

# KIC 003847852

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003847852-01	OBS	No	662.119171	252.884909	994.7	7.357	12.2	7.3	68.71	3876	471.35	290.53
003847852-02	OBS	No	463.231080	170.266552	1450.1	7.163	9.5	7.4	68.71	3876	372.99	467.77
003847852-03	OBS	No	619.675029	298.331687	791.2	3.663	9.4	8.5	68.71	3876	218.80	317.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003847852-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003847852-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003847852-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

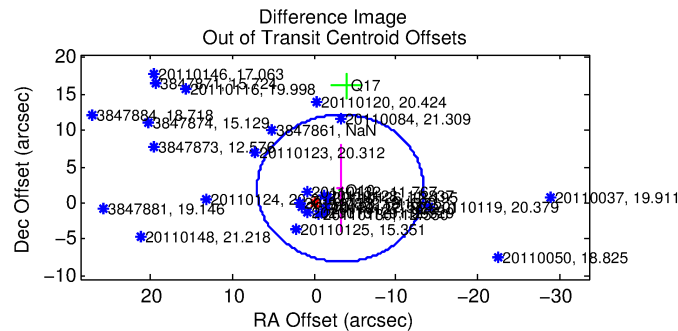
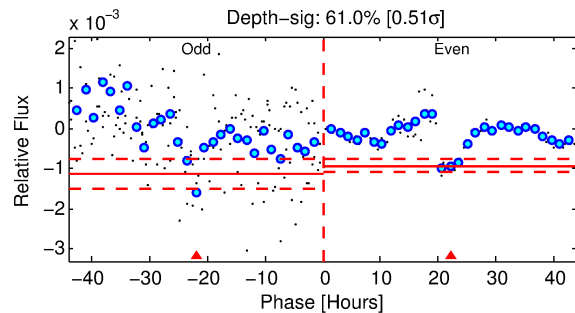
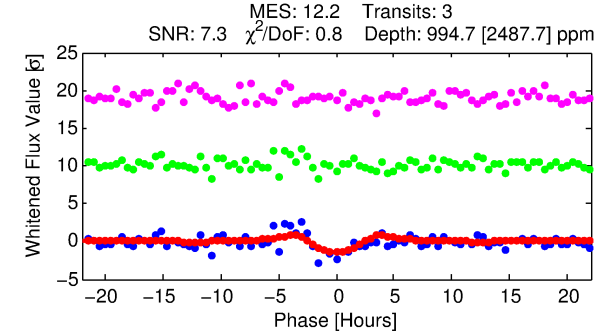
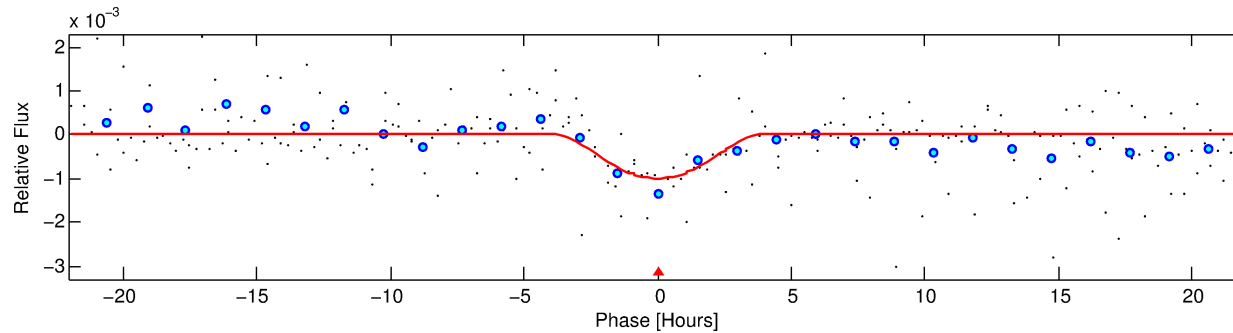
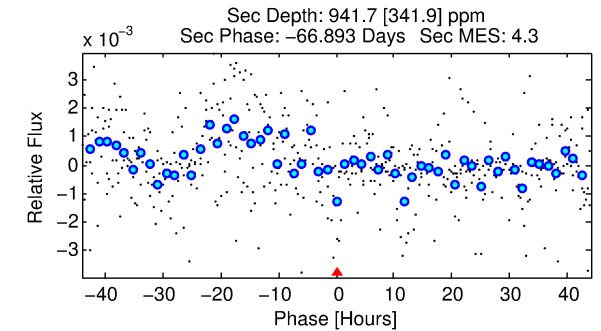
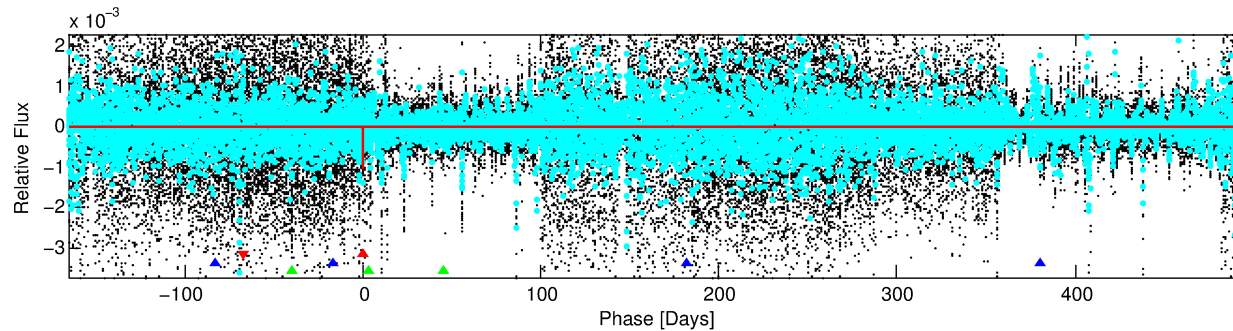
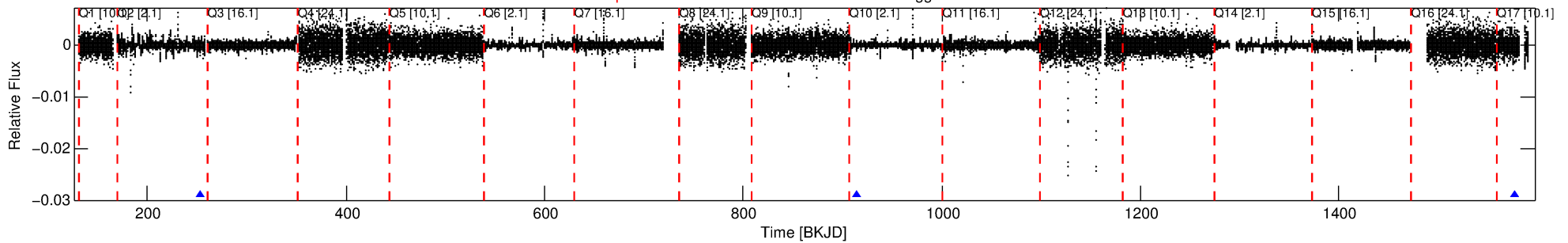
## Ephemeris Match Information For 003847852-01

No Significant Match Found

# DV One-Page Summary

KIC: 3847852 Candidate: 1 of 3 Period: 662.119 d

Kp: 11.60 R\*: 68.71 Rs Teff: 3876.0 K Logg: 1.02 Fe/H: -0.100



## DV Fit Results:

Period = 662.11917 [0.02183] d  
Epoch = 252.8849 [0.0219] BKJD  
Rp/R\* = 0.0629 [0.1917]  
a/R\* = 247.62 [161.97]  
b = 1.00 [0.37]  
Seff = 290.53 [54.22]  
Teq = 1053 [49] K  
Rp = 471.35 [1440.86] Re  
a = 1.8127 [0.2643] AU  
Ag = 7.66 [46.83] [0.14σ]  
Teffp = 2708 [4137] K [0.40σ]

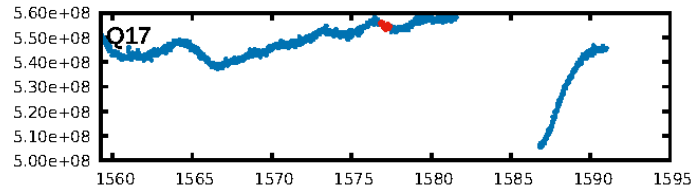
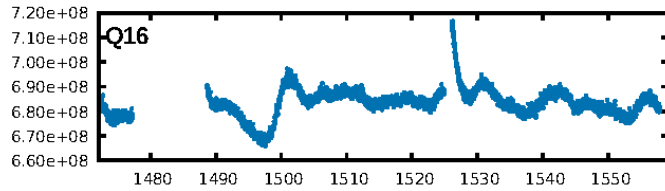
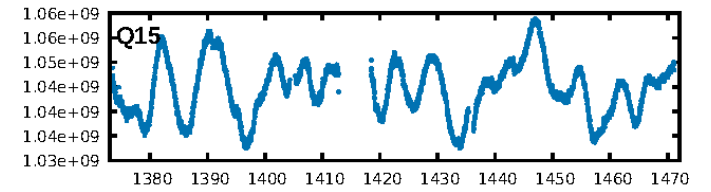
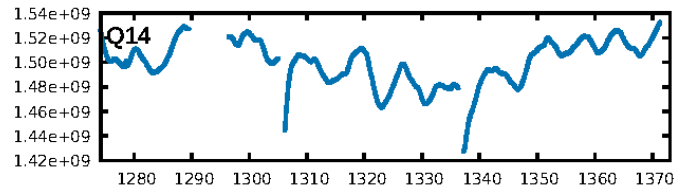
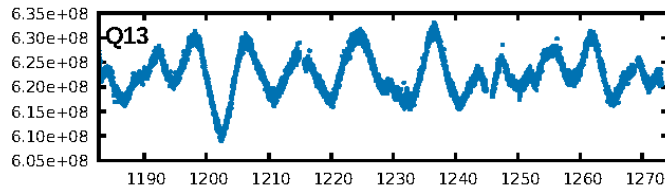
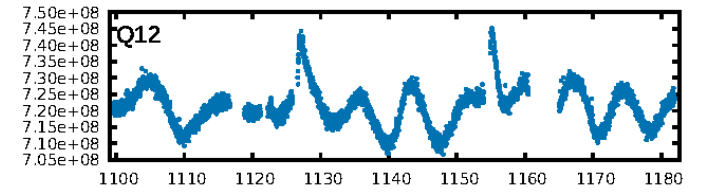
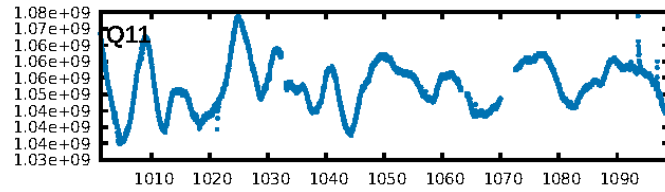
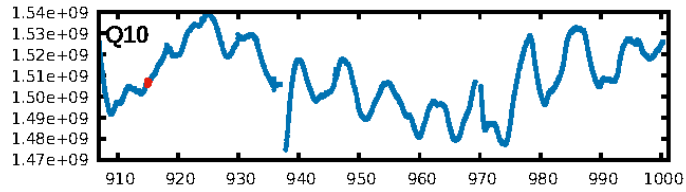
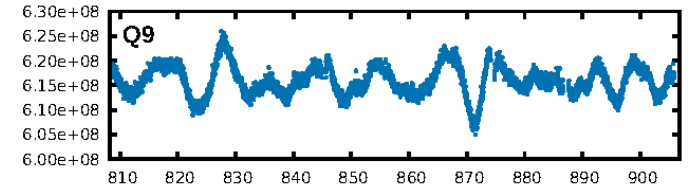
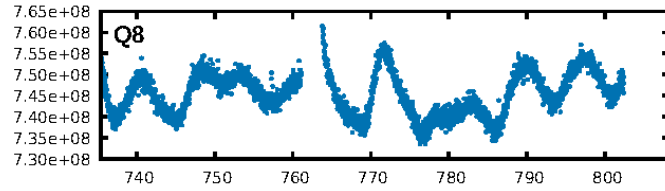
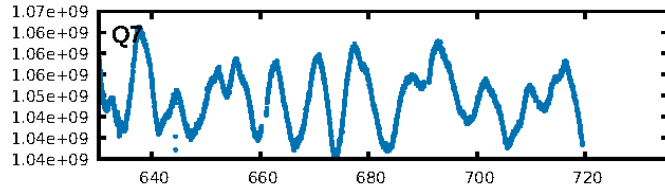
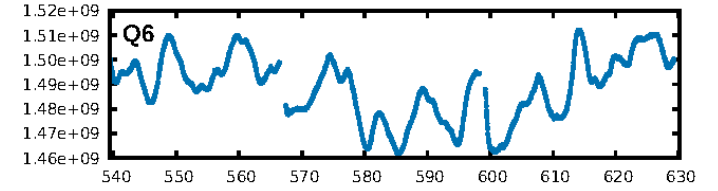
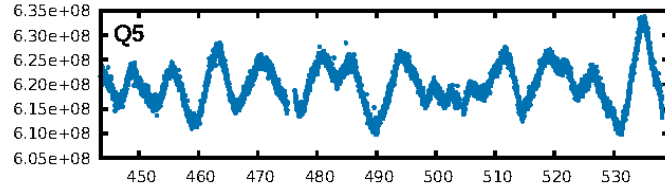
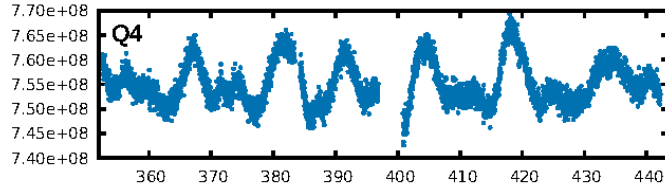
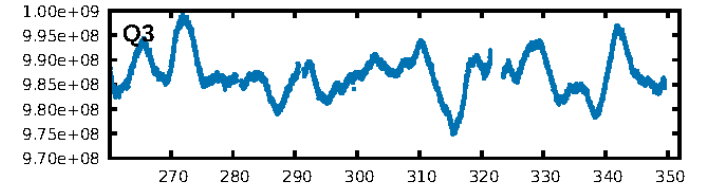
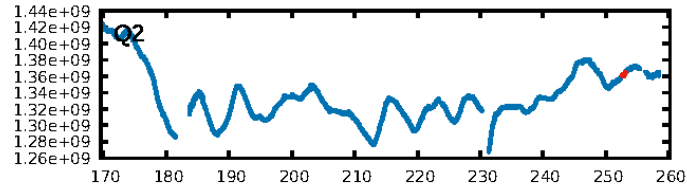
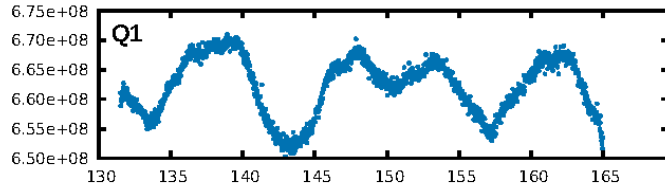
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [123.95σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 80.3%  
ModelChiSquareGof-sig: 99.0%  
Bootstrap-pfa: 1.15e-07  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 5.183  
Centroid-sig: 7.9%  
Centroid-so: 1.935 arcsec [6.40σ]  
OotOffset-rm: 3.811 arcsec [1.13σ]  
KicOffset-rm: 3.561 arcsec [1.08σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

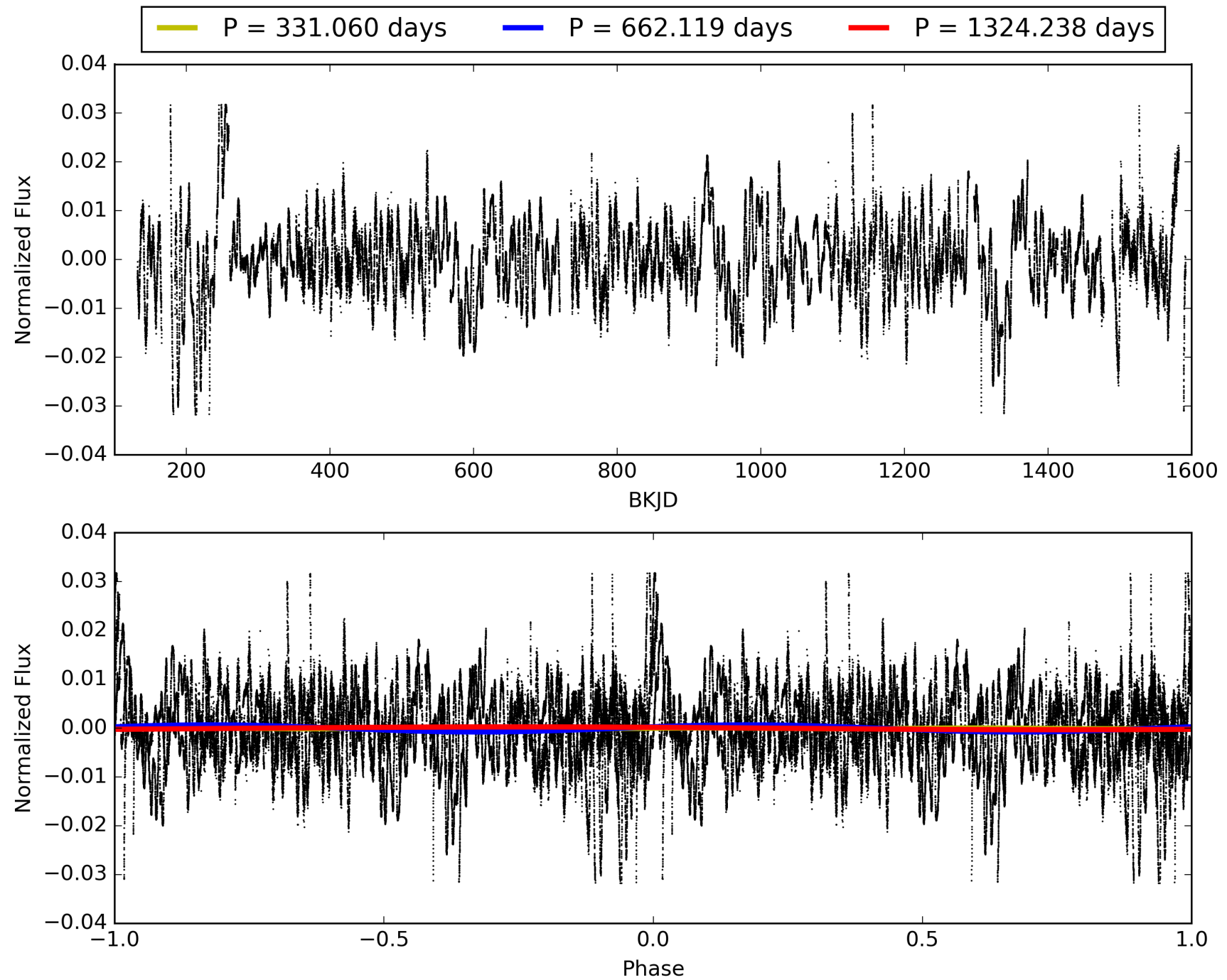
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:13:01 Z

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

# TCE 003847852-01, PDC Light Curves

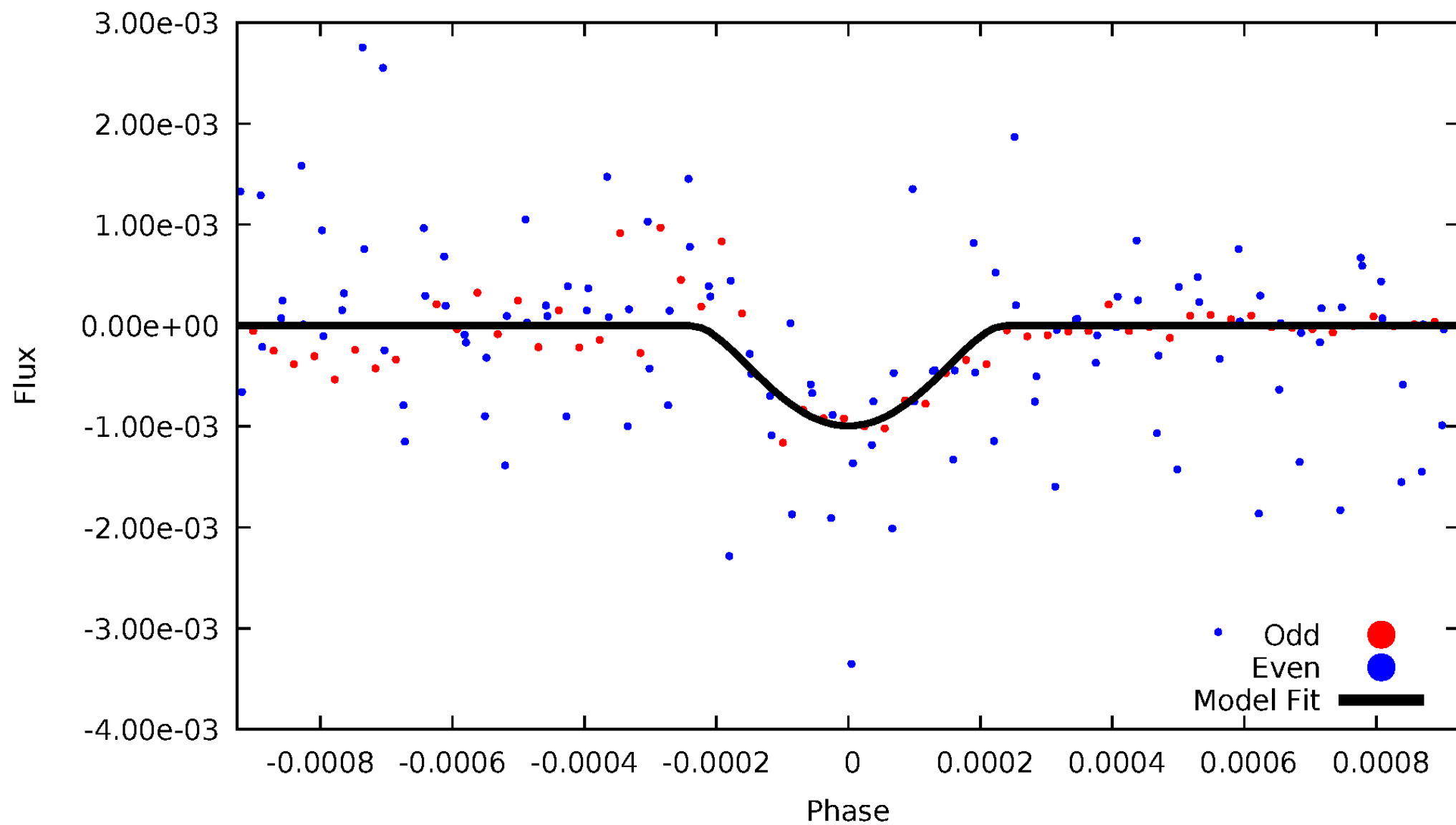


TCE 003847852-01



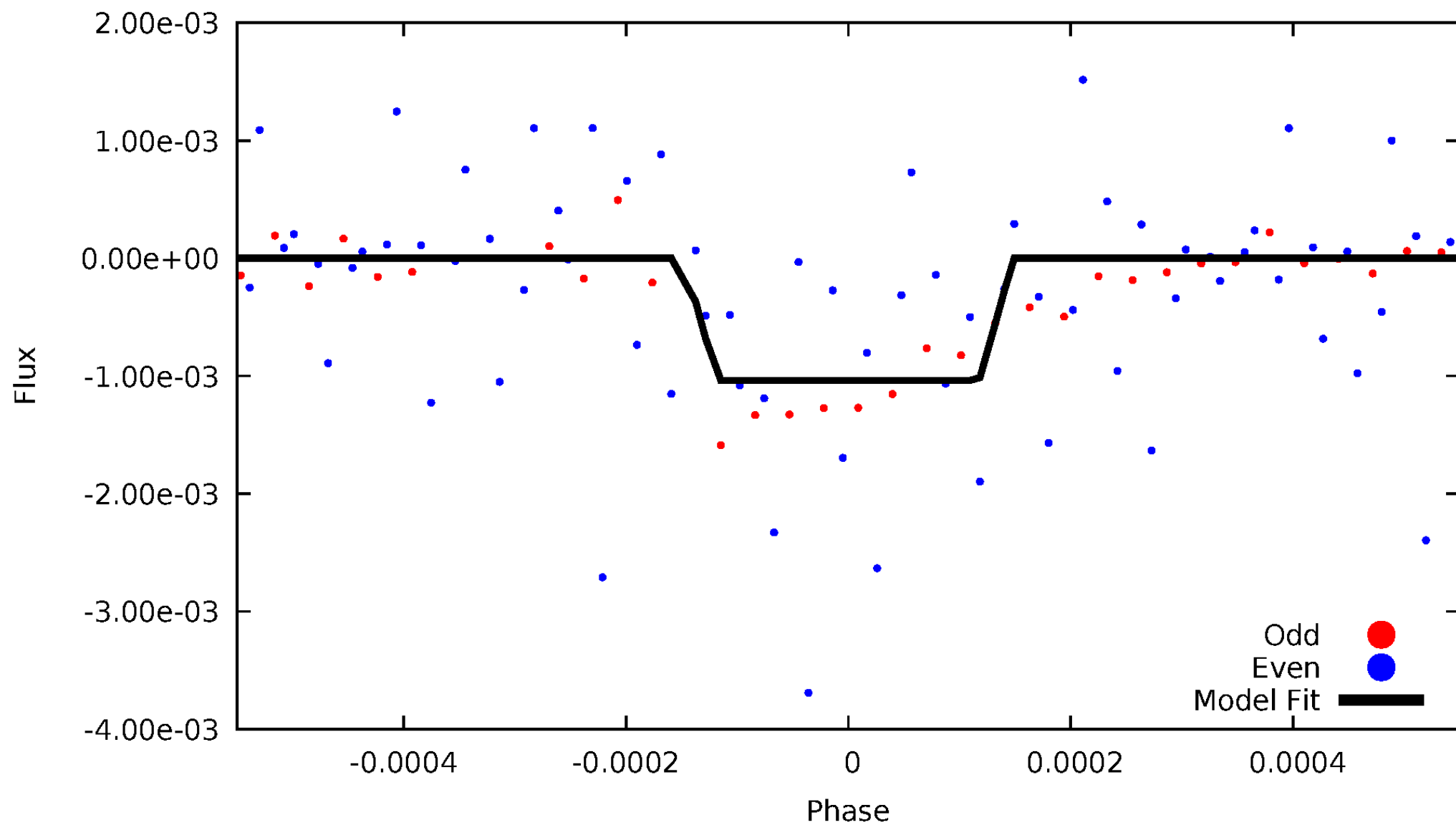
# DV Odd/Even

TCE 003847852-01



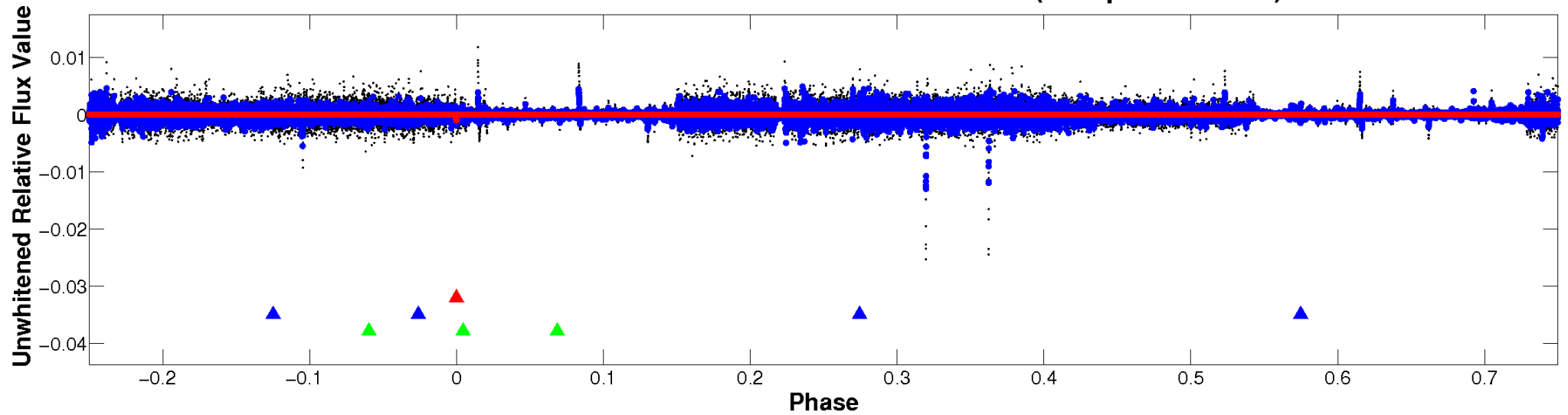
# ALT Odd/Even

TCE 003847852-01

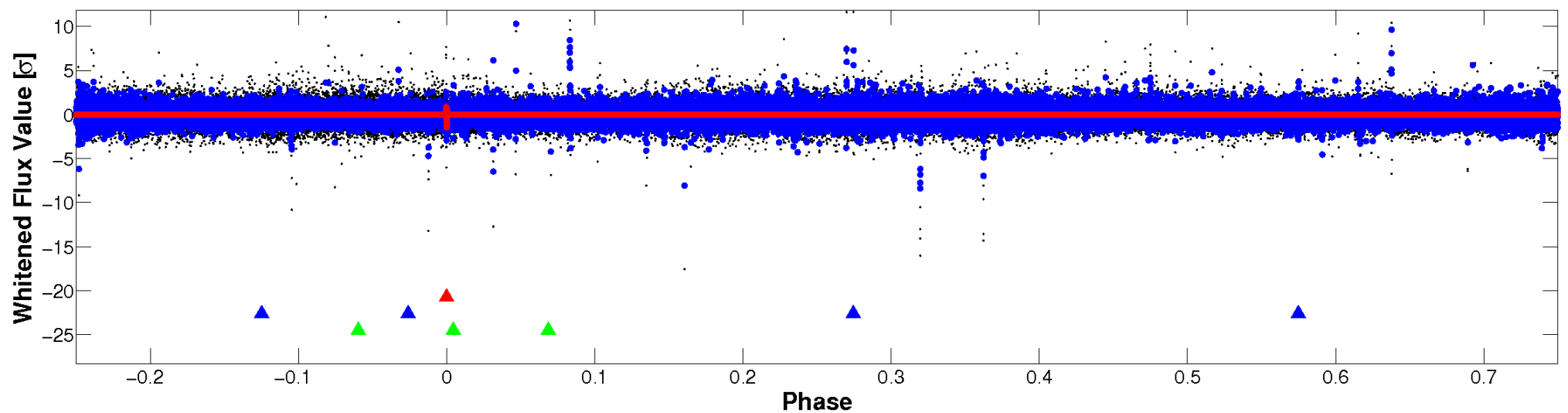


# Non-Whitened Vs. Whitened Light Curve

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

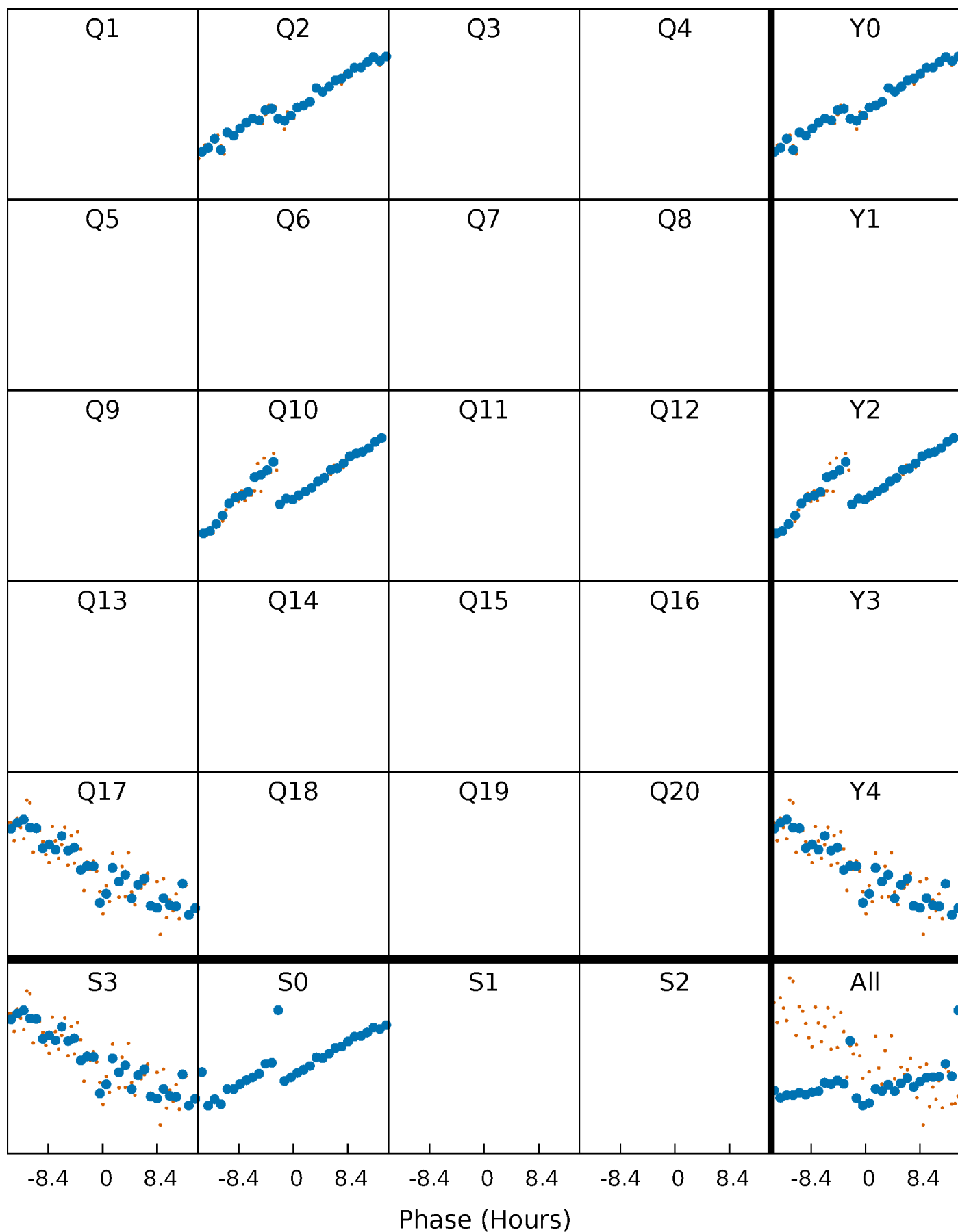


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

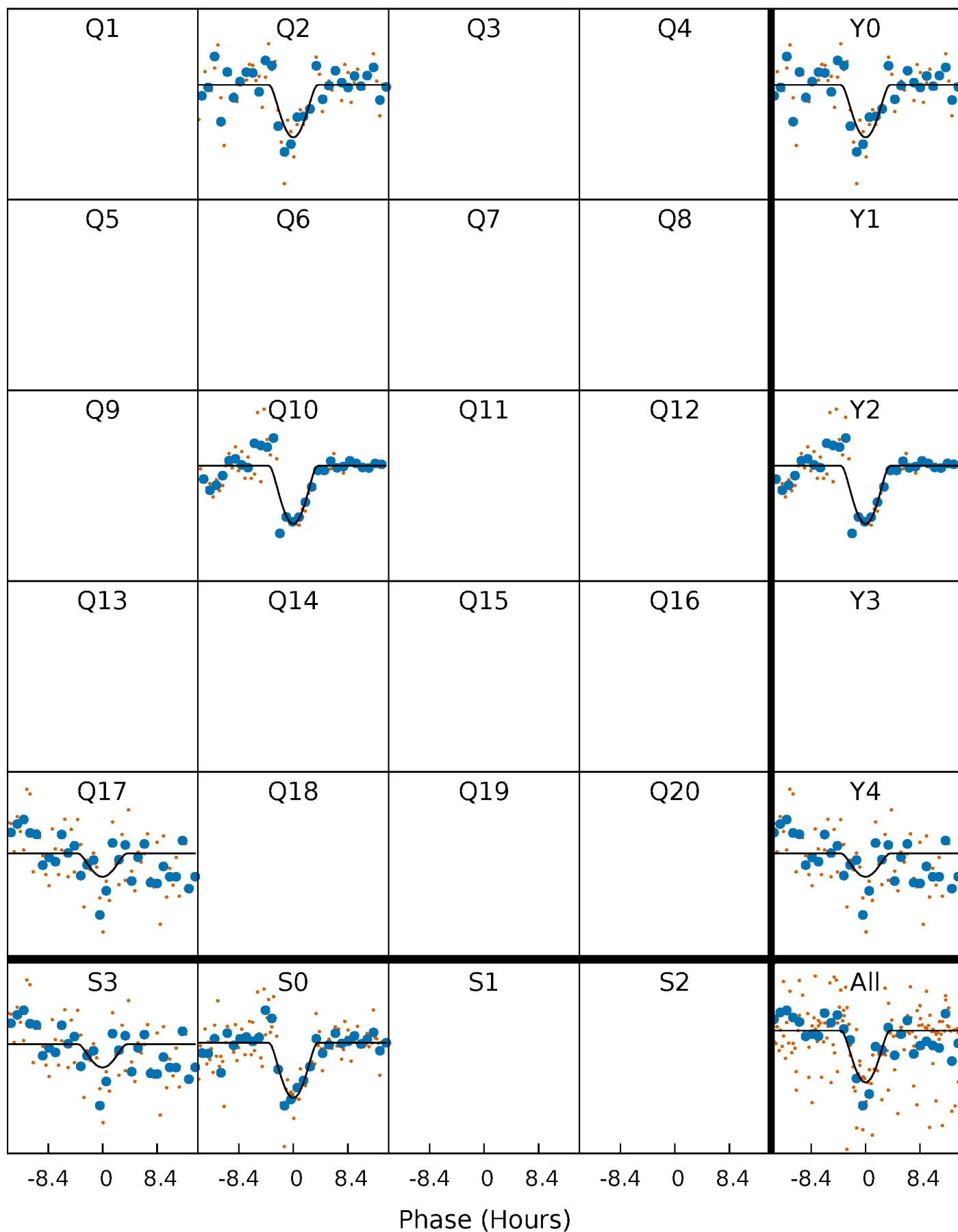
TCE 003847852-01 P=662.119171 Days  $T_0=252.884909$  (BKJD)





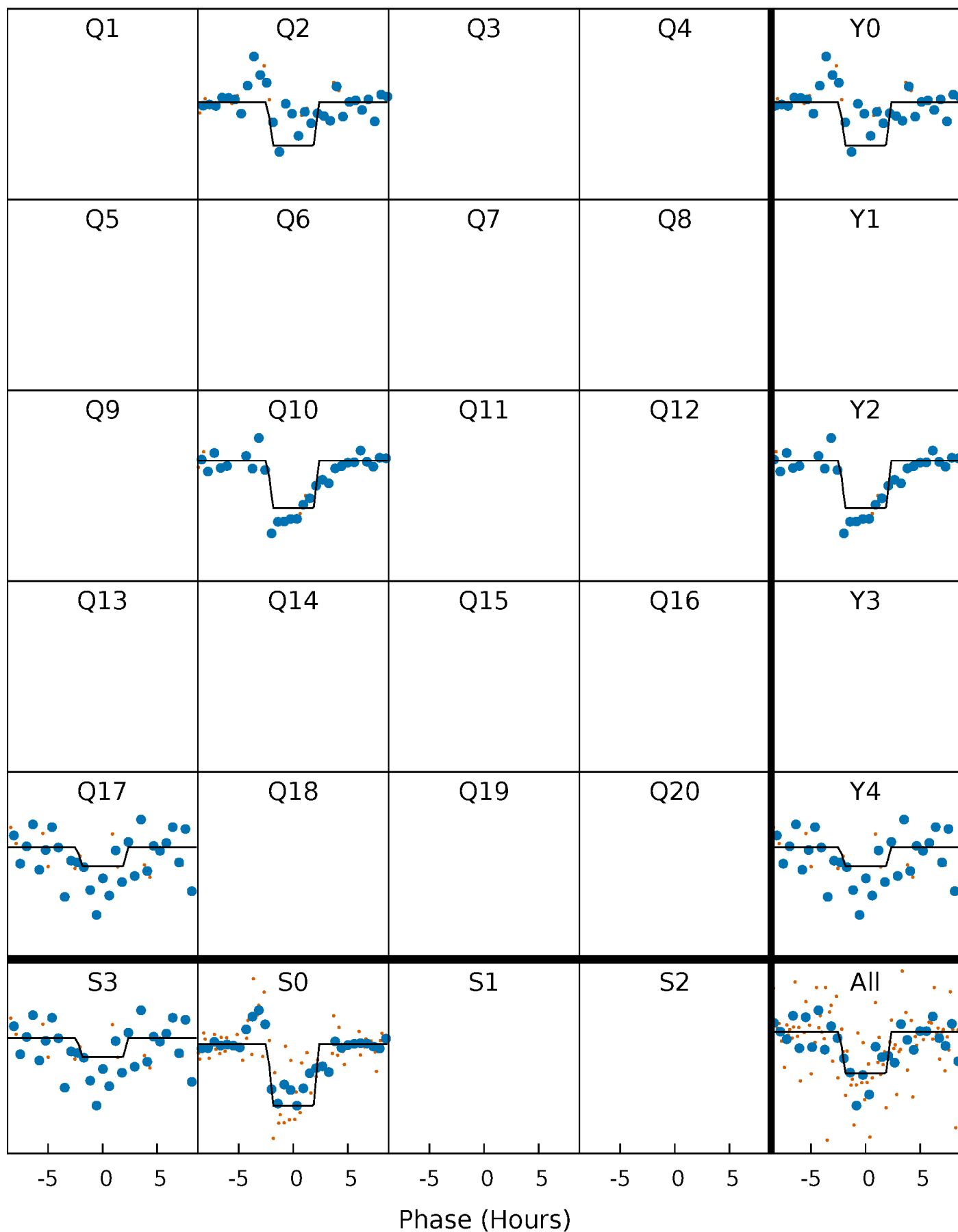
# DV Quarter-Phased Transit Curves

TCE 003847852-01 P=662.119171 Days  $T_0=252.884909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

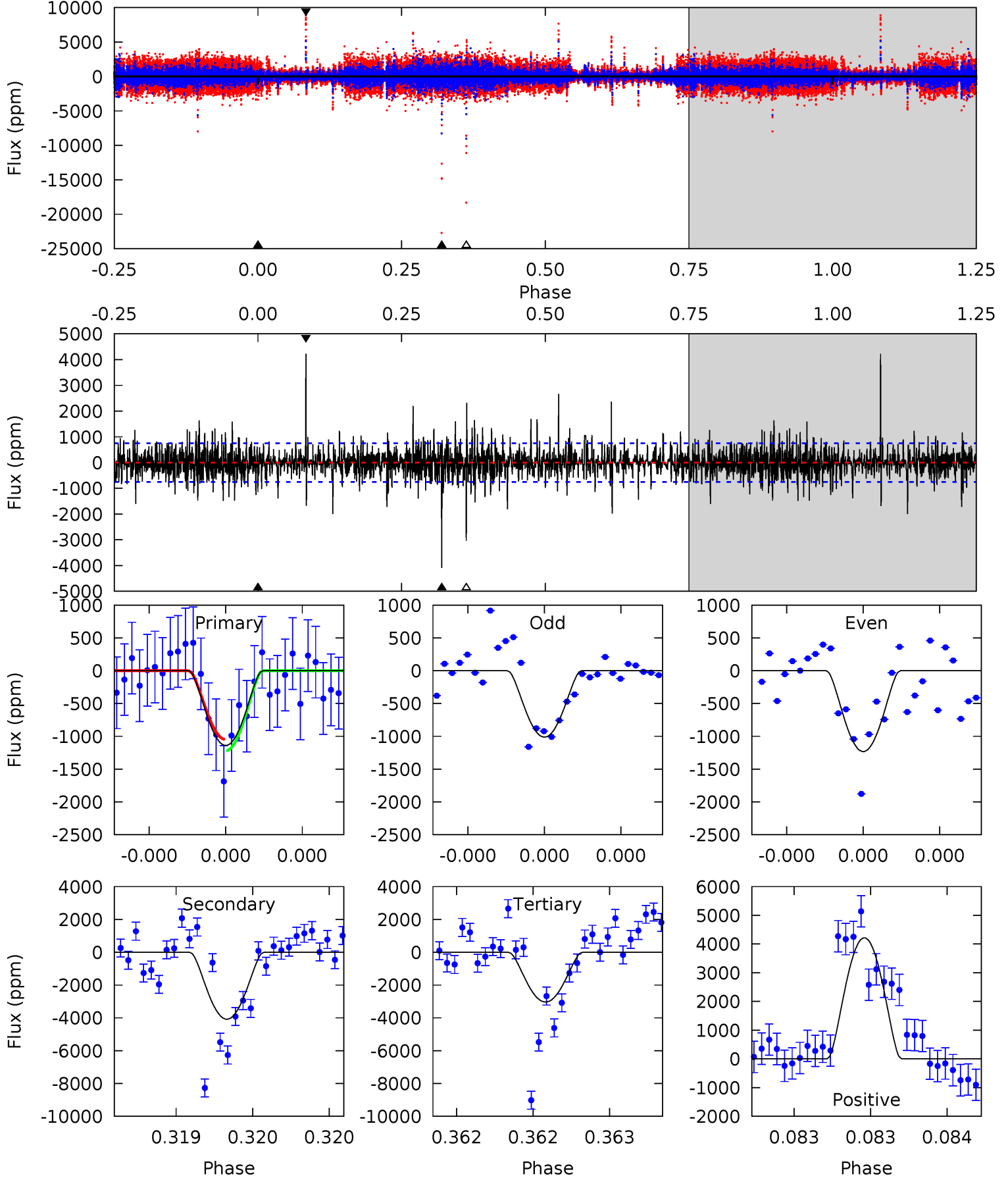
TCE 003847852-01 P=662.135889 Days  $T_0=252.878403$  (BKJD)



# DV Model-Shift Uniqueness Test

003847852-01, P = 662.119171 Days, E = 252.884909 Days

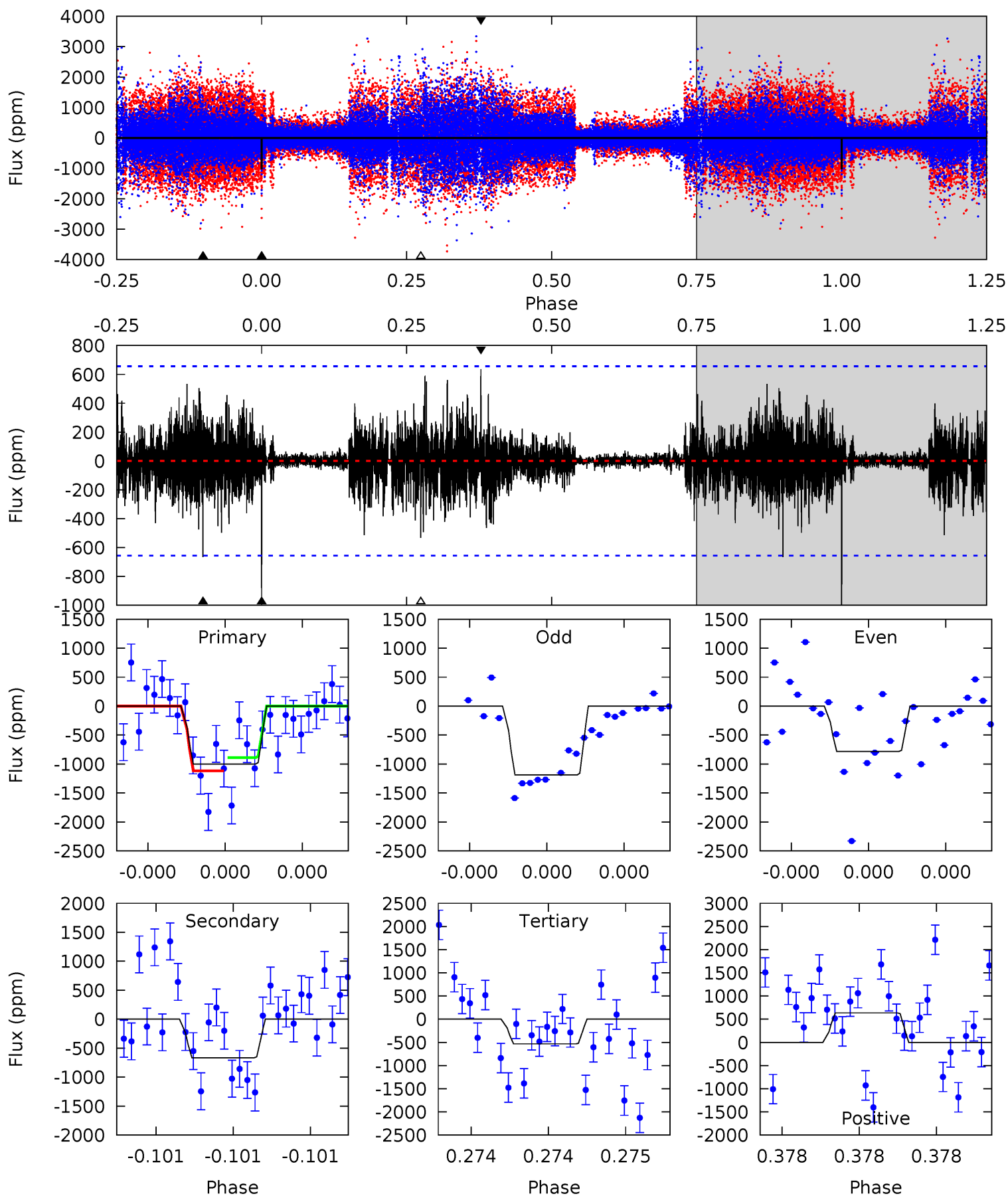
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.45	30.3	22.5	31.3	5.58	3.48	3.04	-14.1	-22.8	7.78	-1.00	0.71	1.08	0.51	0.64



# Alt Model-Shift Uniqueness Test

003847852-01, P = 662.135889 Days, E = 252.878403 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
8.64	5.76	4.61	5.49	5.67	3.64	0.86	4.03	3.15	1.15	0.27	1.51	0.93	0.39	0.99



### Stellar Parameters For KIC 003847852

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3876^{+77}_{-106}$	$1.022^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$68.708^{+2.473}_{-14.841}$	$1.811^{+0.036}_{-0.688}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+200%/-250%	+4%/-22%	+2%/-38%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003847852-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-4084 \pm 135$	$1110.74^{+1184.21}_{-785.64}$	$1472^{+36}_{-47}$	$2962^{+1449}_{-558}$	$6.021^{+61.388}_{-4.609}$
Alt.	$-666 \pm 116$	$1015.70^{+1171.87}_{-662.45}$	$1476^{+31}_{-45}$	$2318^{+860}_{-4065}$	$1.168^{+8.156}_{-0.924}$

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

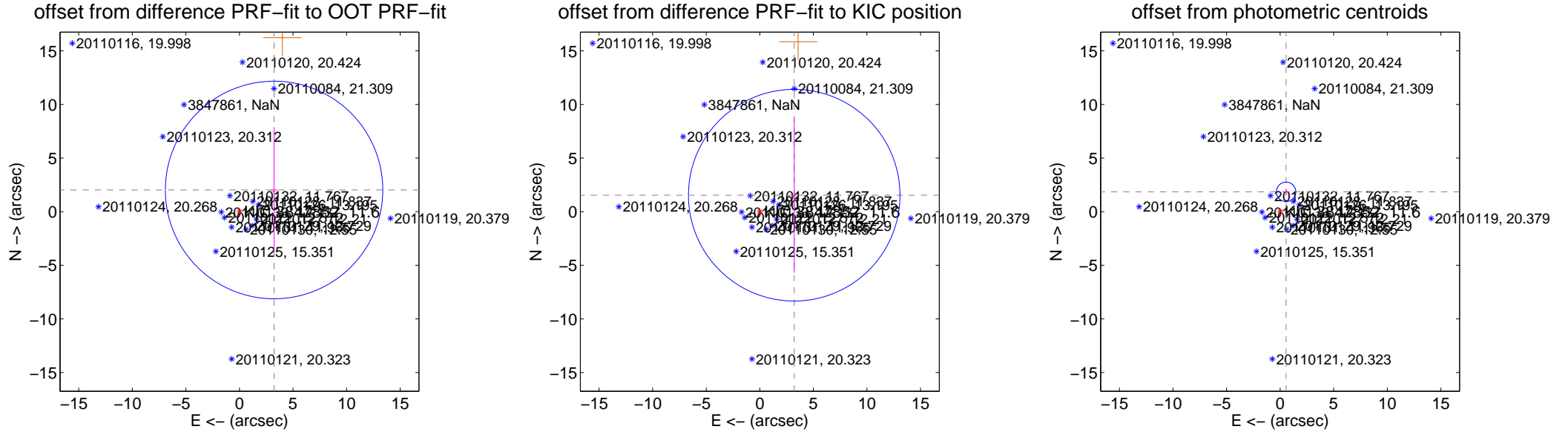
## DV Centroid Data

Supplemental centroid analysis for 003847852-01. **Kepler magnitude: 11.60.** Transit SNR 7.28

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 0.57 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.811 \pm 3.382$	1.13	$-3.230 \pm 0.327$	$2.022 \pm 5.862$
PRF-fit source offset from KIC position	$3.561 \pm 3.290$	1.08	$-3.213 \pm 0.198$	$1.536 \pm 7.234$
photometric centroid source offset	<b><math>1.93 \pm 0.30</math></b>	<b>6.40</b>	$-0.56 \pm 0.32$	$1.85 \pm 0.30$



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.

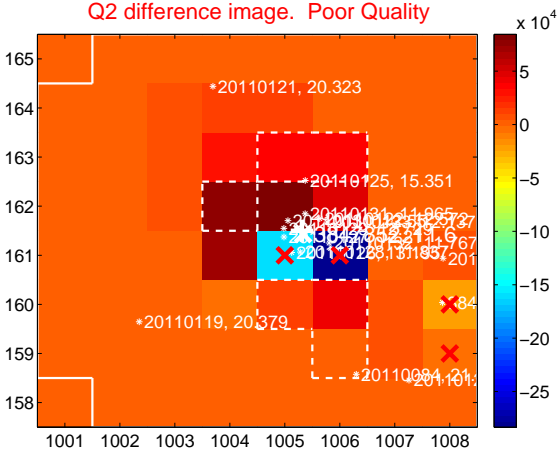
Q1 no difference image



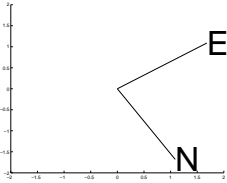
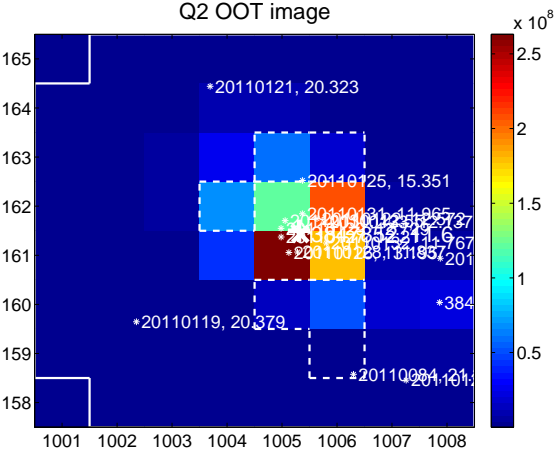
Q1 no OOT image



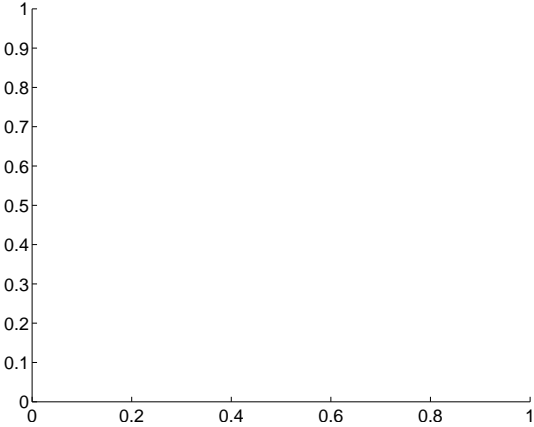
Q2 difference image. Poor Quality



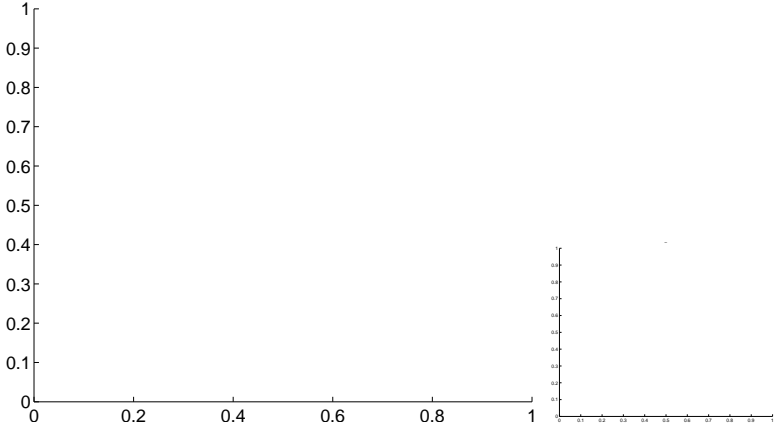
Q2 OOT image



Q3 no difference image



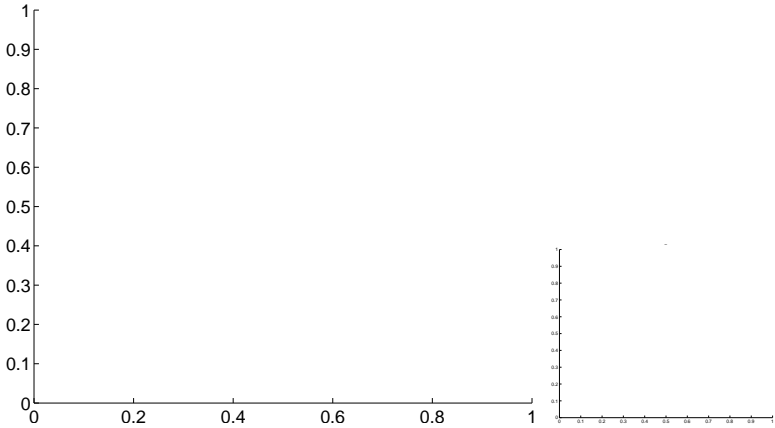
Q3 no OOT image



Q4 no difference image



Q4 no OOT image

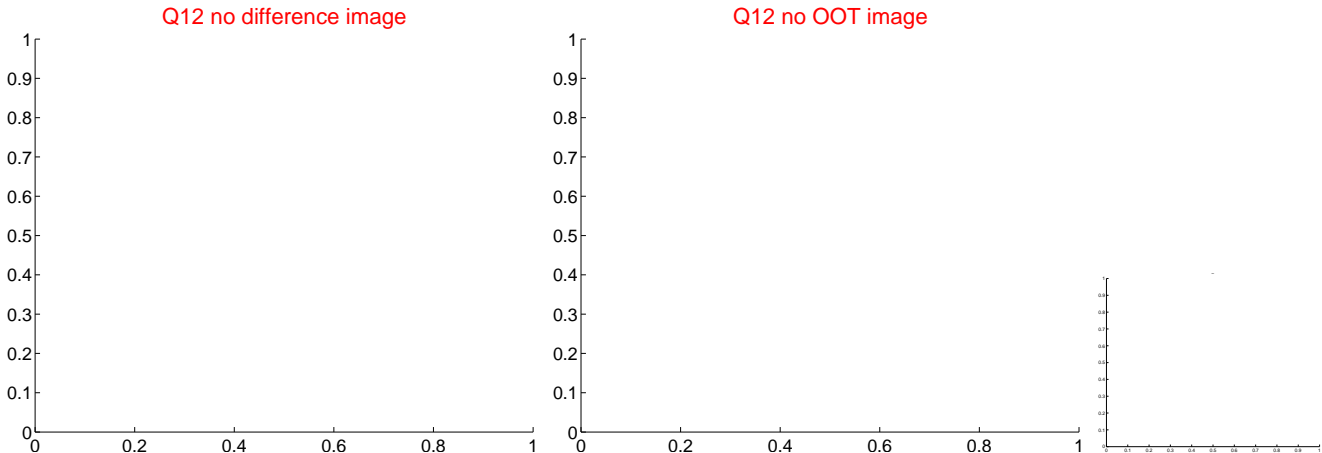
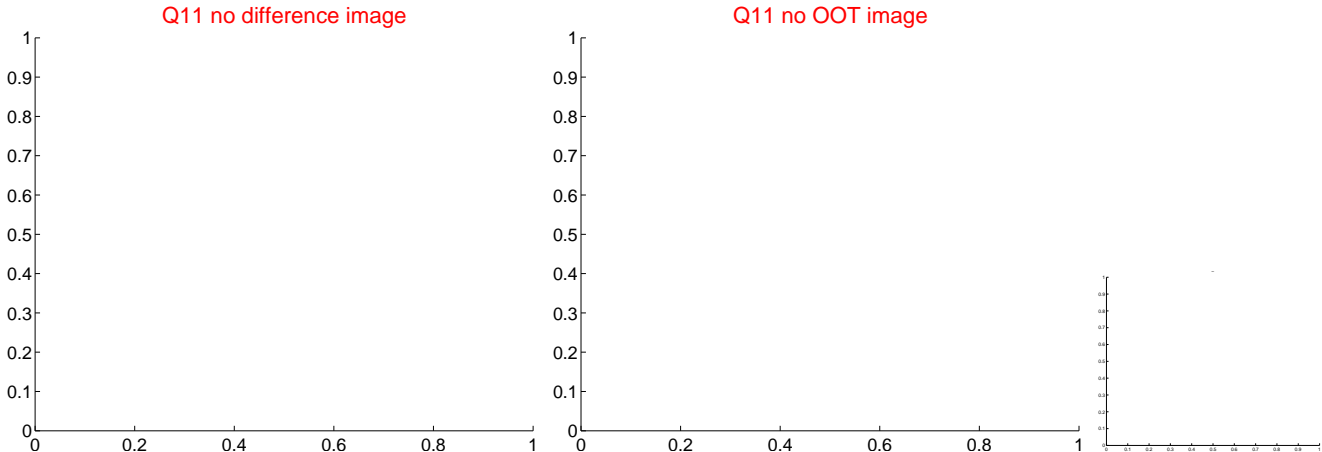
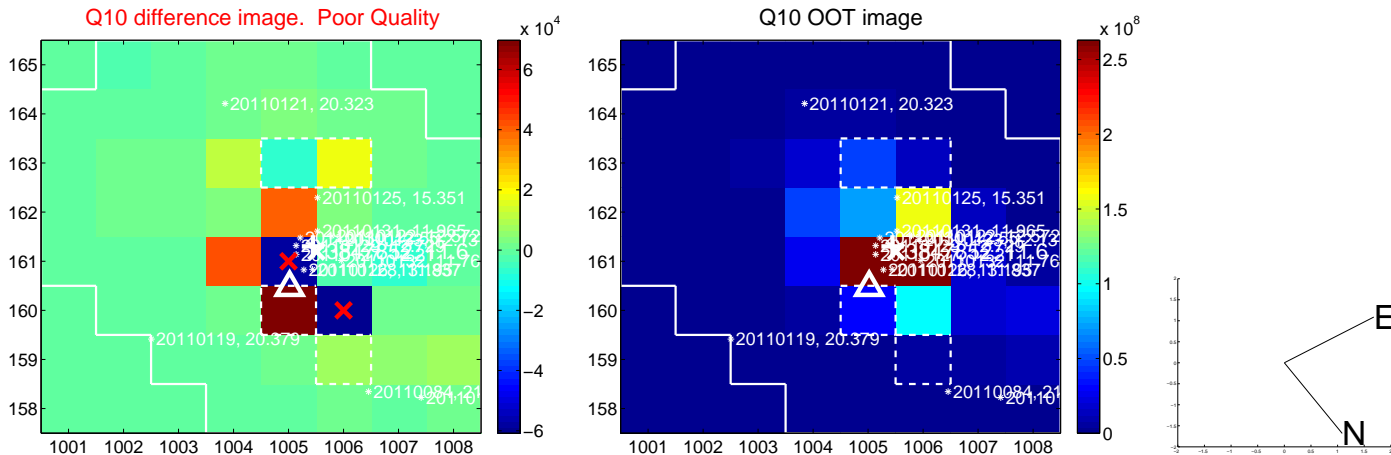
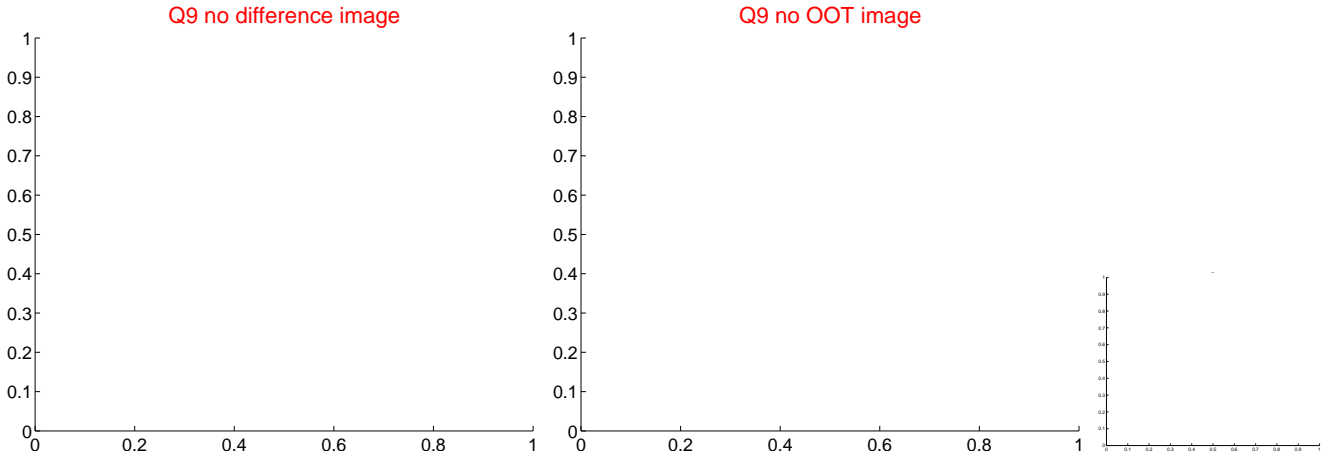


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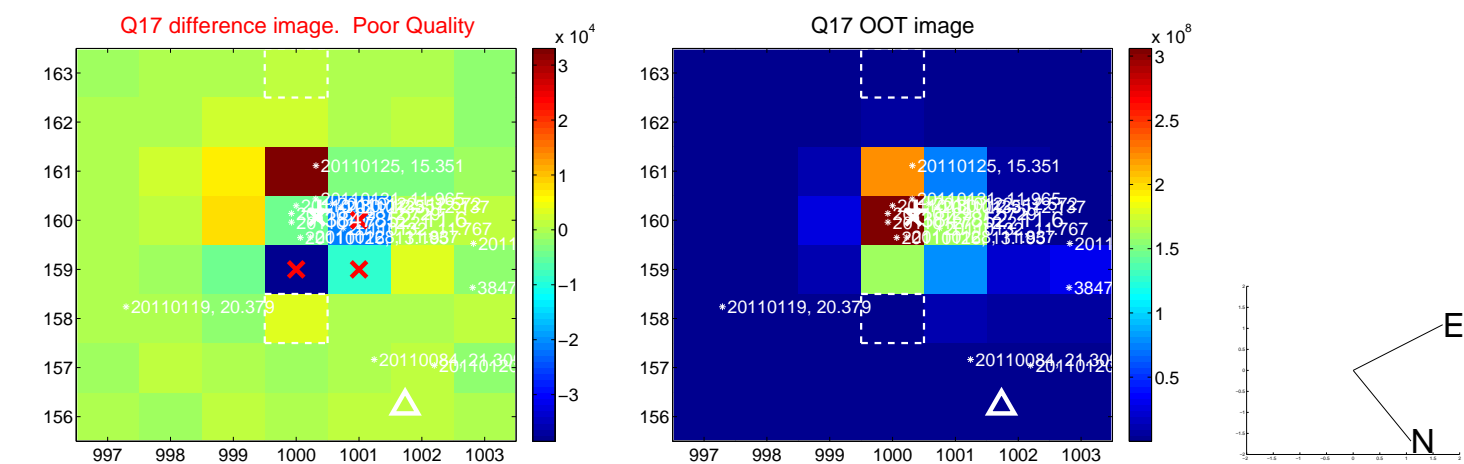
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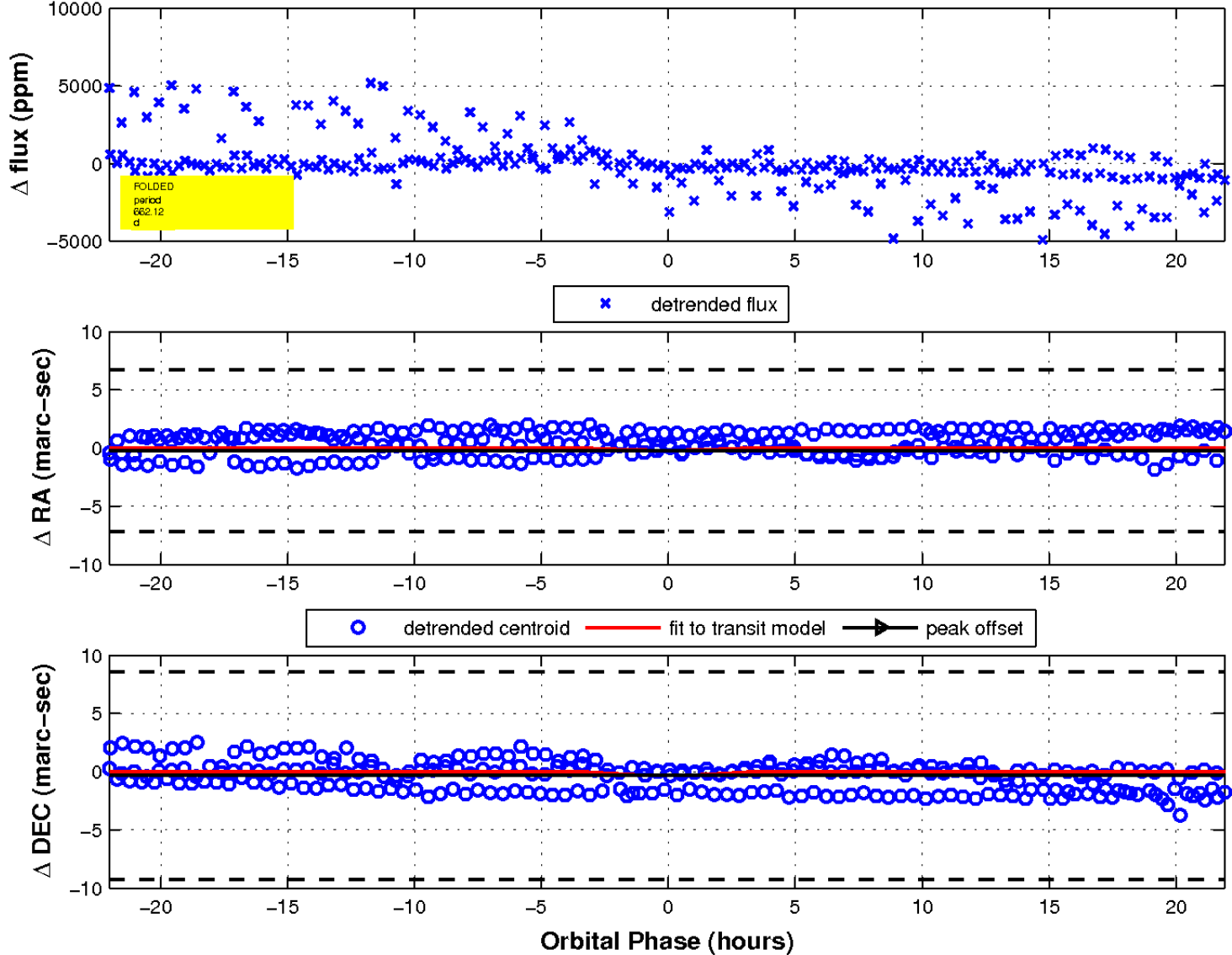
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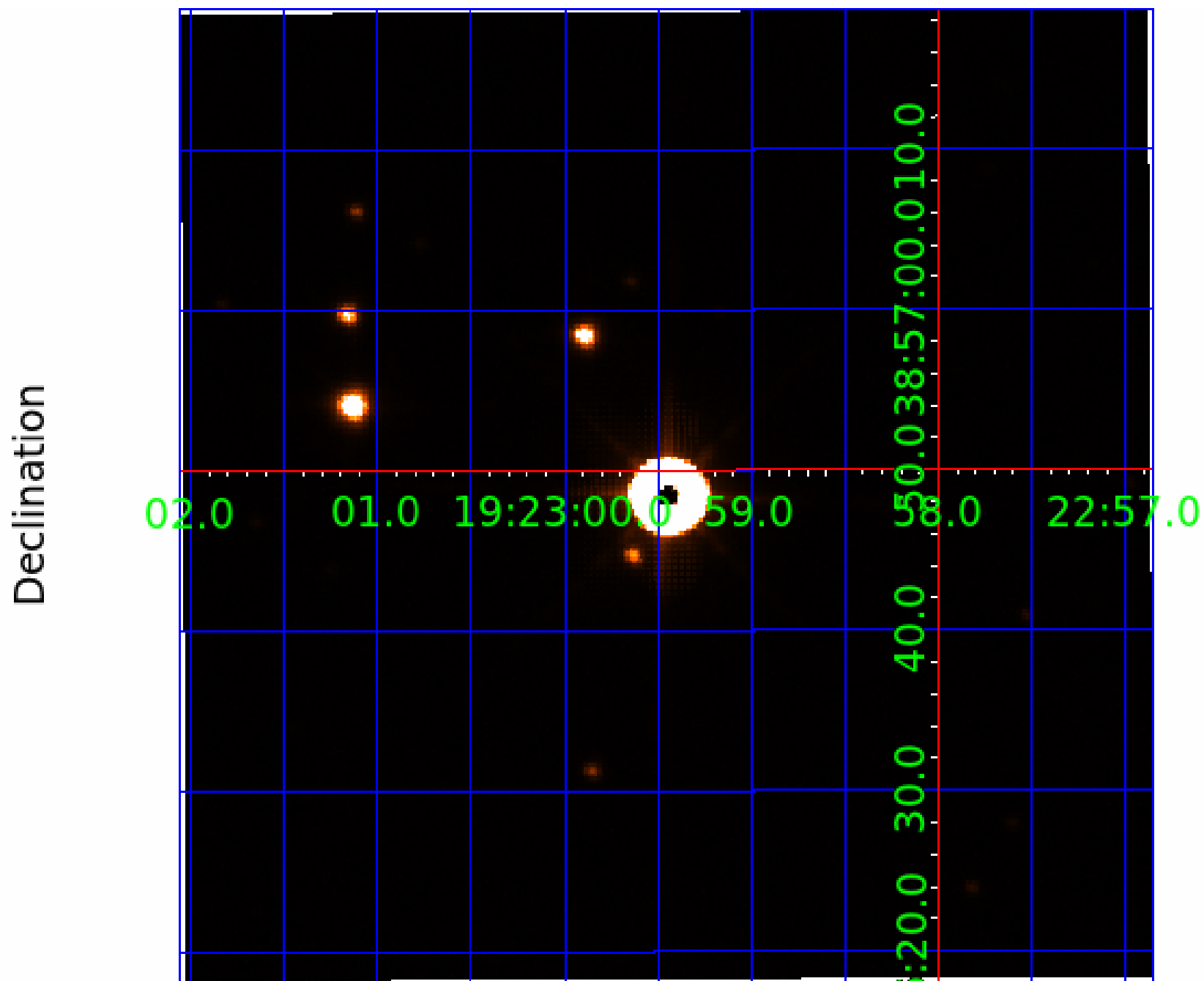
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### fluxWeightedCentroids, Planet 1 of 3



UKIRT Image



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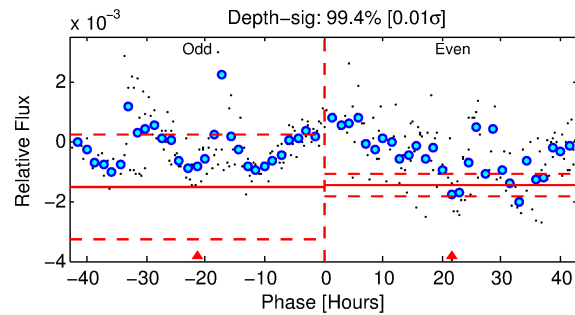
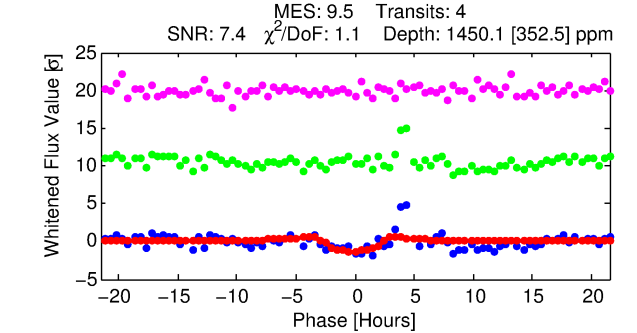
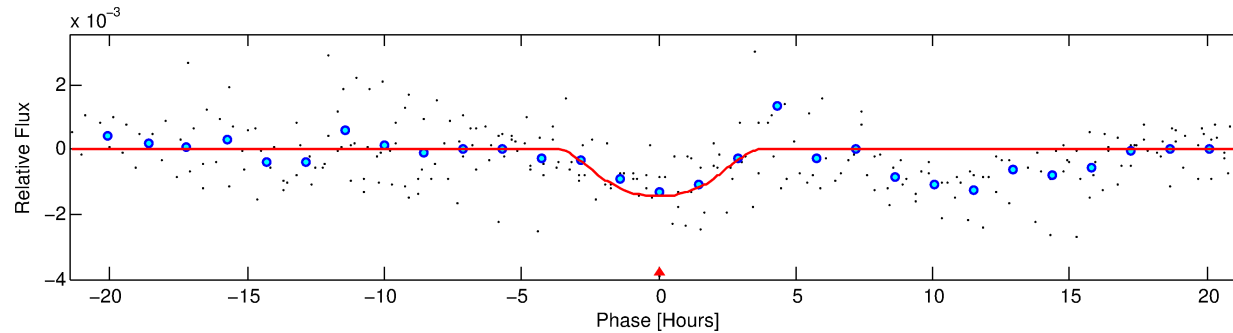
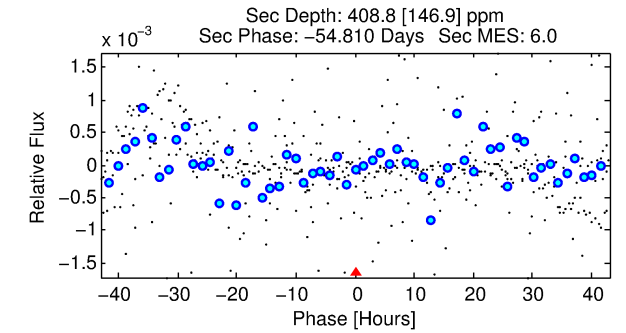
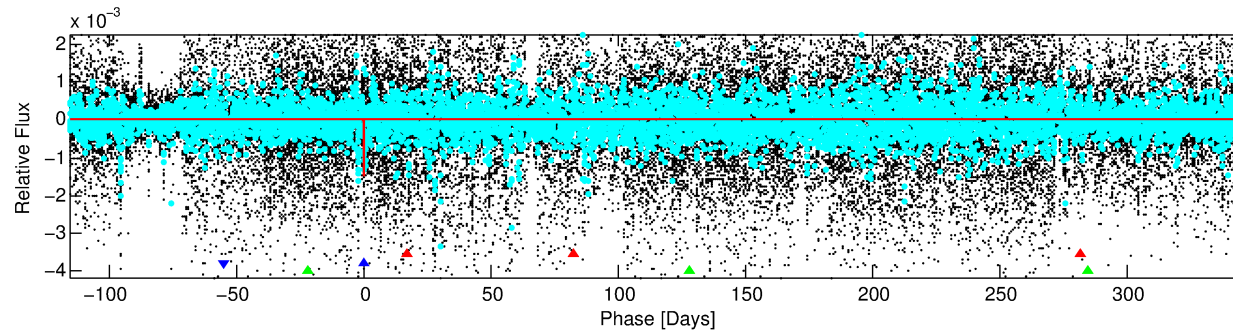
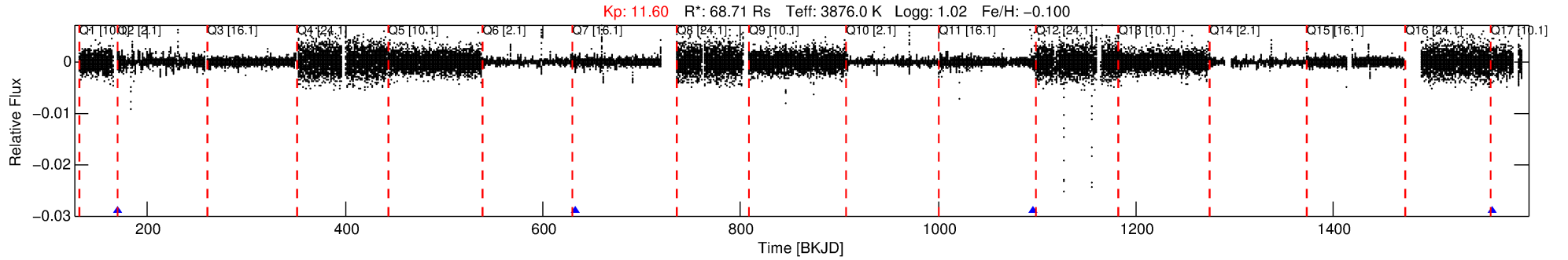
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003847852-02

No Significant Match Found

# DV One-Page Summary

KIC: 3847852 Candidate: 2 of 3 Period: 463.231 d



## DV Fit Results:

Period = 463.23108 [0.01152] d  
Epoch = 170.2666 [0.0177] BKJD  
Rp/R\* = 0.0497 [0.0127]  
a/R\* = 217.51 [44.76]  
b = 0.95 [0.04]  
Seff = 467.78 [87.29]  
Teq = 1186 [55] K  
Rp = 372.99 [125.00] Re  
a = 1.4286 [0.2083] AU  
Ag = 3.30 [2.12] [1.08σ]  
Teffp = 2471 [393] K [3.24σ]

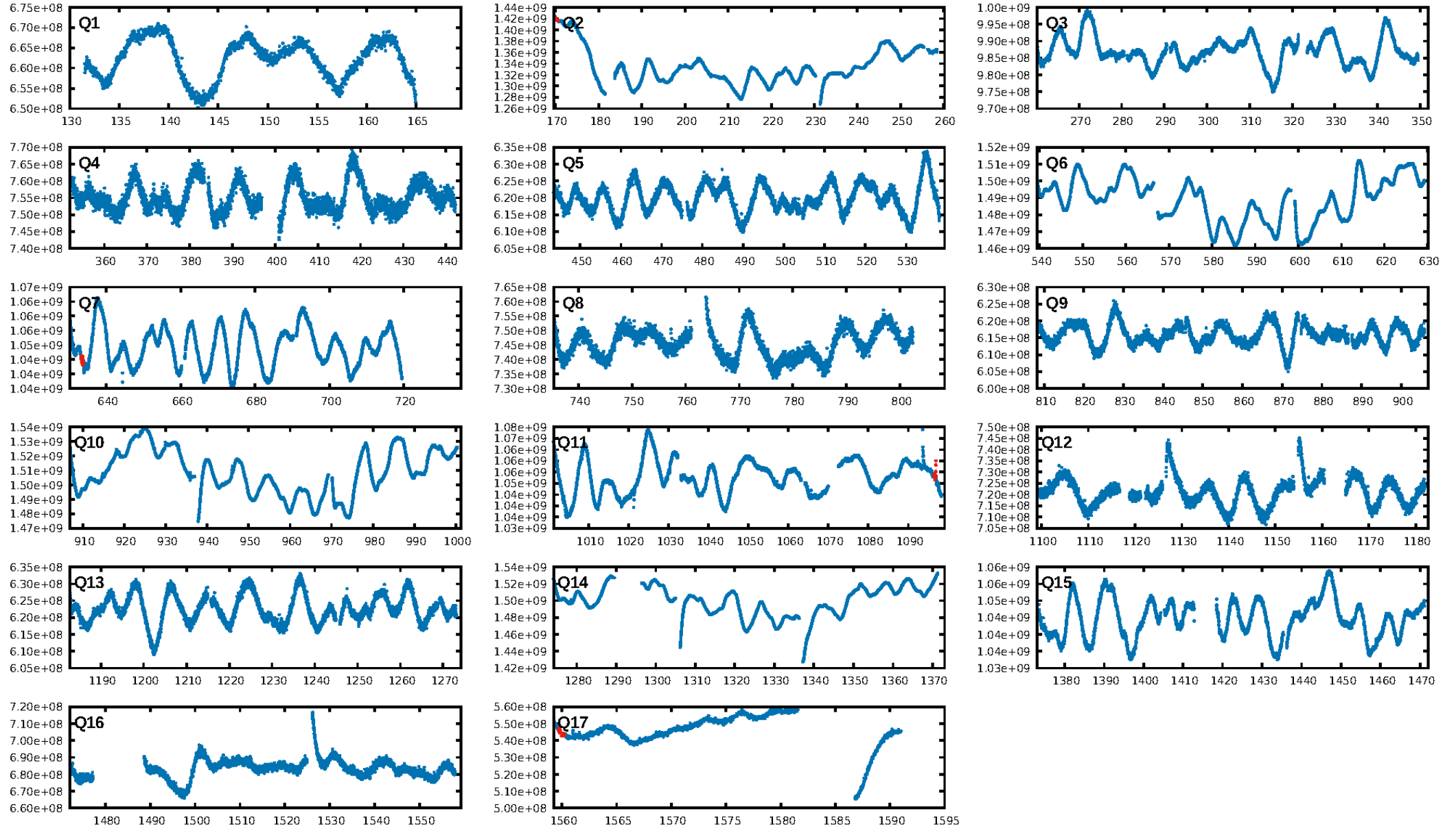
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [466.66σ]  
ModelChiSquare2-sig: 32.1%  
ModelChiSquareGof-sig: 97.9%  
Bootstrap-pfa: 8.61e-05  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -8.529  
Centroid-sig: 0.0%  
Centroid-so: 2.902 arcsec [12.17σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

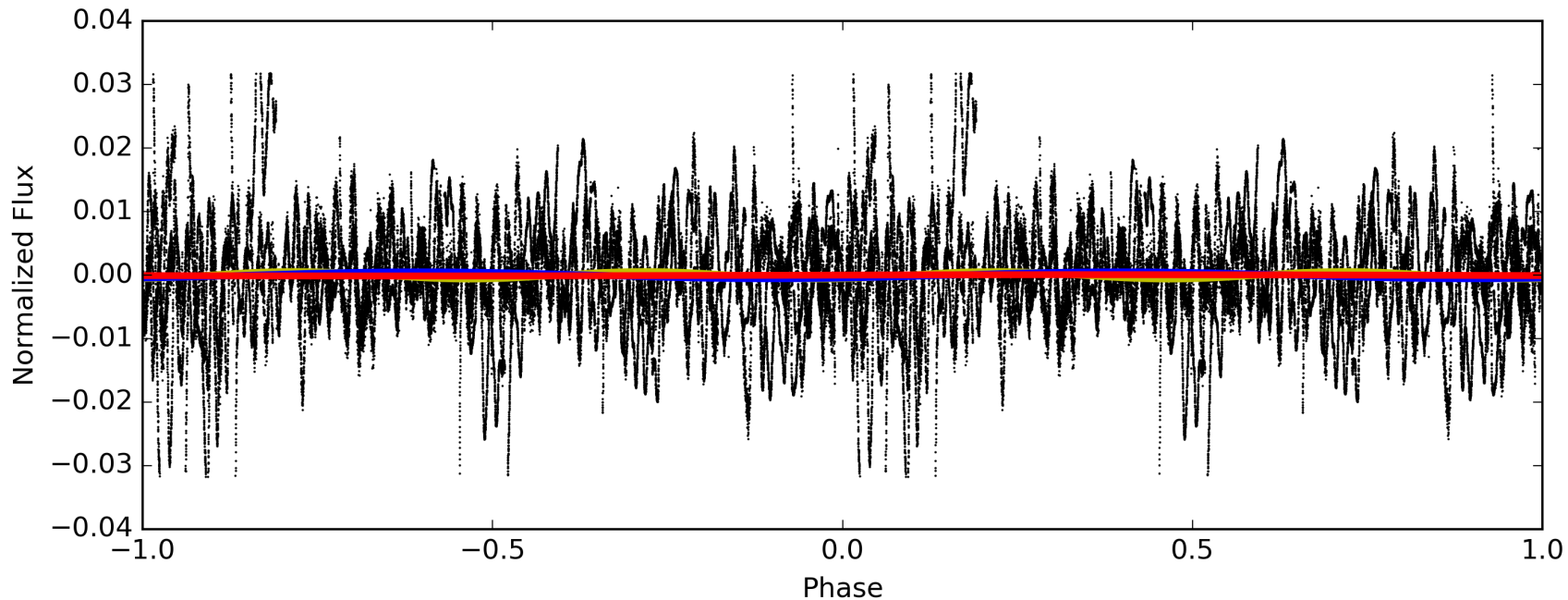
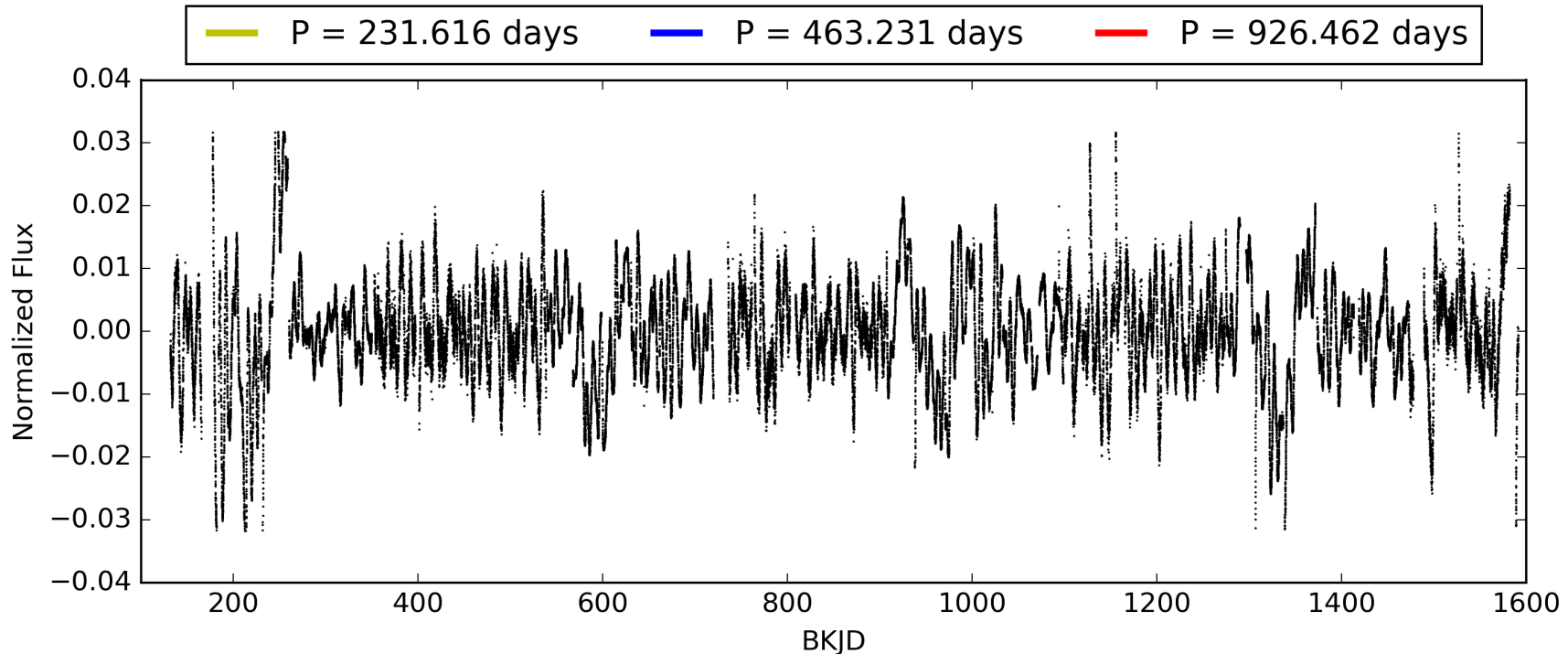
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:13:13 Z

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

# TCE 003847852-02, PDC Light Curves



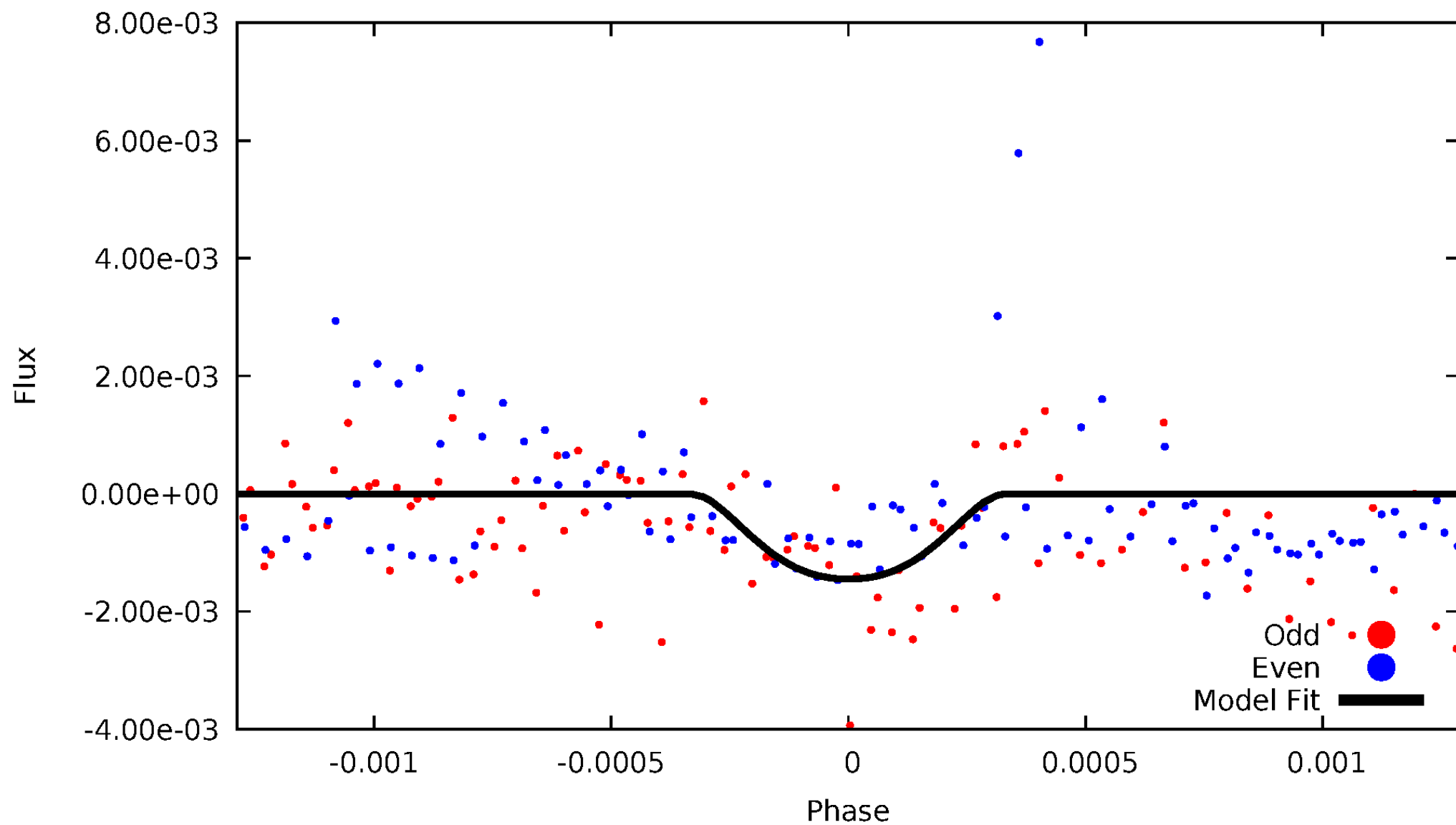
TCE 003847852-02





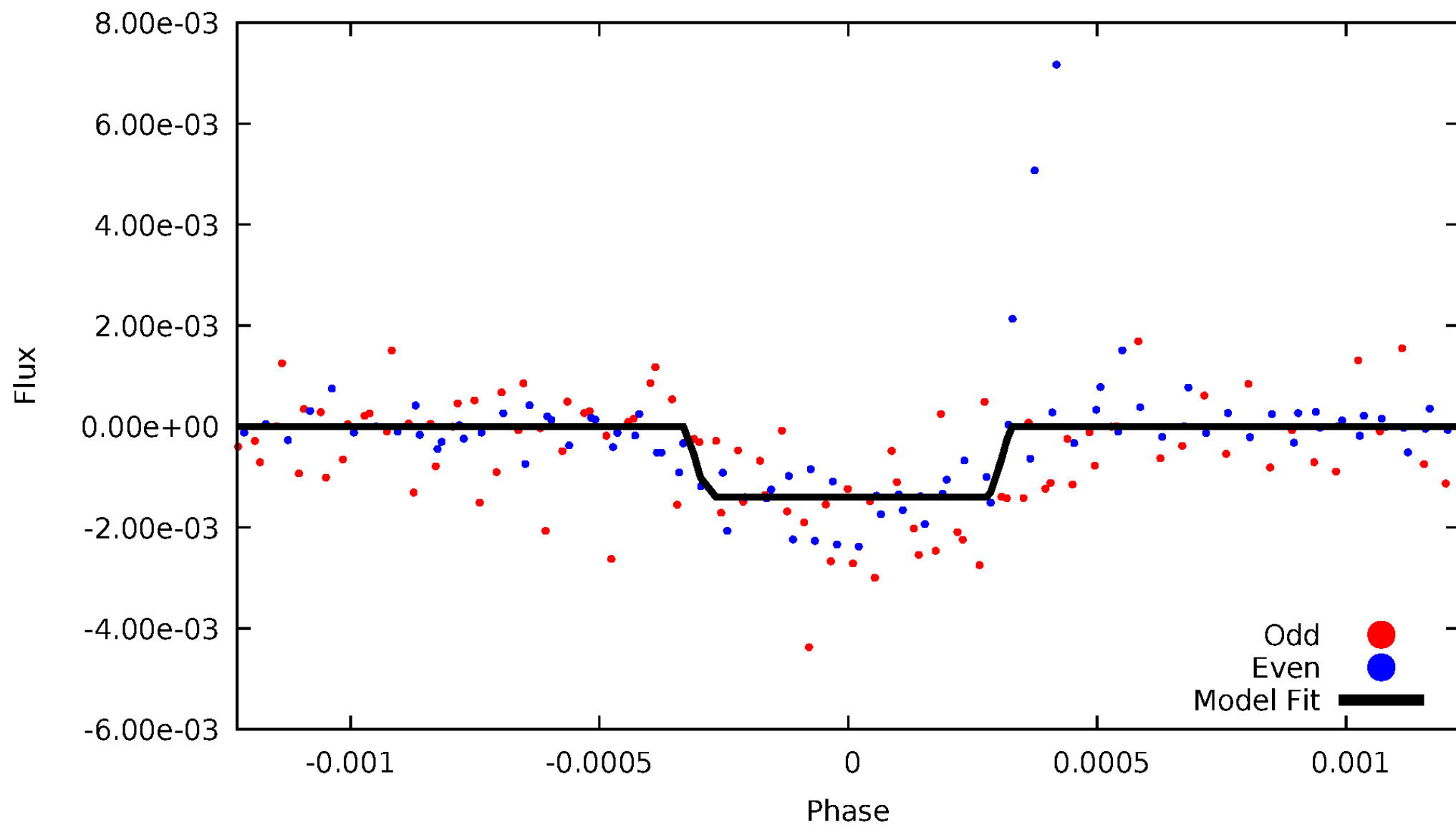
# DV Odd/Even

TCE 003847852-02



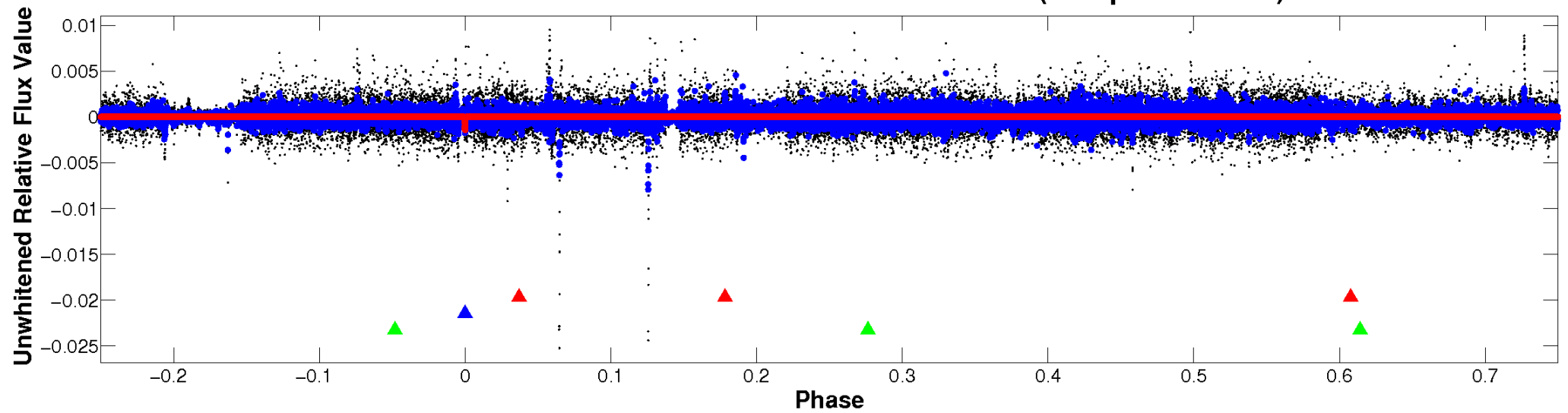
# ALT Odd/Even

TCE 003847852-02

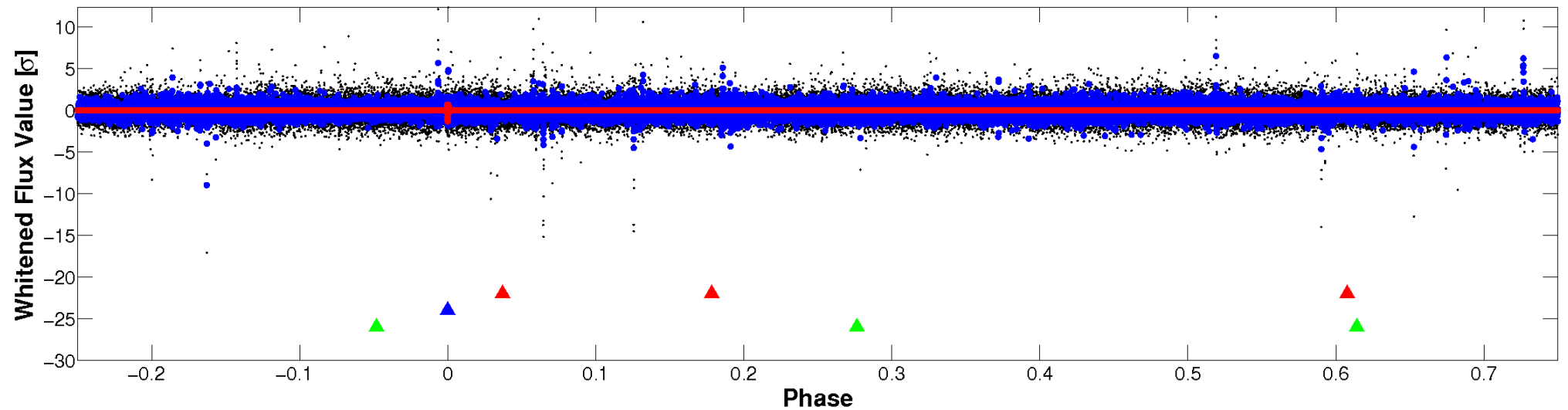


# Non-Whitened Vs. Whitened Light Curve

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

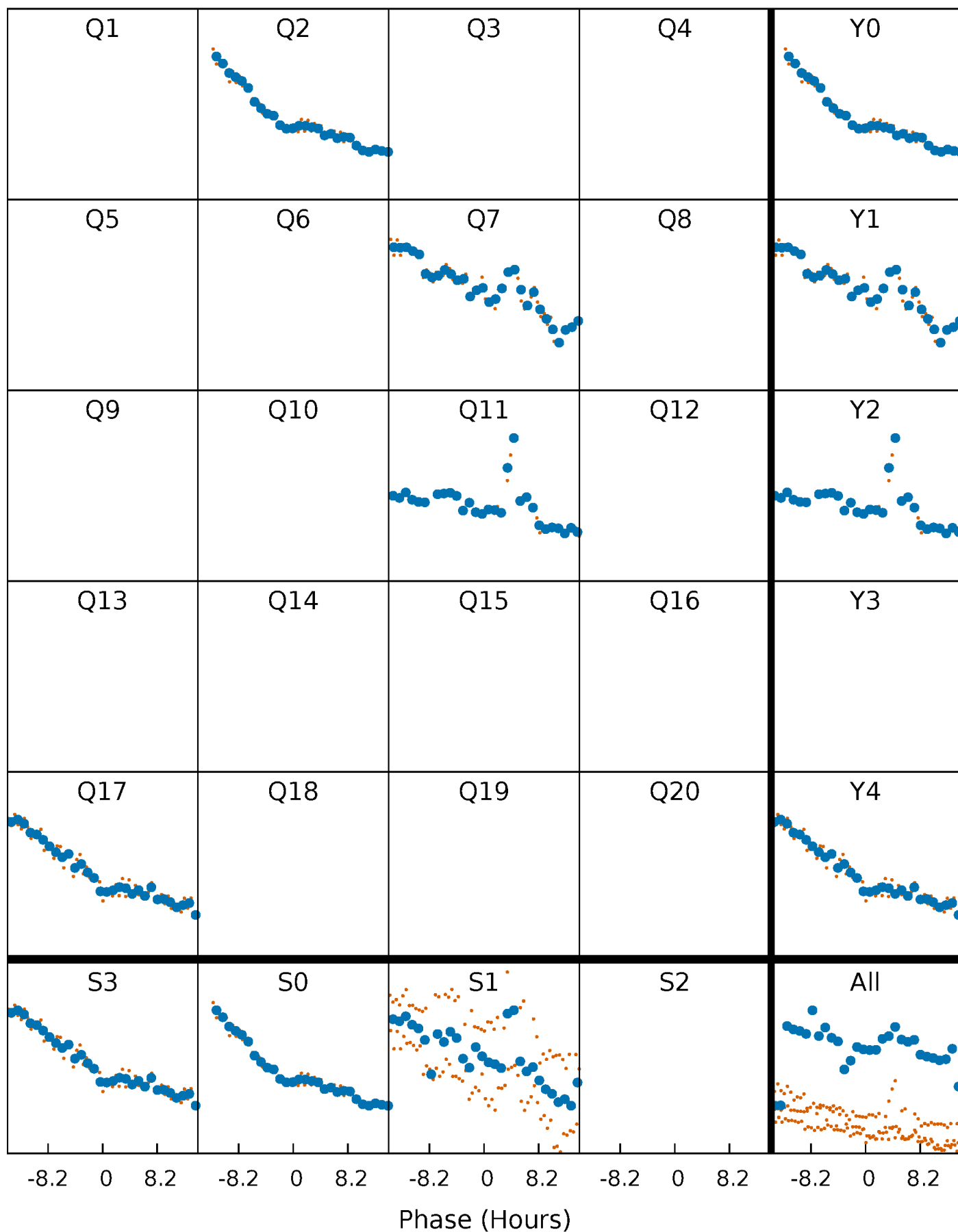


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



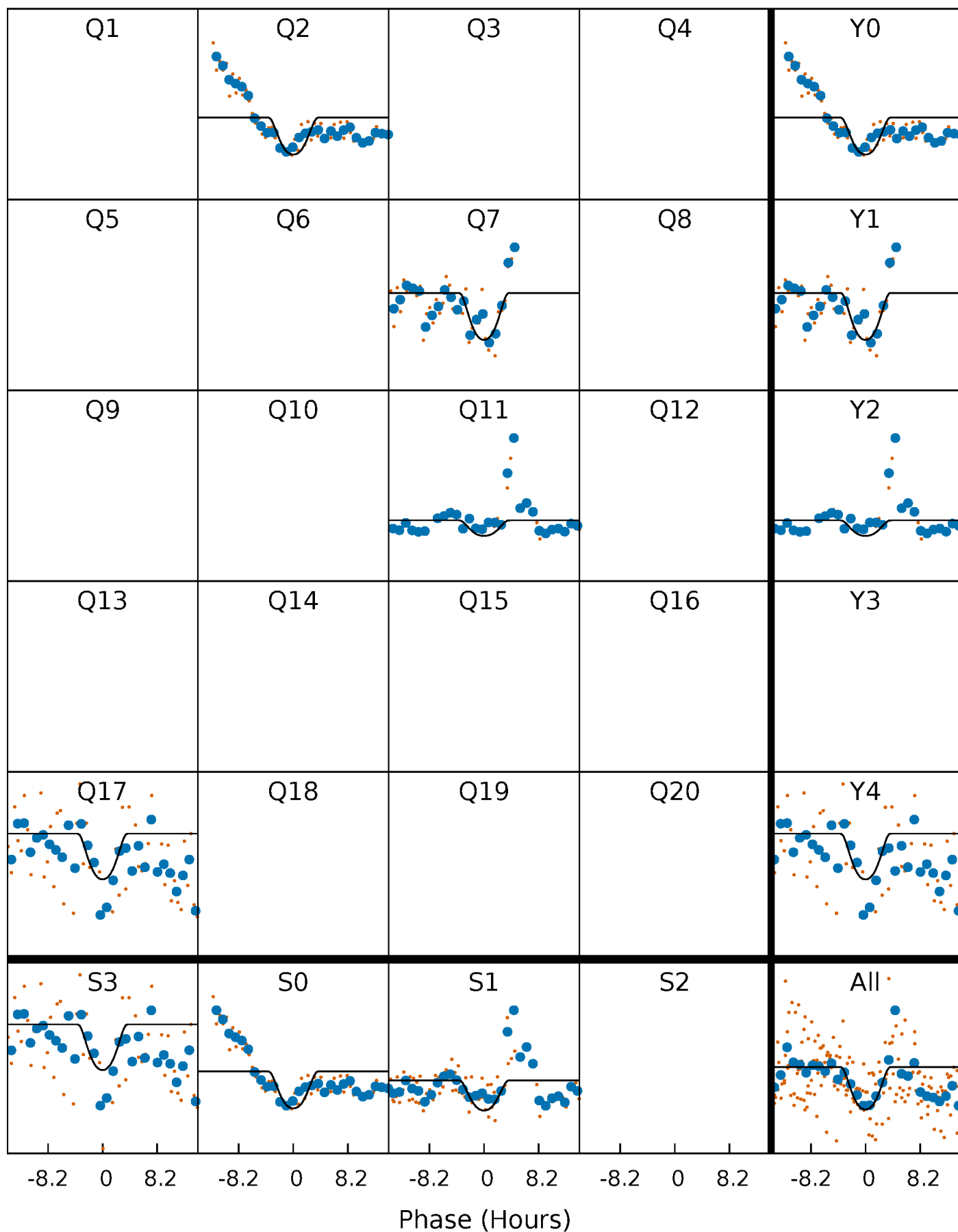
# PDC Quarter-Phased Transit Curves

TCE 003847852-02     $P=463.231081$  Days     $T_0=170.266552$  (BKJD)



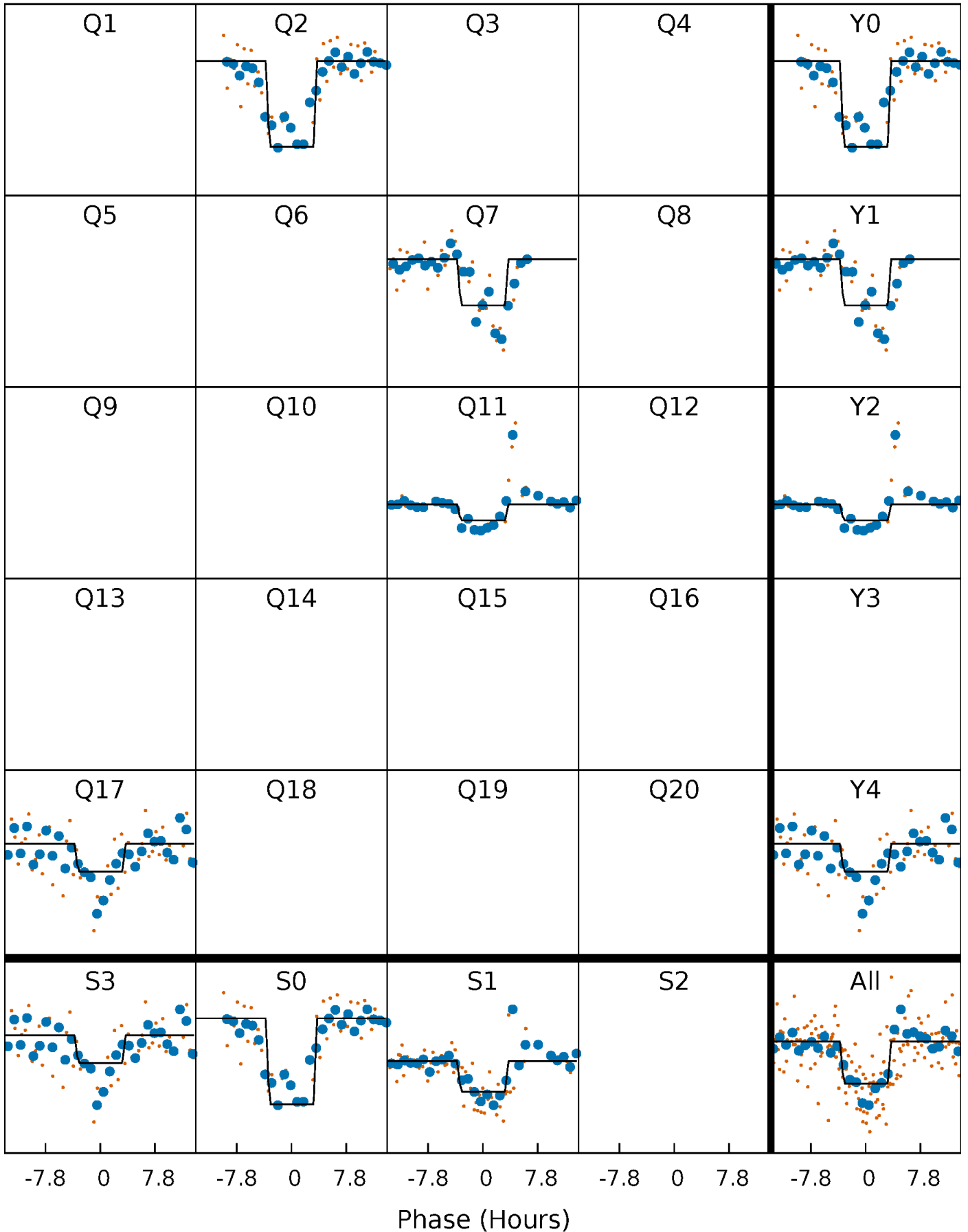
# DV Quarter-Phased Transit Curves

TCE 003847852-02     $P=463.231081$  Days     $T_0=170.266552$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

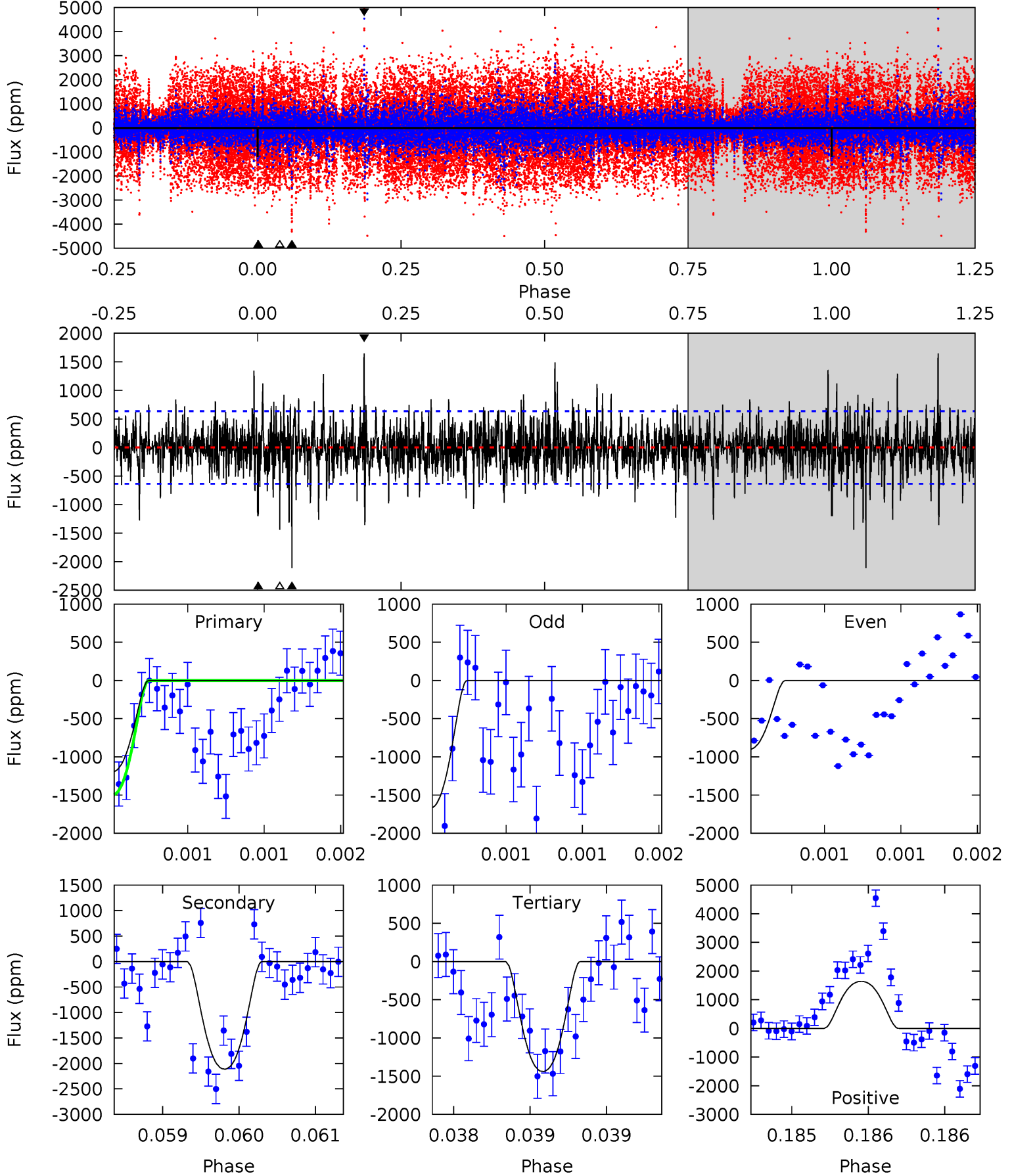
TCE 003847852-02 P=463.276483 Days  $T_0=170.168629$  (BKJD)



# DV Model-Shift Uniqueness Test

003847852-02, P = 463.231081 Days, E = 170.266552 Days

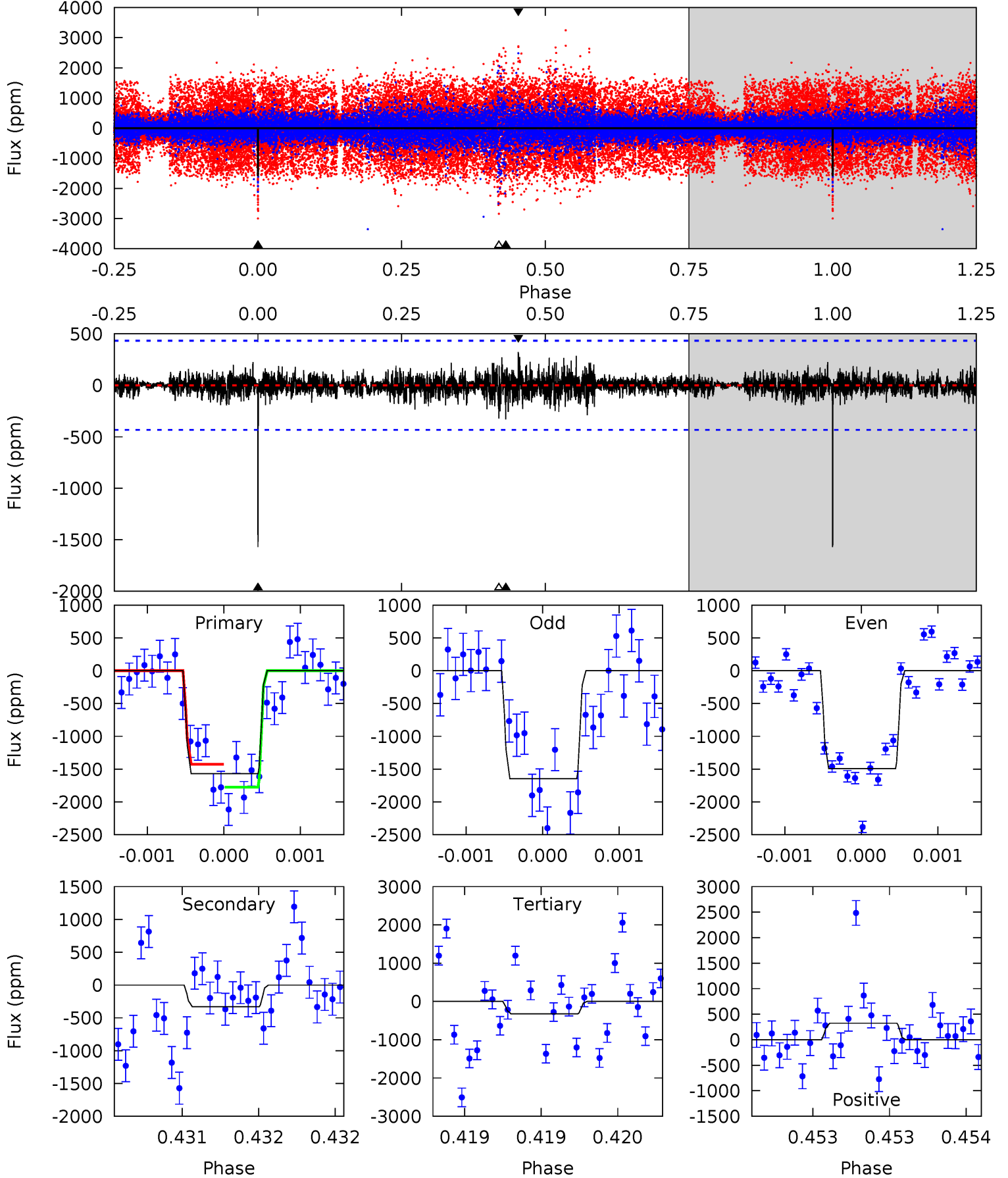
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	18.3	12.5	14.3	5.52	3.39	2.64	-2.06	-3.82	5.84	4.08	3.14	1.02	0.44	2.00



# Alt Model-Shift Uniqueness Test

003847852-02, P = 463.276483 Days, E = 170.168629 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
20.1	4.21	4.10	4.14	5.54	3.42	0.77	16.0	15.9	0.11	0.07	0.91	0.98	0.17	2.18





### Stellar Parameters For KIC 003847852

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3876^{+77}_{-106}$	$1.022^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$68.708^{+2.473}_{-14.841}$	$1.811^{+0.036}_{-0.688}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+200%/-250%	+4%/-22%	+2%/-38%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003847852-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	-2112±115	$376.98^{+98.88}_{-102.72}$	$1658^{+40}_{-48}$	$3734^{+450}_{-278}$	$16^{+14}_{-6}$
Alt.	-329±78	$279.04^{+101.27}_{-103.49}$	$1656^{+42}_{-50}$	$3044^{+443}_{-294}$	$4.616^{+6.421}_{-2.243}$

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

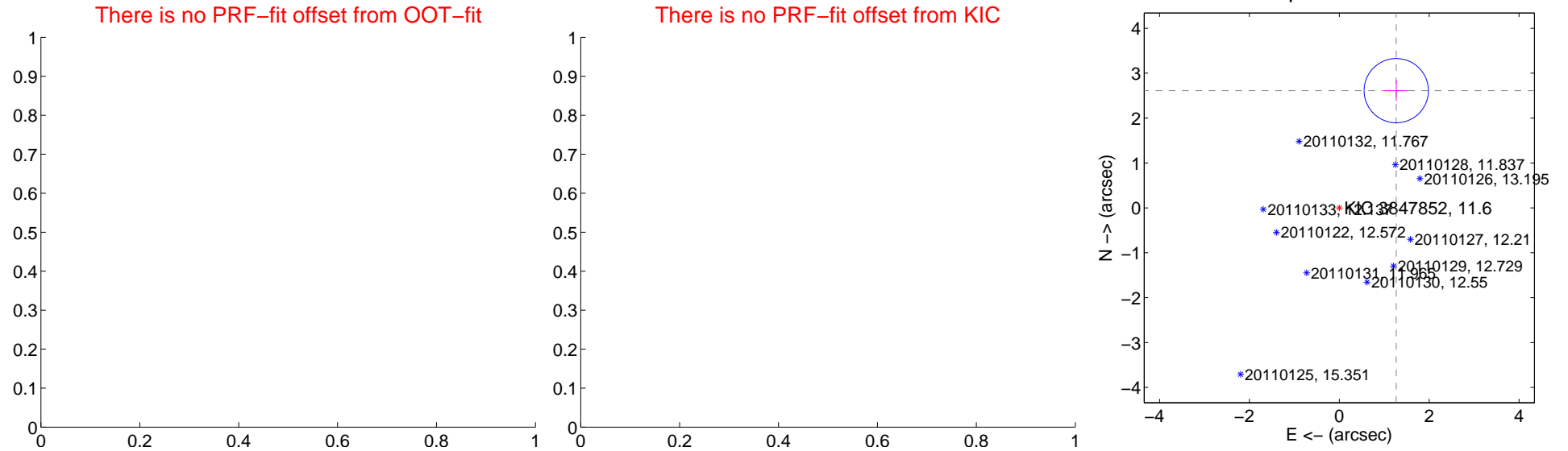
## DV Centroid Data

Supplemental centroid analysis for 003847852-02. **Kepler magnitude: 11.60.** Transit SNR 7.42

**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	—	—	—	—
photometric centroid source offset	<b>2.90 <math>\pm</math> 0.24</b>	<b>12.17</b>	-1.27 $\pm$ 0.26	2.61 $\pm$ 0.23



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.



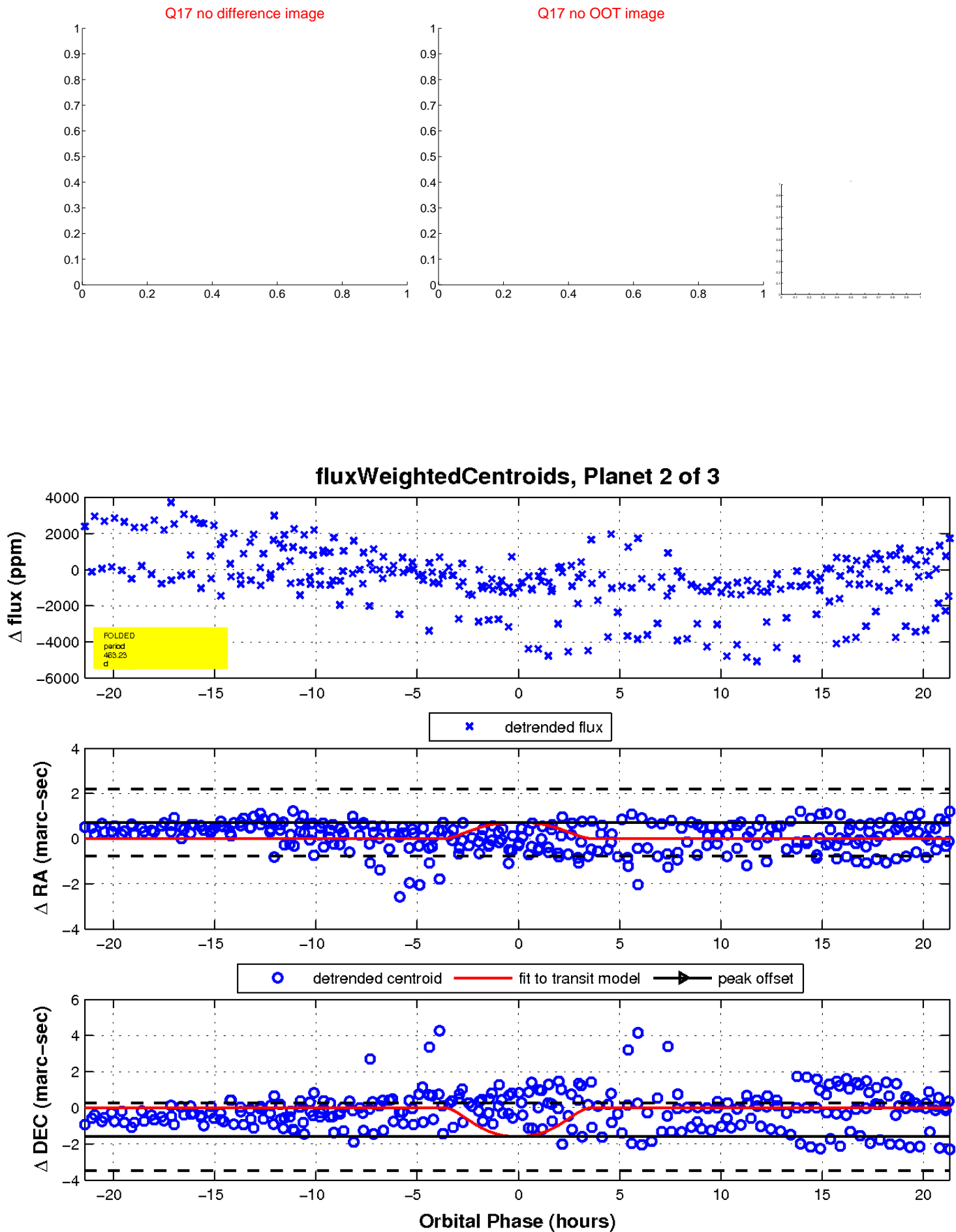
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



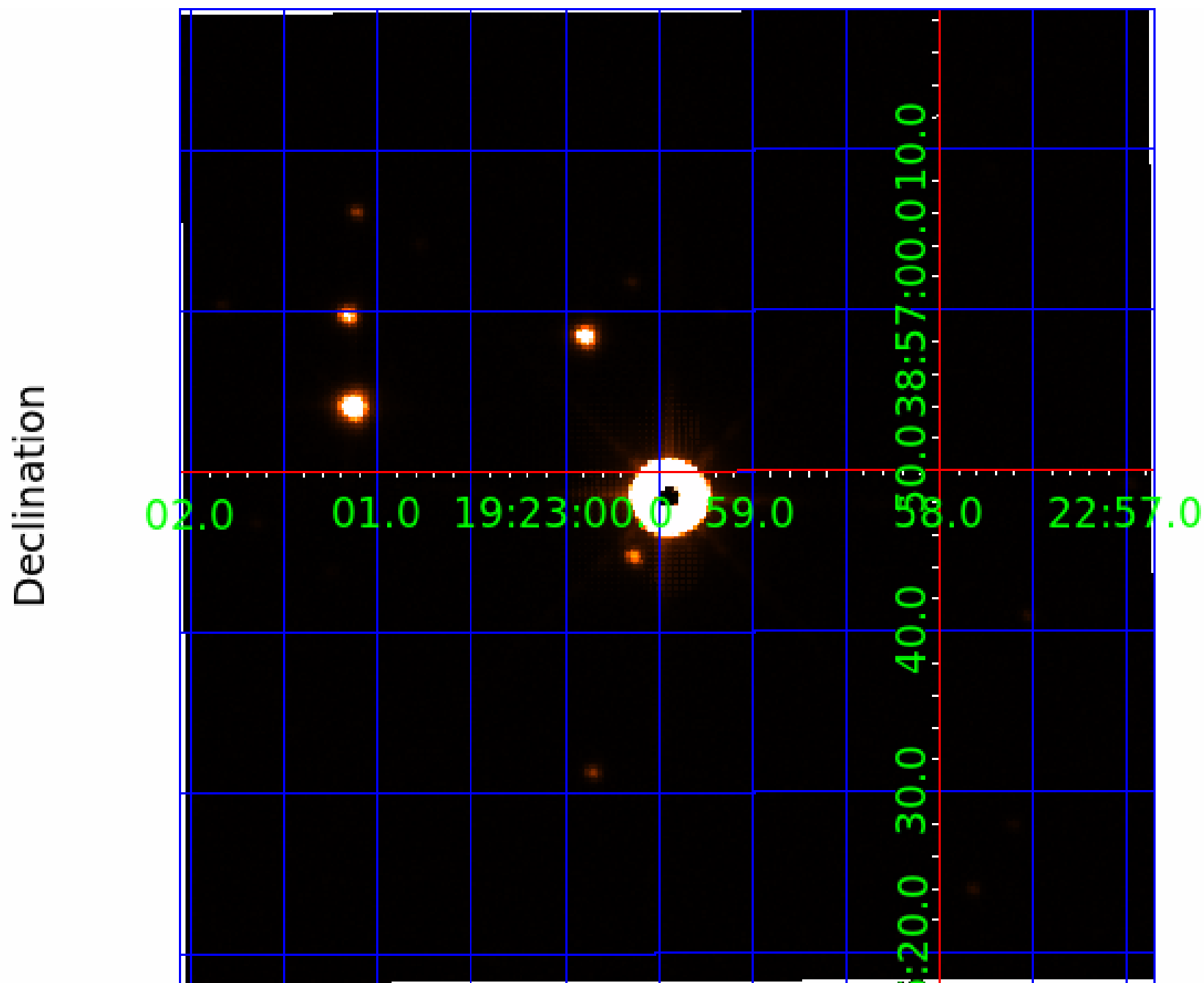
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 003847852

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003847852-01	OBS	No	662.119171	252.884909	994.7	7.357	12.2	7.3	68.71	3876	471.35	290.53
003847852-02	OBS	No	463.231080	170.266552	1450.1	7.163	9.5	7.4	68.71	3876	372.99	467.77
003847852-03	OBS	No	619.675029	298.331687	791.2	3.663	9.4	8.5	68.71	3876	218.80	317.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003847852-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003847852-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003847852-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

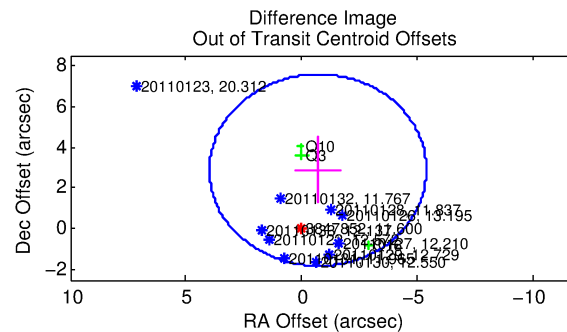
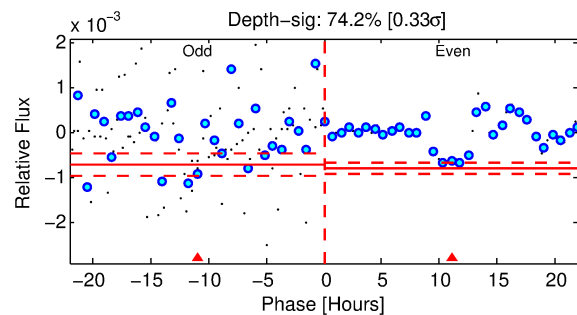
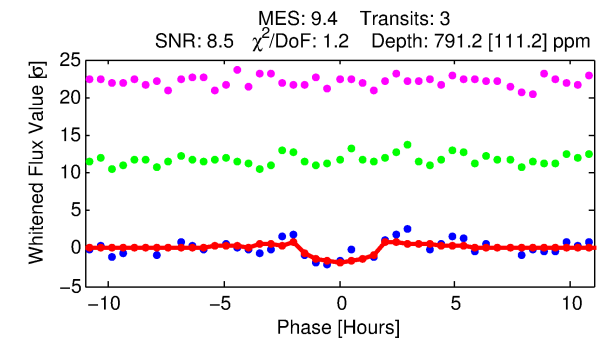
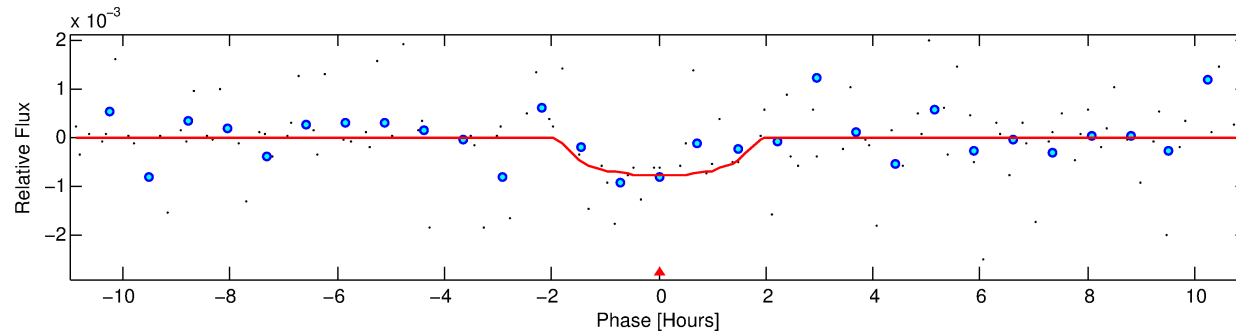
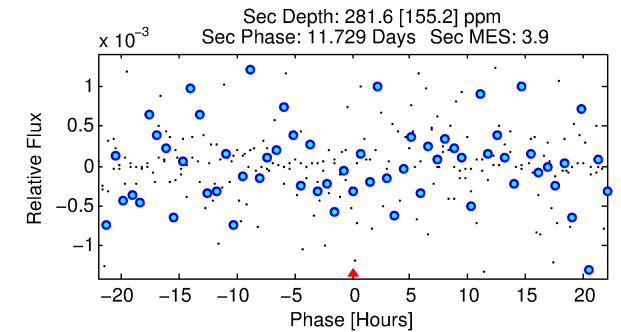
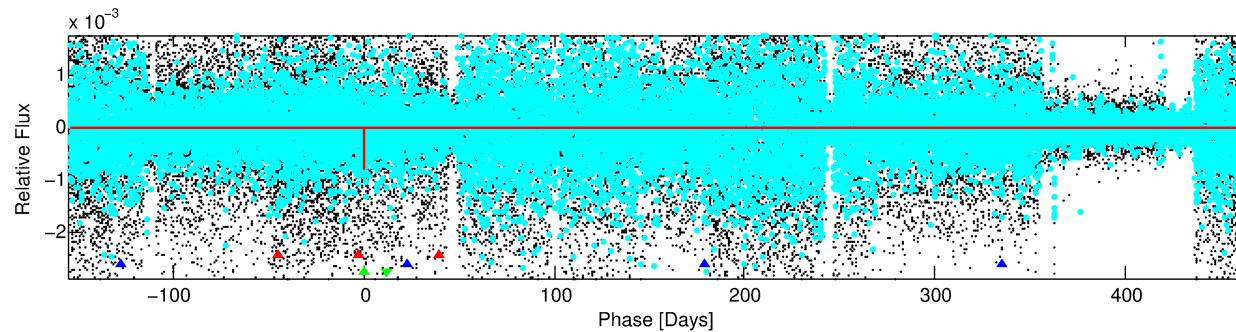
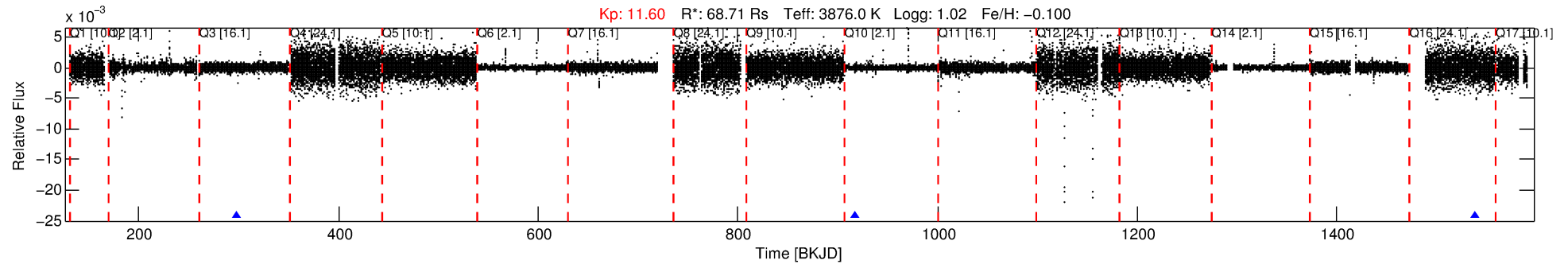
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003847852-03

No Significant Match Found

# DV One-Page Summary

KIC: 3847852 Candidate: 3 of 3 Period: 619.675 d



## DV Fit Results:

Period = 619.67503 [0.01101] d  
Epoch = 298.3317 [0.0101] BKJD  
Rp/R\* = 0.0292 [0.0314]  
a/R\* = 850.42 [2461.68]  
b = 0.79 [1.42]  
Seff = 317.36 [59.22]  
Teq = 1076 [50] K  
Rp = 218.80 [239.81] Re  
a = 1.7344 [0.2529] AU  
Ag = 9.73 [21.65] [0.40σ]  
Teffp = 2939 [1632] K [1.14σ]

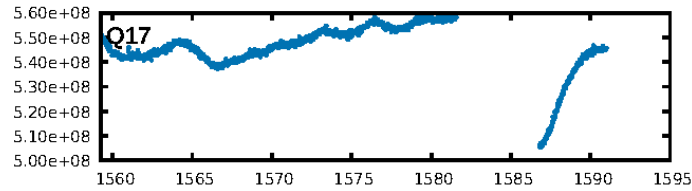
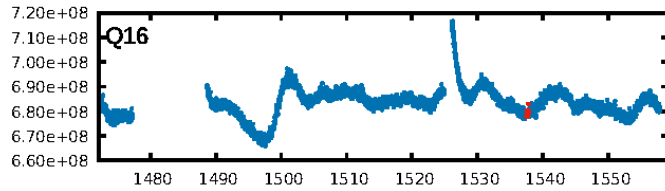
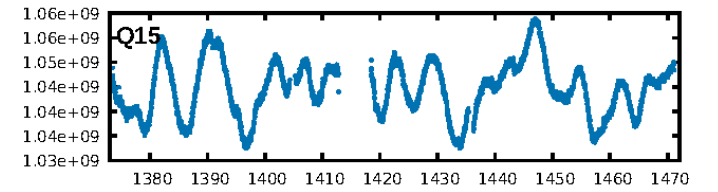
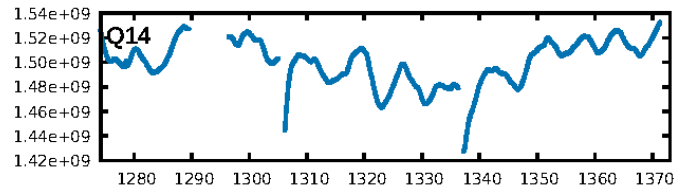
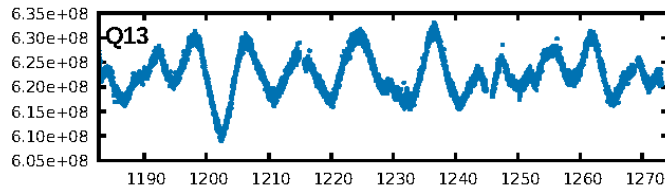
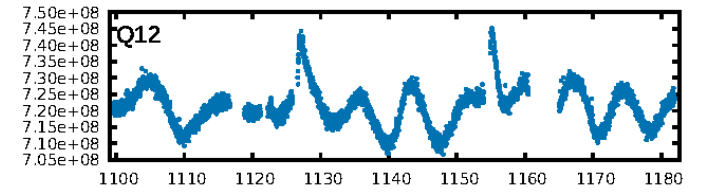
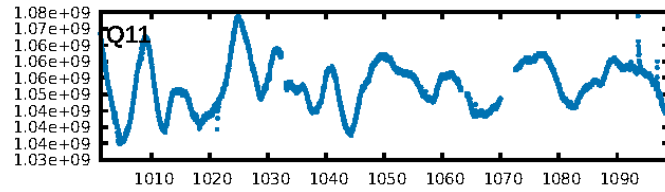
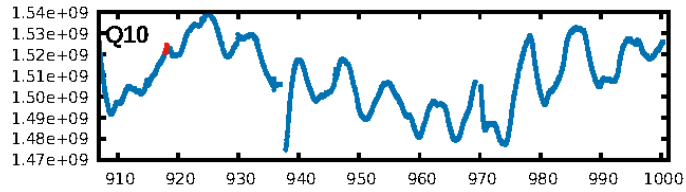
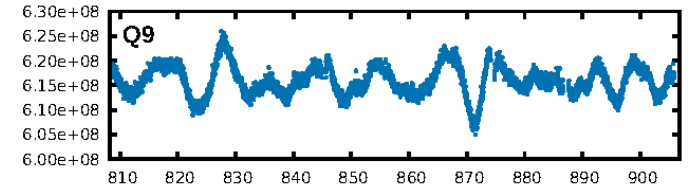
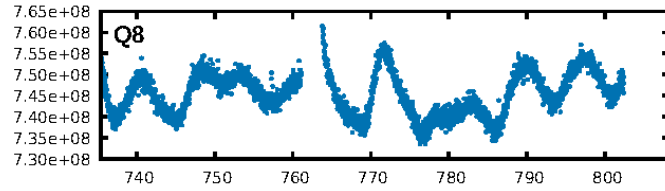
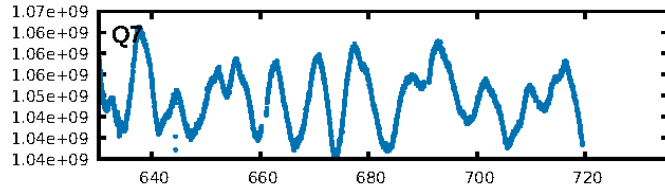
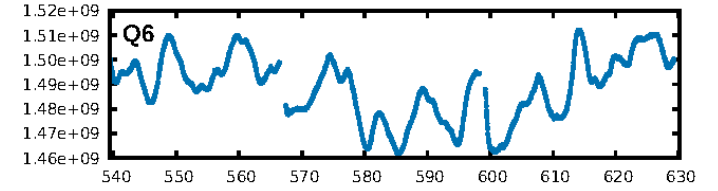
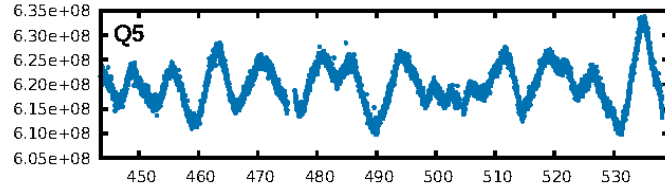
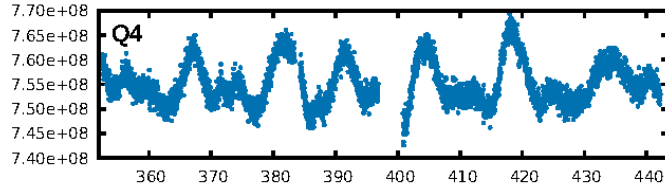
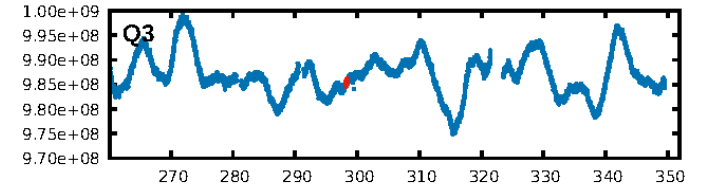
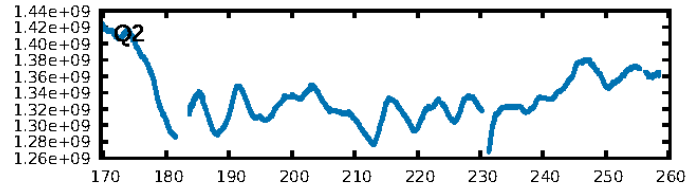
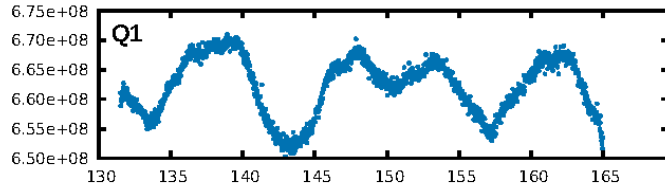
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [466.66σ]  
LongPeriod-sig: 100.0% [123.95σ]  
ModelChiSquare2-sig: 96.6%  
ModelChiSquareGof-sig: 96.4%  
Bootstrap-pfa: 5.28e-06  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.031  
Centroid-sig: 13.2%  
Centroid-so: 1.296 arcsec [3.14σ]  
OotOffset-rm: 2.964 arcsec [1.90σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-rm: 2.299 arcsec [1.26σ]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

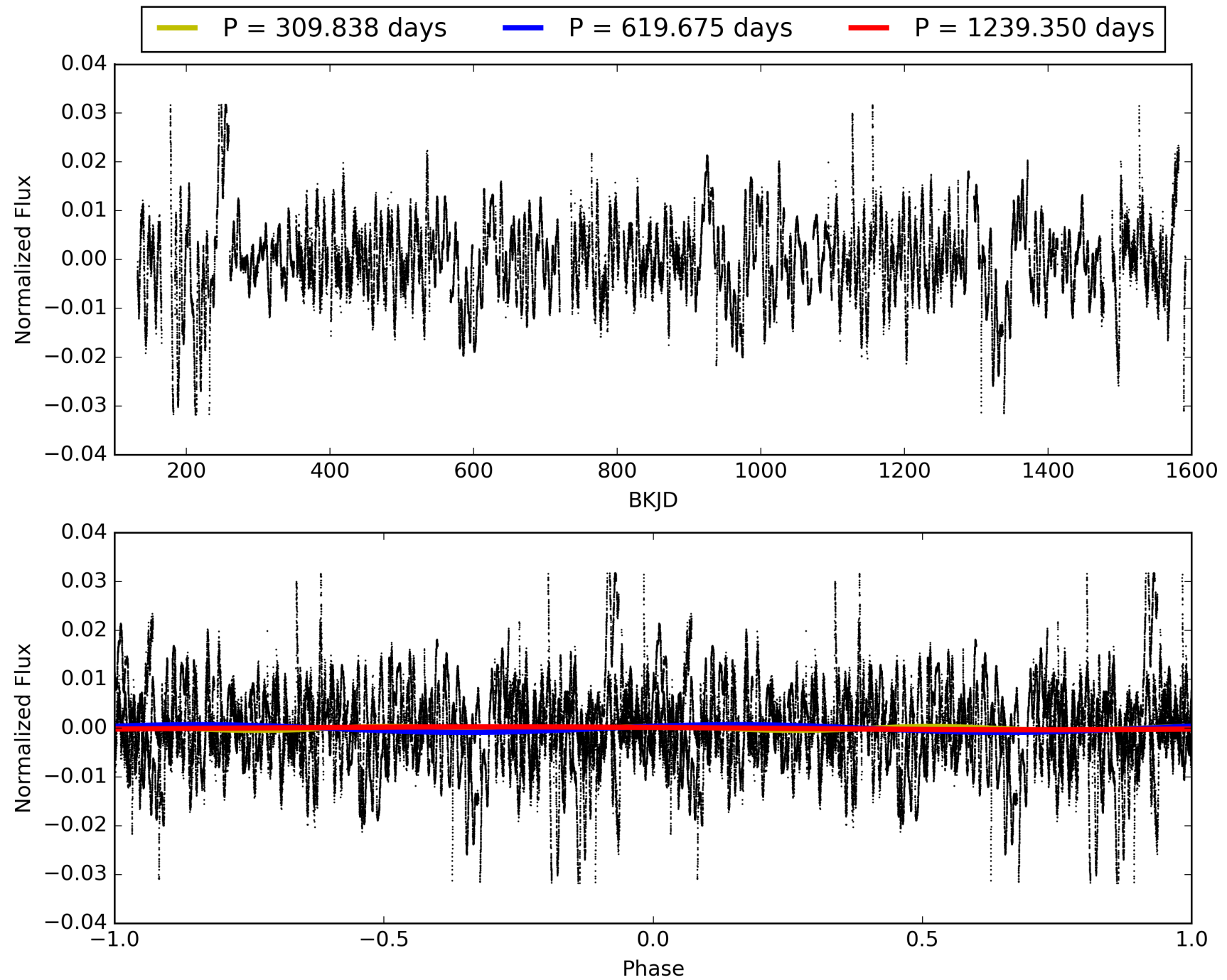
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 07:13:36 Z

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

# TCE 003847852-03, PDC Light Curves

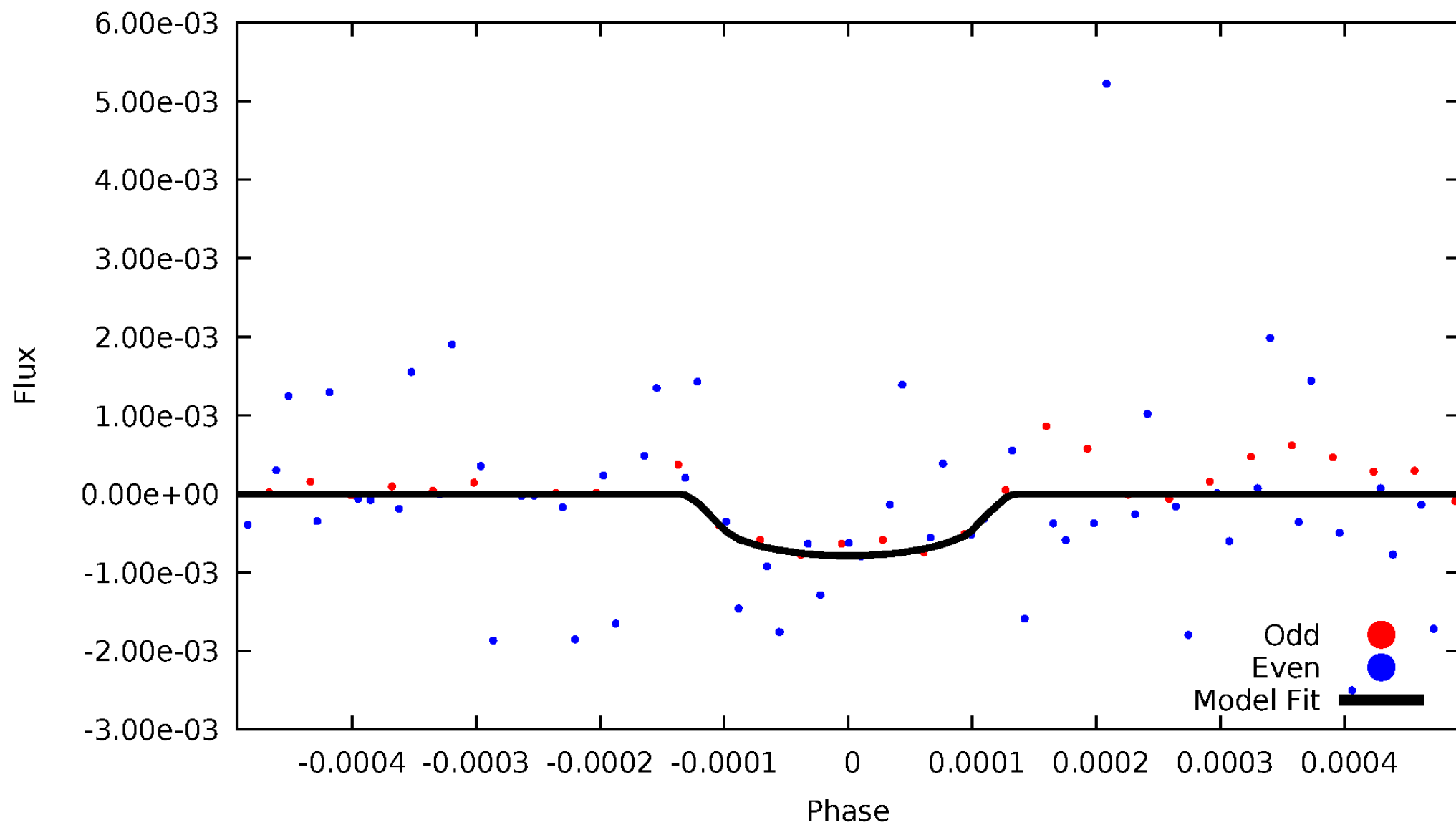


# TCE 003847852-03



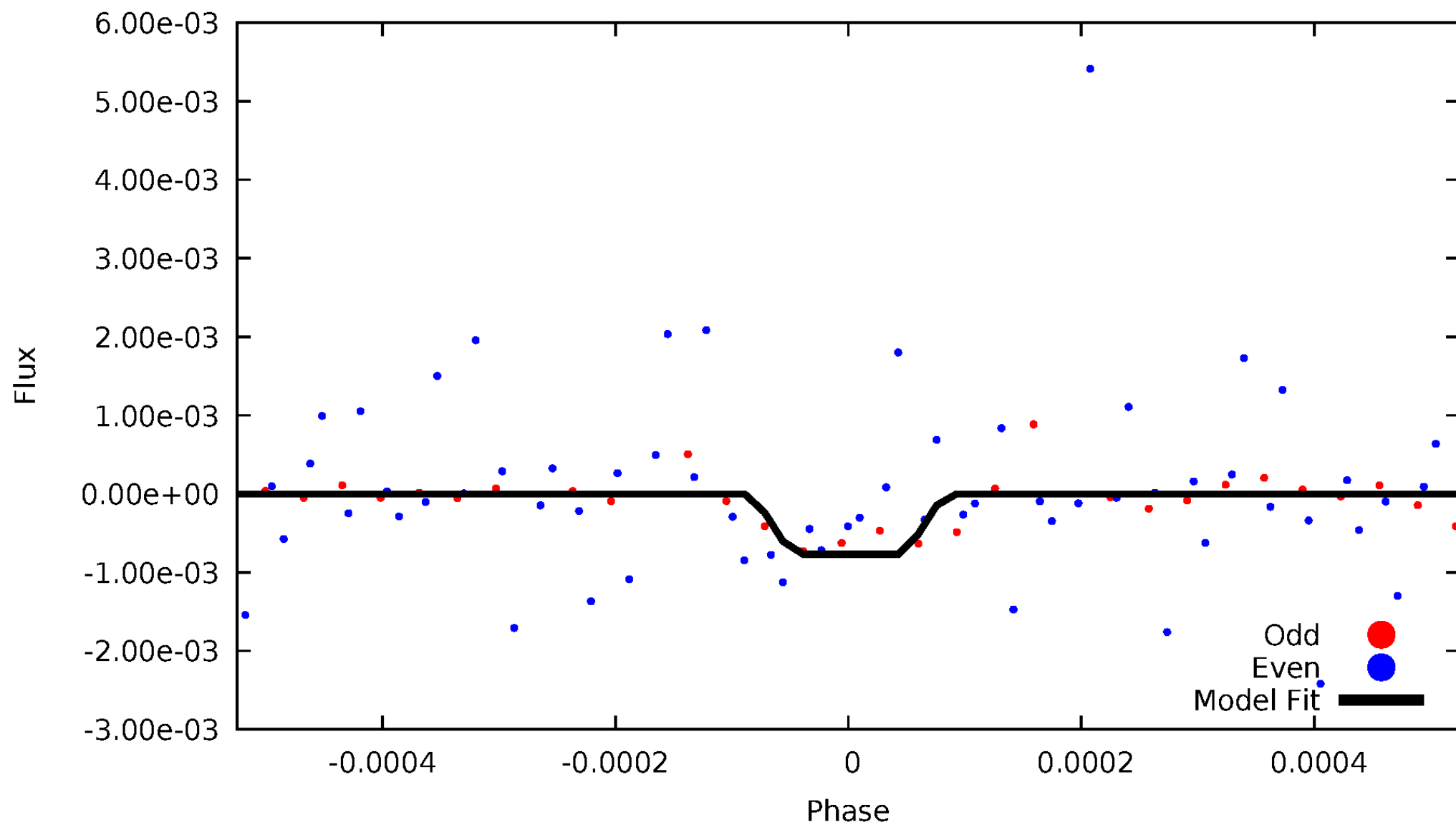
# DV Odd/Even

TCE 003847852-03



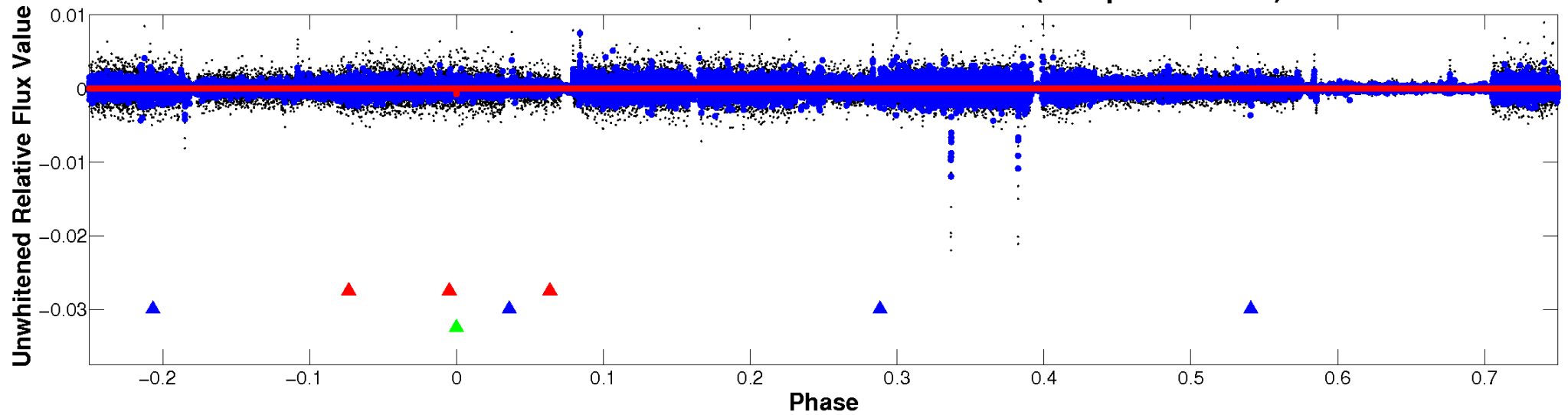
# ALT Odd/Even

TCE 003847852-03

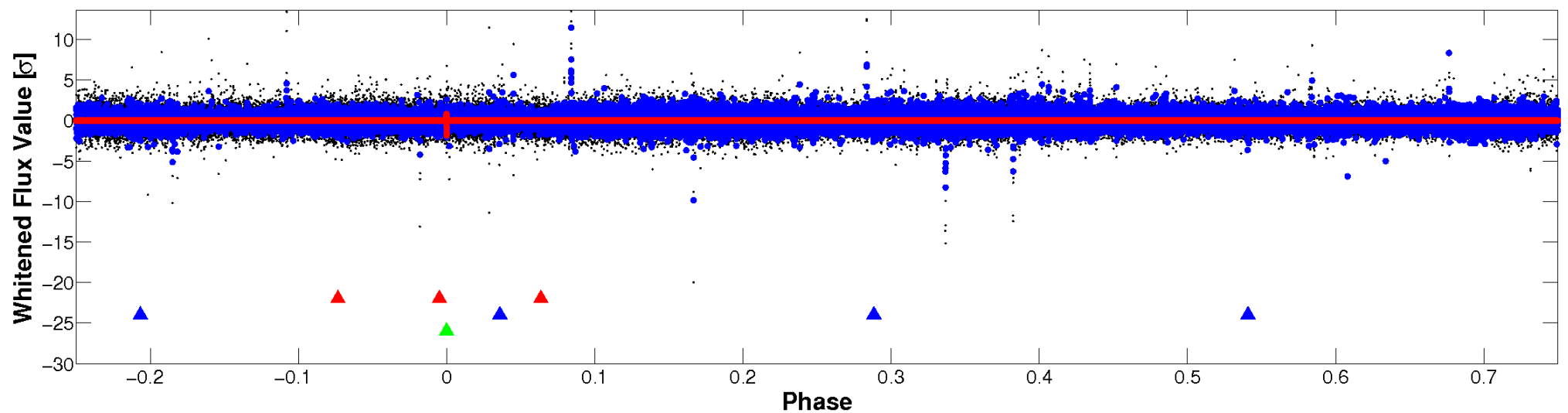


# Non-Whitened Vs. Whitened Light Curve

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

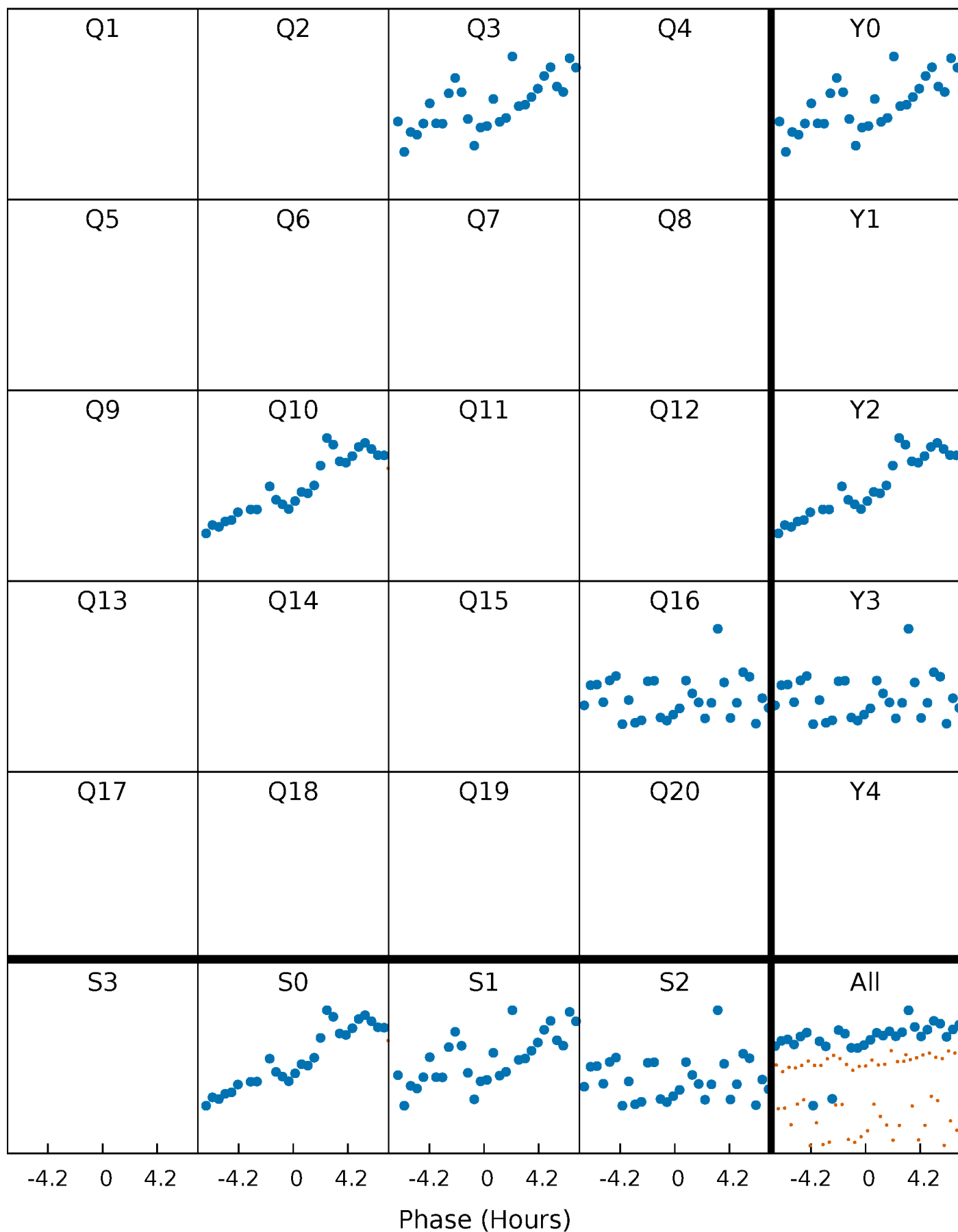


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

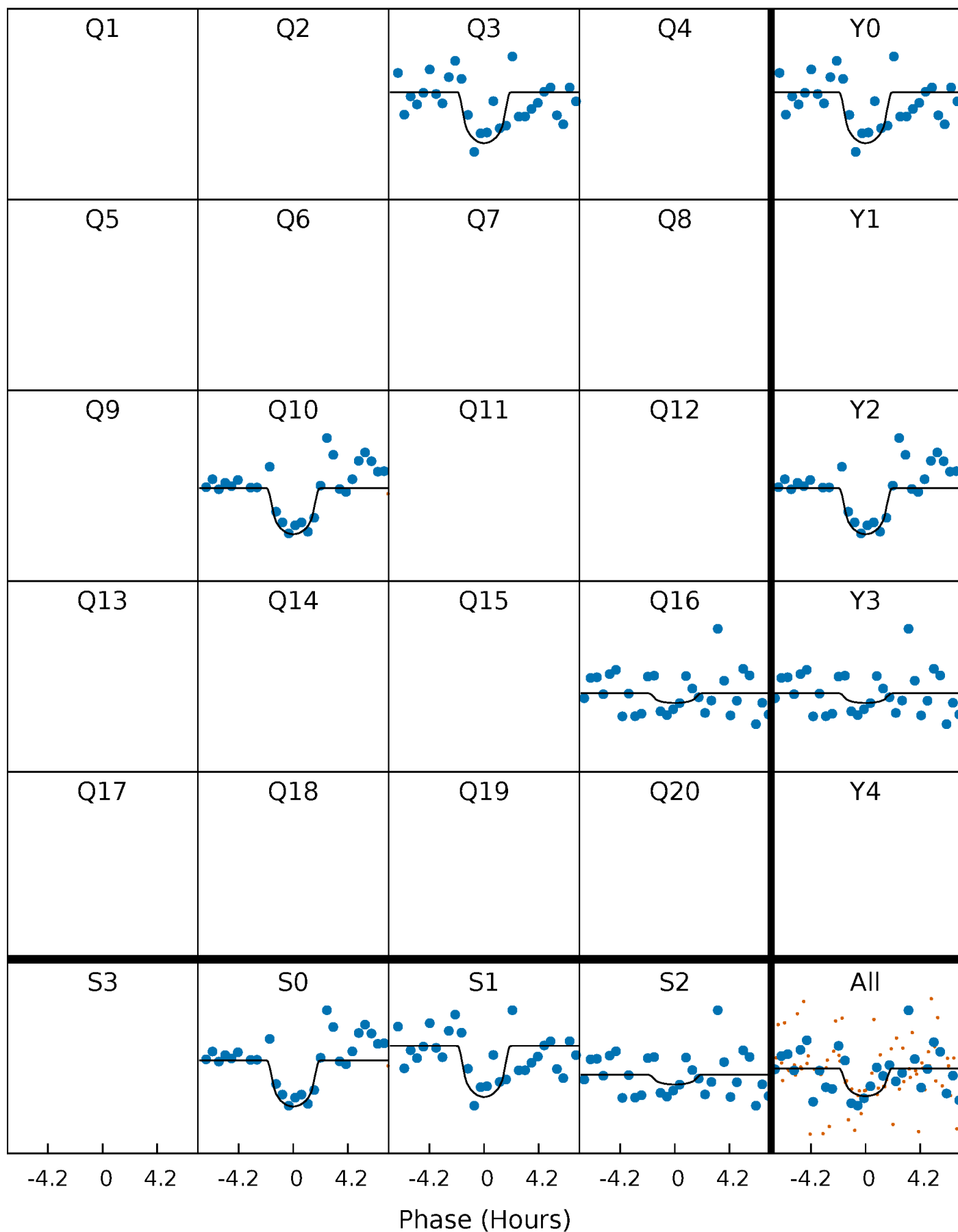
TCE 003847852-03 P=619.675029 Days  $T_0=298.331686$  (BKJD)





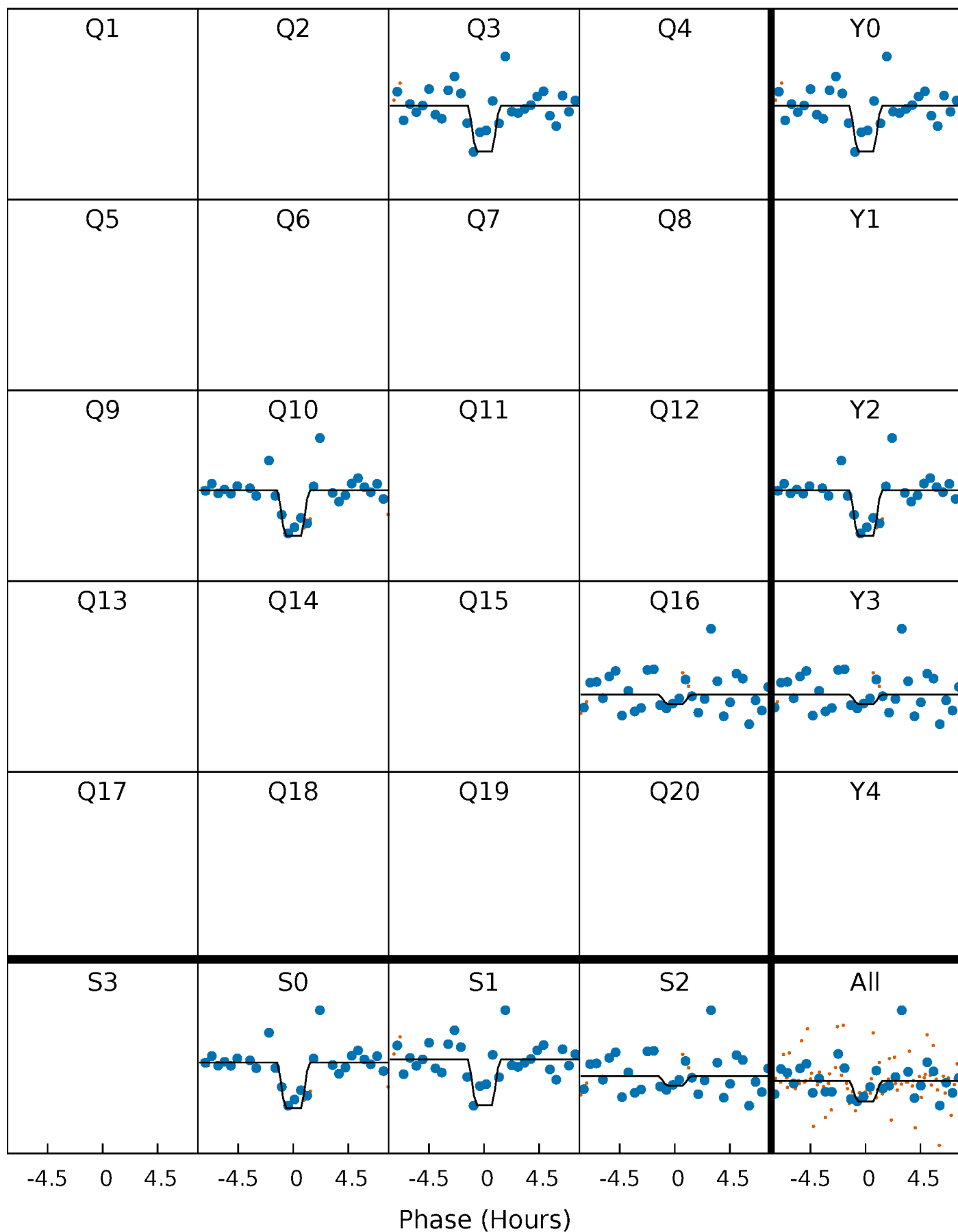
# DV Quarter-Phased Transit Curves

TCE 003847852-03     $P=619.675029$  Days     $T_0=298.331686$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

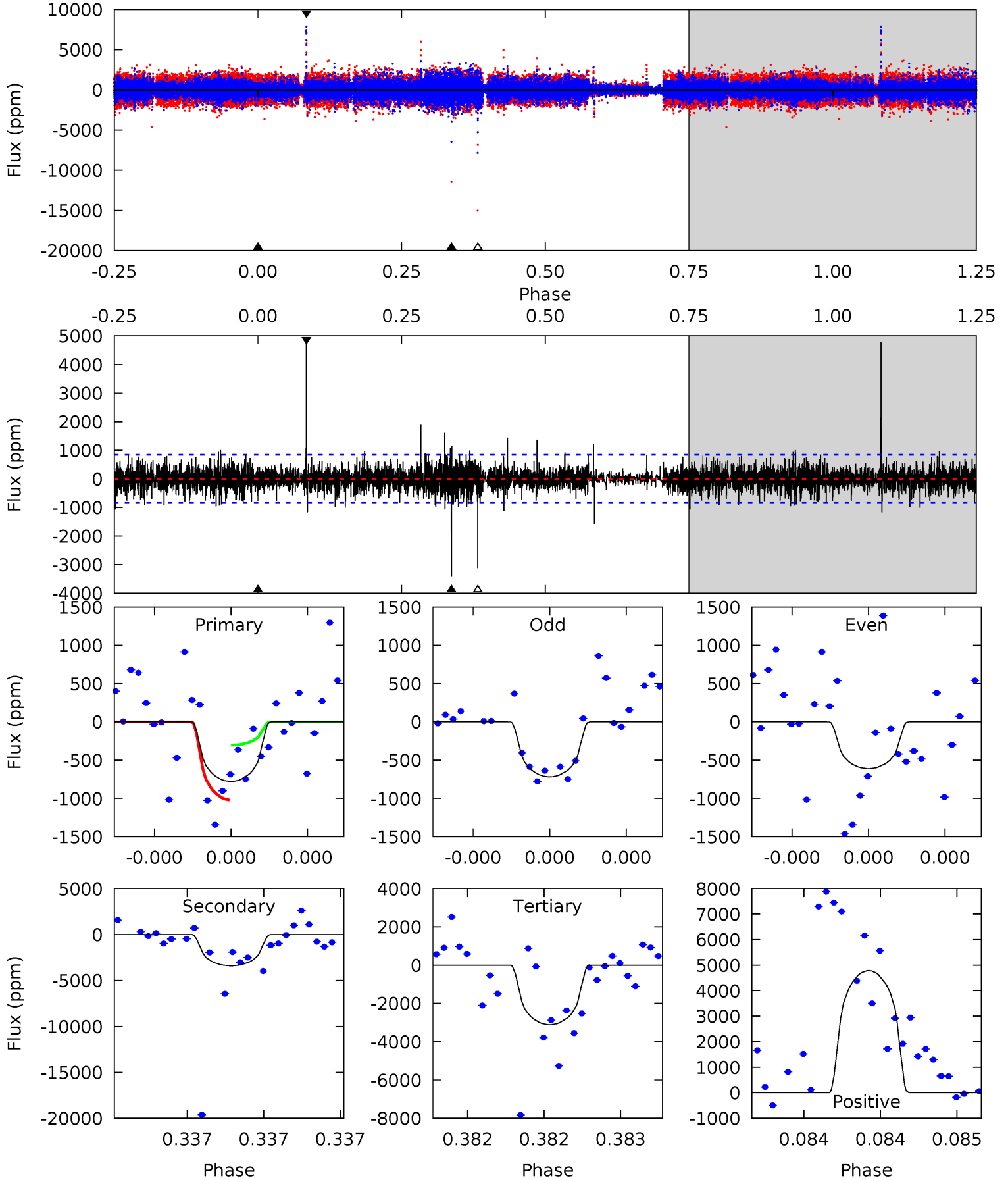
TCE 003847852-03 P=619.674952 Days  $T_0=298.332179$  (BKJD)



# DV Model-Shift Uniqueness Test

003847852-03, P = 619.675029 Days, E = 298.331686 Days

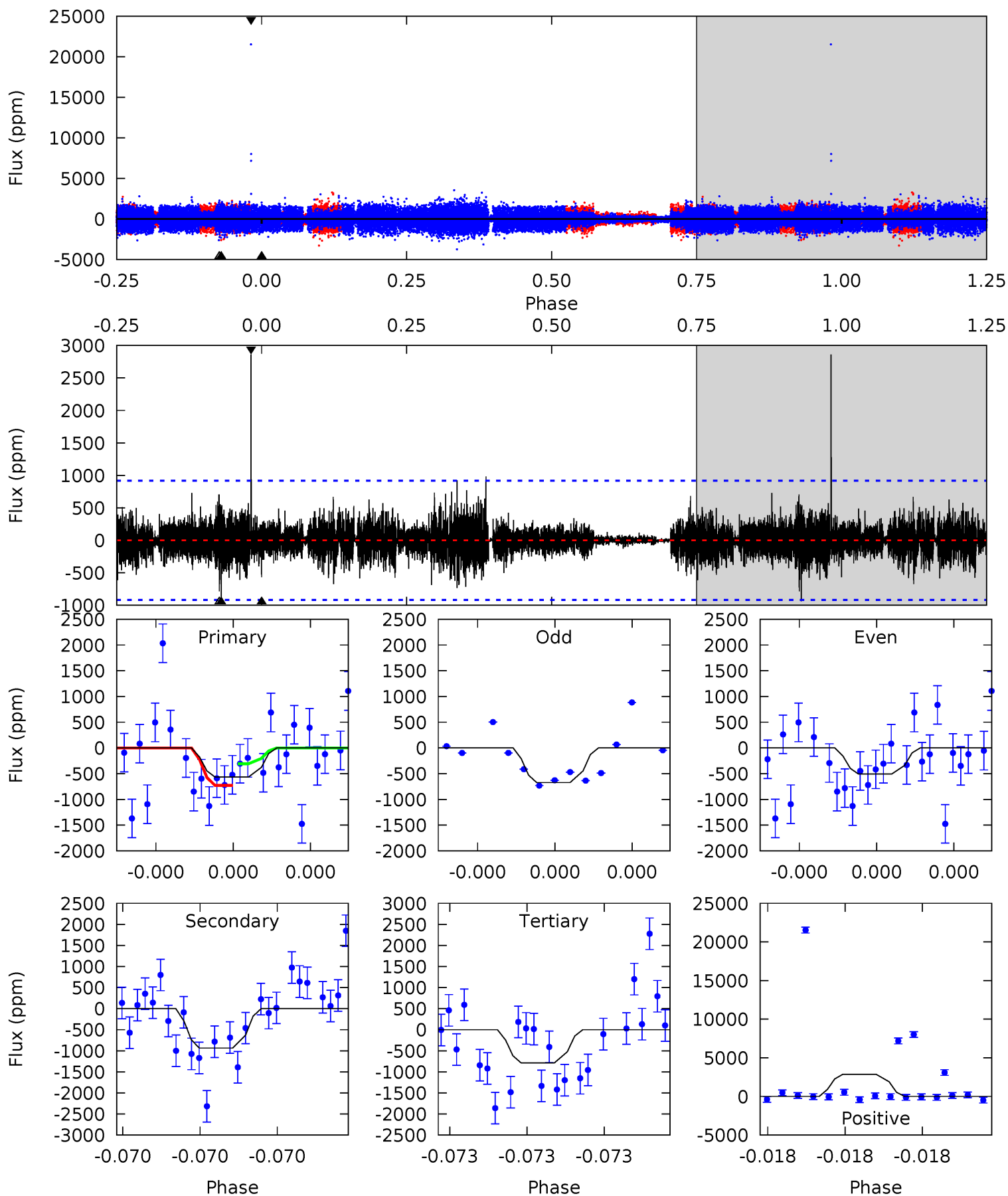
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.24	22.9	21.0	32.3	5.68	3.64	1.73	-15.7	-27.0	1.95	-9.36	0.30	1.04	0.58	2.44



# Alt Model-Shift Uniqueness Test

003847852-03, P = 619.674952 Days, E = 298.332179 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
3.56	5.87	4.93	18.0	5.76	3.77	0.94	-1.37	-14.4	0.94	-12.1	0.42	0.92	0.75	1.28



### Stellar Parameters For KIC 003847852

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3876^{+77}_{-106}$	$1.022^{+0.030}_{-0.030}$	$-0.100^{+0.200}_{-0.250}$	$68.708^{+2.473}_{-14.841}$	$1.811^{+0.036}_{-0.688}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+200%/-250%	+4%/-22%	+2%/-38%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 003847852-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-3401±149	$279.49^{+213.06}_{-180.17}$	$1506^{+36}_{-44}$	$4528^{+2915}_{-845}$	$71^{+486}_{-48}$
Alt.	-935±159	$256.52^{+223.99}_{-162.17}$	$1507^{+38}_{-44}$	$3709^{+1780}_{-684}$	$23^{+143}_{-17}$

$T_{max}$  = 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

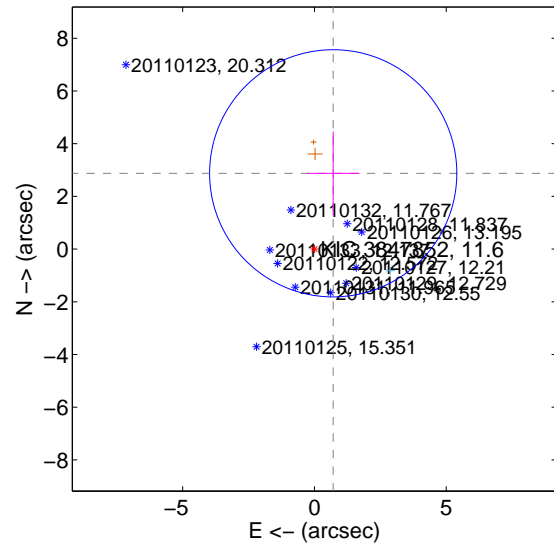
Supplemental centroid analysis for 003847852-03. **Kepler magnitude: 11.60.** Transit SNR 8.52

**There are 1 quarters with good PRF difference image offsets**

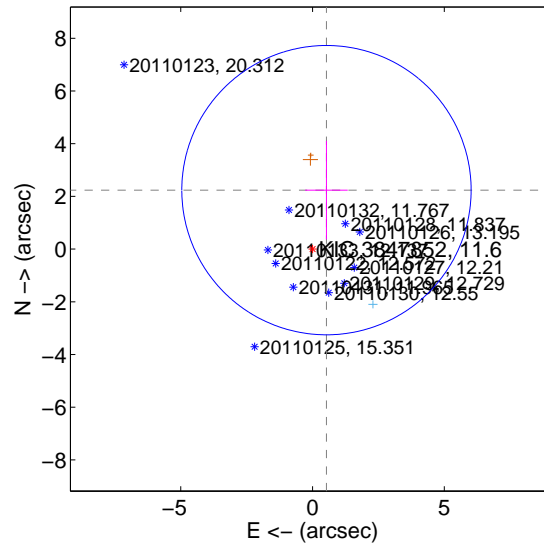
The direct PRF centroid is offset from the target star catalog position by about 1.41 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.964 \pm 1.564$	1.90	$-0.712 \pm 0.992$	$2.877 \pm 1.592$
PRF-fit source offset from KIC position	$2.299 \pm 1.830$	1.26	$-0.529 \pm 0.810$	$2.237 \pm 1.871$
photometric centroid source offset	<b><math>1.30 \pm 0.41</math></b>	<b>3.14</b>	$-0.39 \pm 0.33$	$1.24 \pm 0.42$

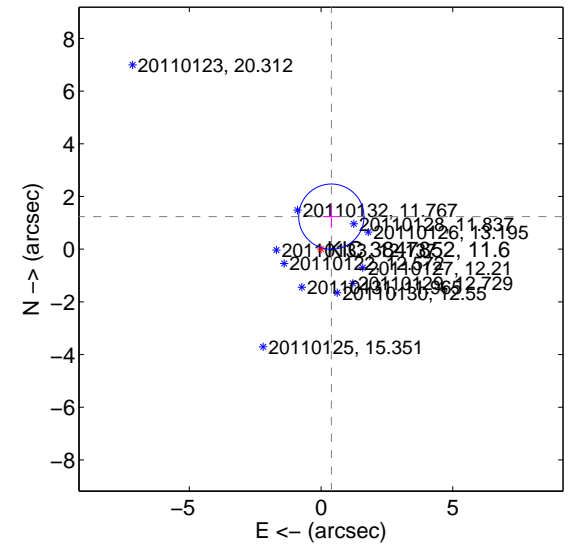
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

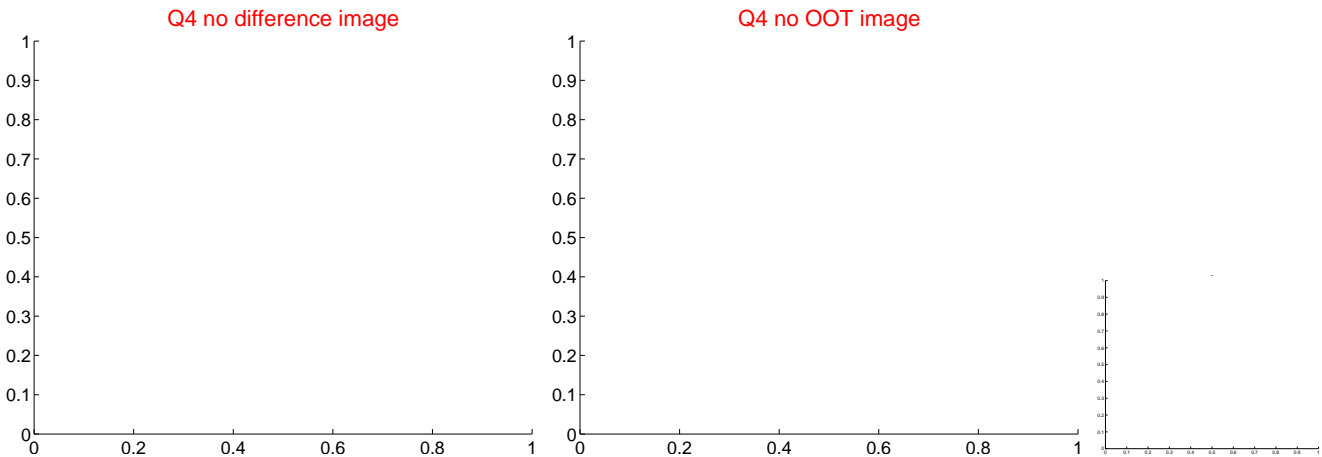
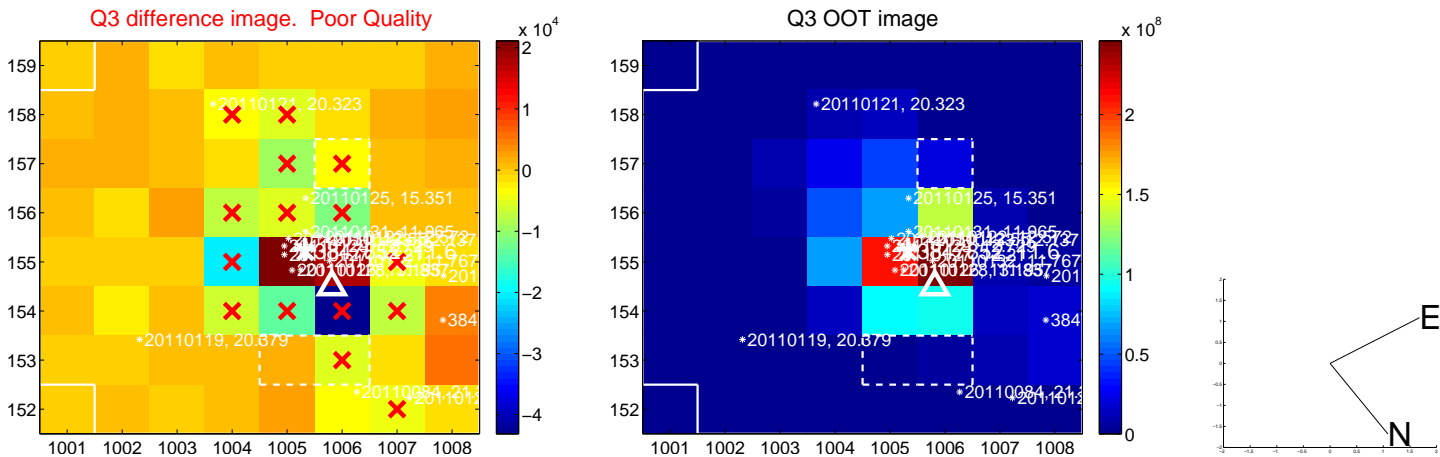
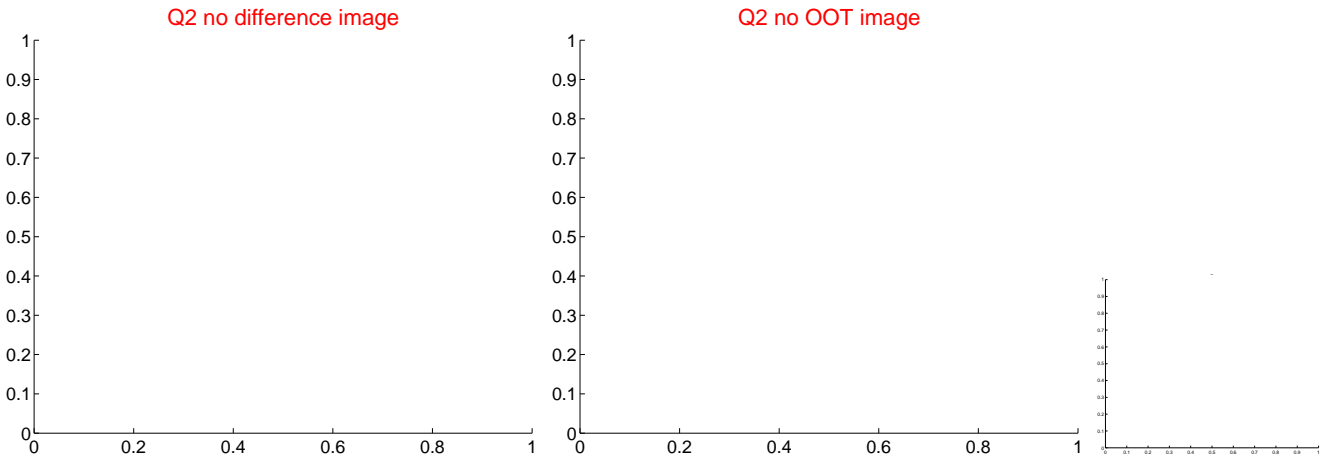
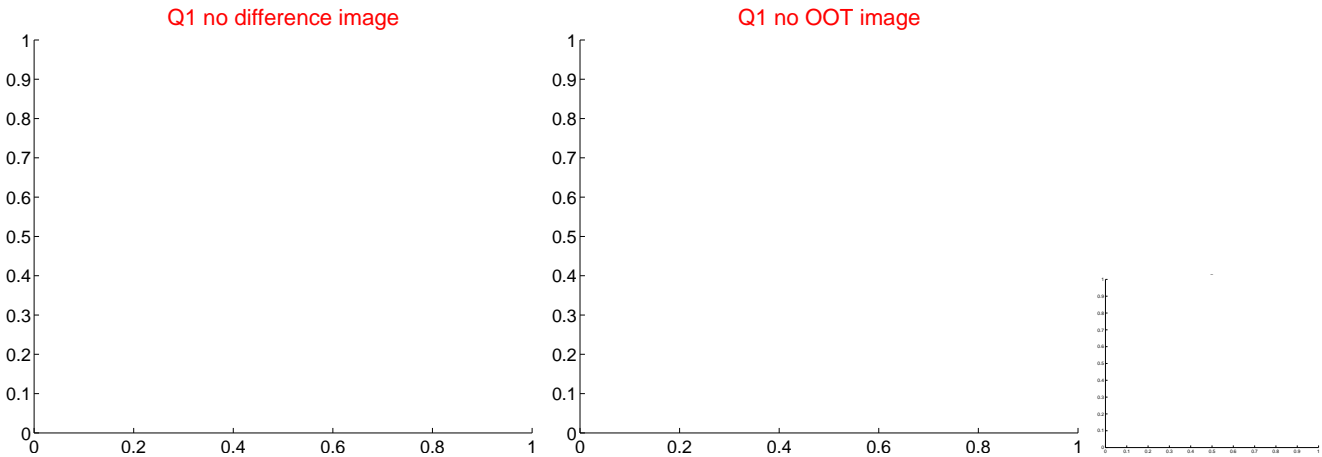


offset from photometric centroids



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

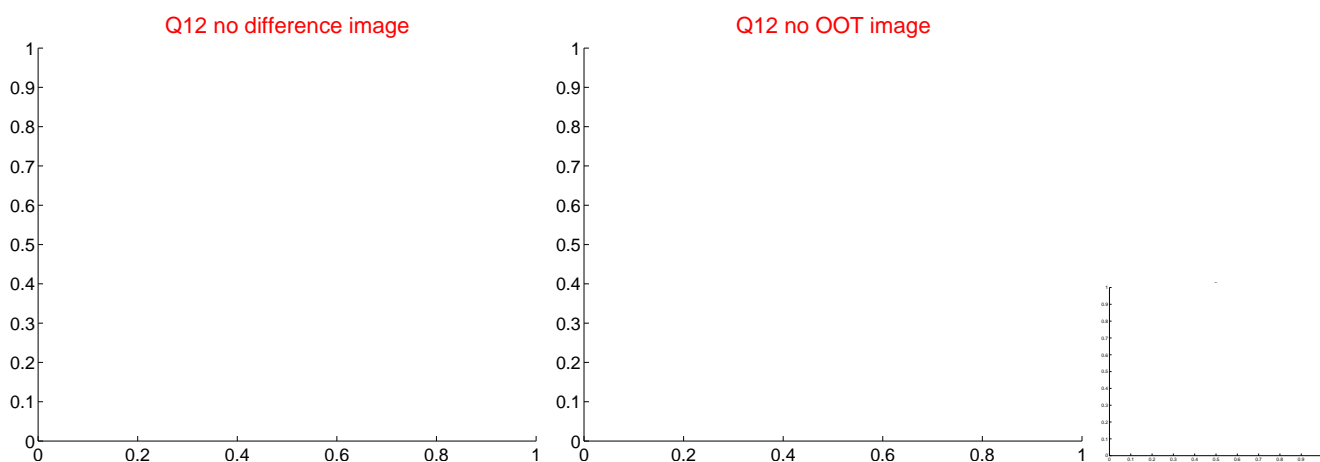
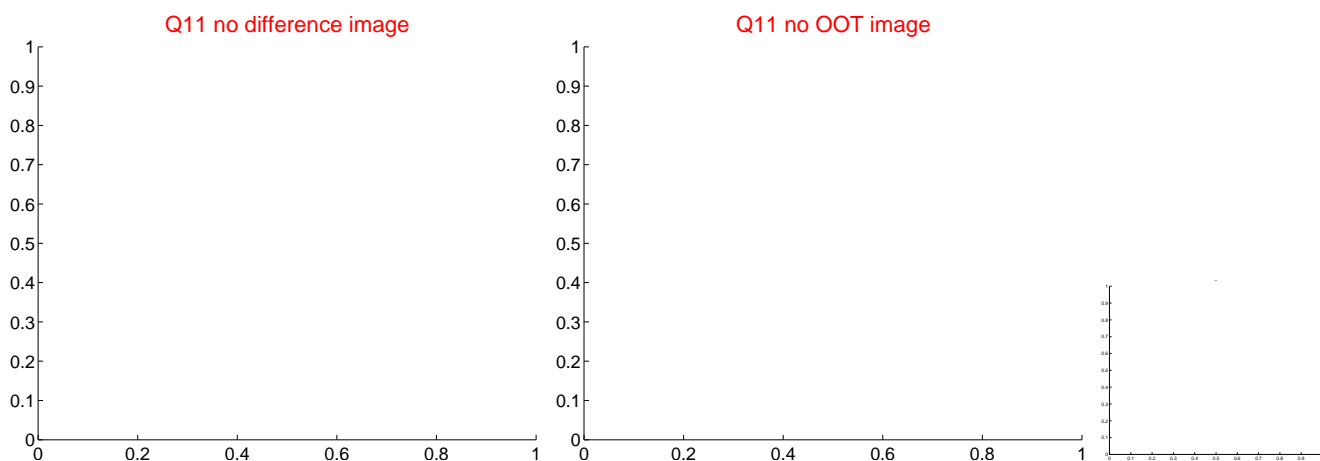
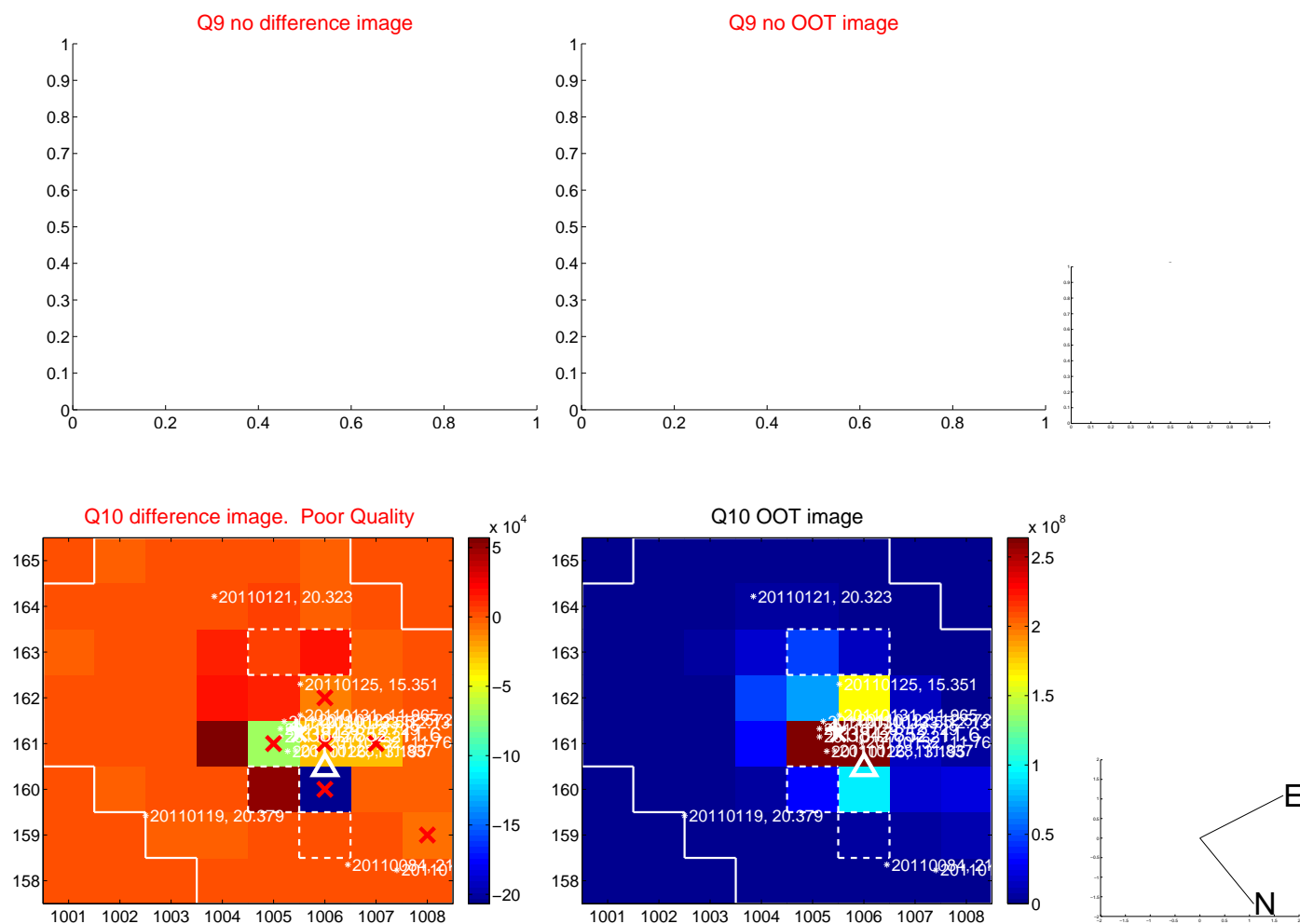


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

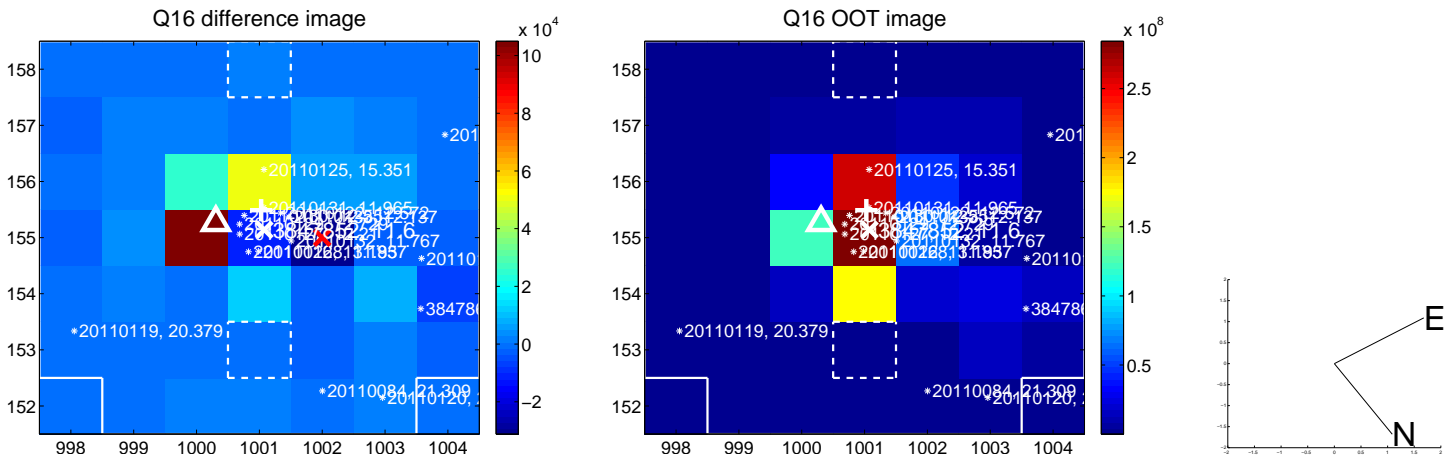
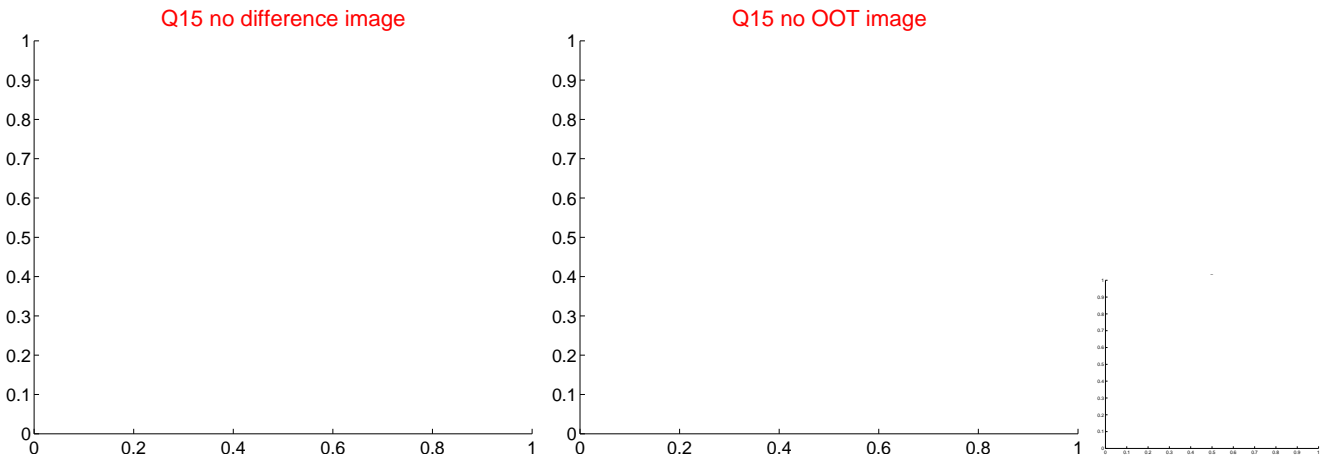
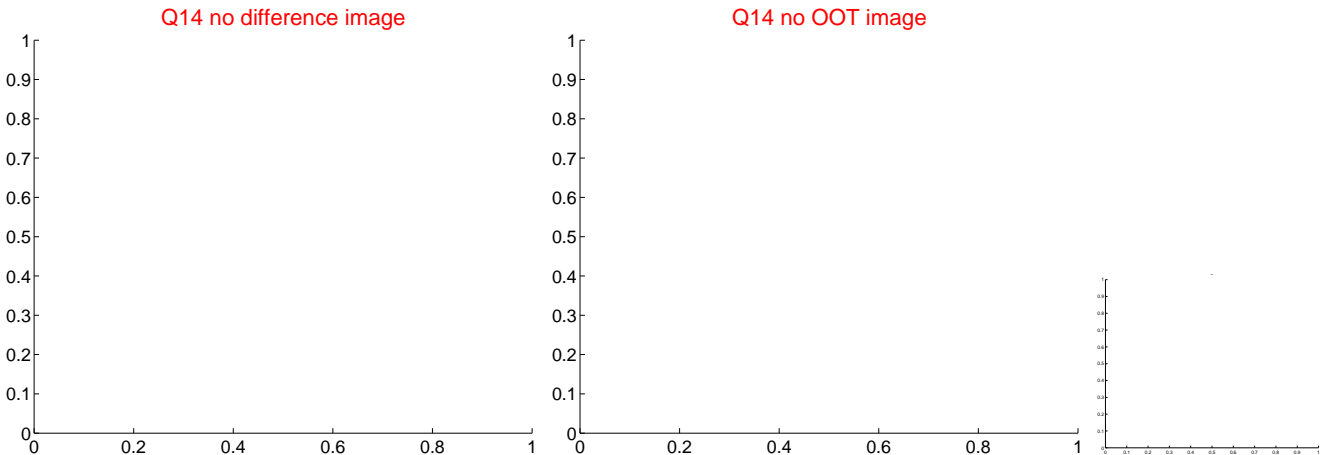
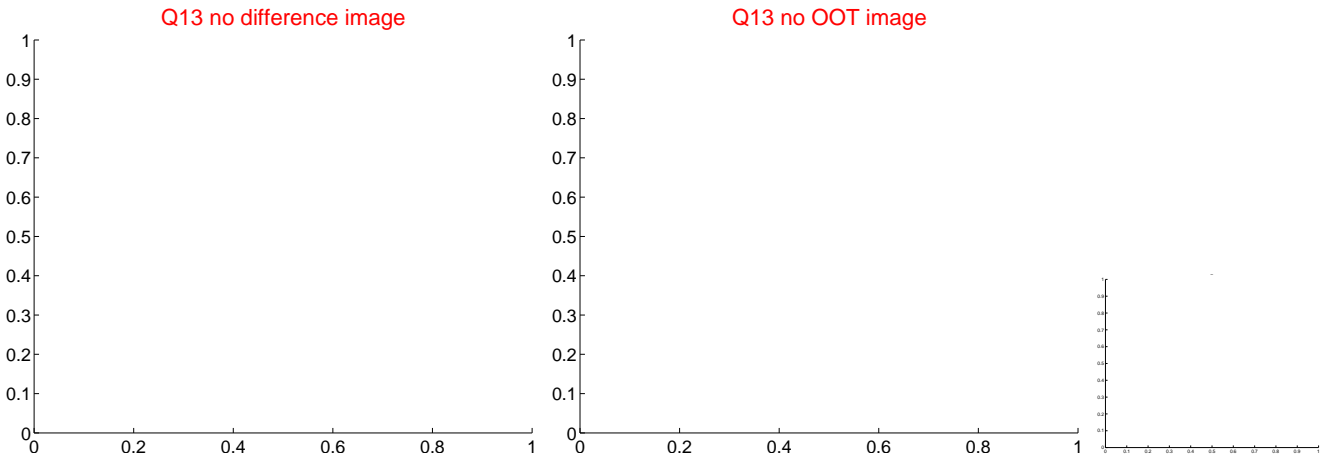




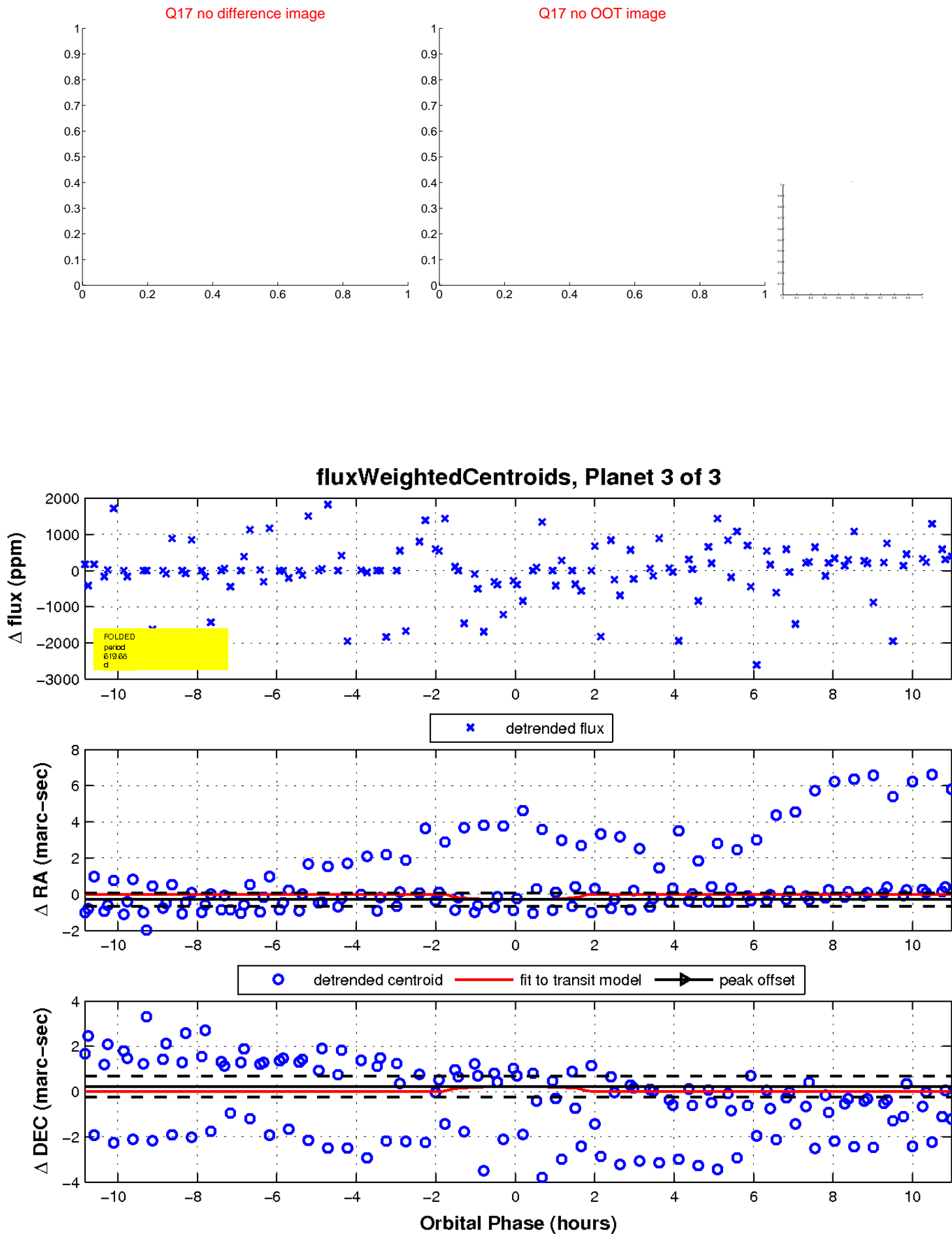
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

