

# KIC 010462826

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010462826-01	OBS	7329.01	50.467022	132.009505	102367.4	8.947	3230.7	2800.8	1.01	6137	47.12	17.65
010462826-02	OBS	No	50.466977	163.155597	20726.1	7.865	601.0	567.0	1.01	6137	23.60	17.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010462826-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
010462826-02	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.

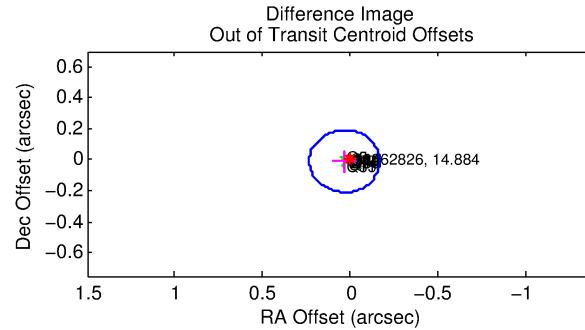
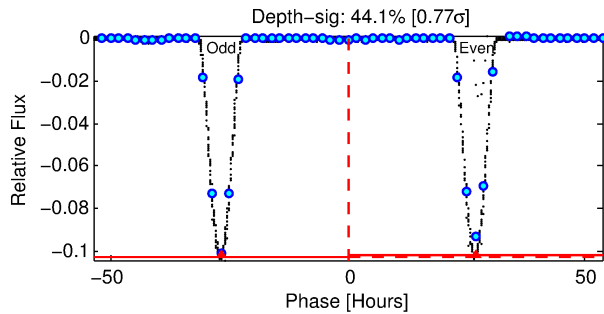
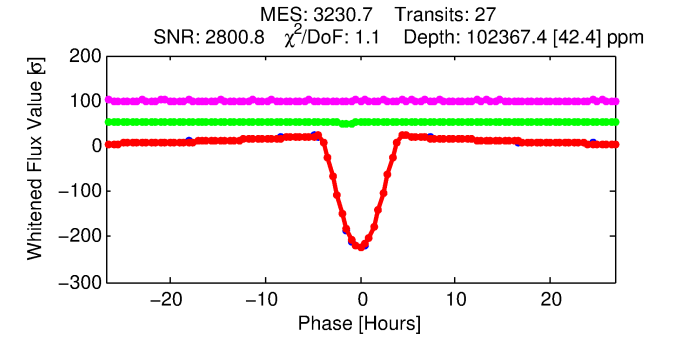
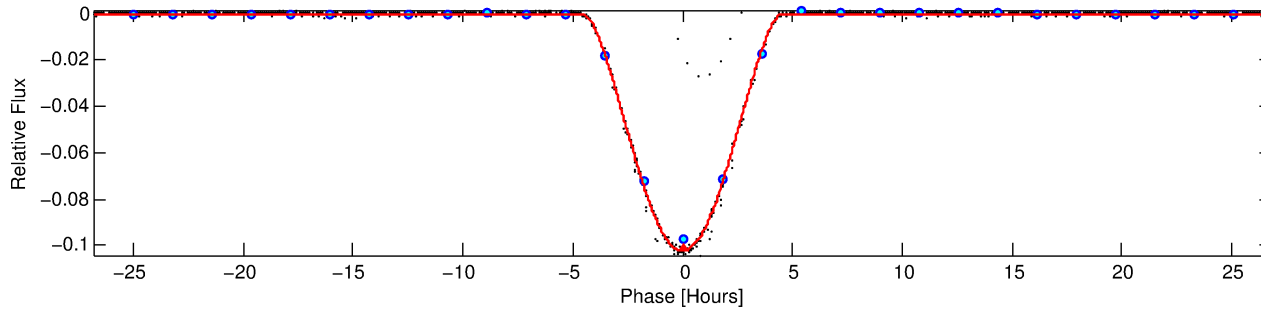
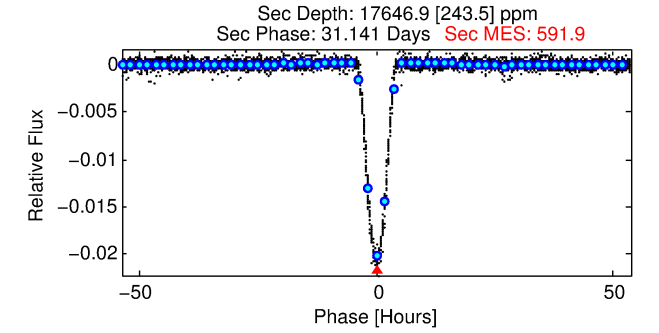
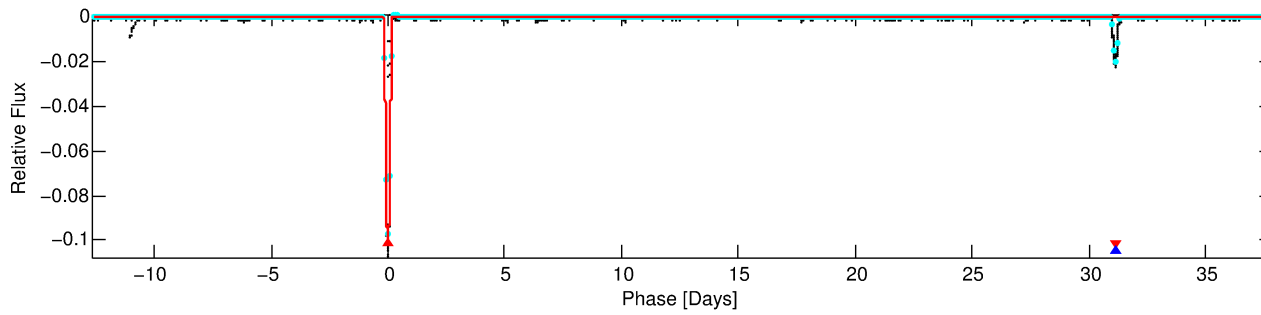
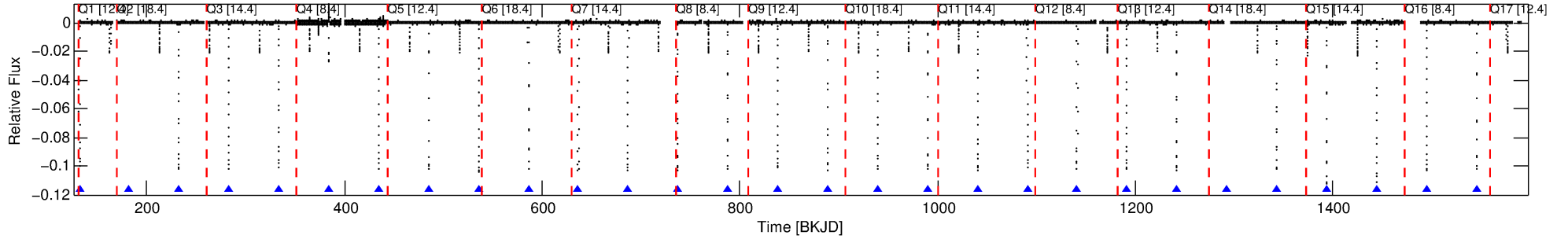
## Ephemeris Match Information For 010462826-01

No Significant Match Found

# DV One-Page Summary

KIC: 10462826 Candidate: 1 of 2 Period: 50.467 d  
KOI: K07329.01 Corr: 0.999

Kp: 14.88 R\*: 1.01 Rs Teff: 6137.0 K Logg: 4.45 Fe/H: -0.120



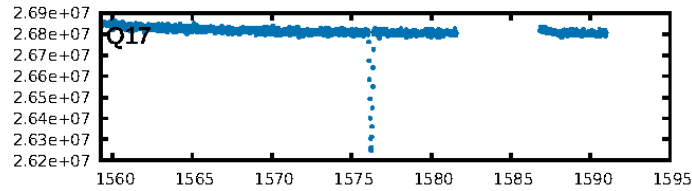
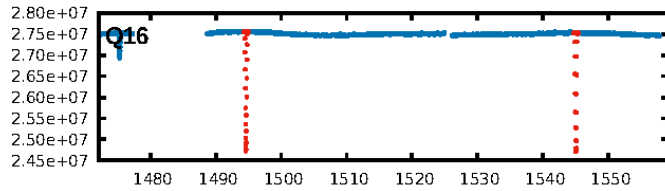
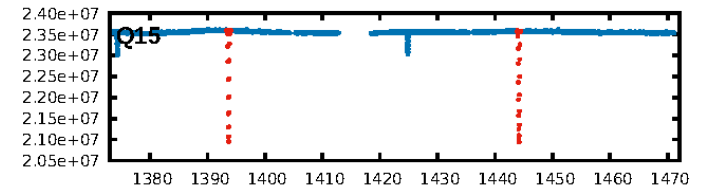
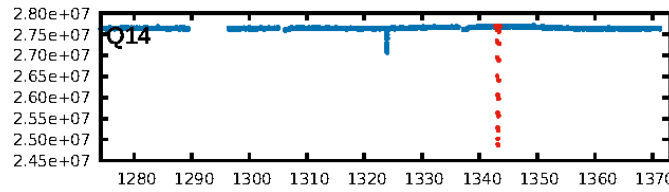
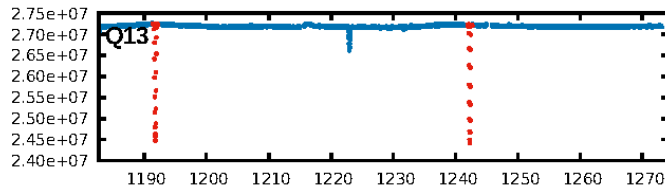
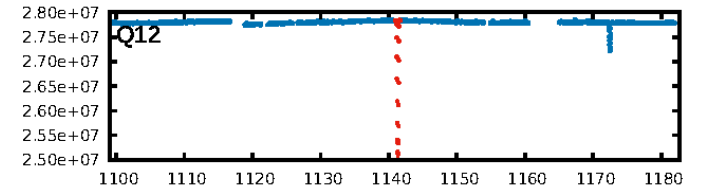
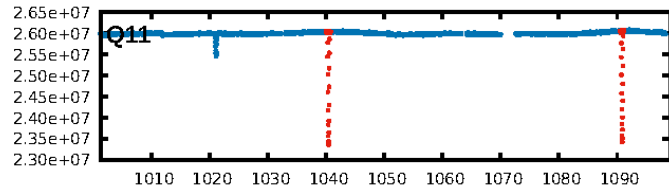
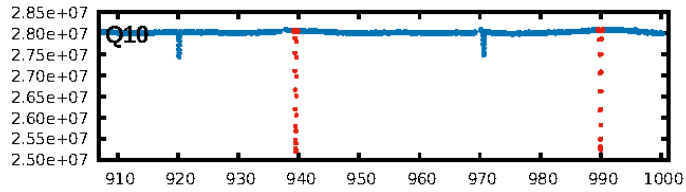
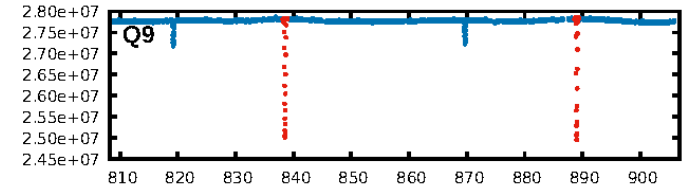
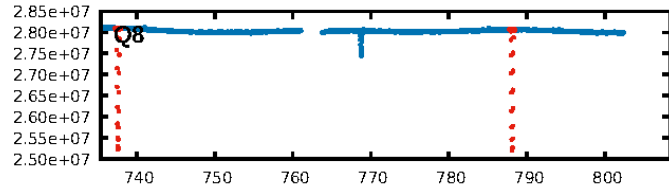
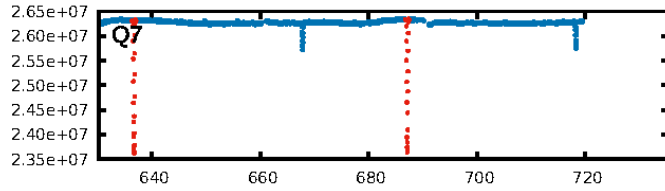
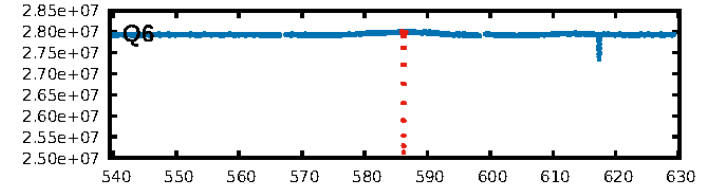
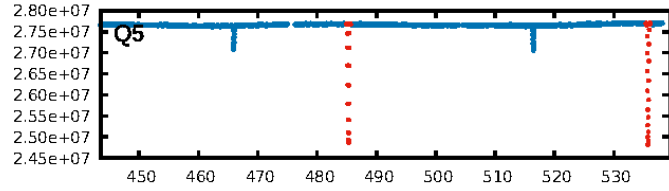
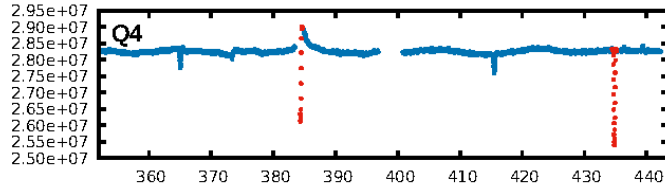
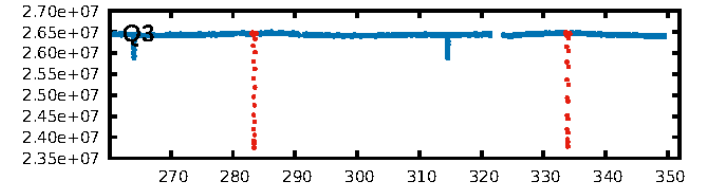
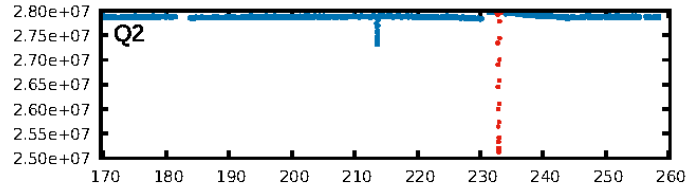
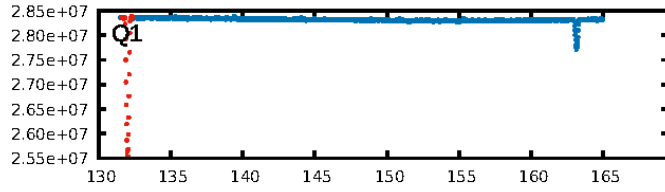
## DV Fit Results:

Period = 50.46702 [0.00000] d  
Epoch = 132.0095 [0.0001] BKJD  
Rp/R\* = 0.4267 [0.0134]  
a/R\* = 47.62 [0.04]  
b = 0.90 [0.02]  
Seff = 17.65 [7.38]  
Teff = 523 [55] K  
Rp = 47.12 [15.95] Re  
a = 0.2715 [0.0751] AU  
Ag = 322.32 [128.34] [2.50σ]  
Teffp = 3424 [135] K [19.98σ]

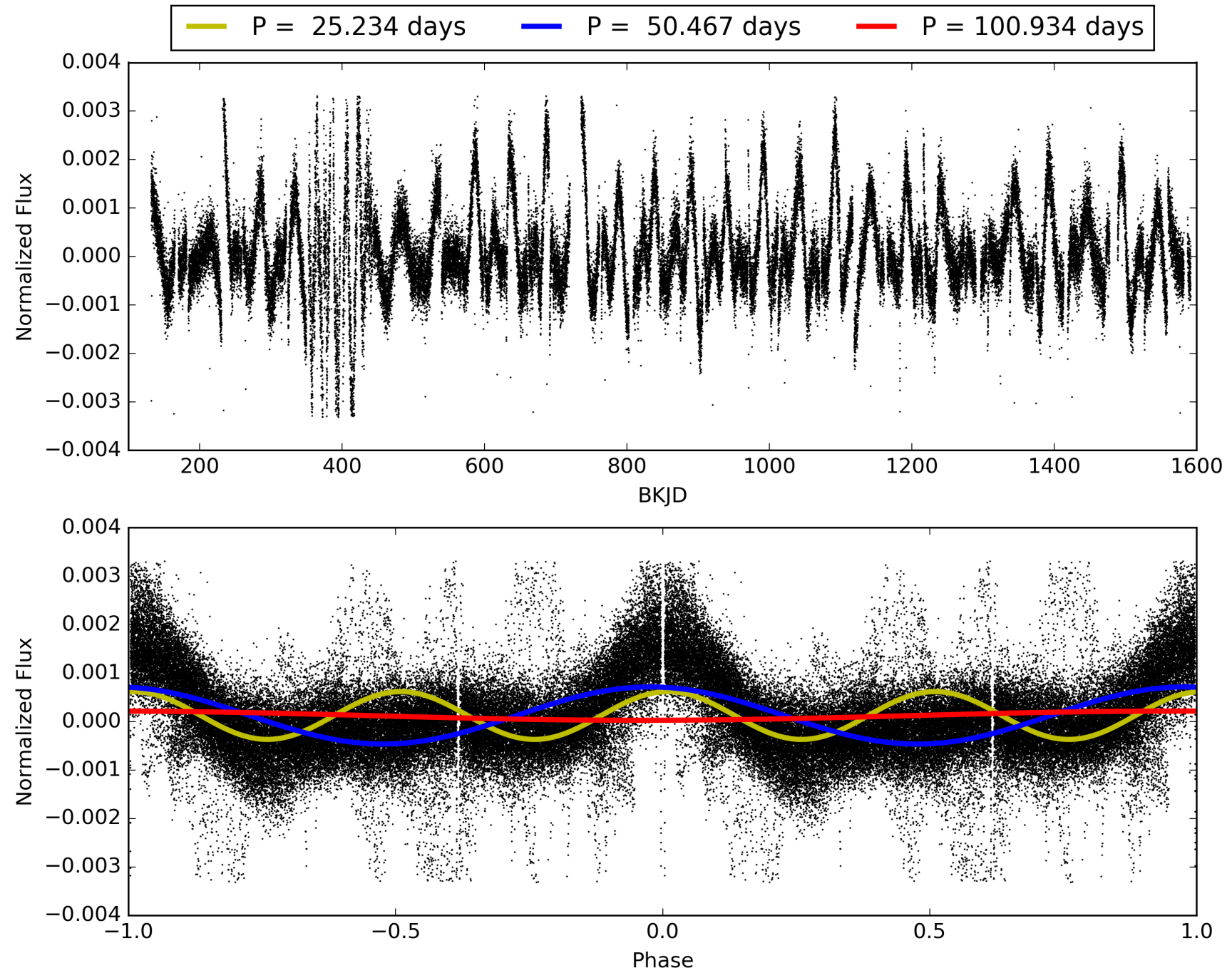
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [26/26]  
GhostDiagnostic-chr: 7.426  
Centroid-sig: 0.0%  
Centroid-so: 0.143 arcsec [43.36σ]  
OotOffset-rm: 0.034 arcsec [0.52σ]  
KicOffset-rm: 0.173 arcsec [2.55σ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 010462826-01, PDC Light Curves

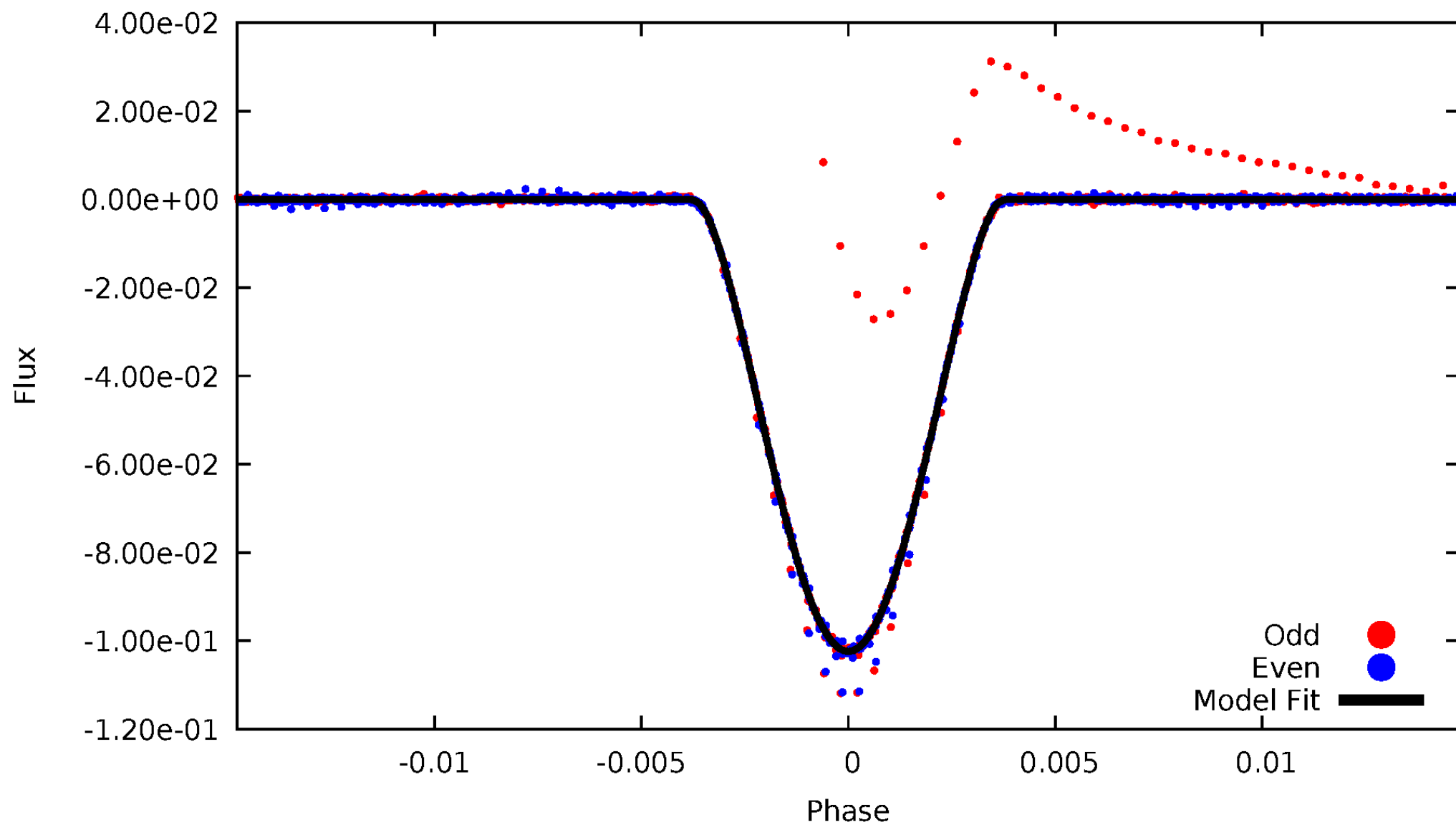


TCE 010462826-01



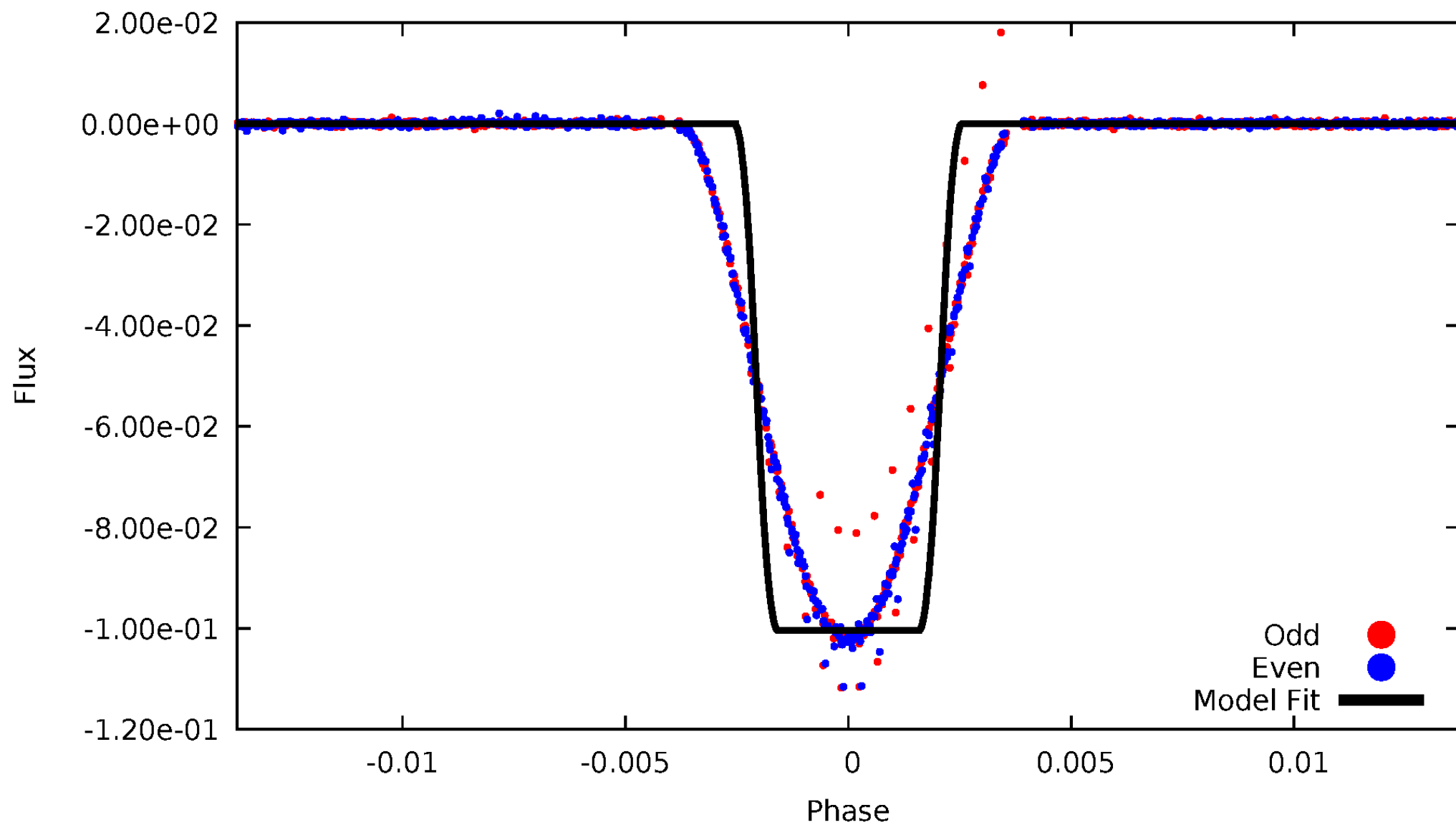
# DV Odd/Even

TCE 010462826-01



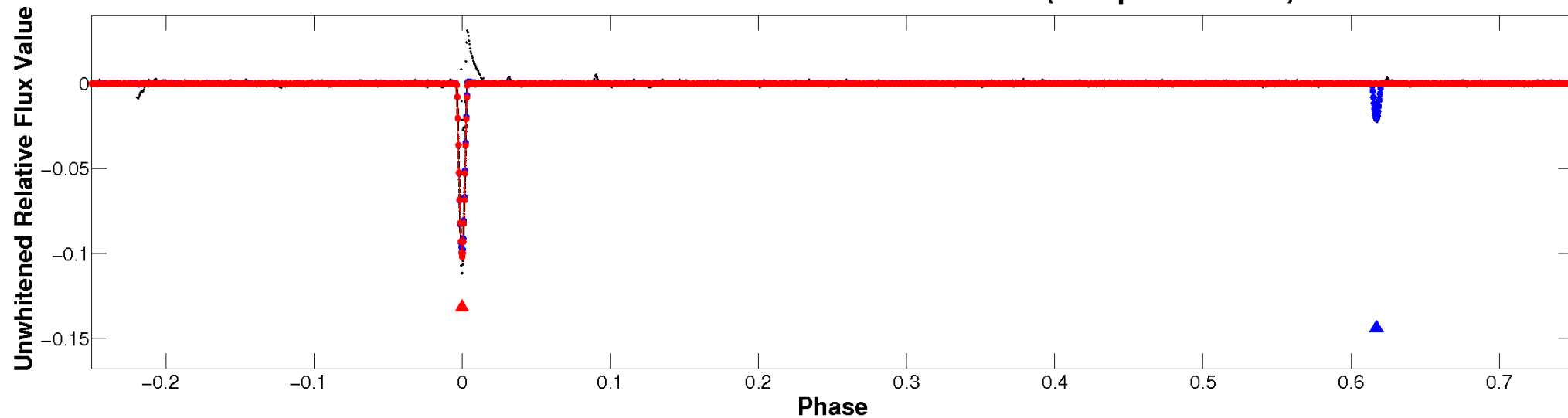
# ALT Odd/Even

TCE 010462826-01

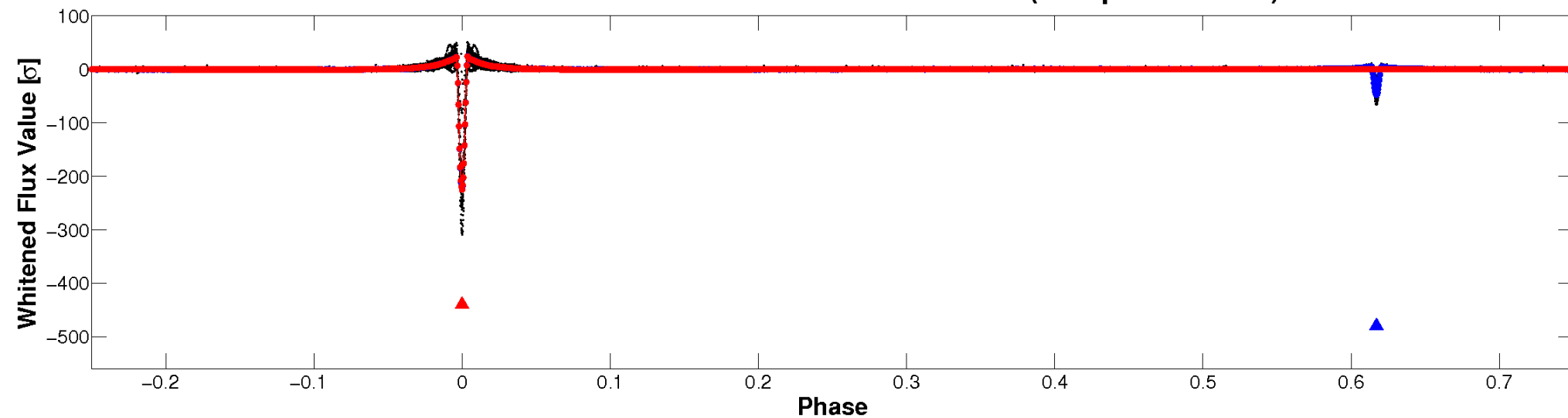


# Non-Whitened Vs. Whitened Light Curve

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

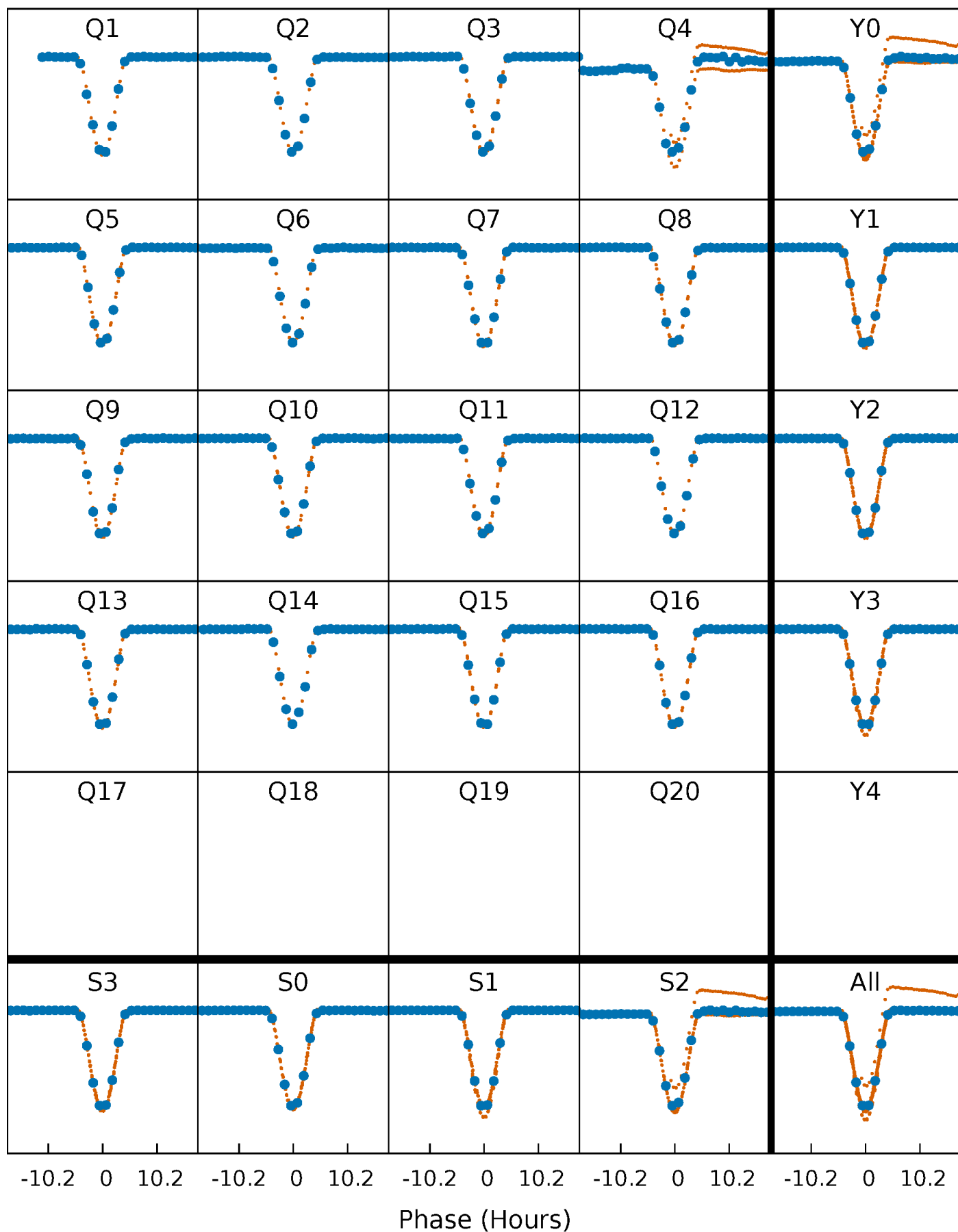


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

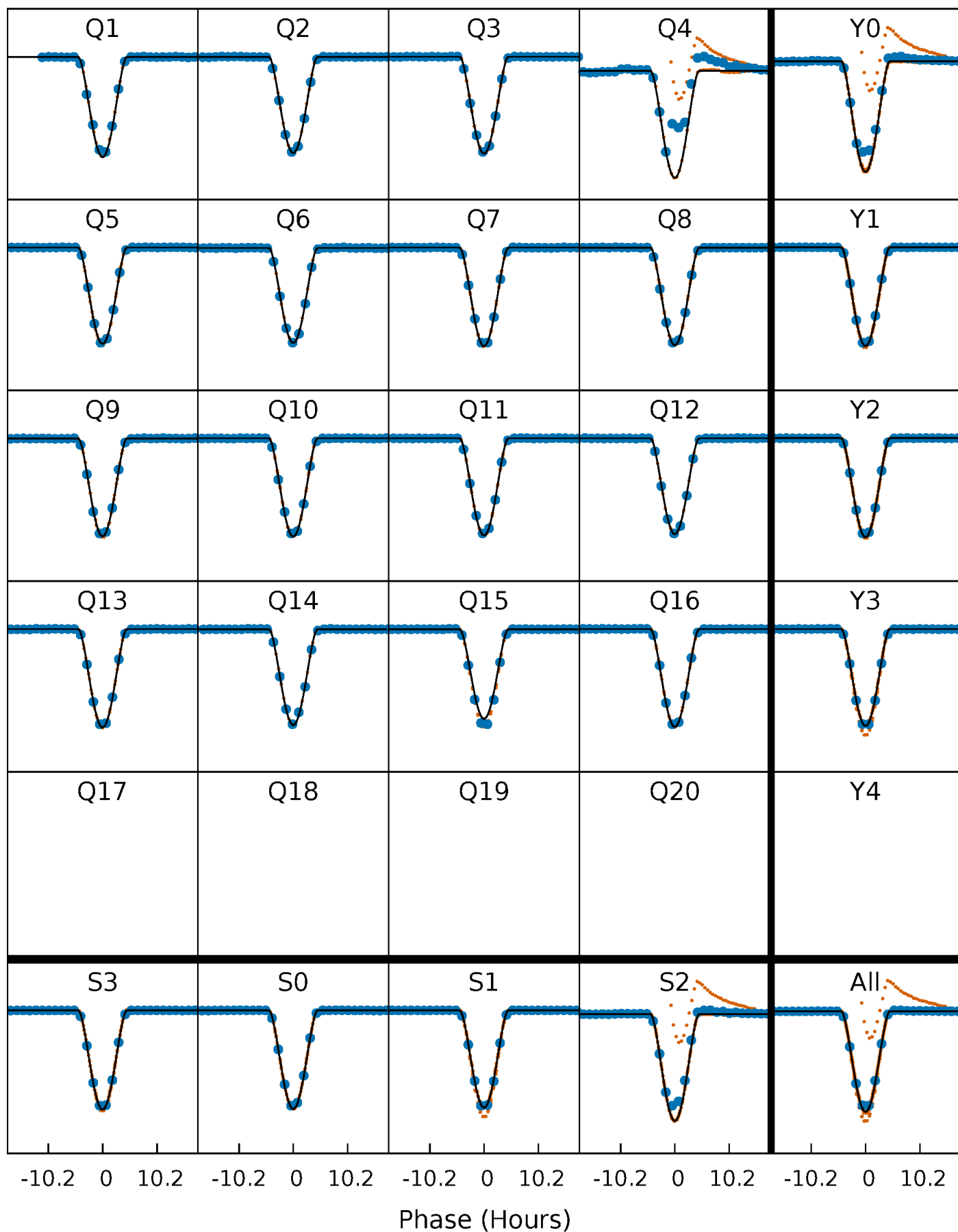
TCE 010462826-01 P= 50.467022 Days  $T_0=132.009505$  (BKJD)





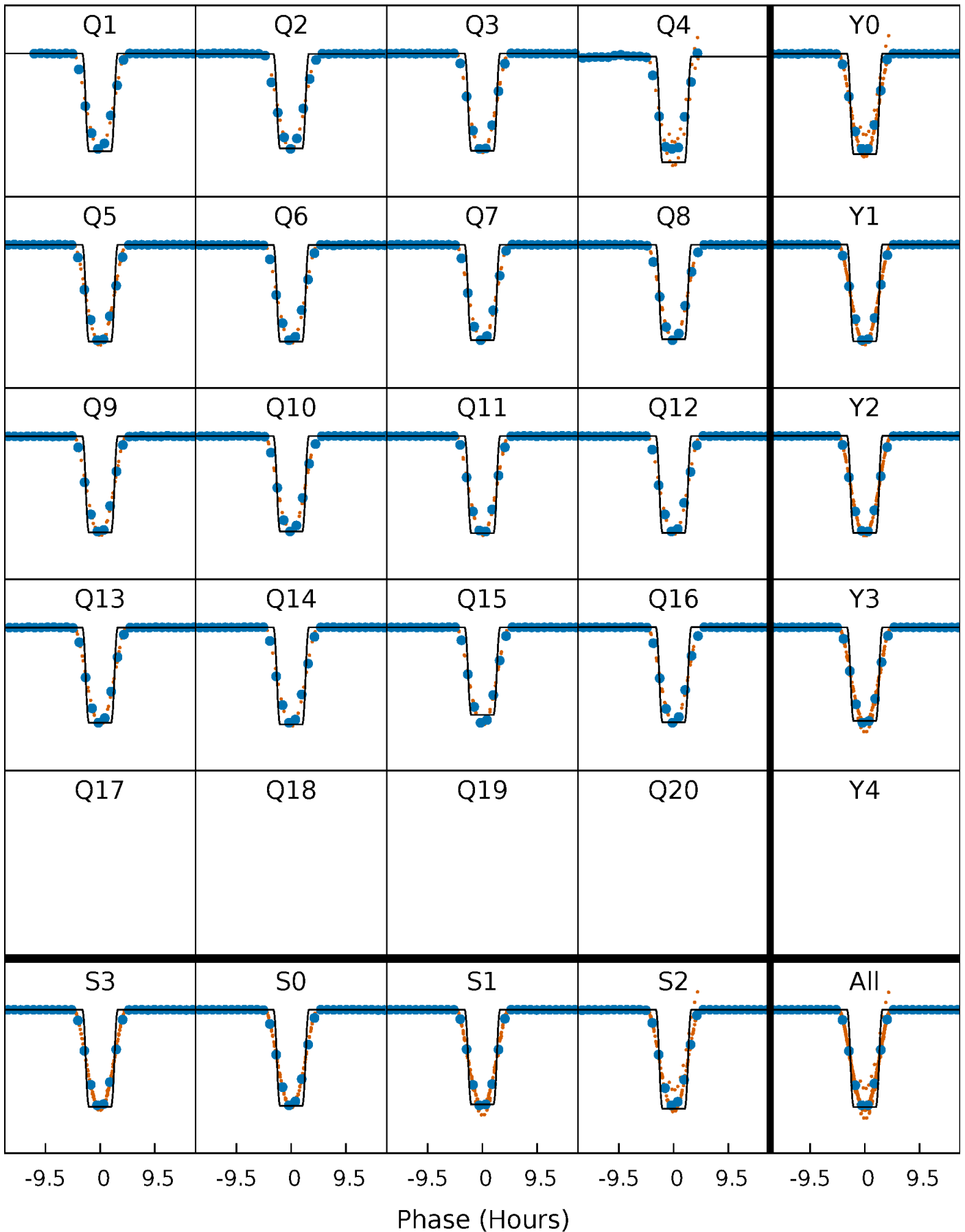
# DV Quarter-Phased Transit Curves

TCE 010462826-01 P= 50.467022 Days  $T_0=132.009505$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

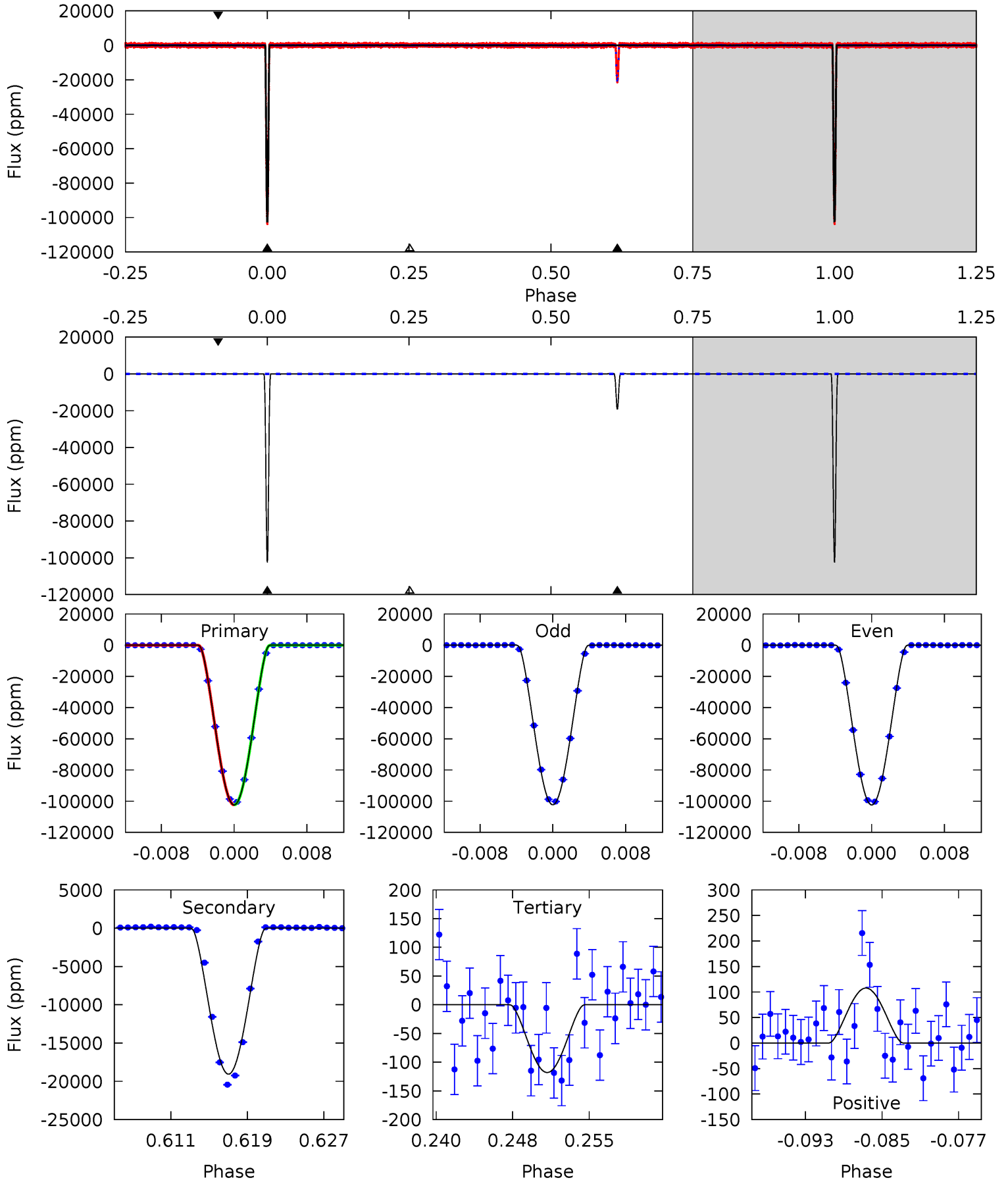
TCE 010462826-01 P= 50.466877 Days  $T_0=132.011565$  (BKJD)



# DV Model-Shift Uniqueness Test

010462826-01, P = 50.467022 Days, E = 81.542483 Days

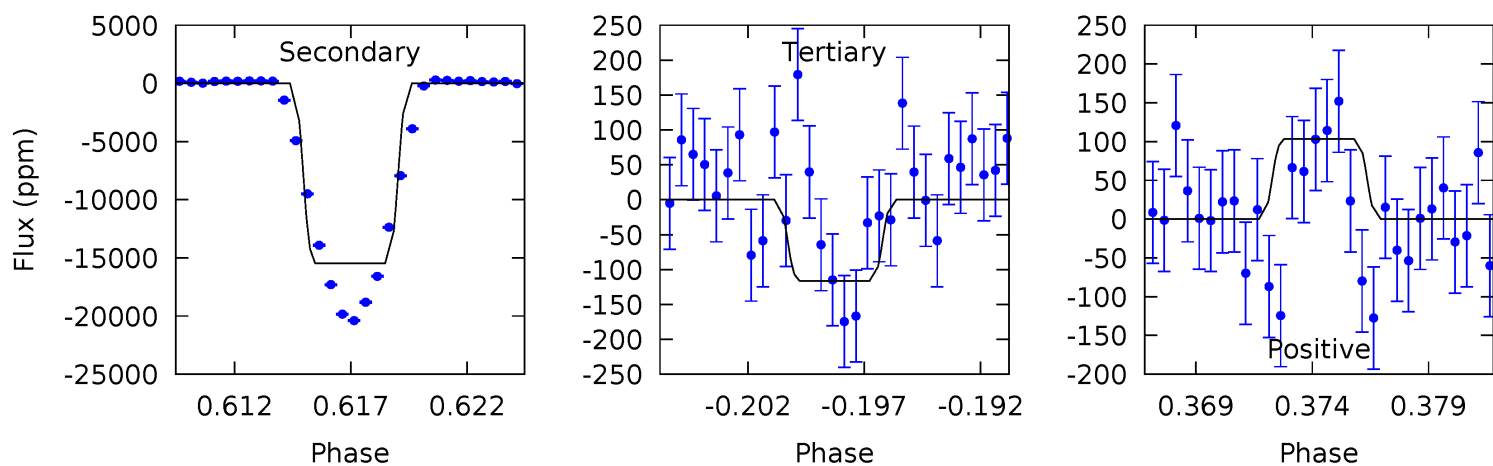
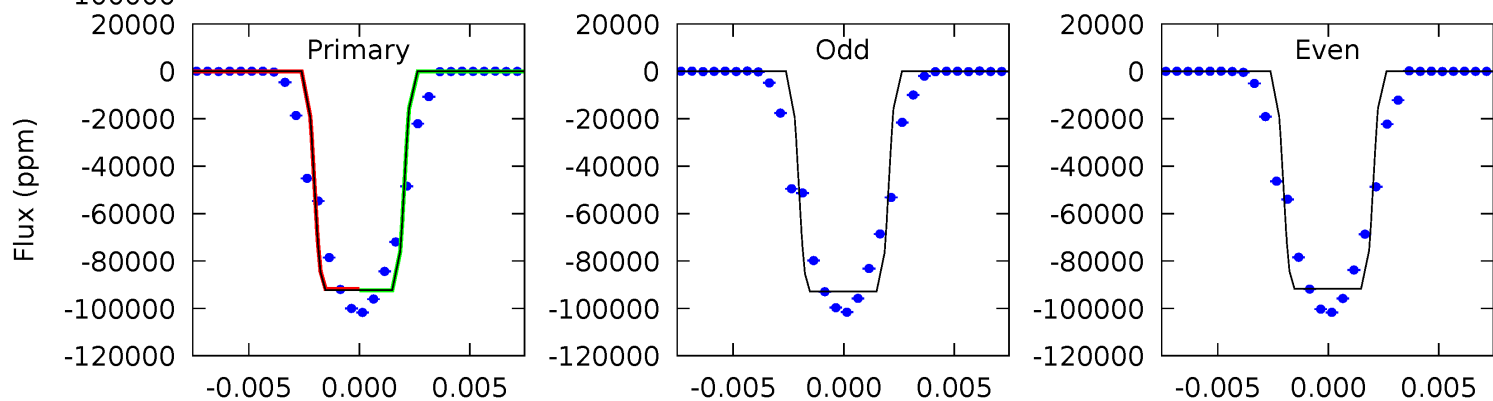
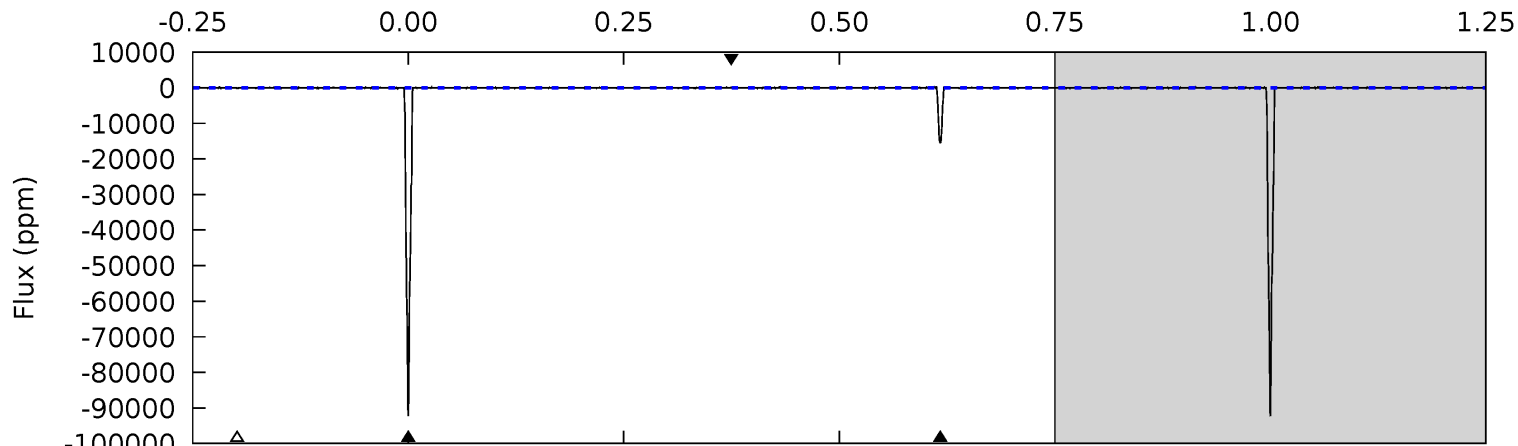
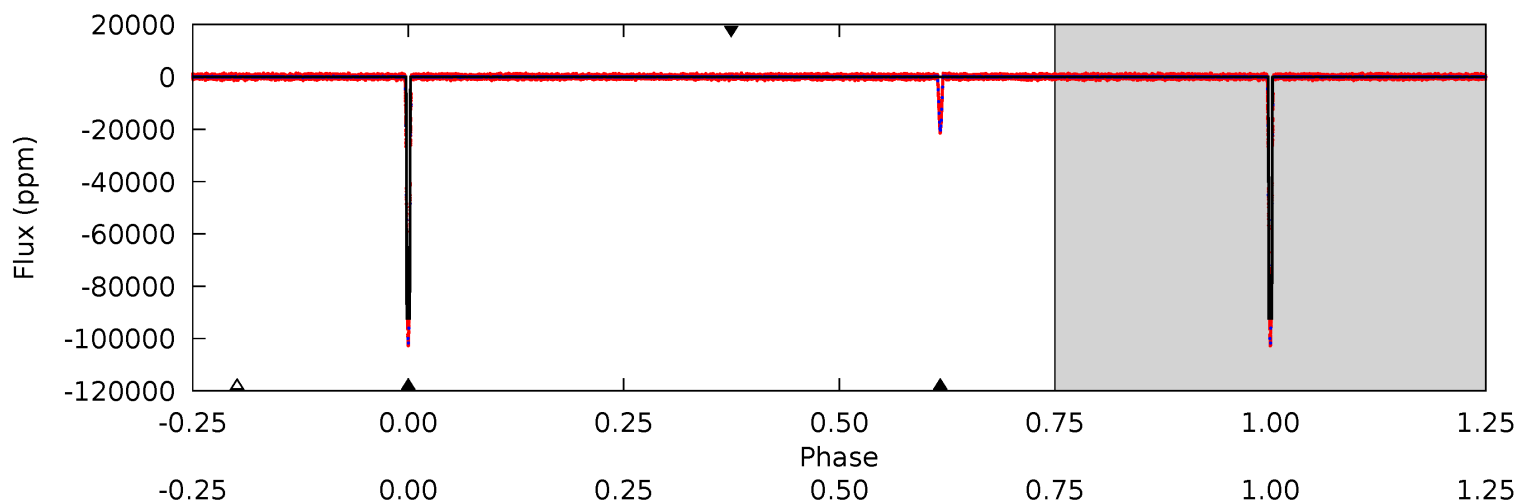
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5969	1112	6.88	6.28	5.08	2.66	2.19	5962	5963	1105	1105	3.94	0.98	0.00	0.06



# Alt Model-Shift Uniqueness Test

010462826-01, P = 50.466877 Days, E = 81.544688 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
3550	594.7	4.47	3.98	5.16	2.80	1.24	3545	3546	590.2	590.7	21.8	1.00	0.00	4.50



### Stellar Parameters For KIC 010462826

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6137^{+184}_{-220}$	$4.448^{+0.070}_{-0.210}$	$-0.120^{+0.250}_{-0.350}$	$1.012^{+0.341}_{-0.114}$	$1.043^{+0.151}_{-0.135}$	$1.416^{+0.431}_{-0.779}$
	+3%/-4%	+2%/-5%	+208%/-292%	+34%/-11%	+14%/-13%	+30%/-55%
Source	PHO1	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 010462826-01 / KOI 7329.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-19065 \pm 17$	$48.28^{+8.16}_{-4.20}$	$747^{+50}_{-40}$	$3871^{+93}_{-102}$	$331^{+62}_{-76}$
Alt.	$-15465 \pm 26$	$35.54^{+6.93}_{-3.51}$	$744^{+56}_{-36}$	$4147^{+110}_{-122}$	$491^{+102}_{-132}$

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

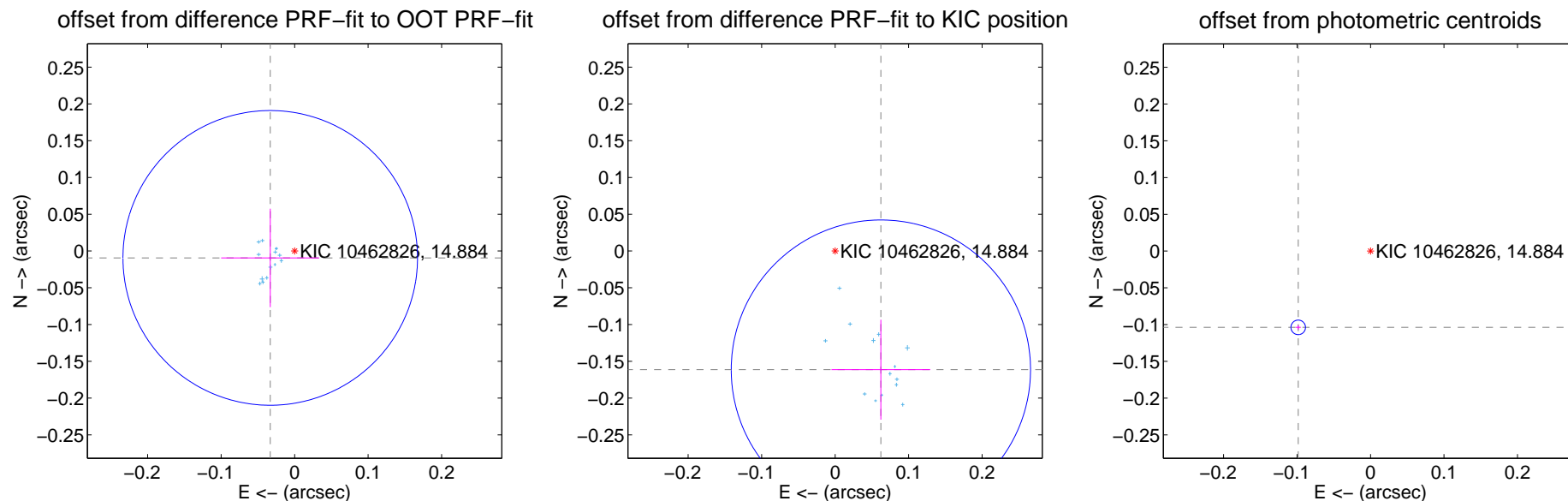
## DV Centroid Data

Supplemental centroid analysis for 010462826-01. Kepler magnitude: 14.88. Transit SNR 2800.76

There are 14 quarters with good PRF difference image offsets

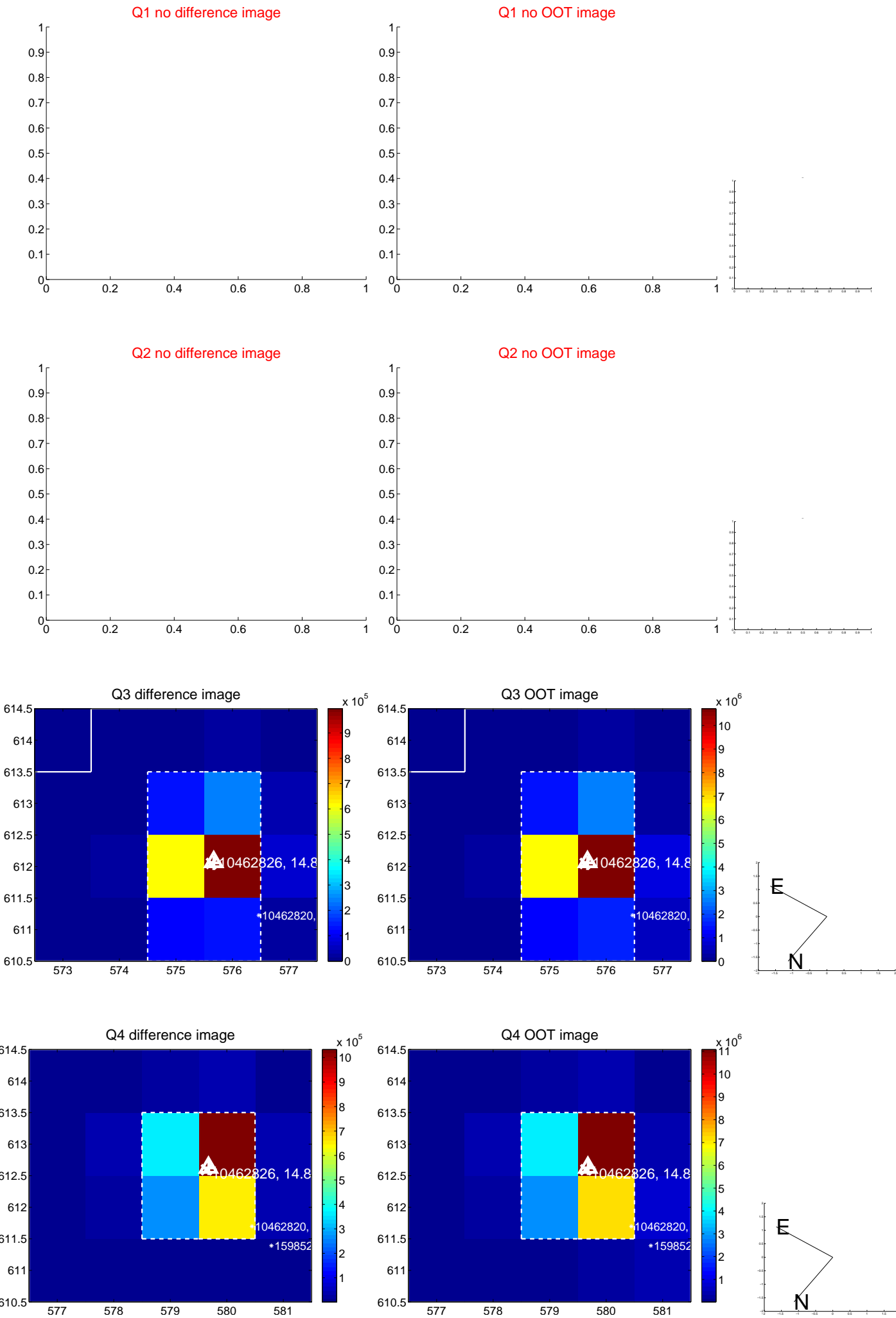
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.034 \pm 0.067$	0.52	$0.033 \pm 0.067$	$-0.009 \pm 0.067$
PRF-fit source offset from KIC position	$0.173 \pm 0.068$	2.55	$-0.062 \pm 0.067$	$-0.161 \pm 0.068$
photometric centroid source offset	$0.14 \pm 0.00$	43.36	$0.10 \pm 0.00$	$-0.10 \pm 0.00$

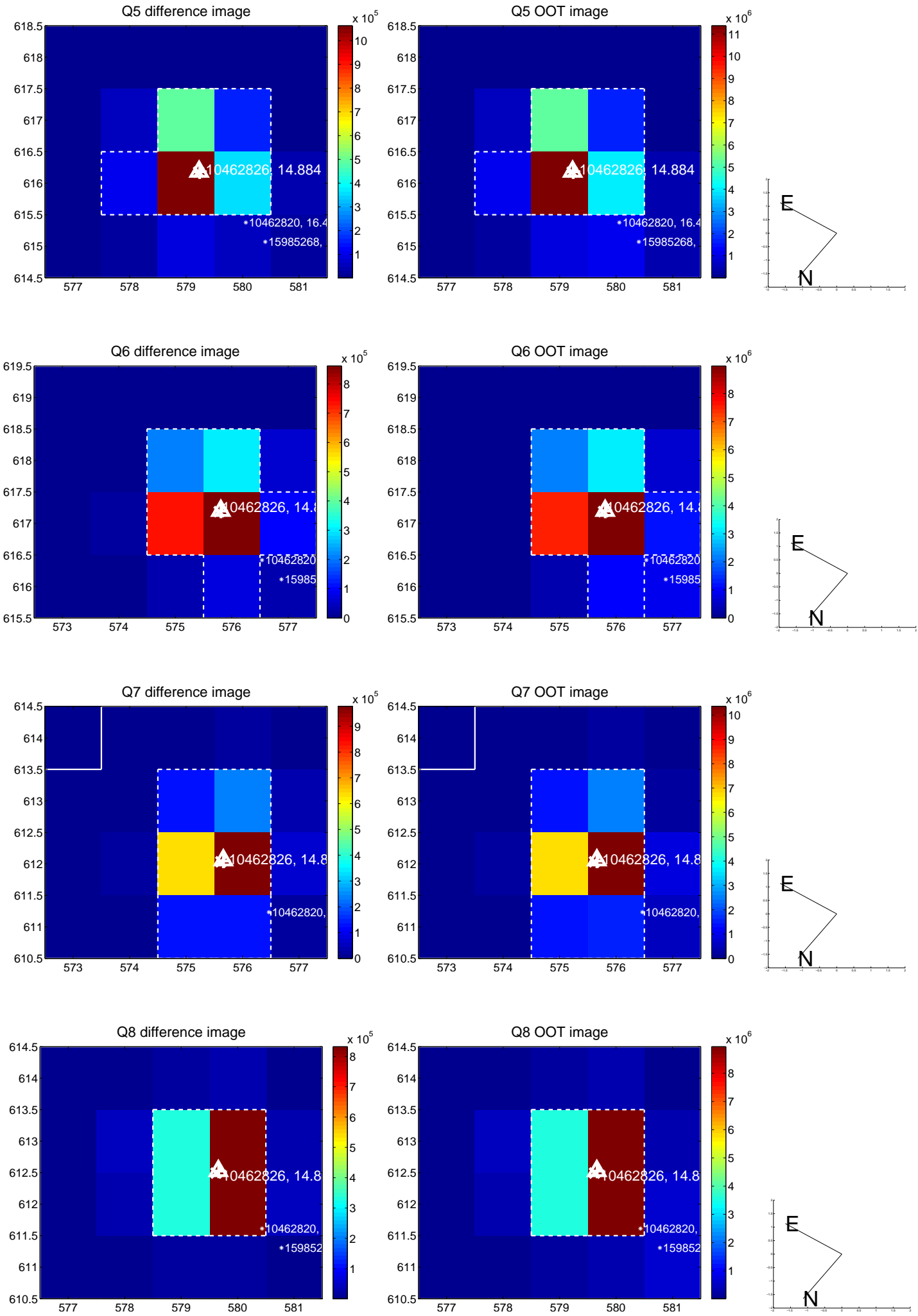


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

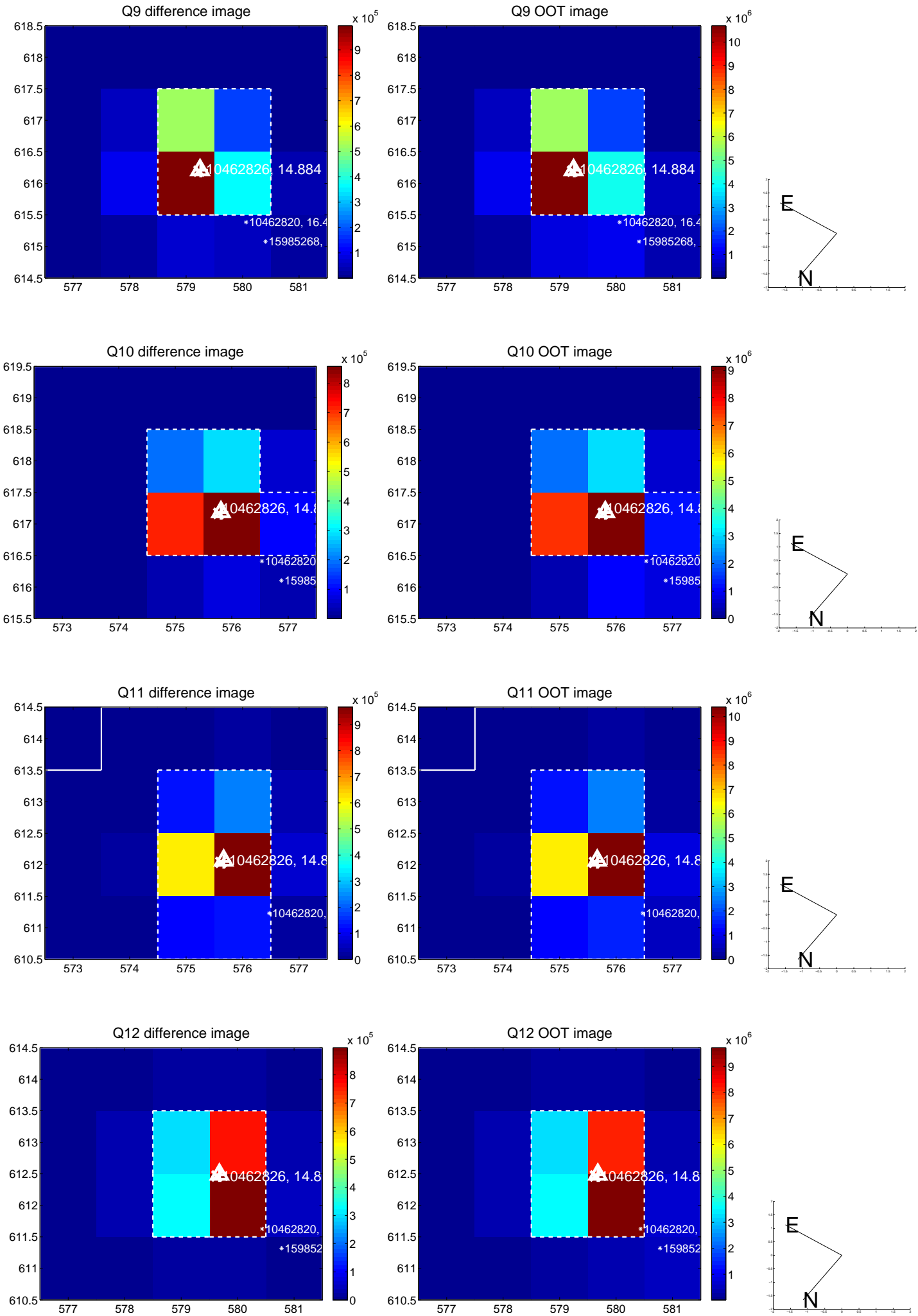


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

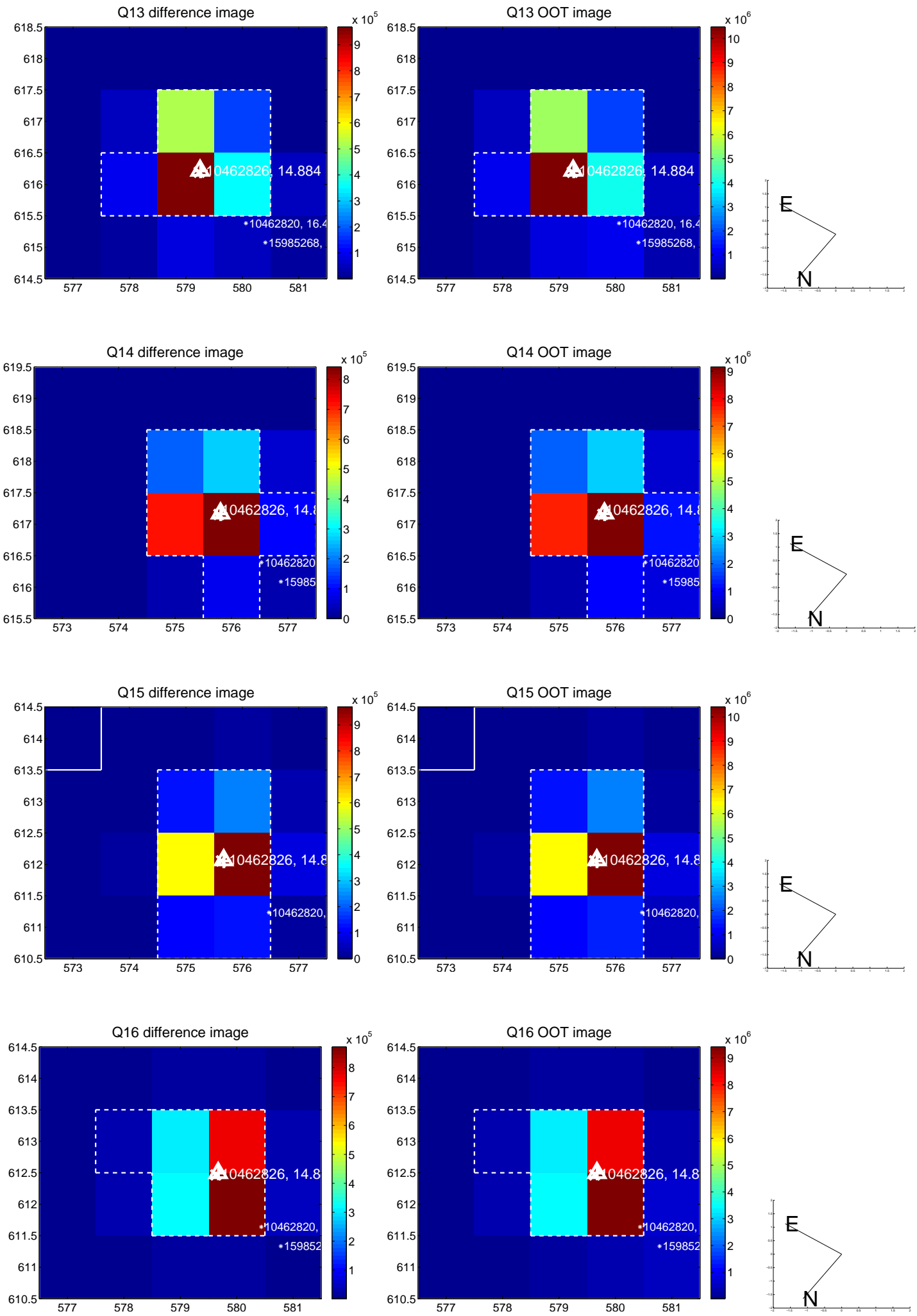




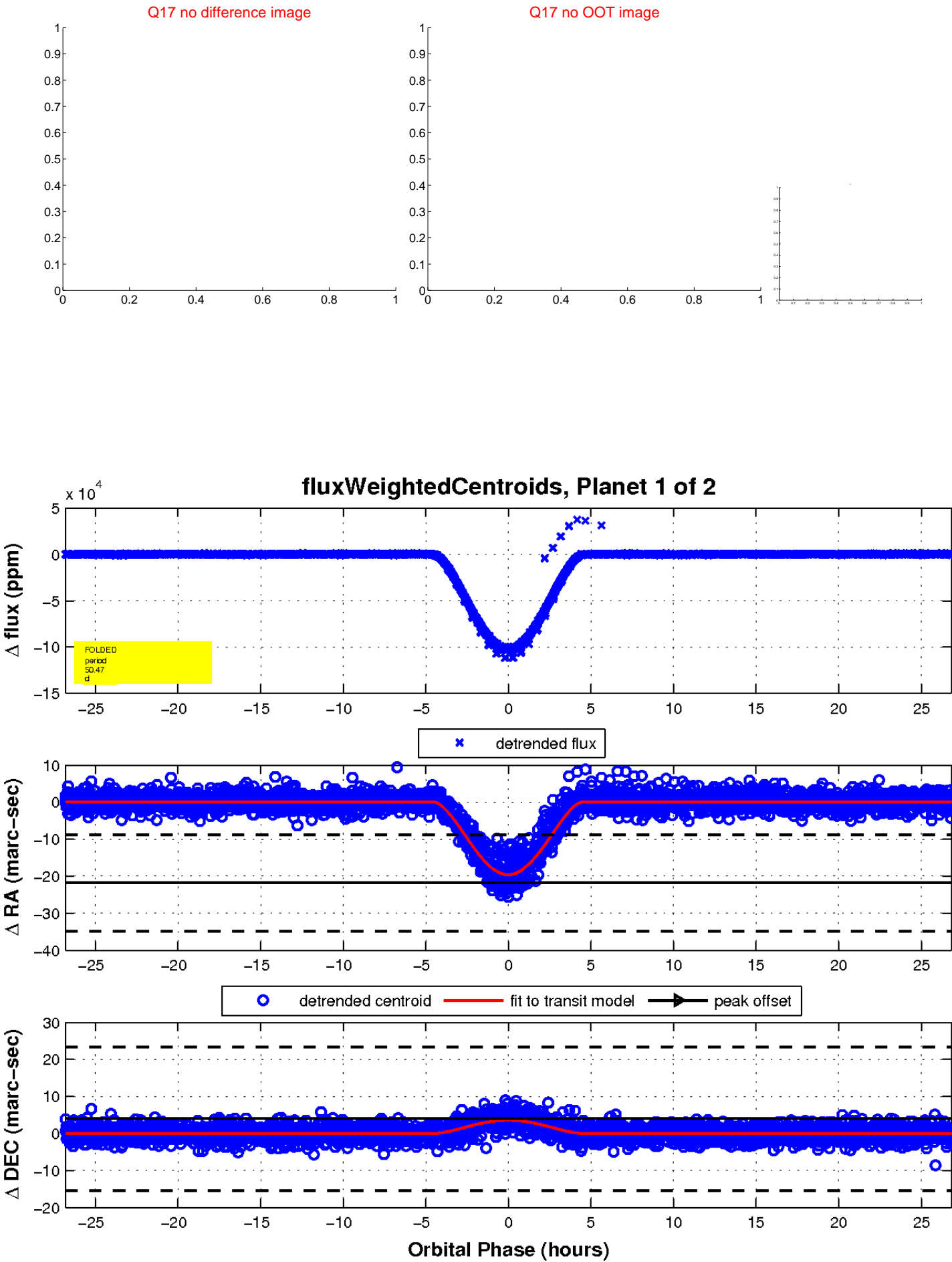
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

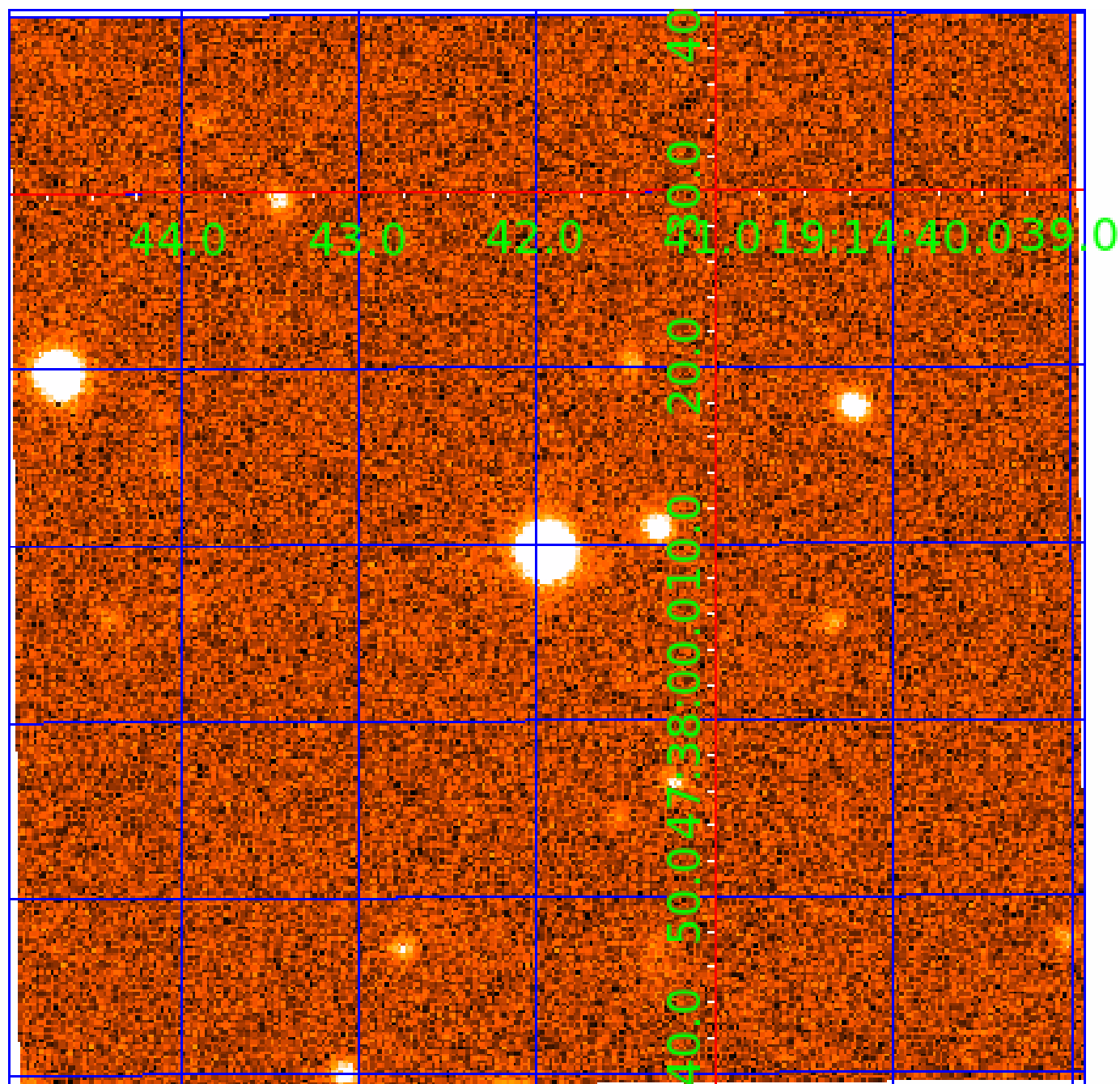


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010462826

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010462826-01	OBS	7329.01	50.467022	132.009505	102367.4	8.947	3230.7	2800.8	1.01	6137	47.12	17.65
010462826-02	OBS	No	50.466977	163.155597	20726.1	7.865	601.0	567.0	1.01	6137	23.60	17.65

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010462826-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
010462826-02	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.

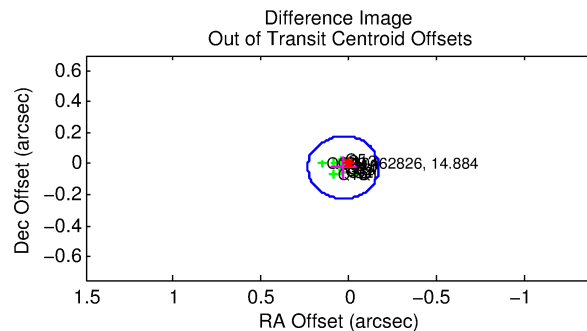
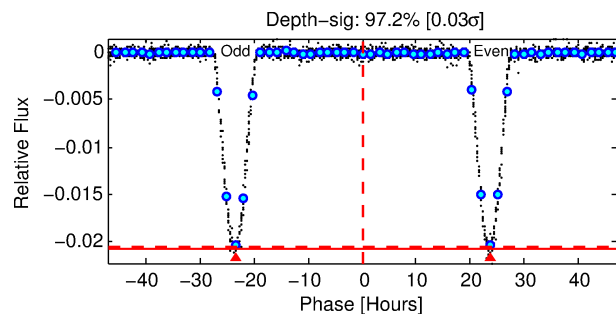
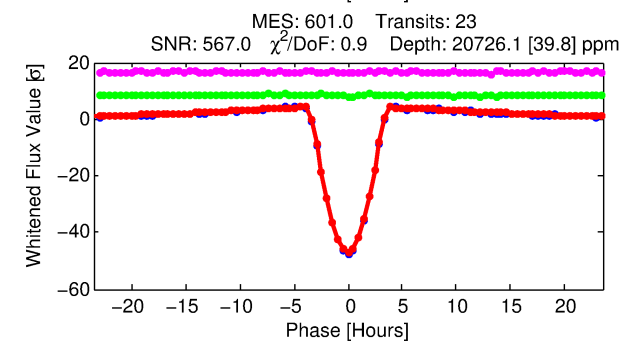
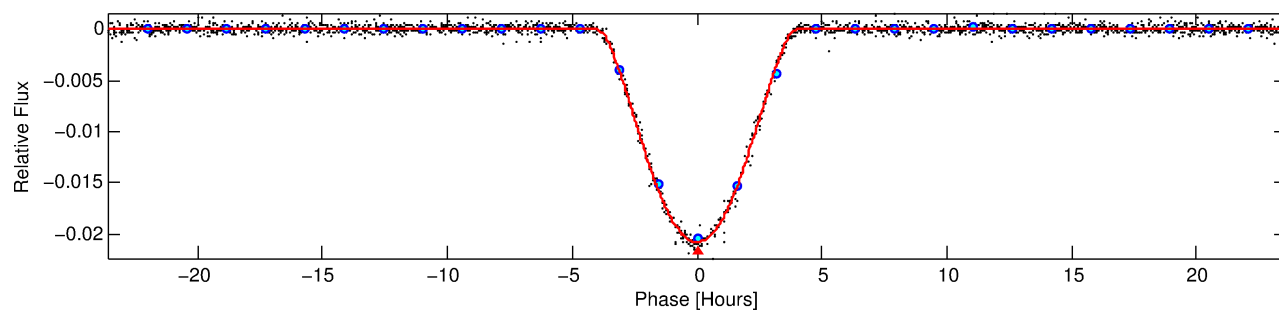
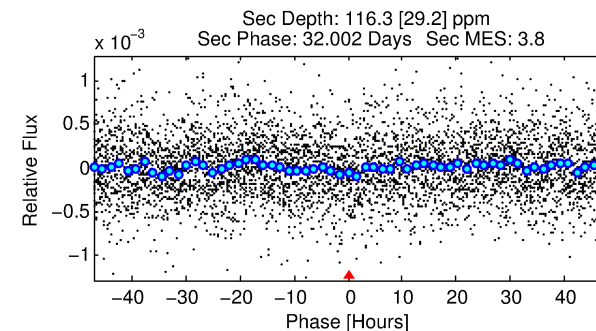
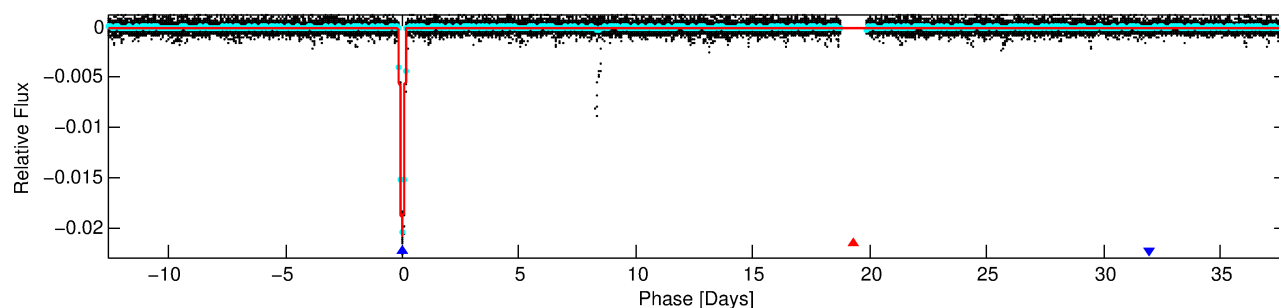
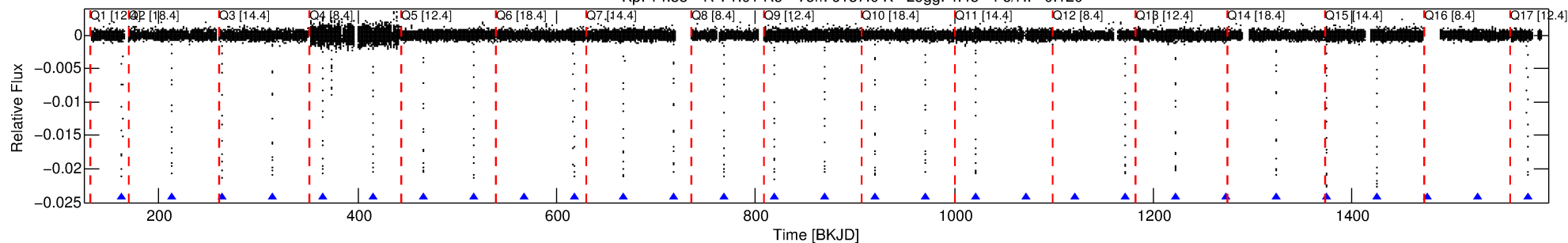
## Ephemeris Match Information For 010462826-02

No Significant Match Found

# DV One-Page Summary

KIC: 10462826 Candidate: 2 of 2 Period: 50.467 d  
KOI: K07329 Corr: No Ephemeris Match

Kp: 14.88 R\*: 1.01 Rs Teff: 6137.0 K Logg: 4.45 Fe/H: -0.120



## DV Fit Results:

Period = 50.46698 [0.00002] d  
Epoch = 163.1556 [0.0003] BKJD  
Rp/R\* = 0.2137 [0.0150]  
a/R\* = 35.38 [0.31]  
b = 0.98 [0.02]  
Seff = 17.65 [7.38]  
Teq = 523 [55] K  
Rp = 23.60 [8.12] Re  
a = 0.2715 [0.0751] AU  
Ag = 8.47 [4.12] [1.81σ]  
Teffp = 1378 [111] K [6.94σ]

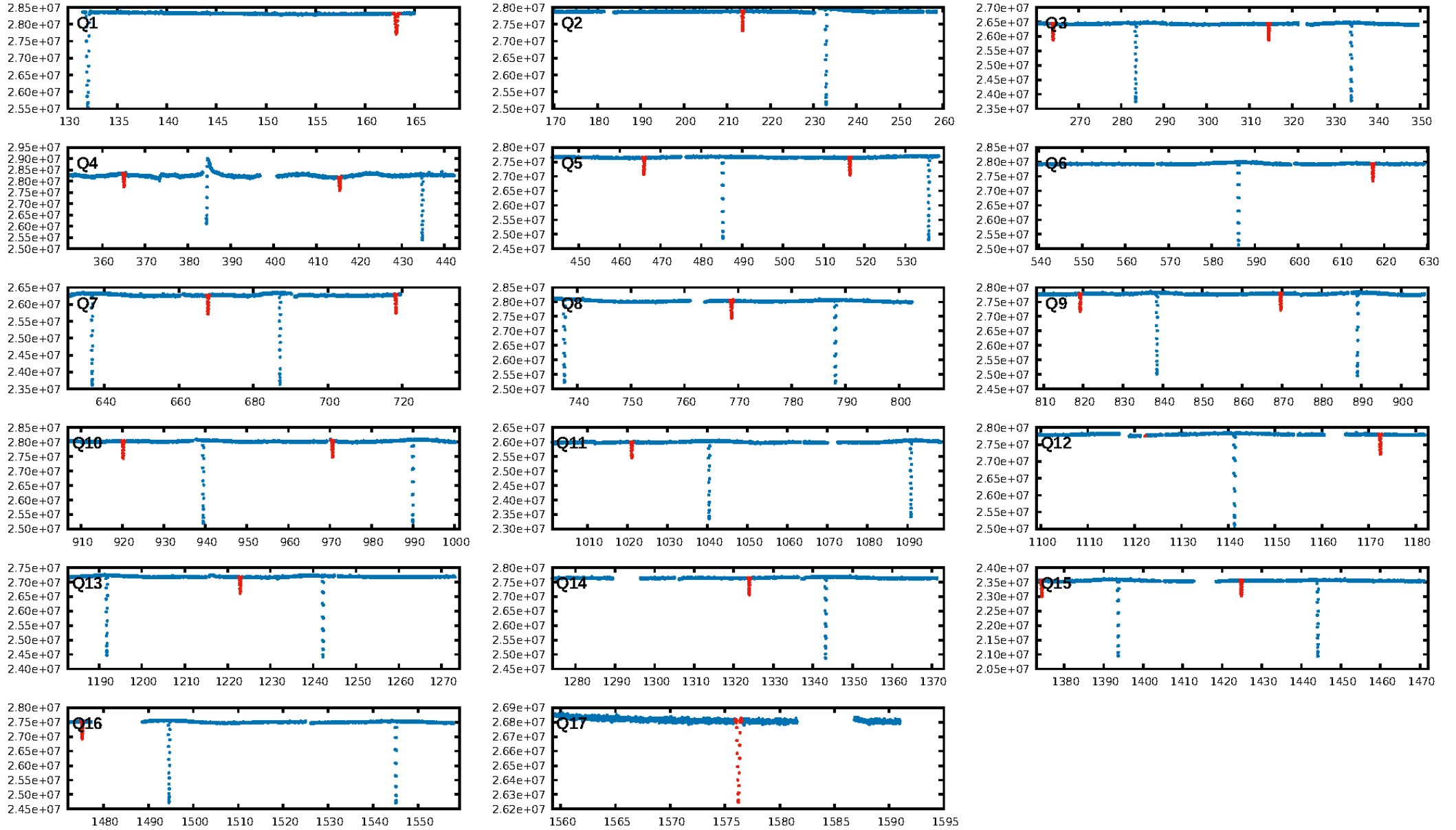
## DV Diagnostic Results:

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 [21/21]  
GhostDiagnostic-chr: 6.497  
Centroid-sig: 0.0%  
Centroid-so: 0.102 arcsec [5.80σ]  
OotOffset-rm: 0.040 arcsec [0.60σ]  
KicOffset-rm: 0.158 arcsec [2.31σ]  
OotOffset-st: 4/3/2/5 [14]  
KicOffset-st: 4/3/2/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

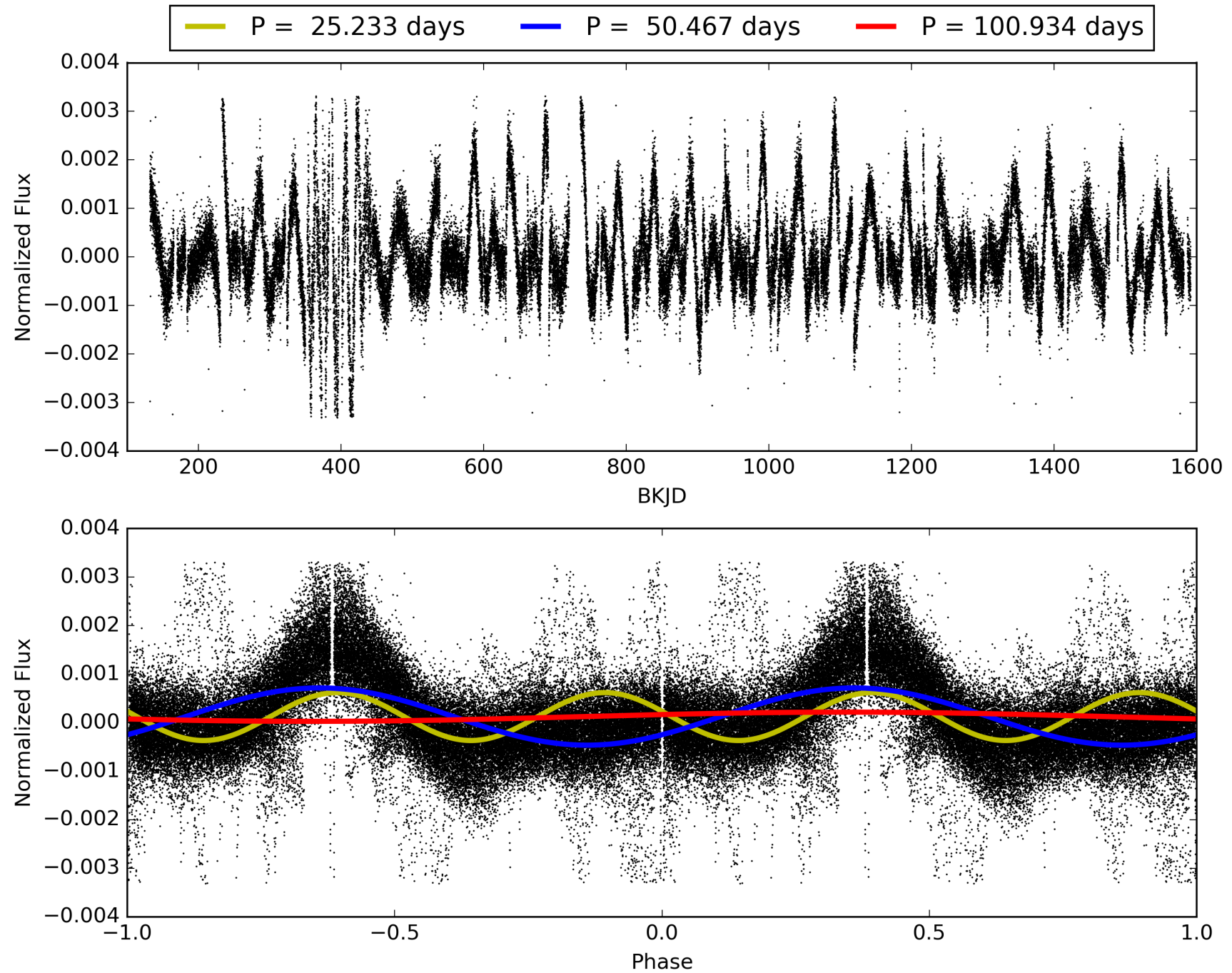
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010462826-02, PDC Light Curves



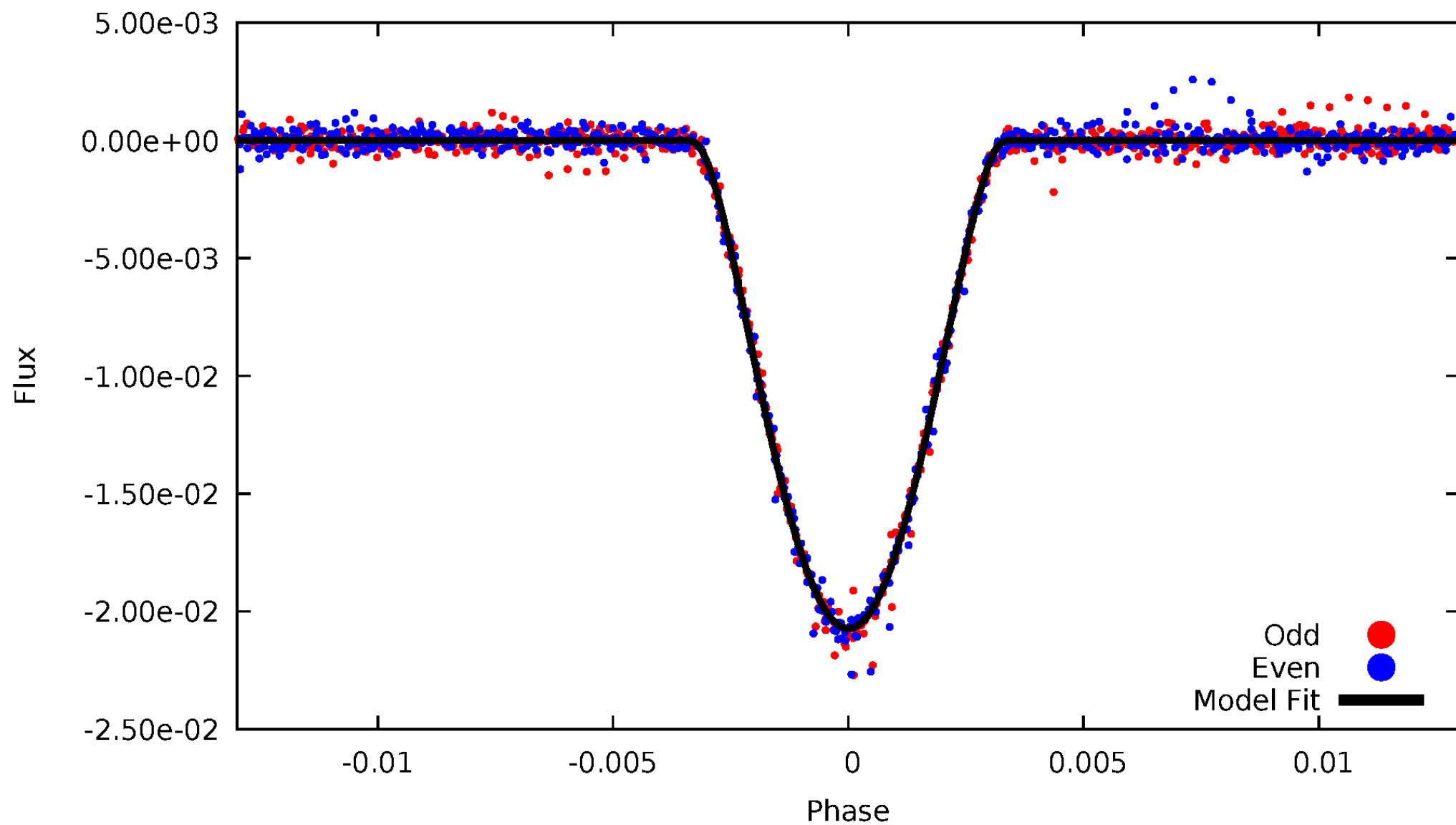
# TCE 010462826-02





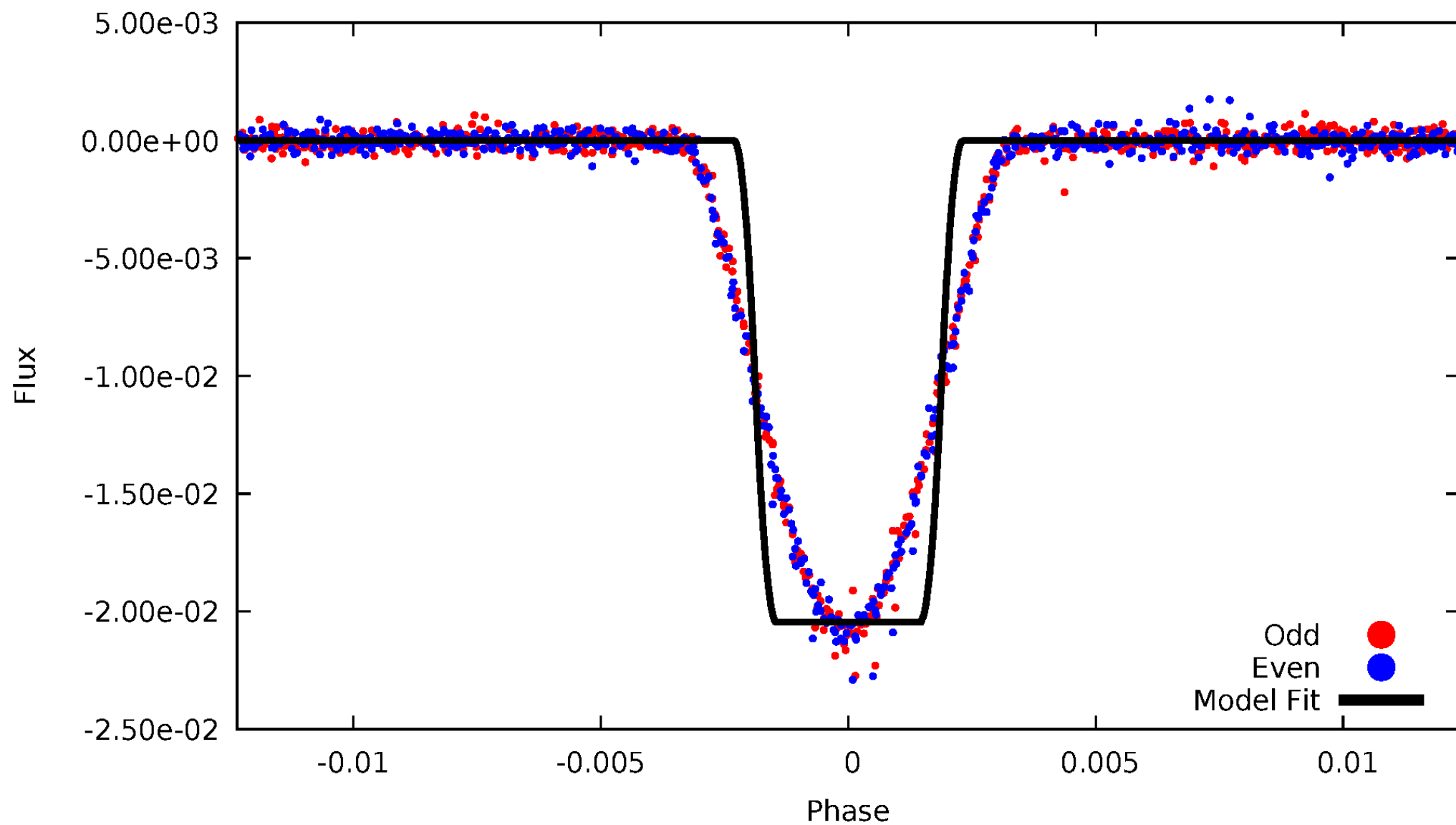
# DV Odd/Even

TCE 010462826-02



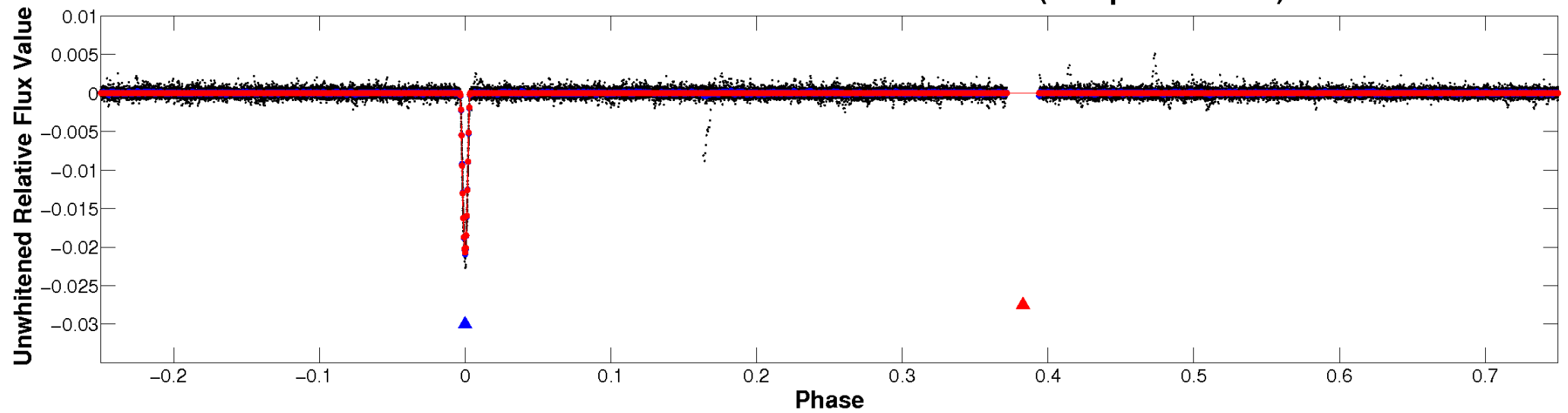
# ALT Odd/Even

TCE 010462826-02

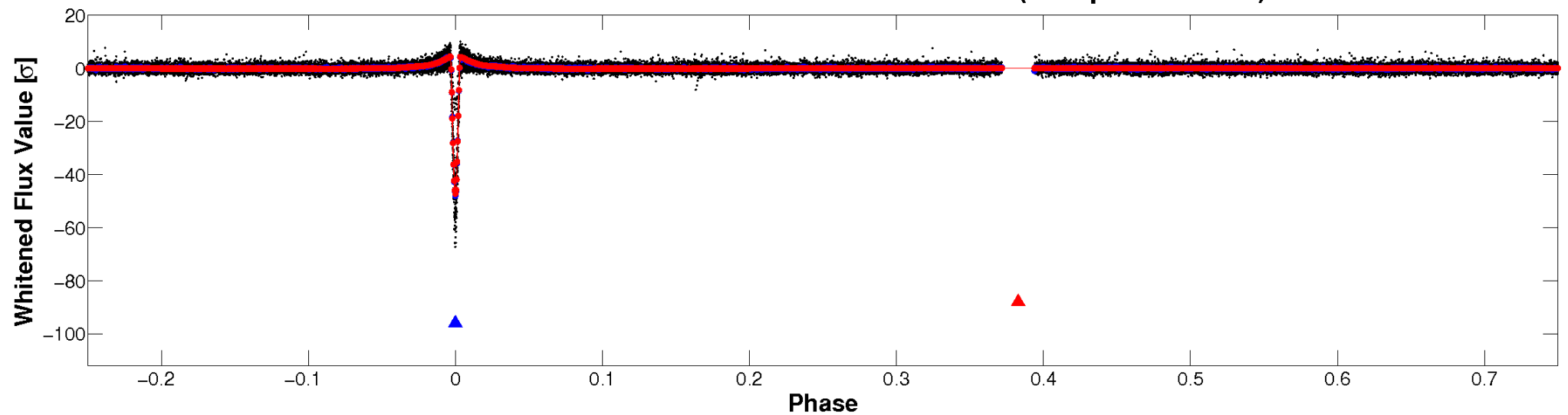


# Non-Whitened Vs. Whitened Light Curve

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

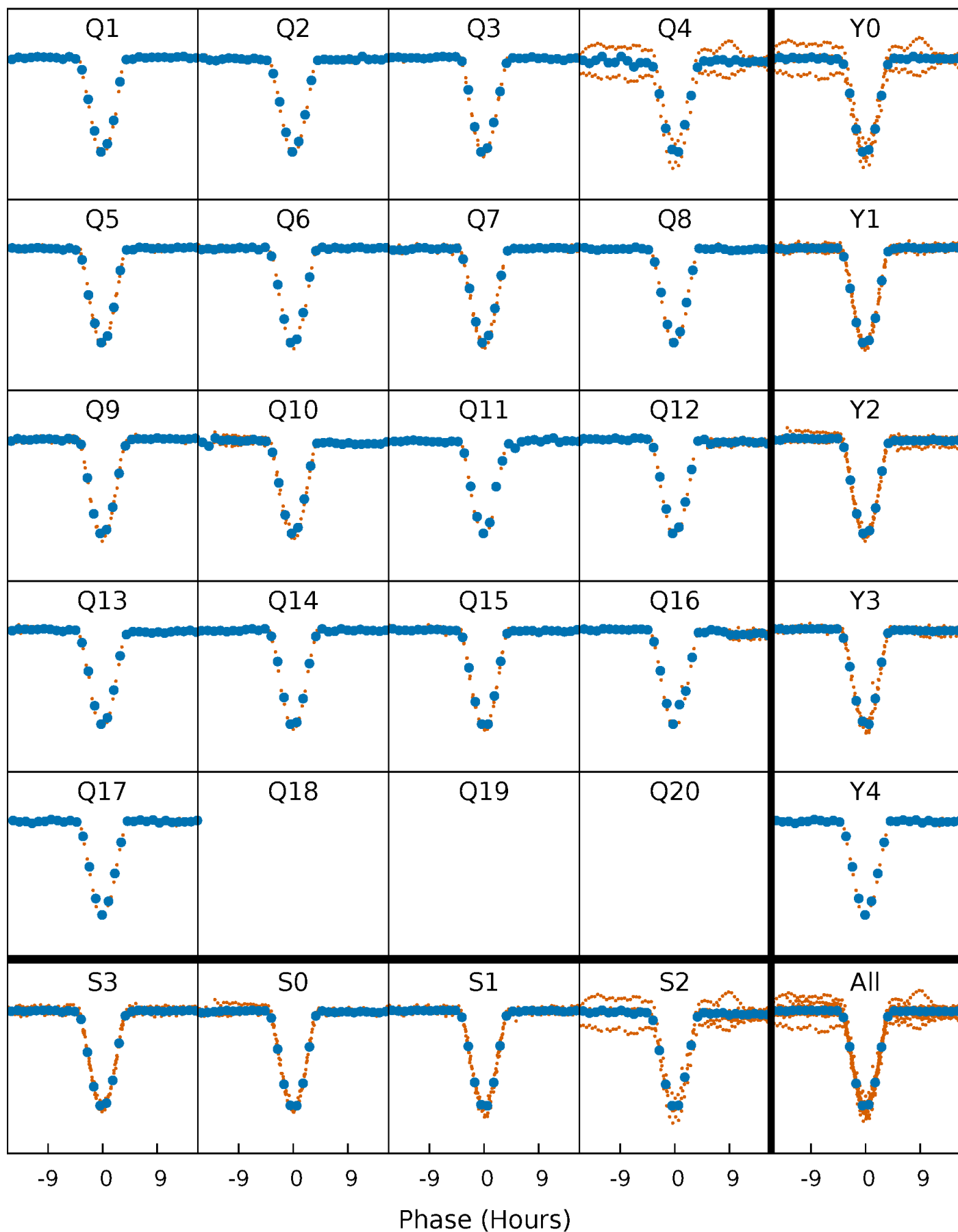


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



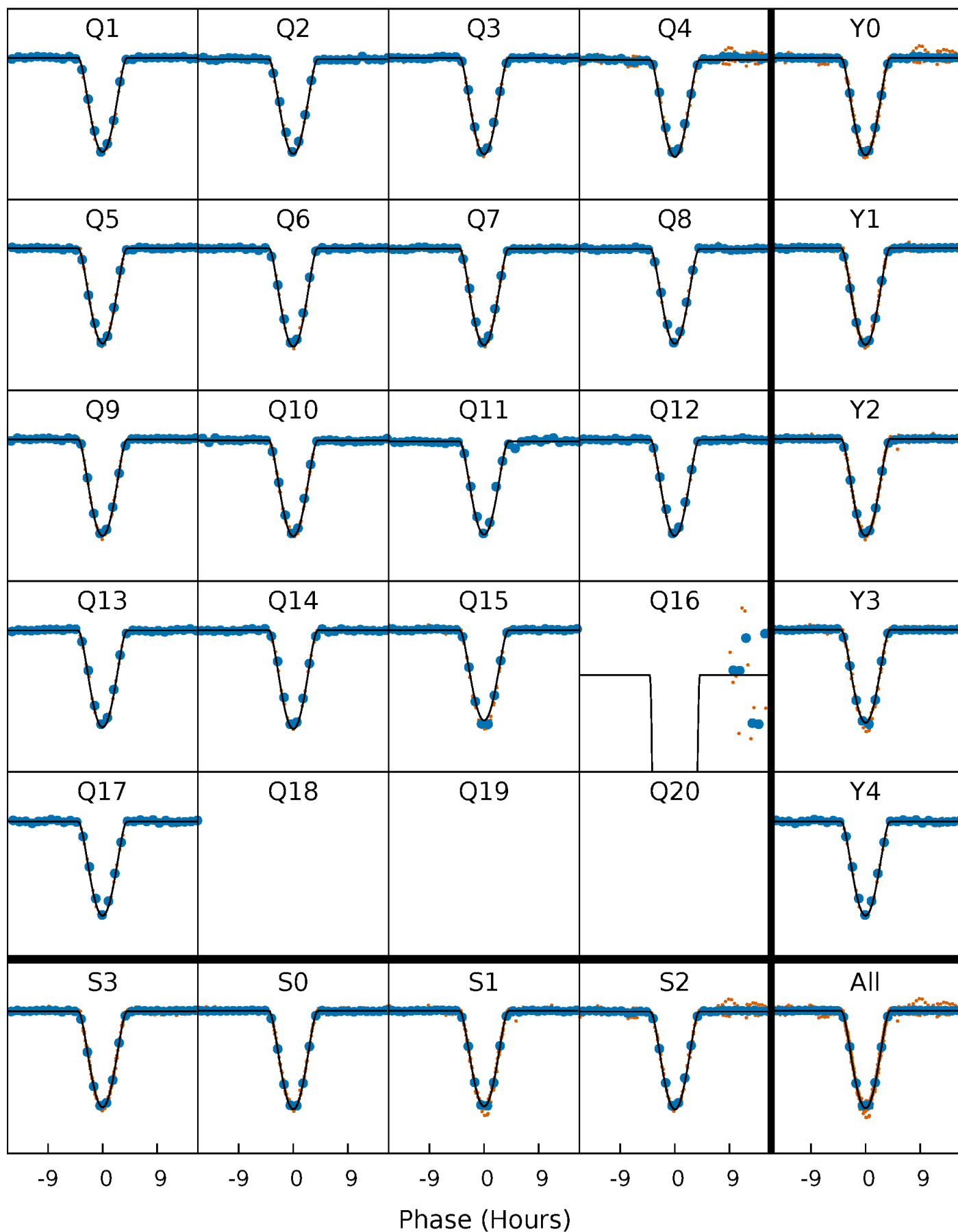
# PDC Quarter-Phased Transit Curves

TCE 010462826-02     $P = 50.466977$  Days     $T_0 = 163.155597$  (BKJD)



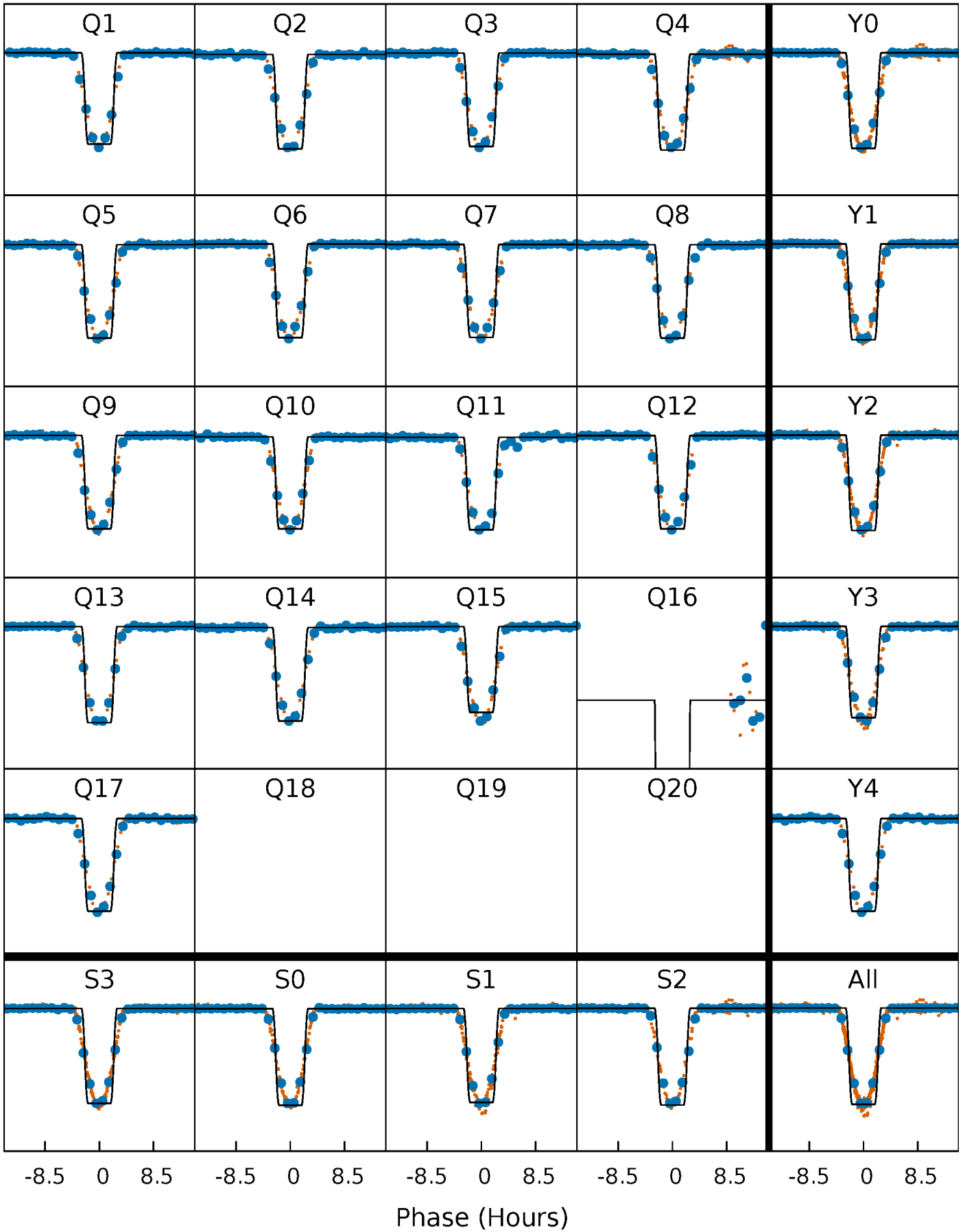
# DV Quarter-Phased Transit Curves

TCE 010462826-02     $P = 50.466977$  Days     $T_0 = 163.155597$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

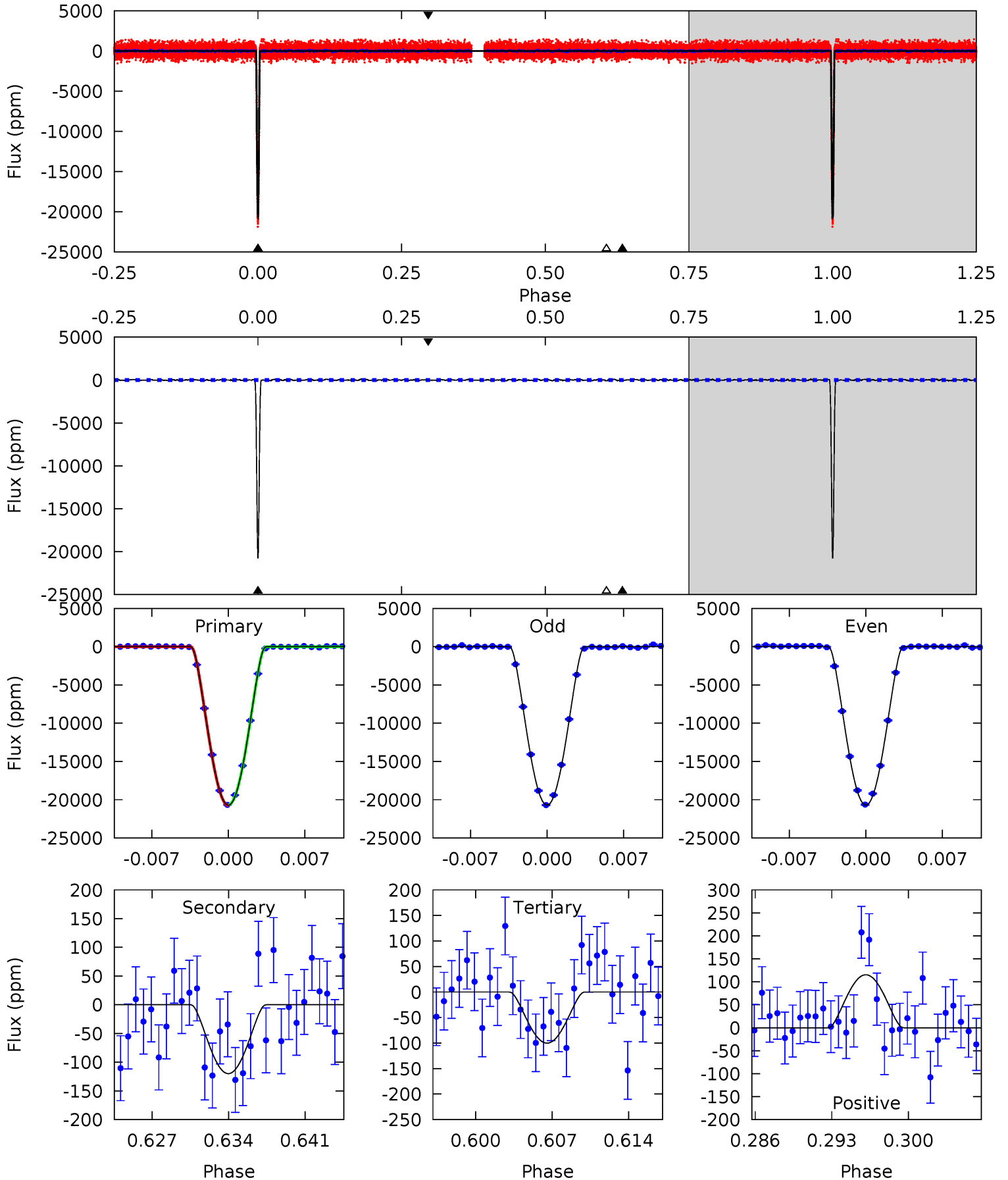
TCE 010462826-02   P= 50.466877 Days    $T_0=163.156913$  (BKJD)



# DV Model-Shift Uniqueness Test

010462826-02, P = 50.466977 Days, E = 112.688620 Days

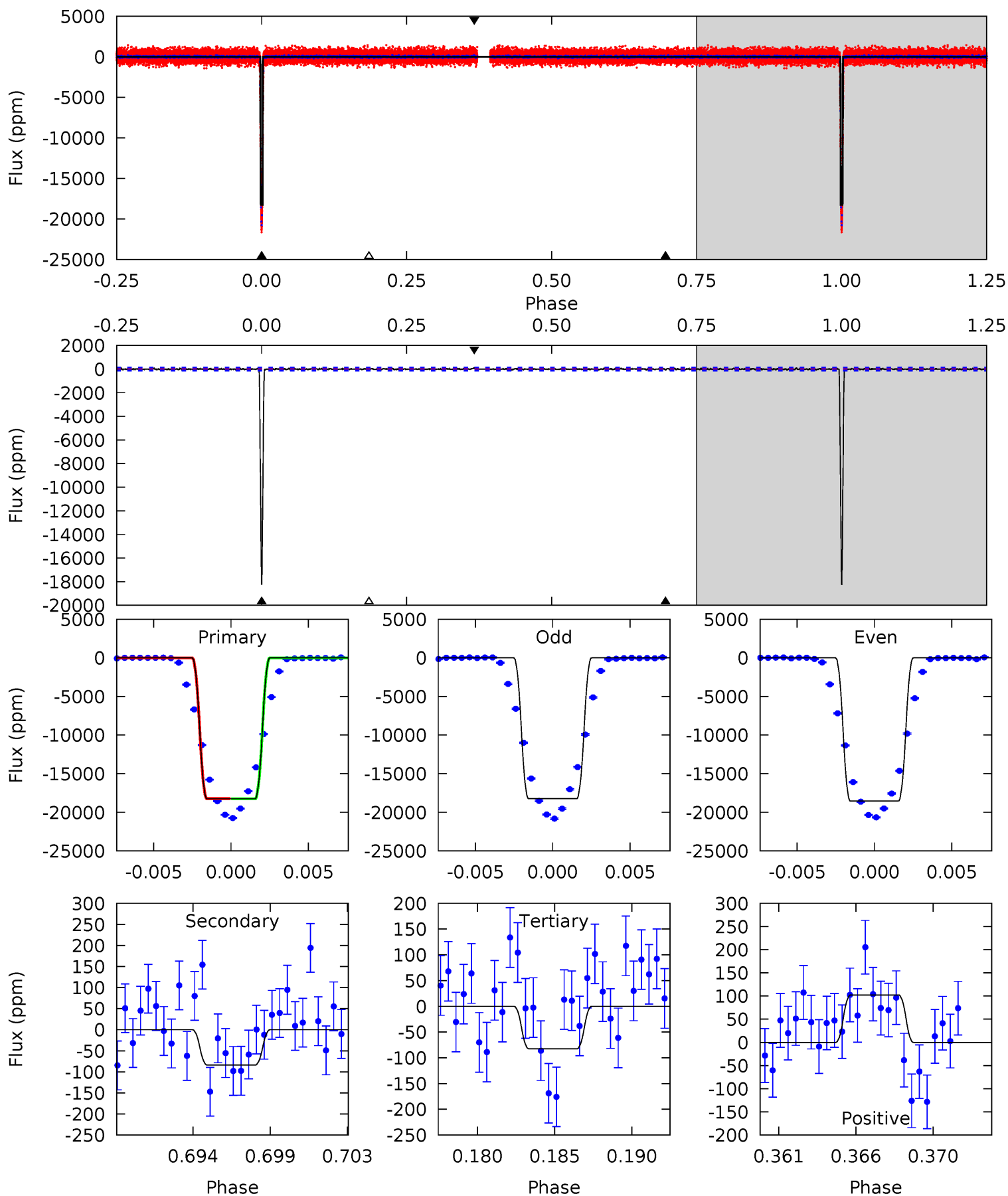
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1107	6.41	5.35	6.17	5.10	2.71	1.87	1102	1101	1.06	0.25	0.03	1.01	0.01	2.32



# Alt Model-Shift Uniqueness Test

010462826-02, P = 50.466877 Days, E = 112.690036 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
790.0	3.63	3.57	4.42	5.17	2.83	1.06	786.4	785.6	0.06	-0.79	6.50	1.01	0.01	0.71





### Stellar Parameters For KIC 010462826

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6137^{+184}_{-220}$	$4.448^{+0.070}_{-0.210}$	$-0.120^{+0.250}_{-0.350}$	$1.012^{+0.341}_{-0.114}$	$1.043^{+0.151}_{-0.135}$	$1.416^{+0.431}_{-0.779}$
	+3%/-4%	+2%/-5%	+208%/-292%	+34%/-11%	+14%/-13%	+30%/-55%
Source	PHO1	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 010462826-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-120 \pm 19$	$24.19^{+4.46}_{-2.78}$	$742^{+58}_{-38}$	$2295^{+69}_{-61}$	$7.884^{+2.842}_{-2.210}$
Alt.	$-84 \pm 23$	$16.27^{+2.94}_{-2.23}$	$744^{+56}_{-39}$	$2428^{+105}_{-118}$	$12^{+6}_{-5}$

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

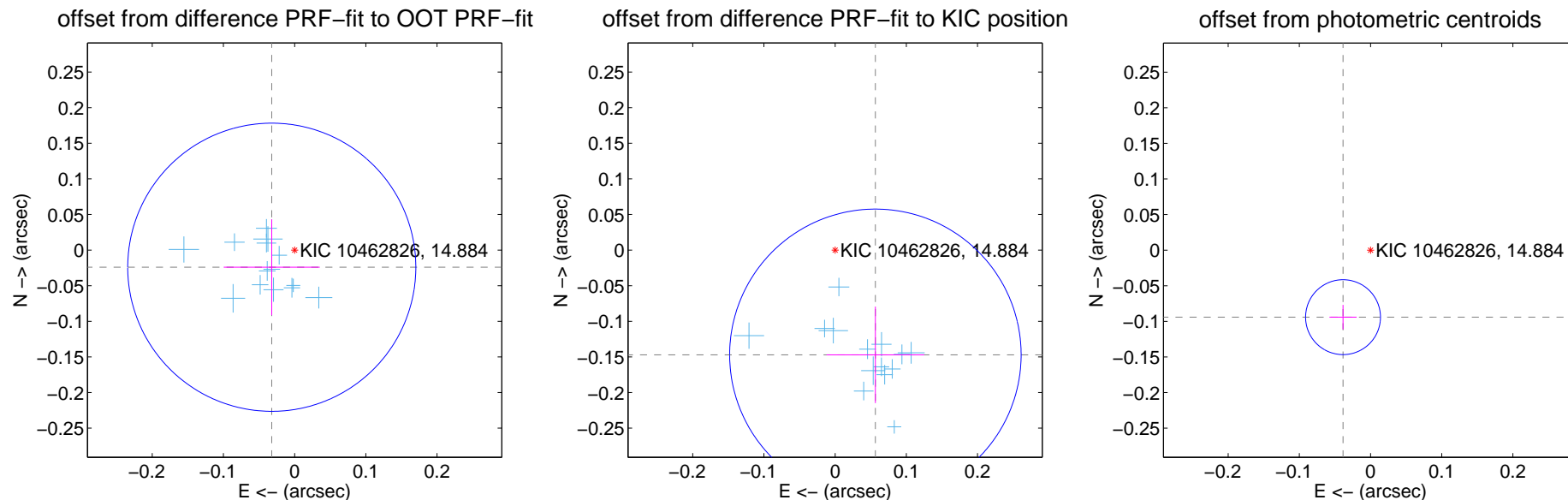
## DV Centroid Data

Supplemental centroid analysis for 010462826-02. Kepler magnitude: 14.88. Transit SNR 567.05

There are 14 quarters with good PRF difference image offsets

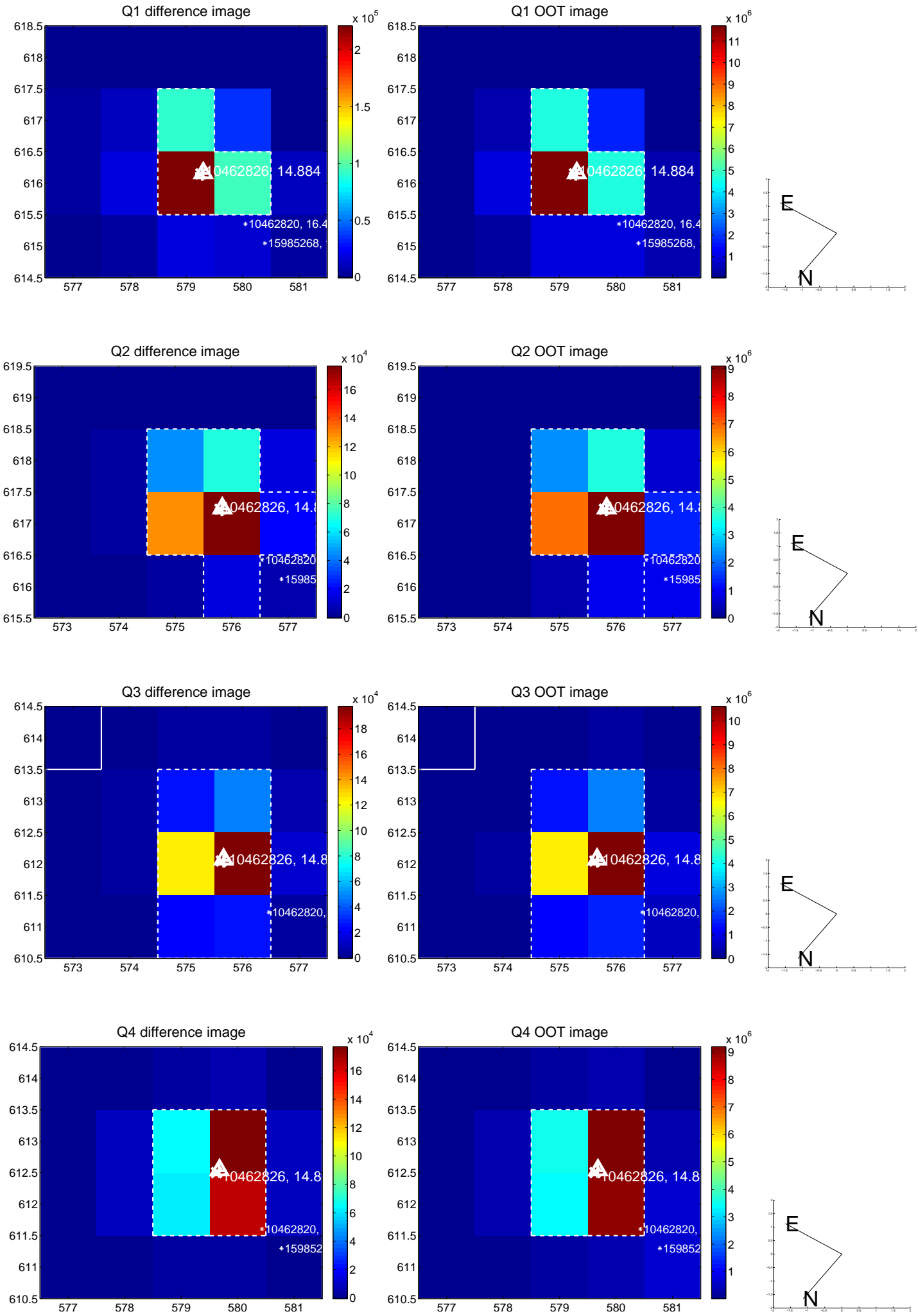
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.040 \pm 0.067$	0.60	$0.032 \pm 0.067$	$-0.024 \pm 0.067$
PRF-fit source offset from KIC position	$0.158 \pm 0.068$	2.31	$-0.057 \pm 0.068$	$-0.147 \pm 0.068$
photometric centroid source offset	$0.10 \pm 0.02$	5.80	$0.04 \pm 0.02$	$-0.09 \pm 0.02$

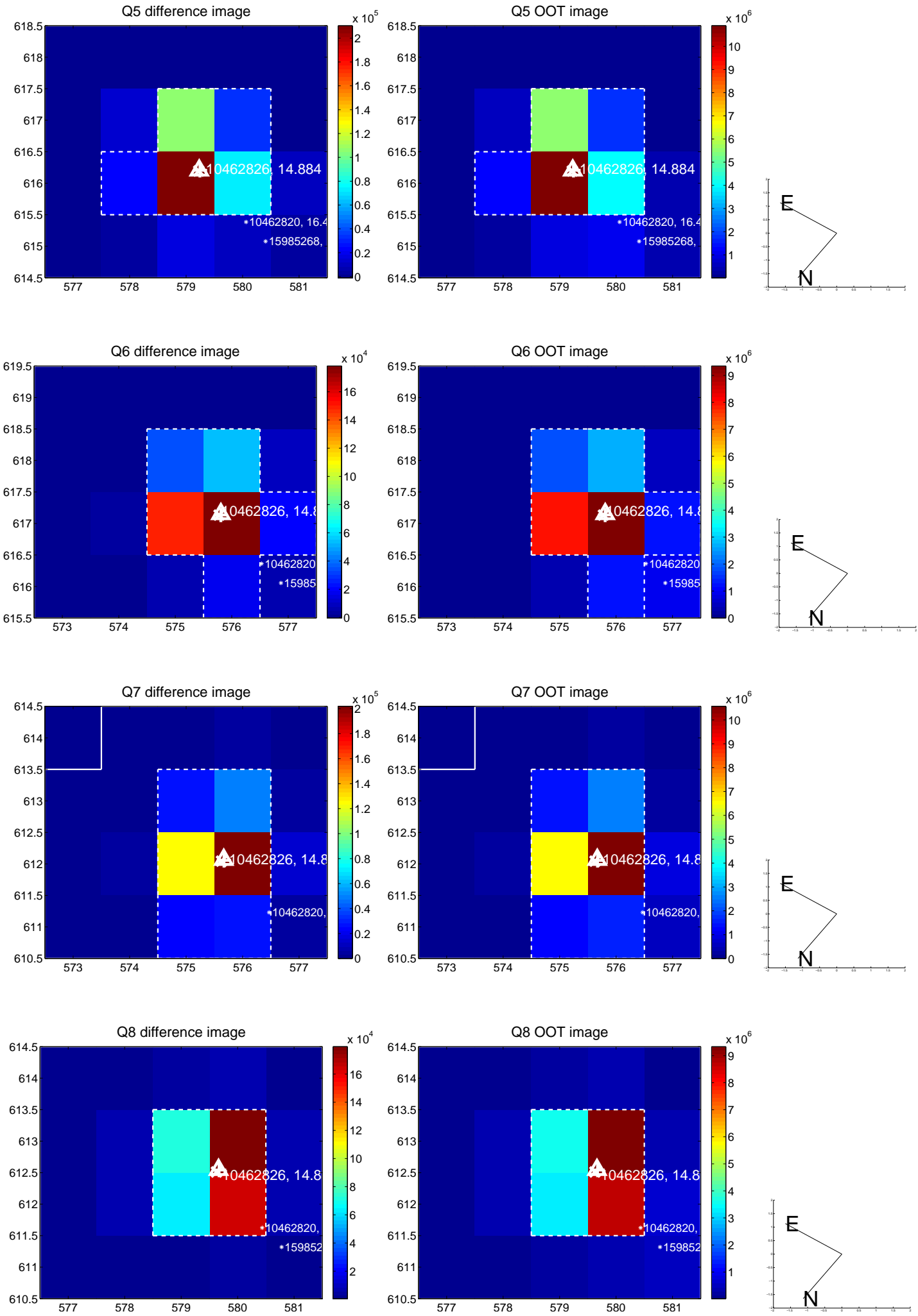


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

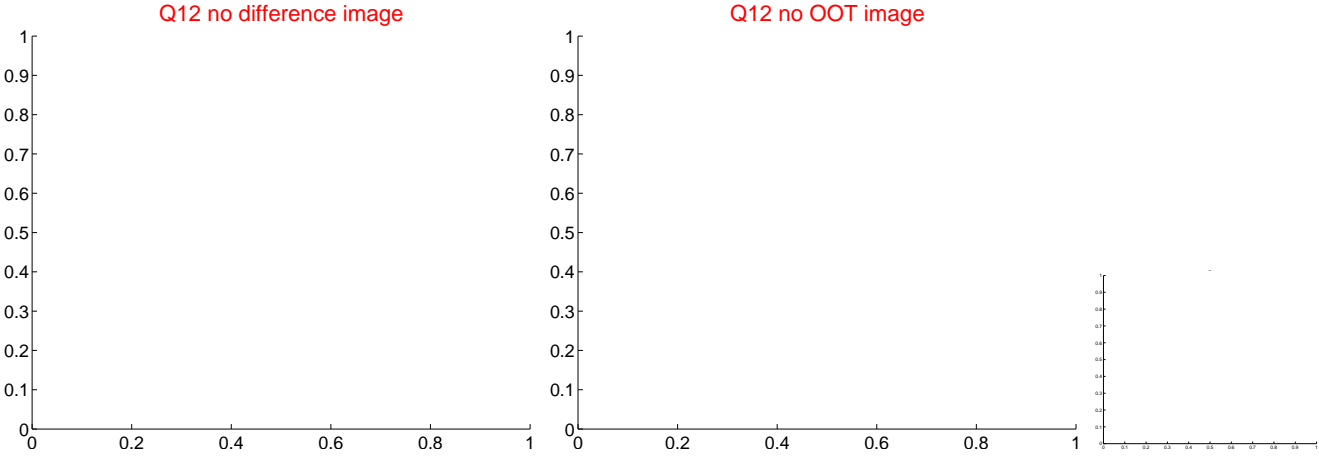
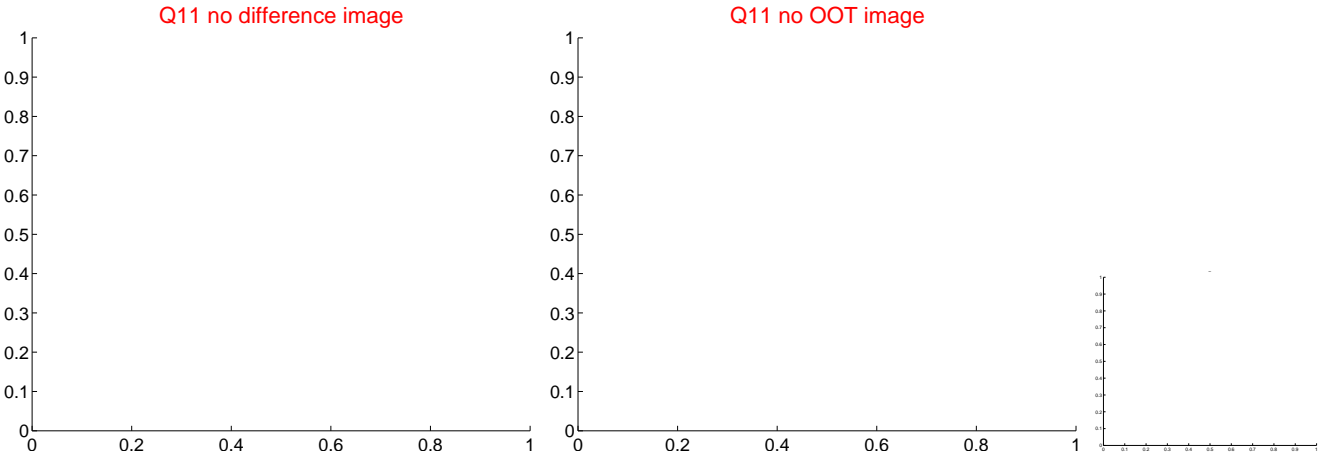
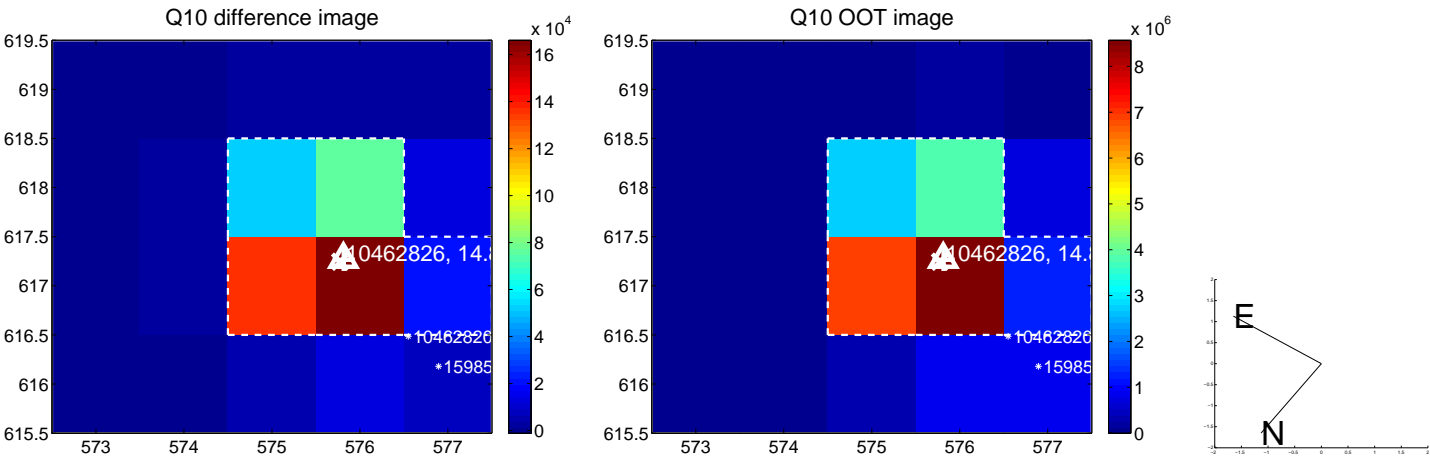
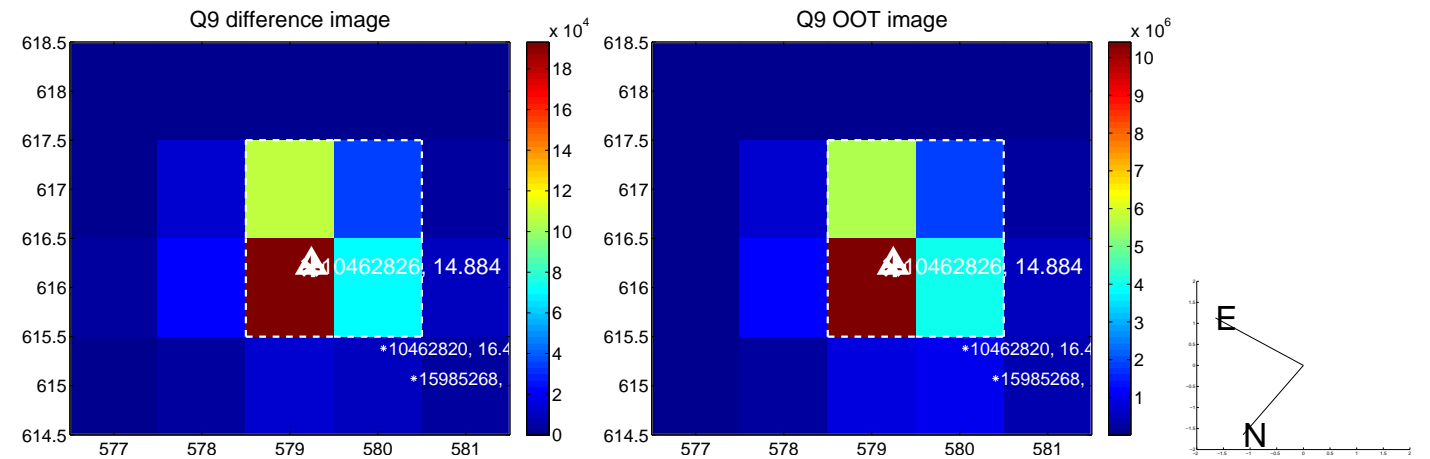
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



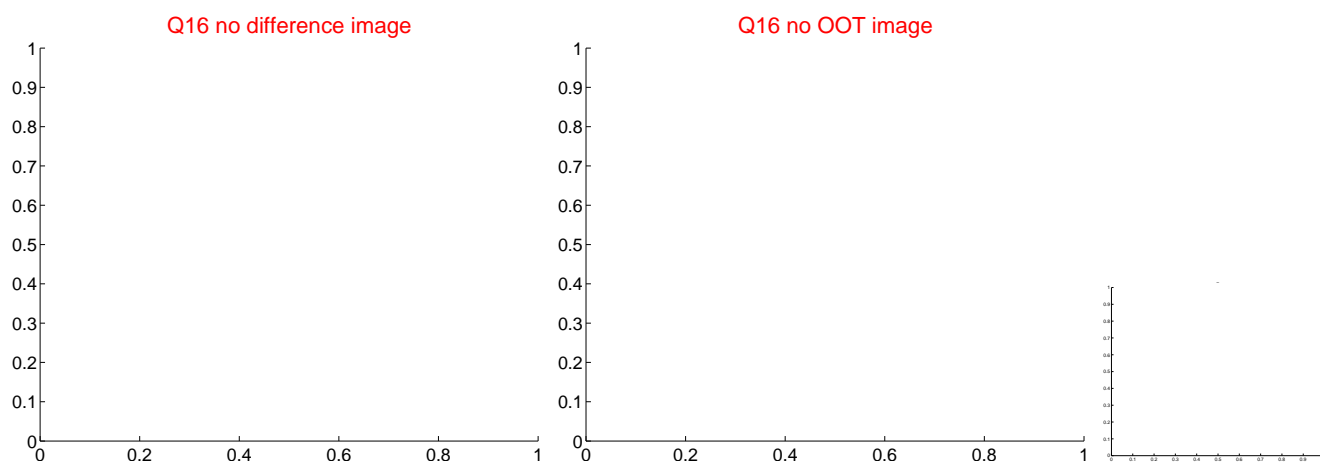
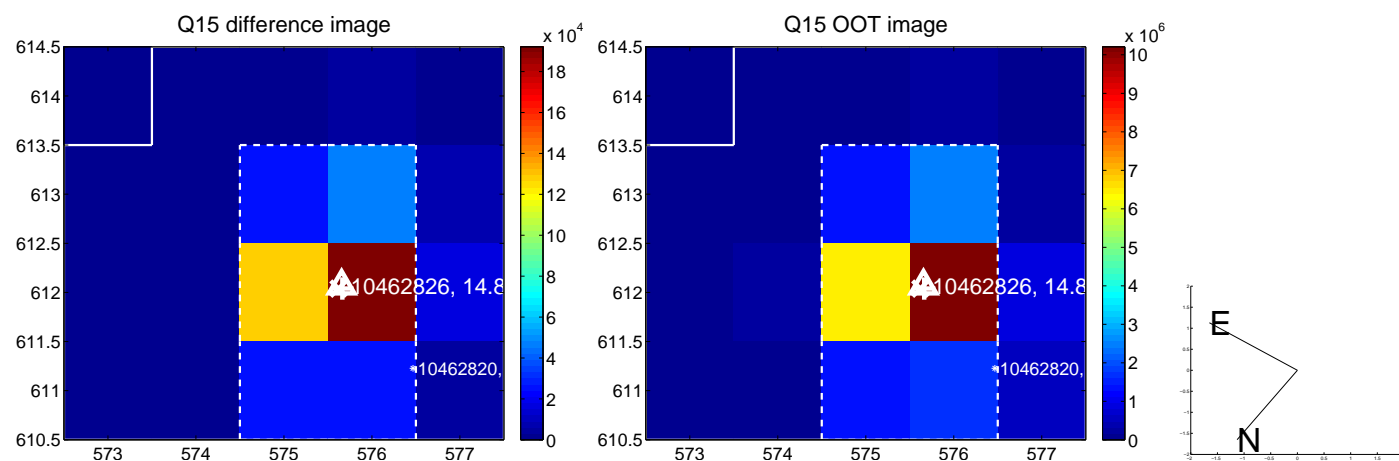
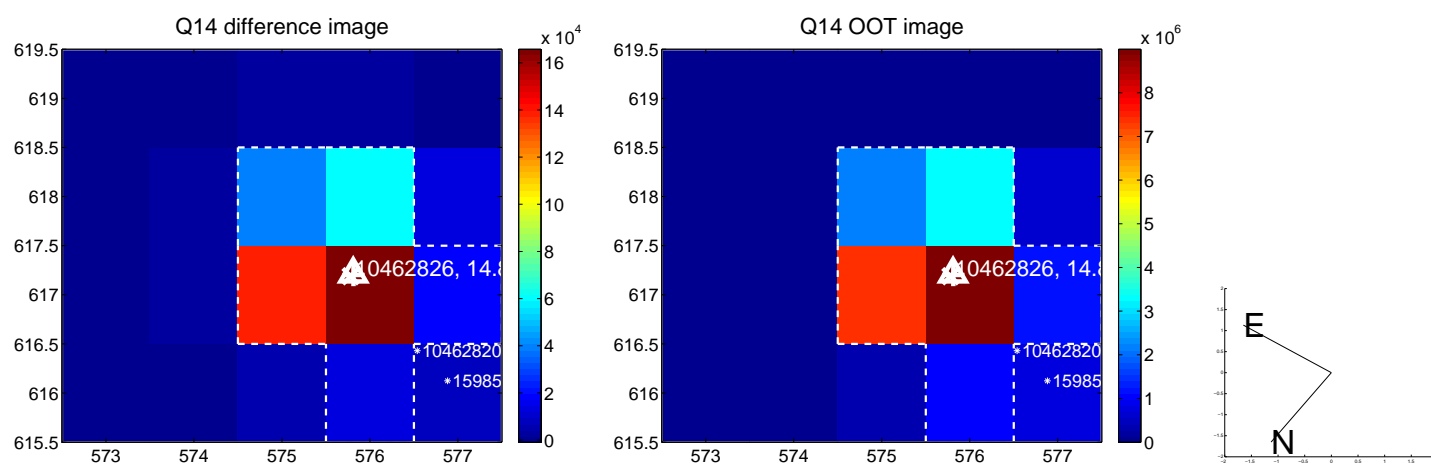
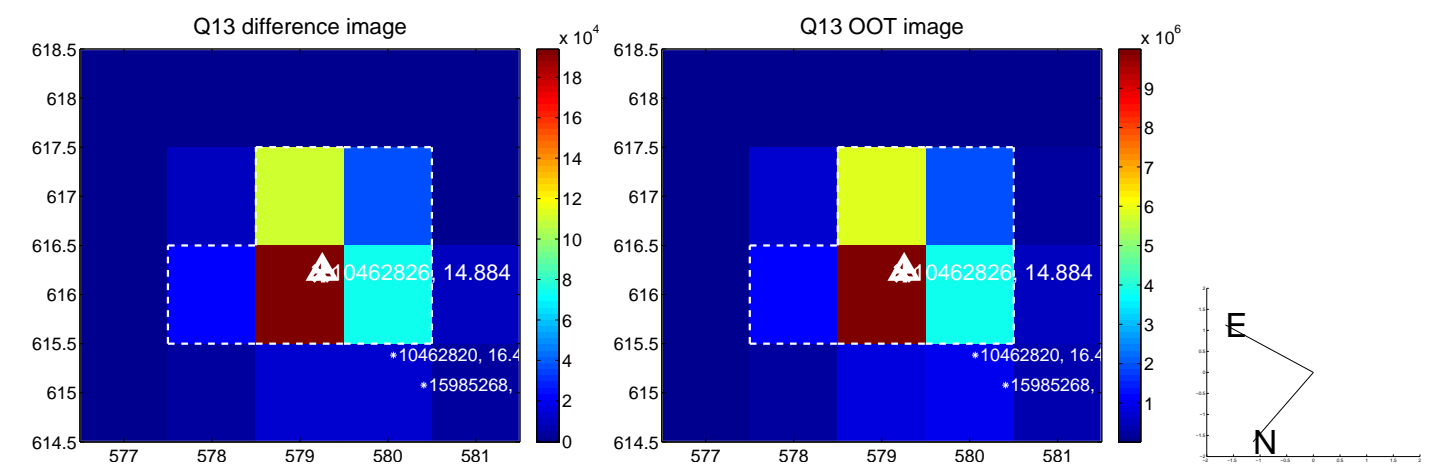
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



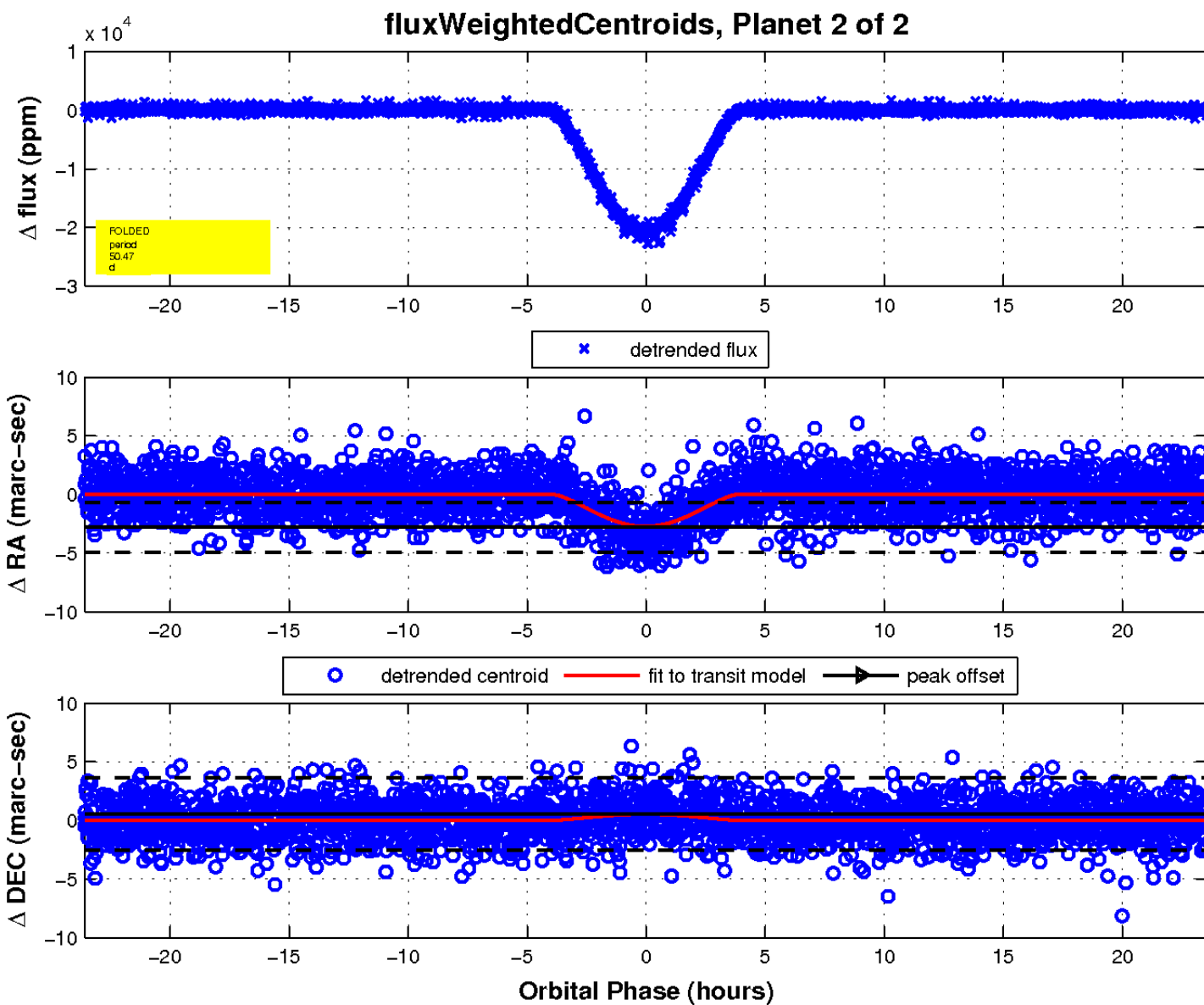
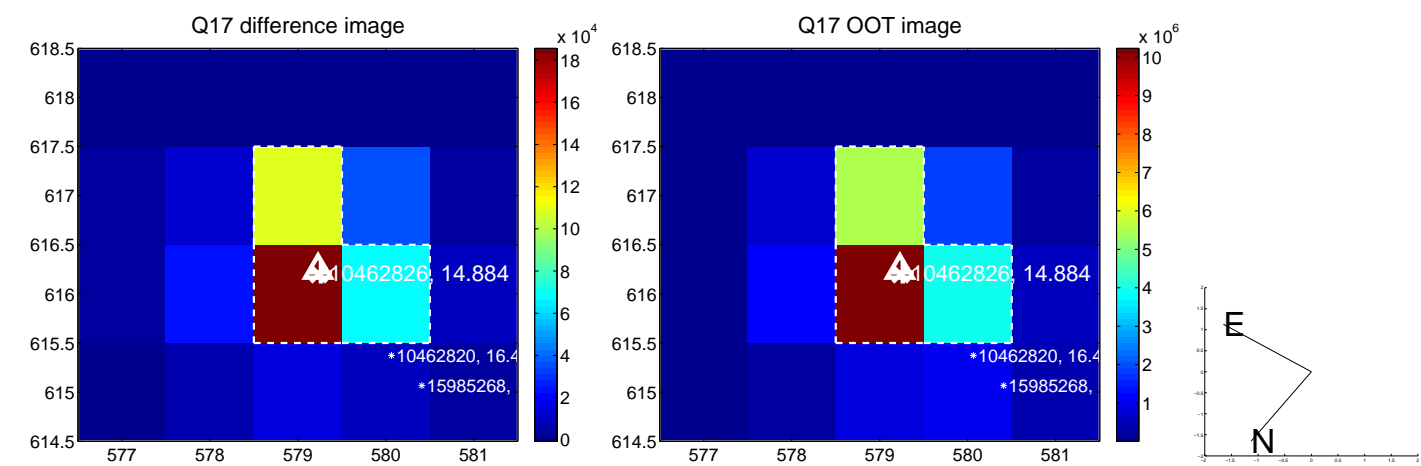
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UKIRT Image

Declination

