

# KIC 007938883

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007938883-01	OBS	3974.01	0.979405	132.039119	376729.4	1.500	372.6	-1.0	0.53	3898	16.09	230.41
007938883-02	OBS	No	0.979380	131.564119	377089.2	1.500	257.1	-1.0	0.53	3898	10.76	230.41
007938883-03	OBS	No	0.979372	132.302724	228357.4	1.483	143.7	203.4	0.53	3898	25.98	230.42
007938883-04	OBS	No	0.979482	131.750777	18408.9	2.000	113.2	-1.0	0.53	3898	7.12	230.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007938883-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS
007938883-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_NOFITS
007938883-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
007938883-04	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—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 007938883-01

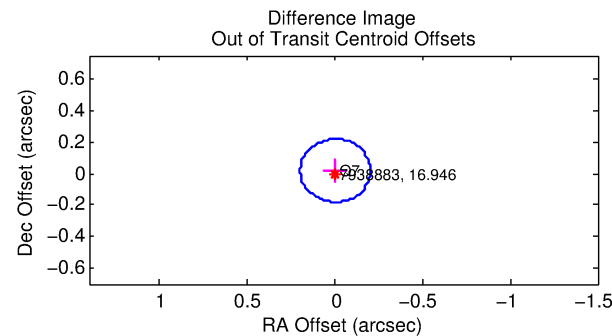
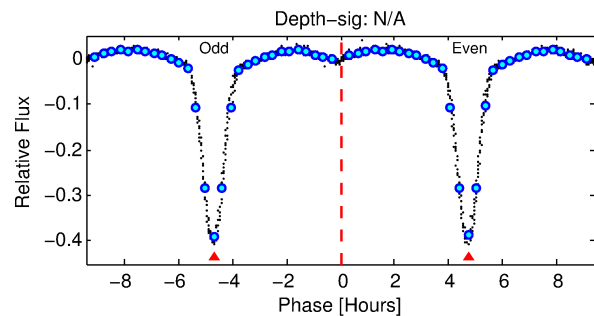
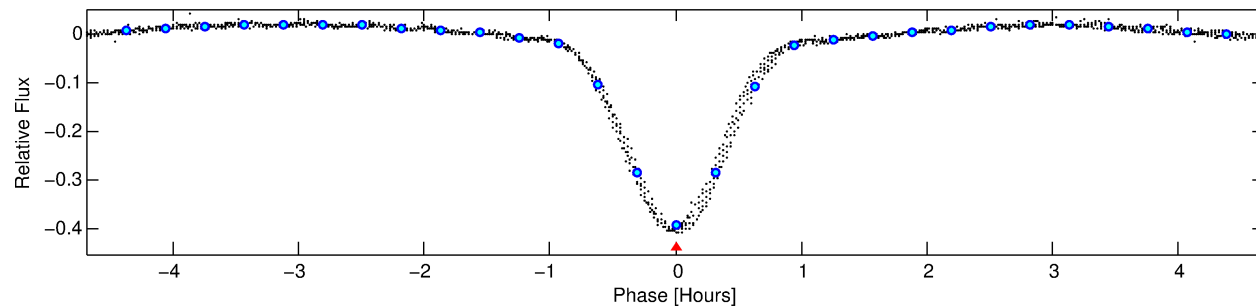
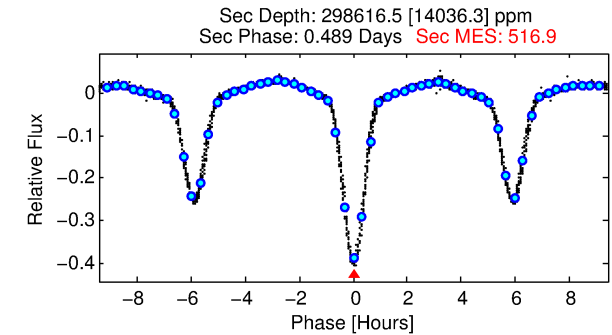
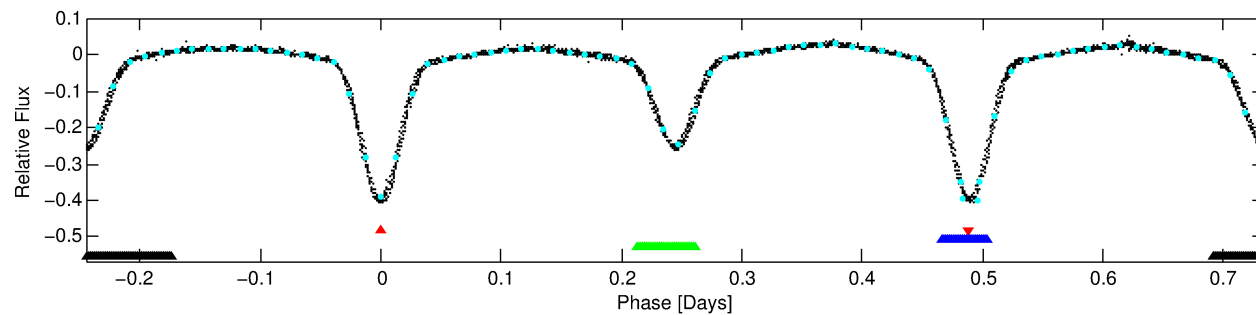
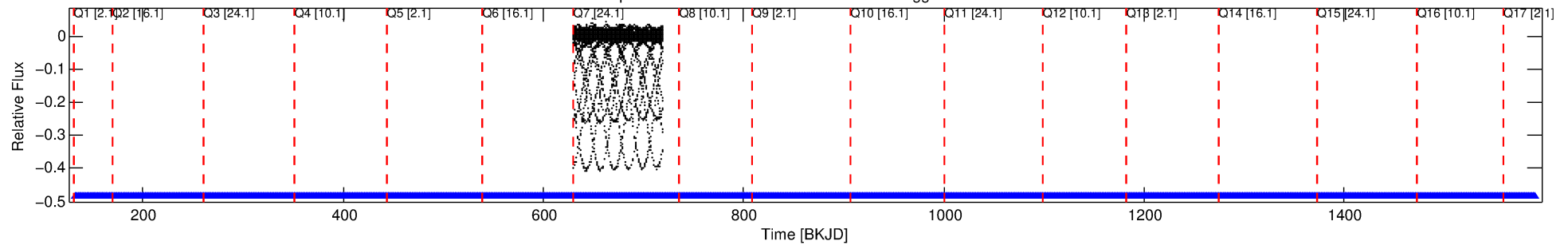
No Significant Match Found

# DV One-Page Summary

KIC: 7938883 Candidate: 1 of 4 Period: 0.979 d

KOI: K03974 Corr: No Ephemeris Match

Kp: 16.95 R\*: 0.53 Rs Teff: 3898.0 K Logg: 4.74 Fe/H: -0.100



## TPS TCE Results:

Period = 0.97940 d  
Epoch = 132.0391 BKJD

DV fit results are unavailable

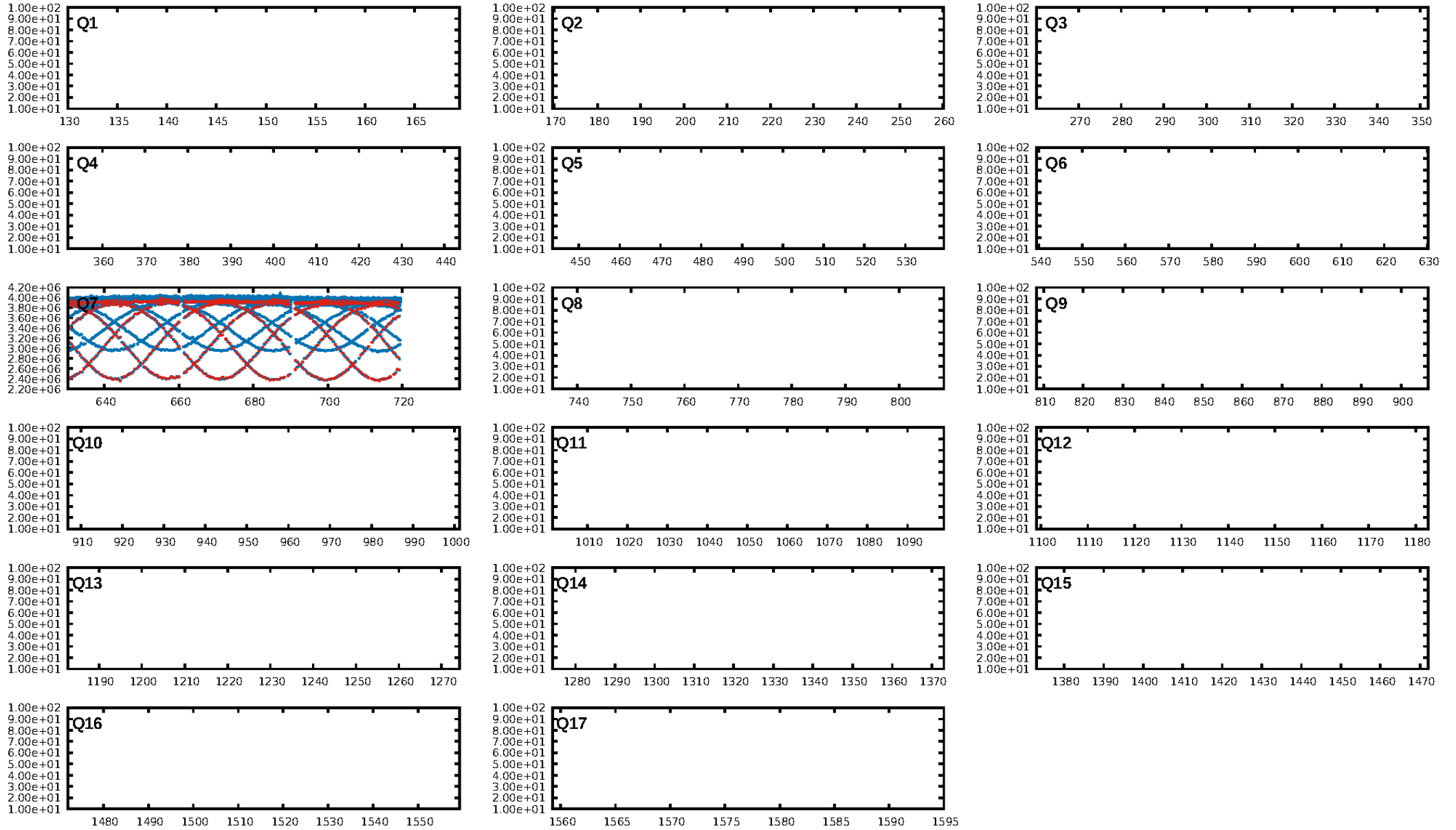
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [88/88]  
GhostDiagnostic-chr: 1.286  
Centroid-sig: N/A  
Centroid-so: 0.504 arcsec [66.28σ]  
OotOffset-rm: 0.020 arcsec [0.30σ]  
KicOffset-rm: 0.356 arcsec [5.33σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

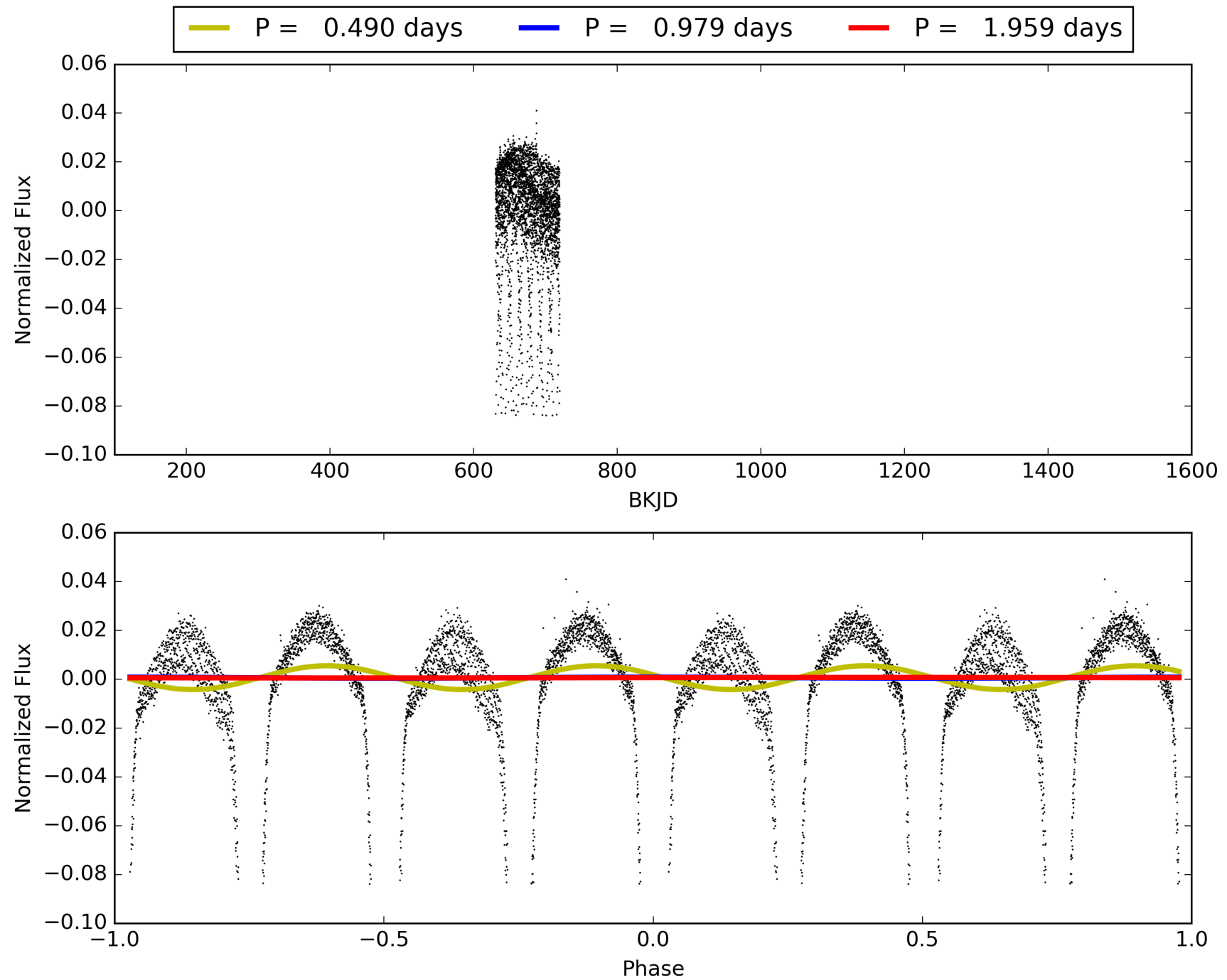
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:34:57 Z

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

# TCE 007938883-01, PDC Light Curves

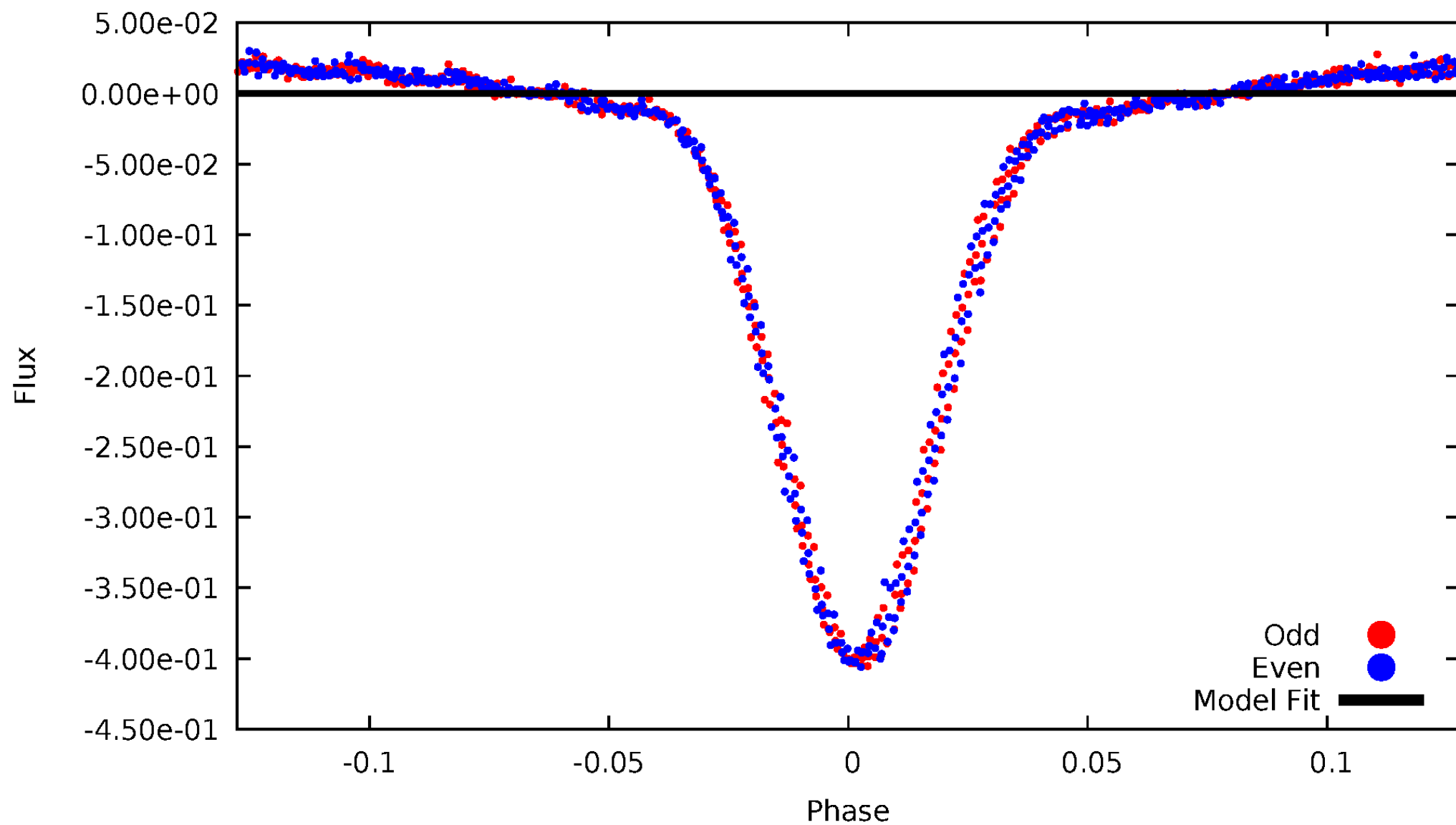


# TCE 007938883-01



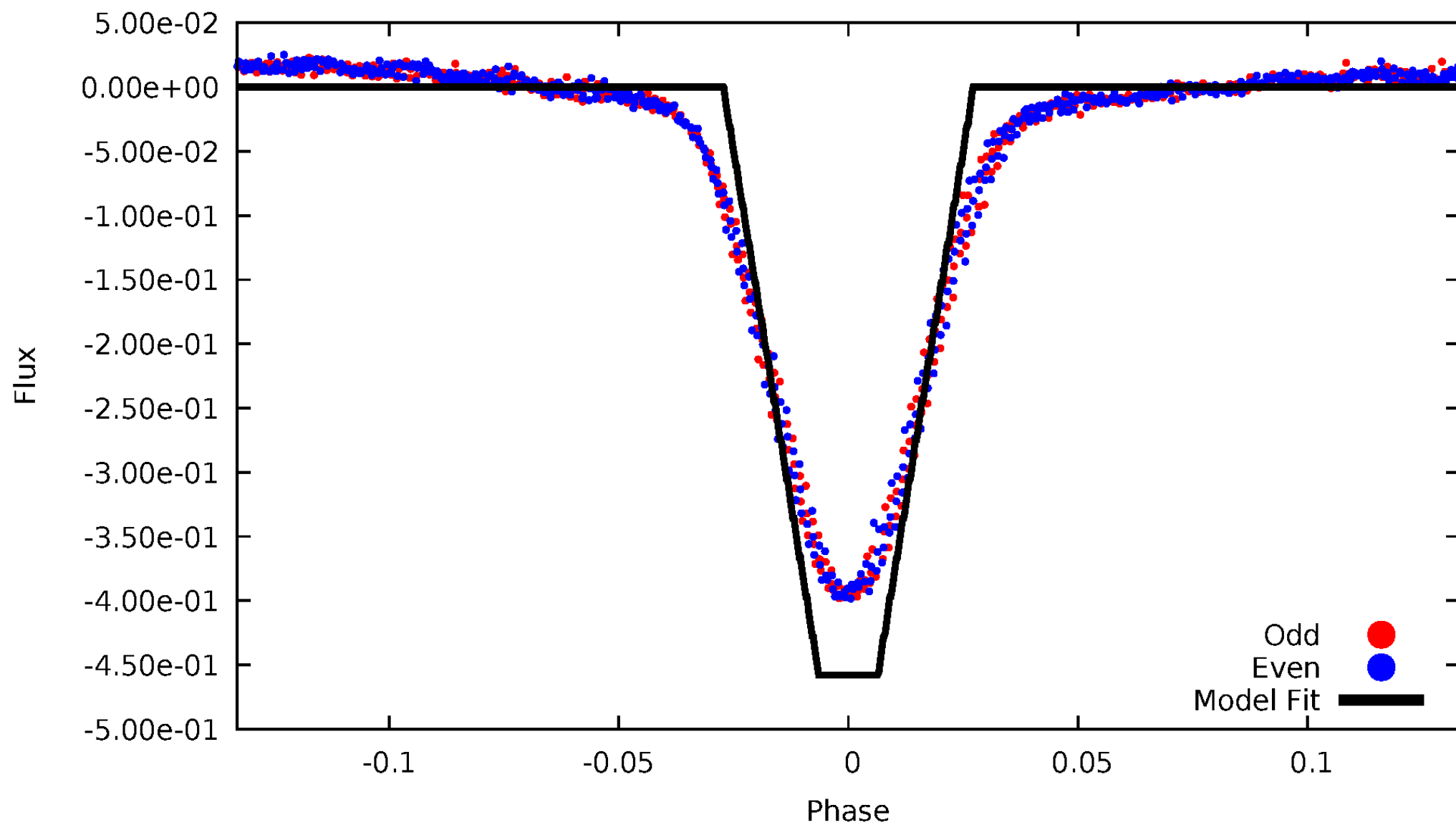
# DV Odd/Even

TCE 007938883-01



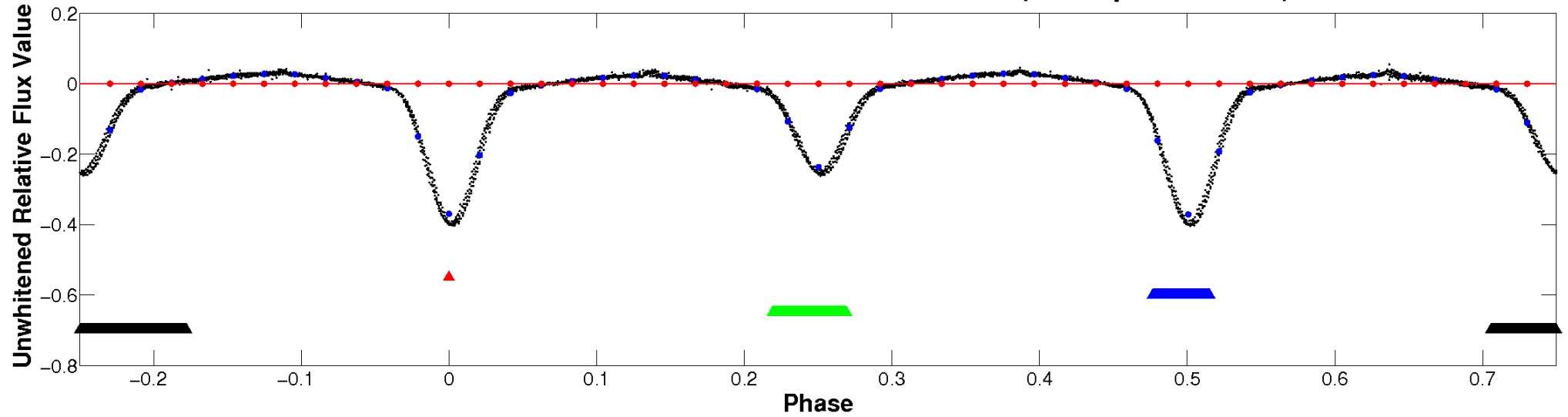
# ALT Odd/Even

TCE 007938883-01

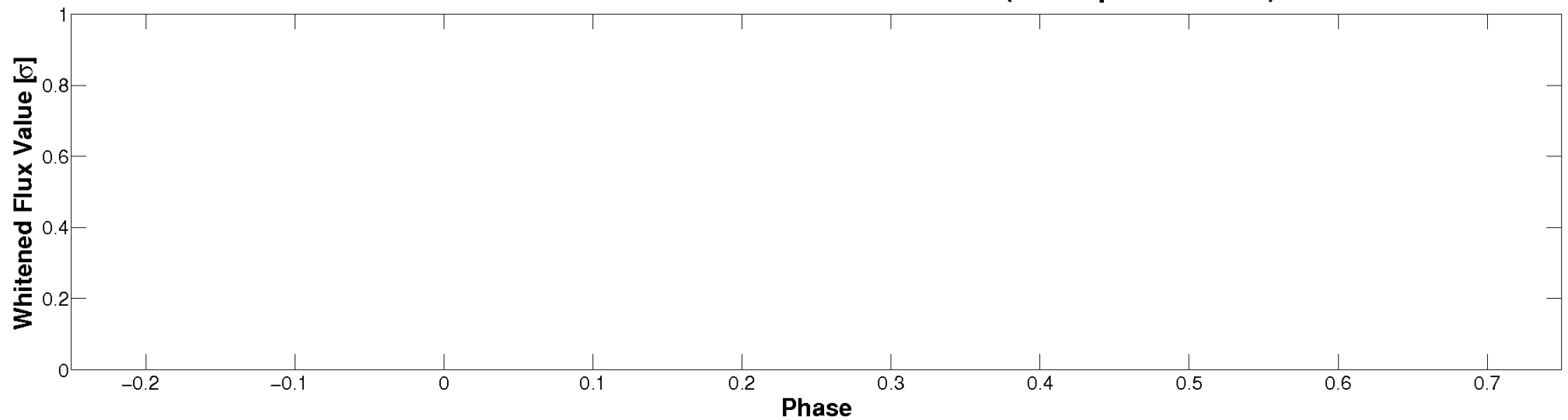


# Non-Whitened Vs. Whitened Light Curve

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

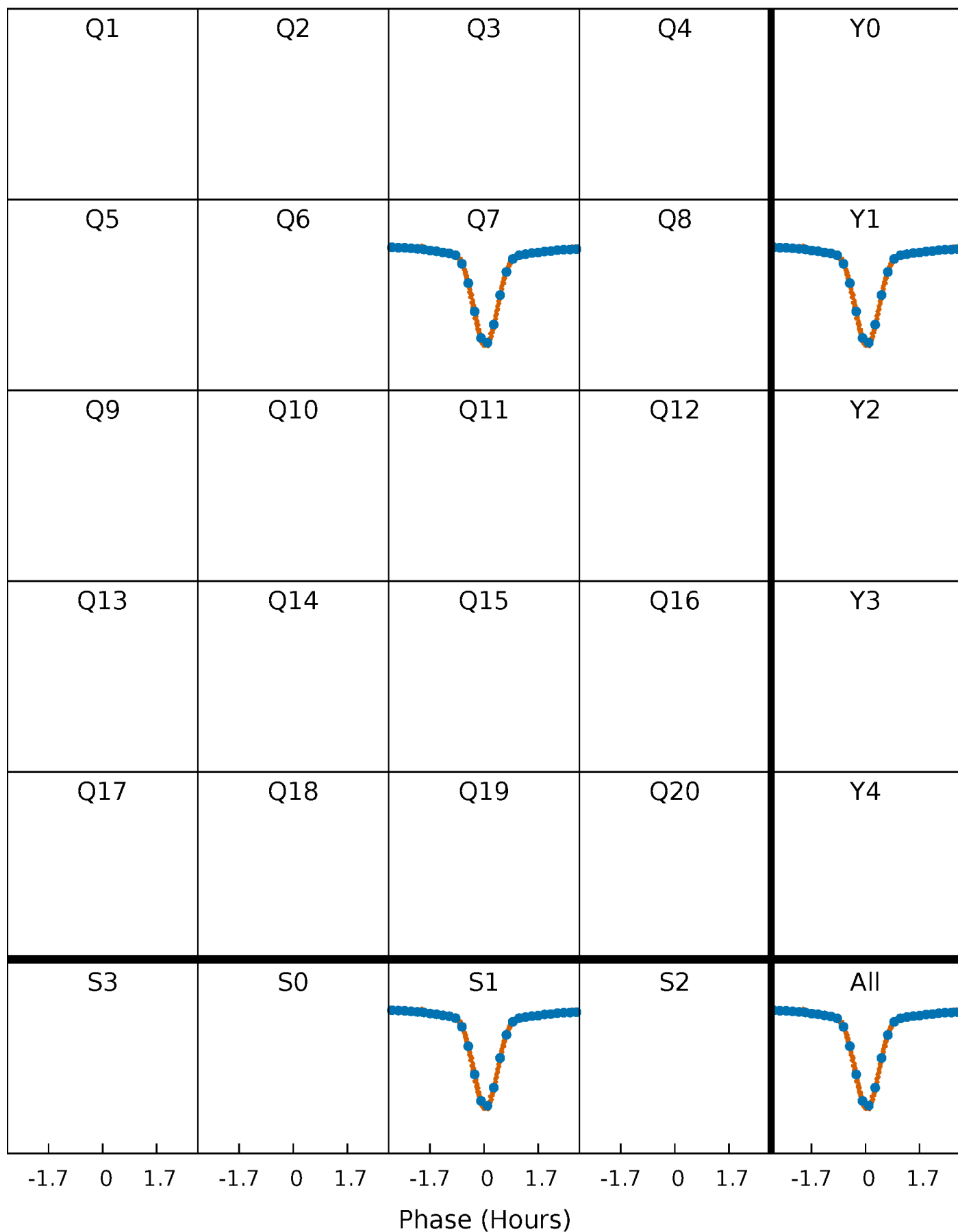


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

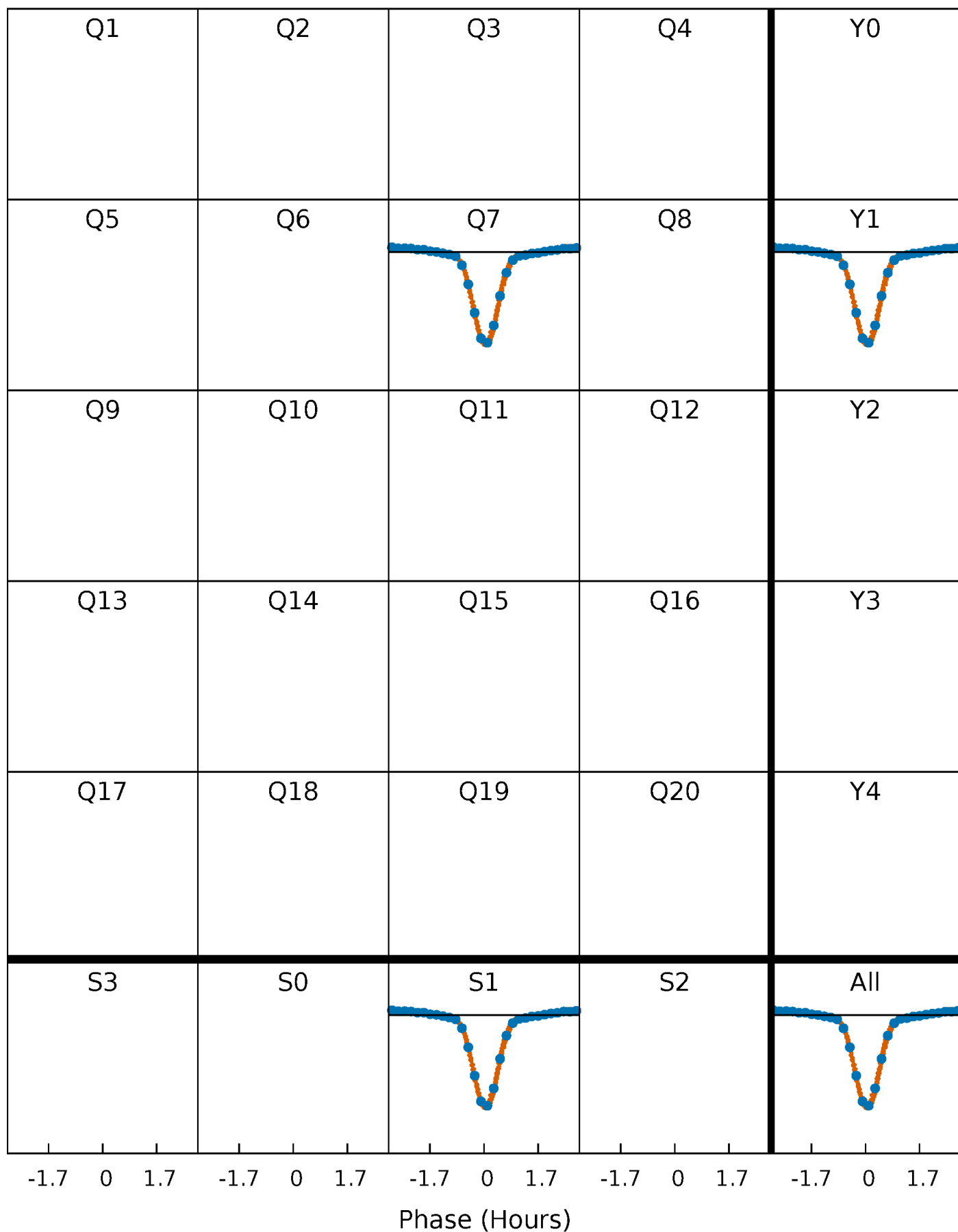
TCE 007938883-01   P= 0.979405 Days    $T_0=132.039119$  (BKJD)





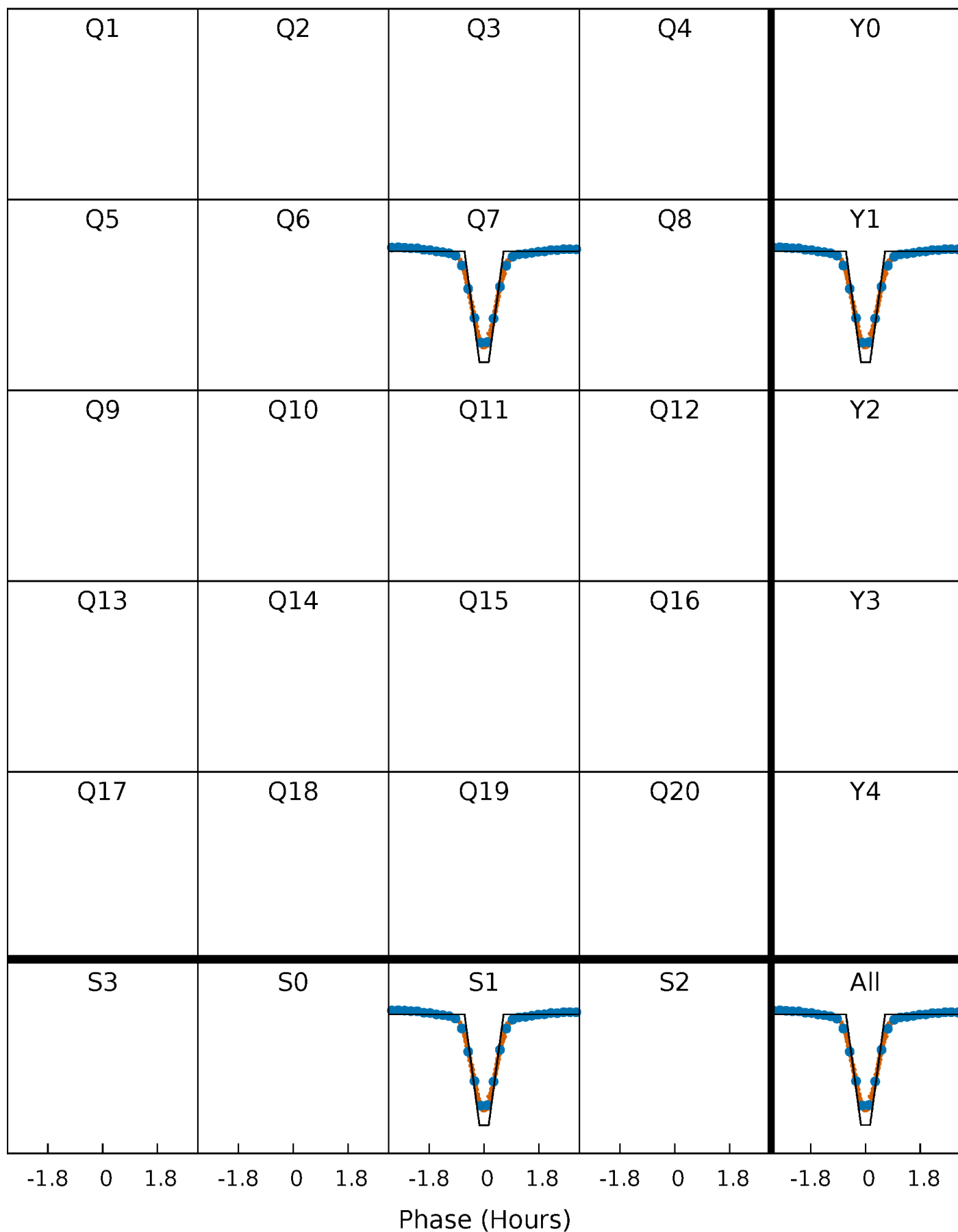
# DV Quarter-Phased Transit Curves

TCE 007938883-01   P= 0.979405 Days    $T_0=132.039119$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

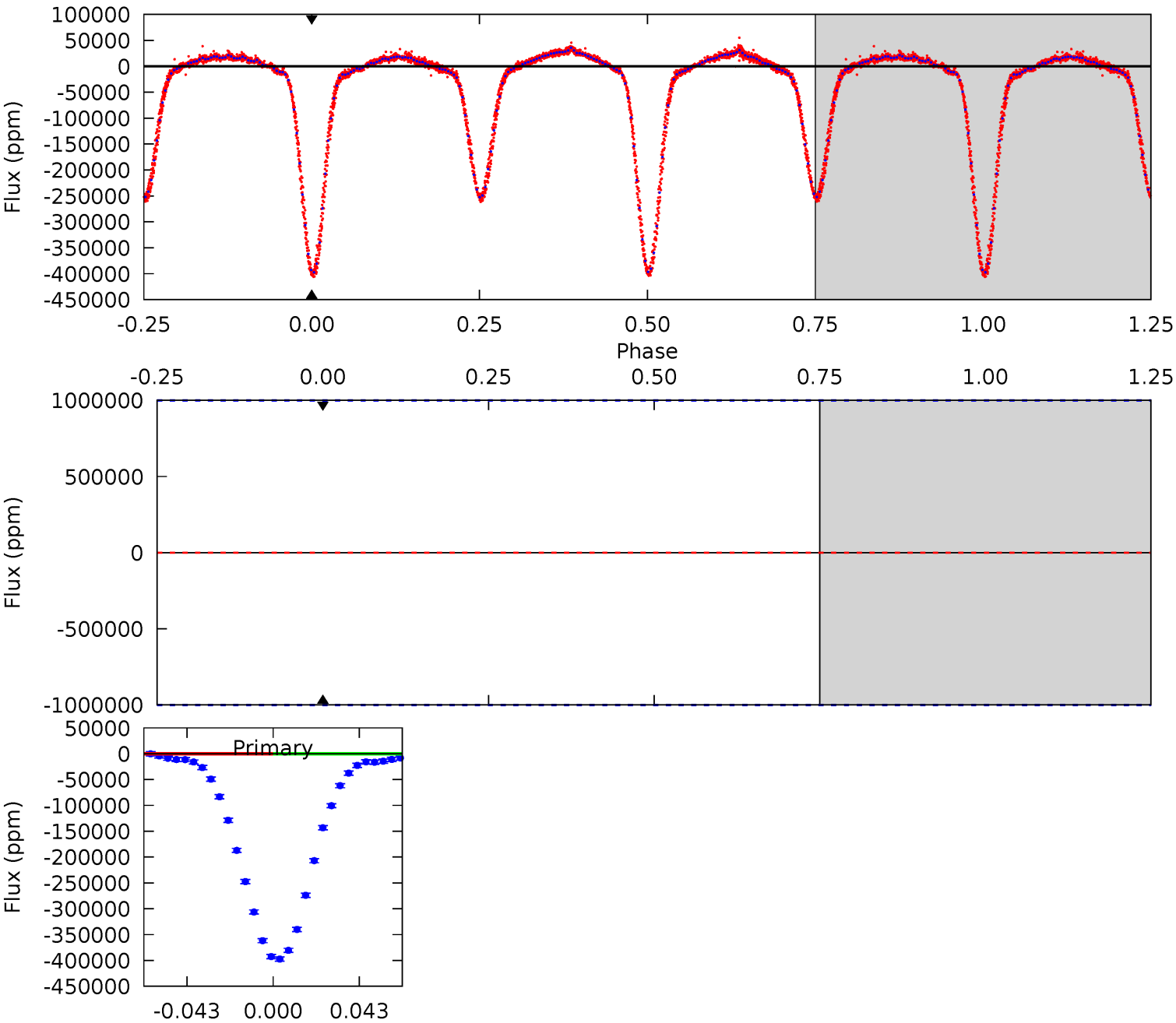
TCE 007938883-01   P= 0.979405 Days    $T_0=132.041167$  (BKJD)



# DV Model-Shift Uniqueness Test

007938883-01, P = 0.979405 Days, E = 132.039119 Days

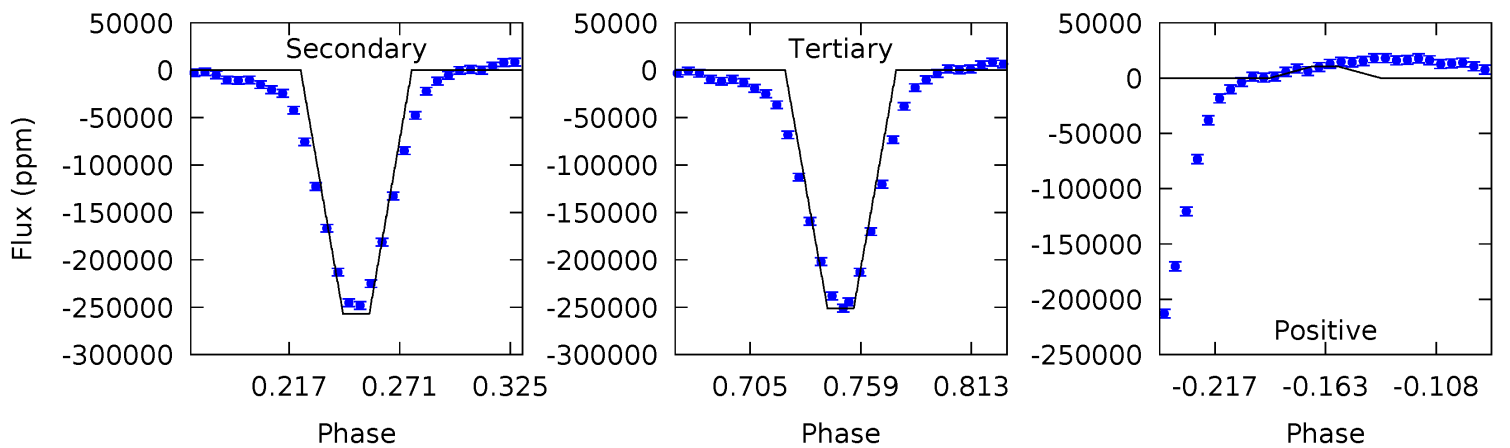
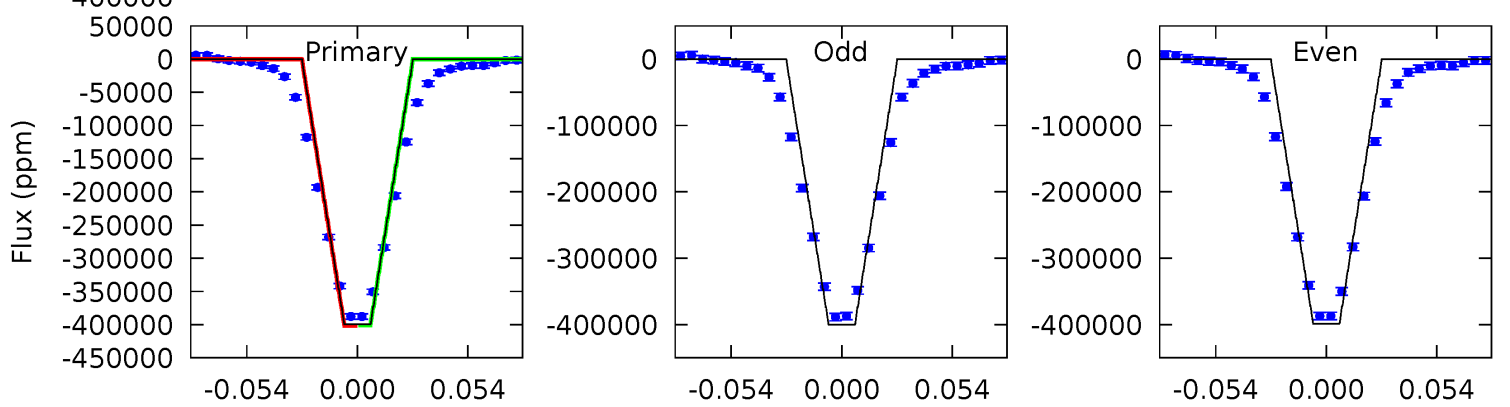
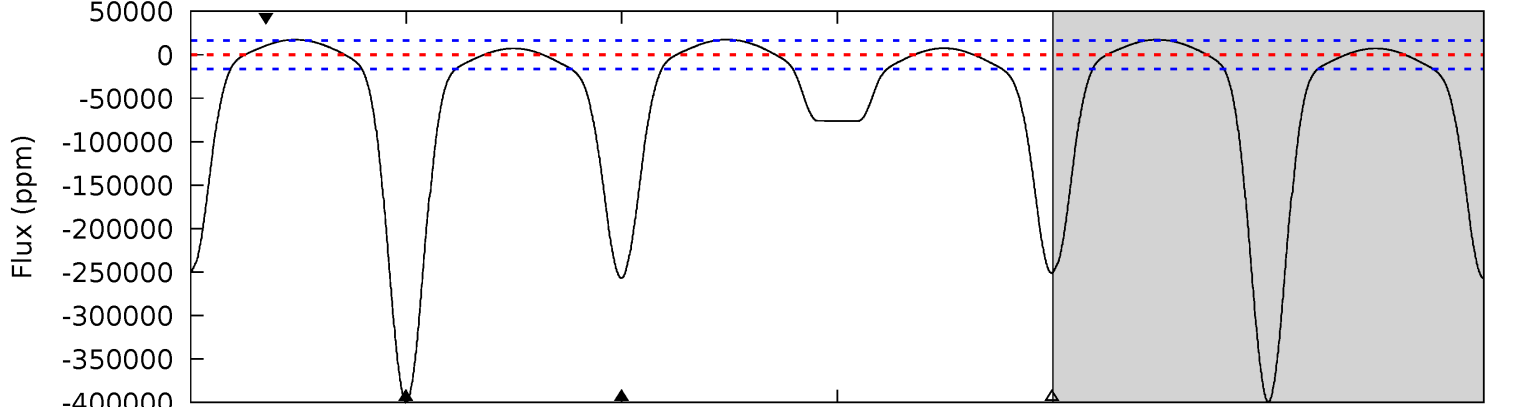
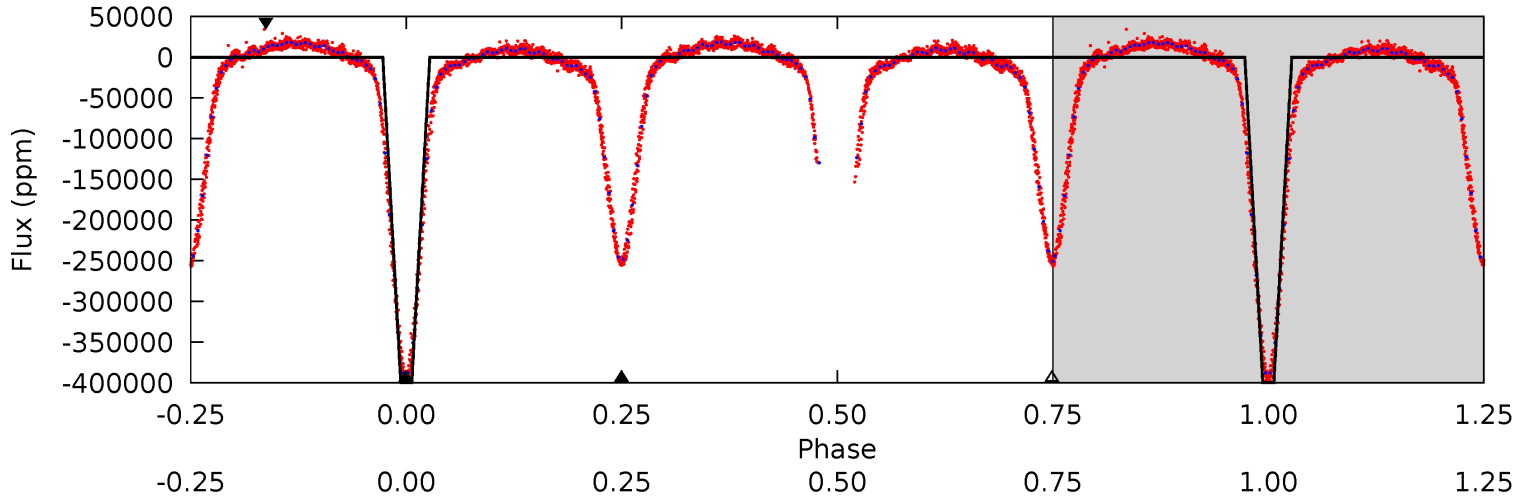
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007938883-01, P = 0.979405 Days, E = 132.041167 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
115.3	74.2	72.5	3.03	4.69	1.93	15.9	42.8	112.3	1.72	71.2	0.25	1.01	0.04	0.03



### Stellar Parameters For KIC 007938883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3898^{+135}_{-148}$	$4.735^{+0.072}_{-0.054}$	$-0.100^{+0.350}_{-0.400}$	$0.530^{+0.057}_{-0.079}$	$0.556^{+0.056}_{-0.084}$	$5.264^{+2.088}_{-1.053}$
	+3%/-4%	+2%/-1%	+350%/-400%	+11%/-15%	+10%/-15%	+40%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007938883-01 / KOI 3974.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$16.04^{+6.08}_{-5.97}$	$1389^{+52}_{-64}$	$2490^{+1771}_{-6589}$	$2.360^{+65.329}_{-59.114}$
Alt.	$-257044 \pm 3465$	$38.77^{+6.81}_{-6.59}$	$1380^{+61}_{-58}$	$3706^{+247}_{-205}$	$32^{+14}_{-9}$

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

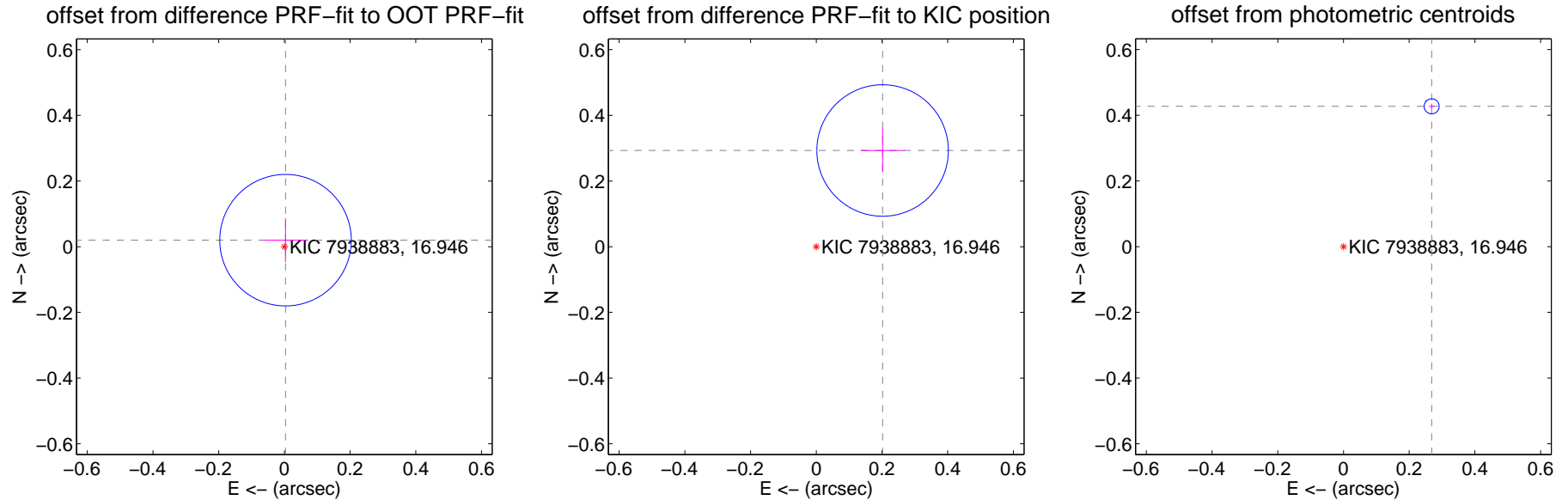
## DV Centroid Data

Supplemental centroid analysis for 007938883-01. Kepler magnitude: 16.95. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.020 \pm 0.067$	0.30	$-0.003 \pm 0.067$	$0.020 \pm 0.067$
PRF-fit source offset from KIC position	$0.356 \pm 0.067$	5.33	$-0.202 \pm 0.067$	$0.293 \pm 0.067$
photometric centroid source offset	$0.50 \pm 0.01$	66.28	$-0.27 \pm 0.01$	$0.43 \pm 0.01$

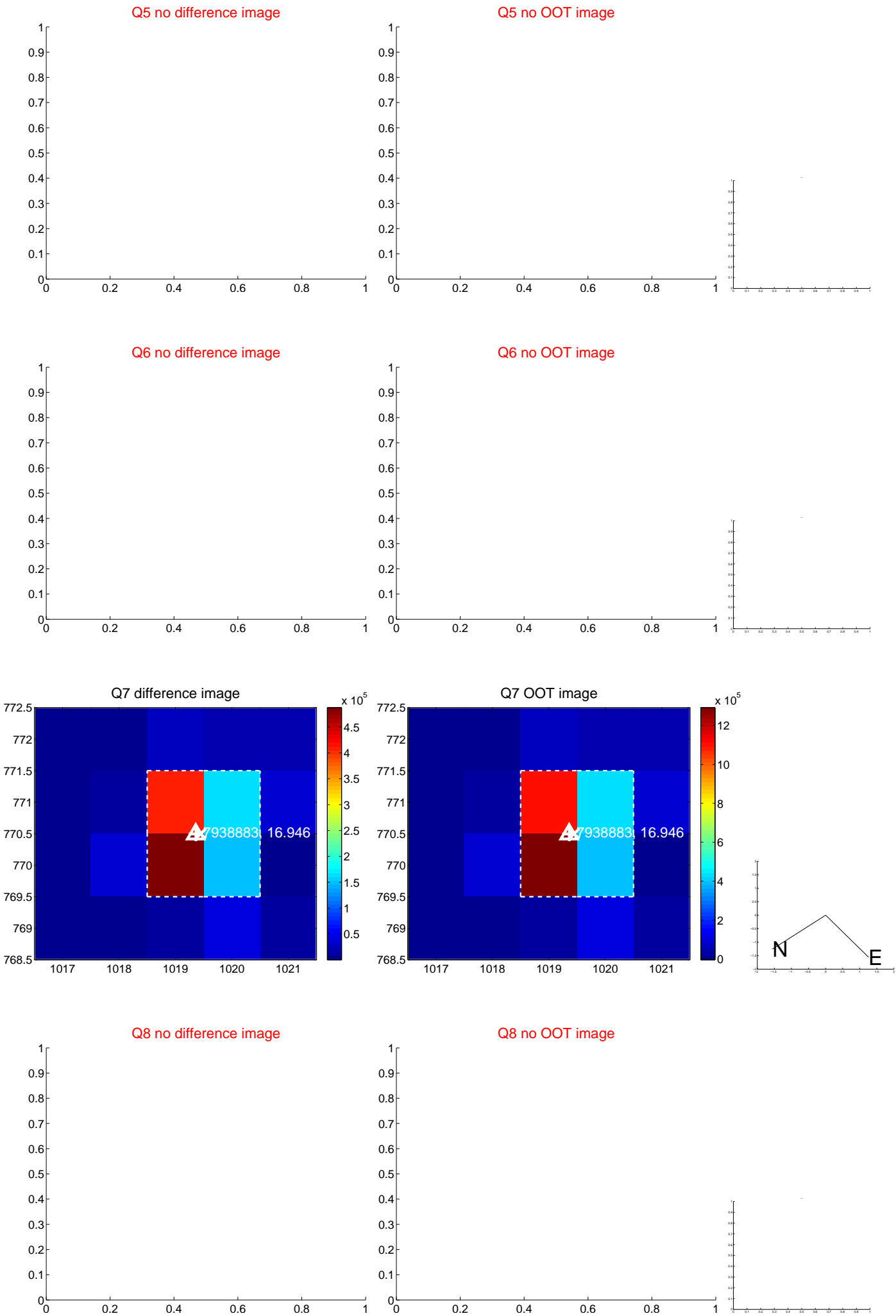


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





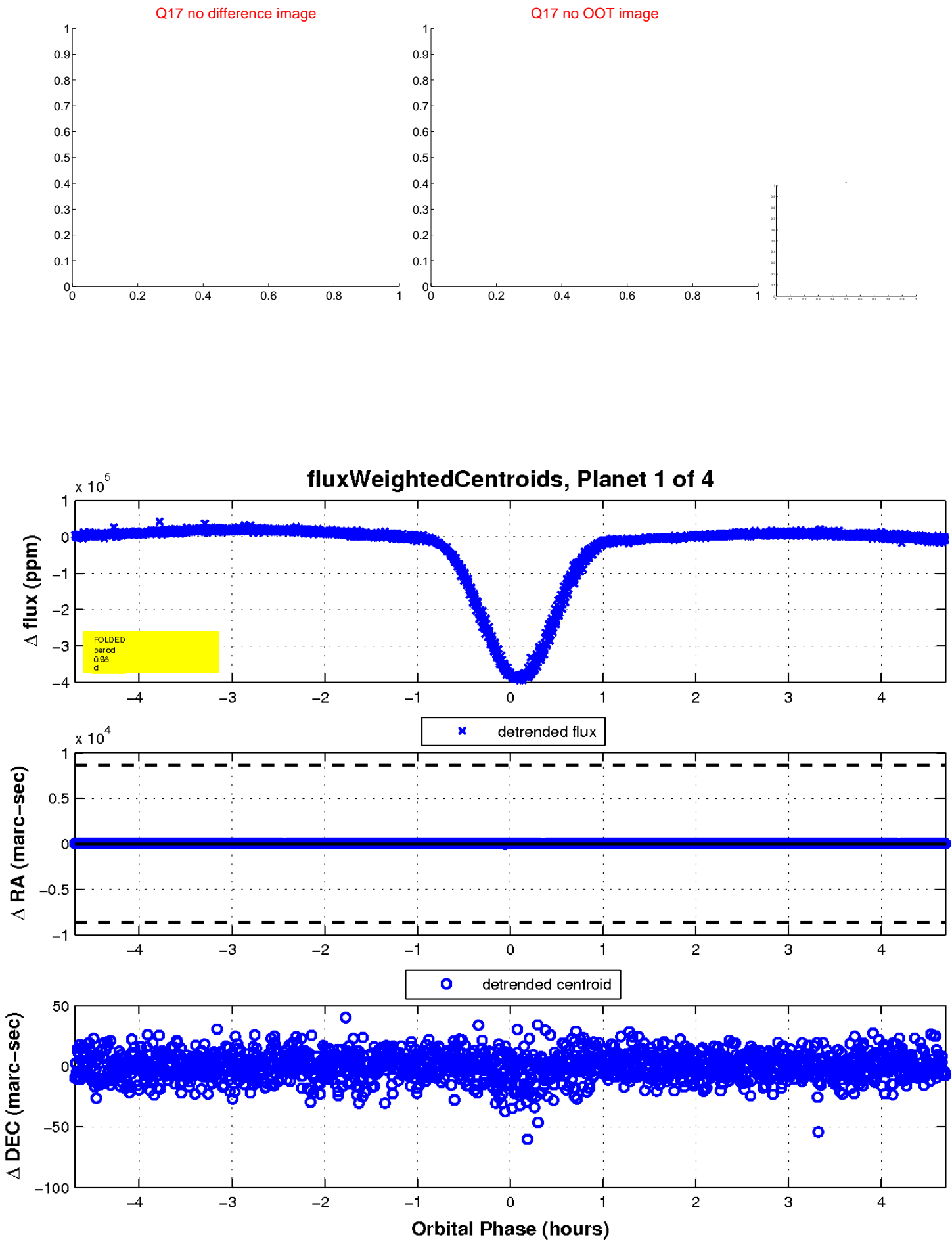
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

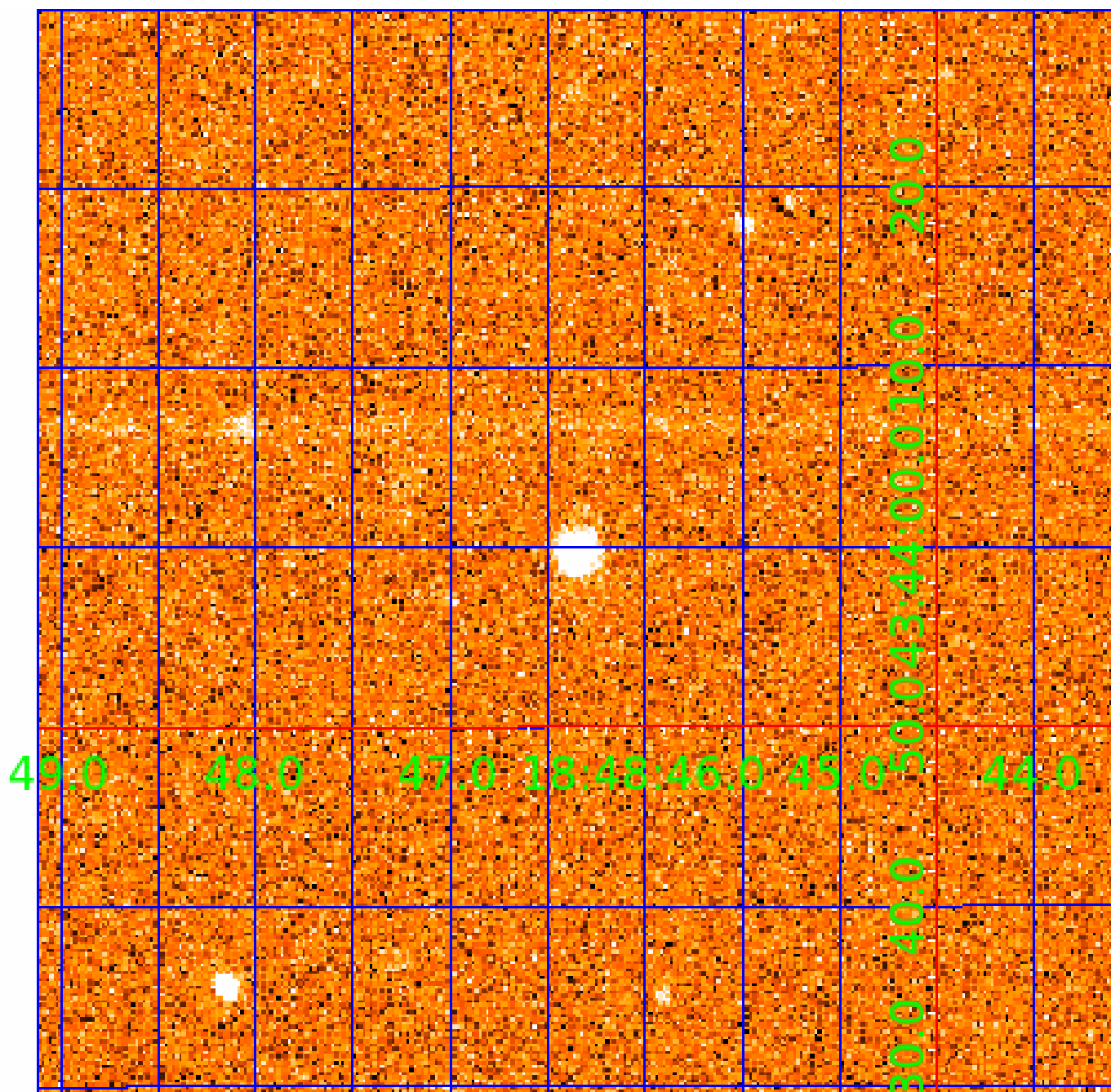


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007938883

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007938883-01	OBS	3974.01	0.979405	132.039119	376729.4	1.500	372.6	-1.0	0.53	3898	16.09	230.41
007938883-02	OBS	No	0.979380	131.564119	377089.2	1.500	257.1	-1.0	0.53	3898	10.76	230.41
007938883-03	OBS	No	0.979372	132.302724	228357.4	1.483	143.7	203.4	0.53	3898	25.98	230.42
007938883-04	OBS	No	0.979482	131.750777	18408.9	2.000	113.2	-1.0	0.53	3898	7.12	230.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007938883-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS
007938883-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_NOFITS
007938883-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
007938883-04	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—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 007938883-02

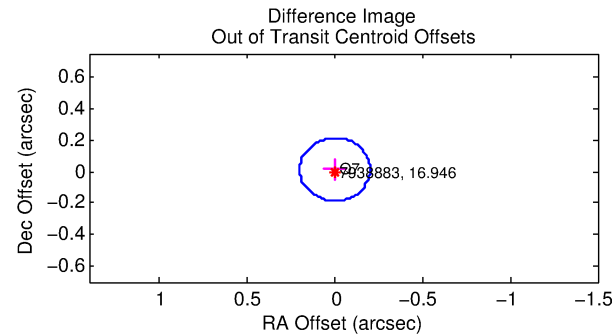
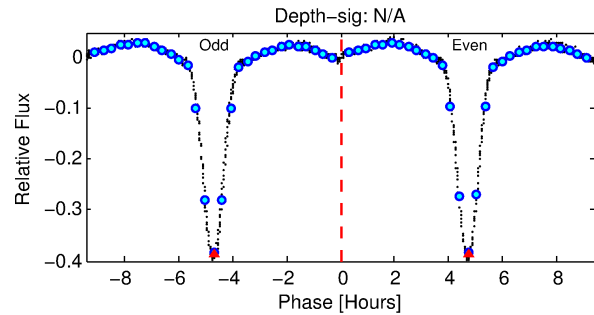
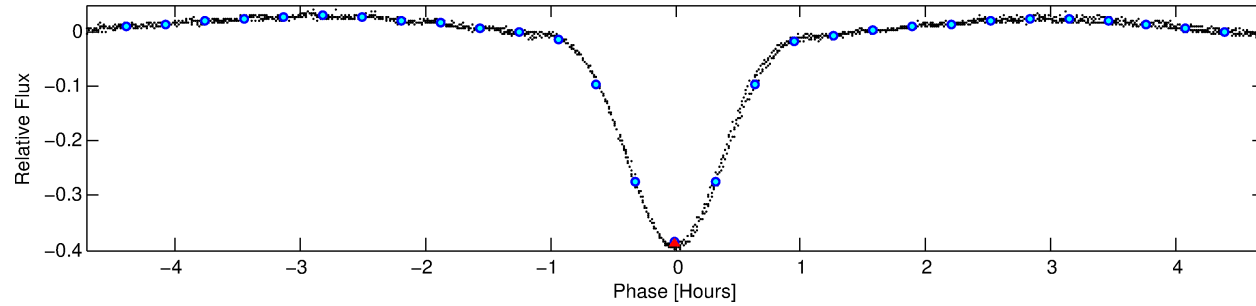
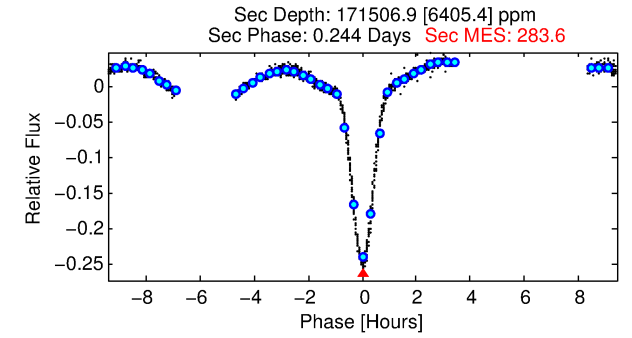
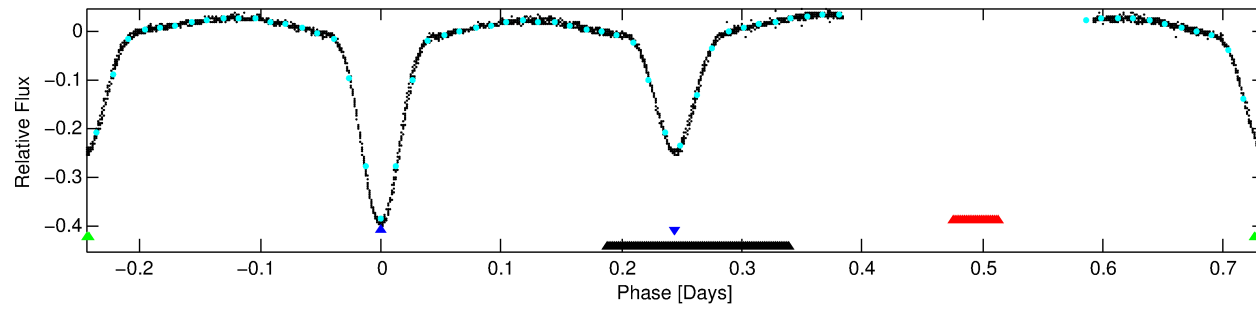
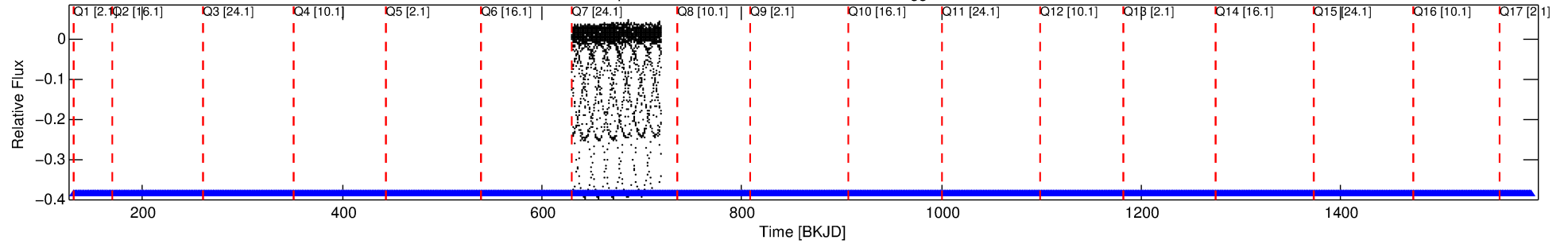
No Significant Match Found

# DV One-Page Summary

KIC: 7938883 Candidate: 2 of 4 Period: 0.979 d

KOI: K03974.01 Corr: 0.898

Kp: 16.95 R\*: 0.53 Rs Teff: 3898.0 K Logg: 4.74 Fe/H: -0.100



## TPS TCE Results:

Period = 0.97938 d  
Epoch = 131.5641 BKJD

DV fit results are unavailable

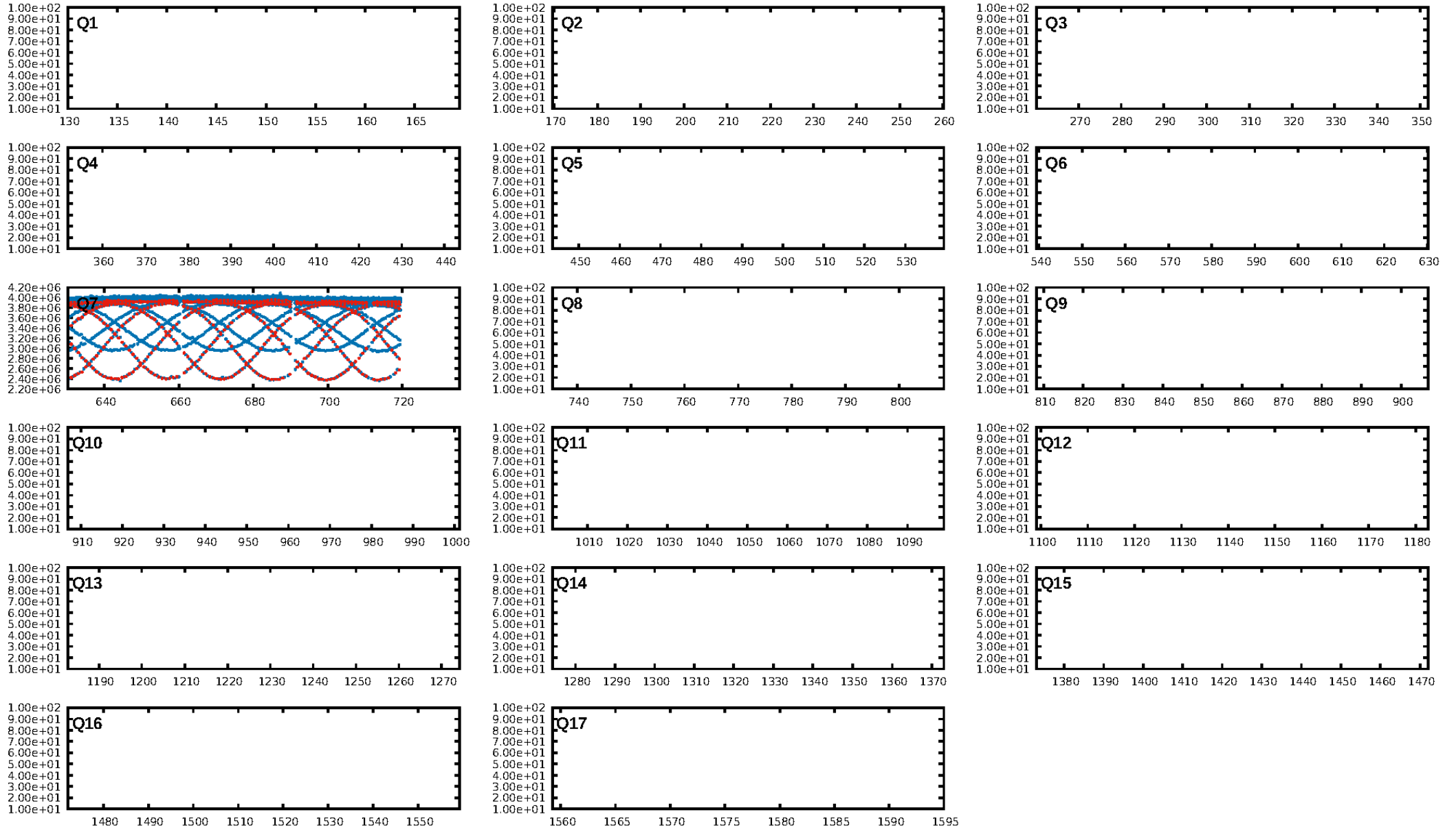
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [87/87]  
GhostDiagnostic-chr: 1.538  
Centroid-sig: N/A  
Centroid-so: 0.507 arcsec [66.91σ]  
OotOffset-rm: 0.014 arcsec [0.22σ]  
KicOffset-rm: 0.349 arcsec [5.23σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

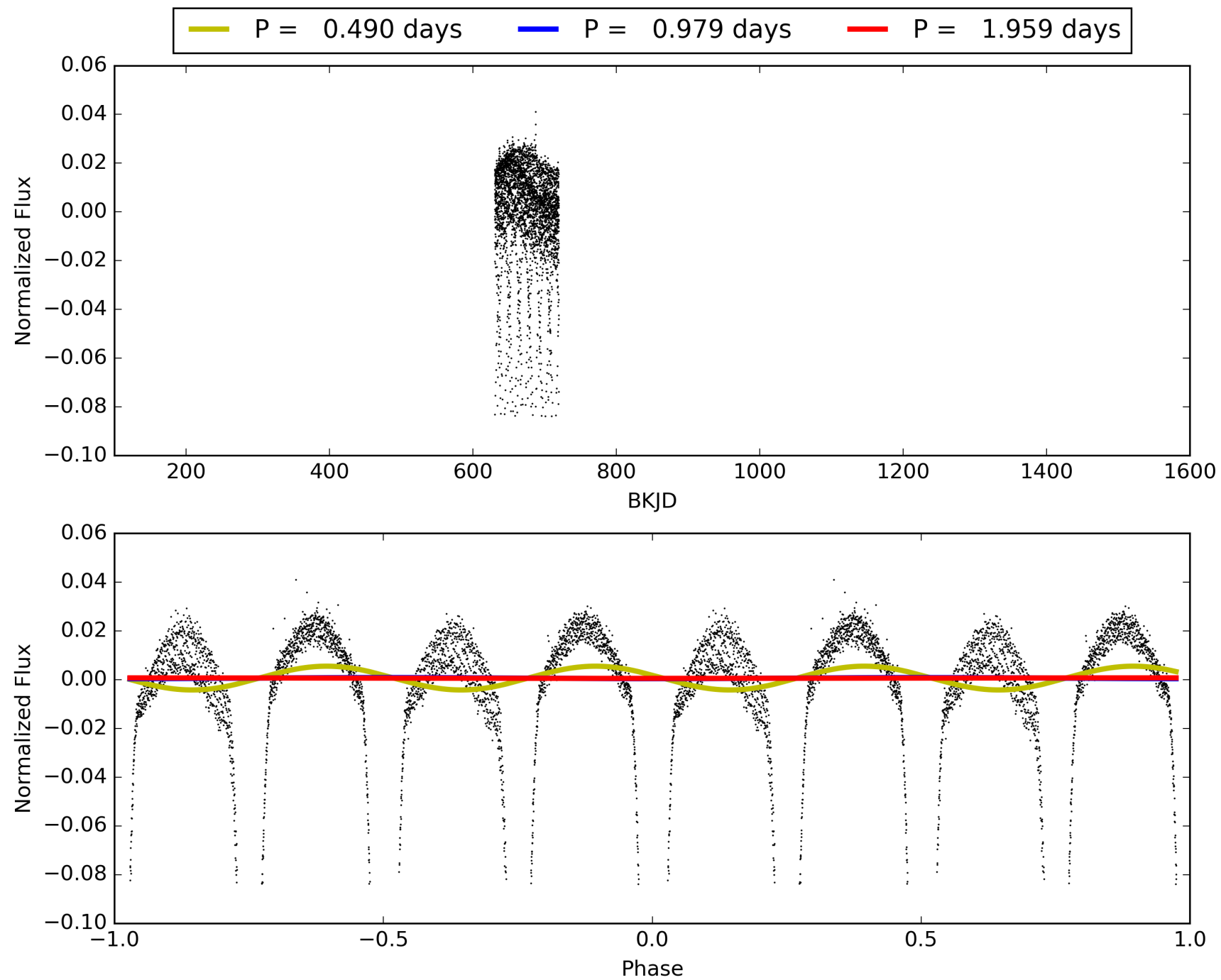
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:35:01 Z

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

# TCE 007938883-02, PDC Light Curves



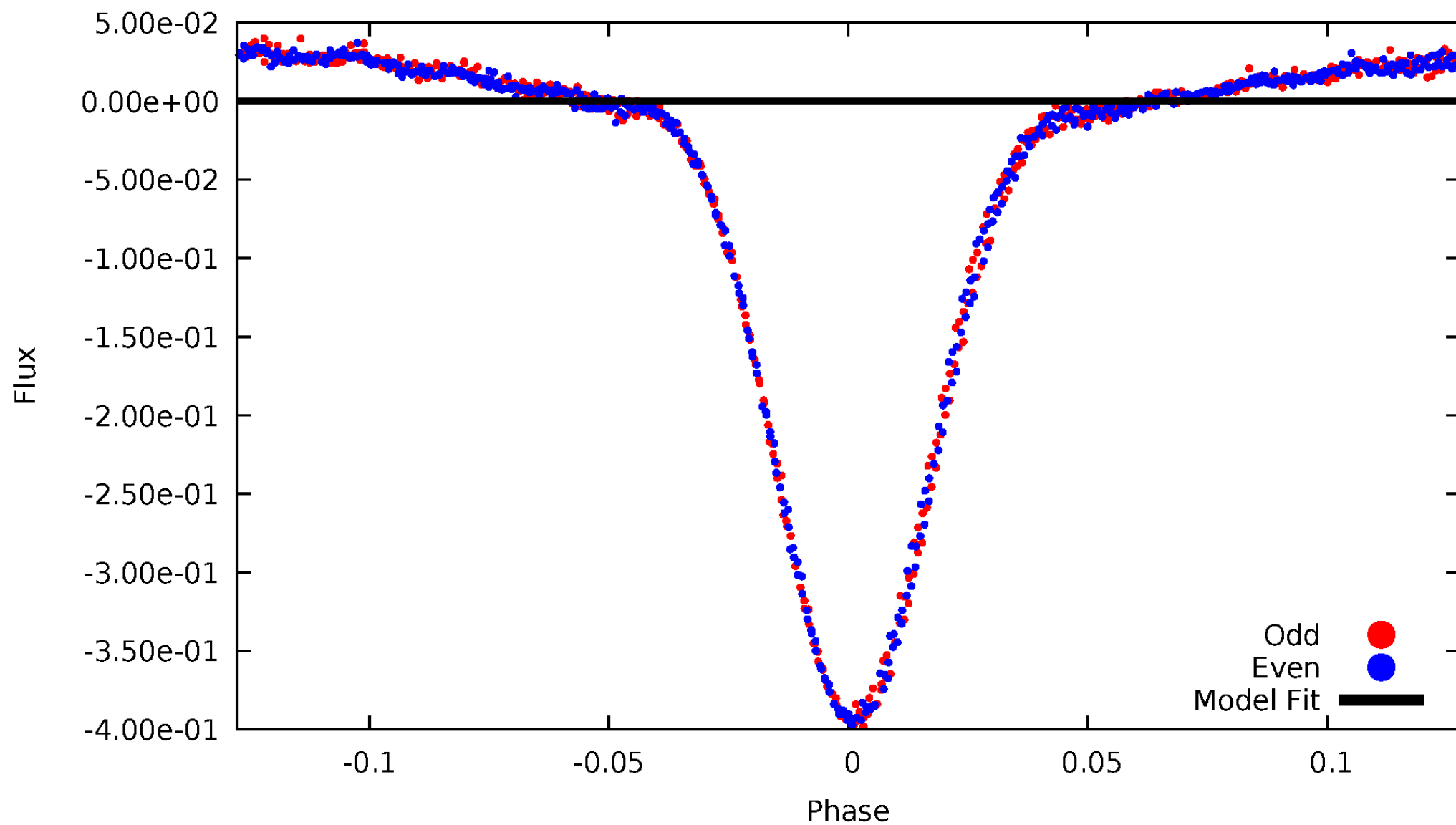
# TCE 007938883-02





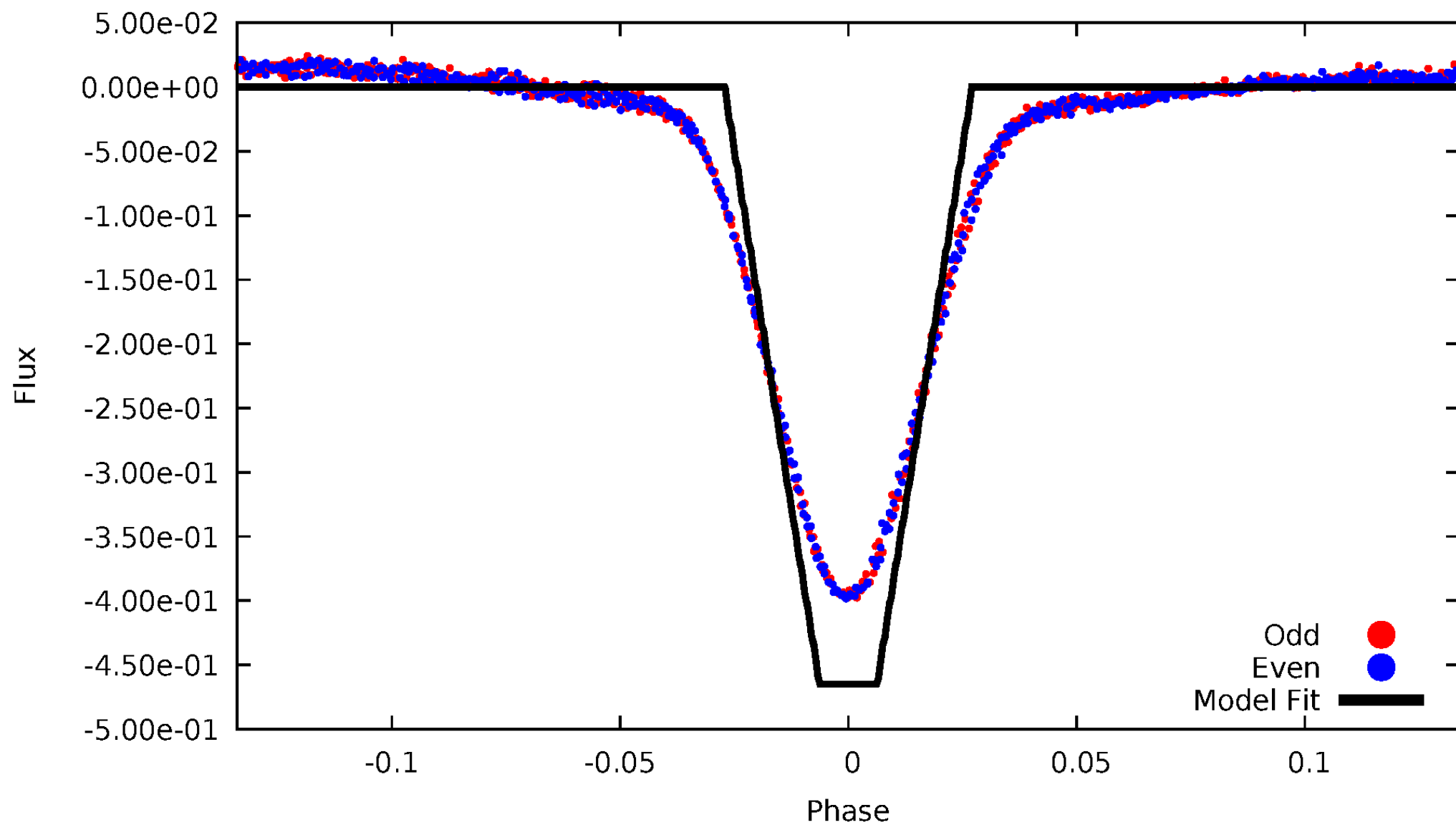
DV Odd/Even

TCE 007938883-02



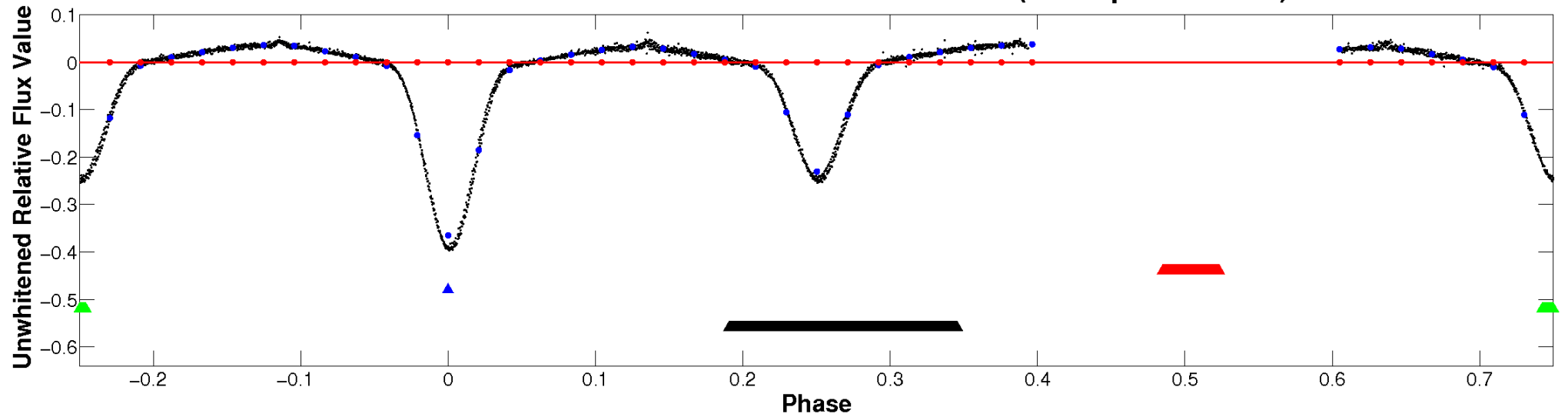
# ALT Odd/Even

TCE 007938883-02



# Non-Whitened Vs. Whitened Light Curve

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

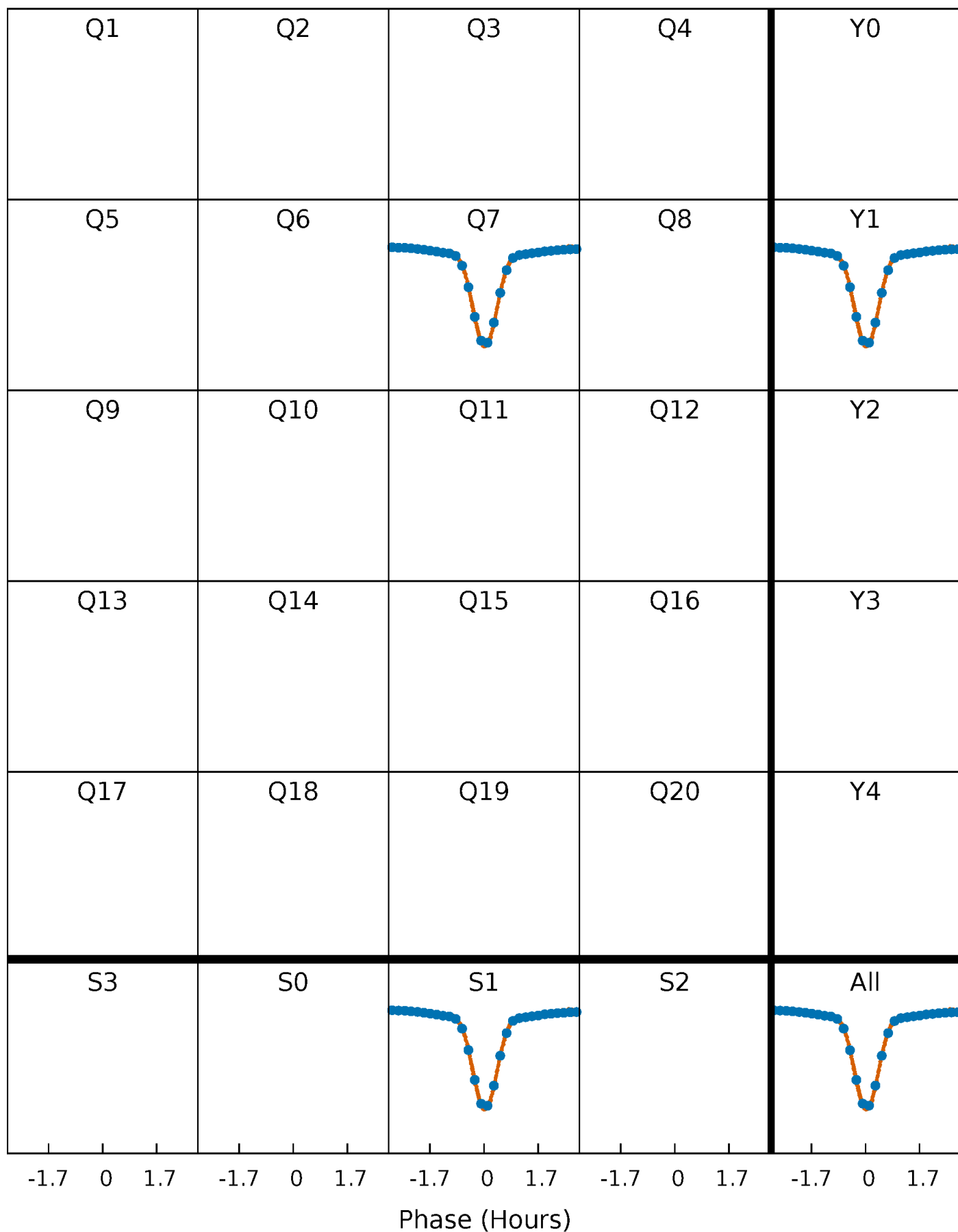


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



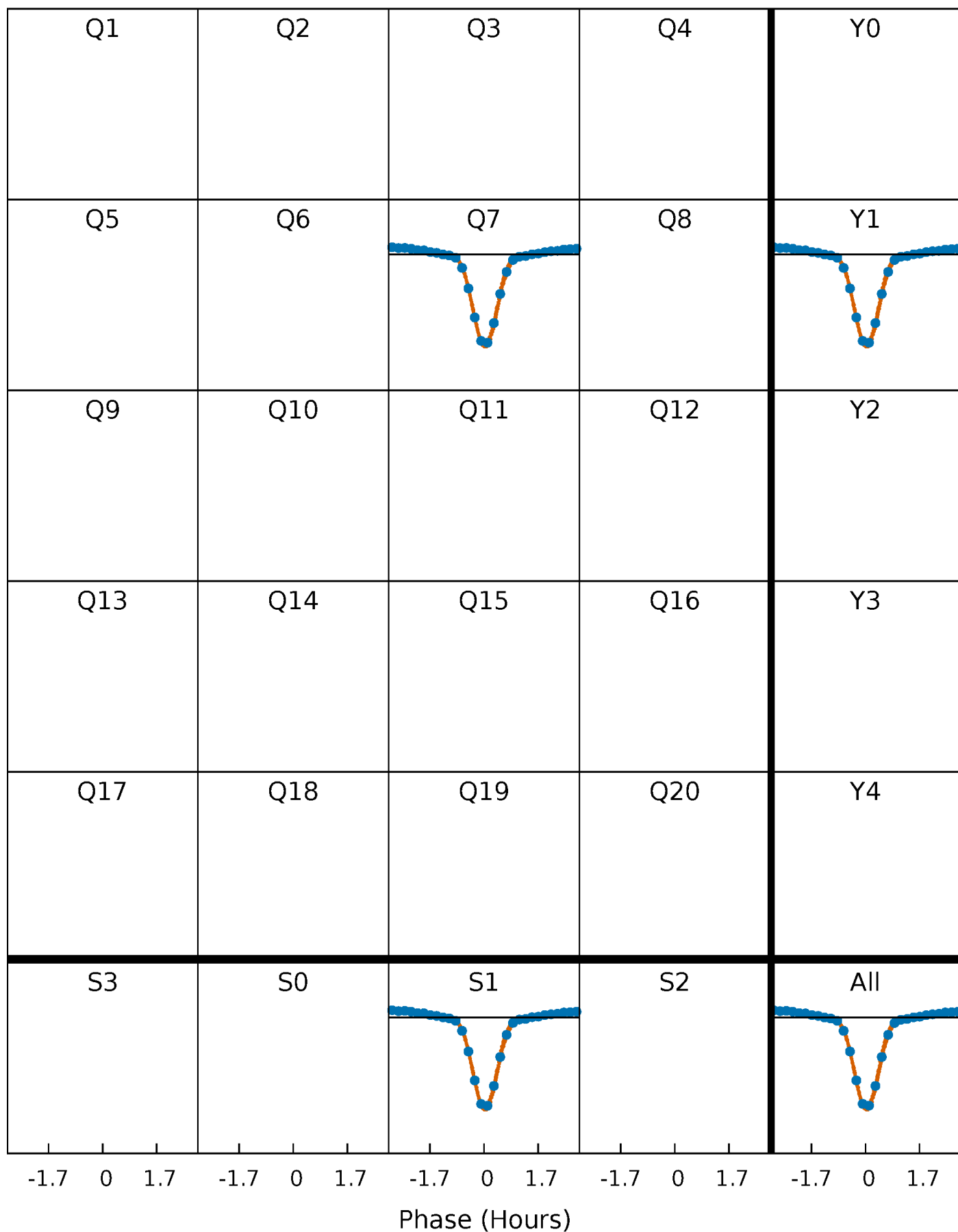
# PDC Quarter-Phased Transit Curves

TCE 007938883-02     $P = 0.979380$  Days     $T_0 = 131.564119$  (BKJD)



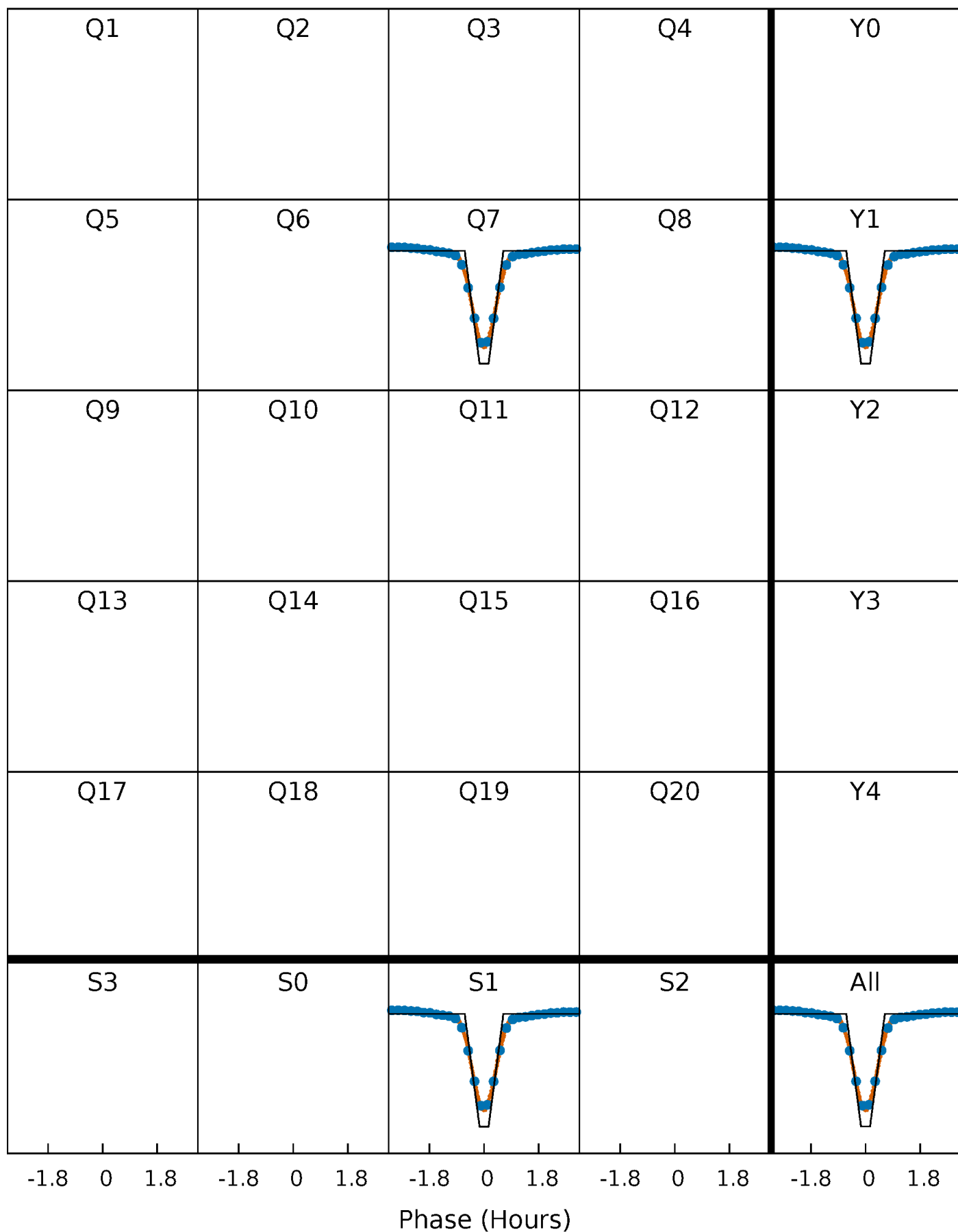
# DV Quarter-Phased Transit Curves

TCE 007938883-02   P= 0.979380 Days    $T_0=131.564119$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

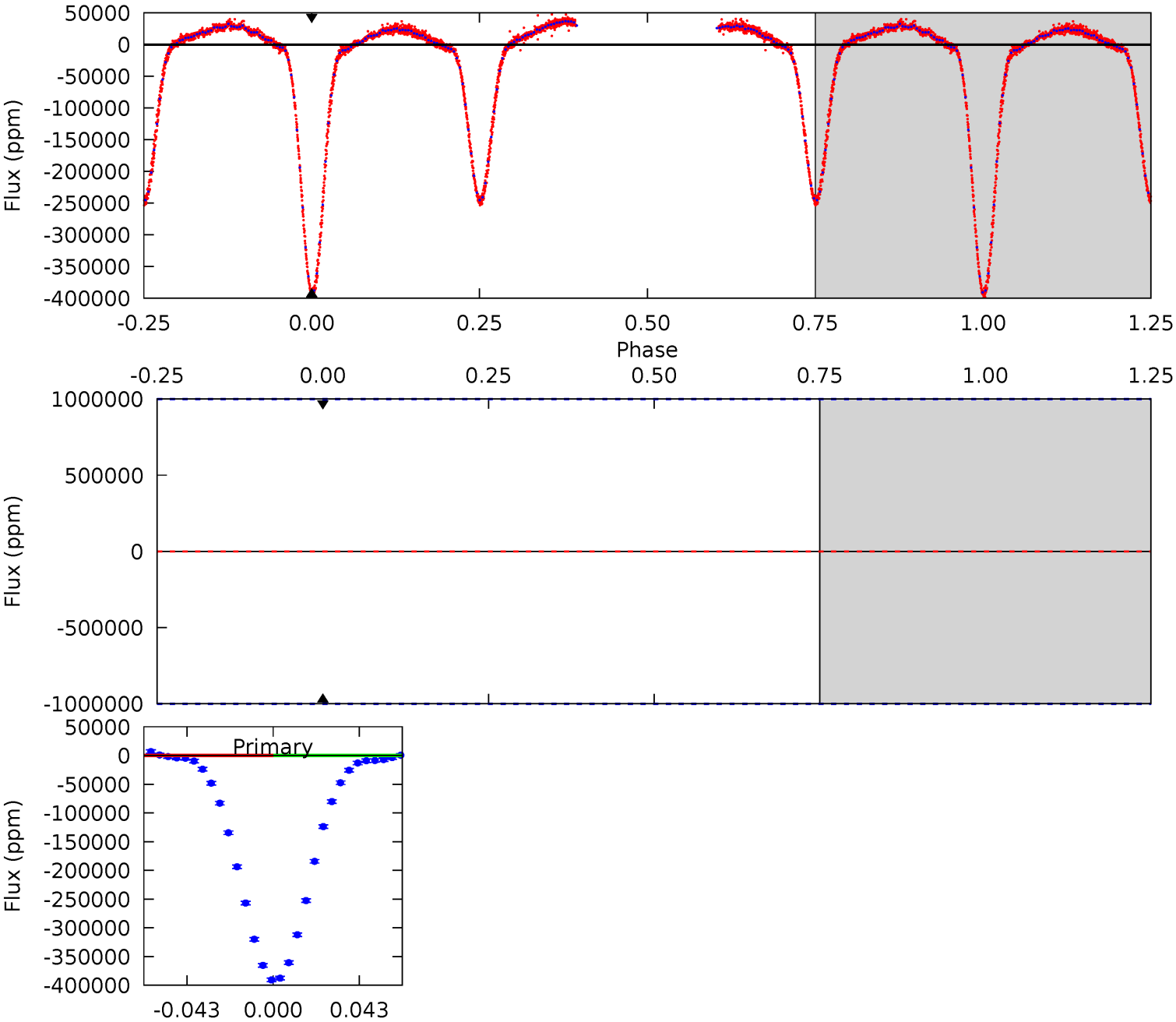
TCE 007938883-02     $P = 0.979380$  Days     $T_0 = 131.565401$  (BKJD)



# DV Model-Shift Uniqueness Test

007938883-02, P = 0.979380 Days, E = 131.564119 Days

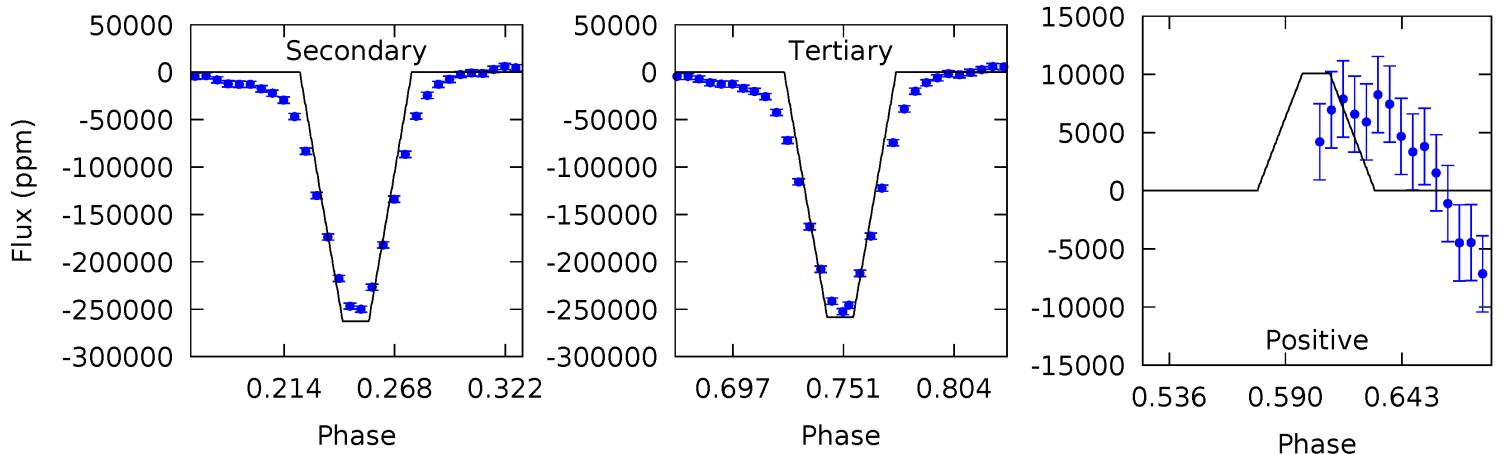
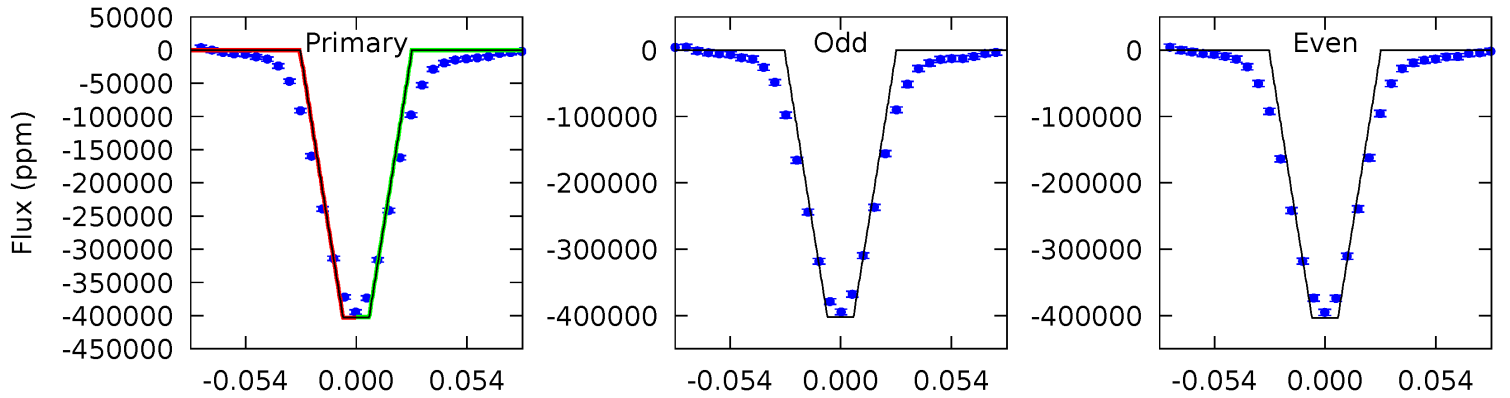
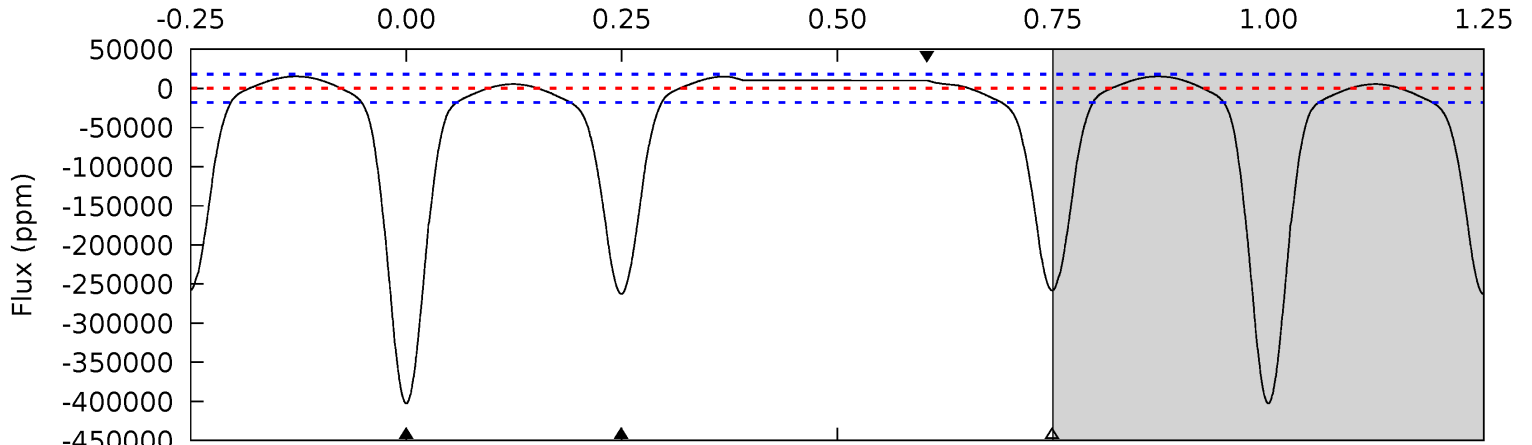
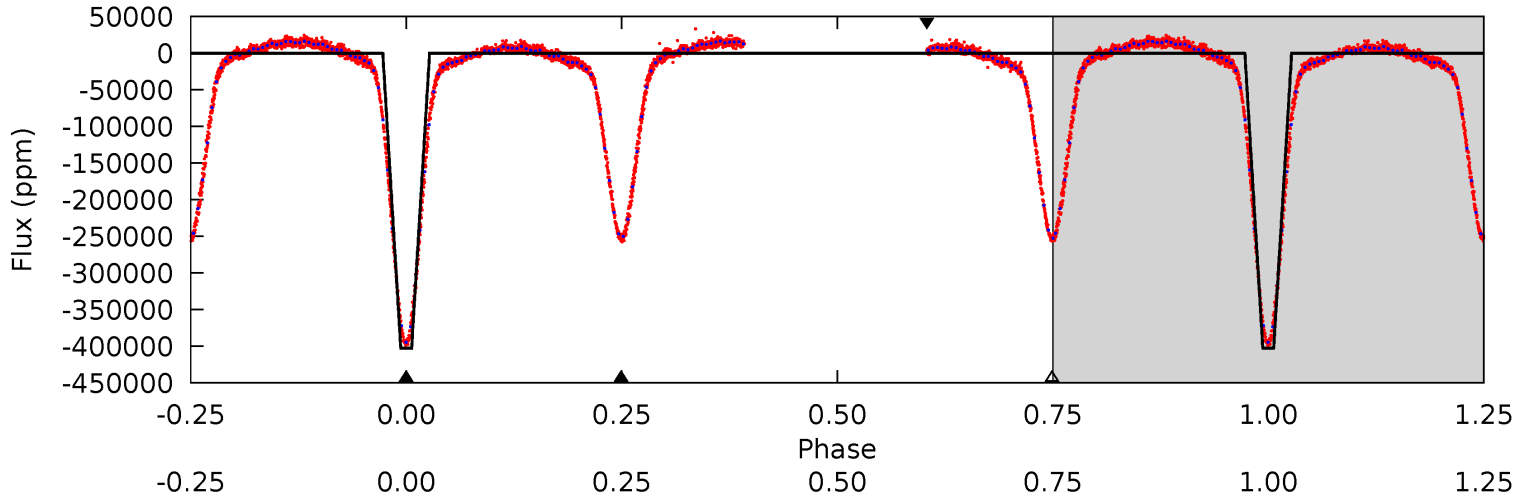
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007938883-02, P = 0.979380 Days, E = 131.565401 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
104.9	68.4	67.3	2.62	4.69	1.93	16.1	37.6	102.3	1.17	65.8	0.13	1.01	0.04	0.09





### Stellar Parameters For KIC 007938883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3898^{+135}_{-148}$	$4.735^{+0.072}_{-0.054}$	$-0.100^{+0.350}_{-0.400}$	$0.530^{+0.057}_{-0.079}$	$0.556^{+0.056}_{-0.084}$	$5.264^{+2.088}_{-1.053}$
	+3%/-4%	+2%/-1%	+350%/-400%	+11%/-15%	+10%/-15%	+40%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007938883-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$10.86^{+6.25}_{-5.43}$	$1385^{+57}_{-67}$	$-1835^{+6737}_{-3176}$	$0.153^{+136.582}_{-154.937}$
Alt.	$-262746 \pm 3840$	$39.00^{+6.59}_{-6.06}$	$1382^{+63}_{-67}$	$3718^{+243}_{-211}$	$32^{+13}_{-8}$

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

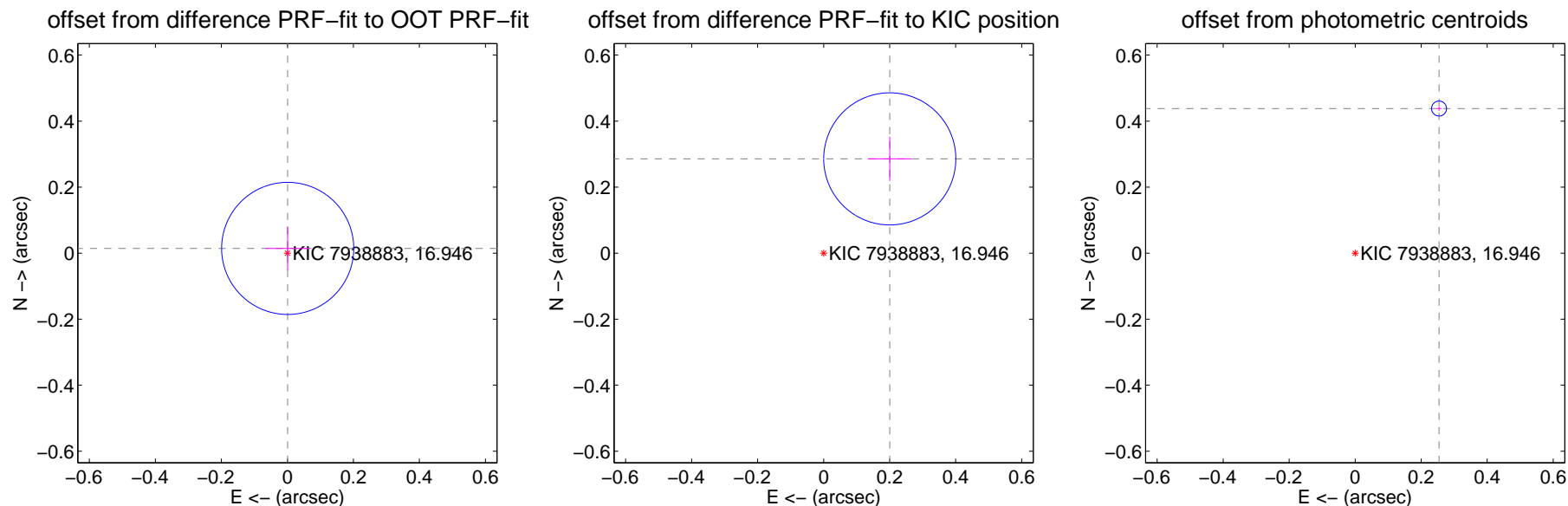
## DV Centroid Data

Supplemental centroid analysis for 007938883-02. Kepler magnitude: 16.95. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.014 \pm 0.067$	0.22	$-0.001 \pm 0.067$	$0.014 \pm 0.067$
PRF-fit source offset from KIC position	$0.349 \pm 0.067$	5.23	$-0.200 \pm 0.067$	$0.286 \pm 0.067$
photometric centroid source offset	$0.51 \pm 0.01$	66.91	$-0.25 \pm 0.01$	$0.44 \pm 0.01$

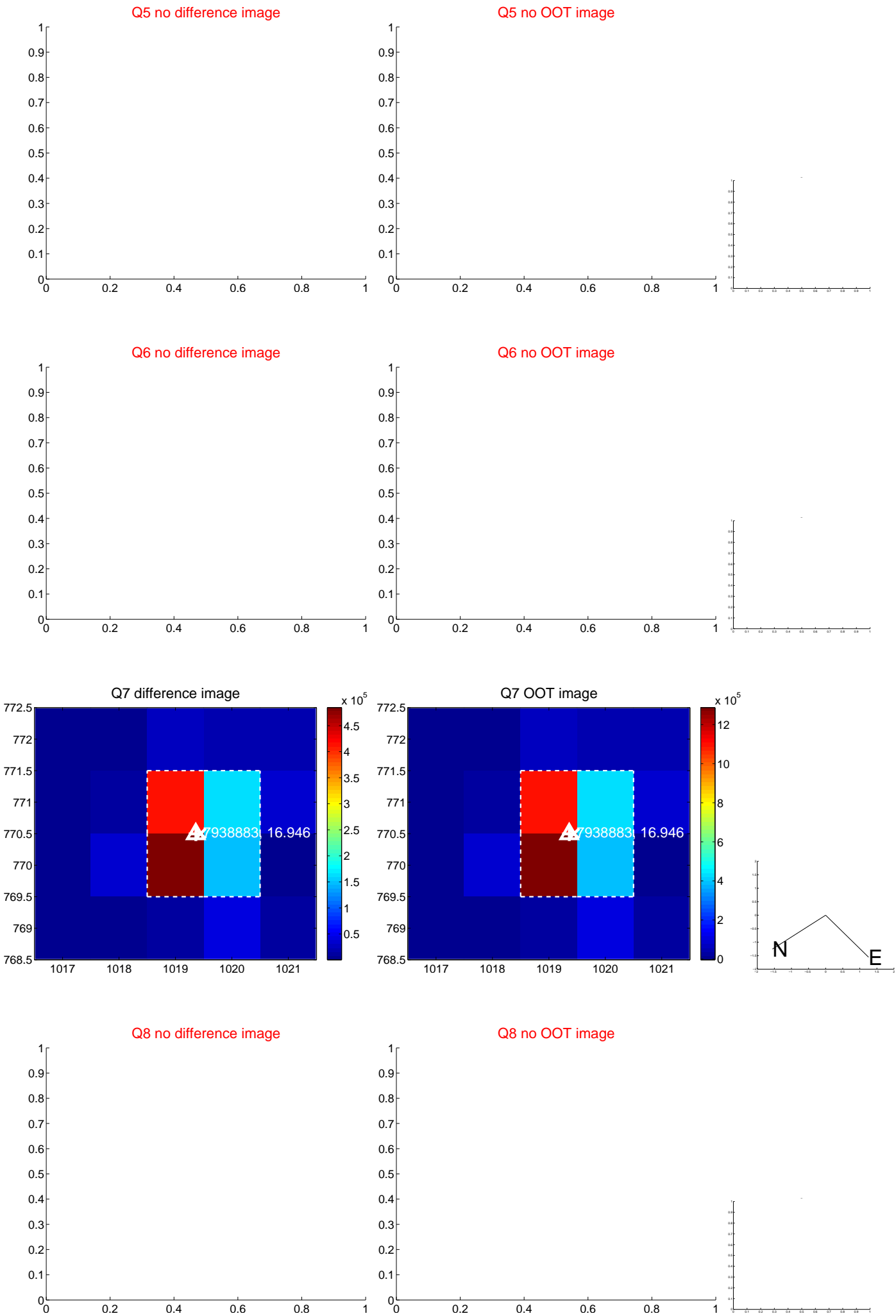


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



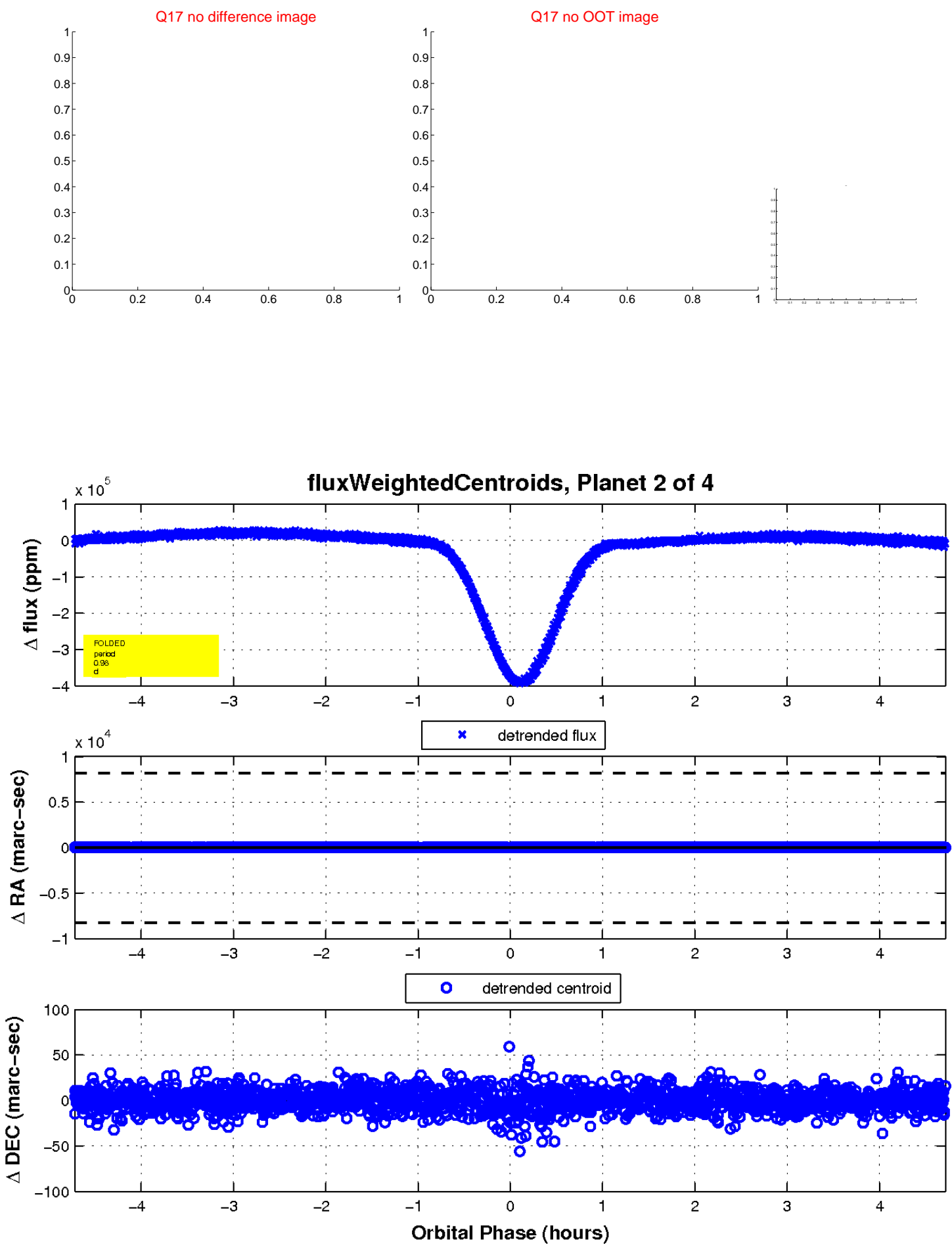
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

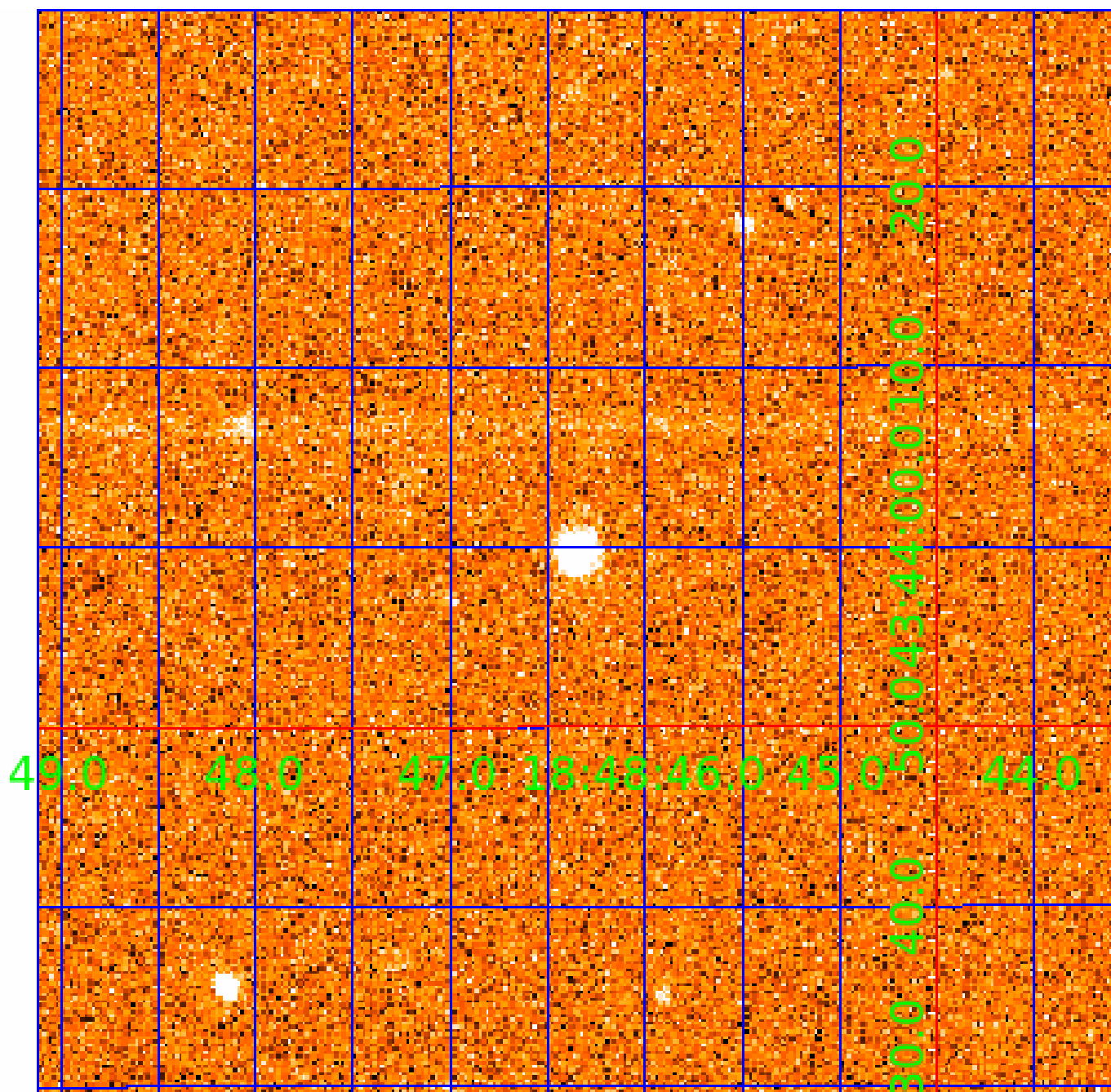


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007938883

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007938883-01	OBS	3974.01	0.979405	132.039119	376729.4	1.500	372.6	-1.0	0.53	3898	16.09	230.41
007938883-02	OBS	No	0.979380	131.564119	377089.2	1.500	257.1	-1.0	0.53	3898	10.76	230.41
007938883-03	OBS	No	0.979372	132.302724	228357.4	1.483	143.7	203.4	0.53	3898	25.98	230.42
007938883-04	OBS	No	0.979482	131.750777	18408.9	2.000	113.2	-1.0	0.53	3898	7.12	230.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007938883-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS
007938883-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_NOFITS
007938883-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
007938883-04	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—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.

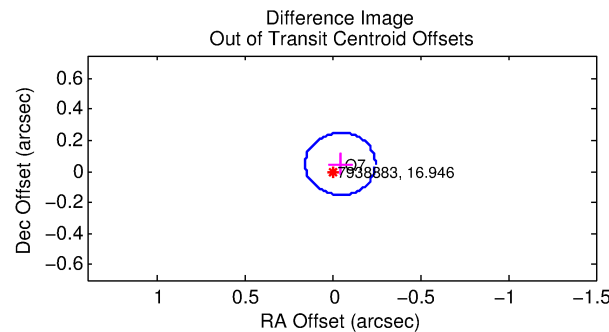
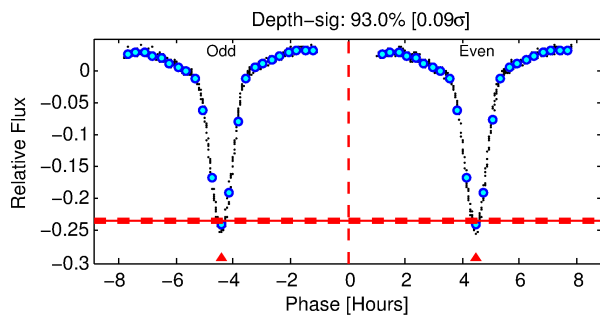
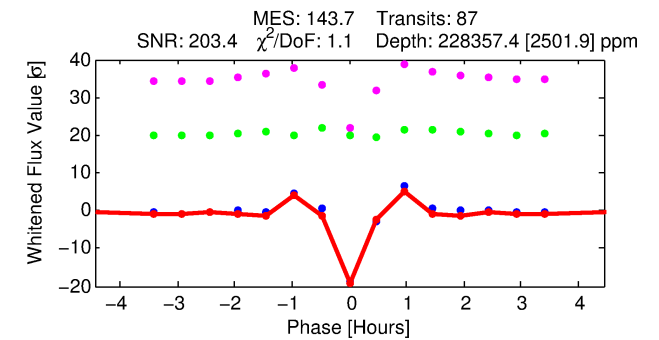
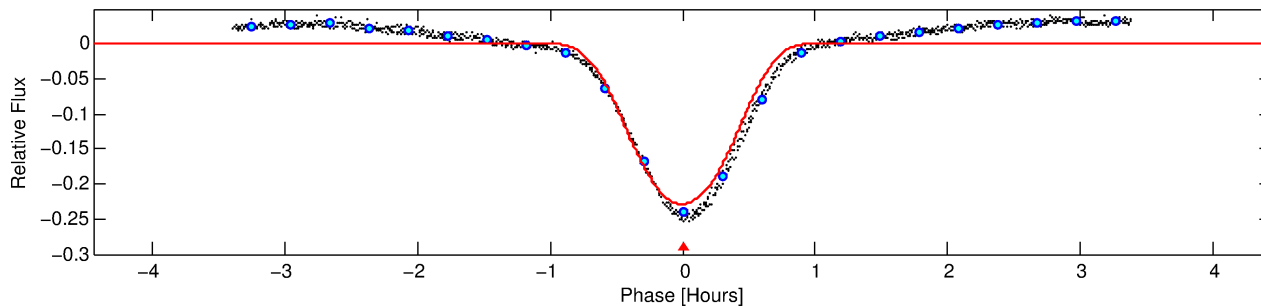
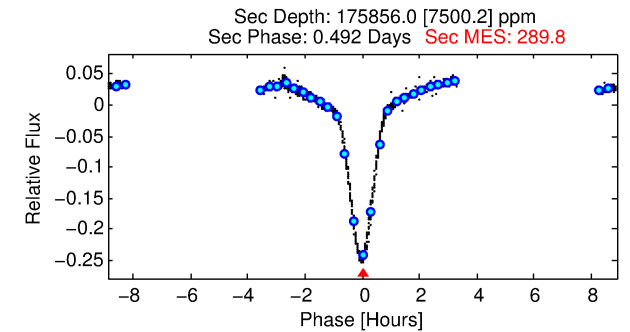
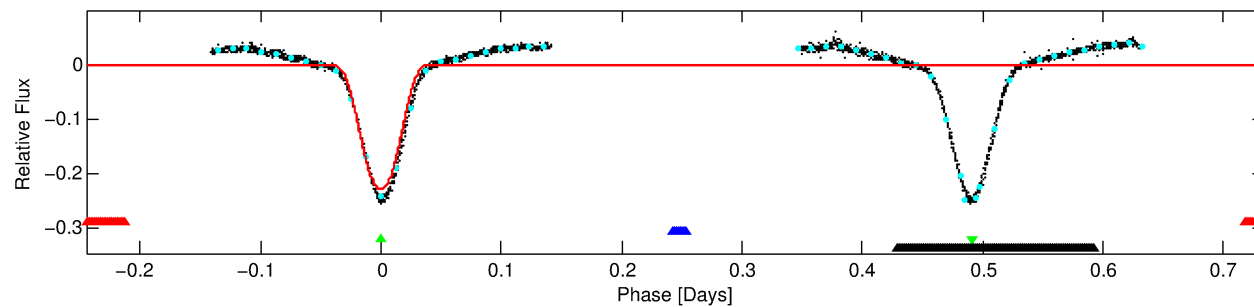
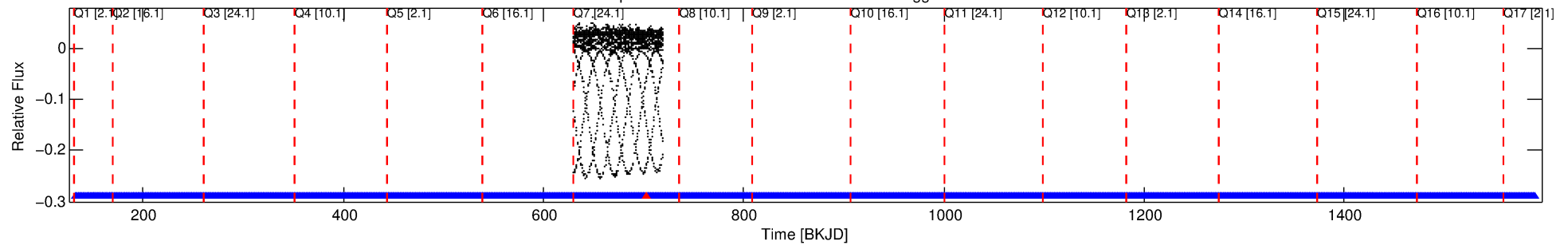
Ephemeris Match Information For 007938883-03

No Significant Match Found

# DV One-Page Summary

KIC: 7938883 Candidate: 3 of 4 Period: 0.979 d  
KOI: K03974 Corr: No Ephemeris Match

Kp: 16.95 R\*: 0.53 Rs Teff: 3898.0 K Logg: 4.74 Fe/H: -0.100



## DV Fit Results:

Period = 0.97937 [0.00000] d  
Epoch = 132.3027 [0.0001] BKJD  
Rp/R\* = 0.4493 [0.0048]  
a/R\* = 7.21 [0.12]  
b = 0.30 [0.06]  
Seff = 230.42 [48.96]  
Teq = 993 [53] K  
Rp = 25.98 [3.88] Re  
a = 0.0159 [0.0018] AU  
Ag = 36.14 [5.64] [6.23σ]  
Teffp = 3766 [150] K [17.45σ]

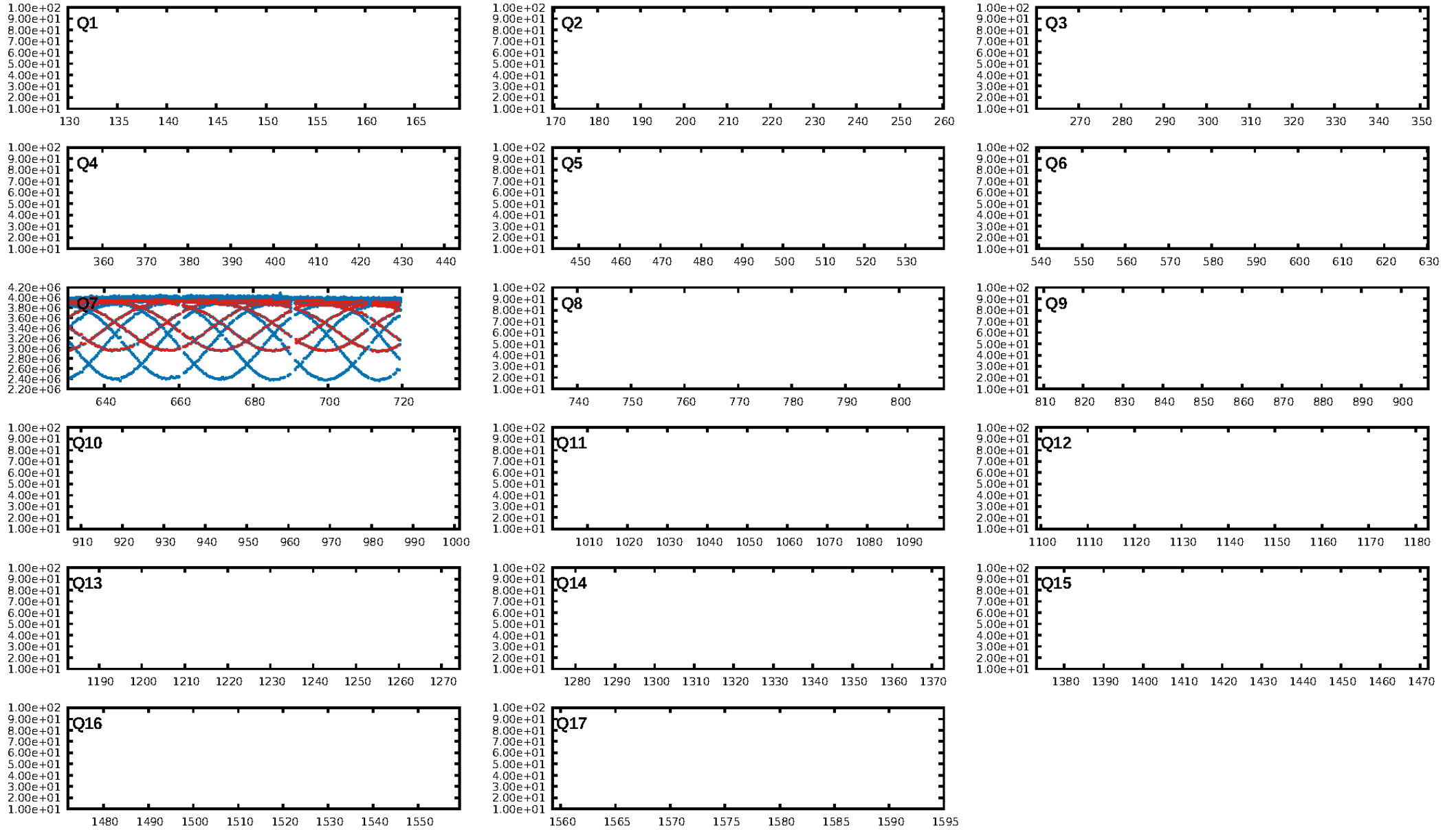
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [86/87]  
GhostDiagnostic-chr: 0.8712  
Centroid-sig: N/A  
Centroid-so: 0.530 arcsec [46.37σ]  
OotOffset-rm: 0.065 arcsec [0.98σ]  
KicOffset-rm: 0.403 arcsec [6.04σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

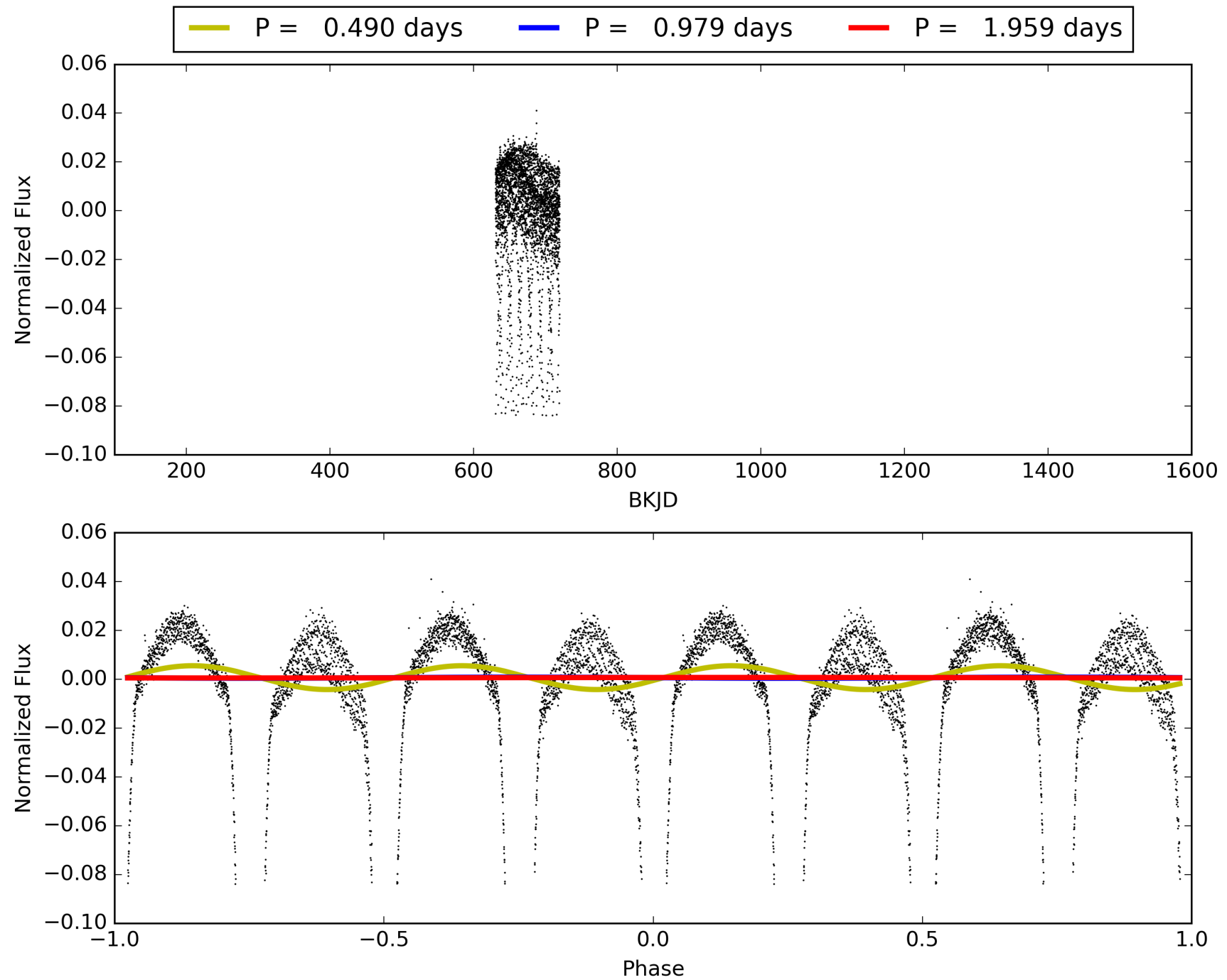
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:35:05 Z

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

# TCE 007938883-03, PDC Light Curves

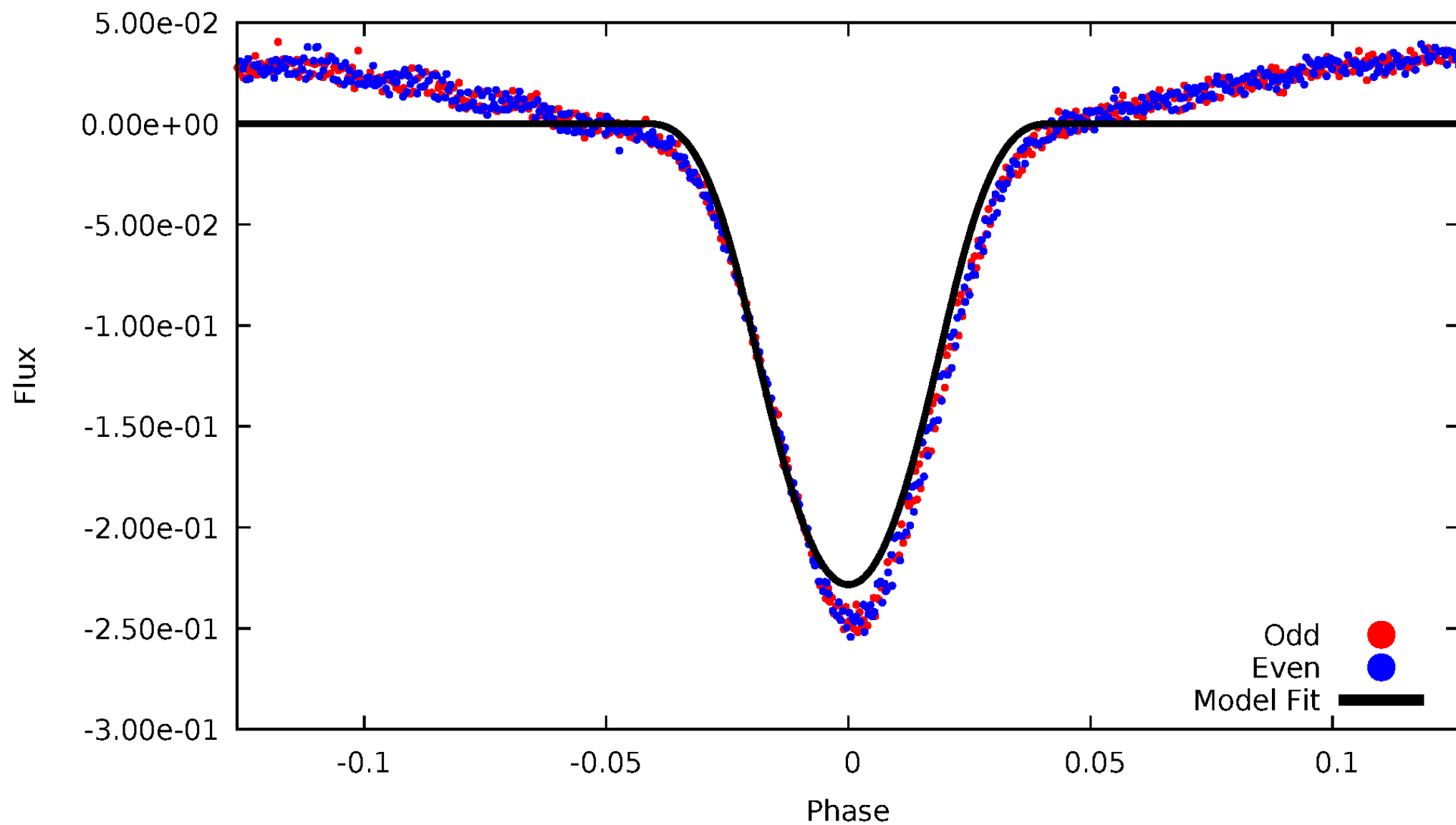


TCE 007938883-03



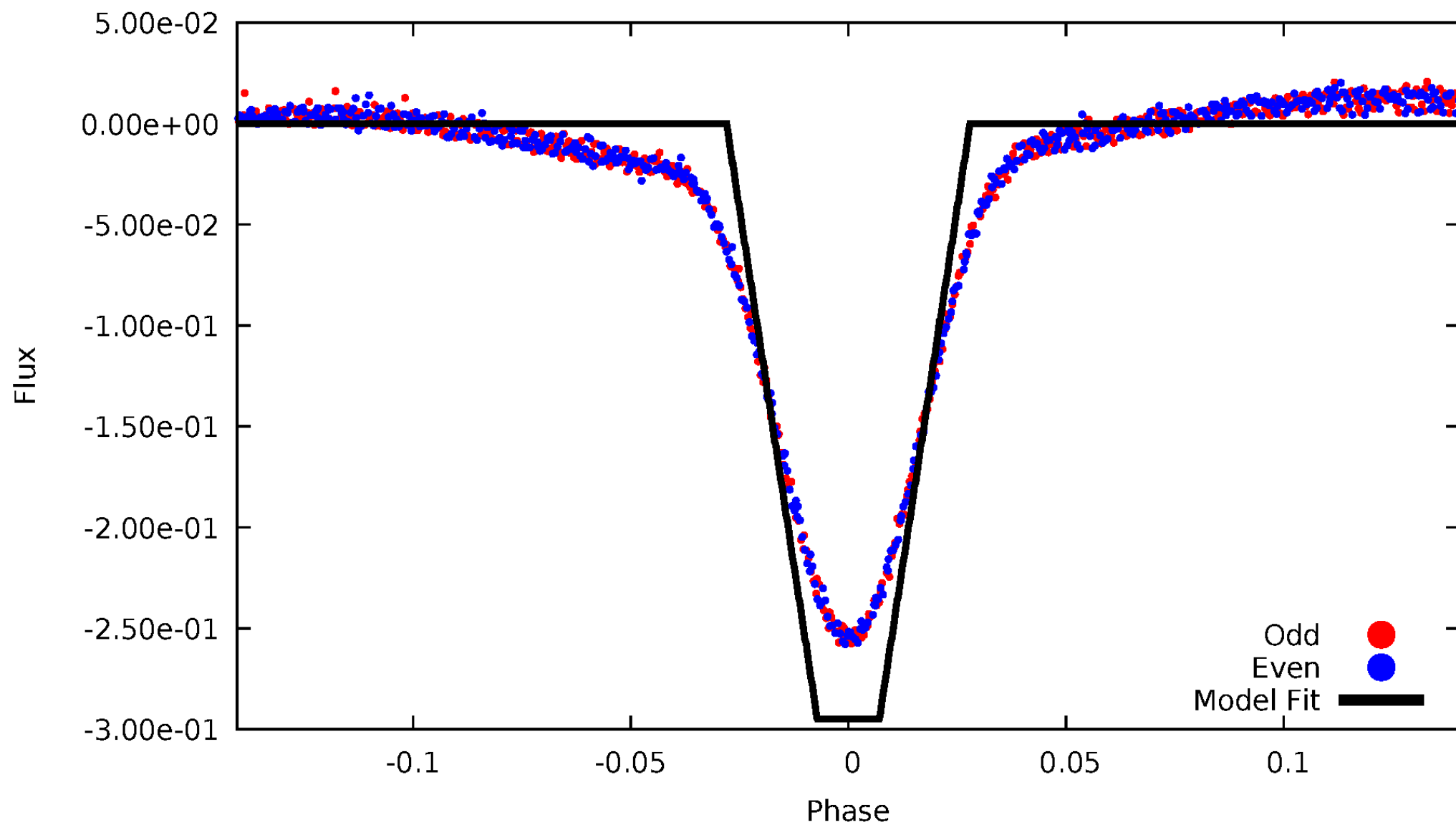
DV Odd/Even

TCE 007938883-03



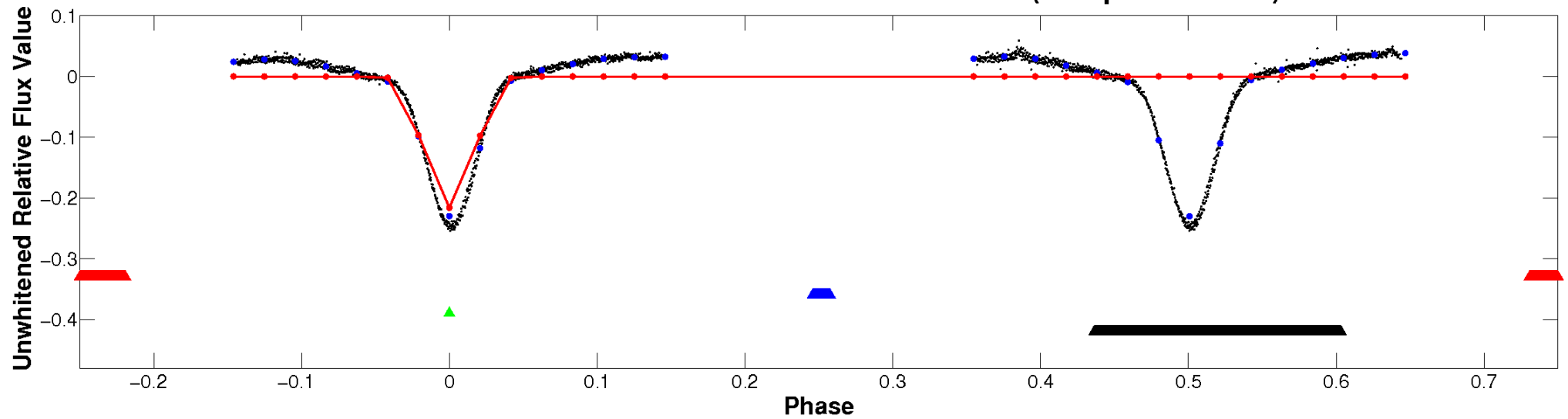
# ALT Odd/Even

TCE 007938883-03

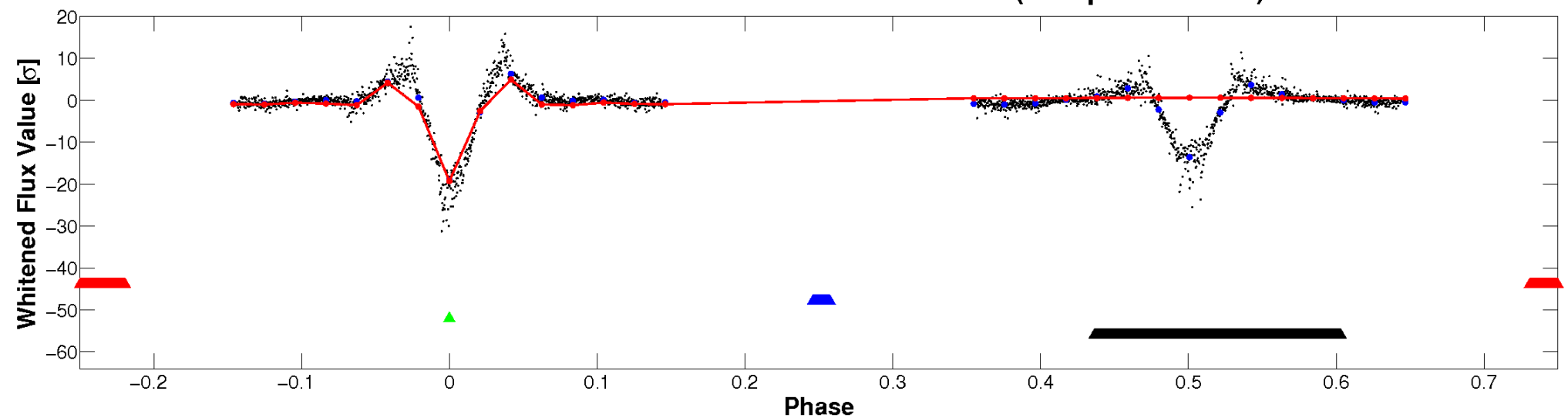


# Non-Whitened Vs. Whitened Light Curve

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

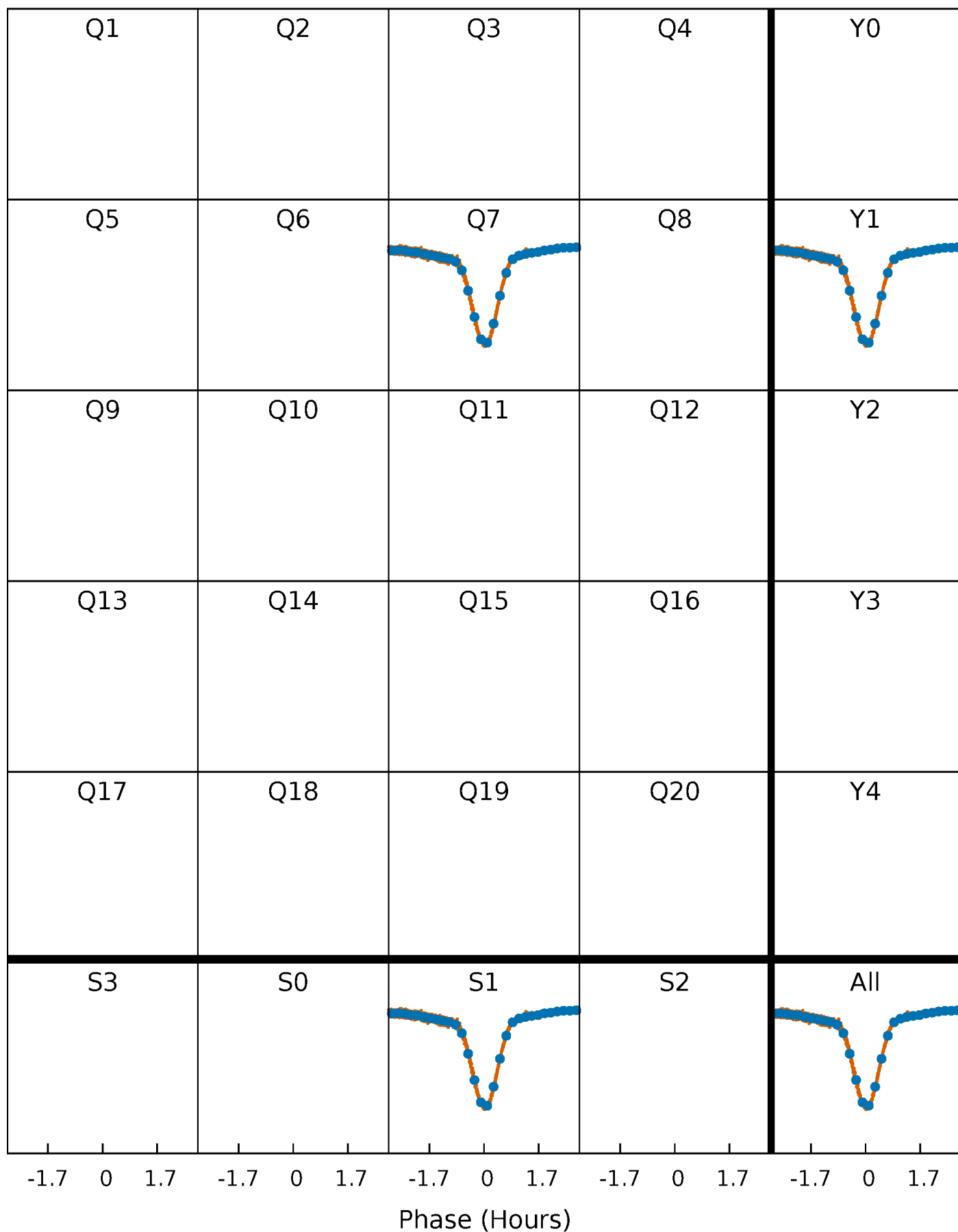


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

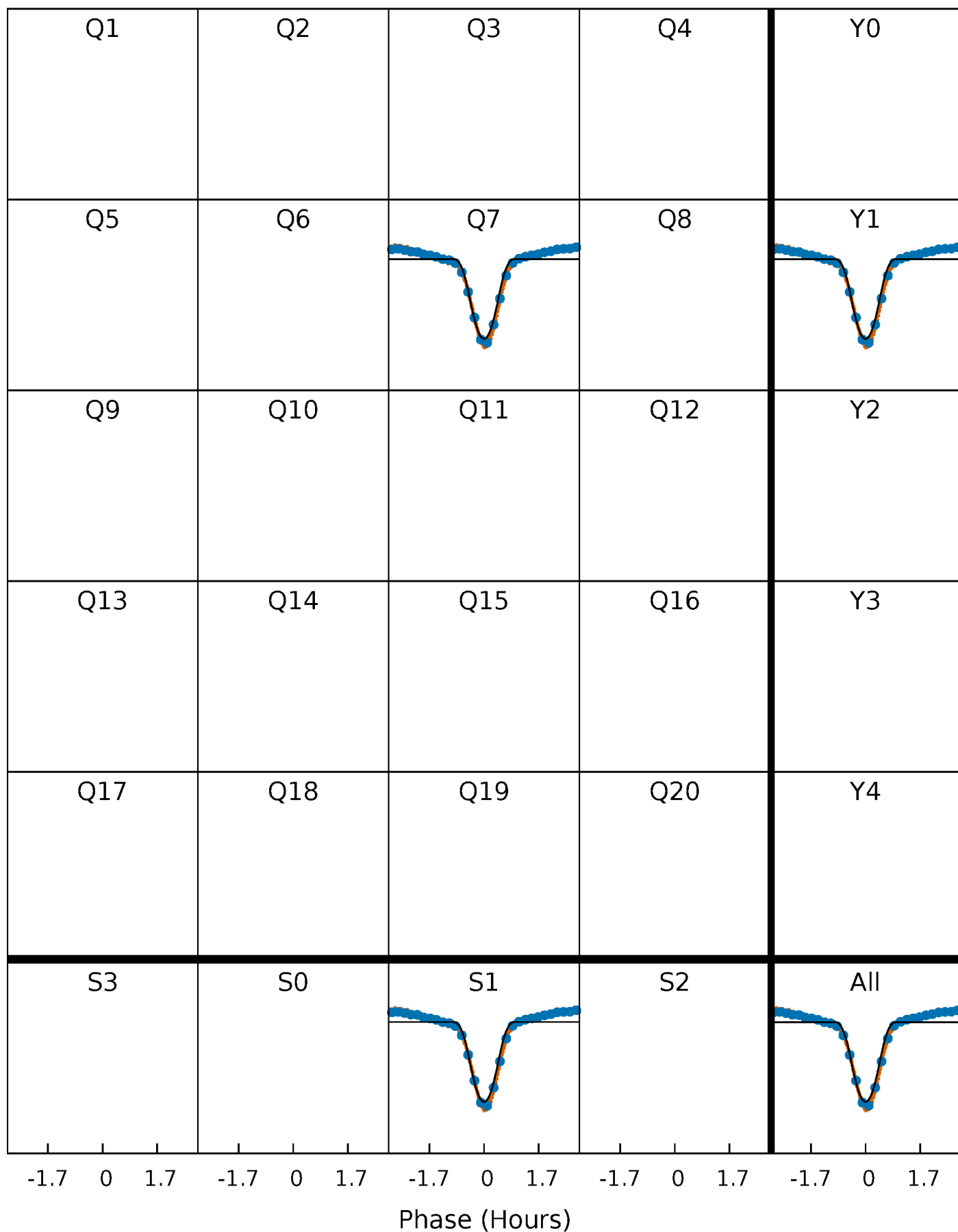
TCE 007938883-03   P= 0.979372 Days    $T_0=132.302724$  (BKJD)





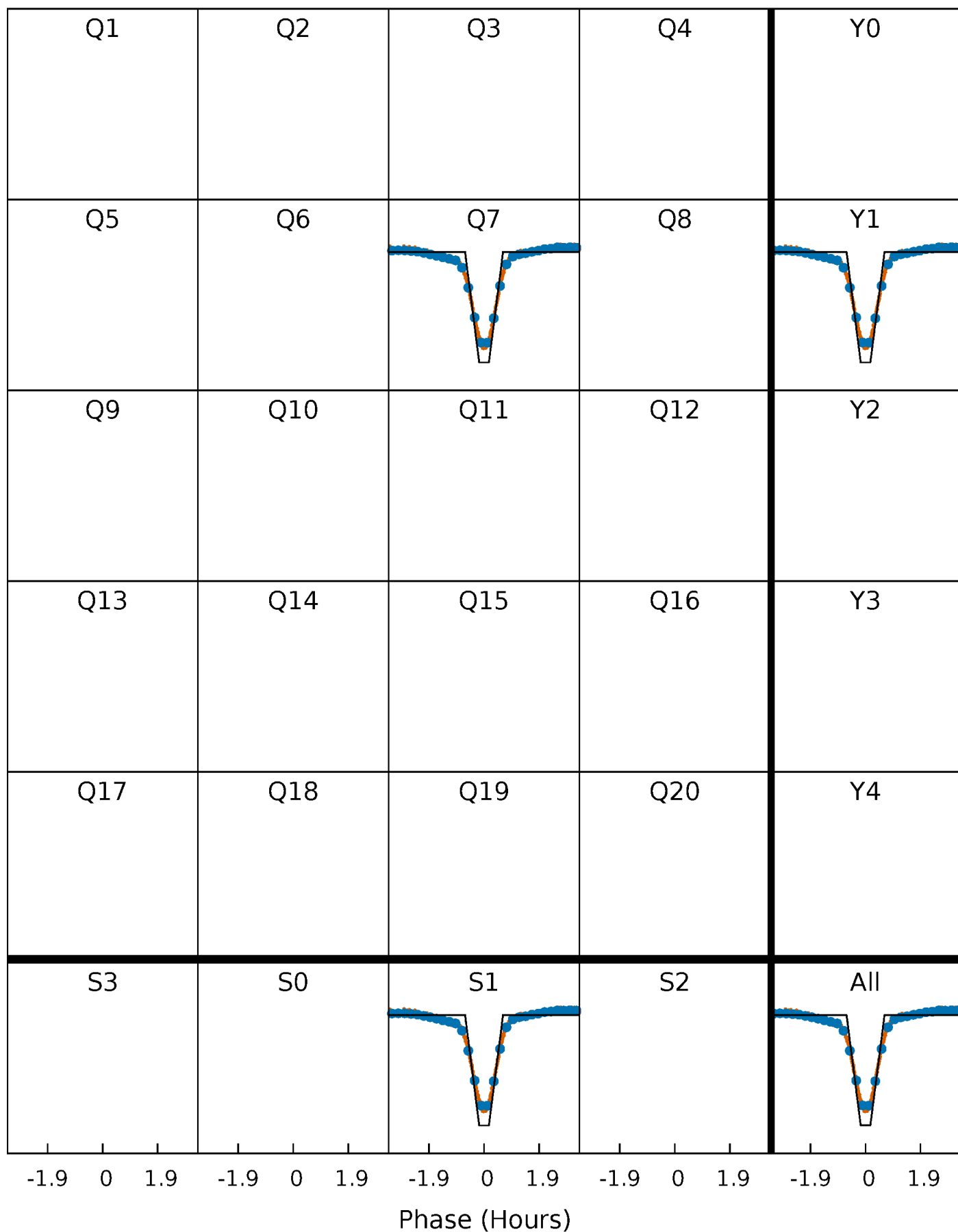
# DV Quarter-Phased Transit Curves

TCE 007938883-03     $P = 0.979372$  Days     $T_0 = 132.302724$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

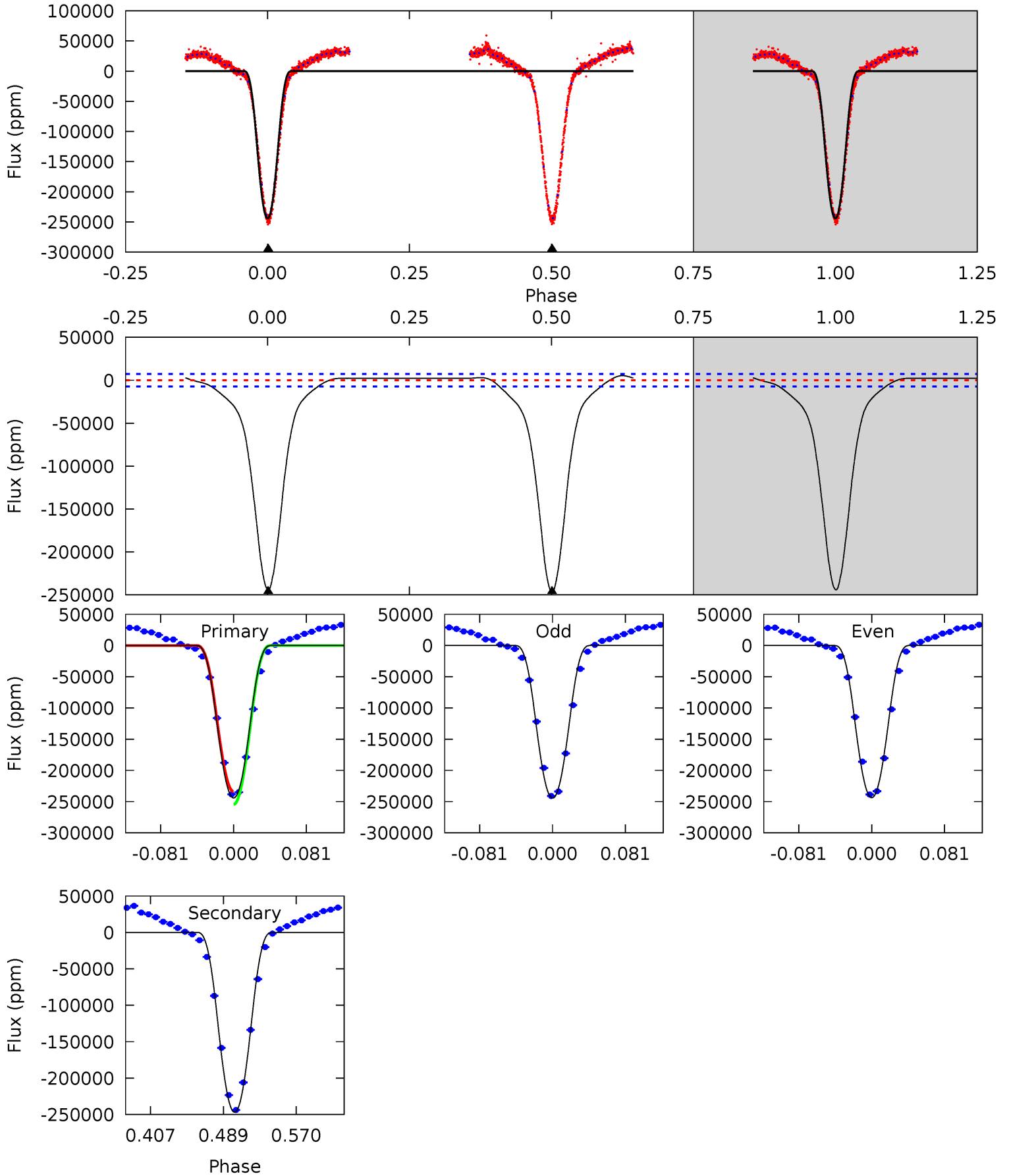
TCE 007938883-03     $P = 0.979355$  Days     $T_0 = 132.313236$  (BKJD)



# DV Model-Shift Uniqueness Test

007938883-03, P = 0.979372 Days, E = 132.302724 Days

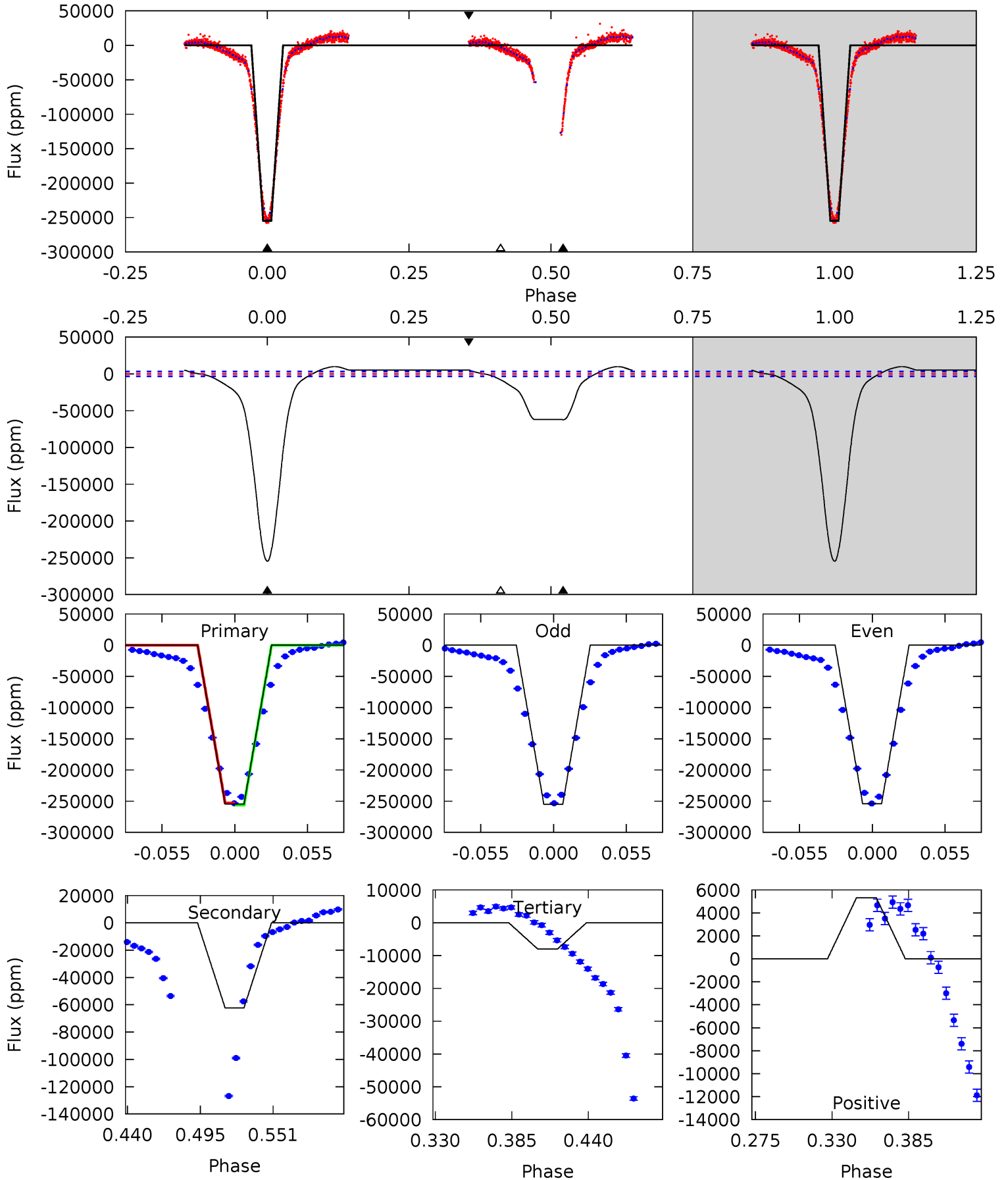
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
154.1	155.8	0	0	4.61	1.74	3.31	154.1	154.1	155.8	155.8	0.22	1.00	0.02	6.40



# Alt Model-Shift Uniqueness Test

007938883-03, P = 0.979355 Days, E = 132.313236 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
369.5	90.4	11.6	7.72	4.69	1.92	19.6	357.9	361.8	78.8	82.7	0.57	1.01	0.04	2.96



### Stellar Parameters For KIC 007938883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3898^{+135}_{-148}$	$4.735^{+0.072}_{-0.054}$	$-0.100^{+0.350}_{-0.400}$	$0.530^{+0.057}_{-0.079}$	$0.556^{+0.056}_{-0.084}$	$5.264^{+2.088}_{-1.053}$
	+3%/-4%	+2%/-1%	+350%/-400%	+11%/-15%	+10%/-15%	+40%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007938883-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-246713 \pm 1583$	$26.09^{+1.57}_{-2.14}$	$1383^{+58}_{-70}$	$4253^{+156}_{-194}$	$68^{+9}_{-6}$
Alt.	$-62297 \pm 689$	$31.54^{+1.91}_{-2.49}$	$1382^{+64}_{-61}$	$3063^{+88}_{-96}$	$9.358^{+1.097}_{-0.920}$

$T_{max}$  = 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

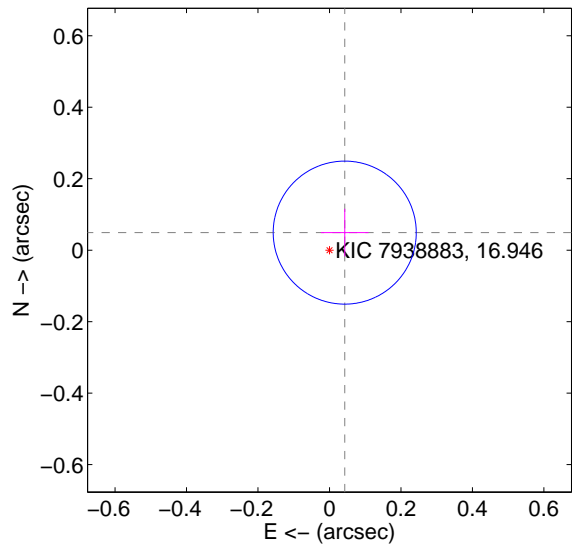
Supplemental centroid analysis for 007938883-03. Kepler magnitude: 16.95. Transit SNR 203.44

There are 1 quarters with good PRF difference image offsets

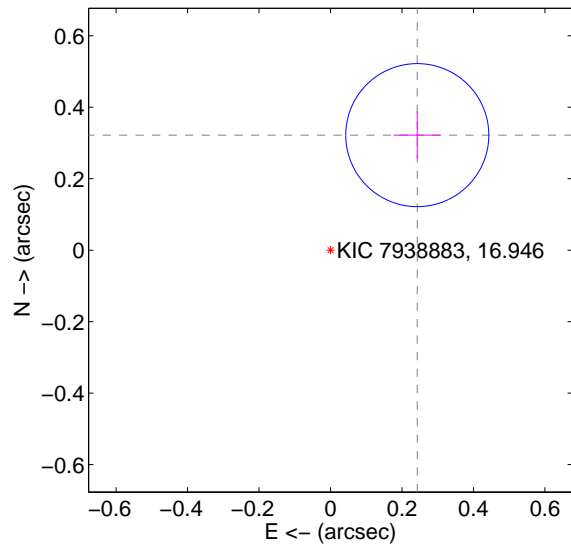
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.065 \pm 0.067$	0.98	$-0.043 \pm 0.067$	$0.049 \pm 0.067$
PRF-fit source offset from KIC position	$0.403 \pm 0.067$	6.04	$-0.243 \pm 0.067$	$0.322 \pm 0.067$
photometric centroid source offset	$0.53 \pm 0.01$	46.37	$-0.31 \pm 0.01$	$0.43 \pm 0.01$

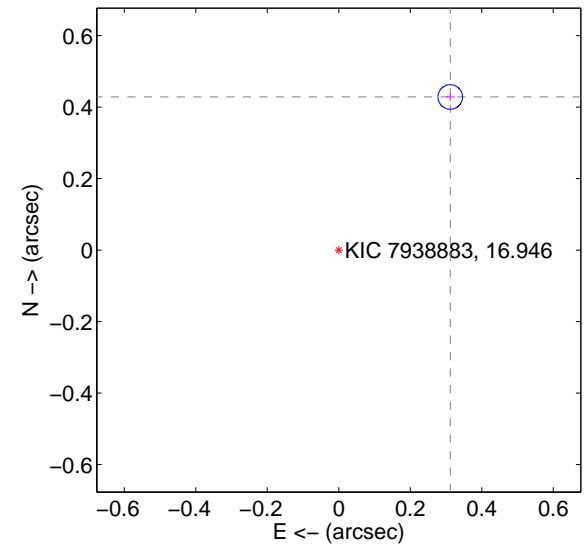
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

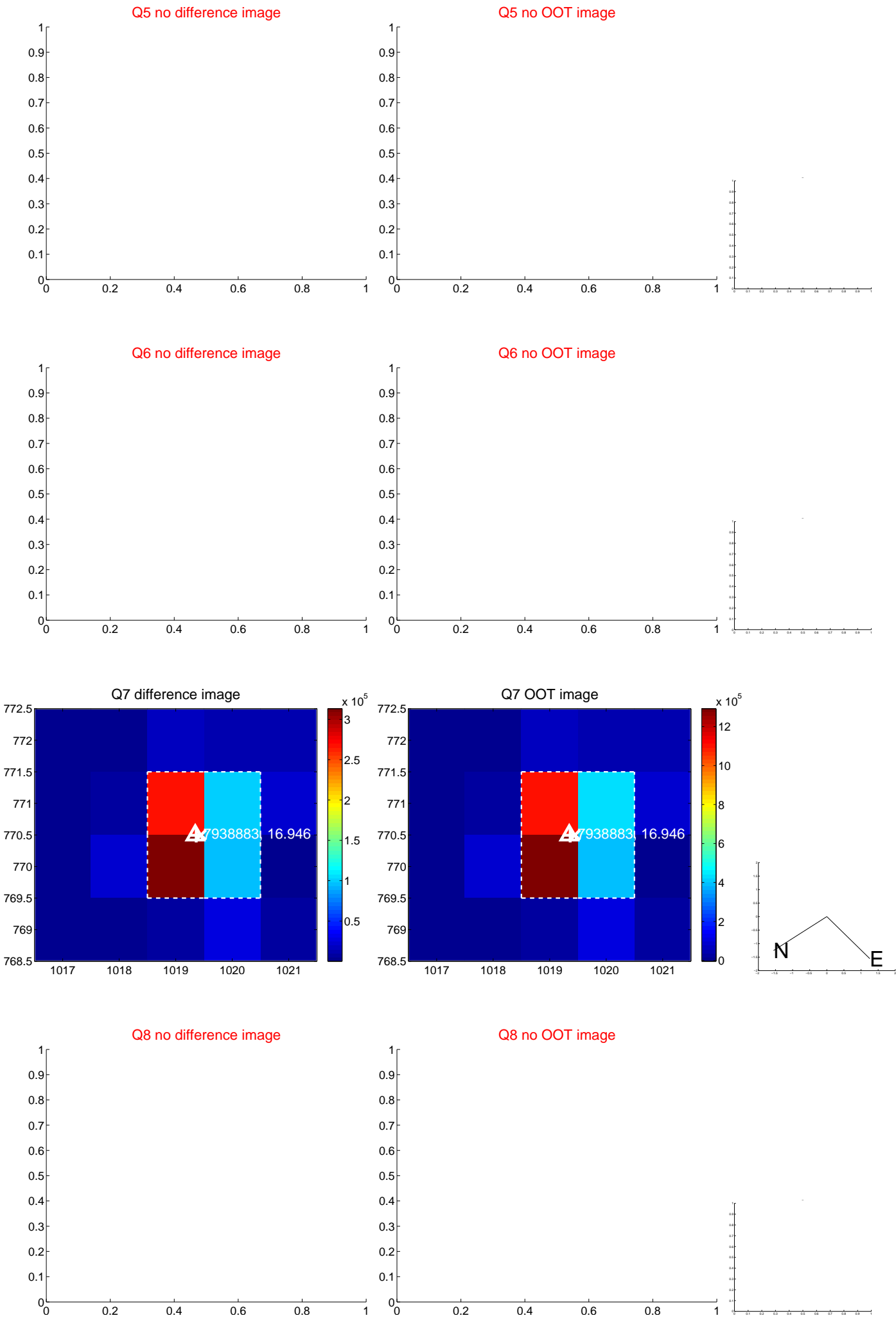


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





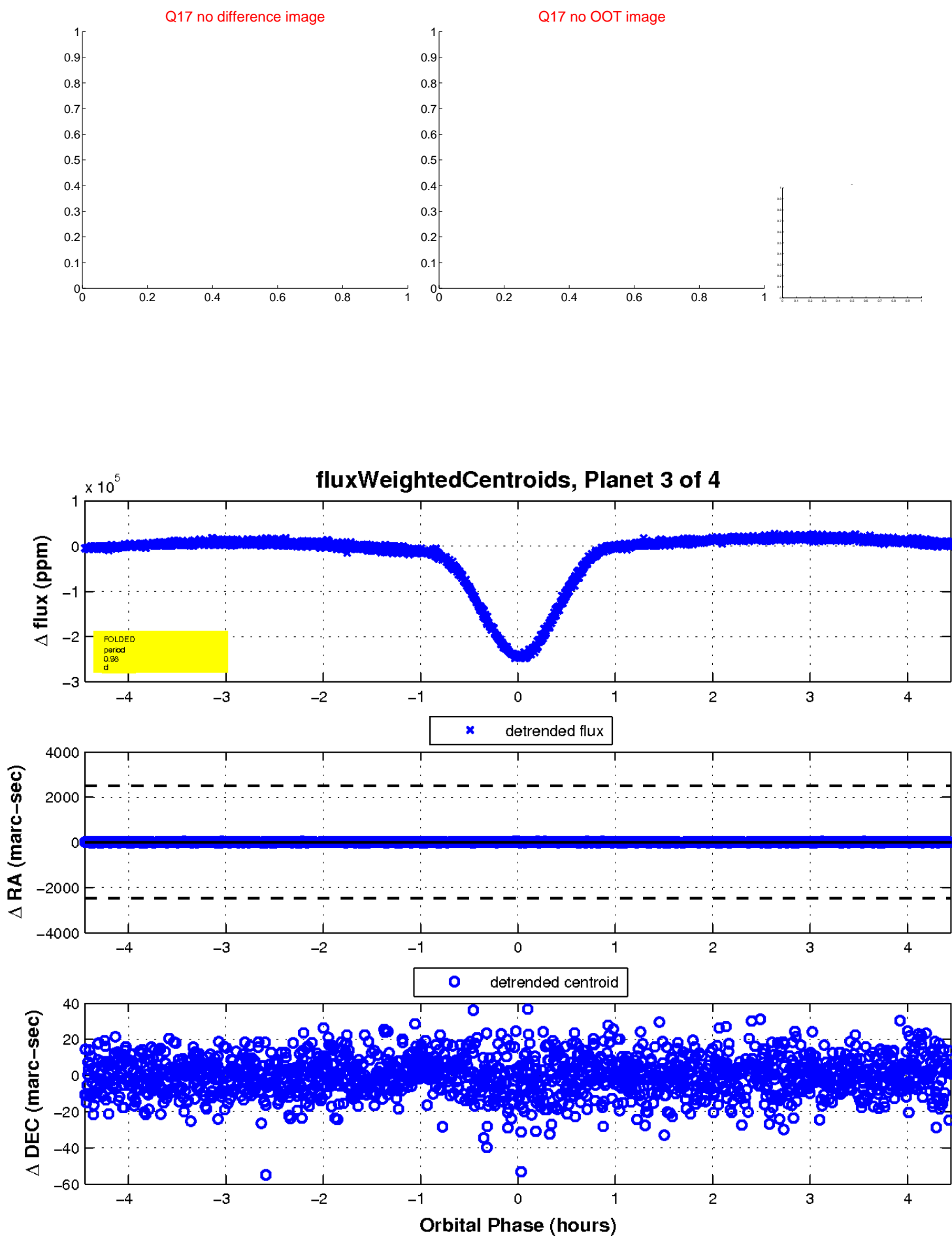
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

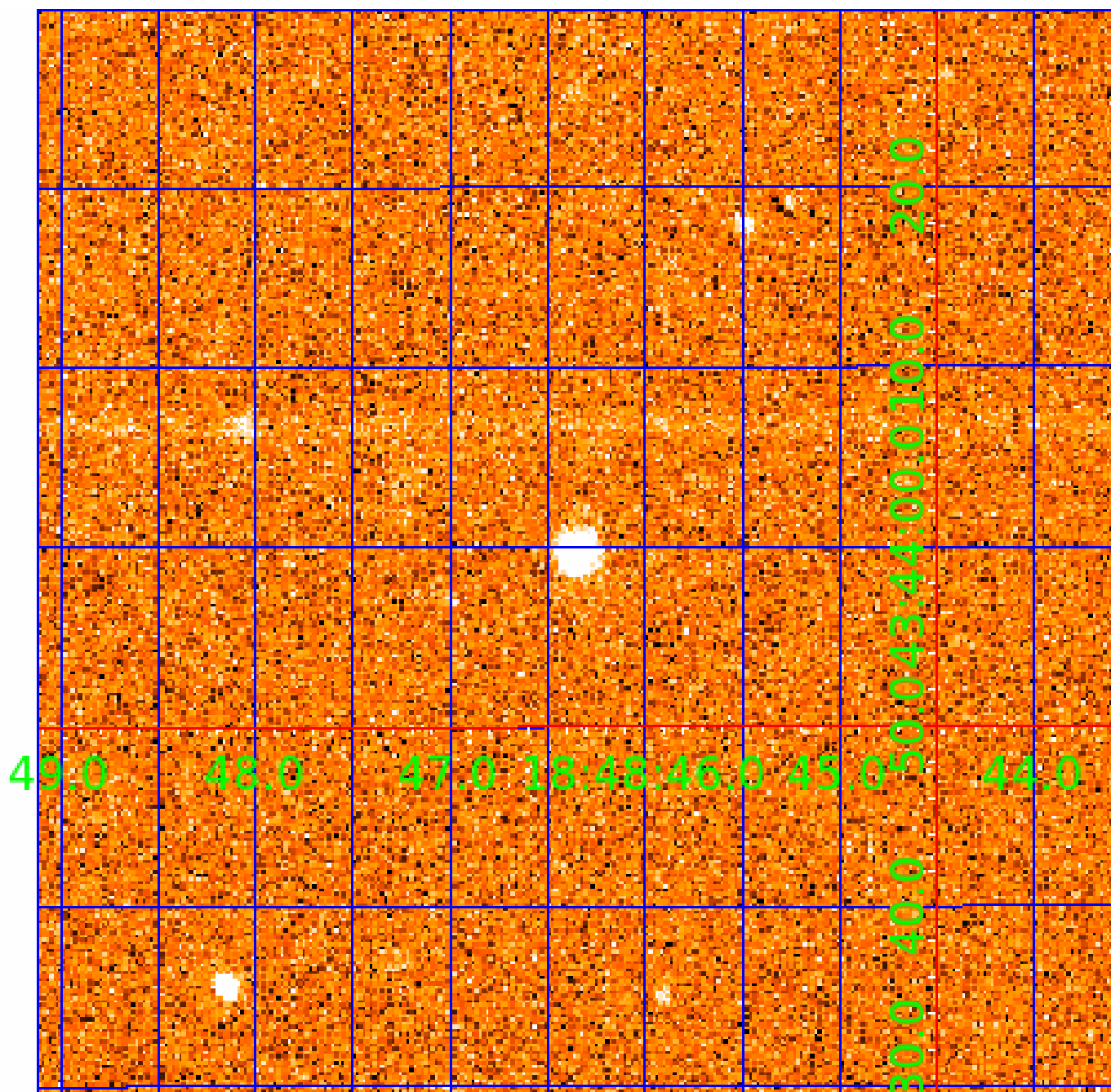


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 007938883

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007938883-01	OBS	3974.01	0.979405	132.039119	376729.4	1.500	372.6	-1.0	0.53	3898	16.09	230.41
007938883-02	OBS	No	0.979380	131.564119	377089.2	1.500	257.1	-1.0	0.53	3898	10.76	230.41
007938883-03	OBS	No	0.979372	132.302724	228357.4	1.483	143.7	203.4	0.53	3898	25.98	230.42
007938883-04	OBS	No	0.979482	131.750777	18408.9	2.000	113.2	-1.0	0.53	3898	7.12	230.38

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007938883-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS
007938883-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_NOFITS
007938883-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
007938883-04	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—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.

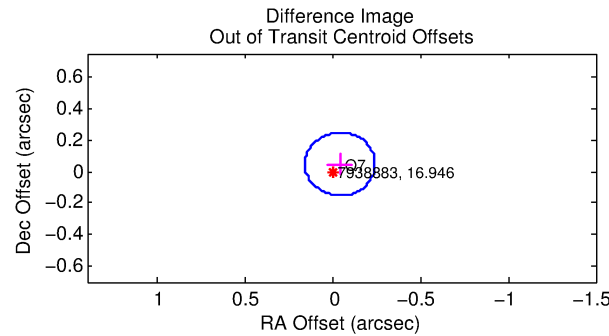
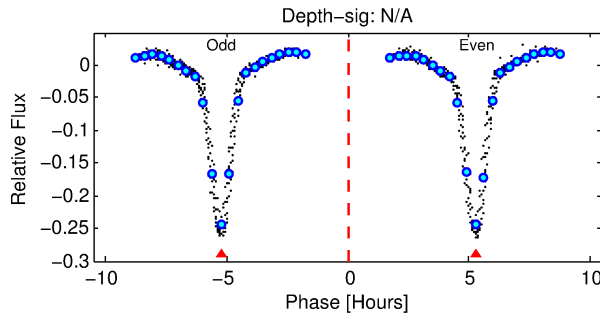
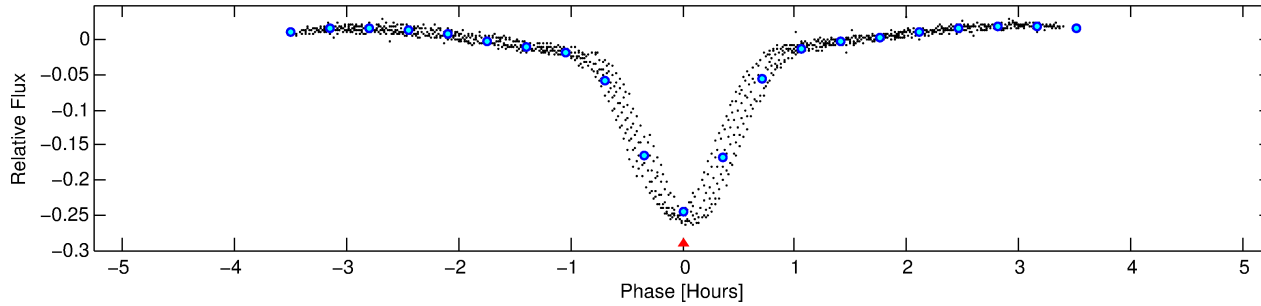
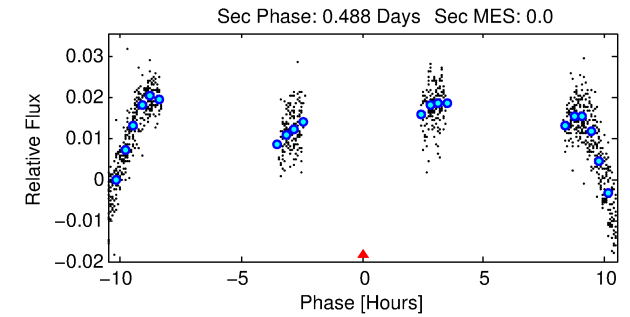
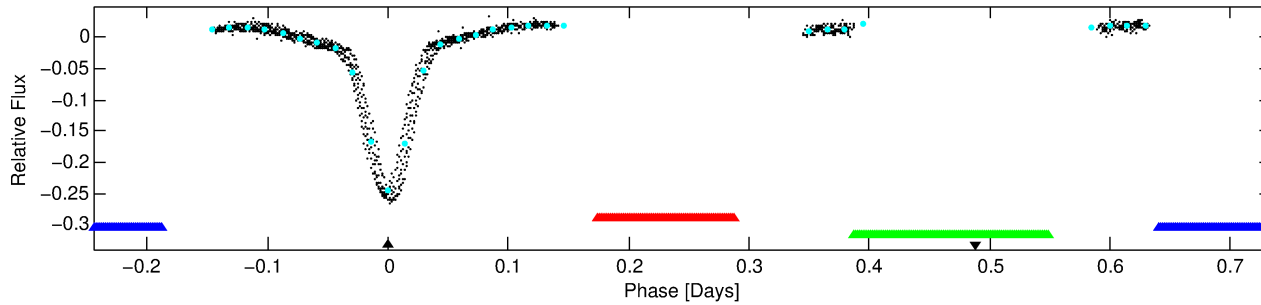
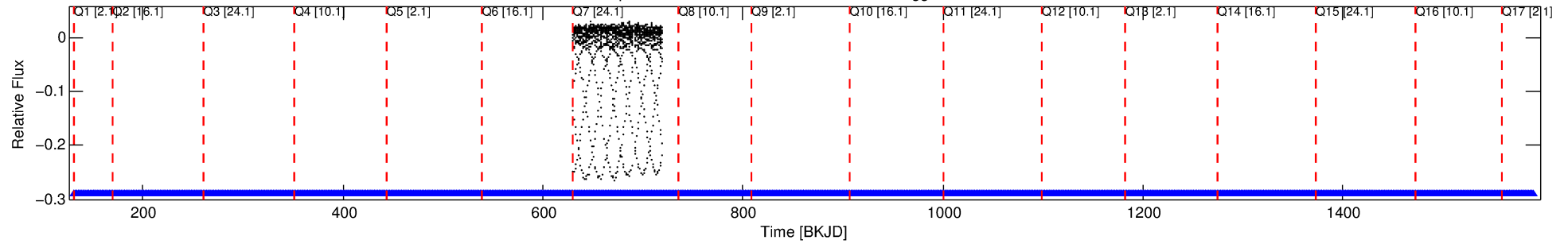
Ephemeris Match Information For 007938883-04

No Significant Match Found

# DV One-Page Summary

KIC: 7938883 Candidate: 4 of 4 Period: 0.979 d  
KOI: K03974 Corr: No Ephemeris Match

Kp: 16.95 R\*: 0.53 Rs Teff: 3898.0 K Logg: 4.74 Fe/H: -0.100



## TPS TCE Results:

Period = 0.97948 d  
Epoch = 131.7508 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

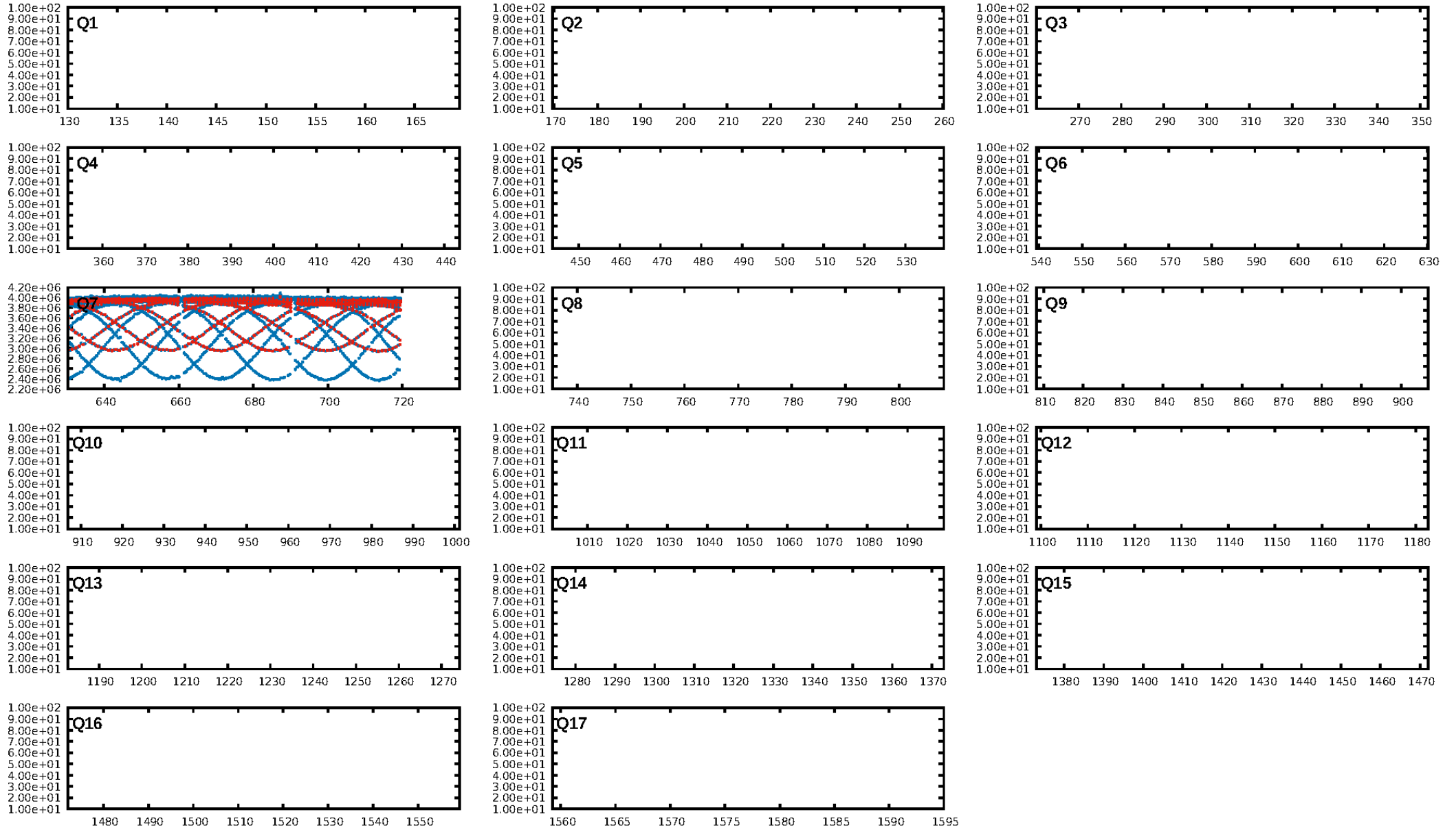
ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [90/90]  
GhostDiagnostic-chr: 1.629

Centroid-sig: N/A  
Centroid-so: 0.518 arcsec [54.79σ]  
OotOffset-rm: 0.063 arcsec [0.95σ]  
KicOffset-rm: 0.400 arcsec [5.99σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

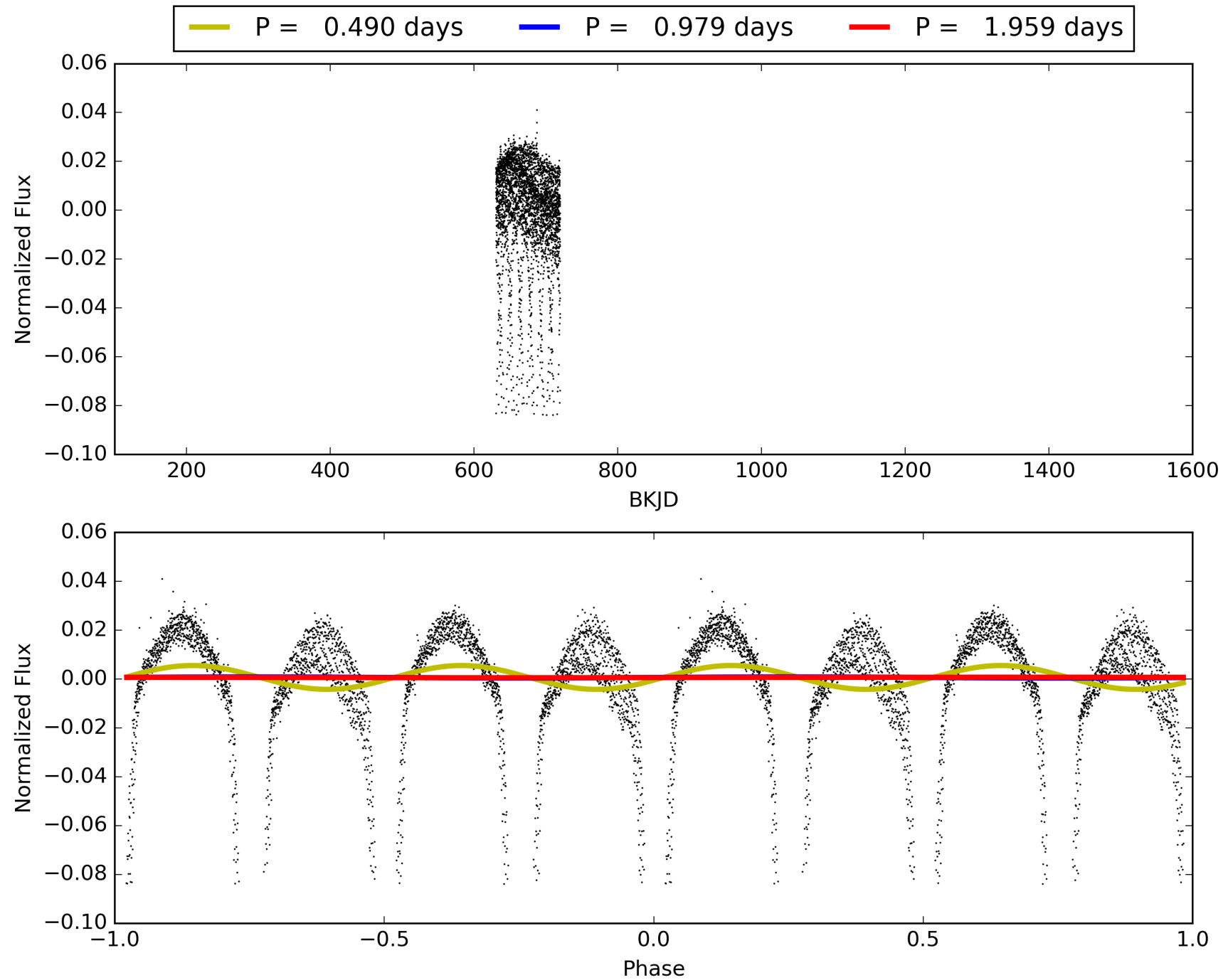
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:35:08 Z

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

# TCE 007938883-04, PDC Light Curves



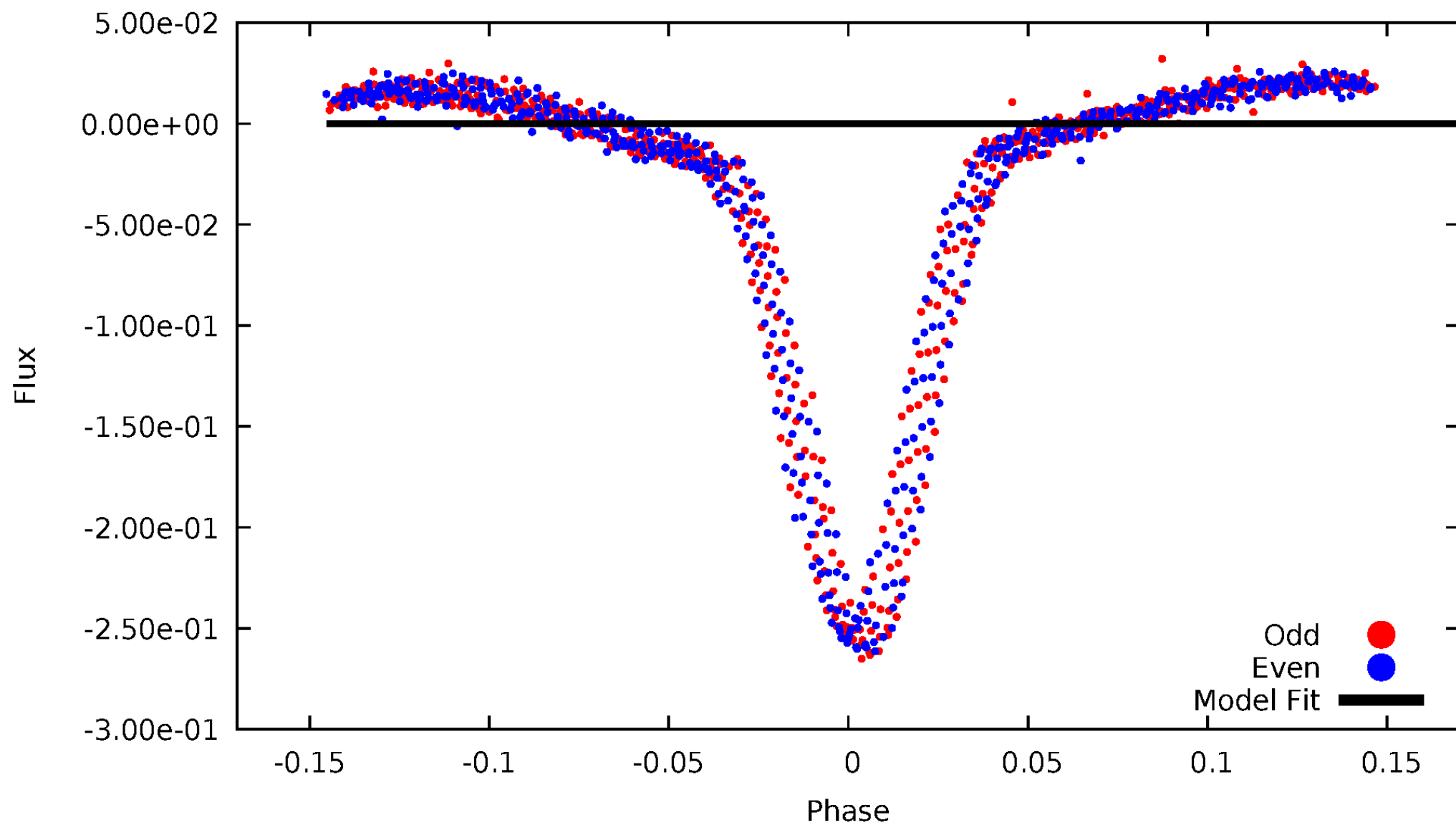
# TCE 007938883-04





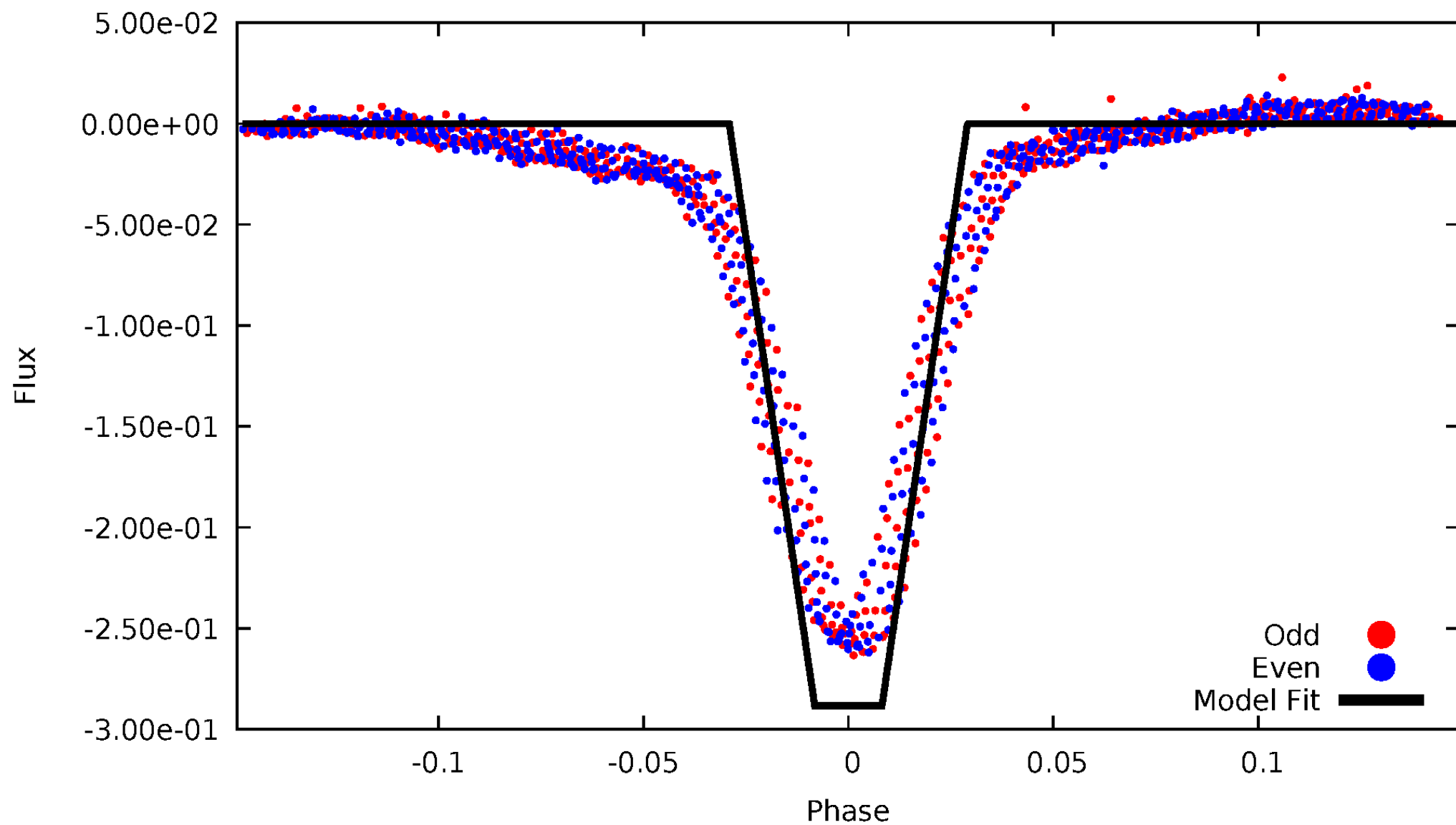
# DV Odd/Even

TCE 007938883-04



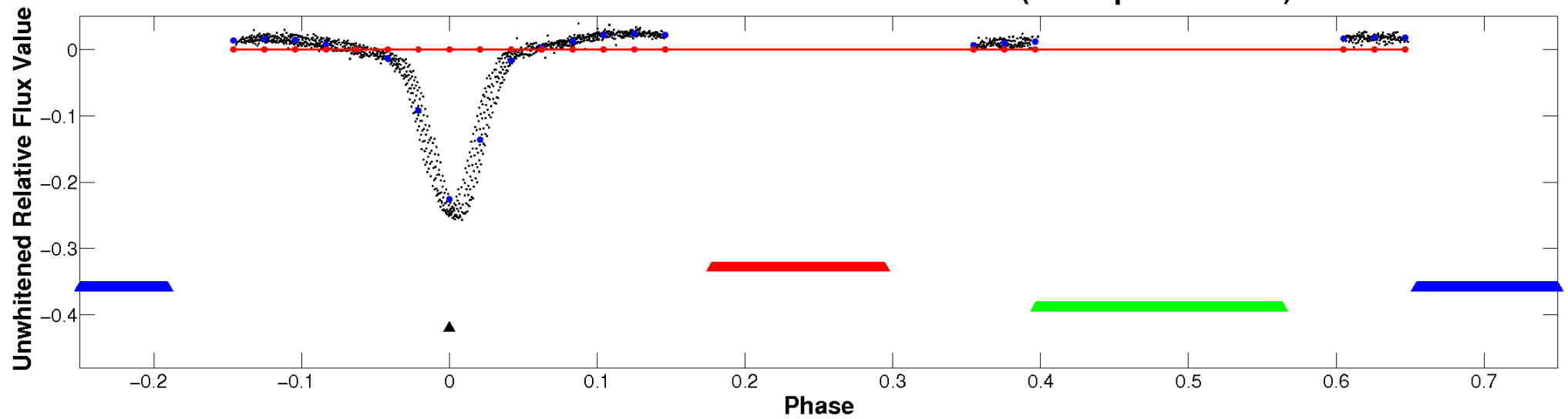
# ALT Odd/Even

TCE 007938883-04



# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

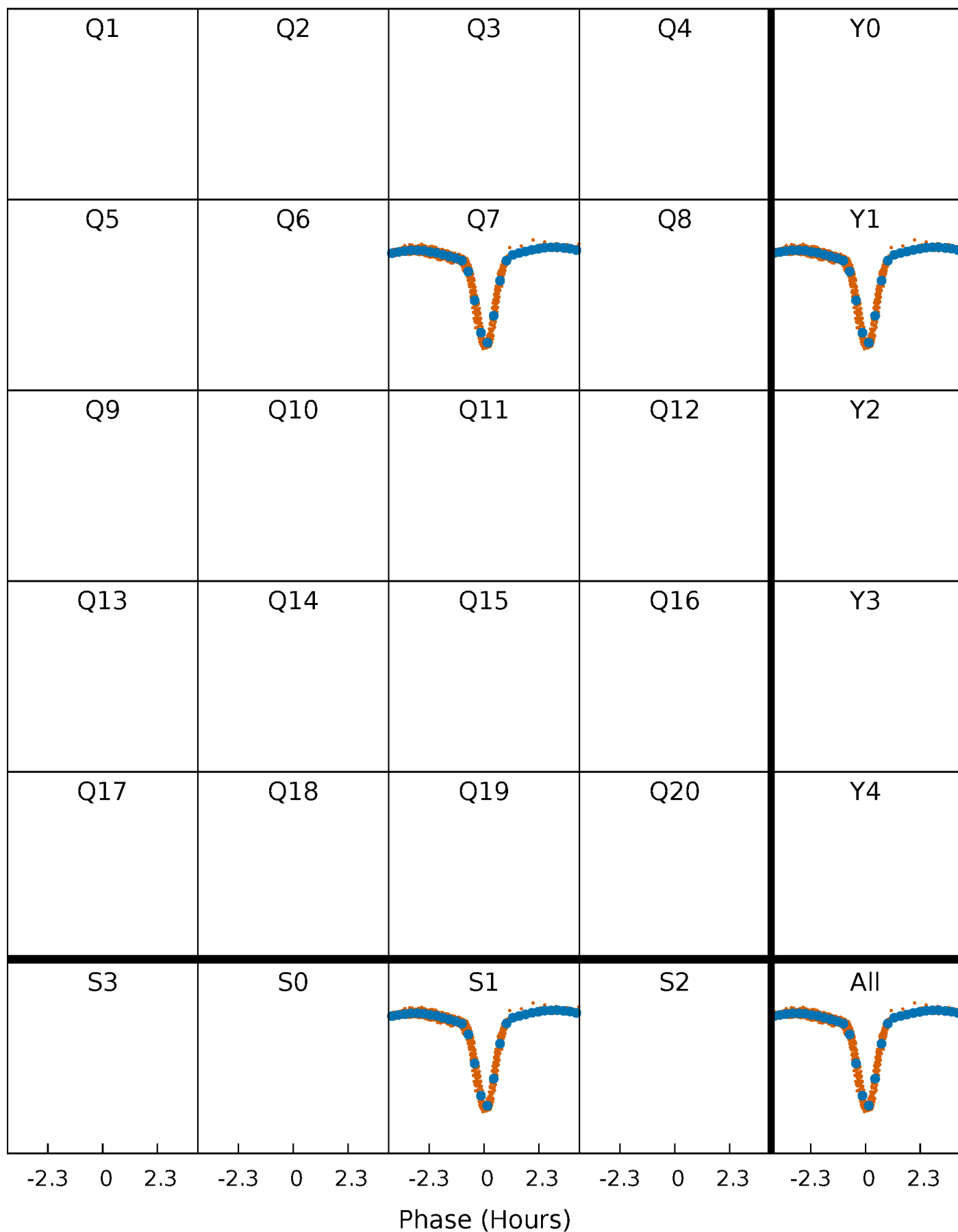


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



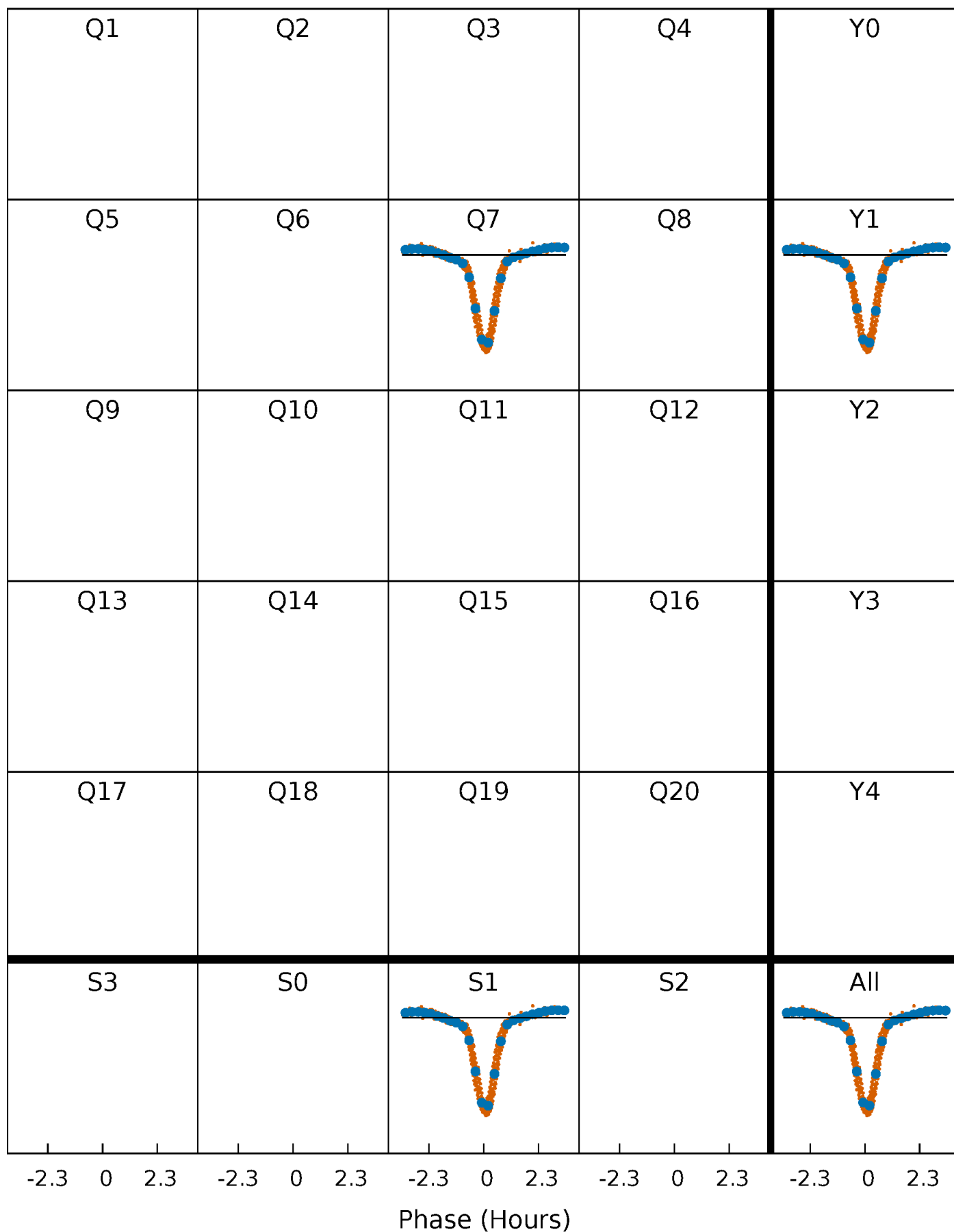
# PDC Quarter-Phased Transit Curves

TCE 007938883-04   P= 0.979482 Days    $T_0=131.750777$  (BKJD)



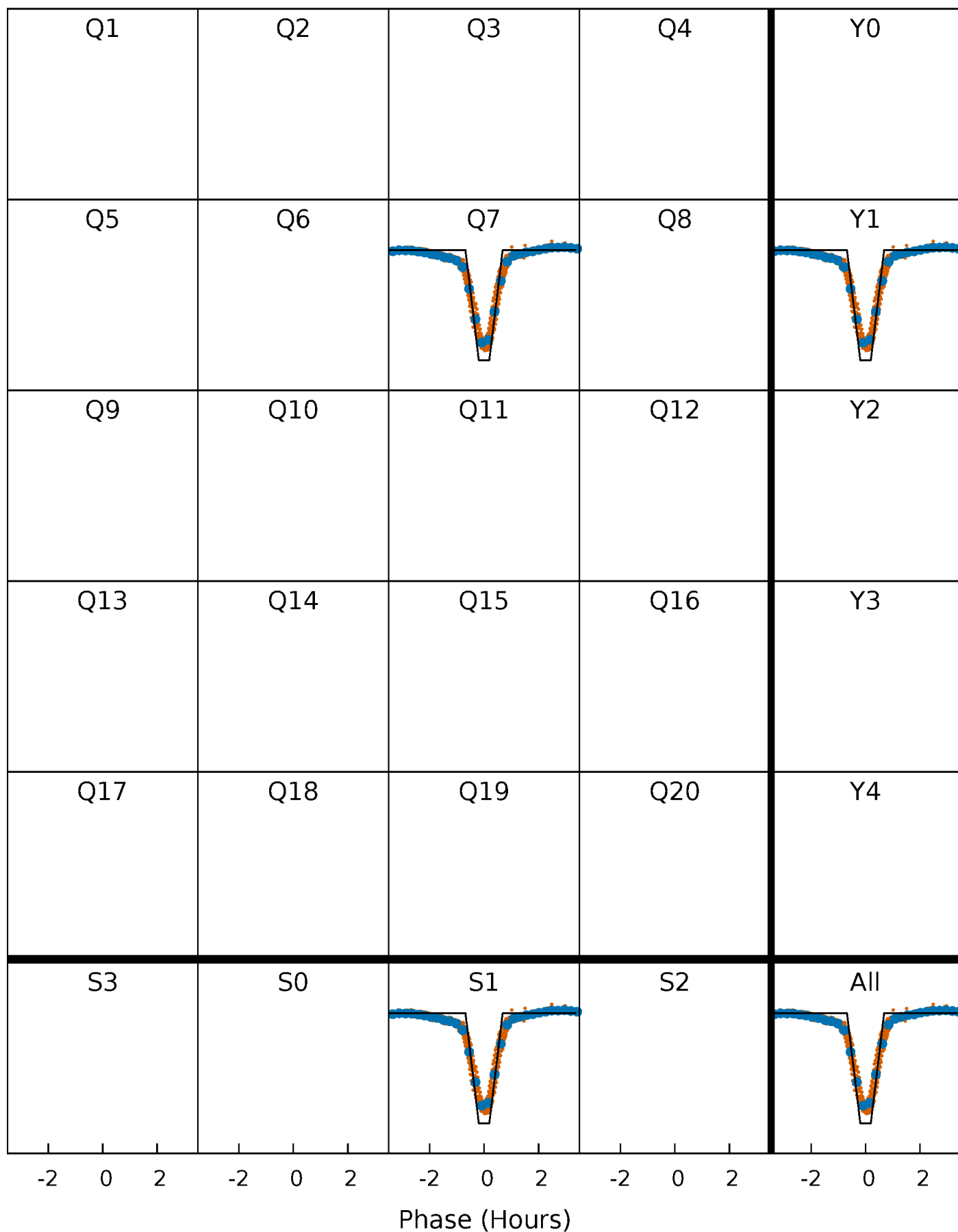
# DV Quarter-Phased Transit Curves

TCE 007938883-04    P= 0.979482 Days     $T_0=131.750777$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

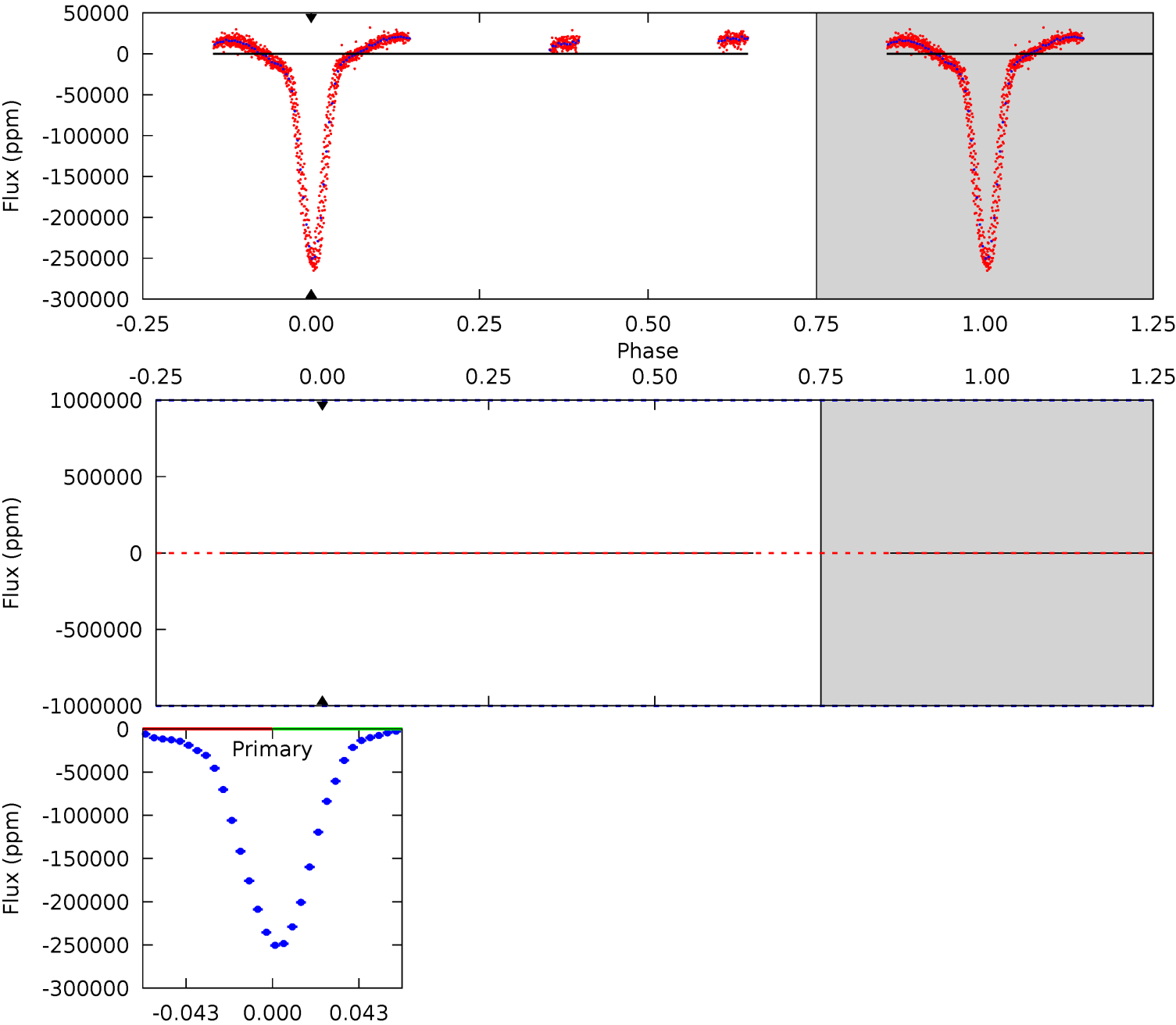
TCE 007938883-04     $P = 0.979482$  Days     $T_0 = 131.753140$  (BKJD)



DV Model-Shift Uniqueness Test

007938883-04, P = 0.979482 Days, E = 131.750777 Days

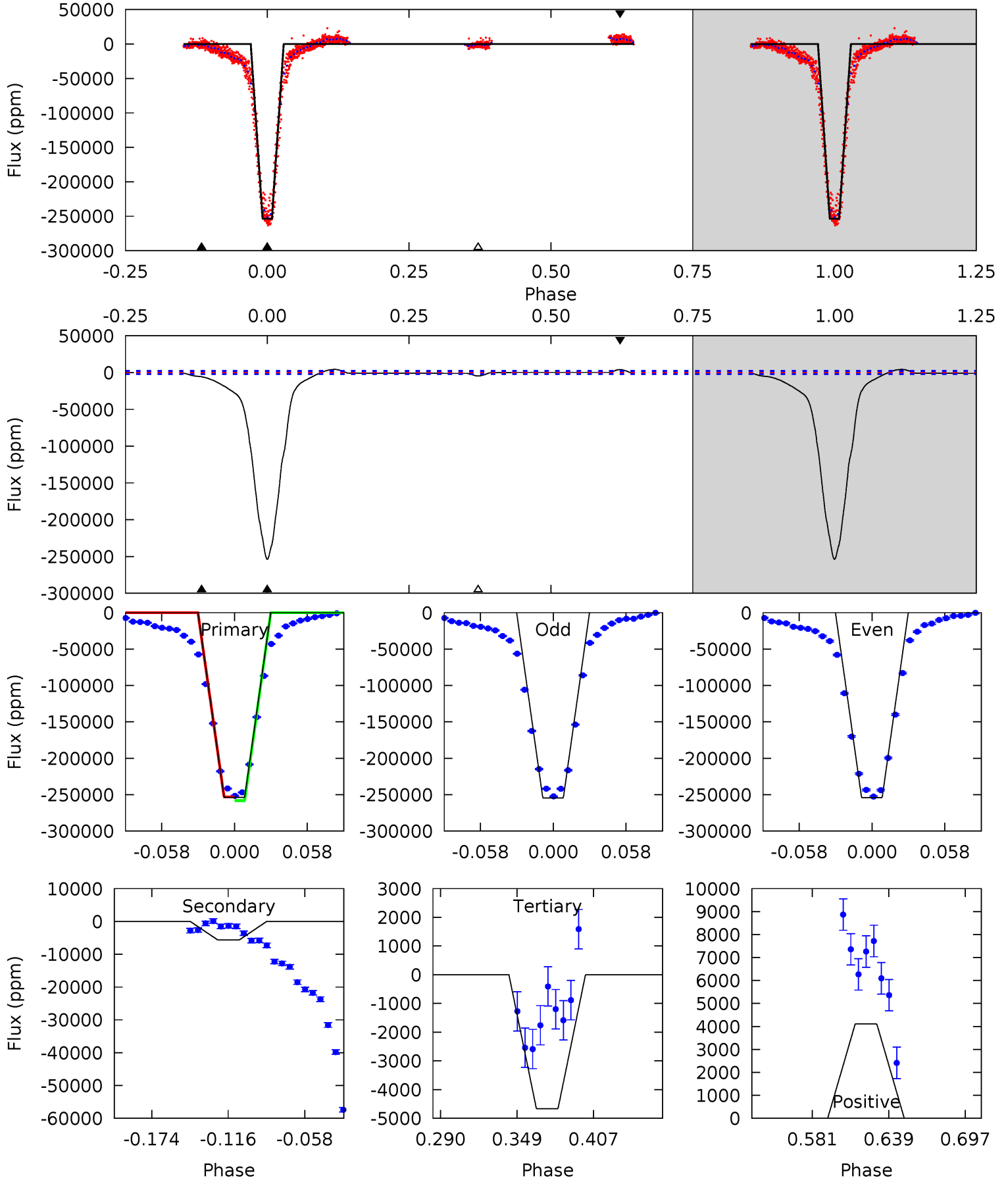
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007938883-04, P = 0.979482 Days, E = 131.753140 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
562.2	12.5	10.3	9.10	4.68	1.89	10.2	551.8	553.1	2.14	3.38	0.28	0.99	0.02	4.23





### Stellar Parameters For KIC 007938883

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3898^{+135}_{-148}$	$4.735^{+0.072}_{-0.054}$	$-0.100^{+0.350}_{-0.400}$	$0.530^{+0.057}_{-0.079}$	$0.556^{+0.056}_{-0.084}$	$5.264^{+2.088}_{-1.053}$
	+3%/-4%	+2%/-1%	+350%/-400%	+11%/-15%	+10%/-15%	+40%/-20%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 007938883-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$7.67^{+5.34}_{-4.53}$	$1380^{+65}_{-62}$	$-2532^{+8493}_{-3544}$	$-1.376^{+358.828}_{-379.841}$
Alt.	$-5631 \pm 451$	$30.19^{+6.70}_{-5.83}$	$1384^{+60}_{-69}$	$2157^{+165}_{-142}$	$0.844^{+0.465}_{-0.264}$

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

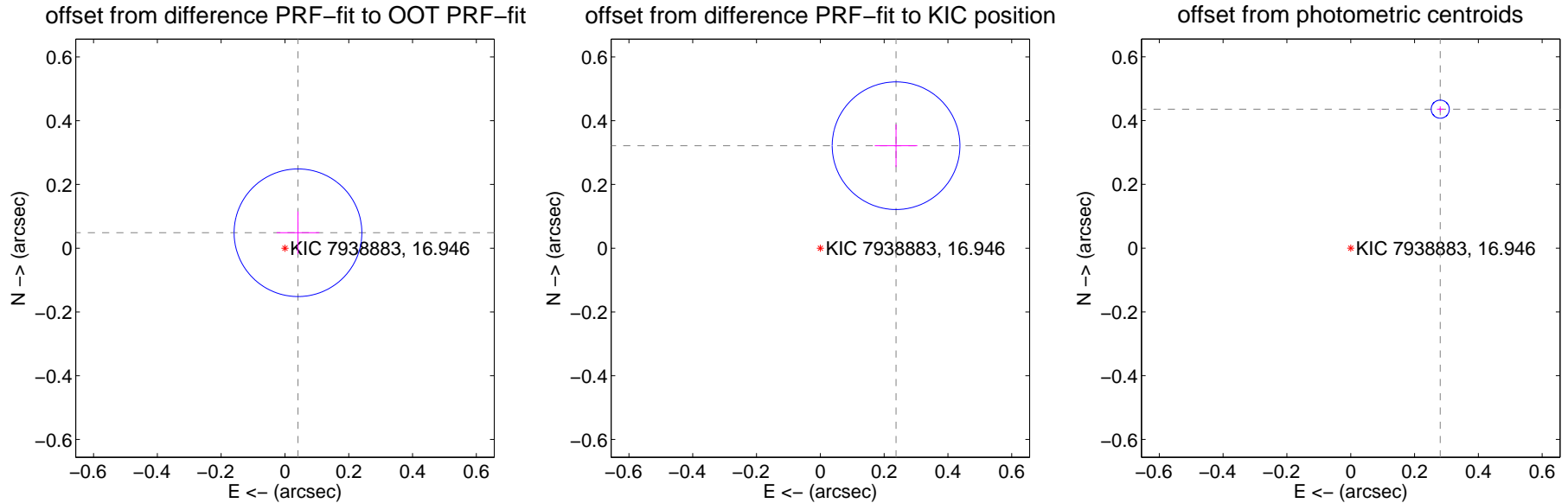
## DV Centroid Data

Supplemental centroid analysis for 007938883-04. Kepler magnitude: 16.95. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.067$	0.95	$-0.041 \pm 0.067$	$0.048 \pm 0.067$
PRF-fit source offset from KIC position	$0.400 \pm 0.067$	5.99	$-0.237 \pm 0.067$	$0.322 \pm 0.067$
photometric centroid source offset	$0.52 \pm 0.01$	54.79	$-0.28 \pm 0.01$	$0.44 \pm 0.01$

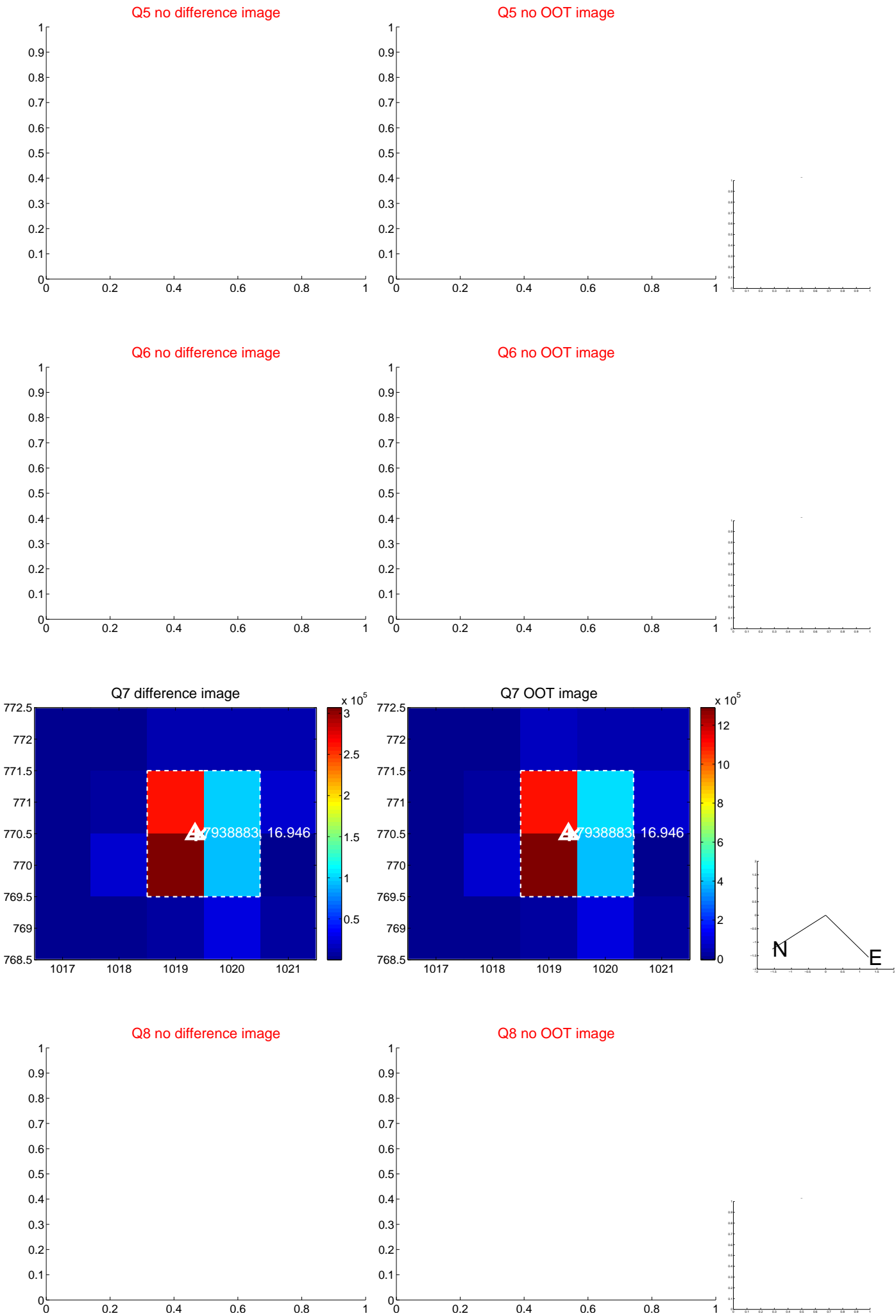


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



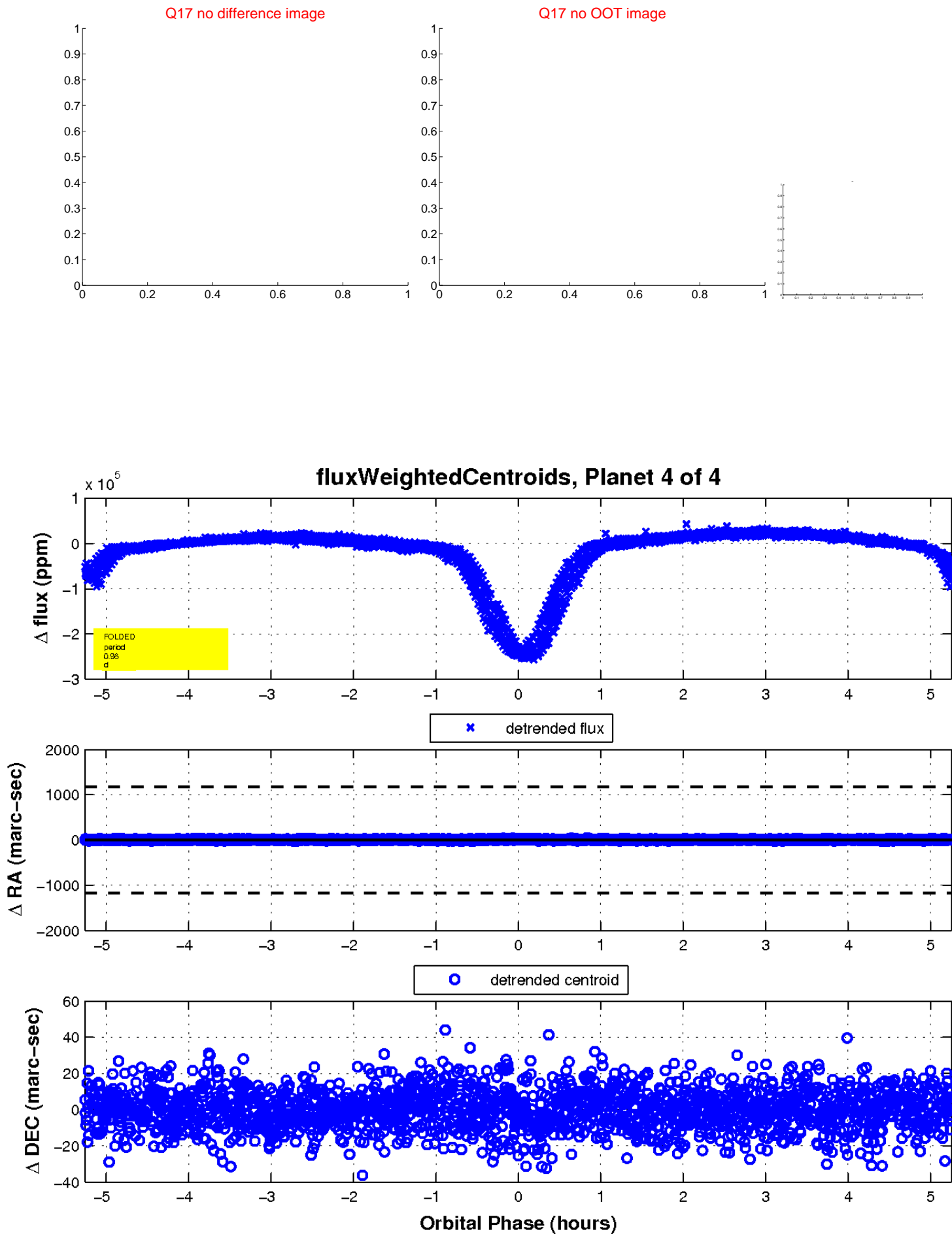
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



# UKIRT Image

Declination

