

# KIC 008754603

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008754603-01	OBS	No	0.741030	131.572512	156.3	1.376	8.1	7.4	4.60	11457	6.62	553329.58
008754603-02	OBS	No	0.739458	131.569965	162.7	1.773	8.2	6.4	4.60	11457	6.95	554897.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008754603-01	OBS	FP	0.00	1	0	0	0	LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
008754603-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

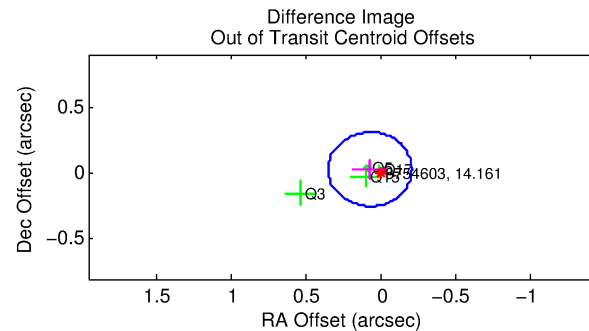
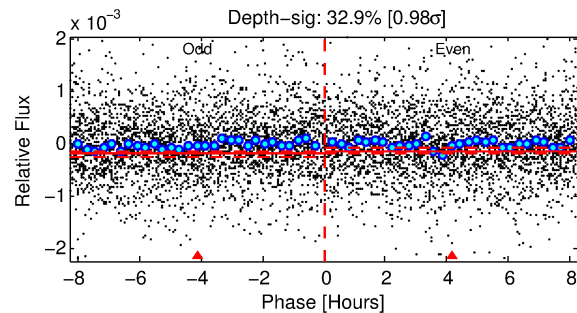
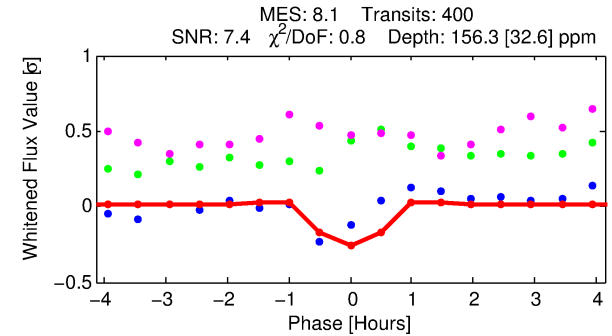
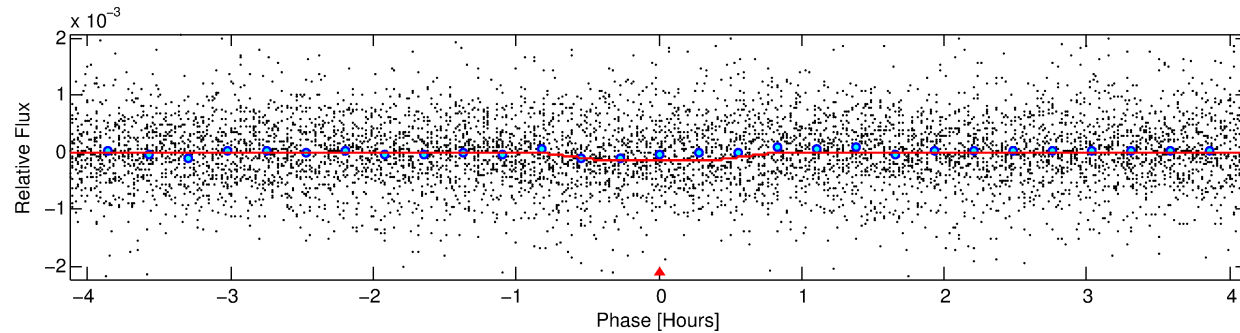
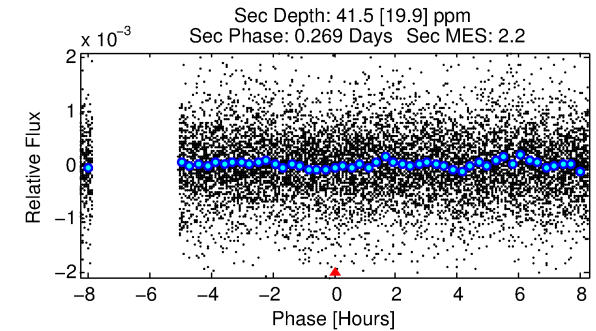
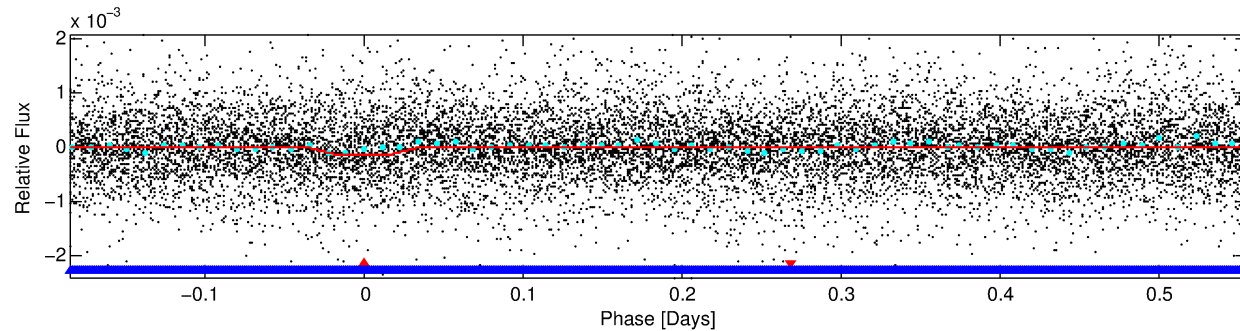
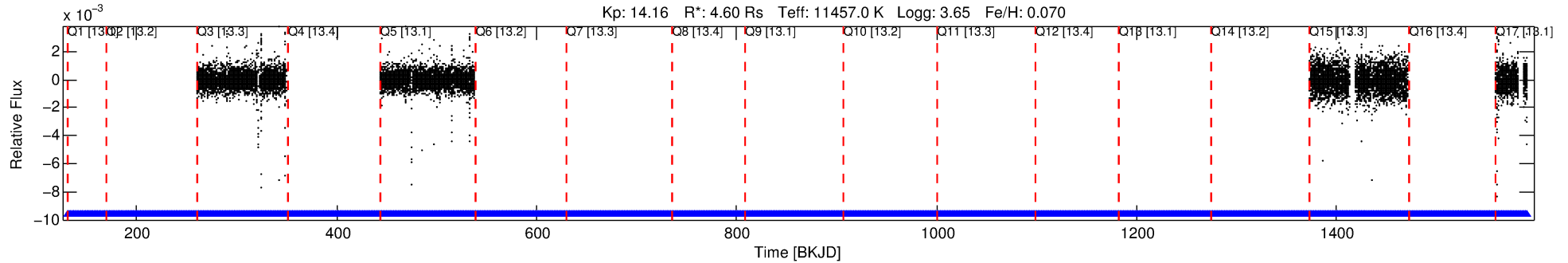
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008754603-01

No Significant Match Found

# DV One-Page Summary

KIC: 8754603 Candidate: 1 of 2 Period: 0.741 d



## DV Fit Results:

Period = 0.74103 [0.00002] d  
Epoch = 131.5725 [0.0028] BKJD  
Rp/R\* = 0.0132 [0.0058]  
a/R\* = 2.05 [5.93]  
b = 0.91 [0.71]  
Seff = 553329.58 [561751.81]  
Teq = 6955 [1765] K  
Rp = 6.62 [4.55] Re  
a = 0.0243 [0.0122] AU  
Ag = 0.31 [0.39] [-1.75σ]  
Teffp = 8005 [2376] K [0.35σ]

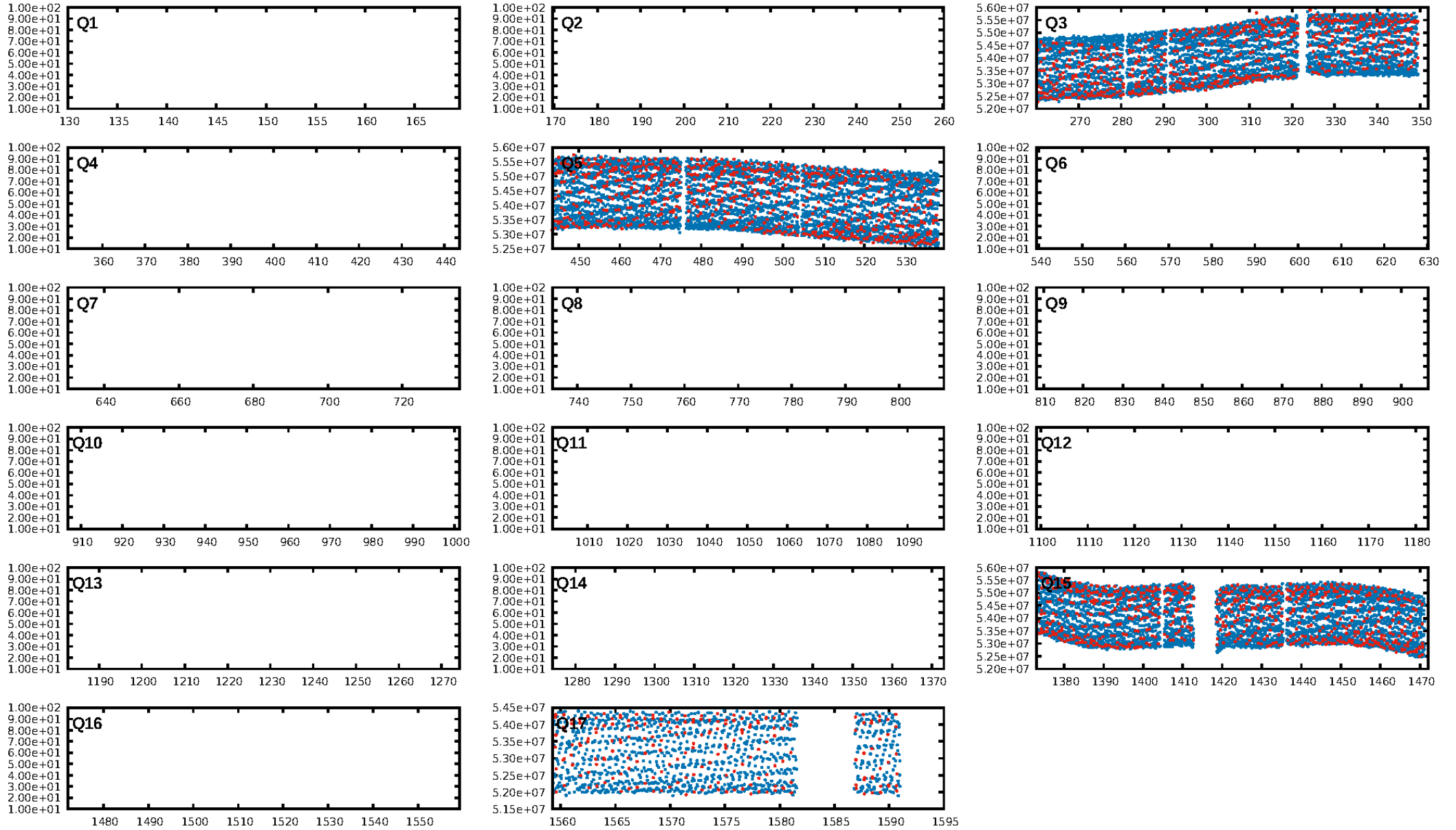
## DV Diagnostic Results:

ShortPeriod-sig: 1.3% [0.02σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.16e-12**  
RollingBand-fgt: 1.00 [364/364]  
GhostDiagnostic-chr: 0.3507  
Centroid-sig: 1.2%  
Centroid-so: 1.380 arcsec [2.29σ]  
OotOffset-rm: 0.074 arcsec [0.79σ]  
OotOffset-st: 0/2/0/2 [4]  
KicOffset-rm: 0.063 arcsec [0.76σ]  
KicOffset-st: 0/2/0/2 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.50 [2/4]

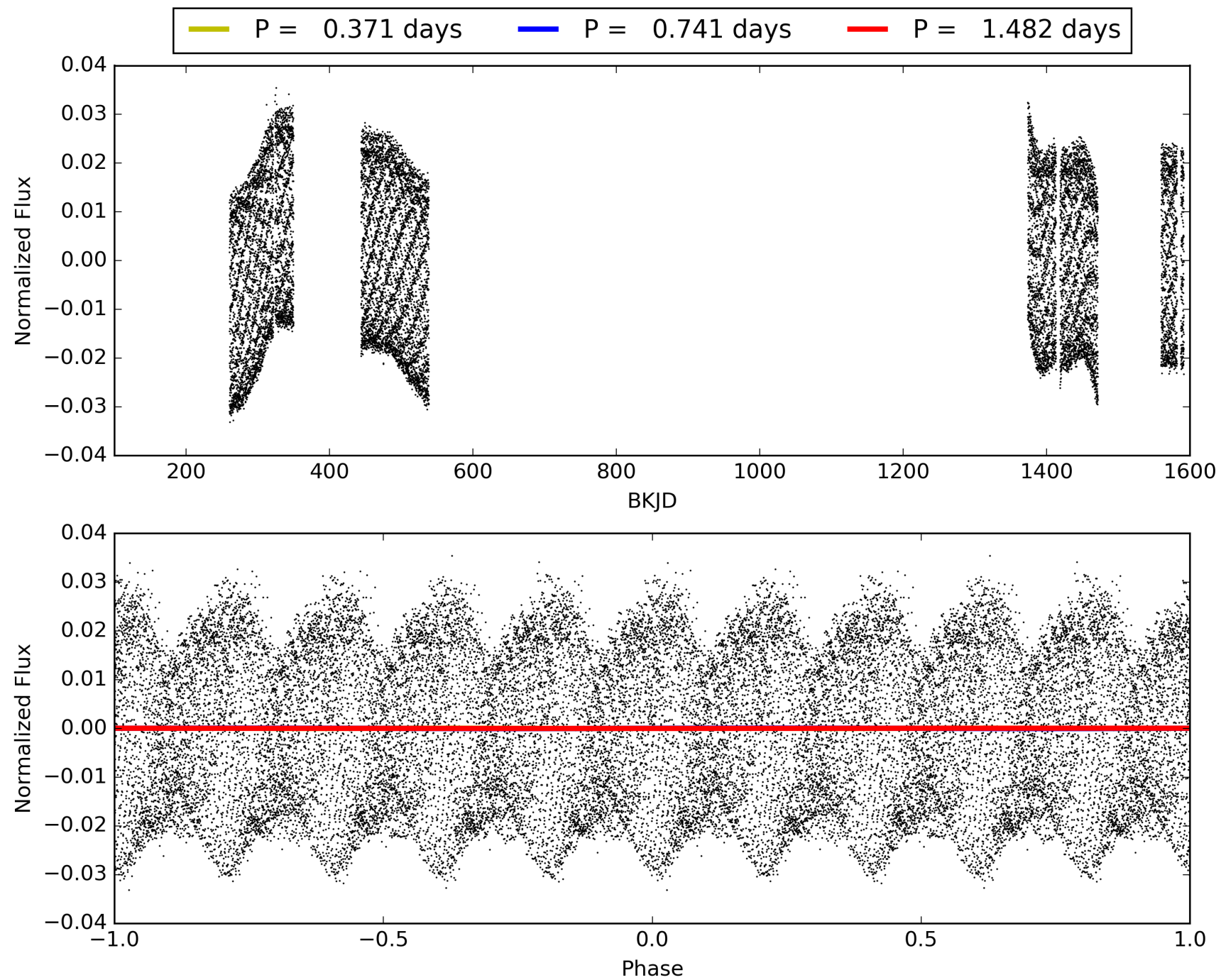
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:49:20 Z

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

# TCE 008754603-01, PDC Light Curves

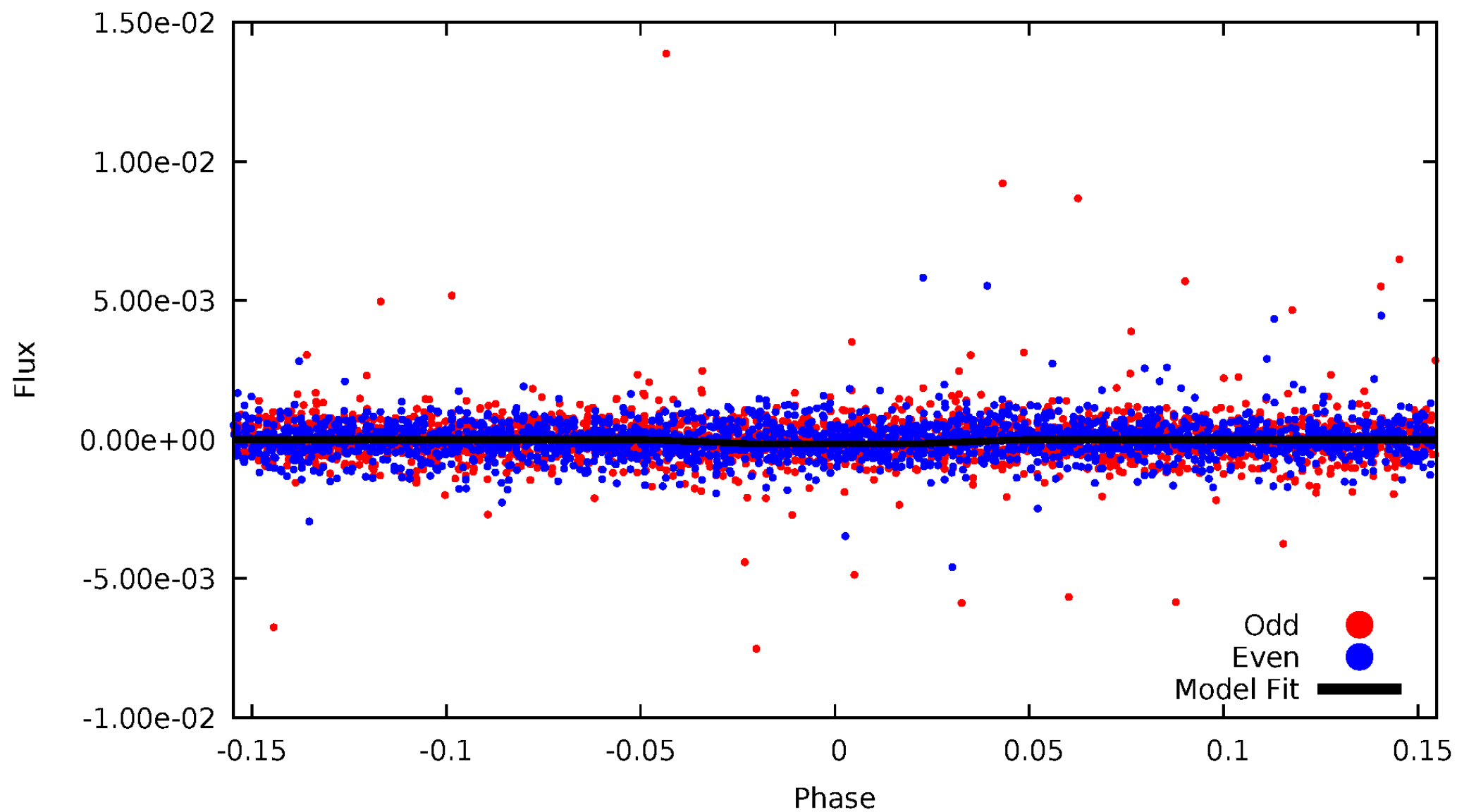


TCE 008754603-01



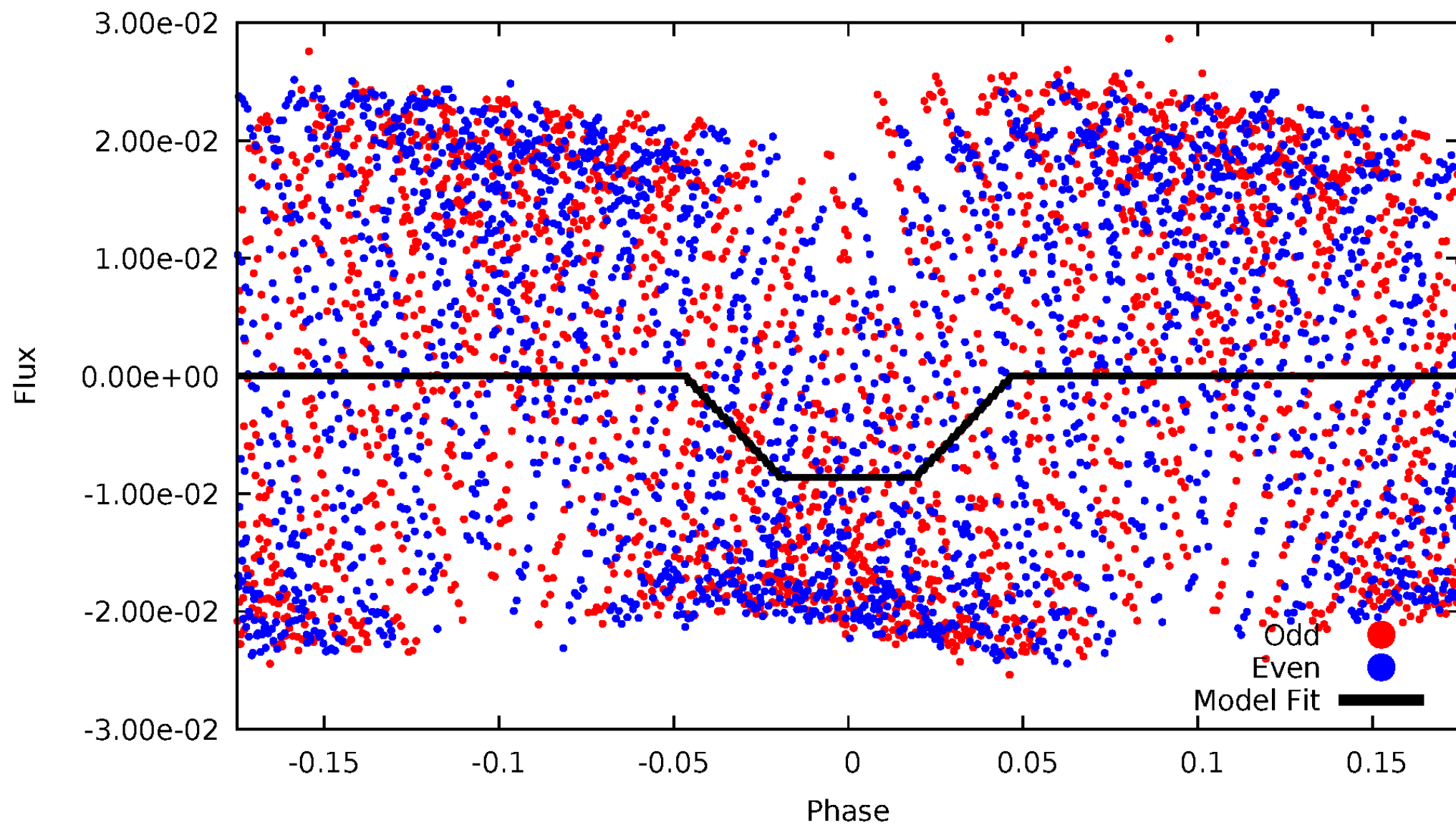
# DV Odd/Even

TCE 008754603-01



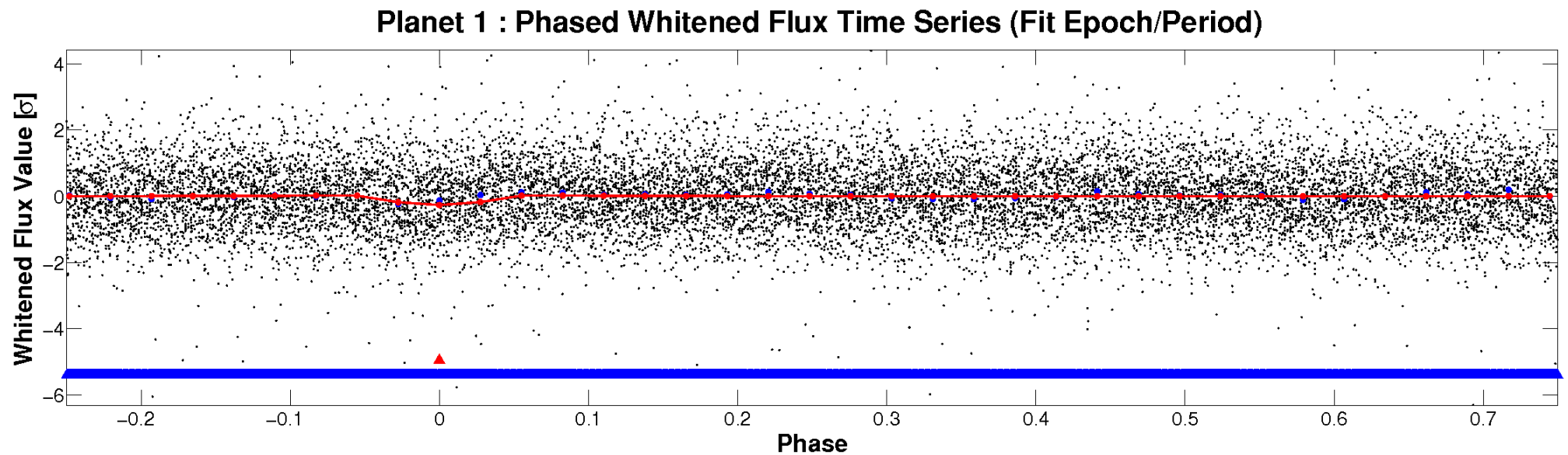
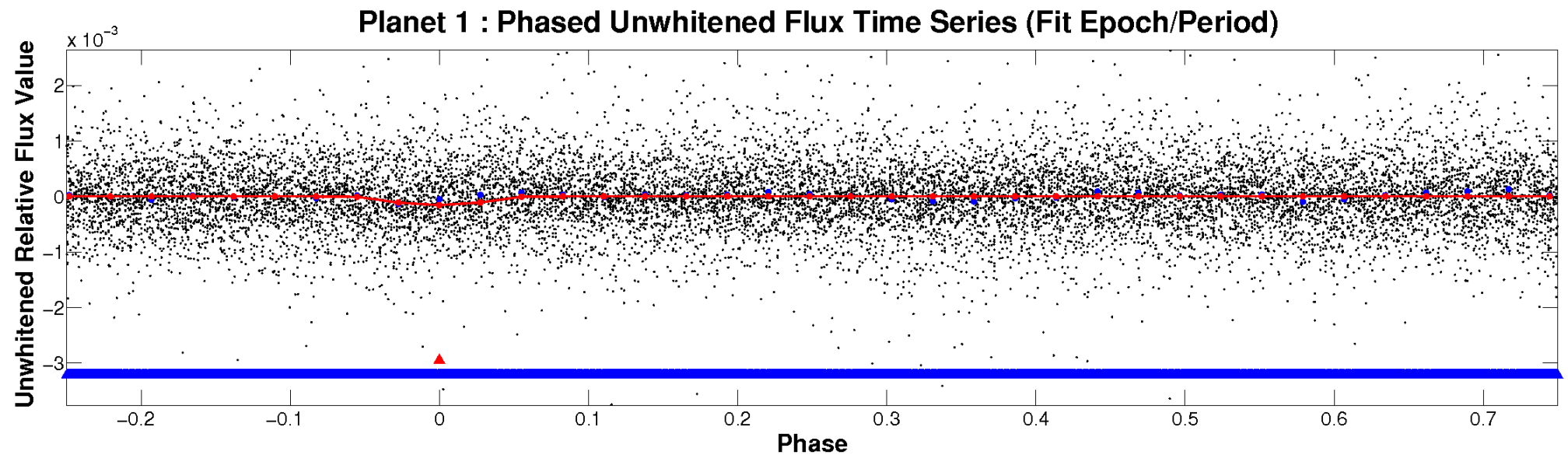
# ALT Odd/Even

TCE 008754603-01



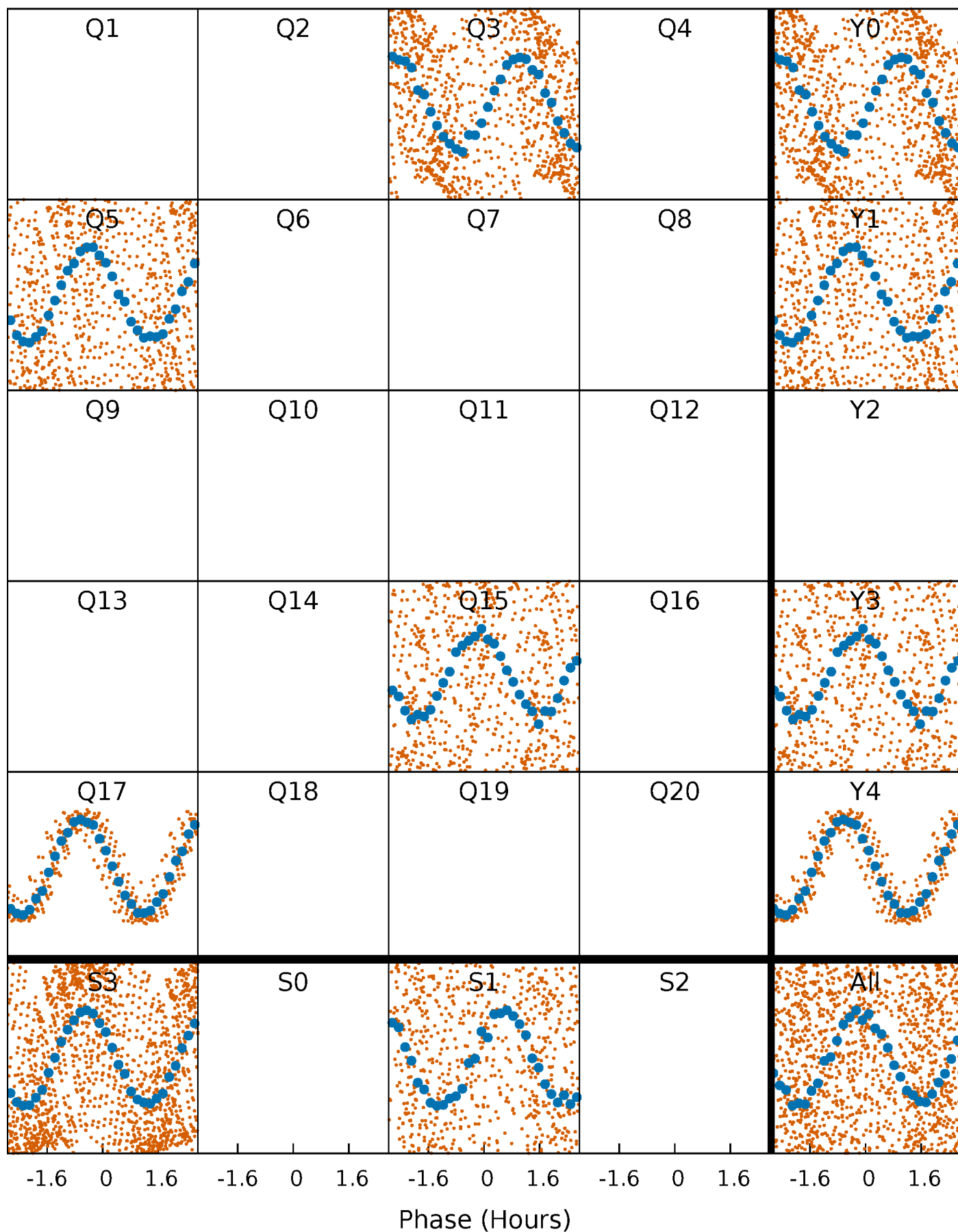


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

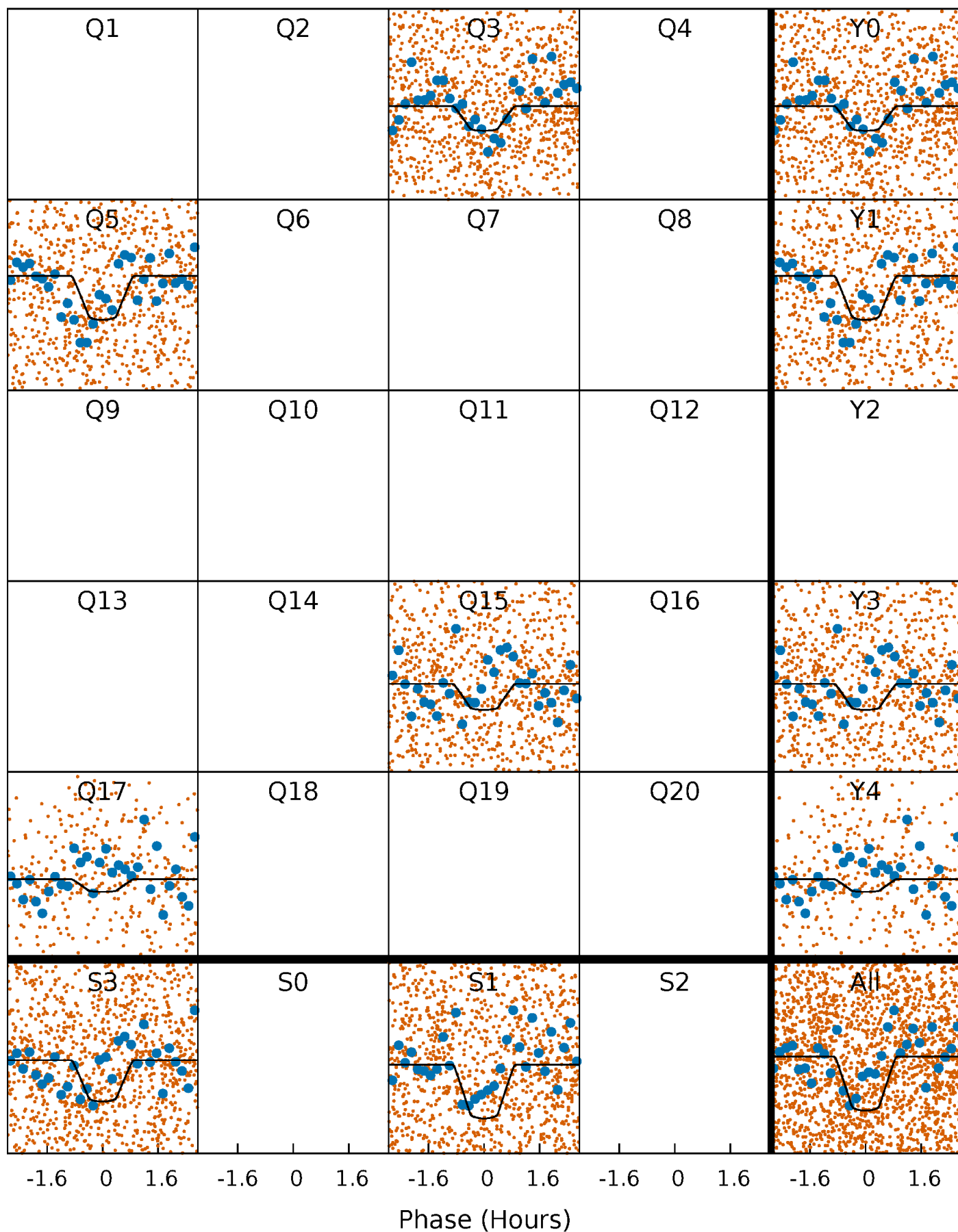
TCE 008754603-01   P= 0.741030 Days    $T_0=131.572512$  (BKJD)





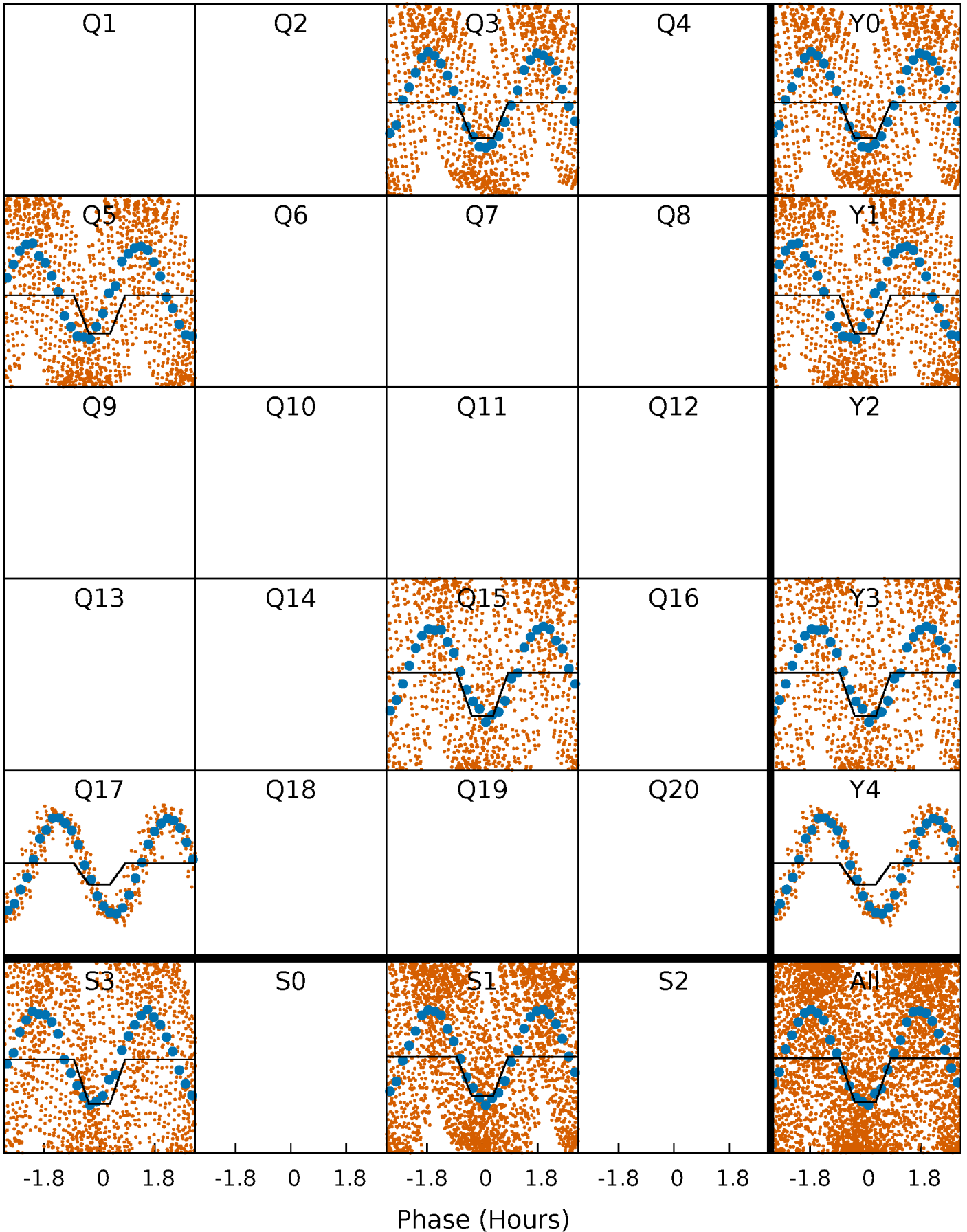
# DV Quarter-Phased Transit Curves

TCE 008754603-01 P= 0.741030 Days  $T_0=131.572512$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

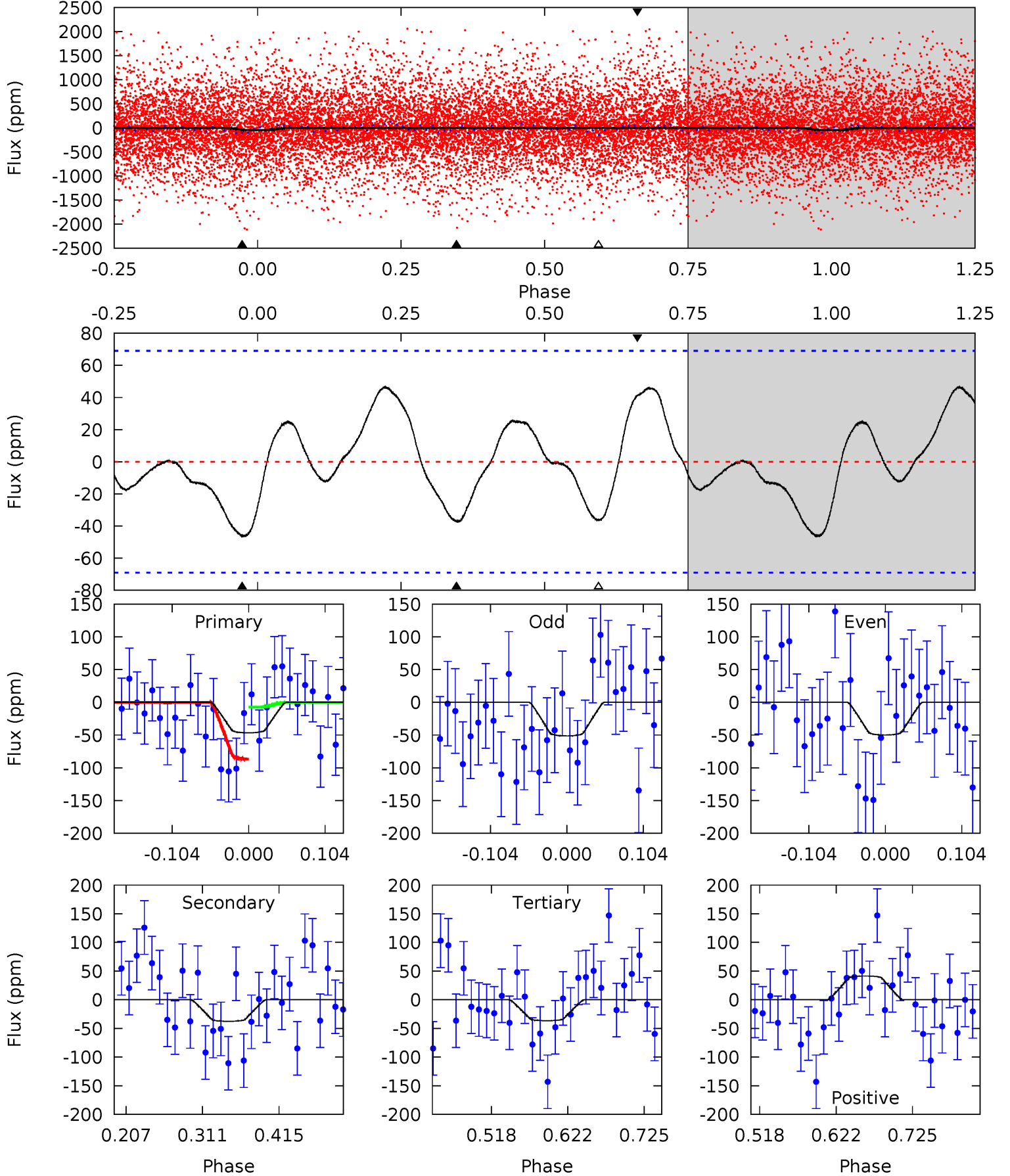
TCE 008754603-01     $P = 0.740895$  Days     $T_0 = 131.569222$  (BKJD)



# DV Model-Shift Uniqueness Test

008754603-01, P = 0.741030 Days, E = 131.572512 Days

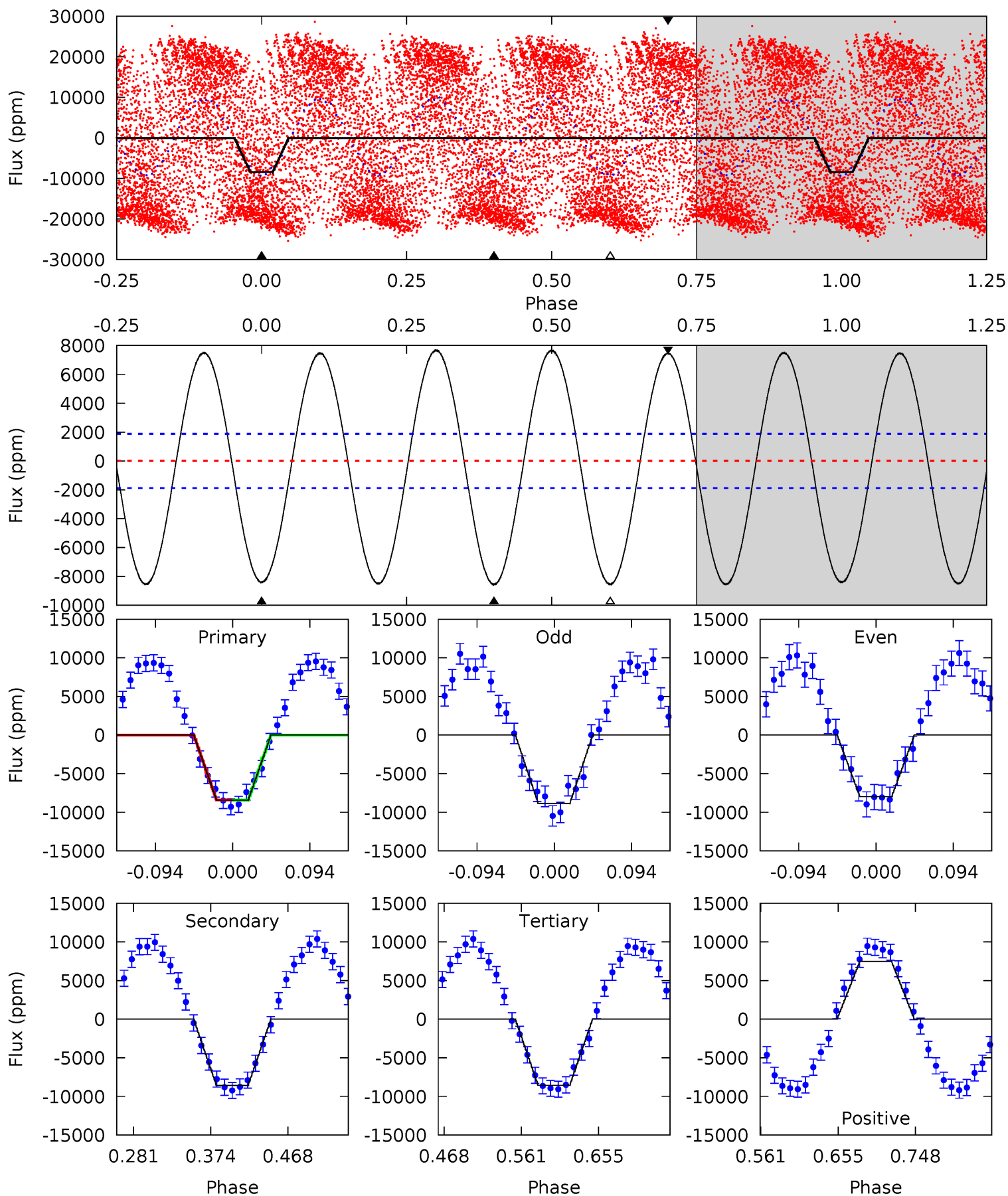
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.08	2.49	2.41	2.74	4.56	1.63	1.46	0.67	0.34	0.08	-0.25	0.05	1.19	0.50	2.61



# Alt Model-Shift Uniqueness Test

008754603-01, P = 0.740895 Days, E = 131.569222 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
20.6	21.0	20.9	18.3	4.58	1.68	14.1	-0.34	2.31	0.05	2.70	1.07	0.76	0.47	0.02



### Stellar Parameters For KIC 008754603

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$11457^{+449}_{-1798}$	$3.654^{+0.467}_{-0.110}$	$0.070^{+0.250}_{-0.550}$	$4.596^{+0.426}_{-2.415}$	$3.472^{+0.069}_{-1.113}$	$0.050^{+0.230}_{-0.014}$
	+4%/-16%	+13%/-3%	+357%/-786%	+9%/-53%	+2%/-32%	+456%/-28%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008754603-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-38 \pm 15$	$6.00^{+3.11}_{-2.85}$	$9204^{+1011}_{-1642}$	$3107^{+5616}_{-9127}$	$0.307^{+0.919}_{-0.187}$
Alt.	$-8573 \pm 409$	$44.85^{+6.05}_{-12.23}$	$9103^{+1054}_{-1566}$	$10133^{+1059}_{-1324}$	$1.363^{+1.033}_{-0.298}$

$T_{max}$  = 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

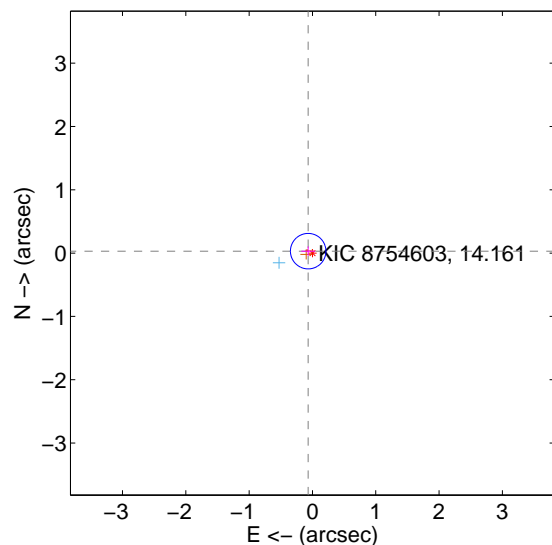
Supplemental centroid analysis for 008754603-01. Kepler magnitude: 14.16. Transit SNR 7.43

There are 1 quarters with good PRF difference image offsets

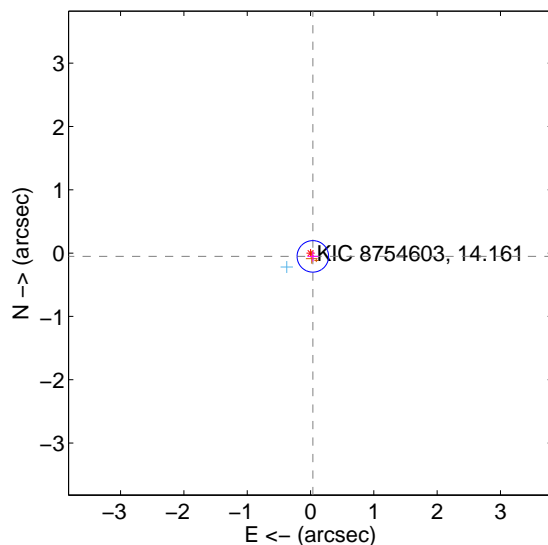
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.074 \pm 0.093$	0.79	$0.067 \pm 0.109$	$0.031 \pm 0.075$
PRF-fit source offset from KIC position	$0.063 \pm 0.083$	0.76	$-0.037 \pm 0.087$	$-0.052 \pm 0.081$
photometric centroid source offset	$1.38 \pm 0.60$	2.29	$-0.82 \pm 0.58$	$-1.11 \pm 0.61$

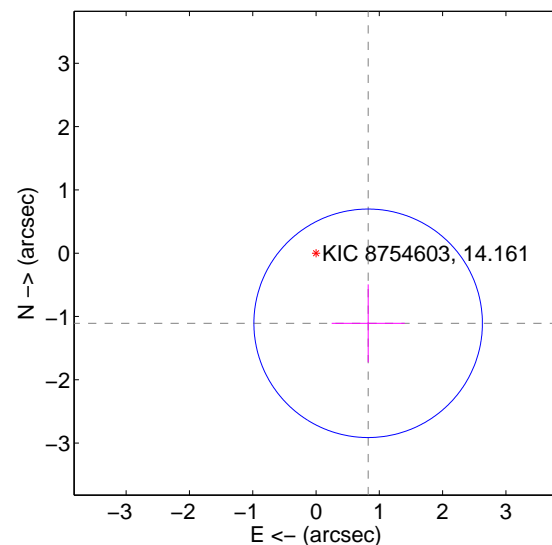
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



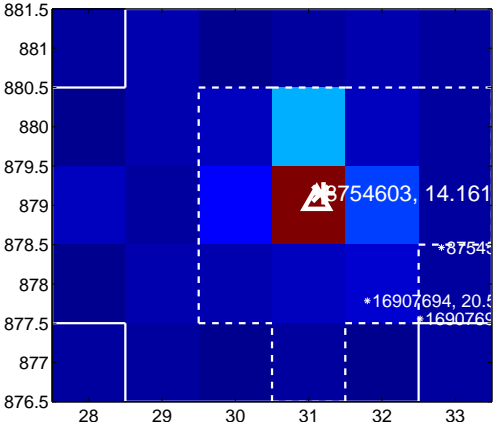
Q2 no difference image



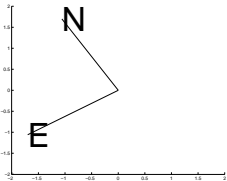
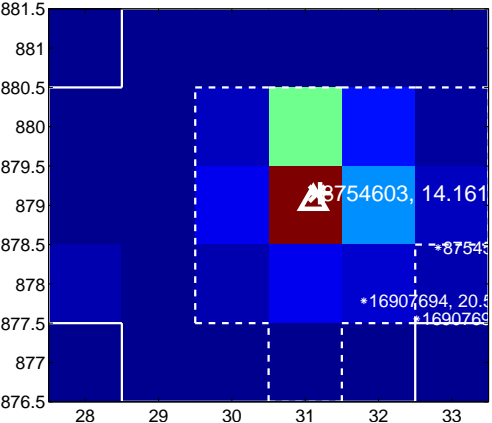
Q2 no OOT image



Q3 difference image



Q3 OOT image



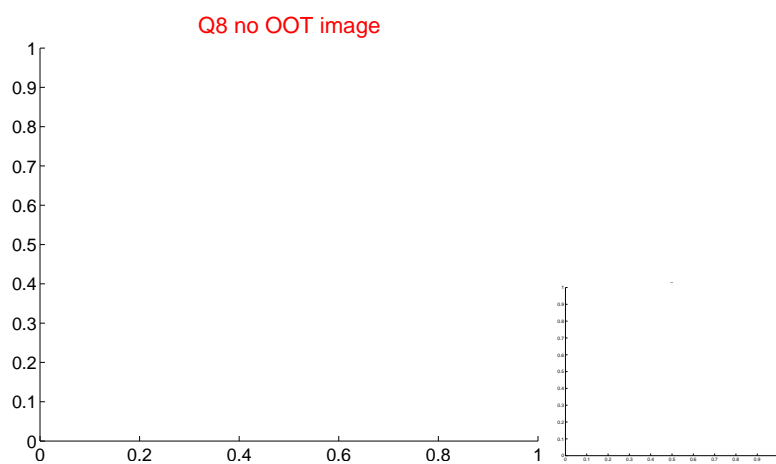
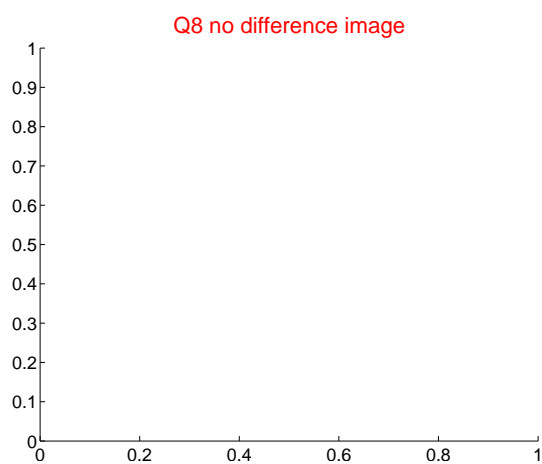
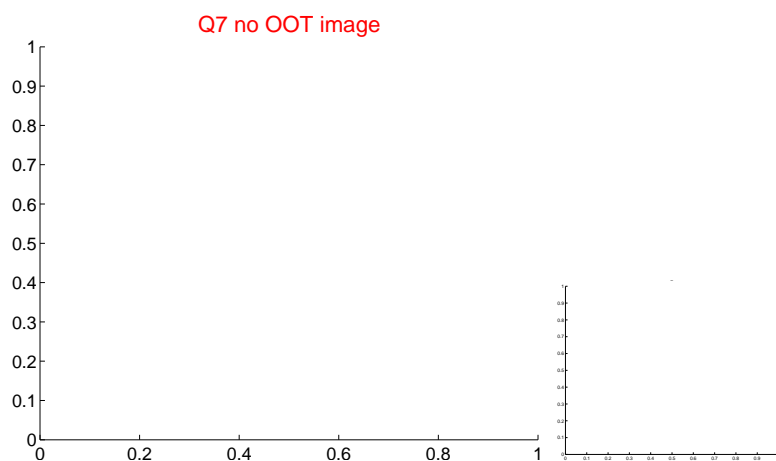
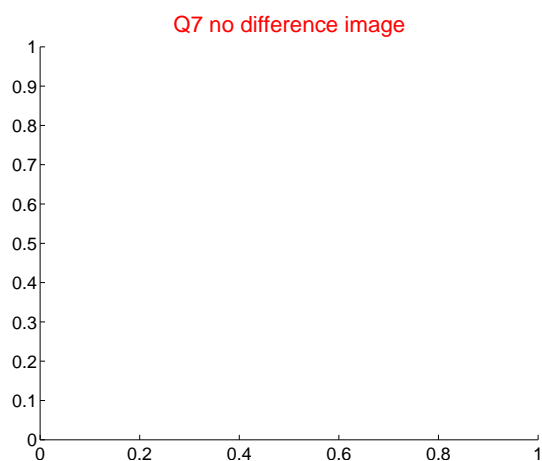
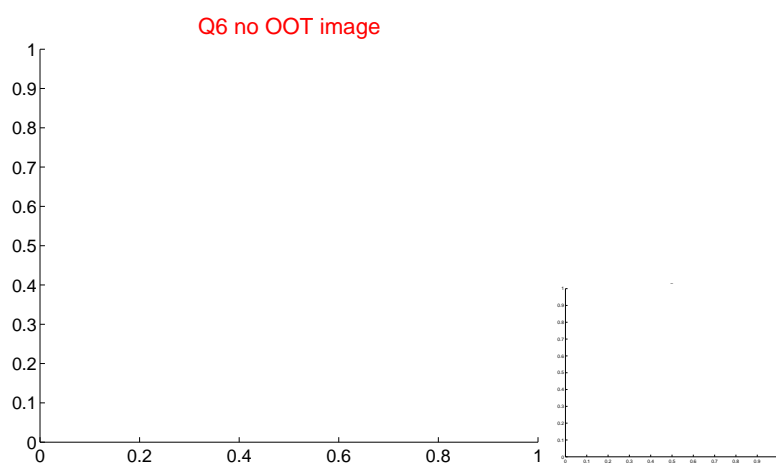
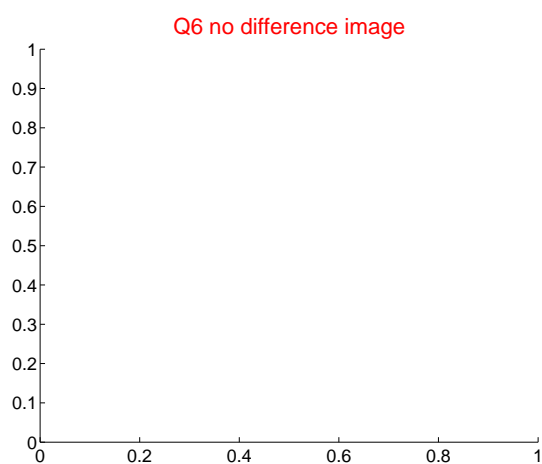
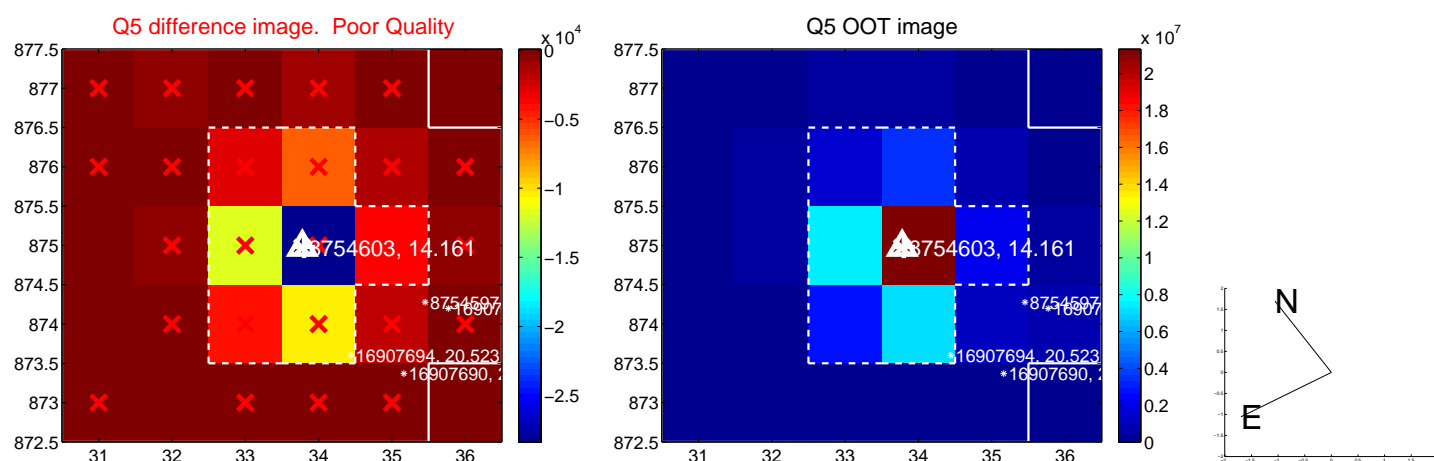
Q4 no difference image



Q4 no OOT image



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



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

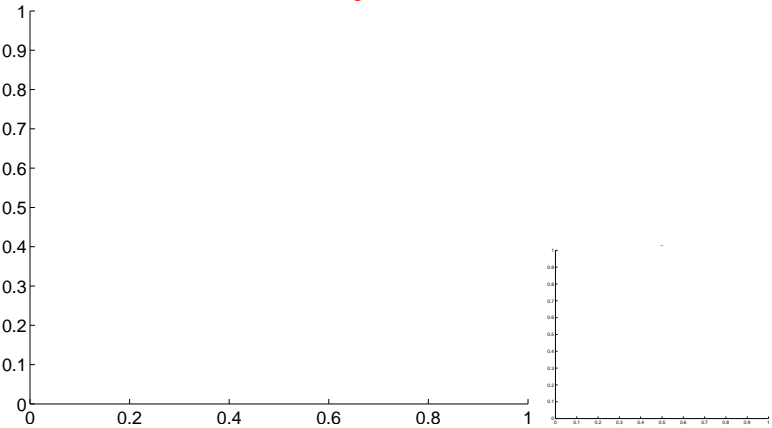


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

Q13 no difference image



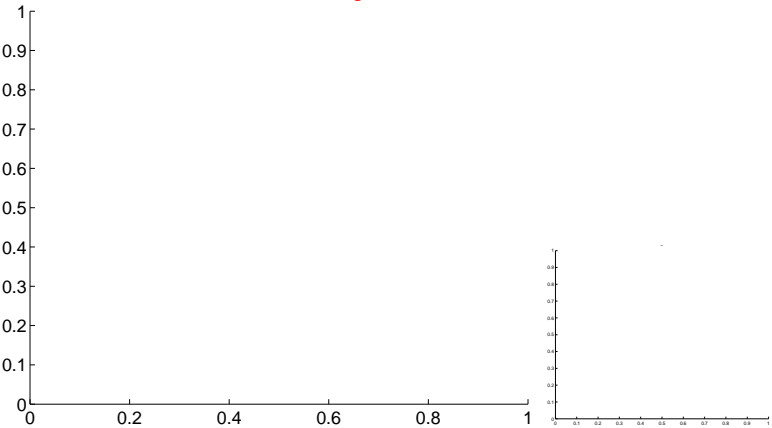
Q13 no OOT image



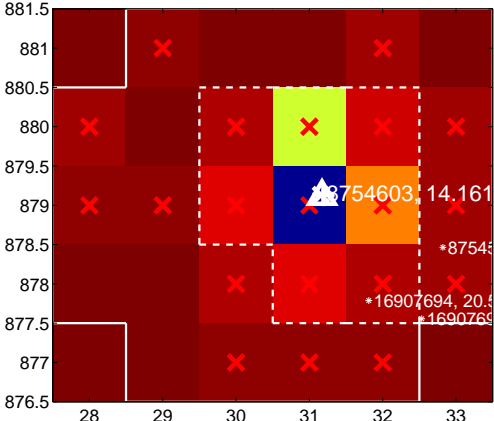
Q14 no difference image



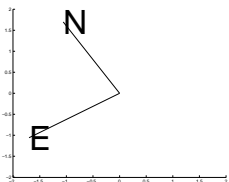
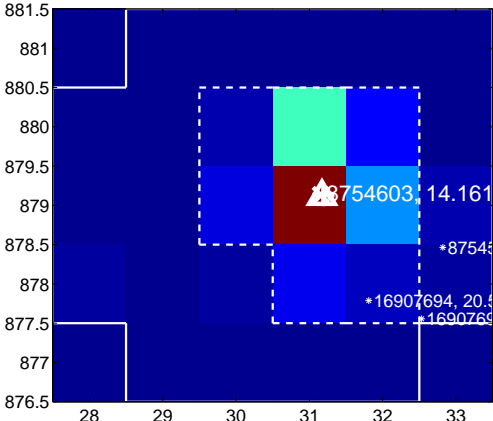
Q14 no OOT image



Q15 difference image. Poor Quality



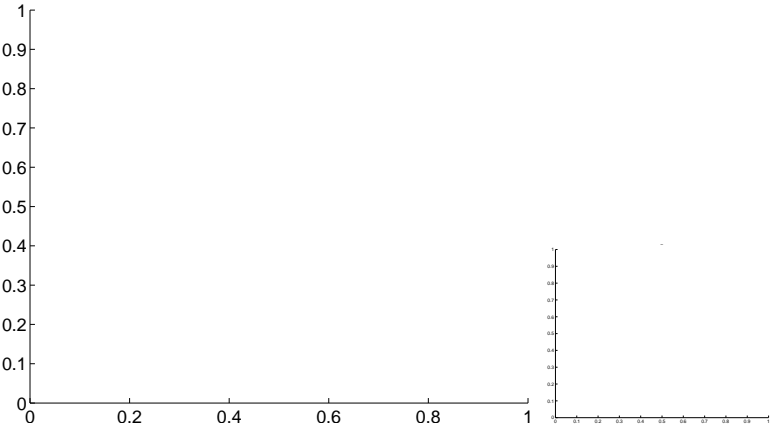
Q15 OOT image



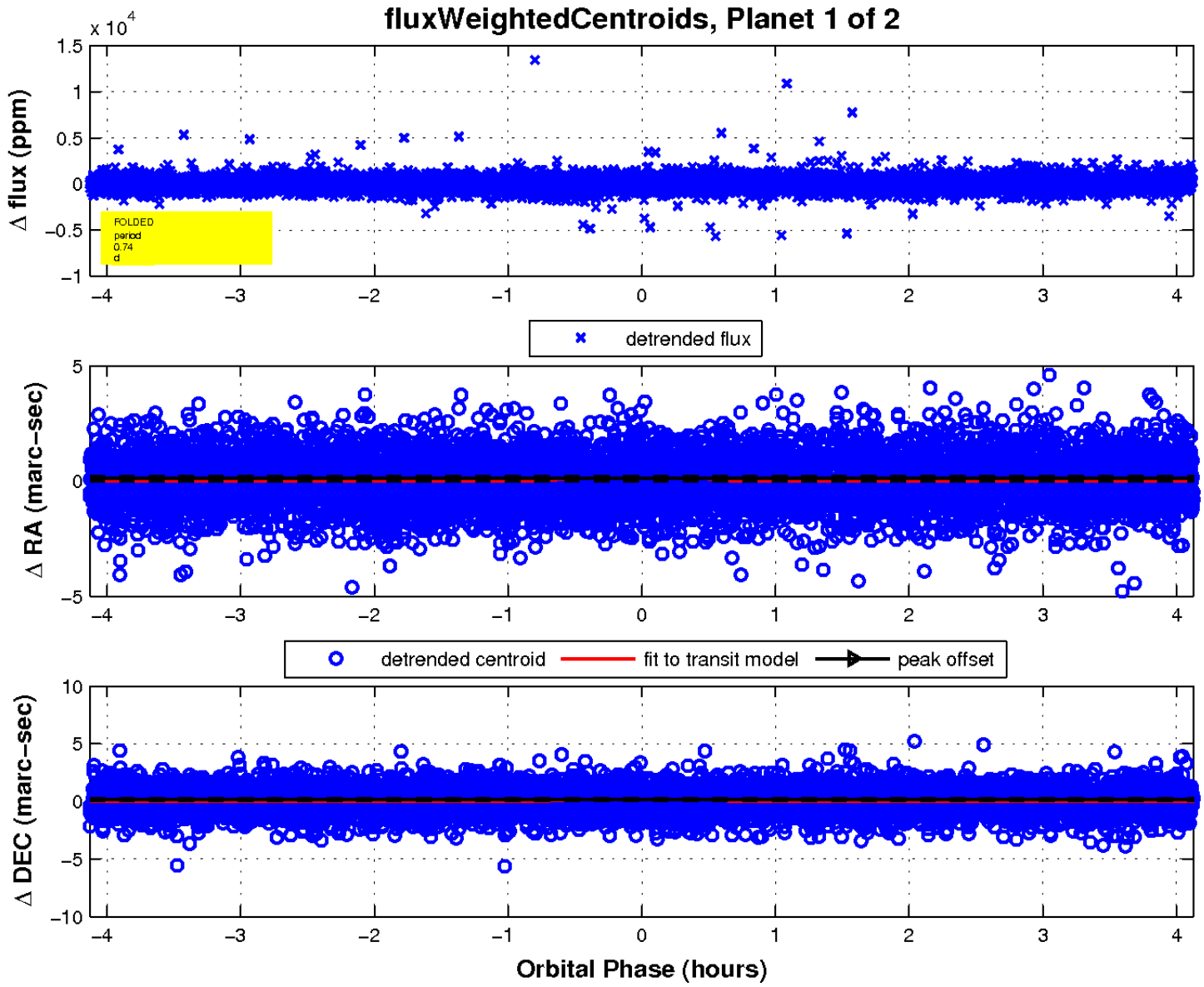
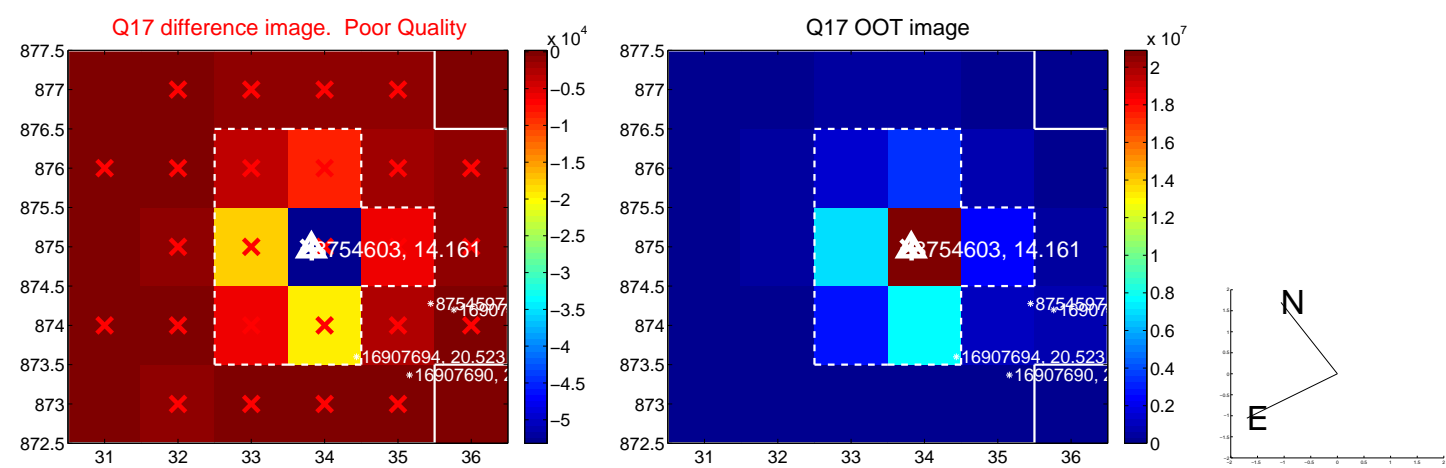
Q16 no difference image



Q16 no OOT image

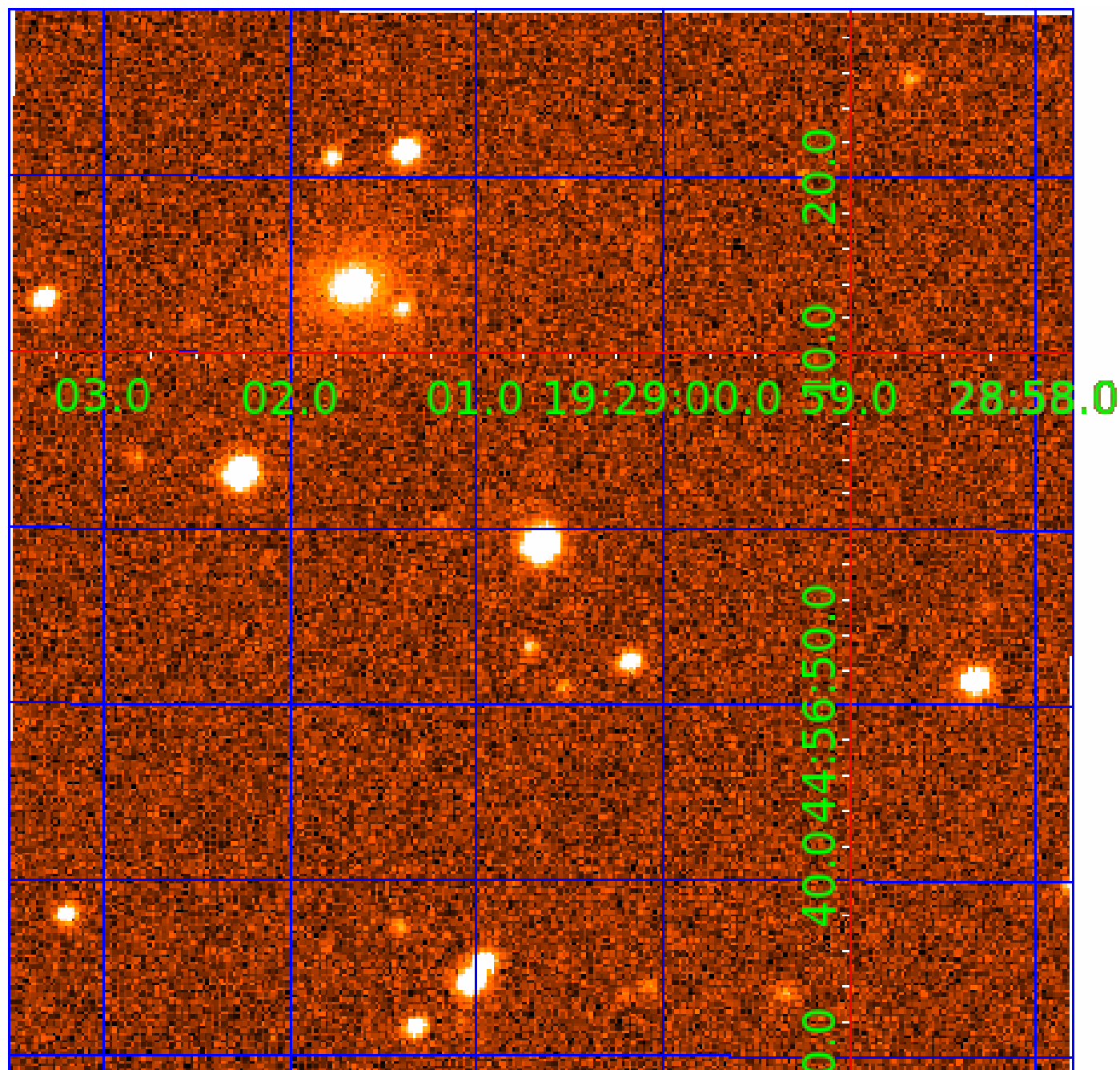


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008754603

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008754603-01	OBS	No	0.741030	131.572512	156.3	1.376	8.1	7.4	4.60	11457	6.62	553329.58
008754603-02	OBS	No	0.739458	131.569965	162.7	1.773	8.2	6.4	4.60	11457	6.95	554897.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008754603-01	OBS	FP	0.00	1	0	0	0	LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_FEW_DIFFS
008754603-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

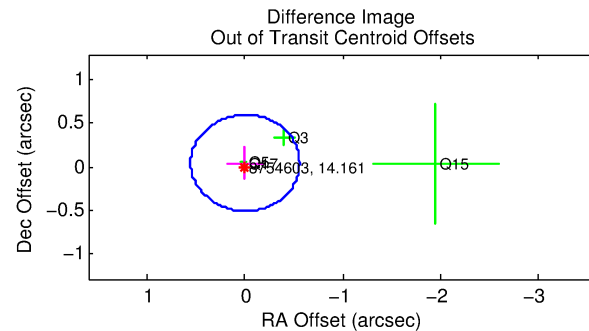
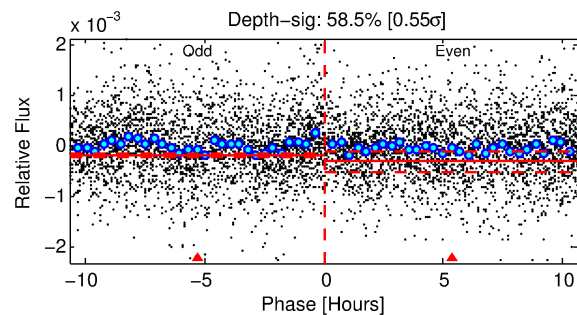
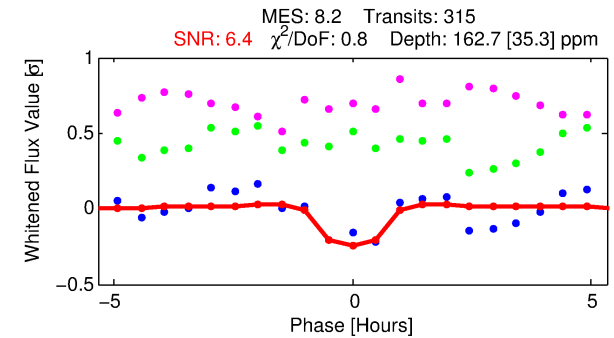
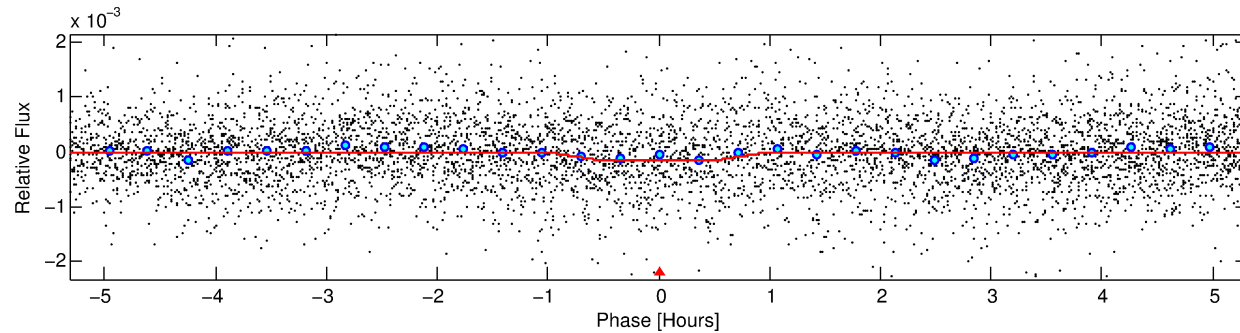
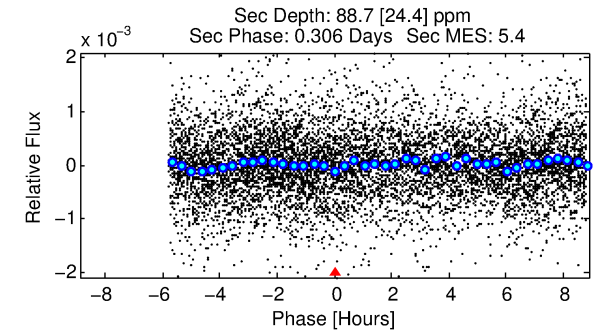
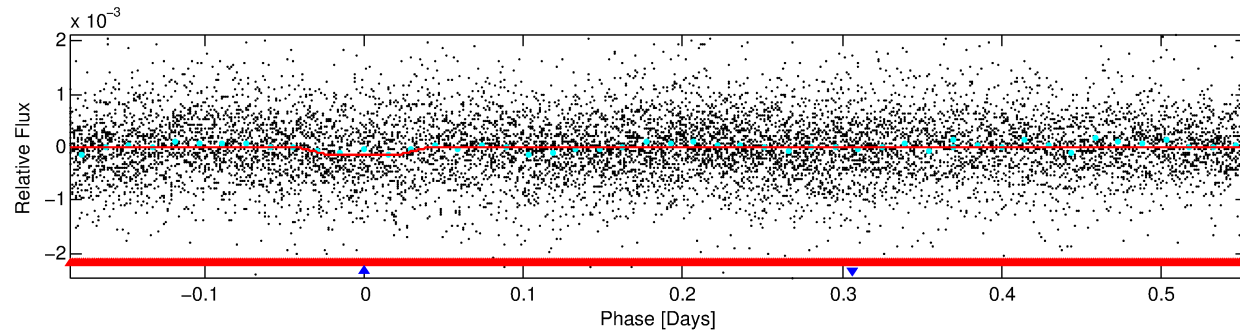
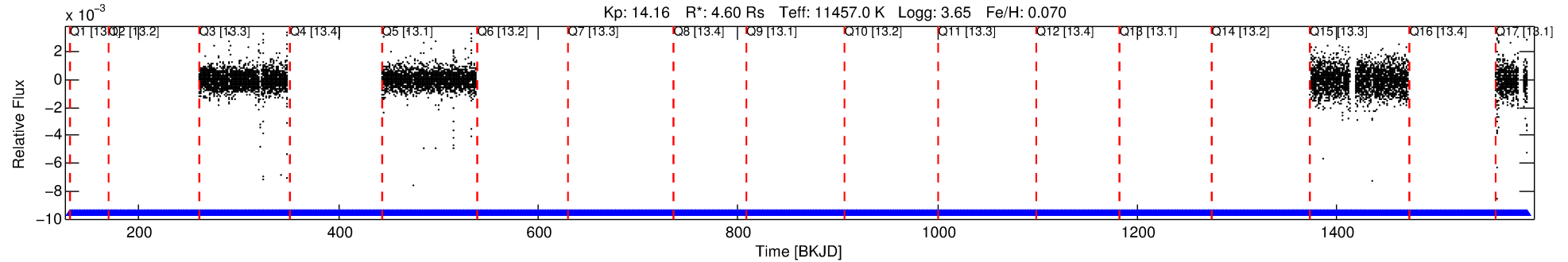
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008754603-02

No Significant Match Found

# DV One-Page Summary

KIC: 8754603 Candidate: 2 of 2 Period: 0.739 d



## DV Fit Results:

Period = 0.73946 [0.00002] d  
Epoch = 131.5700 [0.0040] BKJD  
Rp/R\* = 0.0139 [0.0041]  
a/R\* = 1.48 [1.96]  
b = 0.95 [0.24]  
Seff = 554897.84 [563343.94]  
Teq = 6960 [1766] K  
Rp = 6.95 [4.20] Re  
a = 0.0242 [0.0121] AU  
Ag = 0.59 [0.61] [-0.66σ]  
Teffp = 9443 [2144] K [0.89σ]

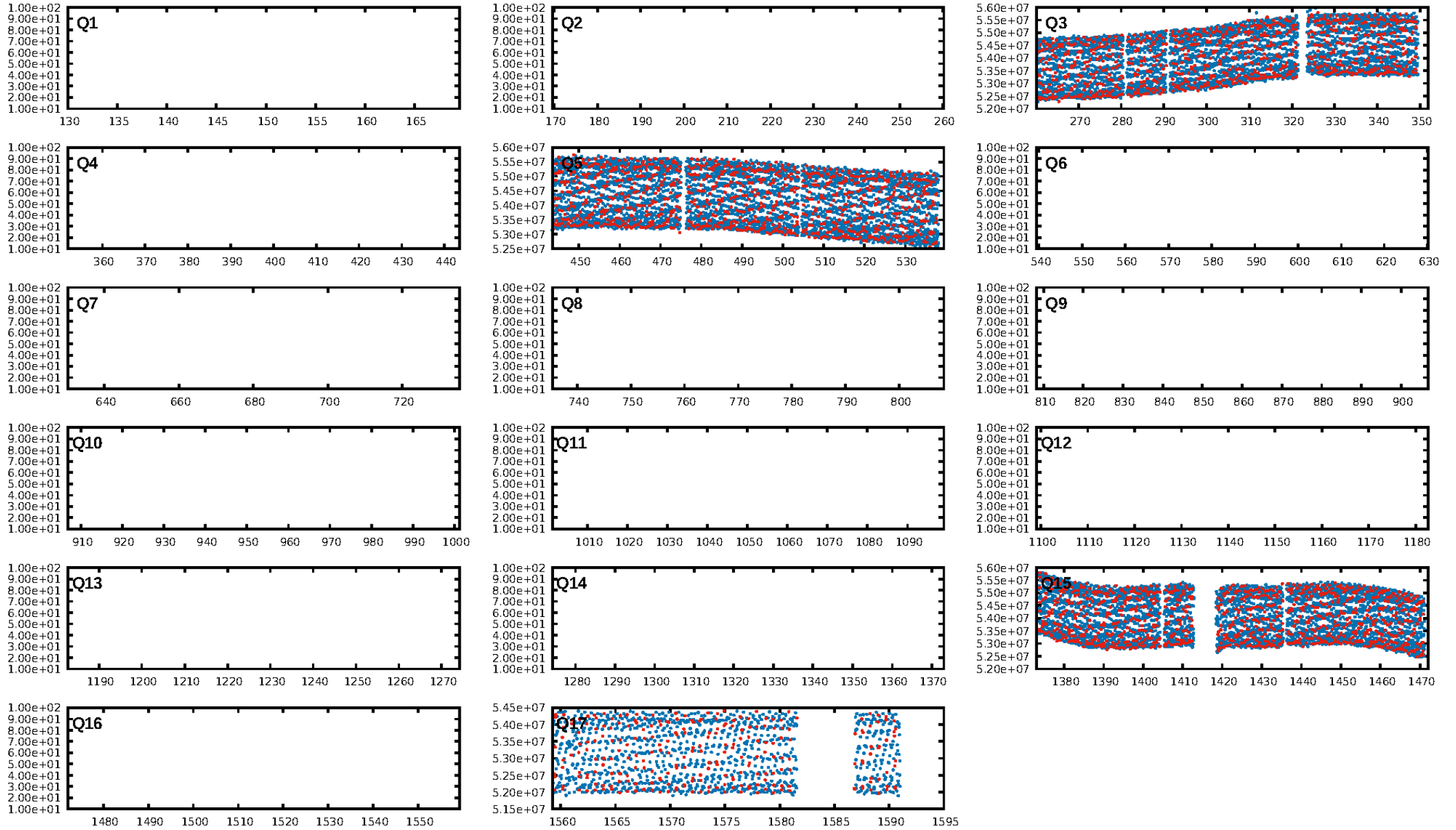
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 1.3% [0.02σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 3.04e-13  
RollingBand-fgt: 1.00 [280/280]  
GhostDiagnostic-chr: -1.81  
Centroid-sig: 0.4%  
Centroid-so: 1.055 arcsec [2.05σ]  
OotOffset-rm: 0.043 arcsec [0.23σ]  
OotOffset-st: 0.2/0/2 [4]  
KicOffset-rm: 0.117 arcsec [0.38σ]  
KicOffset-st: 0.2/0/2 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.50 [2/4]

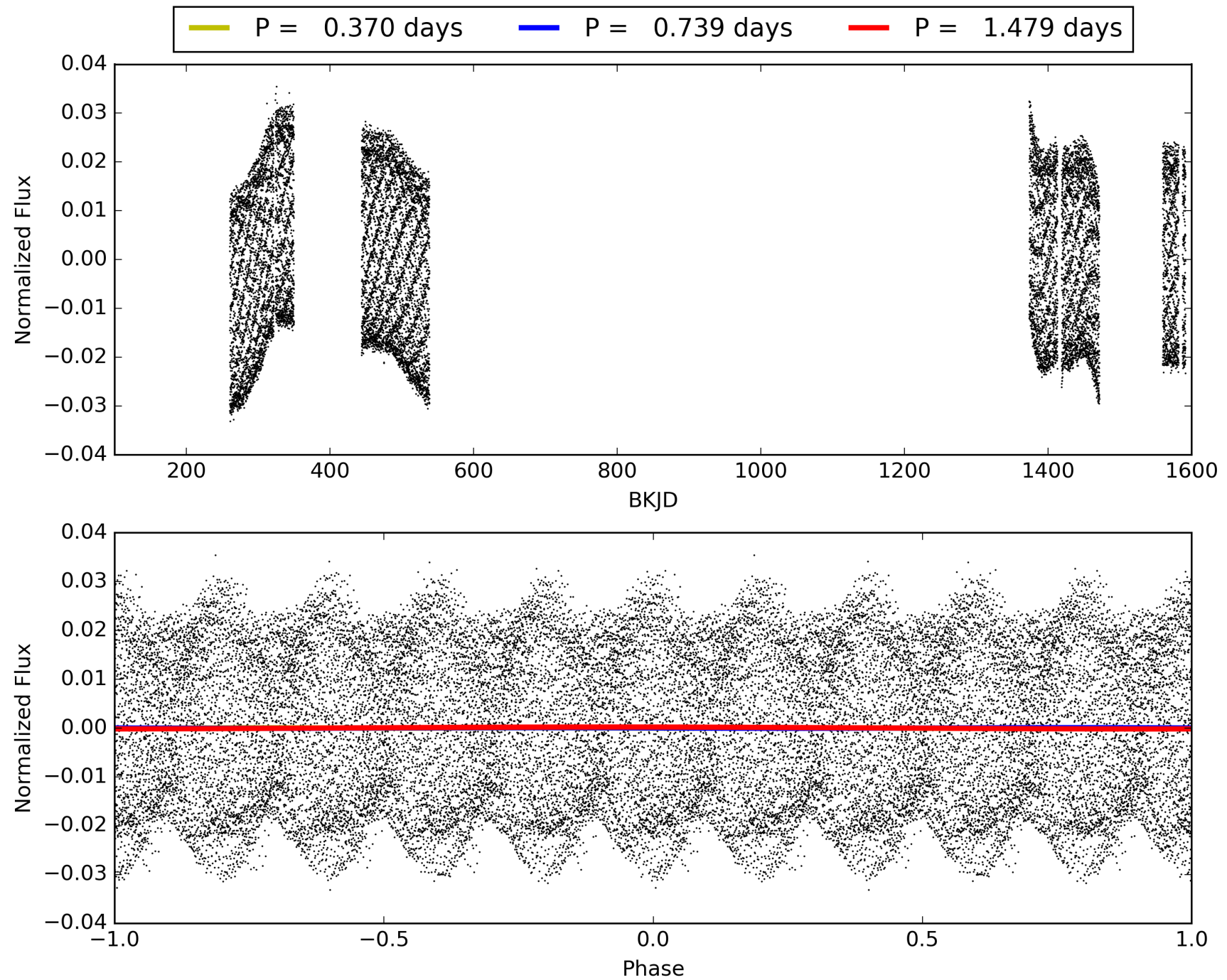
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:49:25 Z

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

# TCE 008754603-02, PDC Light Curves

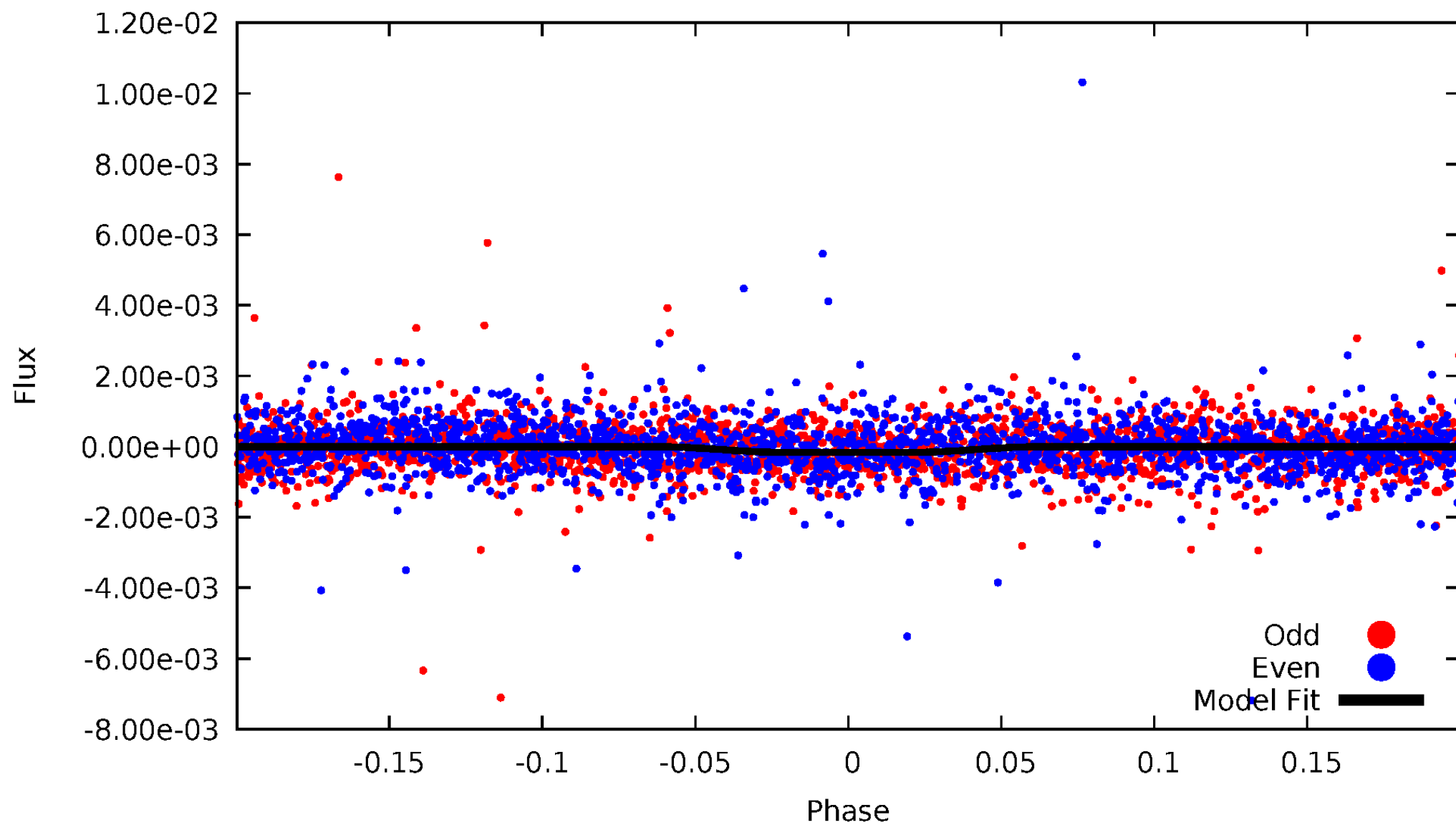


TCE 008754603-02



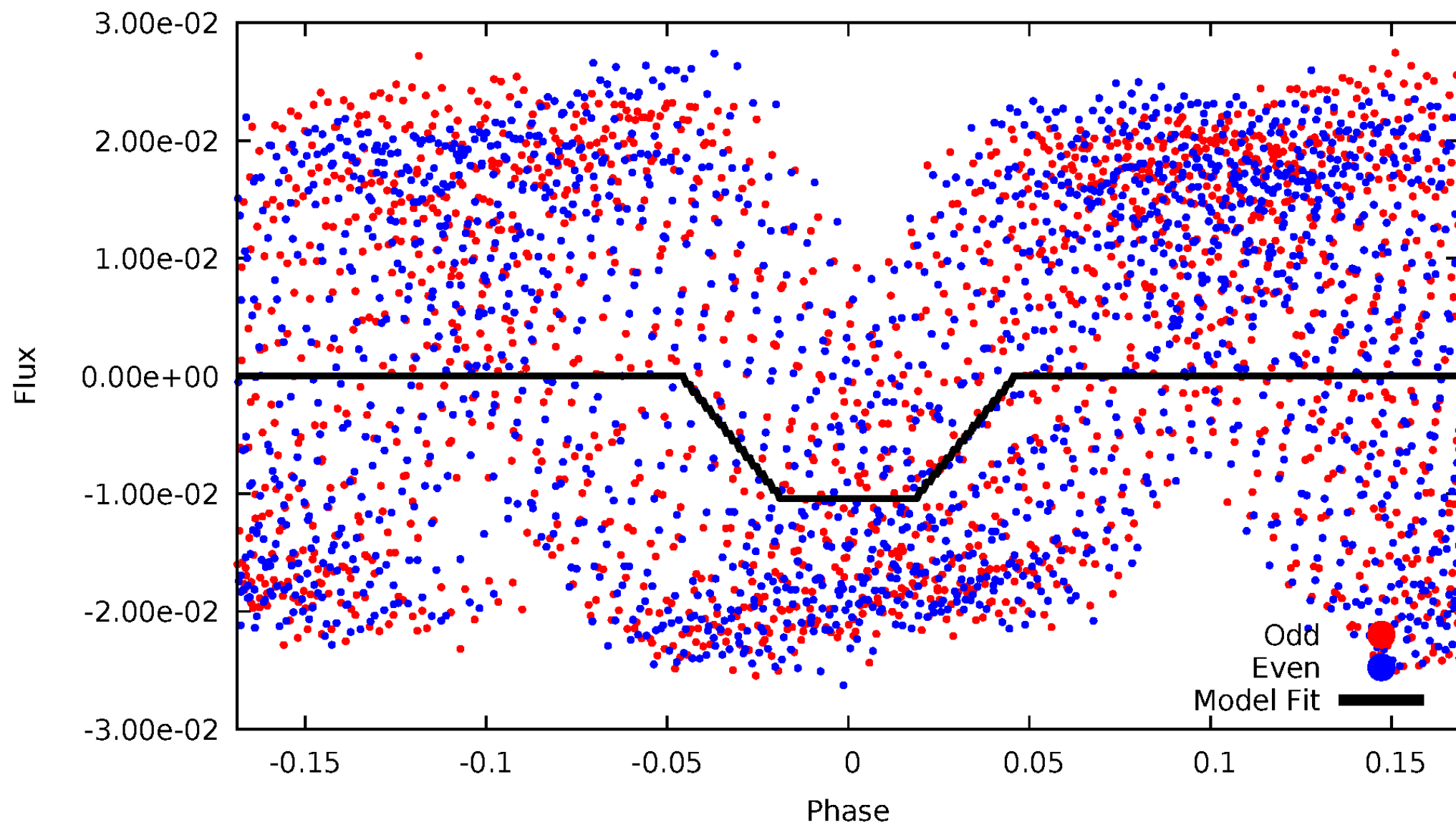
# DV Odd/Even

TCE 008754603-02



# ALT Odd/Even

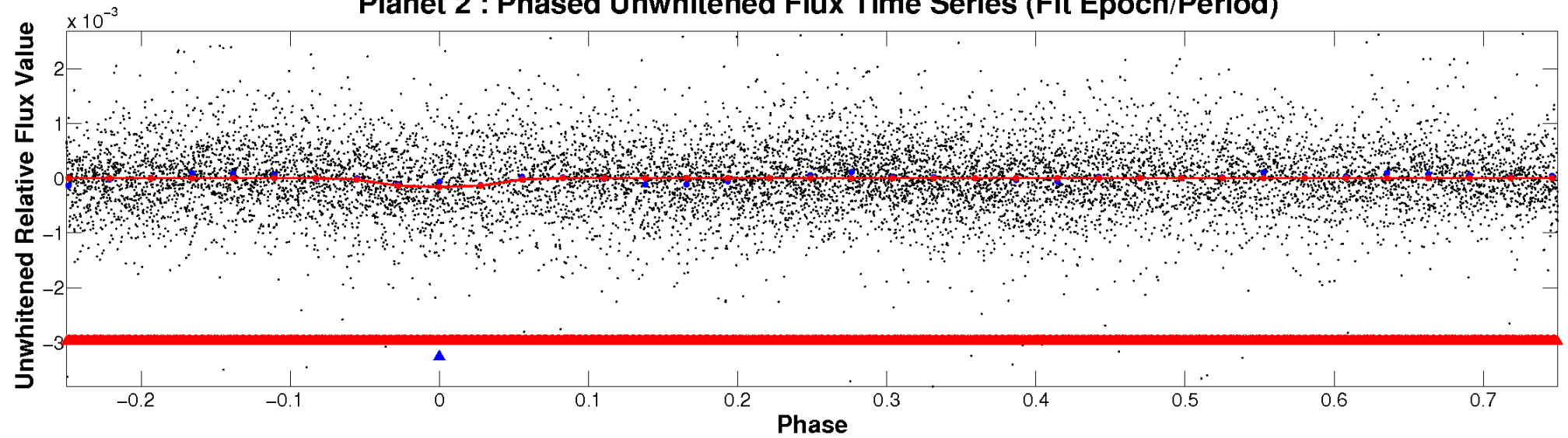
TCE 008754603-02



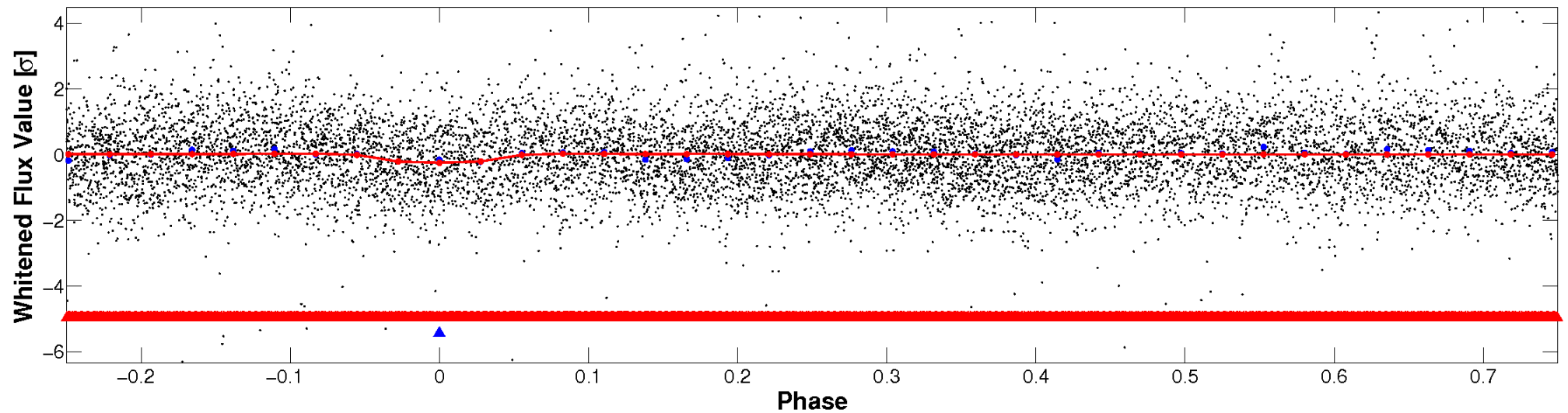


# Non-Whitened Vs. Whitened Light Curve

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

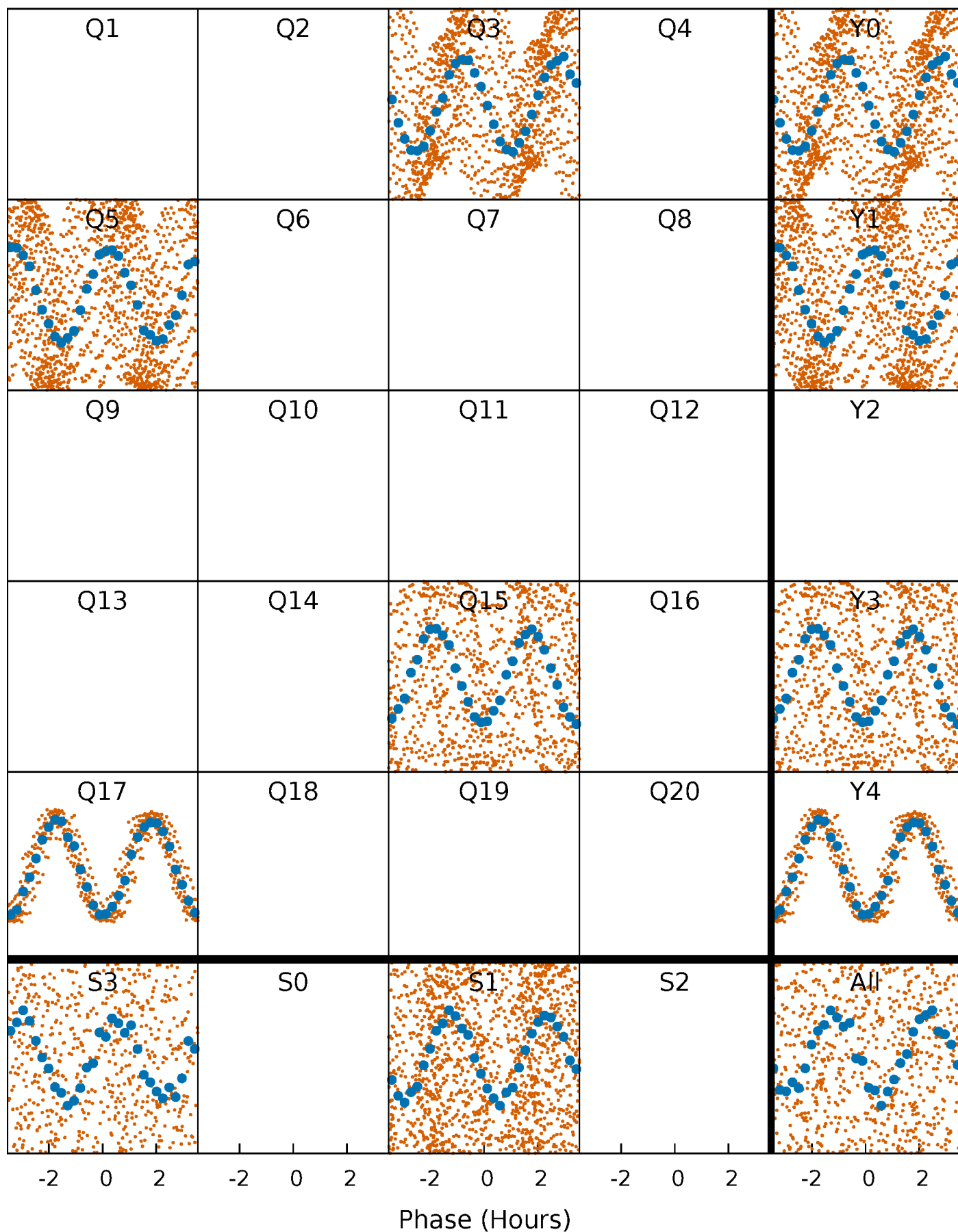


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



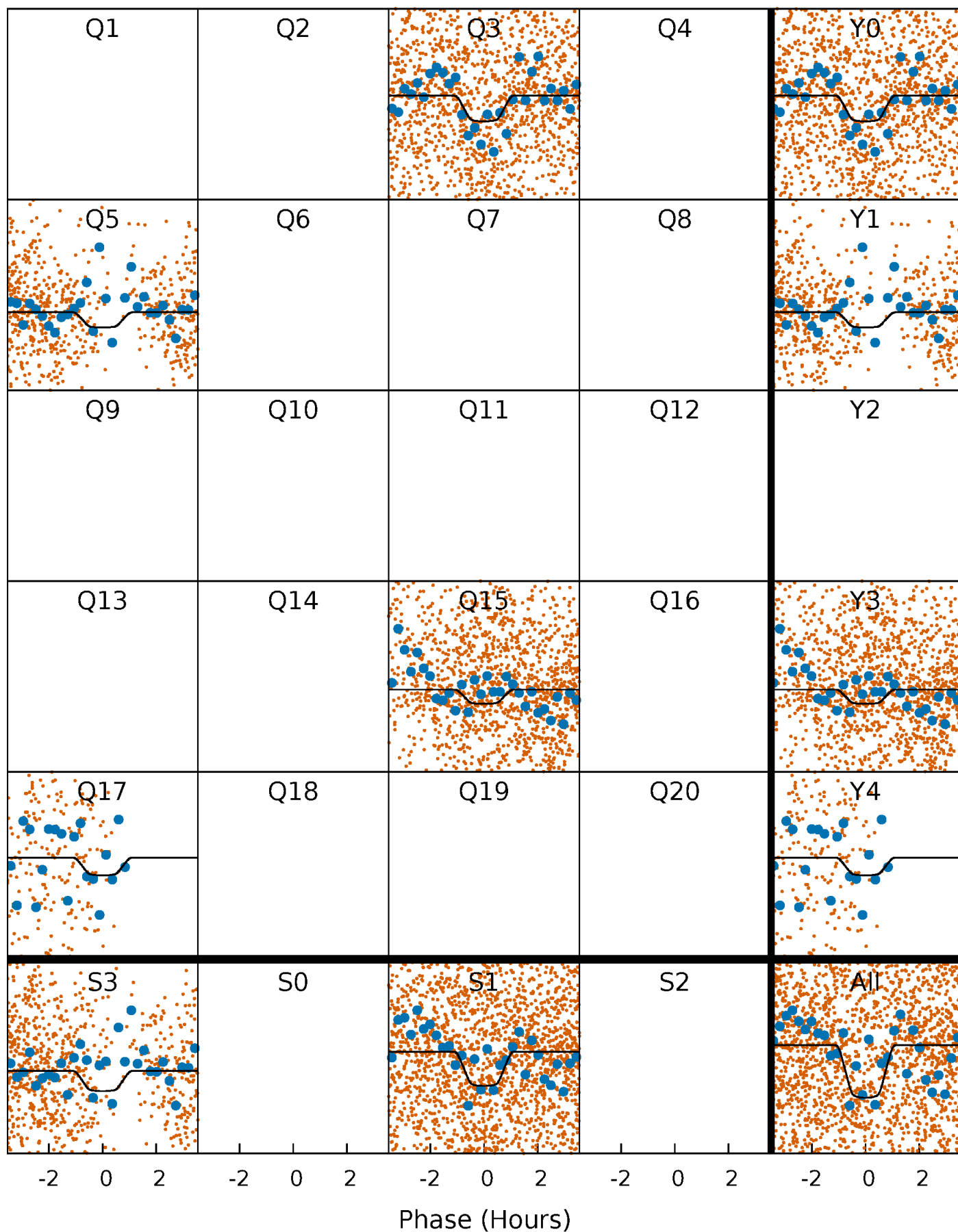
# PDC Quarter-Phased Transit Curves

TCE 008754603-02     $P = 0.739458$  Days     $T_0 = 131.569965$  (BKJD)



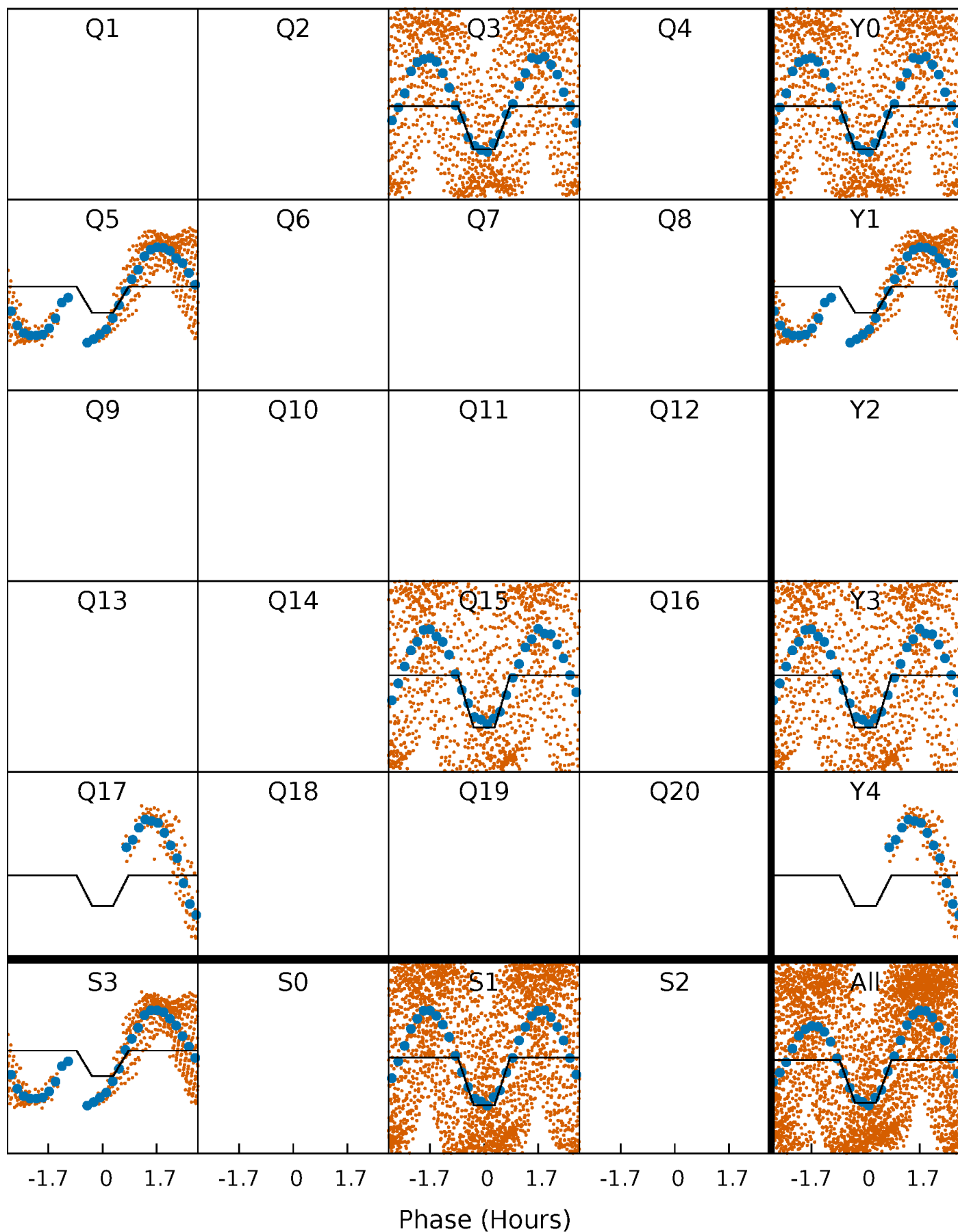
# DV Quarter-Phased Transit Curves

TCE 008754603-02   P= 0.739458 Days    $T_0=131.569965$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

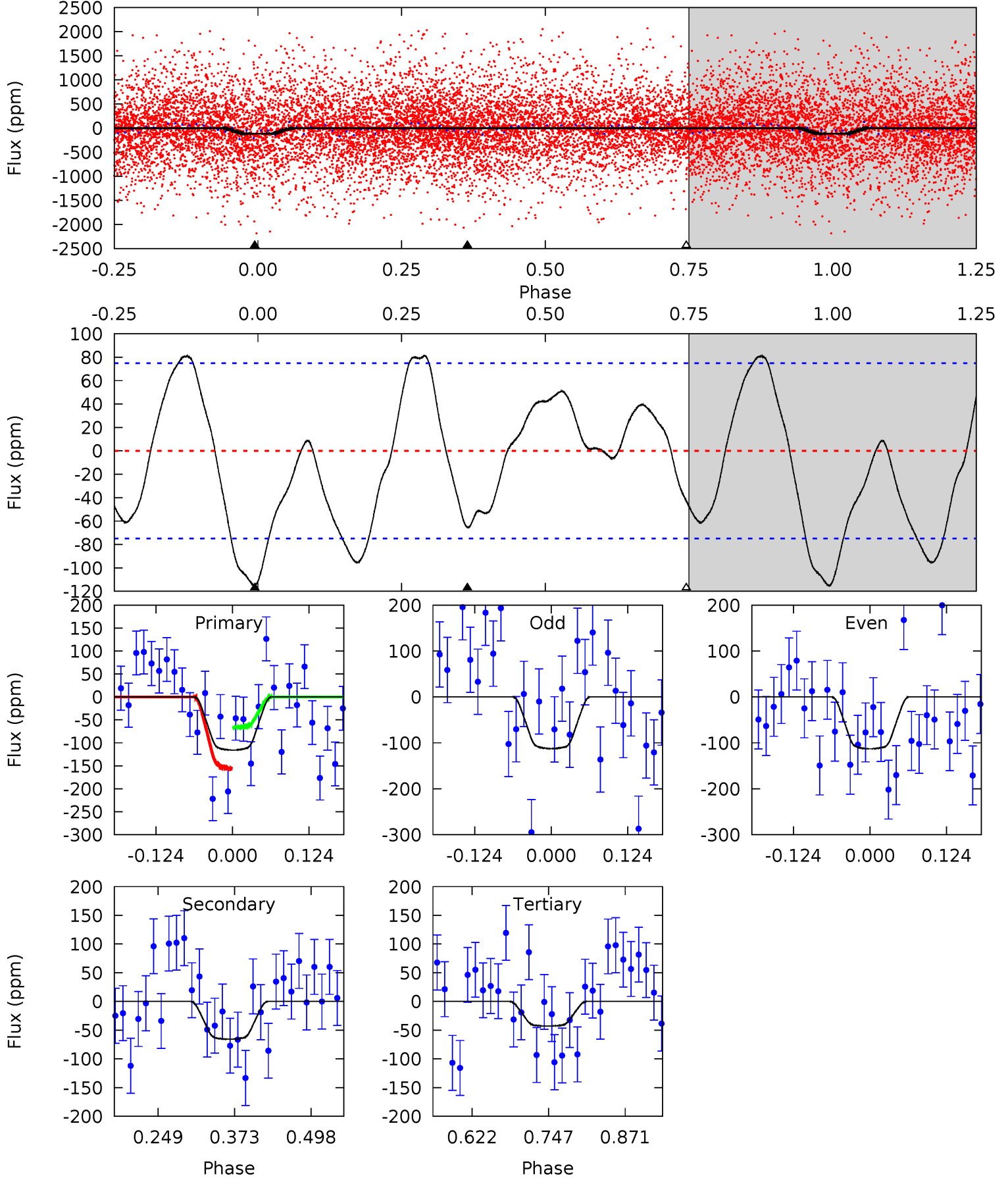
TCE 008754603-02     $P = 0.739526$  Days     $T_0 = 131.596014$  (BKJD)



# DV Model-Shift Uniqueness Test

008754603-02, P = 0.739458 Days, E = 131.569965 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	3.97	2.59	0	4.52	1.54	2.80	4.39	6.98	1.38	3.97	0.01	0.66	0.41	2.64

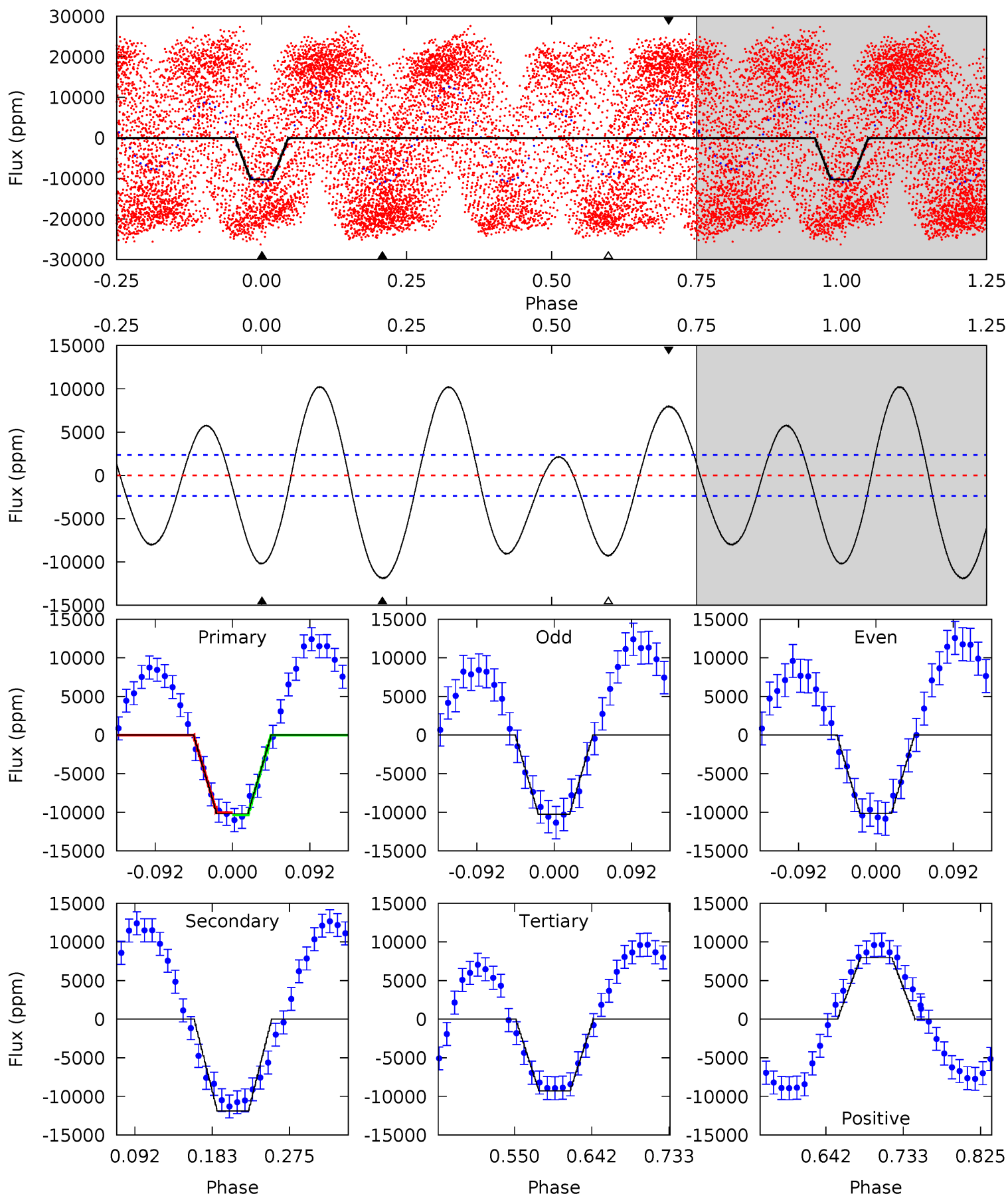




# Alt Model-Shift Uniqueness Test

008754603-02, P = 0.739526 Days, E = 131.596014 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
19.8	23.1	18.0	15.5	4.58	1.69	12.1	1.80	4.33	5.09	7.62	0.08	0.83	0.46	0.29





### Stellar Parameters For KIC 008754603

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$11457^{+449}_{-1798}$	$3.654^{+0.467}_{-0.110}$	$0.070^{+0.250}_{-0.550}$	$4.596^{+0.426}_{-2.415}$	$3.472^{+0.069}_{-1.113}$	$0.050^{+0.230}_{-0.014}$
	+4%/-16%	+13%/-3%	+357%/-786%	+9%/-53%	+2%/-32%	+456%/-28%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008754603-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-66 \pm 17$	$6.21^{+2.64}_{-2.28}$	$9120^{+1074}_{-1600}$	$5900^{+2885}_{-10273}$	$0.509^{+0.733}_{-0.257}$
Alt.	$-11885 \pm 514$	$49.42^{+5.34}_{-13.27}$	$9188^{+985}_{-1705}$	$10936^{+993}_{-1389}$	$1.564^{+1.114}_{-0.297}$

$T_{max}$  = 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

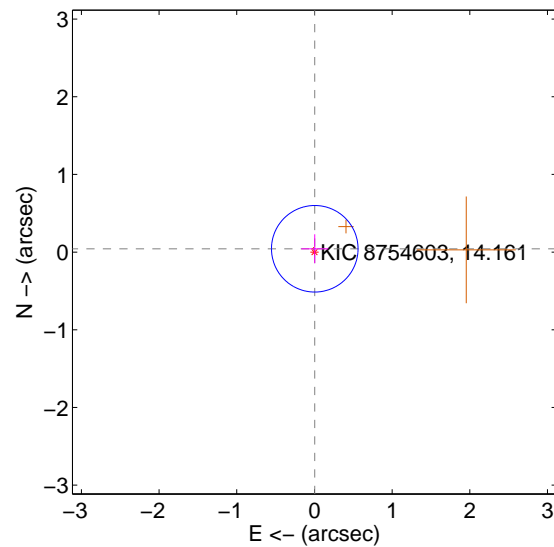
Supplemental centroid analysis for 008754603-02. Kepler magnitude: 14.16. Transit SNR 6.42

There are 1 quarters with good PRF difference image offsets

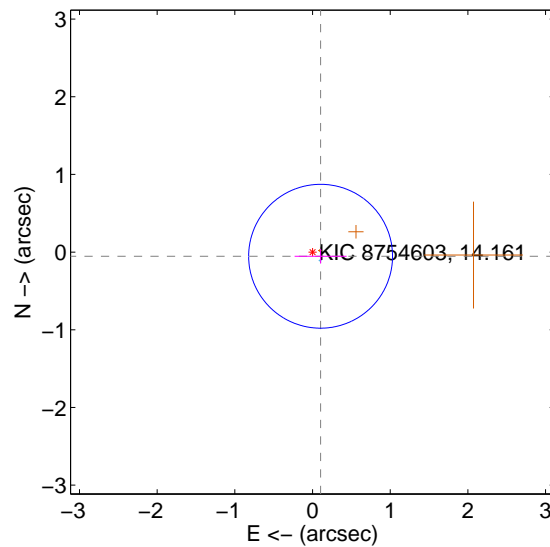
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.043 \pm 0.186$	0.23	$-0.004 \pm 0.174$	$0.043 \pm 0.186$
PRF-fit source offset from KIC position	$0.117 \pm 0.309$	0.38	$-0.104 \pm 0.335$	$-0.053 \pm 0.093$
photometric centroid source offset	$1.05 \pm 0.51$	2.05	$0.83 \pm 0.50$	$0.66 \pm 0.53$

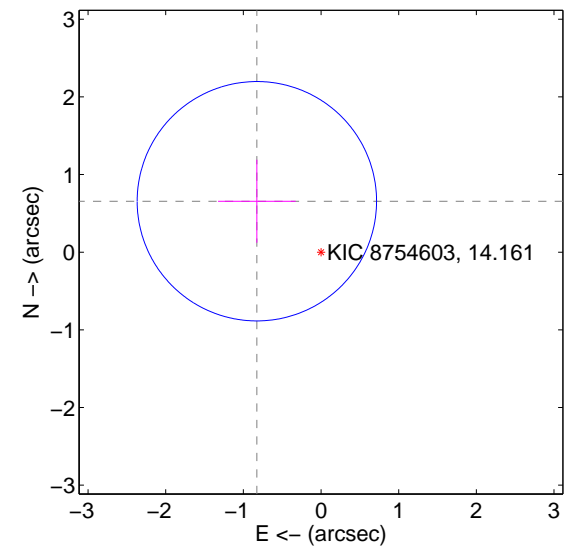
offset from difference PRF-fit to OOT PRF-fit



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.

Q1 no difference image



Q1 no OOT image



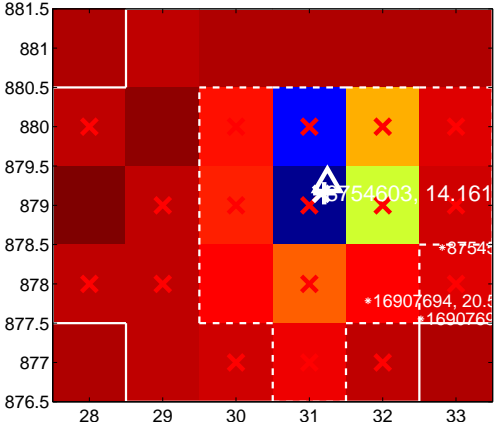
Q2 no difference image



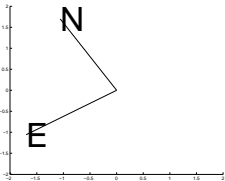
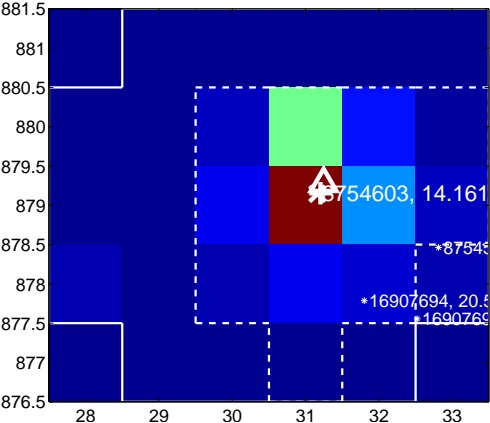
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image

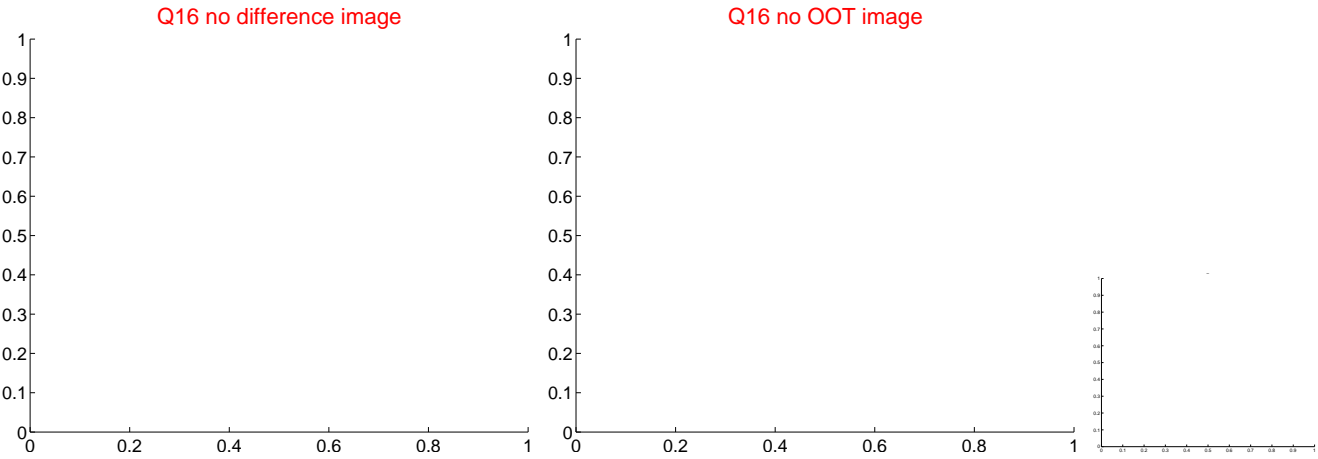
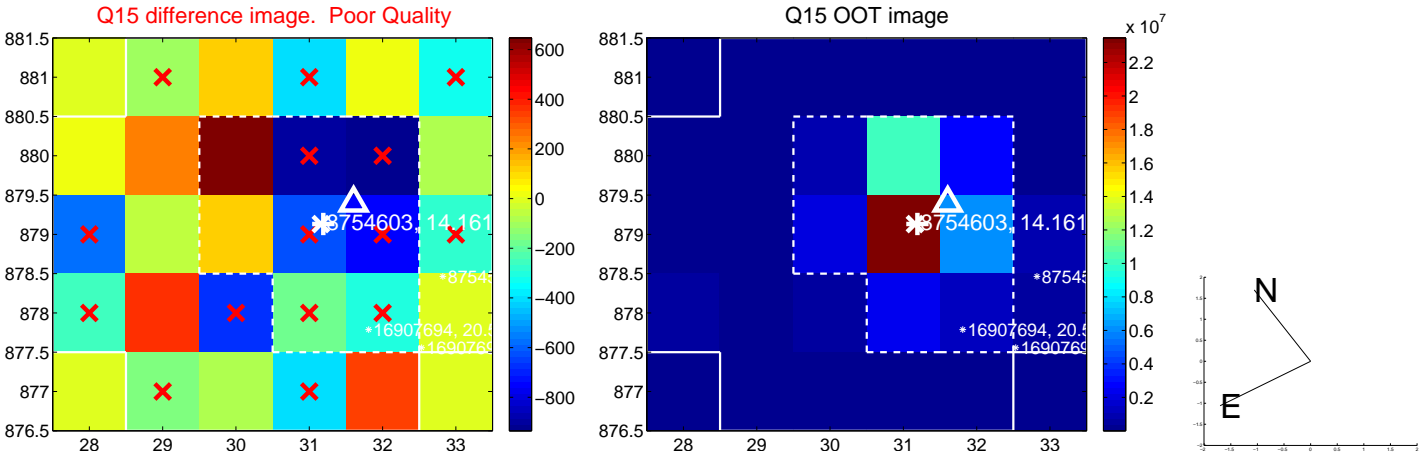
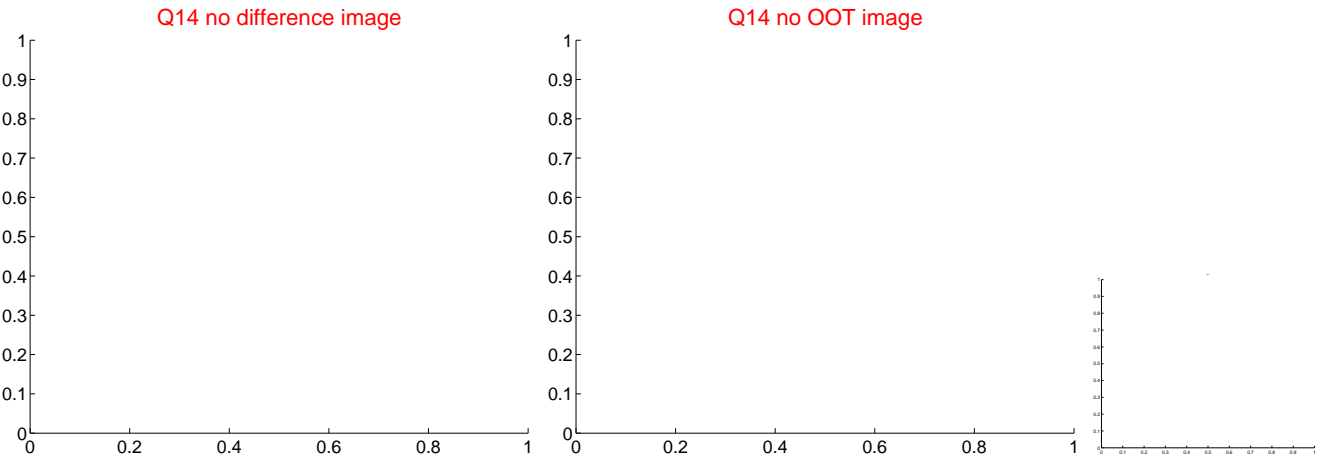
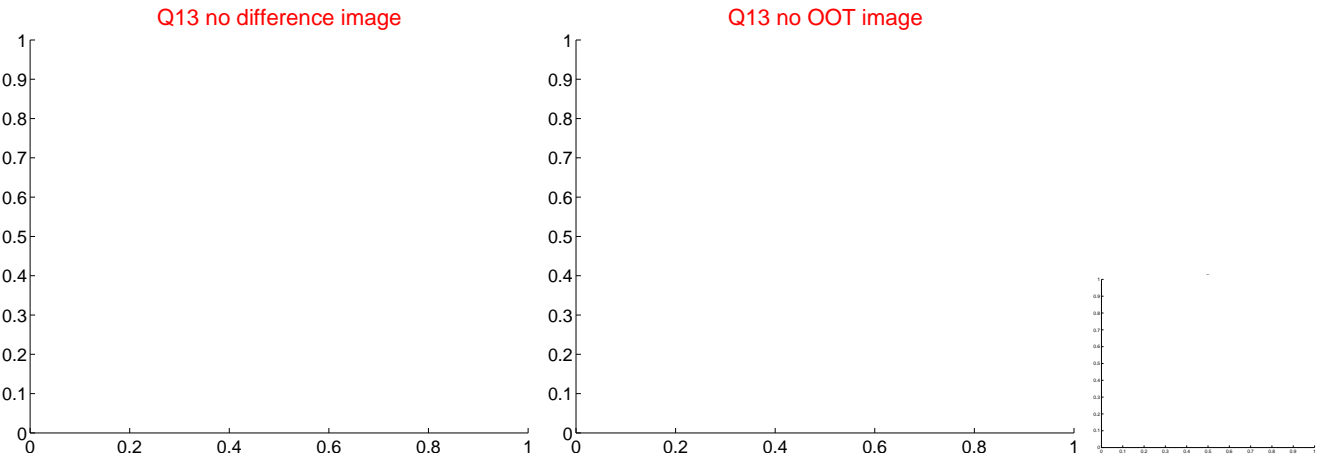




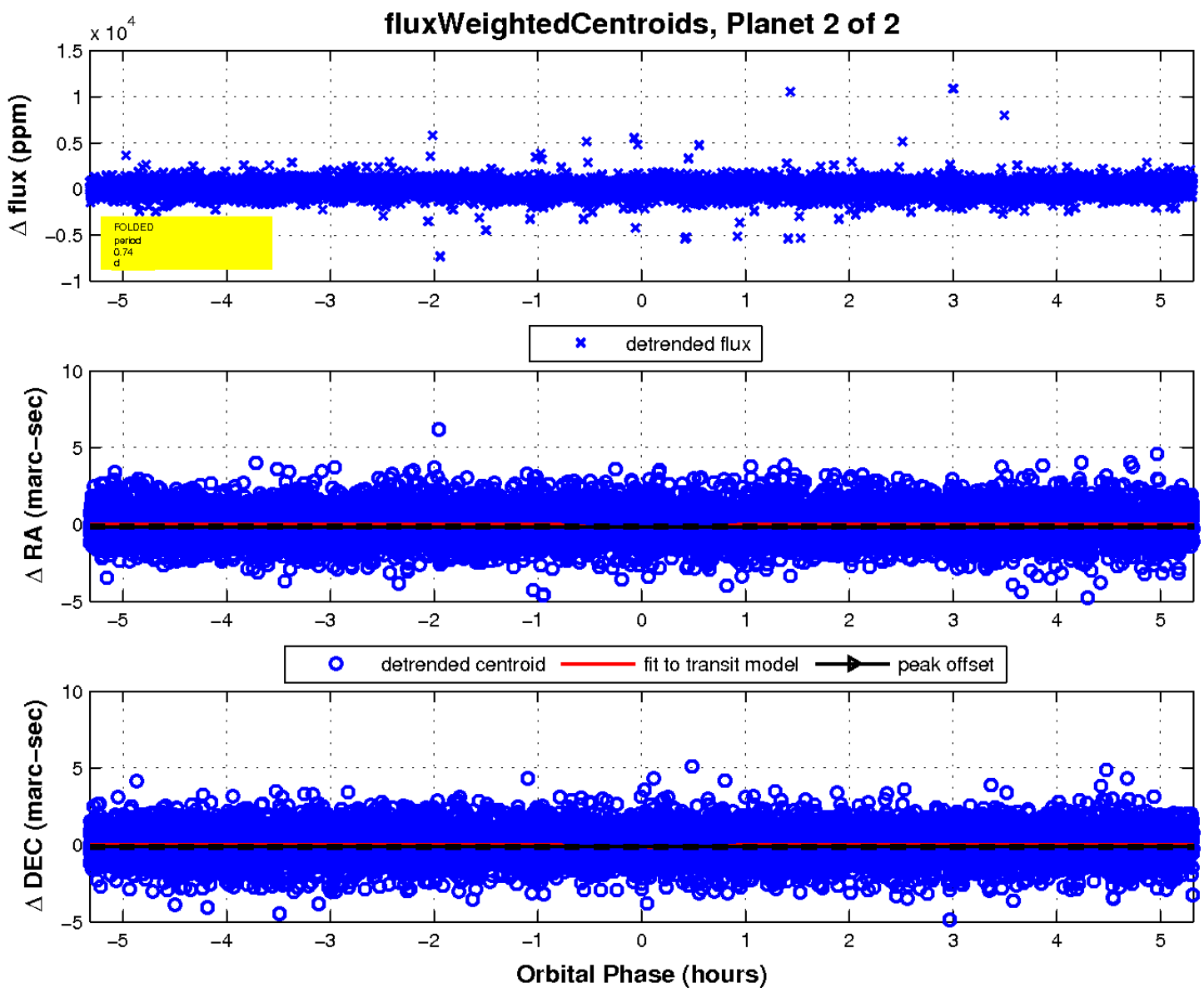
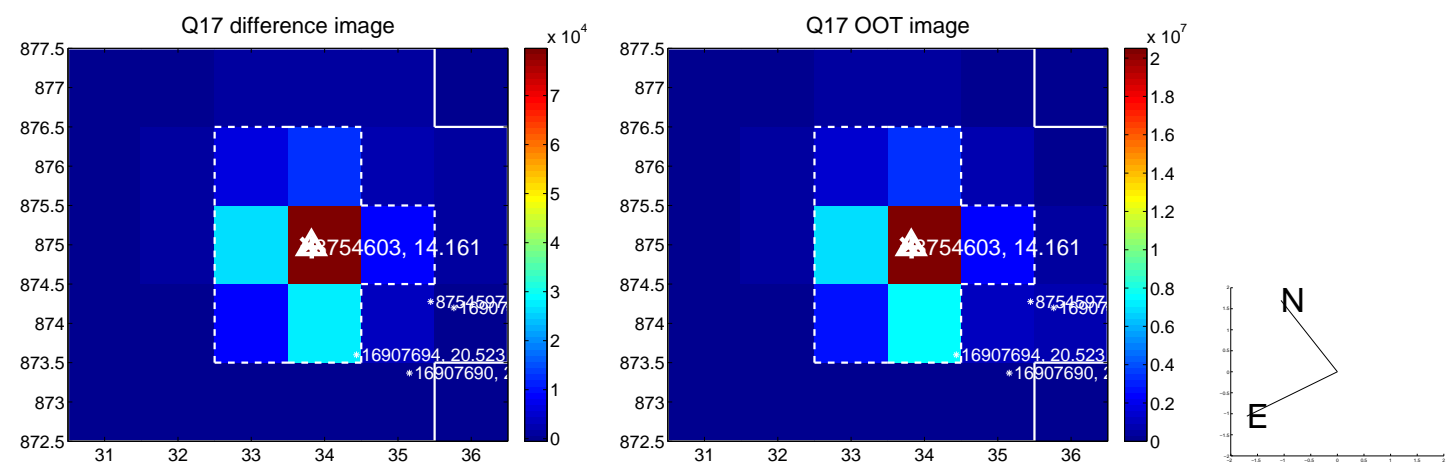
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

