

# KIC 009714724

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009714724-01	OBS	No	0.655502	131.670802	84252.8	2.127	27.4	28.6	0.81	5408	34.42	2540.14
009714724-02	OBS	No	0.655573	131.849732	148615.2	2.030	10.8	46.2	0.81	5408	30.95	2539.78
009714724-03	OBS	No	0.655607	131.942244	1565.6	1.500	13.8	-1.0	0.81	5408	3.15	2539.60

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714724-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009714724-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009714724-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST

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

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

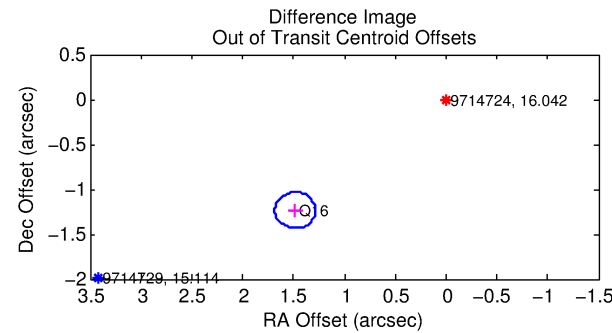
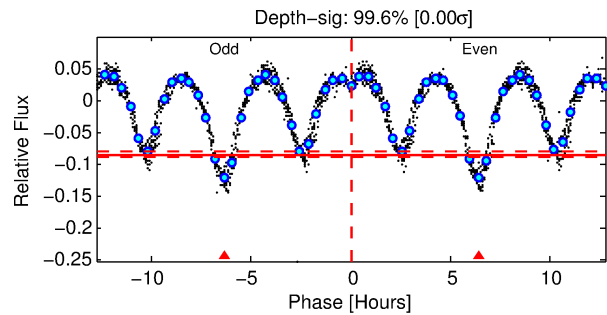
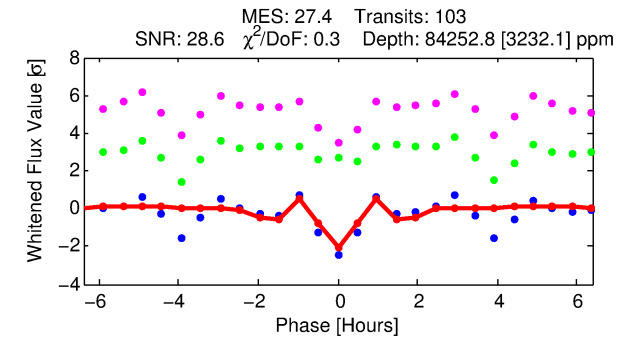
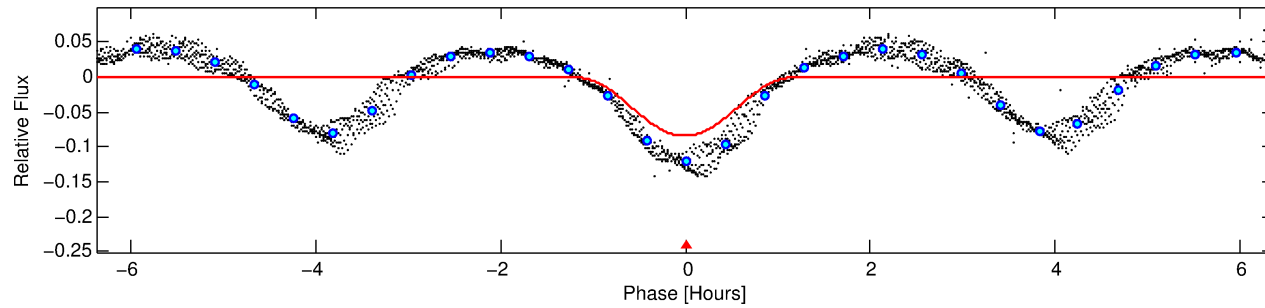
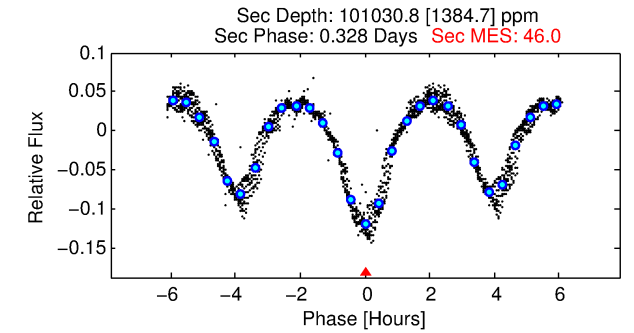
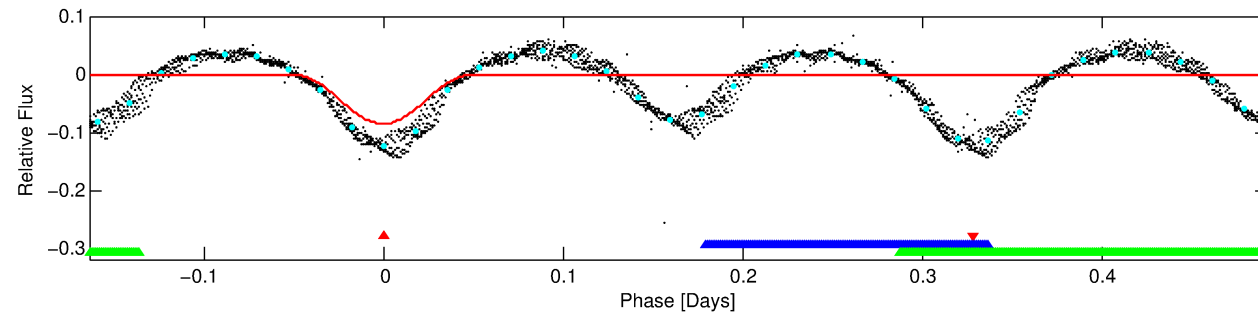
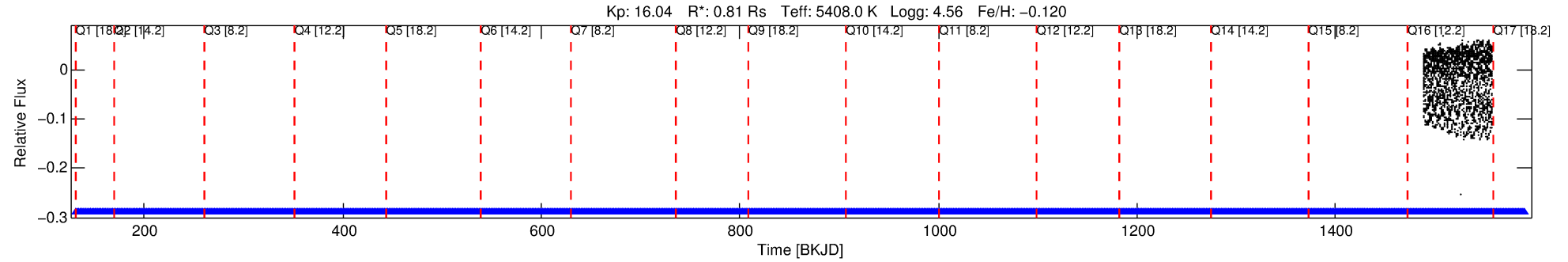
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009714724-01

No Significant Match Found

# DV One-Page Summary

KIC: 9714724 Candidate: 1 of 3 Period: 0.656 d



## DV Fit Results:

Period = 0.65550 [0.00000] d  
Epoch = 131.6708 [0.0003] BKJD  
Rp/R\* = 0.3908 [0.2285]  
a/R\* = 2.73 [0.11]  
b = 0.90 [0.34]  
Seff = 2540.14 [694.32]  
Teq = 1810 [124] K  
**Rp = 34.42 [21.31] Re**  
a = 0.0140 [0.0023] AU  
Ag = 9.22 [11.00] [0.75σ]  
Teffp = 4877 [1435] K [2.13σ]

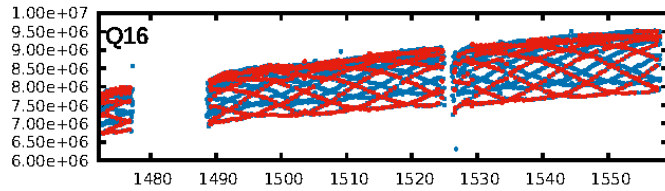
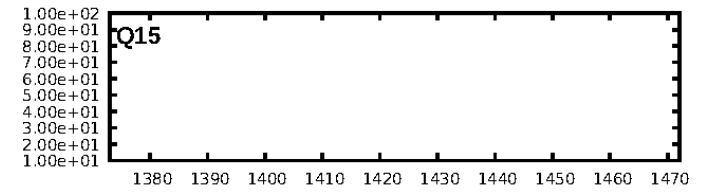
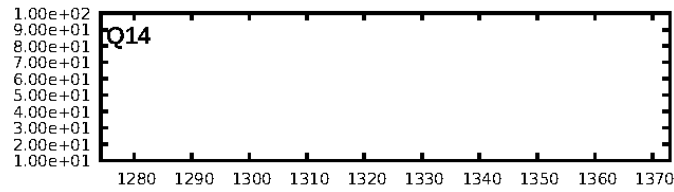
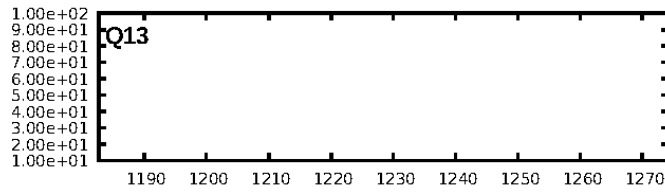
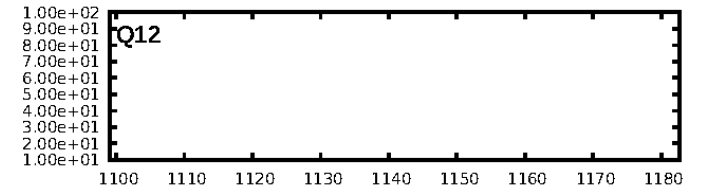
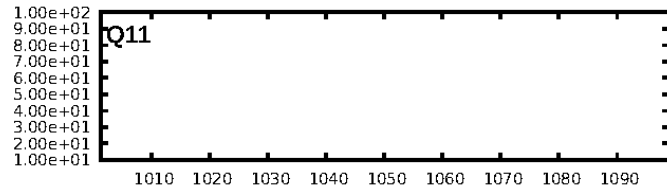
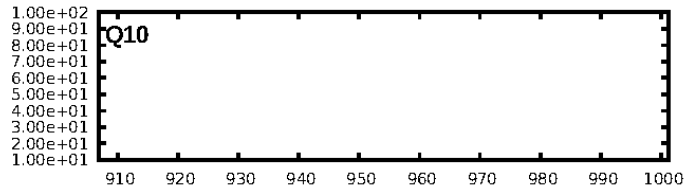
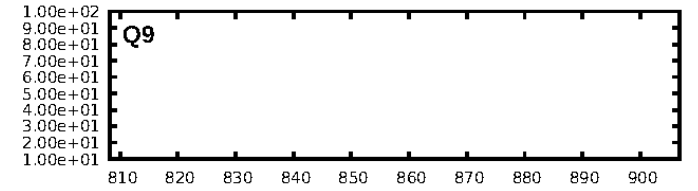
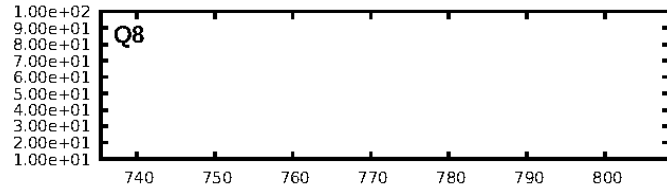
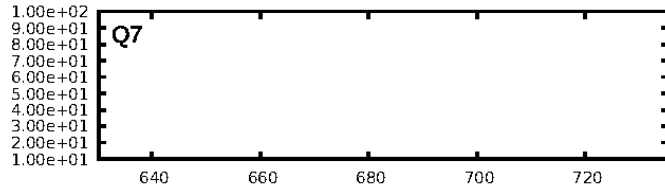
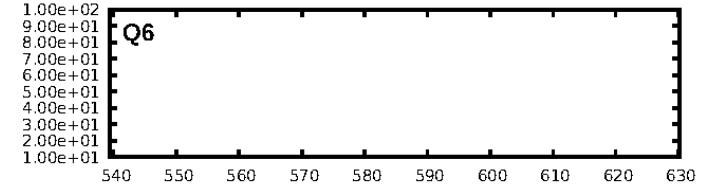
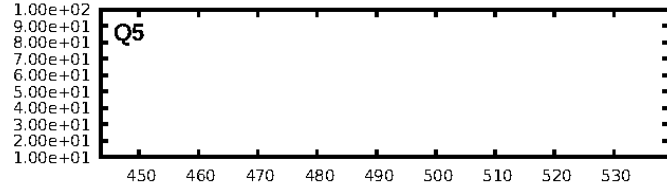
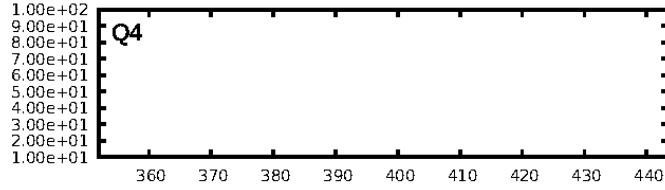
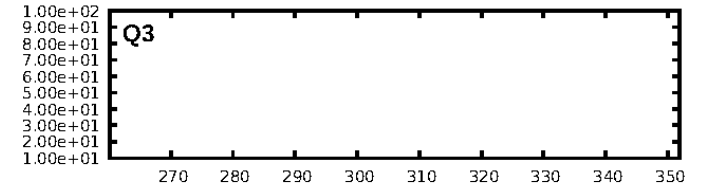
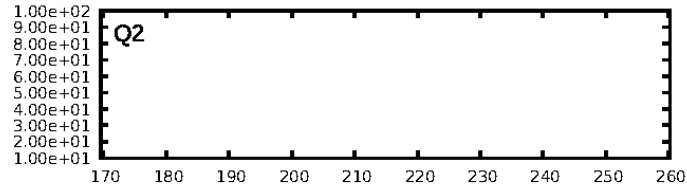
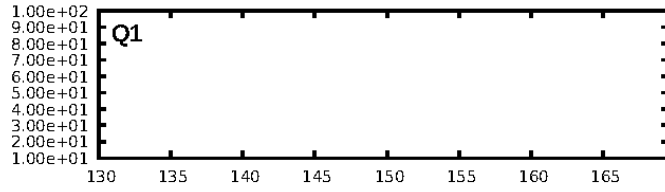
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [103/103]  
**GhostDiagnostic-chr: -0.09834**  
Centroid-sig: N/A  
**Centroid-so: 4.401 arcsec [3.91σ]**  
**OotOffset-rm: 1.931 arcsec [28.95σ]**  
**KicOffset-rm: 4.162 arcsec [62.40σ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

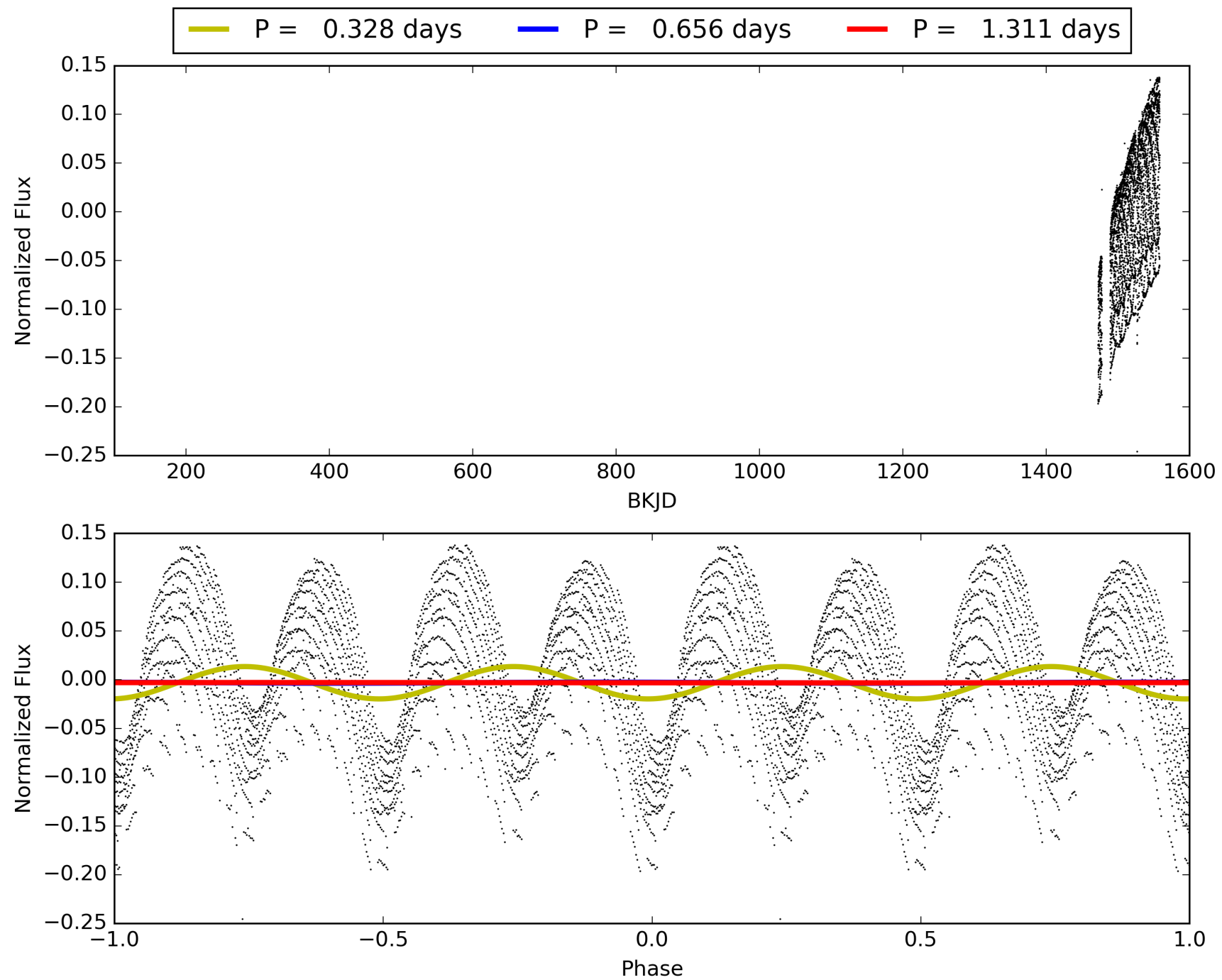
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009714724-01, PDC Light Curves

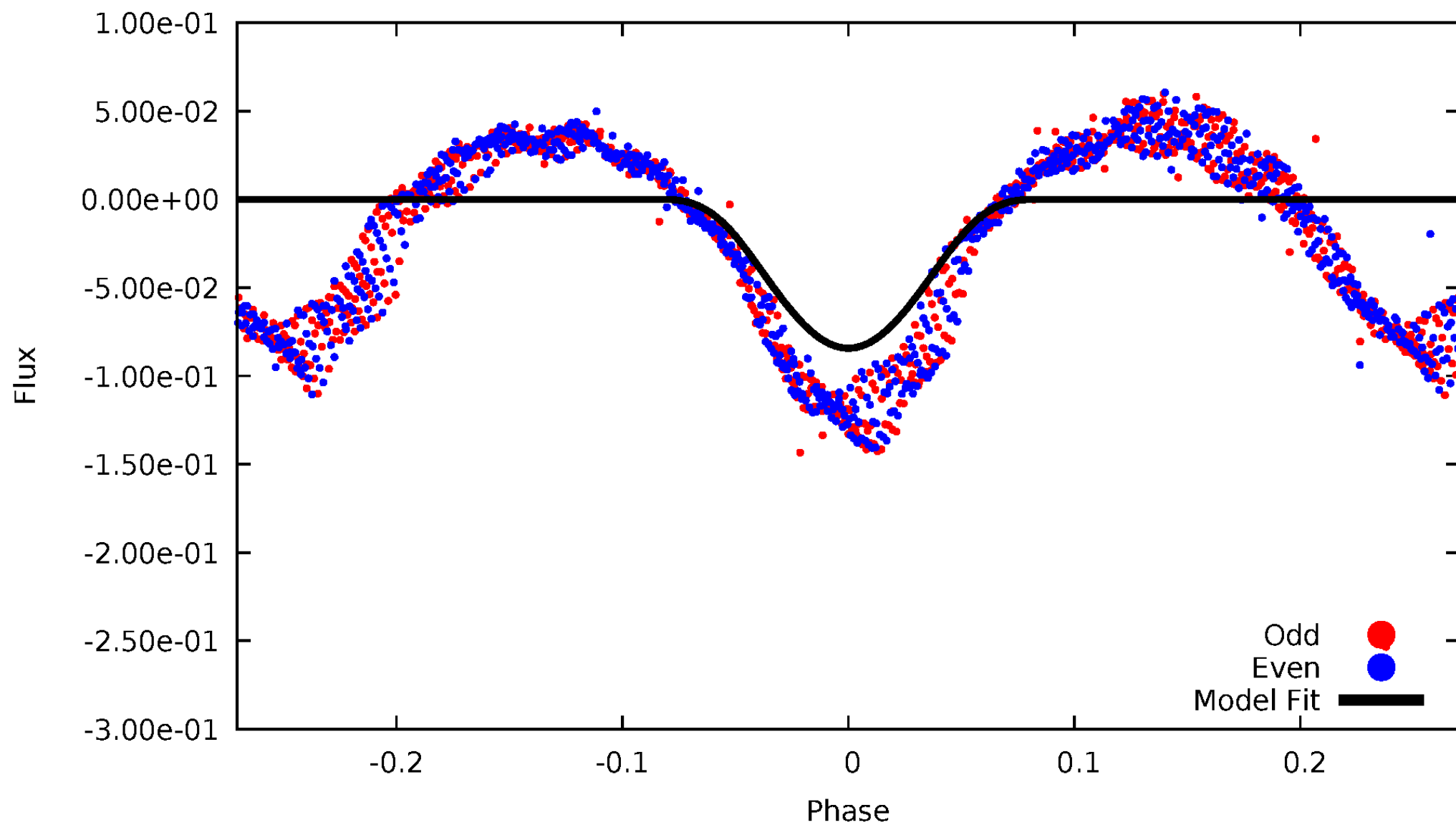


TCE 009714724-01



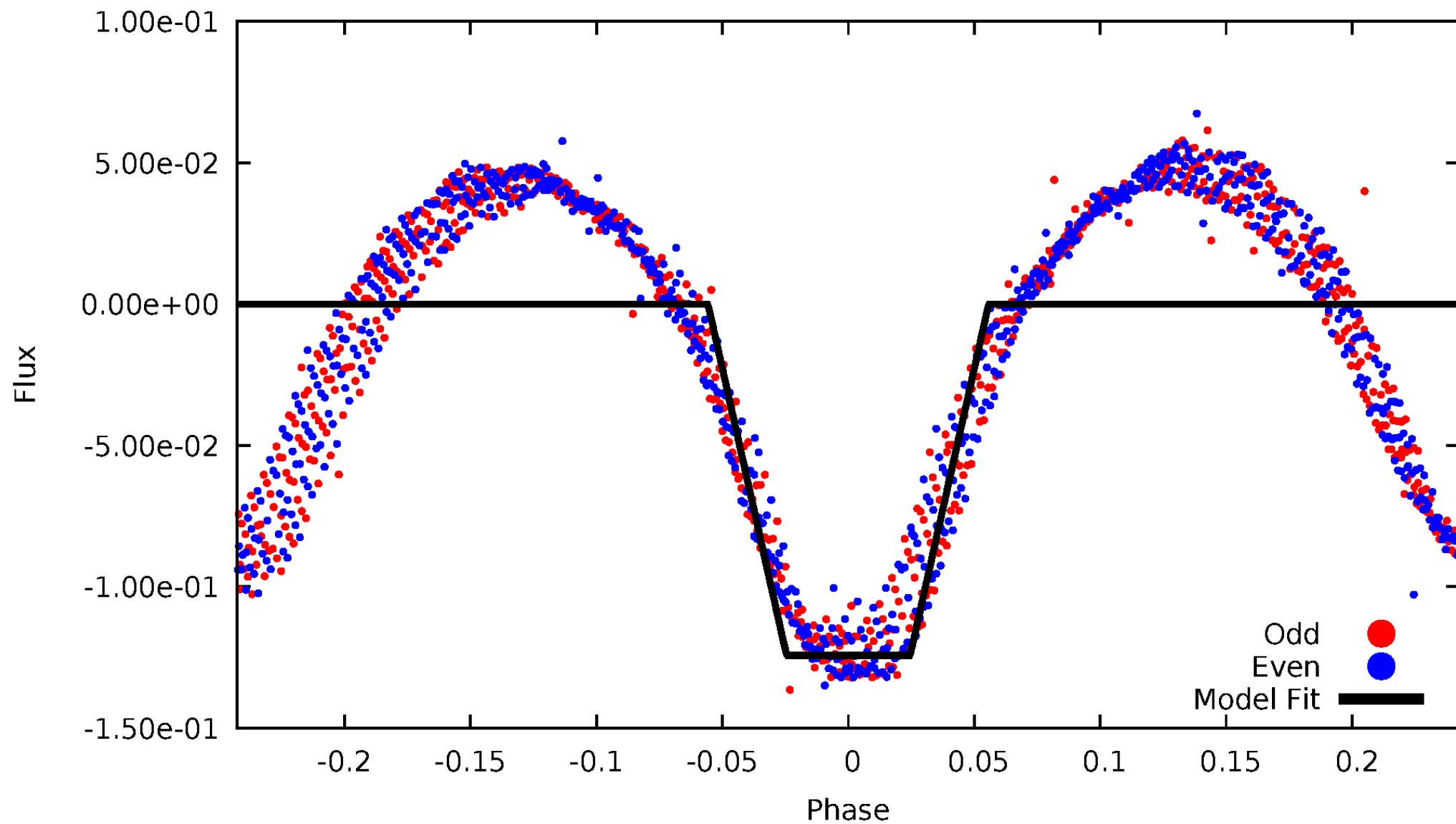
# DV Odd/Even

TCE 009714724-01



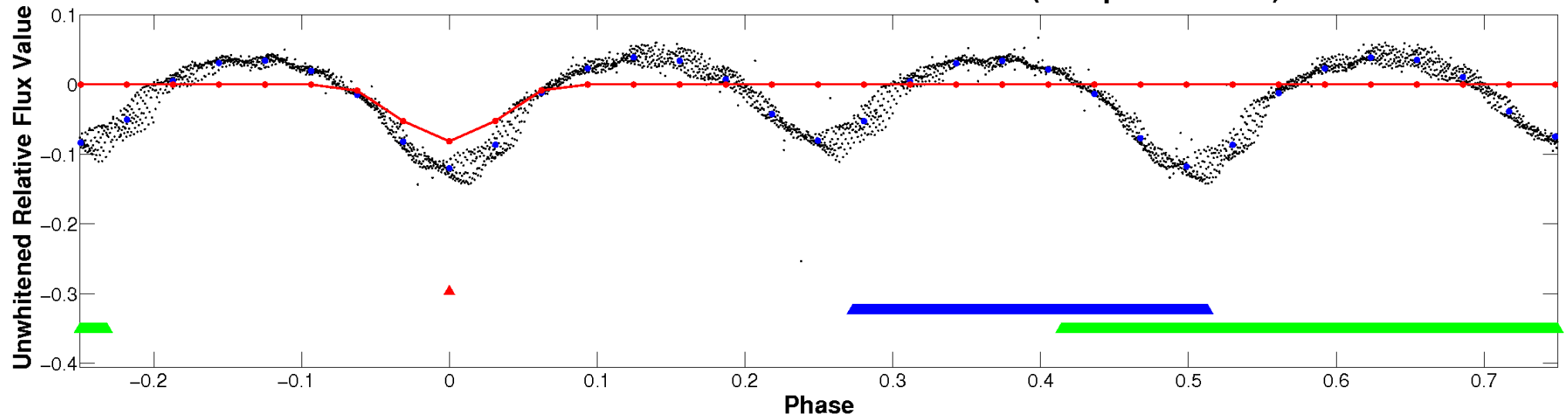
# ALT Odd/Even

TCE 009714724-01

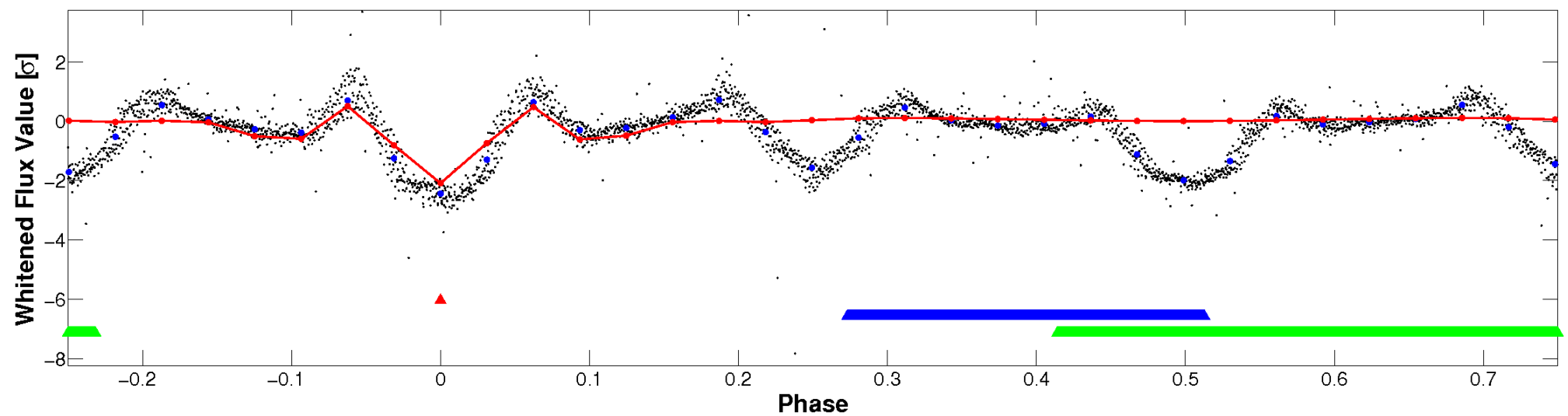


# Non-Whitened Vs. Whitened Light Curve

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

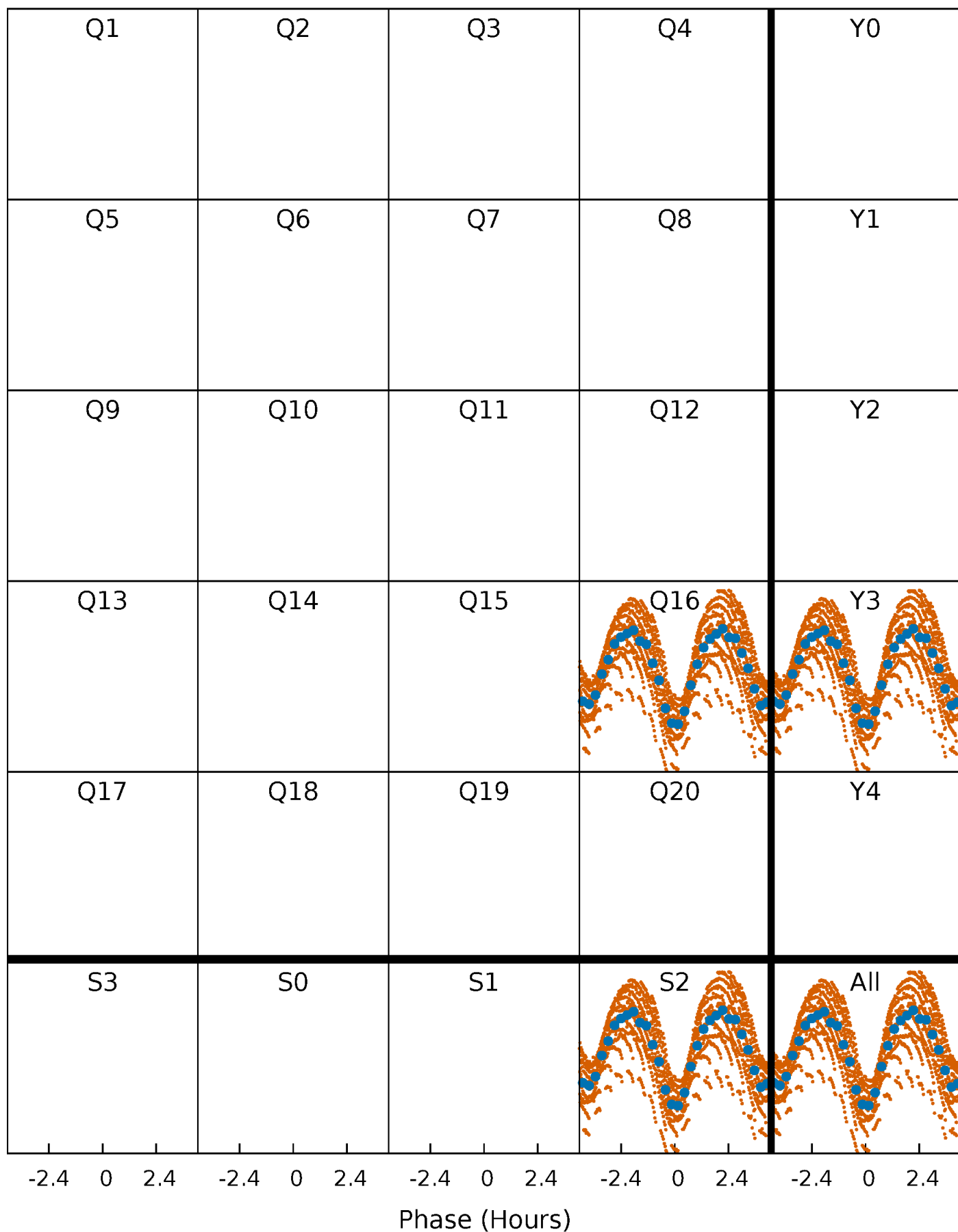


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

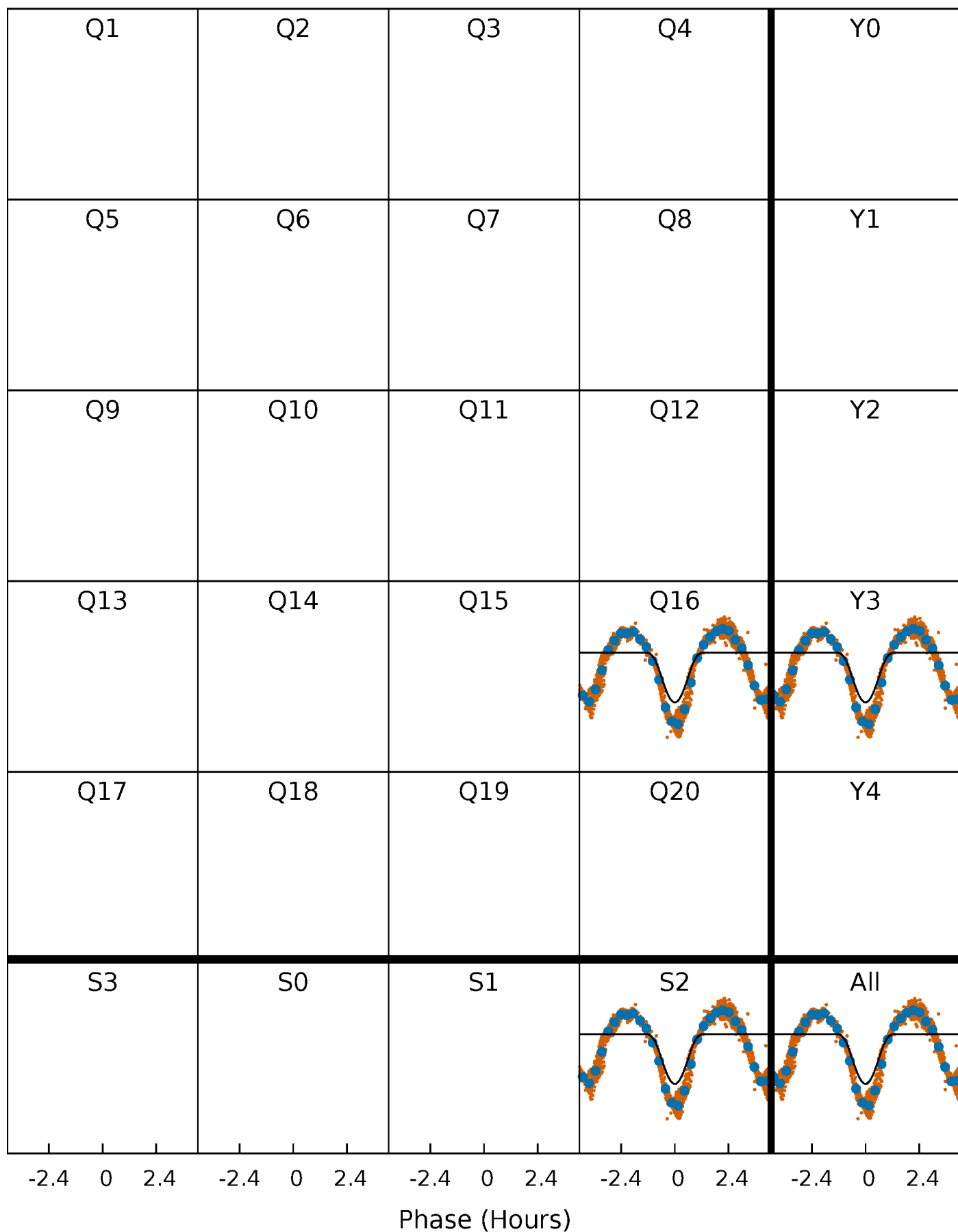
TCE 009714724-01 P= 0.655502 Days  $T_0=131.670802$  (BKJD)





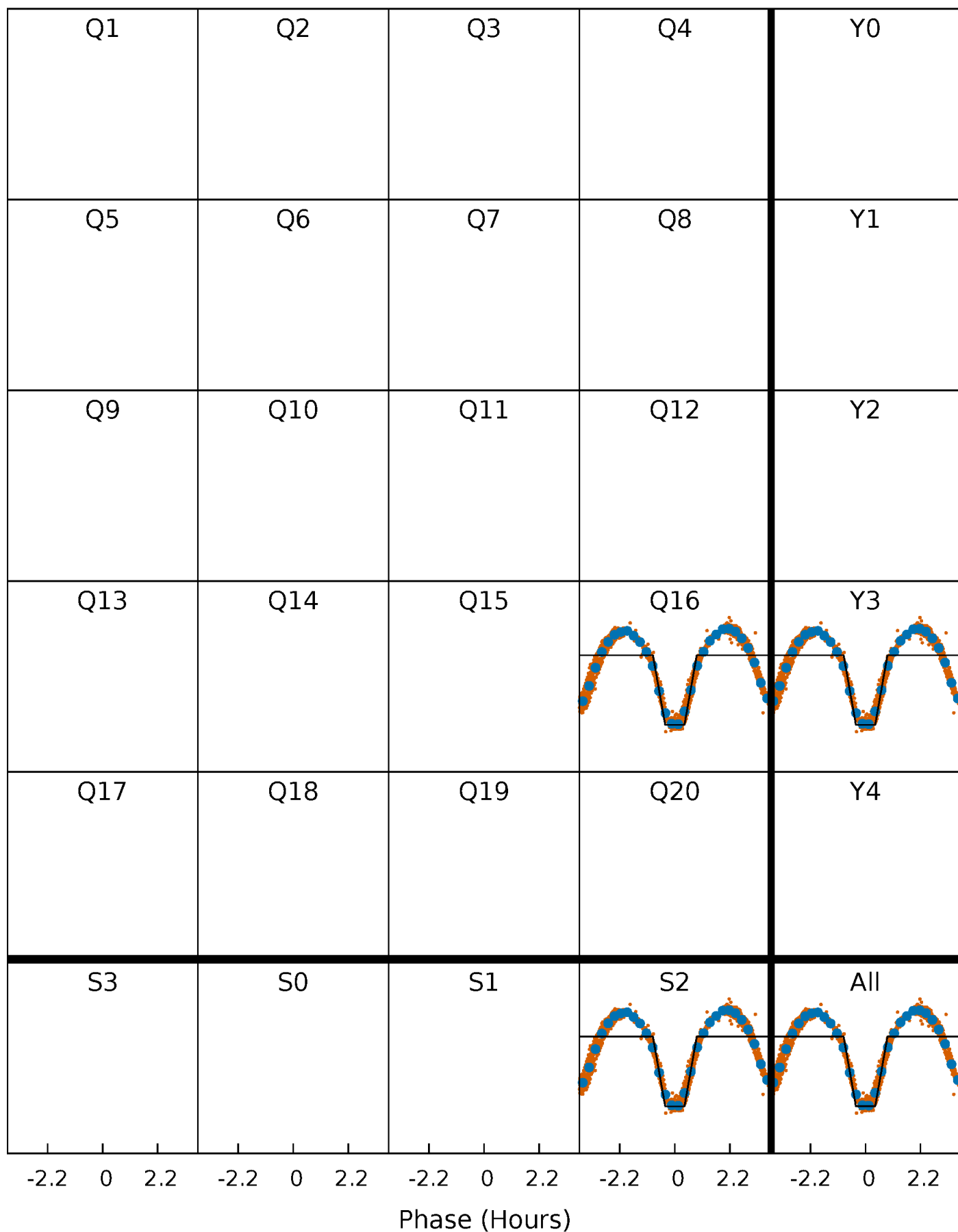
# DV Quarter-Phased Transit Curves

TCE 009714724-01   P= 0.655502 Days    $T_0=131.670802$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

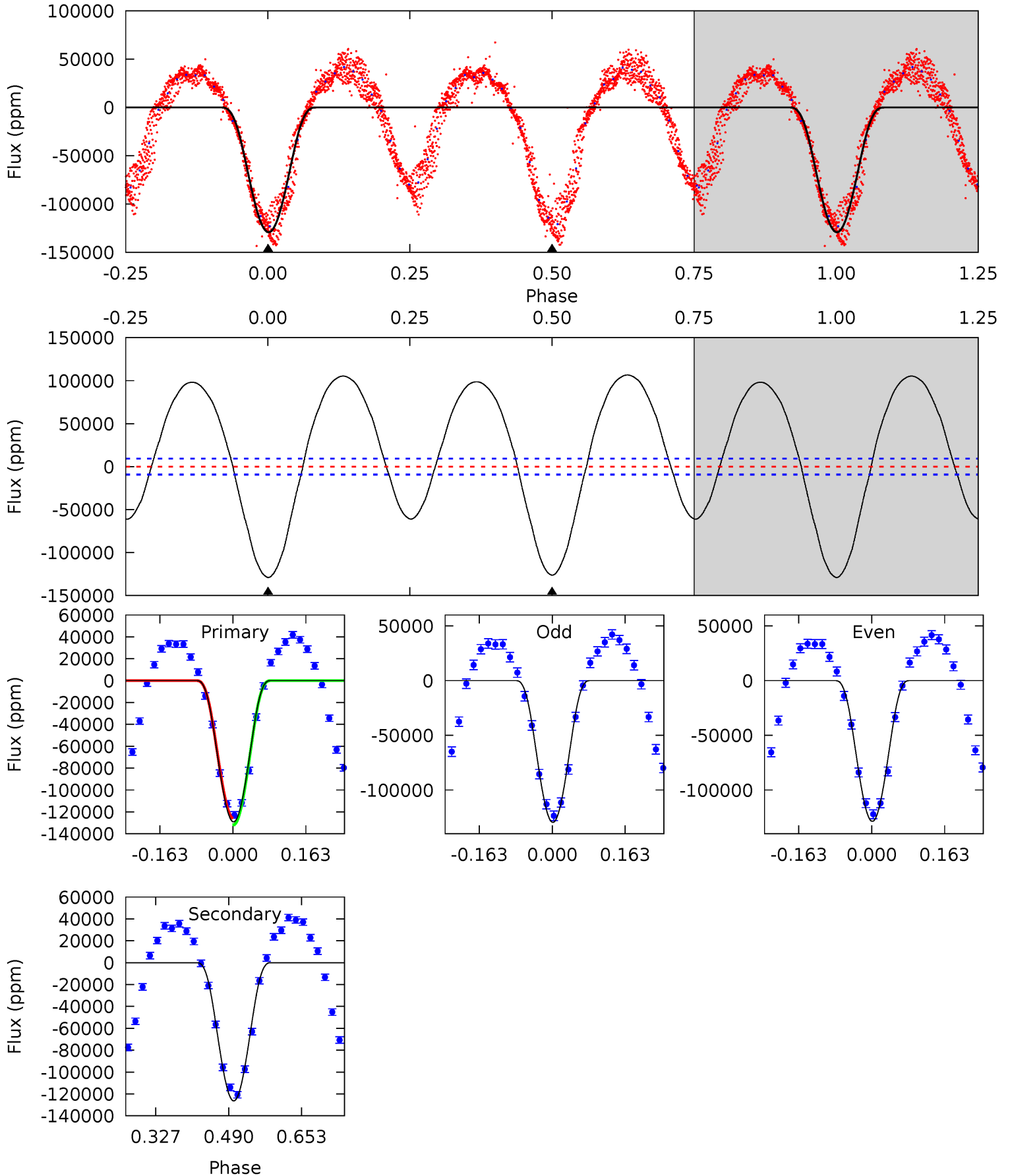
TCE 009714724-01 P= 0.655500 Days  $T_0=131.676942$  (BKJD)



# DV Model-Shift Uniqueness Test

009714724-01, P = 0.655502 Days, E = 131.670802 Days

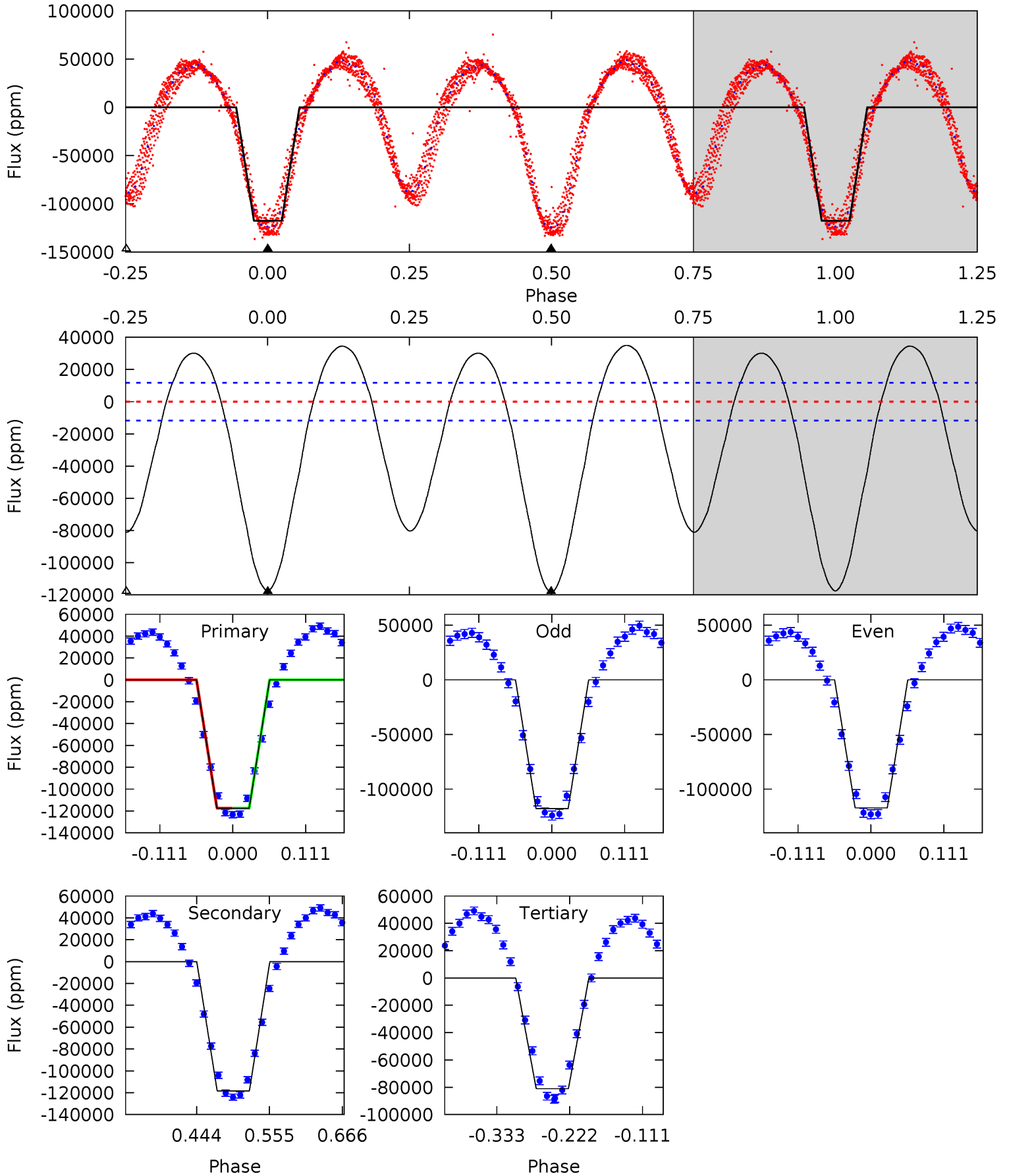
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
62.1	60.7	0	0	4.46	1.39	22.9	62.1	62.1	60.7	60.7	0.22	1.00	0.45	1.32



# Alt Model-Shift Uniqueness Test

009714724-01, P = 0.655500 Days, E = 131.676942 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
45.4	45.7	31.3	0	4.54	1.59	15.9	14.1	45.4	14.4	45.7	0.13	0.98	0.23	0.01



### Stellar Parameters For KIC 009714724

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5408^{+185}_{-185}$	$4.556^{+0.045}_{-0.126}$	$-0.120^{+0.300}_{-0.300}$	$0.807^{+0.165}_{-0.082}$	$0.854^{+0.087}_{-0.087}$	$2.289^{+0.505}_{-0.851}$
	+3%/-3%	+1%/-3%	+250%/-250%	+20%/-10%	+10%/-10%	+22%/-37%
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 009714724-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-126218 \pm 2079$	$35.19^{+22.84}_{-18.85}$	$2568^{+139}_{-113}$	$5312^{+2679}_{-992}$	$12^{+45}_{-8}$
Alt.	$-118358 \pm 2589$	$32.74^{+20.22}_{-18.04}$	$2564^{+129}_{-111}$	$5386^{+2940}_{-978}$	$13^{+52}_{-8}$

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

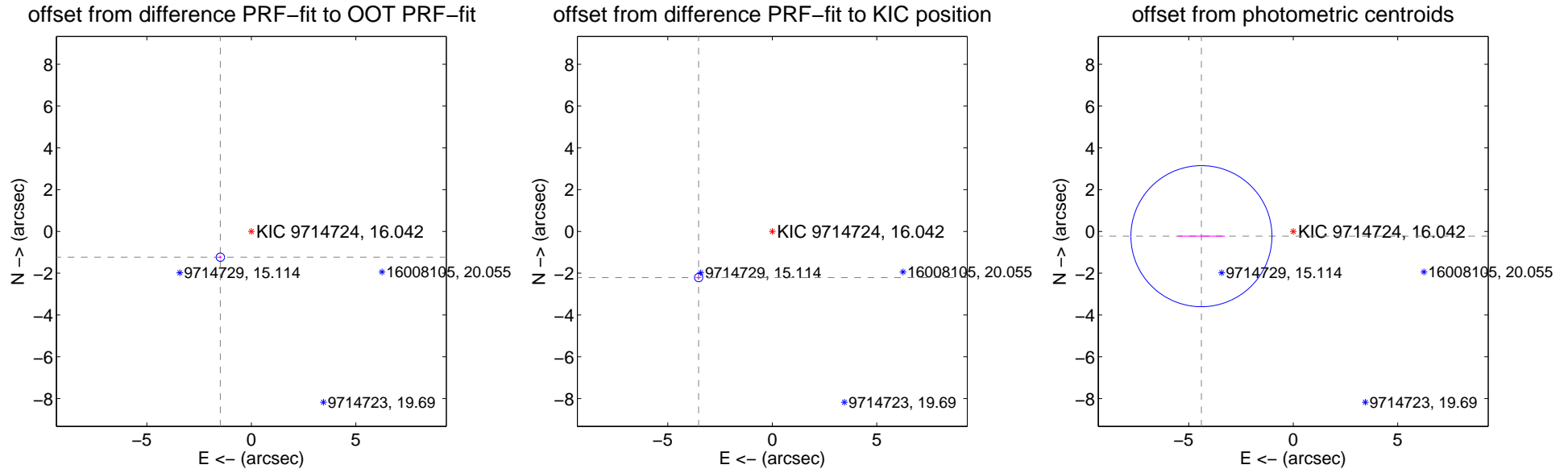
## DV Centroid Data

Supplemental centroid analysis for 009714724-01. Kepler magnitude: 16.04. Transit SNR 28.63

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.26 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.931 \pm 0.067$	28.95	$1.484 \pm 0.067$	$-1.235 \pm 0.067$
PRF-fit source offset from KIC position	$4.162 \pm 0.067$	62.40	$3.526 \pm 0.067$	$-2.211 \pm 0.067$
photometric centroid source offset	$4.40 \pm 1.13$	3.91	$4.39 \pm 1.13$	$-0.23 \pm 0.04$

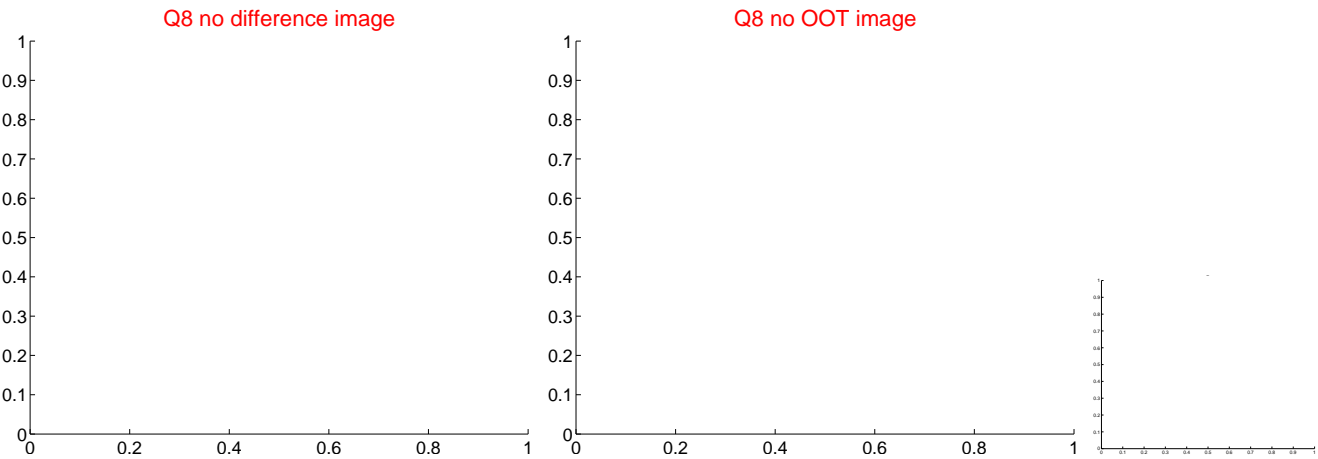
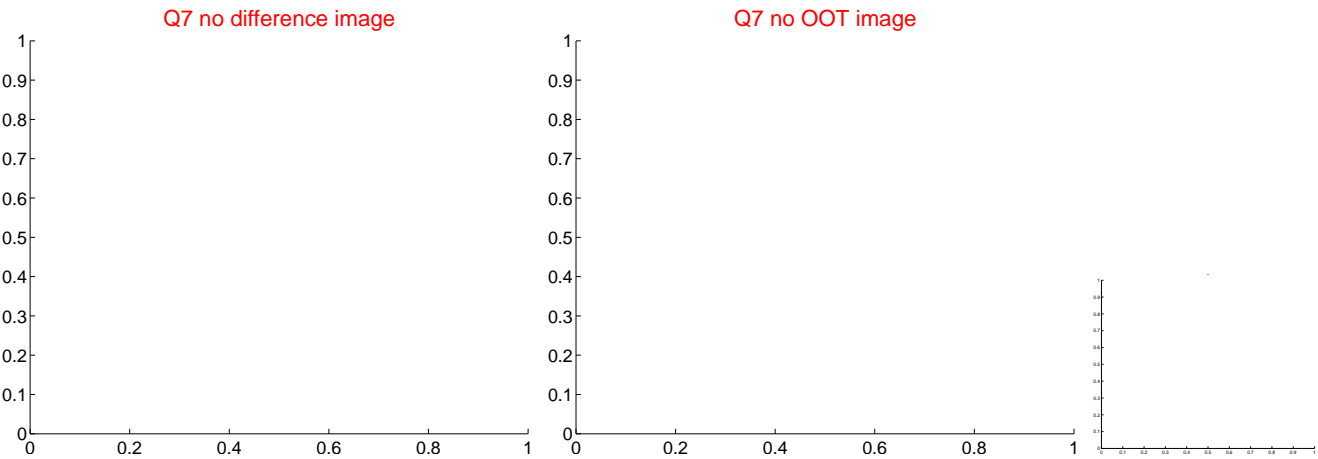
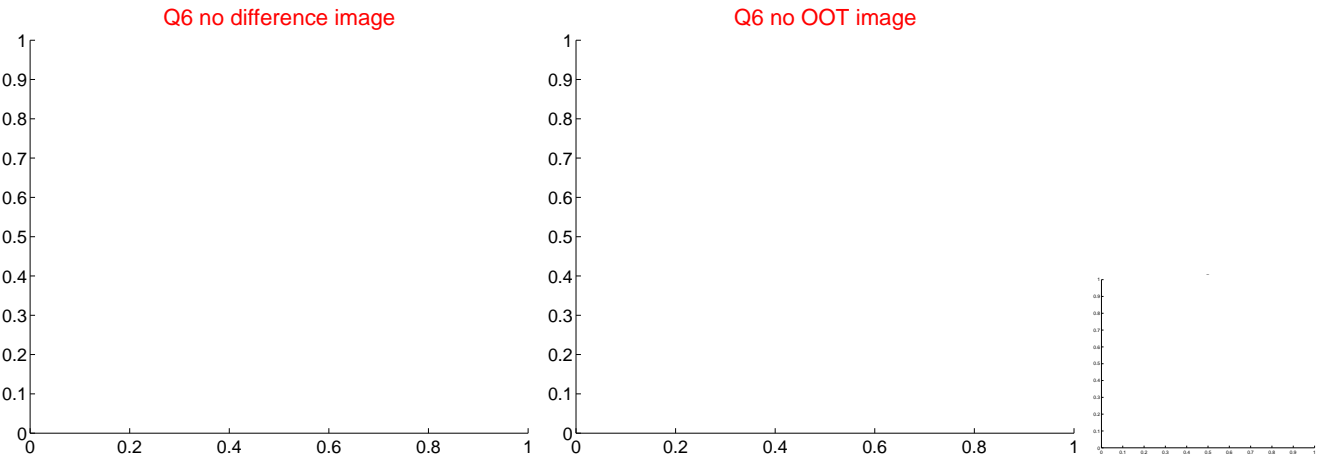
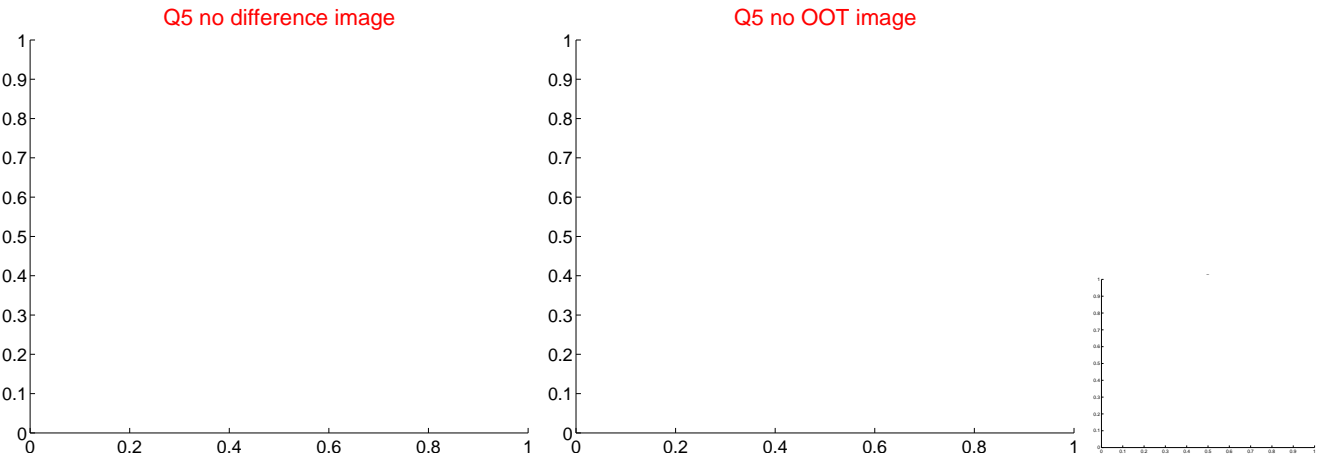


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

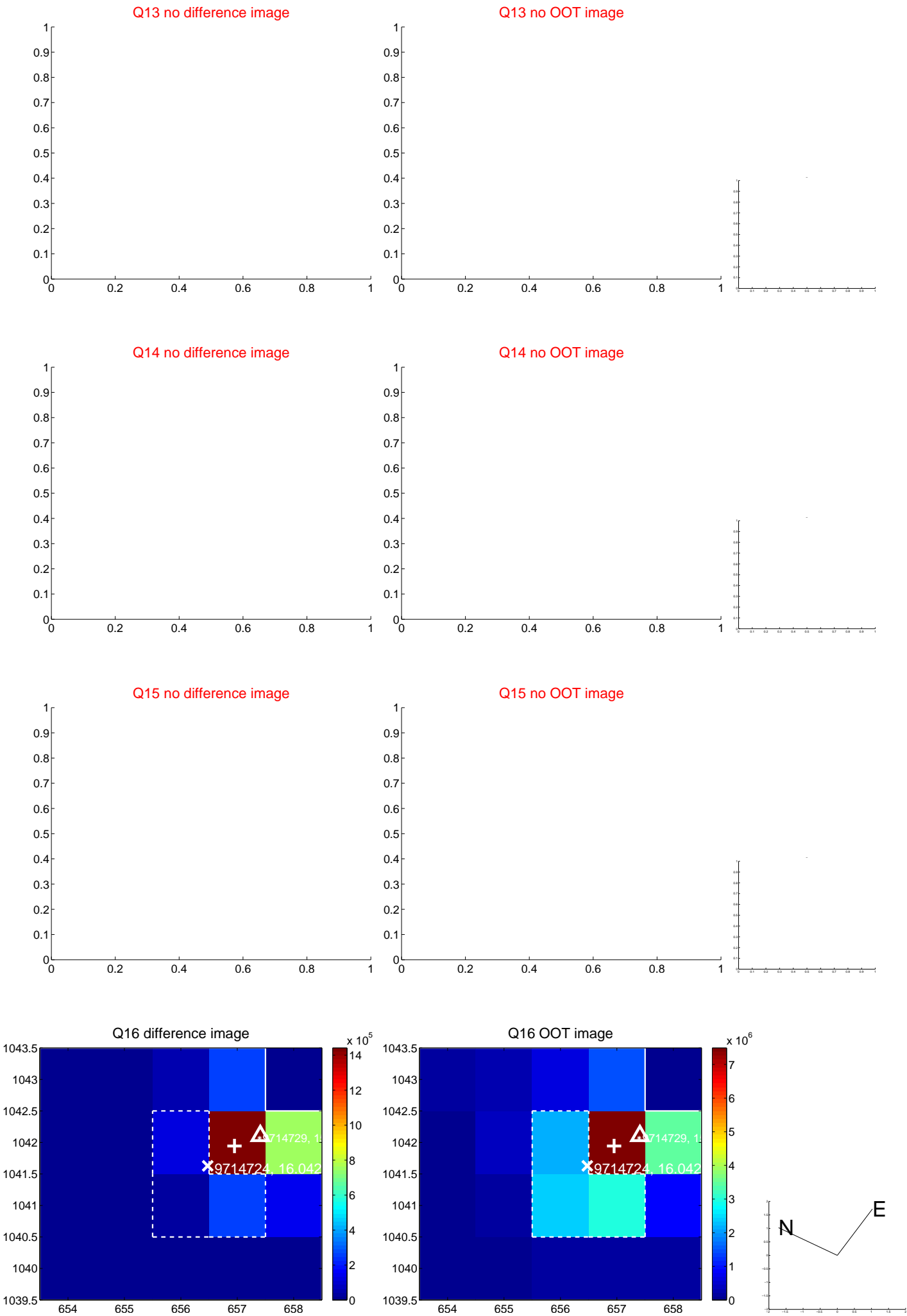




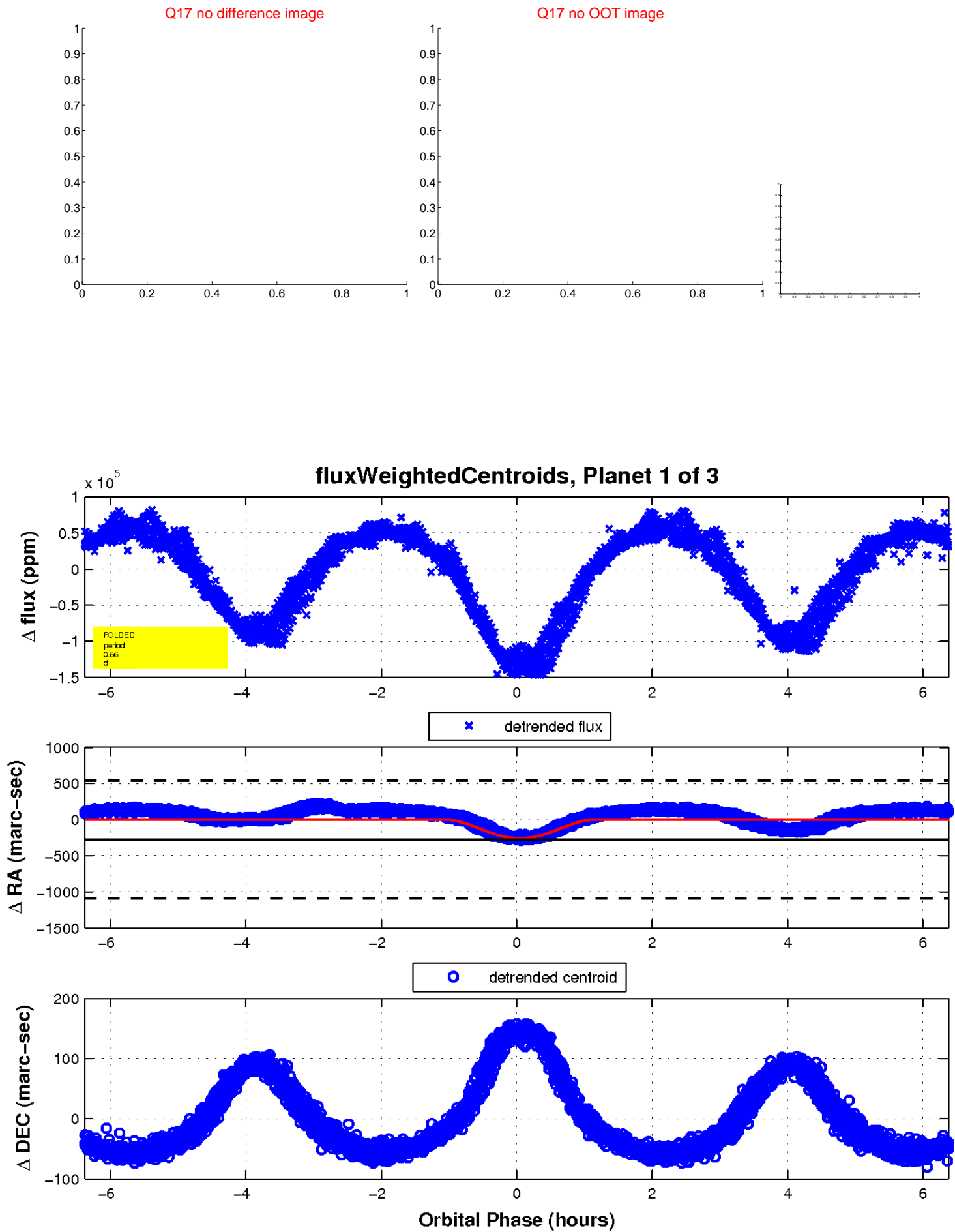
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



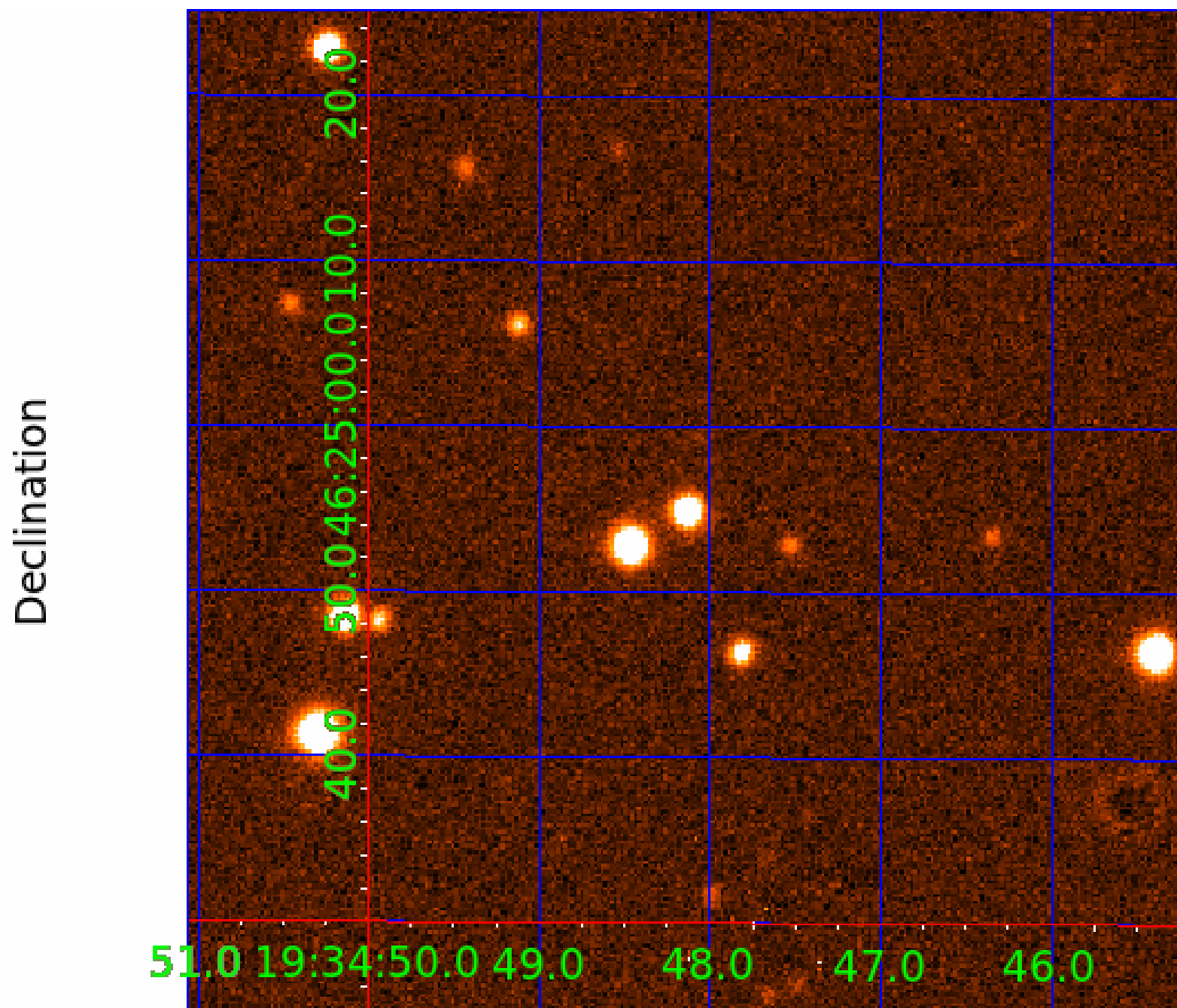
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 009714724

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009714724-01	OBS	No	0.655502	131.670802	84252.8	2.127	27.4	28.6	0.81	5408	34.42	2540.14
009714724-02	OBS	No	0.655573	131.849732	148615.2	2.030	10.8	46.2	0.81	5408	30.95	2539.78
009714724-03	OBS	No	0.655607	131.942244	1565.6	1.500	13.8	-1.0	0.81	5408	3.15	2539.60

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714724-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009714724-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009714724-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST

**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.

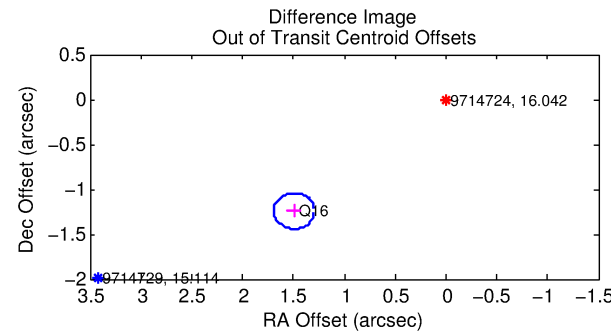
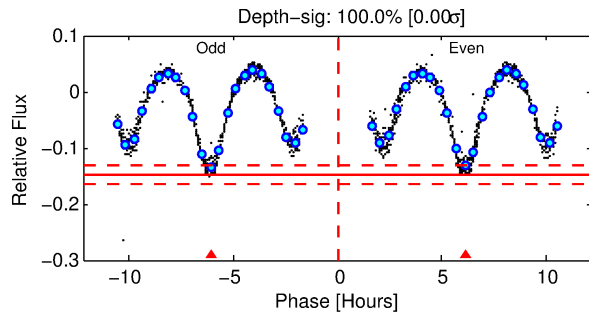
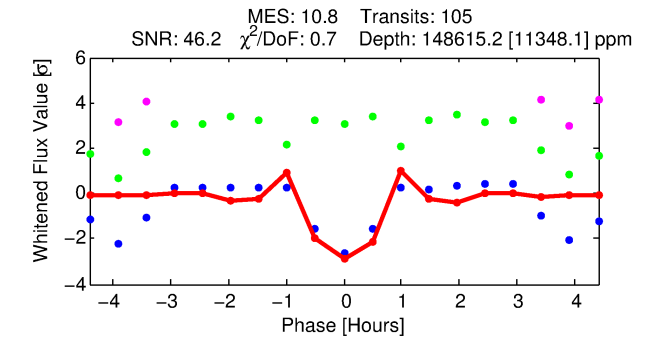
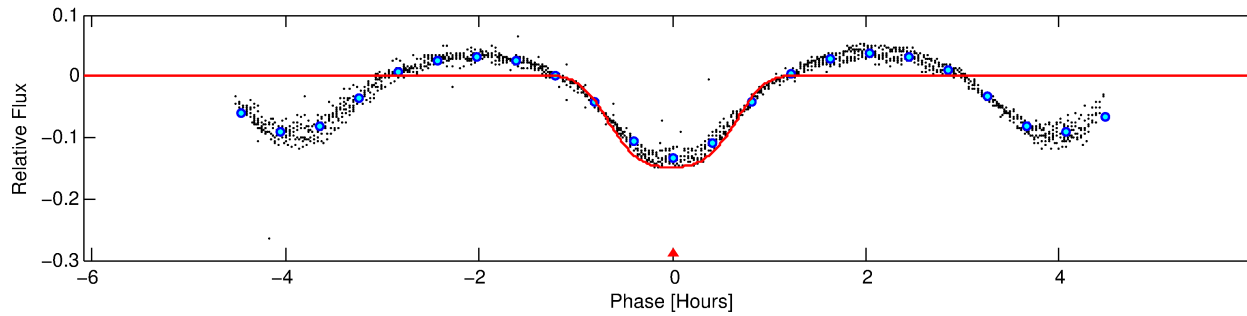
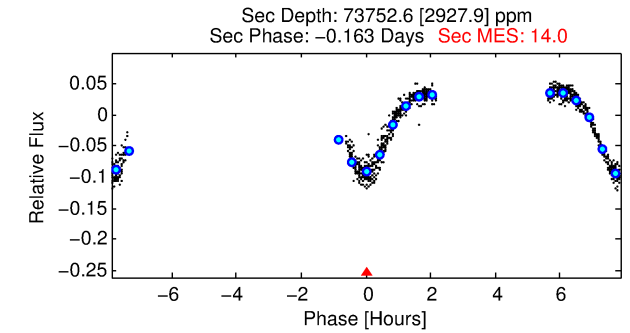
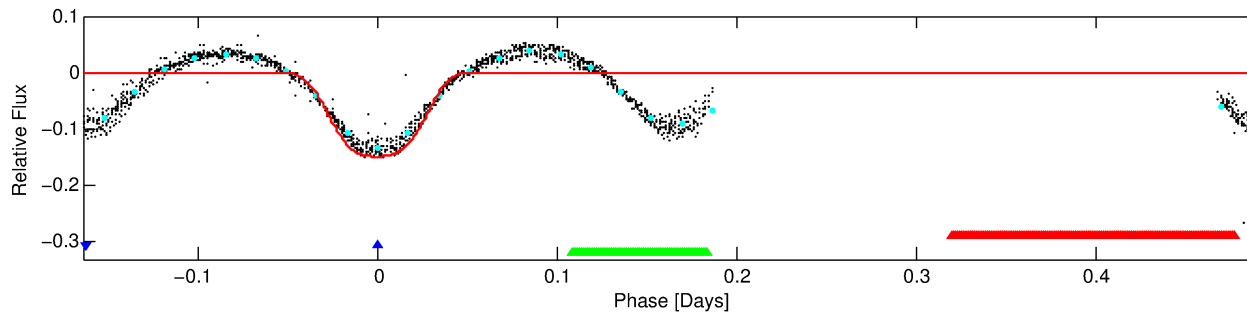
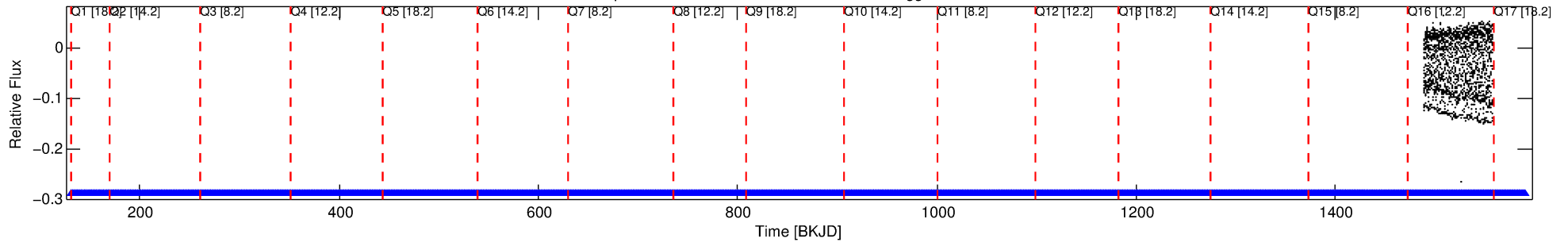
Ephemeris Match Information For 009714724-02

No Significant Match Found

# DV One-Page Summary

KIC: 9714724 Candidate: 2 of 3 Period: 0.656 d

Kp: 16.04 R\*: 0.81 Rs Teff: 5408.0 K Logg: 4.56 Fe/H: -0.120



## DV Fit Results:

Period = 0.65557 [0.00001] d  
Epoch = 131.8497 [0.0003] BKJD  
Rp/R\* = 0.3515 [0.0129]  
a/R\* = 3.42 [0.12]  
b = 0.10 [0.37]  
Seff = 2539.78 [694.22]  
Teff = 1810 [124] K  
Rp = 30.95 [6.43] Re  
a = 0.0140 [0.0023] AU  
Ag = 8.32 [2.09] [3.51σ]  
Teffp = 4754 [190] K [12.97σ]

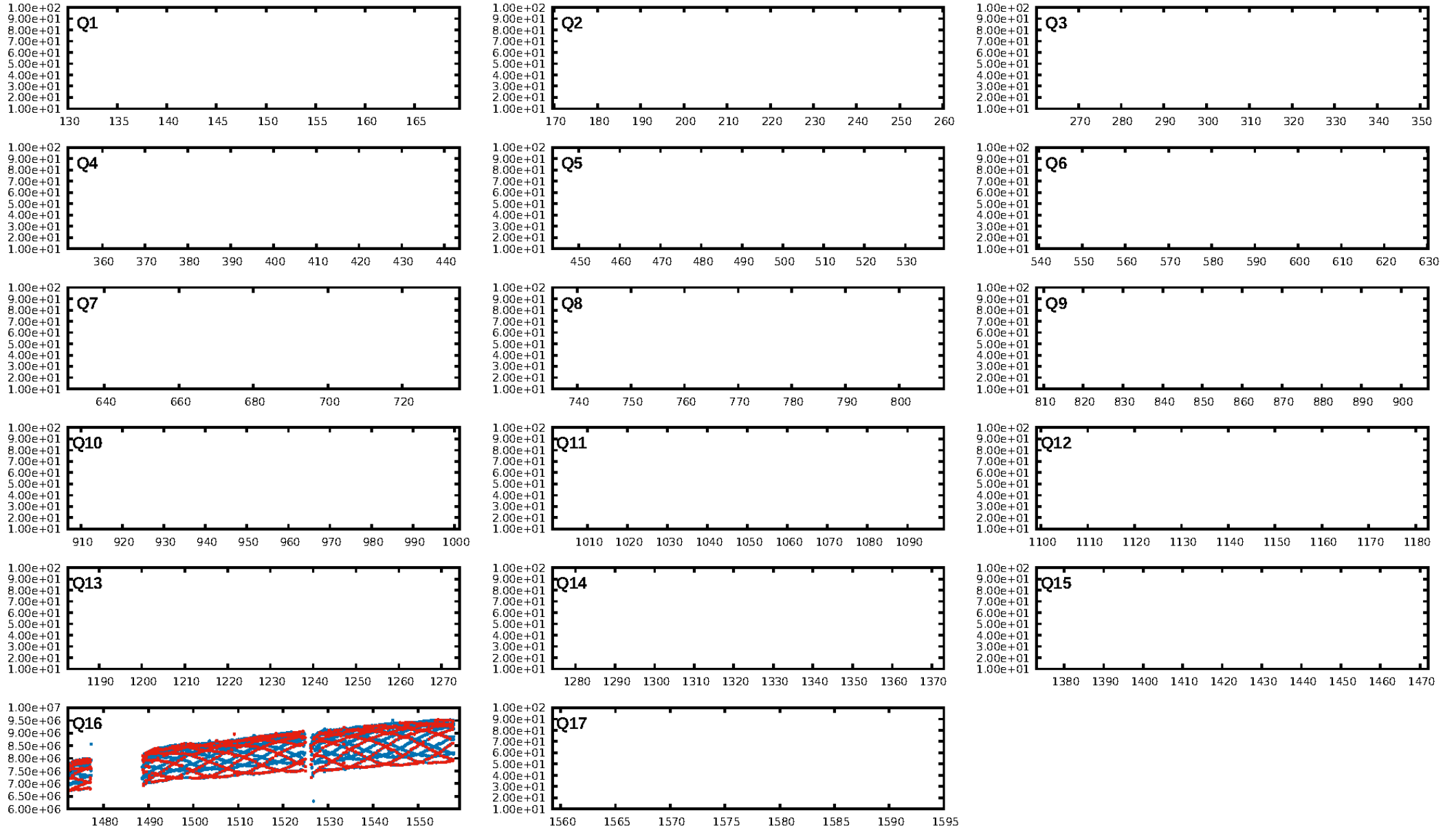
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [105/105]  
GhostDiagnostic-chr: -0.1028  
Centroid-sig: N/A  
Centroid-so: 3.108 arcsec [5.26σ]  
OotOffset-rm: 1.943 arcsec [29.12σ]  
KicOffset-rm: 4.163 arcsec [62.41σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/1]

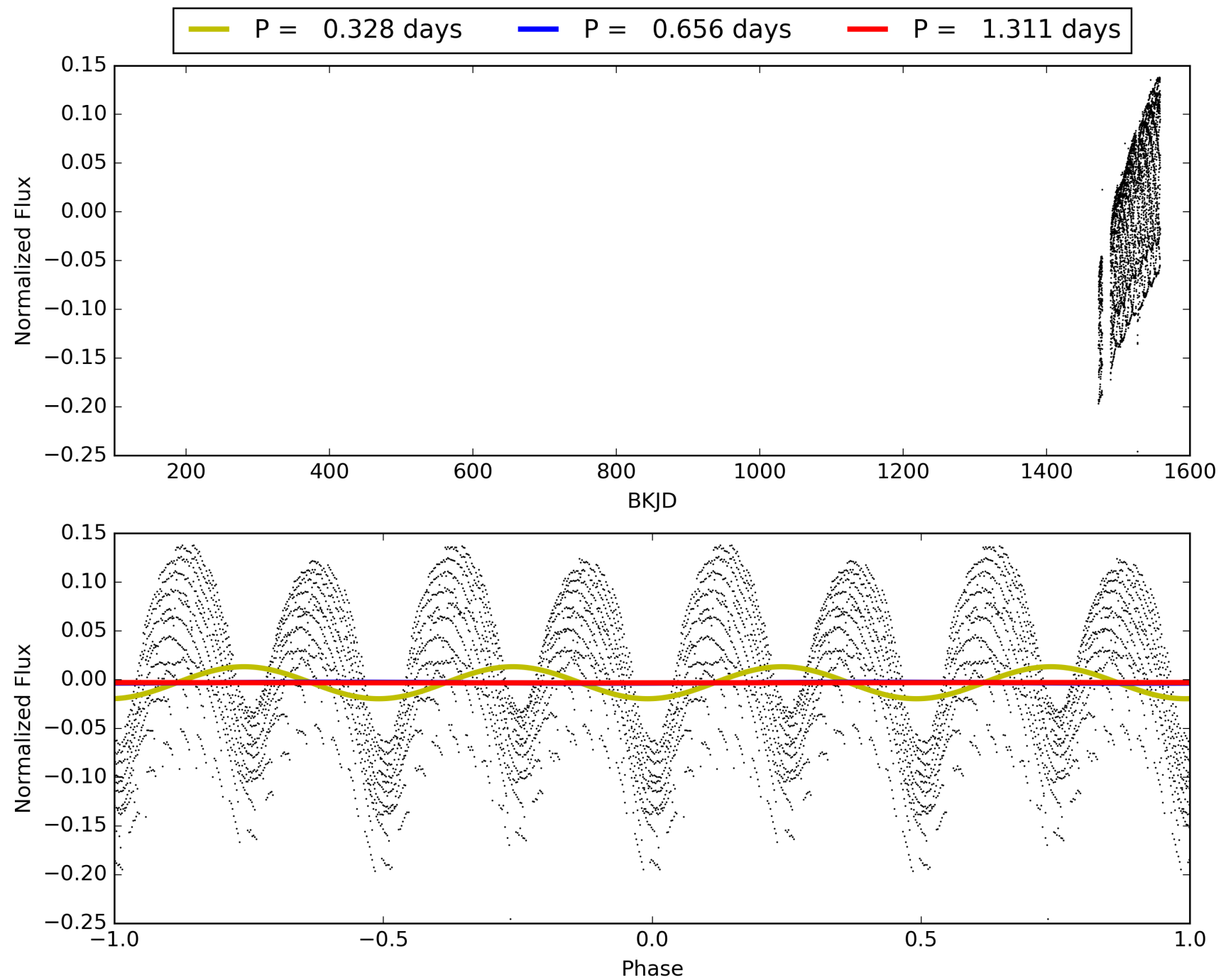
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:38:48 Z

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

# TCE 009714724-02, PDC Light Curves



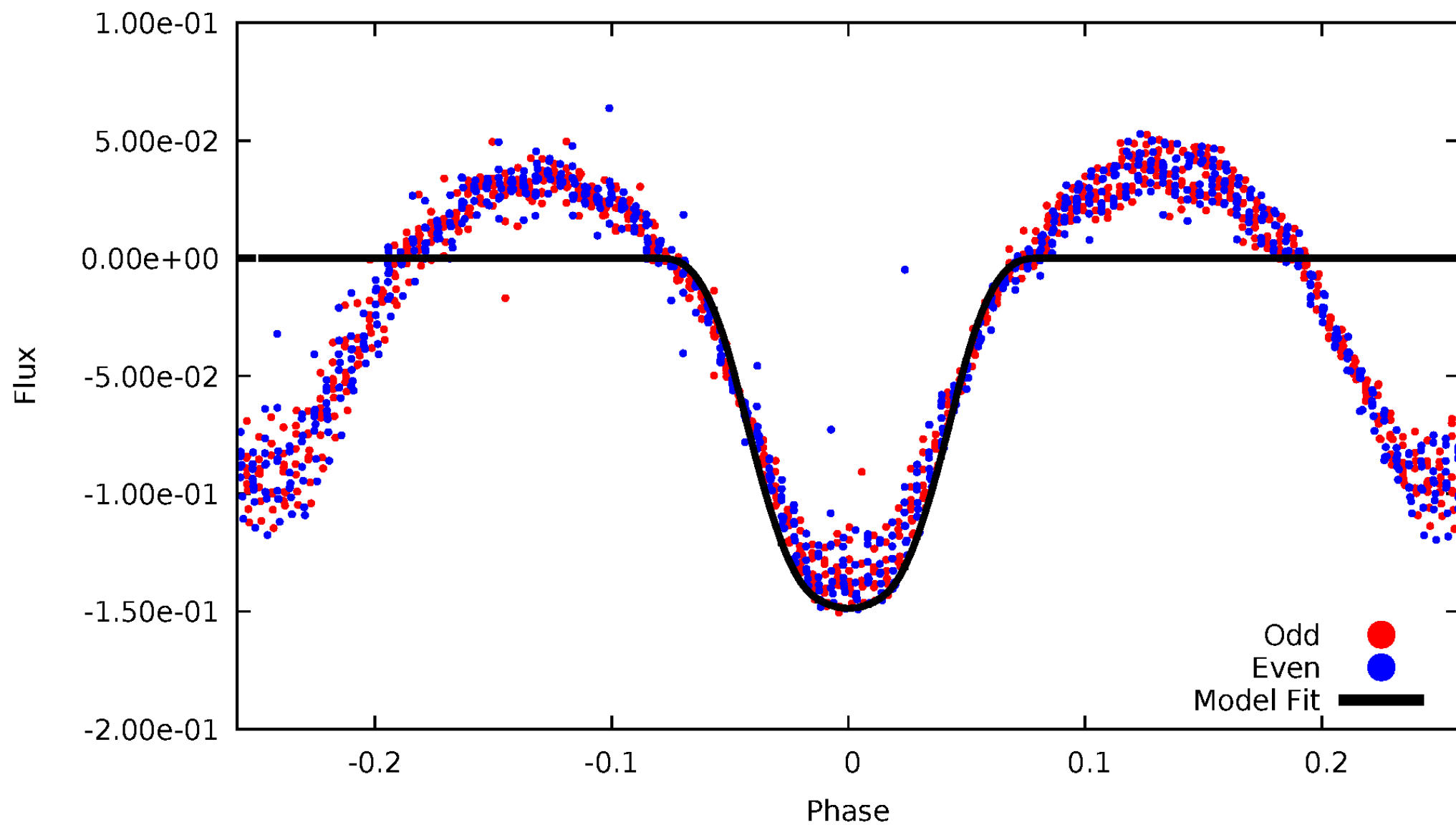
TCE 009714724-02





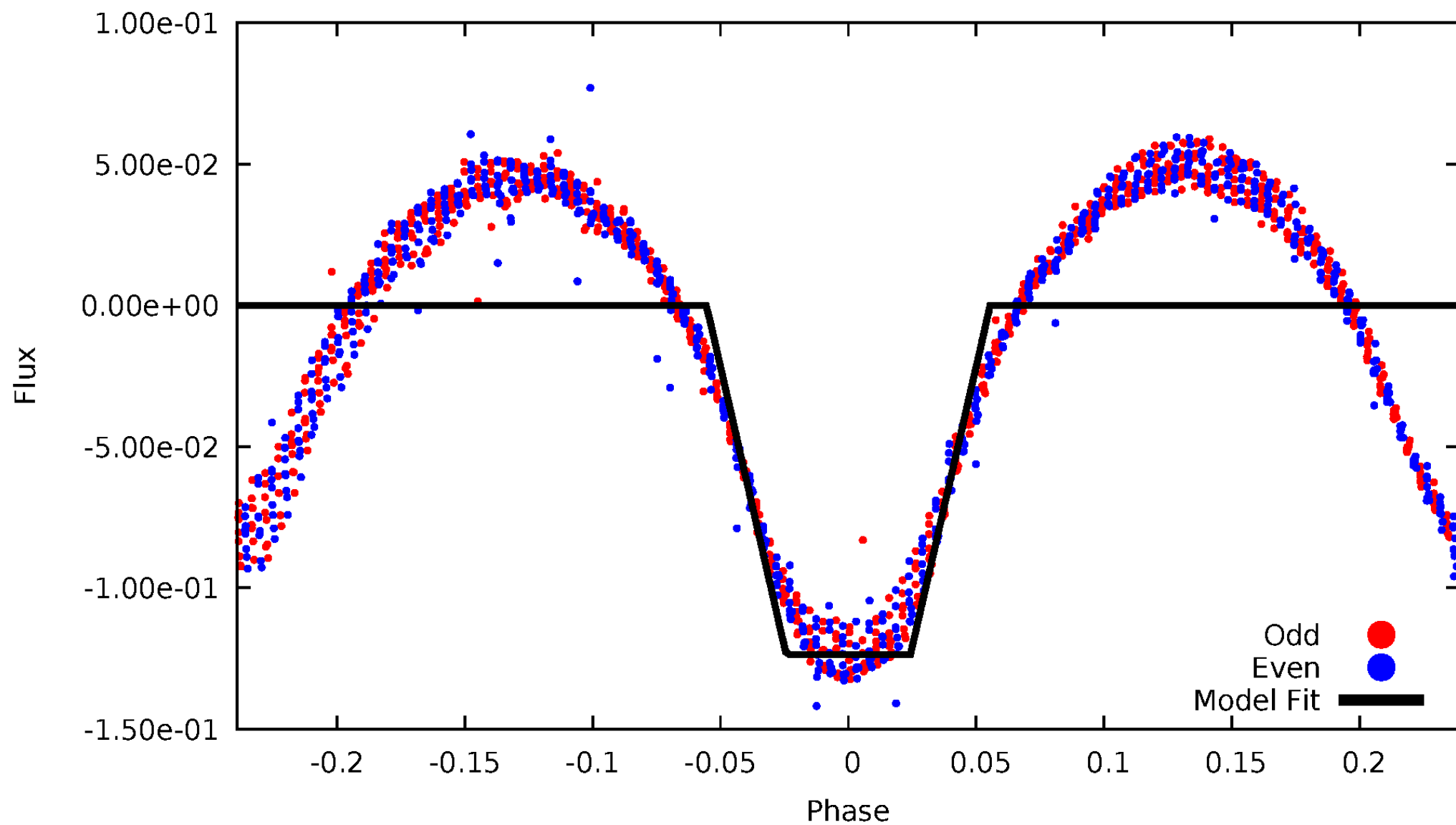
# DV Odd/Even

TCE 009714724-02



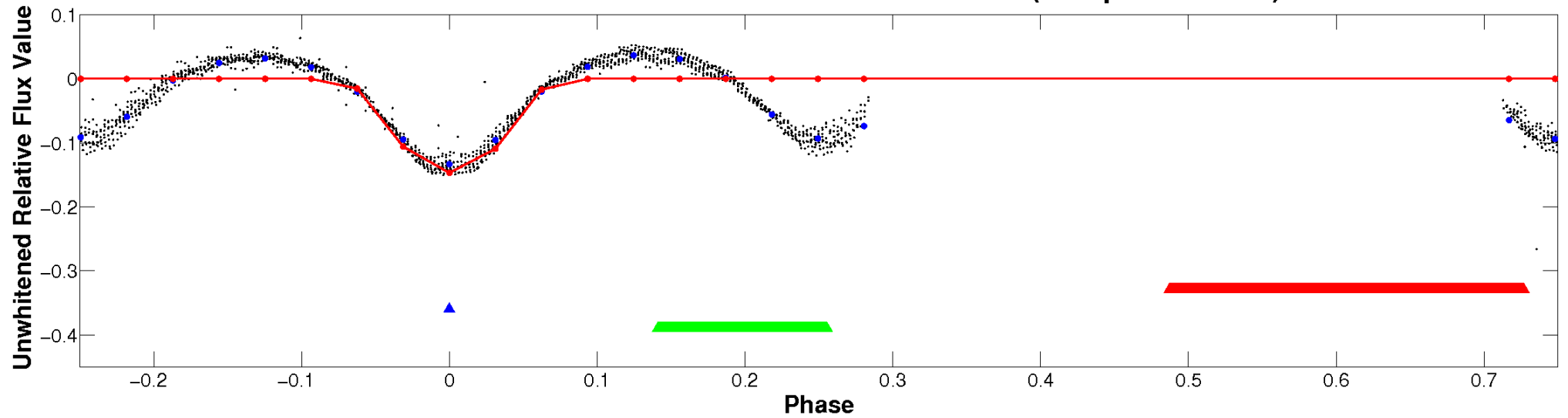
# ALT Odd/Even

TCE 009714724-02

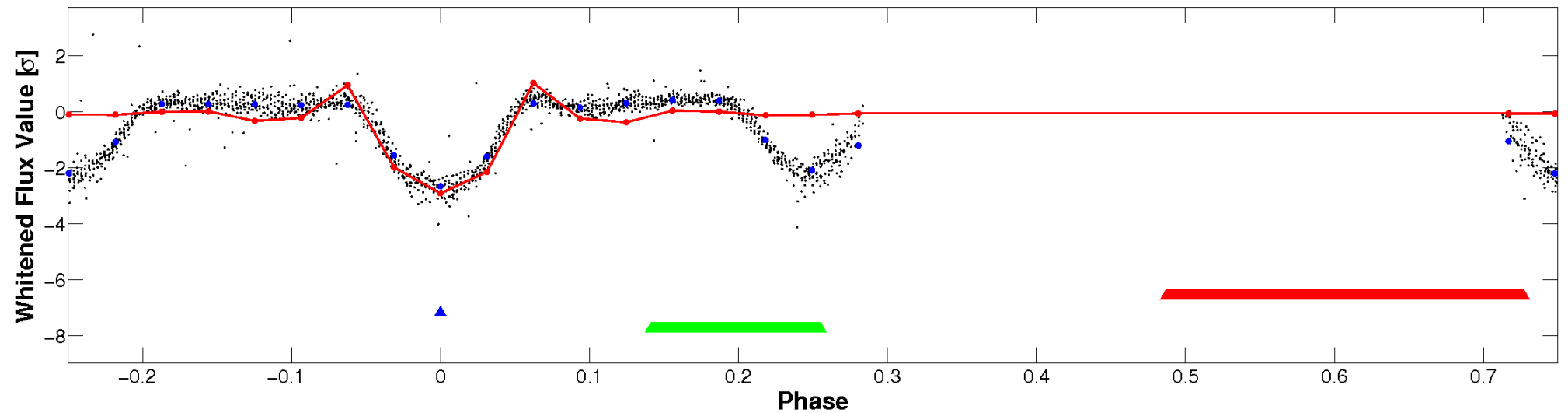


# Non-Whitened Vs. Whitened Light Curve

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

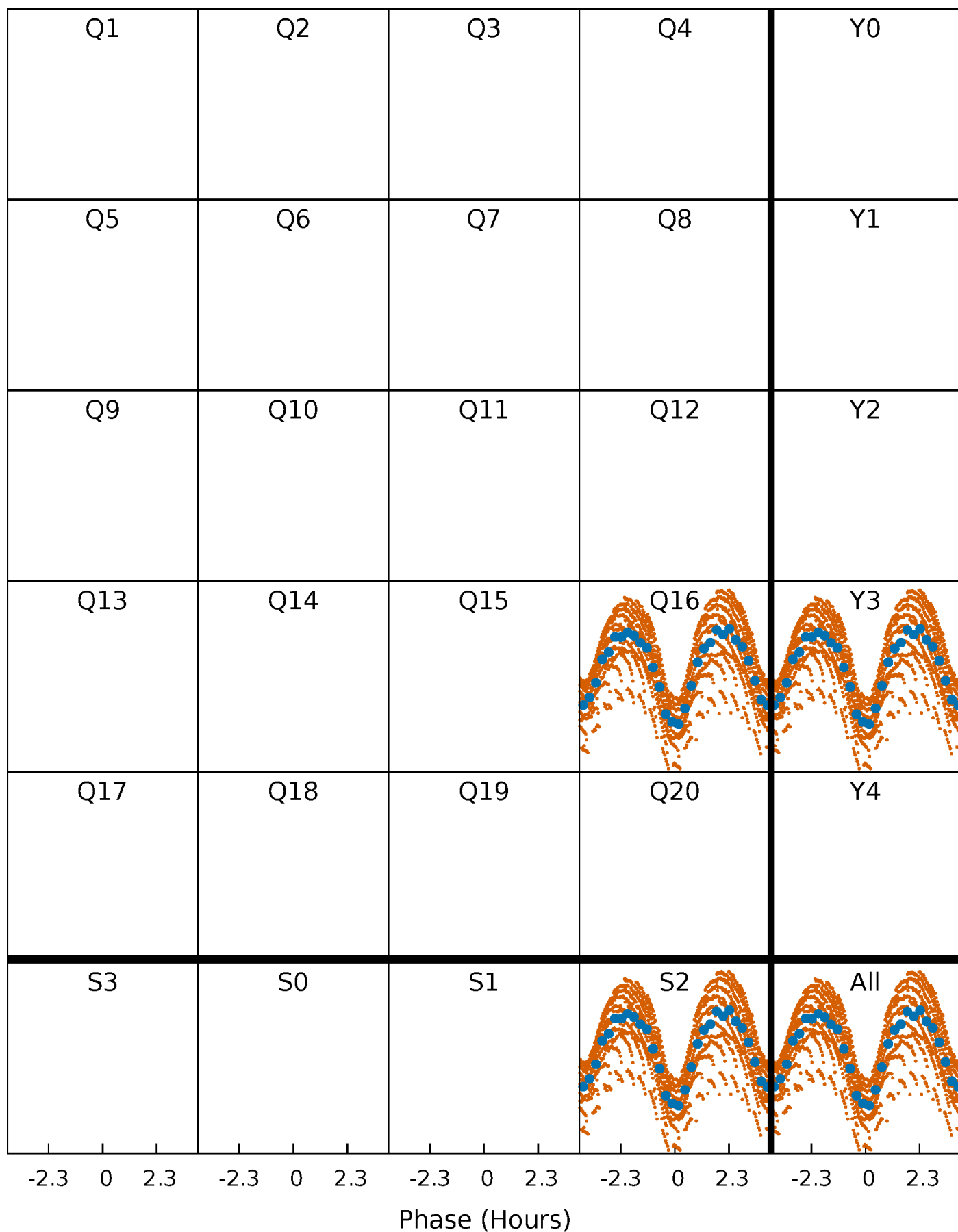


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



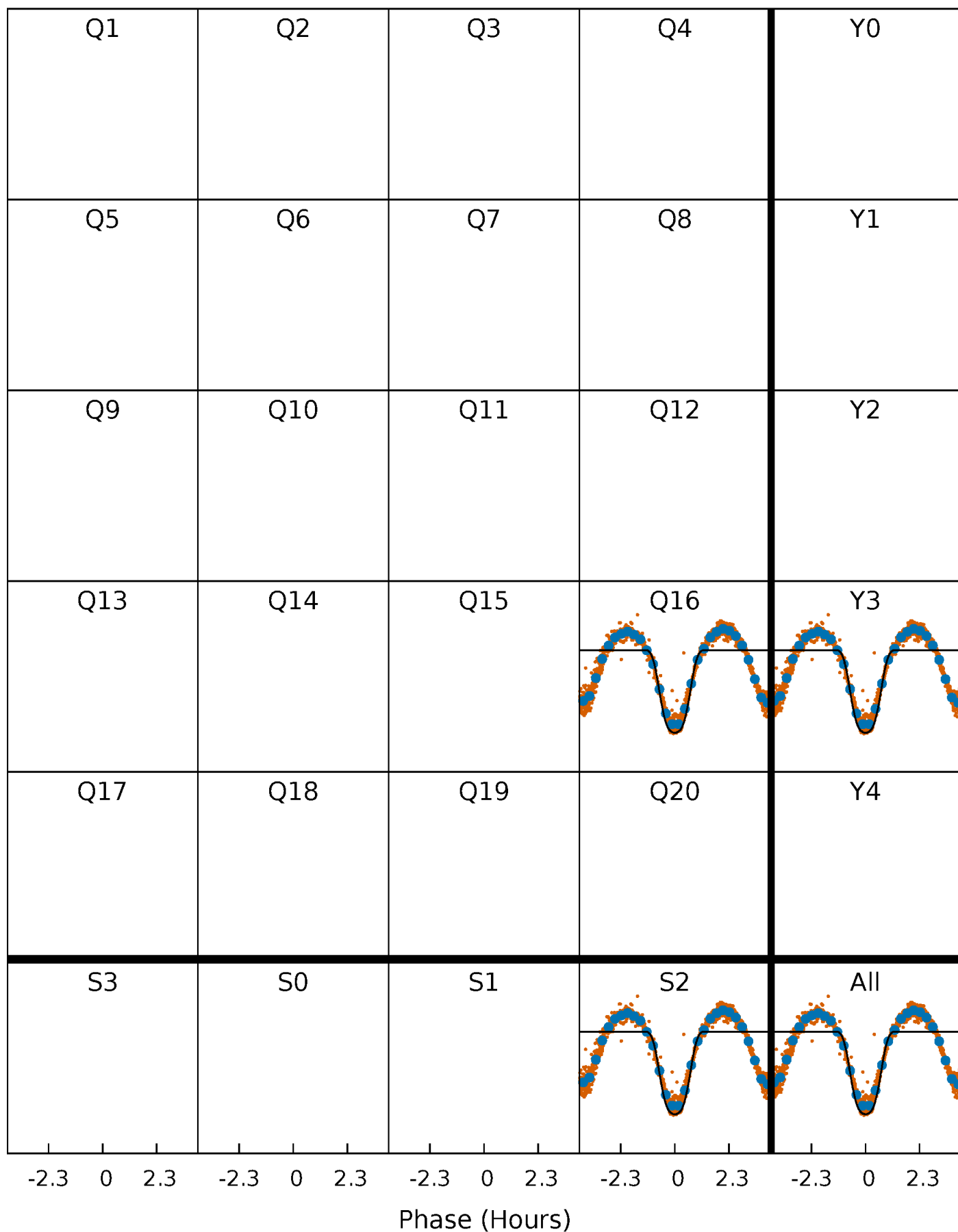
# PDC Quarter-Phased Transit Curves

TCE 009714724-02 P= 0.655573 Days  $T_0=131.849732$  (BKJD)



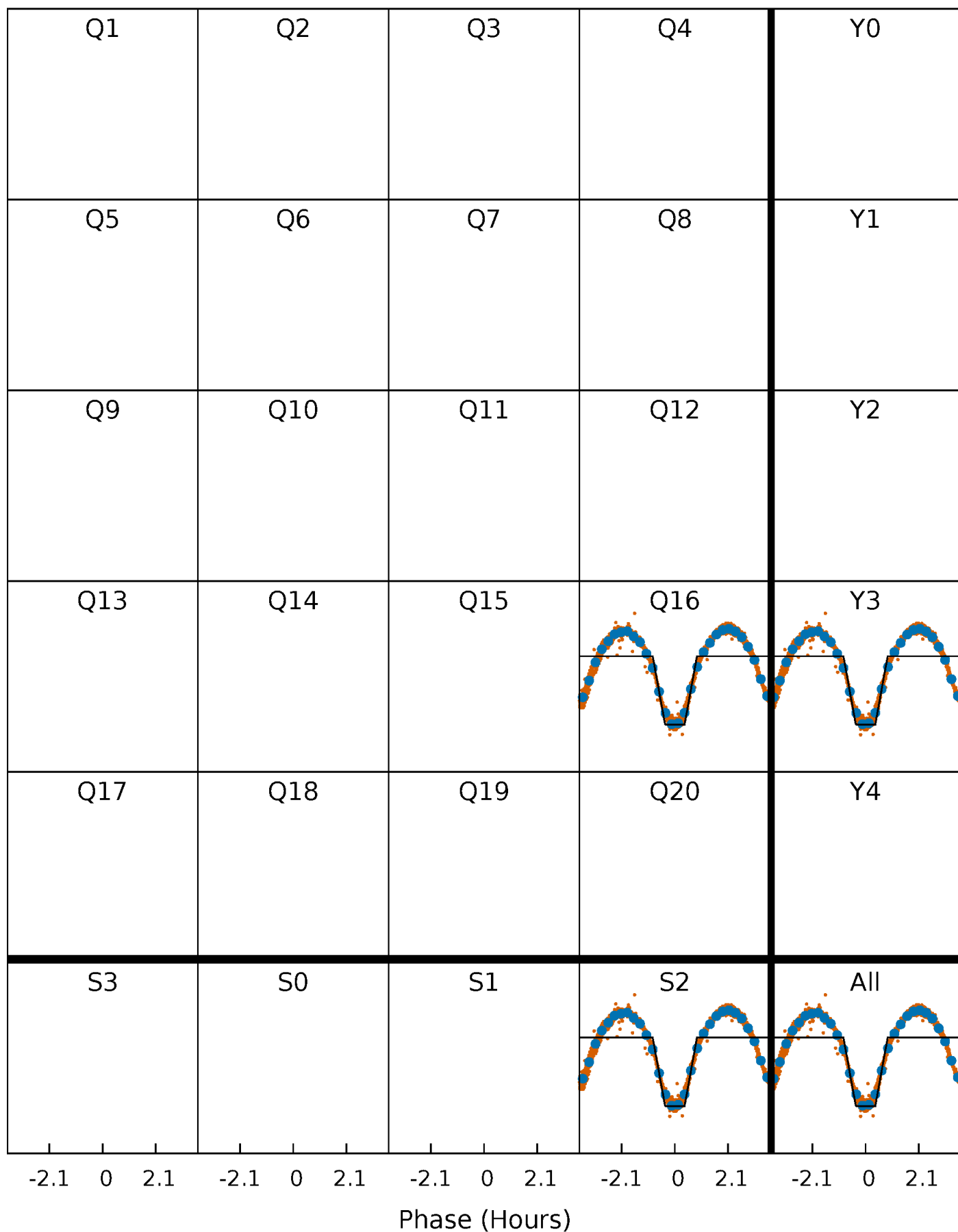
# DV Quarter-Phased Transit Curves

TCE 009714724-02 P= 0.655573 Days  $T_0=131.849732$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

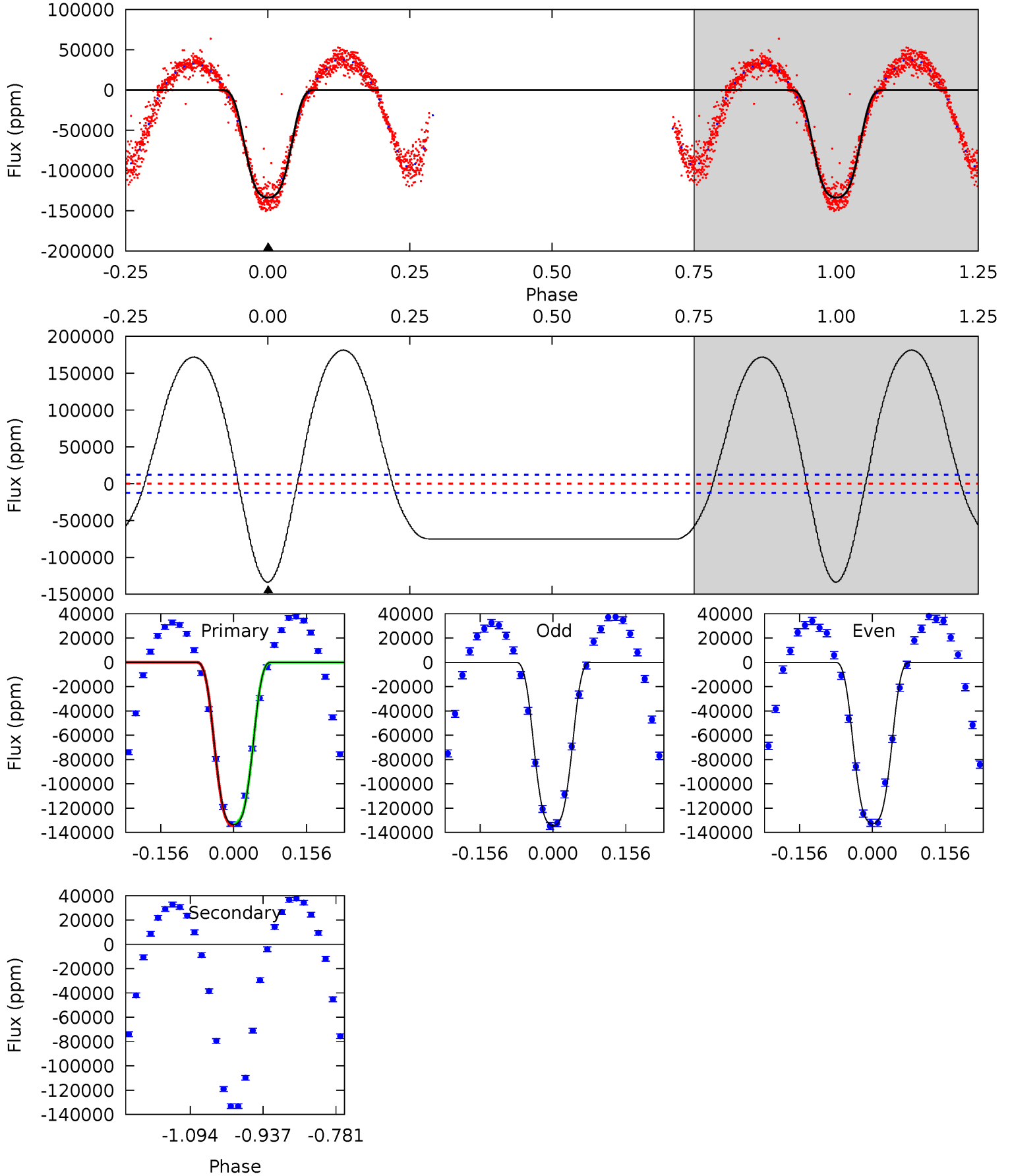
TCE 009714724-02 P= 0.655573 Days  $T_0=131.849732$  (BKJD)



# DV Model-Shift Uniqueness Test

009714724-02, P = 0.655573 Days, E = 131.849732 Days

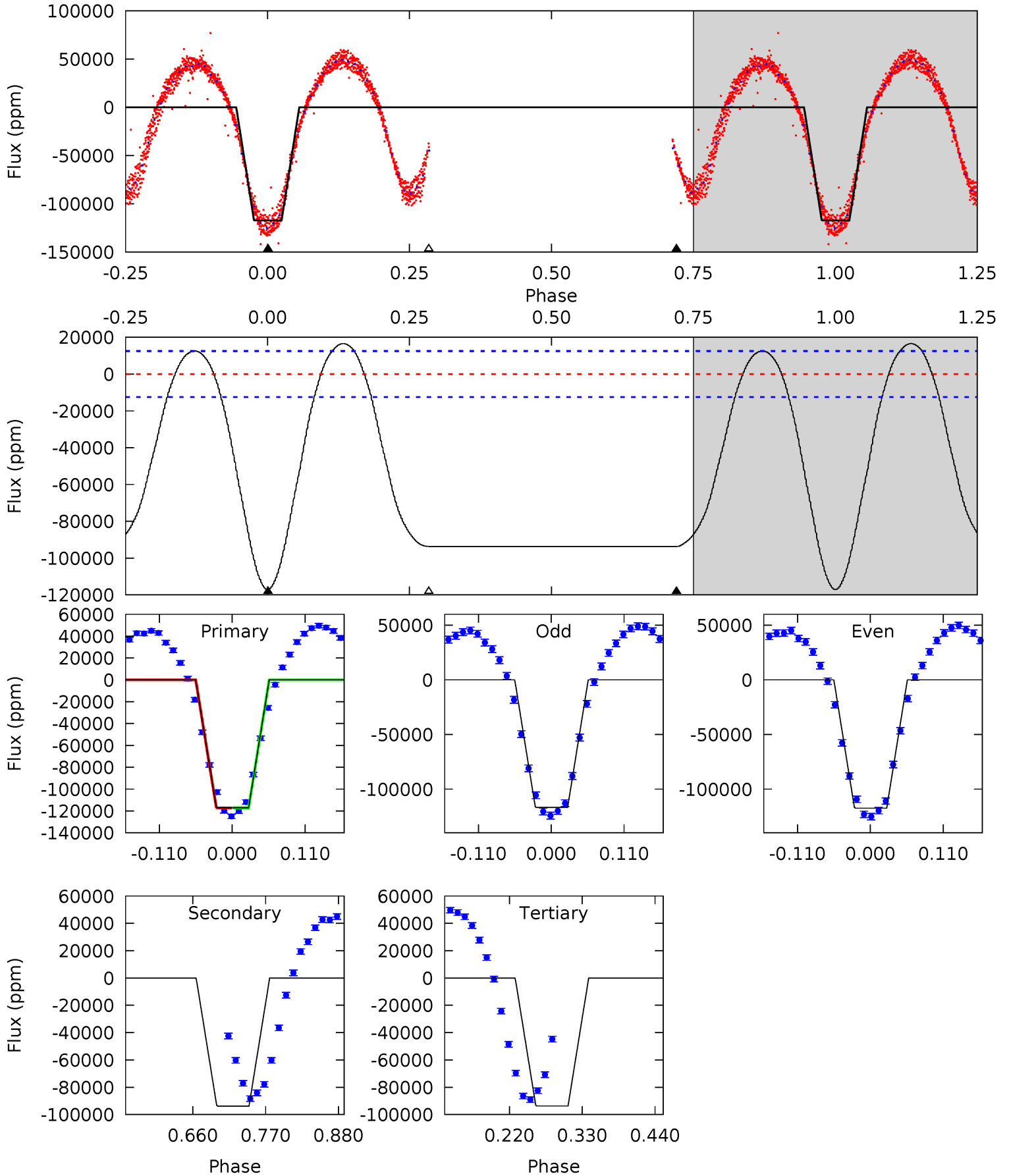
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.8	0	0	0	4.47	1.42	28.9	48.8	48.8	0	0	0.32	0.98	0.58	0.32



# Alt Model-Shift Uniqueness Test

009714724-02, P = 0.655573 Days, E = 131.849732 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
42.7	34.1	34.1	0	4.54	1.60	14.9	8.54	42.7	0.04	34.1	0.11	0.99	0.12	0.03





### Stellar Parameters For KIC 009714724

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5408^{+185}_{-185}$	$4.556^{+0.045}_{-0.126}$	$-0.120^{+0.300}_{-0.300}$	$0.807^{+0.165}_{-0.082}$	$0.854^{+0.087}_{-0.087}$	$2.289^{+0.505}_{-0.851}$
	+3%/-3%	+1%/-3%	+250%/-250%	+20%/-10%	+10%/-10%	+22%/-37%
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 009714724-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 2736$	$31.59^{+3.36}_{-2.61}$	$2566^{+134}_{-120}$	$-2824^{+737}_{-292}$	$0.010^{+0.270}_{-0.308}$
Alt.	$-93781 \pm 2746$	$31.59^{+3.35}_{-2.42}$	$2572^{+128}_{-122}$	$5160^{+208}_{-182}$	$11^{+2}_{-2}$

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

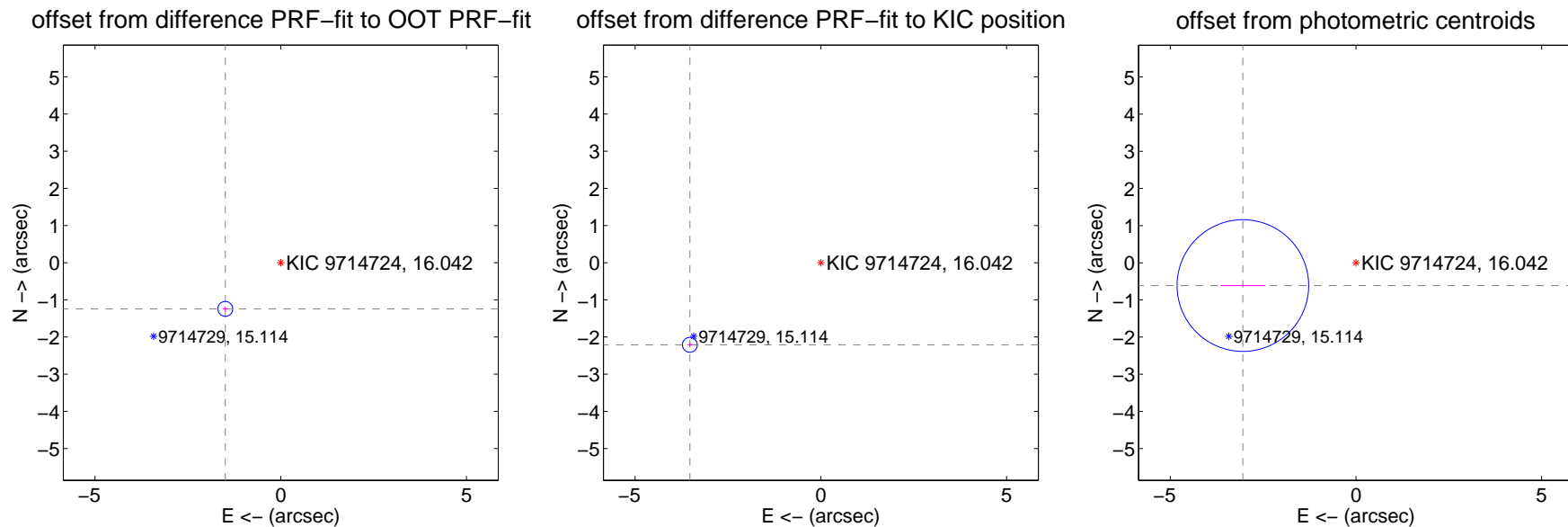
## DV Centroid Data

Supplemental centroid analysis for 009714724-02. Kepler magnitude: 16.04. Transit SNR 46.21

There are 1 quarters with good PRF difference image offsets

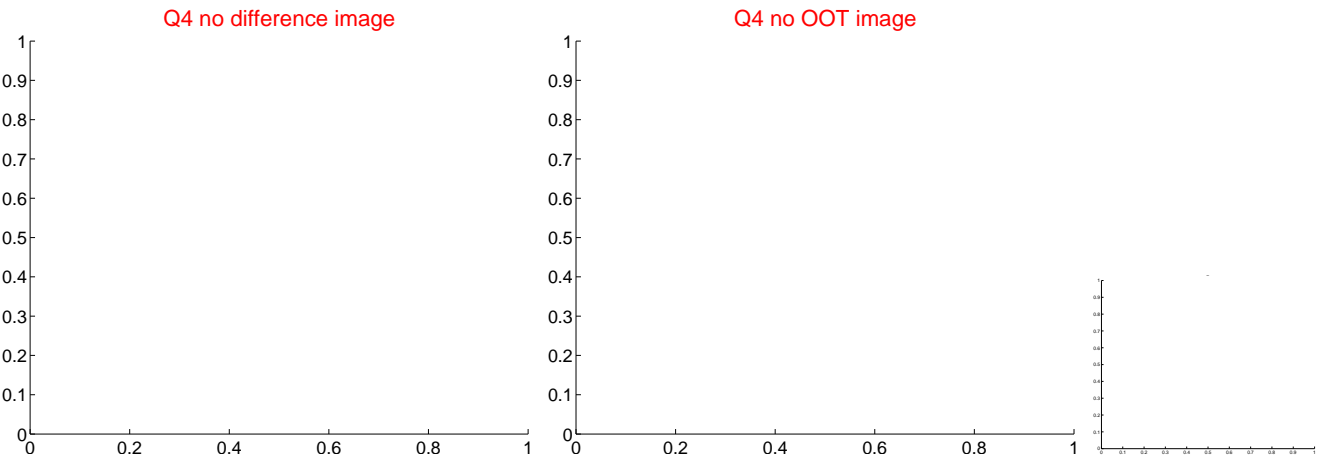
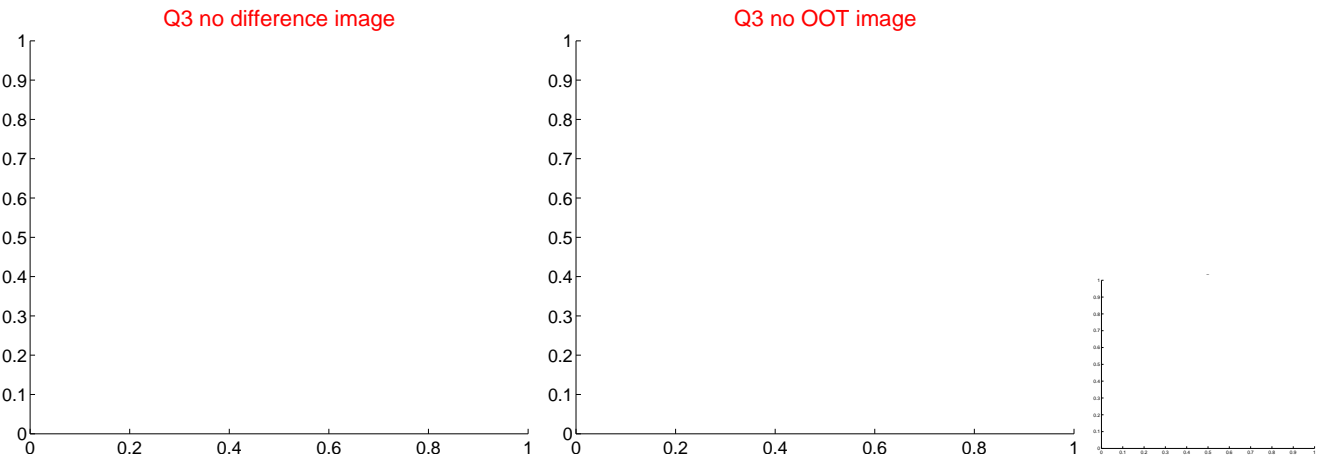
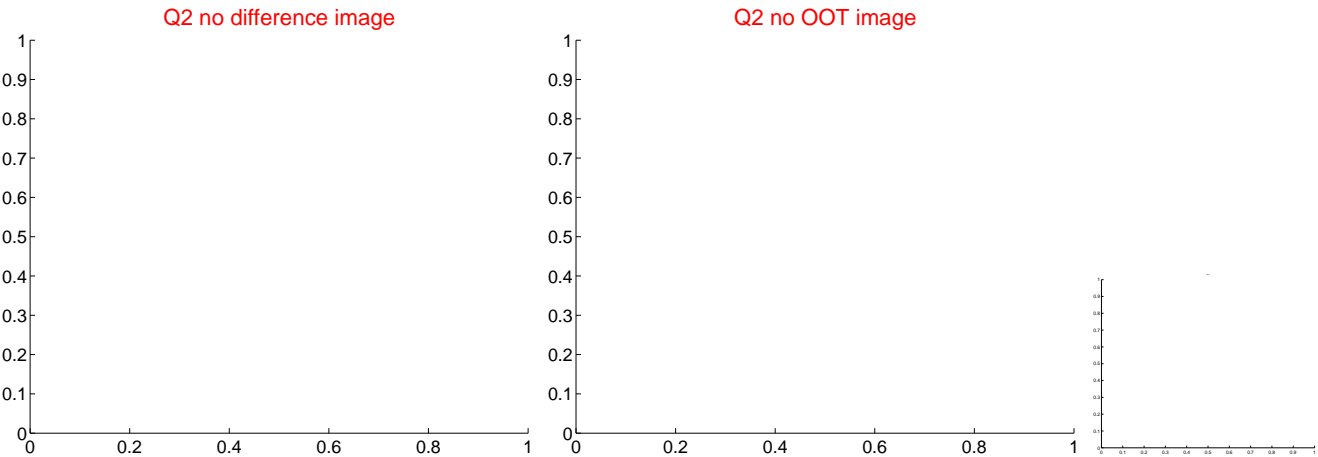
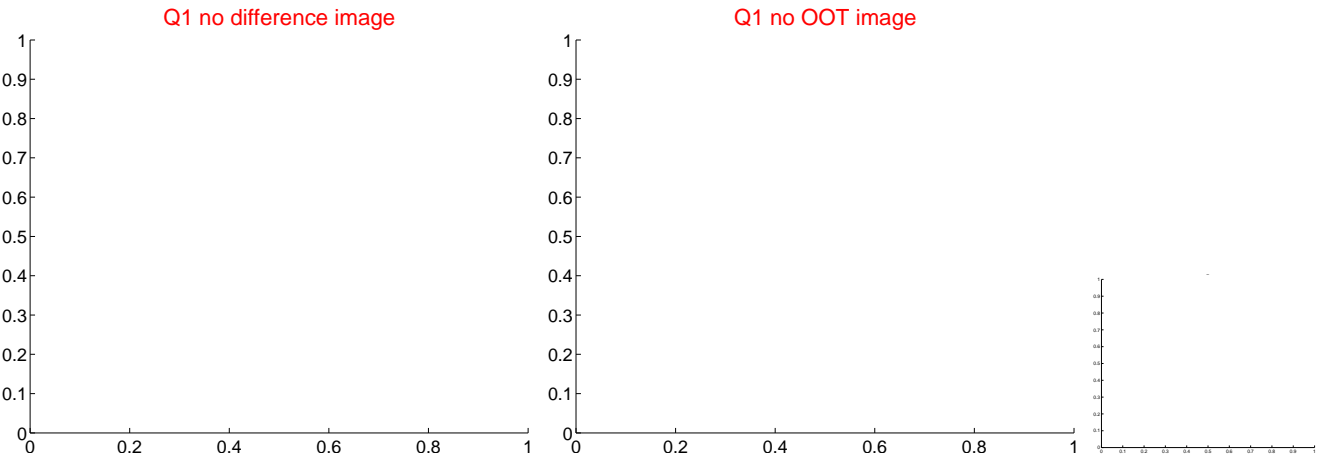
The OOT PRF centroid is offset from the target star catalog position by about 2.25 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.943 \pm 0.067$	29.12	$1.493 \pm 0.067$	$-1.243 \pm 0.067$
PRF-fit source offset from KIC position	$4.163 \pm 0.067$	62.41	$3.528 \pm 0.067$	$-2.210 \pm 0.067$
photometric centroid source offset	$3.11 \pm 0.59$	5.26	$3.05 \pm 0.60$	$-0.61 \pm 0.02$



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.

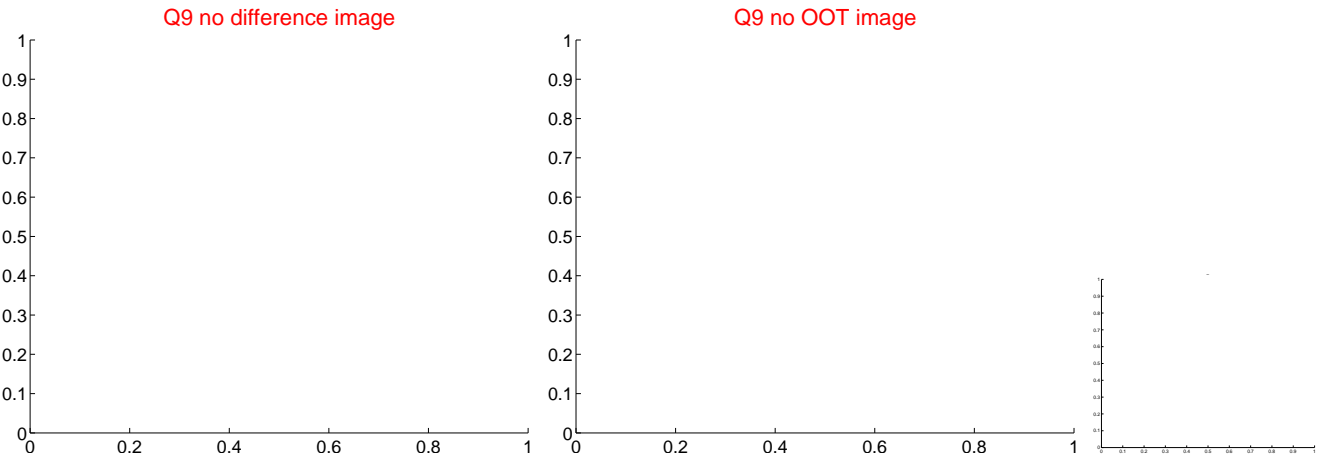
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



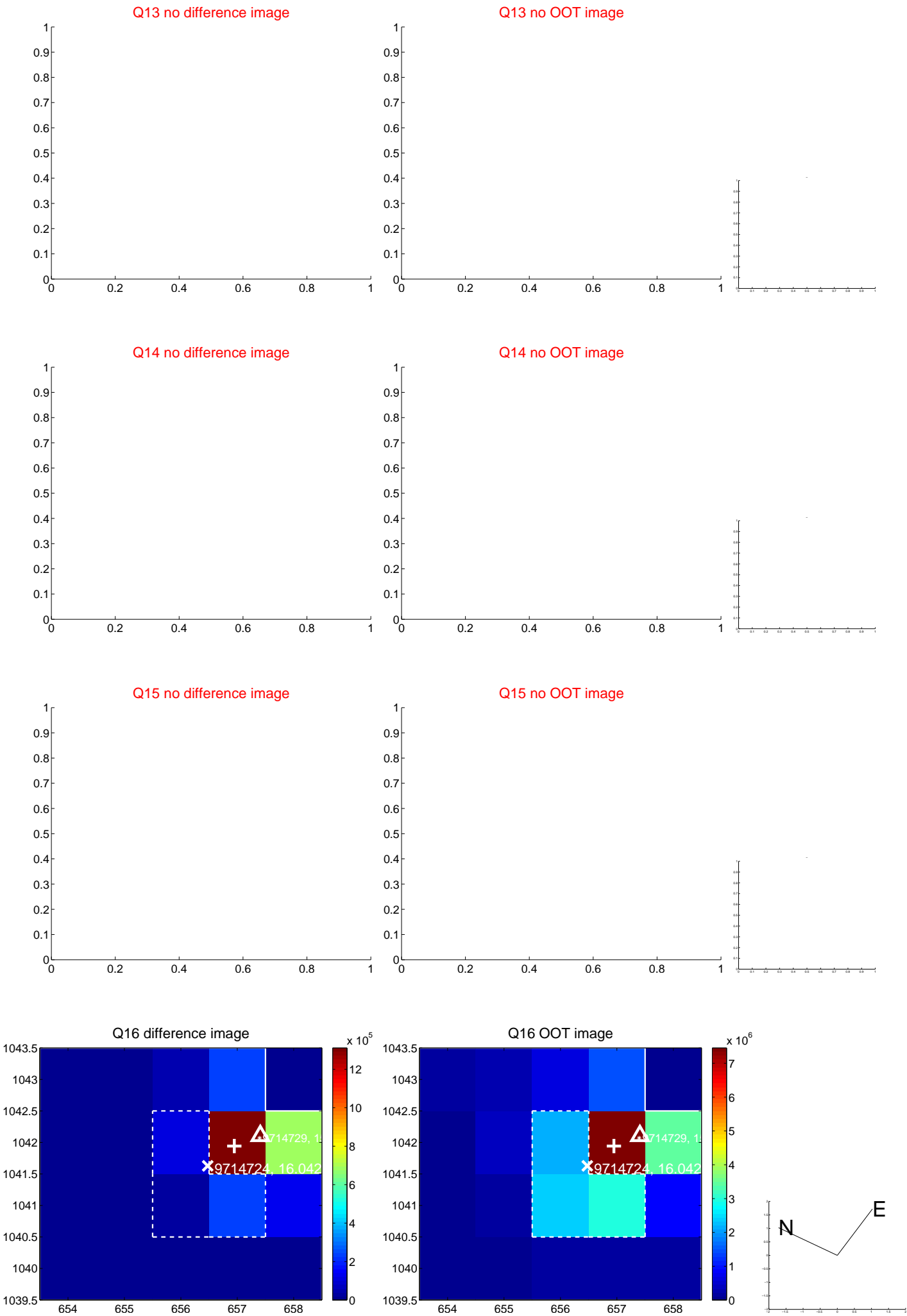
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



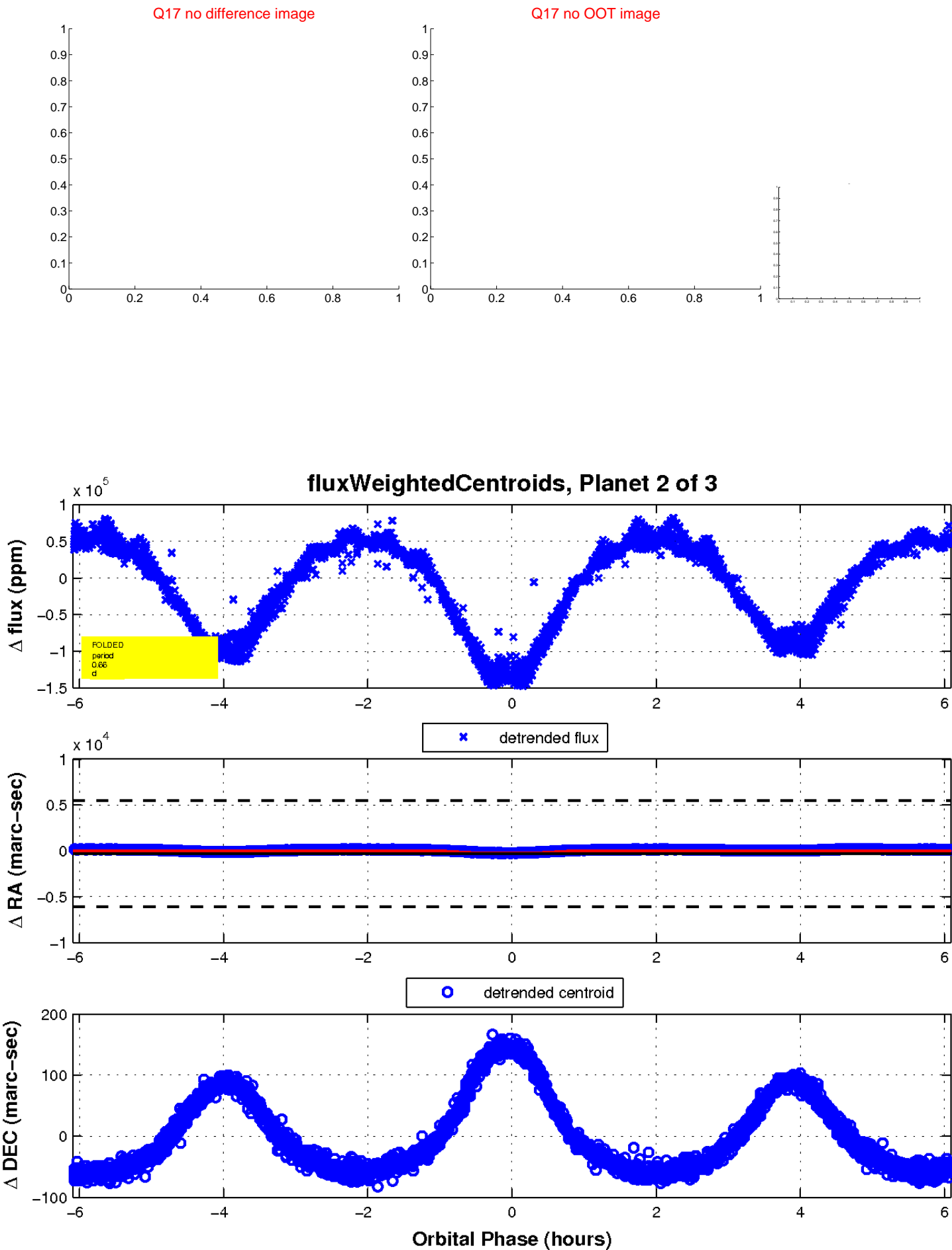
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



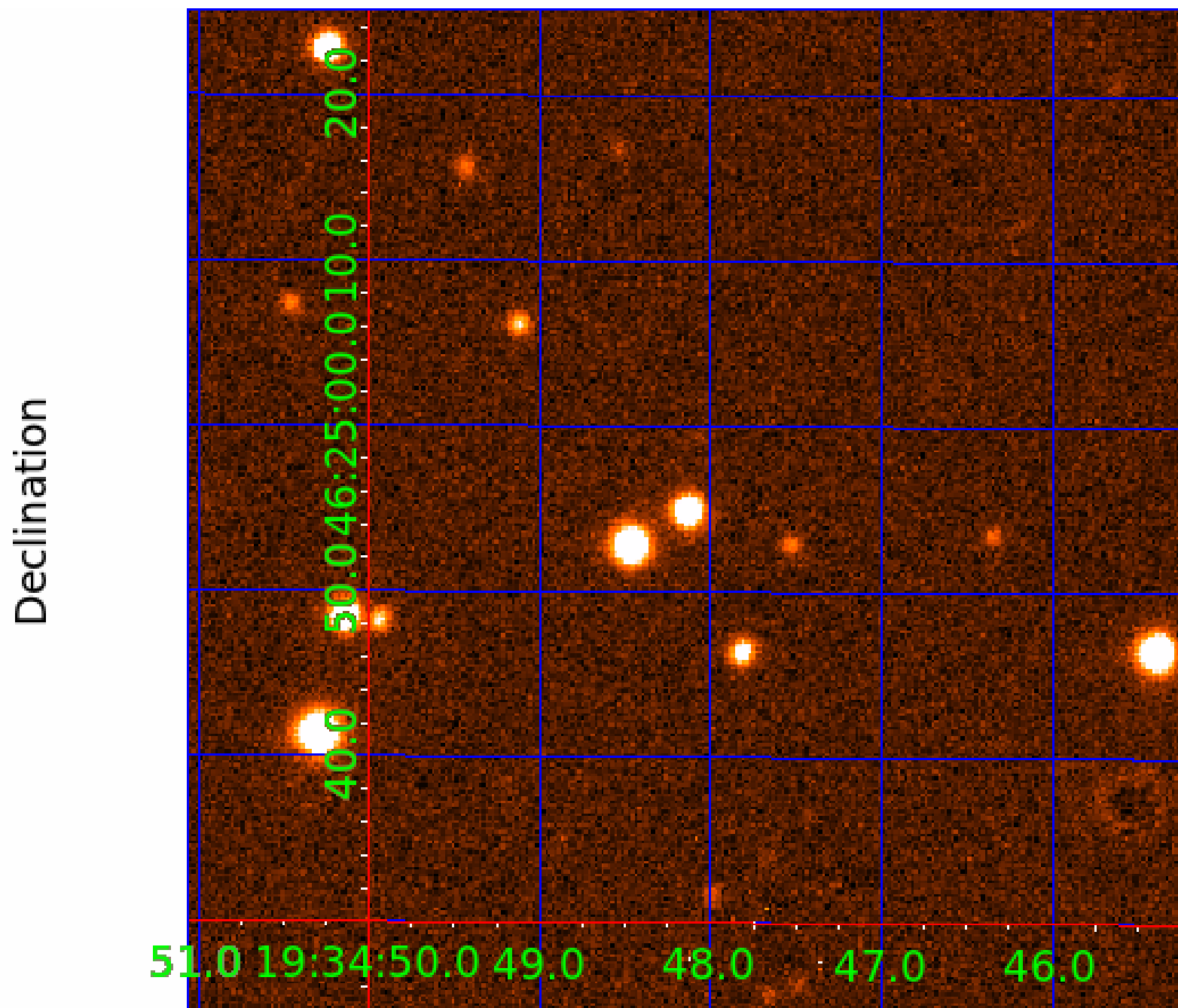
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 009714724

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009714724-01	OBS	No	0.655502	131.670802	84252.8	2.127	27.4	28.6	0.81	5408	34.42	2540.14
009714724-02	OBS	No	0.655573	131.849732	148615.2	2.030	10.8	46.2	0.81	5408	30.95	2539.78
009714724-03	OBS	No	0.655607	131.942244	1565.6	1.500	13.8	-1.0	0.81	5408	3.15	2539.60

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009714724-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
009714724-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009714724-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS—HALO_GHOST

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

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

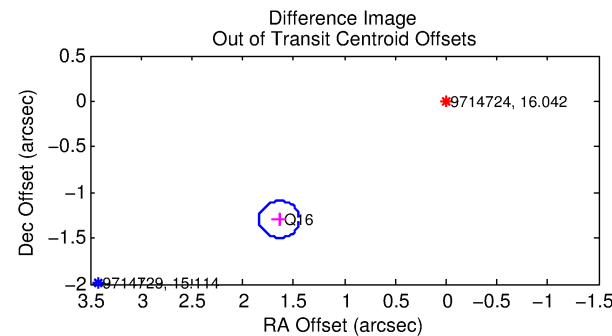
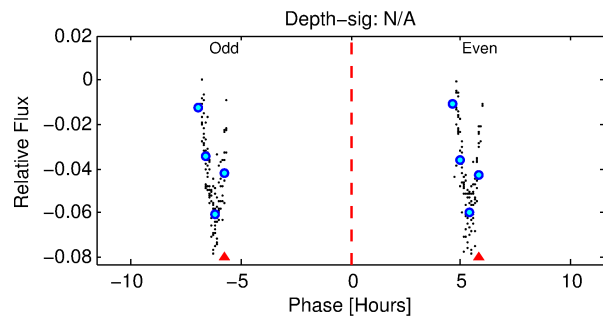
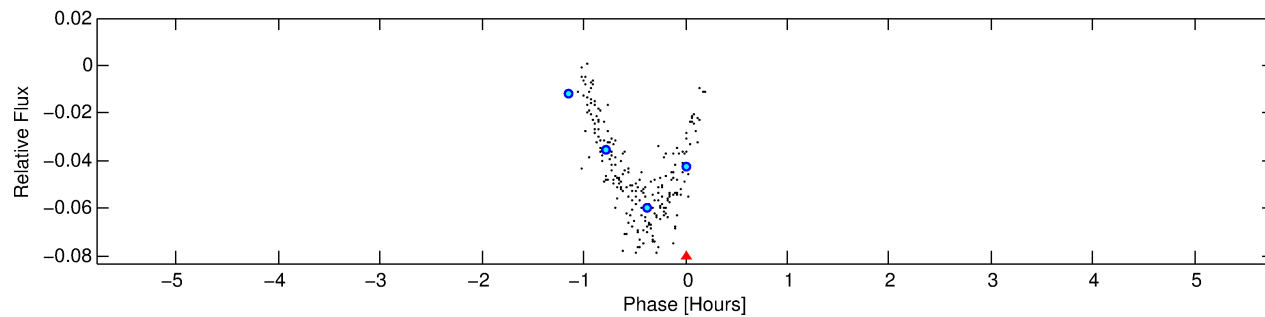
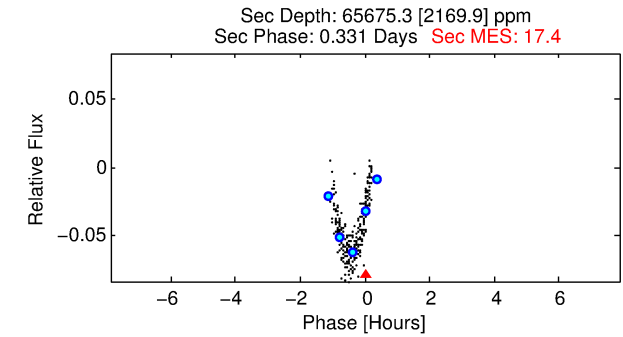
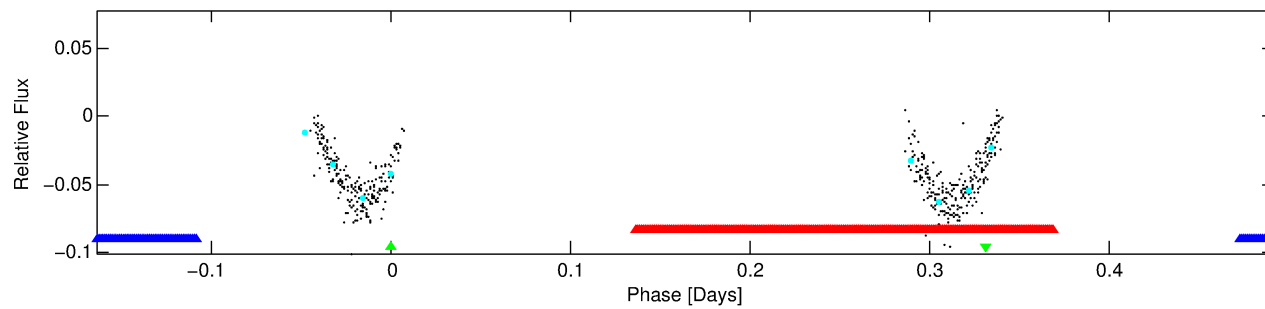
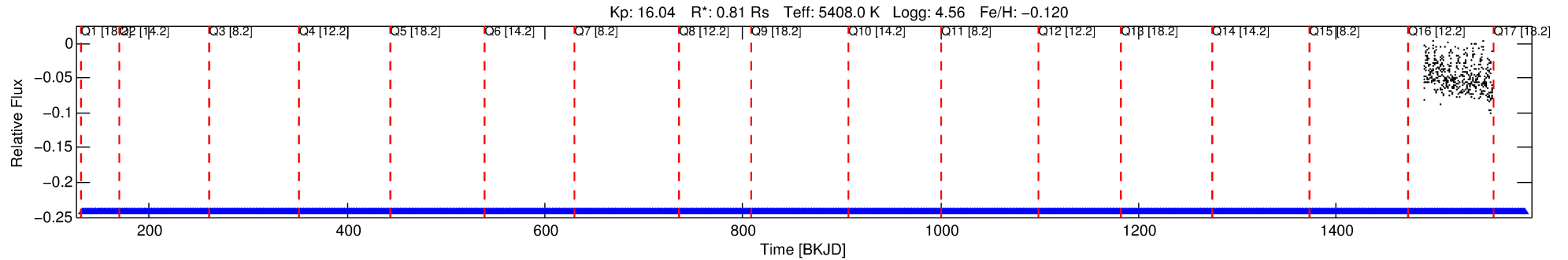
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009714724-03

No Significant Match Found

# DV One-Page Summary

KIC: 9714724 Candidate: 3 of 3 Period: 0.656 d



## TPS TCE Results:

Period = 0.65561 d  
Epoch = 131.9422 BKJD

**DV fit results are unavailable**

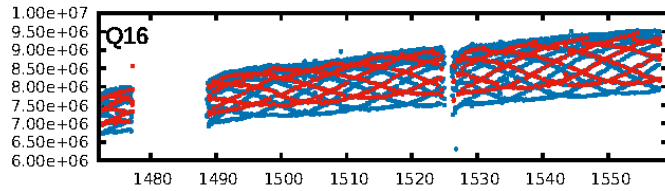
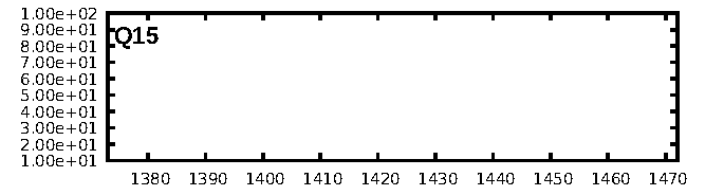
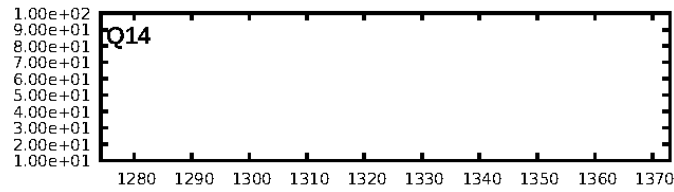
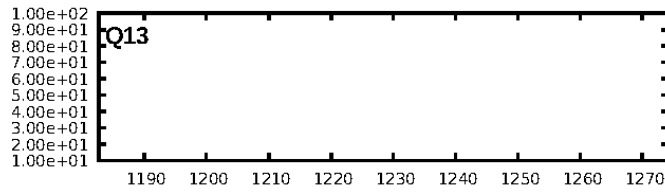
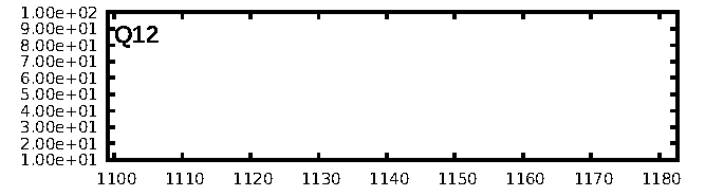
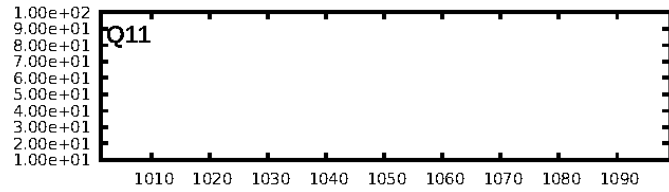
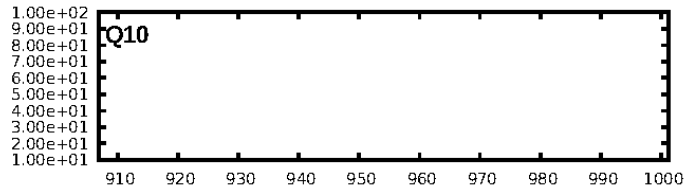
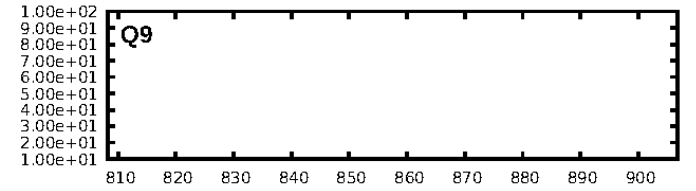
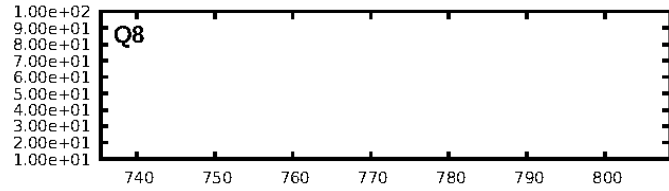
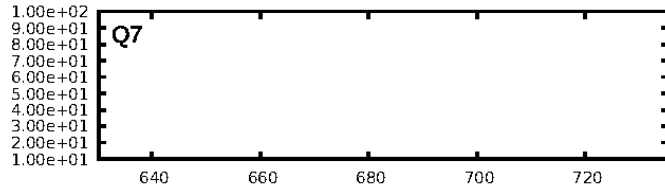
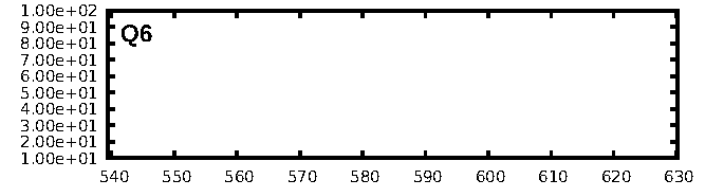
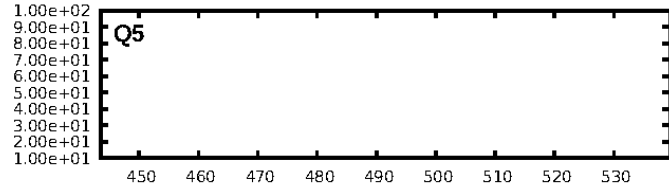
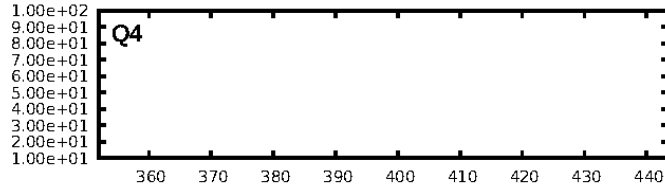
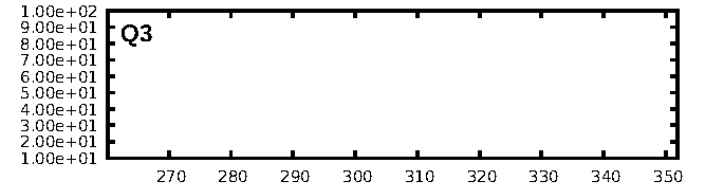
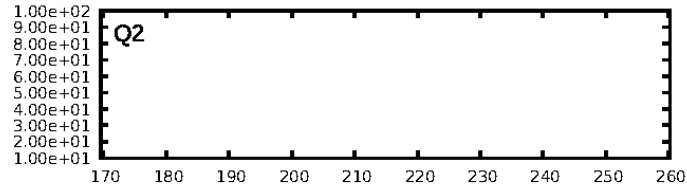
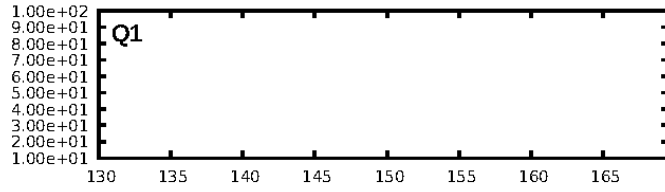
## DV Diagnostic Results:

**ShortPeriod-sig: 0.0% [0.00σ]**  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [104/104]  
GhostDiagnostic-chr: 0.2064  
Centroid-sig: N/A  
Centroid-so: 16.108 arcsec [2.34σ]  
**OotOffset-rm: 2.088 arcsec [31.26σ]**  
**KicOffset-rm: 4.209 arcsec [63.01σ]**  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/1]

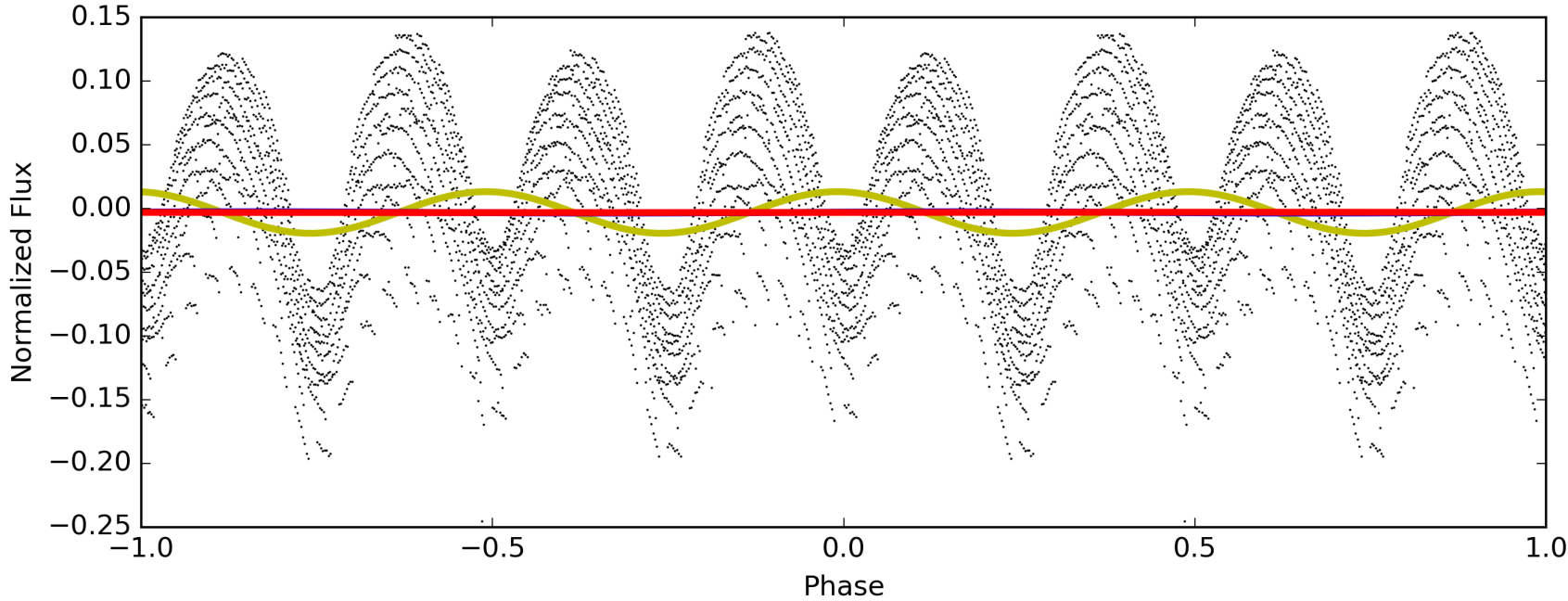
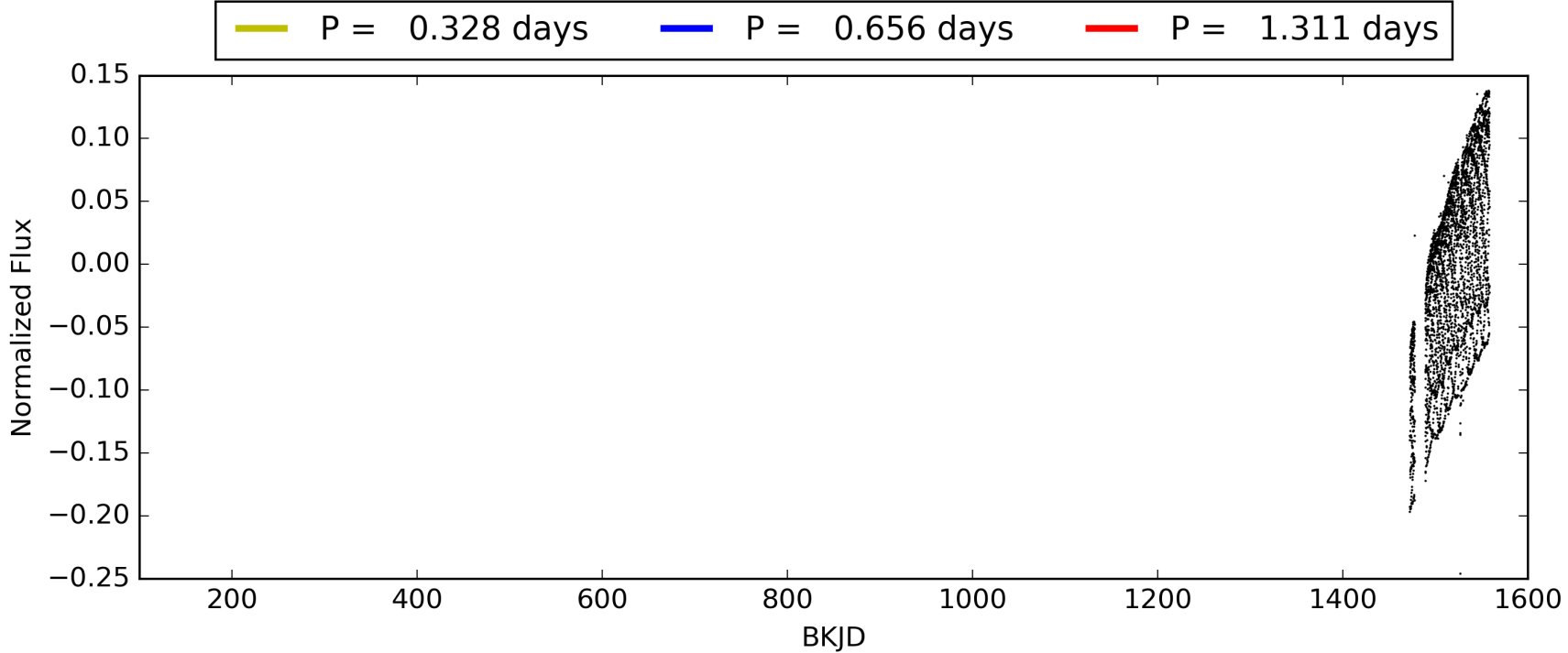
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:38:52 Z

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

# TCE 009714724-03, PDC Light Curves

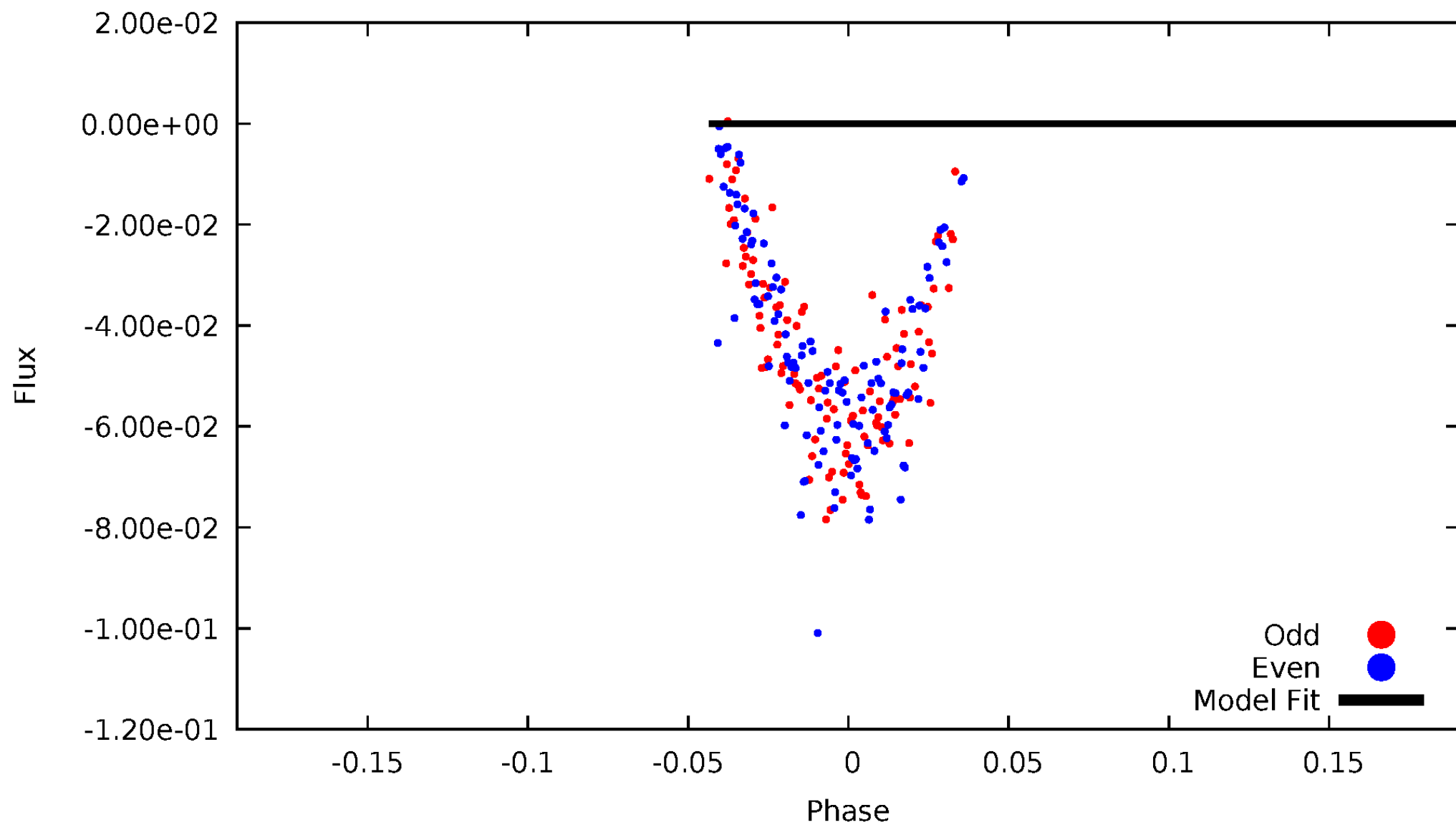


TCE 009714724-03



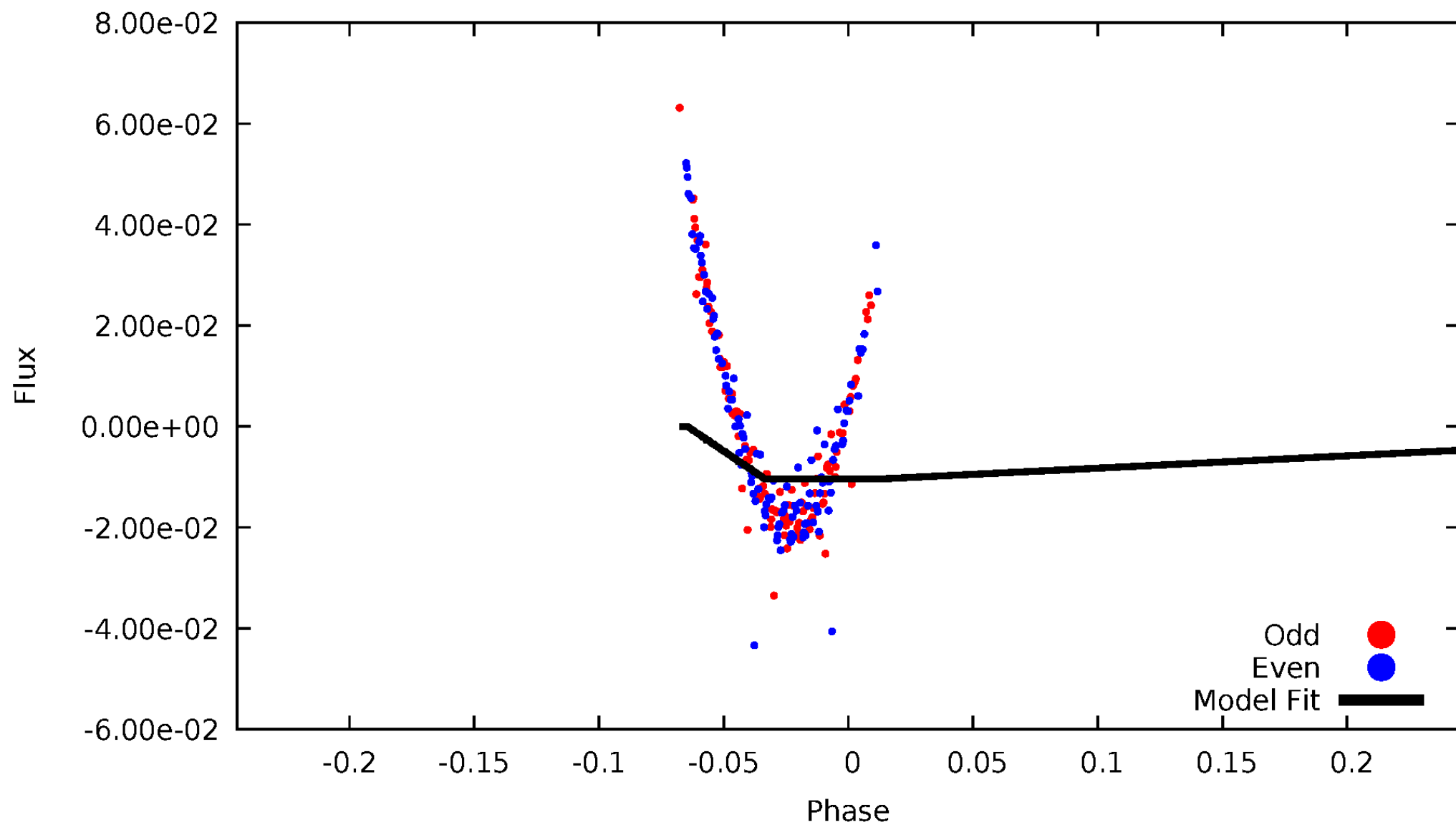
# DV Odd/Even

TCE 009714724-03



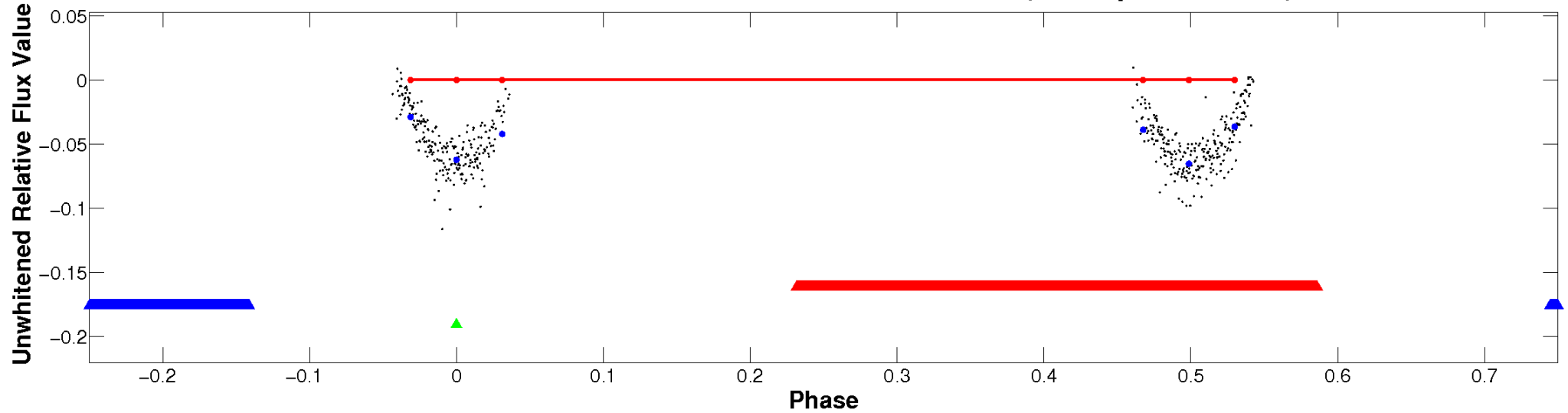
# ALT Odd/Even

TCE 009714724-03

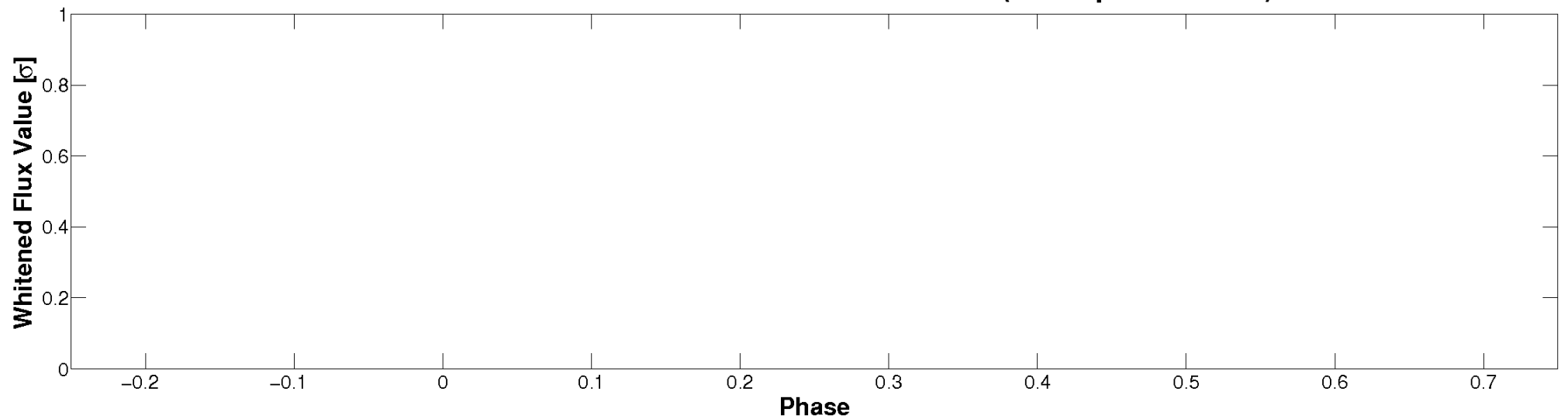


# Non-Whitened Vs. Whitened Light Curve

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

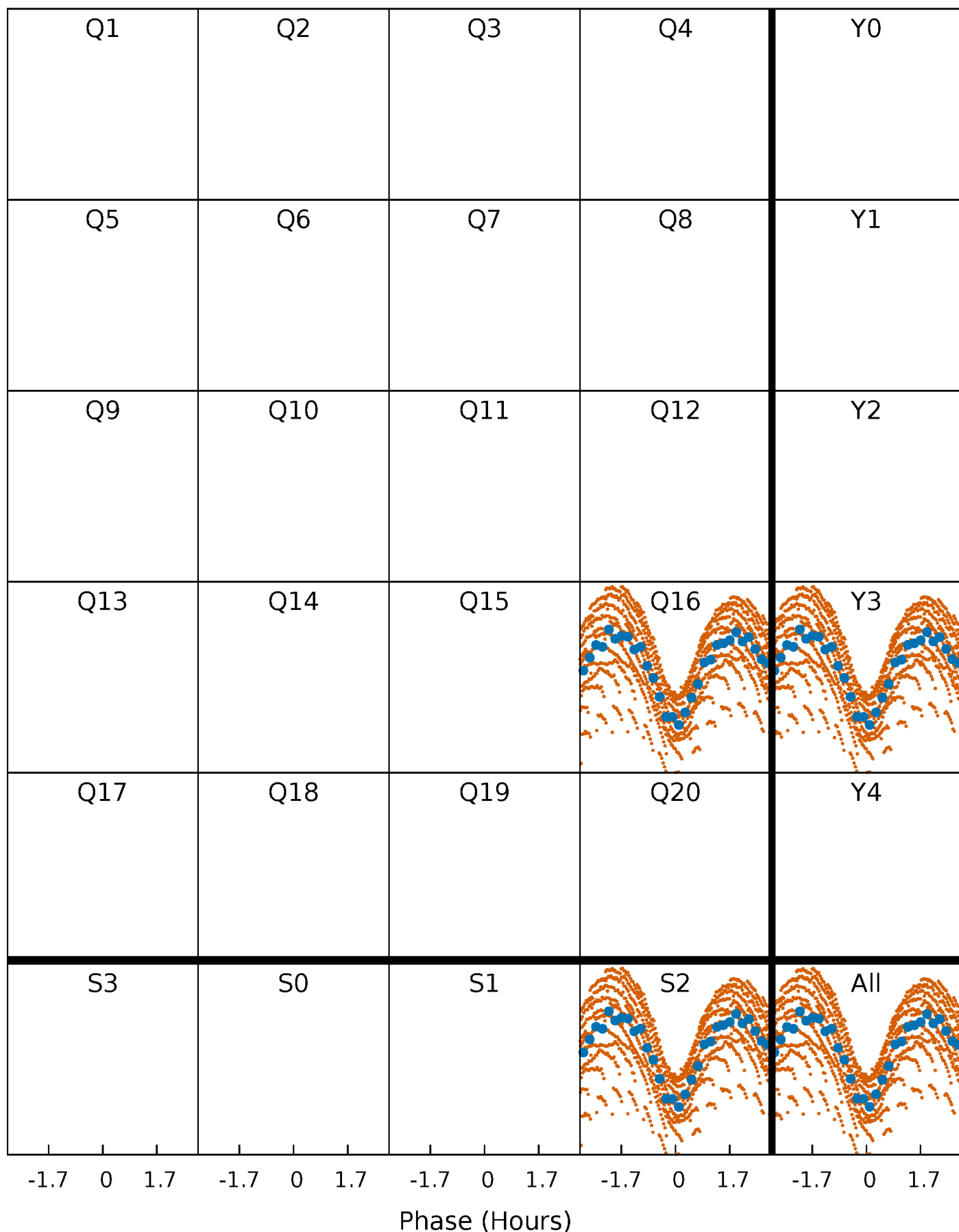


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

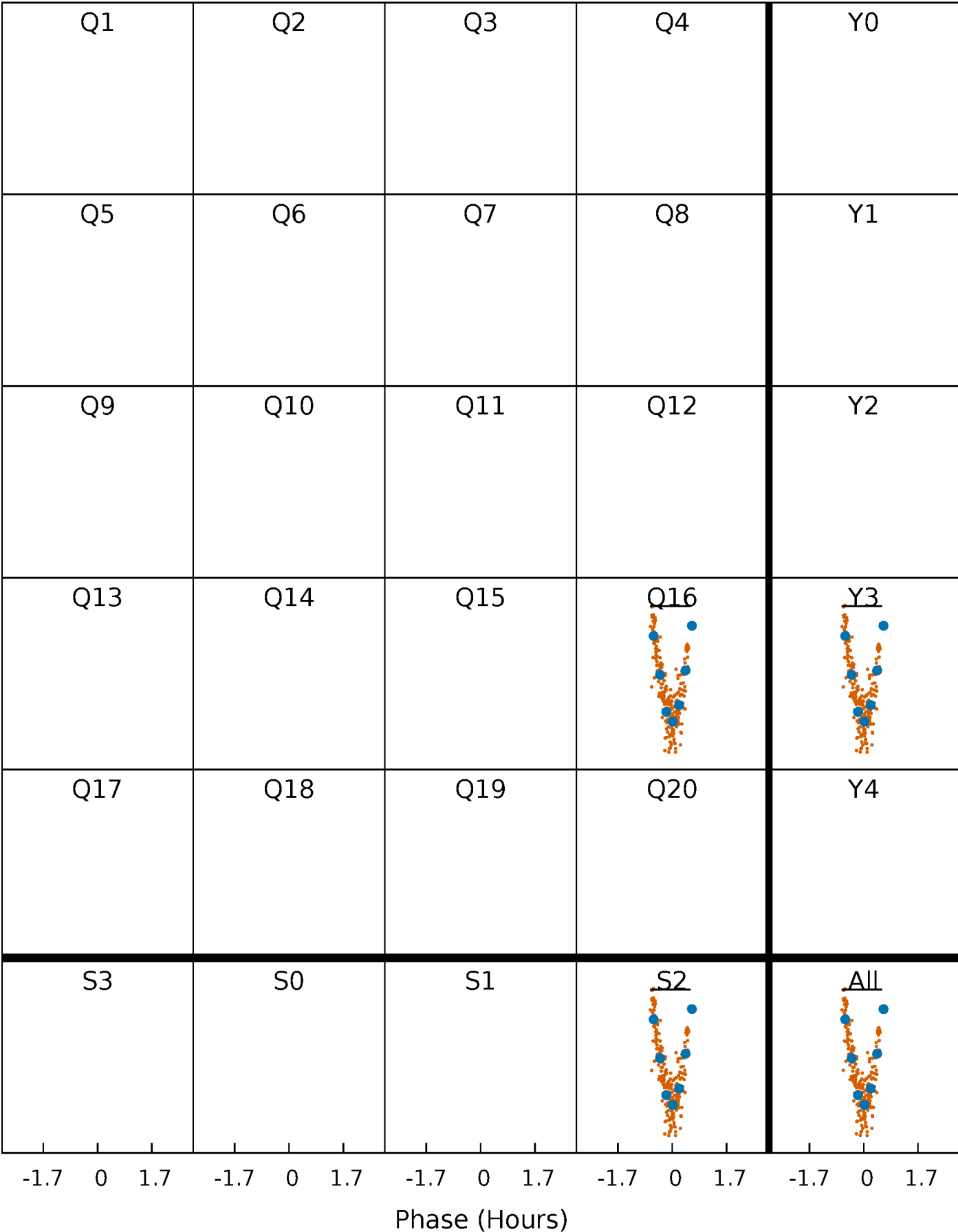
TCE 009714724-03 P= 0.655607 Days  $T_0=131.942244$  (BKJD)





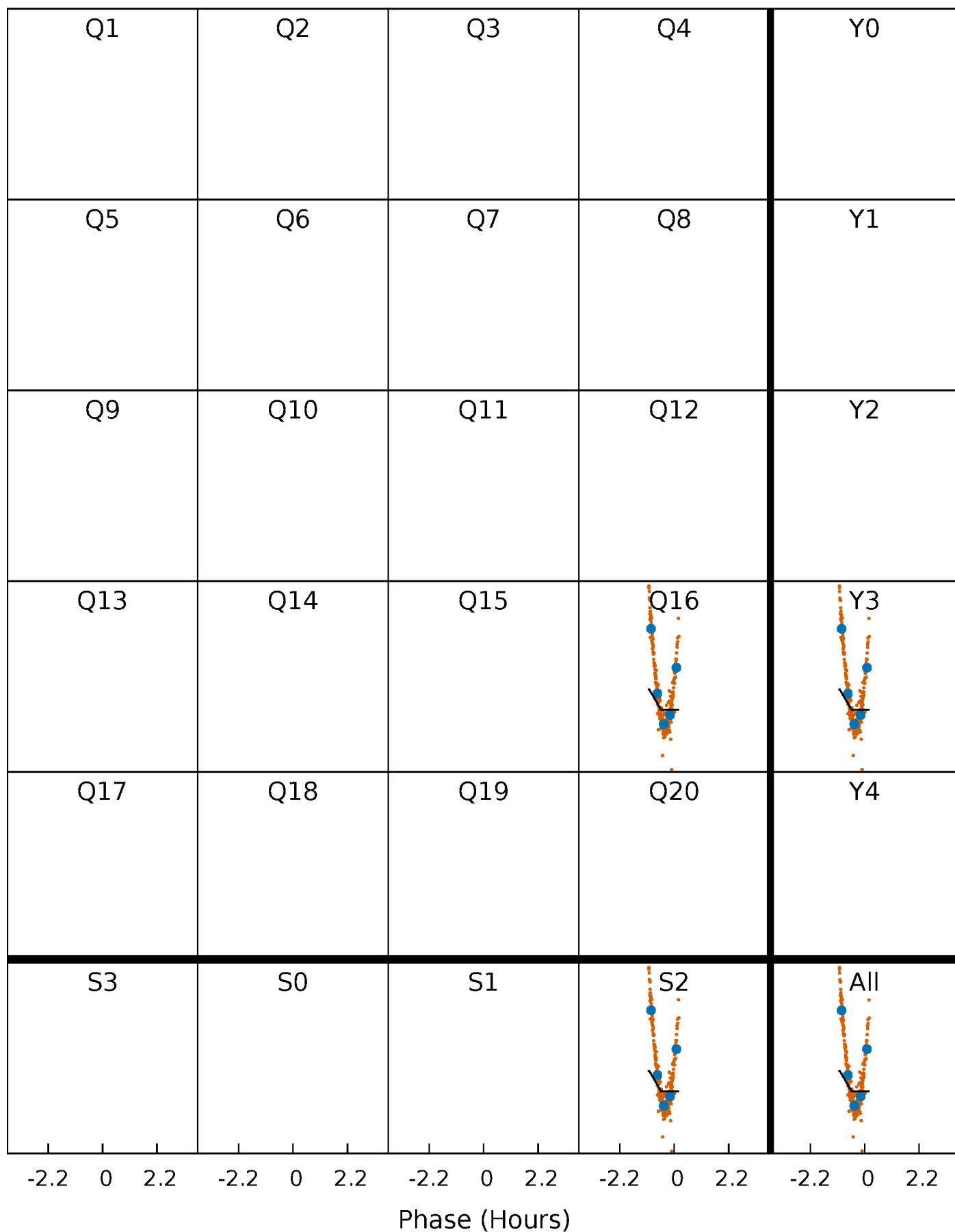
DV Quarter-Phased Transit Curves

TCE 009714724-03    P= 0.655607 Days    T<sub>0</sub>=131.942244 (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

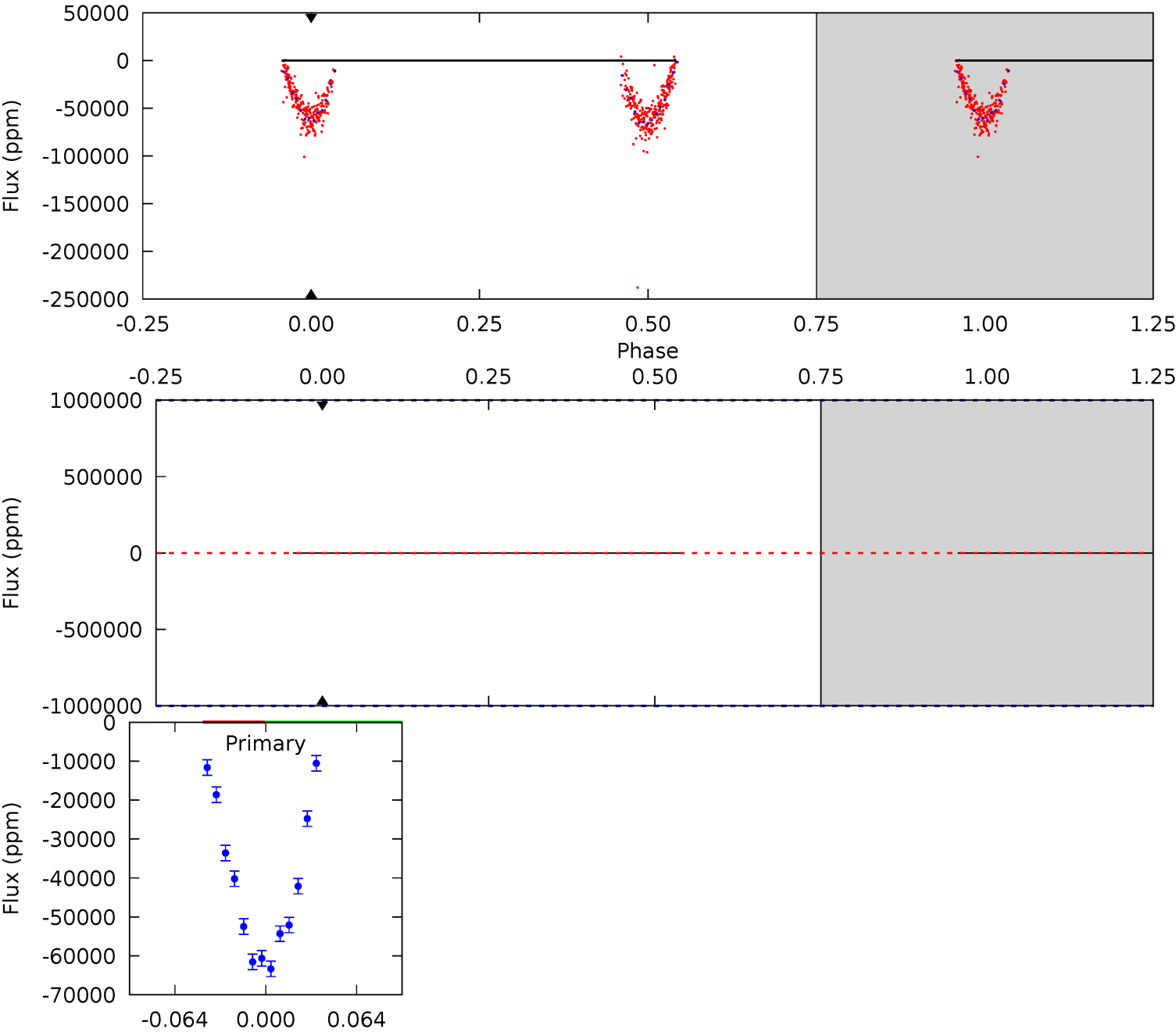
TCE 009714724-03 P= 0.655607 Days  $T_0=131.958134$  (BKJD)



# DV Model-Shift Uniqueness Test

009714724-03, P = 0.655607 Days, E = 131.942244 Days

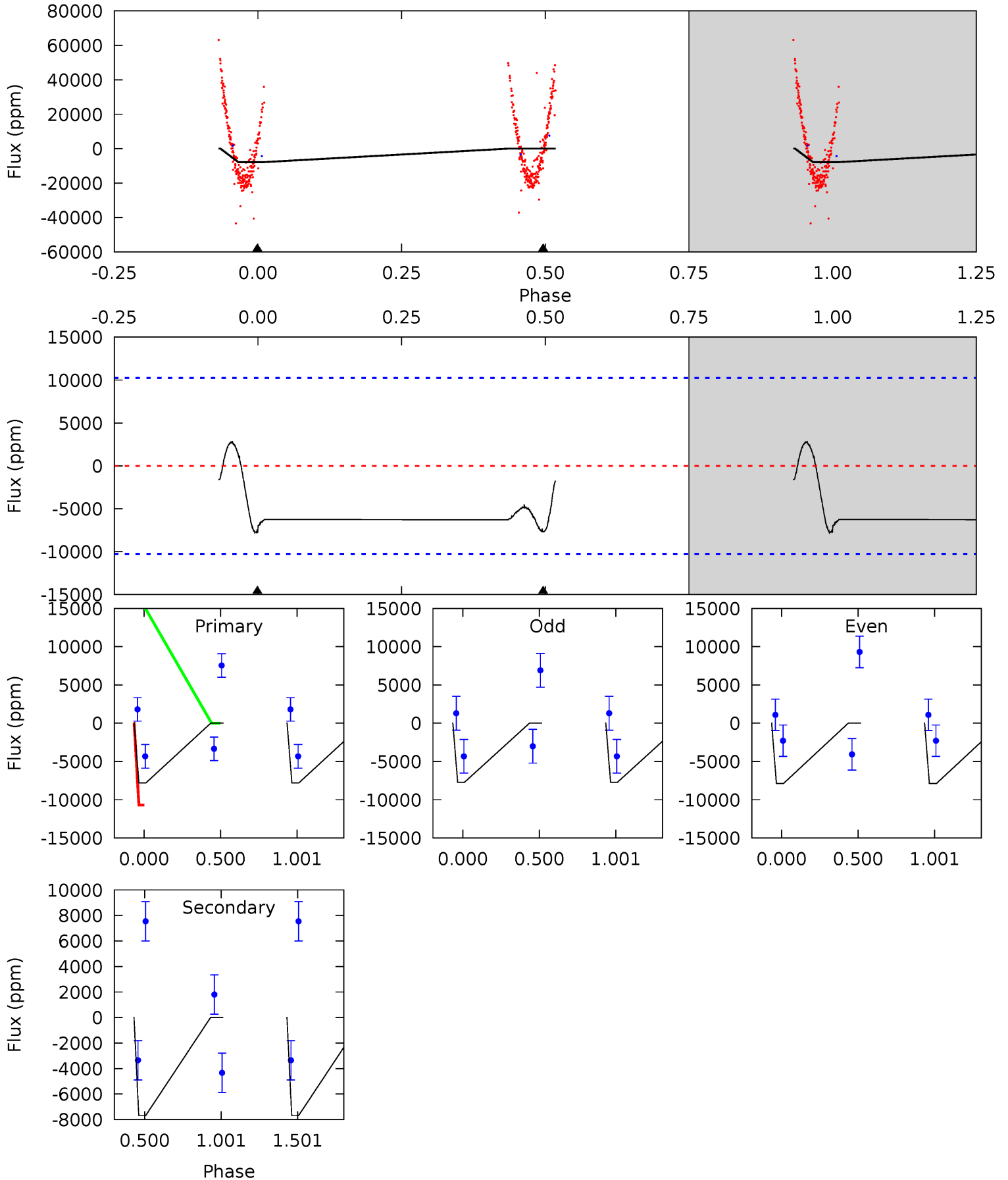
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009714724-03, P = 0.655607 Days, E = 131.958134 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
3.21	3.16	0	0	4.21	0.67	1.14	3.21	3.21	3.16	3.16	0.04	0.87	0.26	1.30



### Stellar Parameters For KIC 009714724

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5408^{+185}_{-185}$	$4.556^{+0.045}_{-0.126}$	$-0.120^{+0.300}_{-0.300}$	$0.807^{+0.165}_{-0.082}$	$0.854^{+0.087}_{-0.087}$	$2.289^{+0.505}_{-0.851}$
	+3%/-3%	+1%/-3%	+250%/-250%	+20%/-10%	+10%/-10%	+22%/-37%
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 009714724-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$7.17^{+7.53}_{-4.70}$	$2568^{+136}_{-112}$	$-4194^{+19918}_{-11013}$	$-3.172^{+333.822}_{-293.500}$
Alt.	$-7684 \pm 2432$	$10.98^{+9.38}_{-6.99}$	$2565^{+131}_{-113}$	$4683^{+2976}_{-1079}$	$6.937^{+44.208}_{-5.105}$

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

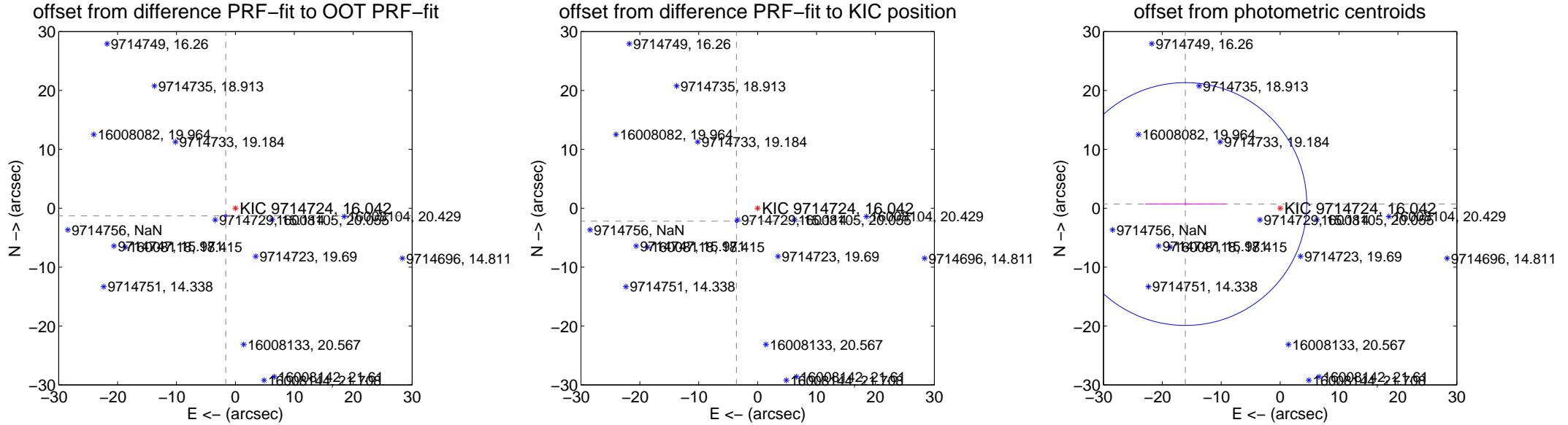
## DV Centroid Data

Supplemental centroid analysis for 009714724-03. Kepler magnitude: 16.04. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.15 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	2.088 $\pm$ 0.067	31.26	1.640 $\pm$ 0.067	-1.293 $\pm$ 0.067
PRF-fit source offset from KIC position	4.209 $\pm$ 0.067	63.01	3.594 $\pm$ 0.067	-2.190 $\pm$ 0.067
photometric centroid source offset	16.11 $\pm$ 6.87	2.34	16.09 $\pm$ 6.88	0.71 $\pm$ 0.27

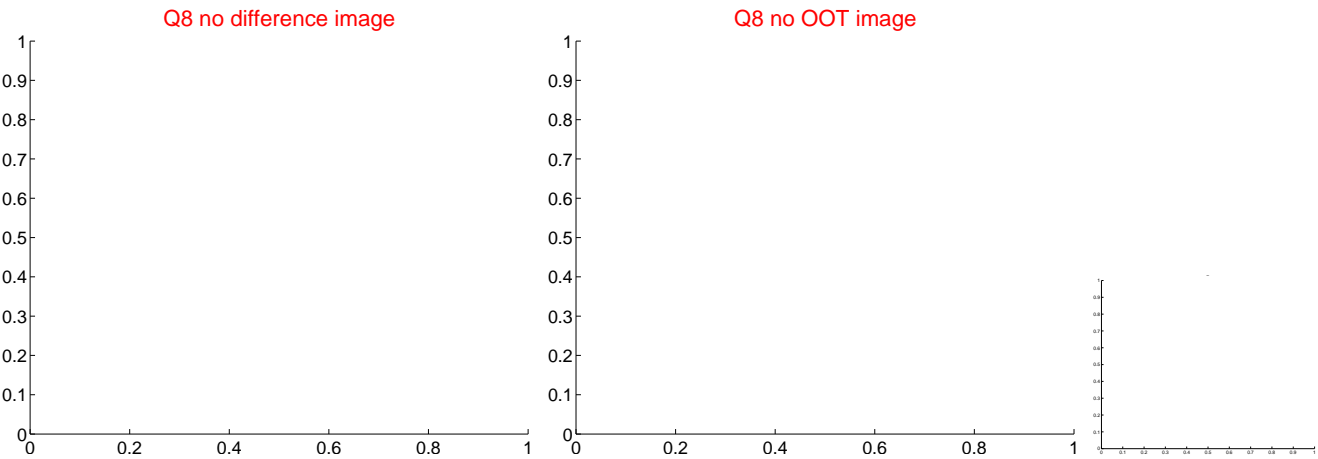
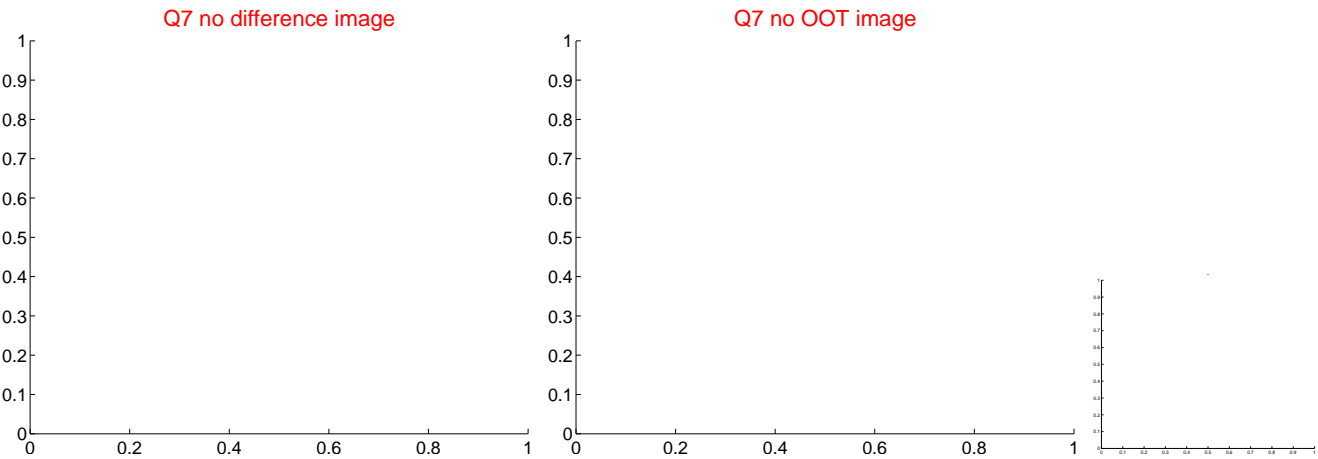
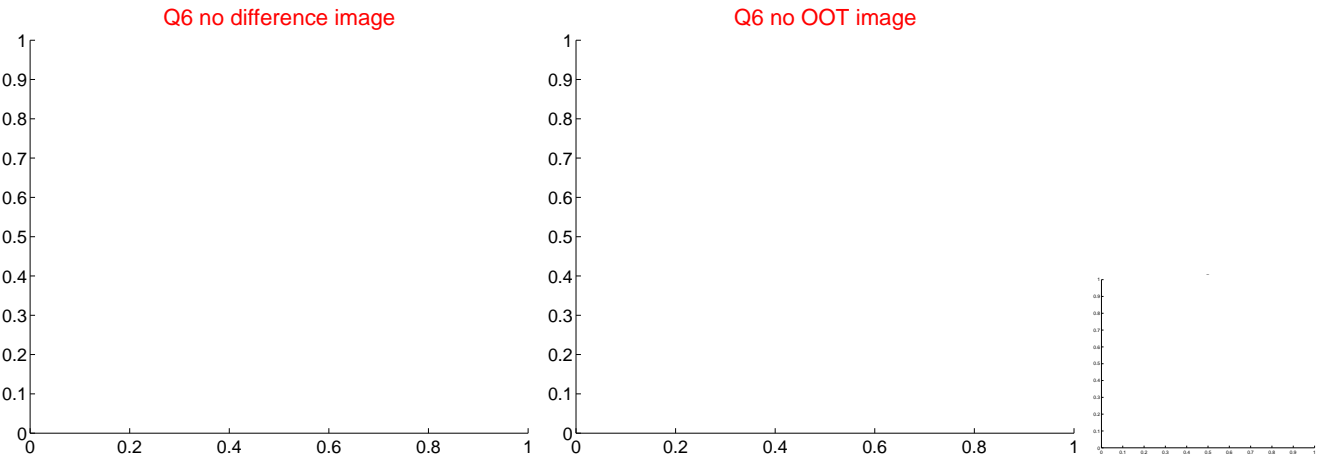
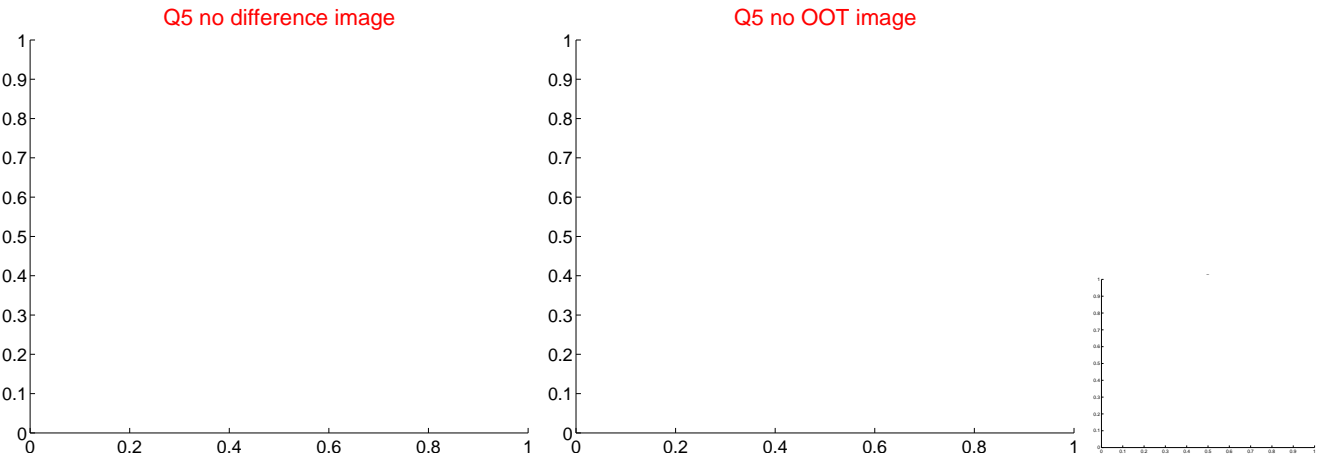


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

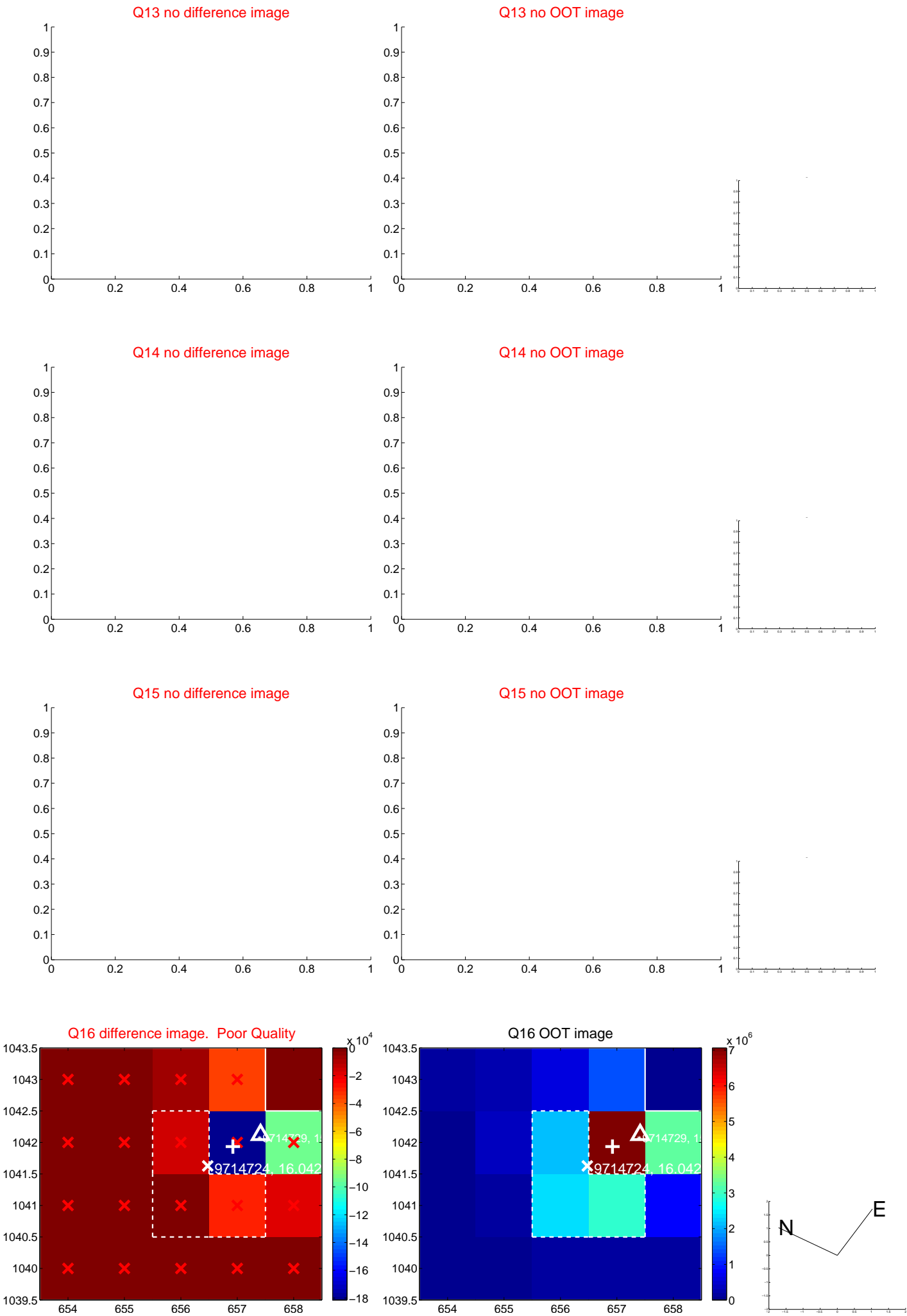




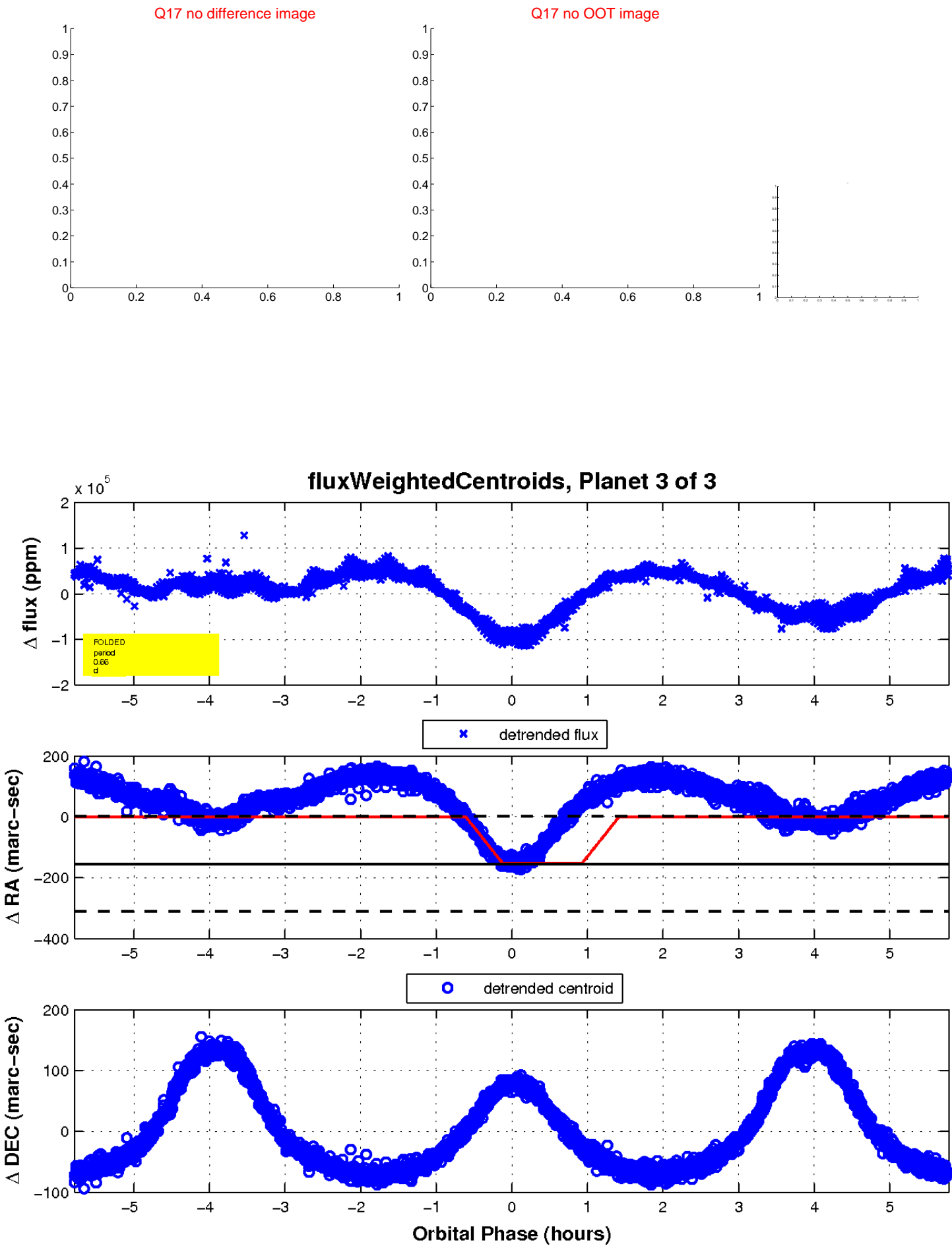
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

