

# KIC 008175177

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008175177-01	OBS	No	0.694611	131.728508	16.6	1.756	7.6	6.7	2.71	8739	1.28	94350.55
008175177-02	OBS	No	0.692848	132.042981	34.9	1.079	8.2	9.6	2.71	8739	1.64	94670.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008175177-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008175177-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

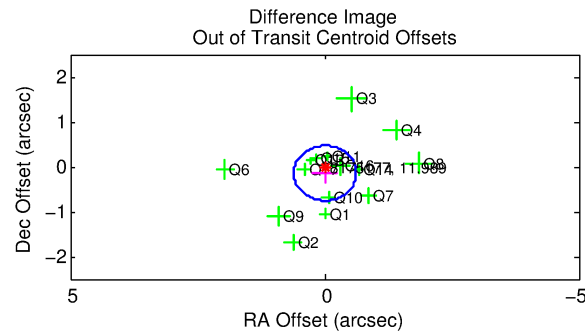
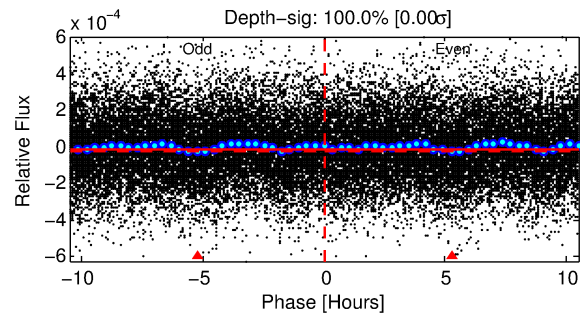
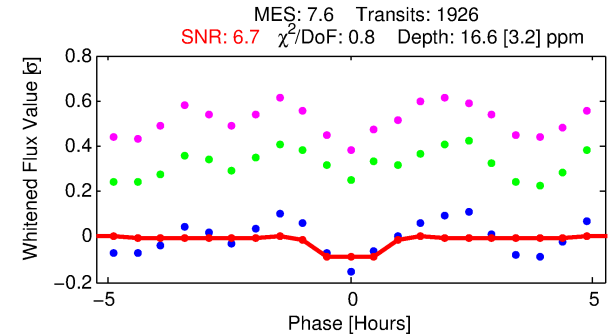
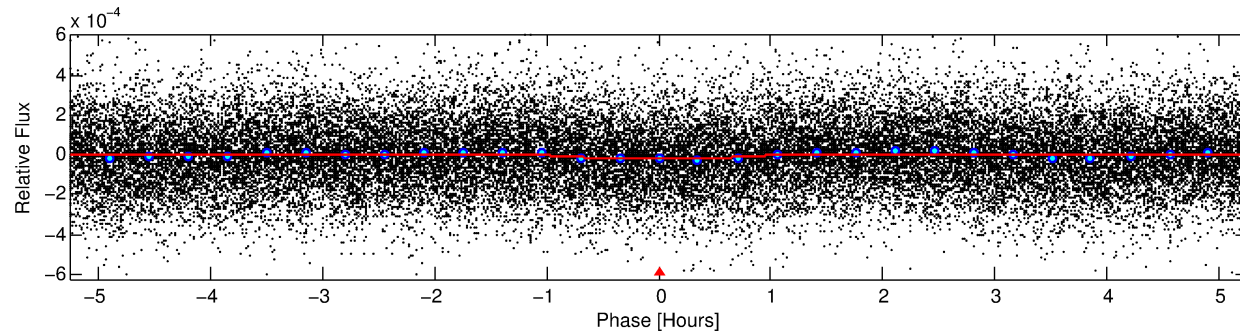
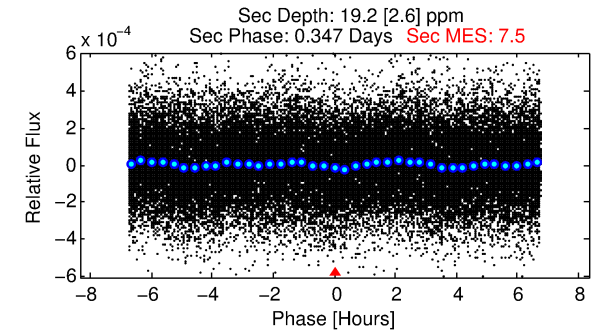
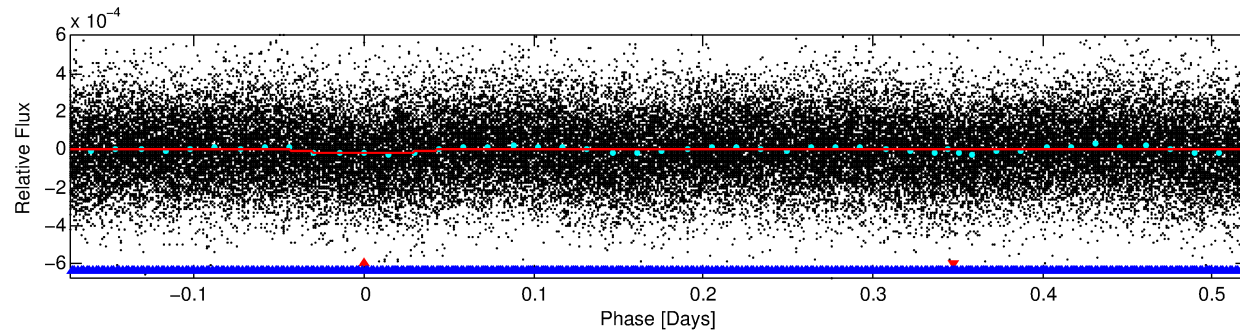
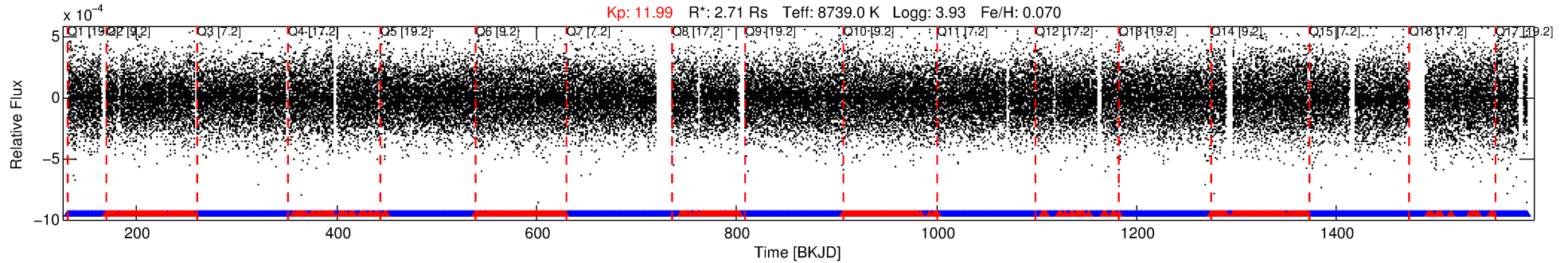
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008175177-01

No Significant Match Found

# DV One-Page Summary

KIC: 8175177 Candidate: 1 of 2 Period: 0.695 d



## DV Fit Results:

Period = 0.69461 [0.00002] d  
Epoch = 131.7285 [0.0033] BKJD  
Rp/R\* = 0.0043 [0.0009]  
a/R\* = 1.64 [1.35]  
b = 0.90 [0.28]  
Seff = 94350.55 [46947.32]  
Teq = 4469 [556] K  
Rp = 1.28 [0.55] Re  
a = 0.0201 [0.0064] AU  
Ag = 2.62 [1.67] [0.97σ]  
Teffp = 8790 [1055] K [3.62σ]

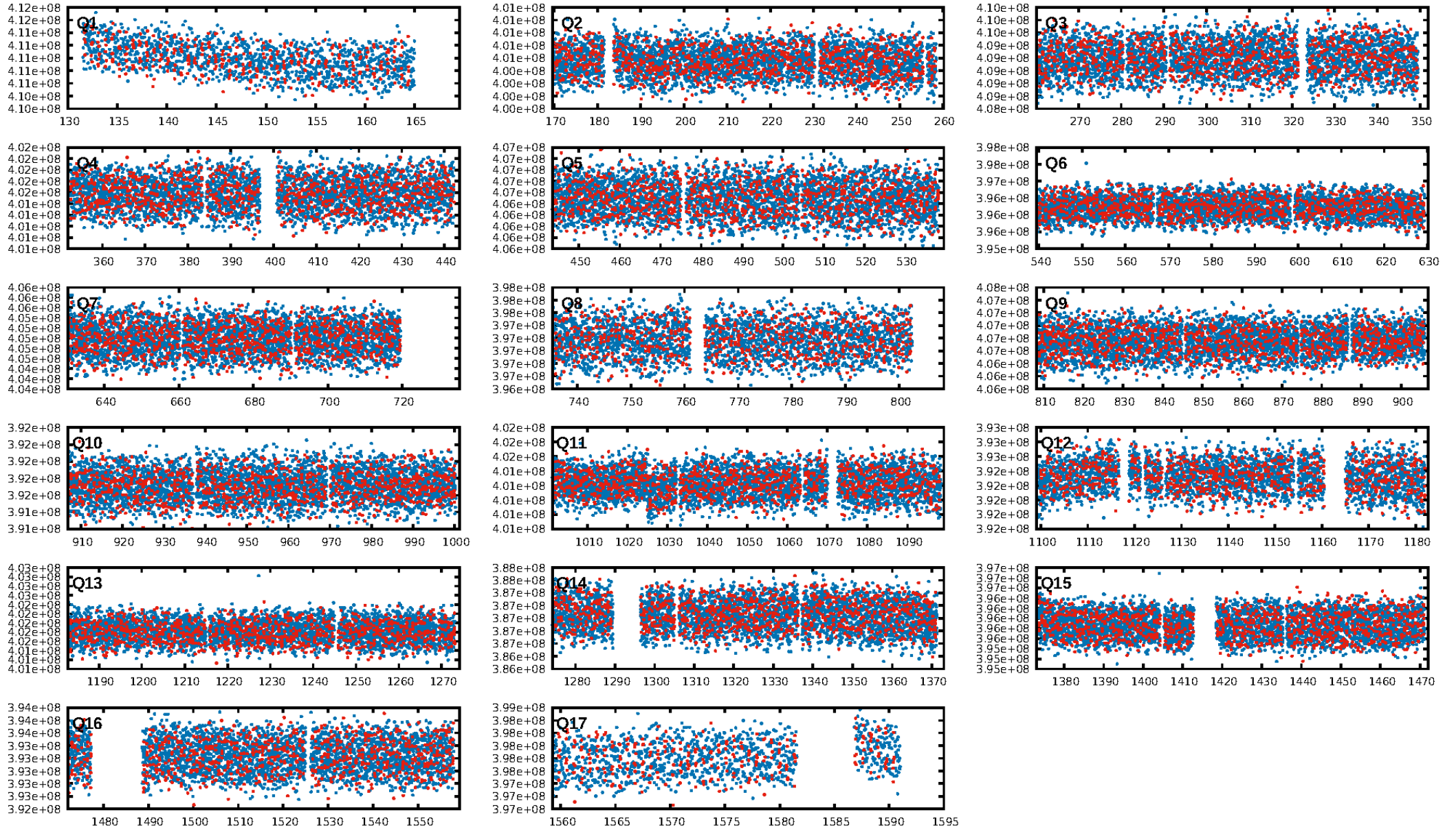
## DV Diagnostic Results:

ShortPeriod-sig: 1.6% [0.02σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.03e-13  
RollingBand-fgt: 0.68 [1257/1840]  
GhostDiagnostic-chr: -3.504  
Centroid-sig: 0.6%  
Centroid-so: 1.118 arcsec [1.72σ]  
OotOffset-rm: 0.146 arcsec [0.71σ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-rm: 0.201 arcsec [1.01σ]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.60 [9/15]  
DiffImageOverlap-fno: 0.47 [8/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:06:46 Z

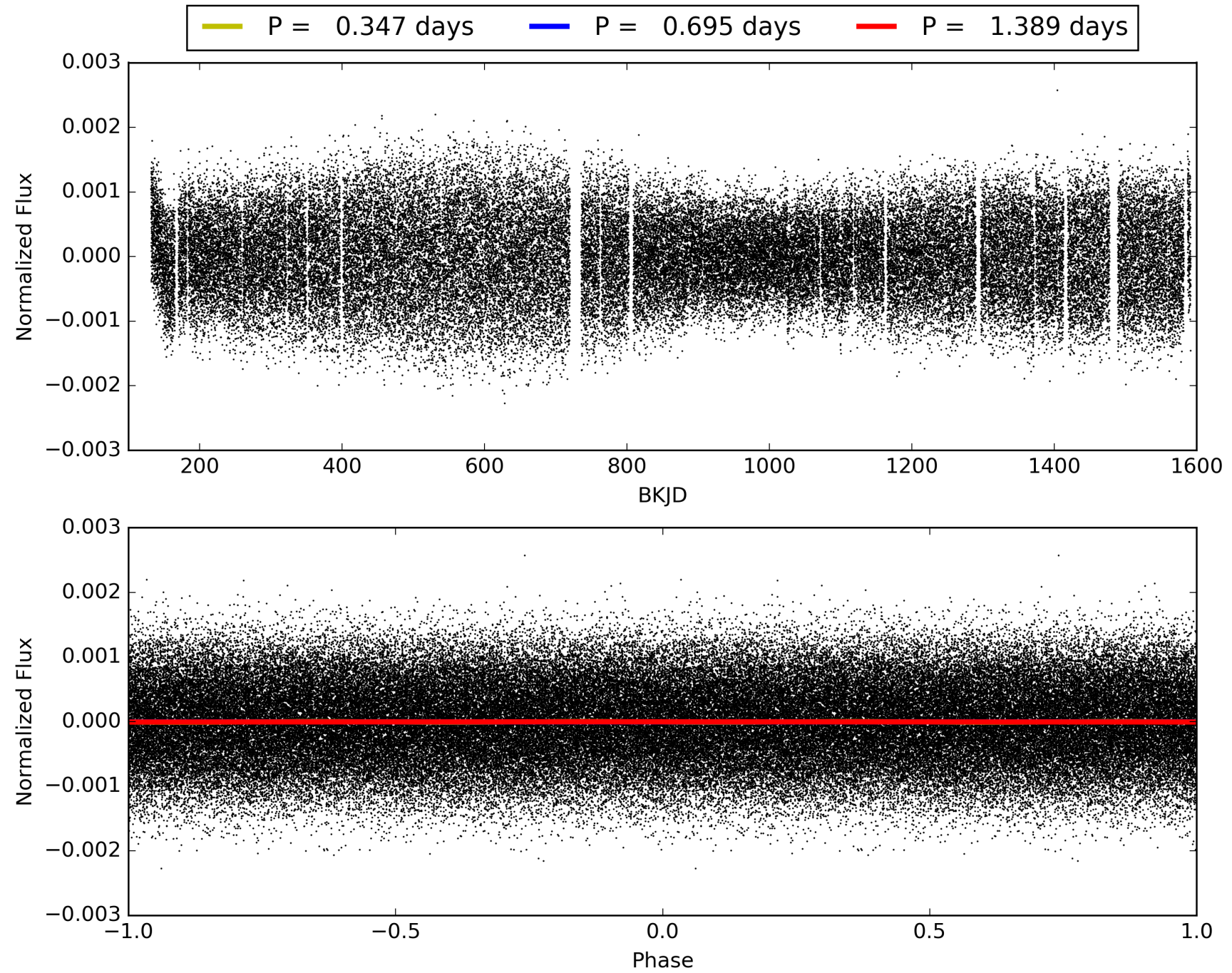
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008175177-01, PDC Light Curves



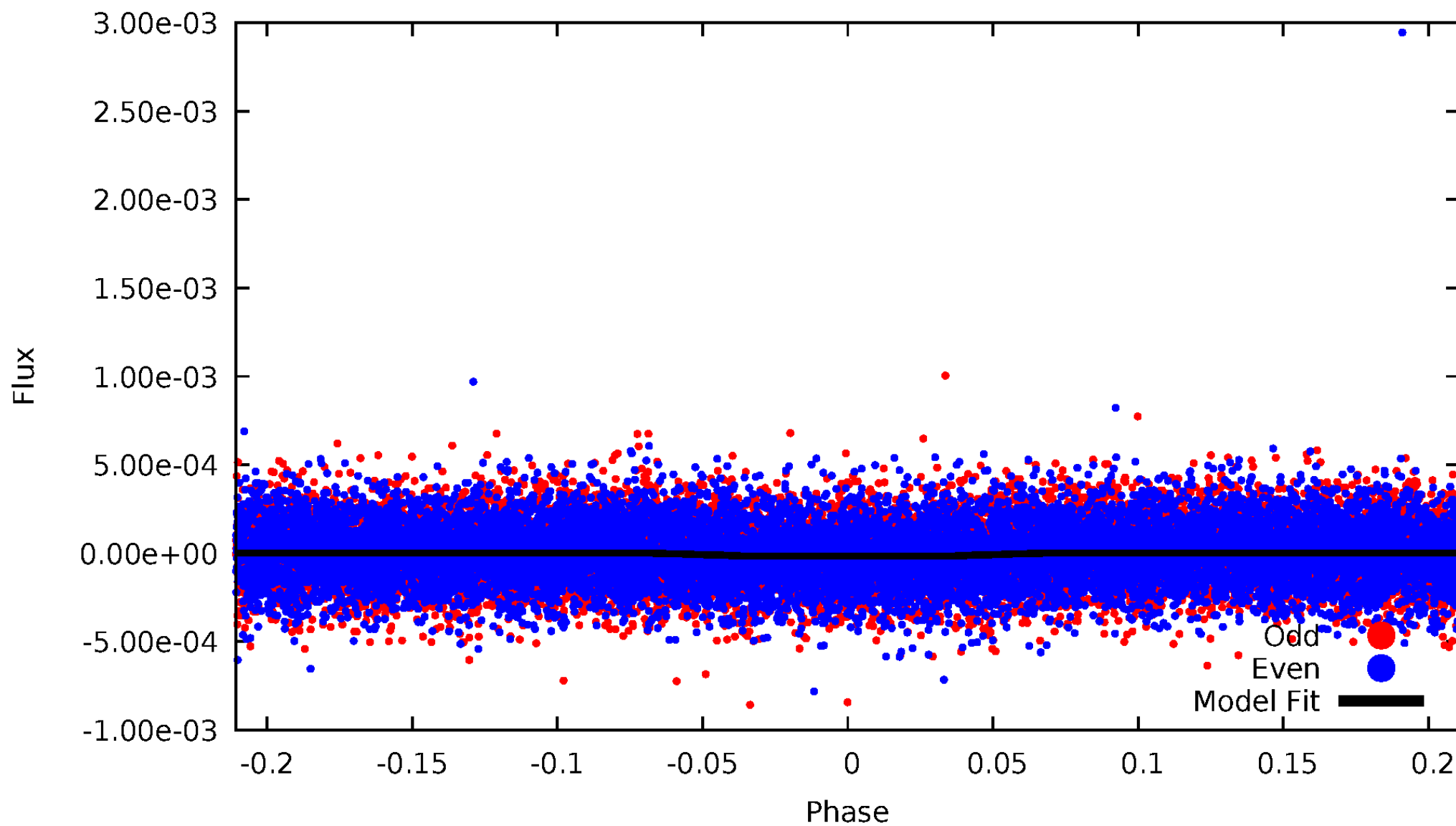


TCE 008175177-01



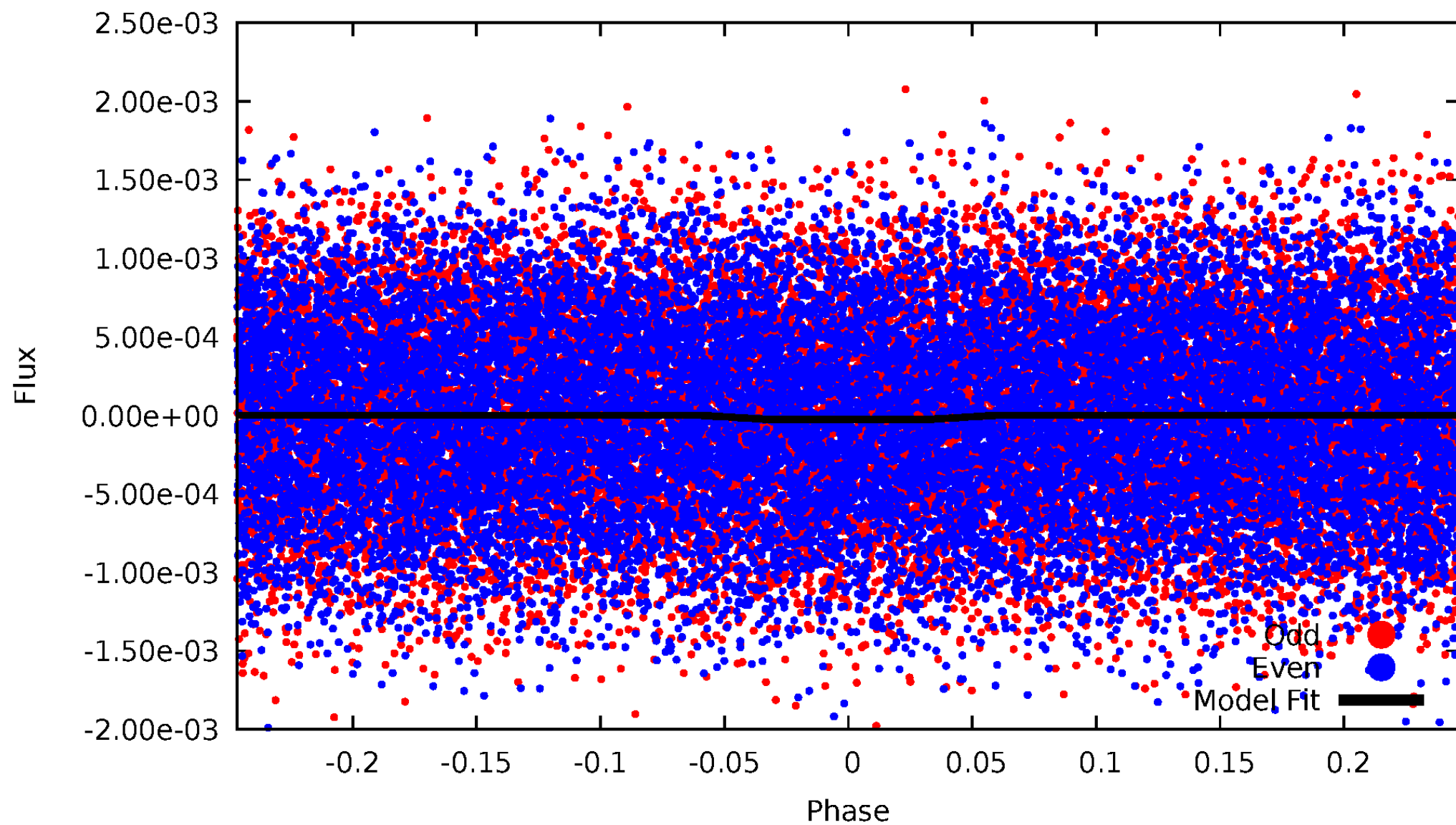
# DV Odd/Even

TCE 008175177-01



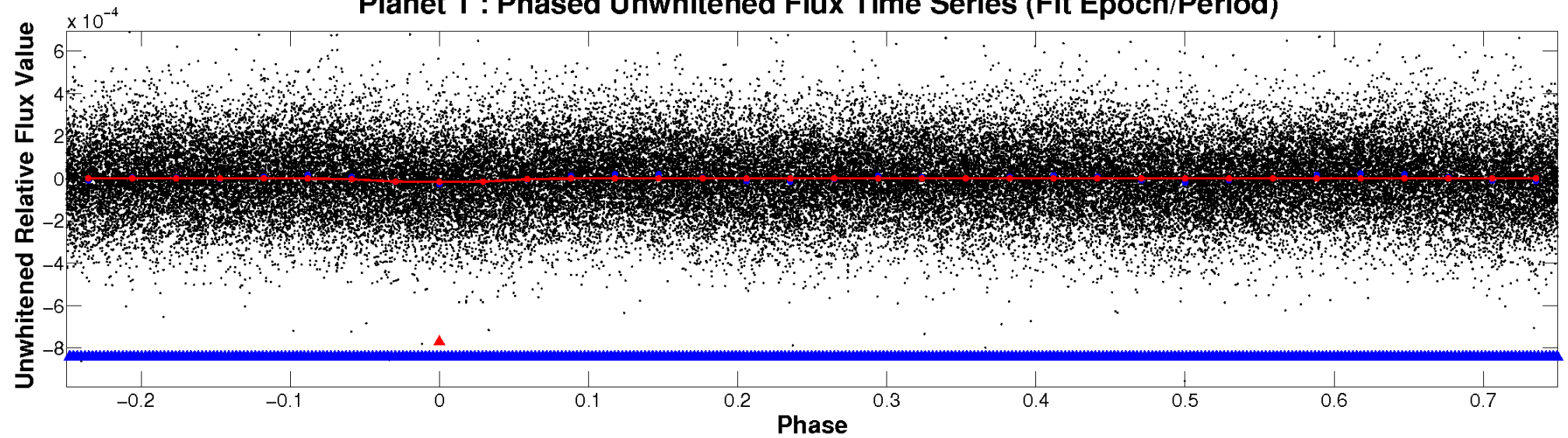
# ALT Odd/Even

TCE 008175177-01

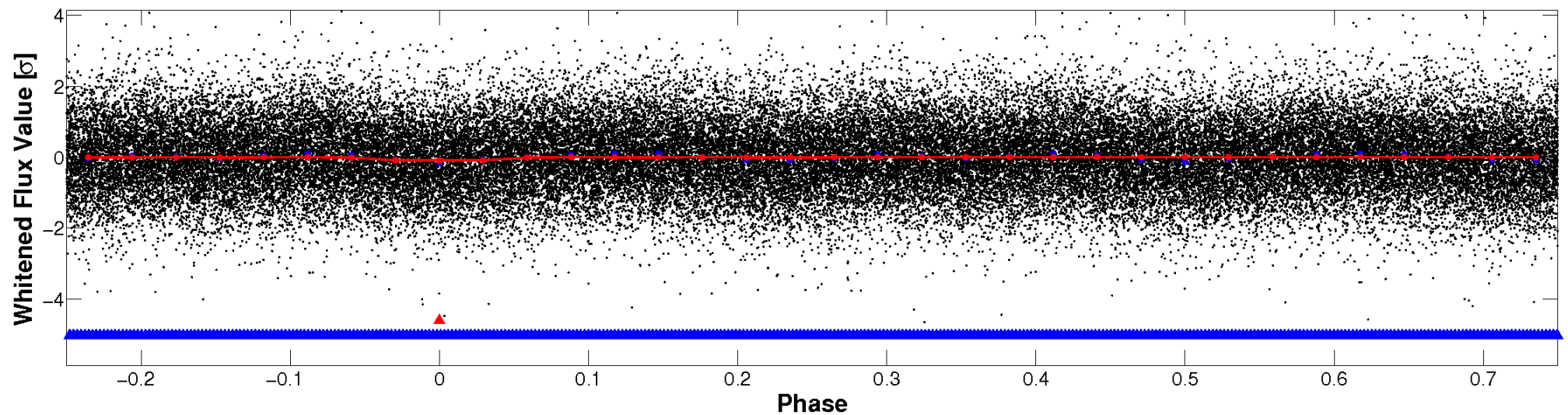


# Non-Whitened Vs. Whitened Light Curve

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



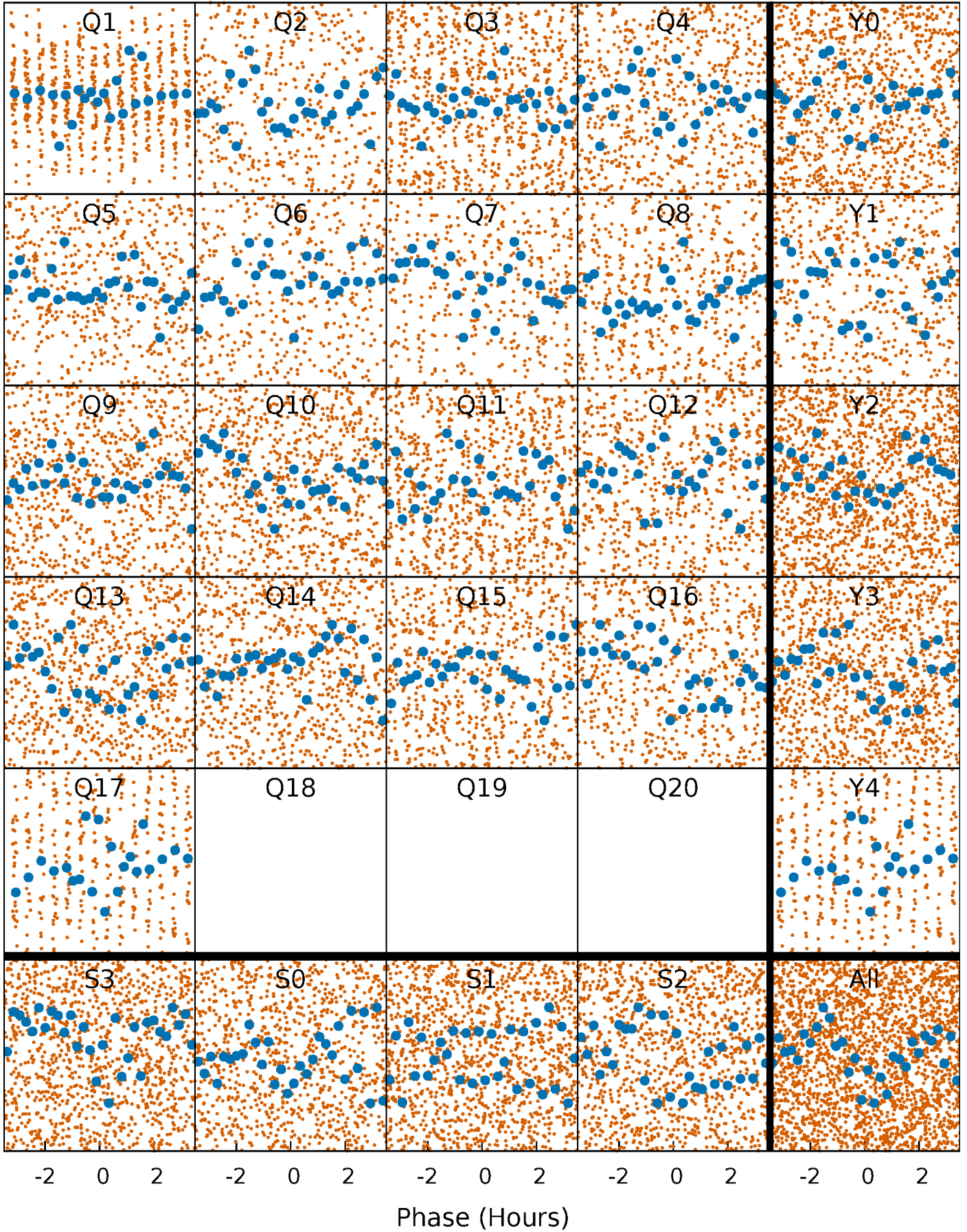
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

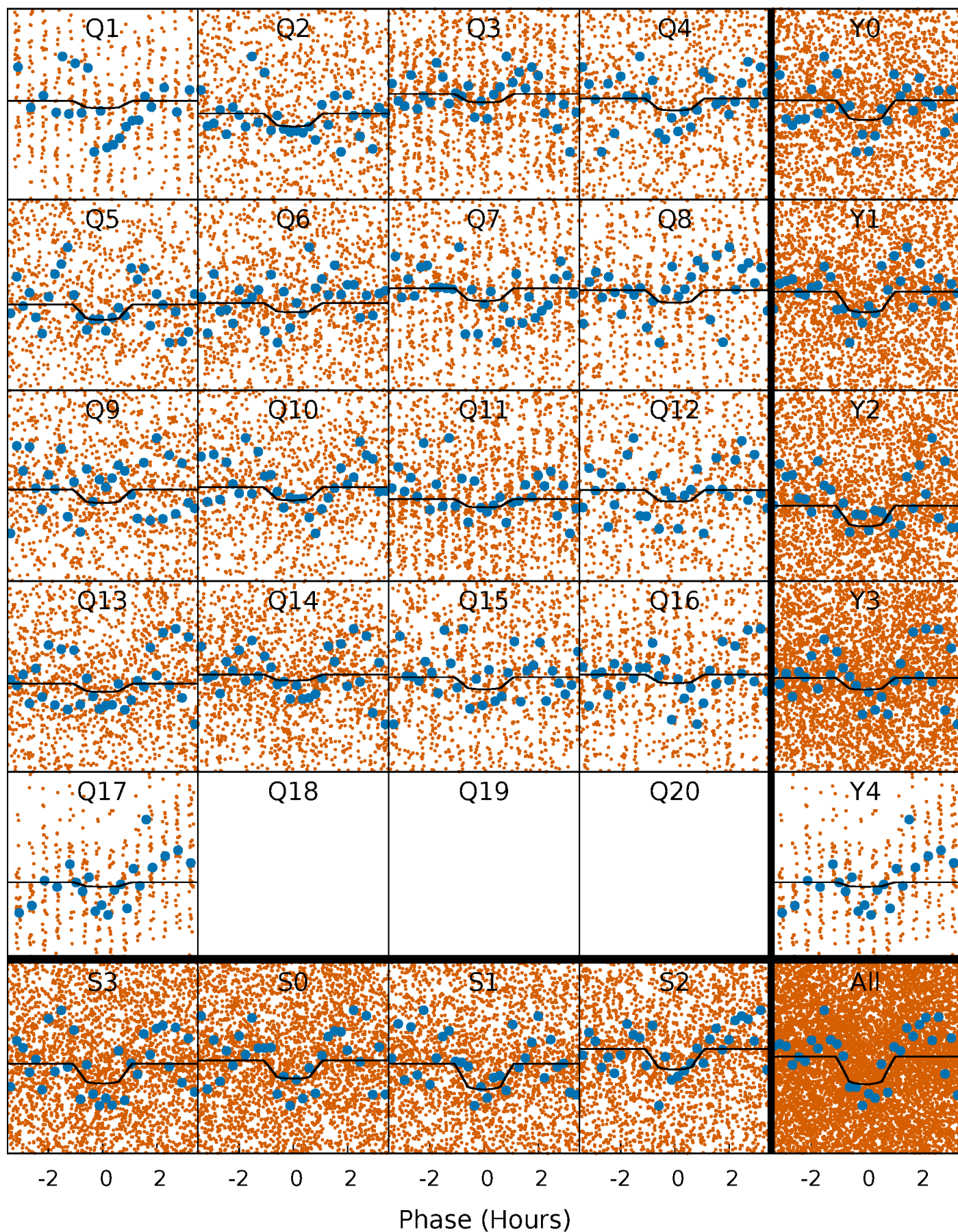
TCE 008175177-01 P= 0.694611 Days  $T_0=131.728508$  (BKJD)





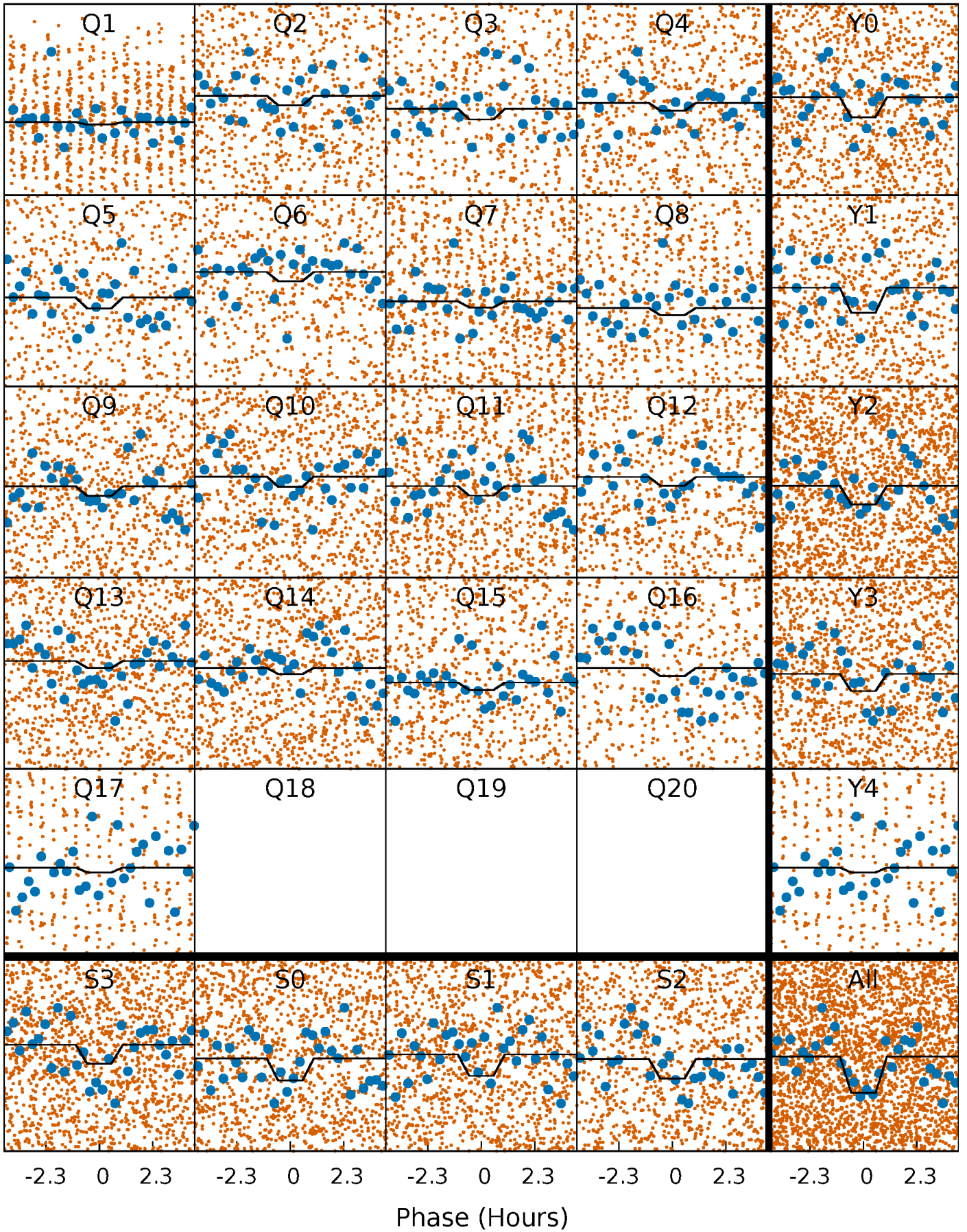
# DV Quarter-Phased Transit Curves

TCE 008175177-01 P= 0.694611 Days  $T_0=131.728508$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

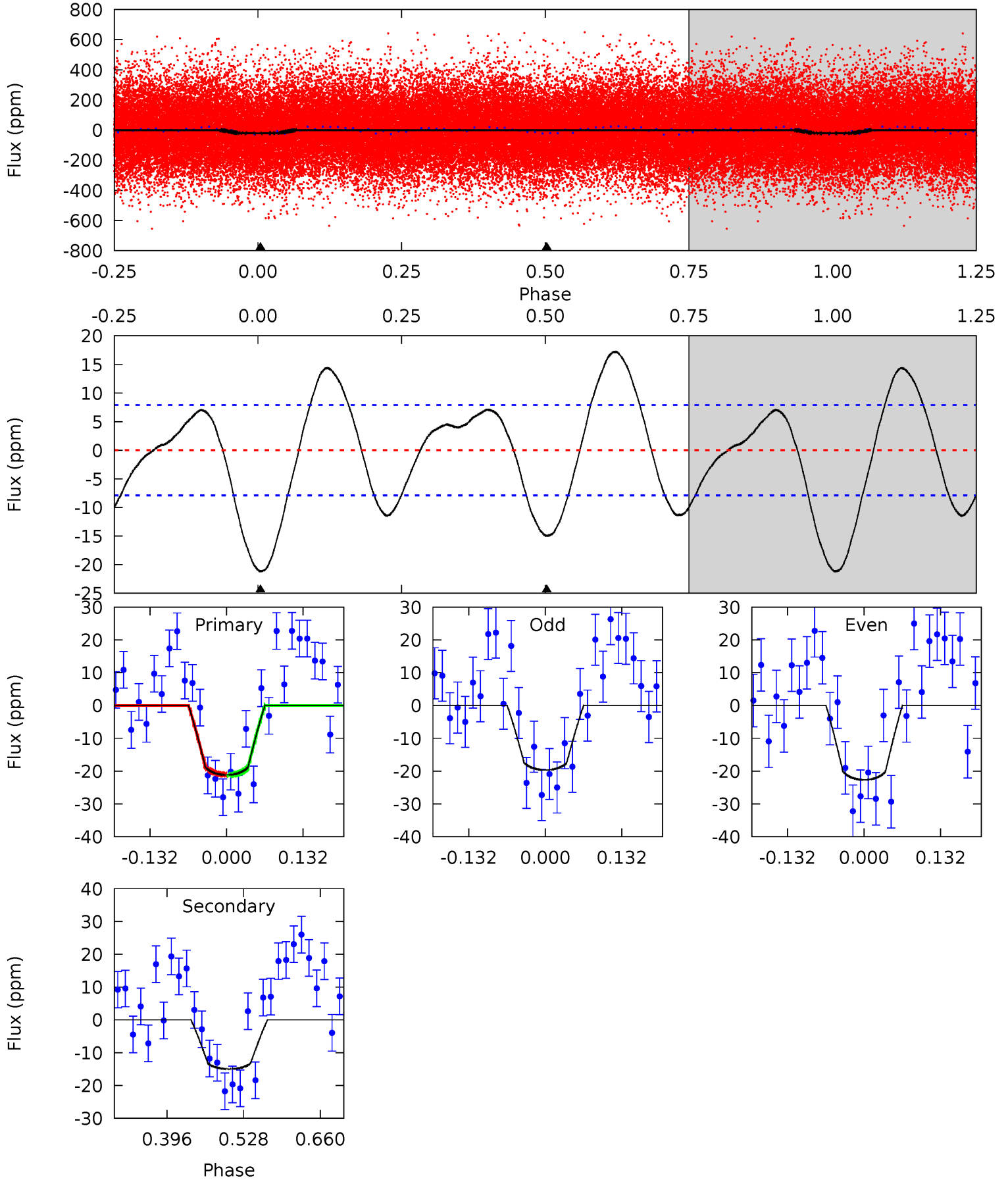
TCE 008175177-01 P= 0.694615 Days  $T_0=131.733519$  (BKJD)



# DV Model-Shift Uniqueness Test

008175177-01, P = 0.694611 Days, E = 131.033897 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
12.1	8.55	0	0	4.51	1.51	3.94	12.1	12.1	8.55	8.55	0.85	1.05	0.45	0.05

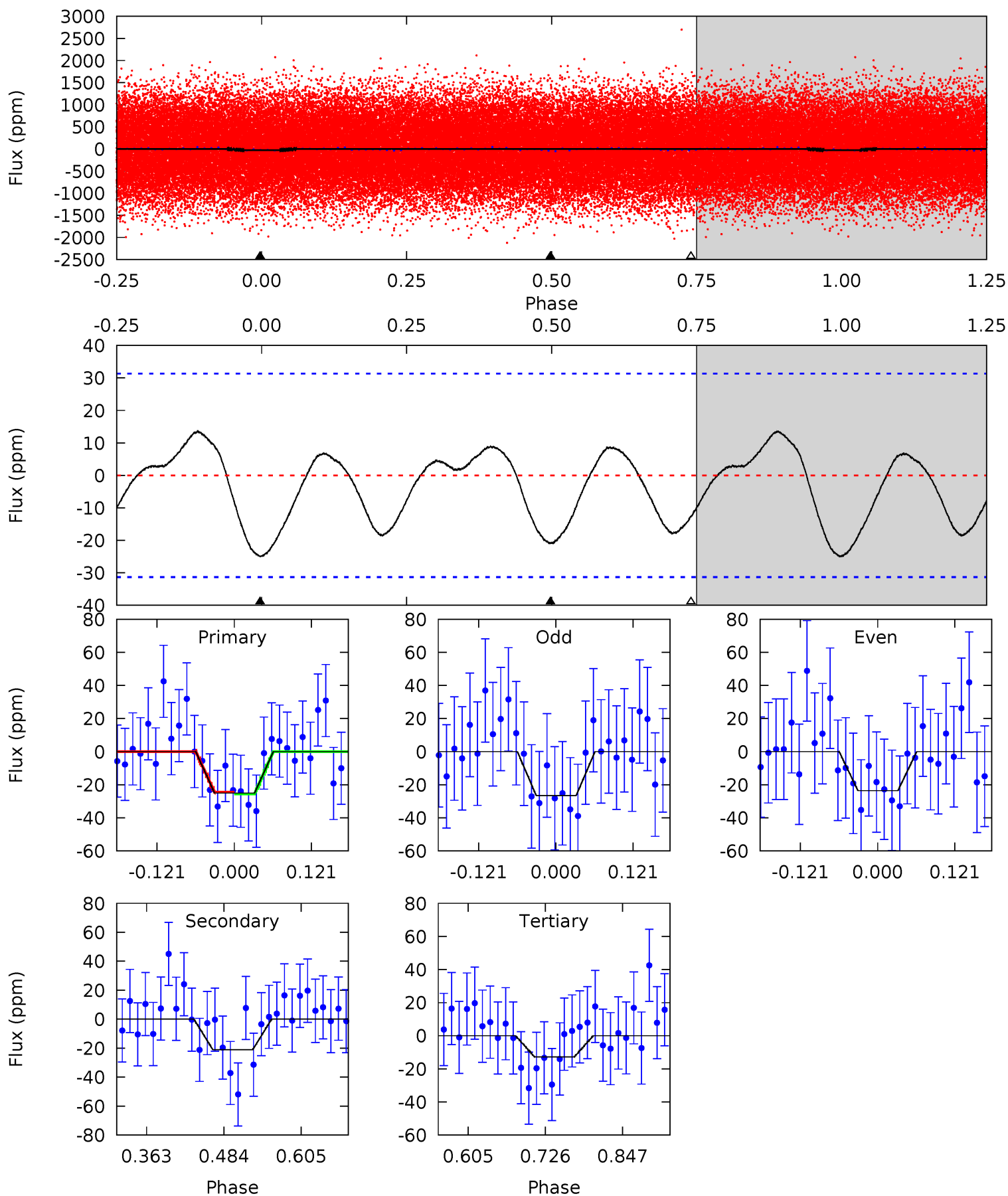




# Alt Model-Shift Uniqueness Test

008175177-01, P = 0.694615 Days, E = 131.038904 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
3.61	3.04	1.84	0	4.52	1.55	1.20	1.77	3.61	1.20	3.04	0.21	1.00	0.35	0.08





### Stellar Parameters For KIC 008175177

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8739^{+273}_{-410}$	$3.927^{+0.252}_{-0.168}$	$0.070^{+0.250}_{-0.600}$	$2.707^{+0.924}_{-1.017}$	$2.257^{+0.346}_{-0.693}$	$0.160^{+0.286}_{-0.080}$
	+3%/-5%	+6%/-4%	+357%/-857%	+34%/-38%	+15%/-31%	+178%/-50%
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 008175177-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-15 \pm 2$	$1.22^{+0.39}_{-0.33}$	$6171^{+525}_{-636}$	$7682^{+1610}_{-1014}$	$2.214^{+1.930}_{-0.984}$
Alt.	$-21 \pm 7$	$1.49^{+0.39}_{-0.36}$	$6173^{+540}_{-595}$	$7543^{+1441}_{-1275}$	$2.009^{+1.628}_{-0.887}$

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

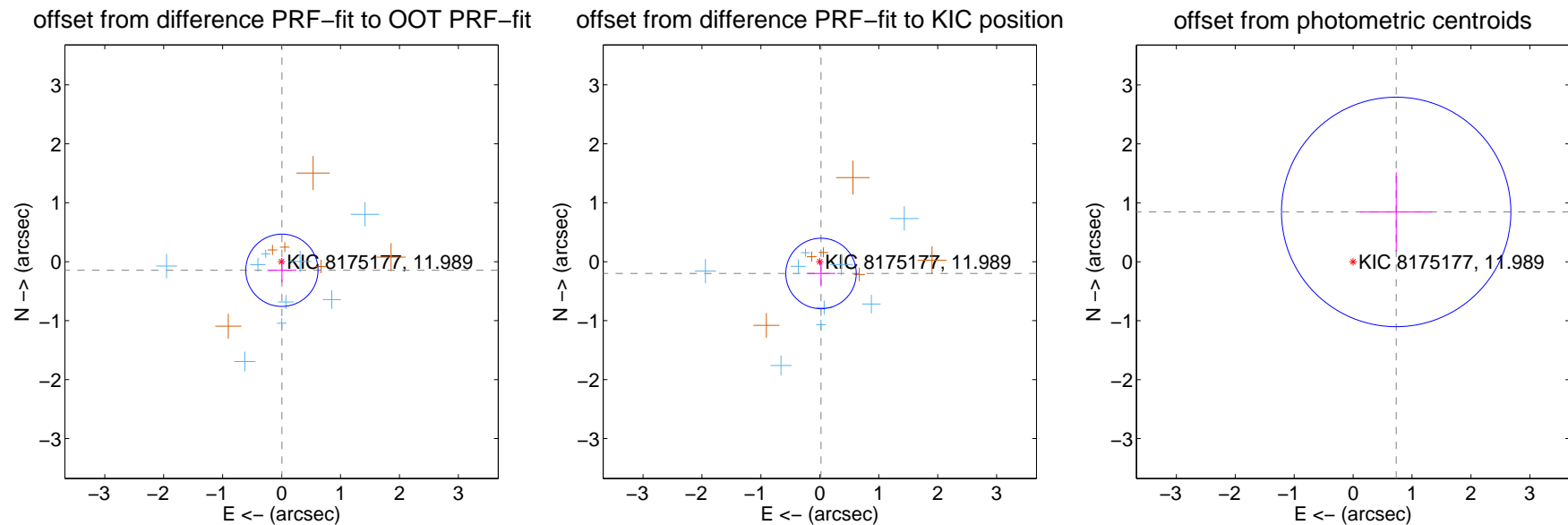
## DV Centroid Data

Supplemental centroid analysis for 008175177-01. **Kepler magnitude: 11.99.** Transit SNR 6.70

There are 9 quarters with good PRF difference image offsets

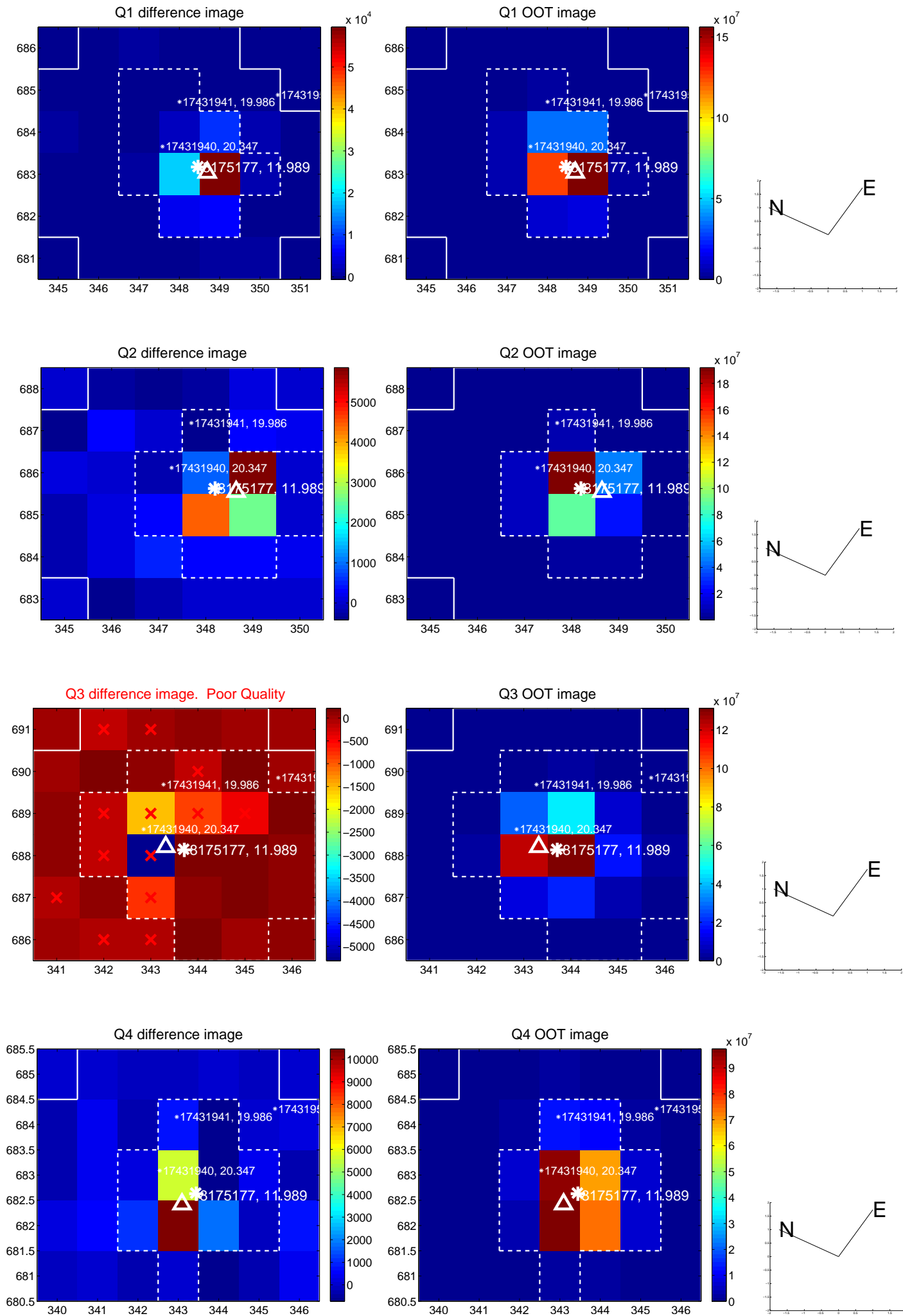
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.146 \pm 0.204$	0.71	$-0.005 \pm 0.246$	$-0.146 \pm 0.207$
PRF-fit source offset from KIC position	$0.201 \pm 0.199$	1.01	$-0.020 \pm 0.243$	$-0.200 \pm 0.205$
photometric centroid source offset	$1.12 \pm 0.65$	1.72	$-0.73 \pm 0.61$	$0.85 \pm 0.68$

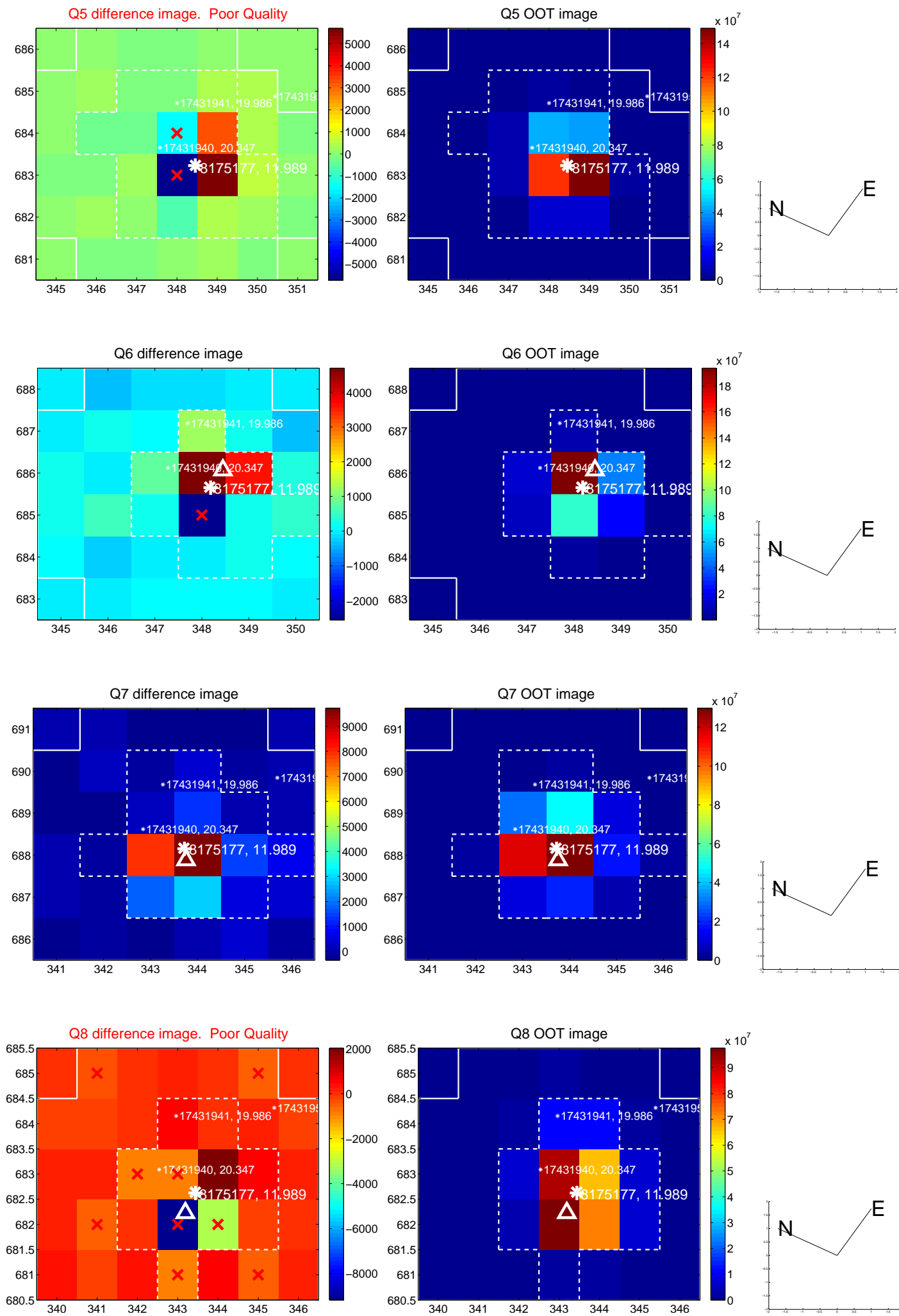


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

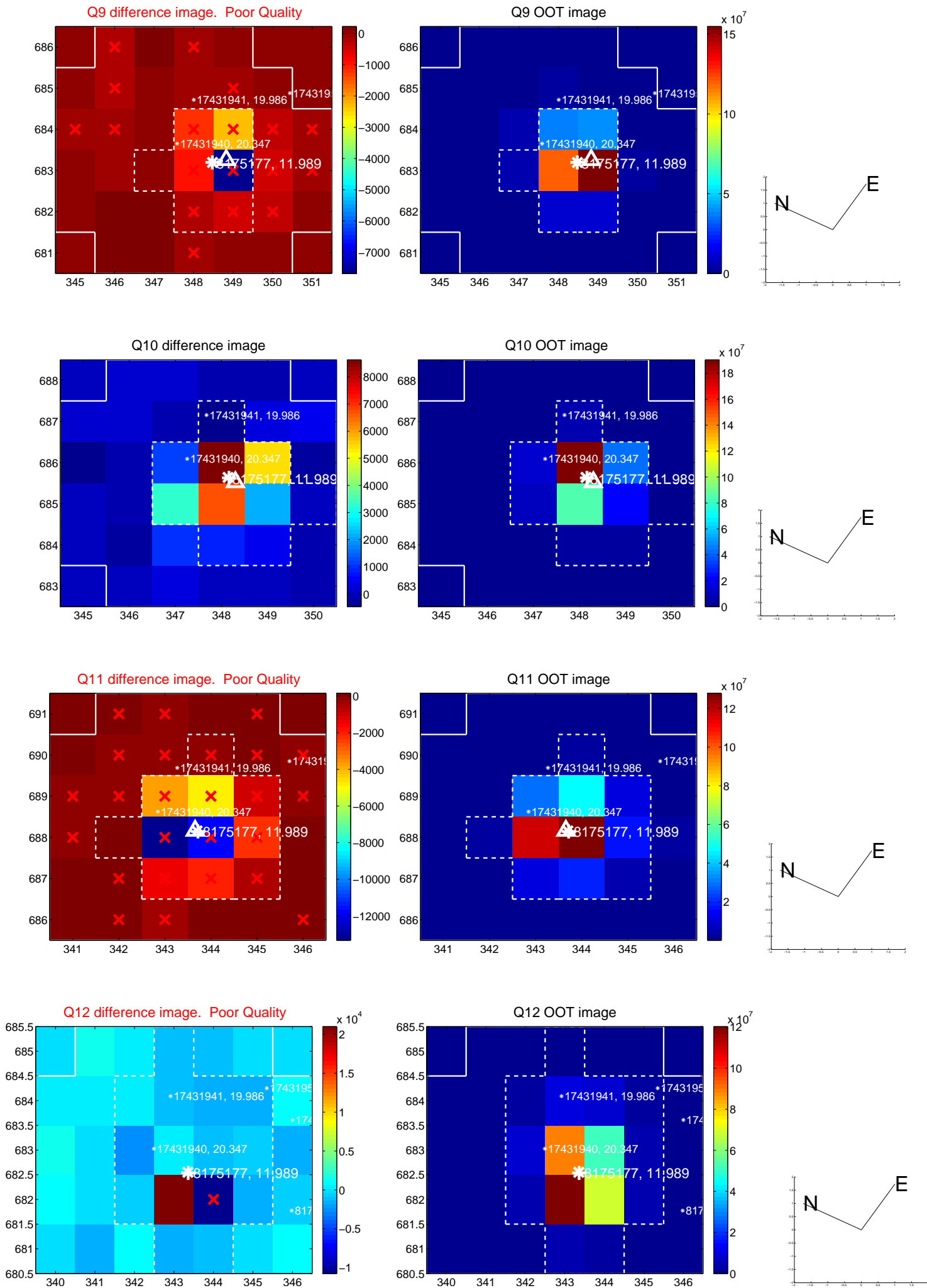


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

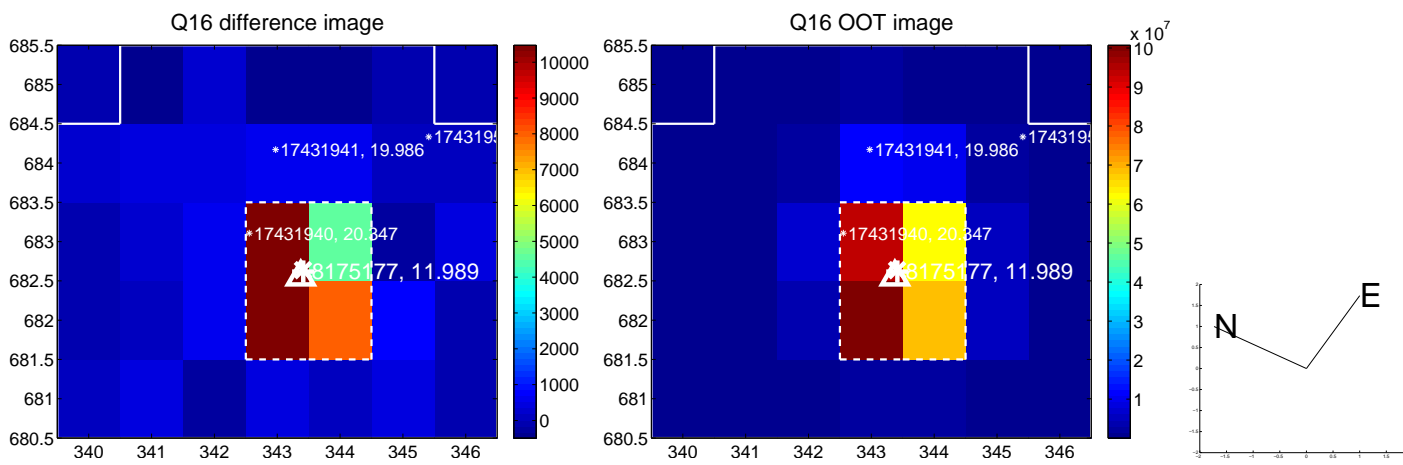
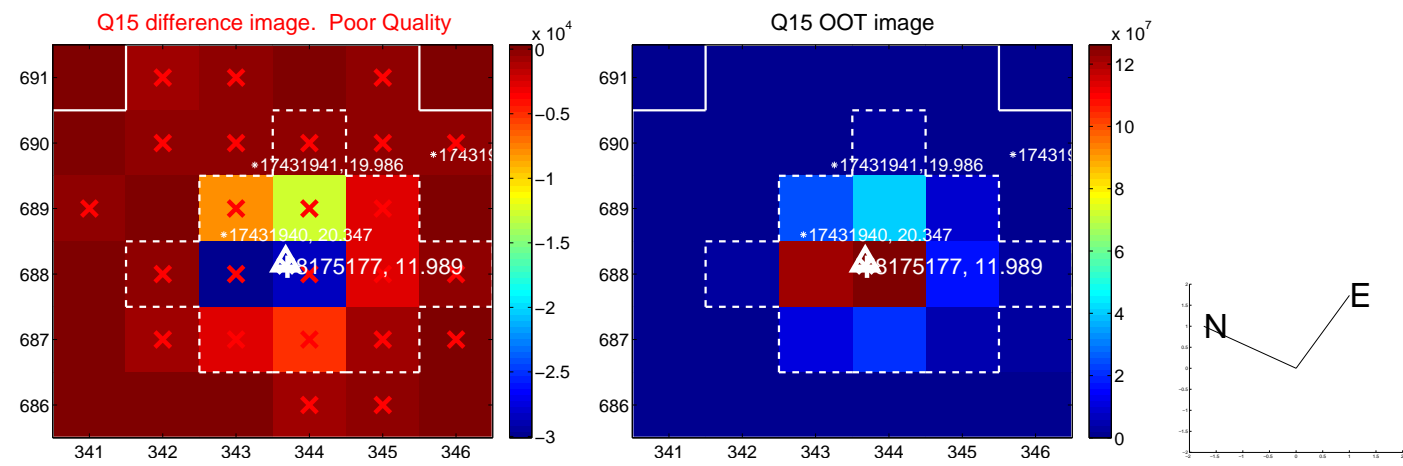
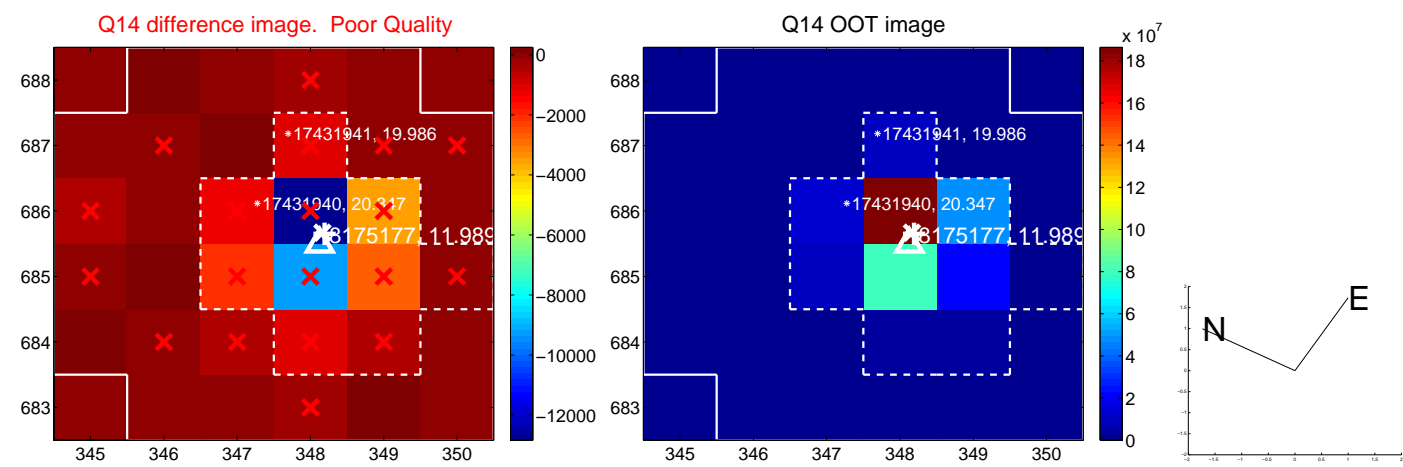
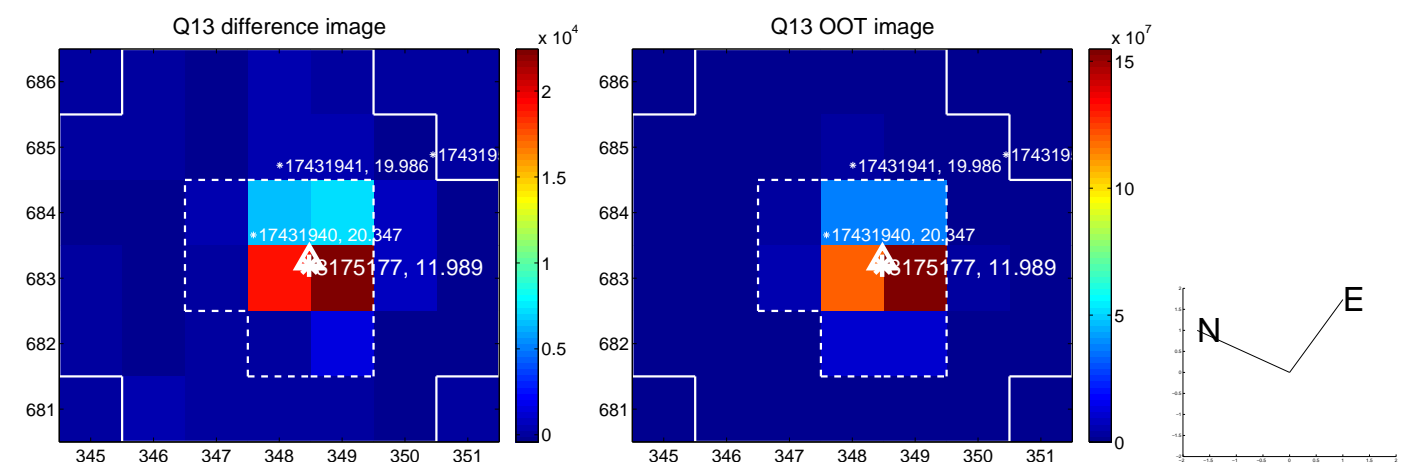




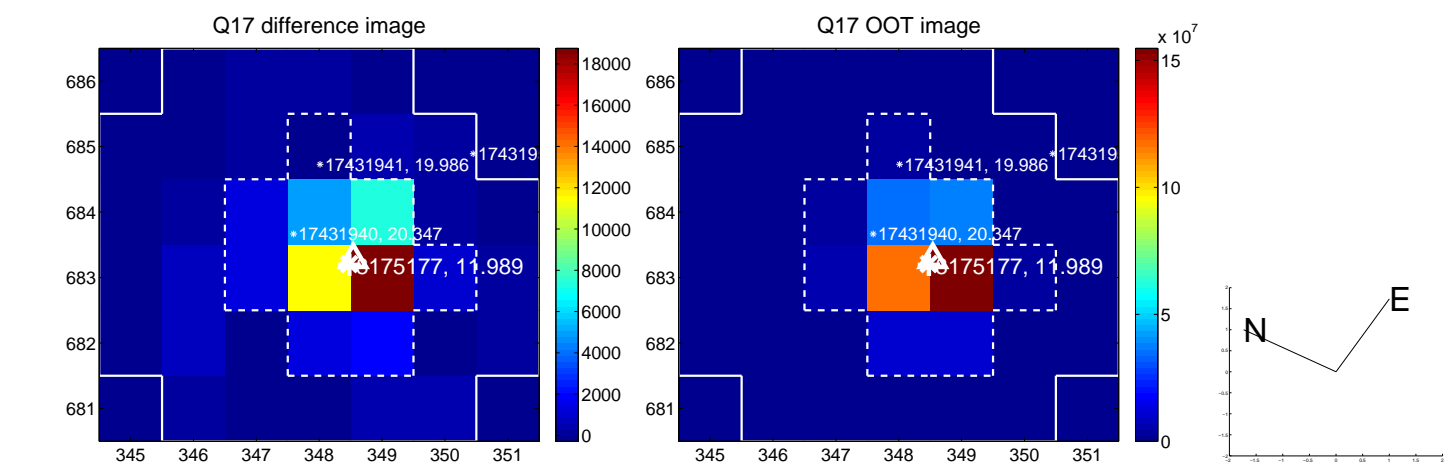
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



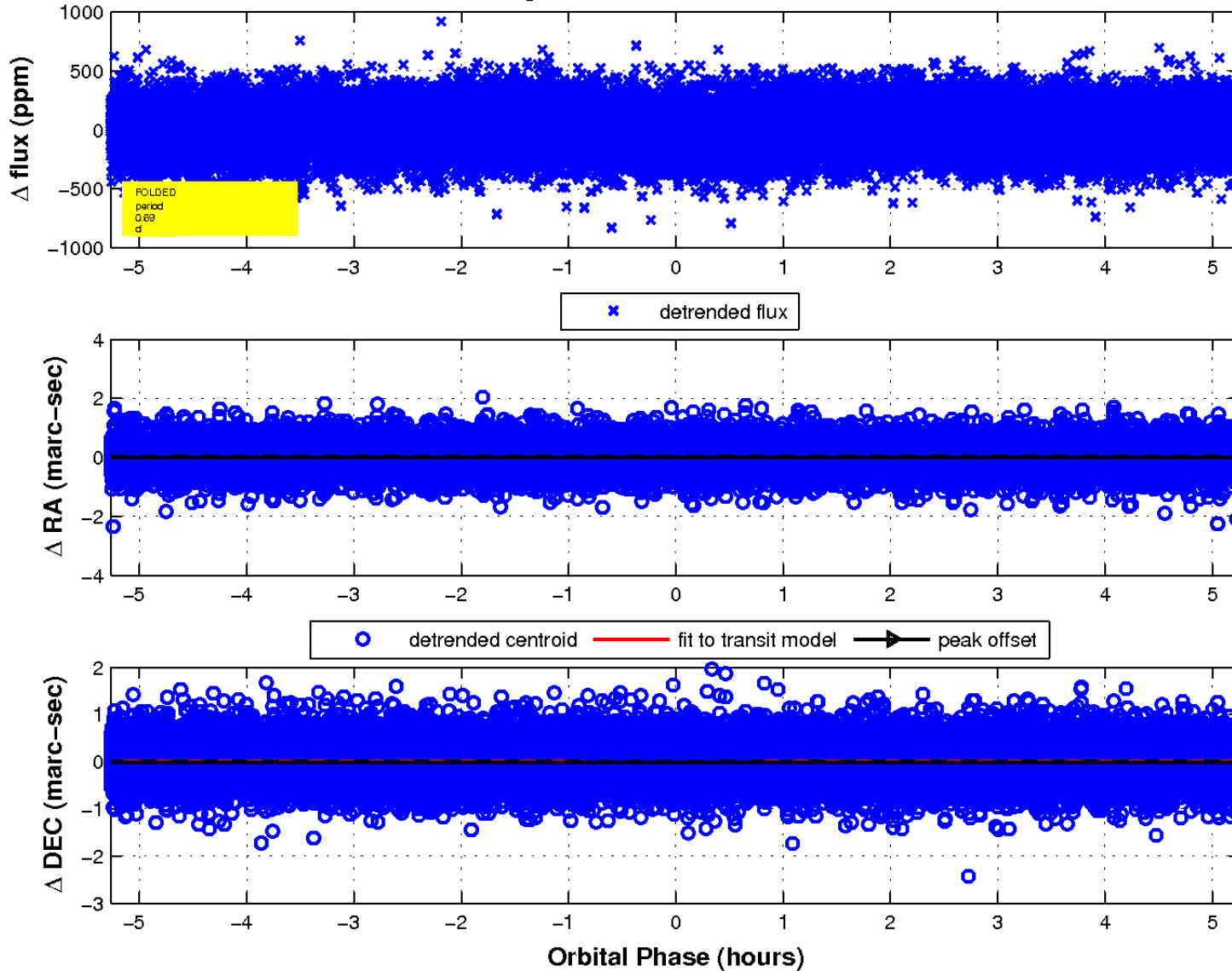
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

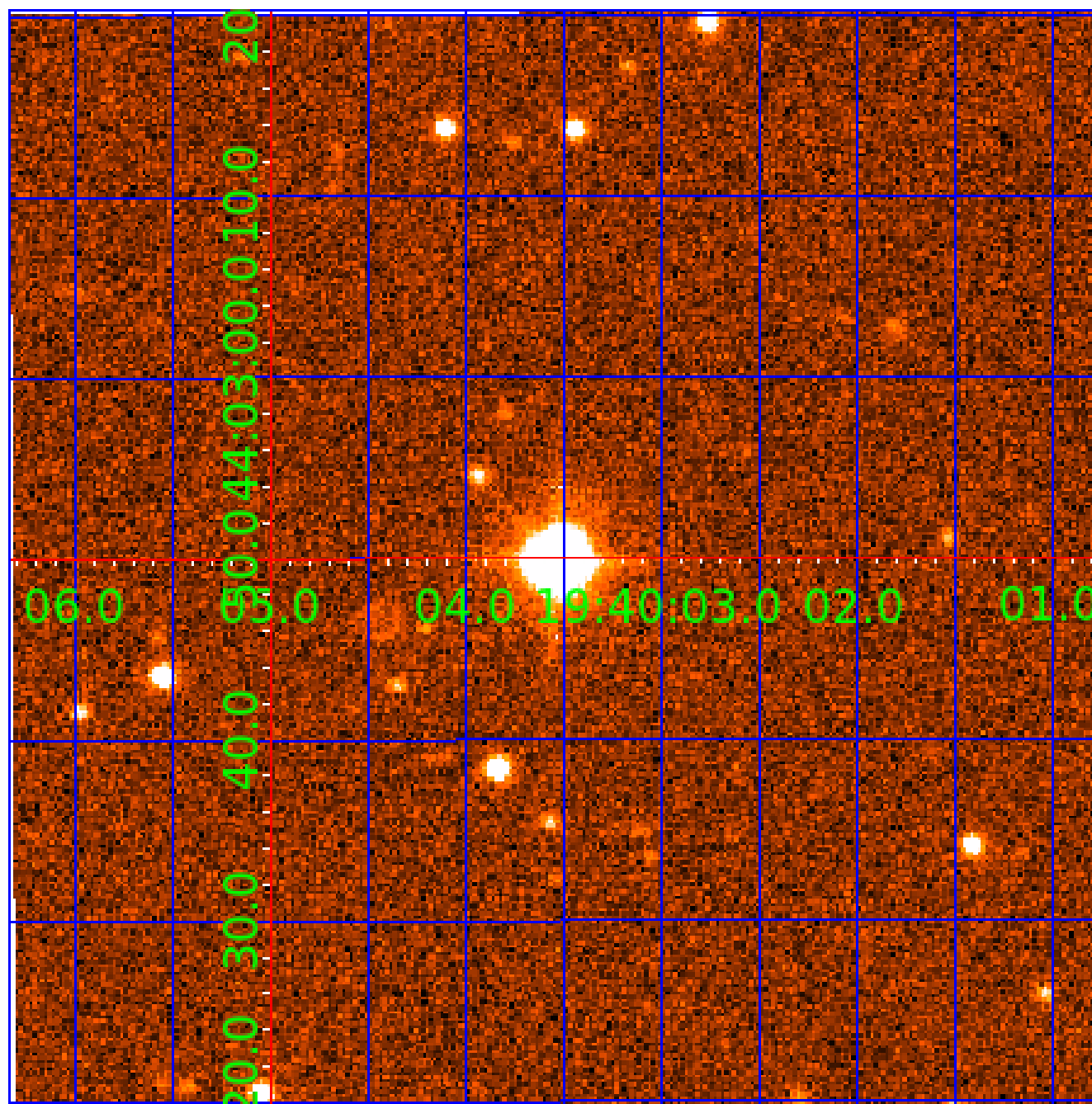


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 008175177

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008175177-01	OBS	No	0.694611	131.728508	16.6	1.756	7.6	6.7	2.71	8739	1.28	94350.55
008175177-02	OBS	No	0.692848	132.042981	34.9	1.079	8.2	9.6	2.71	8739	1.64	94670.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008175177-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
008175177-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT

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

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

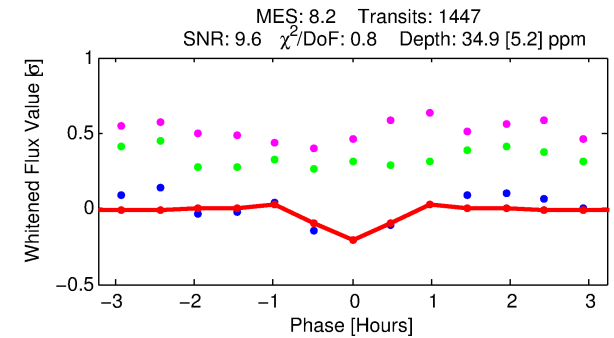
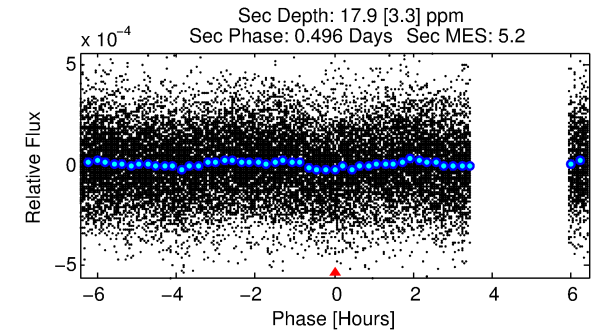
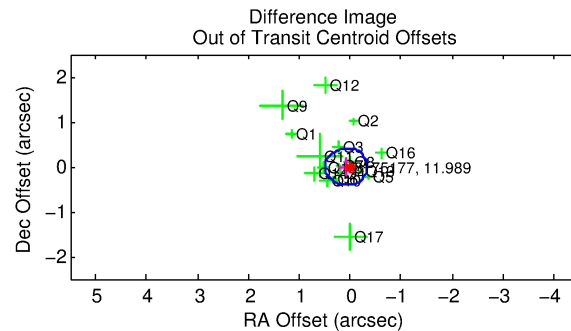
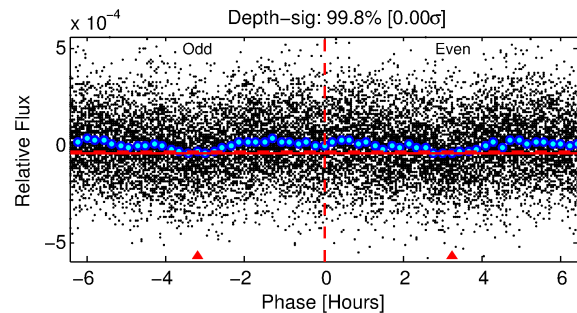
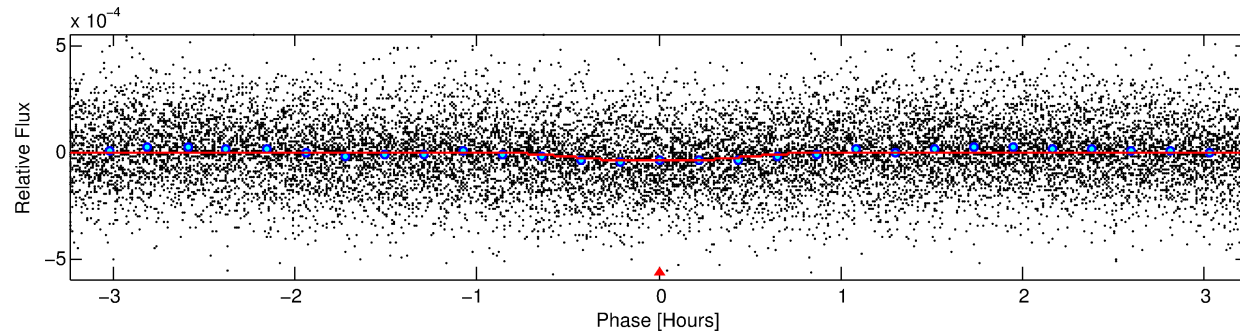
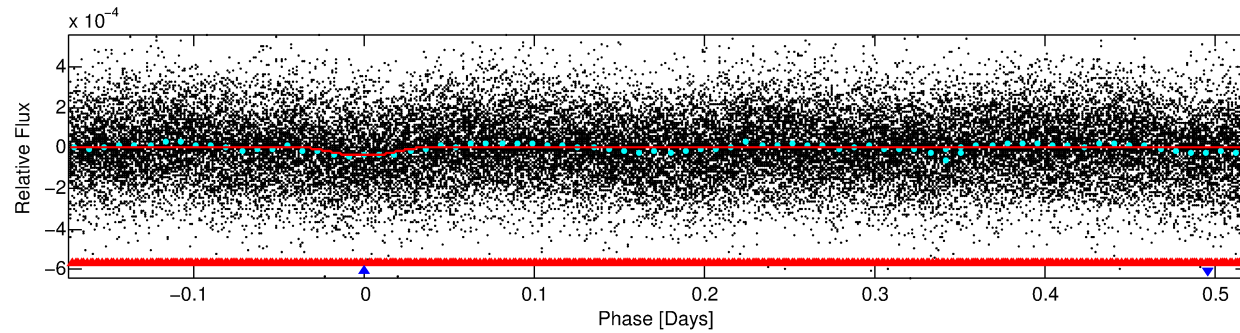
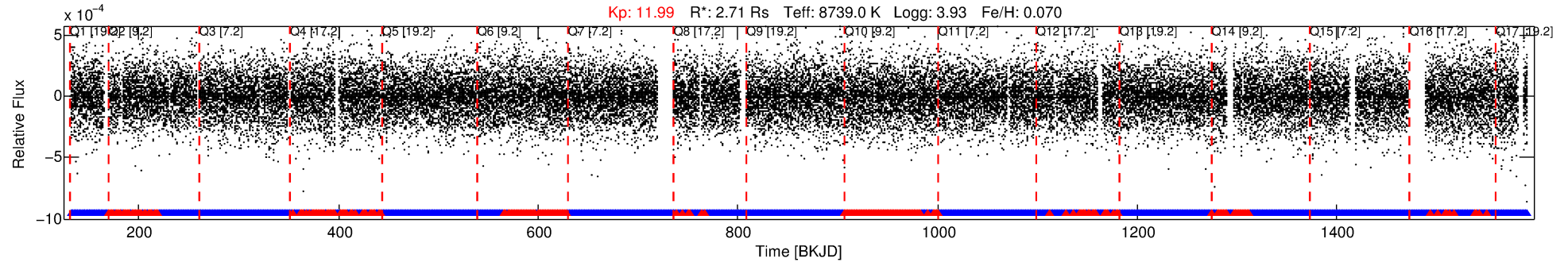
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008175177-02

No Significant Match Found

# DV One-Page Summary

KIC: 8175177 Candidate: 2 of 2 Period: 0.693 d



## DV Fit Results:

Period = 0.69285 [0.00001] d  
Epoch = 132.0430 [0.0017] BKJD  
Rp/R\* = 0.0055 [0.0074]  
a/R\* = 4.96 [39.44]  
b = 0.06 [134.92]  
Seff = 94670.80 [47106.68]  
Teq = 4473 [556] K  
Rp = 1.63 [2.27] Re  
a = 0.0201 [0.0064] AU  
Ag = 1.49 [4.06] [0.12 $\sigma$ ]  
Teffp = 7639 [5139] K [0.61 $\sigma$ ]

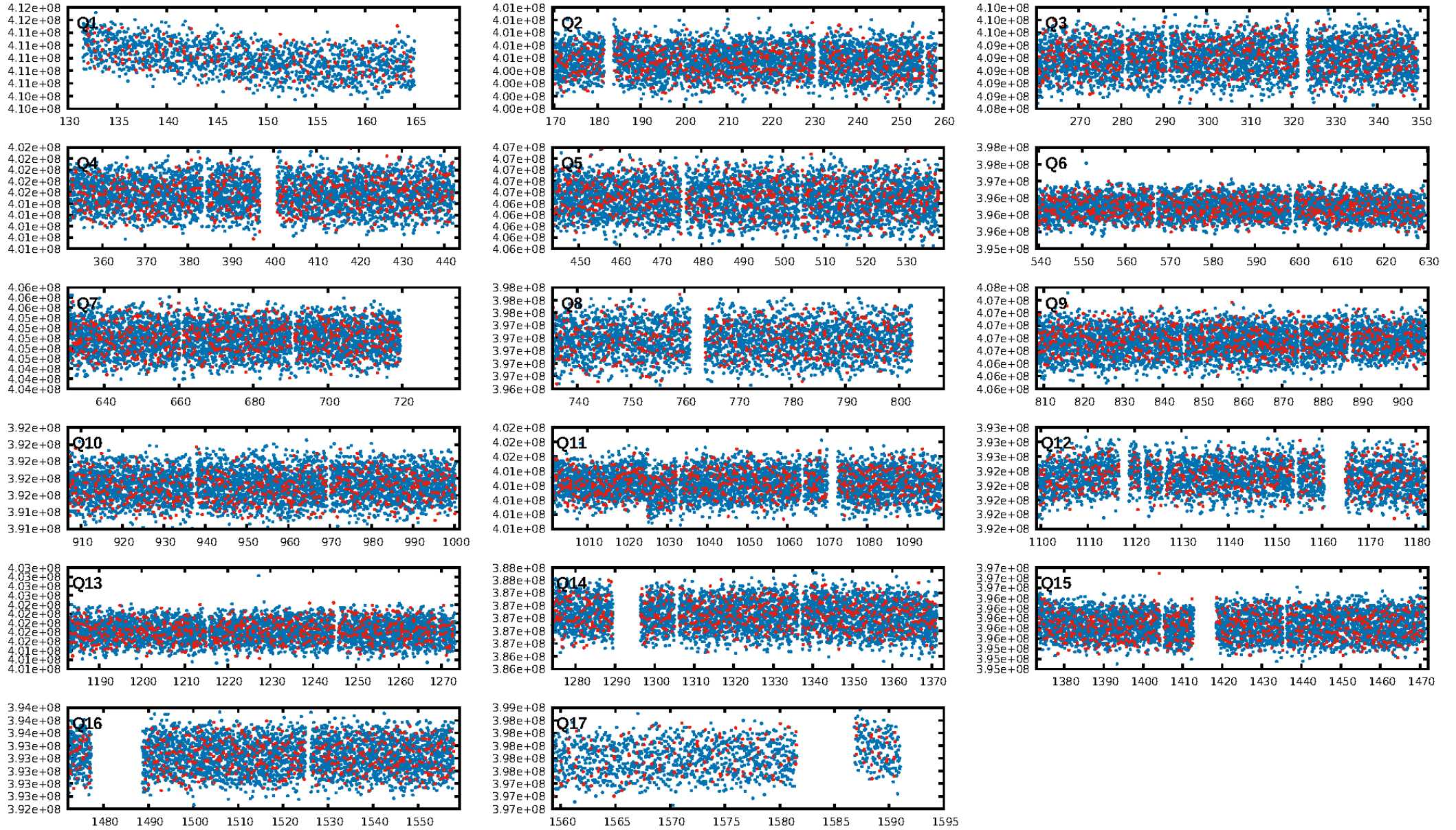
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 1.6% [0.02 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.95e-15  
RollingBand-fgt: 0.74 [1005/1366]  
GhostDiagnostic-chr: 0.868  
Centroid-sig: 40.7%  
Centroid-so: 0.373 arcsec [0.94 $\sigma$ ]  
OotOffset-rm: 0.075 arcsec [0.54 $\sigma$ ]  
KicOffset-rm: 0.079 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.59 [10/17]  
DiffImageOverlap-fno: 0.53 [9/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:06:57 Z

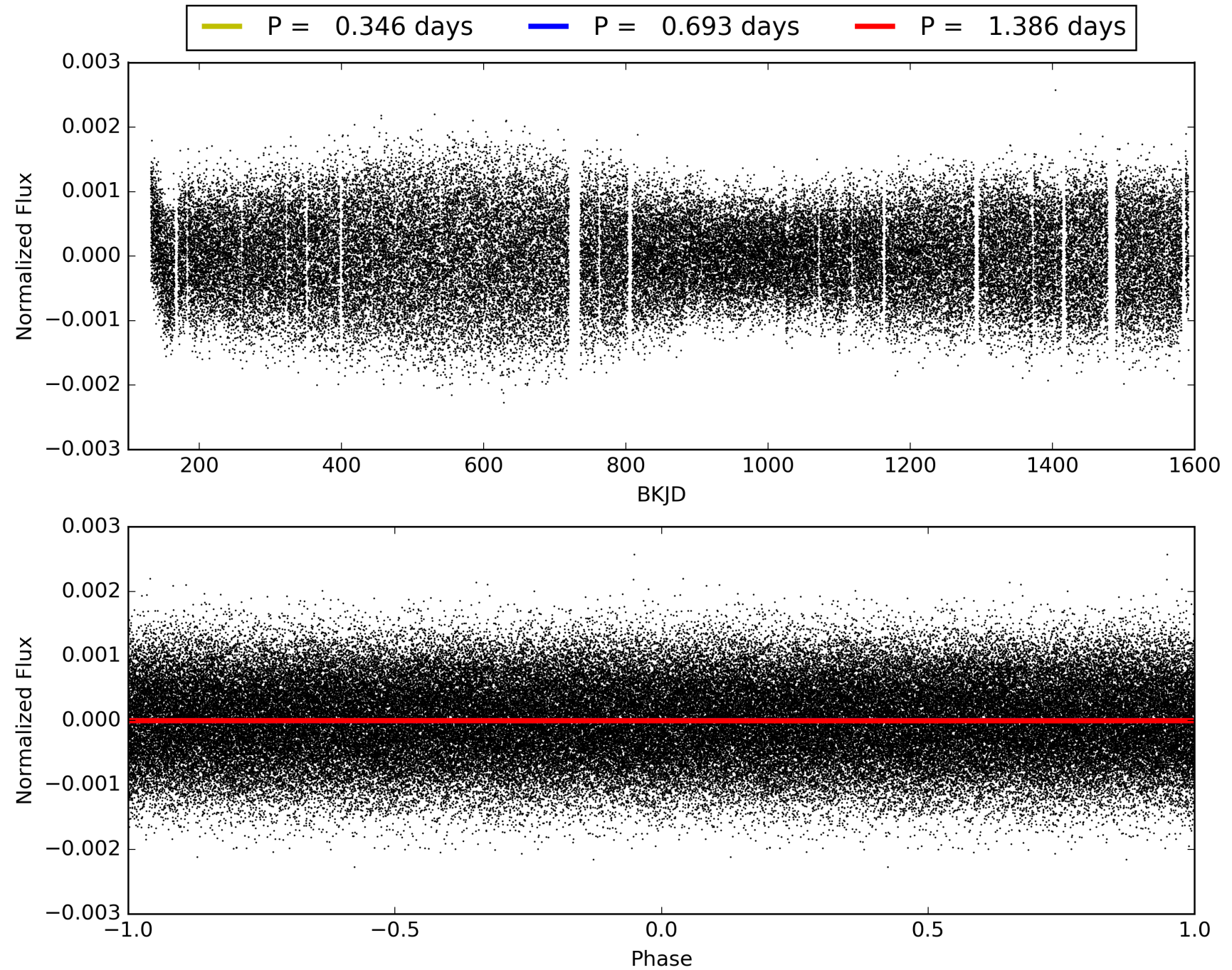
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008175177-02, PDC Light Curves





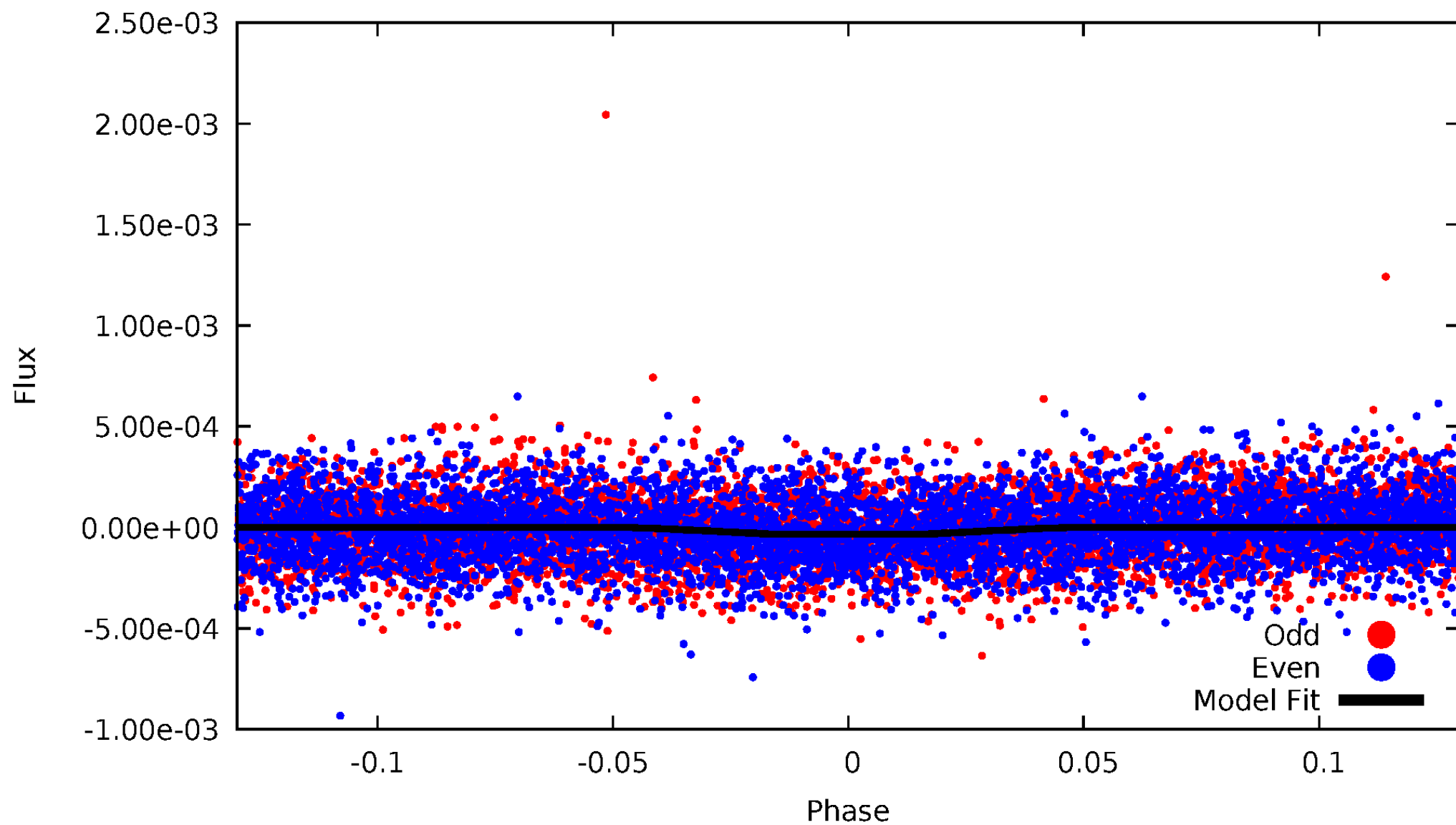
# TCE 008175177-02





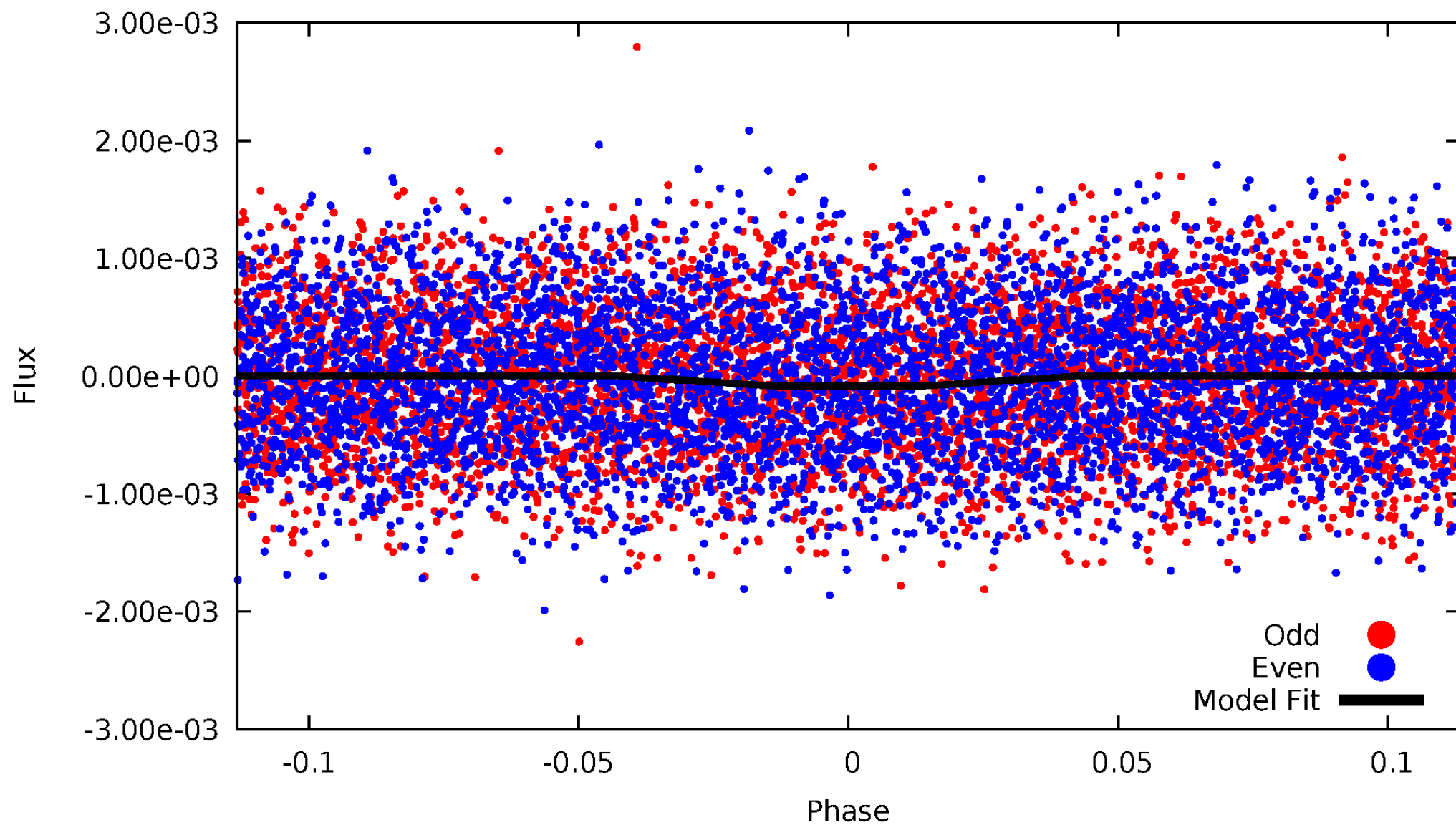
# DV Odd/Even

TCE 008175177-02



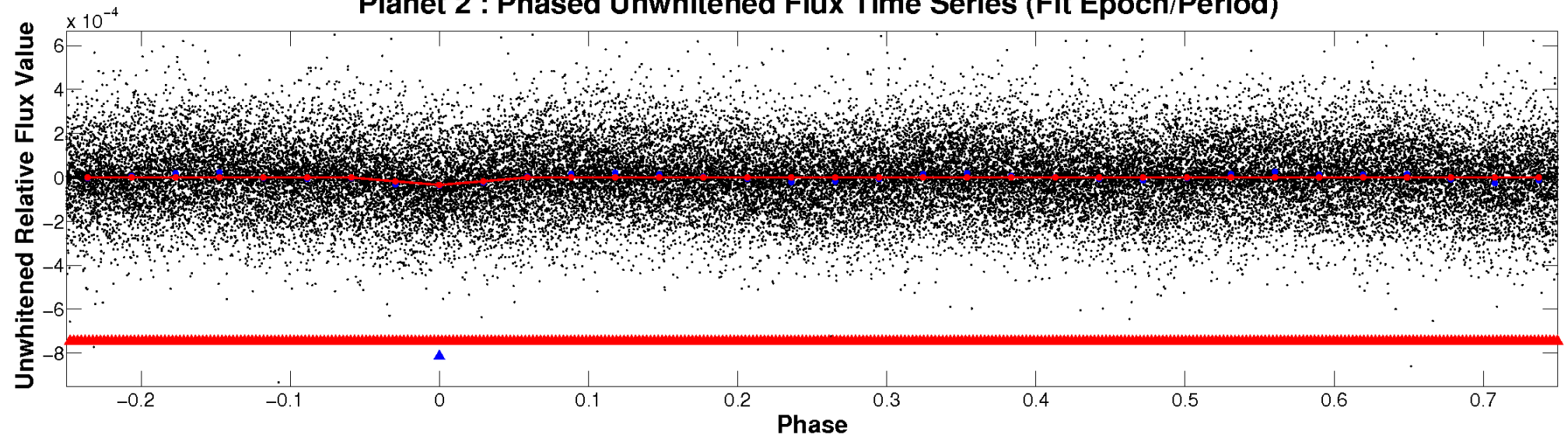
ALT Odd/Even

TCE 008175177-02

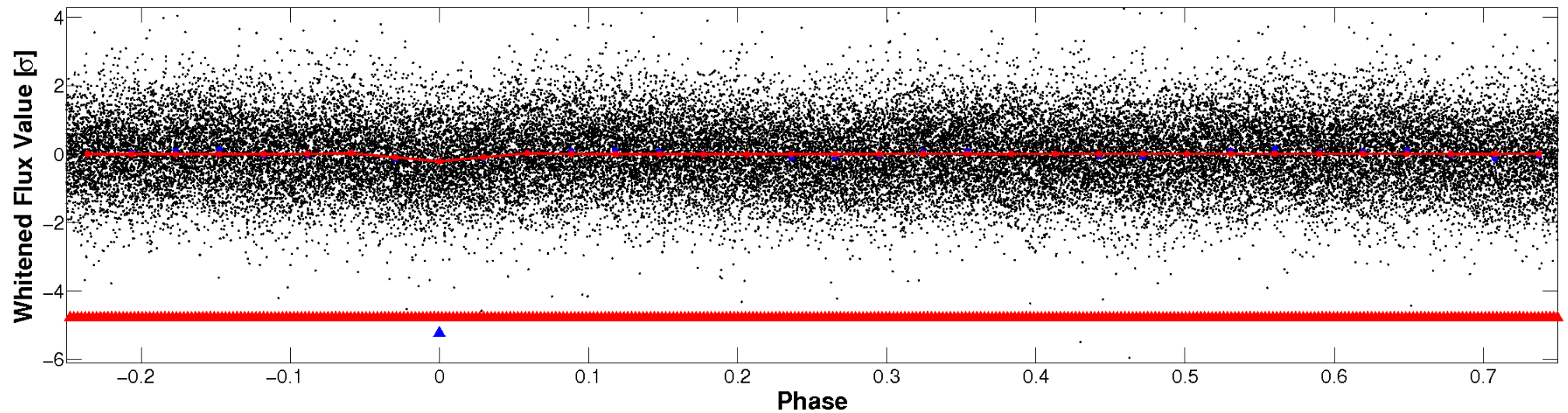


# Non-Whitened Vs. Whitened Light Curve

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

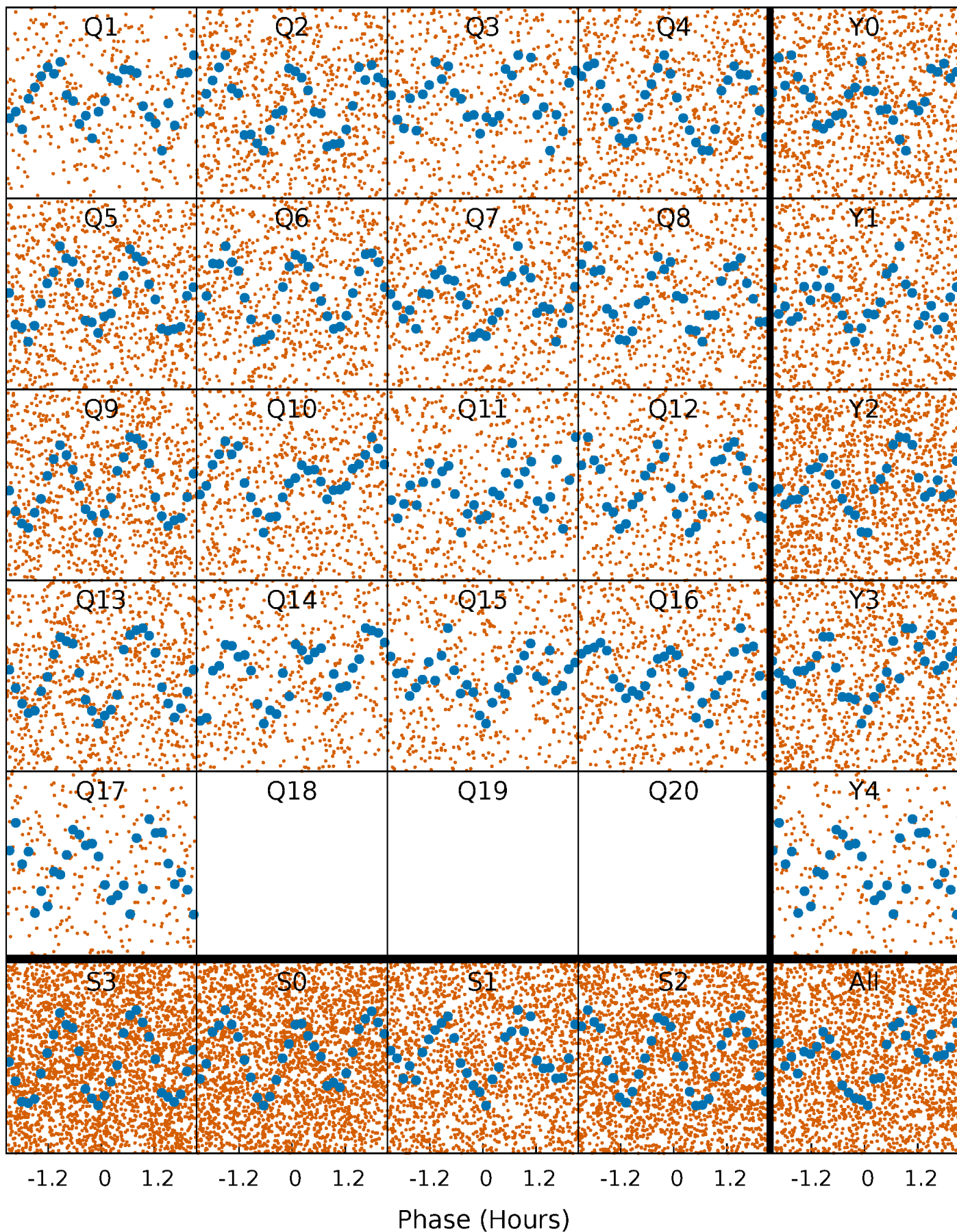


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

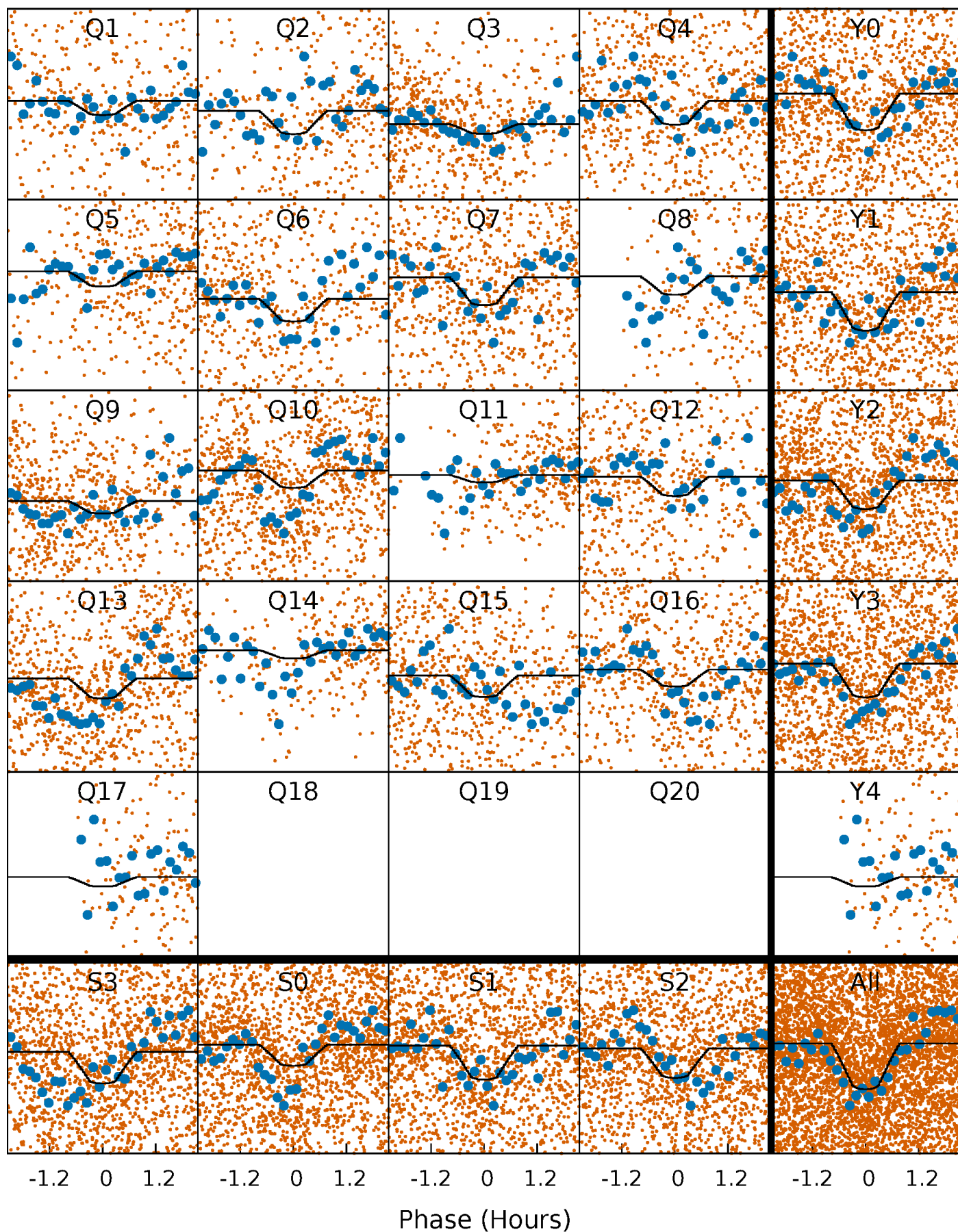
TCE 008175177-02   P= 0.692848 Days    $T_0=132.042981$  (BKJD)





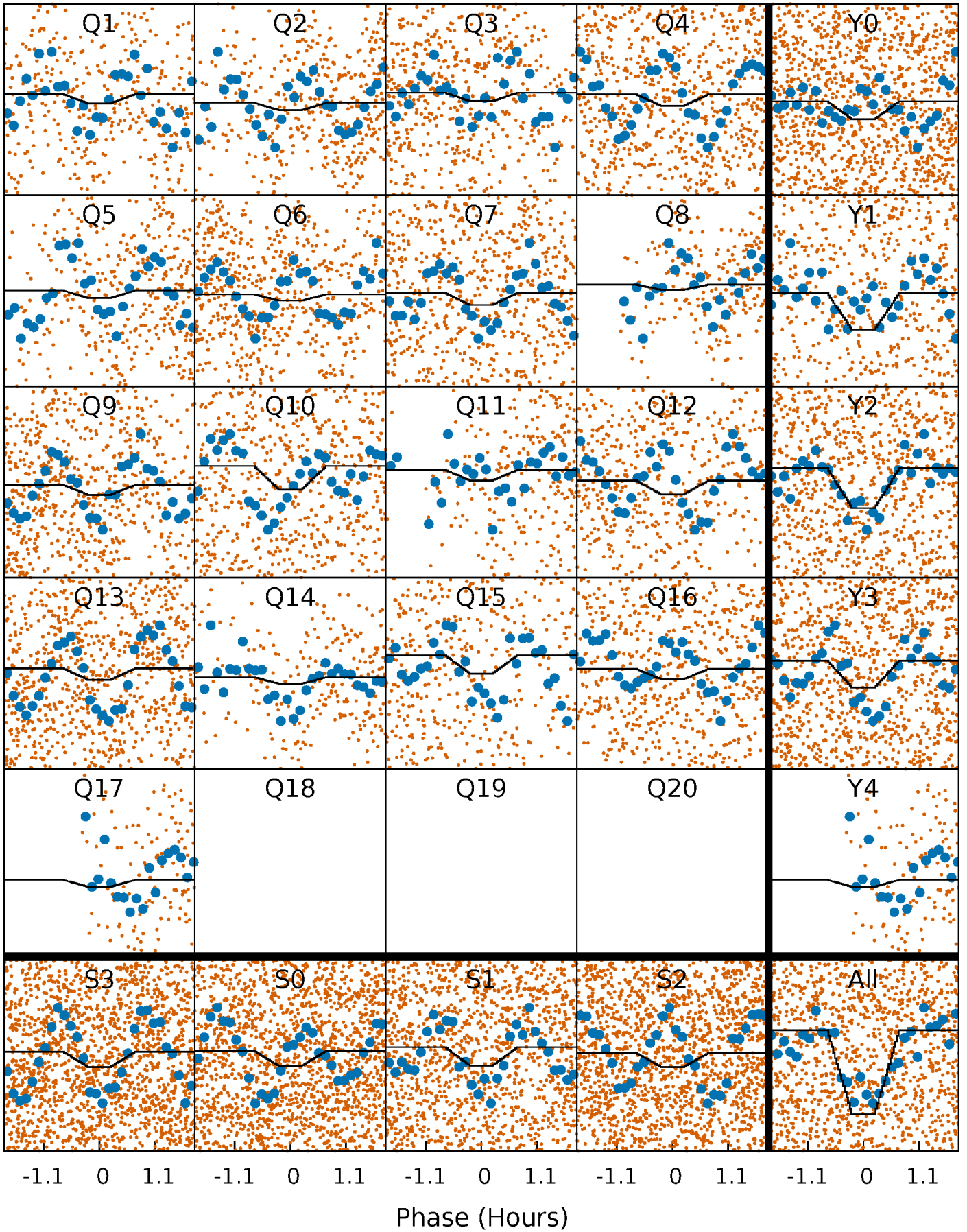
# DV Quarter-Phased Transit Curves

TCE 008175177-02   P= 0.692848 Days    $T_0=132.042981$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008175177-02 P= 0.692845 Days  $T_0=132.039930$  (BKJD)

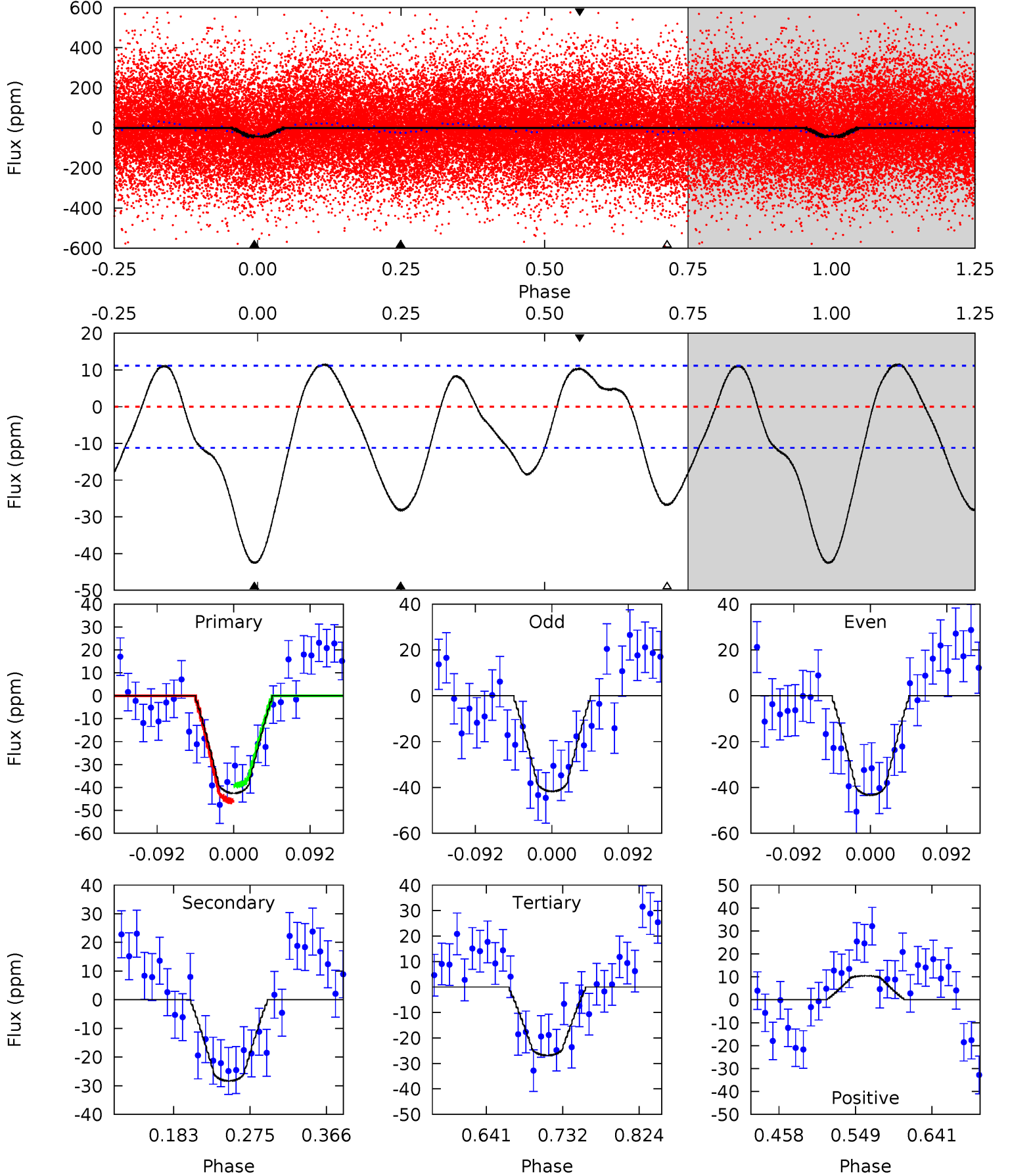




# DV Model-Shift Uniqueness Test

008175177-02, P = 0.692848 Days, E = 131.350133 Days

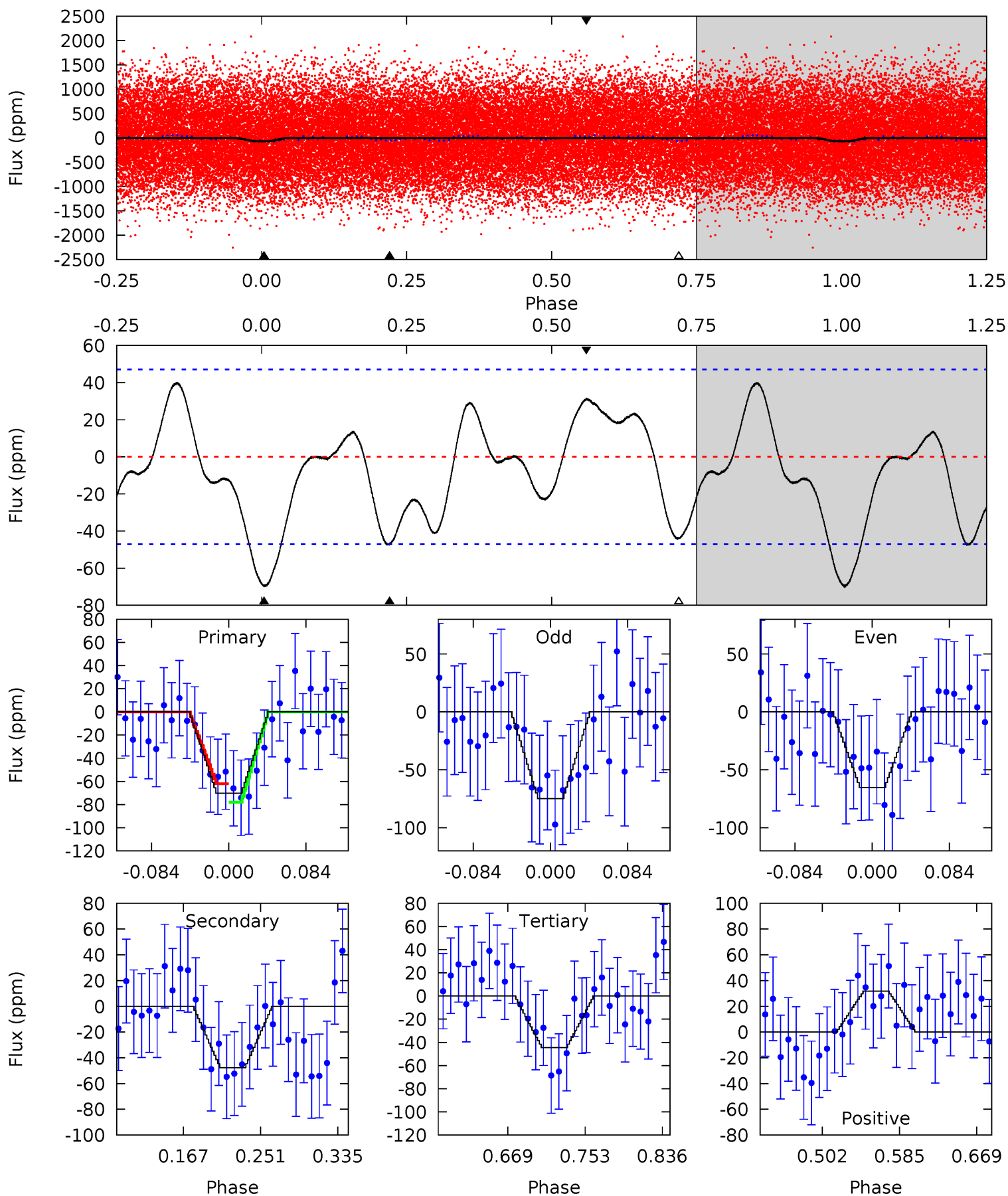
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	11.6	11.0	4.28	4.58	1.69	4.58	6.43	13.1	0.61	7.31	0.33	0.96	0.21	1.42



# Alt Model-Shift Uniqueness Test

008175177-02, P = 0.692845 Days, E = 131.347085 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
6.85	4.66	4.35	3.11	4.60	1.73	1.99	2.51	3.74	0.31	1.55	0.47	0.82	0.36	0.77



### Stellar Parameters For KIC 008175177

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8739^{+273}_{-410}$	$3.927^{+0.252}_{-0.168}$	$0.070^{+0.250}_{-0.600}$	$2.707^{+0.924}_{-1.017}$	$2.257^{+0.346}_{-0.693}$	$0.160^{+0.286}_{-0.080}$
	+3%/-5%	+6%/-4%	+357%/-857%	+34%/-38%	+15%/-31%	+178%/-50%
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 008175177-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-28 \pm 2$	$2.12^{+1.91}_{-1.42}$	$6133^{+554}_{-553}$	$6538^{+9352}_{-2655}$	$1.383^{+11.339}_{-0.997}$
Alt.	$-48 \pm 10$	$2.75^{+2.13}_{-1.66}$	$6176^{+541}_{-589}$	$6583^{+6724}_{-2462}$	$1.415^{+7.641}_{-0.990}$

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

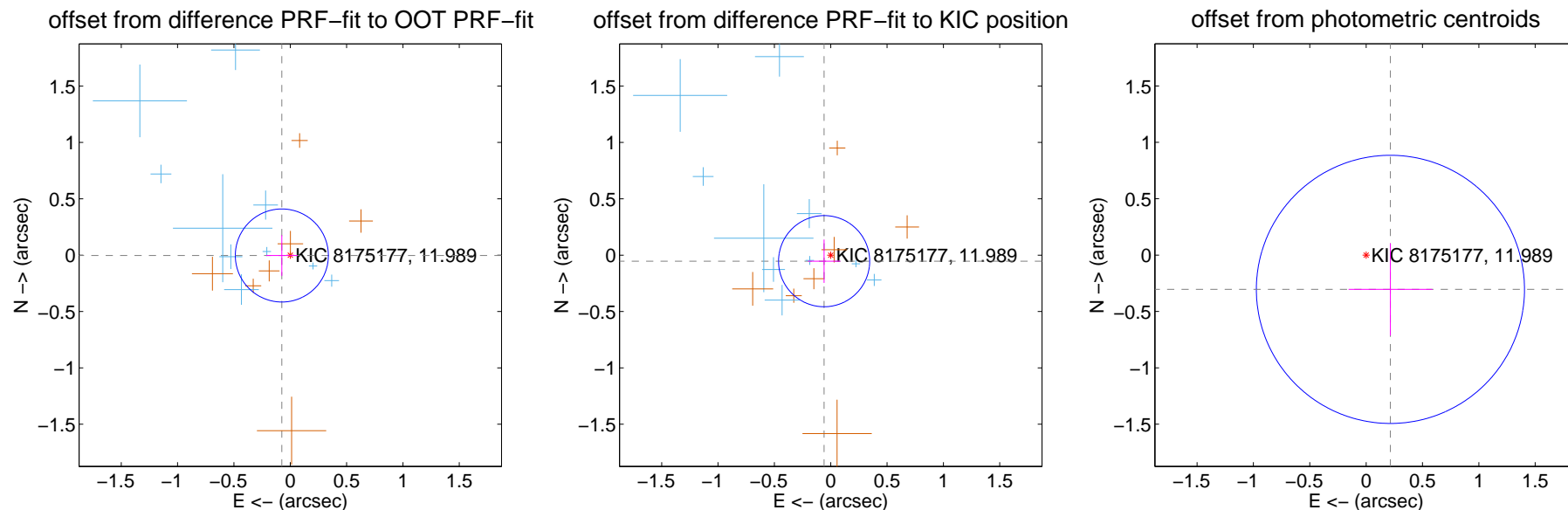
## DV Centroid Data

Supplemental centroid analysis for 008175177-02. **Kepler magnitude: 11.99.** Transit SNR 9.56

There are 10 quarters with good PRF difference image offsets

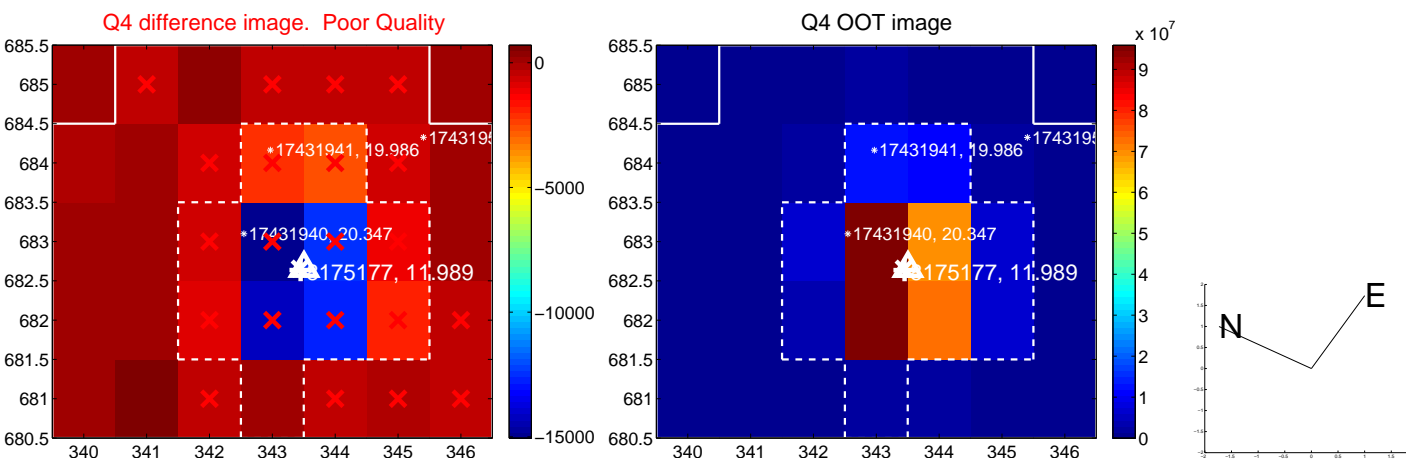
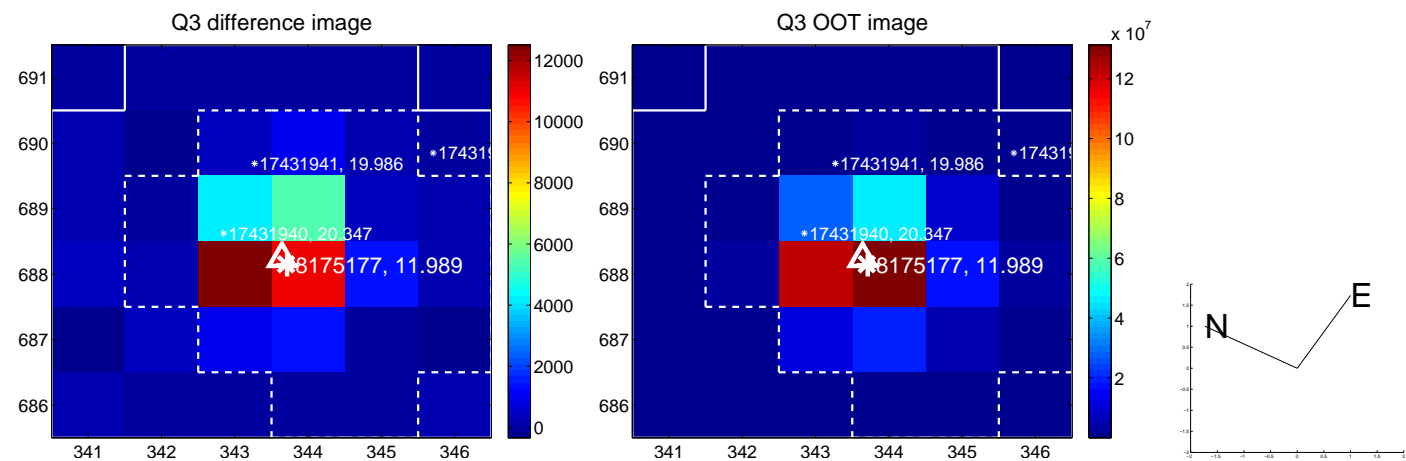
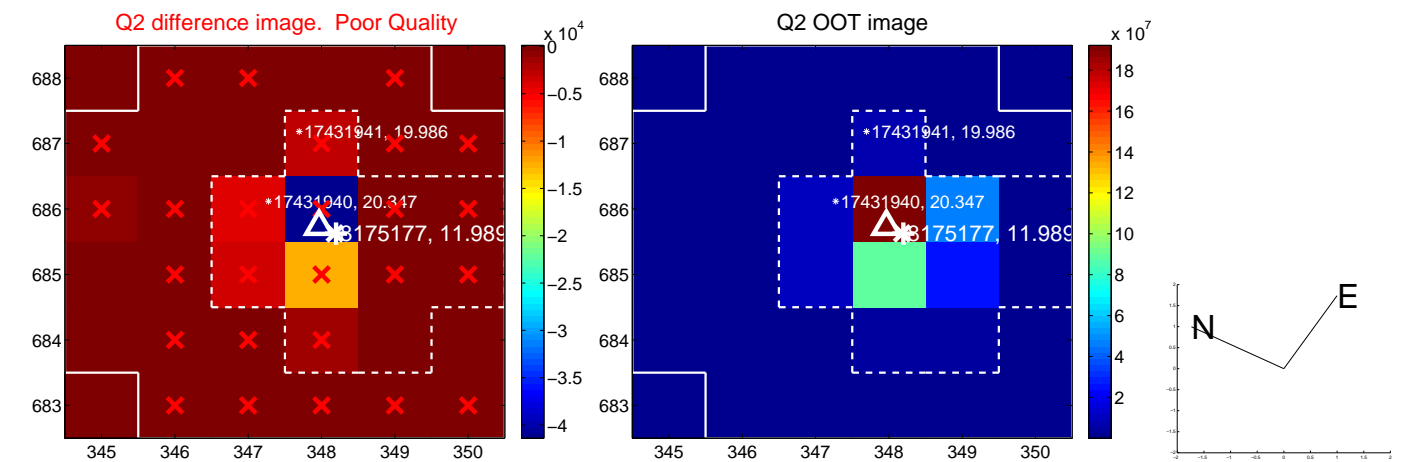
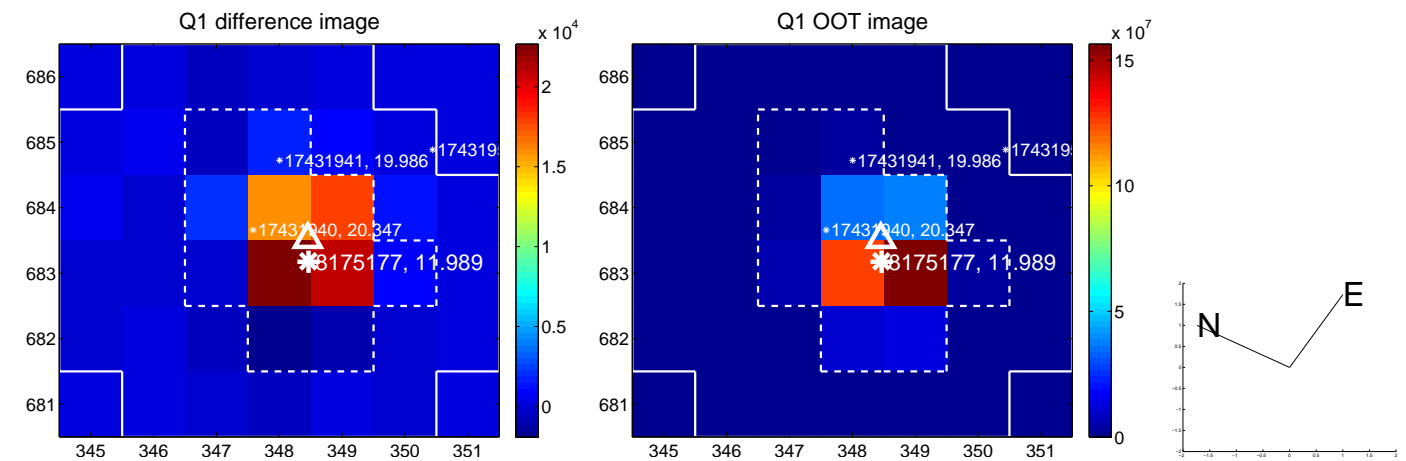
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.075 \pm 0.138$	0.54	$0.075 \pm 0.140$	$-0.003 \pm 0.180$
PRF-fit source offset from KIC position	$0.079 \pm 0.135$	0.59	$0.059 \pm 0.144$	$-0.053 \pm 0.192$
photometric centroid source offset	$0.37 \pm 0.40$	0.94	$-0.22 \pm 0.37$	$-0.30 \pm 0.41$

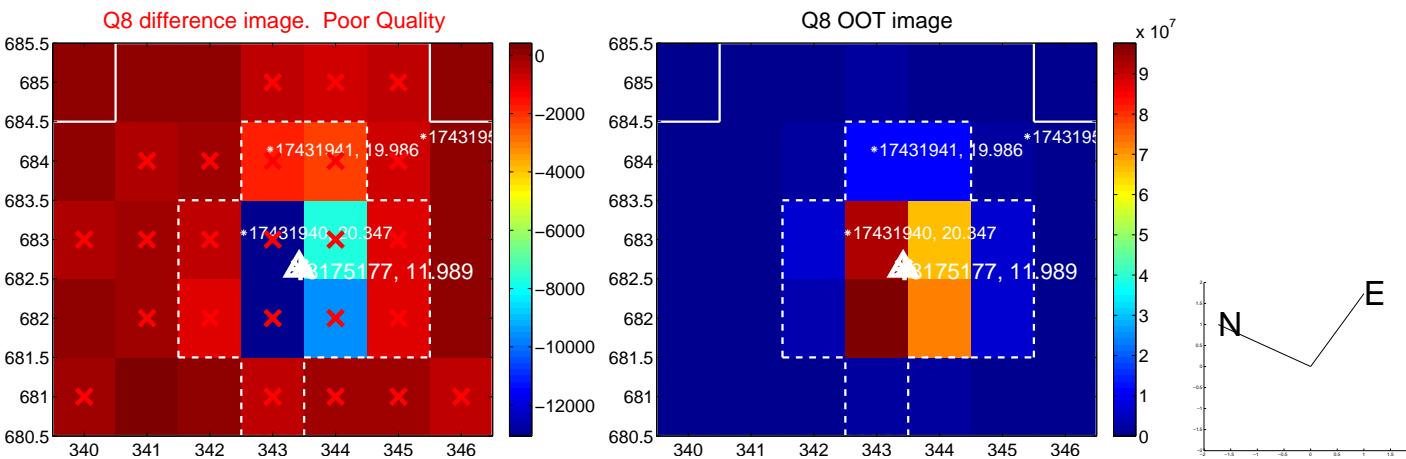
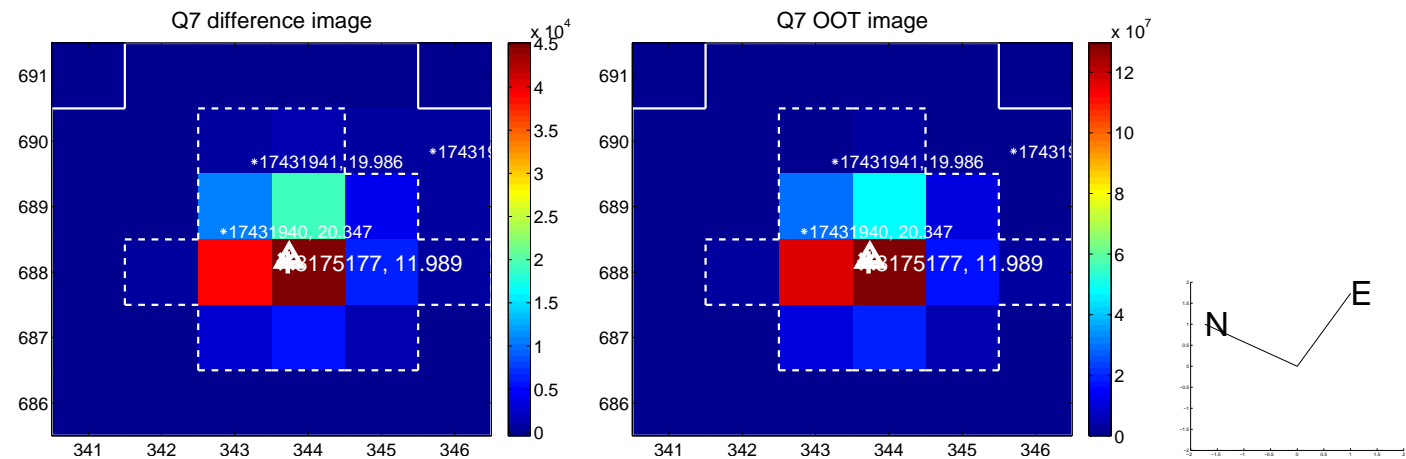
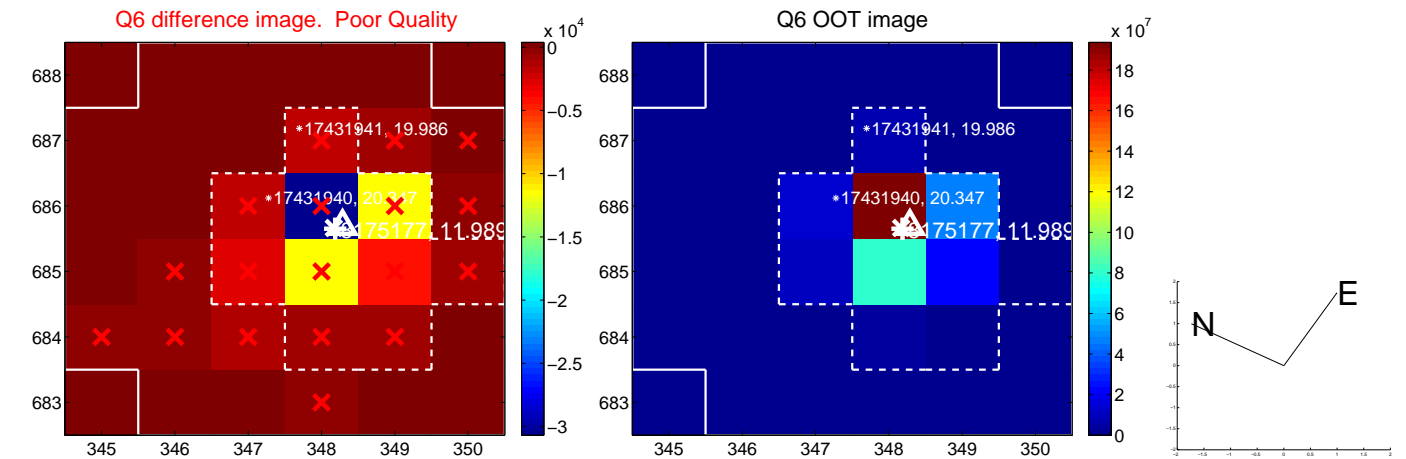
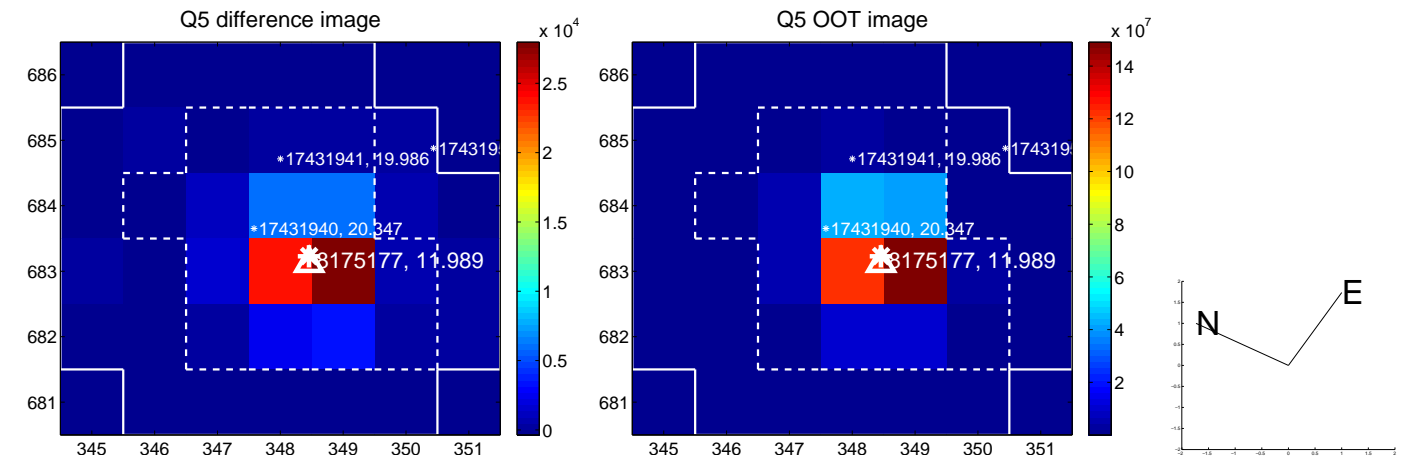


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

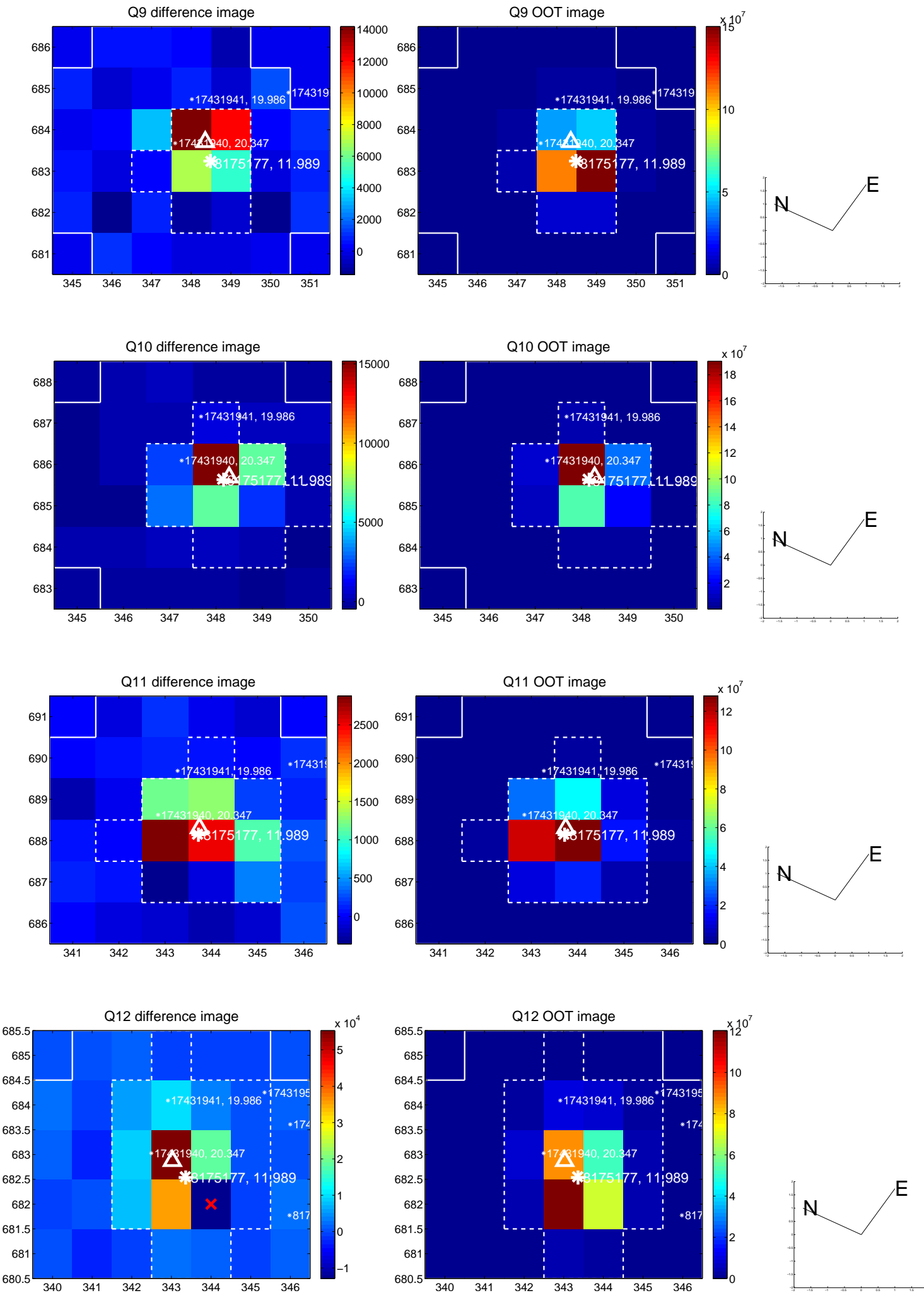


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

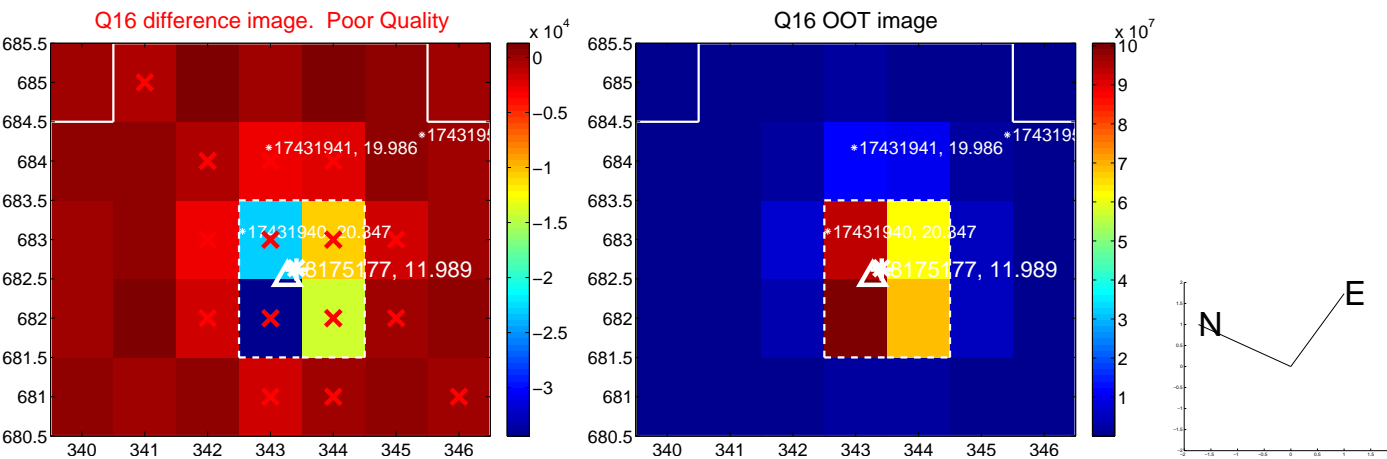
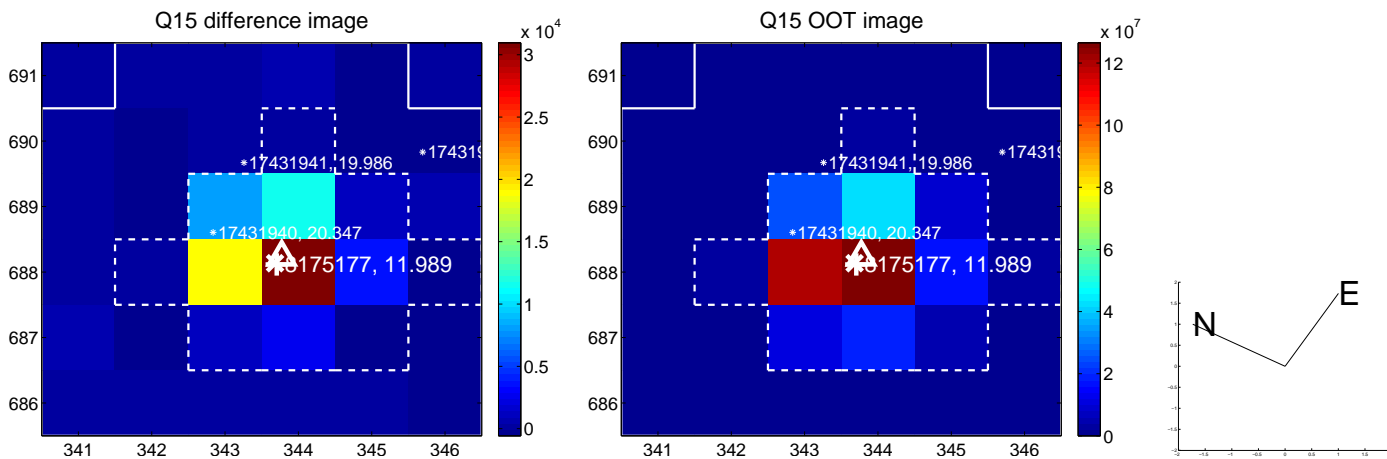
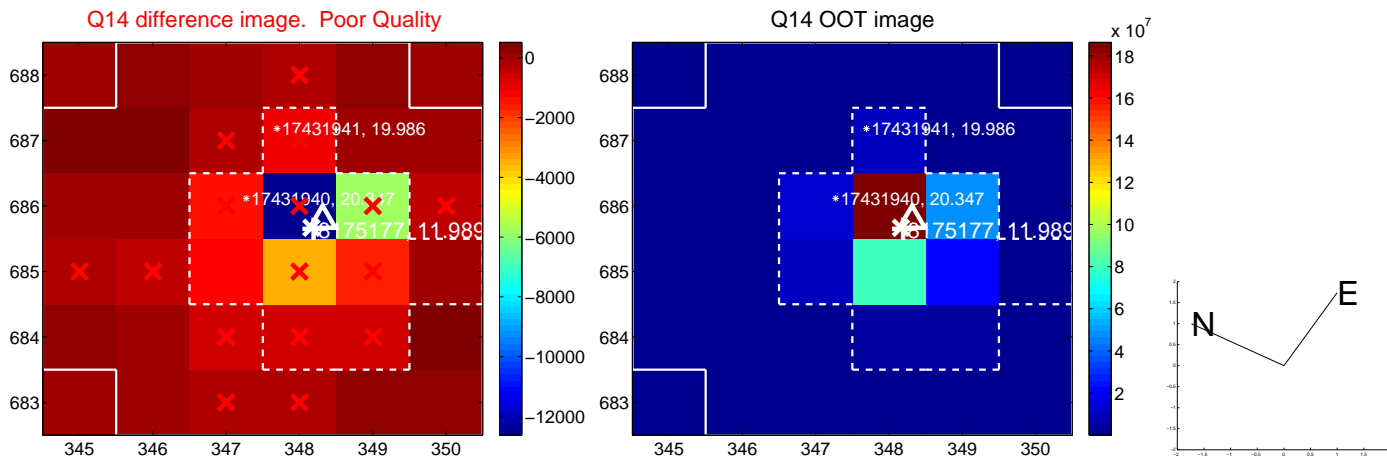
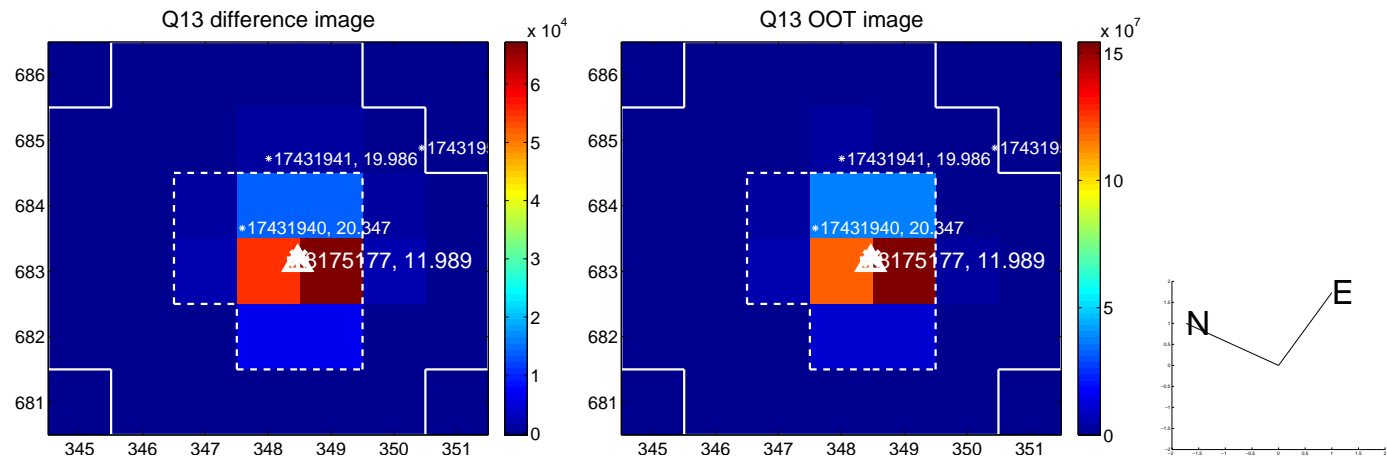




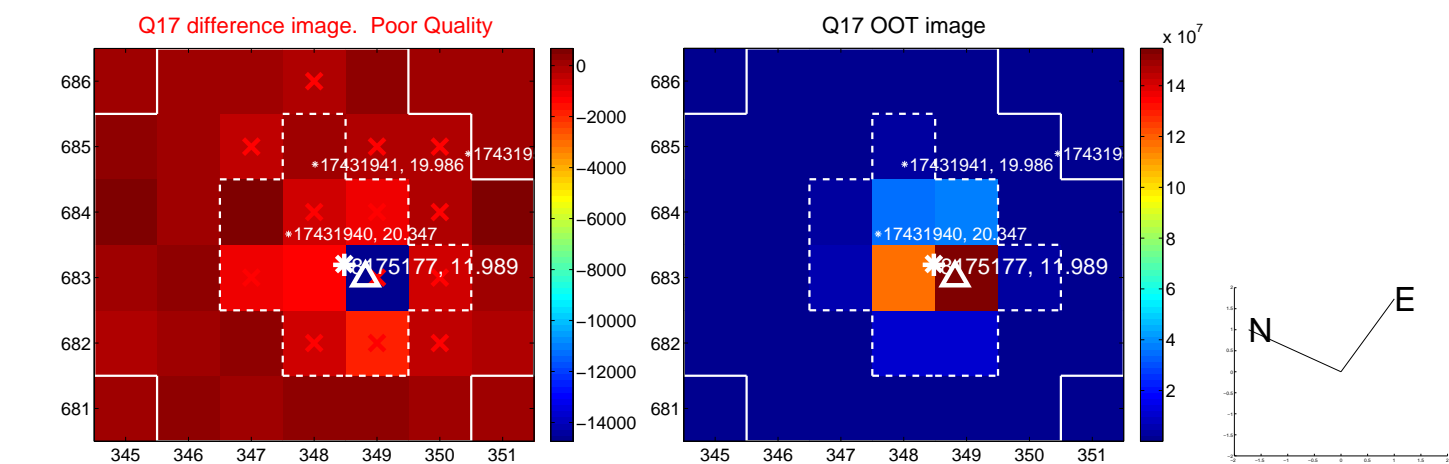
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



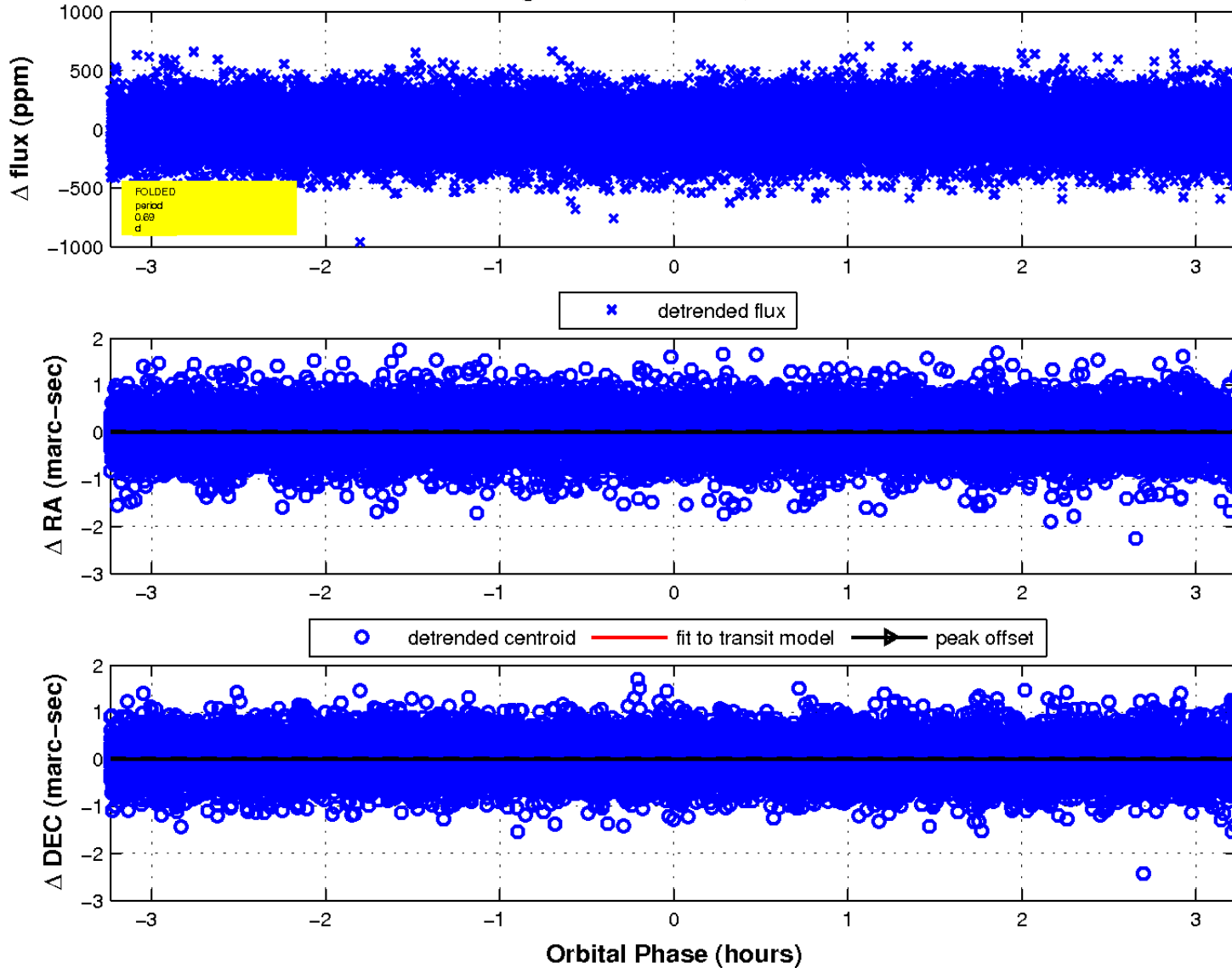
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

