

# KIC 008266276

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008266276-01	OBS	1731.01	2.594863	132.761884	526.1	1.990	12.3	13.8	0.80	4748	2.29	250.28
008266276-02	OBS	1731.02	0.837895	131.983276	242.7	2.035	9.6	11.1	0.80	4748	1.41	1129.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008266276-01	OBS	PC	0.81	0	0	0	0	CENT_FEW_DIFFS
008266276-02	OBS	FP	0.02	0	0	1	0	CENT_RESOLVED_OFFSET

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

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

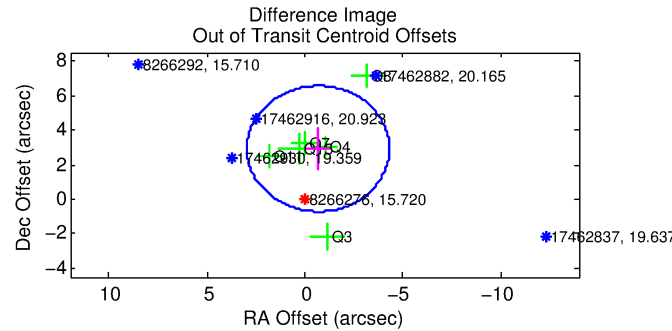
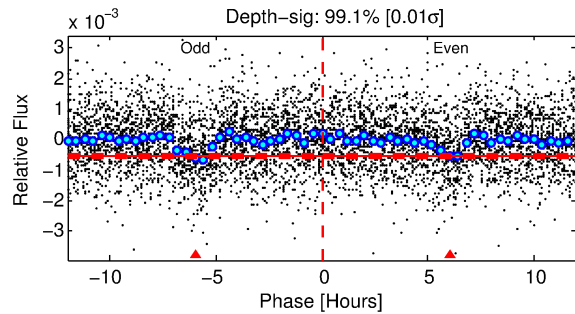
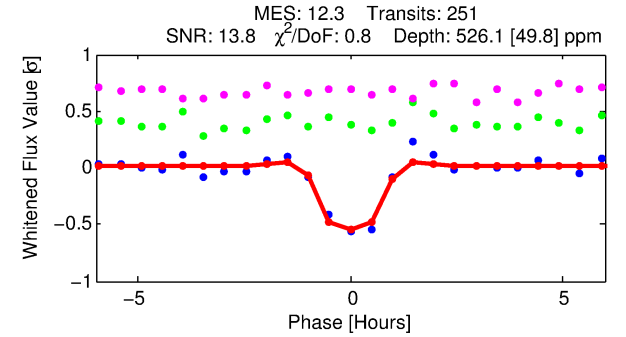
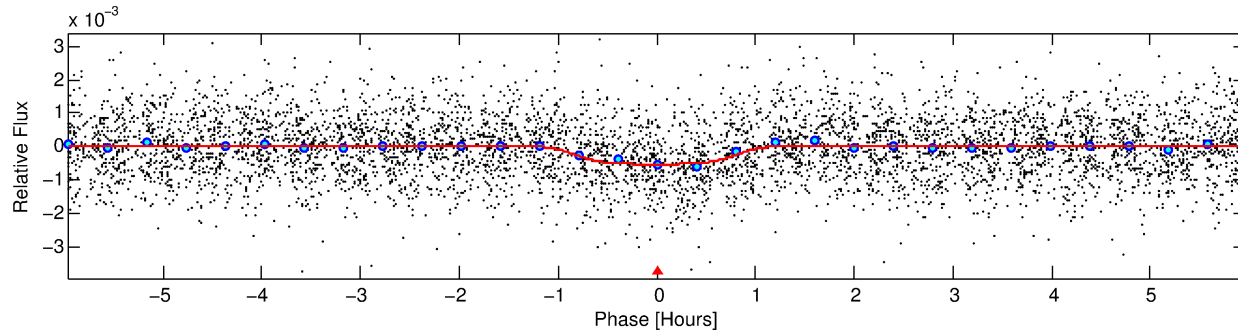
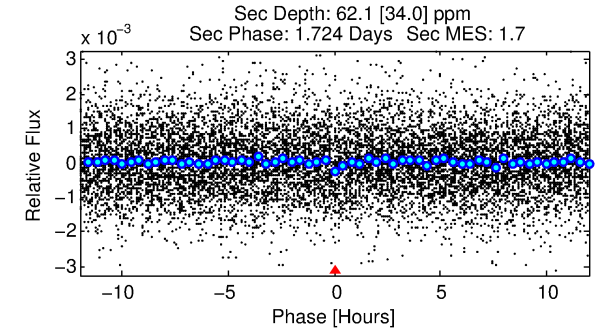
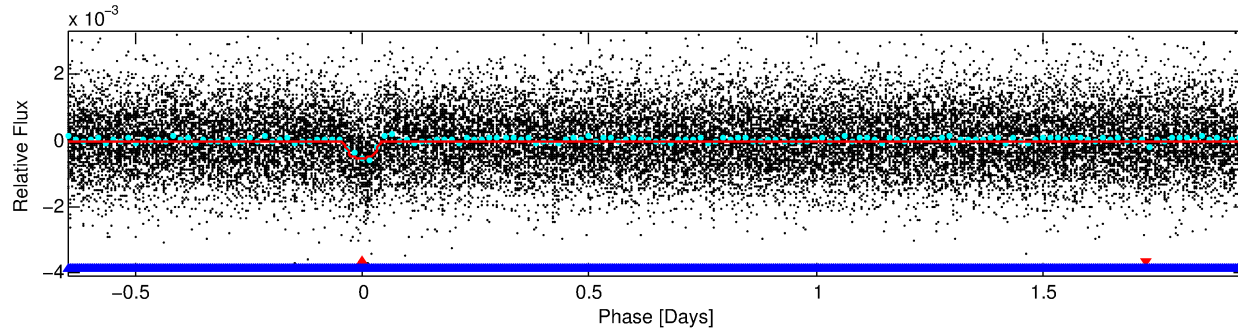
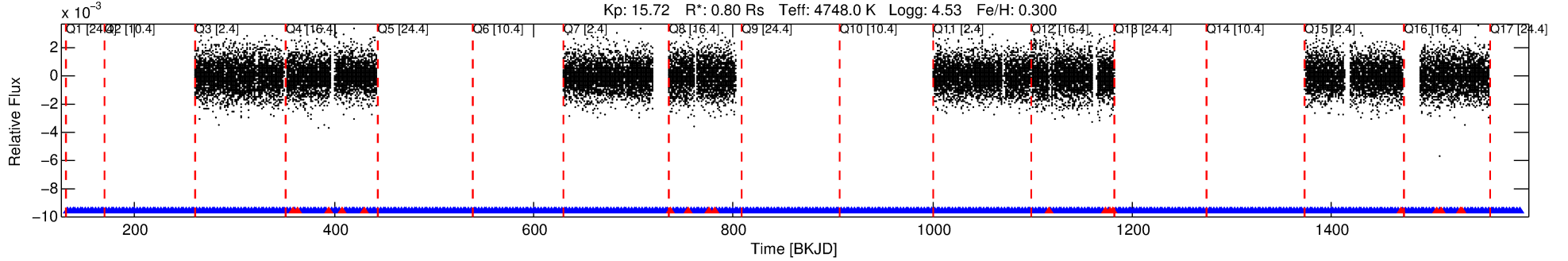
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008266276-01

No Significant Match Found

# DV One-Page Summary

KIC: 8266276 Candidate: 1 of 2 Period: 2.595 d  
KOI: K01731.01 Corr: 0.941



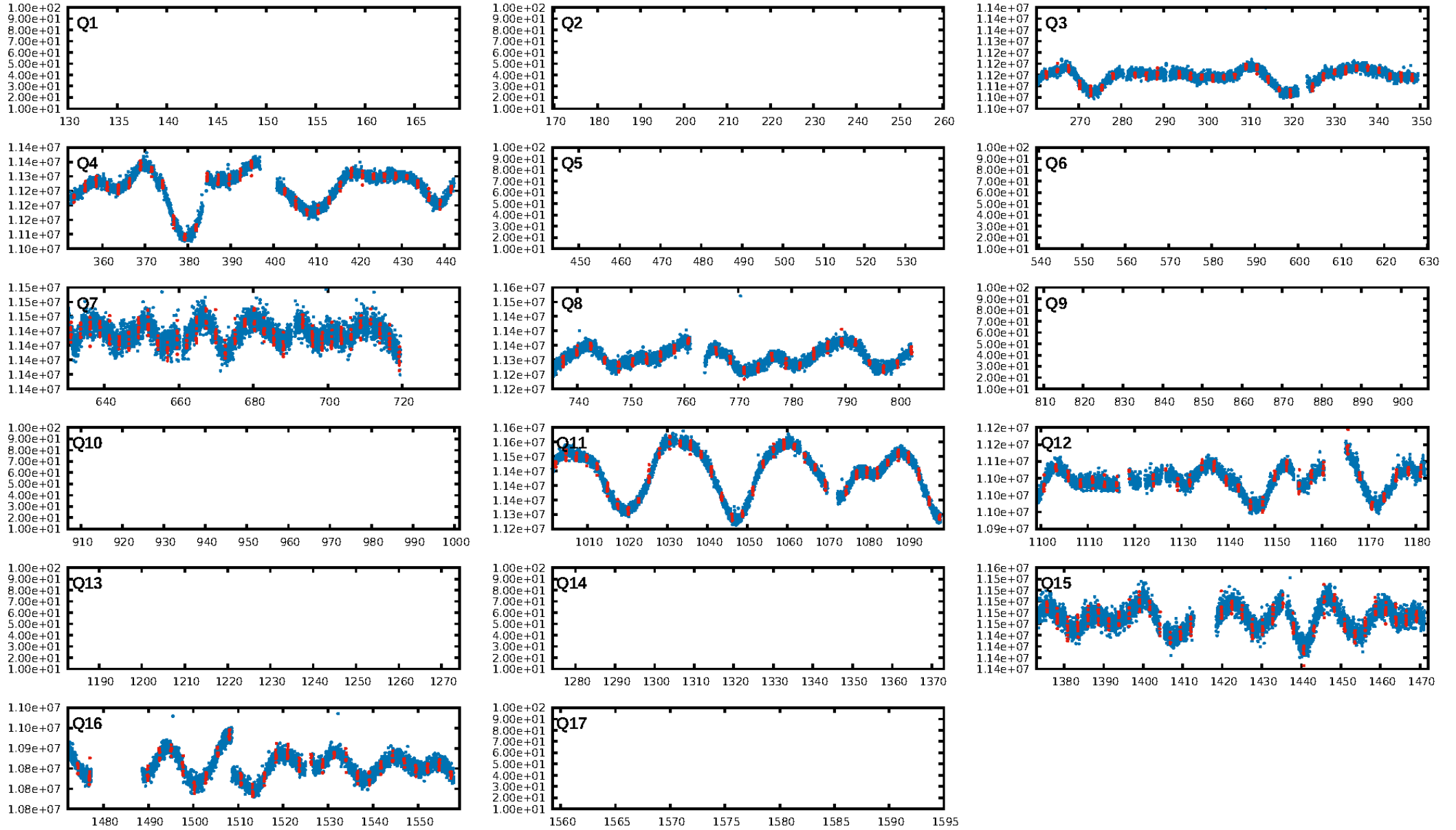
## DV Fit Results:

Period = 2.59486 [0.00001] d  
Epoch = 132.7619 [0.0023] BKJD  
Rp/R\* = 0.0264 [0.0096]  
a/R\* = 4.77 [6.11]  
b = 0.91 [0.25]  
Seff = 250.28 [48.37]  
Teq = 1014 [49] K  
Rp = 2.30 [0.86] Re  
a = 0.0340 [0.0029] AU  
Ag = 7.49 [6.87] [0.94σ]  
Teffp = 2594 [597] K [2.64σ]

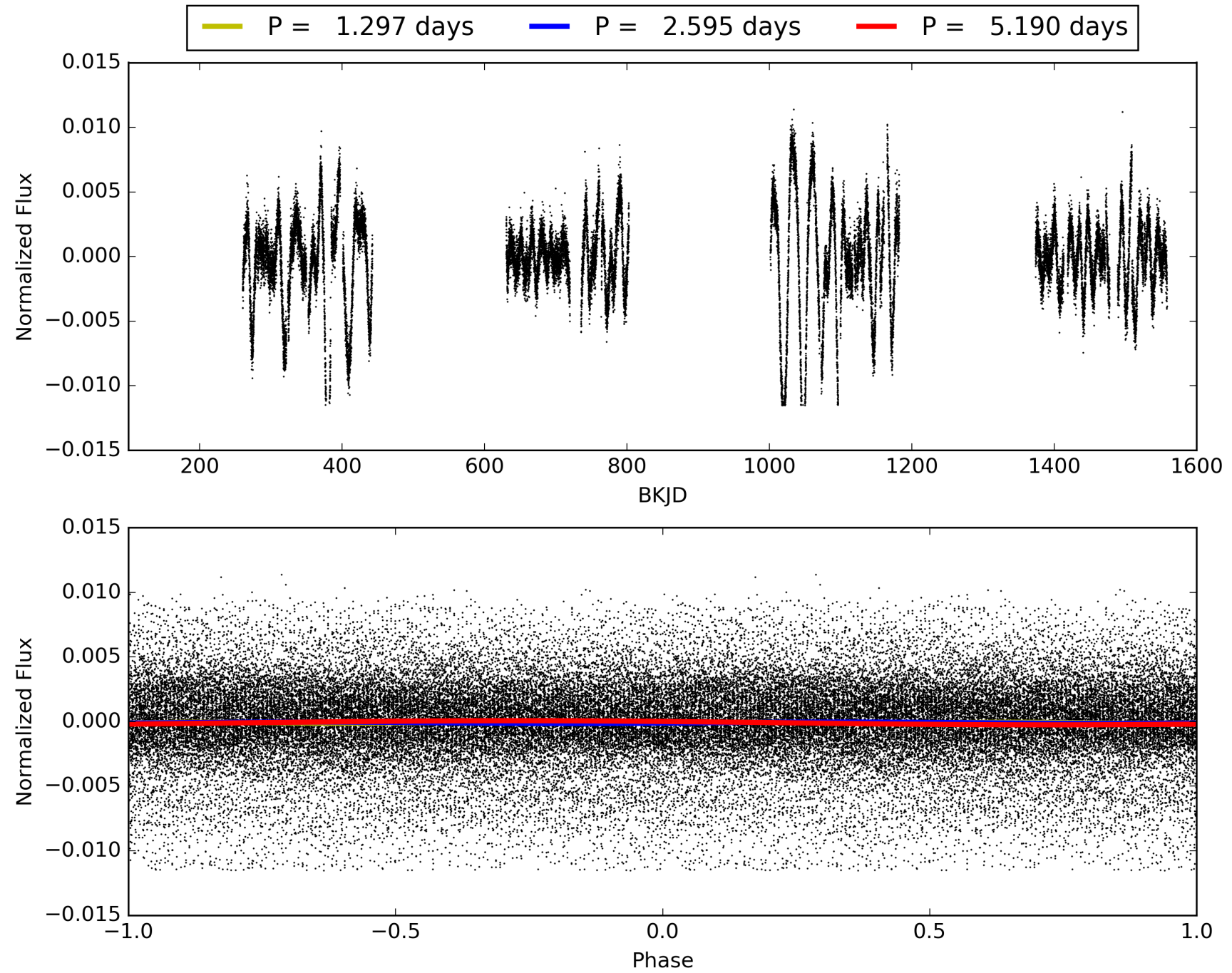
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.81σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.19e-30  
RollingBand-fgt: 0.93 [233/251]  
GhostDiagnostic-chr: 4.502  
Centroid-sig: 60.0%  
Centroid-so: 1.949 arcsec [3.26σ]  
OotOffset-rm: 2.993 arcsec [2.47σ]  
KicOffset-rm: 1.385 arcsec [1.37σ]  
OotOffset-st: 0/4/2/0 [6]  
KicOffset-st: 0/4/2/0 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 1.00 [8/8]

# TCE 008266276-01, PDC Light Curves

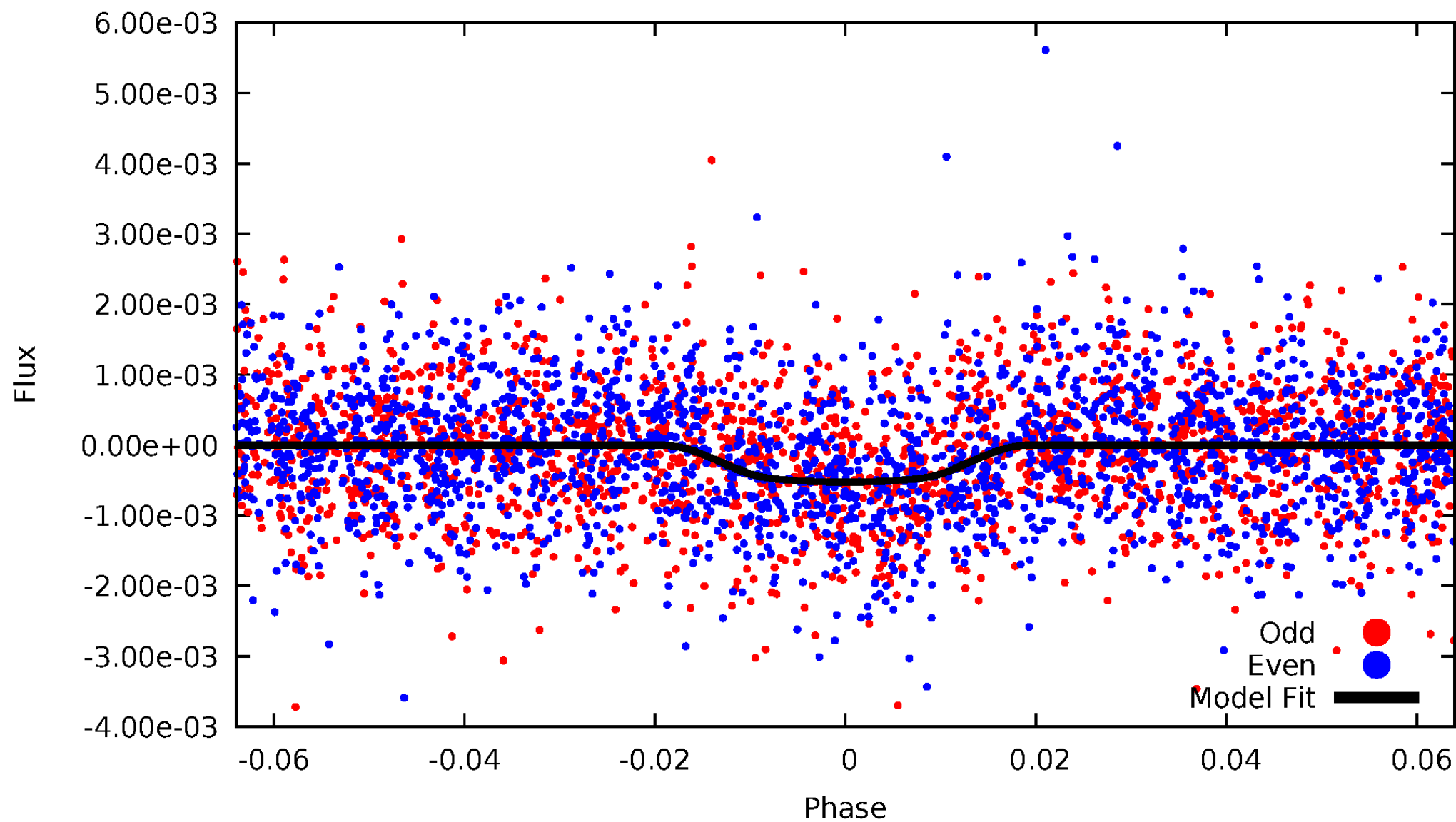


TCE 008266276-01



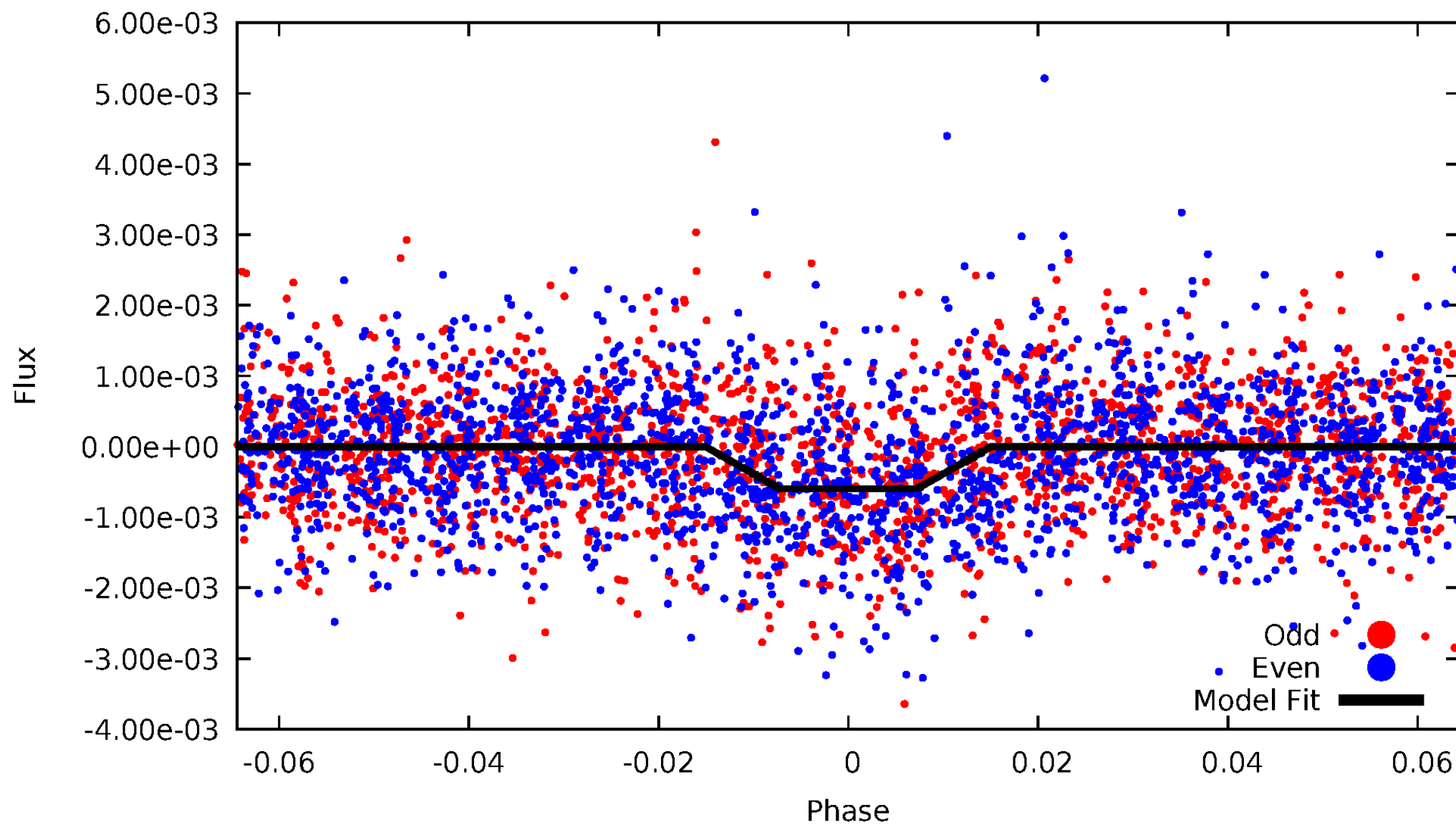
# DV Odd/Even

TCE 008266276-01



# ALT Odd/Even

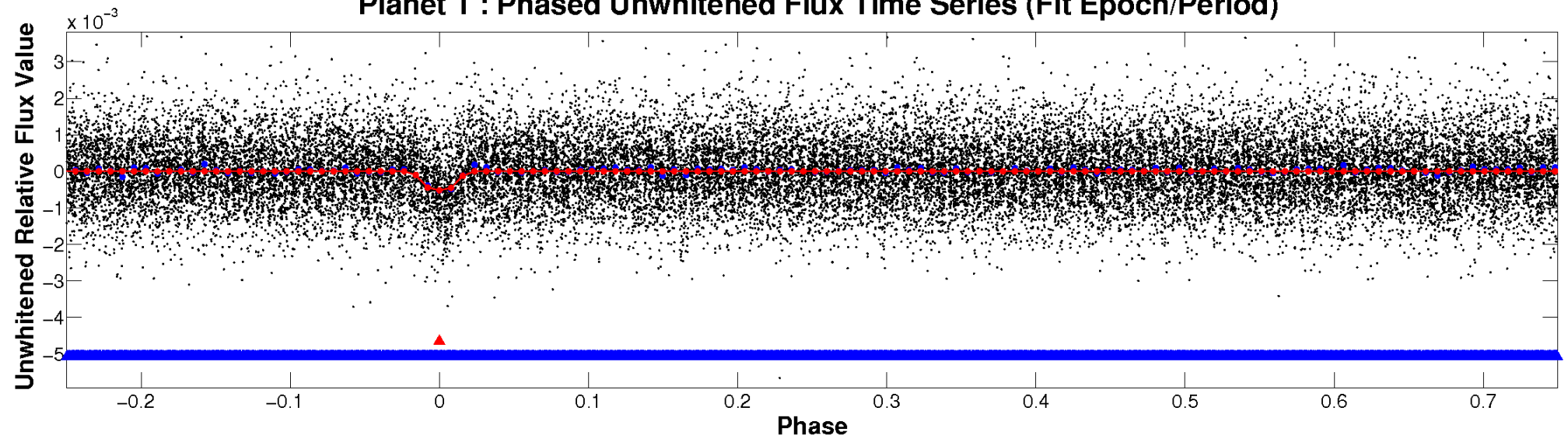
TCE 008266276-01



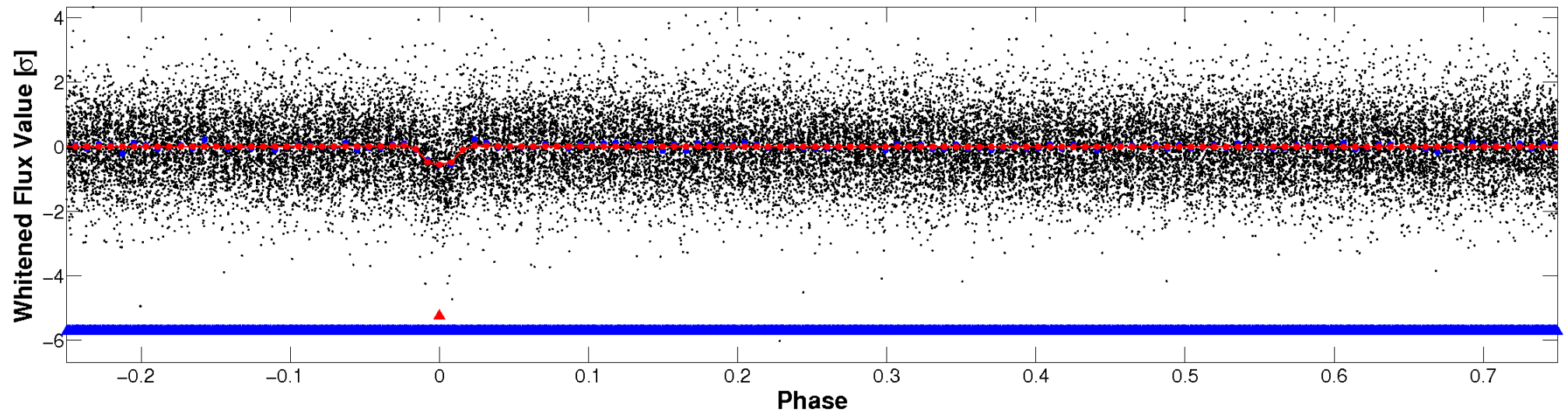


# Non-Whitened Vs. Whitened Light Curve

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

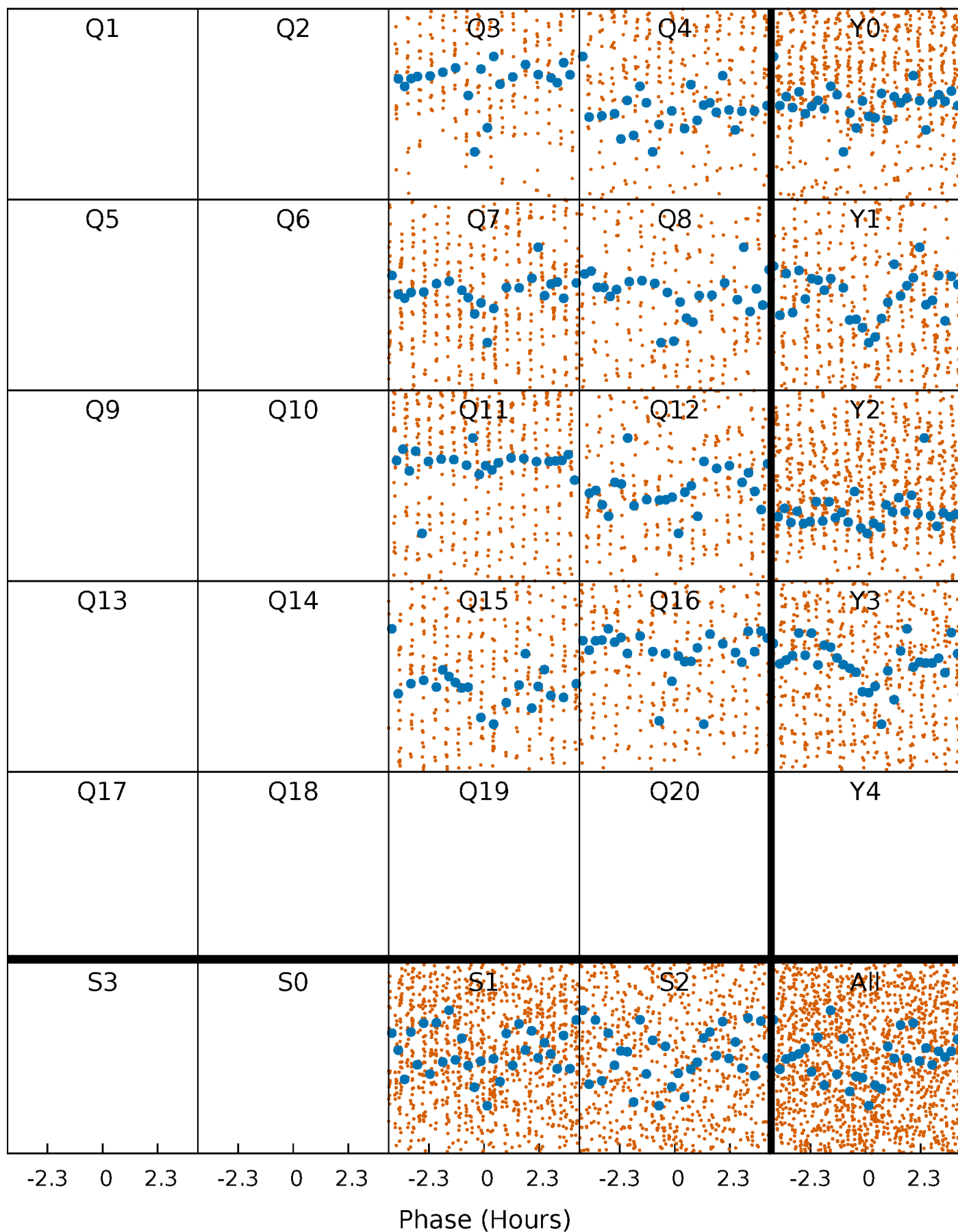


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

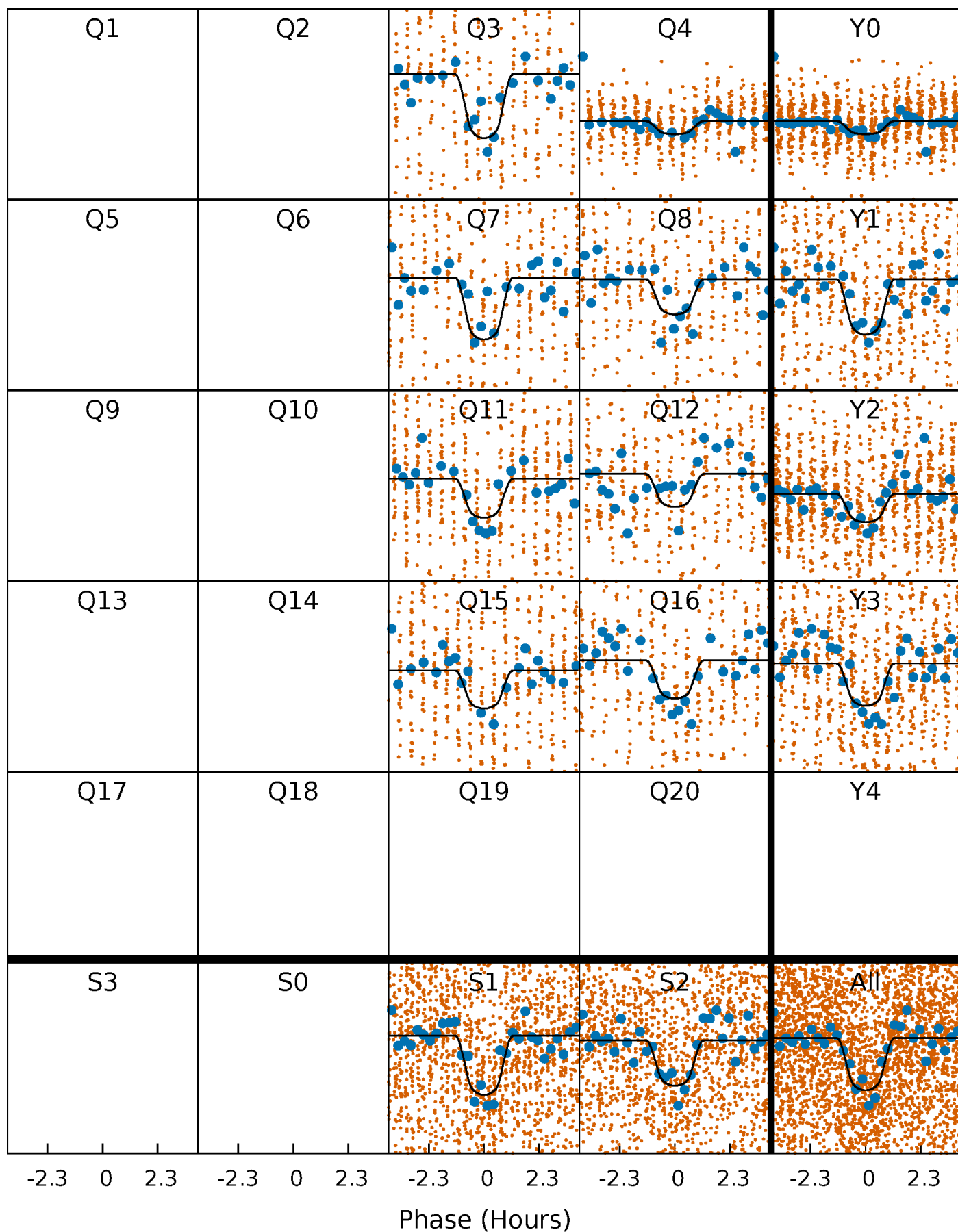
TCE 008266276-01 P= 2.594863 Days  $T_0=132.761884$  (BKJD)





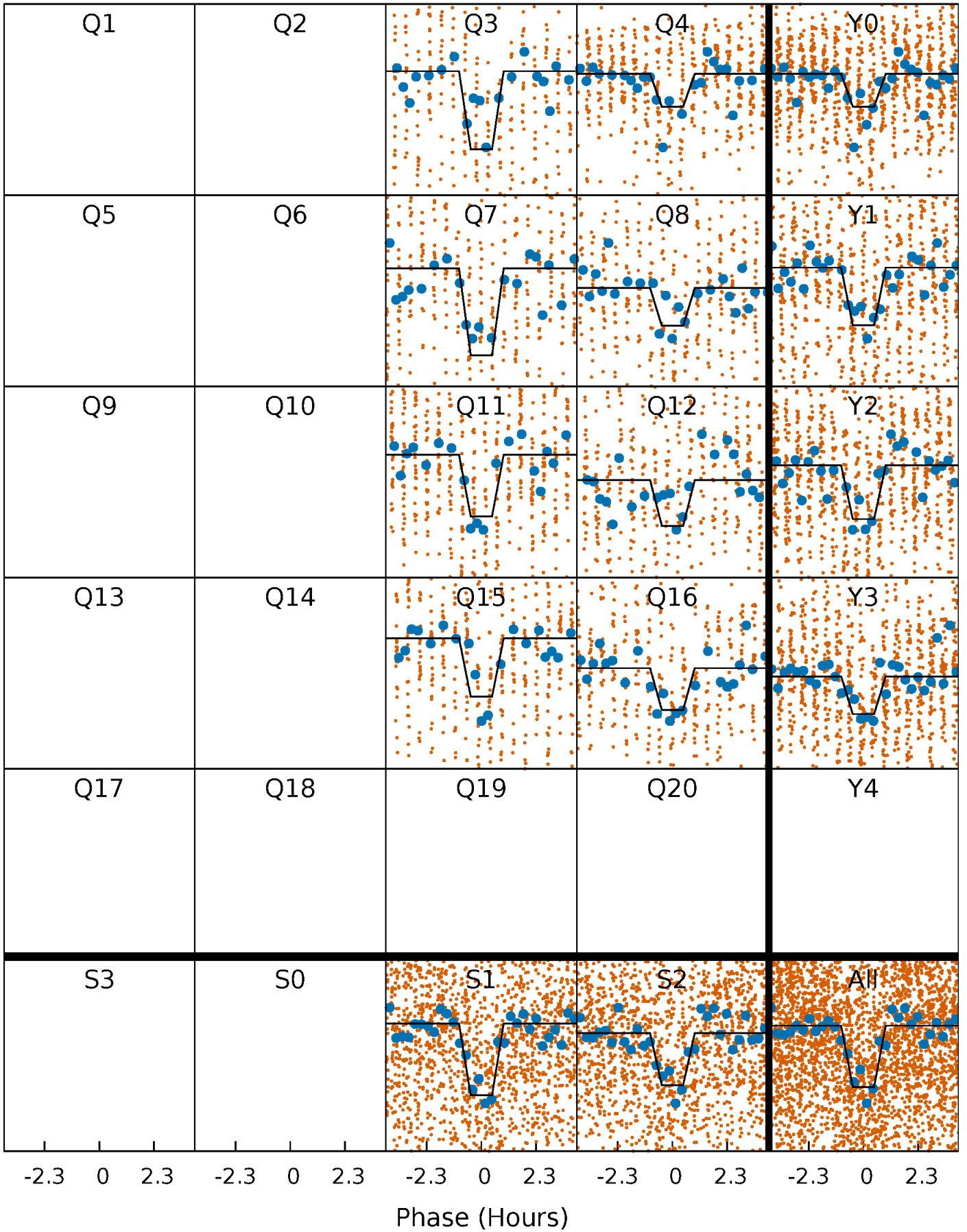
# DV Quarter-Phased Transit Curves

TCE 008266276-01 P= 2.594863 Days  $T_0=132.761884$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

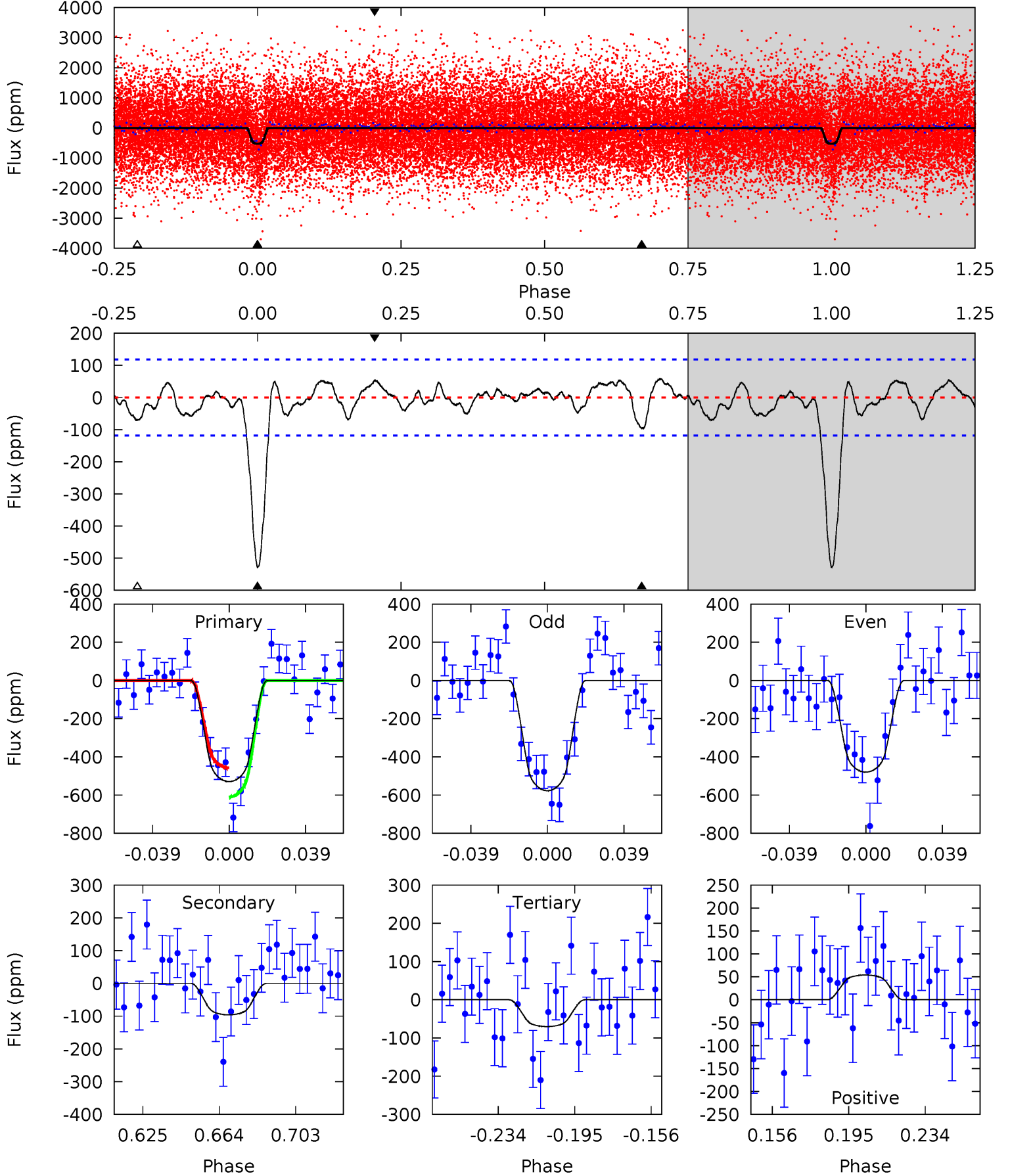
TCE 008266276-01   P= 2.594869 Days    $T_0=132.760202$  (BKJD)



# DV Model-Shift Uniqueness Test

008266276-01, P = 2.594863 Days, E = 132.761884 Days

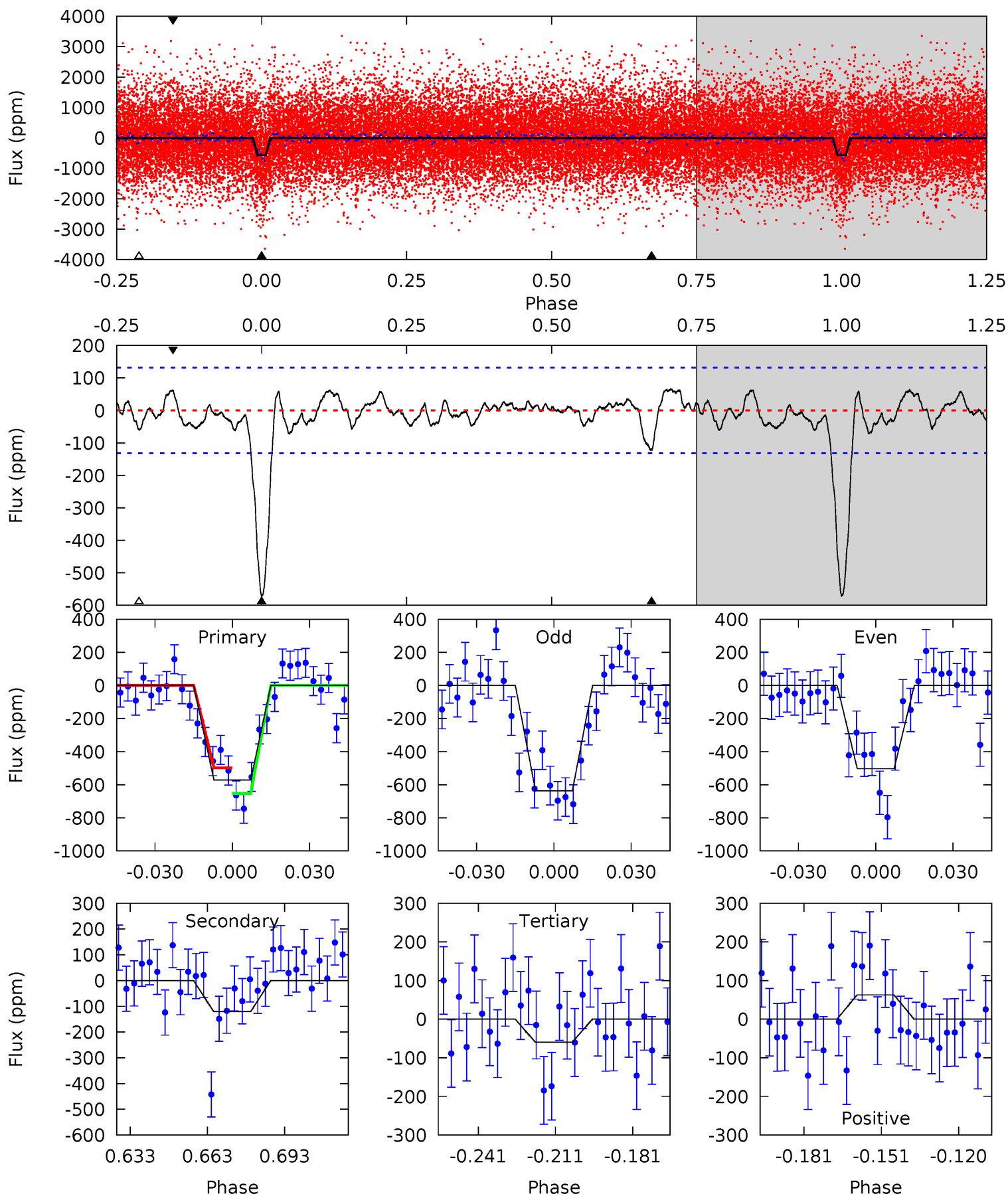
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.3	3.86	2.82	2.17	4.76	2.06	1.19	18.4	19.1	1.04	1.69	1.96	0.95	0.10	3.07



# Alt Model-Shift Uniqueness Test

008266276-01, P = 2.594869 Days, E = 132.760202 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	4.42	2.19	2.30	4.81	2.17	1.06	18.7	18.6	2.24	2.12	2.44	0.93	0.10	2.84



### Stellar Parameters For KIC 008266276

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4748^{+172}_{-153}$	$4.526^{+0.071}_{-0.038}$	$0.300^{+0.150}_{-0.300}$	$0.797^{+0.043}_{-0.080}$	$0.776^{+0.056}_{-0.051}$	$2.163^{+0.680}_{-0.276}$
	+4%/-3%	+2%/-1%	+50%/-100%	+5%/-10%	+7%/-7%	+31%/-13%
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 008266276-01 / KOI 1731.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-96 \pm 25$	$2.28^{+0.89}_{-0.77}$	$1414^{+53}_{-56}$	$3324^{+538}_{-347}$	$11^{+16}_{-6}$
Alt.	$-121 \pm 27$	$2.06^{+0.85}_{-0.89}$	$1411^{+57}_{-54}$	$3575^{+753}_{-412}$	$18^{+37}_{-9}$

$T_{max}$  = 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

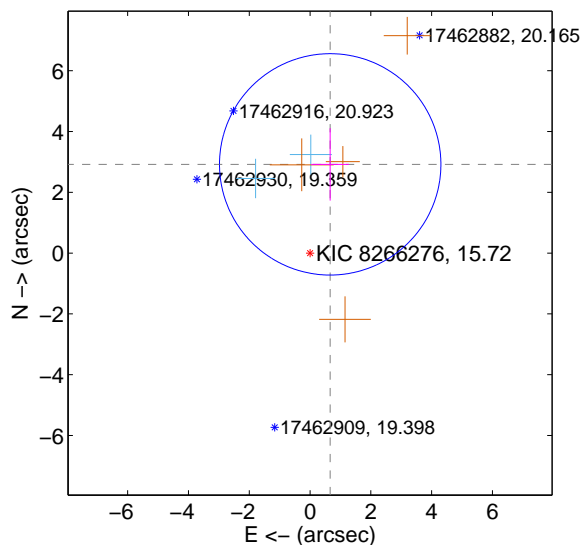
Supplemental centroid analysis for 008266276-01. Kepler magnitude: 15.72. Transit SNR 13.80

There are 2 quarters with good PRF difference image offsets

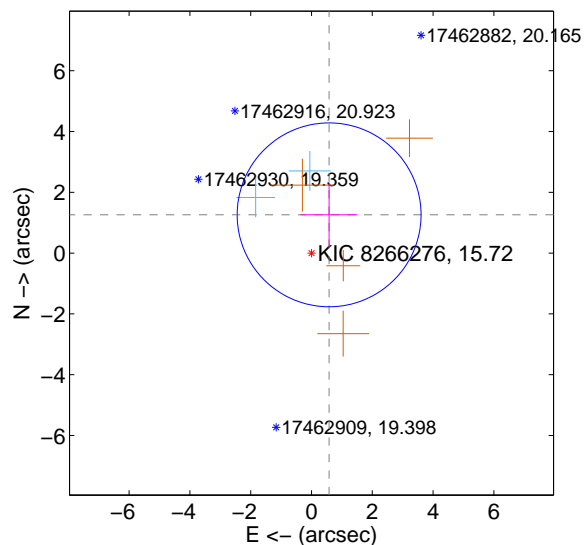
The direct PRF centroid is offset from the target star catalog position by about 0.67 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.993 \pm 1.214$	2.47	$-0.663 \pm 0.618$	$2.918 \pm 1.191$
PRF-fit source offset from KIC position	$1.385 \pm 1.008$	1.37	$-0.579 \pm 0.938$	$1.259 \pm 1.022$
photometric centroid source offset	$1.95 \pm 0.60$	3.26	$1.75 \pm 0.57$	$-0.86 \pm 0.70$

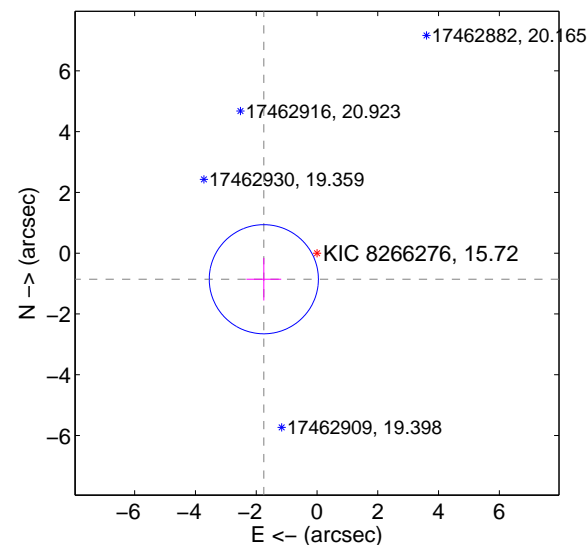
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



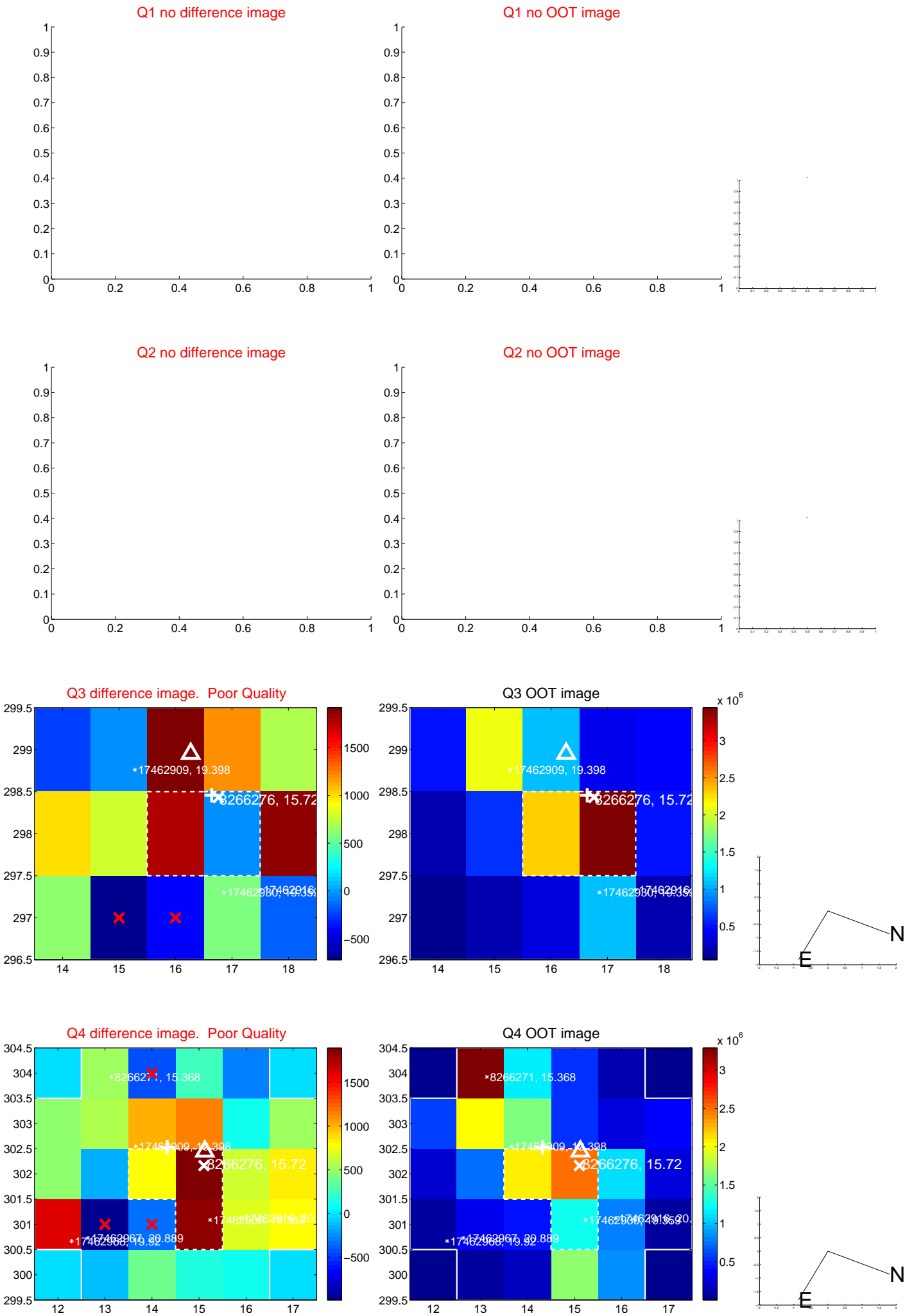
offset from photometric centroids



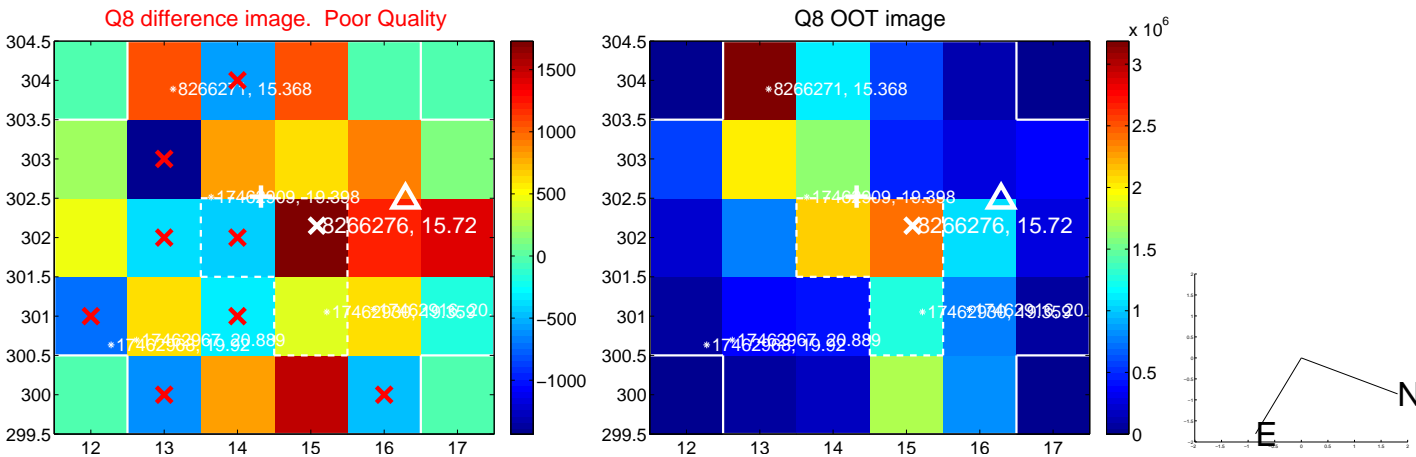
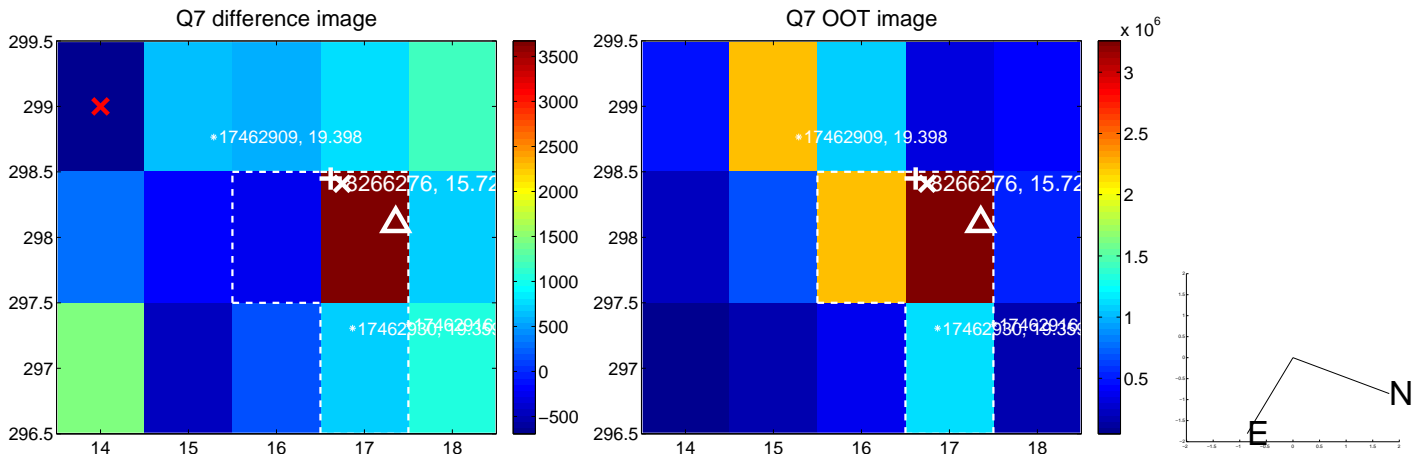
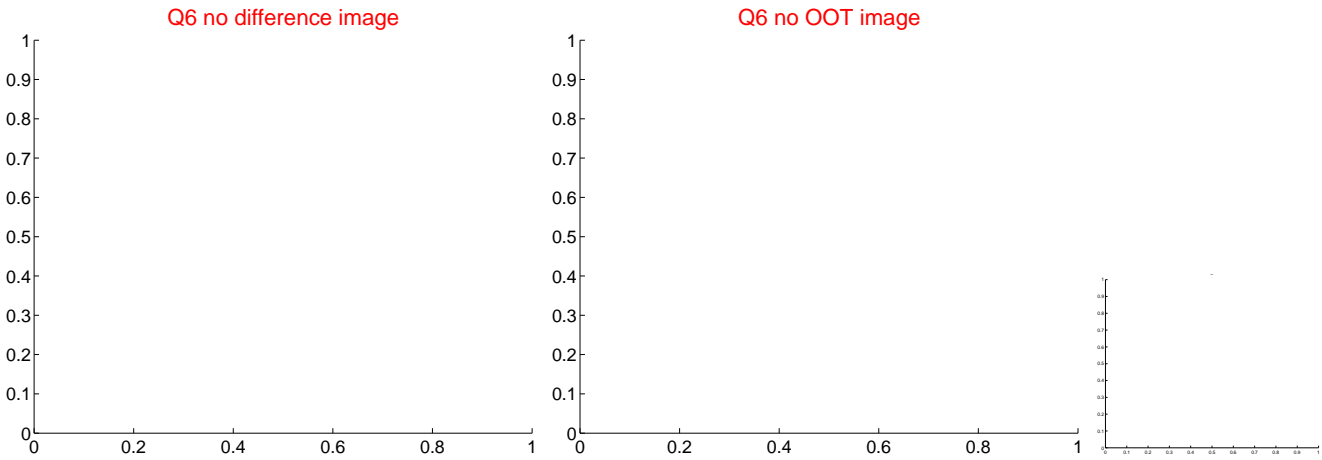
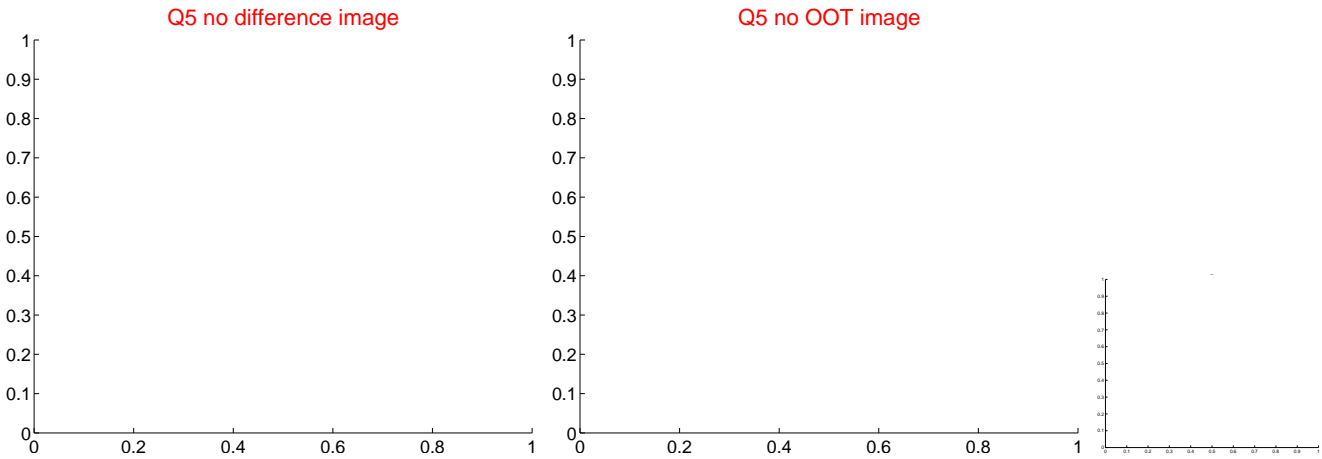
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



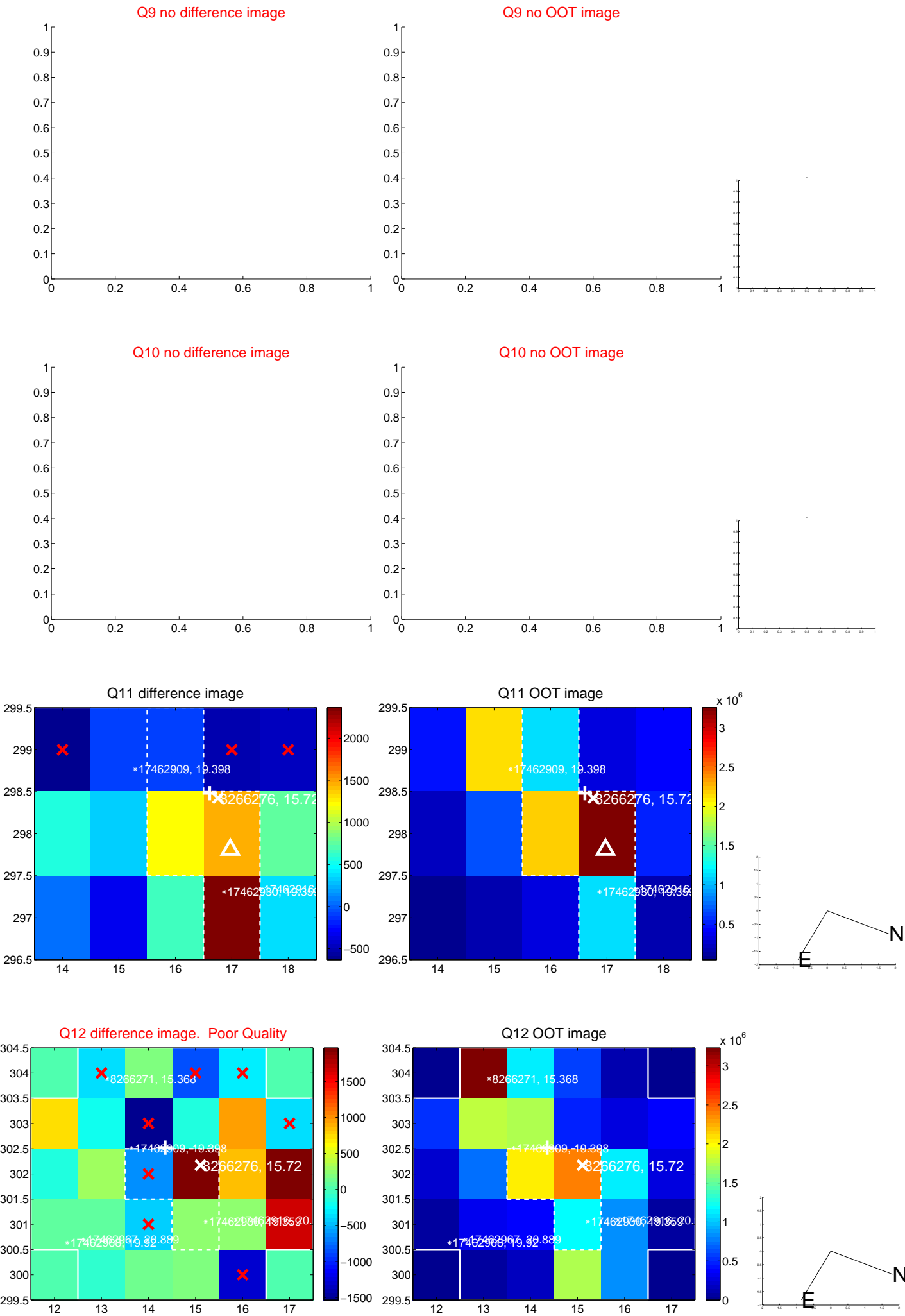
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



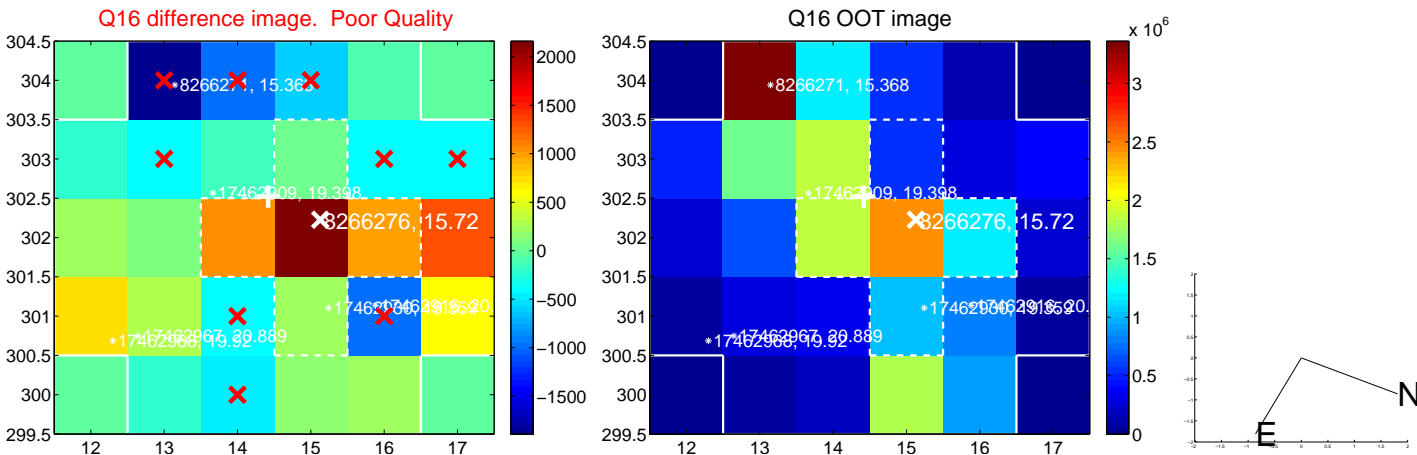
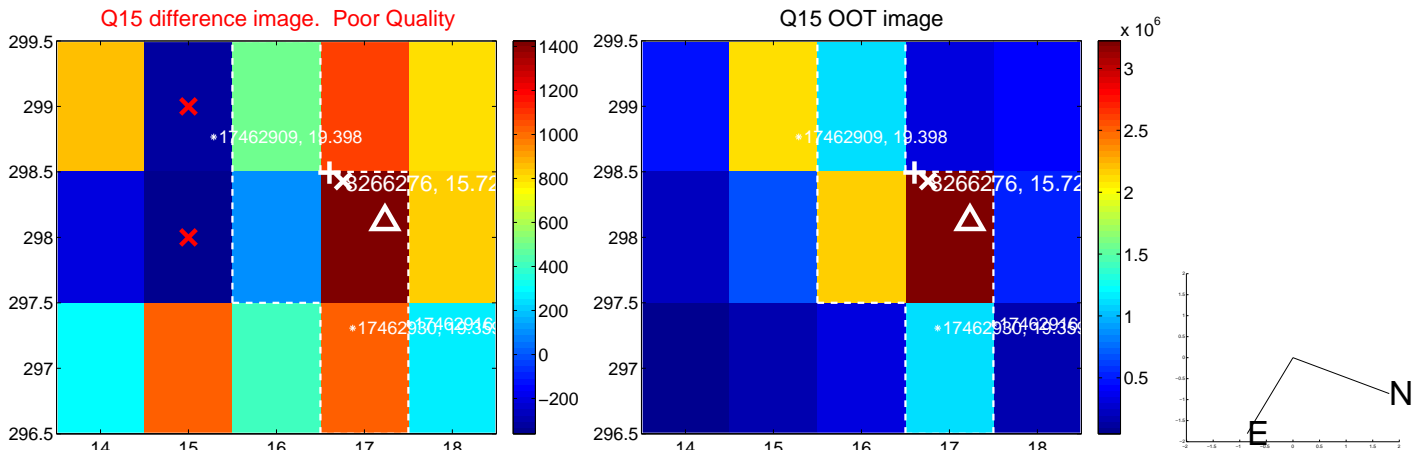
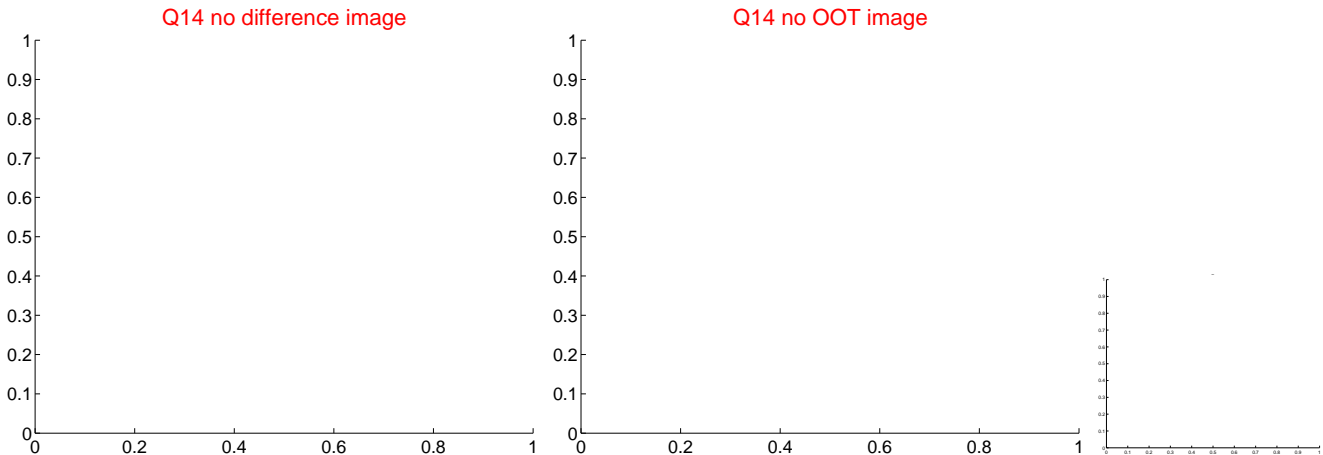
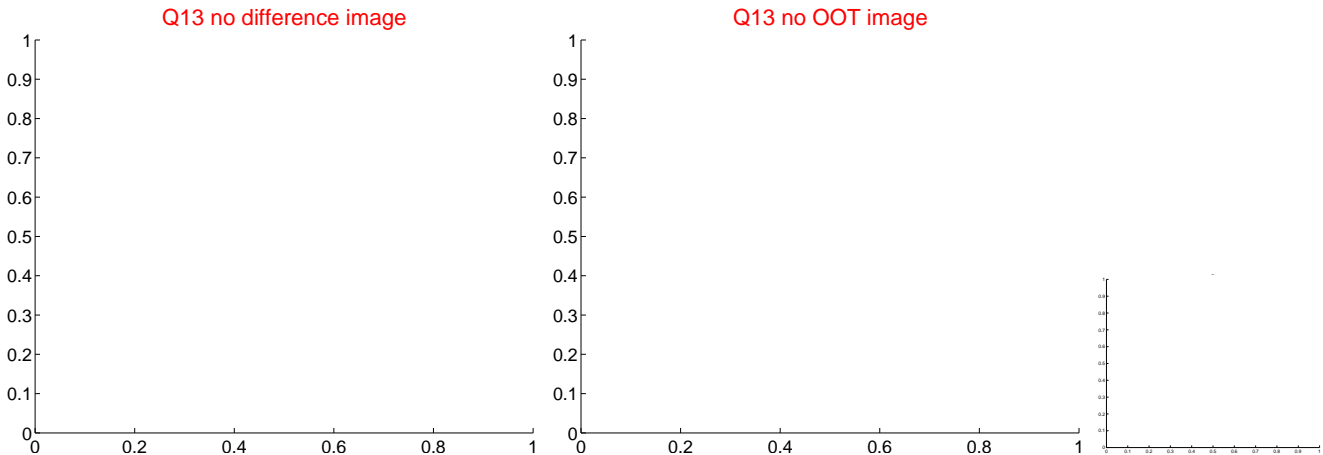
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



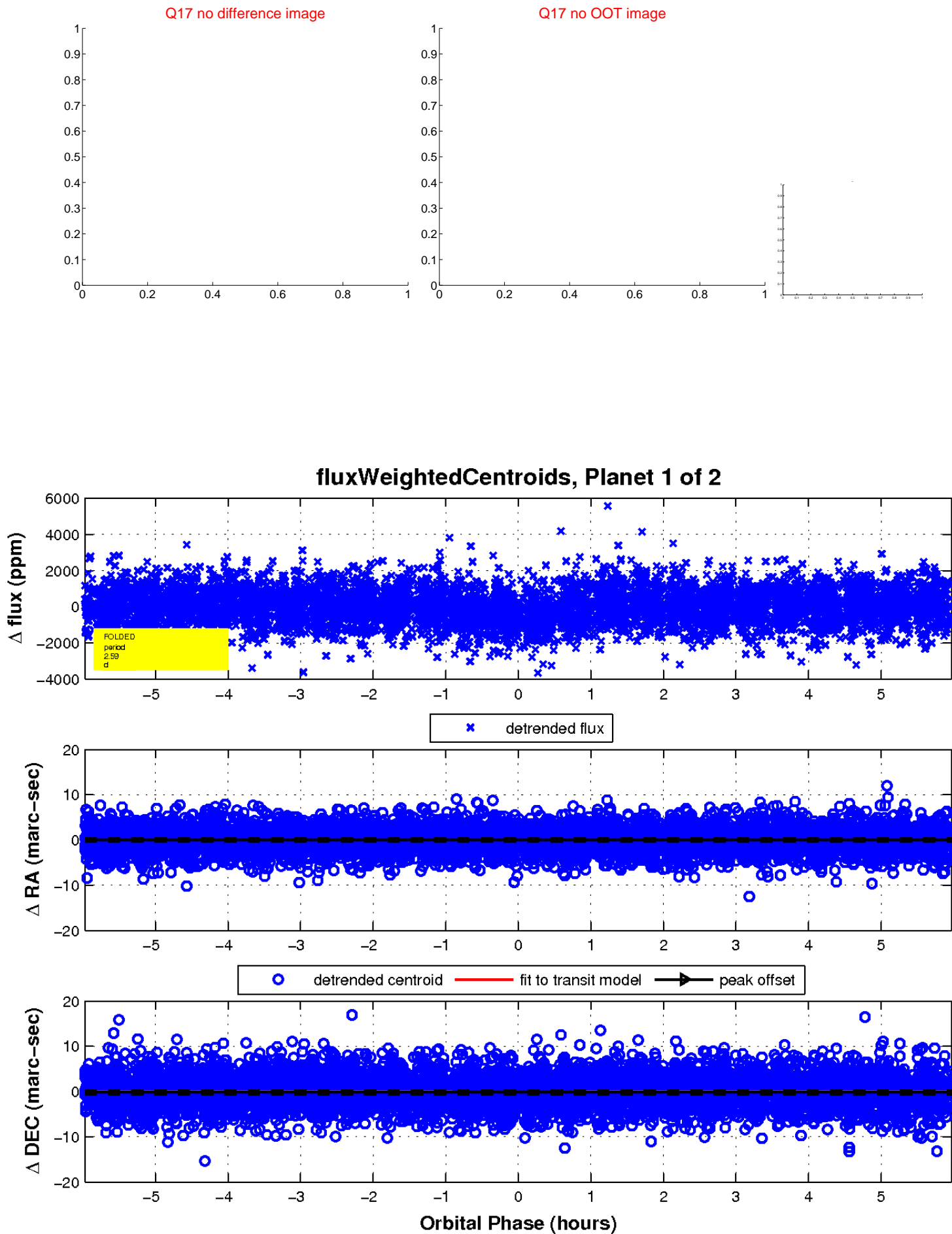
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

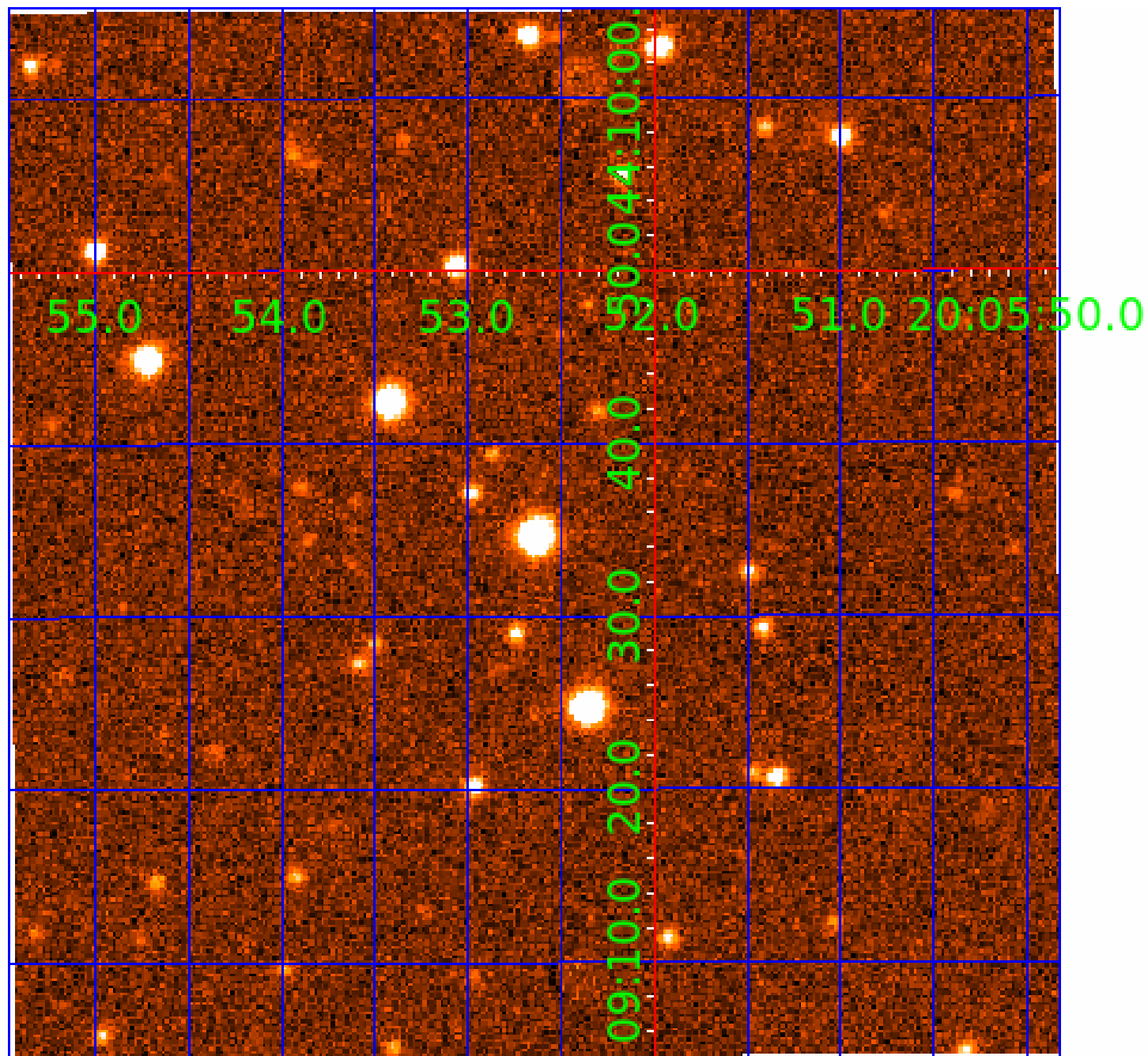


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008266276

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008266276-01	OBS	1731.01	2.594863	132.761884	526.1	1.990	12.3	13.8	0.80	4748	2.29	250.28
008266276-02	OBS	1731.02	0.837895	131.983276	242.7	2.035	9.6	11.1	0.80	4748	1.41	1129.77

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008266276-01	OBS	PC	0.81	0	0	0	0	CENT_FEW_DIFFS
008266276-02	OBS	FP	0.02	0	0	1	0	CENT_RESOLVED_OFFSET

**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.

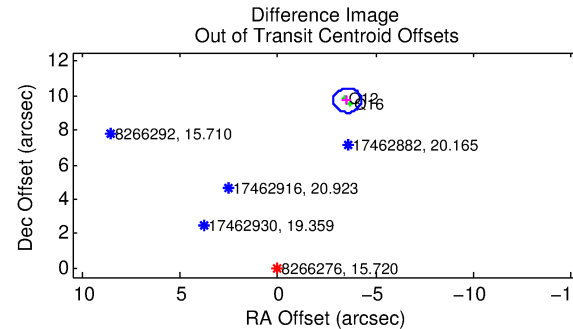
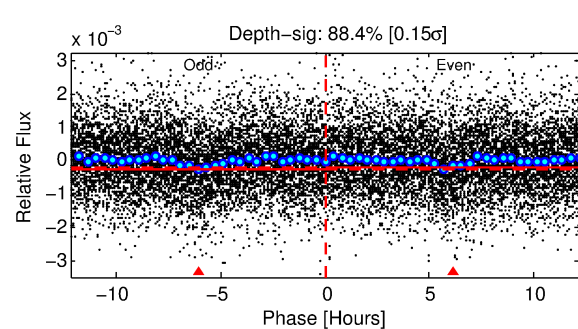
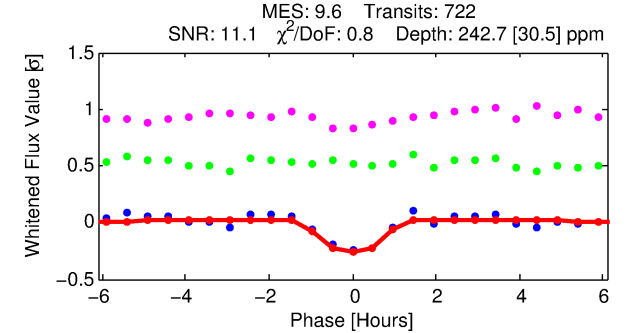
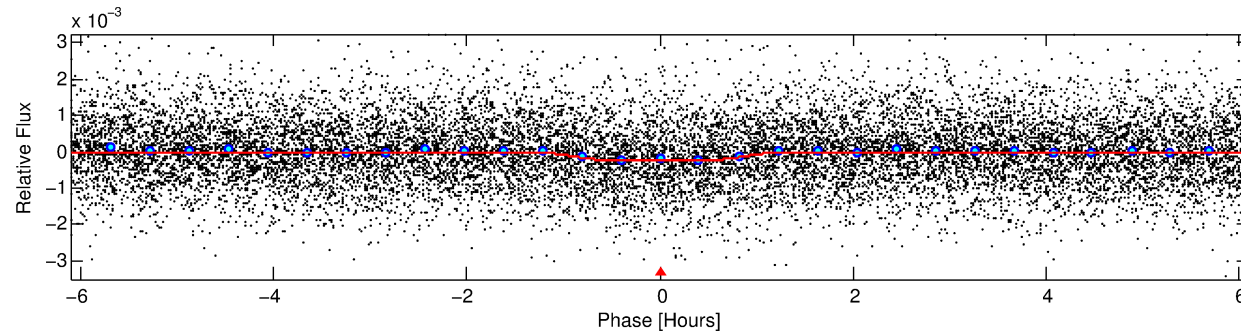
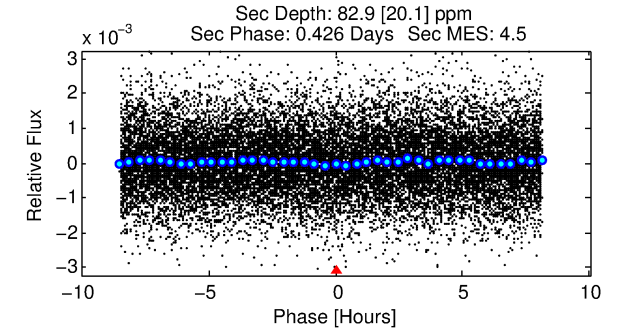
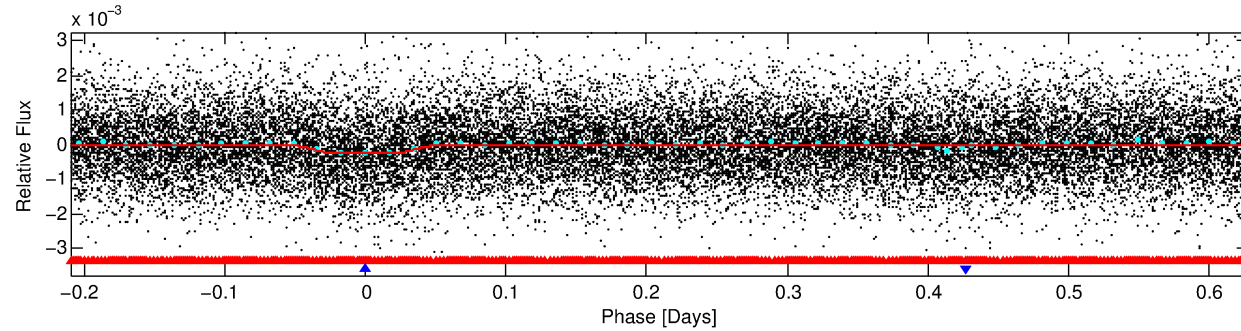
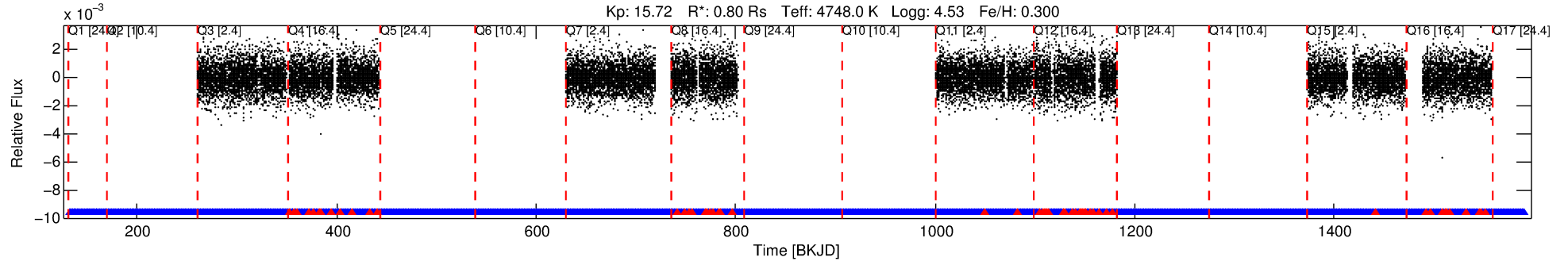
## Ephemeris Match Information For 008266276-02

No Significant Match Found

# DV One-Page Summary

KIC: 8266276 Candidate: 2 of 2 Period: 0.838 d  
KOI: K01731.02 Corr: 0.965

Kp: 15.72 R\*: 0.80 Rs Teff: 4748.0 K Logg: 4.53 Fe/H: 0.300



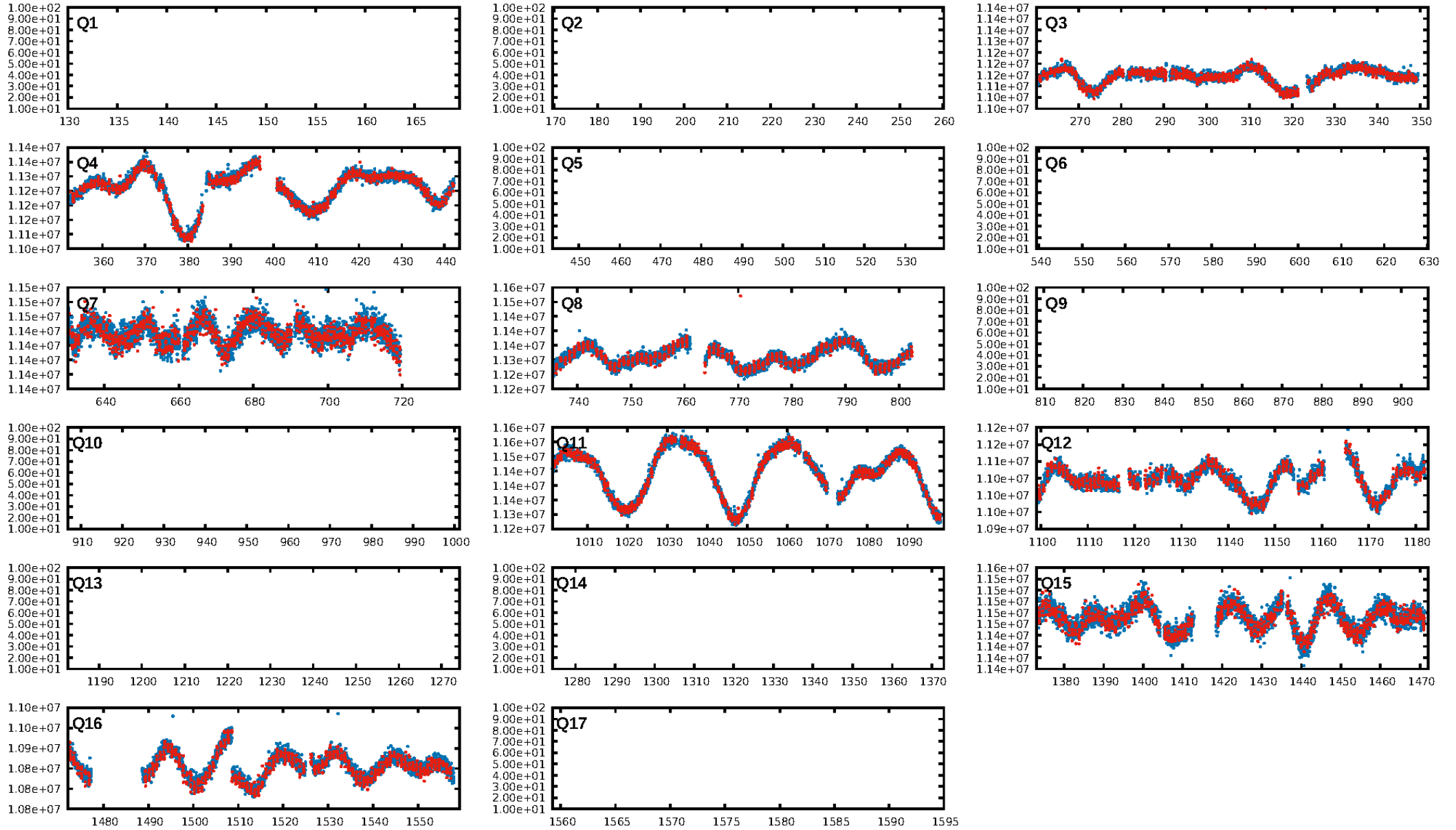
## DV Fit Results:

Period = 0.83790 [0.00001] d  
Epoch = 131.9833 [0.0025] BKJD  
Rp/R\* = 0.0162 [0.0166]  
a/R\* = 2.12 [5.66]  
b = 0.81 [1.51]  
Seff = 1129.77 [218.35]  
Teq = 1478 [71] K  
Rp = 1.41 [1.45] Re  
a = 0.0160 [0.0014] AU  
Ag = 5.86 [12.08] [0.40σ]  
Teffp = 3556 [1833] K [1.13σ]

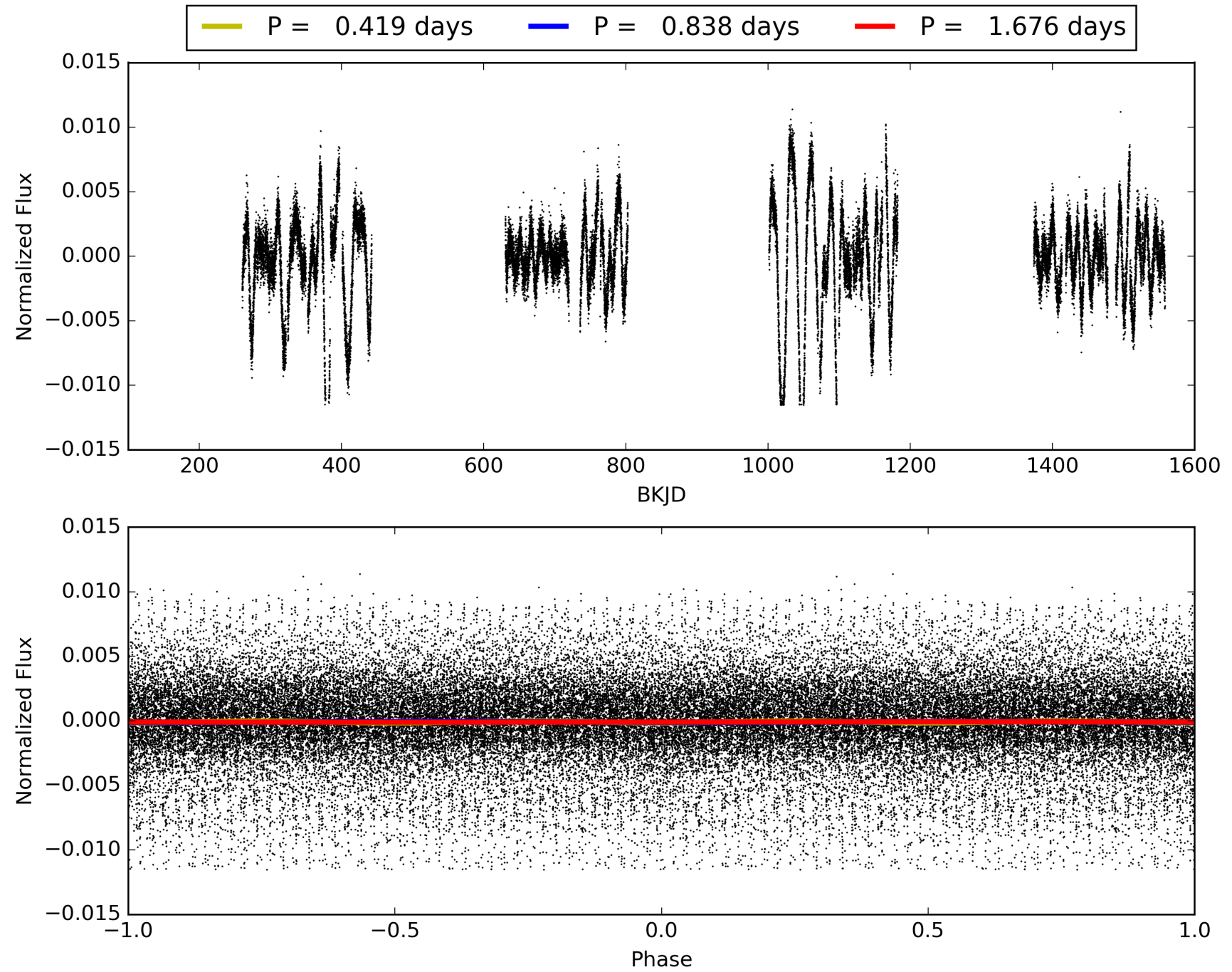
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [14.81σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.18e-20  
RollingBand-fgt: 0.92 [662/722]  
GhostDiagnostic-chr: -0.6161  
Centroid-sig: 0.0%  
Centroid-so: 5.361 arcsec [7.29σ]  
OotOffset-rm: 10.353 arcsec [44.09σ]  
KicOffset-rm: 7.366 arcsec [76.29σ]  
OotOffset-st: 0/0/2/0 [2]  
KicOffset-st: 0/0/2/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [8/8]

# TCE 008266276-02, PDC Light Curves

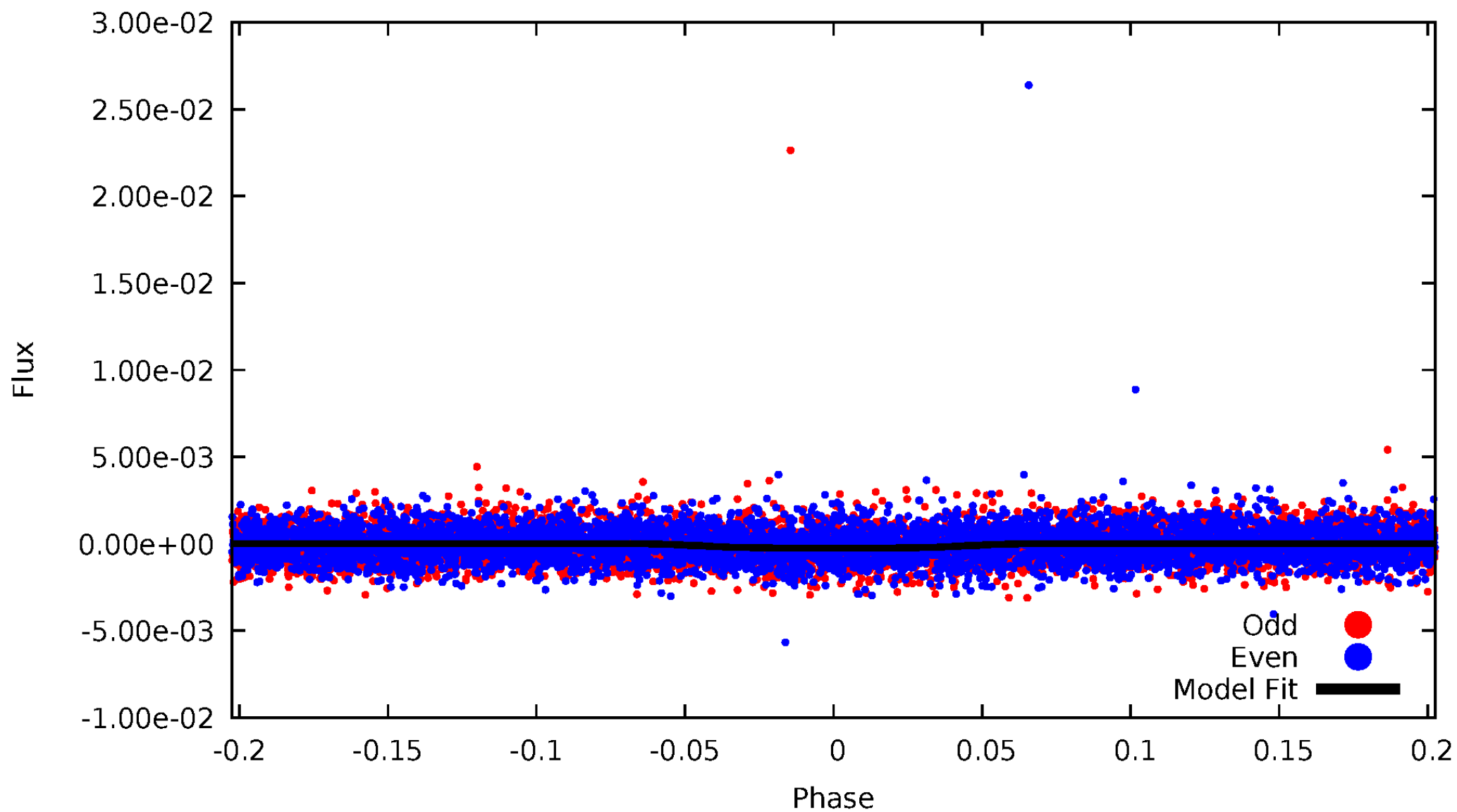


# TCE 008266276-02



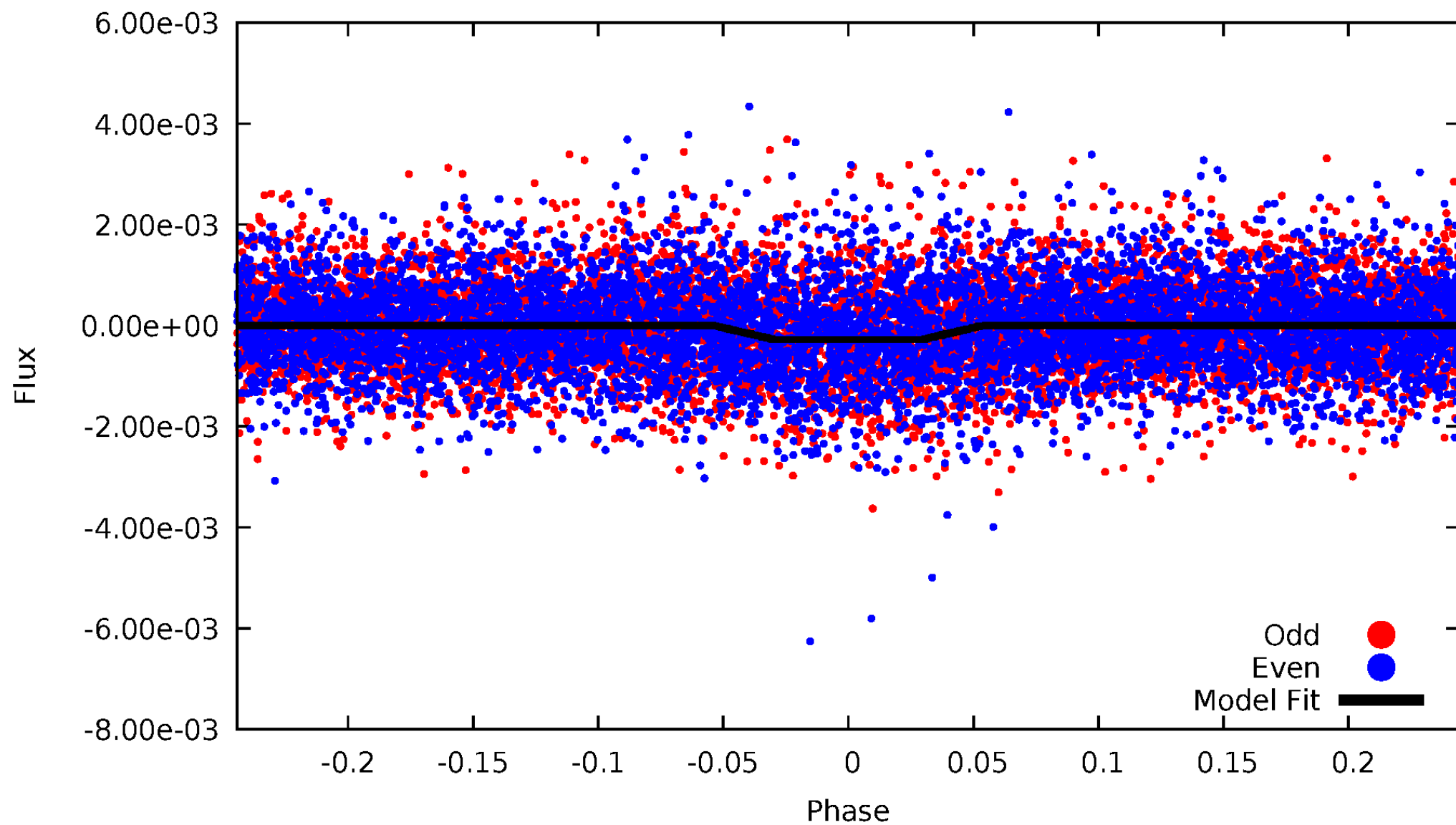
# DV Odd/Even

TCE 008266276-02



# ALT Odd/Even

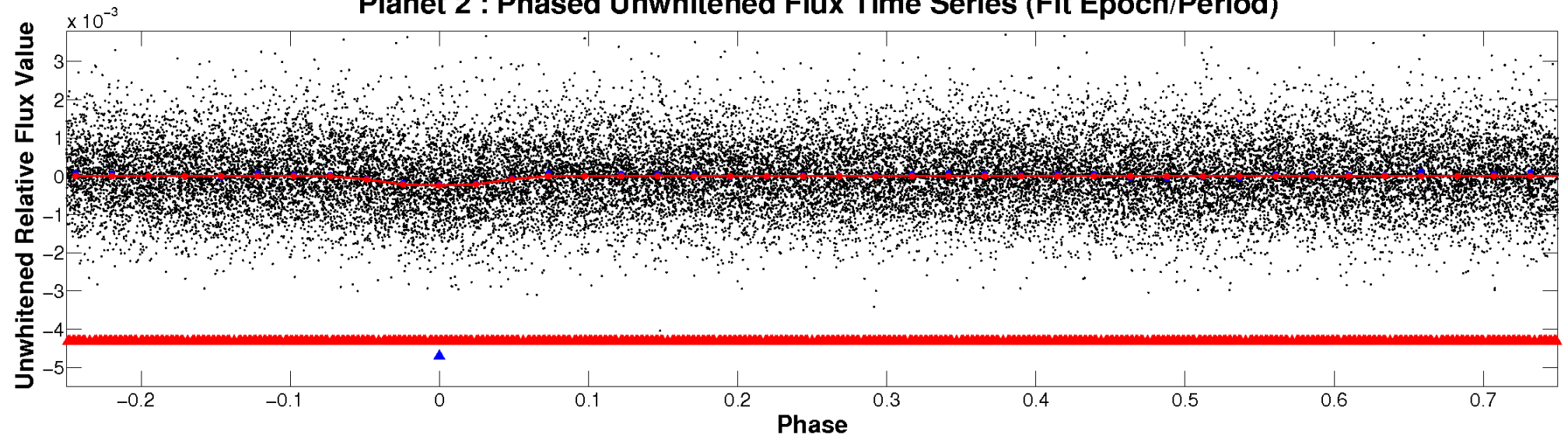
TCE 008266276-02



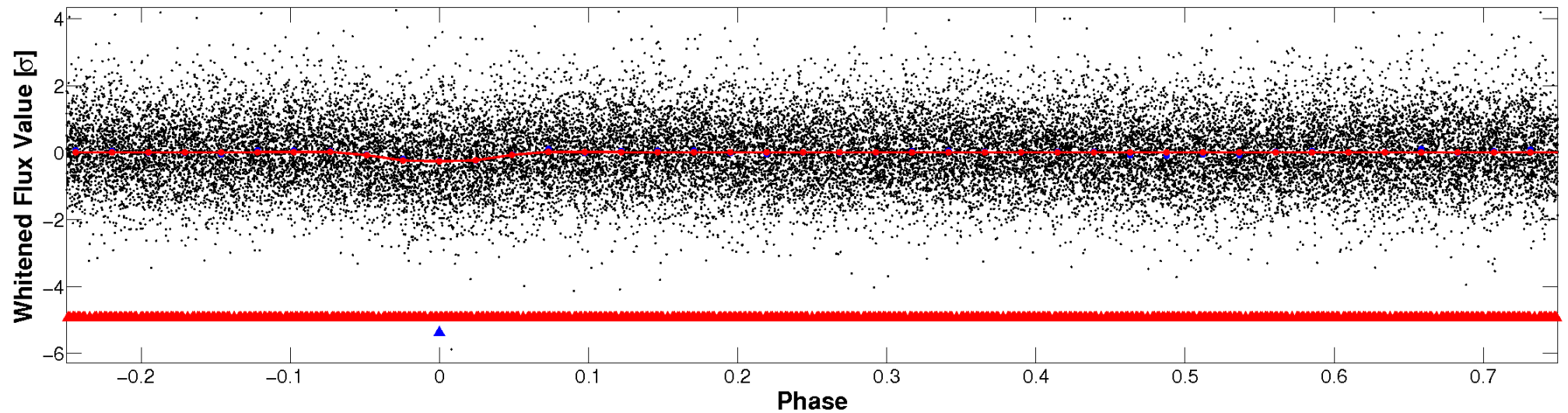


# Non-Whitened Vs. Whitened Light Curve

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

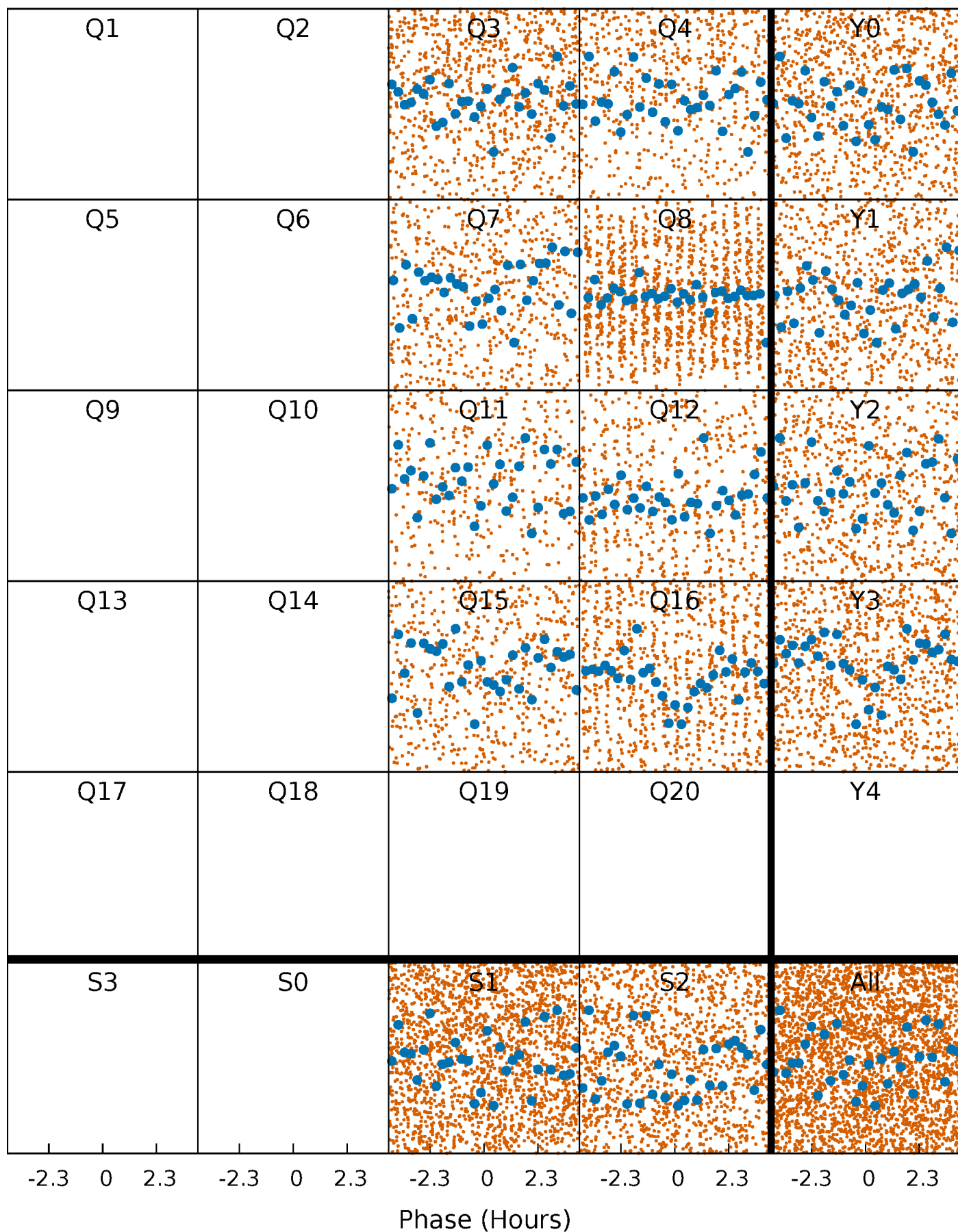


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



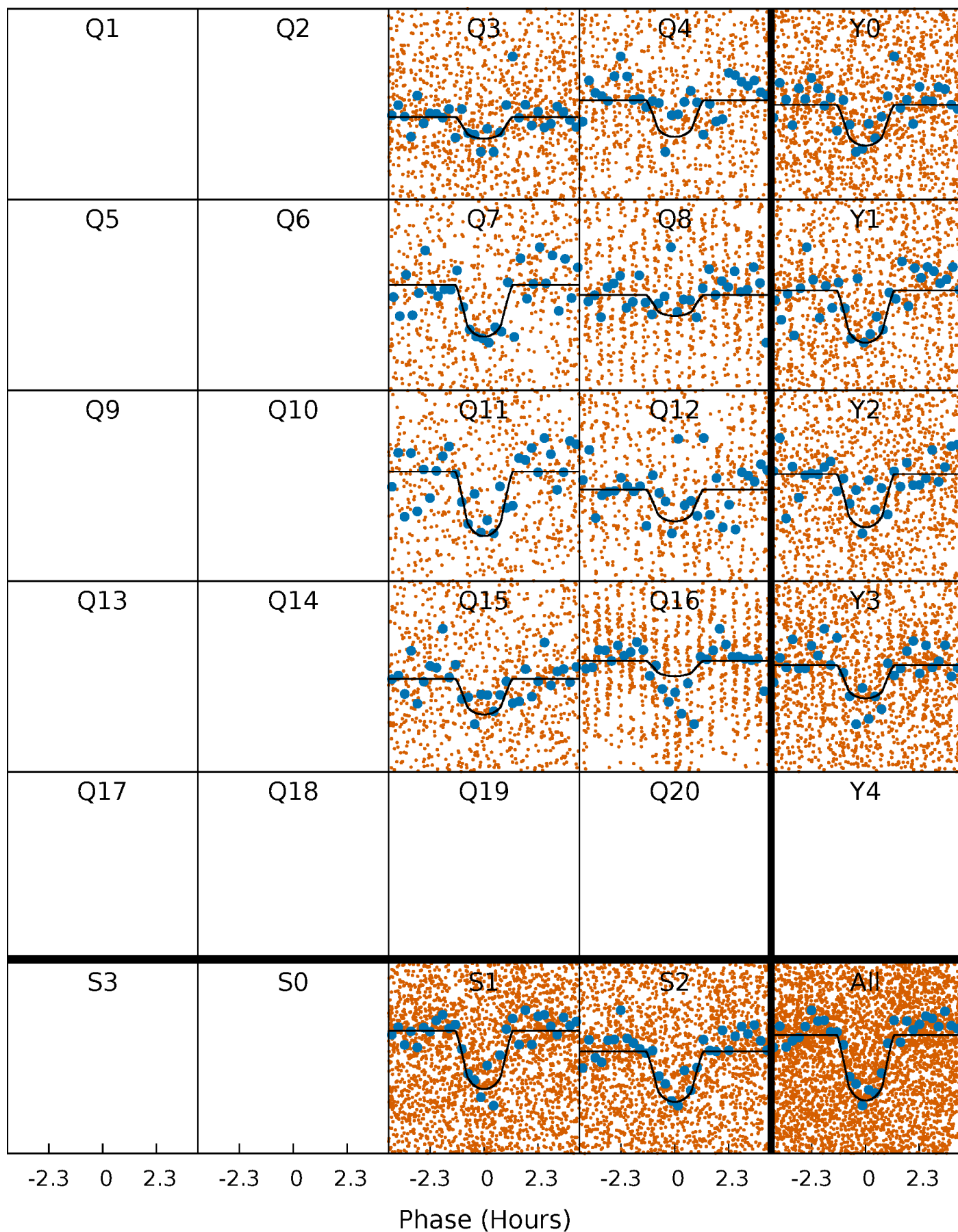
# PDC Quarter-Phased Transit Curves

TCE 008266276-02   P= 0.837895 Days    $T_0=131.983276$  (BKJD)



# DV Quarter-Phased Transit Curves

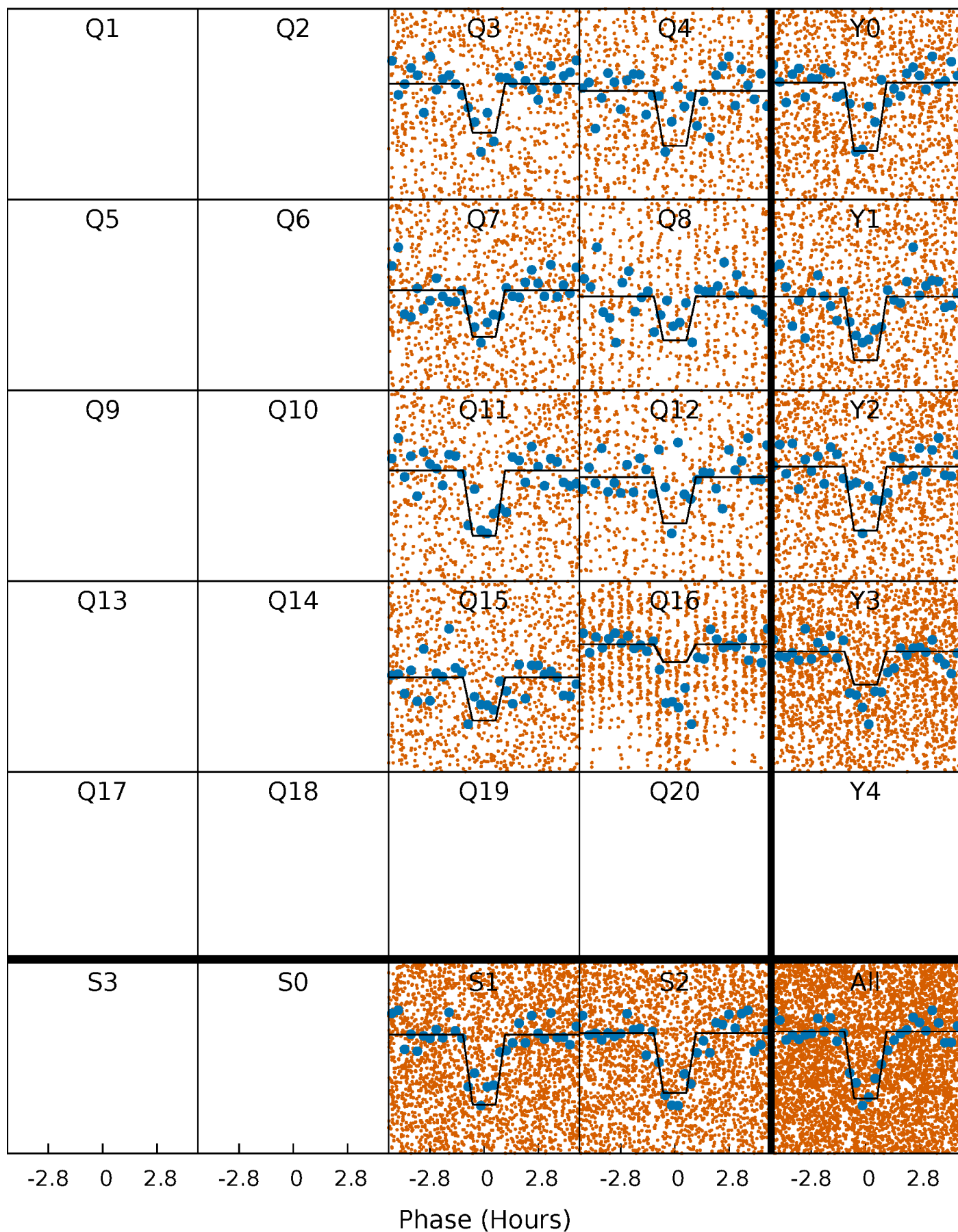
TCE 008266276-02   P= 0.837895 Days    $T_0=131.983276$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

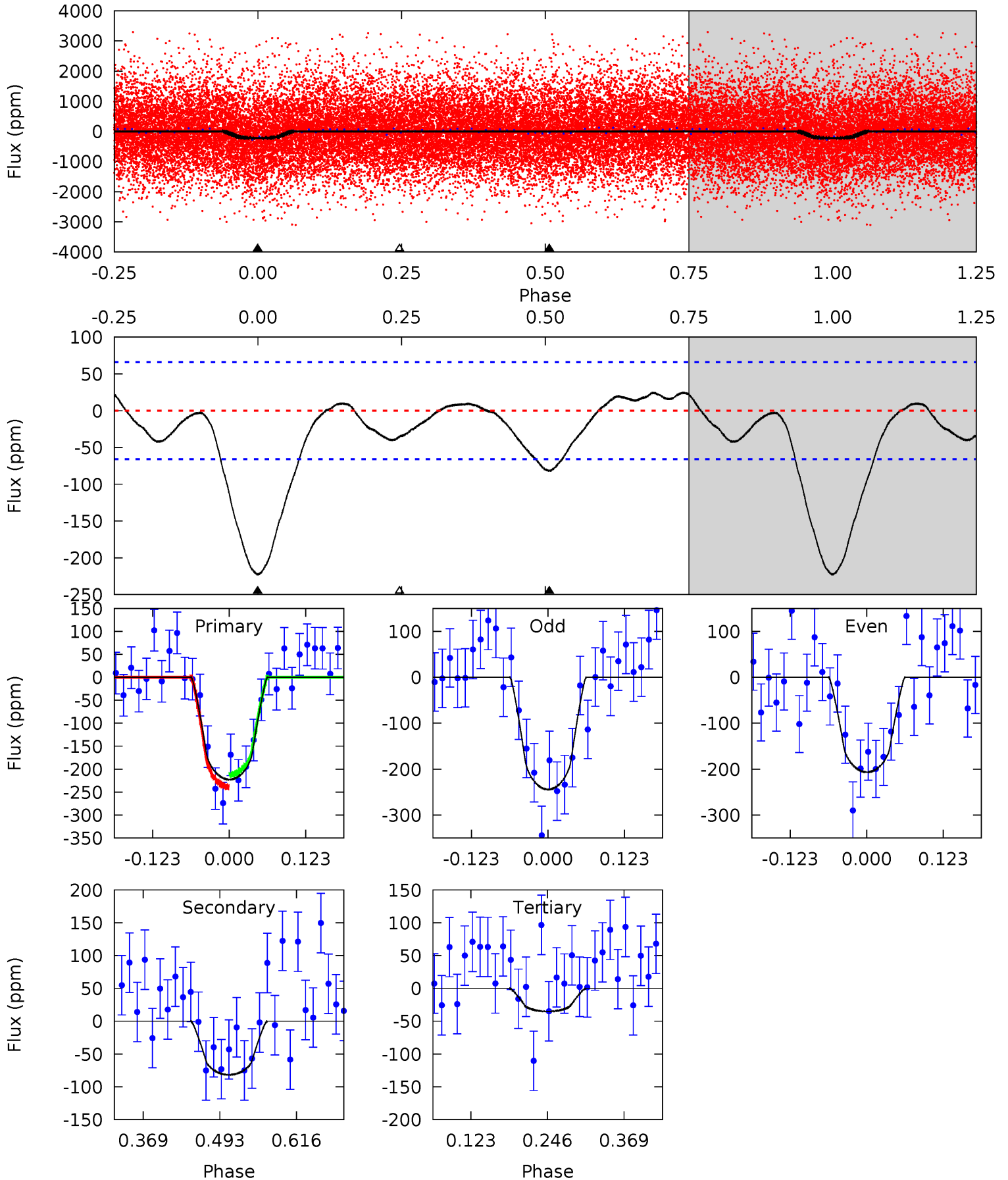
TCE 008266276-02   P= 0.837893 Days    $T_0=131.986033$  (BKJD)



# DV Model-Shift Uniqueness Test

008266276-02, P = 0.837895 Days, E = 131.983276 Days

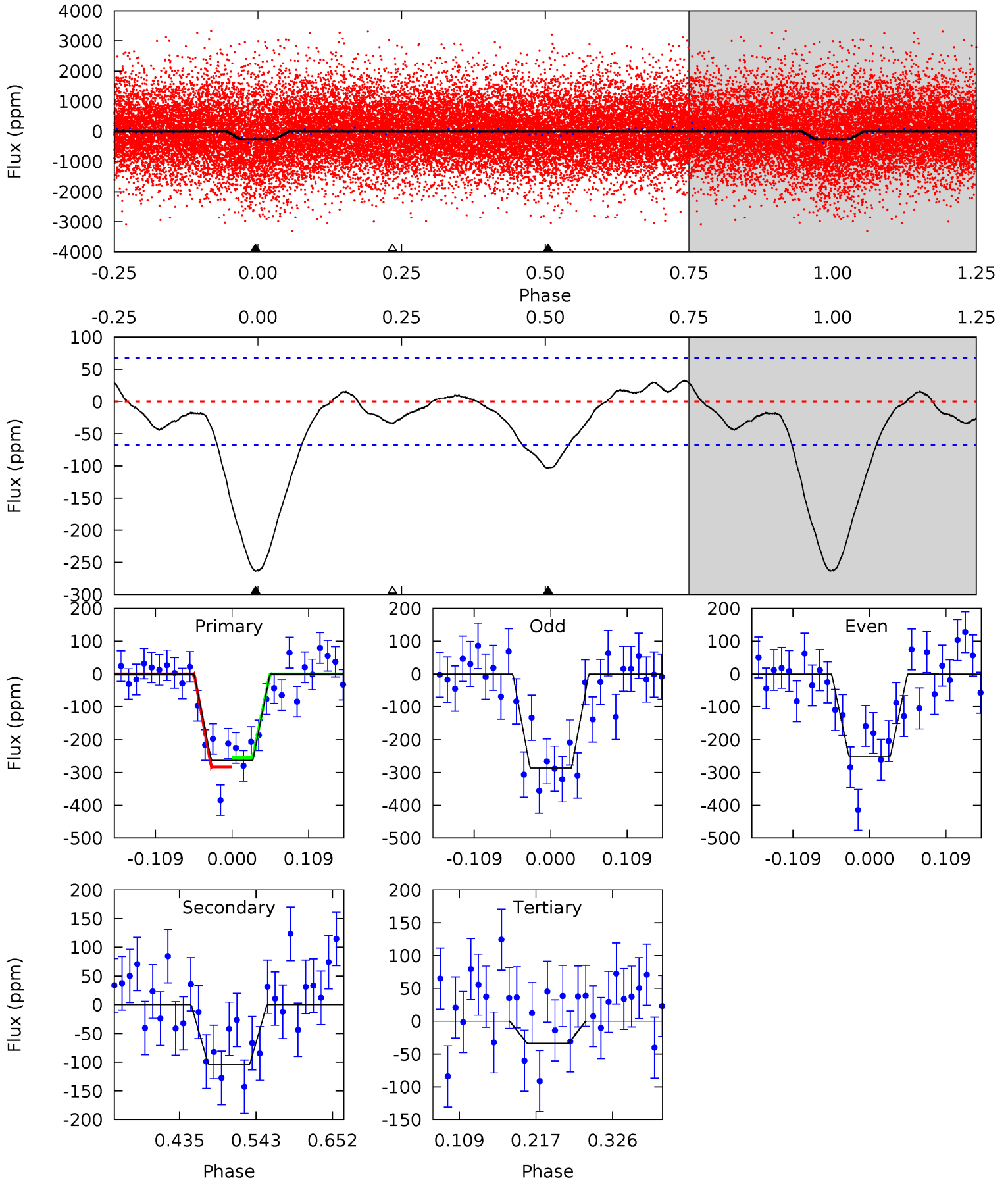
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	5.60	2.42	0	4.52	1.54	1.44	12.9	15.3	3.19	5.60	1.29	1.05	0.10	0.92



# Alt Model-Shift Uniqueness Test

008266276-02, P = 0.837893 Days, E = 131.986033 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
17.6	6.94	2.27	0	4.55	1.60	1.33	15.4	17.6	4.67	6.94	1.21	1.11	0.11	0.98





### Stellar Parameters For KIC 008266276

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4748^{+172}_{-153}$	$4.526^{+0.071}_{-0.038}$	$0.300^{+0.150}_{-0.300}$	$0.797^{+0.043}_{-0.080}$	$0.776^{+0.056}_{-0.051}$	$2.163^{+0.680}_{-0.276}$
	+4%/-3%	+2%/-1%	+50%/-100%	+5%/-10%	+7%/-7%	+31%/-13%
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 008266276-02 / KOI 1731.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-82 \pm 15$	$1.64^{+1.37}_{-1.00}$	$2058^{+85}_{-82}$	$3584^{+1564}_{-699}$	$4.358^{+23.718}_{-3.137}$
Alt.	$-103 \pm 15$	$1.77^{+1.22}_{-1.13}$	$2054^{+80}_{-80}$	$3633^{+1716}_{-614}$	$4.605^{+29.730}_{-2.966}$

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

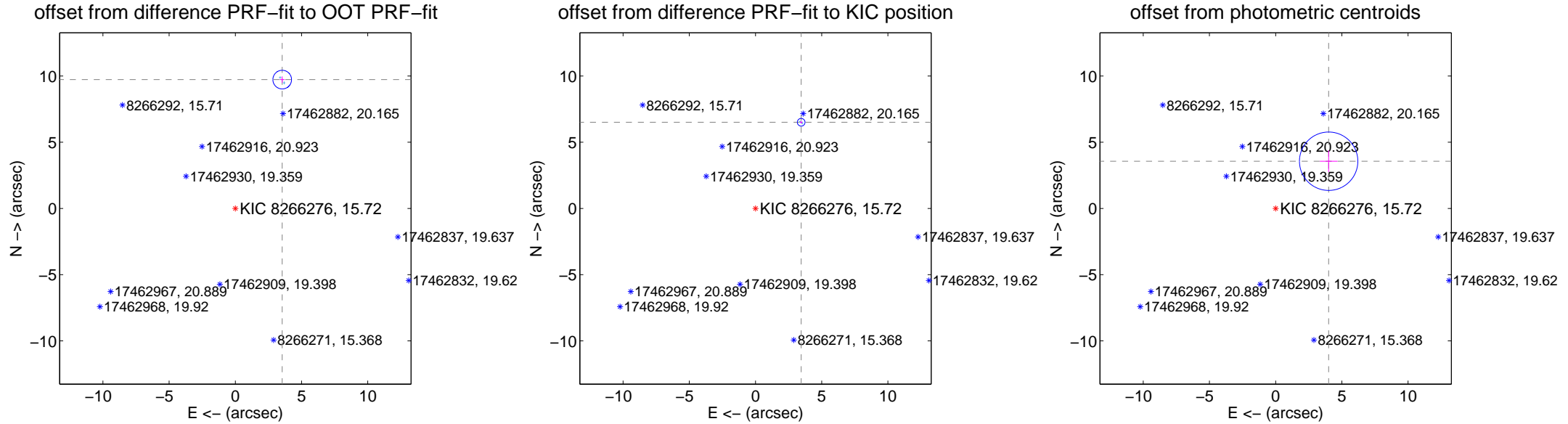
## DV Centroid Data

Supplemental centroid analysis for 008266276-02. Kepler magnitude: 15.72. Transit SNR 11.11

There are 2 quarters with good PRF difference image offsets

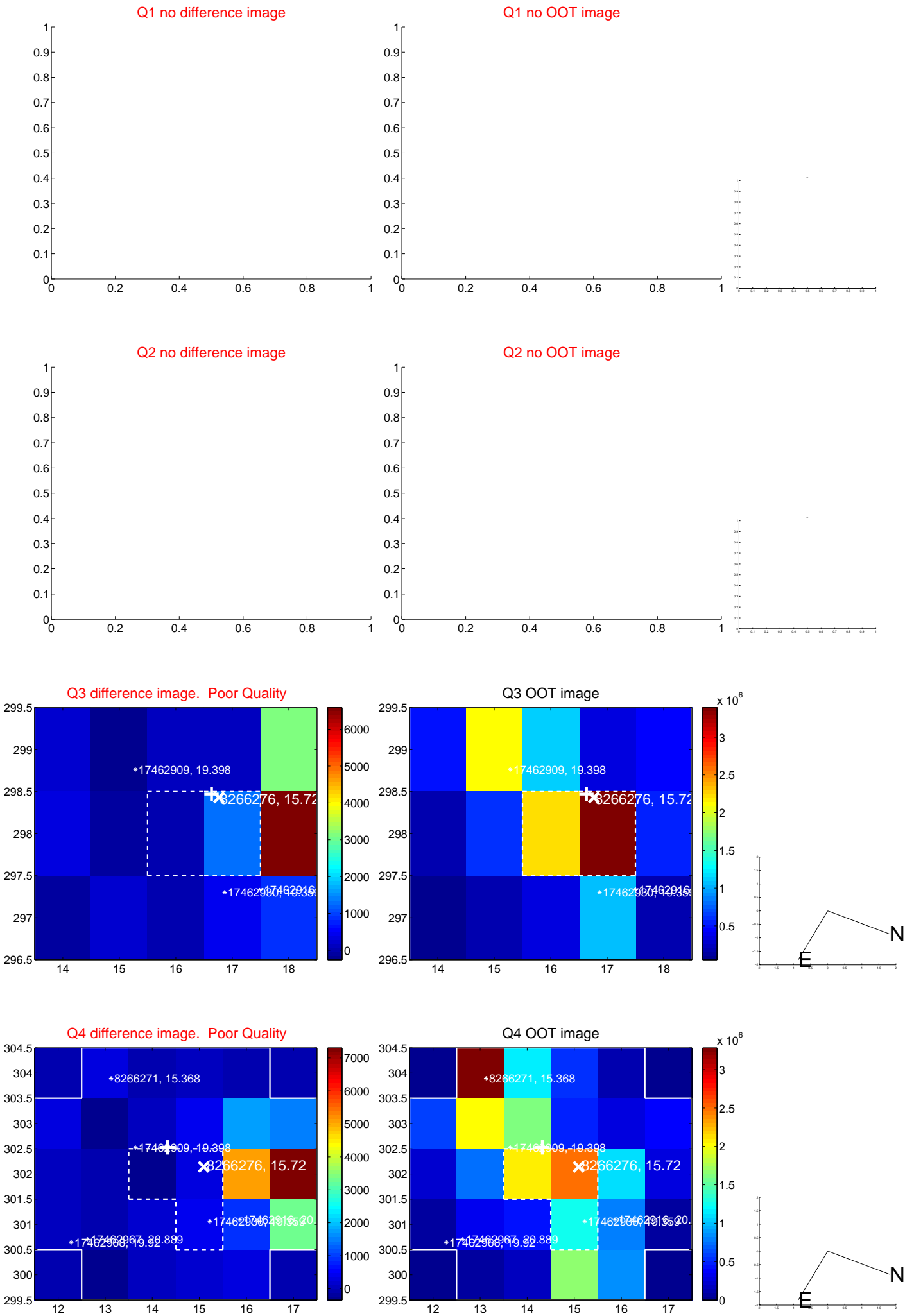
The OOT PRF centroid is offset from the target star catalog position by about 3.04 arcsec so the offset from difference PRF-fit to OOT PRF-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$10.353 \pm 0.235$	44.09	$-3.540 \pm 0.188$	$9.729 \pm 0.240$
PRF-fit source offset from KIC position	$7.366 \pm 0.097$	76.29	$-3.450 \pm 0.093$	$6.508 \pm 0.098$
photometric centroid source offset	$5.36 \pm 0.73$	7.29	$-4.00 \pm 0.66$	$3.57 \pm 0.82$

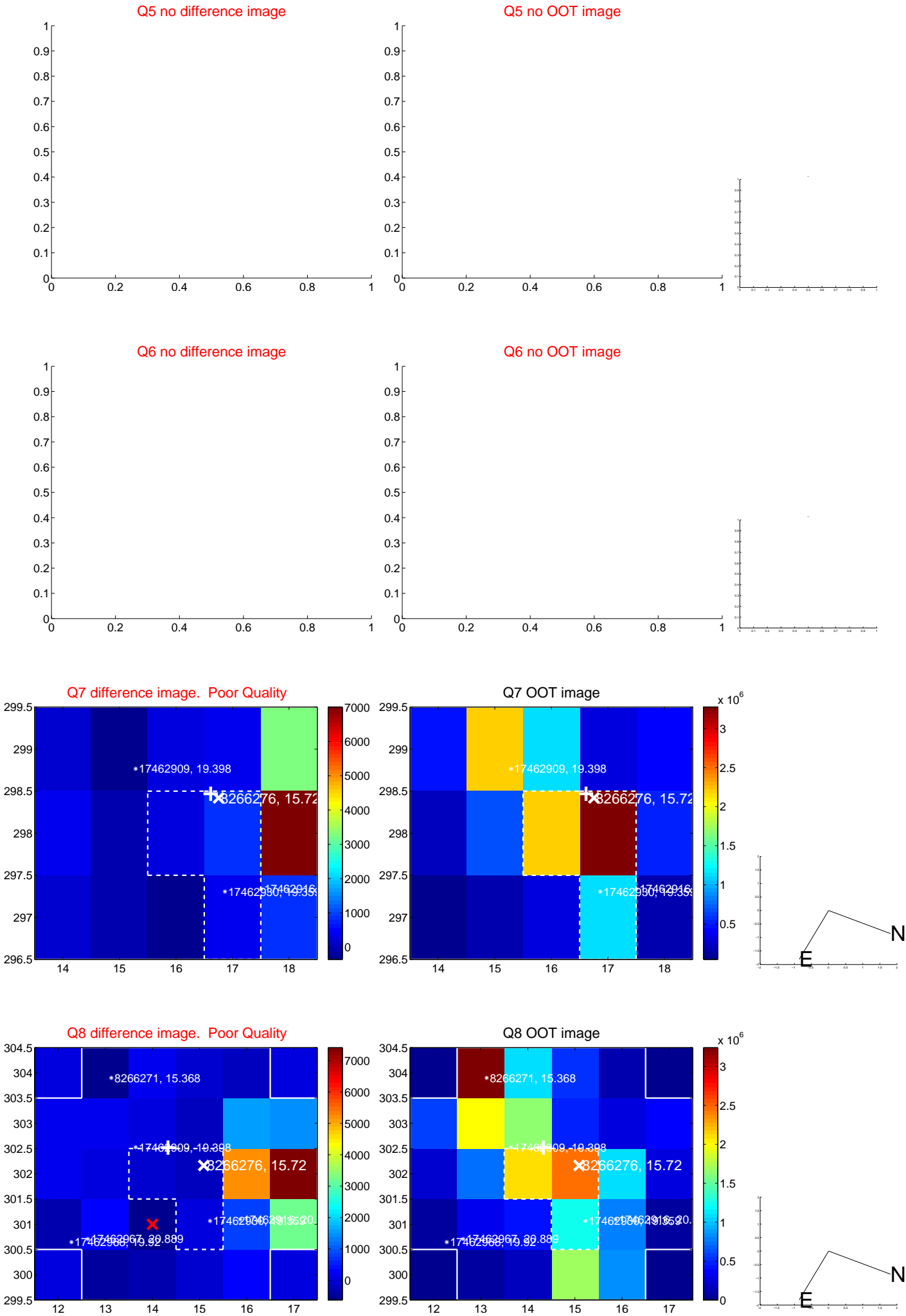


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

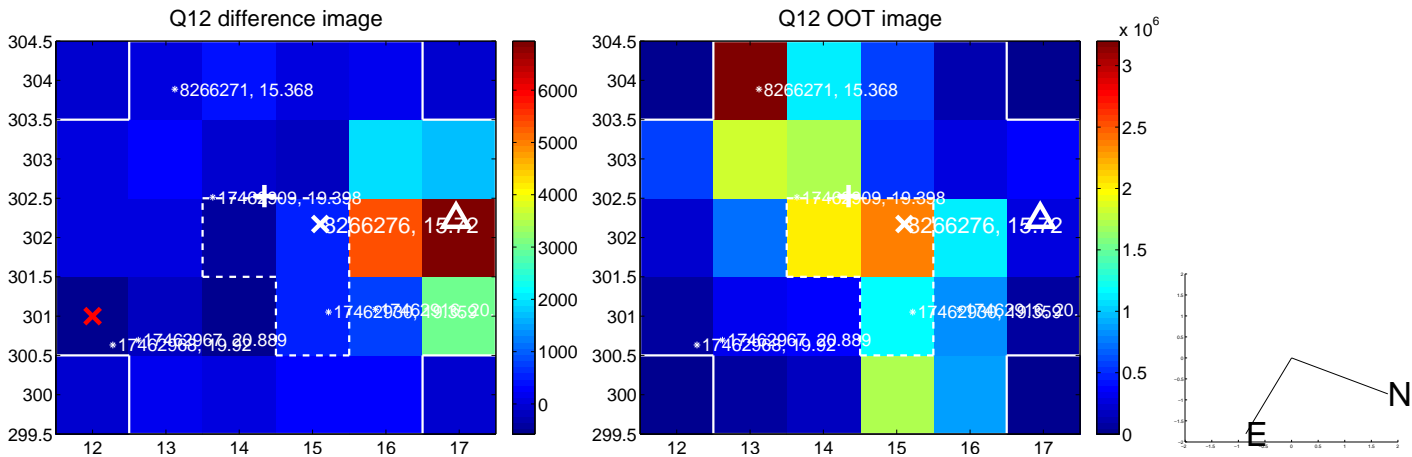
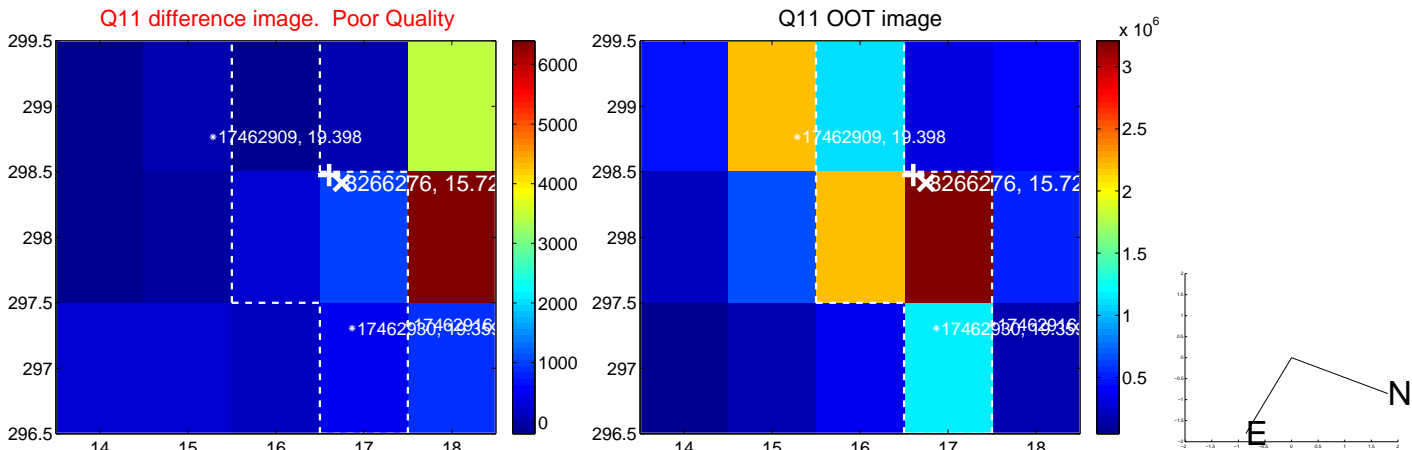
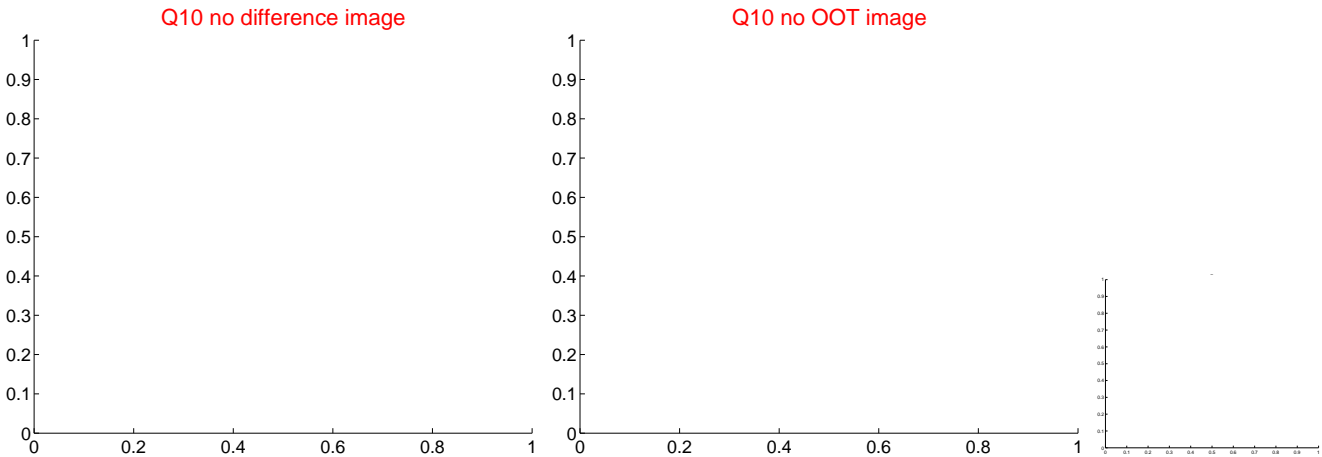
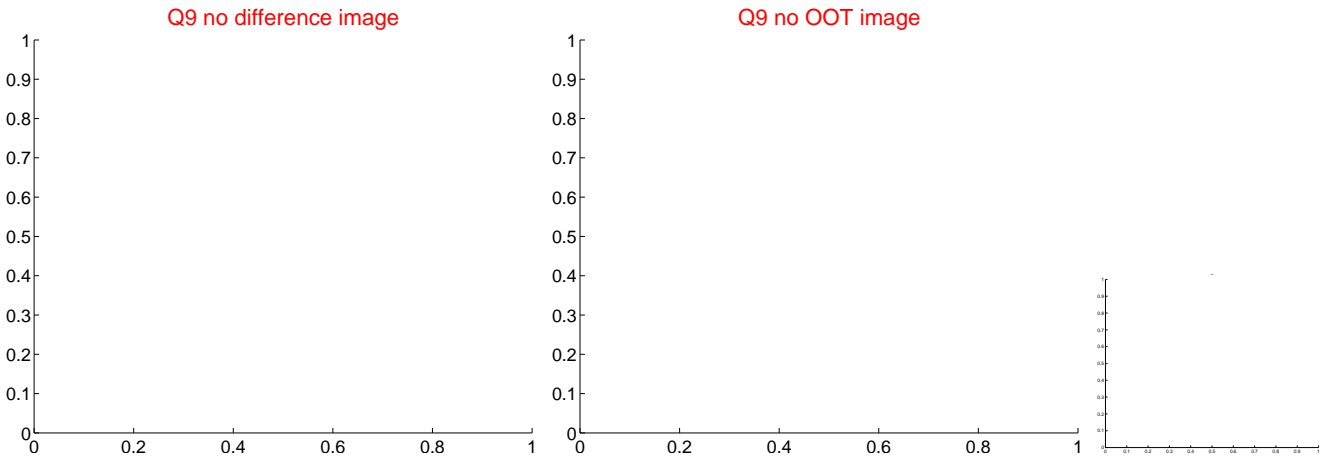
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



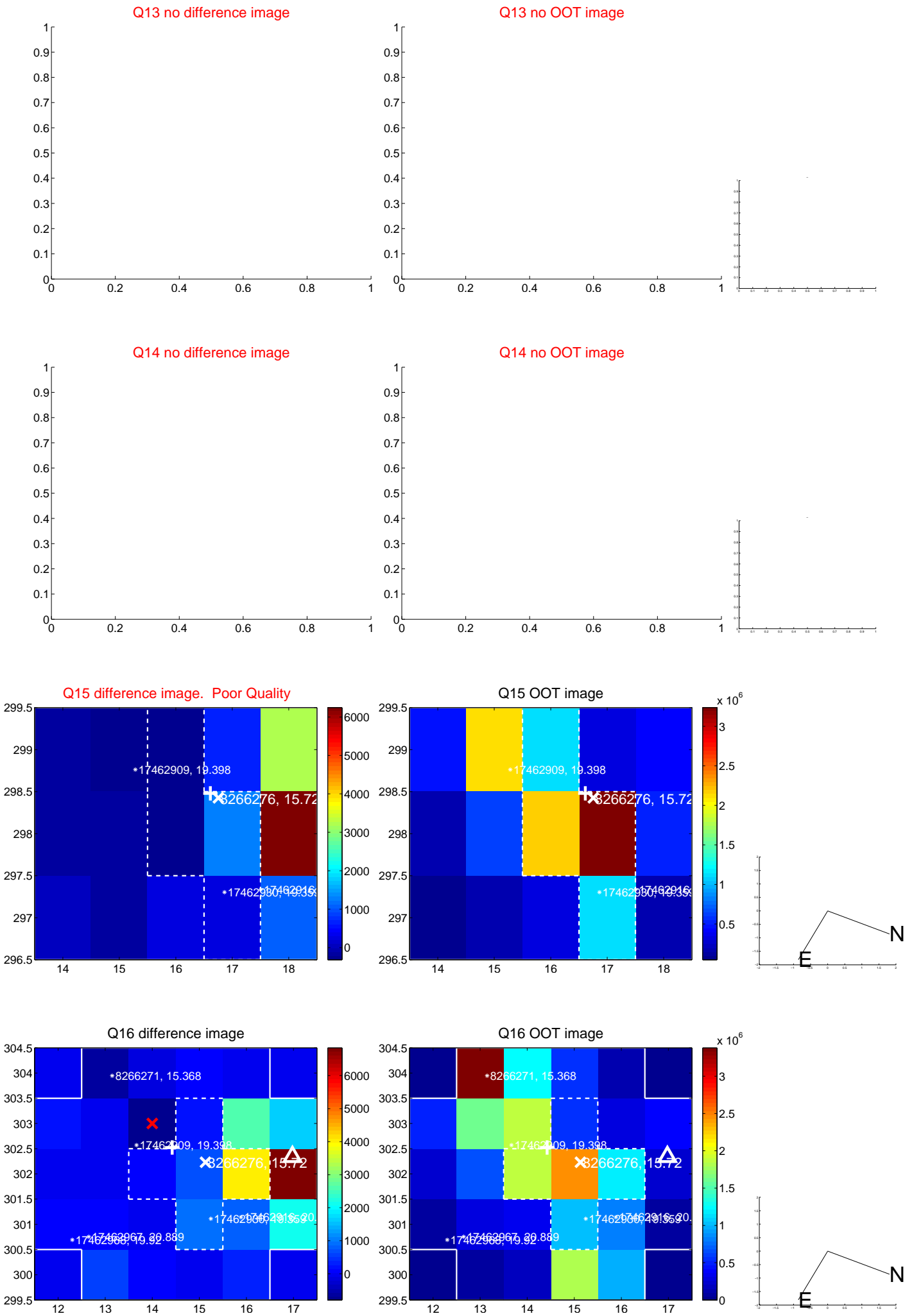
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



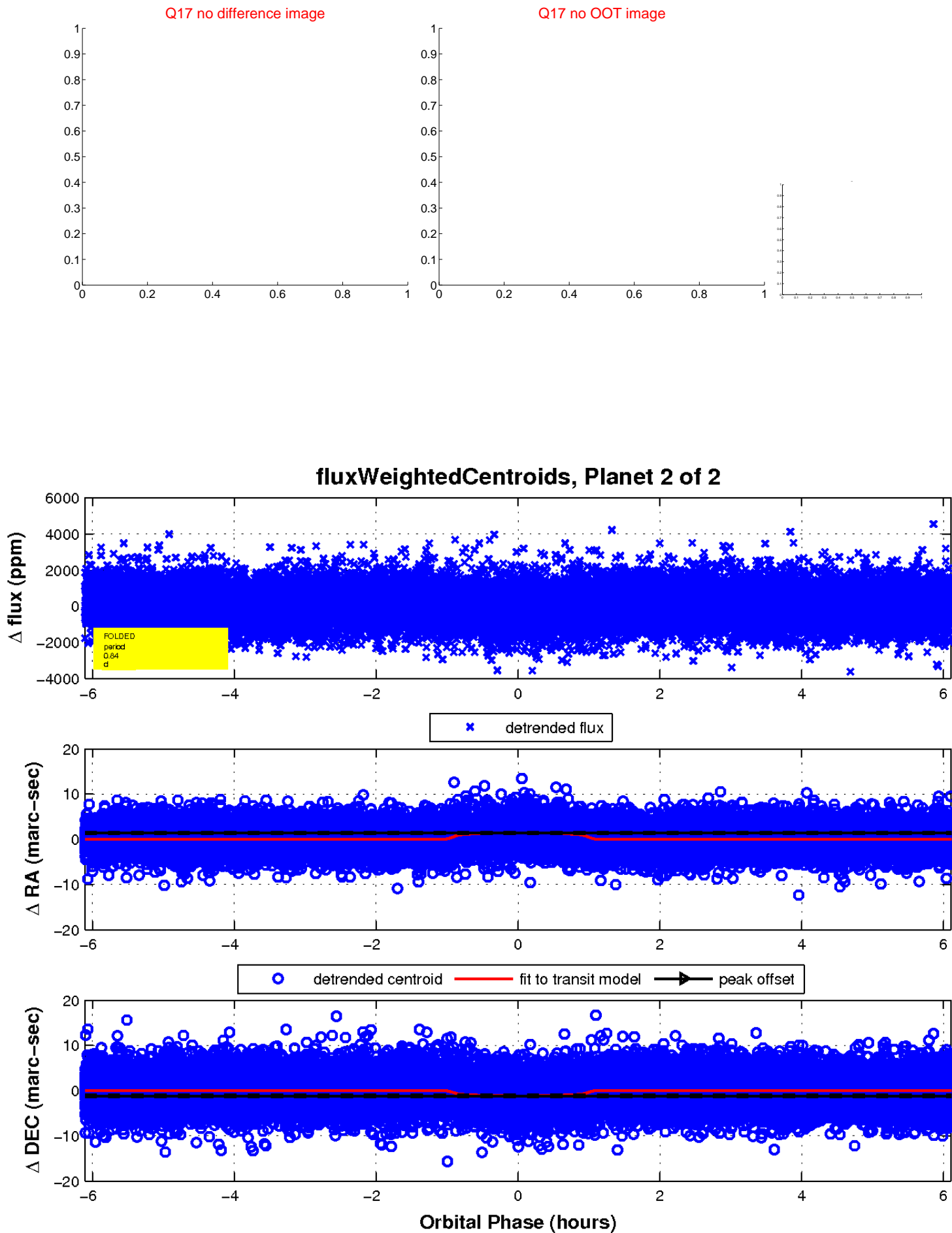
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

