

# KIC 007779411

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007779411-01	OBS	No	0.934470	131.798869	1.8	2.575	14.6	0.9	2.80	6614	0.44	28167.34
007779411-02	OBS	No	0.934598	131.801015	10.7	10.766	11.3	3.8	2.80	6614	0.93	28162.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007779411-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007779411-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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.

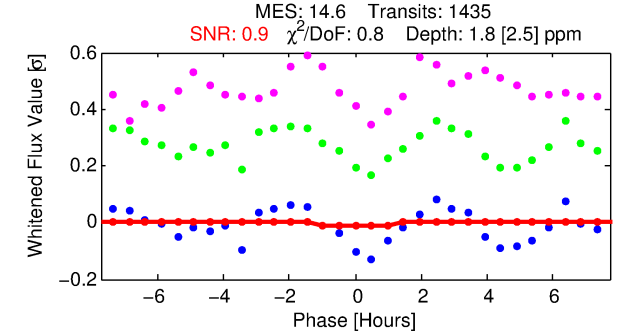
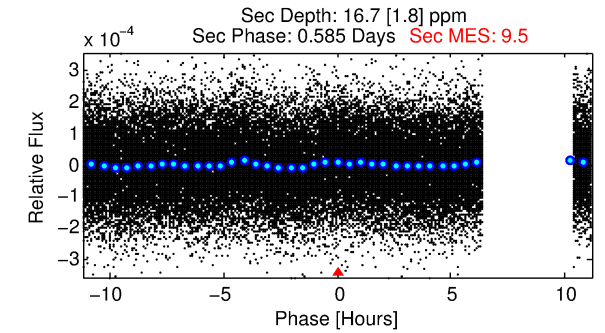
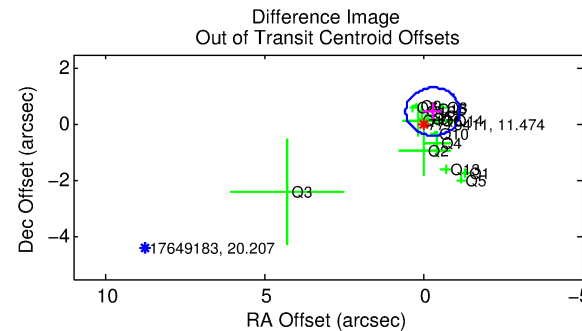
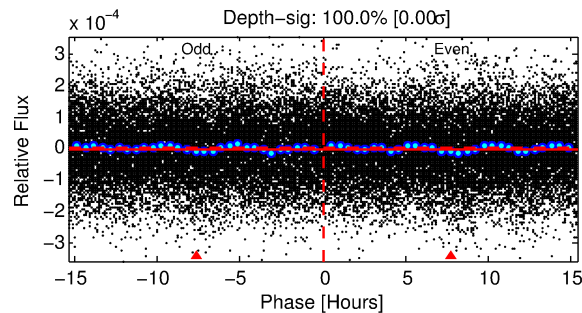
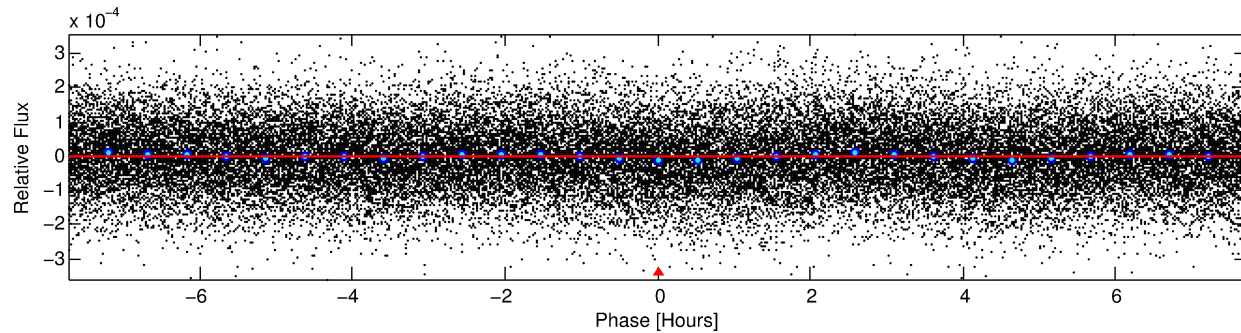
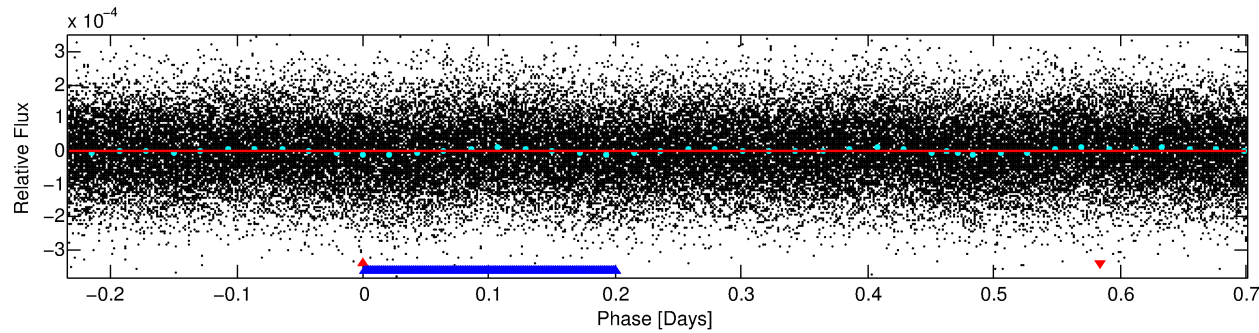
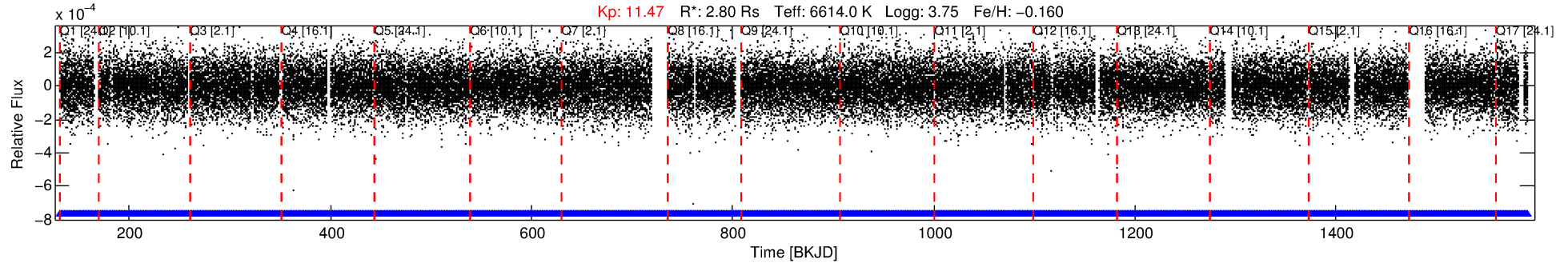
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007779411-01

No Significant Match Found

# DV One-Page Summary

KIC: 7779411 Candidate: 1 of 2 Period: 0.934 d



## DV Fit Results:

Period = 0.93447 [0.00010] d  
Epoch = 131.7989 [0.0213] BKJD  
Rp/R\* = 0.0014 [0.0011]  
a/R\* = 1.54 [1.75]  
b = 0.90 [0.42]  
Seff = 28167.34 [14445.21]  
Teq = 3303 [424] K  
Rp = 0.44 [0.37] Re  
a = 0.0219 [0.0072] AU  
Ag = 22.88 [37.04] [0.59σ]  
Teffp = 11170 [4310] K [1.8σ]

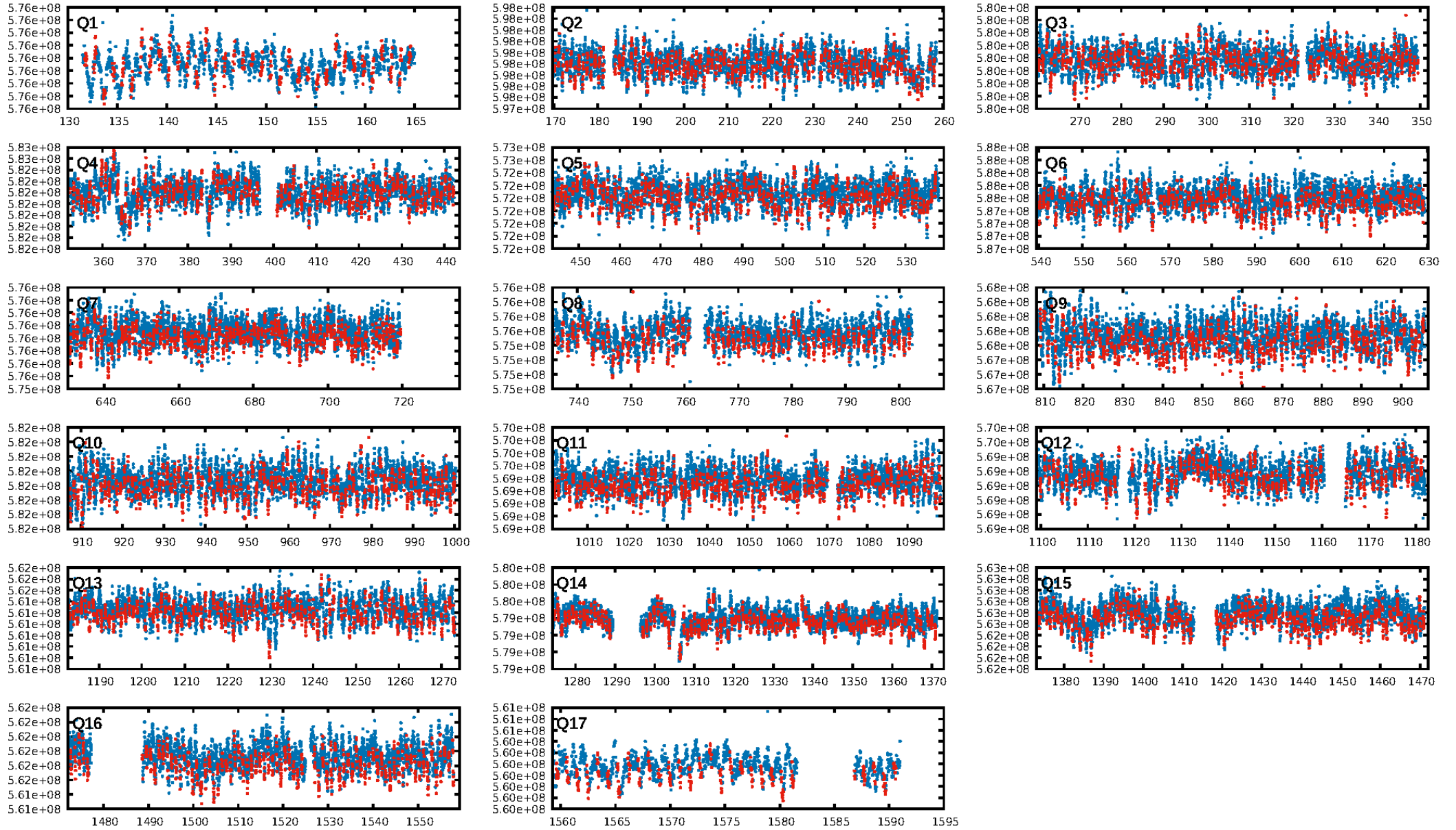
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1370/1370]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.558 arcsec [1.96σ]  
KicOffset-rm: 0.587 arcsec [2.10σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

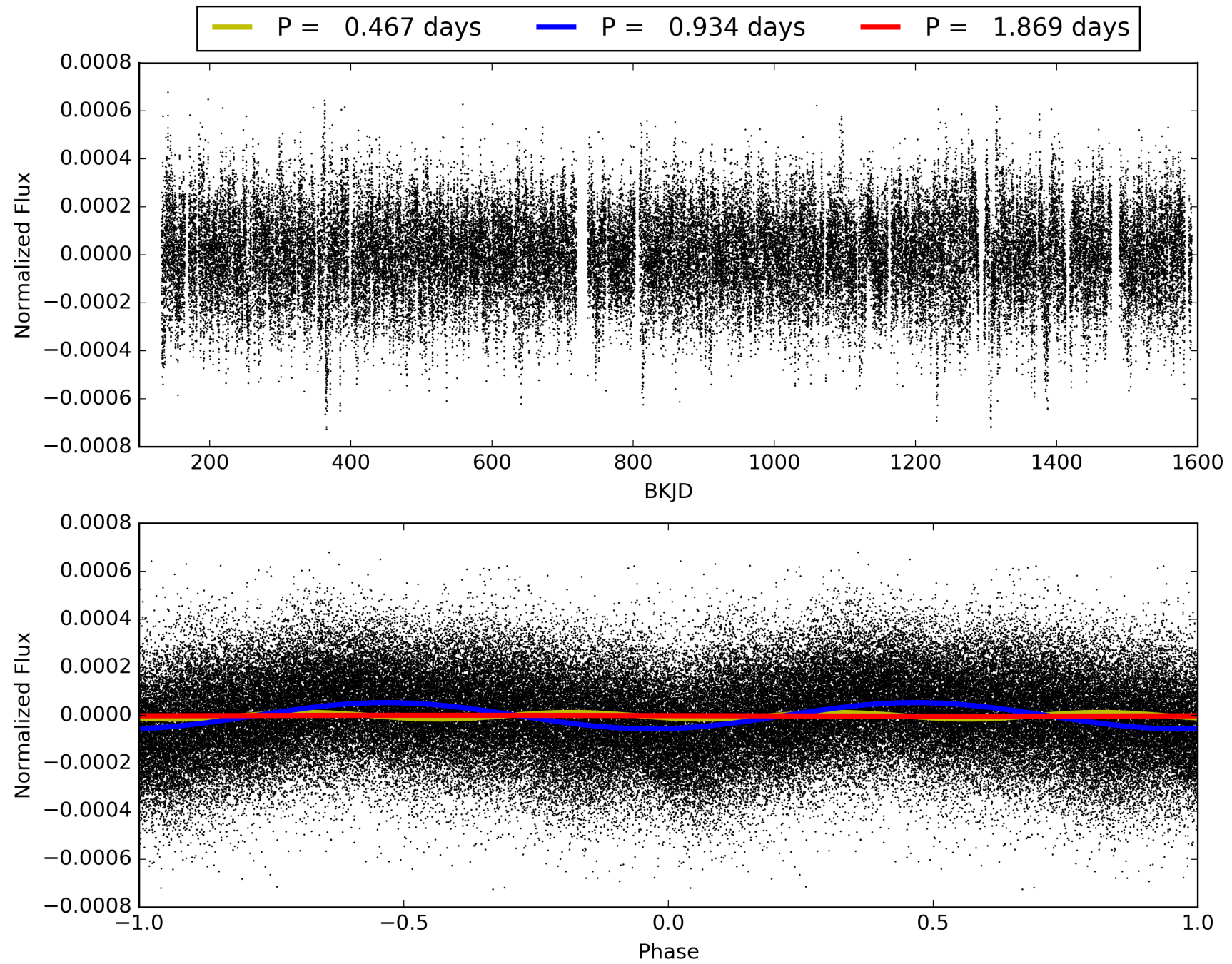
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:35:37 Z

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

# TCE 007779411-01, PDC Light Curves

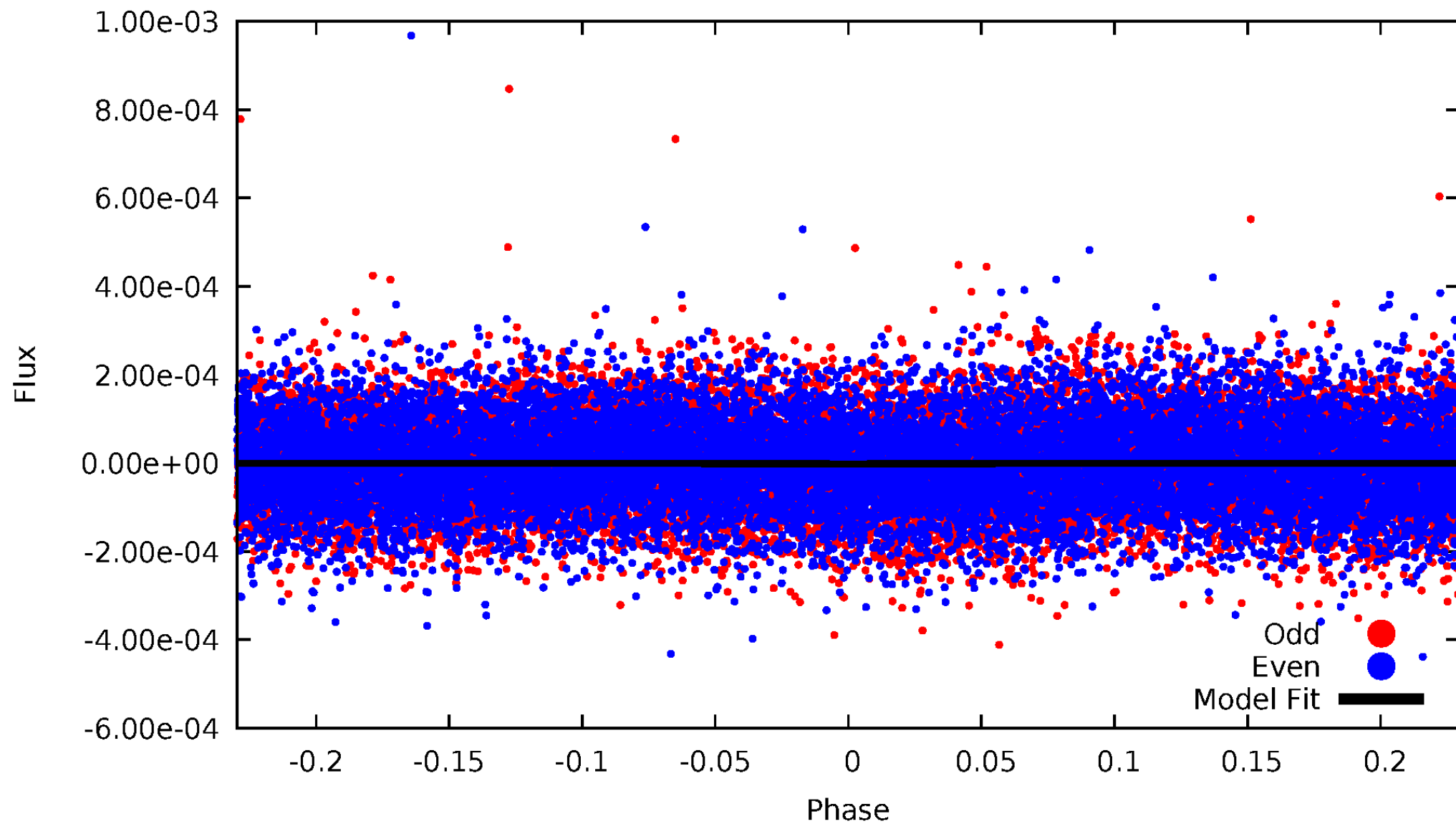


TCE 007779411-01



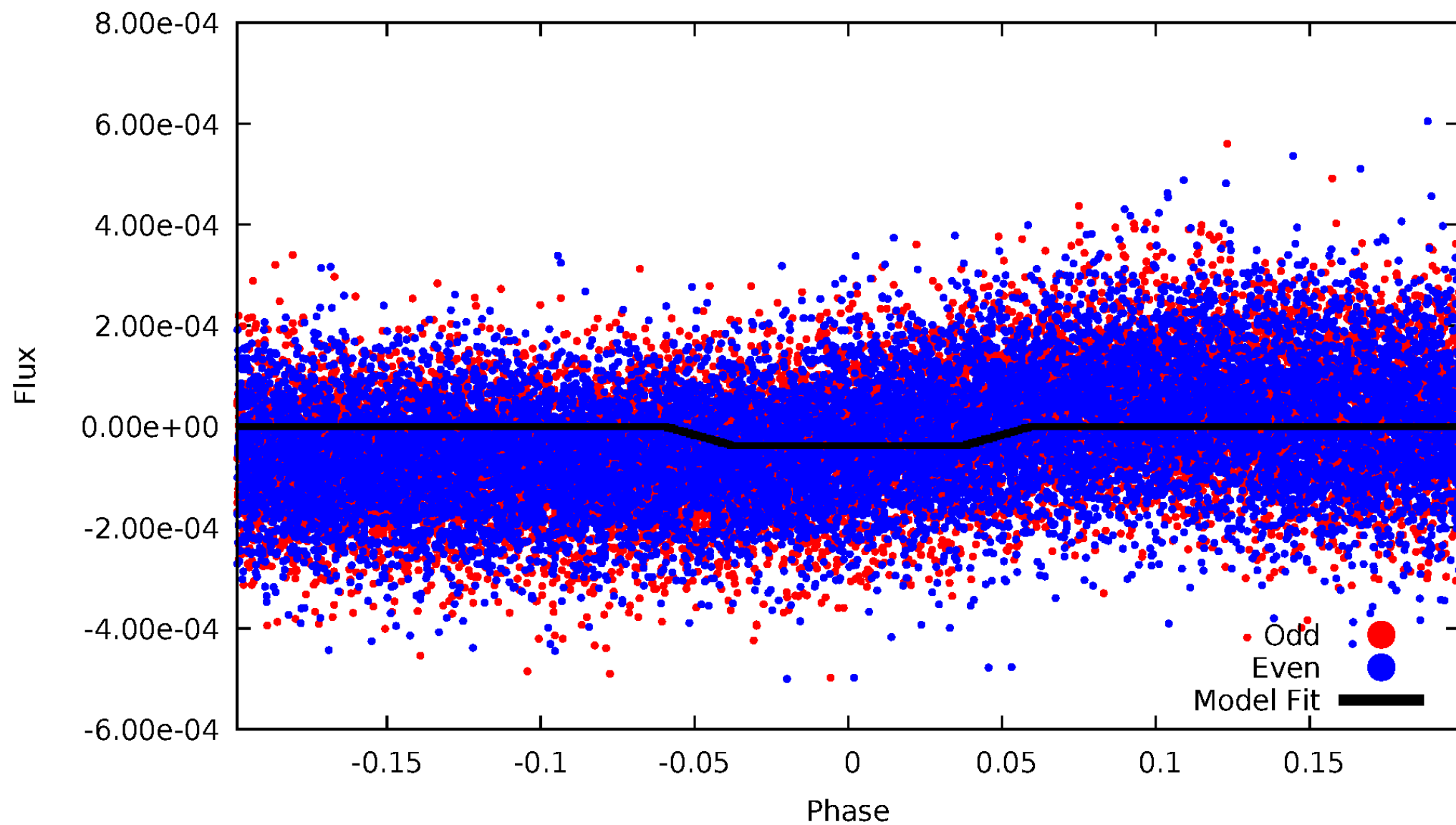
# DV Odd/Even

TCE 007779411-01



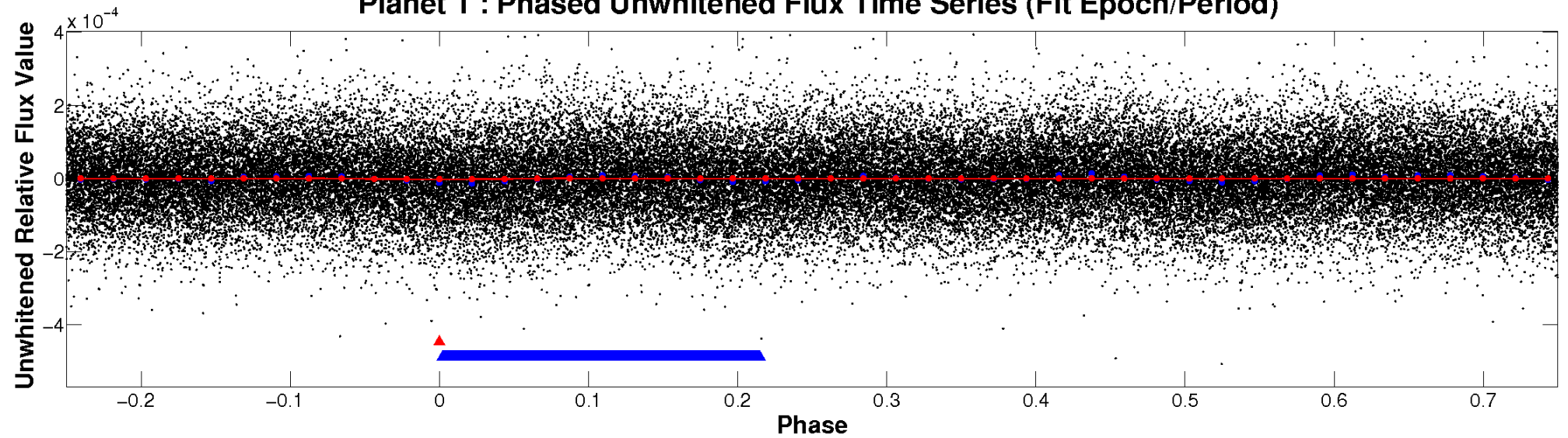
# ALT Odd/Even

TCE 007779411-01

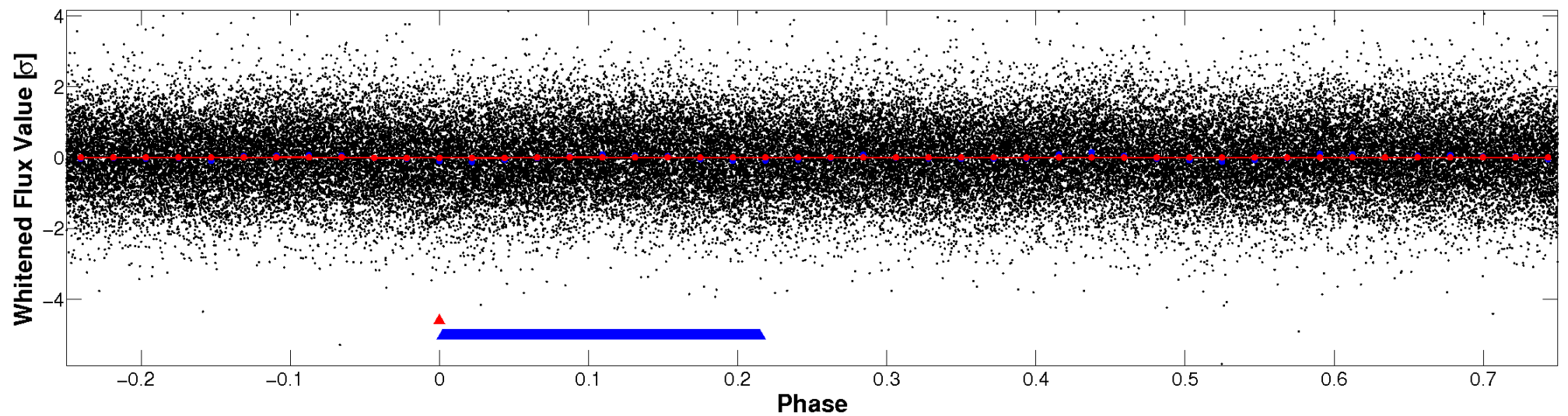


# Non-Whitened Vs. Whitened Light Curve

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

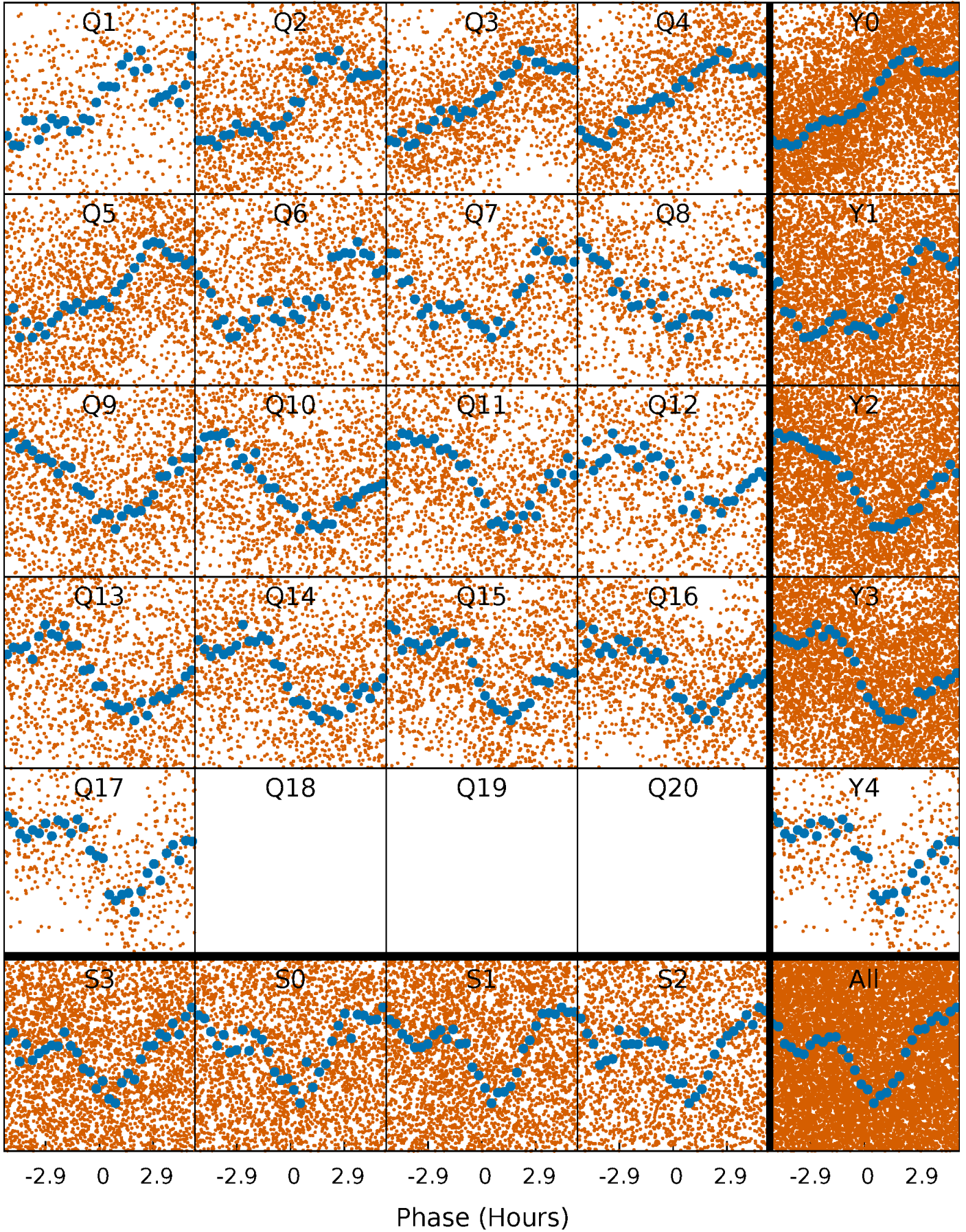


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



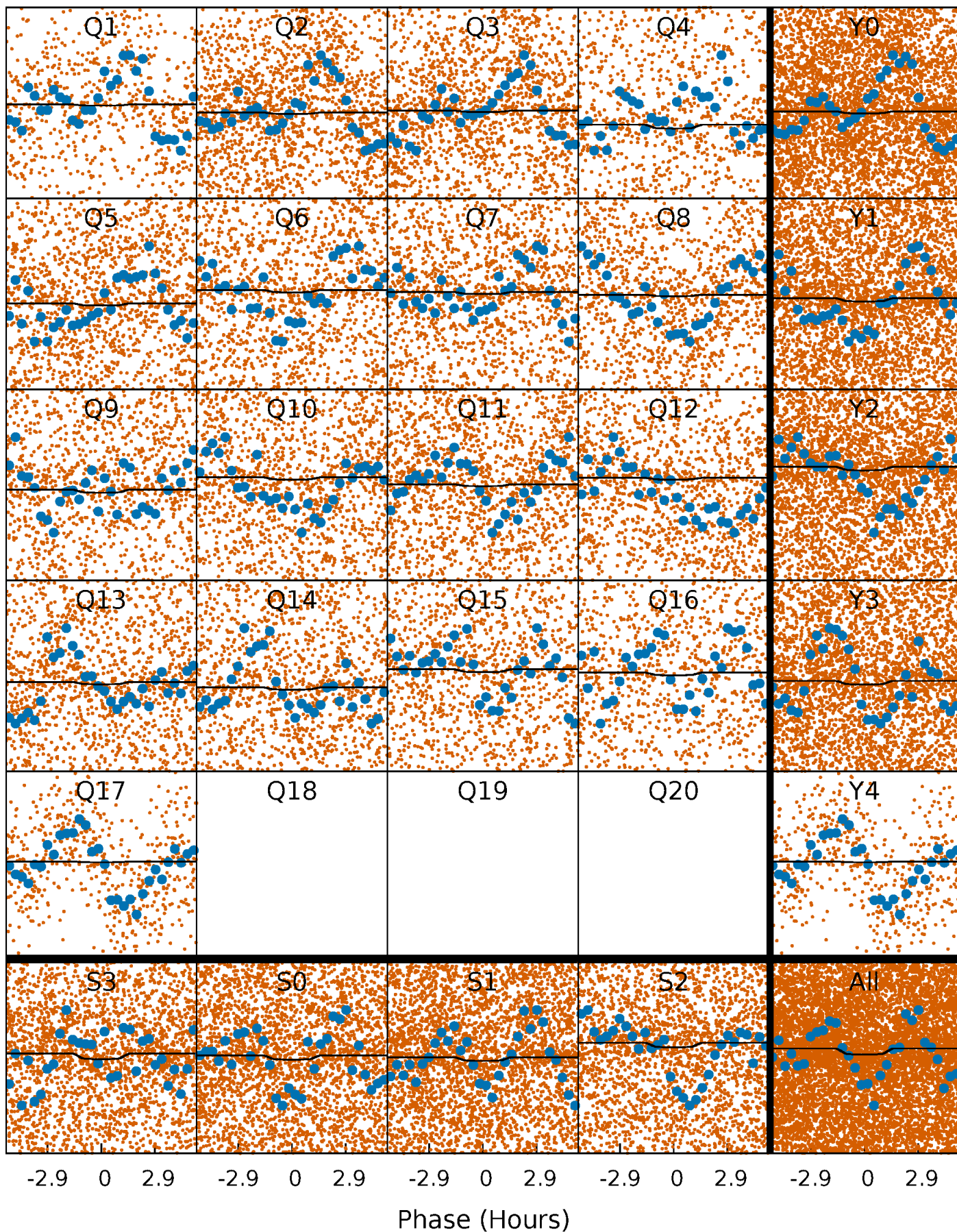
# PDC Quarter-Phased Transit Curves

TCE 007779411-01 P= 0.934470 Days  $T_0=131.798869$  (BKJD)



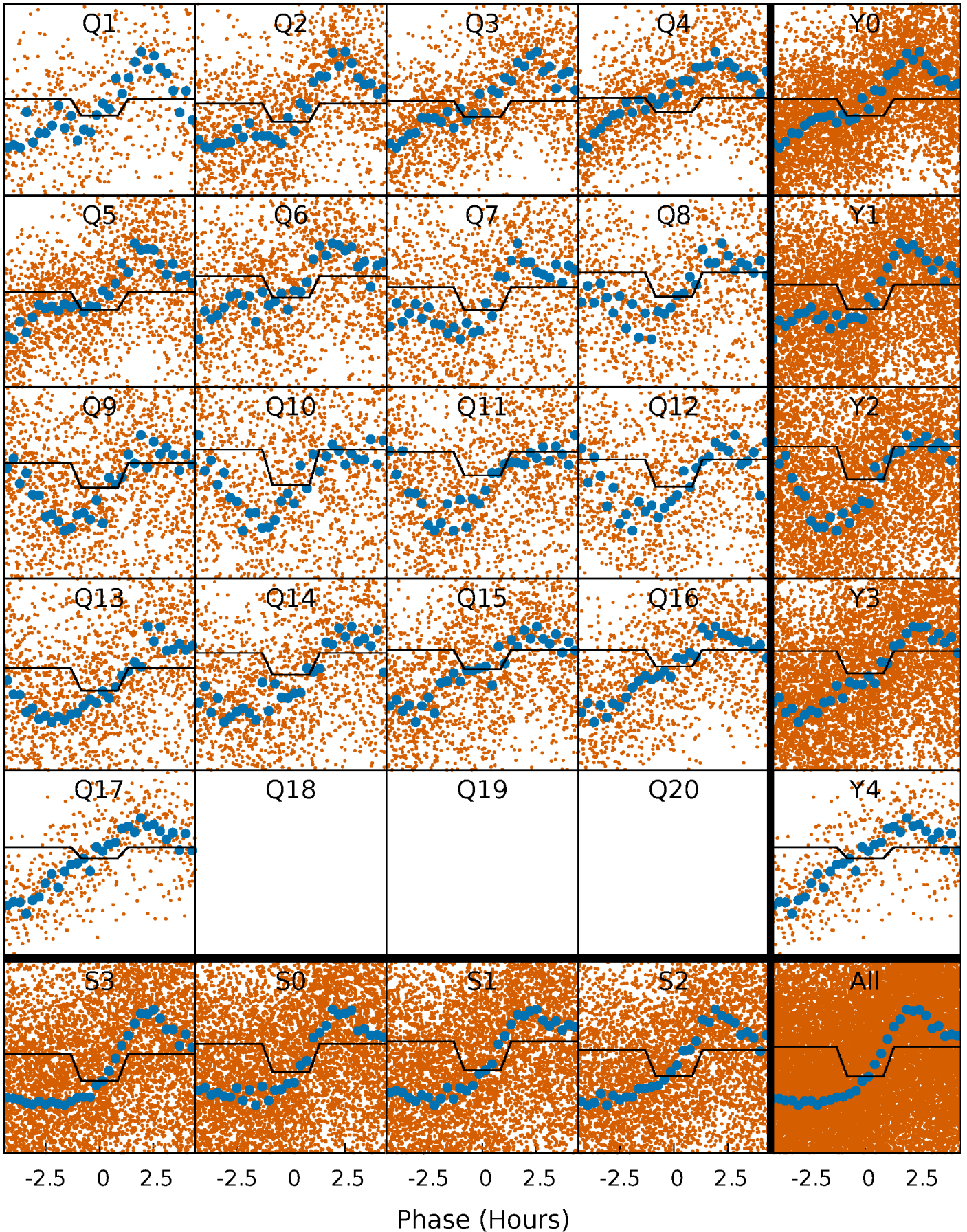
# DV Quarter-Phased Transit Curves

TCE 007779411-01 P= 0.934470 Days  $T_0=131.798869$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

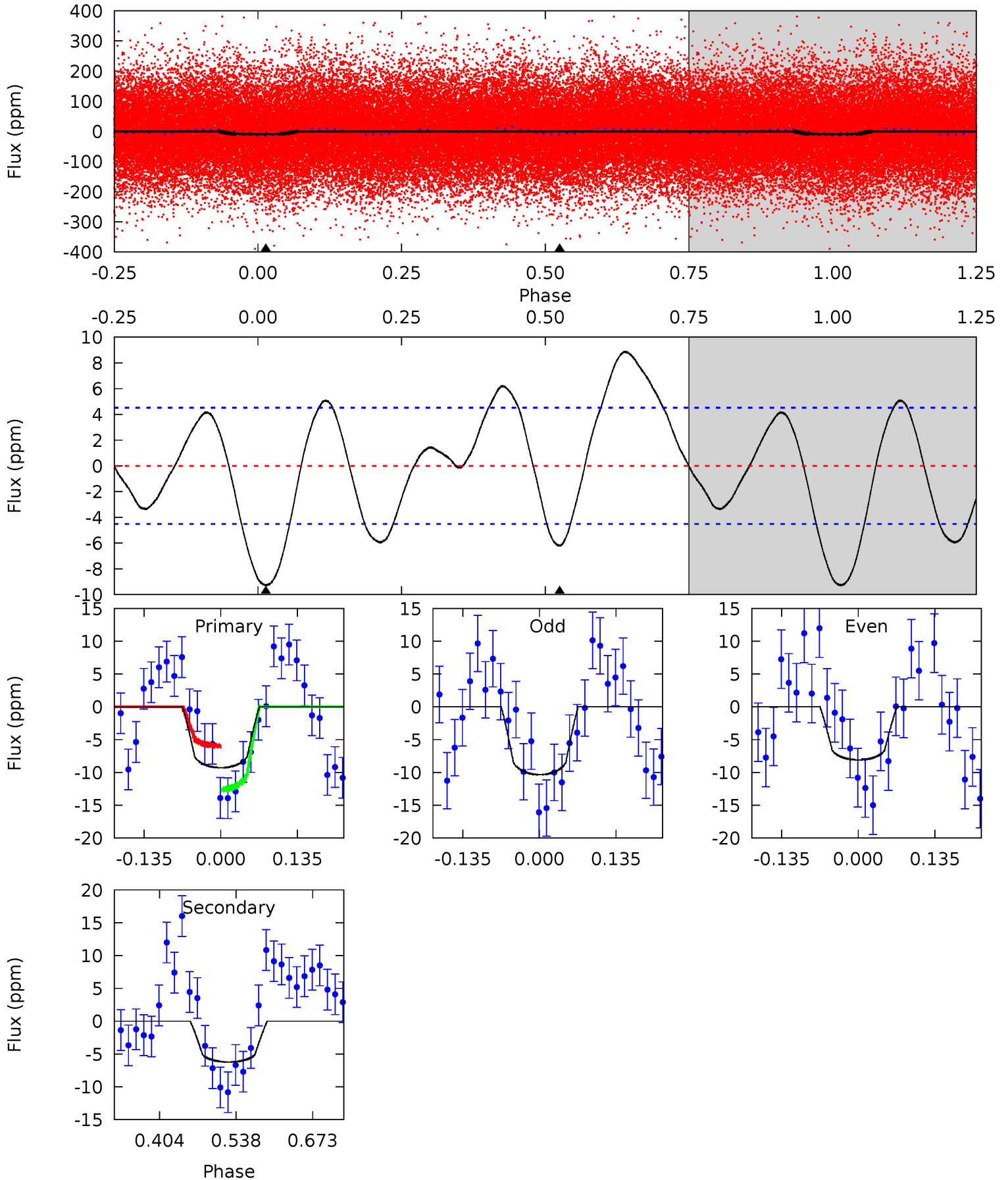
TCE 007779411-01 P= 0.934628 Days  $T_0=131.773876$  (BKJD)



# DV Model-Shift Uniqueness Test

007779411-01, P = 0.934470 Days, E = 130.864399 Days

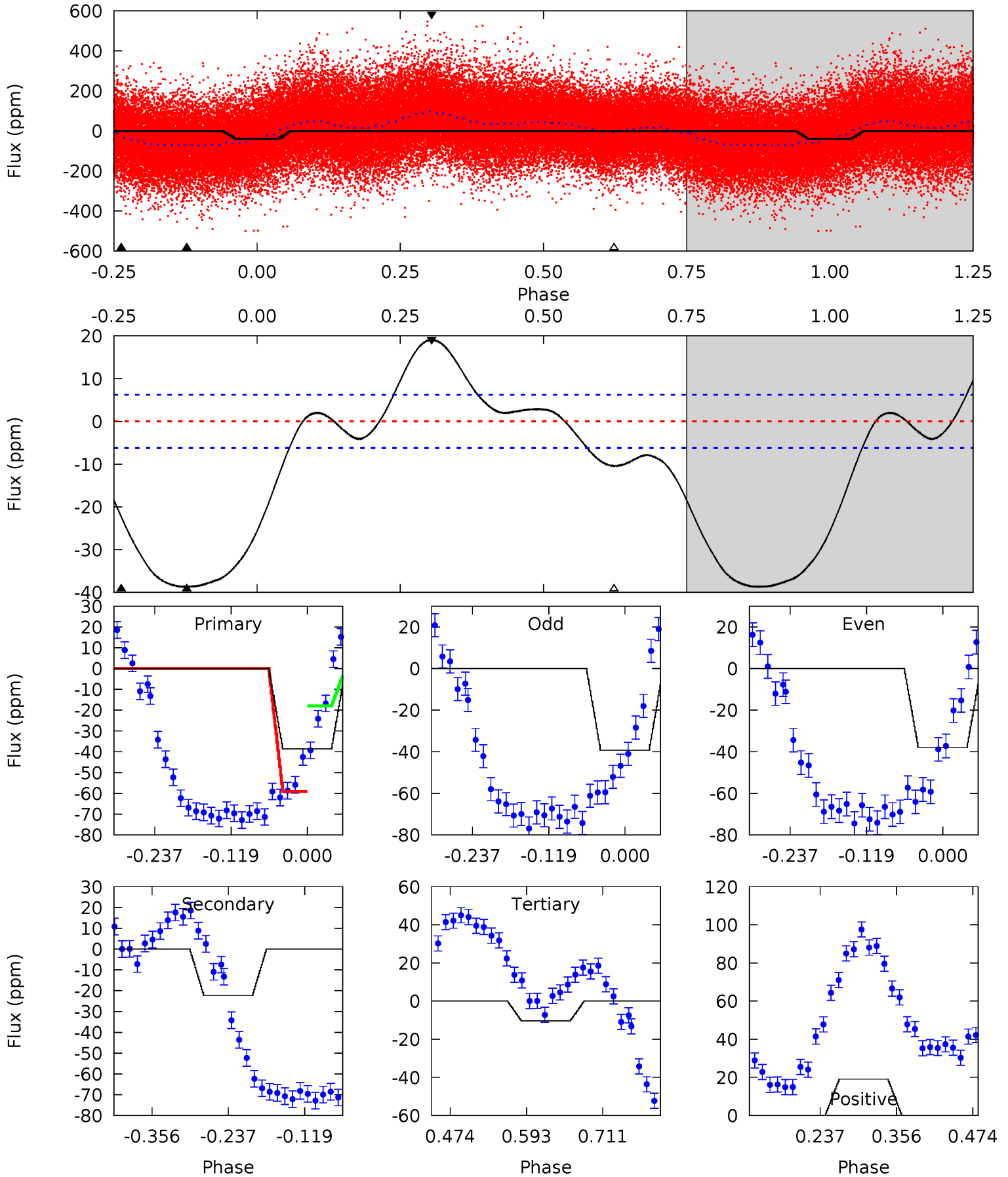
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.25	6.20	0	0	4.50	1.50	3.21	9.25	9.25	6.20	6.20	1.12	0.98	0.49	3.29



# Alt Model-Shift Uniqueness Test

007779411-01, P = 0.934628 Days, E = 130.839248 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
28.1	16.2	7.58	13.9	4.53	1.56	7.11	20.5	14.2	8.64	2.35	0.47	1.06	0.33	14.9



### Stellar Parameters For KIC 007779411

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6614^{+158}_{-178}$	$3.746^{+0.285}_{-0.095}$	$-0.160^{+0.300}_{-0.250}$	$2.803^{+0.441}_{-1.030}$	$1.596^{+0.187}_{-0.348}$	$0.102^{+0.211}_{-0.032}$
	+2%/-3%	+8%/-3%	+188%/-156%	+16%/-37%	+12%/-22%	+206%/-31%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 007779411-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-6 \pm 1$	$0.45^{+0.31}_{-0.27}$	$4541^{+262}_{-358}$	$8430^{+9191}_{-2239}$	$7.636^{+35.521}_{-5.000}$
Alt.	$-22 \pm 1$	$1.77^{+0.39}_{-0.40}$	$4530^{+264}_{-405}$	$5561^{+675}_{-512}$	$1.904^{+1.135}_{-0.637}$

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

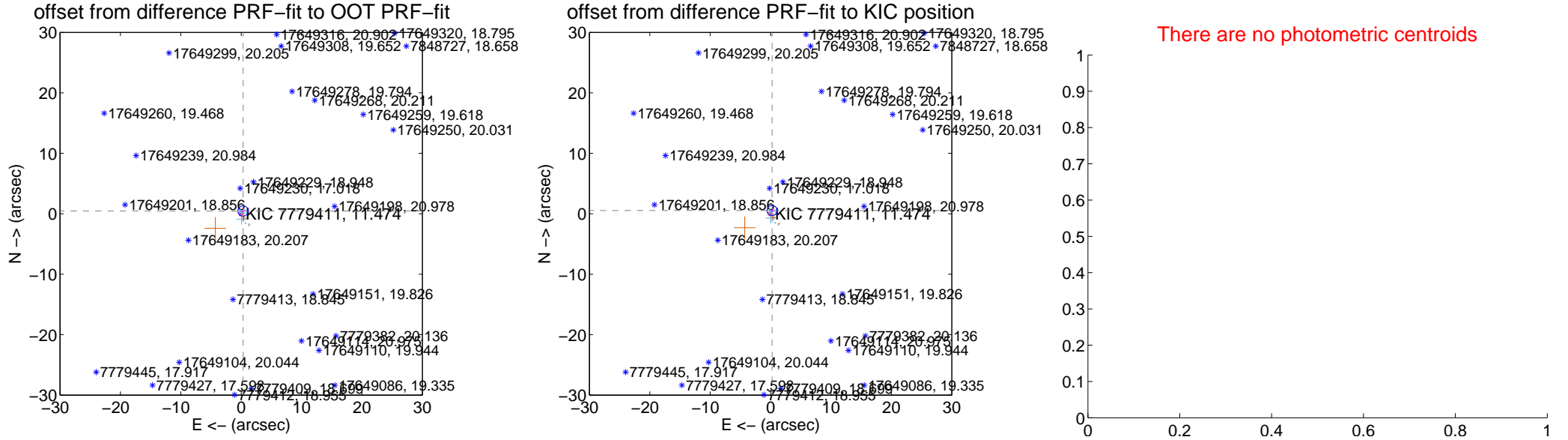
## DV Centroid Data

Supplemental centroid analysis for 007779411-01. **Kepler magnitude: 11.47.** Transit SNR 0.94

There are 14 quarters with good PRF difference image offsets

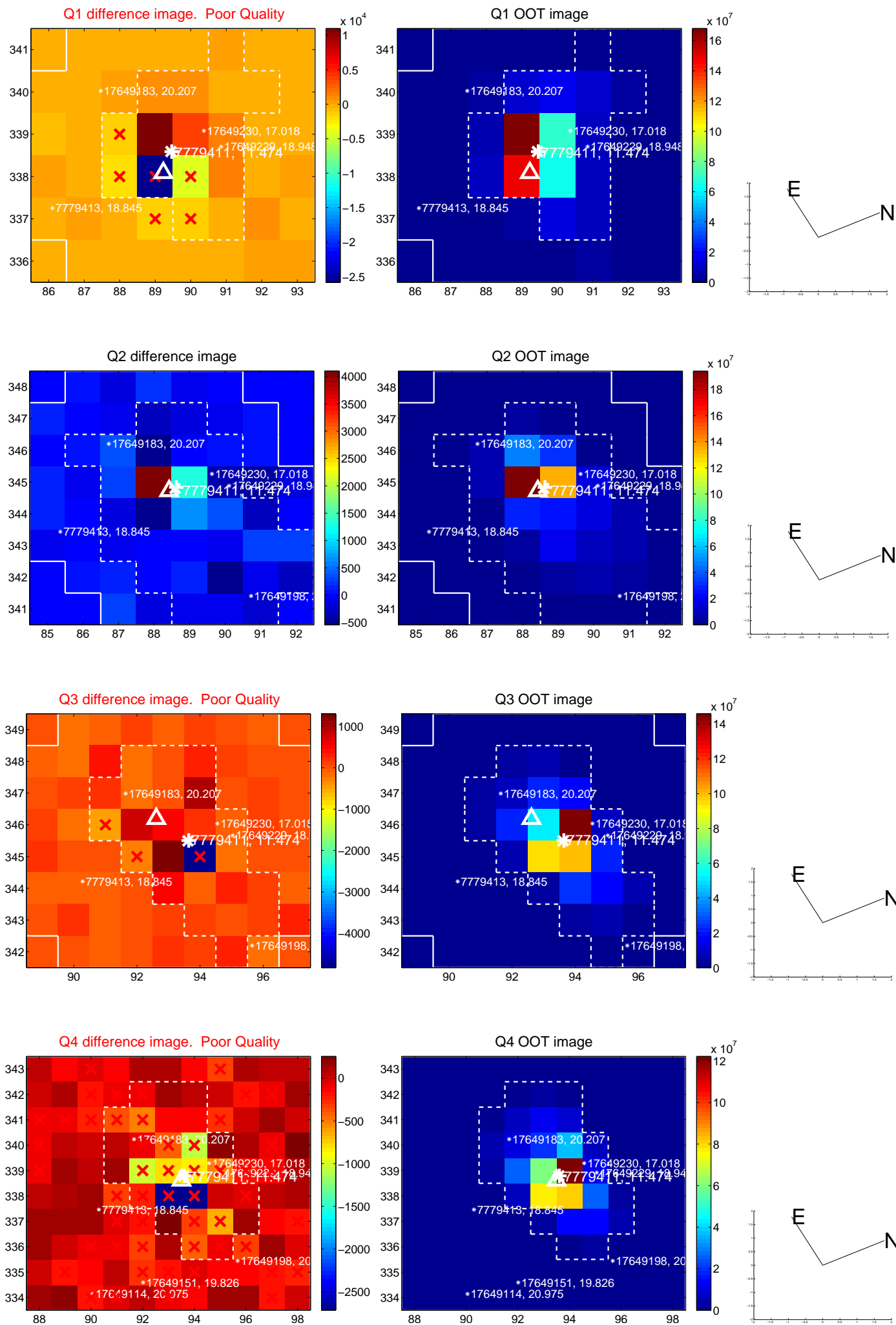
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.558 \pm 0.284$	1.96	$-0.314 \pm 0.271$	$0.461 \pm 0.260$
PRF-fit source offset from KIC position	$0.587 \pm 0.279$	2.10	$-0.246 \pm 0.299$	$0.533 \pm 0.252$
photometric centroid source offset	—	—	—	—



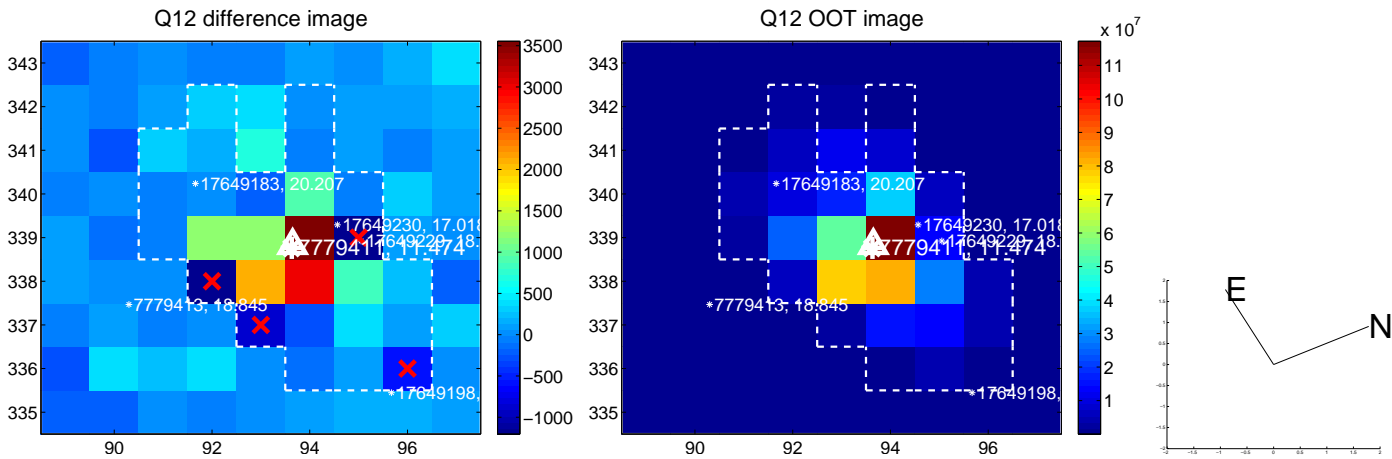
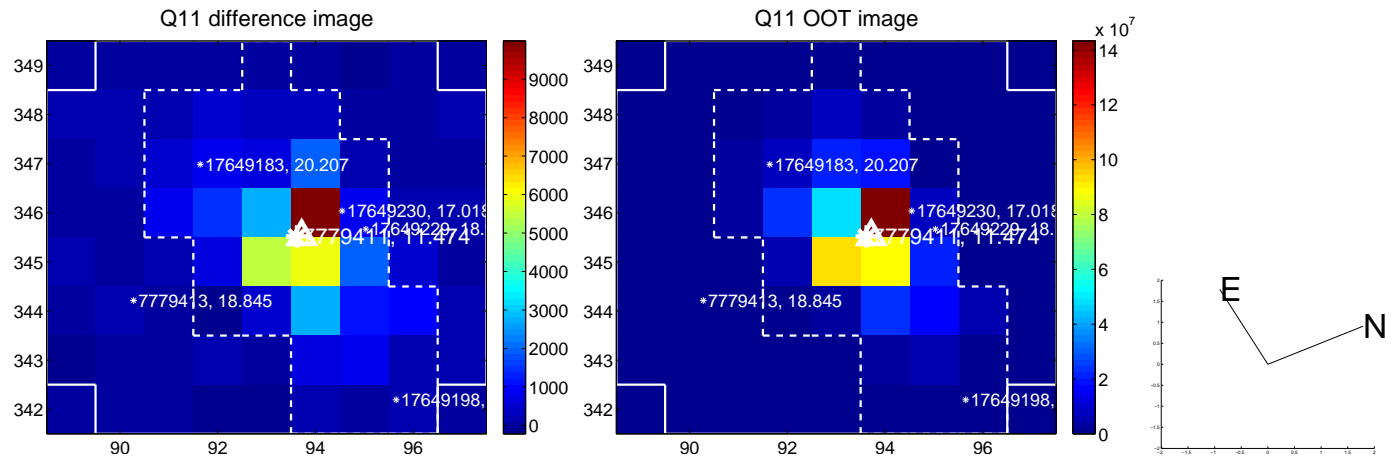
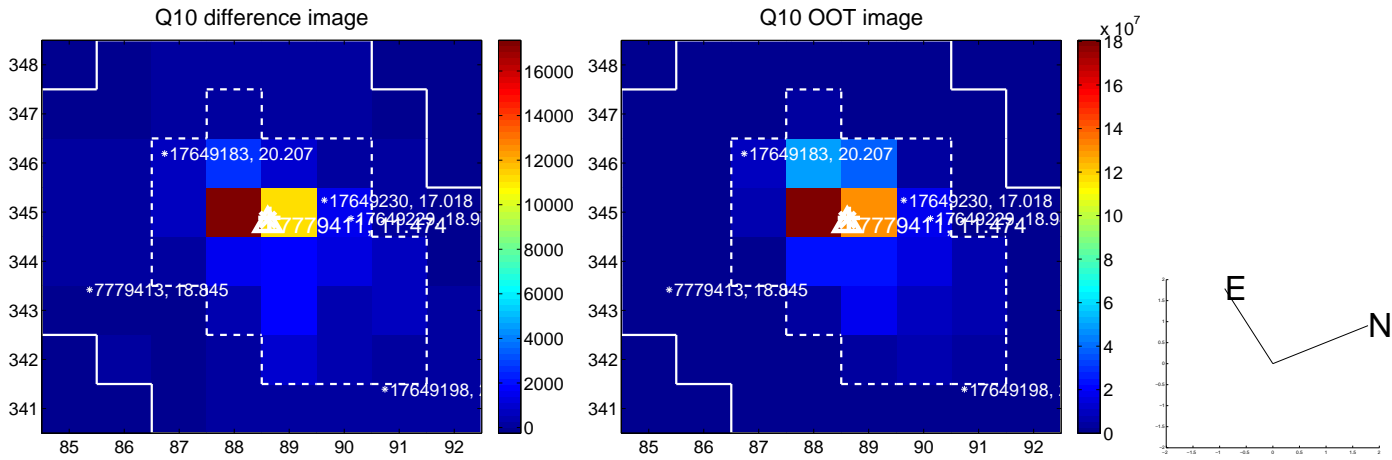
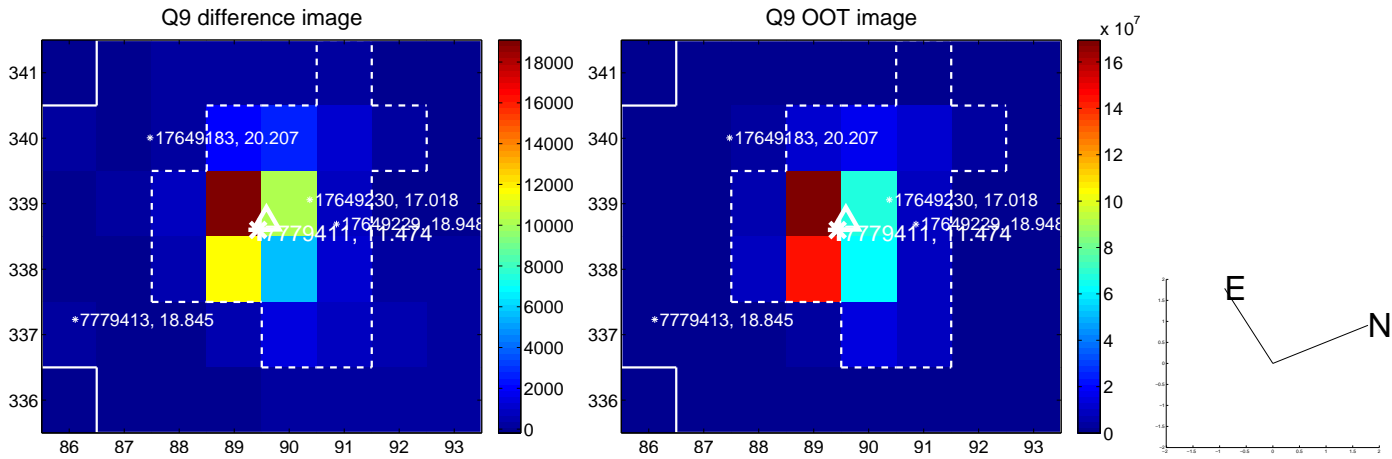
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

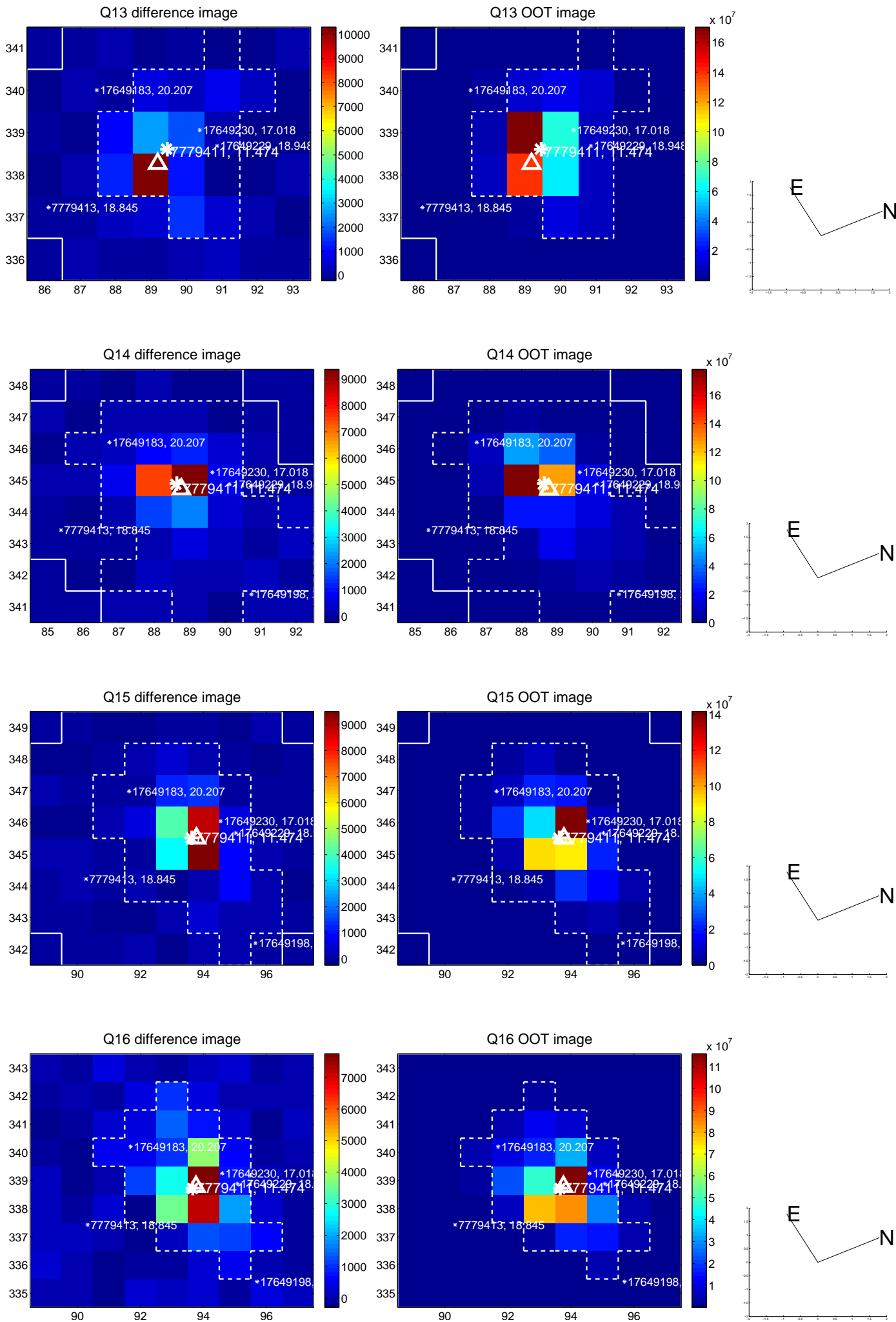




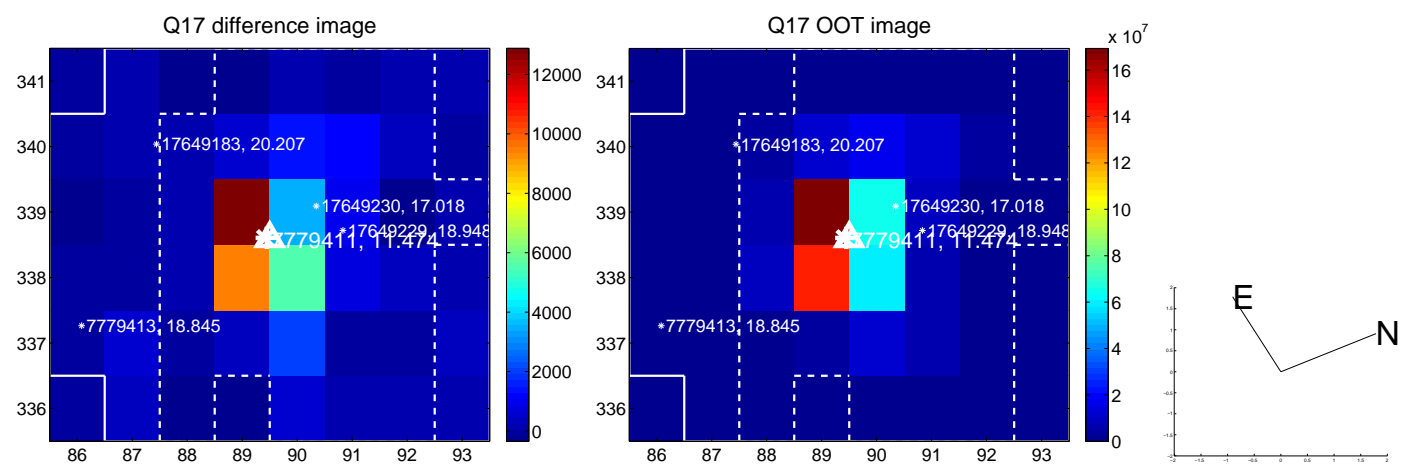
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



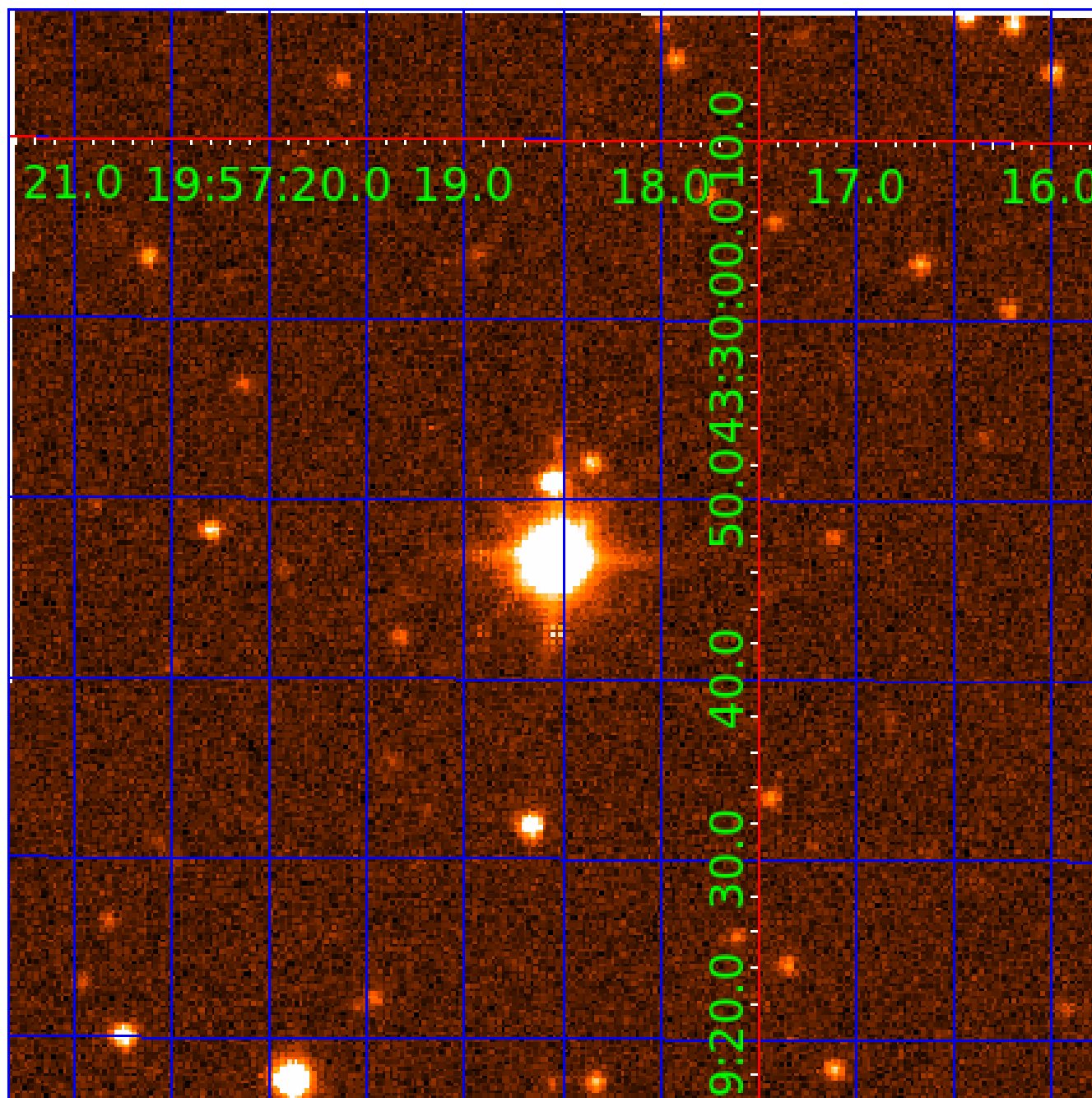
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 007779411

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007779411-01	OBS	No	0.934470	131.798869	1.8	2.575	14.6	0.9	2.80	6614	0.44	28167.34
007779411-02	OBS	No	0.934598	131.801015	10.7	10.766	11.3	3.8	2.80	6614	0.93	28162.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007779411-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
007779411-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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.

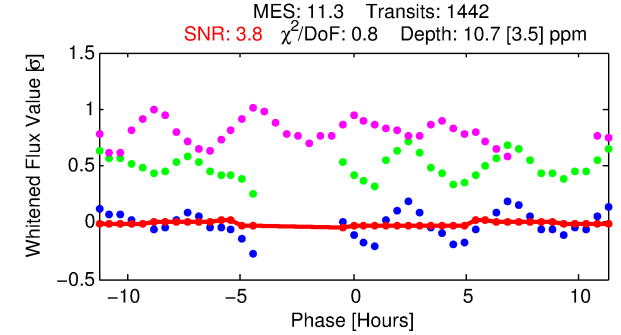
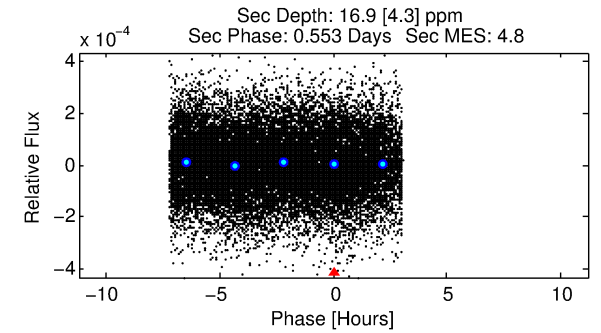
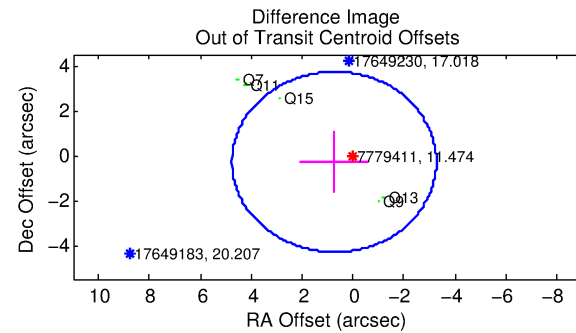
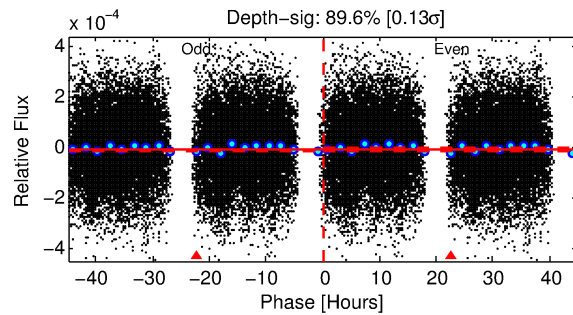
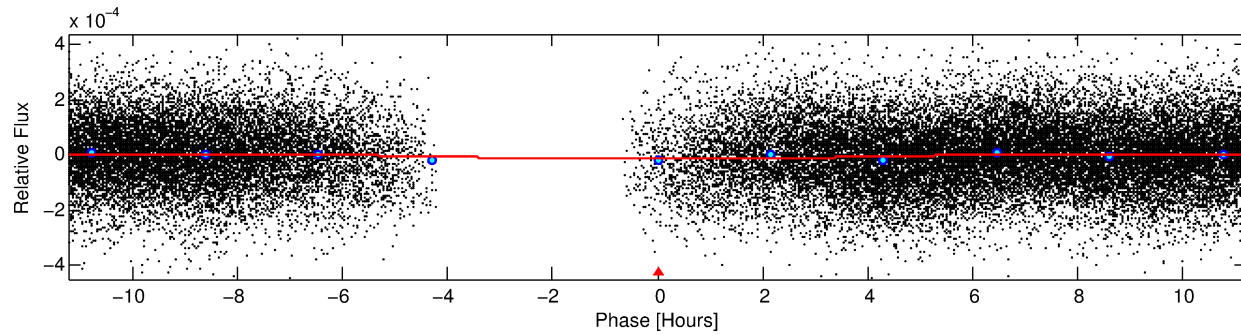
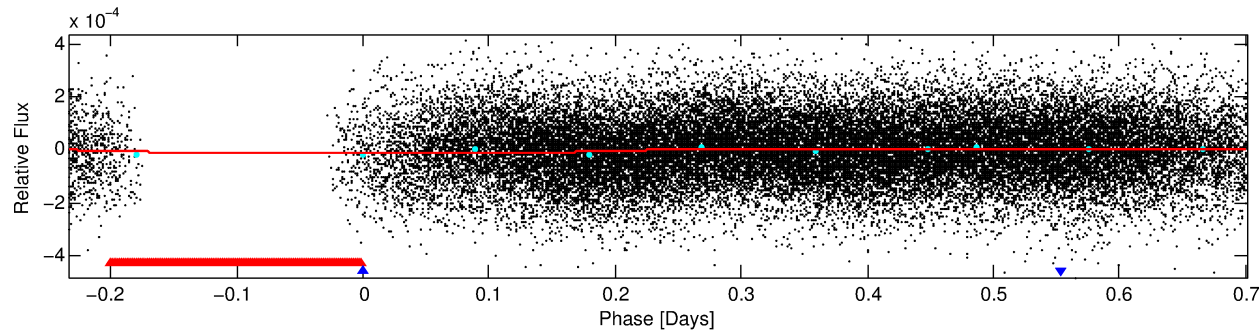
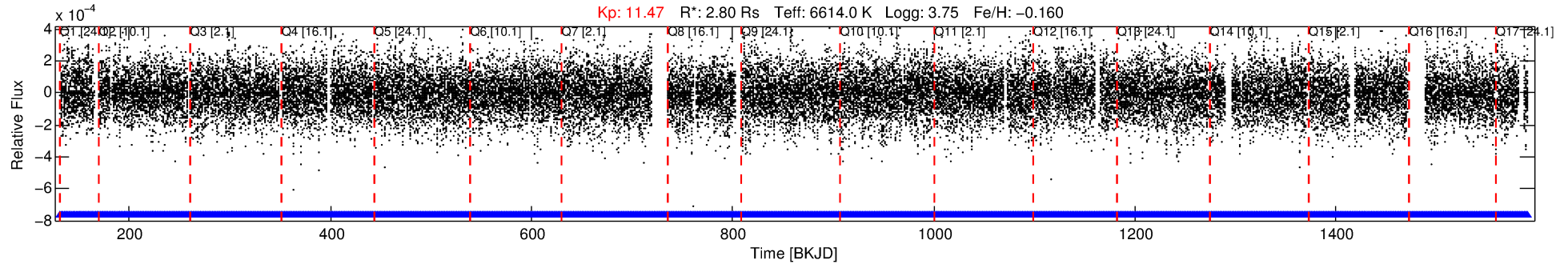
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007779411-02

No Significant Match Found

# DV One-Page Summary

KIC: 7779411 Candidate: 2 of 2 Period: 0.935 d



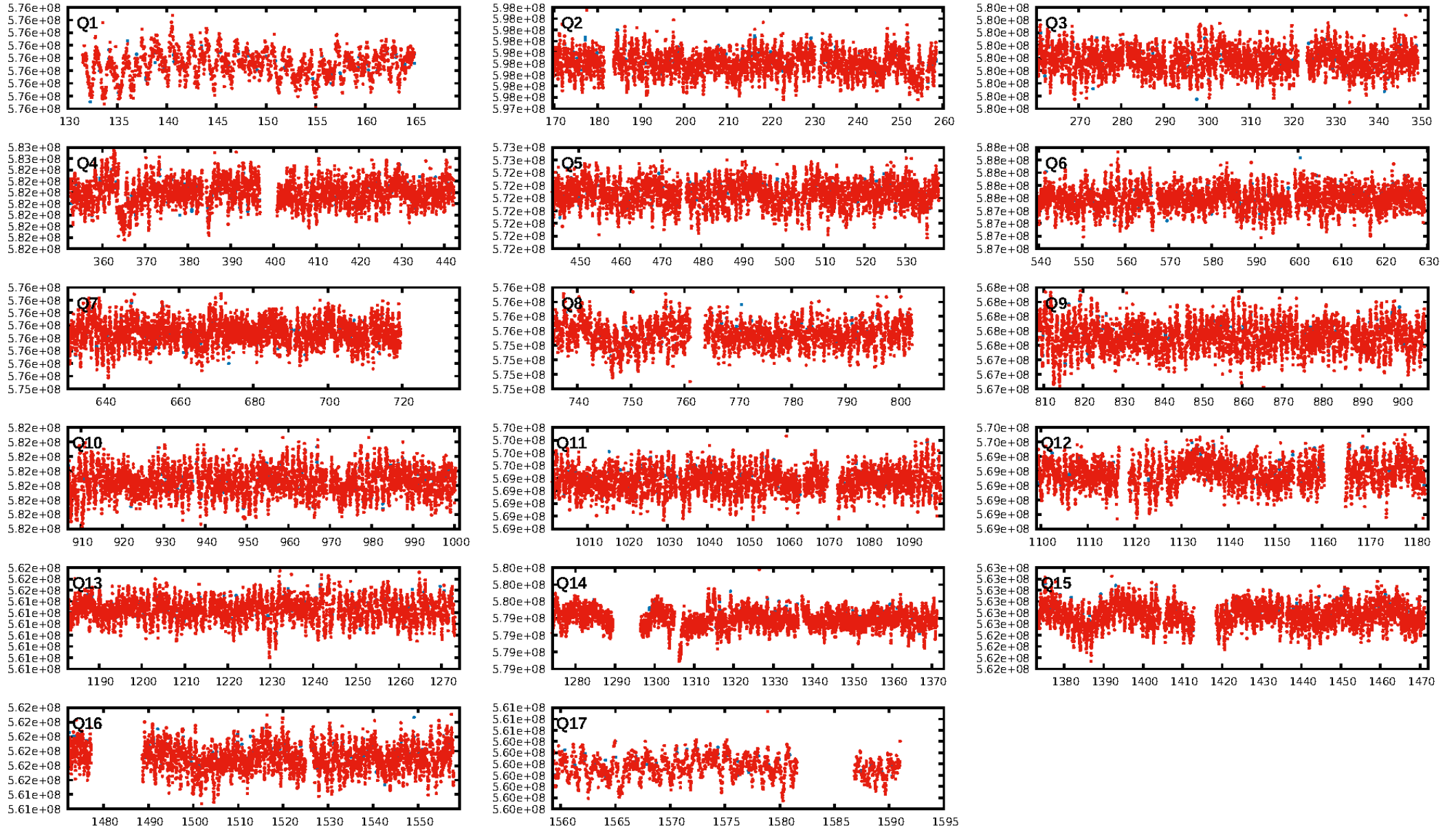
## DV Fit Results:

Period = 0.93460 [0.00003] d  
Epoch = 131.8010 [0.0106] BKJD  
Rp/R\* = 0.0030 [0.0024]  
a/R\* = 1.00 [0.04]  
b = 0.27 [15.98]  
Seff = 28162.23 [14442.59]  
Teq = 3303 [424] K  
Rp = 0.93 [0.81] Re  
a = 0.0219 [0.0072] AU  
Ag = 5.13 [8.65] [0.48 $\sigma$ ]  
Teffp = 7688 [3100] K [1.40 $\sigma$ ]

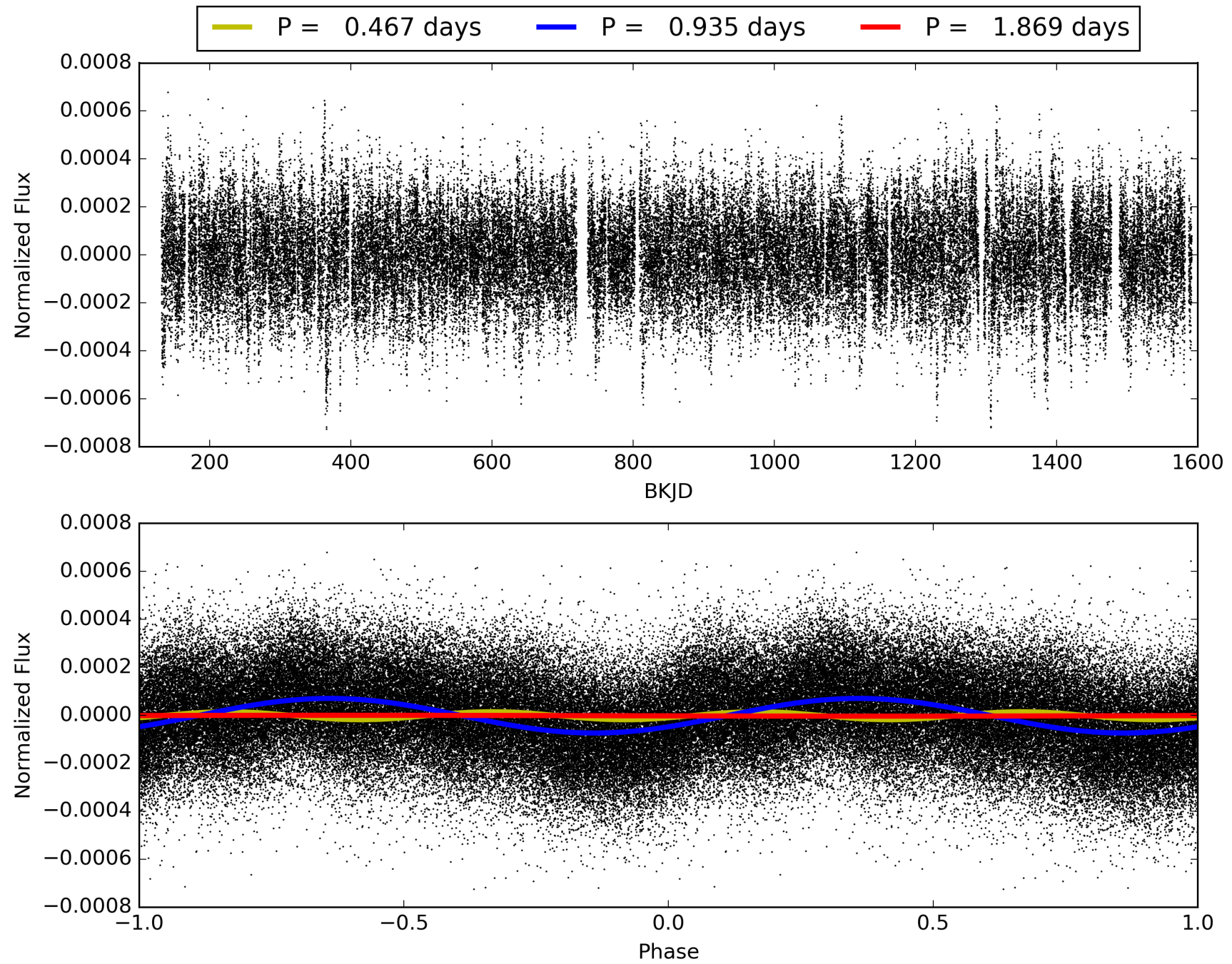
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1377/1377]  
GhostDiagnostic-chr: 0.5076  
Centroid-sig: 0.1%  
Centroid-so: 1.879 arcsec [2.57 $\sigma$ ]  
OotOffset-rm: 0.795 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 0/3/0/2 [5]  
KicOffset-rm: 0.748 arcsec [0.55 $\sigma$ ]  
KicOffset-st: 0/3/0/2 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 007779411-02, PDC Light Curves

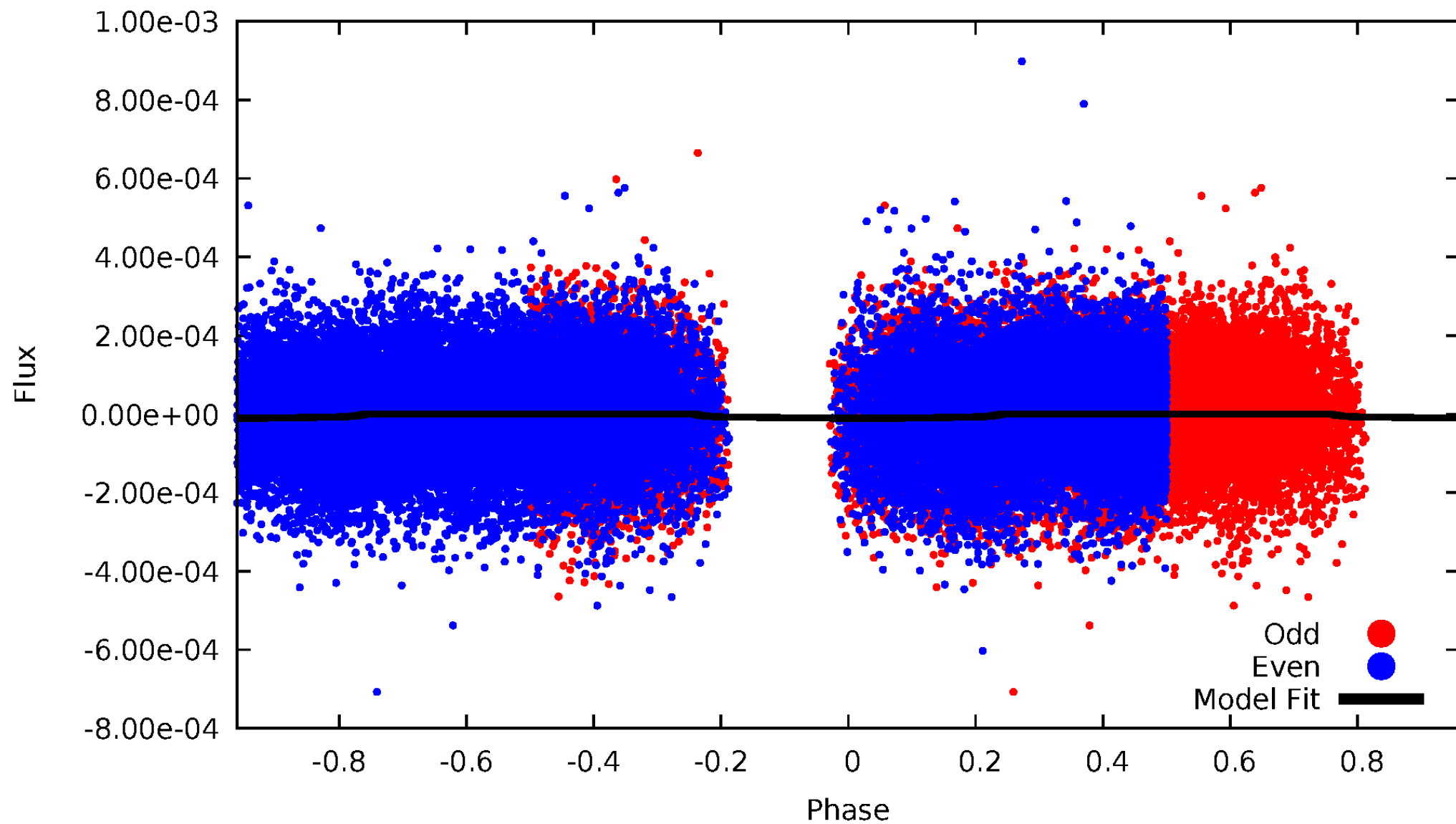


TCE 007779411-02



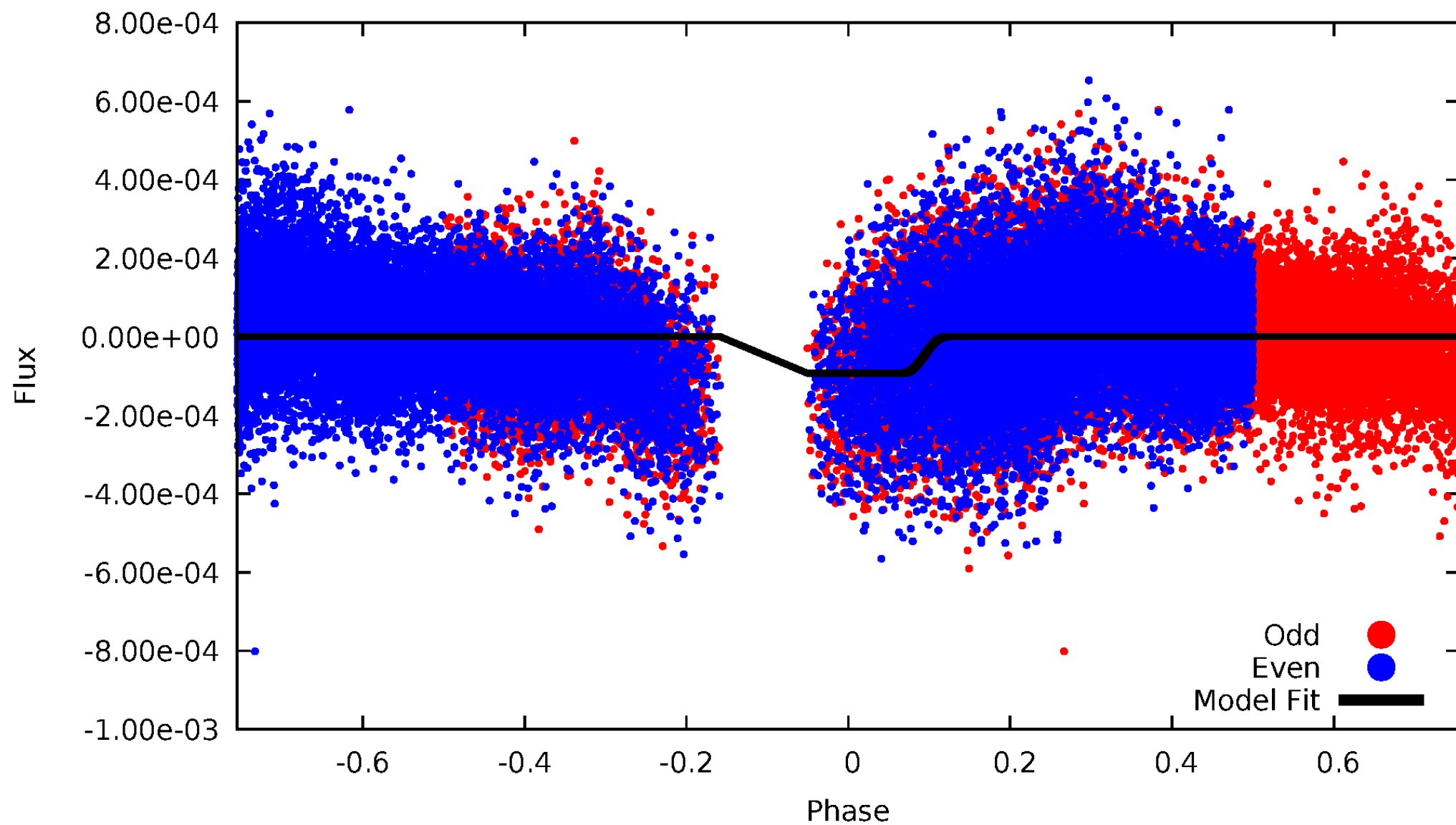
# DV Odd/Even

TCE 007779411-02



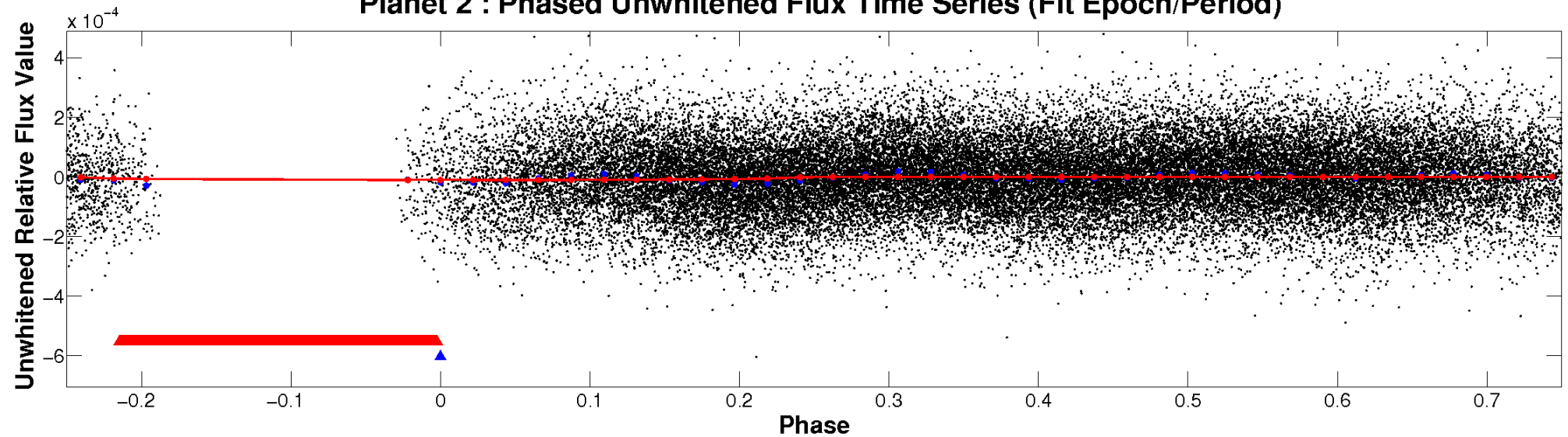
# ALT Odd/Even

TCE 007779411-02

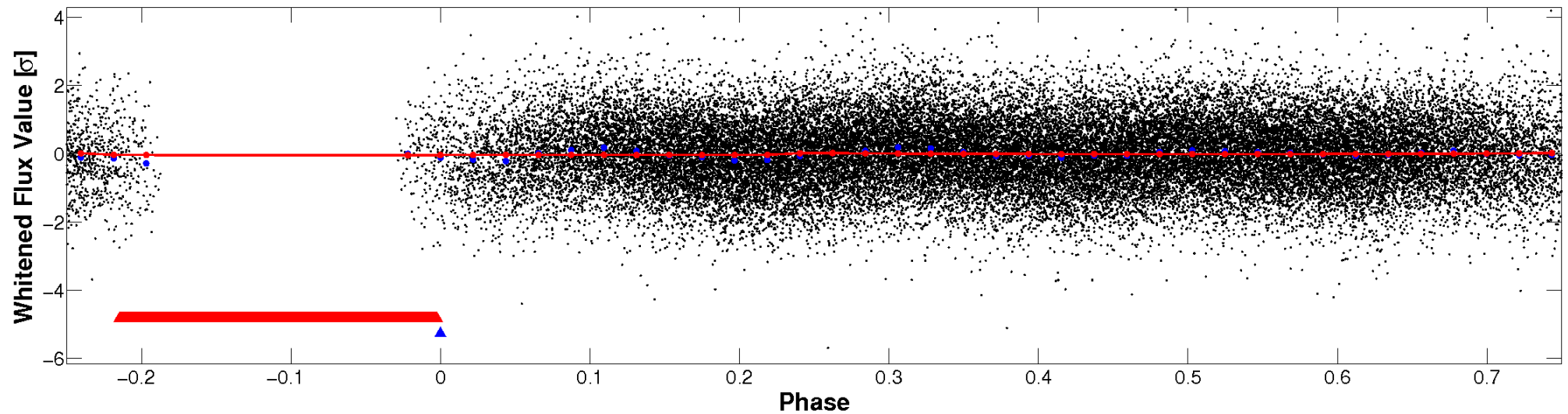


# Non-Whitened Vs. Whitened Light Curve

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

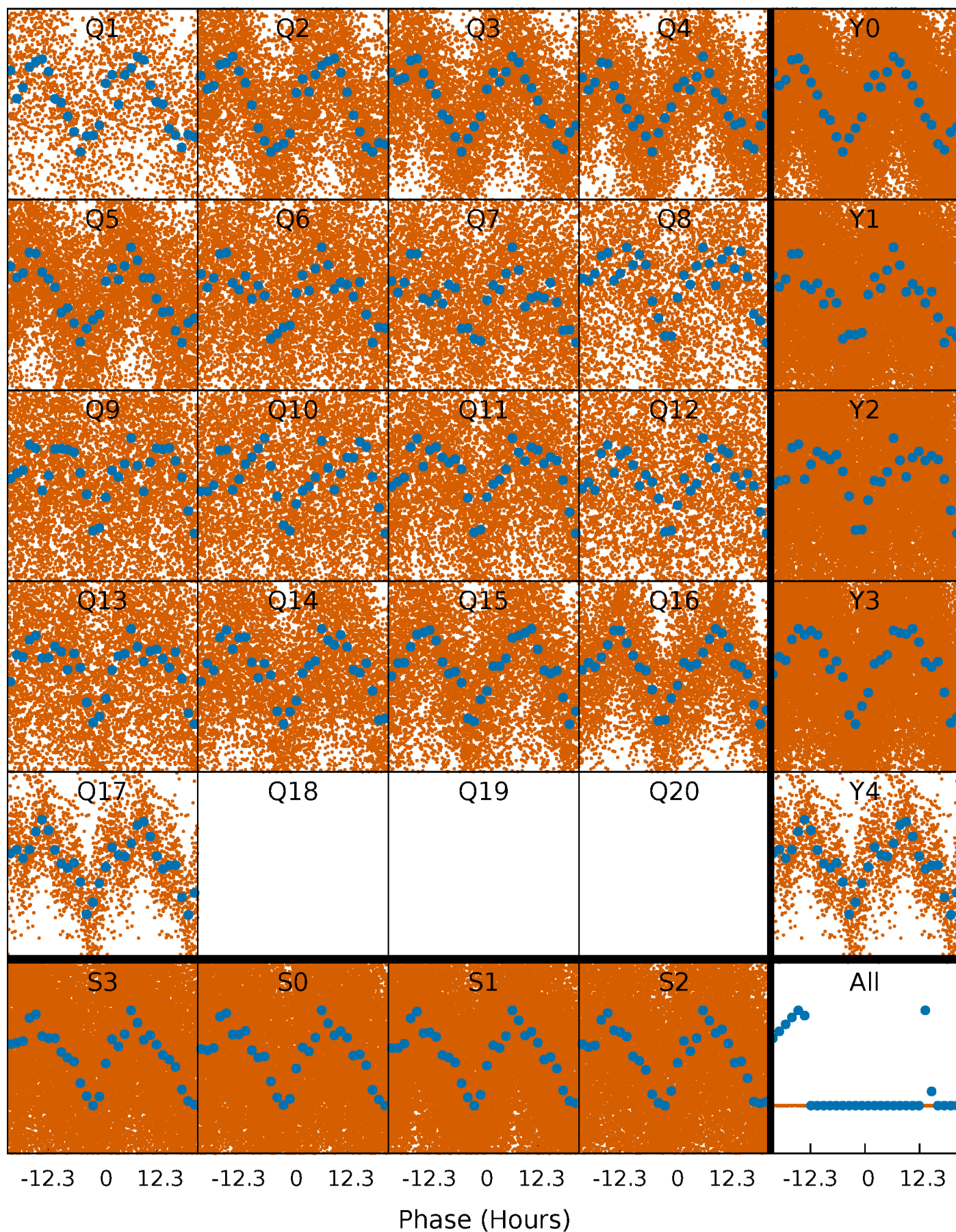


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



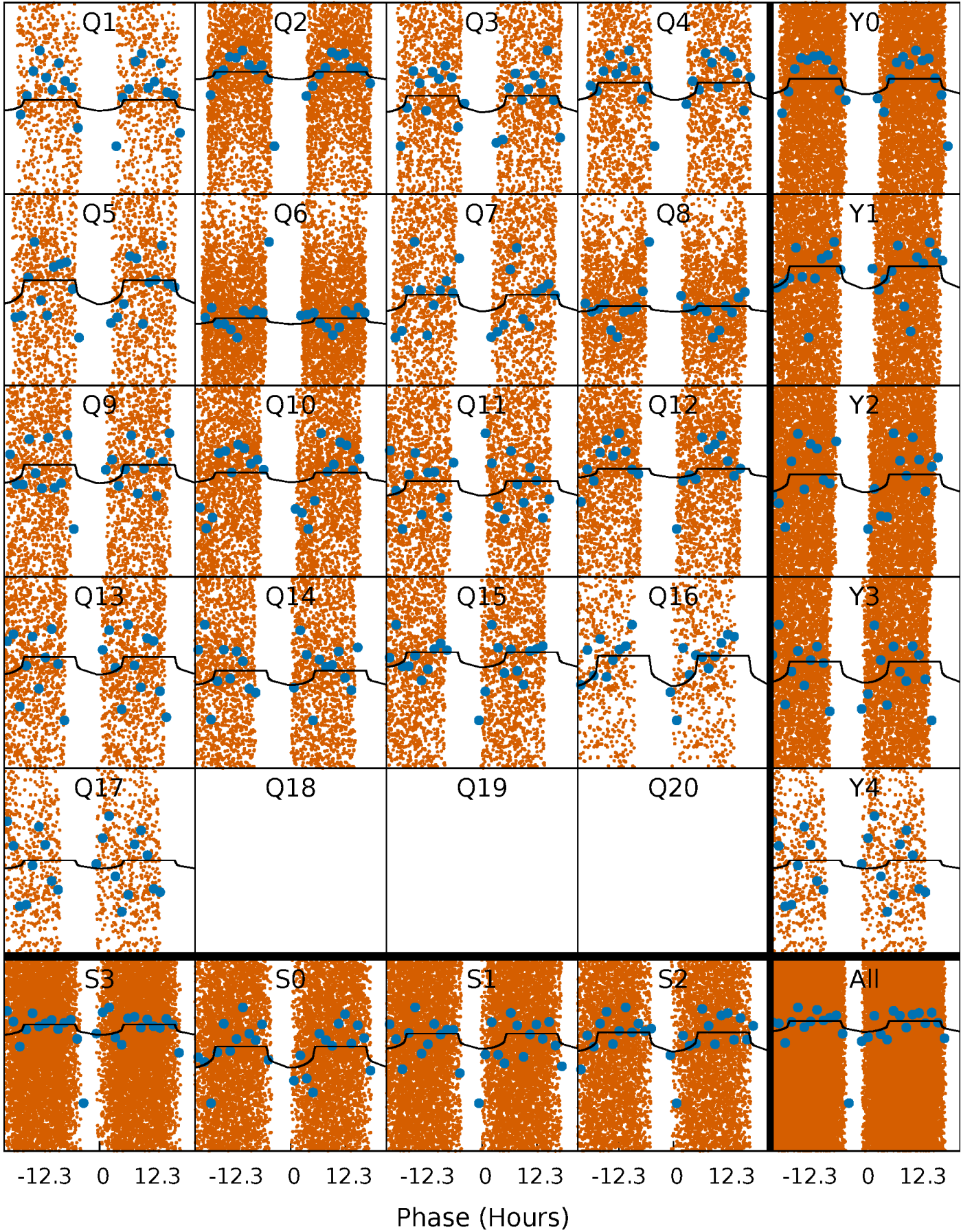
## PDC Quarter-Phased Transit Curves

TCE 007779411-02    P= 0.934598 Days     $T_0=131.801015$  (BKJD)



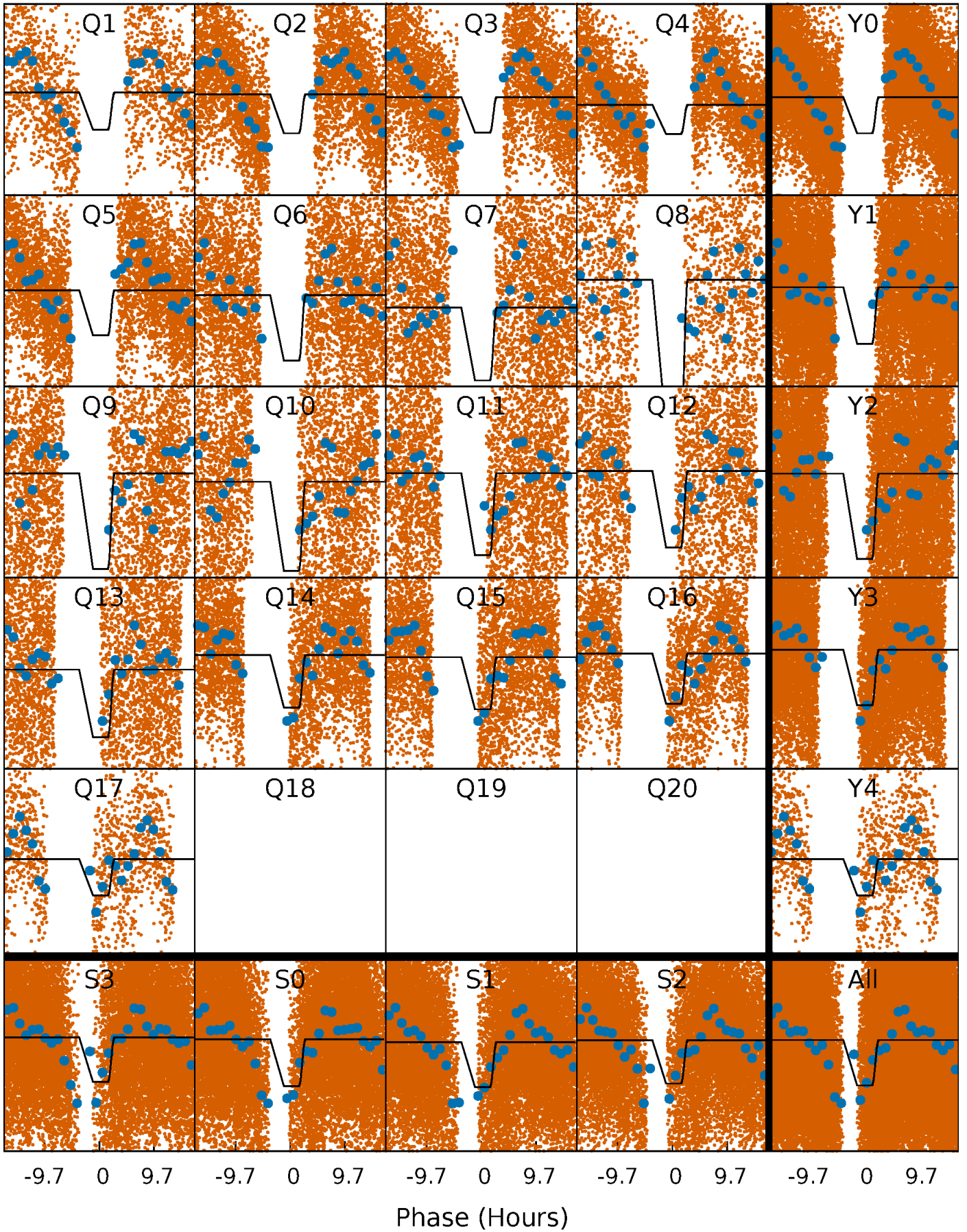
# DV Quarter-Phased Transit Curves

TCE 007779411-02   P= 0.934598 Days    $T_0=131.801015$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

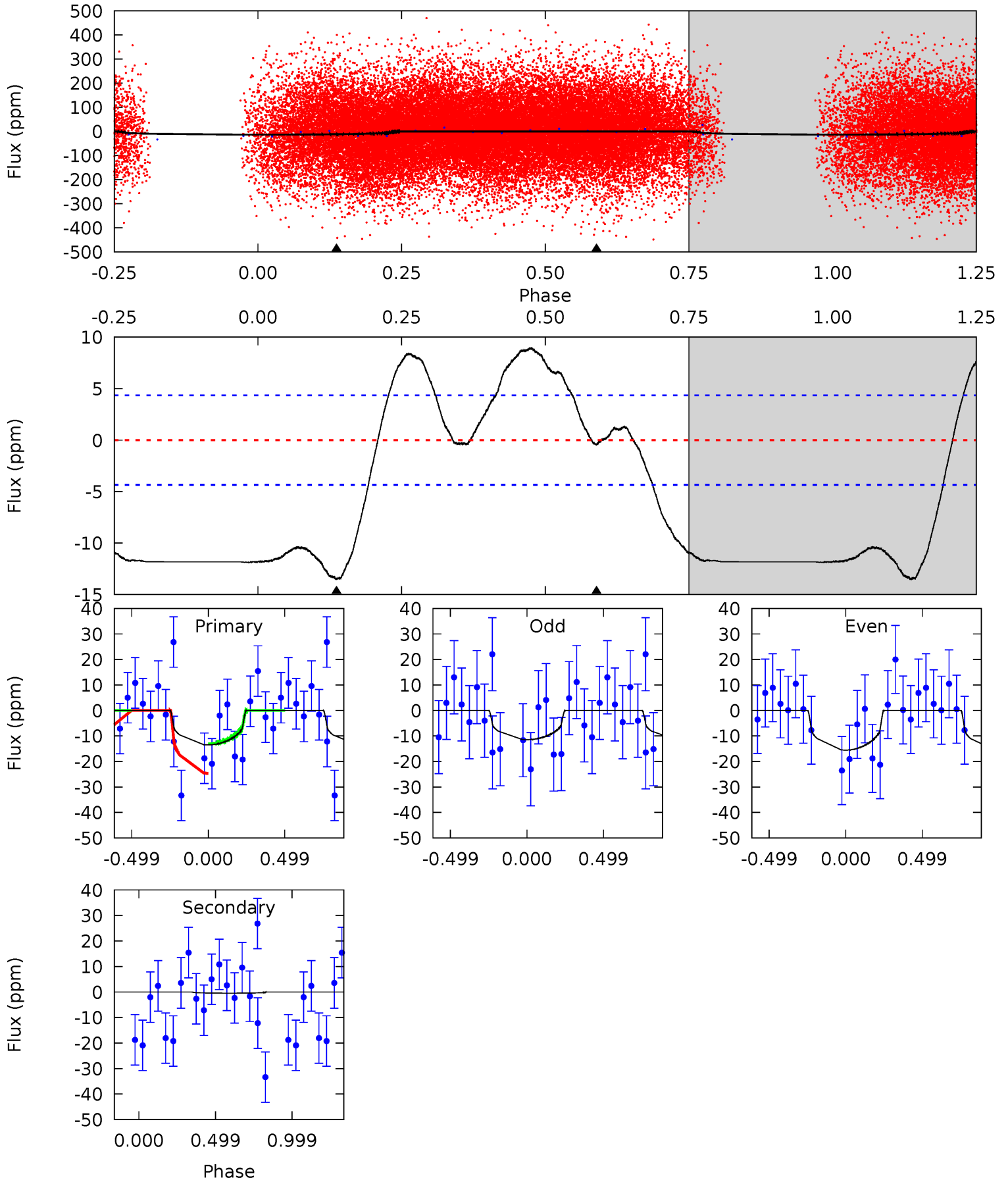
TCE 007779411-02   P= 0.934628 Days    $T_0=131.773878$  (BKJD)



# DV Model-Shift Uniqueness Test

007779411-02, P = 0.934598 Days, E = 130.866417 Days

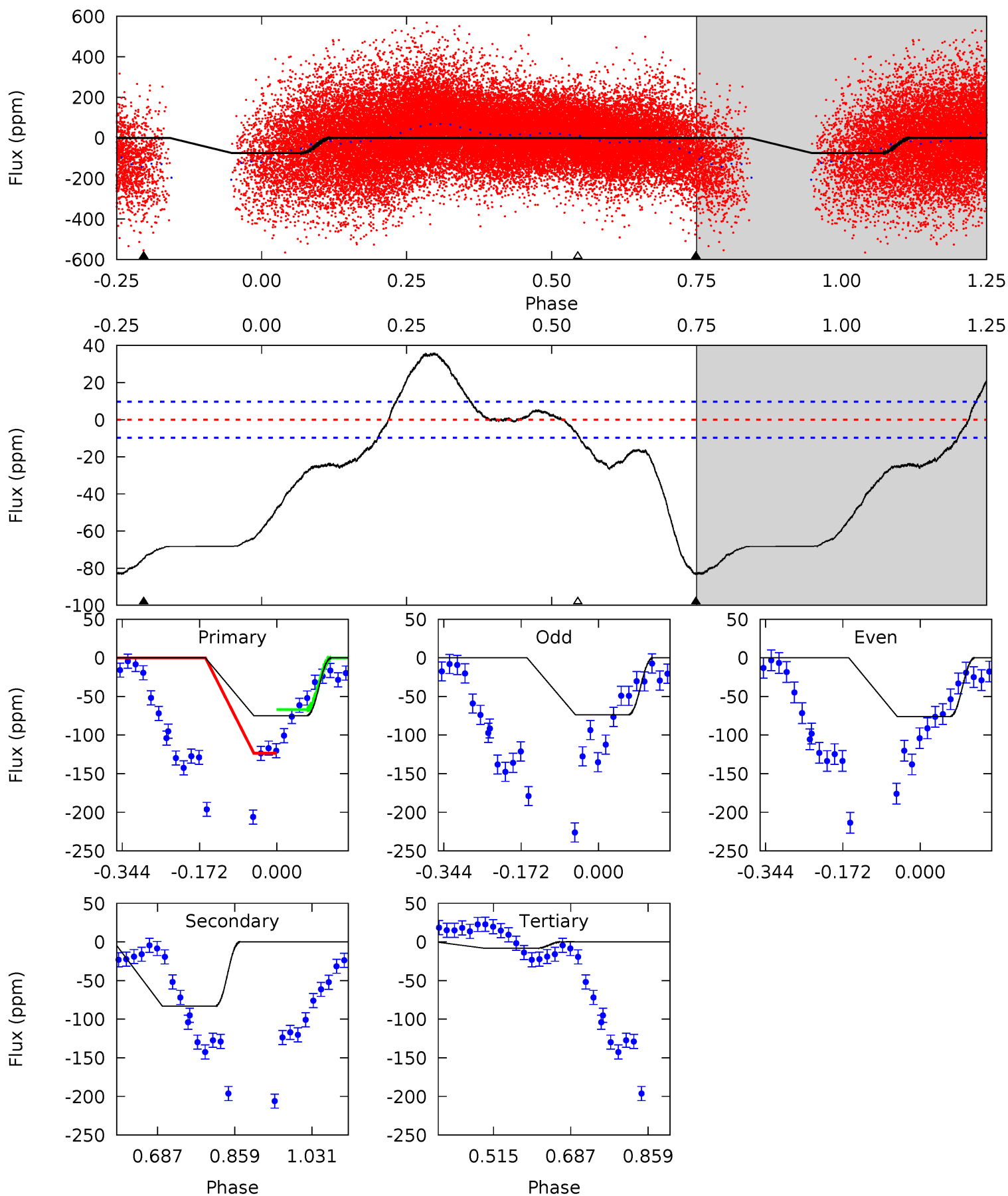
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	0.44	0	0	4.22	0.68	2.34	13.1	13.1	0.44	0.44	1.99	1.09	0.40	2.71



# Alt Model-Shift Uniqueness Test

007779411-02, P = 0.934628 Days, E = 130.839250 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
34.3	38.1	3.70	0	4.45	1.37	8.61	30.6	34.3	34.4	38.1	0.50	0.99	0.30	8.69



### Stellar Parameters For KIC 007779411

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6614^{+158}_{-178}$	$3.746^{+0.285}_{-0.095}$	$-0.160^{+0.300}_{-0.250}$	$2.803^{+0.441}_{-1.030}$	$1.596^{+0.187}_{-0.348}$	$0.102^{+0.211}_{-0.032}$
	+2%/-3%	+8%/-3%	+188%/-156%	+16%/-37%	+12%/-22%	+206%/-31%
Source	PHO1	FLK73	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 007779411-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-0 \pm 1$	$0.95^{+0.72}_{-0.58}$	$4521^{+273}_{-412}$	$-3736^{+8321}_{-597}$	$0.094^{+0.893}_{-0.240}$
Alt.	$-83 \pm 2$	$2.84^{+0.83}_{-0.80}$	$4542^{+255}_{-396}$	$6135^{+1068}_{-682}$	$2.683^{+2.335}_{-1.059}$

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

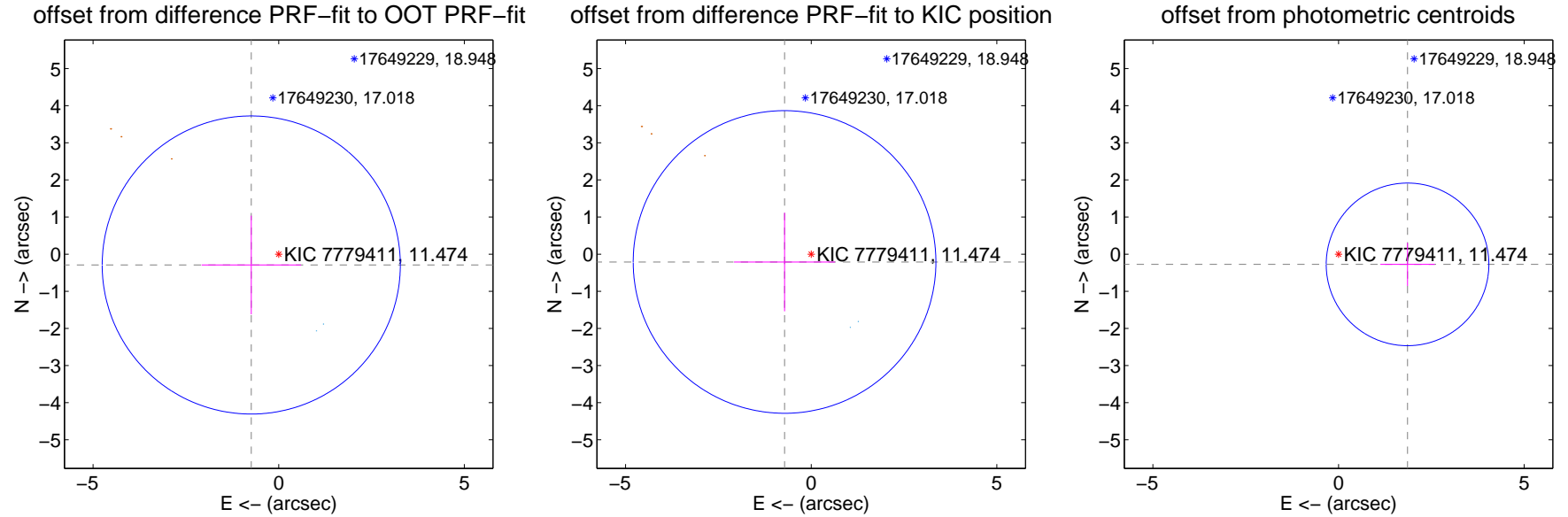
## DV Centroid Data

Supplemental centroid analysis for 007779411-02. **Kepler magnitude: 11.47.** Transit SNR 3.84

**There are 2 quarters with good PRF difference image offsets**

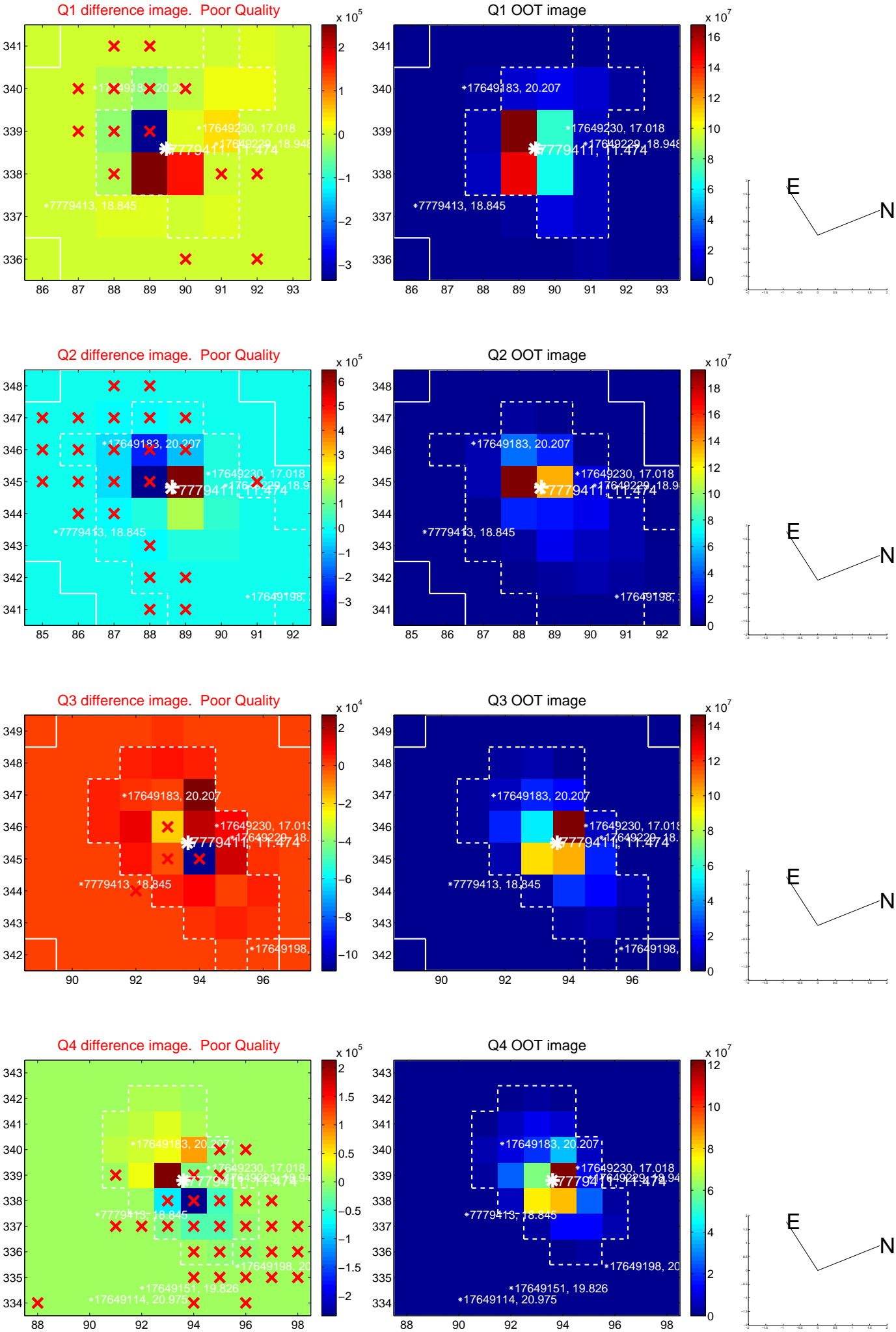
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.795 \pm 1.339$	0.59	$0.739 \pm 1.340$	$-0.292 \pm 1.330$
PRF-fit source offset from KIC position	$0.748 \pm 1.359$	0.55	$0.718 \pm 1.362$	$-0.210 \pm 1.328$
photometric centroid source offset	$1.88 \pm 0.73$	2.57	$-1.86 \pm 0.73$	$-0.28 \pm 0.58$

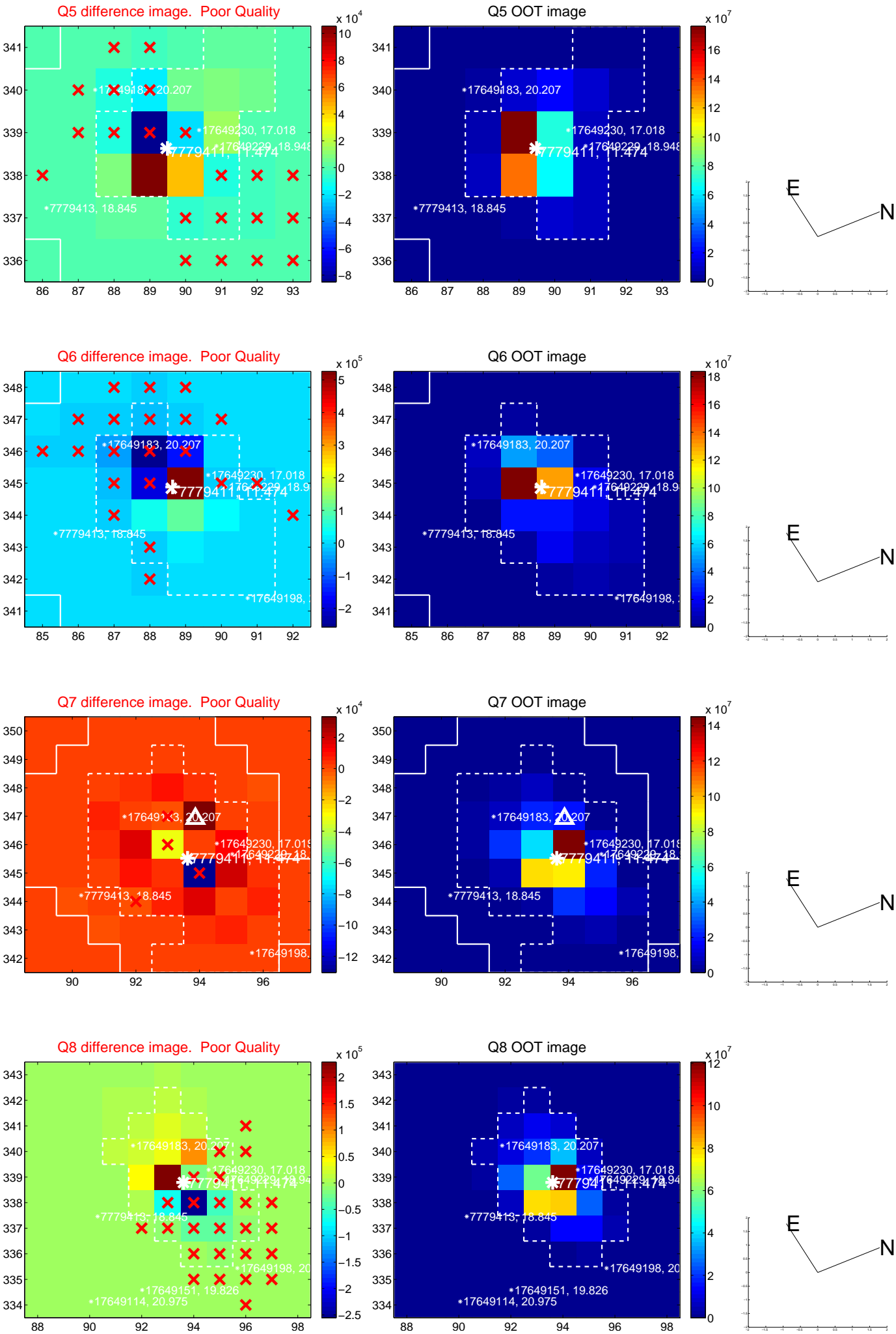


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

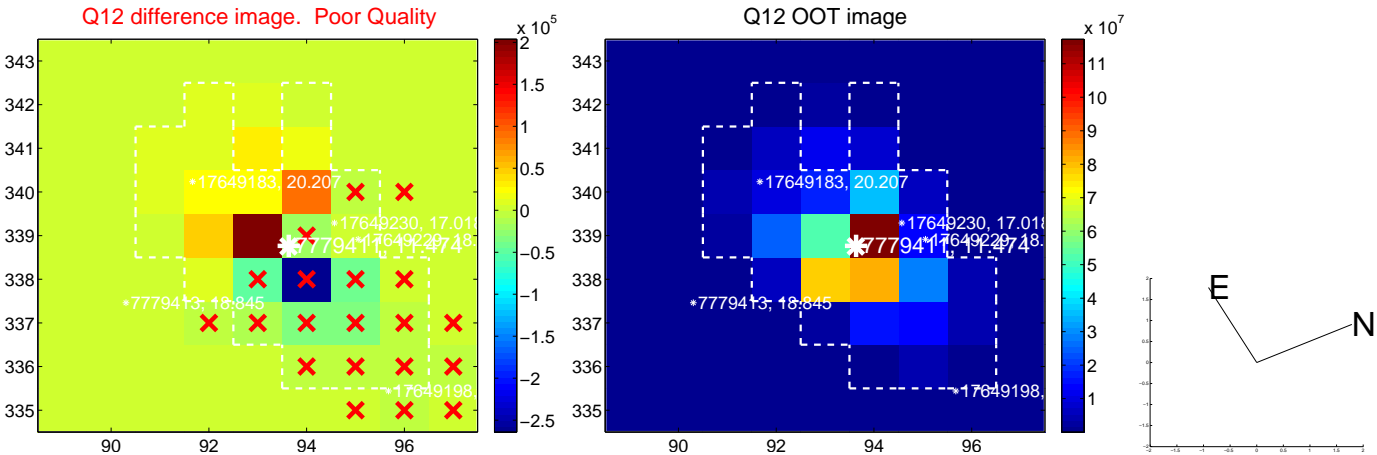
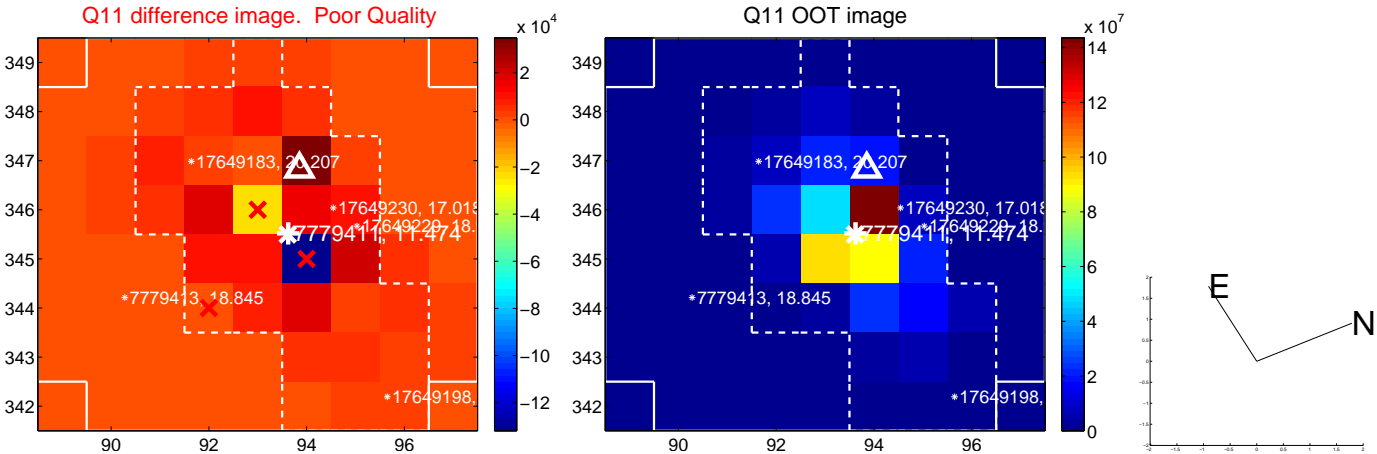
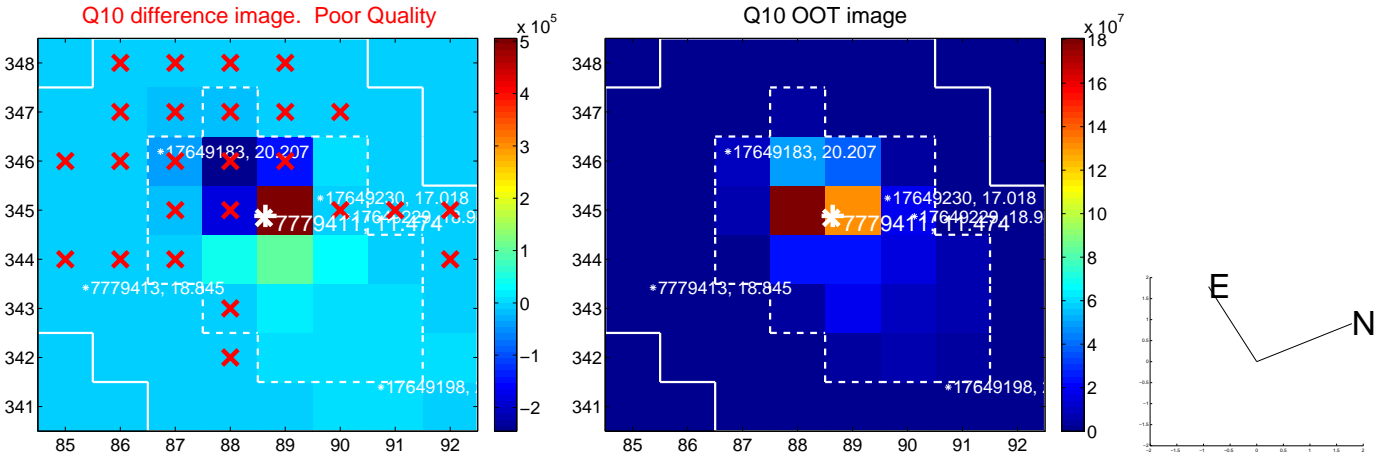
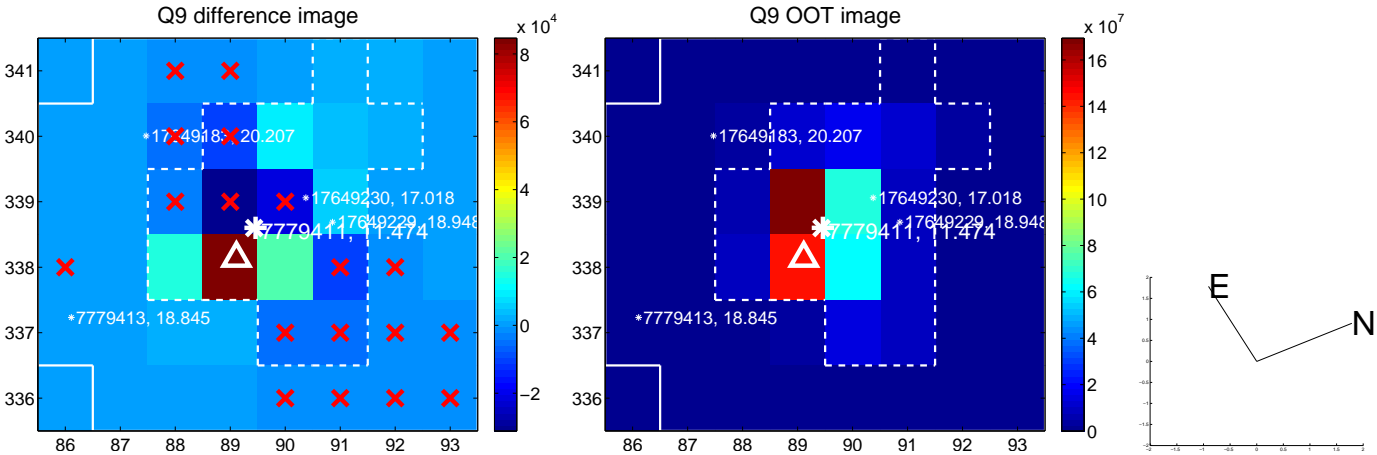
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



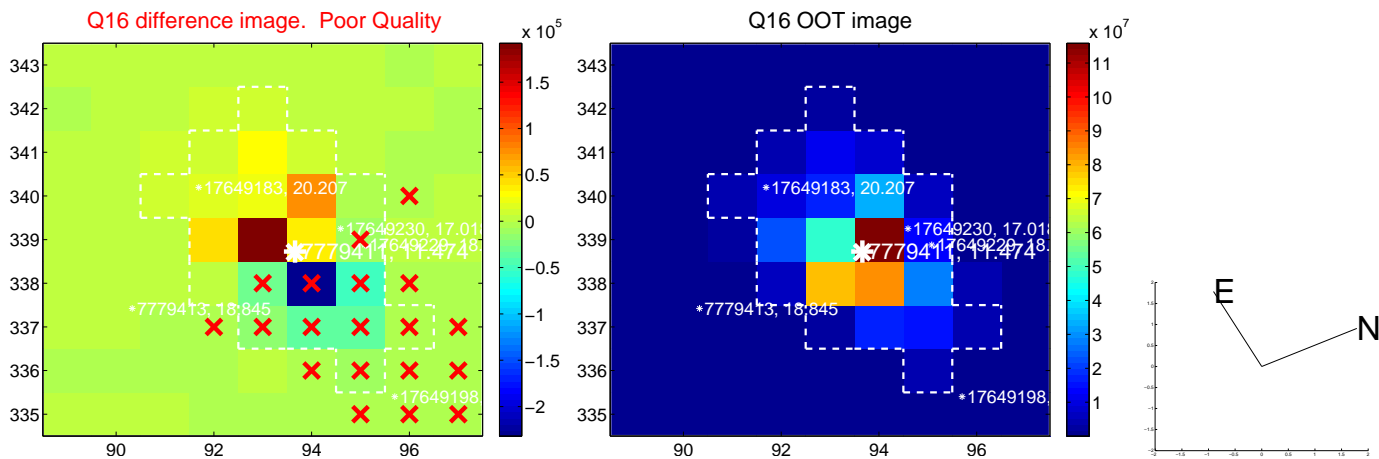
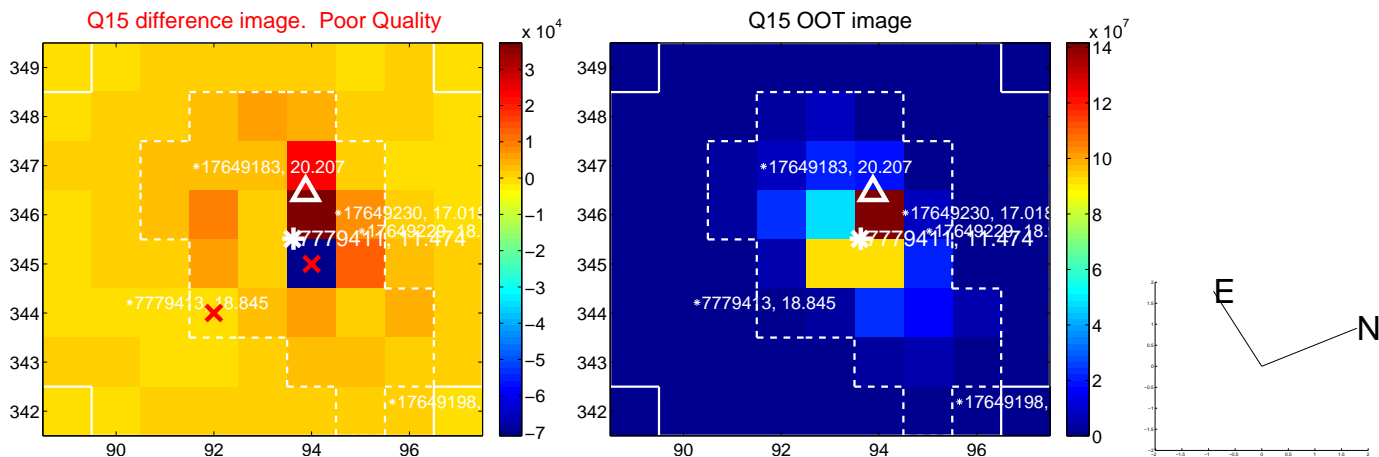
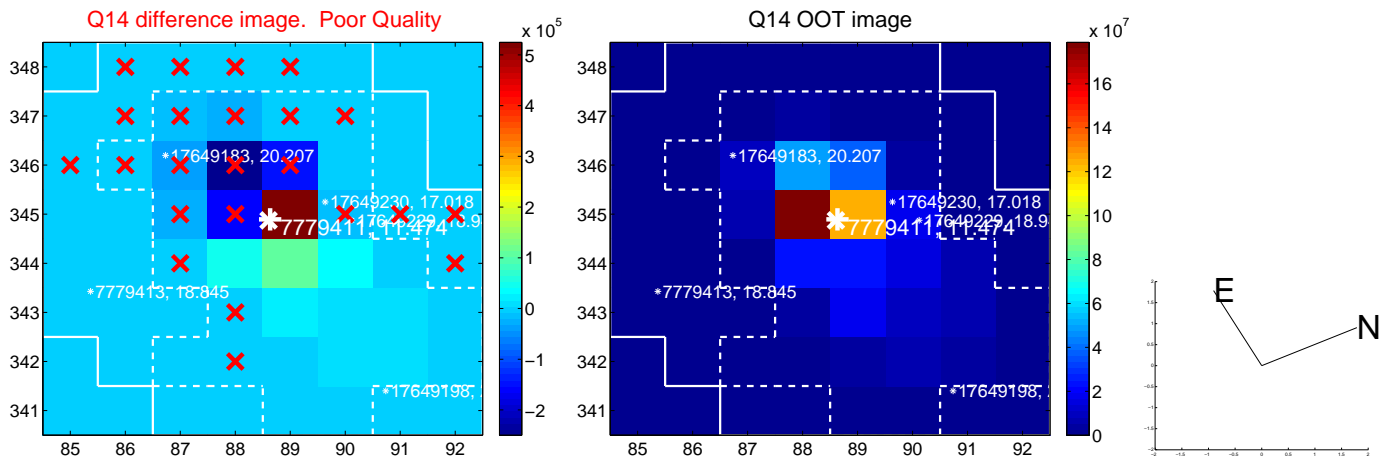
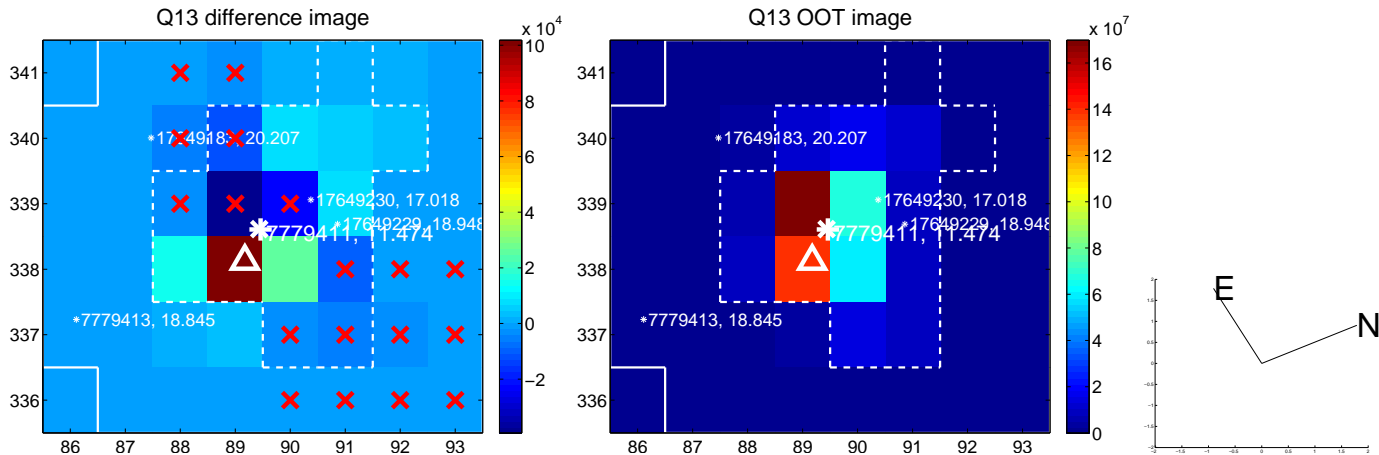
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



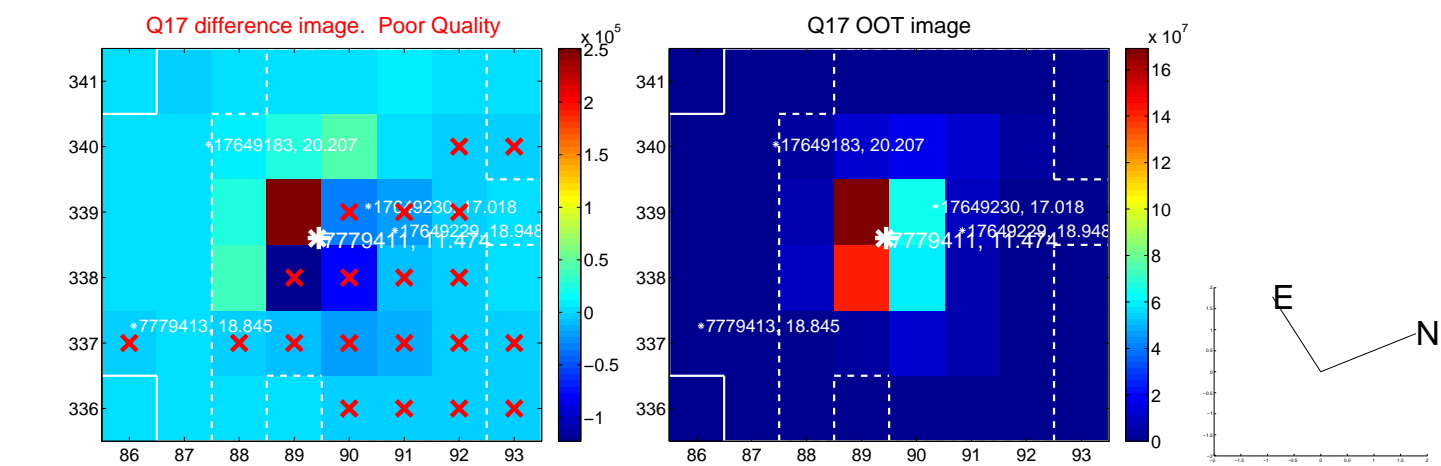
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



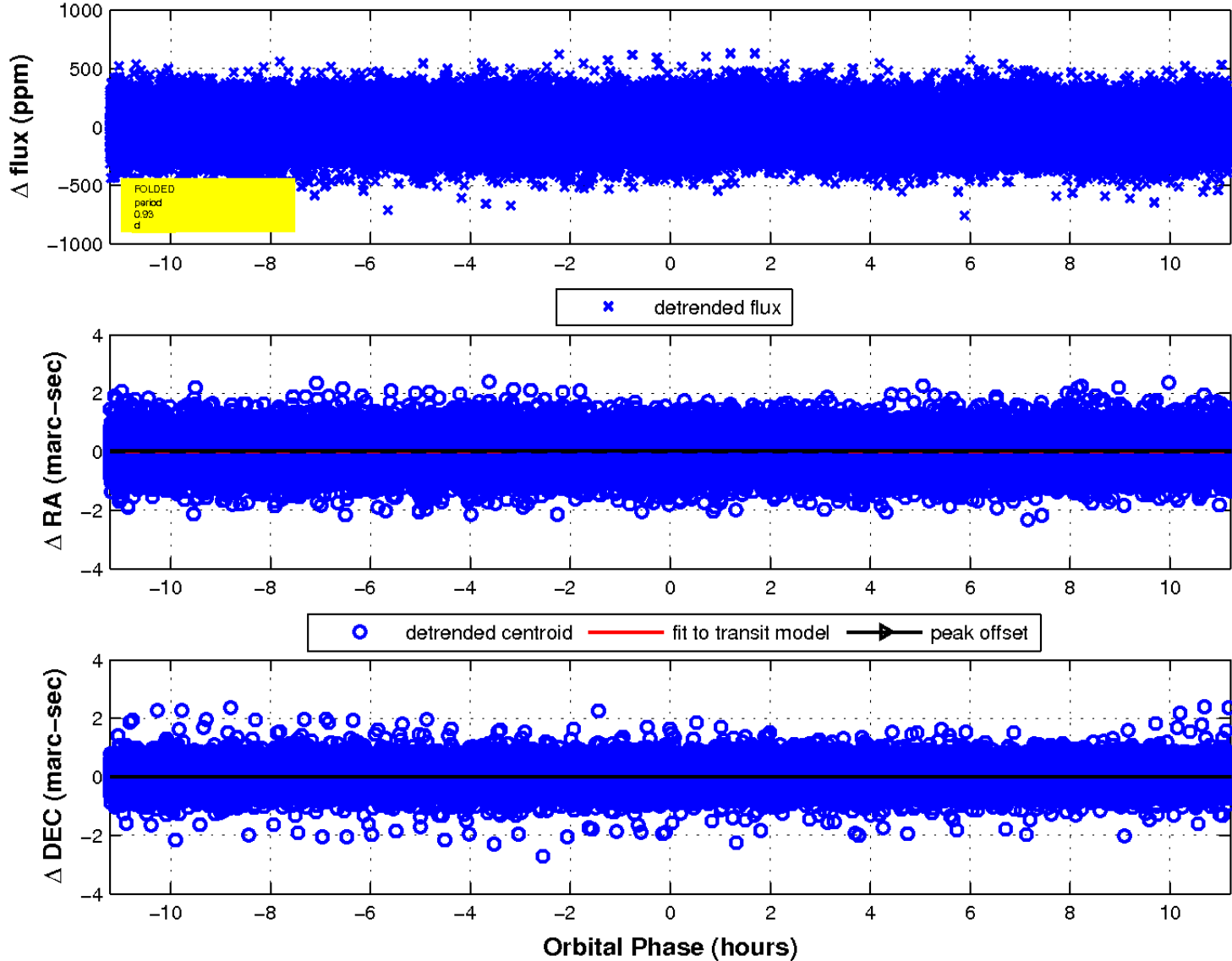
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

