

# KIC 005397516

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005397516-01	OBS	No	4.885646	135.971874	51.3	30.031	10.6	11.6	1.75	6605	1.84	1351.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005397516-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT

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

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

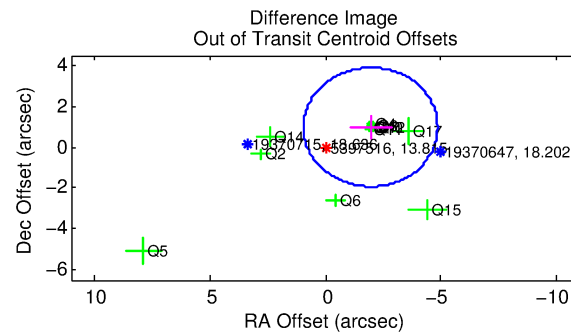
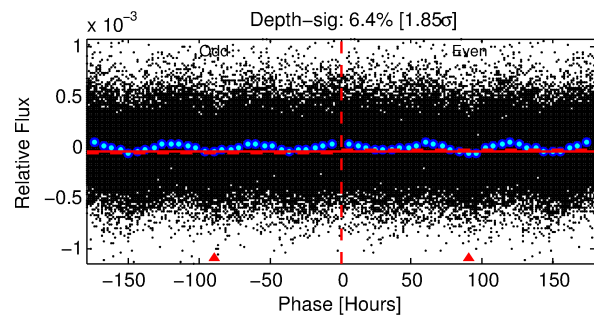
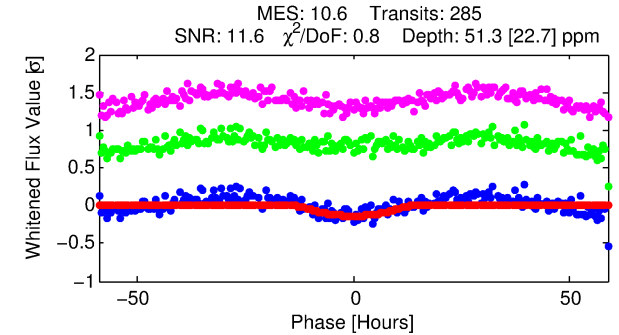
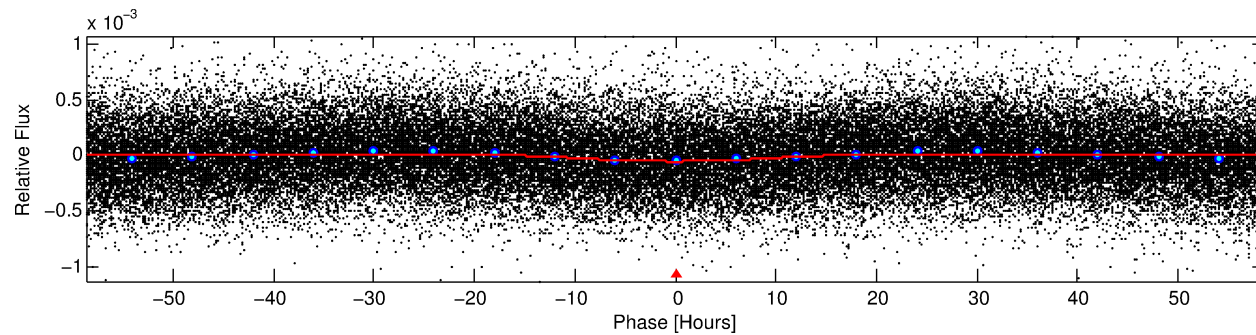
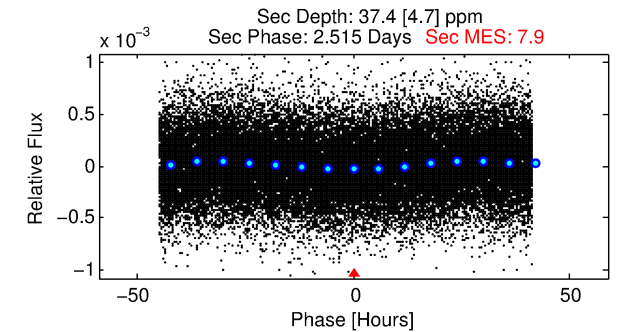
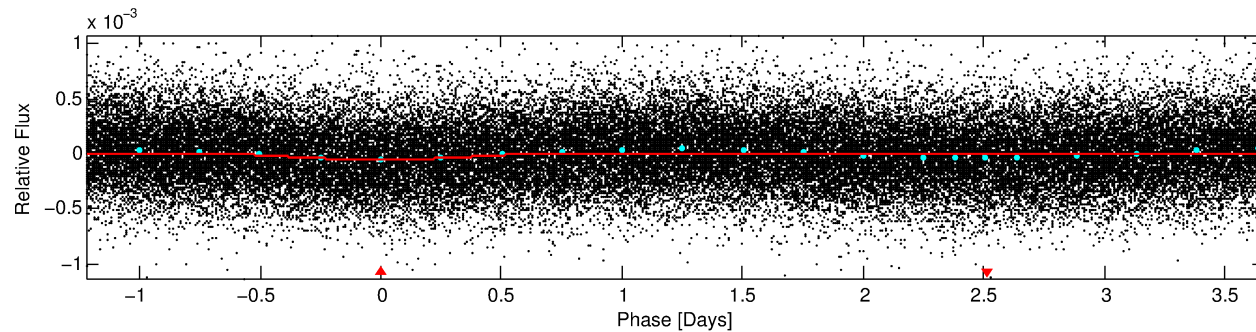
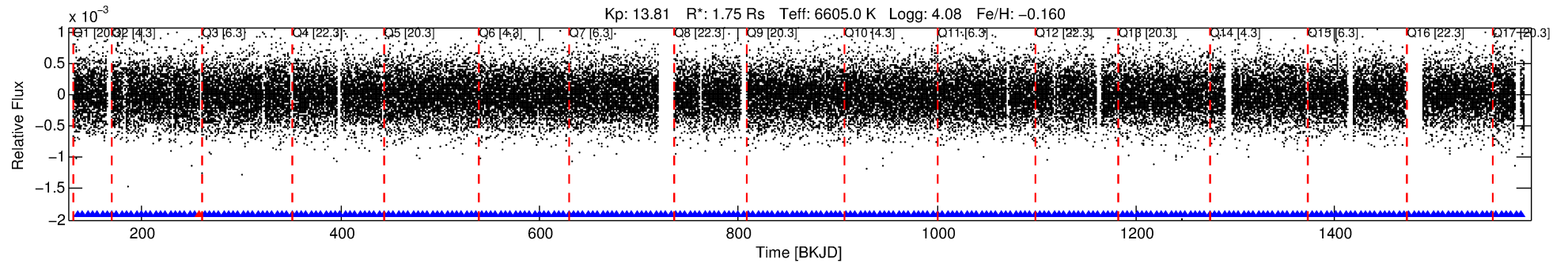
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005397516-01

No Significant Match Found

# DV One-Page Summary

KIC: 5397516 Candidate: 1 of 1 Period: 4.886 d



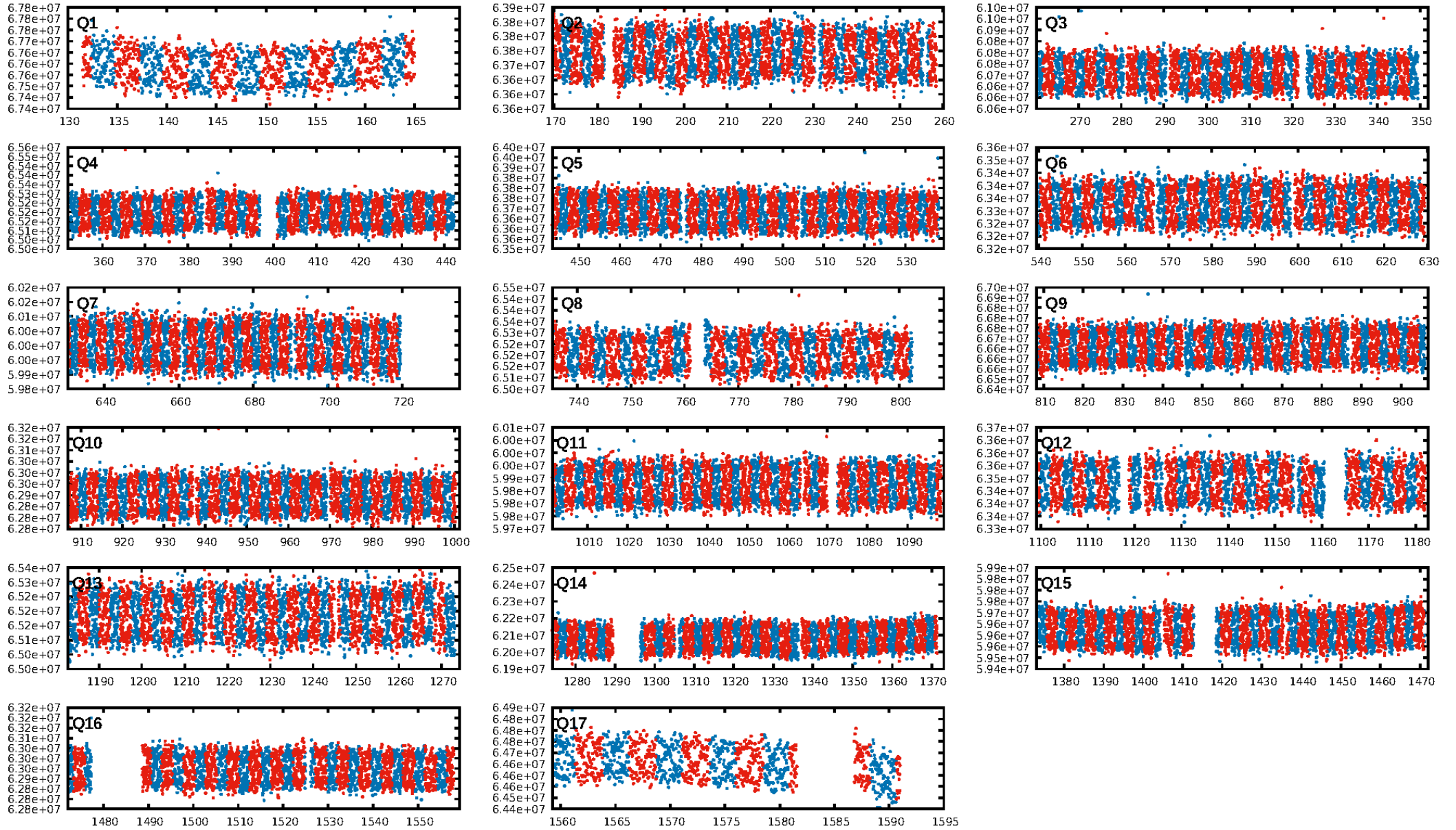
## DV Fit Results:

Period = 4.88565 [0.00036] d  
Epoch = 135.9719 [0.0601] BKJD  
Rp/R\* = 0.0097 [0.0037]  
a/R\* = 1.02 [0.01]  
b = 0.99 [0.01]  
Seff = 1351.61 [624.41]  
Teff = 1546 [179] K  
Rp = 1.84 [0.90] Re  
a = 0.0621 [0.0174] AU  
Ag = 23.38 [20.75] [1.08σ]  
**Teffp = 5256 [1035] K [3.53σ]**

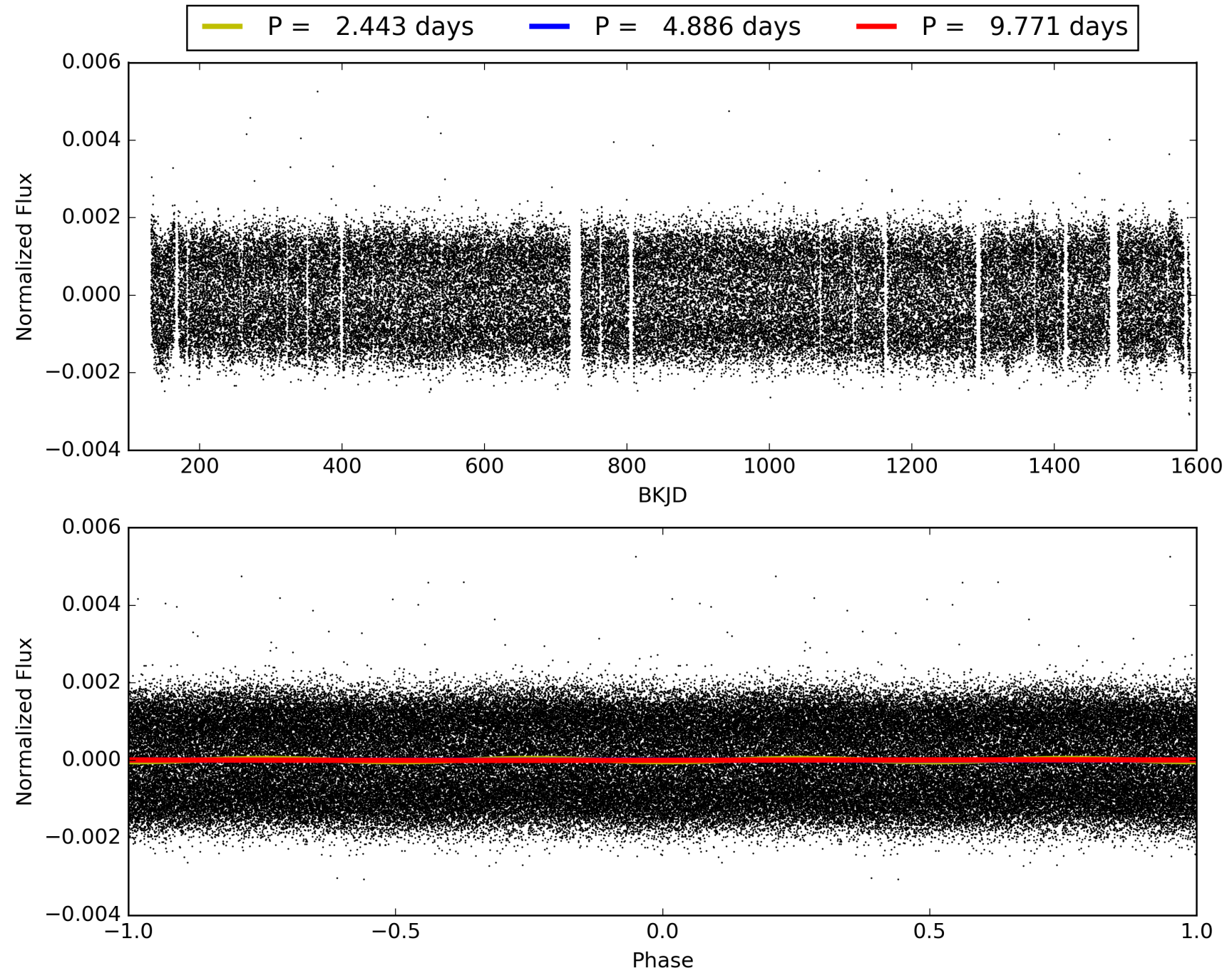
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.29e-27  
RollingBand-fgt: 1.00 [270/271]  
GhostDiagnostic-chr: 3.154  
Centroid-sig: 26.8%  
Centroid-so: 2.583 arcsec [2.86σ]  
OotOffset-rm: 2.181 arcsec [2.25σ]  
KicOffset-rm: 1.995 arcsec [2.16σ]  
OotOffset-st: 4/4/2/2 [12]  
KicOffset-st: 4/4/2/2 [12]  
DiffImageQuality-fgm: 0.25 [3/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005397516-01, PDC Light Curves



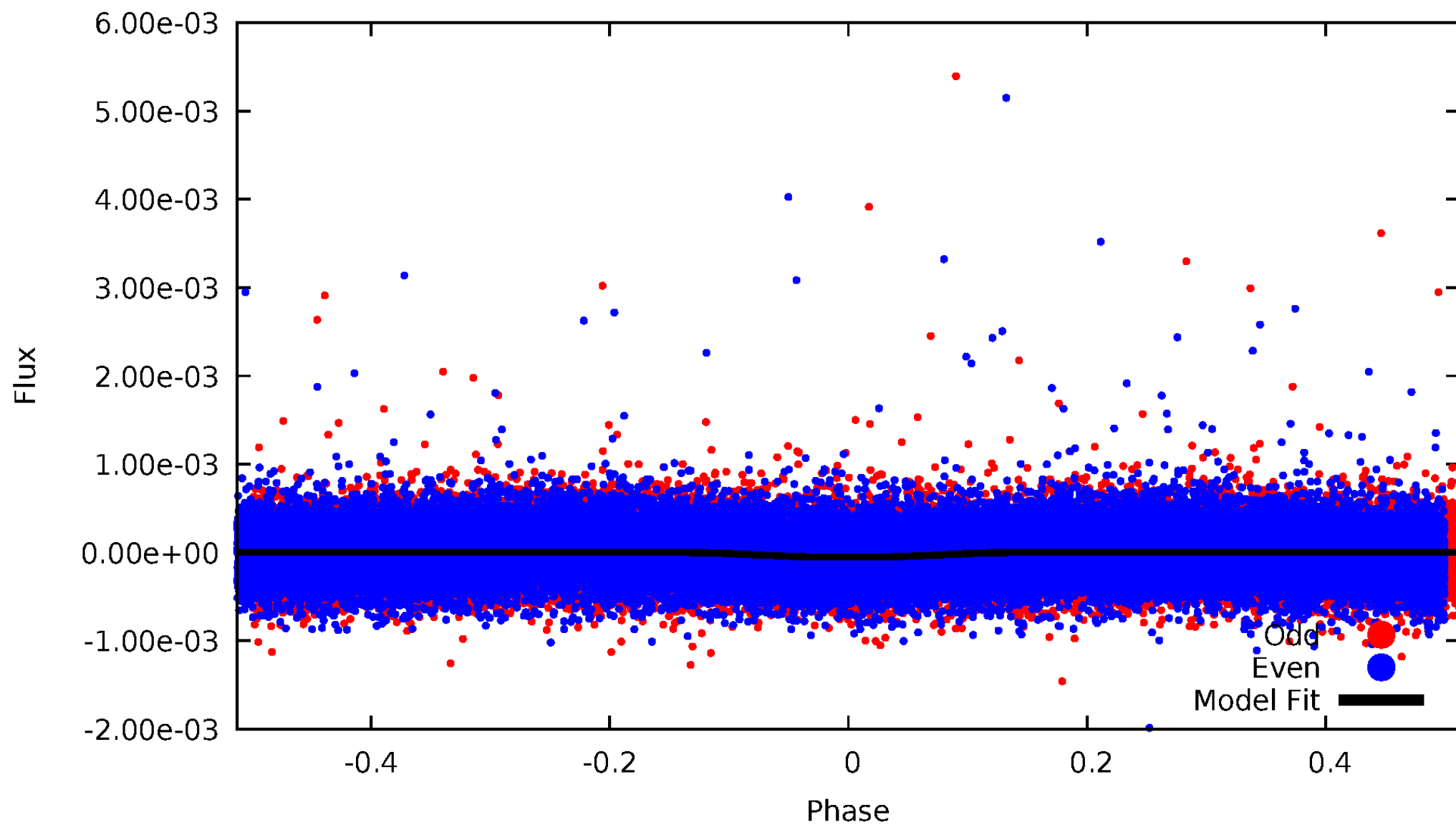
TCE 005397516-01





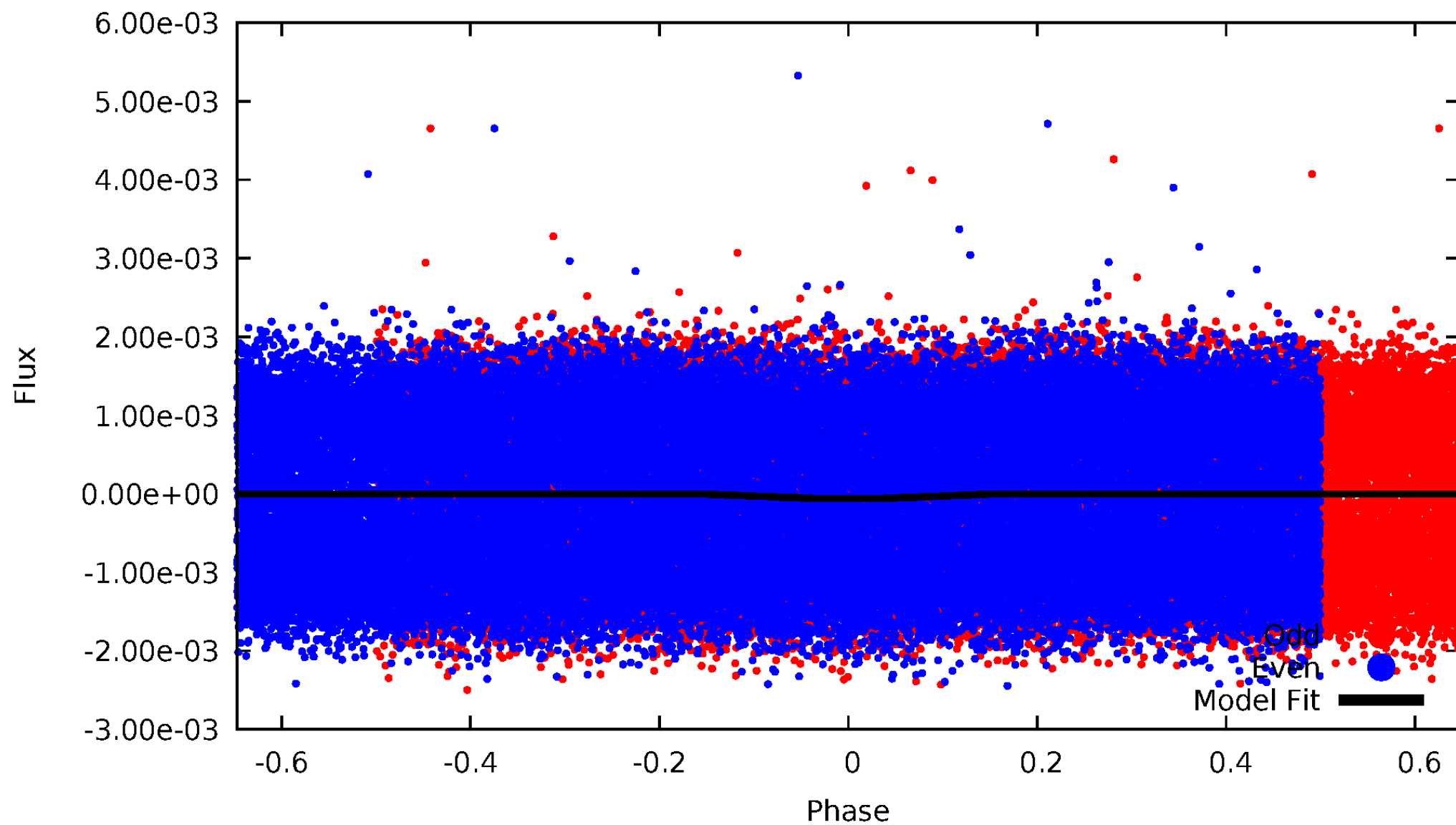
# DV Odd/Even

TCE 005397516-01



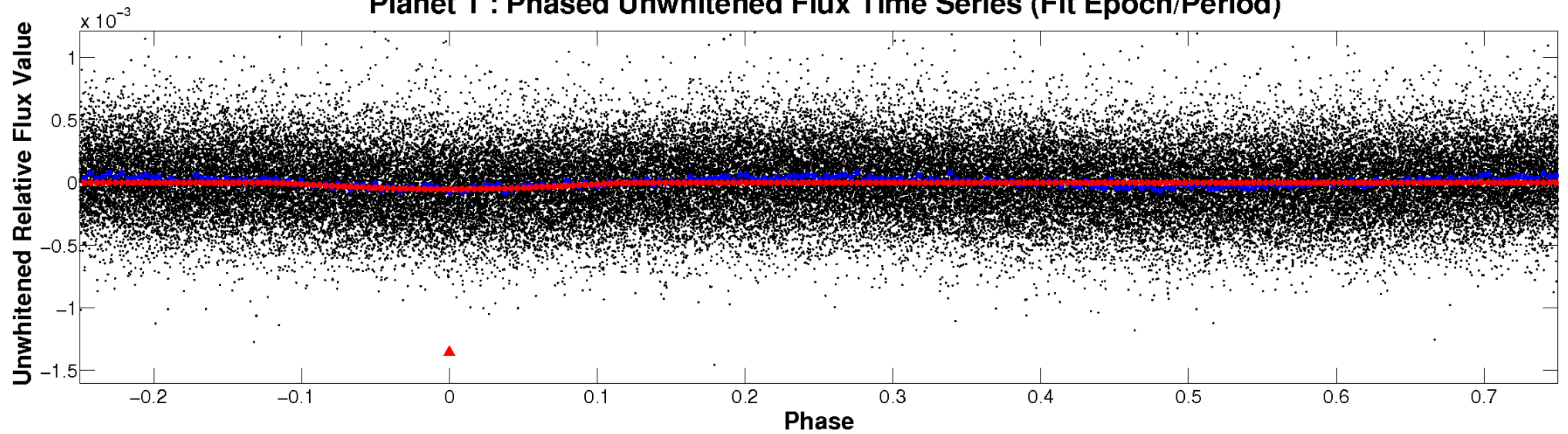
# ALT Odd/Even

TCE 005397516-01

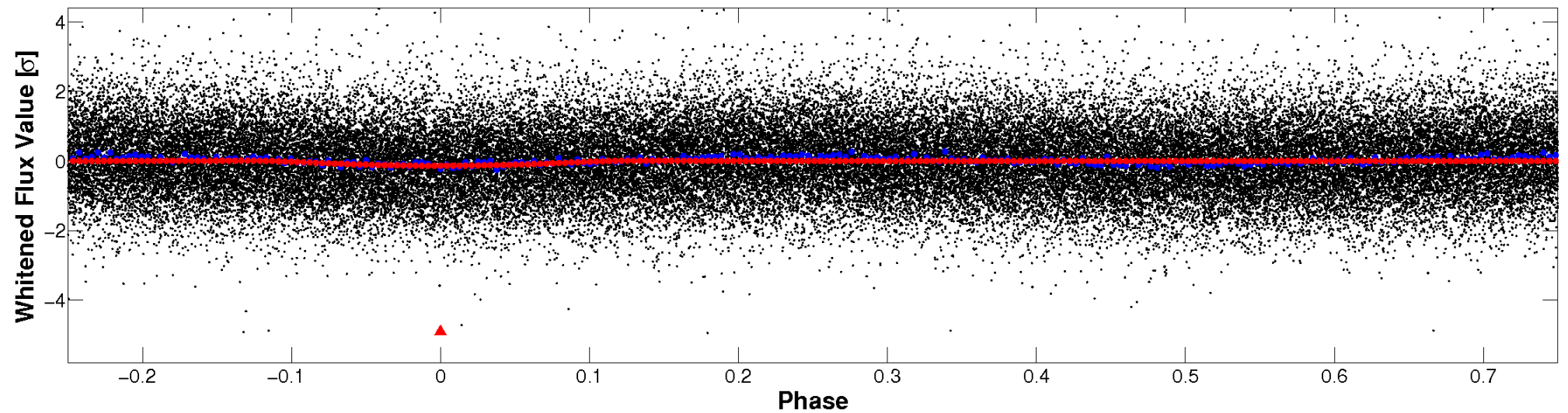


# Non-Whitened Vs. Whitened Light Curve

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

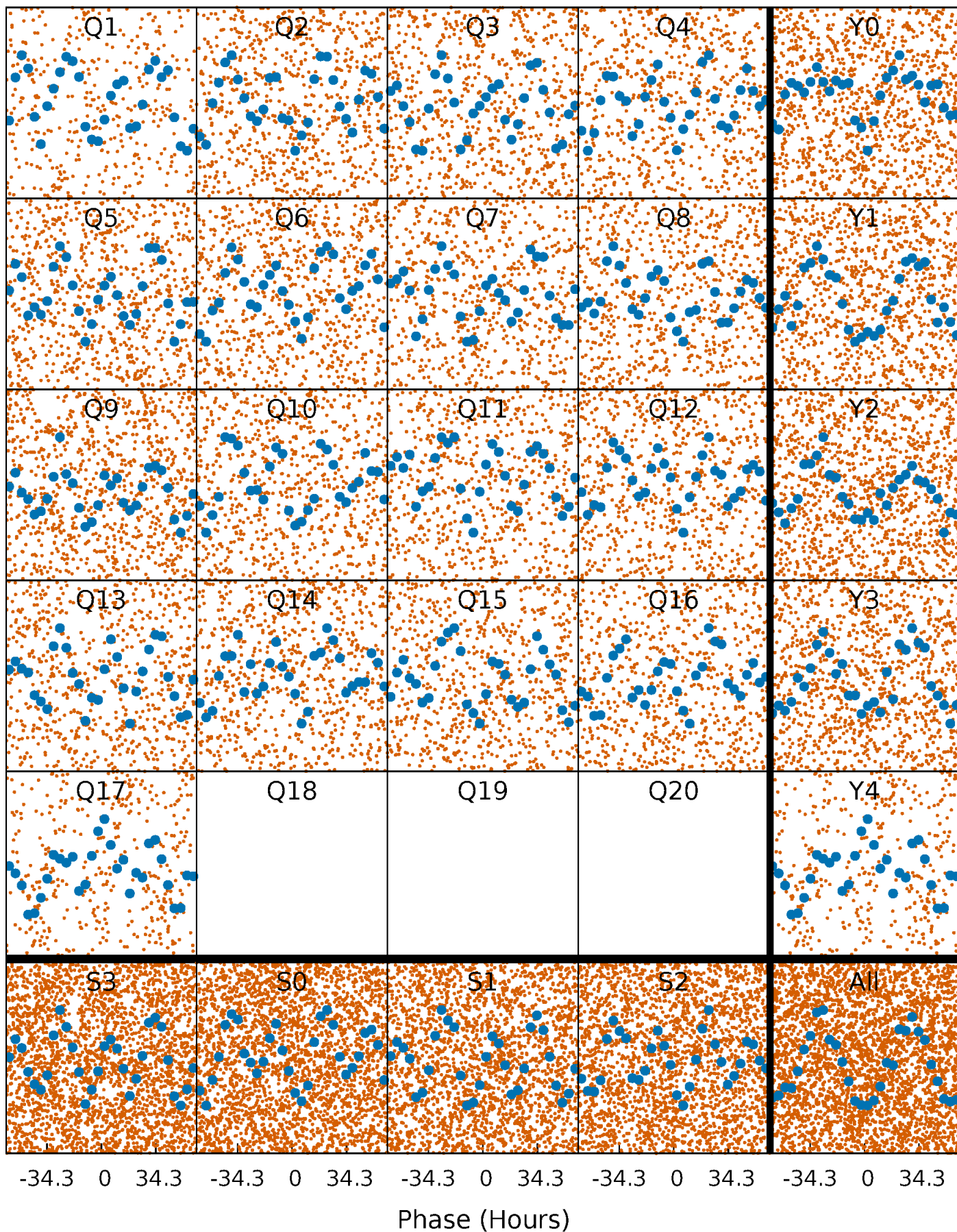


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

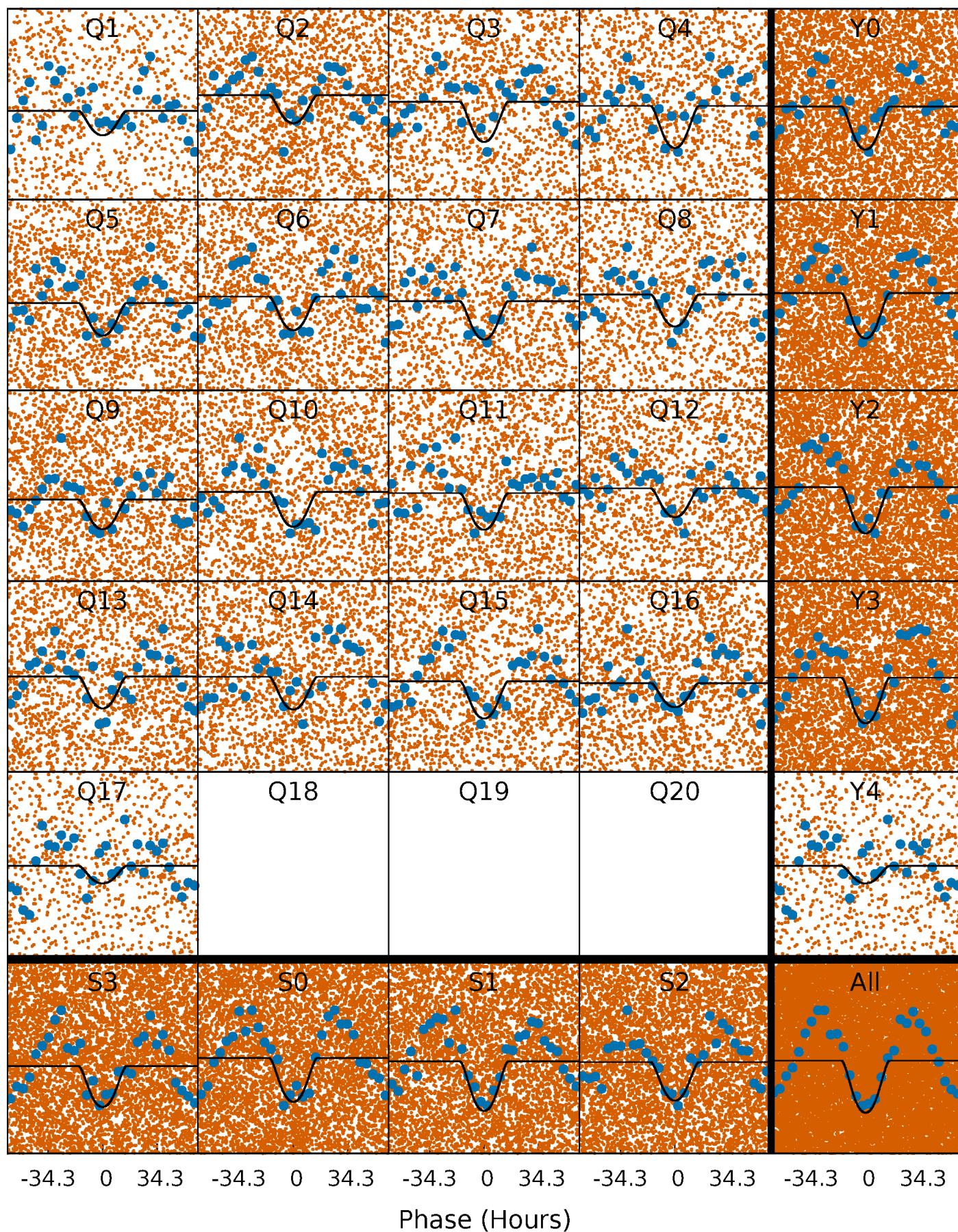
TCE 005397516-01 P= 4.885646 Days  $T_0=135.971874$  (BKJD)





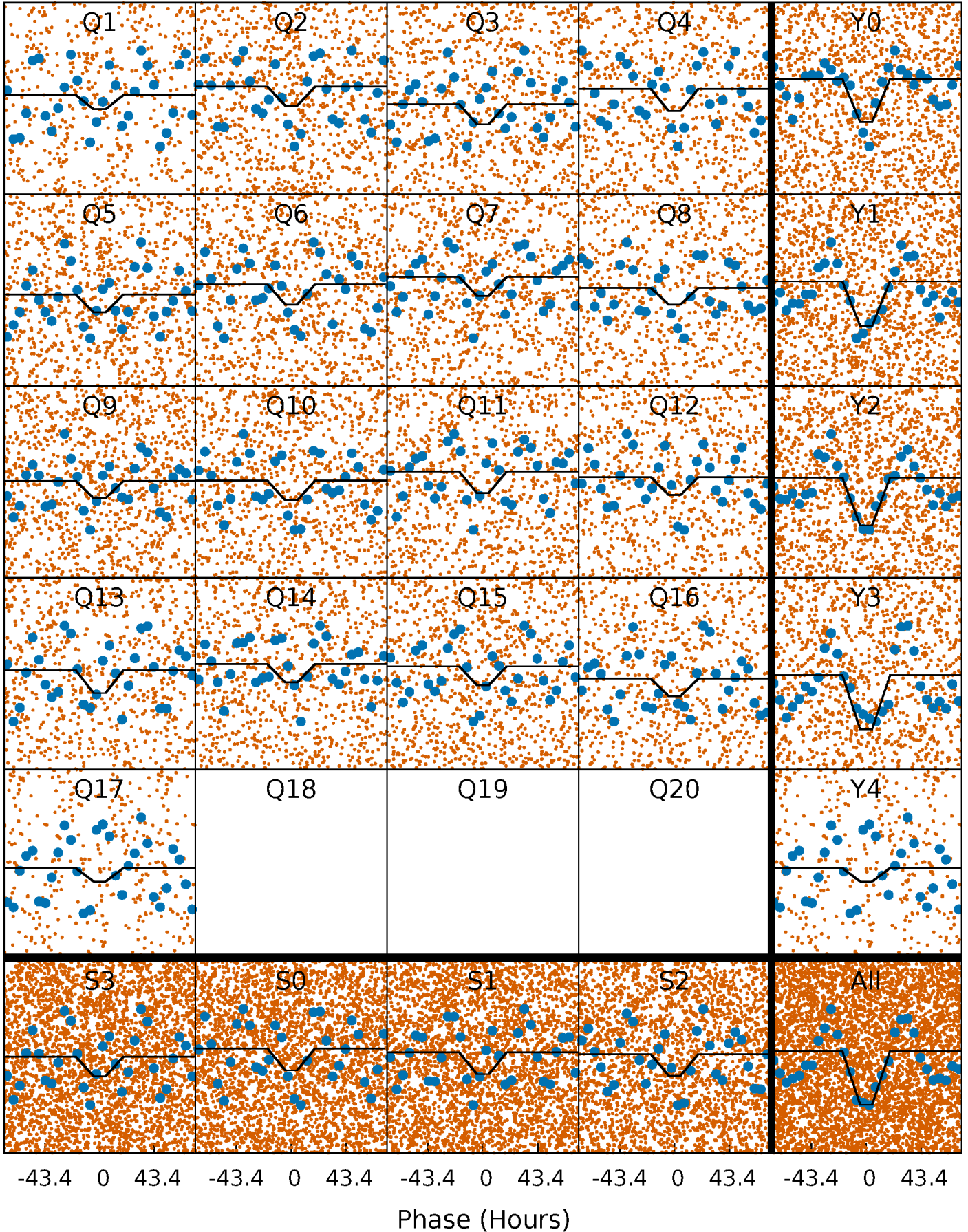
# DV Quarter-Phased Transit Curves

TCE 005397516-01 P= 4.885646 Days  $T_0=135.971874$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005397516-01 P= 4.885541 Days  $T_0=135.991620$  (BKJD)

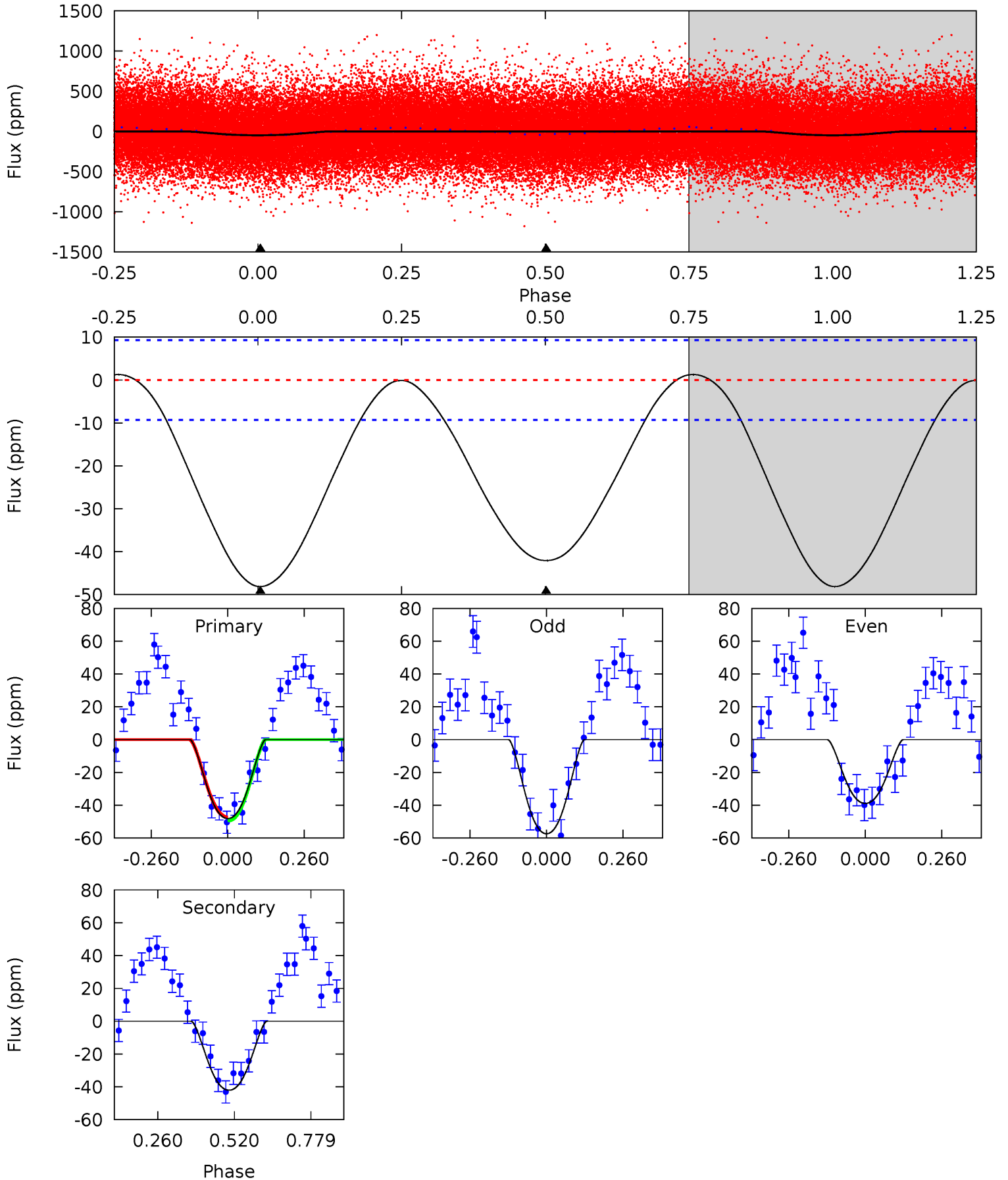




# DV Model-Shift Uniqueness Test

005397516-01, P = 4.885646 Days, E = 131.086228 Days

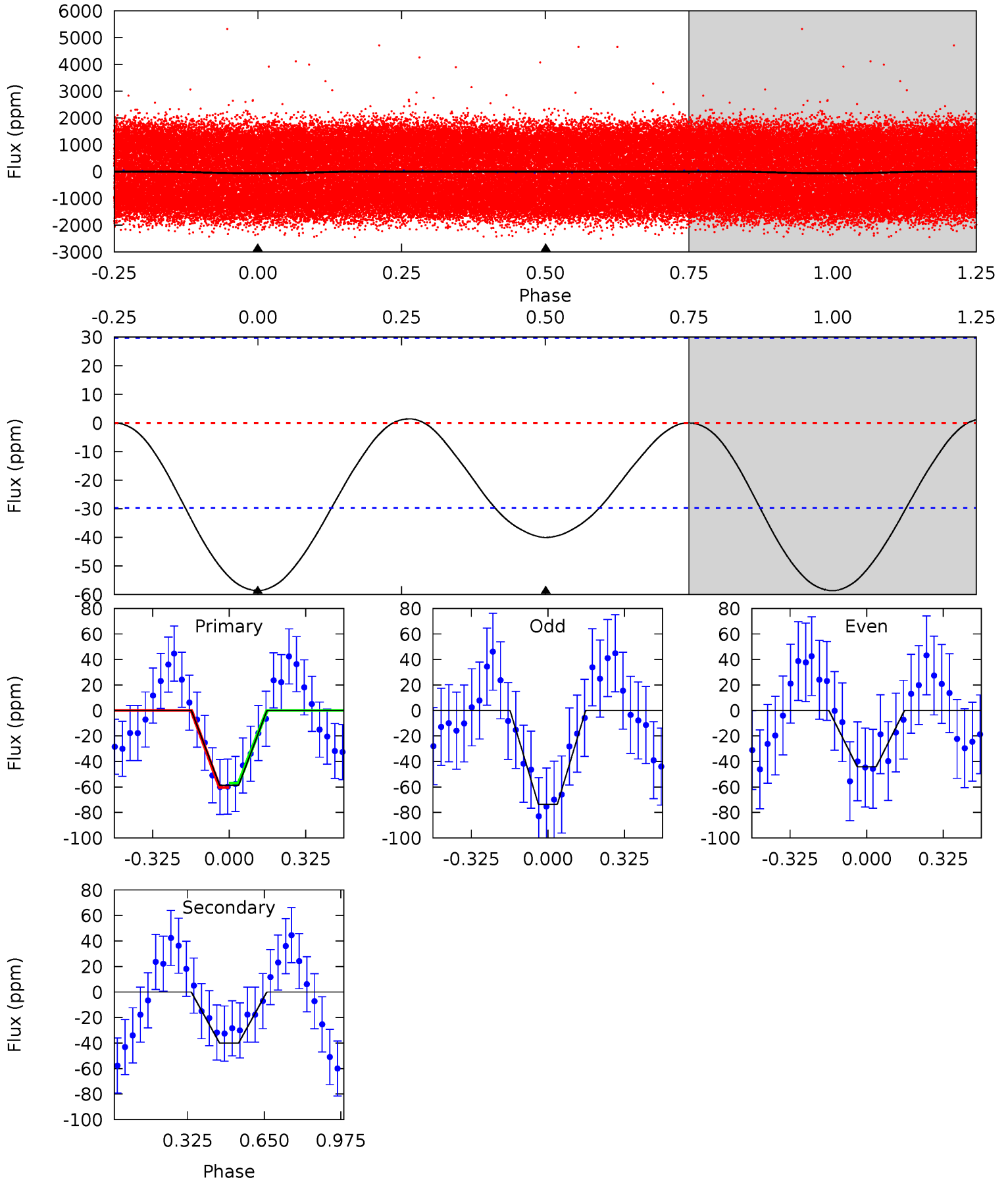
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	19.7	0	0	4.36	1.13	0.38	22.6	22.6	19.7	19.7	4.34	1.14	0.03	0.53



# Alt Model-Shift Uniqueness Test

005397516-01, P = 4.885541 Days, E = 131.106079 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
8.51	5.81	0	0	4.31	0.98	0.12	8.51	8.51	5.81	5.81	2.13	1.60	0.02	0.25





### Stellar Parameters For KIC 005397516

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6605^{+181}_{-250}$	$4.079^{+0.252}_{-0.168}$	$-0.160^{+0.250}_{-0.300}$	$1.748^{+0.477}_{-0.530}$	$1.343^{+0.182}_{-0.273}$	$0.354^{+0.543}_{-0.160}$
	+3%/-4%	+6%/-4%	+156%/-188%	+27%/-30%	+14%/-20%	+153%/-45%
Source	PHO1	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 005397516-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-42 \pm 2$	$1.70^{+0.79}_{-0.69}$	$2134^{+160}_{-178}$	$5489^{+1560}_{-785}$	$30^{+54}_{-16}$
Alt.	$-40 \pm 7$	$1.43^{+0.74}_{-0.66}$	$2142^{+175}_{-190}$	$5918^{+2377}_{-986}$	$41^{+92}_{-24}$

$T_{max}$  = 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

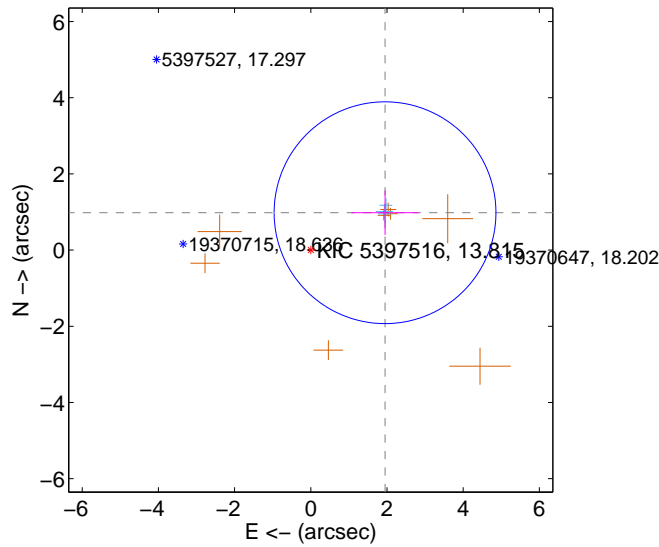
Supplemental centroid analysis for 005397516-01. Kepler magnitude: 13.81. Transit SNR 11.61

There are 3 quarters with good PRF difference image offsets

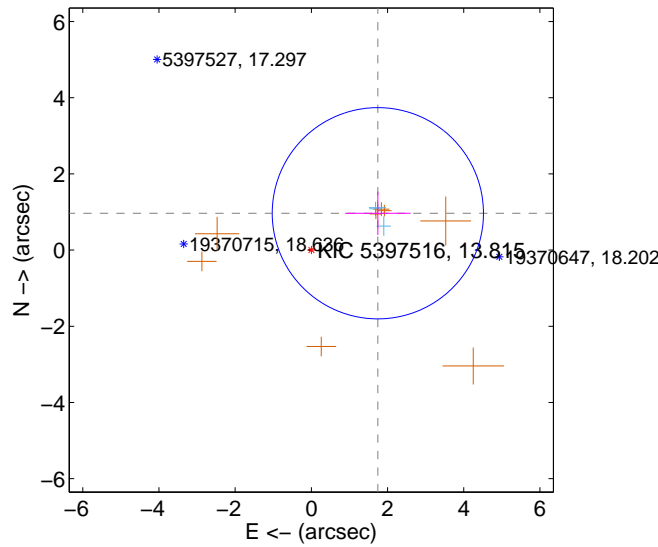
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.181 \pm 0.970$	2.25	$-1.948 \pm 0.883$	$0.981 \pm 0.584$
PRF-fit source offset from KIC position	$1.995 \pm 0.924$	2.16	$-1.745 \pm 0.861$	$0.967 \pm 0.568$
photometric centroid source offset	$2.58 \pm 0.90$	2.86	$2.22 \pm 0.96$	$-1.31 \pm 0.74$

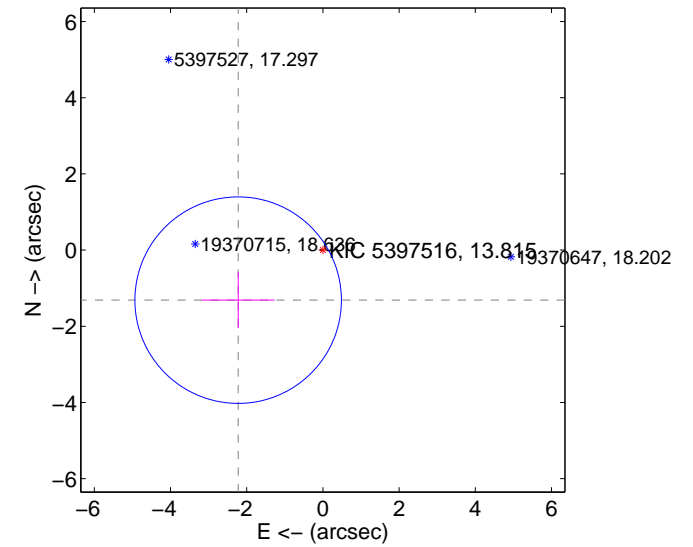
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

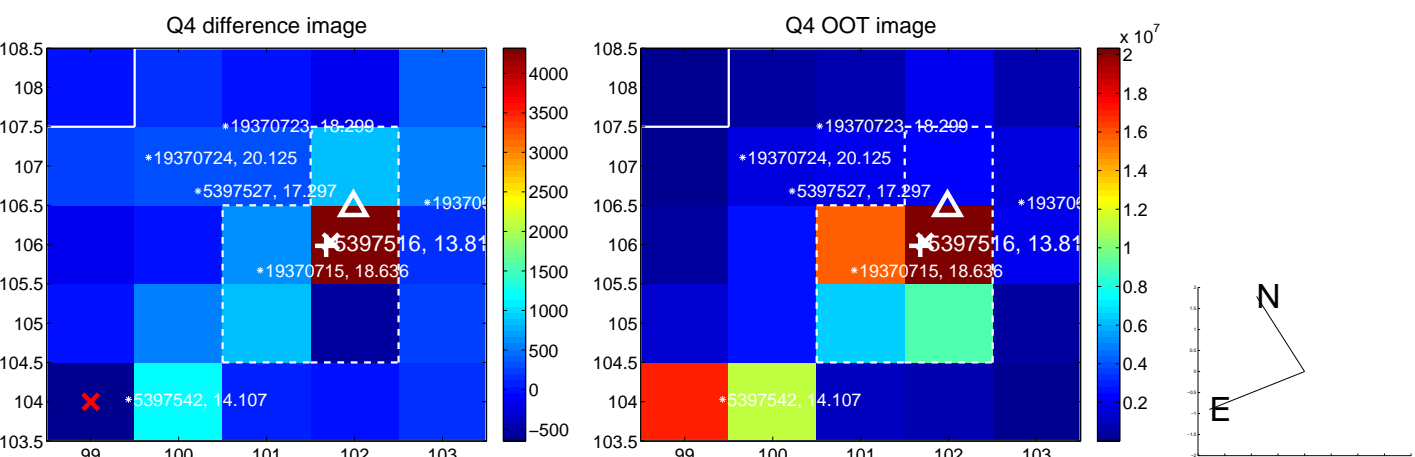
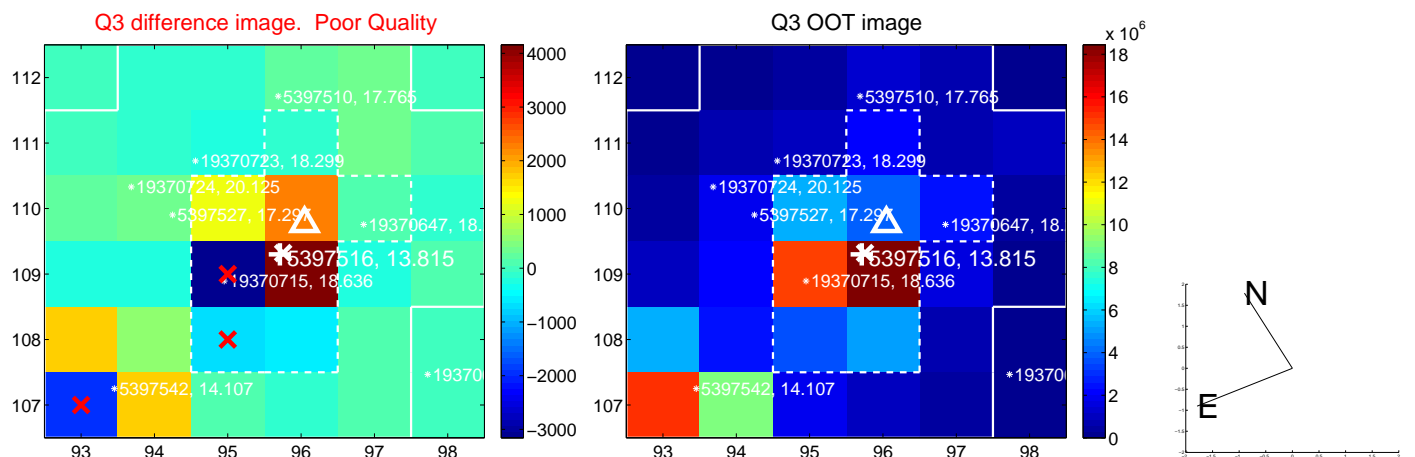
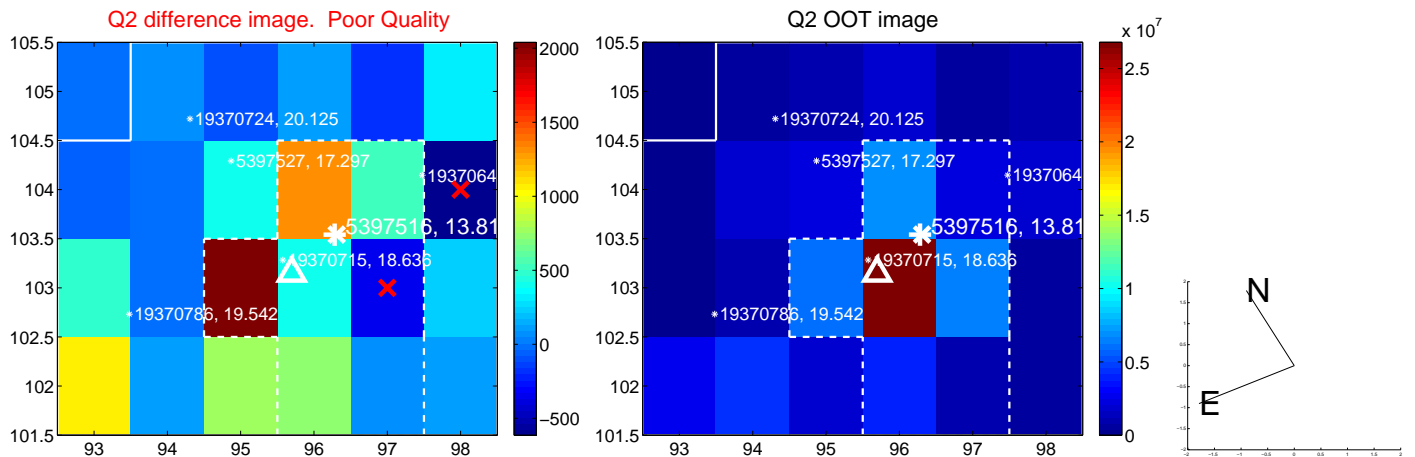
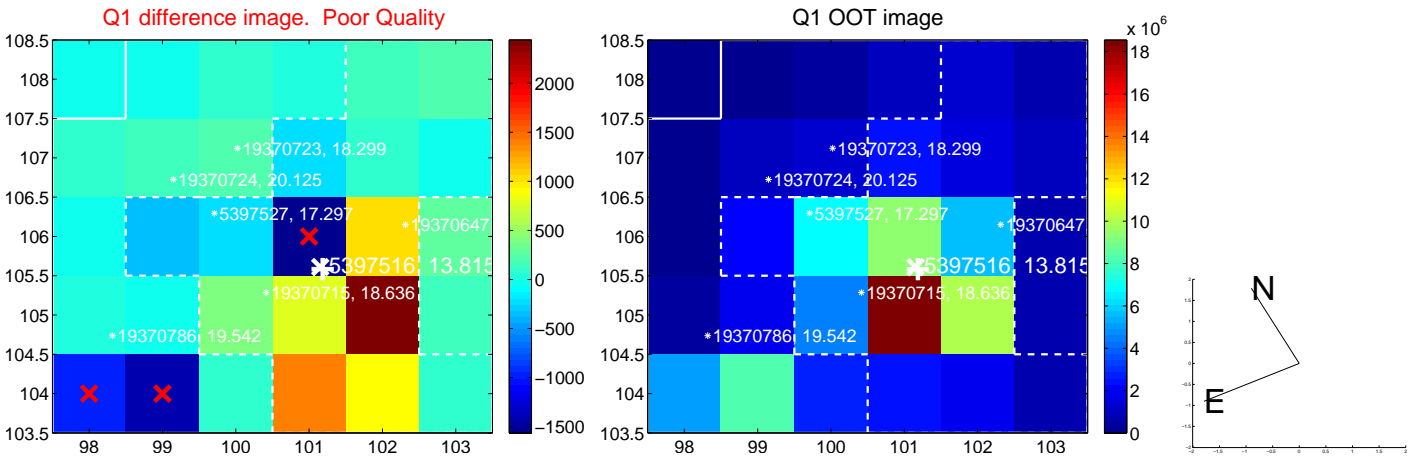


offset from photometric centroids

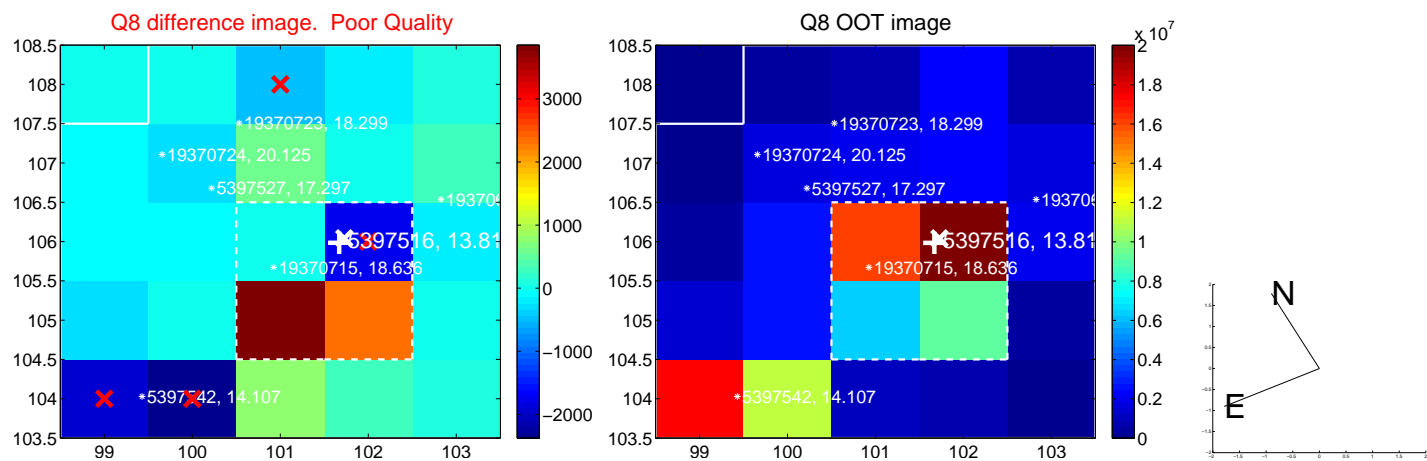
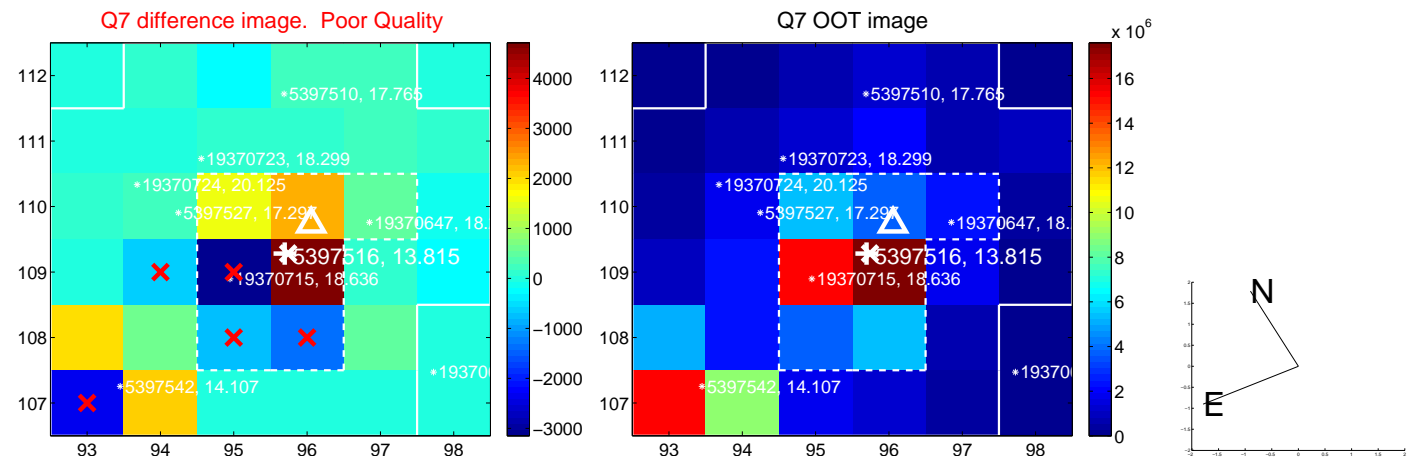
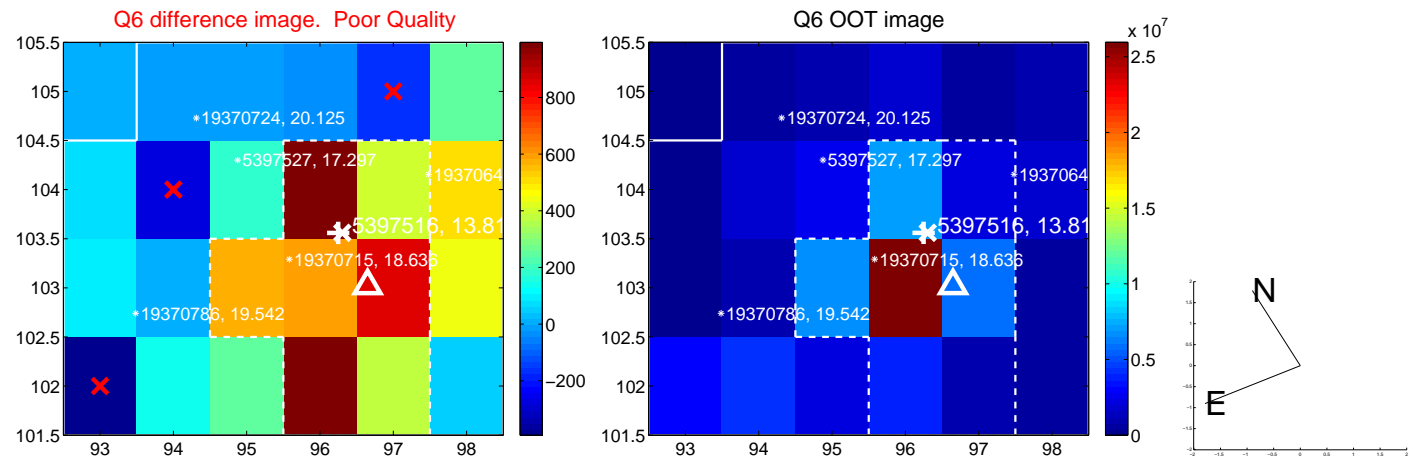
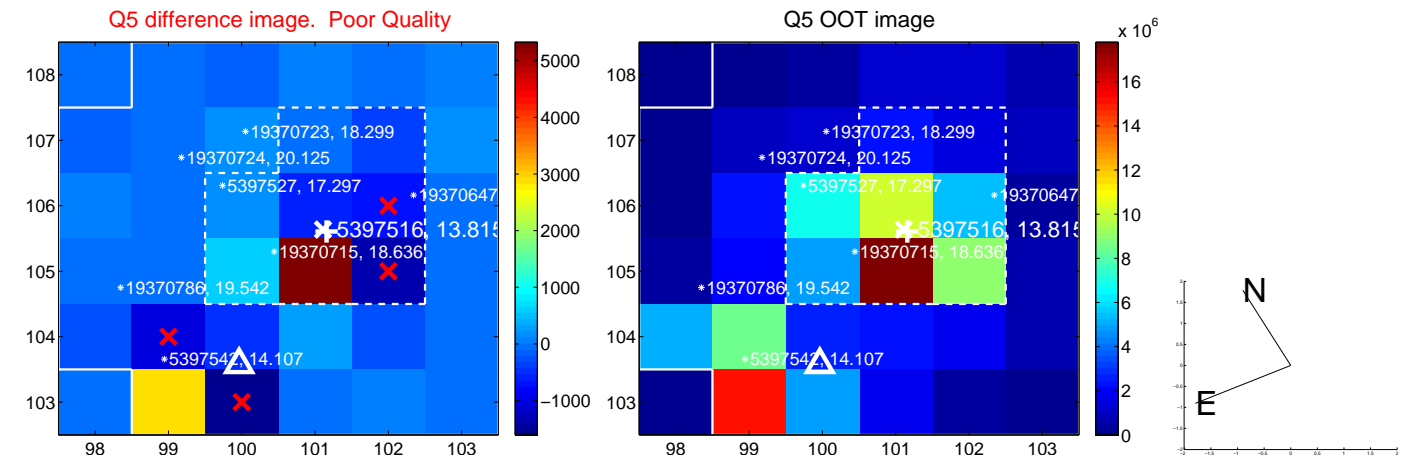


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

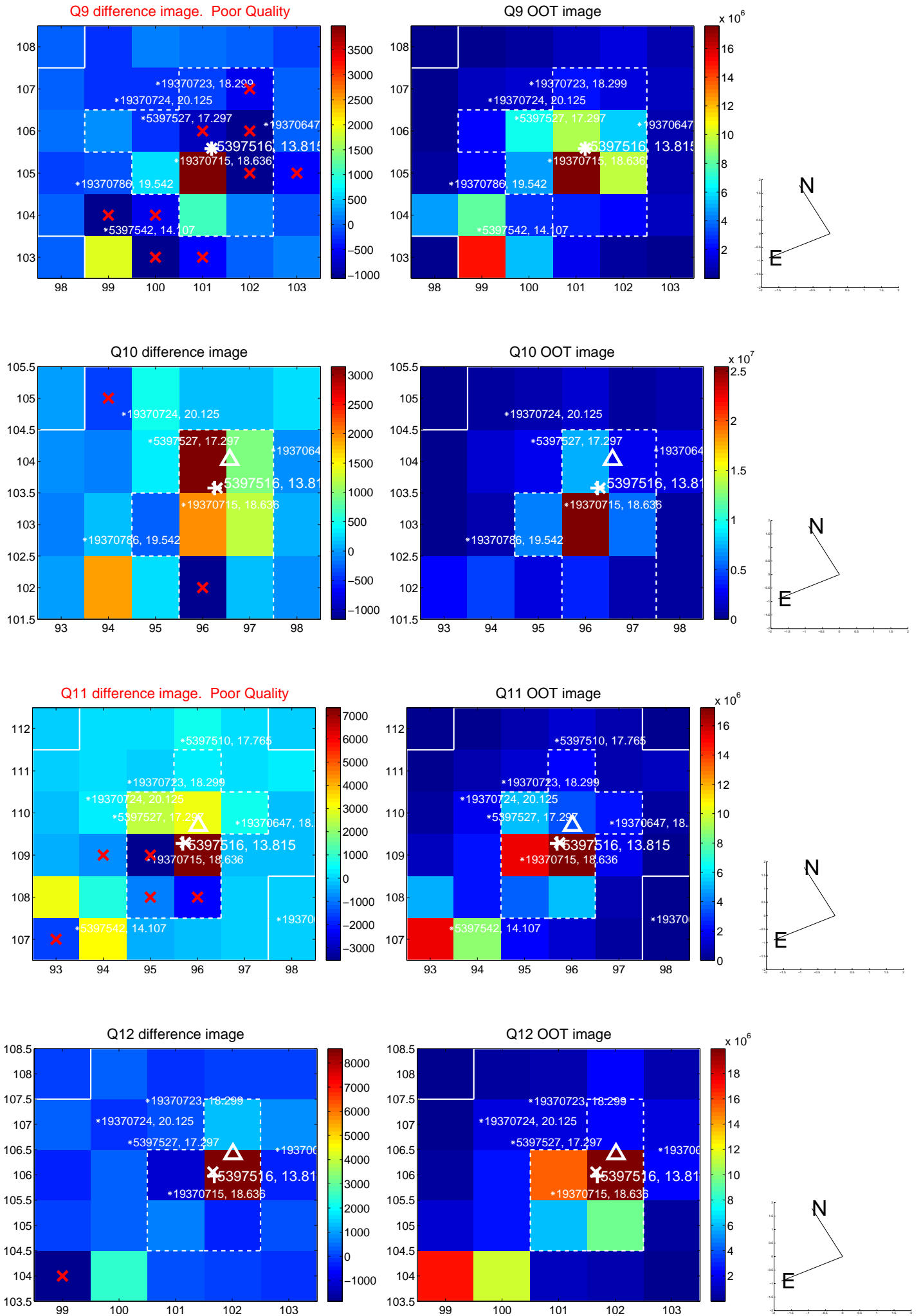


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

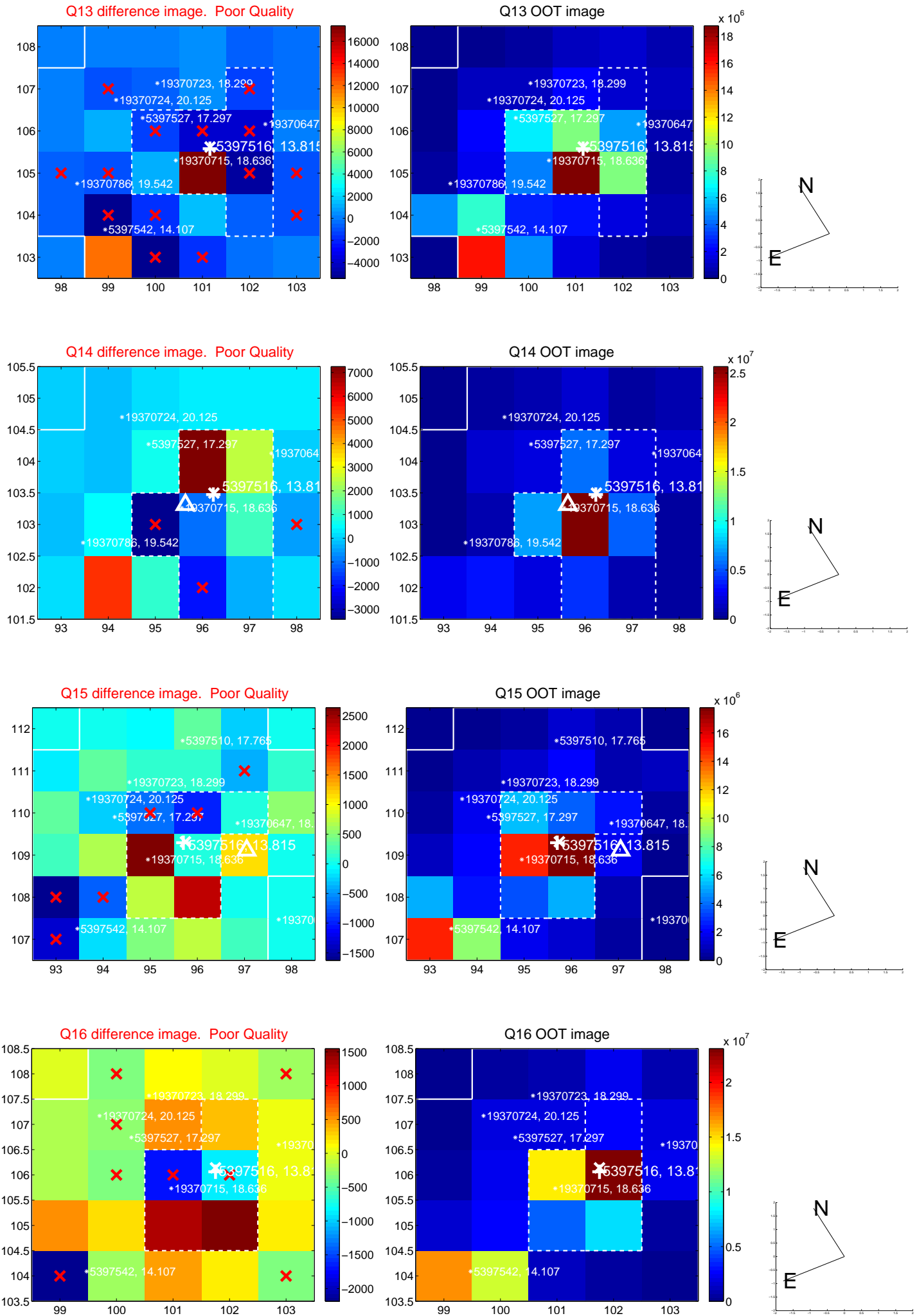




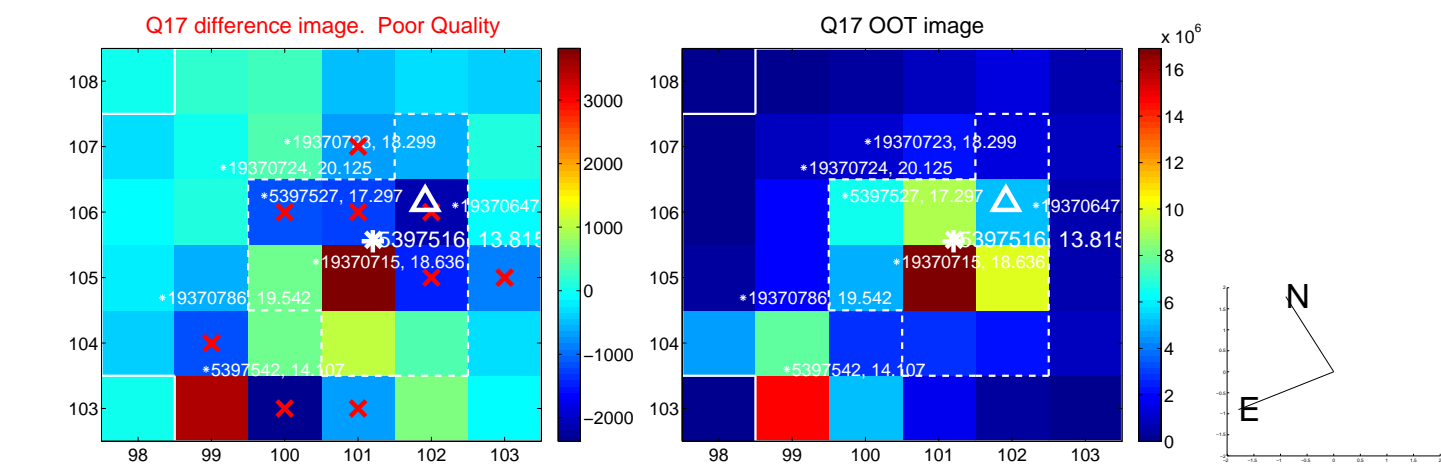
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



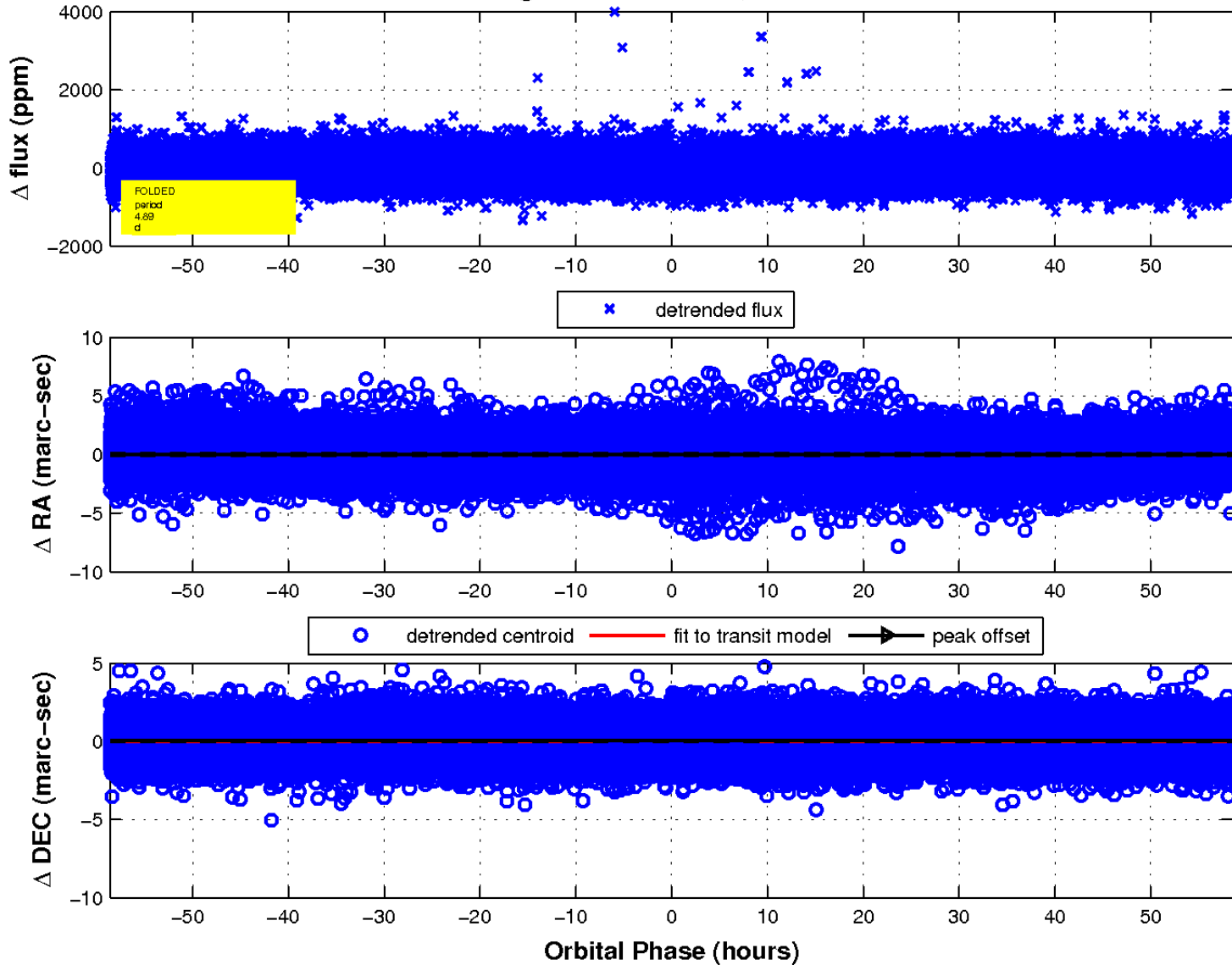
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

