

# KIC 009773980

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009773980-01	OBS	4691.01	3.387966	133.926347	75.0	1.907	9.6	10.1	1.25	5702	1.24	753.70

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009773980-01	OBS	PC	0.96	0	0	0	0	NO_COMMENT

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

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

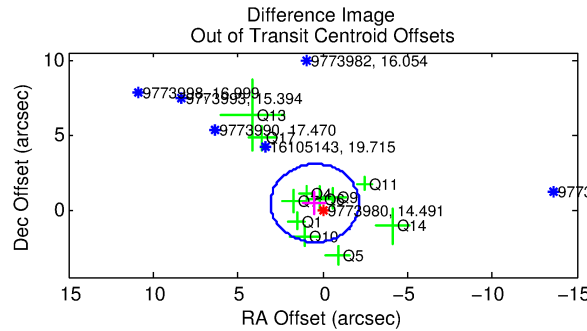
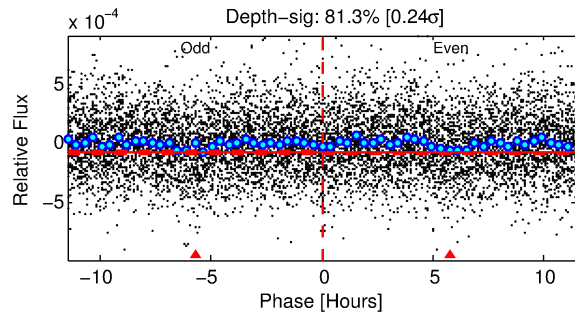
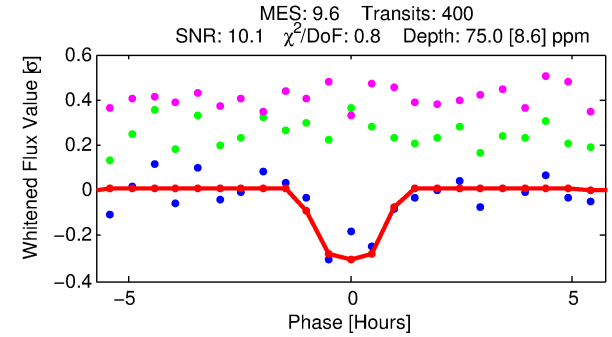
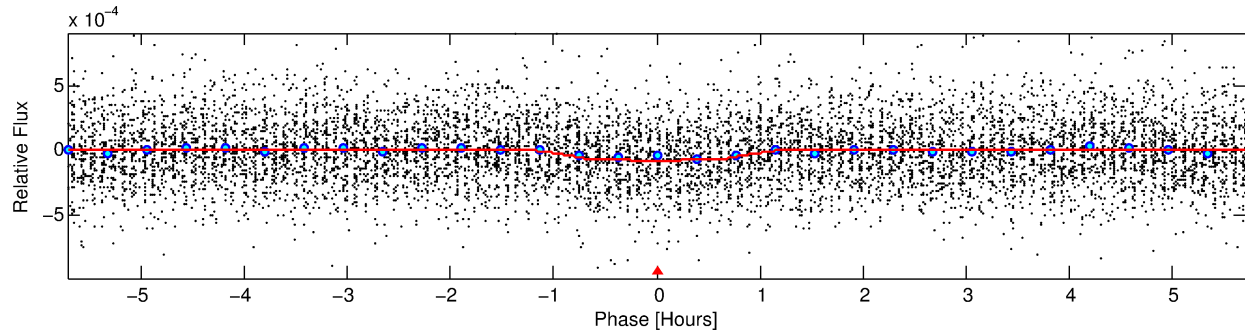
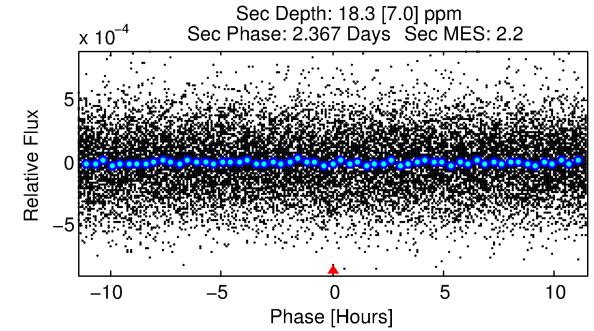
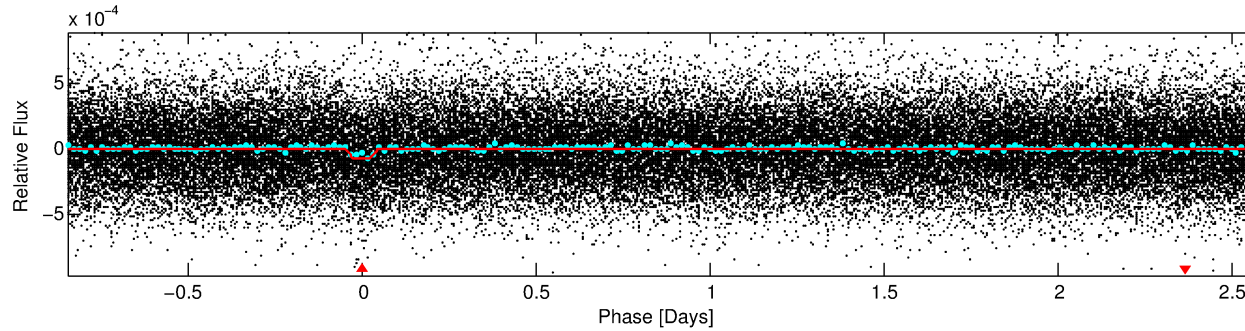
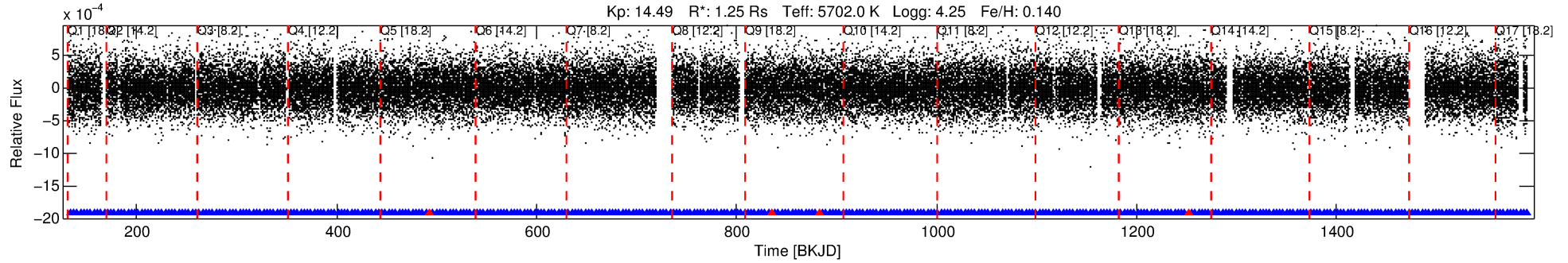
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009773980-01

No Significant Match Found

# DV One-Page Summary

KIC: 9773980 Candidate: 1 of 1 Period: 3.388 d  
KOI: K04691.01 Corr: 0.940



## DV Fit Results:

Period = 3.38797 [0.00002] d  
Epoch = 133.9263 [0.0036] BKJD  
Rp/R\* = 0.0091 [0.0070]  
a/R\* = 7.29 [24.38]  
b = 0.86 [1.08]  
Seff = 753.70 [208.88]  
Teff = 1336 [93] K  
Rp = 1.24 [0.97] Re  
a = 0.0441 [0.0073] AU  
Ag = 12.72 [20.26] [0.58σ]  
Teffp = 3901 [1532] K [1.67σ]

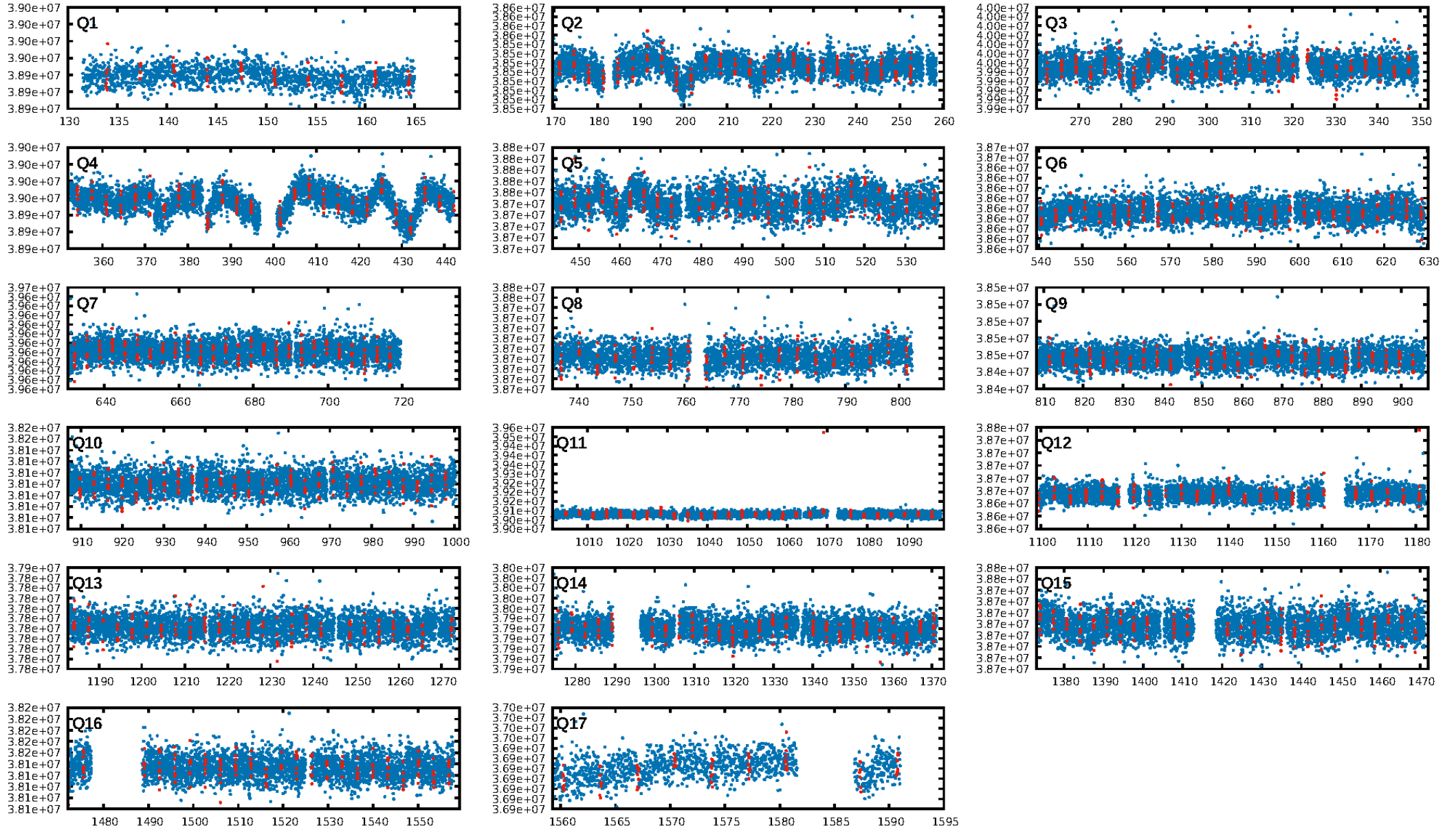
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.14e-22  
RollingBand-fgt: 0.99 [377/381]  
GhostDiagnostic-chr: -44.05  
Centroid-sig: 9.9%  
Centroid-so: 2.260 arcsec [1.85σ]  
OotOffset-rm: 0.623 arcsec [0.72σ]  
KicOffset-rm: 0.672 arcsec [0.72σ]  
OotOffset-st: 3/2/1/5 [11]  
KicOffset-st: 3/2/1/5 [11]  
DiffImageQuality-fgm: 0.45 [5/11]  
DiffImageOverlap-fno: 1.00 [17/17]

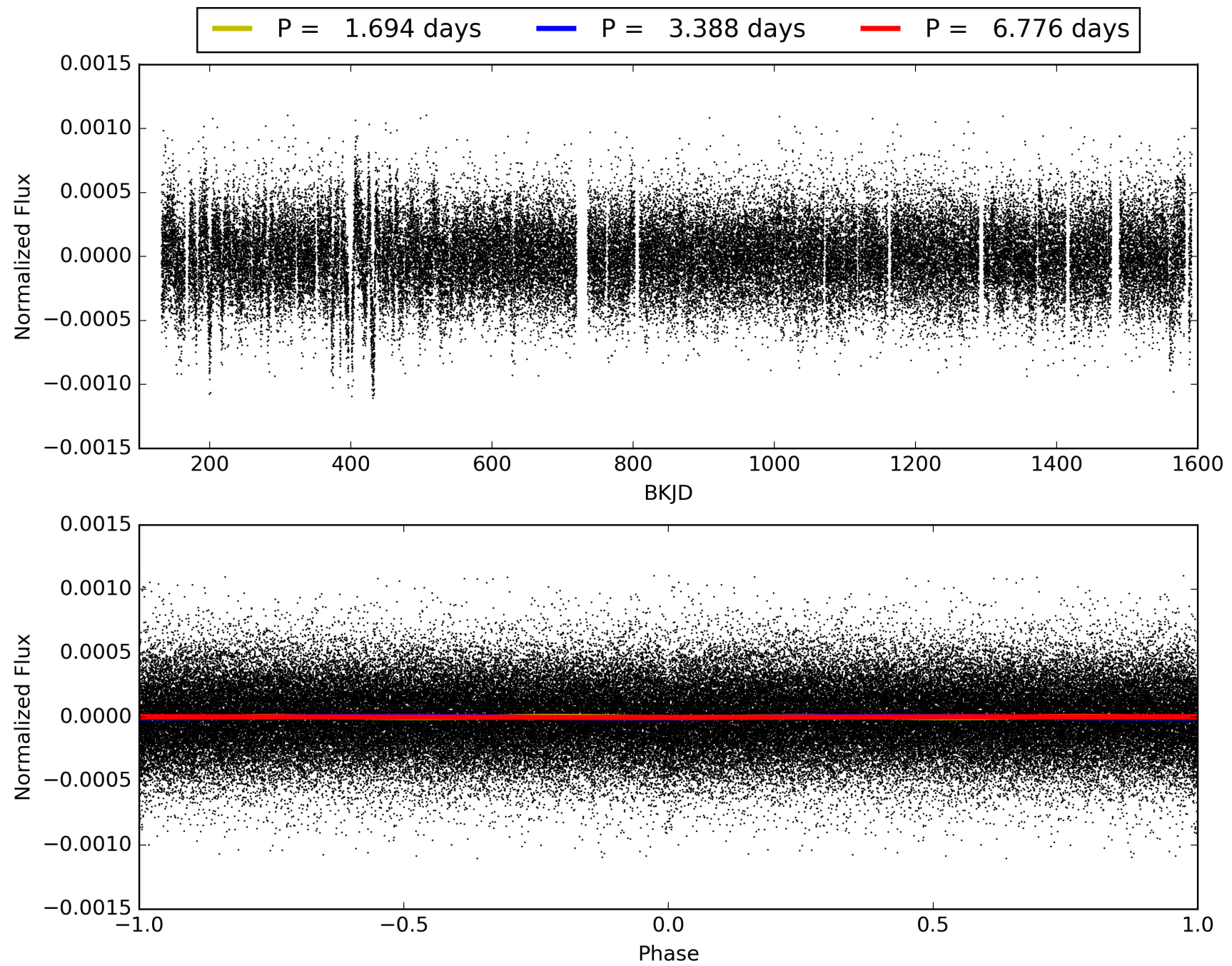
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:31:32 Z

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

# TCE 009773980-01, PDC Light Curves

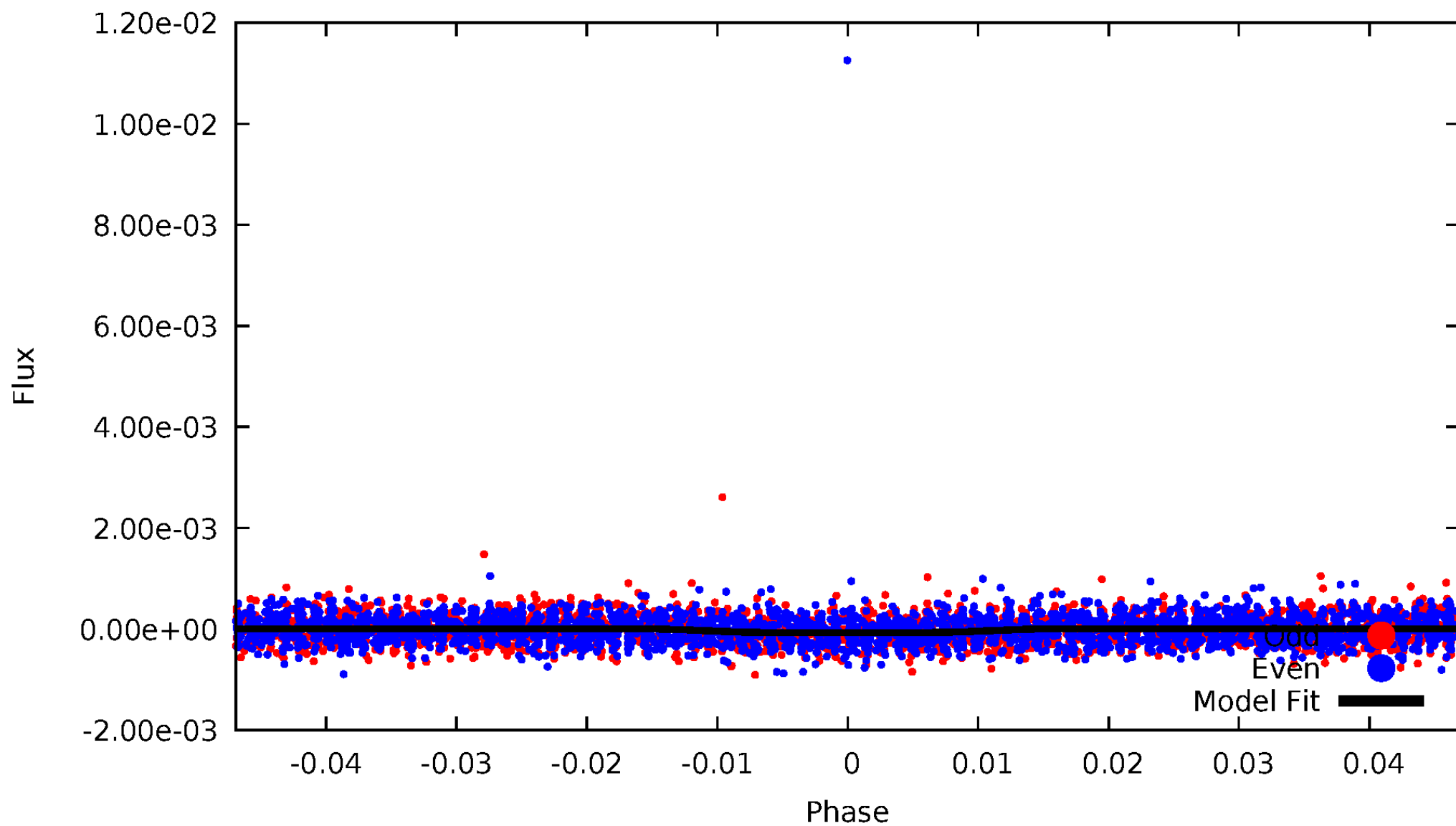


TCE 009773980-01



# DV Odd/Even

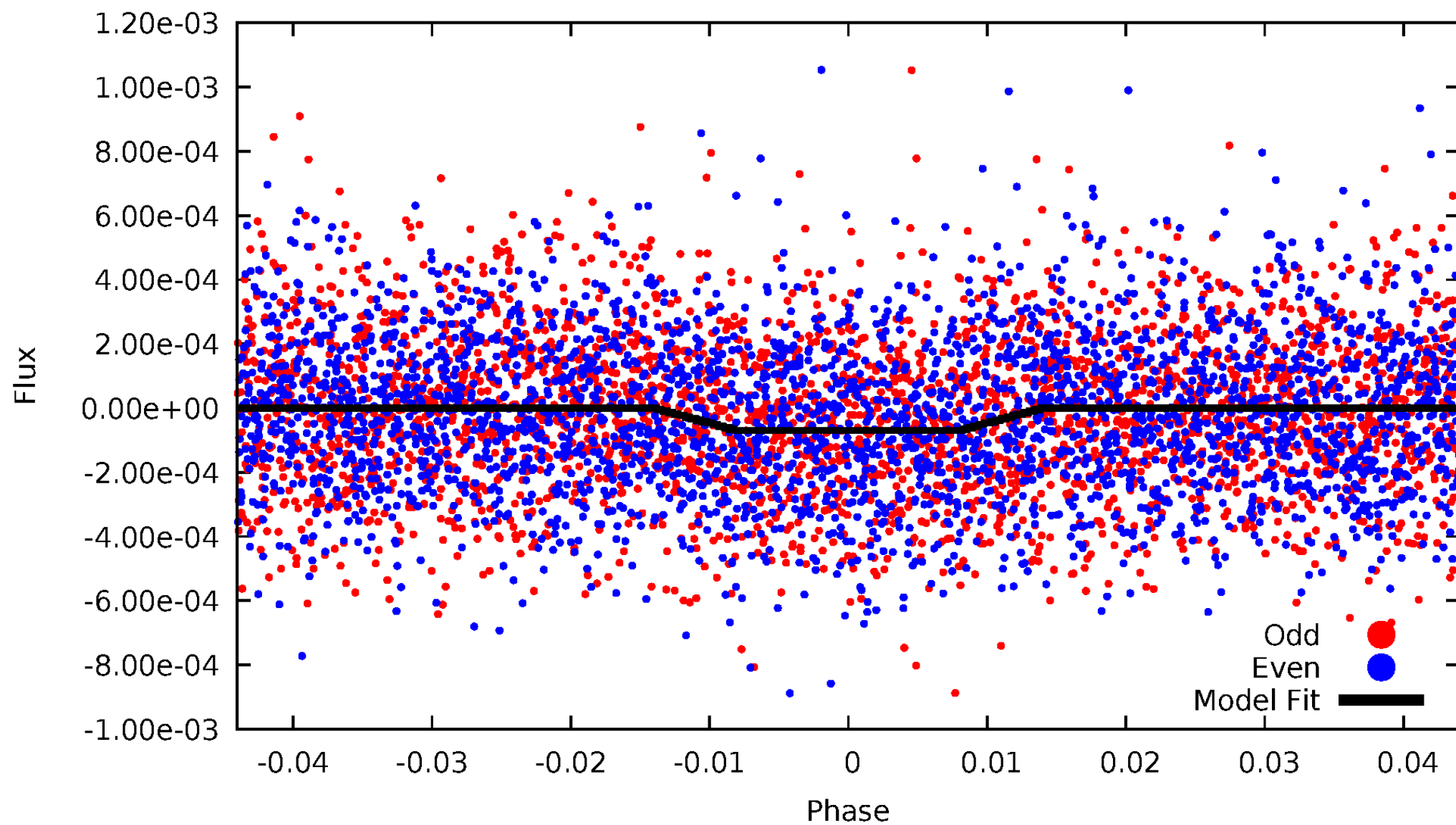
TCE 009773980-01





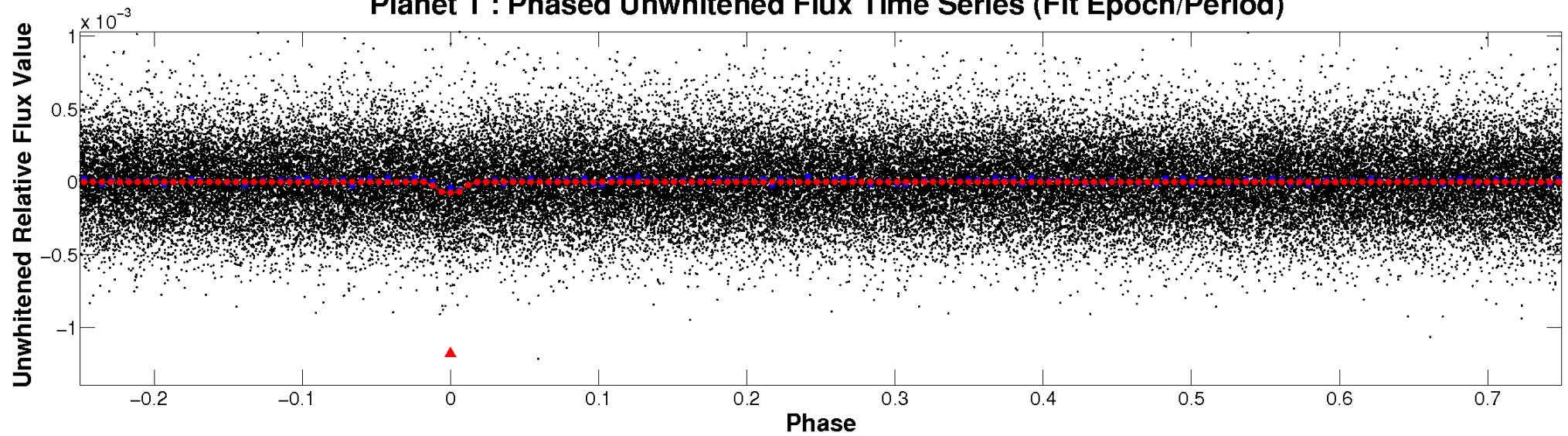
# ALT Odd/Even

TCE 009773980-01

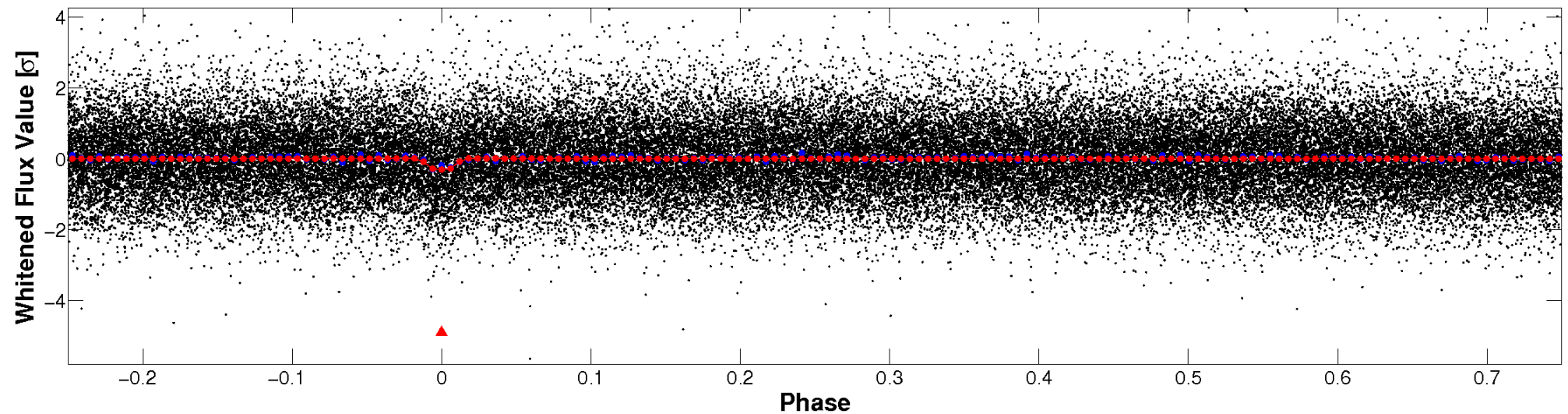


# Non-Whitened Vs. Whitened Light Curve

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

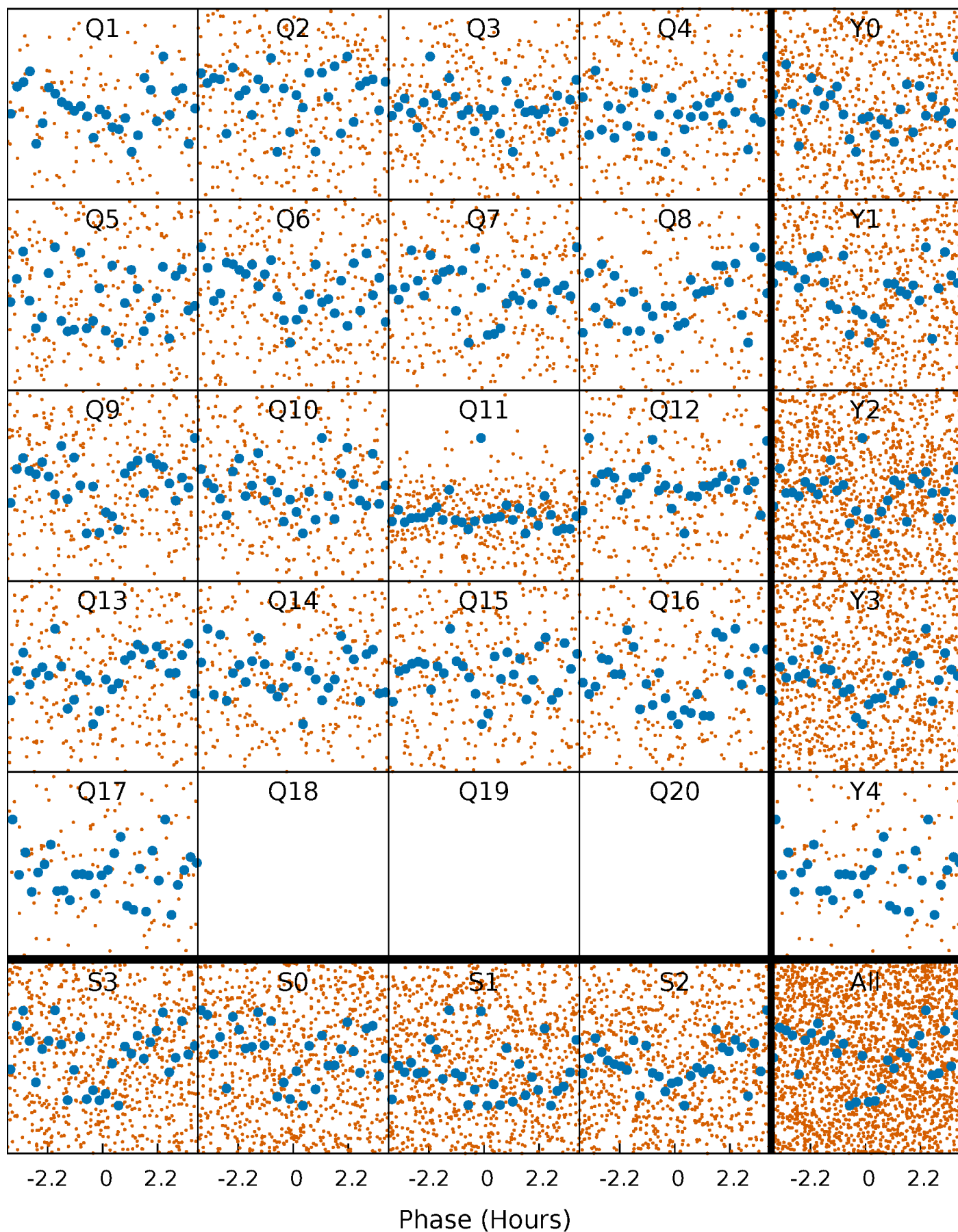


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

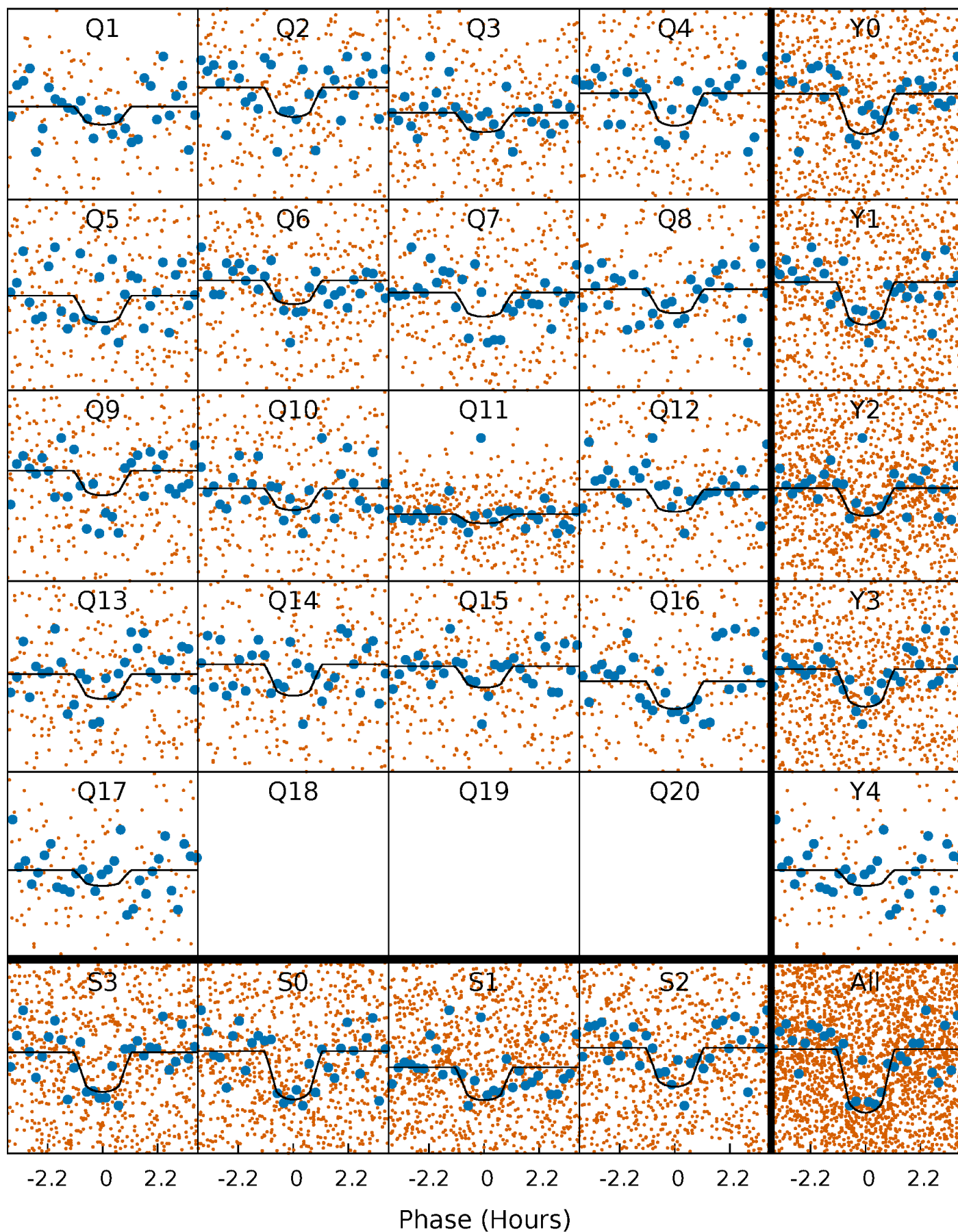
TCE 009773980-01 P= 3.387966 Days  $T_0=133.926347$  (BKJD)





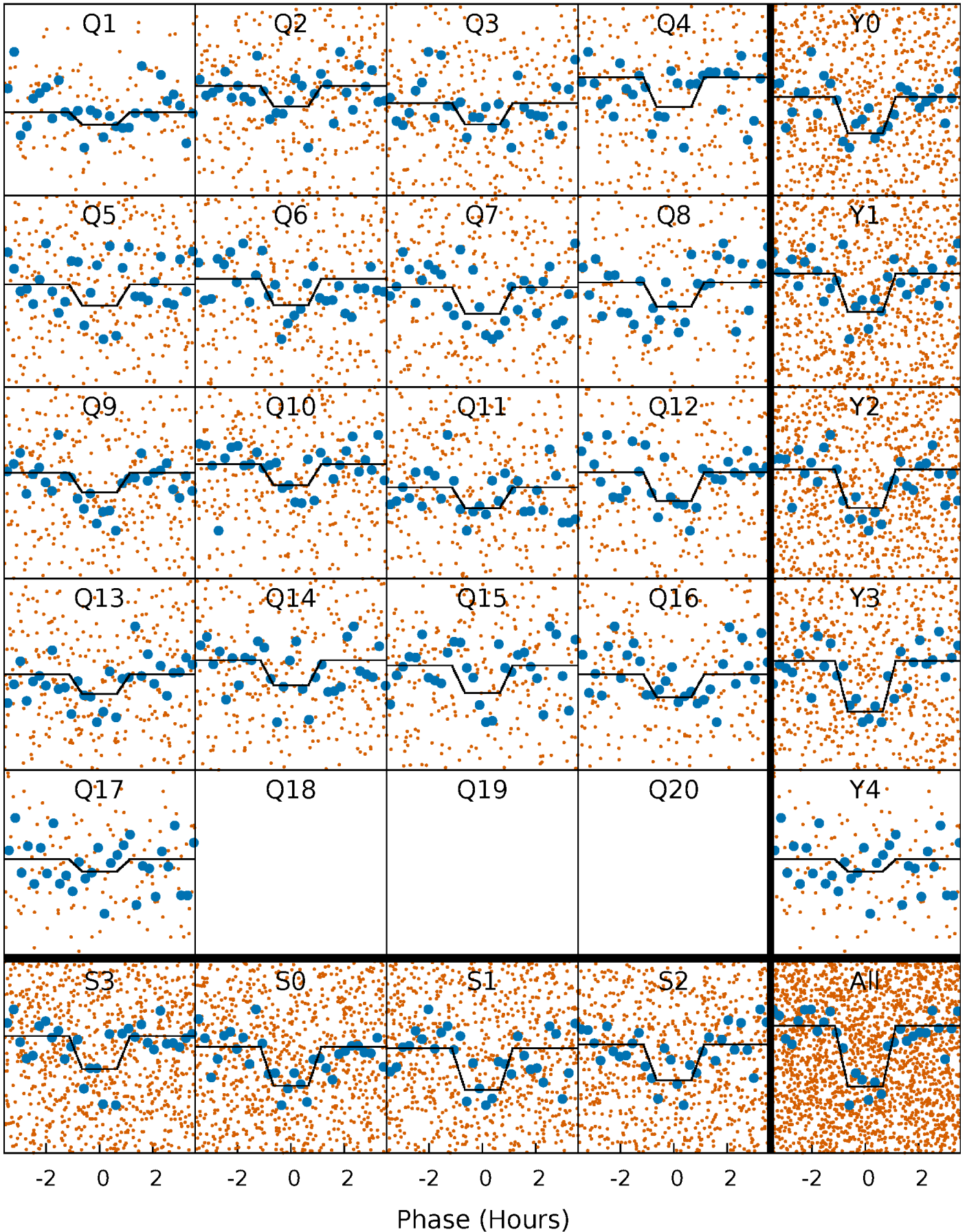
# DV Quarter-Phased Transit Curves

TCE 009773980-01 P= 3.387966 Days  $T_0=133.926347$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

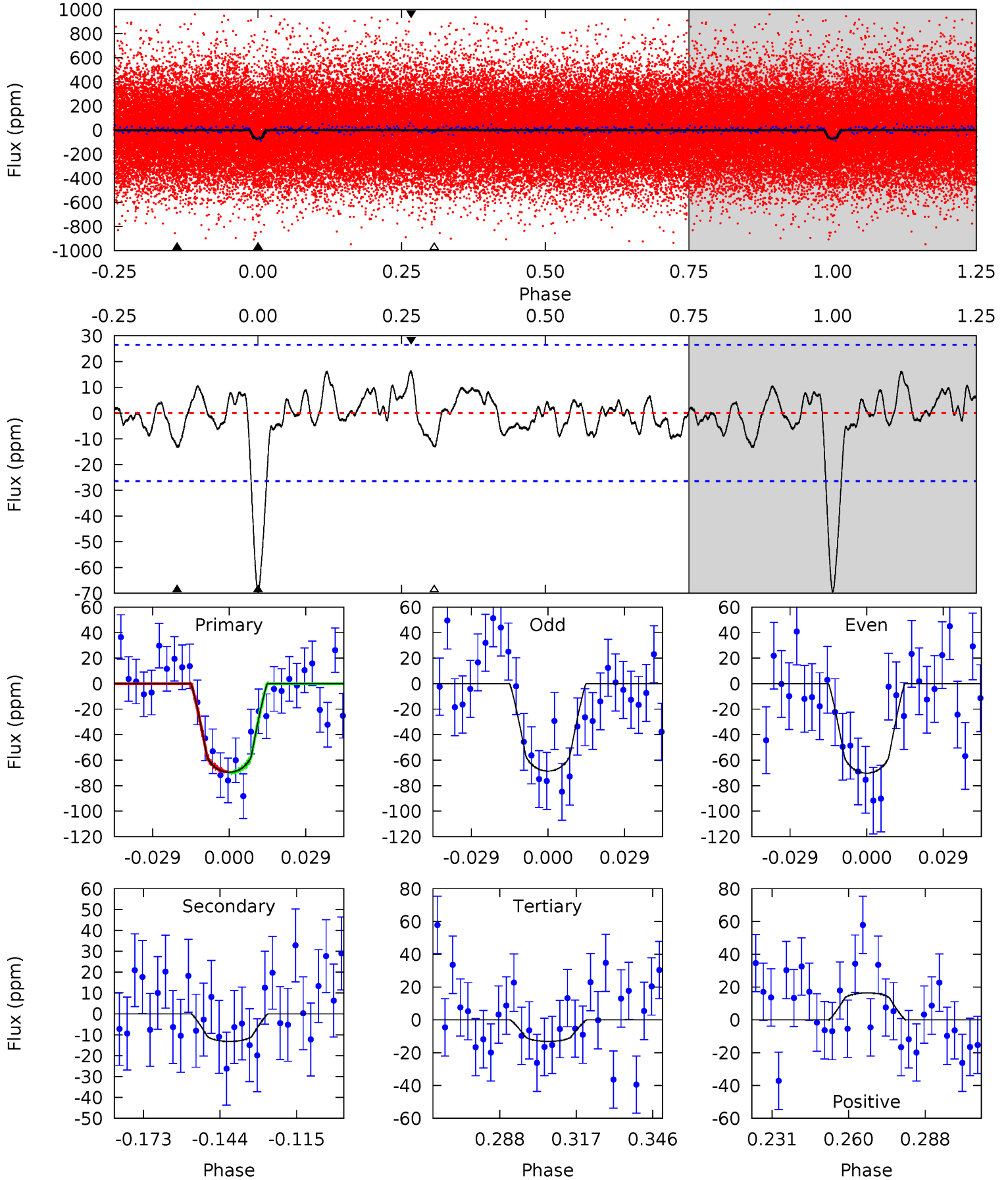
TCE 009773980-01   P= 3.387911 Days    $T_0=133.936684$  (BKJD)



# DV Model-Shift Uniqueness Test

009773980-01, P = 3.387966 Days, E = 130.538381 Days

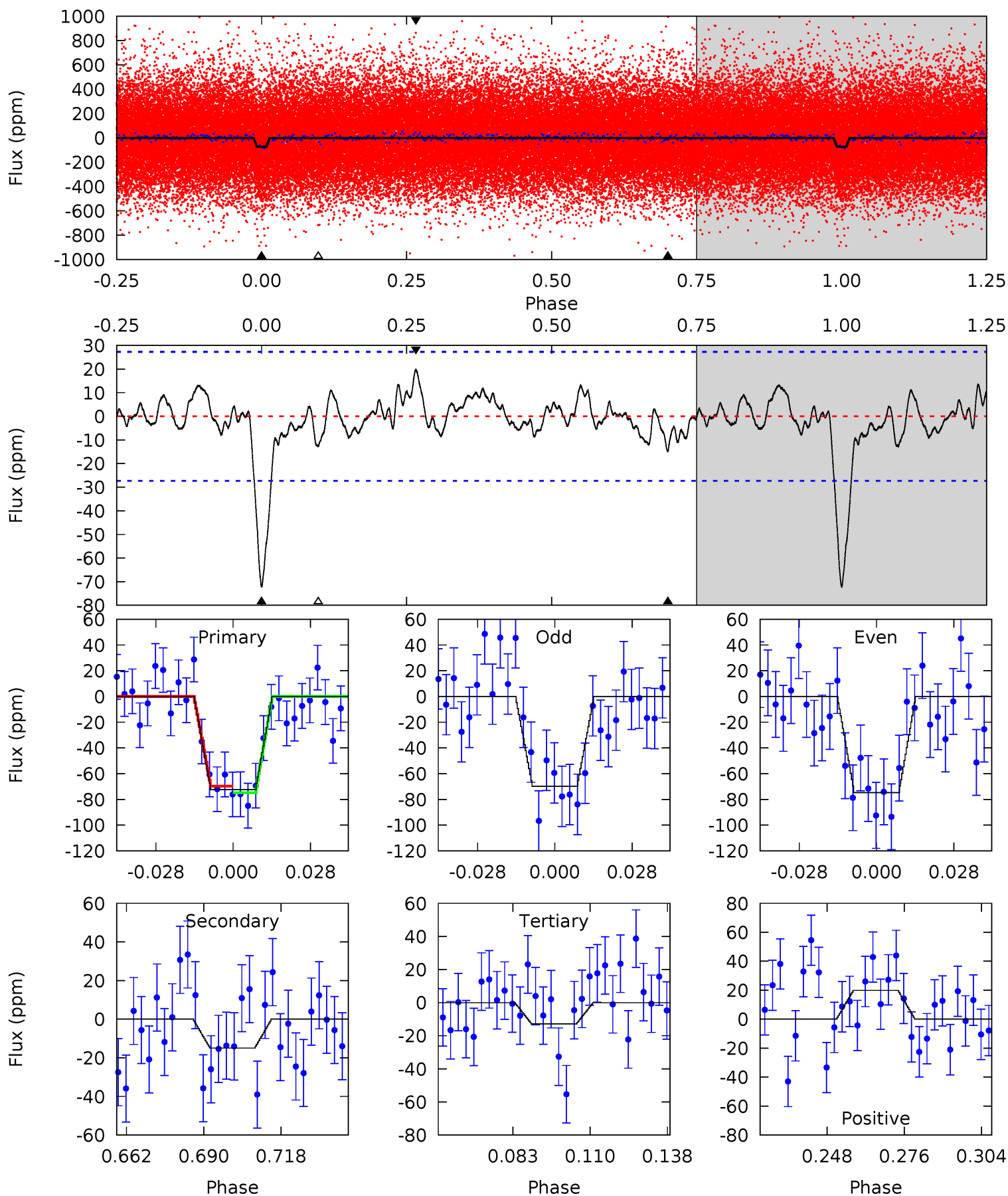
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	2.40	2.39	3.00	4.82	2.19	1.06	10.3	9.64	0.01	-0.59	0.15	0.75	0.19	0.06



# Alt Model-Shift Uniqueness Test

009773980-01, P = 3.387911 Days, E = 130.548773 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
12.8	2.64	2.27	3.51	4.83	2.20	1.08	10.5	9.26	0.37	-0.87	0.41	0.99	0.22	0.46



### Stellar Parameters For KIC 009773980

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5702^{+77}_{-77}$	$4.247^{+0.162}_{-0.108}$	$0.140^{+0.150}_{-0.150}$	$1.245^{+0.205}_{-0.205}$	$0.997^{+0.075}_{-0.060}$	$0.728^{+0.562}_{-0.232}$
	+1%/-1%	+4%/-3%	+107%/-107%	+16%/-16%	+8%/-6%	+77%/-32%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 009773980-01 / KOI 4691.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-13 \pm 5$	$1.37^{+0.88}_{-0.78}$	$1860^{+84}_{-89}$	$3728^{+1505}_{-620}$	$7.214^{+36.502}_{-4.793}$
Alt.	$-15 \pm 6$	$1.26^{+0.93}_{-0.78}$	$1856^{+85}_{-96}$	$3961^{+1879}_{-719}$	$10^{+58}_{-7}$

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



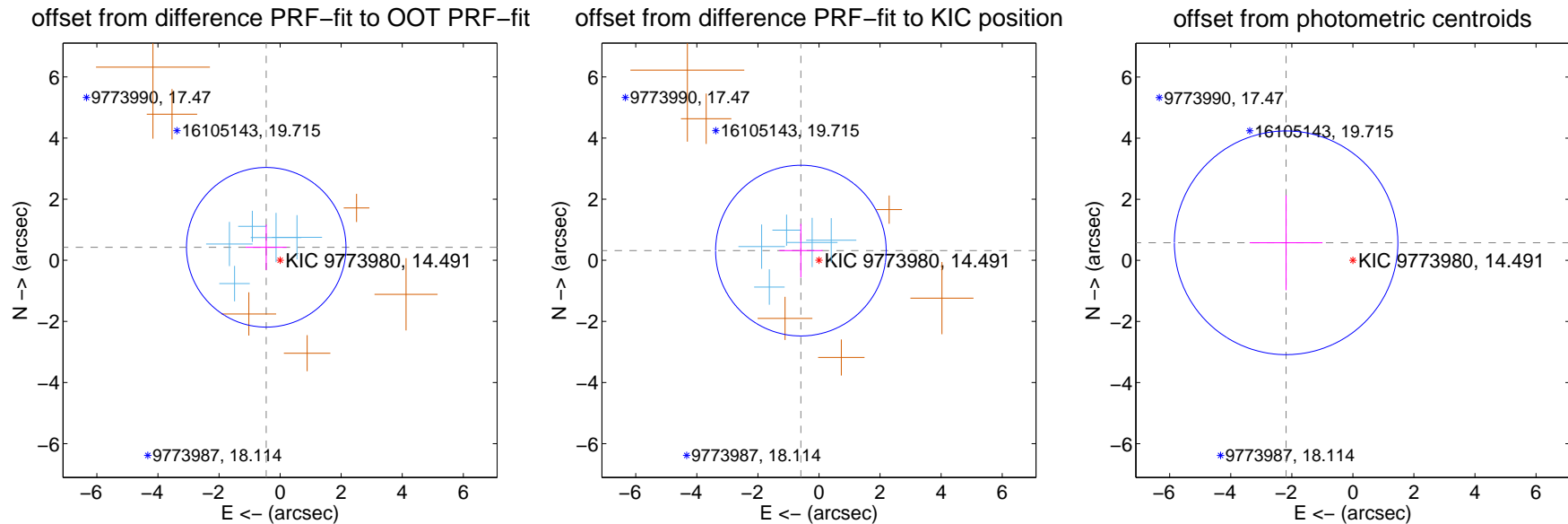
## DV Centroid Data

Supplemental centroid analysis for 009773980-01. Kepler magnitude: 14.49. Transit SNR 10.09

There are 5 quarters with good PRF difference image offsets

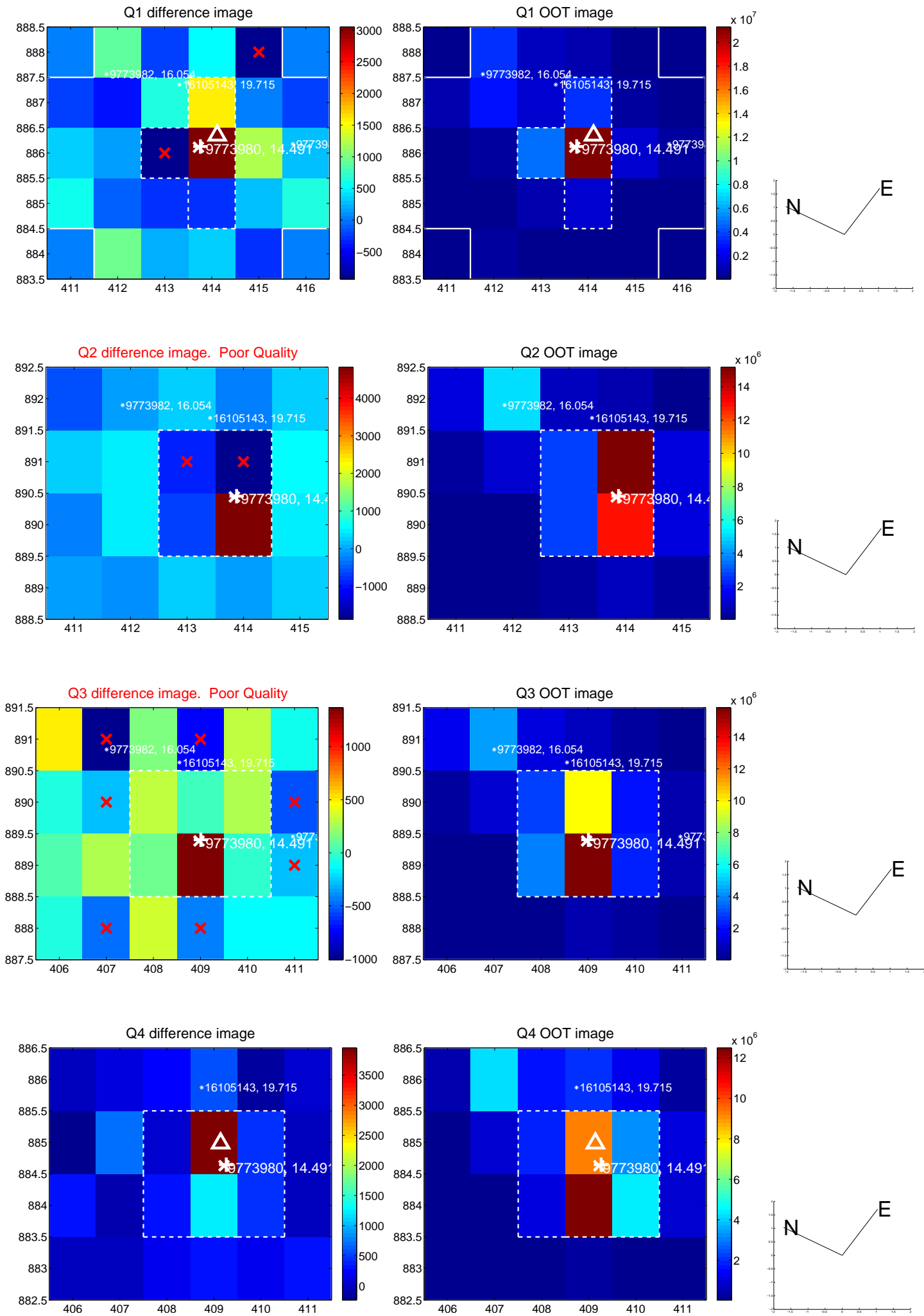
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.623 \pm 0.870$	0.72	$0.455 \pm 0.672$	$0.425 \pm 0.739$
PRF-fit source offset from KIC position	$0.672 \pm 0.931$	0.72	$0.593 \pm 0.708$	$0.317 \pm 0.874$
photometric centroid source offset	$2.26 \pm 1.22$	1.85	$2.19 \pm 1.19$	$0.57 \pm 1.55$

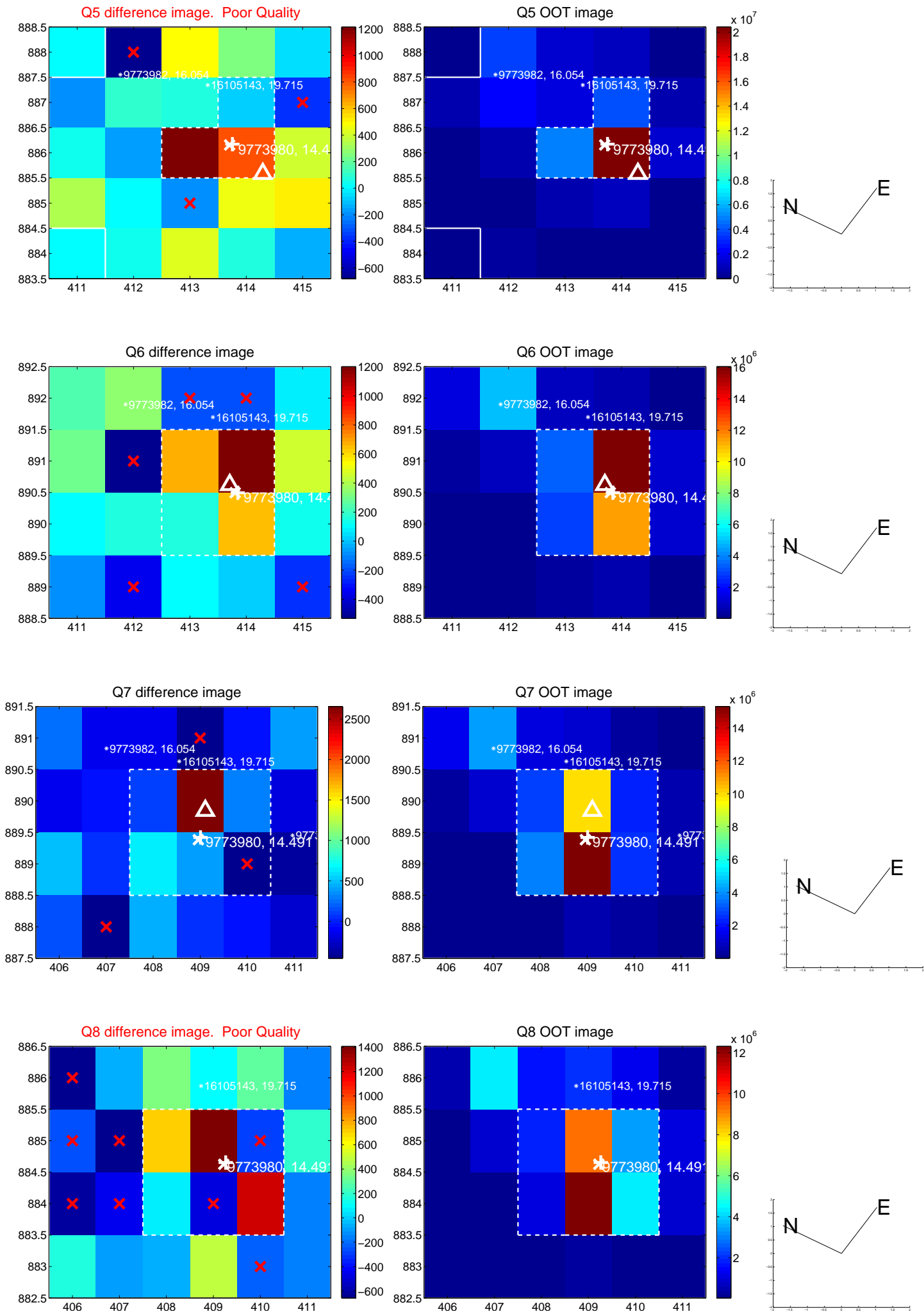


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

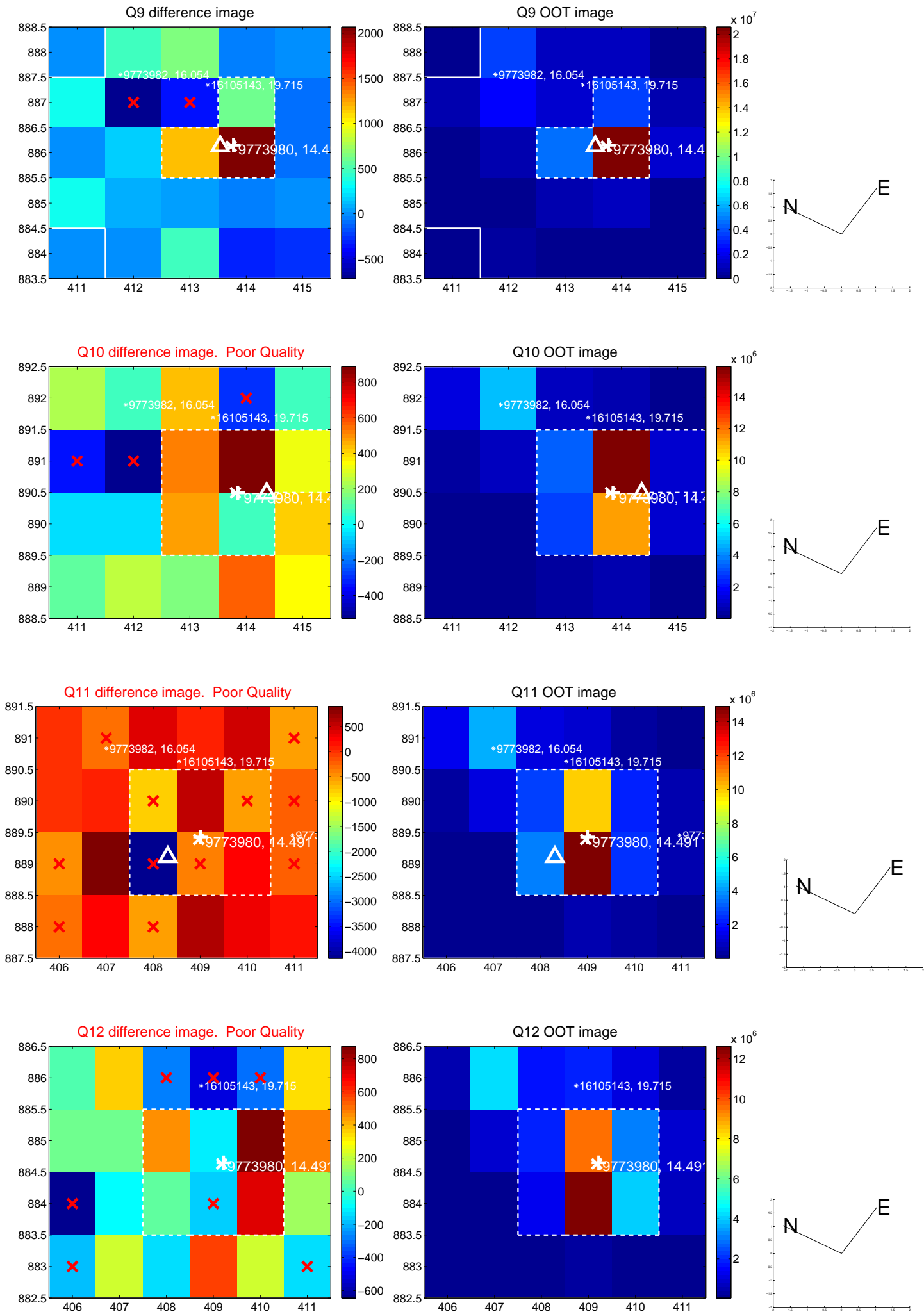
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



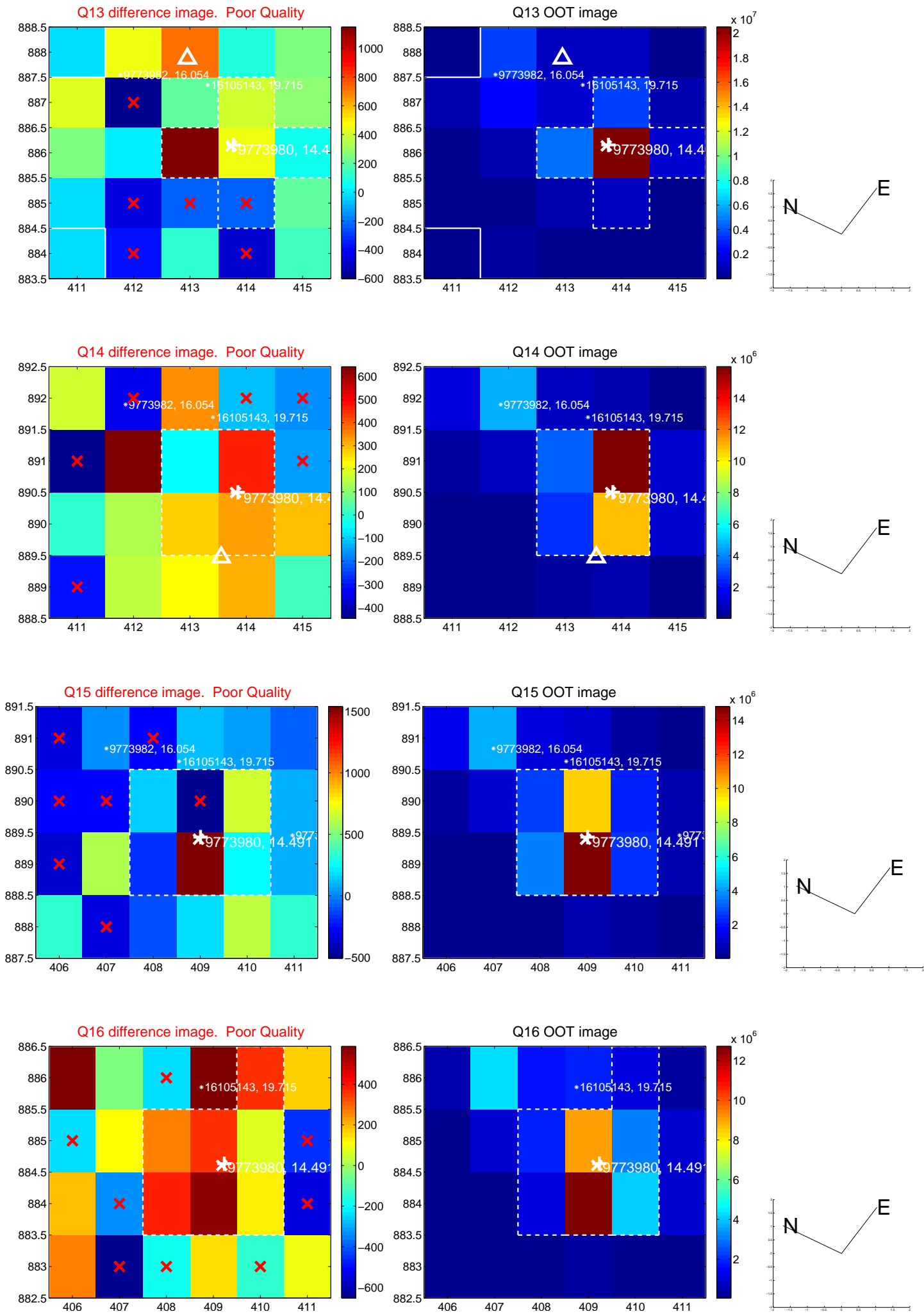
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

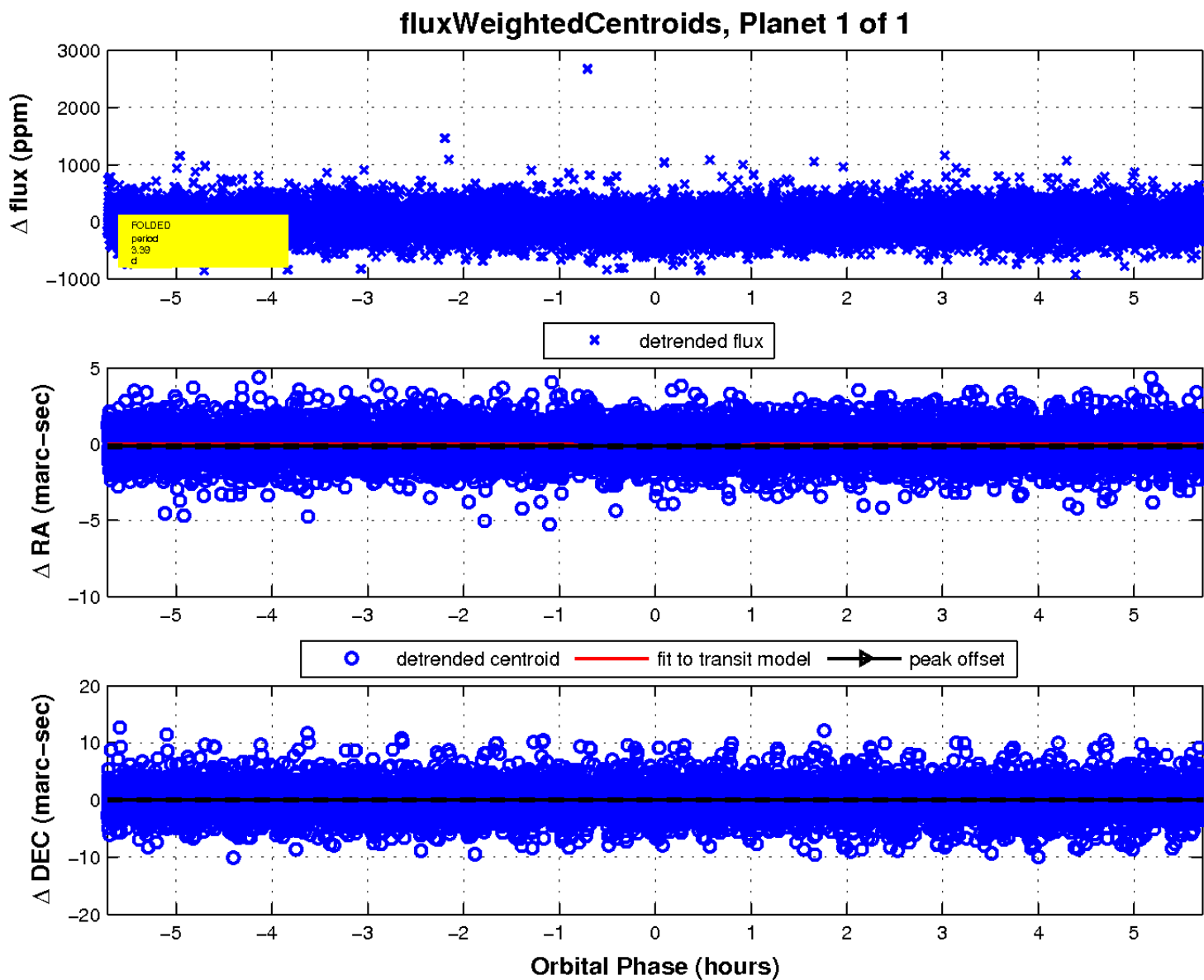
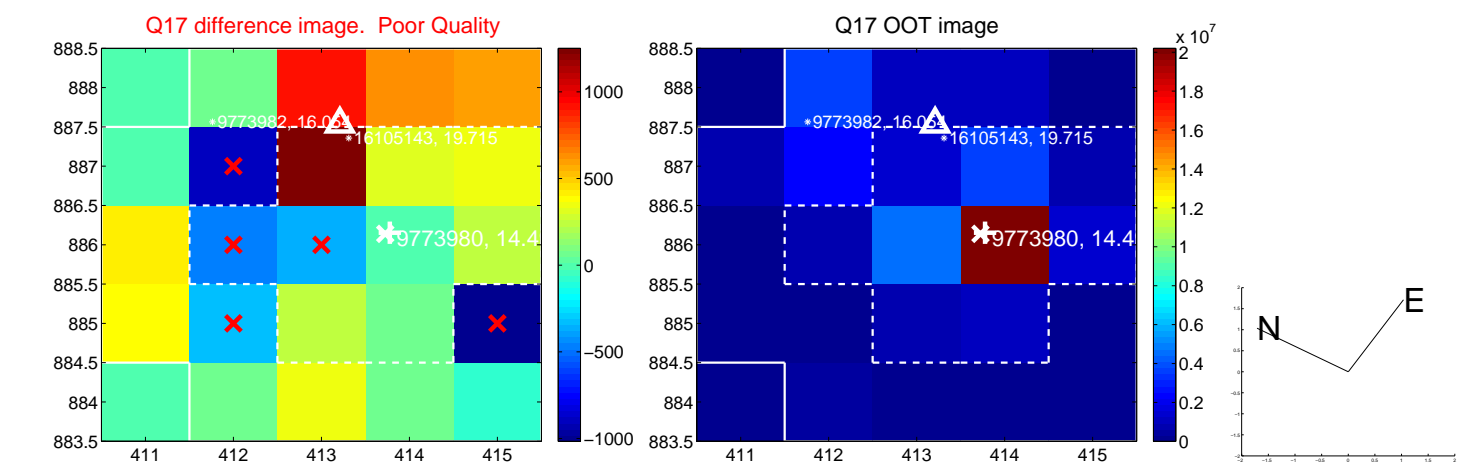


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

