

# KIC 007767733

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007767733-01	OBS	3322.01	25.198303	142.224079	73594.3	5.185	1690.8	1575.9	0.88	5955	35.40	31.62
007767733-02	OBS	No	25.198320	152.933832	10090.7	3.702	197.8	199.0	0.88	5955	13.85	31.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007767733-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
007767733-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

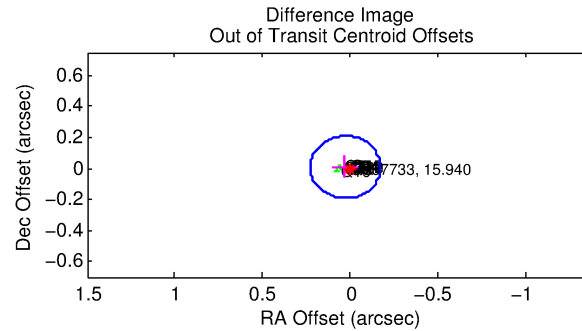
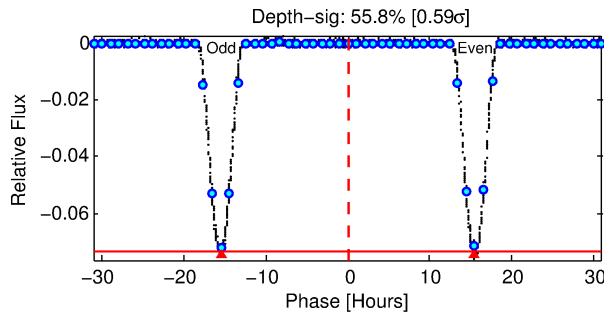
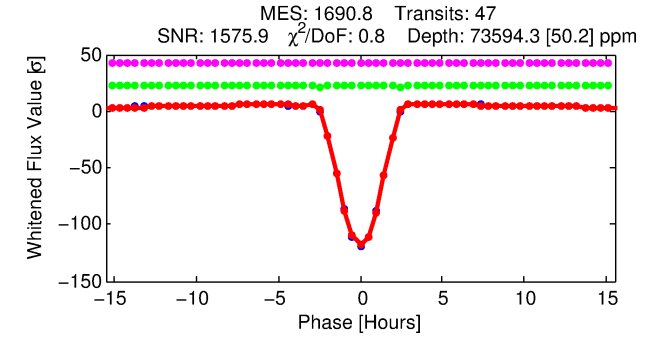
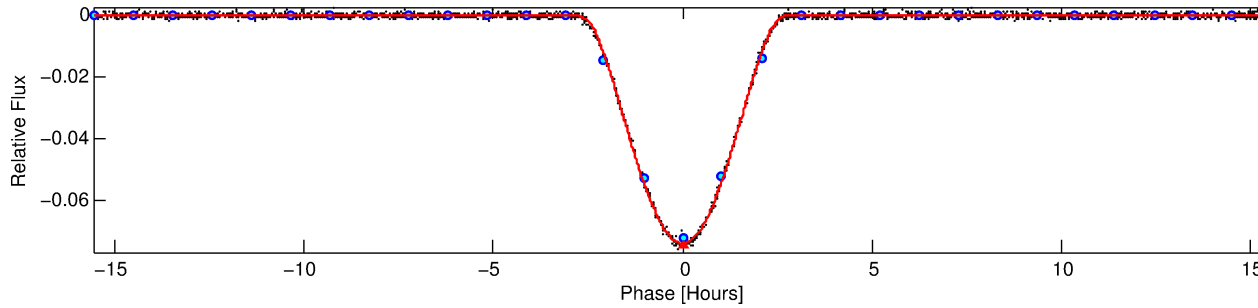
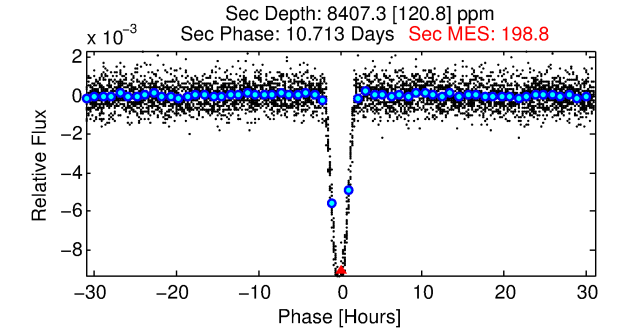
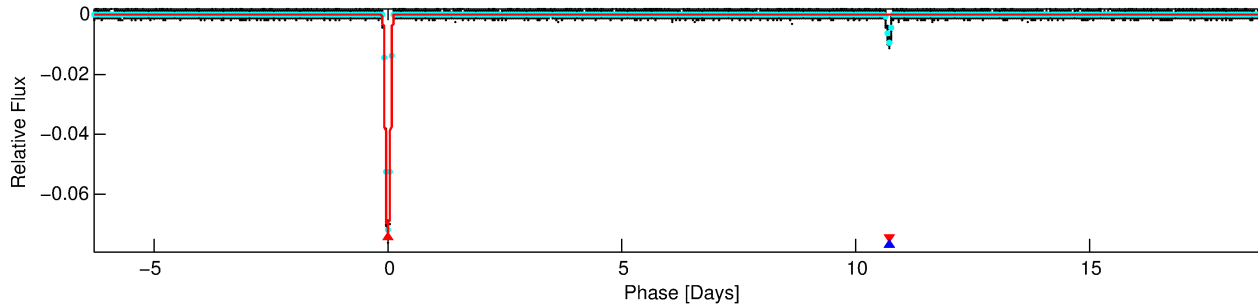
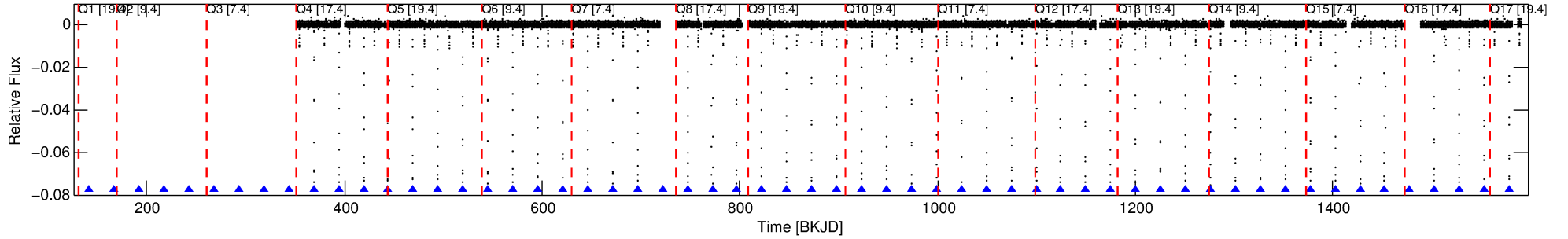
## Ephemeris Match Information For 007767733-01

No Significant Match Found

# DV One-Page Summary

KIC: 7767733 Candidate: 1 of 2 Period: 25.198 d  
KOI: K03322.01 Corr: 0.996

Kp: 15.94 R\*: 0.88 Rs Teff: 5955.0 K Logg: 4.53 Fe/H: -0.240



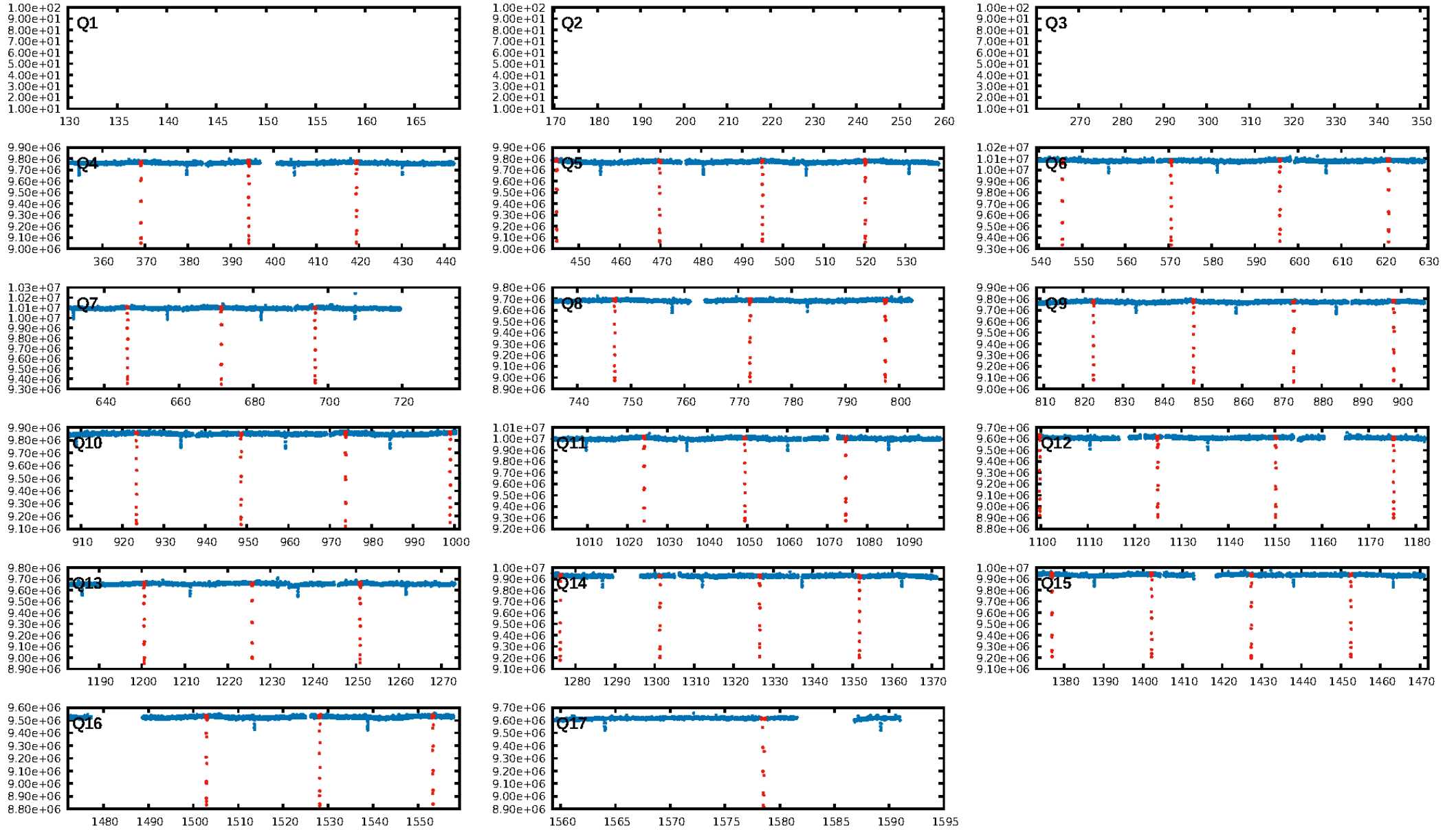
## DV Fit Results:

Period = 25.19830 [0.00000] d  
Epoch = 142.2241 [0.0001] BKJD  
Rp/R\* = 0.3674 [0.0159]  
a/R\* = 37.56 [0.04]  
b = 0.92 [0.02]  
Seff = 31.62 [13.28]  
Teq = 605 [64] K  
Rp = 35.40 [10.97] Re  
a = 0.1667 [0.0443] AU  
Ag = 102.57 [41.62] [2.44σ]  
Teffp = 2975 [123] K [17.16σ]

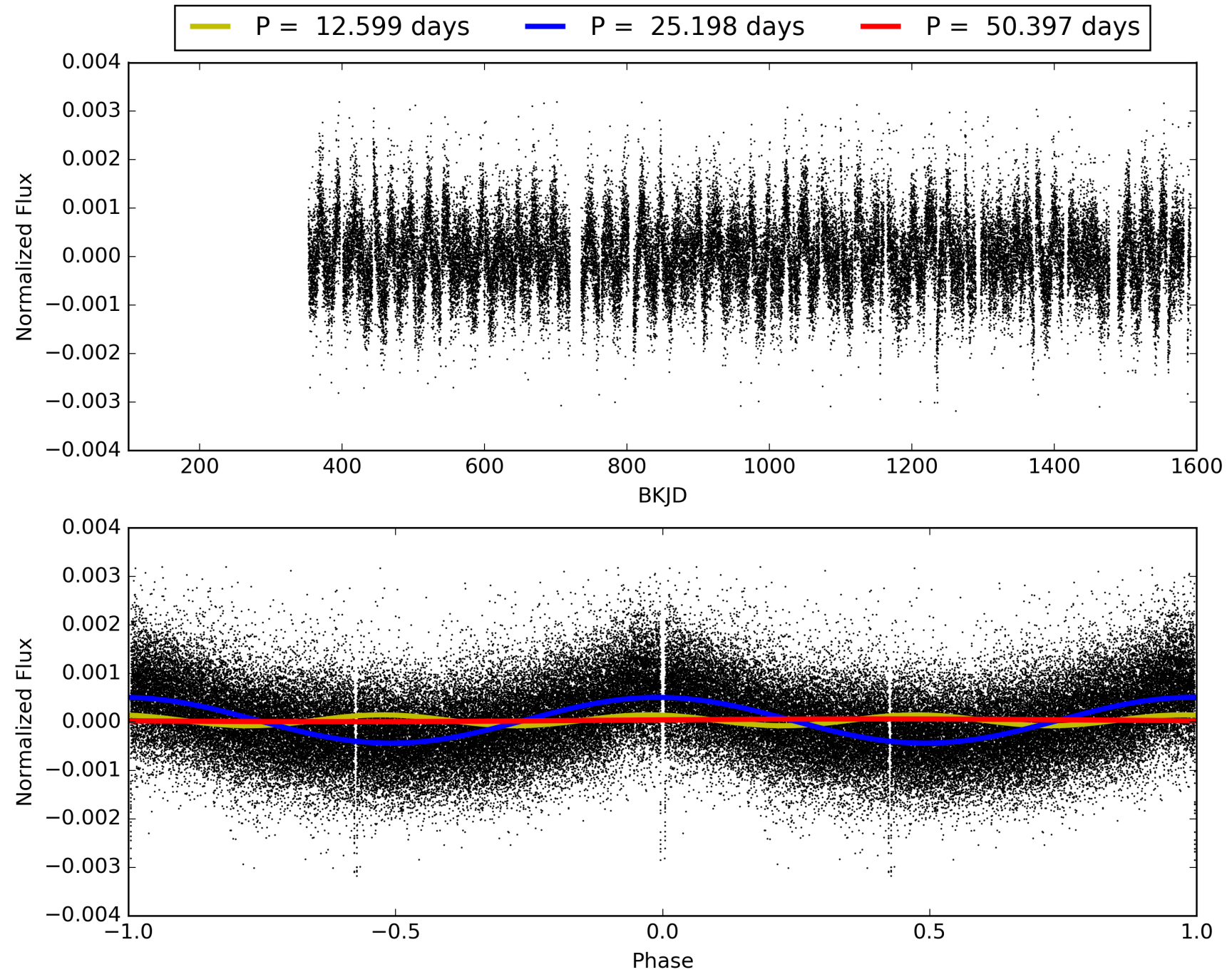
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [46/46]  
GhostDiagnostic-chr: 7.188  
Centroid-sig: 0.0%  
Centroid-so: 0.109 arcsec [12.83σ]  
OotOffset-rm: 0.030 arcsec [0.45σ]  
KicOffset-rm: 0.040 arcsec [0.59σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 007767733-01, PDC Light Curves

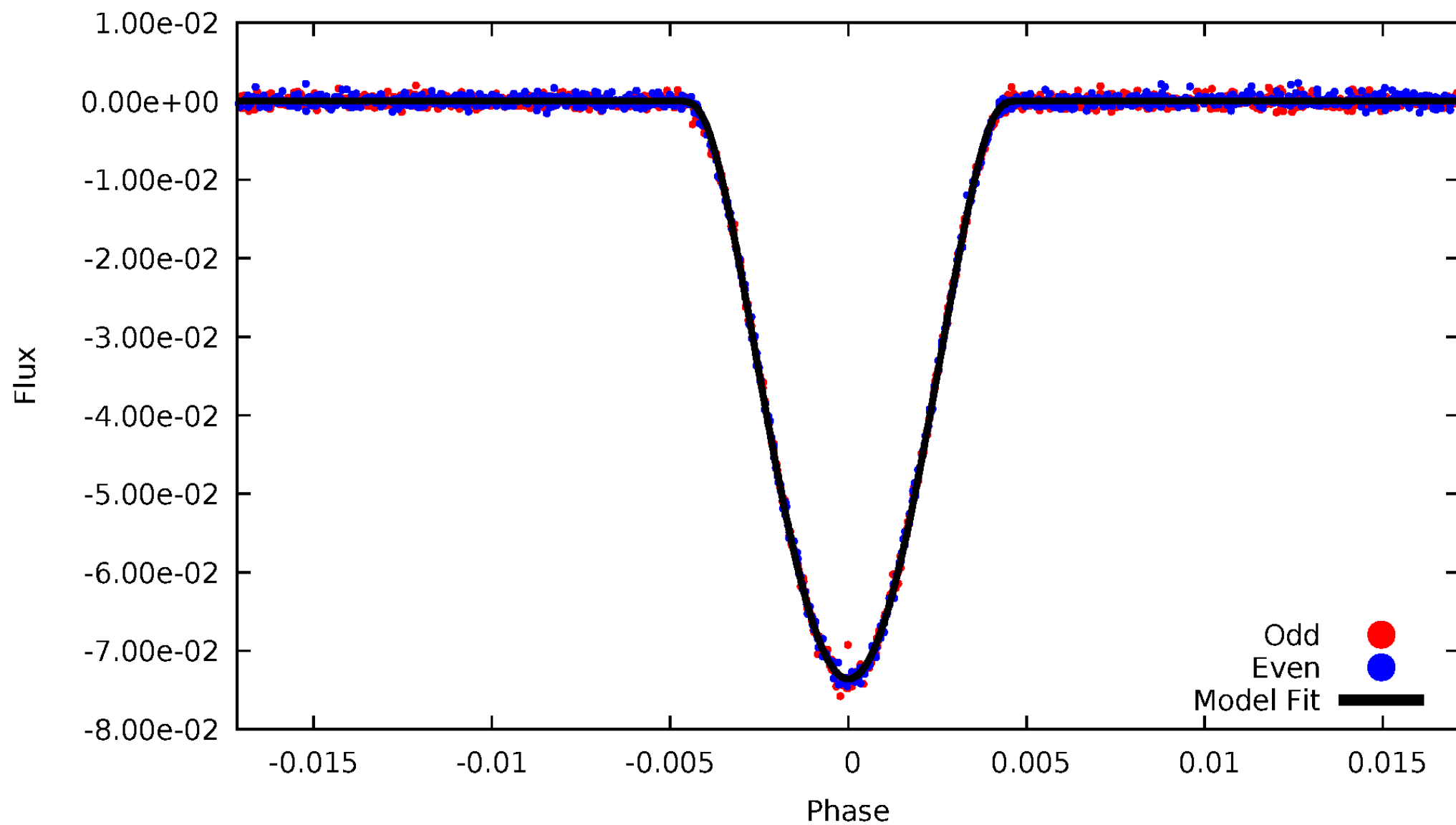


TCE 007767733-01



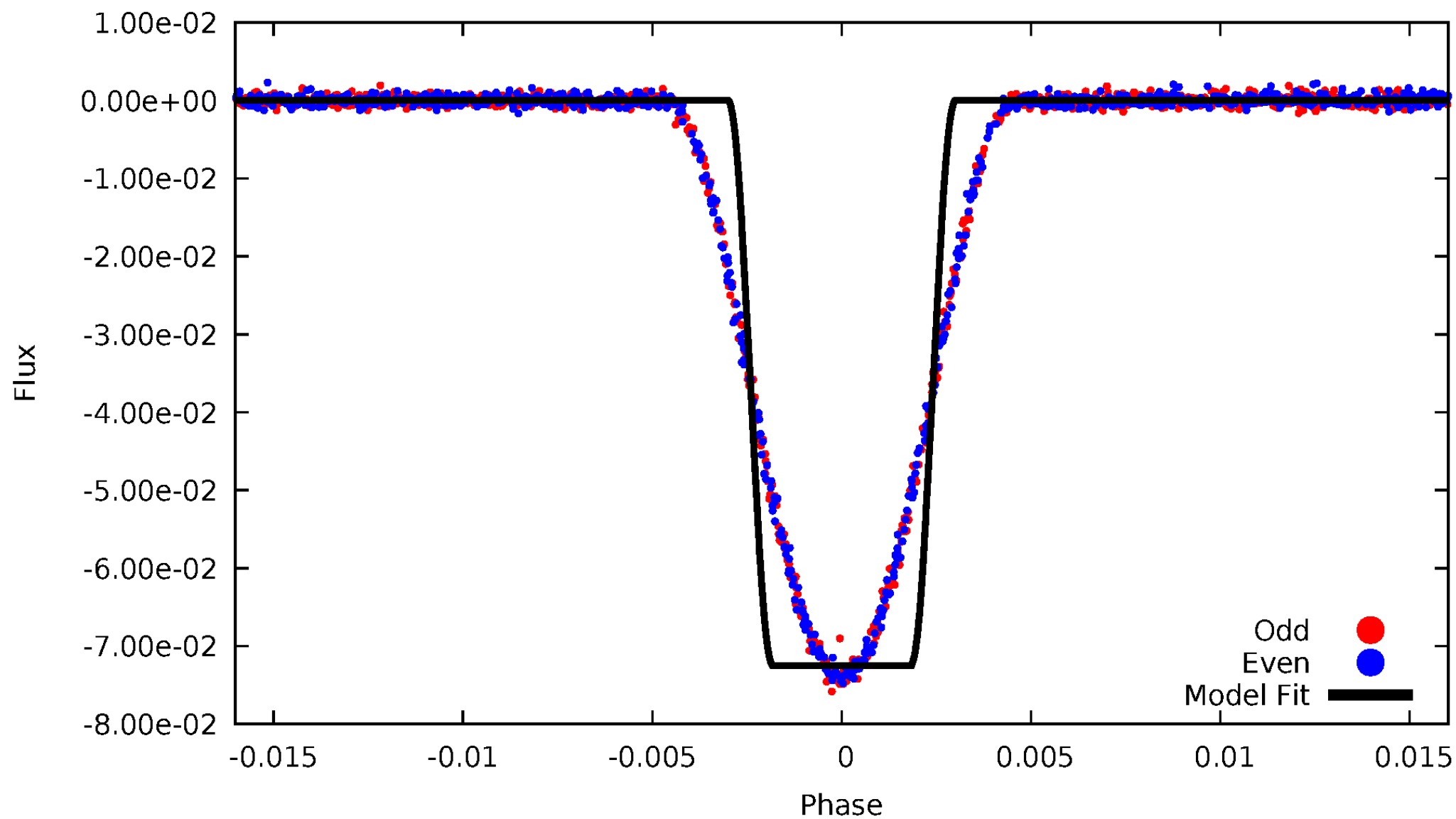
# DV Odd/Even

TCE 007767733-01



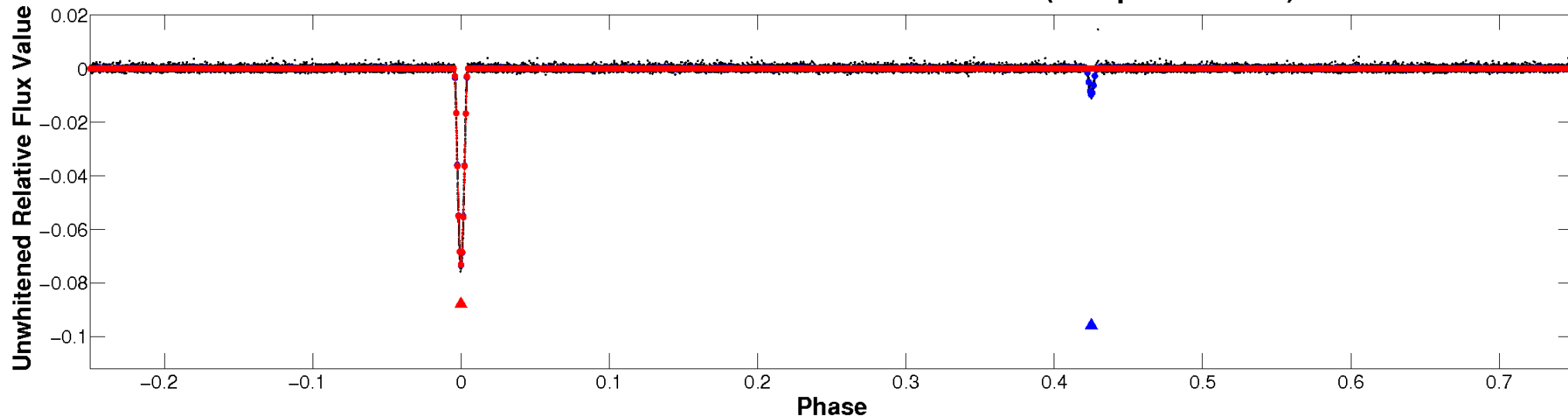
# ALT Odd/Even

TCE 007767733-01

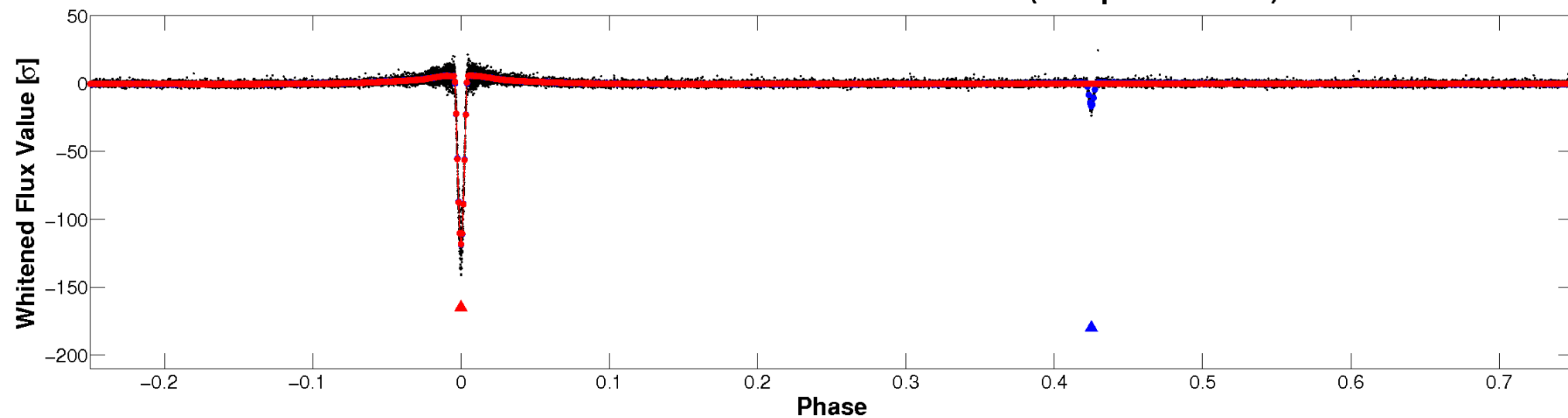


# Non-Whitened Vs. Whitened Light Curve

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

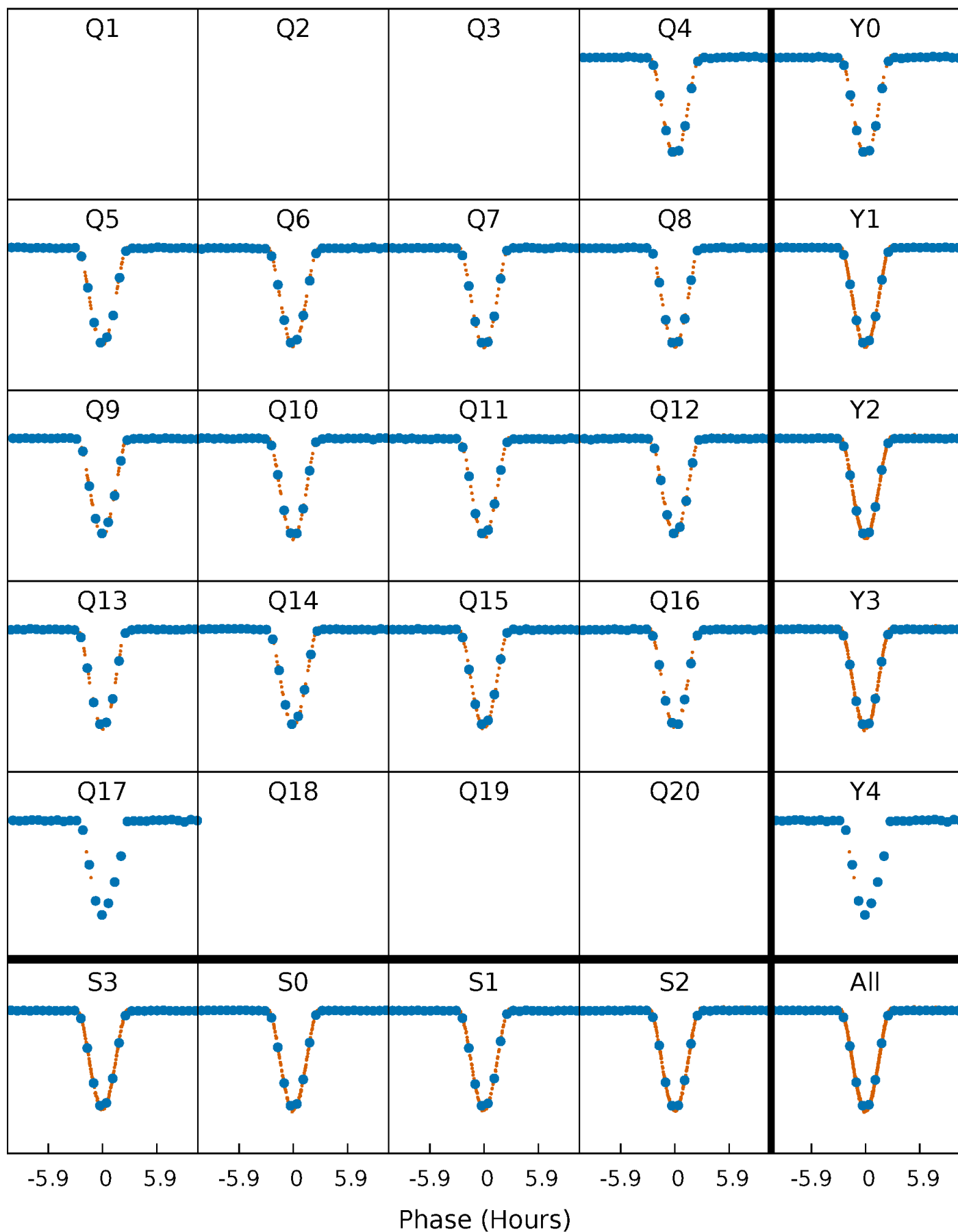


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



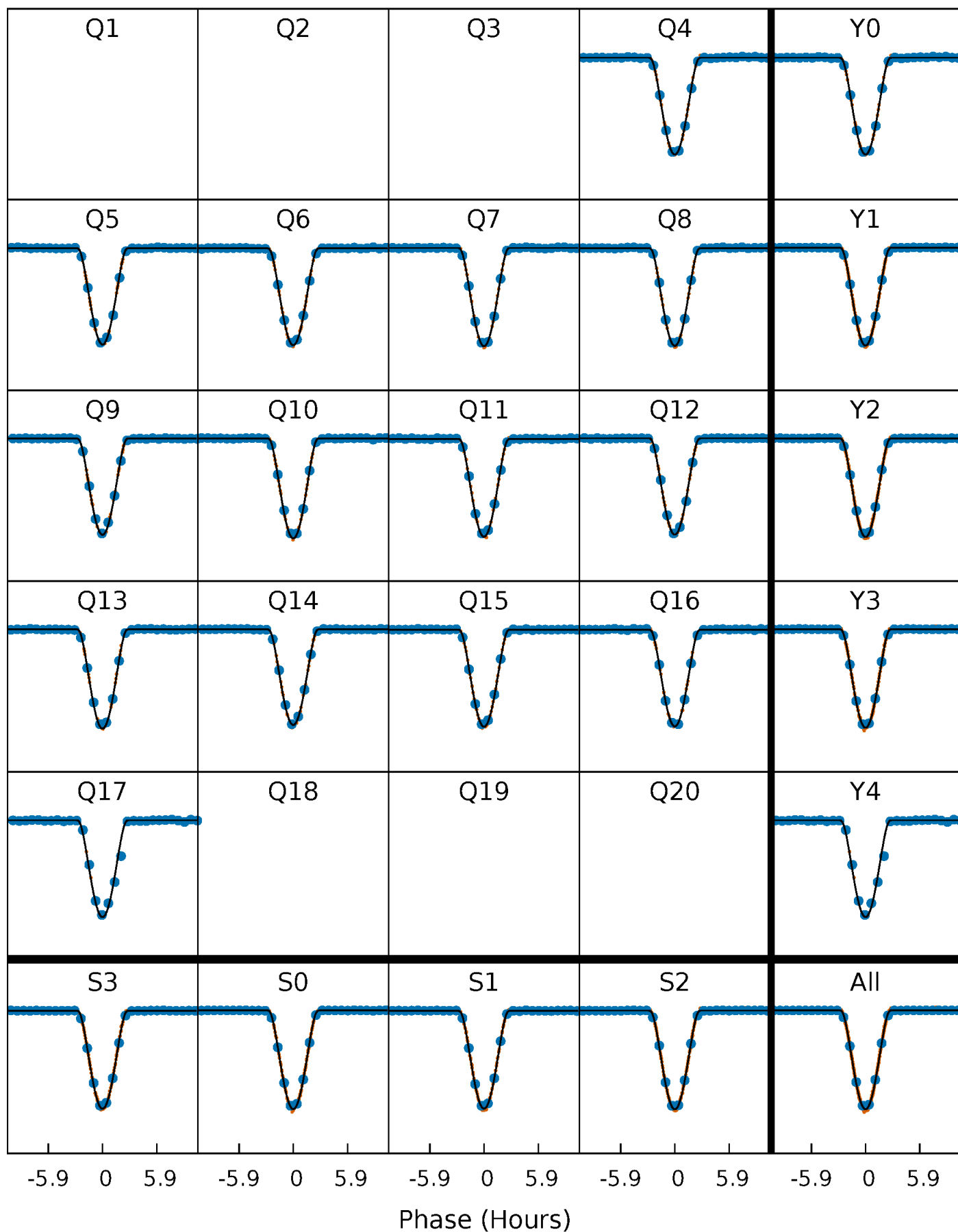
# PDC Quarter-Phased Transit Curves

TCE 007767733-01 P= 25.198303 Days  $T_0=142.224079$  (BKJD)



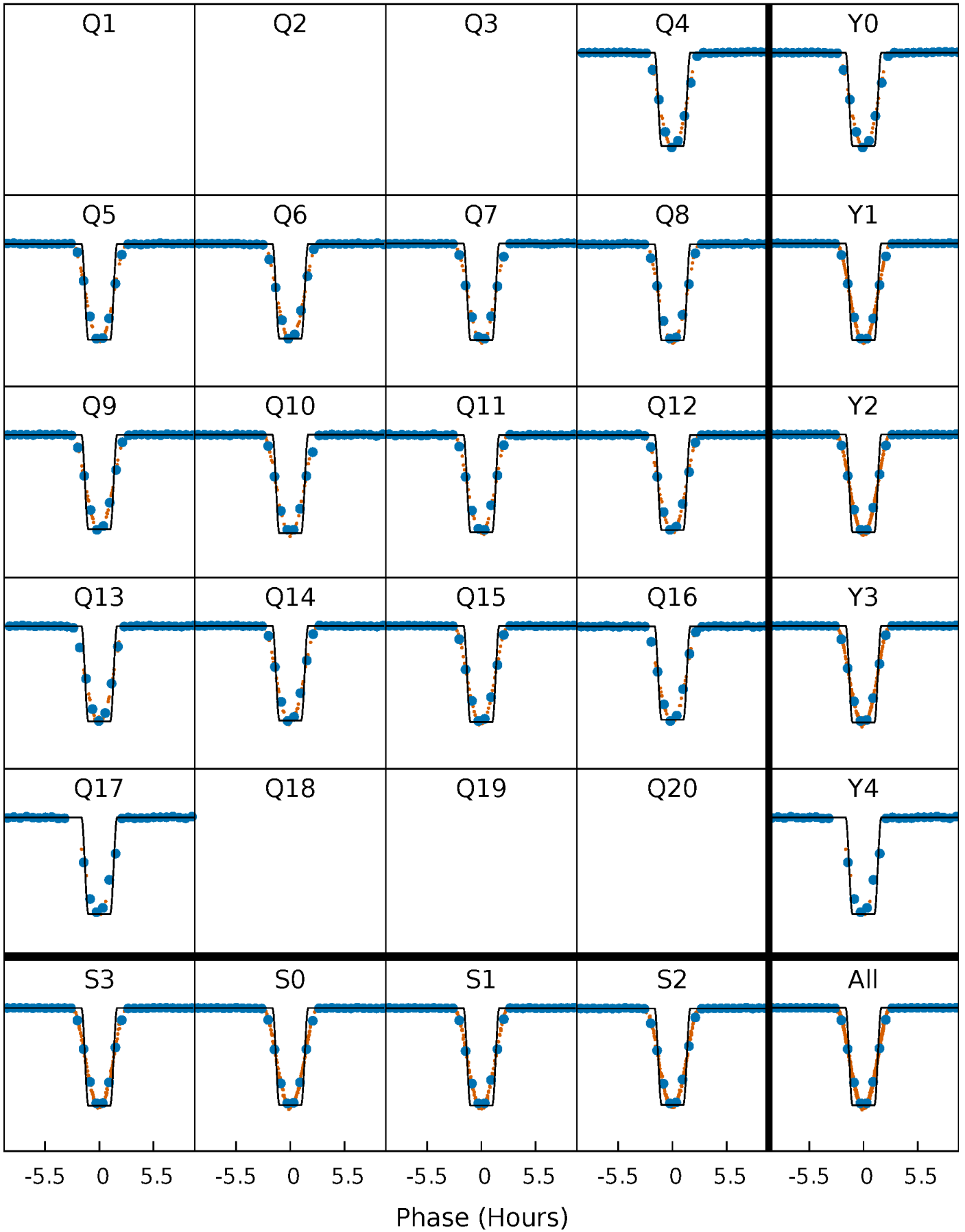
# DV Quarter-Phased Transit Curves

TCE 007767733-01 P= 25.198303 Days  $T_0=142.224079$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

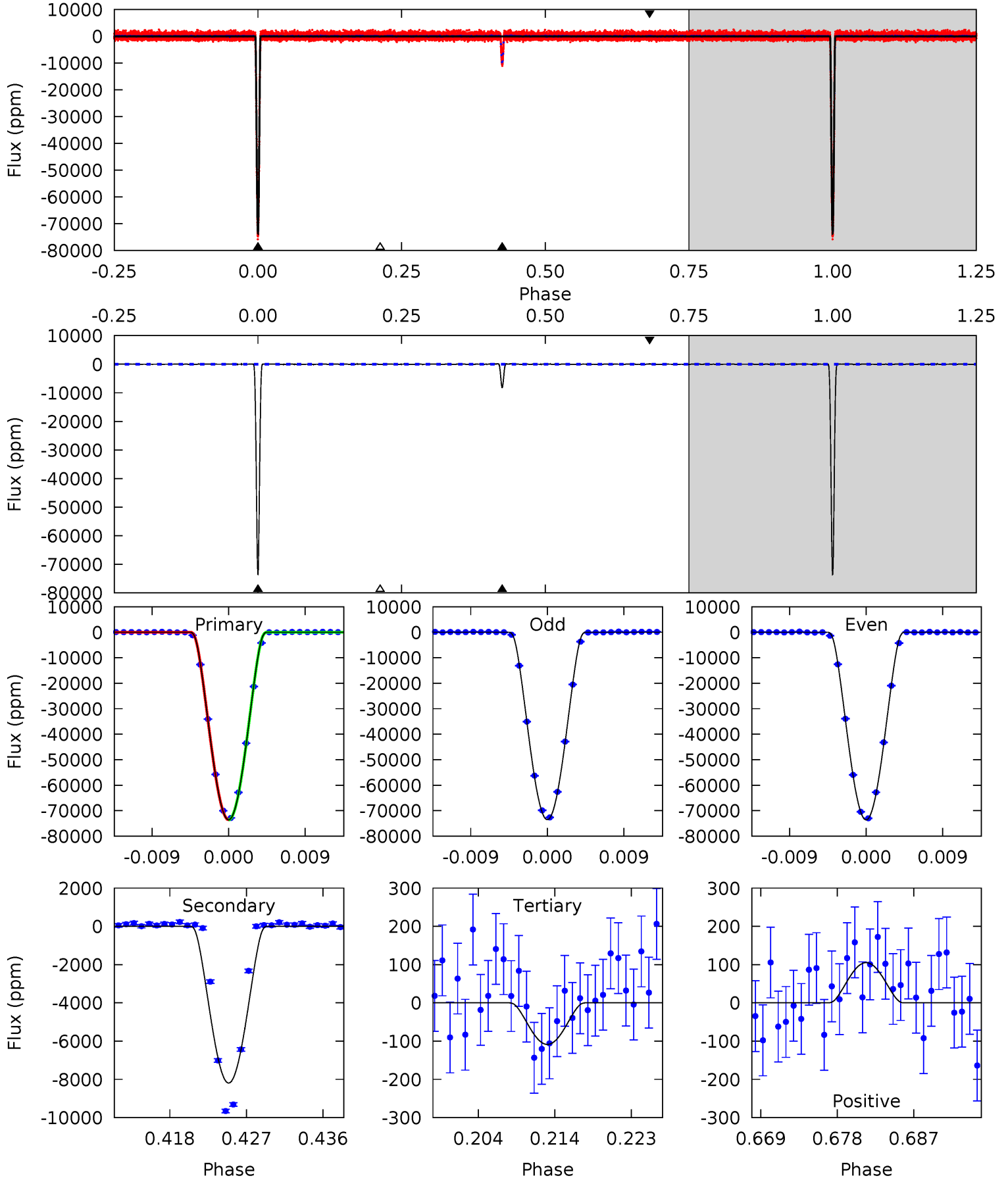
TCE 007767733-01 P= 25.198387 Days  $T_0=142.221309$  (BKJD)



# DV Model-Shift Uniqueness Test

007767733-01, P = 25.198303 Days, E = 142.224079 Days

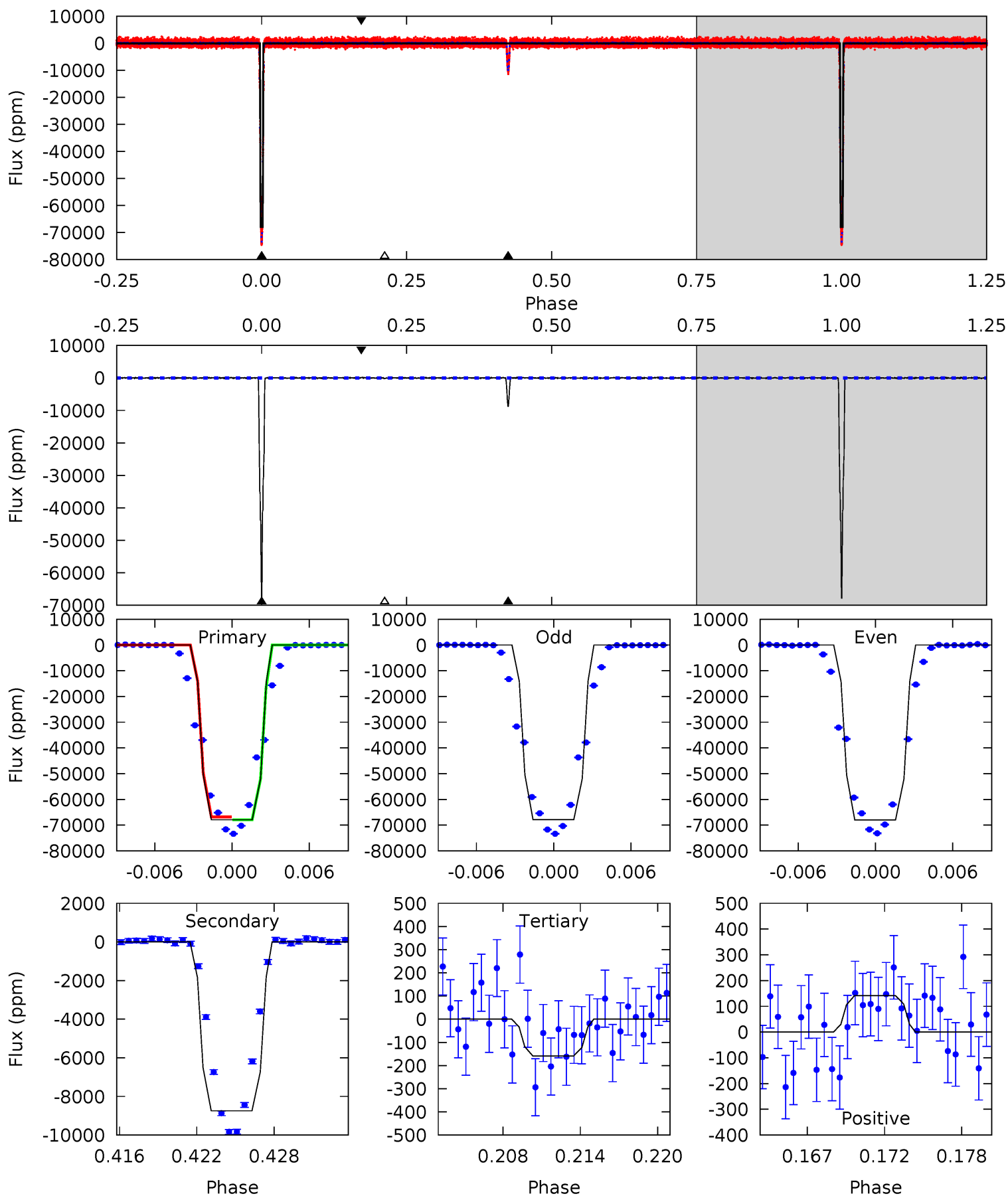
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2925	325.6	4.32	4.18	5.04	2.60	1.71	2921	2921	321.3	321.4	1.42	1.00	0.00	0



# Alt Model-Shift Uniqueness Test

007767733-01, P = 25.198387 Days, E = 142.221309 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
1715	220.7	4.01	3.57	5.13	2.75	1.09	1711	1711	216.7	217.1	1.50	1.00	0.00	0



### Stellar Parameters For KIC 007767733

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5955^{+187}_{-208}$	$4.534^{+0.039}_{-0.221}$	$-0.240^{+0.300}_{-0.300}$	$0.883^{+0.271}_{-0.090}$	$0.972^{+0.115}_{-0.128}$	$1.987^{+0.427}_{-1.079}$
	+3%/-3%	+1%/-5%	+125%/-125%	+31%/-10%	+12%/-13%	+22%/-54%
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 007767733-01 / KOI 3322.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-8189 \pm 25$	$37.25^{+6.48}_{-3.78}$	$873^{+63}_{-46}$	$3457^{+91}_{-82}$	$89^{+19}_{-22}$
Alt.	$-8741 \pm 40$	$27.04^{+4.99}_{-2.65}$	$868^{+72}_{-44}$	$3871^{+128}_{-120}$	$182^{+35}_{-50}$

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

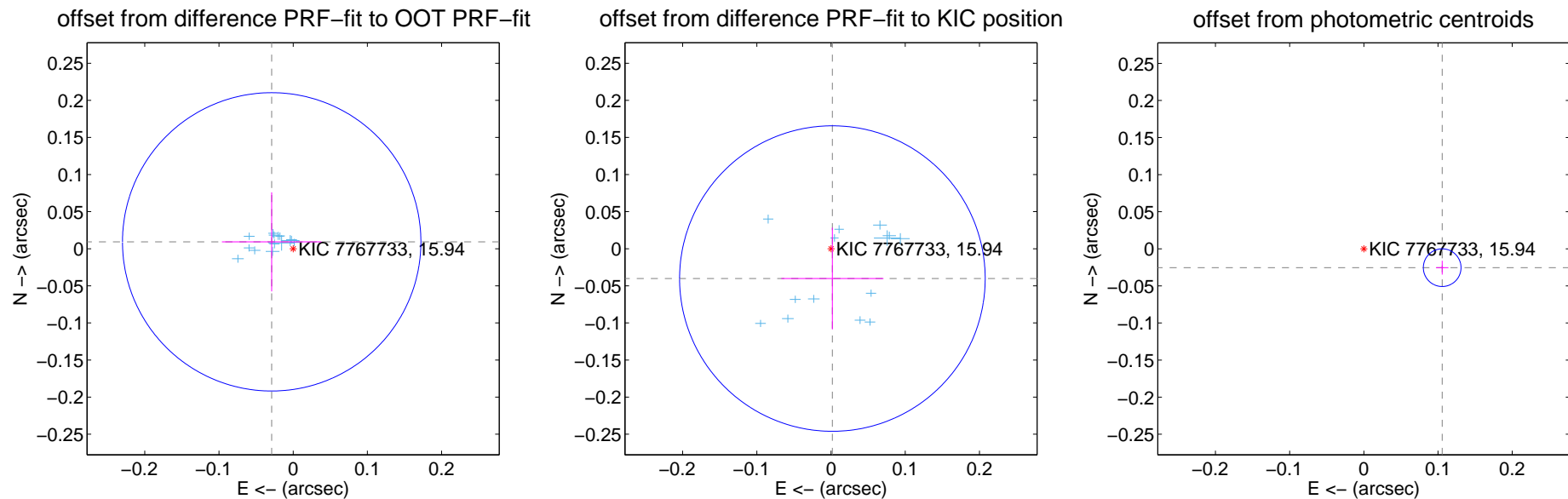
## DV Centroid Data

Supplemental centroid analysis for 007767733-01. Kepler magnitude: 15.94. Transit SNR 1575.88

There are 14 quarters with good PRF difference image offsets

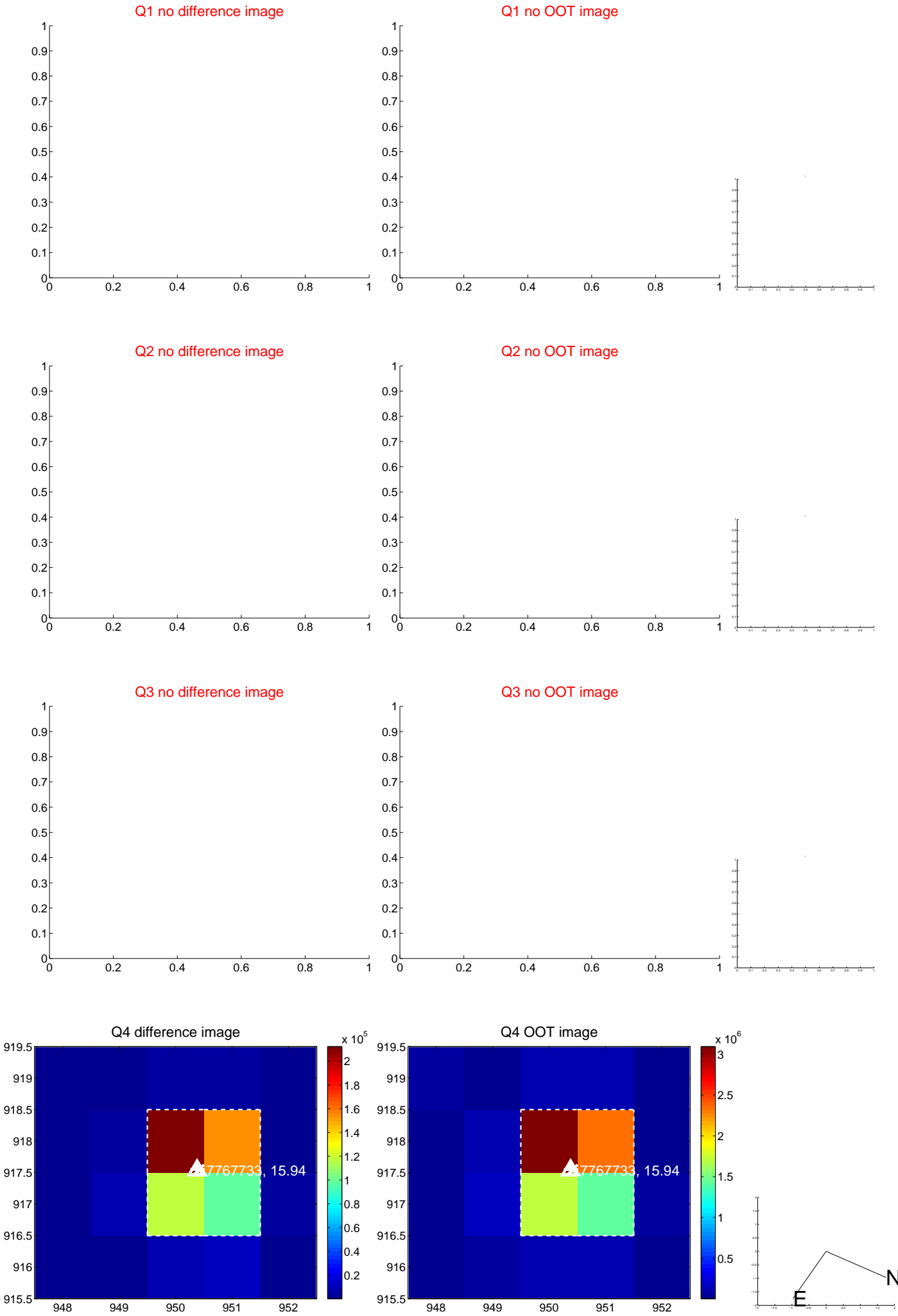
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.030 \pm 0.067$	0.45	$0.029 \pm 0.067$	$0.009 \pm 0.067$
PRF-fit source offset from KIC position	$0.040 \pm 0.069$	0.59	$-0.002 \pm 0.069$	$-0.040 \pm 0.069$
photometric centroid source offset	$0.11 \pm 0.01$	12.83	$-0.11 \pm 0.01$	$-0.03 \pm 0.01$

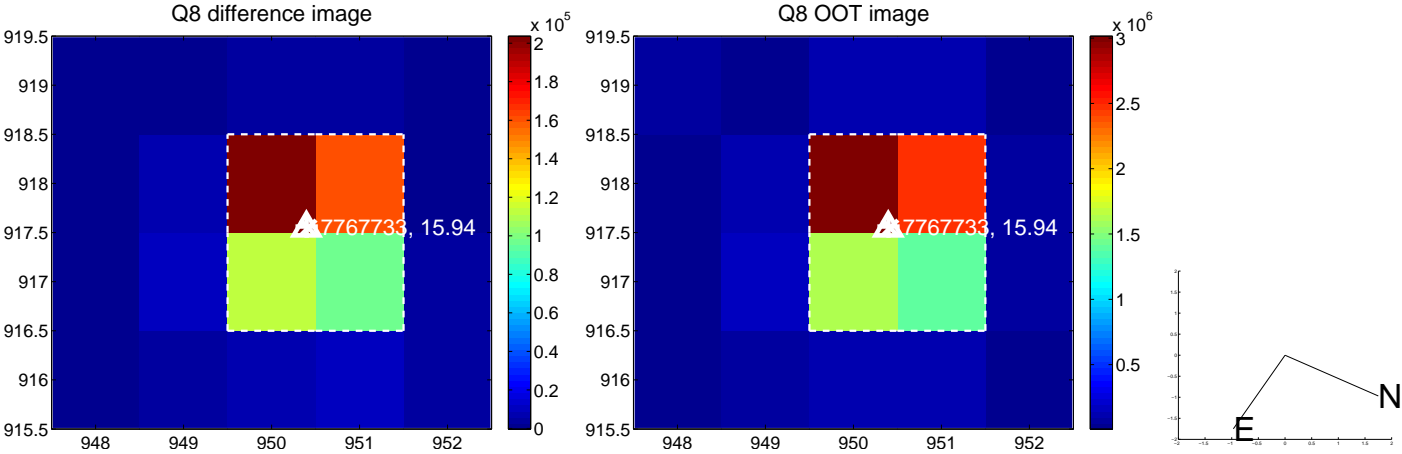
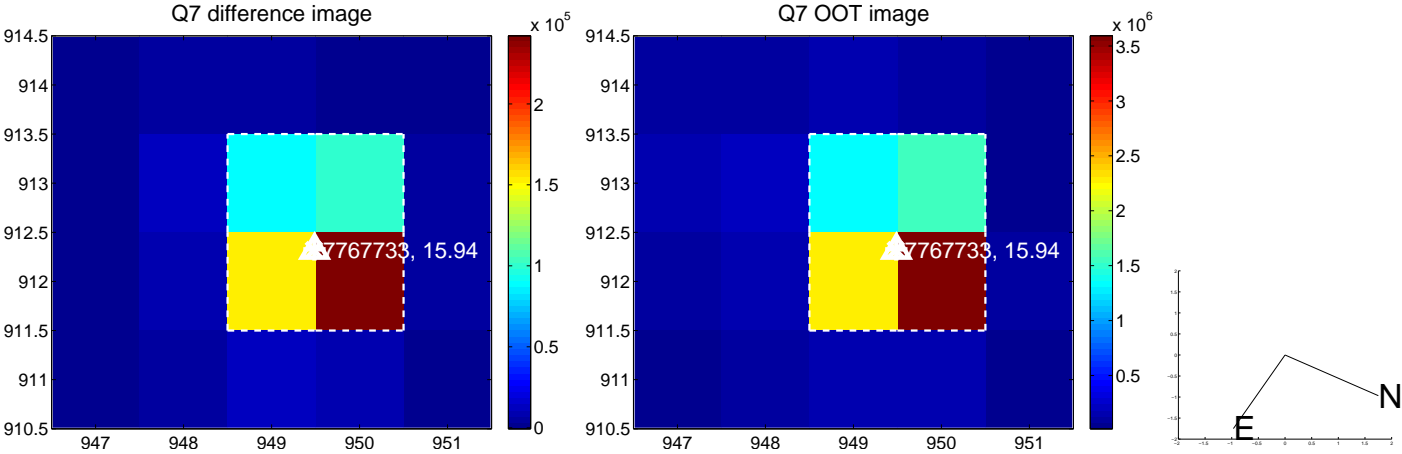
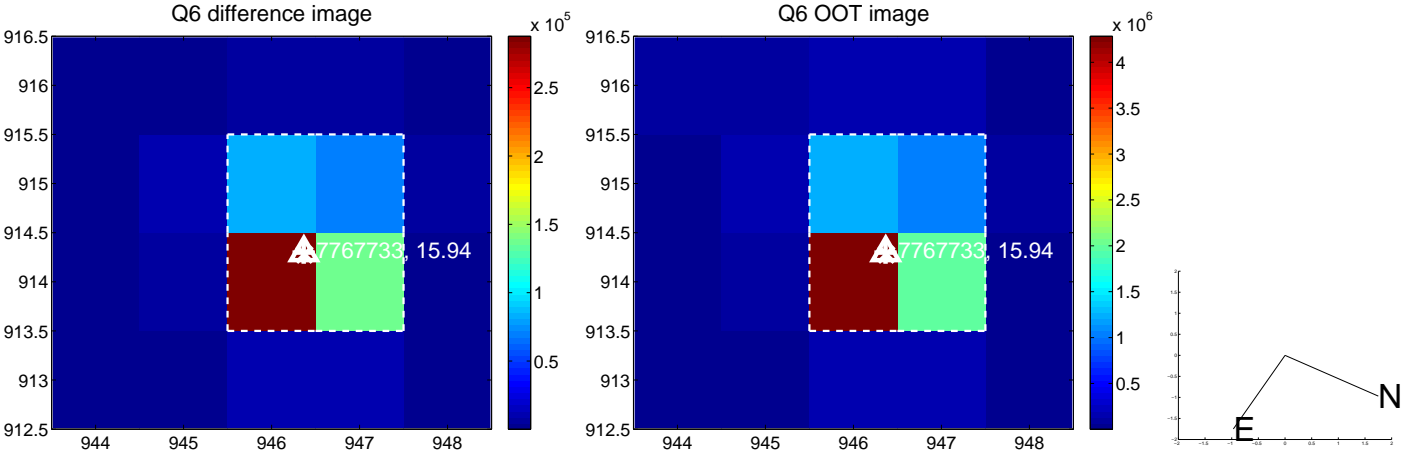
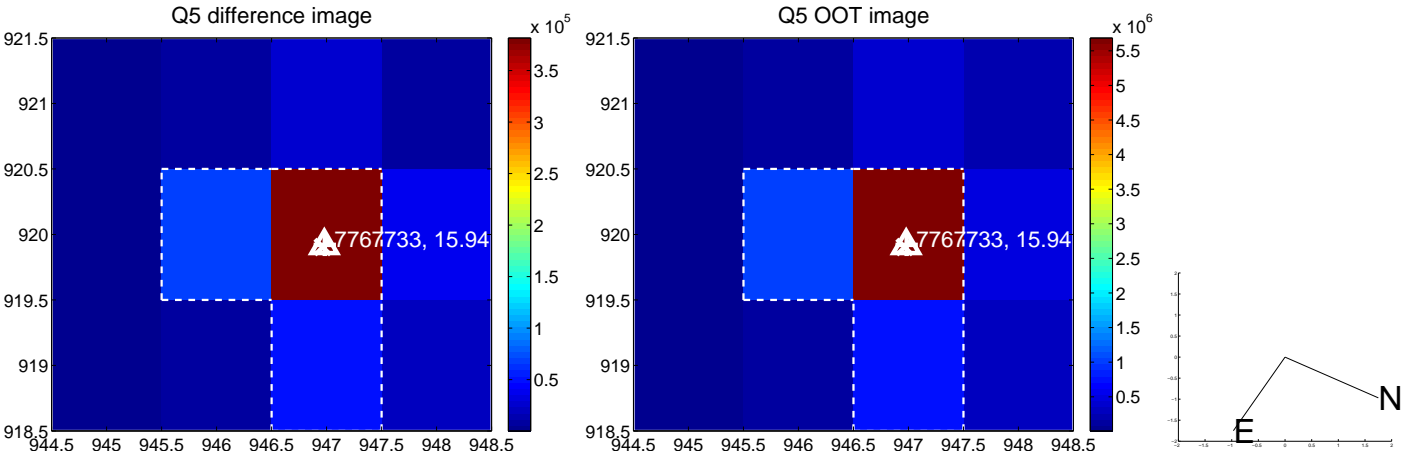


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

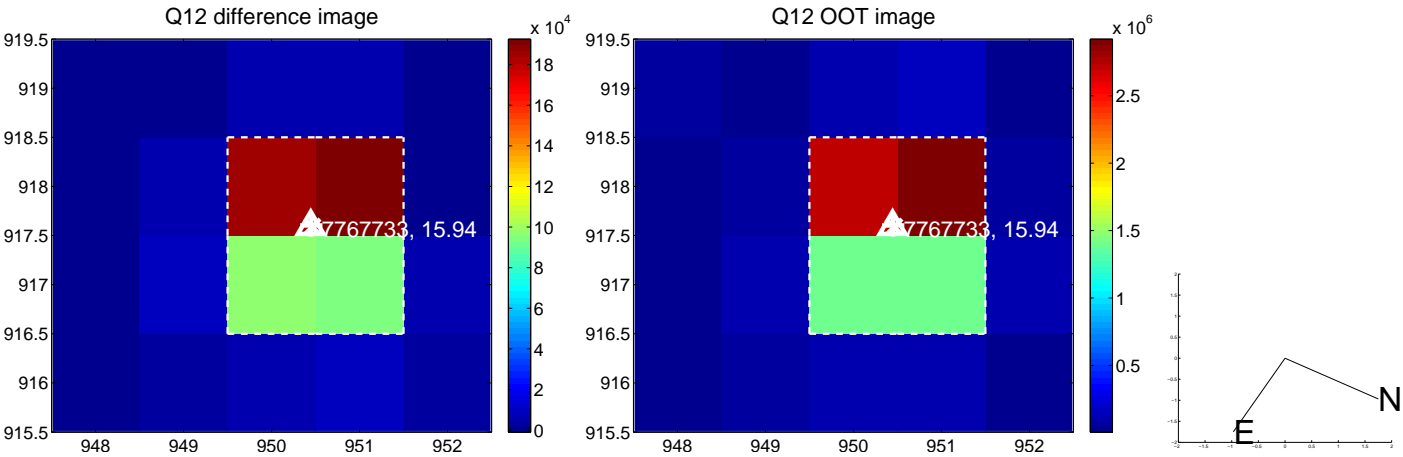
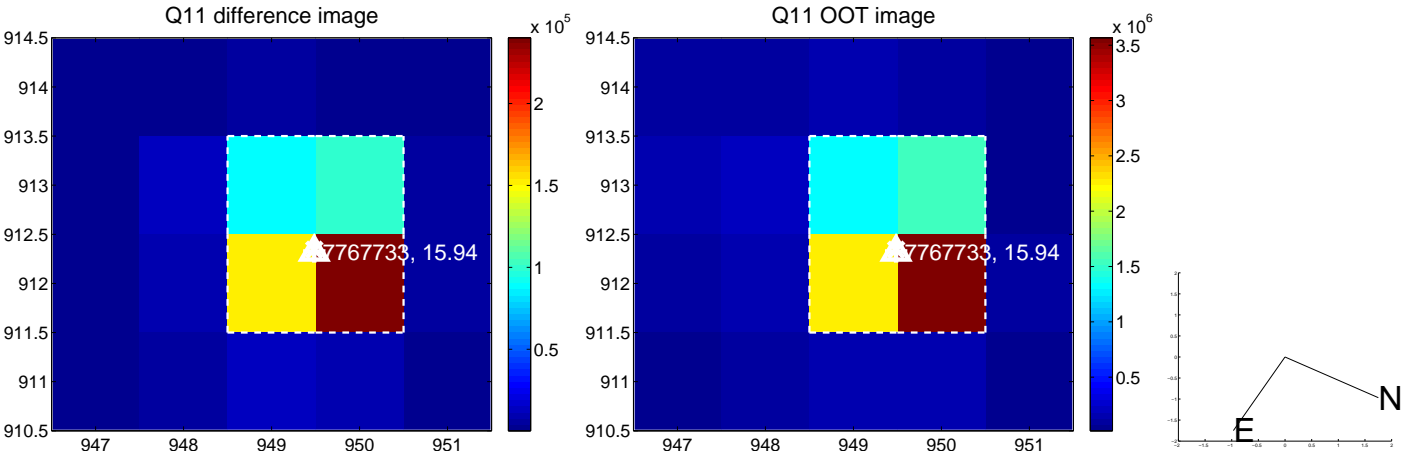
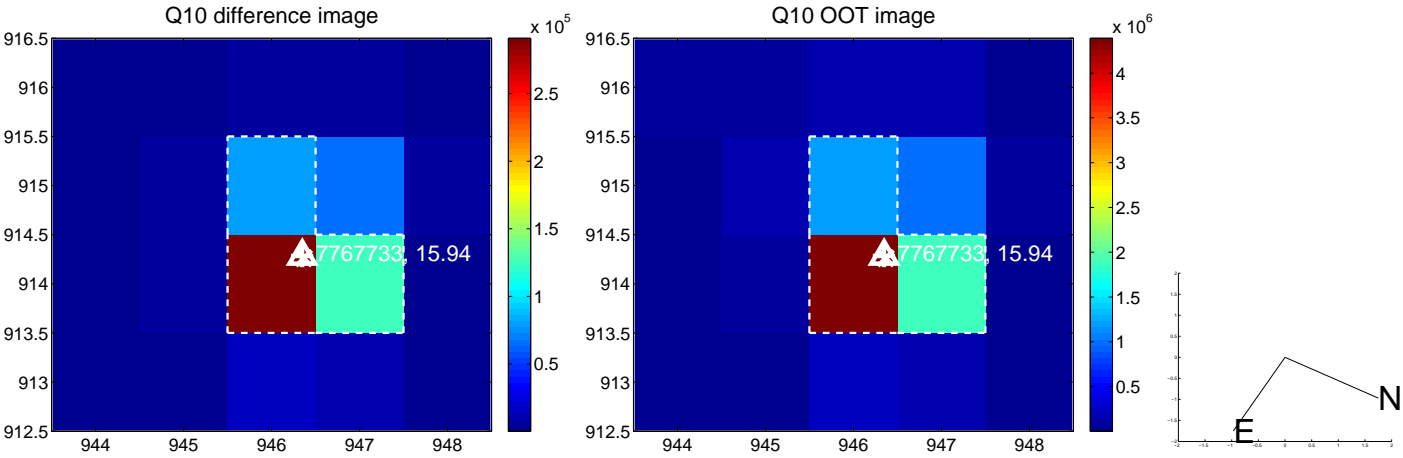
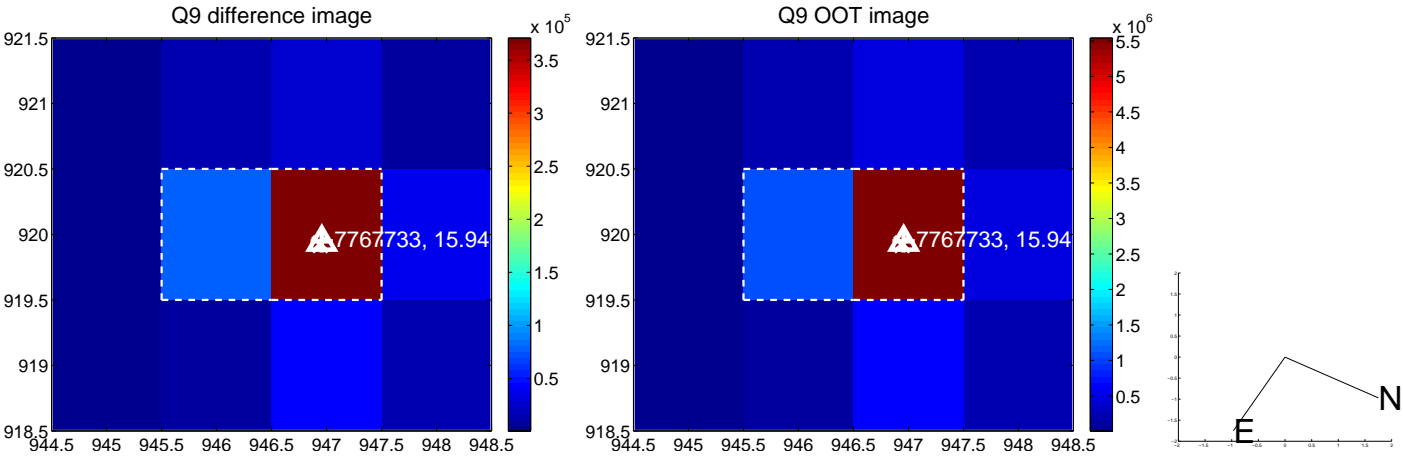
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



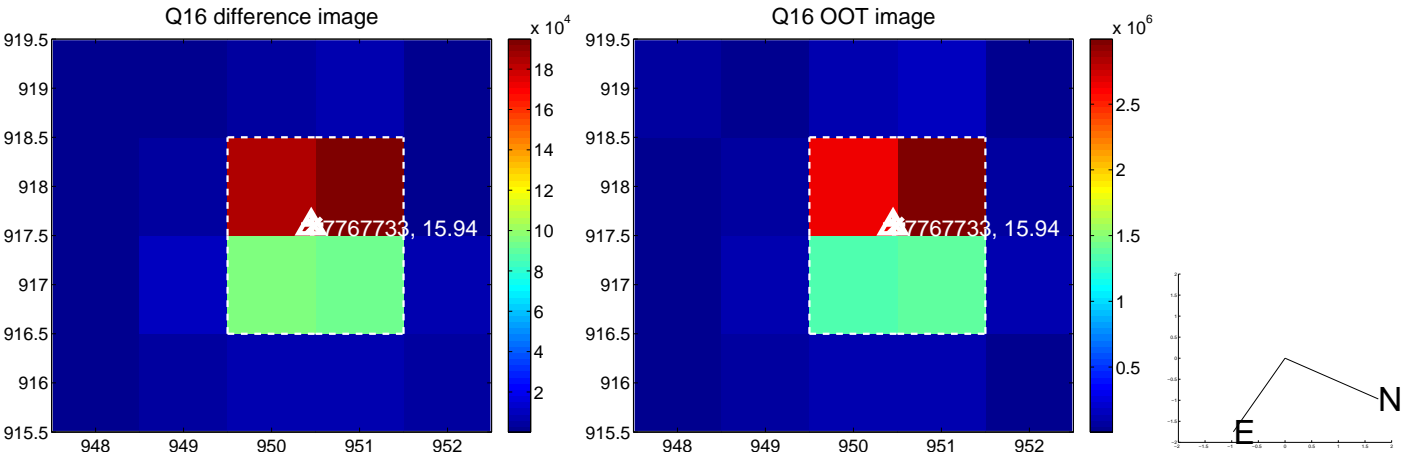
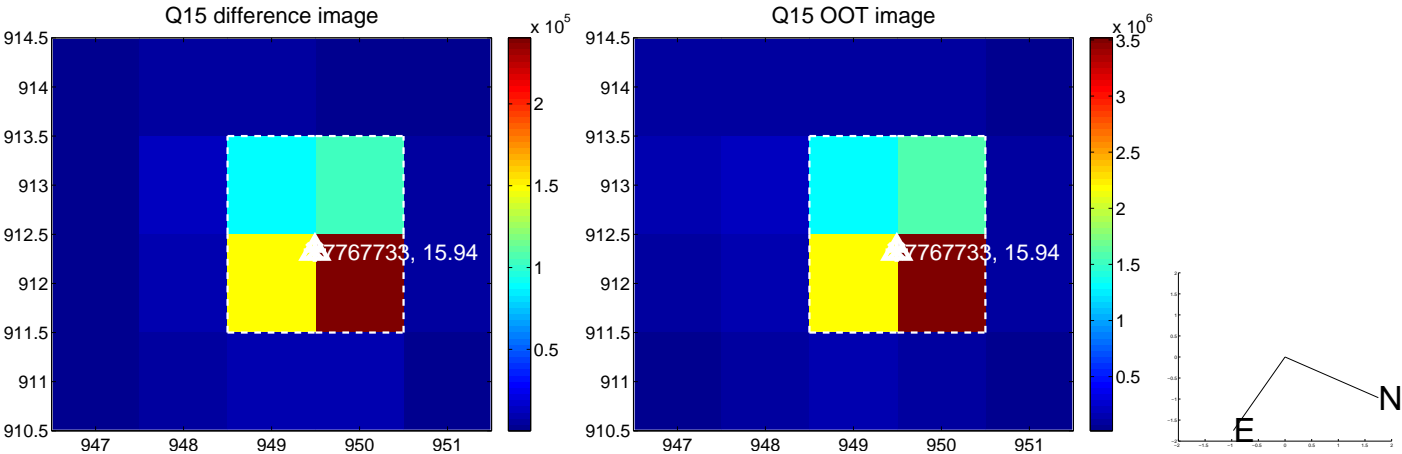
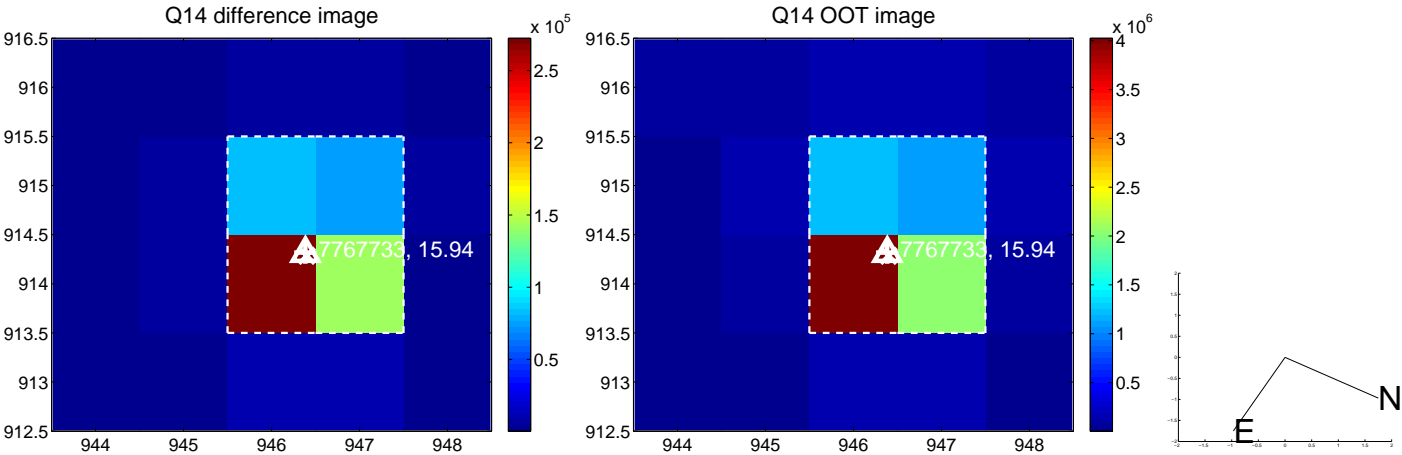
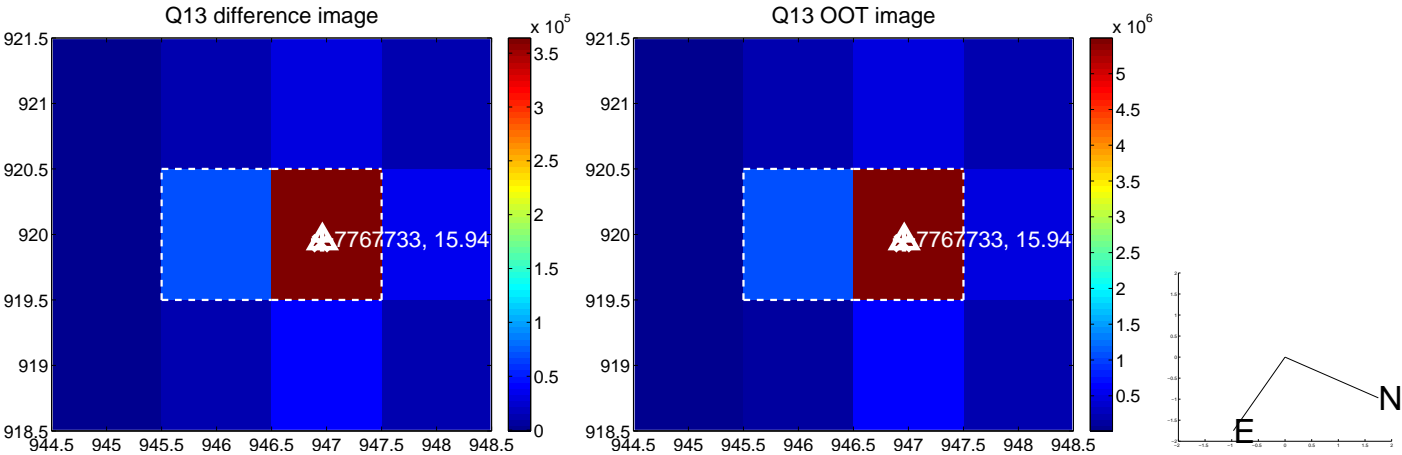
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



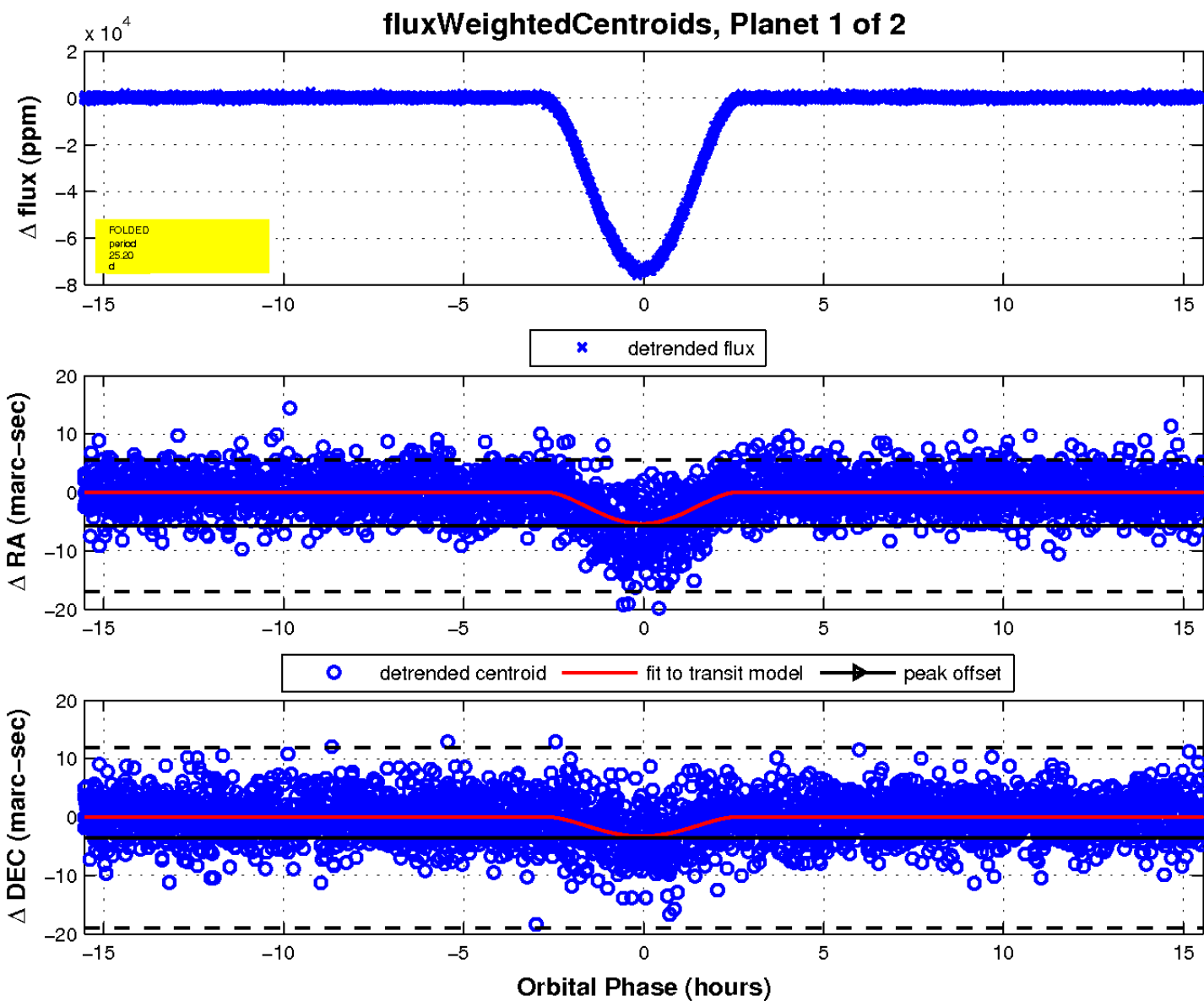
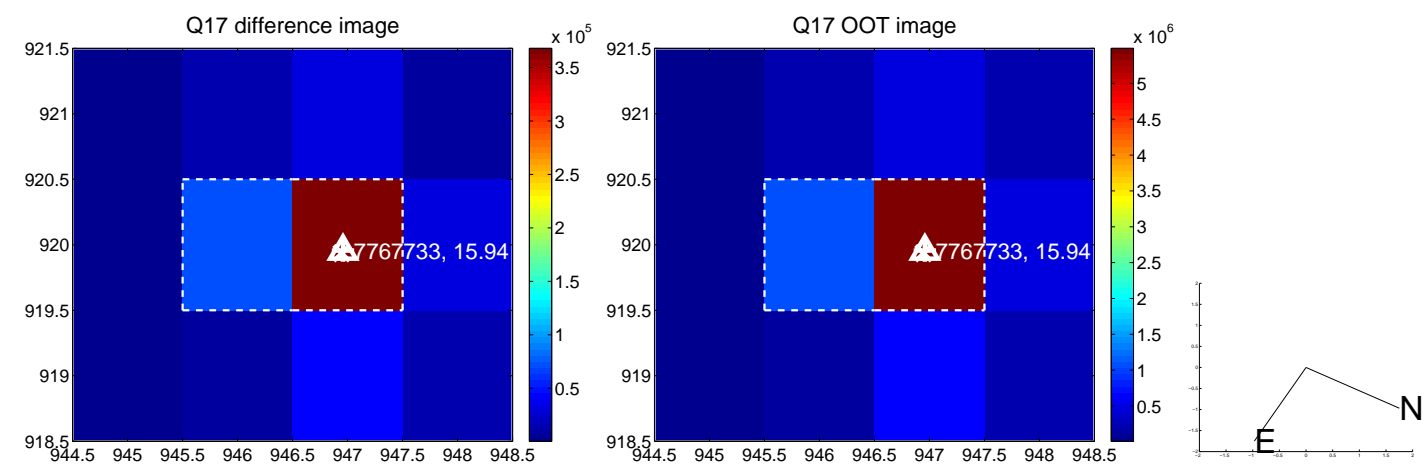
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

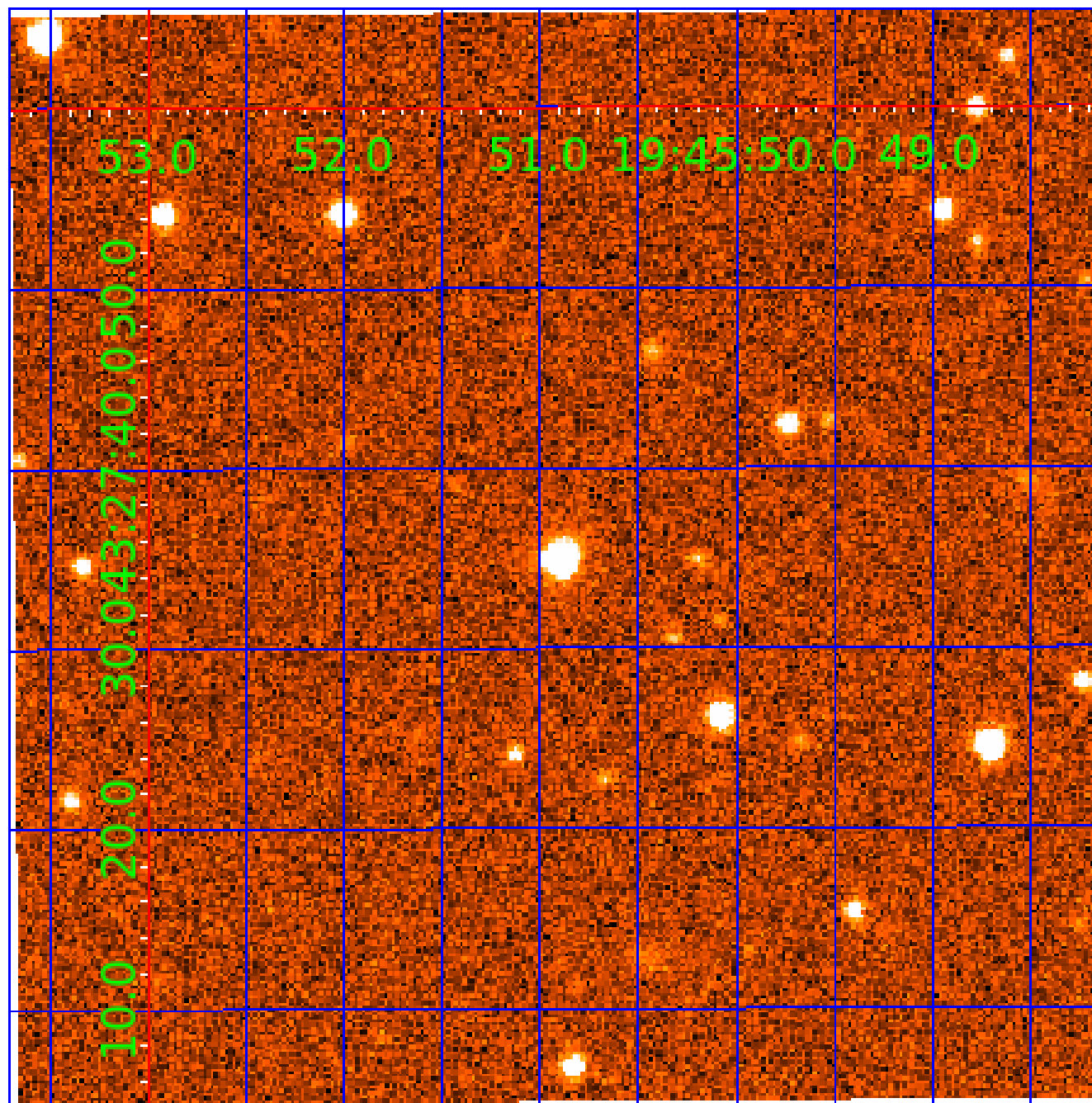


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007767733

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007767733-01	OBS	3322.01	25.198303	142.224079	73594.3	5.185	1690.8	1575.9	0.88	5955	35.40	31.62
007767733-02	OBS	No	25.198320	152.933832	10090.7	3.702	197.8	199.0	0.88	5955	13.85	31.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007767733-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
007767733-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

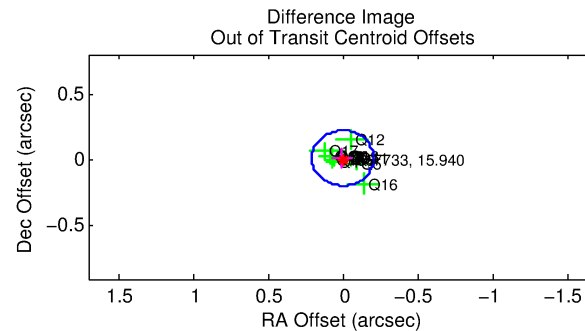
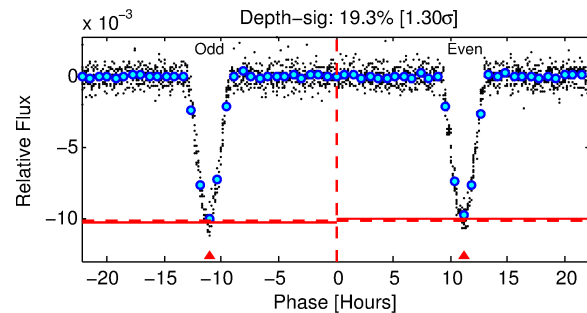
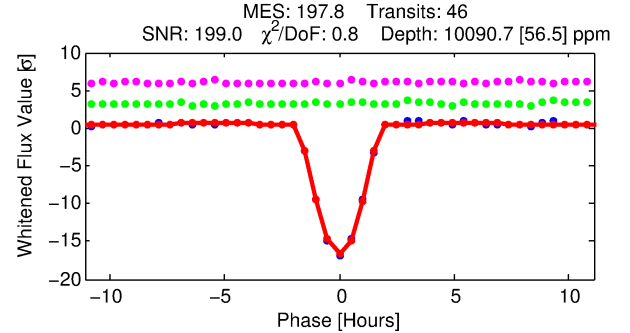
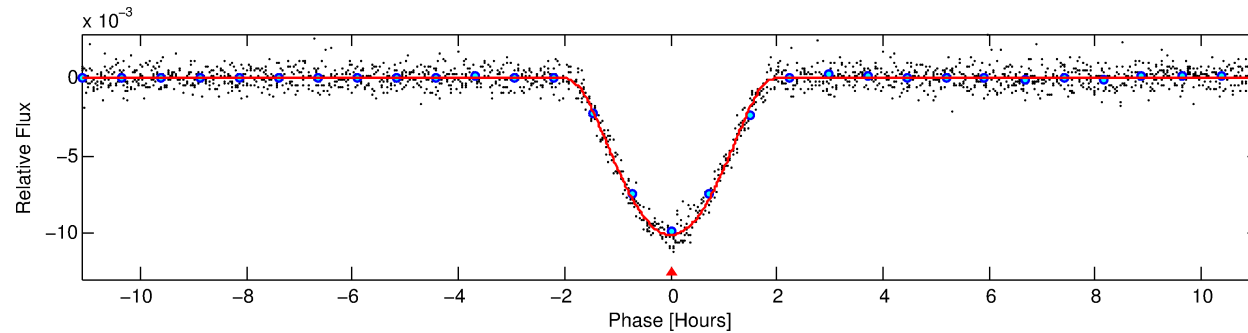
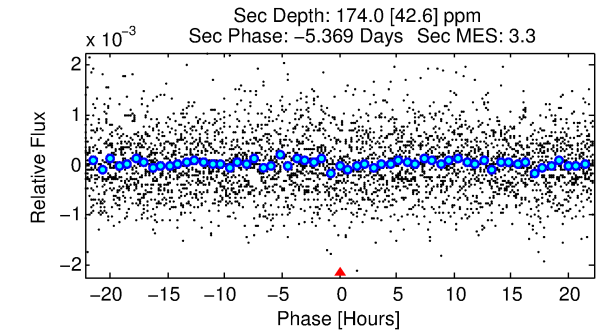
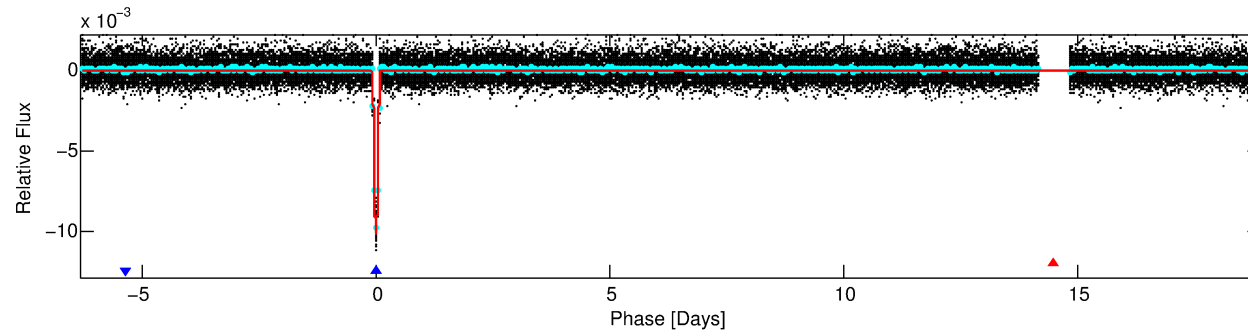
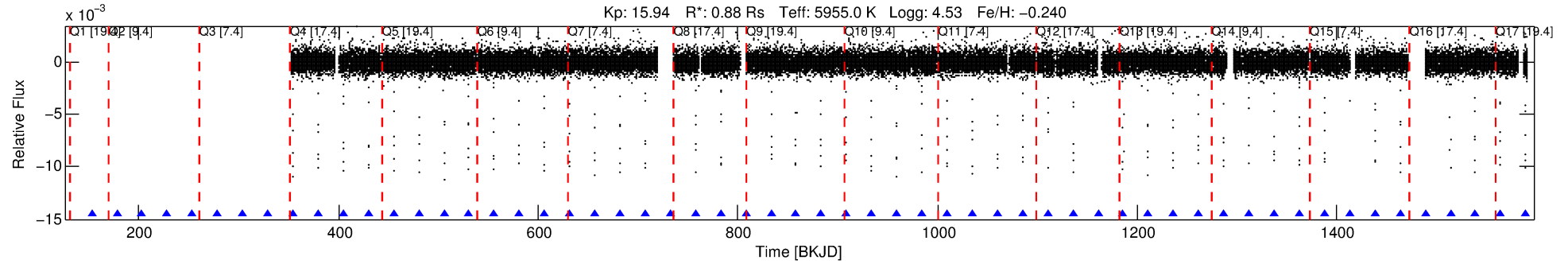
## Ephemeris Match Information For 007767733-02

No Significant Match Found

# DV One-Page Summary

KIC: 7767733 Candidate: 2 of 2 Period: 25.198 d

KOI: K03322 Corr: No Ephemeris Match



## DV Fit Results:

Period = 25.19832 [0.00002] d  
Epoch = 152.9338 [0.0005] BKJD  
Rp/R\* = 0.1438 [0.0237]  
a/R\* = 31.72 [1.10]  
b = 0.97 [0.04]  
Seff = 31.62 [13.28]  
Teff = 605 [64] K  
Rp = 13.85 [4.83] Re  
a = 0.1667 [0.0443] AU  
Ag = 13.86 [7.91] [1.63σ]  
Teffp = 1804 [196] K [5.83σ]

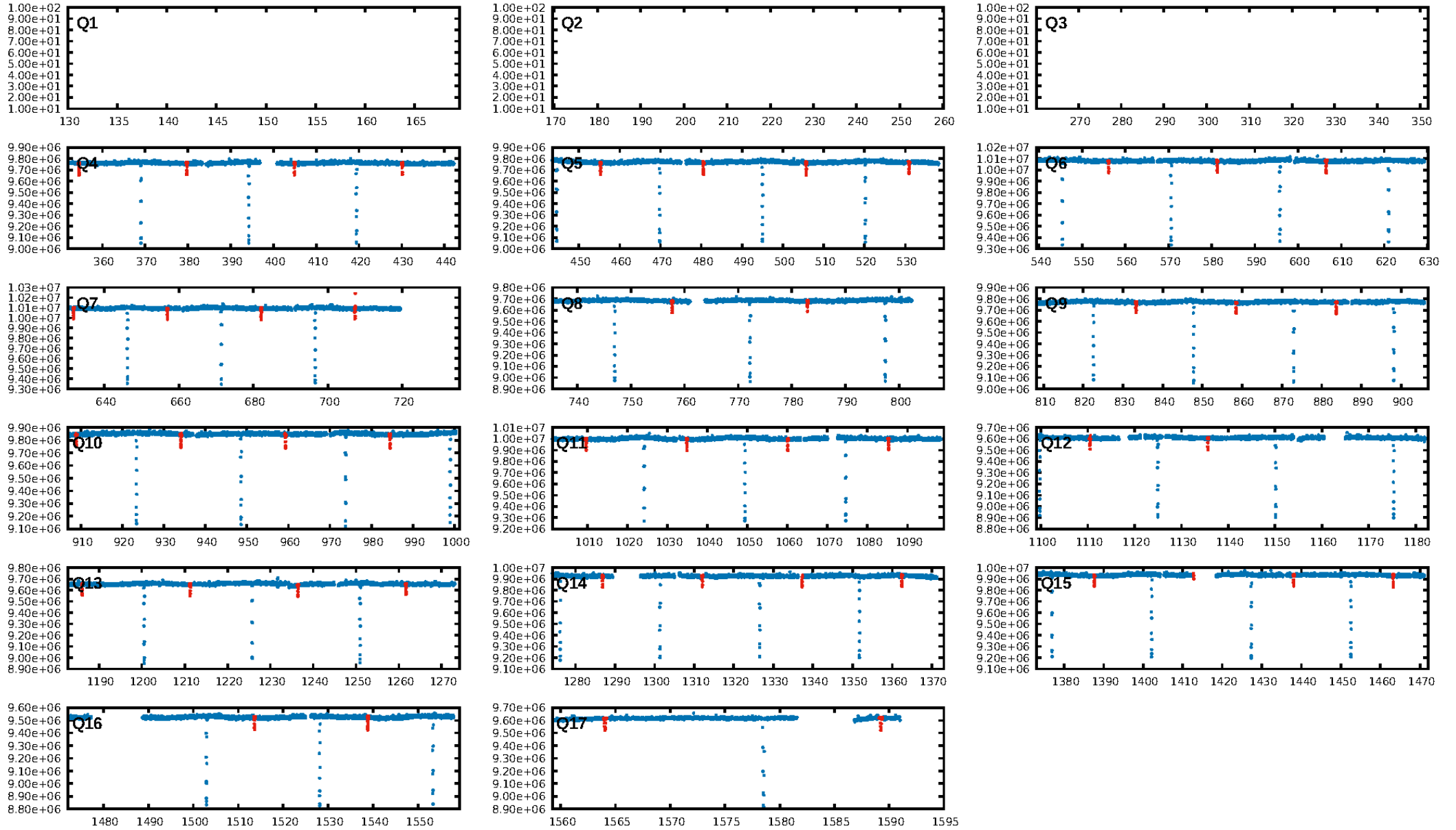
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 91.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [44/44]  
GhostDiagnostic-chr: 6.289  
Centroid-sig: 0.0%  
Centroid-so: 0.229 arcsec [3.03σ]  
OotOffset-rm: 0.015 arcsec [0.22σ]  
KicOffset-rm: 0.036 arcsec [0.50σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
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DiffImageOverlap-fno: 1.00 [14/14]

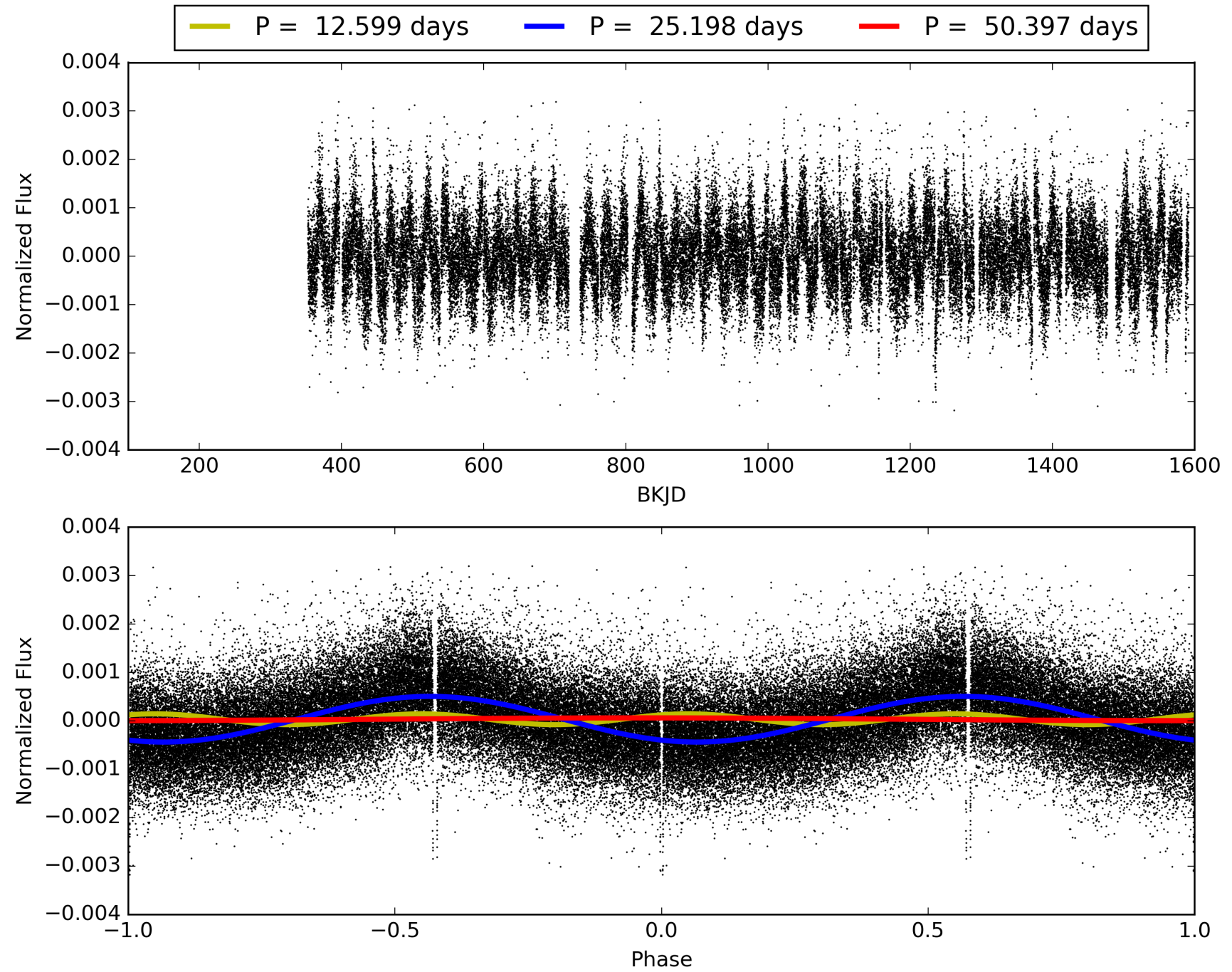
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:52:56 Z

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

# TCE 007767733-02, PDC Light Curves

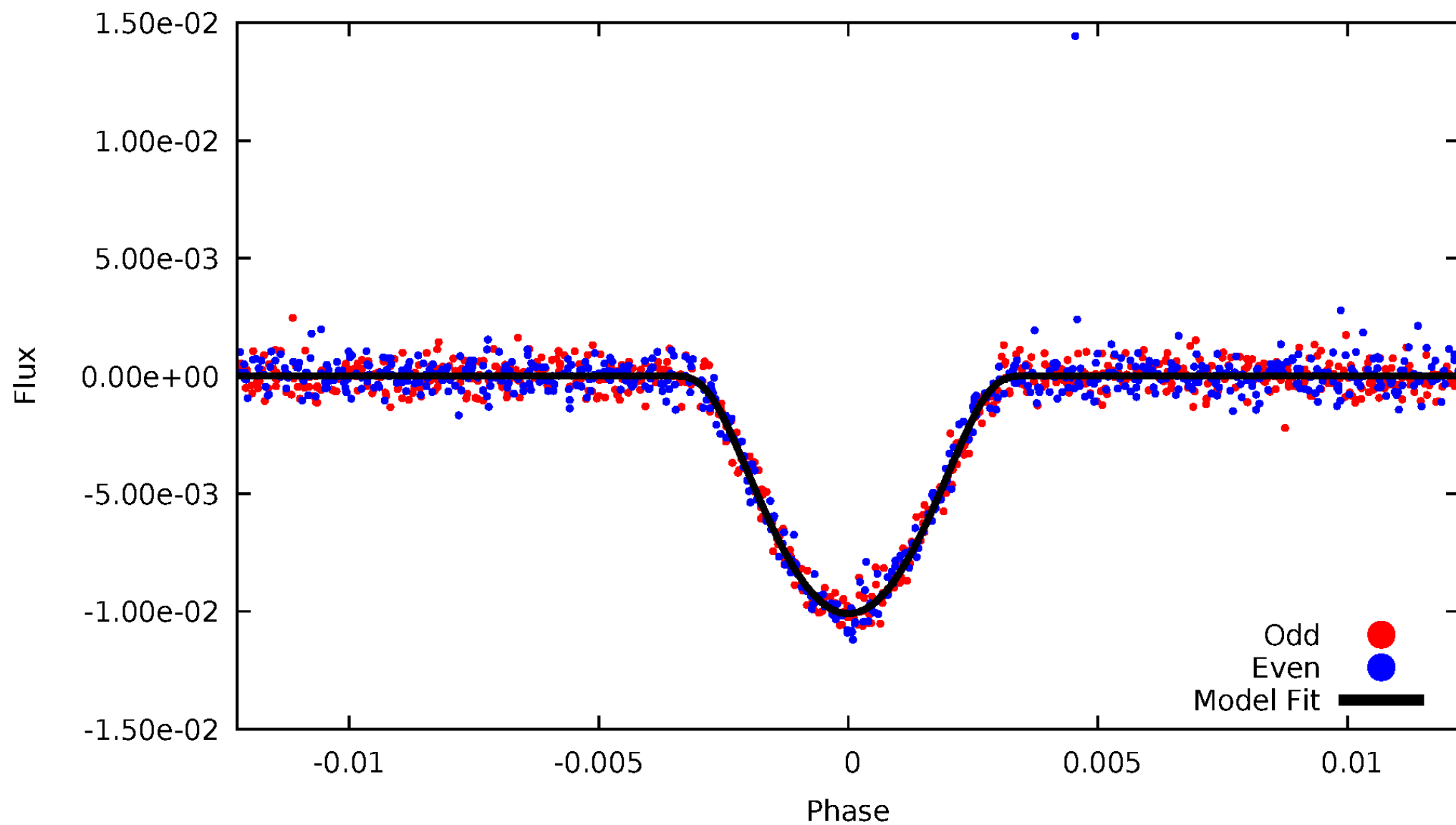


# TCE 007767733-02



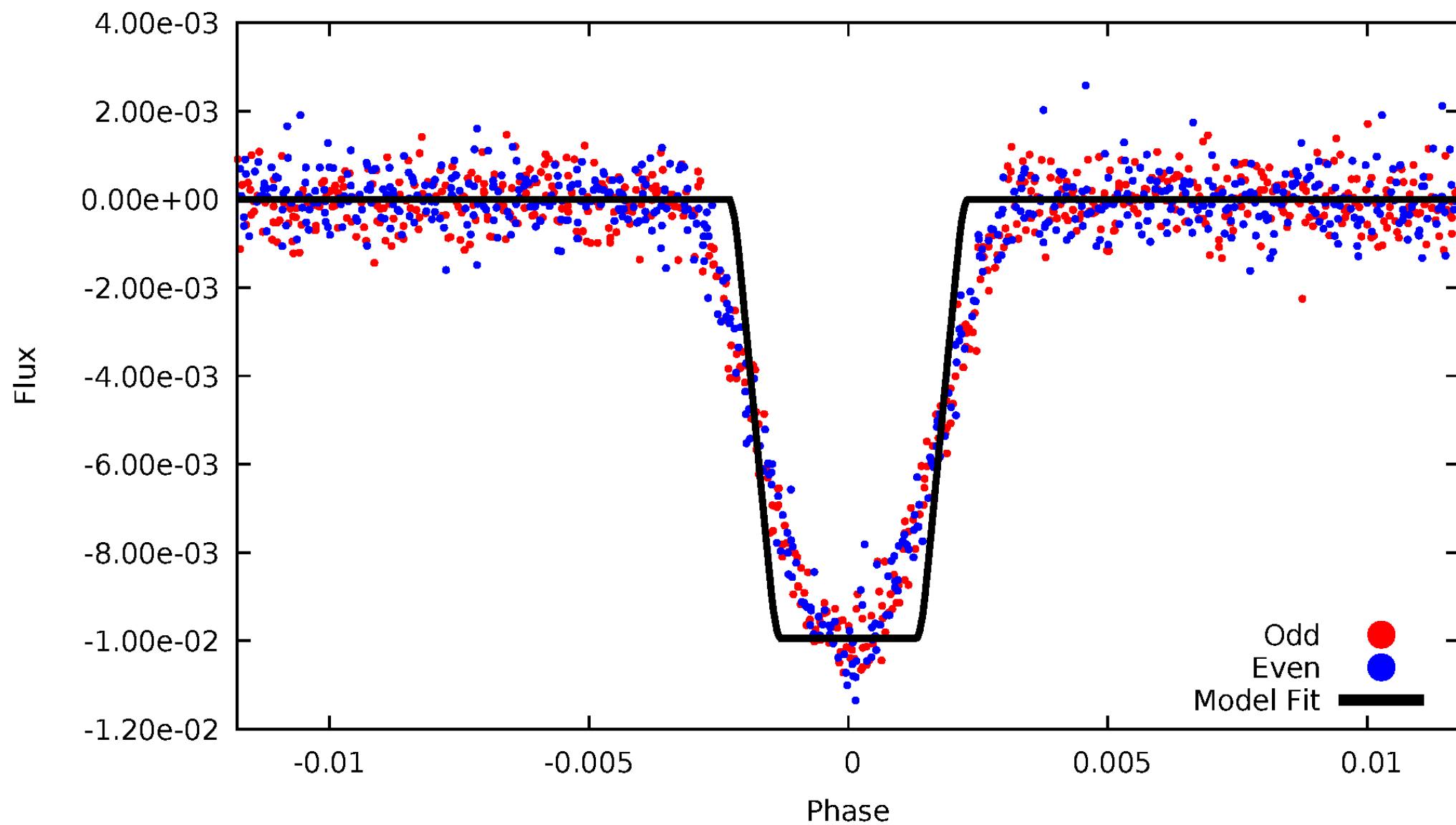
# DV Odd/Even

TCE 007767733-02



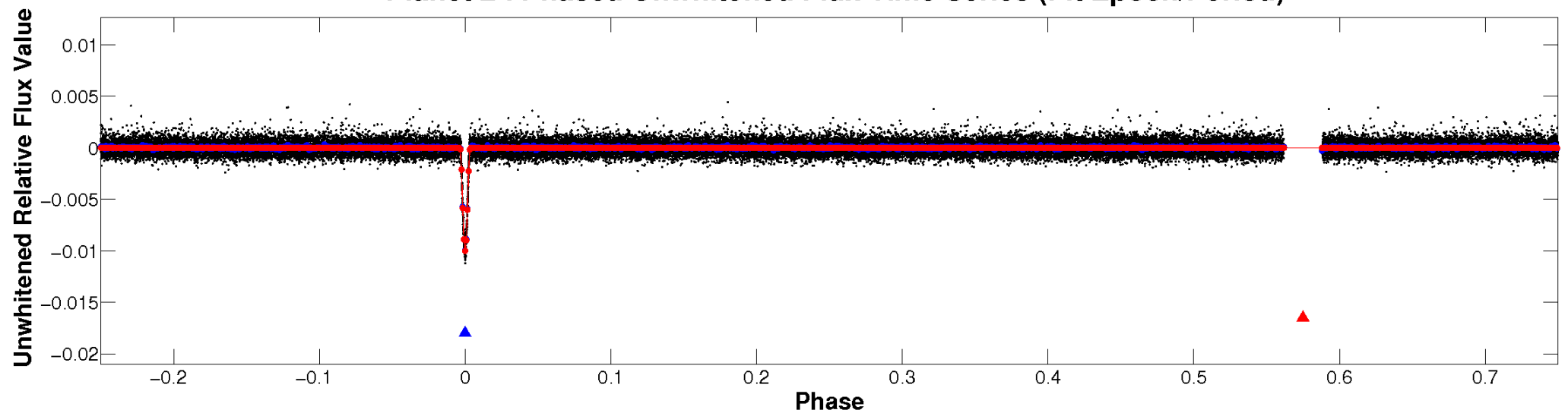
# ALT Odd/Even

TCE 007767733-02

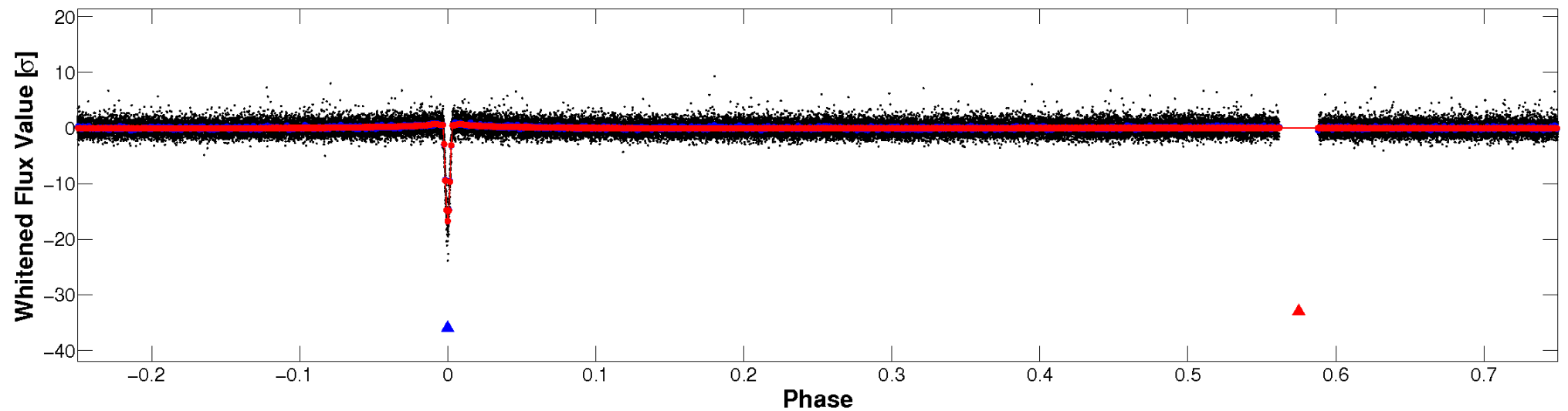


# Non-Whitened Vs. Whitened Light Curve

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

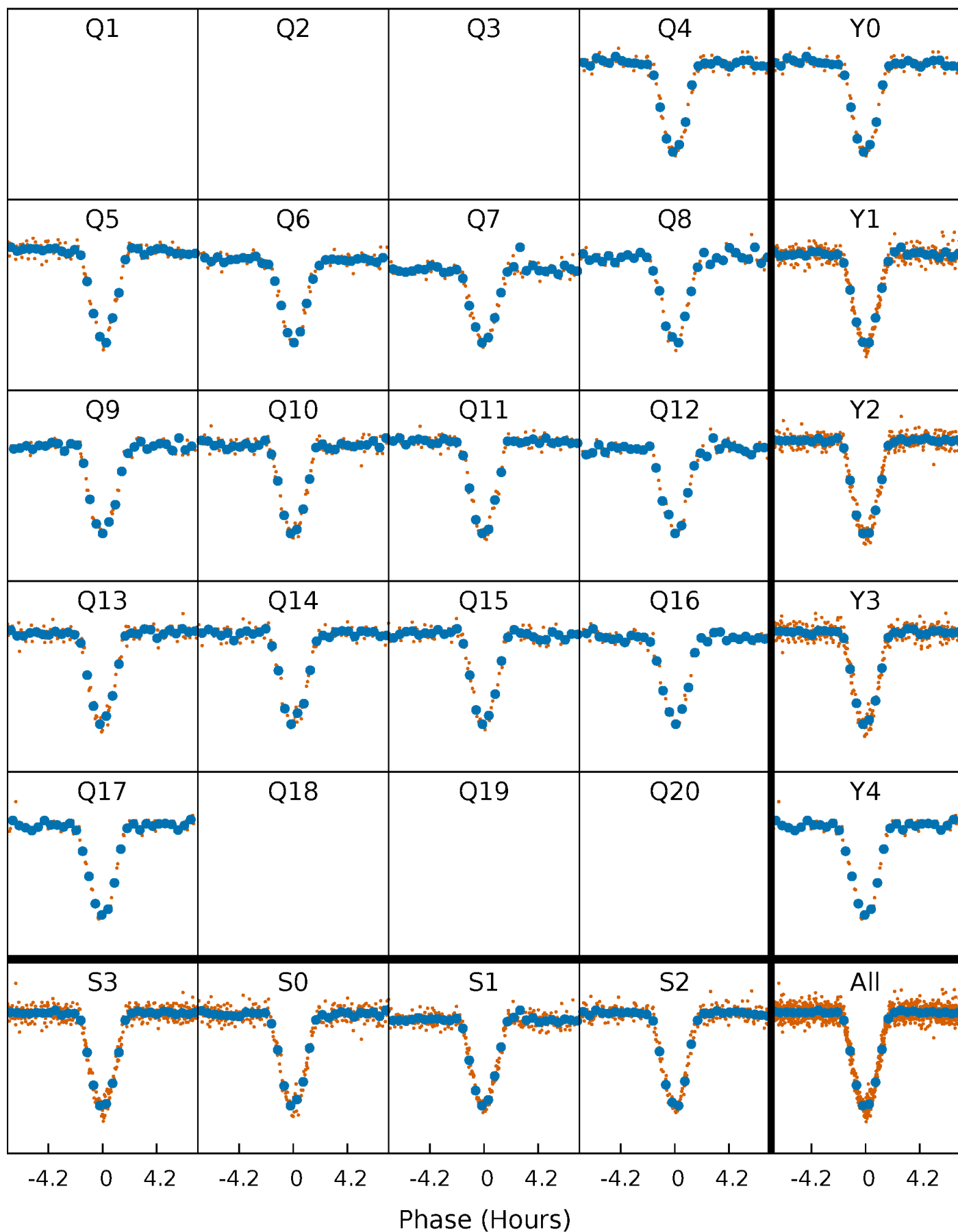


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



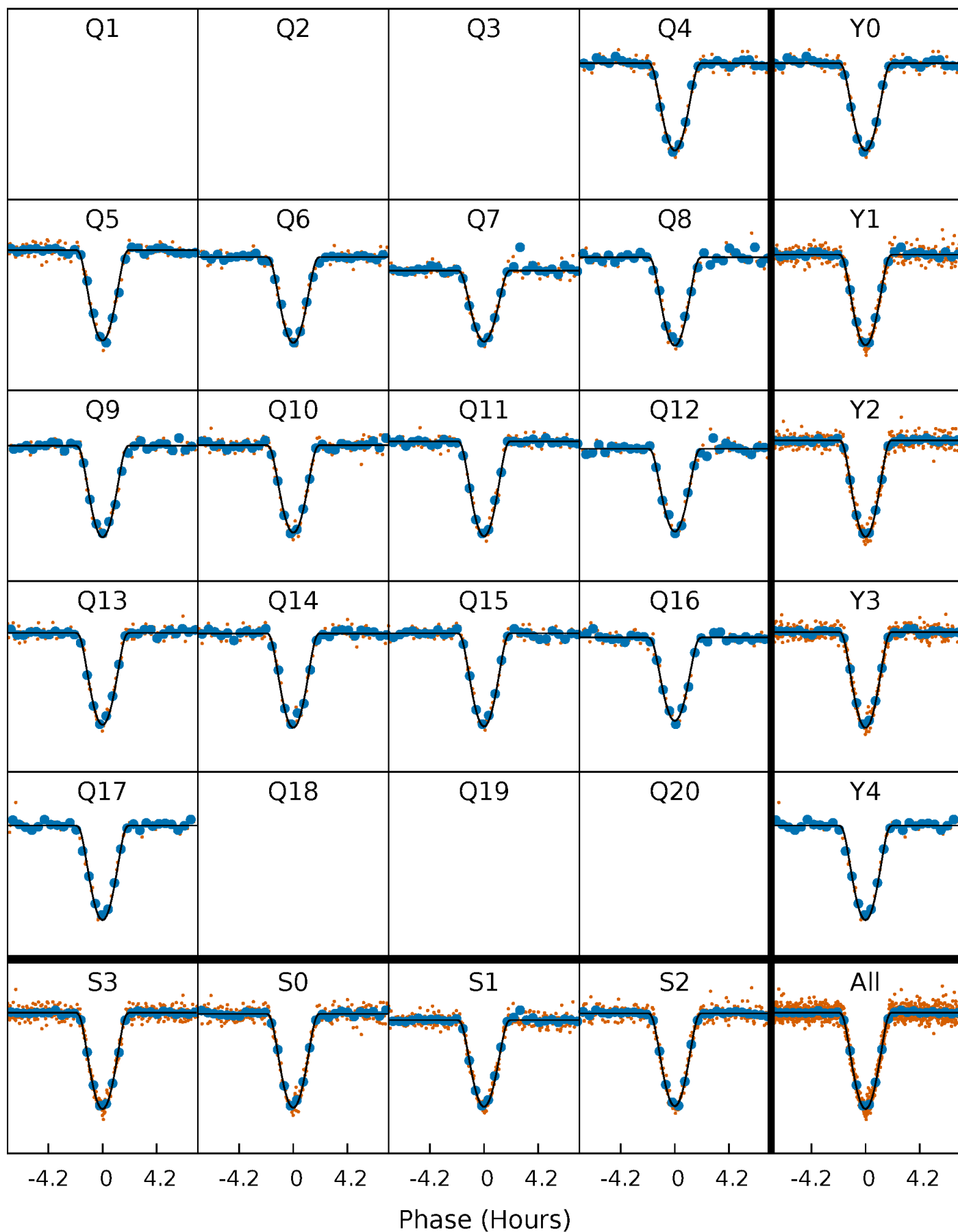
# PDC Quarter-Phased Transit Curves

TCE 007767733-02 P= 25.198320 Days  $T_0=152.933832$  (BKJD)



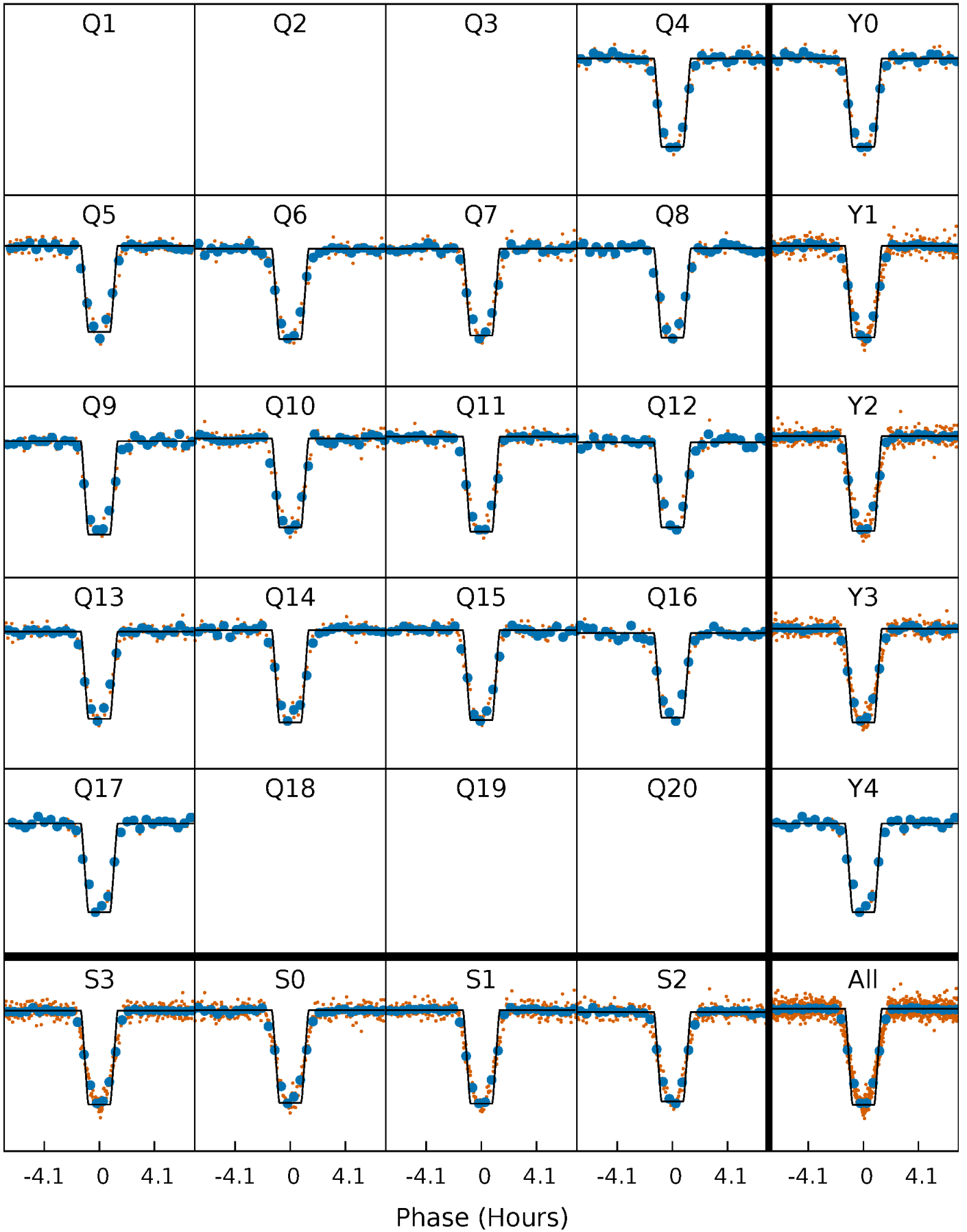
# DV Quarter-Phased Transit Curves

TCE 007767733-02 P= 25.198320 Days  $T_0=152.933832$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

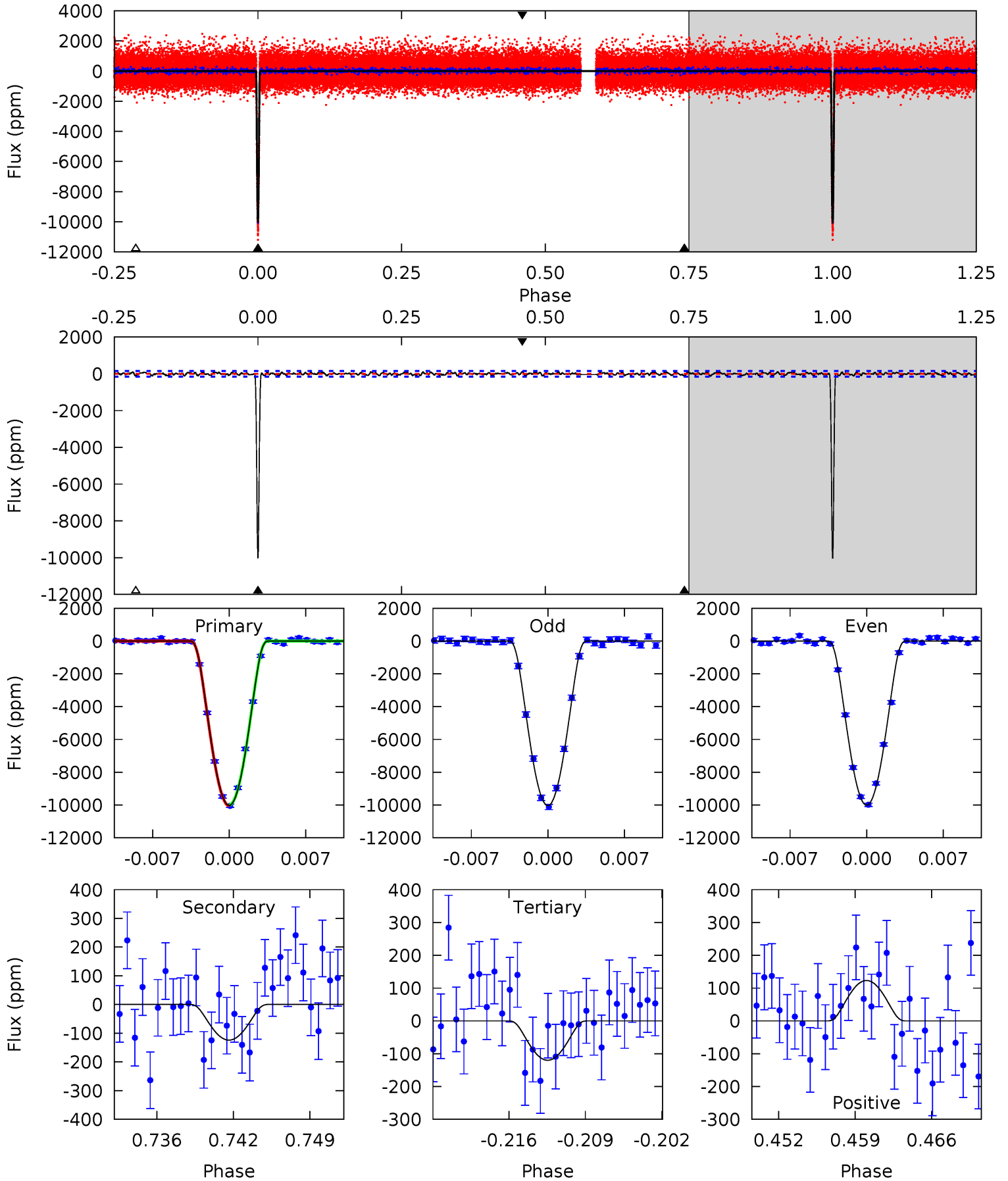
TCE 007767733-02 P= 25.198387 Days  $T_0=152.931635$  (BKJD)



# DV Model-Shift Uniqueness Test

007767733-02, P = 25.198320 Days, E = 152.933832 Days

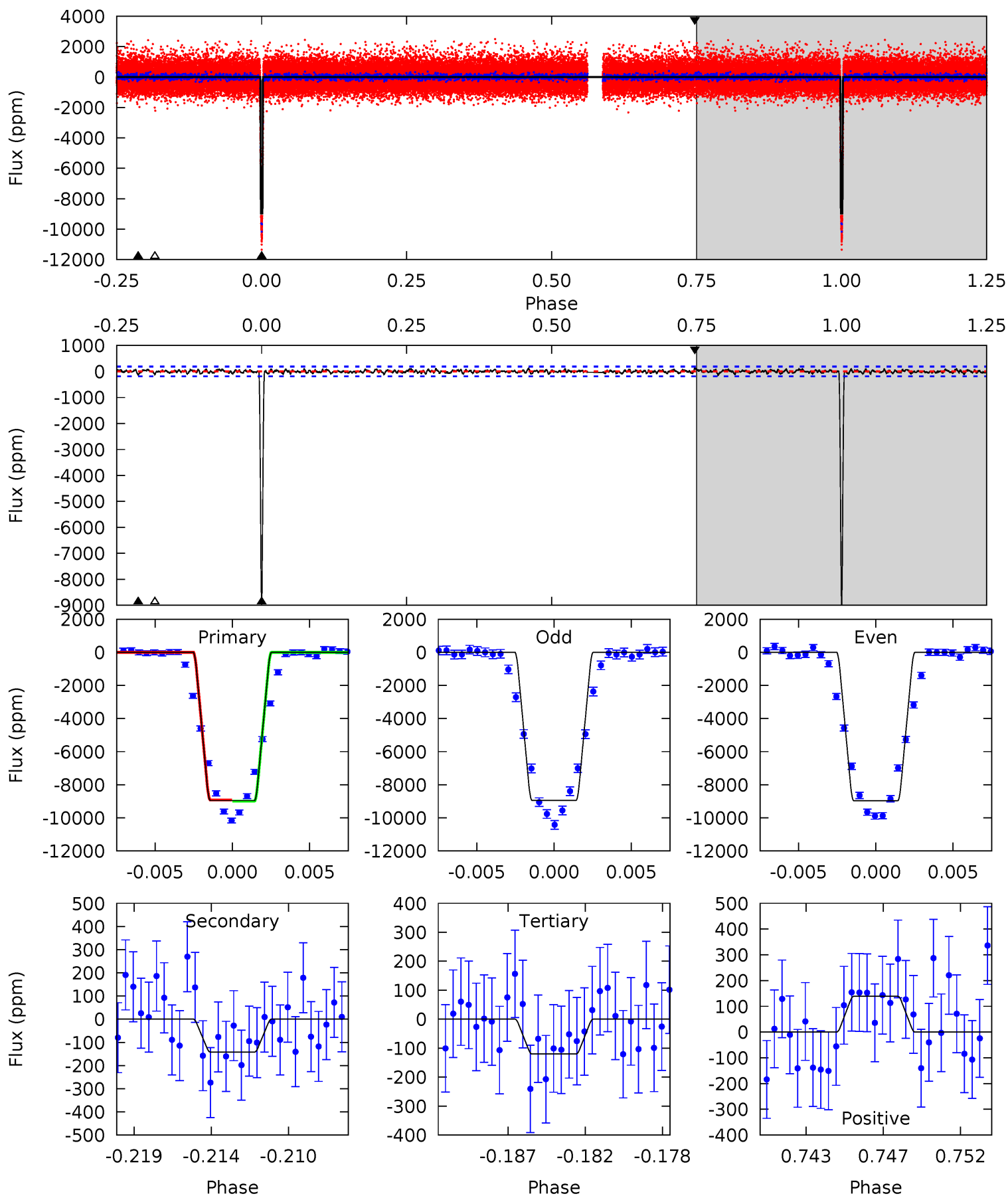
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
337.2	4.17	4.04	4.14	5.10	2.71	1.51	333.2	333.1	0.14	0.03	0.37	0.99	0.01	0.79



# Alt Model-Shift Uniqueness Test

007767733-02, P = 25.198387 Days, E = 152.931635 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
246.7	3.91	3.31	3.82	5.18	2.84	1.11	243.4	242.9	0.60	0.09	0.31	0.99	0.02	0.85



### Stellar Parameters For KIC 007767733

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5955^{+187}_{-208}$	$4.534^{+0.039}_{-0.221}$	$-0.240^{+0.300}_{-0.300}$	$0.883^{+0.271}_{-0.090}$	$0.972^{+0.115}_{-0.128}$	$1.987^{+0.427}_{-1.079}$
	+3%/-3%	+1%/-5%	+125%/-125%	+31%/-10%	+12%/-13%	+22%/-54%
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 007767733-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-124 \pm 30$	$14.61^{+3.22}_{-2.68}$	$871^{+64}_{-47}$	$2502^{+138}_{-137}$	$8.591^{+4.933}_{-3.157}$
Alt.	$-142 \pm 36$	$9.95^{+2.83}_{-2.37}$	$868^{+67}_{-44}$	$2801^{+259}_{-190}$	$21^{+17}_{-9}$

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

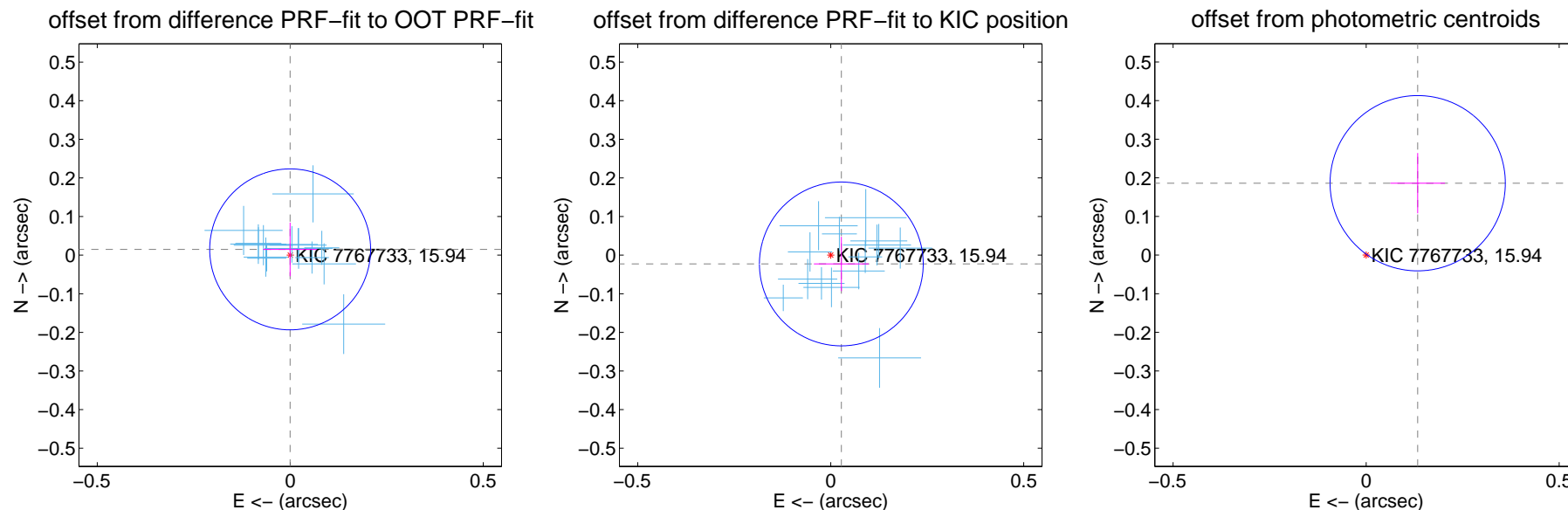
## DV Centroid Data

Supplemental centroid analysis for 007767733-02. Kepler magnitude: 15.94. Transit SNR 198.98

There are 14 quarters with good PRF difference image offsets

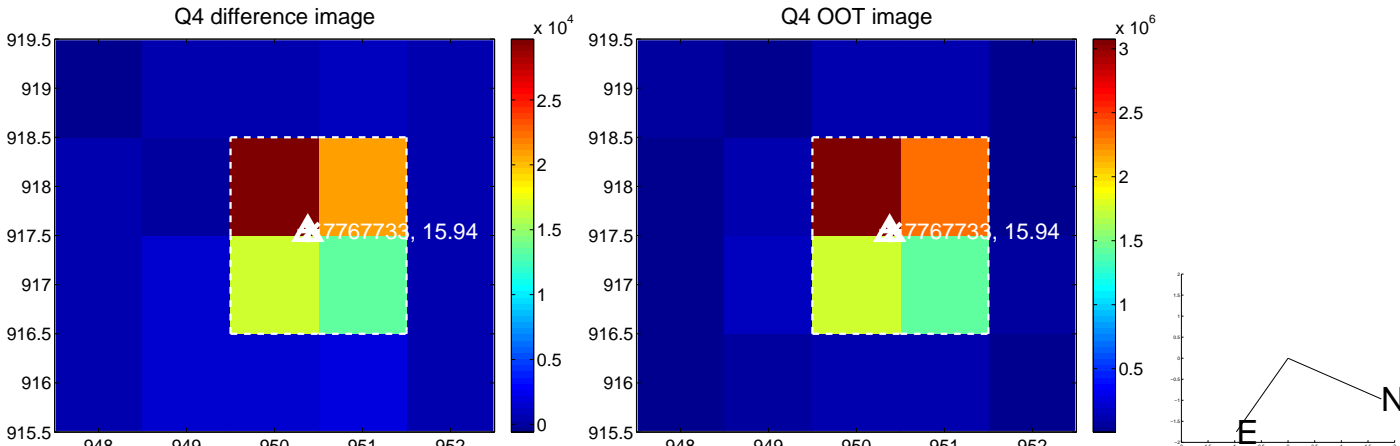
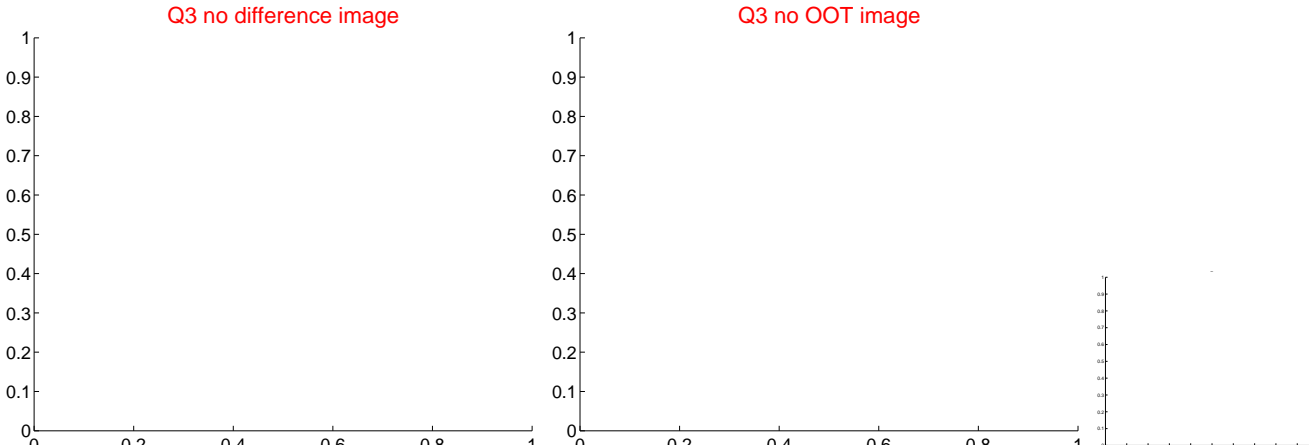
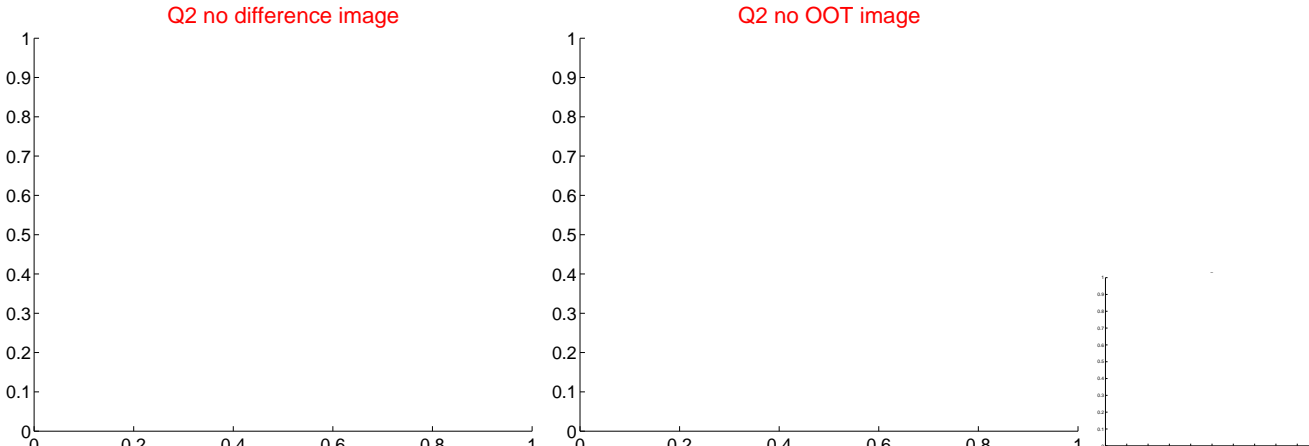
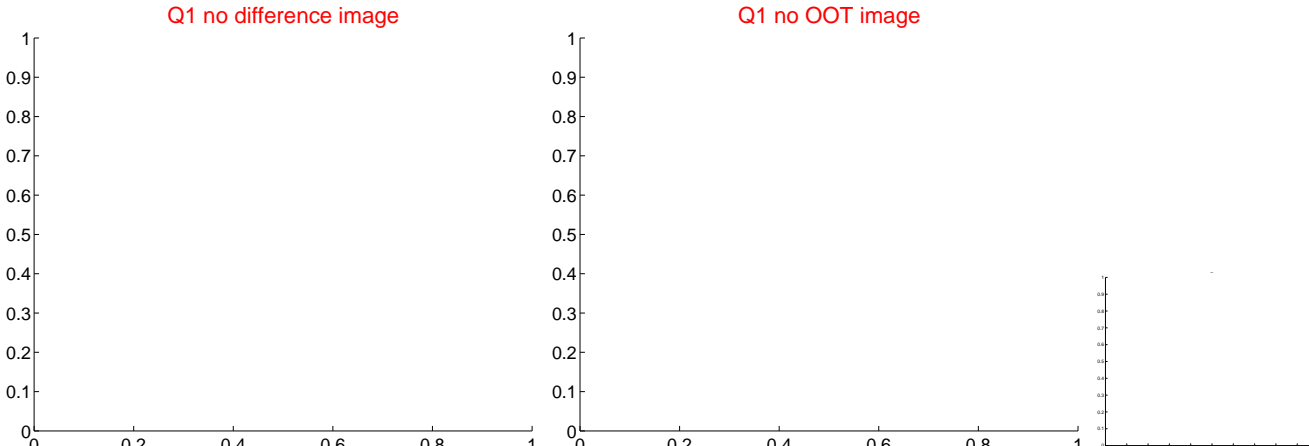
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.015 \pm 0.069$	0.22	$0.000 \pm 0.070$	$0.015 \pm 0.069$
PRF-fit source offset from KIC position	$0.036 \pm 0.071$	0.50	$-0.027 \pm 0.071$	$-0.023 \pm 0.070$
photometric centroid source offset	$0.23 \pm 0.08$	3.03	$-0.13 \pm 0.07$	$0.19 \pm 0.08$

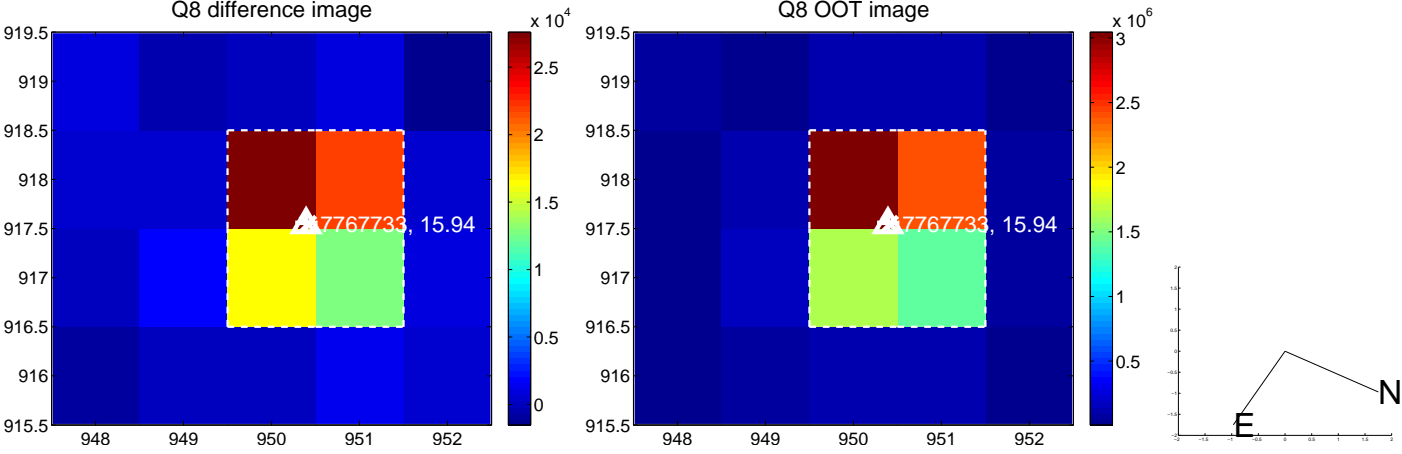
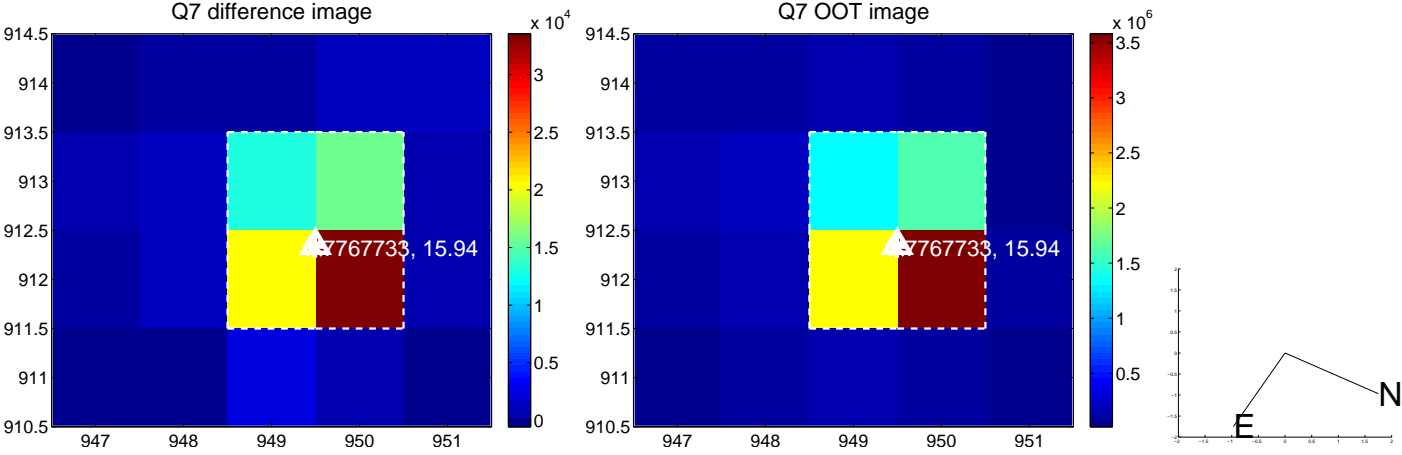
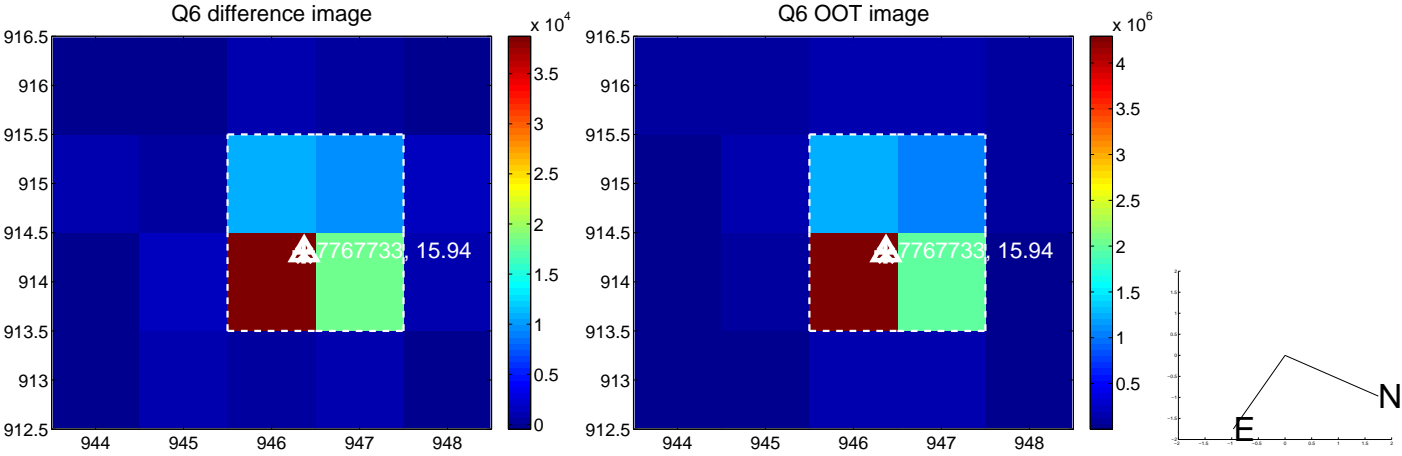
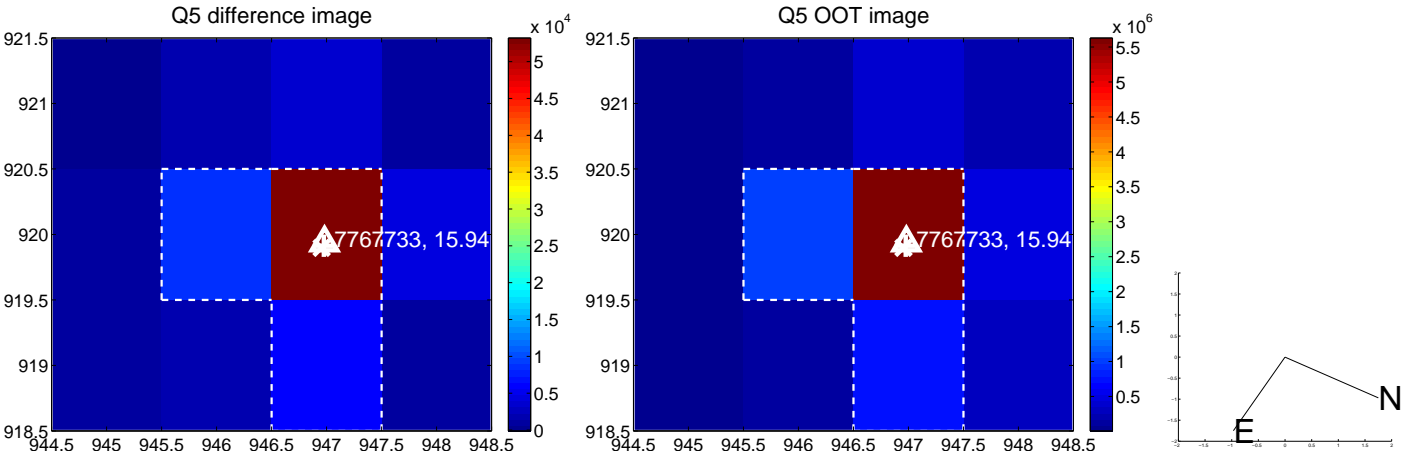


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

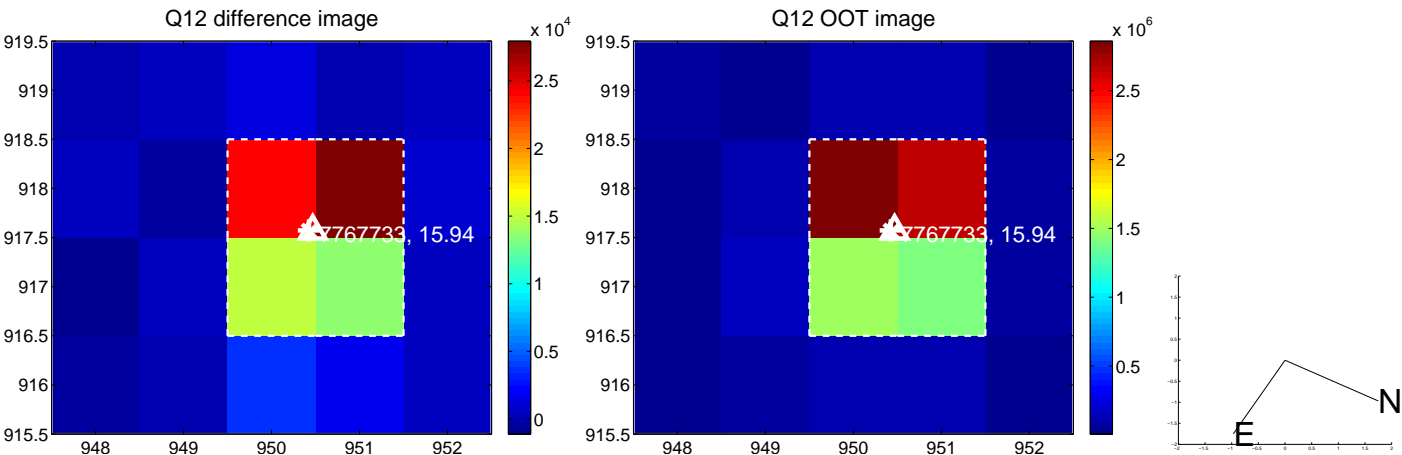
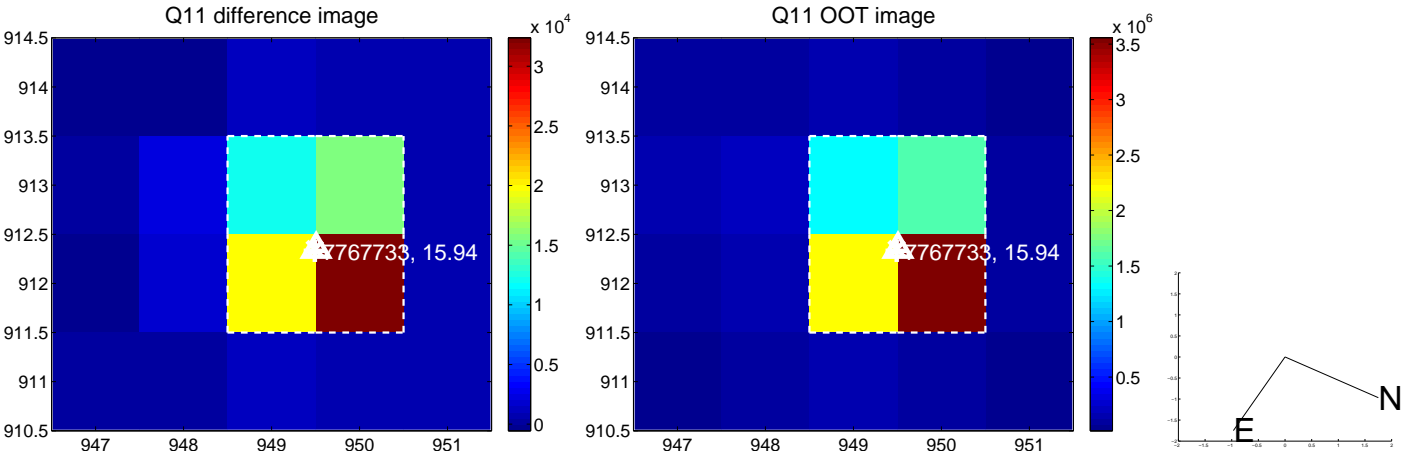
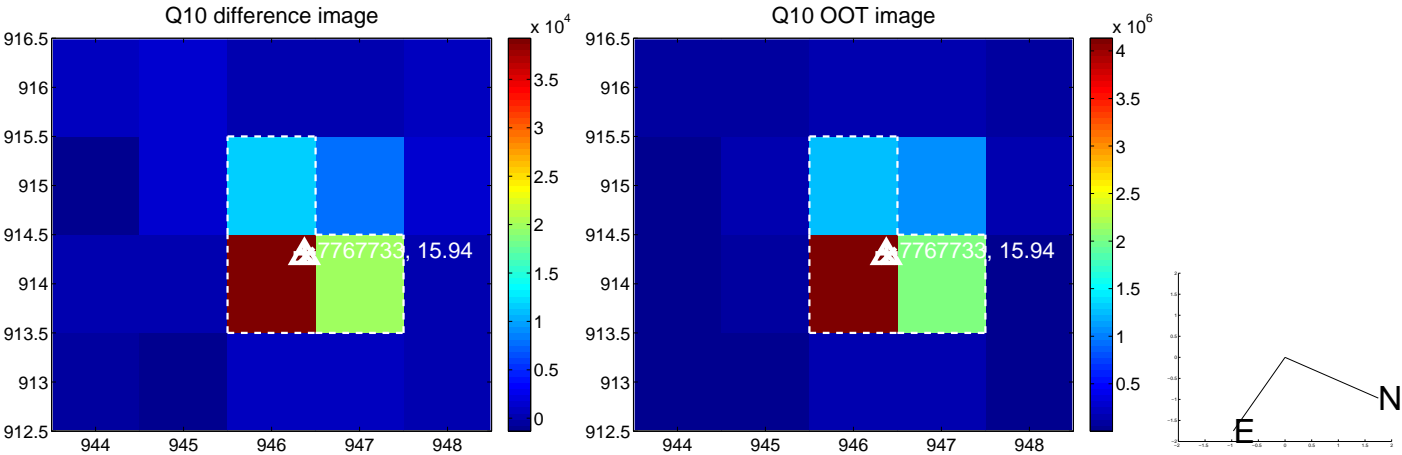
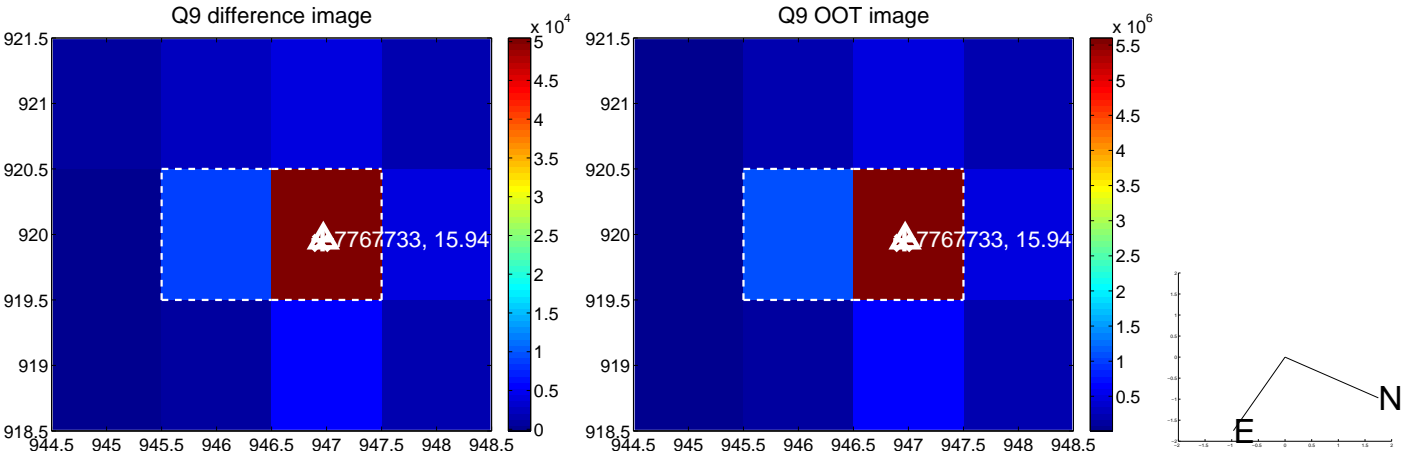
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



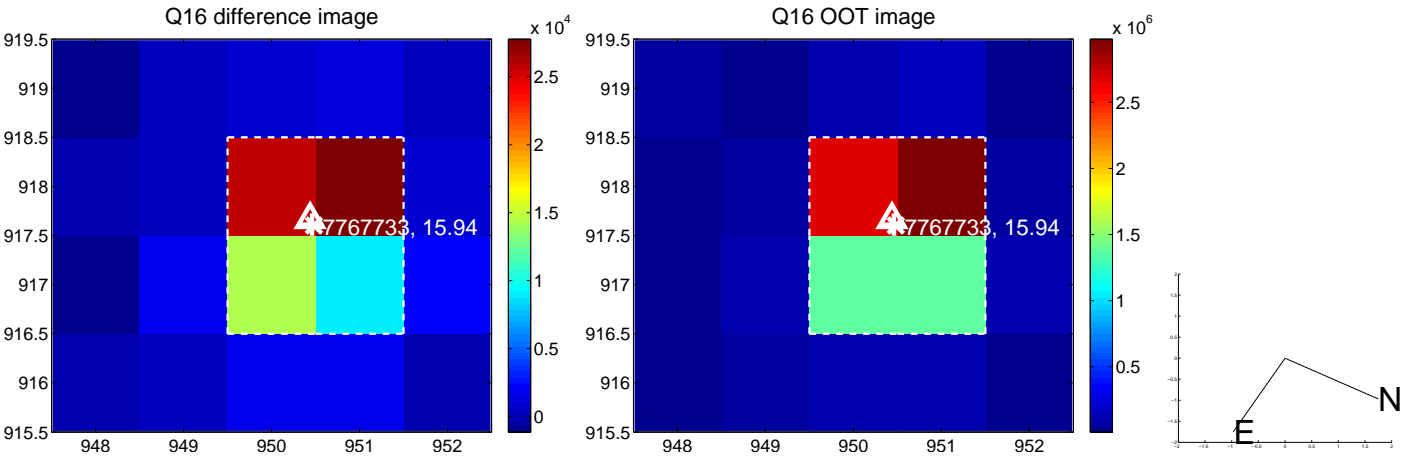
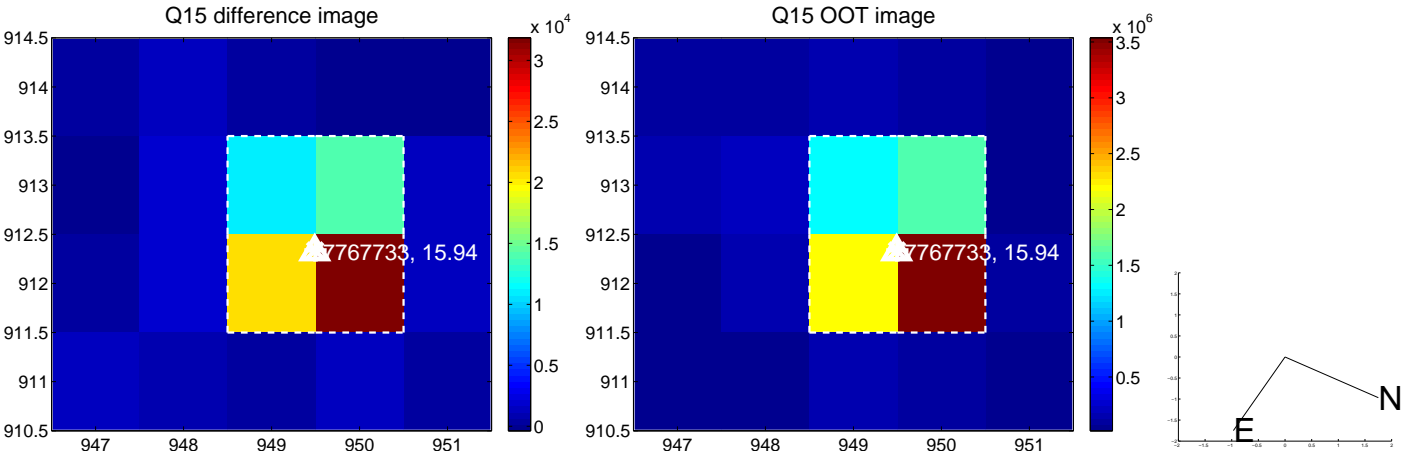
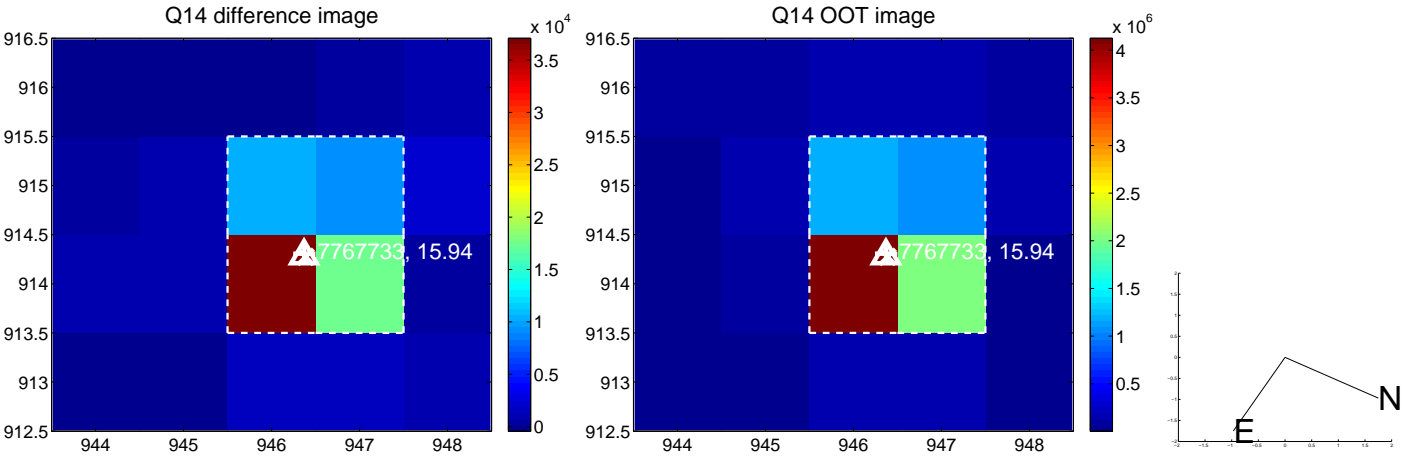
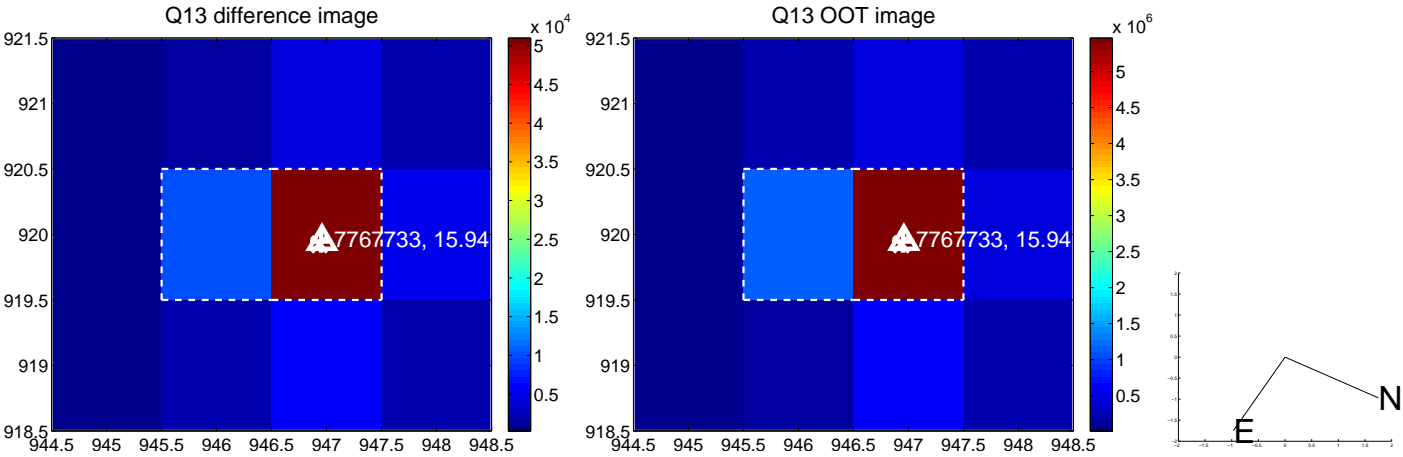
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



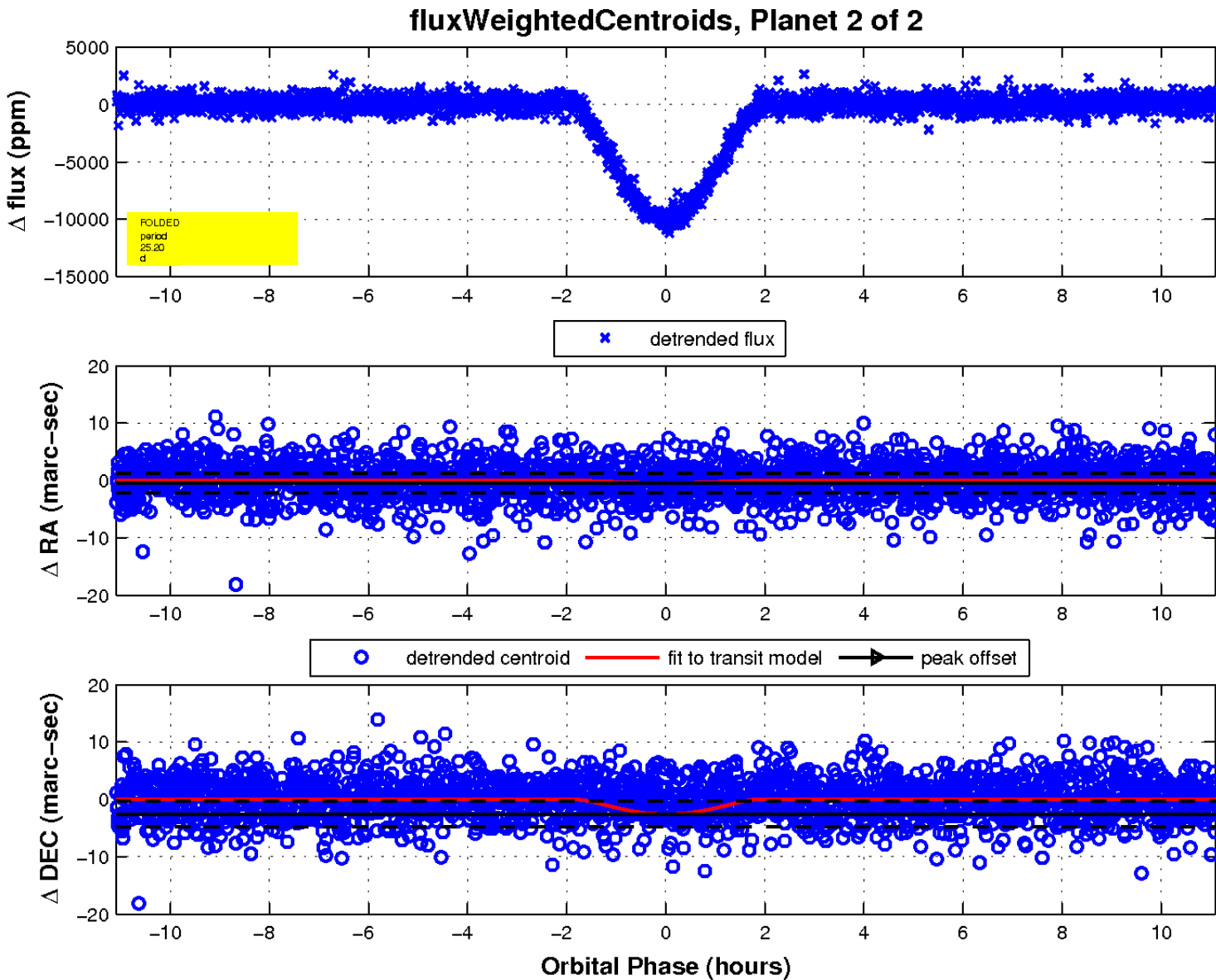
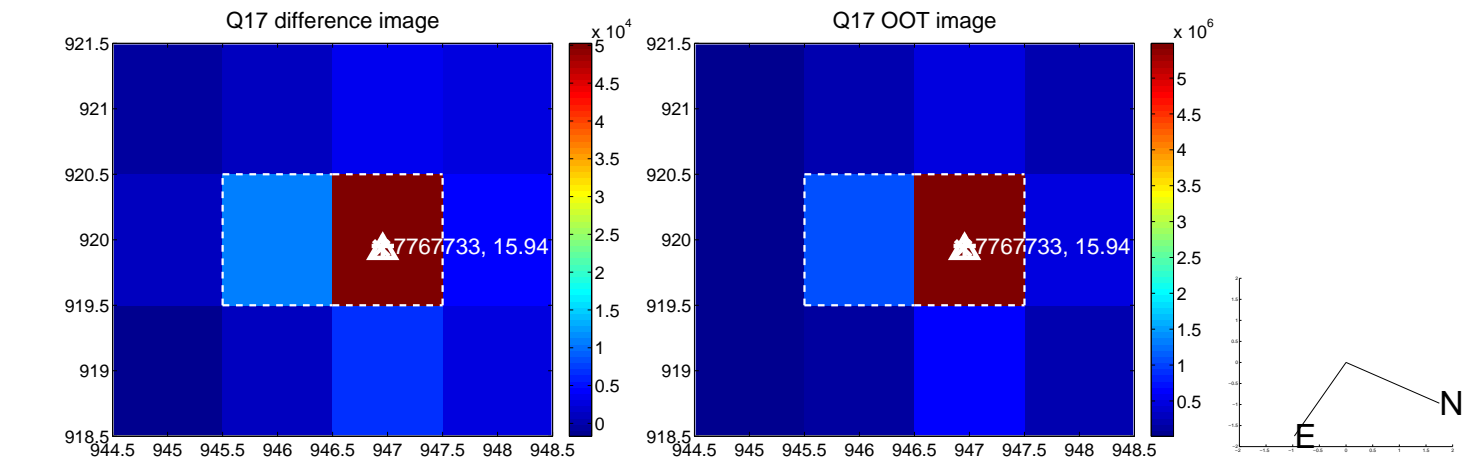
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

