

# KIC 012784394

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012784394-01	OBS	No	0.578348	131.863008	6.4	2.705	8.5	11.3	3.37	8042	0.99	146113.44

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012784394-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

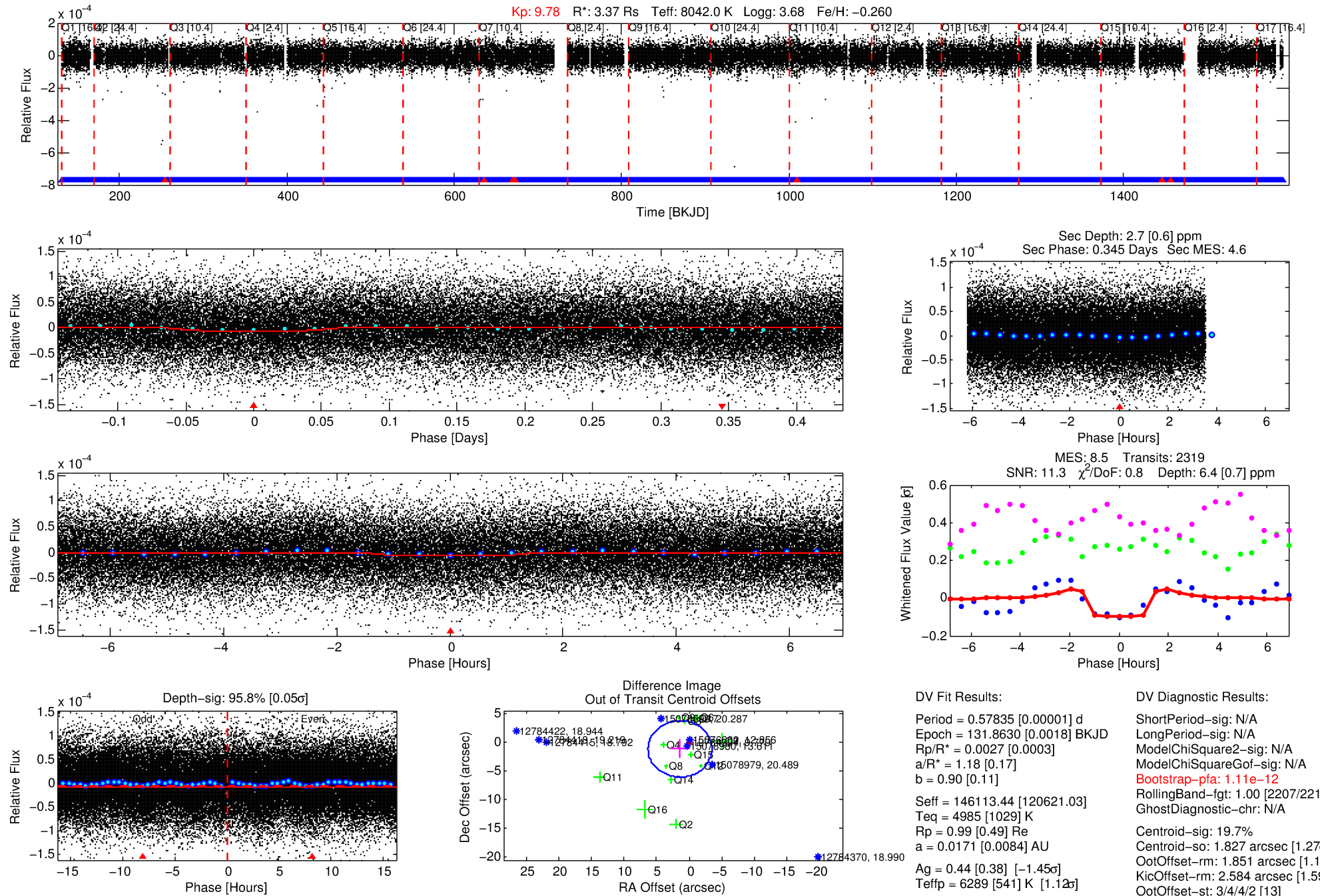
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012784394-01

No Significant Match Found

# DV One-Page Summary

KIC: 12784394 Candidate: 1 of 1 Period: 0.578 d



## DV Fit Results:

Period = 0.57835 [0.00001] d  
Epoch = 131.8630 [0.0018] BKJD  
Rp/R\* = 0.0027 [0.0003]  
a/R\* = 1.18 [0.17]  
b = 0.90 [0.11]  
Seff = 146113.44 [120621.03]  
Teff = 4985 [1029] K  
Rp = 0.99 [0.49] Re  
a = 0.0171 [0.0084] AU  
Ag = 0.44 [0.38] [-1.45σ]  
Teffp = 6289 [541] K [1.12σ]

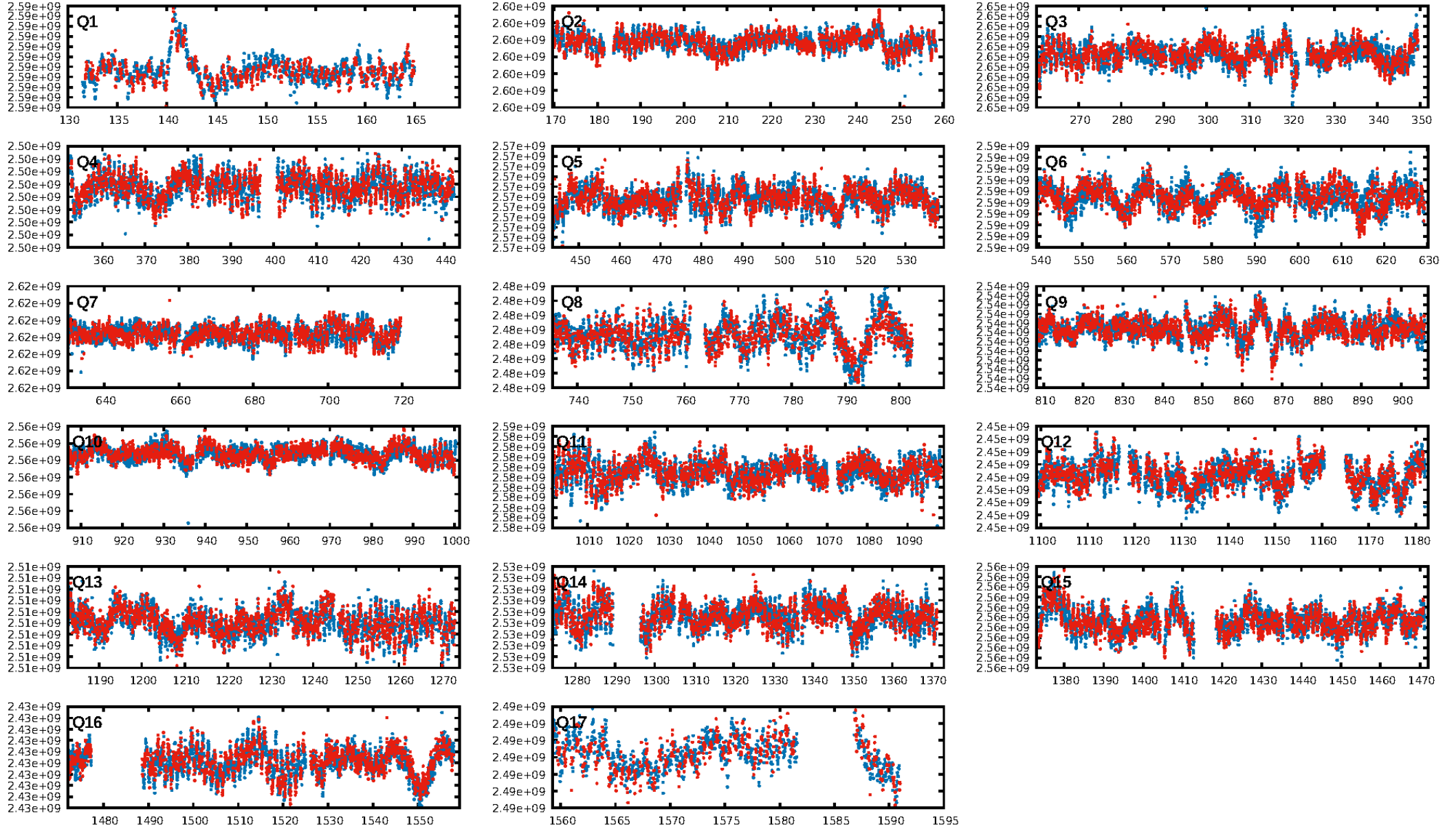
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.11e-12**  
RollingBand-fgt: 1.00 [2207/2214]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 19.7%  
Centroid-so: 1.827 arcsec [1.27σ]  
OotOffset-rm: 1.851 arcsec [1.13σ]  
KicOffset-rm: 2.584 arcsec [1.59σ]  
OotOffset-st: 3/4/4/2 [13]  
KicOffset-st: 3/4/4/2 [13]  
DiffImageQuality-fgm: 0.15 [2/13]  
DiffImageOverlap-fno: 1.00 [17/17]

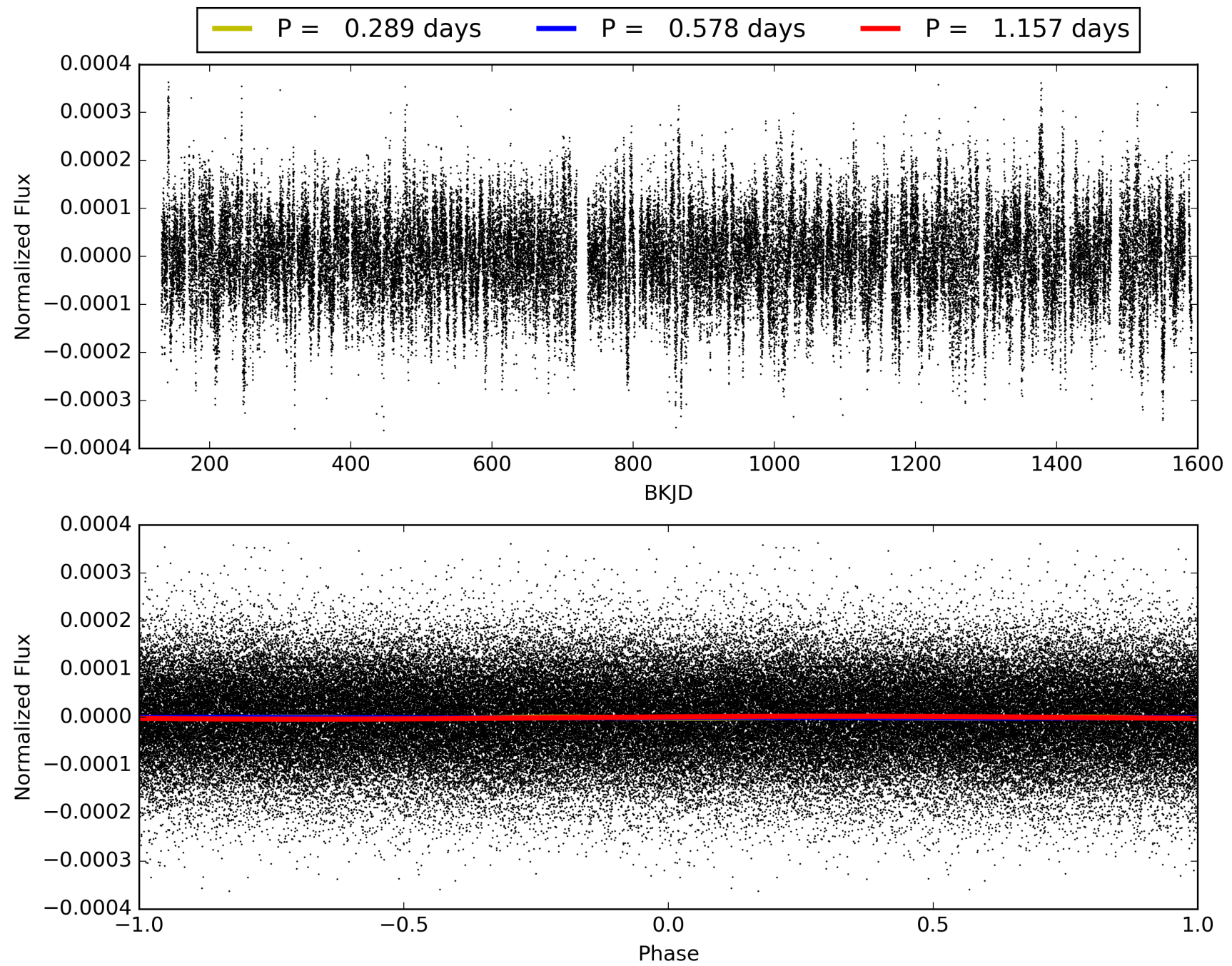
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:08:44 Z

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

# TCE 012784394-01, PDC Light Curves



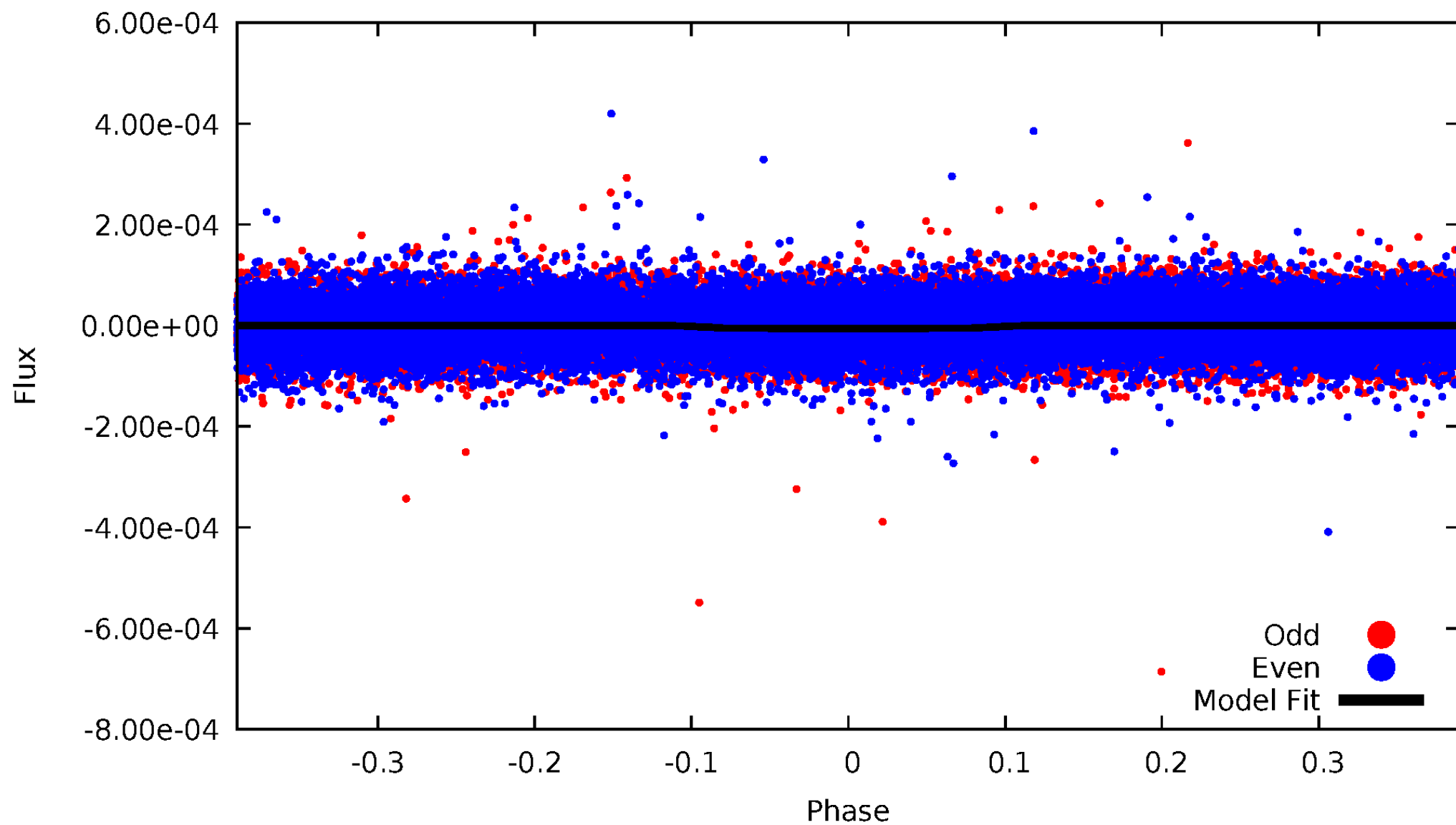
# TCE 012784394-01





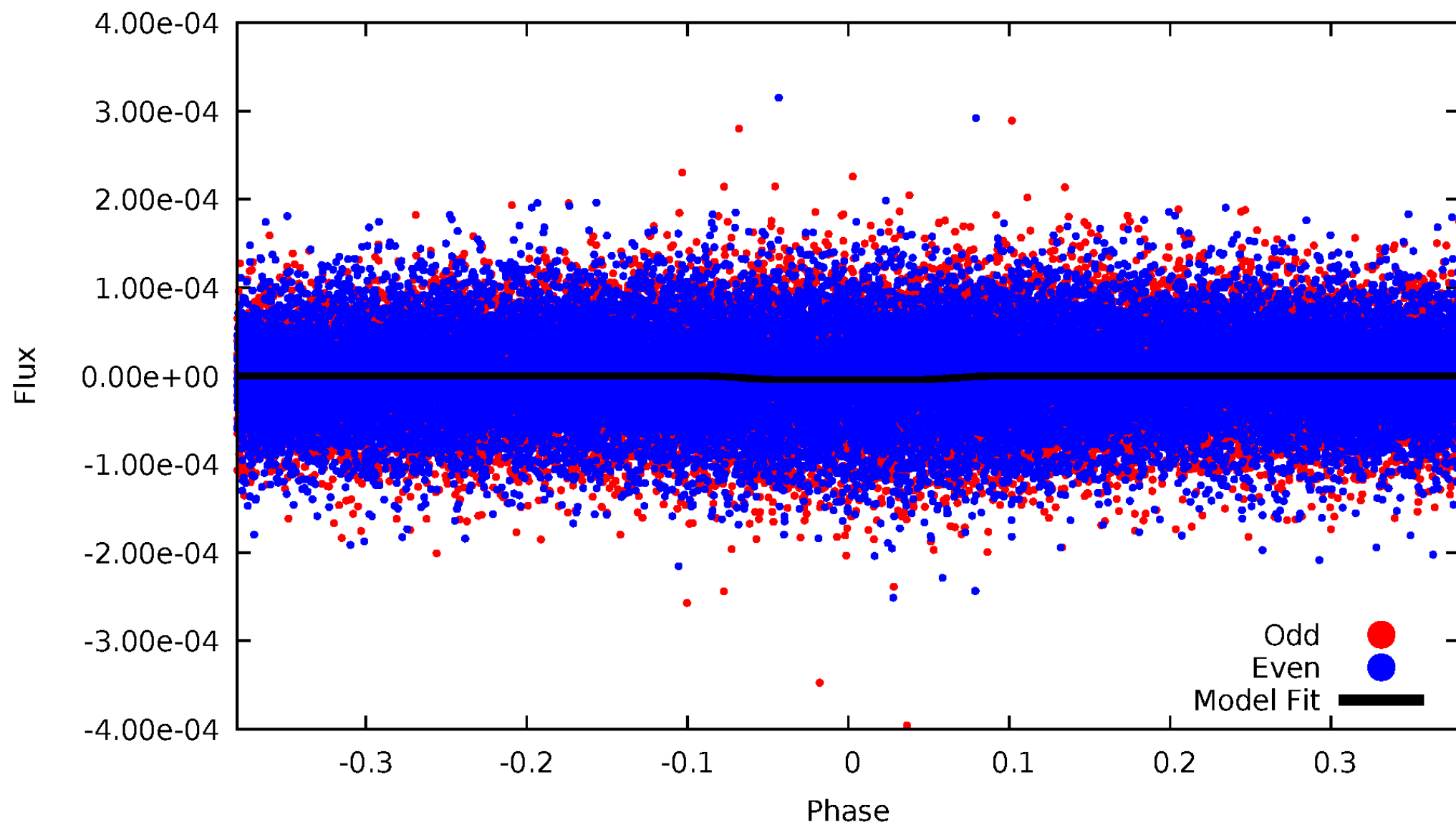
# DV Odd/Even

TCE 012784394-01



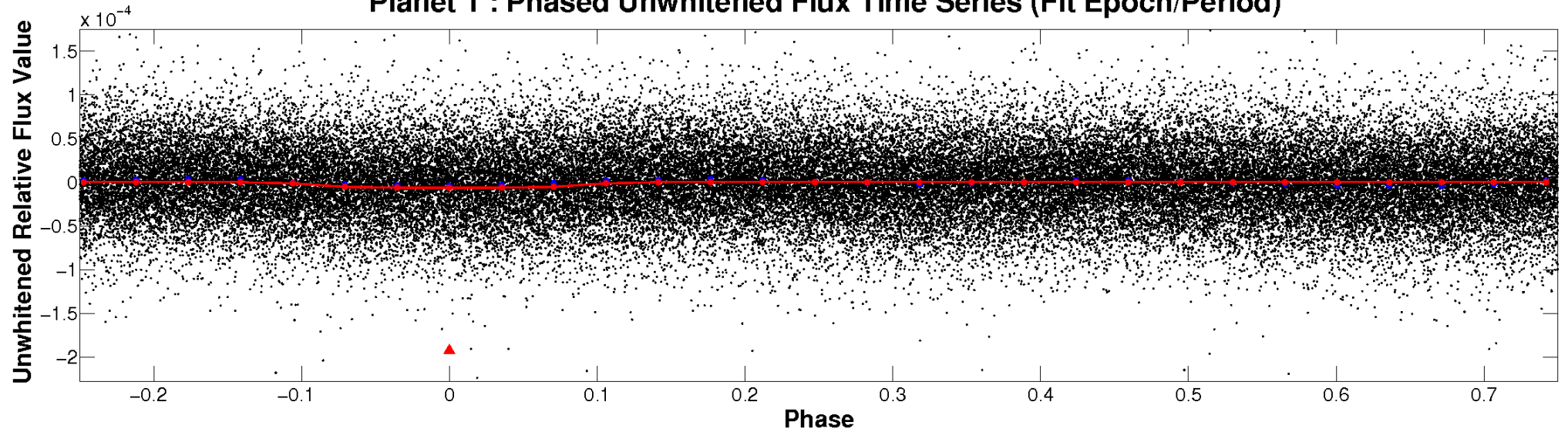
# ALT Odd/Even

TCE 012784394-01

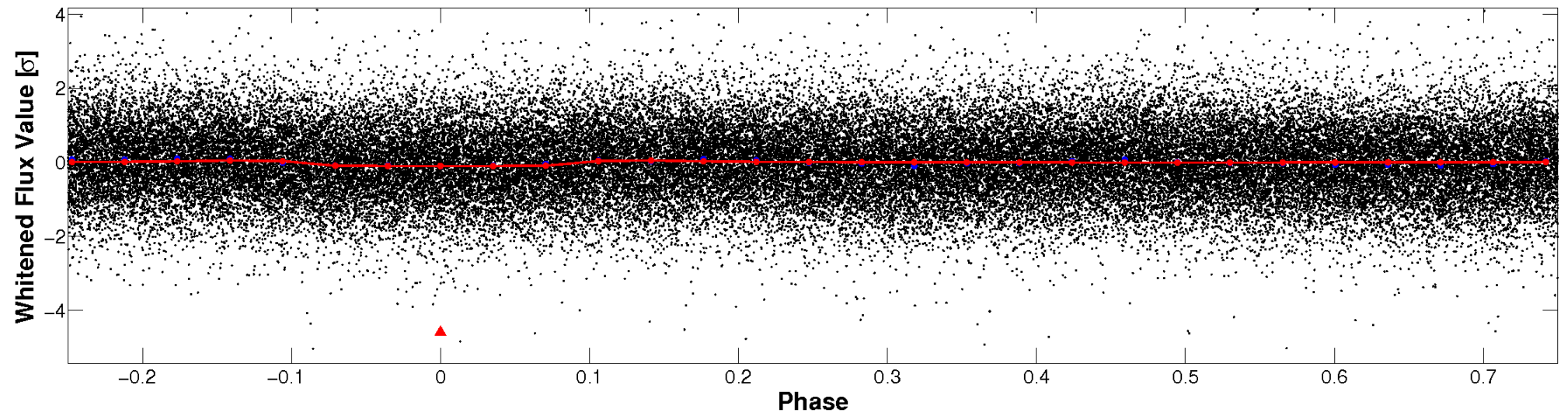


# Non-Whitened Vs. Whitened Light Curve

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

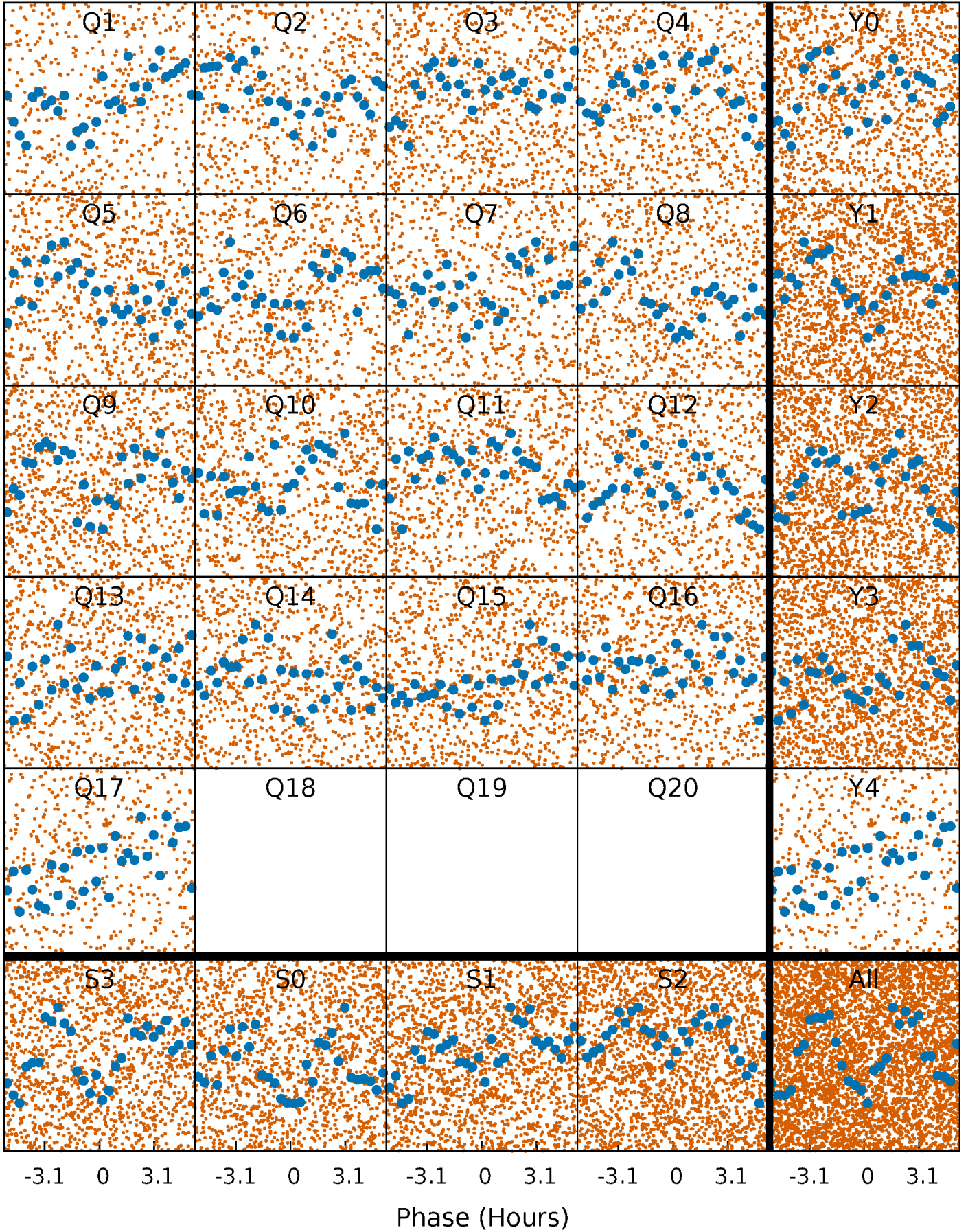


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

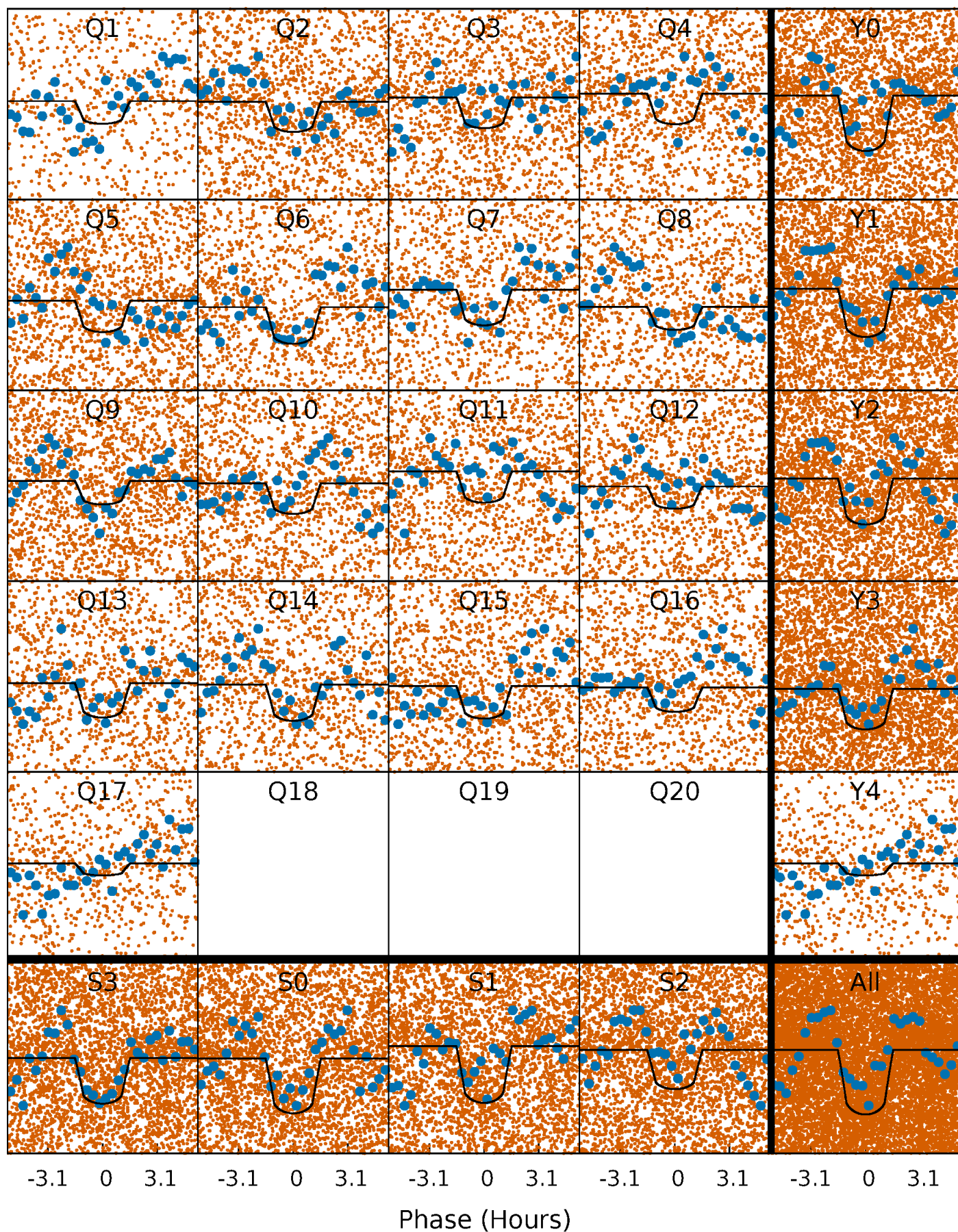
TCE 012784394-01   P= 0.578348 Days    $T_0=131.863008$  (BKJD)





# DV Quarter-Phased Transit Curves

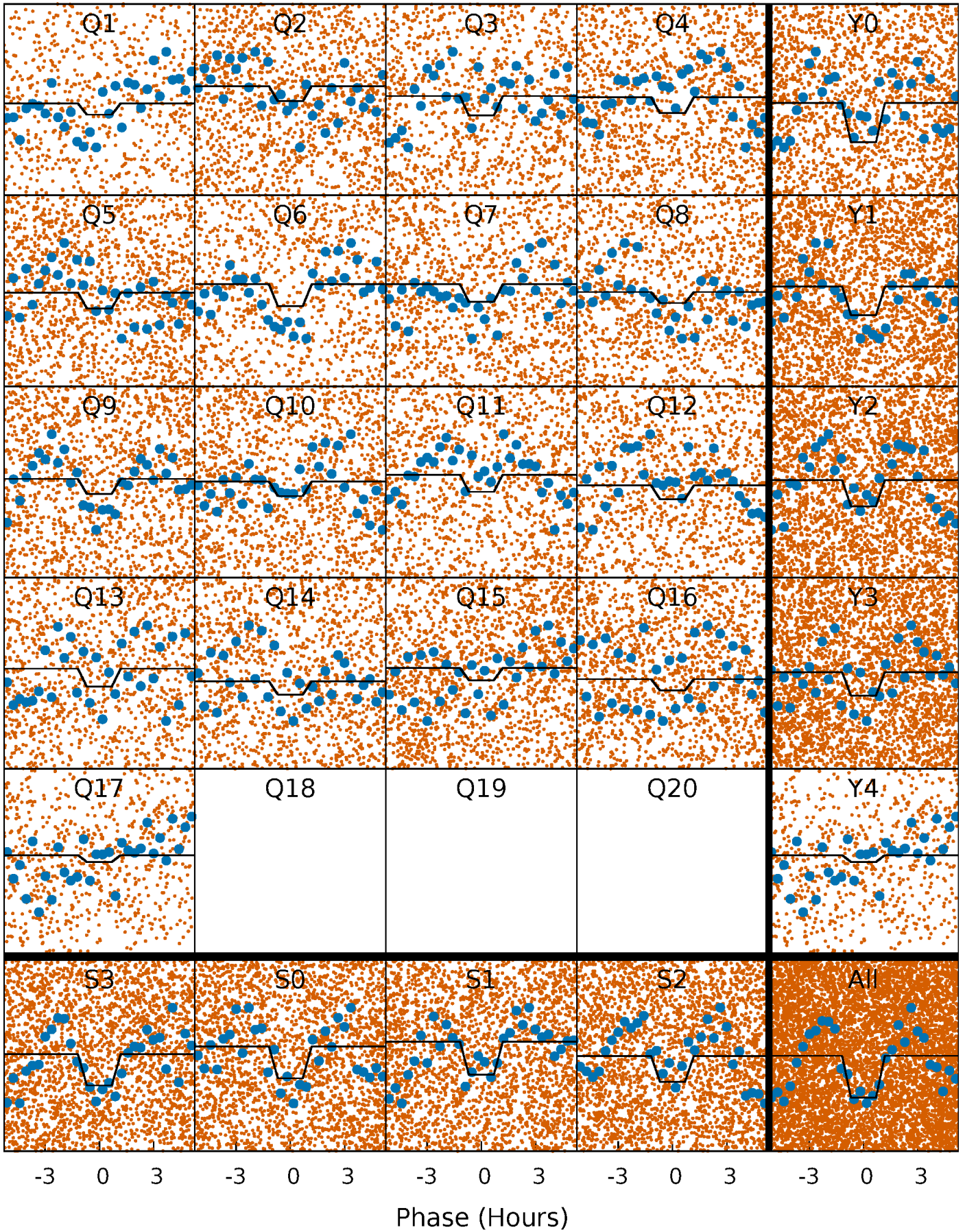
TCE 012784394-01 P= 0.578348 Days  $T_0=131.863008$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

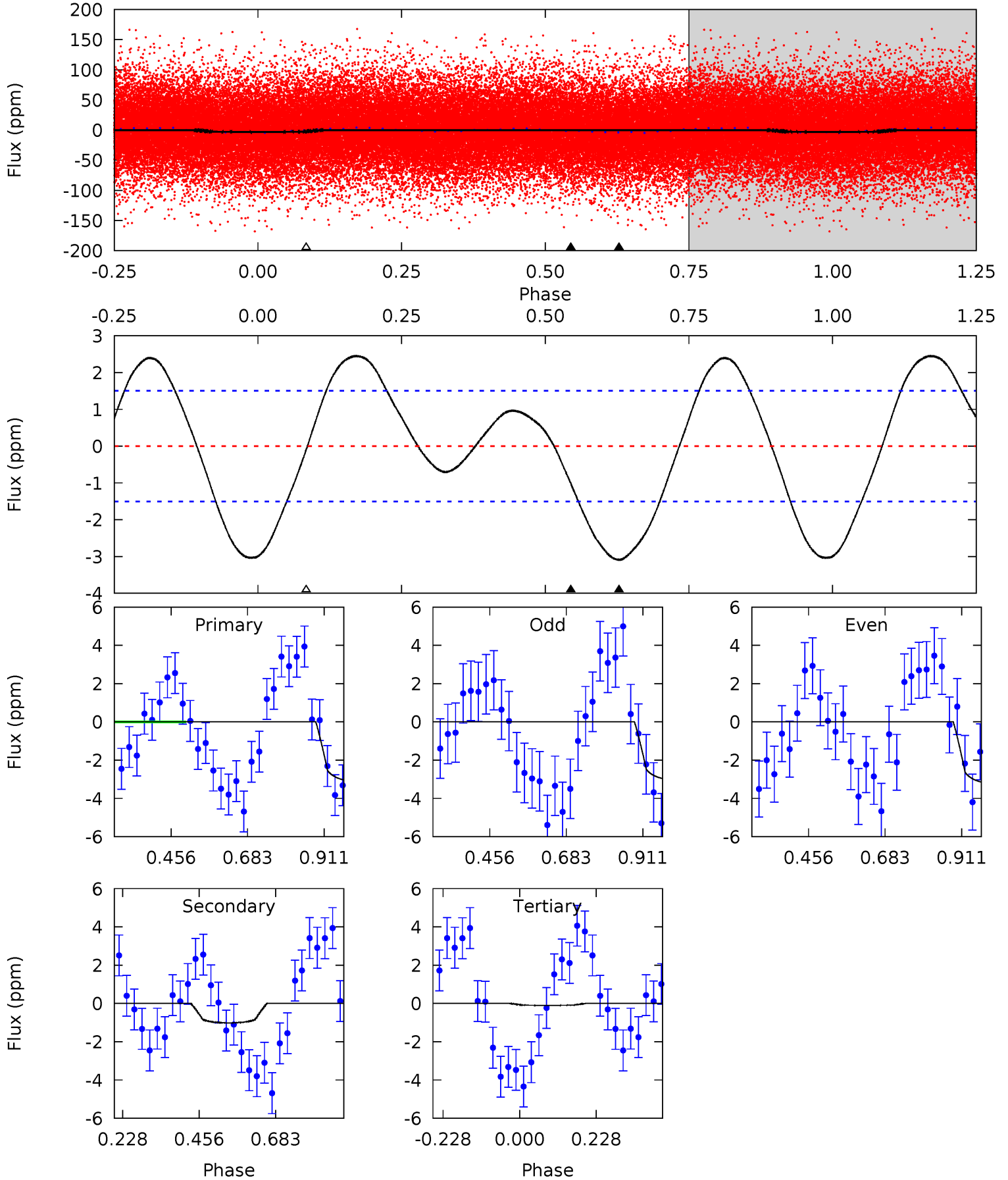
TCE 012784394-01 P= 0.578345 Days  $T_0=131.858383$  (BKJD)



# DV Model-Shift Uniqueness Test

012784394-01, P = 0.578348 Days, E = 131.284660 Days

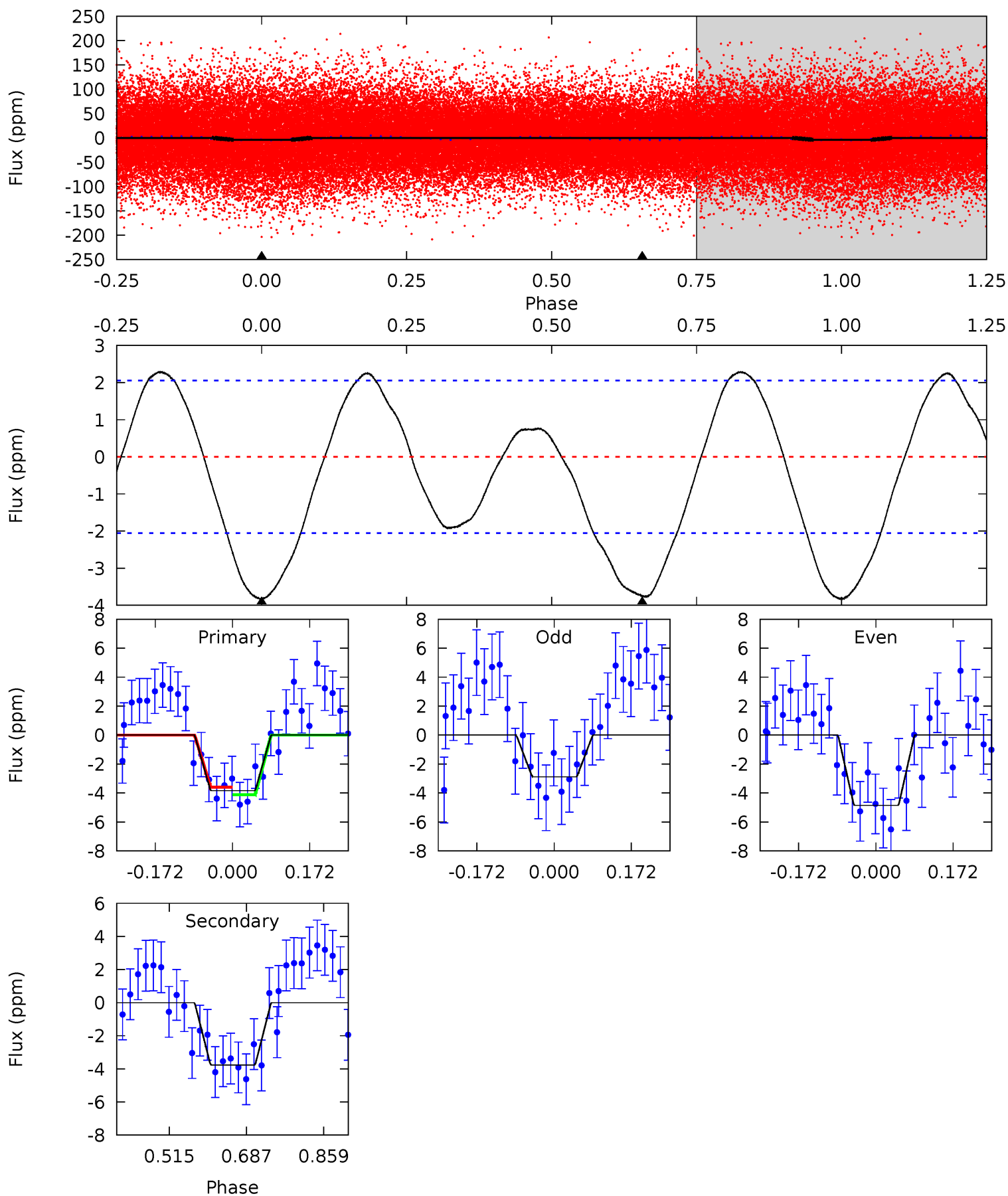
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.02	2.97	0.29	0	4.39	1.21	5.16	8.73	9.02	2.67	2.97	0.27	1.22	0.44	1.19



# Alt Model-Shift Uniqueness Test

012784394-01, P = 0.578345 Days, E = 131.280038 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
8.31	8.14	0	0	4.45	1.37	2.85	8.31	8.31	8.14	8.14	2.06	1.06	0.37	0.51





### Stellar Parameters For KIC 012784394

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8042^{+224}_{-308}$	$3.680^{+0.484}_{-0.114}$	$-0.260^{+0.200}_{-0.300}$	$3.372^{+0.706}_{-1.647}$	$1.987^{+0.349}_{-0.480}$	$0.073^{+0.366}_{-0.027}$
	+3%/-4%	+13%/-3%	+77%/-115%	+21%/-49%	+18%/-24%	+502%/-37%
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 012784394-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1 \pm 0$	$0.93^{+0.20}_{-0.24}$	$6766^{+525}_{-849}$	$-4402^{+7877}_{-739}$	$0.188^{+0.155}_{-0.078}$
Alt.	$-4 \pm 0$	$0.69^{+0.14}_{-0.18}$	$6740^{+520}_{-844}$	$7265^{+934}_{-801}$	$1.306^{+1.011}_{-0.431}$

$T_{max}$  = 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

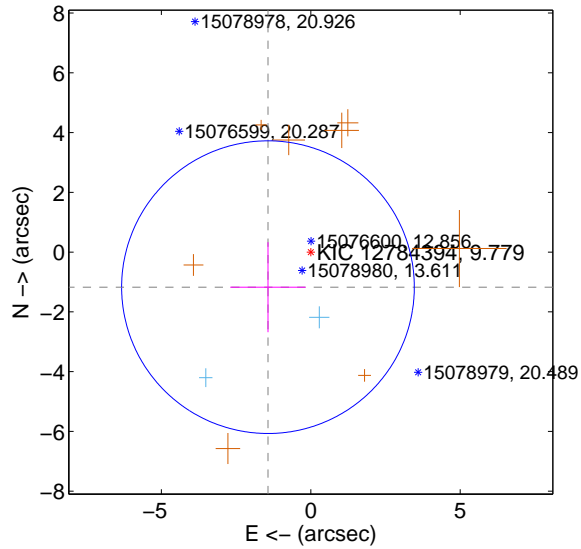
Supplemental centroid analysis for 012784394-01. **Kepler magnitude: 9.78.** Transit SNR 11.27

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

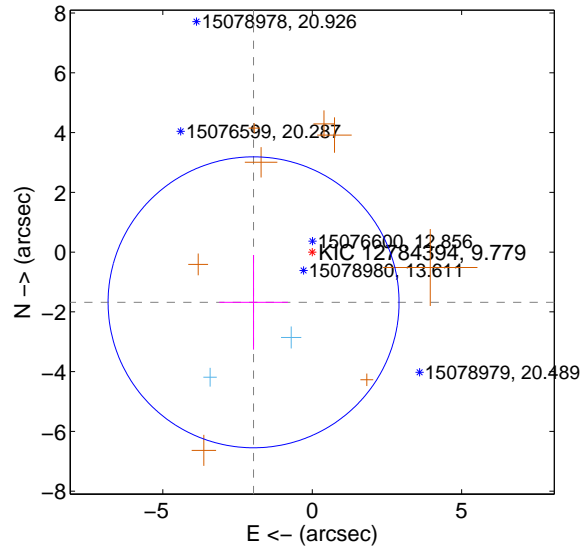
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.851 \pm 1.632$	1.13	$1.432 \pm 1.263$	$-1.173 \pm 1.506$
PRF-fit source offset from KIC position	$2.584 \pm 1.622$	1.59	$1.963 \pm 1.147$	$-1.680 \pm 1.582$
photometric centroid source offset	$1.83 \pm 1.44$	1.27	$-0.69 \pm 0.92$	$-1.69 \pm 1.51$

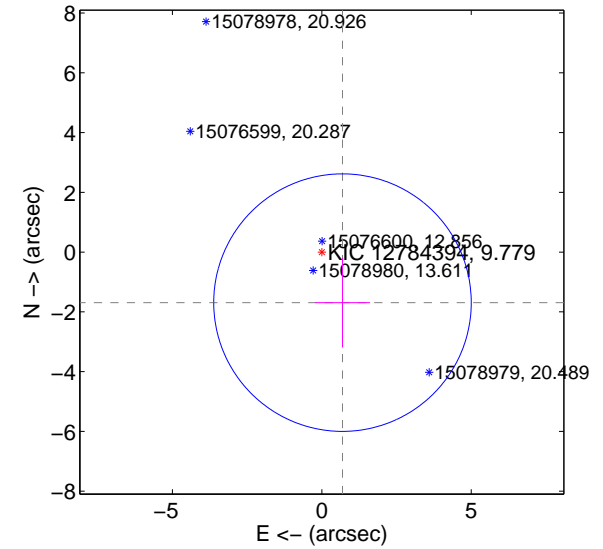
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

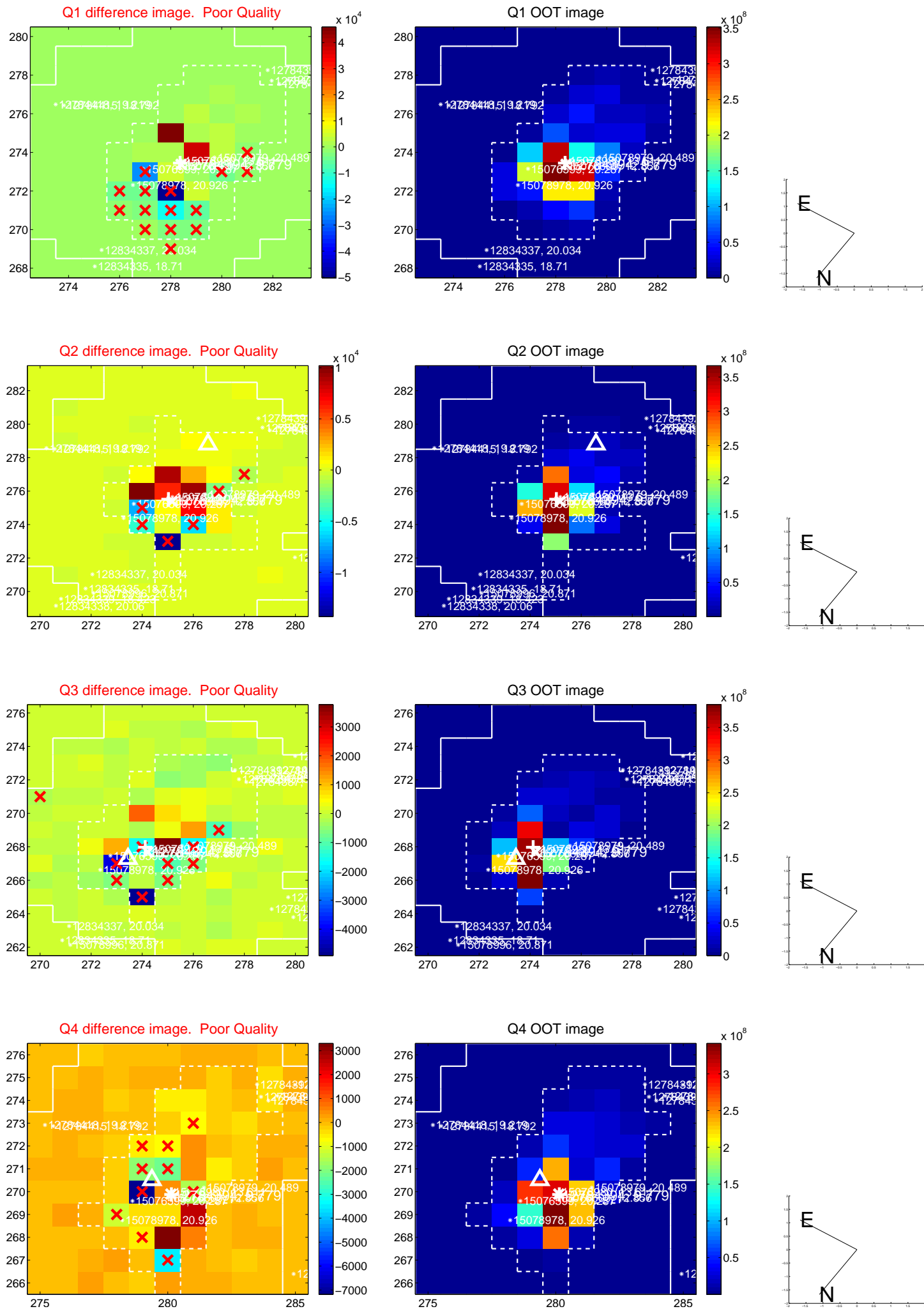


offset from photometric centroids

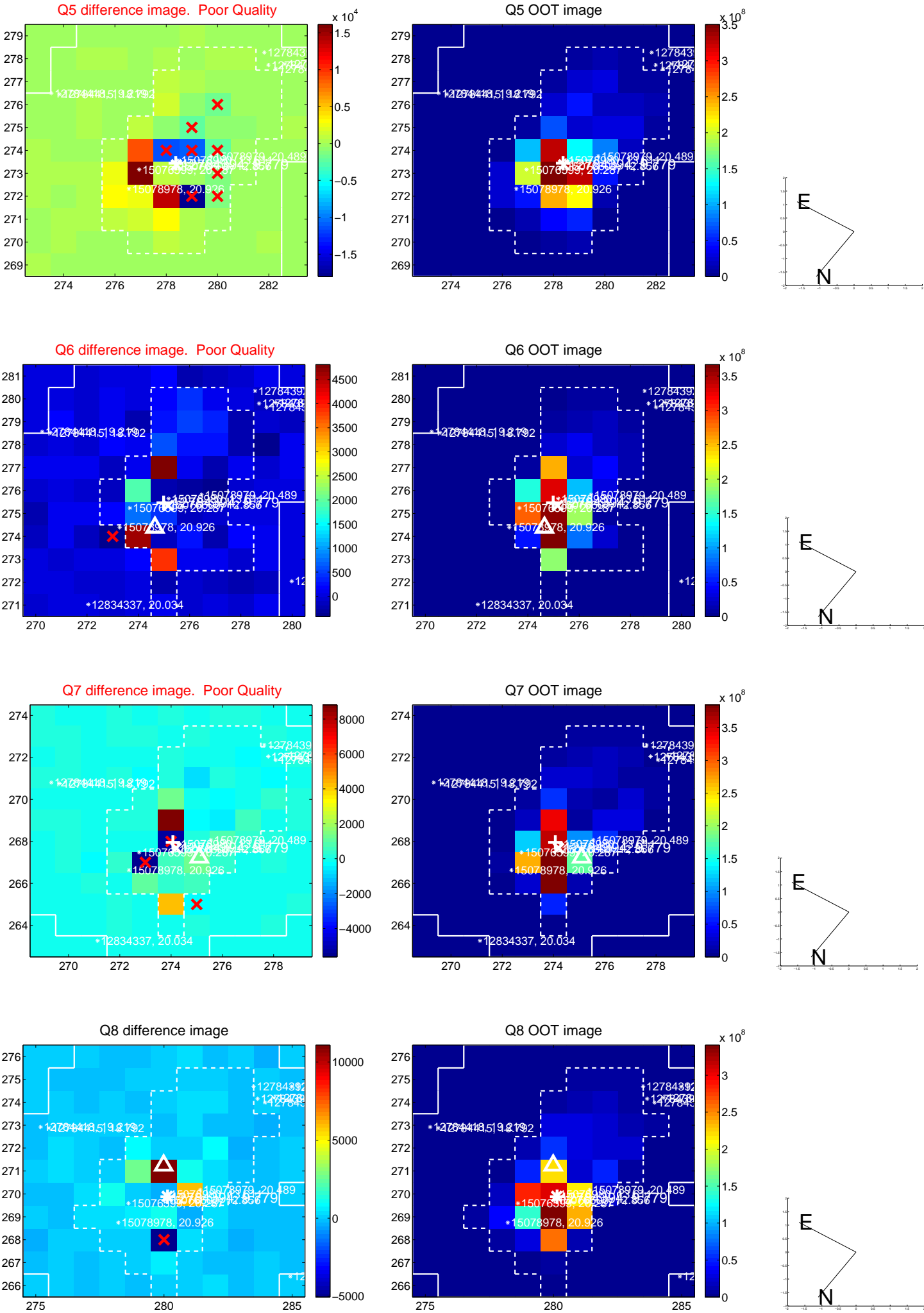


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

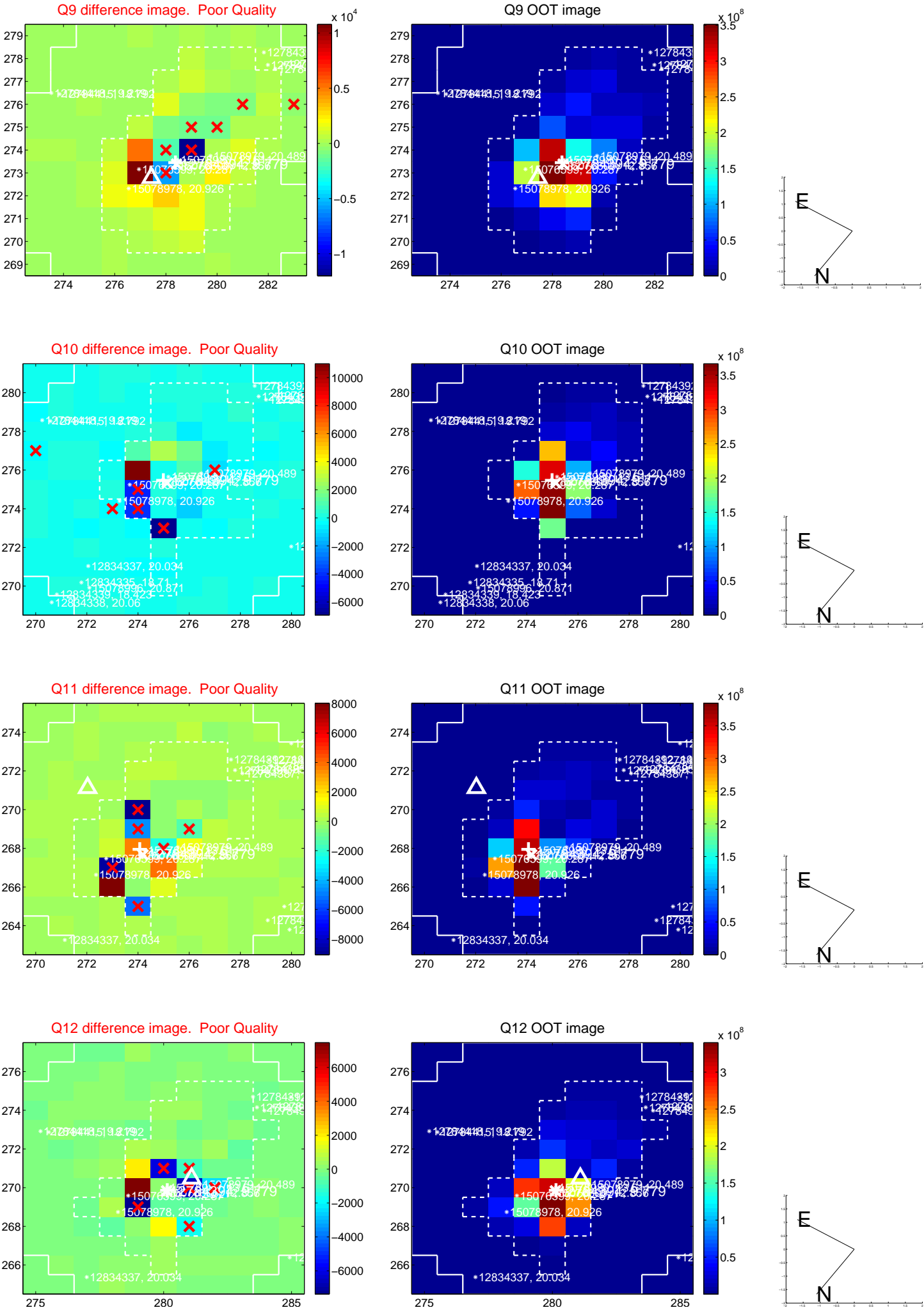


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

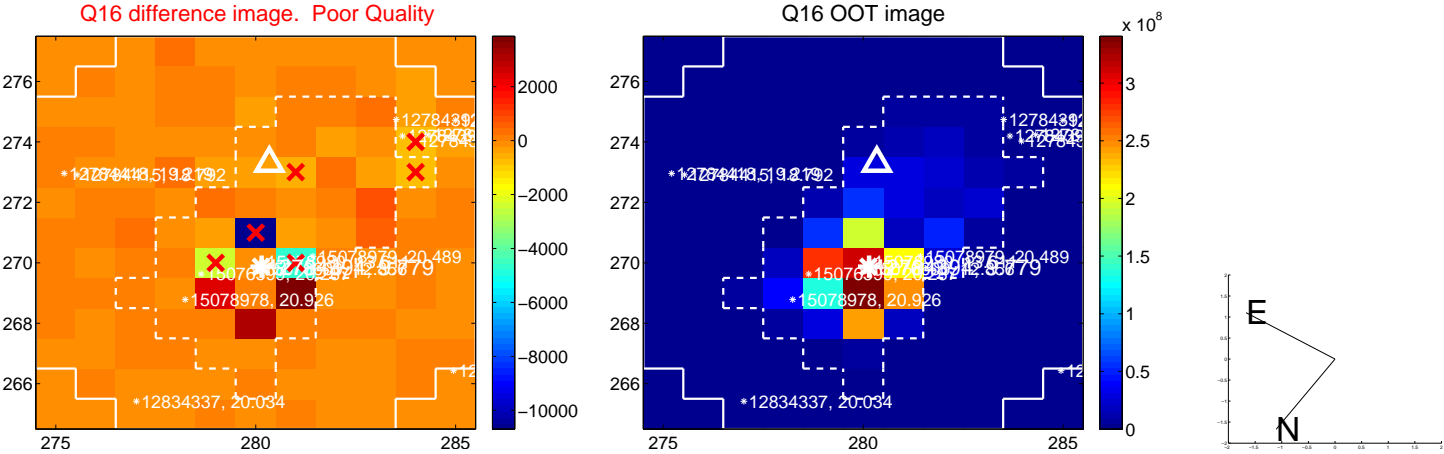
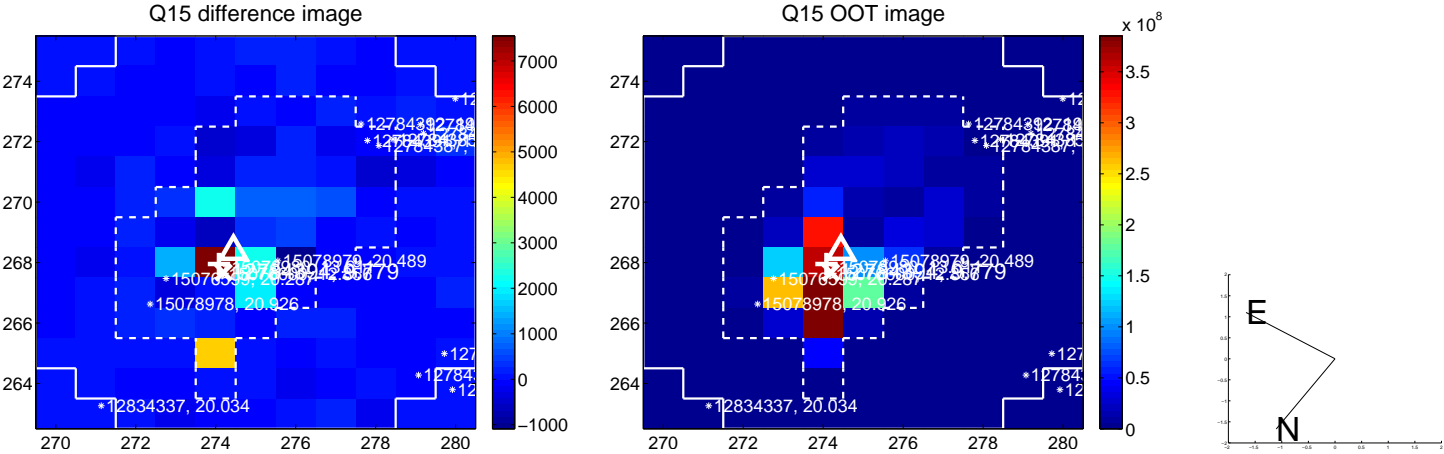
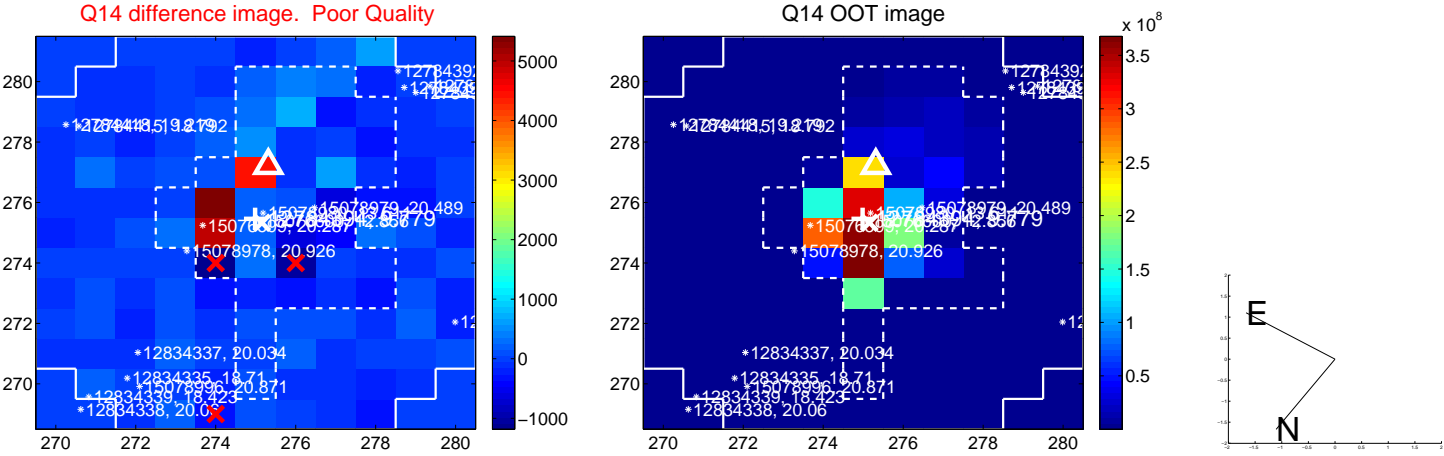
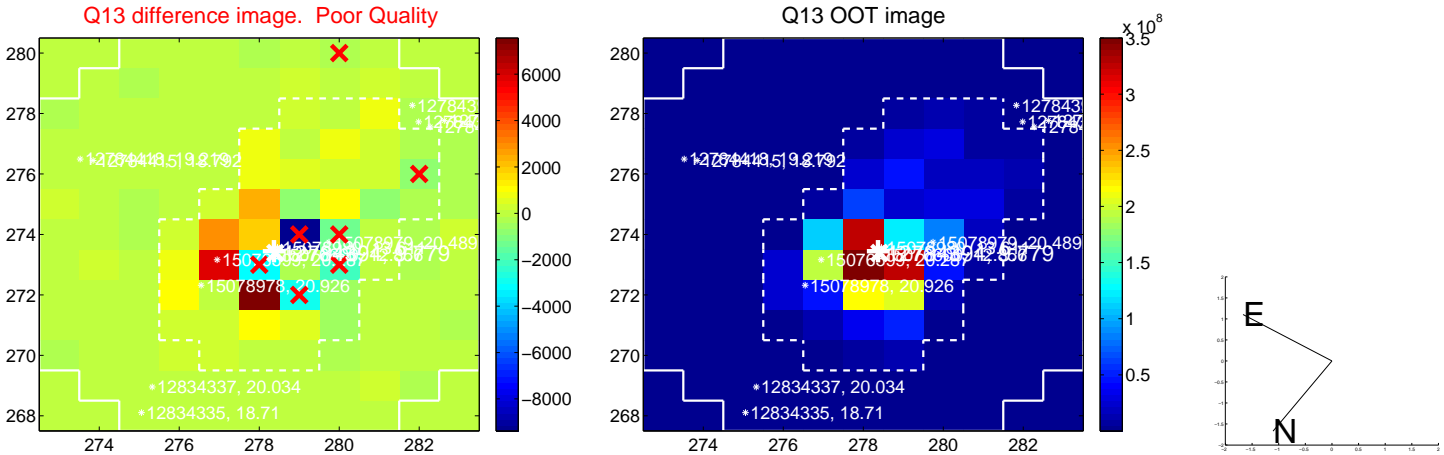




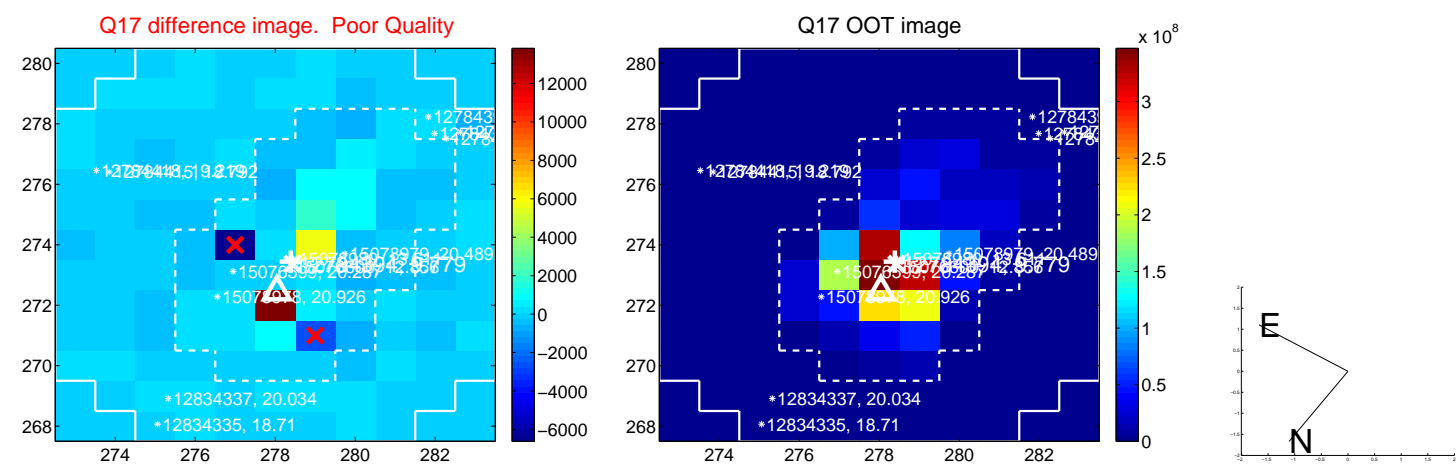
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



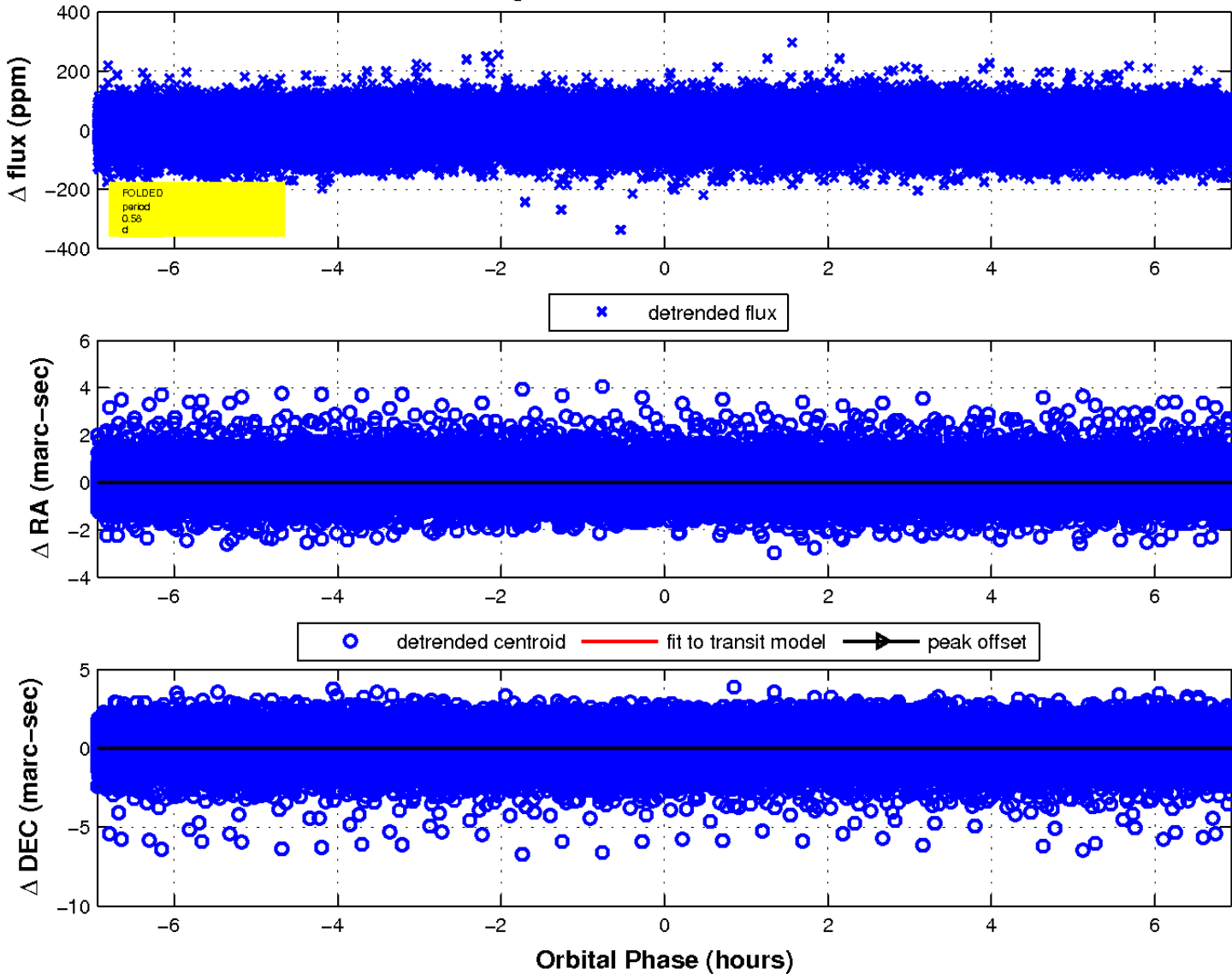
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

