

# KIC 008619915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008619915-01	OBS	No	374.104902	177.800239	803.4	52.148	14.4	22.1	0.95	6042	3.43	1.16
008619915-02	OBS	No	531.107169	255.271138	502.8	18.479	8.9	9.6	0.95	6042	2.18	0.73
008619915-03	OBS	No	399.091430	510.802570	354.7	31.531	7.2	9.6	0.95	6042	1.92	1.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008619915-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
008619915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—CENT_FEW_DIFFS
008619915-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

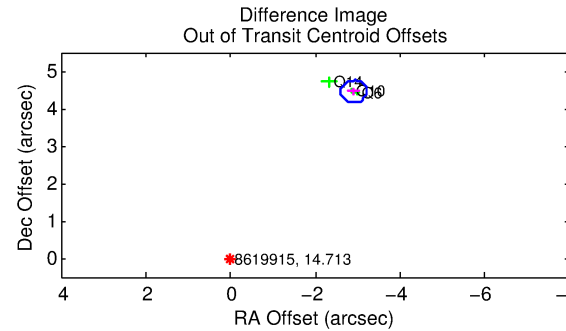
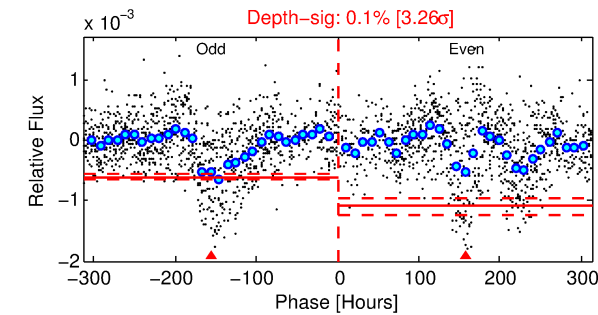
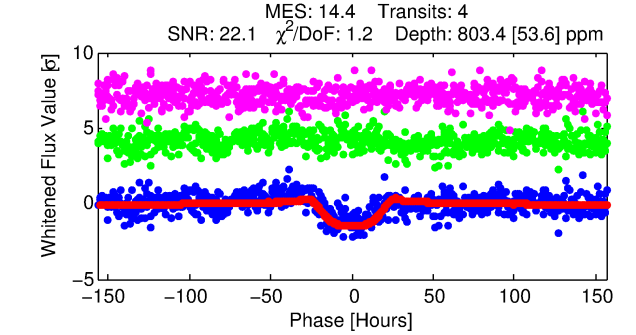
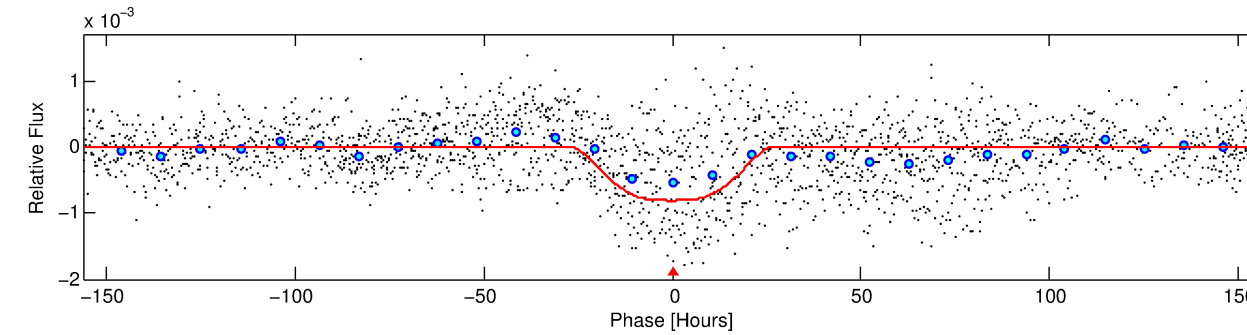
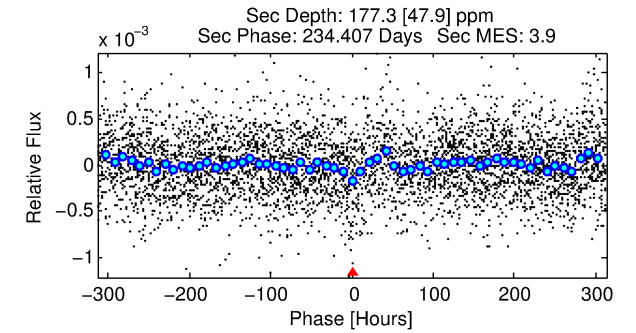
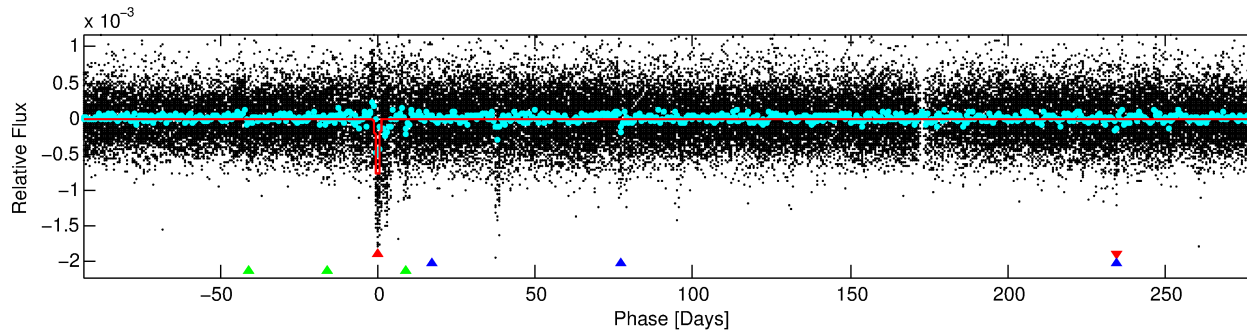
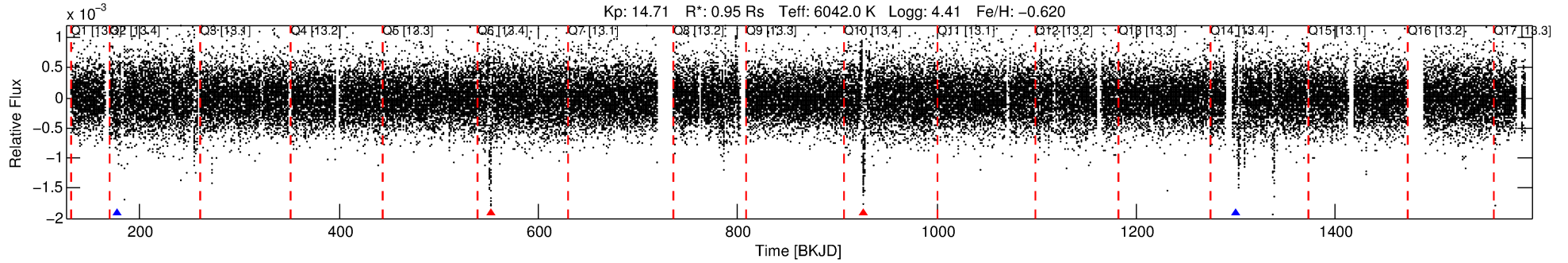
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008619915-01

No Significant Match Found

# DV One-Page Summary

KIC: 8619915 Candidate: 1 of 3 Period: 374.105 d



## DV Fit Results:

Period = 374.10490 [0.02780] d  
Epoch = 177.8002 [0.0476] BKJD  
Rp/R\* = 0.0332 [0.0015]  
a/R\* = 20.67 [1.68]  
b = 0.96 [0.01]  
Seff = 1.16 [0.41]  
Teq = 265 [23] K  
Rp = 3.43 [0.88] Re  
a = 0.9593 [0.2123] AU  
Ag = 7640.47 [3341.94] [2.29σ]  
Teffp = 3826 [296] K [12.01σ]

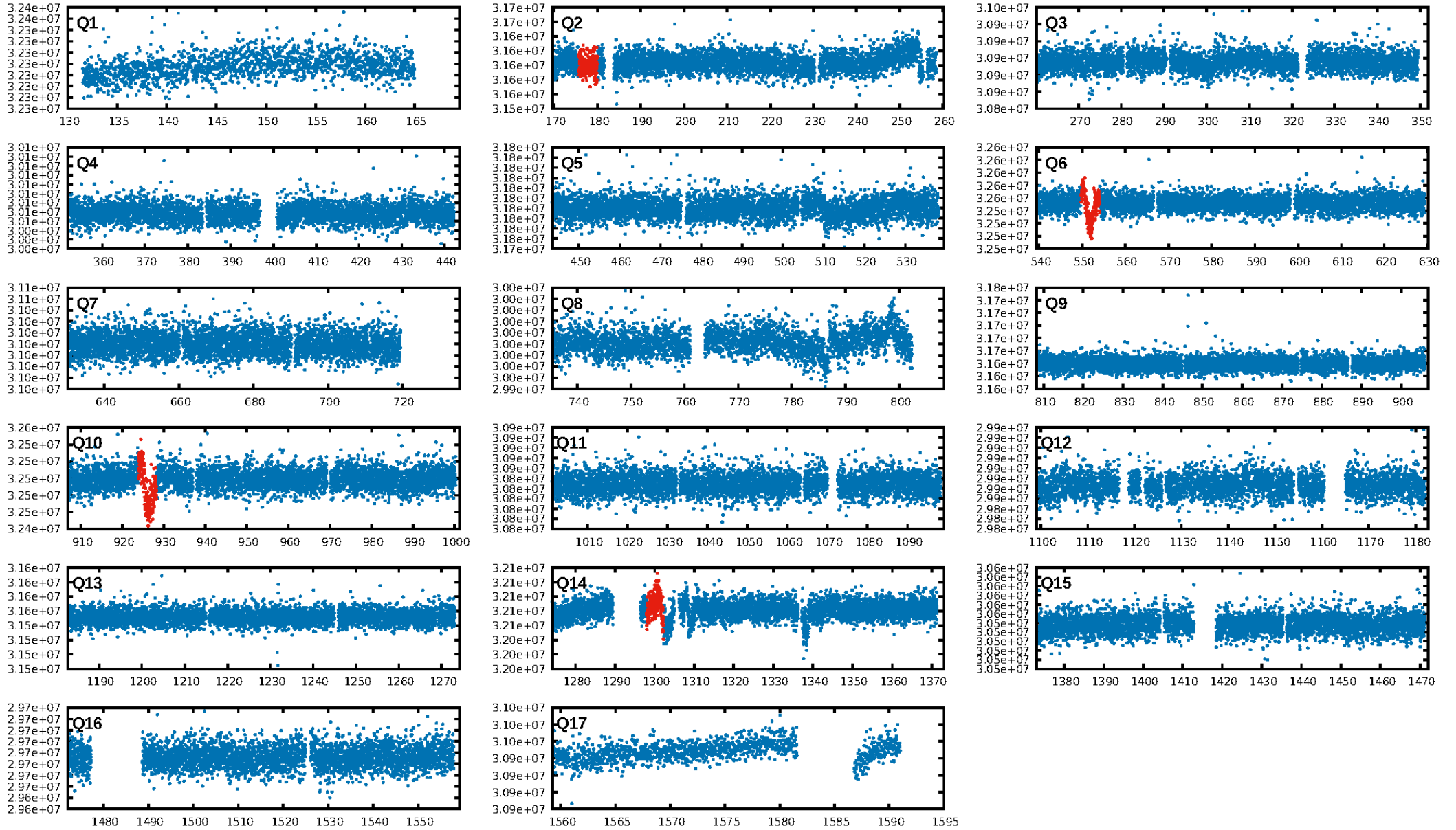
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [9.84σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 54.0%  
Bootstrap-pfa: 1.25e-36  
RollingBand-fgt: 0.50 [2/4]  
GhostDiagnostic-chr: 0.1174  
Centroid-sig: 16.9%  
Centroid-so: 0.788 arcsec [1.30σ]  
OotOffset-rm: 5.318 arcsec [53.30σ]  
KicOffset-rm: 5.267 arcsec [58.56σ]  
OotOffset-st: 3/0/0/0 [3]  
KicOffset-st: 3/0/0/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [4/4]

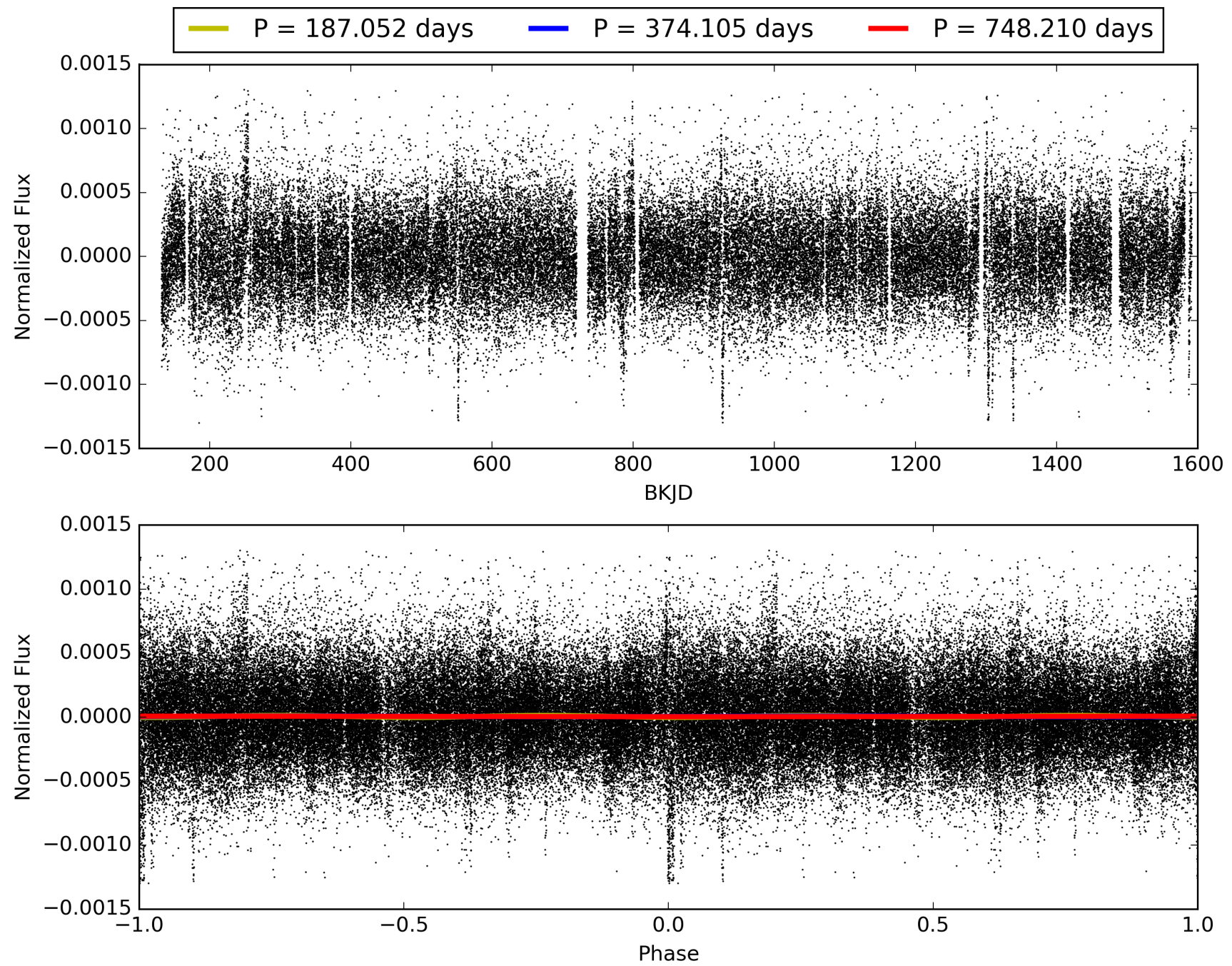
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:42:47 Z

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

# TCE 008619915-01, PDC Light Curves

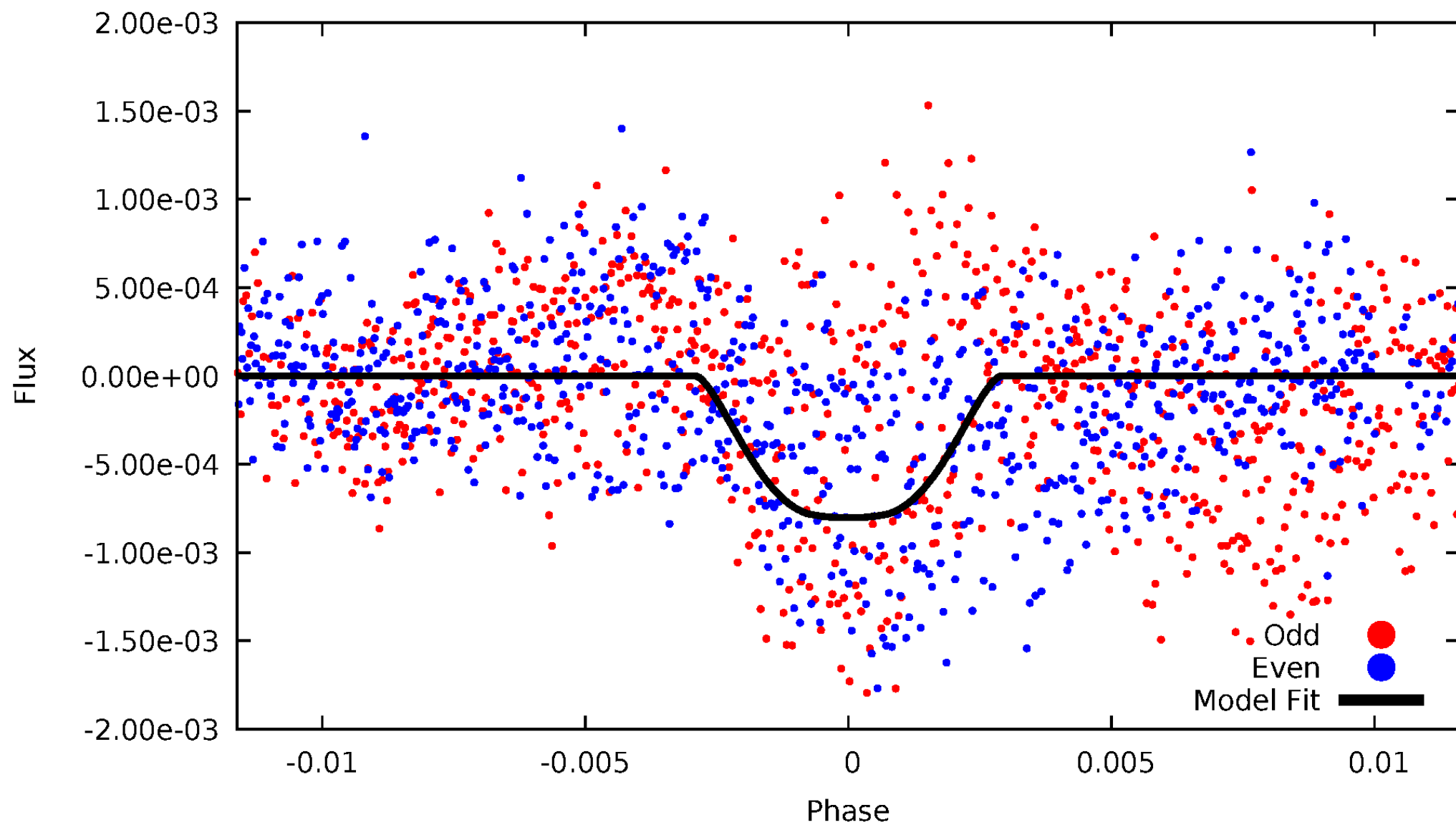


# TCE 008619915-01



# DV Odd/Even

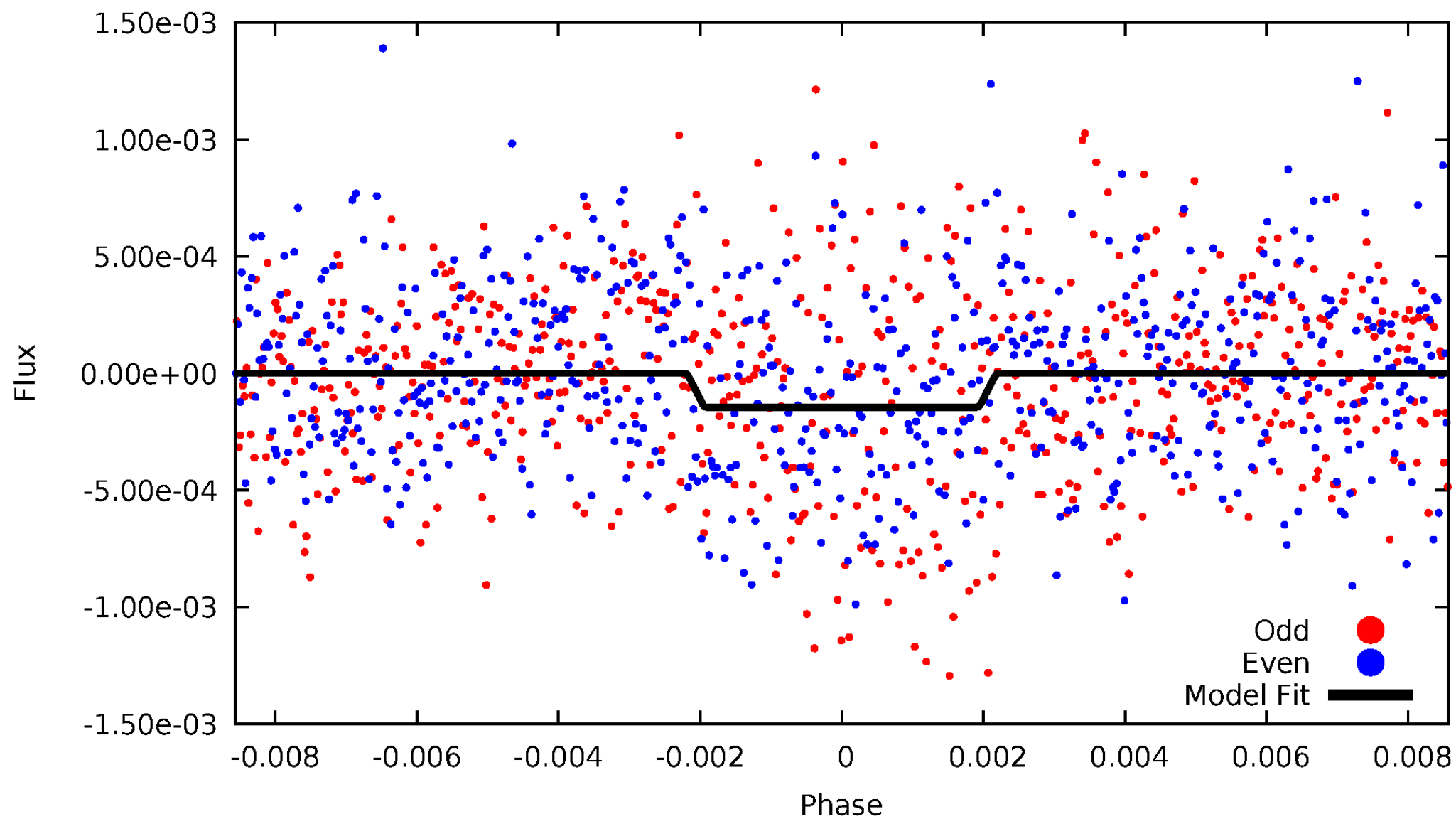
TCE 008619915-01





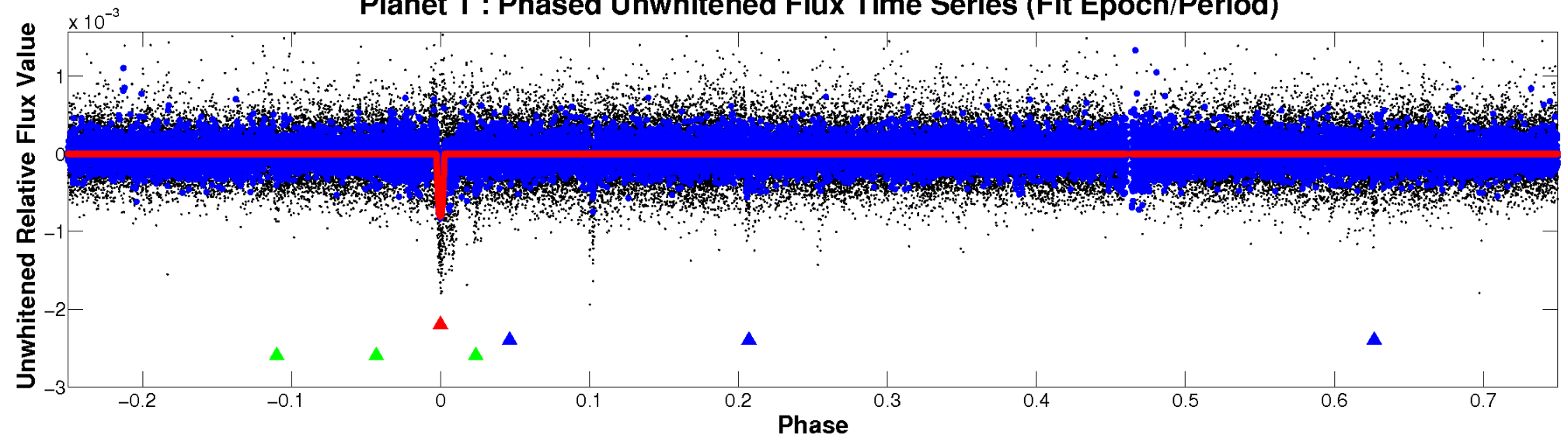
# ALT Odd/Even

TCE 008619915-01

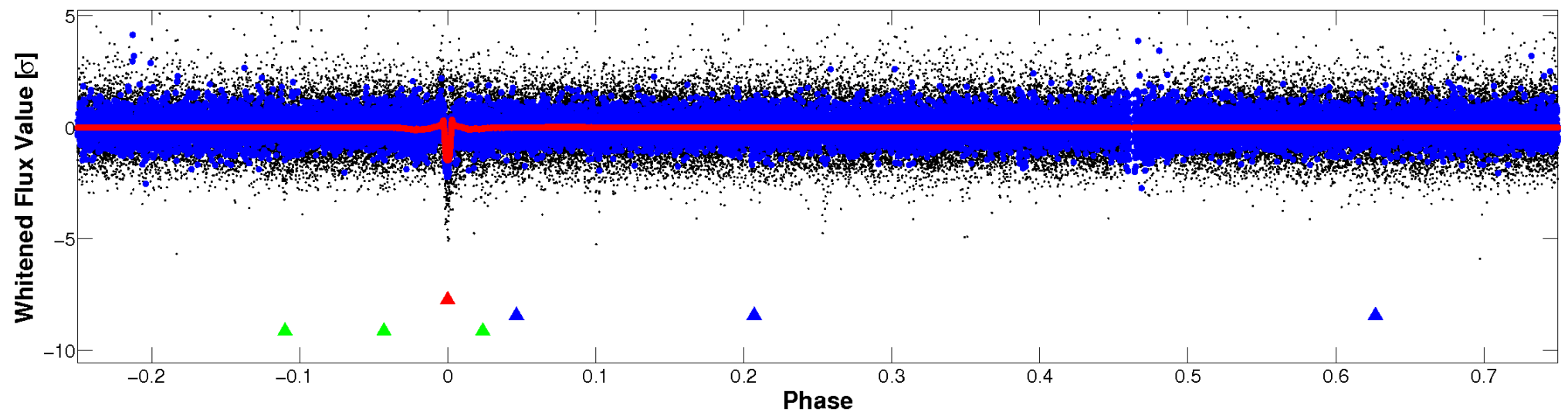


# Non-Whitened Vs. Whitened Light Curve

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

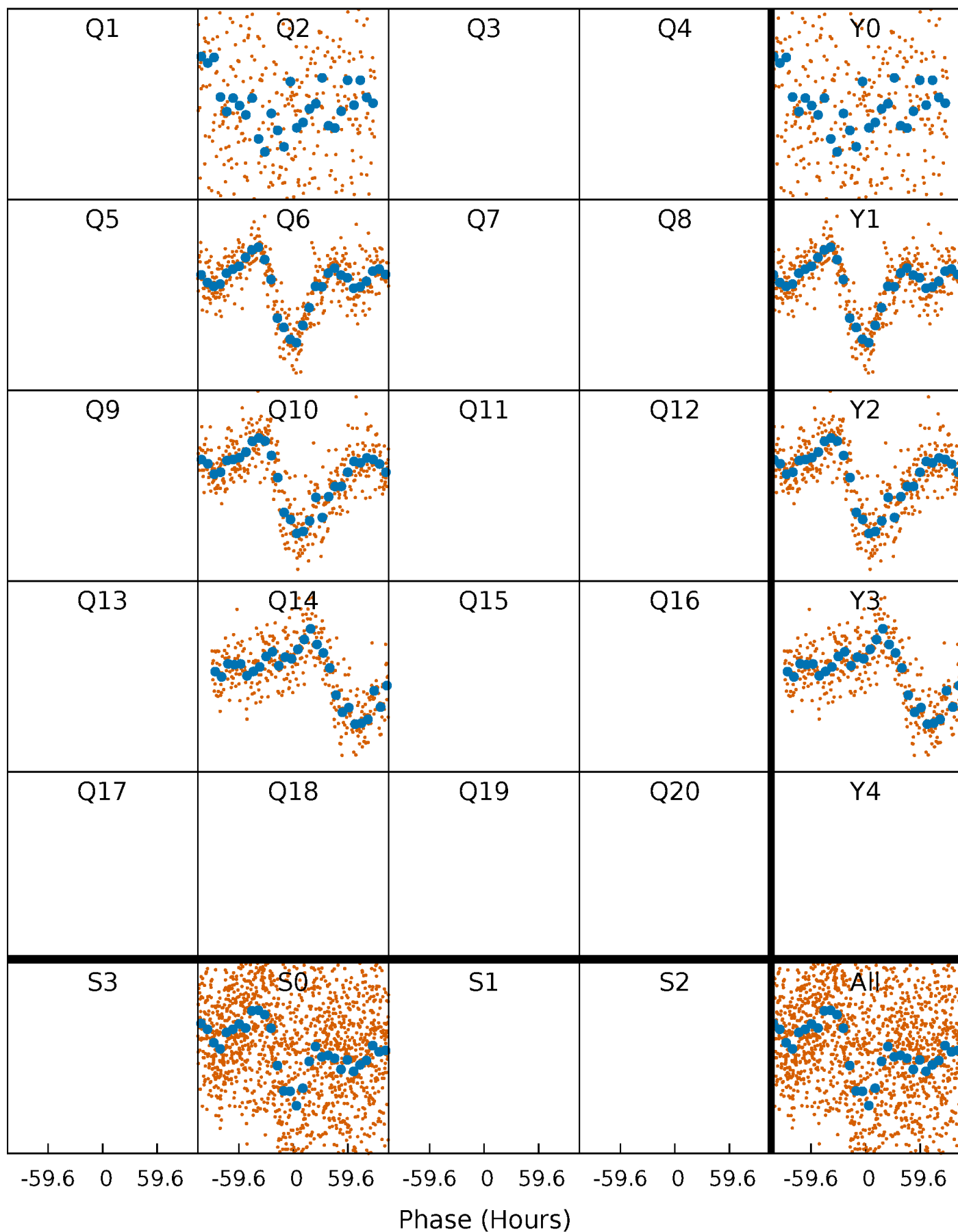


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

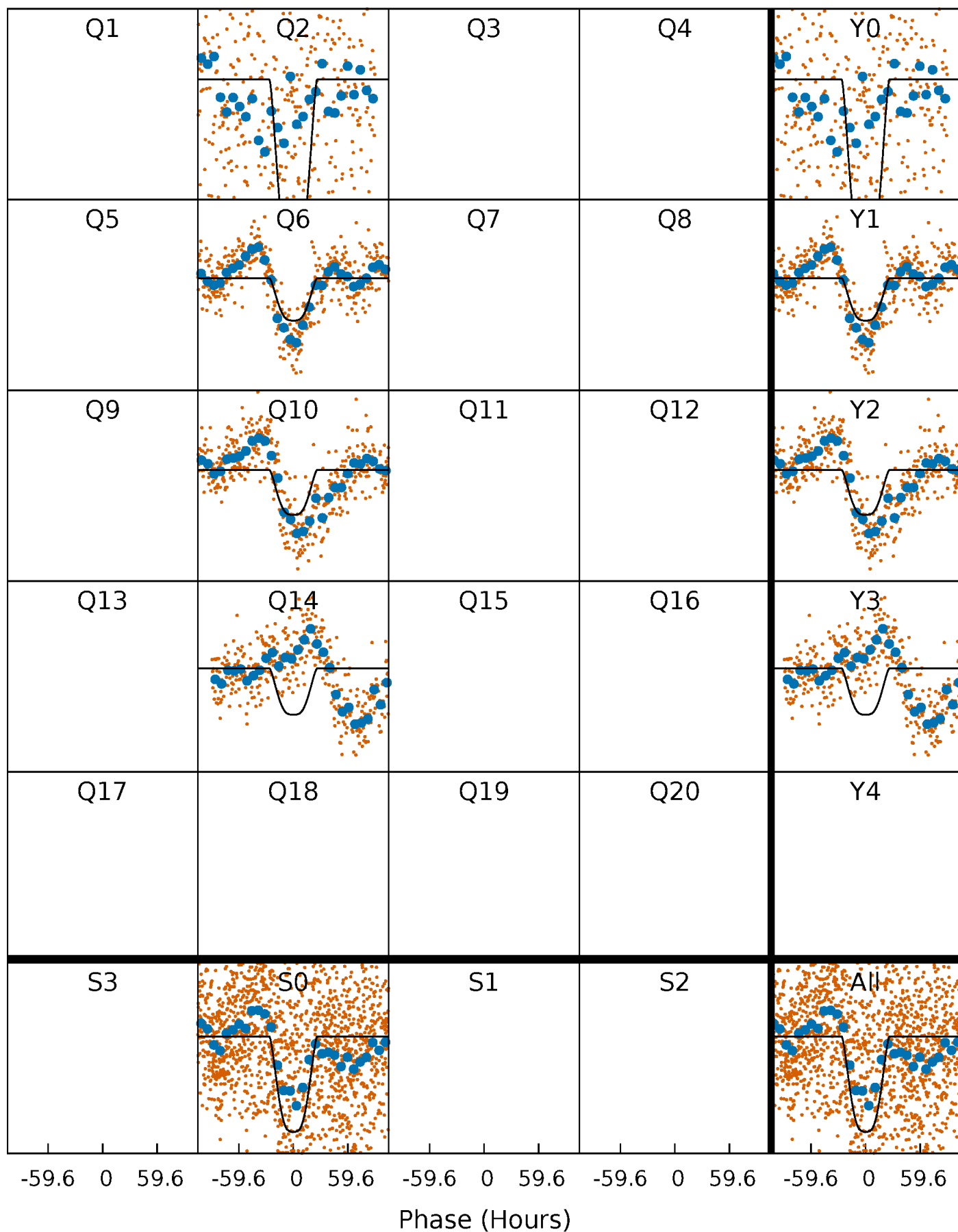
TCE 008619915-01 P=374.104902 Days  $T_0=177.800239$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 008619915-01 P=374.104902 Days  $T_0=177.800239$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

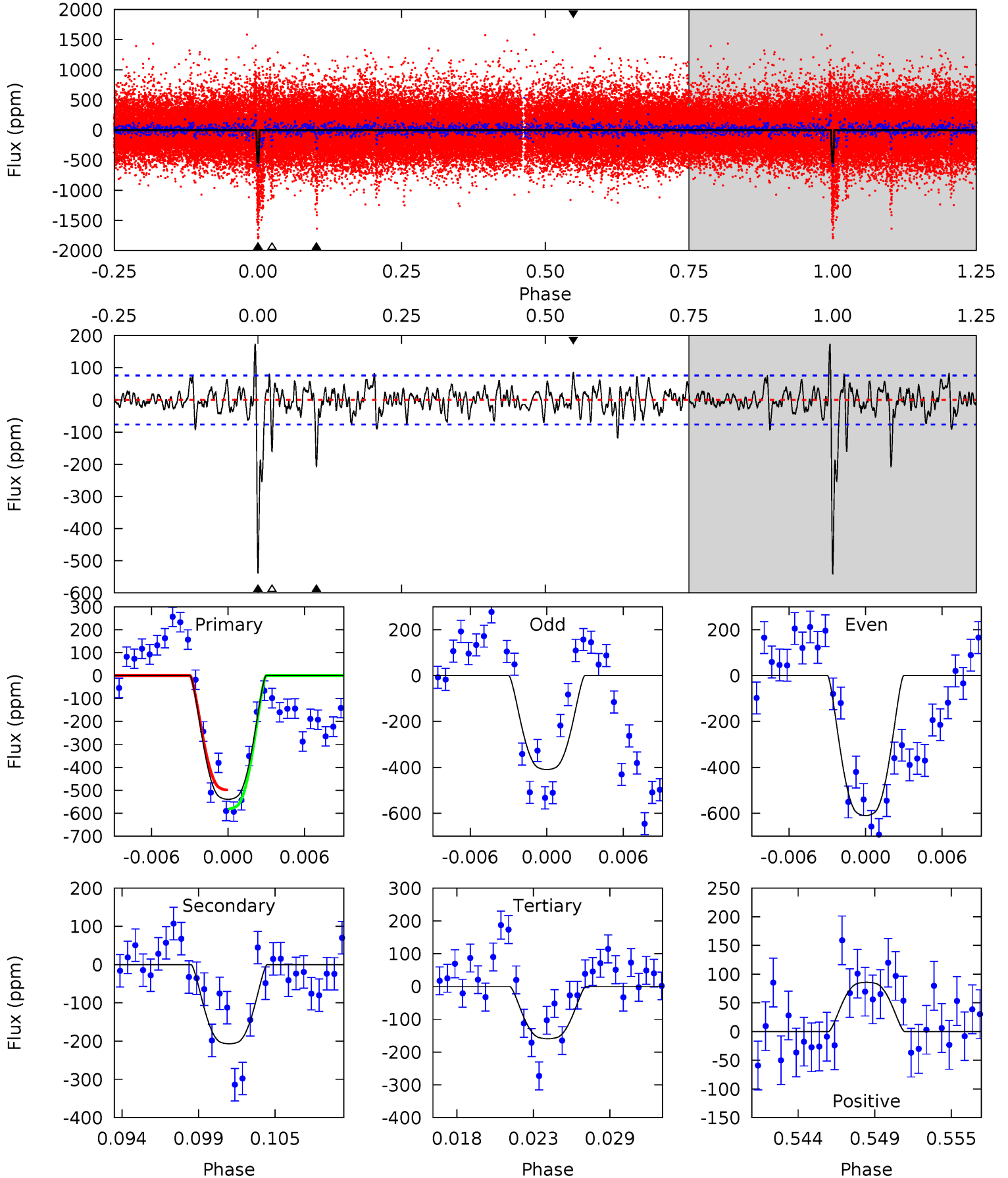
TCE 008619915-01 P=374.676567 Days  $T_0=176.789991$  (BKJD)



# DV Model-Shift Uniqueness Test

008619915-01, P = 374.104902 Days, E = 177.800239 Days

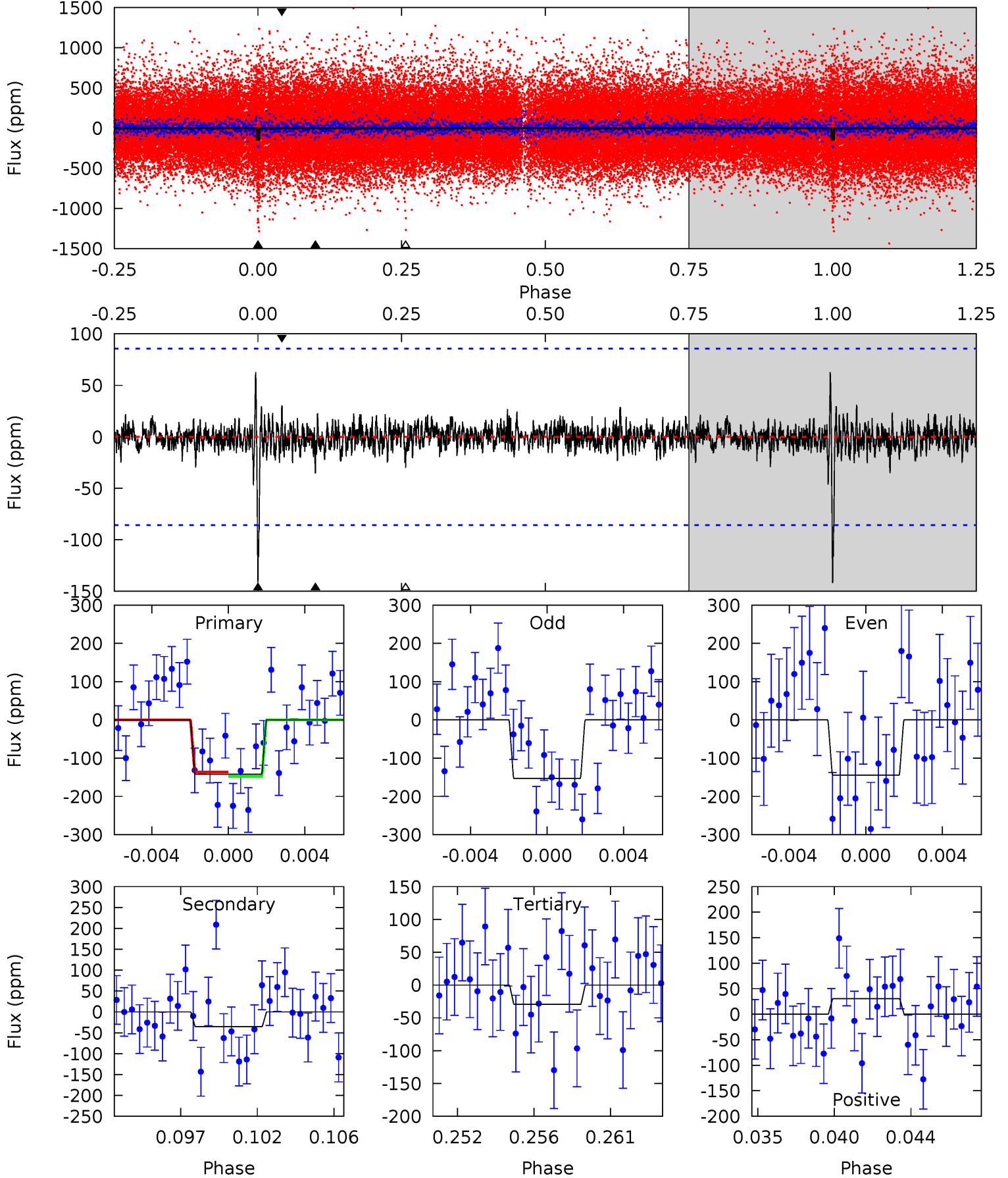
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.3	13.9	10.7	5.78	5.13	2.76	2.30	25.6	30.5	3.22	8.15	6.81	0.83	0.24	2.76



# Alt Model-Shift Uniqueness Test

008619915-01, P = 374.676567 Days, E = 176.789991 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
8.57	2.14	1.78	1.83	5.18	2.85	0.53	6.80	6.74	0.36	0.31	0.25	0.99	0.31	0.36



### Stellar Parameters For KIC 008619915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6042^{+163}_{-181}$	$4.411^{+0.139}_{-0.186}$	$-0.620^{+0.300}_{-0.300}$	$0.946^{+0.240}_{-0.160}$	$0.841^{+0.099}_{-0.072}$	$1.398^{+0.909}_{-0.635}$
	+3%/-3%	+3%/-4%	+48%/-48%	+25%/-17%	+12%/-9%	+65%/-45%
Source	PHO1	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 008619915-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-207 \pm 15$	$3.45^{+0.53}_{-0.35}$	$372^{+26}_{-22}$	$4233^{+130}_{-131}$	$8693^{+2367}_{-1996}$
Alt.	$-35 \pm 17$	$1.26^{+0.22}_{-0.22}$	$372^{+24}_{-22}$	$4435^{+435}_{-491}$	$11073^{+7628}_{-5250}$

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

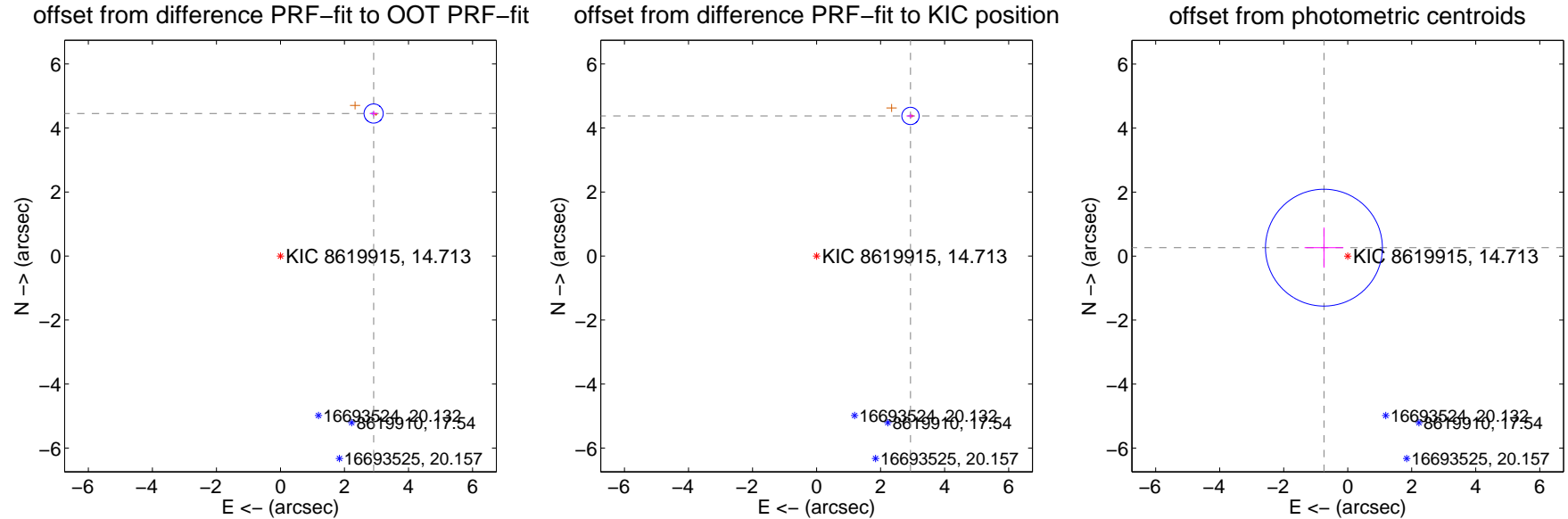
## DV Centroid Data

Supplemental centroid analysis for 008619915-01. Kepler magnitude: 14.71. Transit SNR 22.06

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.318 \pm 0.100$	53.30	$-2.910 \pm 0.124$	$4.451 \pm 0.087$
PRF-fit source offset from KIC position	$5.267 \pm 0.090$	58.56	$-2.933 \pm 0.123$	$4.375 \pm 0.070$
photometric centroid source offset	$0.79 \pm 0.61$	1.30	$0.74 \pm 0.61$	$0.26 \pm 0.63$



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.

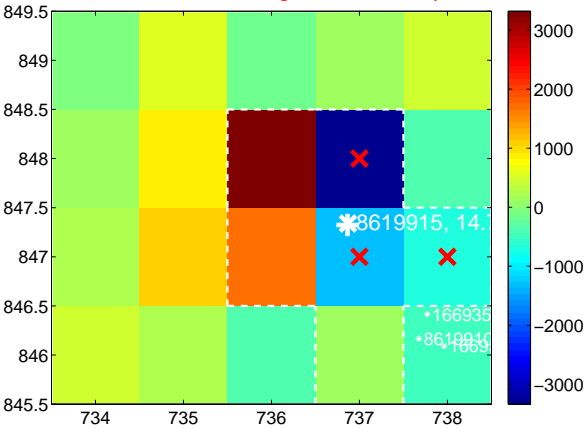
Q1 no difference image



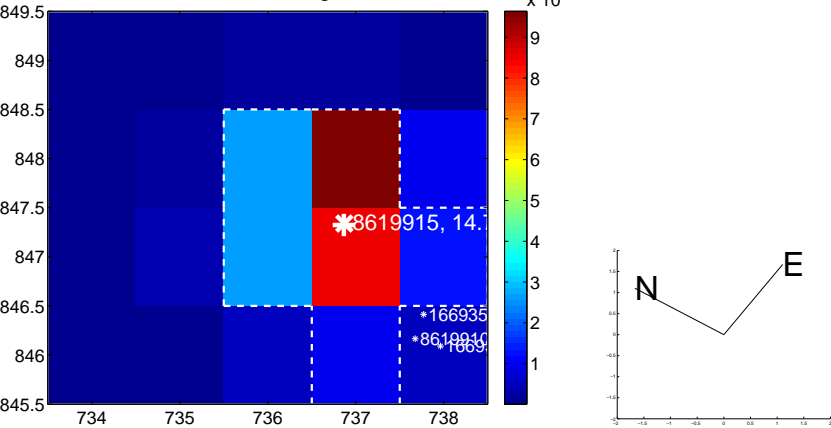
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



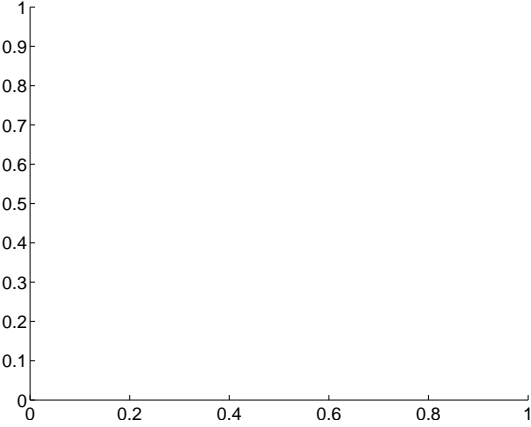
Q3 no difference image



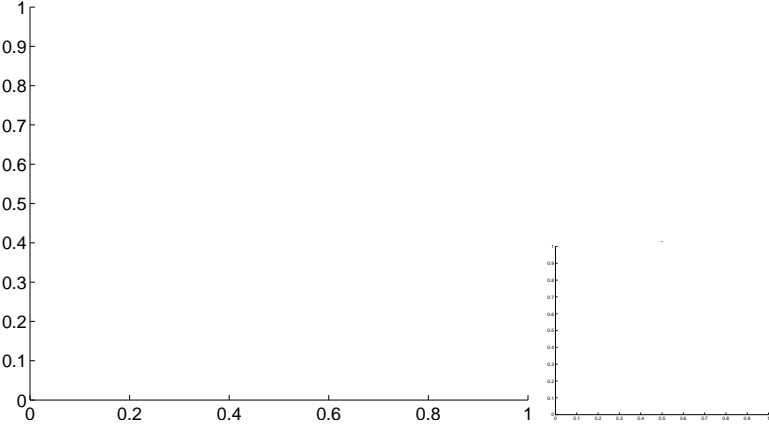
Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

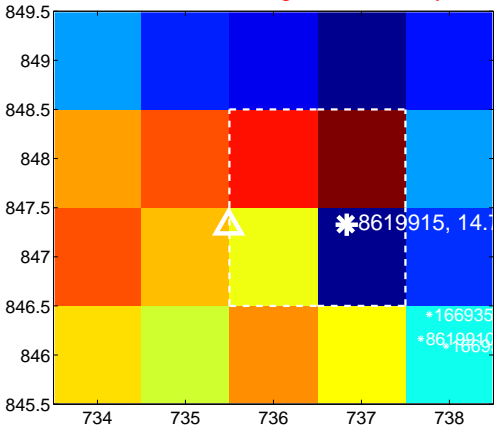
Q5 no difference image



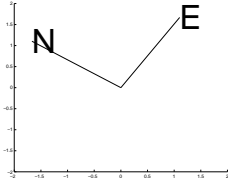
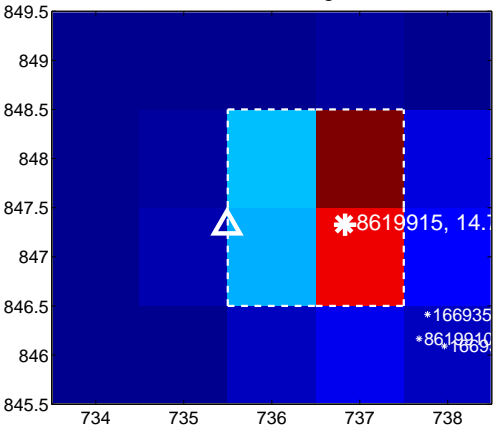
Q5 no OOT image



Q6 difference image. Poor Quality



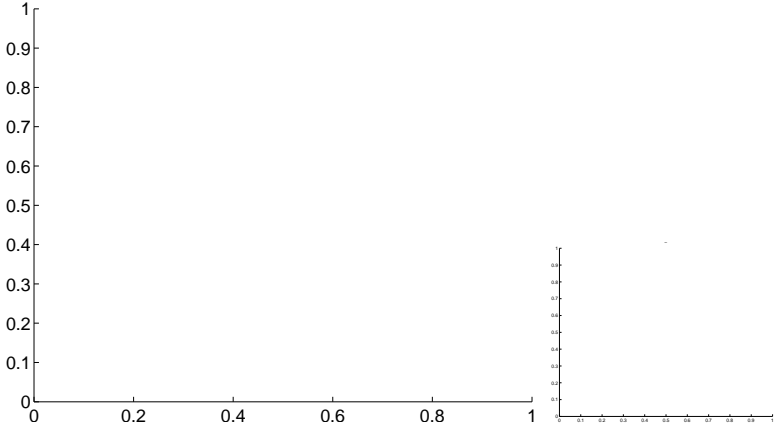
Q6 OOT image



Q7 no difference image



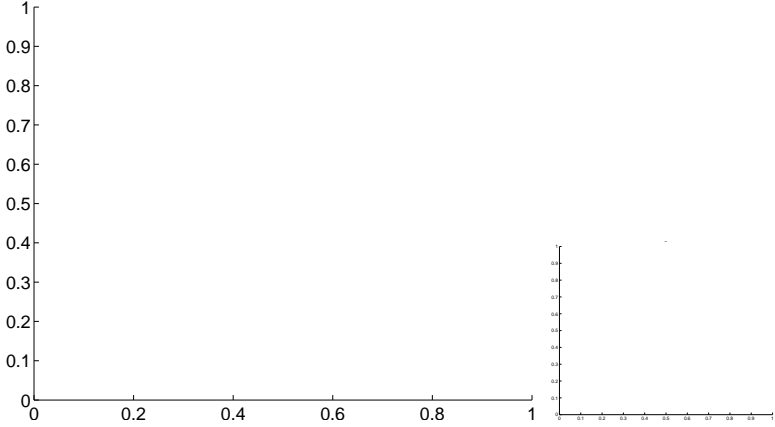
Q7 no OOT image



Q8 no difference image



Q8 no OOT image

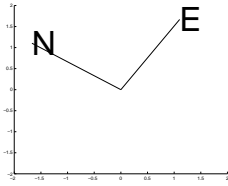
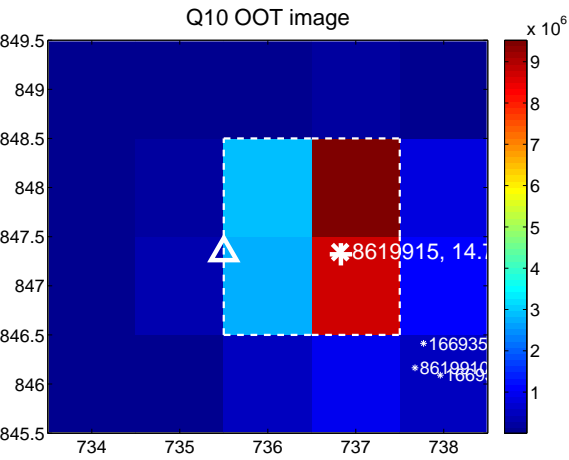
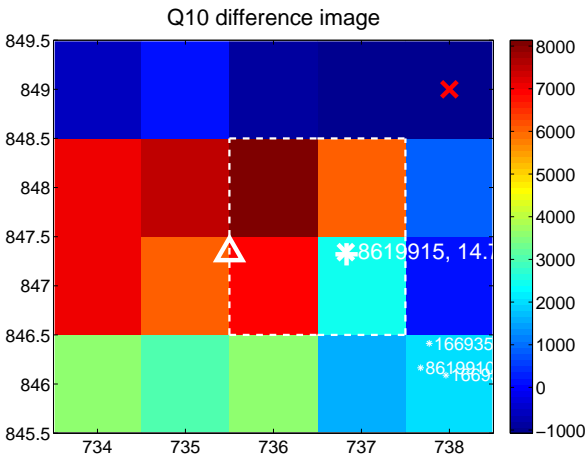


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

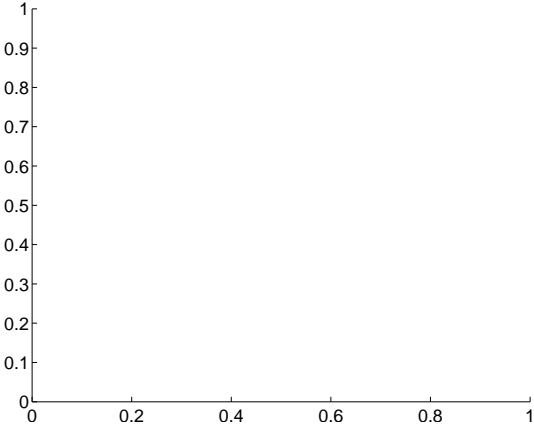
Q9 no difference image



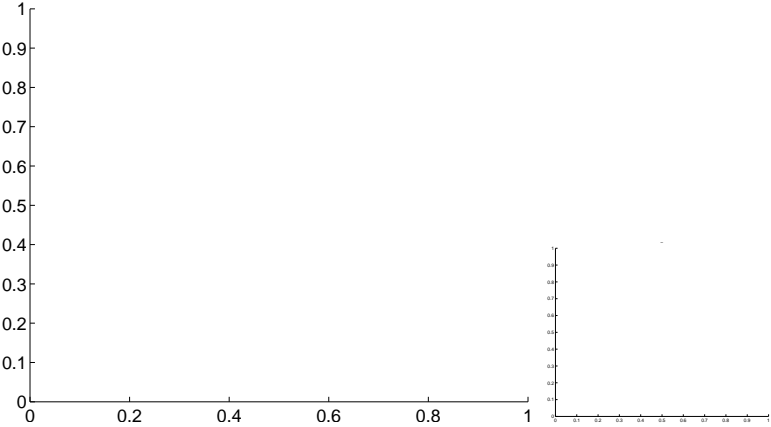
Q9 no OOT image



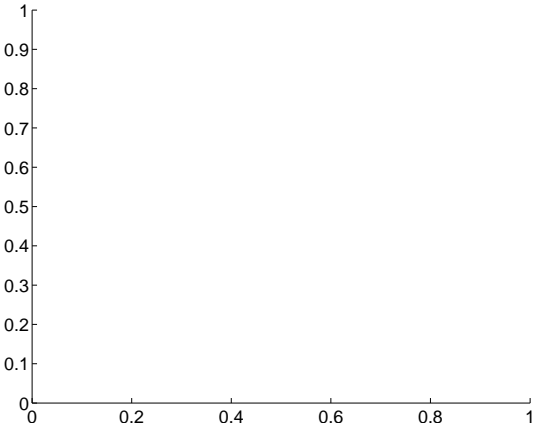
Q11 no difference image



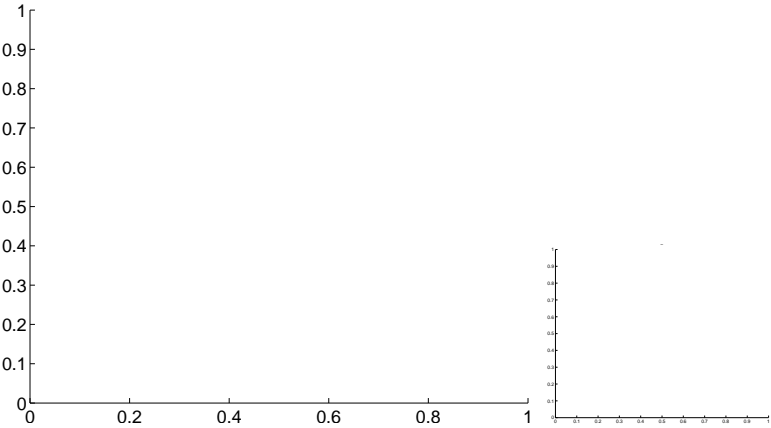
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

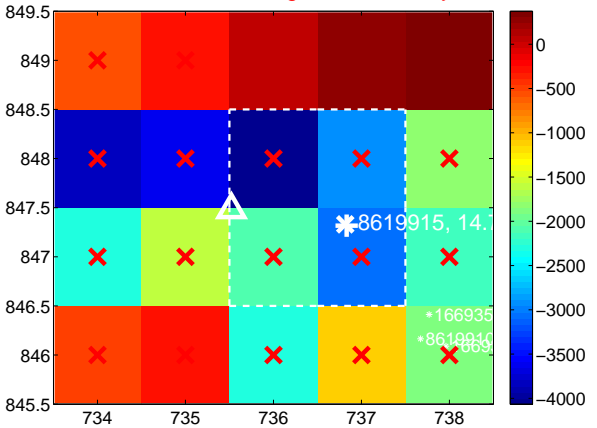
Q13 no difference image



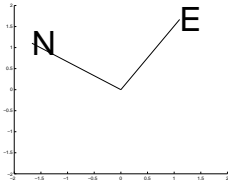
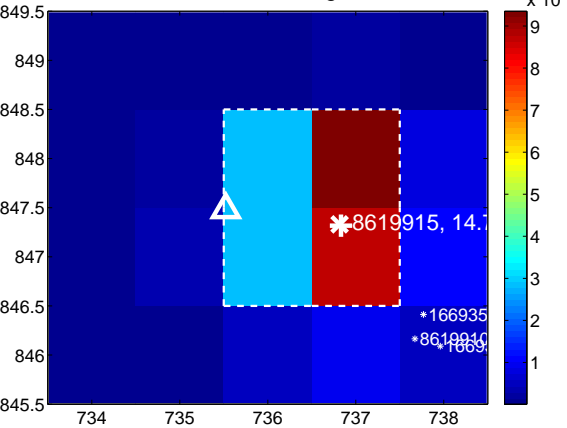
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



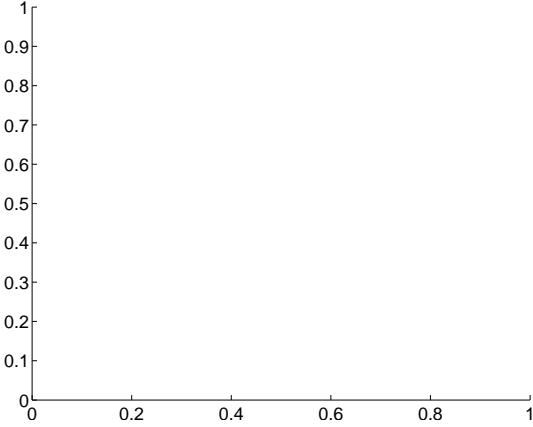
Q15 no difference image



Q15 no OOT image



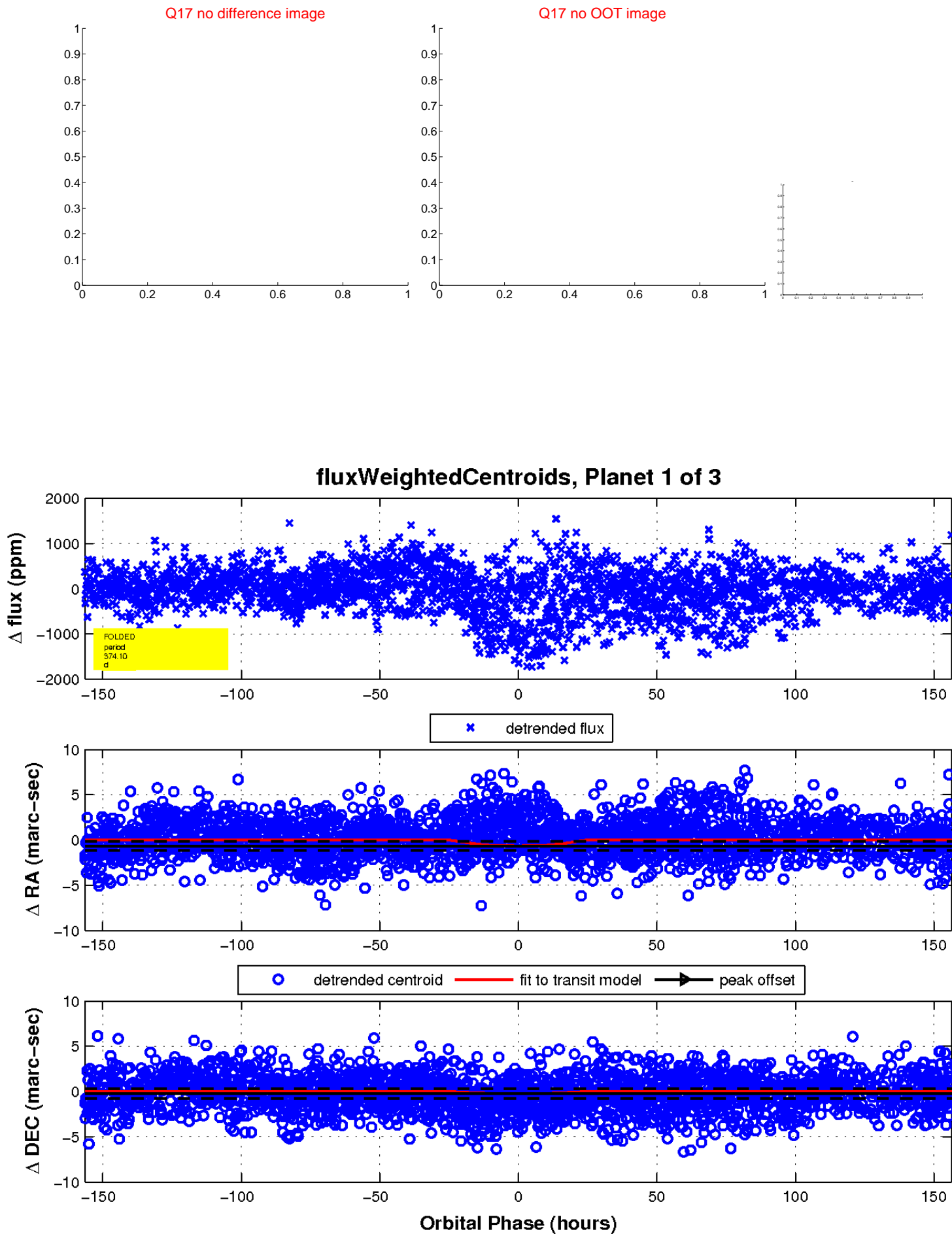
Q16 no difference image



Q16 no OOT image

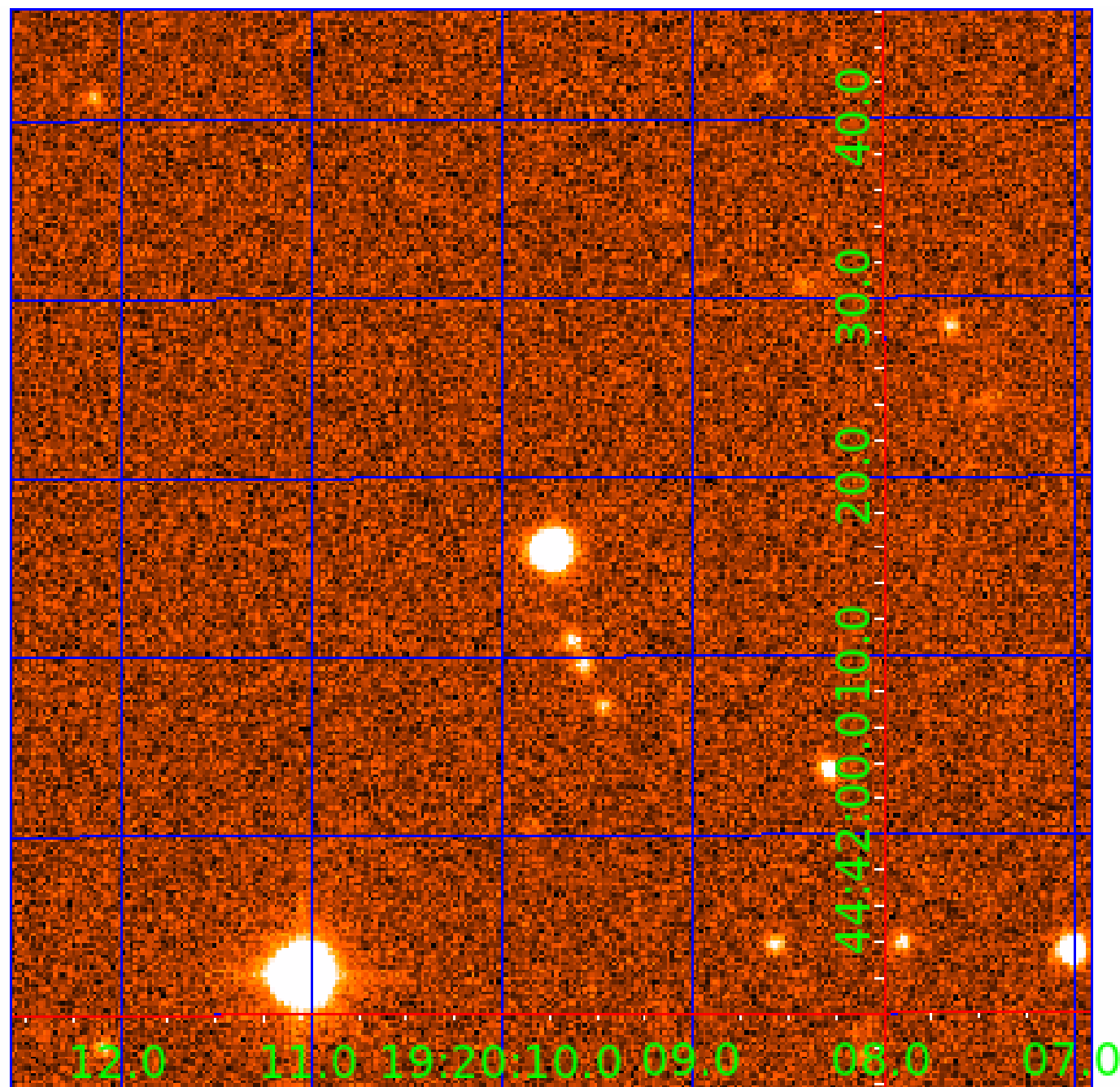


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008619915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

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008619915-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
008619915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—CENT_FEW_DIFFS
008619915-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

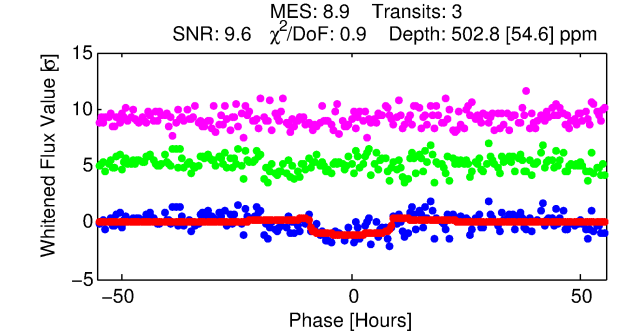
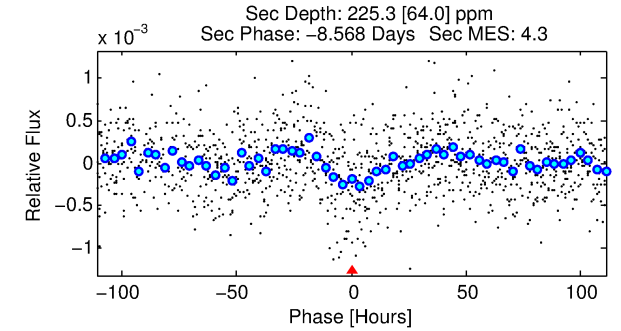
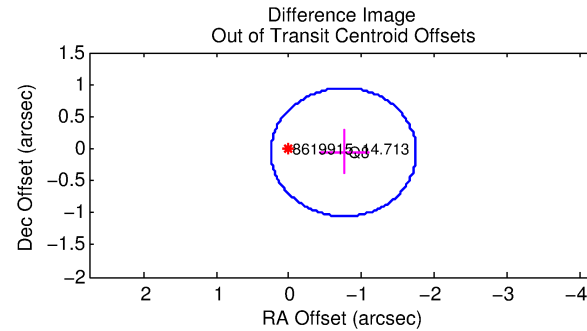
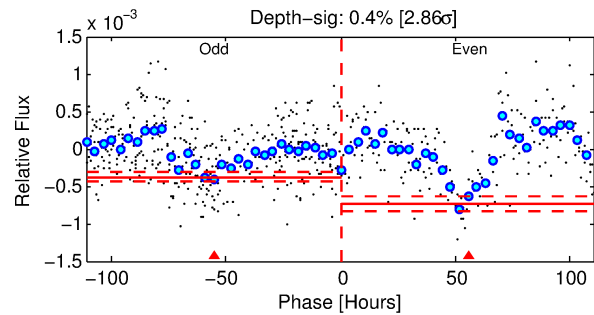
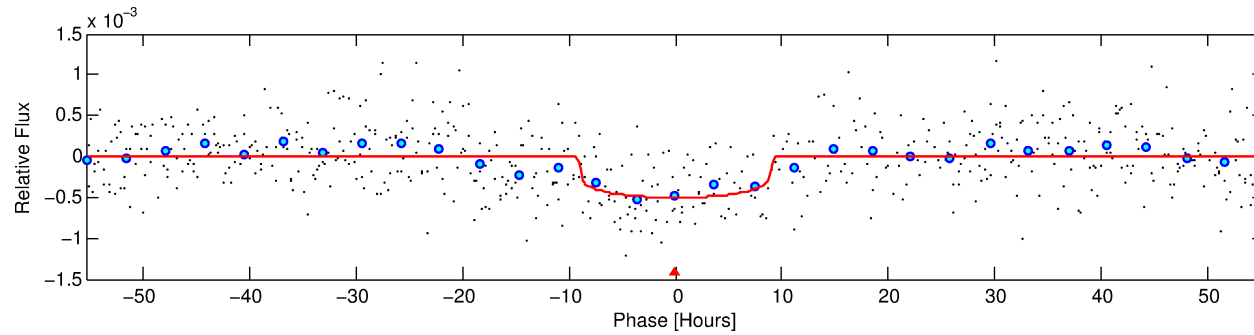
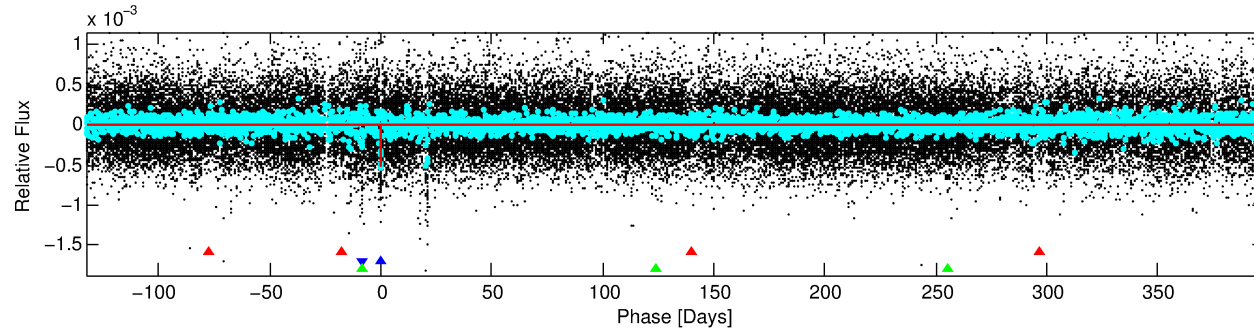
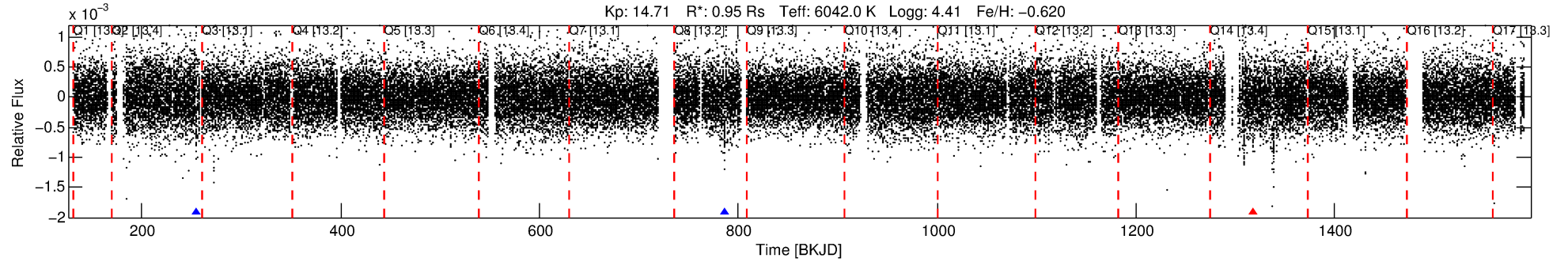
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008619915-02

No Significant Match Found

# DV One-Page Summary

KIC: 8619915 Candidate: 2 of 3 Period: 531.107 d



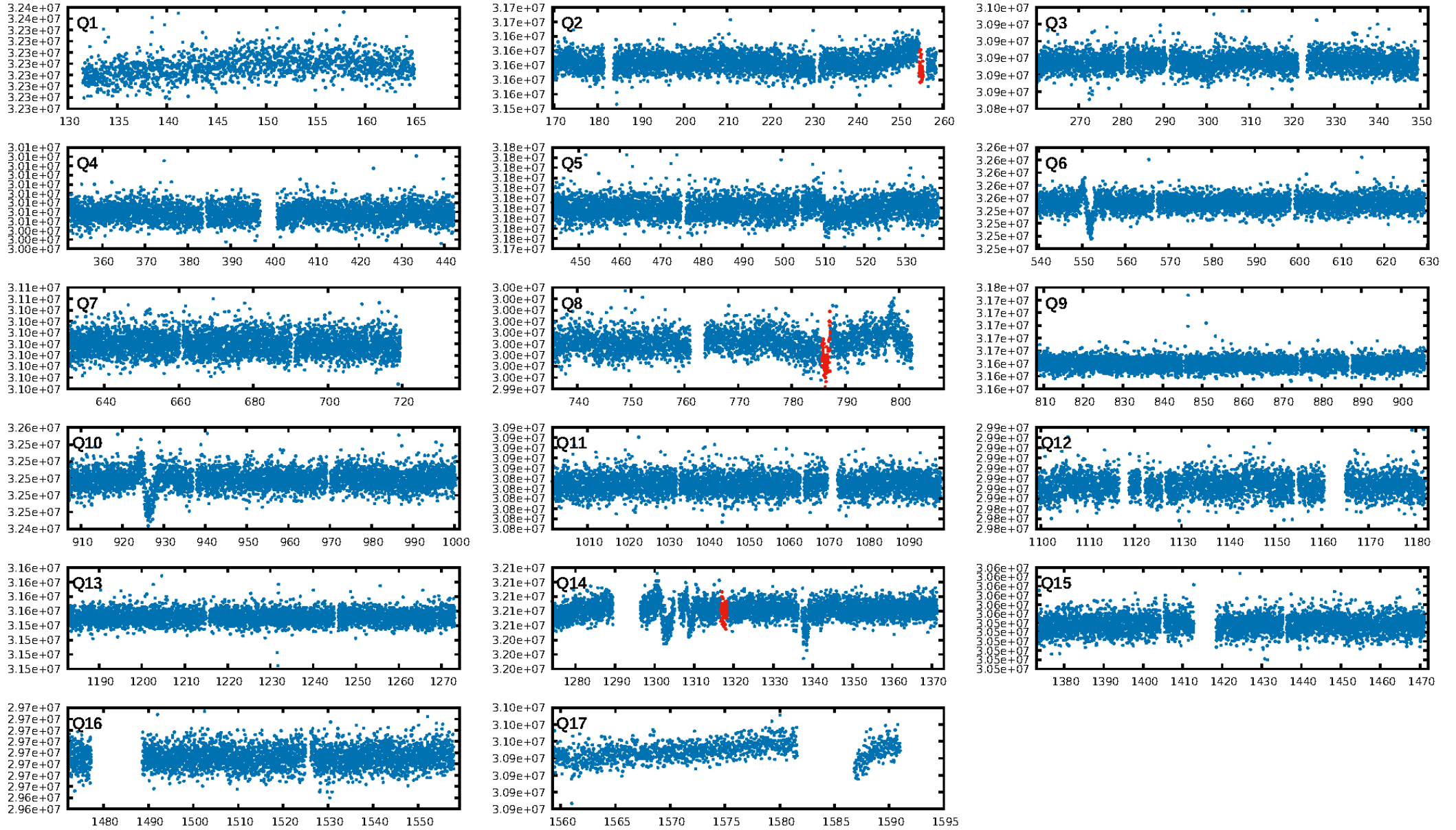
## DV Fit Results:

Period = 531.10717 [0.01711] d  
Epoch = 255.2711 [0.0252] BKJD  
Rp/R\* = 0.0211 [0.0102]  
a/R\* = 198.95 [485.02]  
b = 0.47 [4.07]  
Seff = 0.73 [0.26]  
Teq = 236 [21] K  
Rp = 2.18 [1.19] Re  
a = 1.2117 [0.2682] AU  
Ag = 38393.74 [40746.63] [0.94σ]  
Teffp = 5097 [1294] K [3.76σ]

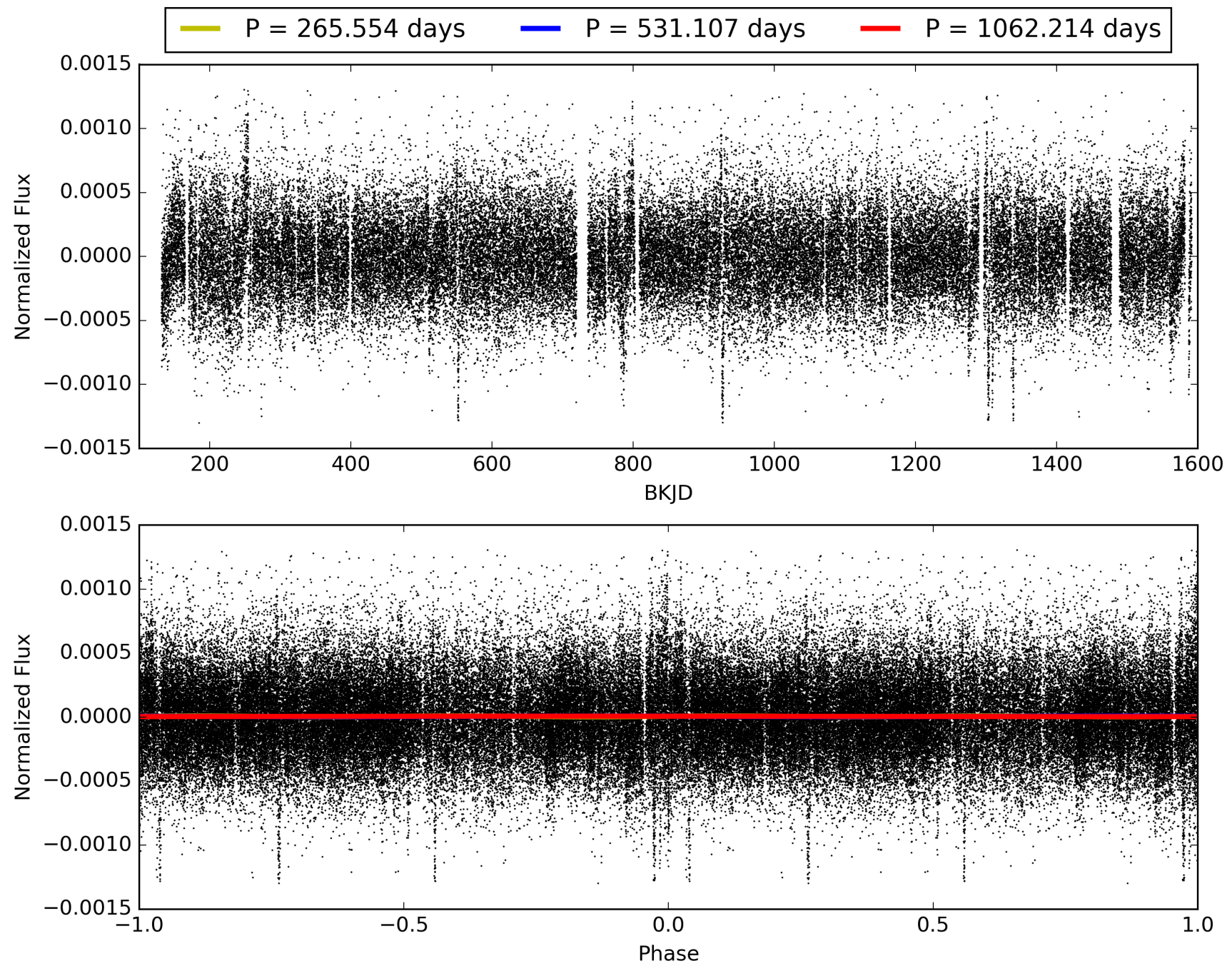
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [86.69σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.75e-15  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: 2.79  
Centroid-sig: 0.0%  
Centroid-so: 5.332 arcsec [3.71σ]  
OotOffset-rm: 0.755 arcsec [2.26σ]  
KicOffset-rm: 0.829 arcsec [2.49σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 008619915-02, PDC Light Curves

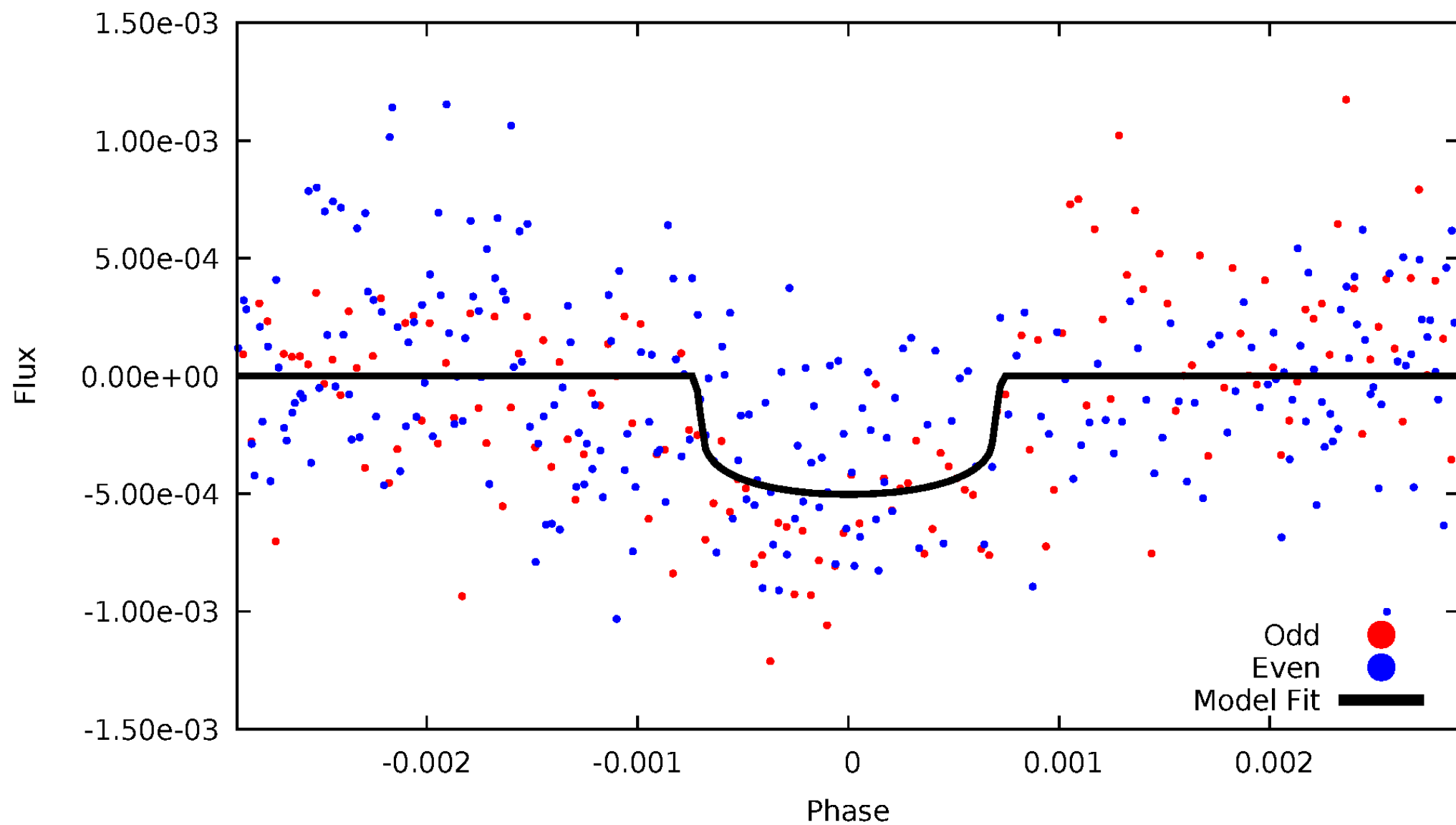


TCE 008619915-02



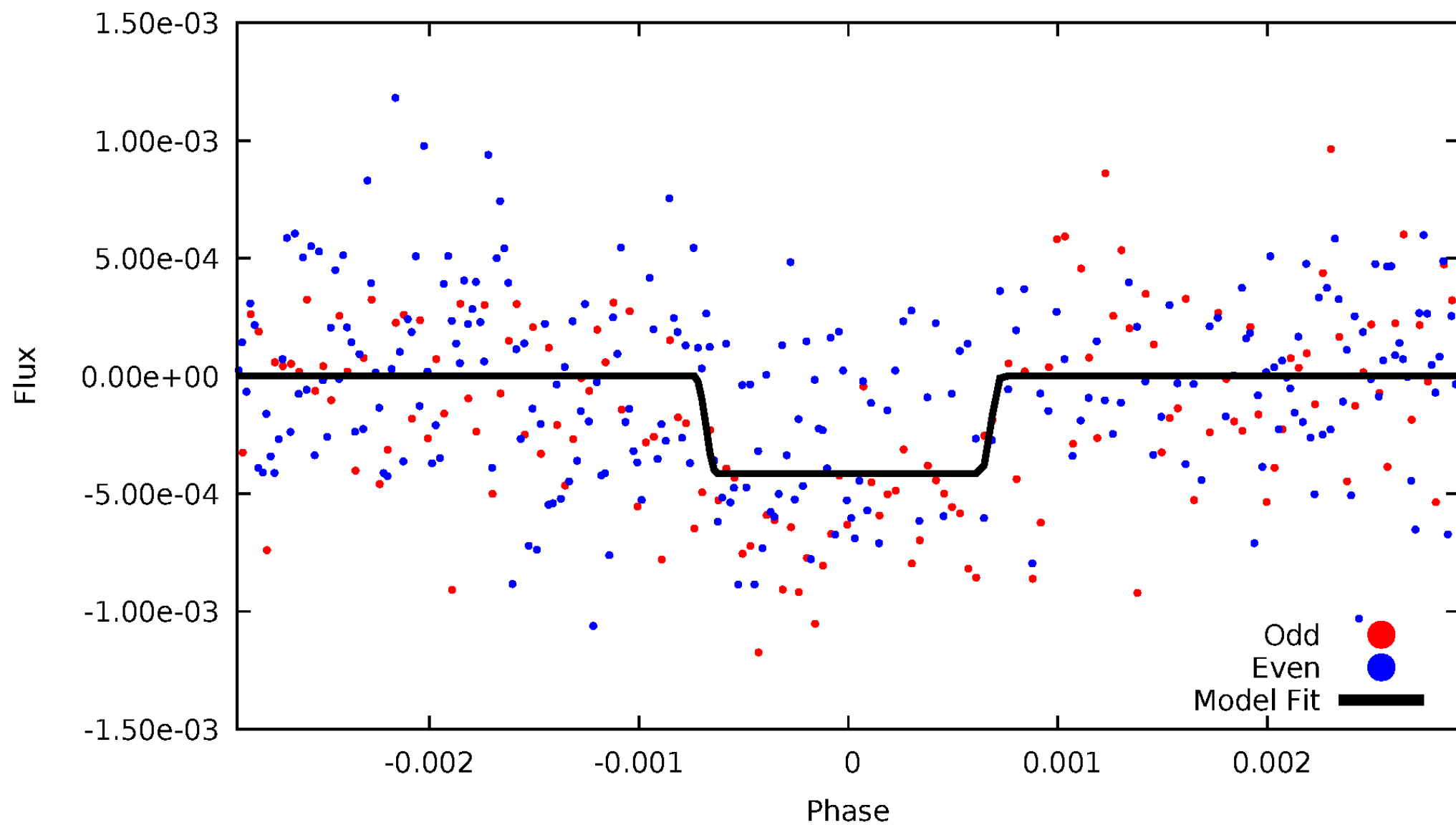
# DV Odd/Even

TCE 008619915-02



# ALT Odd/Even

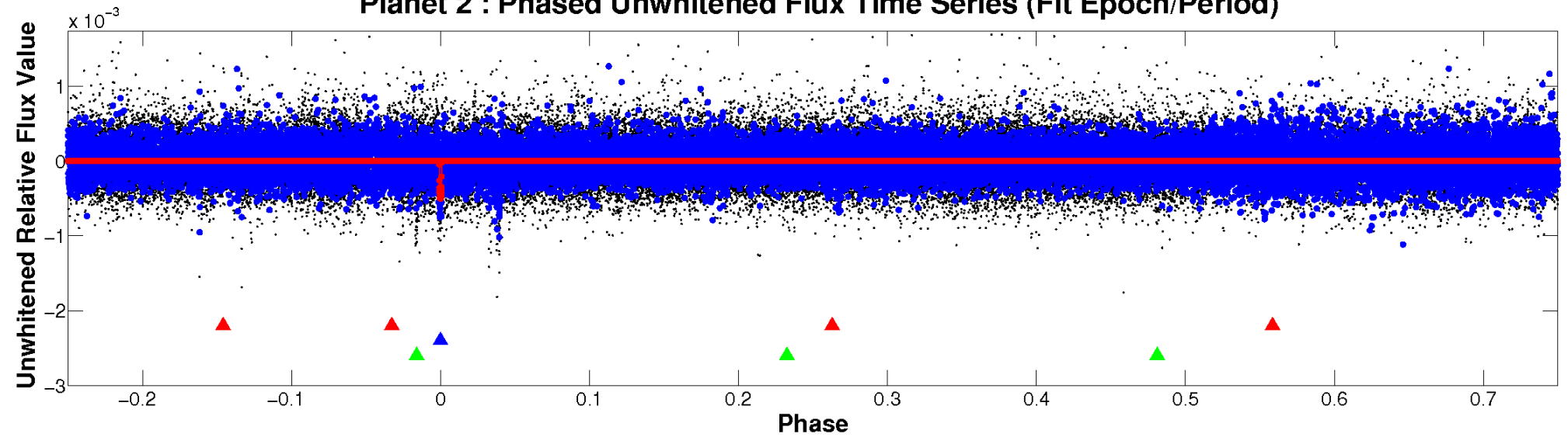
TCE 008619915-02



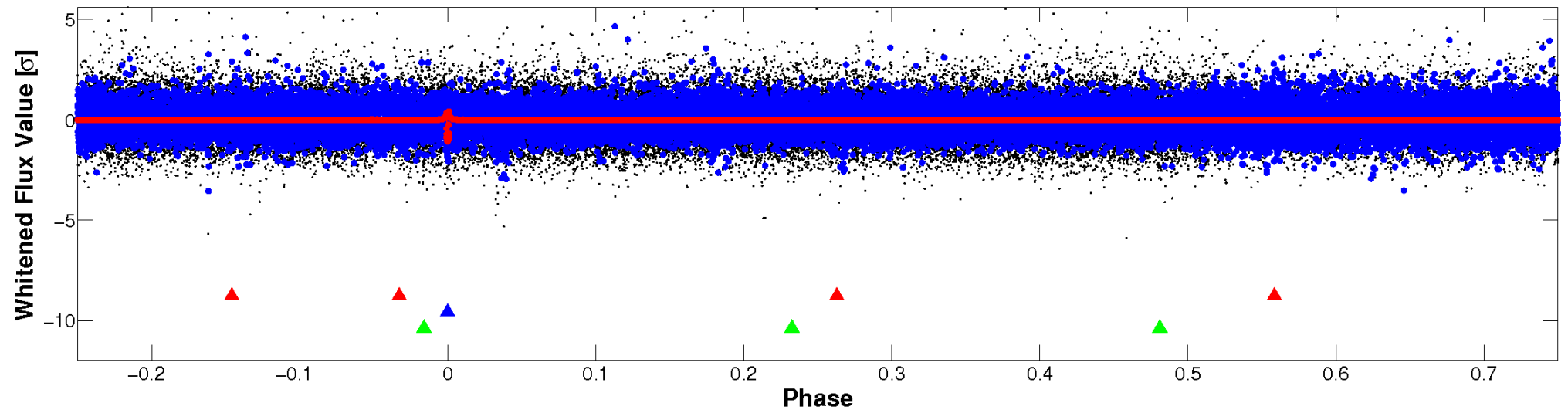


# Non-Whitened Vs. Whitened Light Curve

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

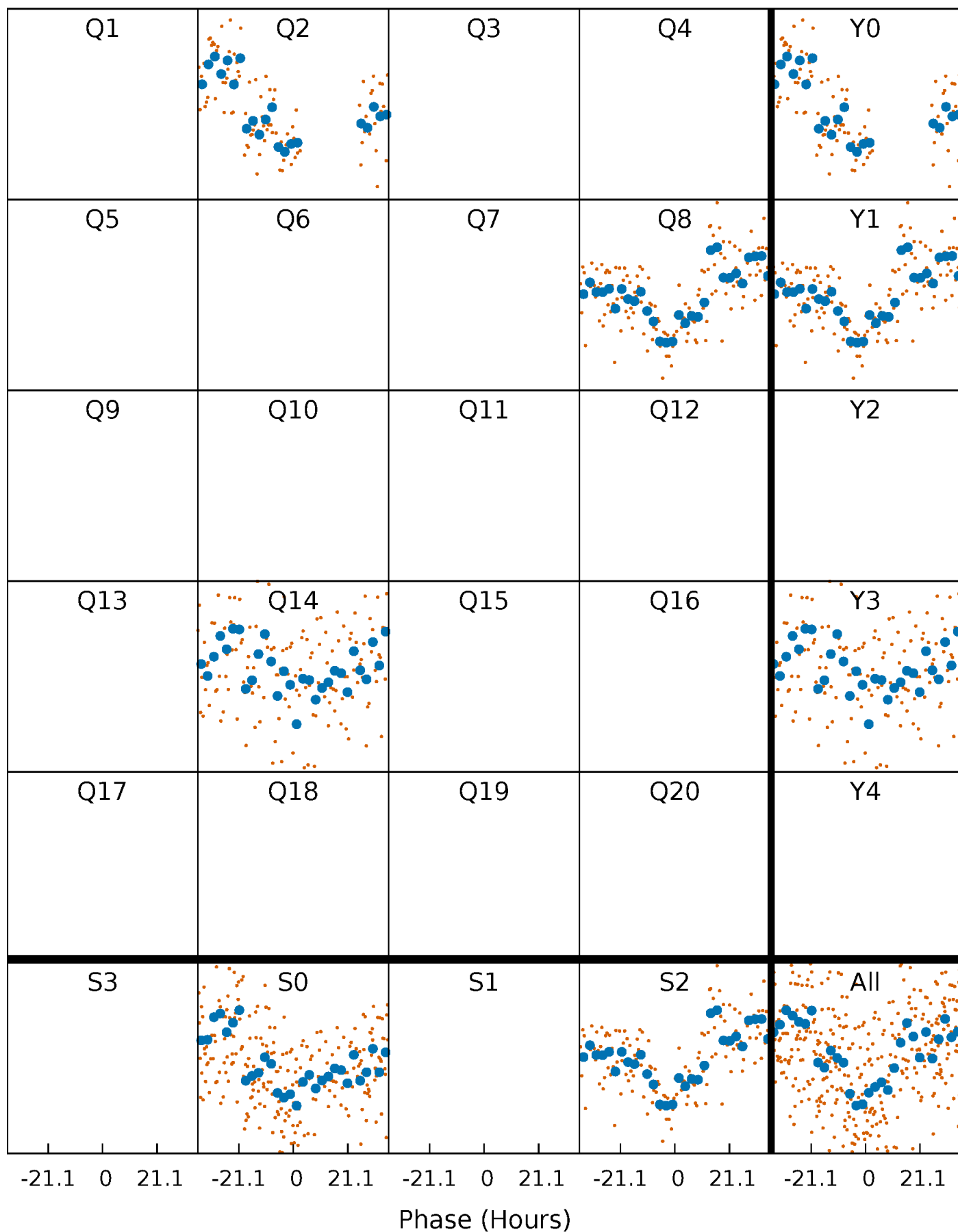


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



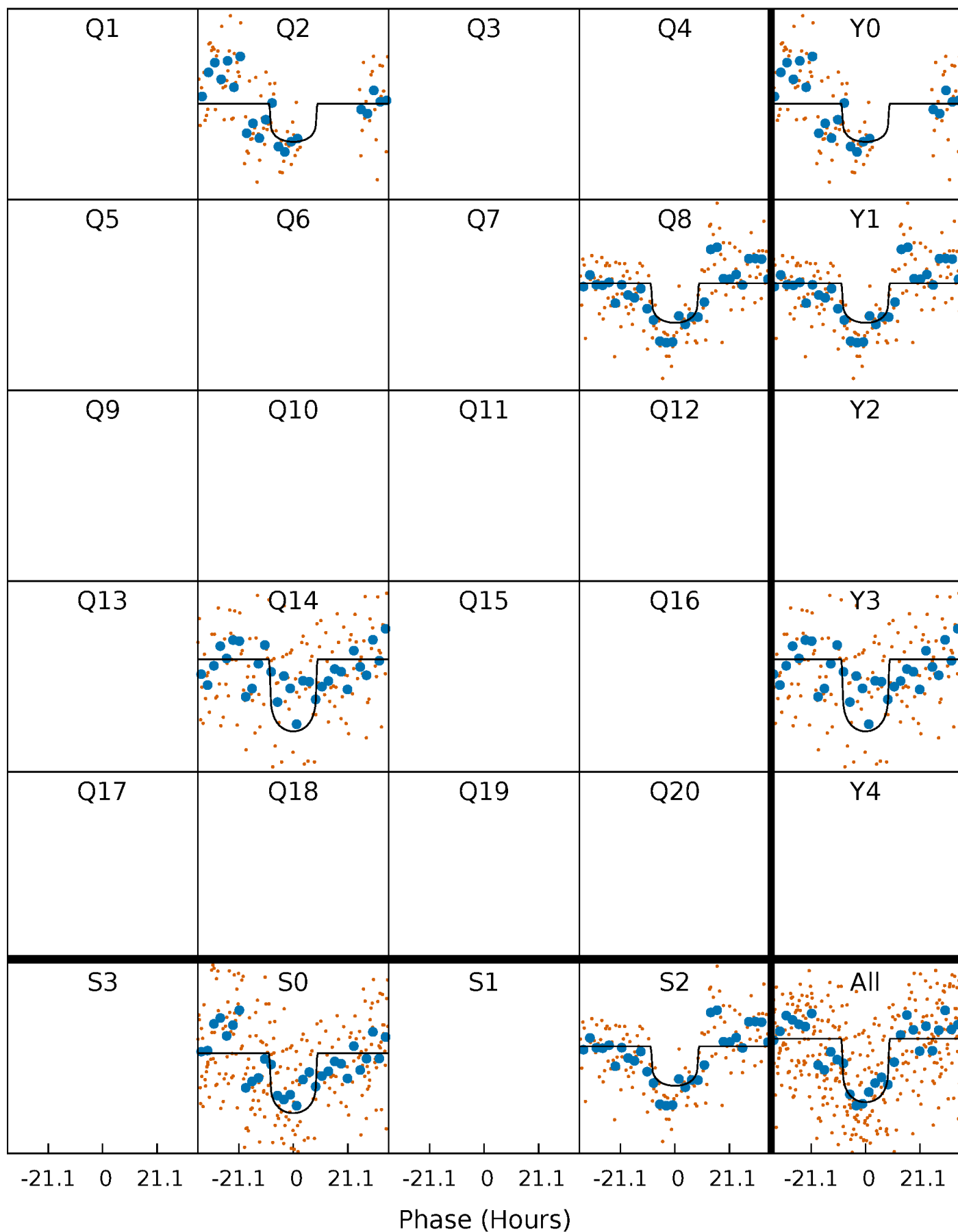
# PDC Quarter-Phased Transit Curves

TCE 008619915-02   P=531.107169 Days    $T_0=255.271138$  (BKJD)



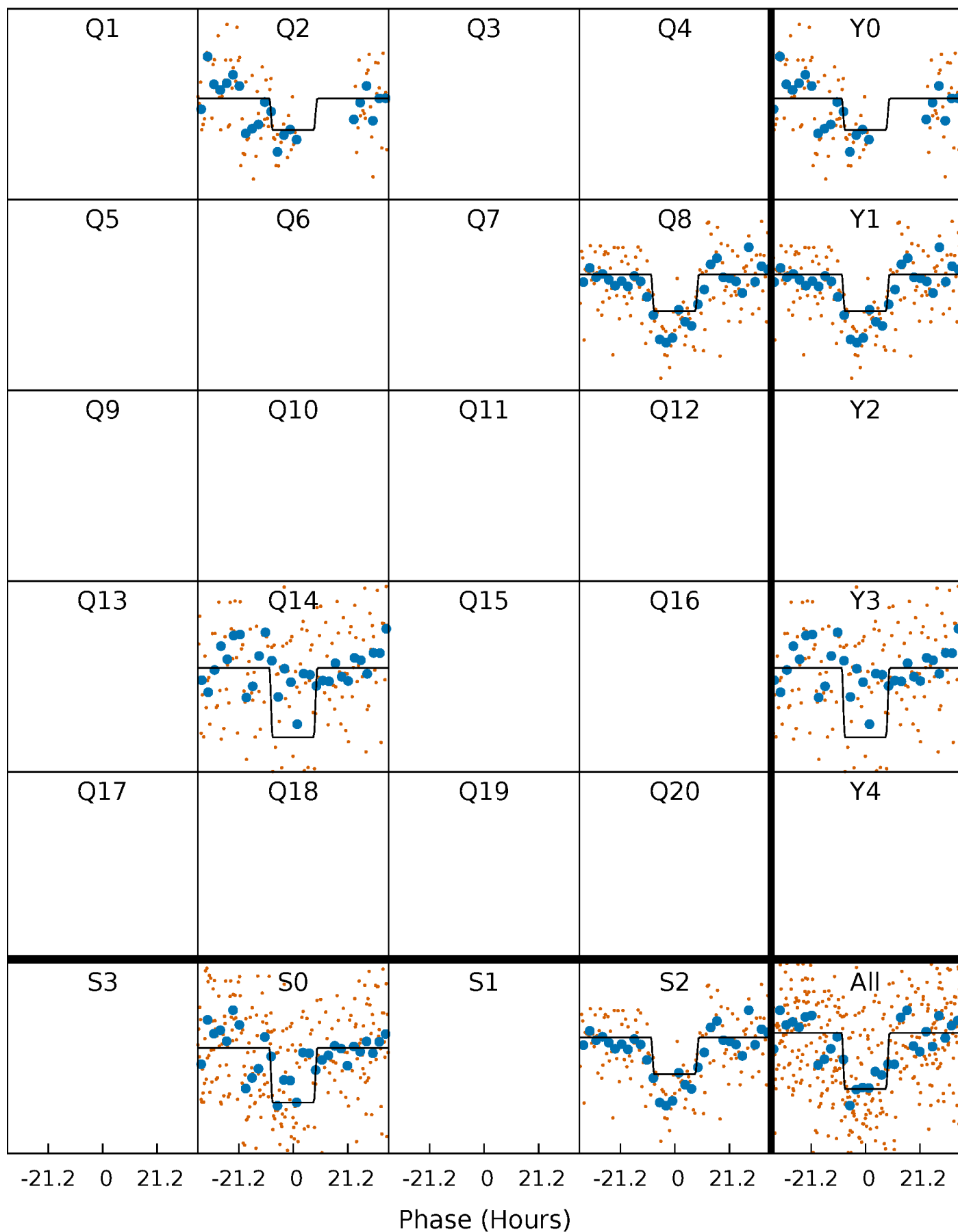
# DV Quarter-Phased Transit Curves

TCE 008619915-02 P=531.107169 Days  $T_0=255.271138$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

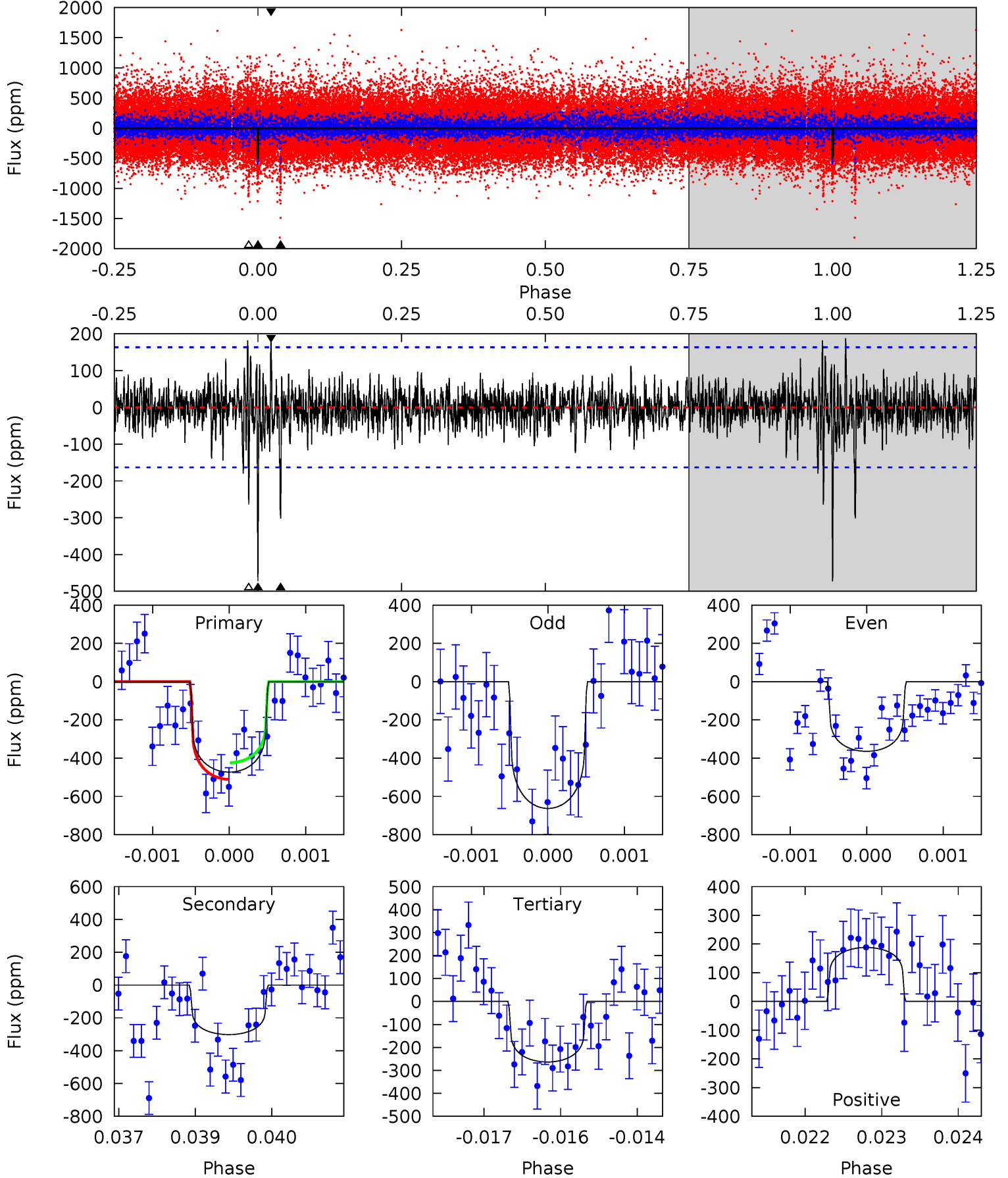
TCE 008619915-02 P=531.075036 Days  $T_0=255.333949$  (BKJD)



# DV Model-Shift Uniqueness Test

008619915-02, P = 531.107169 Days, E = 255.271138 Days

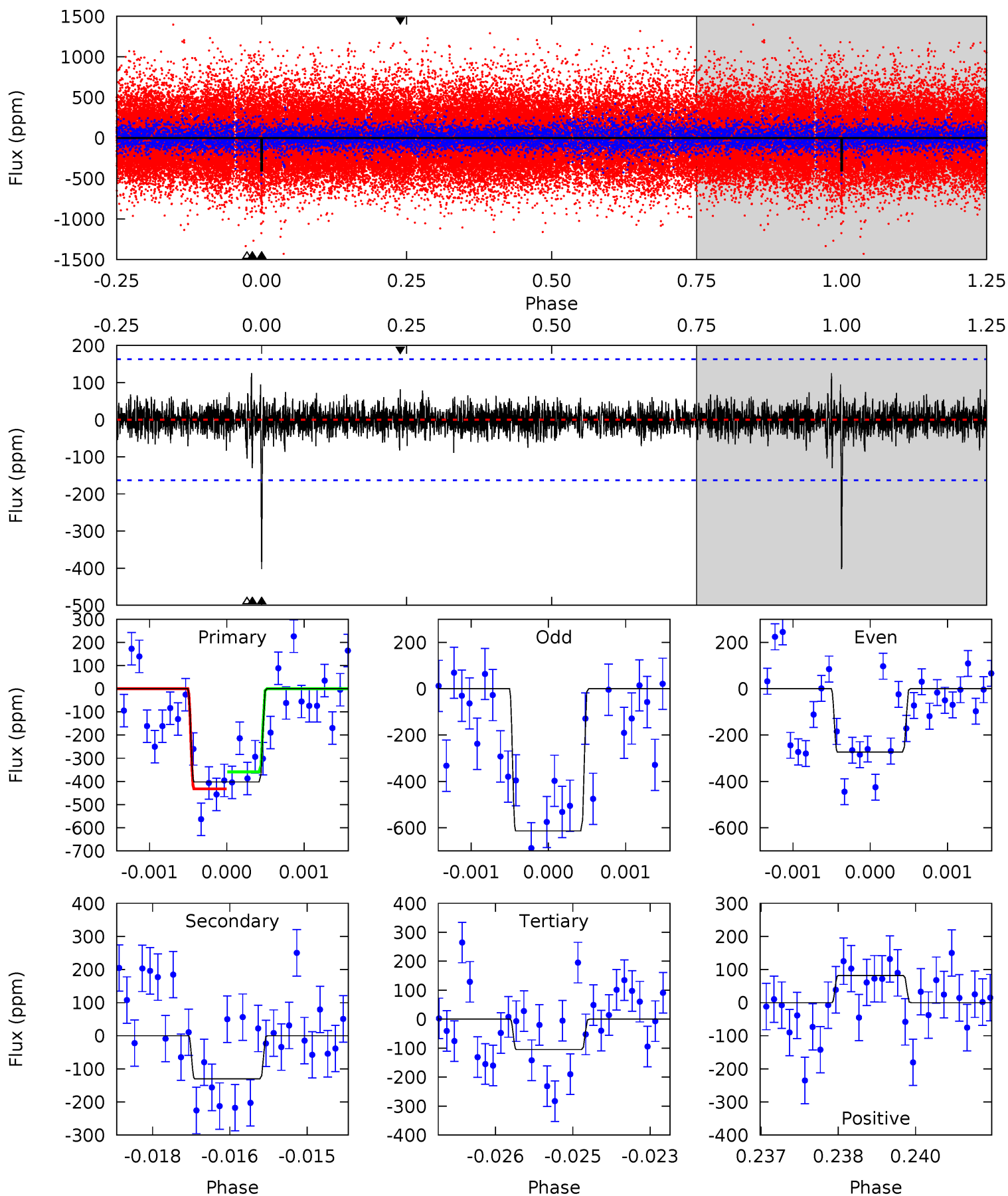
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	9.96	8.69	6.20	5.39	3.19	1.33	6.90	9.39	1.27	3.76	4.76	0.95	0.28	1.43



# Alt Model-Shift Uniqueness Test

008619915-02, P = 531.075036 Days, E = 255.333949 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
13.3	4.30	3.46	2.71	5.38	3.18	0.78	9.81	10.6	0.84	1.60	5.48	0.82	0.24	1.19





### Stellar Parameters For KIC 008619915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6042^{+163}_{-181}$	$4.411^{+0.139}_{-0.186}$	$-0.620^{+0.300}_{-0.300}$	$0.946^{+0.240}_{-0.160}$	$0.841^{+0.099}_{-0.072}$	$1.398^{+0.909}_{-0.635}$
	+3%/-3%	+3%/-4%	+48%/-48%	+25%/-17%	+12%/-9%	+65%/-45%
Source	PHO1	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 008619915-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-302 \pm 30$	$2.20^{+1.19}_{-1.03}$	$331^{+23}_{-19}$	$5536^{+2139}_{-942}$	$51435^{+131284}_{-29913}$
Alt.	$-130 \pm 30$	$2.09^{+1.14}_{-0.93}$	$331^{+23}_{-19}$	$4717^{+1428}_{-750}$	$24176^{+53777}_{-14633}$

$T_{max}$  = 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

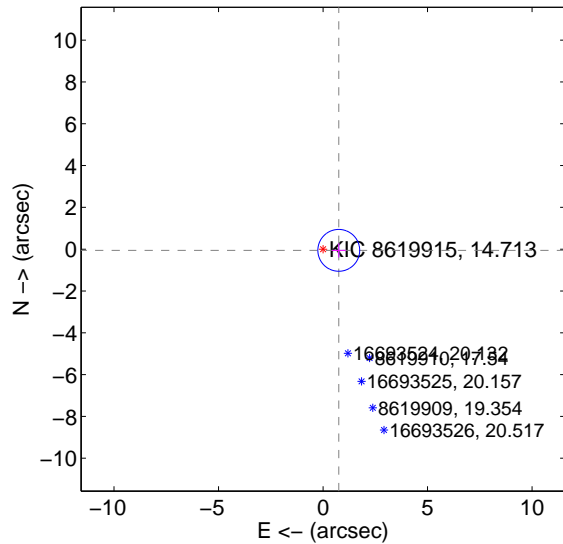
Supplemental centroid analysis for 008619915-02. Kepler magnitude: 14.71. Transit SNR 9.59

There are 1 quarters with good PRF difference image offsets

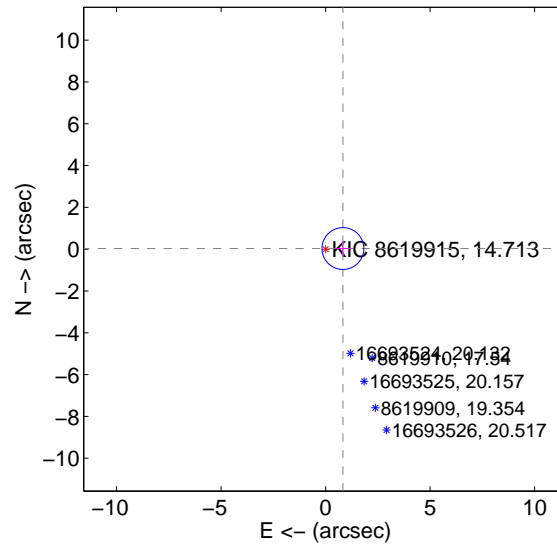
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.755 \pm 0.333$	2.26	$-0.753 \pm 0.333$	$-0.056 \pm 0.339$
PRF-fit source offset from KIC position	$0.829 \pm 0.333$	2.49	$-0.829 \pm 0.333$	$0.030 \pm 0.339$
photometric centroid source offset	$5.33 \pm 1.44$	3.71	$-4.76 \pm 1.49$	$2.40 \pm 1.23$

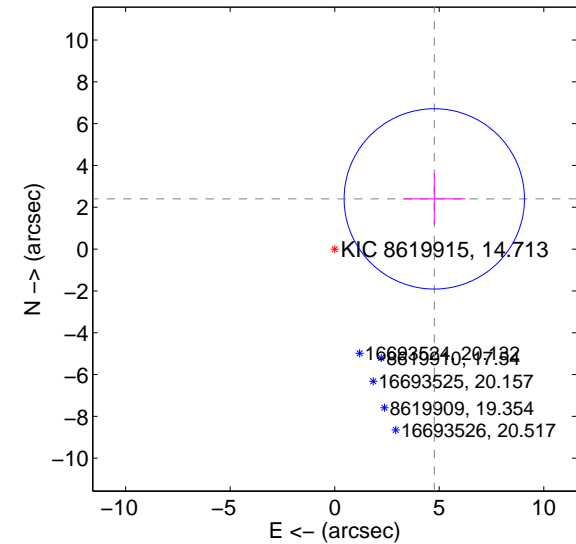
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

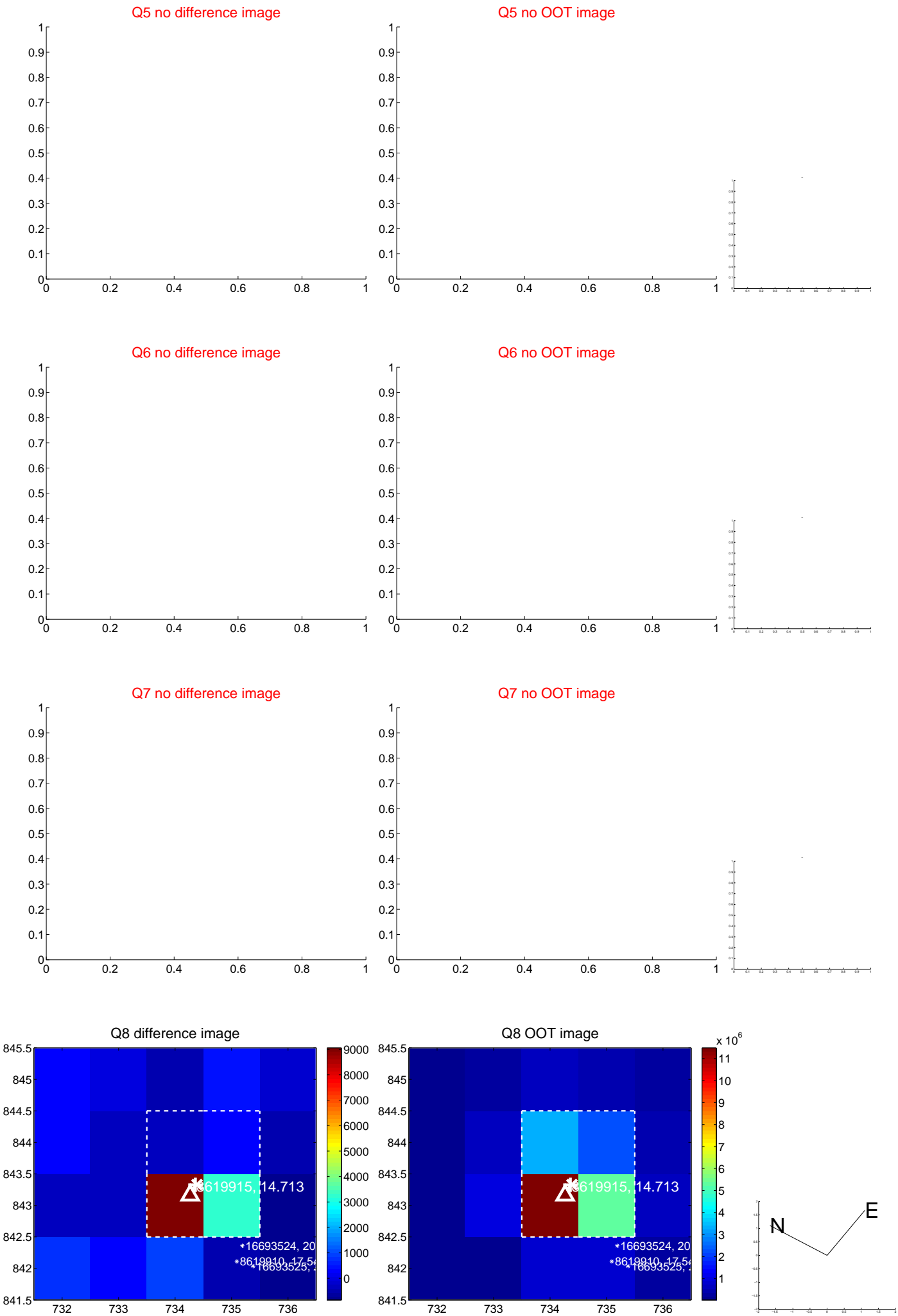


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



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



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



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

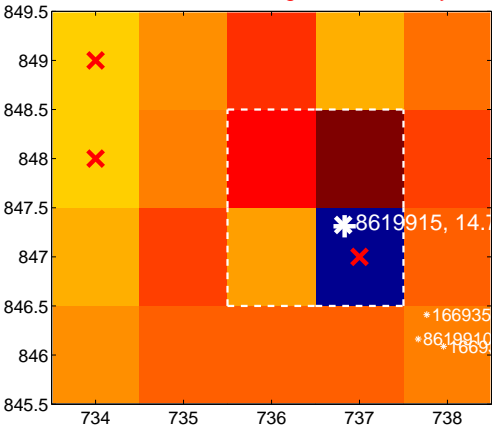
Q13 no difference image



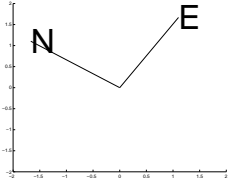
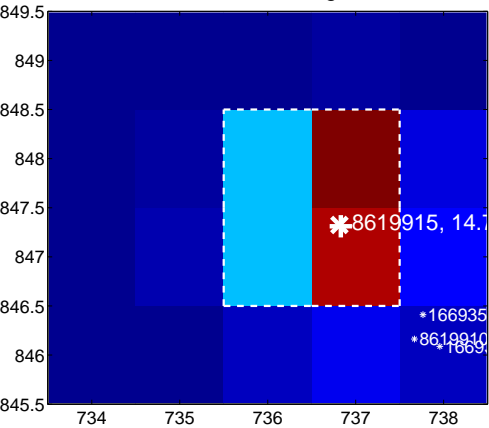
Q13 no OOT image



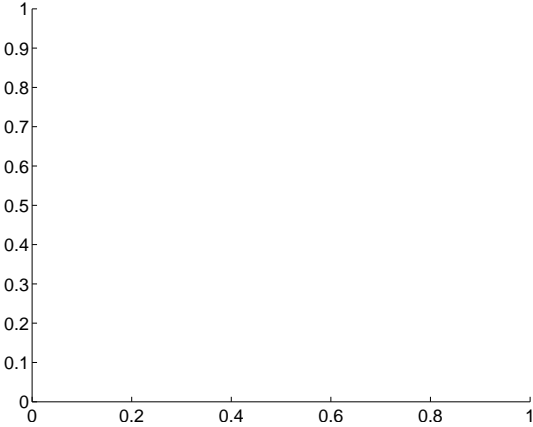
Q14 difference image. Poor Quality



Q14 OOT image



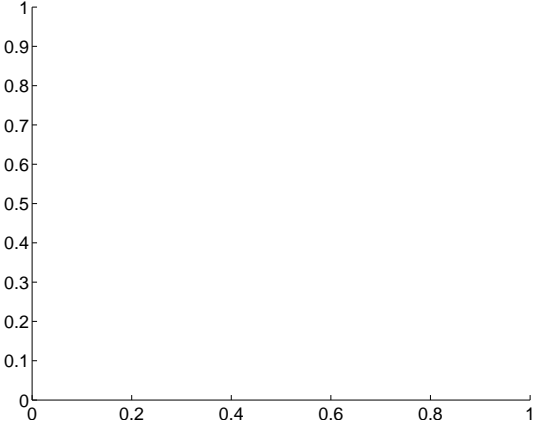
Q15 no difference image



Q15 no OOT image



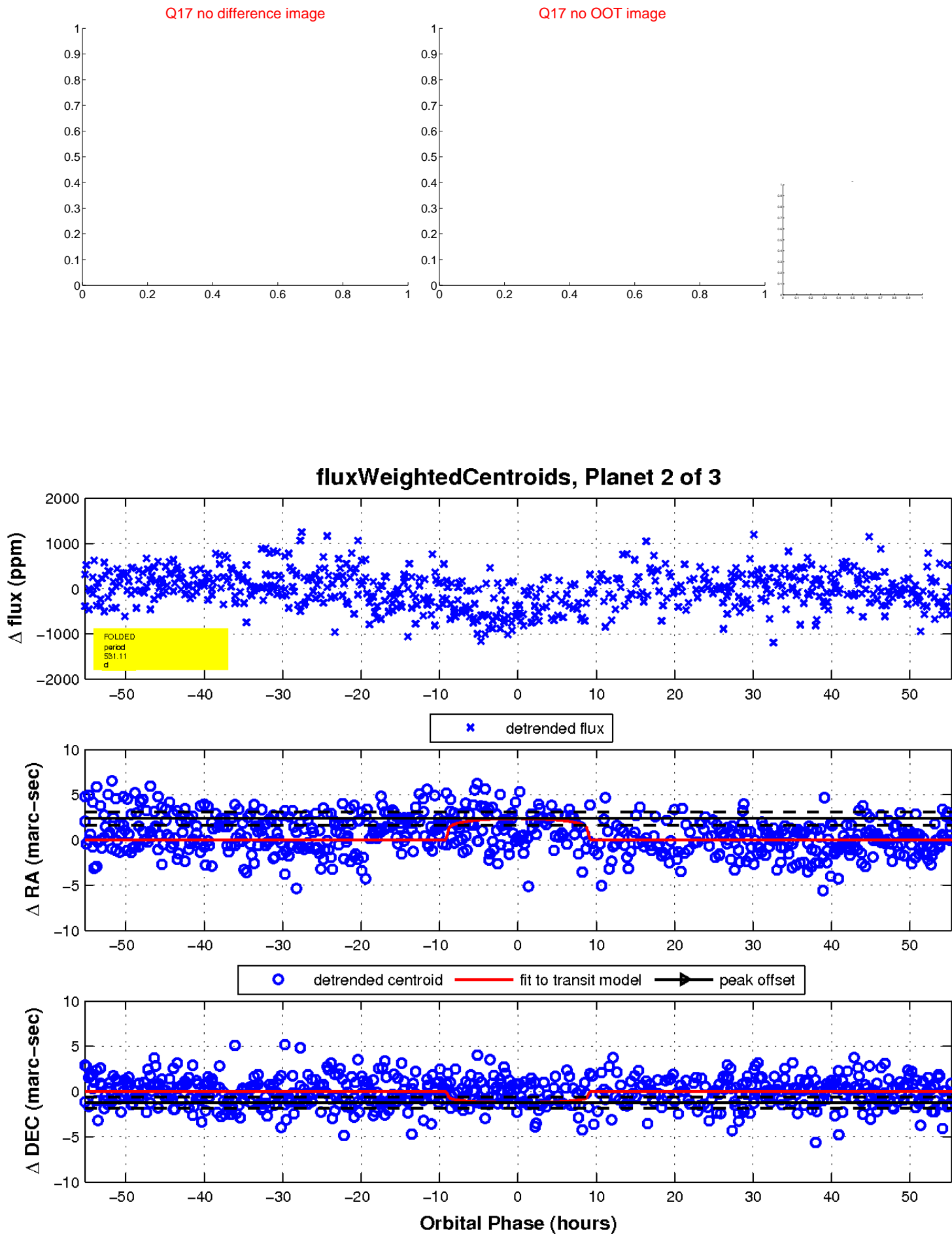
Q16 no difference image



Q16 no OOT image

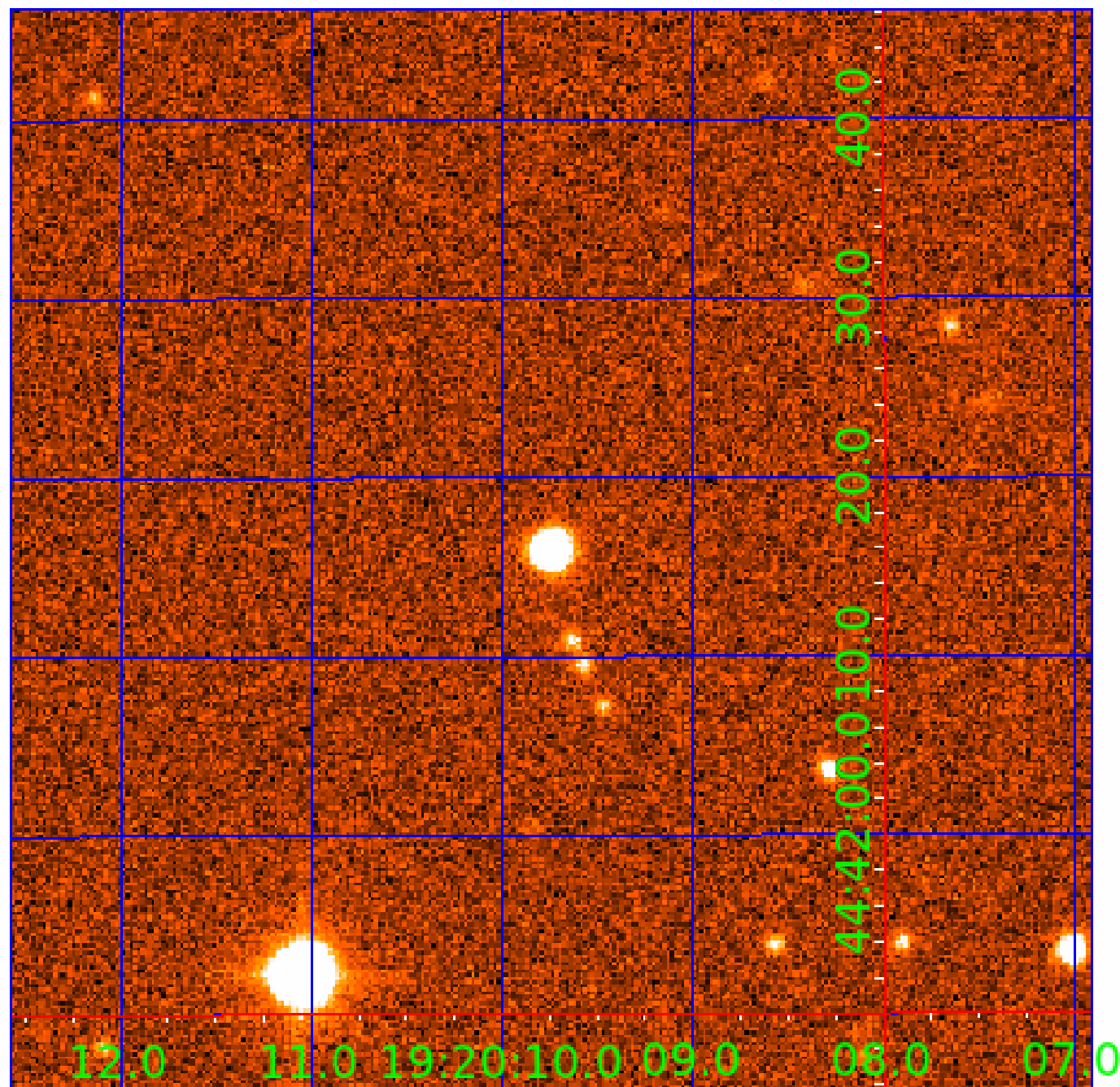


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008619915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008619915-01	OBS	No	374.104902	177.800239	803.4	52.148	14.4	22.1	0.95	6042	3.43	1.16
008619915-02	OBS	No	531.107169	255.271138	502.8	18.479	8.9	9.6	0.95	6042	2.18	0.73
008619915-03	OBS	No	399.091430	510.802570	354.7	31.531	7.2	9.6	0.95	6042	1.92	1.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008619915-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
008619915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—CENT_FEW_DIFFS
008619915-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—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.

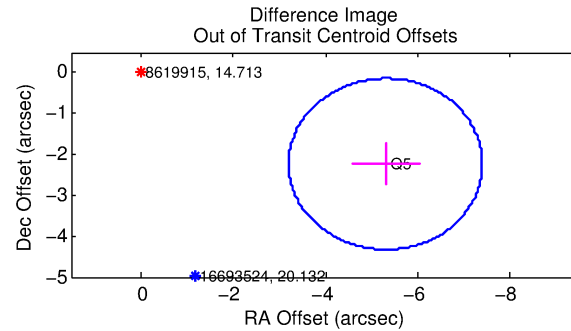
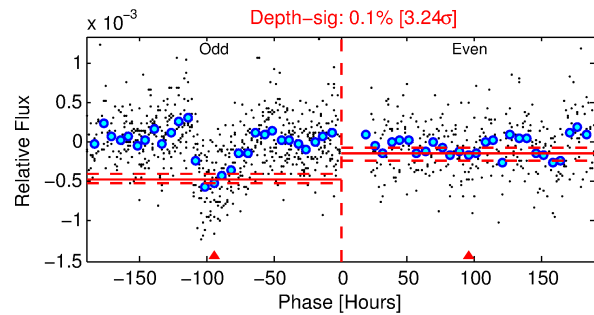
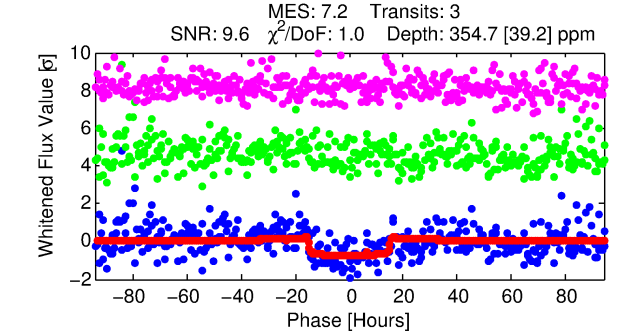
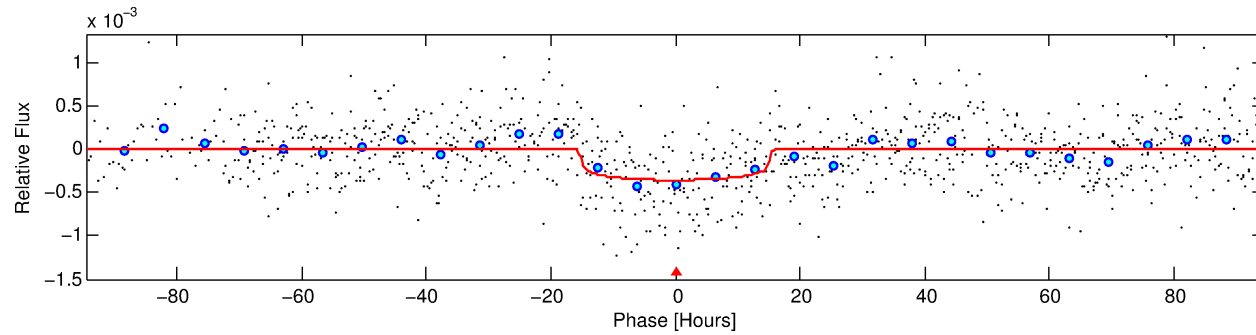
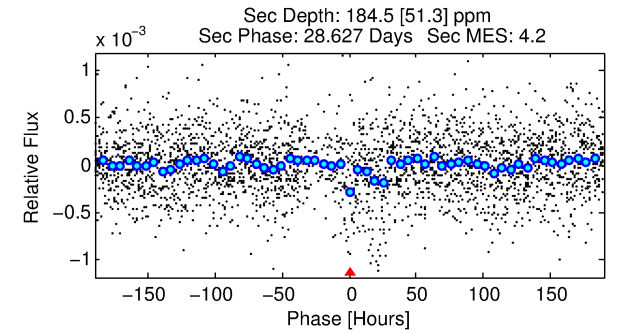
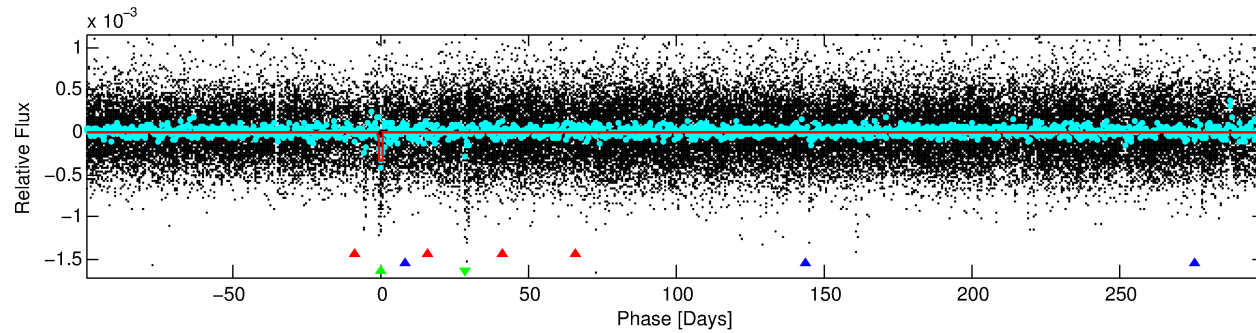
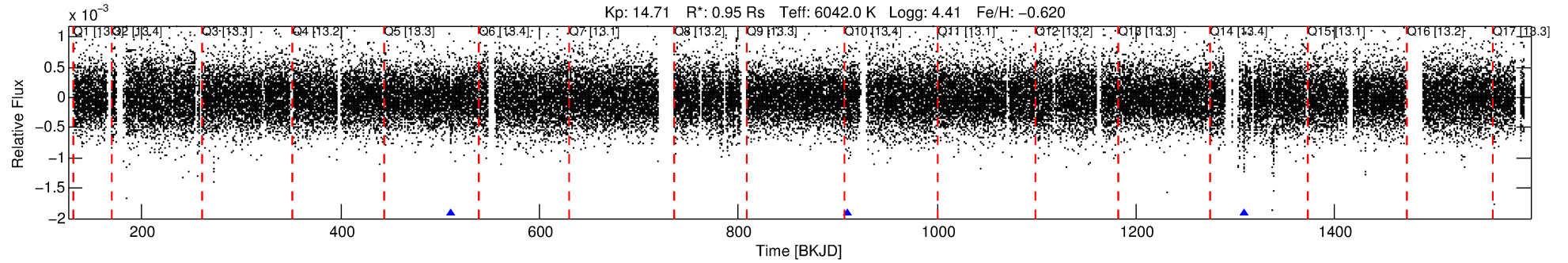
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008619915-03

No Significant Match Found

# DV One-Page Summary

KIC: 8619915 Candidate: 3 of 3 Period: 399.091 d



## DV Fit Results:

Period = 399.09143 [0.02336] d  
Epoch = 510.8026 [0.0289] BKJD  
Rp/R\* = 0.0186 [0.0032]  
a/R\* = 69.04 [57.19]  
b = 0.73 [0.54]  
Seff = 1.07 [0.38]  
Teq = 259 [23] K  
Rp = 1.92 [0.59] Re  
a = 1.0016 [0.2217] AU  
Ag = 27644.56 [15199.27] [1.82 $\sigma$ ]  
Teff = 5165 [587] K [8.35 $\sigma$ ]

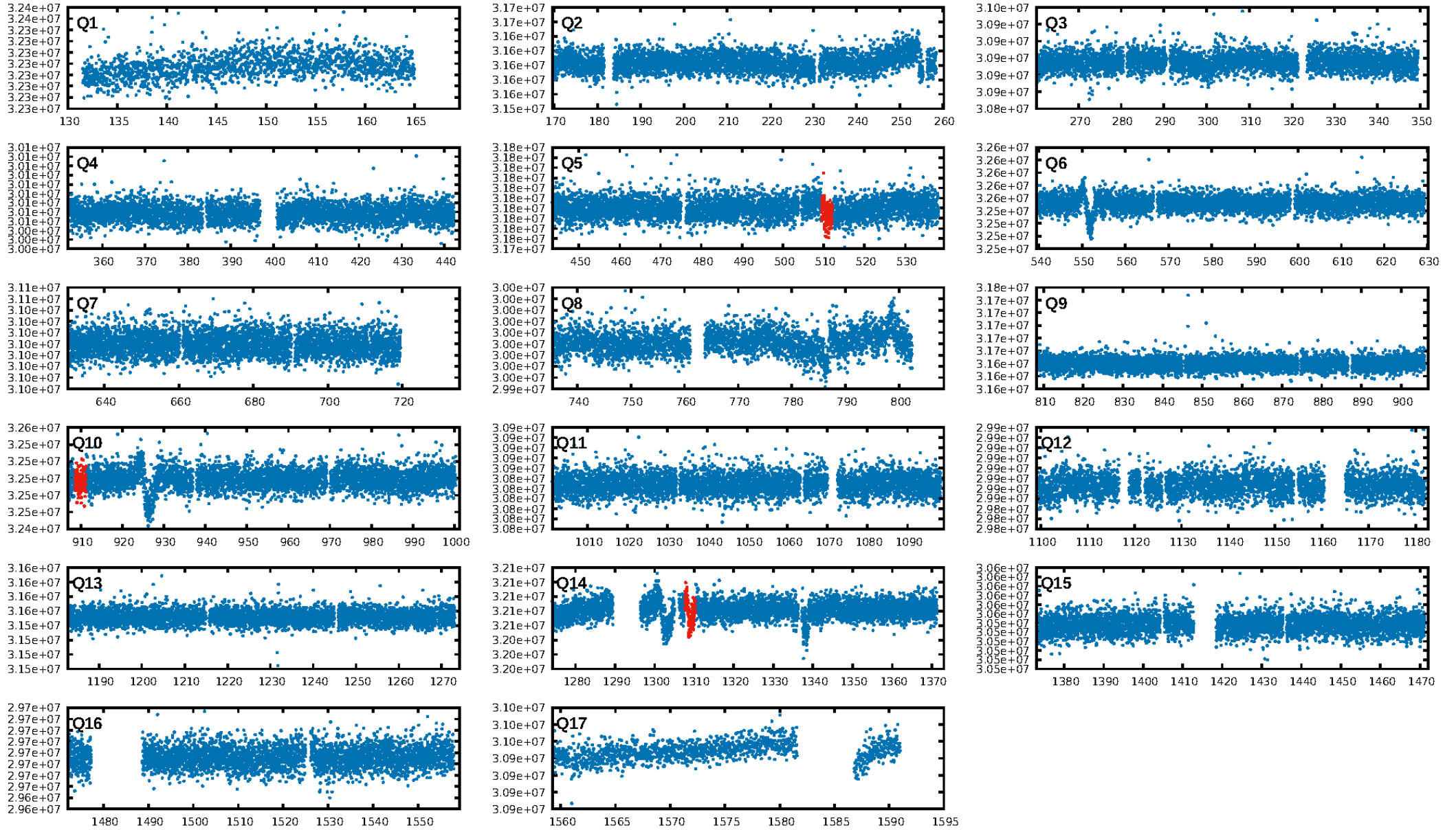
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.84 $\sigma$ ]  
LongPeriod-sig: 100.0% [86.69 $\sigma$ ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 99.6%  
Bootstrap-pfa: 1.34e-08  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 8.94  
Centroid-sig: 0.1%  
Centroid-so: 3.874 arcsec [2.85 $\sigma$ ]  
OotOffset-rm: 5.750 arcsec [8.23 $\sigma$ ]  
KicOffset-rm: 5.840 arcsec [8.34 $\sigma$ ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

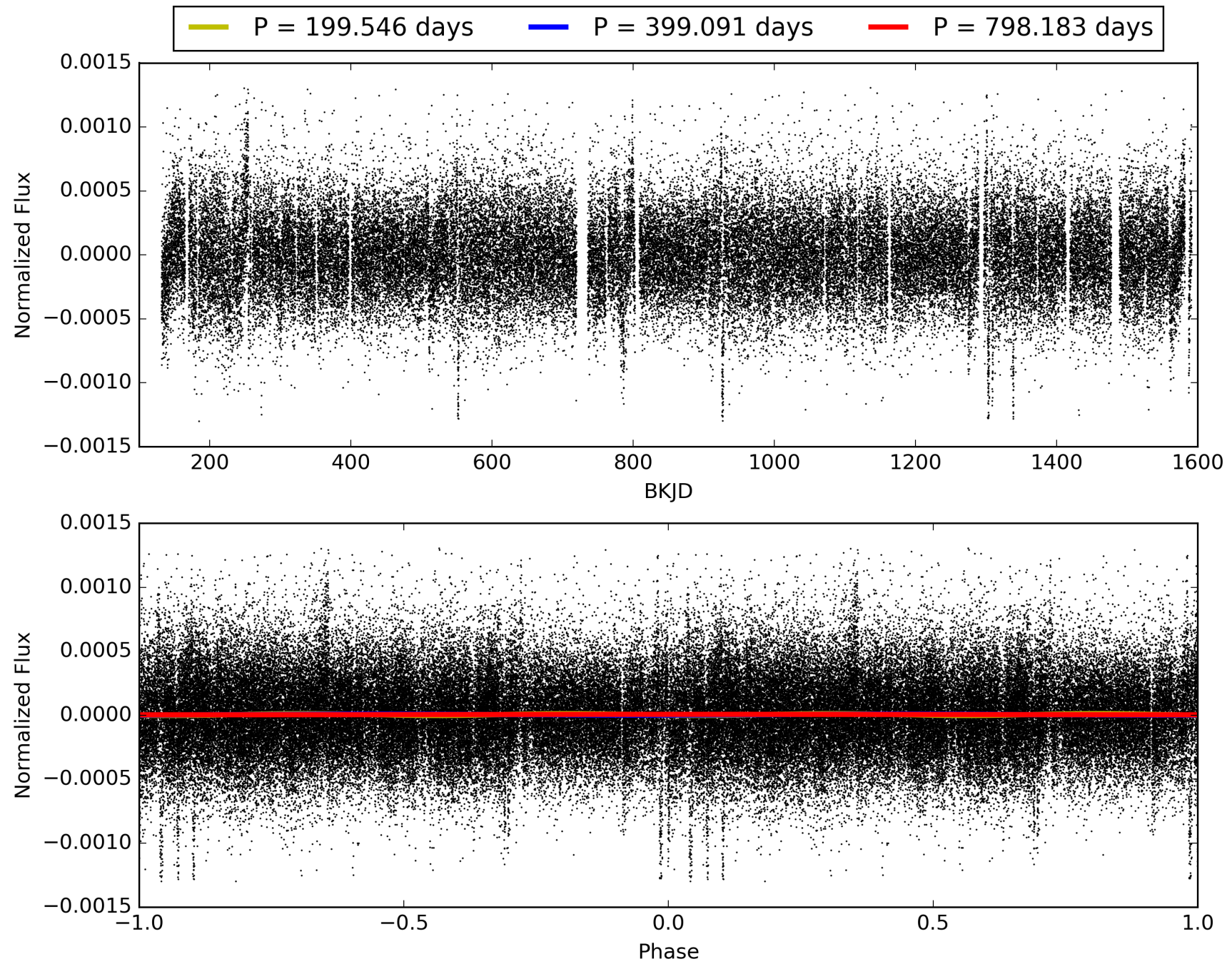
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:43:05 Z

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

# TCE 008619915-03, PDC Light Curves

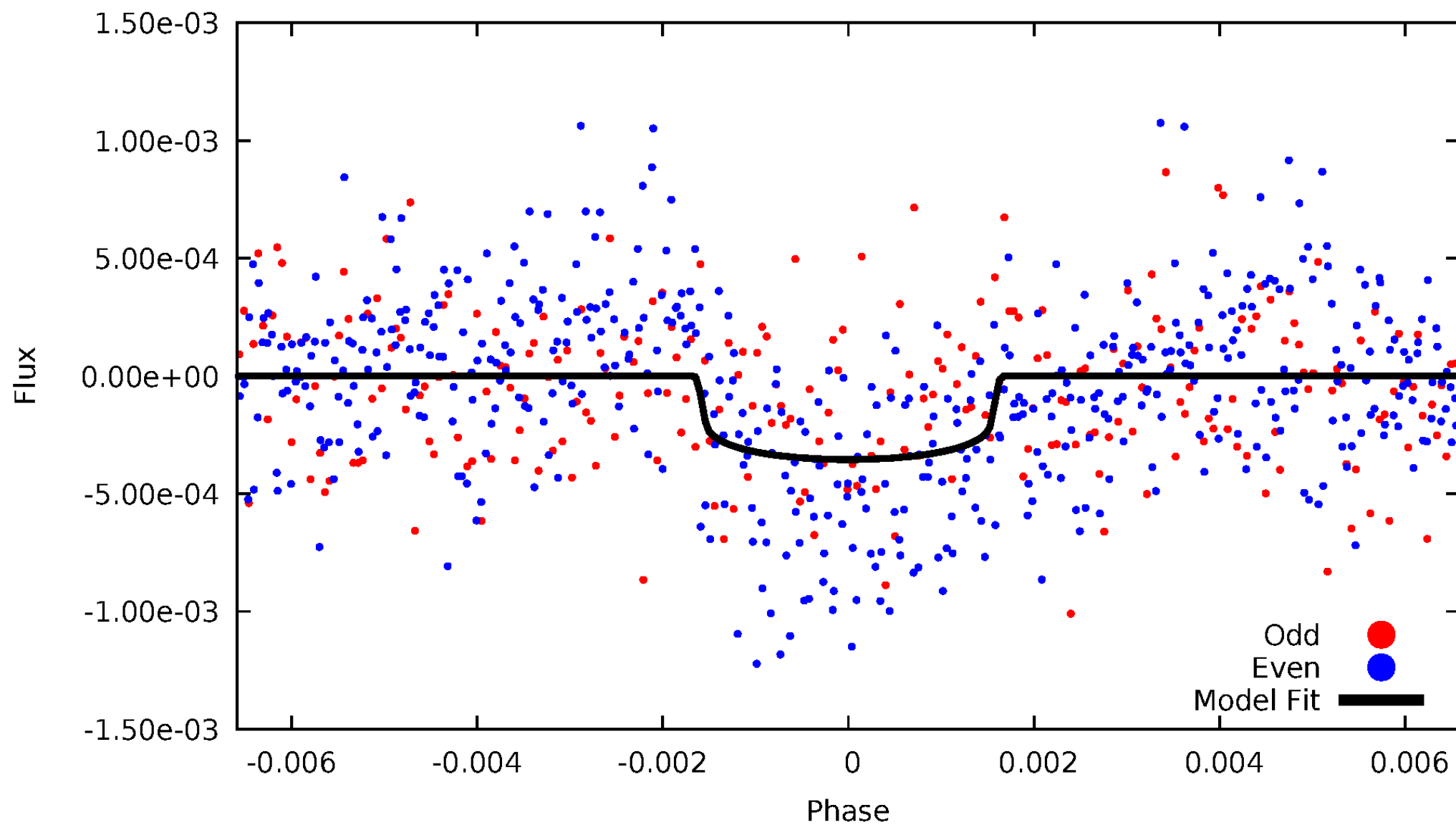


TCE 008619915-03



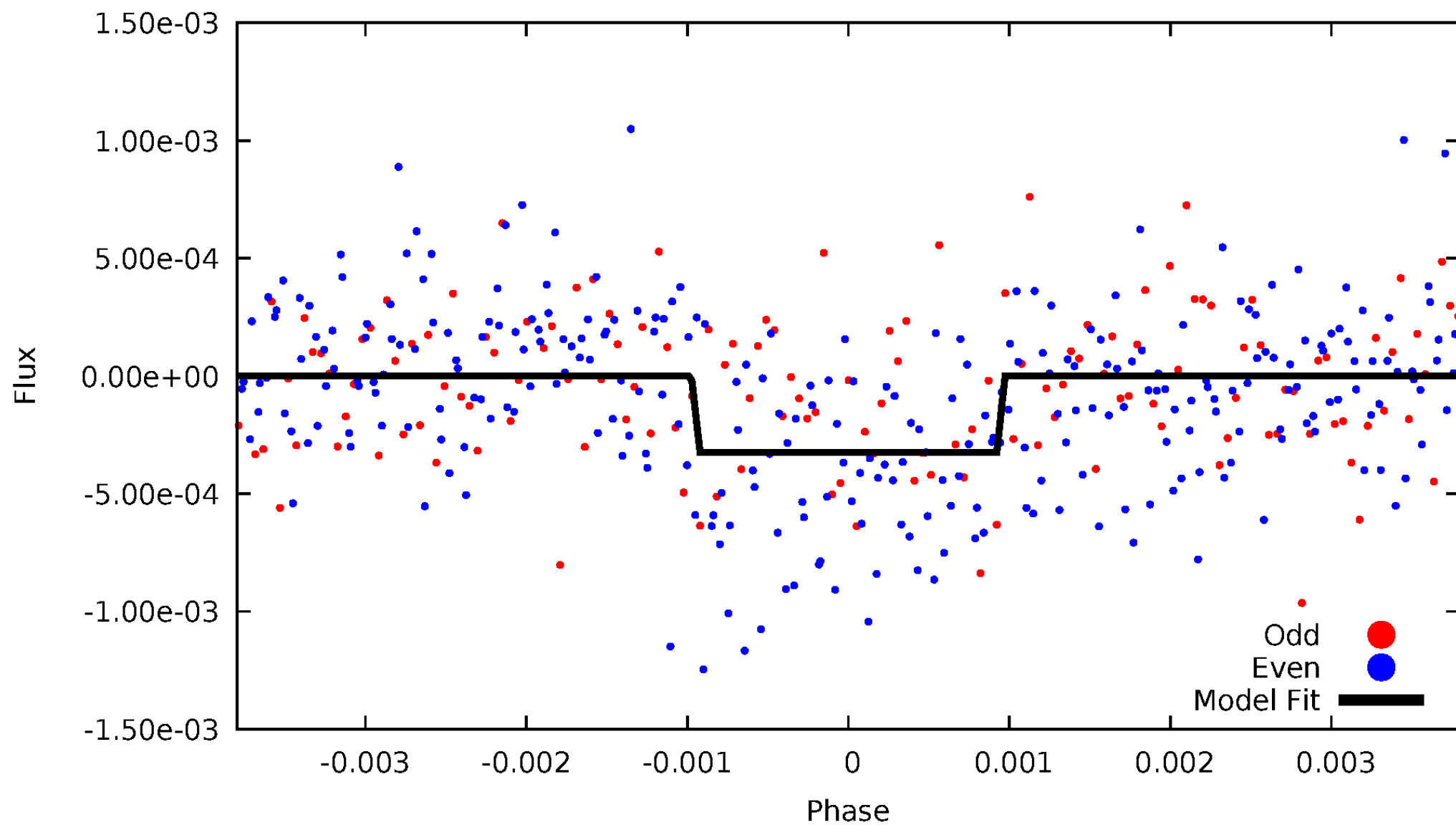
# DV Odd/Even

TCE 008619915-03



# ALT Odd/Even

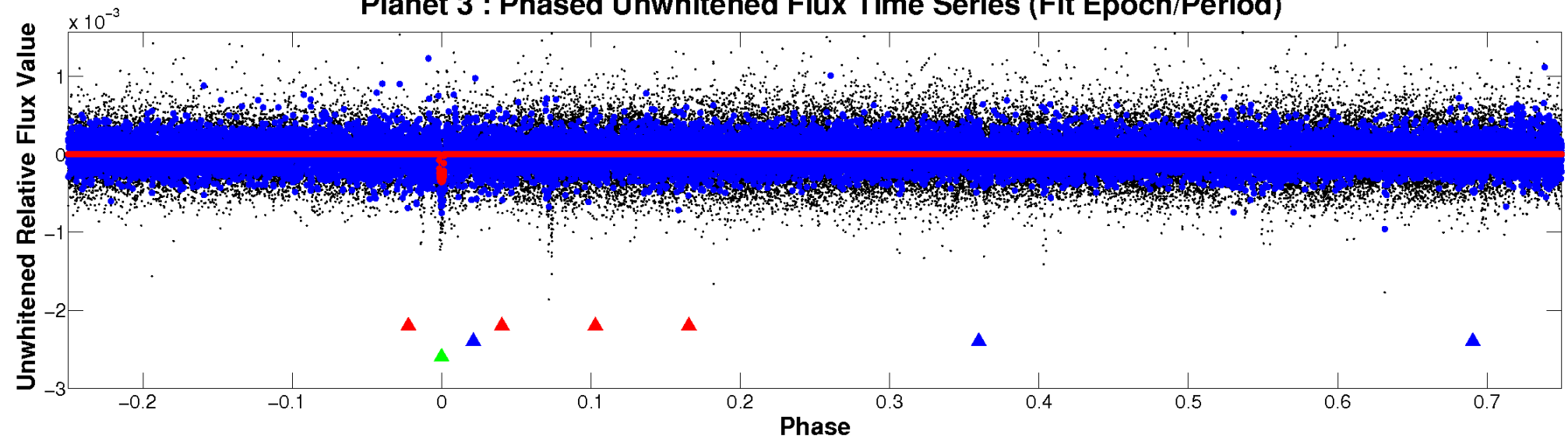
TCE 008619915-03



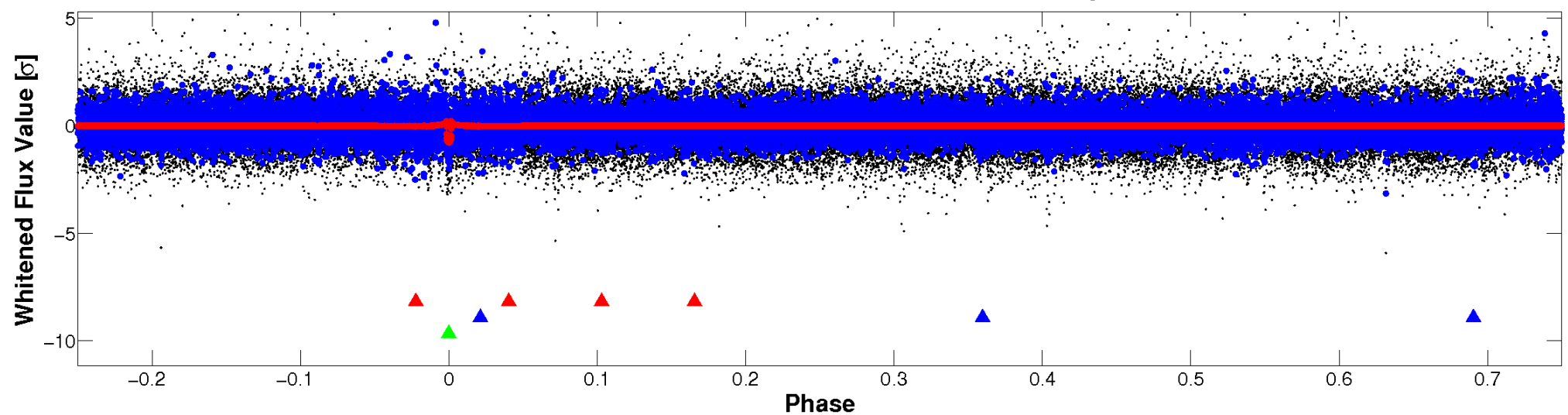


# Non-Whitened Vs. Whitened Light Curve

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



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



# PDC Quarter-Phased Transit Curves

TCE 008619915-03     $P=399.091430$  Days     $T_0=510.802570$  (BKJD)





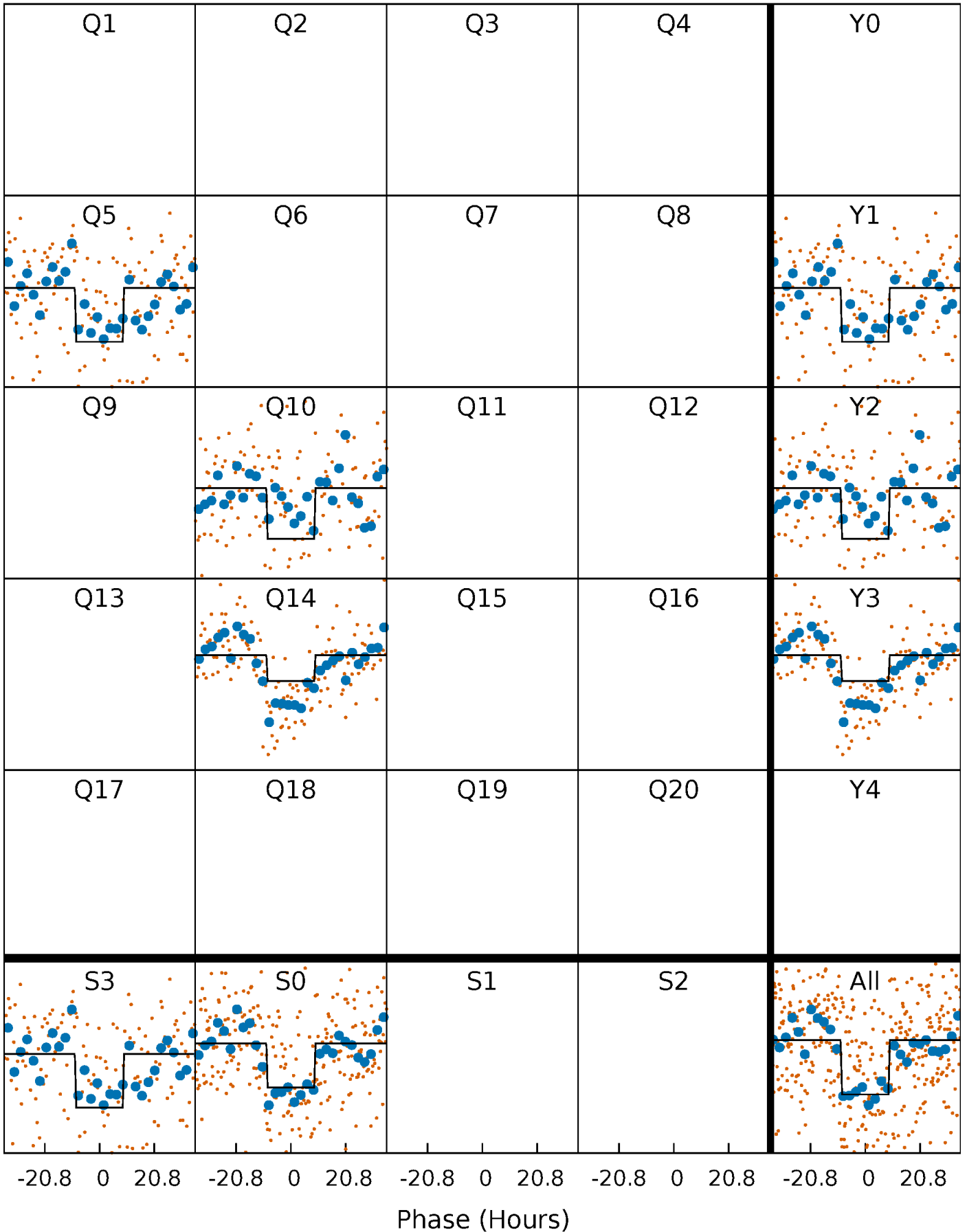
# DV Quarter-Phased Transit Curves

TCE 008619915-03     $P=399.091430$  Days     $T_0=510.802570$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

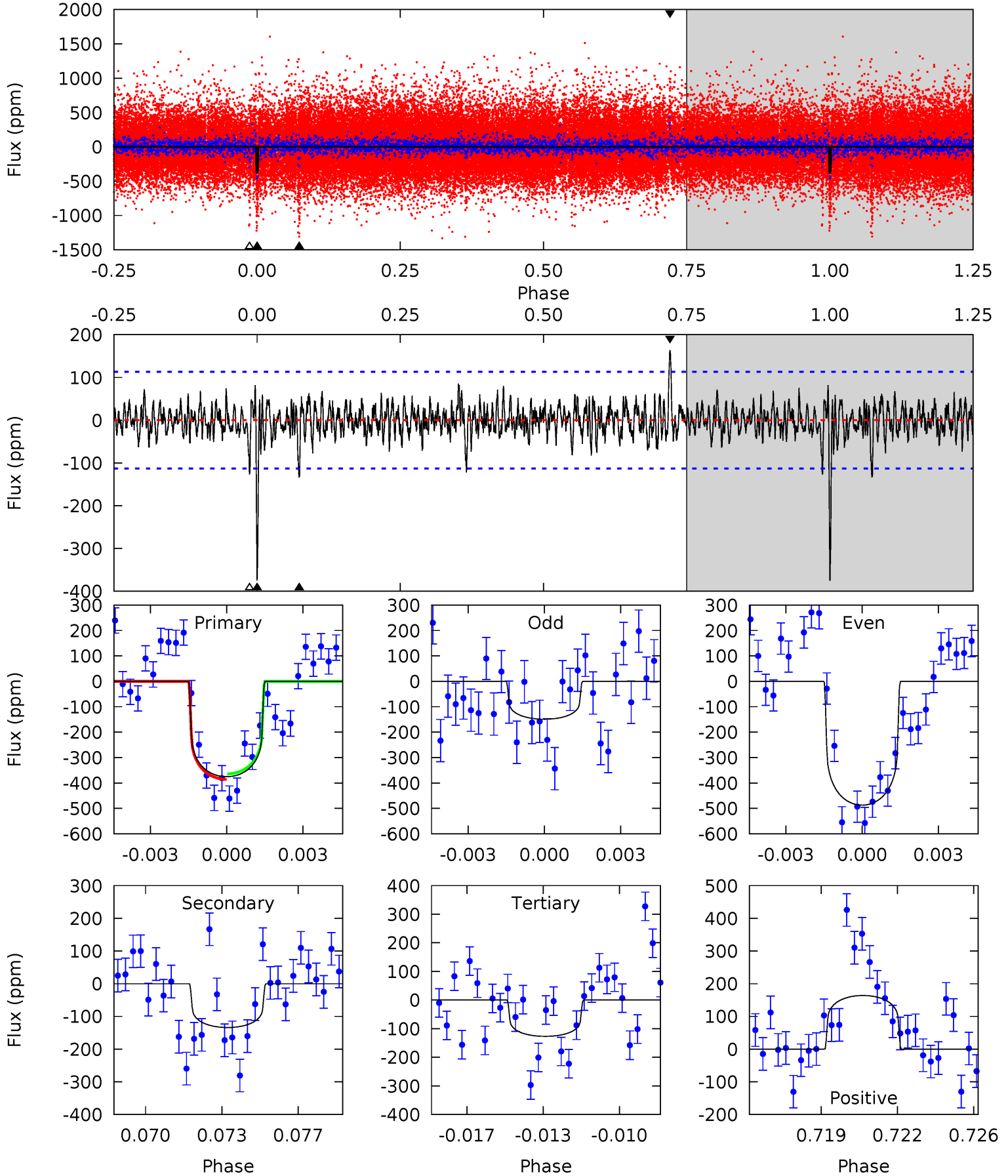
TCE 008619915-03     $P=399.224084$  Days     $T_0=510.502617$  (BKJD)



# DV Model-Shift Uniqueness Test

008619915-03, P = 399.091430 Days, E = 111.711140 Days

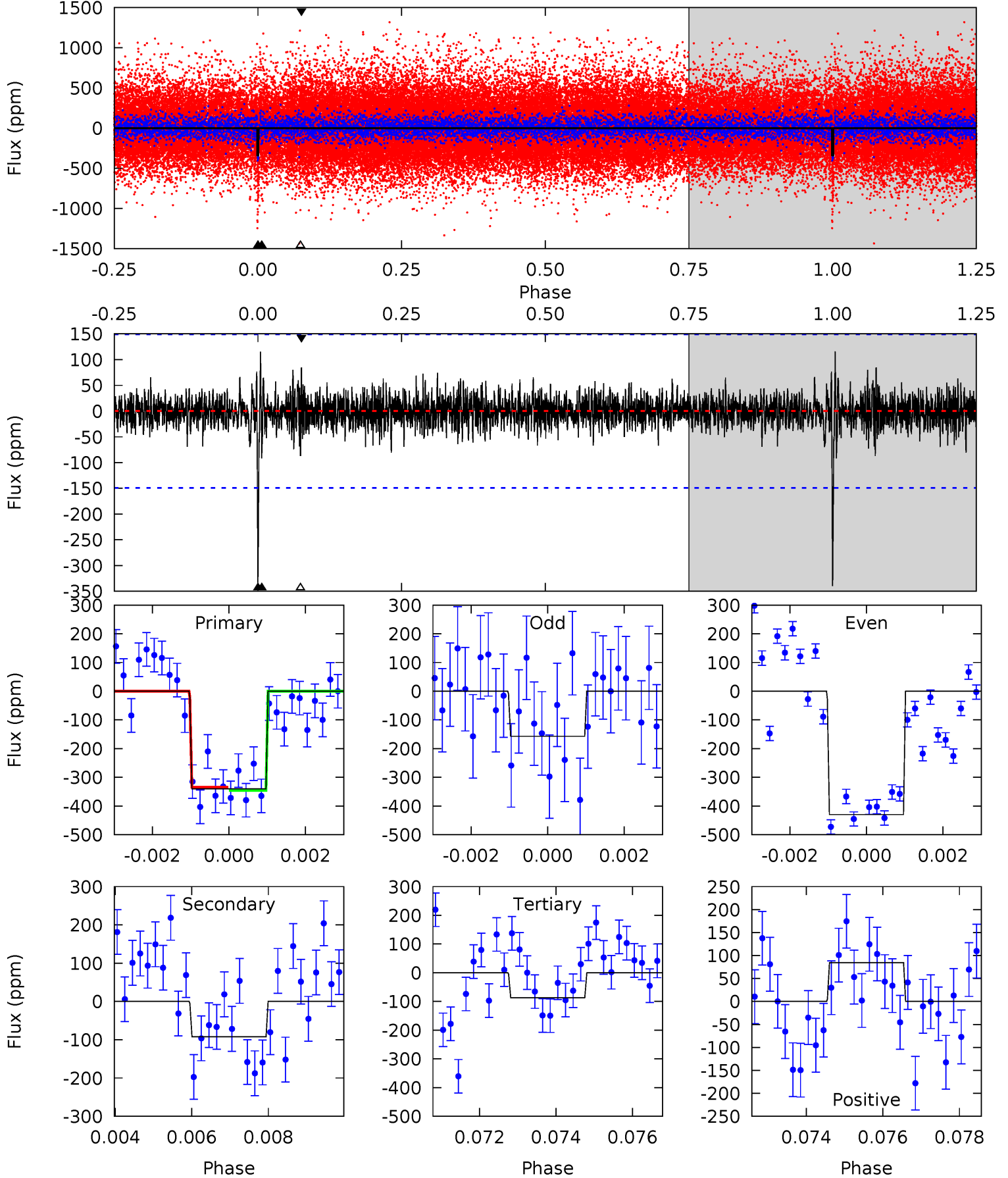
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	6.20	5.87	7.59	5.23	2.94	1.37	11.5	9.77	0.33	-1.39	7.35	0.97	0.30	0.50



# Alt Model-Shift Uniqueness Test

008619915-03, P = 399.224084 Days, E = 111.278533 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	3.29	3.11	3.02	5.34	3.10	0.76	9.04	9.13	0.18	0.27	4.56	1.41	0.25	0.19



### Stellar Parameters For KIC 008619915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6042^{+163}_{-181}$	$4.411^{+0.139}_{-0.186}$	$-0.620^{+0.300}_{-0.300}$	$0.946^{+0.240}_{-0.160}$	$0.841^{+0.099}_{-0.072}$	$1.398^{+0.909}_{-0.635}$
	+3%/-3%	+3%/-4%	+48%/-48%	+25%/-17%	+12%/-9%	+65%/-45%
Source	PHO1	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 008619915-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-134 \pm 22$	$1.95^{+0.45}_{-0.39}$	$364^{+25}_{-22}$	$4870^{+442}_{-372}$	$19238^{+11602}_{-6968}$
Alt.	$-92 \pm 28$	$1.88^{+0.46}_{-0.37}$	$365^{+25}_{-22}$	$4552^{+473}_{-407}$	$14236^{+9282}_{-6455}$

$T_{\text{max}}$  = 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

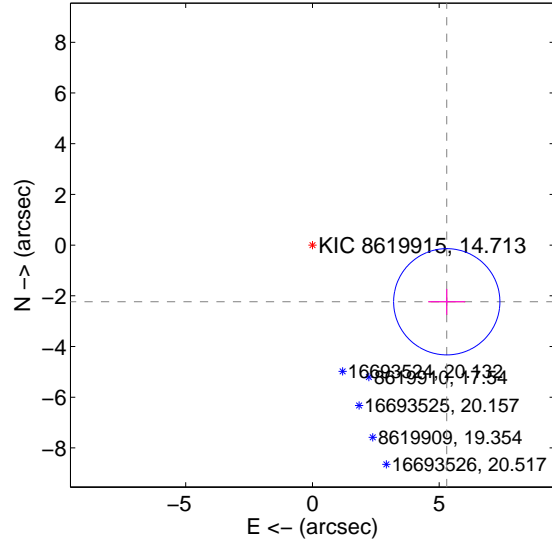
Supplemental centroid analysis for 008619915-03. Kepler magnitude: 14.71. Transit SNR 9.65

There are 0 quarters with good PRF difference image offsets

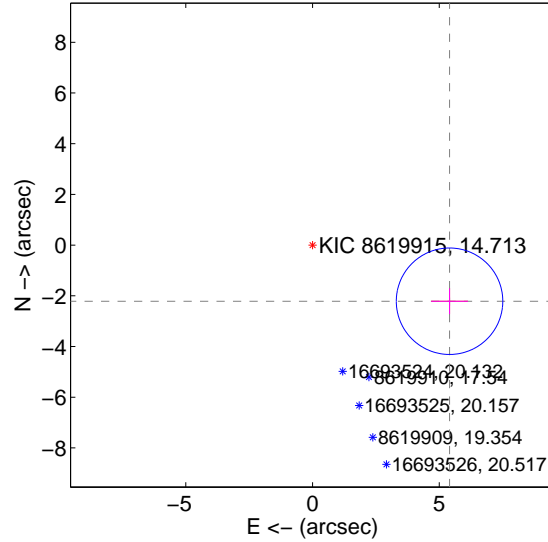
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.750 \pm 0.699$	8.23	$-5.298 \pm 0.727$	$-2.235 \pm 0.508$
PRF-fit source offset from KIC position	$5.840 \pm 0.700$	8.34	$-5.404 \pm 0.727$	$-2.214 \pm 0.508$
photometric centroid source offset	$3.87 \pm 1.36$	2.85	$-3.62 \pm 1.37$	$1.38 \pm 1.28$

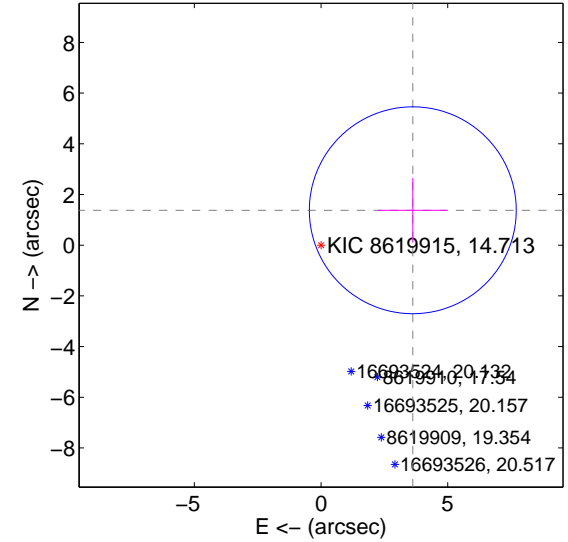
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

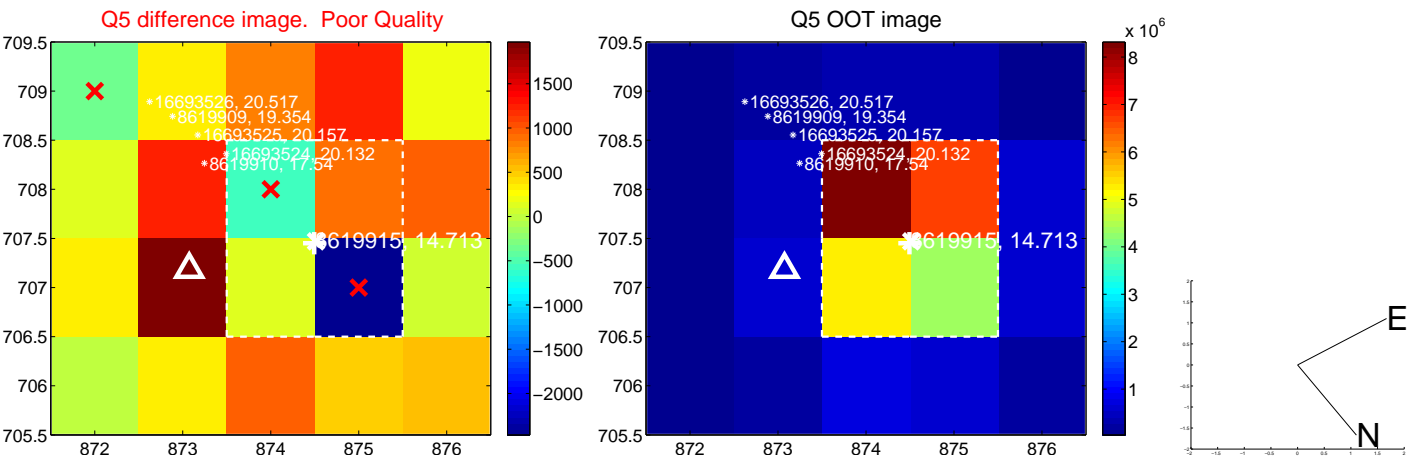


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



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





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

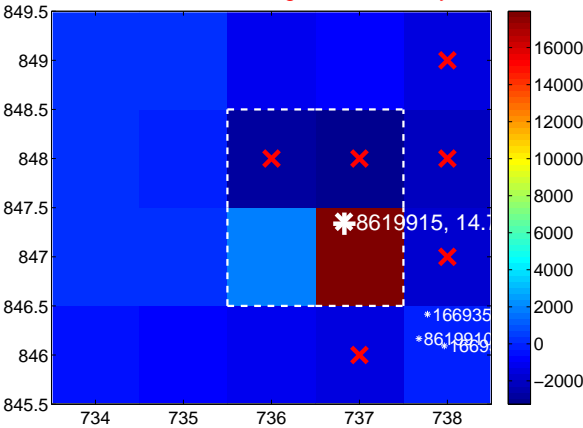
Q9 no difference image



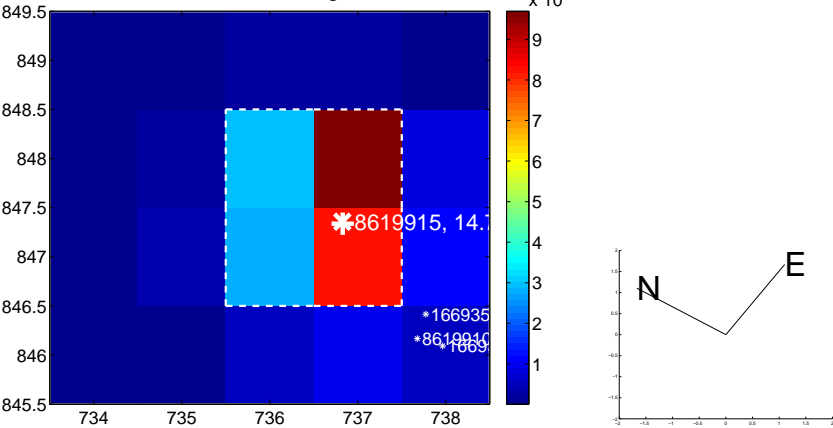
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



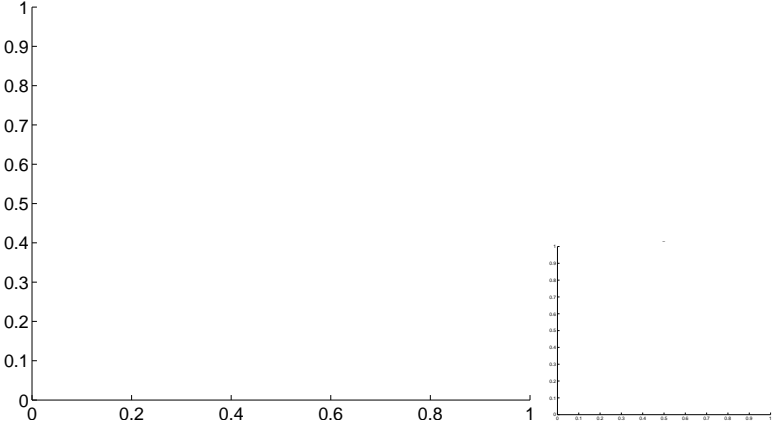
Q11 no OOT image



Q12 no difference image



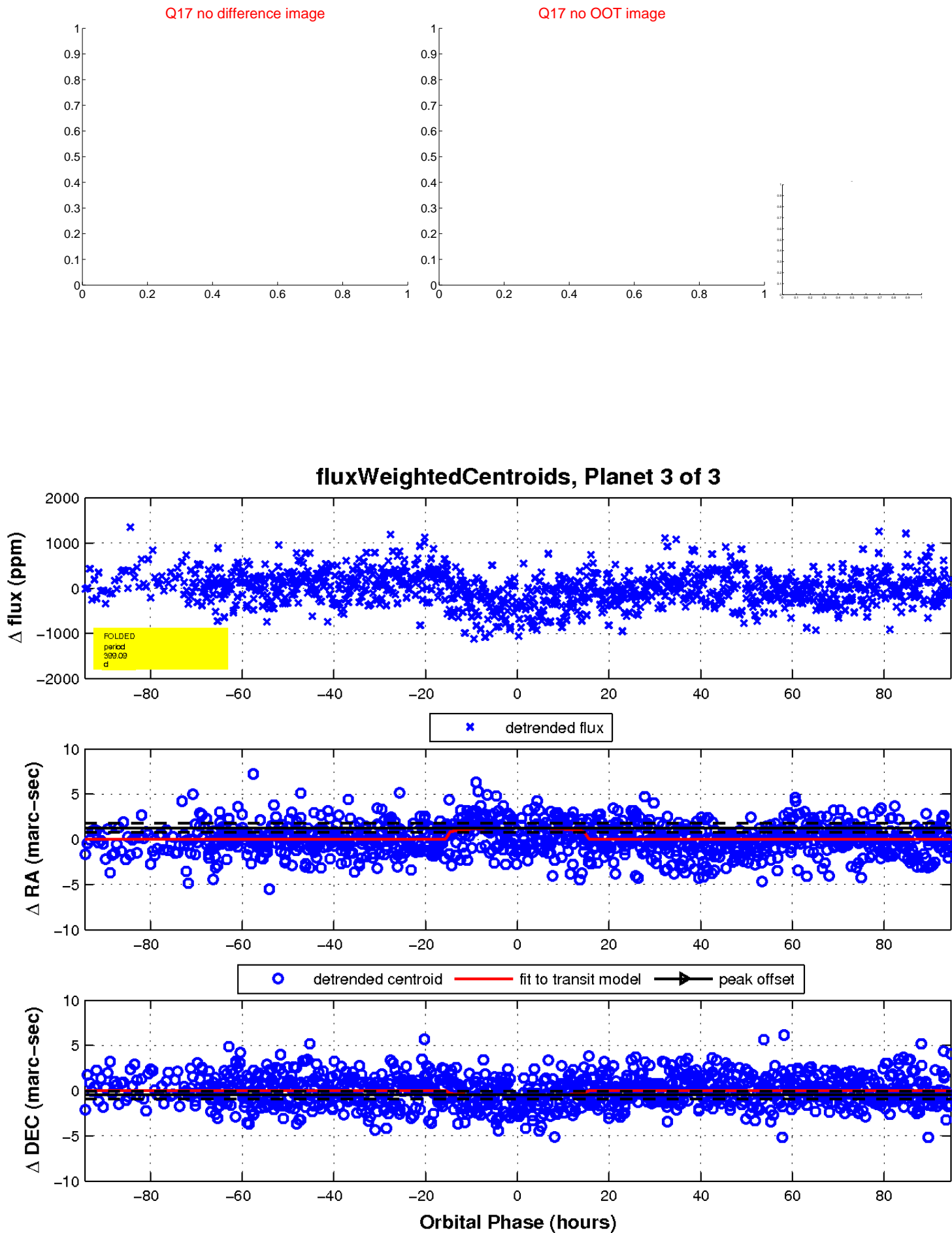
Q12 no OOT image



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

Declination

