

# KIC 004679528

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004679528-01	OBS	No	0.920902	131.726639	30.7	3.864	13.0	12.3	2.12	7694	1.36	27777.87
004679528-02	OBS	No	0.530325	132.023743	37.8	5.790	10.1	13.3	2.12	7694	1.39	57977.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004679528-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004679528-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

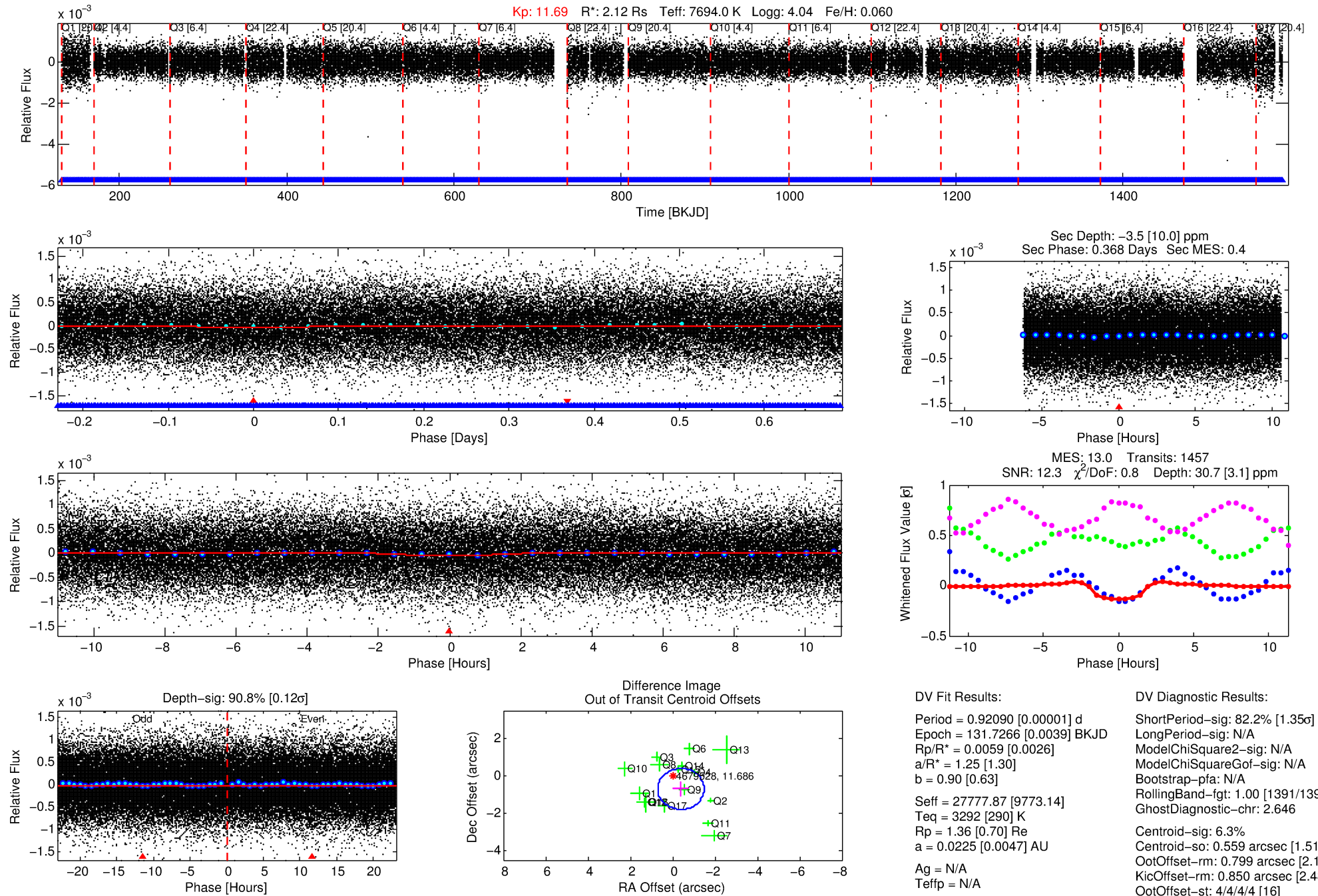
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004679528-01

No Significant Match Found

# DV One-Page Summary

KIC: 4679528 Candidate: 1 of 2 Period: 0.921 d



## DV Fit Results:

Period = 0.92090 [0.00001] d  
Epoch = 131.7266 [0.0039] BKJD  
Rp/R\* = 0.0059 [0.0026]  
a/R\* = 1.25 [1.30]  
b = 0.90 [0.63]  
Seff = 27777.87 [9773.14]  
Teff = 3292 [290] K  
Rp = 1.36 [0.70] Re  
a = 0.0225 [0.0047] AU  
Ag = N/A  
Teffp = N/A

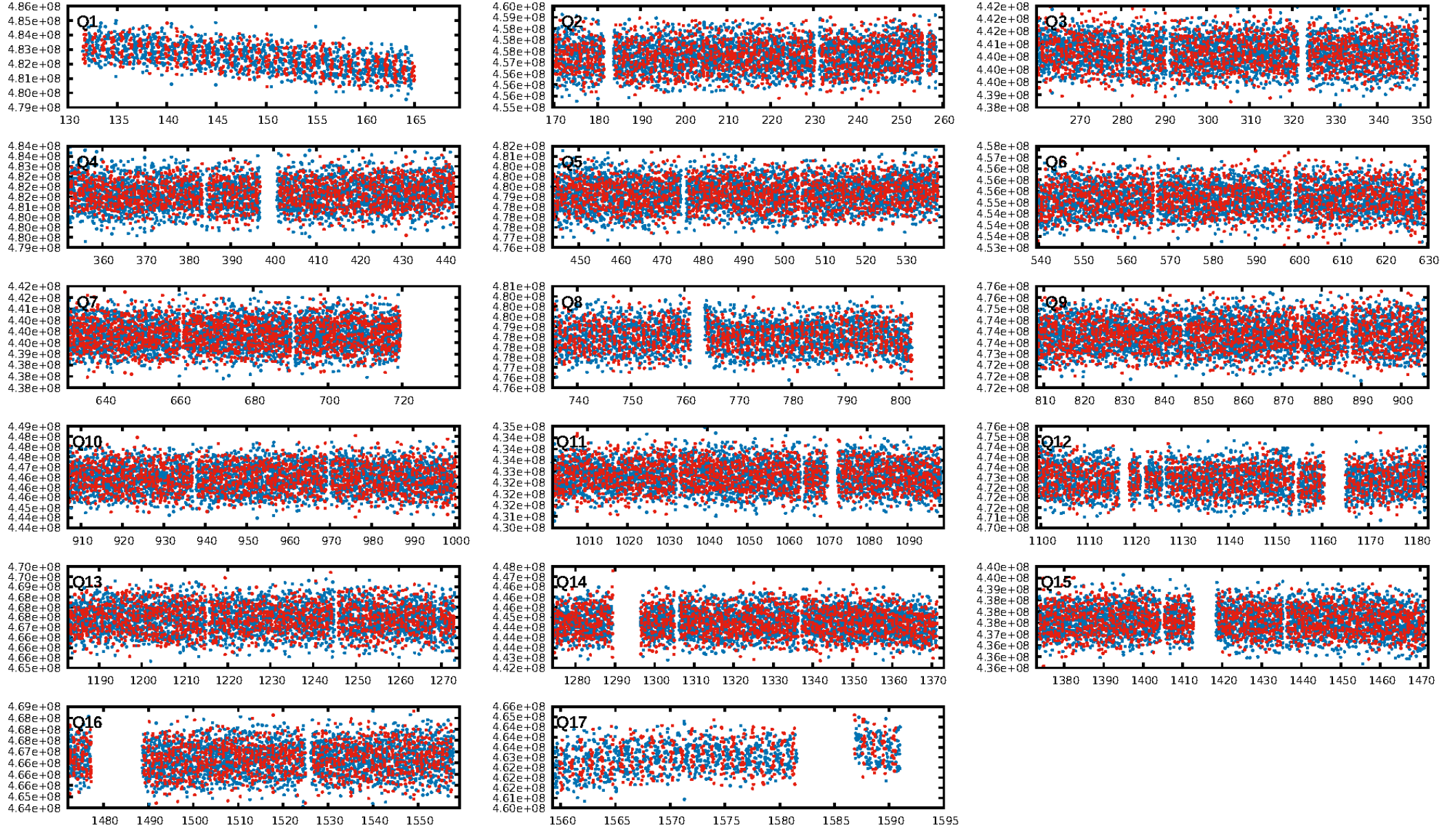
## DV Diagnostic Results:

ShortPeriod-sig: 82.2% [1.35 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1391/1391]  
GhostDiagnostic-chr: 2.646  
Centroid-sig: 6.3%  
Centroid-so: 0.559 arcsec [1.51 $\sigma$ ]  
OotOffset-rm: 0.799 arcsec [2.19 $\sigma$ ]  
KicOffset-rm: 0.850 arcsec [2.48 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.62 [10/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:42:41 Z

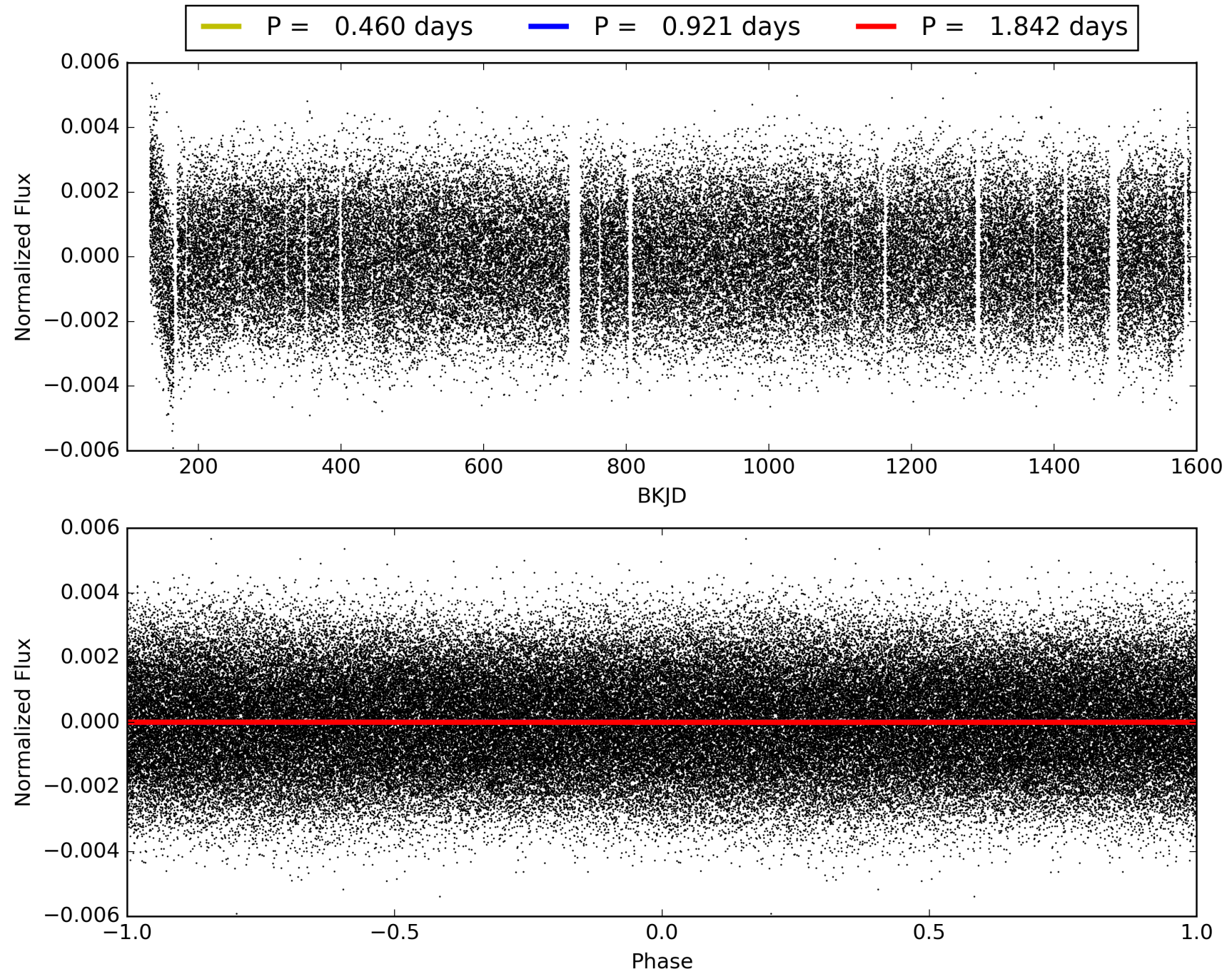
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004679528-01, PDC Light Curves



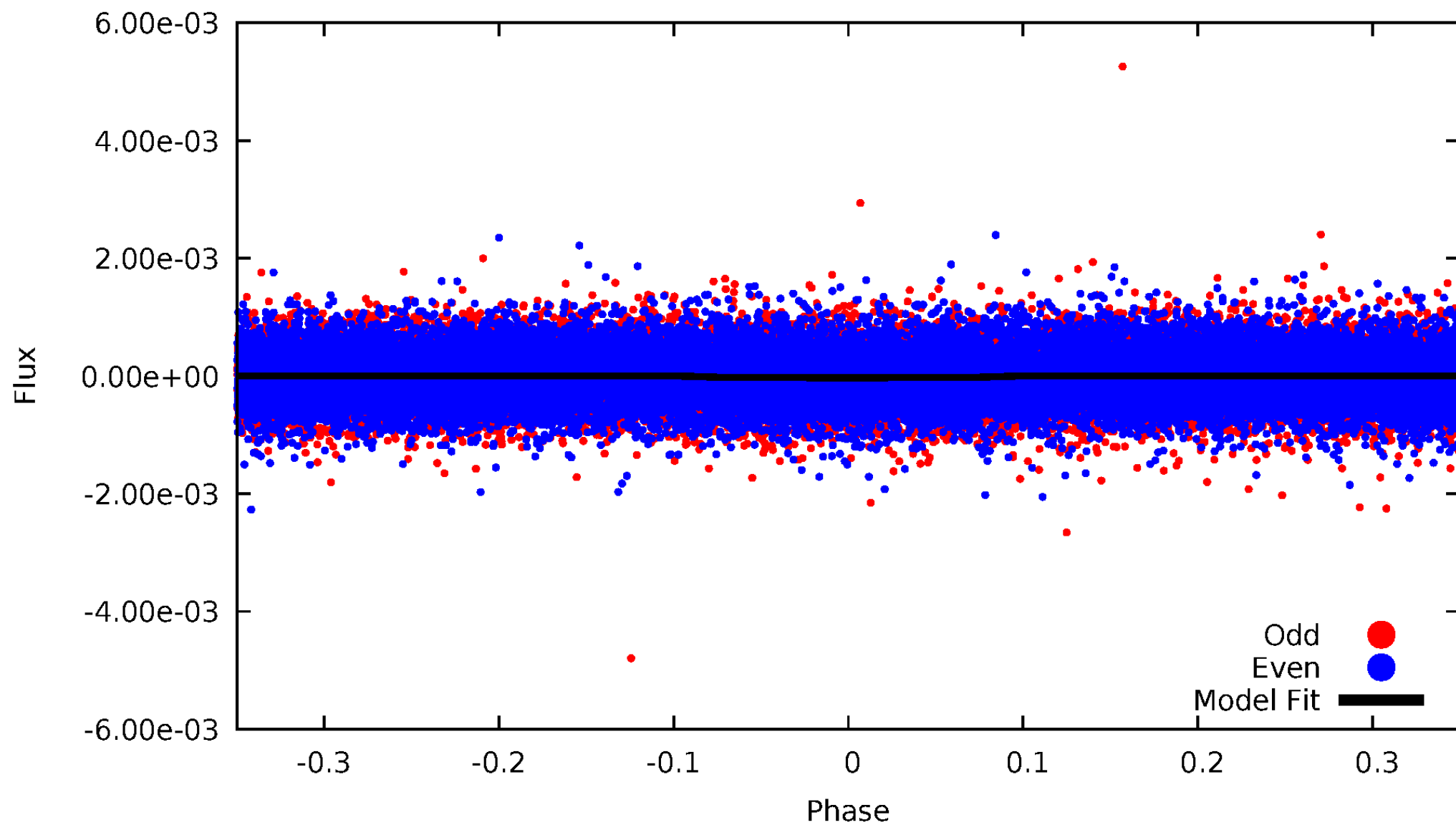


TCE 004679528-01



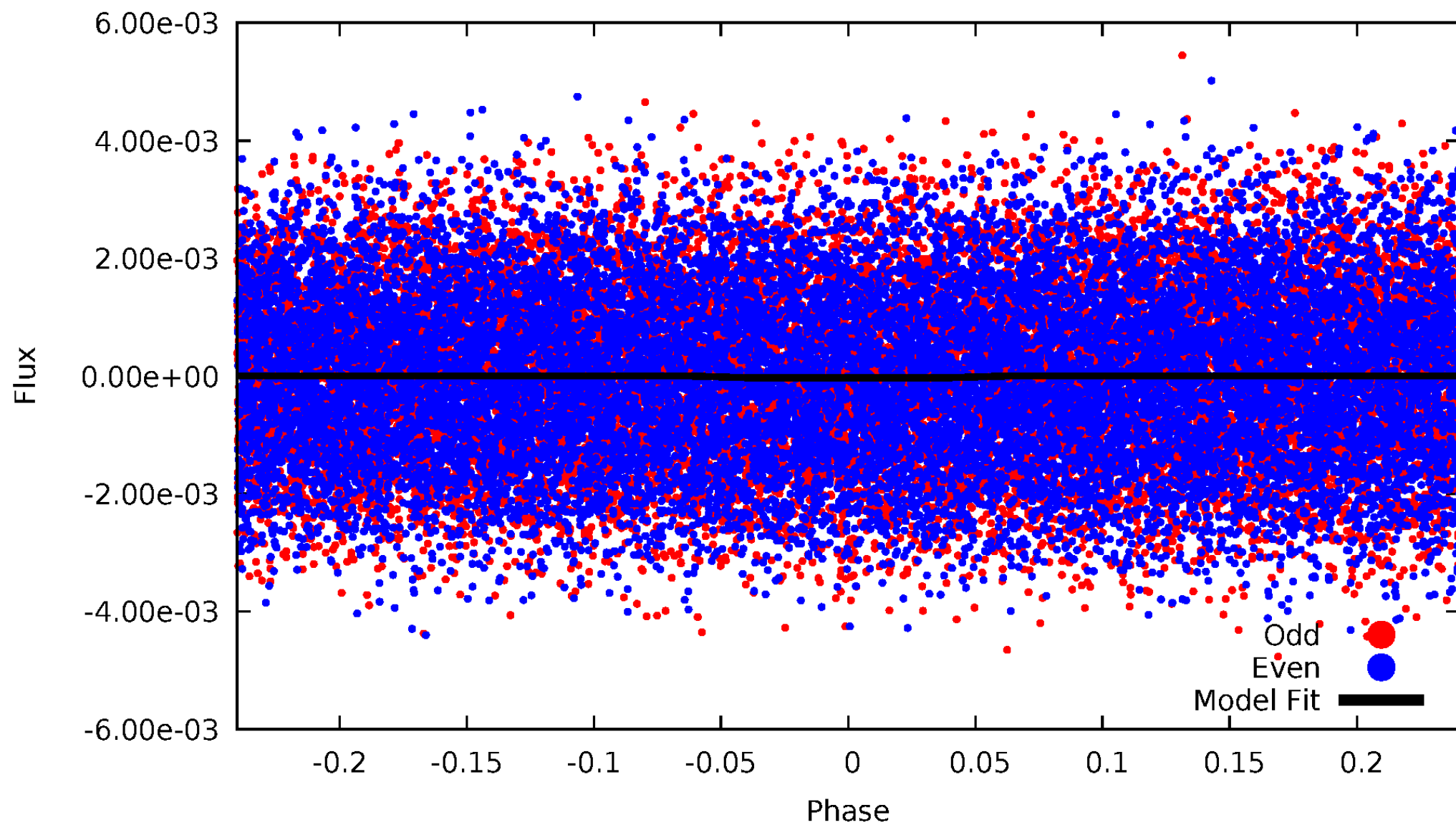
# DV Odd/Even

TCE 004679528-01



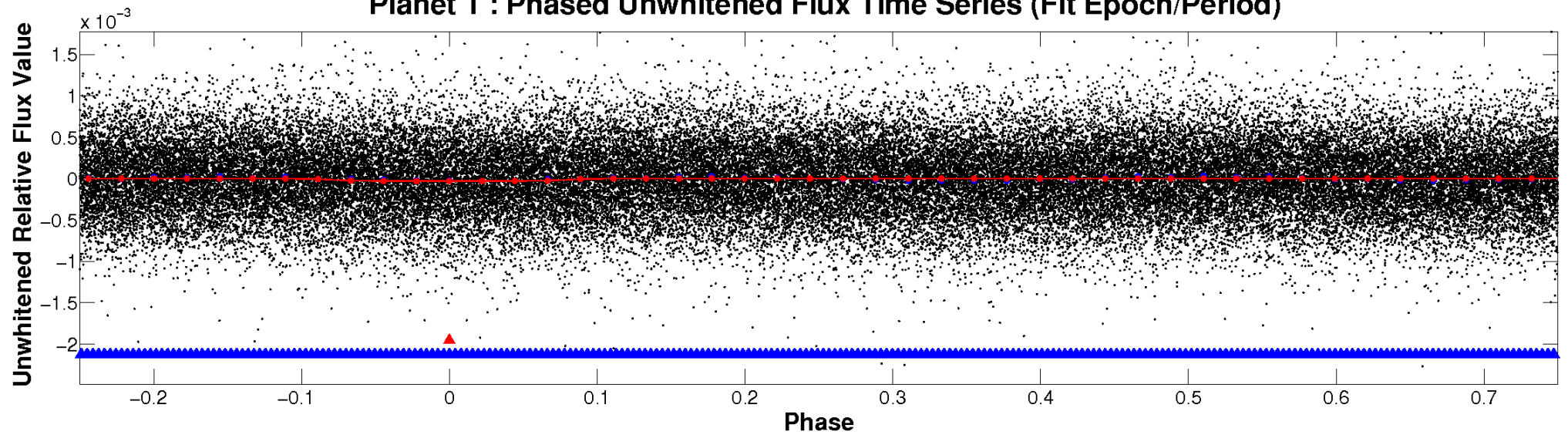
# ALT Odd/Even

TCE 004679528-01

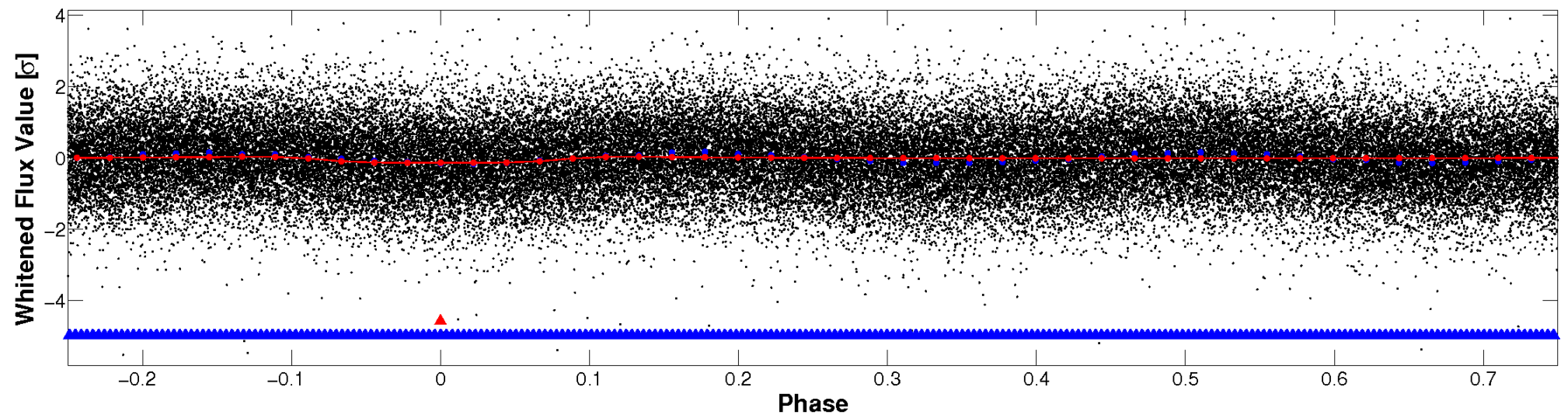


# Non-Whitened Vs. Whitened Light Curve

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



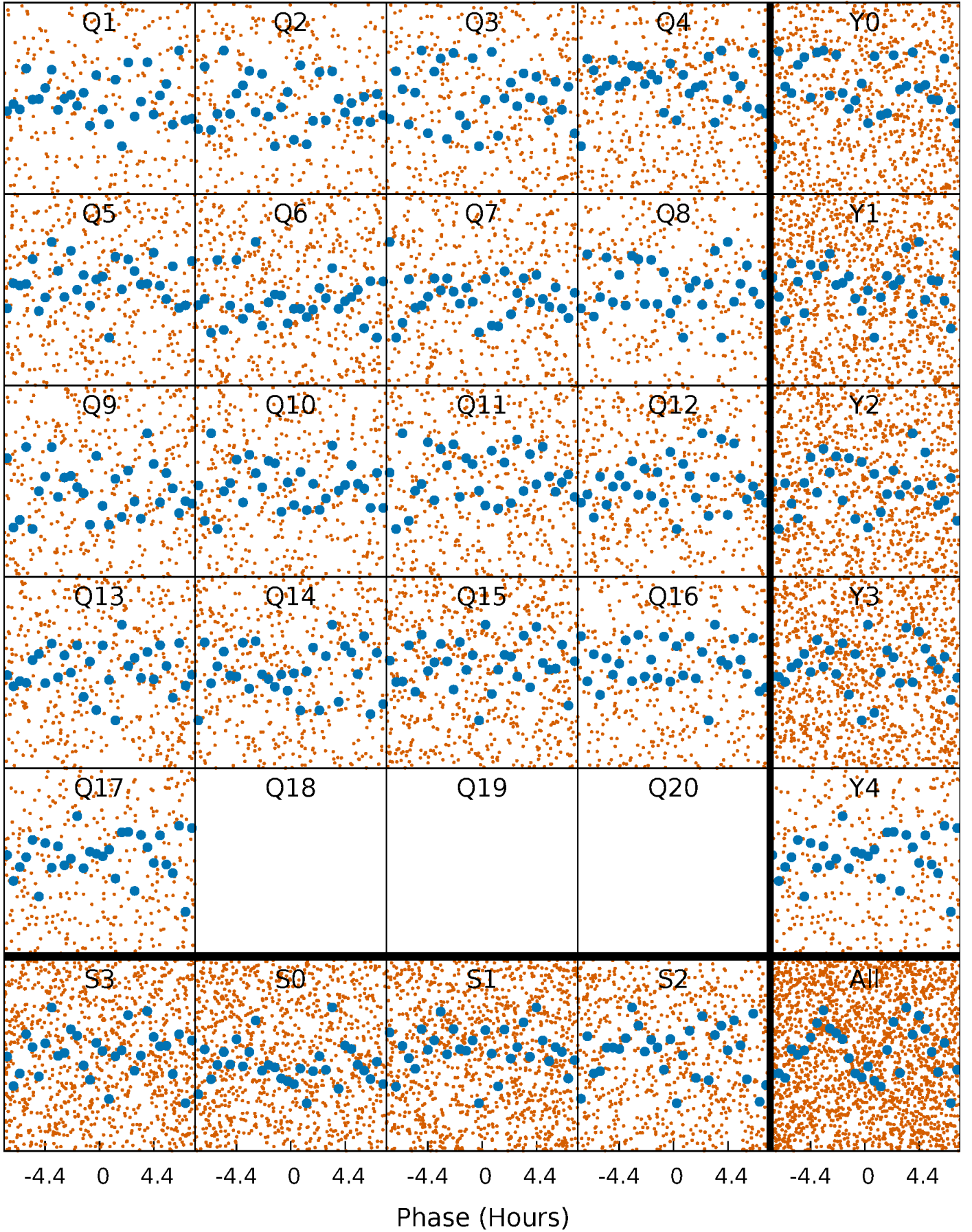
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

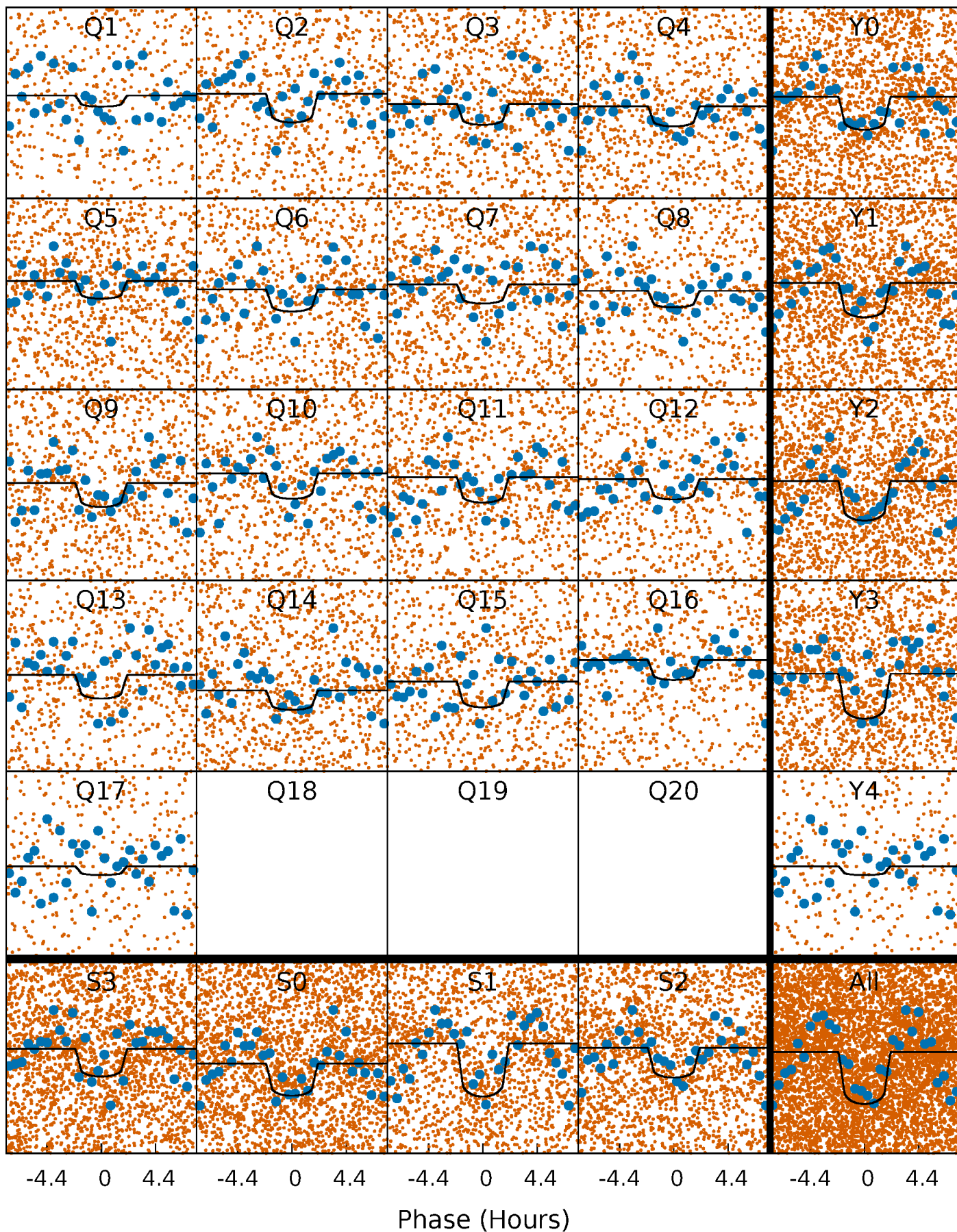
TCE 004679528-01   P= 0.920902 Days    $T_0=131.726639$  (BKJD)





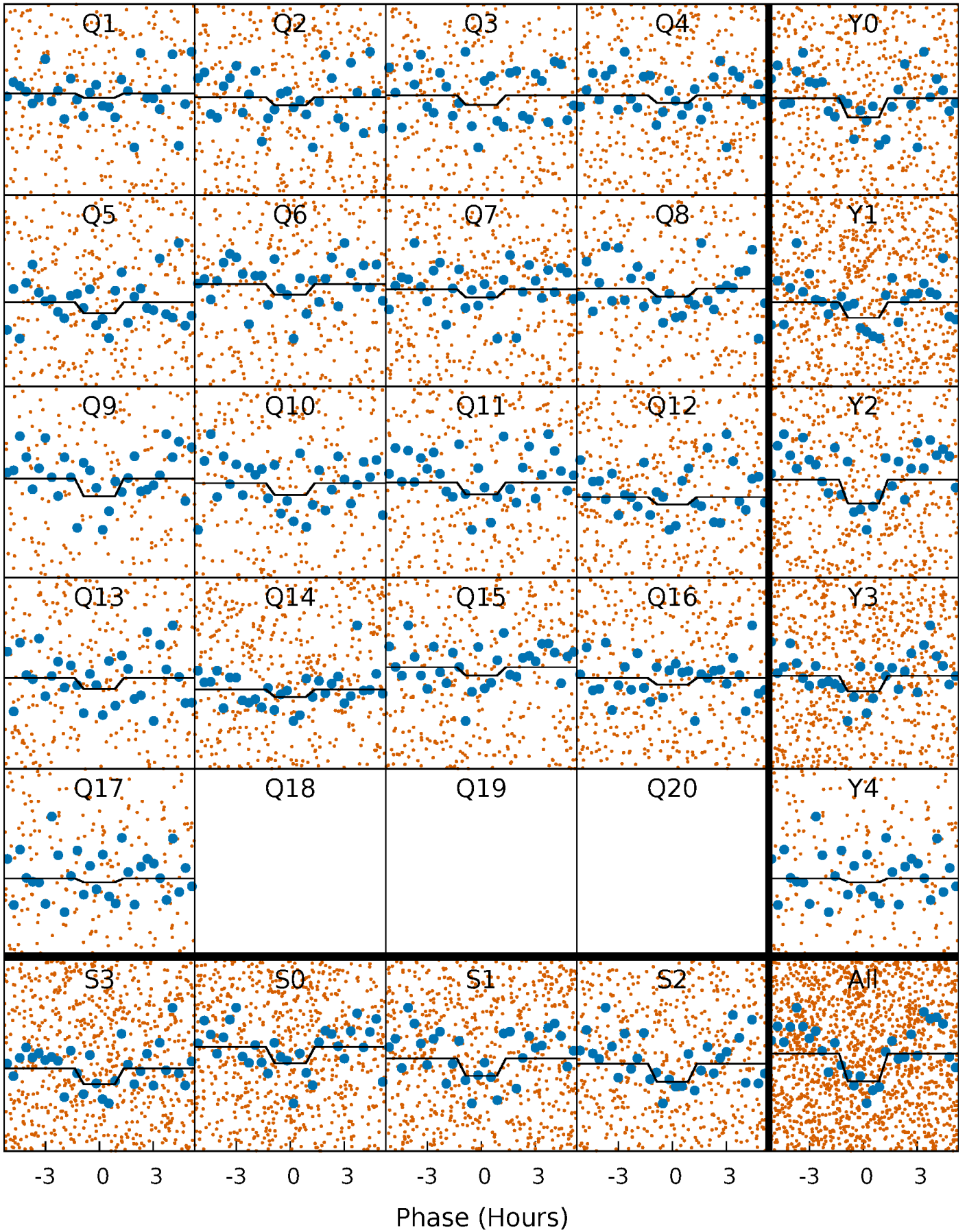
# DV Quarter-Phased Transit Curves

TCE 004679528-01 P= 0.920902 Days  $T_0=131.726639$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

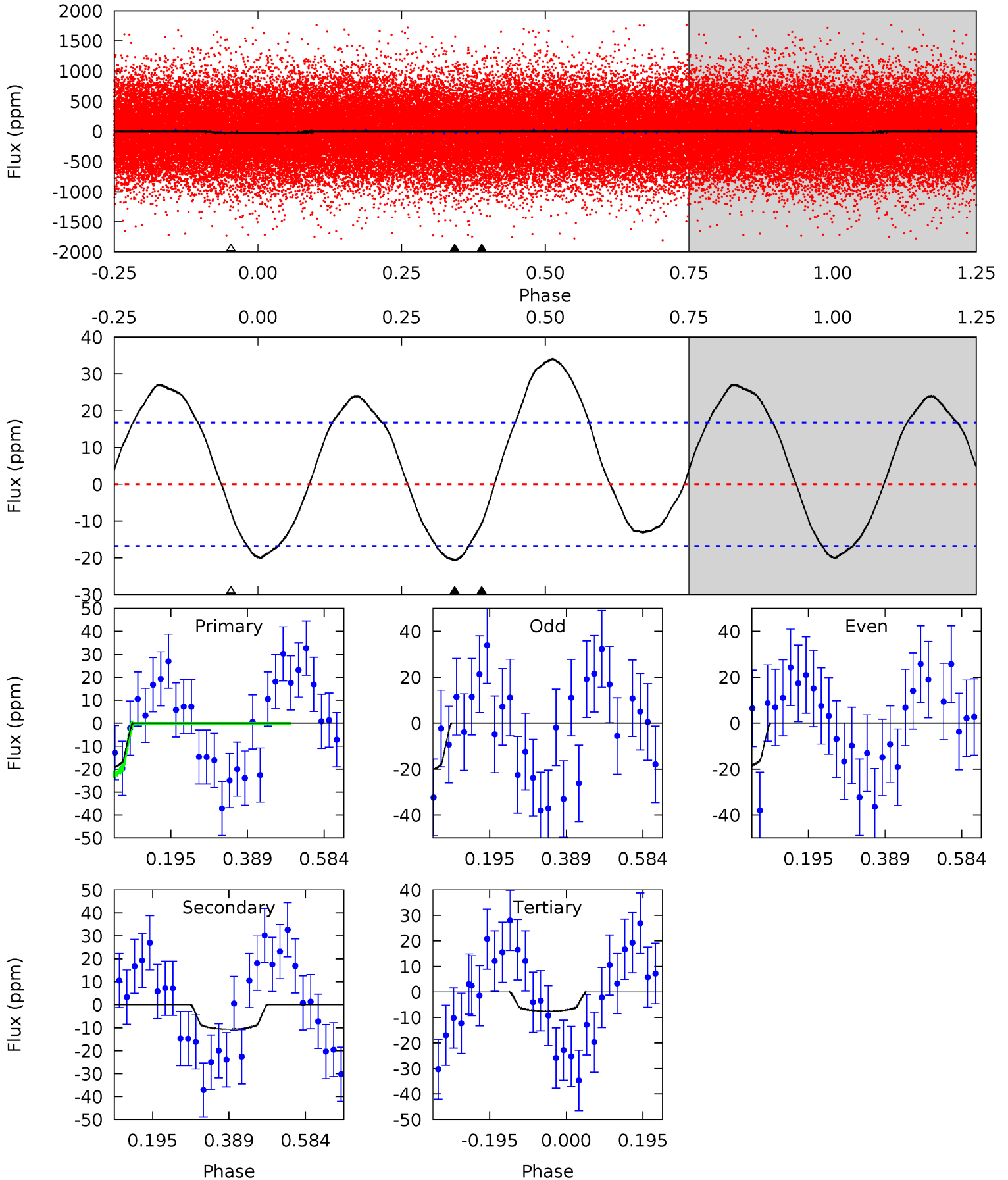
TCE 004679528-01 P= 0.920921 Days  $T_0=131.726568$  (BKJD)



# DV Model-Shift Uniqueness Test

004679528-01, P = 0.920902 Days, E = 130.805737 Days

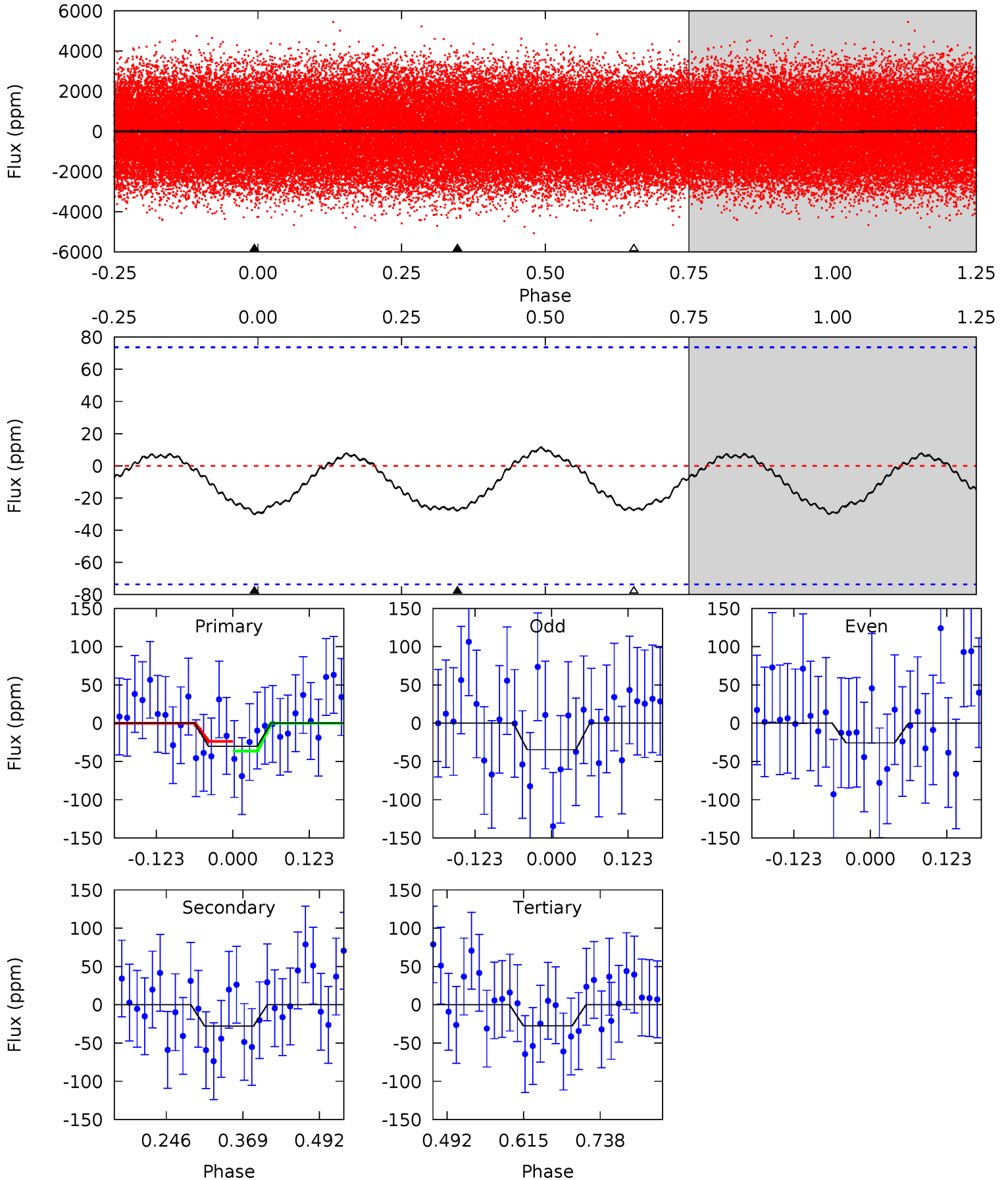
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.43	2.81	1.97	0	4.42	1.30	3.88	3.46	5.43	0.84	2.81	0.26	1.07	0.62	0.90



# Alt Model-Shift Uniqueness Test

004679528-01, P = 0.920921 Days, E = 130.805647 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
1.85	1.72	1.69	0	4.52	1.54	0.74	0.16	1.85	0.03	1.72	0.27	1.53	0.28	0.38





### Stellar Parameters For KIC 004679528

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7694^{+214}_{-349}$	$4.040^{+0.165}_{-0.165}$	$0.060^{+0.150}_{-0.400}$	$2.117^{+0.519}_{-0.519}$	$1.791^{+0.170}_{-0.339}$	$0.266^{+0.269}_{-0.116}$
	+3%/-5%	+4%/-4%	+250%/-667%	+25%/-25%	+9%/-19%	+101%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004679528-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-11 \pm 4$	$1.33^{+0.71}_{-0.61}$	$4586^{+310}_{-329}$	$5360^{+2272}_{-1335}$	$1.595^{+4.032}_{-0.972}$
Alt.	$-28 \pm 16$	$1.30^{+0.68}_{-0.62}$	$4609^{+296}_{-309}$	$7070^{+3867}_{-1933}$	$4.203^{+11.327}_{-2.896}$

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

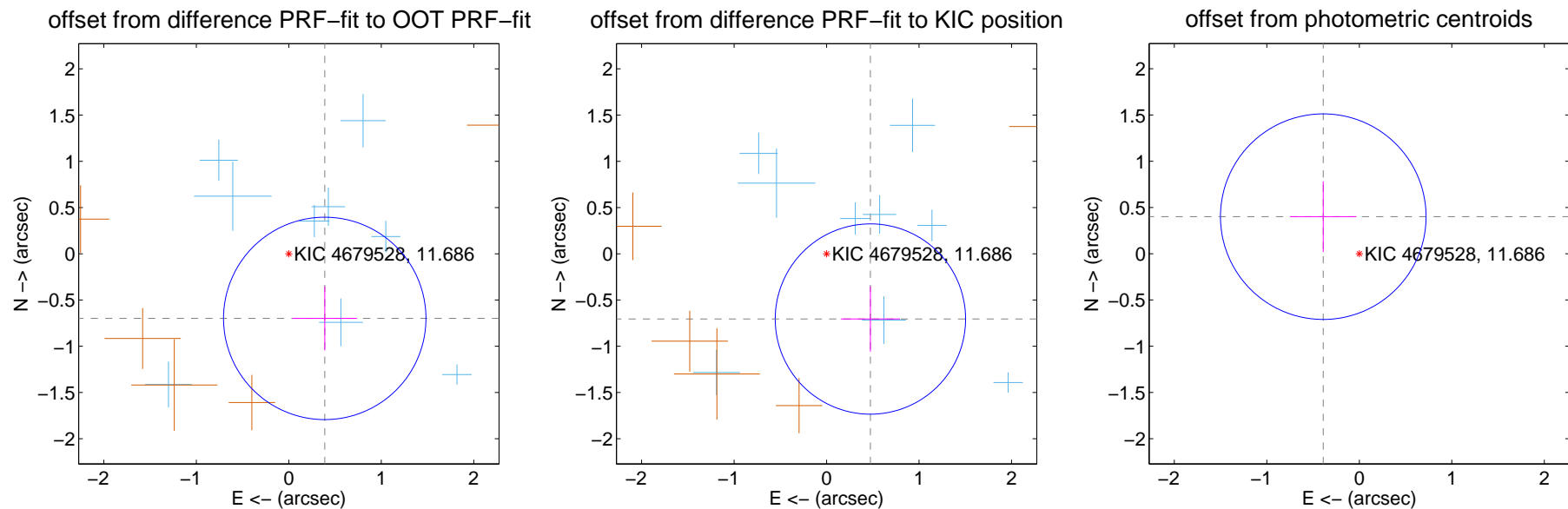
## DV Centroid Data

Supplemental centroid analysis for 004679528-01. **Kepler magnitude: 11.69.** Transit SNR 12.30

There are 10 quarters with good PRF difference image offsets

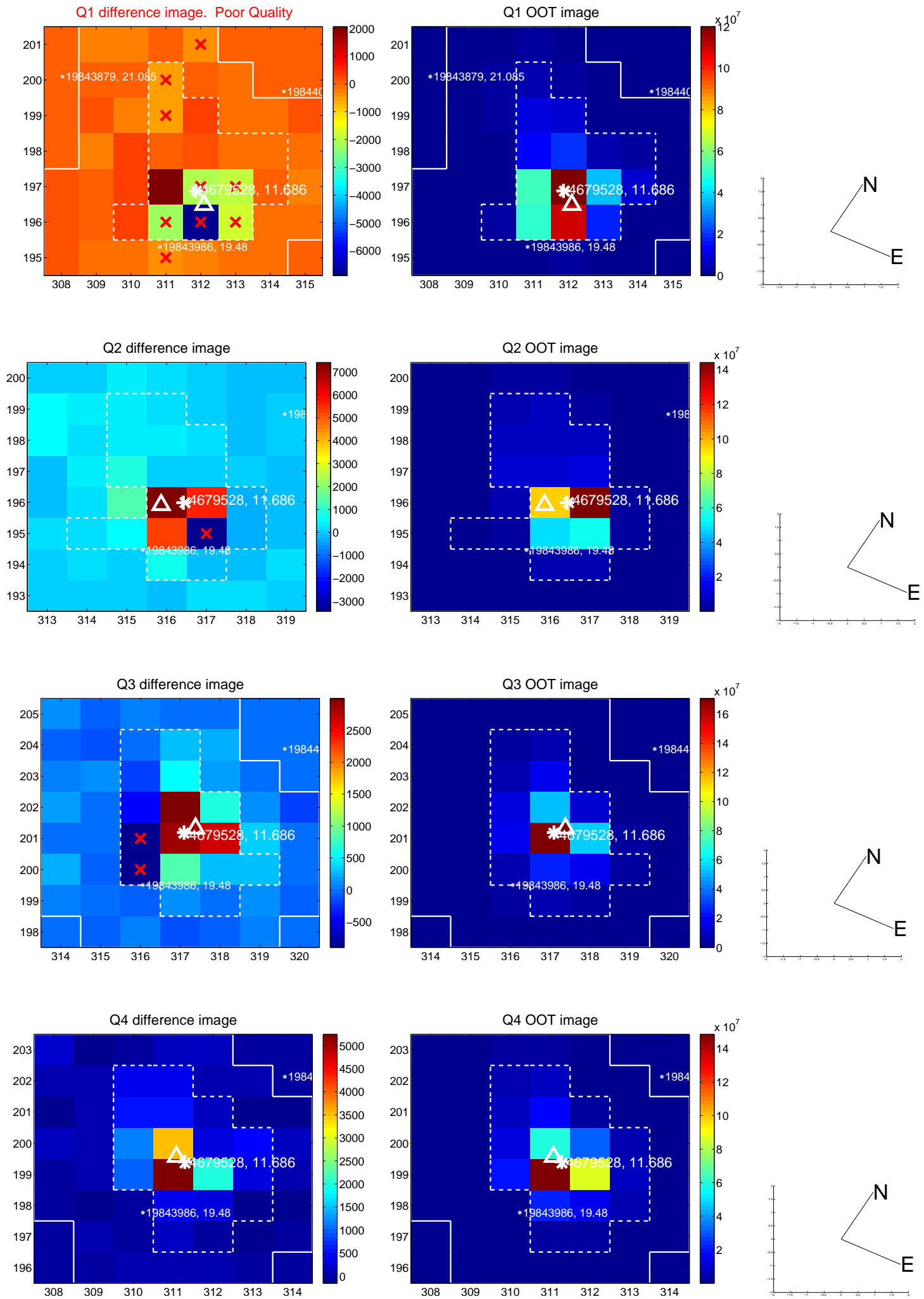
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.799 \pm 0.365$	2.19	$-0.388 \pm 0.349$	$-0.699 \pm 0.345$
PRF-fit source offset from KIC position	$0.850 \pm 0.343$	2.48	$-0.474 \pm 0.320$	$-0.705 \pm 0.353$
photometric centroid source offset	$0.56 \pm 0.37$	1.51	$0.39 \pm 0.36$	$0.40 \pm 0.38$

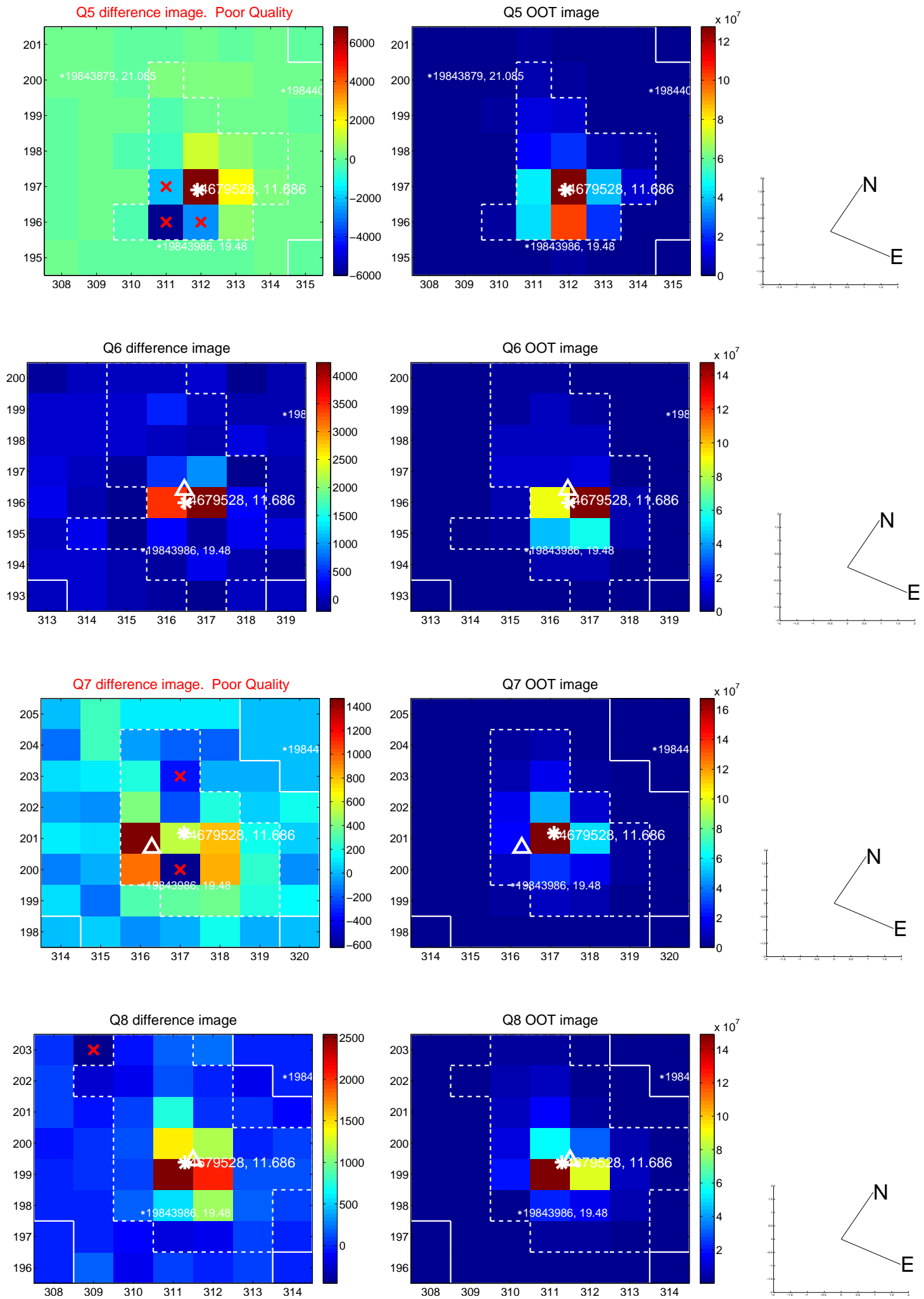


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

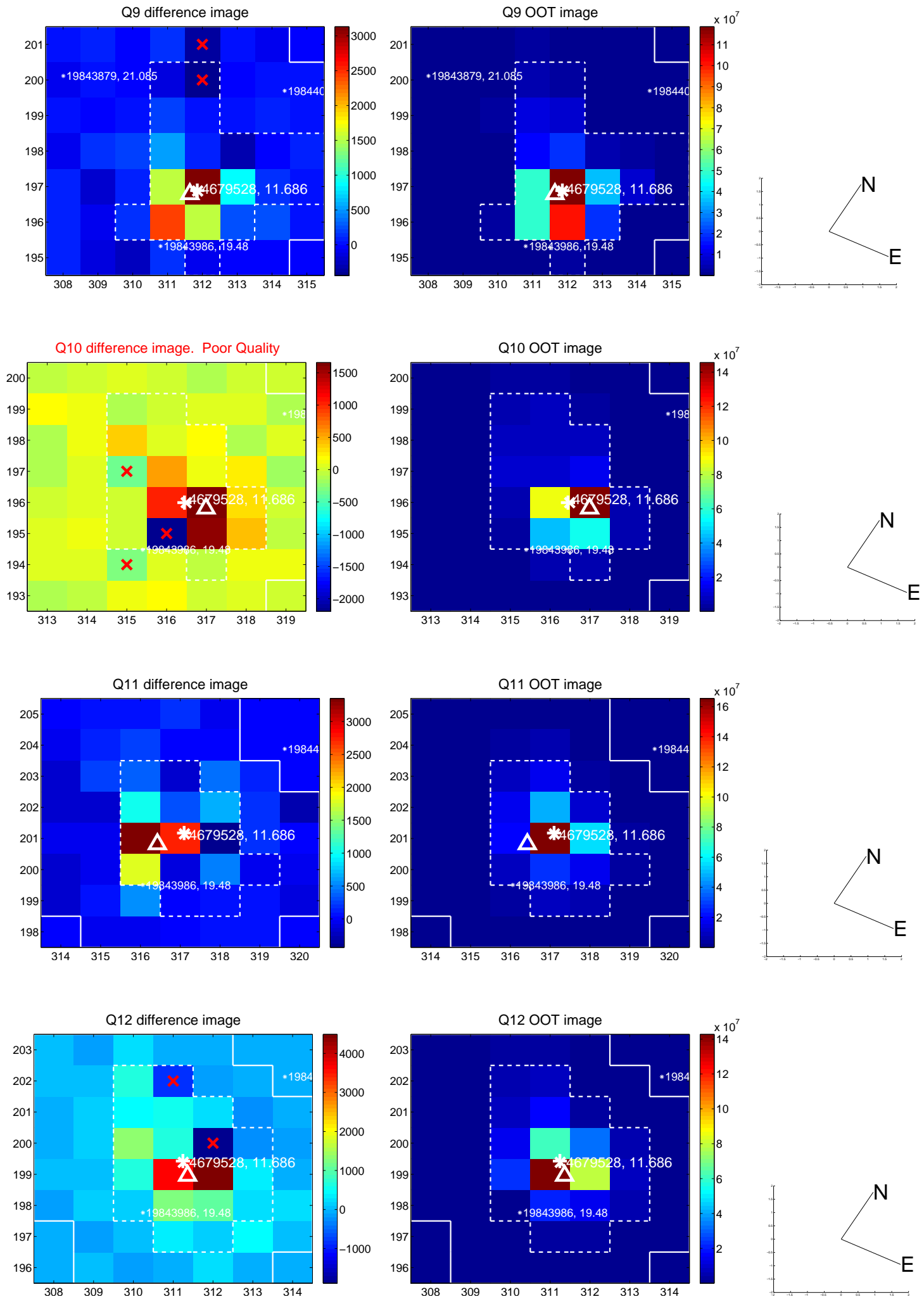


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

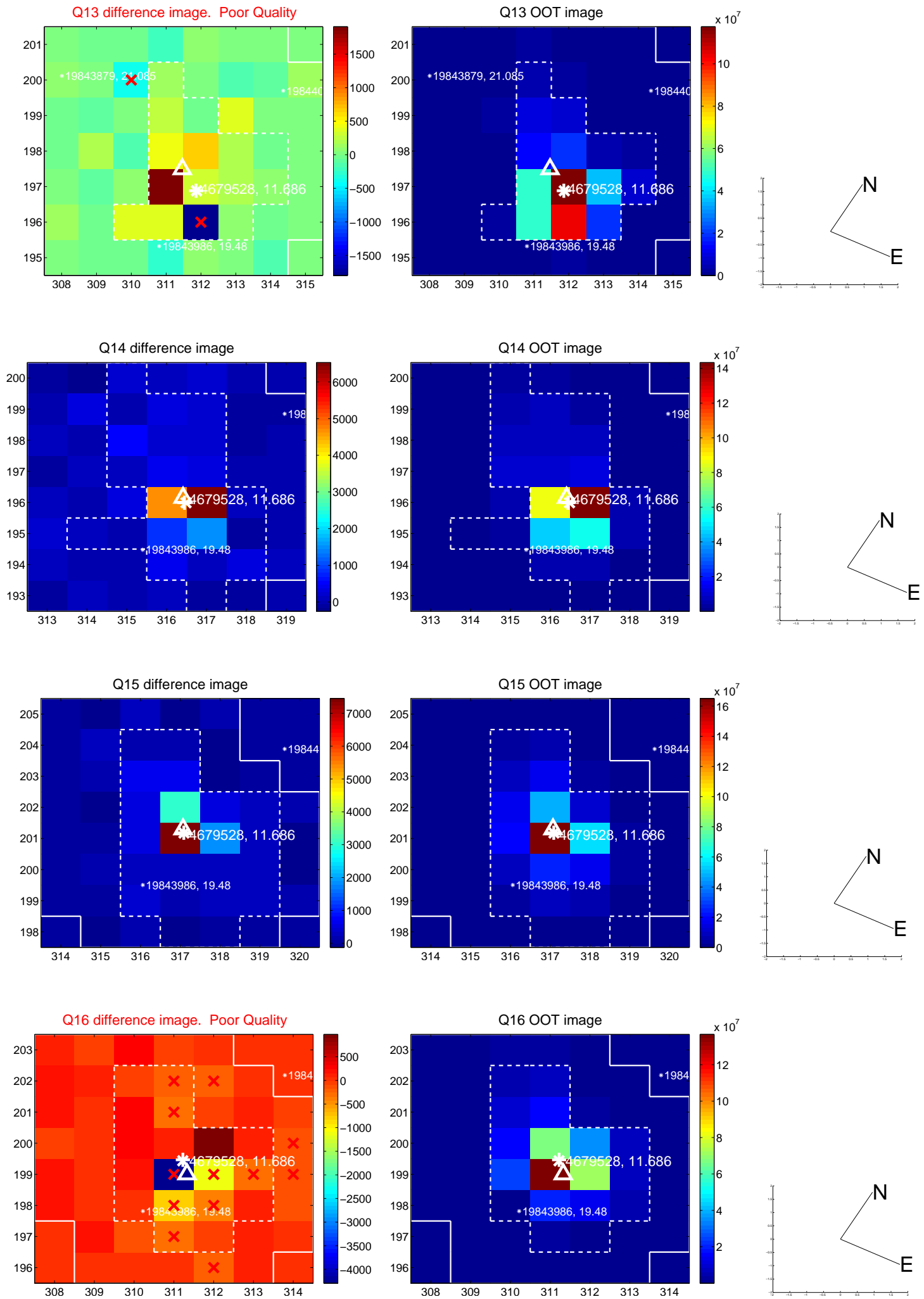




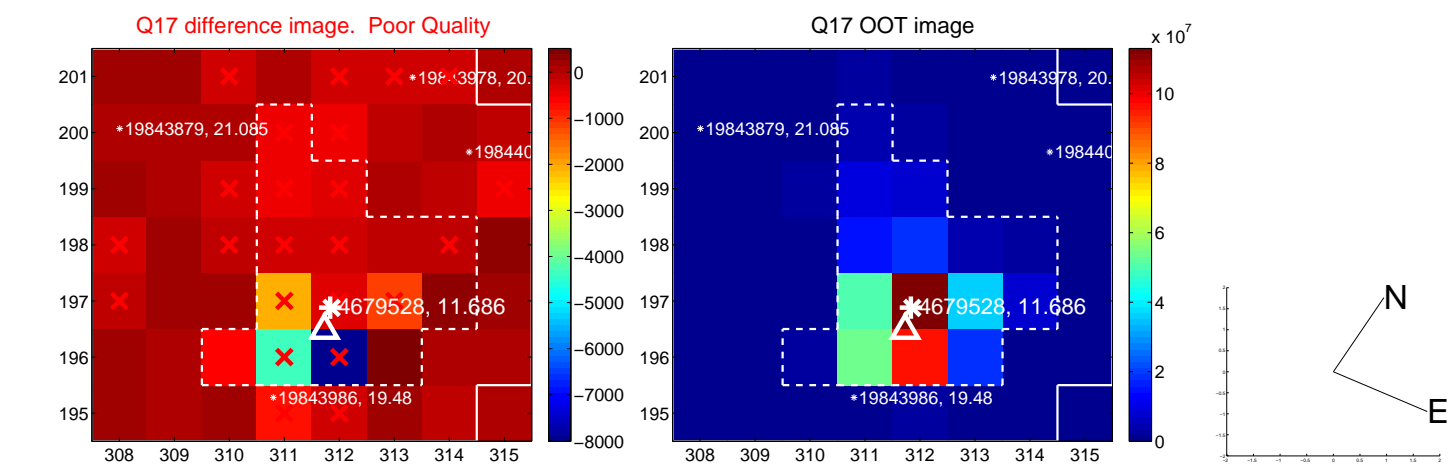
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



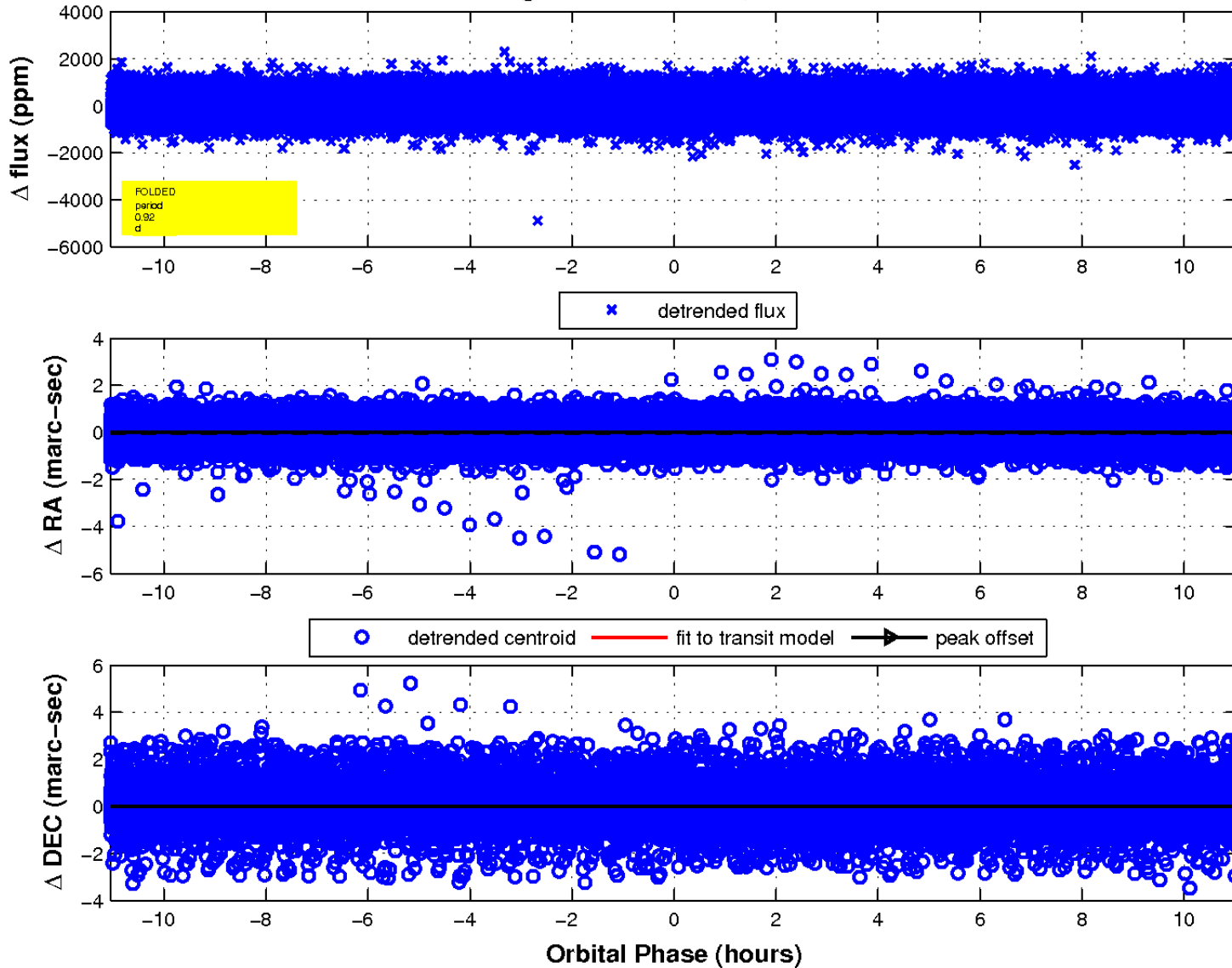
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

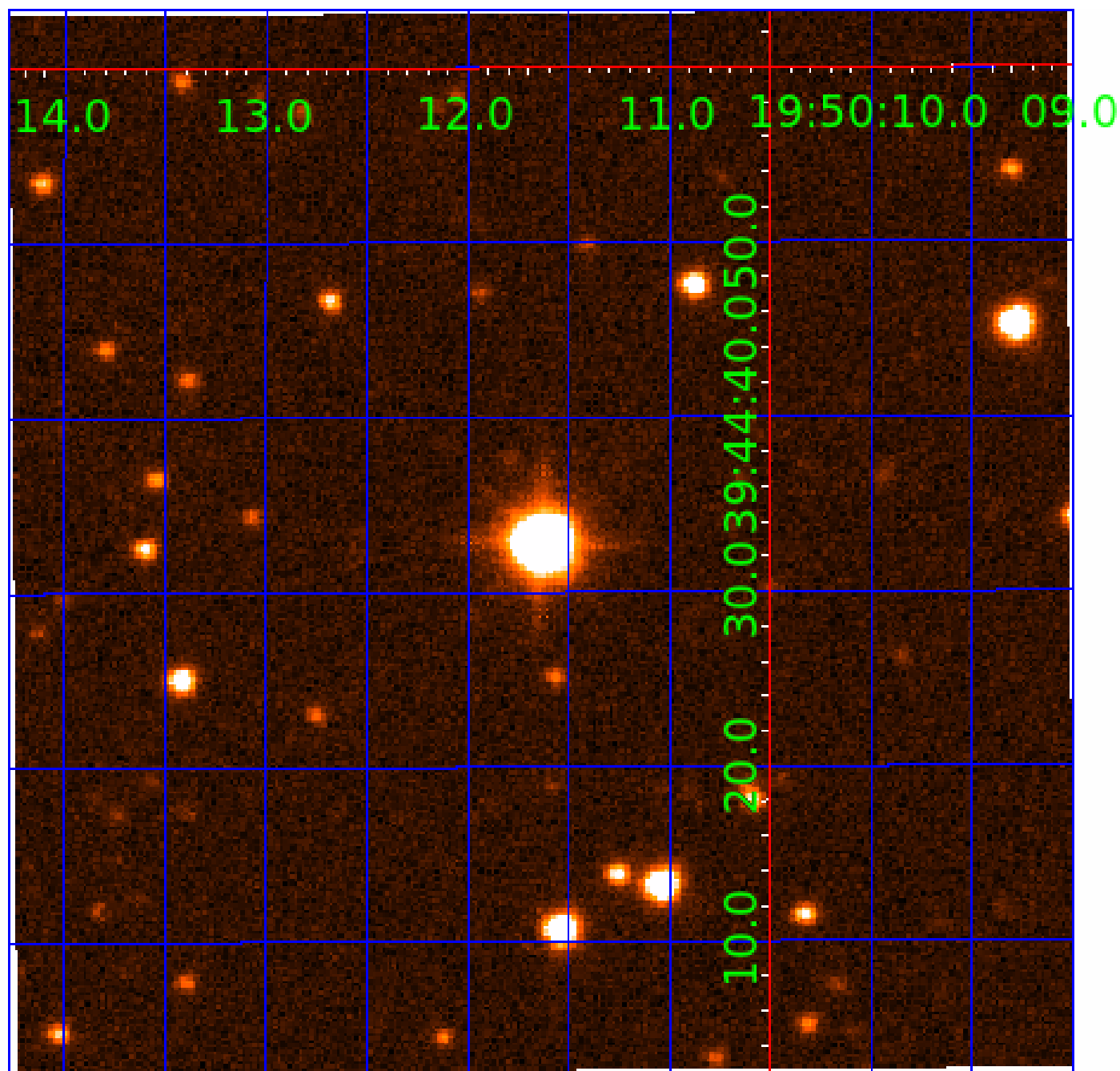


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 004679528

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004679528-01	OBS	No	0.920902	131.726639	30.7	3.864	13.0	12.3	2.12	7694	1.36	27777.87
004679528-02	OBS	No	0.530325	132.023743	37.8	5.790	10.1	13.3	2.12	7694	1.39	57977.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004679528-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004679528-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

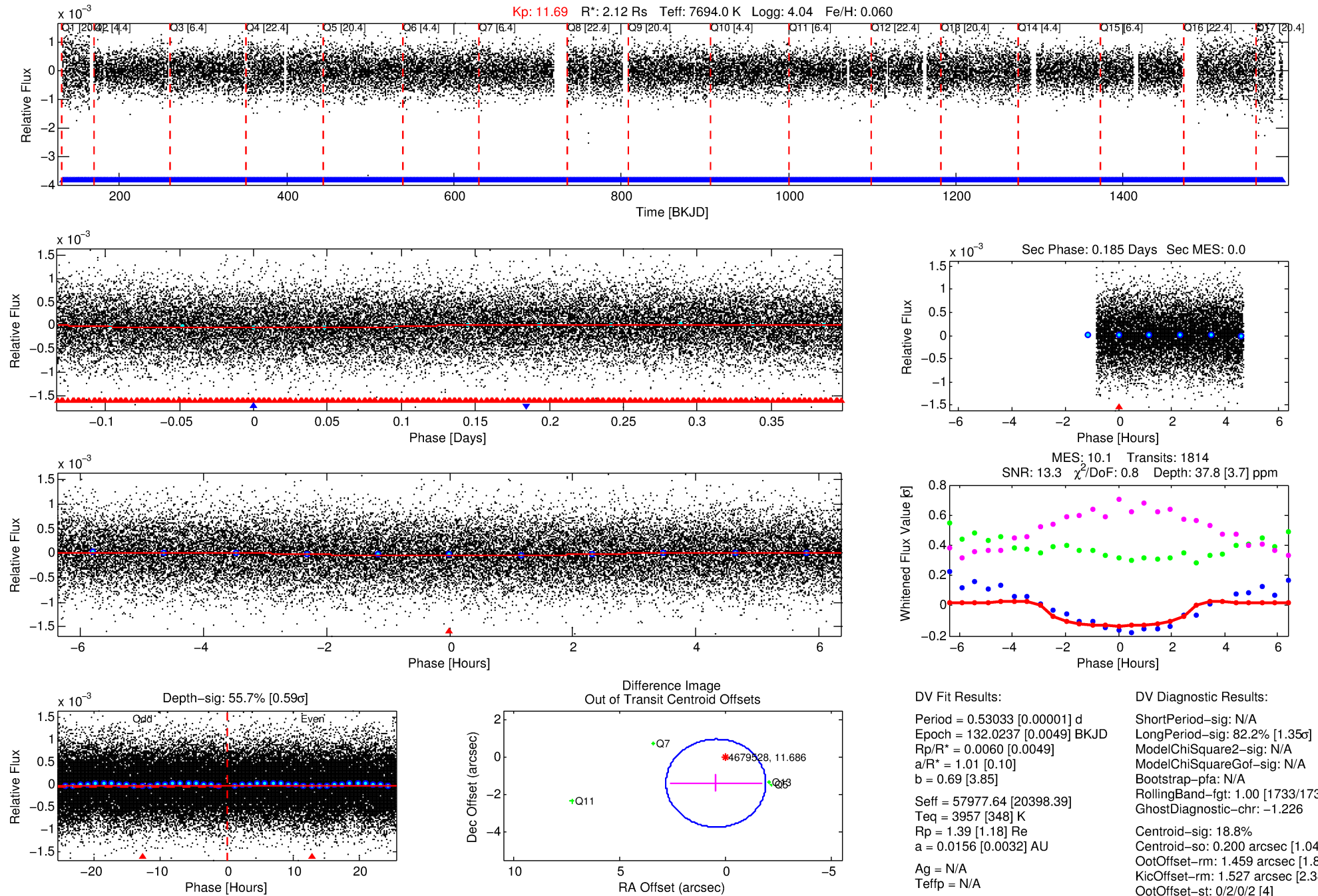
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004679528-02

No Significant Match Found

# DV One-Page Summary

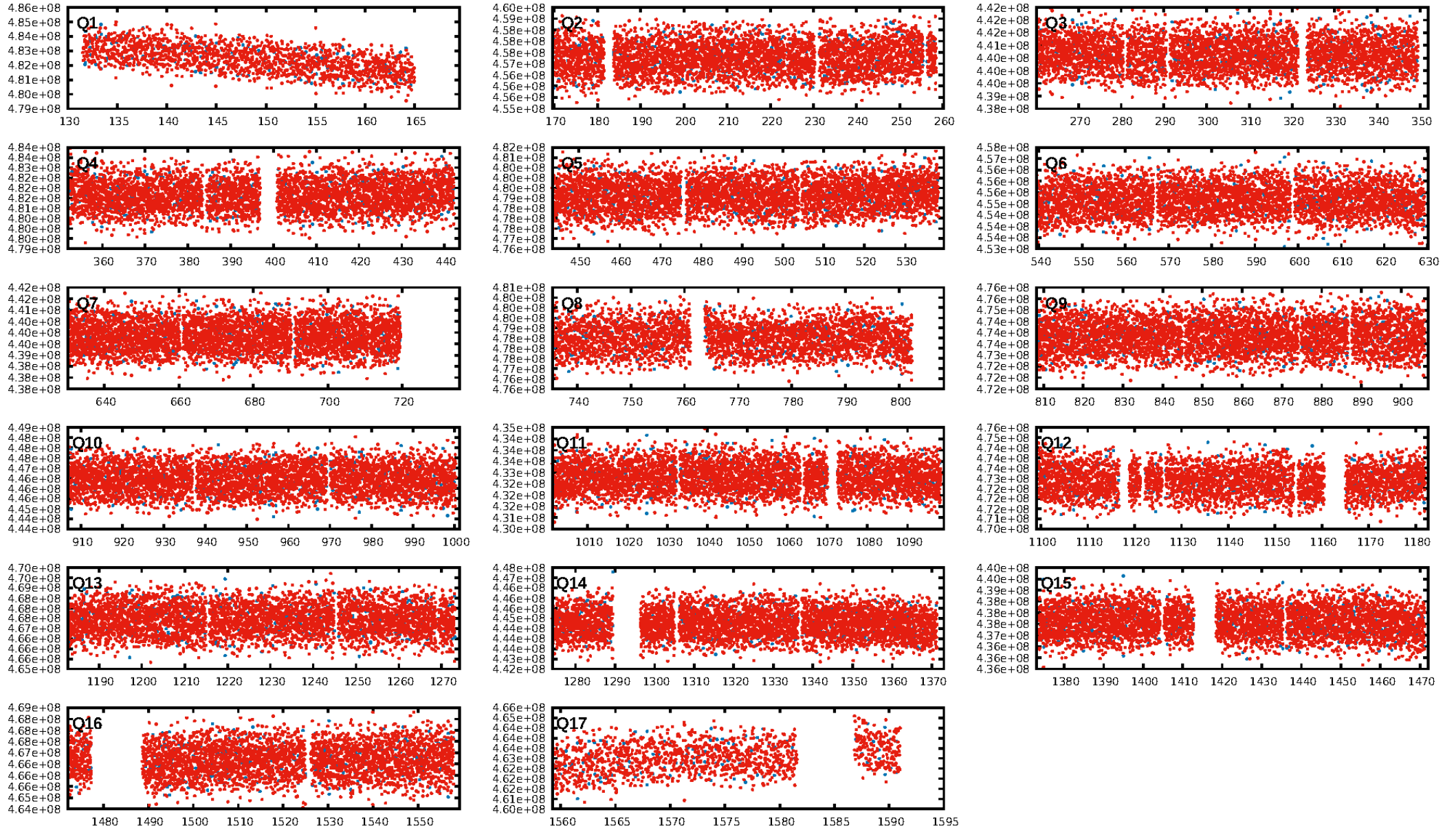
KIC: 4679528 Candidate: 2 of 2 Period: 0.530 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:42:58 Z

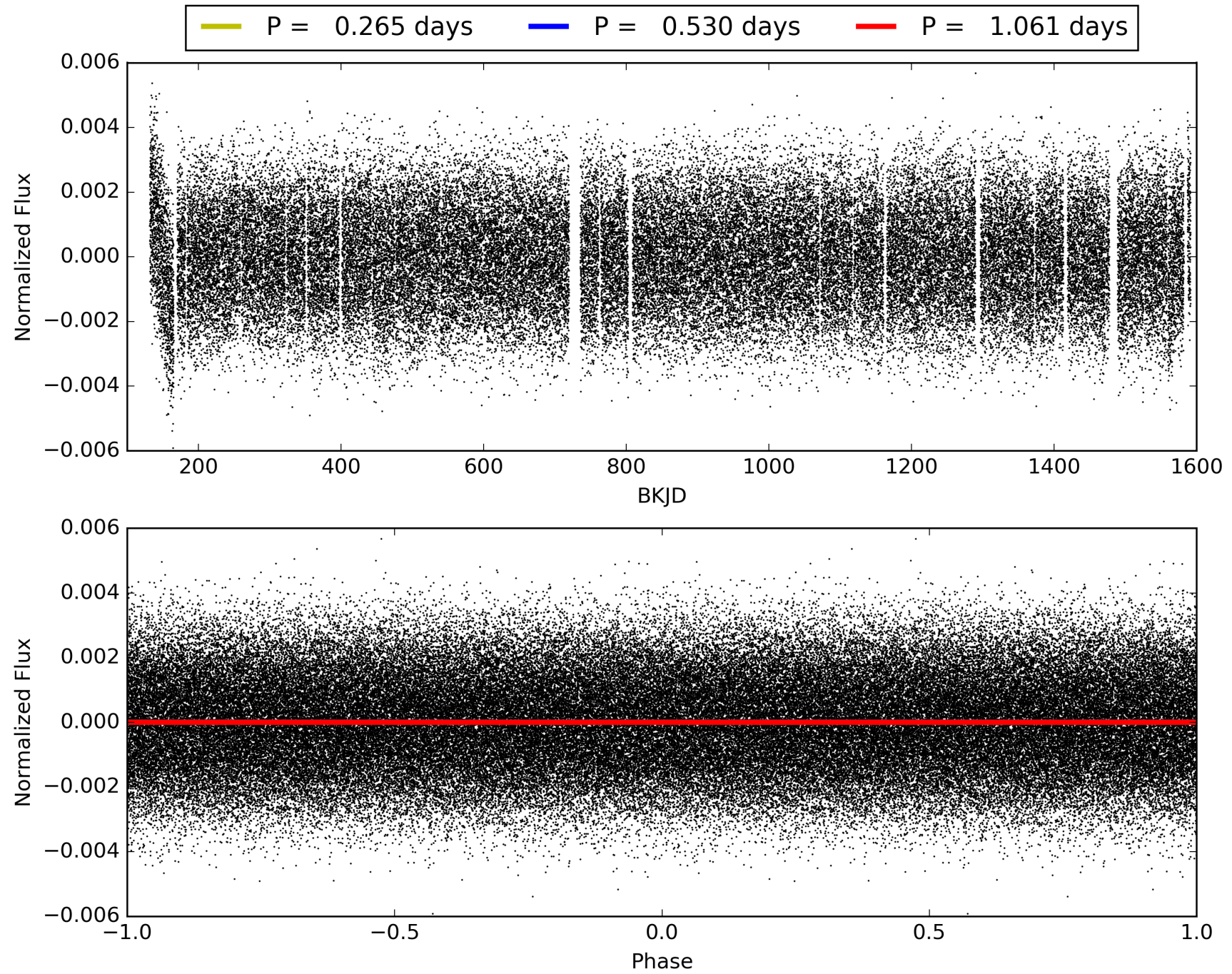
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004679528-02, PDC Light Curves



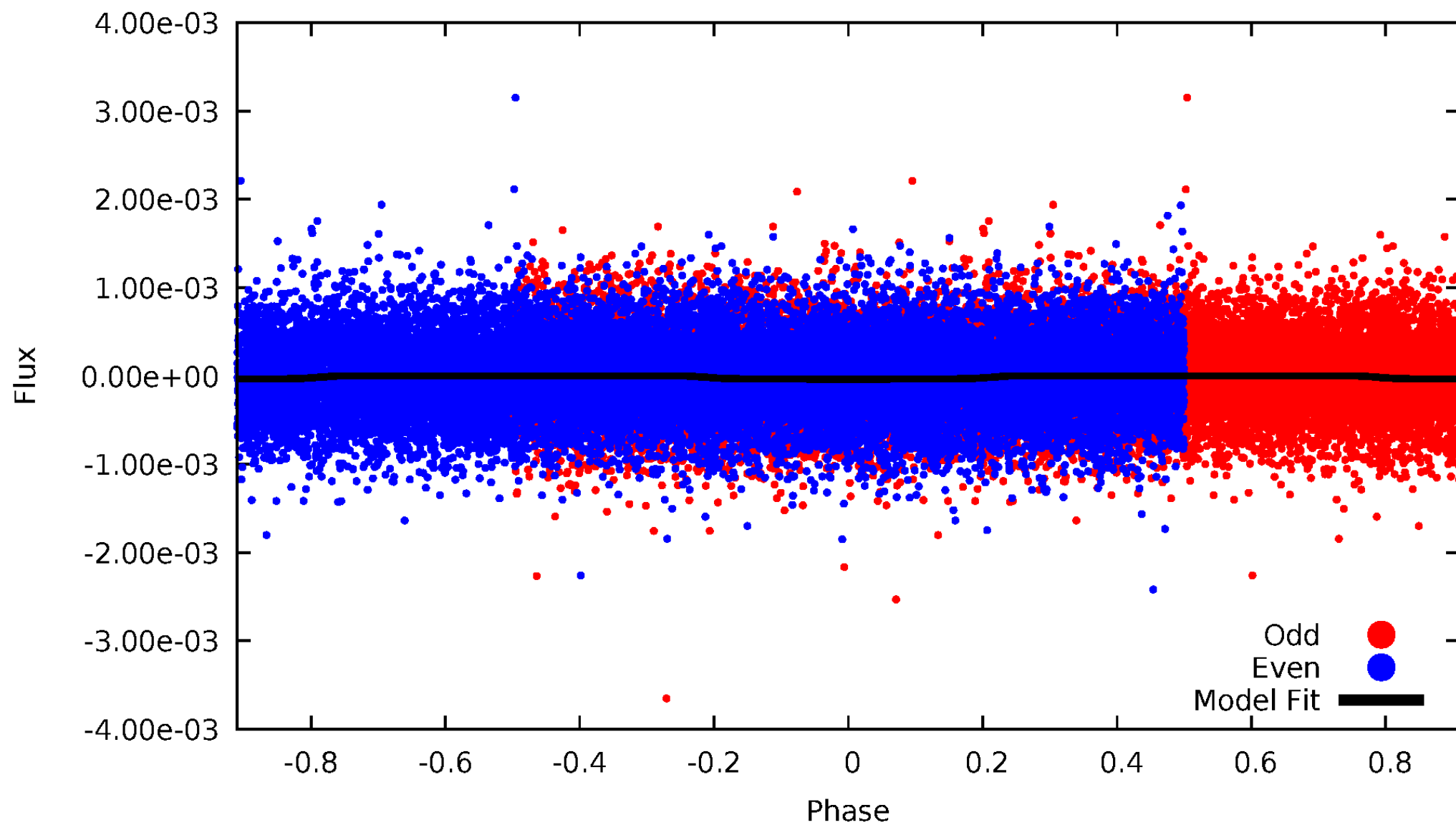


# TCE 004679528-02



DV Odd/Even

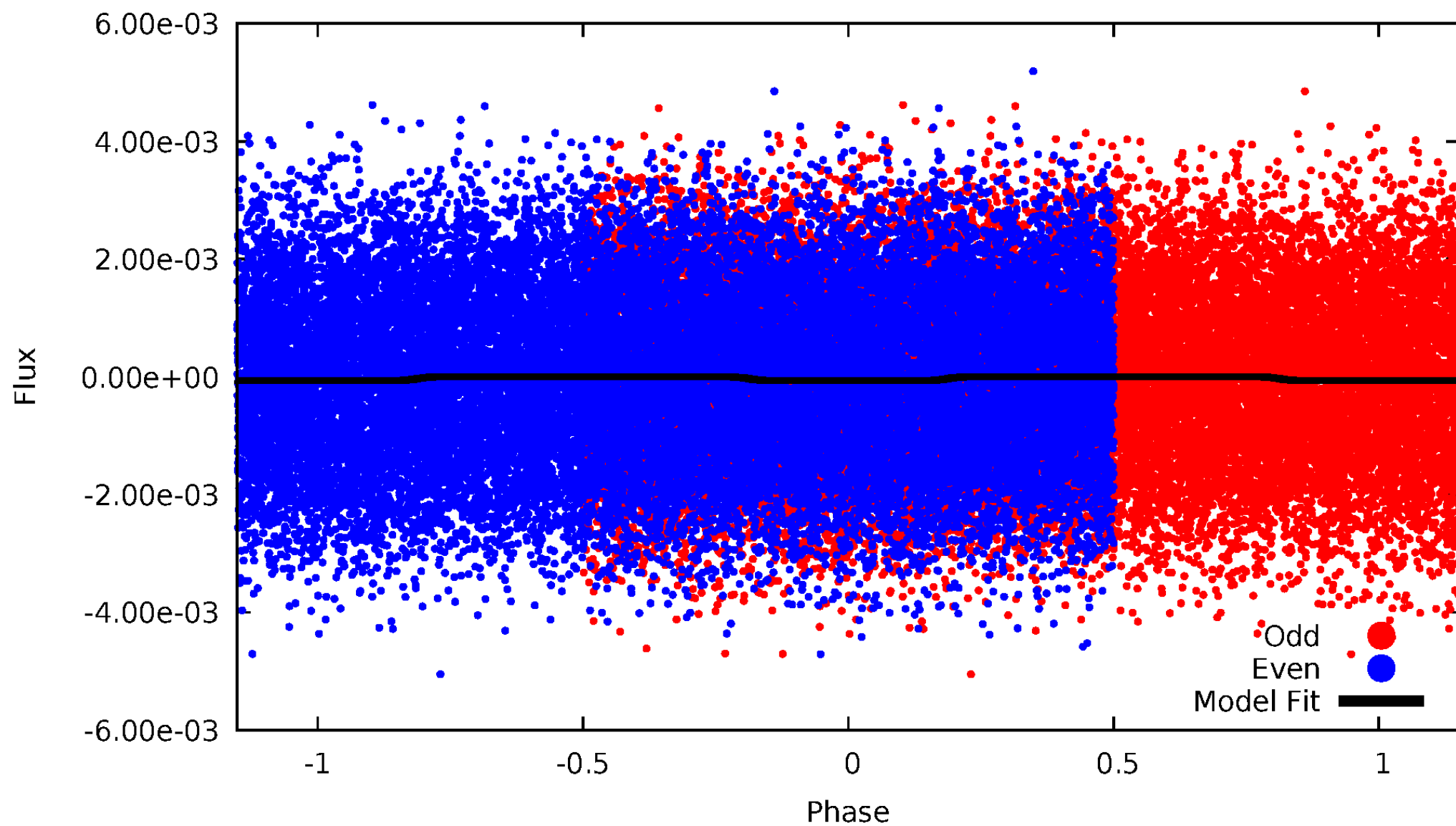
TCE 004679528-02





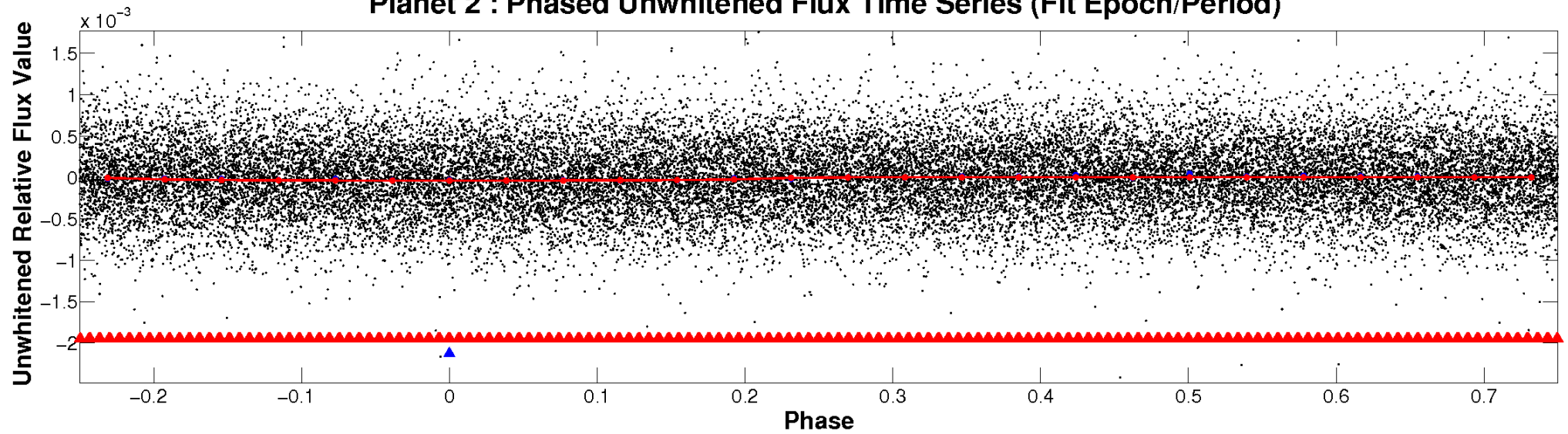
# ALT Odd/Even

TCE 004679528-02

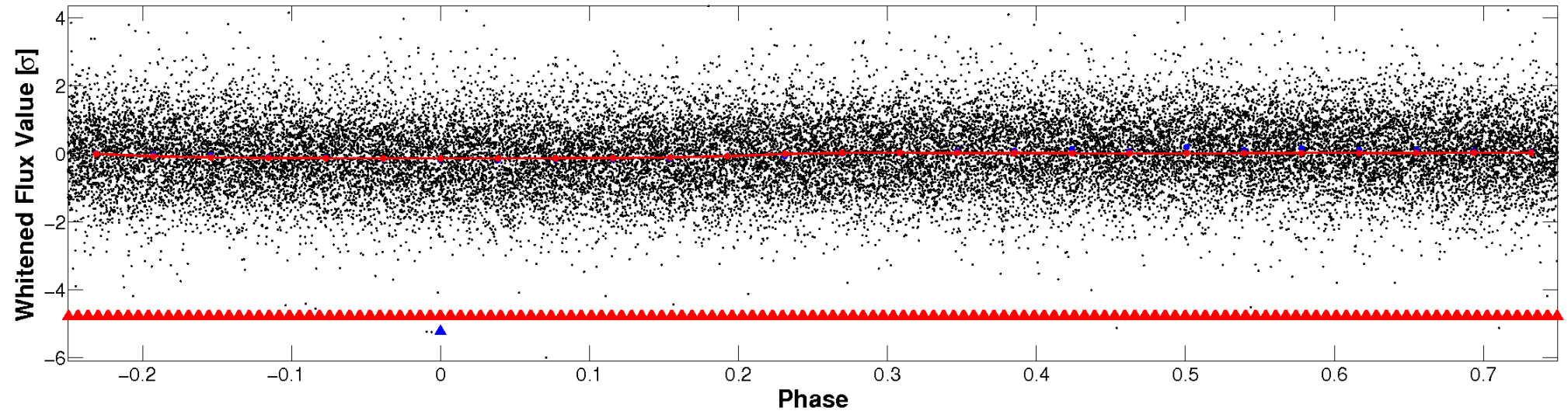


# Non-Whitened Vs. Whitened Light Curve

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

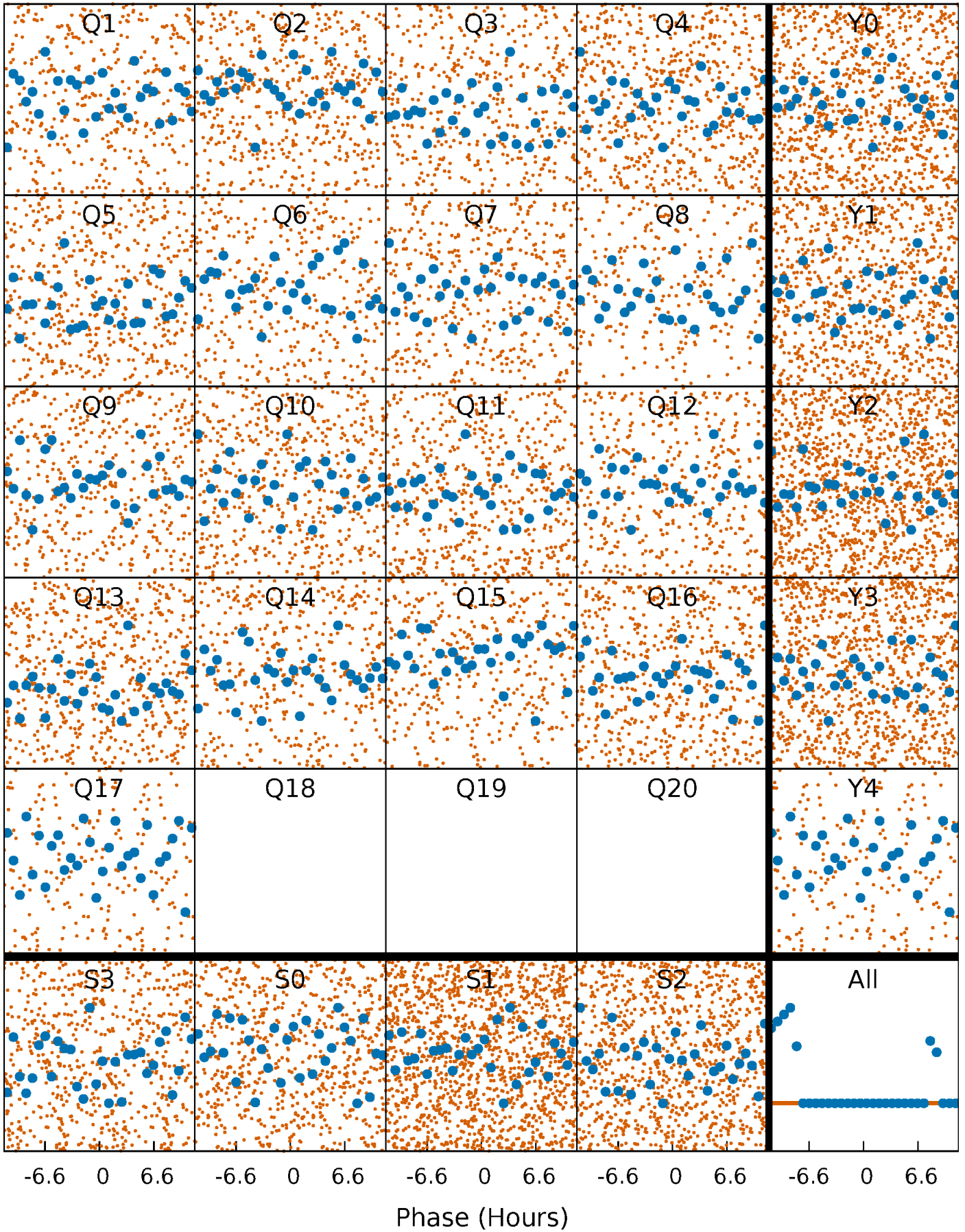


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

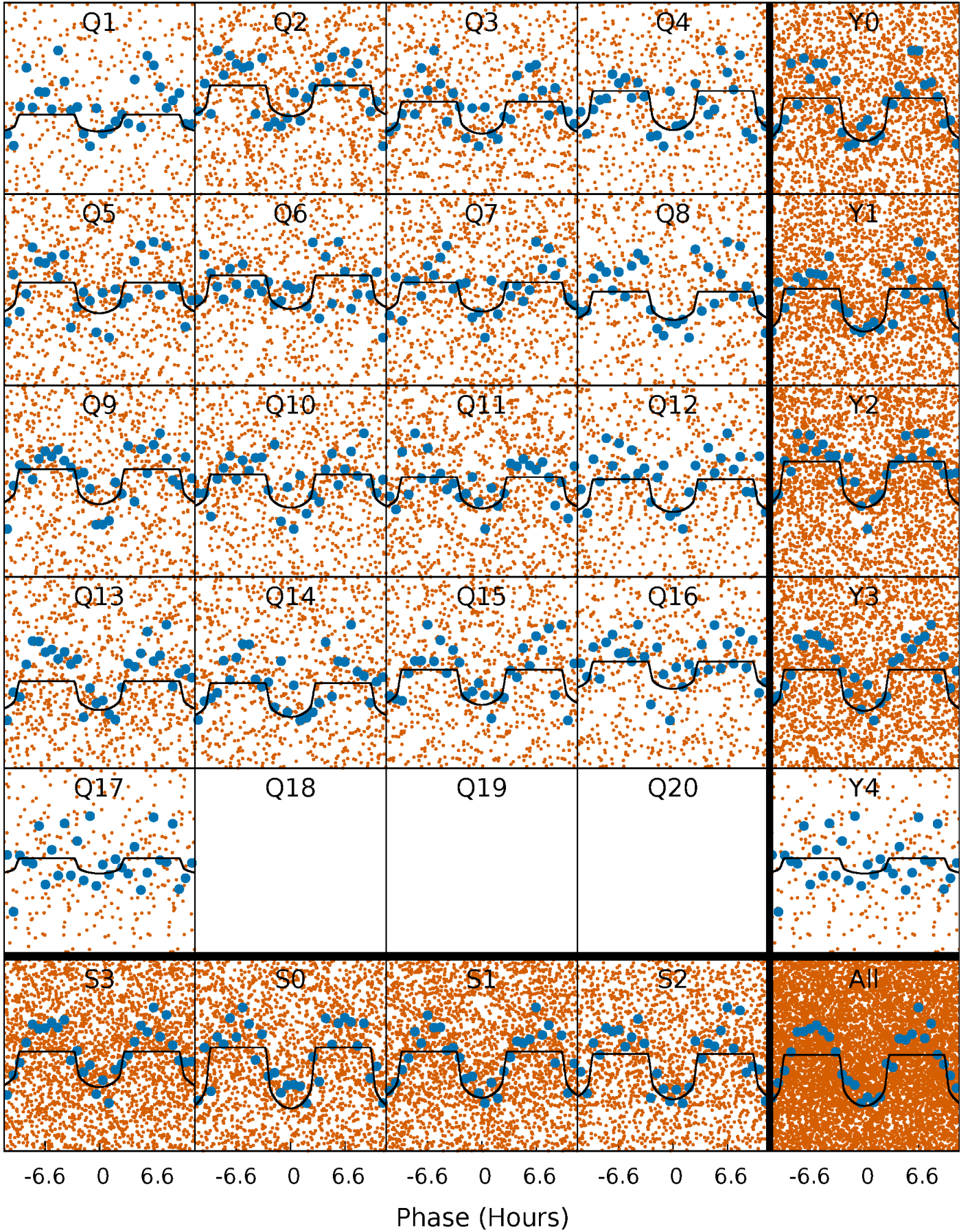
TCE 004679528-02   P= 0.530325 Days    $T_0=132.023743$  (BKJD)





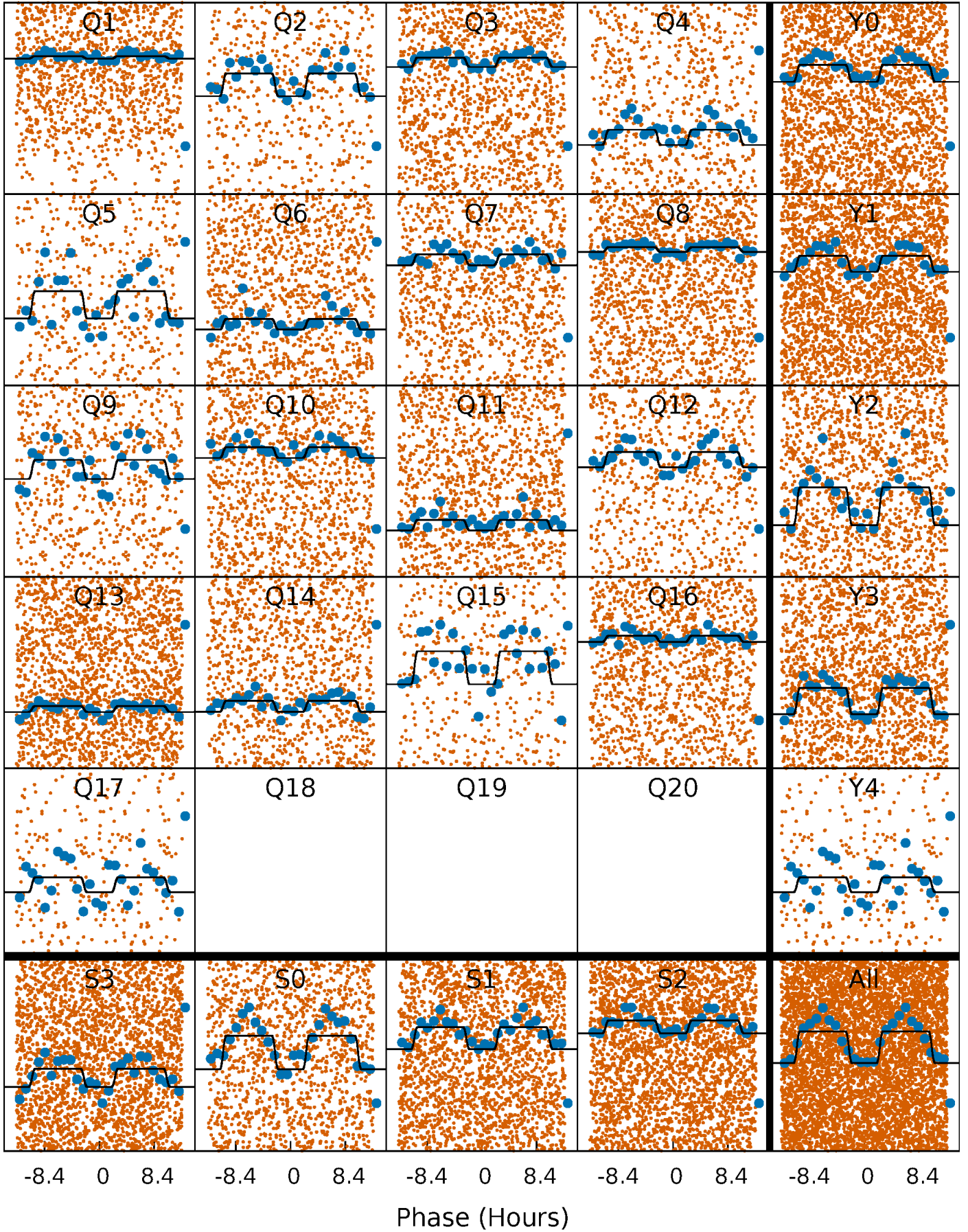
# DV Quarter-Phased Transit Curves

TCE 004679528-02   P= 0.530325 Days    $T_0=132.023743$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004679528-02   P= 0.530350 Days    $T_0=132.021941$  (BKJD)

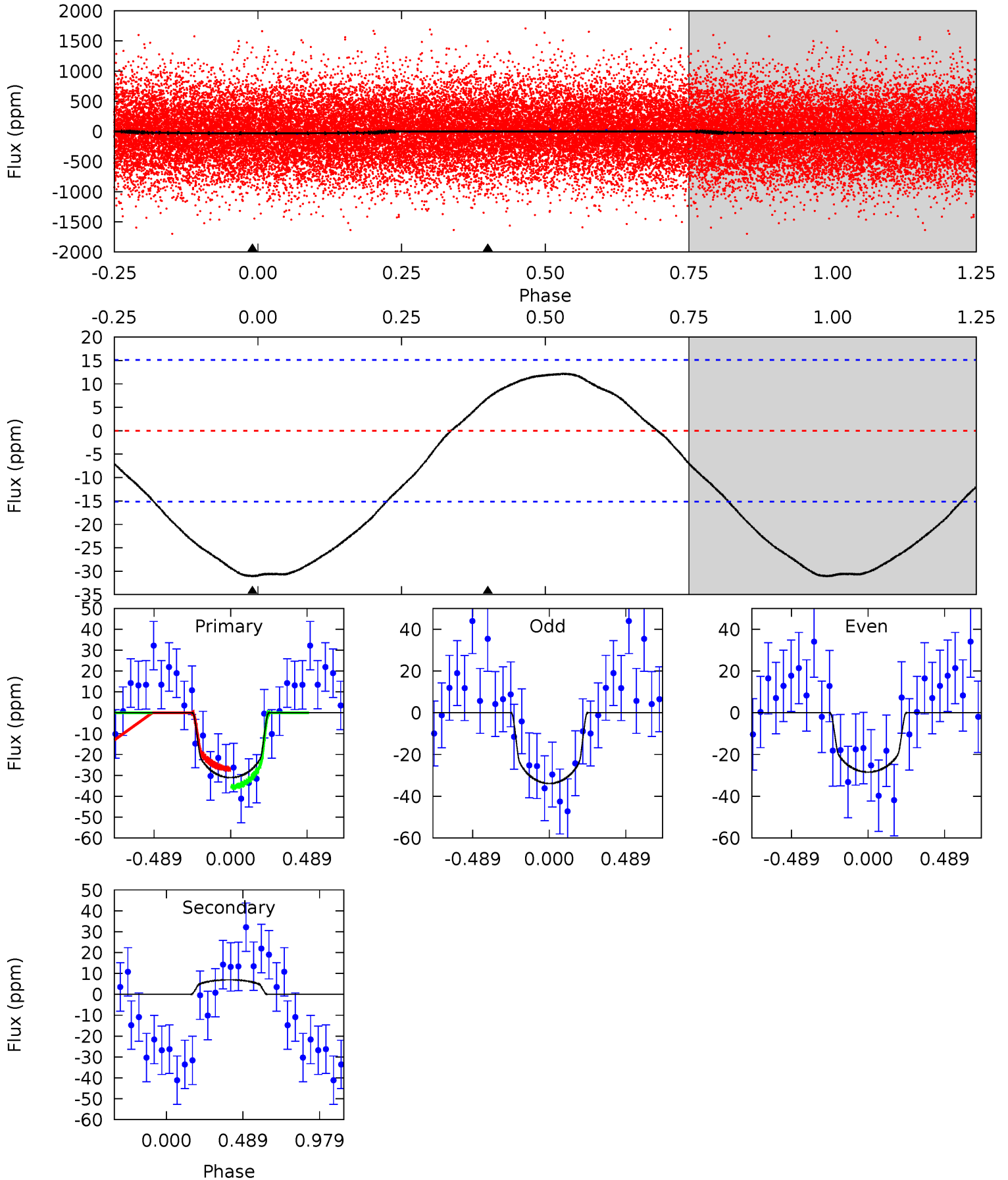




# DV Model-Shift Uniqueness Test

004679528-02, P = 0.530325 Days, E = 131.493418 Days

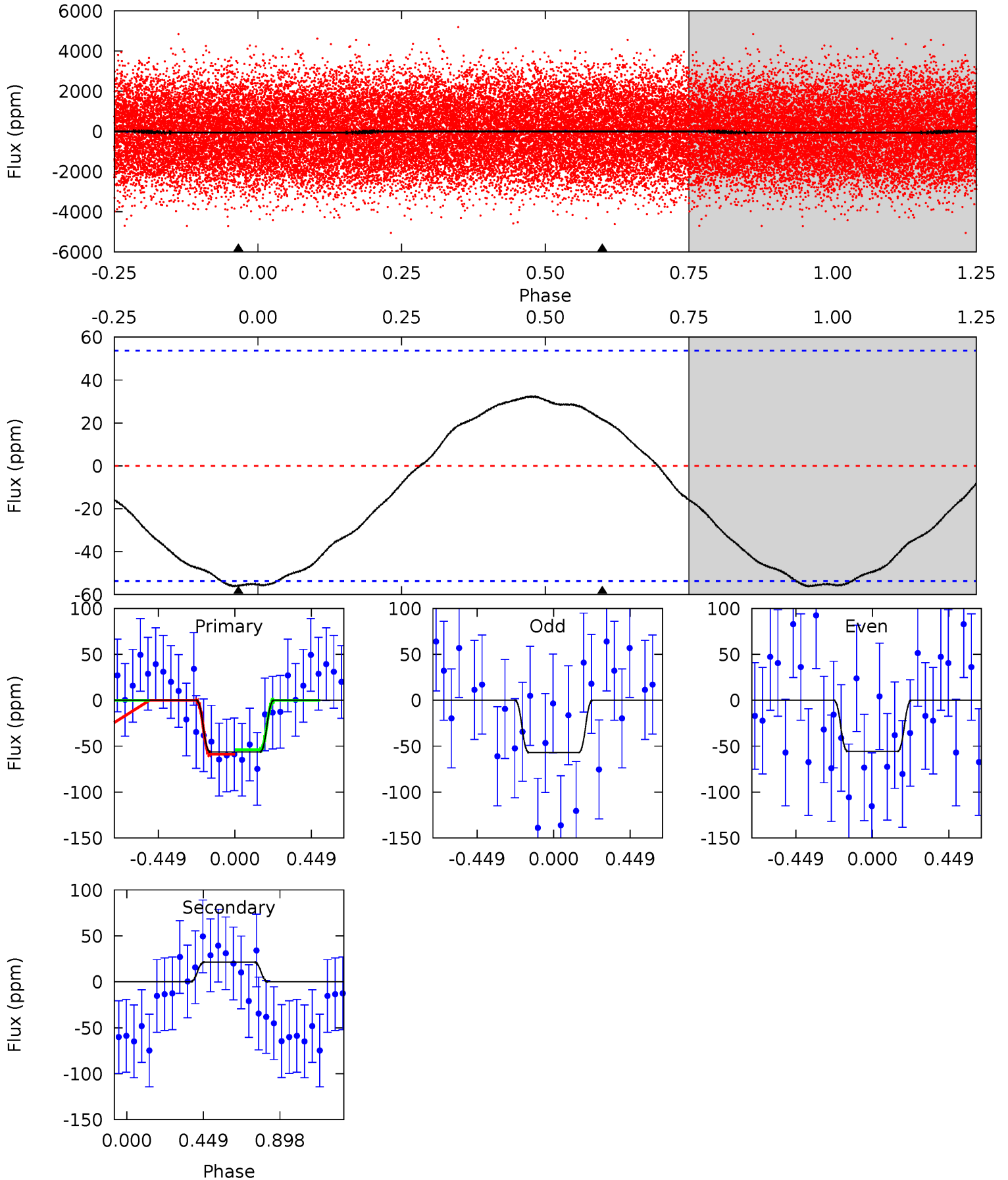
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.67	-1.95	0	0	4.22	0.69	0.92	8.67	8.67	-1.95	-1.95	0.76	0.77	0.28	1.21



# Alt Model-Shift Uniqueness Test

004679528-02, P = 0.530350 Days, E = 131.491591 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
4.44	-1.69	0	0	4.24	0.76	0.64	4.44	4.44	-1.69	-1.69	0.05	0.93	0.37	0.19



### Stellar Parameters For KIC 004679528

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7694^{+214}_{-349}$	$4.040^{+0.165}_{-0.165}$	$0.060^{+0.150}_{-0.400}$	$2.117^{+0.519}_{-0.519}$	$1.791^{+0.170}_{-0.339}$	$0.266^{+0.269}_{-0.116}$
	+3%/-5%	+4%/-4%	+250%/-667%	+25%/-25%	+9%/-19%	+101%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 004679528-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$7\pm4$	$1.57^{+1.03}_{-0.91}$	$5511^{+368}_{-372}$	$-5422^{+583}_{-2096}$	$-0.339^{+0.246}_{-1.795}$
Alt.	$21\pm13$	$1.84^{+1.18}_{-0.96}$	$5520^{+361}_{-381}$	$-6050^{+955}_{-2921}$	$-0.728^{+0.543}_{-3.105}$

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

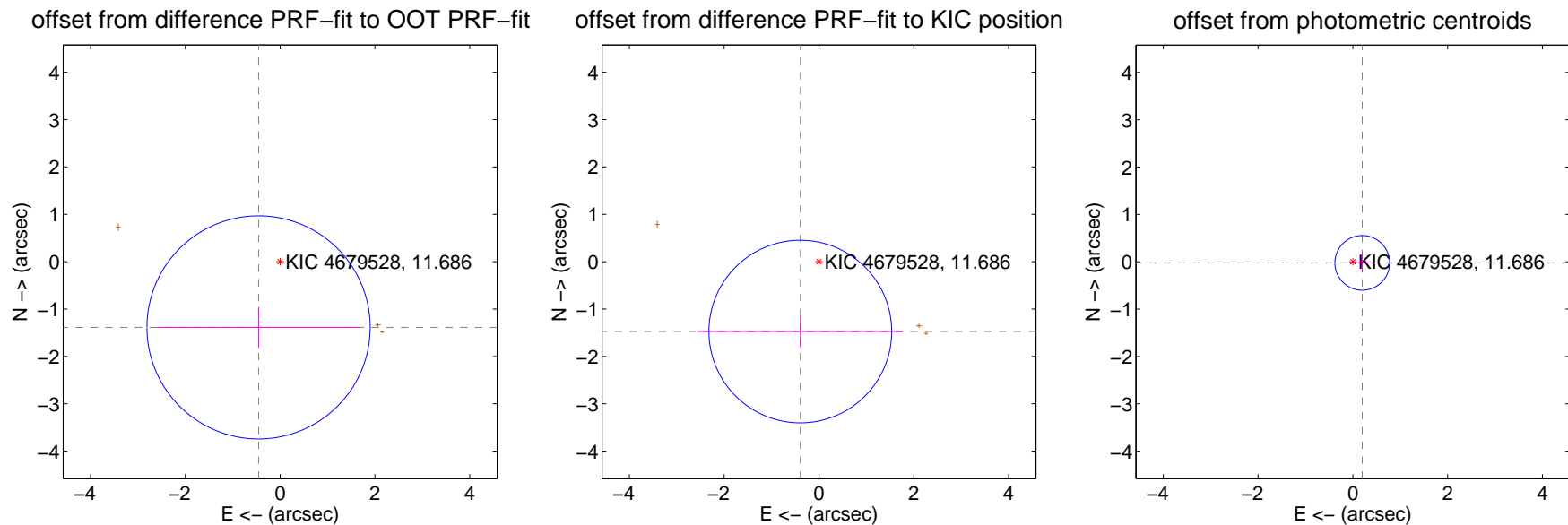
## DV Centroid Data

Supplemental centroid analysis for 004679528-02. **Kepler magnitude: 11.69.** Transit SNR 13.31

**There are 0 quarters with good PRF difference image offsets**

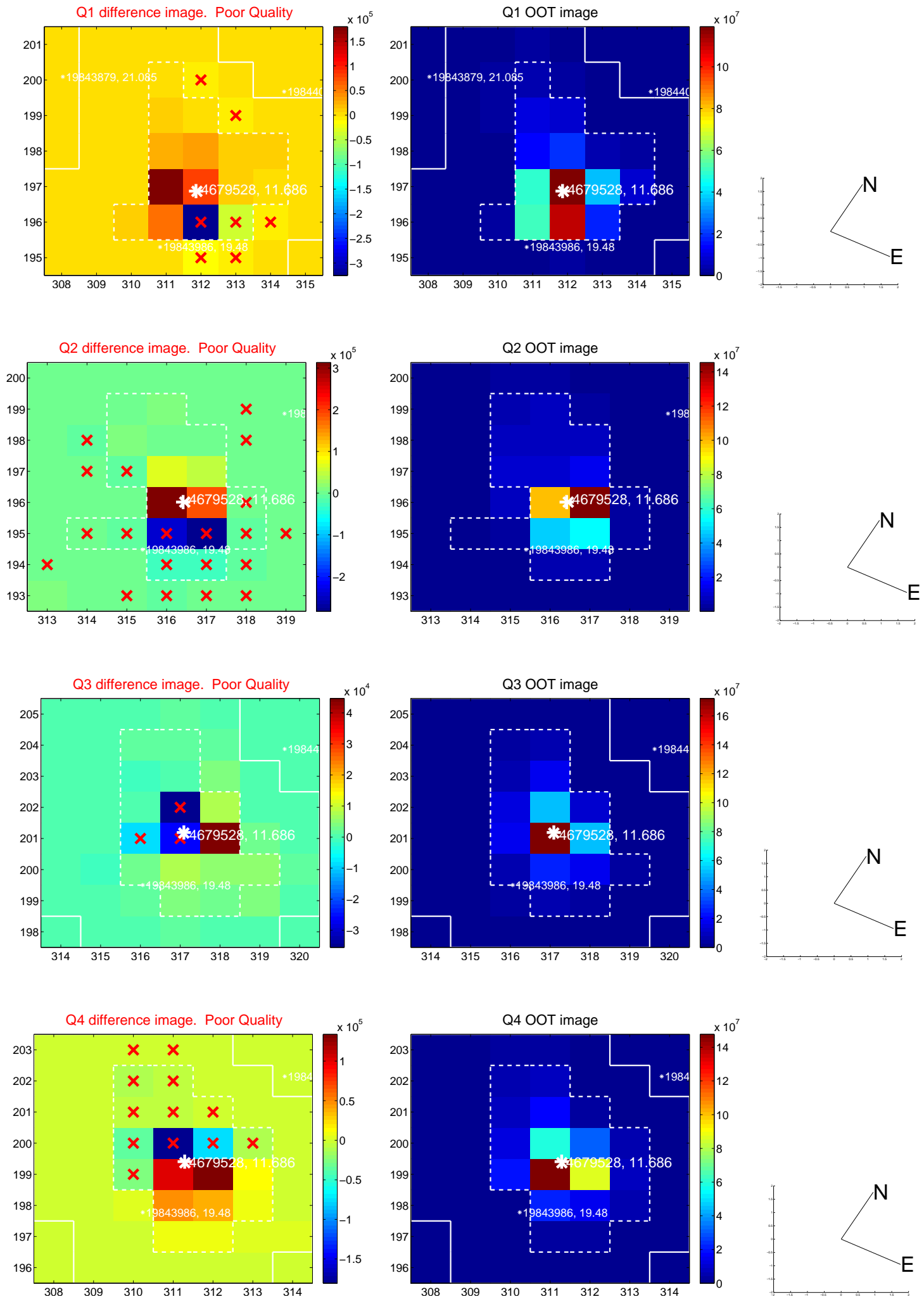
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.459 \pm 0.785$	1.86	$0.455 \pm 2.152$	$-1.387 \pm 0.430$
PRF-fit source offset from KIC position	$1.527 \pm 0.643$	2.38	$0.394 \pm 2.161$	$-1.475 \pm 0.331$
photometric centroid source offset	$0.20 \pm 0.19$	1.04	$-0.20 \pm 0.19$	$-0.02 \pm 0.20$



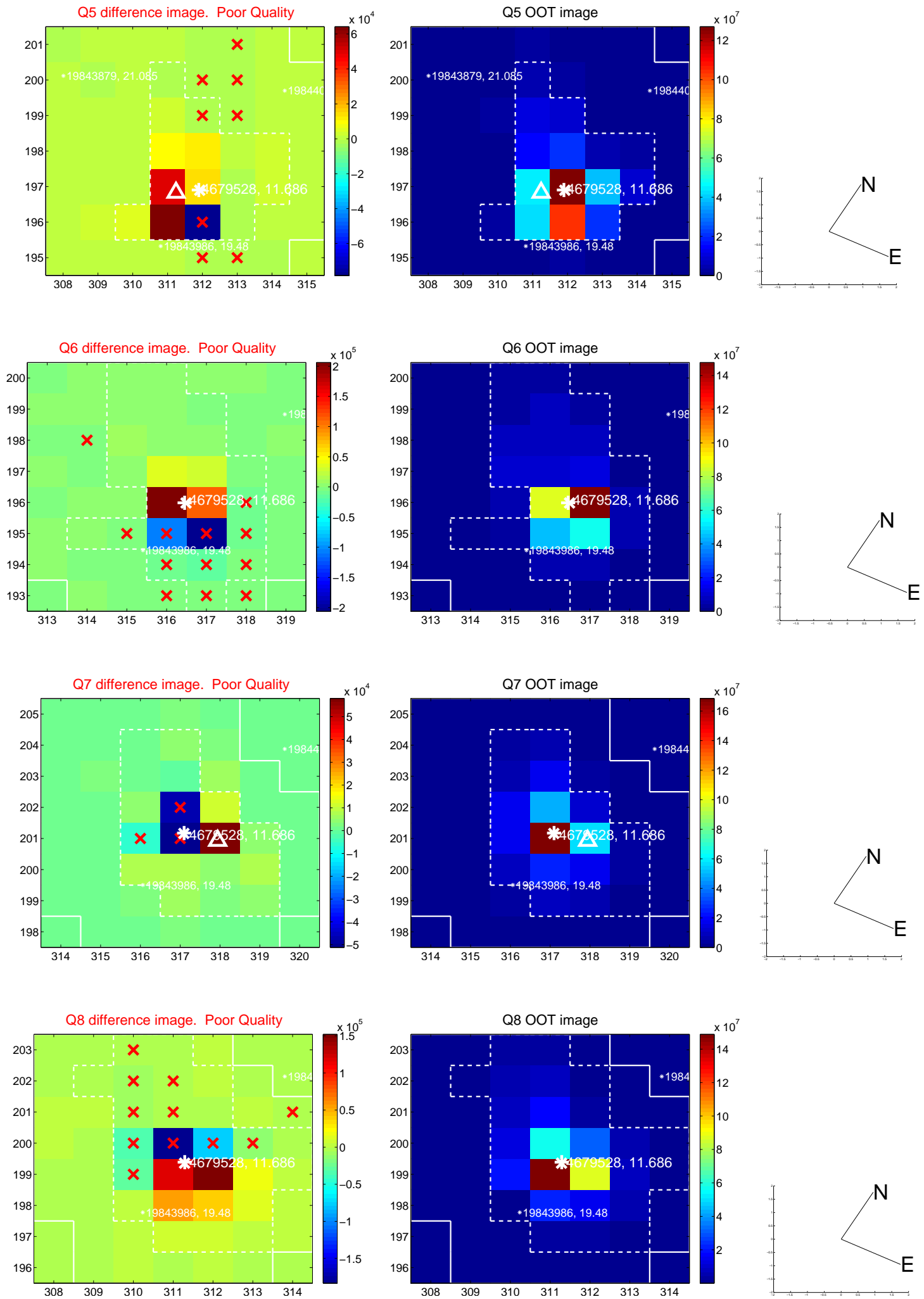
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

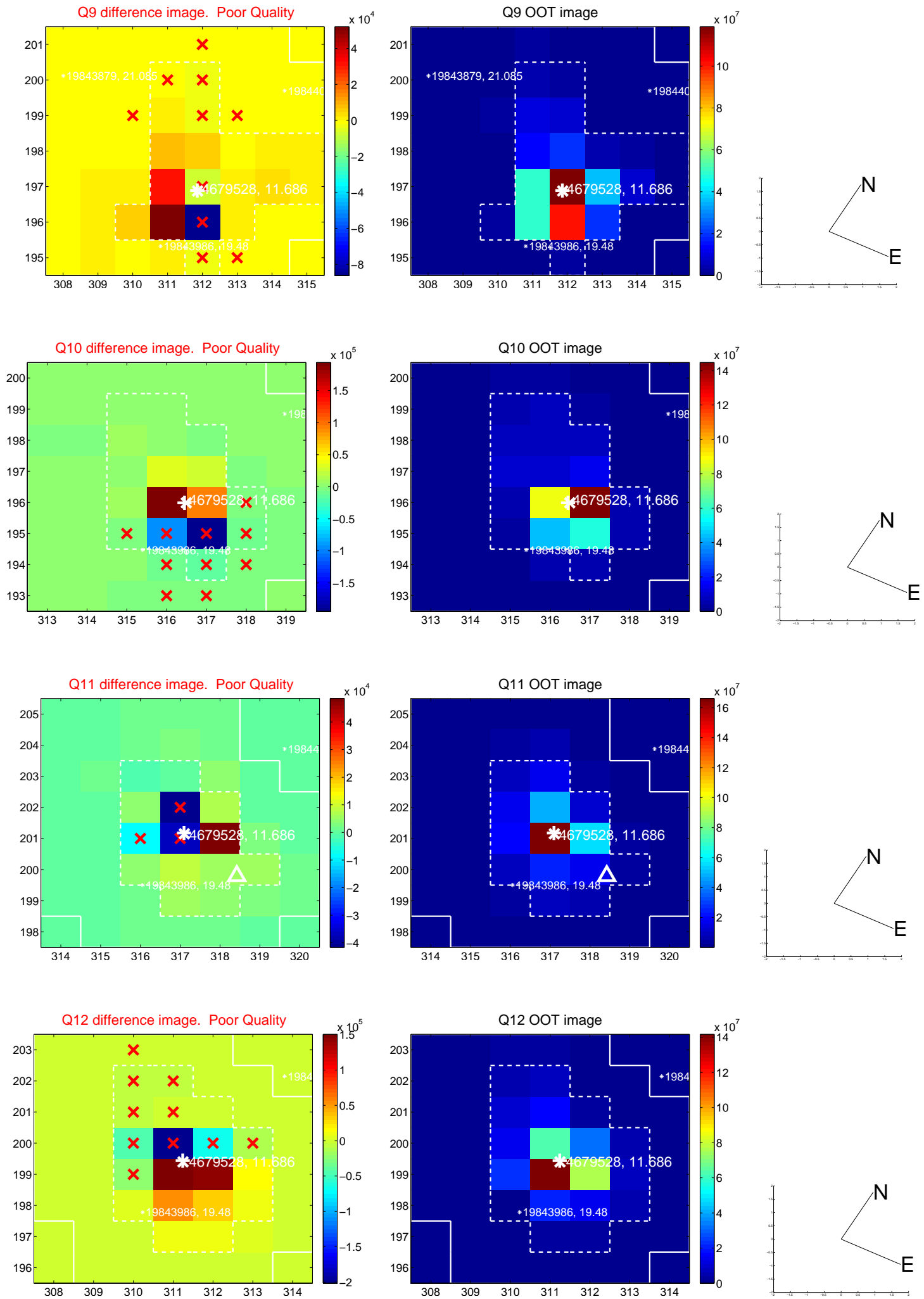




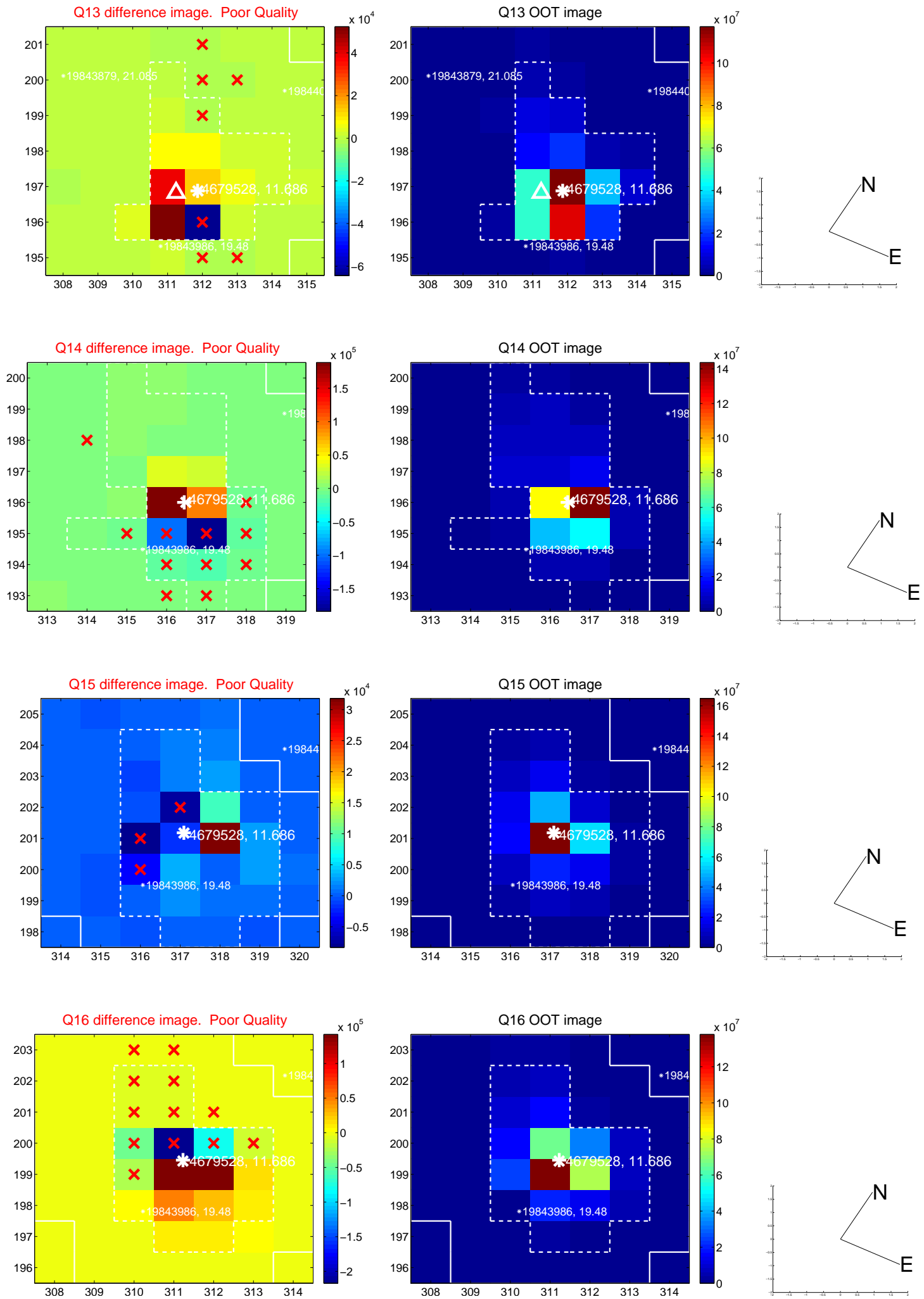
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



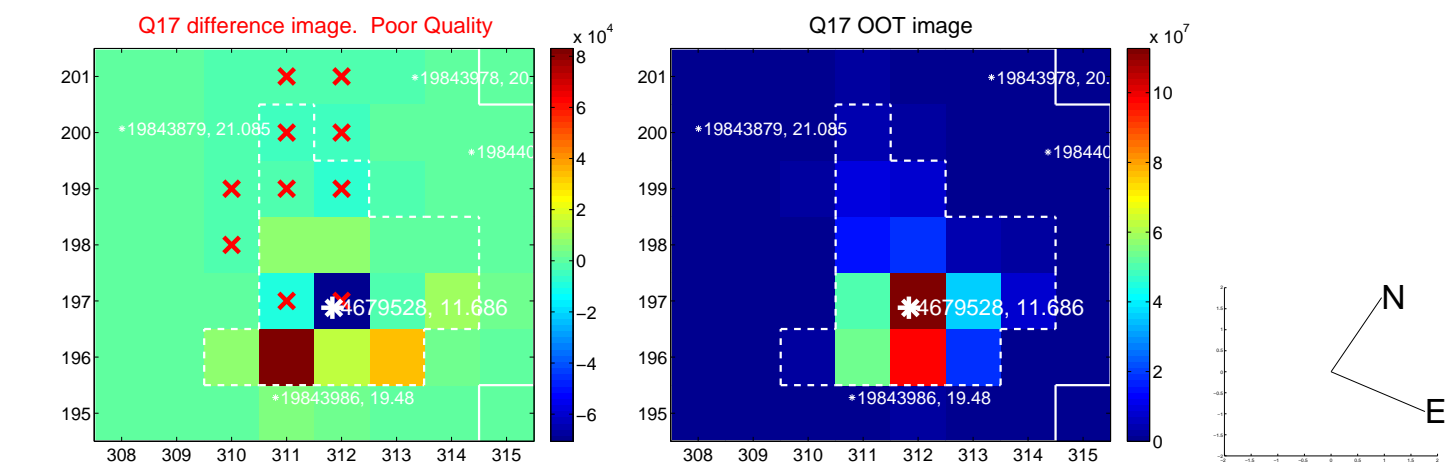
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



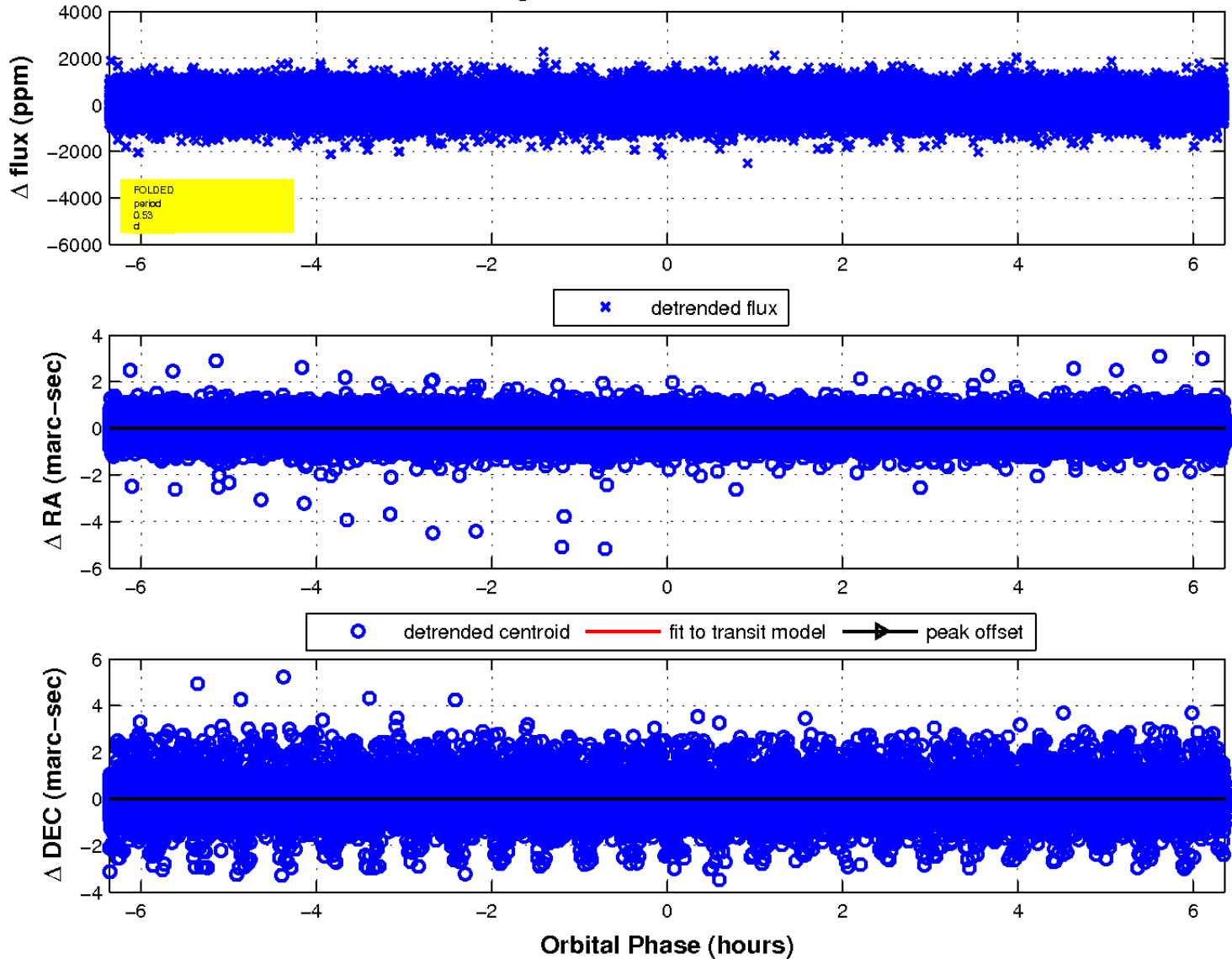
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



**fluxWeightedCentroids, Planet 2 of 2**



UKIRT Image

Declination

