

# KIC 009343862

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009343862-01	OBS	6201.01	1.123236	132.052661	358904.5	2.500	4604.7	-1.0	2.17	7945	83.94	25289.99
009343862-02	OBS	No	1.123323	132.513320	94102.3	4.654	647.4	475.8	2.17	7945	105.81	25287.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009343862-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
009343862-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

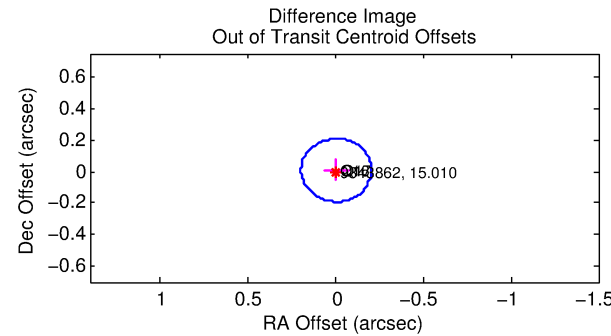
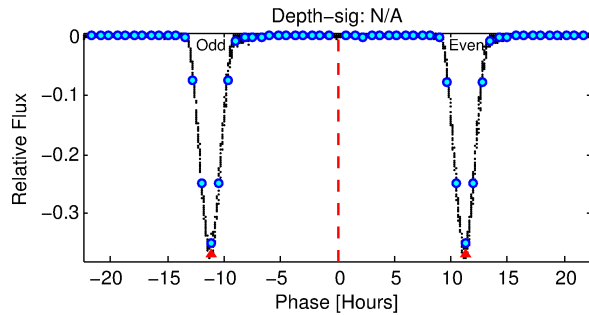
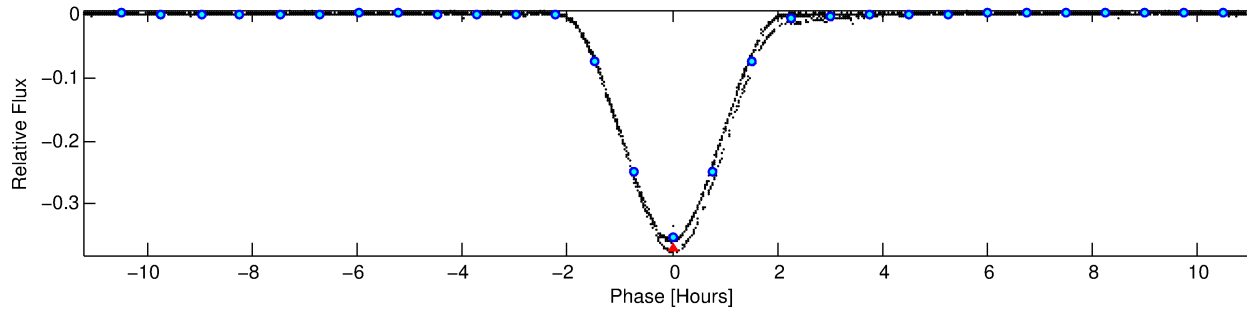
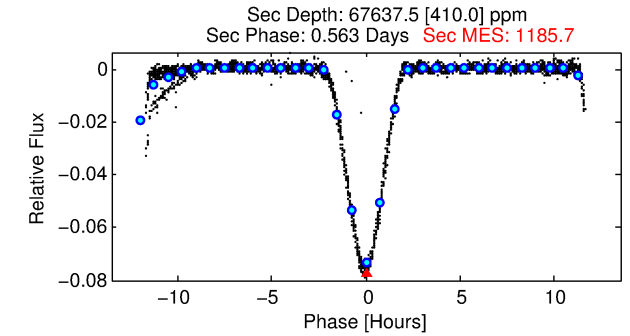
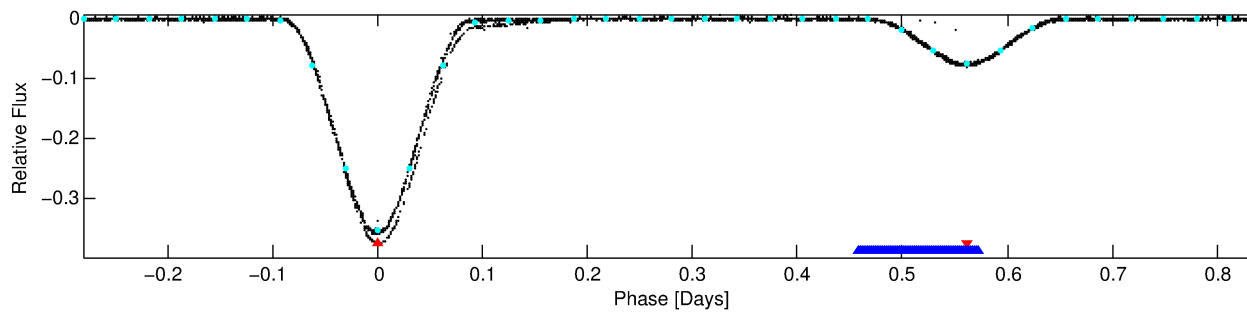
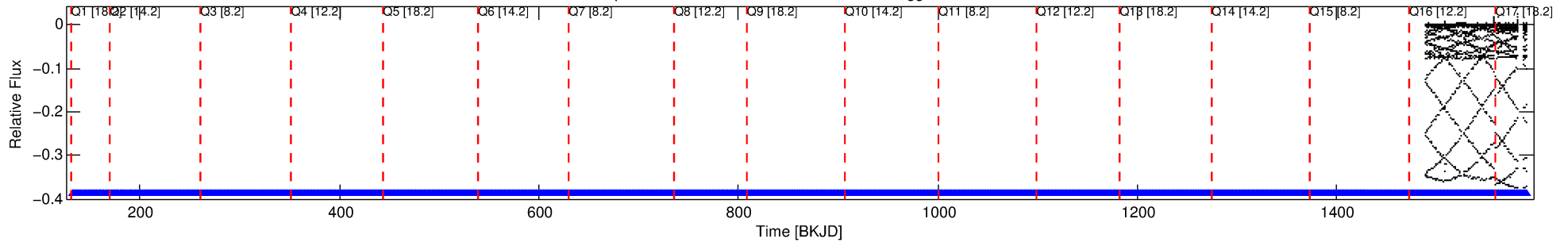
## Ephemeris Match Information For 009343862-01

No Significant Match Found

# DV One-Page Summary

KIC: 9343862 Candidate: 1 of 2 Period: 1.123 d  
KOI: K06201.01 Corr: 0.763

Kp: 15.01 R\*: 2.17 Rs Teff: 7945.0 K Logg: 4.02 Fe/H: -0.060



## TPS TCE Results:

Period = 1.12324 d  
Epoch = 132.0527 BKJD

DV fit results are unavailable

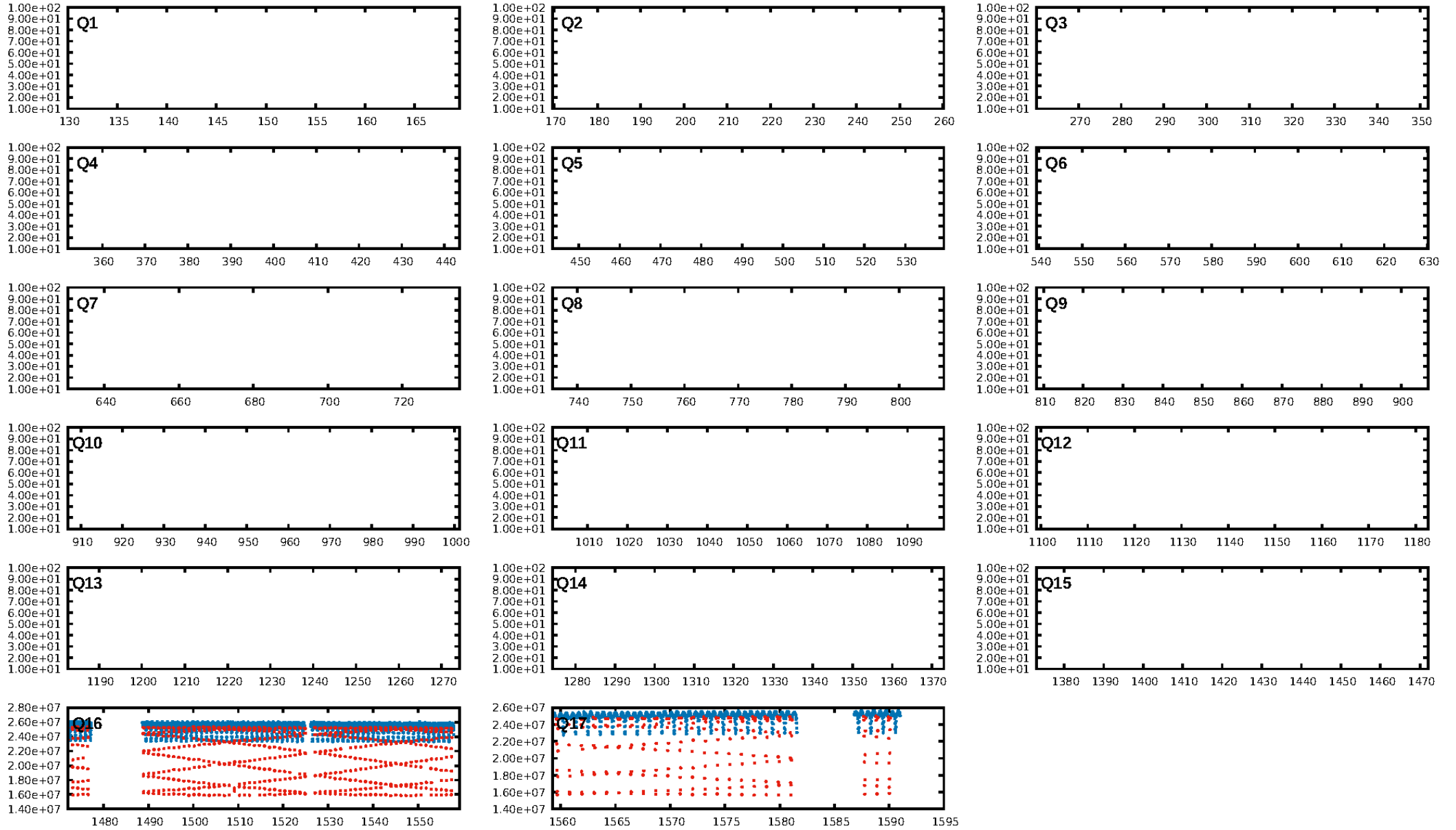
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [61/61]  
GhostDiagnostic-chr: 0.3523  
Centroid-sig: N/A  
Centroid-so: 0.379 arcsec [198.44 $\sigma$ ]  
OotOffset-rm: 0.010 arcsec [0.15 $\sigma$ ]  
KicOffset-rm: 0.056 arcsec [0.83 $\sigma$ ]  
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]

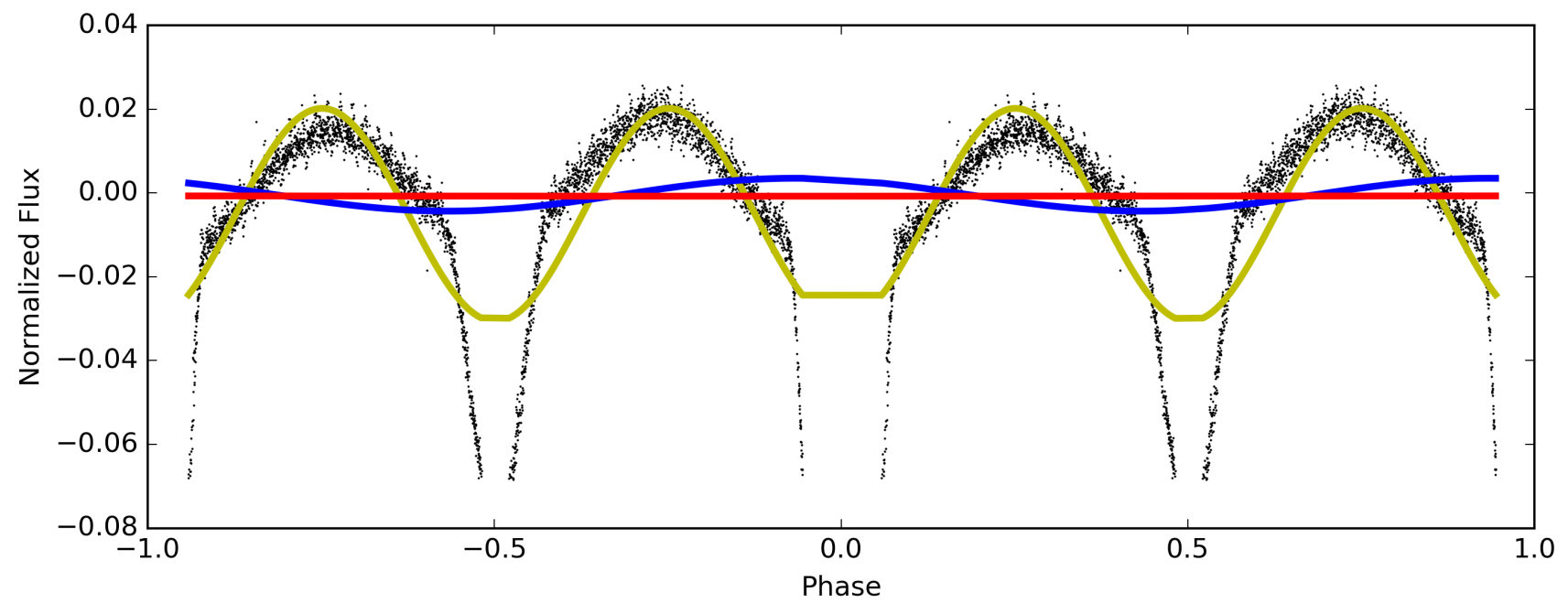
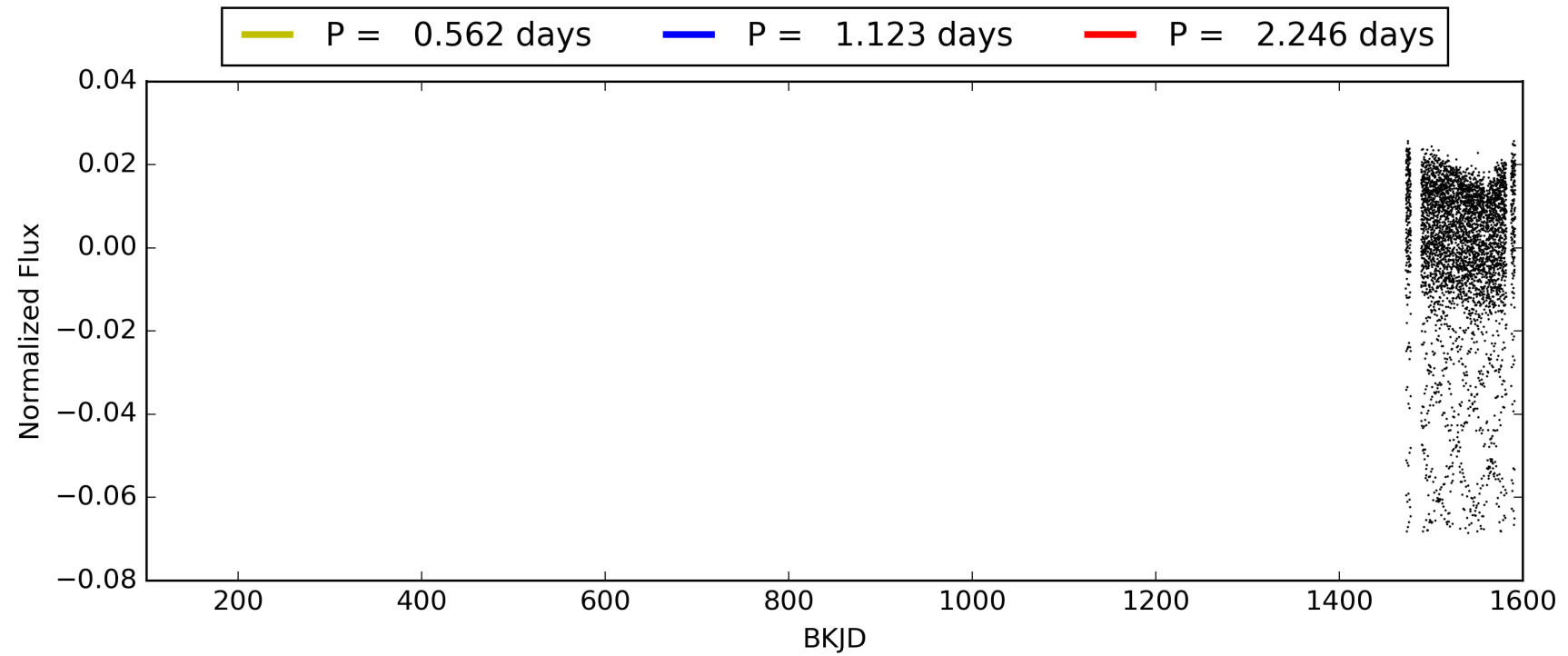
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:23:46 Z

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

# TCE 009343862-01, PDC Light Curves

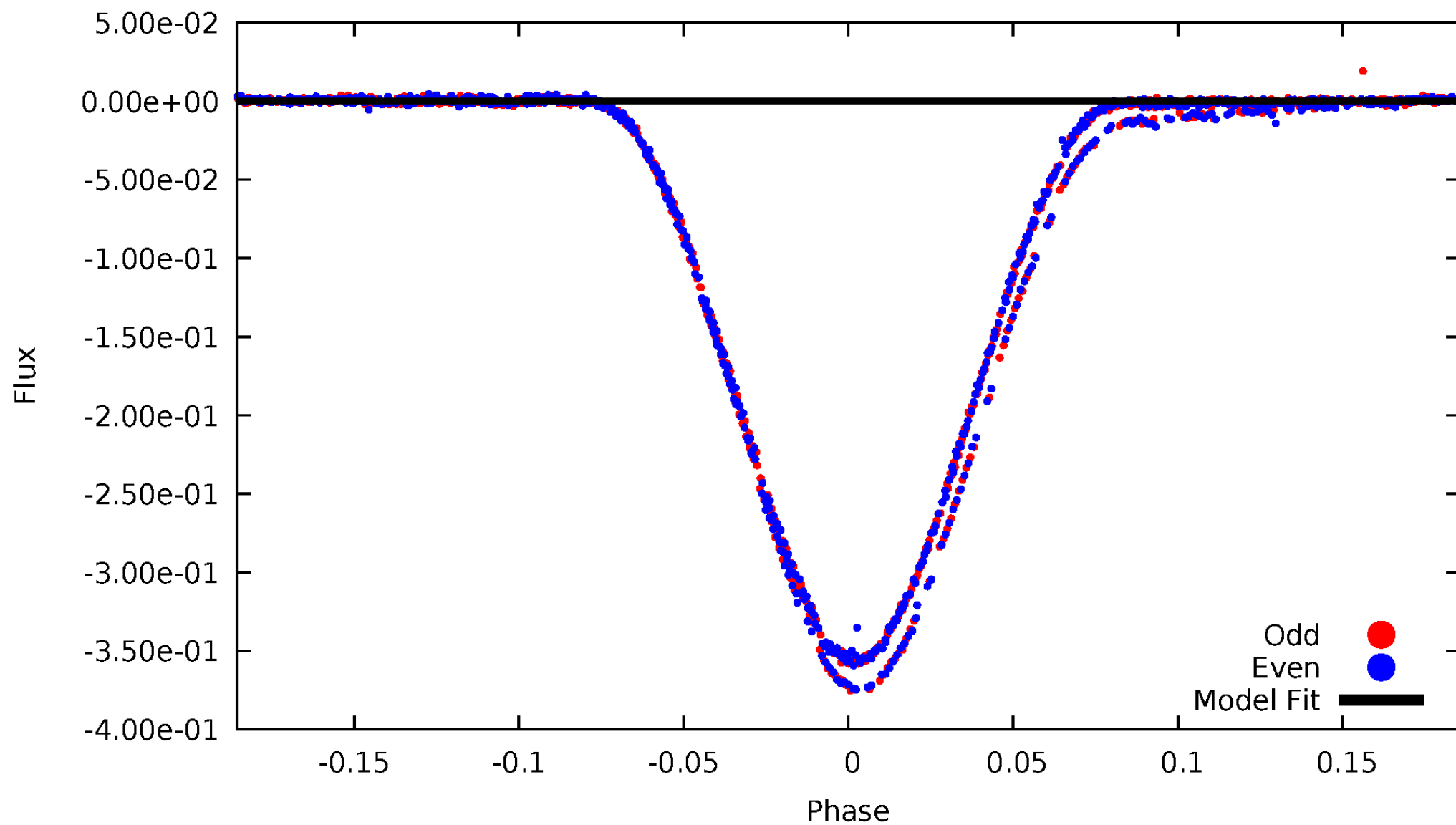


TCE 009343862-01



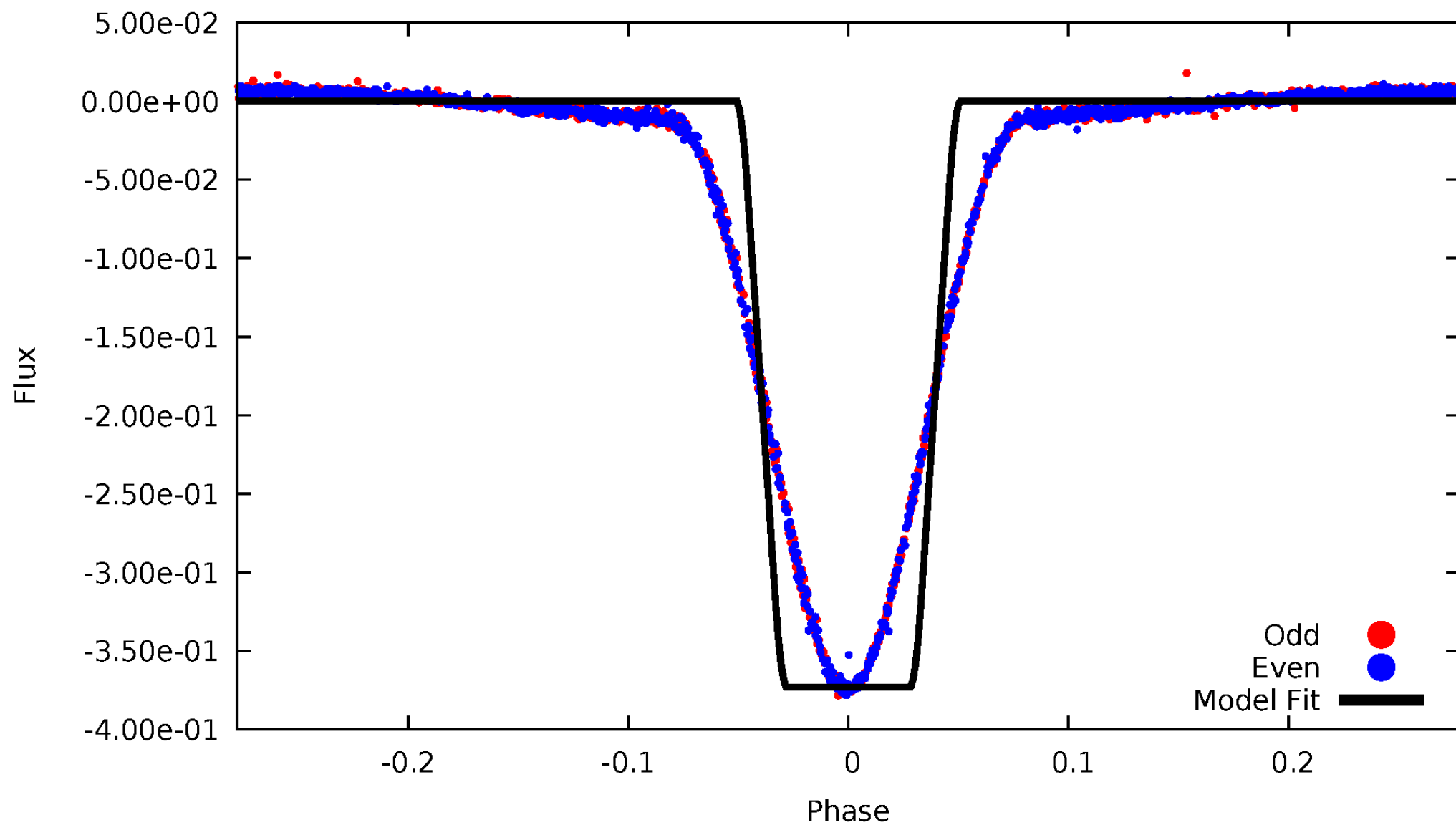
# DV Odd/Even

TCE 009343862-01



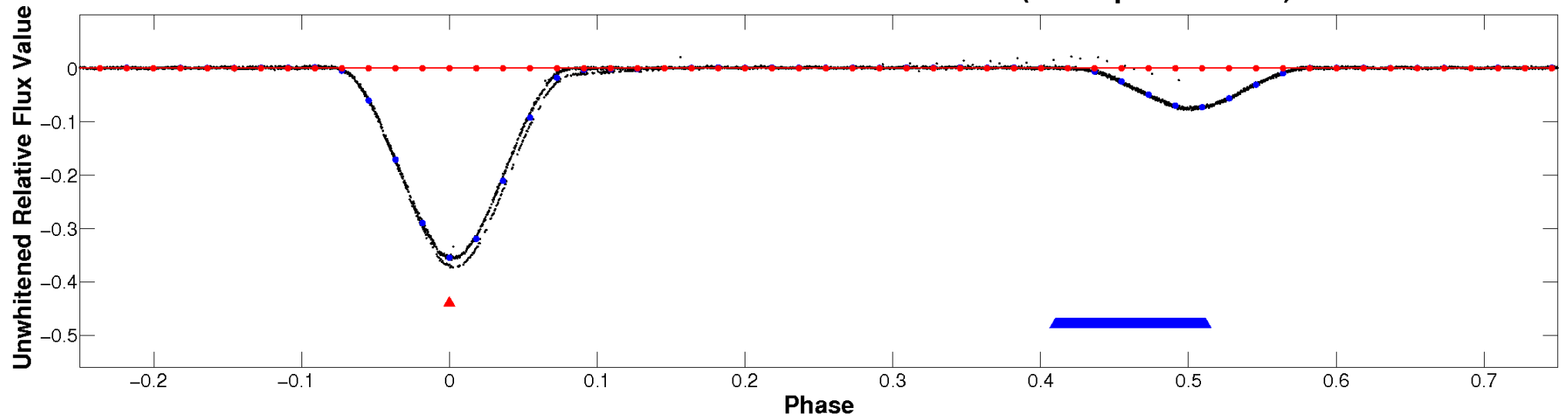
# ALT Odd/Even

TCE 009343862-01



# Non-Whitened Vs. Whitened Light Curve

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

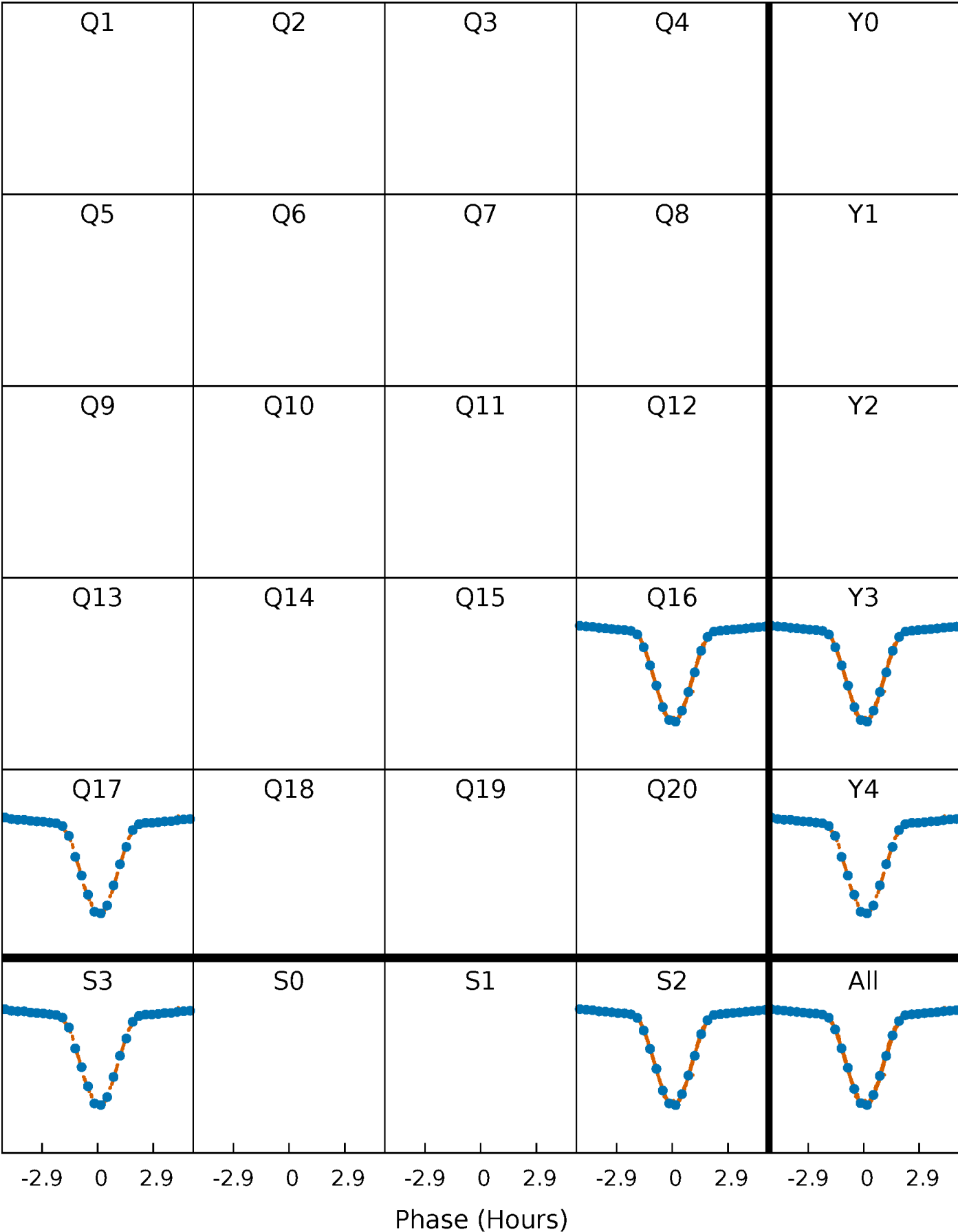


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



PDC Quarter-Phased Transit Curves

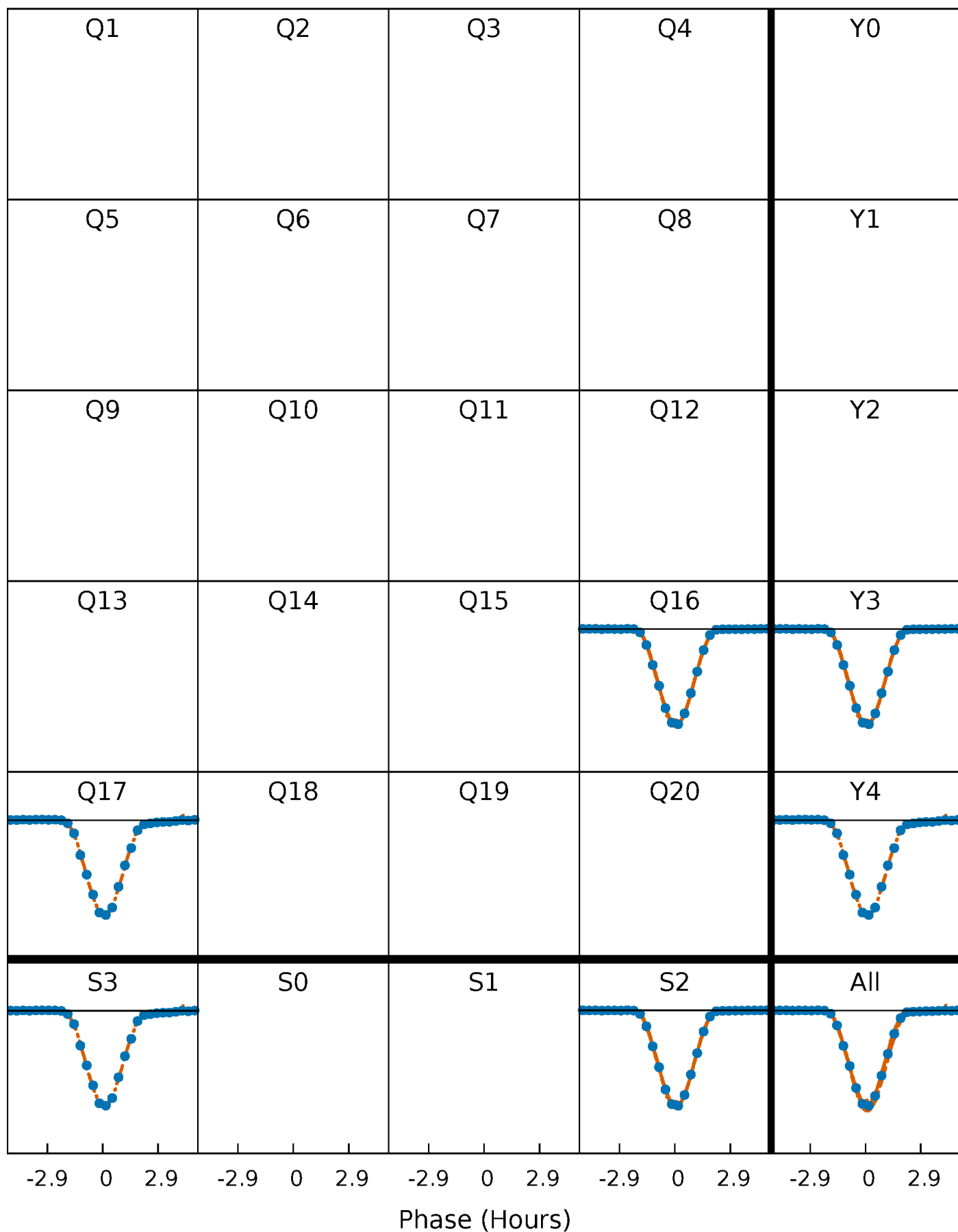
TCE 009343862-01    P= 1.123236 Days     $T_0=132.052661$  (BKJD)





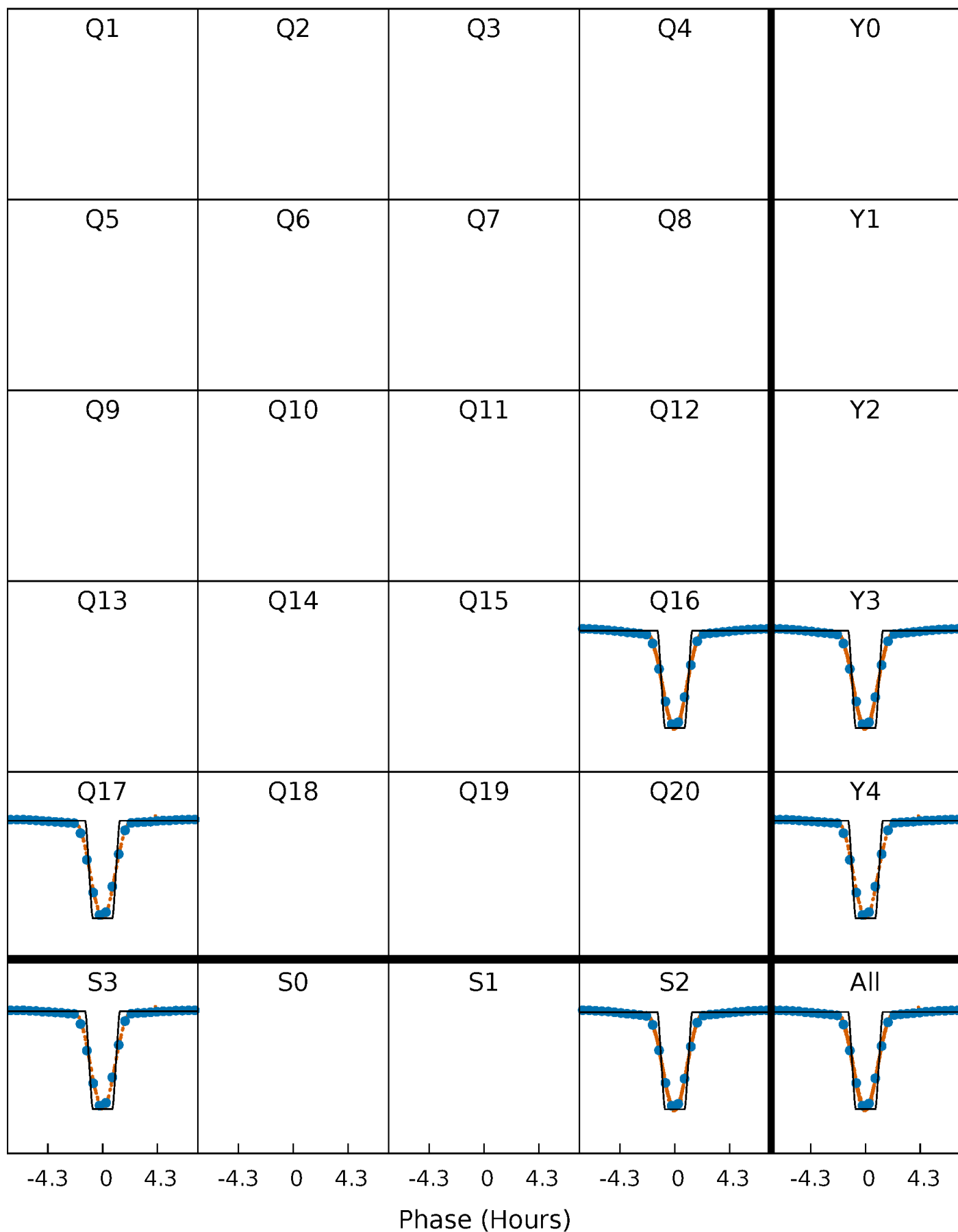
# DV Quarter-Phased Transit Curves

TCE 009343862-01 P= 1.123236 Days  $T_0=132.052661$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

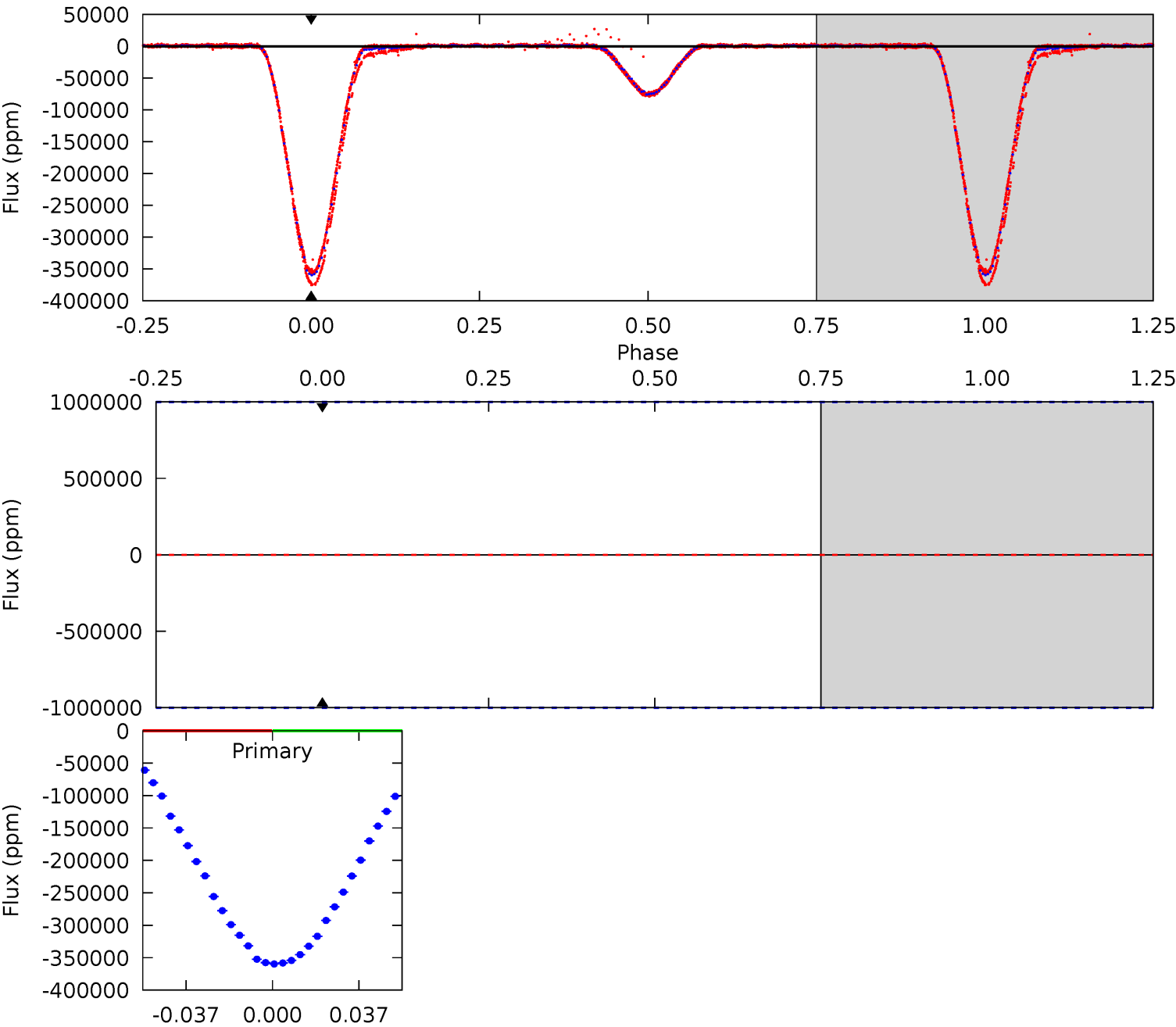
TCE 009343862-01 P= 1.123236 Days  $T_0=132.055477$  (BKJD)



# DV Model-Shift Uniqueness Test

009343862-01, P = 1.123236 Days, E = 132.052661 Days

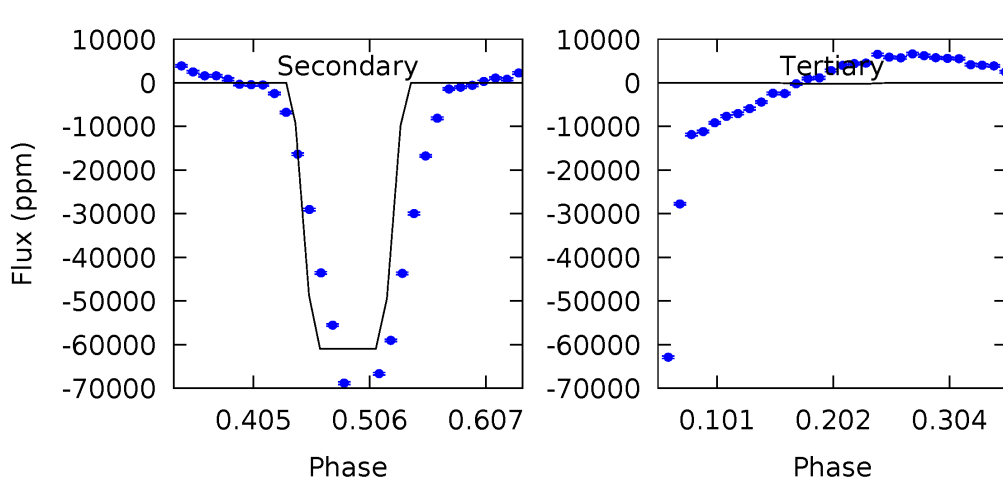
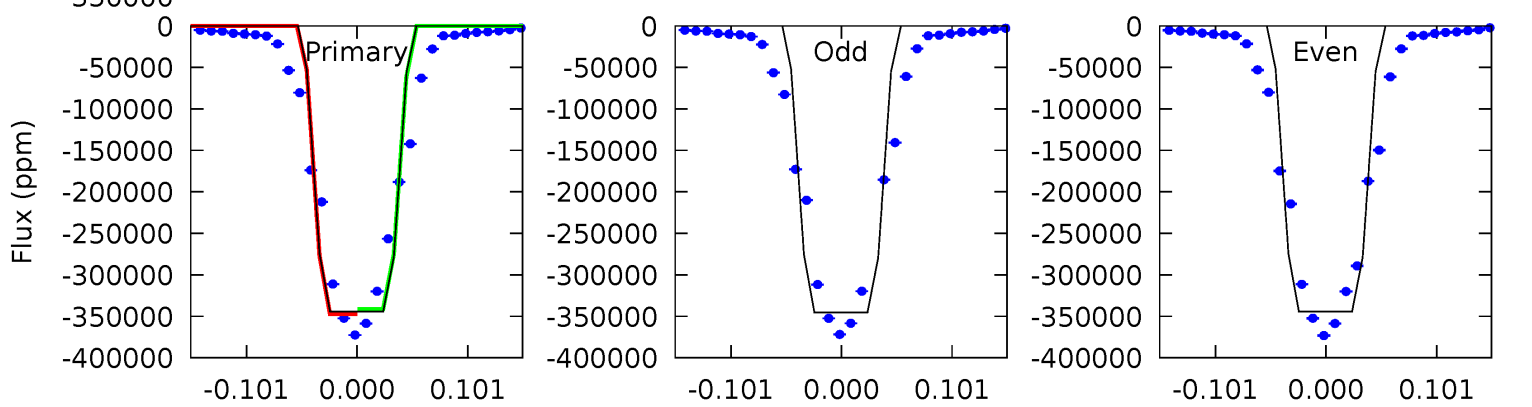
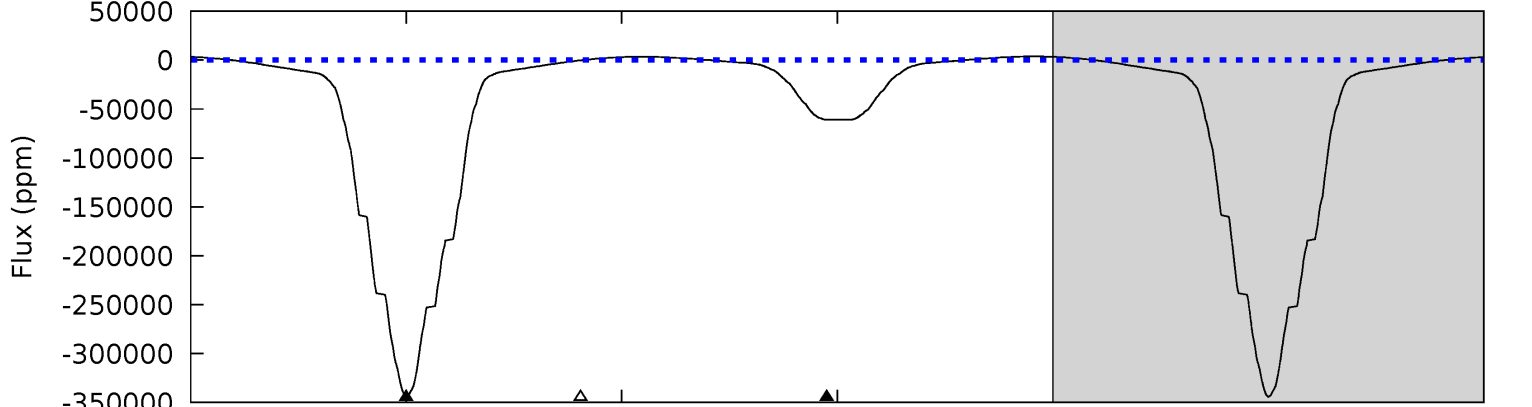
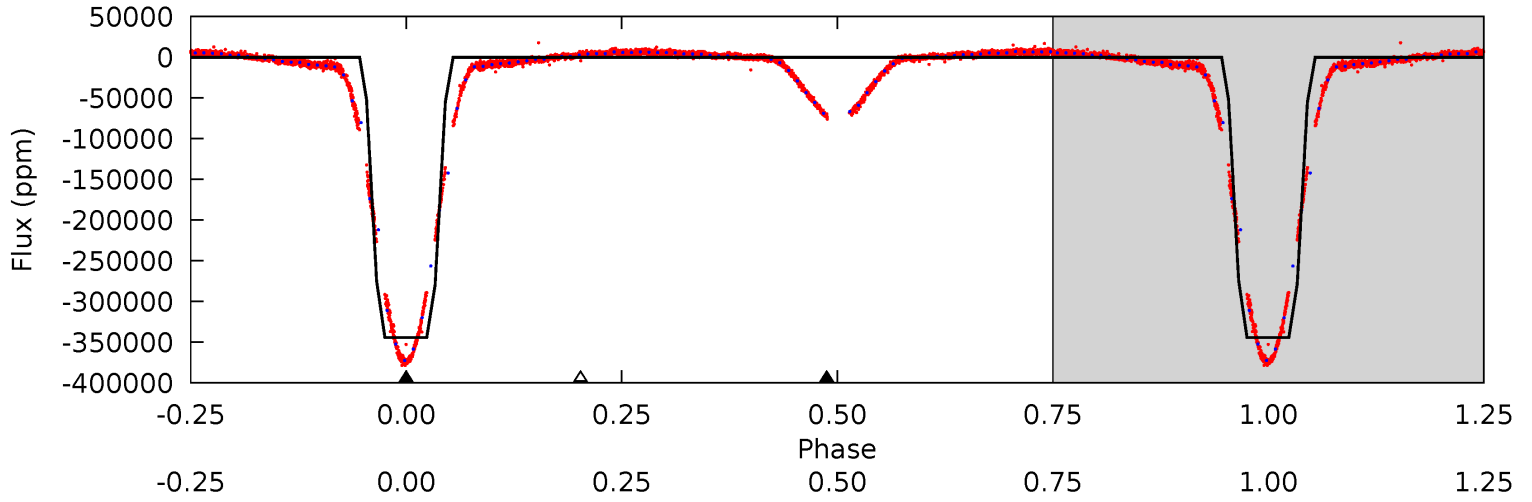
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009343862-01, P = 1.123236 Days, E = 132.055477 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
1206	213.7	0.71	0	4.56	1.64	16.6	1206	1206	213.0	213.7	1.46	1.00	0.01	10.2



### Stellar Parameters For KIC 009343862

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7945^{+193}_{-358}$	$4.023^{+0.204}_{-0.136}$	$-0.060^{+0.150}_{-0.400}$	$2.170^{+0.469}_{-0.626}$	$1.812^{+0.121}_{-0.339}$	$0.250^{+0.288}_{-0.101}$
	+2%/-5%	+5%/-3%	+250%/-667%	+22%/-29%	+7%/-19%	+115%/-40%
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 009343862-01 / KOI 6201.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$81.83^{+27.79}_{-24.50}$	$4457^{+279}_{-366}$	$-3098^{+10737}_{-4200}$	$0.224^{+6.790}_{-5.342}$
Alt.	$-60983 \pm 285$	$142.30^{+28.36}_{-29.39}$	$4437^{+287}_{-366}$	$4746^{+413}_{-428}$	$1.162^{+0.601}_{-0.355}$

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

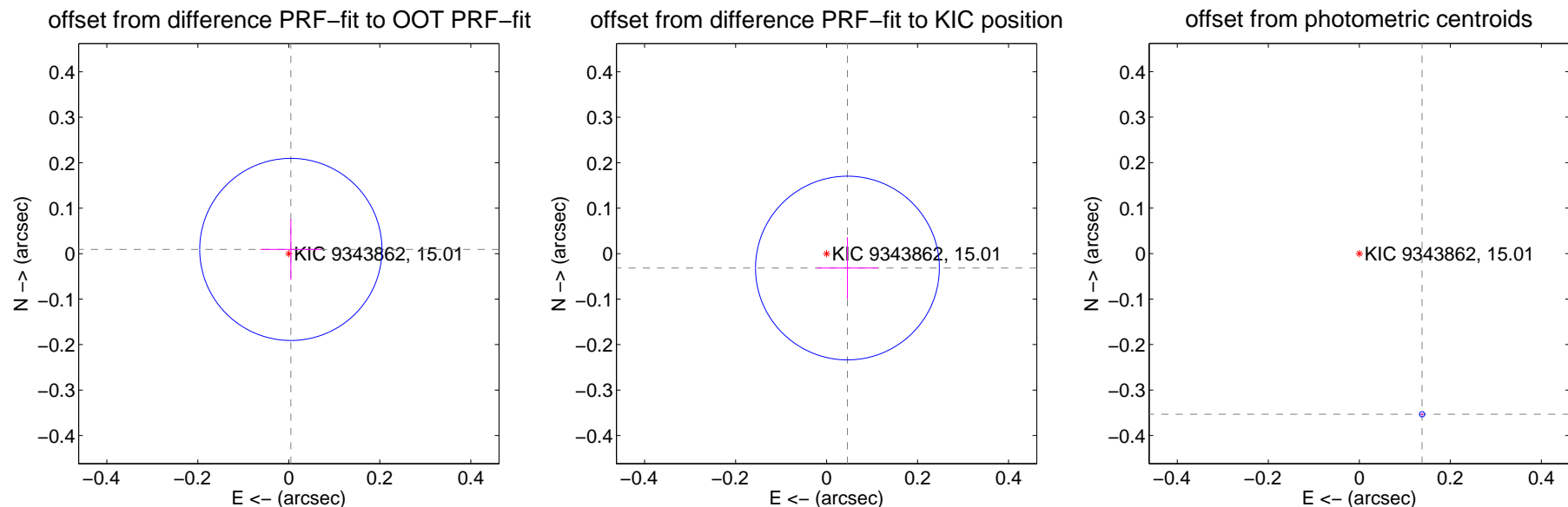
## DV Centroid Data

Supplemental centroid analysis for 009343862-01. Kepler magnitude: 15.01. 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	$0.010 \pm 0.067$	0.15	$-0.004 \pm 0.067$	$0.009 \pm 0.067$
PRF-fit source offset from KIC position	$0.056 \pm 0.067$	0.83	$-0.046 \pm 0.067$	$-0.032 \pm 0.068$
photometric centroid source offset	$0.38 \pm 0.00$	198.44	$-0.14 \pm 0.00$	$-0.35 \pm 0.00$



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.



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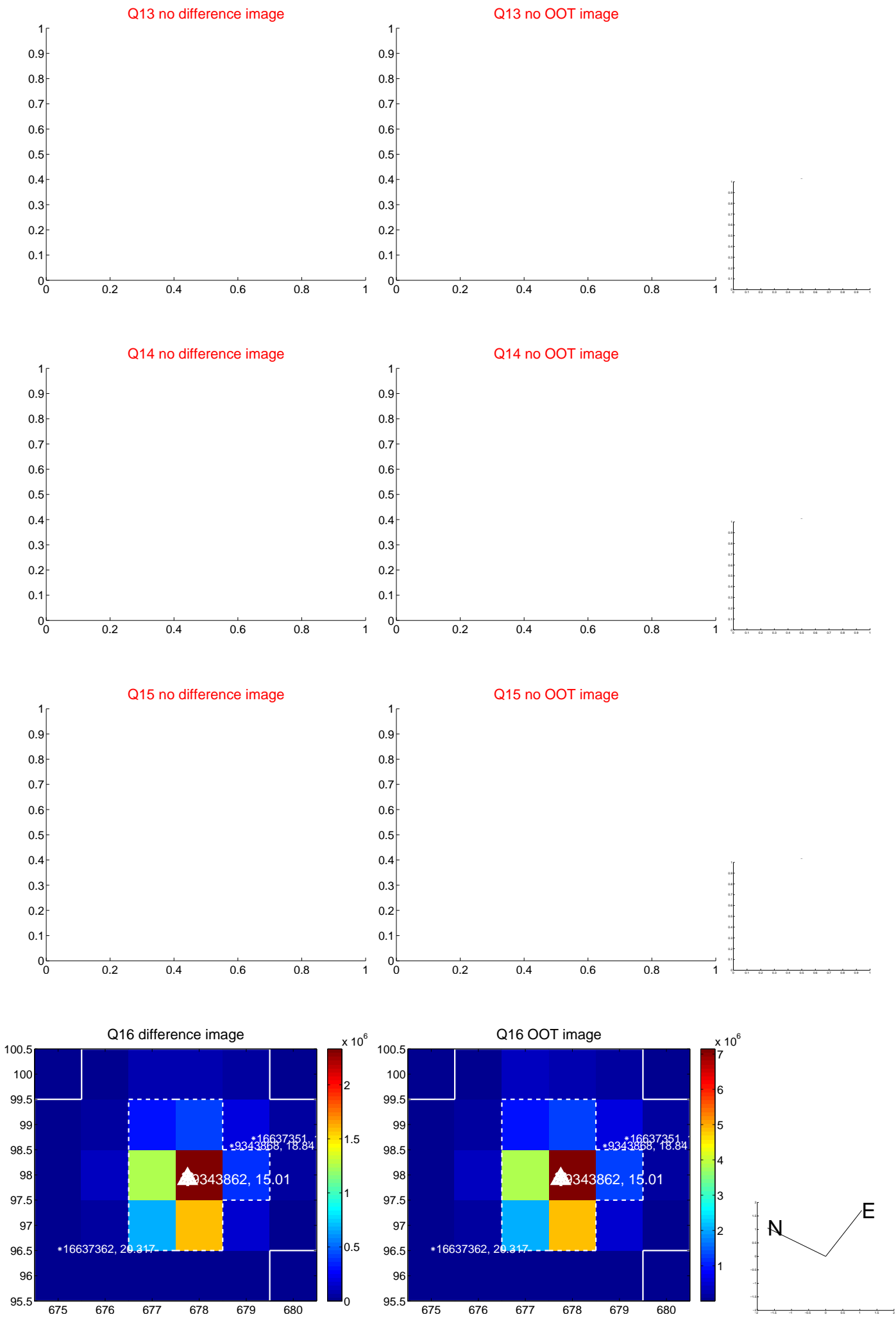




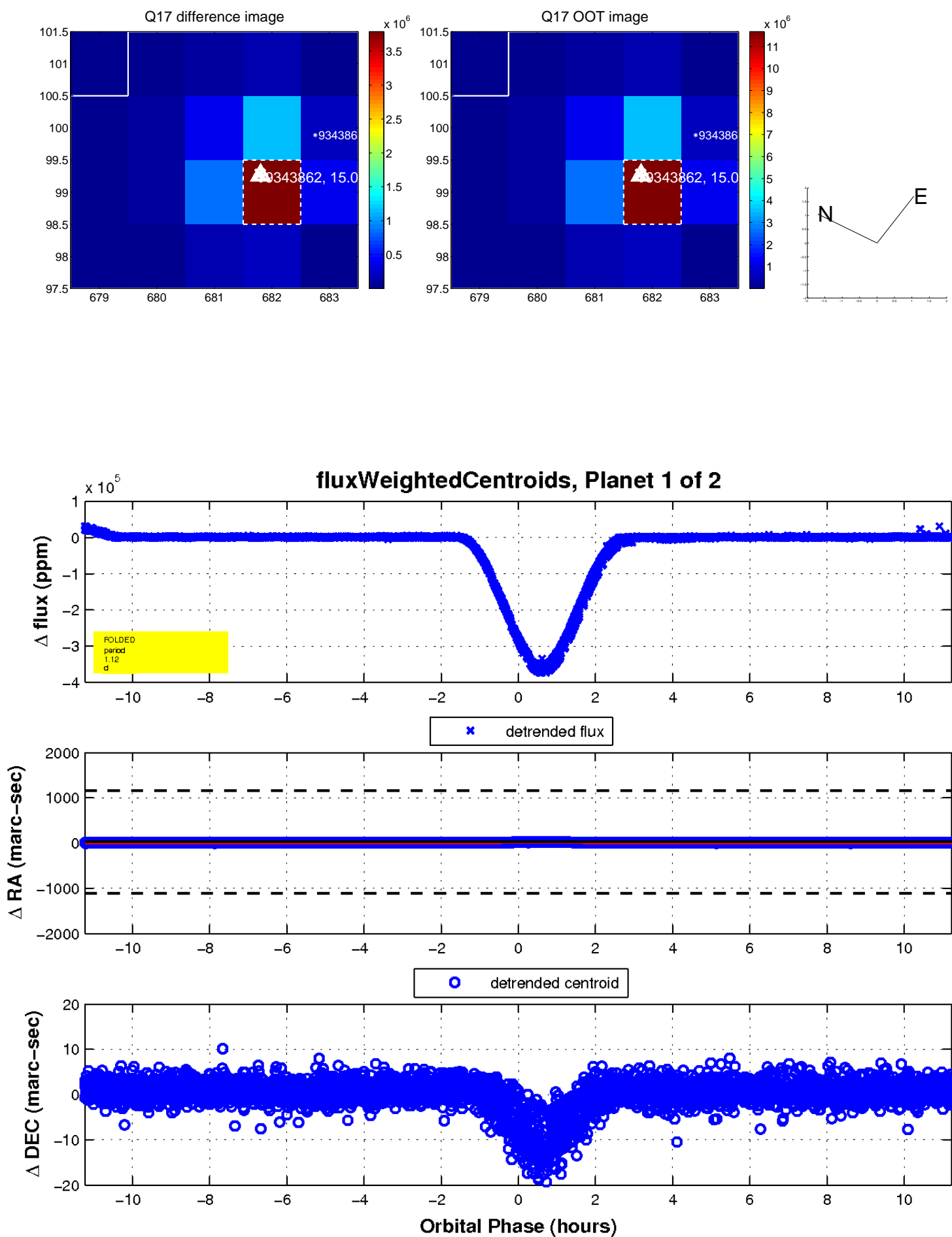
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

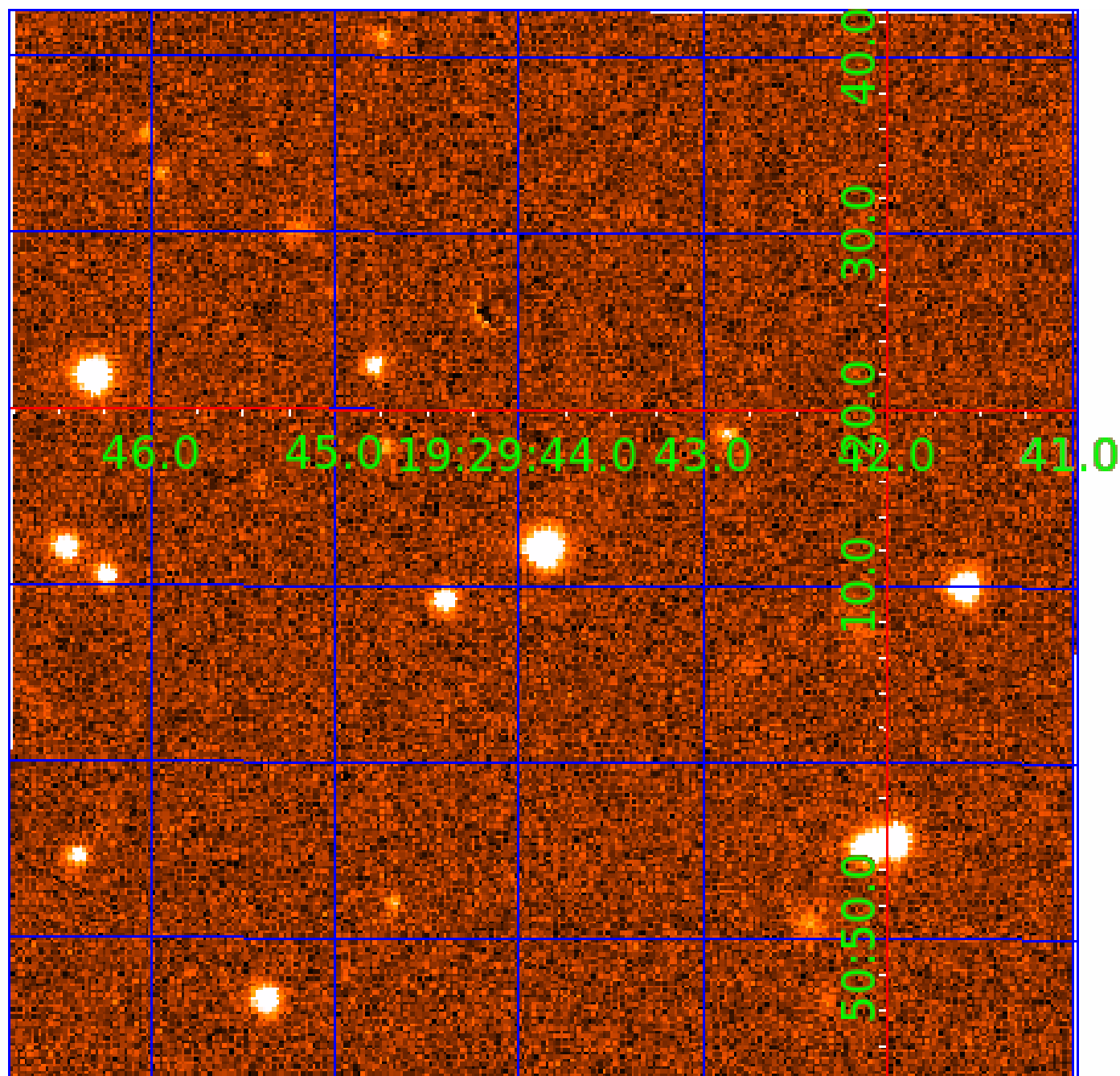


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009343862

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009343862-01	OBS	6201.01	1.123236	132.052661	358904.5	2.500	4604.7	-1.0	2.17	7945	83.94	25289.99
009343862-02	OBS	No	1.123323	132.513320	94102.3	4.654	647.4	475.8	2.17	7945	105.81	25287.35

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009343862-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
009343862-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

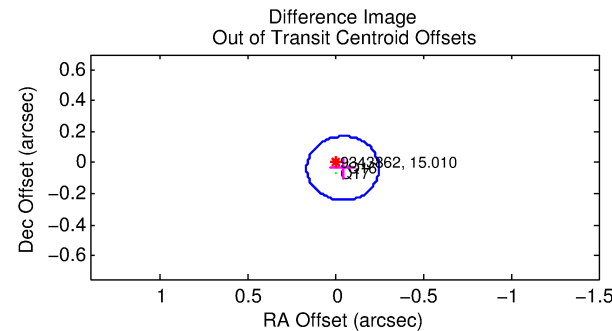
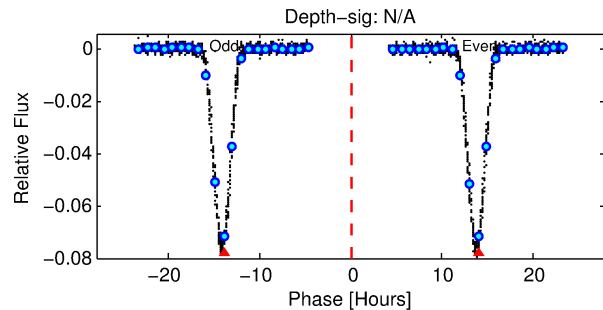
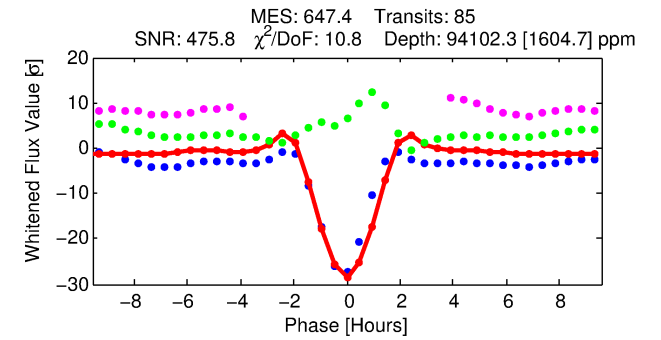
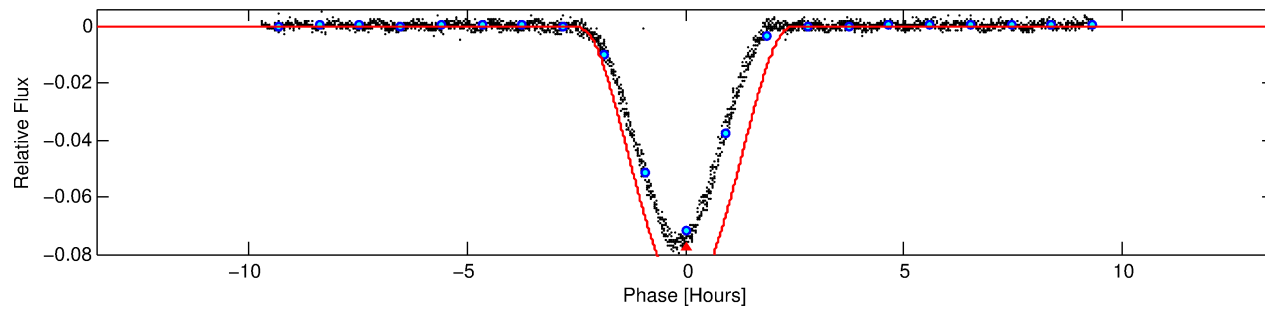
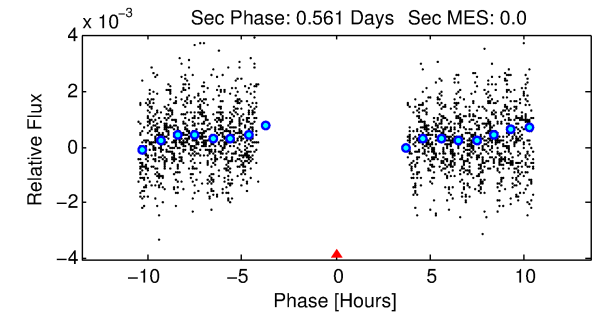
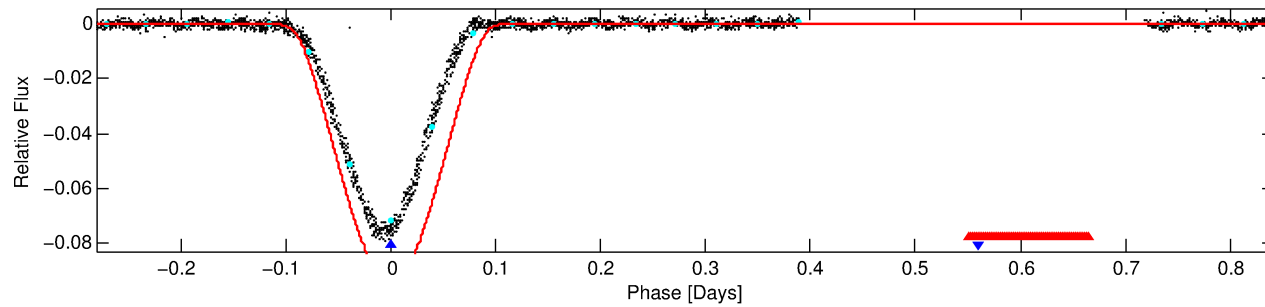
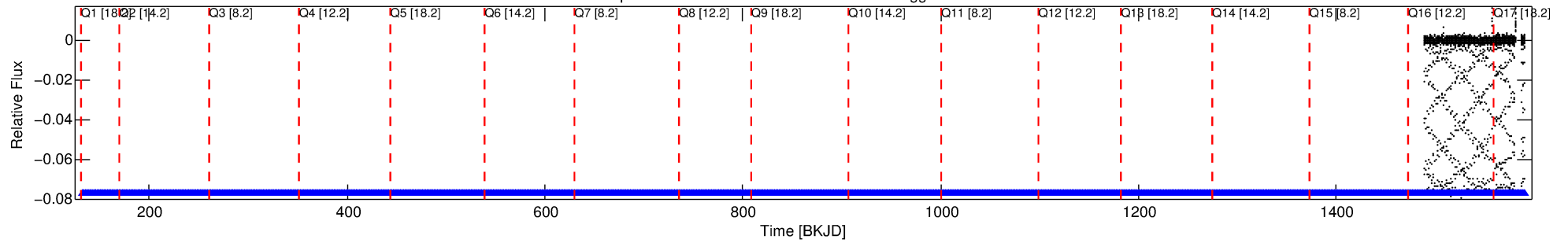
## Ephemeris Match Information For 009343862-02

No Significant Match Found

# DV One-Page Summary

KIC: 9343862 Candidate: 2 of 2 Period: 1.123 d  
KOI: K06201 Corr: No Ephemeris Match

Kp: 15.01 R\*: 2.17 Rs Teff: 7945.0 K Logg: 4.02 Fe/H: -0.060



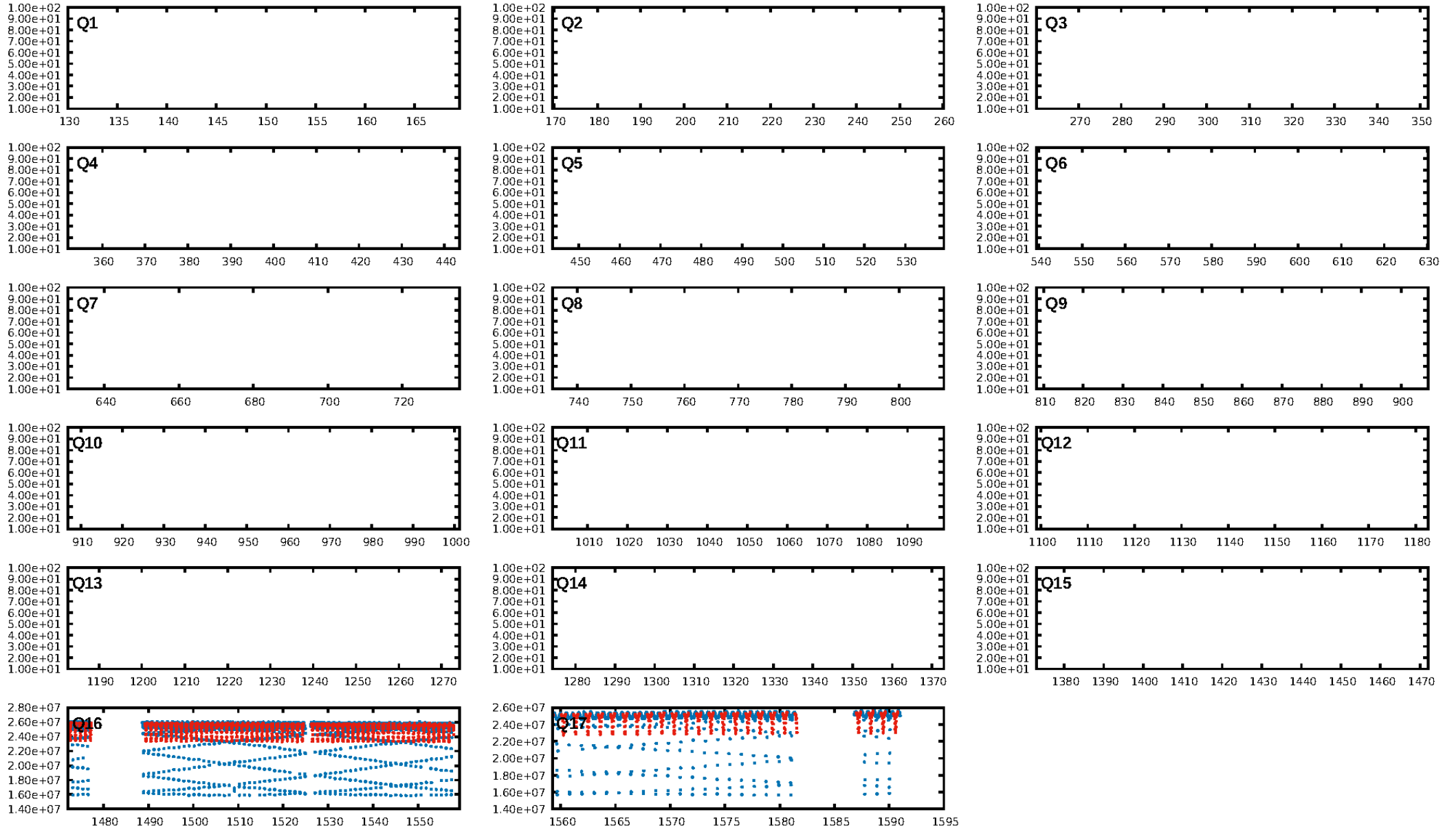
## DV Fit Results:

Period = 1.12332 [0.00000] d  
Epoch = 132.5133 [0.0003] BKJD  
Rp/R\* = 0.4469 [0.3854]  
a/R\* = 2.30 [0.29]  
b = 0.96 [0.53]  
Seff = 25287.35 [10350.43]  
Teff = 3216 [329] K  
Rp = 105.82 [96.23] Re  
a = 0.0258 [0.0064] AU  
Ag = N/A  
Teffp = N/A

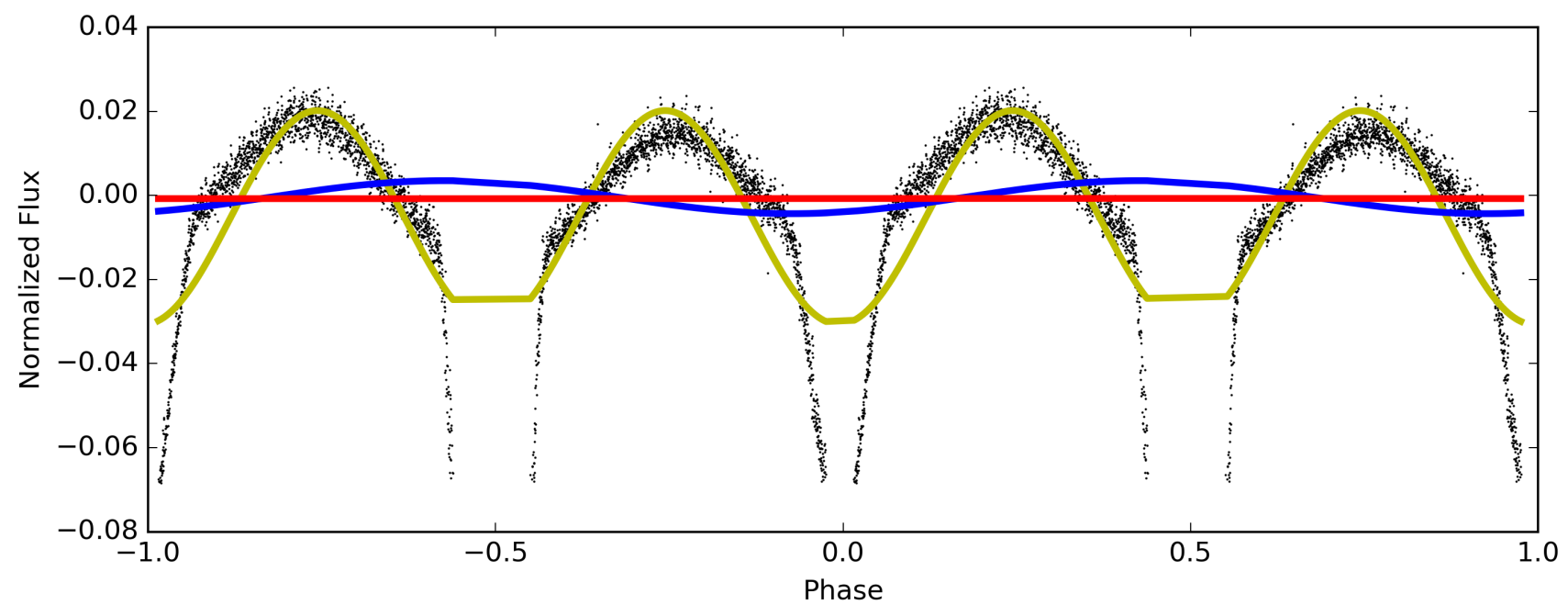
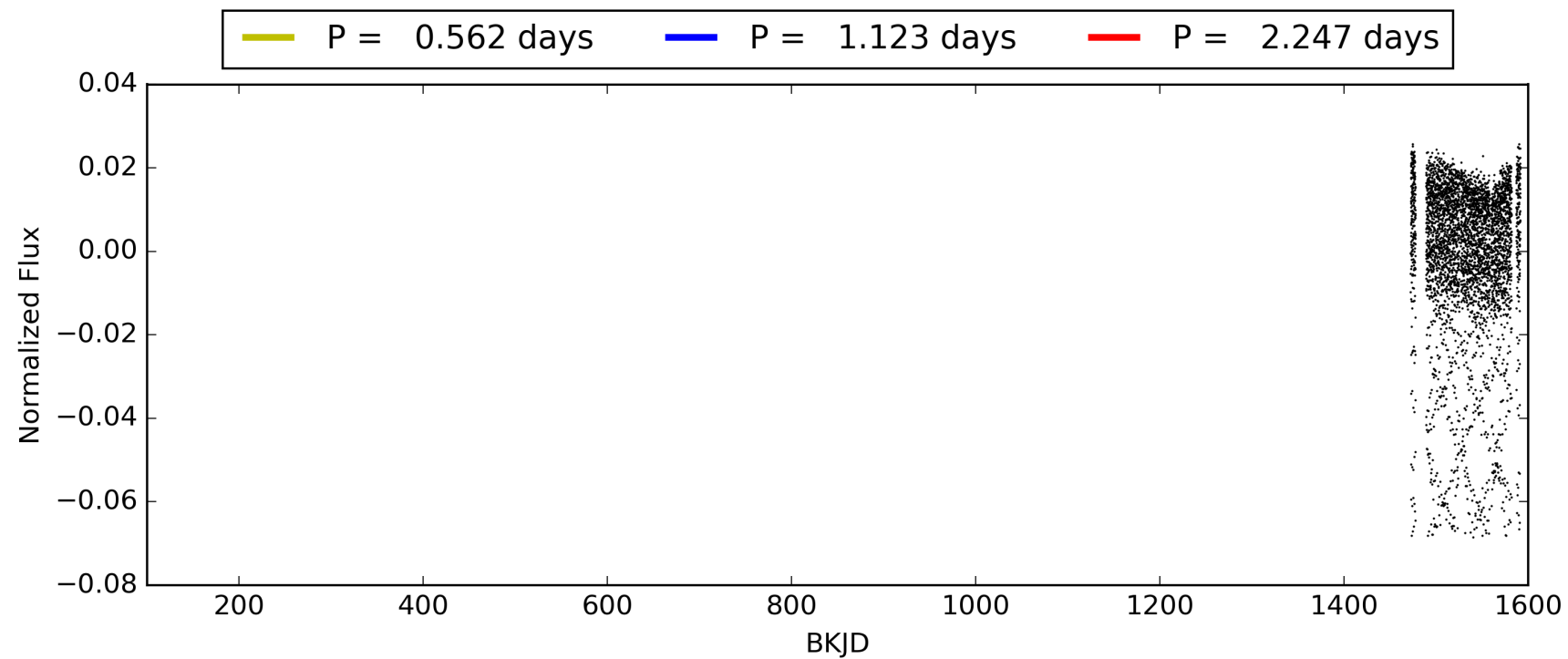
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGoF-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [61/61]  
GhostDiagnostic-chr: 0.4442  
Centroid-sig: N/A  
Centroid-so: 0.396 arcsec [107.02σ]  
OotOffset-rm: 0.055 arcsec [0.80σ]  
KicOffset-rm: 0.109 arcsec [1.49σ]  
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 009343862-02, PDC Light Curves



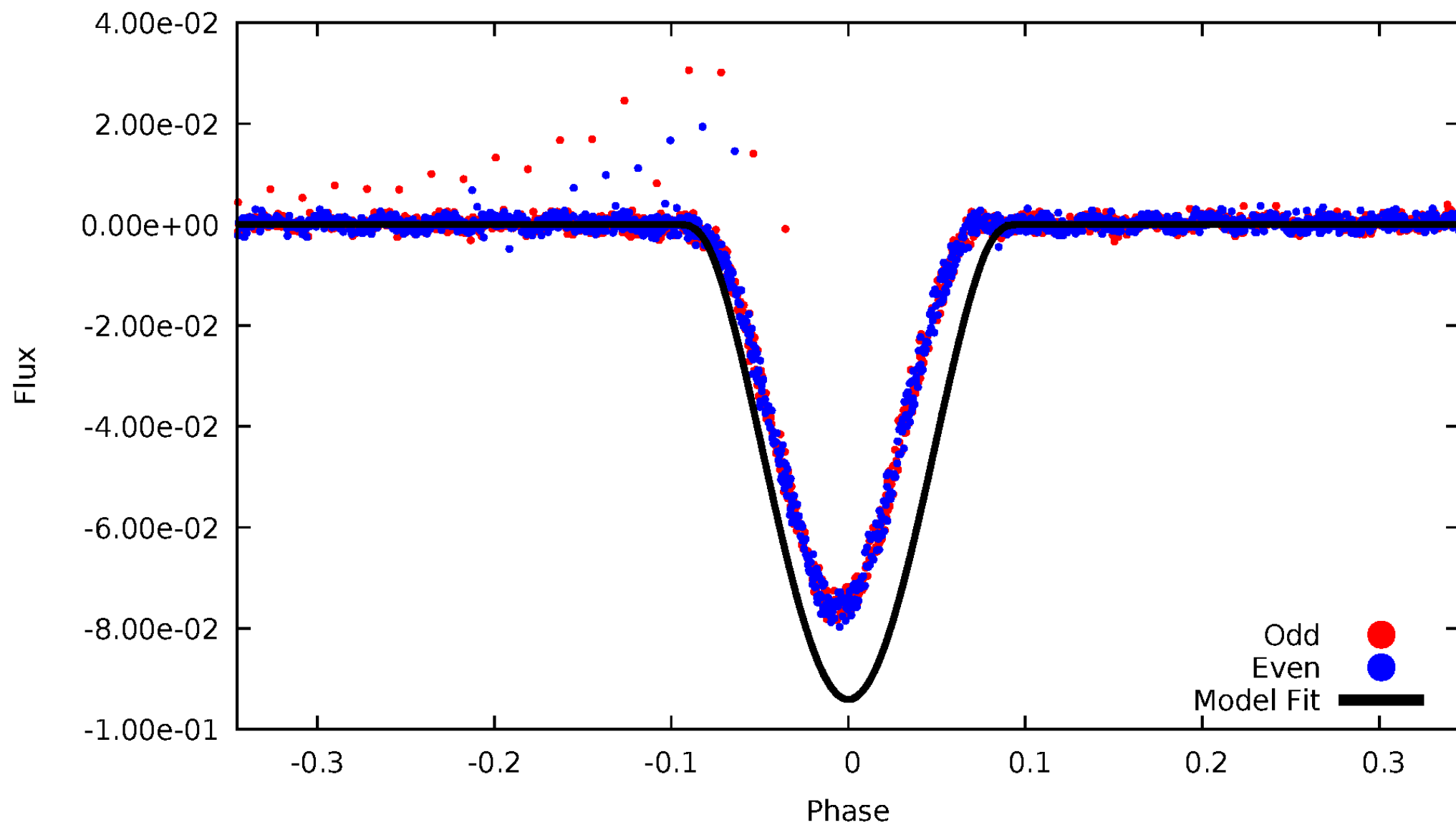
TCE 009343862-02





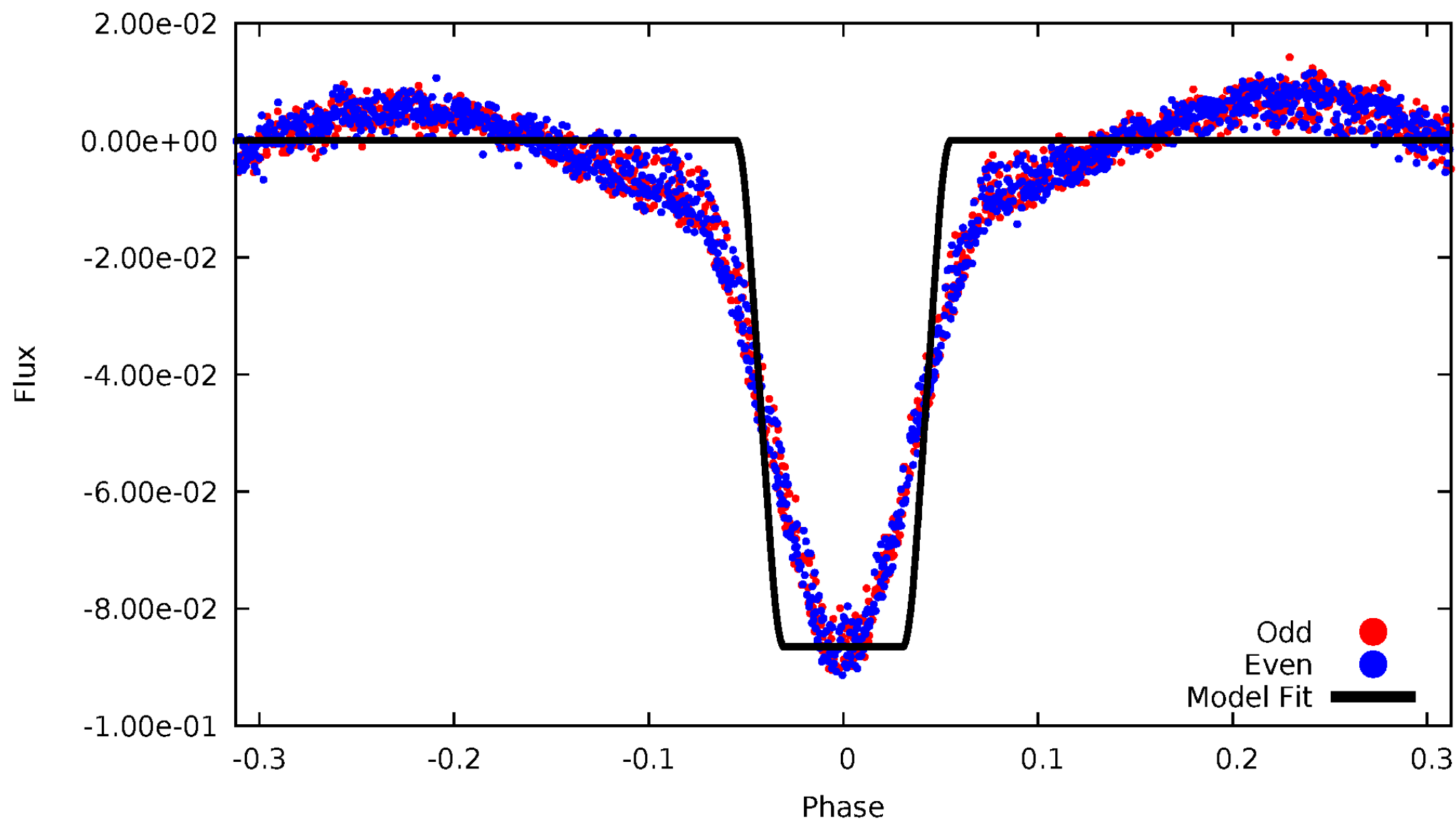
# DV Odd/Even

TCE 009343862-02



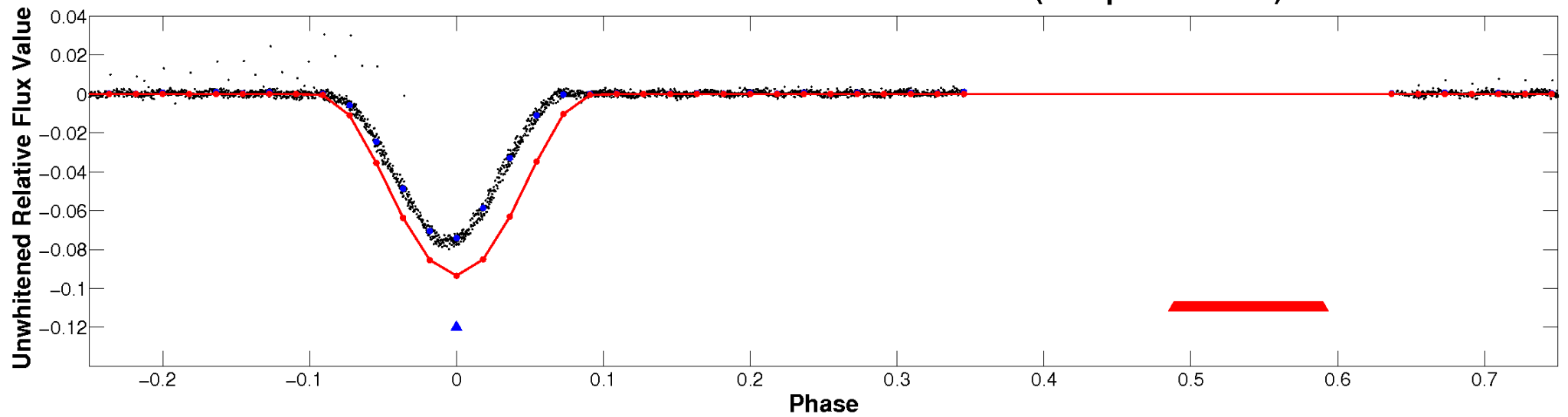
# ALT Odd/Even

TCE 009343862-02

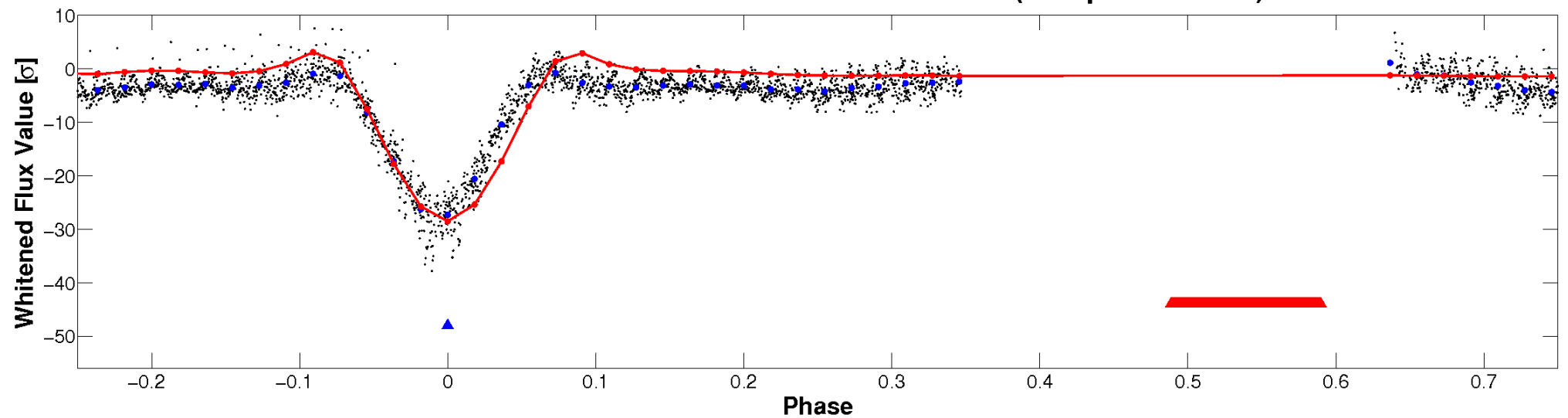


# Non-Whitened Vs. Whitened Light Curve

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

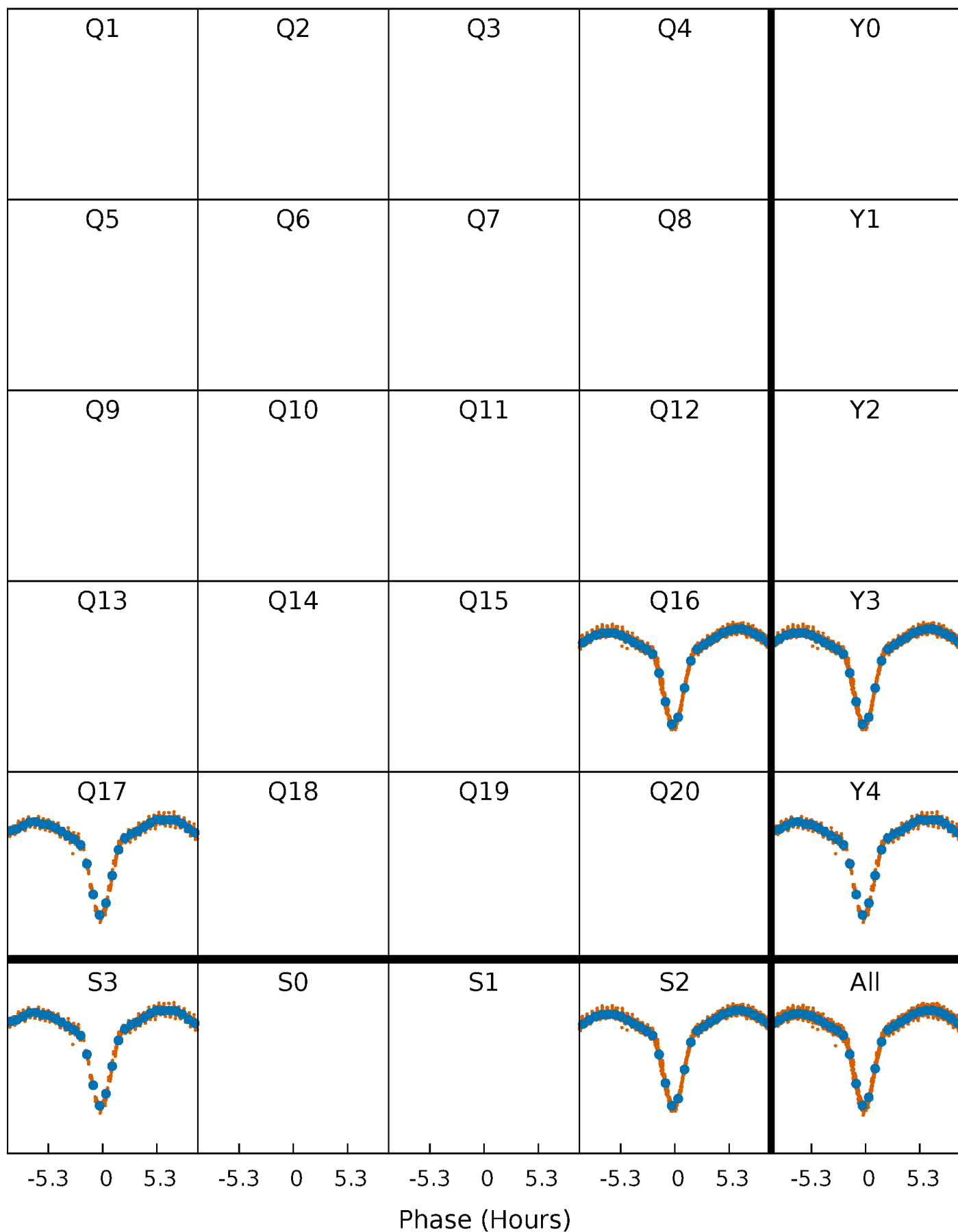


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



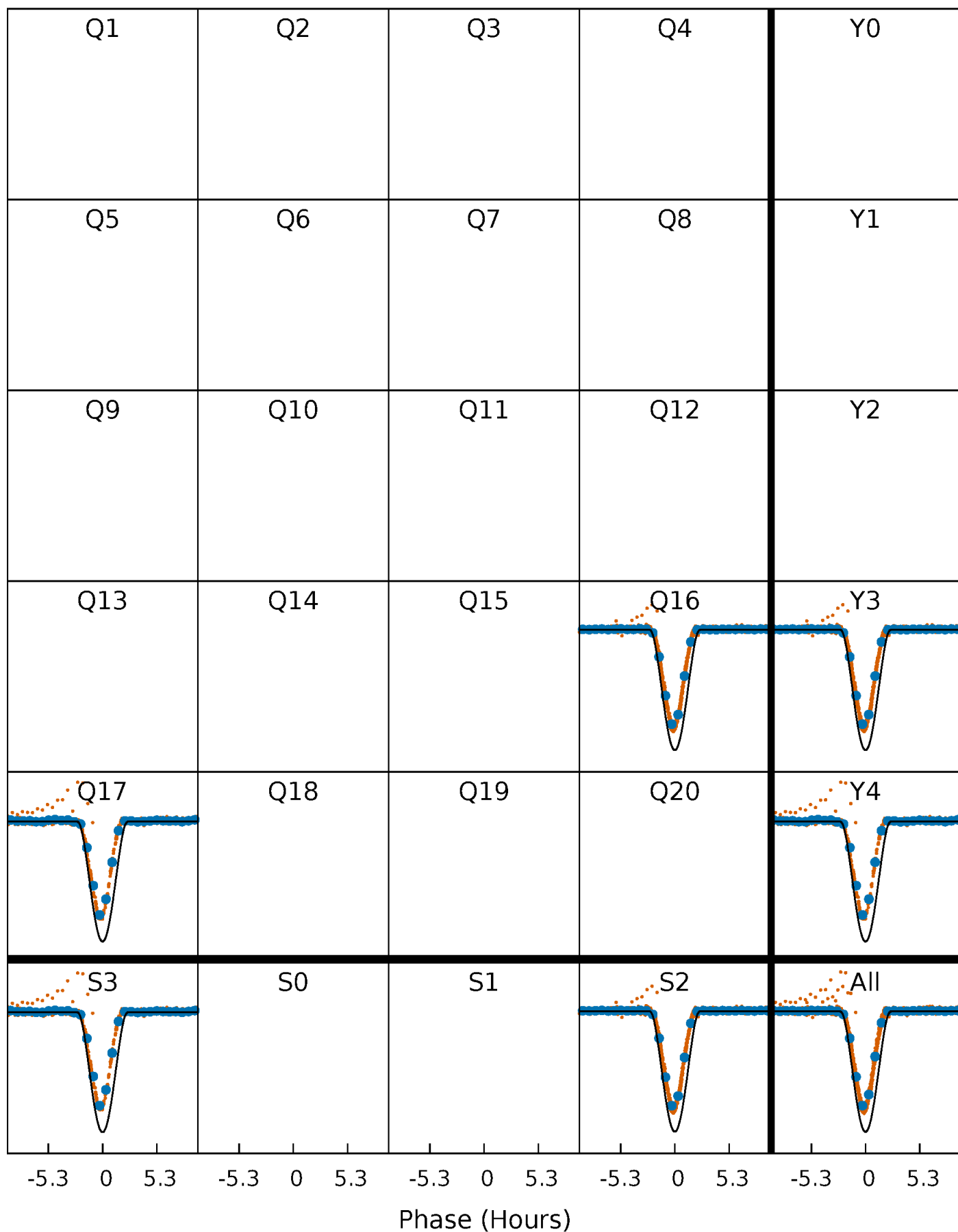
# PDC Quarter-Phased Transit Curves

TCE 009343862-02   P= 1.123323 Days    $T_0=132.513320$  (BKJD)



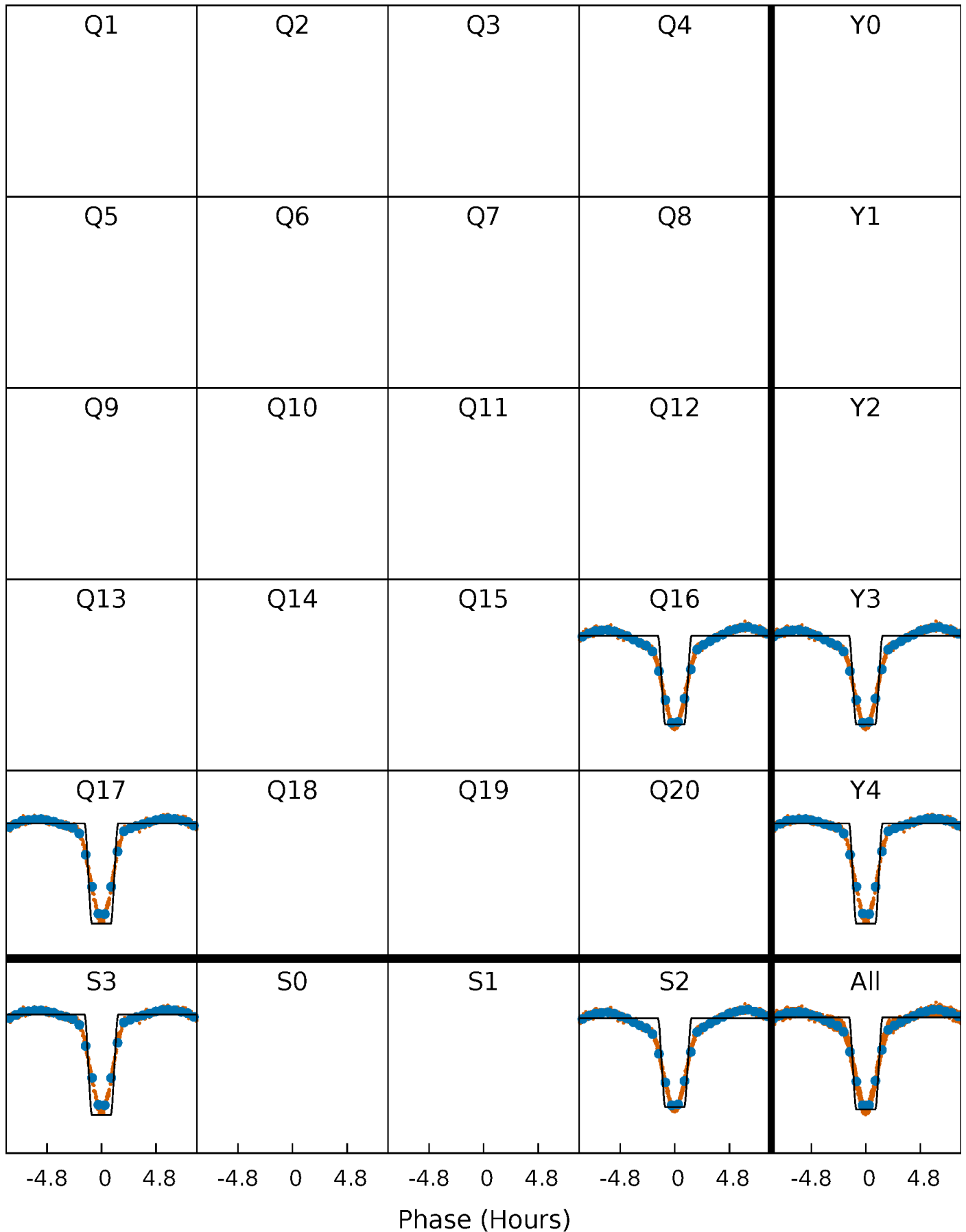
# DV Quarter-Phased Transit Curves

TCE 009343862-02   P= 1.123323 Days    $T_0=132.513320$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

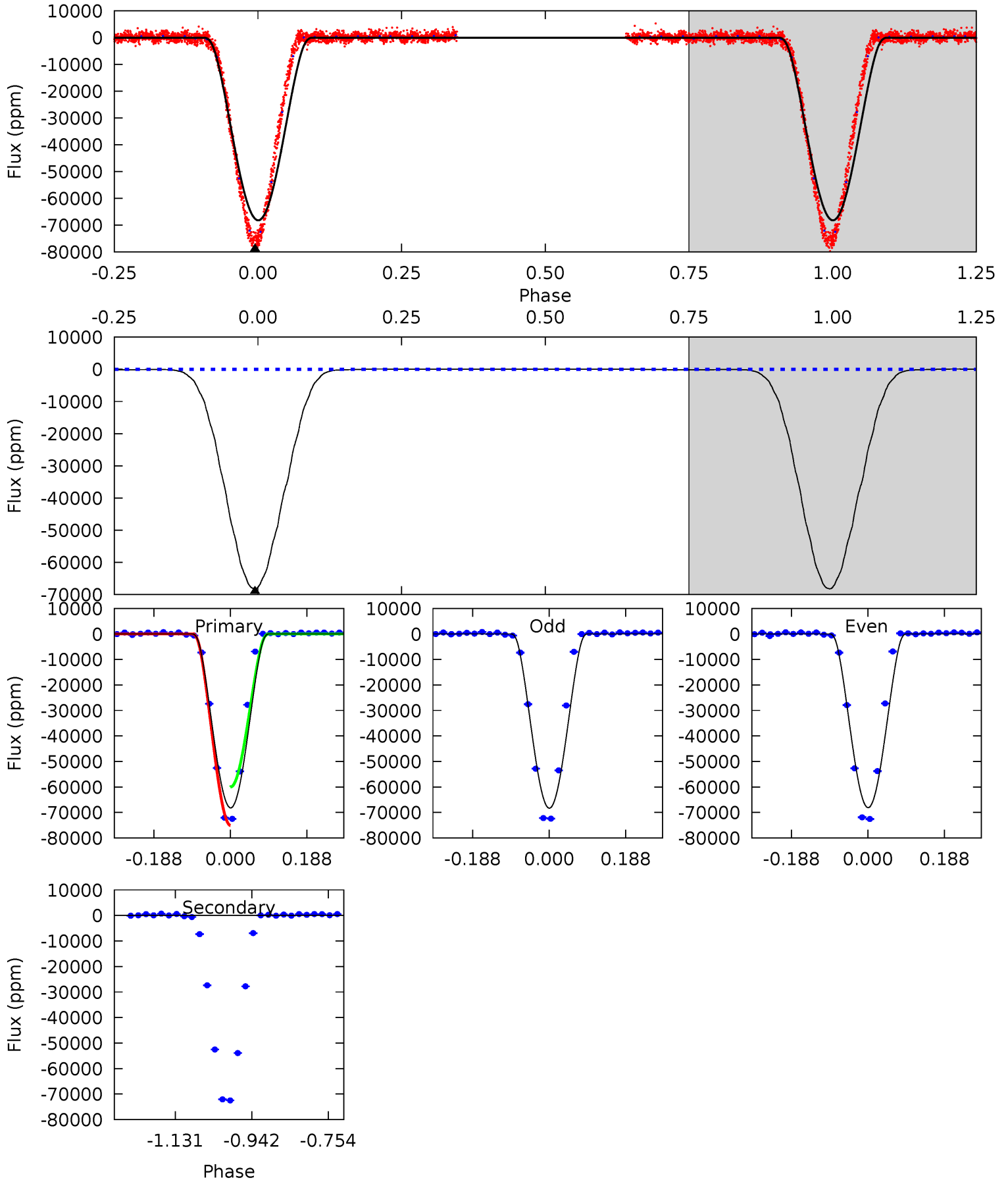
TCE 009343862-02   P= 1.123252 Days    $T_0=132.597214$  (BKJD)



# DV Model-Shift Uniqueness Test

009343862-02, P = 1.123323 Days, E = 132.513320 Days

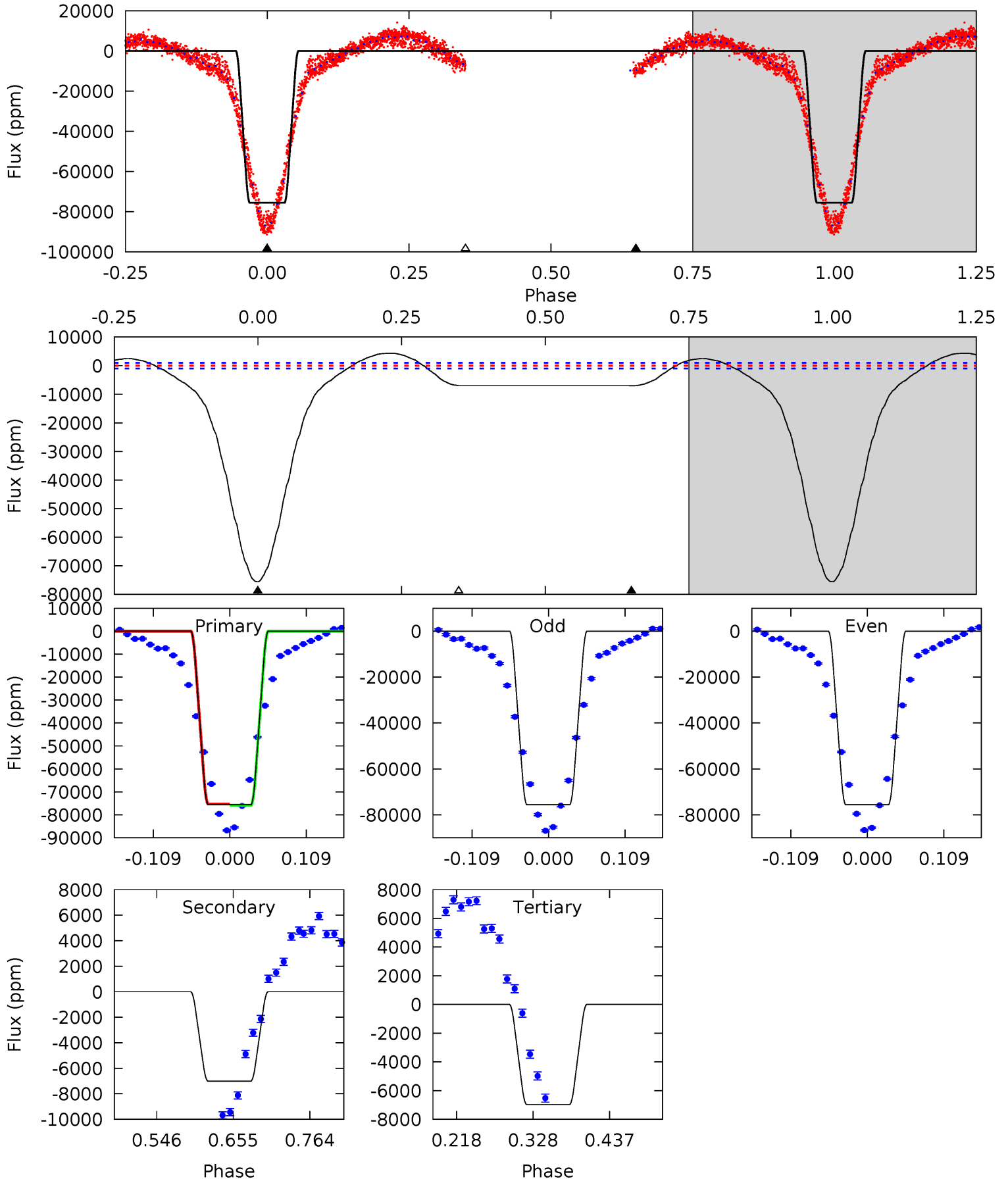
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1820	0	0	0	4.43	1.32	2.16	1820	1820	0	0	3.01	0.96	0.00	200.1



# Alt Model-Shift Uniqueness Test

009343862-02, P = 1.123252 Days, E = 132.597214 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
345.1	32.0	31.8	0	4.55	1.60	17.2	313.2	345.1	0.18	32.0	0.02	0.99	0.05	1.45





### Stellar Parameters For KIC 009343862

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7945^{+193}_{-358}$	$4.023^{+0.204}_{-0.136}$	$-0.060^{+0.150}_{-0.400}$	$2.170^{+0.469}_{-0.626}$	$1.812^{+0.121}_{-0.339}$	$0.250^{+0.288}_{-0.101}$
	+2%/-5%	+5%/-3%	+250%/-667%	+22%/-29%	+7%/-19%	+115%/-40%
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 009343862-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 37$	$114.39^{+82.39}_{-64.67}$	$4451^{+292}_{-323}$	$-3906^{+191}_{-189}$	$-0.000^{+0.001}_{-0.002}$
Alt.	$-7006 \pm 219$	$92.36^{+82.56}_{-56.92}$	$4436^{+303}_{-328}$	$-2421^{+7828}_{-1312}$	$0.291^{+1.657}_{-0.209}$

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

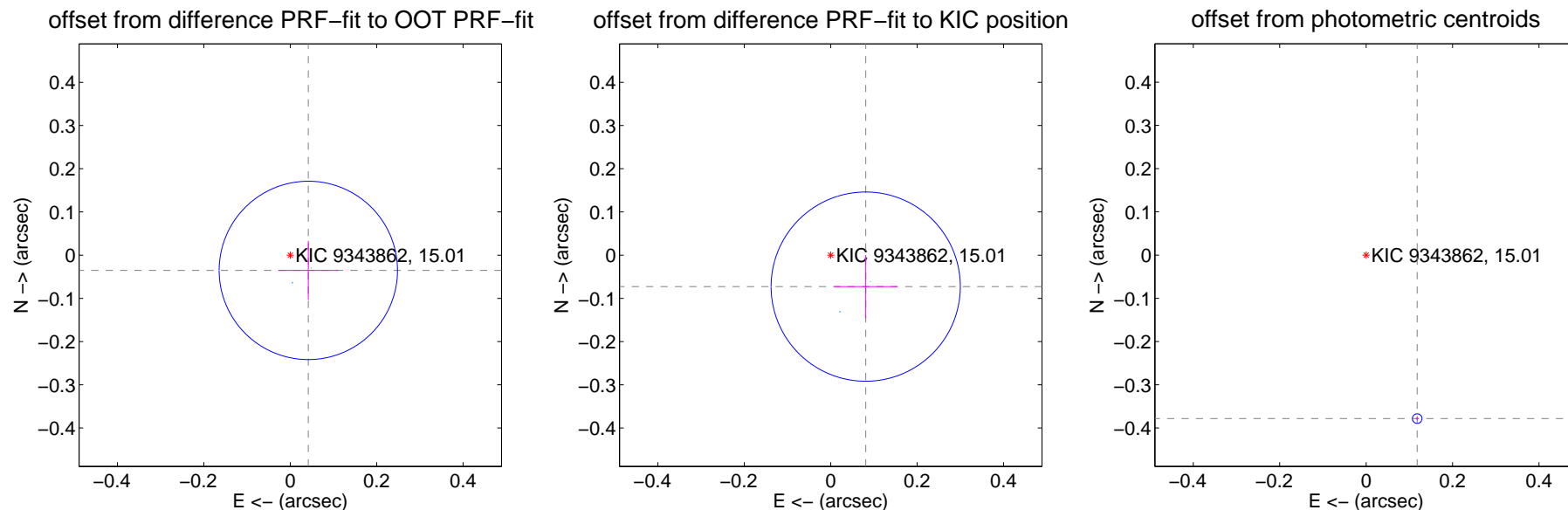
## DV Centroid Data

Supplemental centroid analysis for 009343862-02. Kepler magnitude: 15.01. Transit SNR 475.77

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	$0.055 \pm 0.069$	0.80	$-0.042 \pm 0.069$	$-0.035 \pm 0.068$
PRF-fit source offset from KIC position	$0.109 \pm 0.073$	1.49	$-0.081 \pm 0.073$	$-0.073 \pm 0.073$
photometric centroid source offset	$0.40 \pm 0.00$	107.02	$-0.12 \pm 0.00$	$-0.38 \pm 0.00$



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.



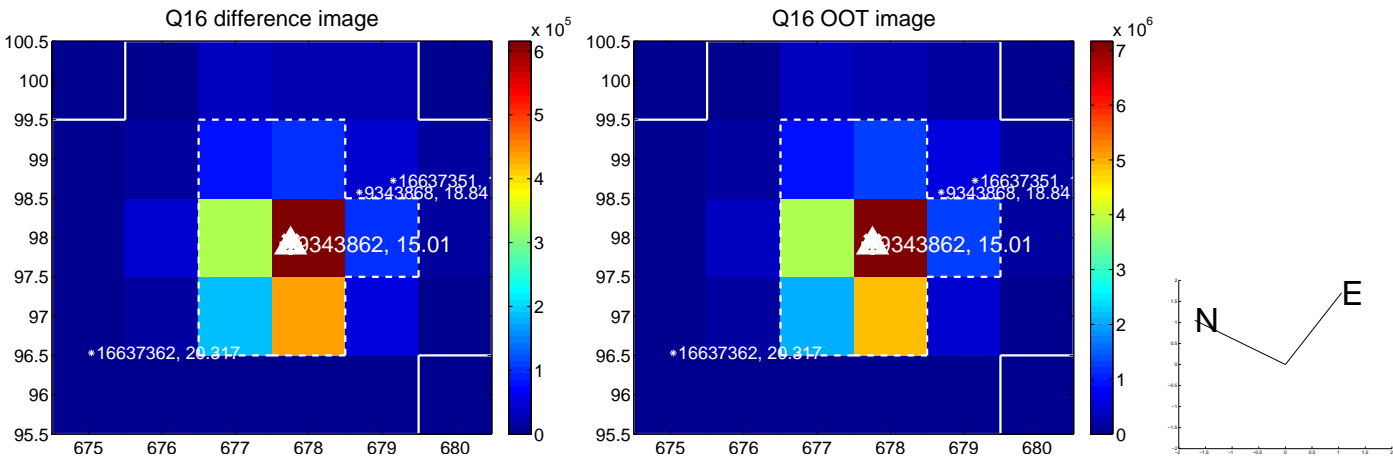
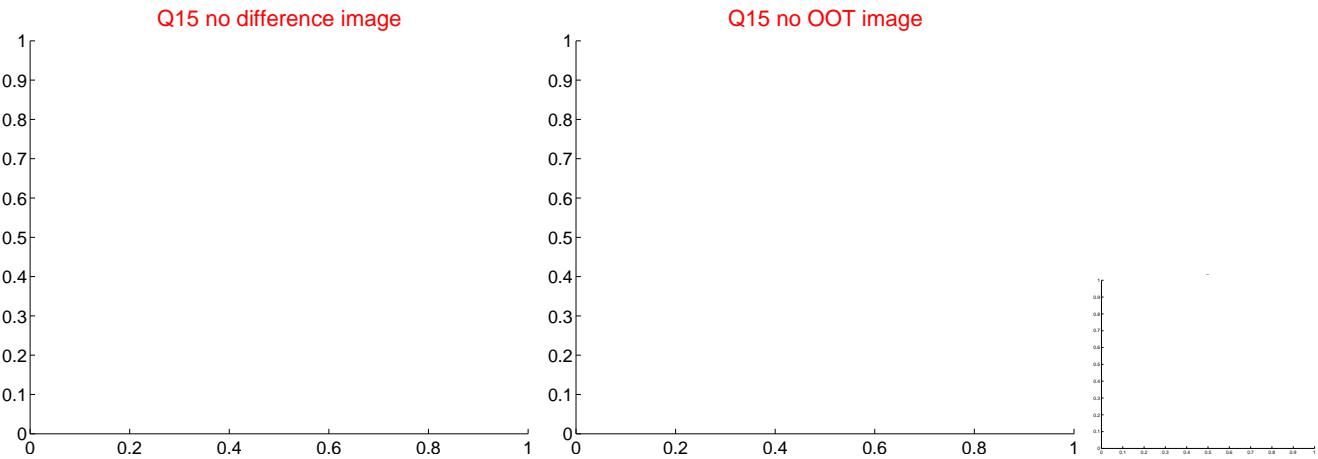
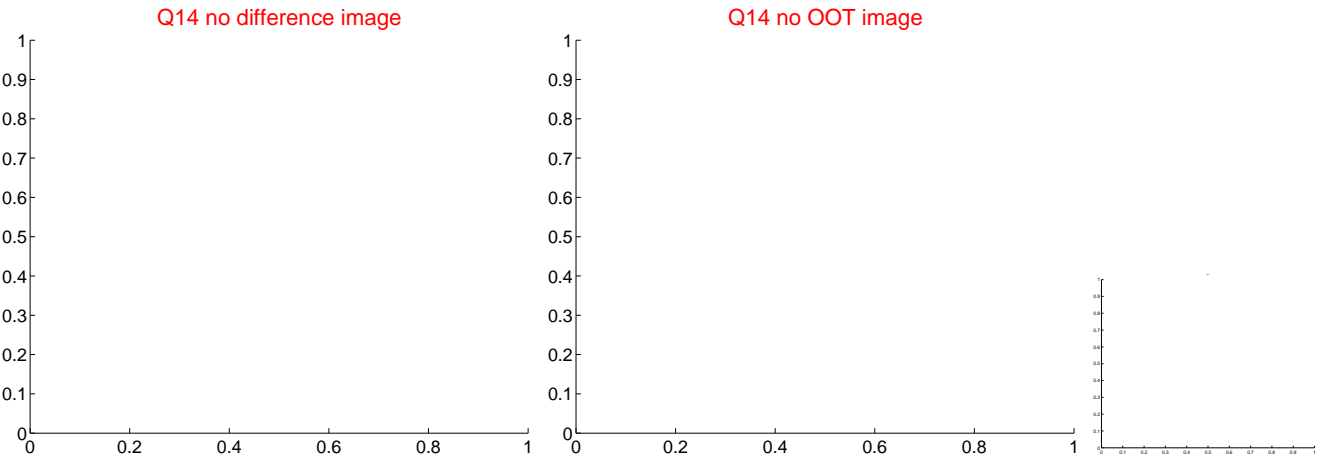
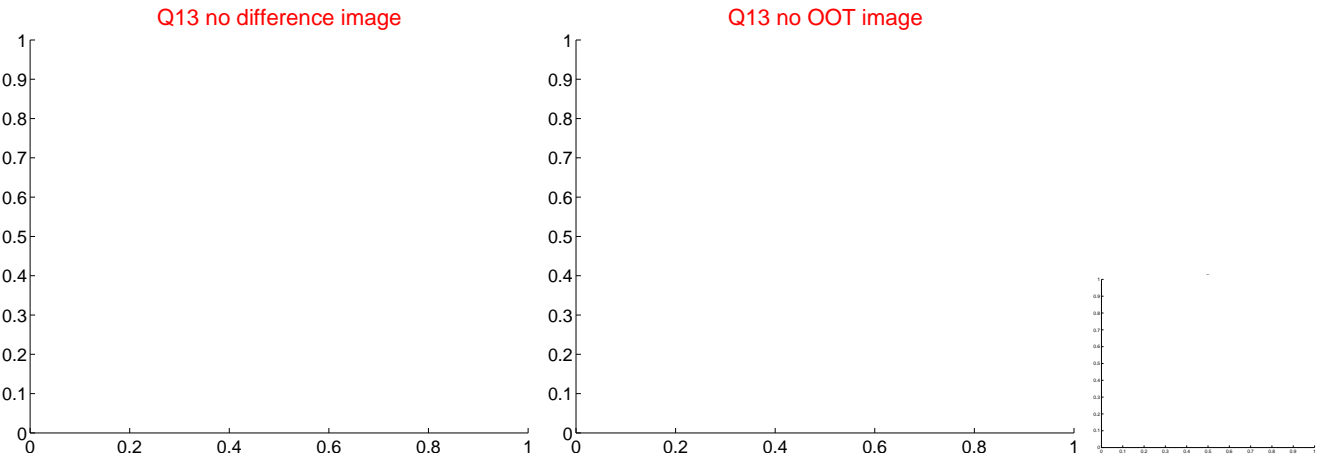
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



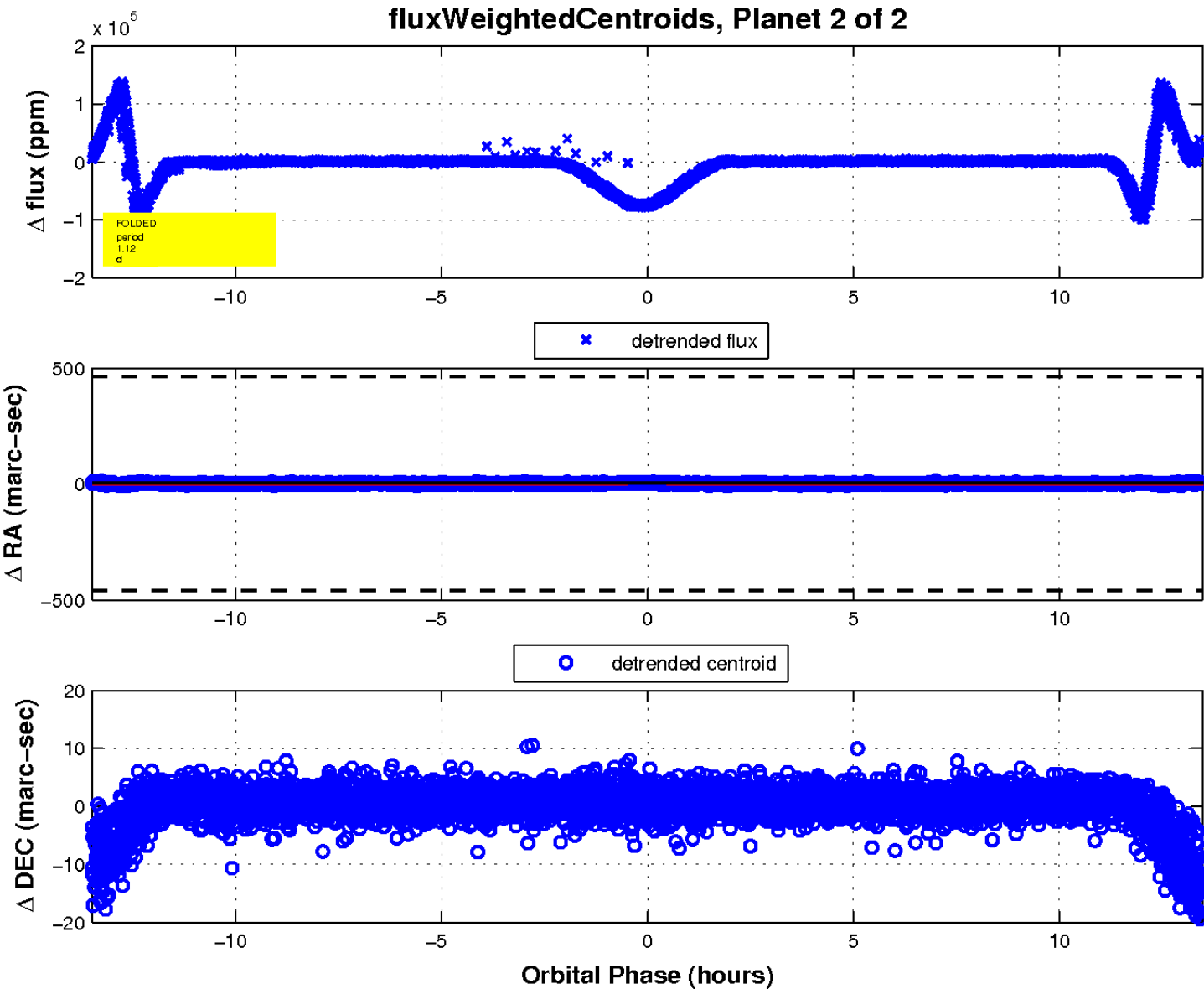
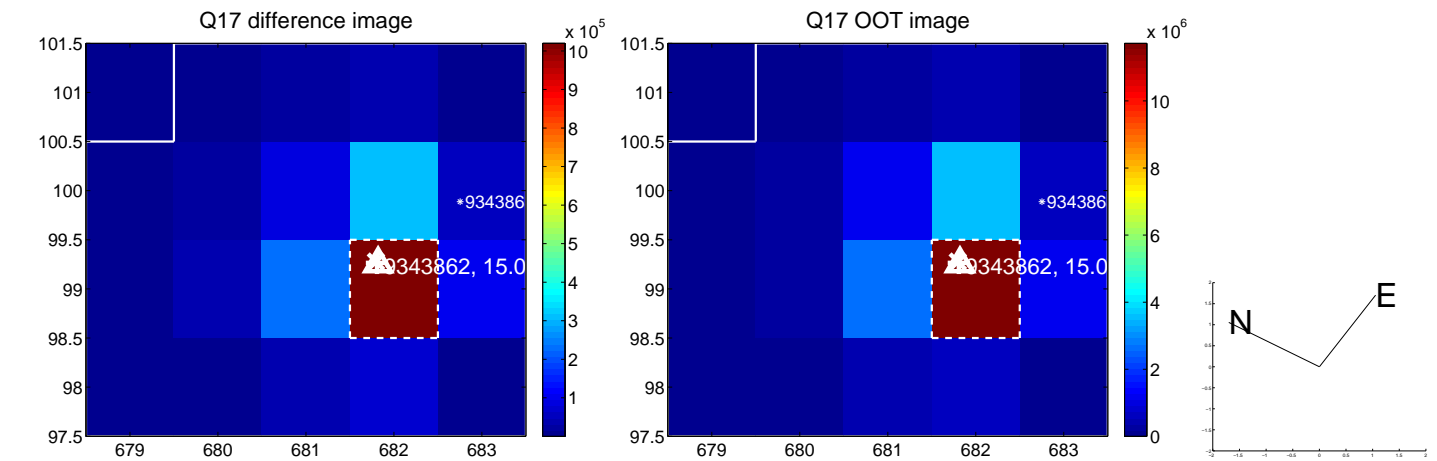
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

