

# KIC 010275880

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010275880-01	OBS	3734.01	9.726733	139.478192	7271.6	18.254	655.1	565.1	2.43	6327	37.11	817.51
010275880-02	OBS	No	9.726815	134.607539	949.0	17.668	117.4	118.2	2.43	6327	14.26	817.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010275880-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010275880-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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.

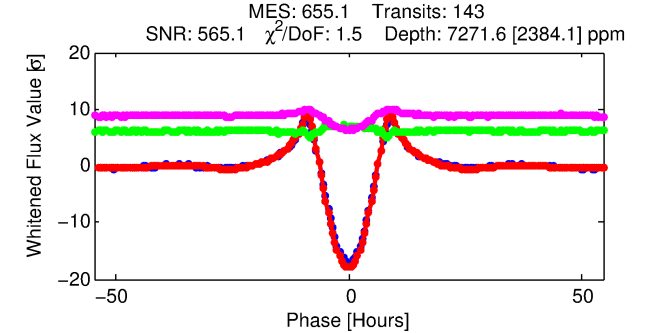
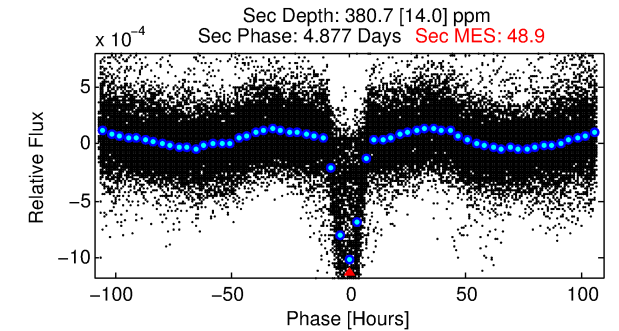
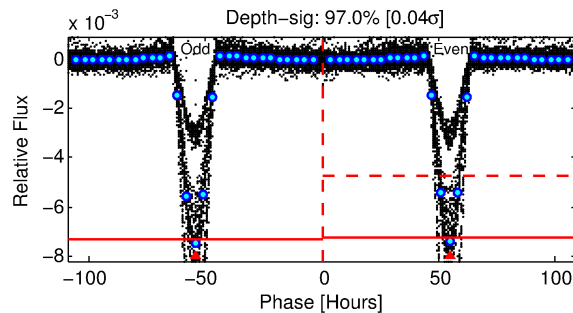
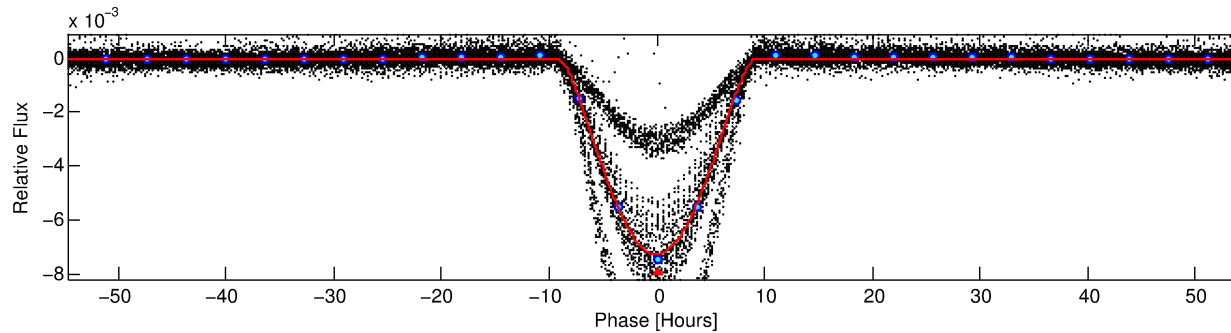
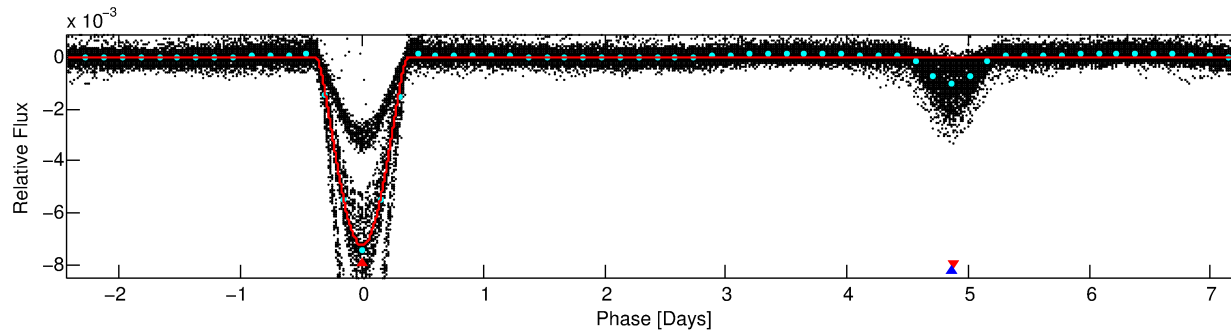
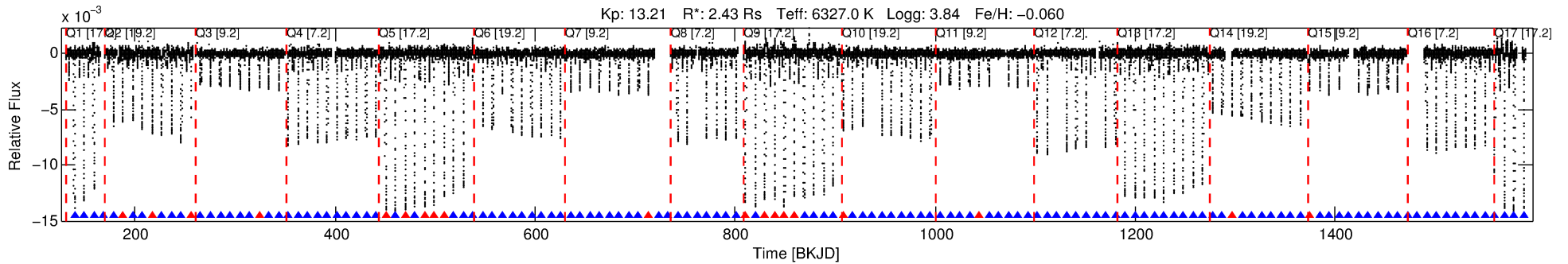
## Ephemeris Match Information For 010275880-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010275880-01	10275880	010275887-pri	10275887	1:1	10.0	2	-1	13.04	13.21	59.45	Direct-PRF	0	0.07	0.05

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10275880 Candidate: 1 of 2 Period: 9.727 d  
KOI: K03734.01 Corr: 0.967



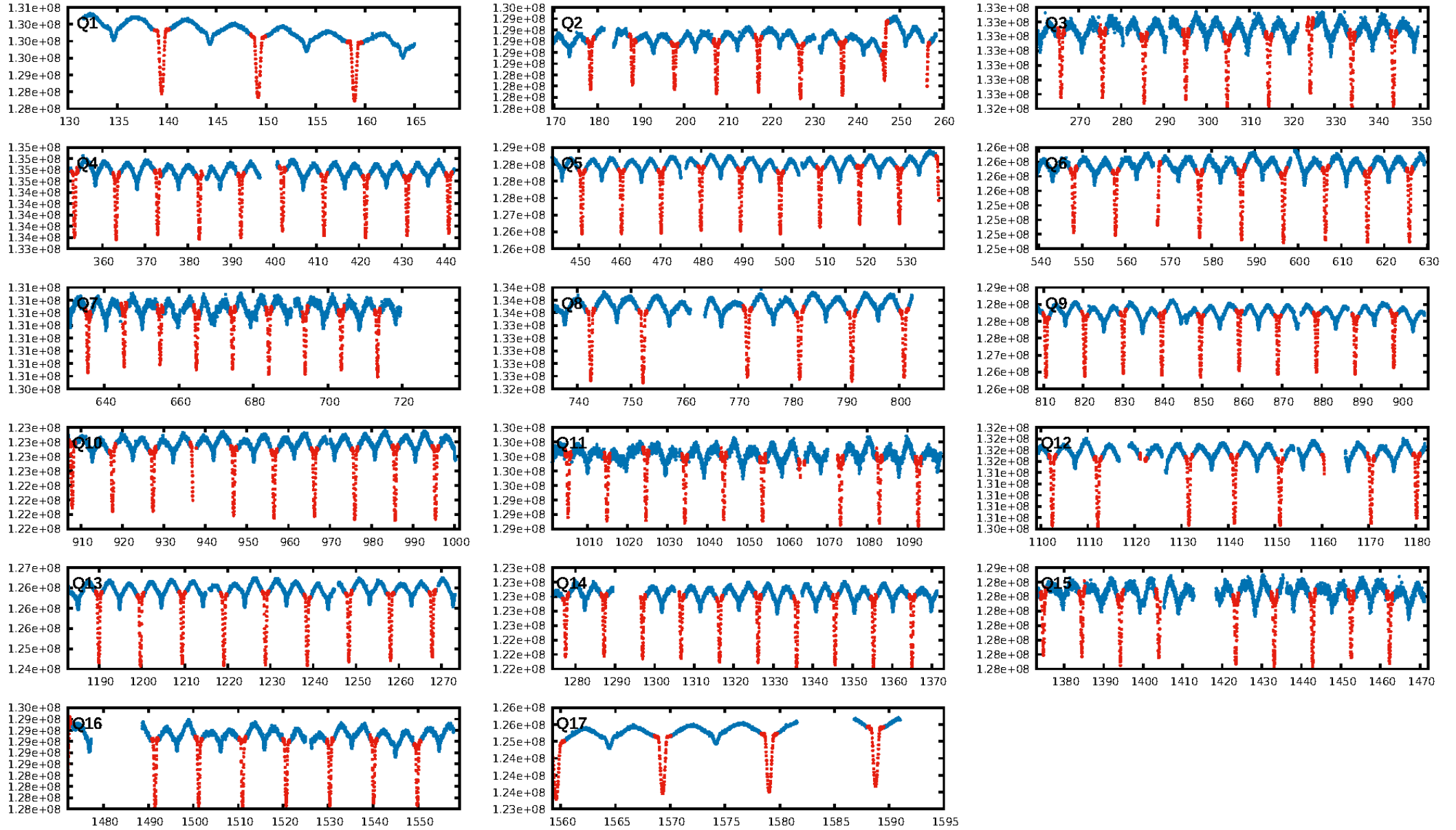
## DV Fit Results:

Period = 9.72673 [0.00001] d  
Epoch = 139.4782 [0.0005] BKJD  
Rp/R\* = 0.1398 [0.0047]  
a/R\* = 2.46 [0.01]  
b = 1.00 [0.04]  
Seff = 817.51 [415.54]  
Teq = 1363 [173] K  
Rp = 37.11 [13.12] Re  
a = 0.1020 [0.0327] AU  
Ag = 1.58 [0.79] [0.73σ]  
Teffp = 2364 [79] K [5.26σ]

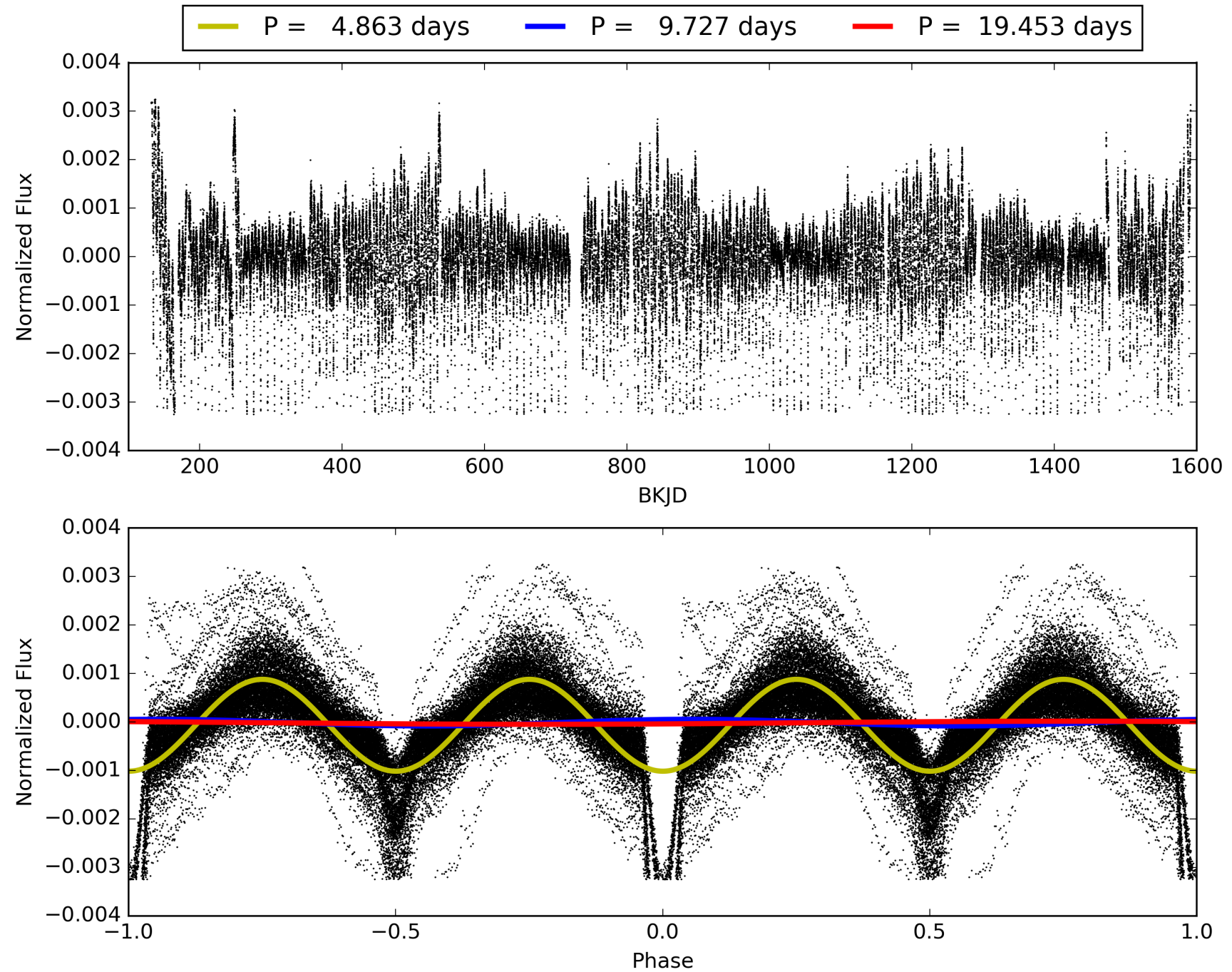
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.4%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.86 [117/136]  
GhostDiagnostic-chr: -0.8154  
Centroid-sig: 0.0%  
Centroid-so: 85.782 arcsec [368.85σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 010275880-01, PDC Light Curves

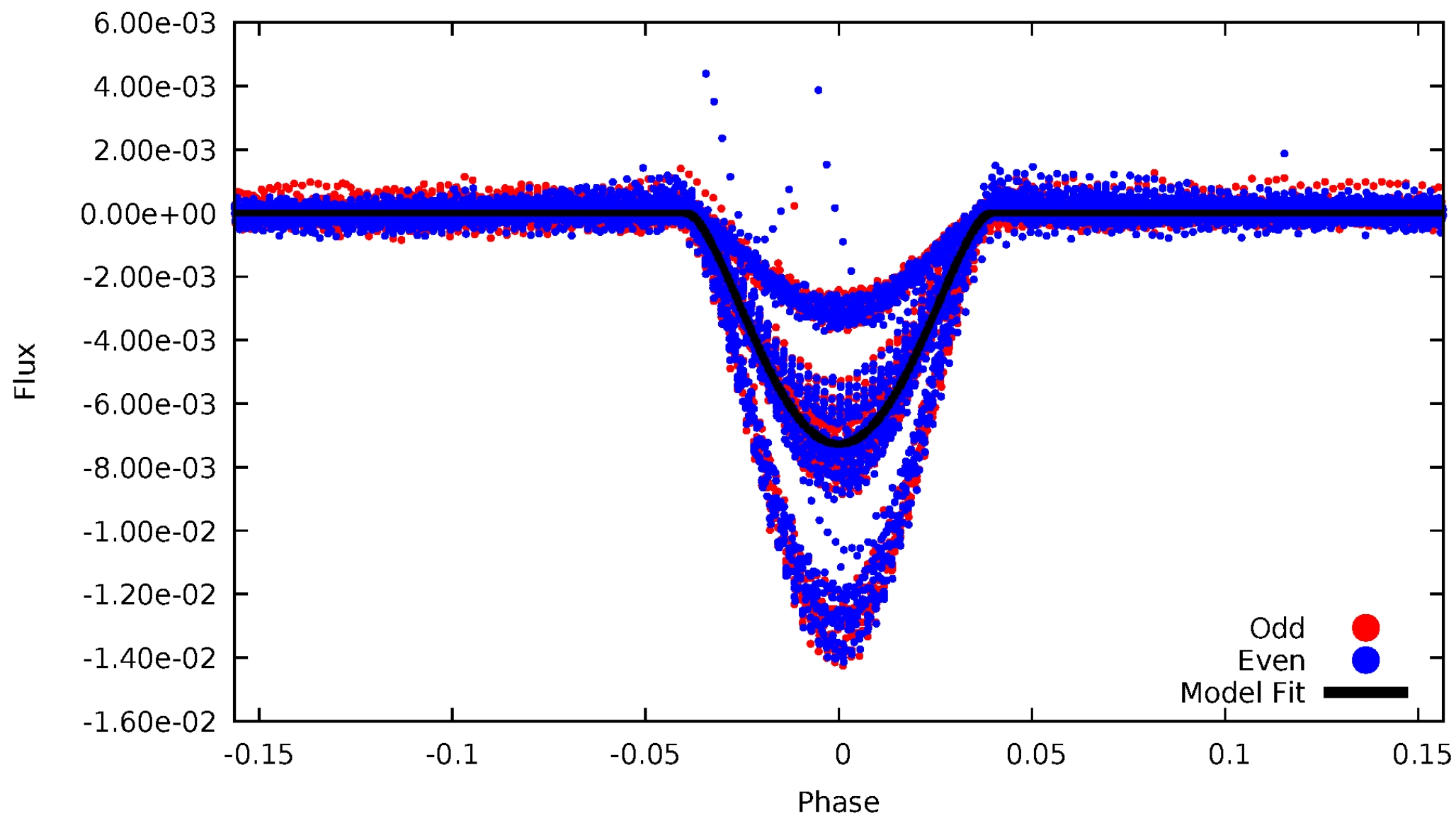


TCE 010275880-01



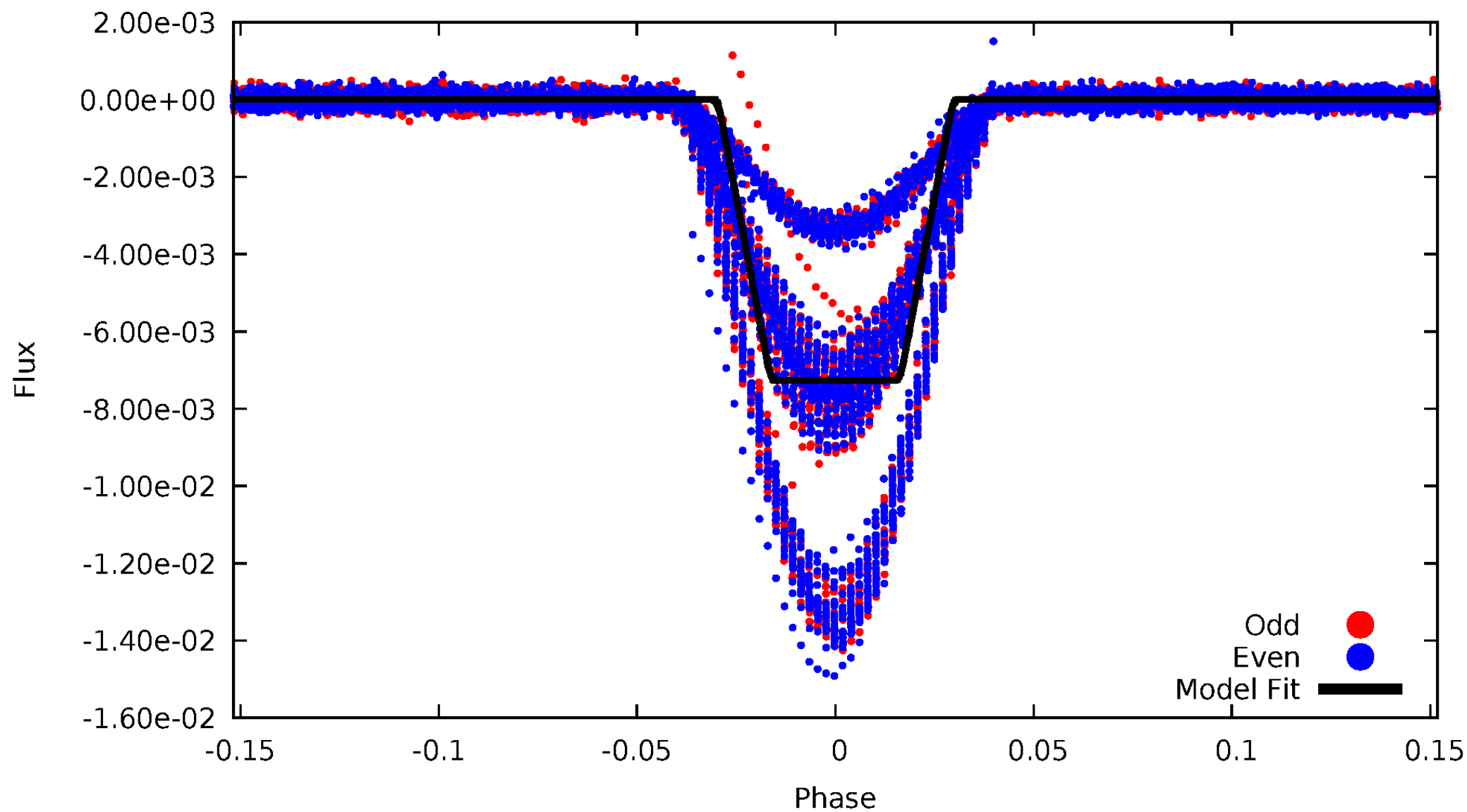
# DV Odd/Even

TCE 010275880-01

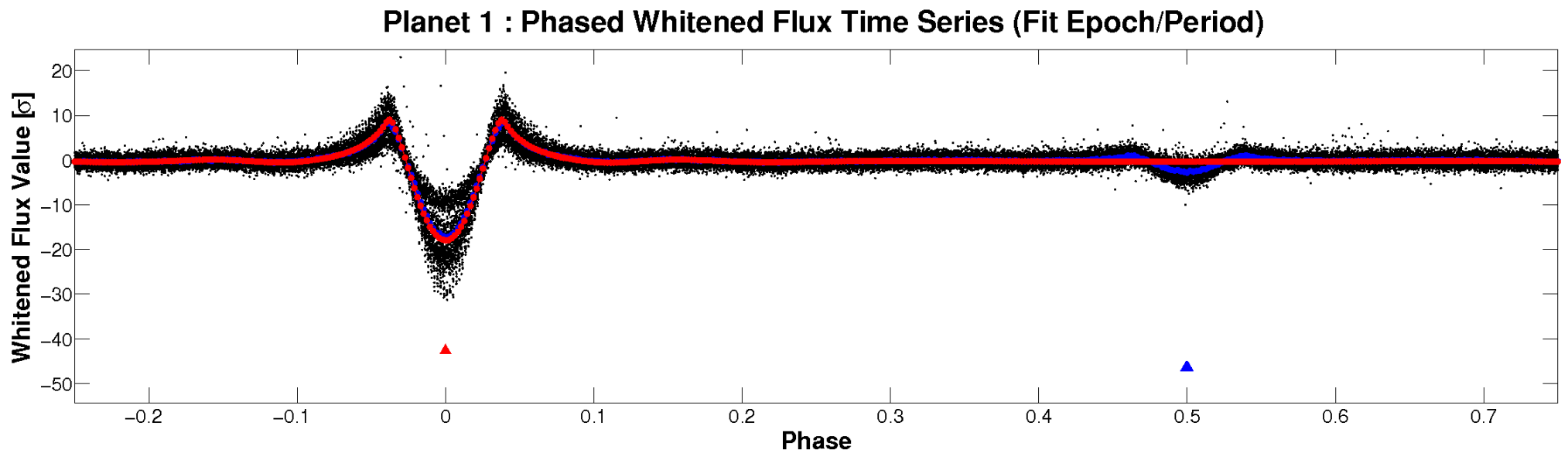
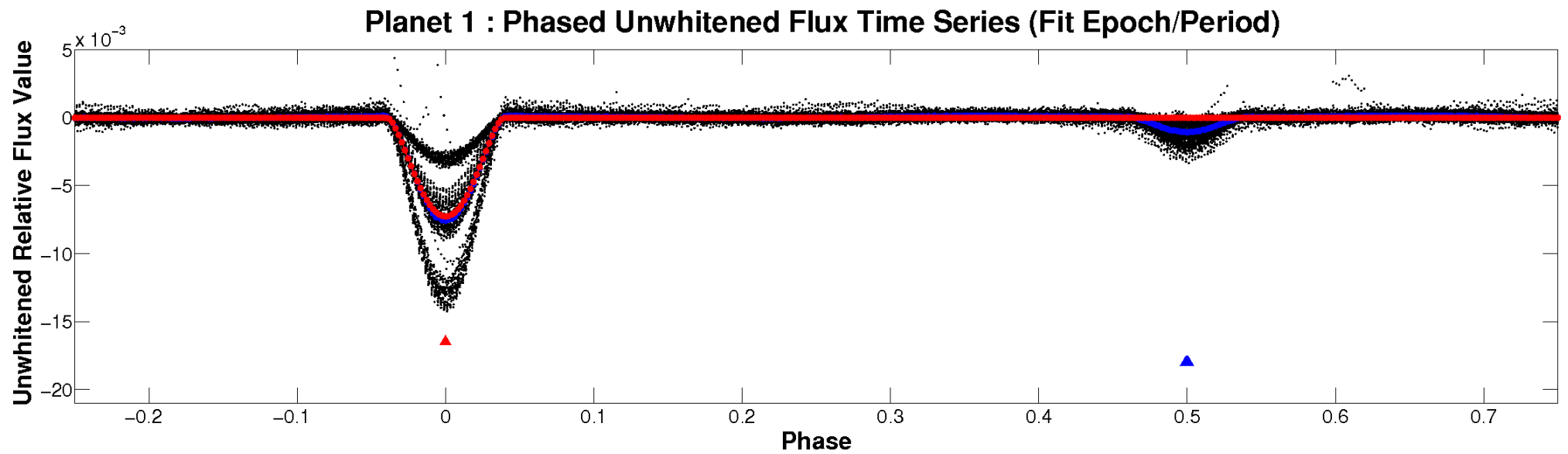


# ALT Odd/Even

TCE 010275880-01



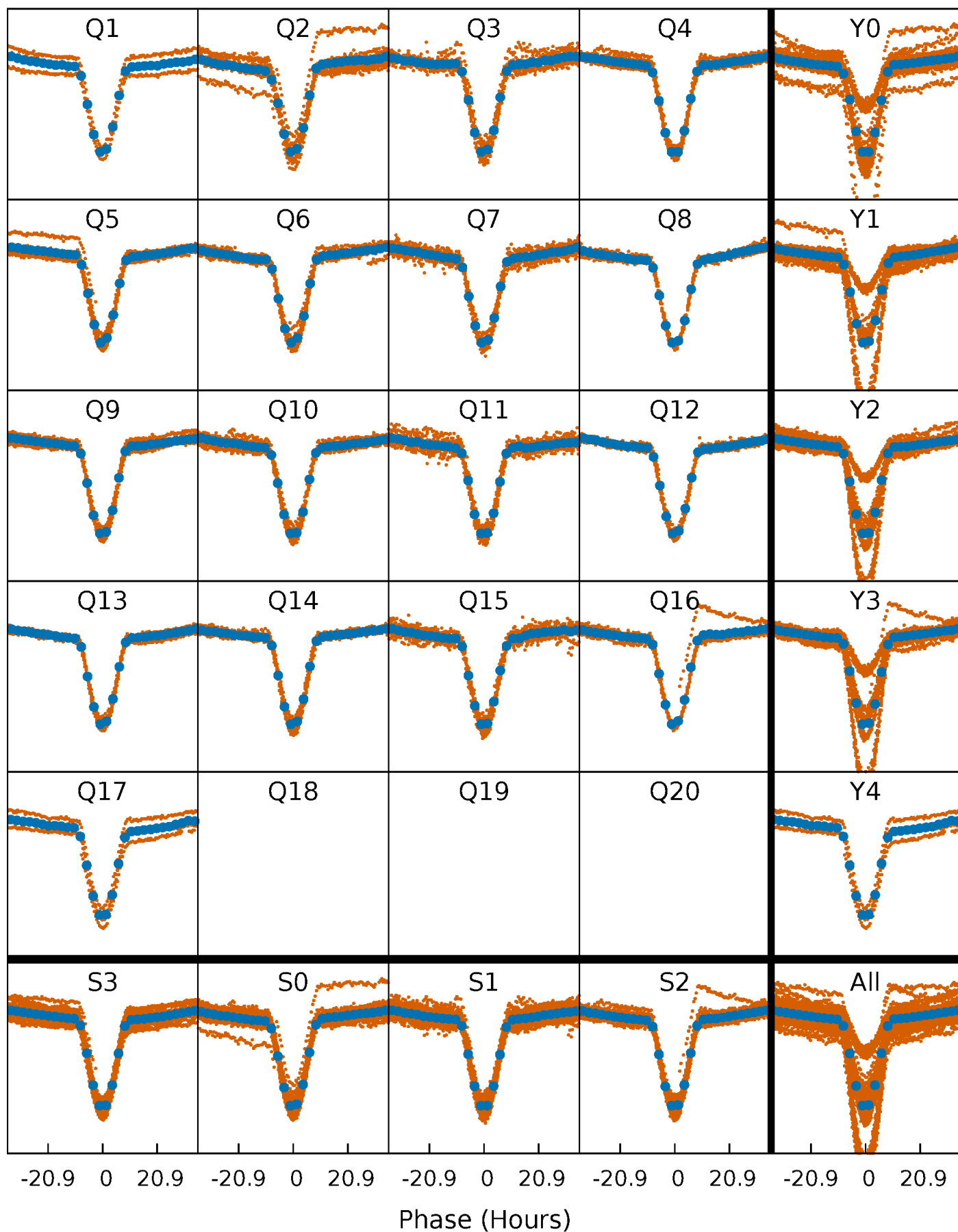
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

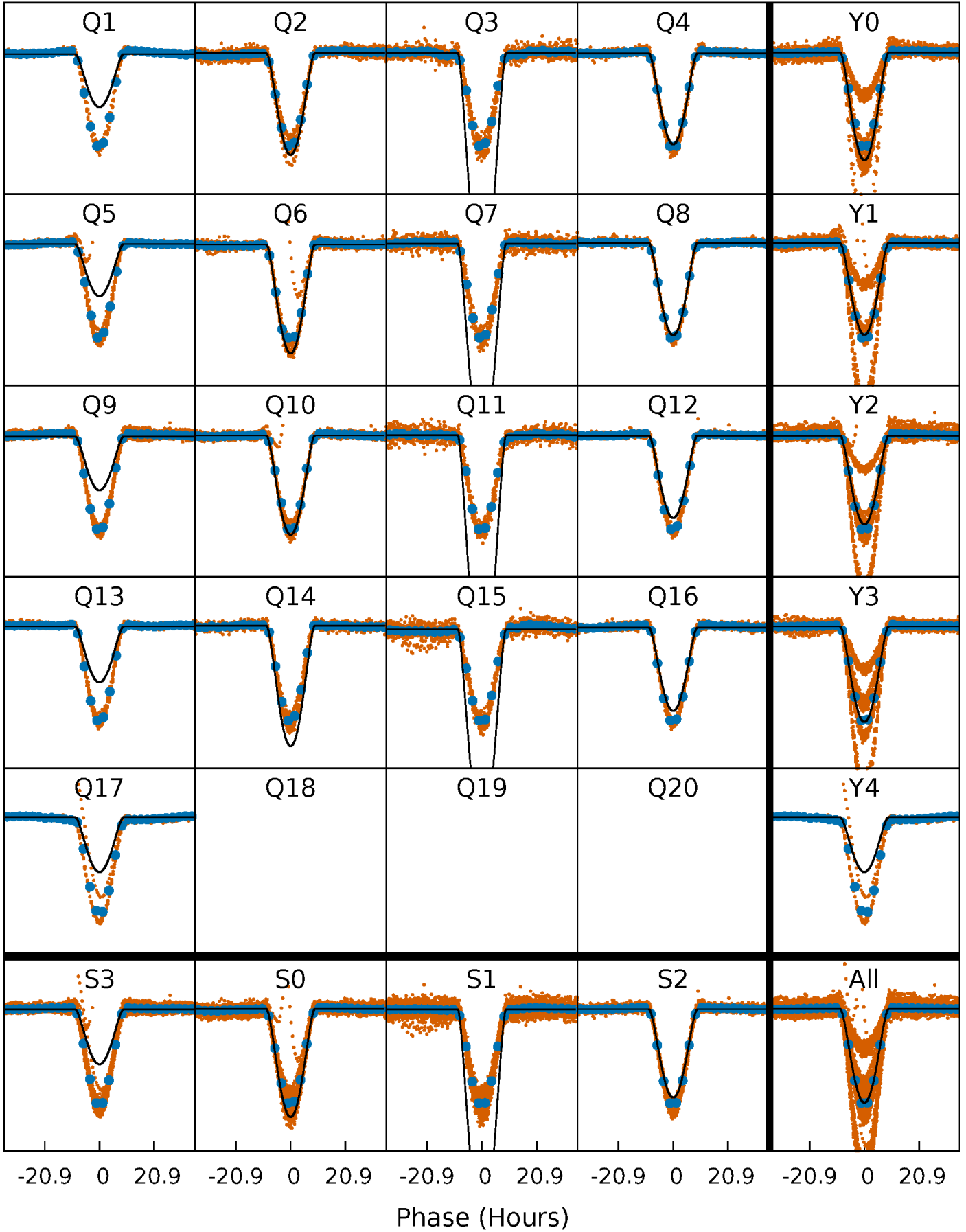
TCE 010275880-01   P= 9.726733 Days    $T_0=139.478192$  (BKJD)





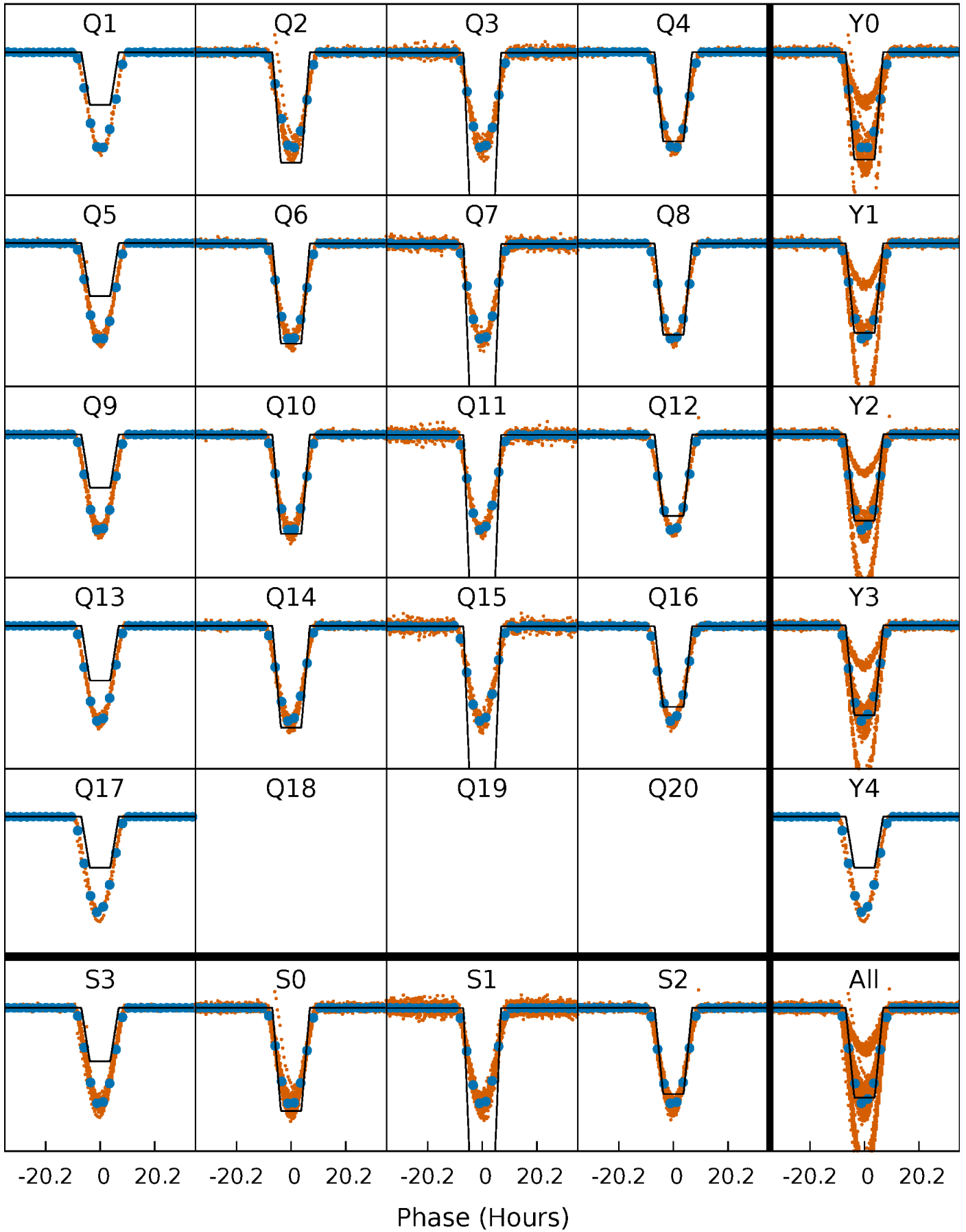
# DV Quarter-Phased Transit Curves

TCE 010275880-01 P= 9.726733 Days  $T_0=139.478192$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

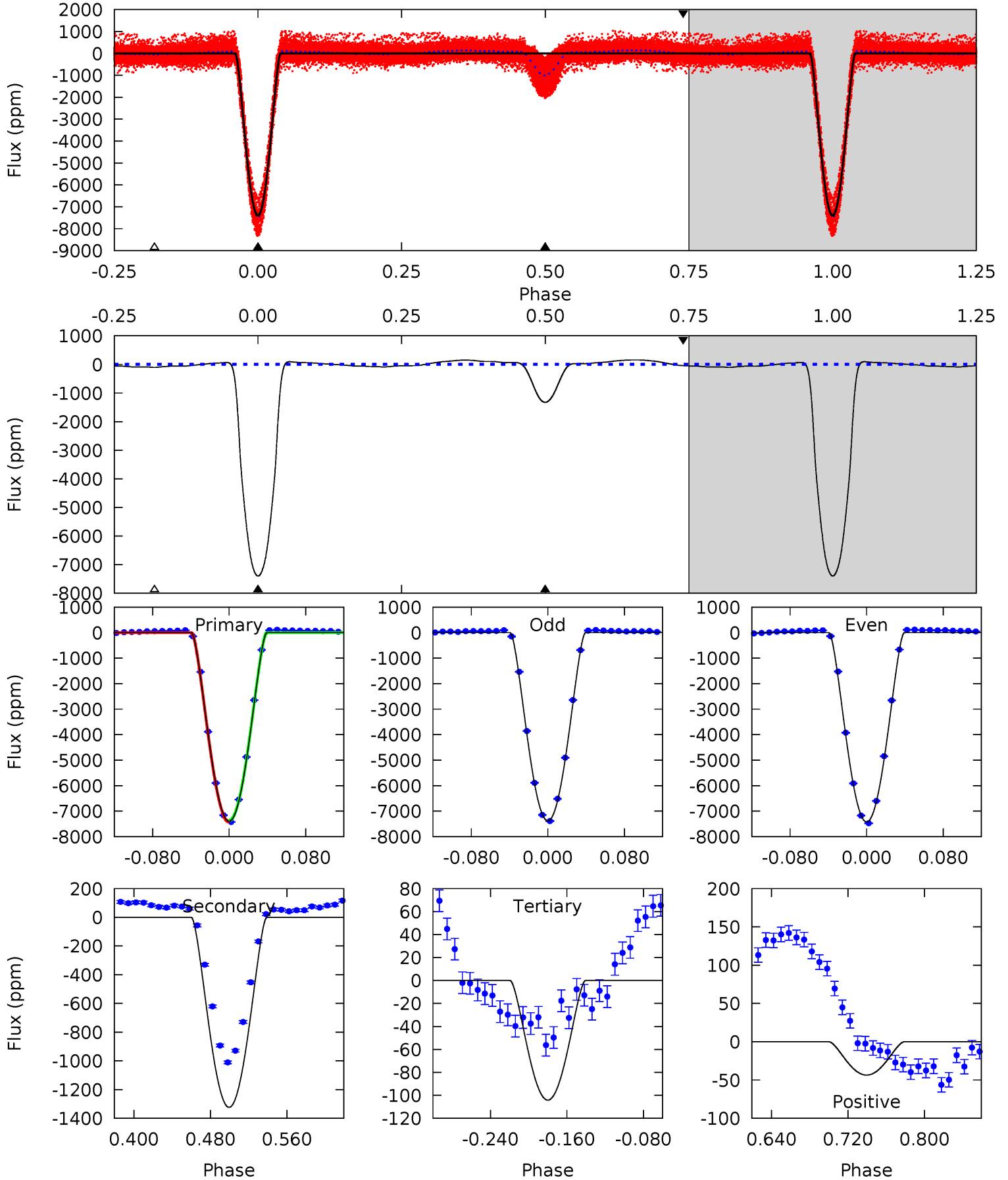
TCE 010275880-01   P= 9.726937 Days    $T_0=139.463539$  (BKJD)



# DV Model-Shift Uniqueness Test

010275880-01, P = 9.726733 Days, E = 129.751459 Days

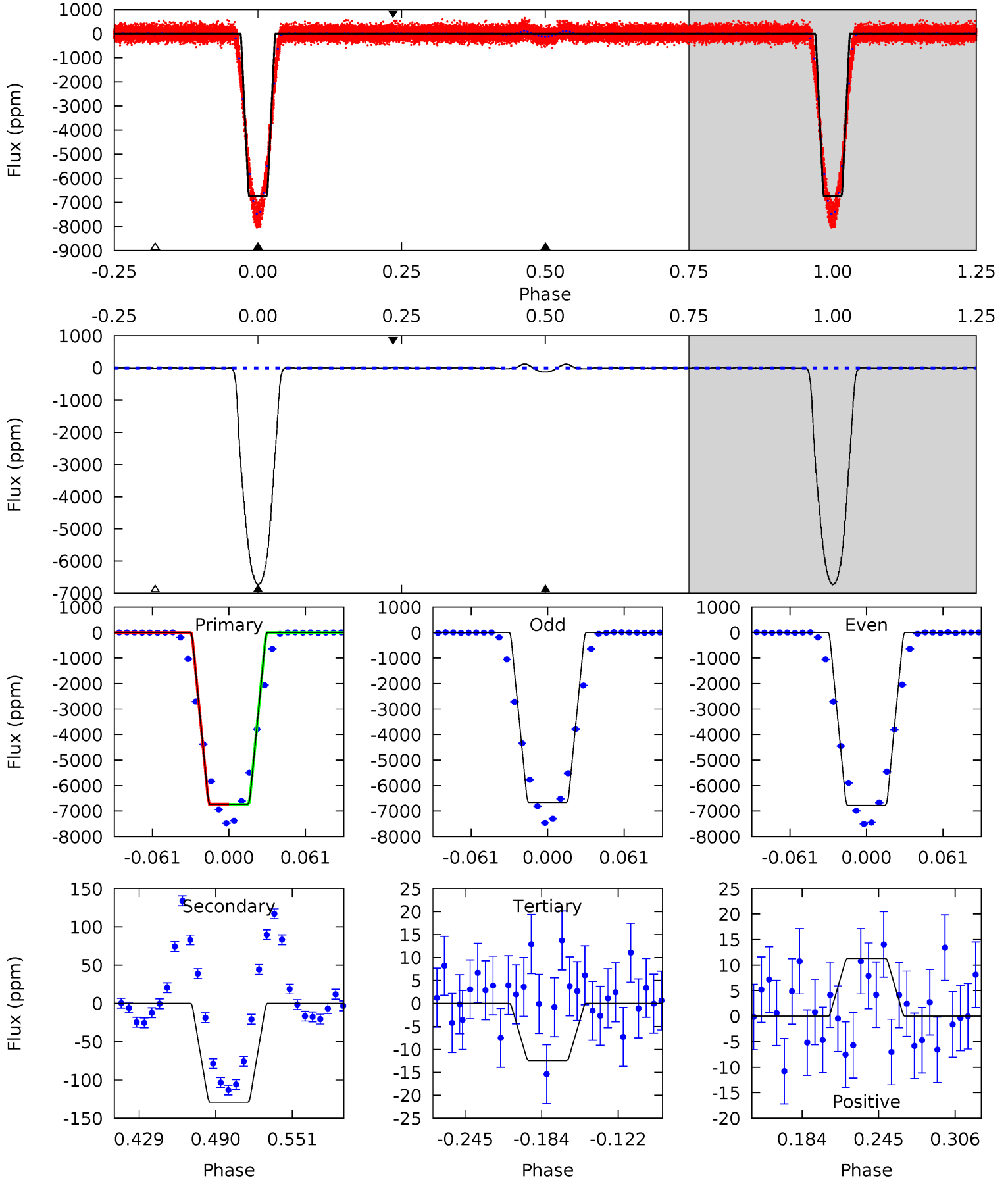
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1847	330.4	26.0	-10.9	4.61	1.75	20.6	1821	1858	304.4	341.3	5.41	1.01	0.02	0



# Alt Model-Shift Uniqueness Test

010275880-01, P = 9.726937 Days, E = 129.736602 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
1840	35.3	3.39	3.09	4.67	1.87	1.59	1837	1837	31.9	32.2	14.5	1.05	0.02	0



### Stellar Parameters For KIC 010275880

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6327^{+154}_{-173}$	$3.840^{+0.285}_{-0.095}$	$-0.060^{+0.300}_{-0.250}$	$2.433^{+0.461}_{-0.856}$	$1.495^{+0.177}_{-0.329}$	$0.146^{+0.298}_{-0.045}$
	+2%/-3%	+7%/-2%	+500%/-417%	+19%/-35%	+12%/-22%	+204%/-31%
Source	PHO1	FLK73	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 010275880-01 / KOI 3734.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1324 \pm 4$	$35.99^{+4.10}_{-6.69}$	$1868^{+108}_{-157}$	$3629^{+74}_{-68}$	$5.907^{+2.498}_{-1.079}$
Alt.	$-129 \pm 4$	$21.95^{+3.18}_{-4.16}$	$1870^{+121}_{-161}$	$2895^{+78}_{-67}$	$1.560^{+0.651}_{-0.350}$

$T_{\text{max}}$  = 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

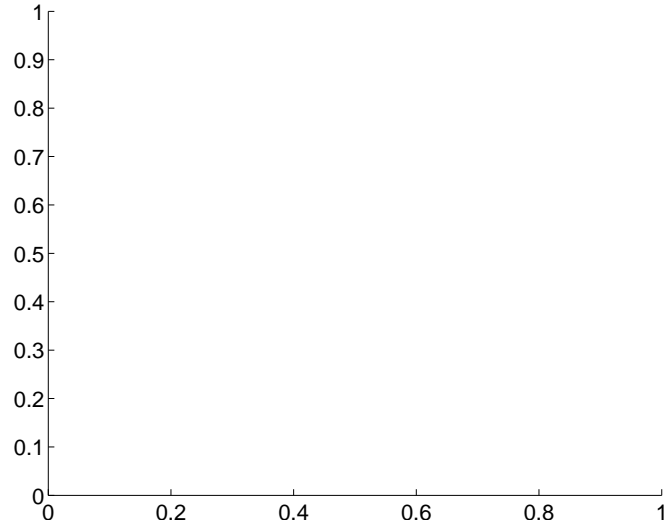
Supplemental centroid analysis for 010275880-01. Kepler magnitude: 13.21. Transit SNR 565.13

There are 0 quarters with good PRF difference image offsets

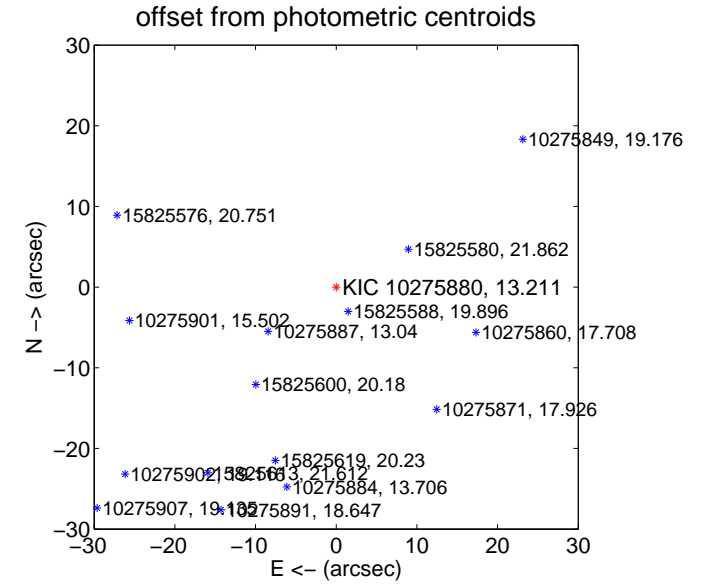
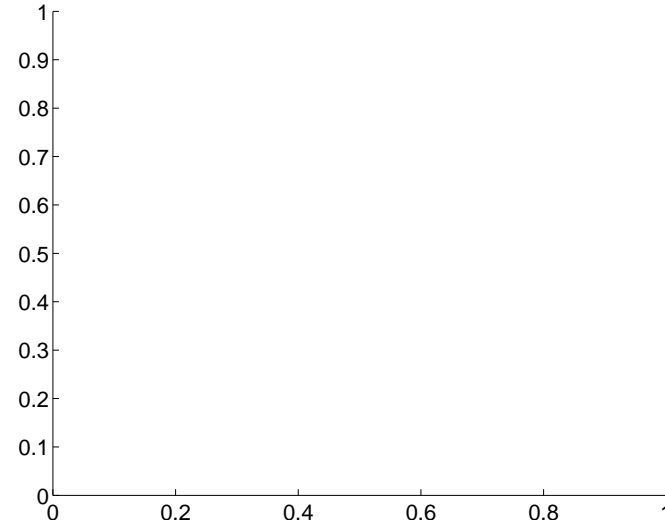
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$85.80 \pm 0.23$	$368.83$	$75.81 \pm 0.26$	$-40.17 \pm 0.12$

There is no PRF-fit offset from OOT-fit

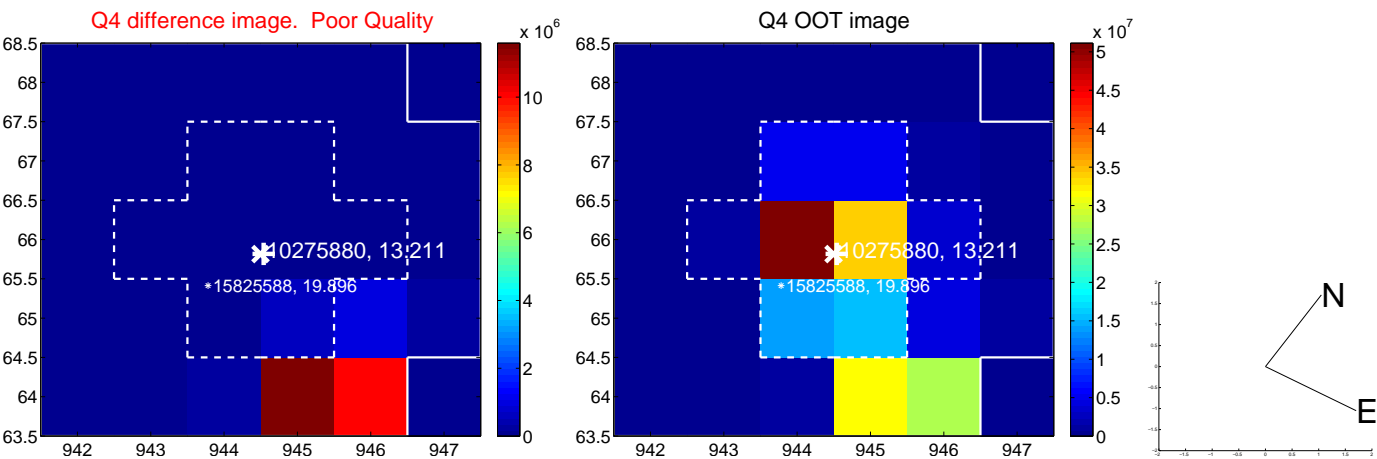
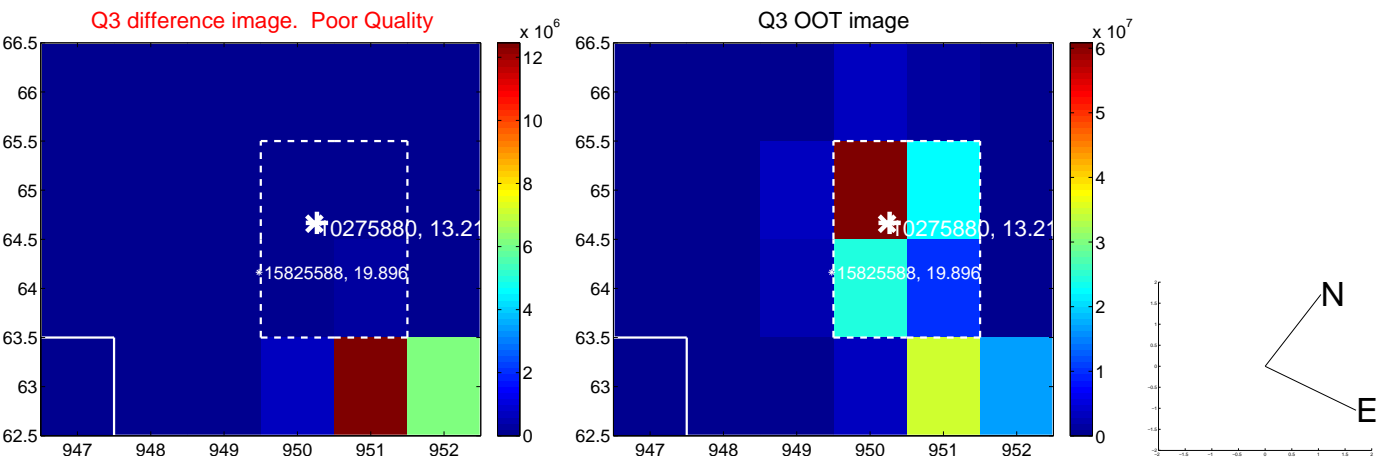
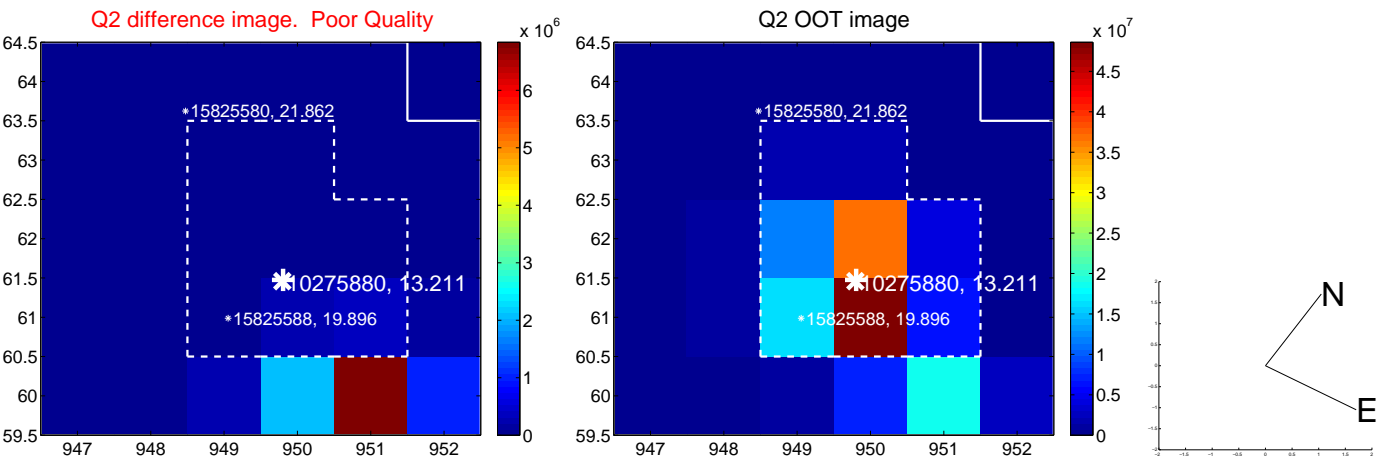
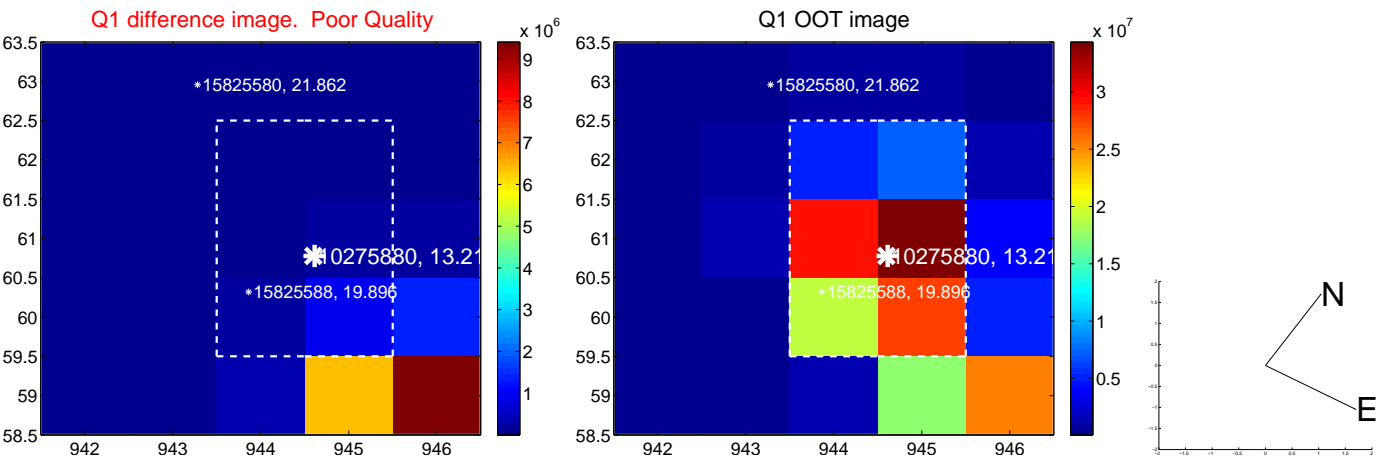


There is no PRF-fit offset from KIC



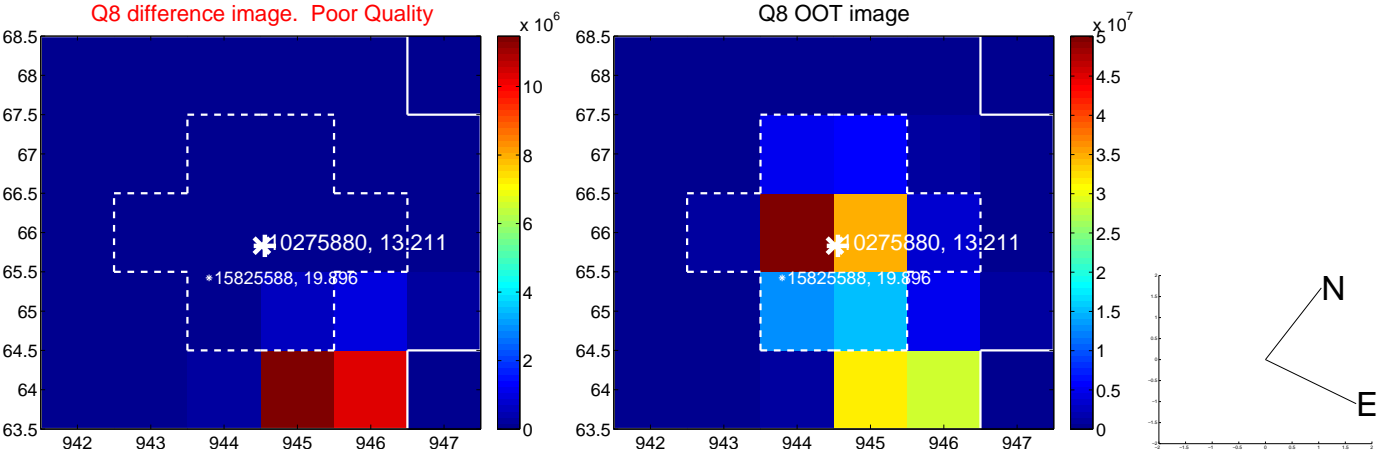
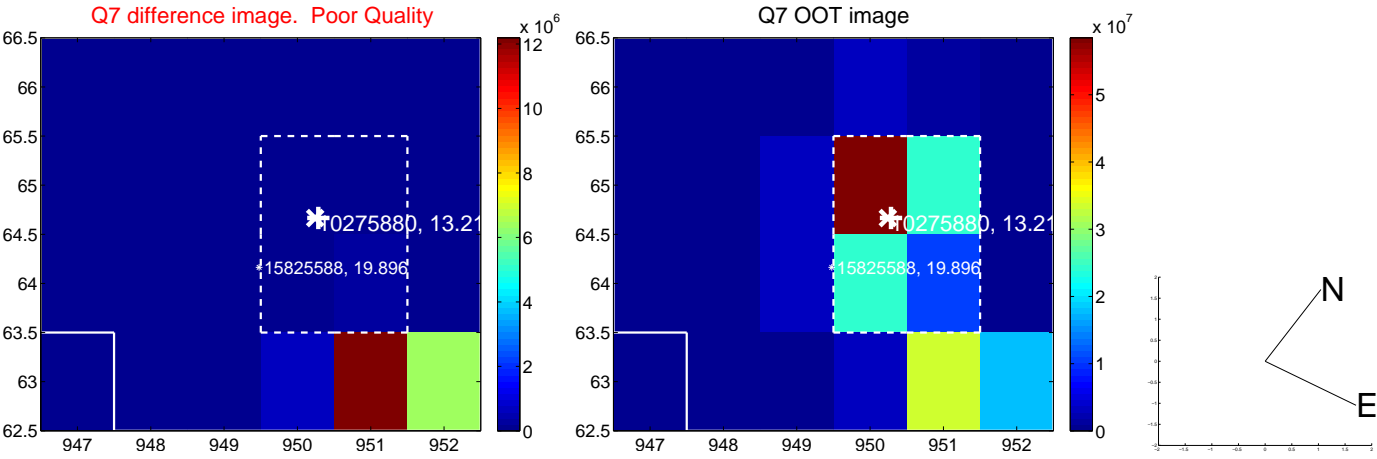
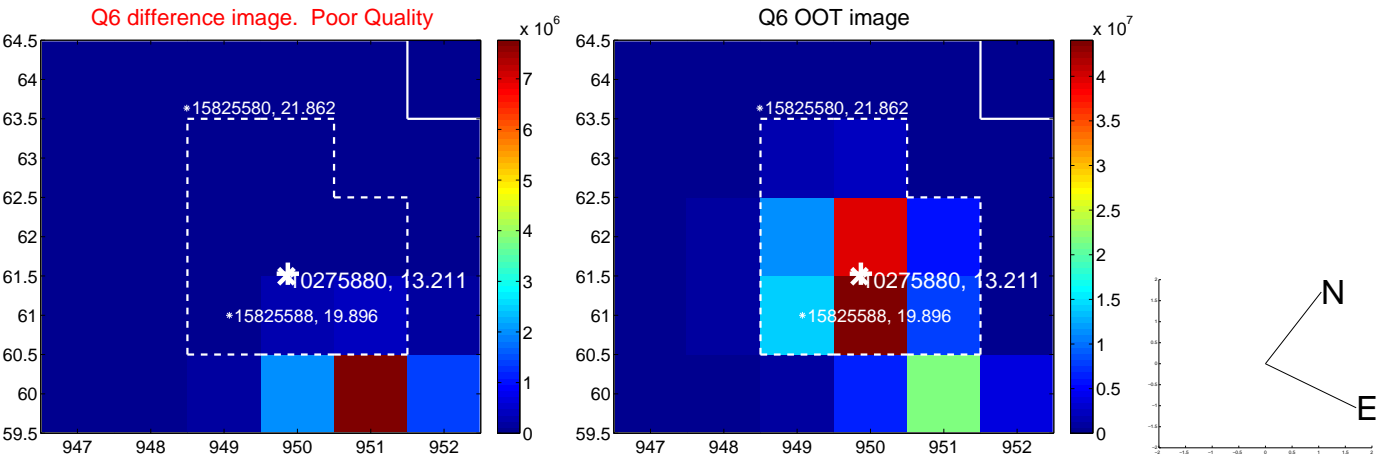
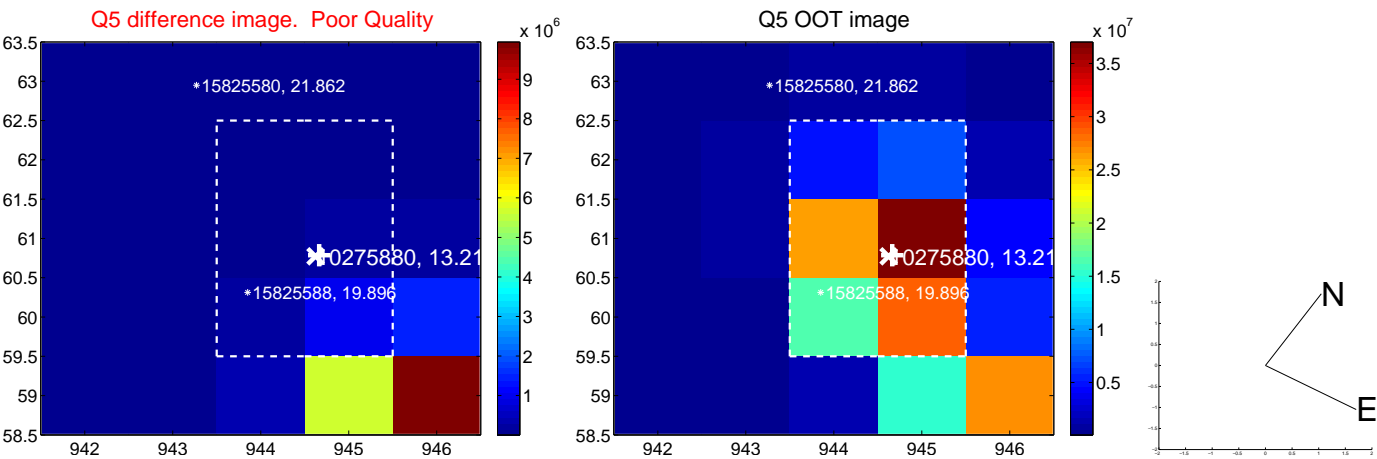
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

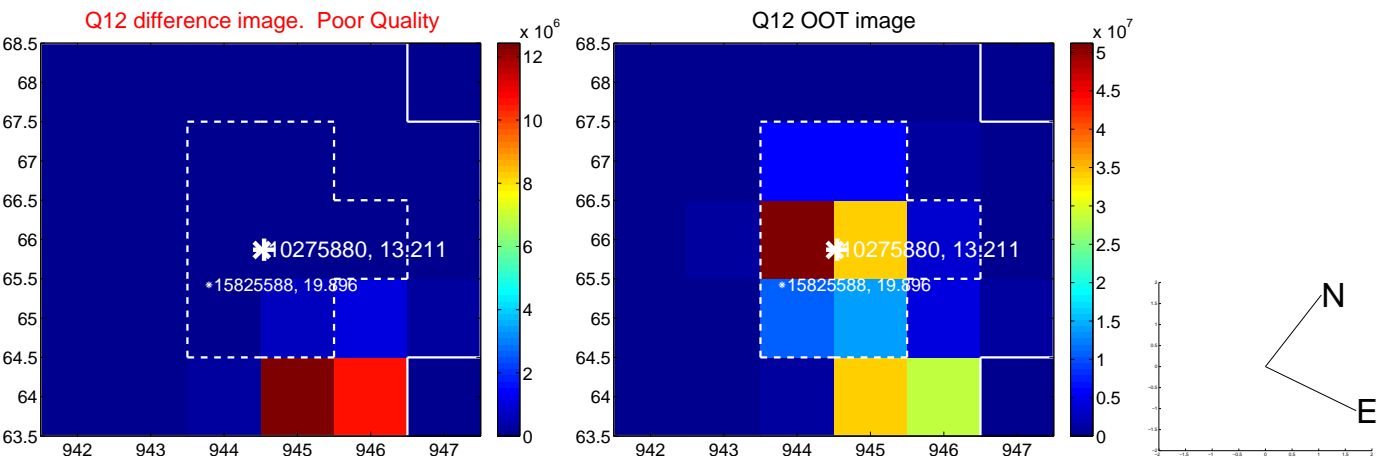
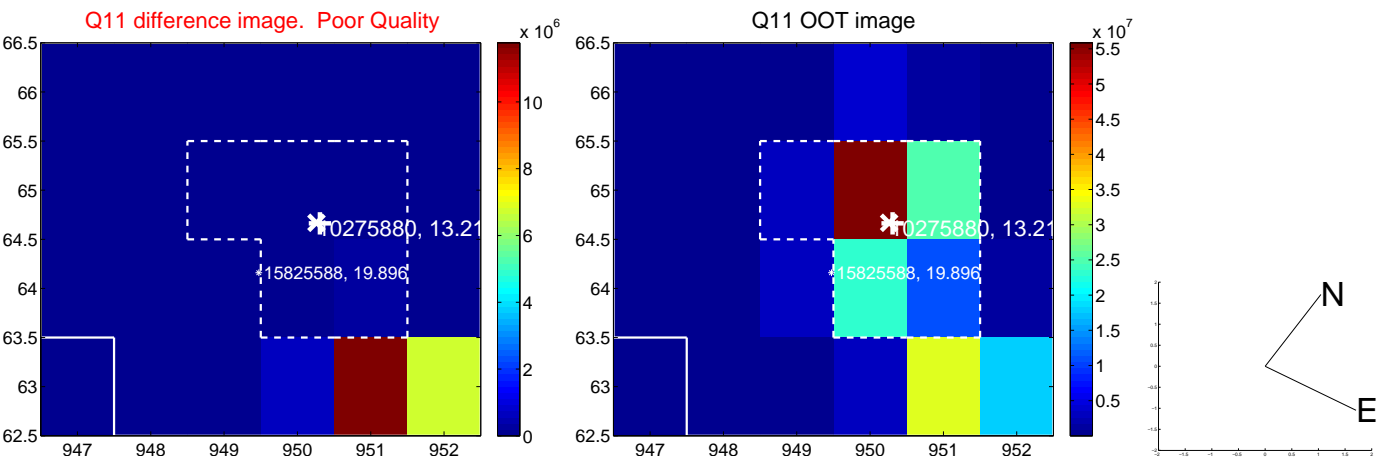
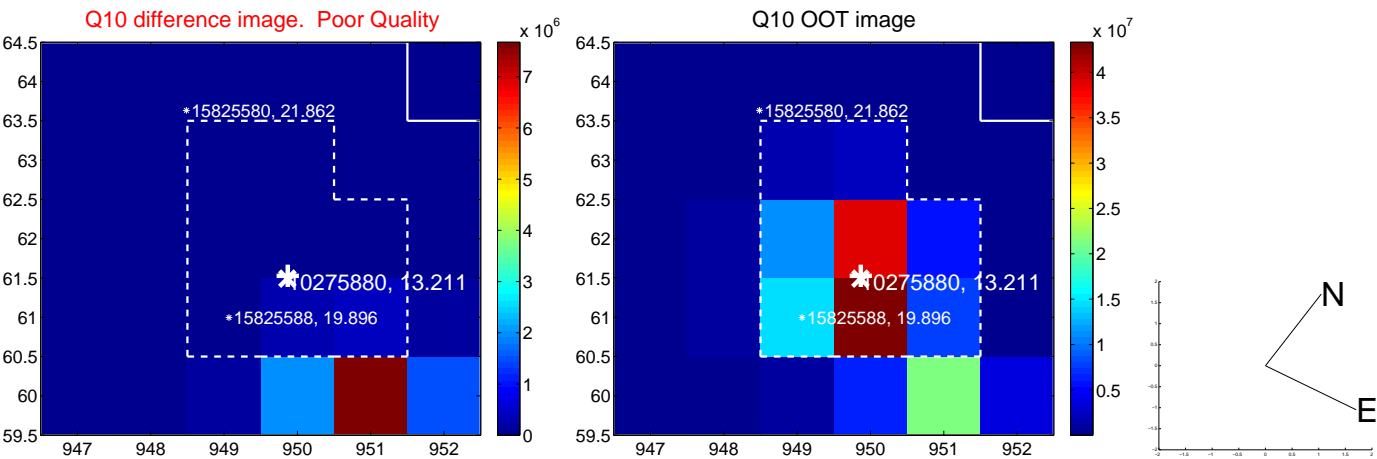
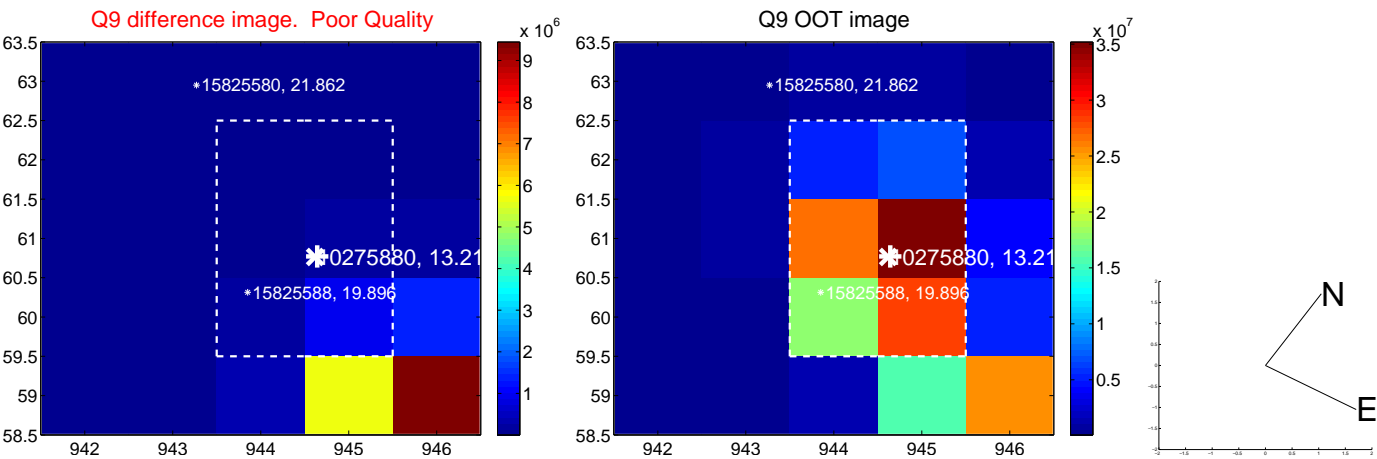




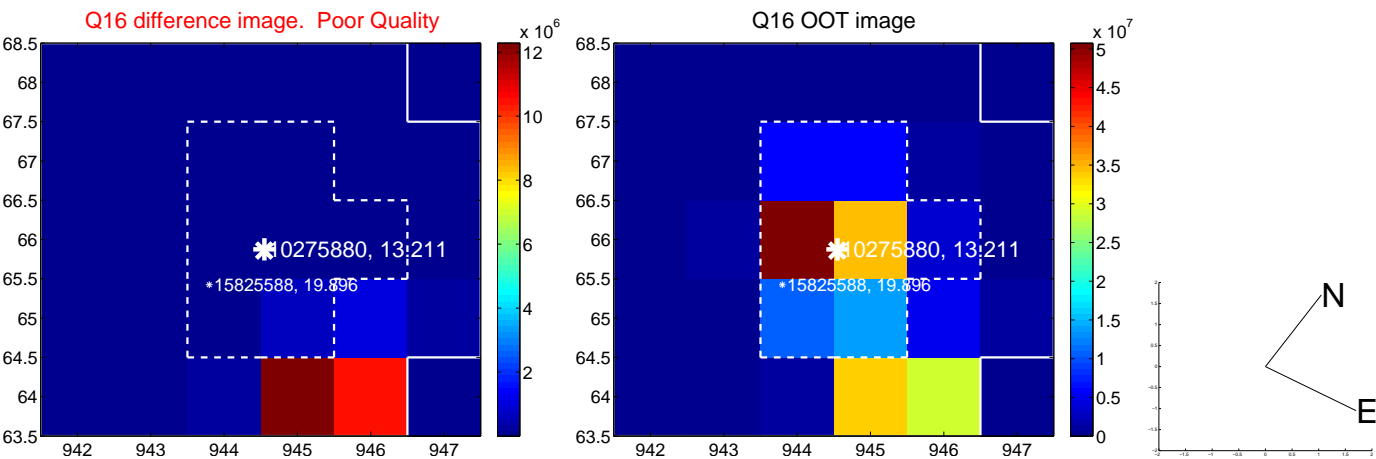
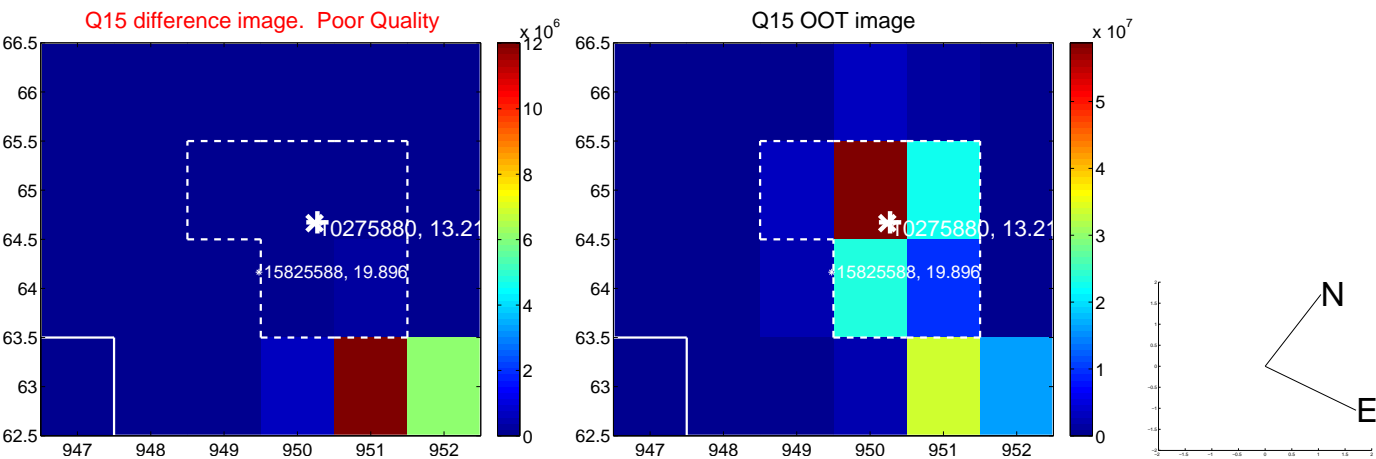
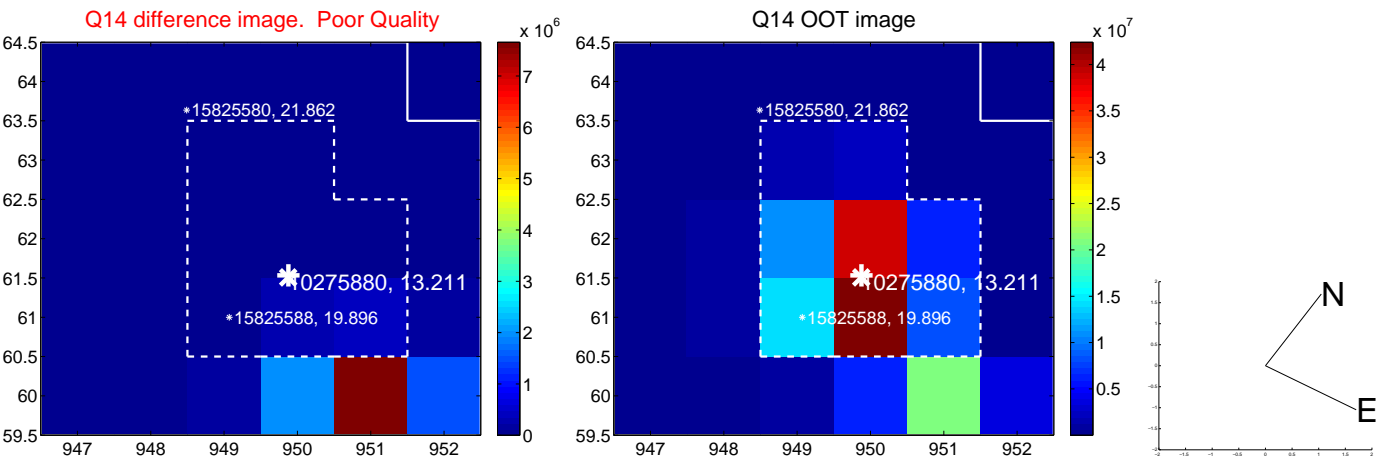
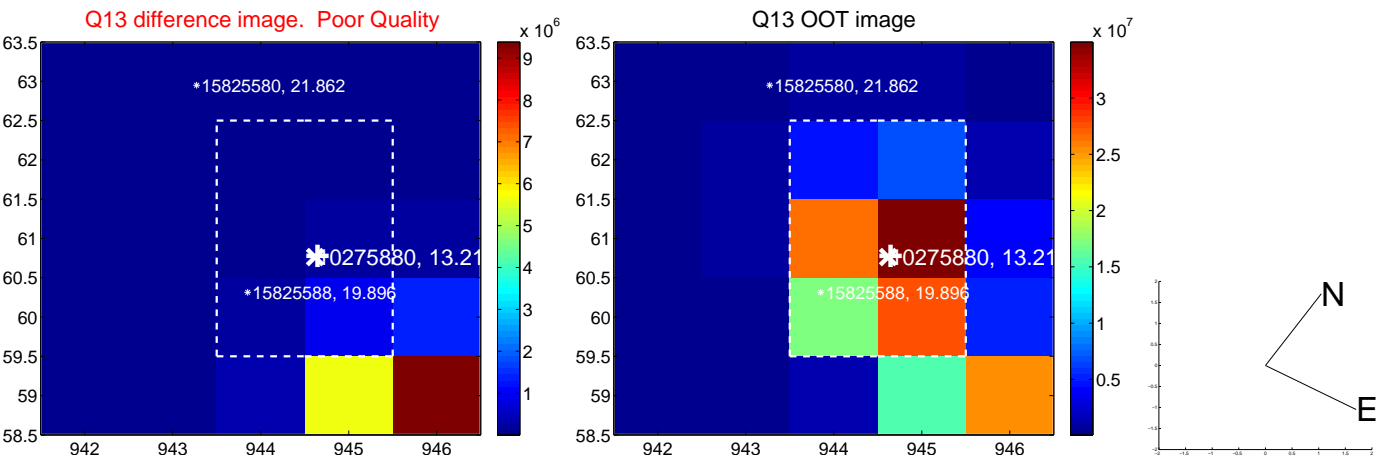
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



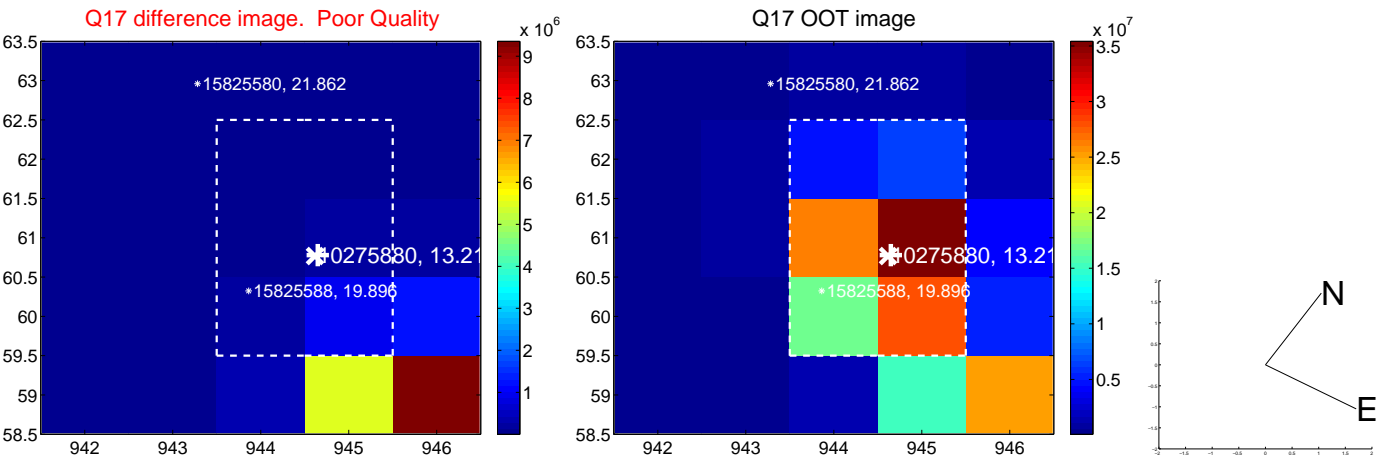
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



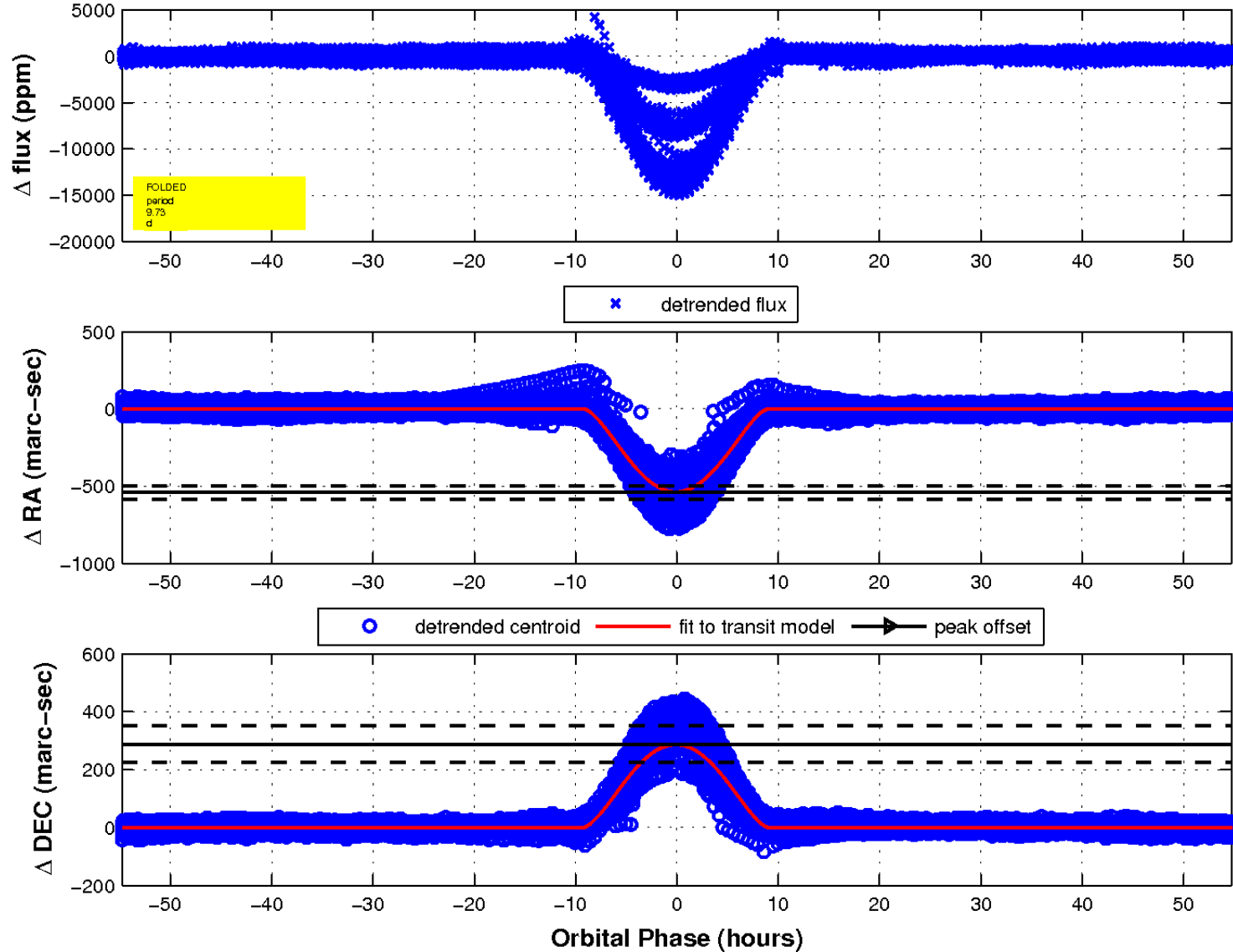
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

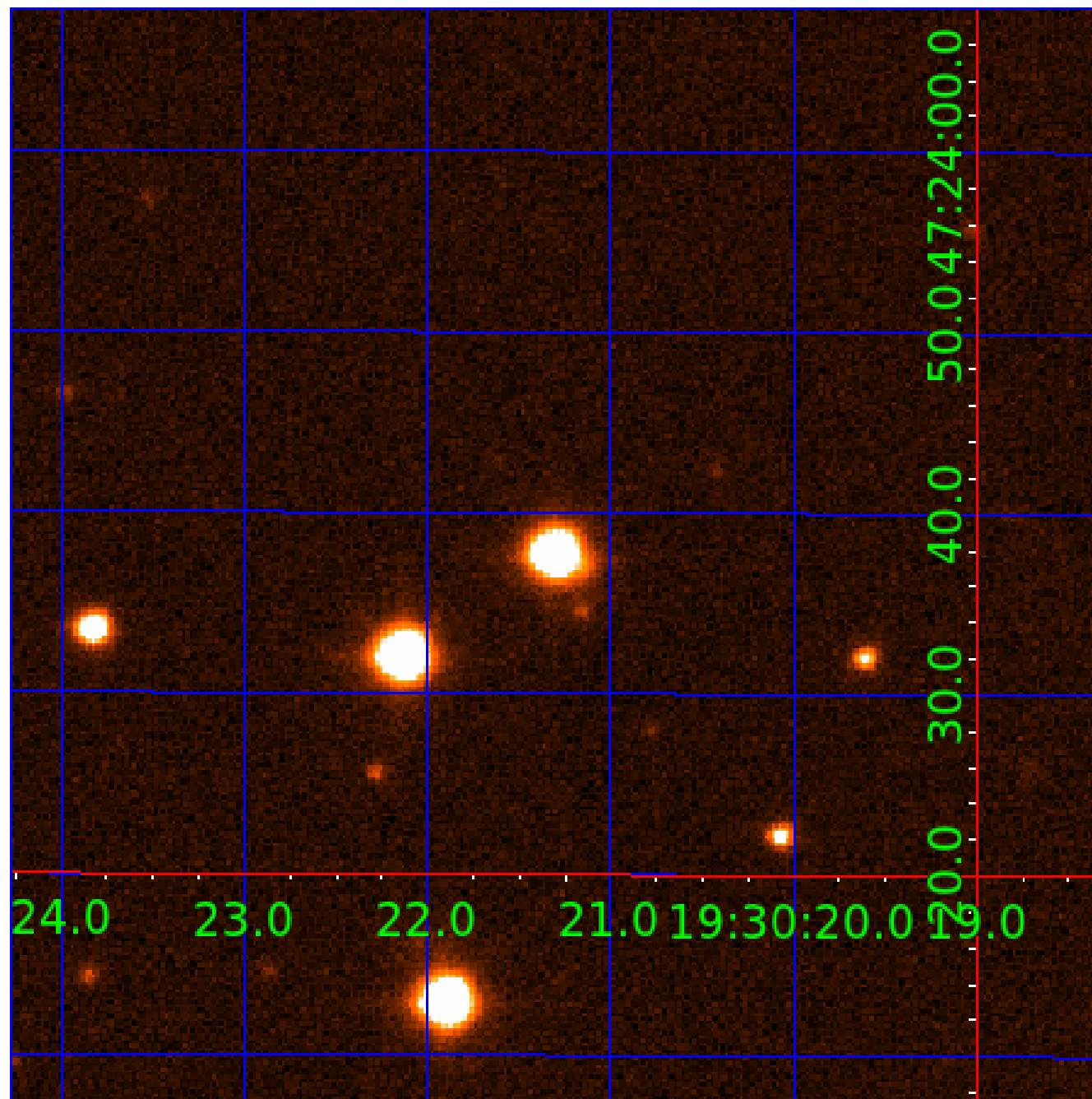


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 010275880

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010275880-01	OBS	3734.01	9.726733	139.478192	7271.6	18.254	655.1	565.1	2.43	6327	37.11	817.51
010275880-02	OBS	No	9.726815	134.607539	949.0	17.668	117.4	118.2	2.43	6327	14.26	817.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010275880-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010275880-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—EPHEM_MATCH

**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 010275880-02

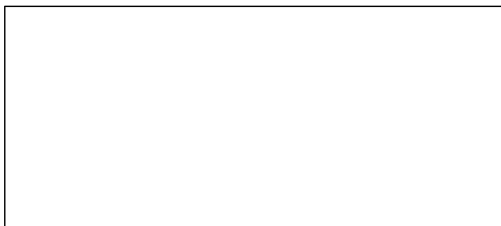
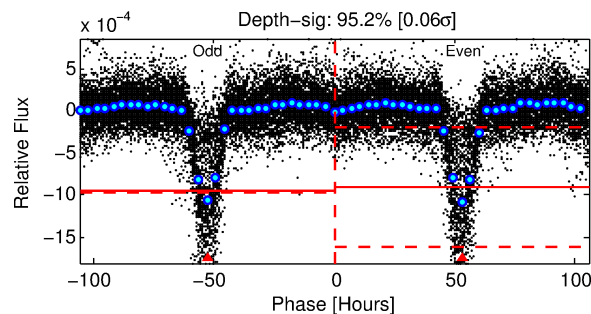
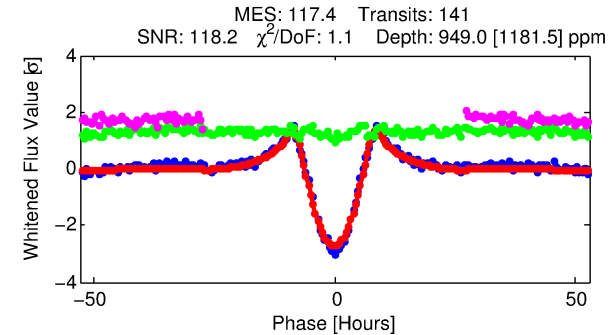
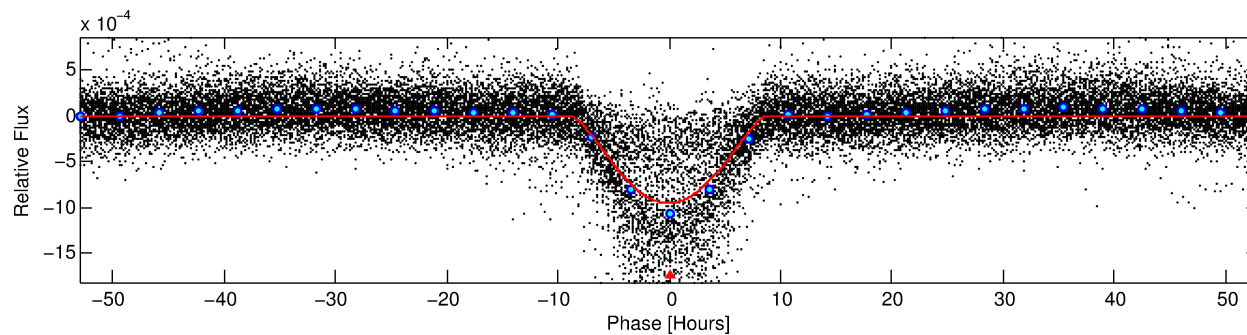
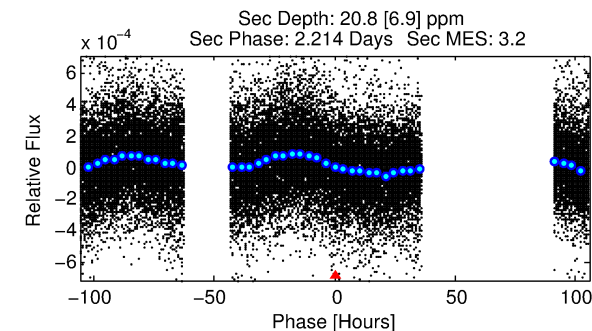
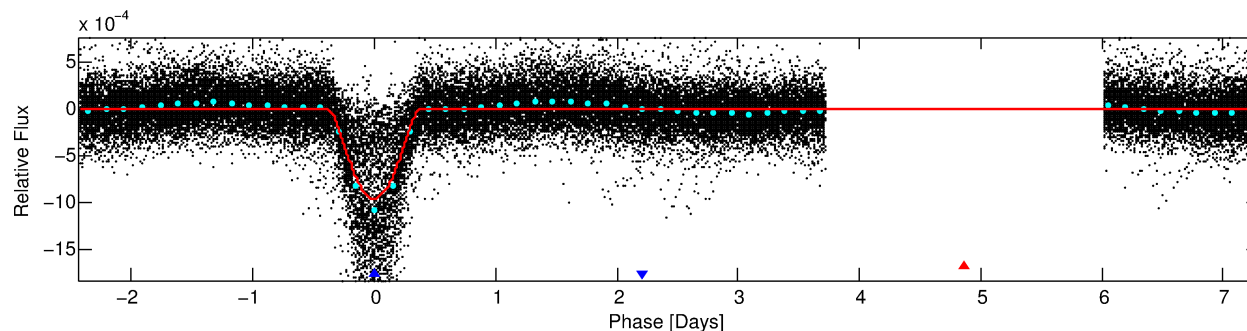
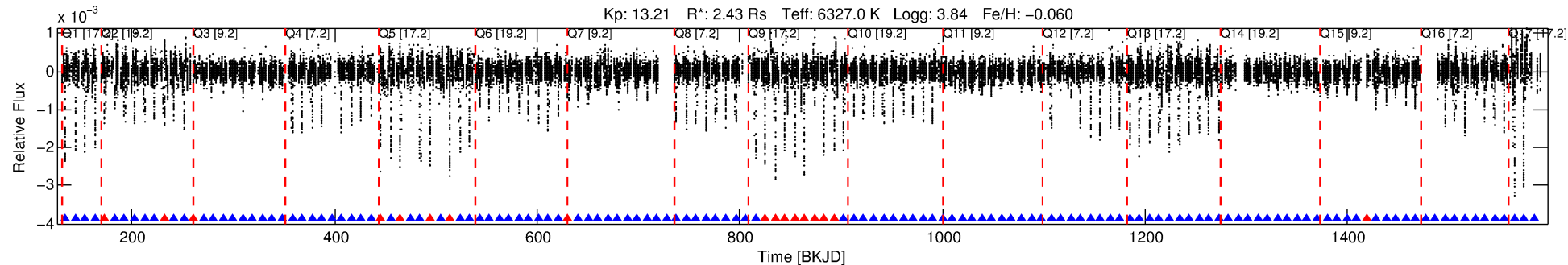
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010275880-02	10275880	010275887-sec	10275887	1:1	10.0	2	-1	13.04	13.21	124.66	Direct-PRF	0	0.26	0.49

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10275880 Candidate: 2 of 2 Period: 9.727 d  
KOI: K03734 Corr: No Ephemeris Match

Kp: 13.21 R\*: 2.43 Rs Teff: 6327.0 K Logg: 3.84 Fe/H: -0.060



## DV Fit Results:

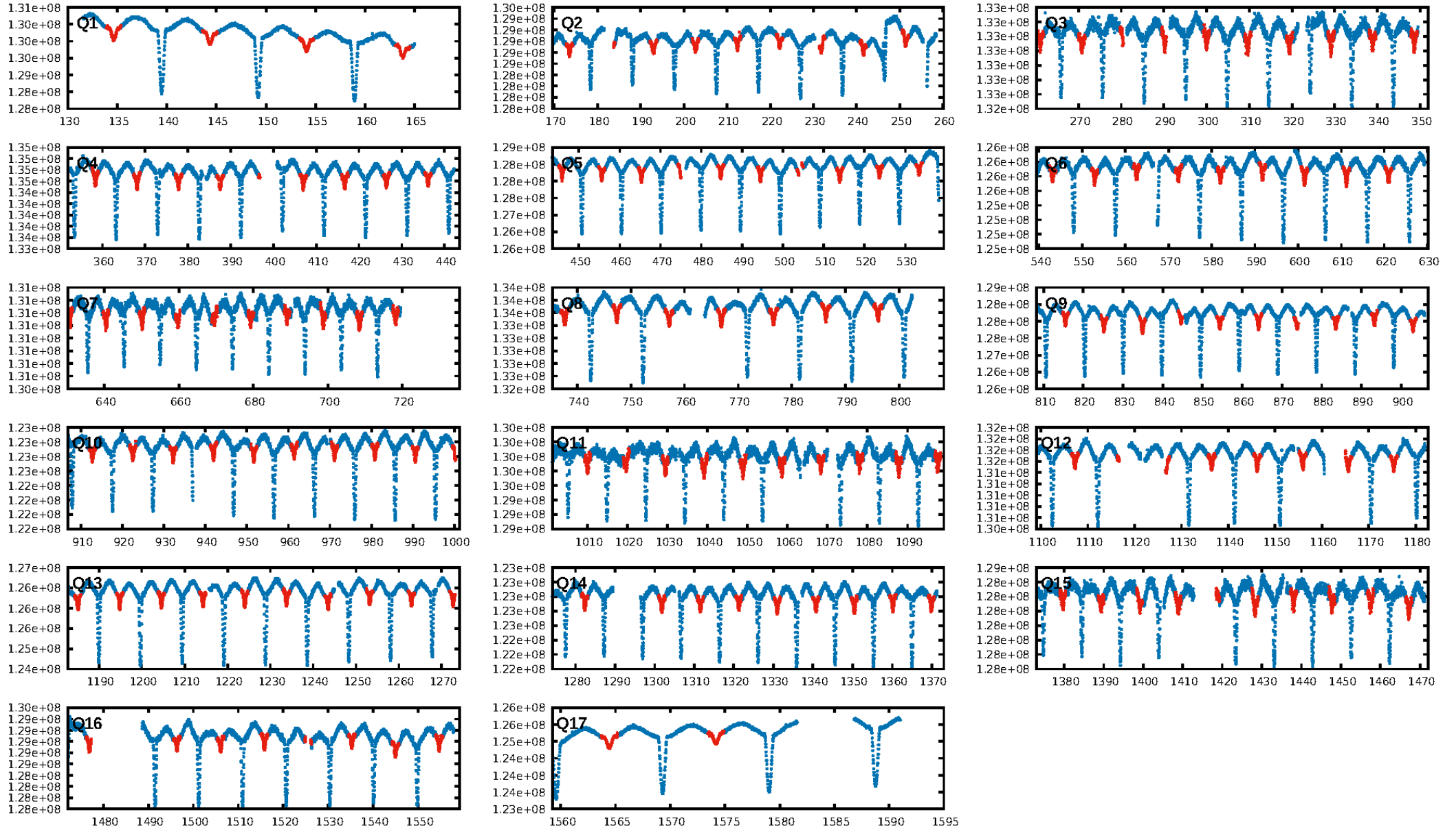
Period = 9.72681 [0.00003] d  
Epoch = 134.6075 [0.0026] BKJD  
Rp/R\* = 0.0537 [0.0088]  
a/R\* = 1.73 [0.04]  
b = 1.00 [0.03]  
Seff = 817.50 [415.54]  
Teq = 1363 [173] K  
Rp = 14.26 [5.53] Re  
a = 0.1020 [0.0327] AU  
Ag = 0.58 [0.40] [-1.05σ]  
Teffp = 1843 [220] K [1.71σ]

## DV Diagnostic Results:

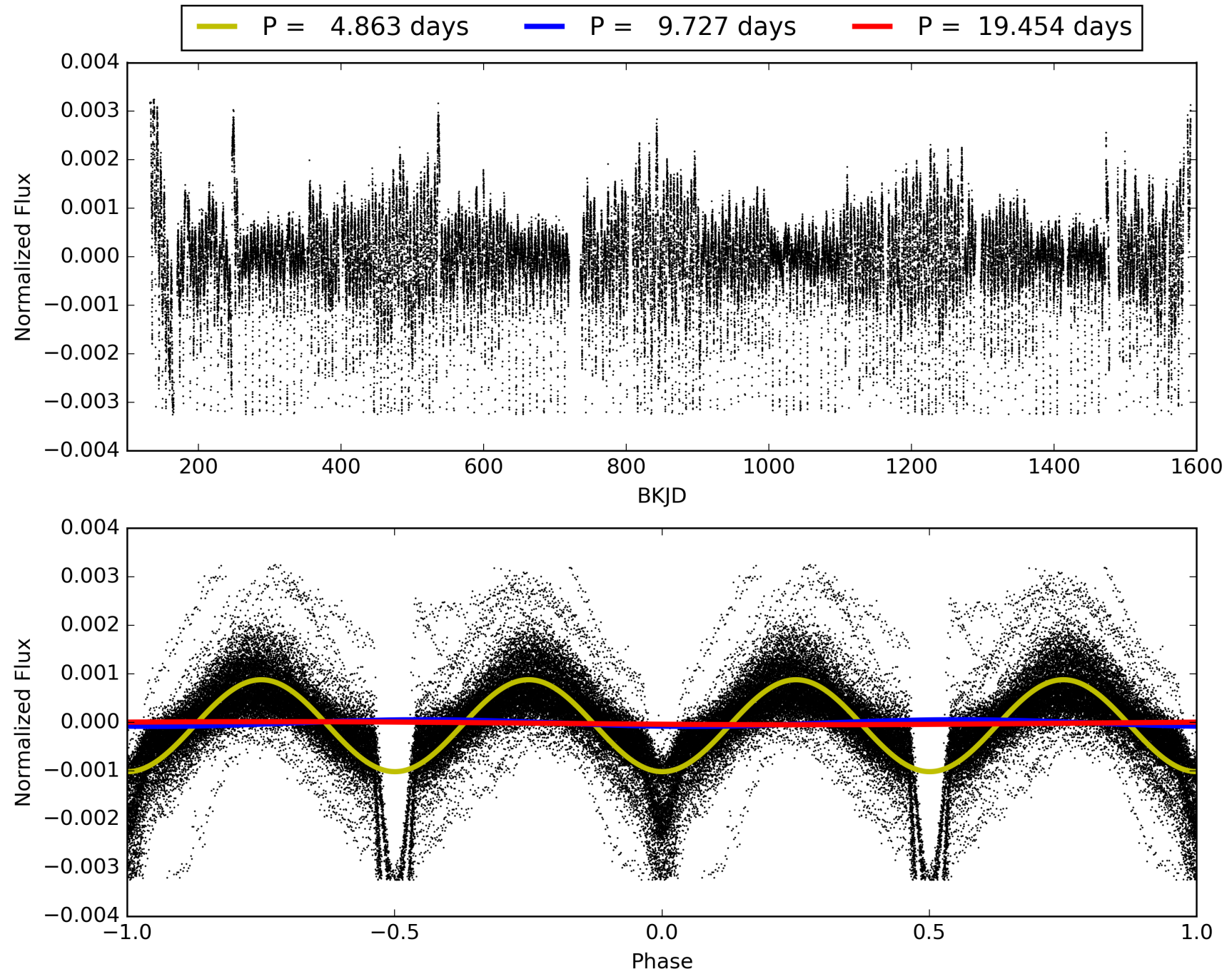
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.87 [118/135]  
GhostDiagnostic-chr: -0.8724  
Centroid-sig: 0.0%  
Centroid-so: 78.095 arcsec [44.68σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [17/17]



# TCE 010275880-02, PDC Light Curves

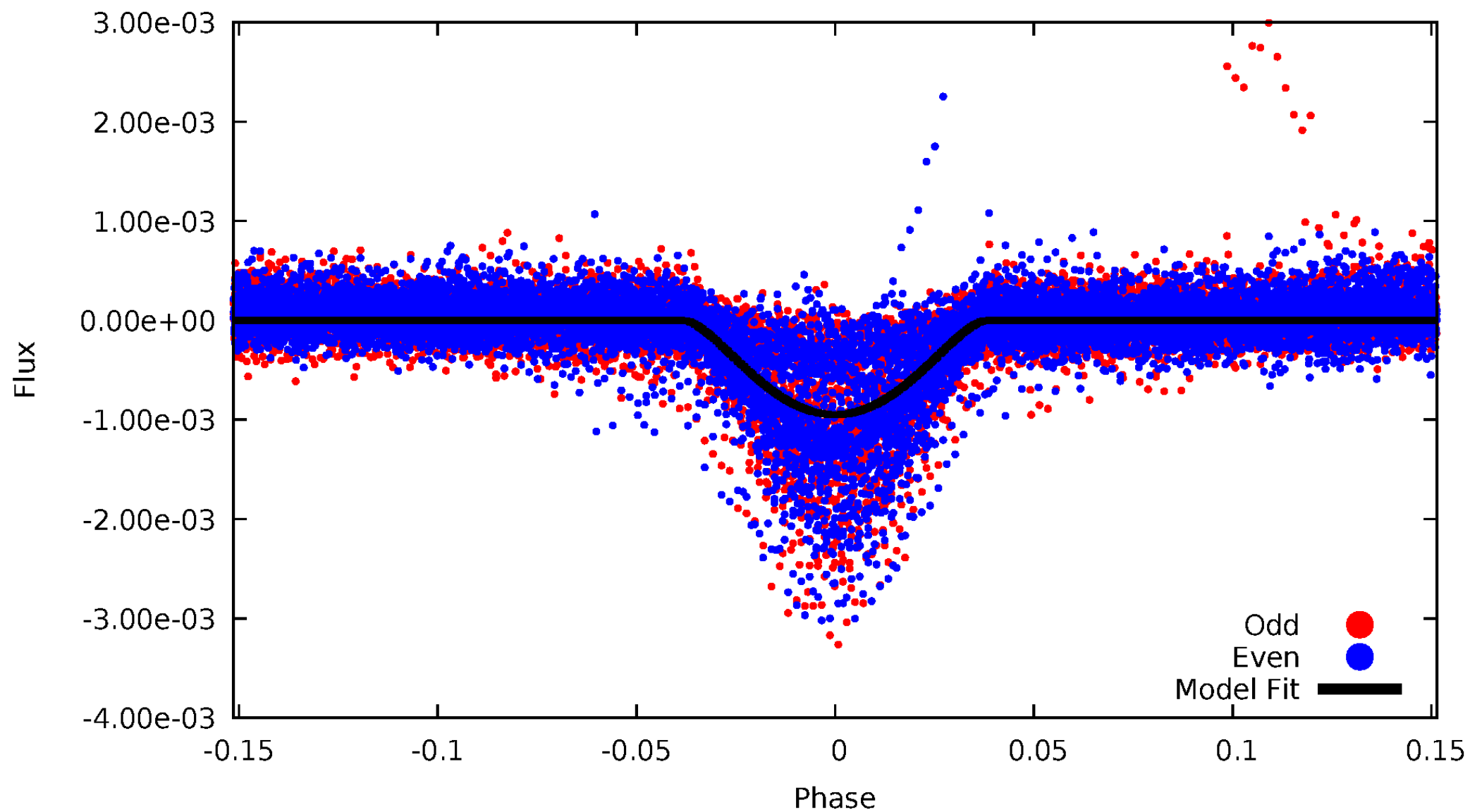


TCE 010275880-02



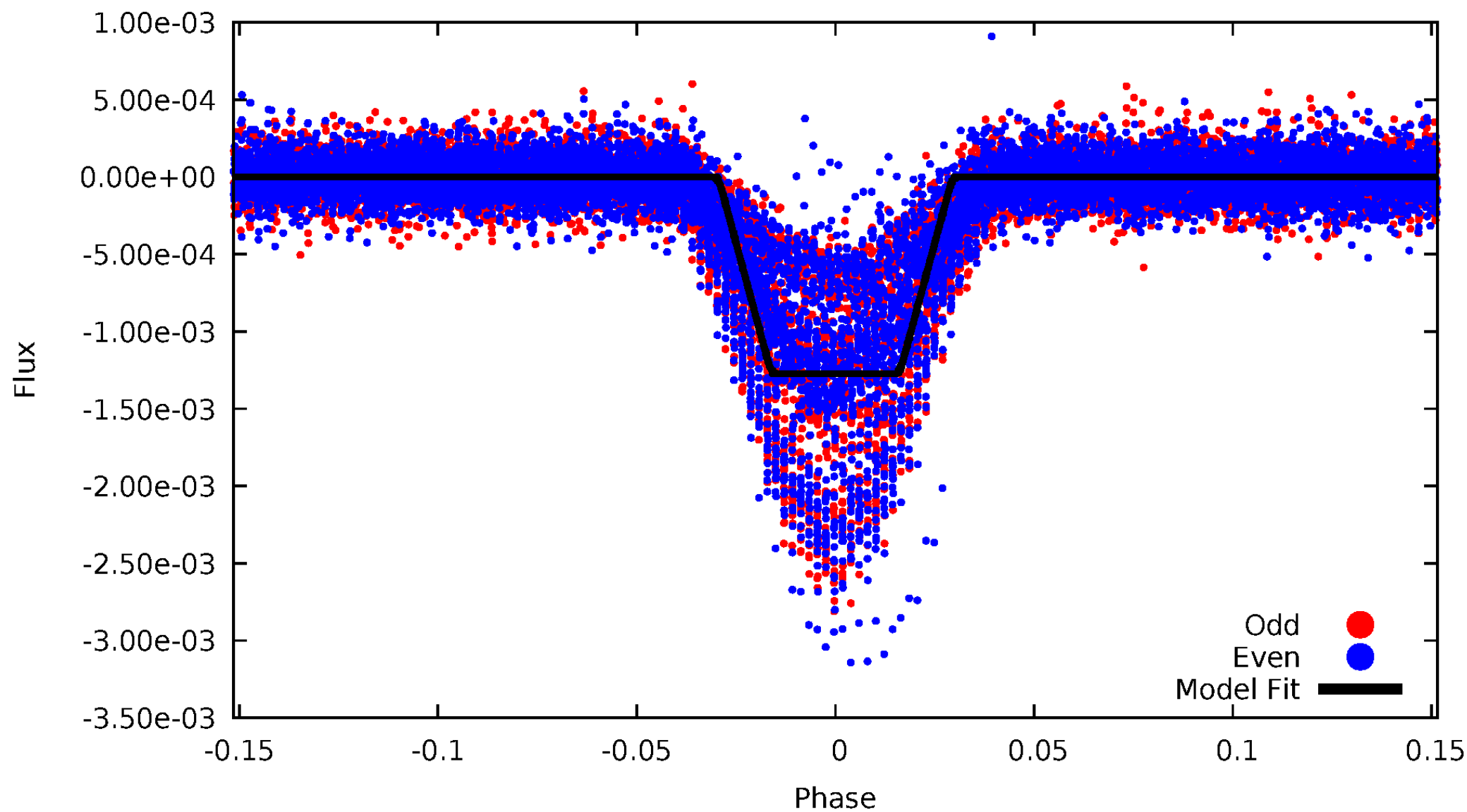
# DV Odd/Even

TCE 010275880-02



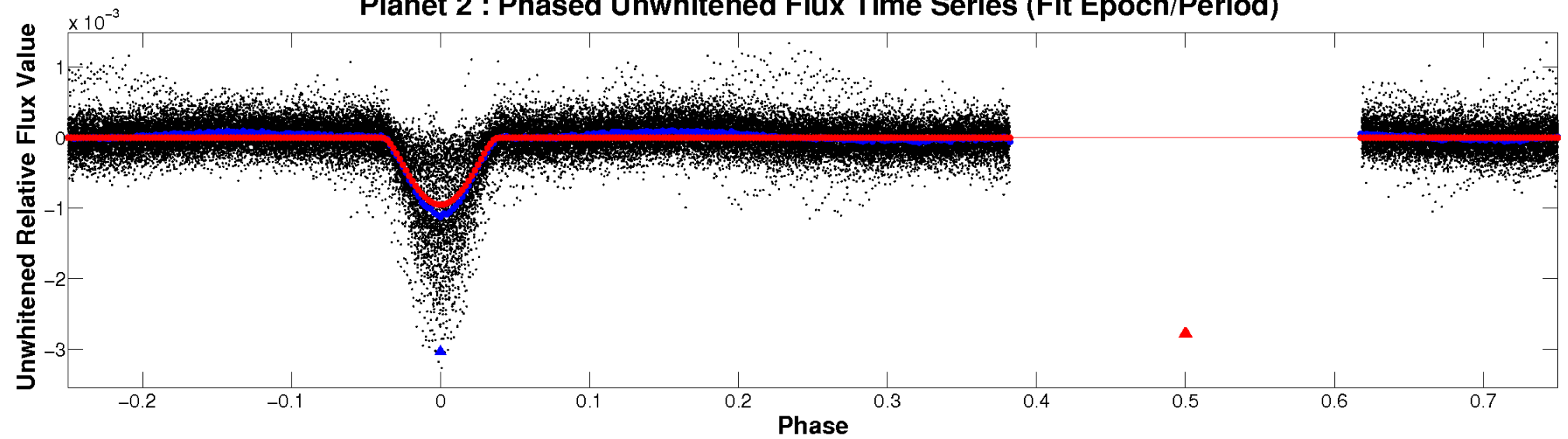
# ALT Odd/Even

TCE 010275880-02

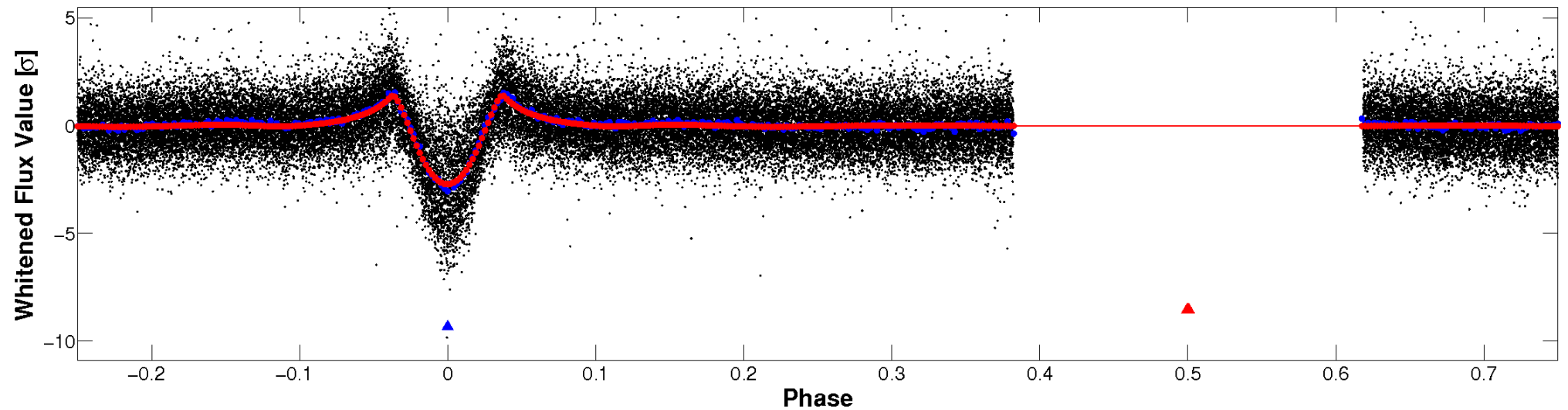


# Non-Whitened Vs. Whitened Light Curve

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

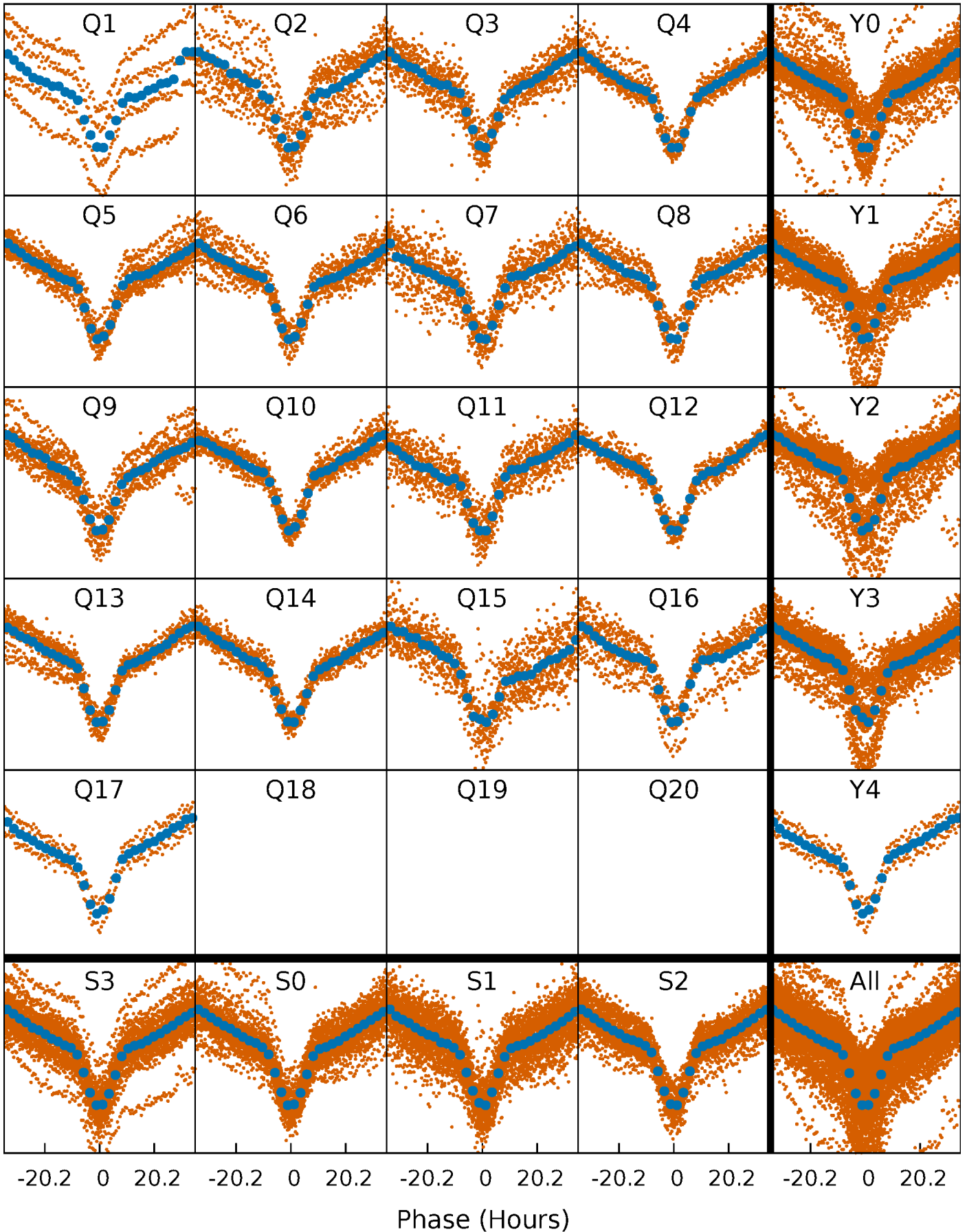


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

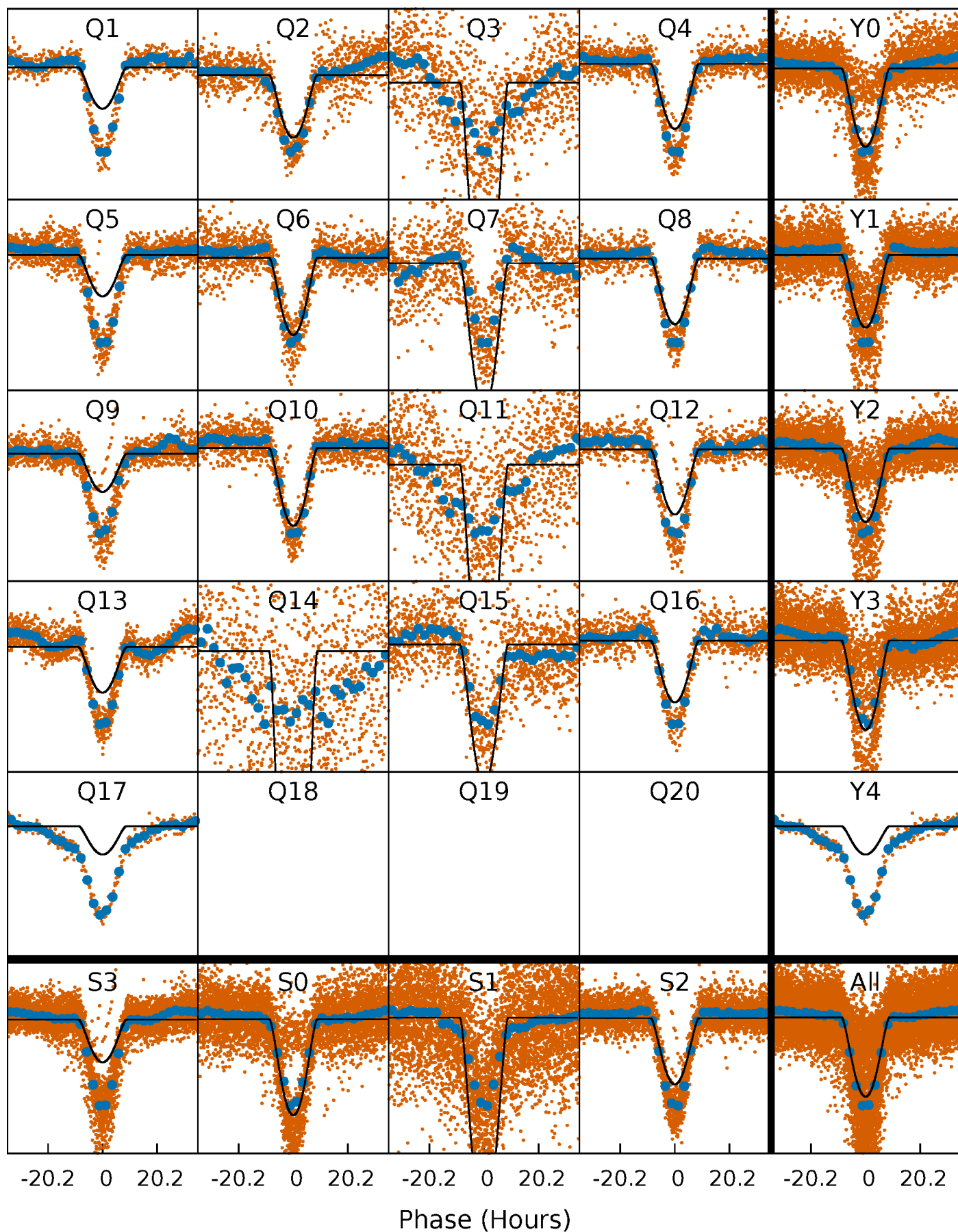
TCE 010275880-02     $P = 9.726815$  Days     $T_0 = 134.607539$  (BKJD)





# DV Quarter-Phased Transit Curves

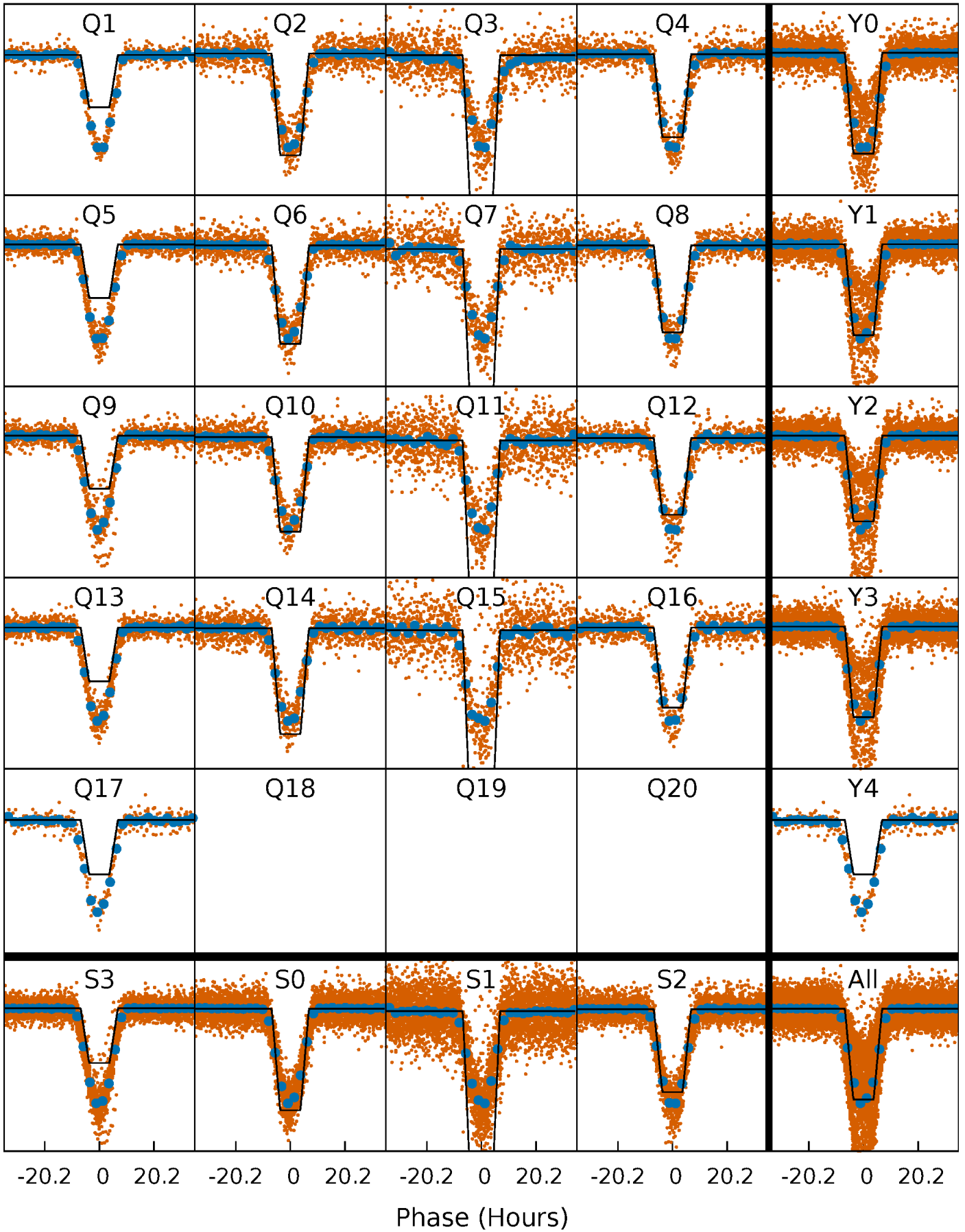
TCE 010275880-02 P= 9.726815 Days  $T_0=134.607539$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

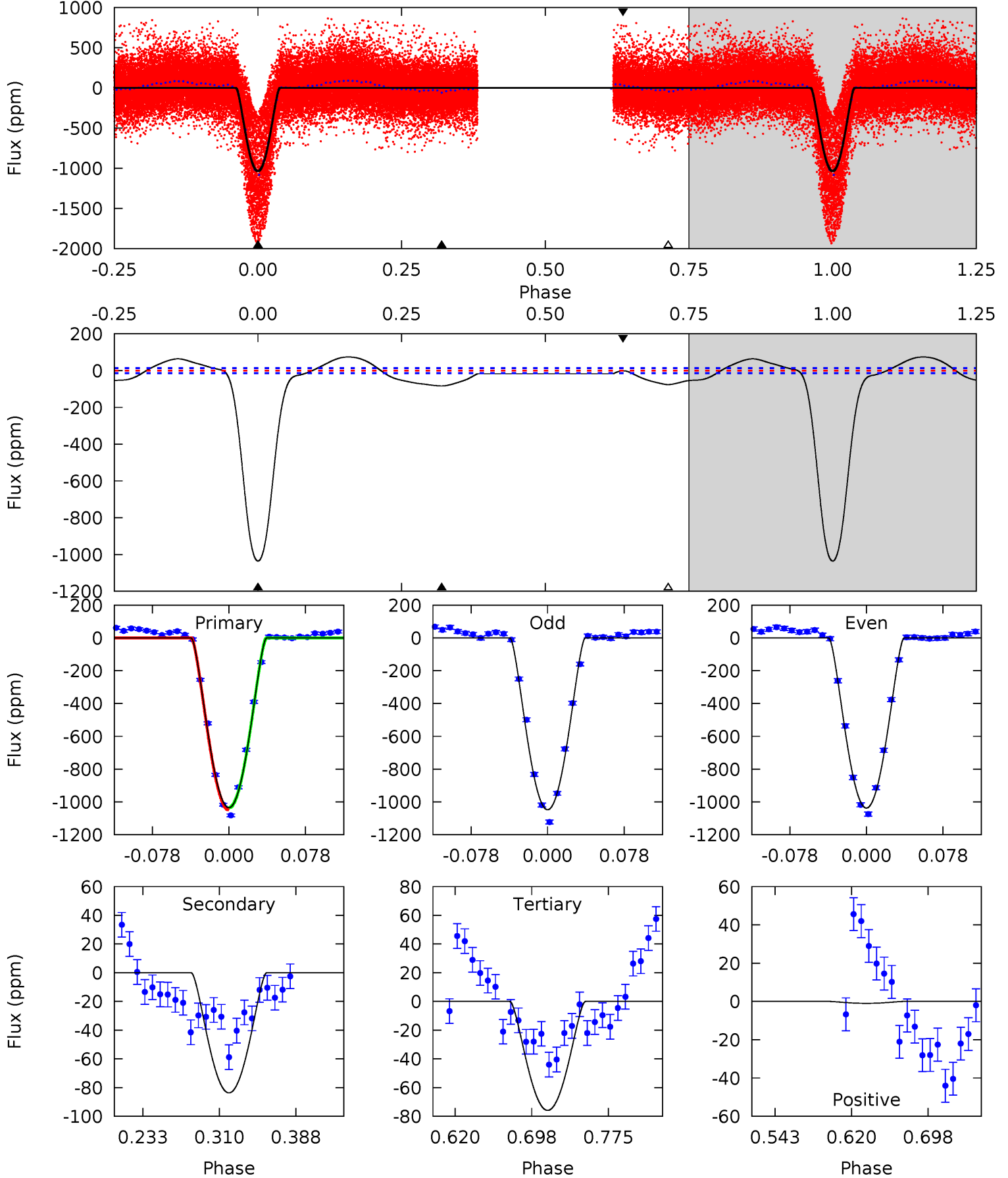
TCE 010275880-02     $P = 9.726937$  Days     $T_0 = 134.600395$  (BKJD)



# DV Model-Shift Uniqueness Test

010275880-02, P = 9.726815 Days, E = 124.880724 Days

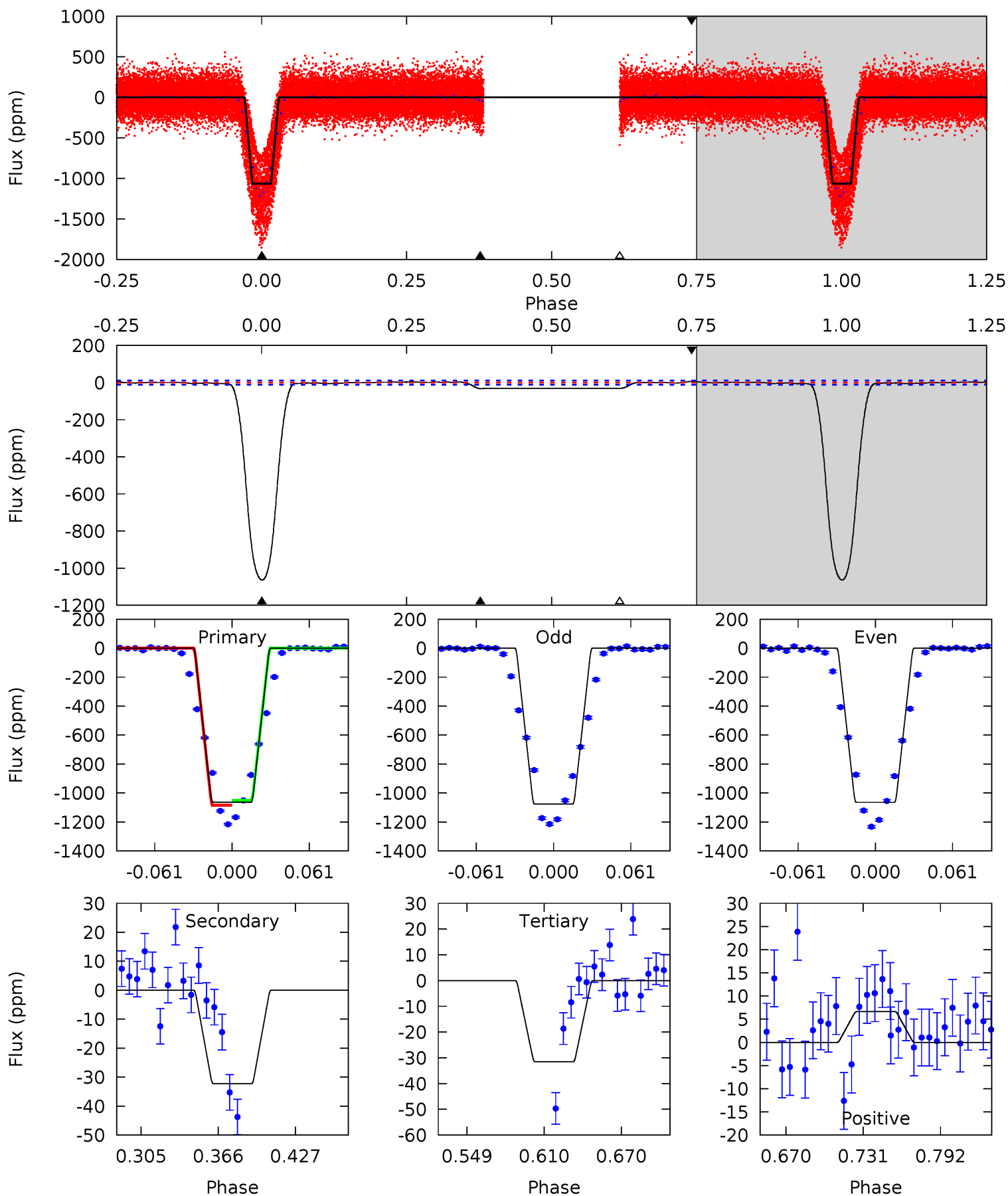
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
347.6	28.1	25.5	-0.33	4.62	1.77	15.7	322.1	347.9	2.62	28.4	1.75	1.03	0.07	0



# Alt Model-Shift Uniqueness Test

010275880-02, P = 9.726937 Days, E = 124.873458 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
446.2	13.5	13.2	2.78	4.67	1.87	2.08	432.9	443.4	0.31	10.8	2.40	1.06	0.01	7.31



### Stellar Parameters For KIC 010275880

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6327^{+154}_{-173}$	$3.840^{+0.285}_{-0.095}$	$-0.060^{+0.300}_{-0.250}$	$2.433^{+0.461}_{-0.856}$	$1.495^{+0.177}_{-0.329}$	$0.146^{+0.298}_{-0.045}$
	+2%/-3%	+7%/-2%	+500%/-417%	+19%/-35%	+12%/-22%	+204%/-31%
Source	PHO1	FLK73	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 010275880-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-84 \pm 3$	$13.41^{+3.56}_{-3.14}$	$1866^{+117}_{-165}$	$3146^{+207}_{-174}$	$2.618^{+1.735}_{-0.888}$
Alt.	$-32 \pm 2$	$8.92^{+2.94}_{-2.46}$	$1870^{+113}_{-167}$	$3064^{+296}_{-233}$	$2.297^{+2.006}_{-1.002}$

$T_{max}$  = 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

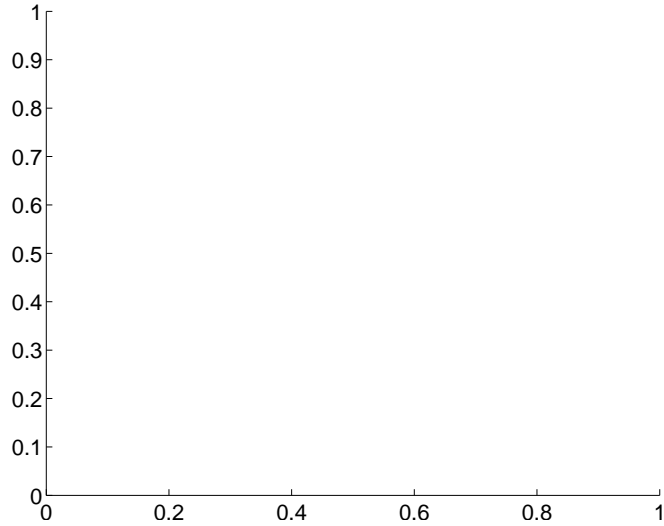
Supplemental centroid analysis for 010275880-02. Kepler magnitude: 13.21. Transit SNR 118.19

There are 0 quarters with good PRF difference image offsets

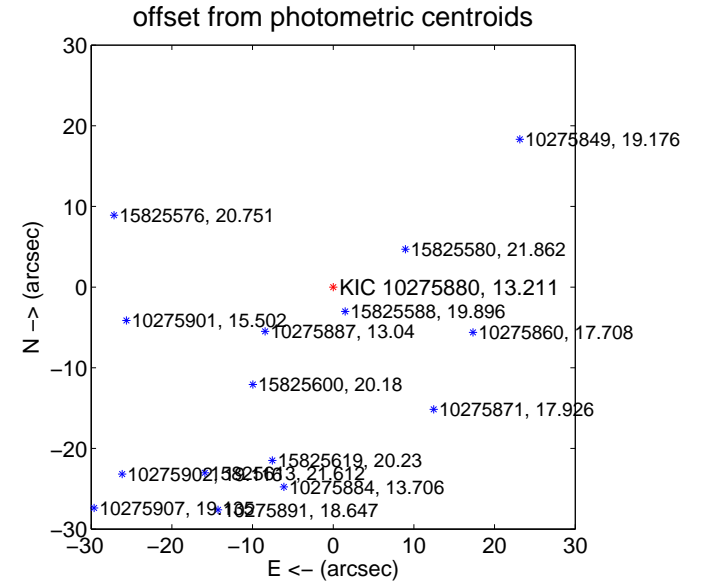
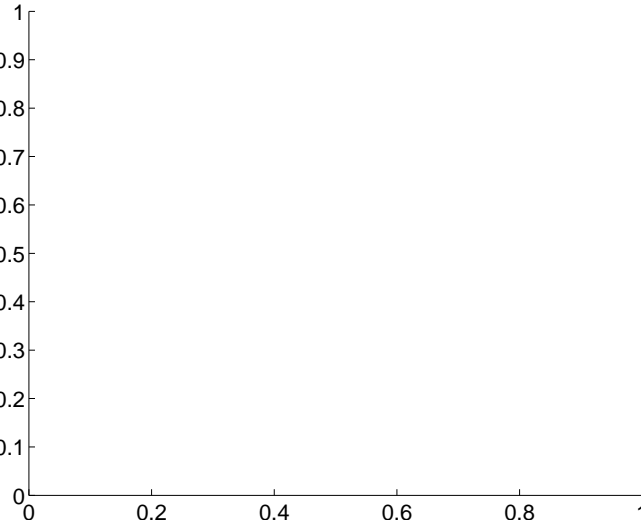
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$78.11 \pm 1.75$	$44.67$	$71.09 \pm 1.88$	$-32.35 \pm 0.89$

There is no PRF-fit offset from OOT-fit

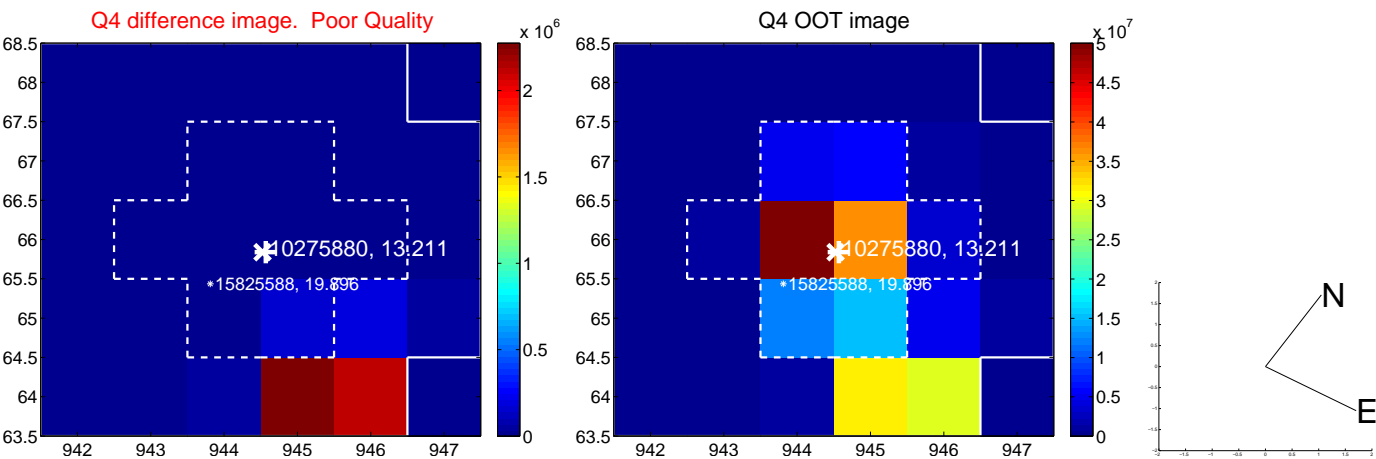
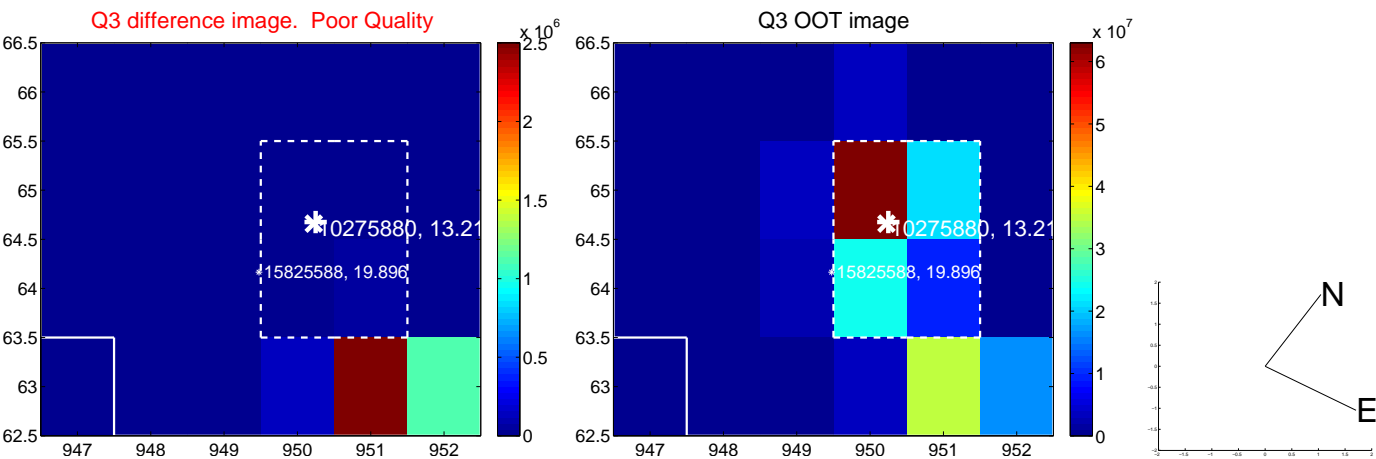
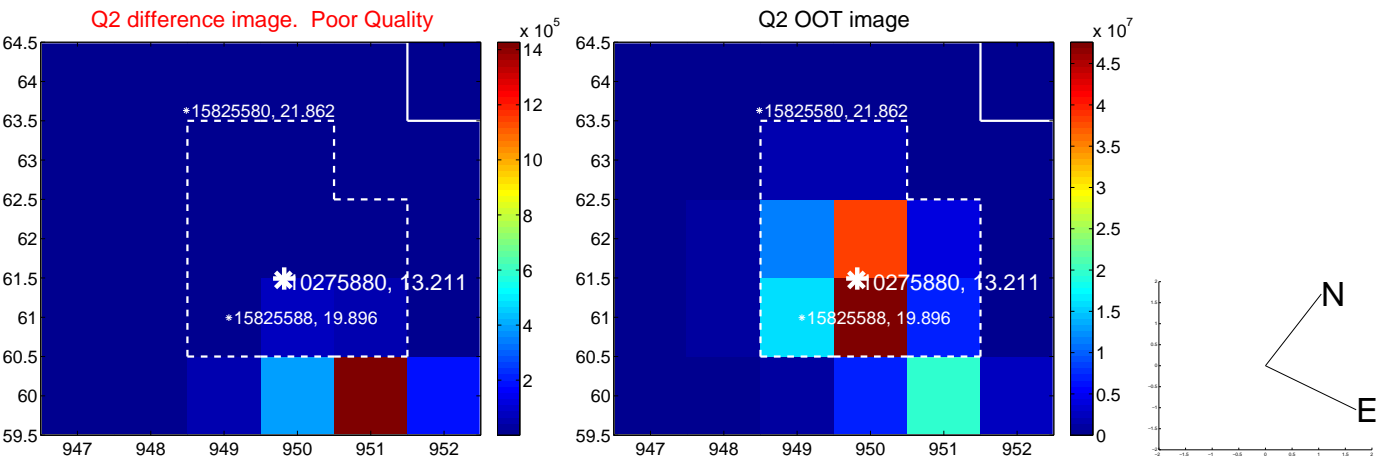
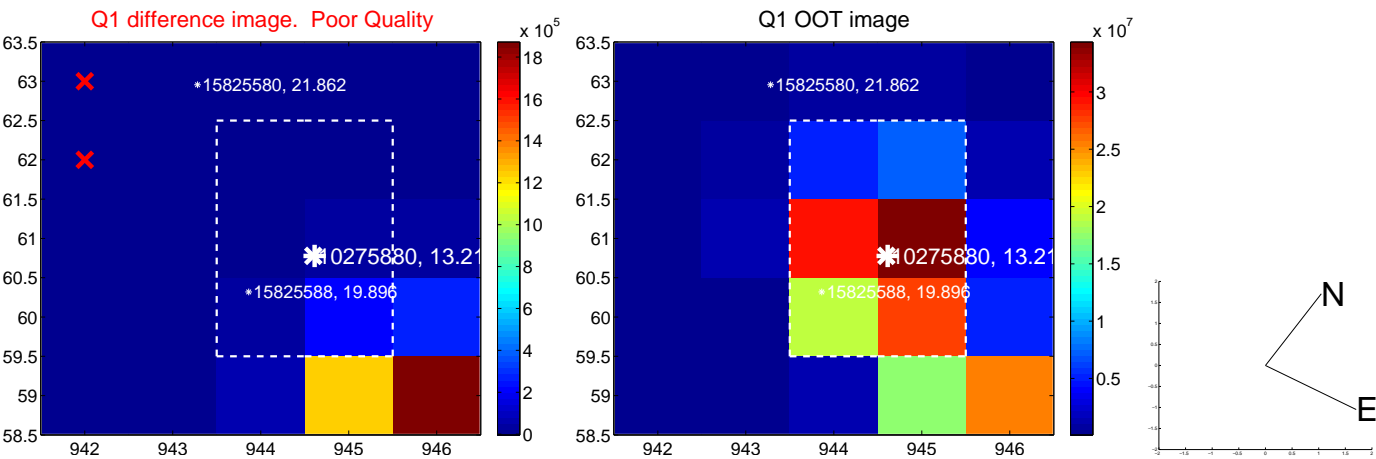


There is no PRF-fit offset from KIC

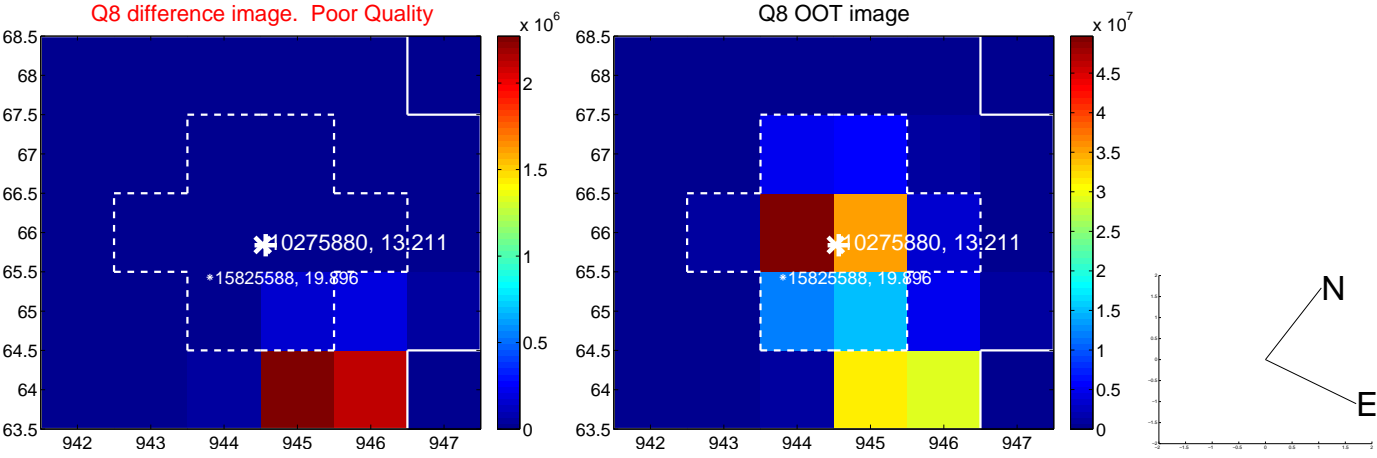
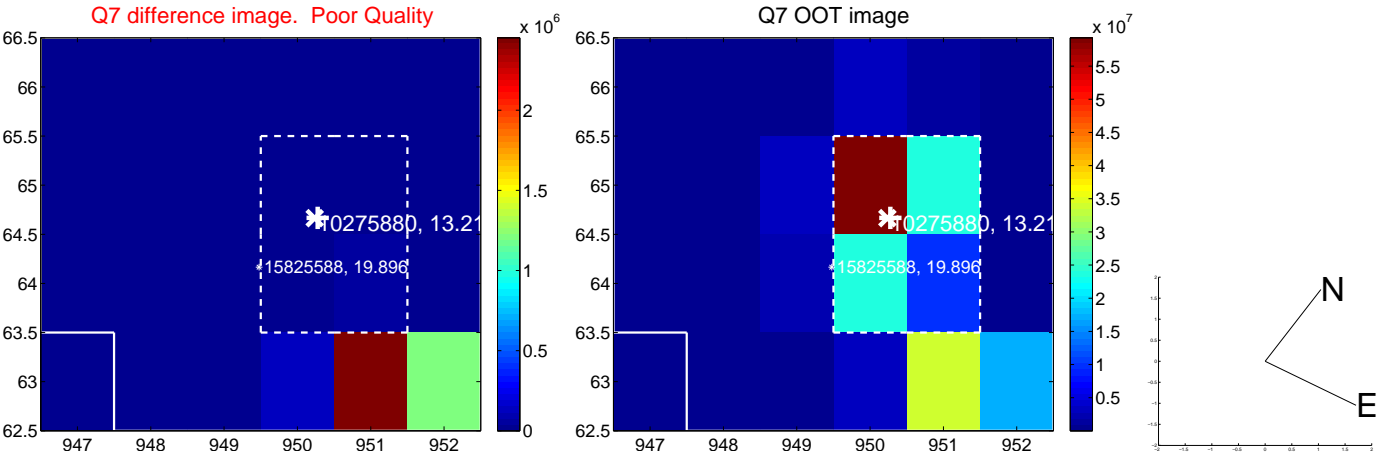
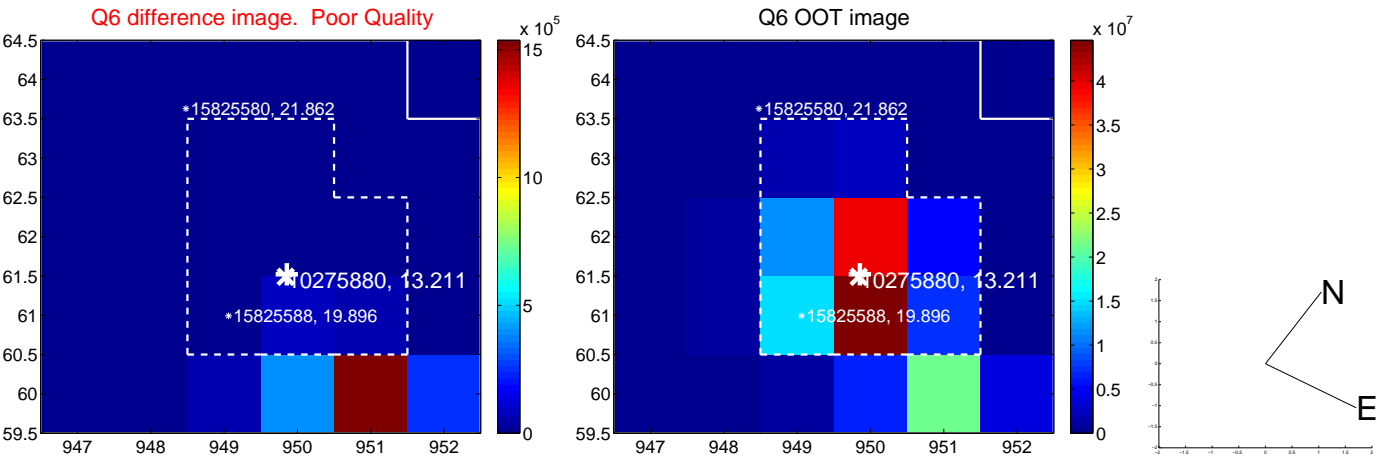
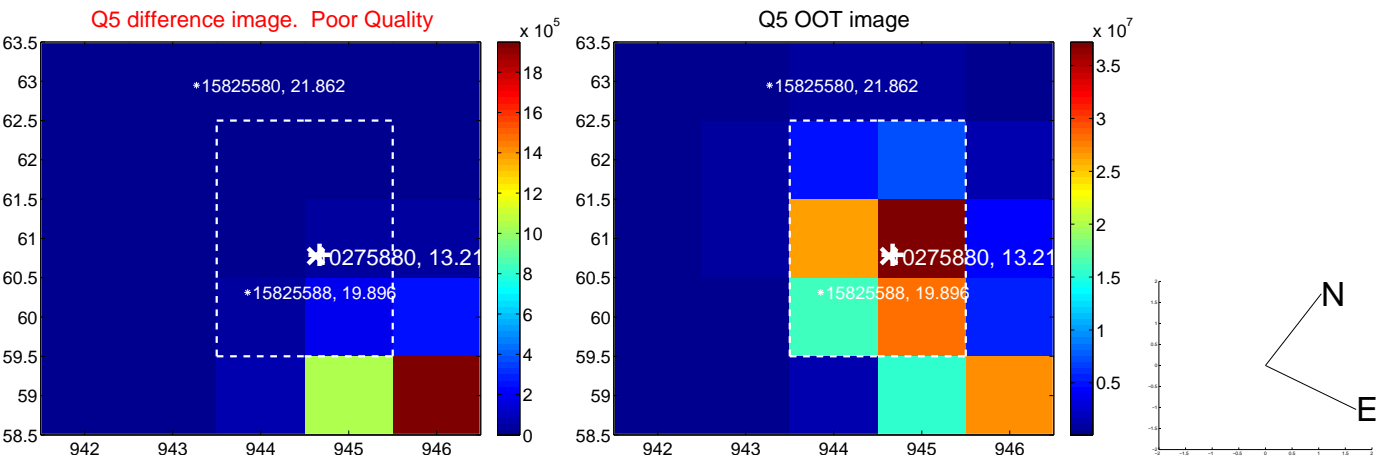


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

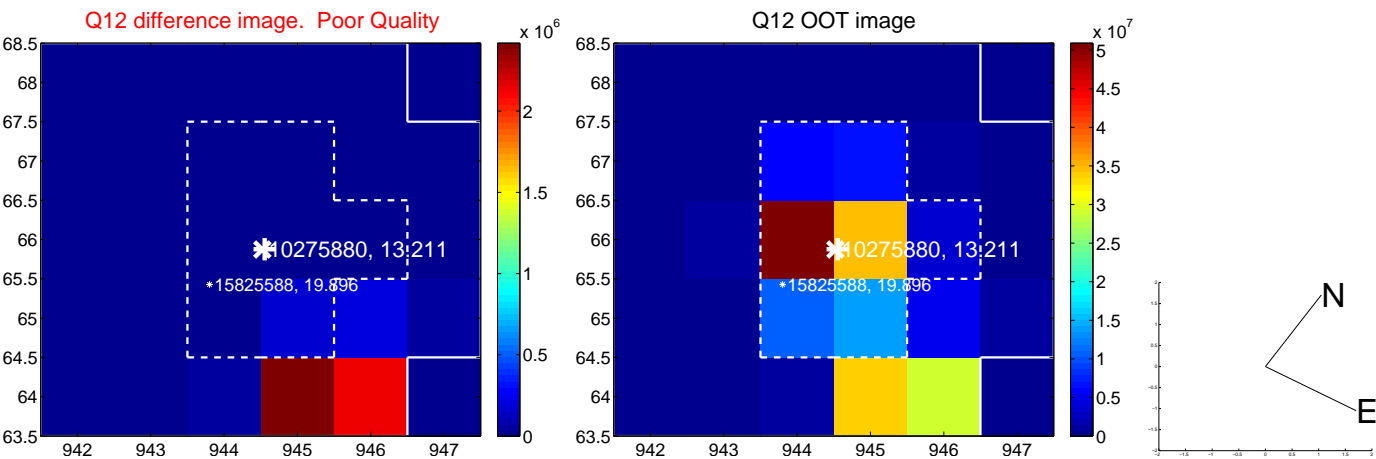
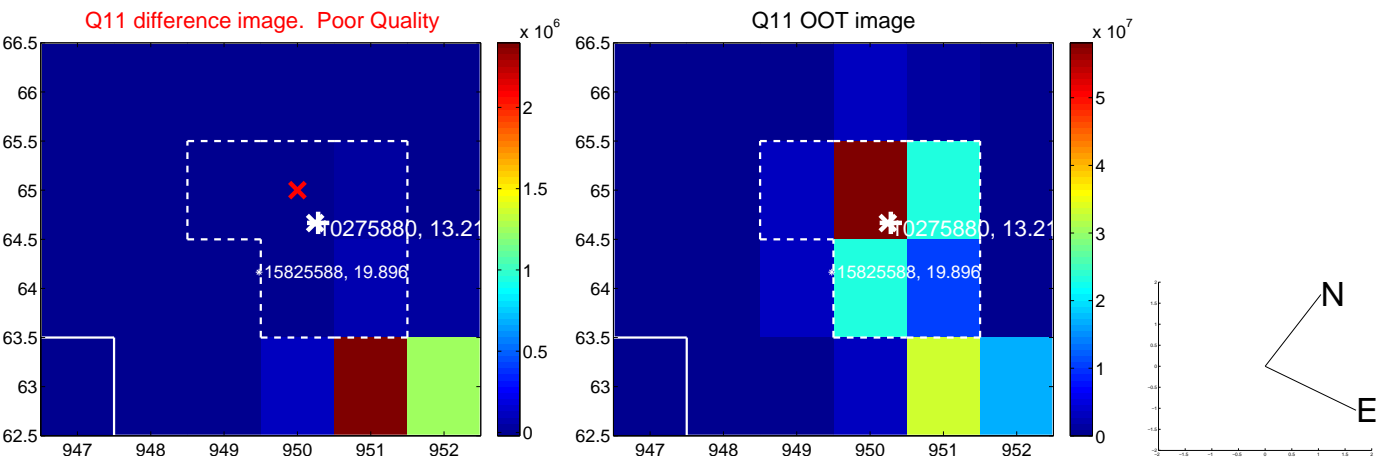
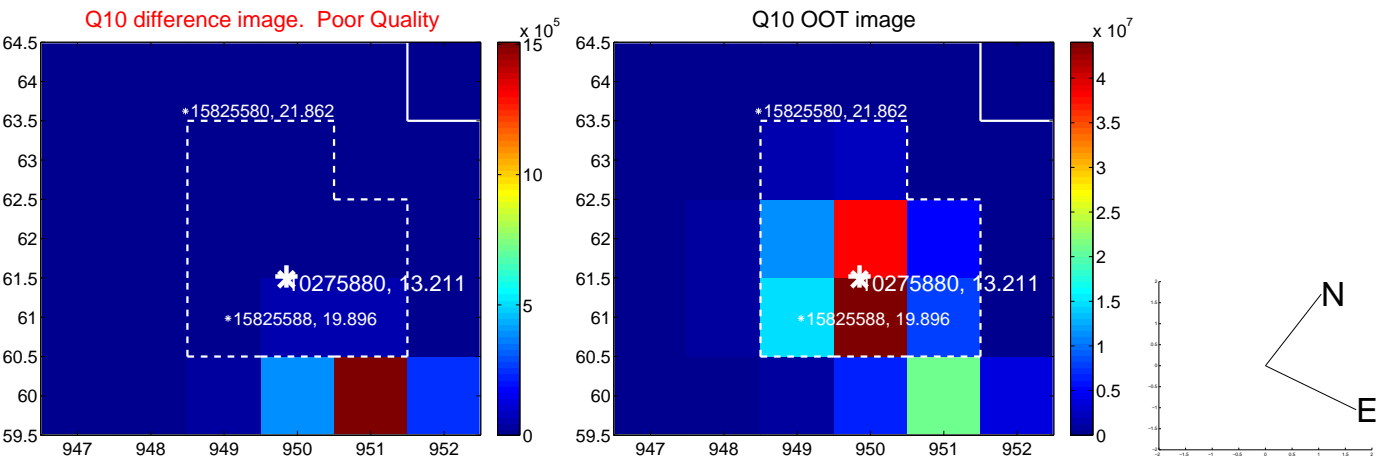
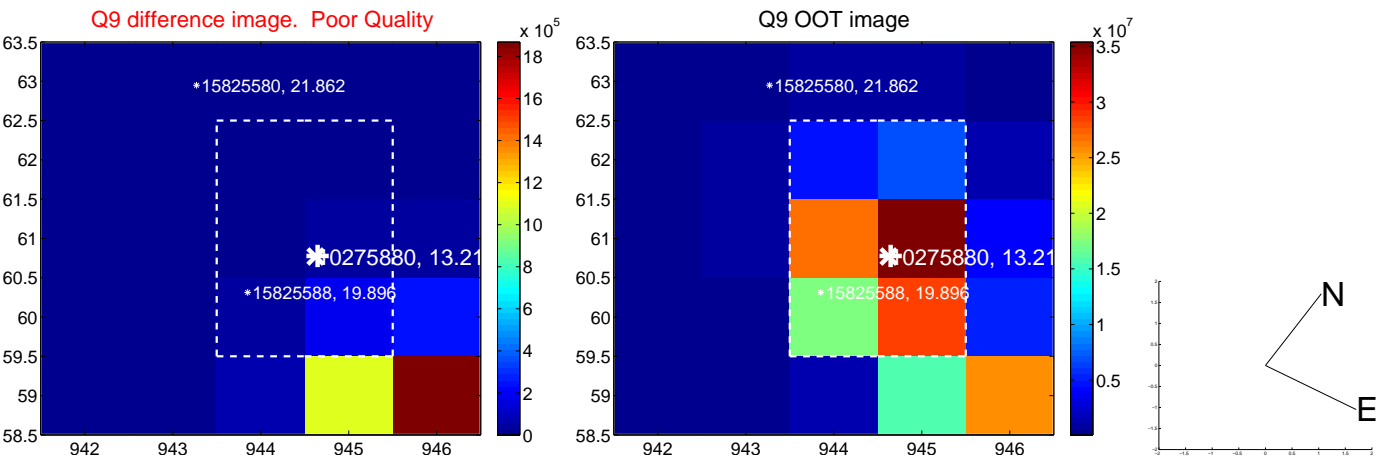


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



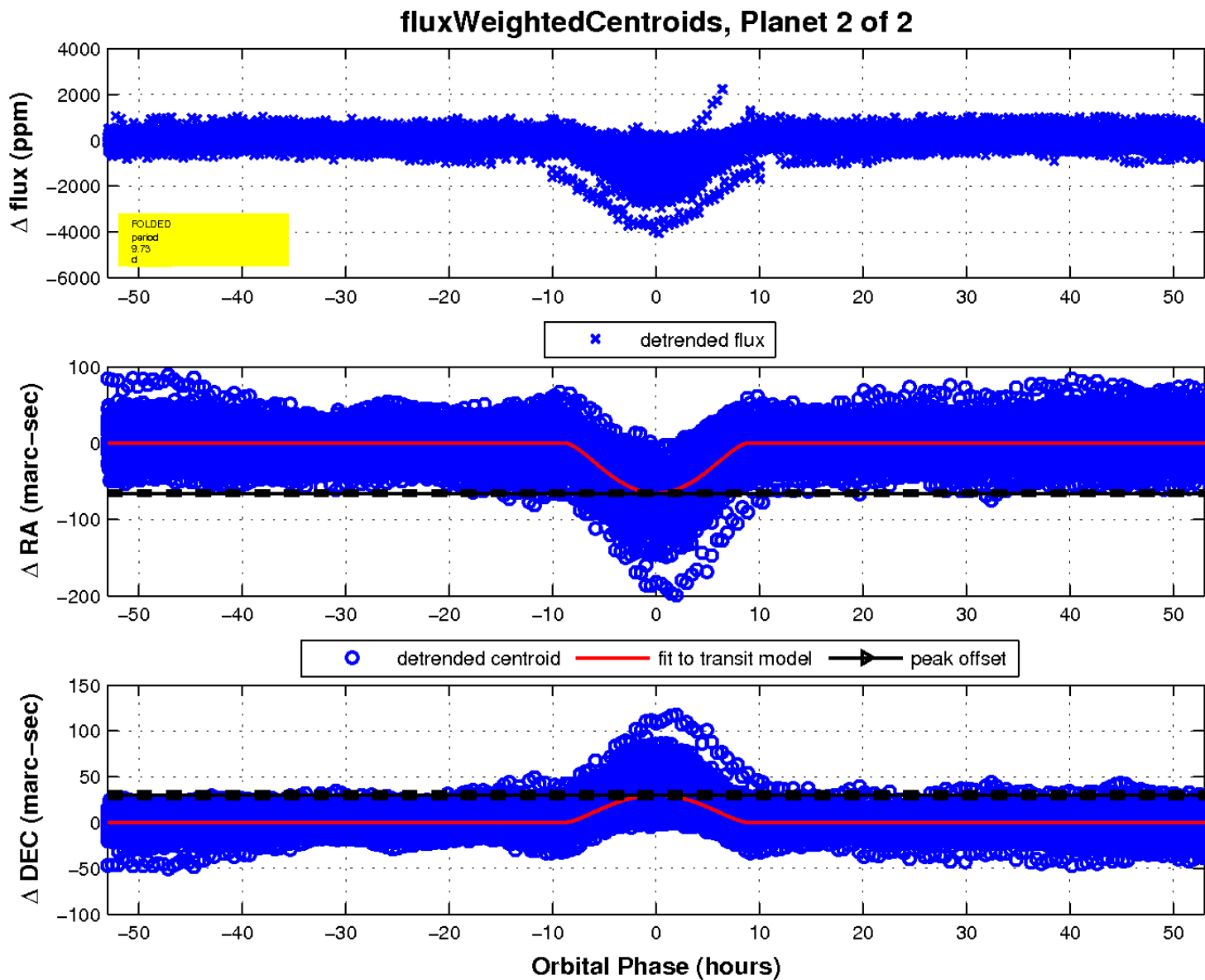
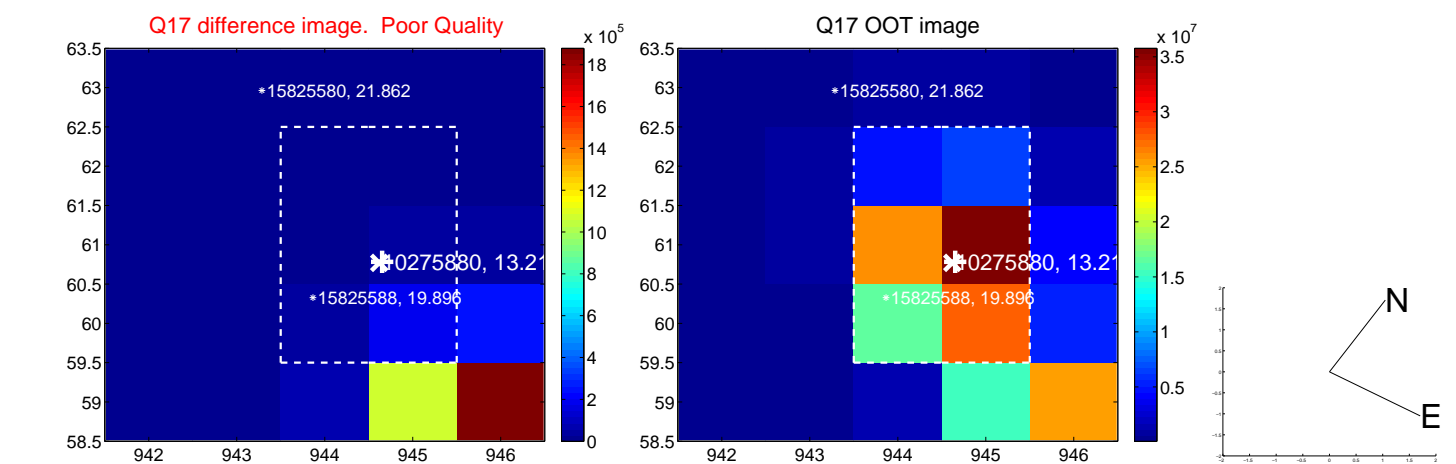


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

