

# KIC 007741837

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741837-01	OBS	No	4.128068	133.892177	27.4	16.937	13.7	8.4	4.13	6723	2.34	8110.82
007741837-02	OBS	No	4.128587	132.836050	76.3	27.205	14.5	16.4	4.13	6723	4.57	8109.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741837-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
007741837-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

**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.

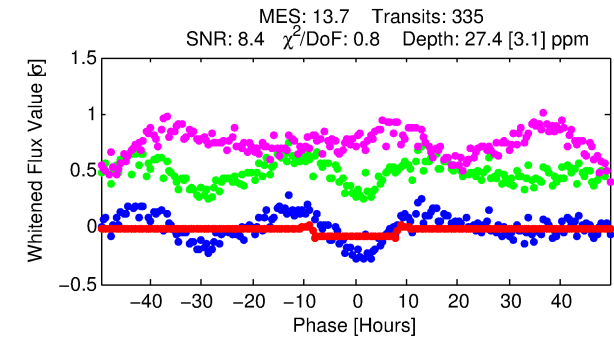
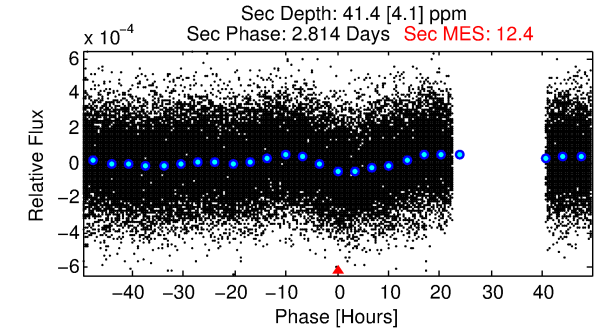
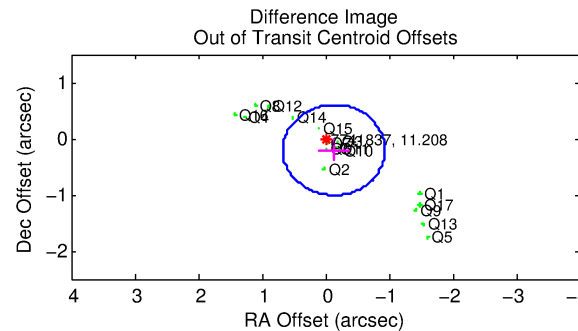
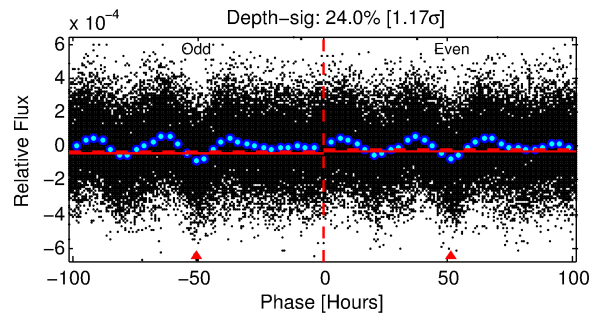
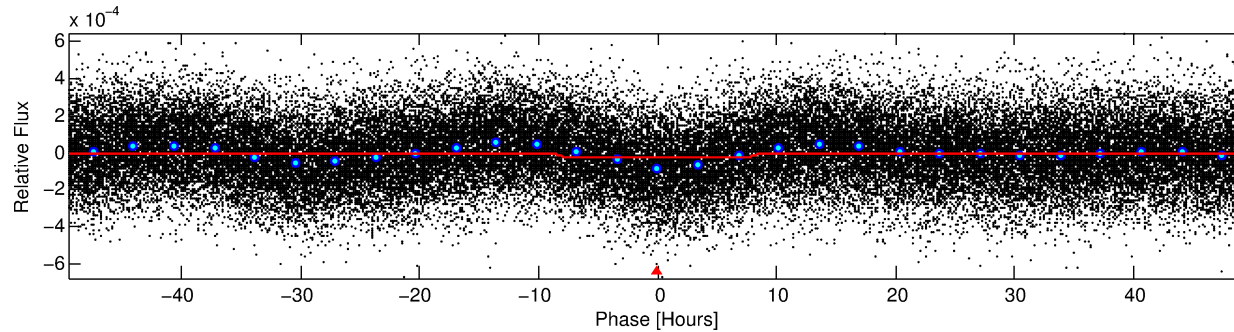
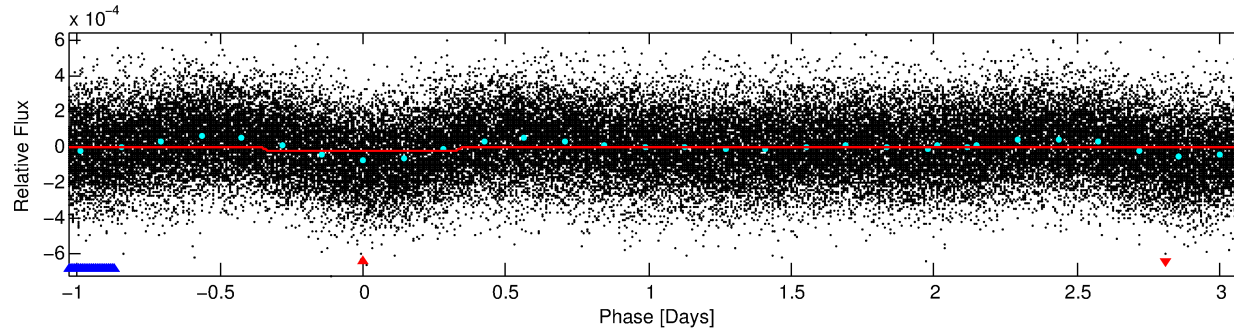
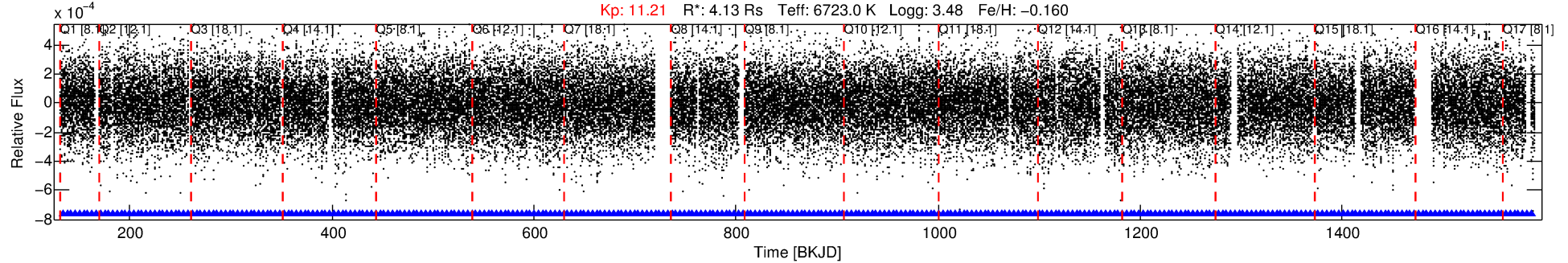
## Ephemeris Match Information For 007741837-01

No Significant Match Found

# DV One-Page Summary

KIC: 7741837 Candidate: 1 of 2 Period: 4.128 d  
KOI: K04619 Corr: No Ephemeris Match

Kp: 11.21 R\*: 4.13 Rs Teff: 6723.0 K Logg: 3.48 Fe/H: -0.160



## DV Fit Results:

Period = 4.12807 [0.00006] d  
Epoch = 133.8922 [0.0083] BKJD  
Rp/R\* = 0.0052 [0.0009]  
a/R\* = 1.52 [0.86]  
b = 0.74 [0.61]  
Seff = 8110.82 [4876.66]  
Teq = 2420 [364] K  
Rp = 2.34 [1.02] Re  
a = 0.0621 [0.0233] AU  
Ag = 16.05 [11.23] [1.34σ]  
Teffp = 7489 [730] K [6.21σ]

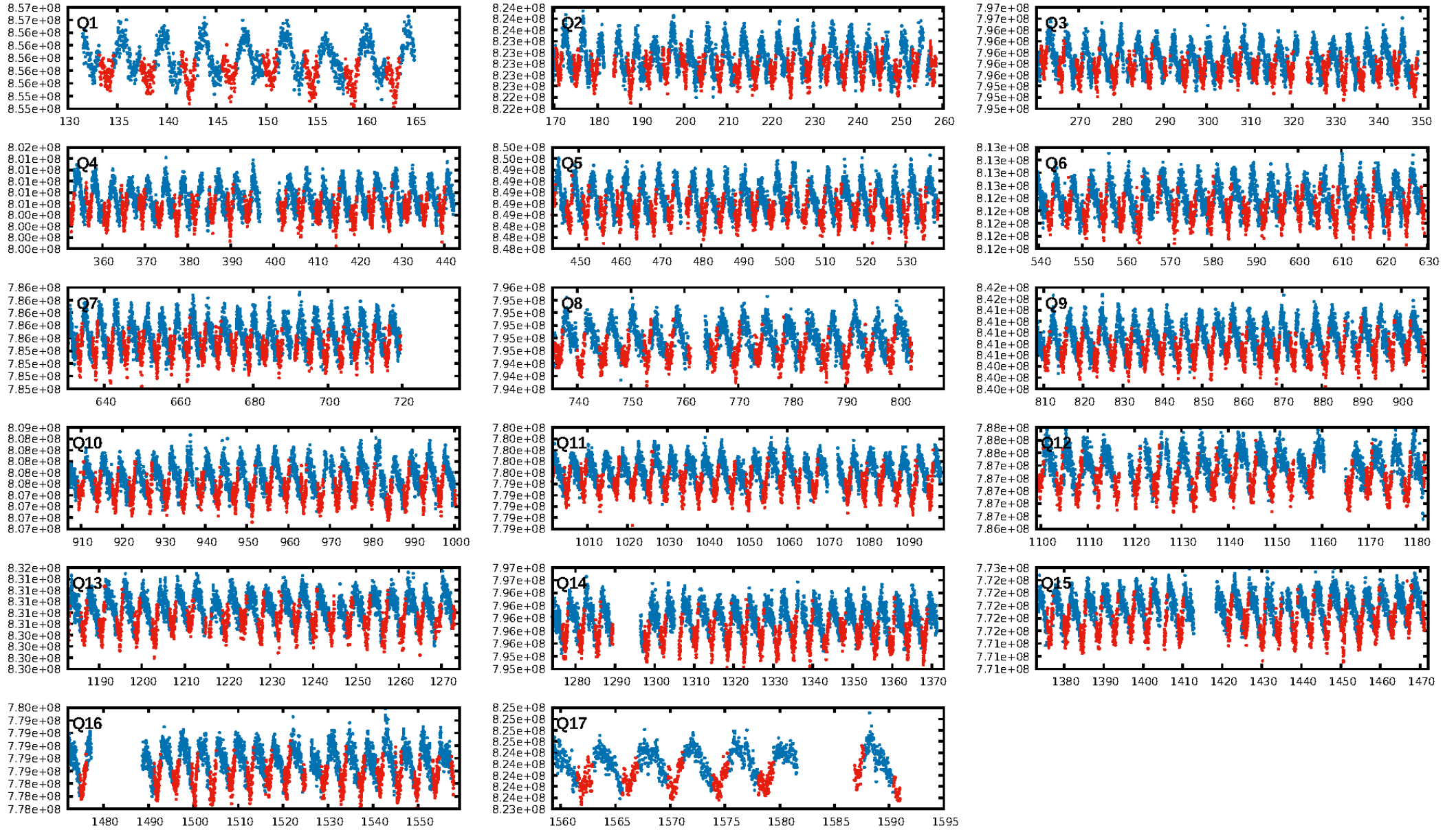
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.76e-48  
RollingBand-fgt: 1.00 [320/320]  
GhostDiagnostic-chr: 1.06  
Centroid-sig: 4.0%  
Centroid-so: 0.731 arcsec [1.53σ]  
OotOffset-rm: 0.243 arcsec [0.91σ]  
KicOffset-rm: 0.050 arcsec [0.16σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.76 [13/17]  
DiffImageOverlap-fno: 0.00 [0/17]

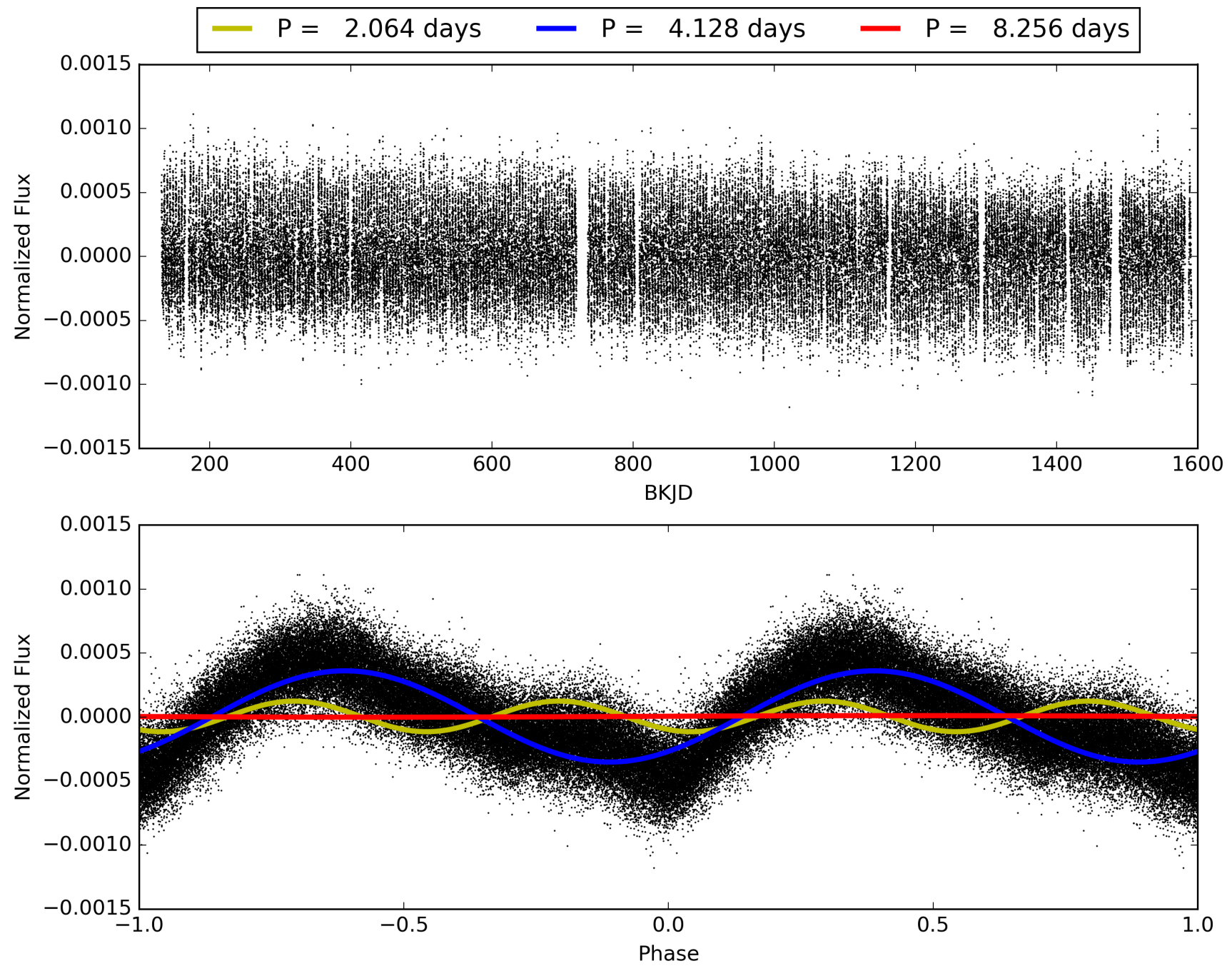
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:12:03 Z

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

# TCE 007741837-01, PDC Light Curves



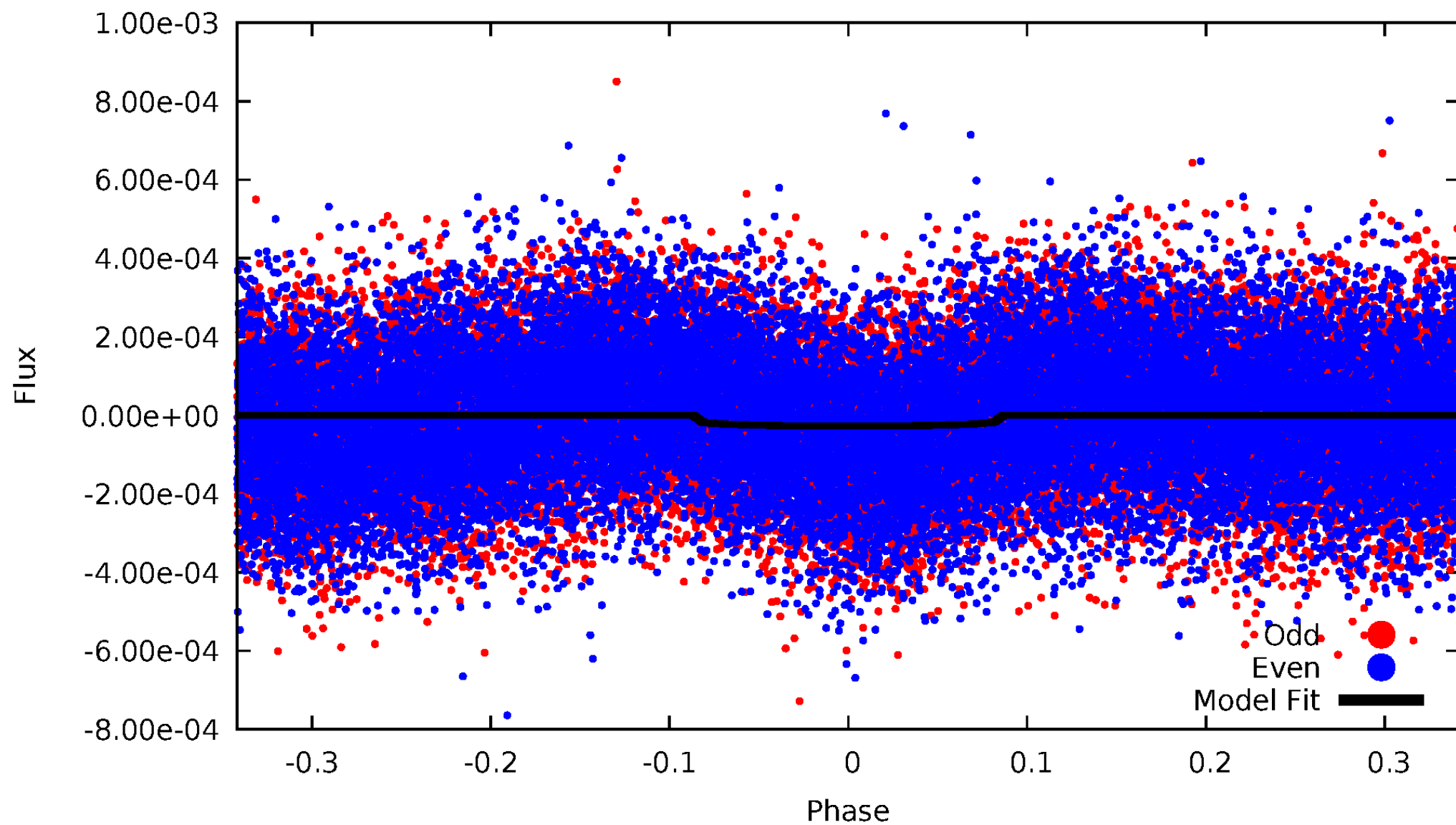
TCE 007741837-01





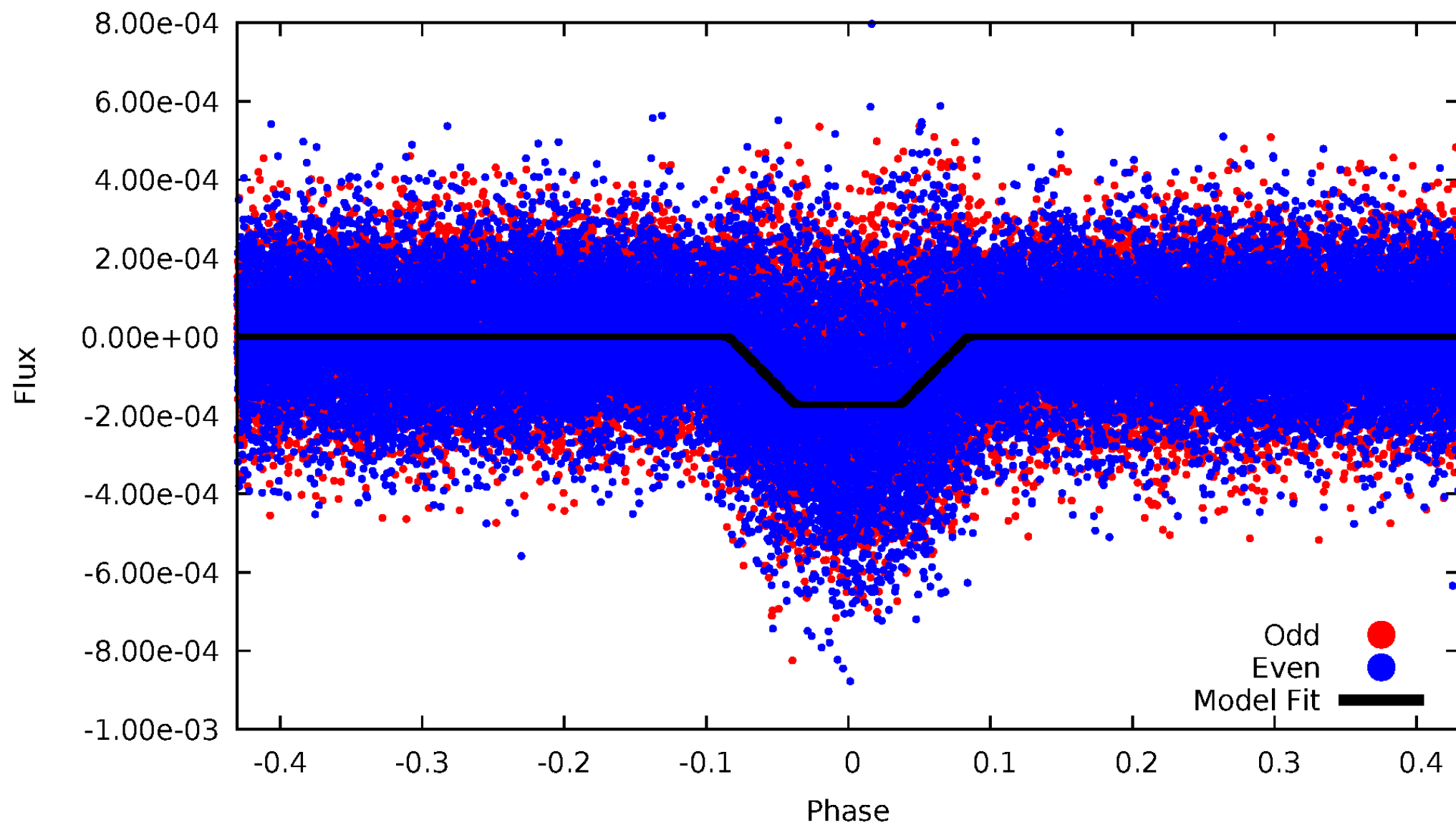
# DV Odd/Even

TCE 007741837-01



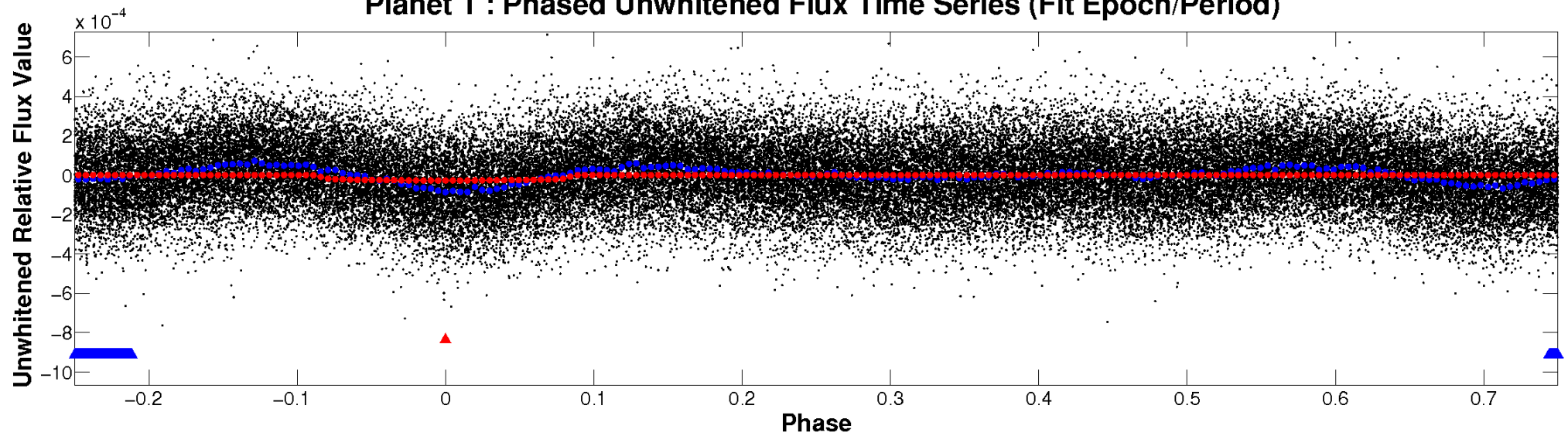
# ALT Odd/Even

TCE 007741837-01

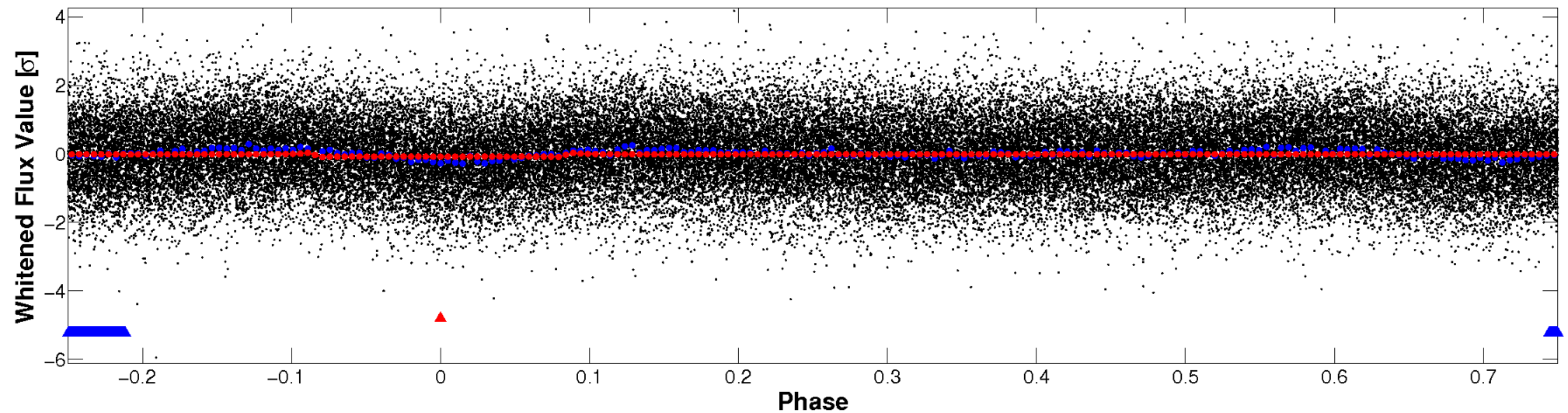


# Non-Whitened Vs. Whitened Light Curve

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

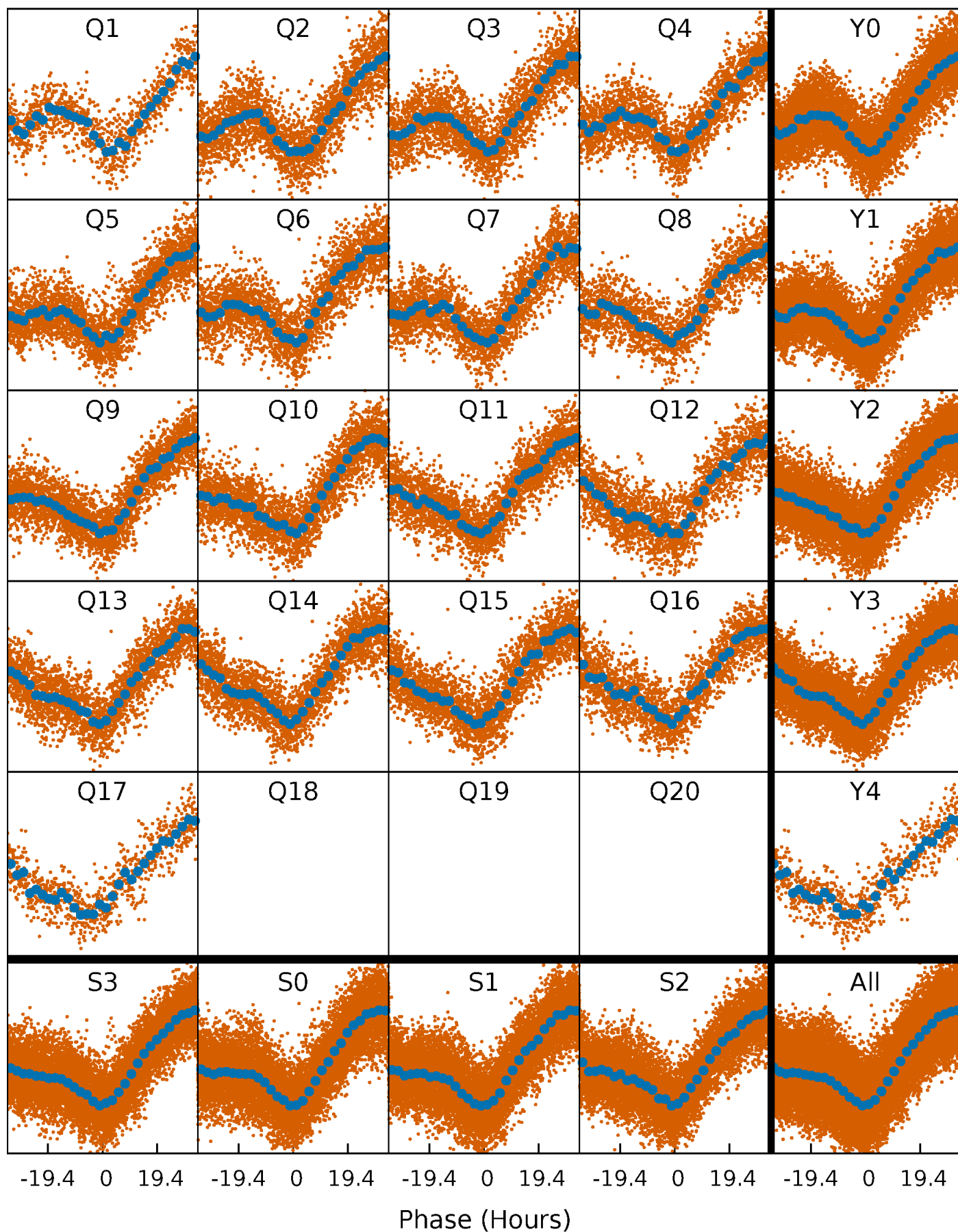


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

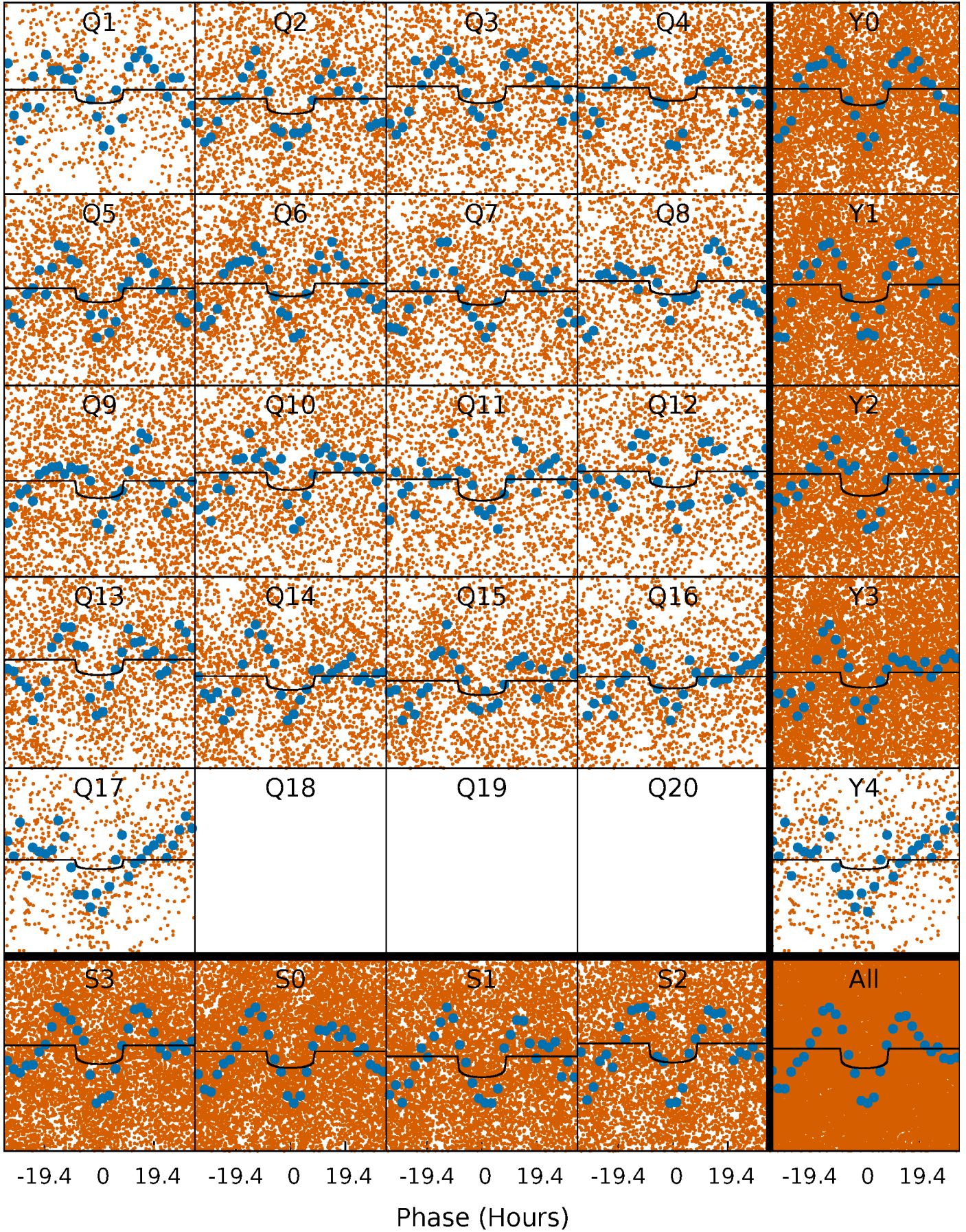
TCE 007741837-01 P= 4.128068 Days  $T_0=133.892177$  (BKJD)





# DV Quarter-Phased Transit Curves

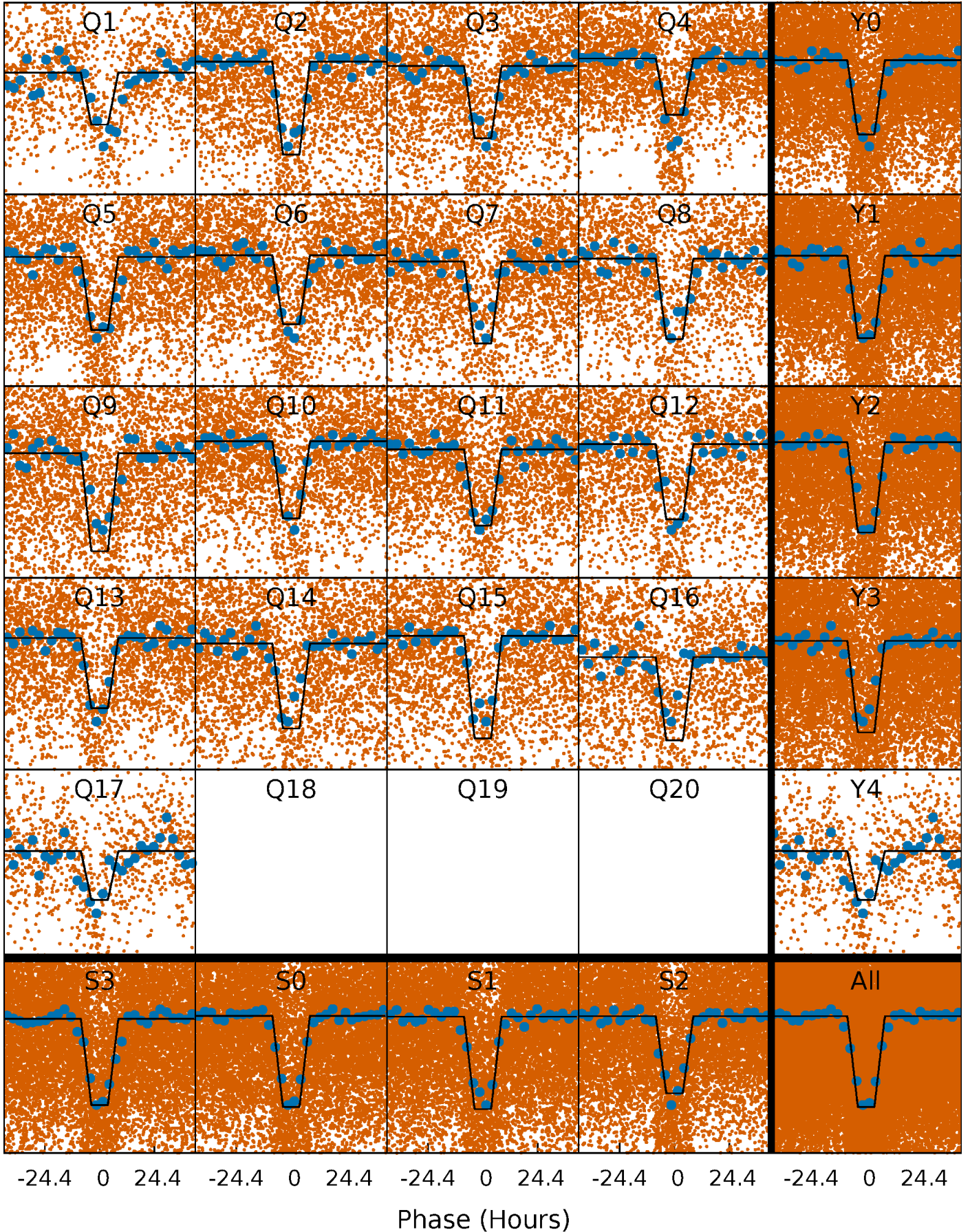
TCE 007741837-01 P= 4.128068 Days  $T_0=133.892177$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

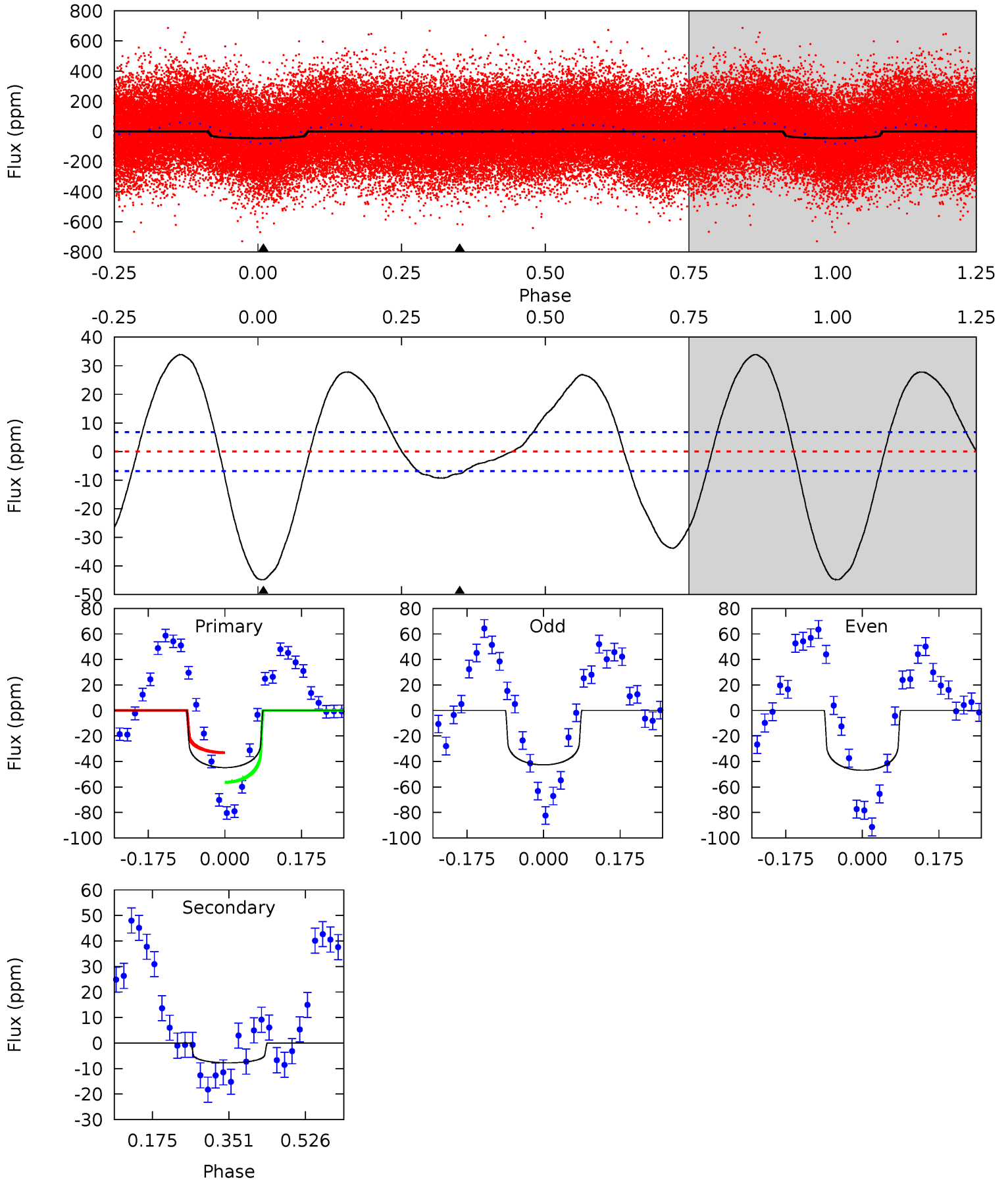
TCE 007741837-01   P= 4.128336 Days    $T_0=133.884776$  (BKJD)



# DV Model-Shift Uniqueness Test

007741837-01, P = 4.128068 Days, E = 129.764109 Days

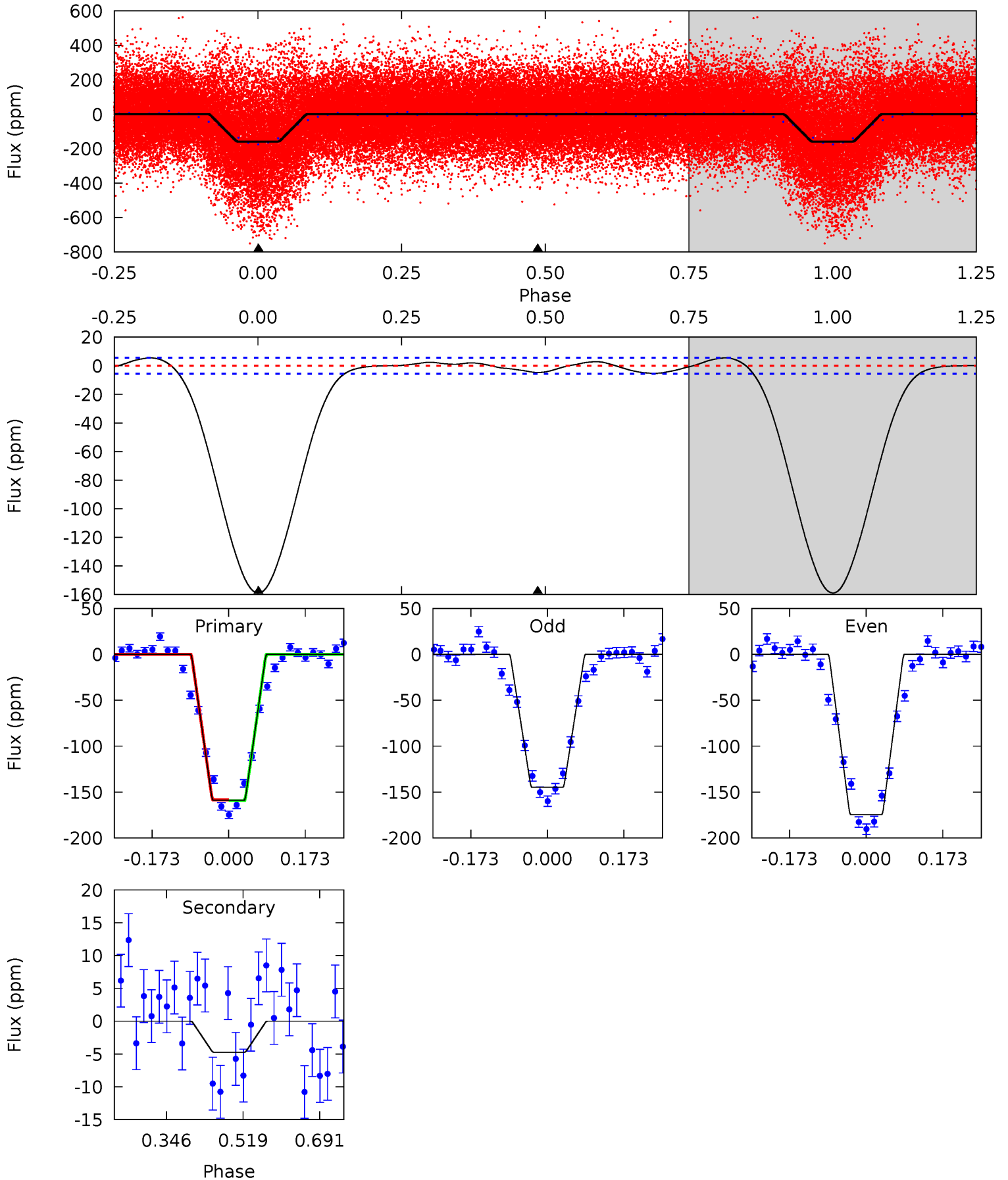
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.2	5.04	0	0	4.45	1.35	14.2	29.2	29.2	5.04	5.04	1.38	1.03	0.43	7.65



# Alt Model-Shift Uniqueness Test

007741837-01, P = 4.128336 Days, E = 129.756440 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
125.5	3.74	0	0	4.45	1.36	2.46	125.5	125.5	3.74	3.74	11.7	0.97	0.03	0.31





### Stellar Parameters For KIC 007741837

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6723^{+168}_{-185}$	$3.478^{+0.344}_{-0.086}$	$-0.160^{+0.300}_{-0.250}$	$4.134^{+0.515}_{-1.647}$	$1.872^{+0.199}_{-0.369}$	$0.037^{+0.103}_{-0.010}$
	+2%/-3%	+10%/-2%	+188%/-156%	+12%/-40%	+11%/-20%	+275%/-26%
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 007741837-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-8 \pm 2$	$2.18^{+0.60}_{-0.56}$	$3307^{+207}_{-328}$	$4878^{+557}_{-428}$	$3.424^{+2.881}_{-1.392}$
Alt.	$-5 \pm 1$	$5.71^{+0.79}_{-1.19}$	$3315^{+186}_{-334}$	$2233^{+715}_{-5016}$	$0.315^{+0.186}_{-0.105}$

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

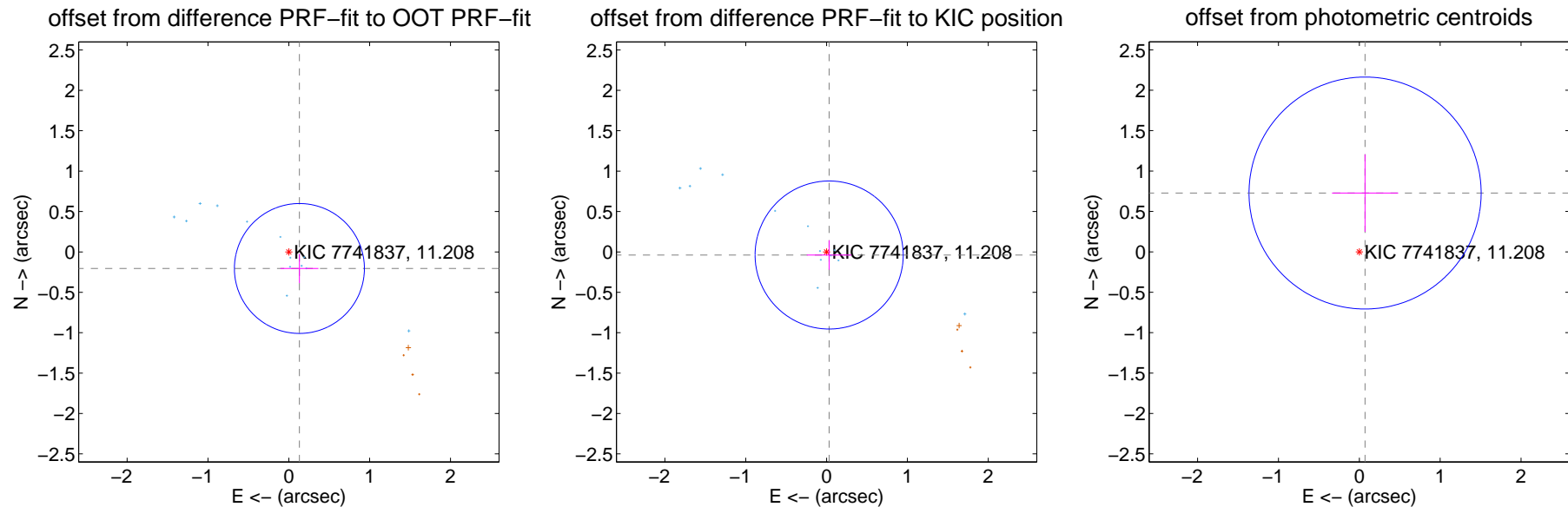
## DV Centroid Data

Supplemental centroid analysis for 007741837-01. **Kepler magnitude: 11.21.** Transit SNR 8.40

There are 13 quarters with good PRF difference image offsets

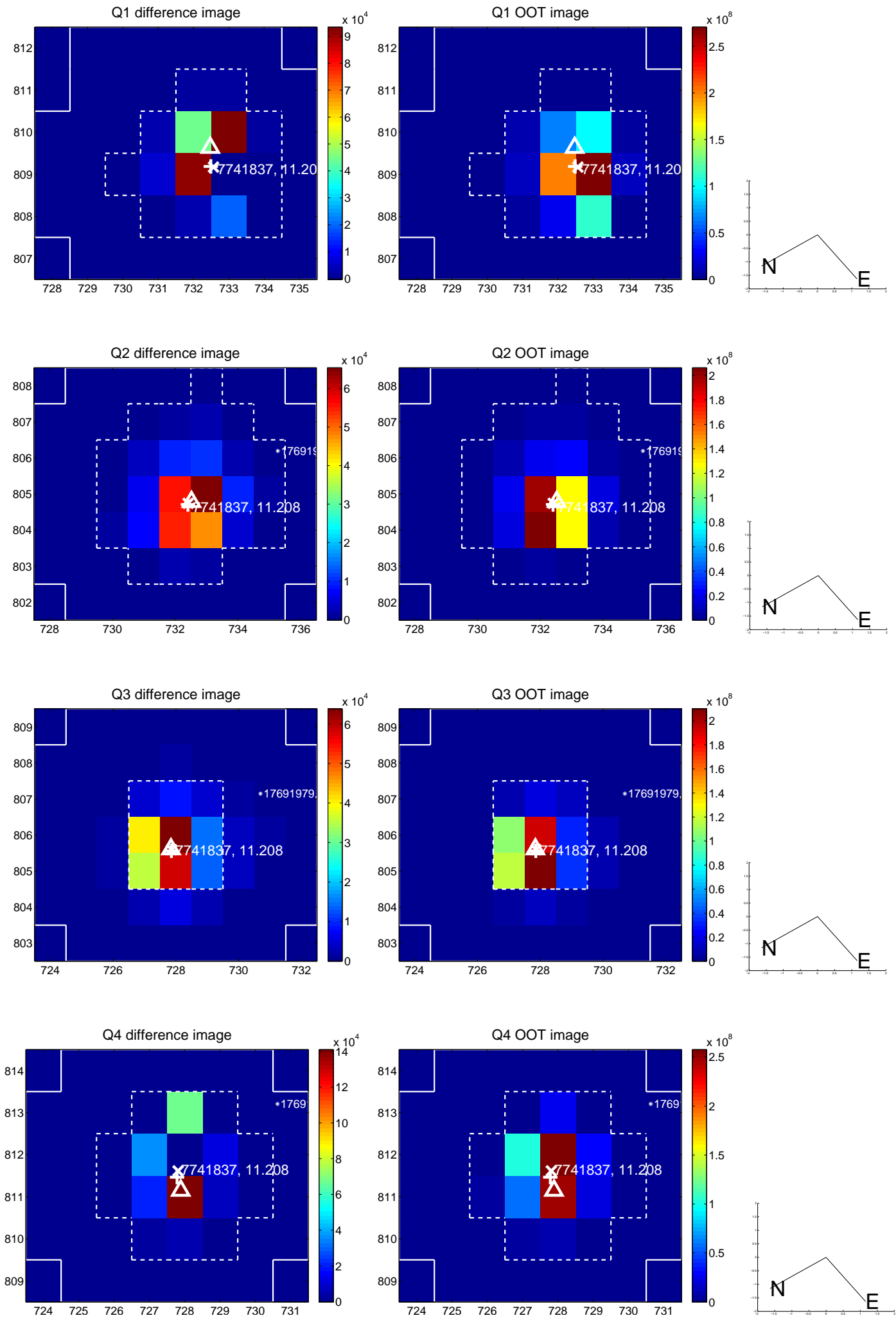
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.243 \pm 0.268$	0.91	$-0.131 \pm 0.236$	$-0.205 \pm 0.181$
PRF-fit source offset from KIC position	$0.050 \pm 0.305$	0.16	$-0.032 \pm 0.276$	$-0.038 \pm 0.182$
photometric centroid source offset	$0.73 \pm 0.48$	1.53	$-0.07 \pm 0.41$	$0.73 \pm 0.48$

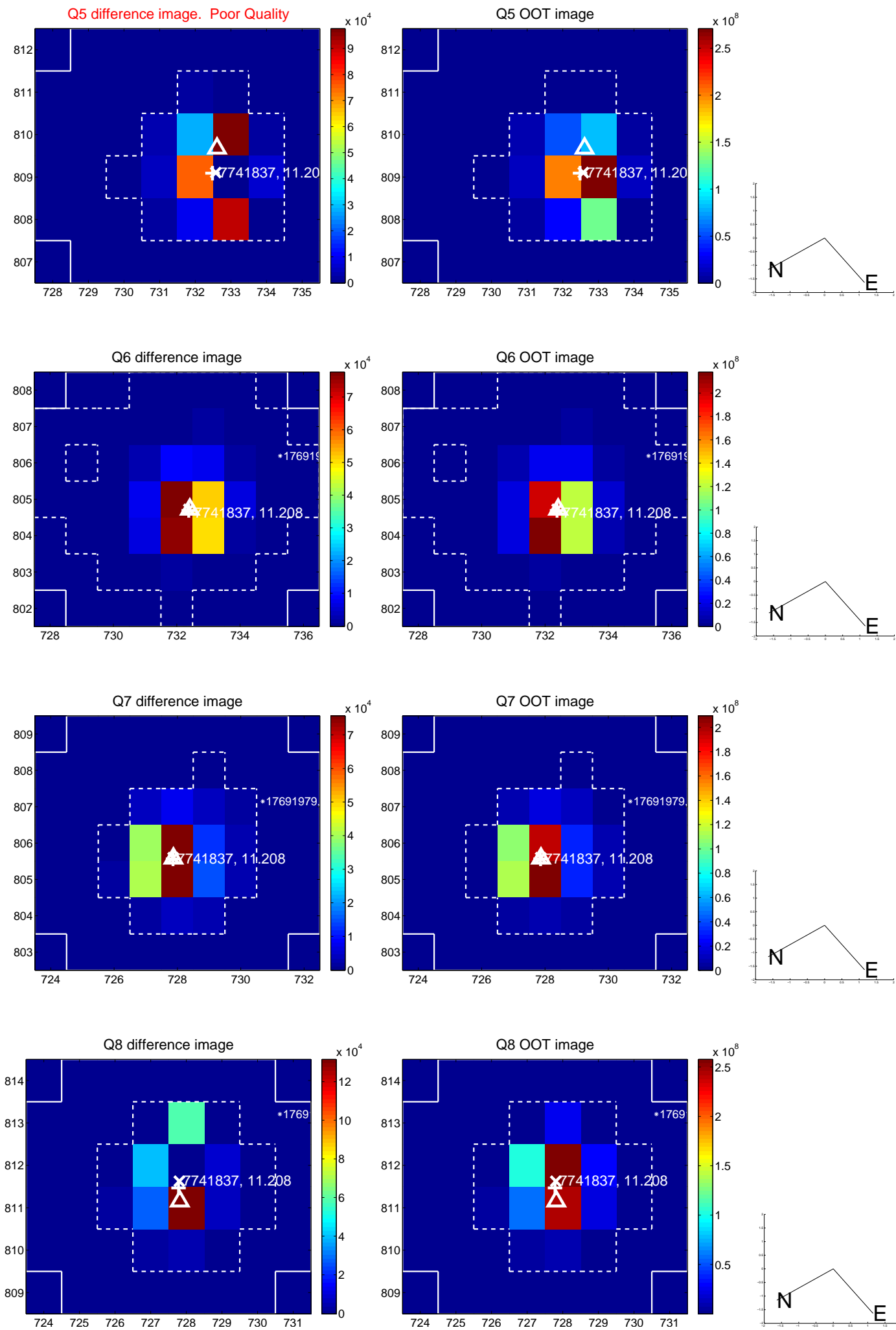


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

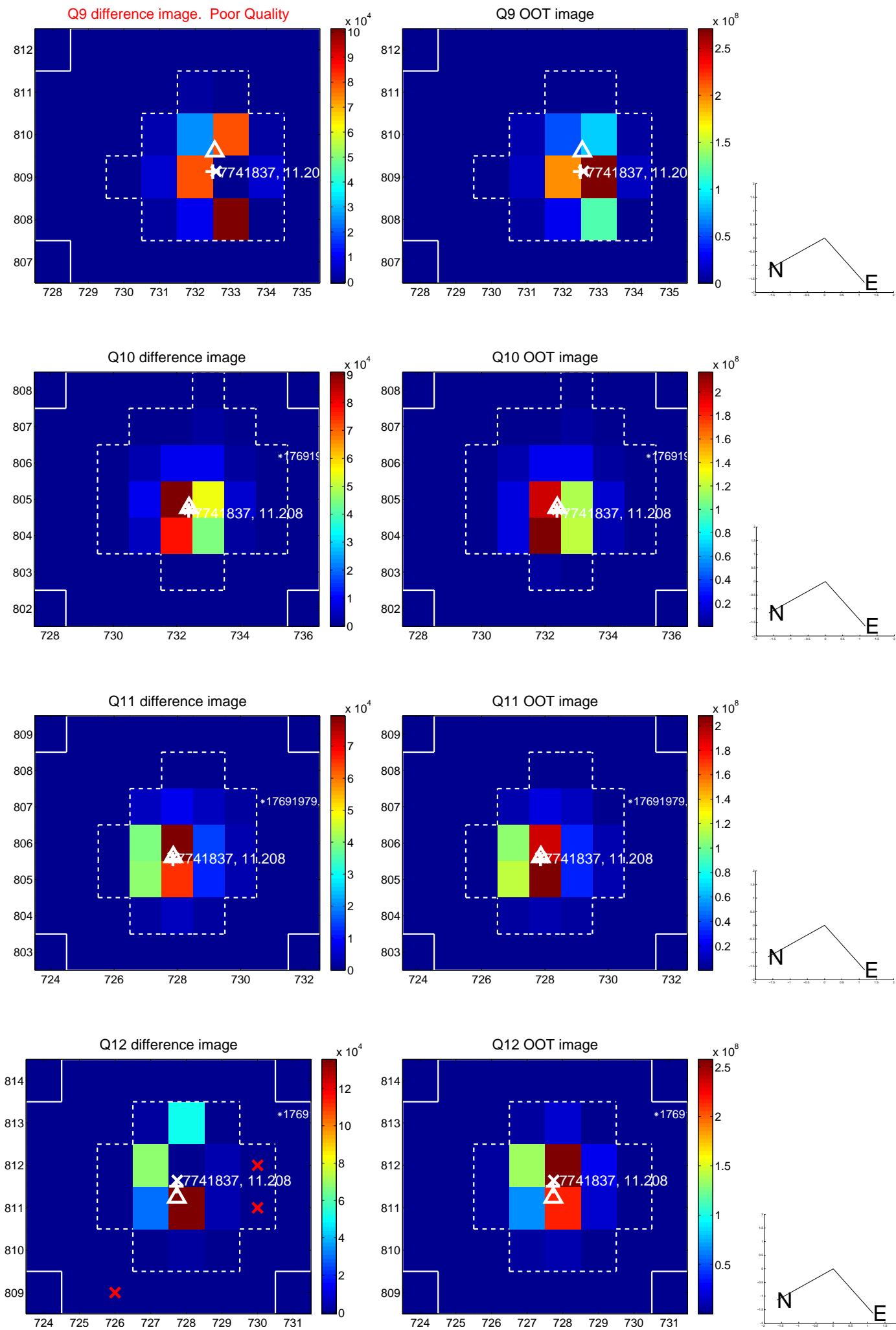


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

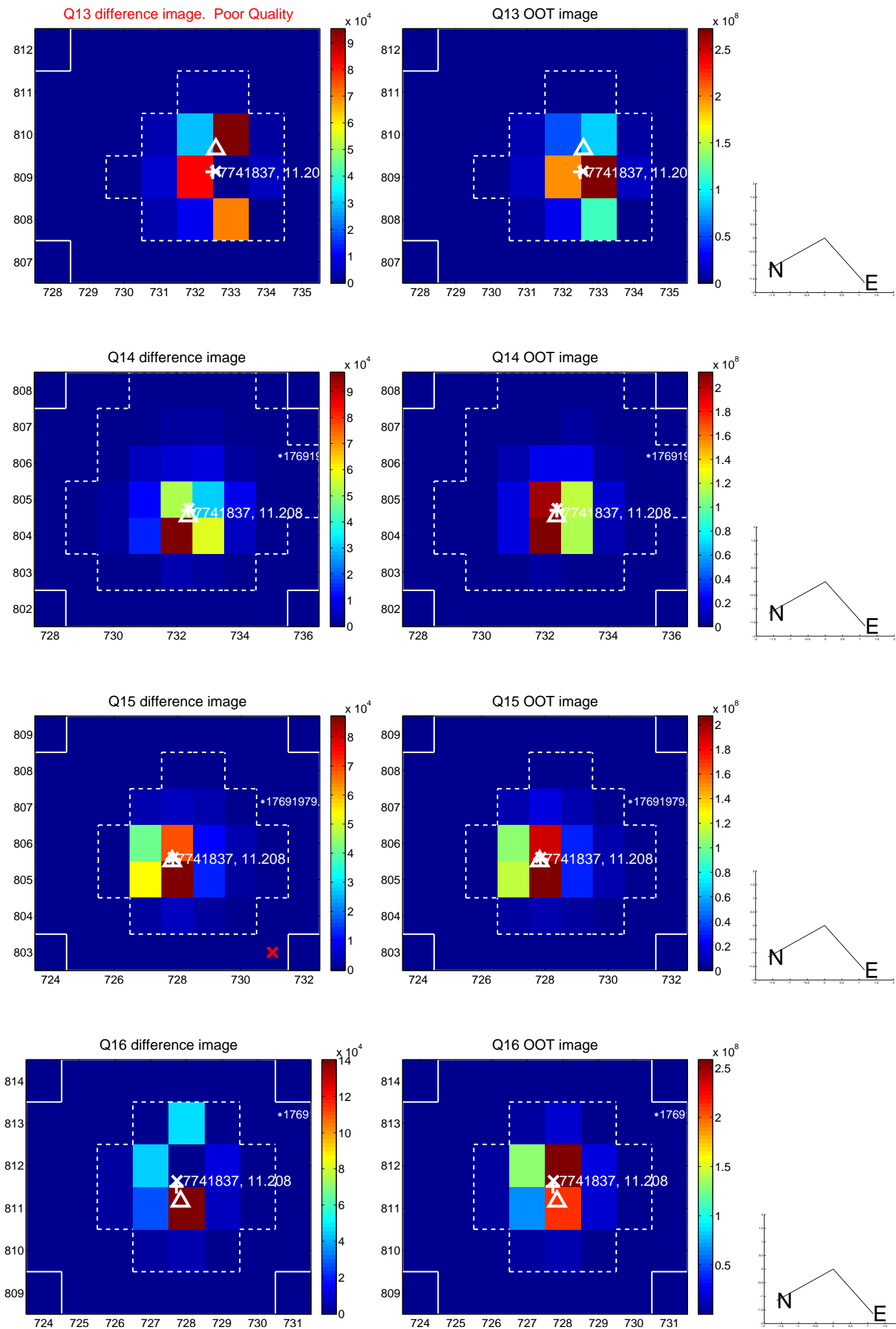




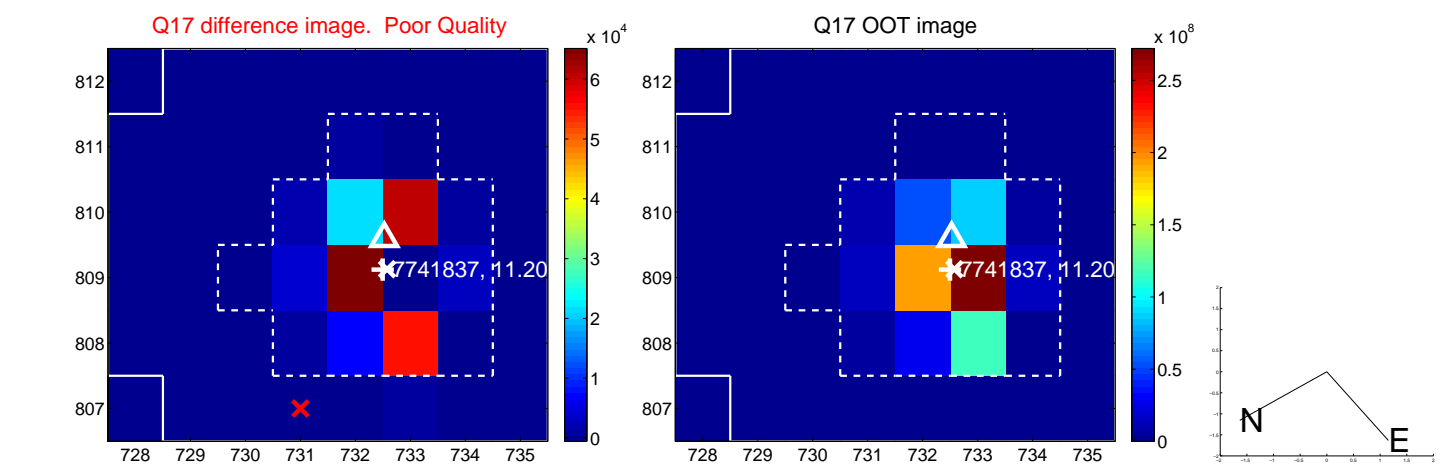
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



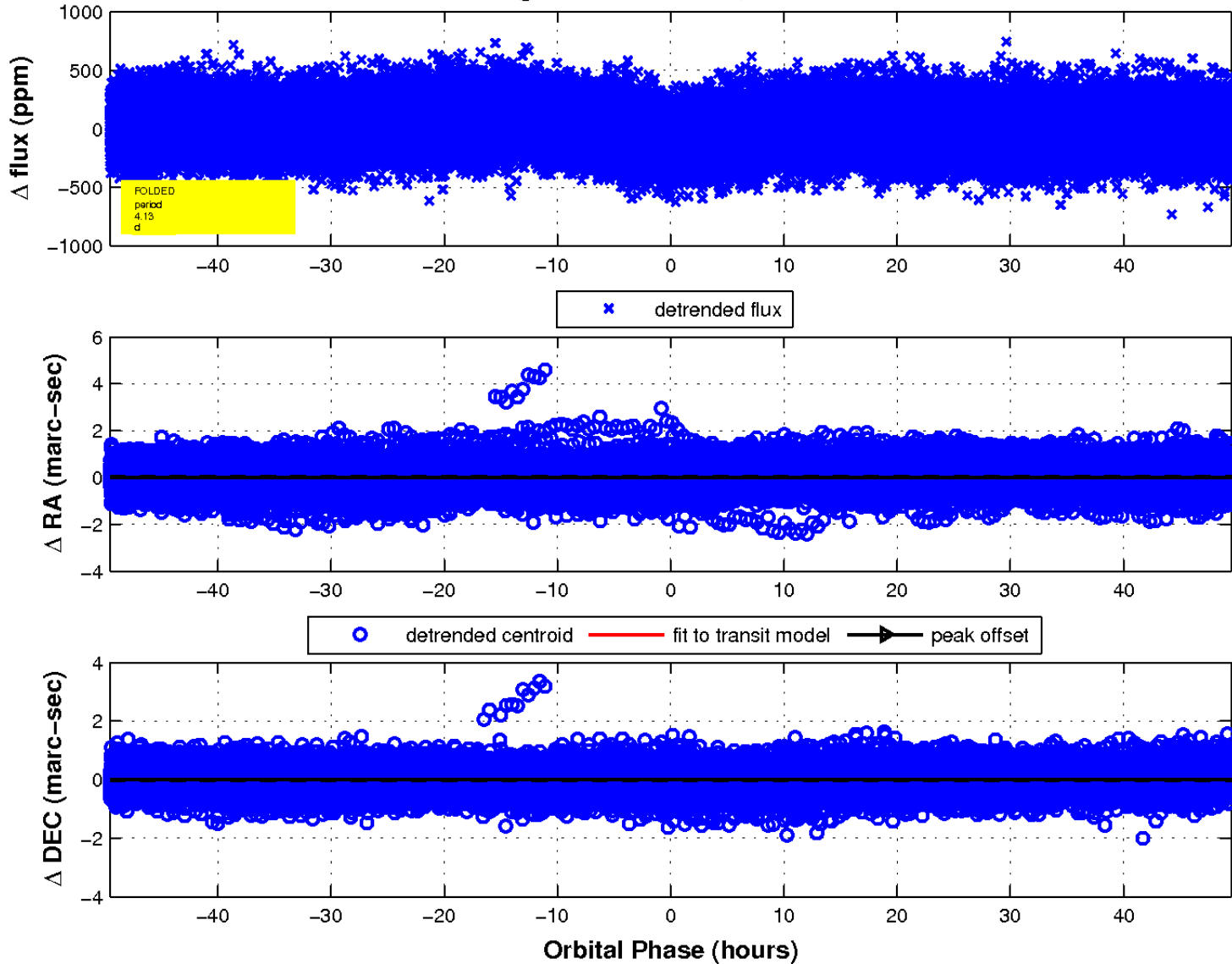
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

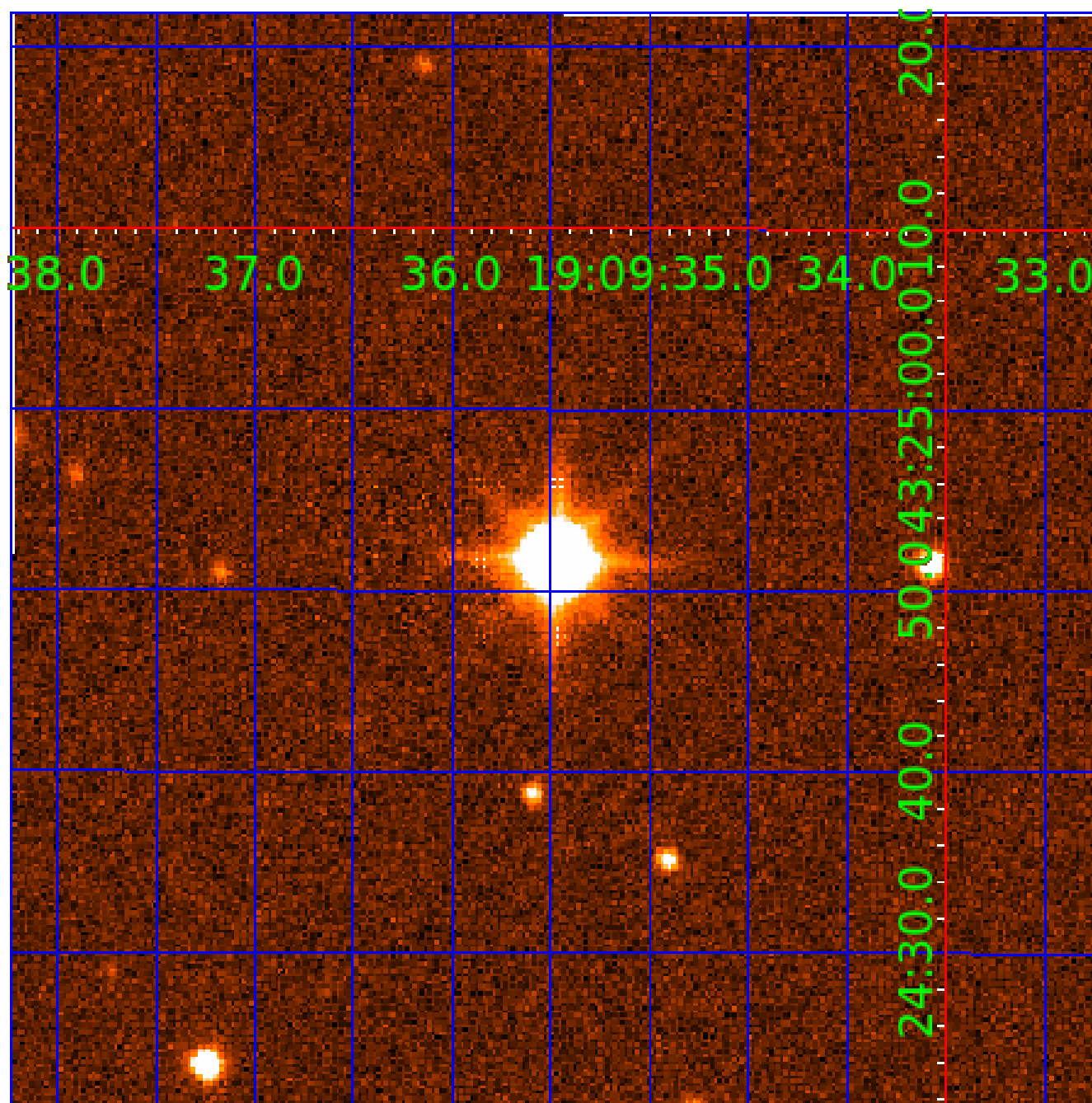


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 007741837

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007741837-01	OBS	No	4.128068	133.892177	27.4	16.937	13.7	8.4	4.13	6723	2.34	8110.82
007741837-02	OBS	No	4.128587	132.836050	76.3	27.205	14.5	16.4	4.13	6723	4.57	8109.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007741837-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
007741837-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—SAME_NTL_PERIOD—CENT_SATURATED

**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.

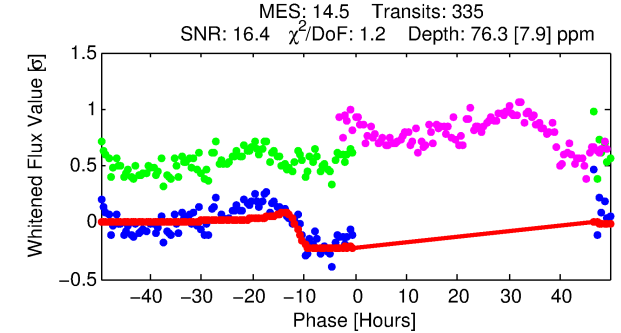
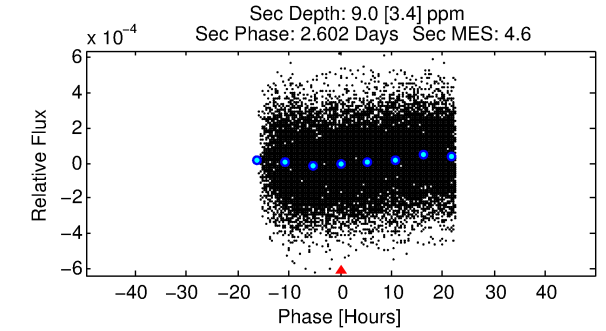
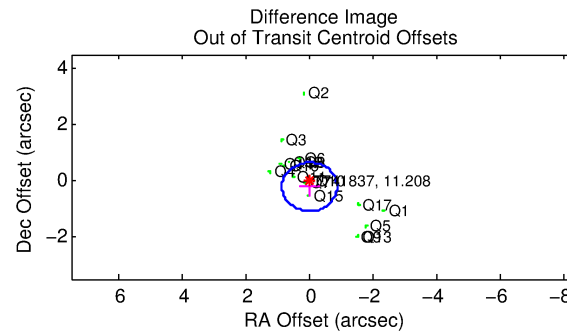
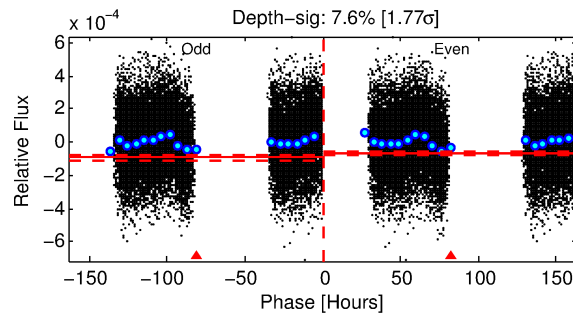
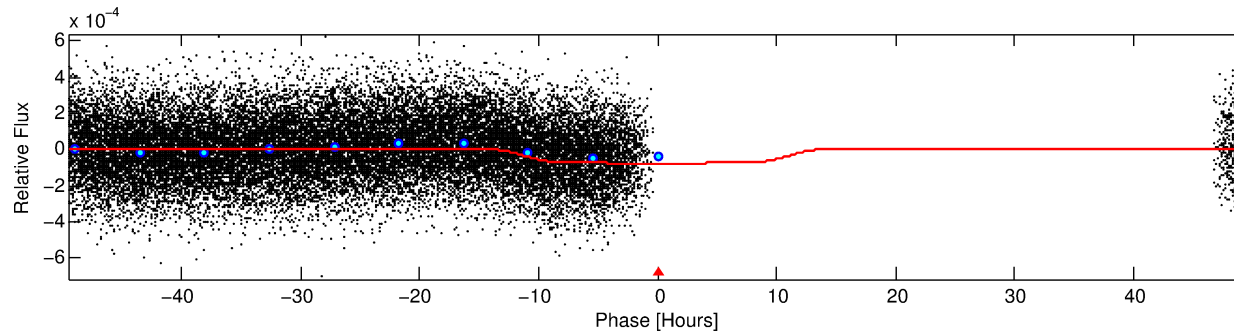
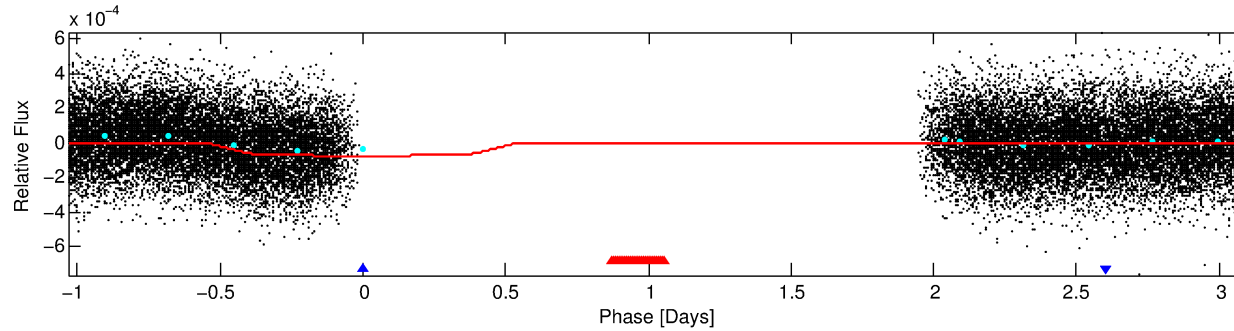
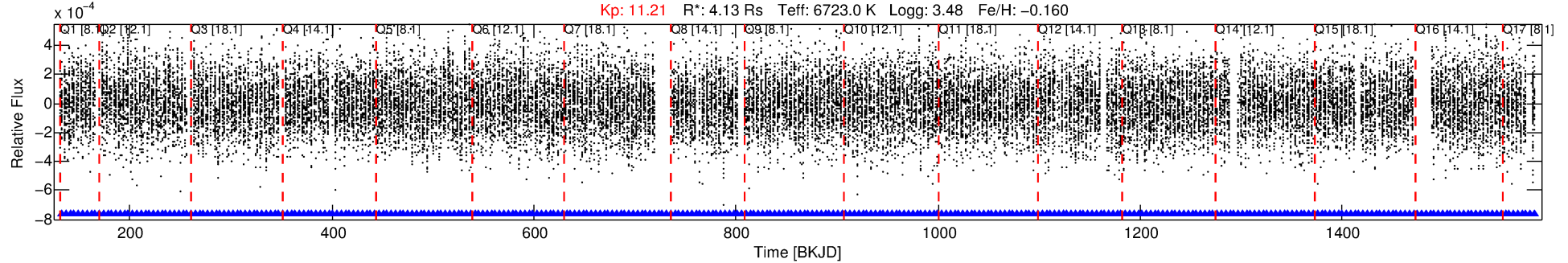
## Ephemeris Match Information For 007741837-02

No Significant Match Found

# DV One-Page Summary

KIC: 7741837 Candidate: 2 of 2 Period: 4.129 d  
KOI: K04619 Corr: No Ephemeris Match

Kp: 11.21 R\*: 4.13 Rs Teff: 6723.0 K Logg: 3.48 Fe/H: -0.160



## DV Fit Results:

Period = 4.12859 [0.00011] d  
Epoch = 132.8361 [0.1159] BKJD  
Rp/R\* = 0.0101 [0.0004]  
a/R\* = 1.04 [0.02]  
b = 0.97 [0.02]  
Seff = 8109.46 [4875.85]  
Teq = 2420 [364] K  
Rp = 4.57 [1.83] Re  
a = 0.0621 [0.0233] AU  
Ag = 0.92 [0.65] [-0.13σ]  
Teffp = 3661 [365] K [2.41σ]

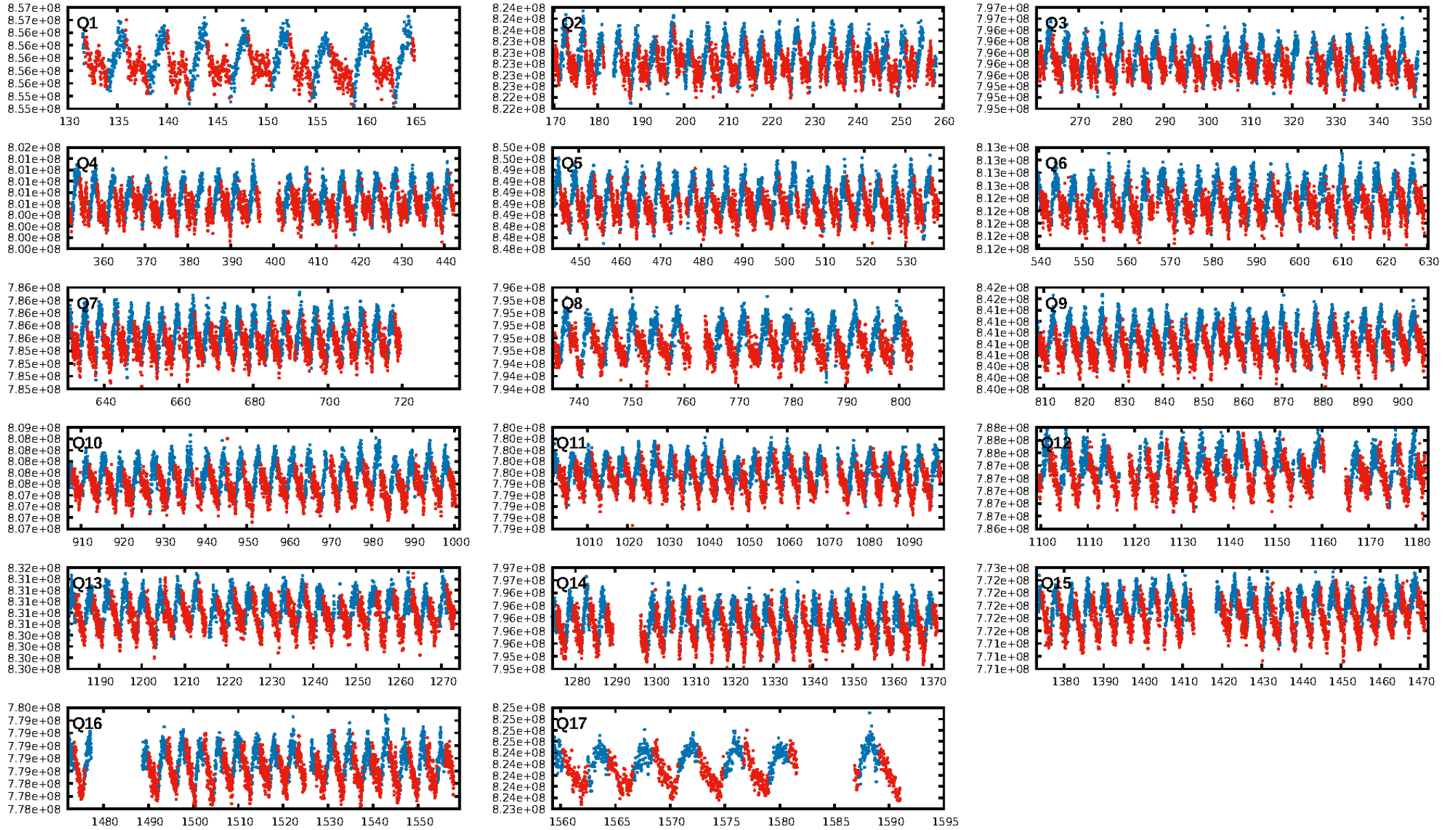
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.34e-44  
RollingBand-fgt: 1.00 [320/320]  
GhostDiagnostic-chr: 1.309  
Centroid-sig: 1.1%  
Centroid-so: 0.529 arcsec [3.49σ]  
OotOffset-rm: 0.222 arcsec [0.77σ]  
KicOffset-rm: 0.124 arcsec [0.36σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 0.00 [0/17]

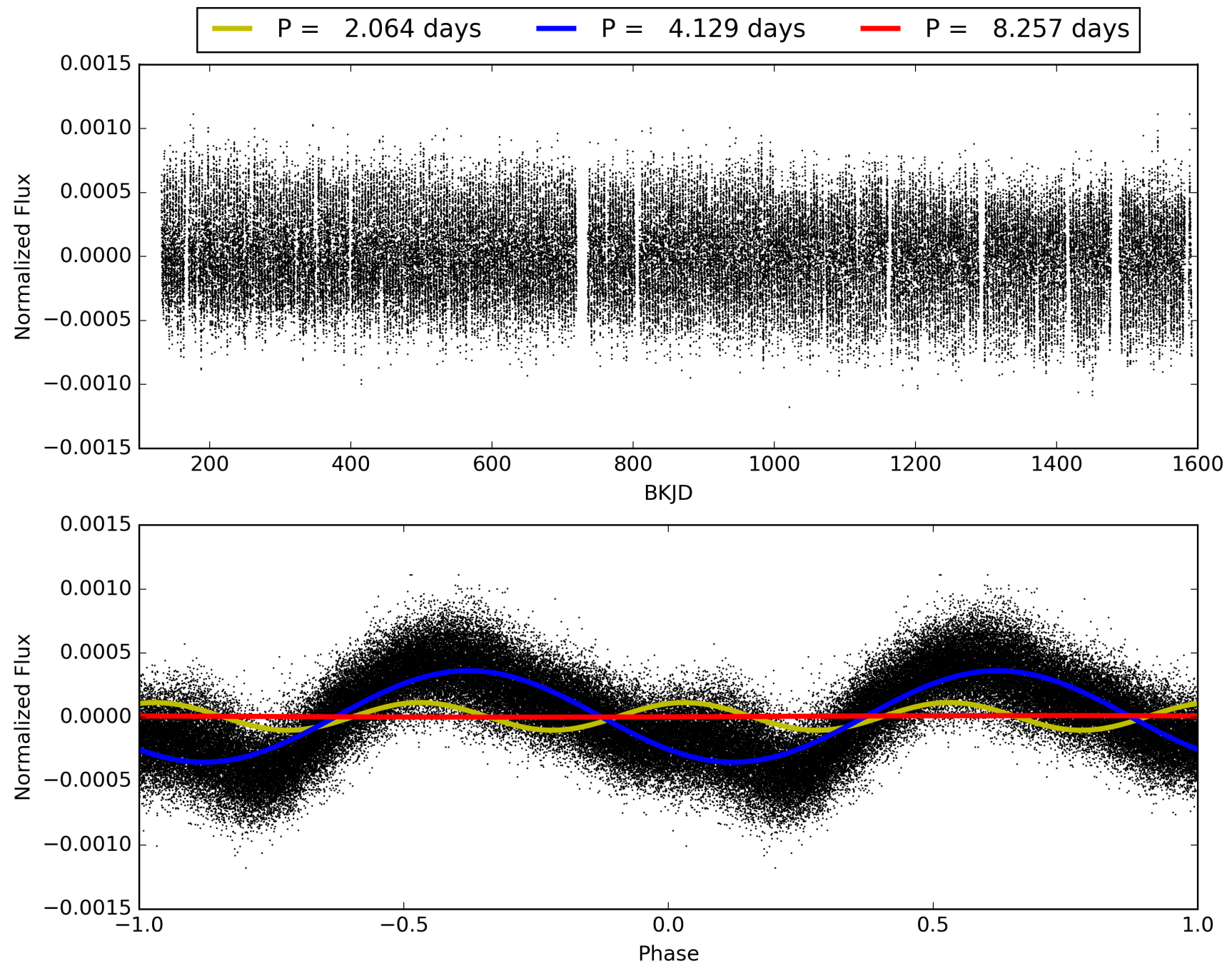
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:12:17 Z

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

# TCE 007741837-02, PDC Light Curves



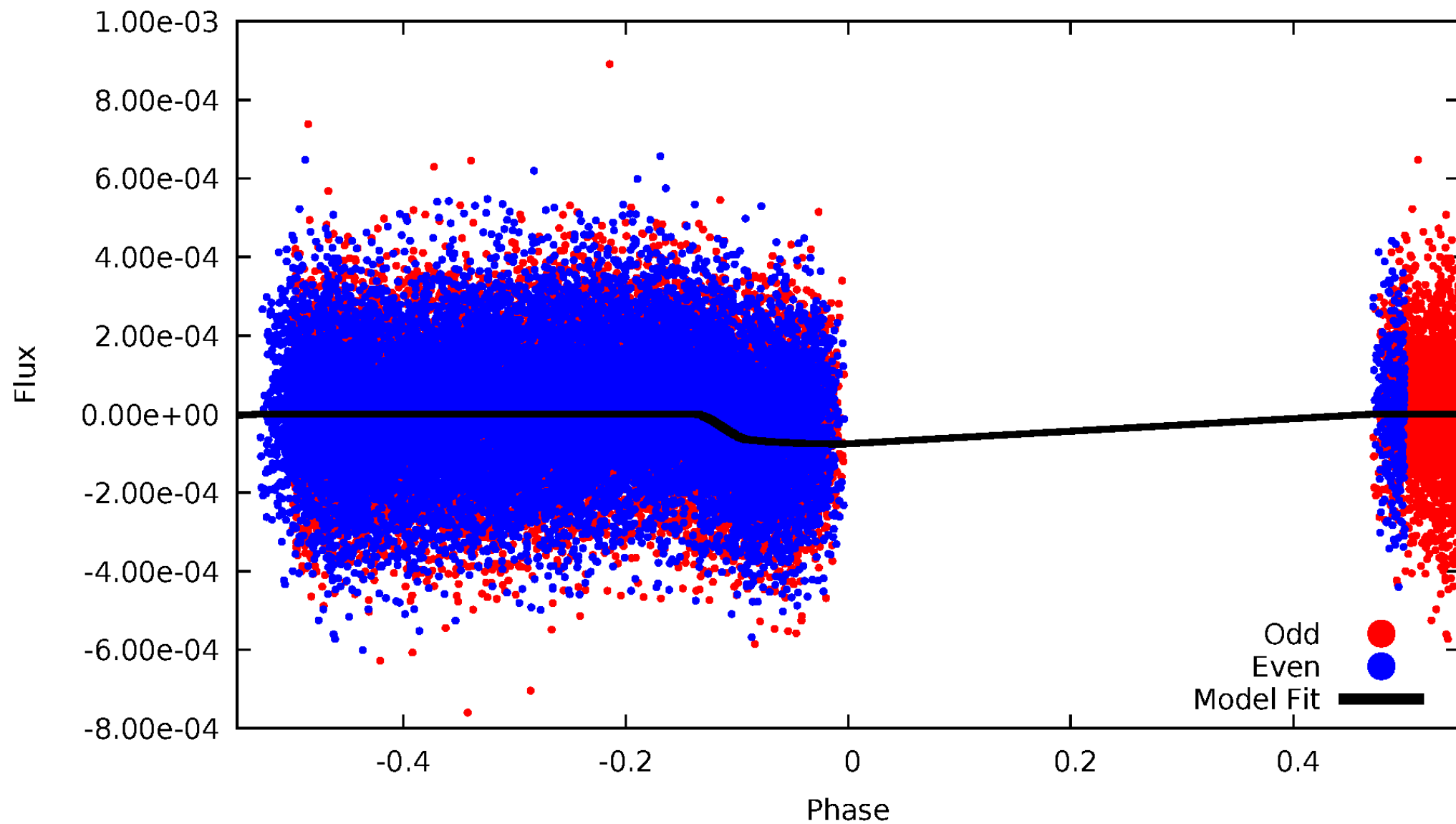
TCE 007741837-02





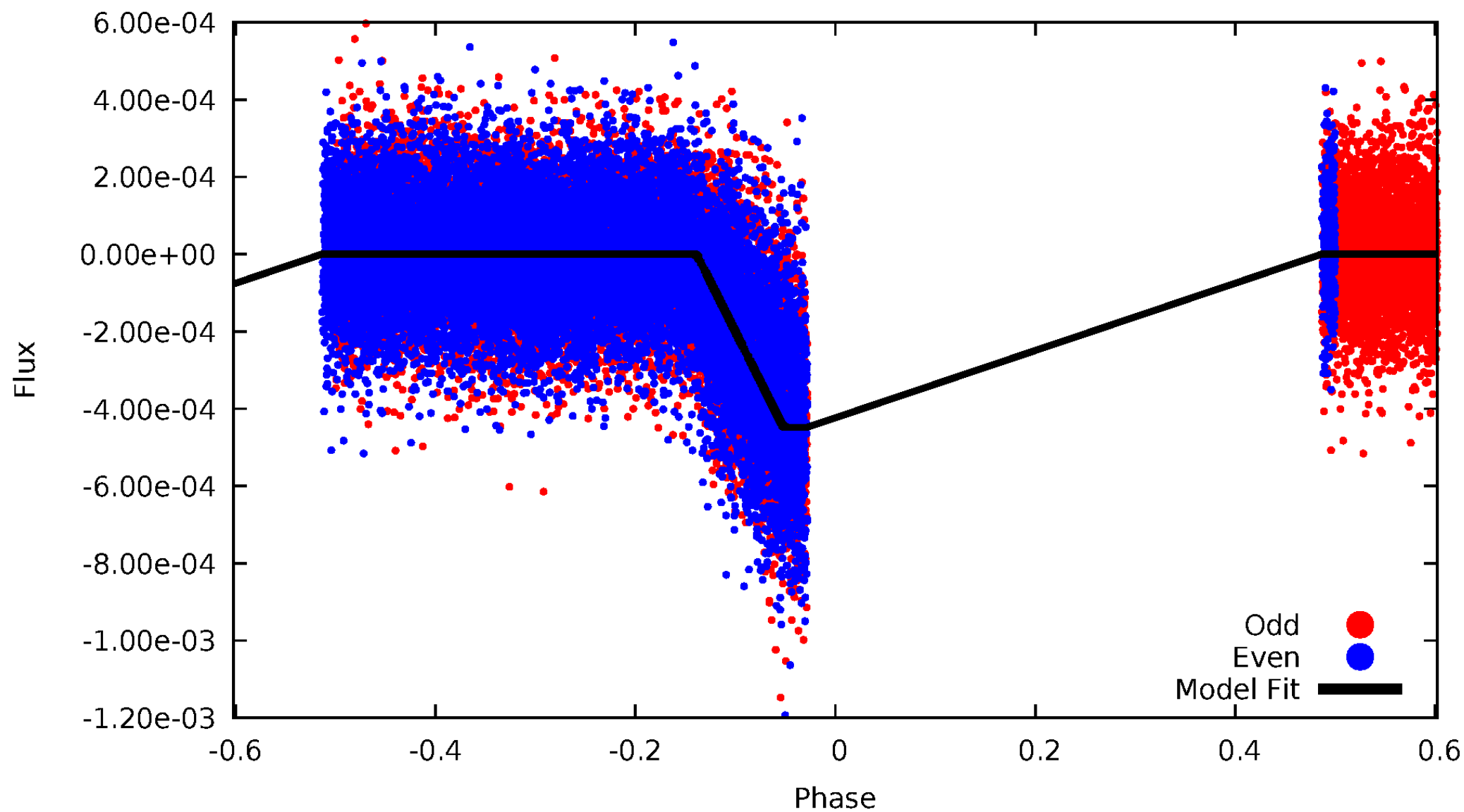
DV Odd/Even

TCE 007741837-02



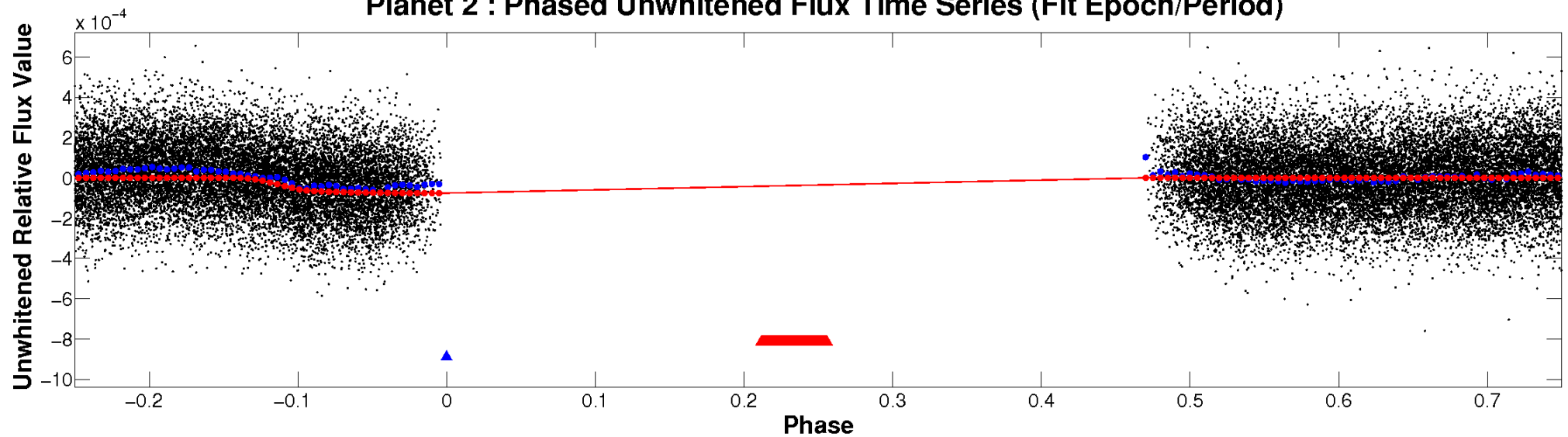
# ALT Odd/Even

TCE 007741837-02

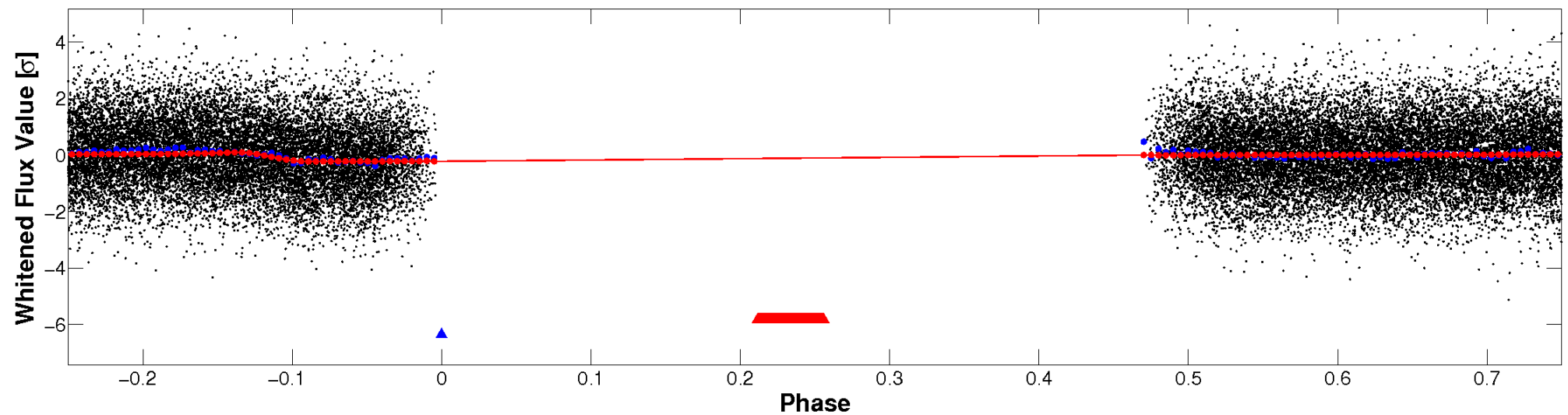


# Non-Whitened Vs. Whitened Light Curve

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

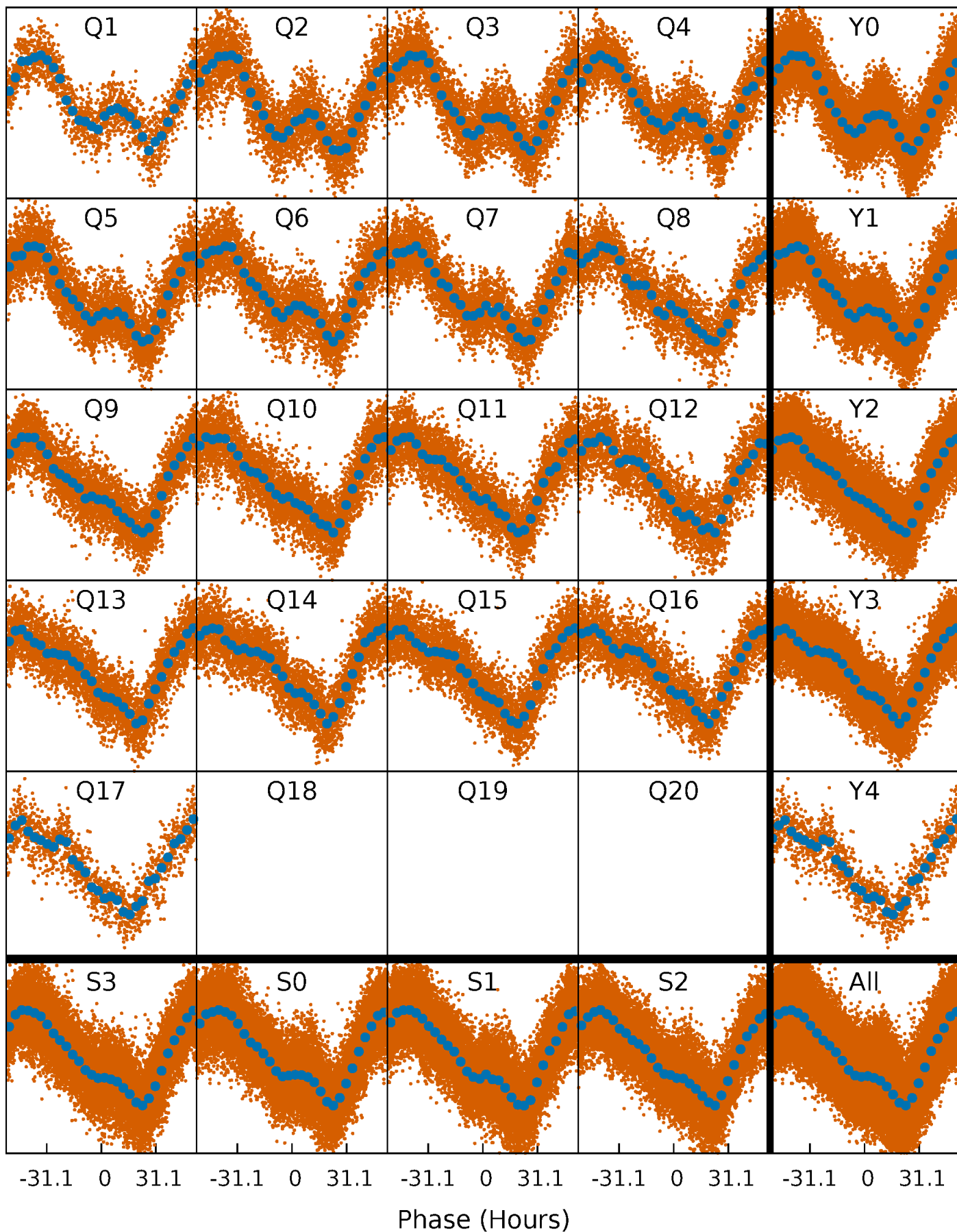


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



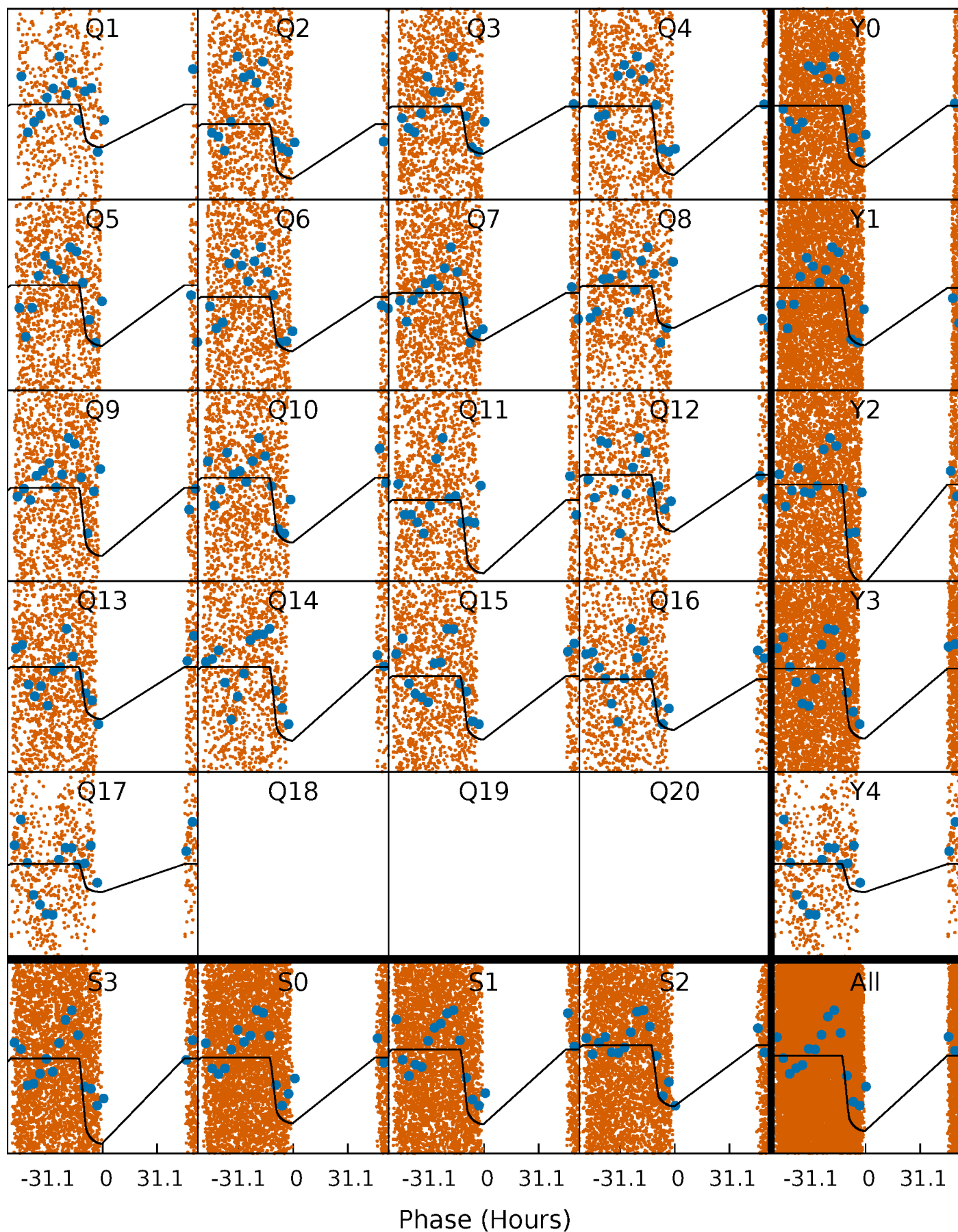
# PDC Quarter-Phased Transit Curves

TCE 007741837-02   P= 4.128587 Days    $T_0=132.836050$  (BKJD)



# DV Quarter-Phased Transit Curves

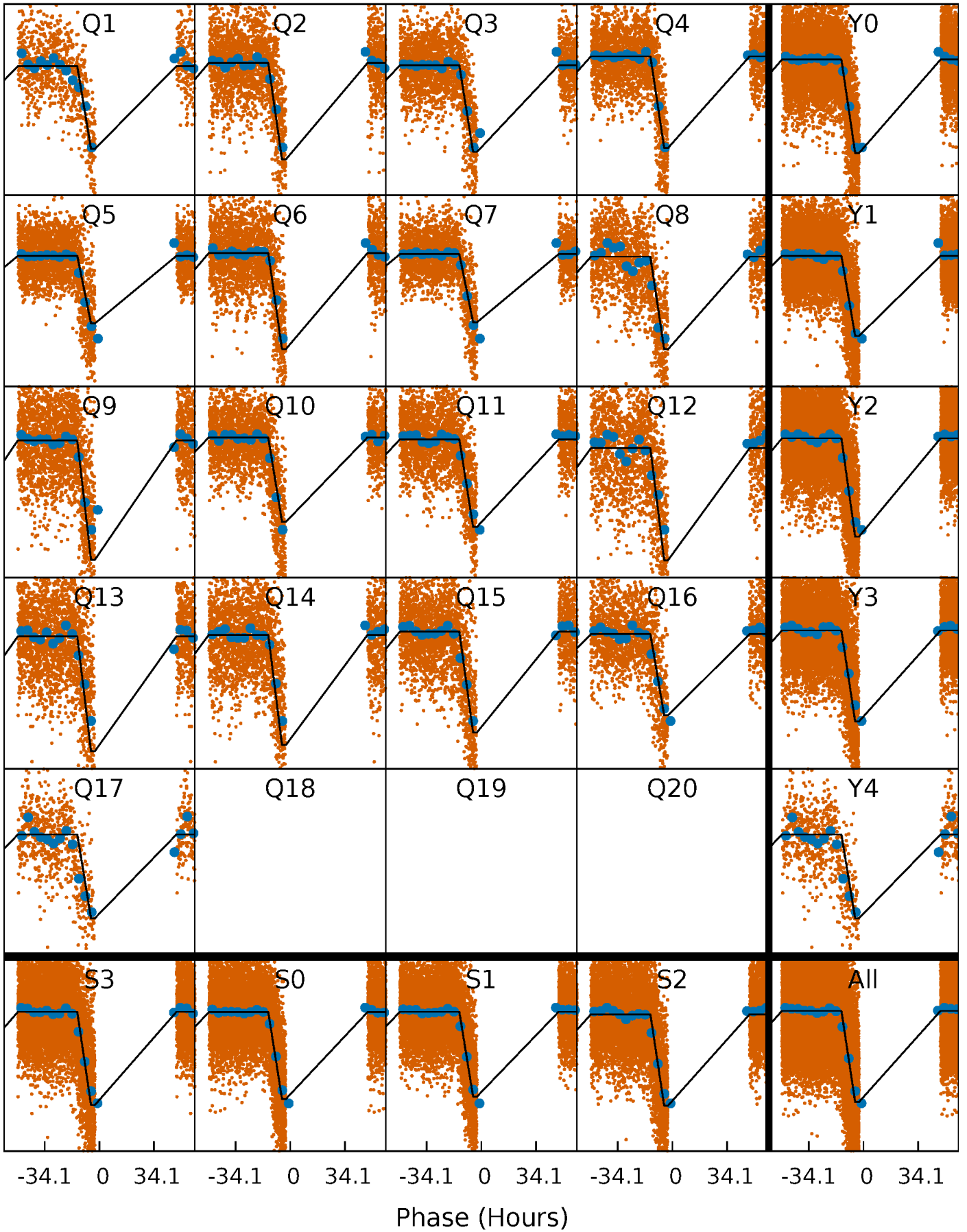
TCE 007741837-02   P= 4.128587 Days    $T_0=132.836050$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

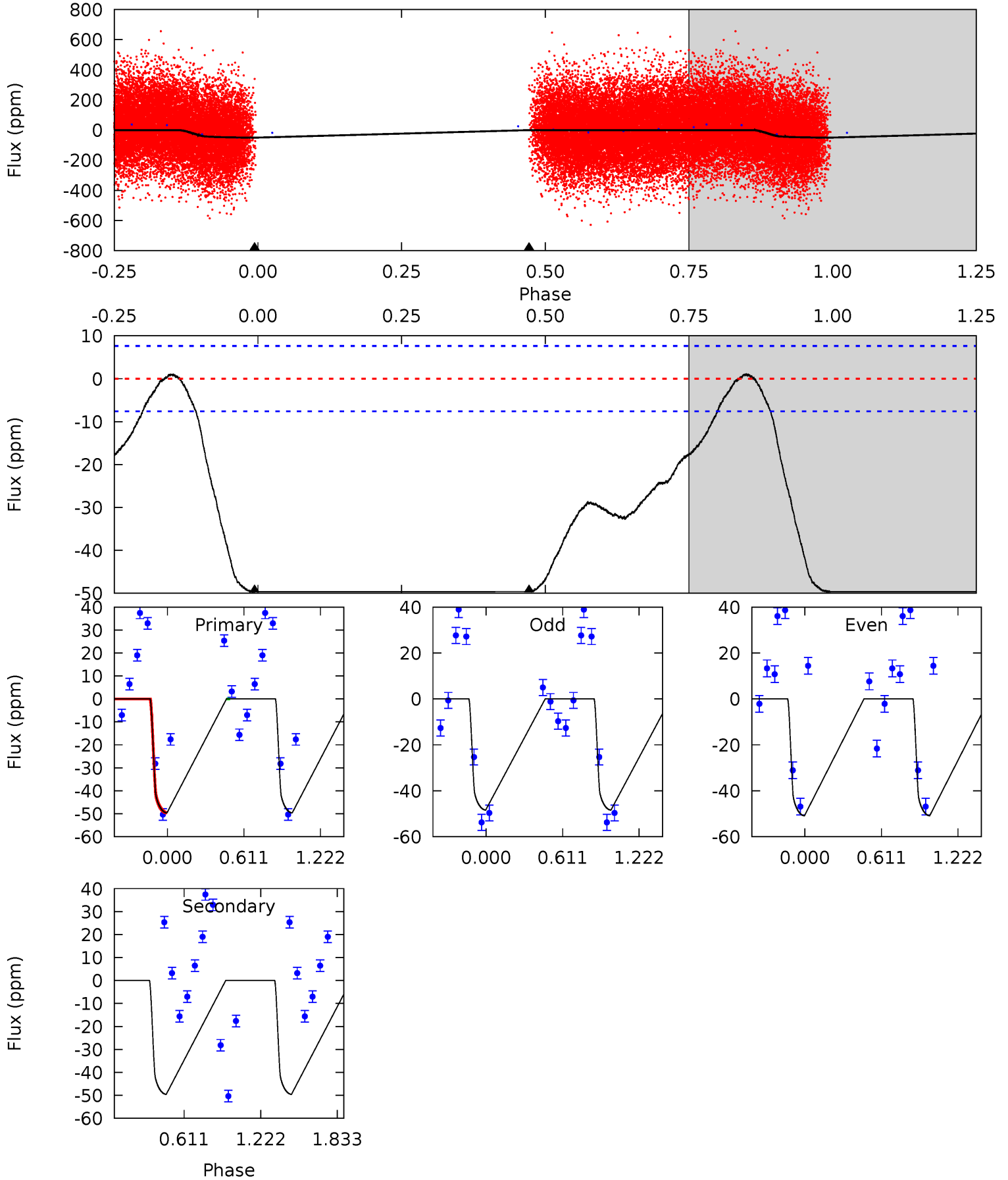
TCE 007741837-02   P= 4.128116 Days    $T_0=132.936191$  (BKJD)



# DV Model-Shift Uniqueness Test

007741837-02, P = 4.128587 Days, E = 128.707463 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
27.2	27.2	0	0	4.17	0.51	1.10	27.2	27.2	27.2	27.2	0.68	0	0.02	0

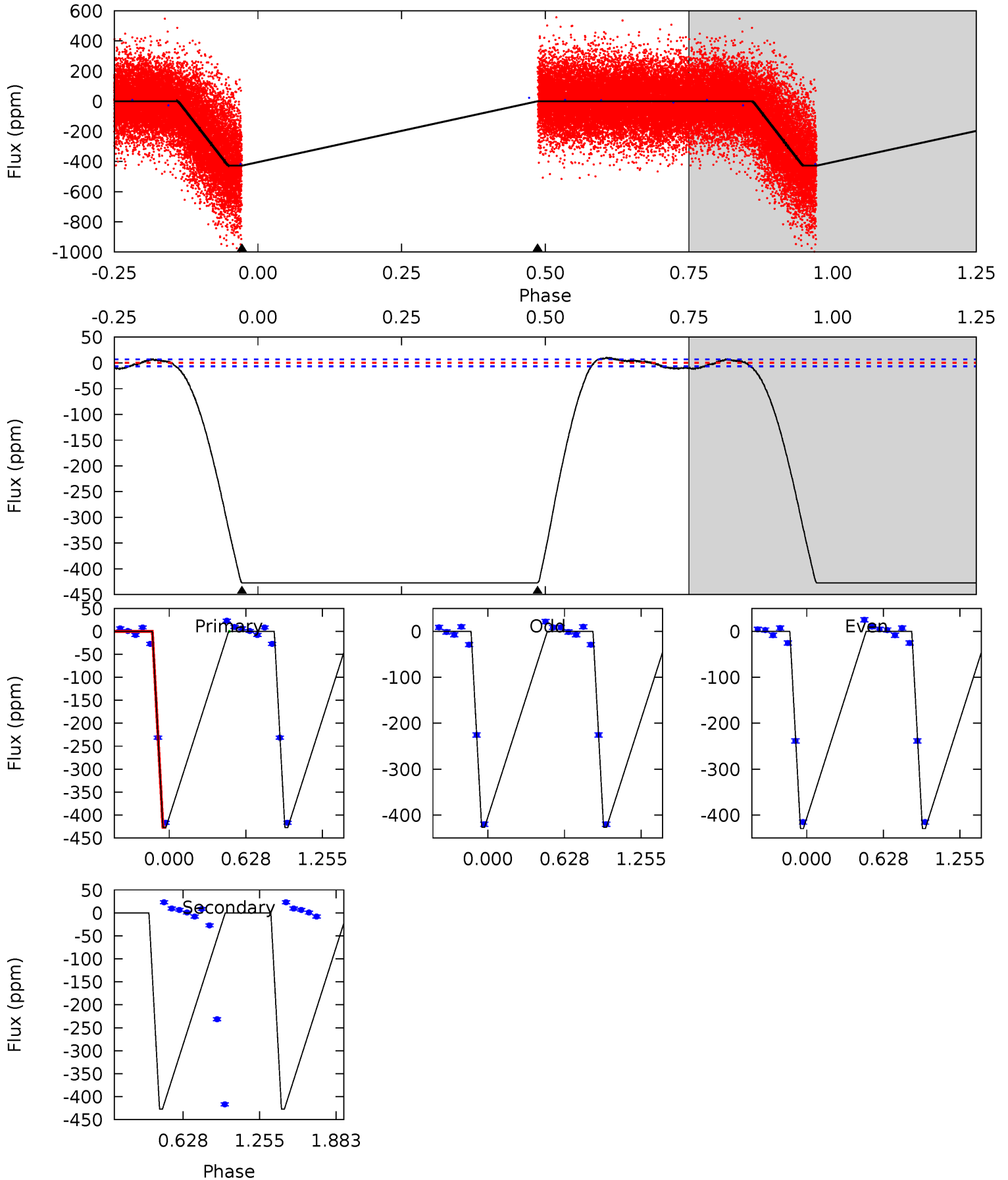




# Alt Model-Shift Uniqueness Test

007741837-02, P = 4.128116 Days, E = 128.808075 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
259.4	259.4	0	0	4.16	0.48	6.17	259.4	259.4	259.4	259.4	0.90	0	0.02	0



### Stellar Parameters For KIC 007741837

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6723^{+168}_{-185}$	$3.478^{+0.344}_{-0.086}$	$-0.160^{+0.300}_{-0.250}$	$4.134^{+0.515}_{-1.647}$	$1.872^{+0.199}_{-0.369}$	$0.037^{+0.103}_{-0.010}$
	+2%/-3%	+10%/-2%	+188%/-156%	+12%/-40%	+11%/-20%	+275%/-26%
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 007741837-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-50 \pm 2$	$4.43^{+0.53}_{-0.86}$	$3316^{+179}_{-321}$	$5522^{+177}_{-171}$	$5.389^{+2.447}_{-1.018}$
Alt.	$-427 \pm 2$	$9.40^{+0.83}_{-2.00}$	$3314^{+190}_{-317}$	$6570^{+203}_{-181}$	$10^{+5}_{-2}$

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

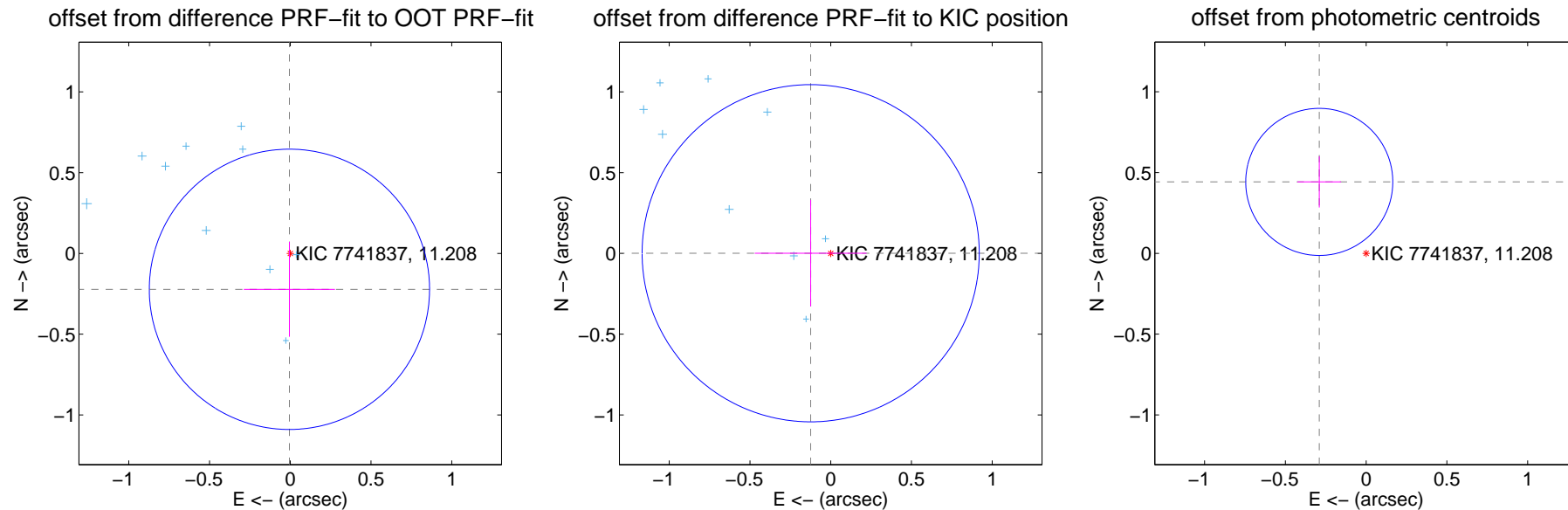
## DV Centroid Data

Supplemental centroid analysis for 007741837-02. **Kepler magnitude: 11.21.** Transit SNR 16.39

There are 16 quarters with good PRF difference image offsets

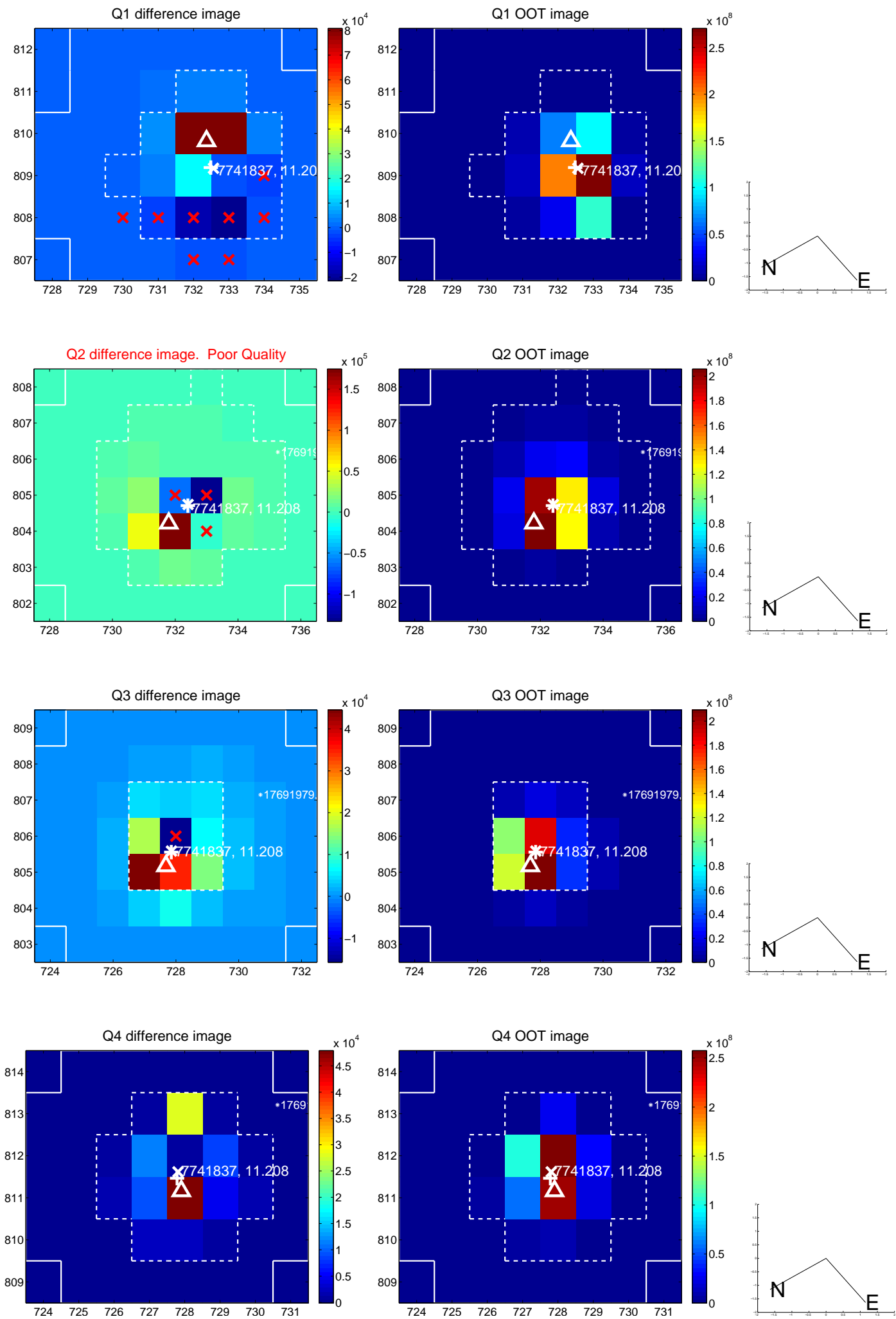
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.222 \pm 0.289$	0.77	$0.005 \pm 0.282$	$-0.222 \pm 0.294$
PRF-fit source offset from KIC position	$0.124 \pm 0.348$	0.36	$0.124 \pm 0.346$	$0.001 \pm 0.329$
photometric centroid source offset	<b><math>0.53 \pm 0.15</math></b>	<b>3.49</b>	$0.29 \pm 0.14$	$0.44 \pm 0.16$

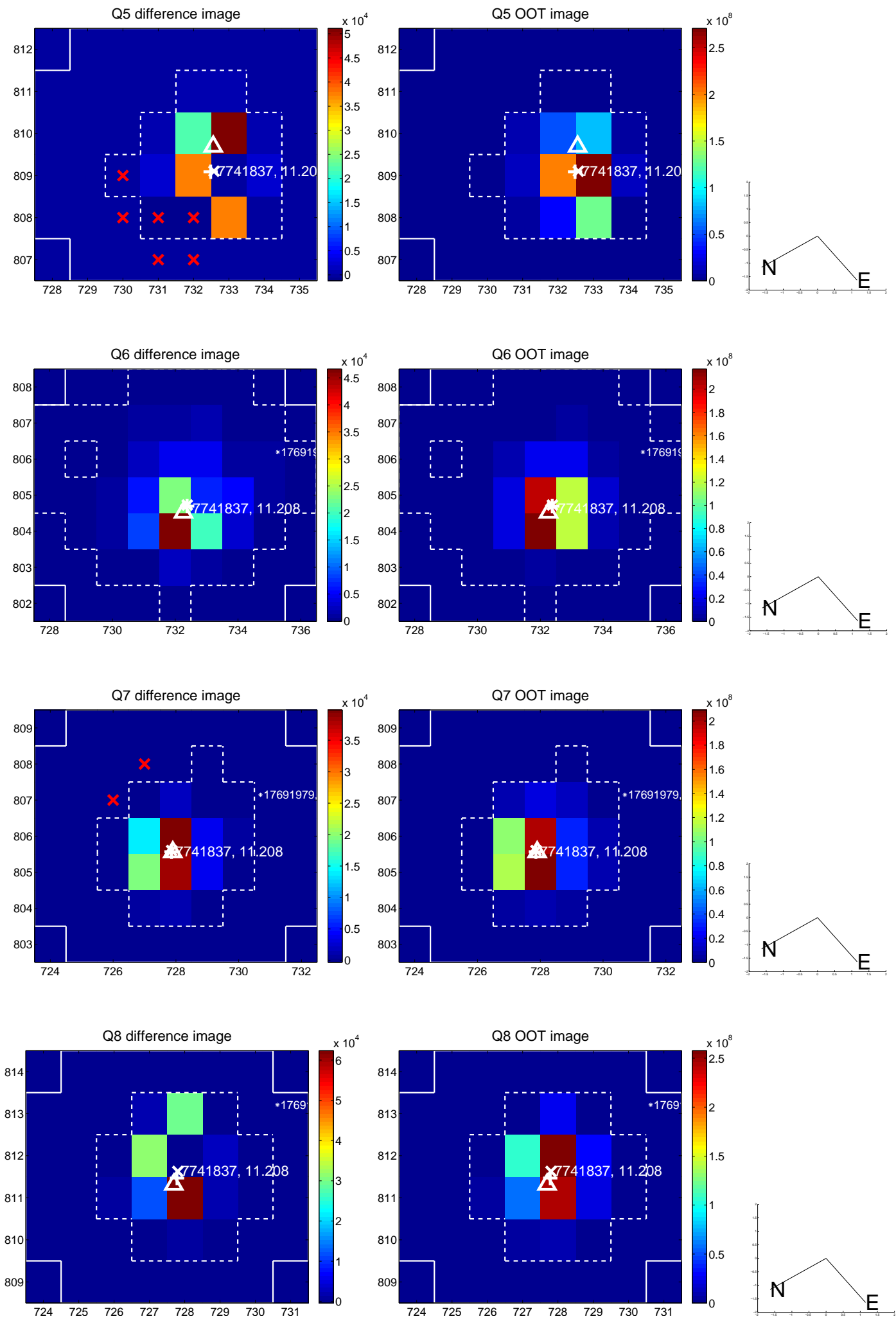


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

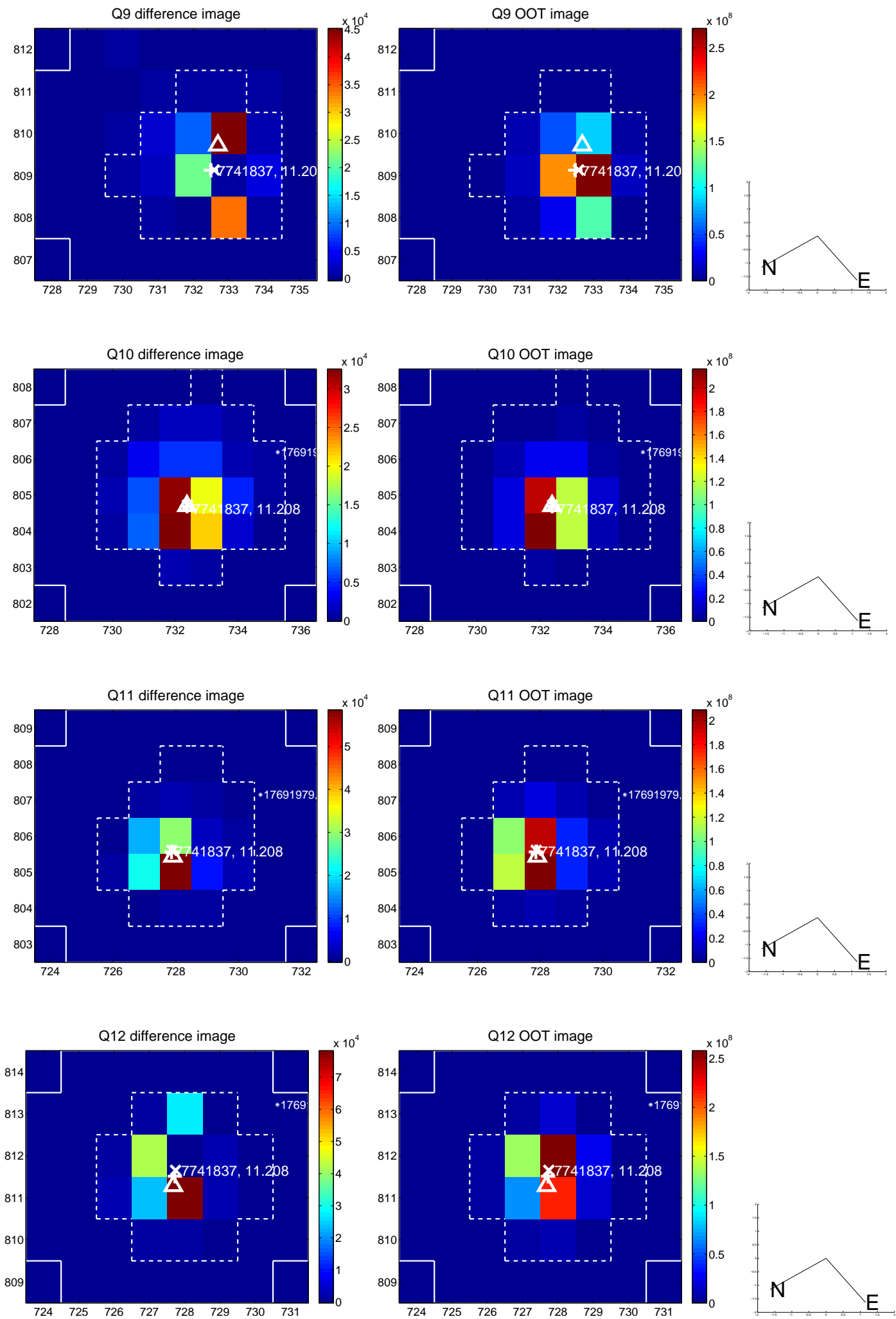
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



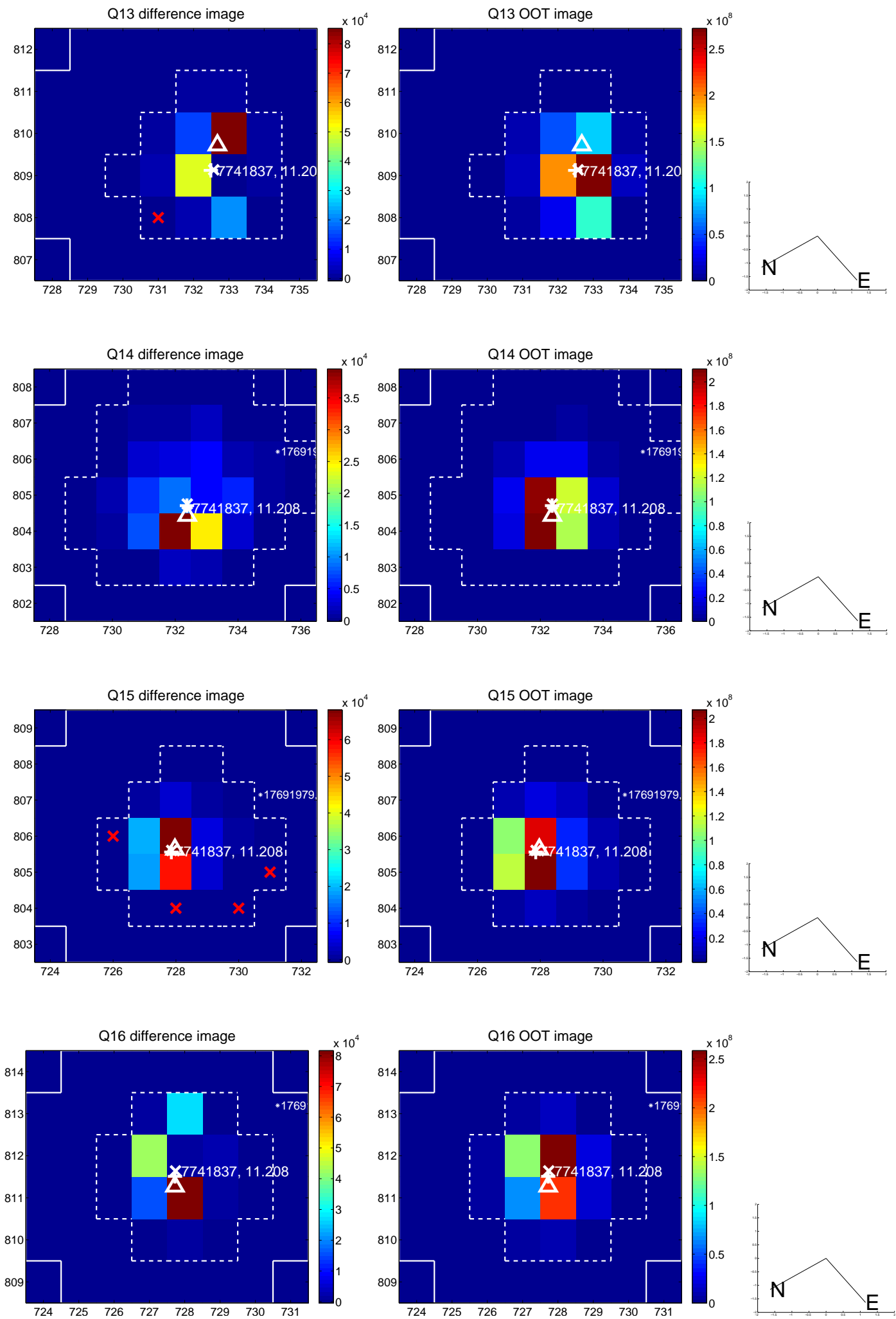
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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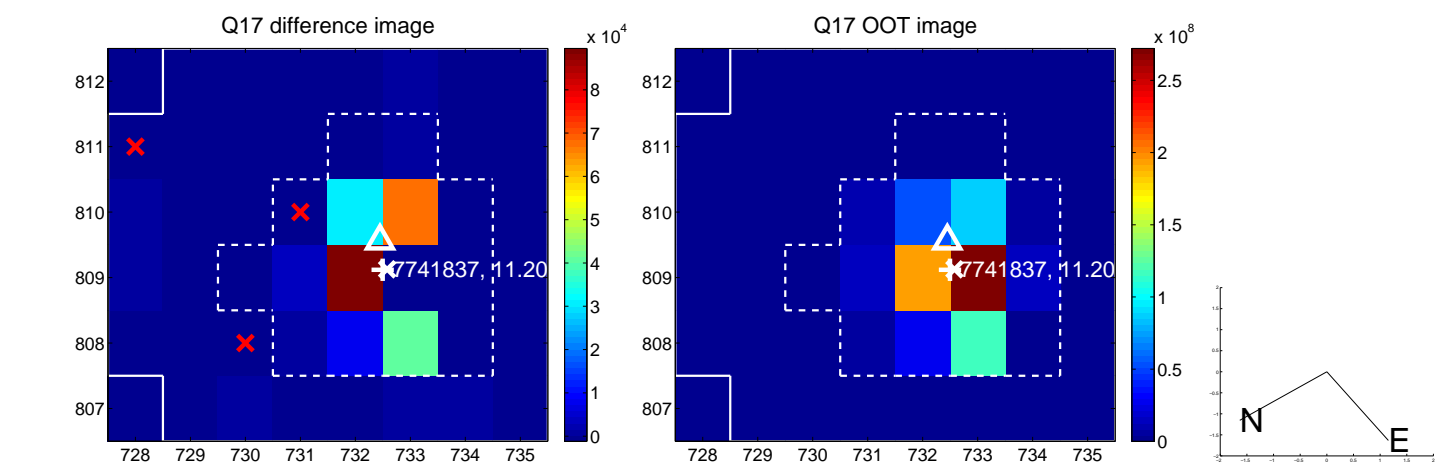


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

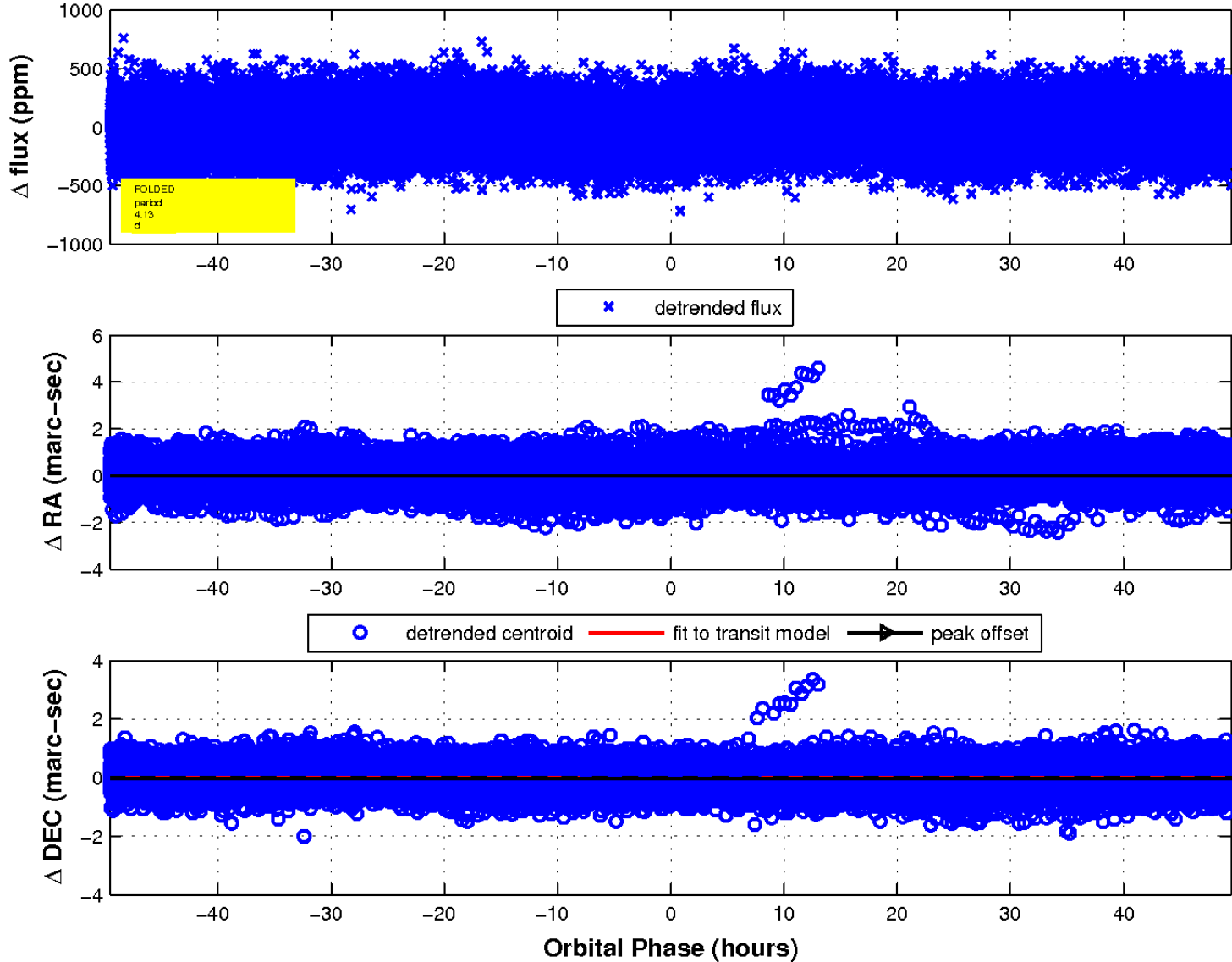




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

