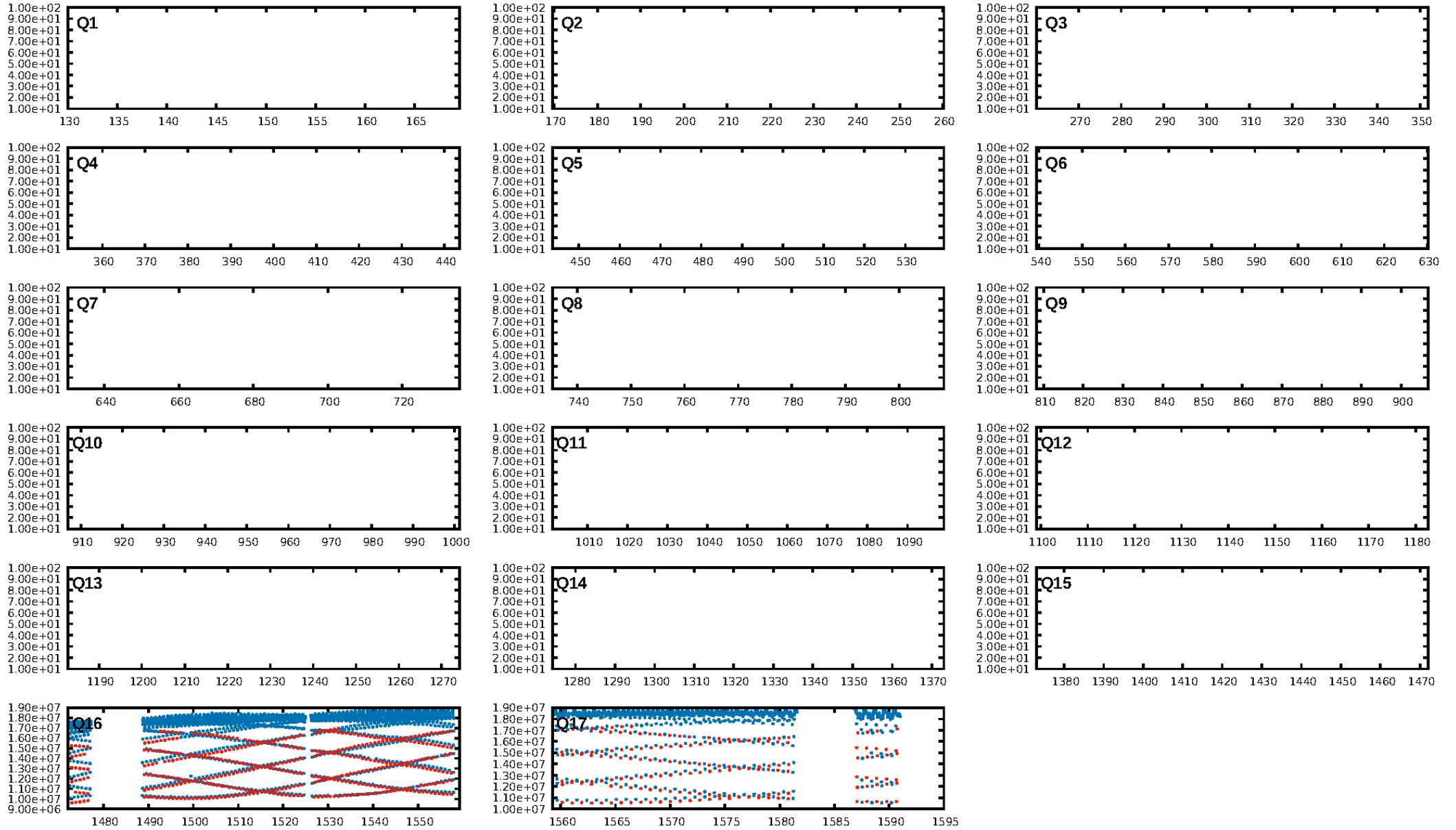
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [73/75]  
GhostDiagnostic-chr: 2.96  
Centroid-sig: N/A  
Centroid-so: 0.230 arcsec [89.27σ]  
OotOffset-rm: 0.074 arcsec [1.11σ]  
KicOffset-rm: 0.113 arcsec [1.32σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

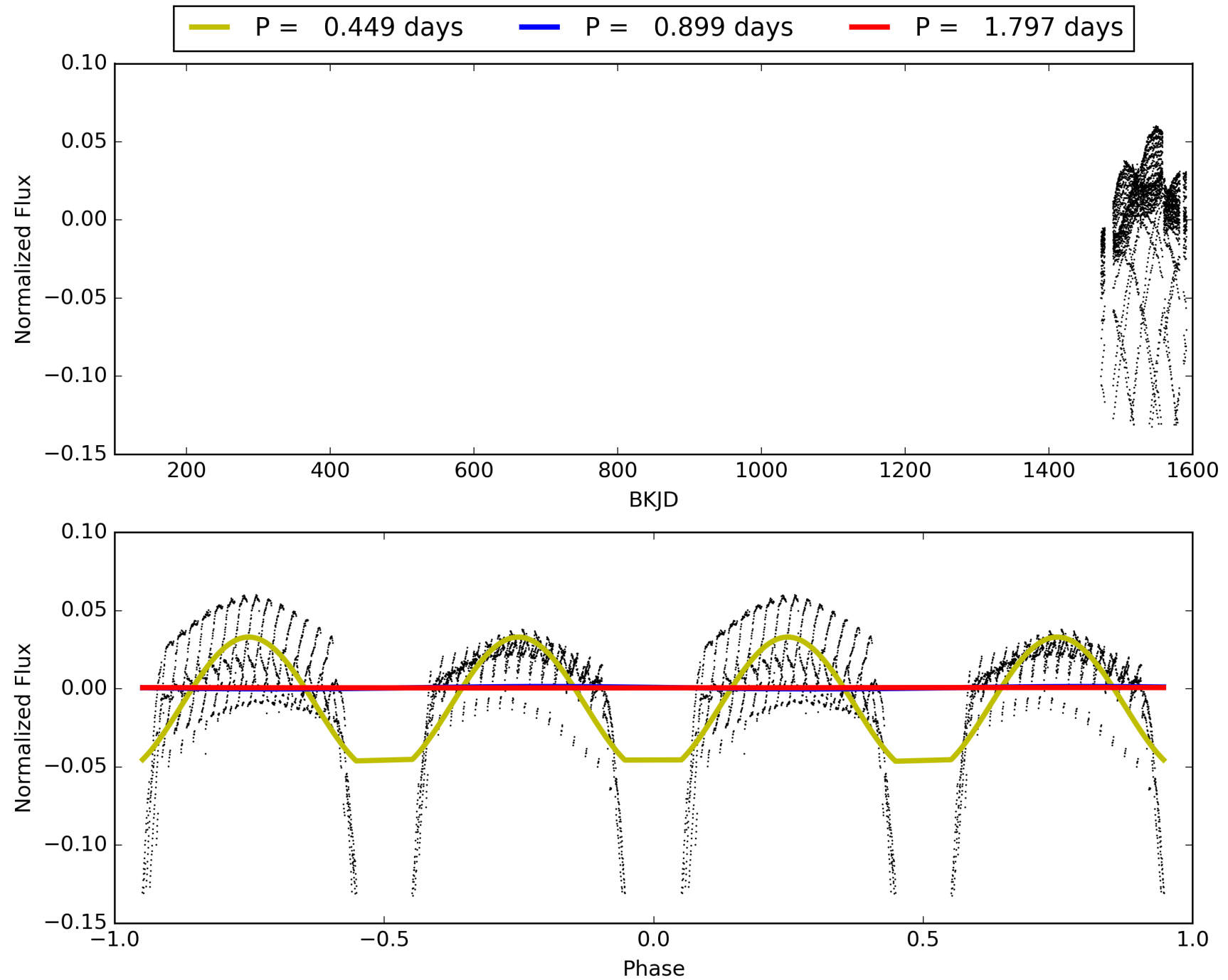
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:13:38 Z

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

# TCE 008240861-01, PDC Light Curves

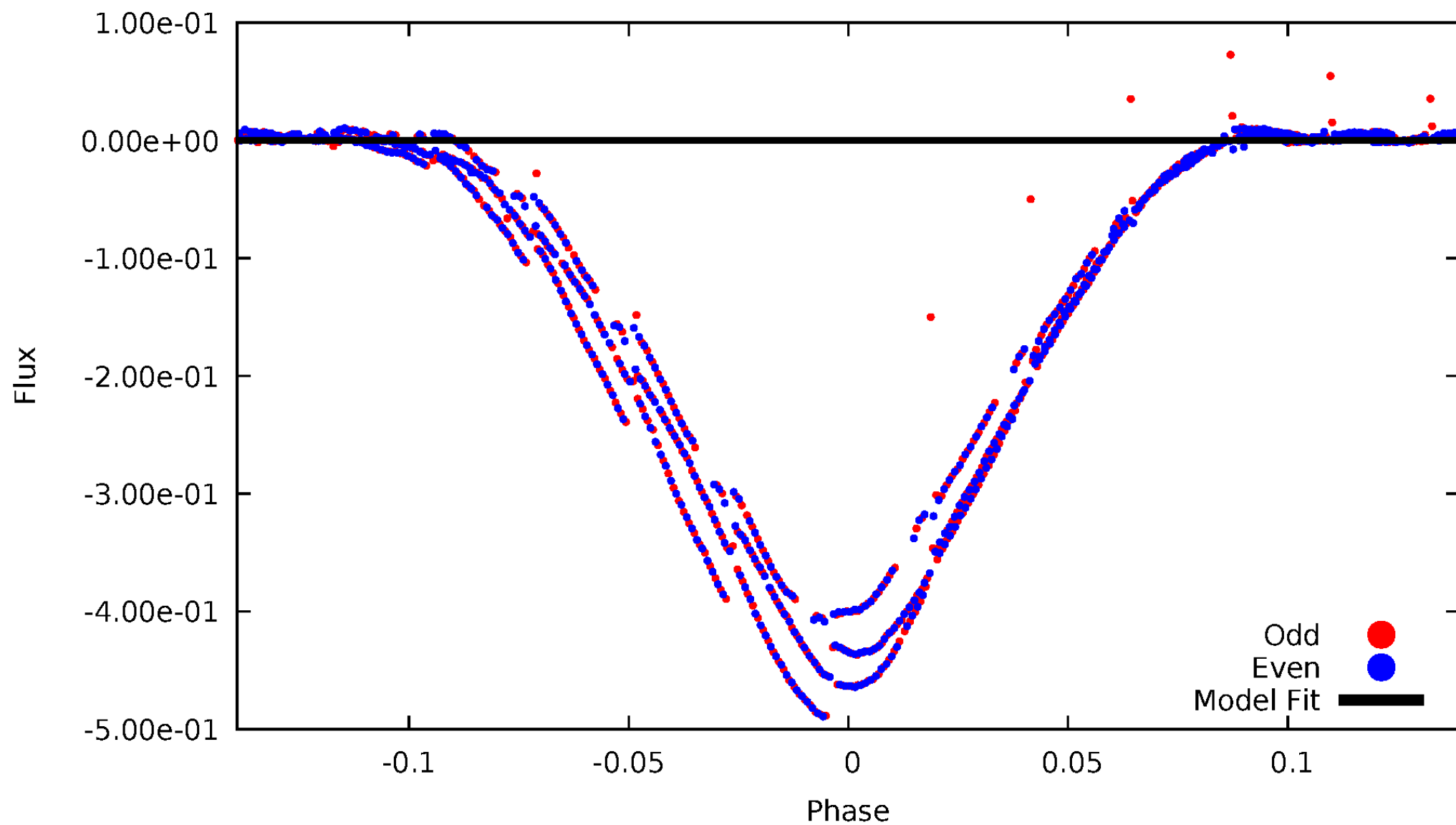


TCE 008240861-01



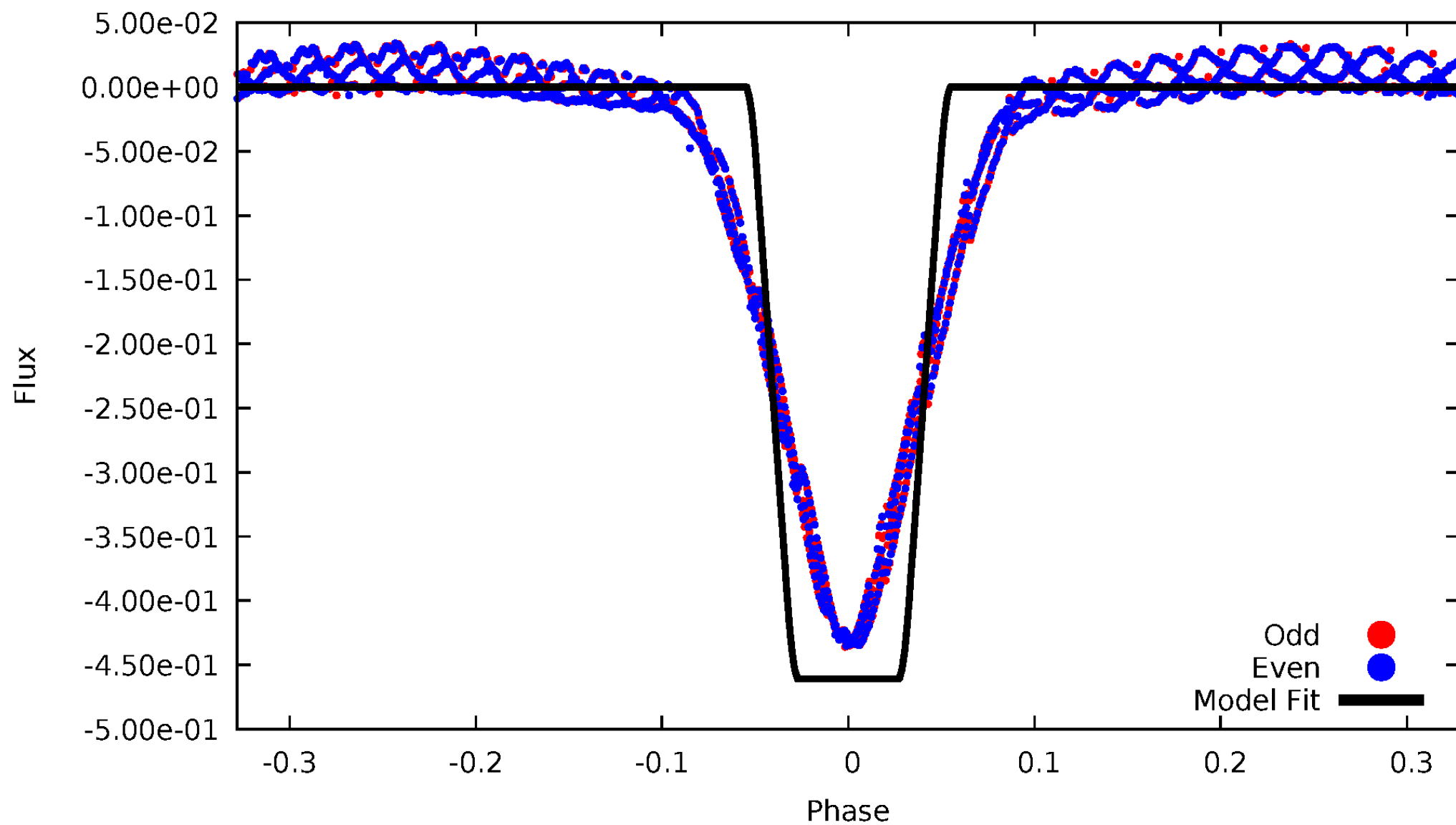
# DV Odd/Even

TCE 008240861-01



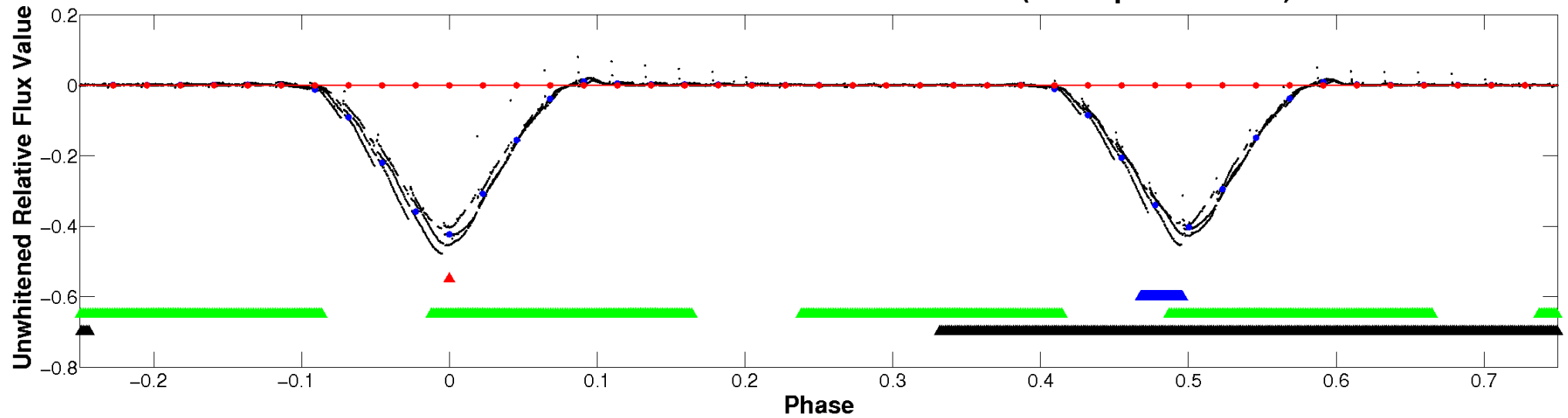
# ALT Odd/Even

TCE 008240861-01



# Non-Whitened Vs. Whitened Light Curve

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

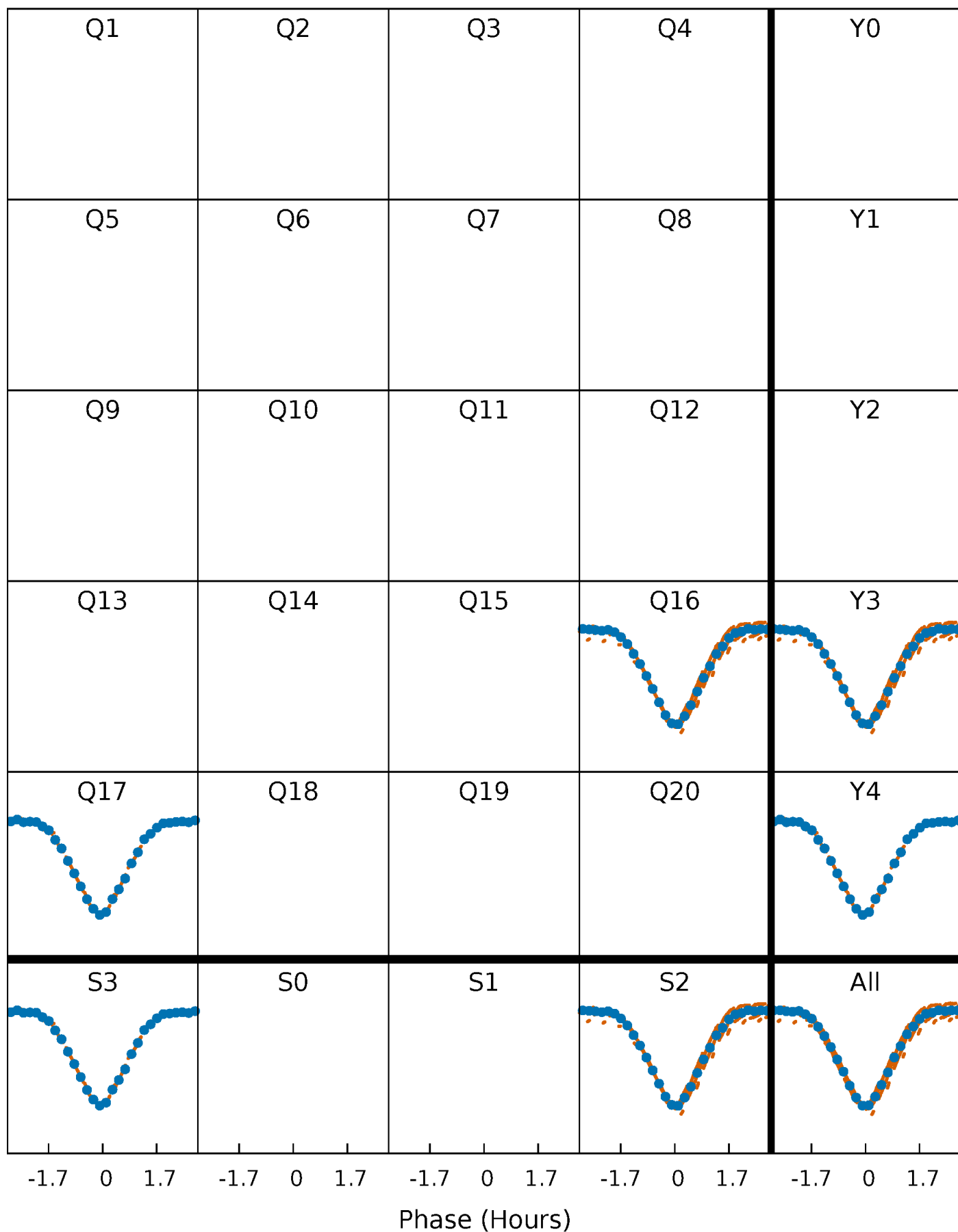


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

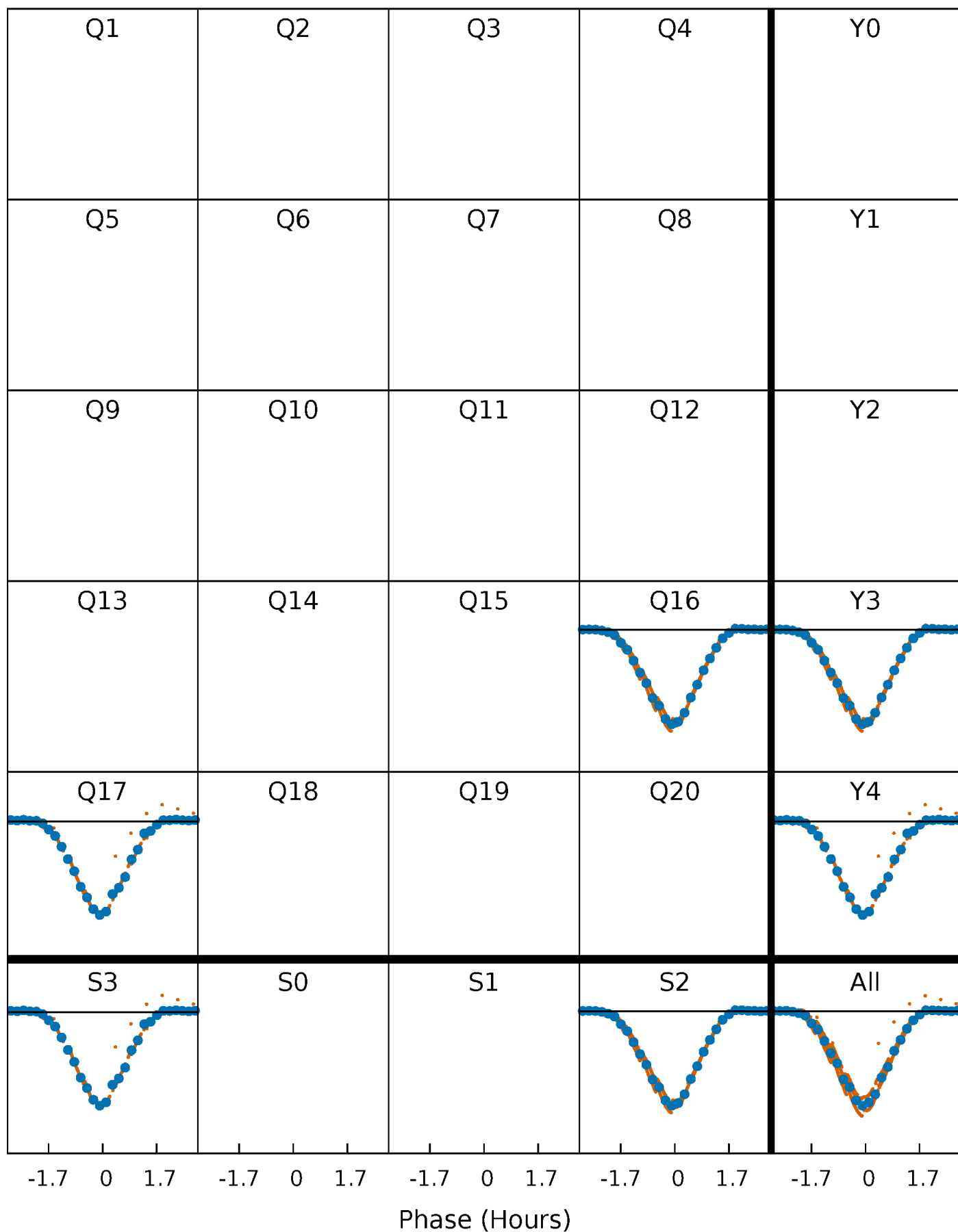
TCE 008240861-01   P= 0.898563 Days    $T_0=132.310994$  (BKJD)





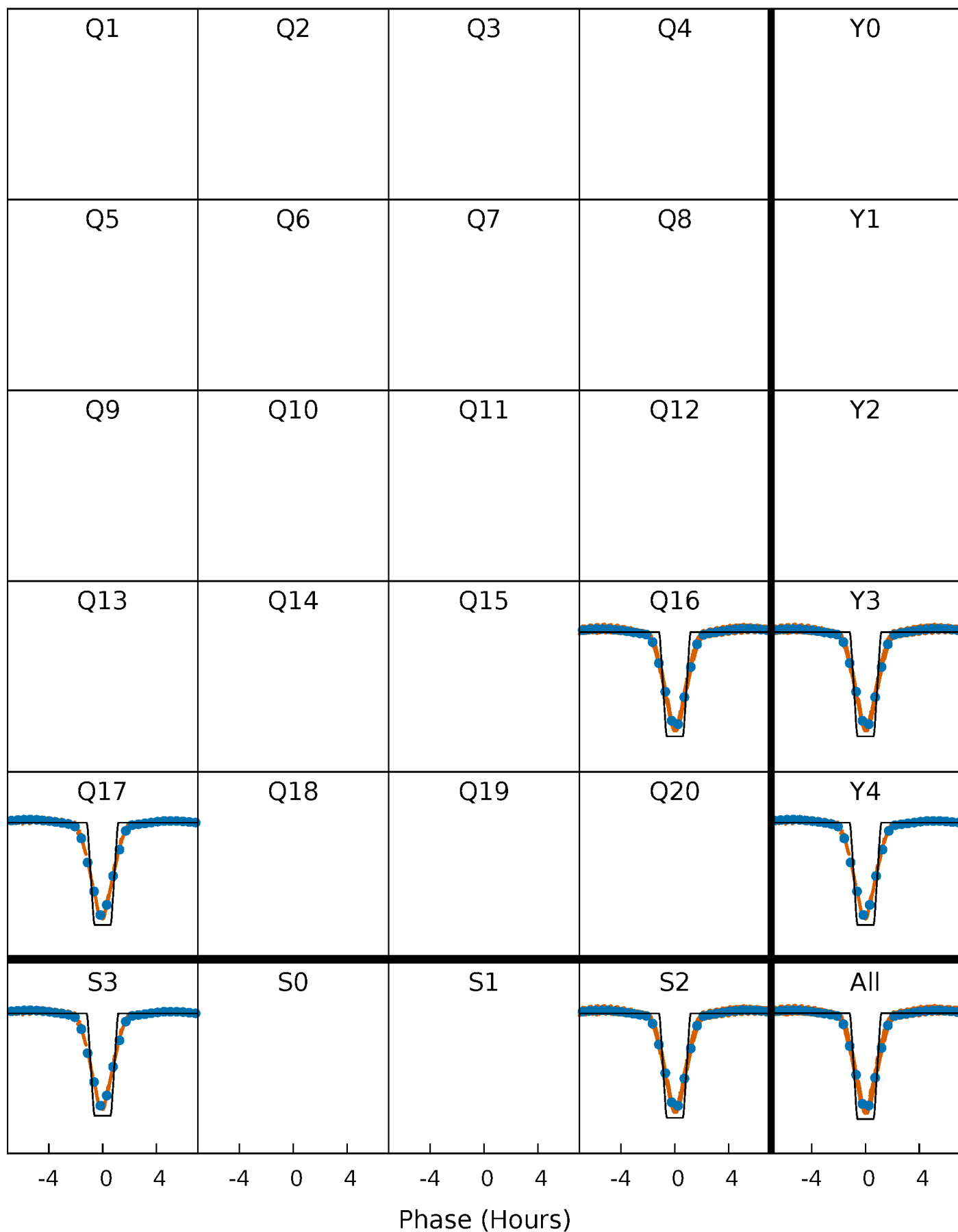
# DV Quarter-Phased Transit Curves

TCE 008240861-01   P= 0.898563 Days    $T_0=132.310994$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

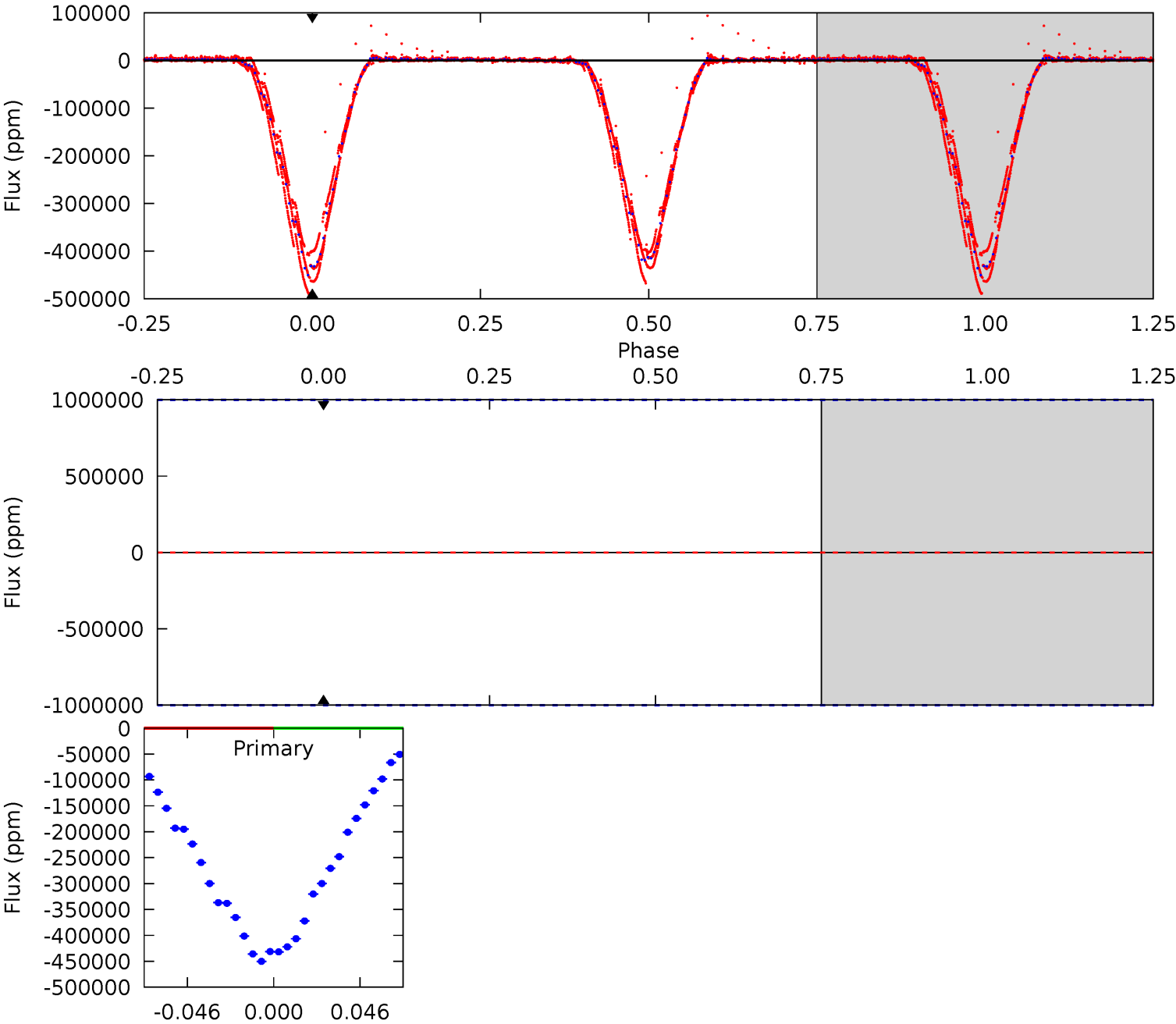
TCE 008240861-01   P= 0.898563 Days    $T_0=132.310248$  (BKJD)



# DV Model-Shift Uniqueness Test

008240861-01, P = 0.898563 Days, E = 132.310994 Days

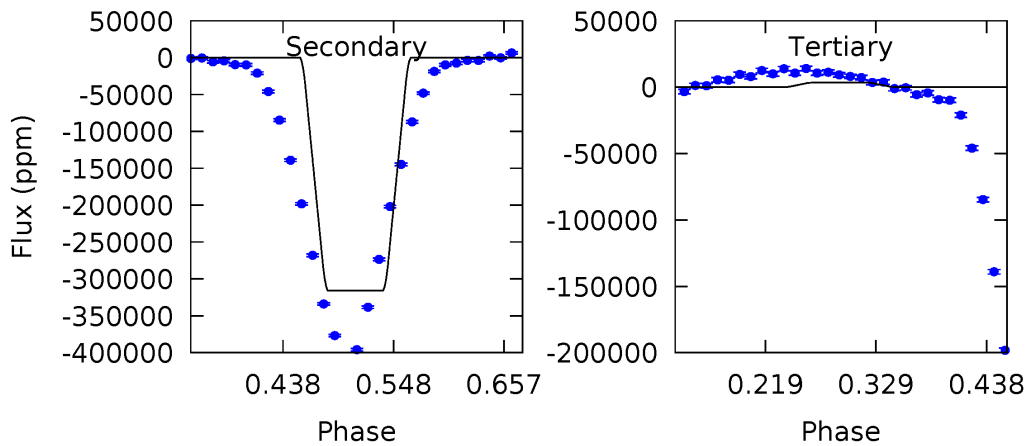
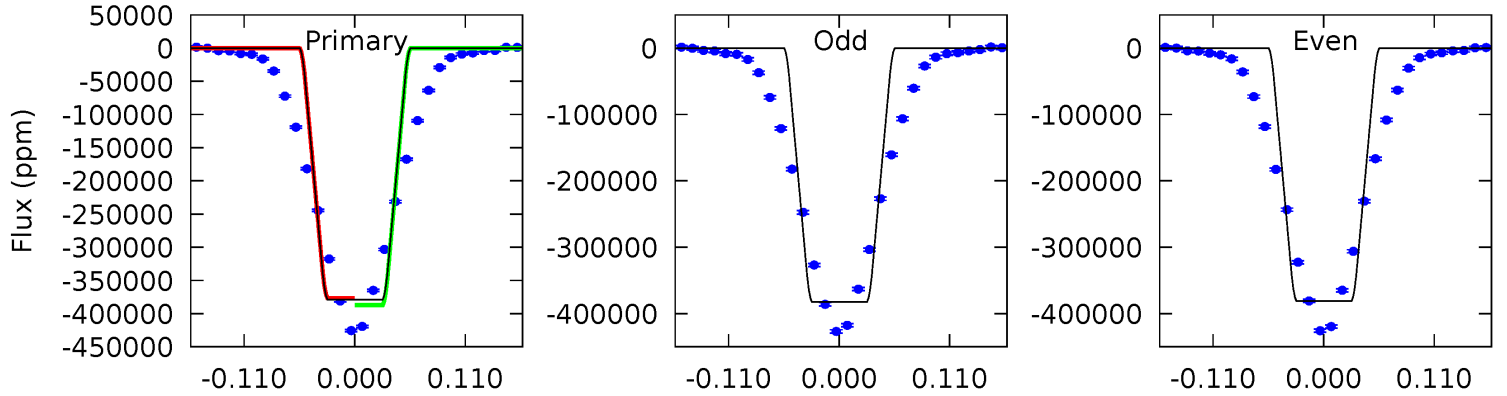
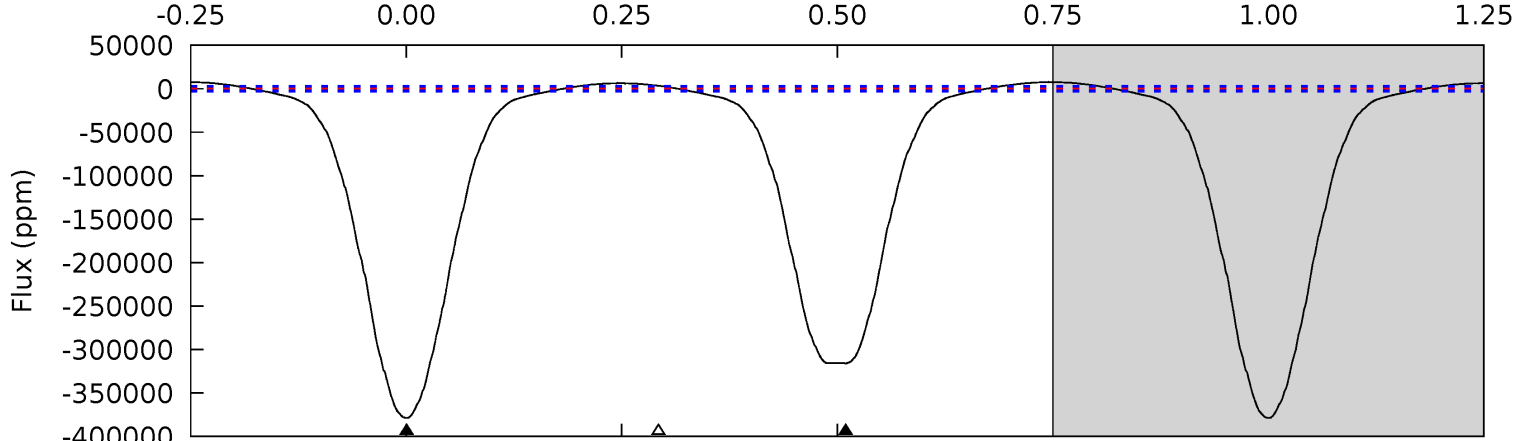
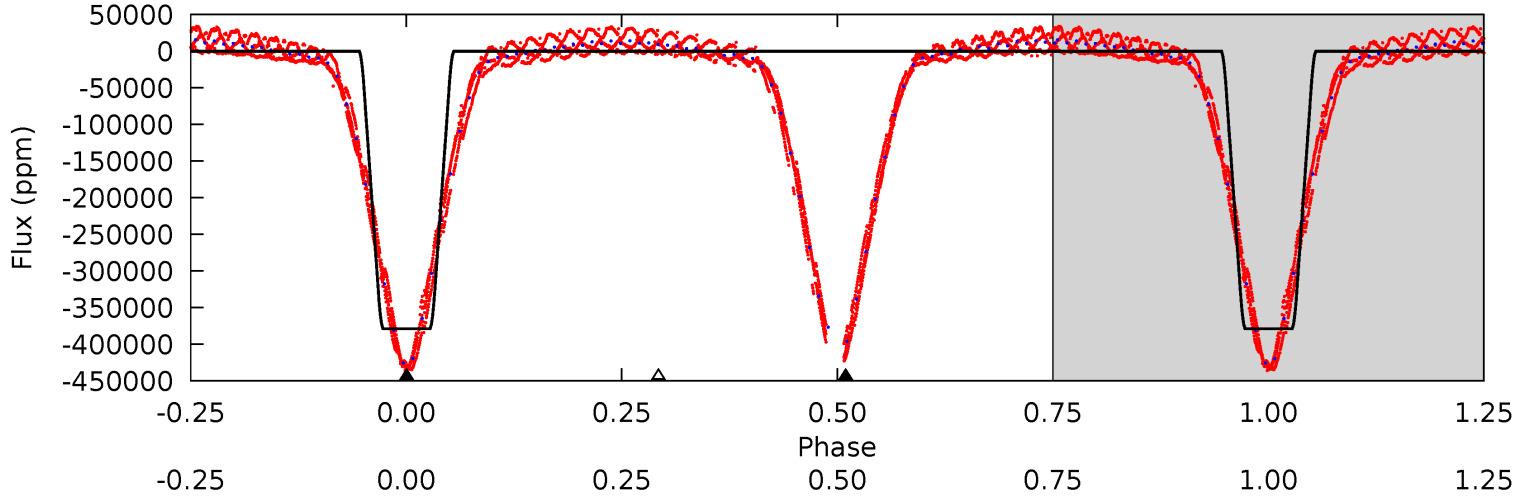
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008240861-01, P = 0.898563 Days, E = 132.310248 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
627.0	523.0	-5.69	0	4.55	1.60	14.0	632.7	627.0	528.6	523.0	1.15	1.00	0.02	8.37



### Stellar Parameters For KIC 008240861

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+175}_{-241}$	$4.239^{+0.180}_{-0.180}$	$-0.220^{+0.250}_{-0.300}$	$1.299^{+0.373}_{-0.271}$	$1.065^{+0.181}_{-0.131}$	$0.684^{+0.646}_{-0.331}$
	+3%/-4%	+4%/-4%	+114%/-136%	+29%/-21%	+17%/-12%	+94%/-48%
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 008240861-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$59.32^{+18.46}_{-14.99}$	$3236^{+260}_{-210}$	$-3235^{+8889}_{-2221}$	$0.006^{+6.676}_{-5.197}$
Alt.	$-315920 \pm 604$	$94.83^{+22.03}_{-17.67}$	$3241^{+241}_{-201}$	$6278^{+612}_{-439}$	$9.760^{+4.722}_{-3.160}$

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

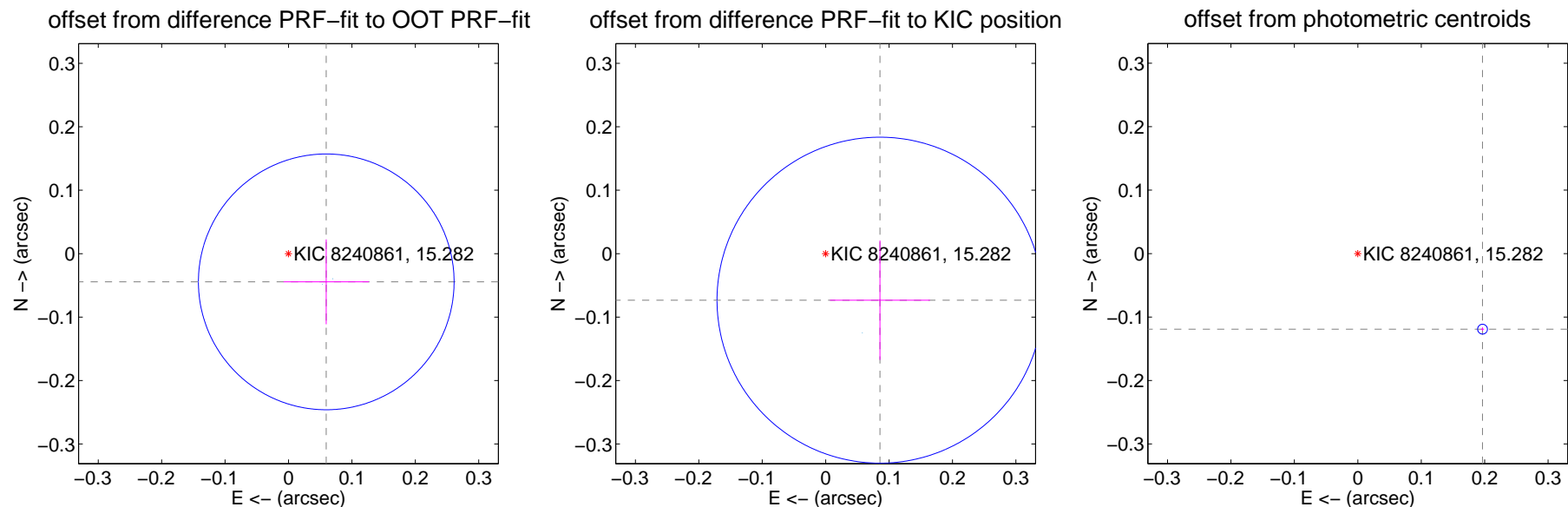
## DV Centroid Data

Supplemental centroid analysis for 008240861-01. Kepler magnitude: 15.28. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.074 \pm 0.067$	1.11	$-0.060 \pm 0.067$	$-0.044 \pm 0.067$
PRF-fit source offset from KIC position	$0.113 \pm 0.086$	1.32	$-0.086 \pm 0.079$	$-0.073 \pm 0.094$
photometric centroid source offset	$0.23 \pm 0.00$	89.27	$-0.20 \pm 0.00$	$-0.12 \pm 0.00$



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.

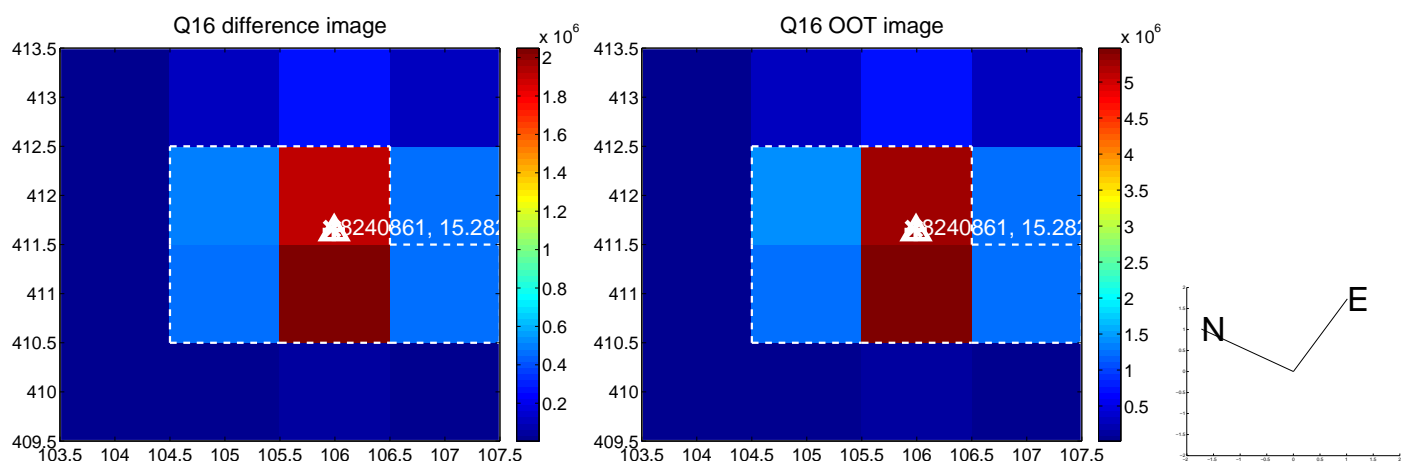




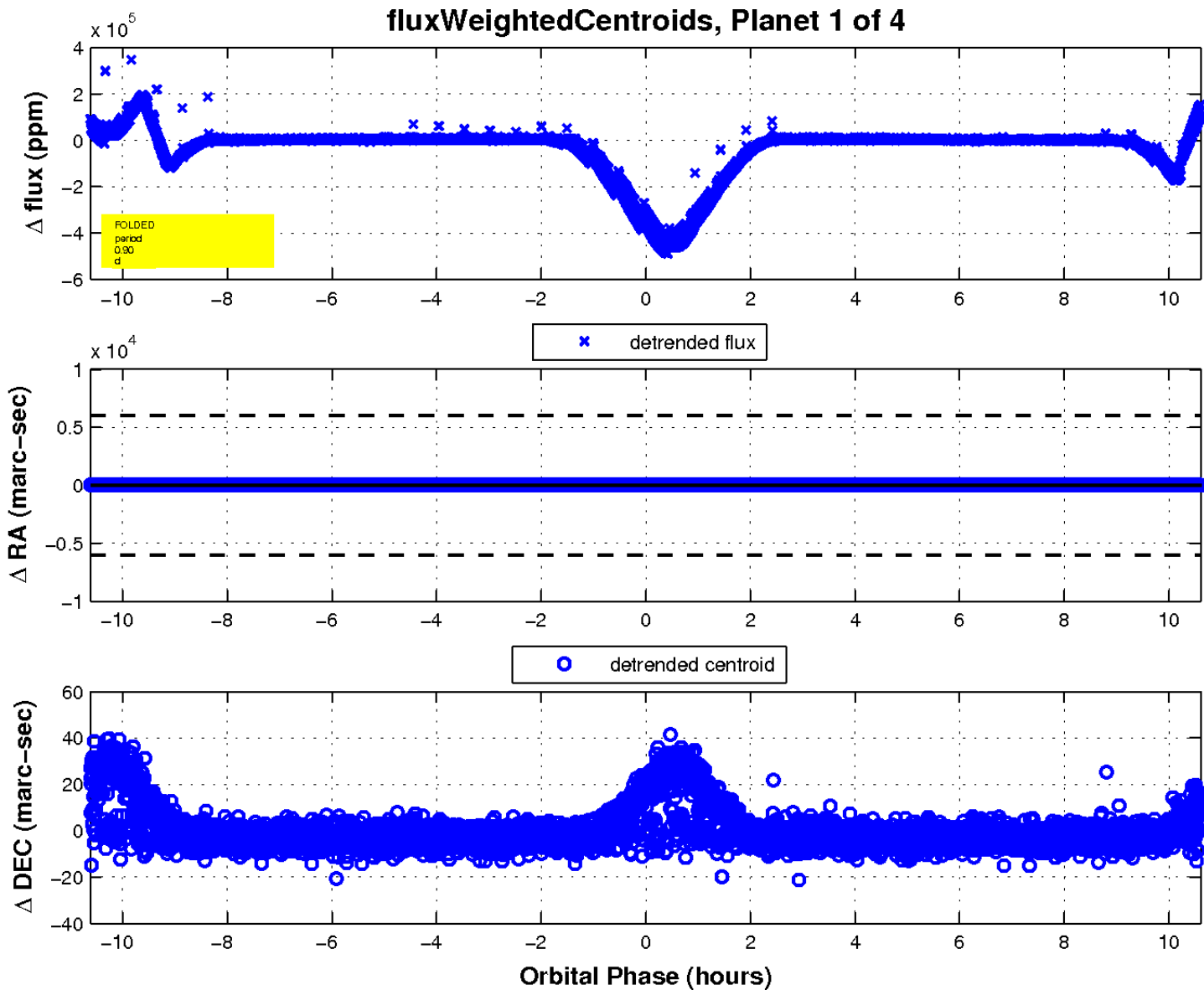
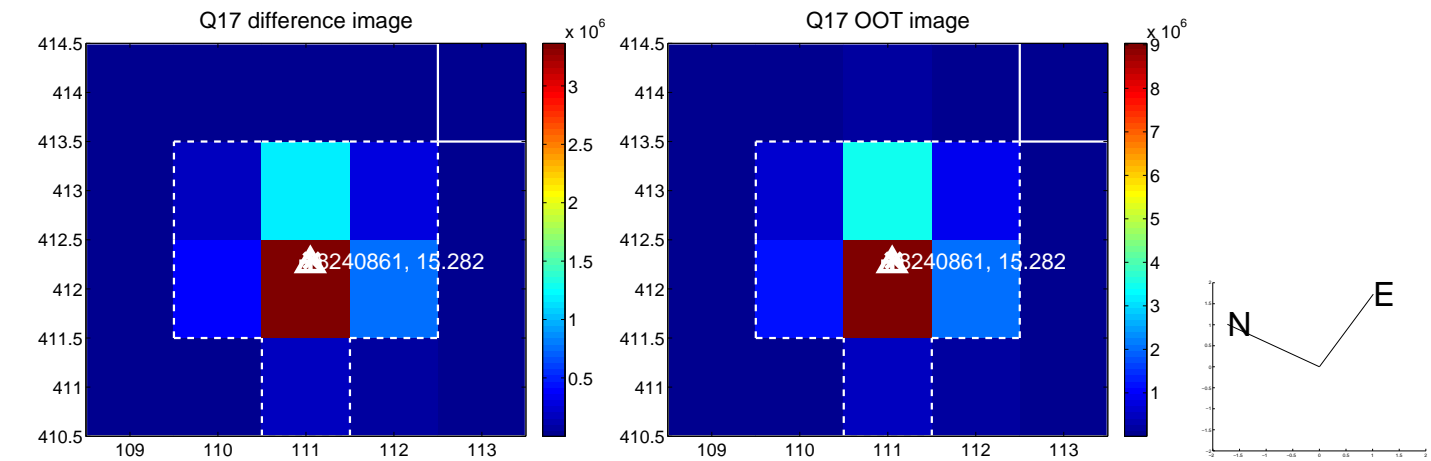
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

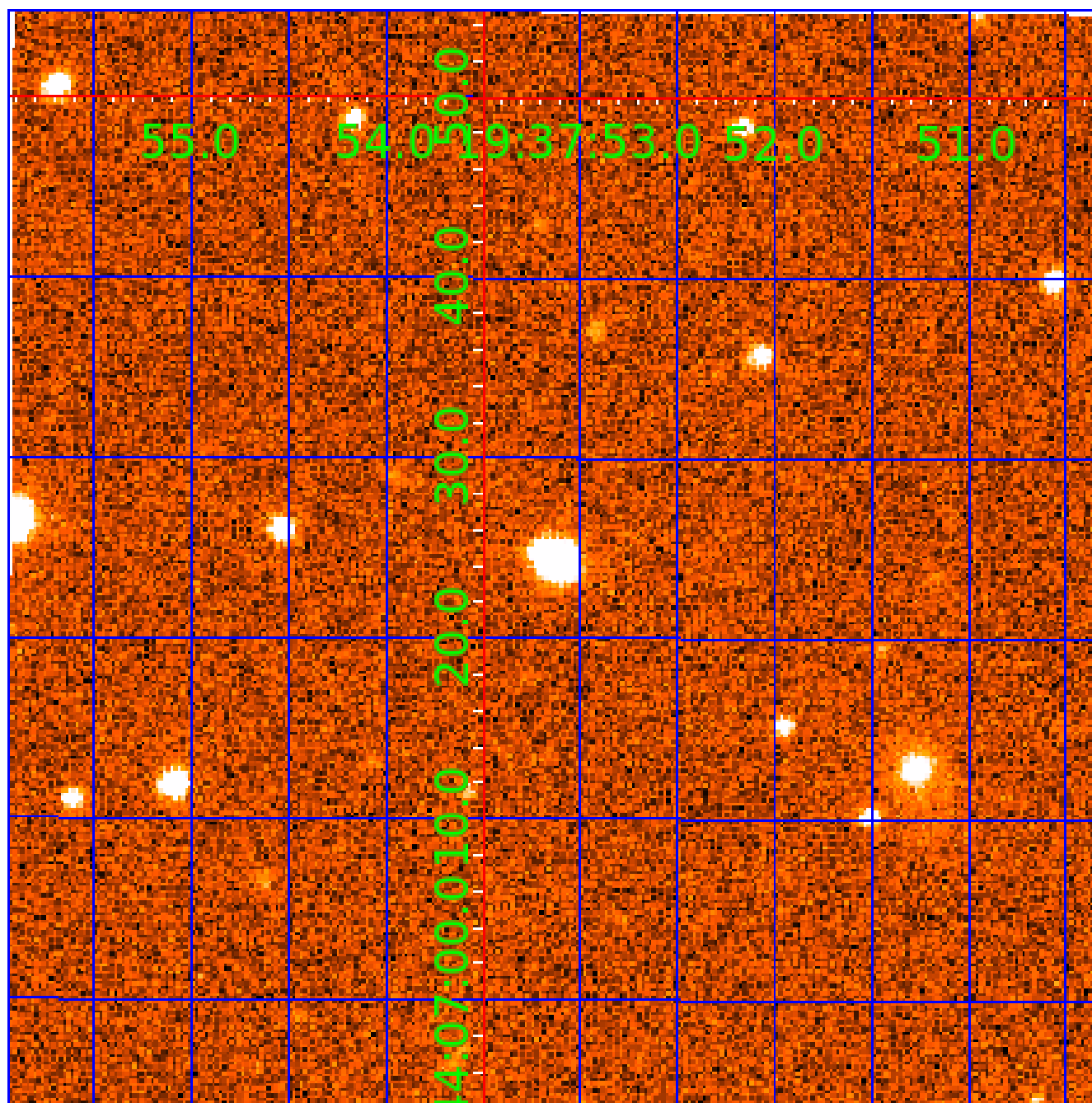


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 008240861

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240861-01	OBS	No	0.898563	132.310994	439691.0	1.500	2701.3	-1.0	1.30	6338	60.69	7031.44
008240861-02	OBS	6999.01	0.898579	131.832869	418205.5	1.500	794.9	-1.0	1.30	6338	25.81	7031.28
008240861-03	OBS	No	3.369242	134.705440	2444.7	12.500	52.1	-1.0	1.30	6338	6.45	1207.07
008240861-04	OBS	No	4.493996	135.304825	2245.6	15.000	74.2	-1.0	1.30	6338	6.18	822.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240861-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
008240861-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_NOFITS
008240861-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
008240861-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—NO_FITS—CENT_NOFITS

**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.

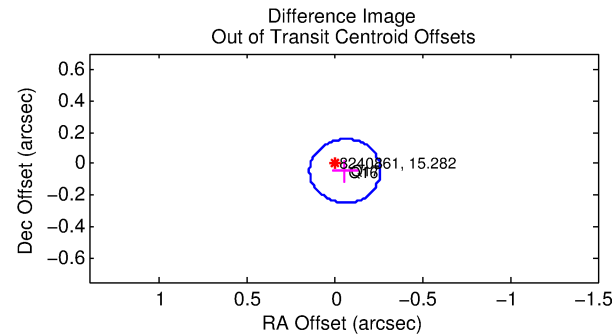
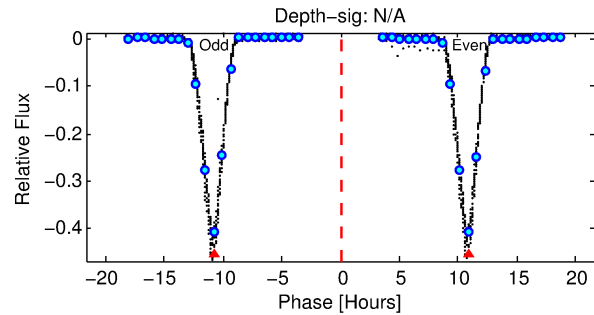
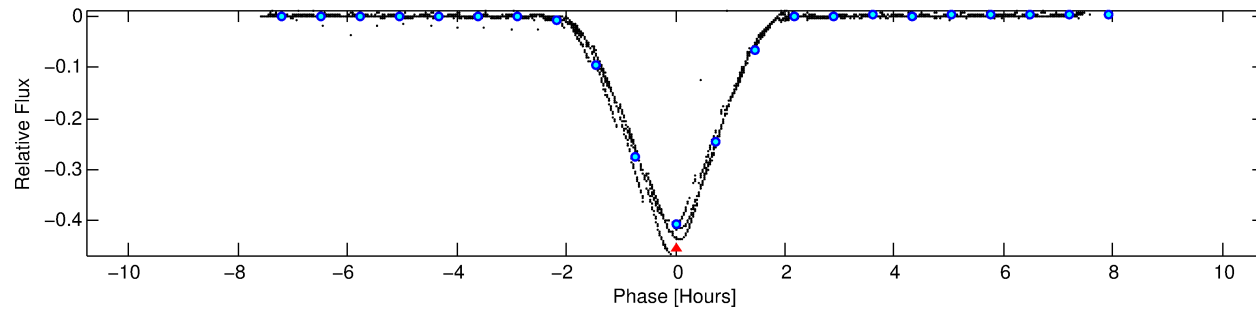
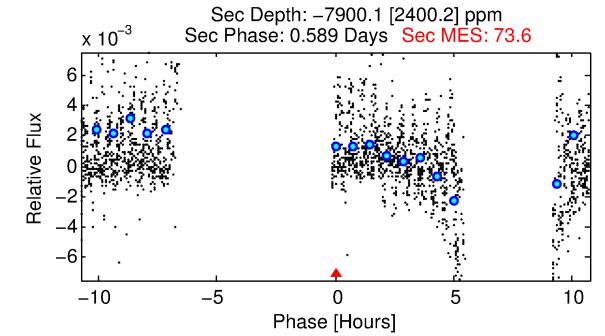
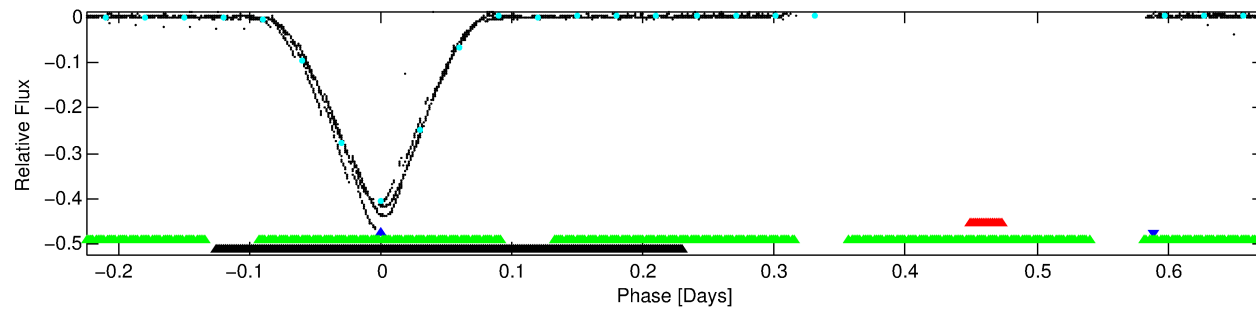
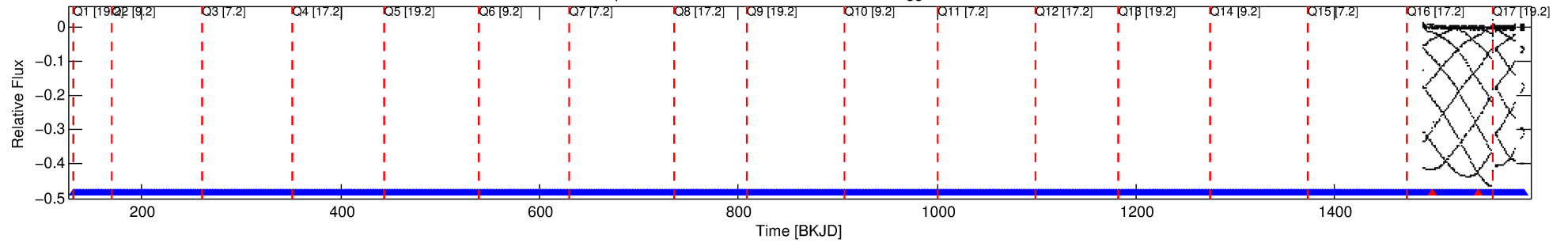
Ephemeris Match Information For 008240861-02

No Significant Match Found

# DV One-Page Summary

KIC: 8240861 Candidate: 2 of 4 Period: 0.899 d  
KOI: K06999 Corr: No Ephemeris Match

Kp: 15.28 R\*: 1.30 Rs Teff: 6338.0 K Logg: 4.24 Fe/H: -0.220



## TPS TCE Results:

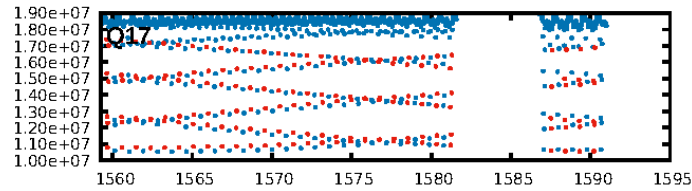
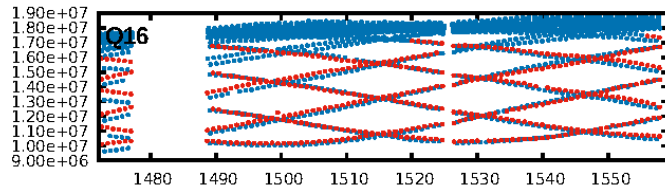
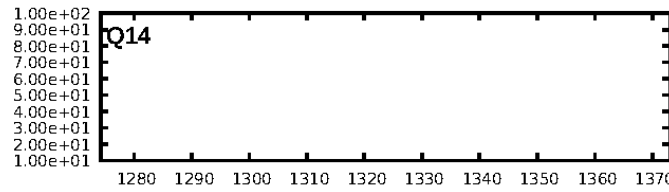
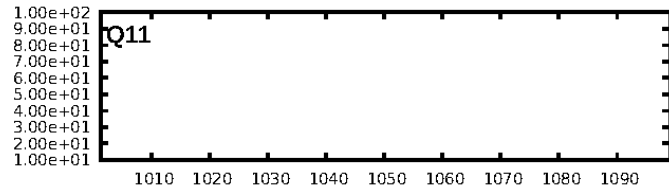
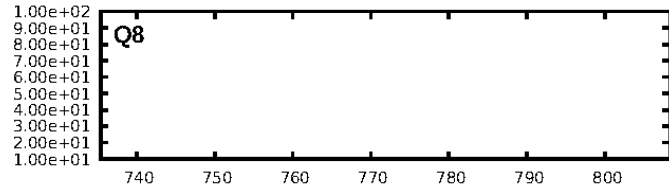
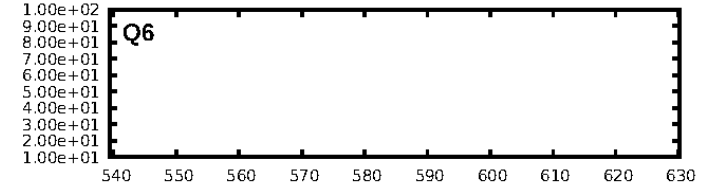
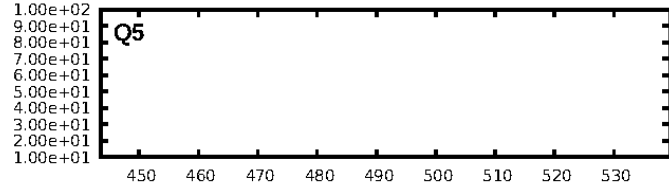
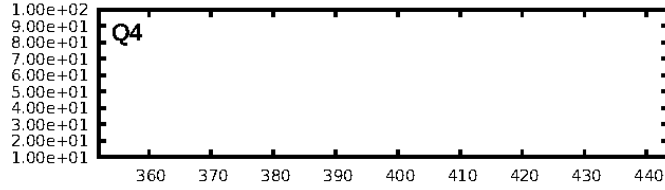
Period = 0.89858 d  
Epoch = 131.8329 BKJD

DV fit results are unavailable

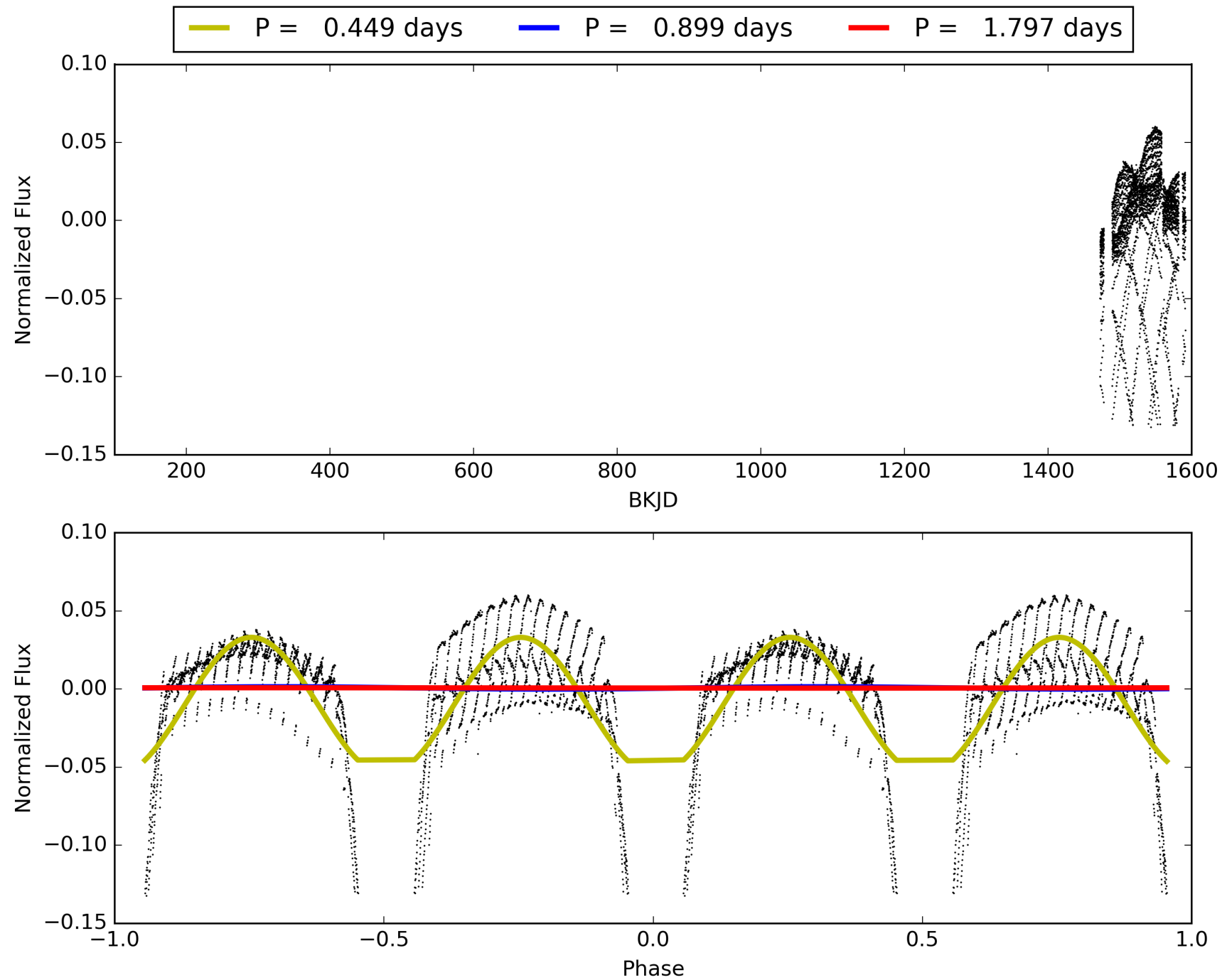
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 100.0% [4.71 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [74/76]  
GhostDiagnostic-chr: 3.444  
Centroid-sig: N/A  
Centroid-so: 0.231 arcsec [89.08 $\sigma$ ]  
OotOffset-rm: 0.075 arcsec [1.11 $\sigma$ ]  
KicOffset-rm: 0.112 arcsec [1.30 $\sigma$ ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 008240861-02, PDC Light Curves



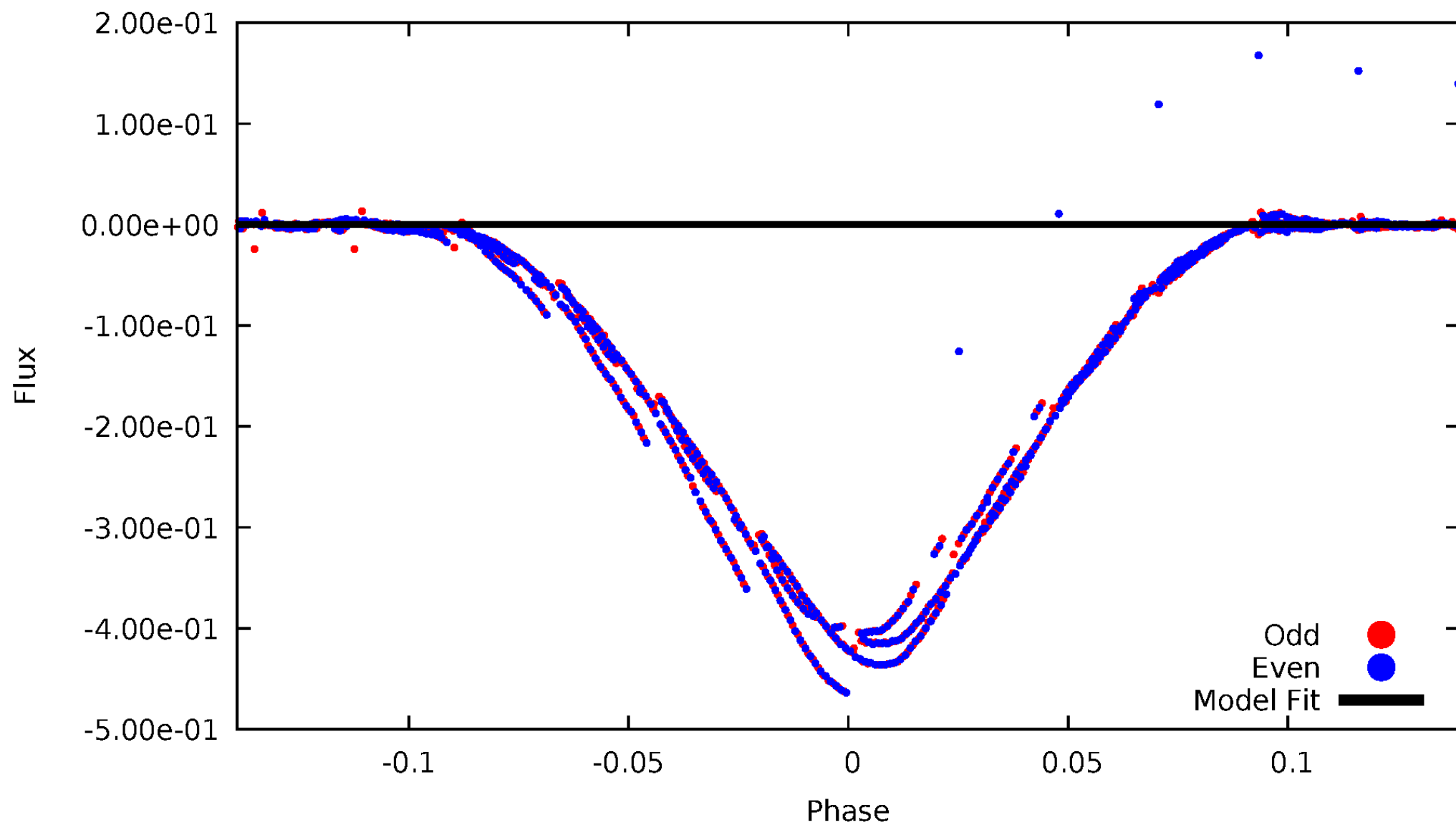
TCE 008240861-02





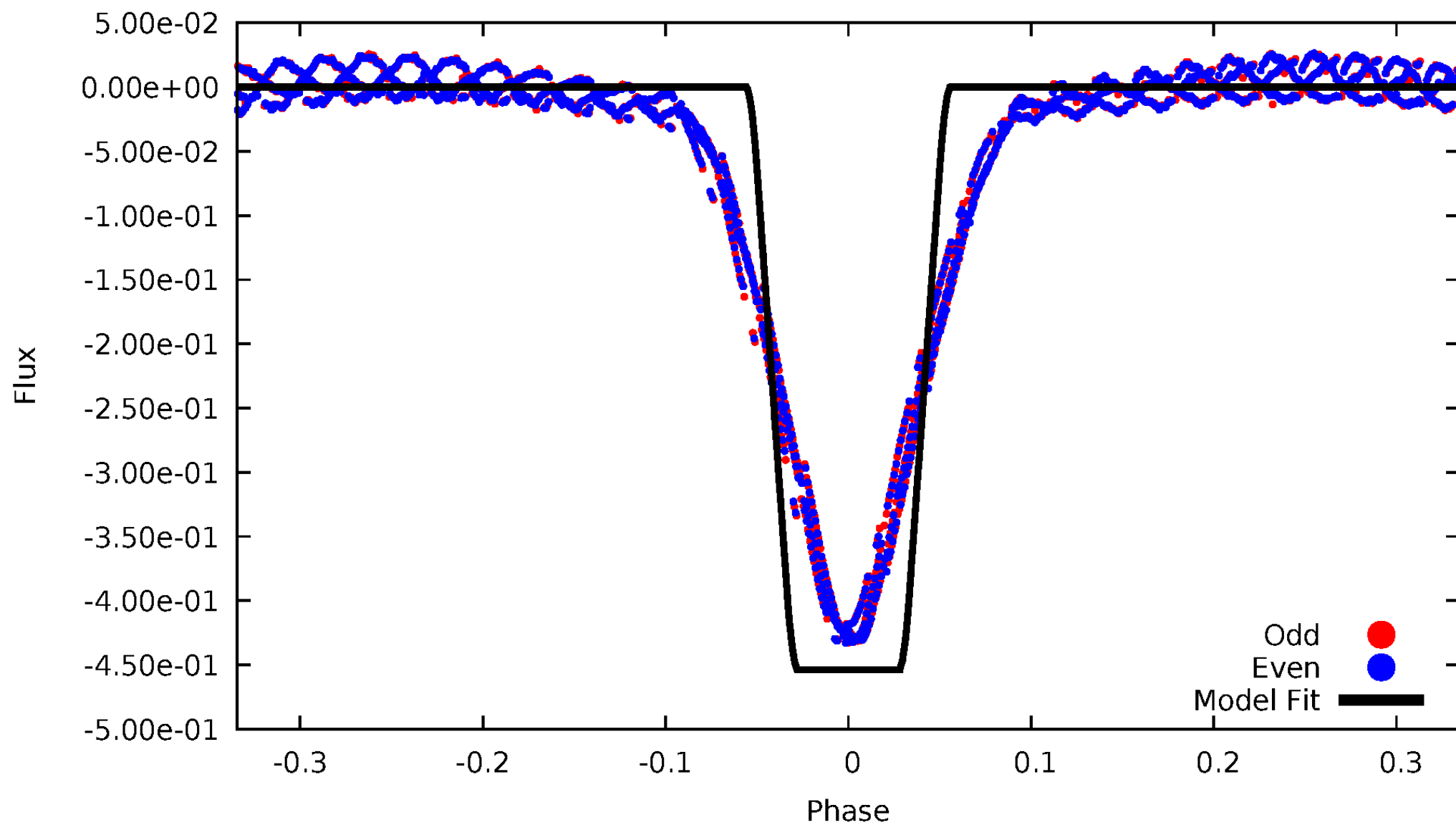
# DV Odd/Even

TCE 008240861-02



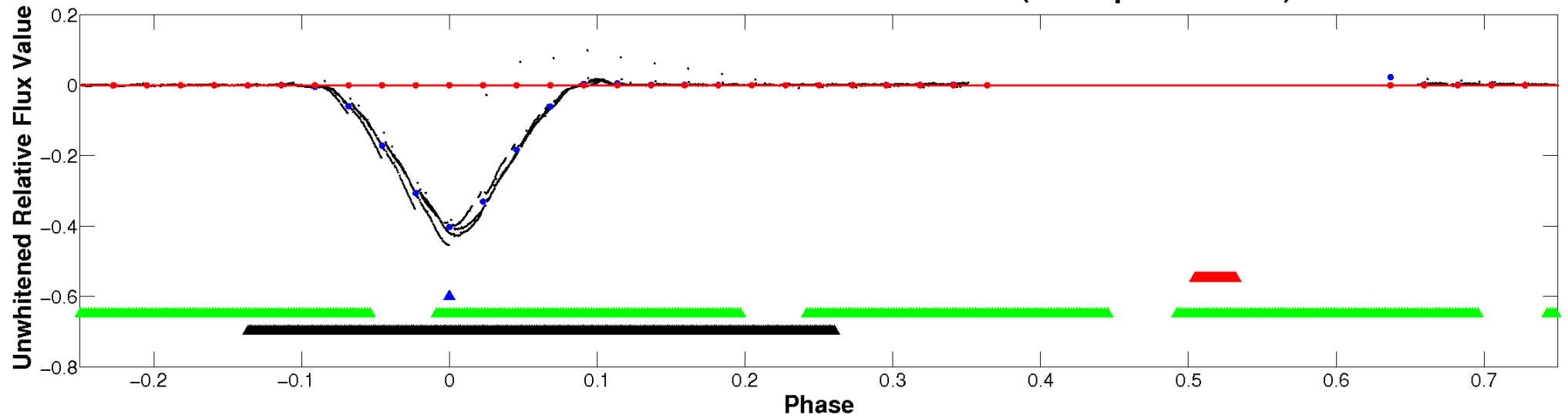
# ALT Odd/Even

TCE 008240861-02



# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

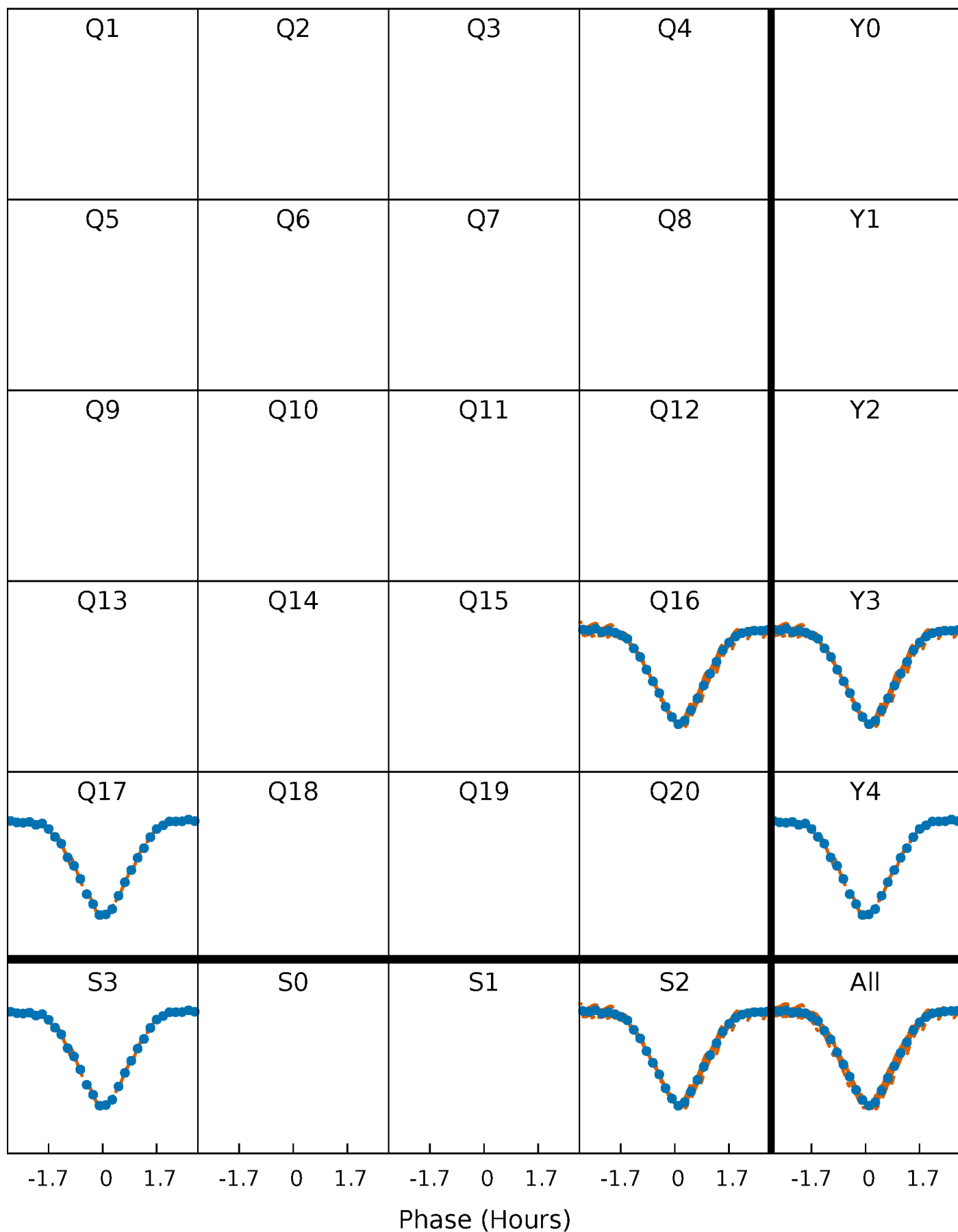


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



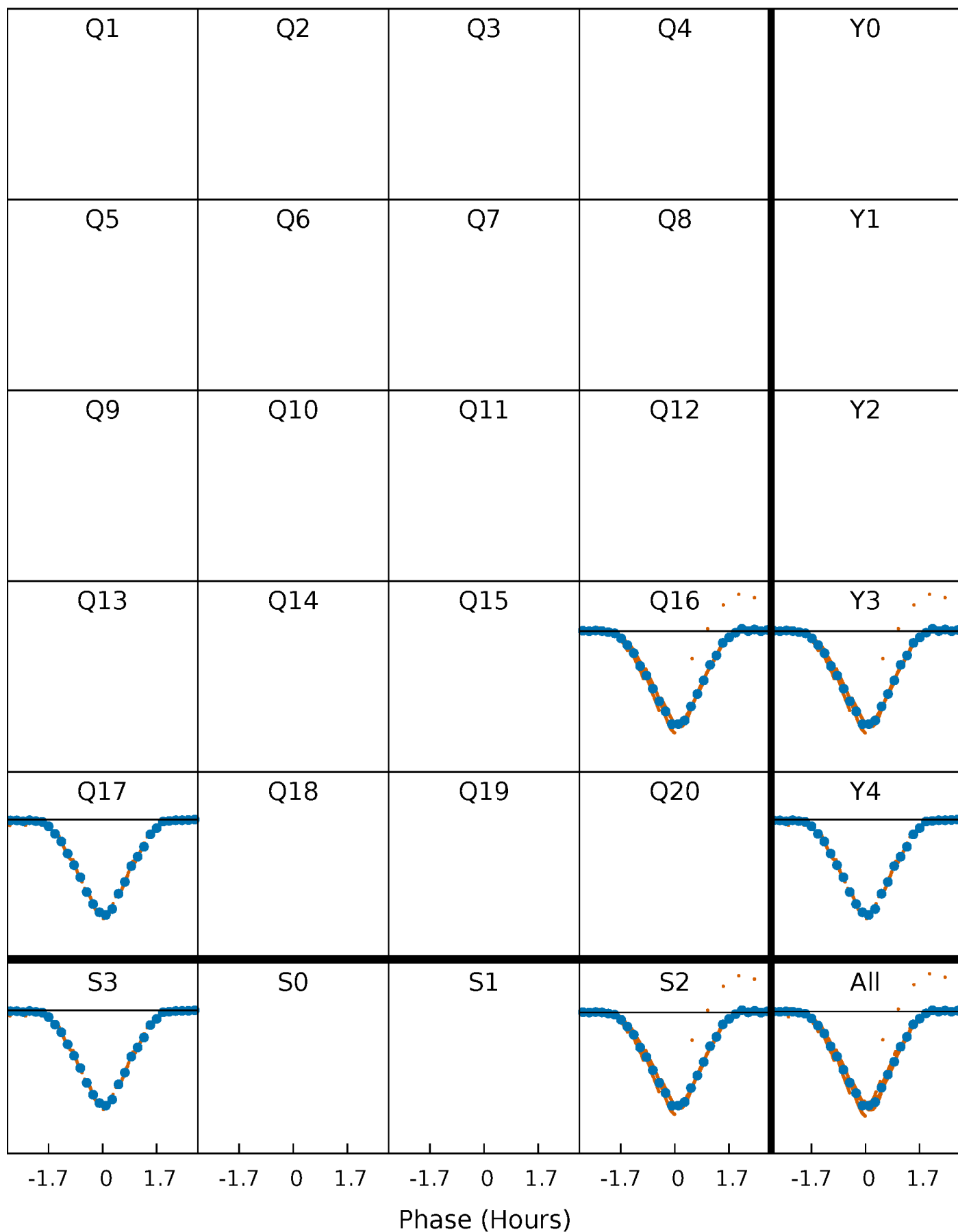
# PDC Quarter-Phased Transit Curves

TCE 008240861-02   P= 0.898579 Days    $T_0=131.832869$  (BKJD)



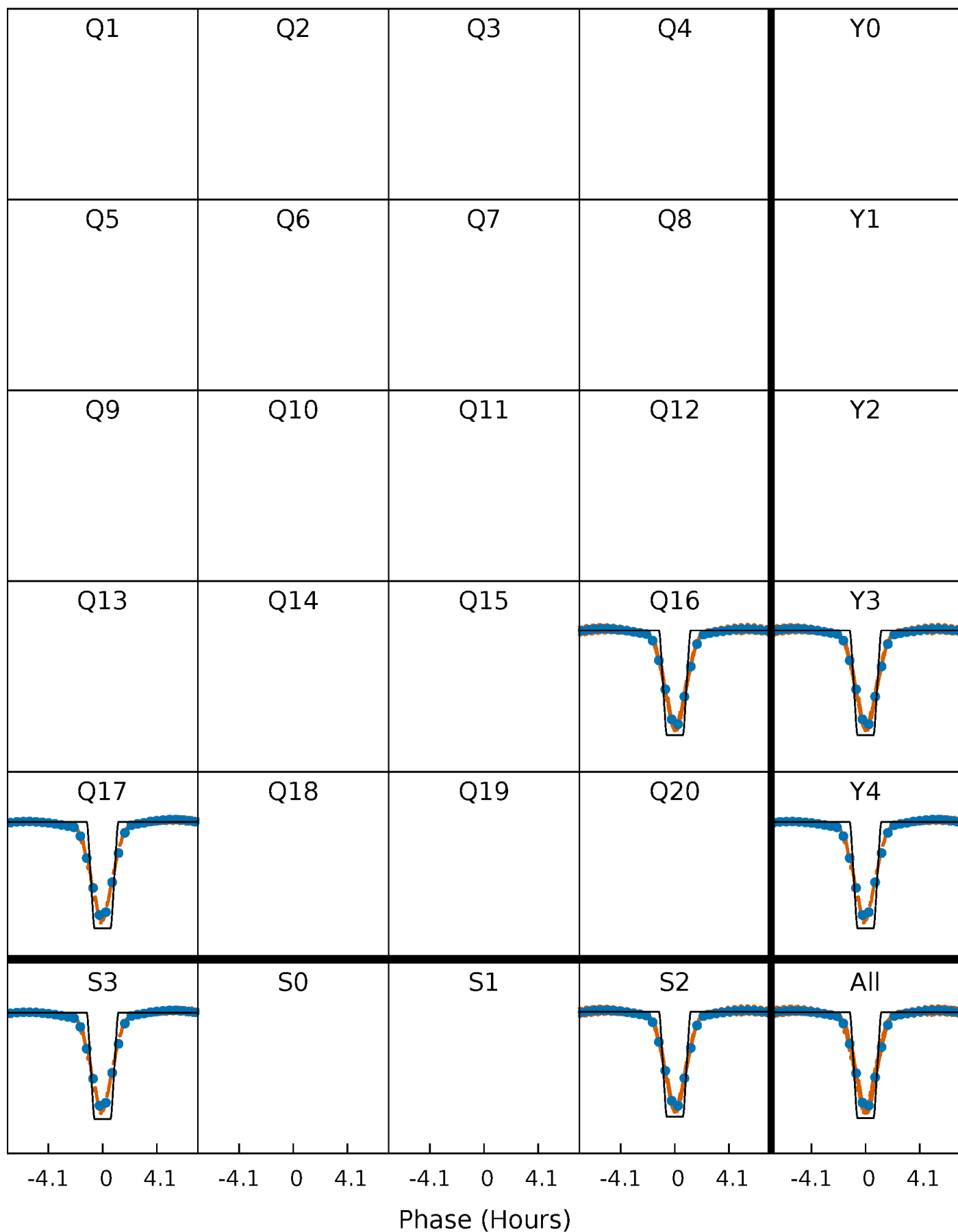
# DV Quarter-Phased Transit Curves

TCE 008240861-02   P= 0.898579 Days    $T_0=131.832869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

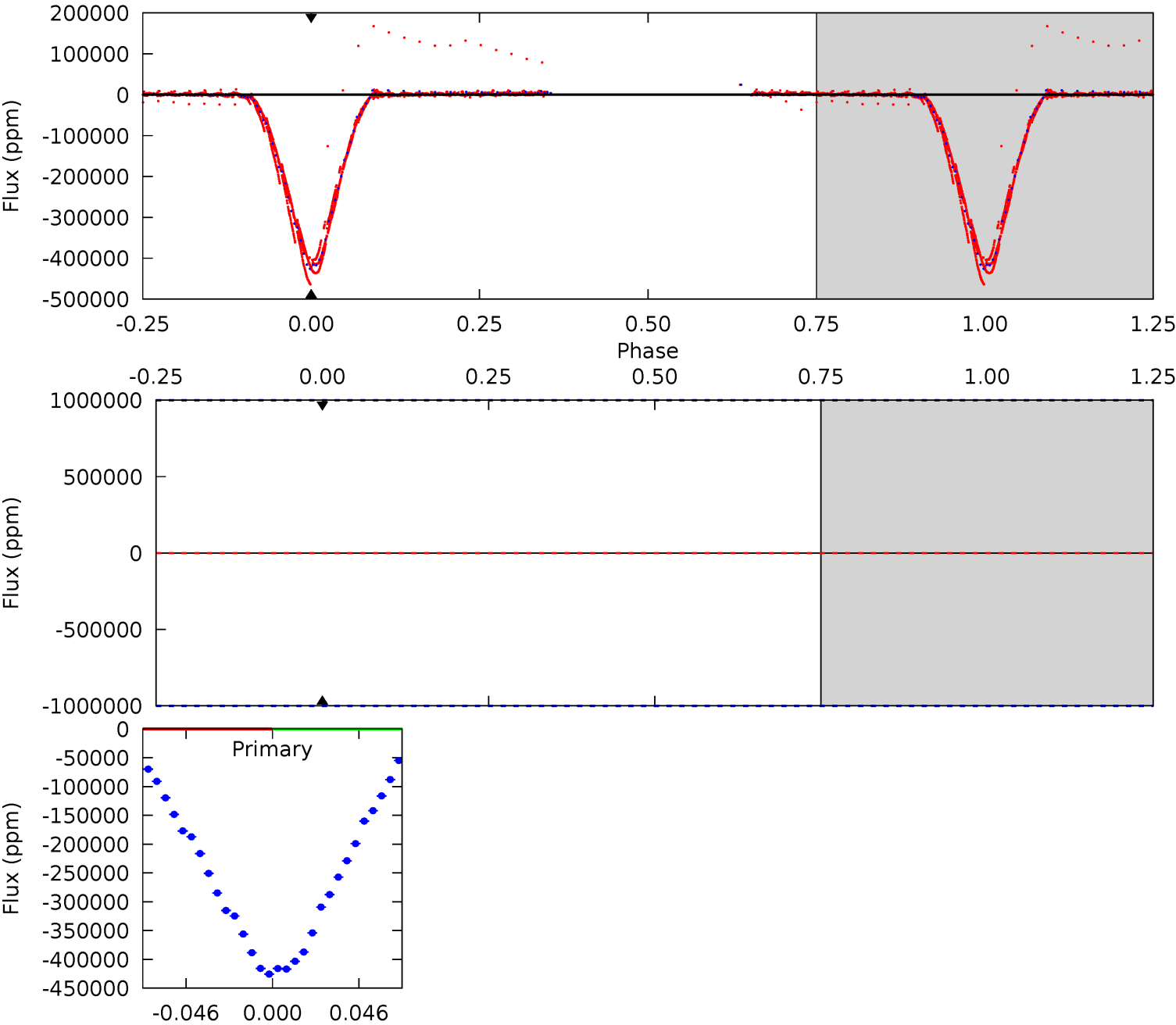
TCE 008240861-02     $P = 0.898579$  Days     $T_0 = 131.836623$  (BKJD)



# DV Model-Shift Uniqueness Test

008240861-02, P = 0.898579 Days, E = 131.832869 Days

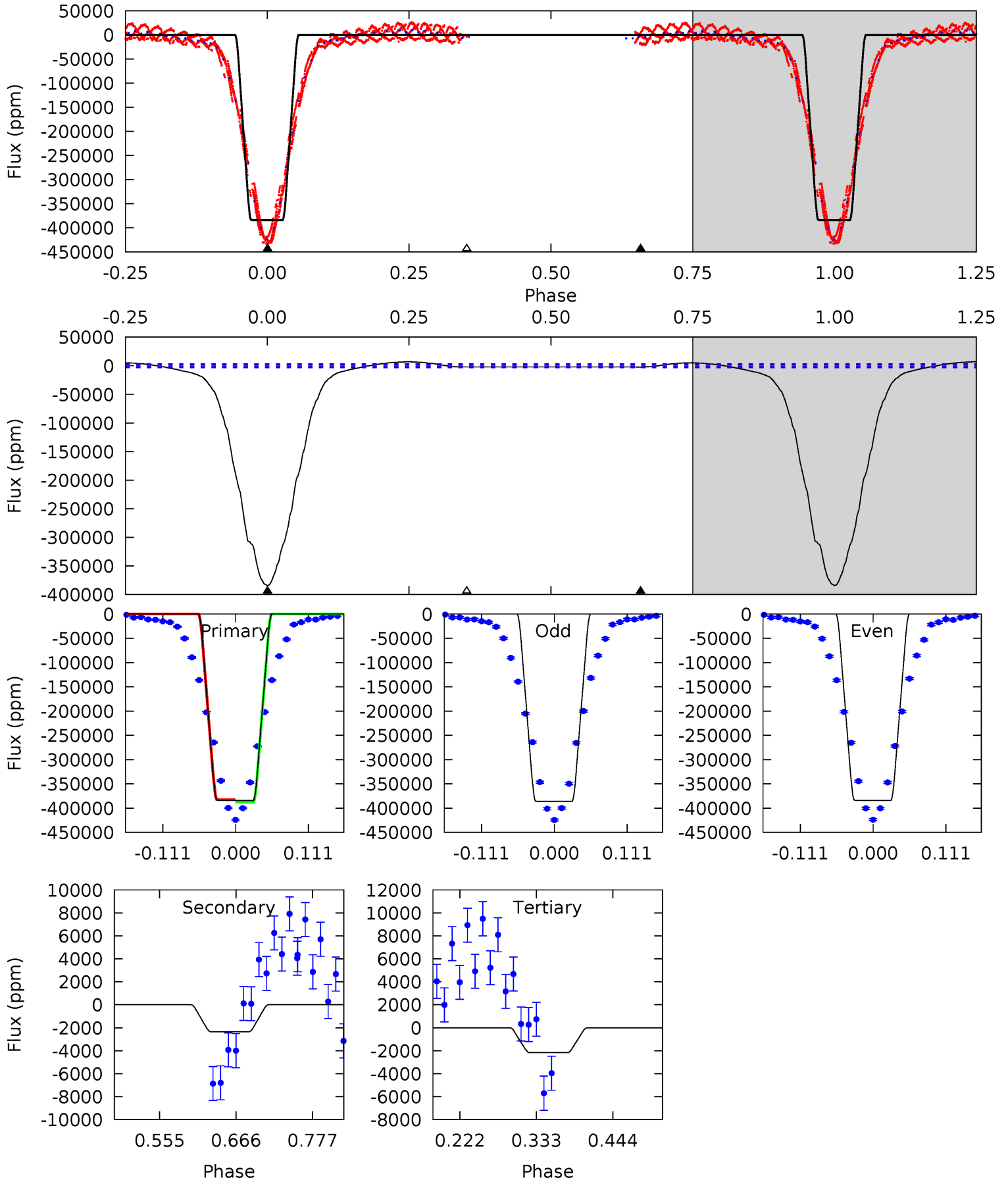
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008240861-02, P = 0.898579 Days, E = 131.836623 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
686.7	4.21	3.88	0	4.54	1.59	12.7	682.9	686.7	0.33	4.21	1.81	1.00	0.02	4.59





### Stellar Parameters For KIC 008240861

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+175}_{-241}$	$4.239^{+0.180}_{-0.180}$	$-0.220^{+0.250}_{-0.300}$	$1.299^{+0.373}_{-0.271}$	$1.065^{+0.181}_{-0.131}$	$0.684^{+0.646}_{-0.331}$
	+3%/-4%	+4%/-4%	+114%/-136%	+29%/-21%	+17%/-12%	+94%/-48%
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 008240861-02 / KOI 6999.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$26.40^{+16.46}_{-13.46}$	$3244^{+248}_{-220}$	$-3402^{+12730}_{-5686}$	$-0.077^{+36.993}_{-32.458}$
Alt.	$-2352 \pm 559$	$94.69^{+22.44}_{-17.18}$	$3247^{+248}_{-228}$	$-3146^{+153}_{-161}$	$0.049^{+0.028}_{-0.019}$

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

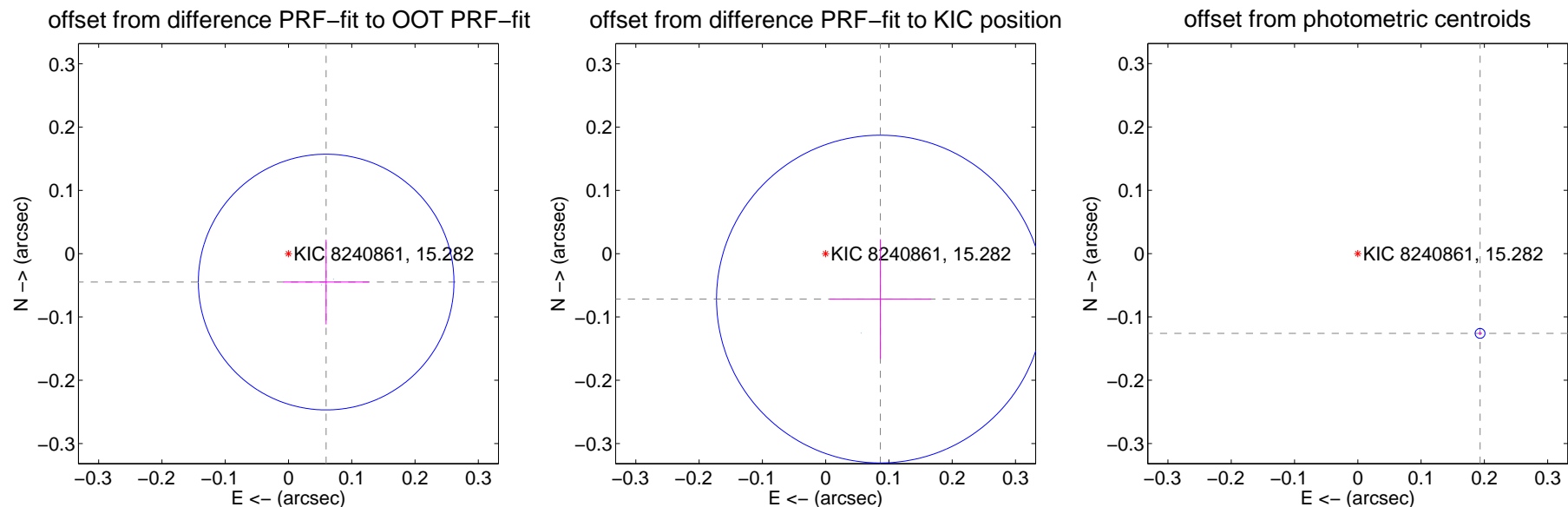
## DV Centroid Data

Supplemental centroid analysis for 008240861-02. Kepler magnitude: 15.28. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.075 \pm 0.067$	1.11	$-0.060 \pm 0.068$	$-0.045 \pm 0.067$
PRF-fit source offset from KIC position	$0.112 \pm 0.086$	1.30	$-0.086 \pm 0.080$	$-0.072 \pm 0.094$
photometric centroid source offset	$0.23 \pm 0.00$	89.08	$-0.19 \pm 0.00$	$-0.13 \pm 0.00$



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.



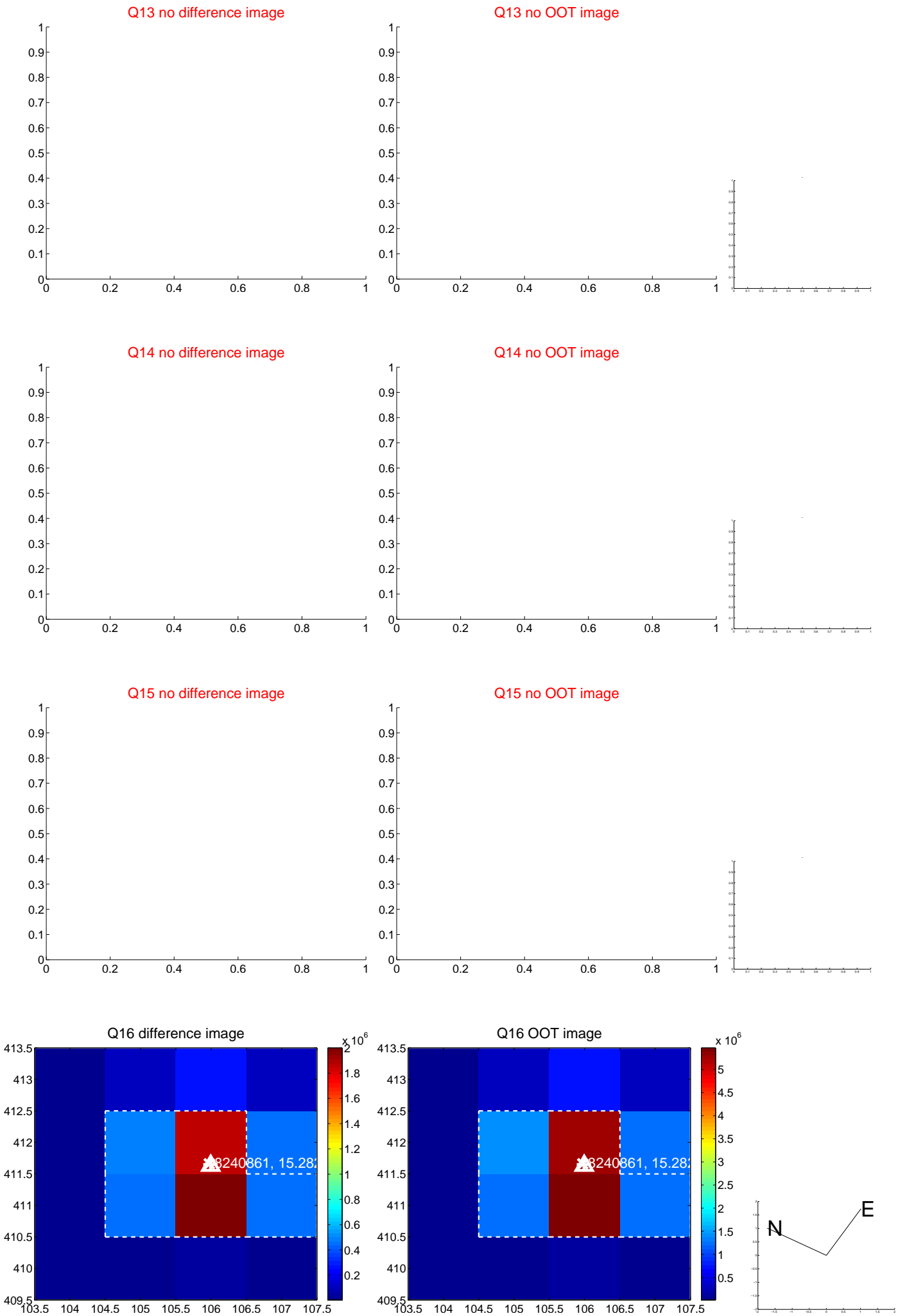
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



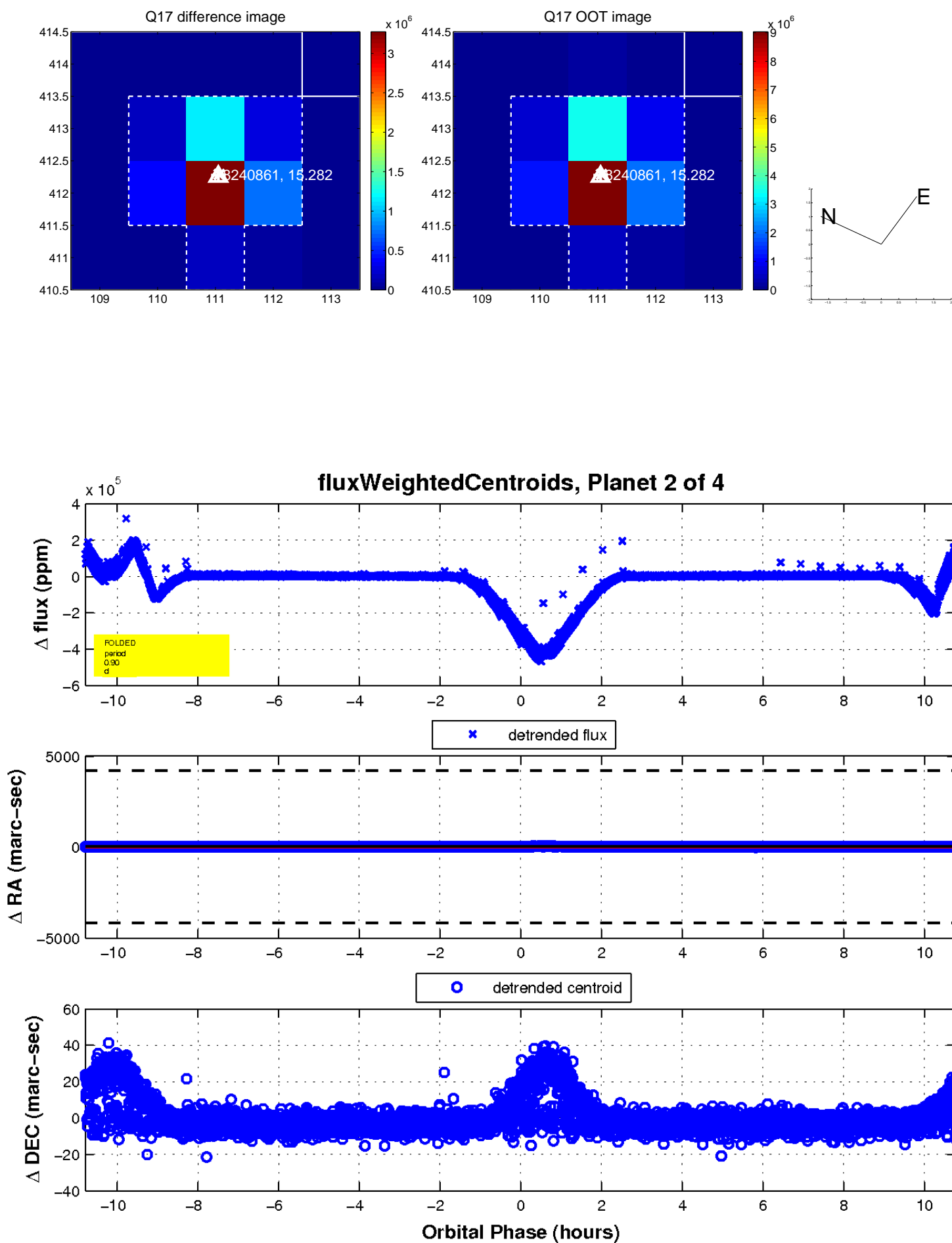
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

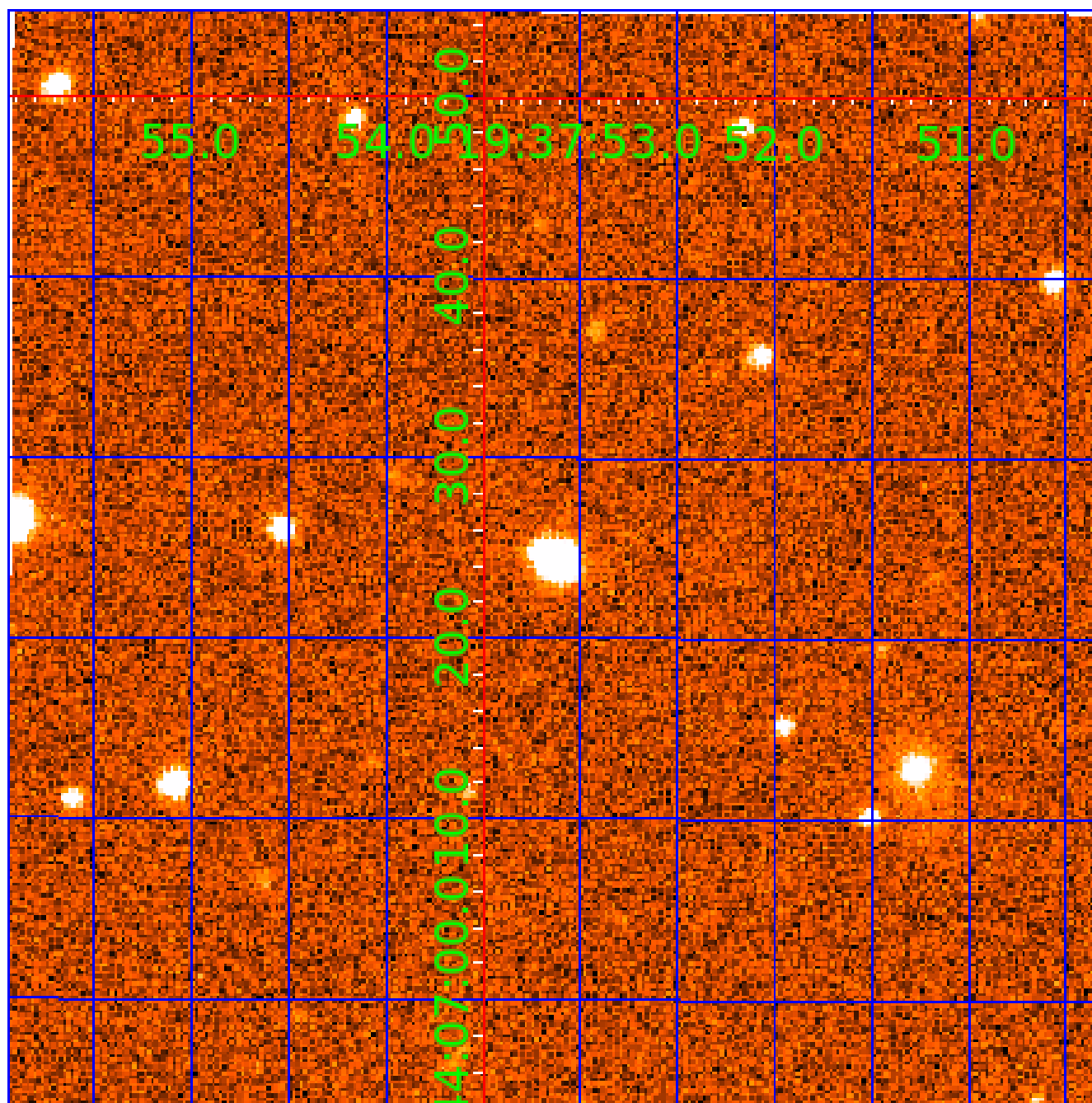


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 008240861

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240861-01	OBS	No	0.898563	132.310994	439691.0	1.500	2701.3	-1.0	1.30	6338	60.69	7031.44
008240861-02	OBS	6999.01	0.898579	131.832869	418205.5	1.500	794.9	-1.0	1.30	6338	25.81	7031.28
008240861-03	OBS	No	3.369242	134.705440	2444.7	12.500	52.1	-1.0	1.30	6338	6.45	1207.07
008240861-04	OBS	No	4.493996	135.304825	2245.6	15.000	74.2	-1.0	1.30	6338	6.18	822.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240861-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
008240861-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_NOFITS
008240861-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
008240861-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—NO_FITS—CENT_NOFITS

**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.

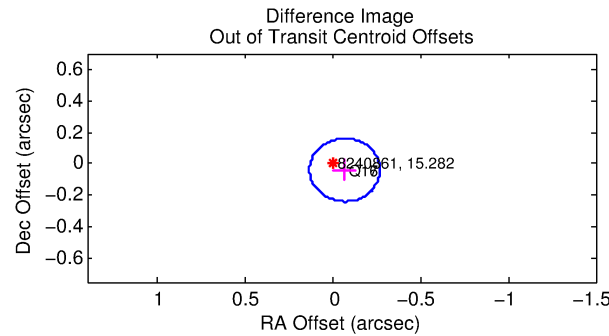
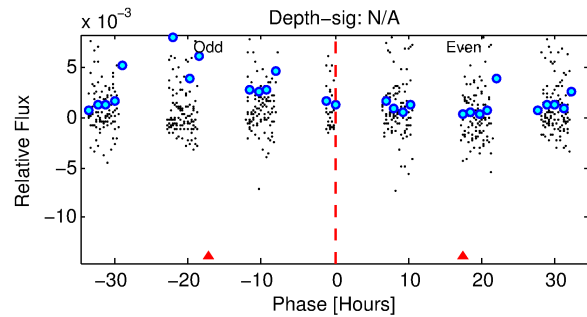
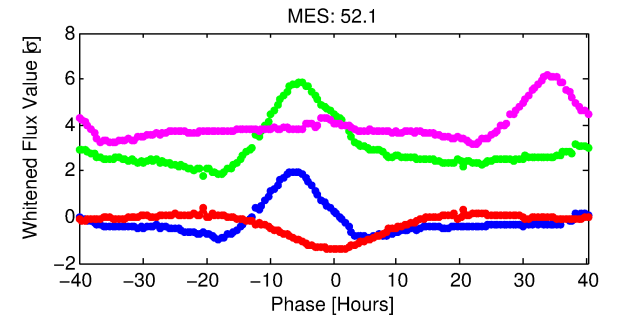
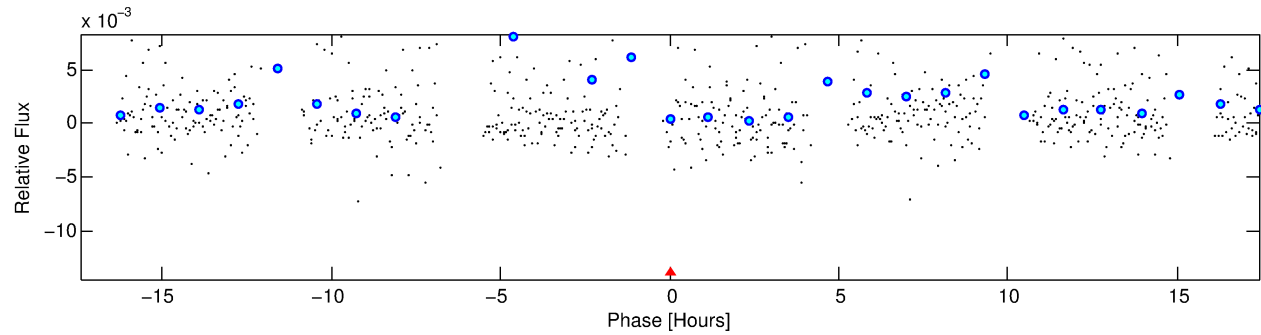
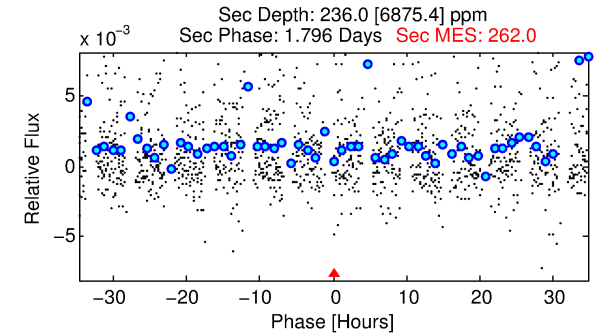
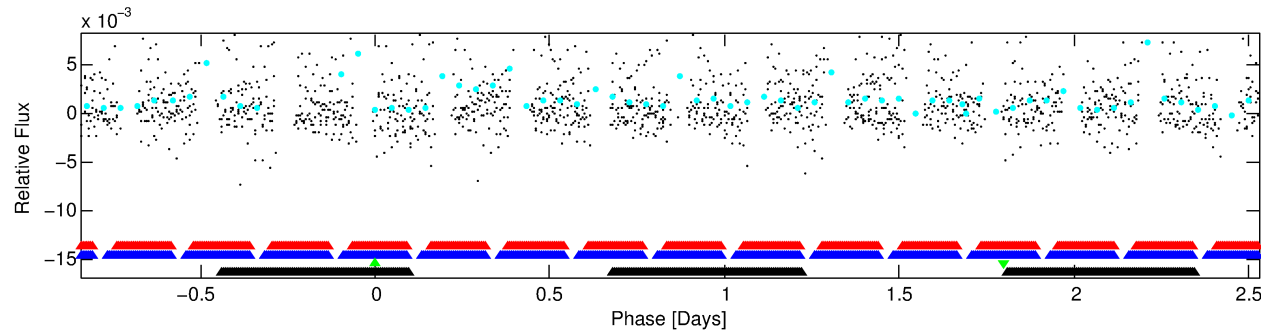
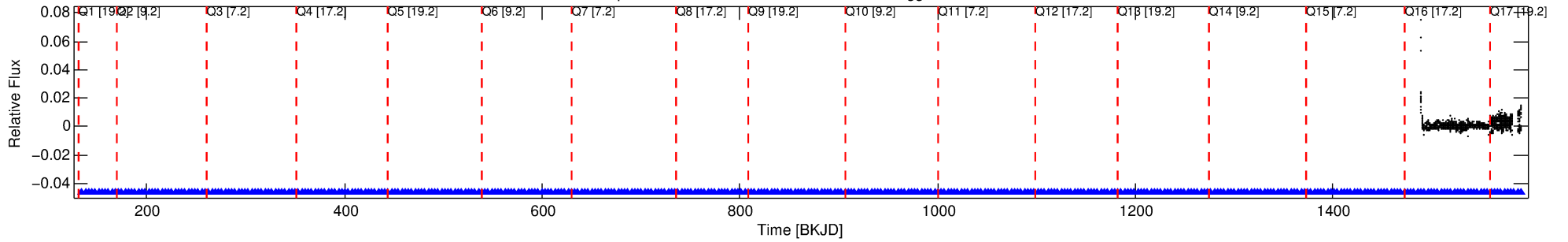
Ephemeris Match Information For 008240861-03

No Significant Match Found

# DV One-Page Summary

KIC: 8240861 Candidate: 3 of 4 Period: 3.369 d  
KOI: K06999 Corr: No Ephemeris Match

Kp: 15.28 R\*: 1.30 Rs Teff: 6338.0 K Logg: 4.24 Fe/H: -0.220



## TPS TCE Results:

Period = 3.36924 d  
Epoch = 134.7054 BKJD

DV fit results are unavailable

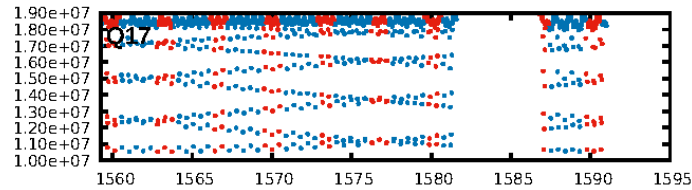
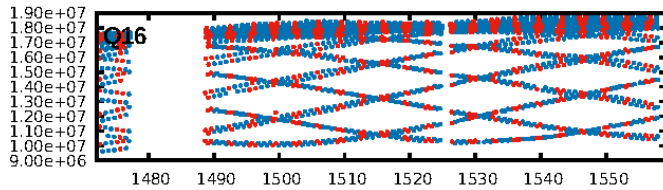
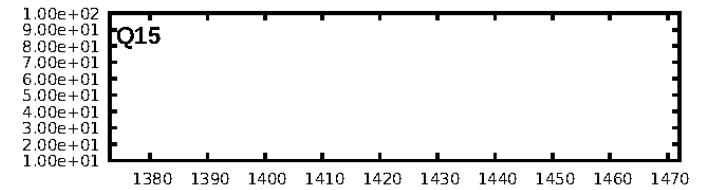
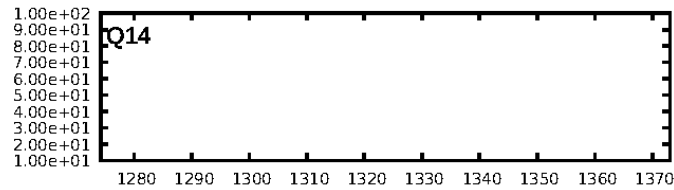
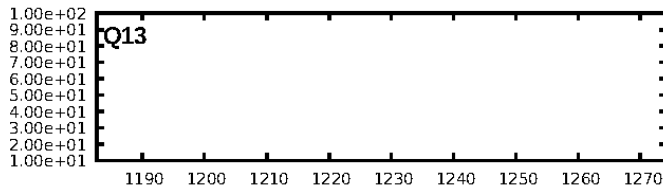
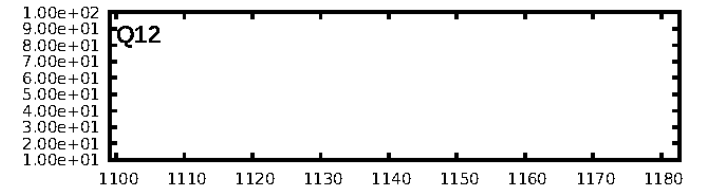
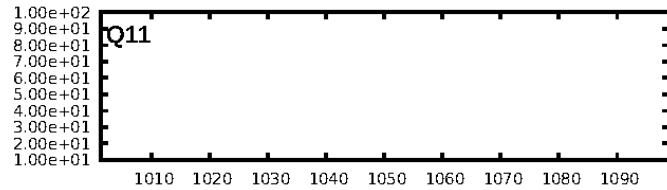
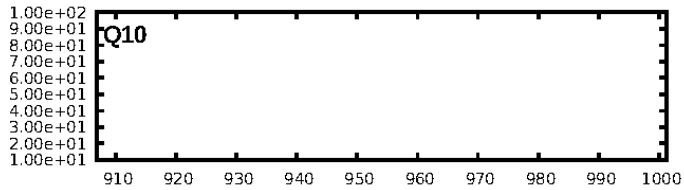
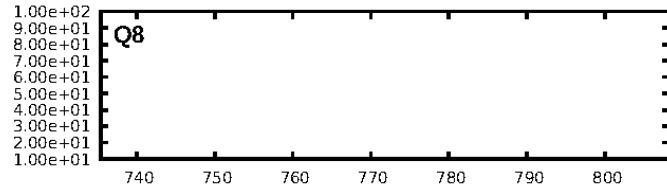
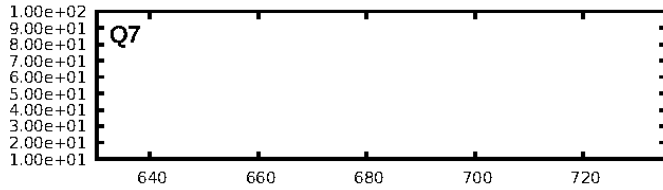
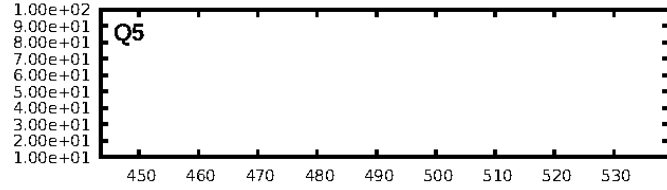
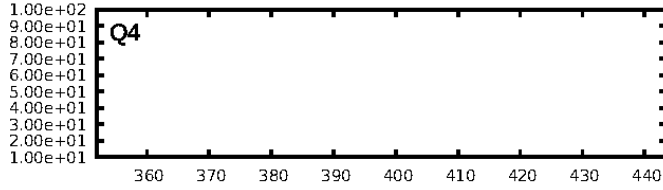
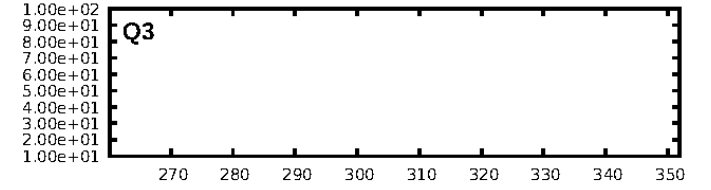
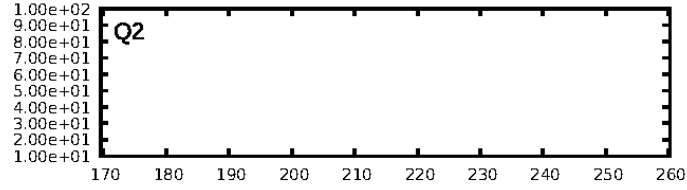
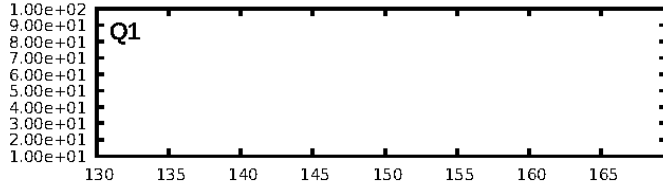
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.71σ]  
LongPeriod-sig: 83.3% [1.38σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.00e+00  
RollingBand-fgt: 1.00 [21/21]  
GhostDiagnostic-chr: 0.2291  
Centroid-sig: N/A  
Centroid-so: 0.243 arcsec [1.54σ]  
OotOffset-rm: 0.078 arcsec [1.16σ]  
KicOffset-rm: 0.109 arcsec [1.42σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.00 [0/2]

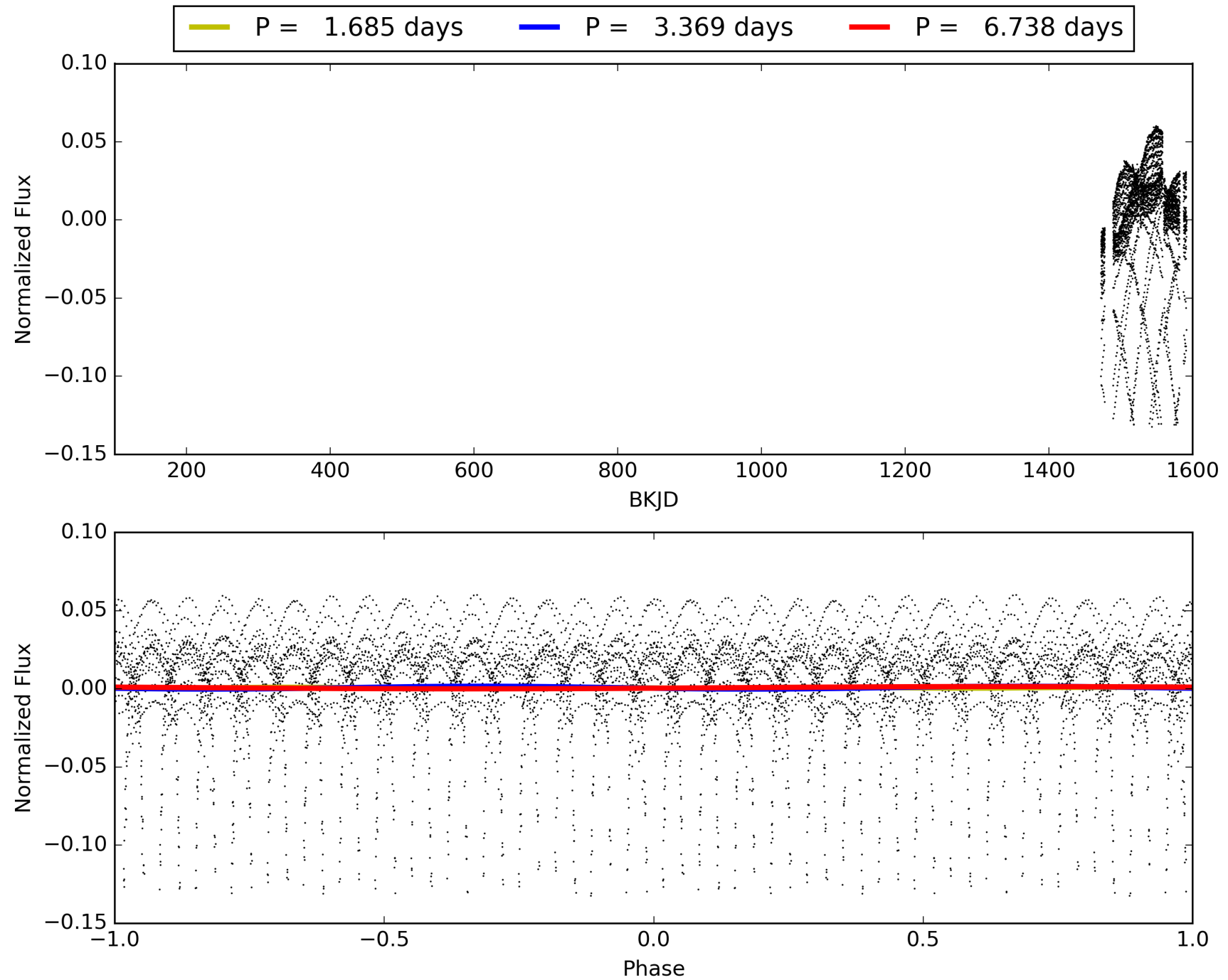
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:13:46 Z

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

# TCE 008240861-03, PDC Light Curves

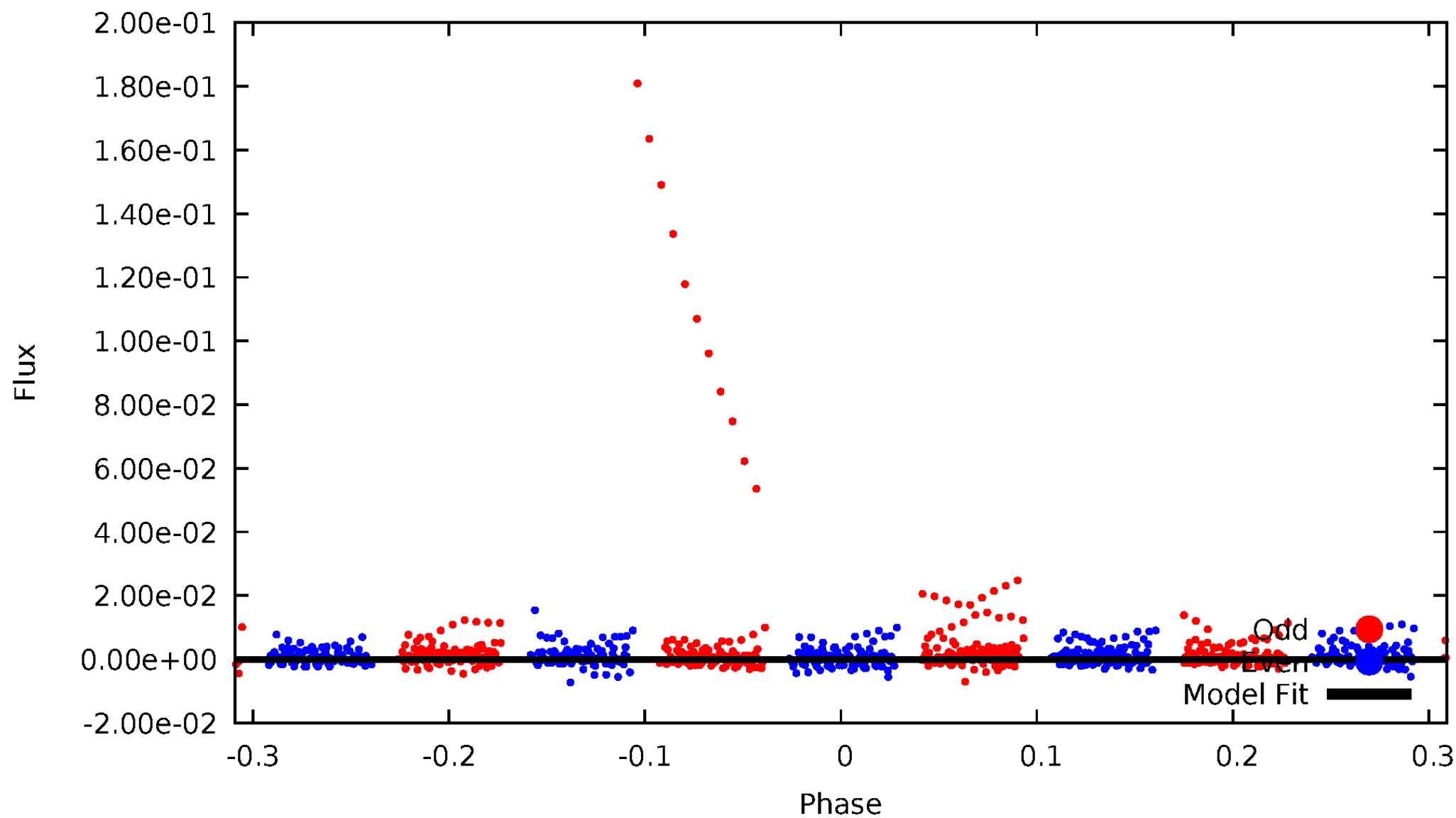


# TCE 008240861-03



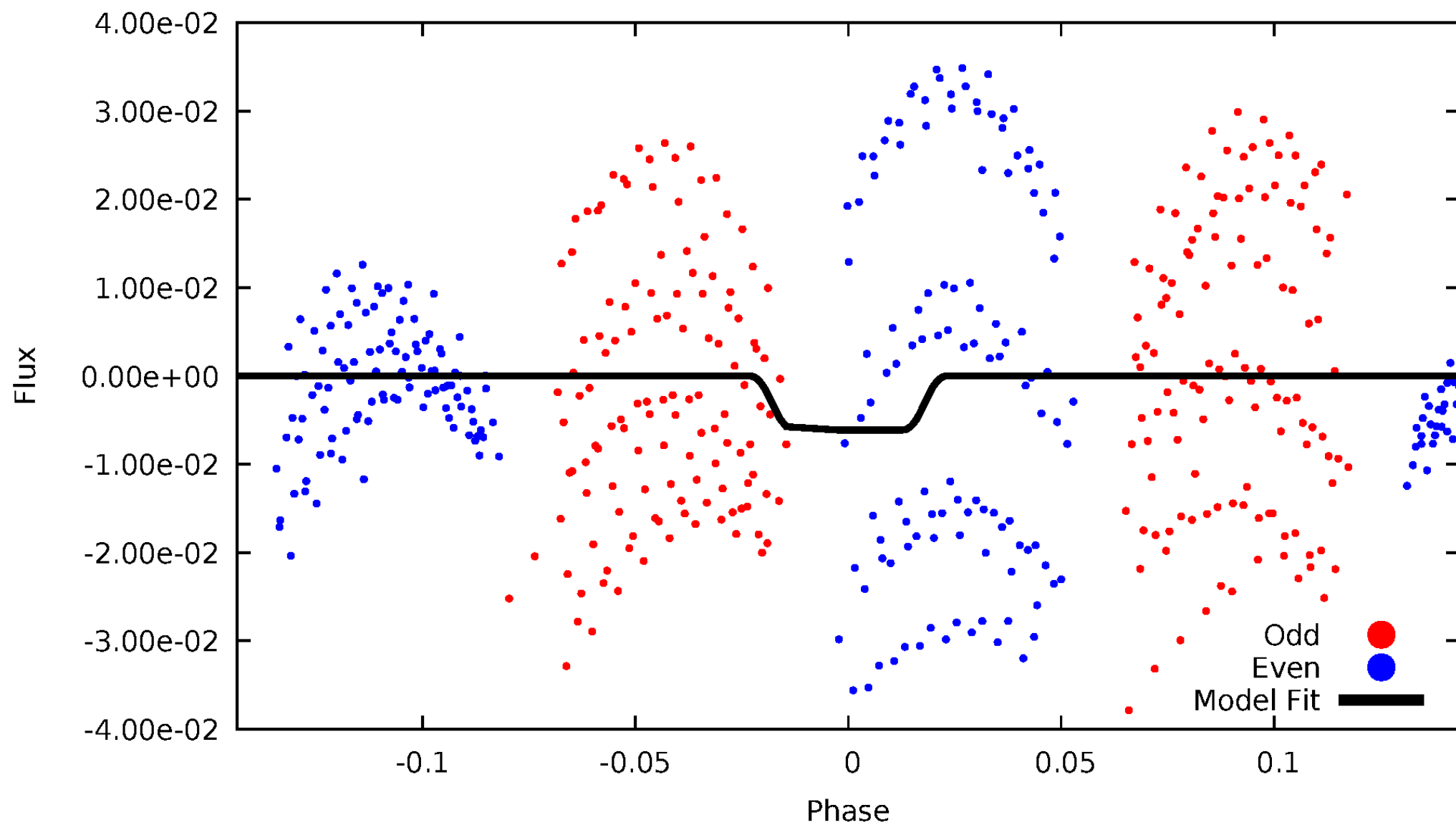
# DV Odd/Even

TCE 008240861-03



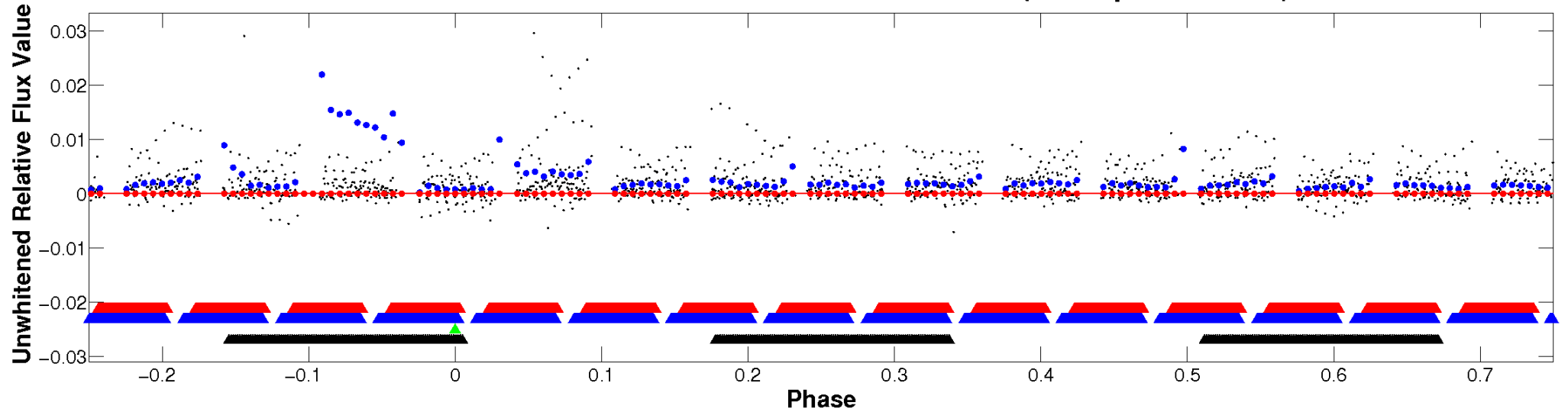
# ALT Odd/Even

TCE 008240861-03



# Non-Whitened Vs. Whitened Light Curve

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

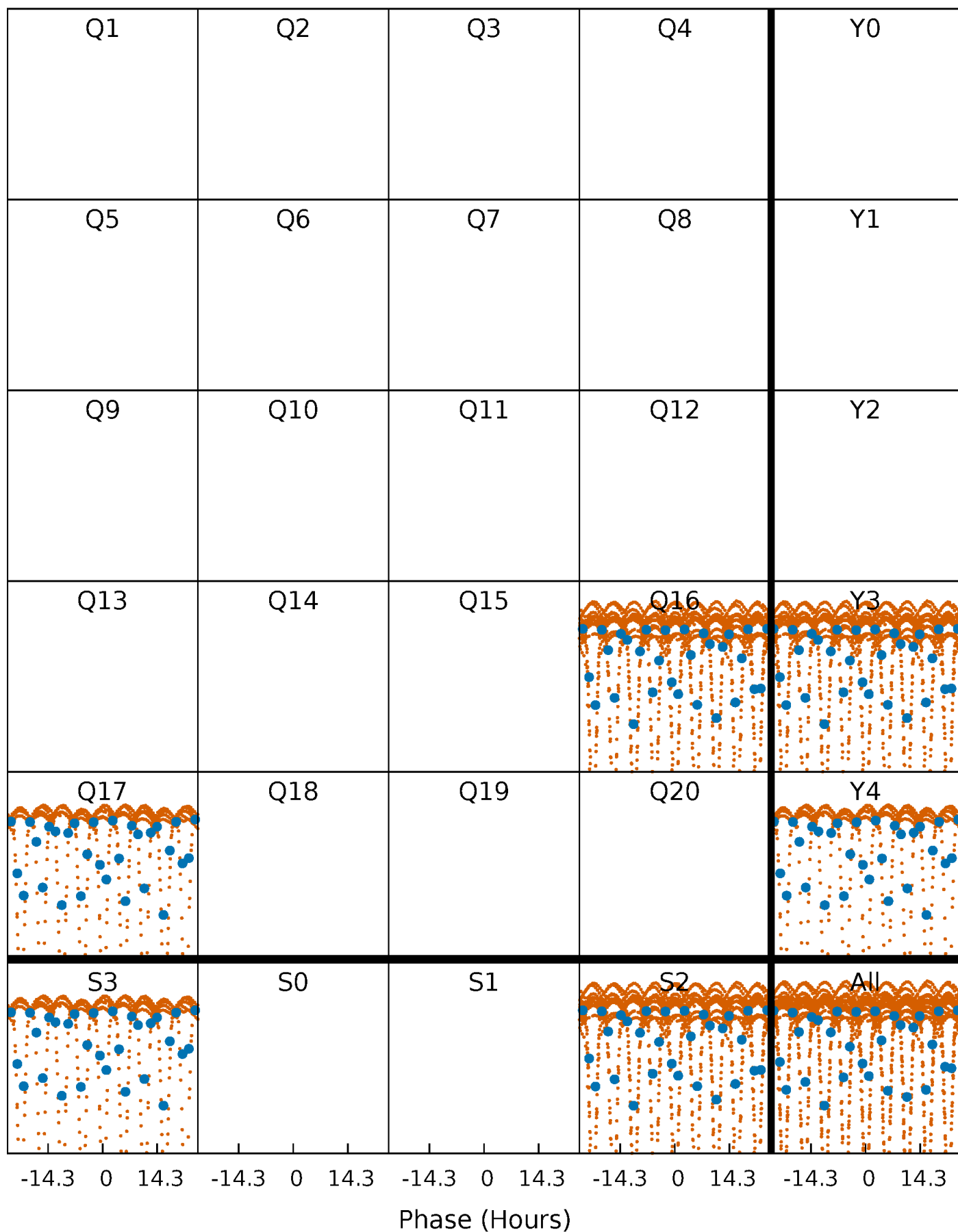


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

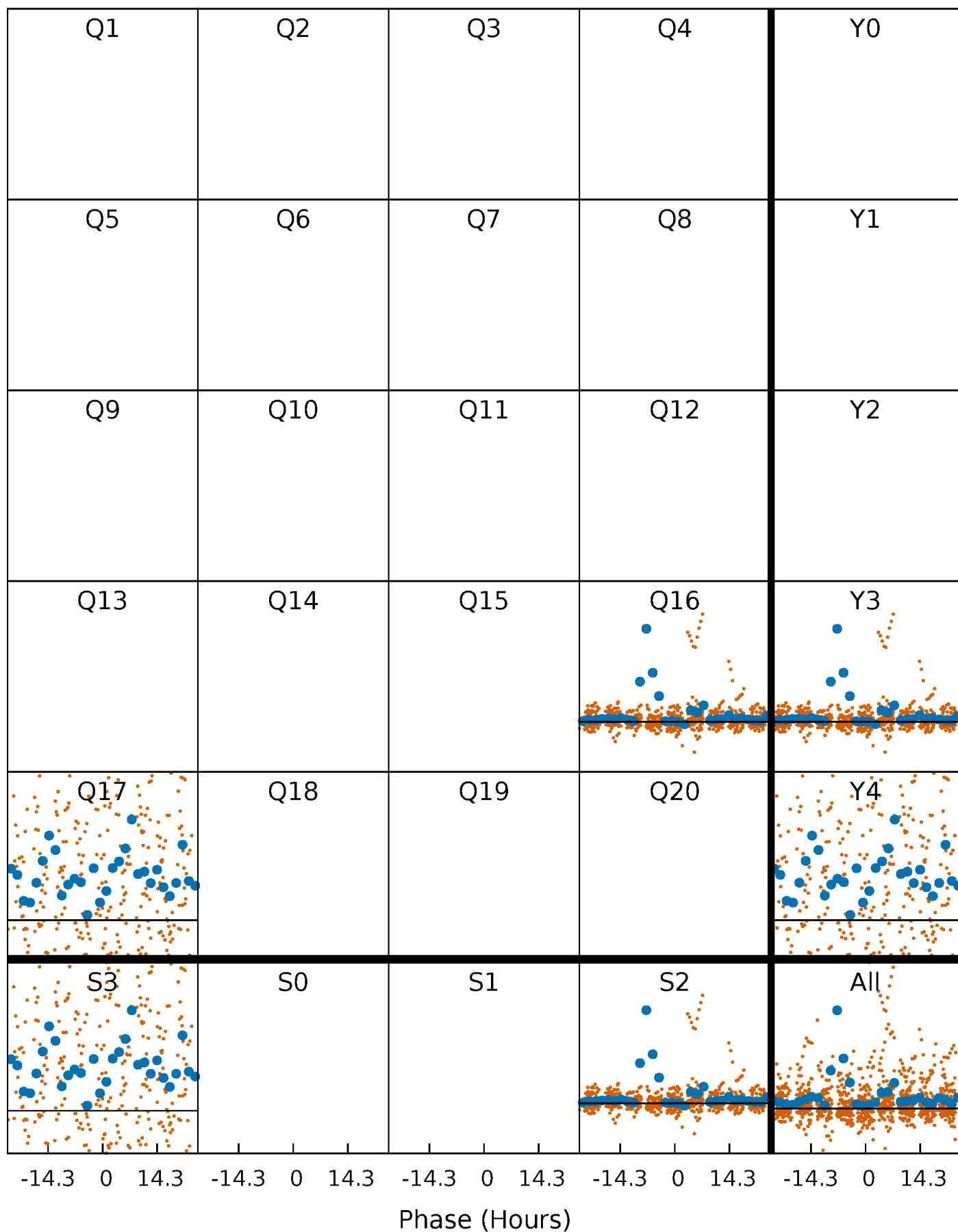
TCE 008240861-03   P= 3.369242 Days    $T_0=134.705440$  (BKJD)





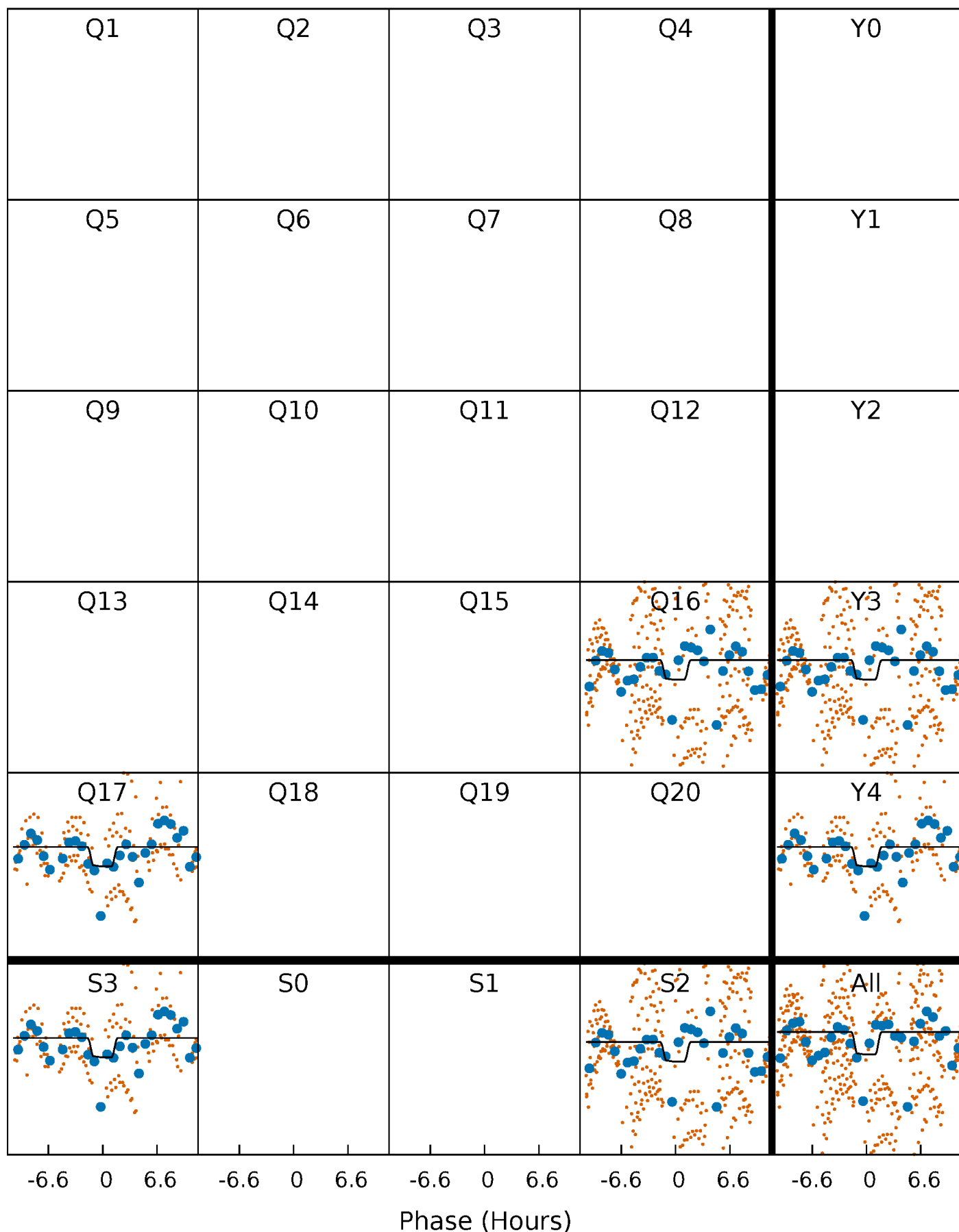
# DV Quarter-Phased Transit Curves

TCE 008240861-03     $P = 3.369242$  Days     $T_0 = 134.705440$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

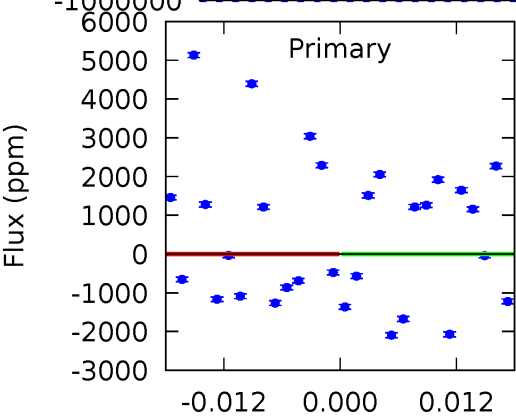
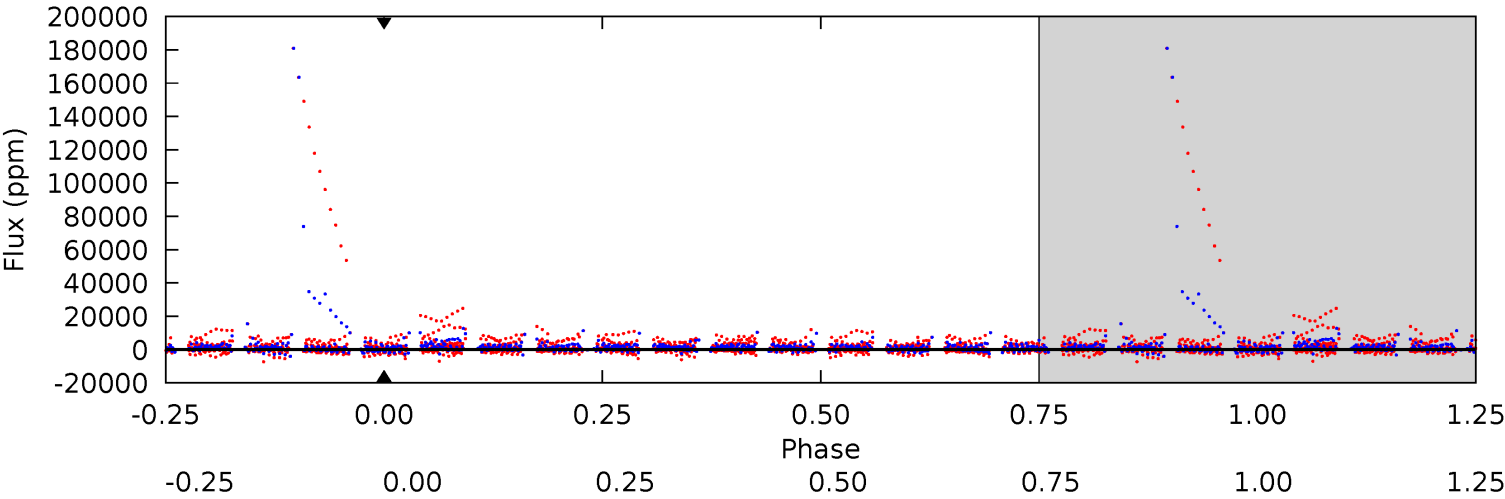
TCE 008240861-03 P= 3.369242 Days  $T_0=134.623918$  (BKJD)



# DV Model-Shift Uniqueness Test

008240861-03, P = 3.369242 Days, E = 134.705440 Days

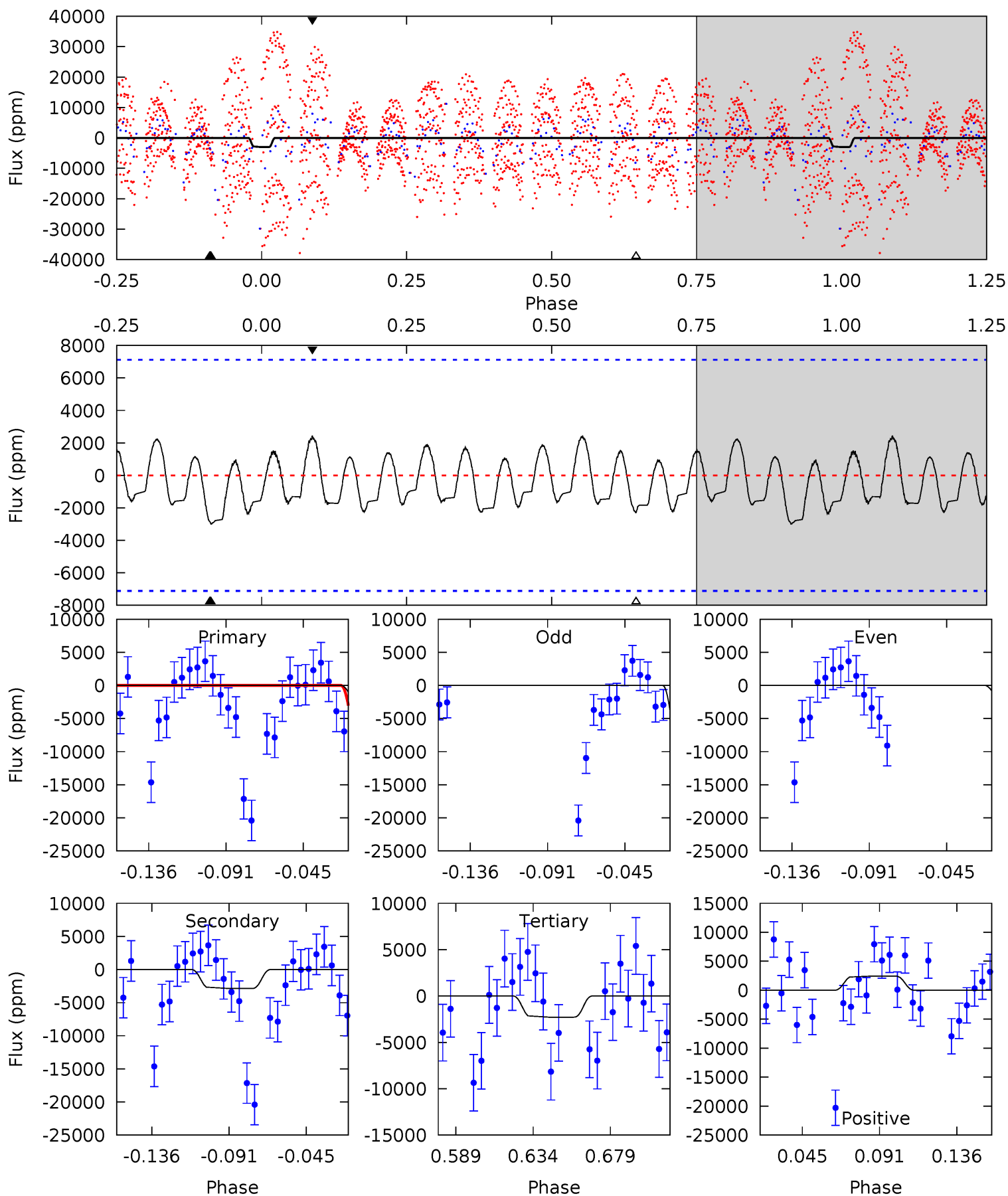
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008240861-03, P = 3.369242 Days, E = 134.623918 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
1.99	1.89	1.52	1.61	4.73	2.00	0.88	0.47	0.38	0.38	0.28	2.50	0.82	0.45	2.22



### Stellar Parameters For KIC 008240861

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+175}_{-241}$	$4.239^{+0.180}_{-0.180}$	$-0.220^{+0.250}_{-0.300}$	$1.299^{+0.373}_{-0.271}$	$1.065^{+0.181}_{-0.131}$	$0.684^{+0.646}_{-0.331}$
	+3%/-4%	+4%/-4%	+114%/-136%	+29%/-21%	+17%/-12%	+94%/-48%
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 008240861-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$12.96^{+11.57}_{-8.67}$	$2090^{+157}_{-143}$	$4040^{+15835}_{-24068}$	$6.585^{+1213.907}_{-1138.225}$
Alt.	$-2849 \pm 1505$	$14.91^{+12.70}_{-10.16}$	$2099^{+154}_{-144}$	$4544^{+3349}_{-1105}$	$13^{+105}_{-10}$

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

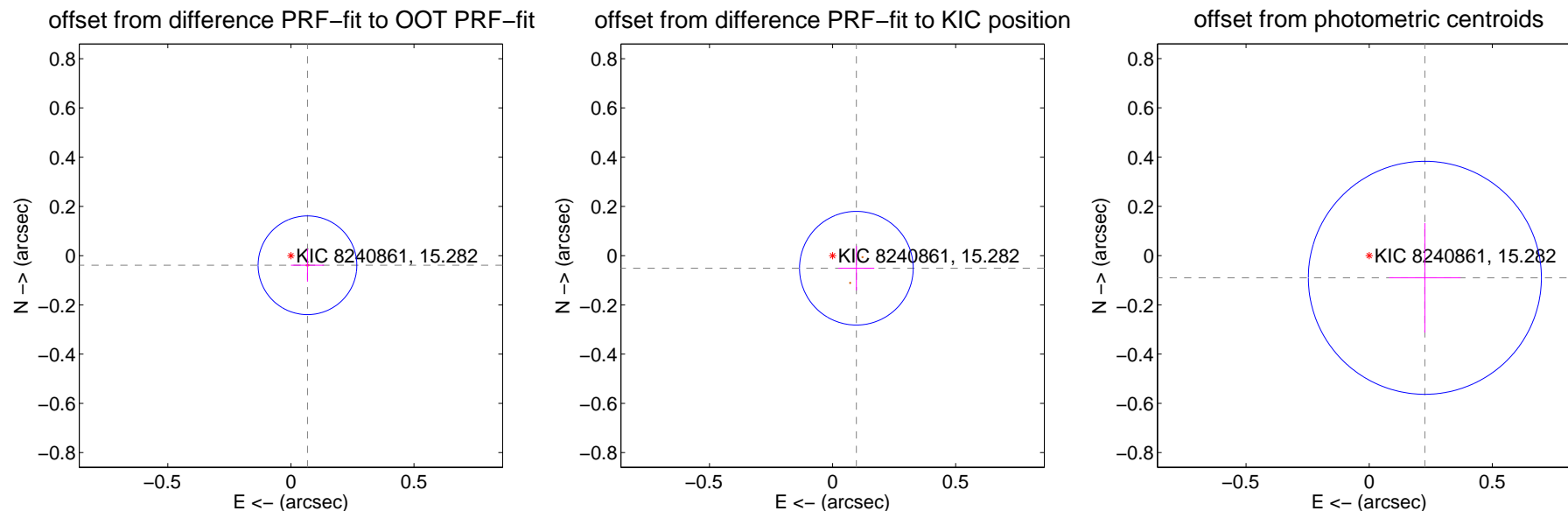
## DV Centroid Data

Supplemental centroid analysis for 008240861-03. Kepler magnitude: 15.28. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.078 \pm 0.067$	1.16	$-0.067 \pm 0.067$	$-0.039 \pm 0.067$
PRF-fit source offset from KIC position	$0.109 \pm 0.077$	1.42	$-0.097 \pm 0.073$	$-0.051 \pm 0.090$
photometric centroid source offset	$0.24 \pm 0.16$	1.54	$-0.23 \pm 0.14$	$-0.09 \pm 0.22$



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.

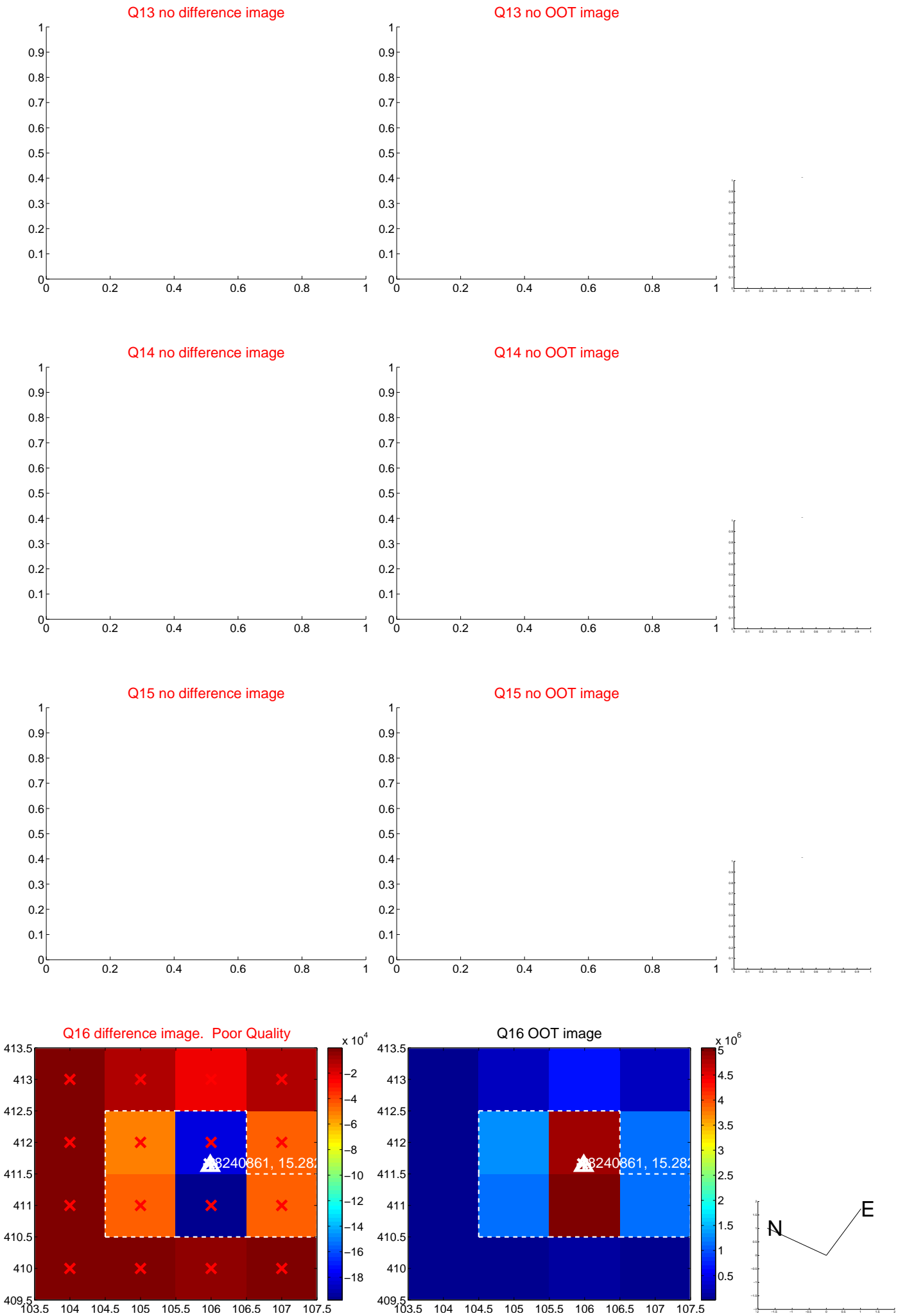




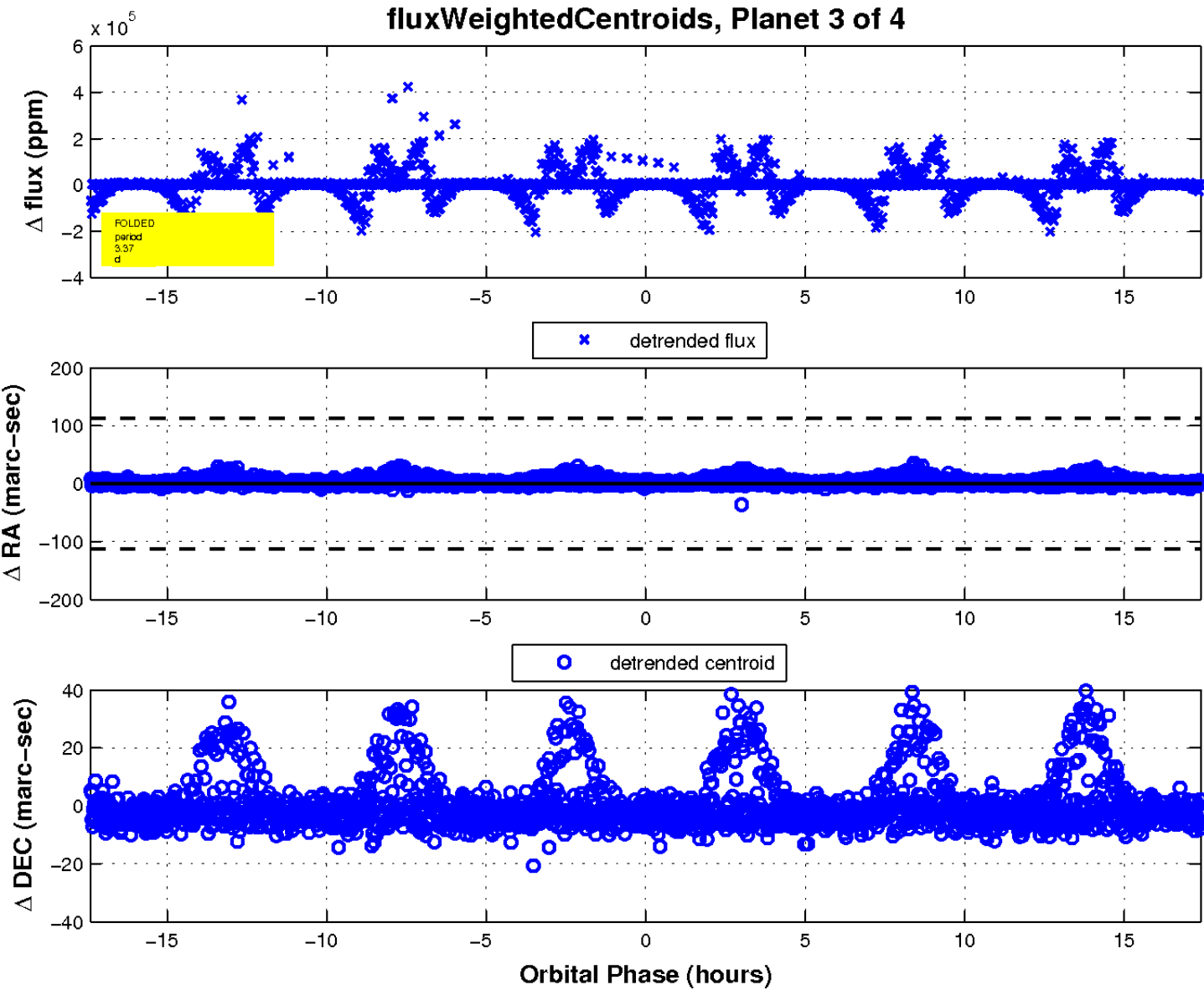
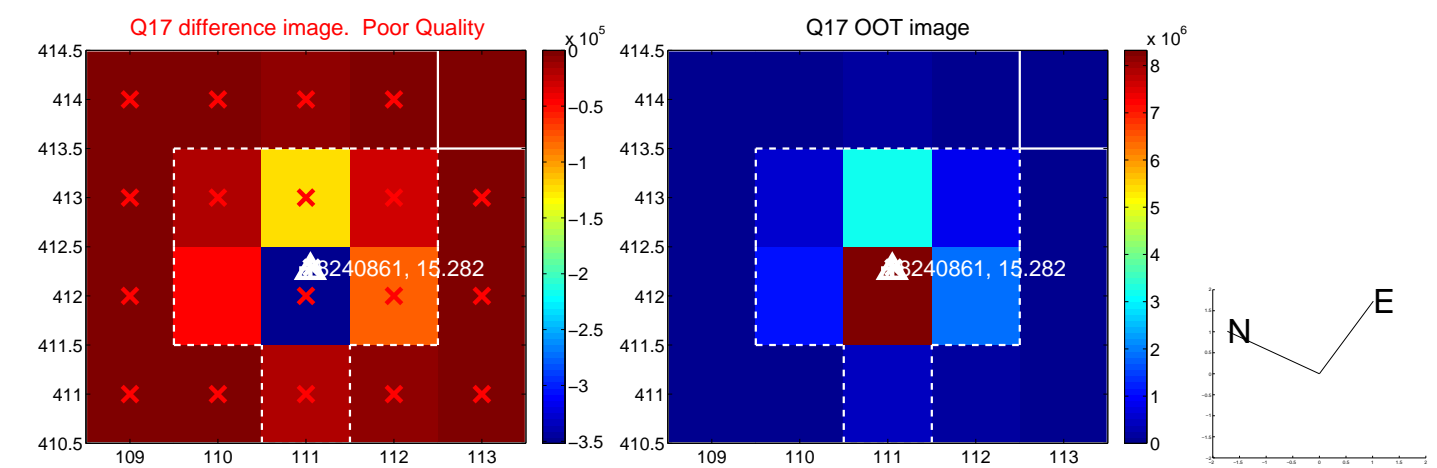
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

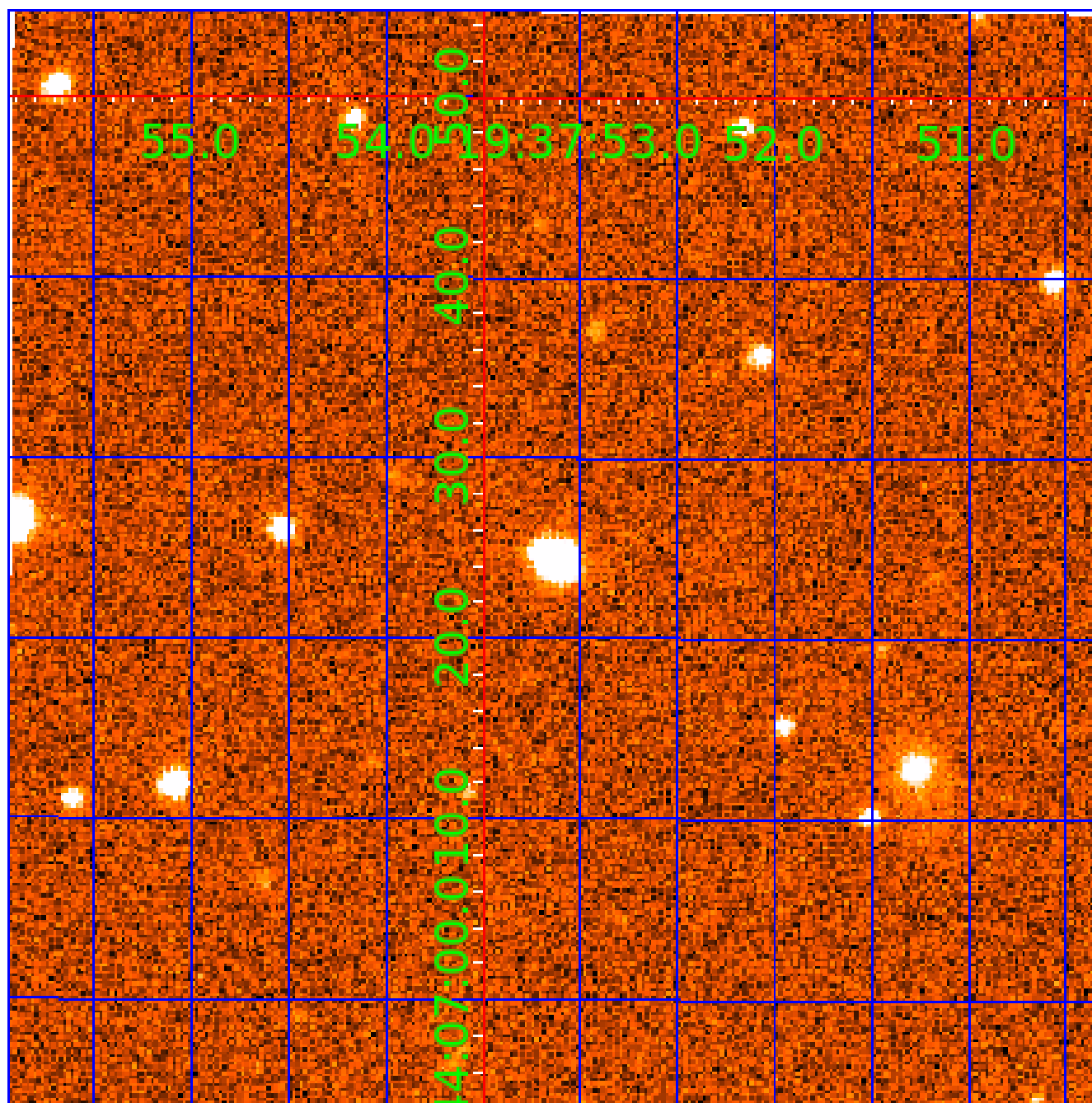


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 008240861

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008240861-01	OBS	No	0.898563	132.310994	439691.0	1.500	2701.3	-1.0	1.30	6338	60.69	7031.44
008240861-02	OBS	6999.01	0.898579	131.832869	418205.5	1.500	794.9	-1.0	1.30	6338	25.81	7031.28
008240861-03	OBS	No	3.369242	134.705440	2444.7	12.500	52.1	-1.0	1.30	6338	6.45	1207.07
008240861-04	OBS	No	4.493996	135.304825	2245.6	15.000	74.2	-1.0	1.30	6338	6.18	822.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008240861-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
008240861-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_NOFITS
008240861-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
008240861-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—NO_FITS—CENT_NOFITS

**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.

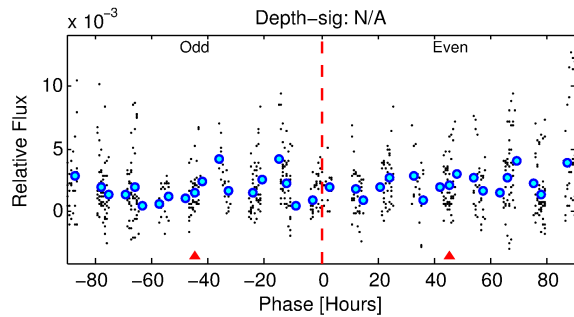
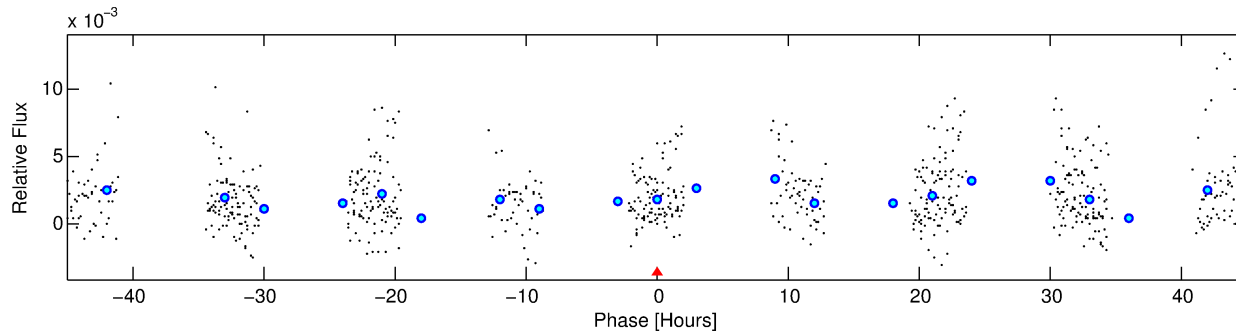
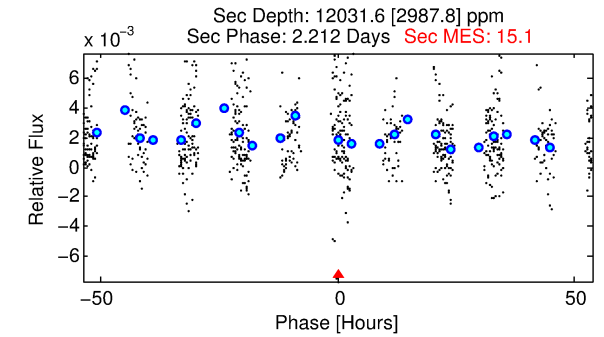
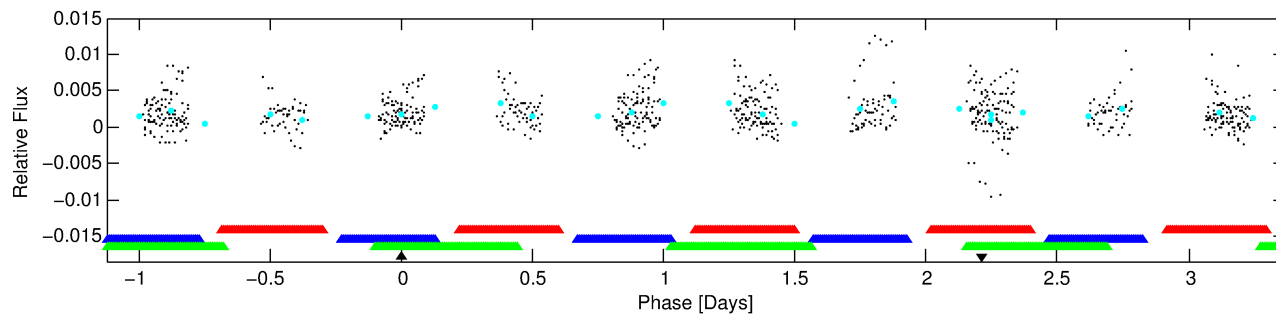
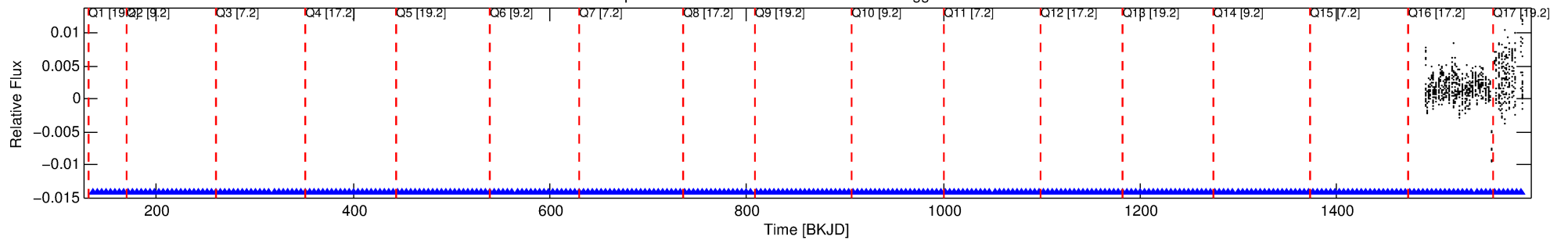
Ephemeris Match Information For 008240861-04

No Significant Match Found

# DV One-Page Summary

KIC: 8240861 Candidate: 4 of 4 Period: 4.494 d  
KOI: K06999 Corr: No Ephemeris Match

Kp: 15.28 R\*: 1.30 Rs Teff: 6338.0 K Logg: 4.24 Fe/H: -0.220



## TPS TCE Results:

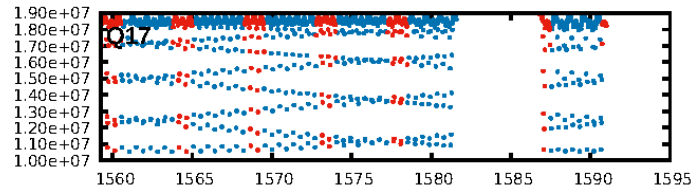
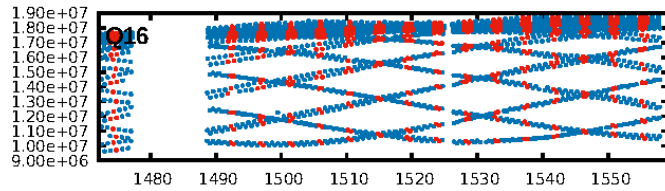
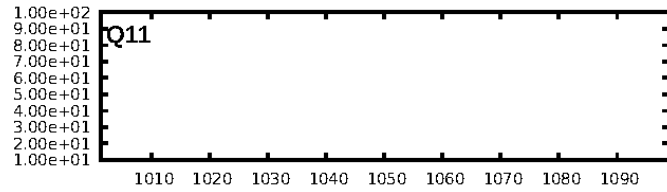
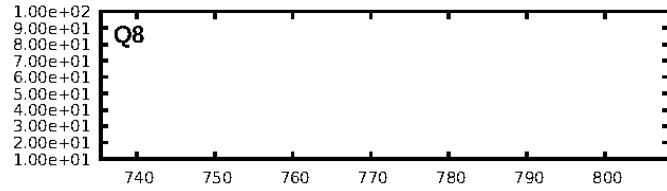
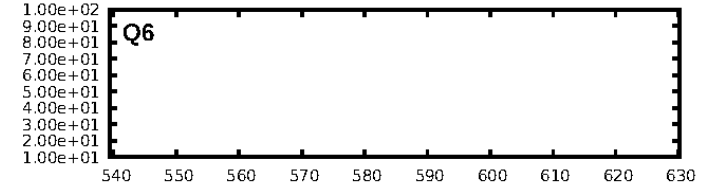
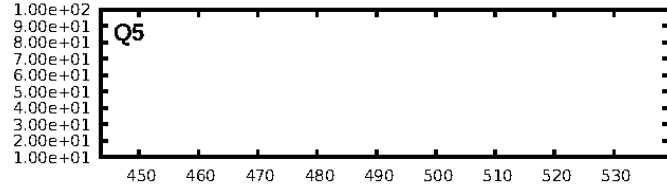
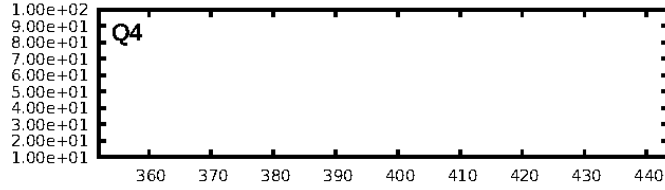
Period = 4.49400 d  
Epoch = 135.3048 BKJD

DV fit results are unavailable

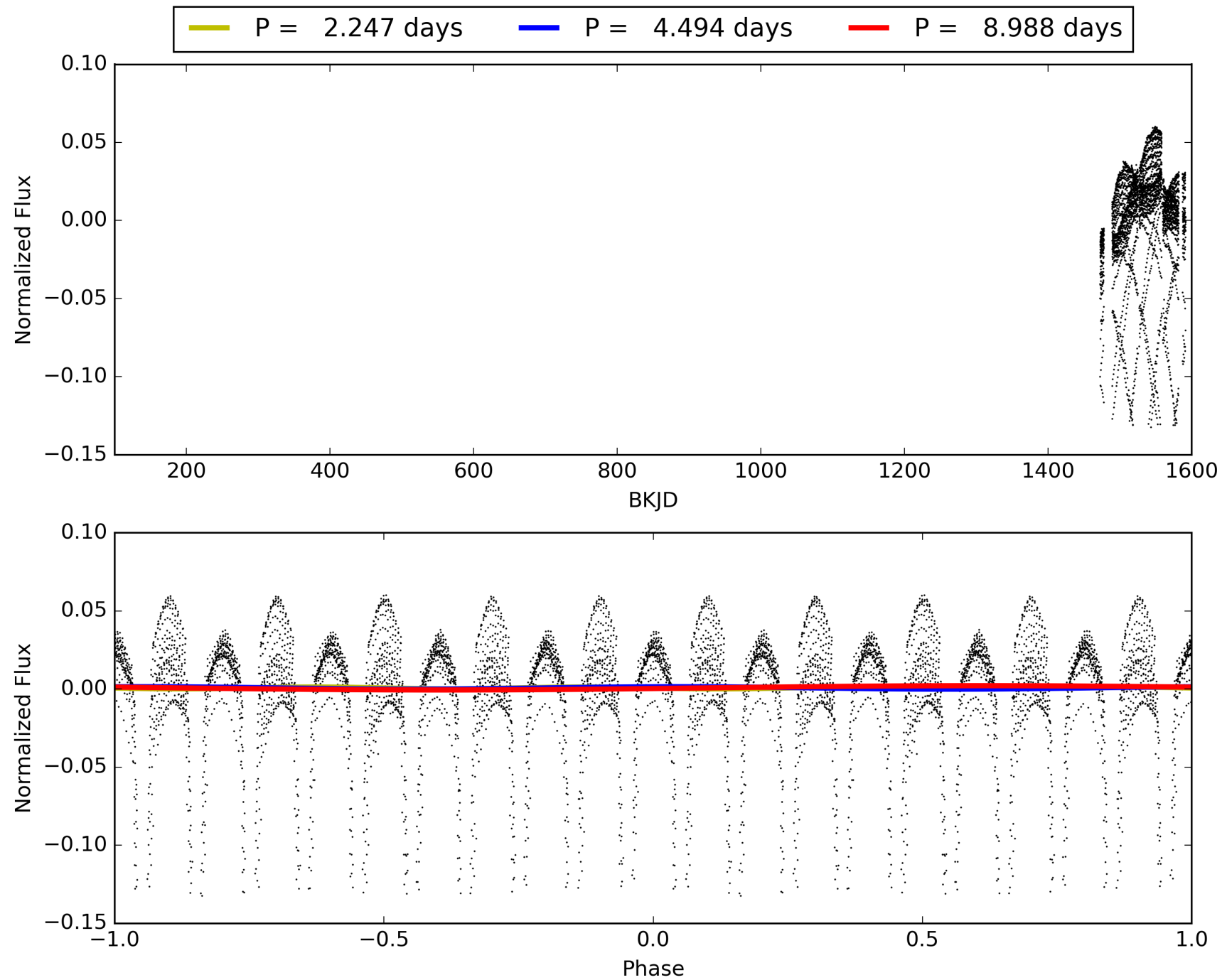
## DV Diagnostic Results:

ShortPeriod-sig: 83.3% [1.38 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.00e+00  
RollingBand-fgt: N/A  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

# TCE 008240861-04, PDC Light Curves



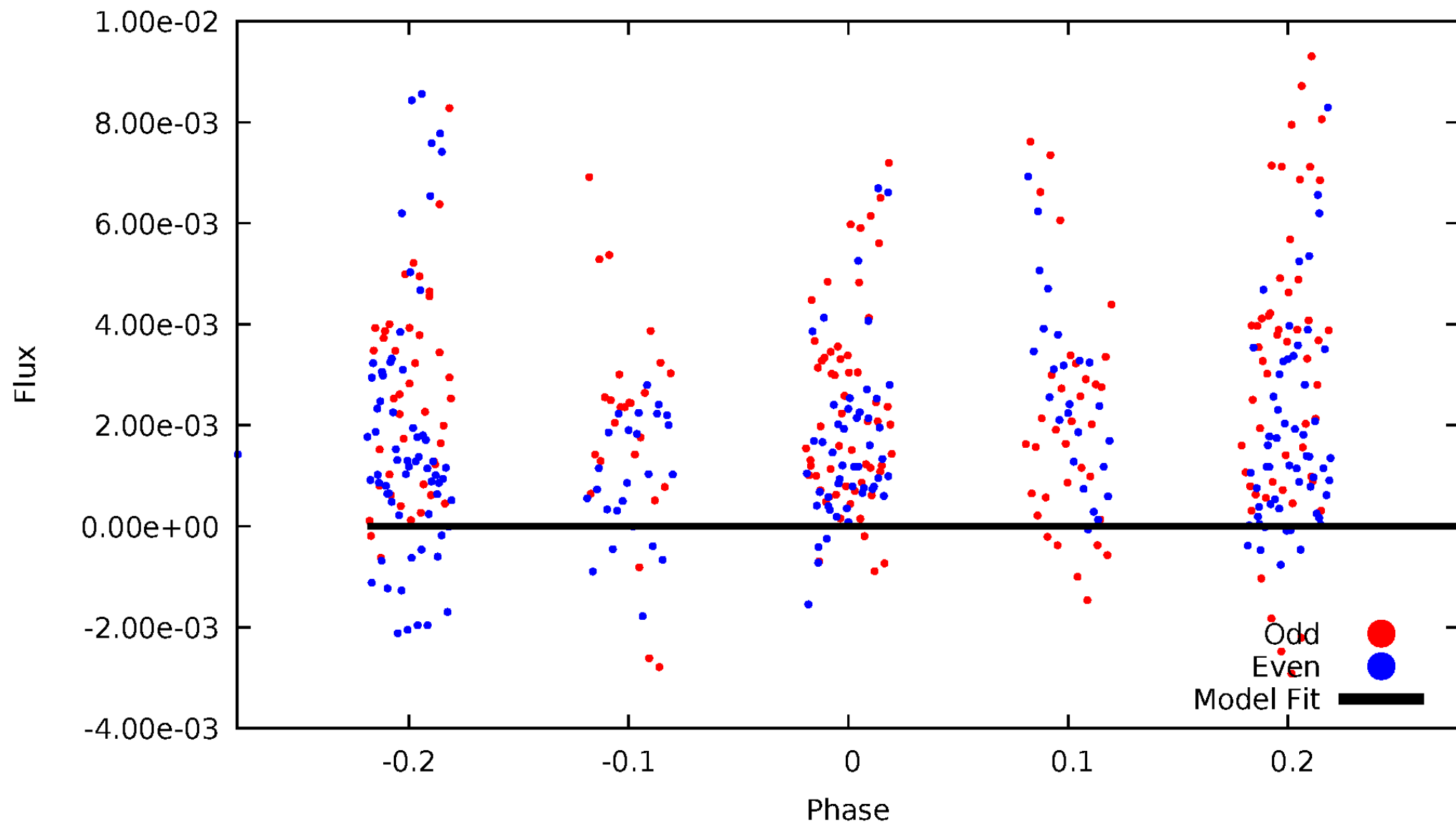
TCE 008240861-04





# DV Odd/Even

TCE 008240861-04



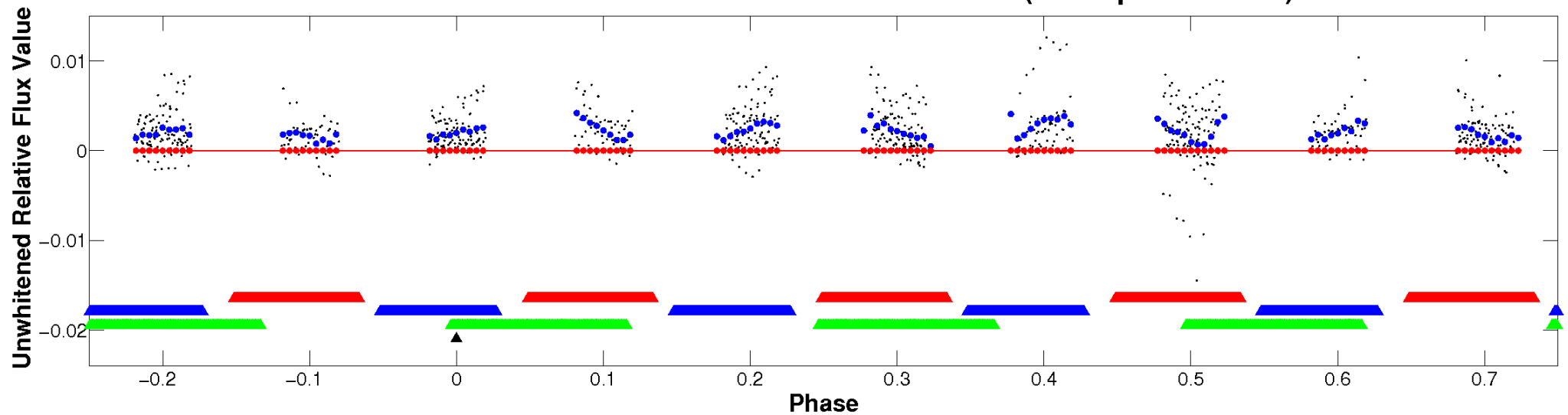


ALT Odd/Even

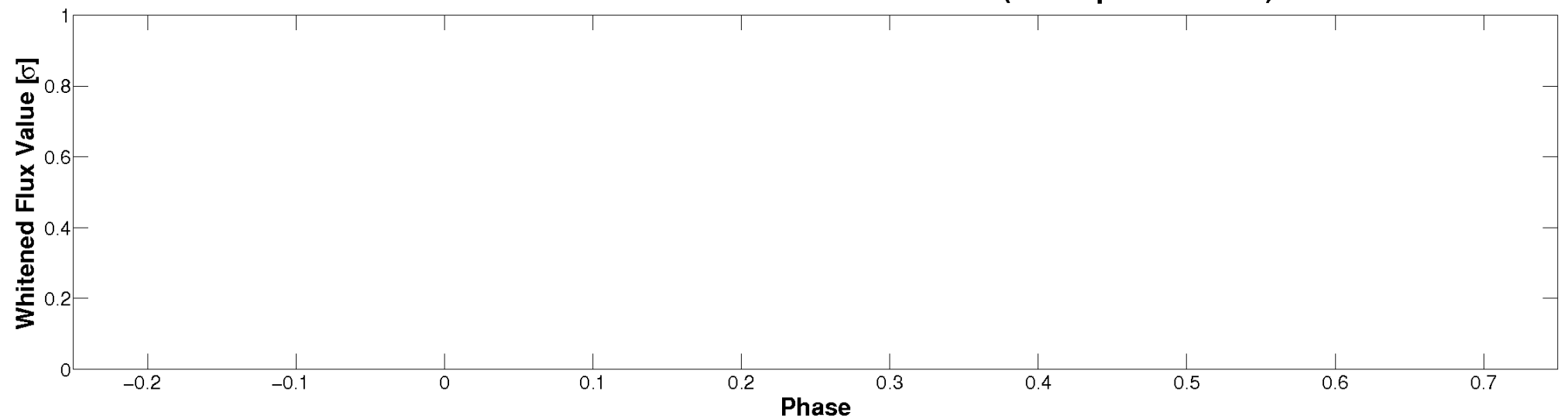
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

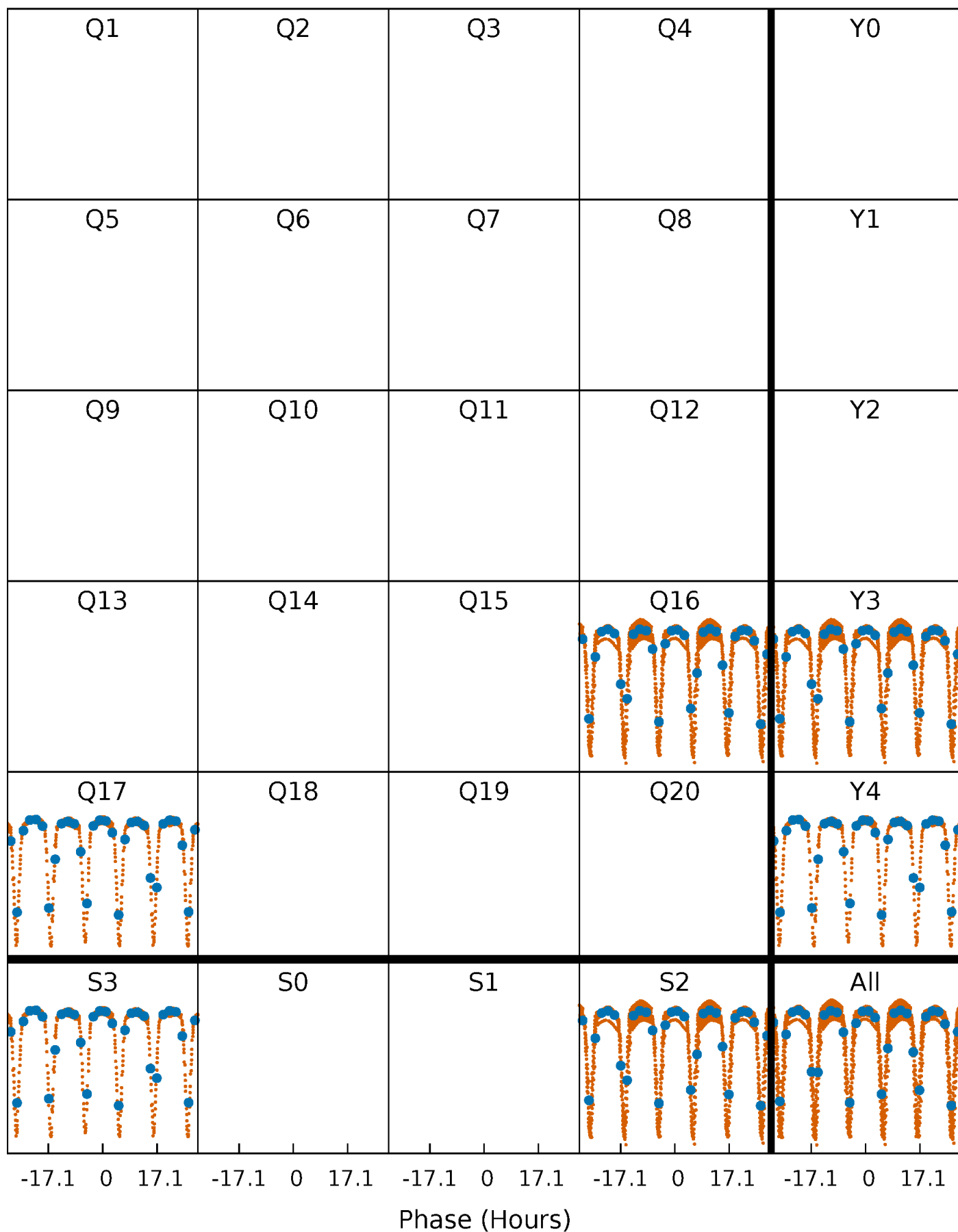


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



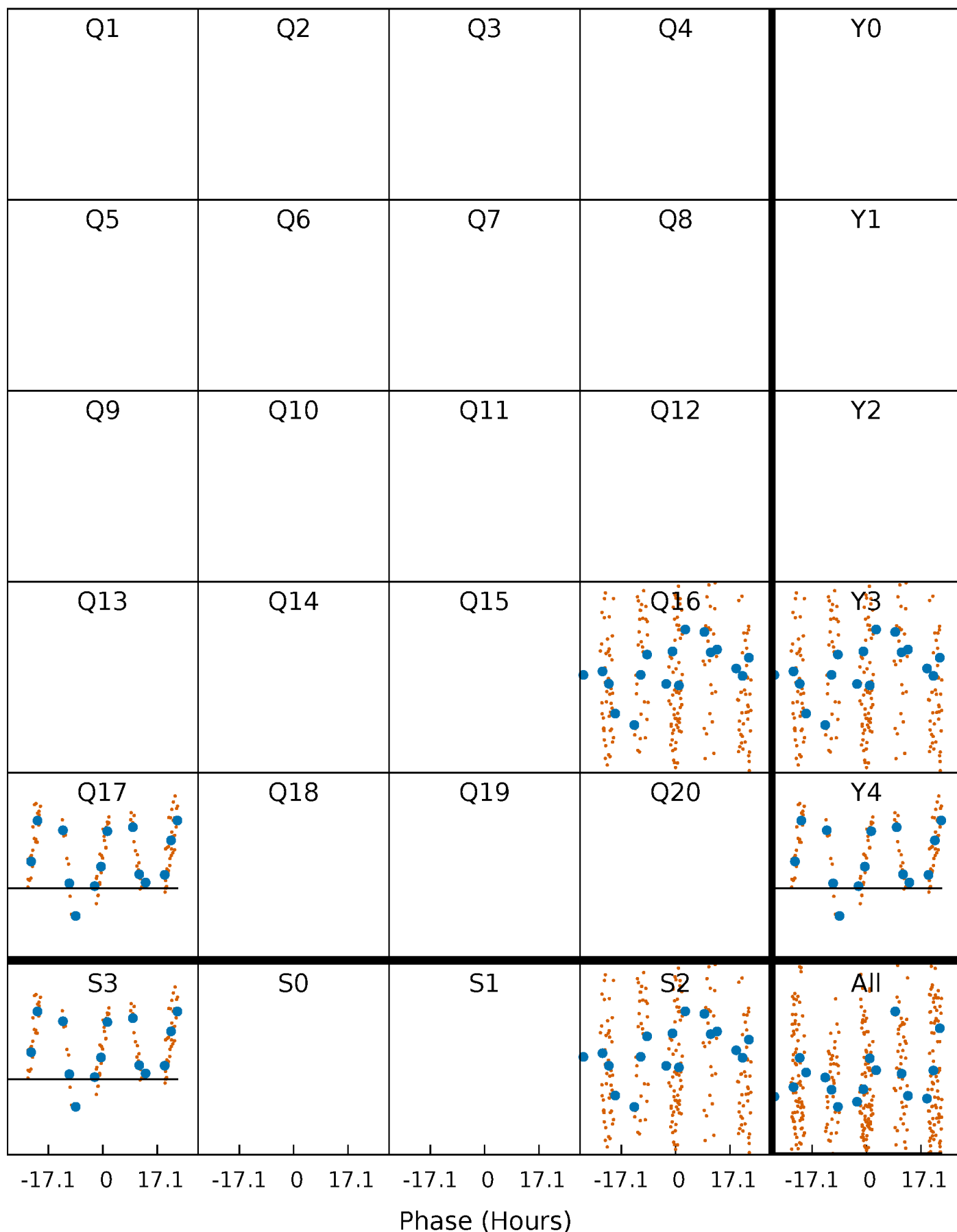
# PDC Quarter-Phased Transit Curves

TCE 008240861-04   P= 4.493996 Days    $T_0=135.304825$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008240861-04    P= 4.493996 Days     $T_0=135.304825$  (BKJD)

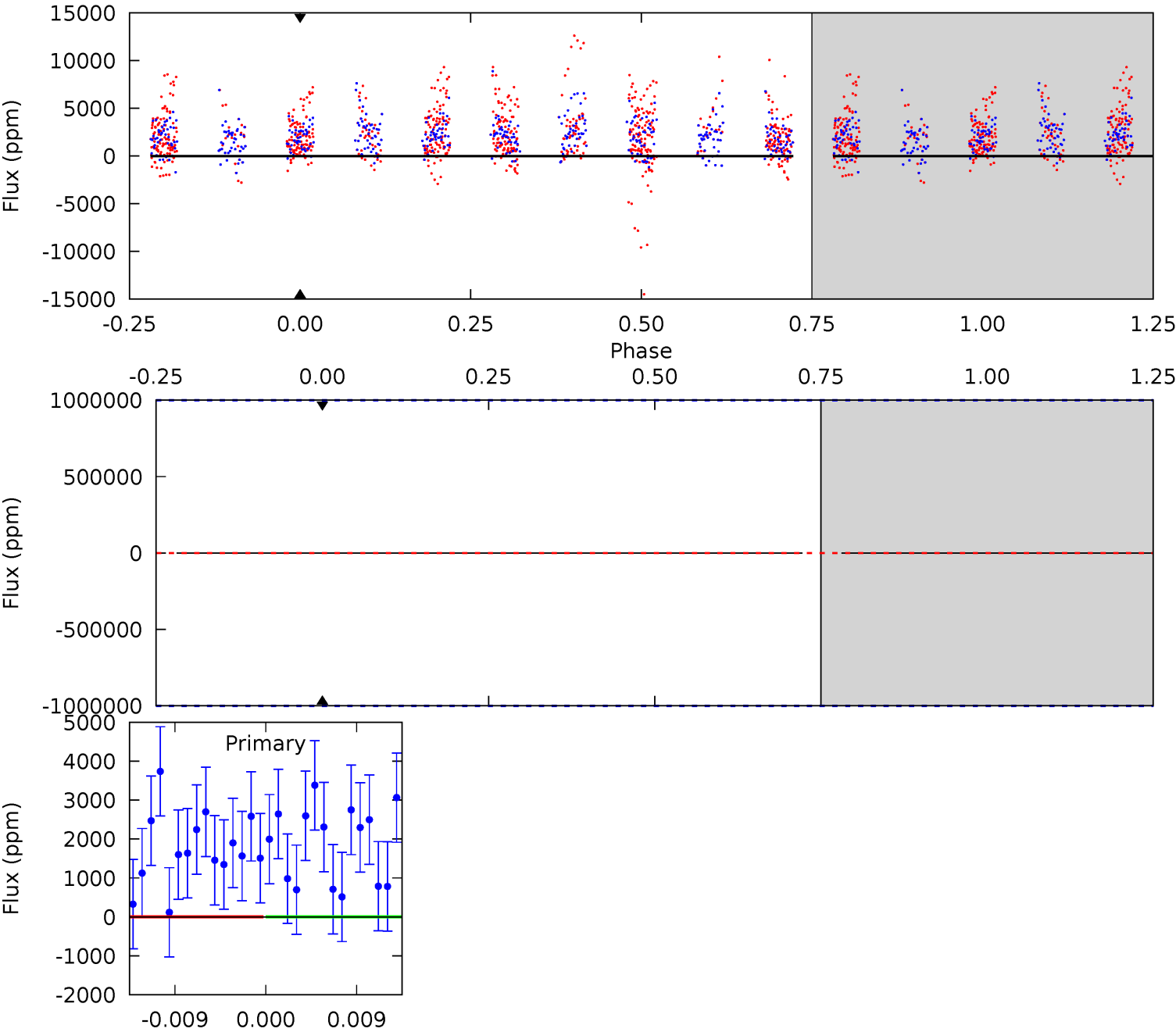


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

008240861-04, P = 4.493996 Days, E = 135.304825 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

This plot does not exist for this TCE.

### Stellar Parameters For KIC 008240861

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6338^{+175}_{-241}$	$4.239^{+0.180}_{-0.180}$	$-0.220^{+0.250}_{-0.300}$	$1.299^{+0.373}_{-0.271}$	$1.065^{+0.181}_{-0.131}$	$0.684^{+0.646}_{-0.331}$
	+3%/-4%	+4%/-4%	+114%/-136%	+29%/-21%	+17%/-12%	+94%/-48%
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 008240861-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$12.48^{+11.42}_{-8.55}$	$1896^{+147}_{-134}$	$-3906^{+27736}_{-15099}$	$-7.198^{+2385.751}_{-1592.730}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

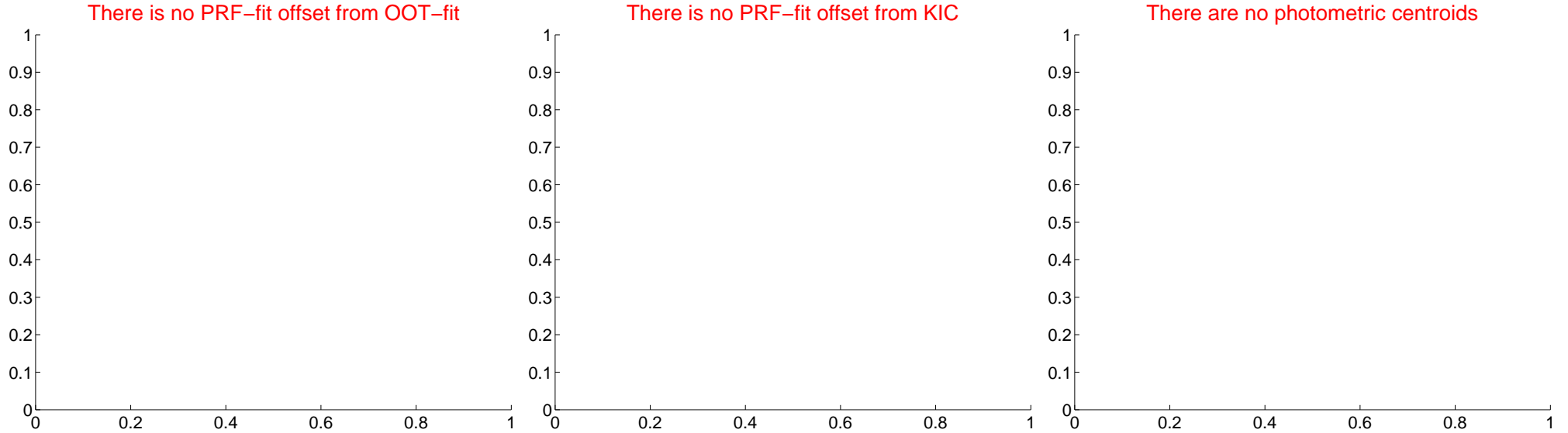
## DV Centroid Data

Supplemental centroid analysis for 008240861-04. Kepler magnitude: 15.28. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

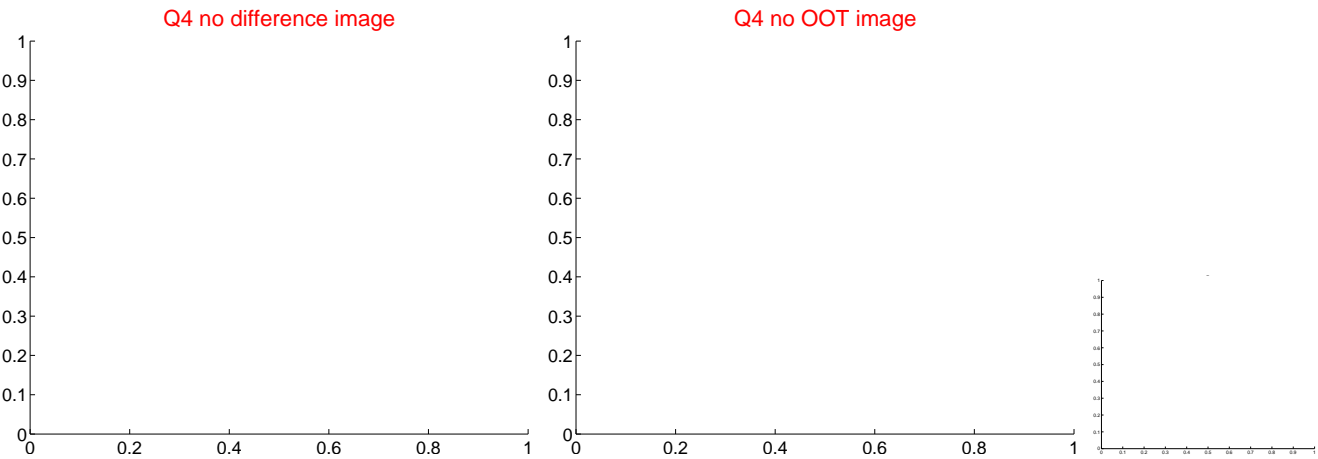
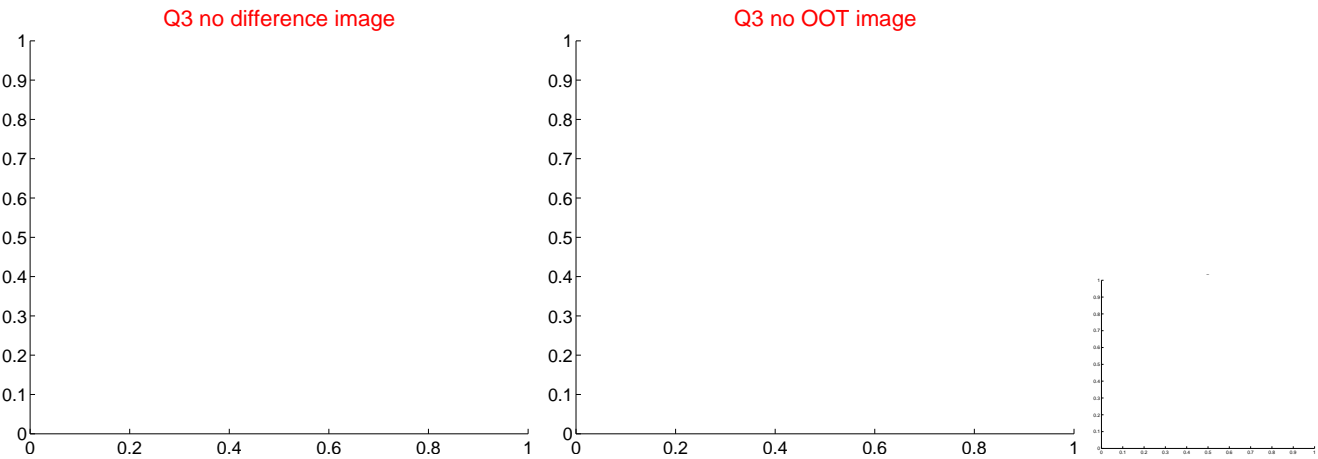
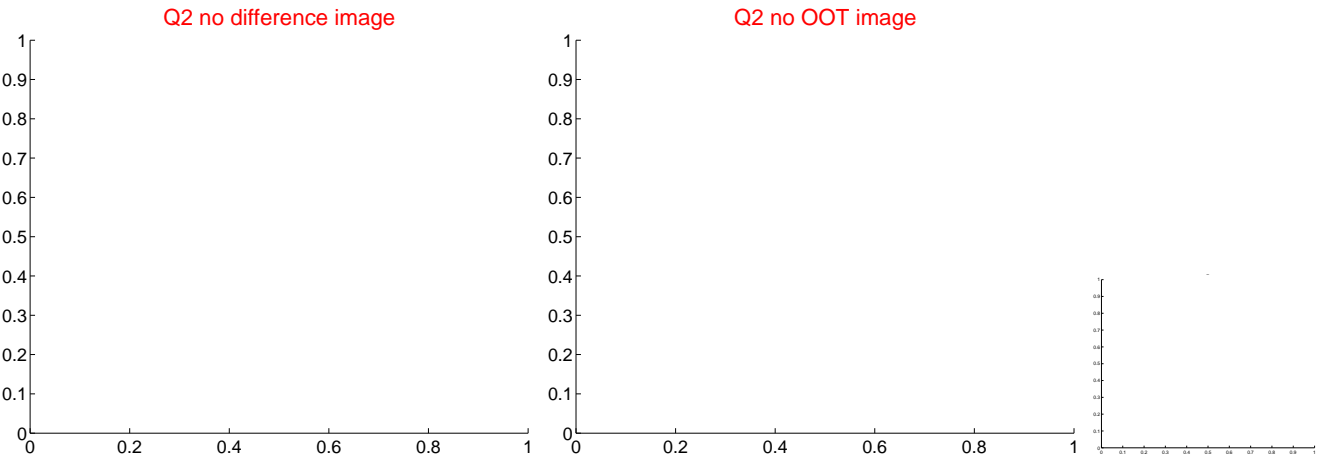
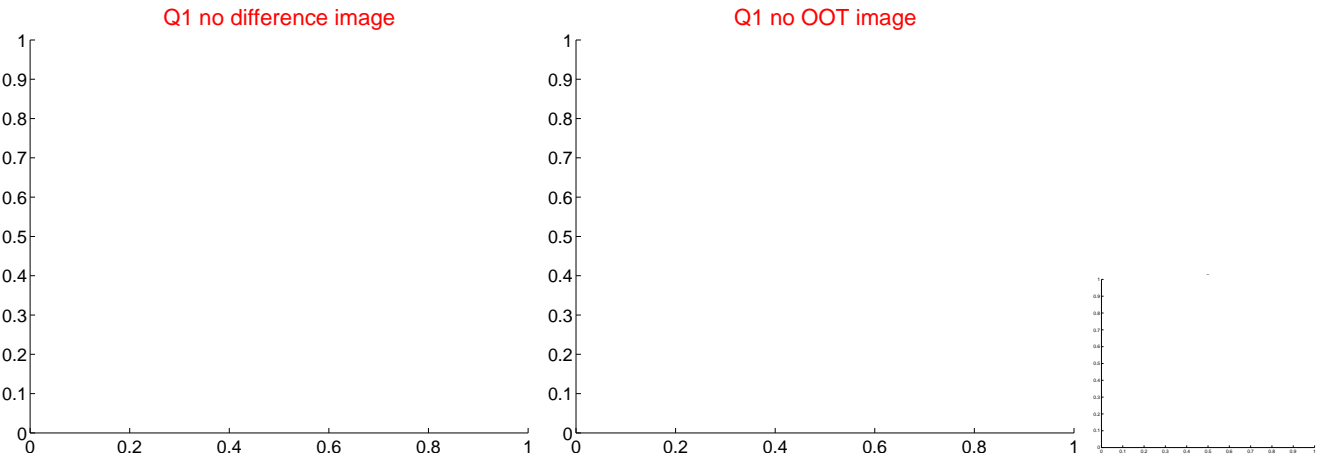
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
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.



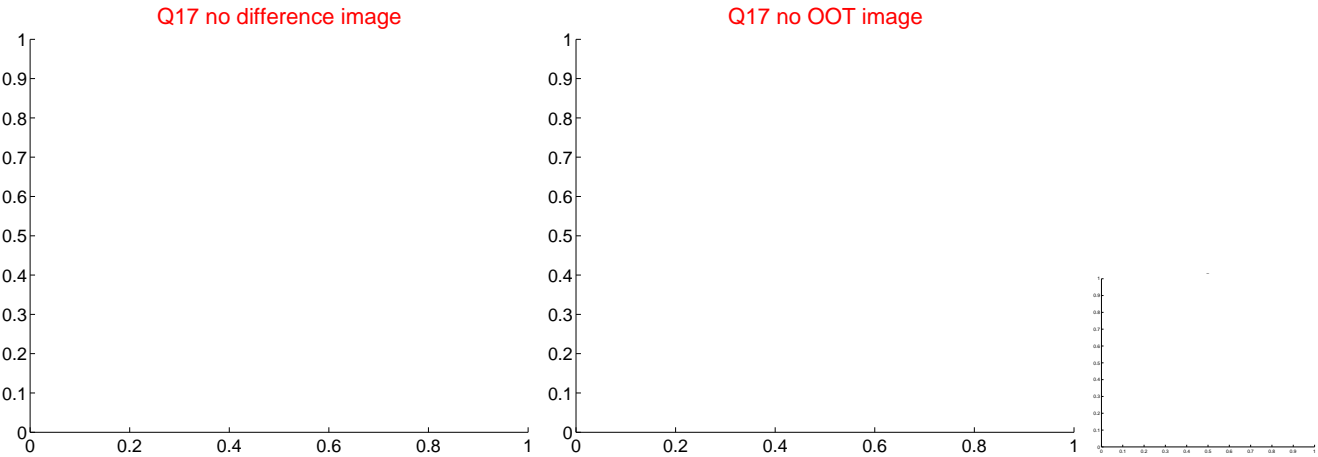
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



folded centroid time series figure for this object.



# UKIRT Image

Declination

