

# KIC 008197923

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008197923-01	OBS	No	358.131564	356.377232	2629.1	4.622	13.1	7.6	0.63	5025	4.03	0.32
008197923-02	OBS	No	458.684876	586.576996	2473.2	3.392	11.6	7.6	0.63	5025	3.24	0.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008197923-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008197923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

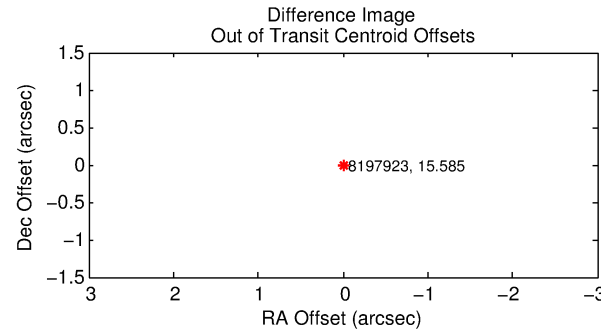
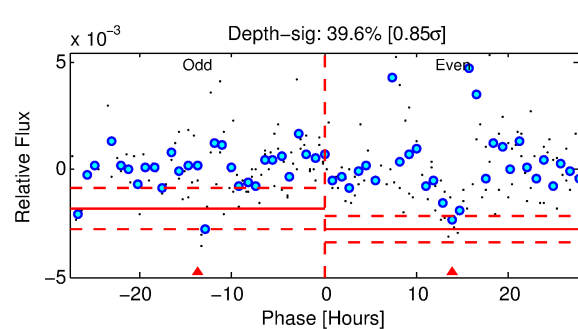
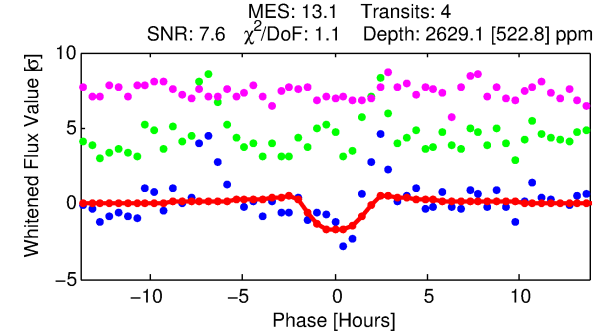
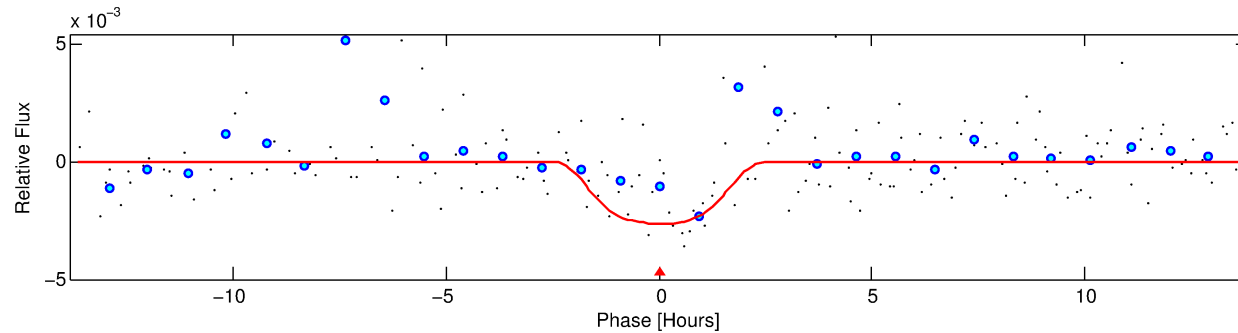
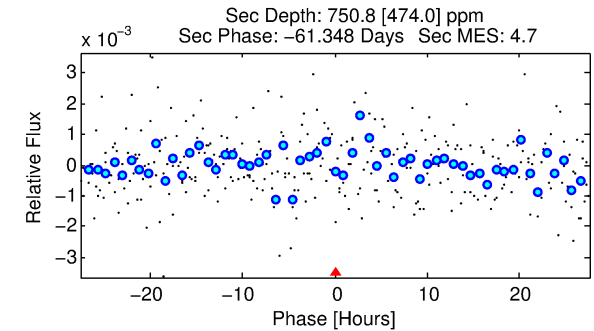
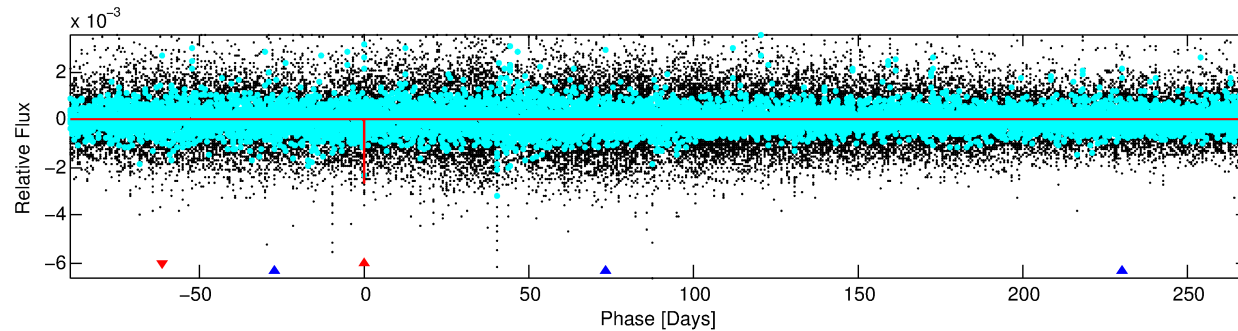
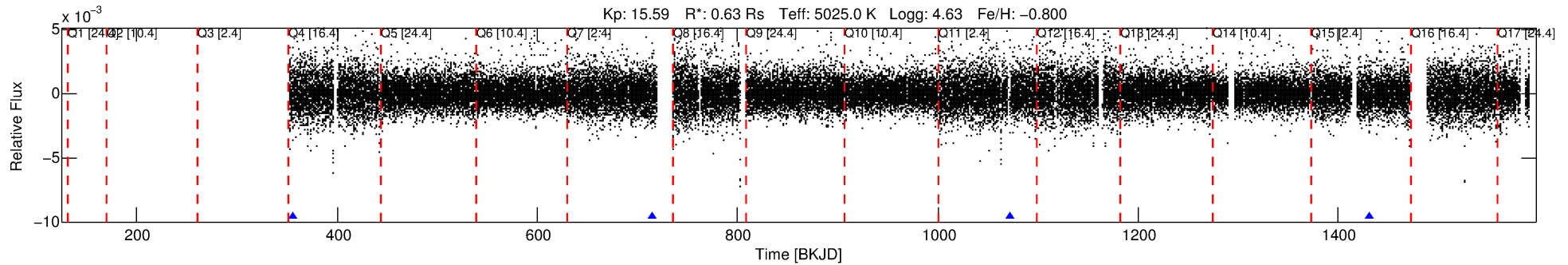
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008197923-01

No Significant Match Found

# DV One-Page Summary

KIC: 8197923 Candidate: 1 of 2 Period: 358.132 d



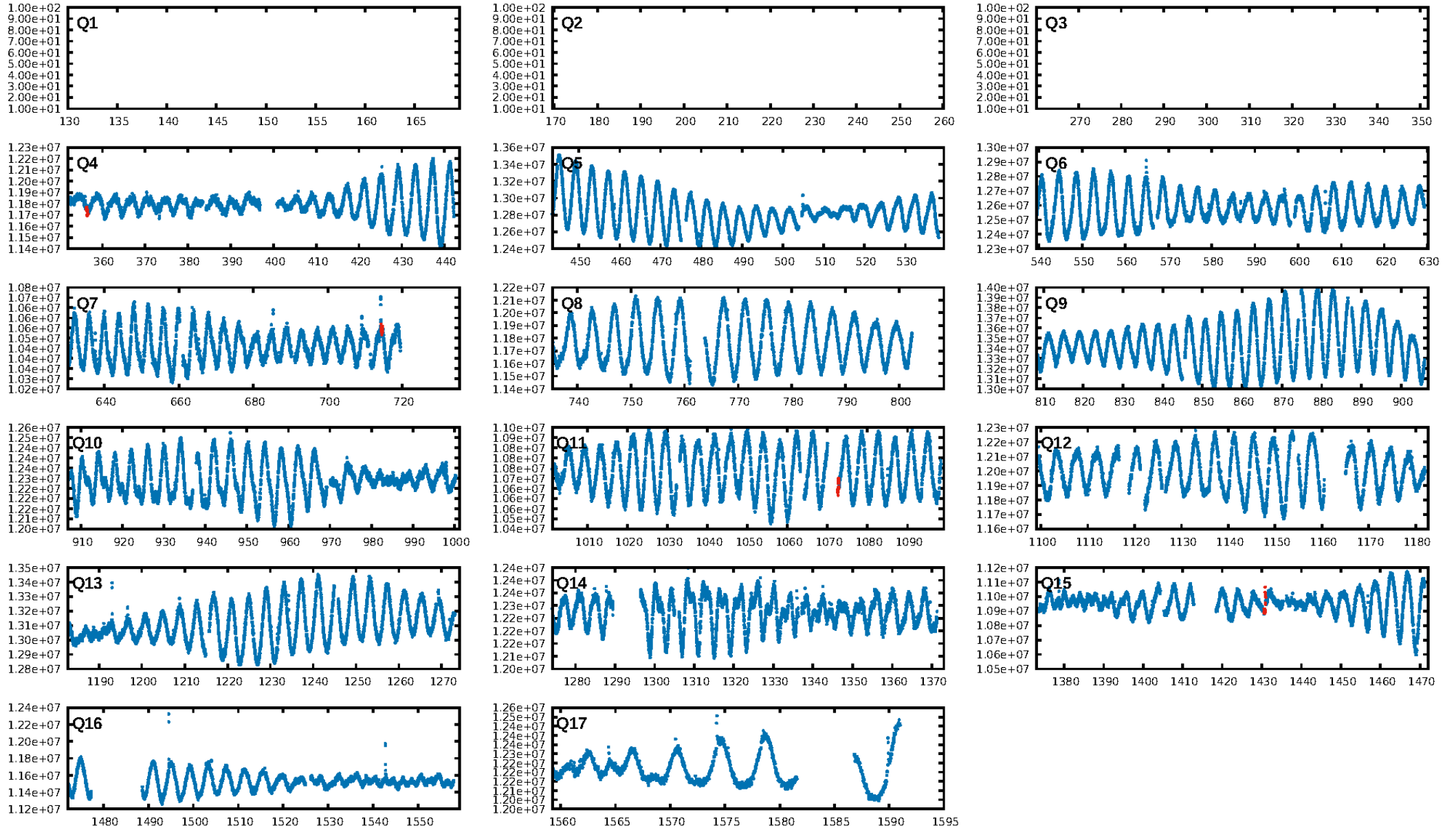
## DV Fit Results:

Period = 358.13156 [0.00719] d  
Epoch = 356.3772 [0.0152] BKJD  
Rp/R\* = 0.0586 [0.0102]  
a/R\* = 305.57 [116.87]  
b = 0.92 [0.07]  
Seff = 0.32 [0.06]  
Teq = 192 [9] K  
Rp = 4.03 [0.80] Re  
a = 0.8413 [0.0679] AU  
Ag = 18005.91 [13141.77] [1.37σ]  
Teffp = 3436 [630] K [5.15σ]

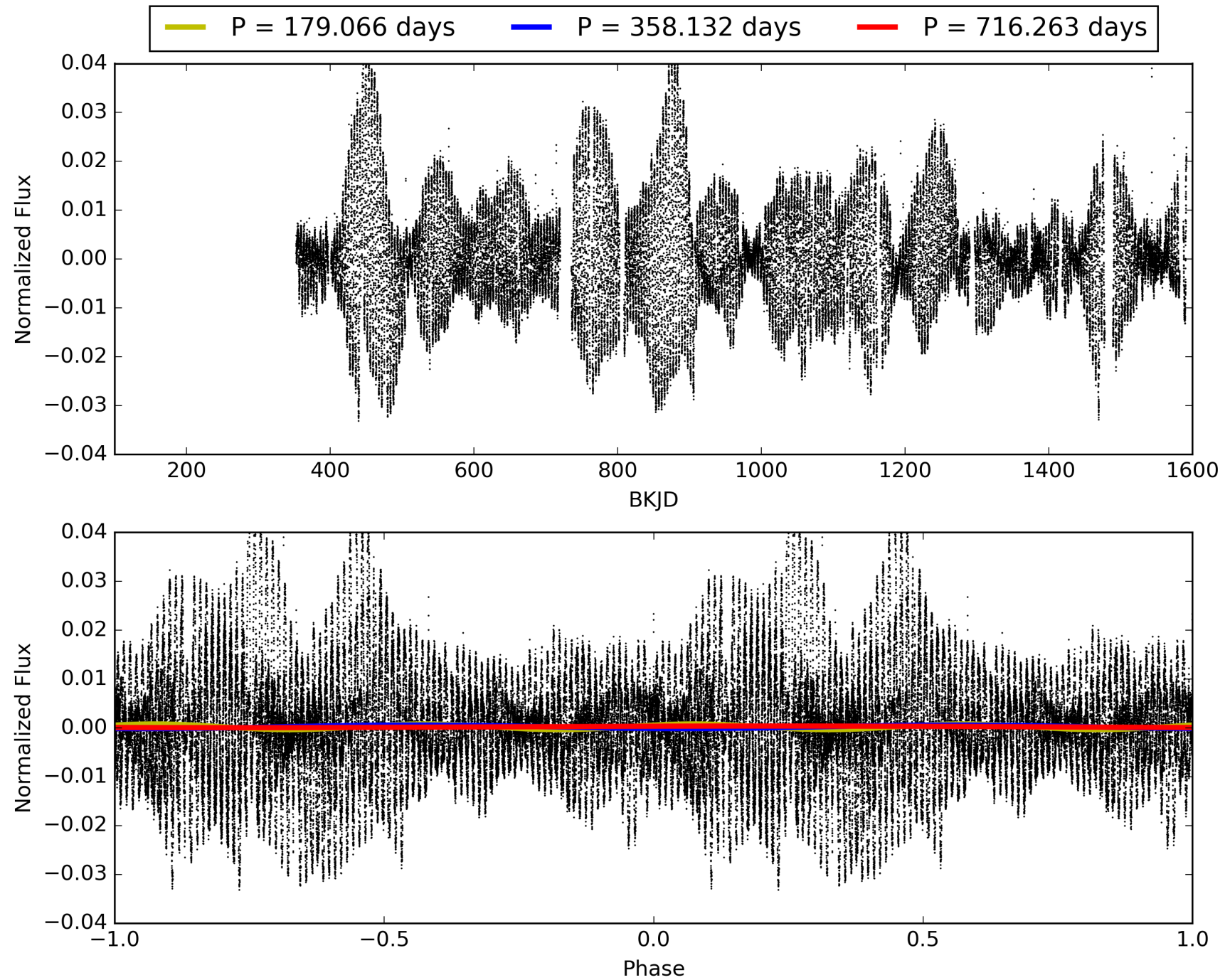
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [420.95σ]  
ModelChiSquare2-sig: 4.4%  
ModelChiSquareGof-sig: 82.5%  
Bootstrap-pfa: 3.97e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 3.107  
Centroid-sig: 0.1%  
Centroid-so: 0.250 arcsec [0.74σ]  
OotOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 008197923-01, PDC Light Curves

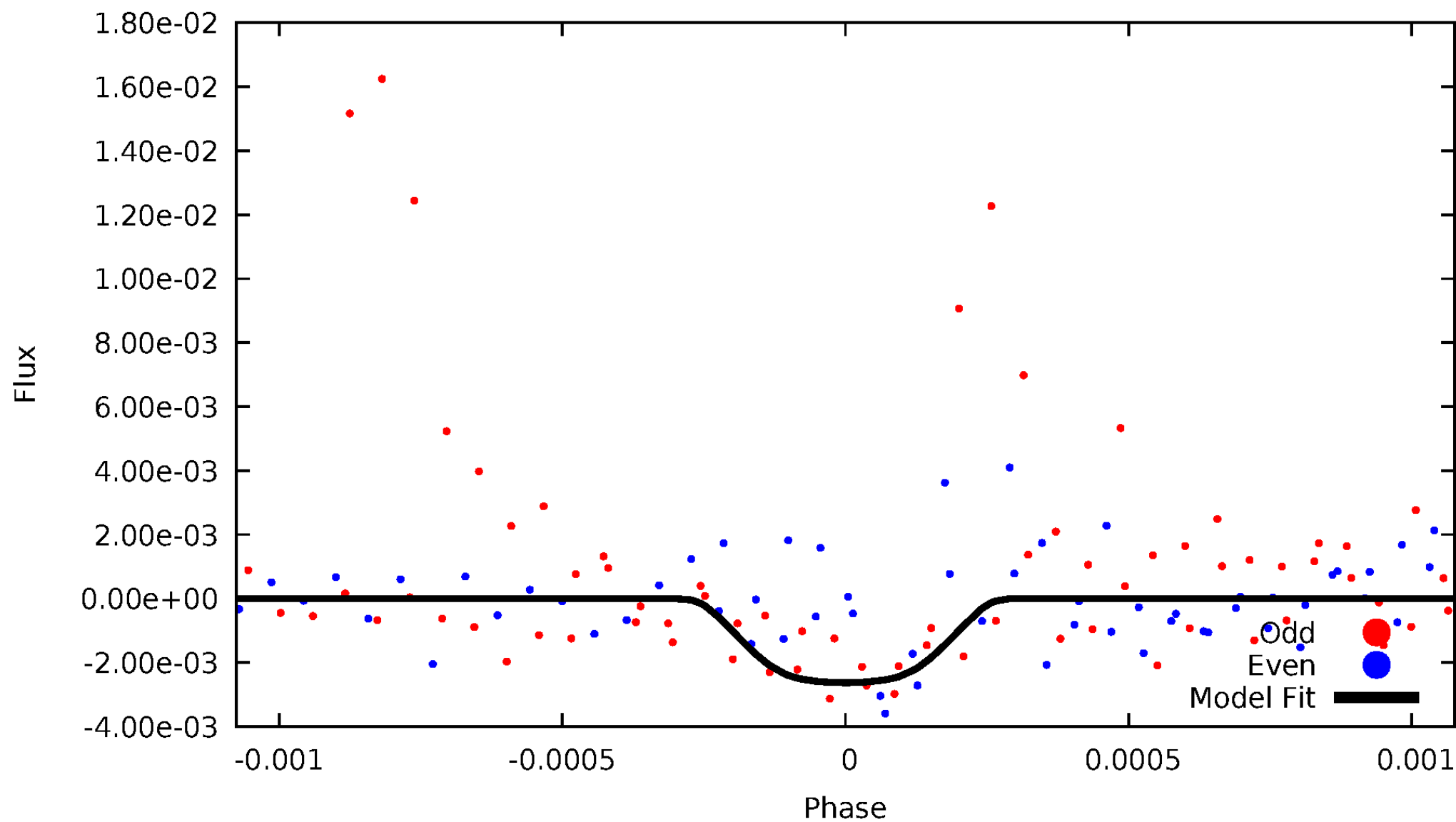


# TCE 008197923-01



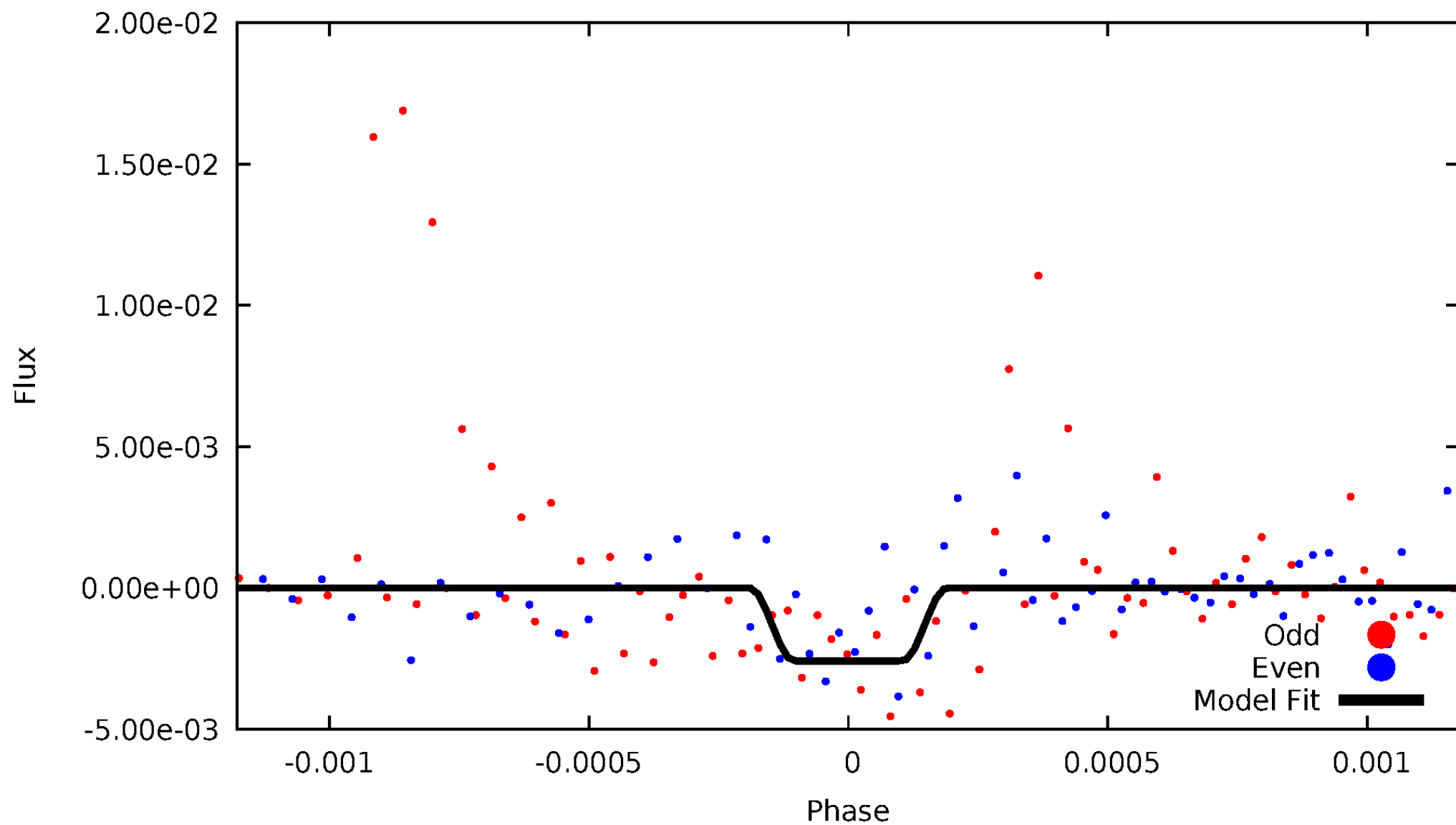
# DV Odd/Even

TCE 008197923-01



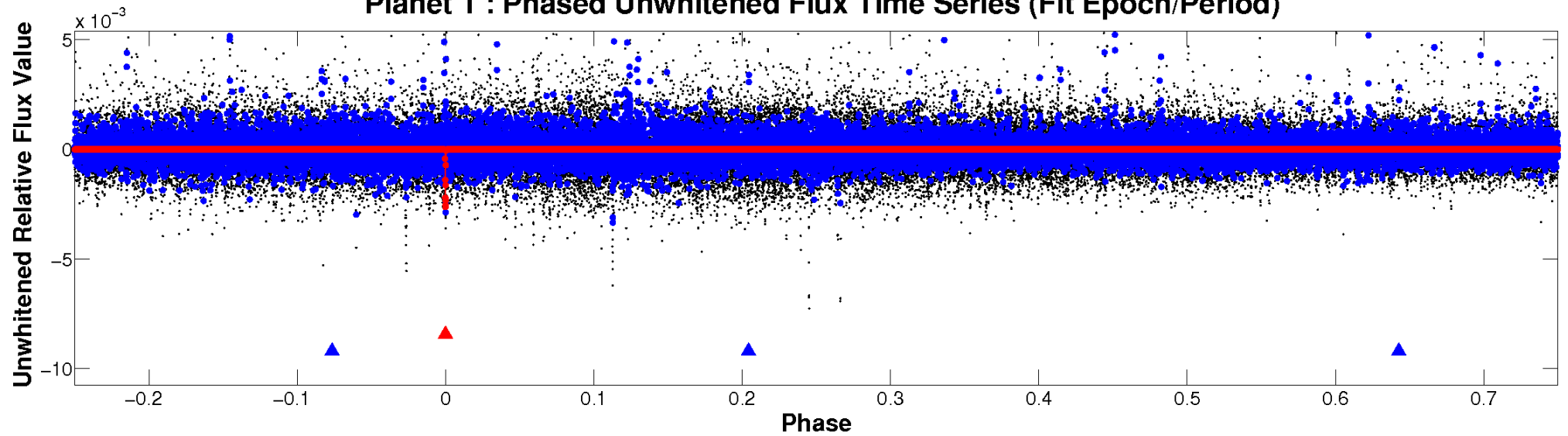
# ALT Odd/Even

TCE 008197923-01

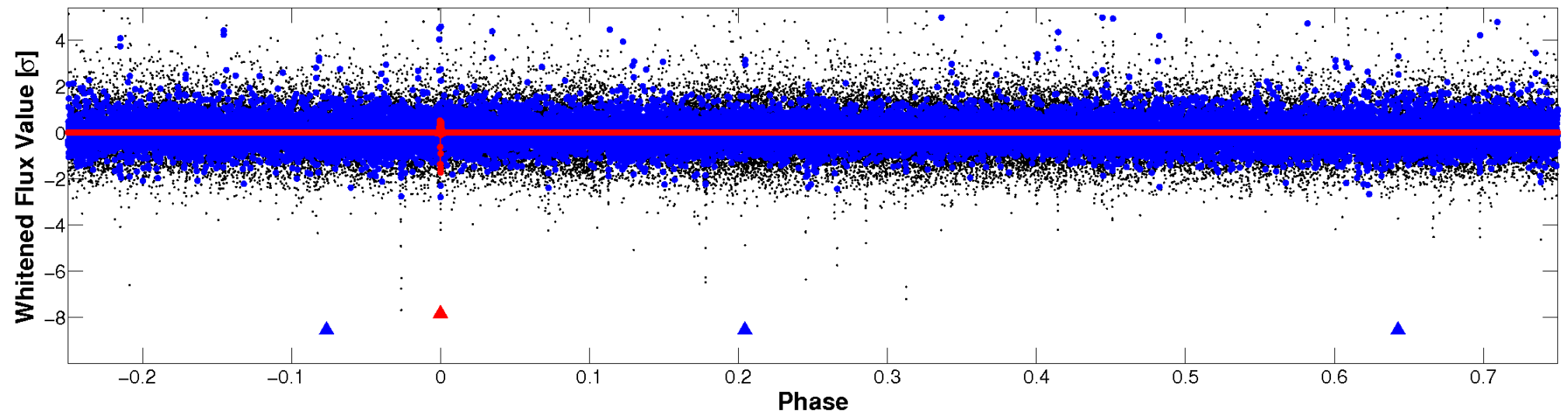


# Non-Whitened Vs. Whitened Light Curve

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

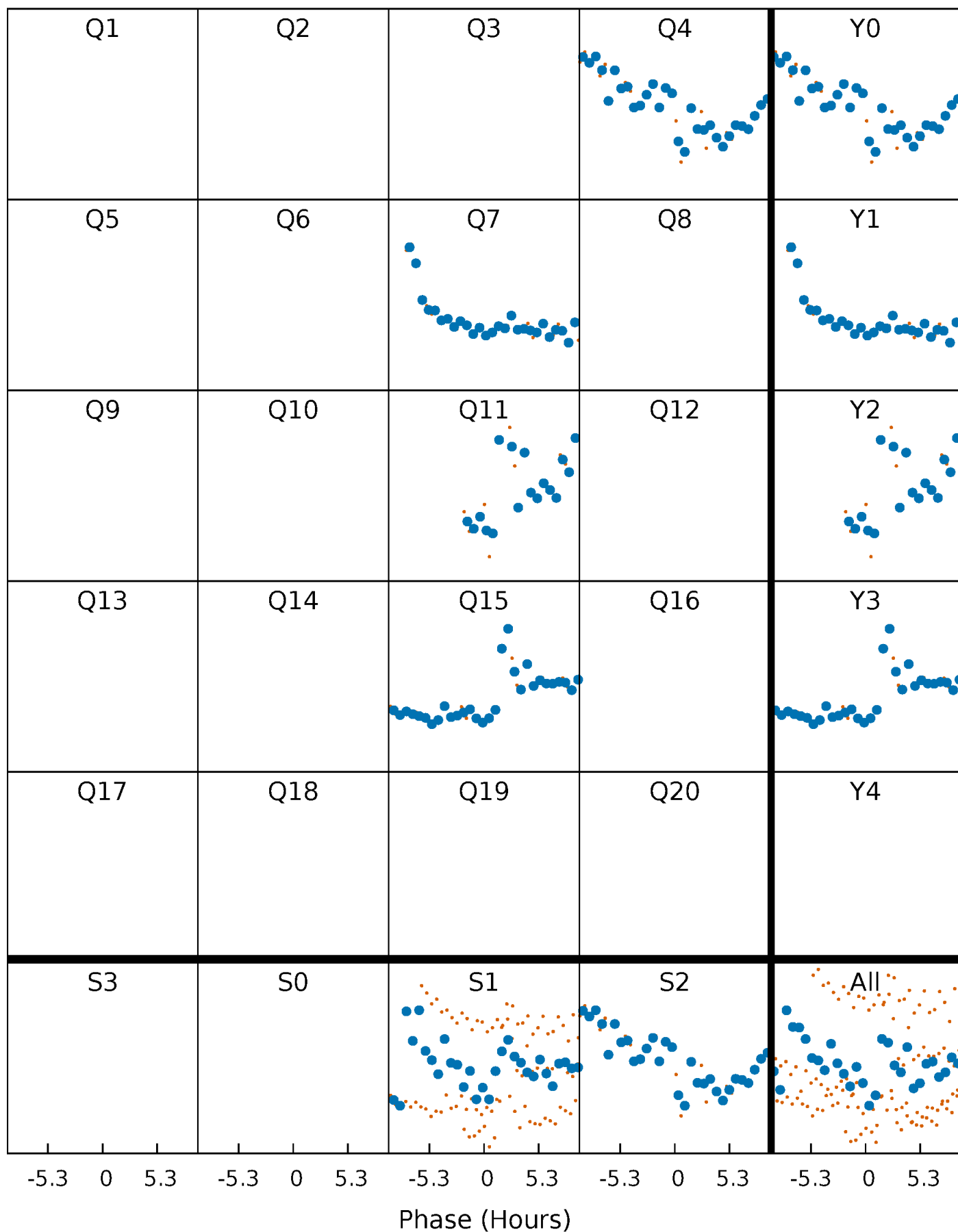


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

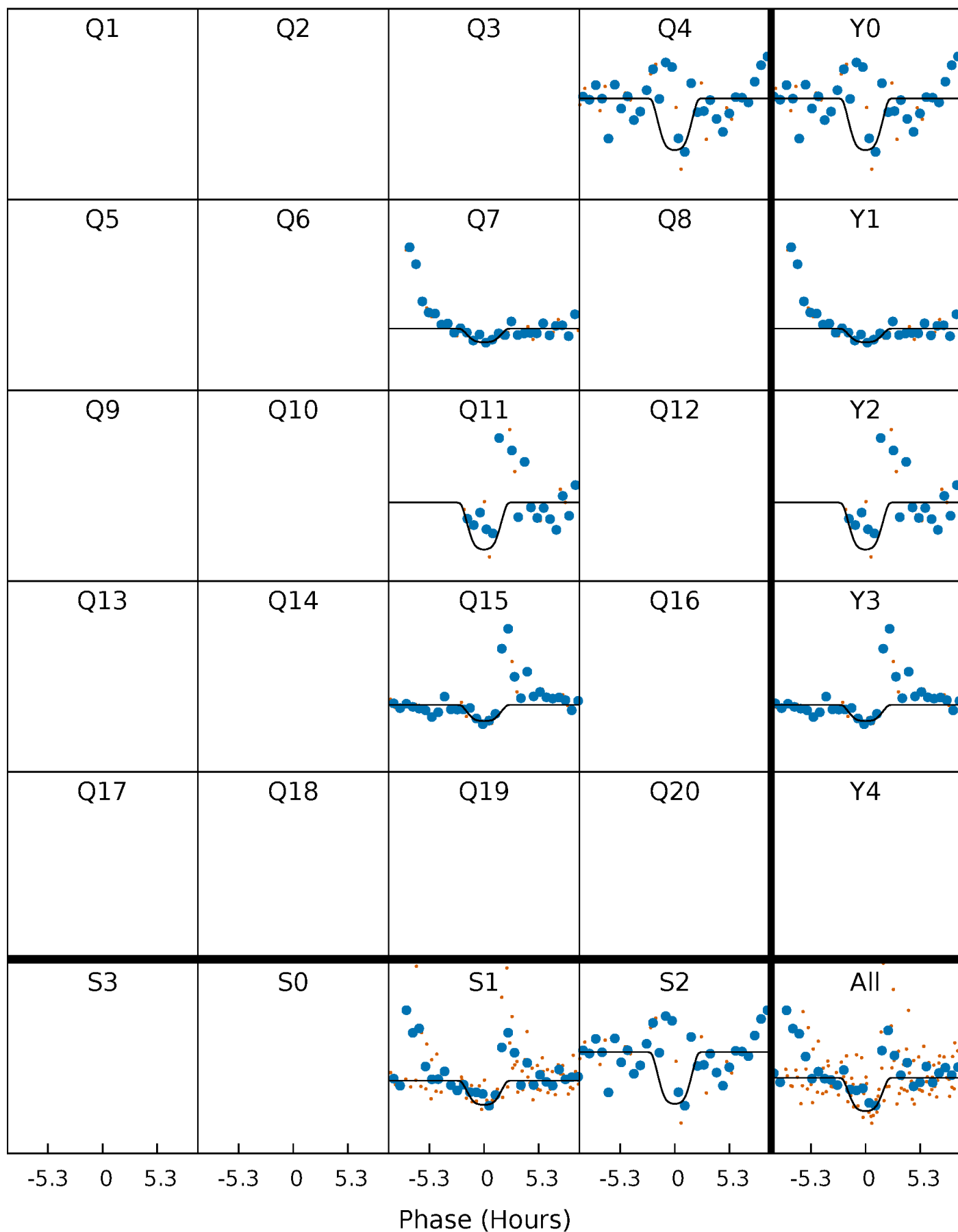
TCE 008197923-01 P=358.131564 Days  $T_0=356.377232$  (BKJD)





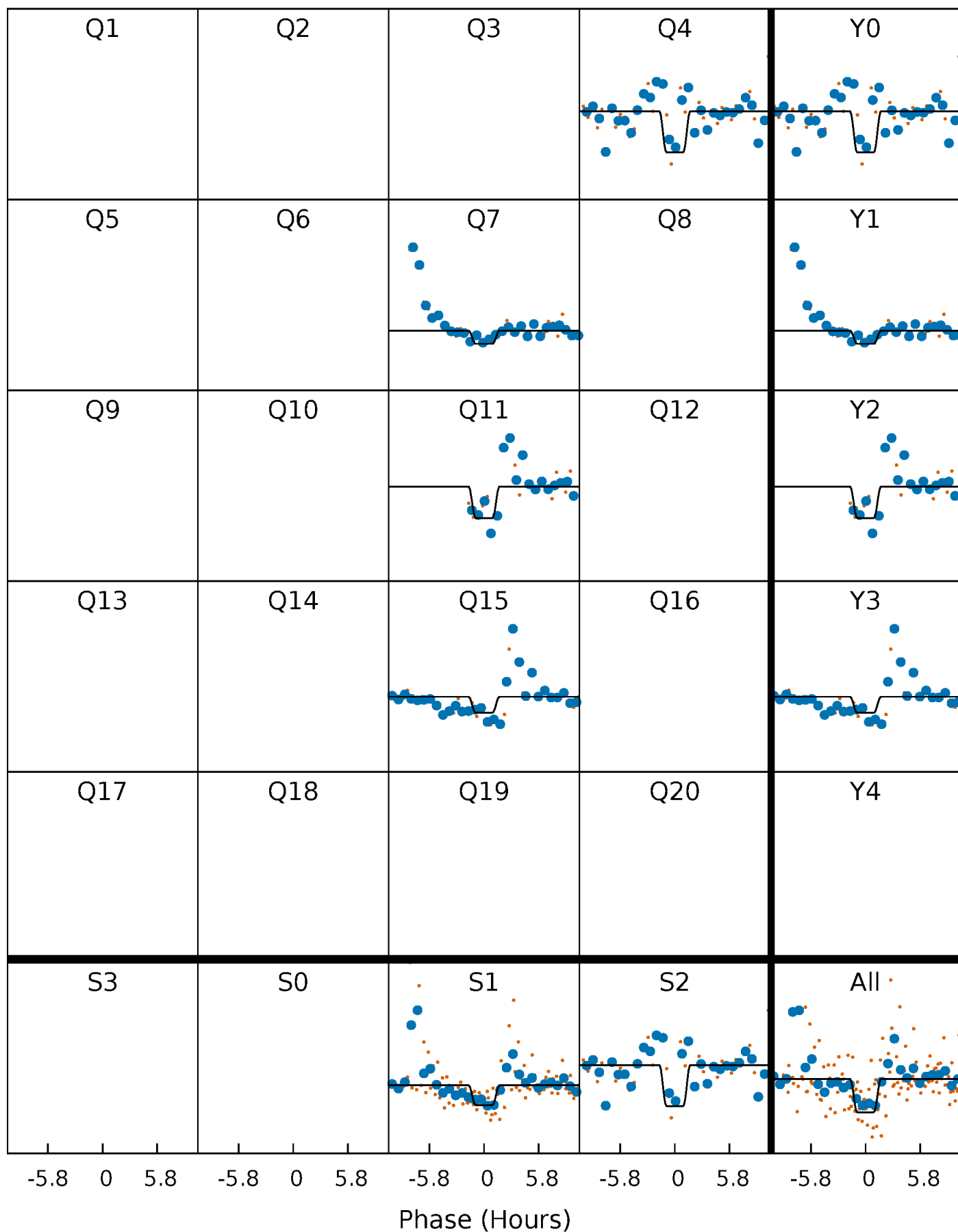
# DV Quarter-Phased Transit Curves

TCE 008197923-01 P=358.131564 Days  $T_0=356.377232$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

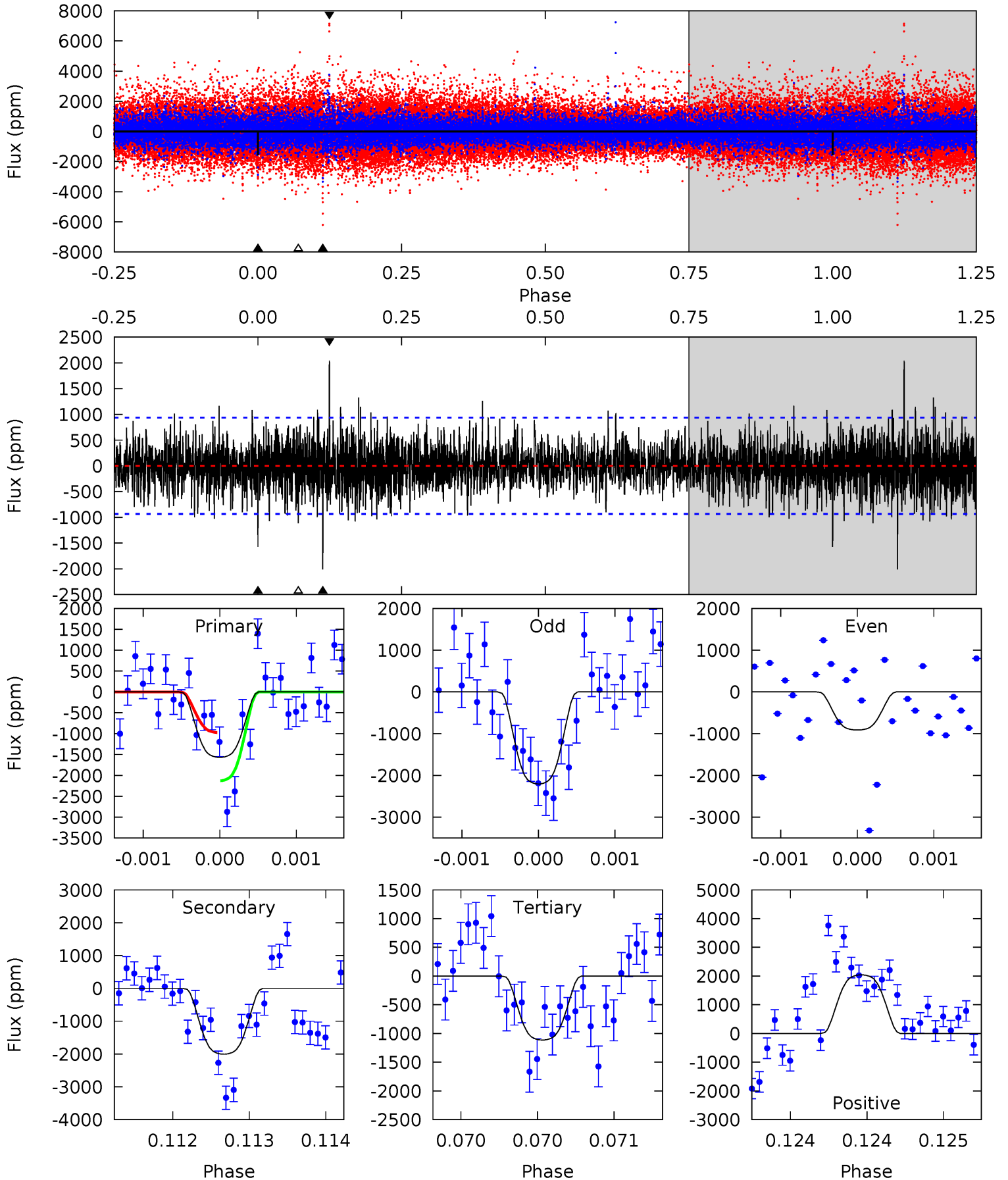
TCE 008197923-01 P=358.104950 Days  $T_0=356.418104$  (BKJD)



# DV Model-Shift Uniqueness Test

008197923-01, P = 358.131564 Days, E = 356.377232 Days

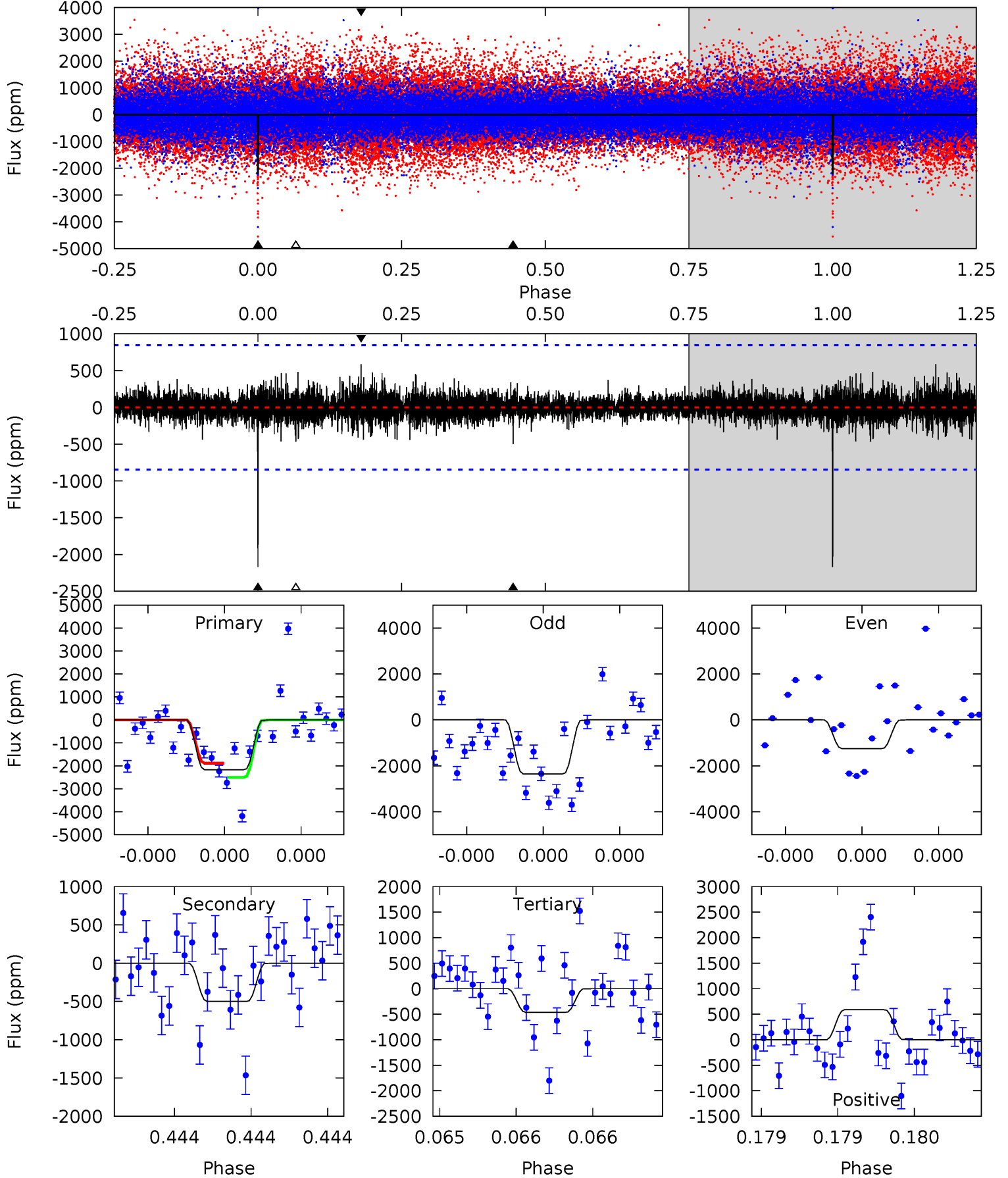
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.32	11.9	6.62	12.1	5.55	3.45	1.89	2.70	-2.81	5.31	-0.21	3.82	0.97	0.50	3.46



# Alt Model-Shift Uniqueness Test

008197923-01, P = 358.104950 Days, E = 356.418104 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
14.4	3.32	3.08	3.90	5.62	3.55	0.70	11.3	10.5	0.24	-0.58	3.57	1.07	0.21	2.05



### Stellar Parameters For KIC 008197923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5025^{+175}_{-175}$	$4.631^{+0.065}_{-0.040}$	$-0.800^{+0.300}_{-0.300}$	$0.630^{+0.060}_{-0.054}$	$0.619^{+0.065}_{-0.030}$	$3.488^{+0.898}_{-0.536}$
	+3%/-3%	+1%/-1%	+37%/-37%	+10%/-9%	+11%/-5%	+26%/-15%
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 008197923-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2007 \pm 168$	$4.03^{+0.73}_{-0.75}$	$267^{+11}_{-10}$	$4502^{+397}_{-301}$	$49051^{+26058}_{-14466}$
Alt.	$-500 \pm 151$	$3.43^{+0.74}_{-0.69}$	$266^{+12}_{-10}$	$3705^{+359}_{-314}$	$16630^{+11747}_{-6821}$

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

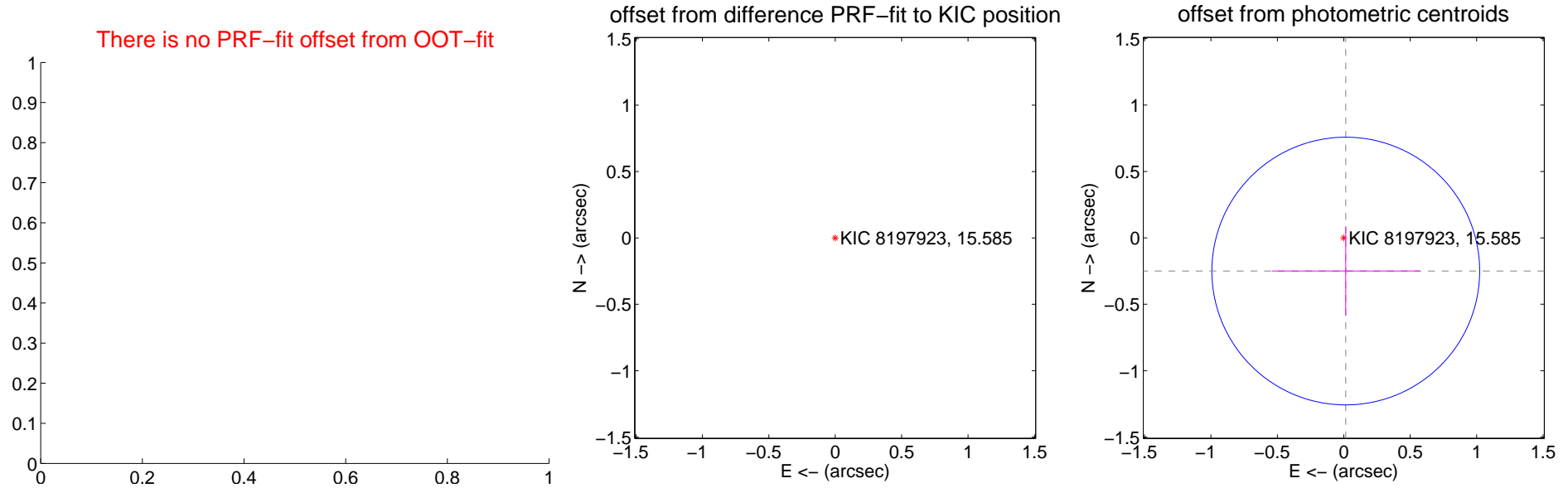
## DV Centroid Data

Supplemental centroid analysis for 008197923-01. Kepler magnitude: 15.59. Transit SNR 7.64

There are 0 quarters with good PRF difference image offsets

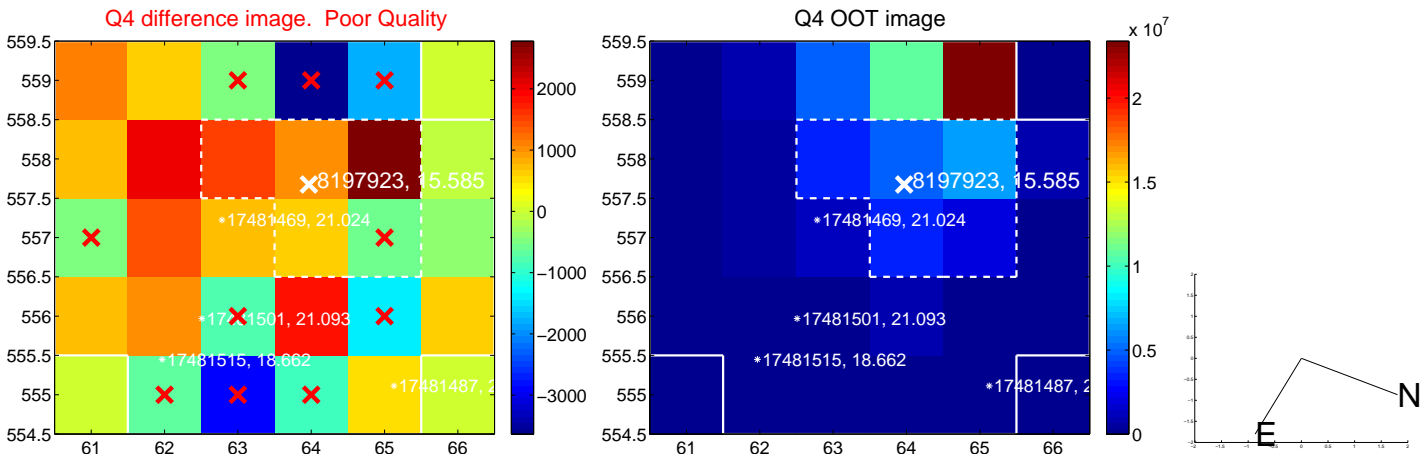
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	$6.790 \pm 0.767$	8.85	$6.559 \pm 0.750$	$-1.756 \pm 0.981$
photometric centroid source offset	$0.25 \pm 0.34$	0.74	$-0.01 \pm 0.56$	$-0.25 \pm 0.33$



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

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



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

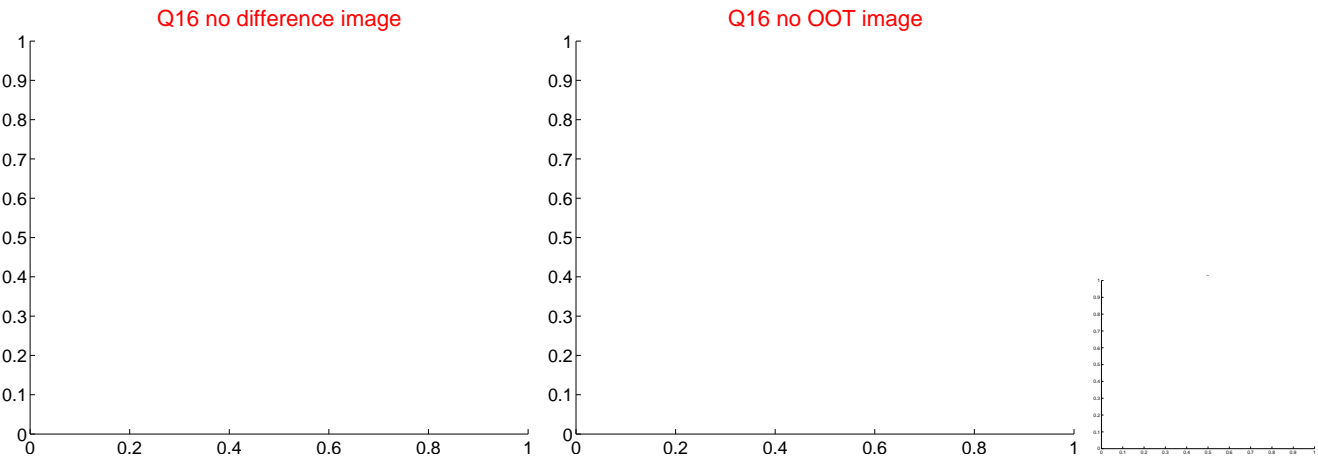
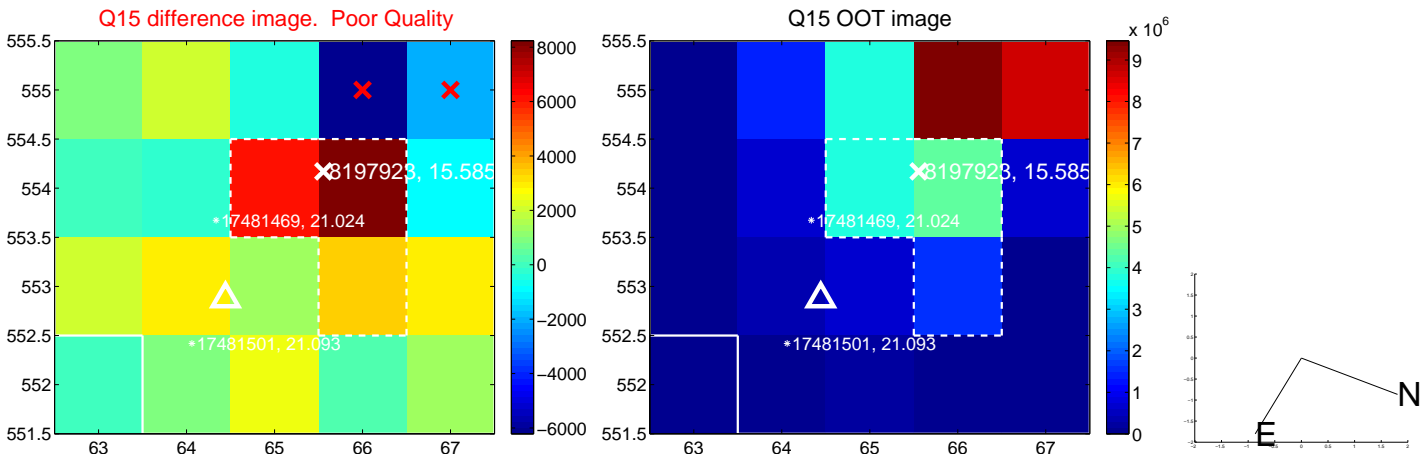
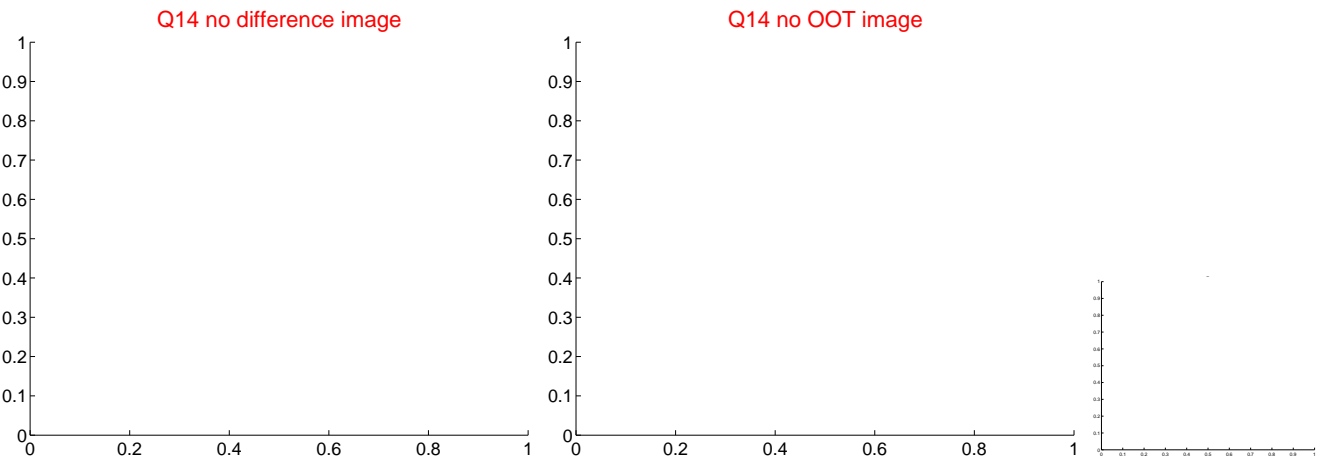
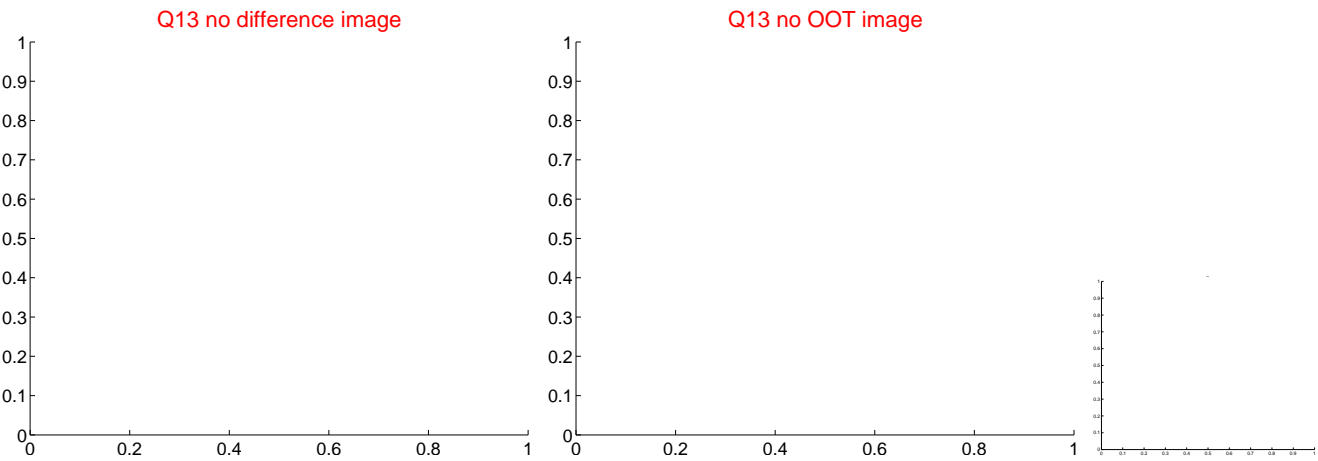




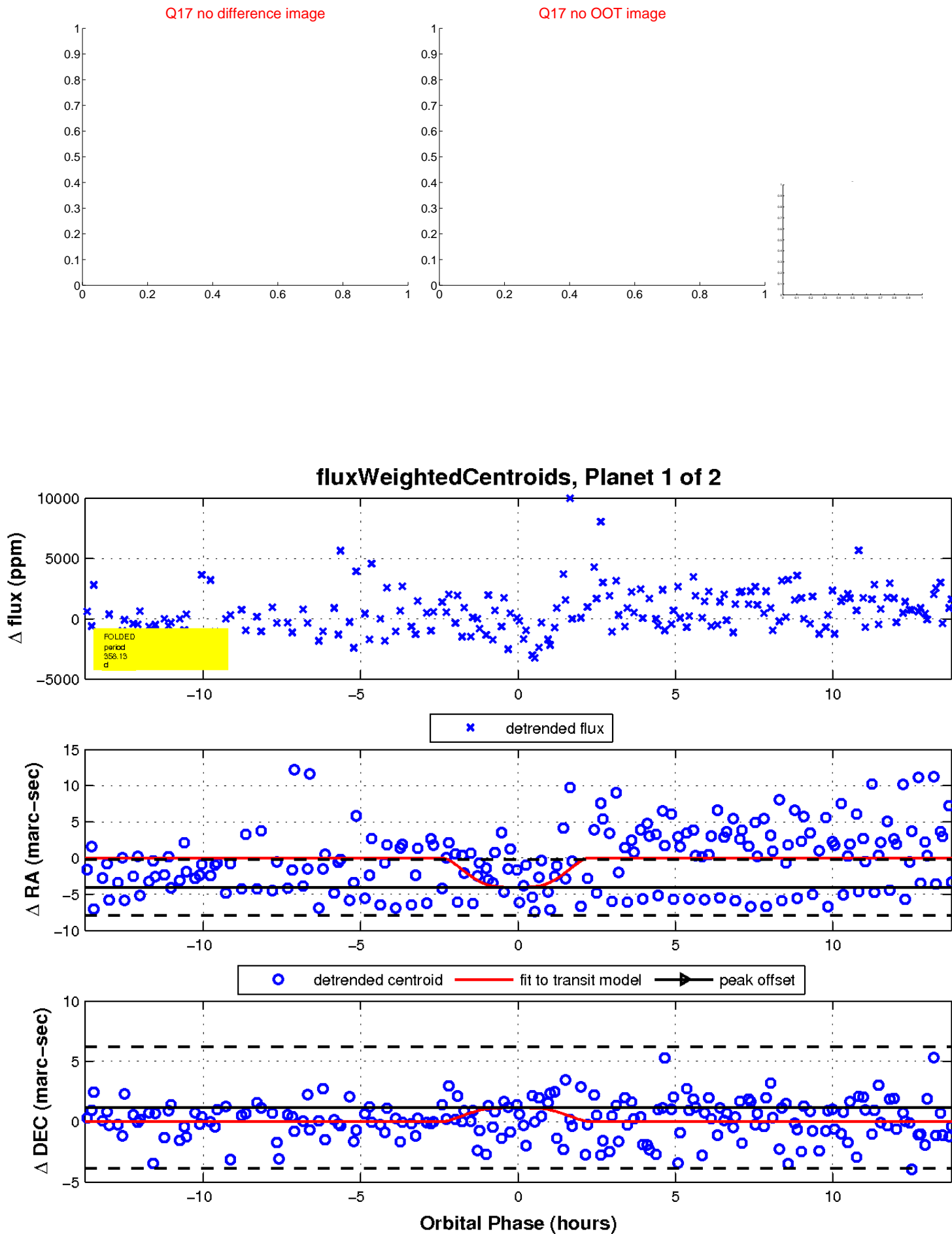
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



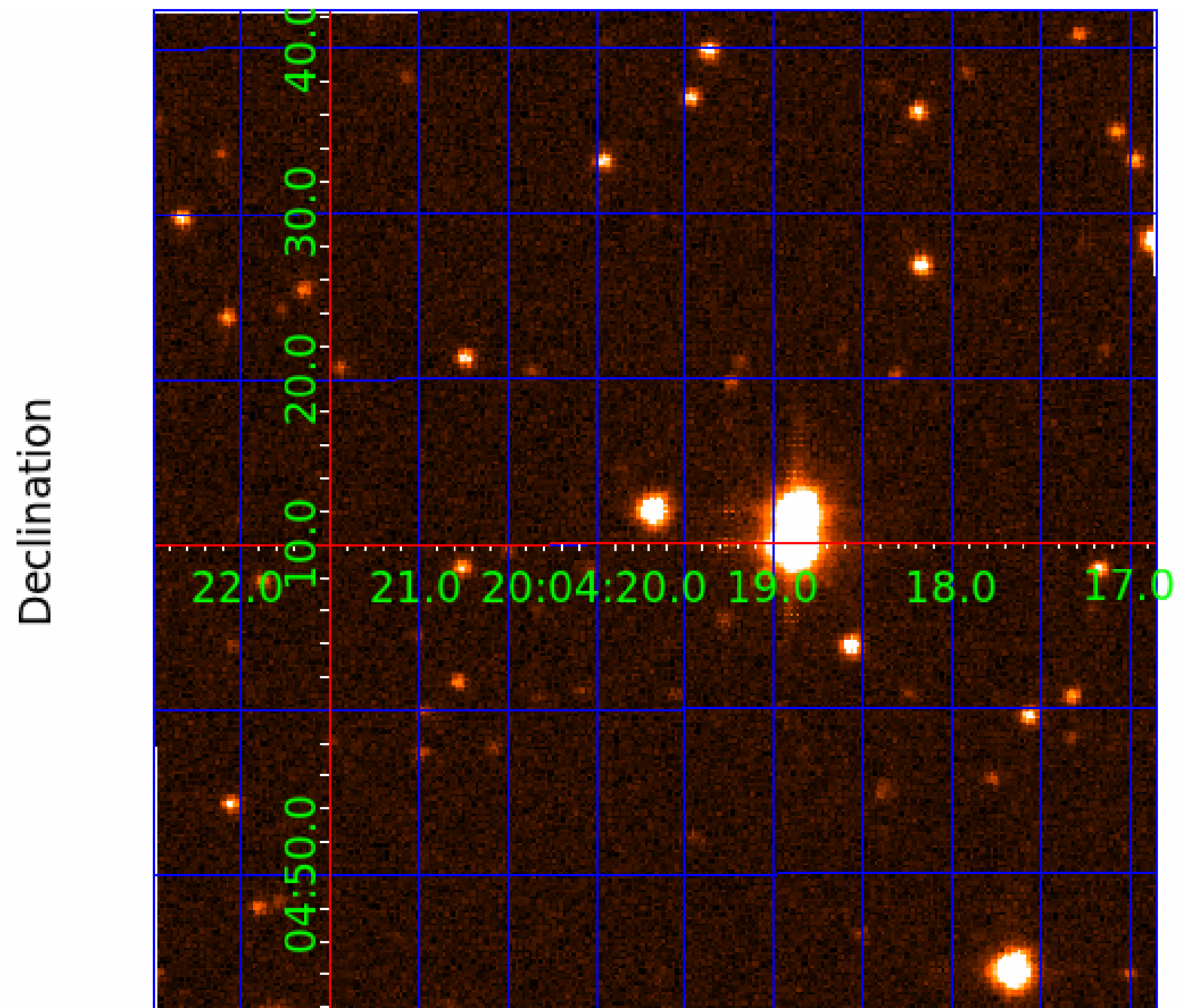
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



# KIC 008197923

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008197923-01	OBS	No	358.131564	356.377232	2629.1	4.622	13.1	7.6	0.63	5025	4.03	0.32
008197923-02	OBS	No	458.684876	586.576996	2473.2	3.392	11.6	7.6	0.63	5025	3.24	0.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008197923-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008197923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

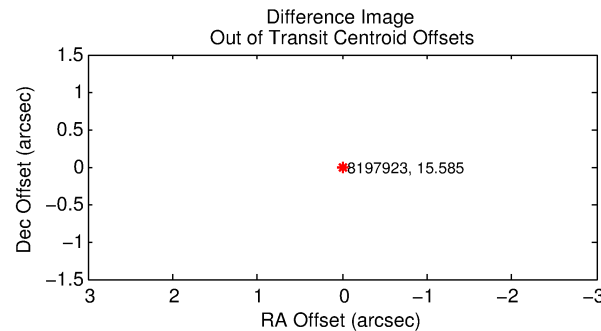
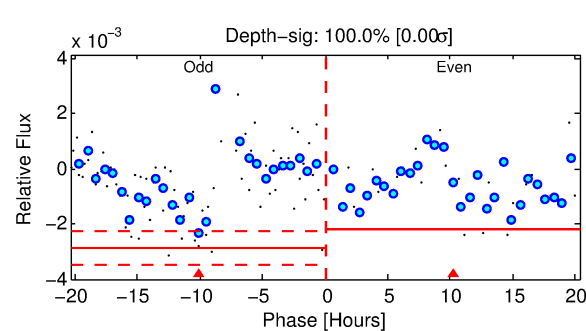
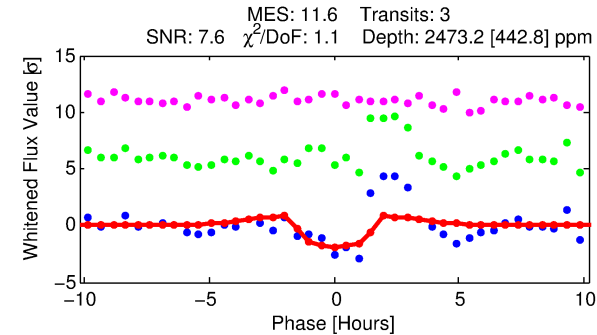
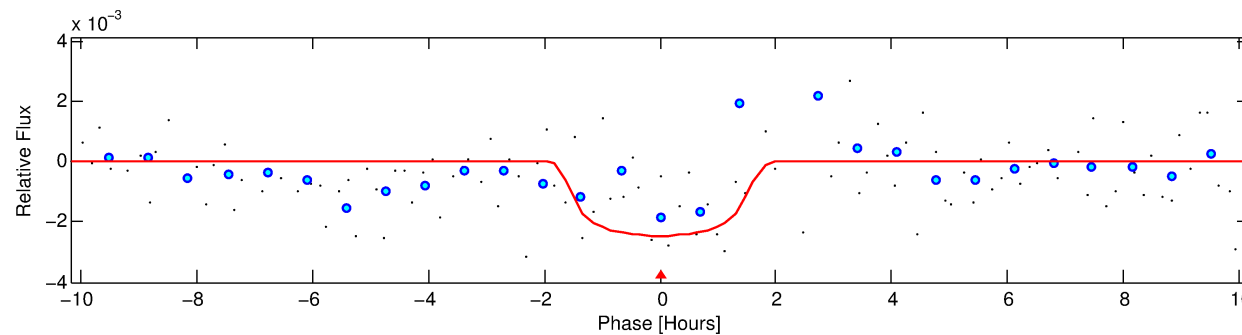
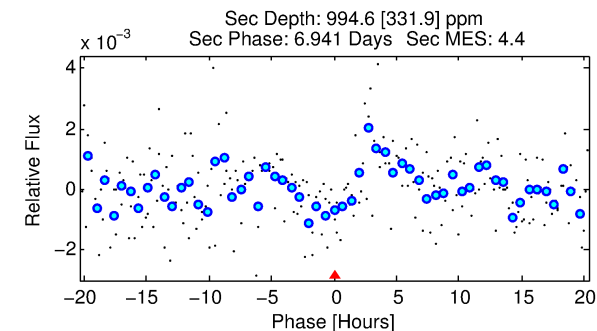
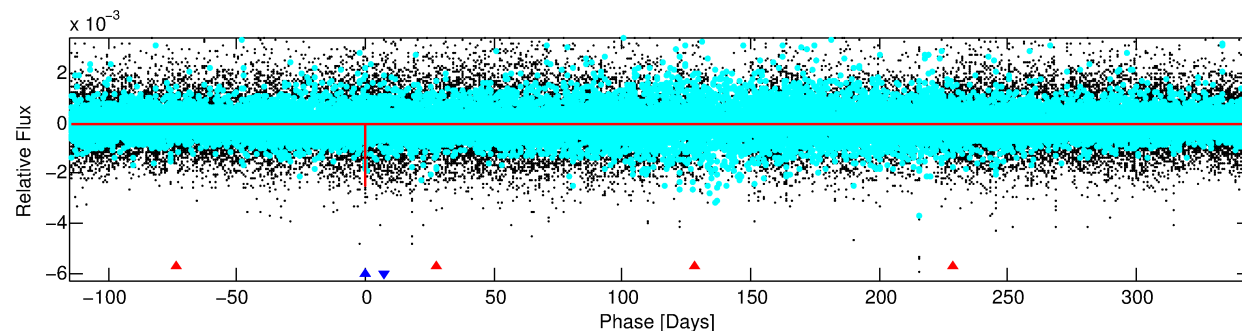
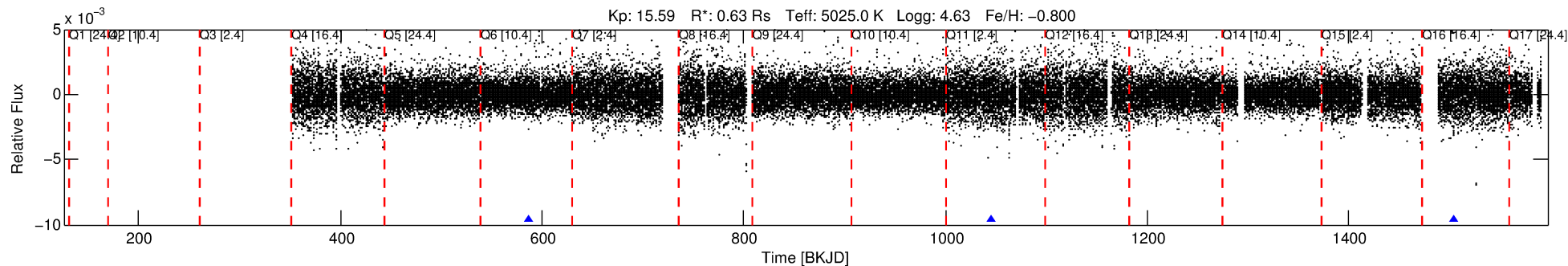
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008197923-02

No Significant Match Found

# DV One-Page Summary

KIC: 8197923 Candidate: 2 of 2 Period: 458.685 d



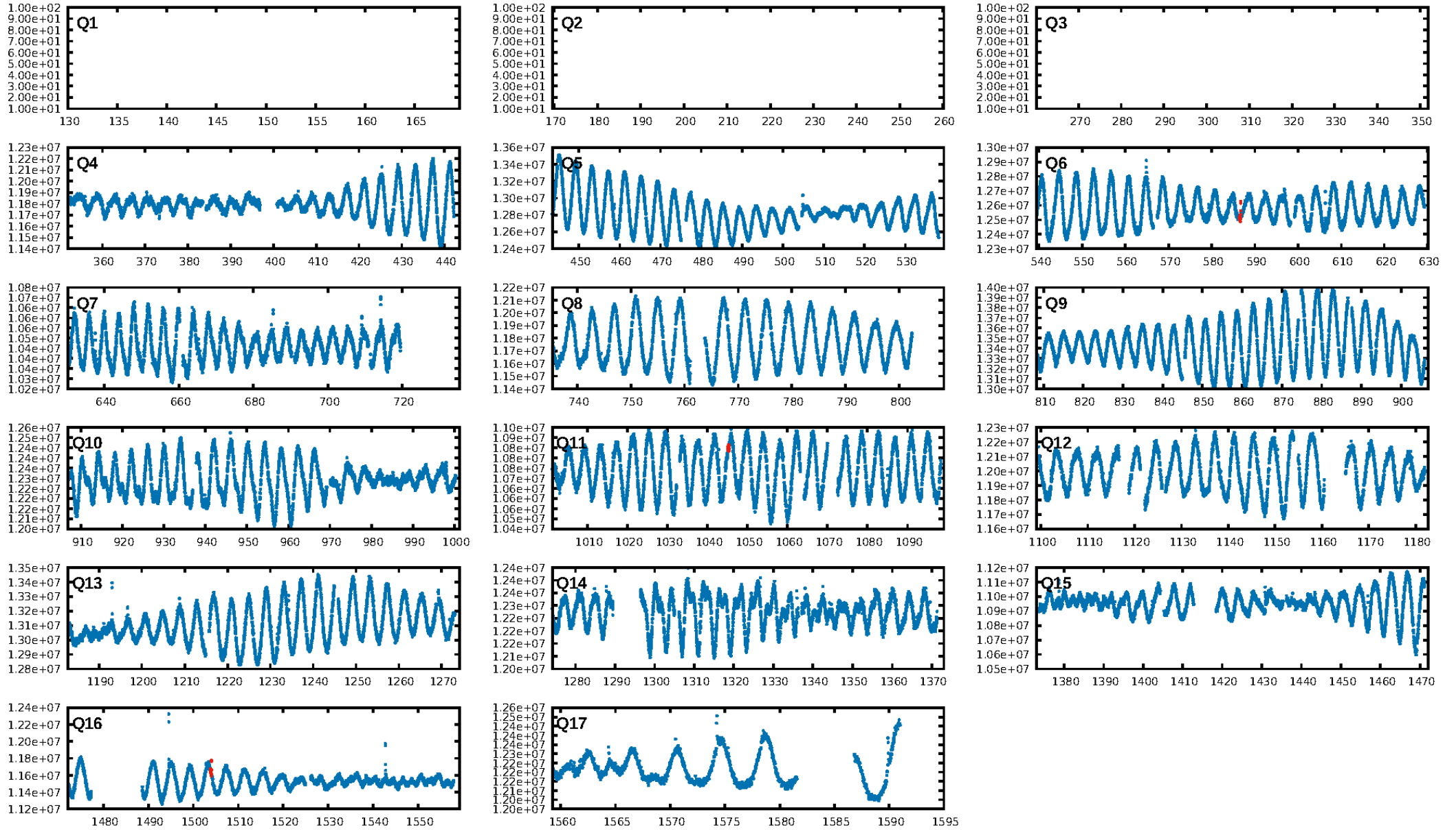
## DV Fit Results:

Period = 458.68488 [0.00730] d  
Epoch = 586.5770 [0.0077] BKJD  
Rp/R\* = 0.0471 [0.0510]  
a/R\* = 897.46 [3670.50]  
b = 0.58 [4.67]  
Seff = 0.23 [0.04]  
Teq = 177 [8] K  
Rp = 3.24 [3.52] Re  
a = 0.9922 [0.0801] AU  
Ag = 51425.53 [112993.09] [0.46 $\sigma$ ]  
Teffp = 4113 [2260] K [1.74 $\sigma$ ]

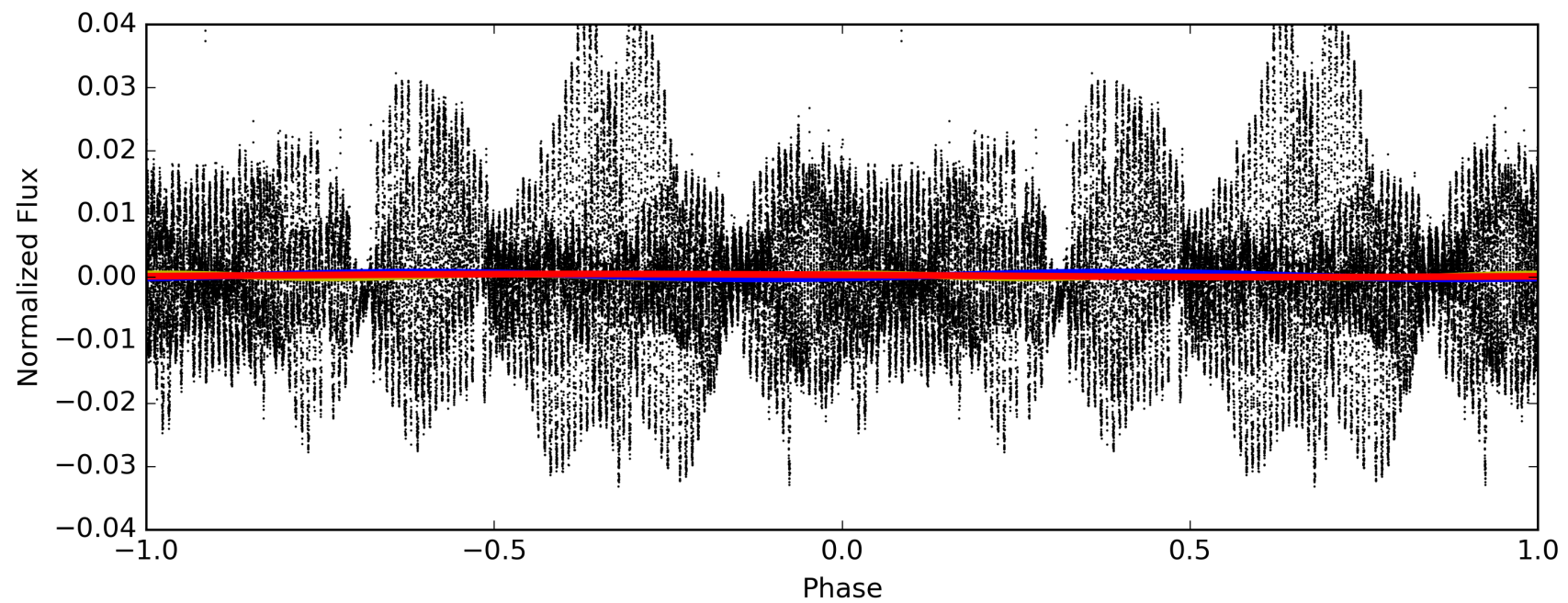
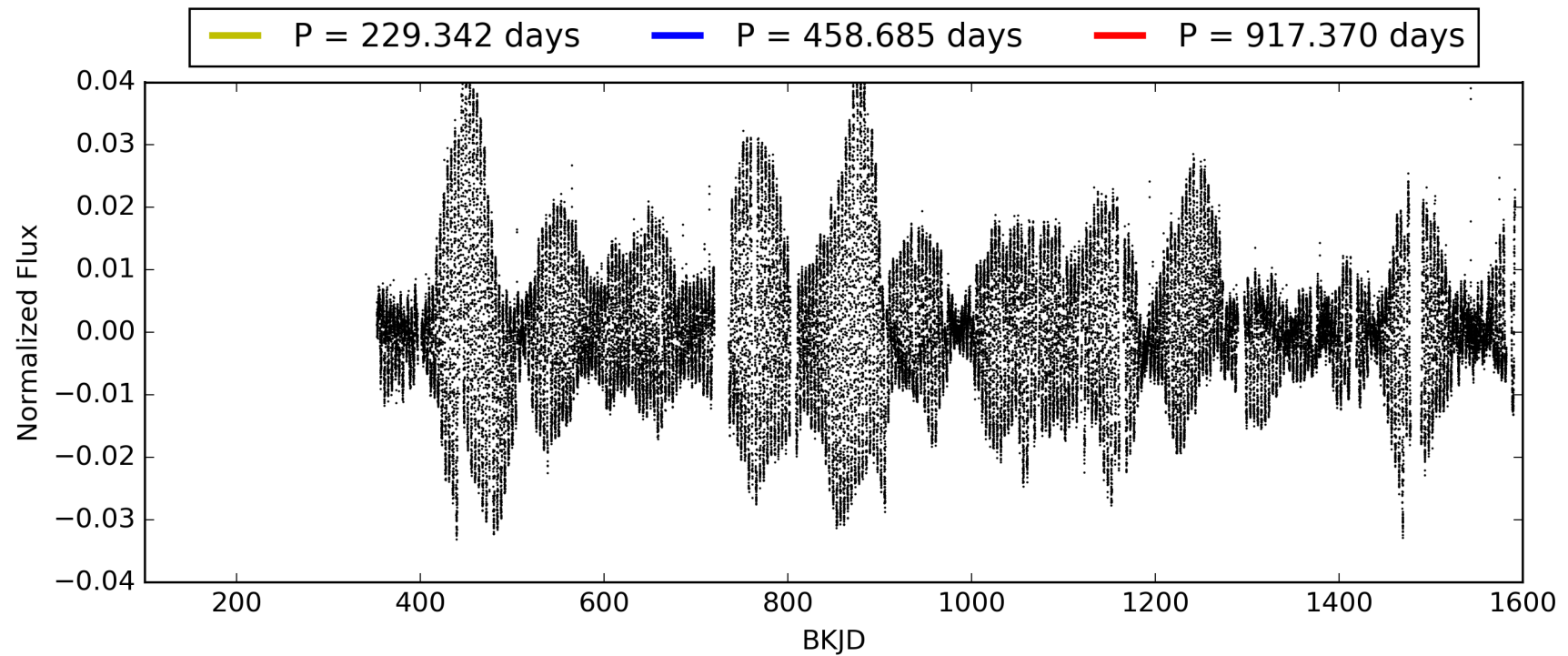
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [420.95 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.7%  
ModelChiSquareGof-sig: 64.9%  
Bootstrap-pfa: 1.40e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.636  
Centroid-sig: 1.3%  
Centroid-so: 0.624 arcsec [0.99 $\sigma$ ]  
OotOffset-rm: N/A  
KicOffset-rm: 0.514 arcsec [0.82 $\sigma$ ]  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 008197923-02, PDC Light Curves



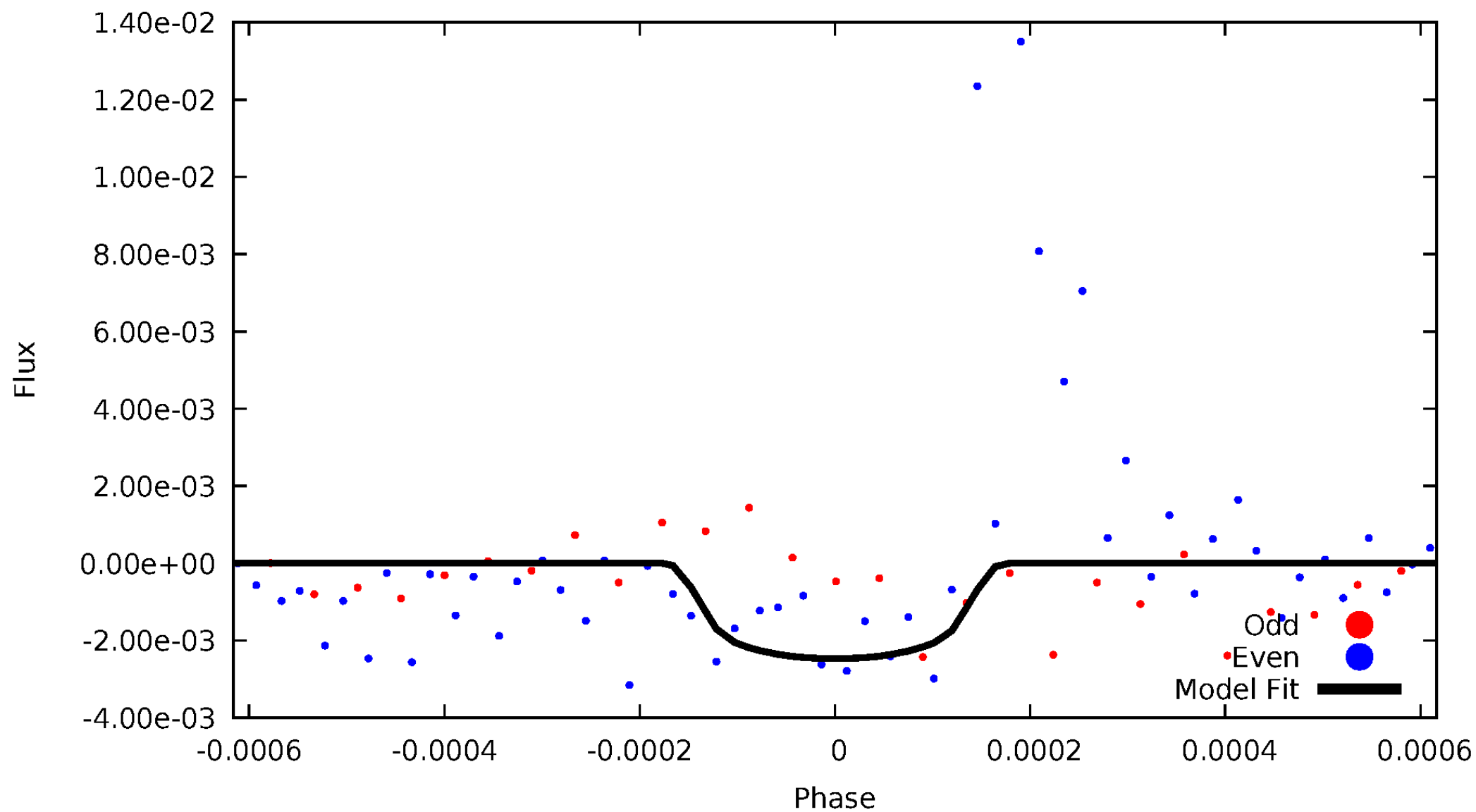
TCE 008197923-02





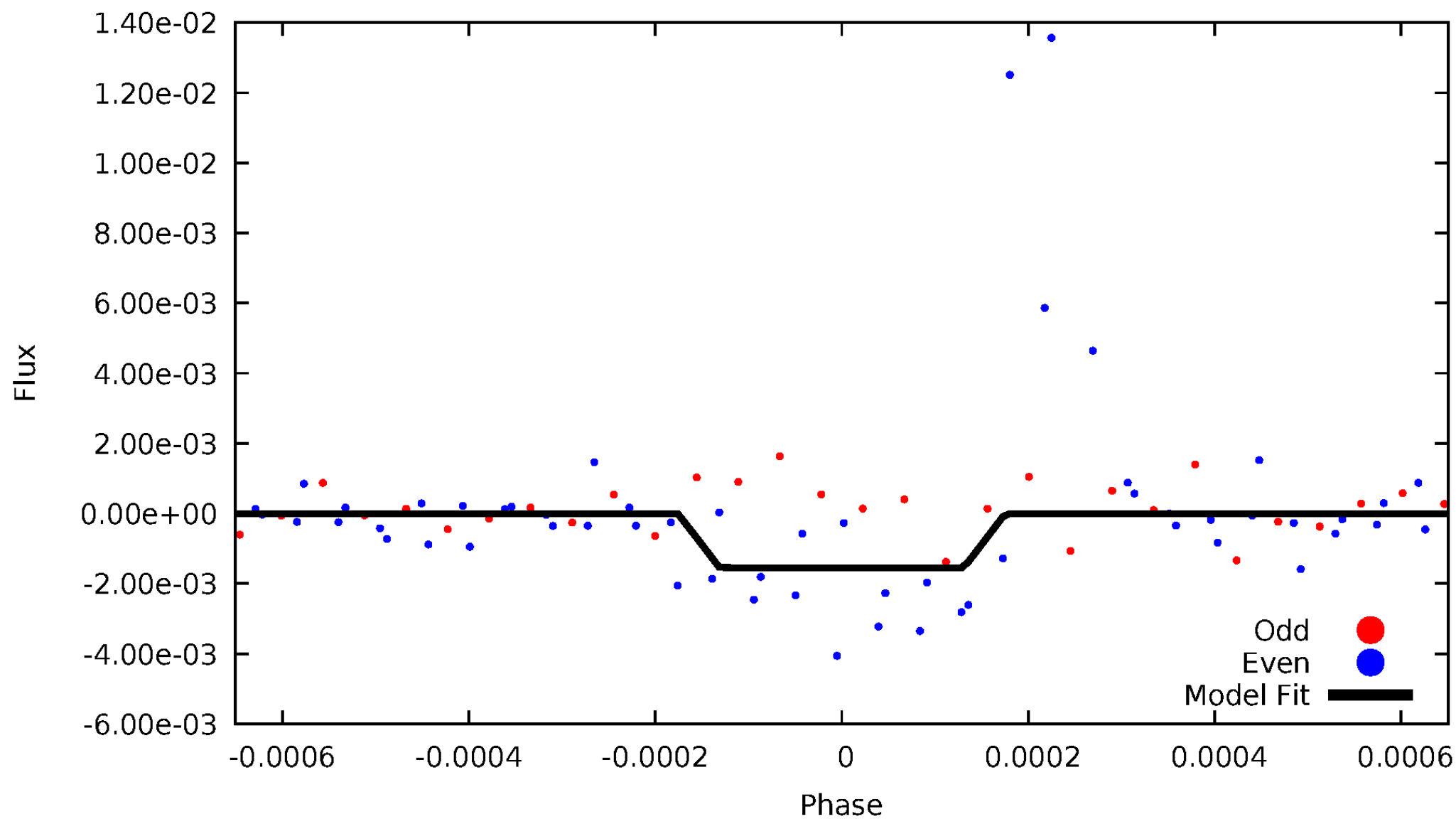
# DV Odd/Even

TCE 008197923-02



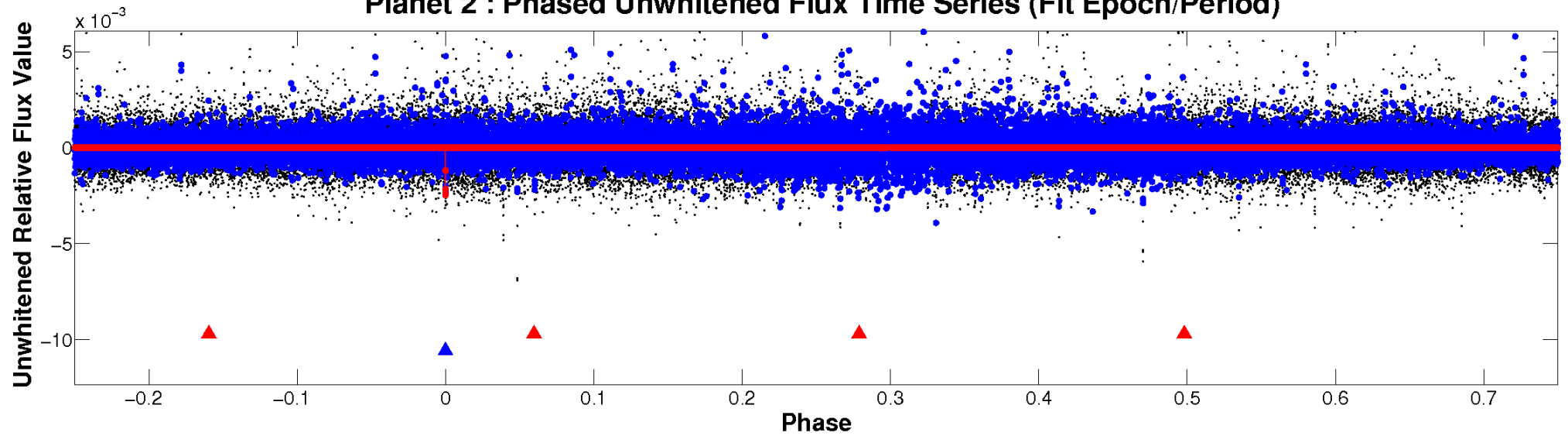
# ALT Odd/Even

TCE 008197923-02

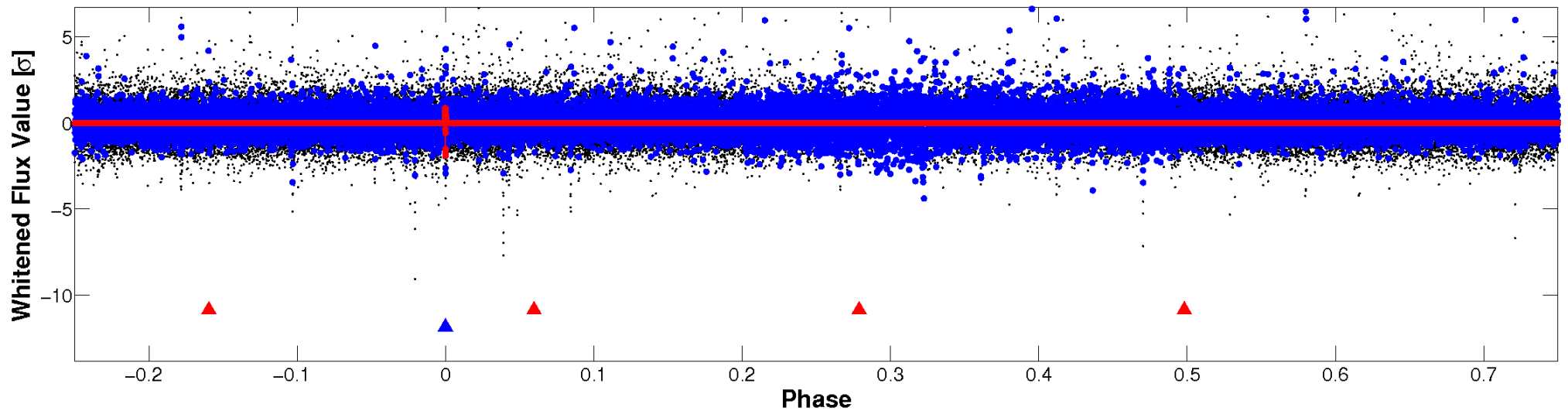


# Non-Whitened Vs. Whitened Light Curve

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

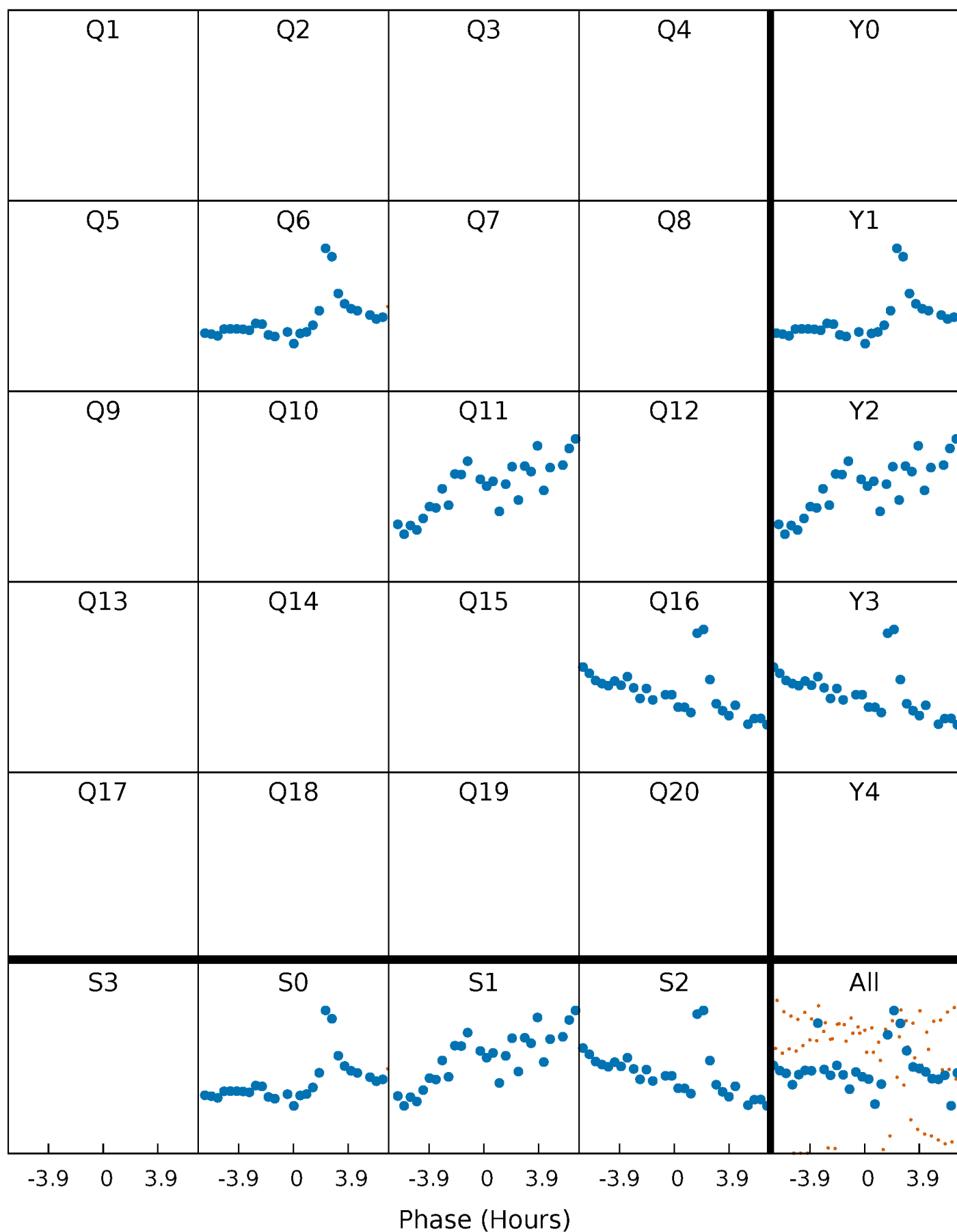


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



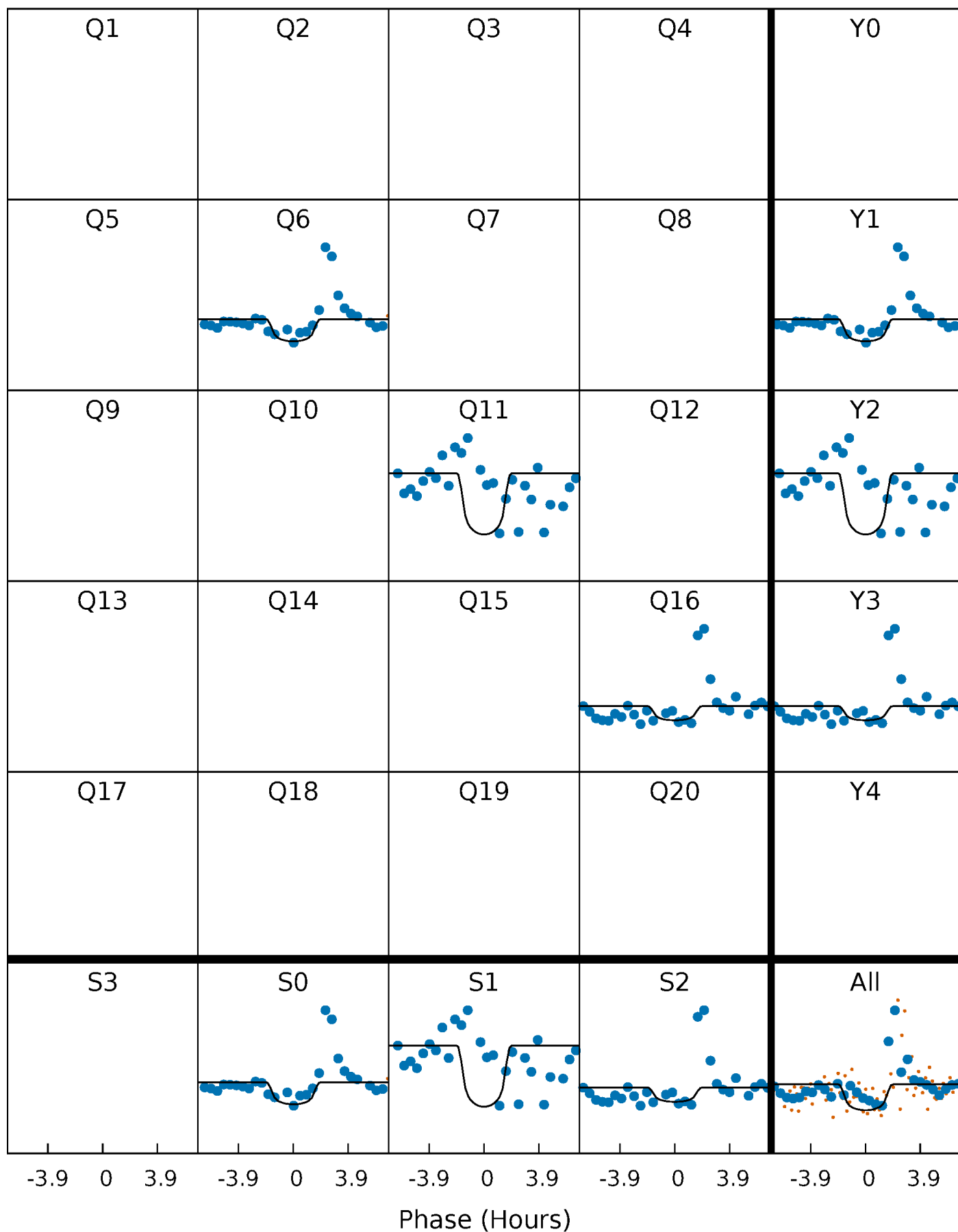
# PDC Quarter-Phased Transit Curves

TCE 008197923-02 P=458.684876 Days  $T_0=586.576996$  (BKJD)



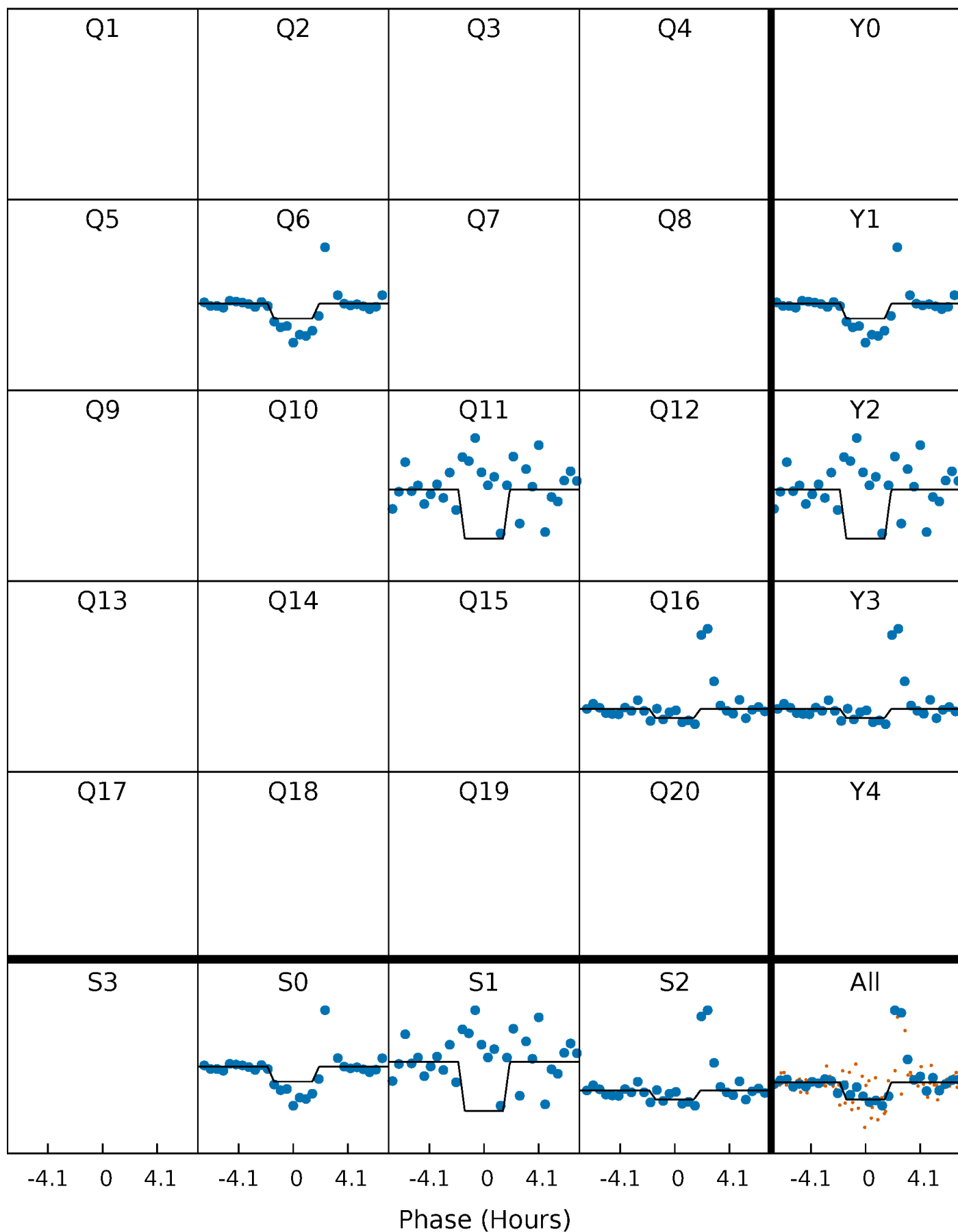
# DV Quarter-Phased Transit Curves

TCE 008197923-02 P=458.684876 Days  $T_0=586.576996$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

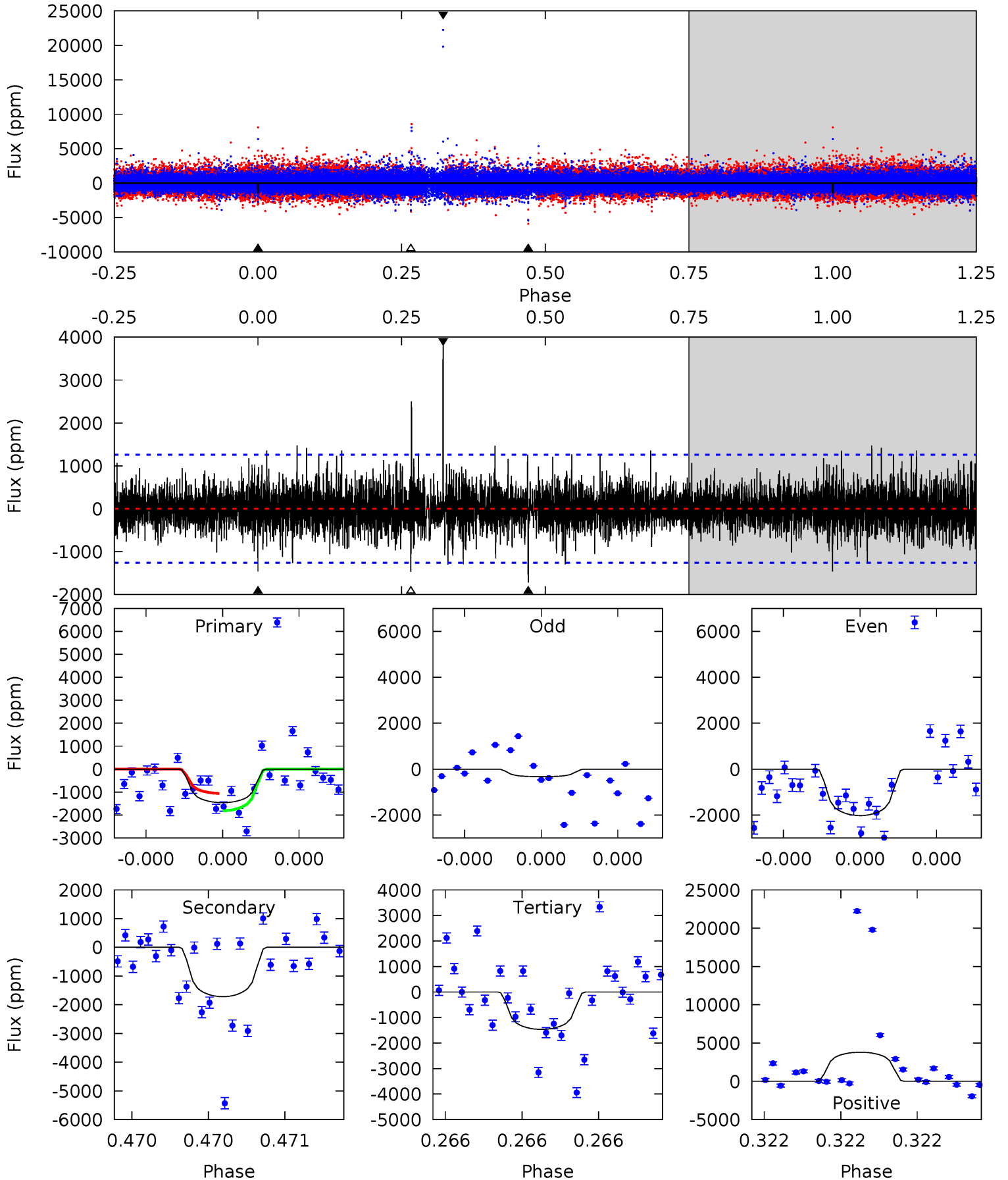
TCE 008197923-02 P=458.678932 Days  $T_0=586.573024$  (BKJD)



# DV Model-Shift Uniqueness Test

008197923-02, P = 458.684876 Days, E = 127.892120 Days

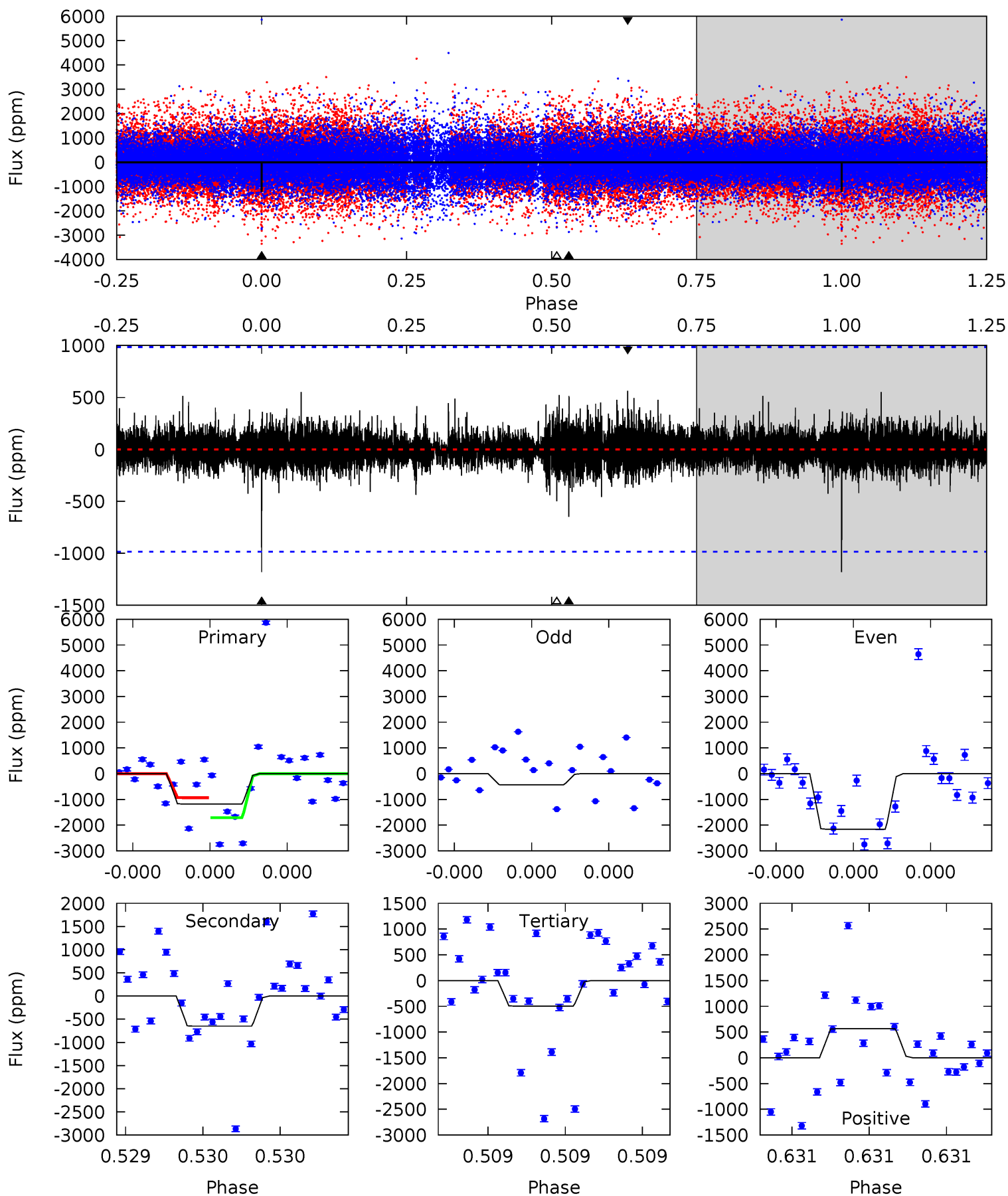
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.56	7.72	6.58	17.1	5.65	3.61	1.47	-0.02	-10.5	1.14	-9.36	3.53	0.77	0.69	1.68



# Alt Model-Shift Uniqueness Test

008197923-02, P = 458.678932 Days, E = 127.894092 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
6.77	3.73	2.85	3.24	5.65	3.61	0.61	3.92	3.53	0.88	0.49	4.89	0.96	0.32	2.28





### Stellar Parameters For KIC 008197923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5025^{+175}_{-175}$	$4.631^{+0.065}_{-0.040}$	$-0.800^{+0.300}_{-0.300}$	$0.630^{+0.060}_{-0.054}$	$0.619^{+0.065}_{-0.030}$	$3.488^{+0.898}_{-0.536}$
	+3%/-3%	+1%/-1%	+37%/-37%	+10%/-9%	+11%/-5%	+26%/-15%
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 008197923-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1719 \pm 223$	$4.16^{+3.24}_{-2.64}$	$246^{+10}_{-10}$	$4324^{+2274}_{-786}$	$54686^{+317494}_{-37544}$
Alt.	$-649 \pm 174$	$3.46^{+3.16}_{-2.13}$	$246^{+10}_{-10}$	$3865^{+1840}_{-746}$	$29281^{+188822}_{-21602}$

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

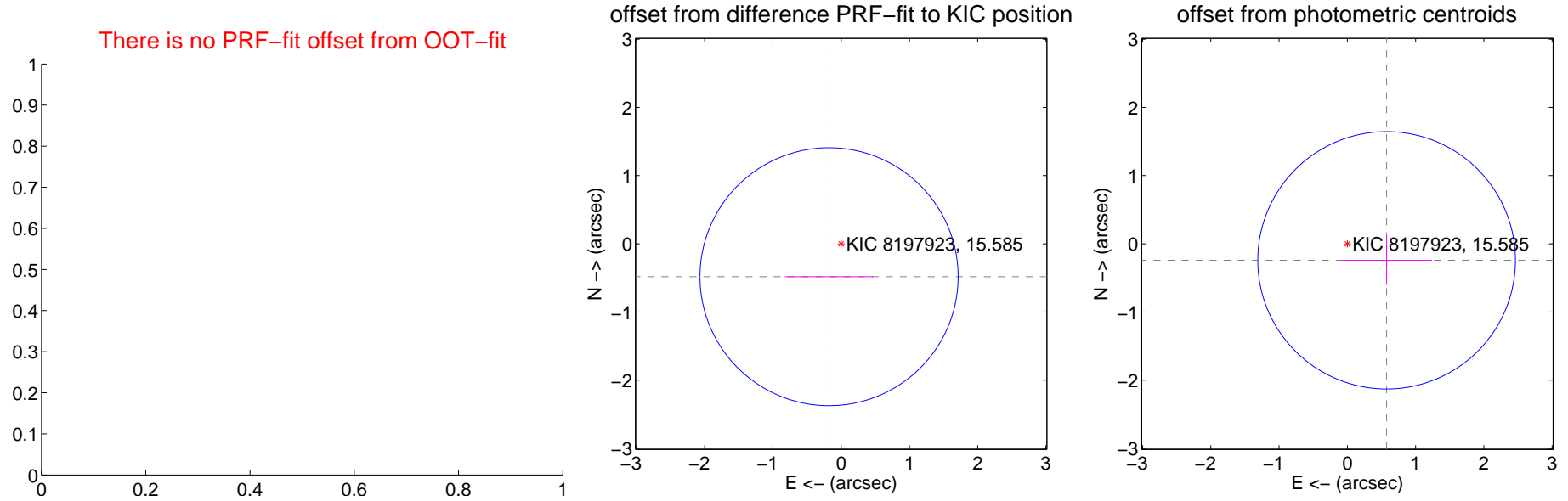
## DV Centroid Data

Supplemental centroid analysis for 008197923-02. Kepler magnitude: 15.59. Transit SNR 7.57

There are 1 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	$0.514 \pm 0.630$	0.82	$0.178 \pm 0.649$	$-0.483 \pm 0.628$
photometric centroid source offset	$0.62 \pm 0.63$	0.99	$-0.58 \pm 0.67$	$-0.24 \pm 0.36$



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

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



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

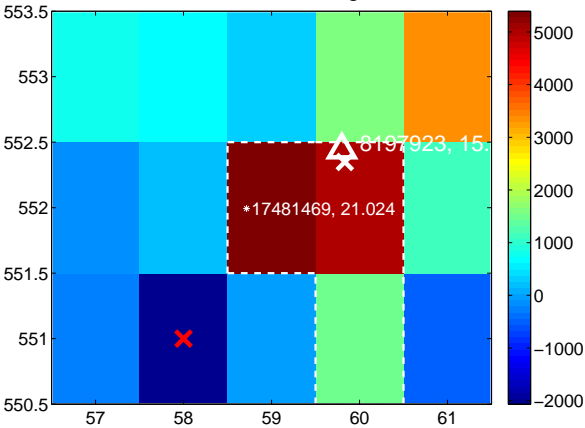
Q5 no difference image



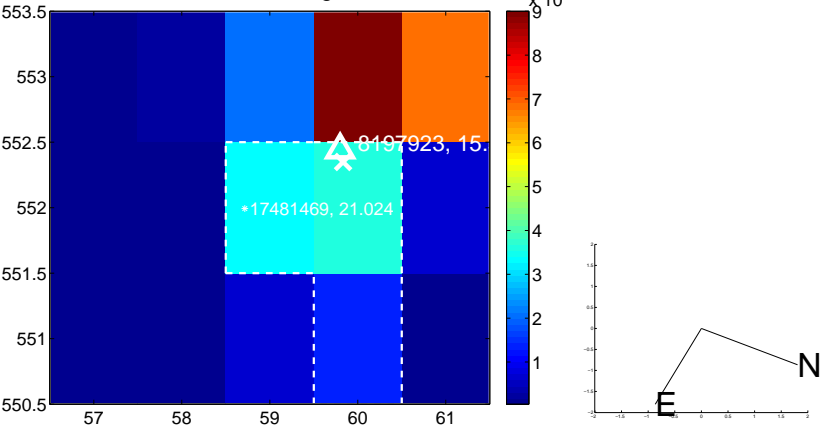
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



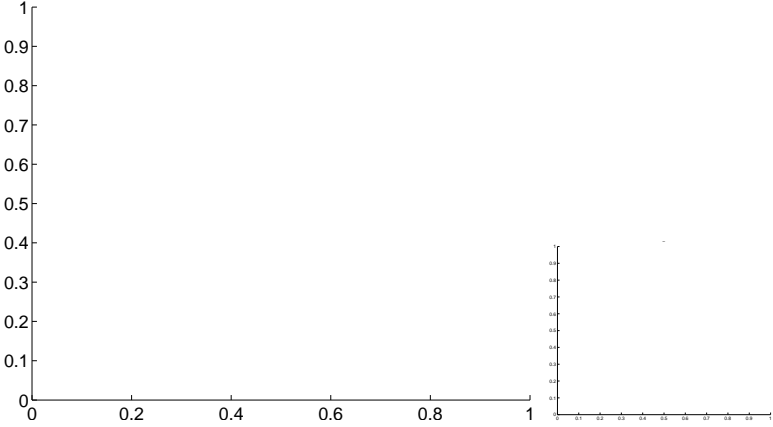
Q7 no OOT image



Q8 no difference image

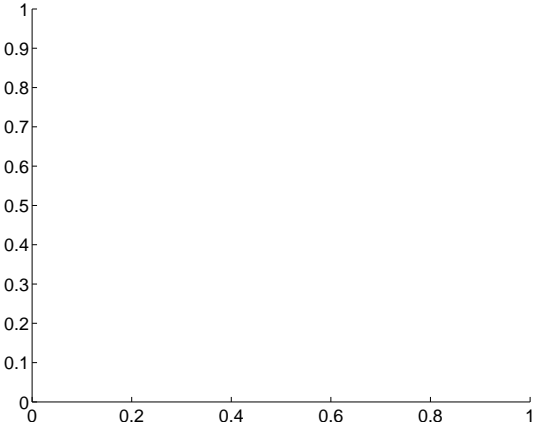


Q8 no OOT image

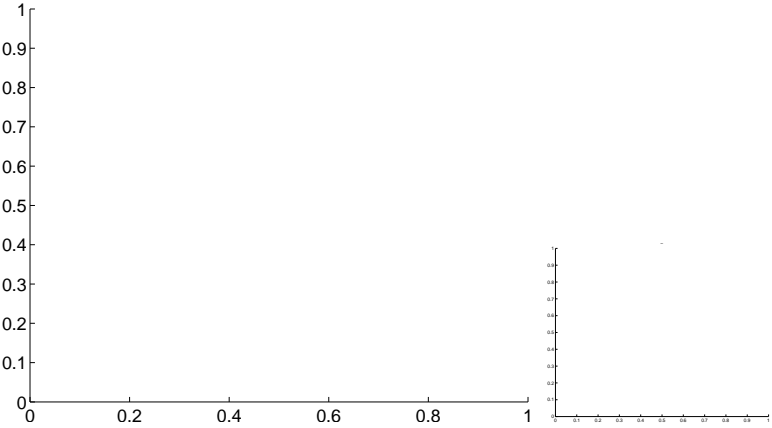


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q9 no difference image



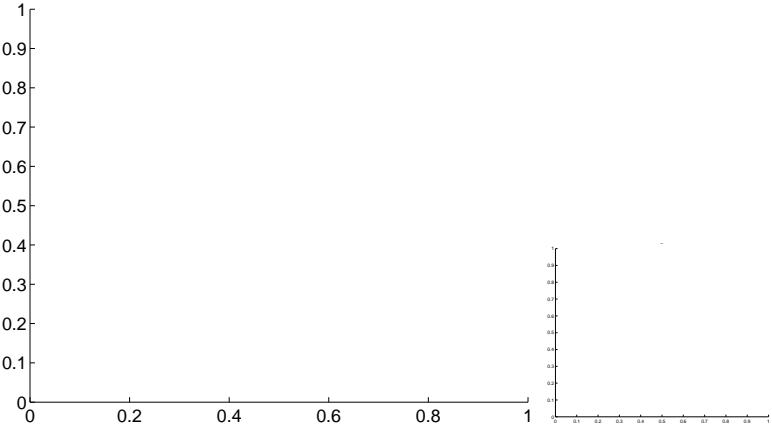
Q9 no OOT image



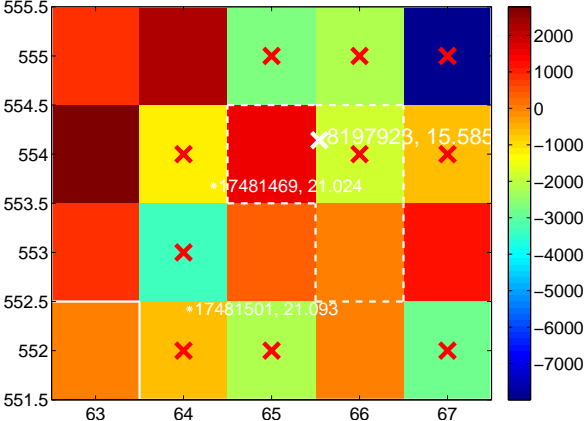
Q10 no difference image



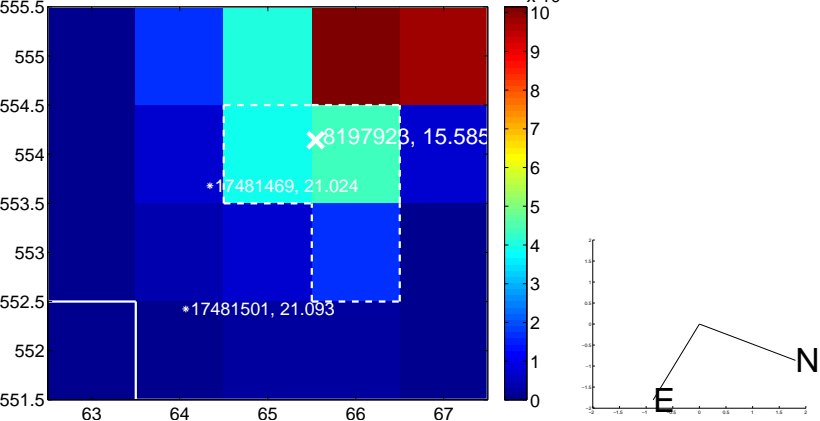
Q10 no OOT image



Q11 difference image. Poor Quality



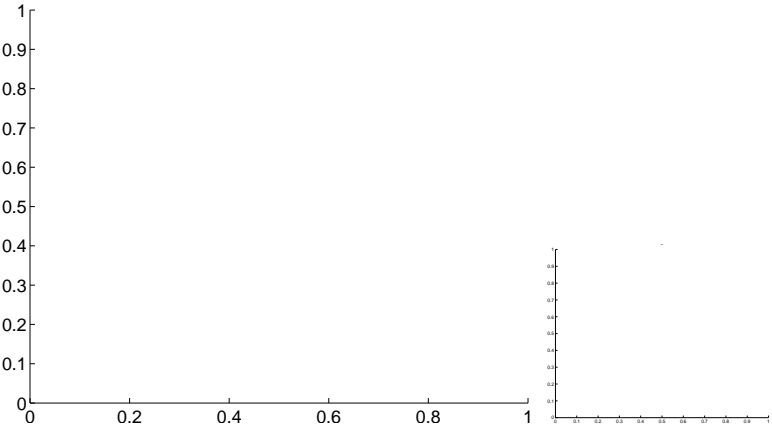
Q11 OOT image



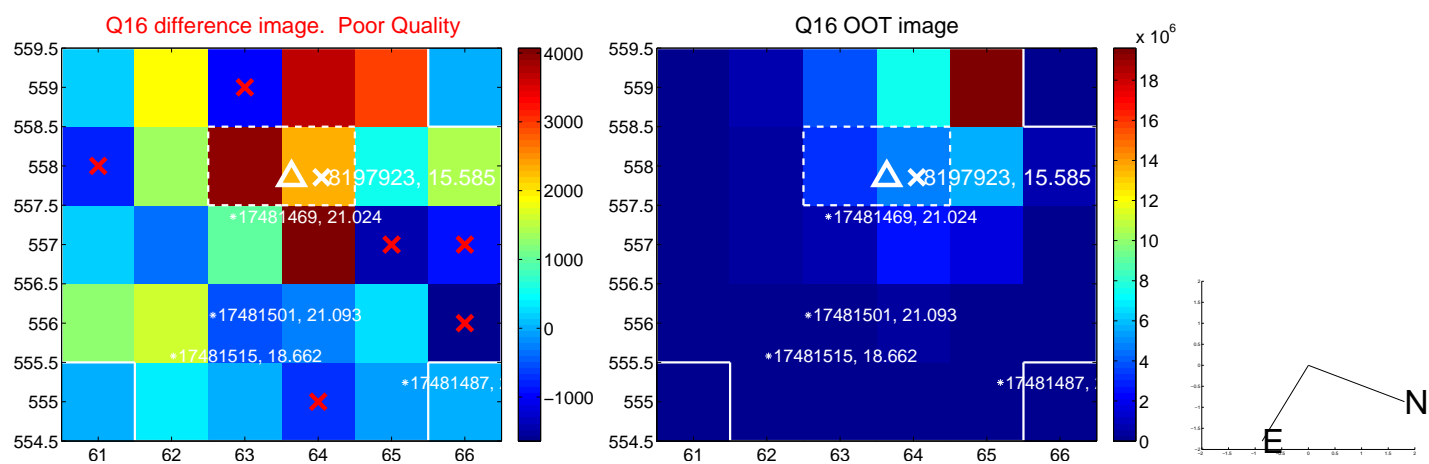
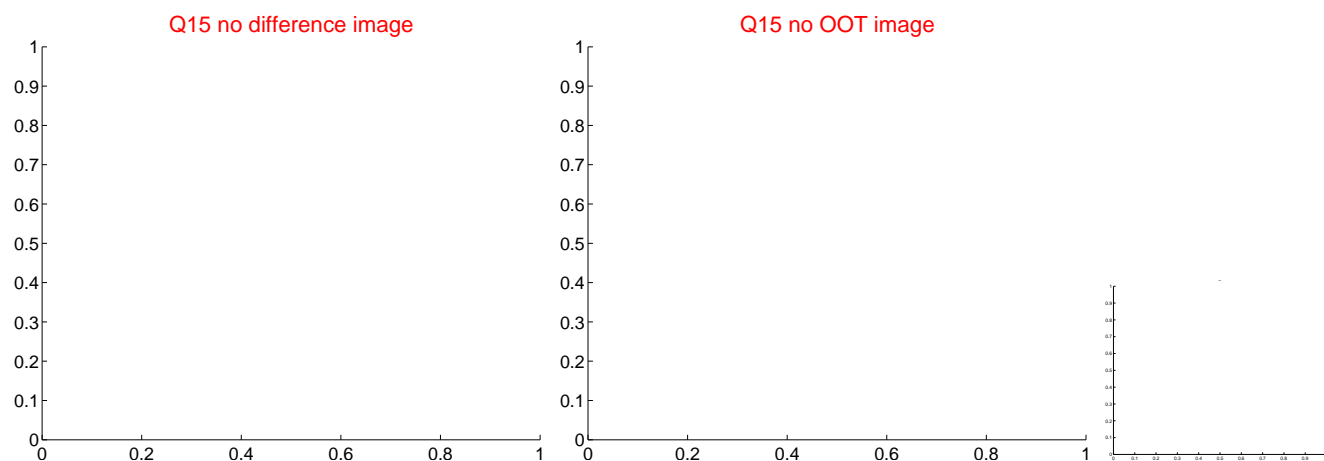
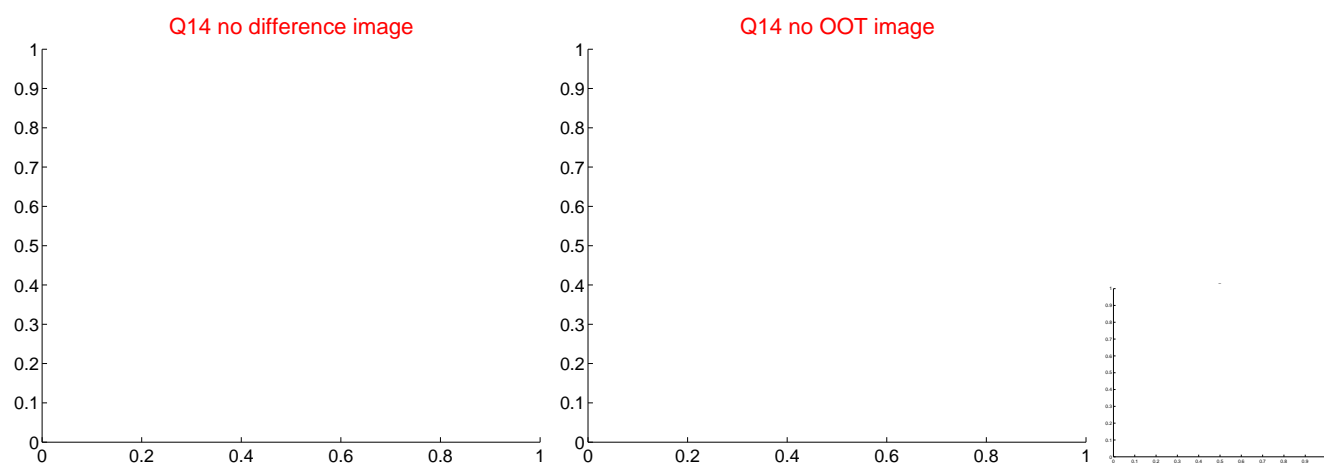
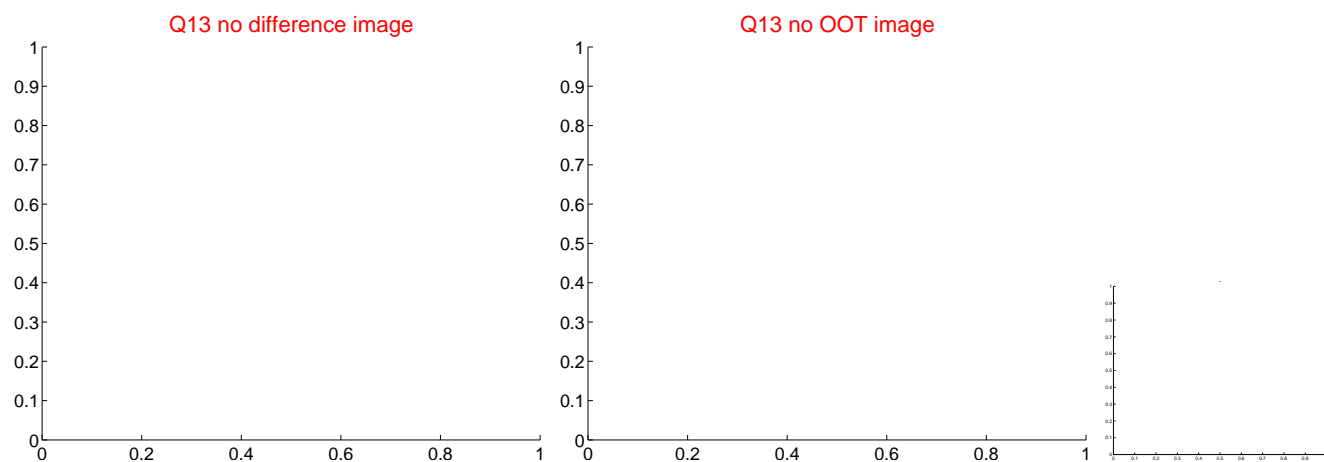
Q12 no difference image



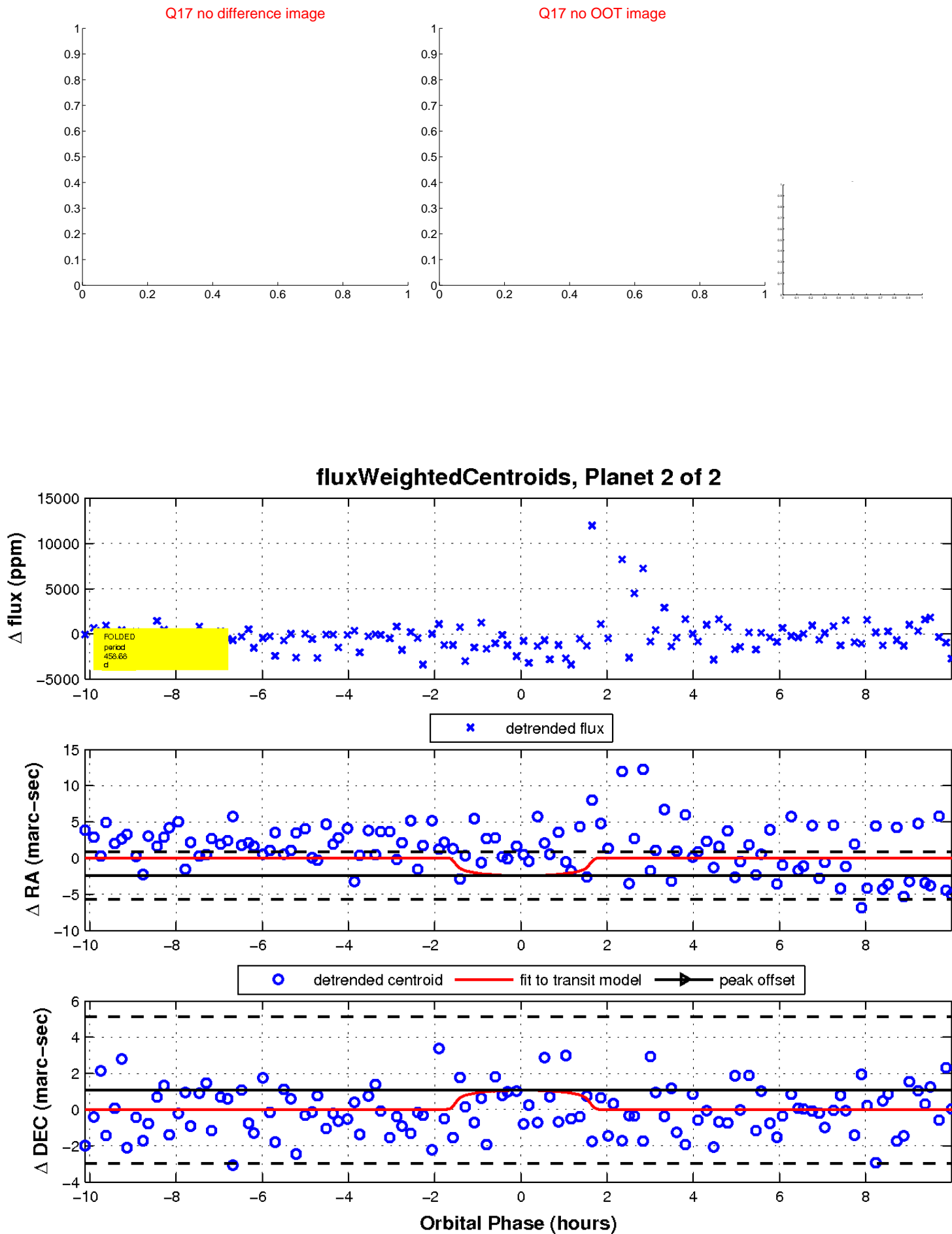
Q12 no OOT image



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

