

# KIC 006607610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006607610-01	OBS	6742.01	63.520217	162.163033	32557.0	17.157	1211.9	1175.7	4.33	4938	77.14	73.04
006607610-02	OBS	No	63.520339	189.473269	5617.4	25.393	192.8	231.4	4.33	4938	35.75	73.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006607610-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006607610-02	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.

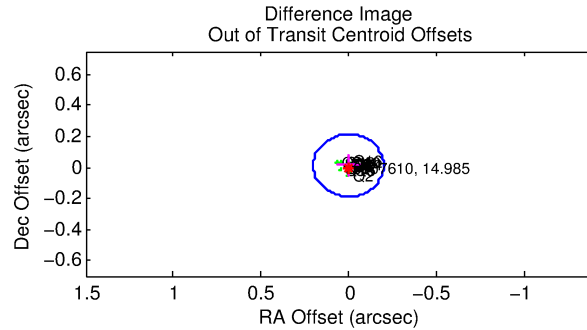
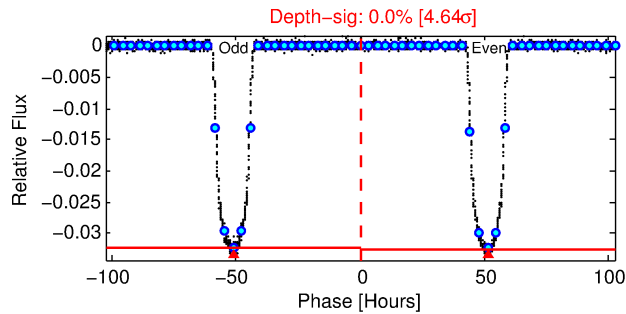
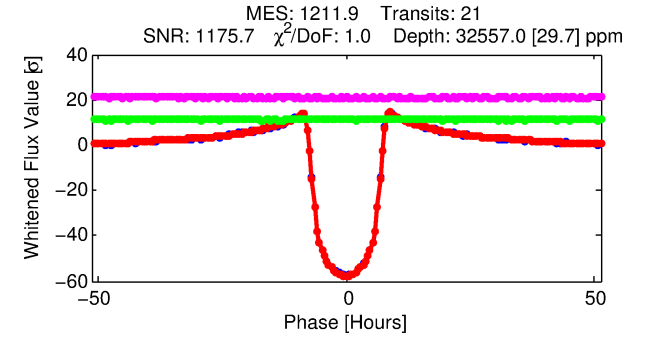
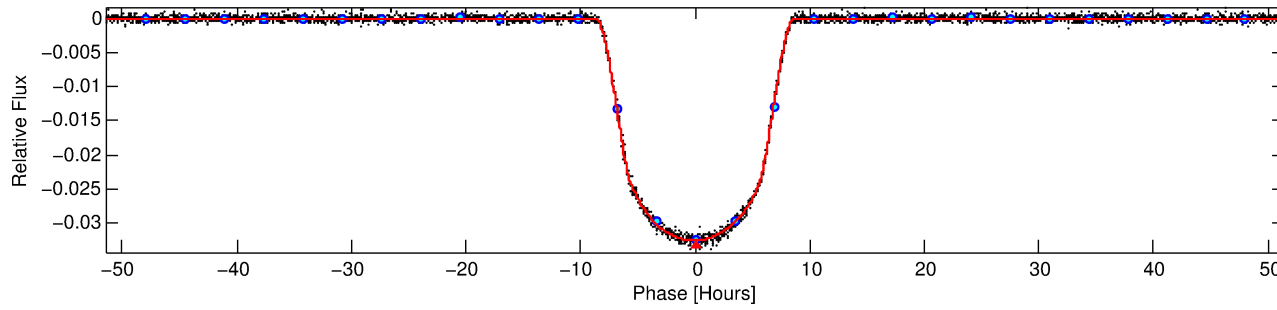
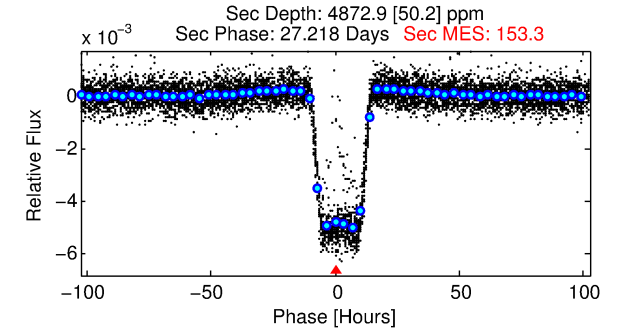
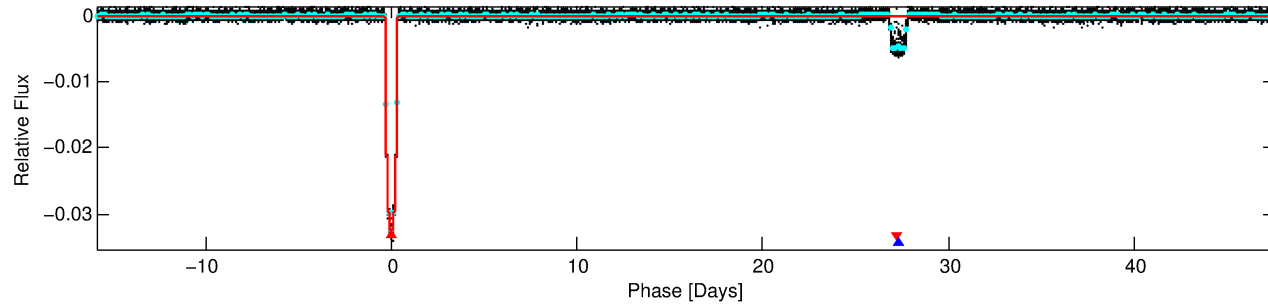
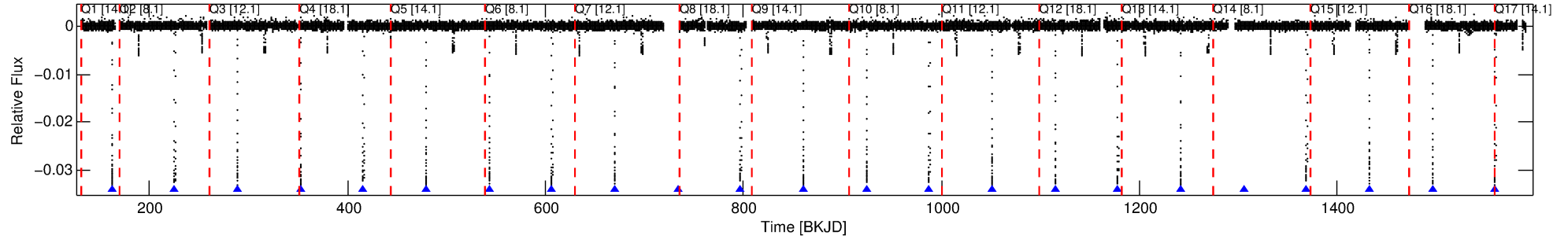
## Ephemeris Match Information For 006607610-01

No Significant Match Found

# DV One-Page Summary

KIC: 6607610 Candidate: 1 of 2 Period: 63.520 d  
KOI: K06742.01 Corr: 0.999

Kp: 14.98 R\*: 4.33 Rs Teff: 4938.0 K Logg: 3.39 Fe/H: 0.340



## DV Fit Results:

Period = 63.52022 [0.00002] d  
Epoch = 162.1630 [0.0003] BKJD  
Rp/R\* = 0.1633 [0.0002]  
a/R\* = 31.13 [0.10]  
b = 0.38 [0.01]  
Seff = 73.04 [26.56]  
Teq = 745 [68] K  
Rp = 77.14 [23.57] Re  
a = 0.3698 [0.0923] AU  
Ag = 61.61 [21.77] [2.78σ]  
Teffp = 3229 [70] K [25.40σ]

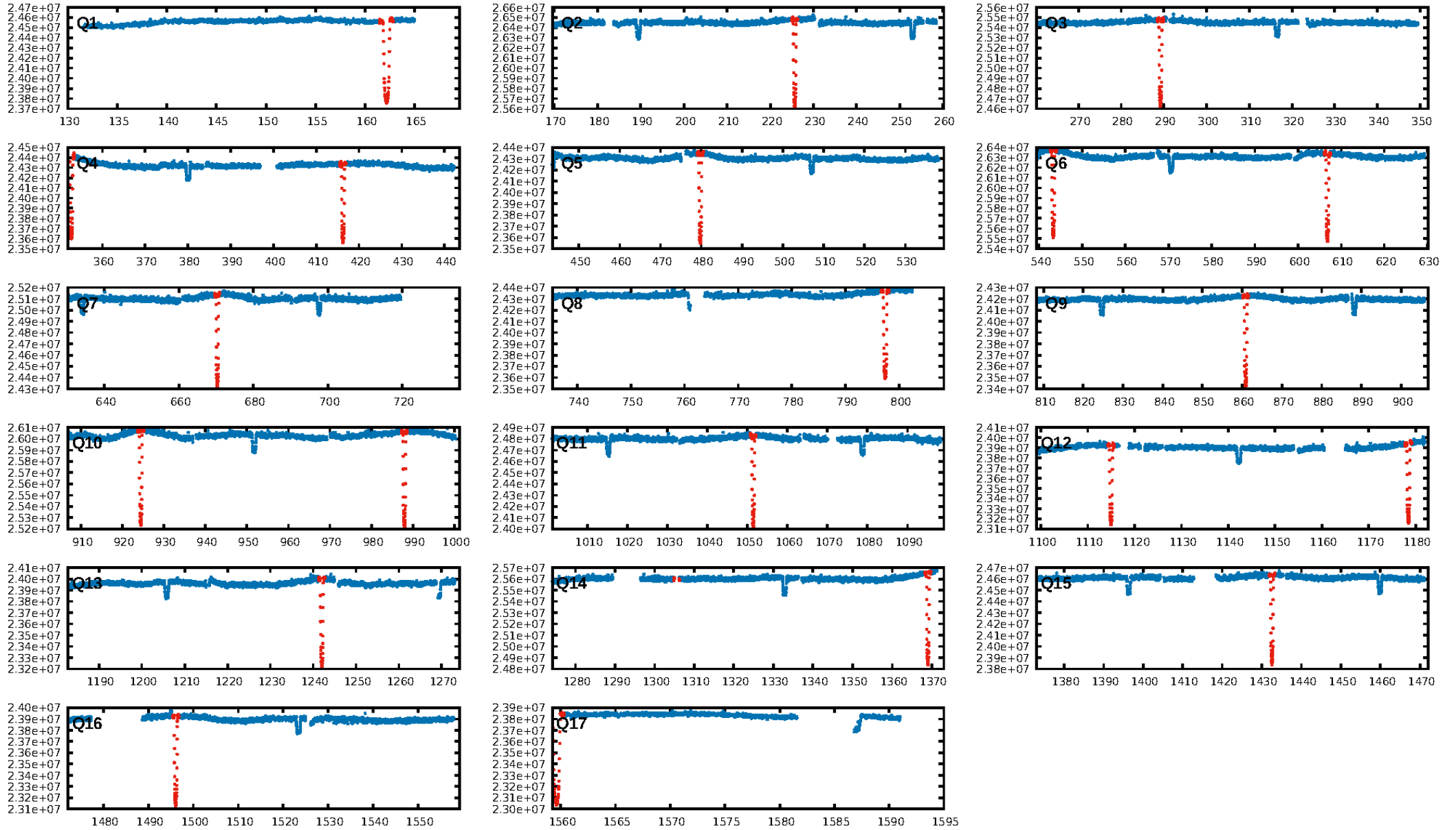
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [19/19]  
GhostDiagnostic-chr: 3.6  
Centroid-sig: 0.0%  
Centroid-so: 0.167 arcsec [24.92σ]  
OotOffset-rm: 0.014 arcsec [0.21σ]  
KicOffset-rm: 0.031 arcsec [0.45σ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [15/15]

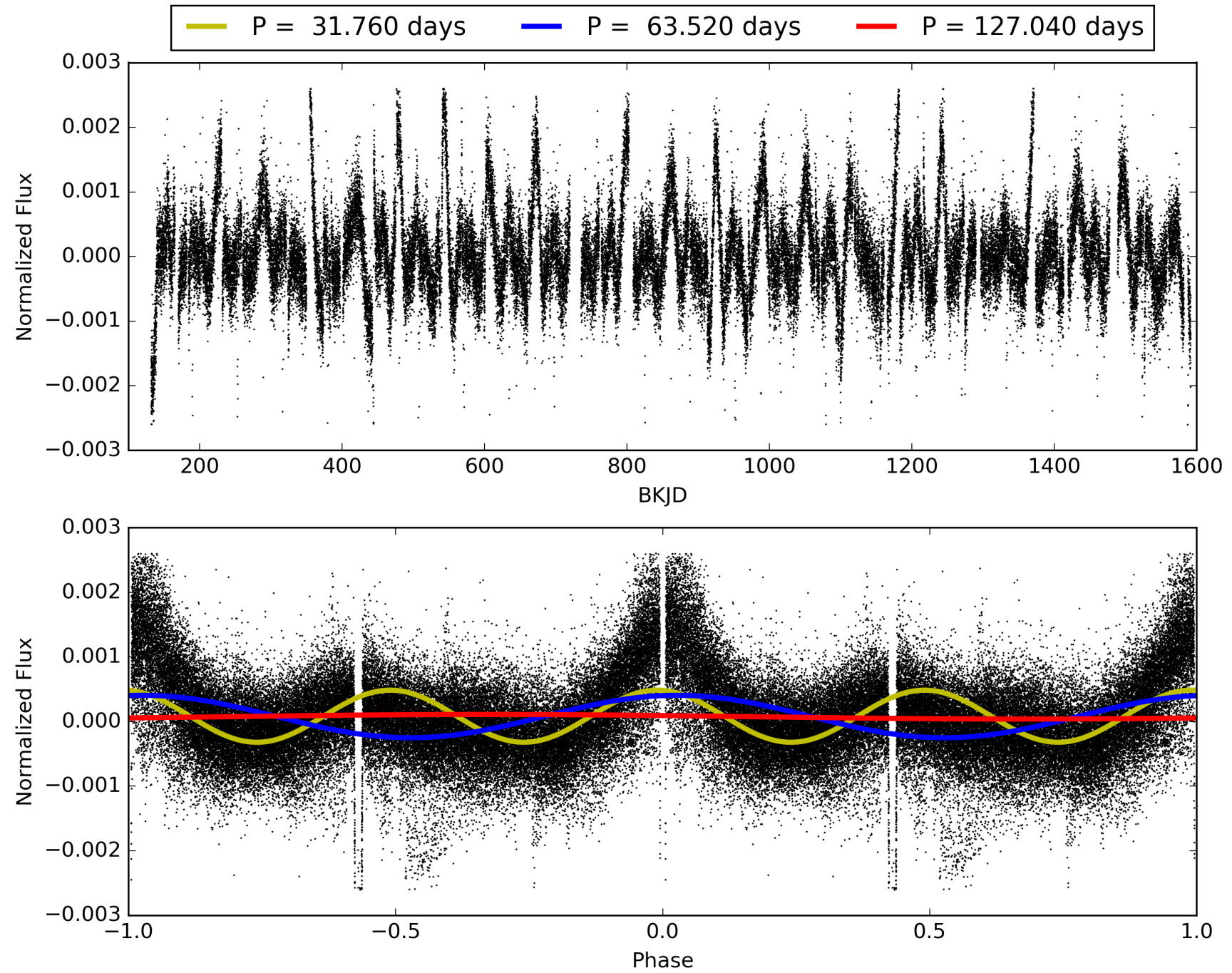
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:20:30 Z

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

# TCE 006607610-01, PDC Light Curves

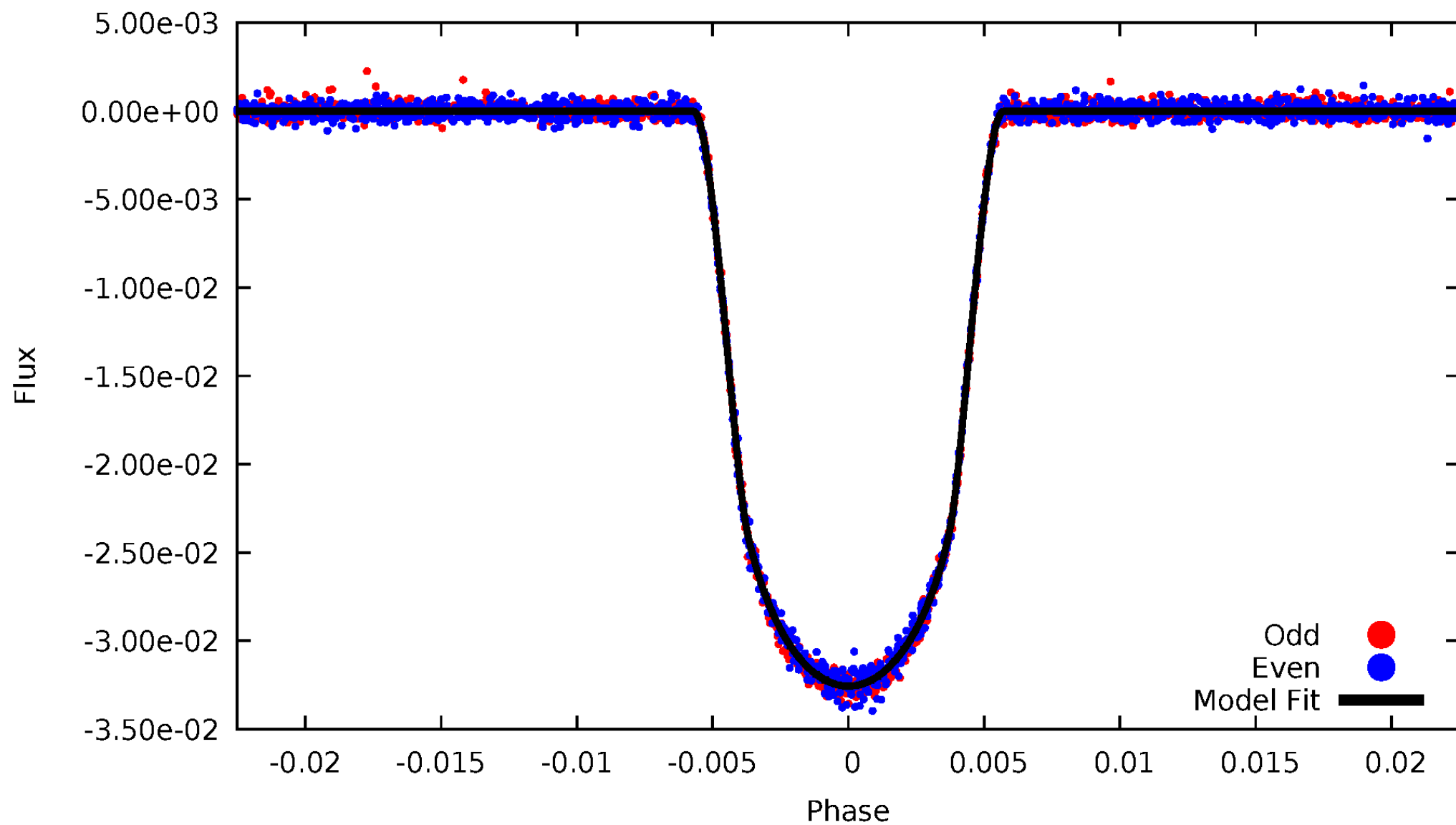


TCE 006607610-01



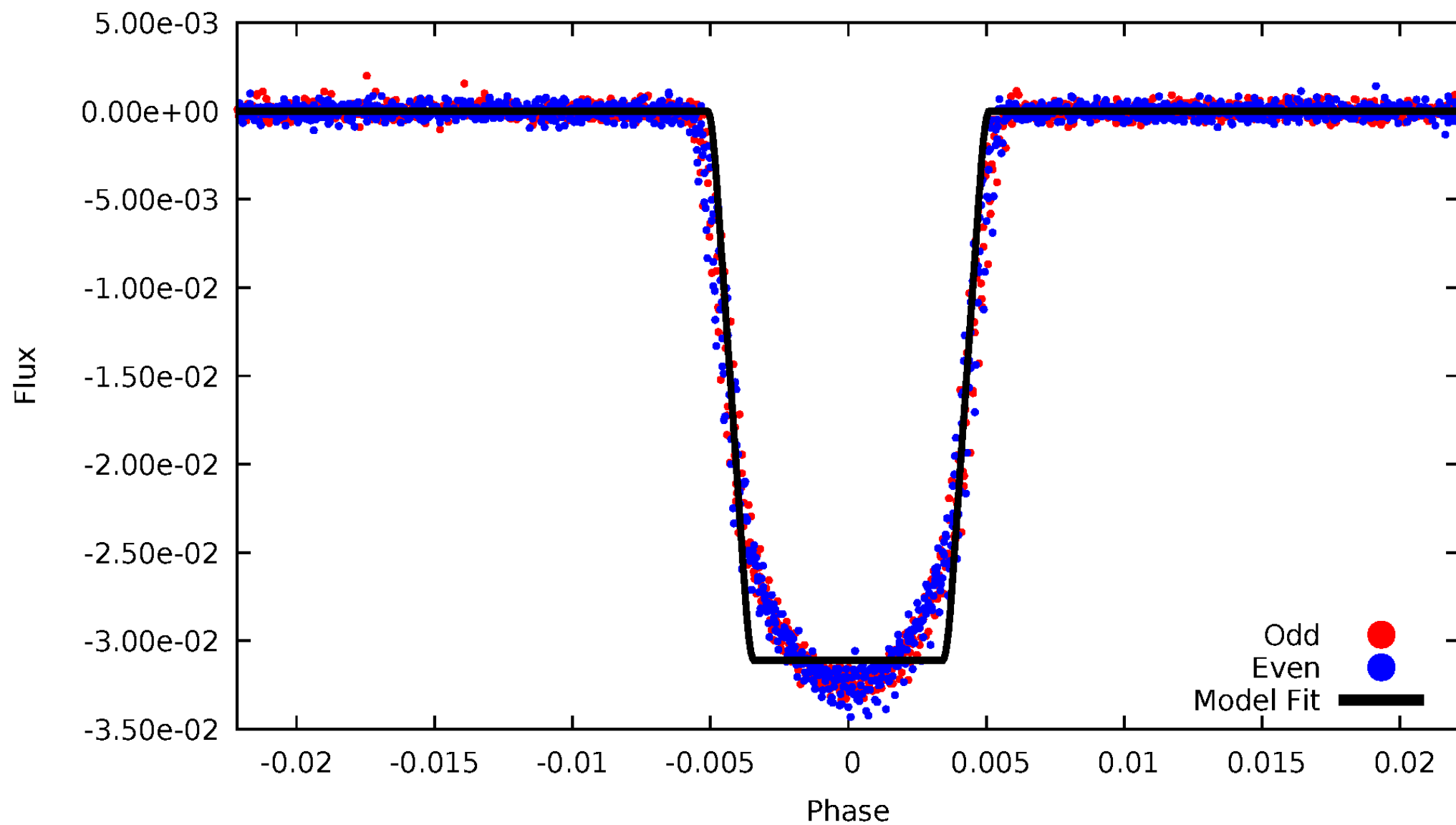
# DV Odd/Even

TCE 006607610-01



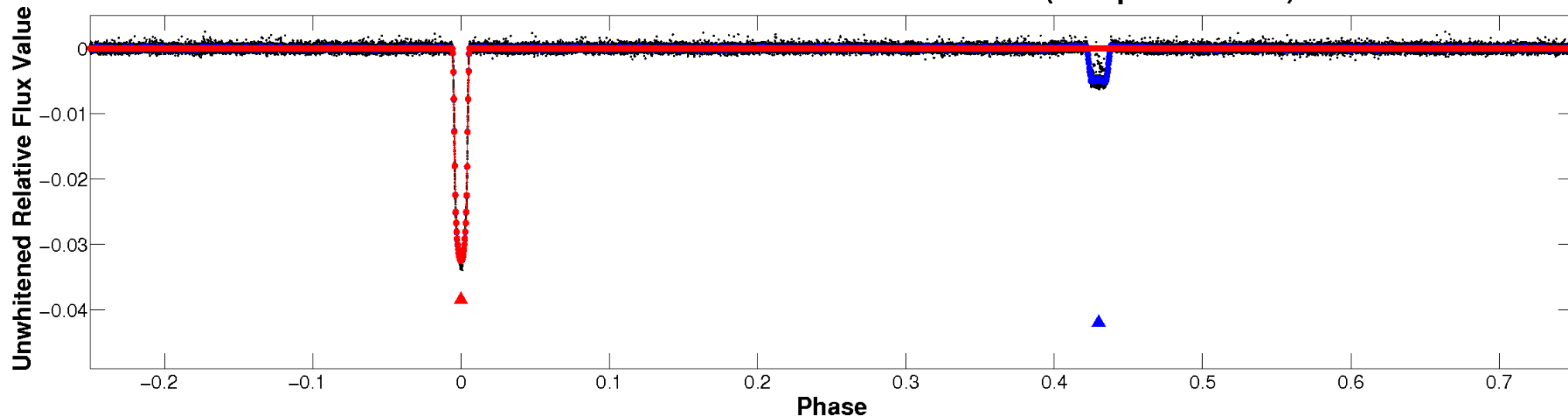
# ALT Odd/Even

TCE 006607610-01

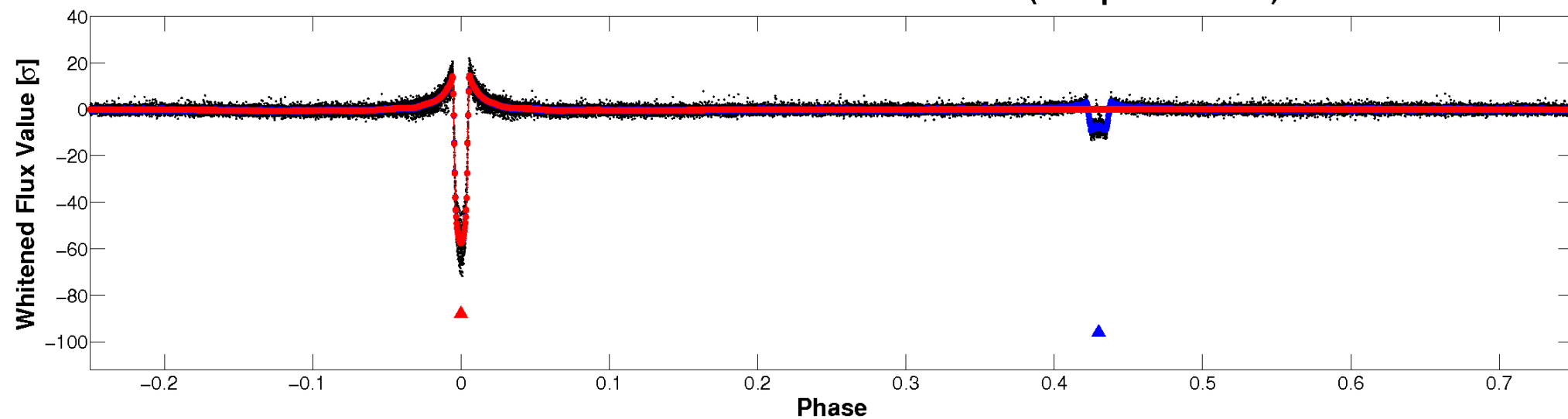


# Non-Whitened Vs. Whitened Light Curve

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

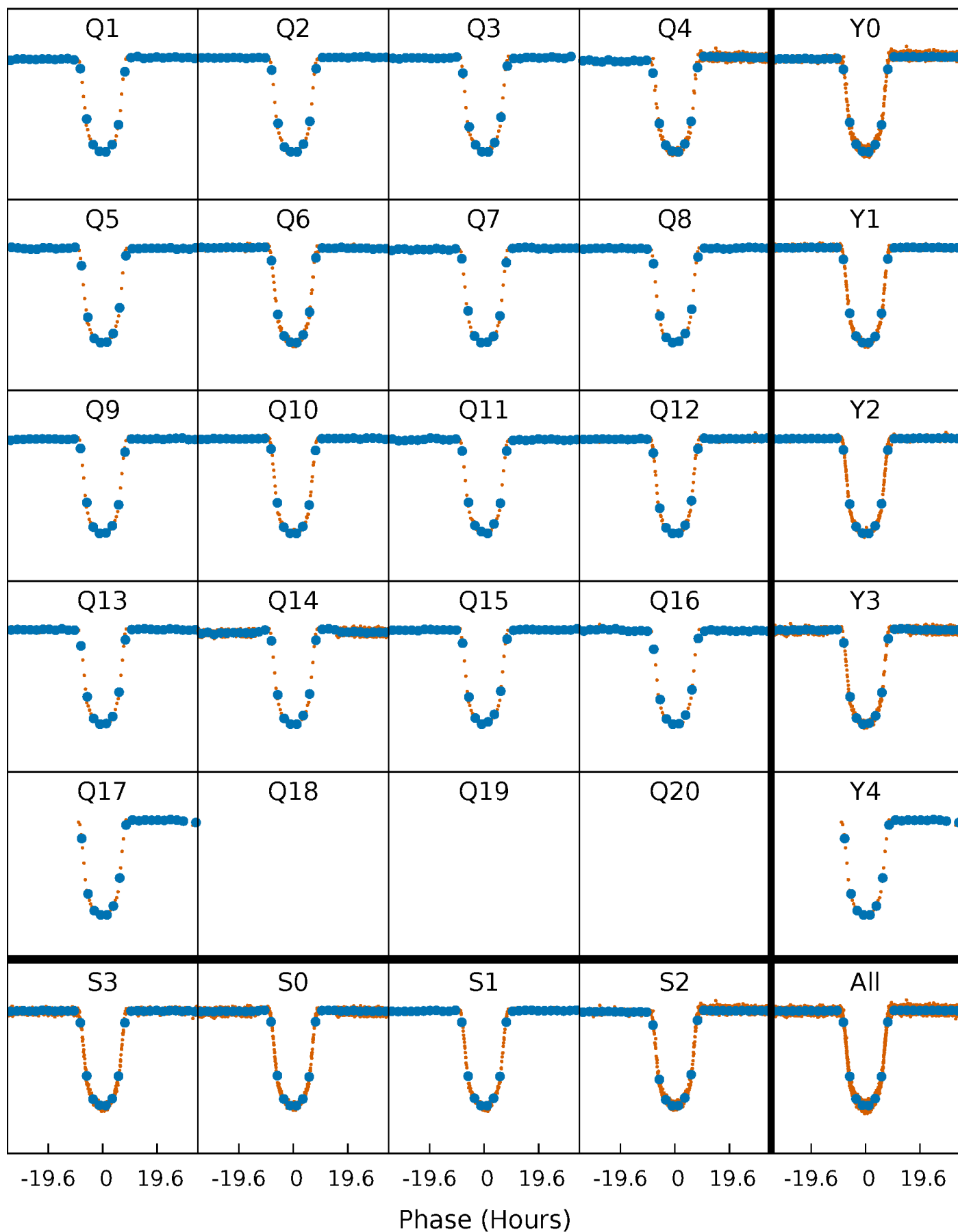


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

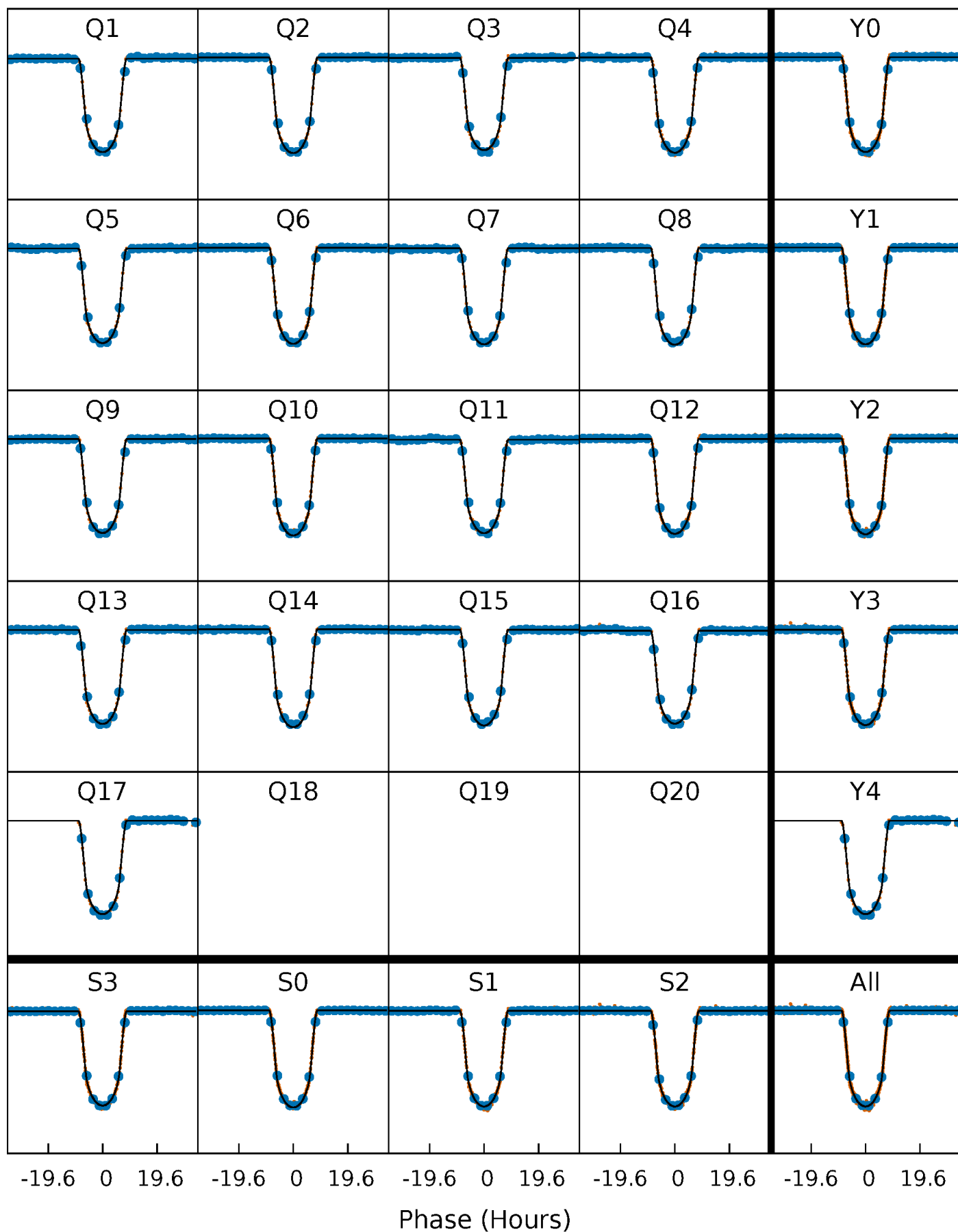
TCE 006607610-01 P= 63.520217 Days  $T_0=162.163033$  (BKJD)





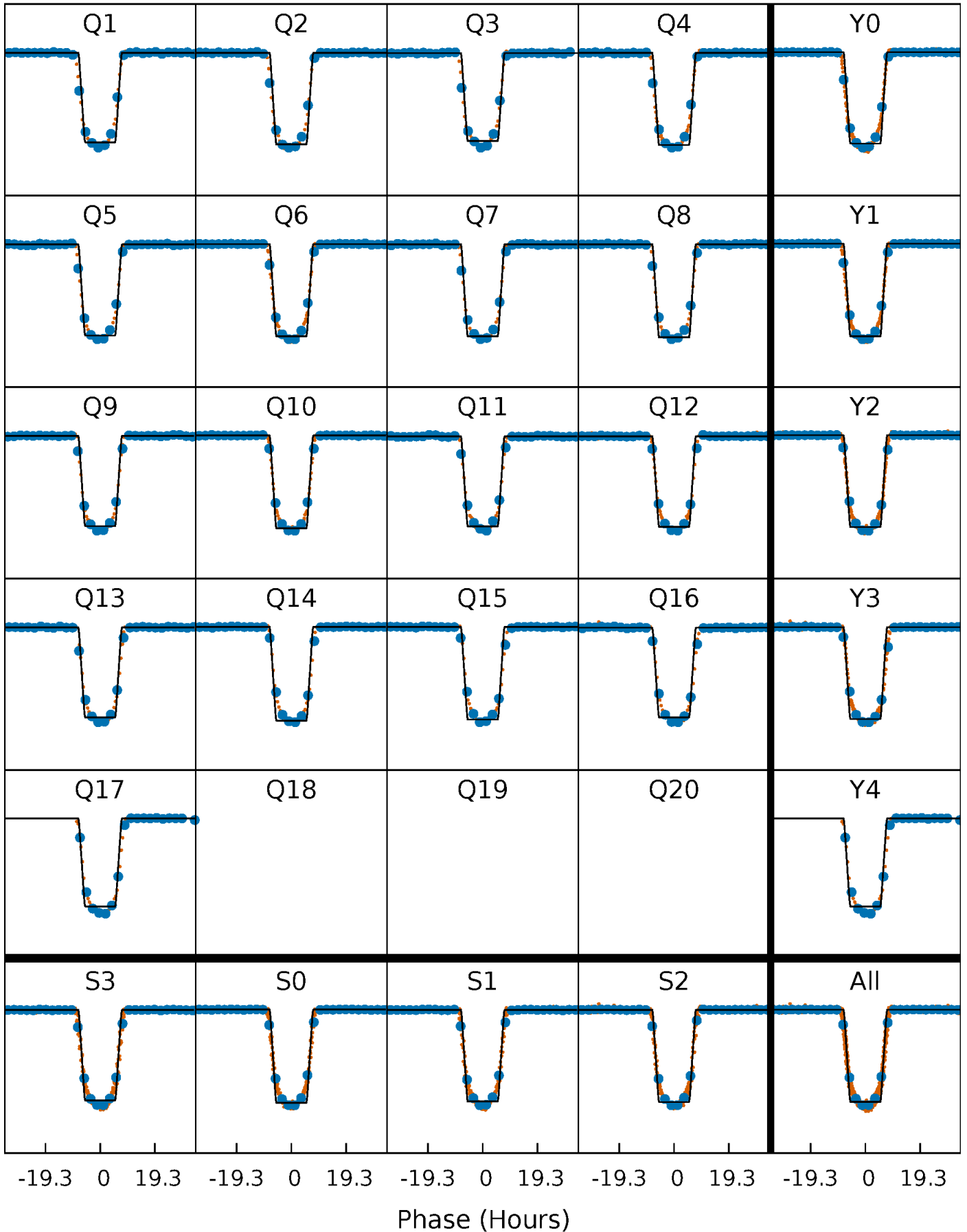
# DV Quarter-Phased Transit Curves

TCE 006607610-01 P= 63.520217 Days  $T_0=162.163033$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

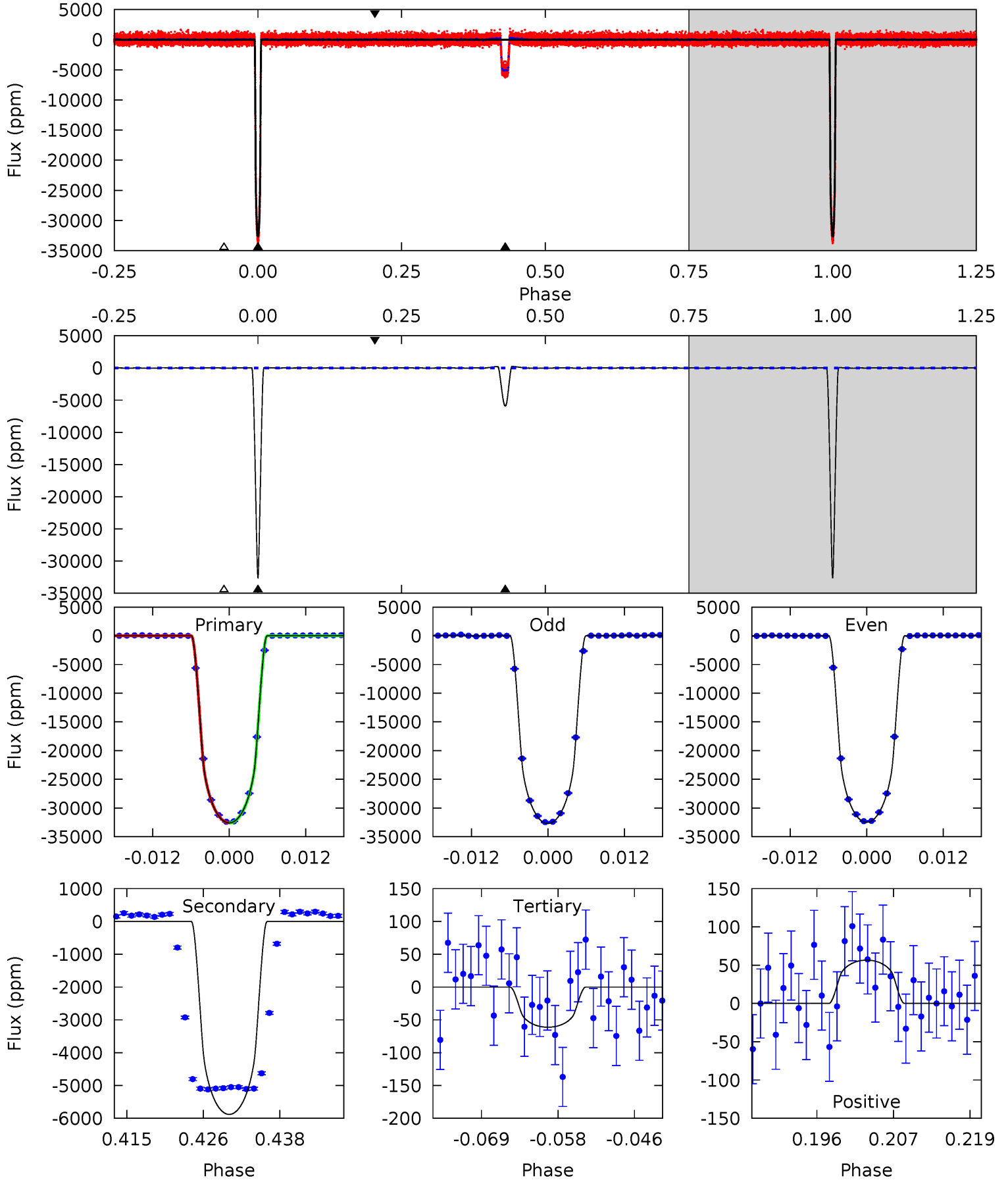
TCE 006607610-01 P= 63.518480 Days  $T_0=162.181994$  (BKJD)



# DV Model-Shift Uniqueness Test

006607610-01, P = 63.520217 Days, E = 98.642816 Days

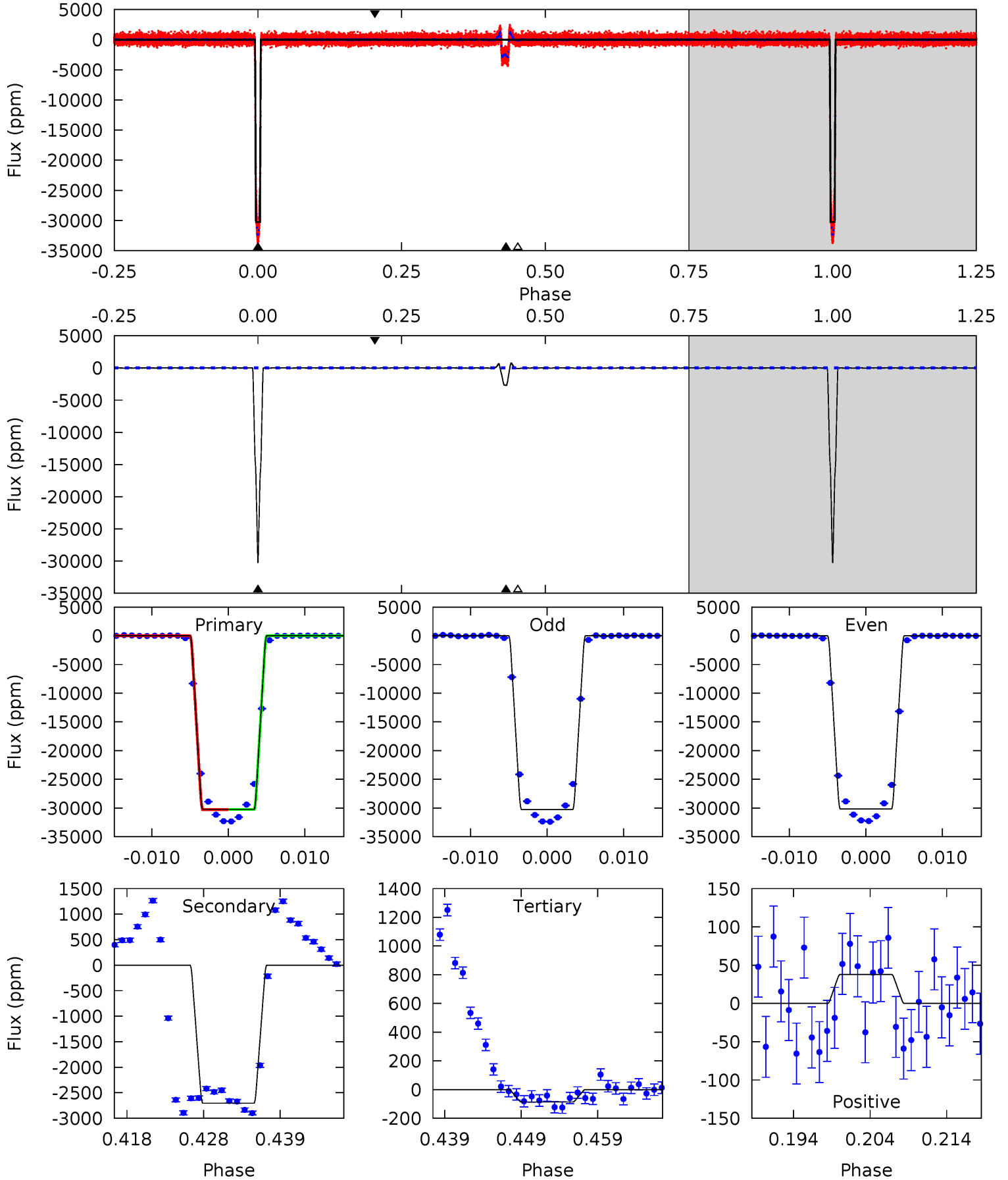
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2454	442.8	4.61	4.26	5.00	2.53	2.85	2449	2450	438.2	438.5	7.86	1.00	0.01	0.90



# Alt Model-Shift Uniqueness Test

006607610-01, P = 63.518480 Days, E = 98.663514 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
1969	175.9	5.63	2.47	5.02	2.57	3.07	1964	1967	170.3	173.5	3.30	1.00	0.03	0.12



### Stellar Parameters For KIC 006607610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4938^{+58}_{-107}$	$3.388^{+0.188}_{-0.101}$	$0.340^{+0.100}_{-0.200}$	$4.330^{+0.661}_{-1.323}$	$1.669^{+0.171}_{-0.478}$	$0.029^{+0.031}_{-0.009}$
	+1%/-2%	+6%/-3%	+29%/-59%	+15%/-31%	+10%/-29%	+108%/-33%
Source	SPE74	SPE74	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 006607610-01 / KOI 6742.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-5881 \pm 13$	$77.05^{+7.16}_{-11.86}$	$1032^{+47}_{-60}$	$3726^{+33}_{-67}$	$76^{+20}_{-12}$
Alt.	$-2703 \pm 15$	$84.01^{+7.19}_{-13.40}$	$1035^{+47}_{-68}$	$3212^{+27}_{-51}$	$29^{+9}_{-4}$

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

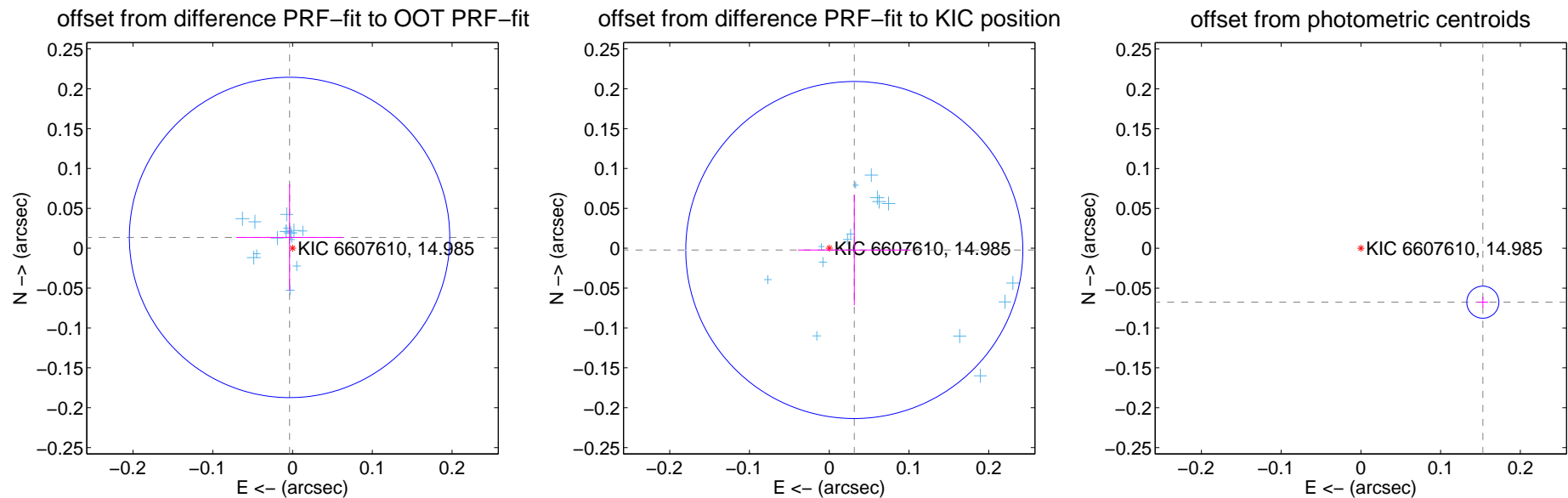
## DV Centroid Data

Supplemental centroid analysis for 006607610-01. Kepler magnitude: 14.98. Transit SNR 1175.74

There are 15 quarters with good PRF difference image offsets

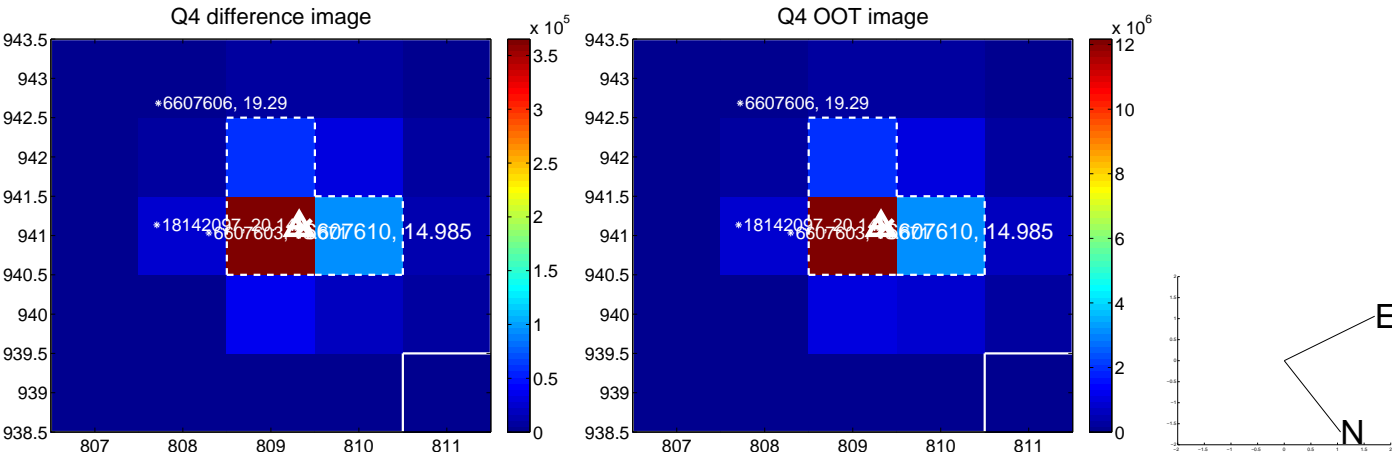
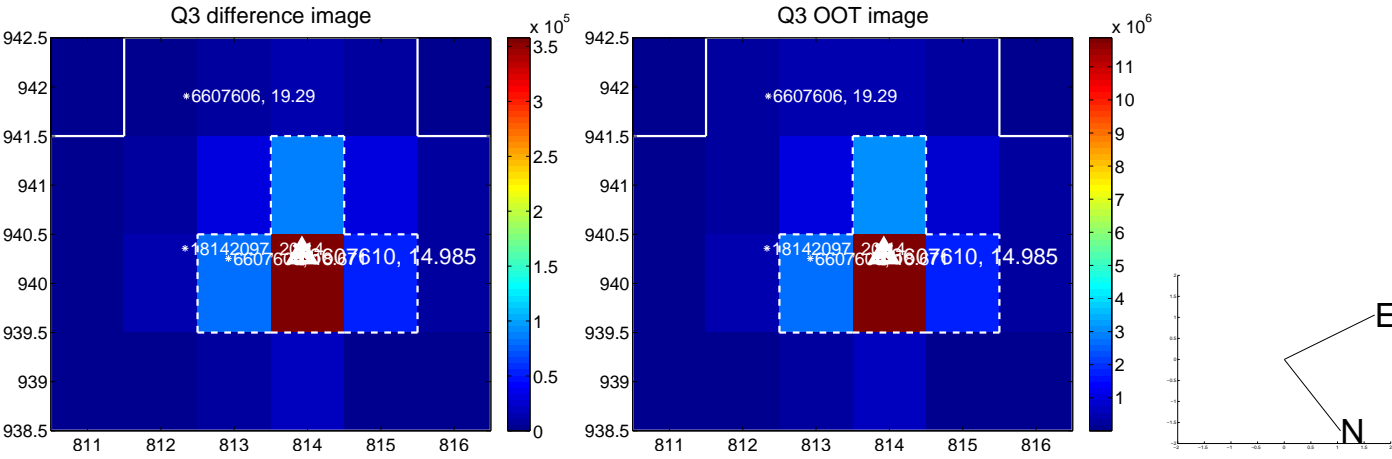
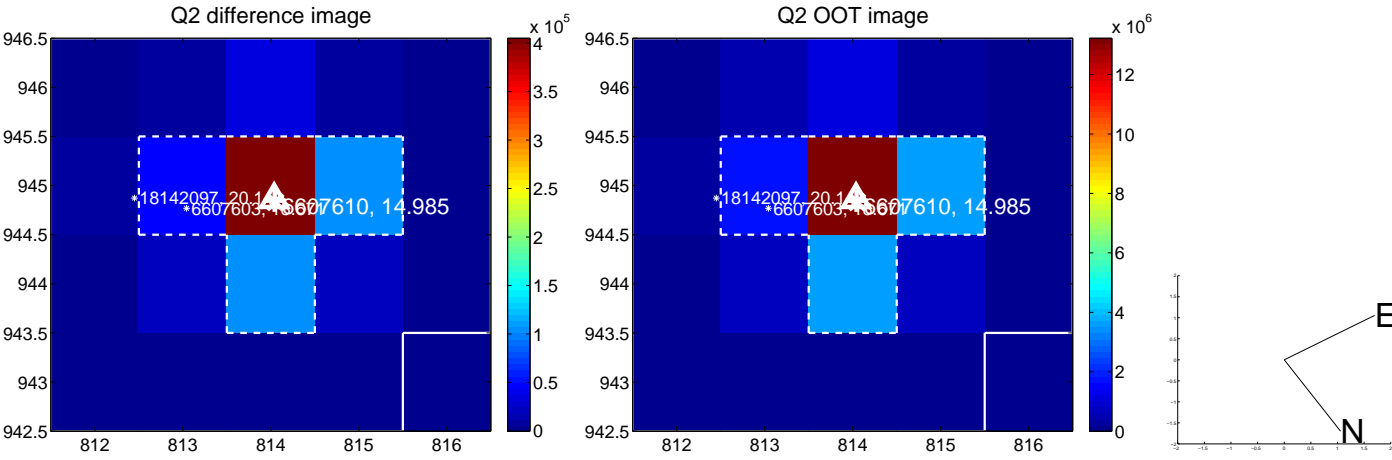
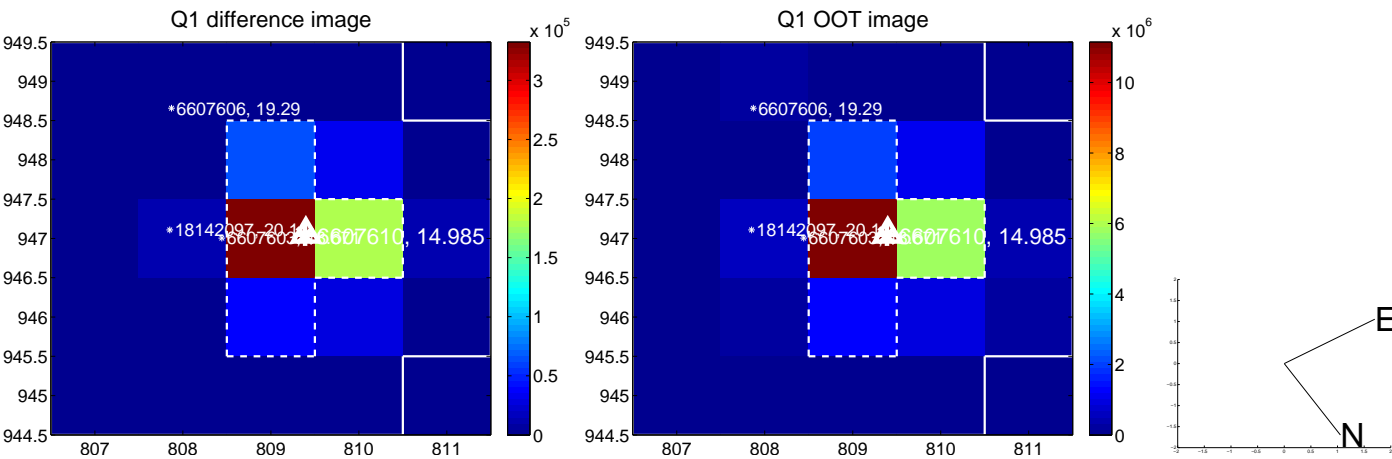
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.014 \pm 0.067$	0.21	$0.004 \pm 0.067$	$0.014 \pm 0.067$
PRF-fit source offset from KIC position	$0.031 \pm 0.070$	0.45	$-0.031 \pm 0.070$	$-0.002 \pm 0.069$
photometric centroid source offset	$0.17 \pm 0.01$	24.92	$-0.15 \pm 0.01$	$-0.07 \pm 0.01$

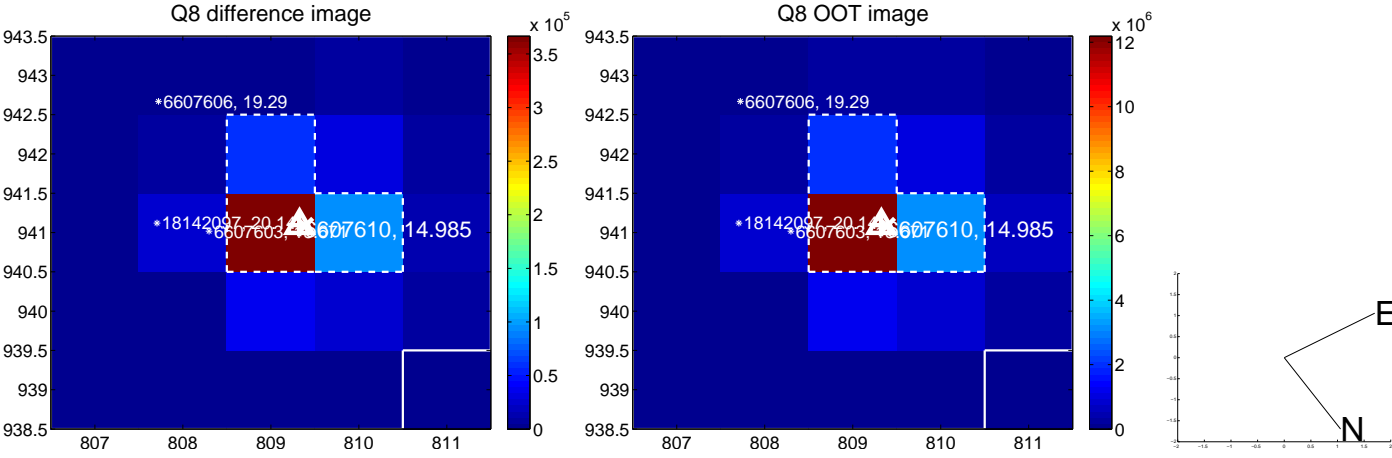
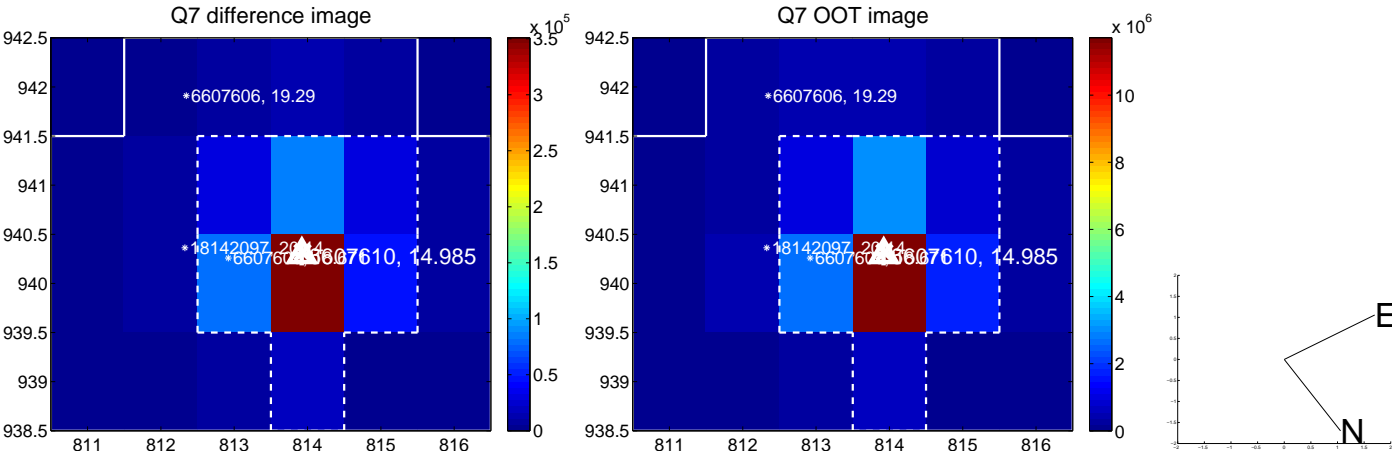
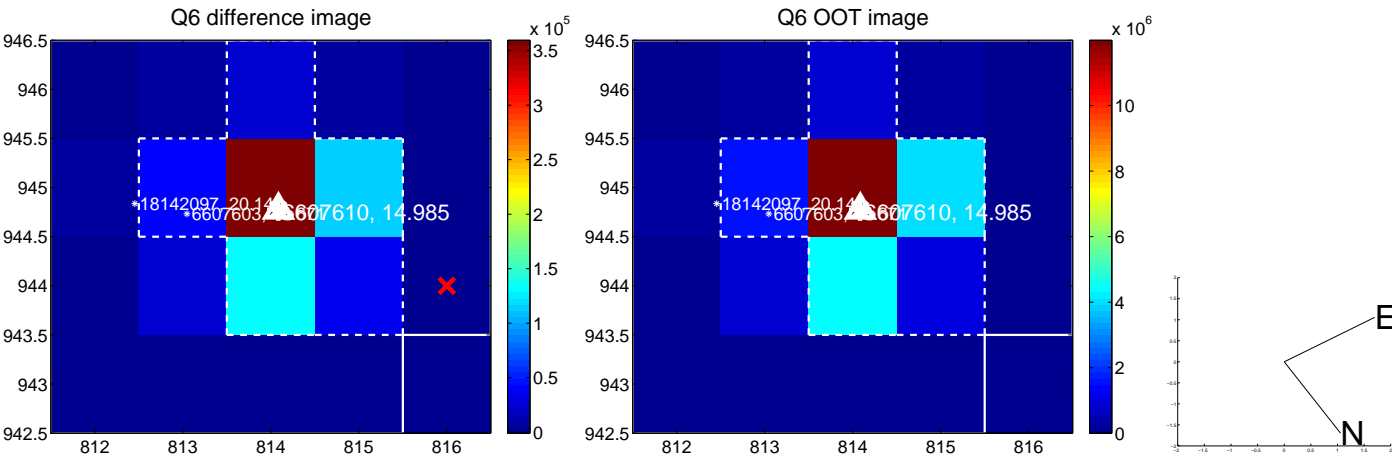
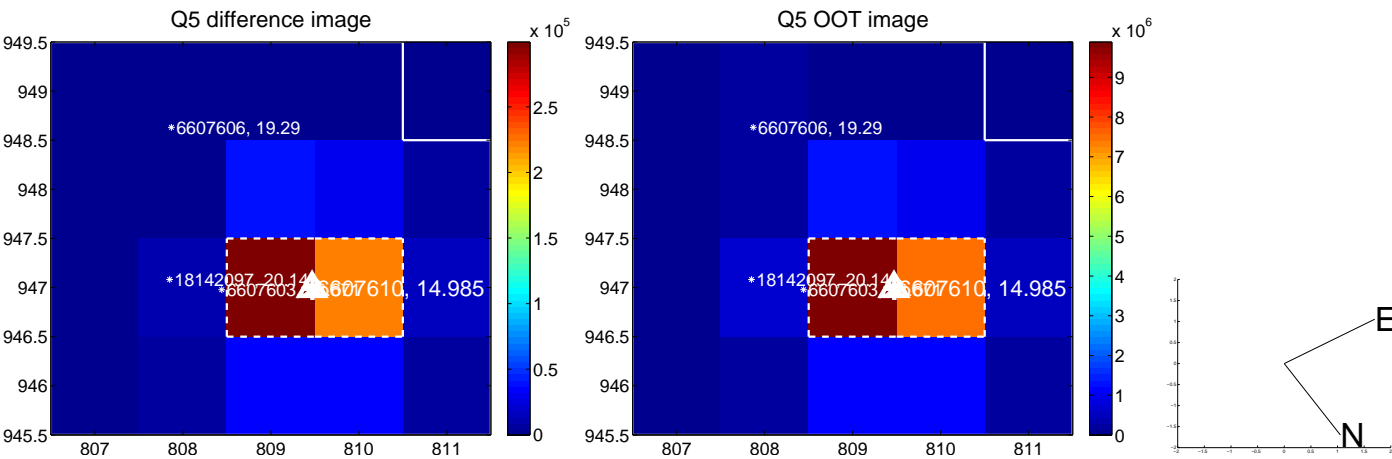


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

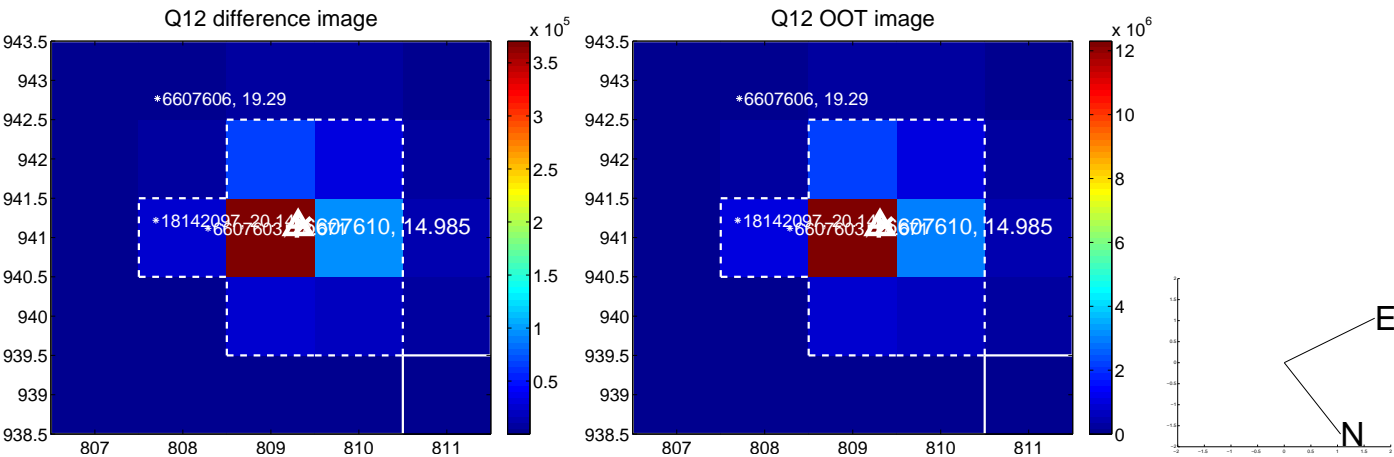
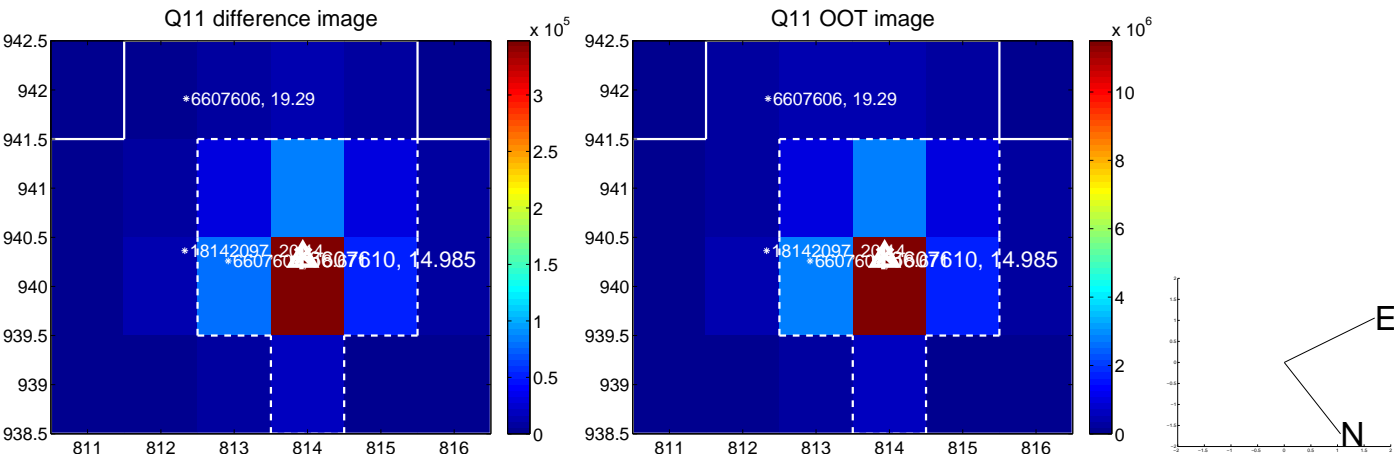
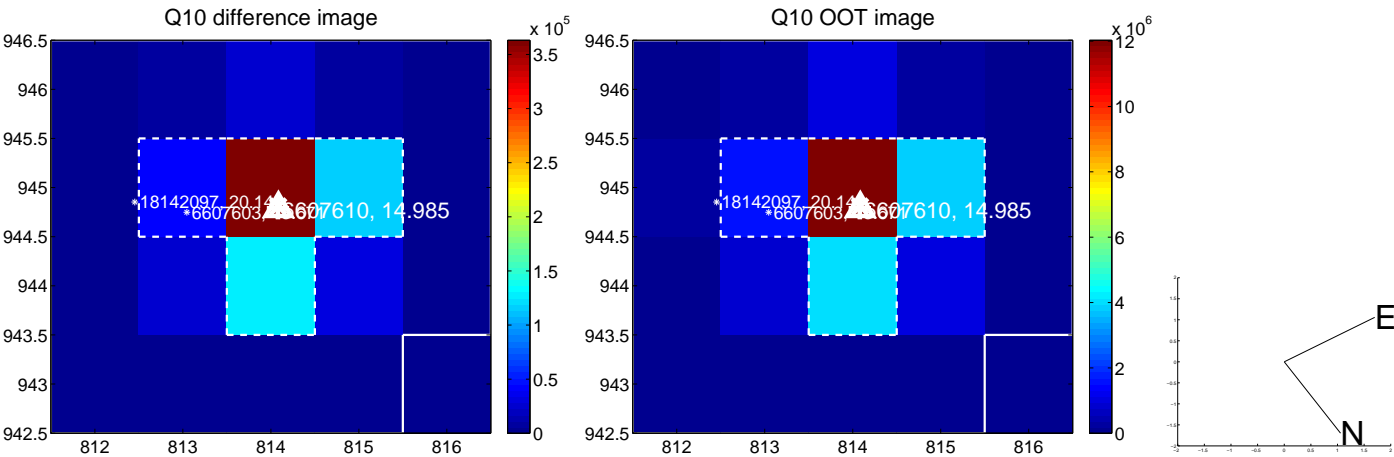
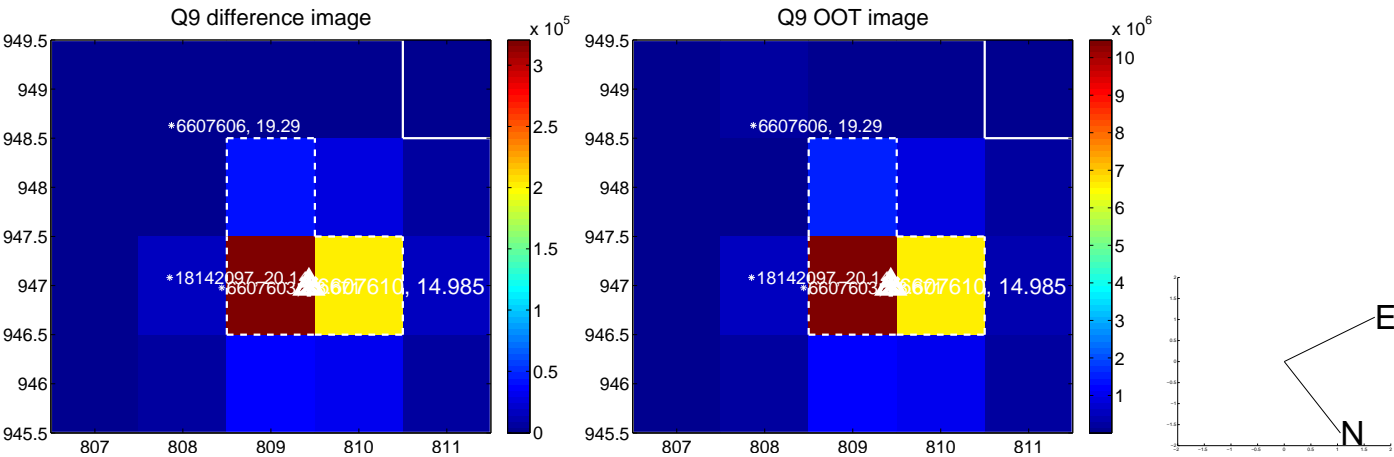


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

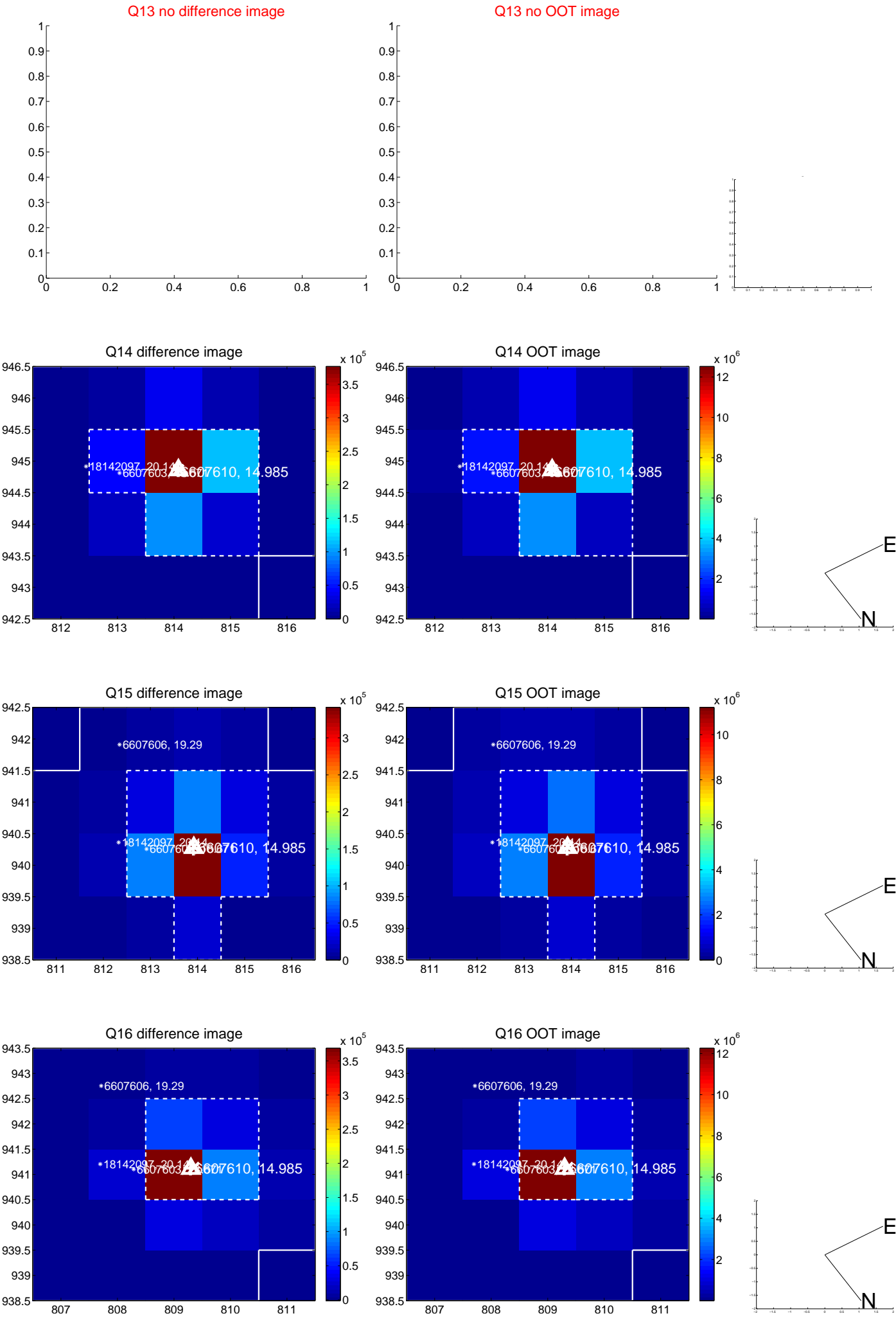




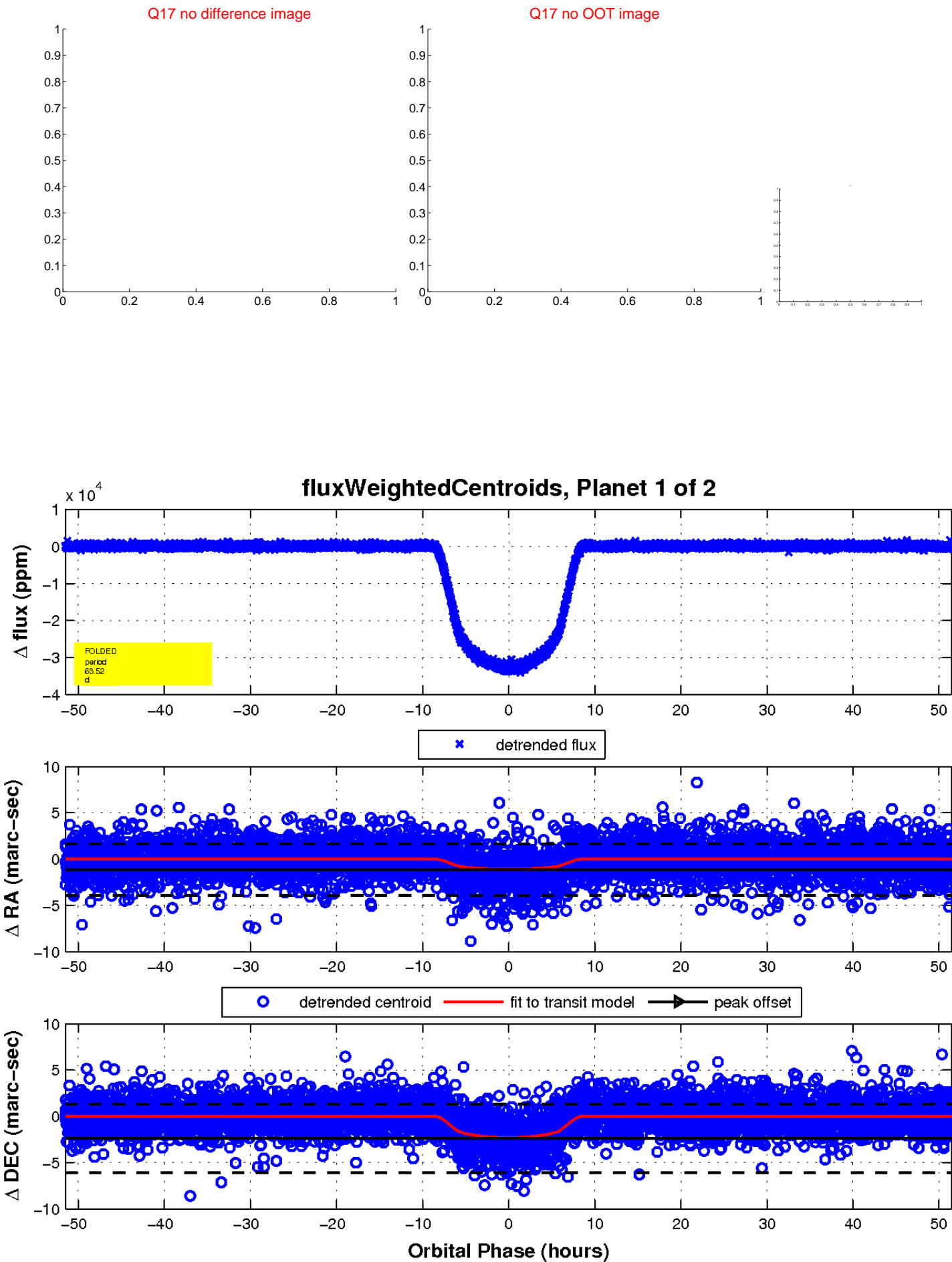
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

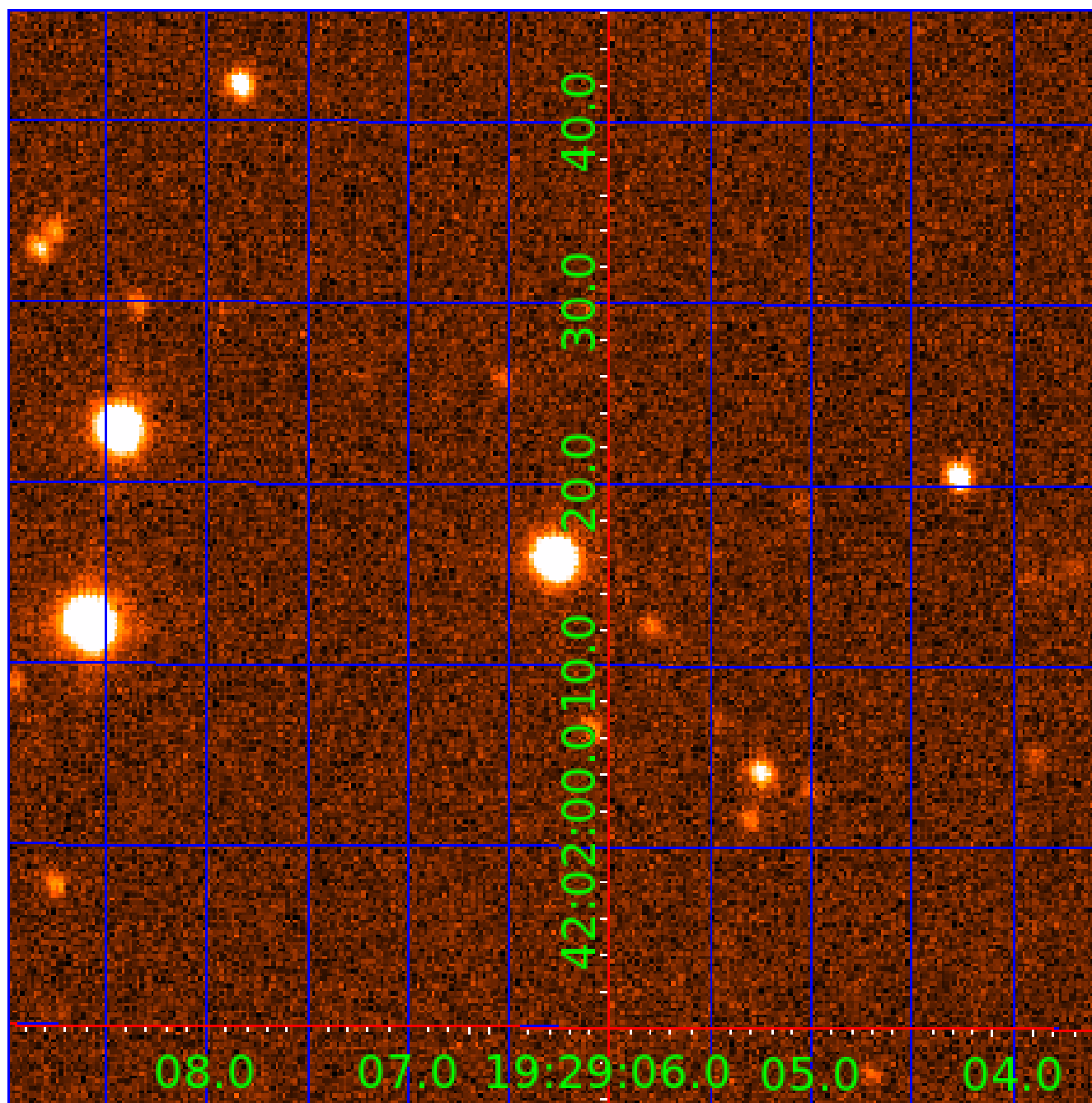


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006607610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006607610-01	OBS	6742.01	63.520217	162.163033	32557.0	17.157	1211.9	1175.7	4.33	4938	77.14	73.04
006607610-02	OBS	No	63.520339	189.473269	5617.4	25.393	192.8	231.4	4.33	4938	35.75	73.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006607610-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
006607610-02	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.

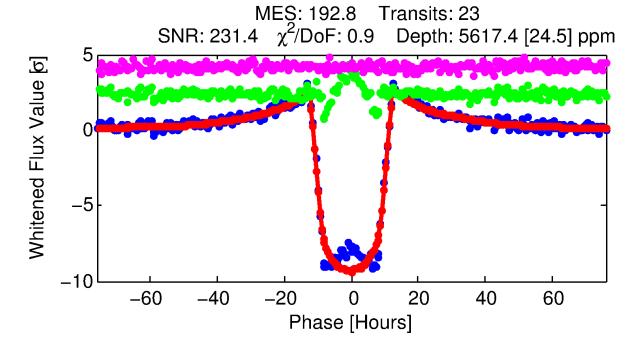
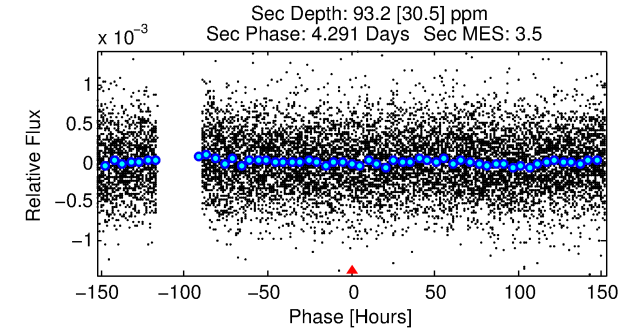
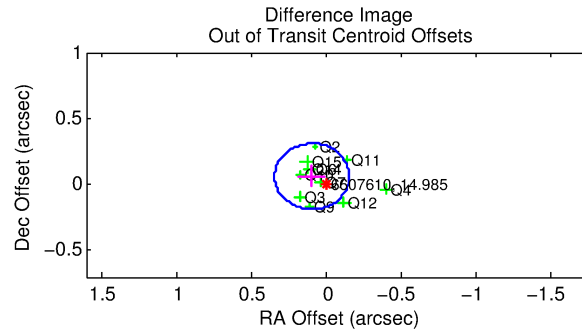
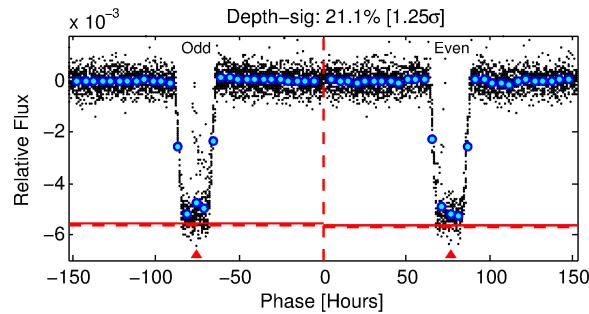
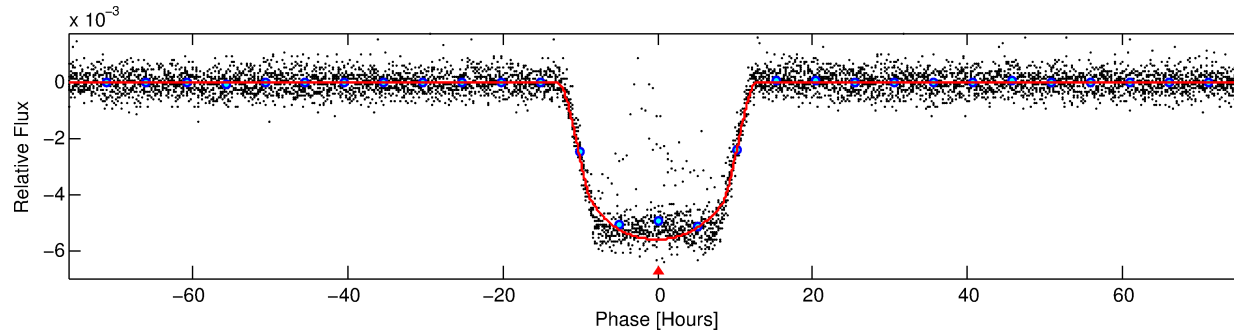
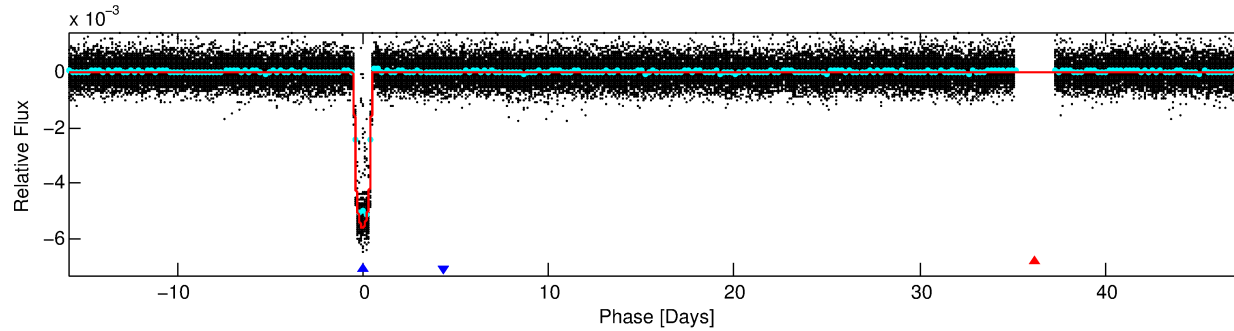
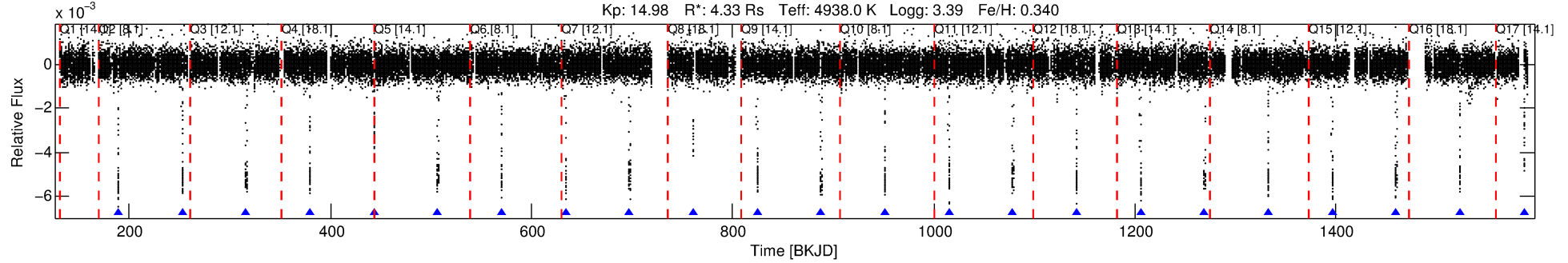
## Ephemeris Match Information For 006607610-02

No Significant Match Found

# DV One-Page Summary

KIC: 6607610 Candidate: 2 of 2 Period: 63.520 d  
KOI: K06742 Corr: No Ephemeris Match

Kp: 14.98 R\*: 4.33 Rs Teff: 4938.0 K Logg: 3.39 Fe/H: 0.340



## DV Fit Results:

Period = 63.52034 [0.00014] d  
Epoch = 189.4733 [0.0018] BKJD  
Rp/R\* = 0.0757 [0.0004]  
a/R\* = 14.45 [0.20]  
b = 0.77 [0.01]  
Seff = 73.04 [26.56]  
Teq = 745 [68] K  
Rp = 35.75 [10.92] Re  
a = 0.3698 [0.0923] AU  
Ag = 5.48 [2.64] [1.70σ]  
Teffp = 1764 [149] K [6.21σ]

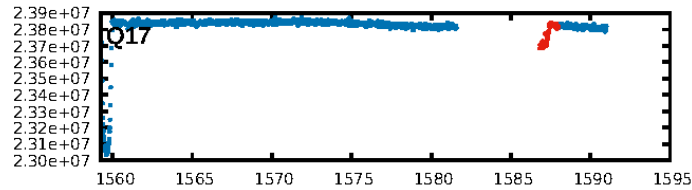
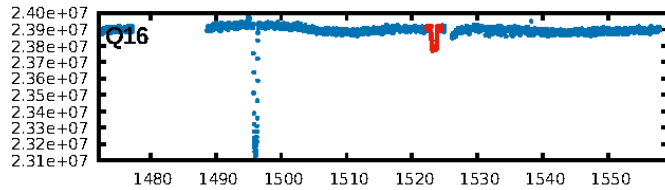
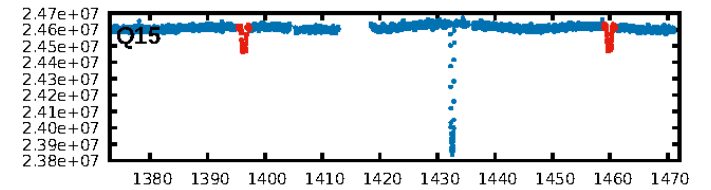
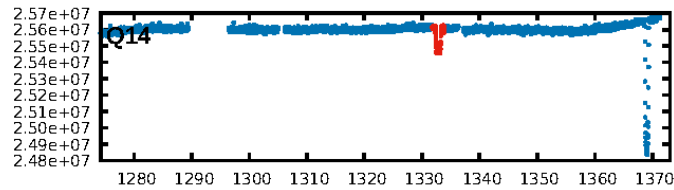
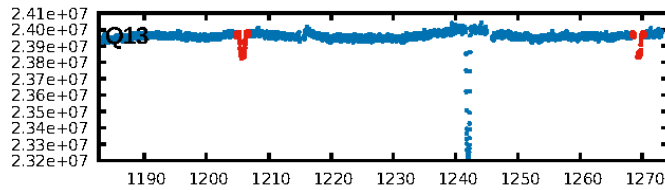
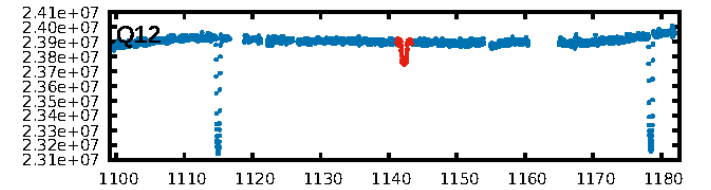
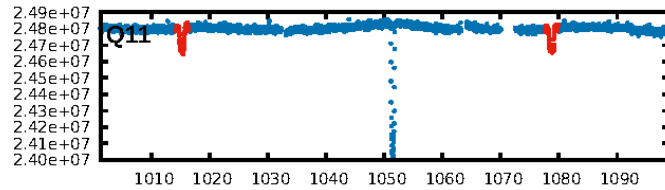
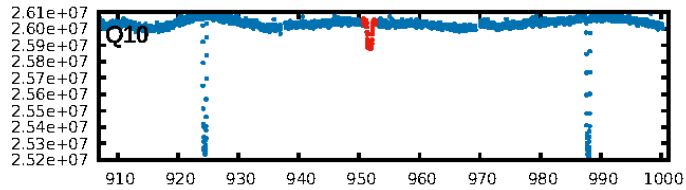
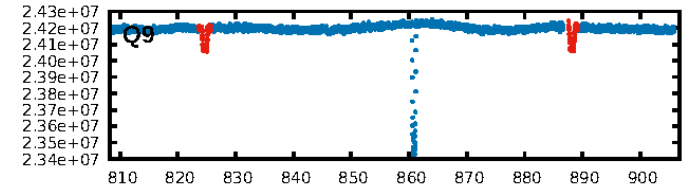
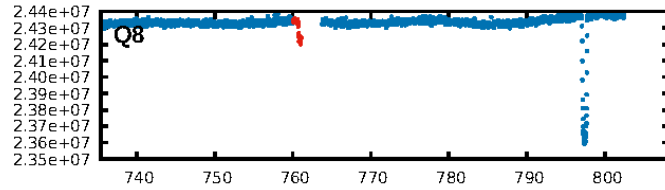
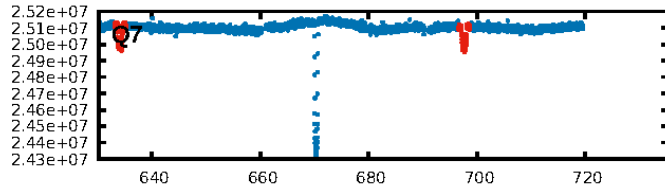
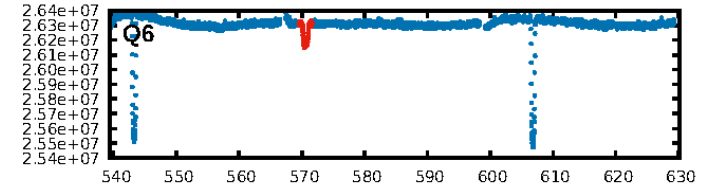
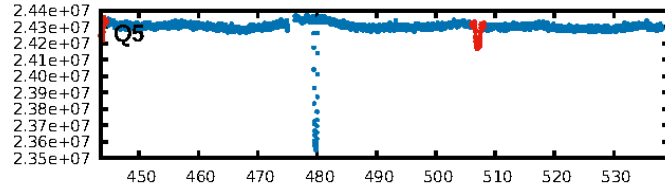
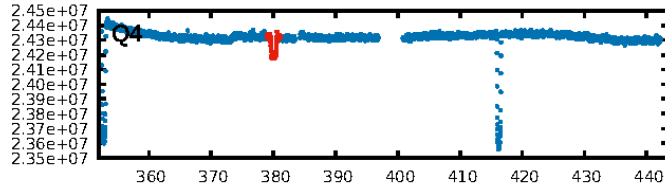
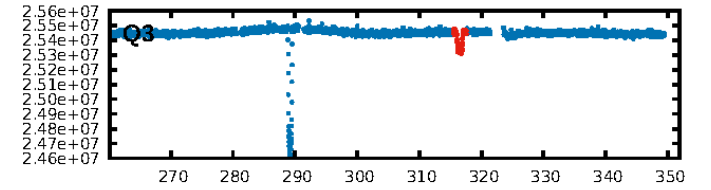
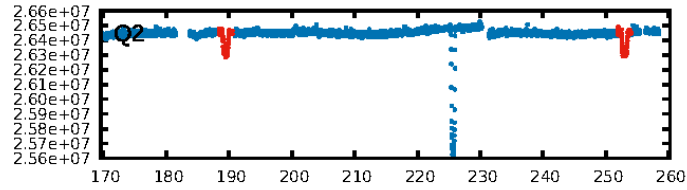
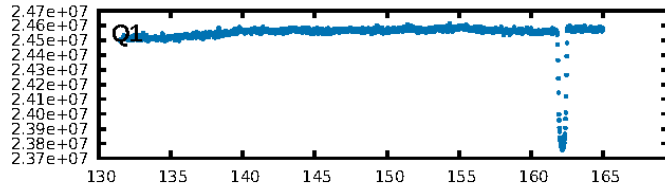
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [22/22]  
GhostDiagnostic-chr: 2.831  
Centroid-sig: 46.2%  
Centroid-so: 0.218 arcsec [6.79σ]  
OotOffset-rm: 0.110 arcsec [1.33σ]  
KicOffset-rm: 0.120 arcsec [1.22σ]  
OotOffset-st: 4/4/2/1 [11]  
KicOffset-st: 4/4/2/1 [11]  
DiffImageQuality-fgm: 1.00 [11/11]  
DiffImageOverlap-fno: 1.00 [11/11]

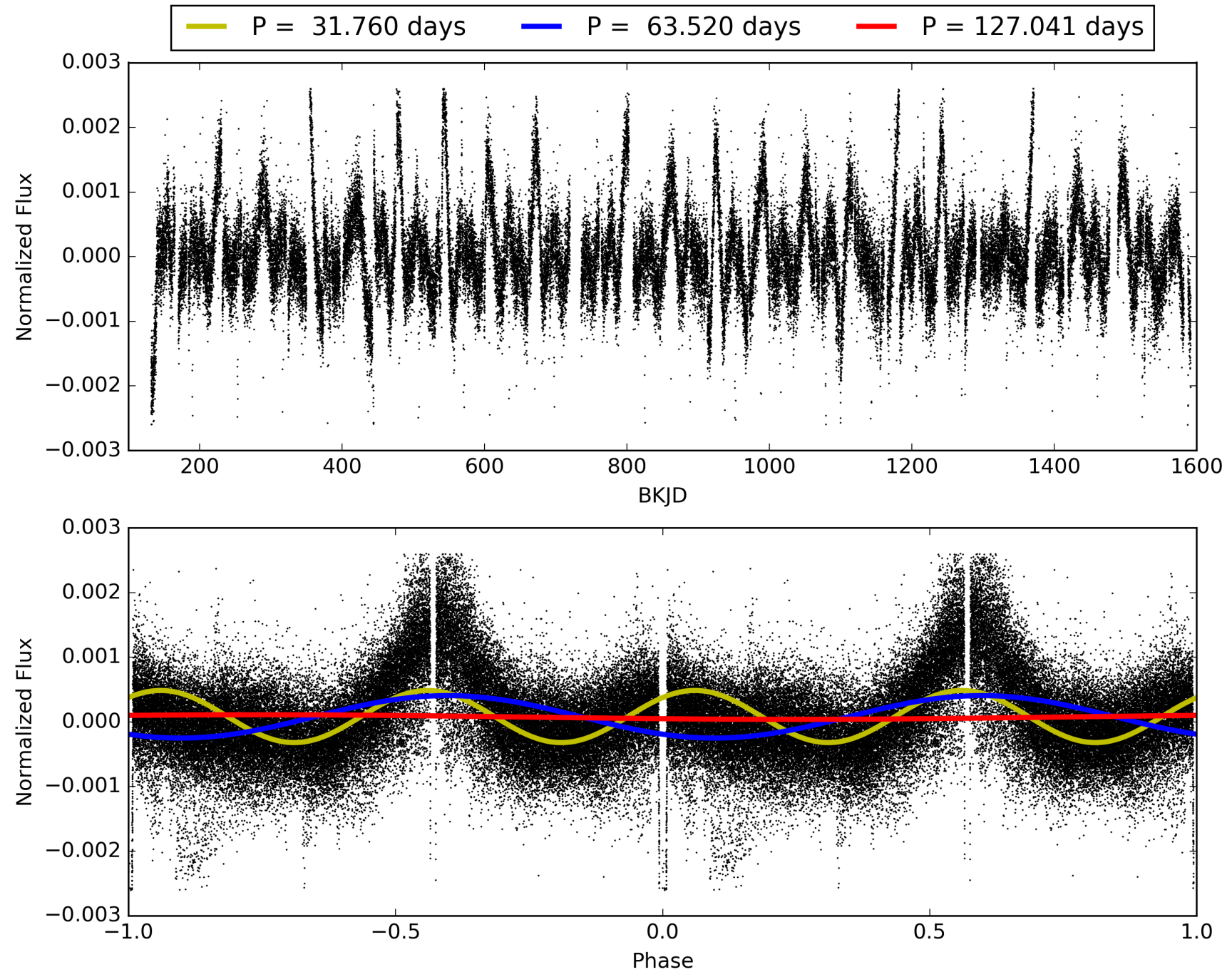
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:20:36 Z

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

# TCE 006607610-02, PDC Light Curves



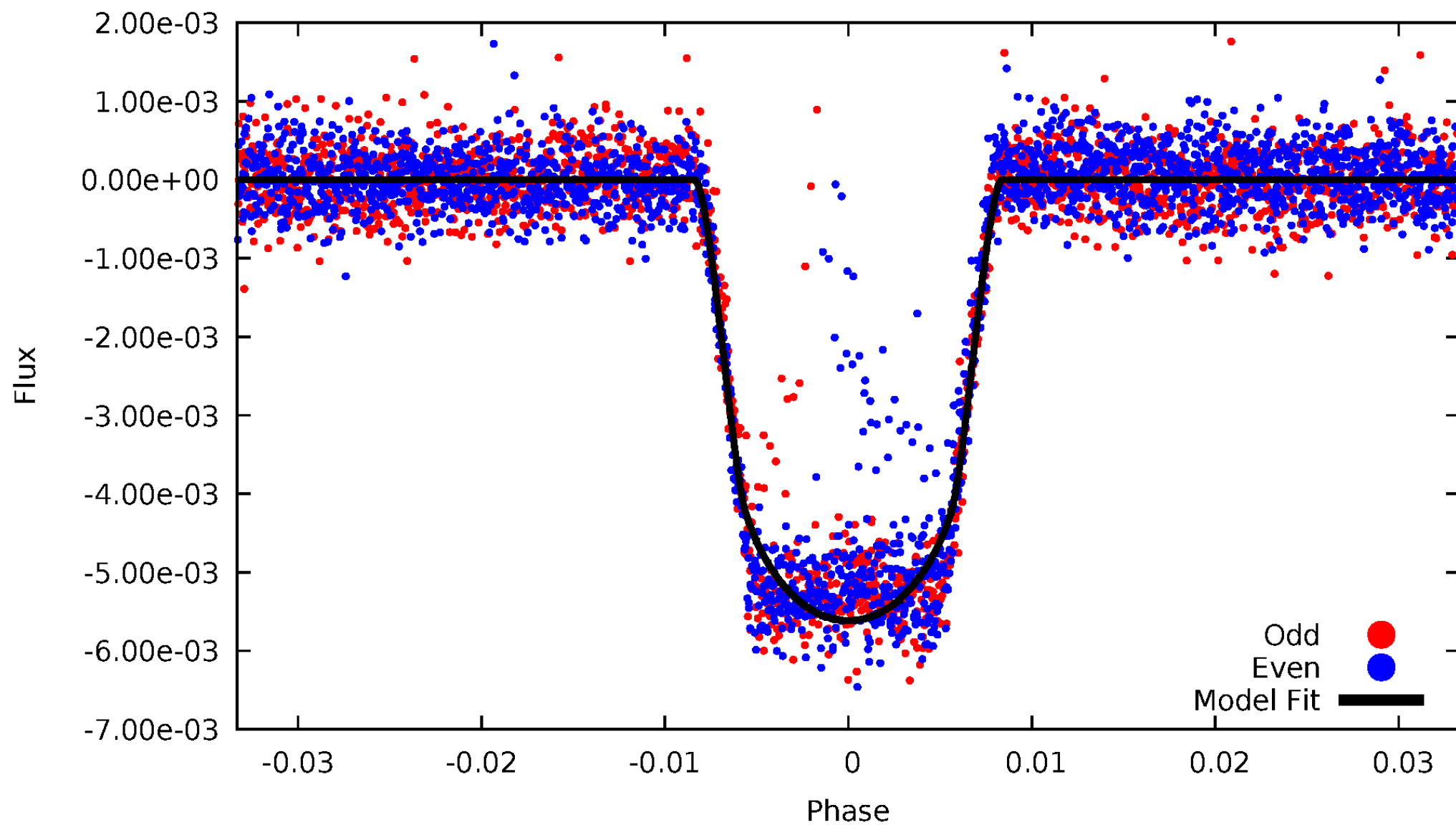
TCE 006607610-02





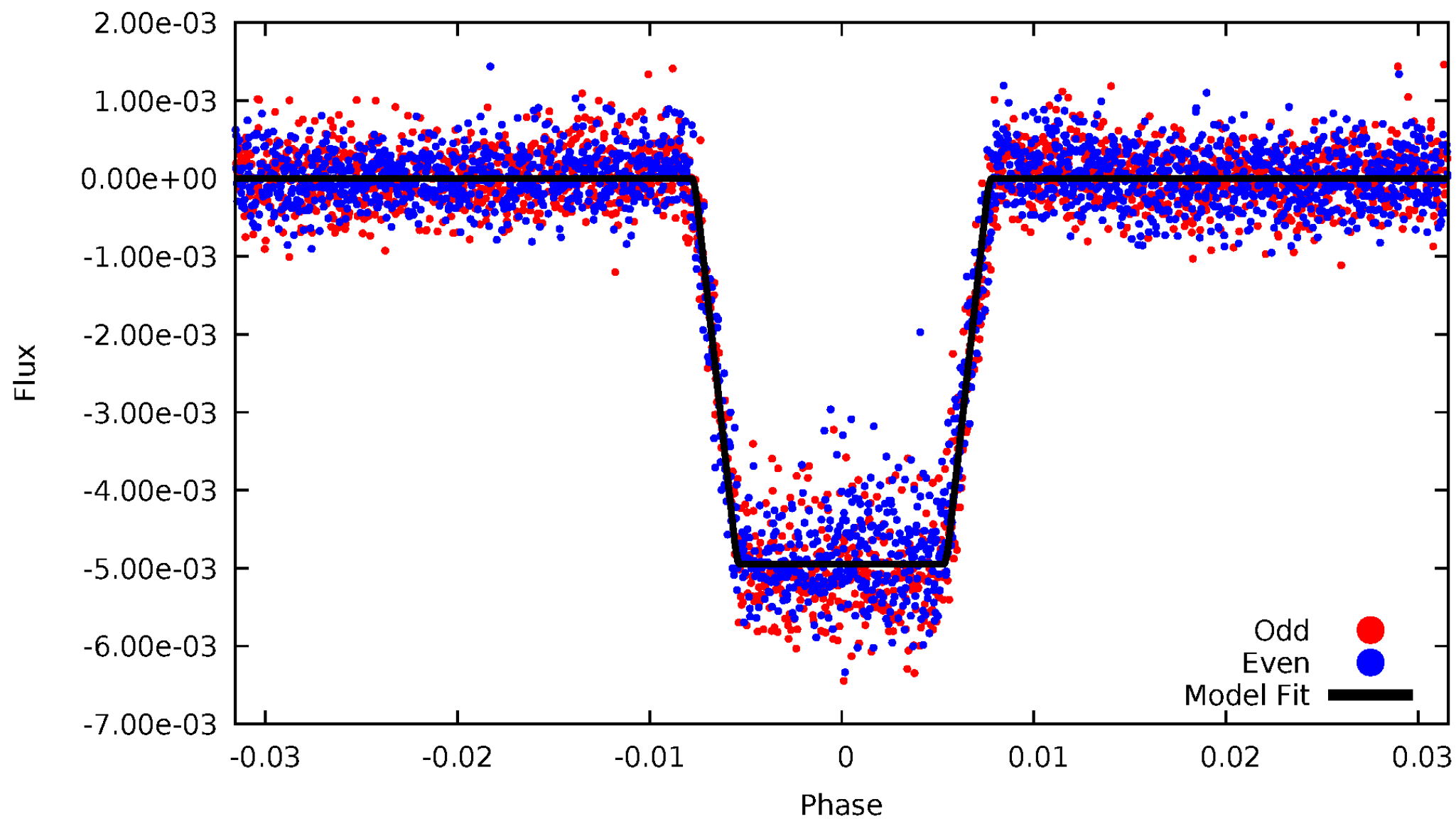
DV Odd/Even

TCE 006607610-02



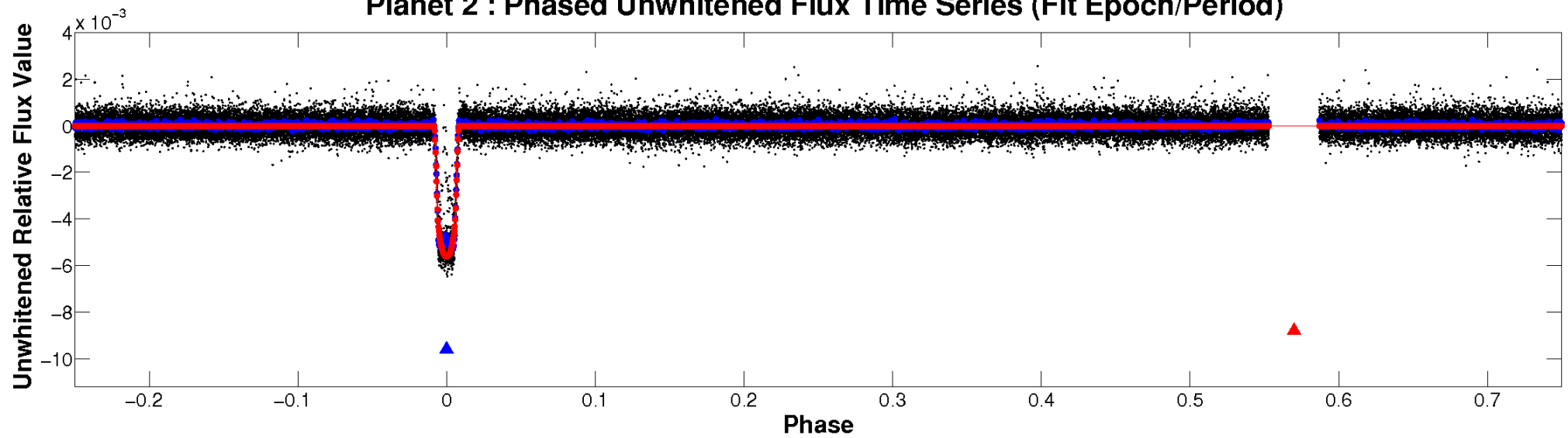
# ALT Odd/Even

TCE 006607610-02

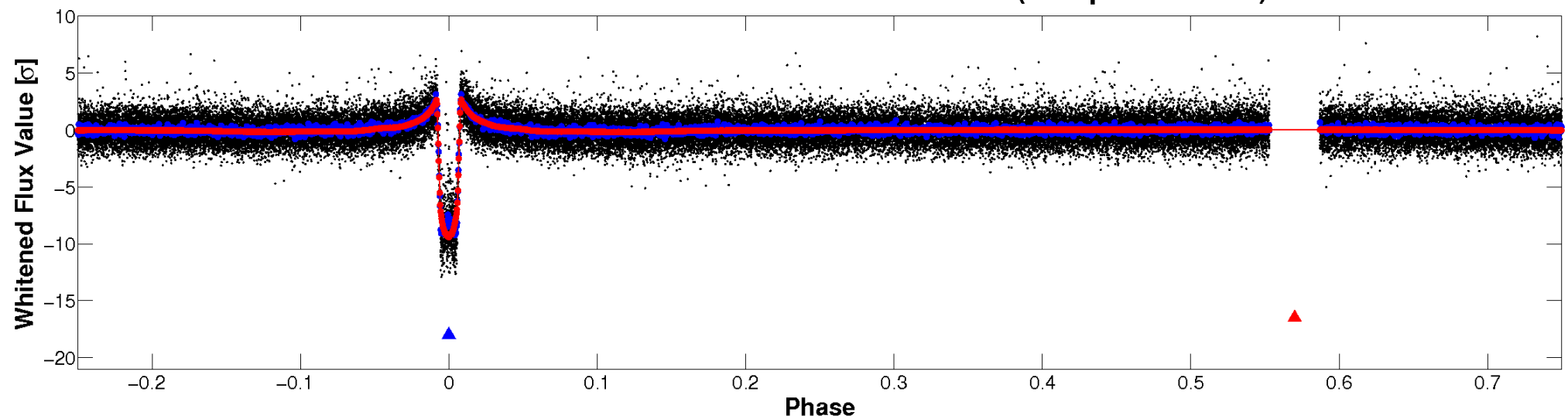


# Non-Whitened Vs. Whitened Light Curve

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

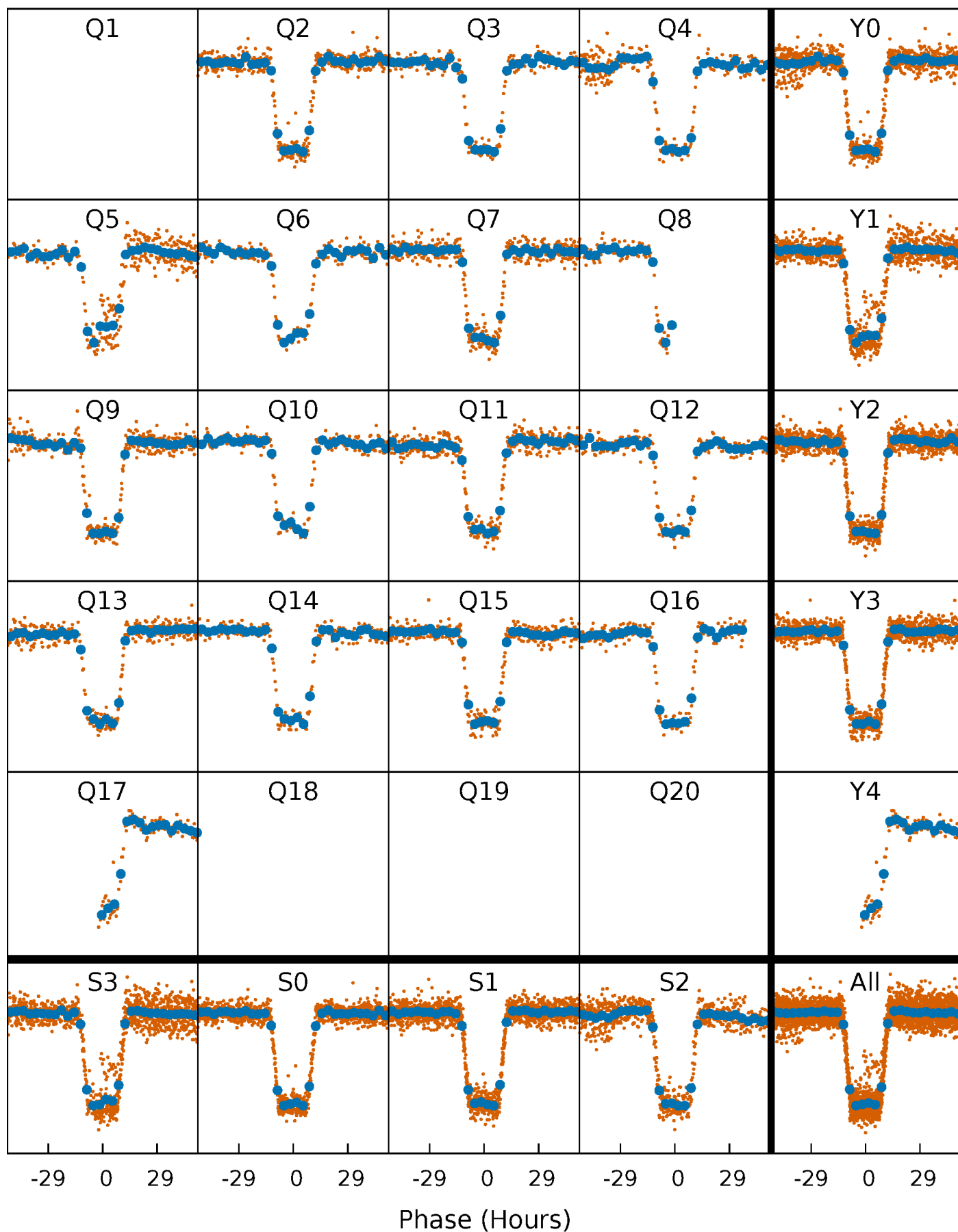


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



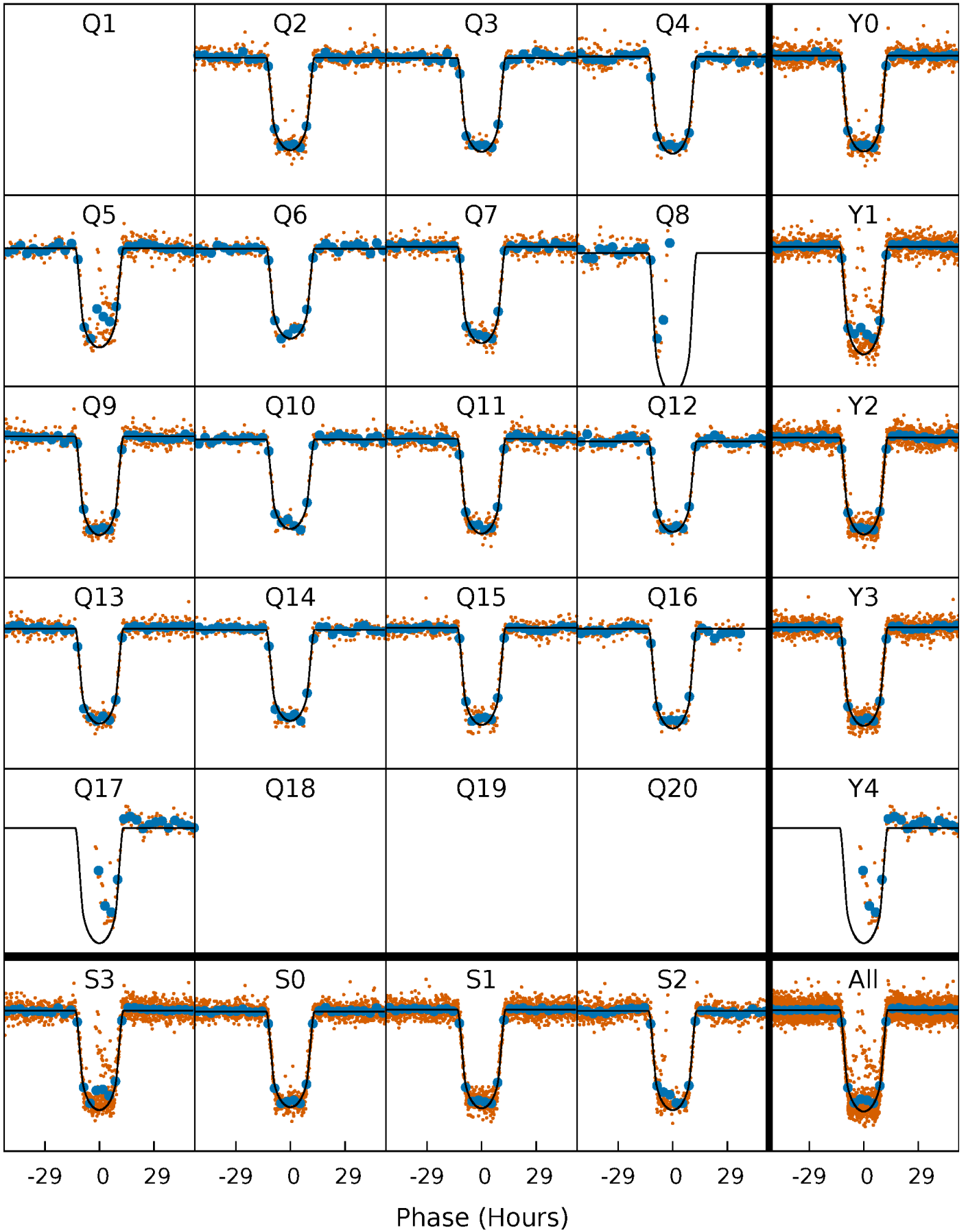
# PDC Quarter-Phased Transit Curves

TCE 006607610-02 P= 63.520339 Days  $T_0=189.473269$  (BKJD)



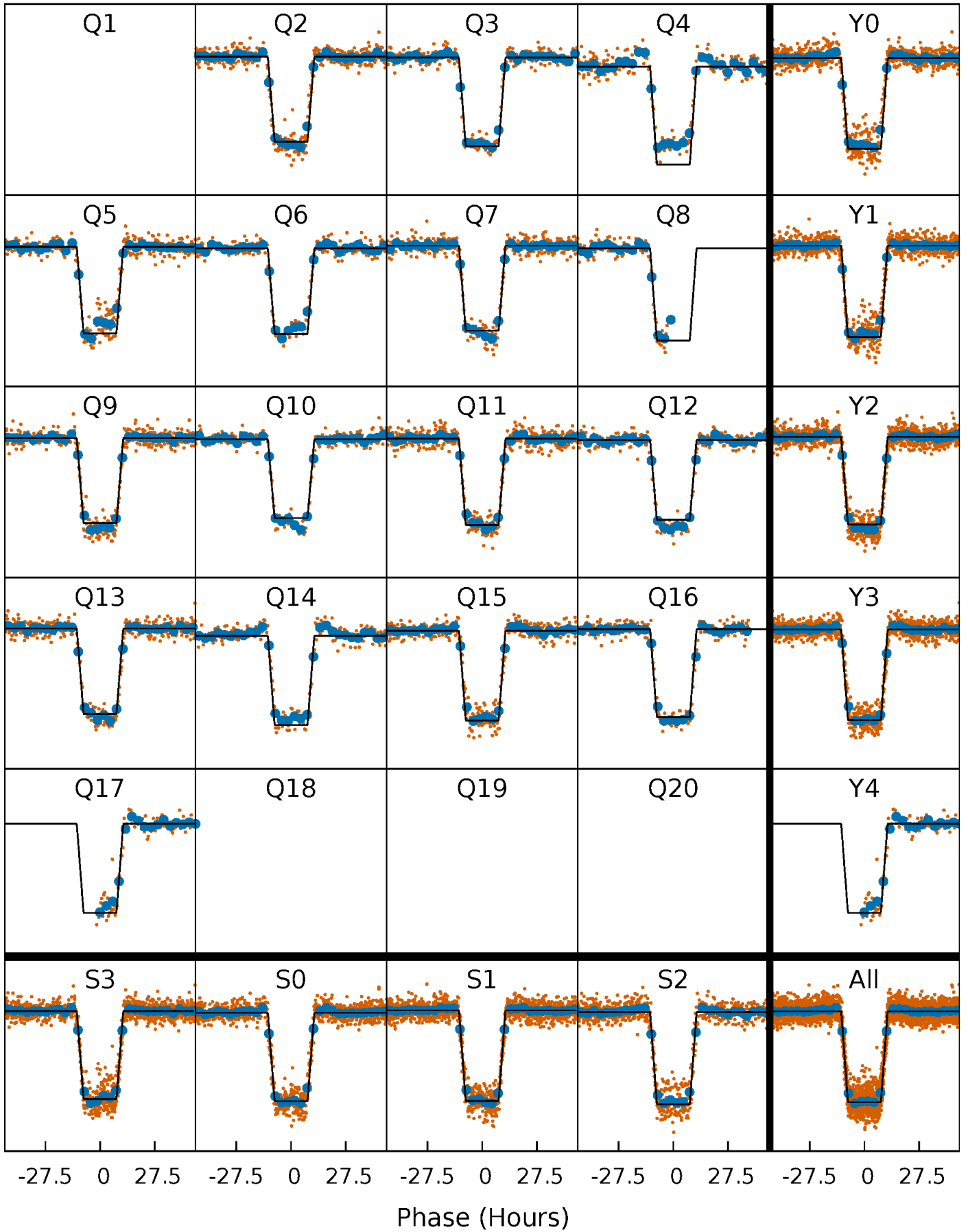
# DV Quarter-Phased Transit Curves

TCE 006607610-02   P= 63.520339 Days    $T_0=189.473269$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

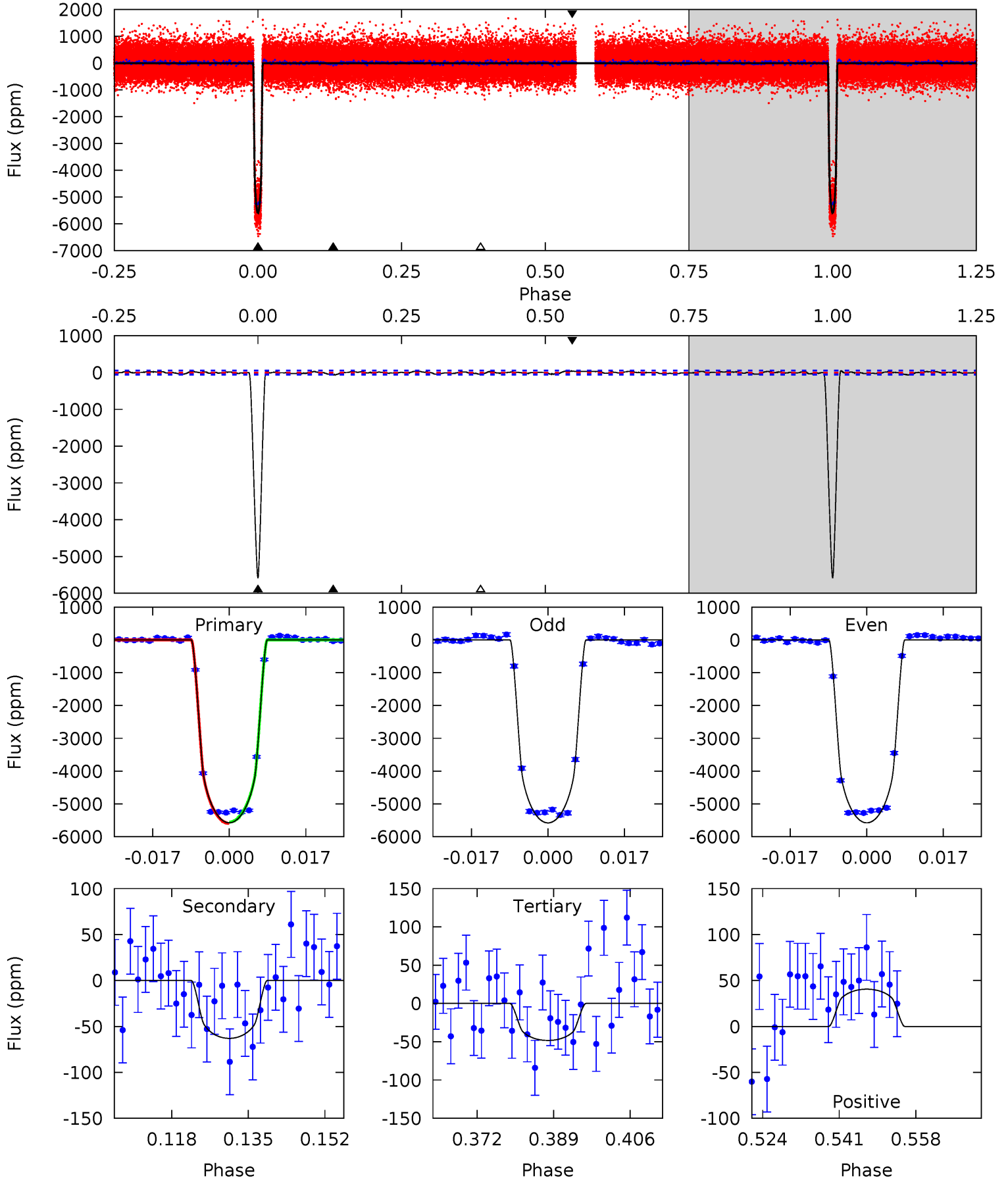
TCE 006607610-02 P= 63.518480 Days  $T_0=189.493582$  (BKJD)



# DV Model-Shift Uniqueness Test

006607610-02, P = 63.520339 Days, E = 125.952930 Days

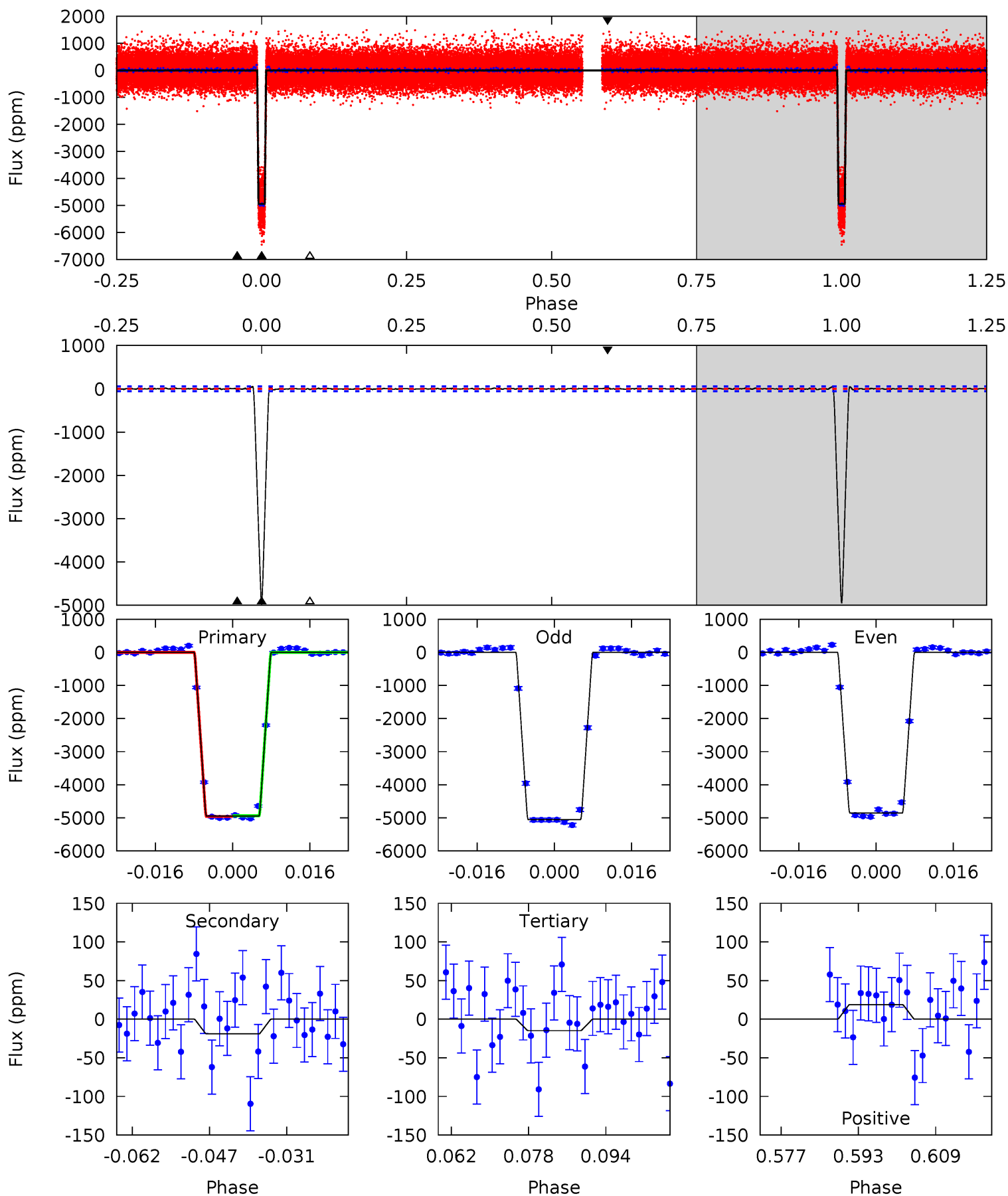
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
496.5	5.61	4.31	3.61	4.92	2.39	1.65	492.2	492.9	1.30	2.00	0.08	0.95	0.01	1.87



# Alt Model-Shift Uniqueness Test

006607610-02, P = 63.518480 Days, E = 125.975102 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
451.9	1.73	1.35	1.73	4.94	2.42	0.61	450.6	450.2	0.38	0.01	8.87	0.99	0.01	1.14





### Stellar Parameters For KIC 006607610

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4938^{+58}_{-107}$	$3.388^{+0.188}_{-0.101}$	$0.340^{+0.100}_{-0.200}$	$4.330^{+0.661}_{-1.323}$	$1.669^{+0.171}_{-0.478}$	$0.029^{+0.031}_{-0.009}$
	+1%/-2%	+6%/-3%	+29%/-59%	+15%/-31%	+10%/-29%	+108%/-33%
Source	SPE74	SPE74	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 006607610-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-63 \pm 11$	$35.39^{+3.63}_{-5.52}$	$1030^{+49}_{-61}$	$2417^{+58}_{-74}$	$3.815^{+1.266}_{-0.885}$
Alt.	$-19 \pm 11$	$33.16^{+3.10}_{-5.22}$	$1030^{+48}_{-63}$	$2100^{+142}_{-250}$	$1.332^{+0.880}_{-0.744}$

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

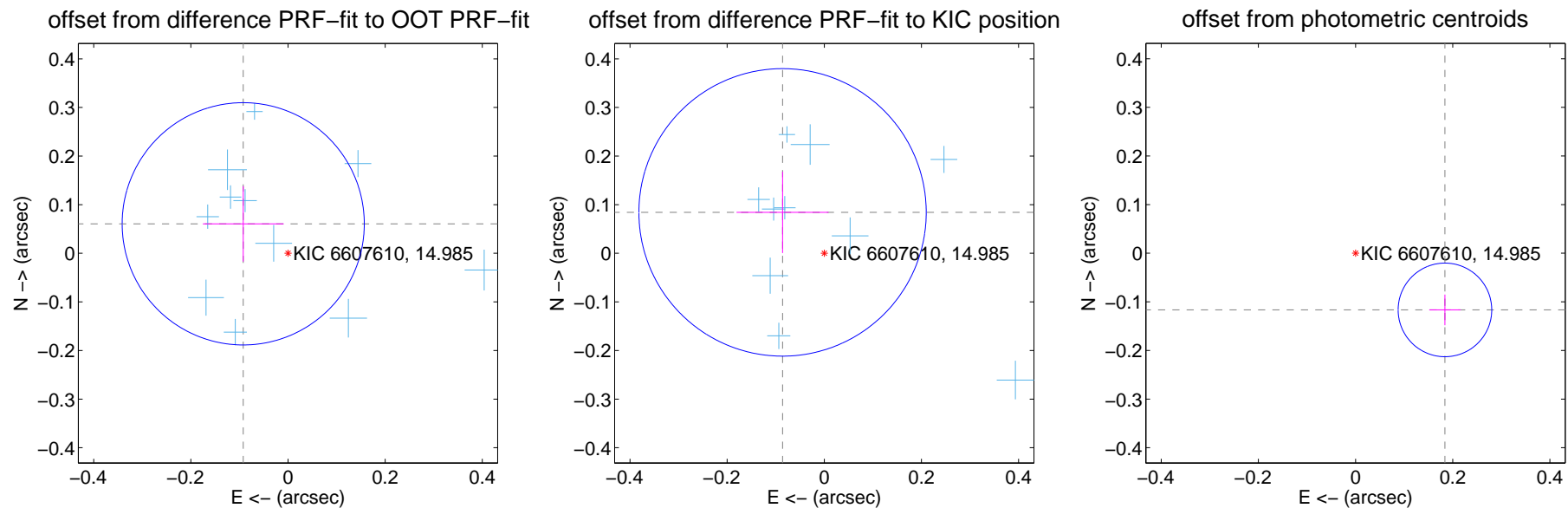
## DV Centroid Data

Supplemental centroid analysis for 006607610-02. Kepler magnitude: 14.98. Transit SNR 231.40

There are 11 quarters with good PRF difference image offsets

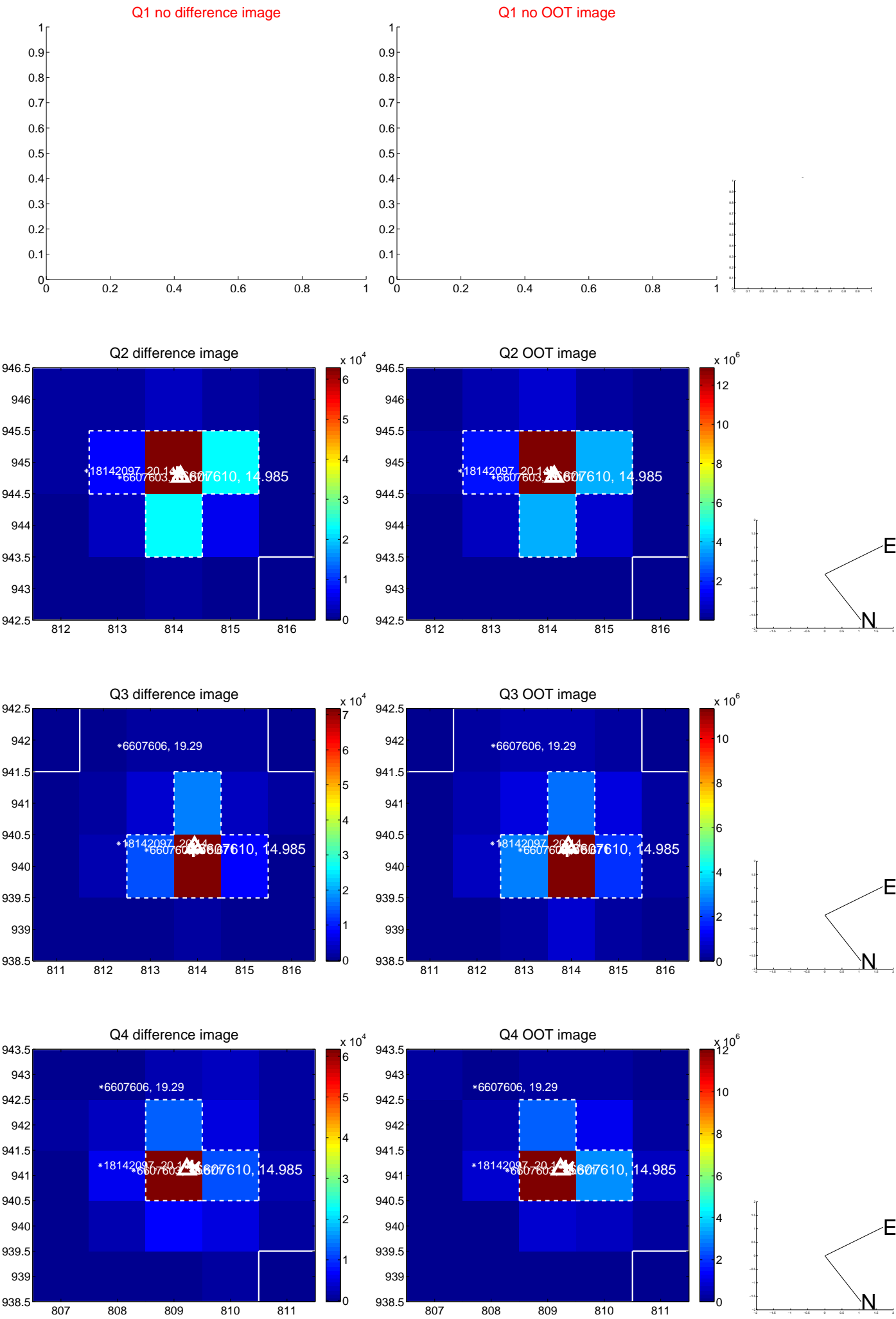
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.110 \pm 0.083$	1.33	$0.092 \pm 0.083$	$0.061 \pm 0.078$
PRF-fit source offset from KIC position	$0.120 \pm 0.099$	1.22	$0.086 \pm 0.095$	$0.084 \pm 0.084$
photometric centroid source offset	$0.22 \pm 0.03$	6.79	$-0.18 \pm 0.03$	$-0.12 \pm 0.03$

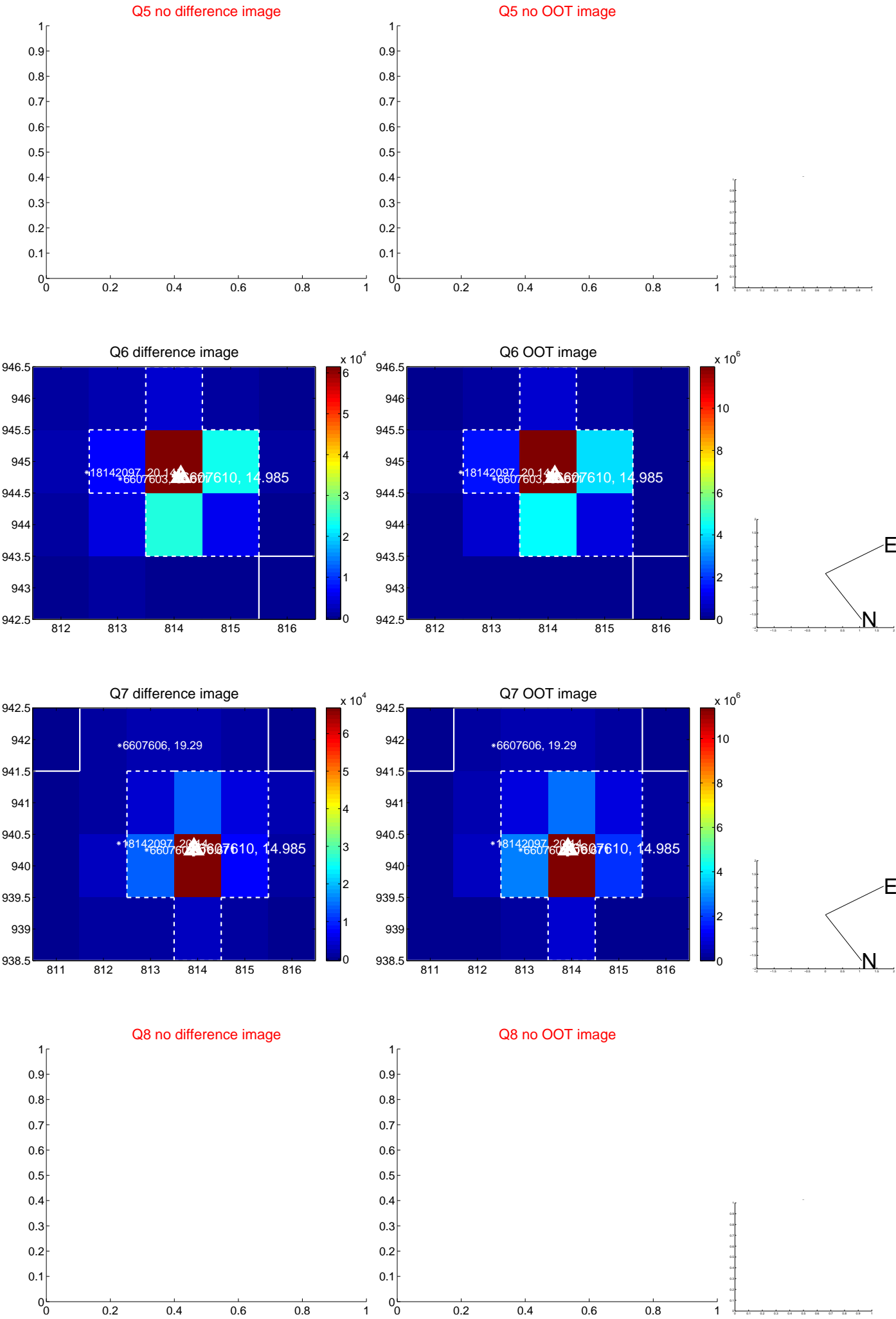


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

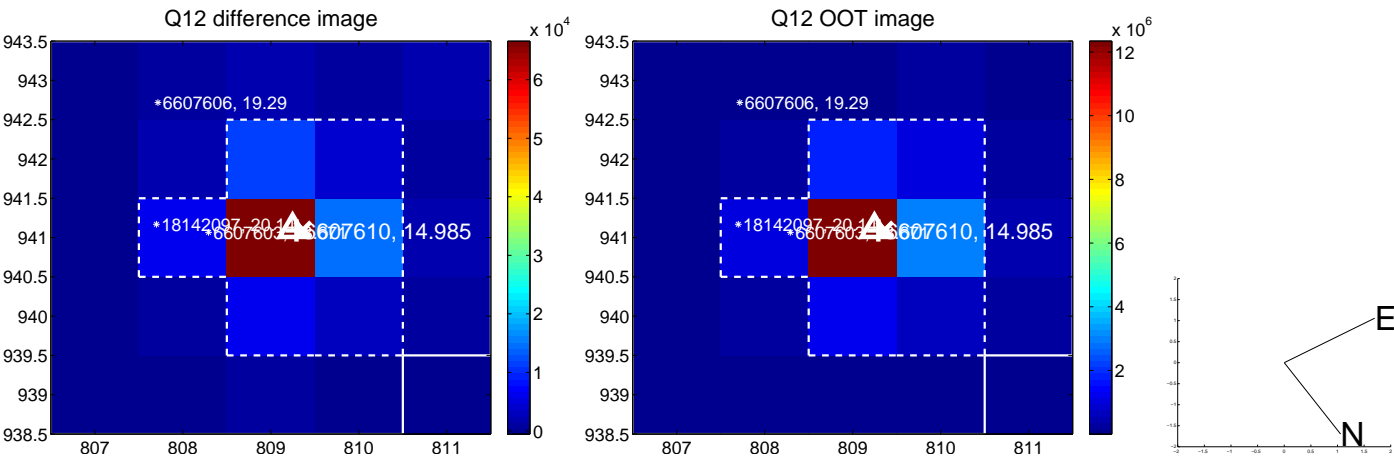
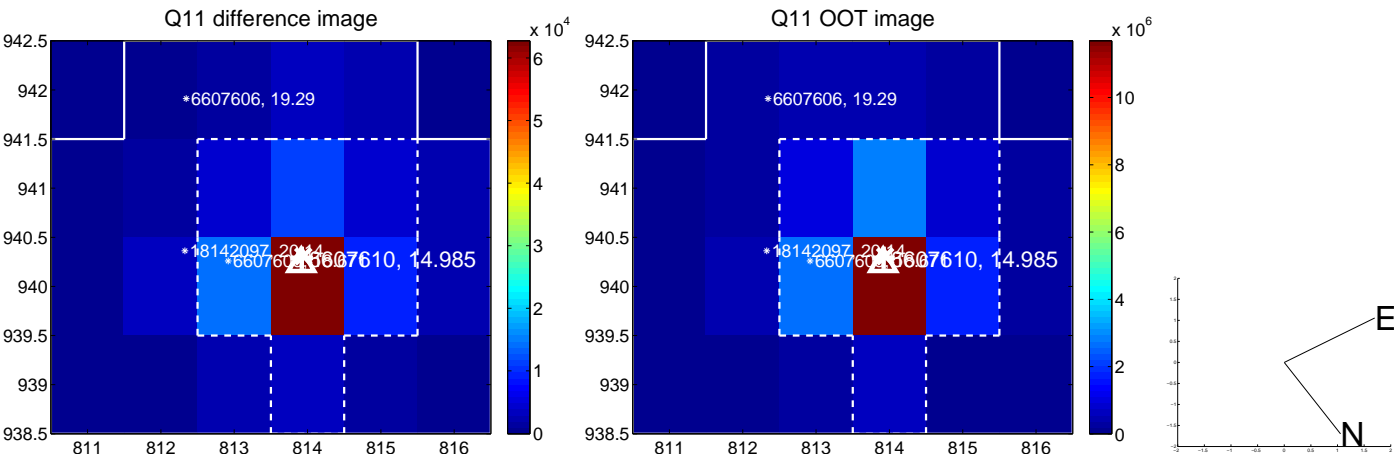
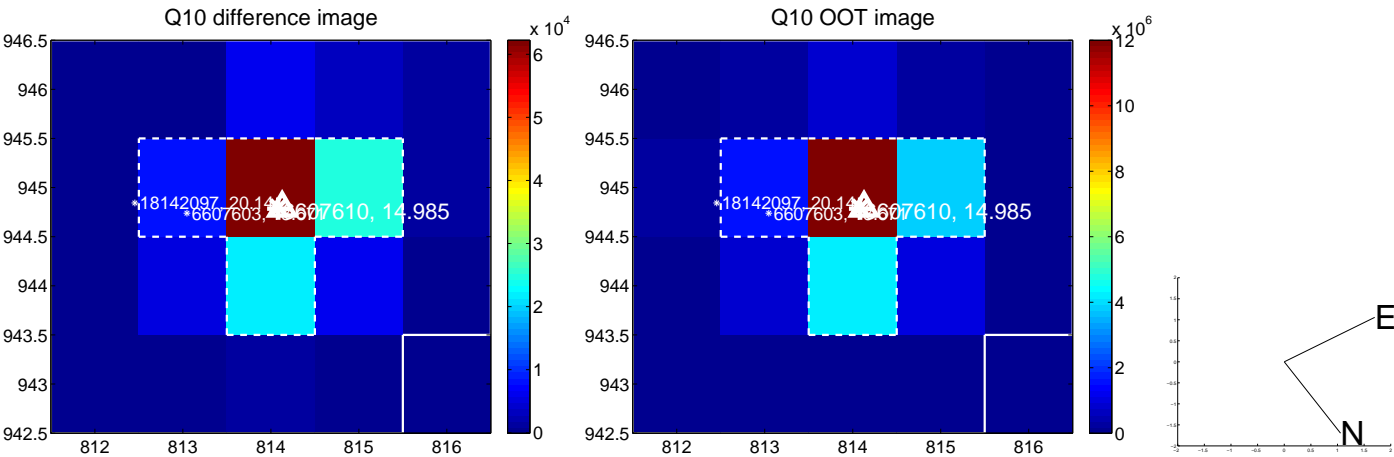
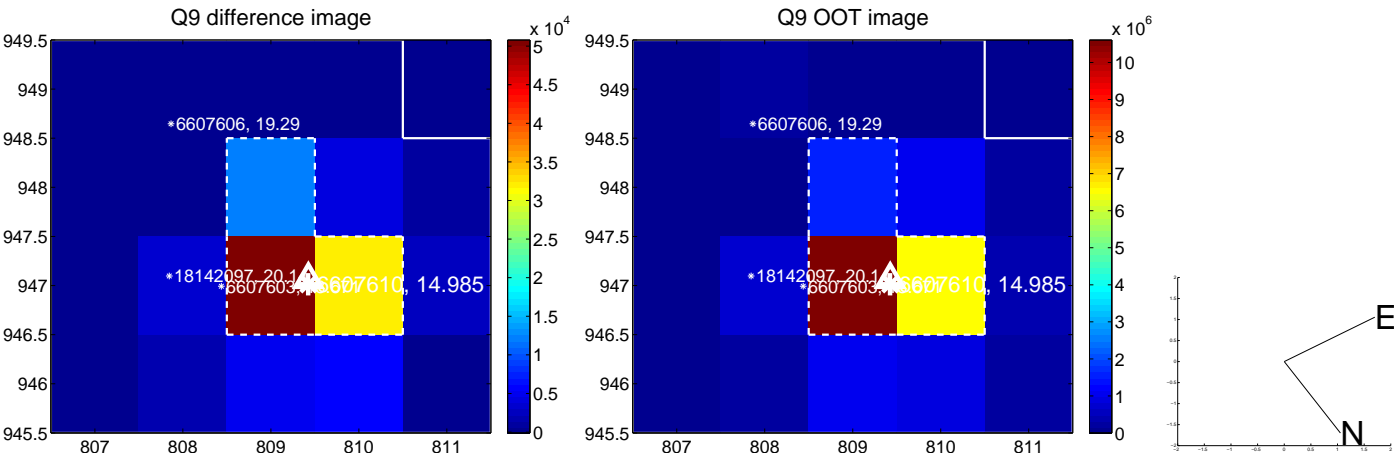
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



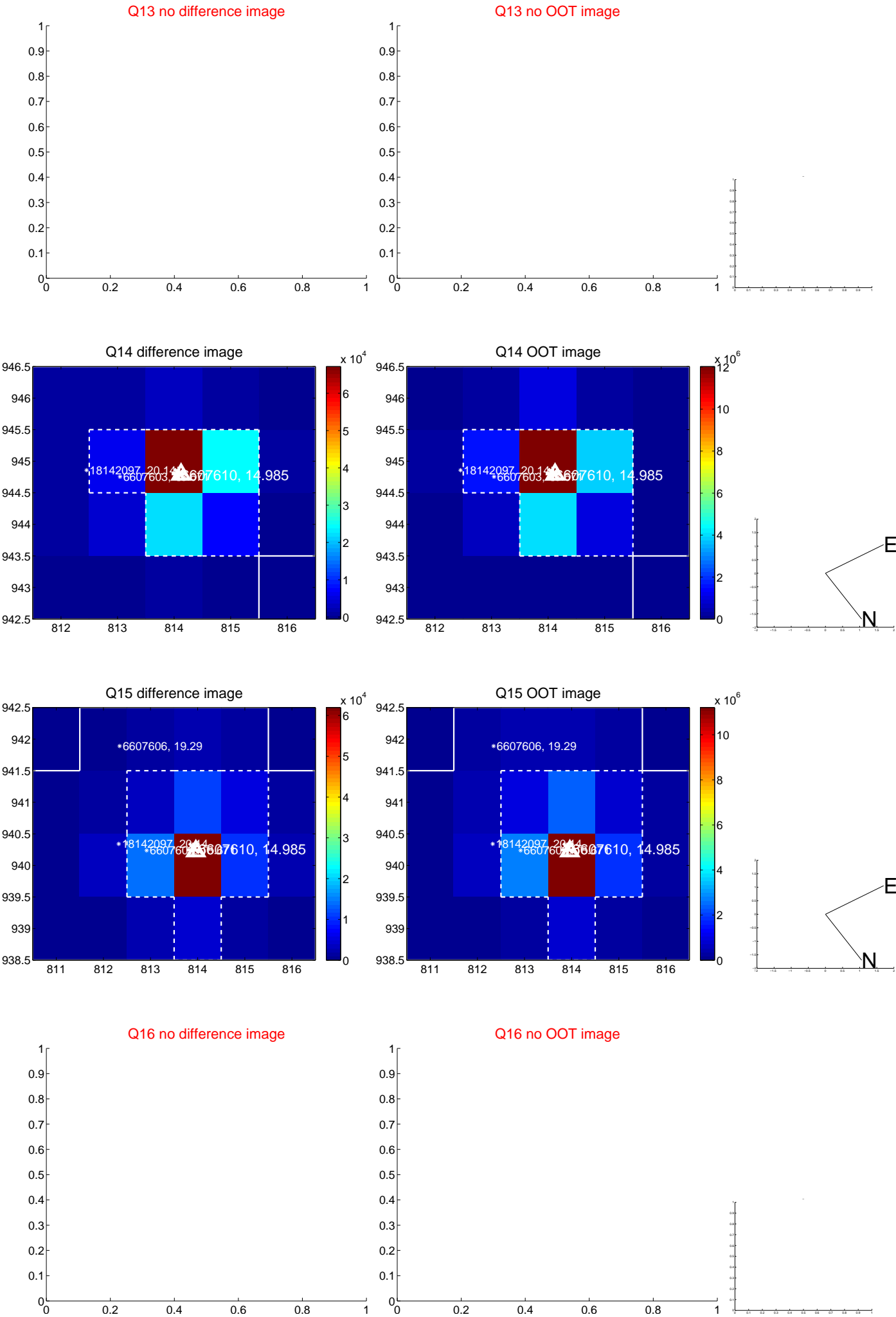
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



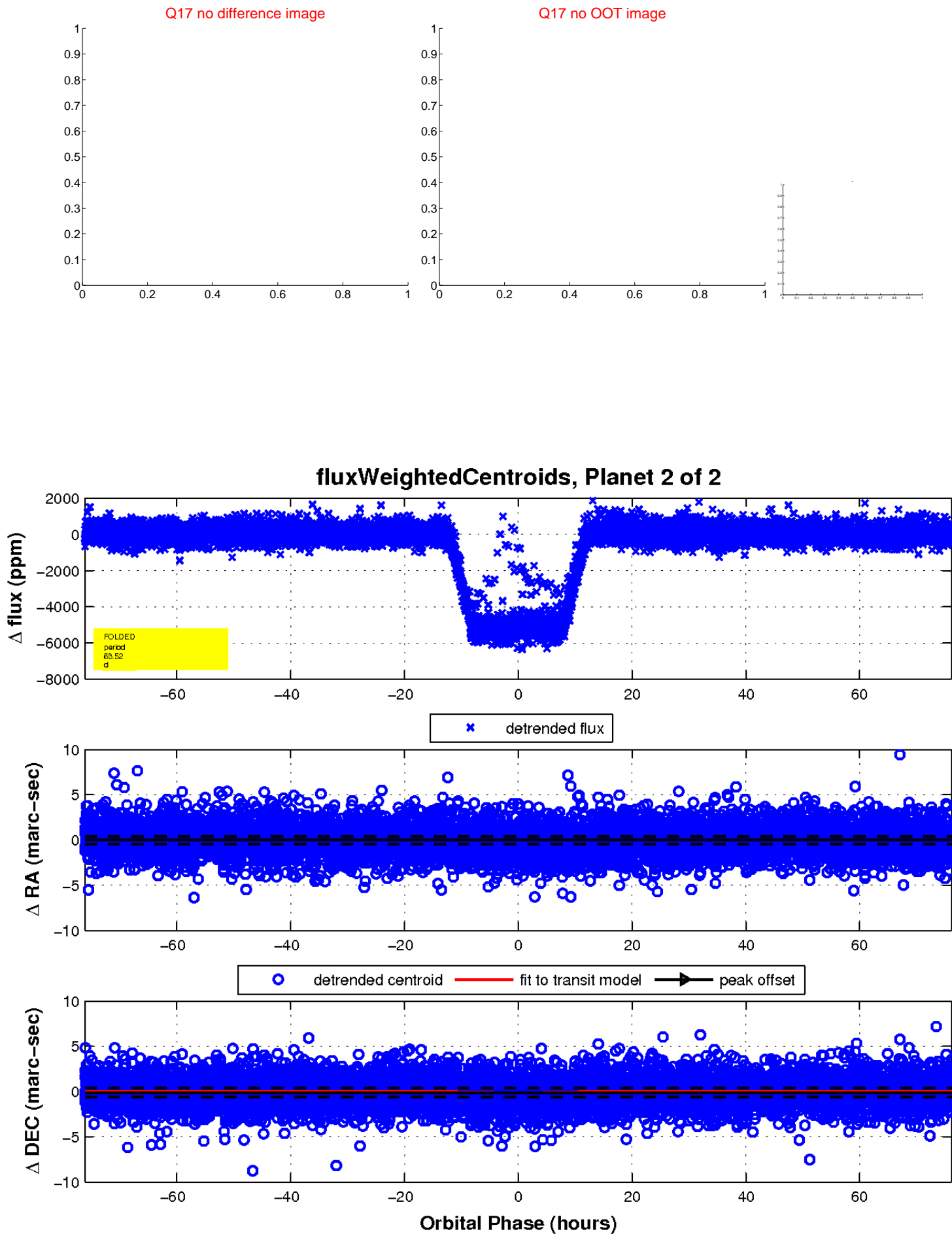
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

