

# KIC 008153568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008153568-01	OBS	6051.01	3.607651	133.622462	813213.6	7.500	1259.6	-1.0	1.78	7026	36.68	2674.15
008153568-02	OBS	No	3.607188	132.008210	5424.0	7.500	240.3	-1.0	1.78	7026	13.30	2674.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008153568-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
008153568-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

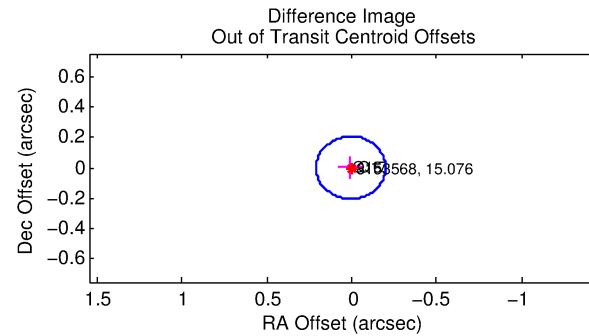
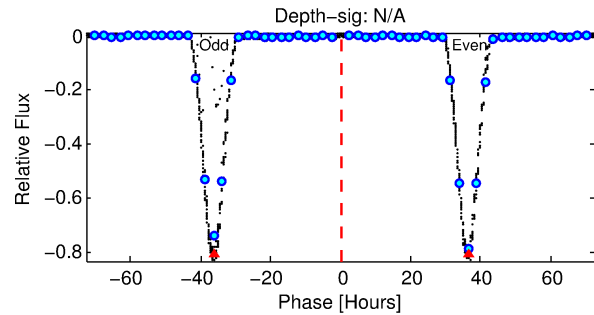
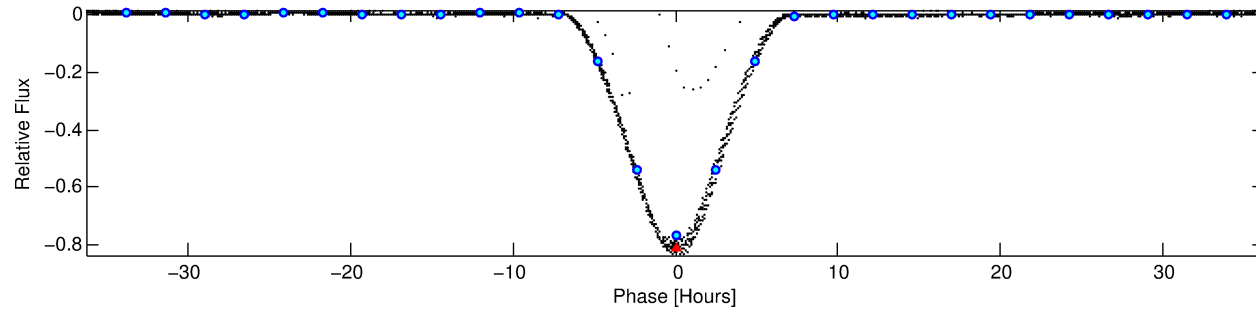
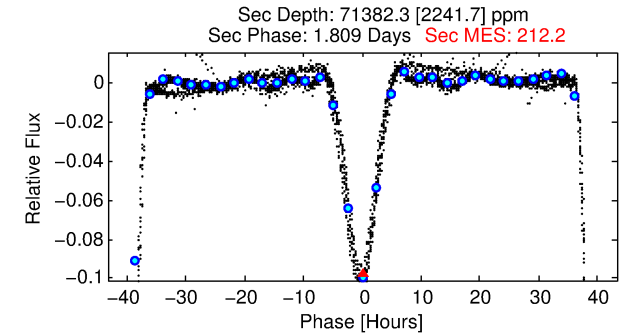
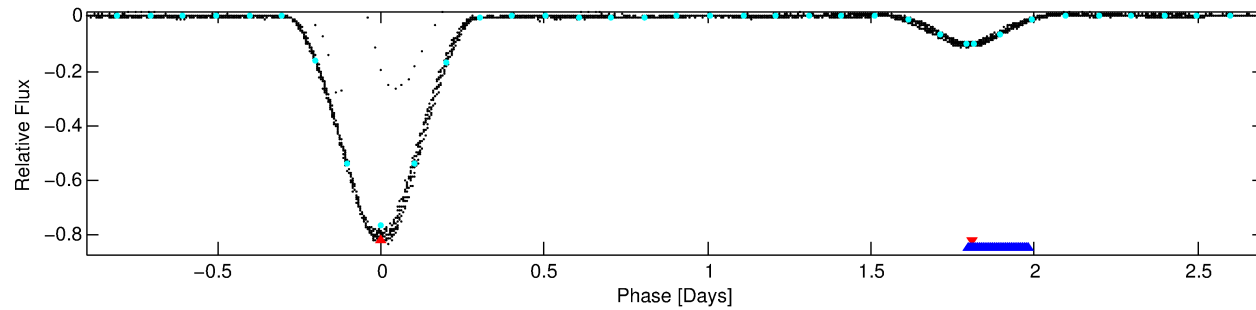
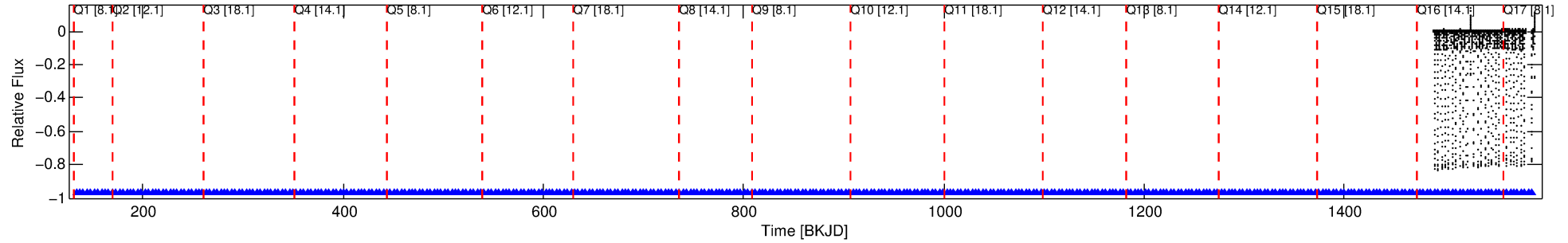
## Ephemeris Match Information For 008153568-01

No Significant Match Found

# DV One-Page Summary

KIC: 8153568 Candidate: 1 of 2 Period: 3.608 d  
KOI: K06051.01 Corr: 0.755

Kp: 15.08 R\*: 1.78 Rs Teff: 7026.0 K Logg: 4.07 Fe/H: -0.360



## TPS TCE Results:

Period = 3.60765 d  
Epoch = 133.6225 BKJD

DV fit results are unavailable

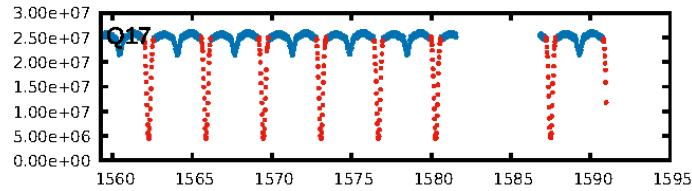
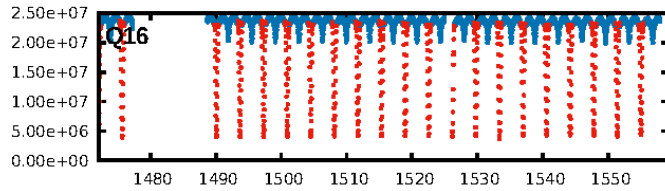
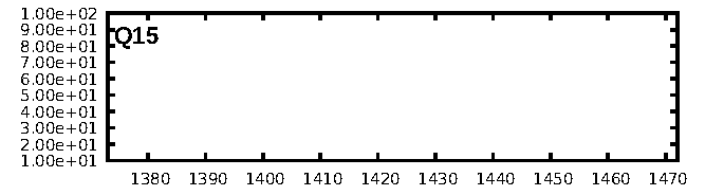
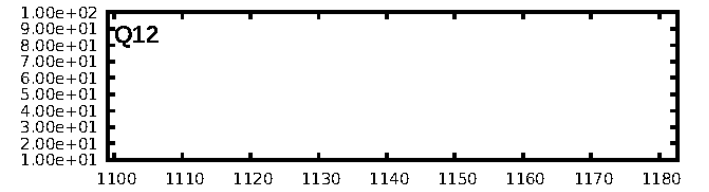
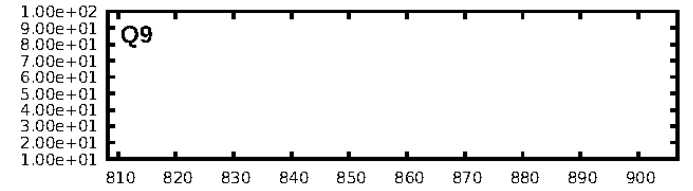
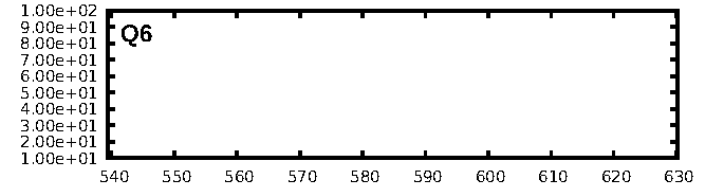
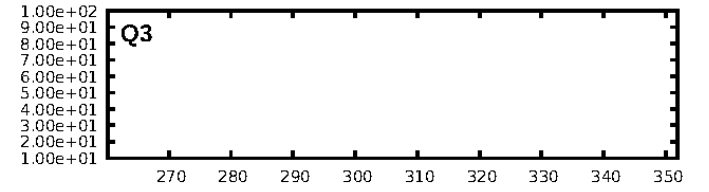
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [19/19]  
GhostDiagnostic-chr: 1.148  
Centroid-sig: N/A  
Centroid-so: 0.075 arcsec [51.70 $\sigma$ ]  
OotOffset-rm: 0.008 arcsec [0.12 $\sigma$ ]  
KicOffset-rm: 0.019 arcsec [0.25 $\sigma$ ]  
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]

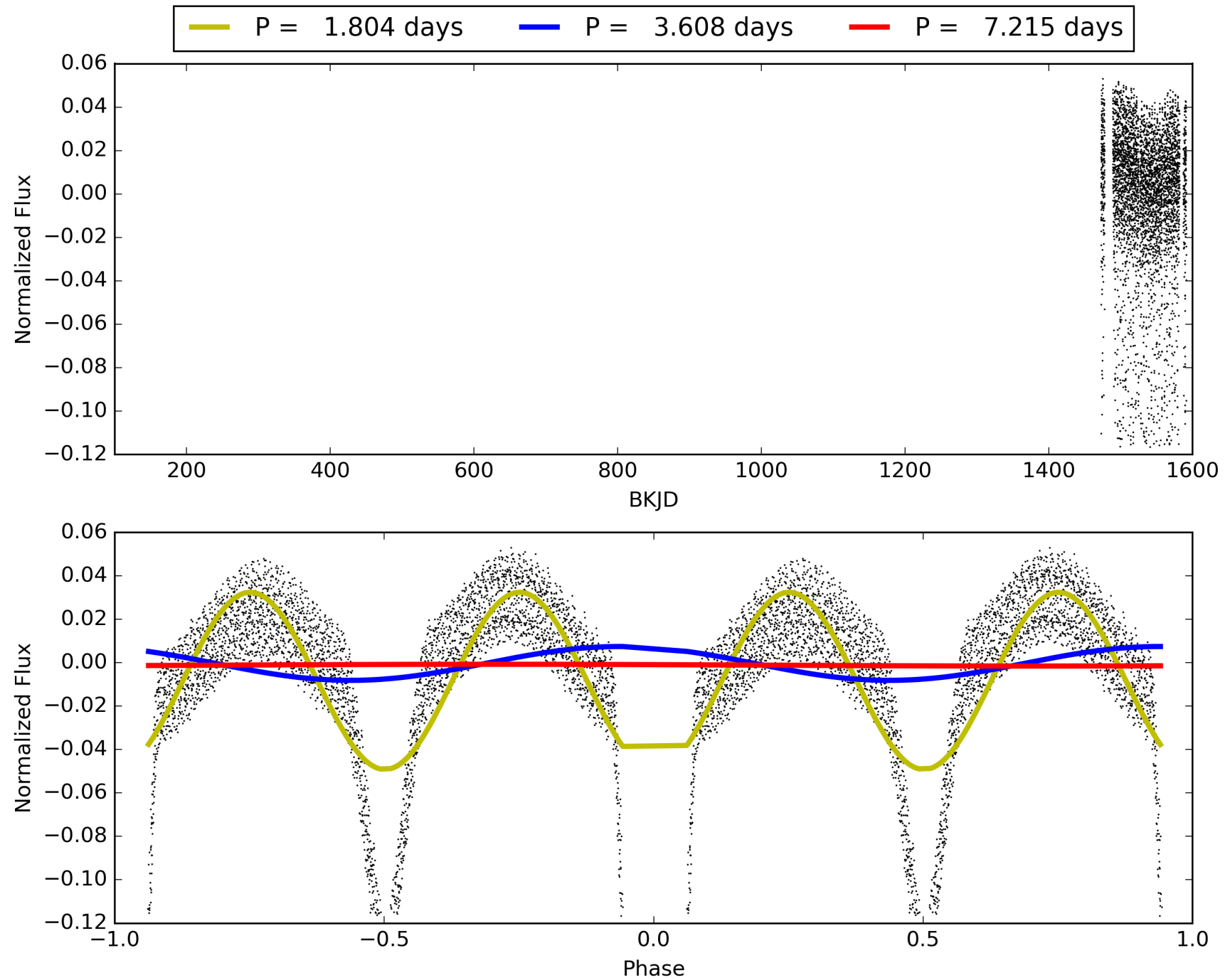
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:18:24 Z

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

# TCE 008153568-01, PDC Light Curves

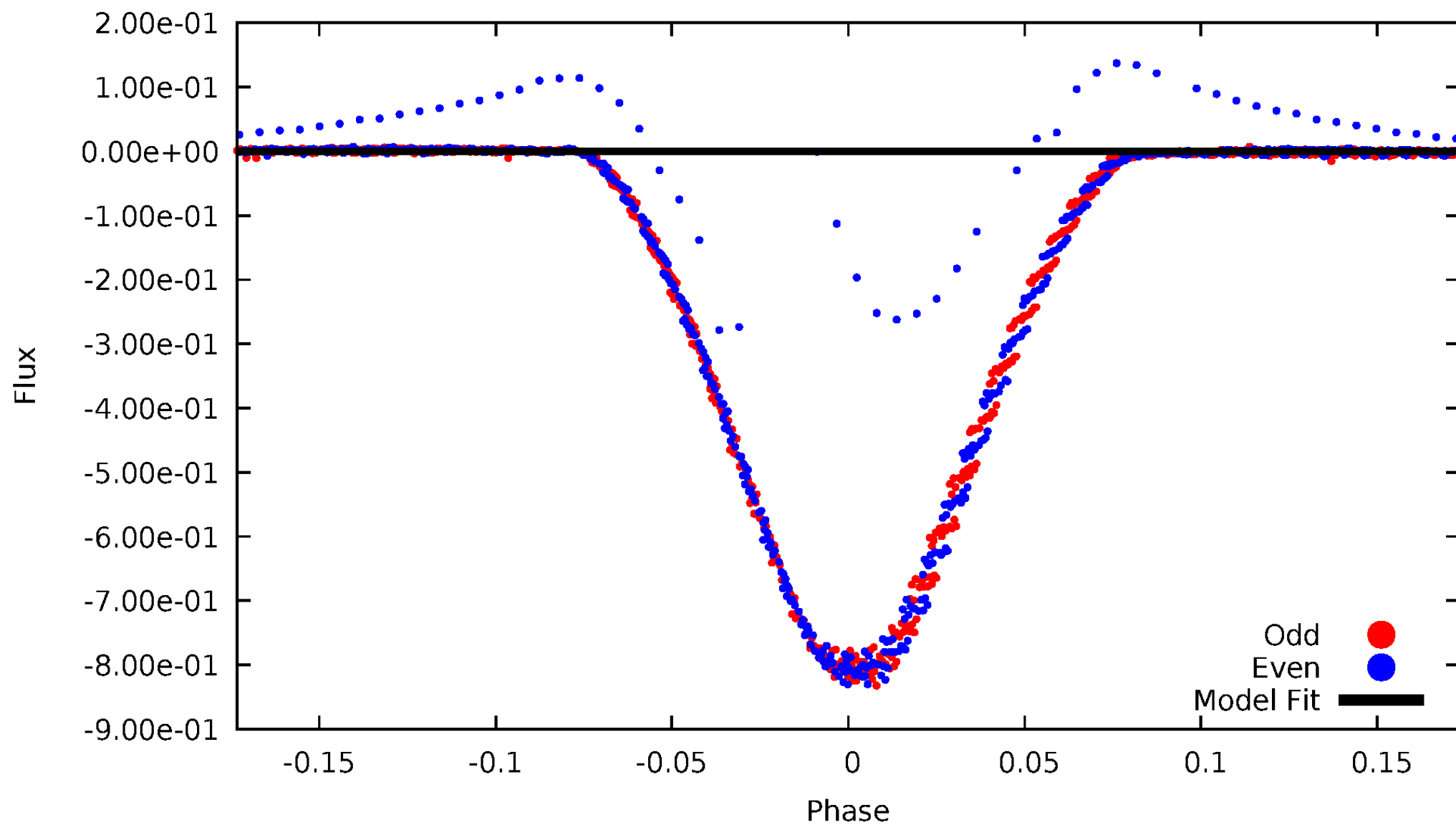


TCE 008153568-01



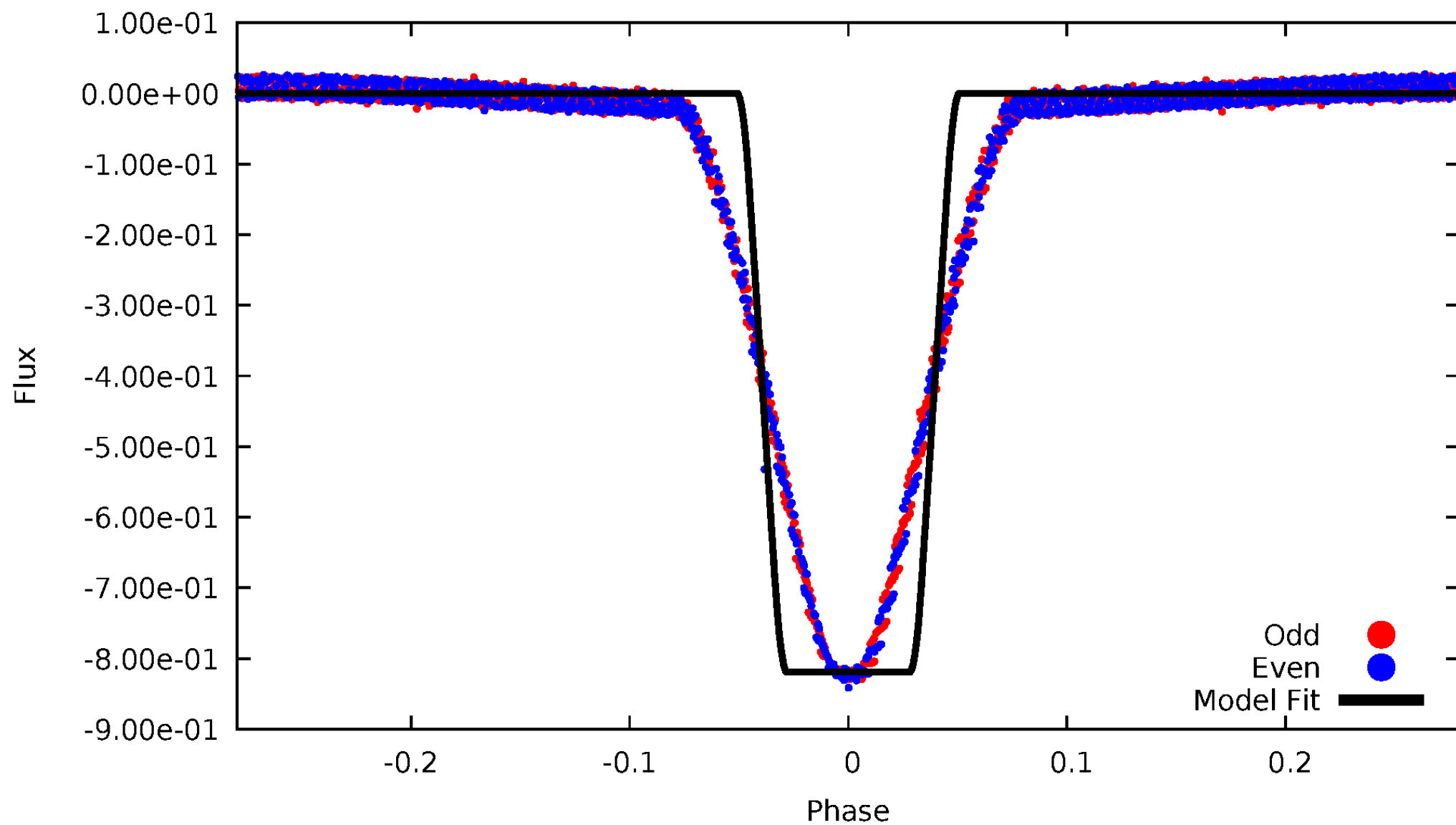
# DV Odd/Even

TCE 008153568-01



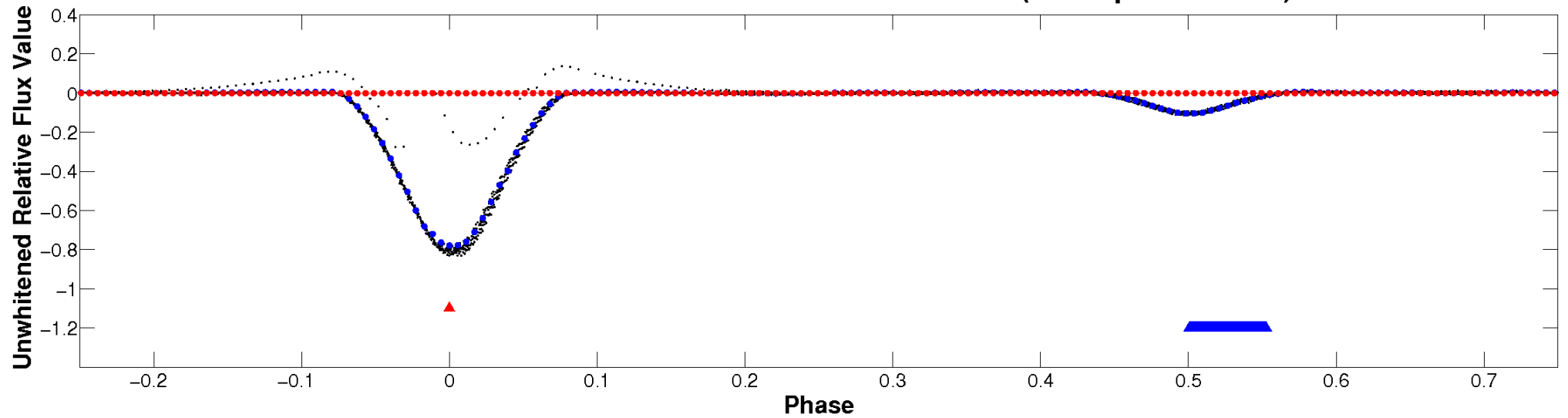
# ALT Odd/Even

TCE 008153568-01



# Non-Whitened Vs. Whitened Light Curve

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

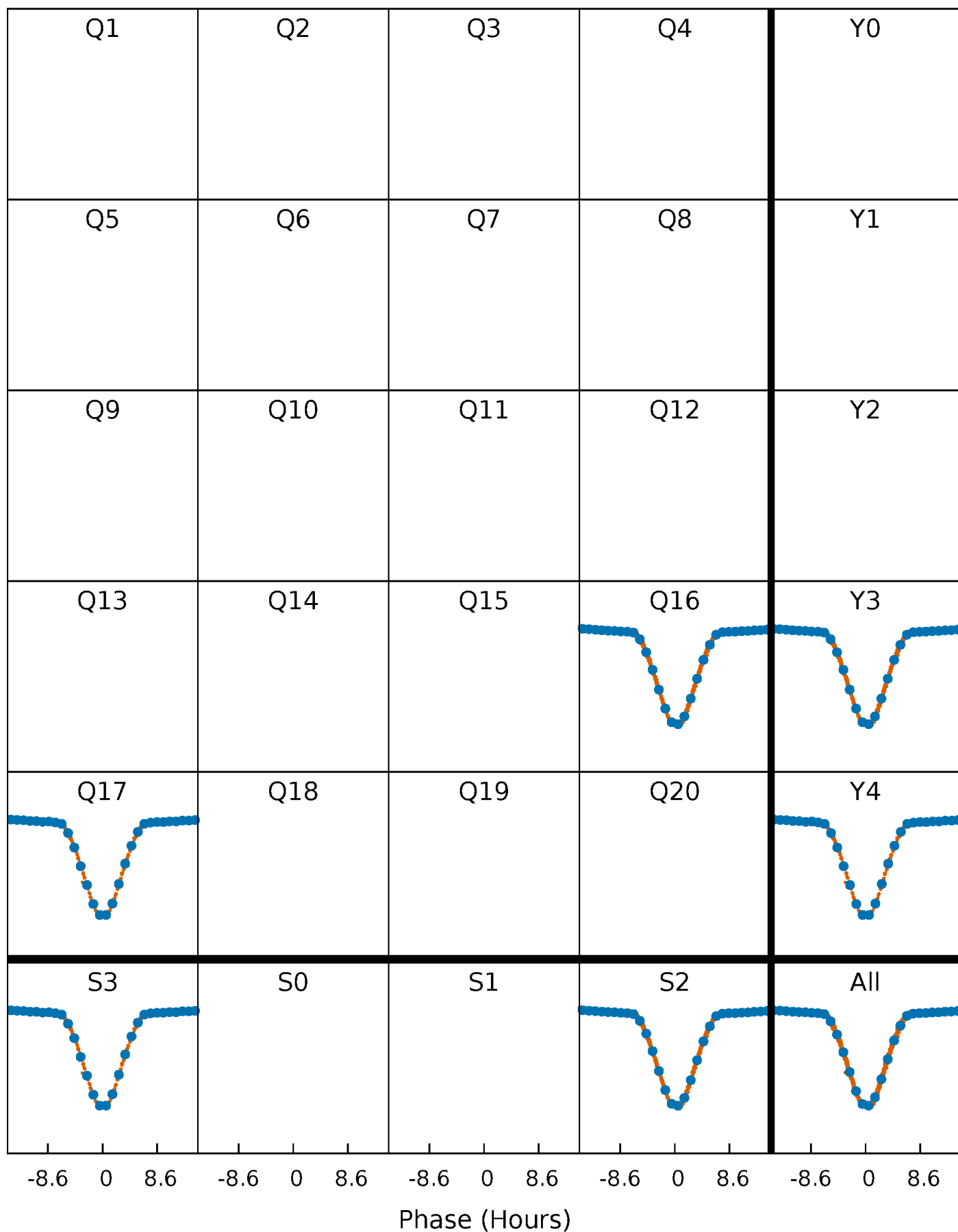


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

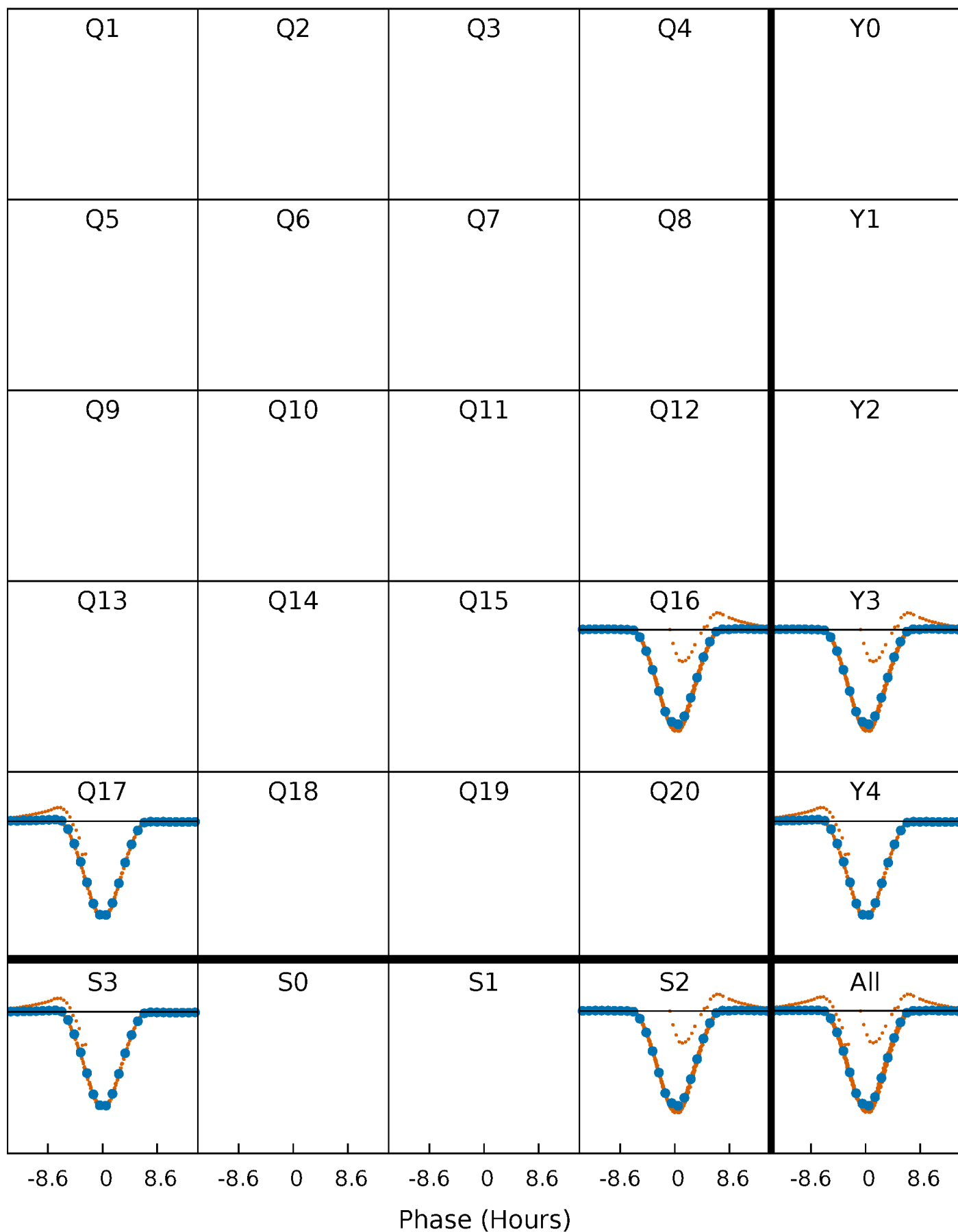
TCE 008153568-01 P= 3.607651 Days  $T_0=133.622462$  (BKJD)





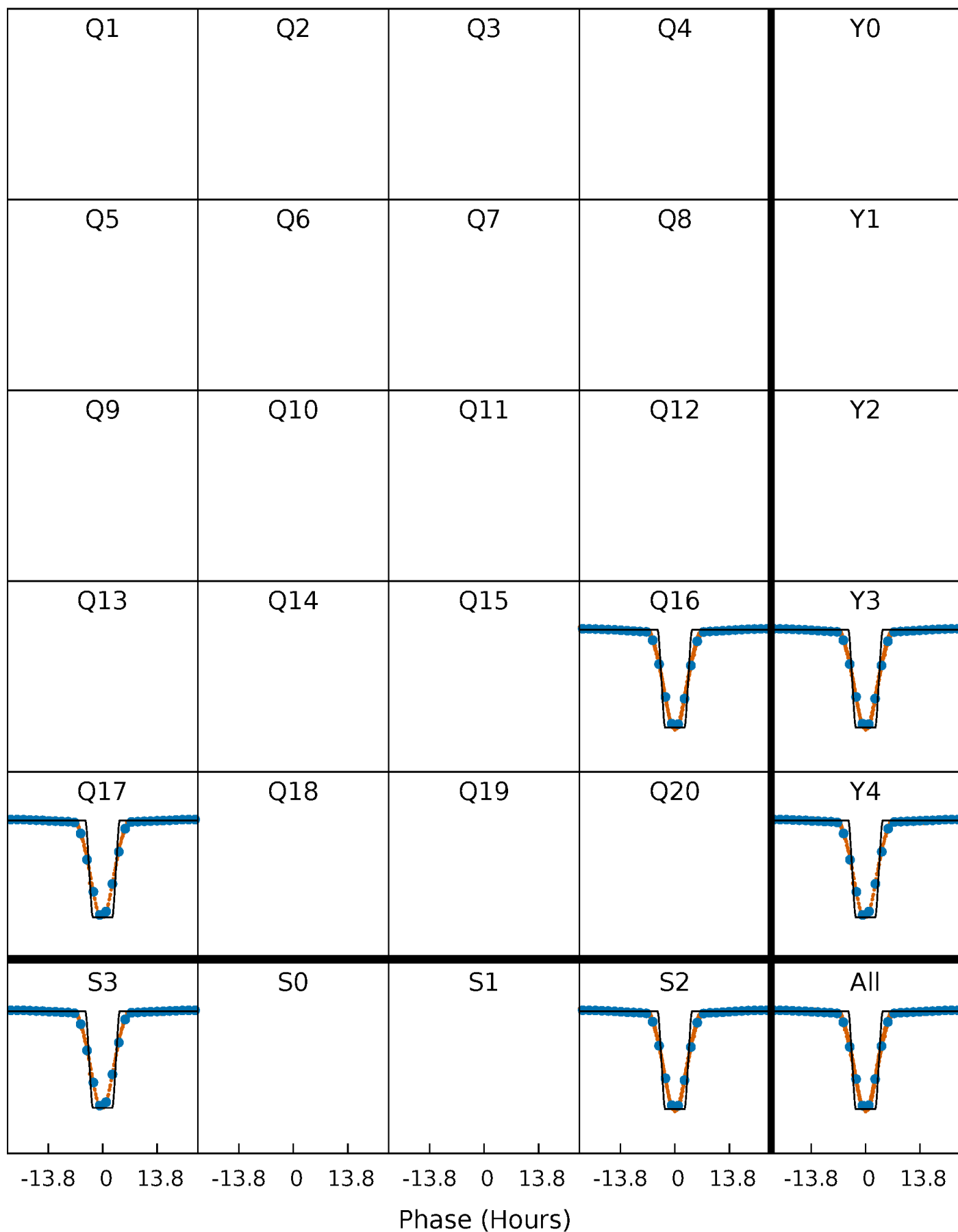
# DV Quarter-Phased Transit Curves

TCE 008153568-01 P= 3.607651 Days  $T_0=133.622462$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

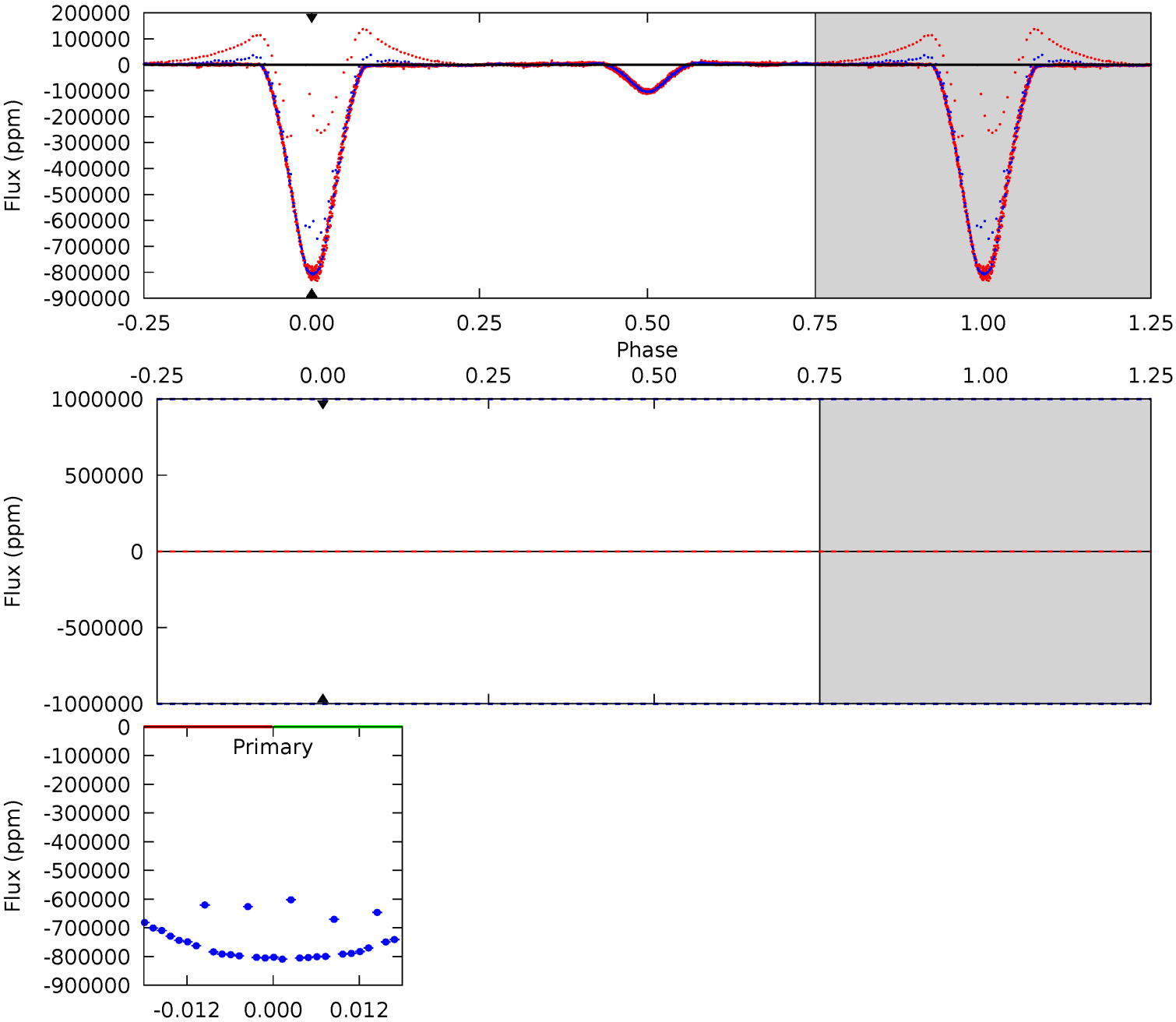
TCE 008153568-01 P= 3.607651 Days  $T_0=133.628753$  (BKJD)



# DV Model-Shift Uniqueness Test

008153568-01, P = 3.607651 Days, E = 133.622462 Days

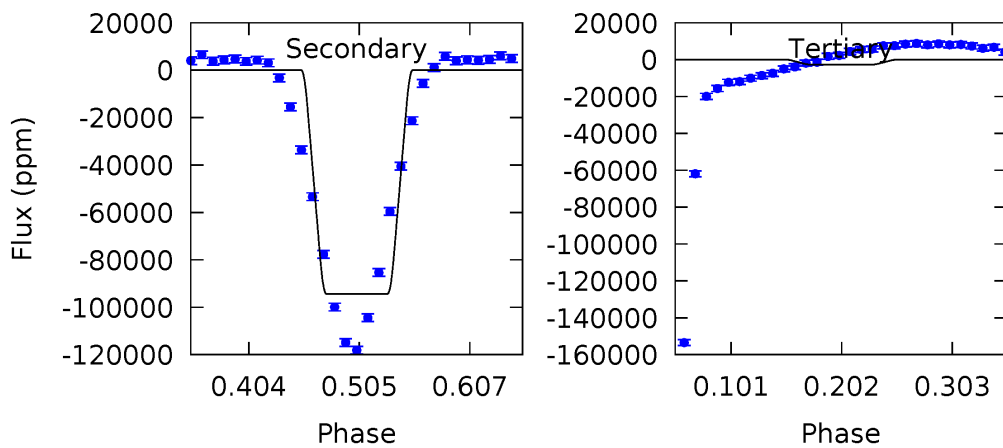
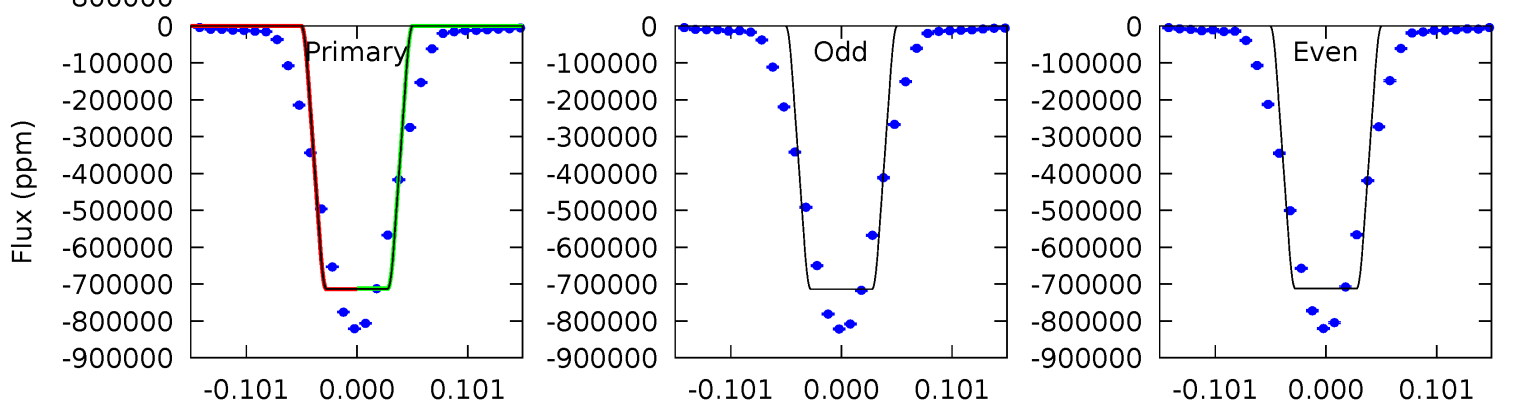
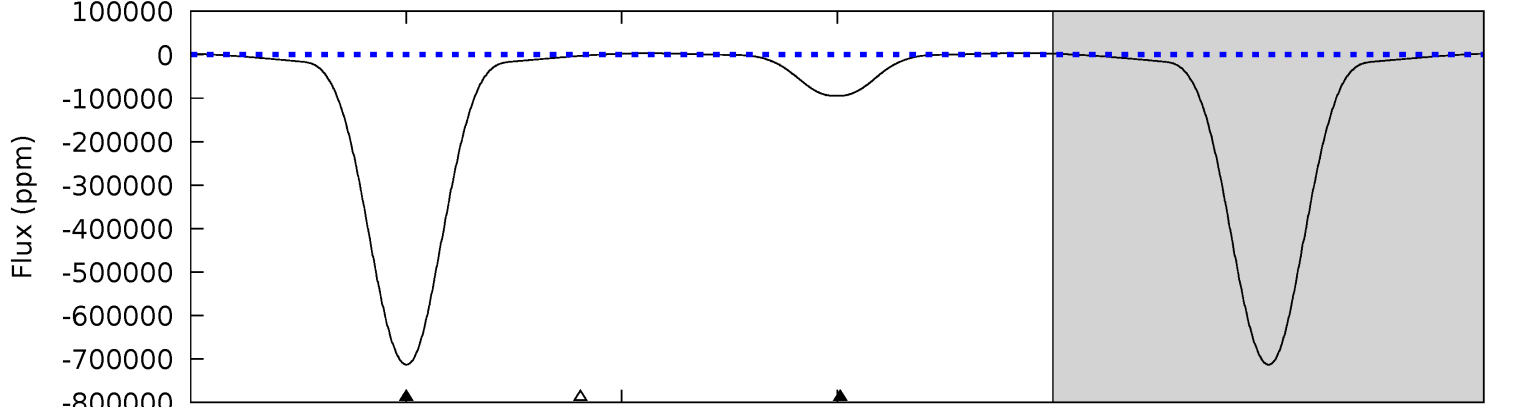
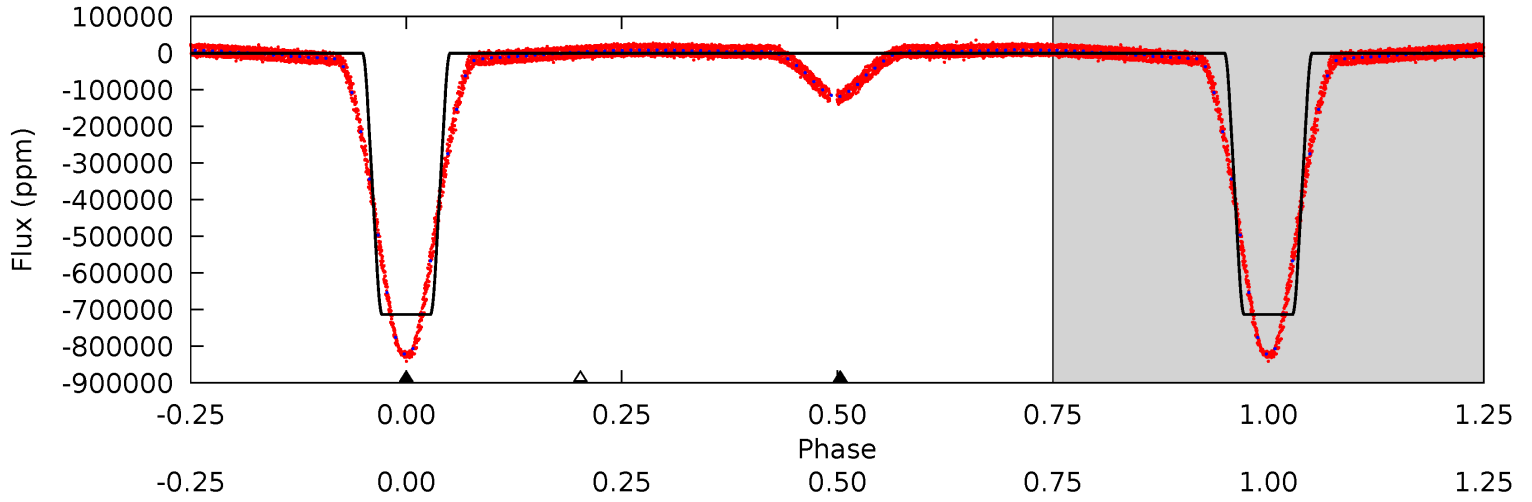
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008153568-01, P = 3.607651 Days, E = 133.628753 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
1166	154.3	4.39	0	4.56	1.64	11.6	1162	1166	150.0	154.3	1.41	1.00	0.00	1.37



### Stellar Parameters For KIC 008153568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7026^{+216}_{-312}$	$4.068^{+0.240}_{-0.160}$	$-0.360^{+0.300}_{-0.300}$	$1.785^{+0.478}_{-0.531}$	$1.360^{+0.190}_{-0.253}$	$0.337^{+0.483}_{-0.148}$
	+3%/-4%	+6%/-4%	+83%/-83%	+27%/-30%	+14%/-19%	+144%/-44%
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 008153568-01 / KOI 6051.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$35.77^{+21.36}_{-18.20}$	$2535^{+202}_{-212}$	$4023^{+6515}_{-14165}$	$3.674^{+143.956}_{-139.218}$
Alt.	$-94342 \pm 611$	$171.97^{+33.82}_{-32.04}$	$2517^{+213}_{-208}$	$4317^{+240}_{-215}$	$5.050^{+2.345}_{-1.504}$

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

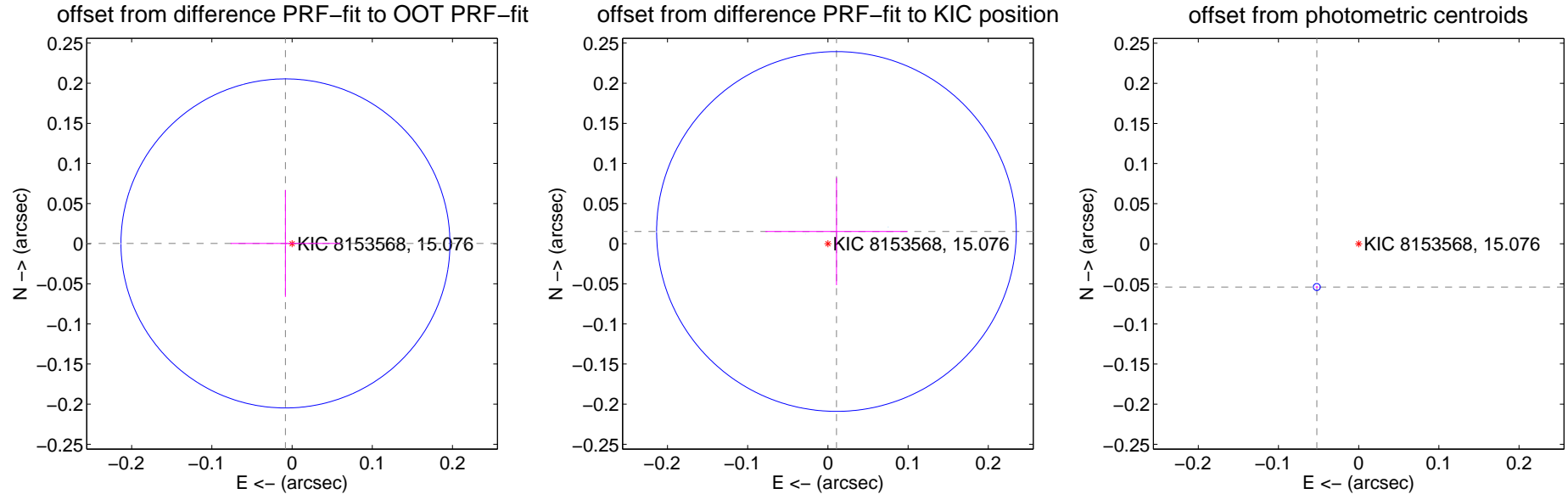
## DV Centroid Data

Supplemental centroid analysis for 008153568-01. Kepler magnitude: 15.08. 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	$0.008 \pm 0.068$	0.12	$0.008 \pm 0.068$	$0.000 \pm 0.067$
PRF-fit source offset from KIC position	$0.019 \pm 0.075$	0.25	$-0.011 \pm 0.089$	$0.015 \pm 0.067$
photometric centroid source offset	$0.08 \pm 0.00$	51.70	$0.05 \pm 0.00$	$-0.05 \pm 0.00$



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.

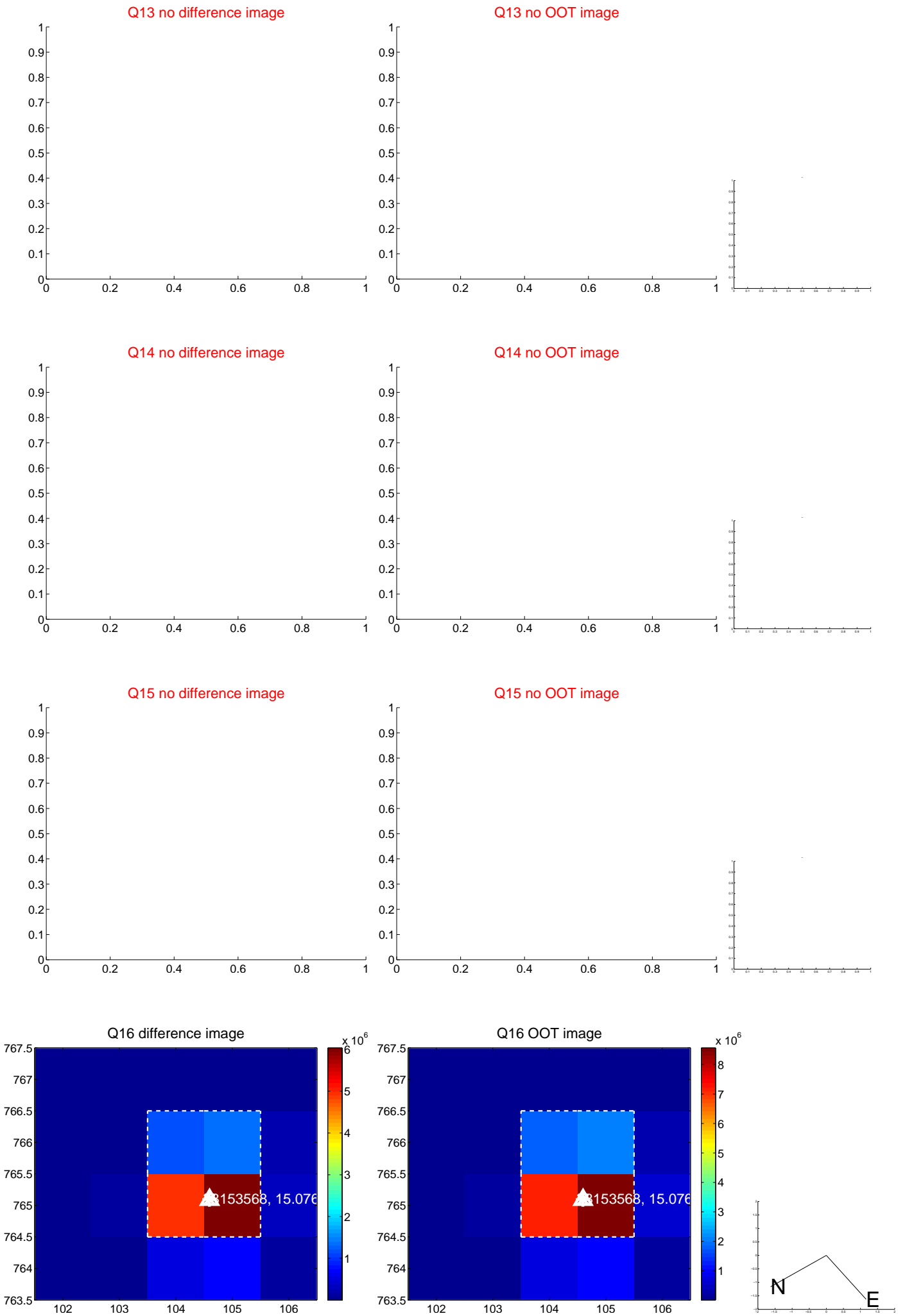




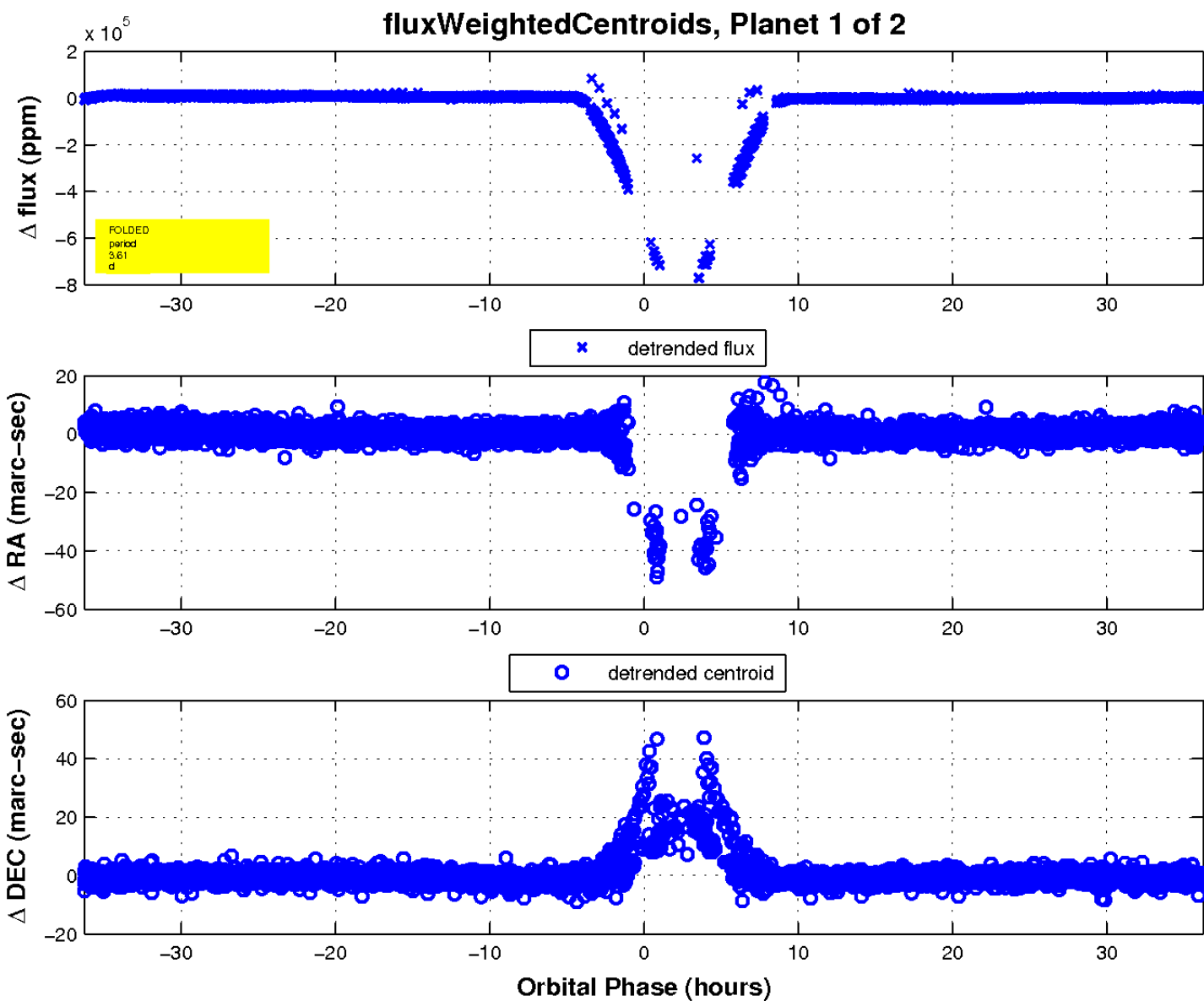
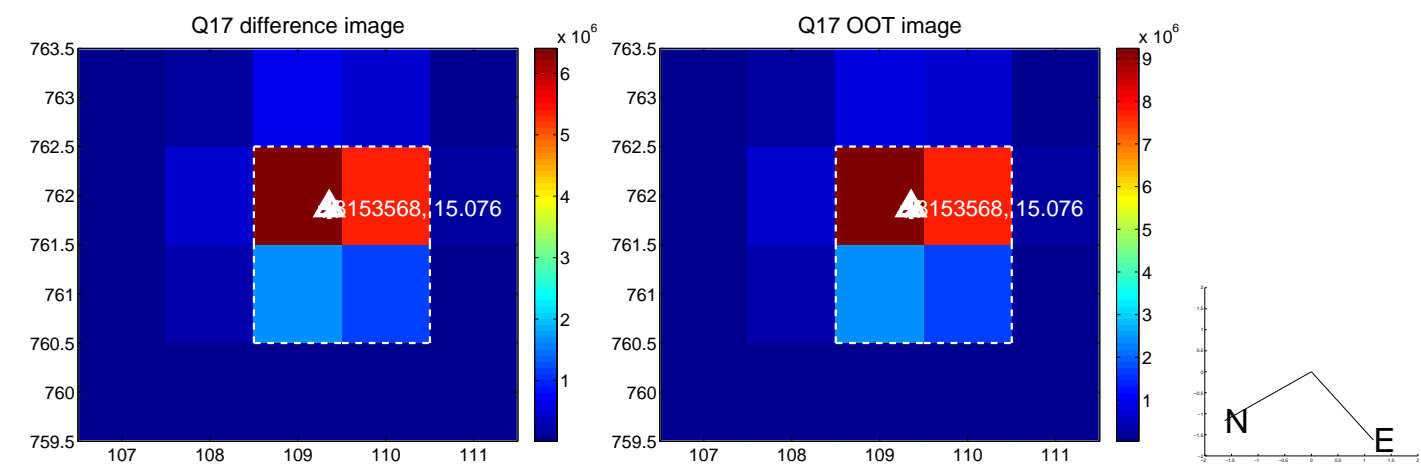
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

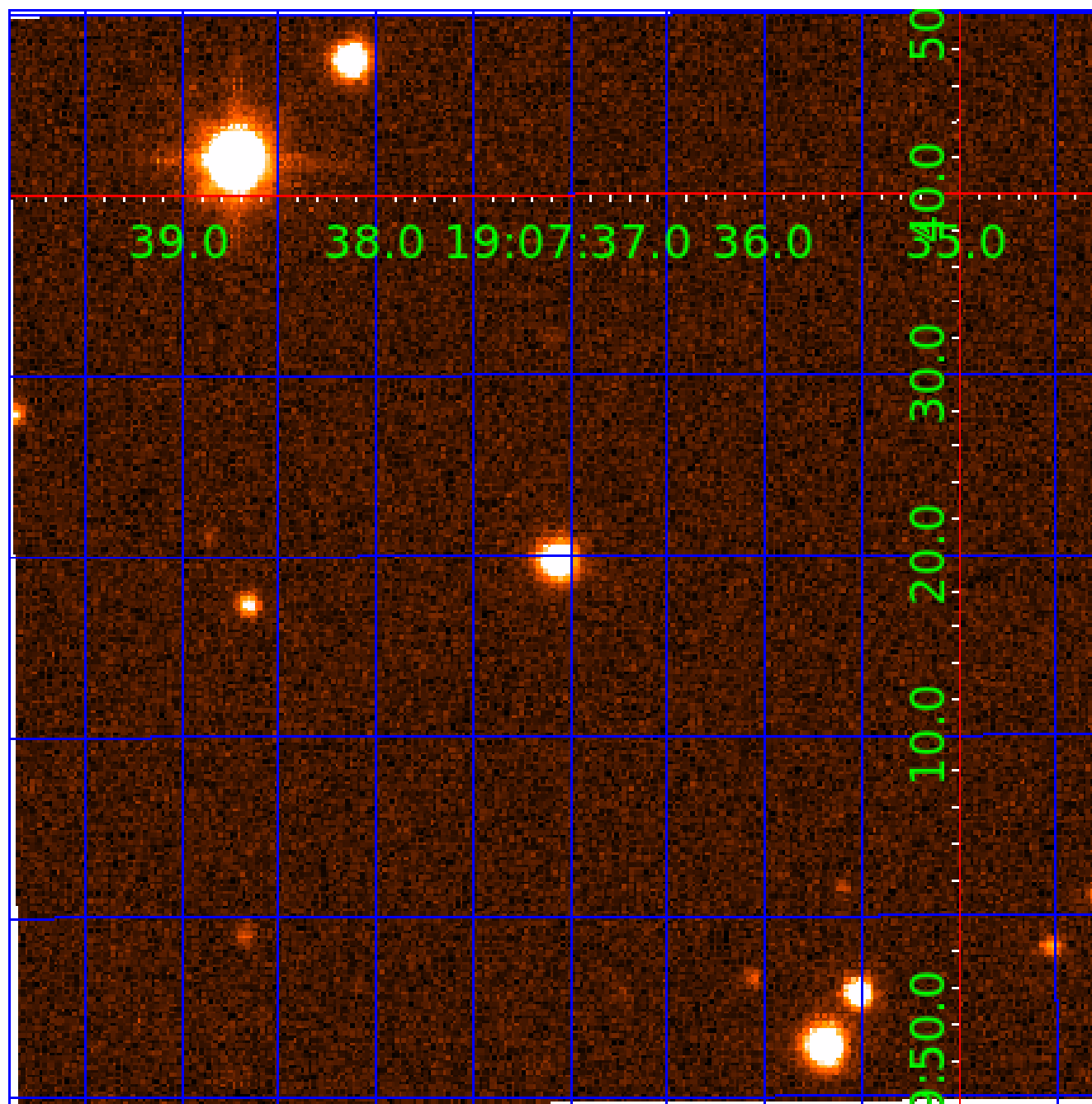


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008153568

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008153568-01	OBS	6051.01	3.607651	133.622462	813213.6	7.500	1259.6	-1.0	1.78	7026	36.68	2674.15
008153568-02	OBS	No	3.607188	132.008210	5424.0	7.500	240.3	-1.0	1.78	7026	13.30	2674.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008153568-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
008153568-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

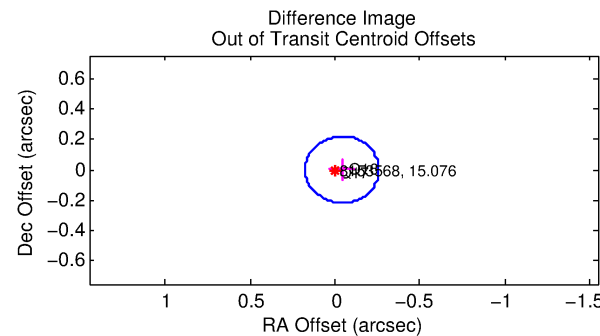
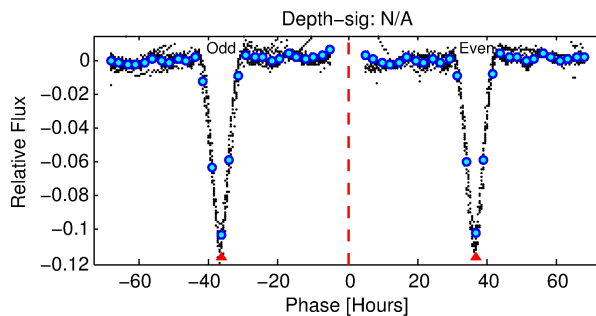
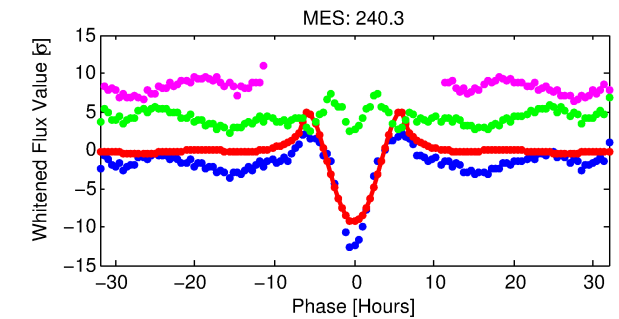
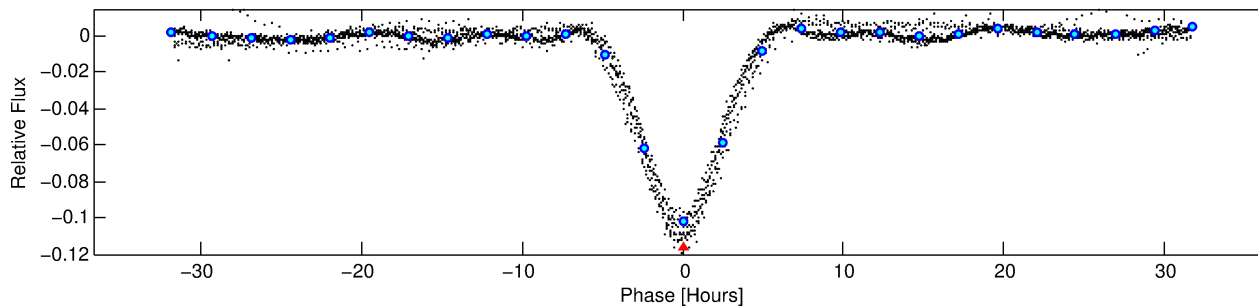
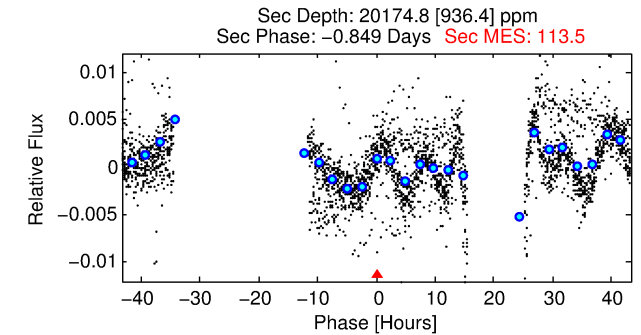
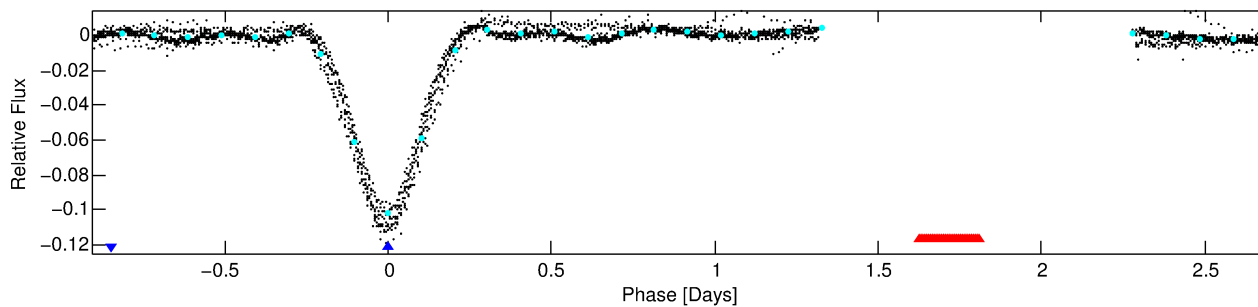
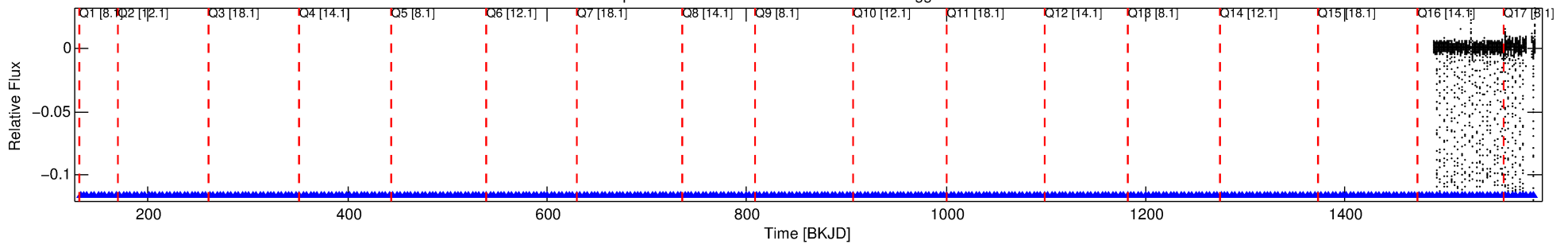
## Ephemeris Match Information For 008153568-02

No Significant Match Found

# DV One-Page Summary

KIC: 8153568 Candidate: 2 of 2 Period: 3.607 d  
KOI: K06051 Corr: No Ephemeris Match

Kp: 15.08 R\*: 1.78 Rs Teff: 7026.0 K Logg: 4.07 Fe/H: -0.360



TPS TCE Results:

Period = 3.60719 d  
Epoch = 132.0082 BKJD

DV fit results are unavailable

DV Diagnostic Results:

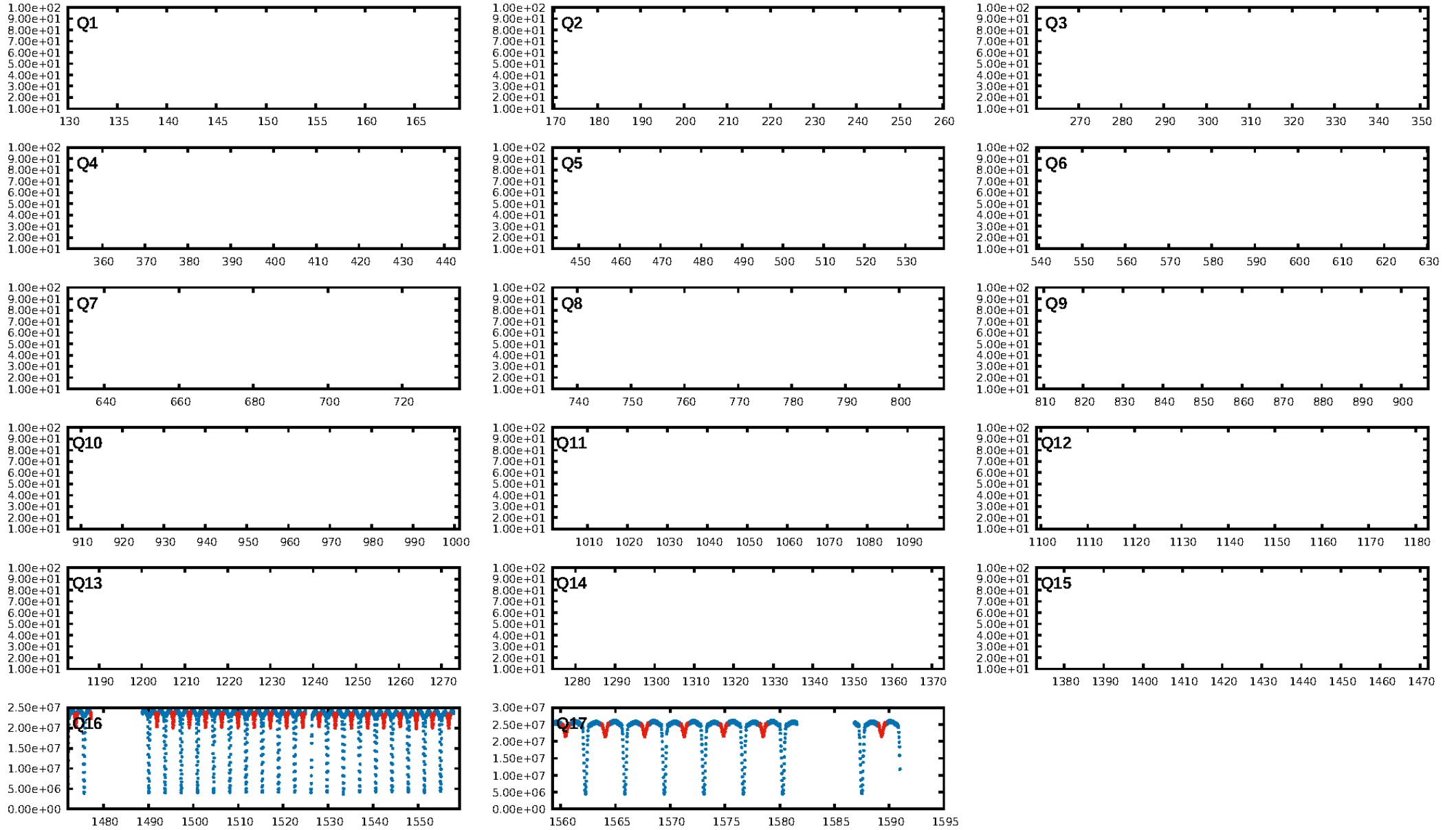
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [19/19]  
GhostDiagnostic-chr: 0.8986

Centroid-sig: N/A  
Centroid-so: 0.030 arcsec [11.00σ]  
OotOffset-rm: 0.041 arcsec [0.56σ]  
KicOffset-rm: 0.061 arcsec [0.90σ]  
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]

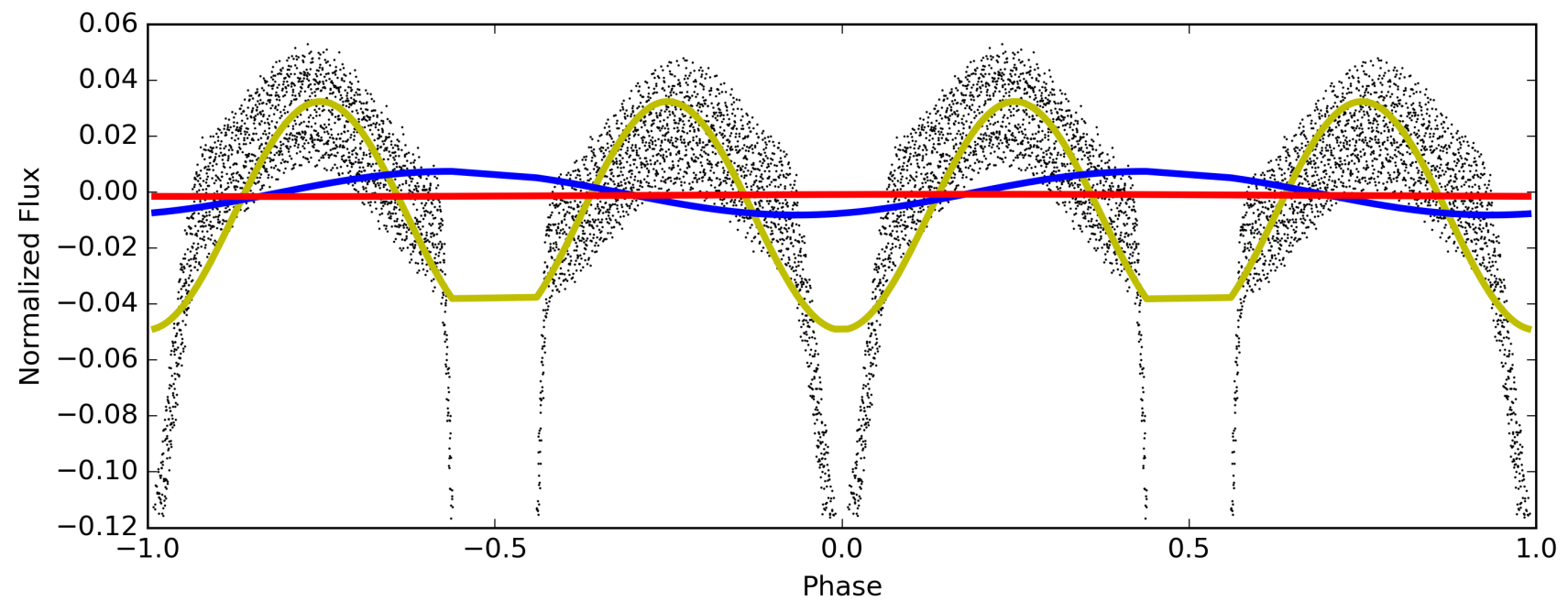
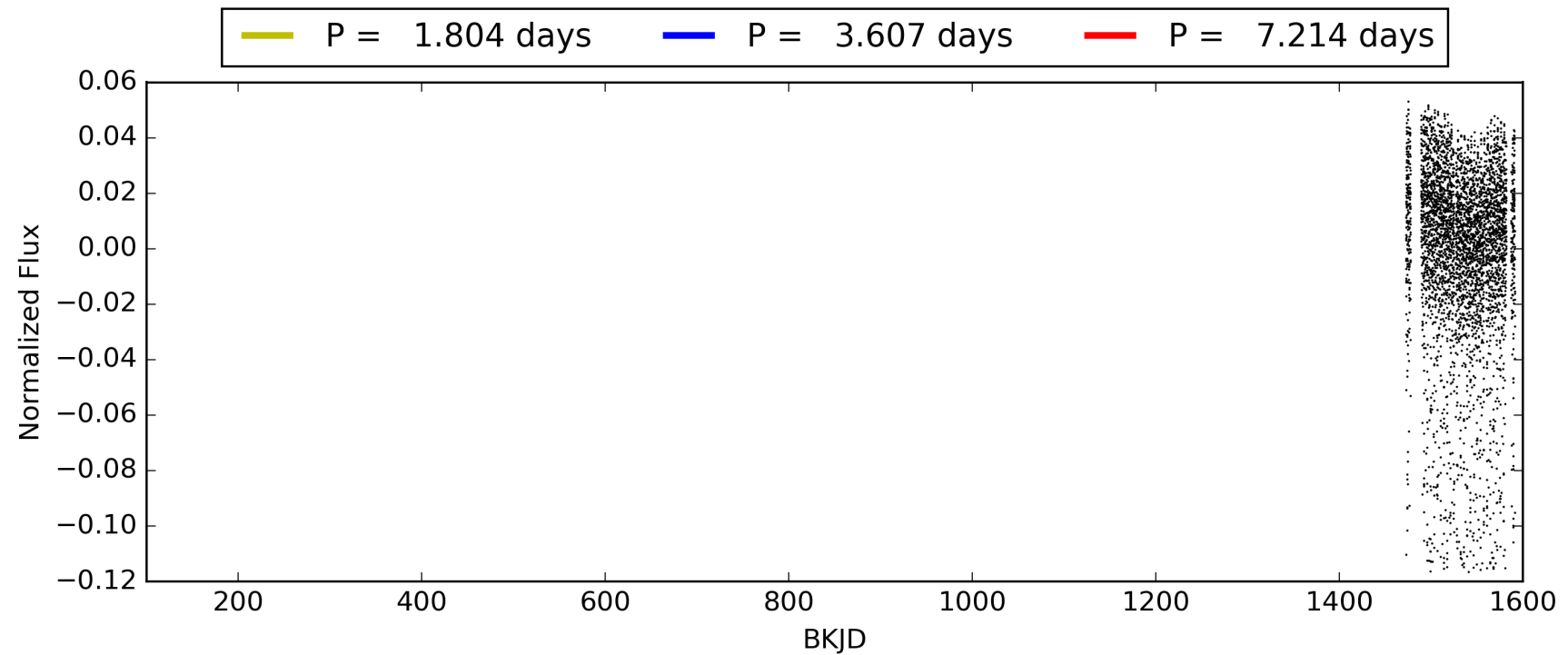
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 07:18:29 Z

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

# TCE 008153568-02, PDC Light Curves



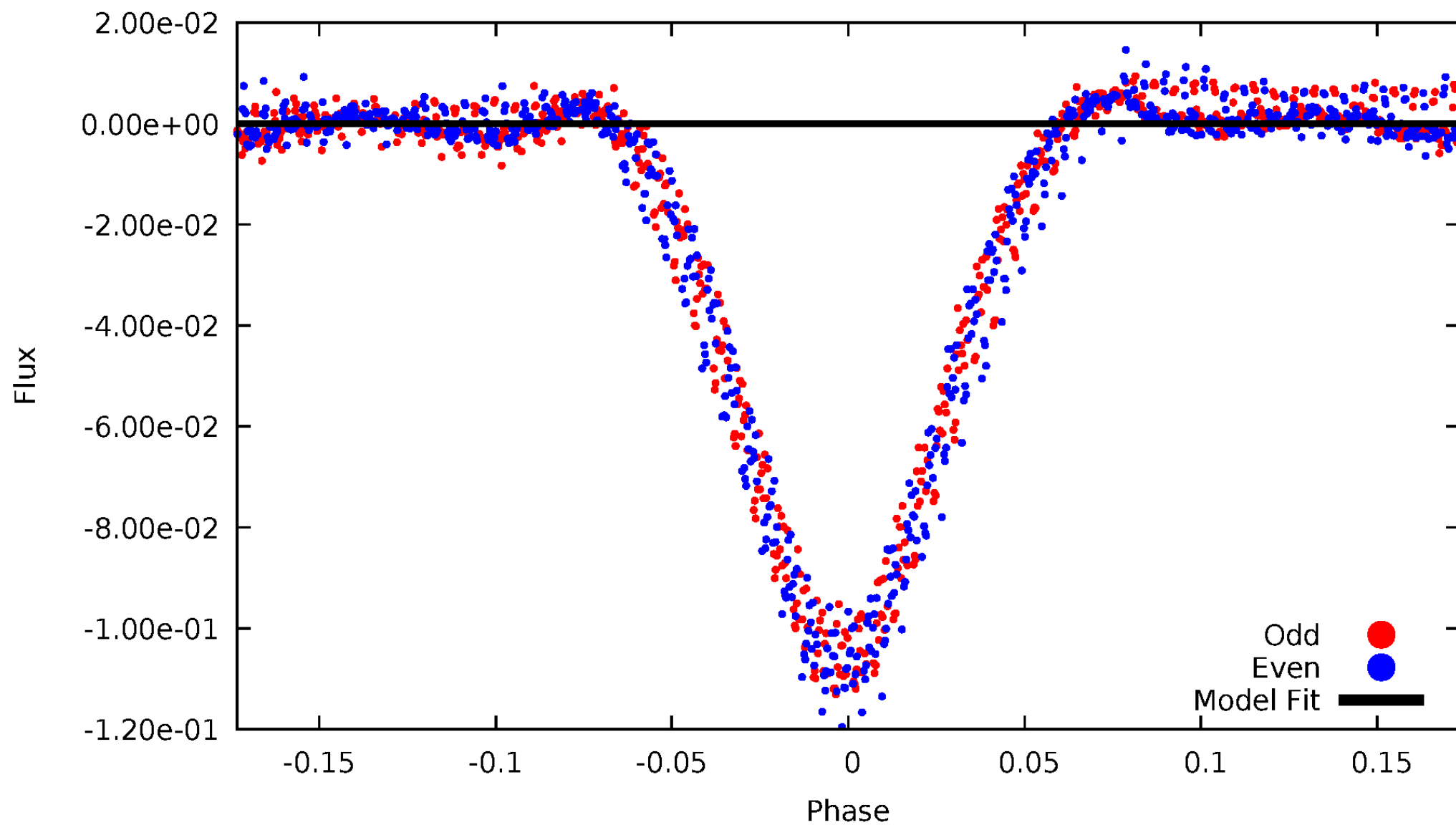
TCE 008153568-02





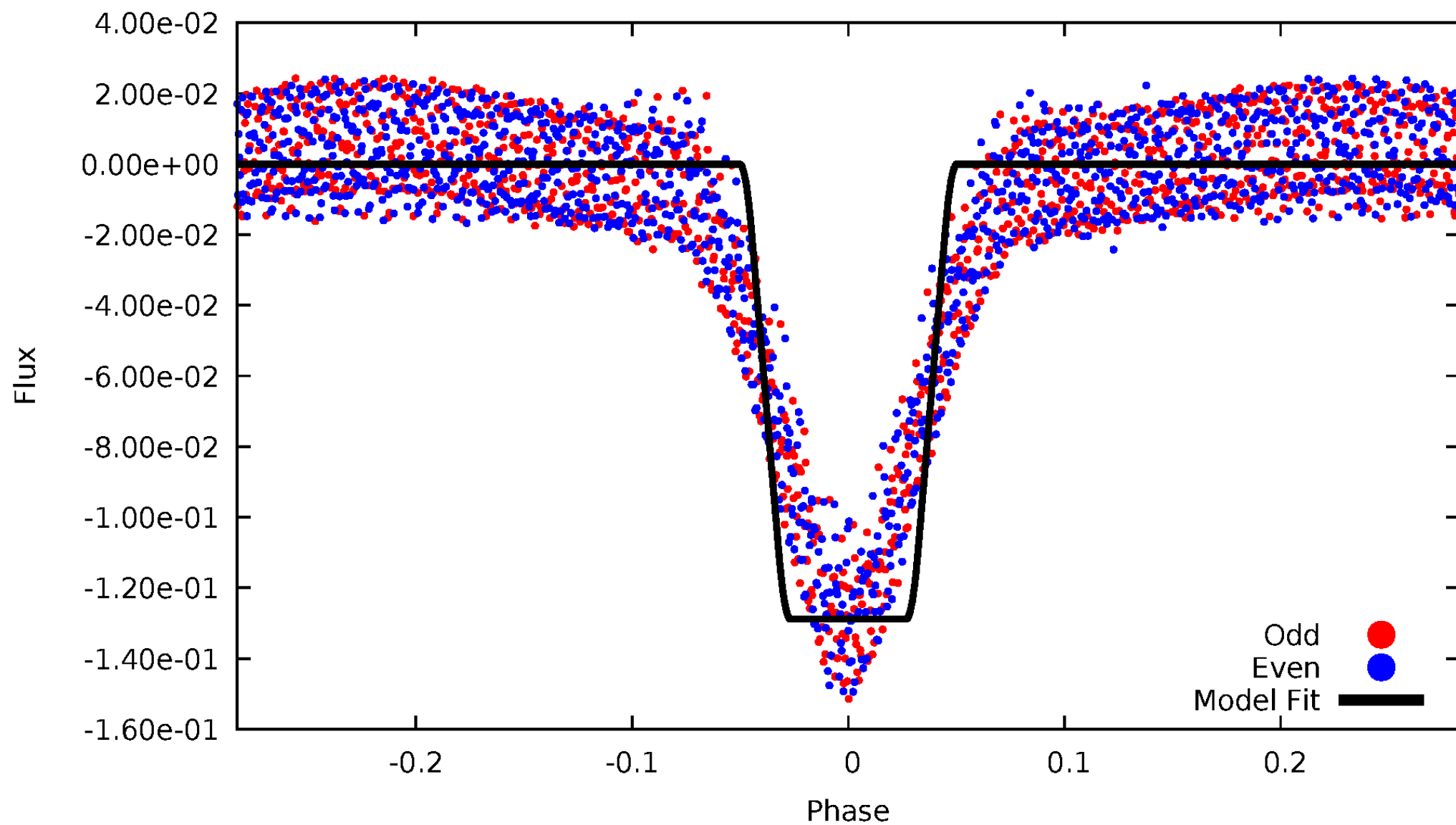
# DV Odd/Even

TCE 008153568-02



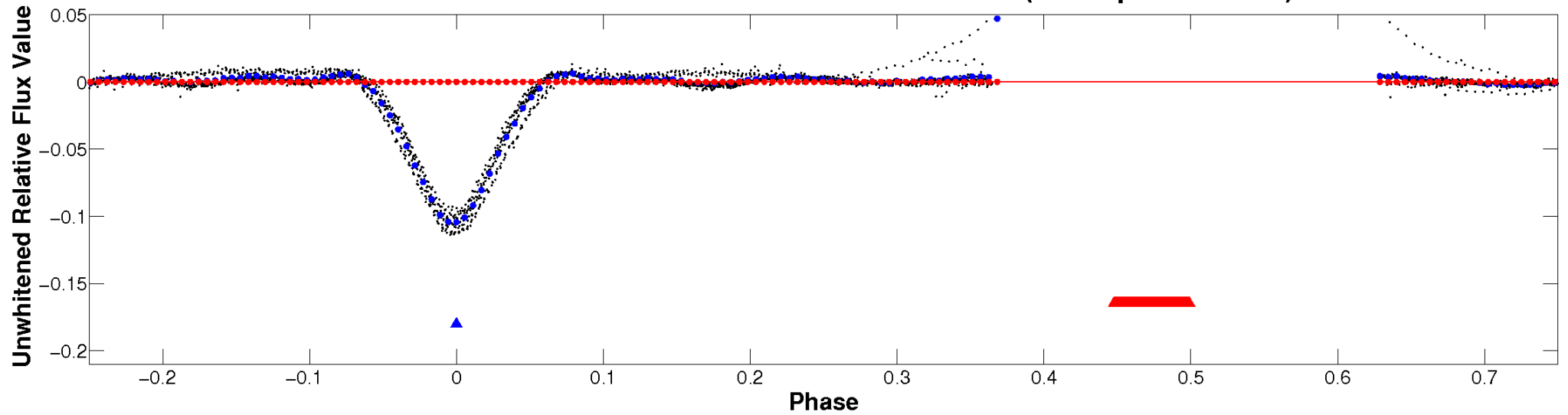
# ALT Odd/Even

TCE 008153568-02



# Non-Whitened Vs. Whitened Light Curve

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

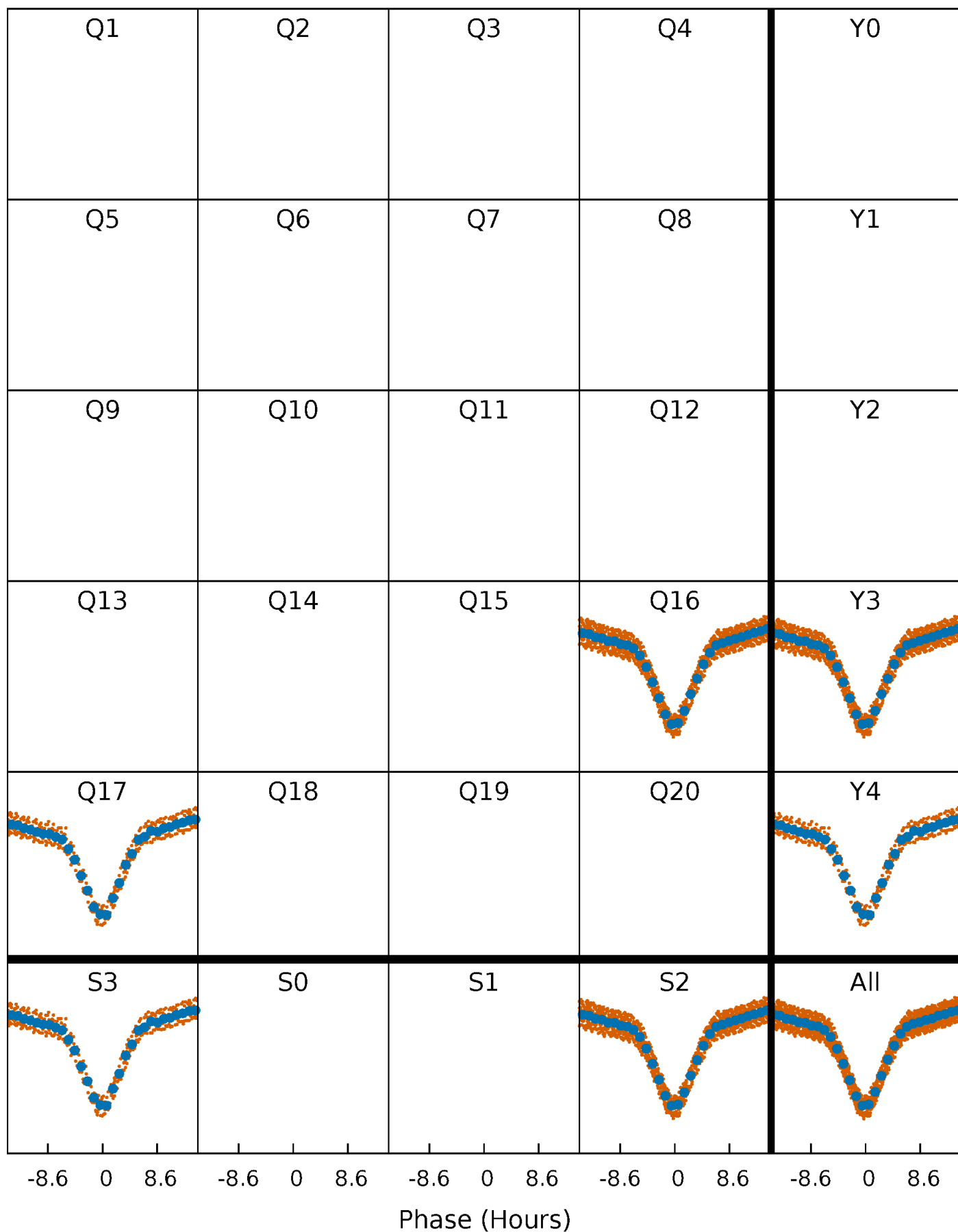


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



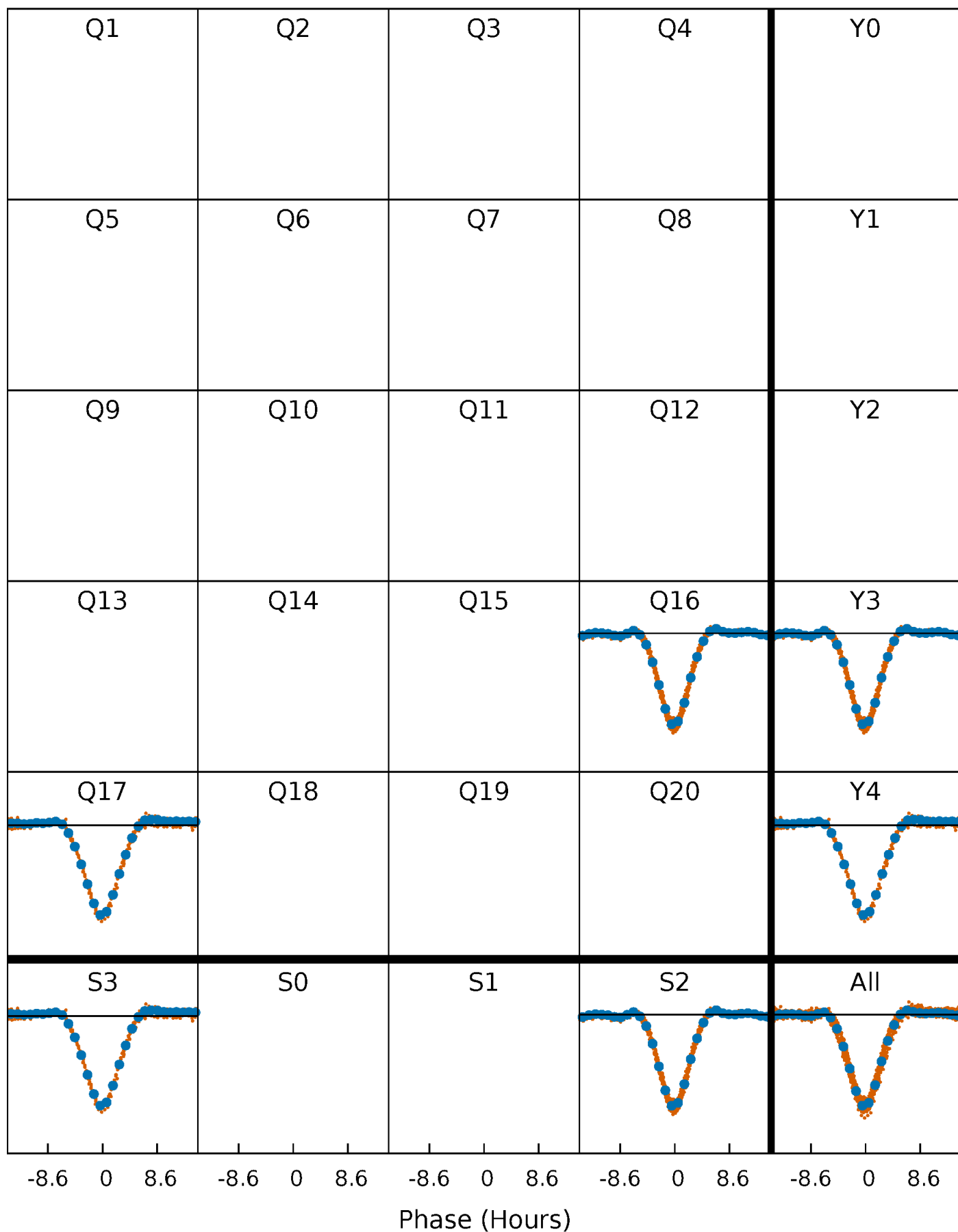
# PDC Quarter-Phased Transit Curves

TCE 008153568-02   P= 3.607188 Days    $T_0=132.008210$  (BKJD)



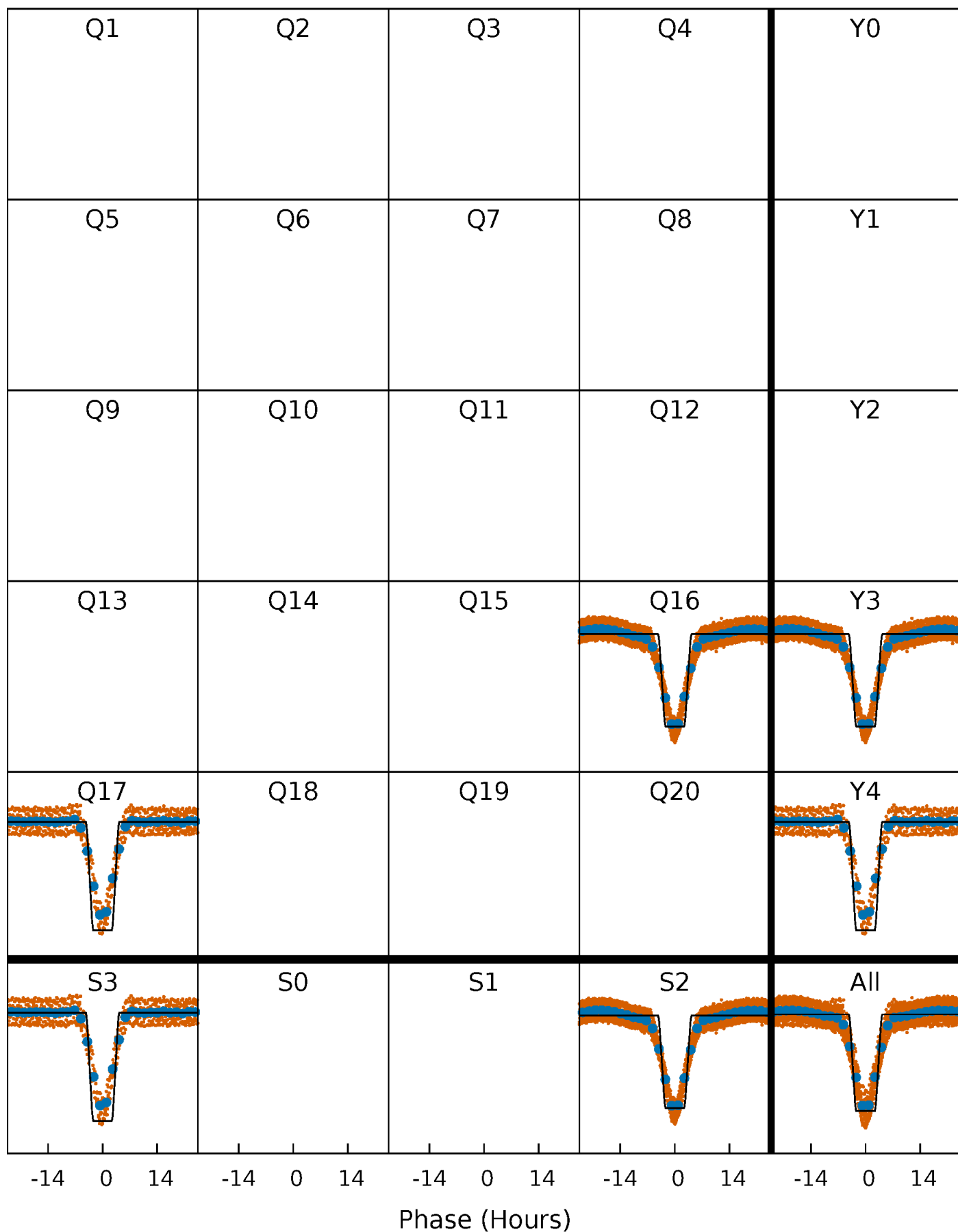
# DV Quarter-Phased Transit Curves

TCE 008153568-02 P= 3.607188 Days  $T_0=132.008210$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

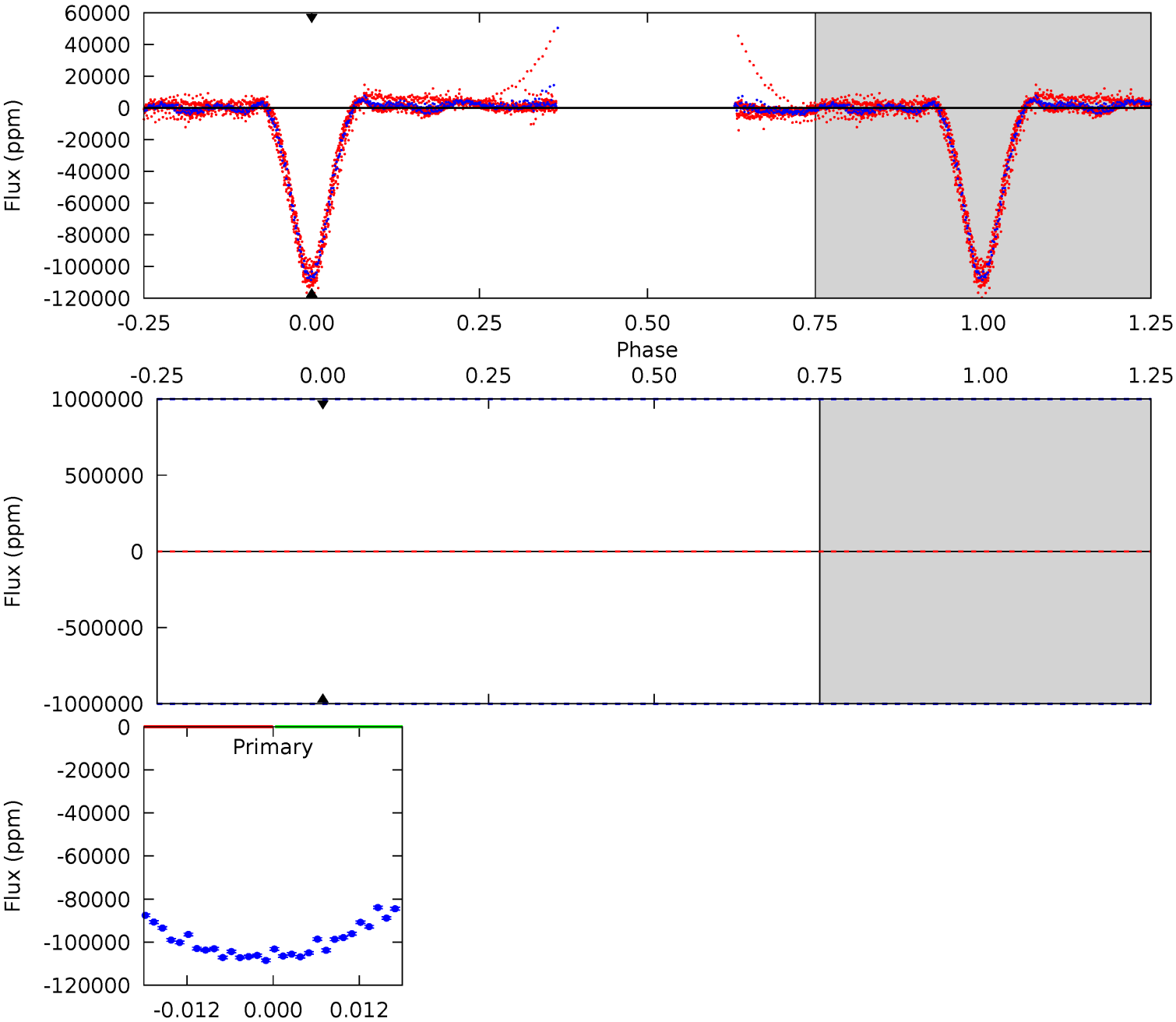
TCE 008153568-02   P= 3.607188 Days    $T_0=132.004989$  (BKJD)



DV Model-Shift Uniqueness Test

008153568-02, P = 3.607188 Days, E = 132.008210 Days

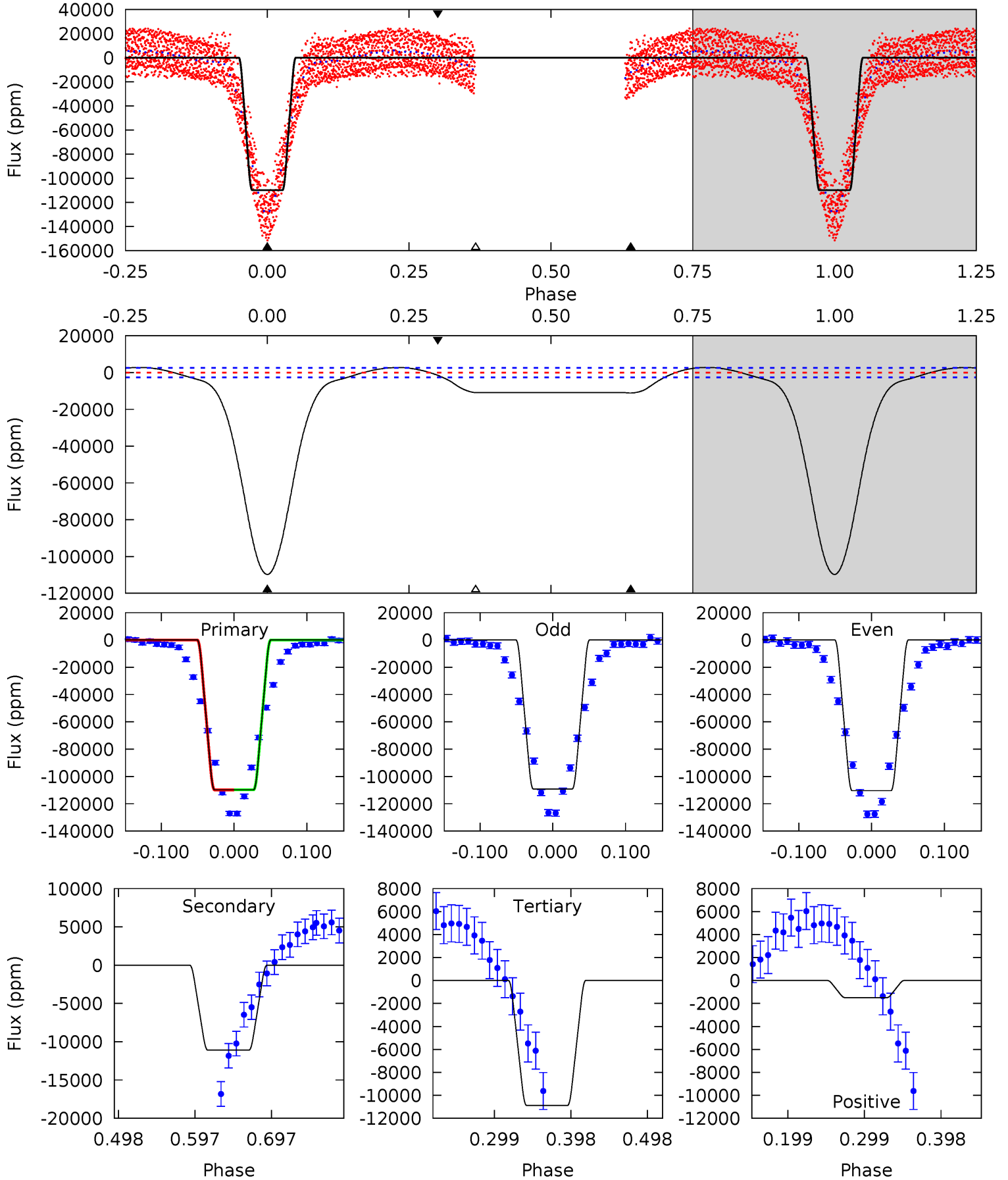
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008153568-02, P = 3.607188 Days, E = 132.004989 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
195.2	19.8	19.3	-2.67	4.57	1.65	6.48	175.9	197.9	0.40	22.4	1.09	0.97	0.02	0.08





### Stellar Parameters For KIC 008153568

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7026^{+216}_{-312}$	$4.068^{+0.240}_{-0.160}$	$-0.360^{+0.300}_{-0.300}$	$1.785^{+0.478}_{-0.531}$	$1.360^{+0.190}_{-0.253}$	$0.337^{+0.483}_{-0.148}$
	+3%/-4%	+6%/-4%	+83%/-83%	+27%/-30%	+14%/-19%	+144%/-44%
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 008153568-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$19.23^{+16.62}_{-12.72}$	$2537^{+186}_{-223}$	$5897^{+16858}_{-25273}$	$19^{+665}_{-524}$
Alt.	$-11106 \pm 562$	$68.36^{+24.33}_{-20.86}$	$2538^{+203}_{-201}$	$4012^{+530}_{-388}$	$3.429^{+3.861}_{-1.578}$

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

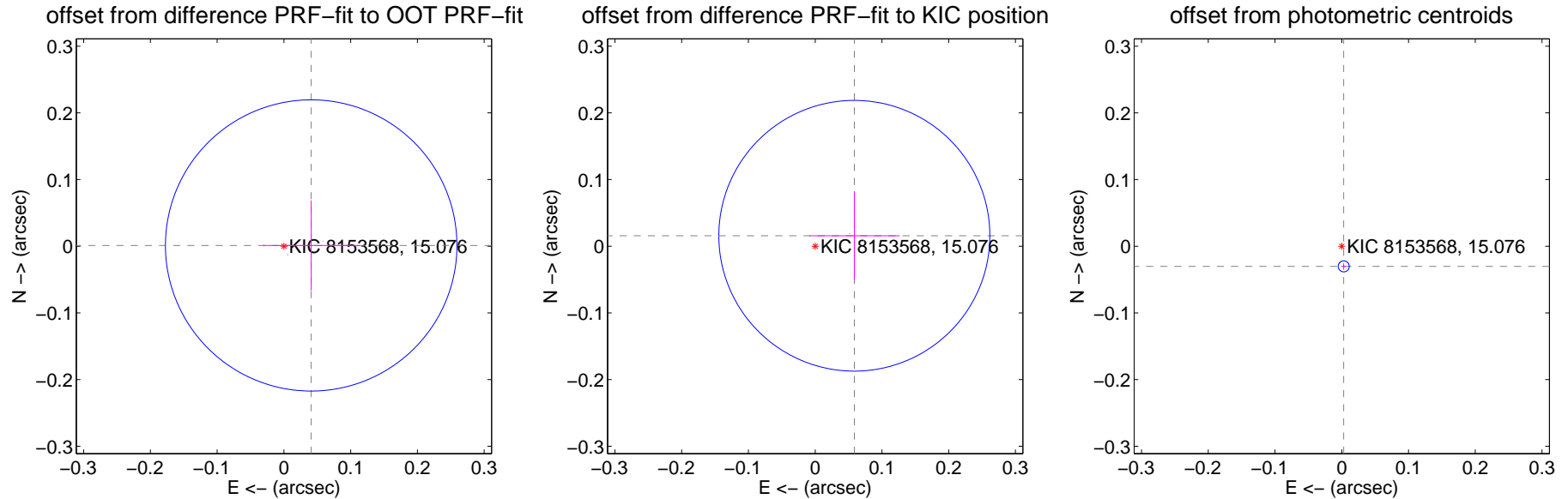
## DV Centroid Data

Supplemental centroid analysis for 008153568-02. Kepler magnitude: 15.08. 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	$0.041 \pm 0.073$	0.56	$-0.041 \pm 0.073$	$0.001 \pm 0.068$
PRF-fit source offset from KIC position	$0.061 \pm 0.068$	0.90	$-0.059 \pm 0.068$	$0.016 \pm 0.067$
photometric centroid source offset	$0.03 \pm 0.00$	11.00	$-0.00 \pm 0.00$	$-0.03 \pm 0.00$



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.



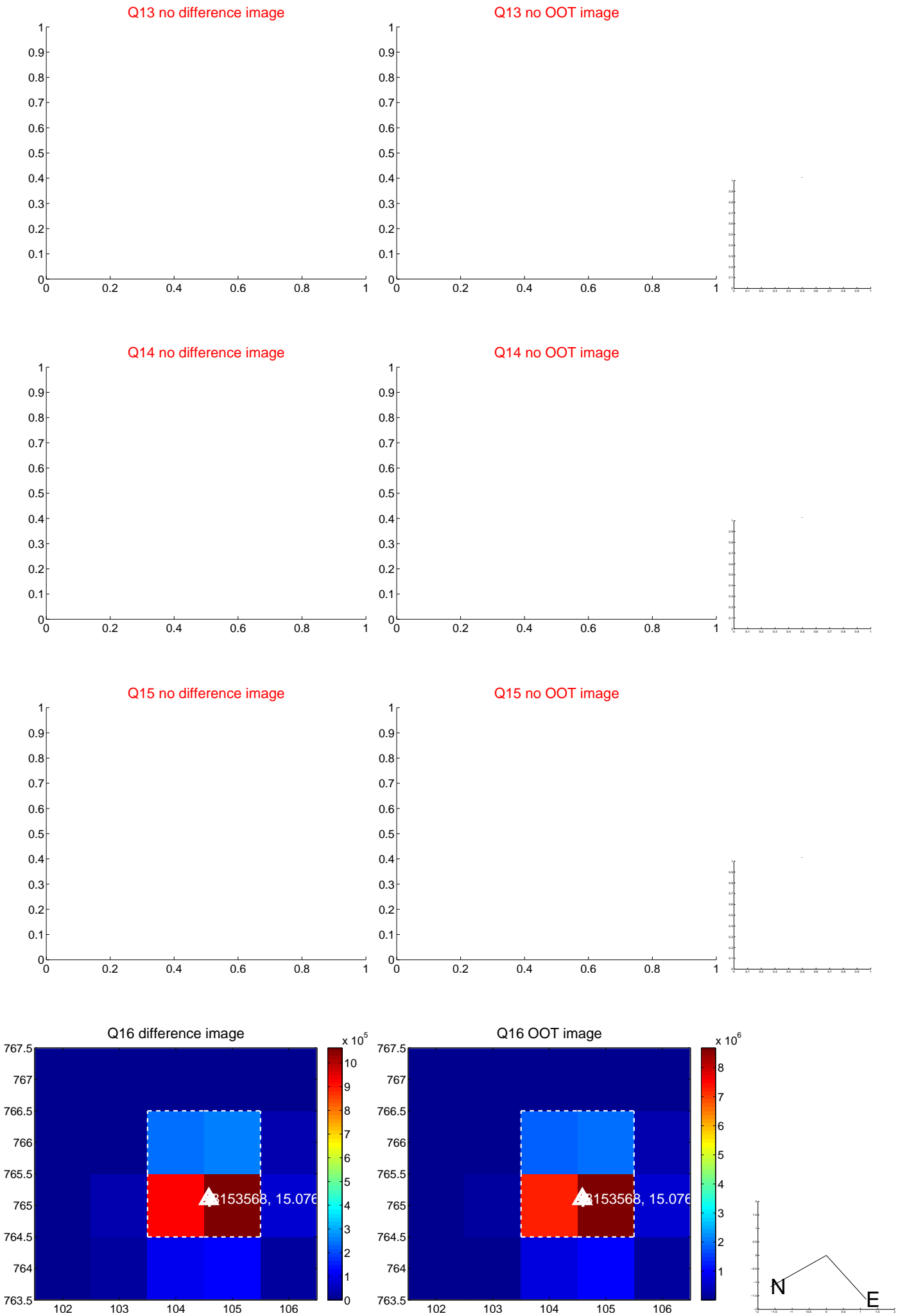
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



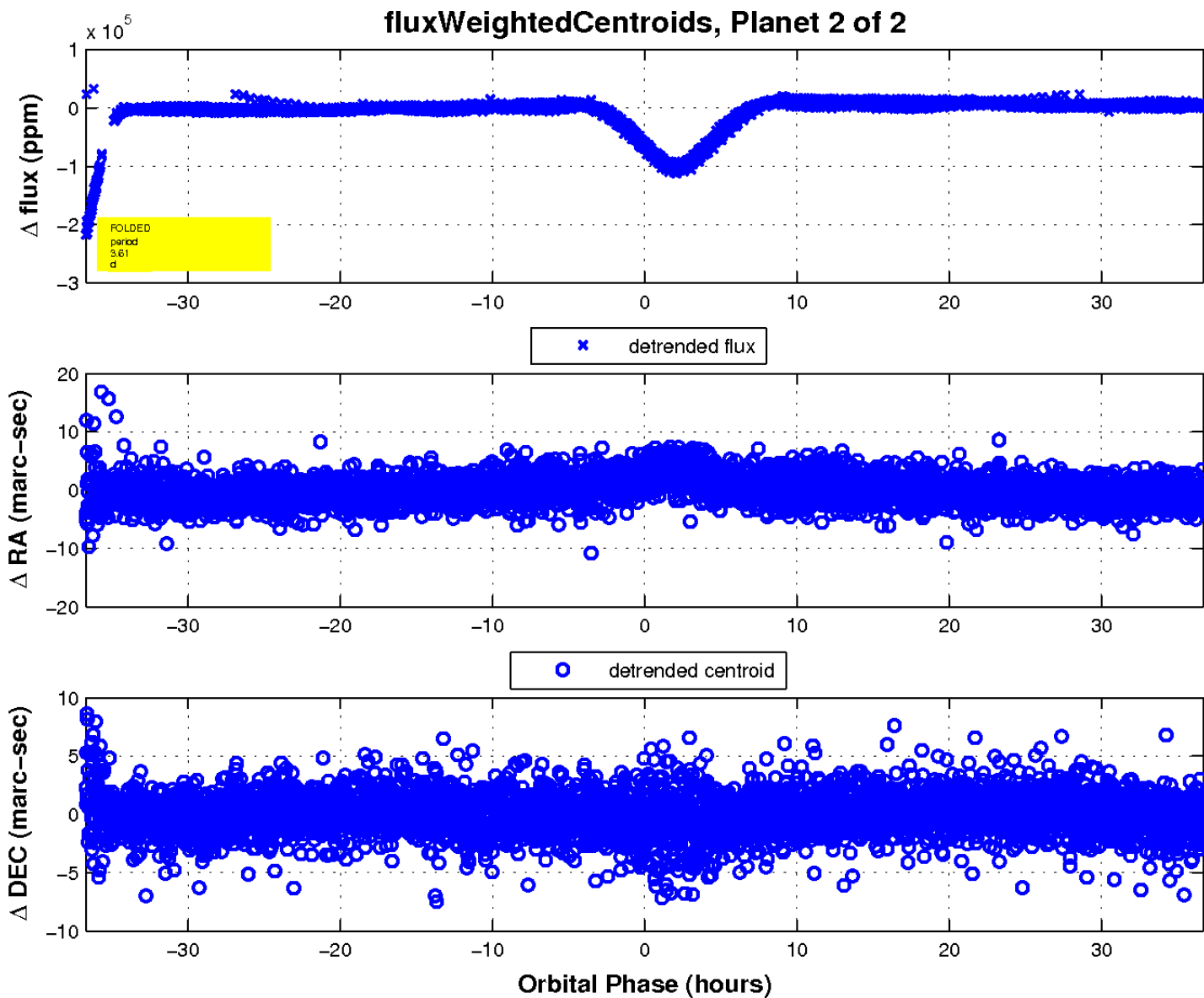
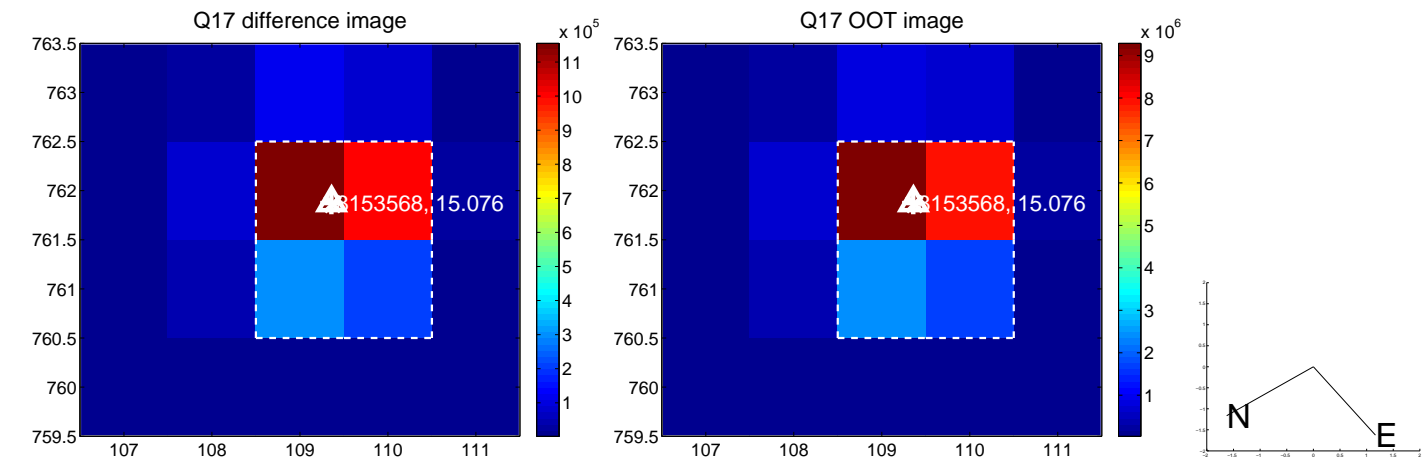
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

Declination

