

# KIC 005077629

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005077629-01	OBS	0822.01	7.919371	132.584032	15143.4	3.358	385.4	367.7	0.78	5690	10.44	104.15
005077629-02	OBS	No	7.919190	136.561579	487.2	3.972	10.8	11.9	0.78	5690	2.46	104.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005077629-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005077629-02	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.

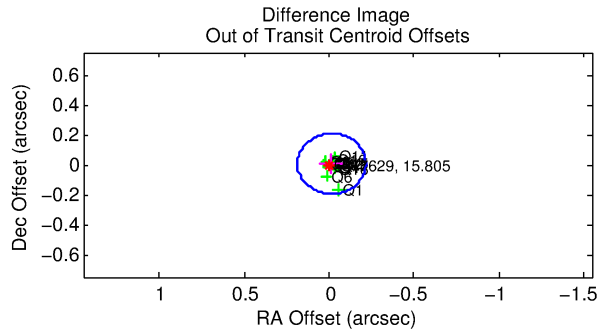
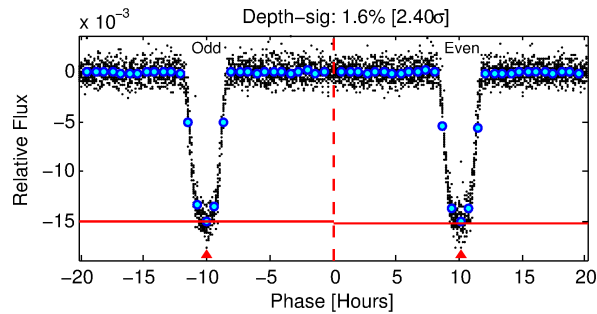
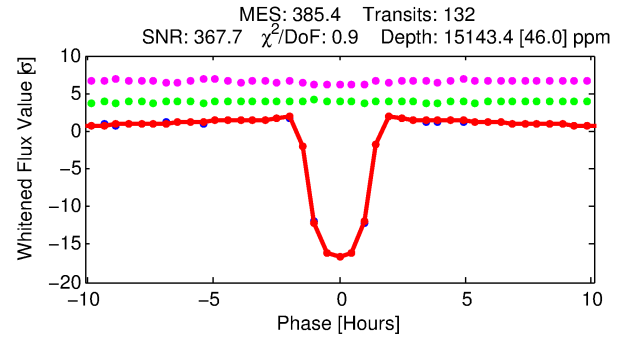
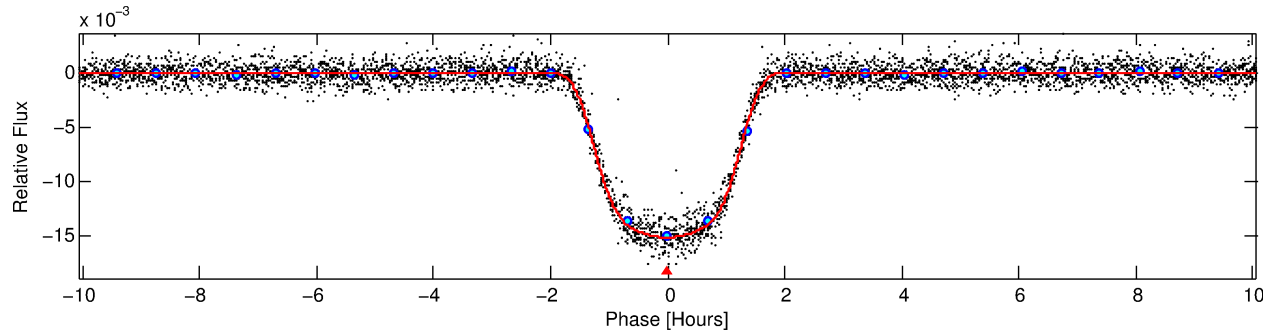
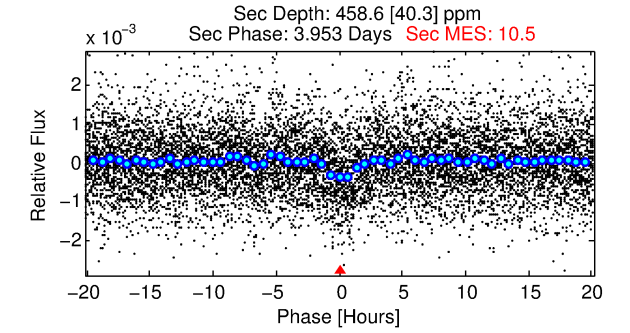
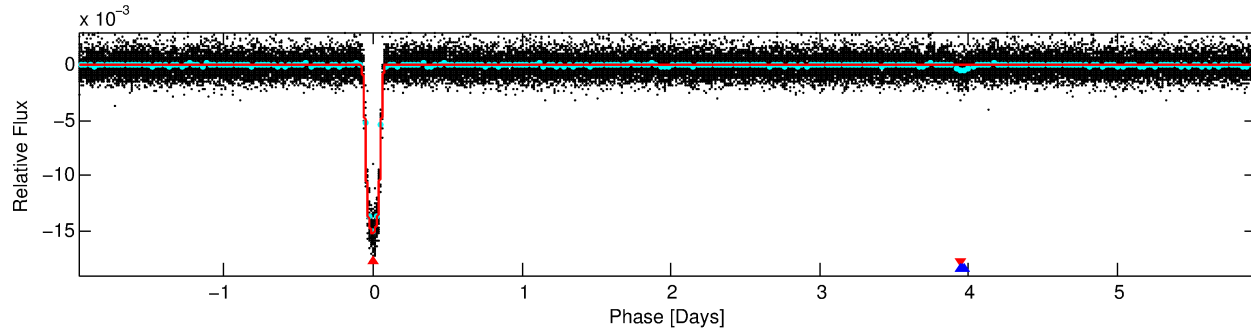
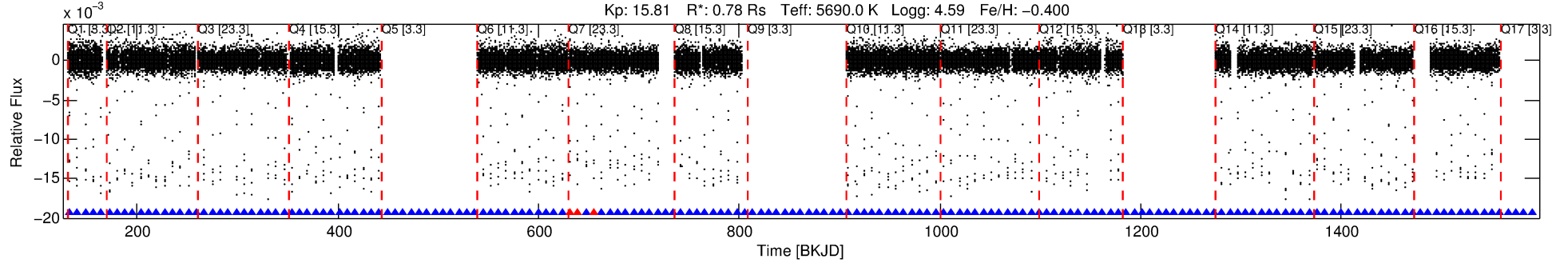
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005077629-01

No Significant Match Found

# DV One-Page Summary

KIC: 5077629 Candidate: 1 of 2 Period: 7.919 d  
KOI: K00822.01 Corr: 0.994



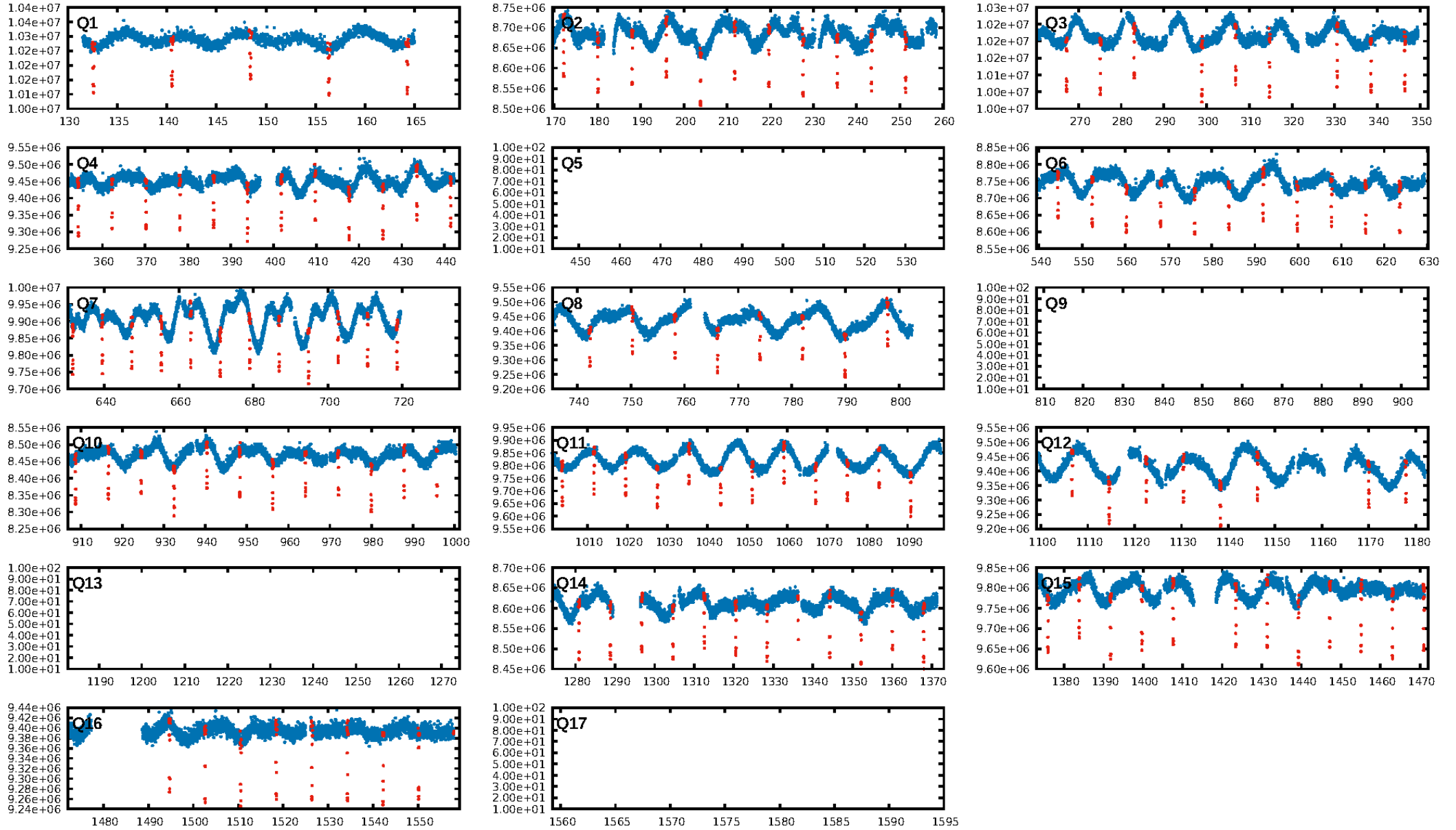
## DV Fit Results:

Period = 7.91937 [0.00000] d  
Epoch = 132.5840 [0.0002] BKJD  
Rp/R\* = 0.1233 [0.0004]  
a/R\* = 15.00 [0.17]  
b = 0.76 [0.01]  
Seff = 104.15 [33.43]  
Teq = 815 [65] K  
Rp = 10.44 [2.62] Re  
a = 0.0737 [0.0153] AU  
Ag = 12.57 [3.90] [2.97 $\sigma$ ]  
Teffp = 2371 [89] K [14.13 $\sigma$ ]

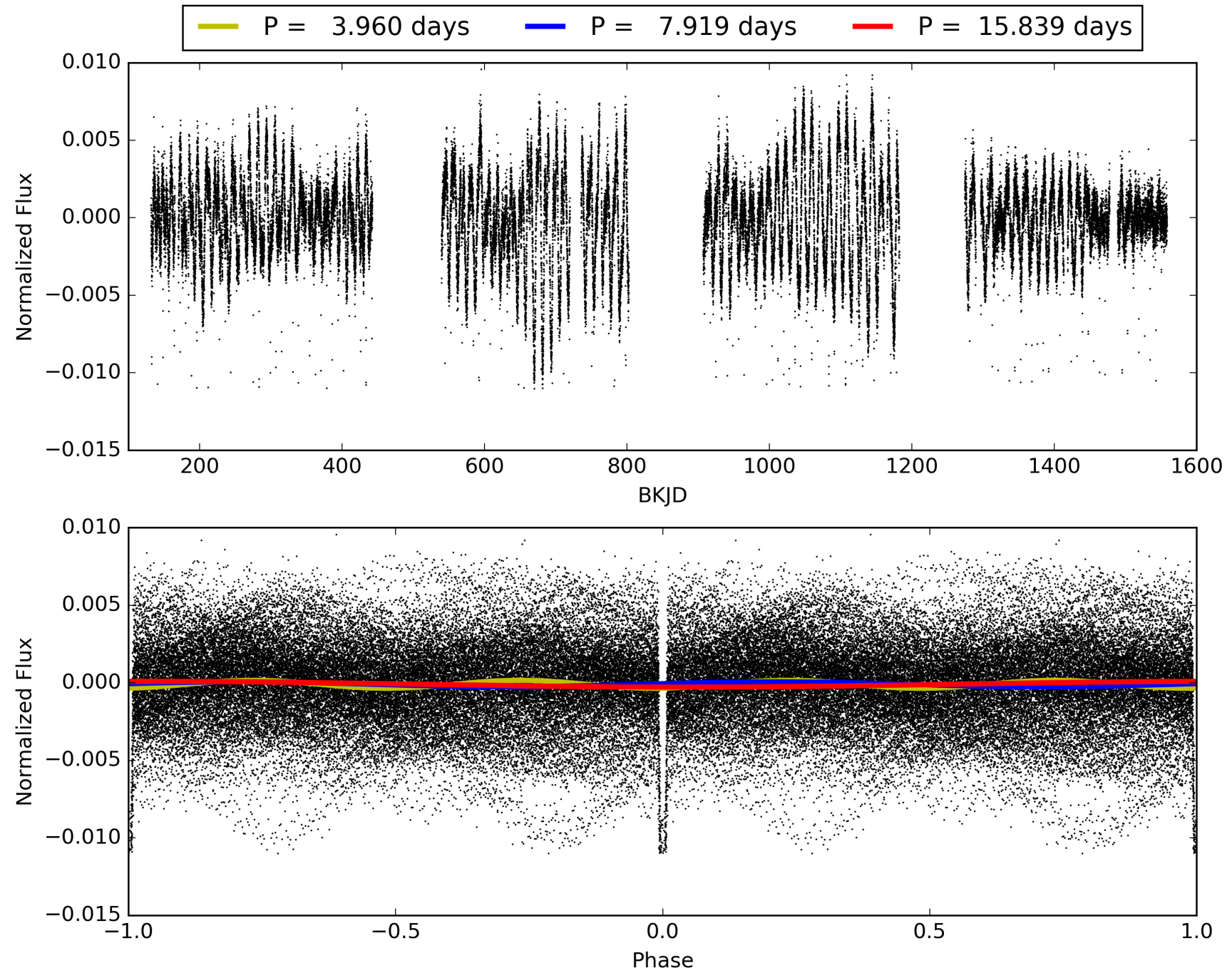
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.98 [124/127]  
GhostDiagnostic-chr: 3.449  
Centroid-sig: 0.0%  
Centroid-so: 0.442 arcsec [11.44 $\sigma$ ]  
OotOffset-rm: 0.016 arcsec [0.24 $\sigma$ ]  
KicOffset-rm: 0.070 arcsec [0.94 $\sigma$ ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 005077629-01, PDC Light Curves

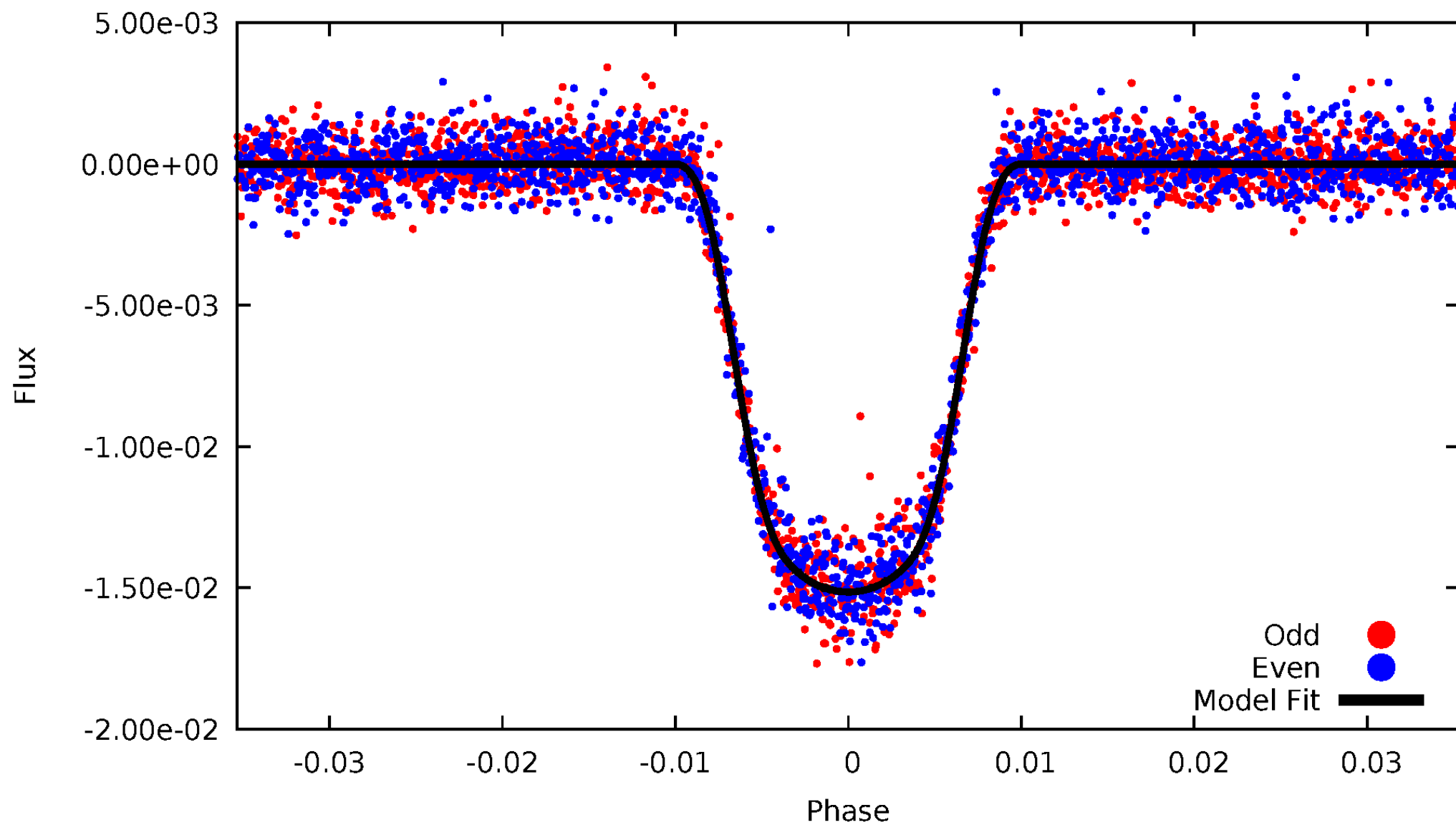


TCE 005077629-01



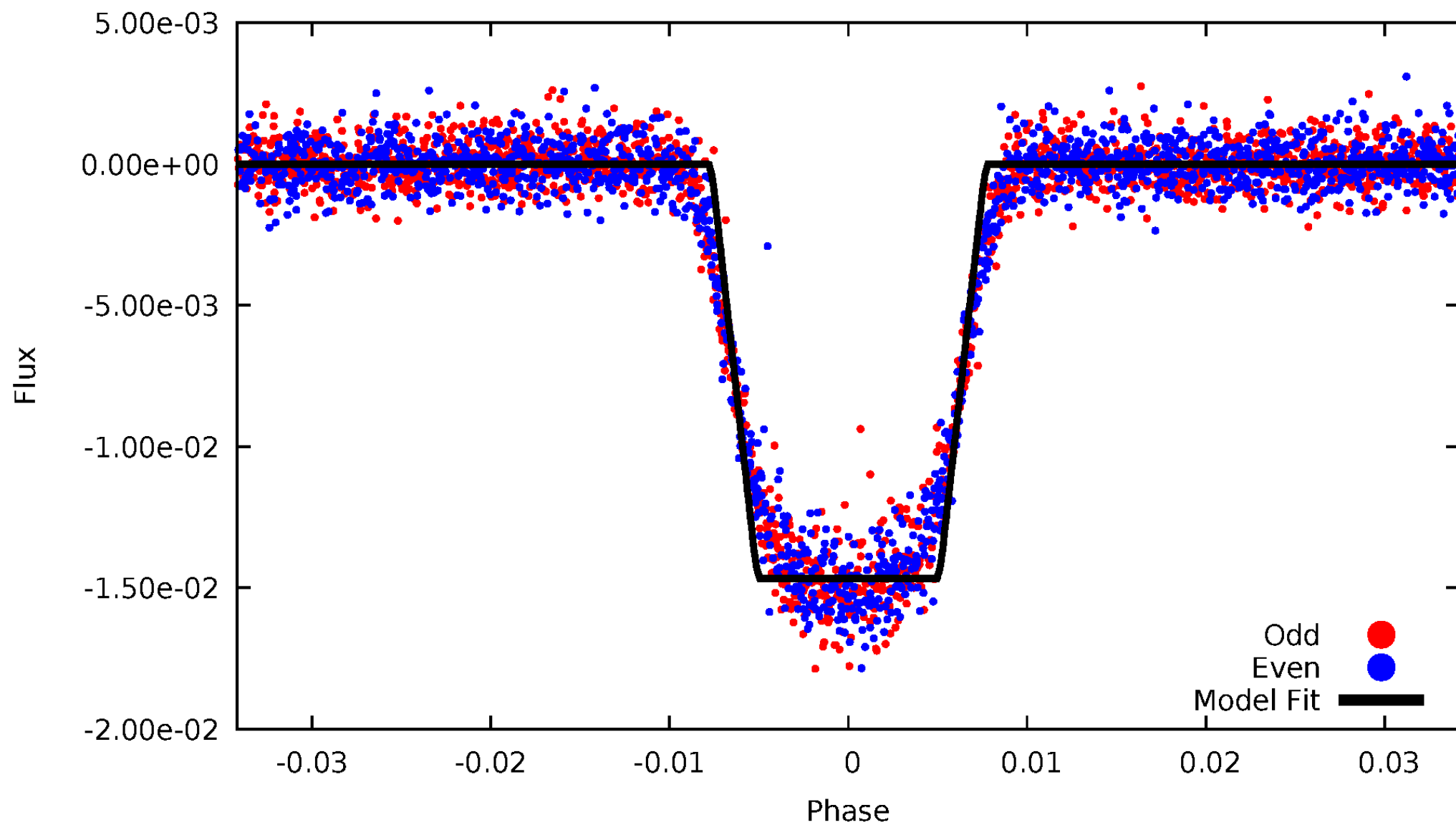
# DV Odd/Even

TCE 005077629-01



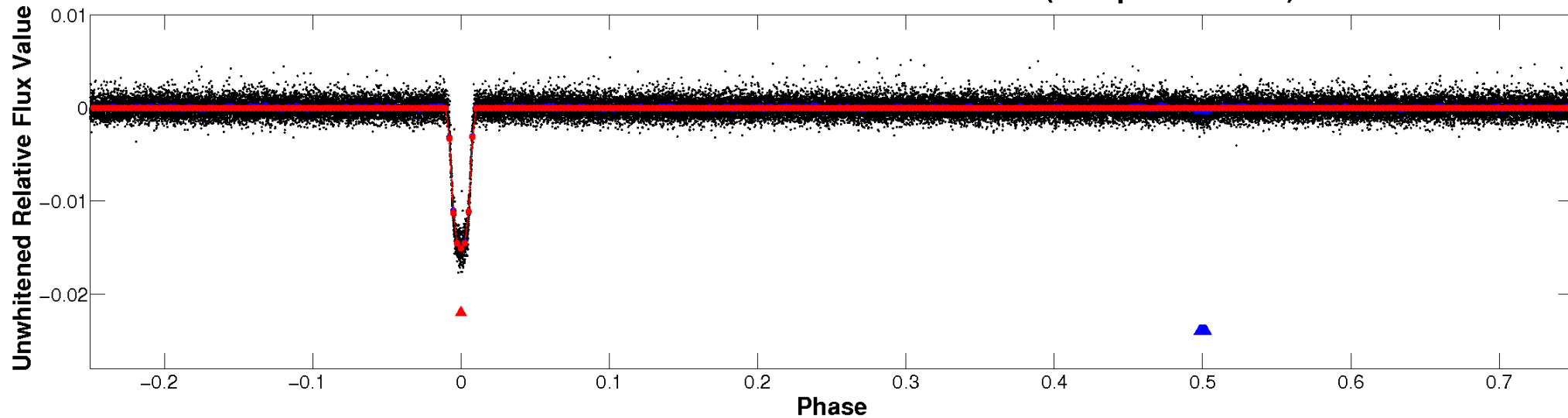
# ALT Odd/Even

TCE 005077629-01

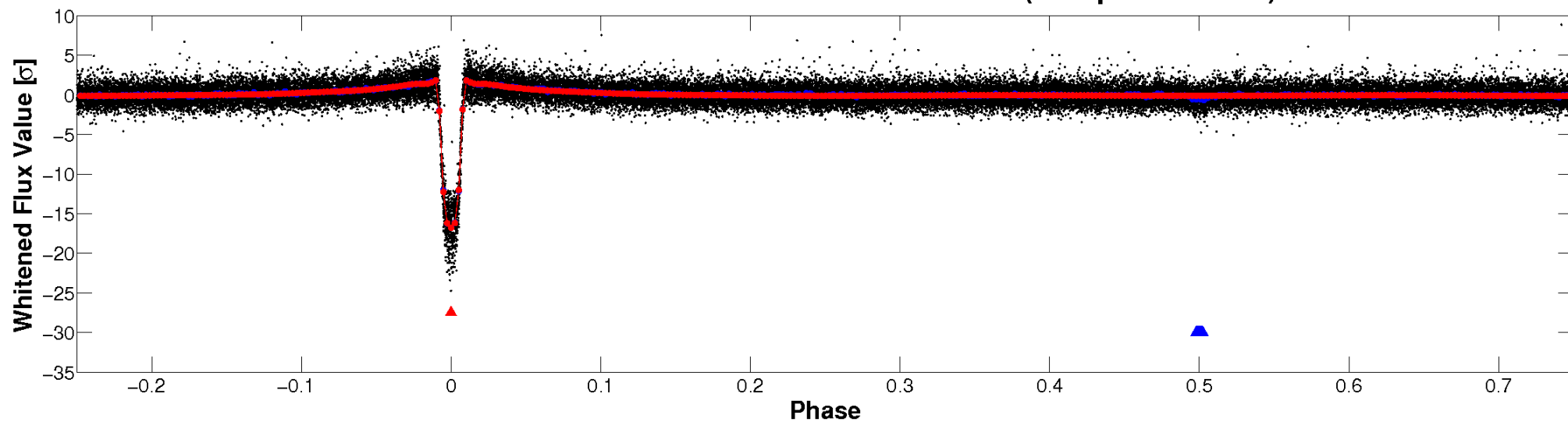


# Non-Whitened Vs. Whitened Light Curve

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



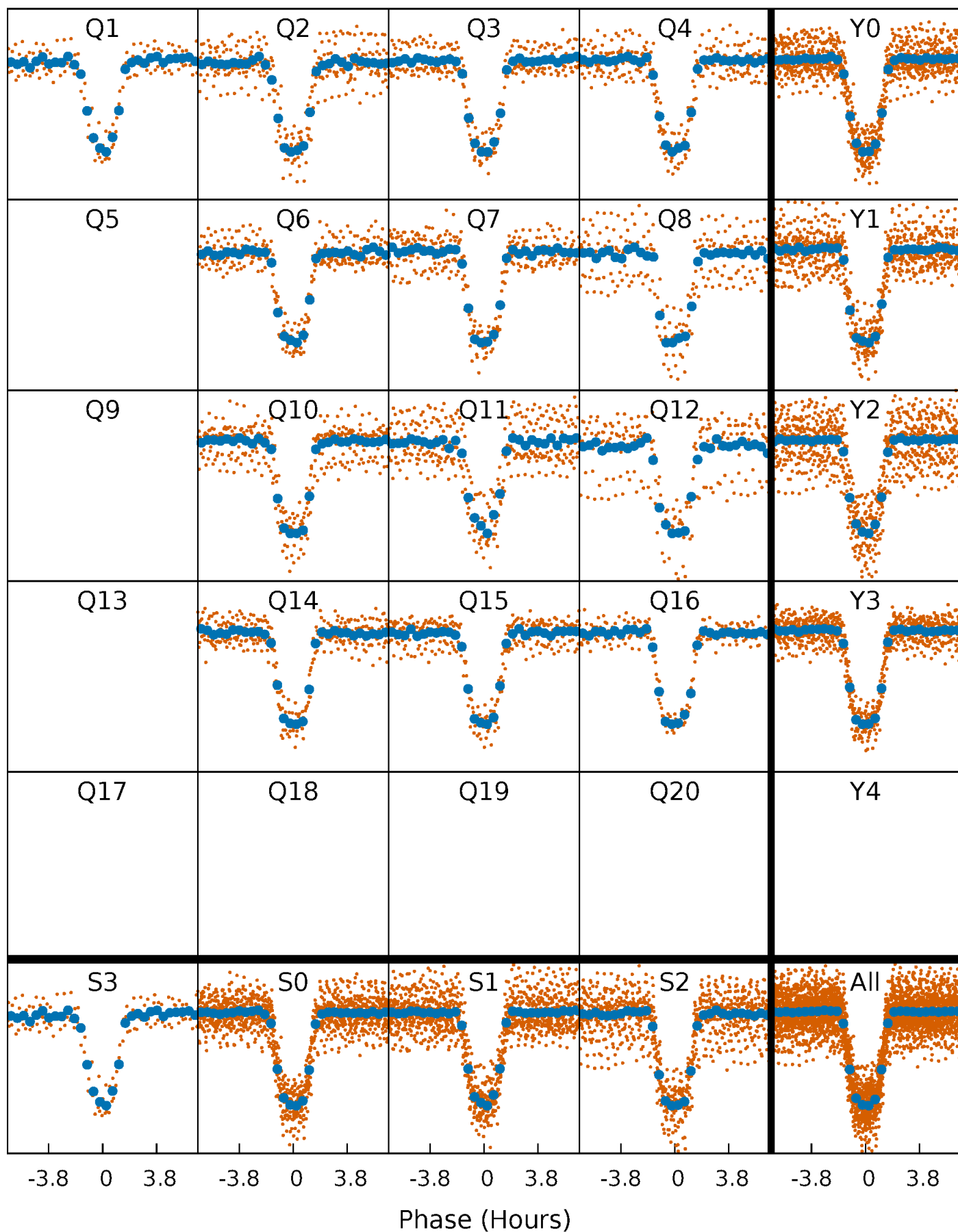
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

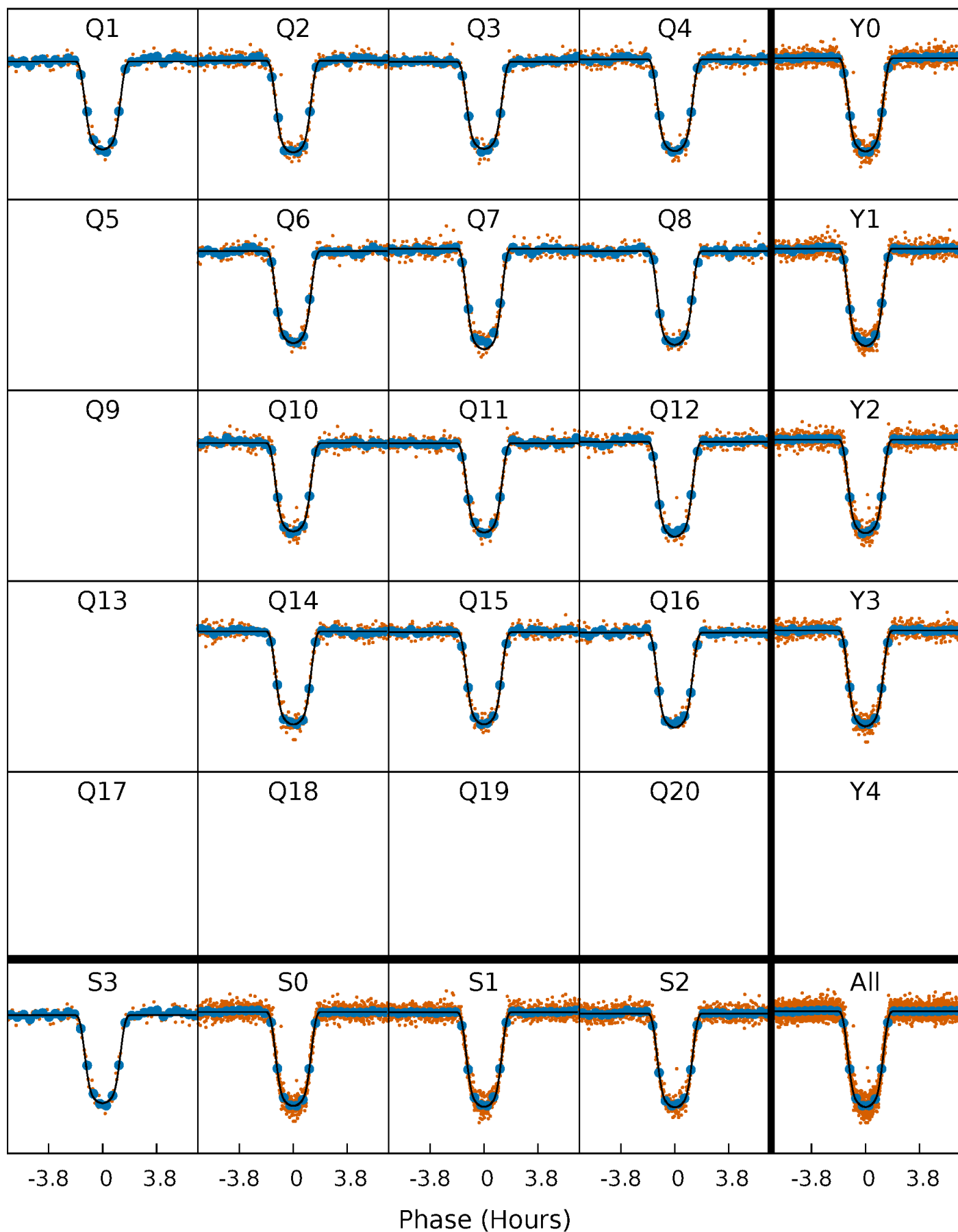
TCE 005077629-01 P= 7.919371 Days  $T_0=132.584032$  (BKJD)





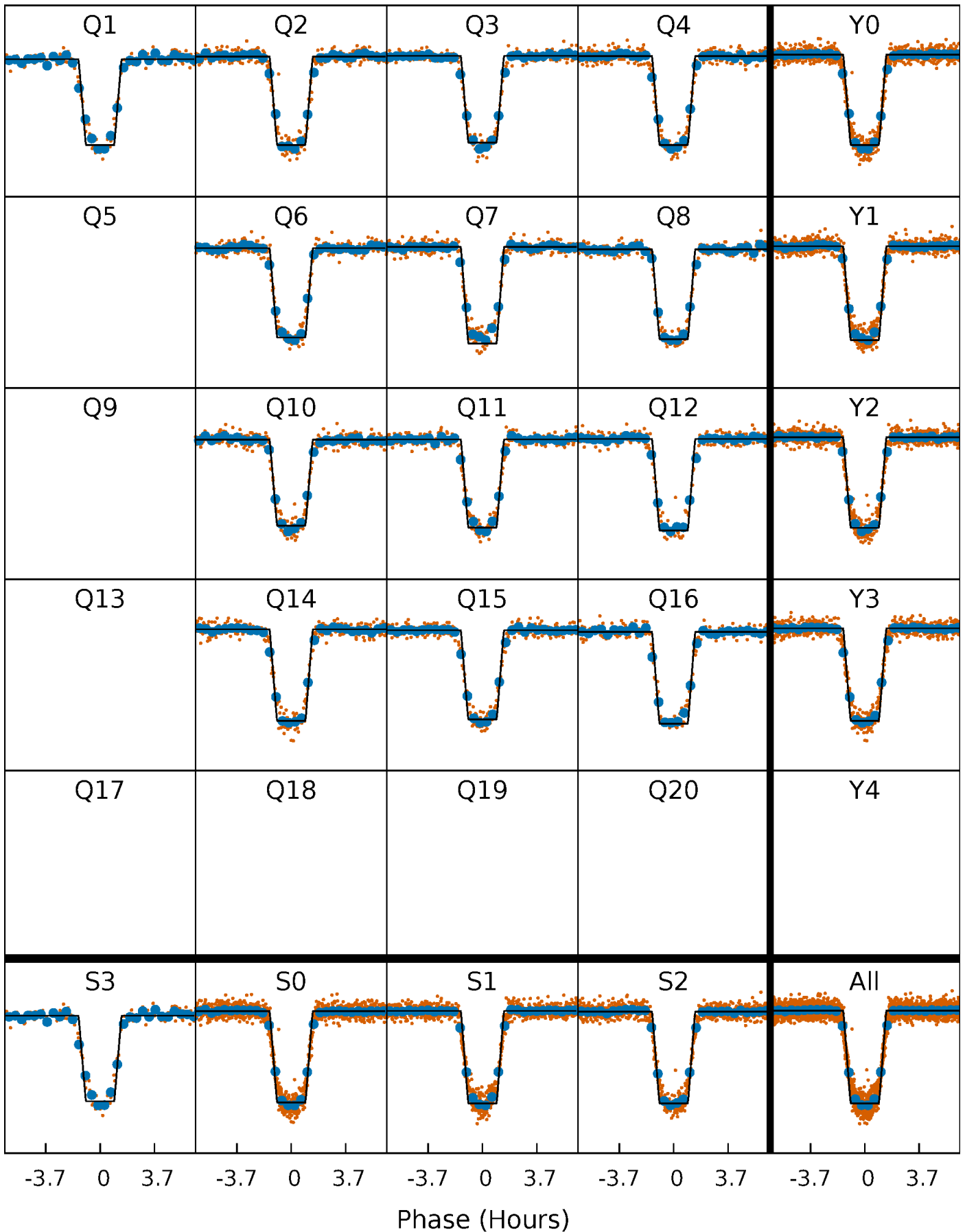
# DV Quarter-Phased Transit Curves

TCE 005077629-01 P= 7.919371 Days  $T_0=132.584032$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

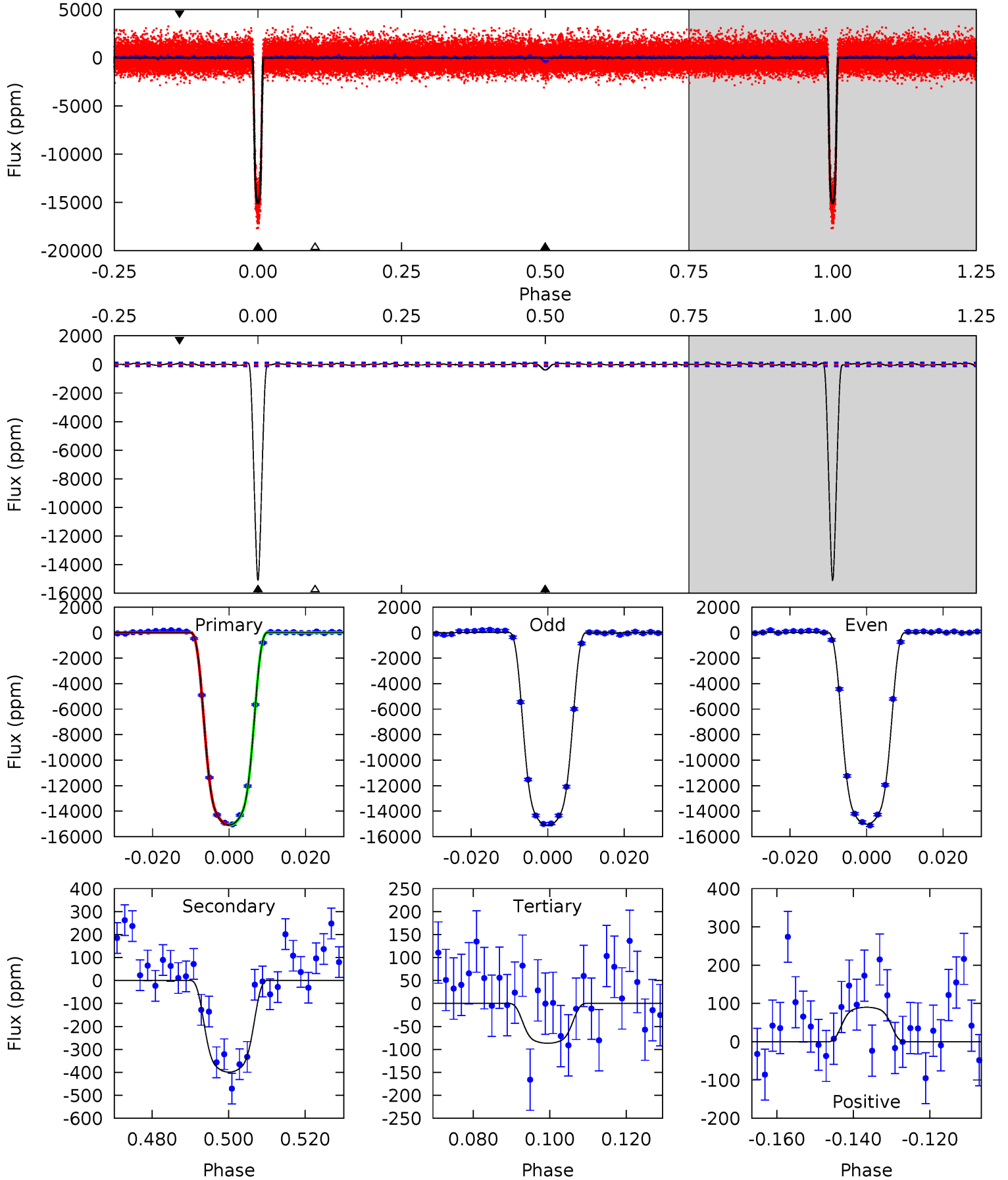
TCE 005077629-01 P= 7.919370 Days  $T_0=132.584201$  (BKJD)



# DV Model-Shift Uniqueness Test

005077629-01, P = 7.919371 Days, E = 124.664661 Days

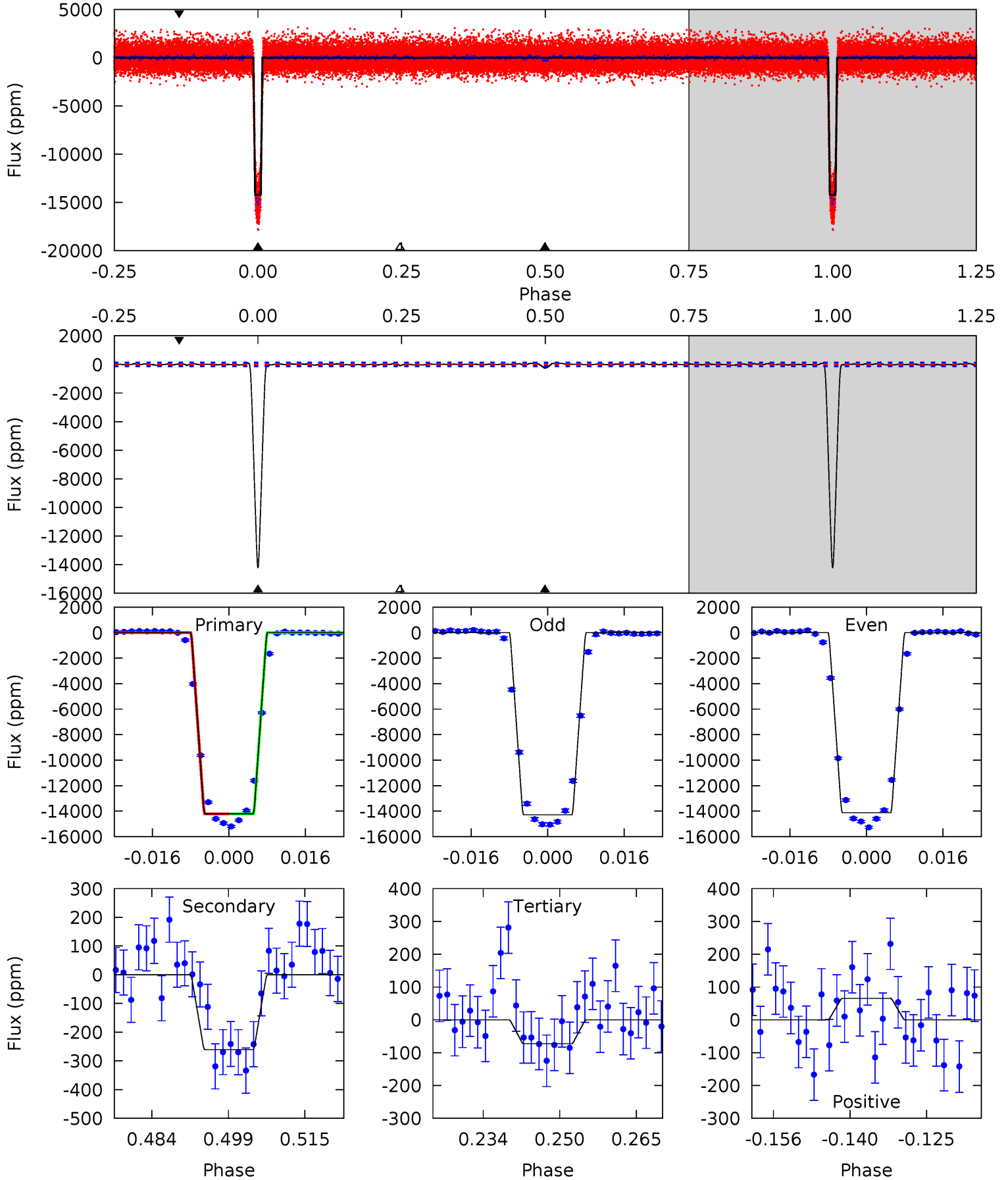
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
606.4	16.0	3.48	3.62	4.89	2.33	1.39	602.9	602.7	12.6	12.4	2.09	1.00	0.01	0.69



# Alt Model-Shift Uniqueness Test

005077629-01, P = 7.919370 Days, E = 124.664831 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
527.5	9.69	2.69	2.43	4.94	2.42	0.97	524.8	525.1	6.99	7.26	2.97	1.00	0.01	0.05



### Stellar Parameters For KIC 005077629

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5690^{+154}_{-172}$	$4.588^{+0.040}_{-0.160}$	$-0.400^{+0.300}_{-0.300}$	$0.776^{+0.195}_{-0.065}$	$0.852^{+0.089}_{-0.089}$	$2.568^{+0.421}_{-1.114}$
	+3%/-3%	+1%/-3%	+75%/-75%	+25%/-8%	+10%/-10%	+16%/-43%
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 005077629-01 / KOI 0822.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-399 \pm 25$	$10.63^{+1.43}_{-0.61}$	$1158^{+68}_{-49}$	$2955^{+59}_{-60}$	$10^{+2}_{-2}$
Alt.	$-261 \pm 27$	$10.54^{+1.33}_{-0.72}$	$1159^{+67}_{-46}$	$2800^{+59}_{-66}$	$6.840^{+1.283}_{-1.347}$

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

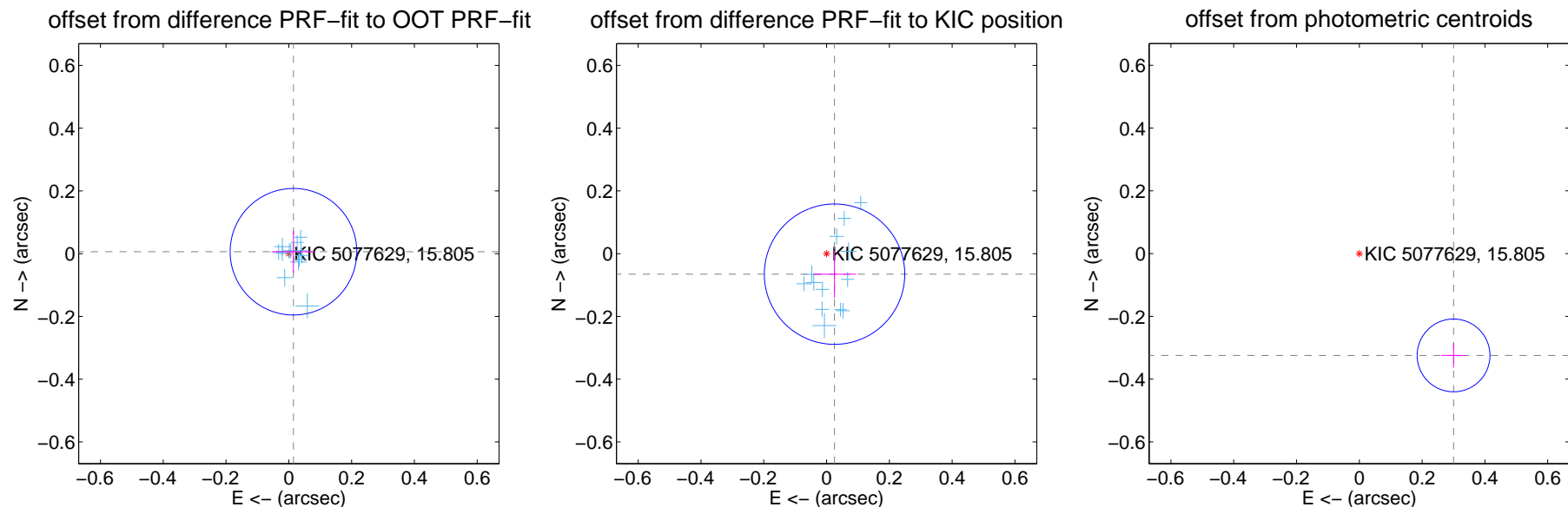
## DV Centroid Data

Supplemental centroid analysis for 005077629-01. Kepler magnitude: 15.80. Transit SNR 367.73

There are 13 quarters with good PRF difference image offsets

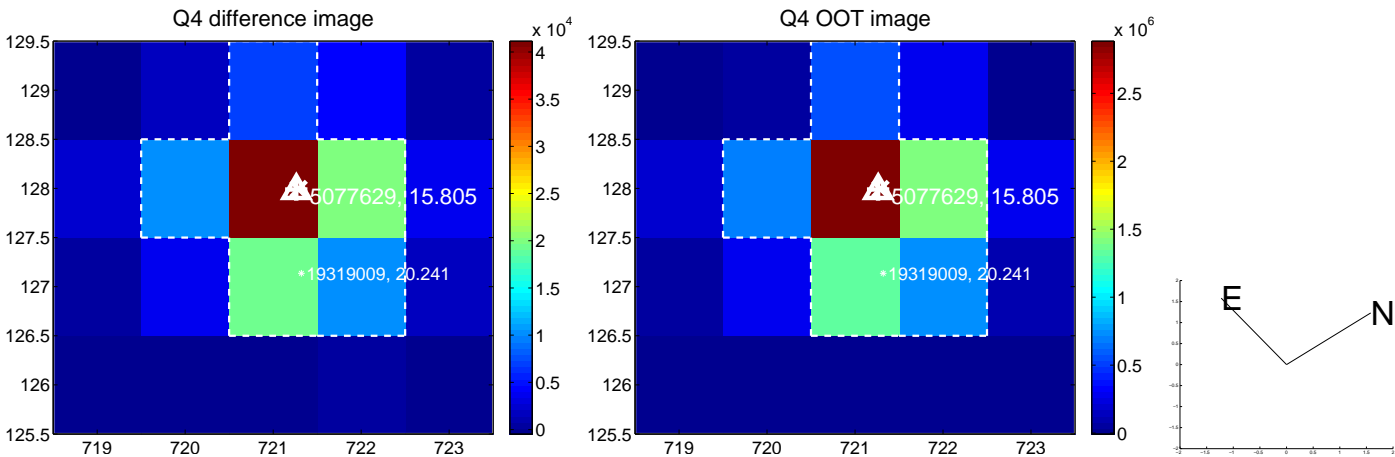
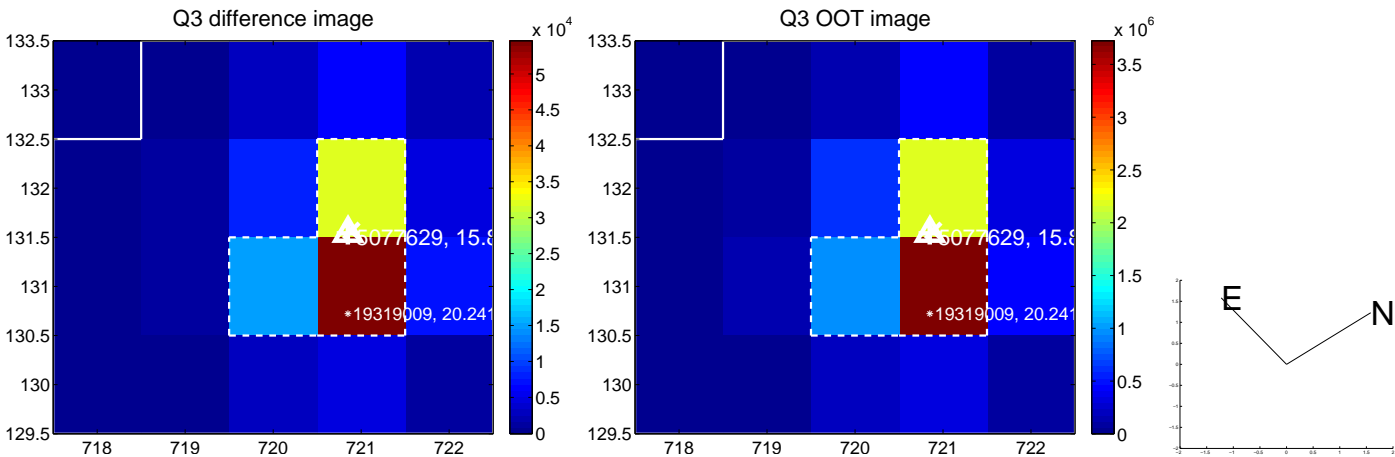
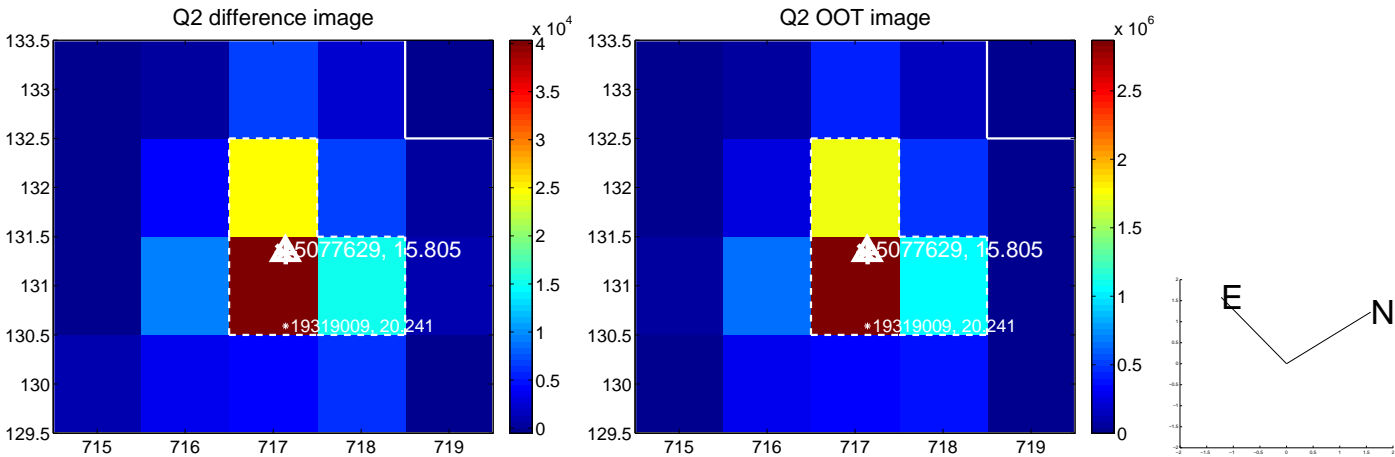
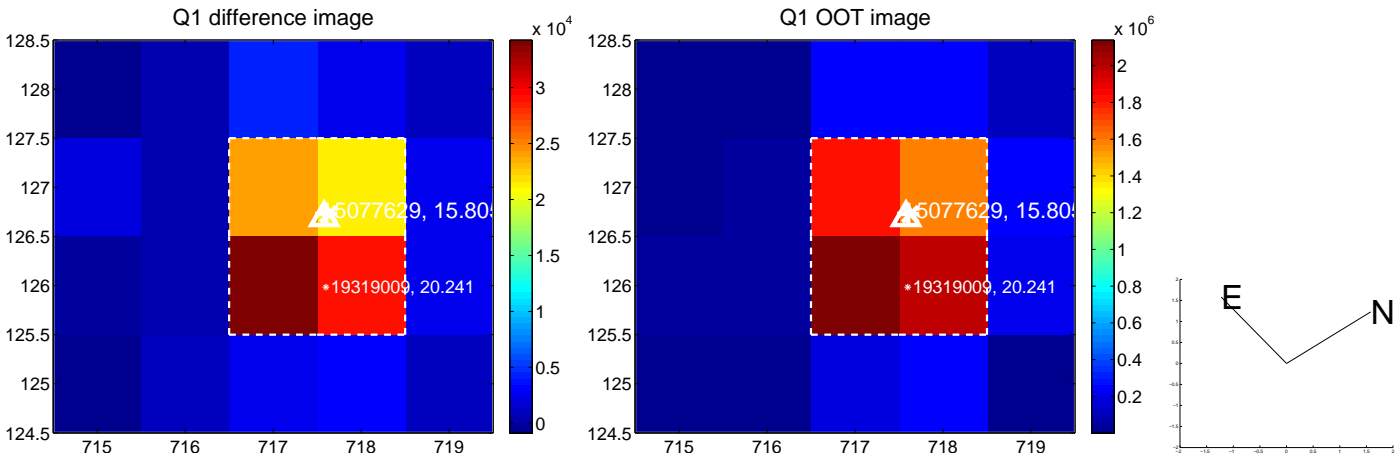
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.016 \pm 0.067$	0.24	$-0.015 \pm 0.067$	$0.006 \pm 0.067$
PRF-fit source offset from KIC position	$0.070 \pm 0.075$	0.94	$-0.025 \pm 0.069$	$-0.065 \pm 0.075$
photometric centroid source offset	$0.44 \pm 0.04$	11.44	$-0.30 \pm 0.04$	$-0.32 \pm 0.04$



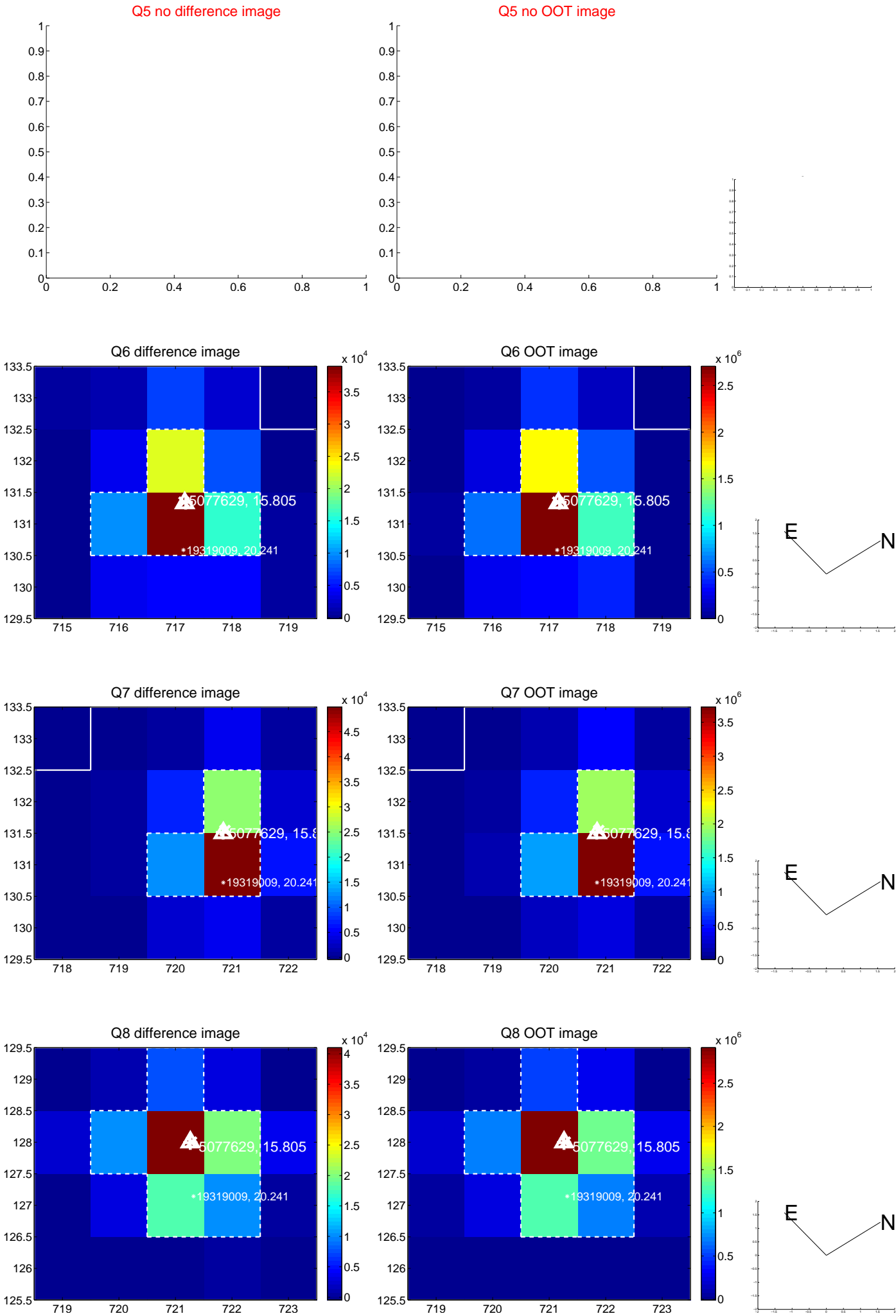
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

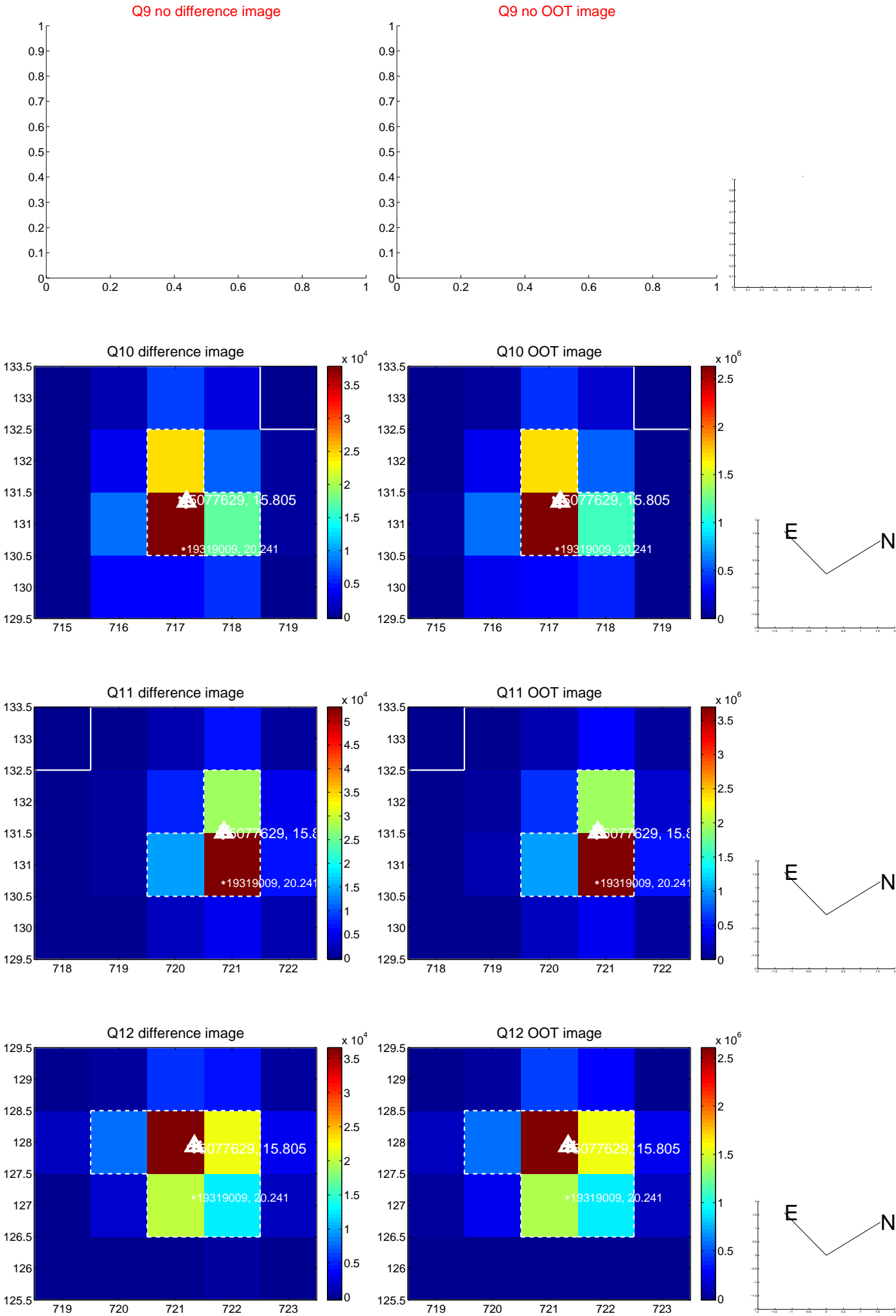




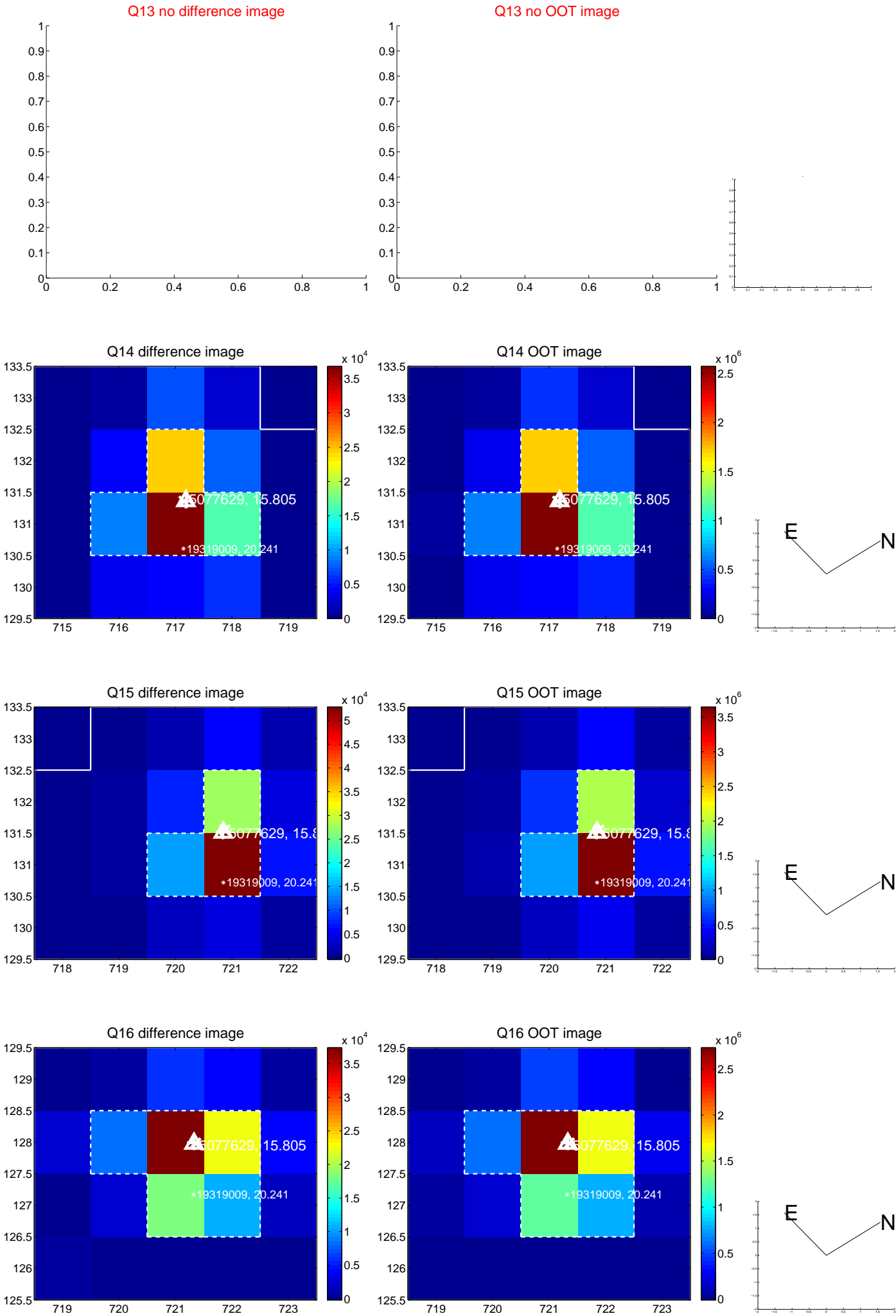
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

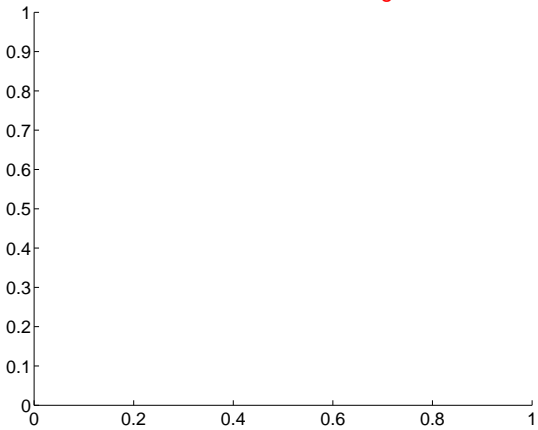


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

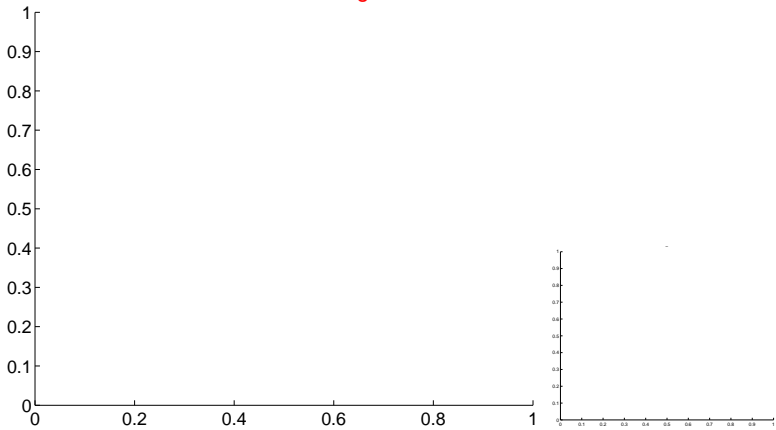


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

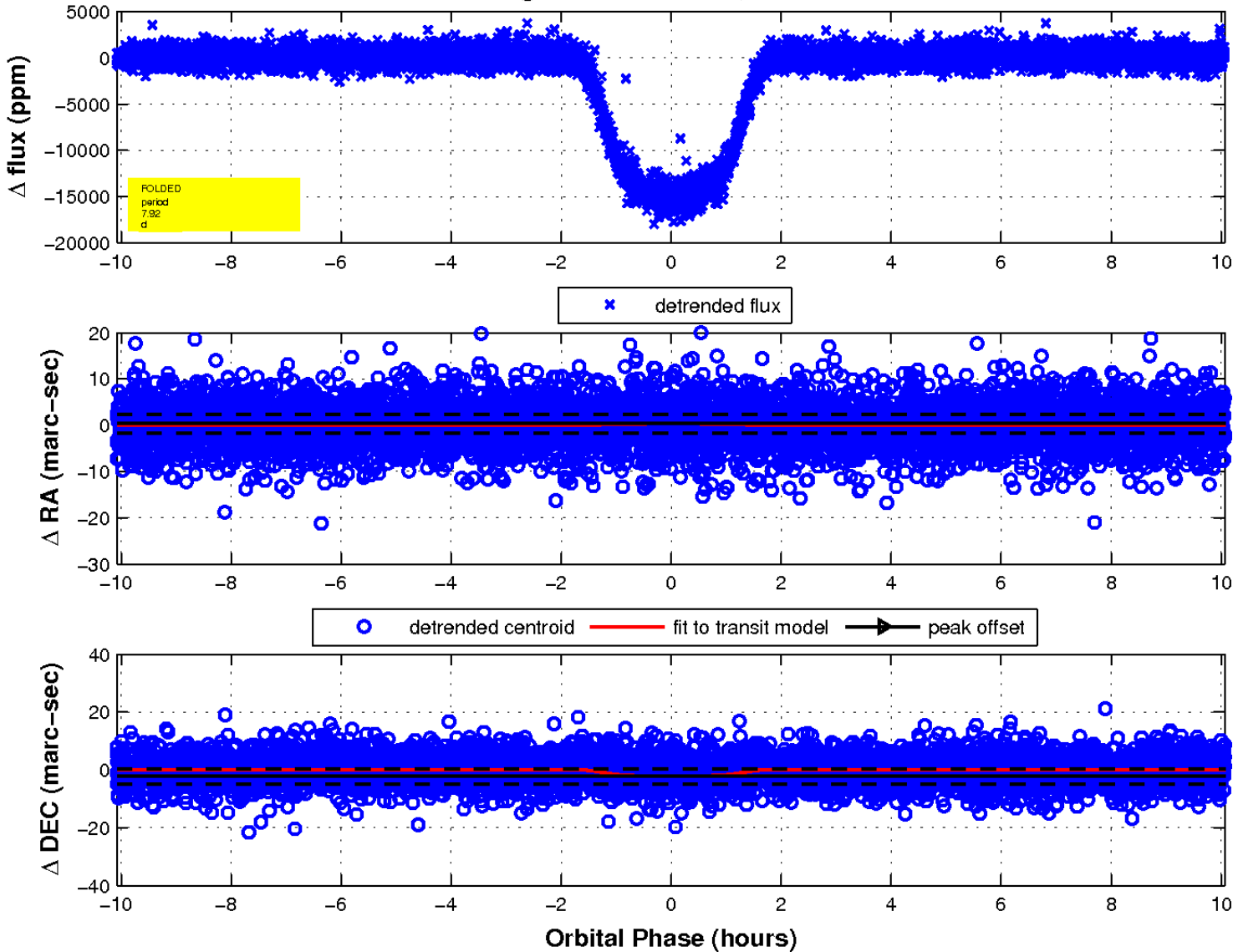
Q17 no difference image



Q17 no OOT image

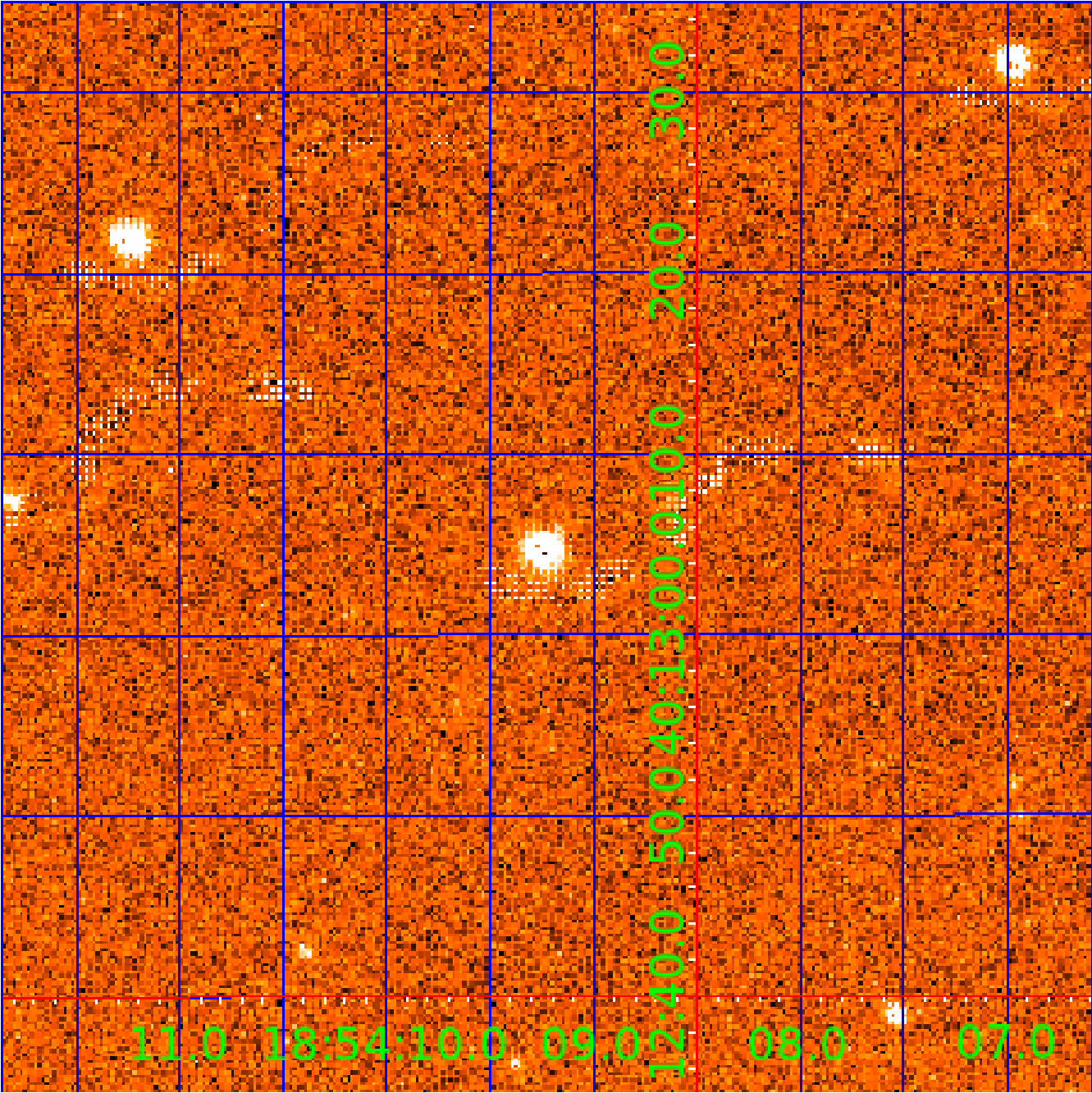


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



# KIC 005077629

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005077629-01	OBS	0822.01	7.919371	132.584032	15143.4	3.358	385.4	367.7	0.78	5690	10.44	104.15
005077629-02	OBS	No	7.919190	136.561579	487.2	3.972	10.8	11.9	0.78	5690	2.46	104.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005077629-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005077629-02	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.

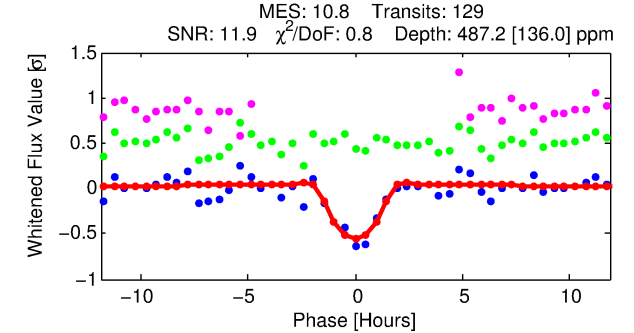
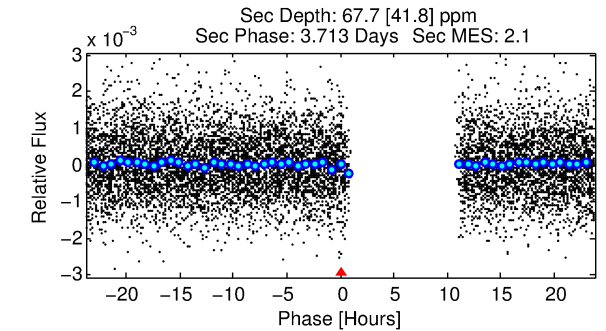
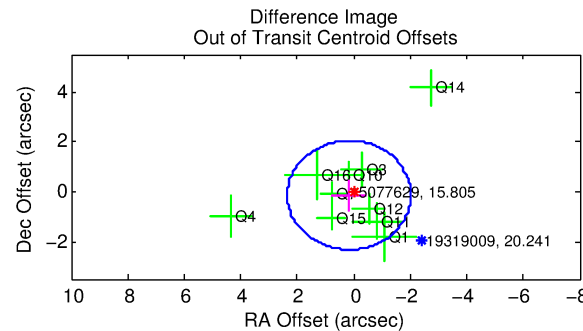
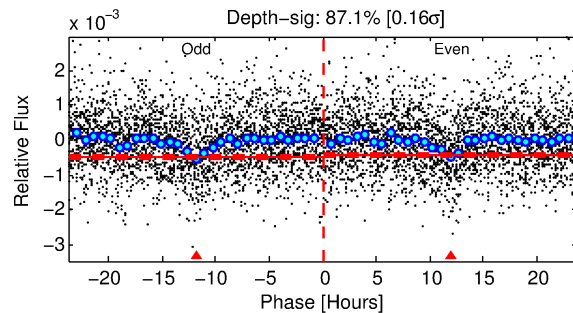
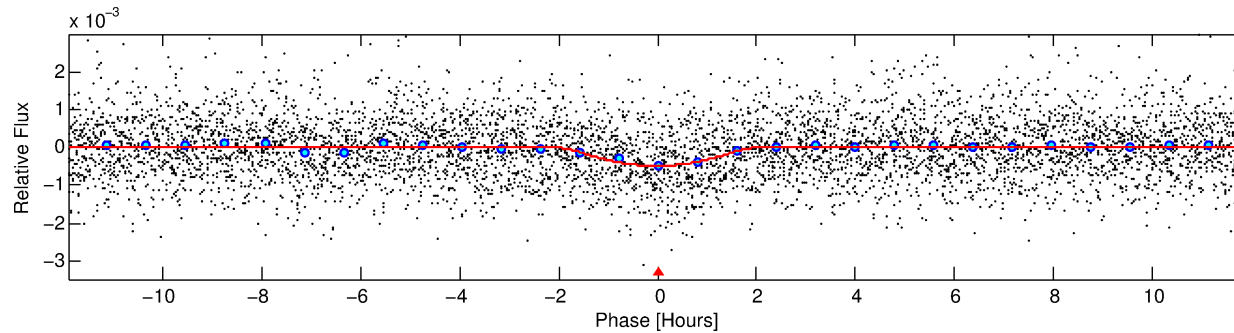
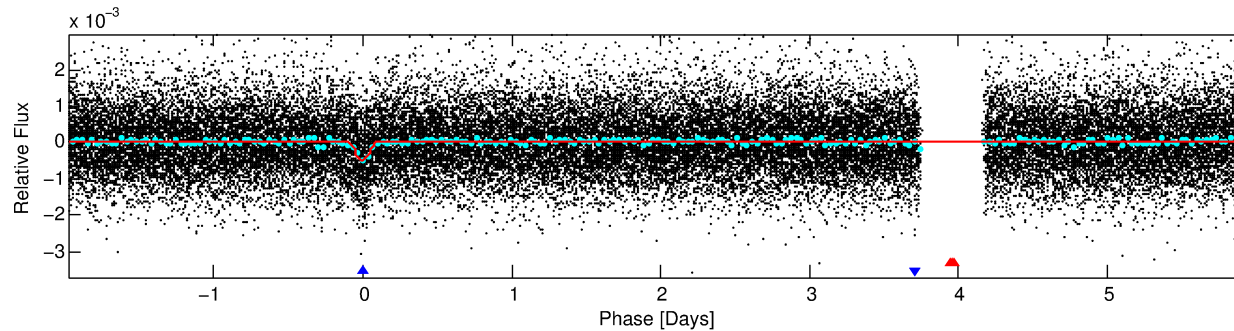
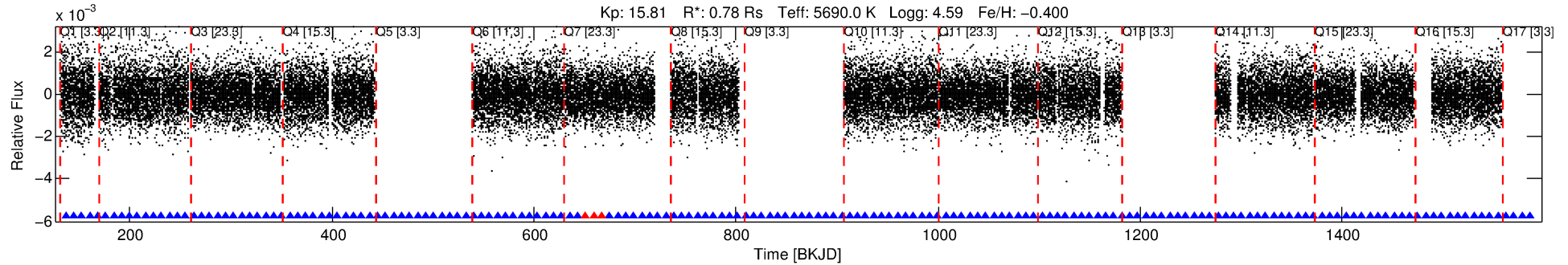
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005077629-02

No Significant Match Found

# DV One-Page Summary

KIC: 5077629 Candidate: 2 of 2 Period: 7.919 d  
KOI: K00822 Corr: No Ephemeris Match



## DV Fit Results:

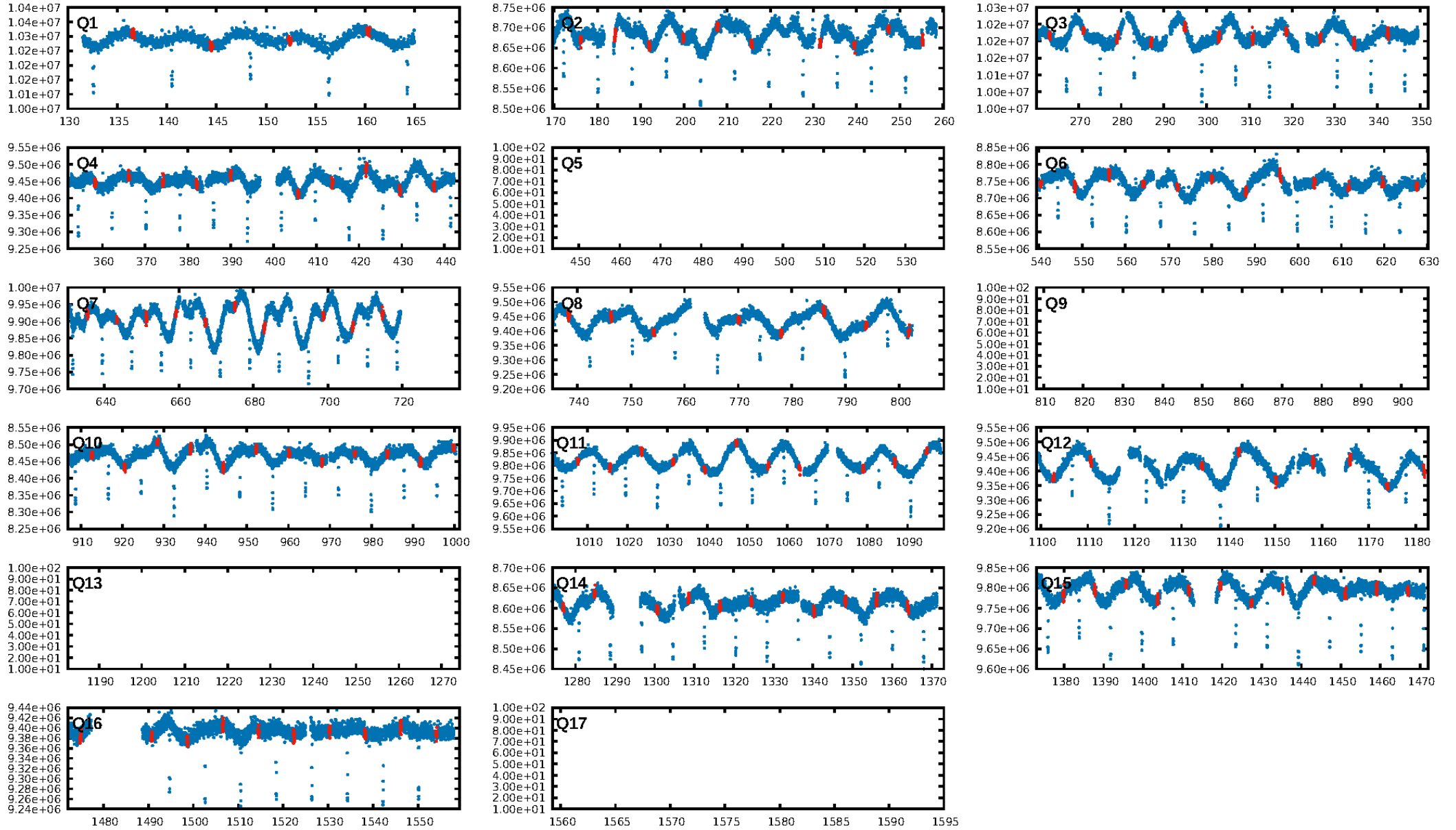
Period = 7.91919 [0.00007] d  
Epoch = 136.5616 [0.0072] BKJD  
Rp/R\* = 0.0291 [0.0166]  
a/R\* = 4.90 [1.59]  
b = 0.98 [0.04]  
Seff = 104.15 [33.43]  
Teq = 815 [65] K  
Rp = 2.47 [1.53] Re  
a = 0.0737 [0.0153] AU  
Ag = 33.25 [44.20] [0.73 $\sigma$ ]  
Teff = 3024 [984] K [2.24 $\sigma$ ]

## DV Diagnostic Results:

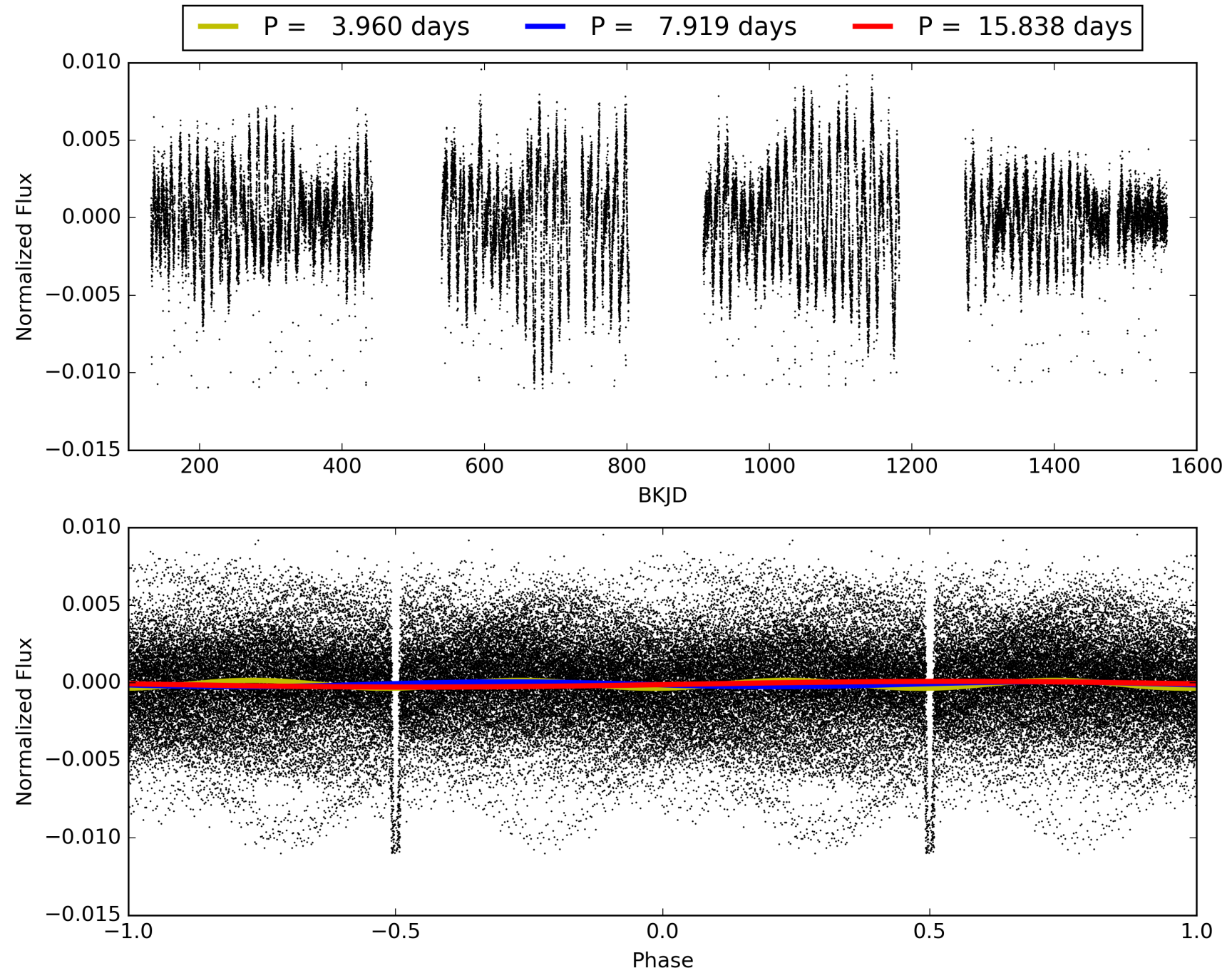
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.13e-26  
RollingBand-fgt: 0.98 [122/125]  
GhostDiagnostic-chr: 1.808  
Centroid-sig: 10.5%  
Centroid-so: 1.671 arcsec [1.34 $\sigma$ ]  
OotOffset-rm: 0.223 arcsec [0.31 $\sigma$ ]  
KicOffset-rm: 0.308 arcsec [0.53 $\sigma$ ]  
OotOffset-st: 2/4/3/1 [10]  
KicOffset-st: 2/4/3/1 [10]  
DiffImageQuality-fgm: 0.70 [7/10]  
DiffImageOverlap-fno: 1.00 [13/13]



# TCE 005077629-02, PDC Light Curves

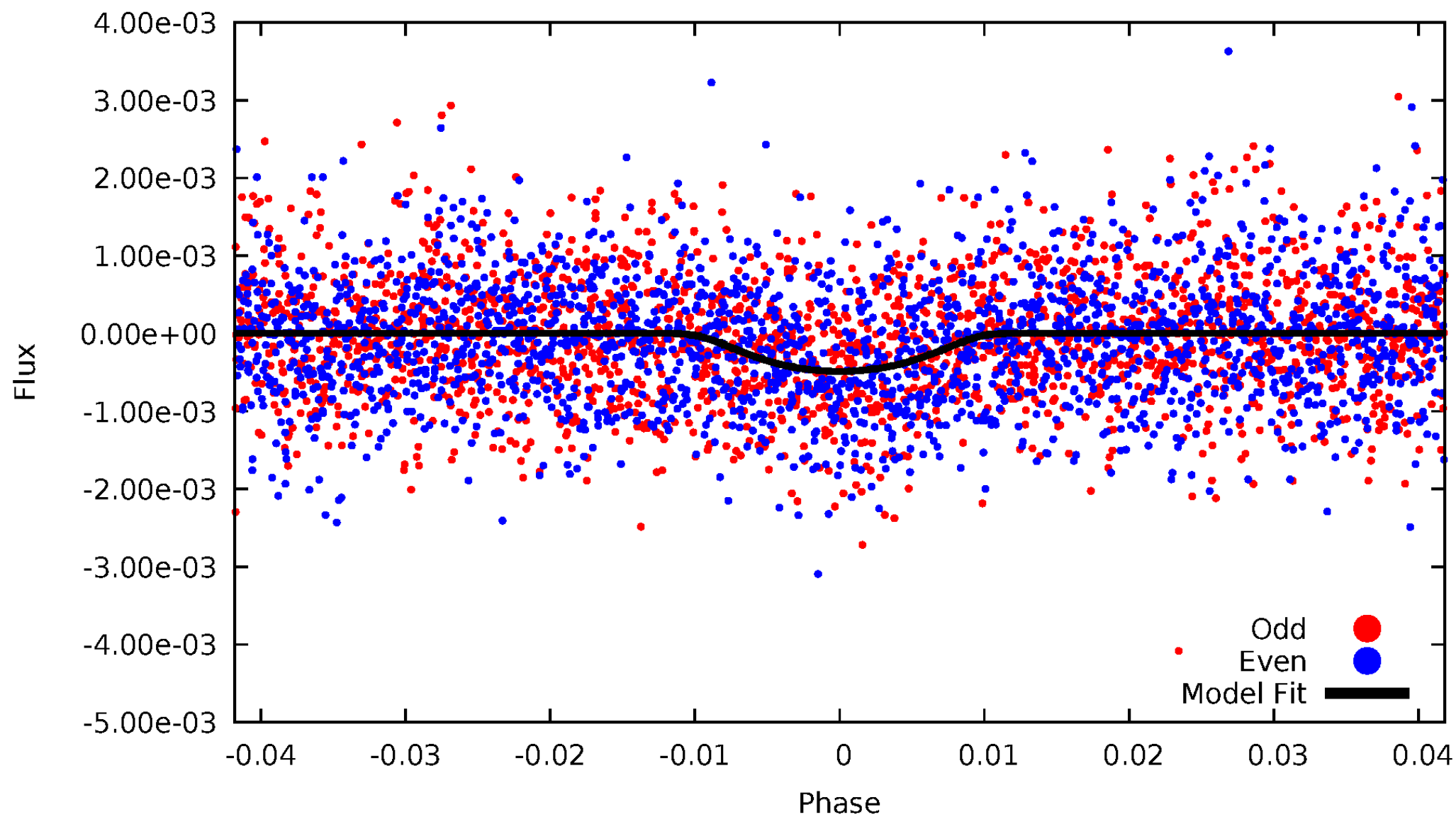


TCE 005077629-02



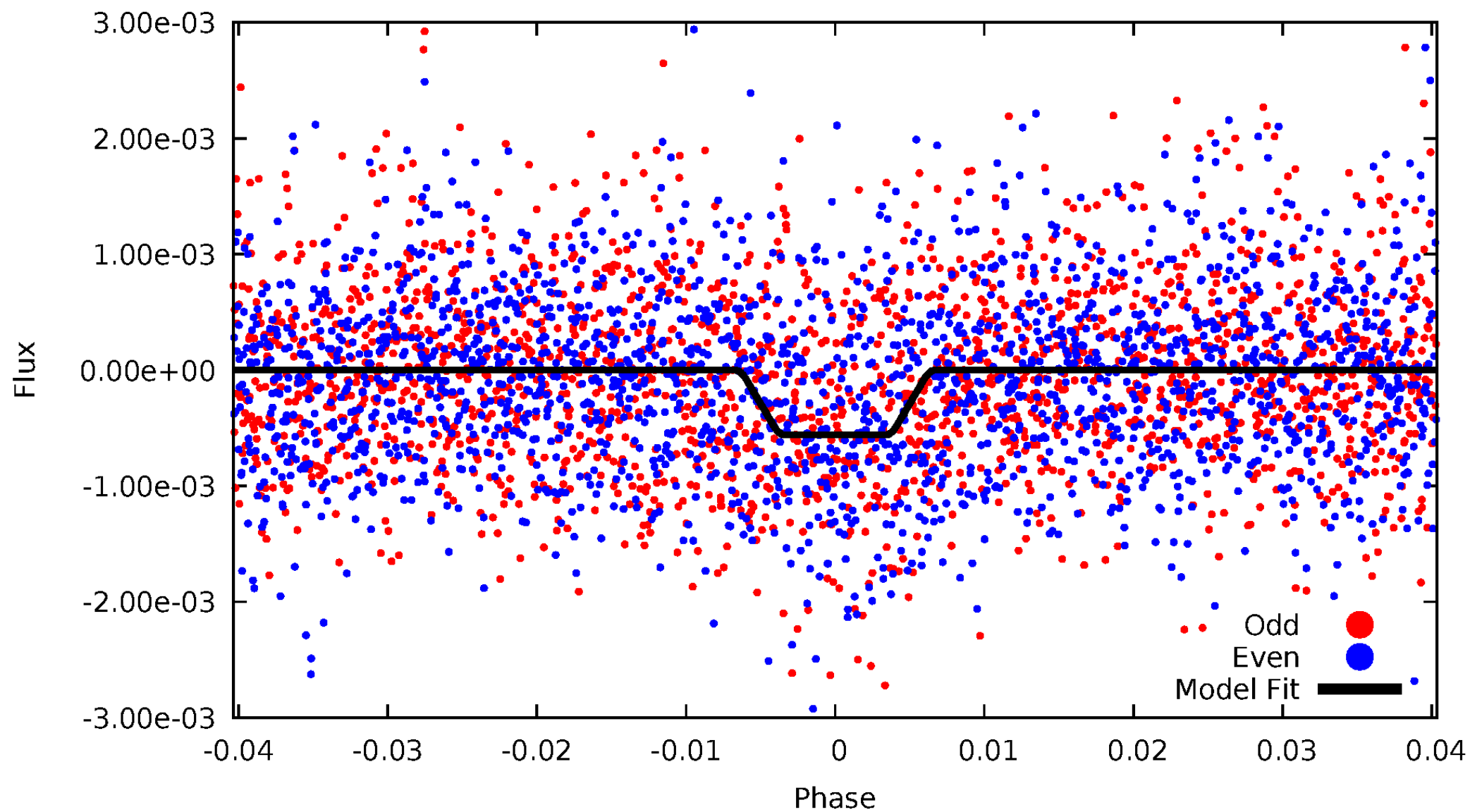
DV Odd/Even

TCE 005077629-02



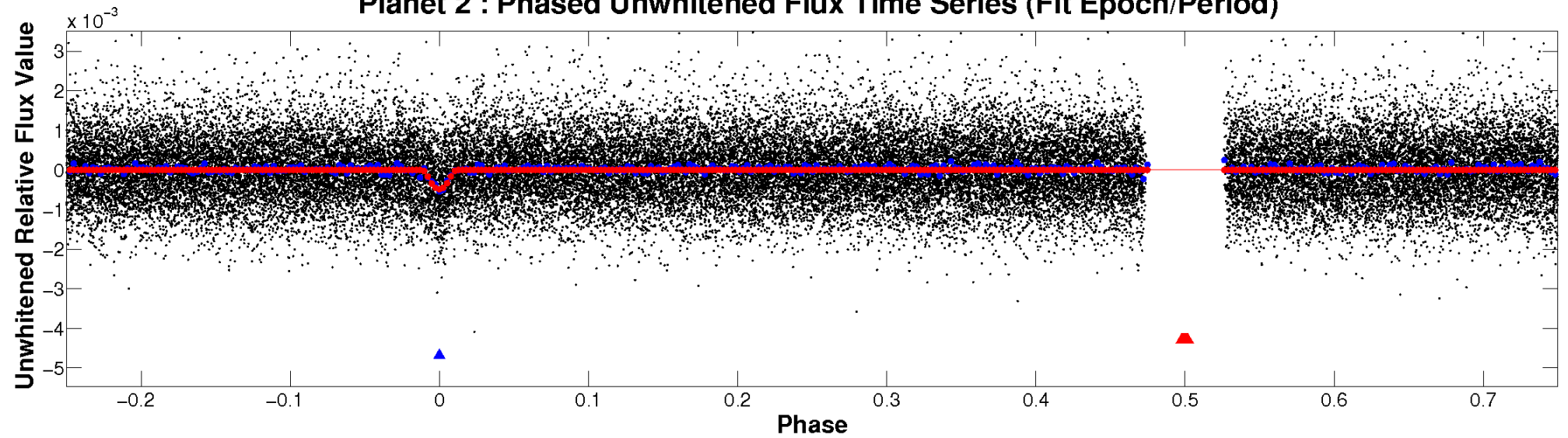
# ALT Odd/Even

TCE 005077629-02

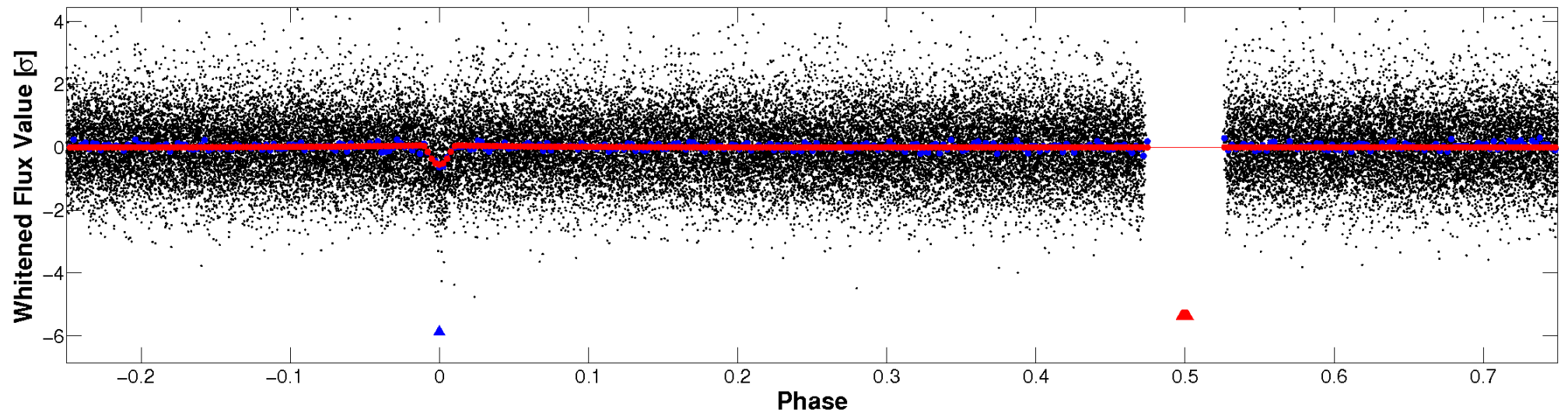


# Non-Whitened Vs. Whitened Light Curve

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



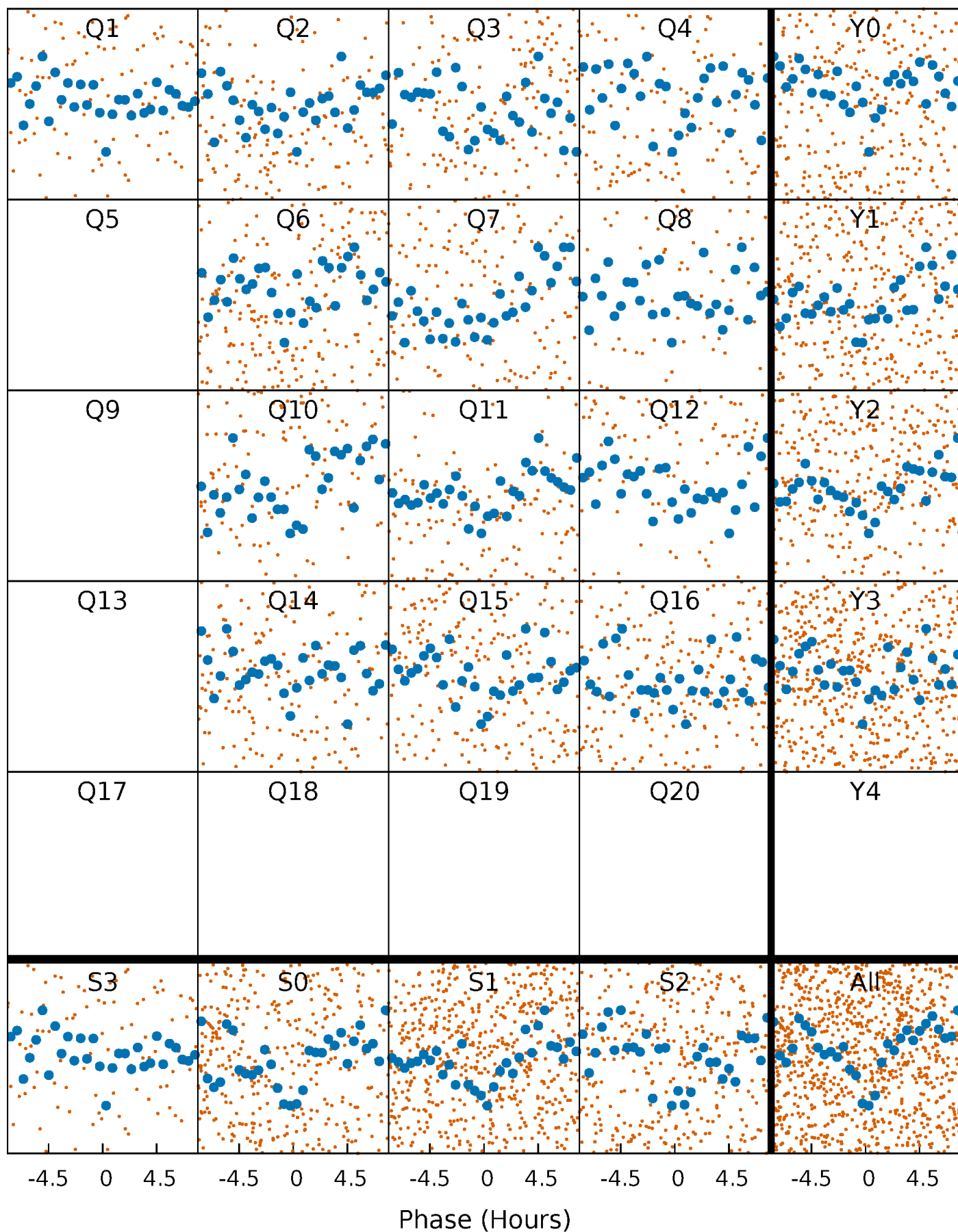
**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





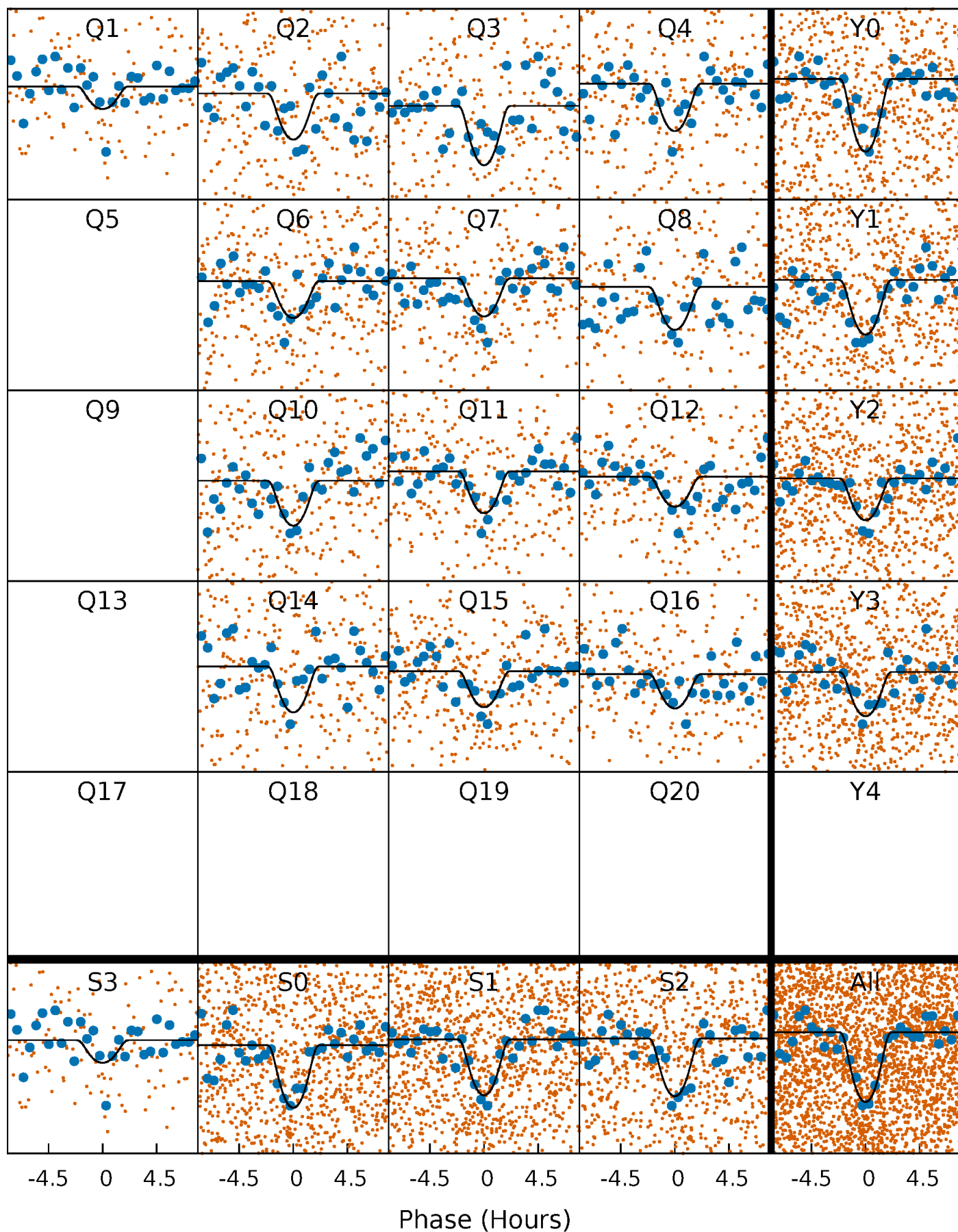
# PDC Quarter-Phased Transit Curves

TCE 005077629-02   P= 7.919190 Days    $T_0=136.561579$  (BKJD)



# DV Quarter-Phased Transit Curves

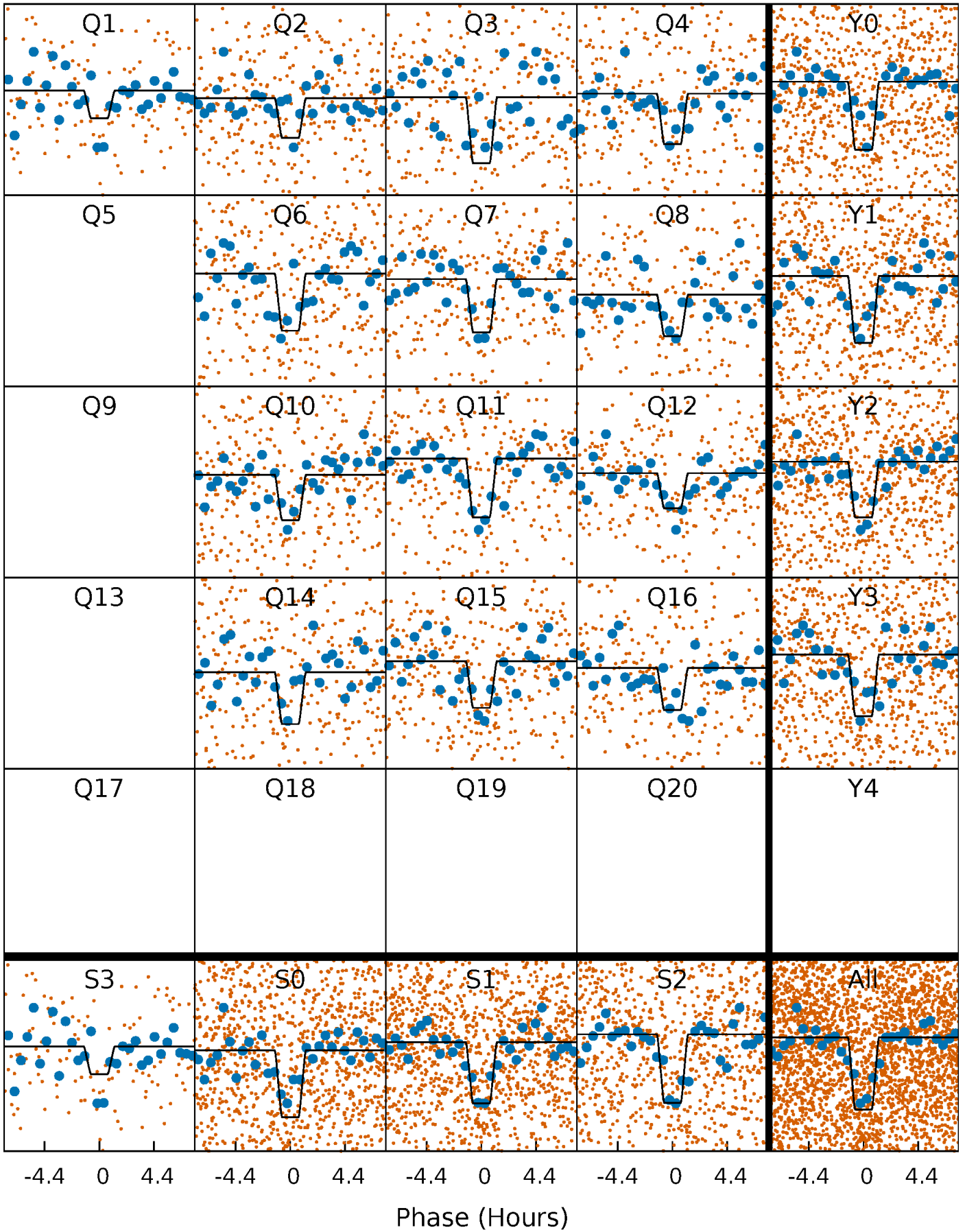
TCE 005077629-02 P= 7.919190 Days  $T_0=136.561579$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

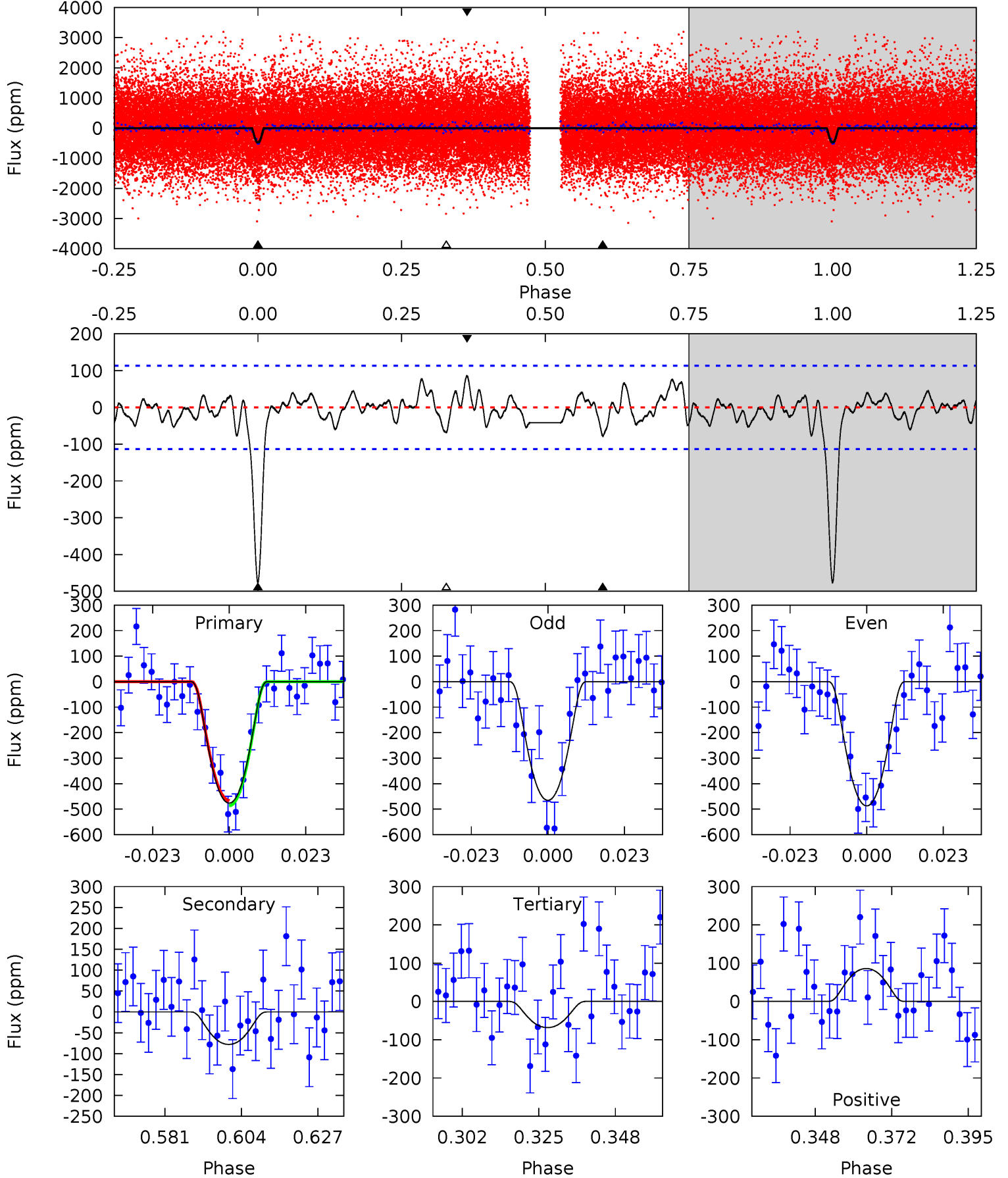
TCE 005077629-02   P= 7.919143 Days    $T_0=136.567457$  (BKJD)



# DV Model-Shift Uniqueness Test

005077629-02, P = 7.919190 Days, E = 128.642389 Days

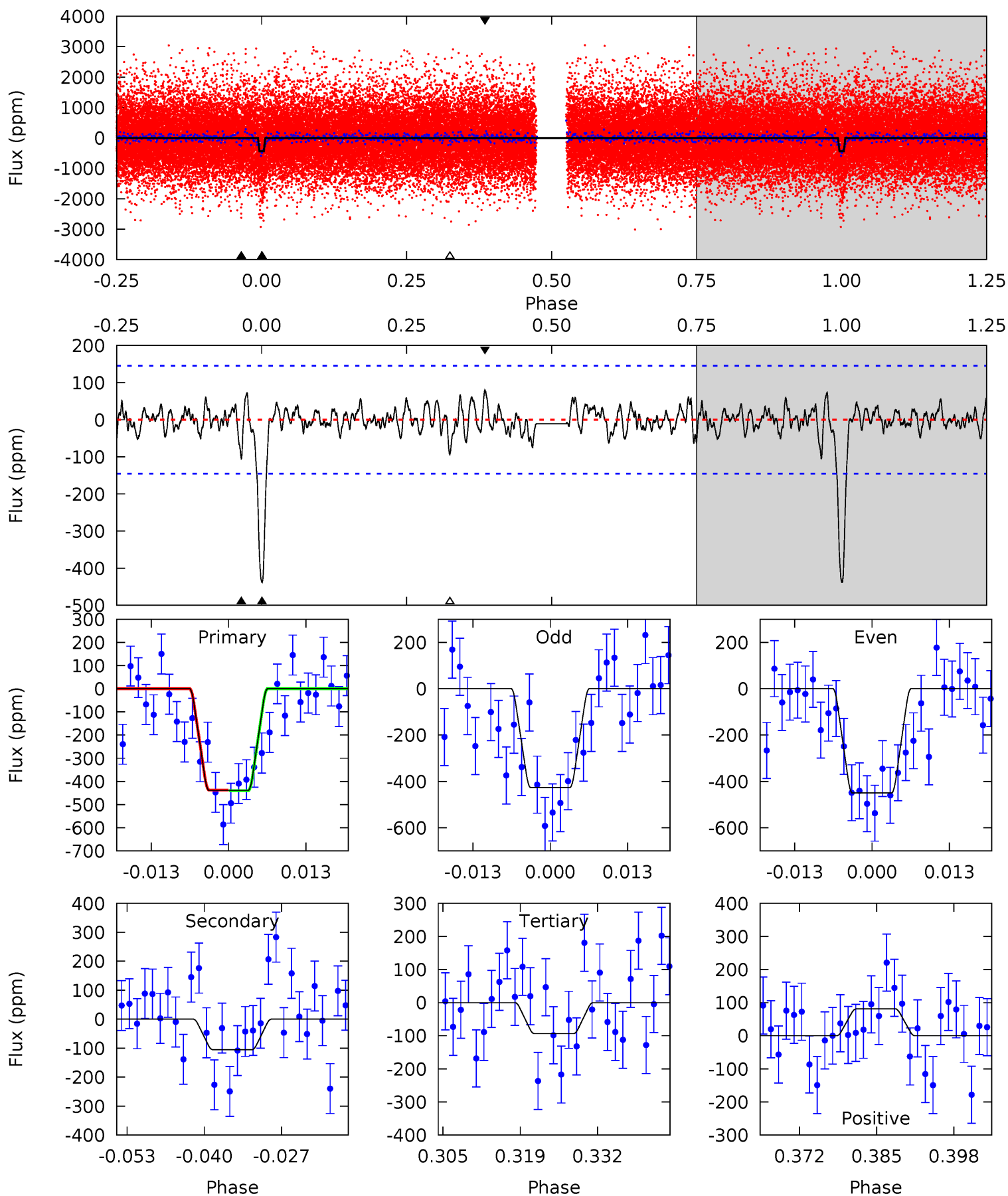
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	3.34	2.93	3.69	4.86	2.27	1.30	17.5	16.7	0.41	-0.35	0.47	1.05	0.15	0.44



# Alt Model-Shift Uniqueness Test

005077629-02, P = 7.919143 Days, E = 128.648314 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
15.0	3.60	3.20	2.77	4.97	2.48	0.93	11.8	12.2	0.40	0.83	0.40	1.12	0.16	0.05



### Stellar Parameters For KIC 005077629

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5690^{+154}_{-172}$	$4.588^{+0.040}_{-0.160}$	$-0.400^{+0.300}_{-0.300}$	$0.776^{+0.195}_{-0.065}$	$0.852^{+0.089}_{-0.089}$	$2.568^{+0.421}_{-1.114}$
	+3%/-3%	+1%/-3%	+75%/-75%	+25%/-8%	+10%/-10%	+16%/-43%
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 005077629-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-78 \pm 23$	$2.71^{+1.38}_{-1.51}$	$1158^{+69}_{-50}$	$3515^{+1137}_{-447}$	$31^{+124}_{-18}$
Alt.	$-105 \pm 29$	$2.23^{+1.43}_{-1.25}$	$1158^{+71}_{-49}$	$3933^{+1494}_{-602}$	$62^{+255}_{-40}$

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

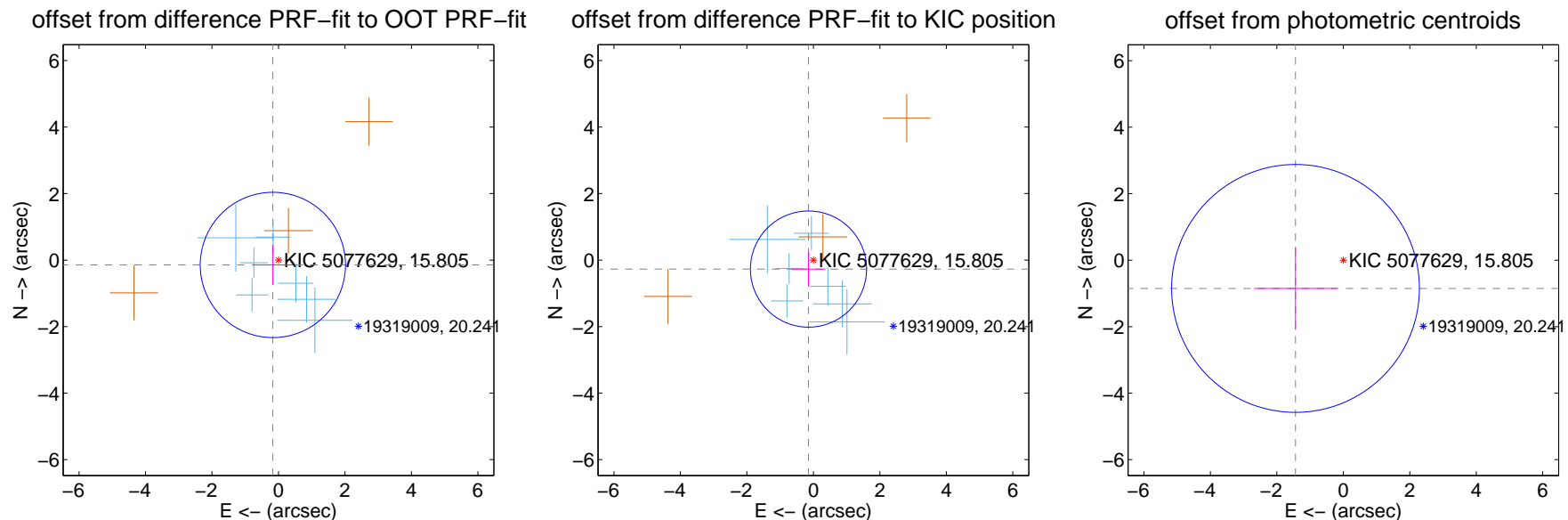
## DV Centroid Data

Supplemental centroid analysis for 005077629-02. Kepler magnitude: 15.80. Transit SNR 11.91

There are 7 quarters with good PRF difference image offsets

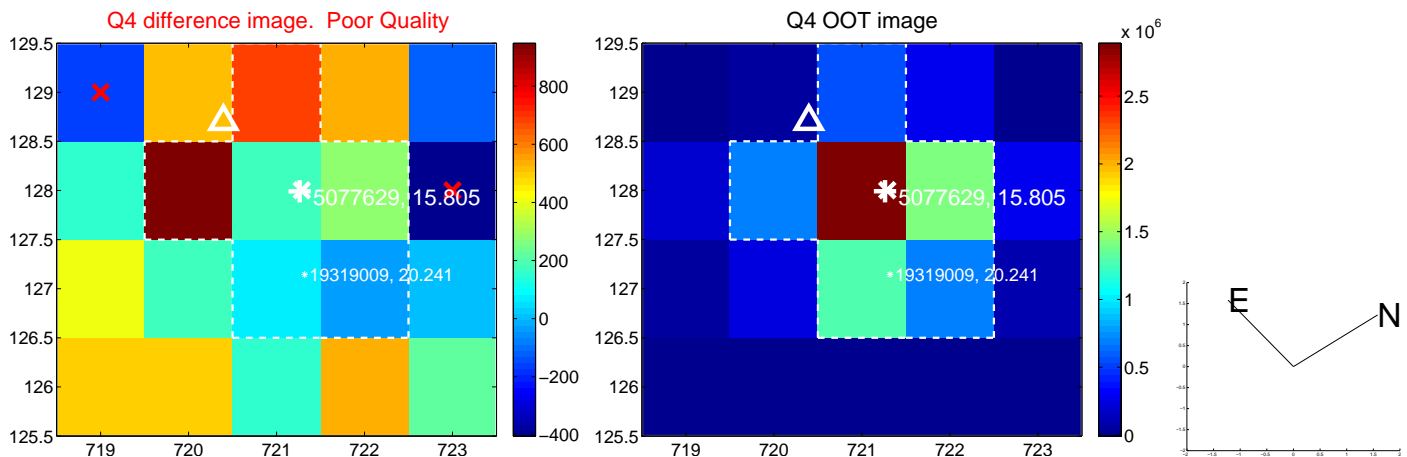
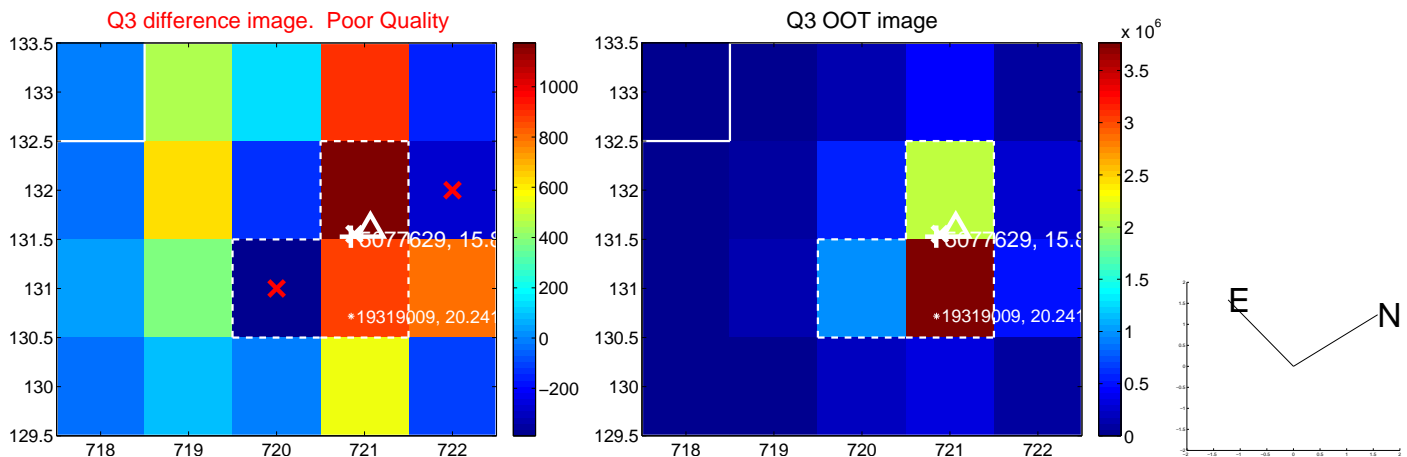
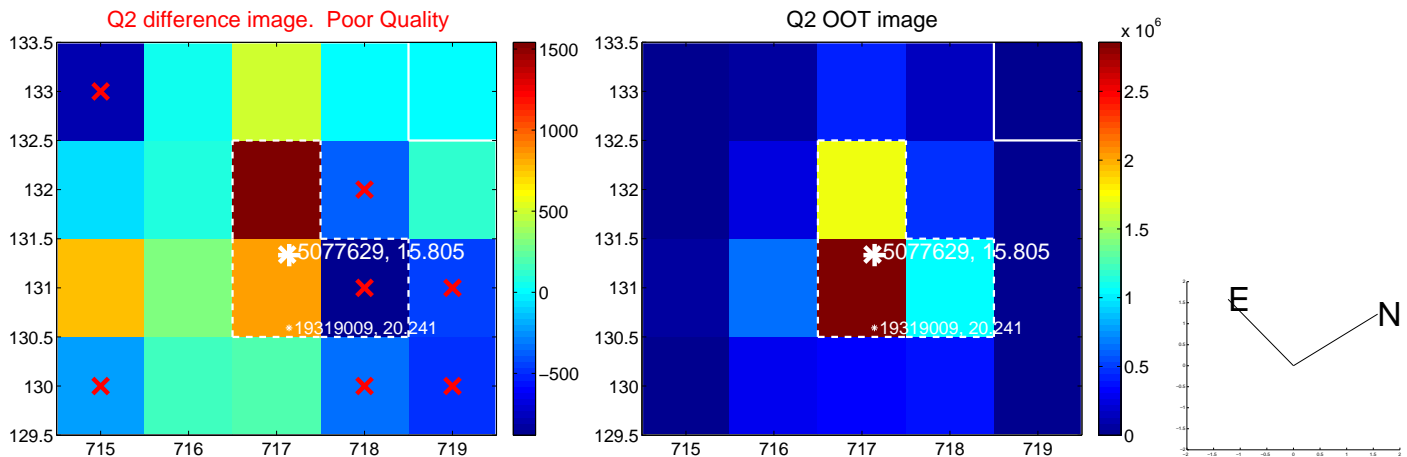
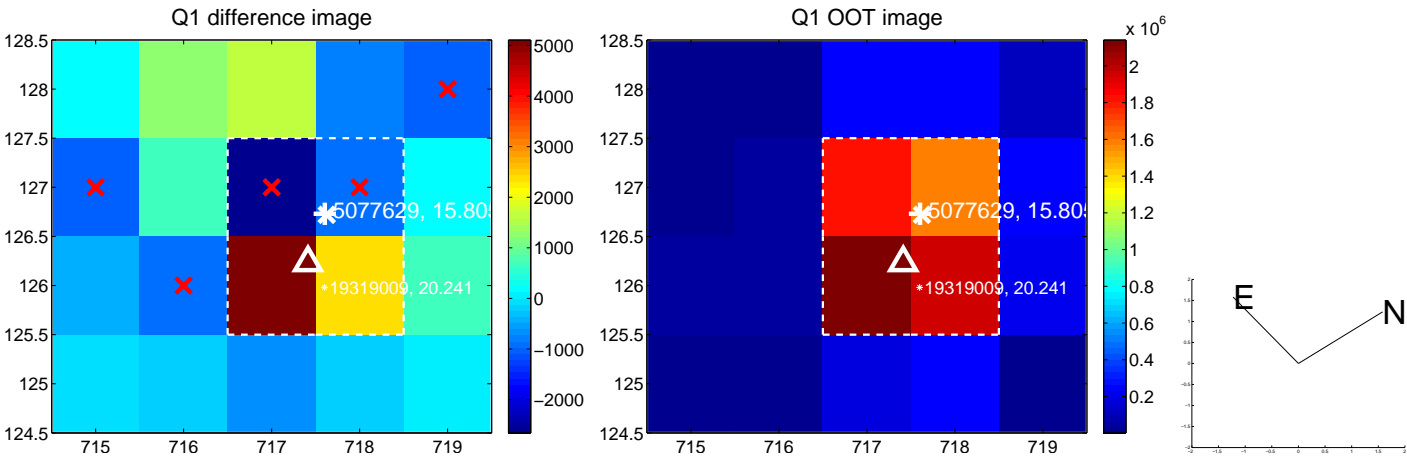
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.223 \pm 0.728$	0.31	$0.169 \pm 0.594$	$-0.146 \pm 0.604$
PRF-fit source offset from KIC position	$0.308 \pm 0.582$	0.53	$0.148 \pm 0.510$	$-0.270 \pm 0.524$
photometric centroid source offset	$1.67 \pm 1.24$	1.34	$1.44 \pm 1.24$	$-0.85 \pm 1.25$

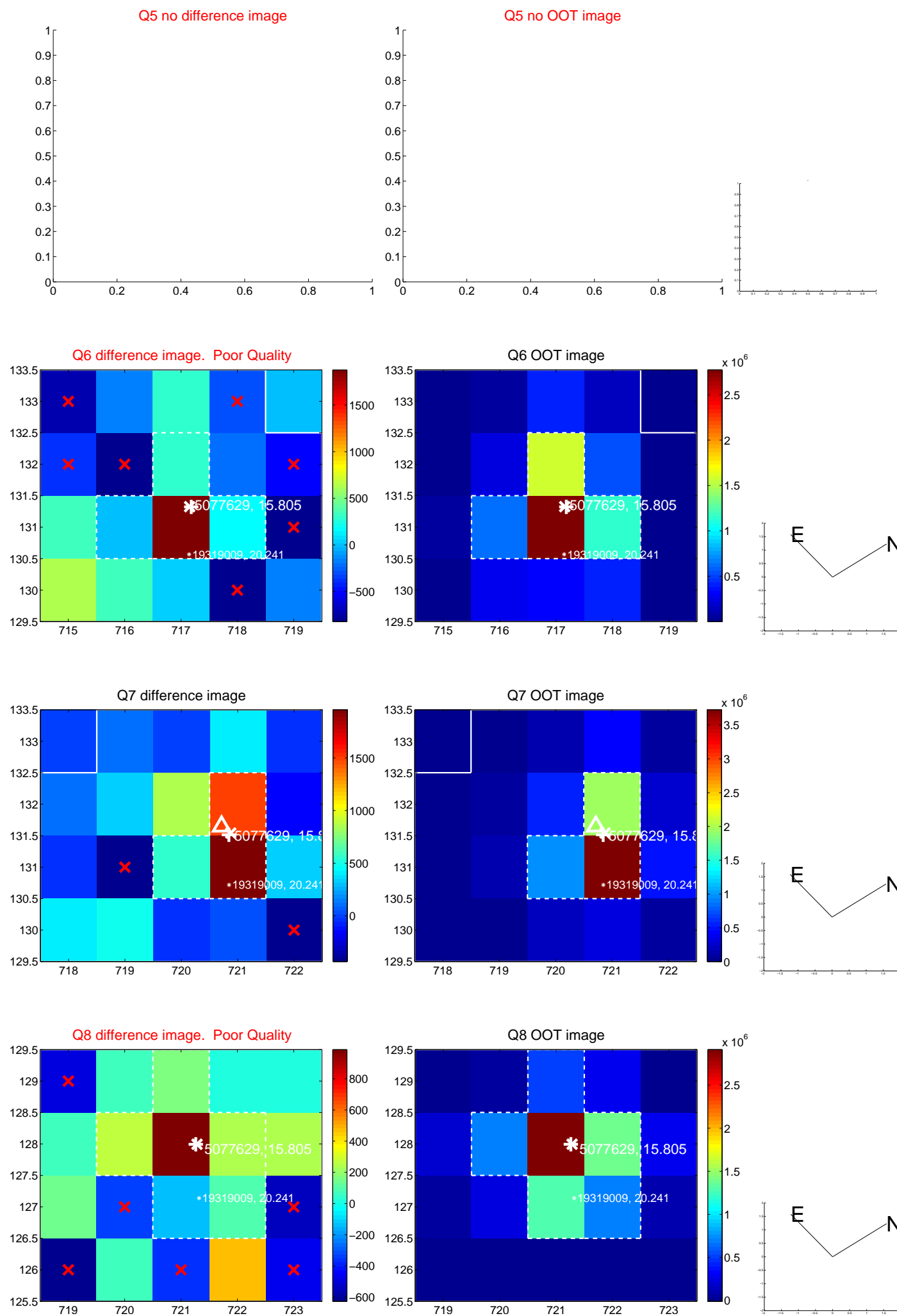


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

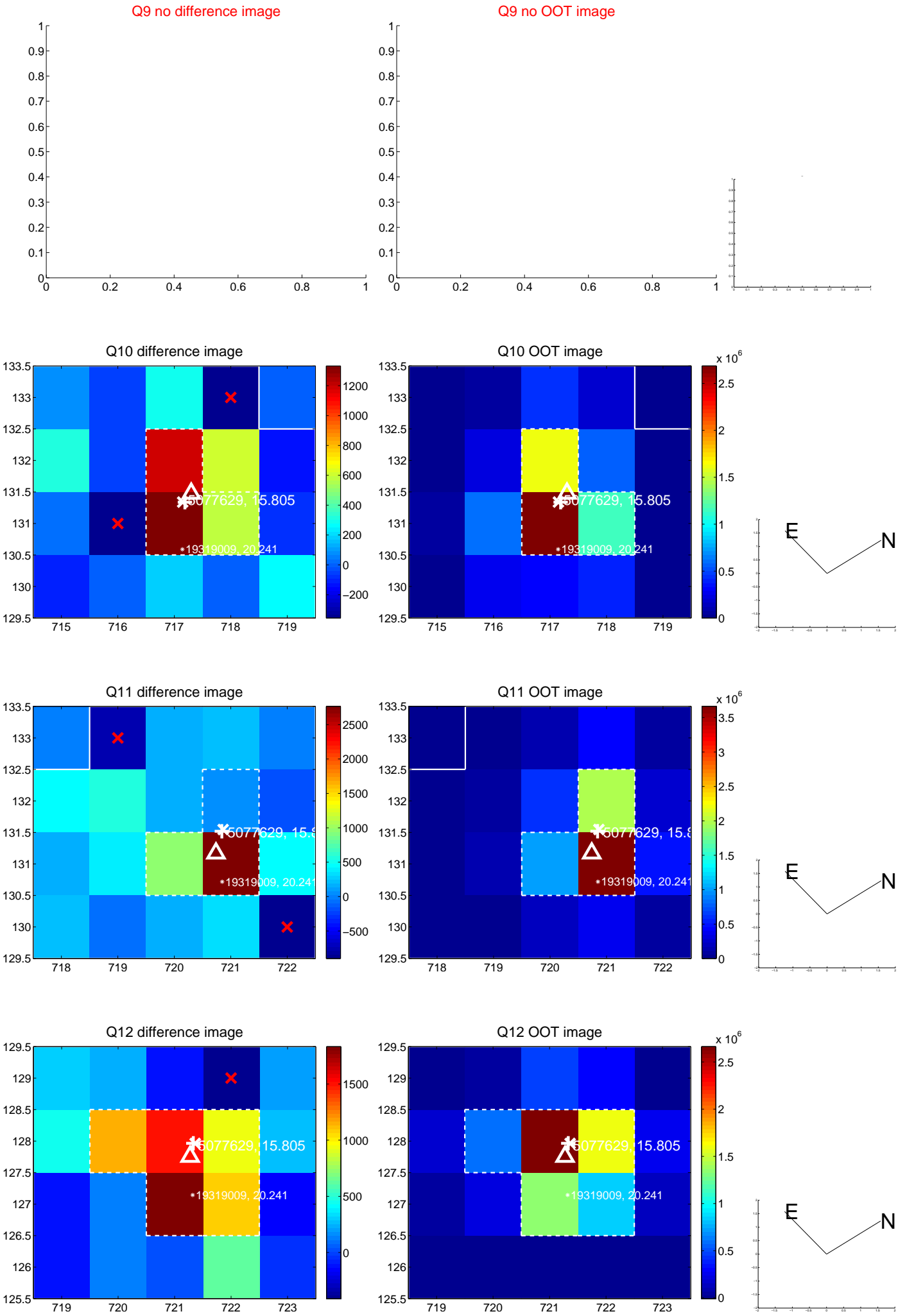


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

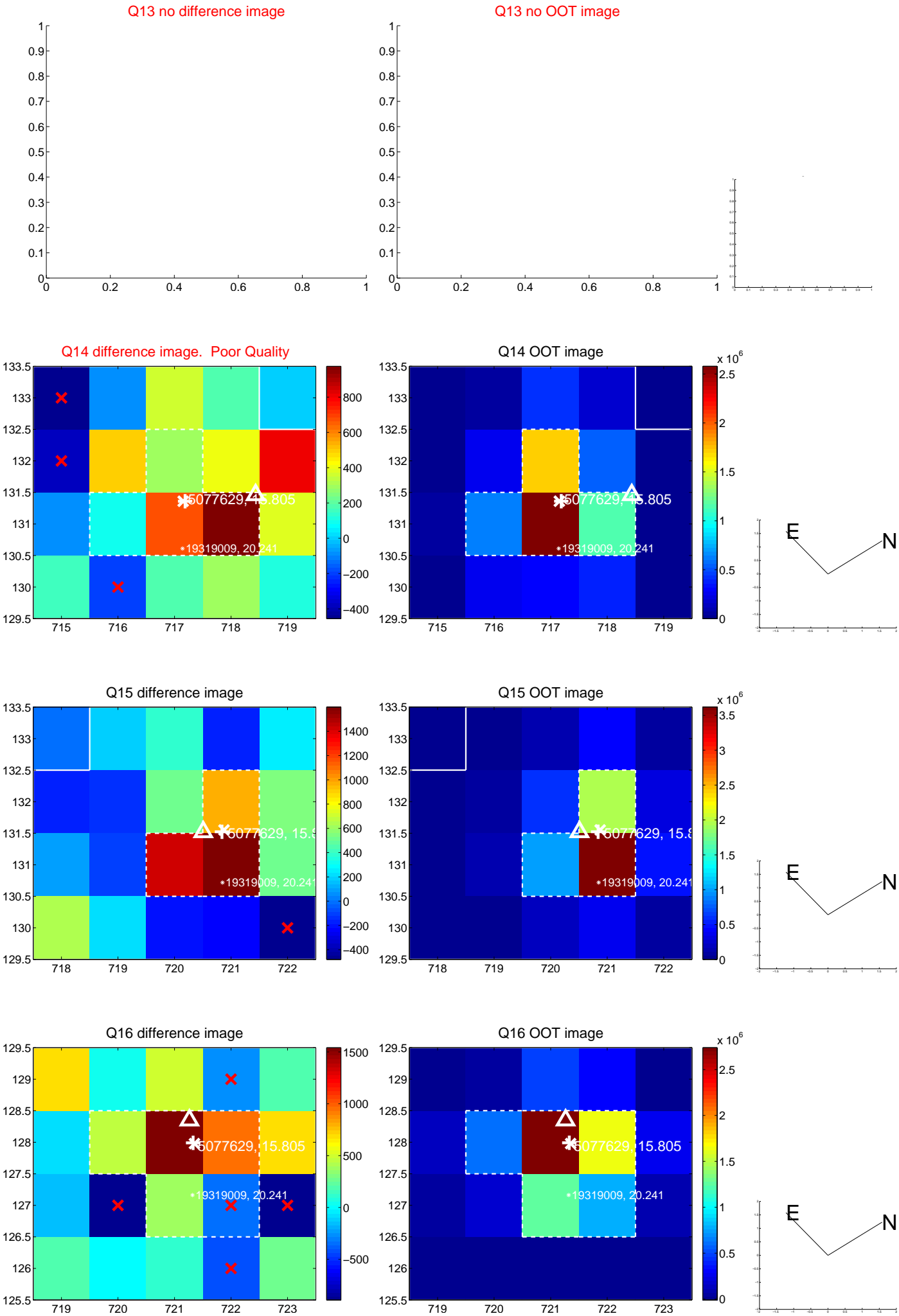




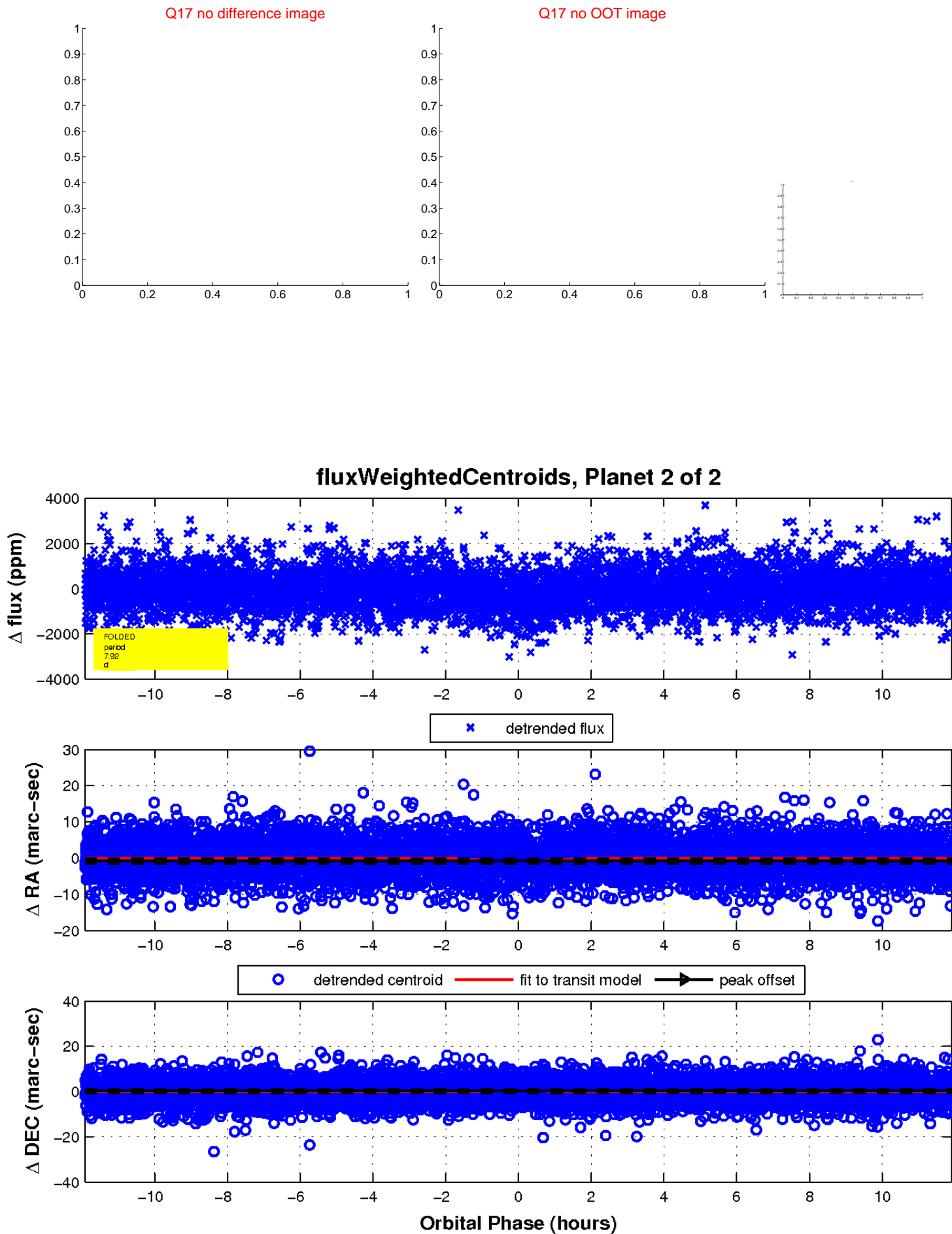
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

