

# KIC 008431611

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008431611-01	OBS	No	0.610623	131.849105	6409.5	1.461	47.8	37.8	1.13	6157	9.37	8194.94
008431611-02	OBS	No	0.610652	132.114082	15397.1	1.283	45.5	62.4	1.13	6157	18.19	8194.43
008431611-03	OBS	No	0.610233	131.895369	5262.9	1.500	15.9	-1.0	1.13	6157	8.22	8201.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008431611-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008431611-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008431611-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

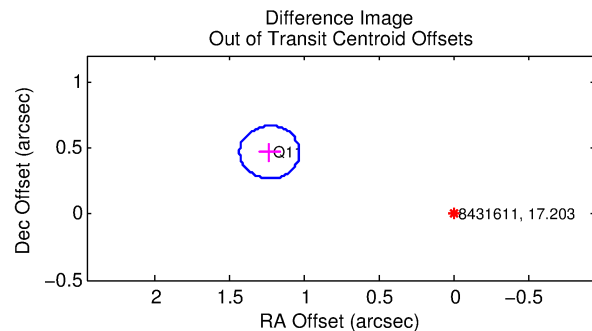
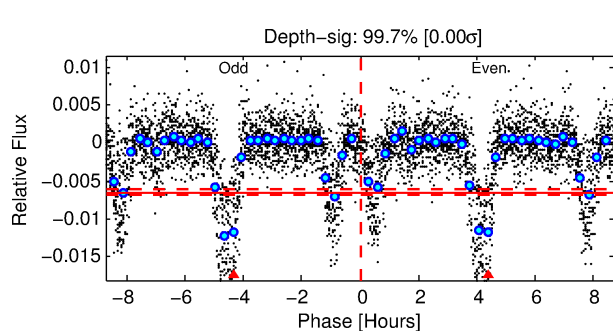
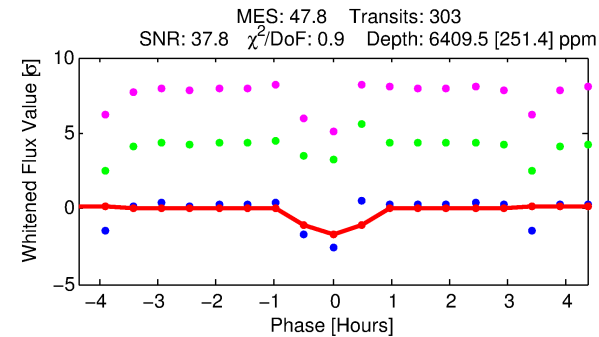
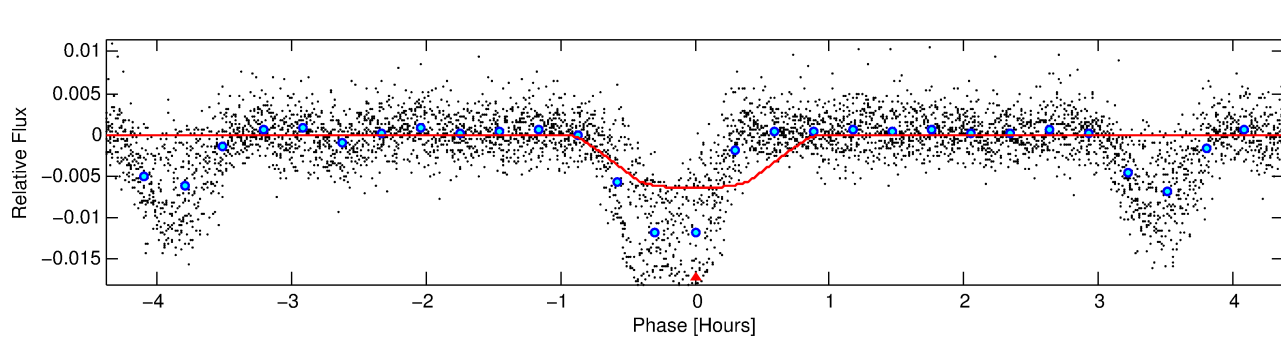
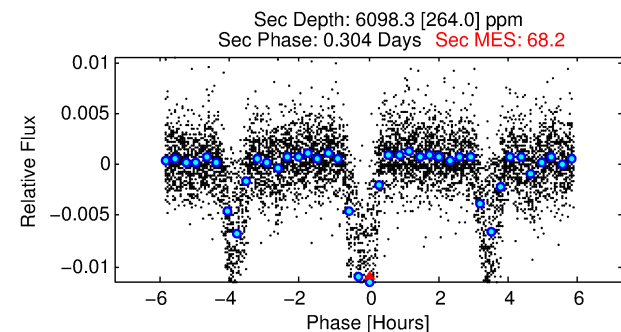
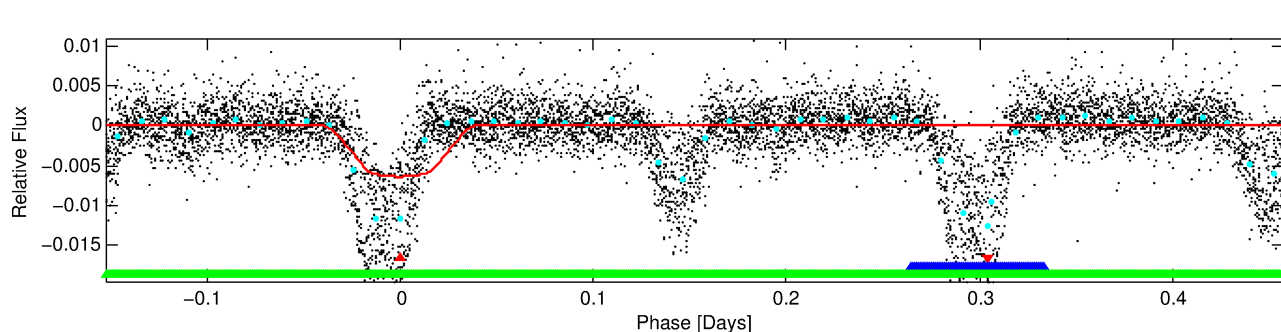
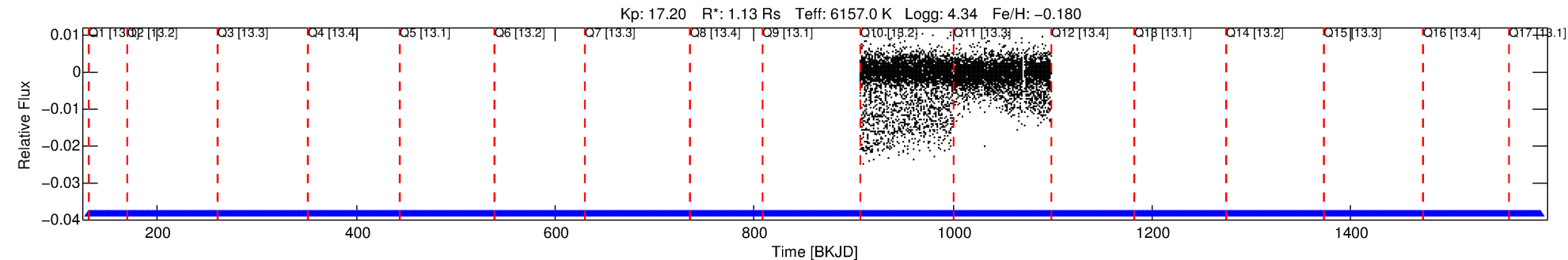
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008431611-01

No Significant Match Found

# DV One-Page Summary

KIC: 8431611 Candidate: 1 of 3 Period: 0.611 d



## DV Fit Results:

Period = 0.61062 [0.00000] d  
Epoch = 131.8491 [0.0005] BKJD  
Rp/R\* = 0.0761 [0.0137]  
a/R\* = 3.10 [2.39]  
b = 0.52 [1.22]  
Seff = 8194.94 [3225.84]  
Teq = 2426 [239] K  
Rp = 9.37 [3.39] Re  
a = 0.0141 [0.0036] AU  
Ag = 7.65 [3.92] [1.70σ]  
**Teffp = 6238 [617] K [5.76σ]**

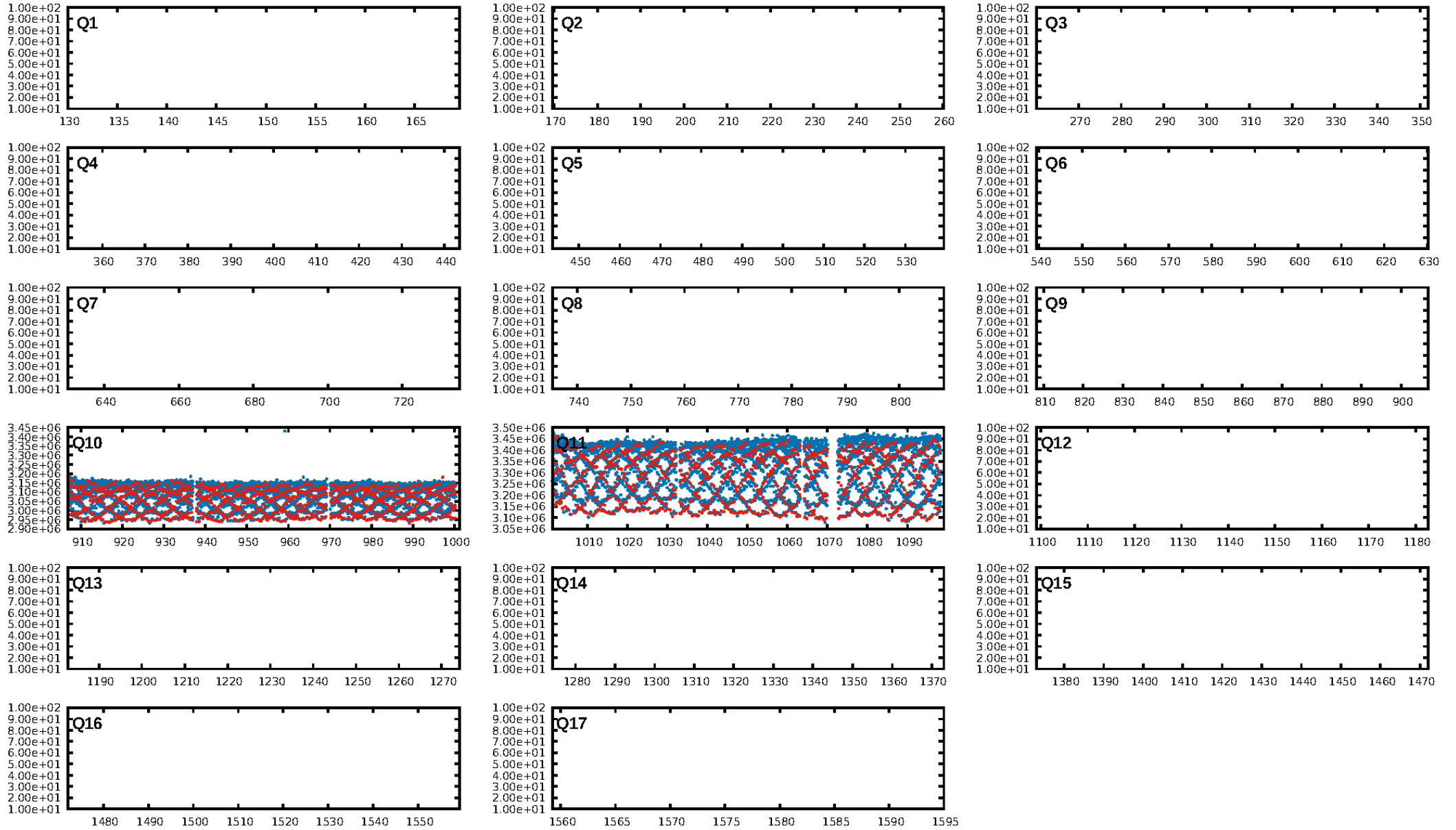
## DV Diagnostic Results:

ShortPeriod-sig: 0.4% [0.00σ]  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [303/303]  
**GhostDiagnostic-chr: -1.693**  
**Centroid-sig: 0.2%**  
Centroid-so: 1.150 arcsec [1.80σ]  
**OotOffset-rm: 1.312 arcsec [19.67σ]**  
**KicOffset-rm: 6.595 arcsec [98.86σ]**  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/2]

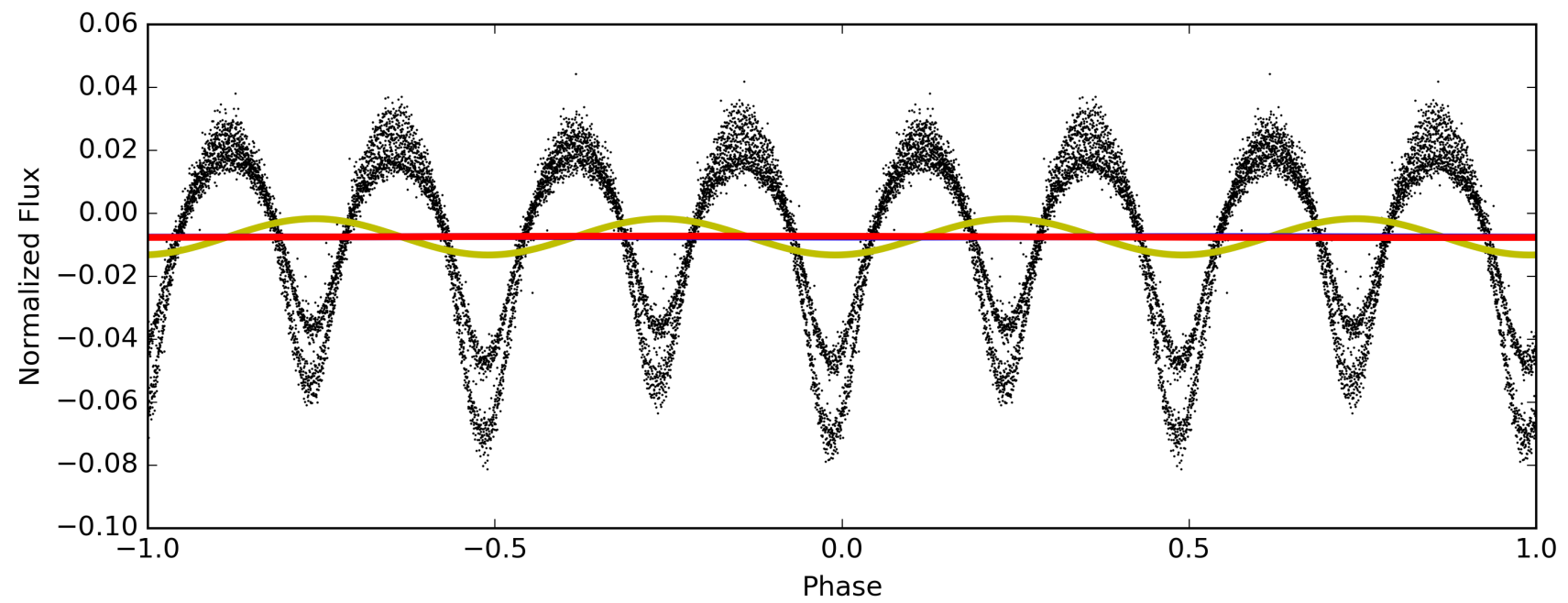
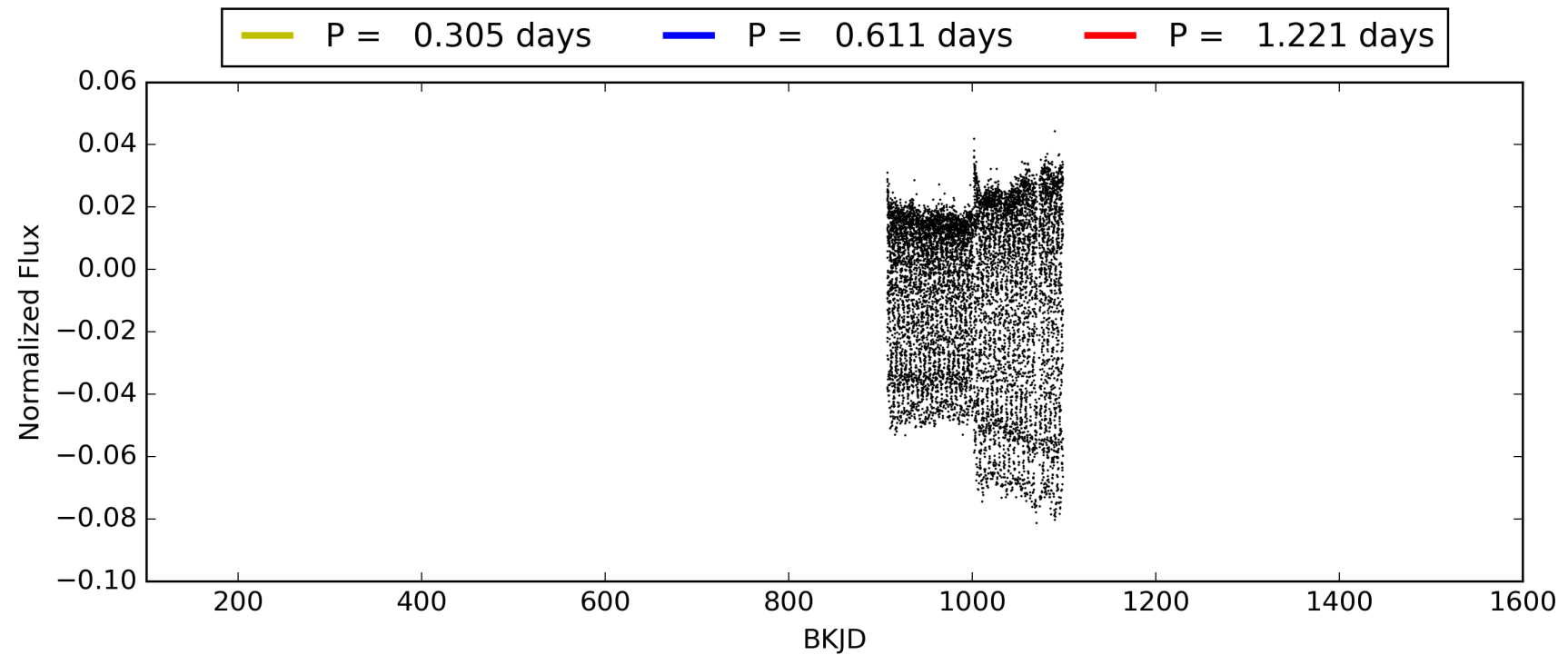
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:52:30 Z

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

# TCE 008431611-01, PDC Light Curves

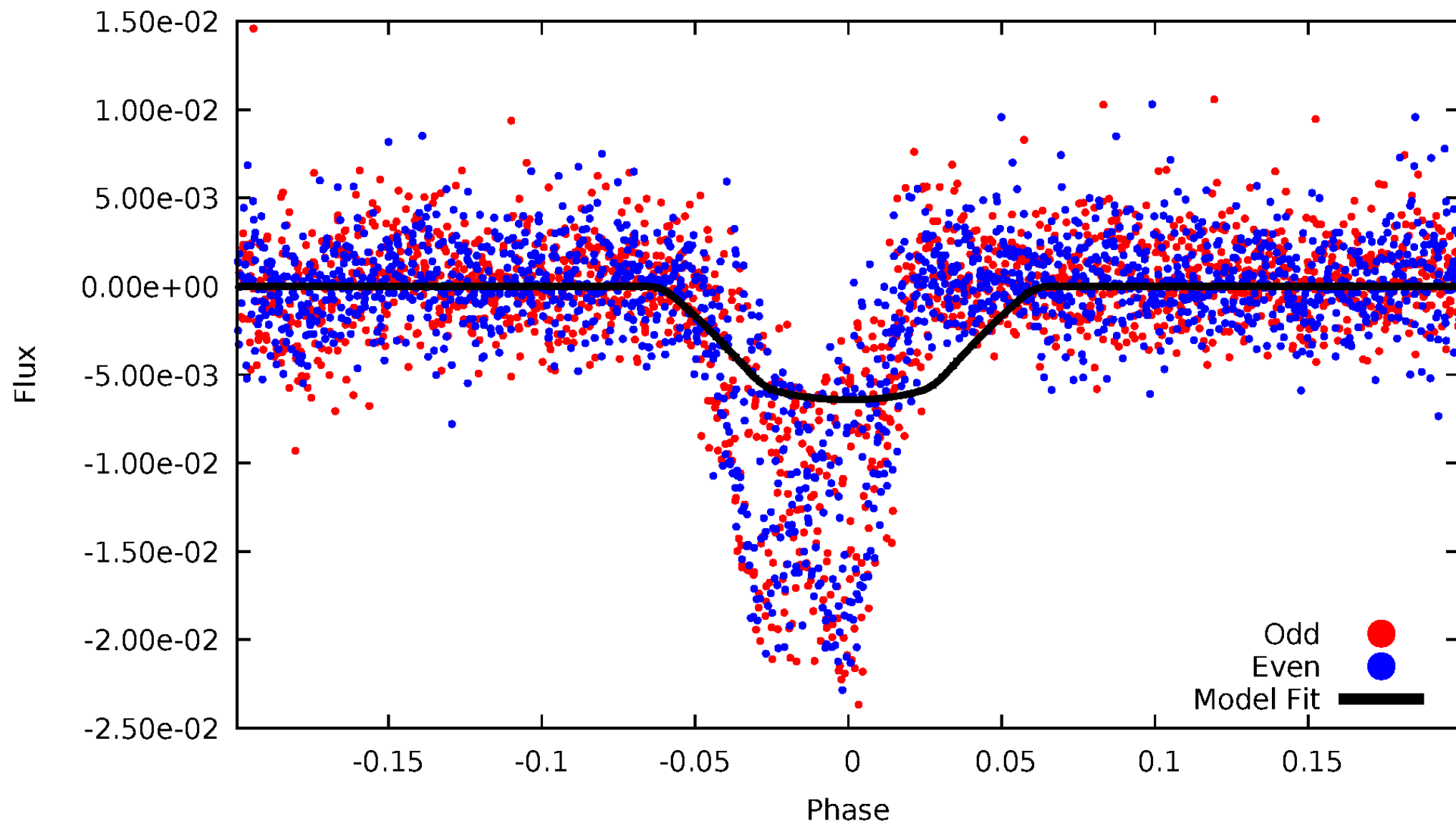


TCE 008431611-01



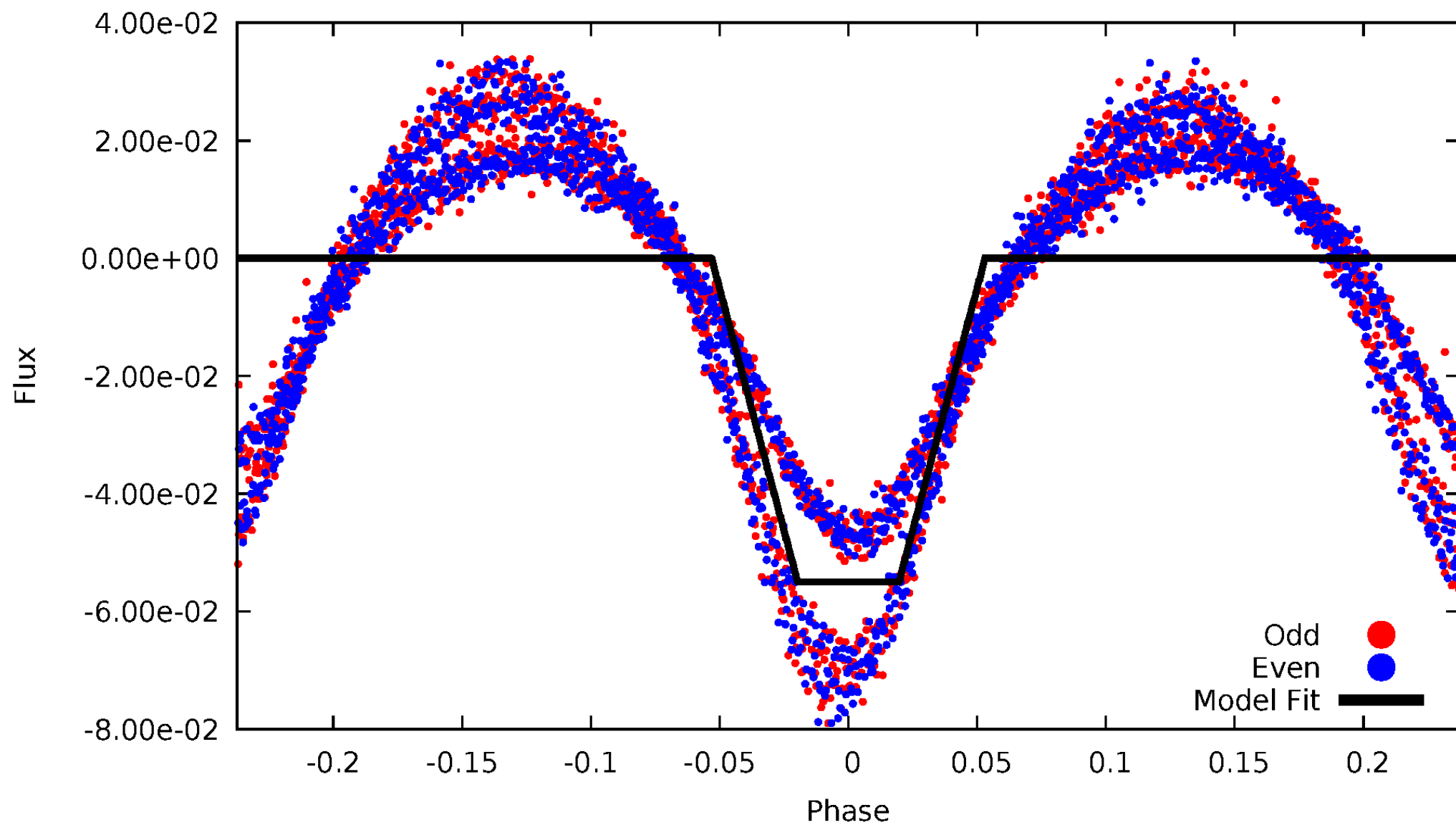
# DV Odd/Even

TCE 008431611-01



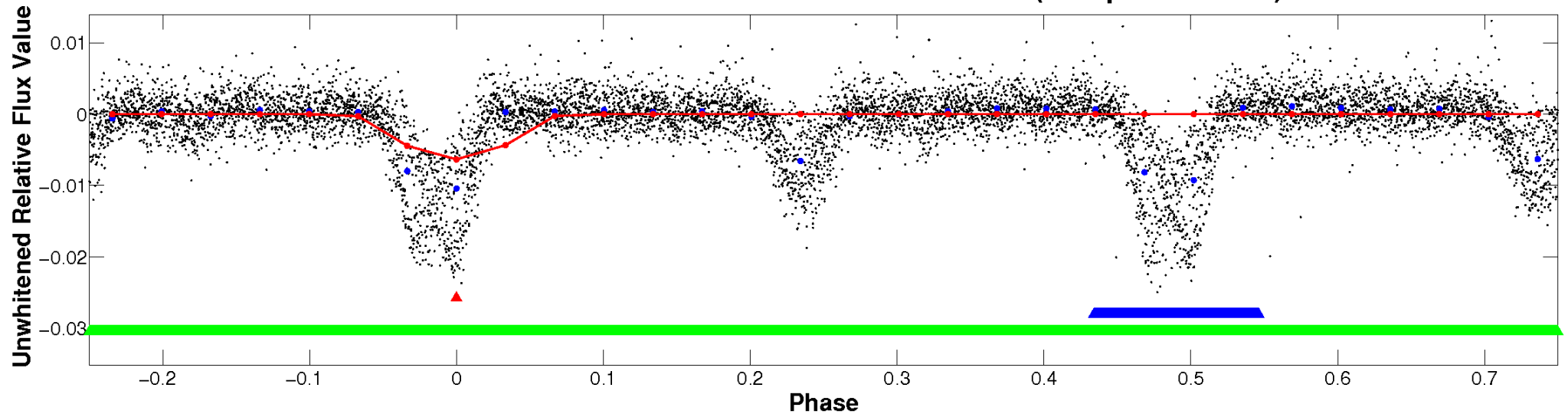
# ALT Odd/Even

TCE 008431611-01

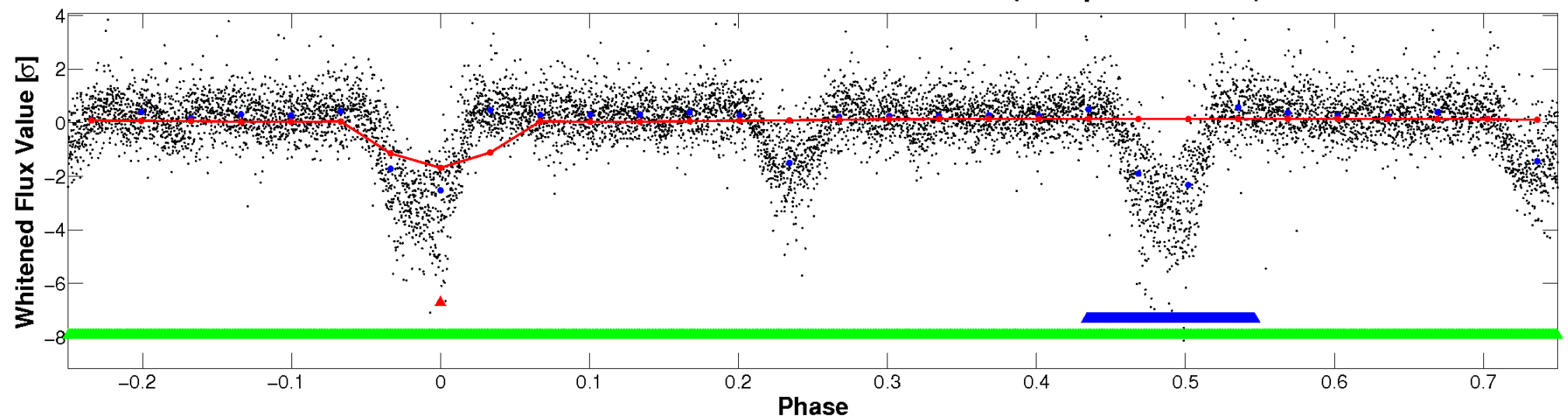


# Non-Whitened Vs. Whitened Light Curve

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

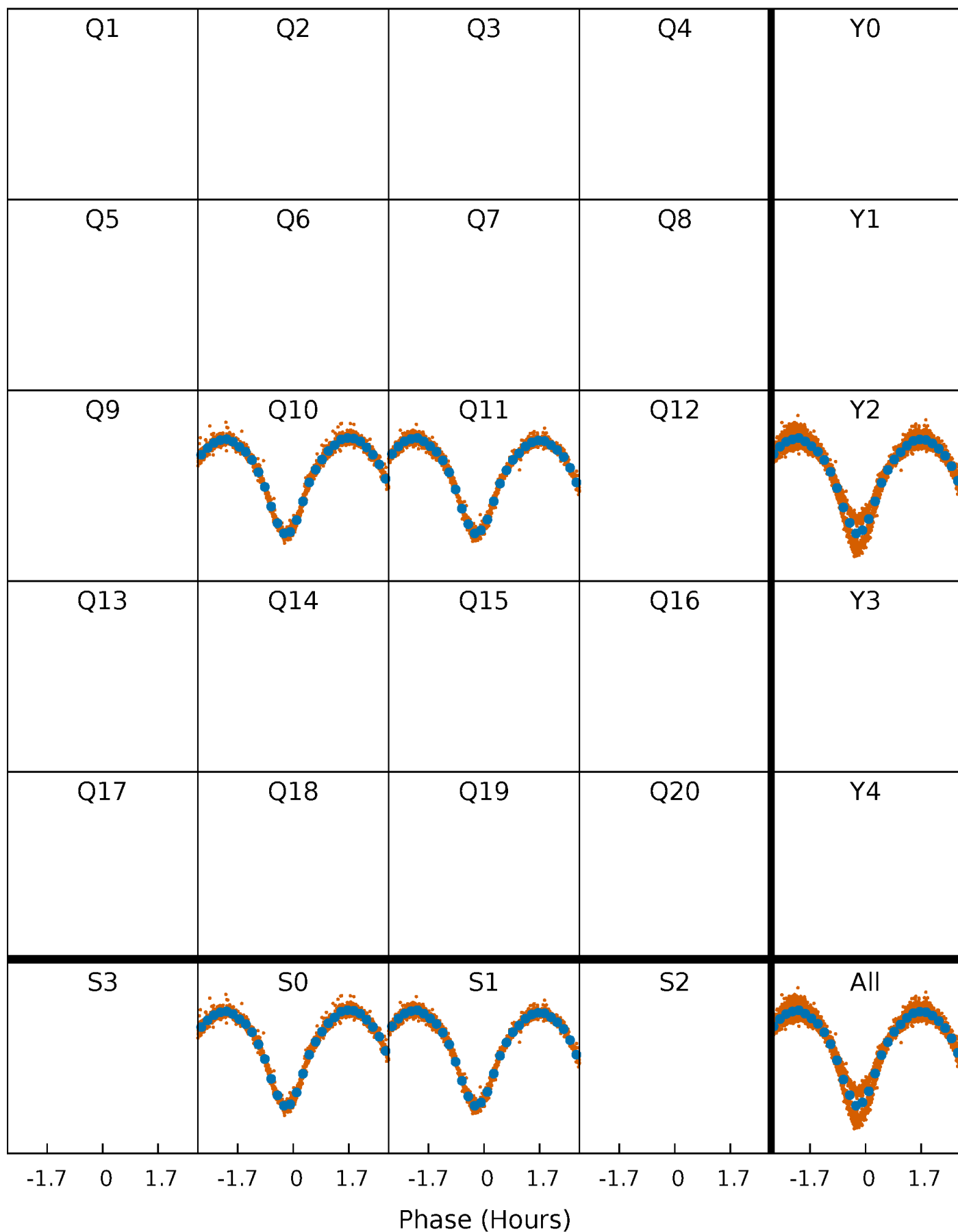


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

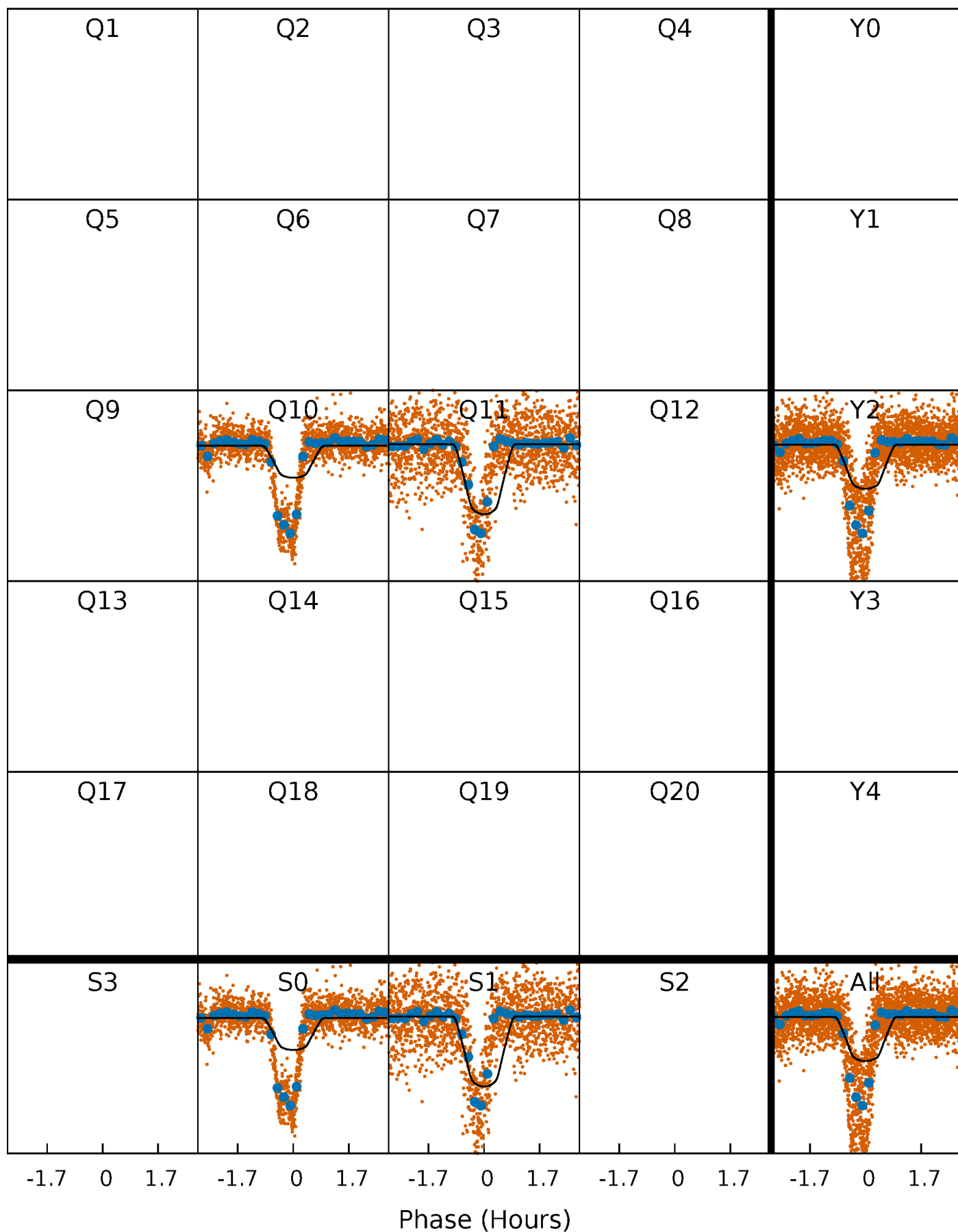
TCE 008431611-01 P= 0.610623 Days  $T_0=131.849105$  (BKJD)





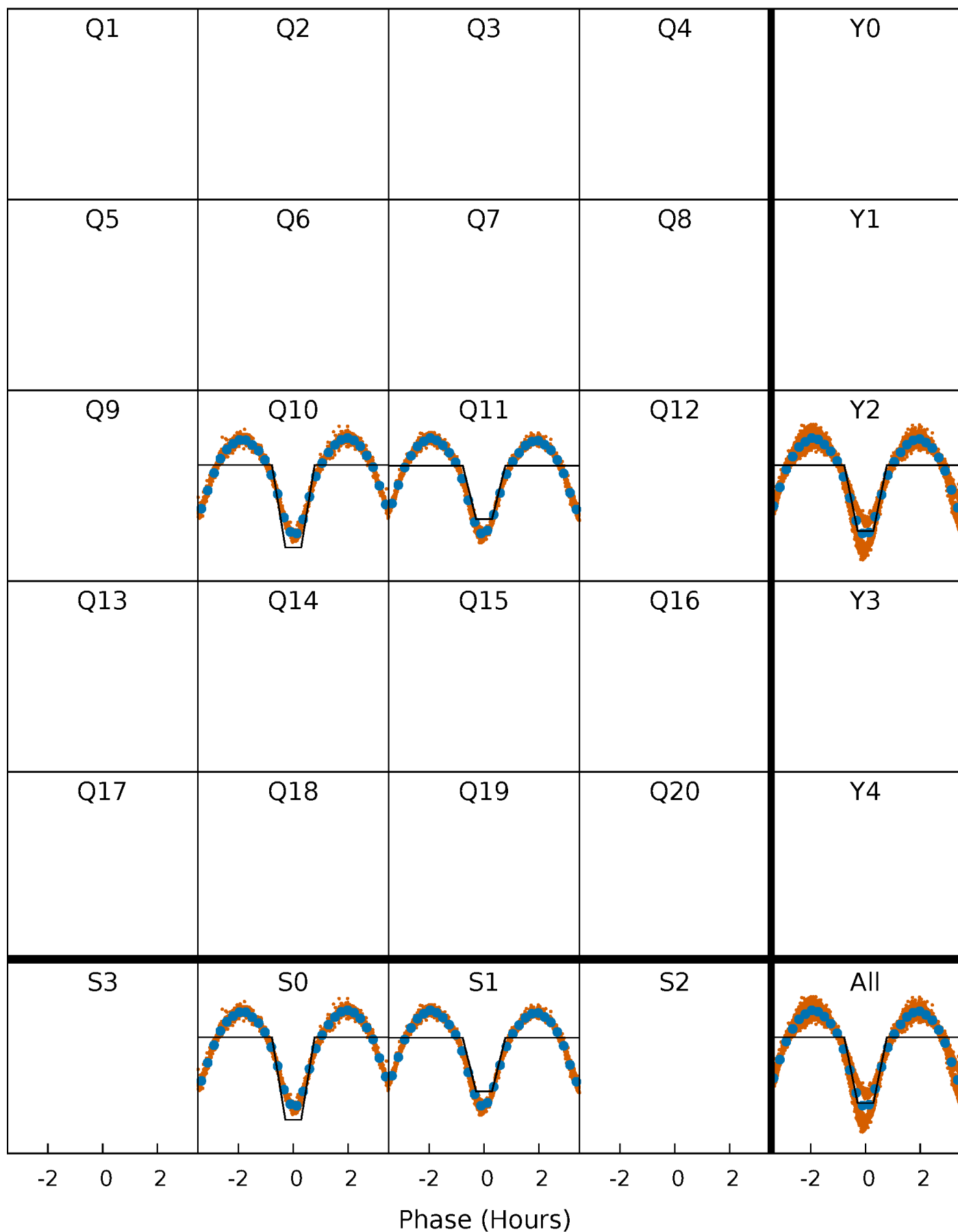
# DV Quarter-Phased Transit Curves

TCE 008431611-01 P= 0.610623 Days  $T_0=131.849105$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

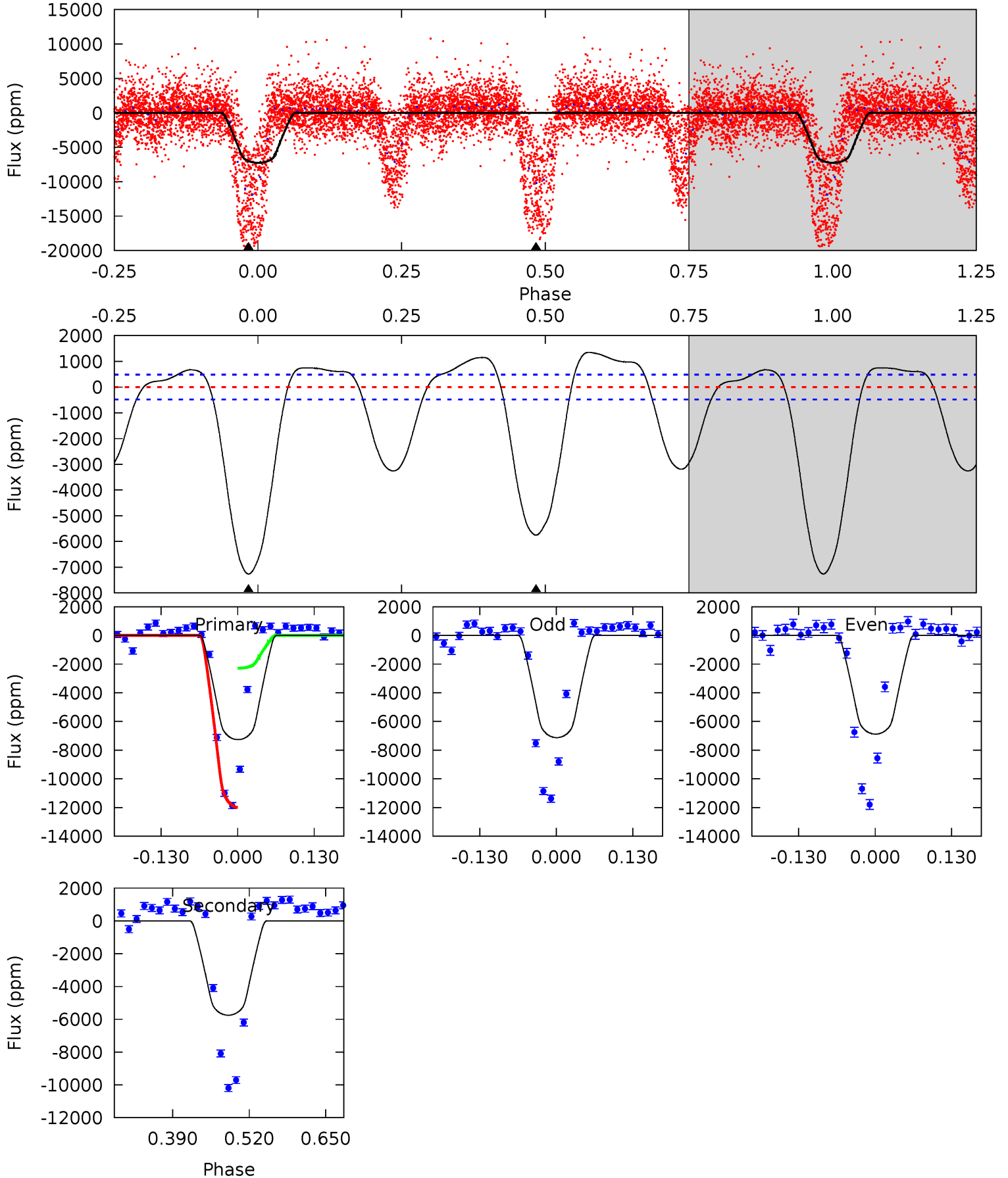
TCE 008431611-01   P= 0.610635 Days    $T_0=131.823048$  (BKJD)



# DV Model-Shift Uniqueness Test

008431611-01, P = 0.610623 Days, E = 131.849105 Days

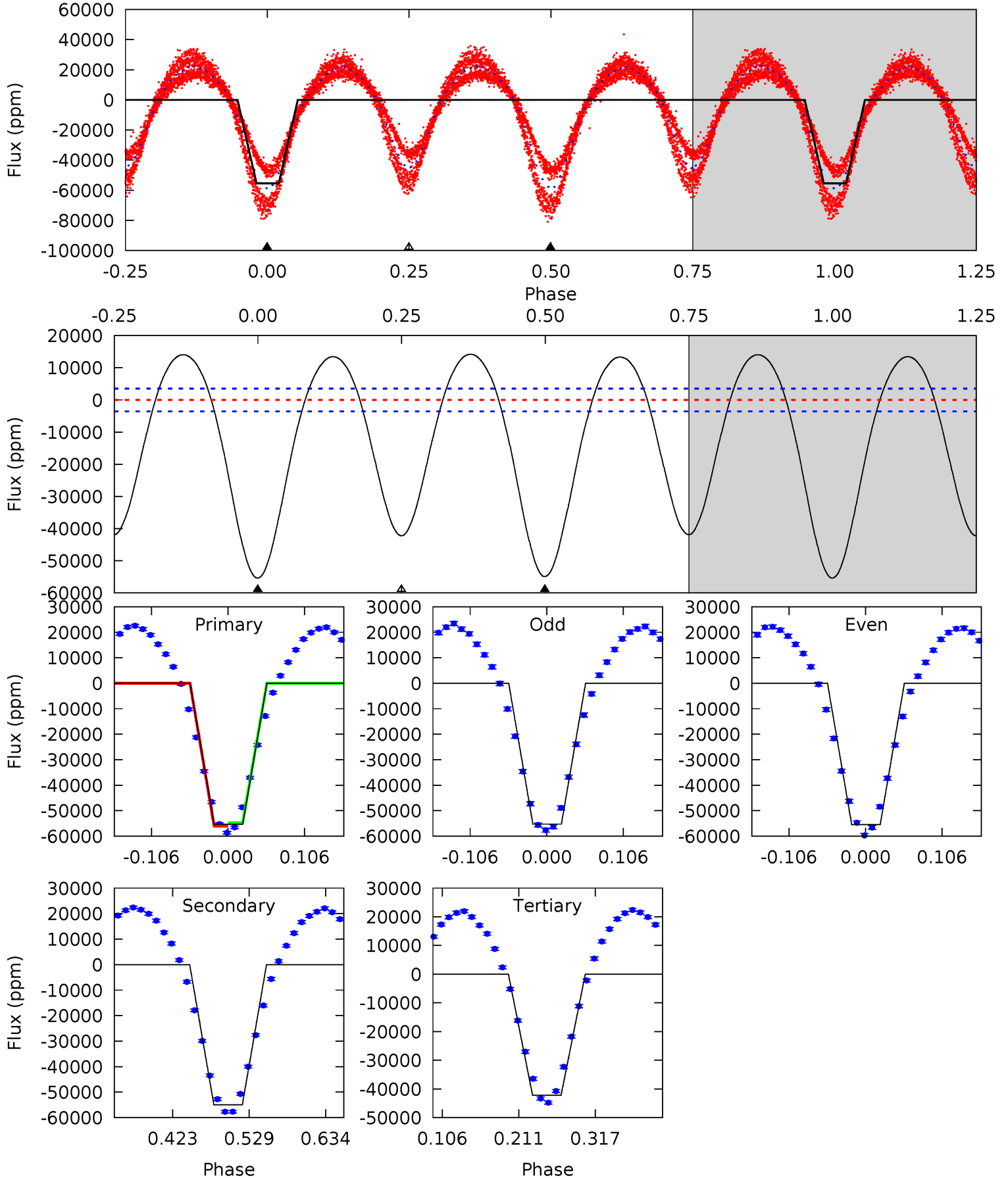
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
67.7	53.6	0	0	4.51	1.51	13.7	67.7	67.7	53.6	53.6	1.15	1.09	0.16	47.8



# Alt Model-Shift Uniqueness Test

008431611-01, P = 0.610635 Days, E = 131.823048 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
71.3	70.7	54.4	0	4.55	1.62	25.9	16.9	71.3	16.3	70.7	0.14	0.96	0.20	0.89



### Stellar Parameters For KIC 008431611

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6157^{+196}_{-240}$	$4.338^{+0.128}_{-0.192}$	$-0.180^{+0.250}_{-0.300}$	$1.128^{+0.354}_{-0.191}$	$1.007^{+0.173}_{-0.116}$	$0.988^{+0.598}_{-0.499}$
	+3%/-4%	+3%/-4%	+139%/-167%	+31%/-17%	+17%/-12%	+61%/-51%
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 008431611-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5753 \pm 107$	$9.54^{+2.23}_{-1.96}$	$3409^{+254}_{-236}$	$6085^{+626}_{-548}$	$7.043^{+3.781}_{-2.420}$
Alt.	$-54917 \pm 777$	$29.45^{+5.10}_{-3.53}$	$3407^{+287}_{-207}$	$6150^{+312}_{-281}$	$7.380^{+2.090}_{-1.840}$

$T_{\text{max}}$  = 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

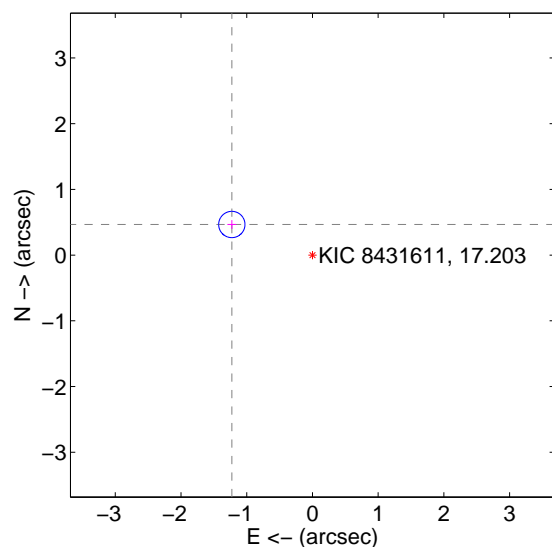
Supplemental centroid analysis for 008431611-01. Kepler magnitude: 17.20. Transit SNR 37.82

There are 1 quarters with good PRF difference image offsets

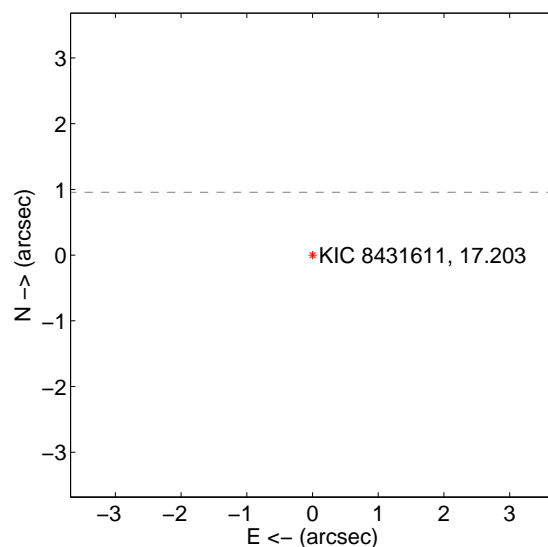
The OOT PRF centroid is offset from the target star catalog position by about 5.32 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.312 \pm 0.067$	19.67	$1.227 \pm 0.067$	$0.466 \pm 0.067$
PRF-fit source offset from KIC position	$6.595 \pm 0.067$	98.86	$6.525 \pm 0.067$	$0.956 \pm 0.067$
photometric centroid source offset	$1.15 \pm 0.64$	1.80	$-1.08 \pm 0.68$	$0.41 \pm 0.18$

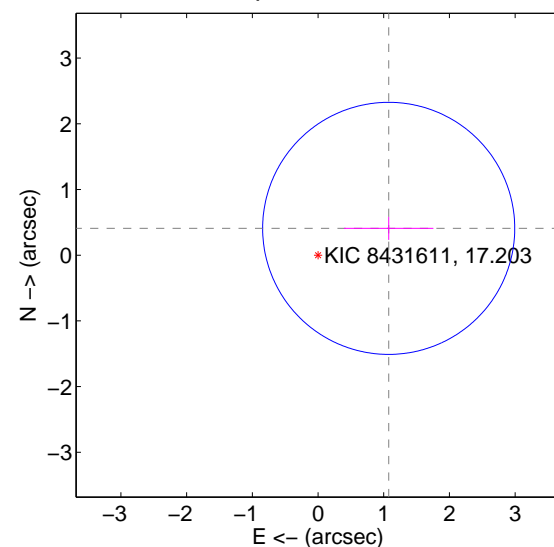
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

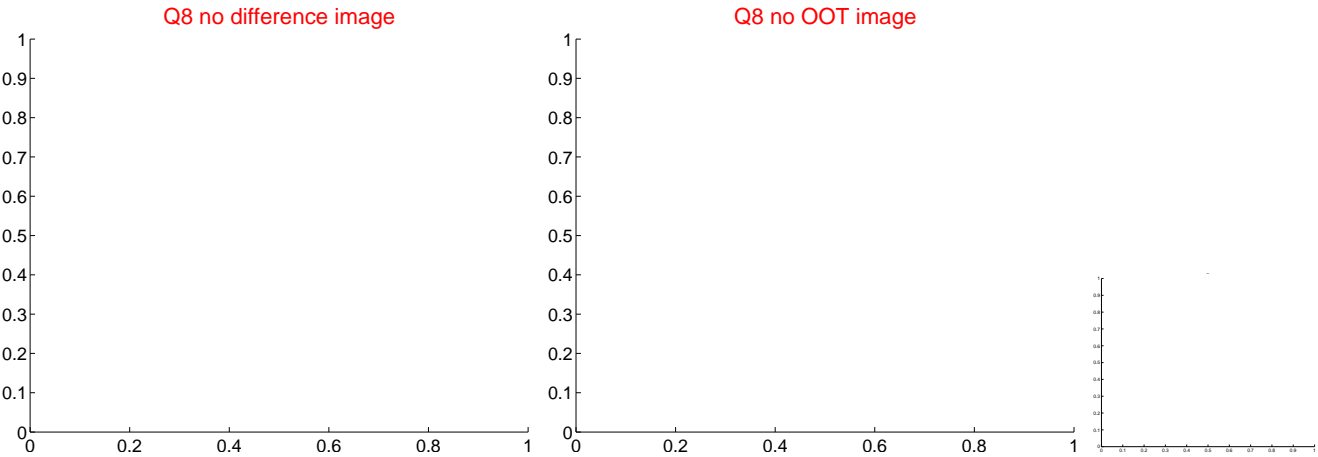
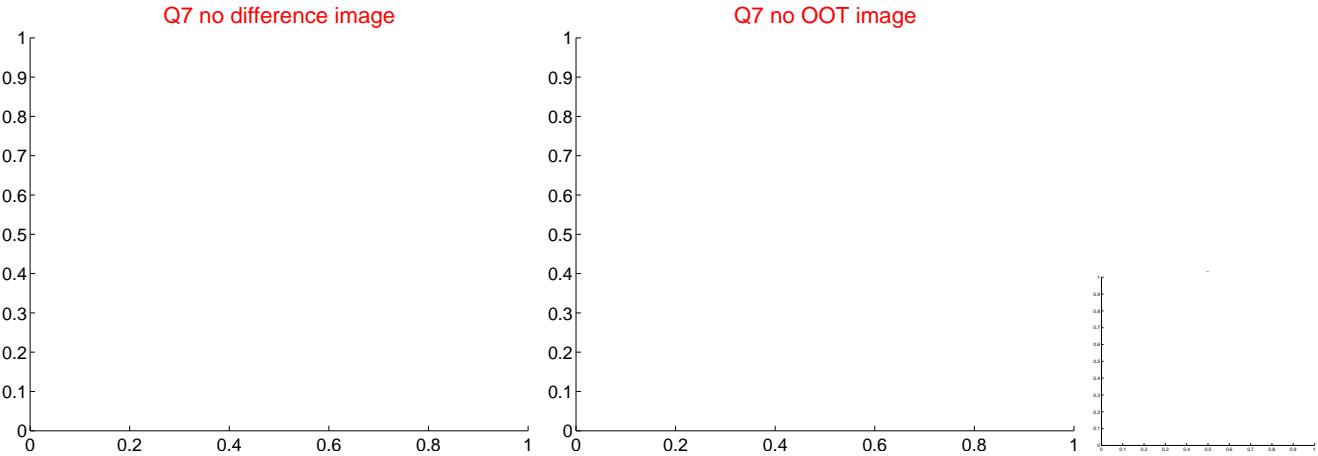
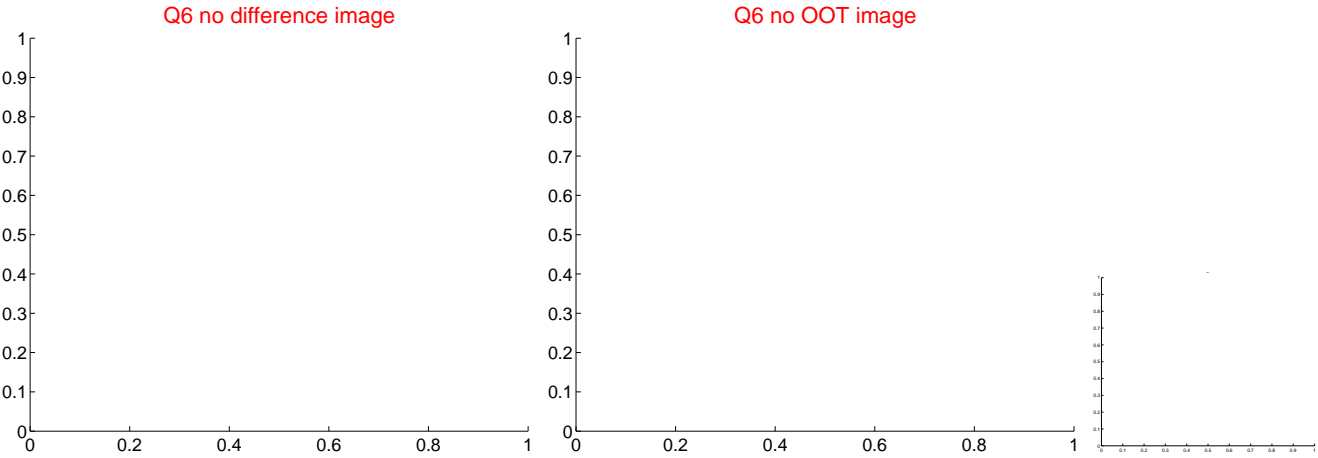
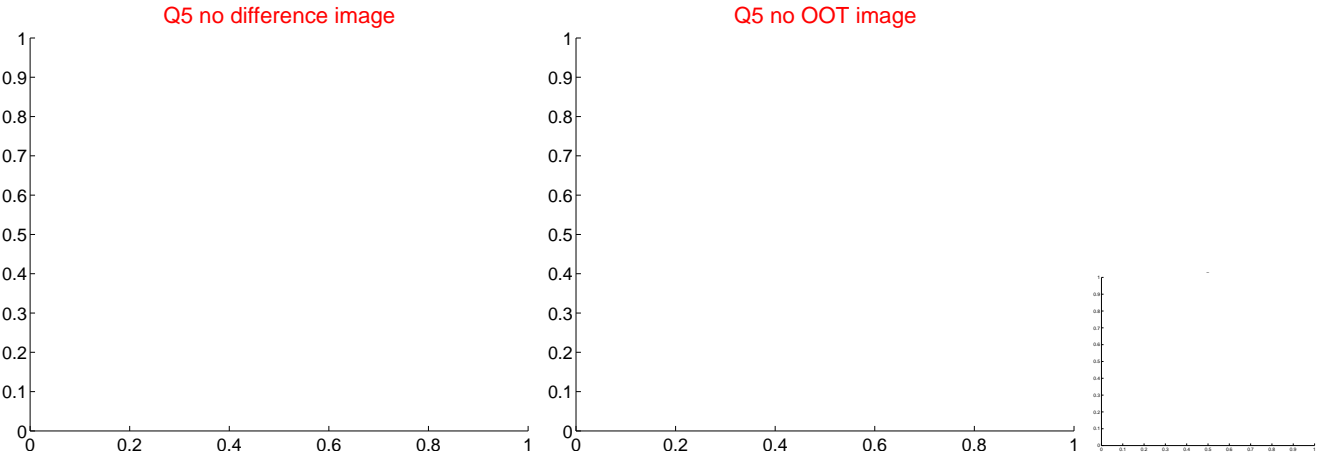


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

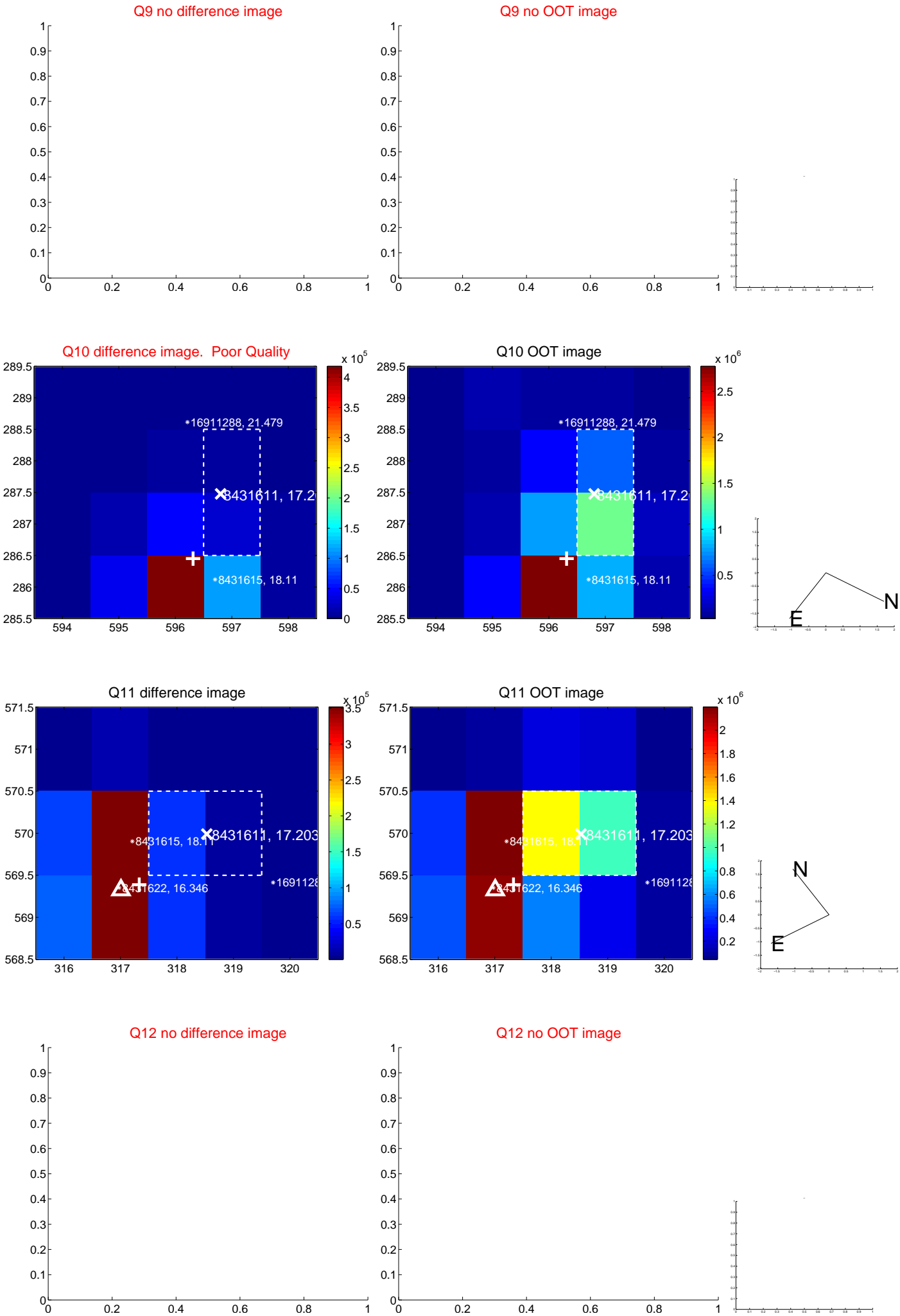


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





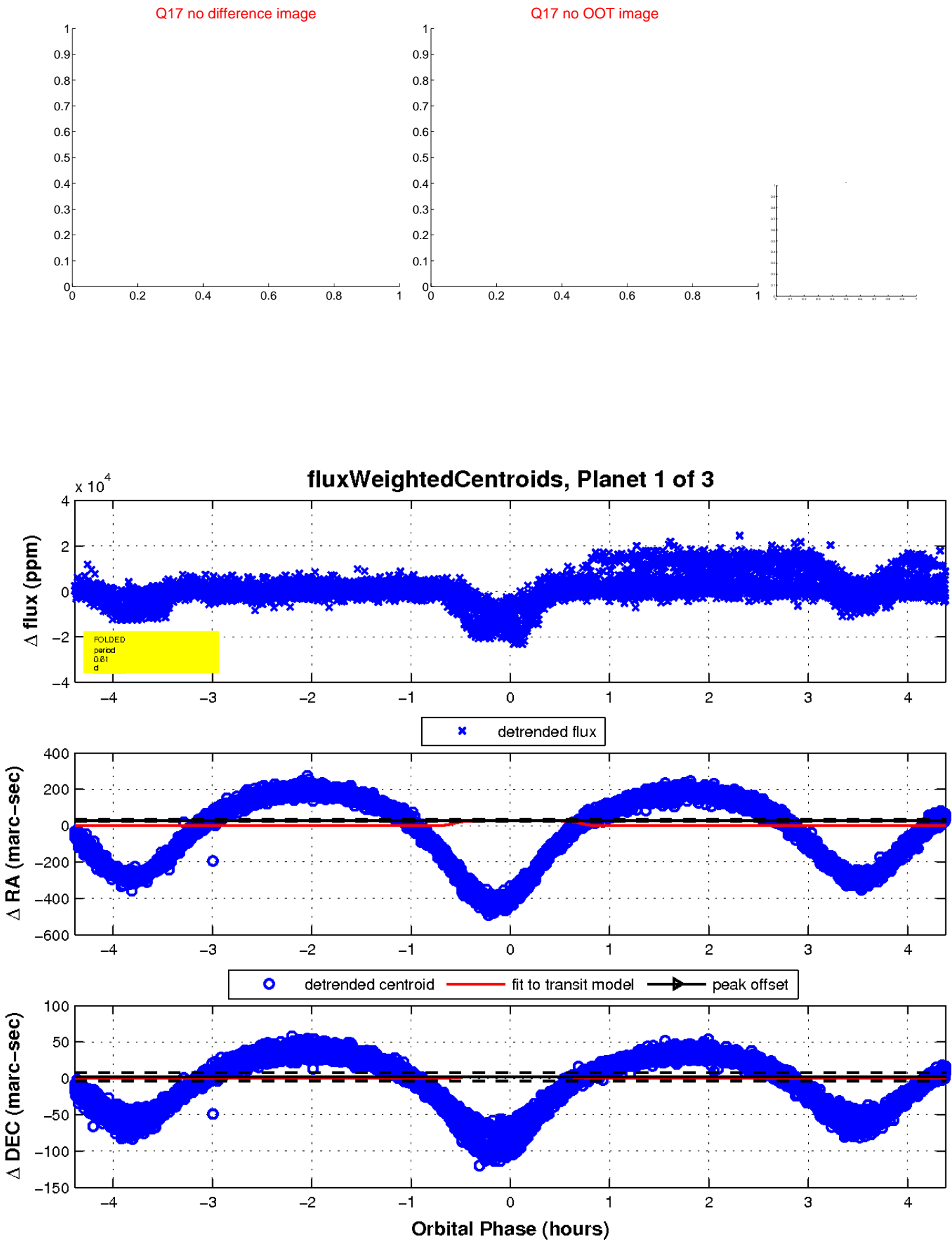
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

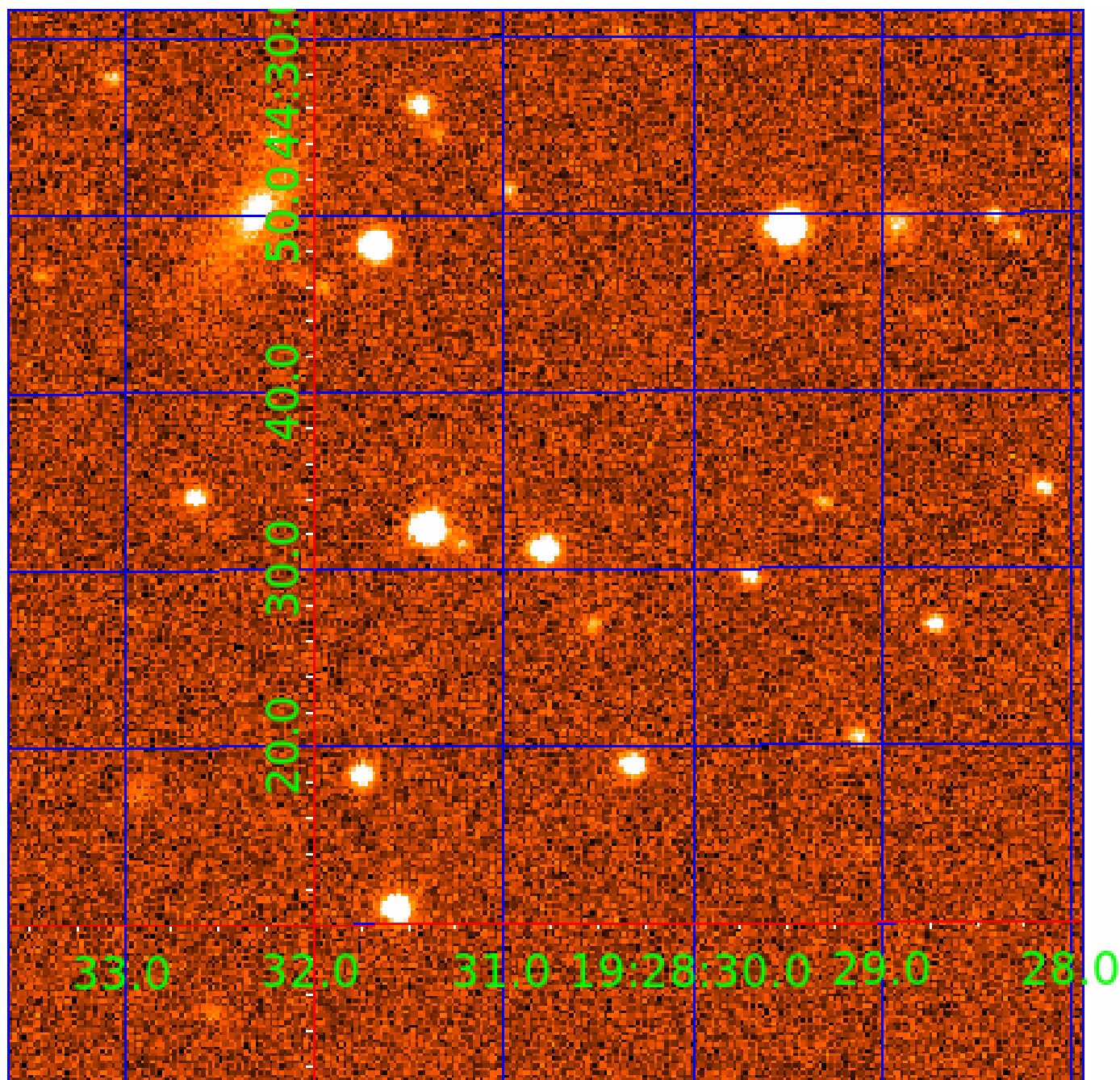


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008431611

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008431611-01	OBS	No	0.610623	131.849105	6409.5	1.461	47.8	37.8	1.13	6157	9.37	8194.94
008431611-02	OBS	No	0.610652	132.114082	15397.1	1.283	45.5	62.4	1.13	6157	18.19	8194.43
008431611-03	OBS	No	0.610233	131.895369	5262.9	1.500	15.9	-1.0	1.13	6157	8.22	8201.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008431611-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008431611-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008431611-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

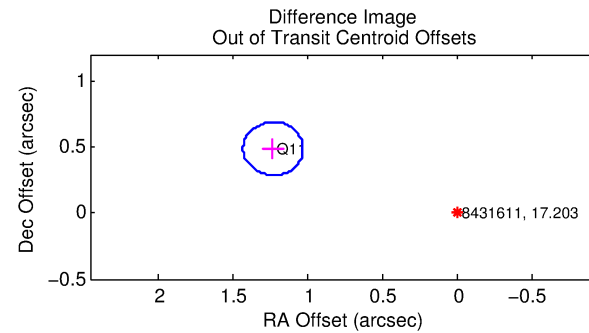
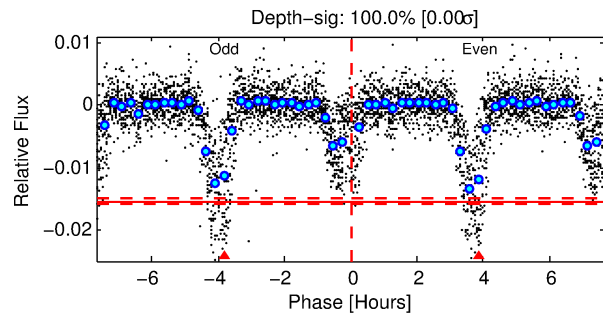
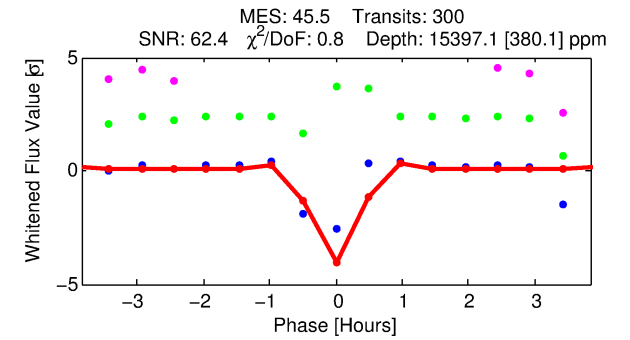
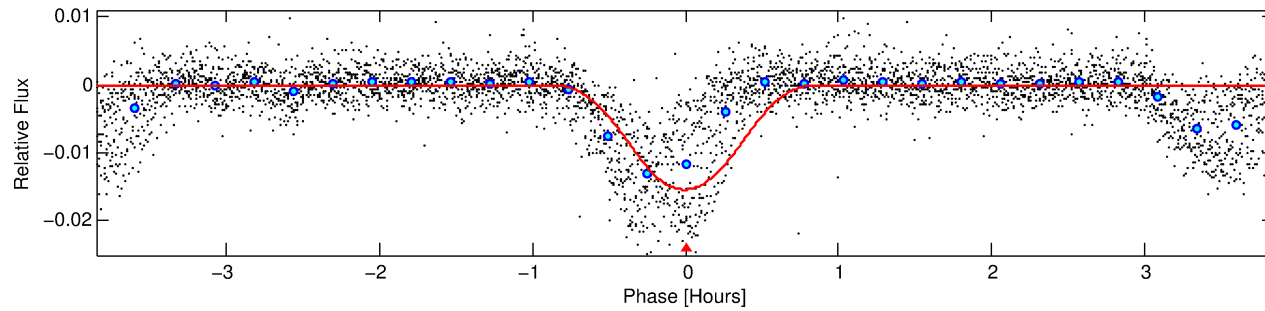
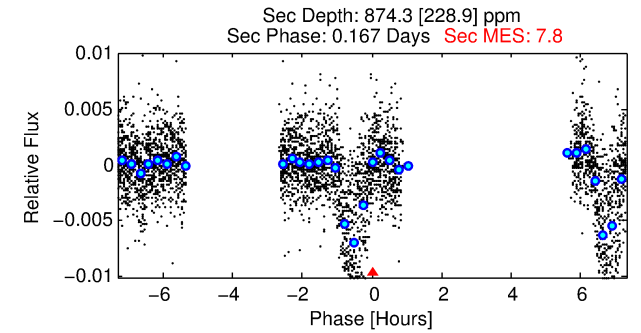
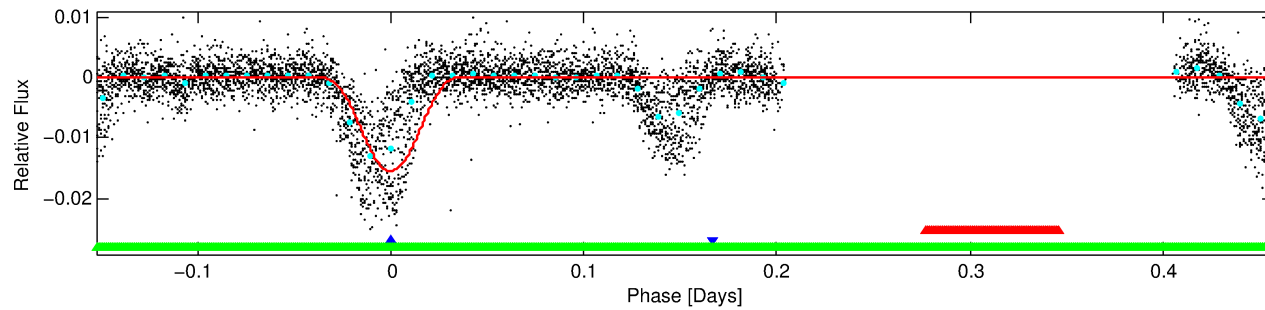
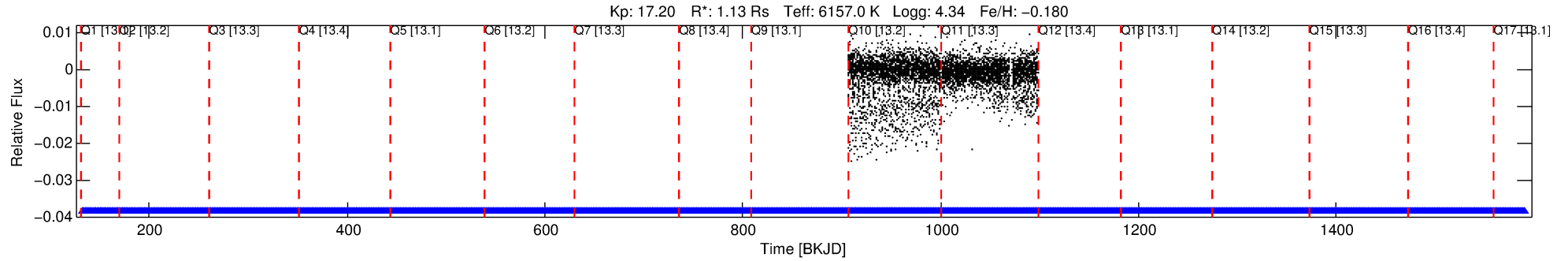
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008431611-02

No Significant Match Found

# DV One-Page Summary

KIC: 8431611 Candidate: 2 of 3 Period: 0.611 d



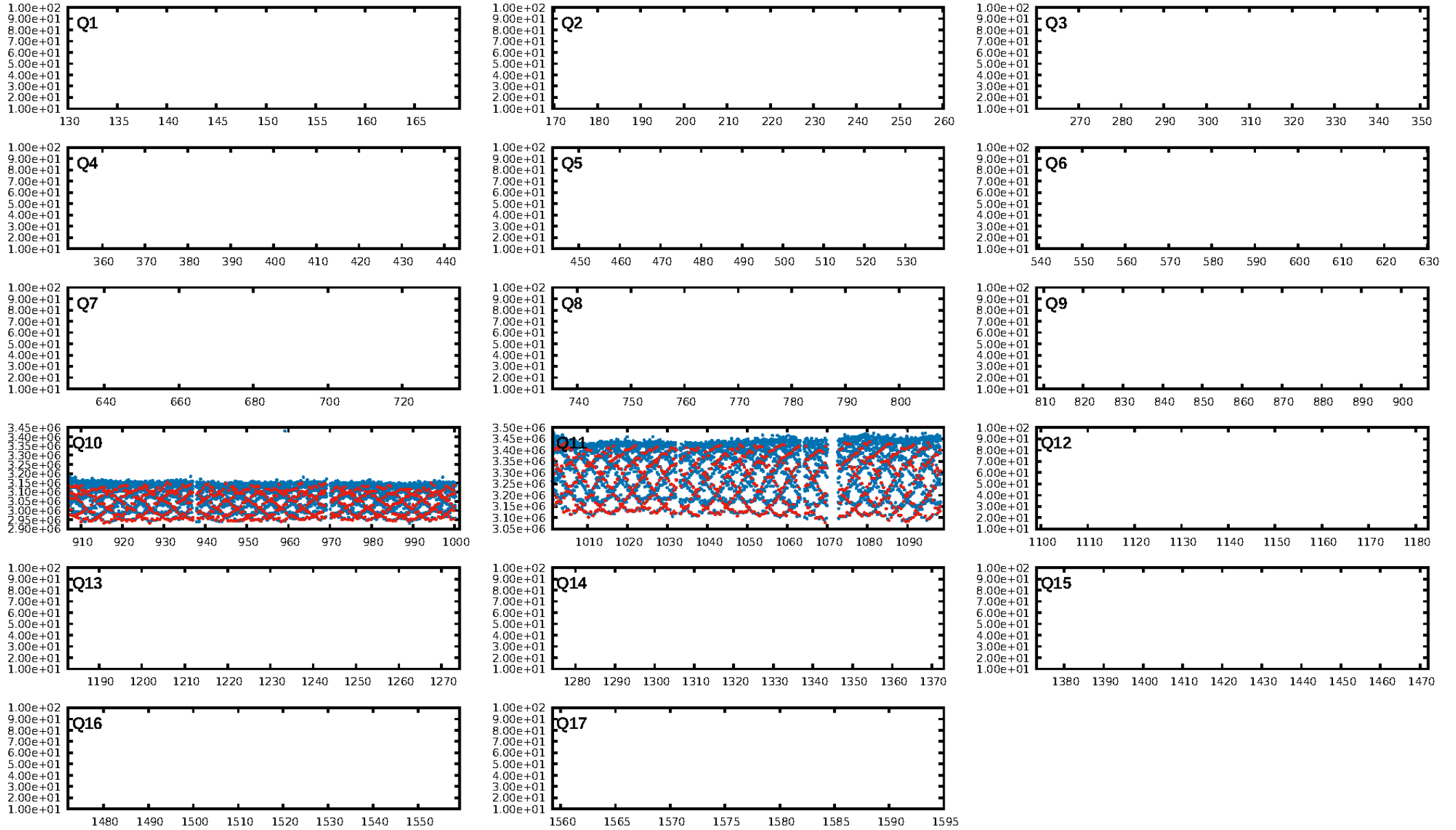
## DV Fit Results:

Period = 0.61065 [0.00000] d  
Epoch = 132.1141 [0.0002] BKJD  
Rp/R\* = 0.1478 [0.0533]  
a/R\* = 2.77 [0.33]  
b = 0.90 [0.12]  
Seff = 8194.43 [3225.63]  
Teff = 2426 [239] K  
Rp = 18.19 [8.70] Re  
a = 0.0141 [0.0036] AU  
Ag = 0.29 [0.25] [-2.88 $\sigma$ ]  
Teffp = 2754 [539] K [0.56 $\sigma$ ]

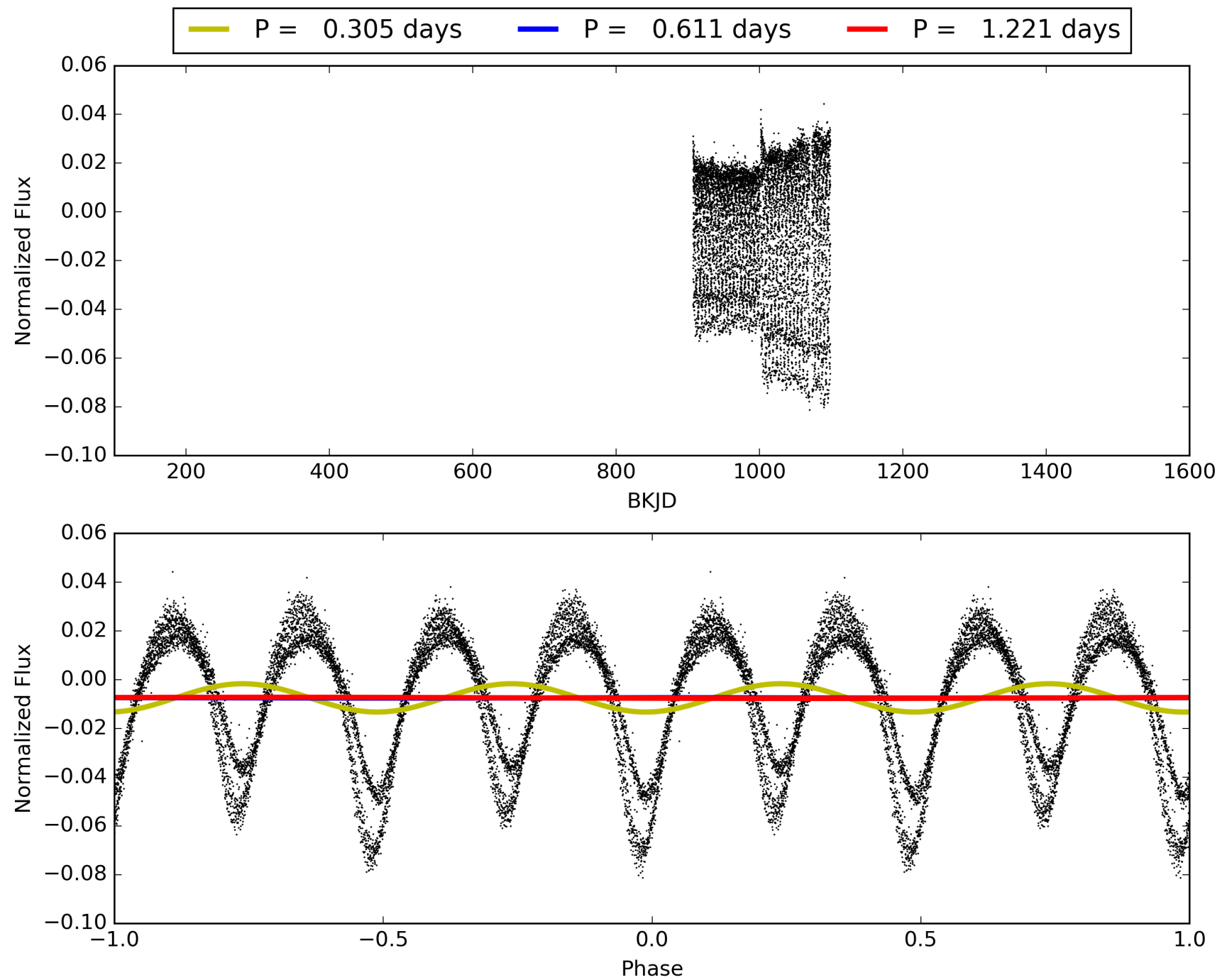
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [300/300]  
GhostDiagnostic-chr: -1.547  
Centroid-sig: 0.8%  
Centroid-so: 1.072 arcsec [3.66 $\sigma$ ]  
OotOffset-rm: 1.319 arcsec [19.68 $\sigma$ ]  
KicOffset-rm: 6.606 arcsec [98.57 $\sigma$ ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.50 [1/2]

# TCE 008431611-02, PDC Light Curves



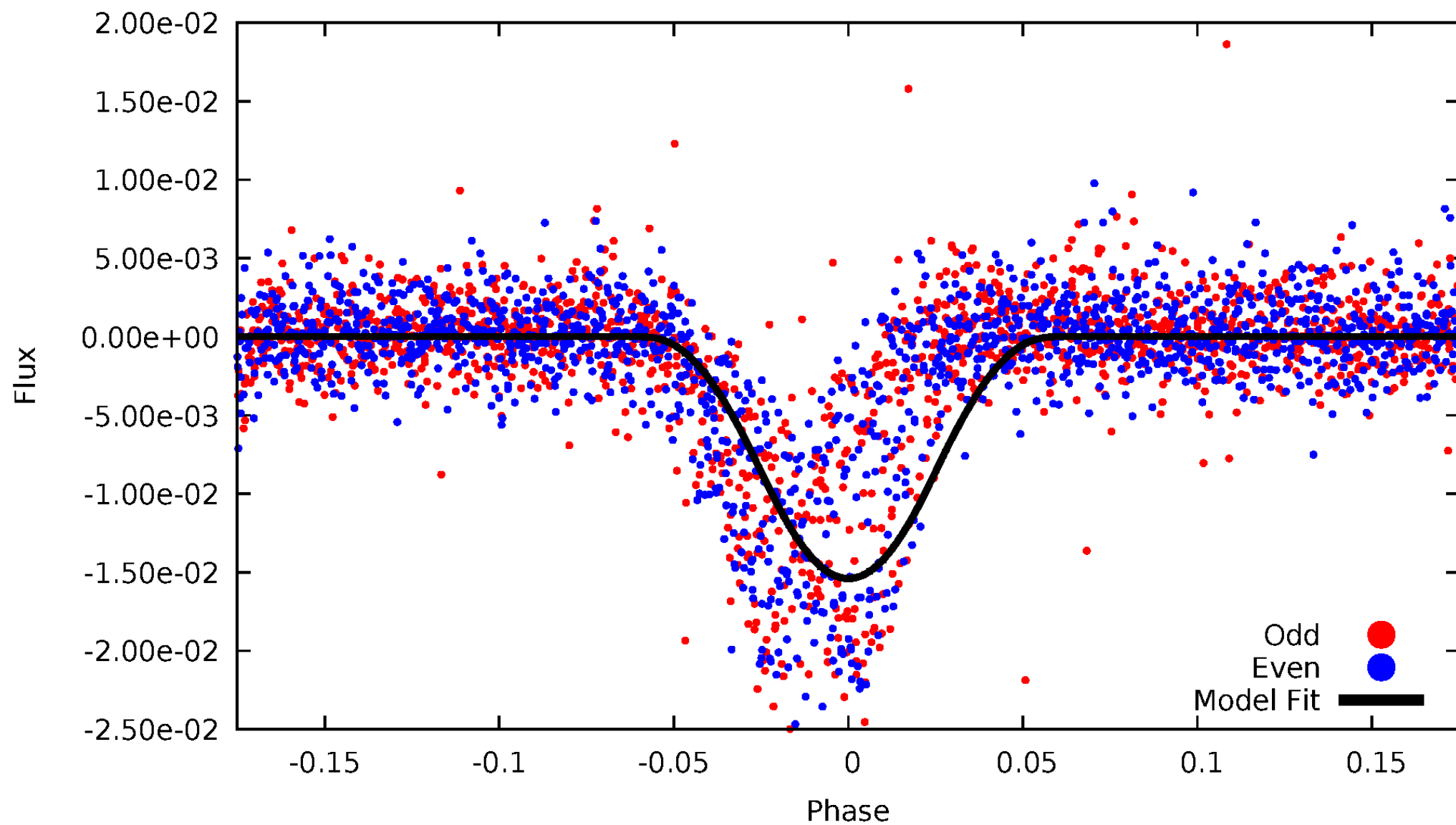
# TCE 008431611-02





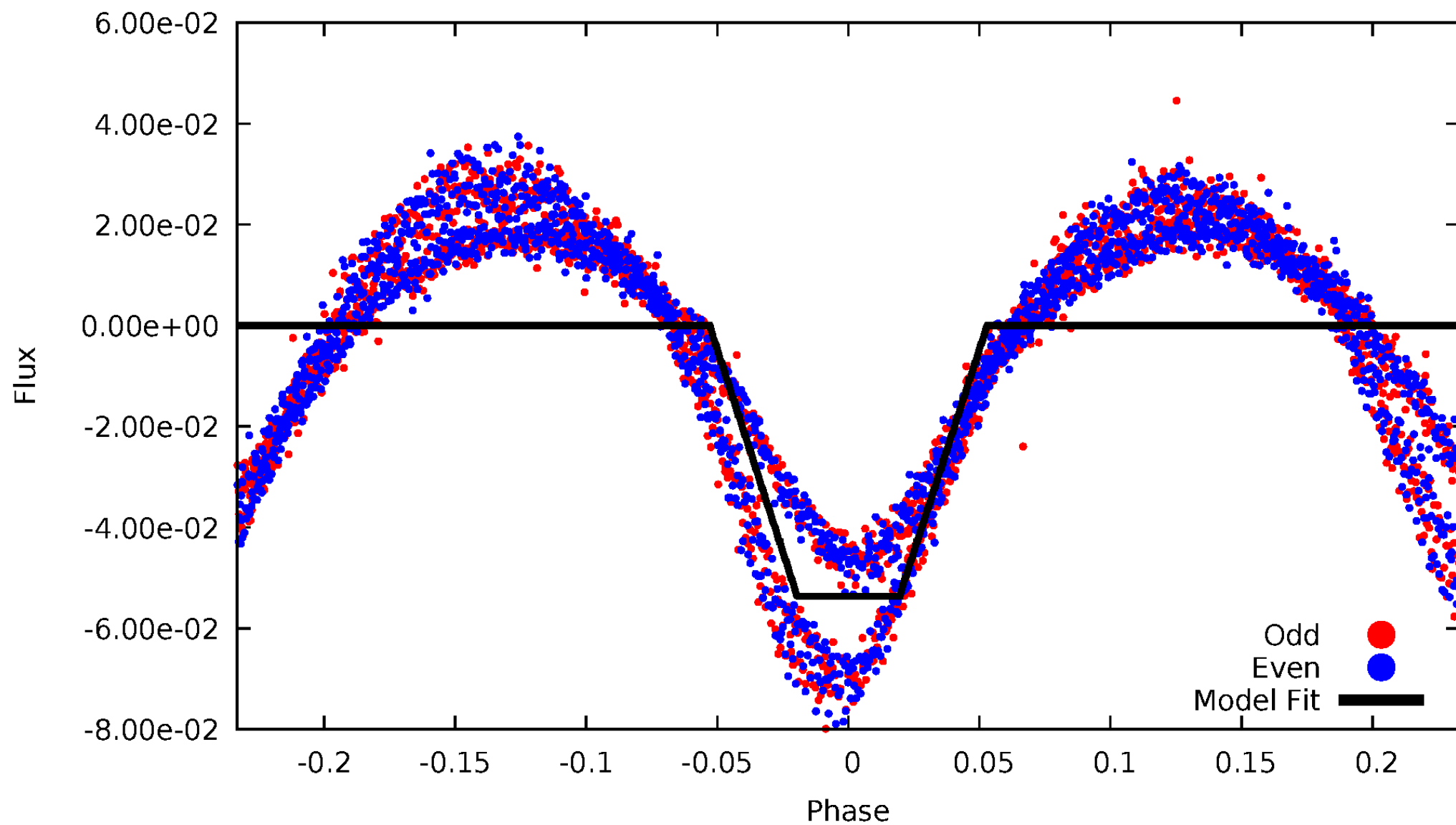
DV Odd/Even

TCE 008431611-02



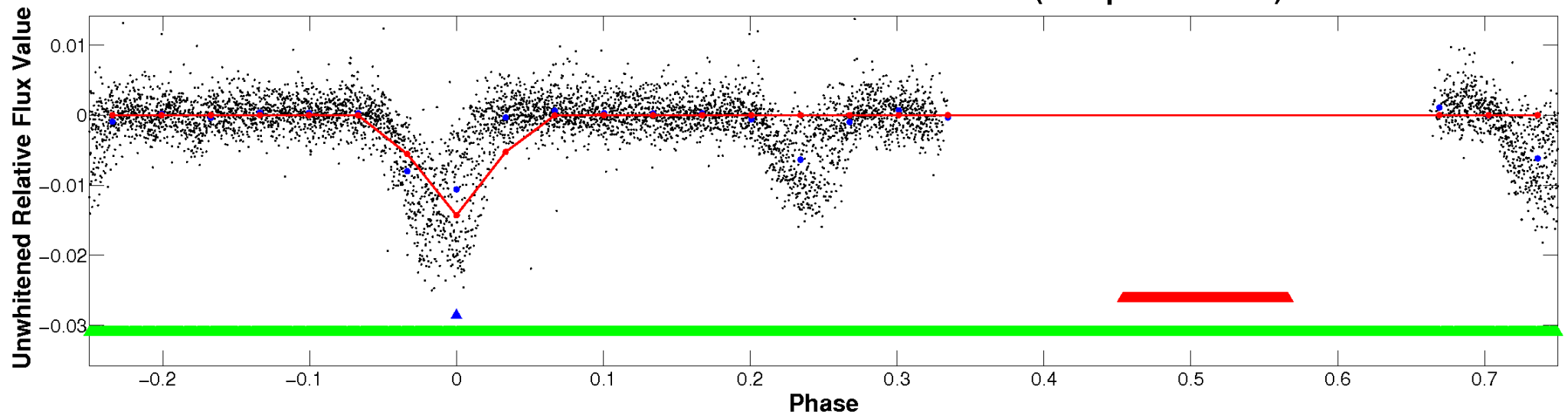
# ALT Odd/Even

TCE 008431611-02

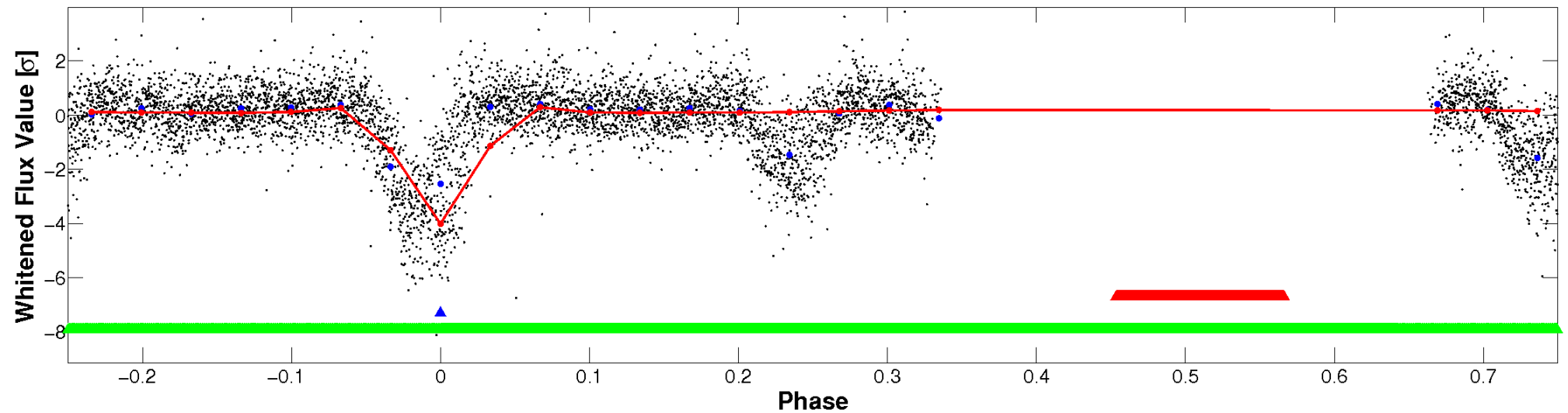


# Non-Whitened Vs. Whitened Light Curve

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

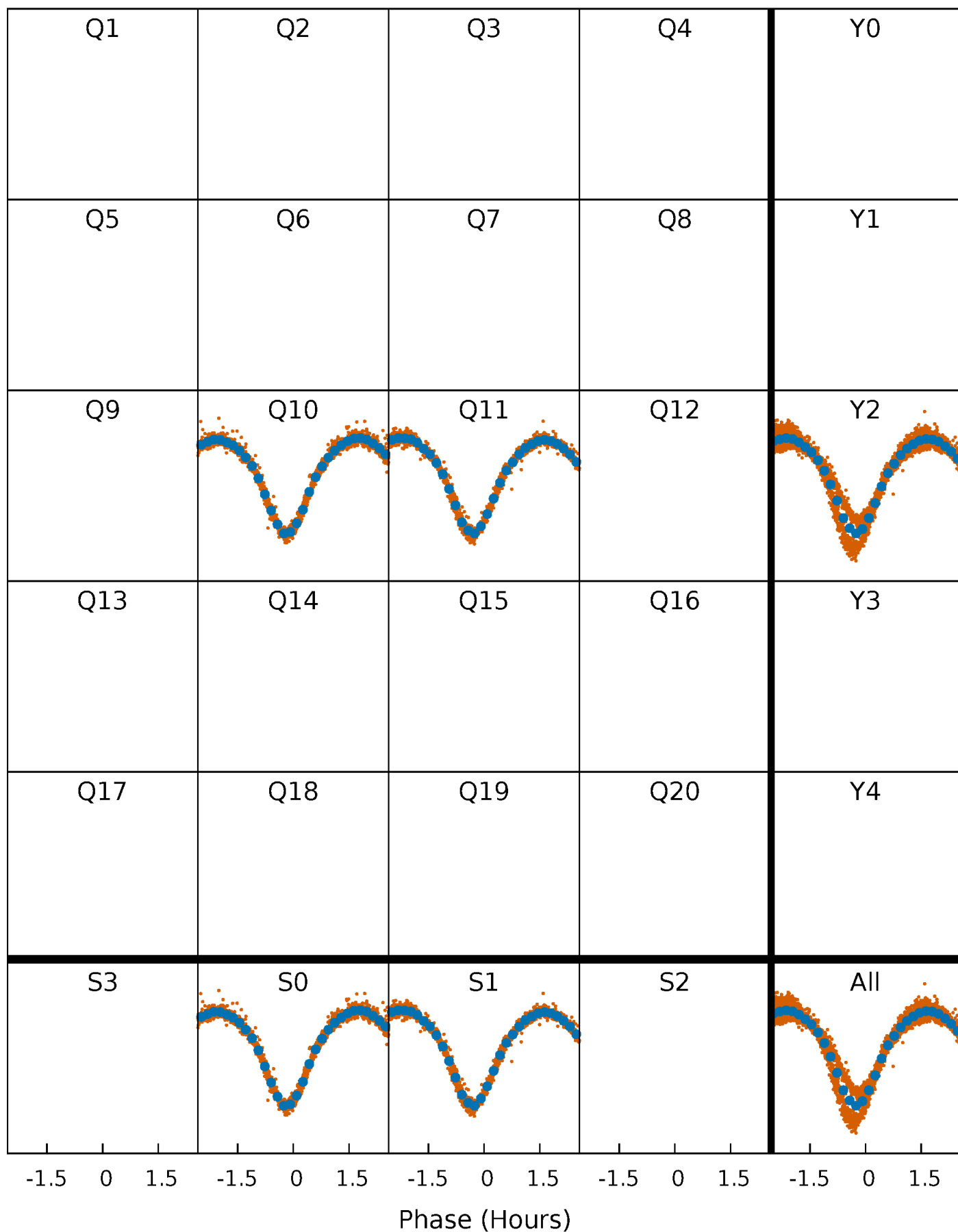


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



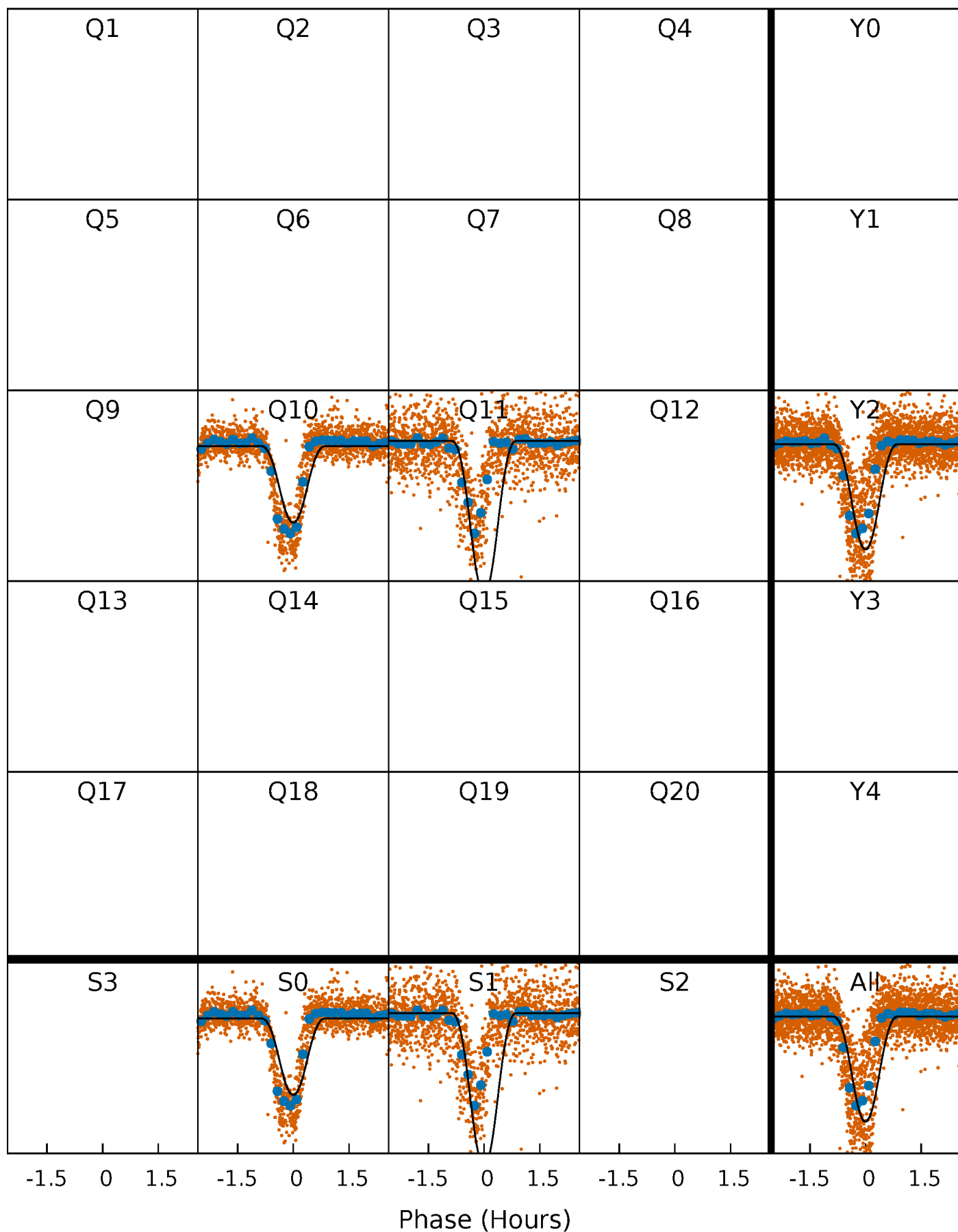
# PDC Quarter-Phased Transit Curves

TCE 008431611-02   P= 0.610652 Days    $T_0=132.114082$  (BKJD)



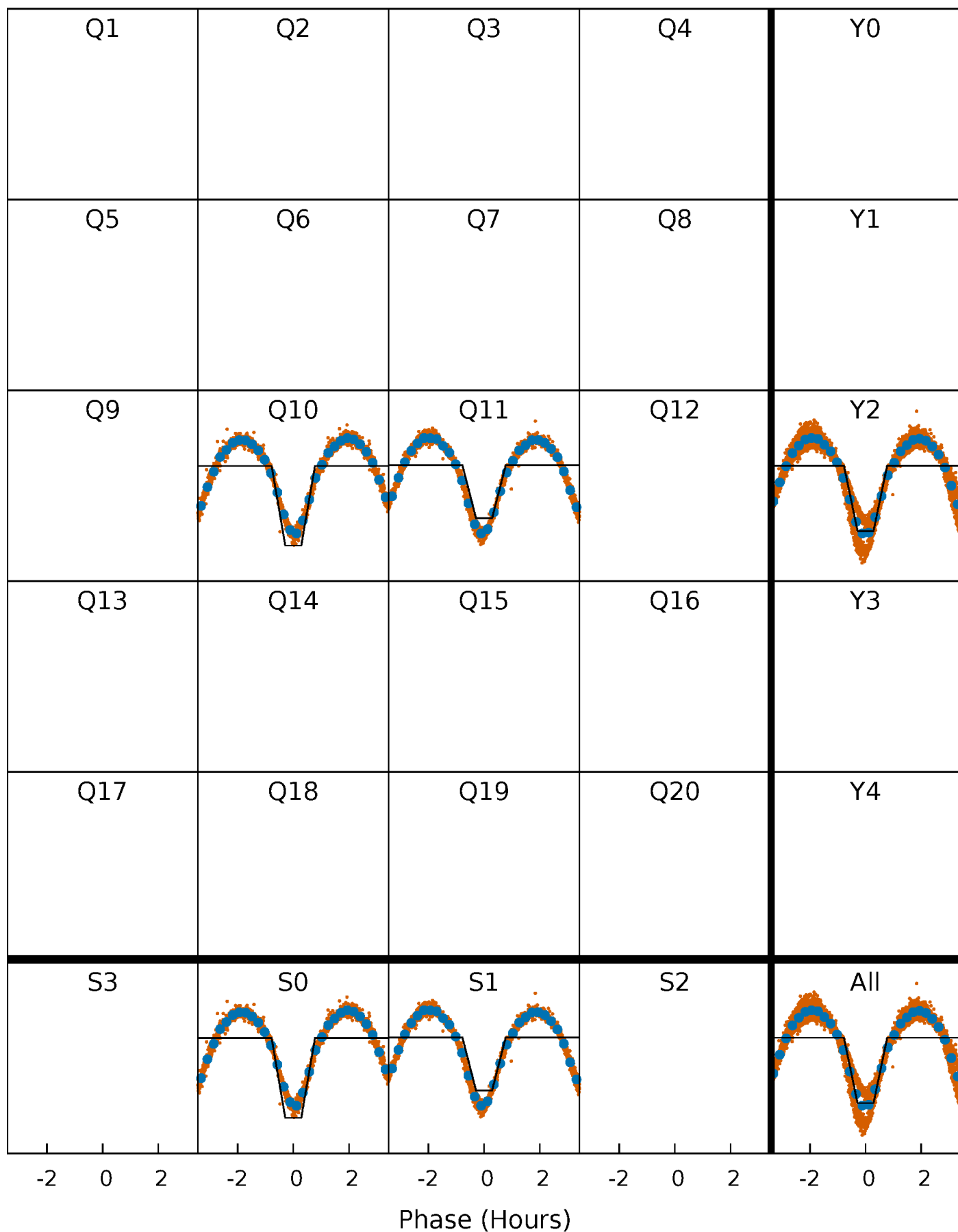
# DV Quarter-Phased Transit Curves

TCE 008431611-02     $P = 0.610652$  Days     $T_0 = 132.114082$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

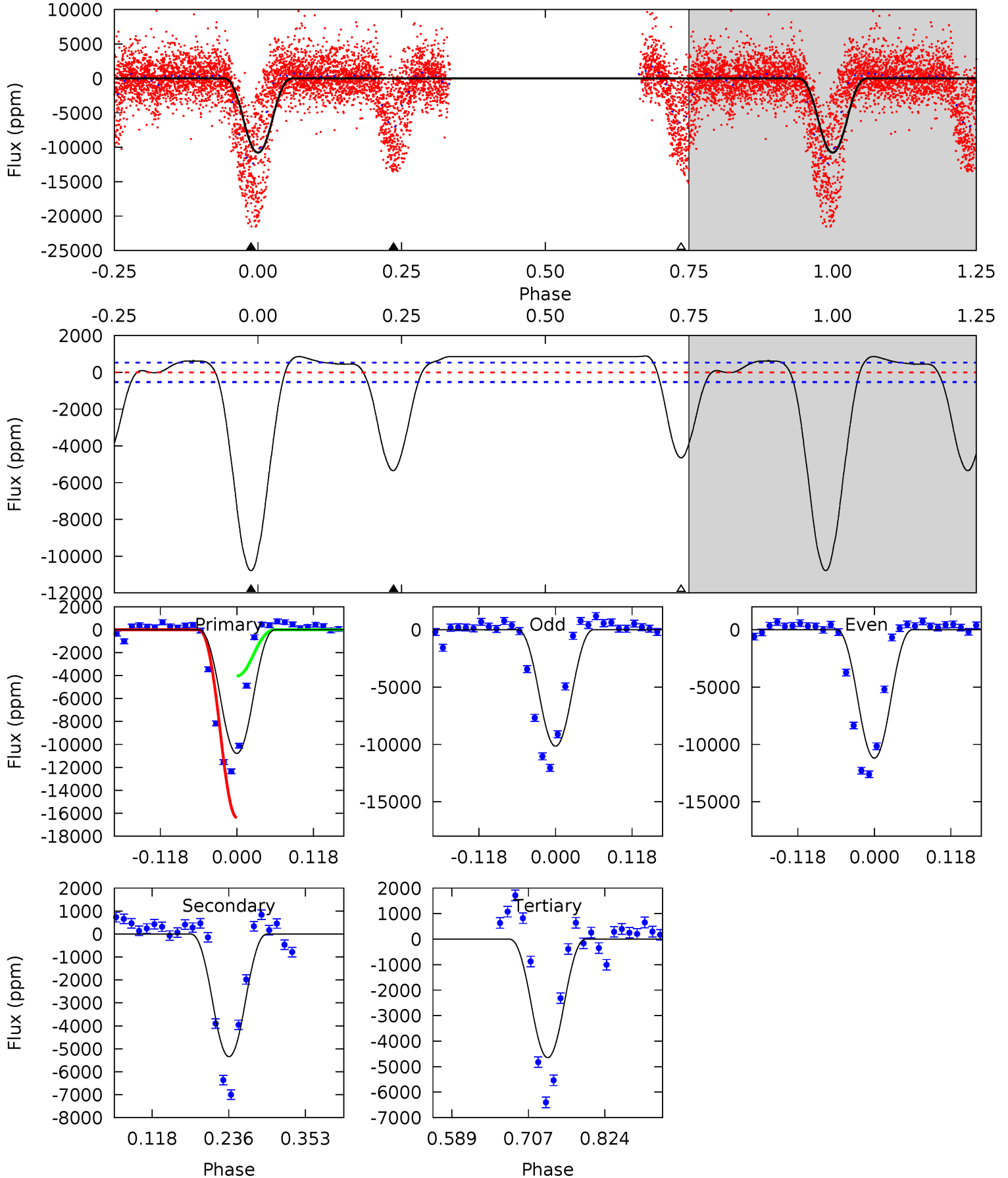
TCE 008431611-02   P= 0.610646 Days    $T_0=132.113577$  (BKJD)



# DV Model-Shift Uniqueness Test

008431611-02, P = 0.610652 Days, E = 132.114082 Days

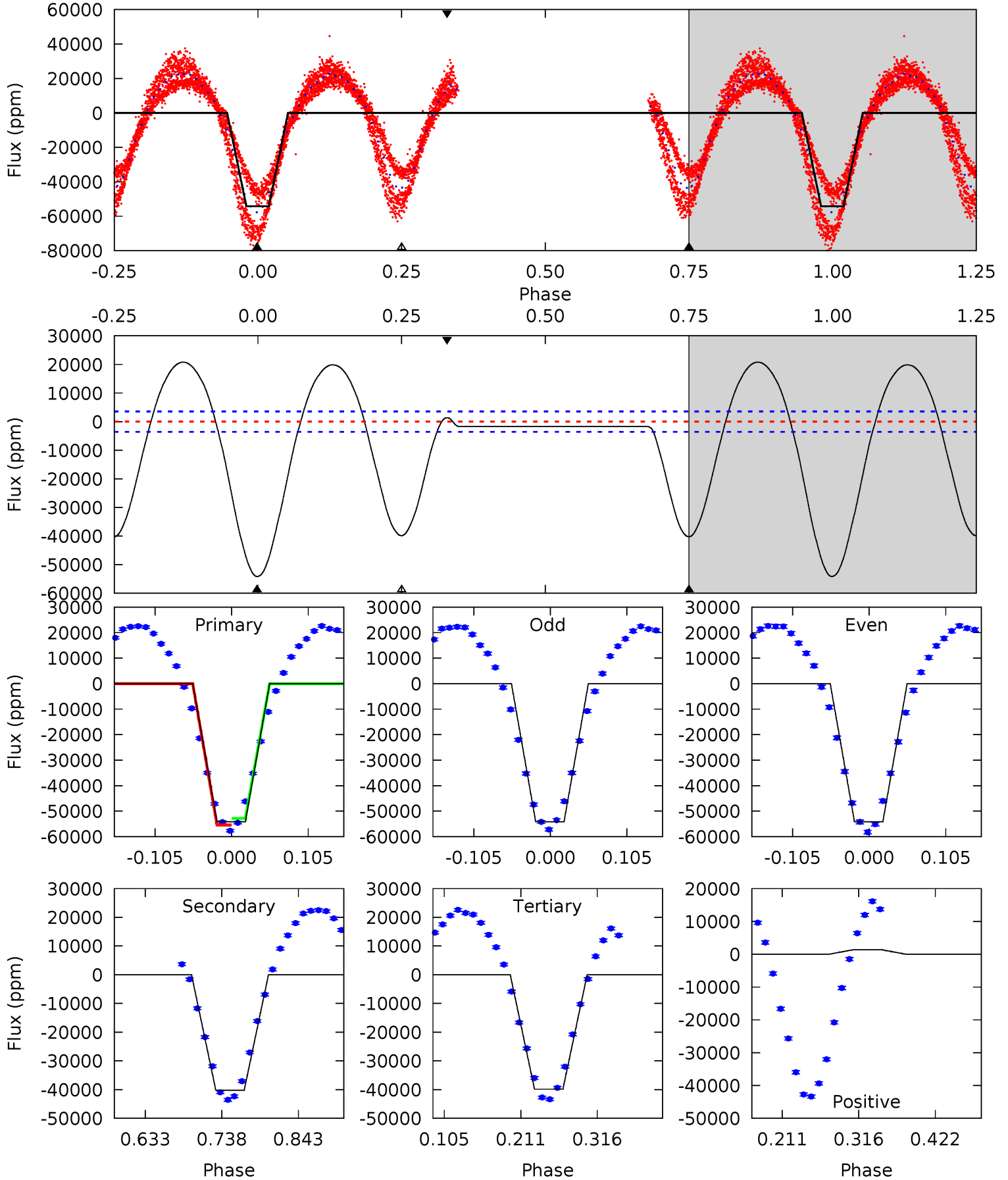
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
92.2	45.7	39.8	0	4.53	1.56	15.0	52.5	92.2	5.95	45.7	4.48	1.06	0.08	0



# Alt Model-Shift Uniqueness Test

008431611-02, P = 0.610646 Days, E = 132.113577 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
69.4	51.6	51.1	1.76	4.55	1.62	27.3	18.3	67.6	0.48	49.8	0.04	0.98	0.28	1.96





### Stellar Parameters For KIC 008431611

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6157^{+196}_{-240}$	$4.338^{+0.128}_{-0.192}$	$-0.180^{+0.250}_{-0.300}$	$1.128^{+0.354}_{-0.191}$	$1.007^{+0.173}_{-0.116}$	$0.988^{+0.598}_{-0.499}$
	+3%/-4%	+3%/-4%	+139%/-167%	+31%/-17%	+17%/-12%	+61%/-51%
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 008431611-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-5344 \pm 117$	$18.49^{+7.43}_{-6.55}$	$3404^{+246}_{-220}$	$4332^{+989}_{-654}$	$1.716^{+2.462}_{-0.834}$
Alt.	$-40241 \pm 780$	$29.50^{+8.95}_{-7.65}$	$3410^{+261}_{-222}$	$5674^{+818}_{-609}$	$5.306^{+4.170}_{-2.087}$

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

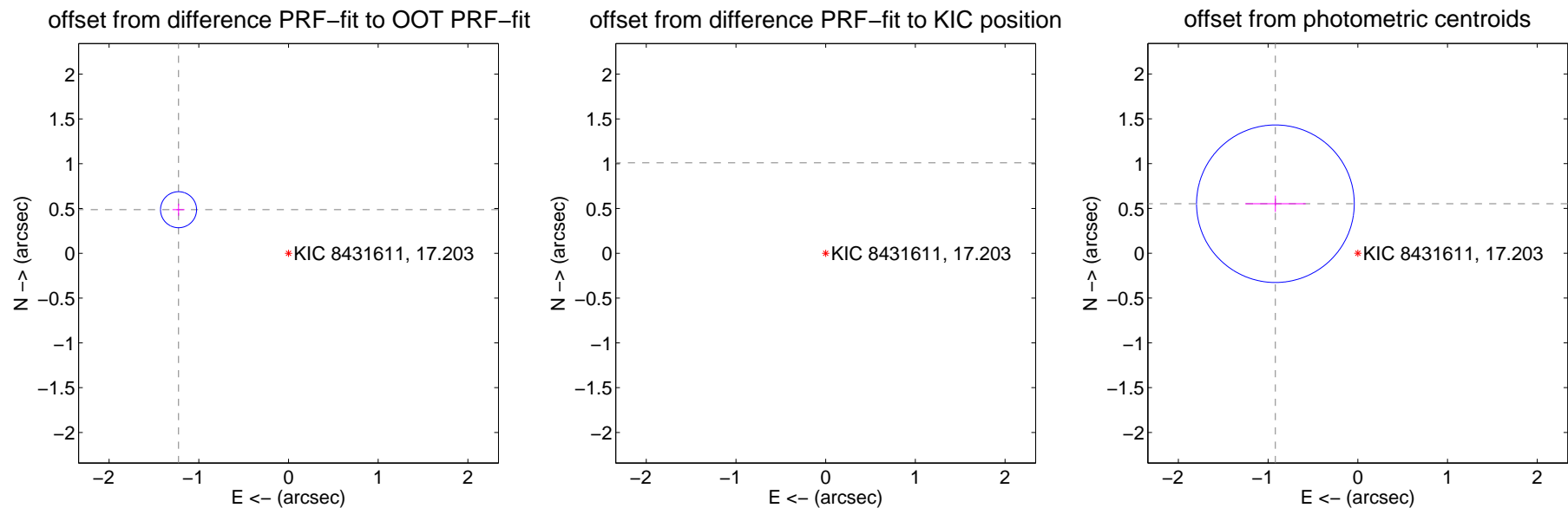
## DV Centroid Data

Supplemental centroid analysis for 008431611-02. Kepler magnitude: 17.20. Transit SNR 62.37

There are 1 quarters with good PRF difference image offsets

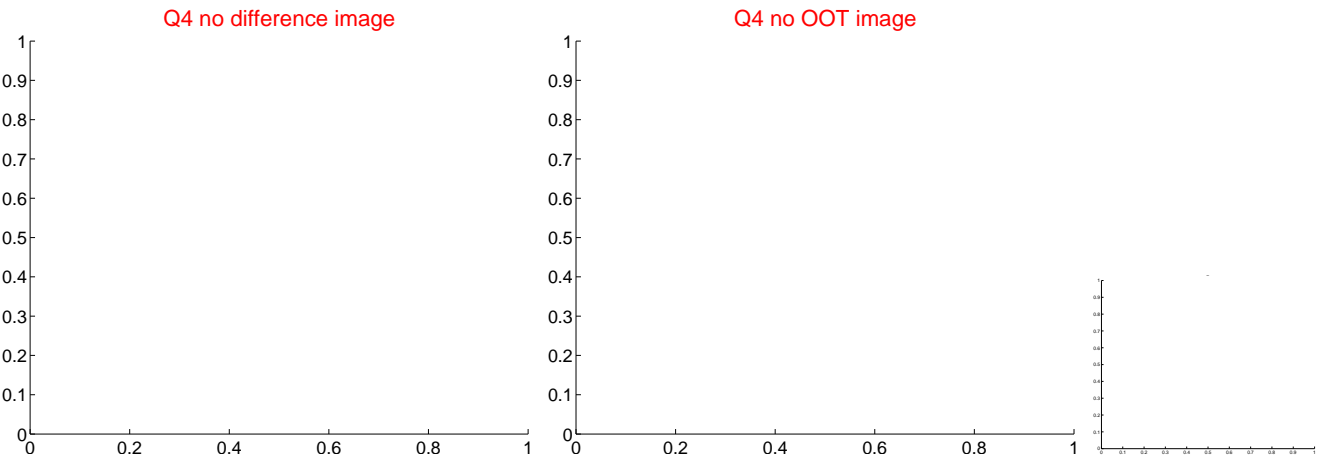
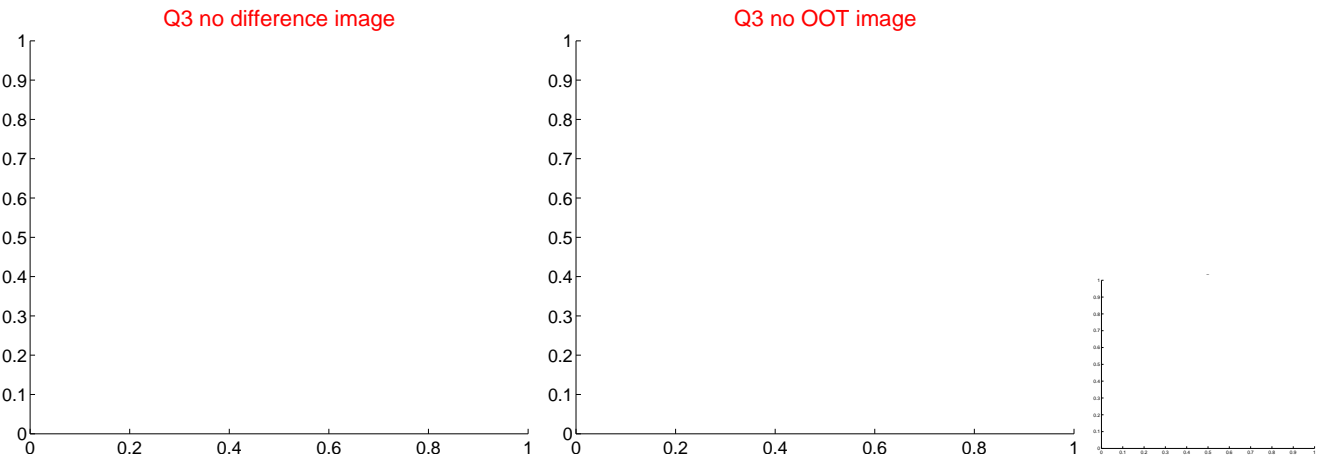
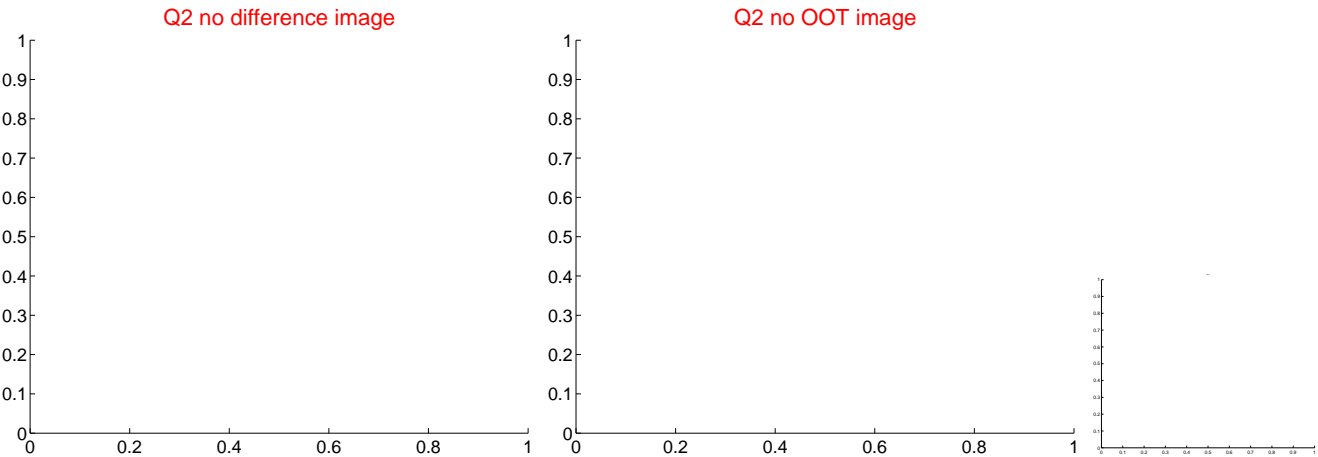
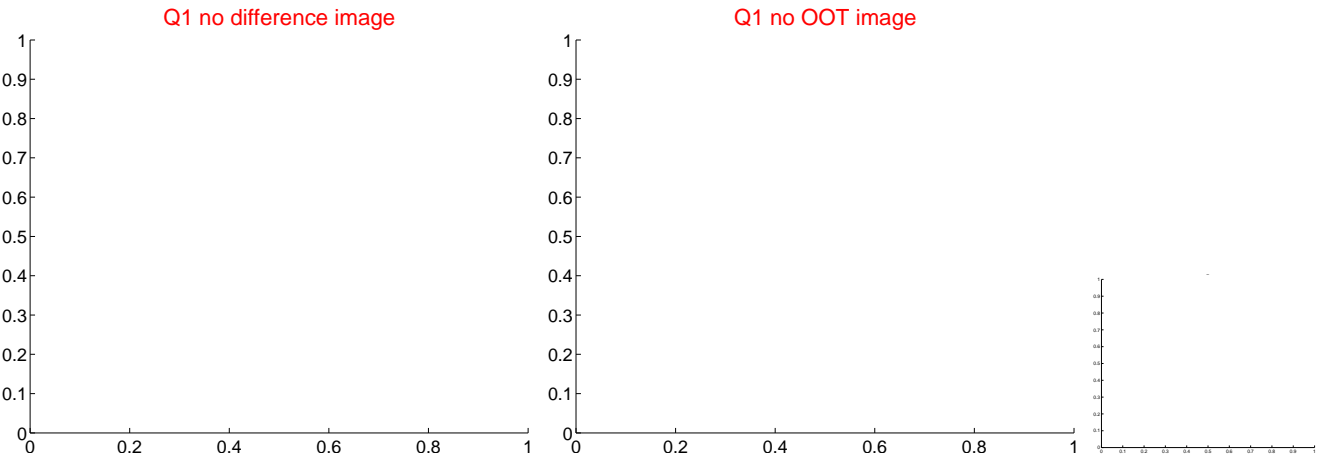
The OOT PRF centroid is offset from the target star catalog position by about 5.33 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.319 \pm 0.067$	19.68	$1.226 \pm 0.067$	$0.486 \pm 0.067$
PRF-fit source offset from KIC position	$6.606 \pm 0.067$	98.57	$6.528 \pm 0.067$	$1.009 \pm 0.067$
photometric centroid source offset	$1.07 \pm 0.29$	3.66	$0.92 \pm 0.34$	$0.55 \pm 0.09$



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.

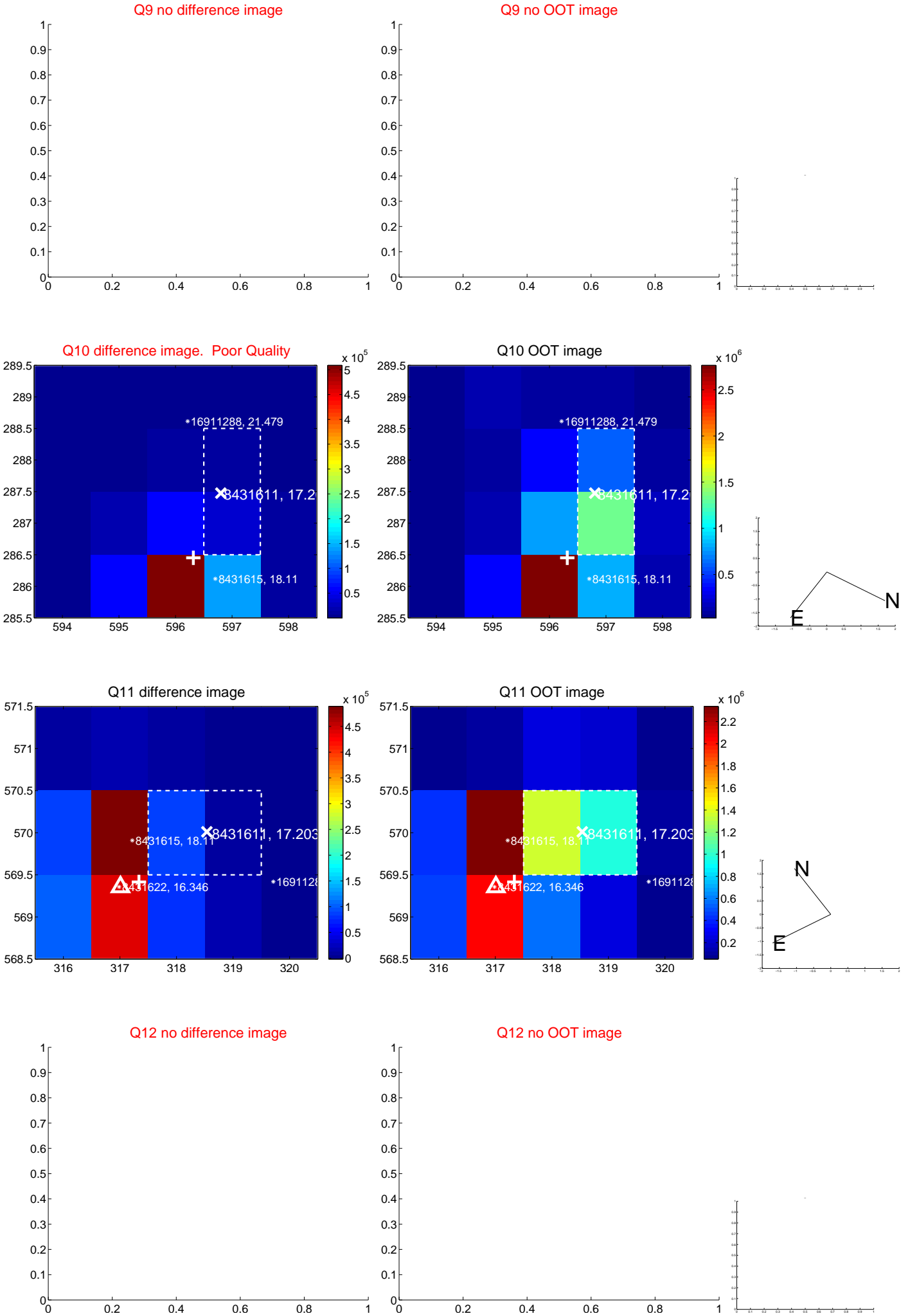
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



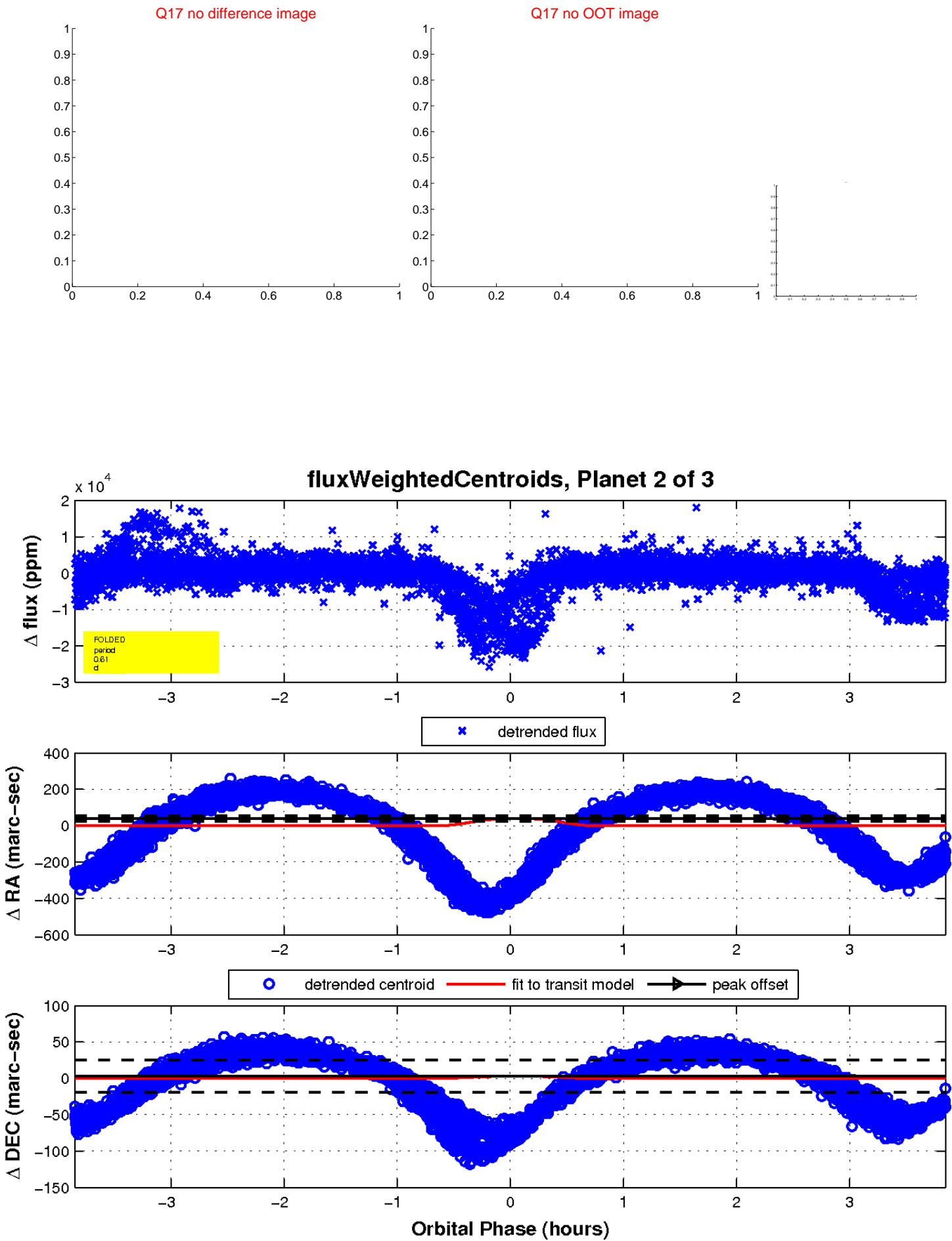
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

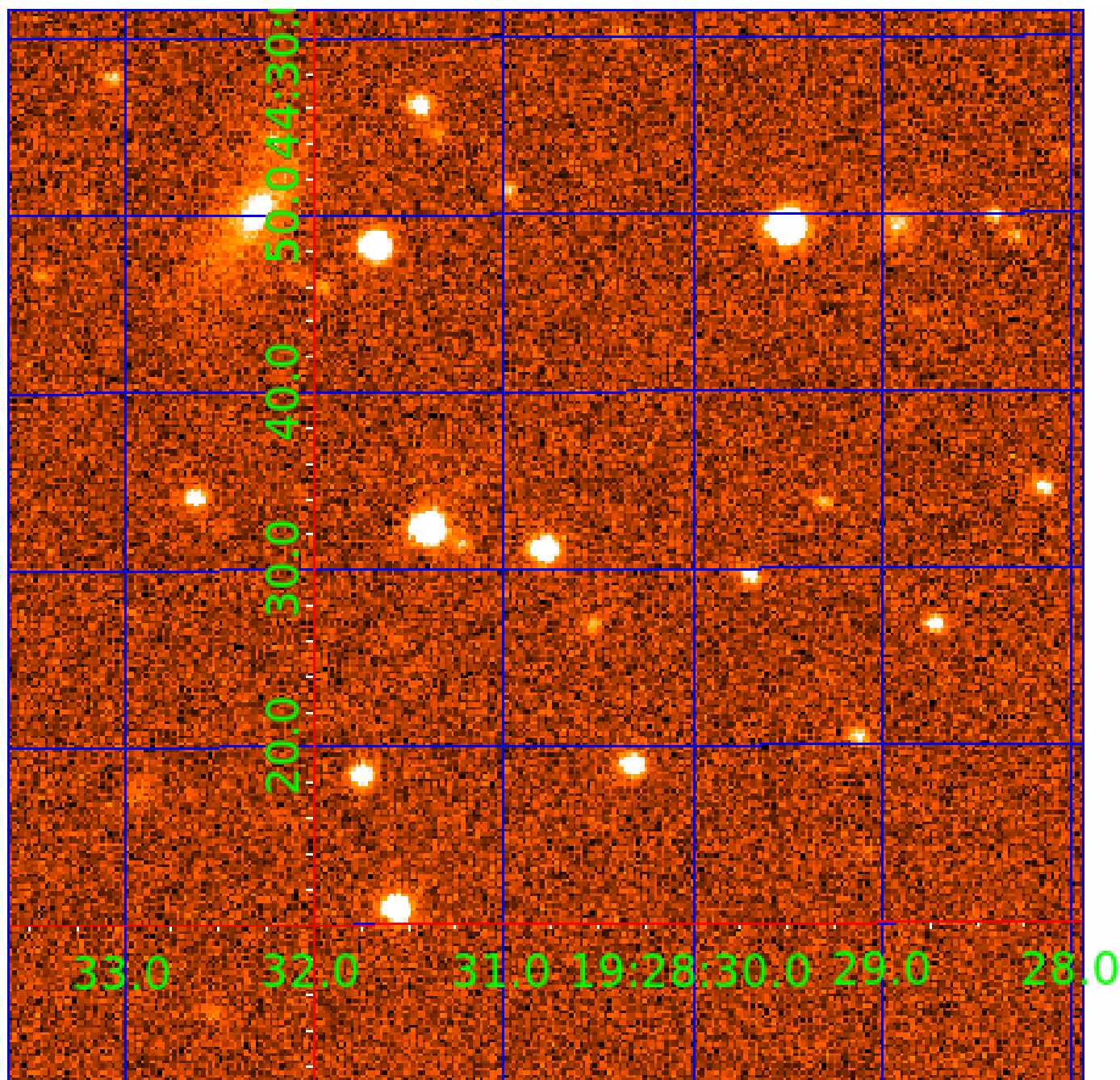


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008431611

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008431611-01	OBS	No	0.610623	131.849105	6409.5	1.461	47.8	37.8	1.13	6157	9.37	8194.94
008431611-02	OBS	No	0.610652	132.114082	15397.1	1.283	45.5	62.4	1.13	6157	18.19	8194.43
008431611-03	OBS	No	0.610233	131.895369	5262.9	1.500	15.9	-1.0	1.13	6157	8.22	8201.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008431611-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
008431611-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008431611-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

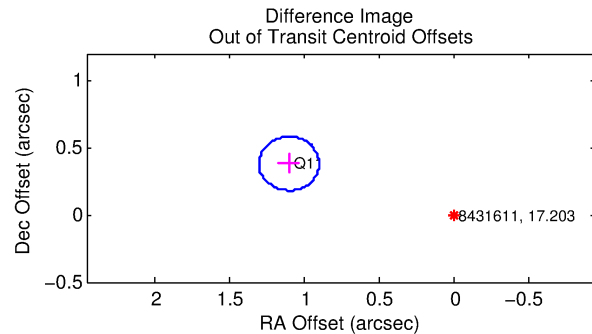
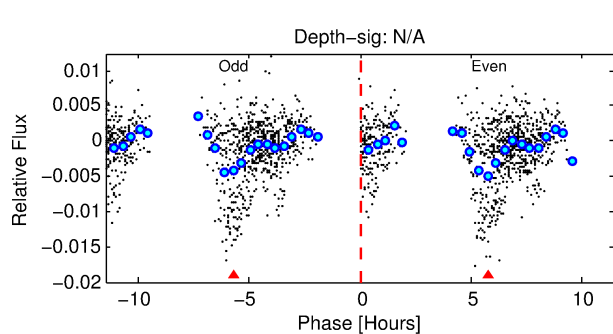
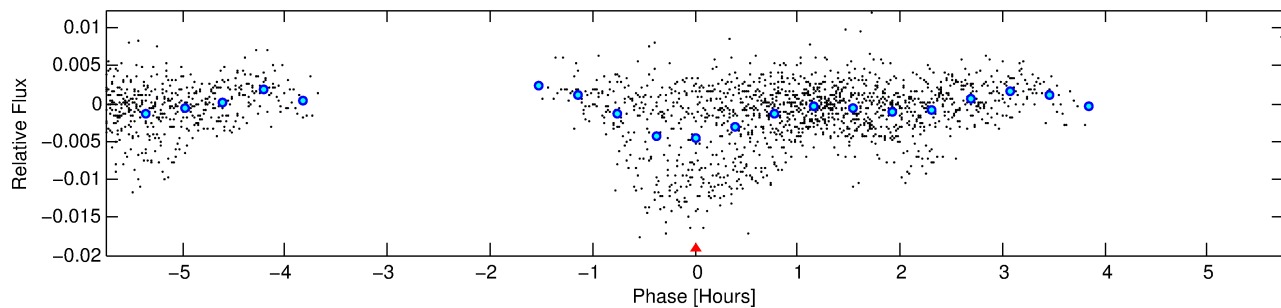
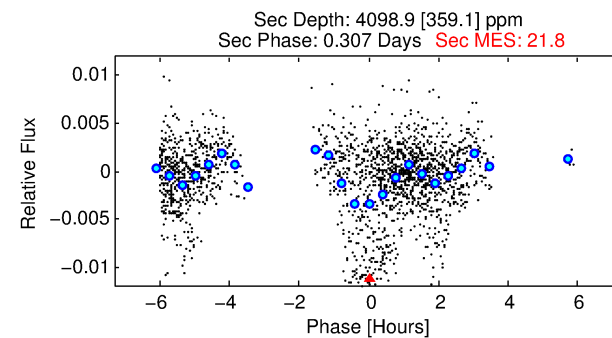
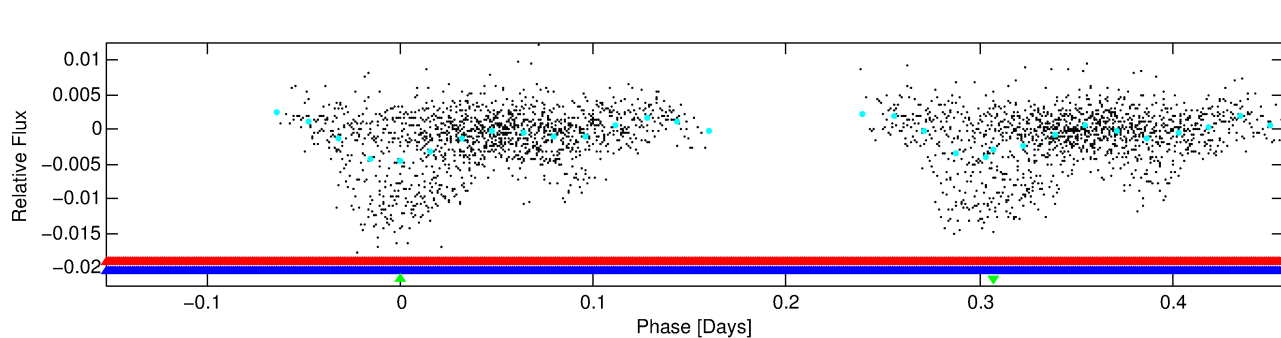
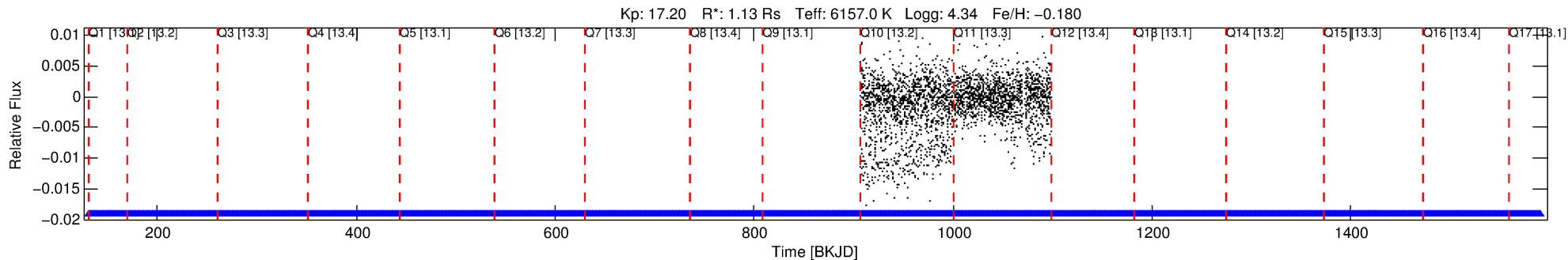
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008431611-03

No Significant Match Found

# DV One-Page Summary

KIC: 8431611 Candidate: 3 of 3 Period: 0.610 d



## TPS TCE Results:

Period = 0.61023 d  
Epoch = 131.8954 BKJD

**DV fit results are unavailable**

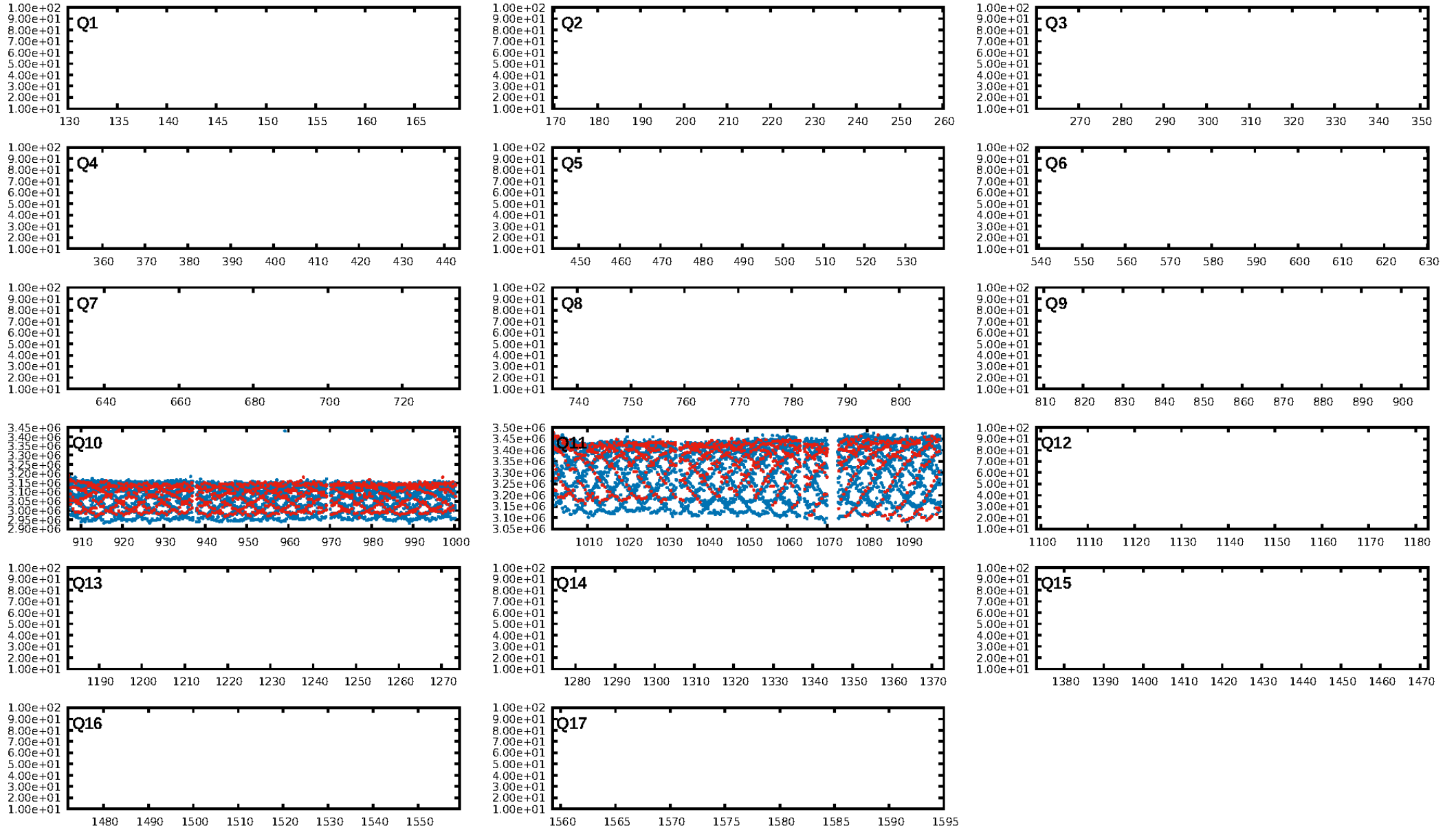
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.4% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [261/261]  
GhostDiagnostic-chr: -9.406  
Centroid-sig: 0.6%  
**Centroid-so: 2.336 arcsec [8.39σ]**  
**OotOffset-rm: 1.162 arcsec [17.38σ]**  
**KicOffset-rm: 6.636 arcsec [99.25σ]**  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/2]

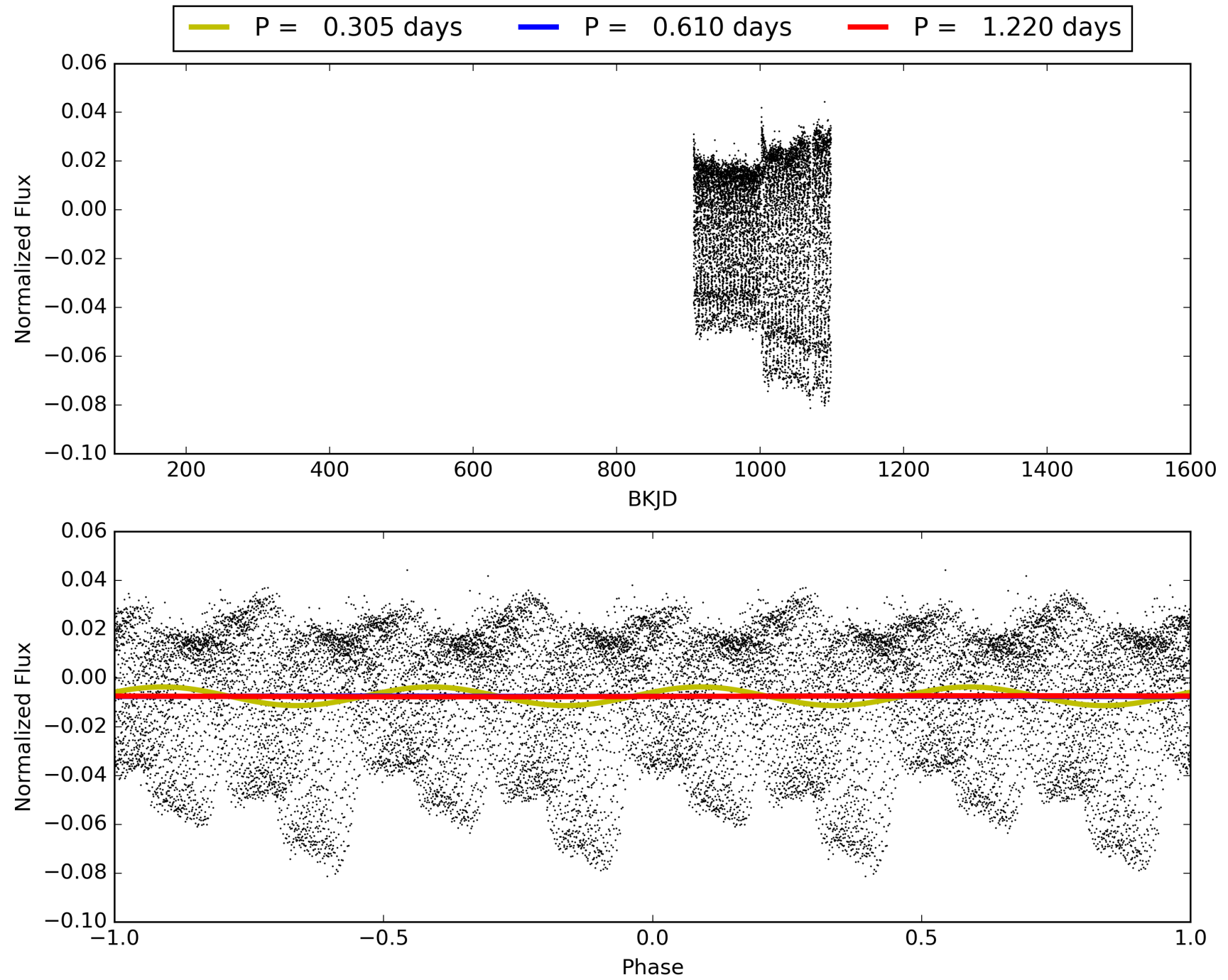
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 17:52:41 Z

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

# TCE 008431611-03, PDC Light Curves

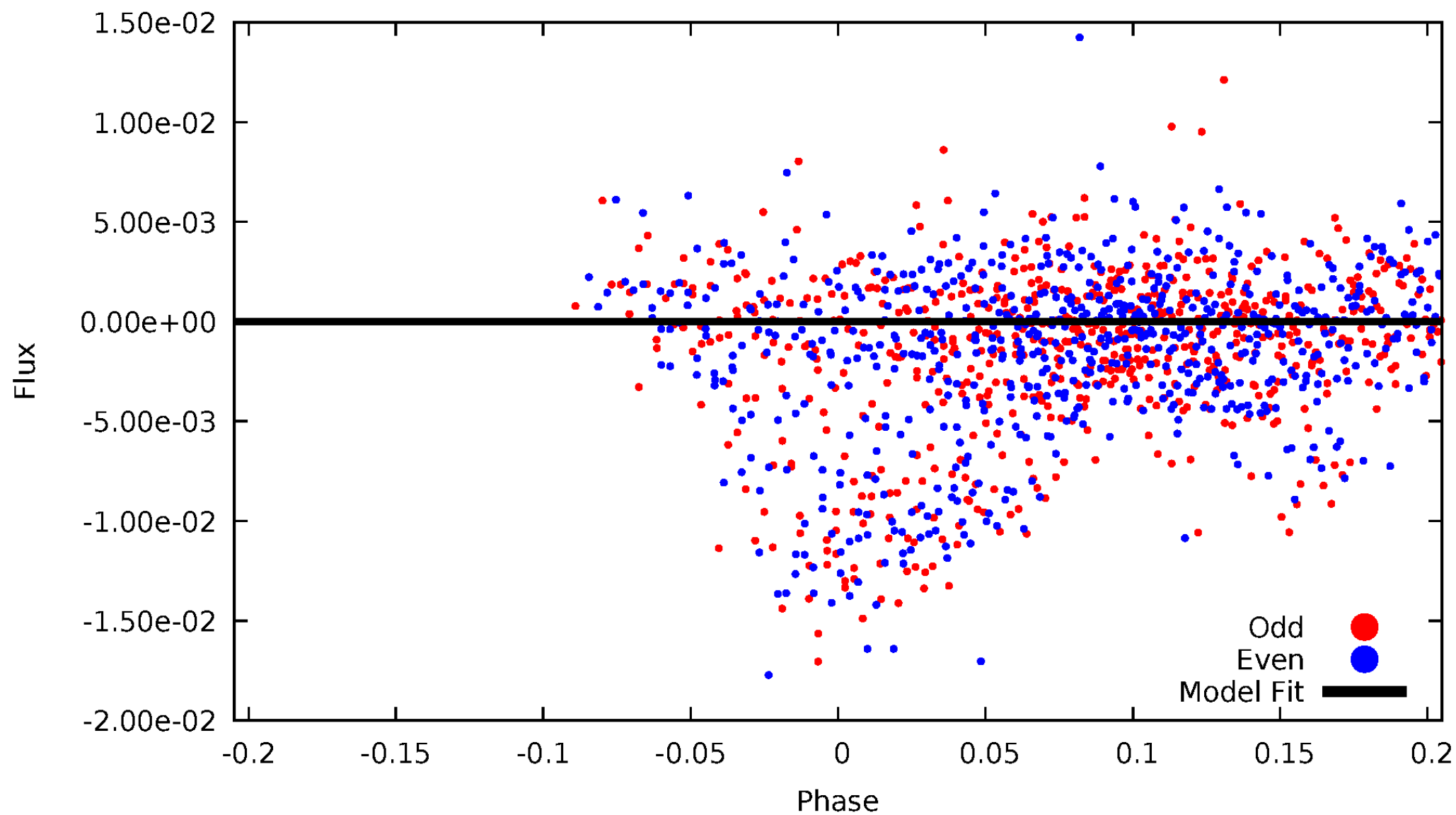


# TCE 008431611-03



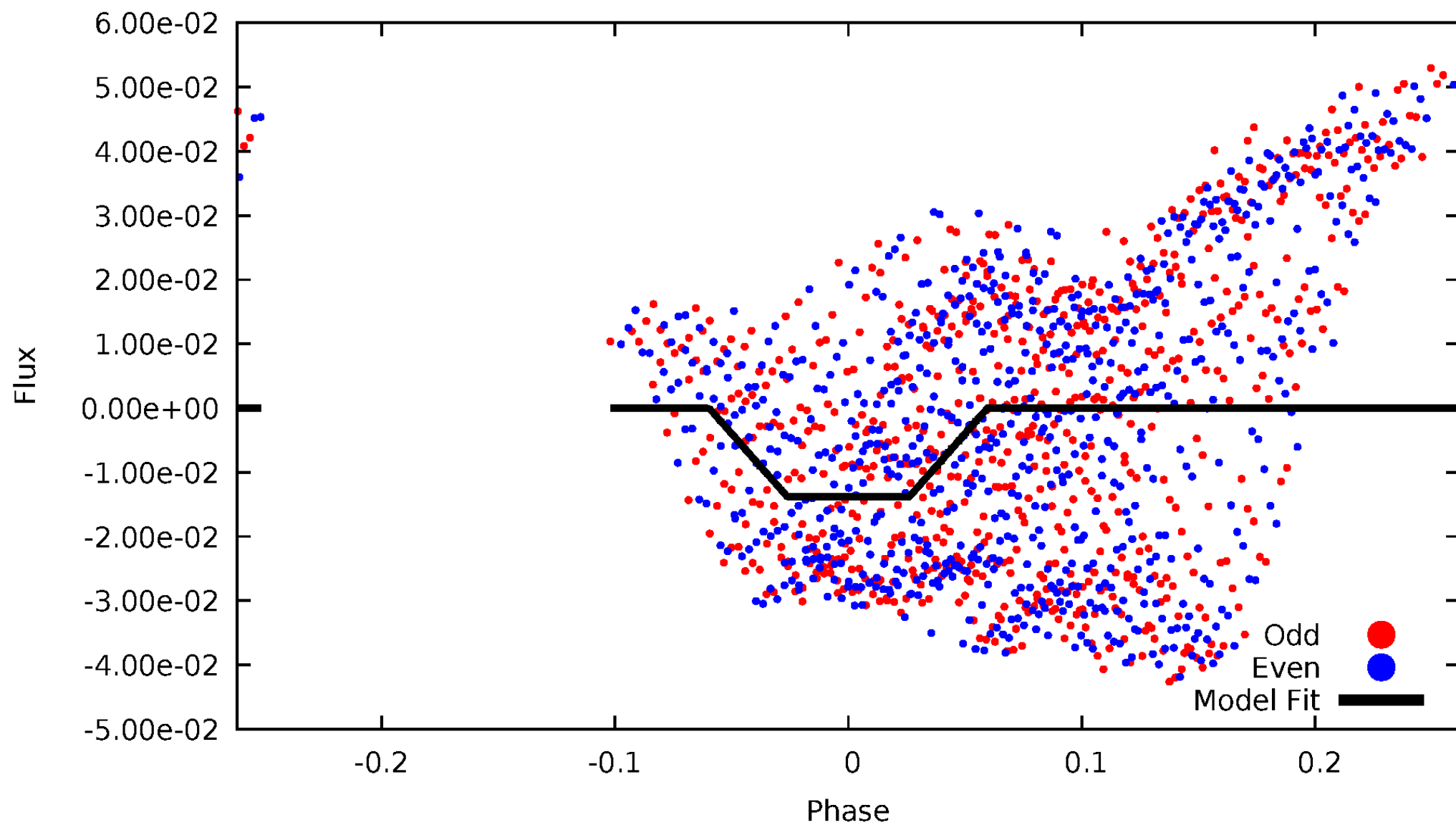
DV Odd/Even

TCE 008431611-03



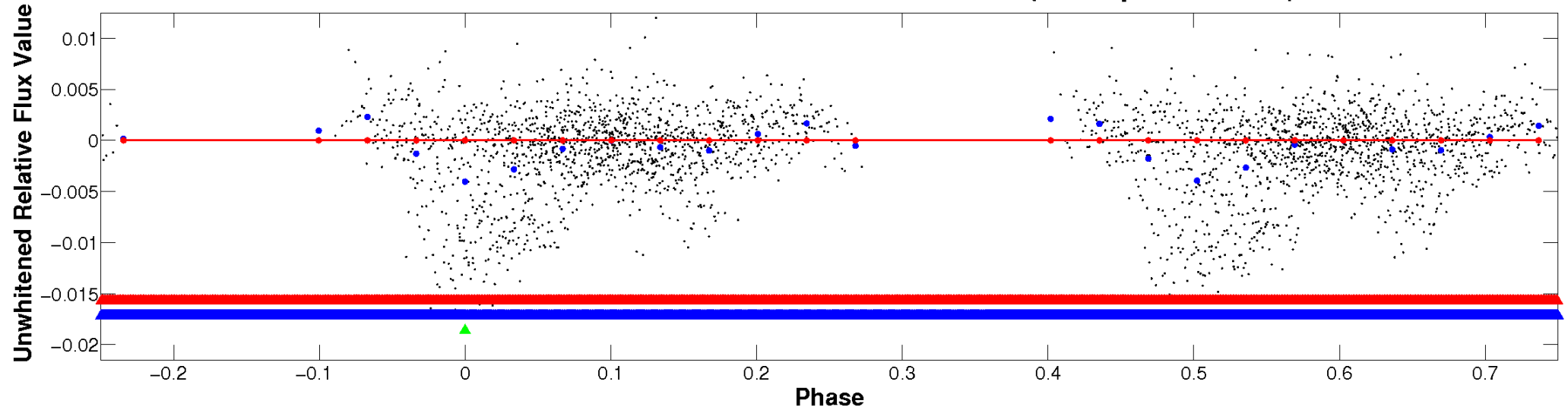
# ALT Odd/Even

TCE 008431611-03

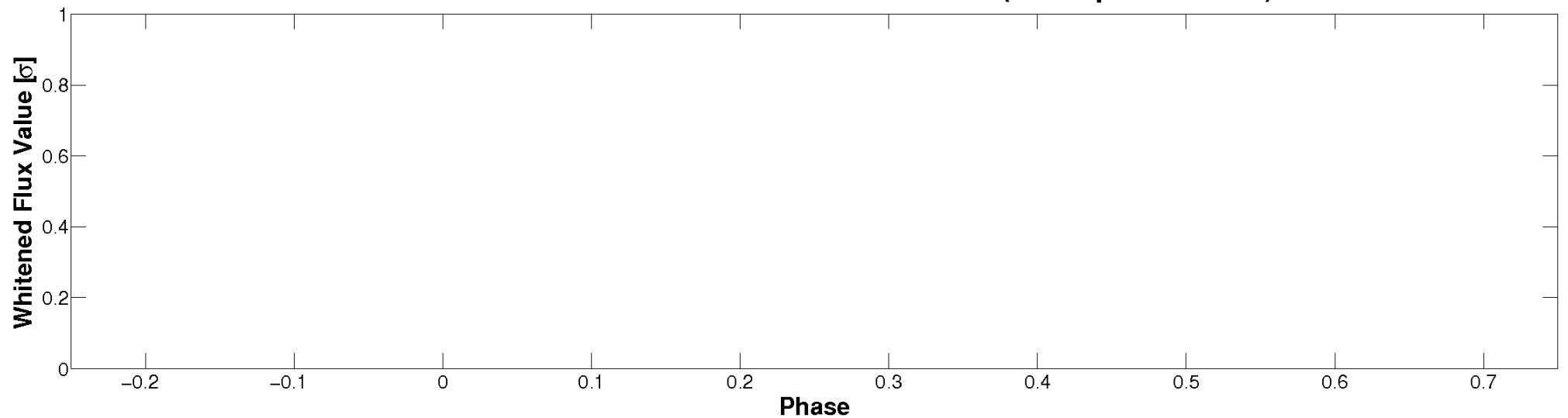


# Non-Whitened Vs. Whitened Light Curve

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

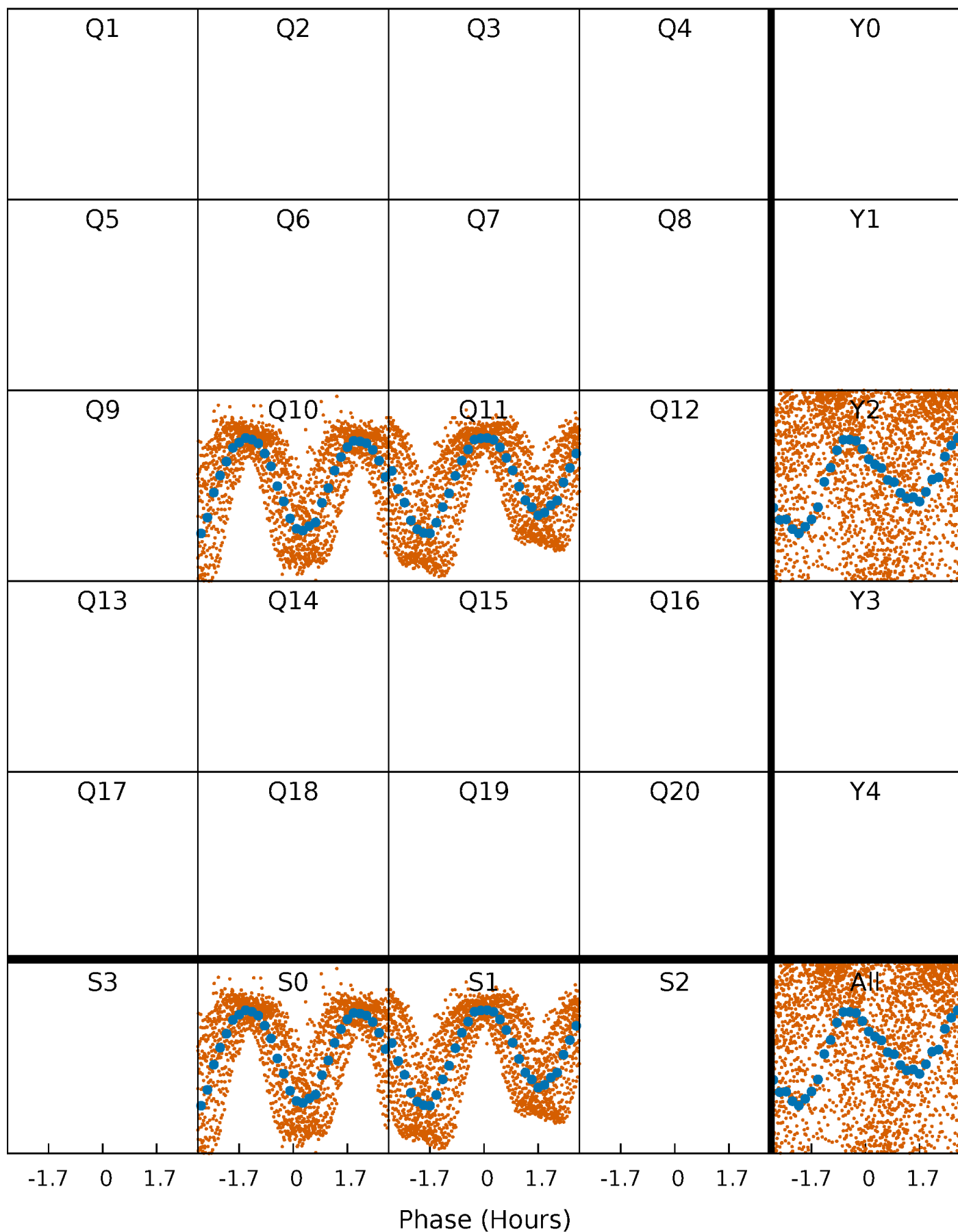


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 008431611-03     $P = 0.610233$  Days     $T_0 = 131.895369$  (BKJD)





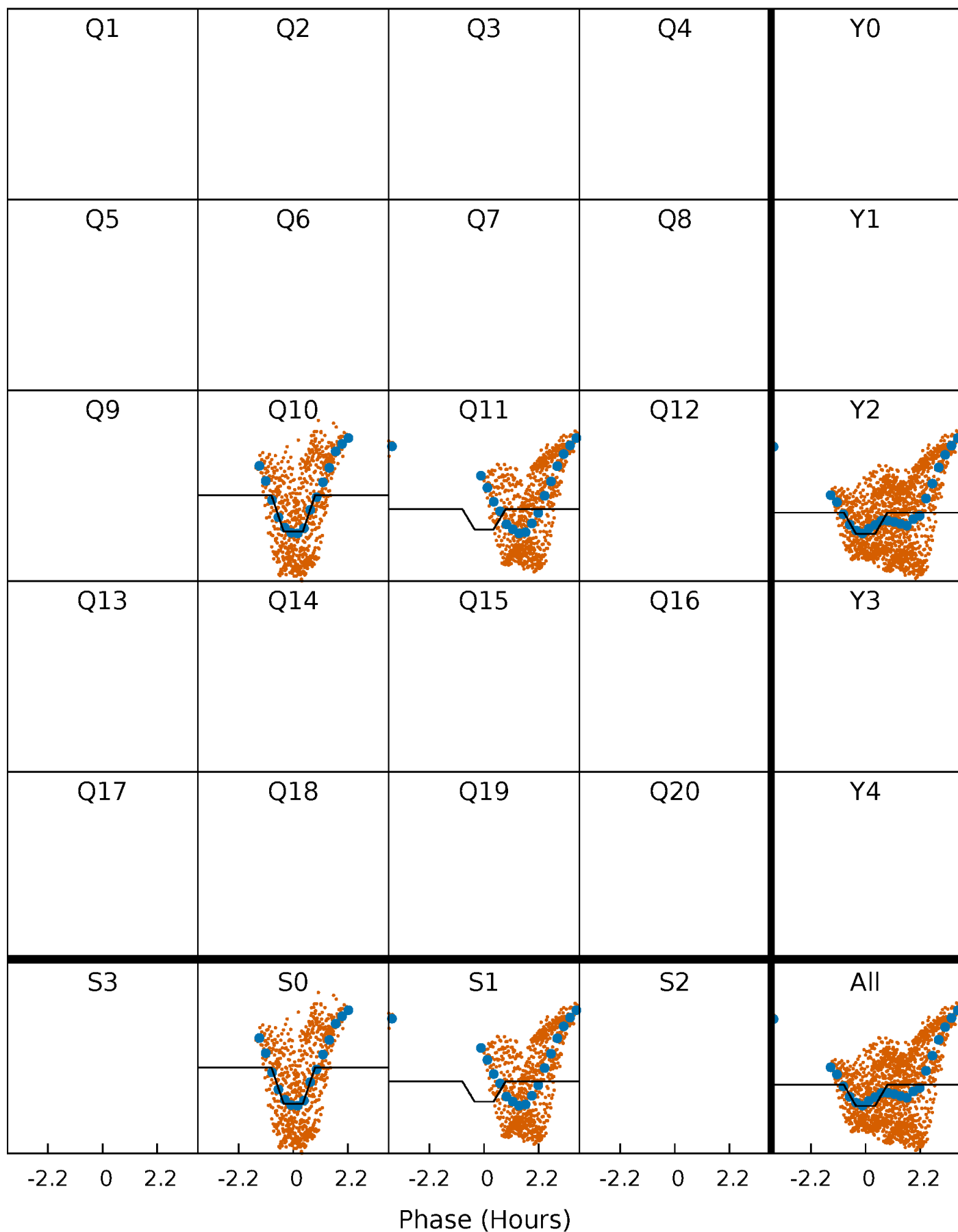
# DV Quarter-Phased Transit Curves

TCE 008431611-03     $P = 0.610233$  Days     $T_0 = 131.895369$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

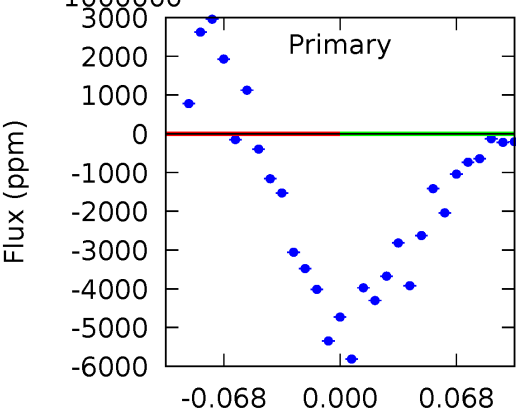
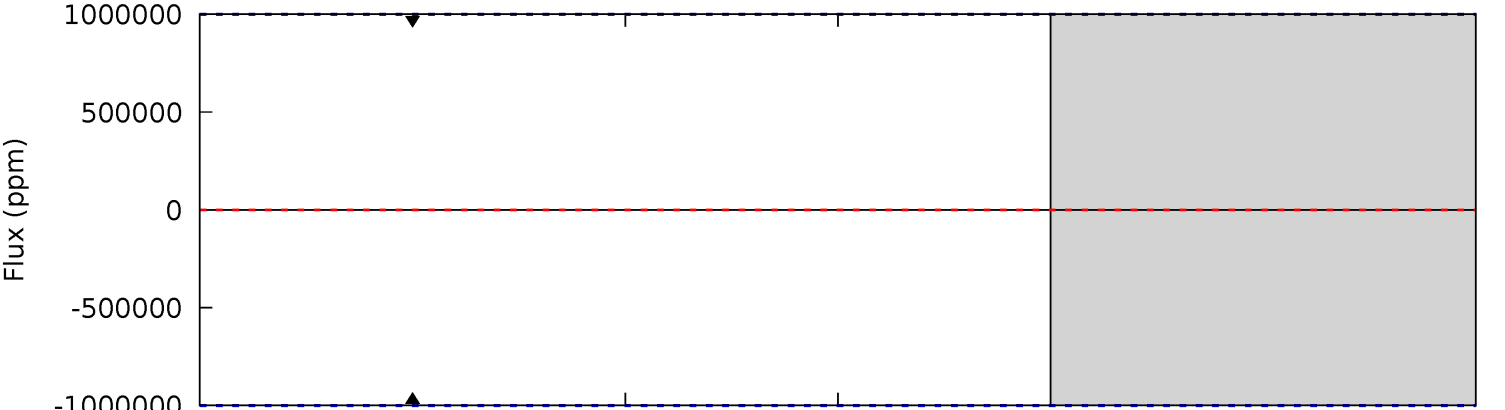
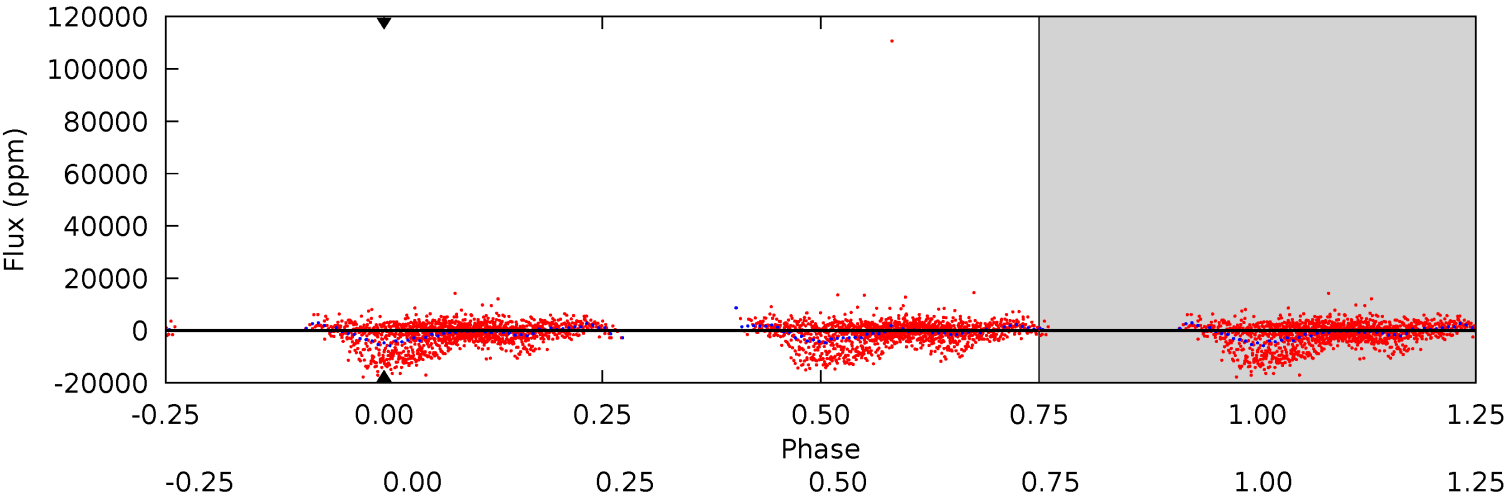
TCE 008431611-03   P= 0.610233 Days    $T_0=131.903234$  (BKJD)



# DV Model-Shift Uniqueness Test

008431611-03, P = 0.610233 Days, E = 131.895369 Days

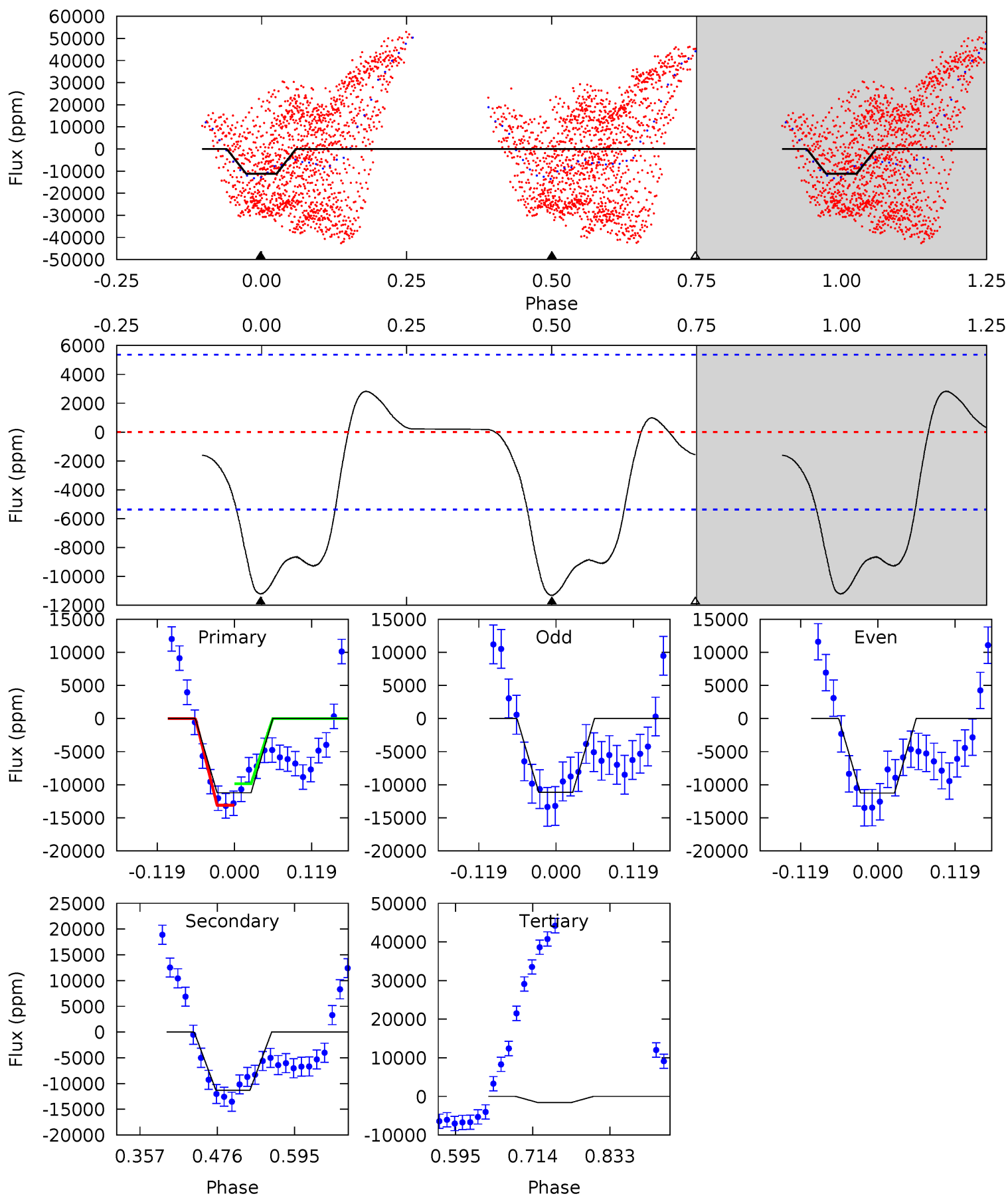
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008431611-03, P = 0.610233 Days, E = 131.903234 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
9.47	9.56	1.32	0	4.53	1.56	2.46	8.15	9.47	8.24	9.56	0.05	0.87	0.20	1.32



### Stellar Parameters For KIC 008431611

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6157^{+196}_{-240}$	$4.338^{+0.128}_{-0.192}$	$-0.180^{+0.250}_{-0.300}$	$1.128^{+0.354}_{-0.191}$	$1.007^{+0.173}_{-0.116}$	$0.988^{+0.598}_{-0.499}$
	+3%/-4%	+3%/-4%	+139%/-167%	+31%/-17%	+17%/-12%	+61%/-51%
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 008431611-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$11.63^{+12.20}_{-7.60}$	$3415^{+267}_{-227}$	$4168^{+15252}_{-20032}$	$1.590^{+158.046}_{-109.416}$
Alt.	$-11315 \pm 1184$	$16.44^{+12.44}_{-9.45}$	$3444^{+263}_{-222}$	$5485^{+3601}_{-1280}$	$4.481^{+21.219}_{-2.992}$

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

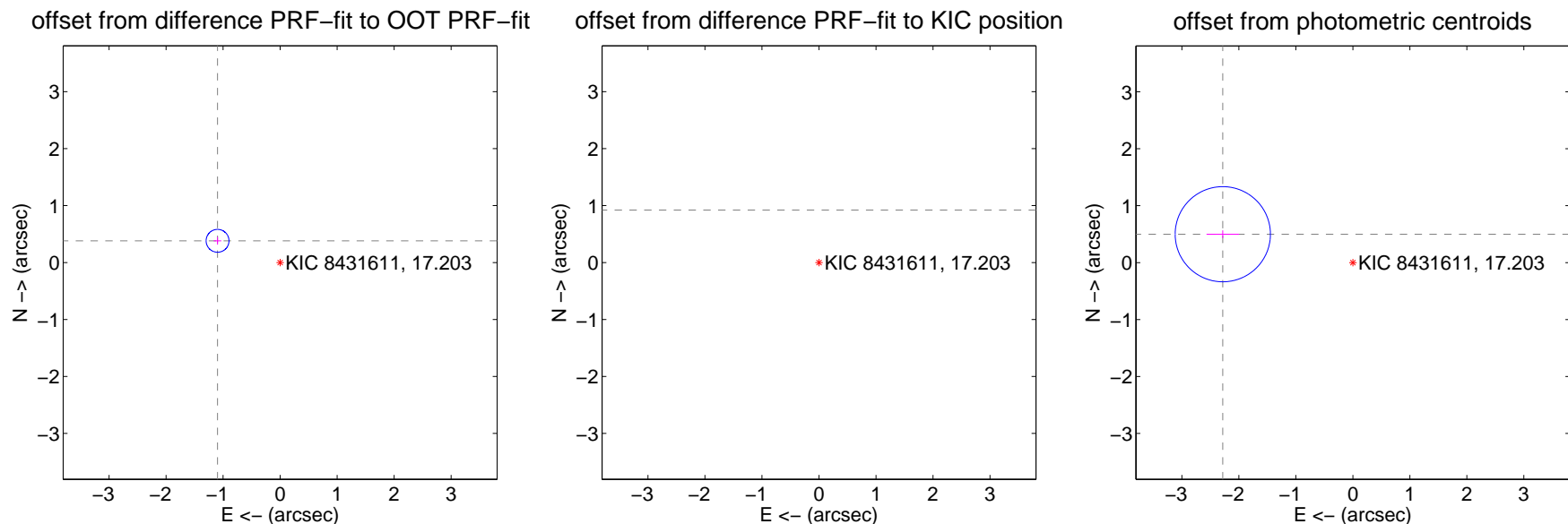
## DV Centroid Data

Supplemental centroid analysis for 008431611-03. Kepler magnitude: 17.20. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 5.50 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.162 \pm 0.067$	17.38	$1.097 \pm 0.067$	$0.382 \pm 0.067$
PRF-fit source offset from KIC position	$6.636 \pm 0.067$	99.25	$6.572 \pm 0.067$	$0.921 \pm 0.067$
photometric centroid source offset	$2.34 \pm 0.28$	8.39	$2.28 \pm 0.28$	$0.50 \pm 0.07$

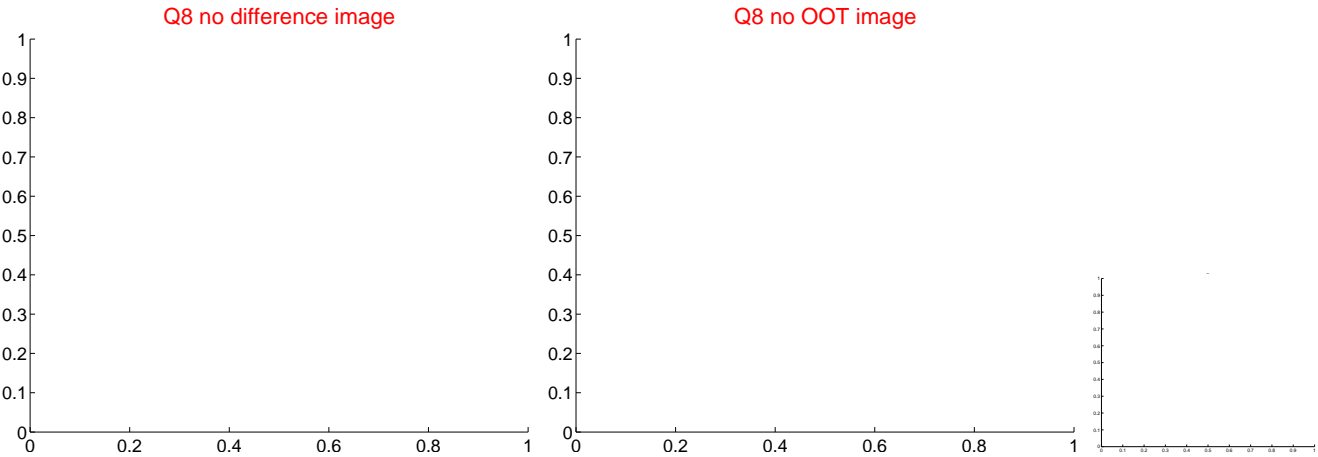
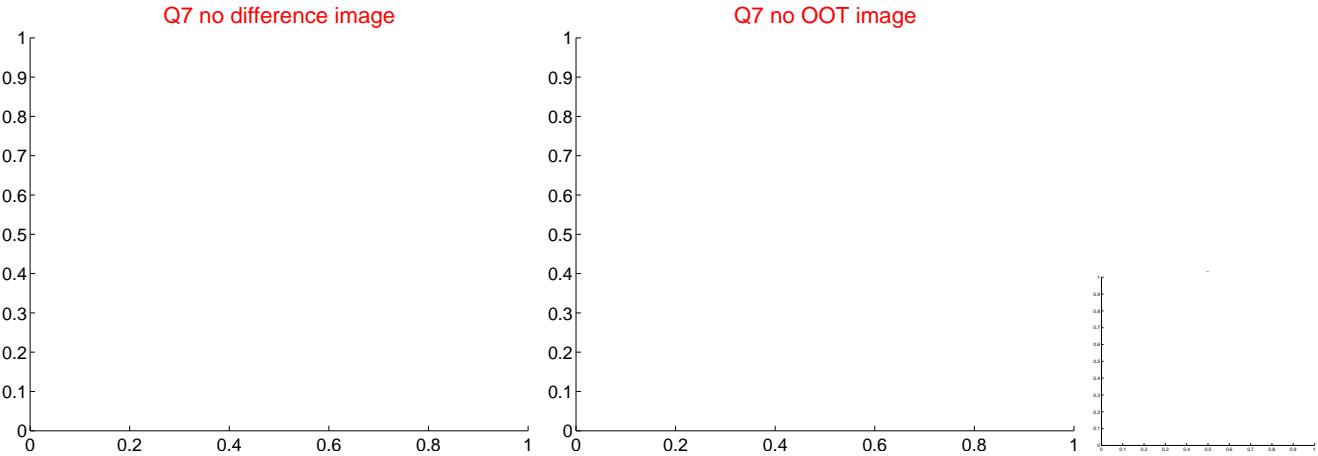
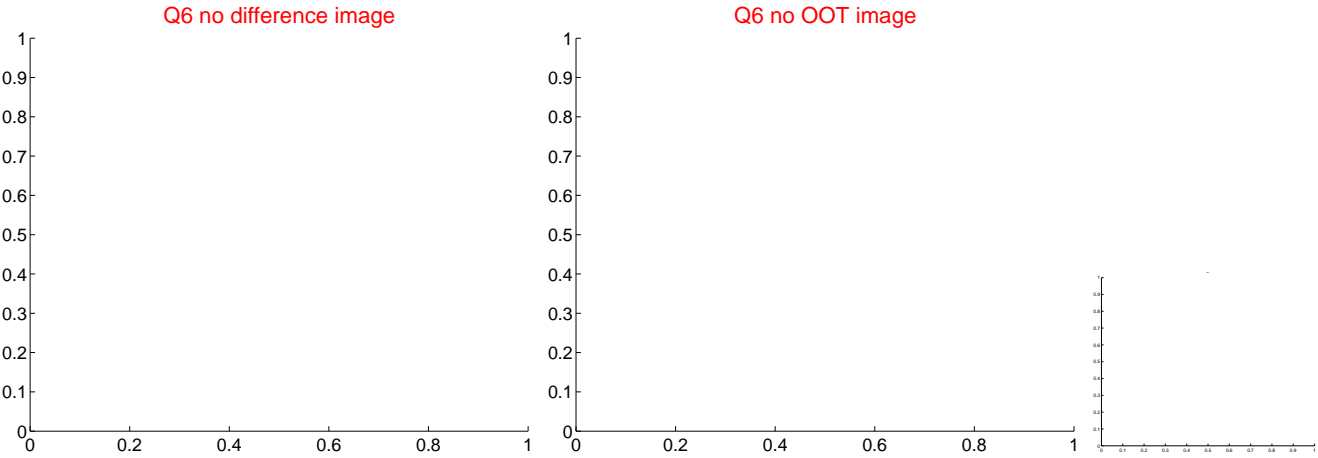
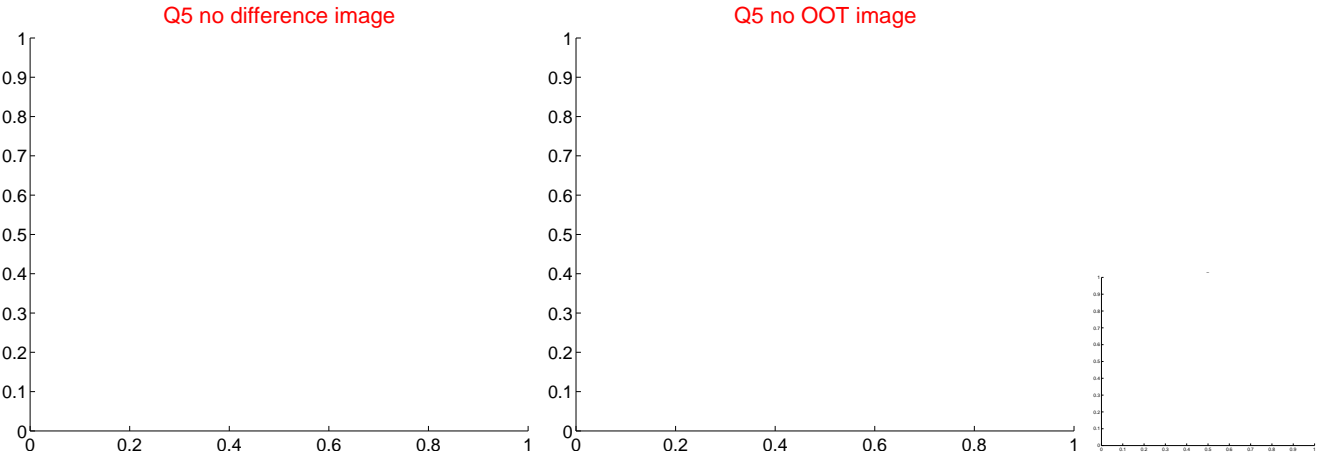


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

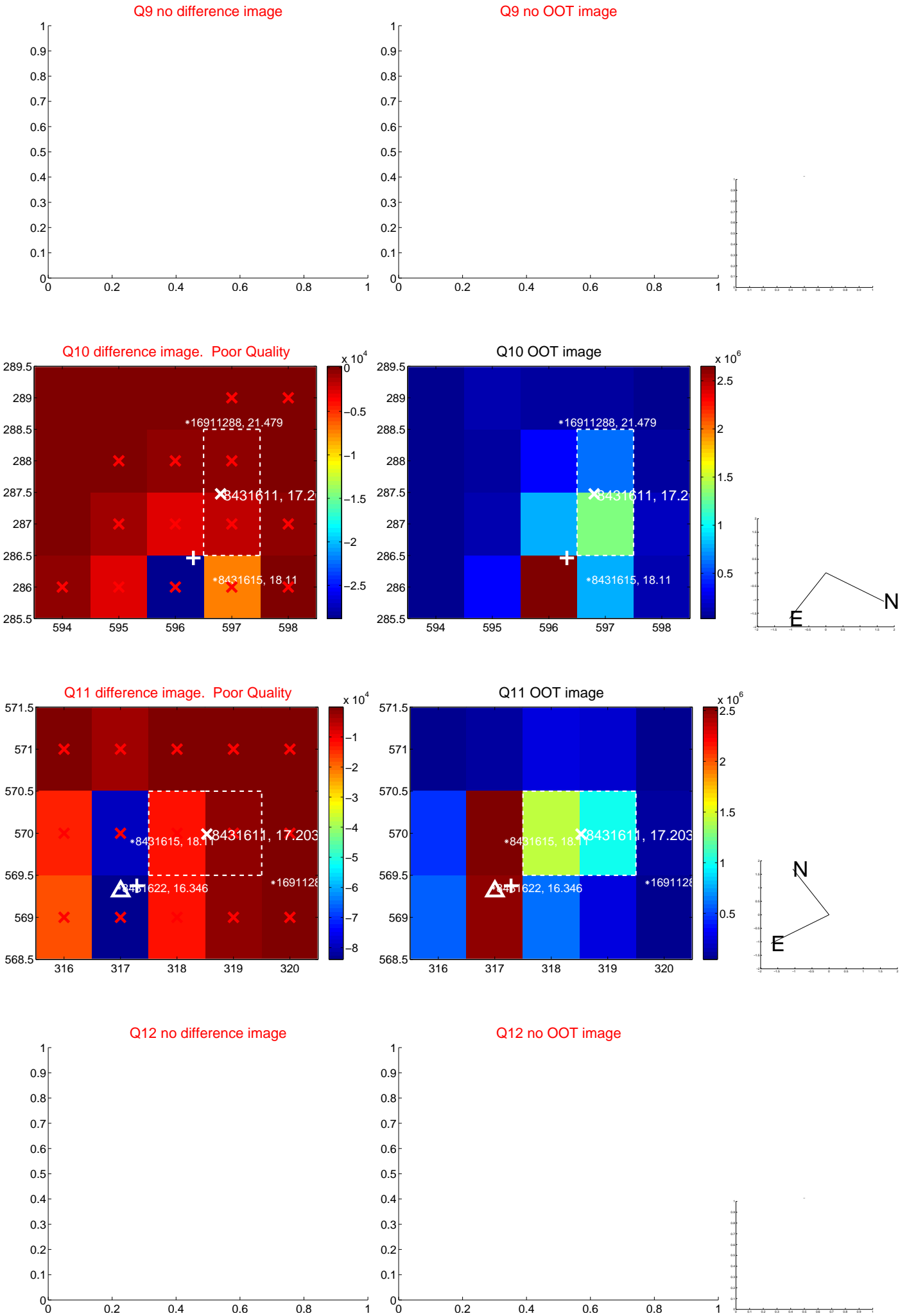


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





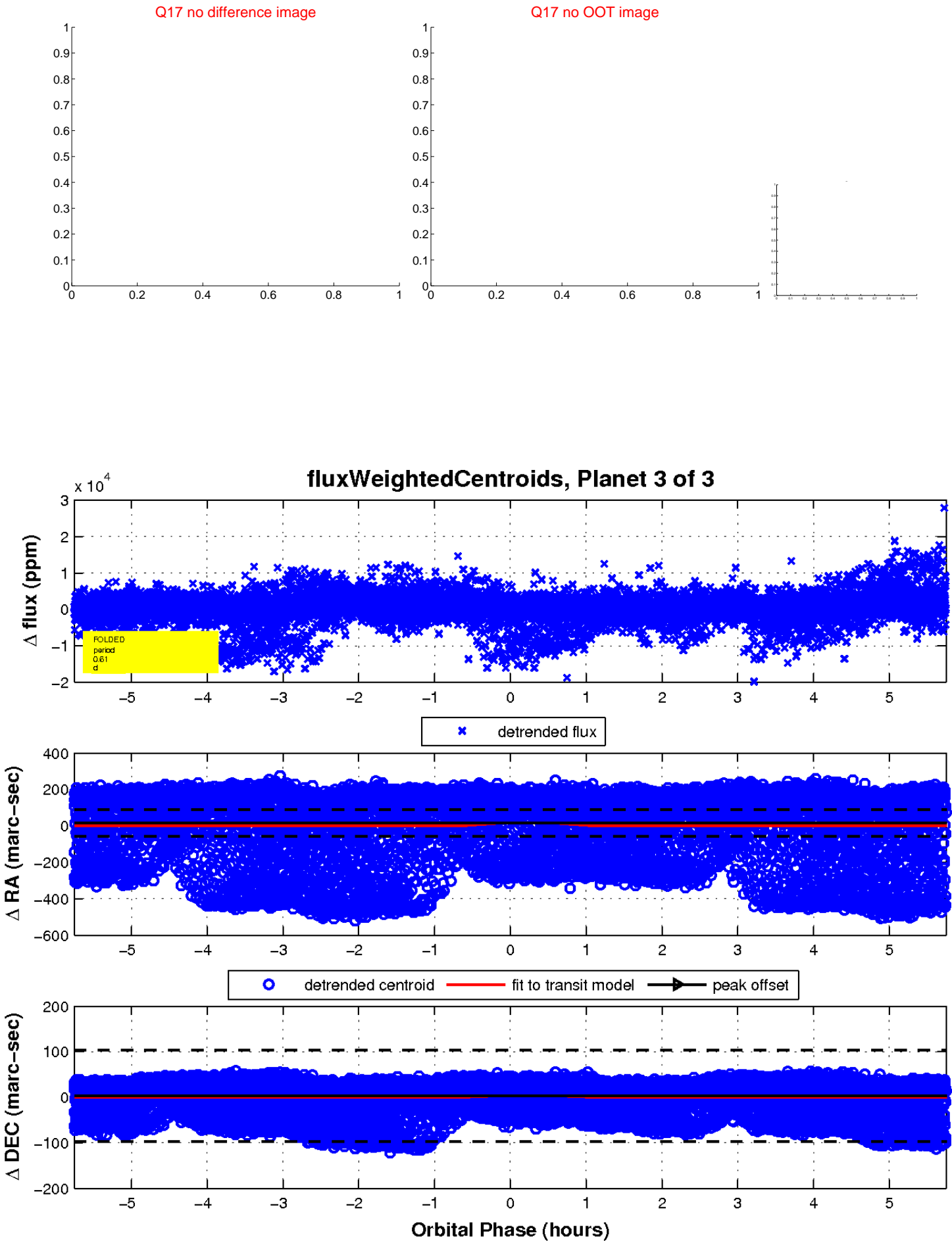
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

