

# KIC 004953173

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004953173-01	OBS	4676.02	3.363718	132.936766	52.8	9.421	10.5	6.9	2.41	5947	2.10	2716.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004953173-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS

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

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

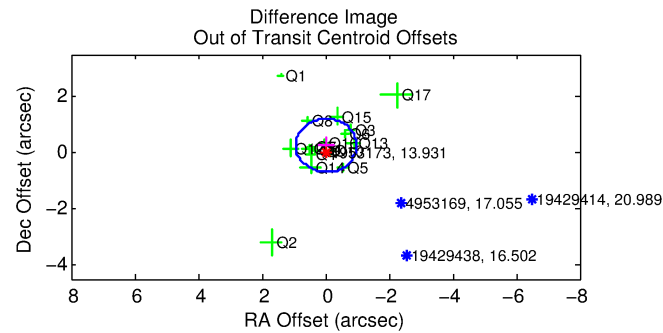
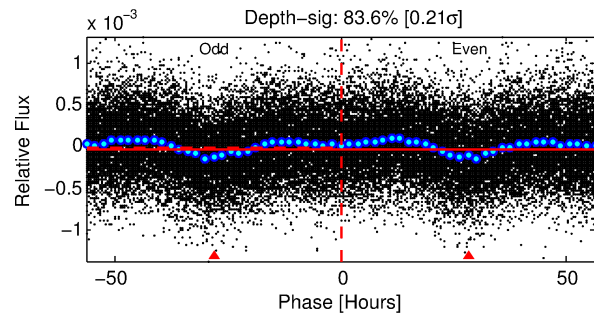
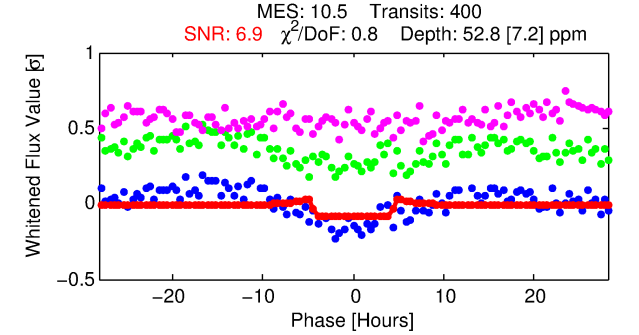
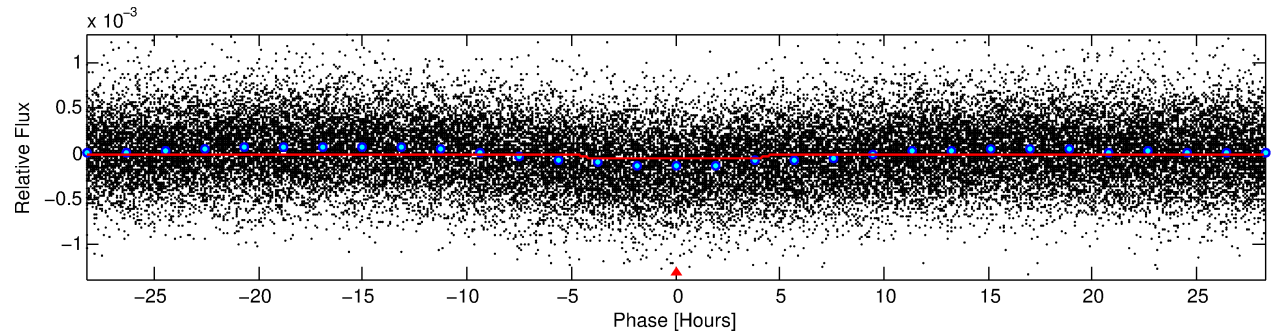
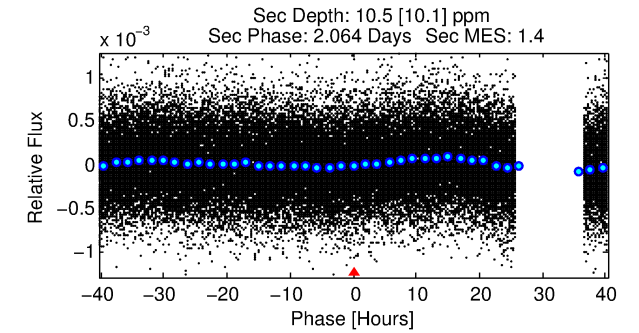
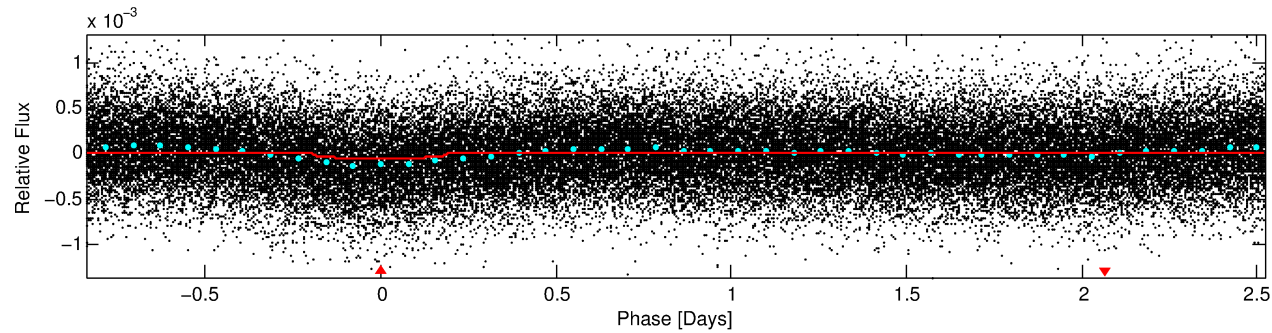
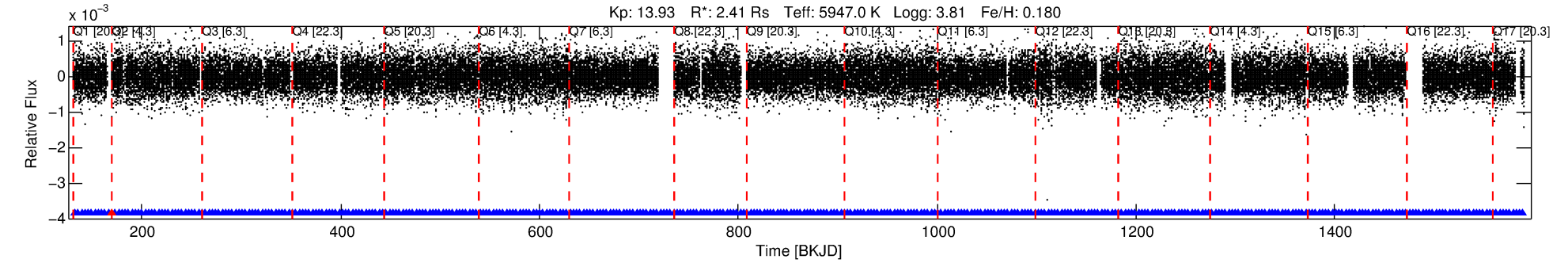
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004953173-01

No Significant Match Found

# DV One-Page Summary

KIC: 4953173 Candidate: 1 of 1 Period: 3.364 d  
KOI: K04676.02 Corr: 0.806



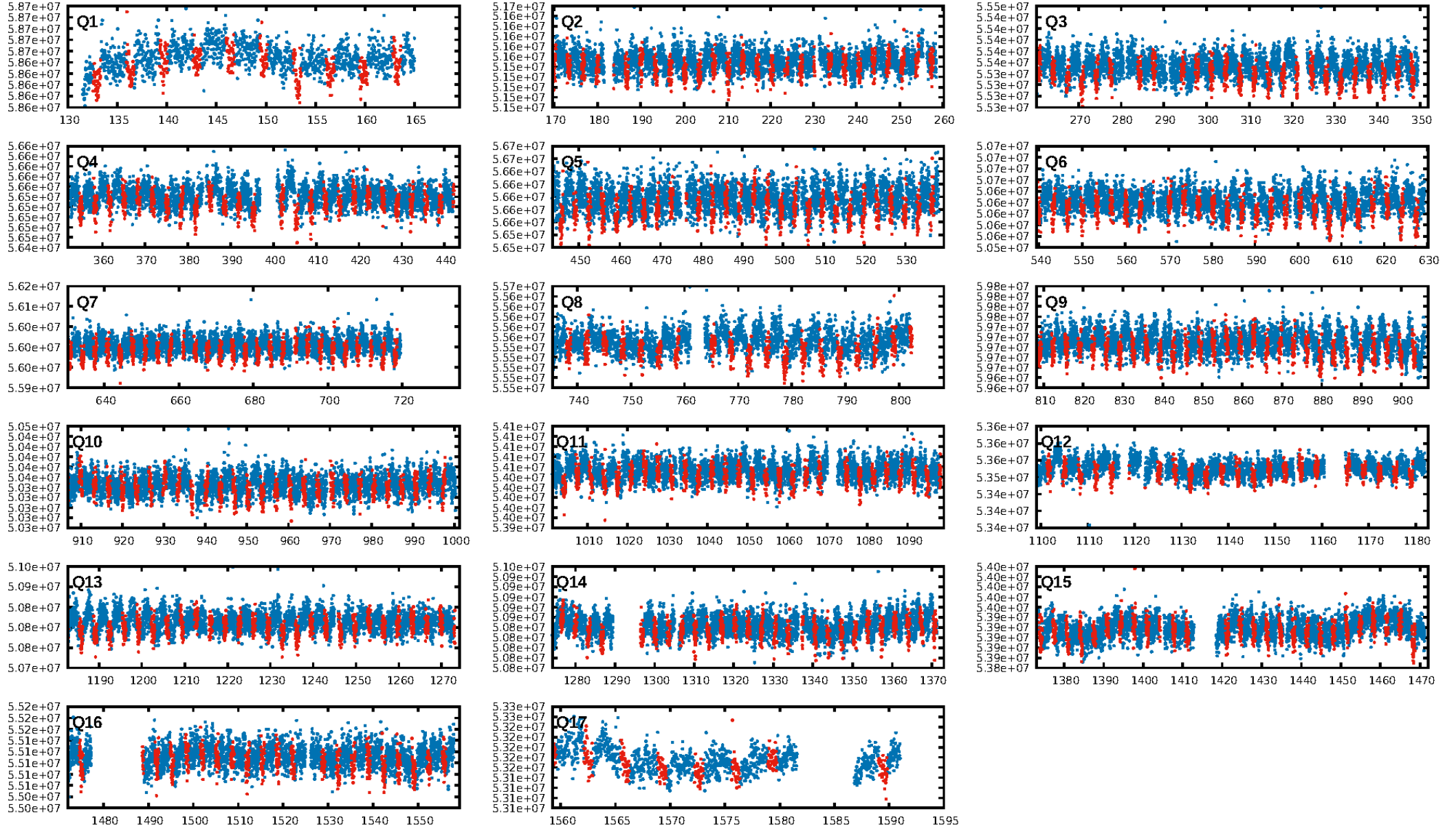
## DV Fit Results:

Period = 3.36372 [0.00005] d  
Epoch = 132.9368 [0.0091] BKJD  
Rp/R\* = 0.0080 [0.0017]  
a/R\* = 1.49 [0.84]  
b = 0.92 [0.18]  
Seff = 2716.30 [2340.78]  
Teq = 1841 [397] K  
Rp = 2.10 [1.19] Re  
a = 0.0489 [0.0255] AU  
Ag = 3.13 [4.22] [0.50 $\sigma$ ]  
Teffp = 3785 [1002] K [1.80 $\sigma$ ]

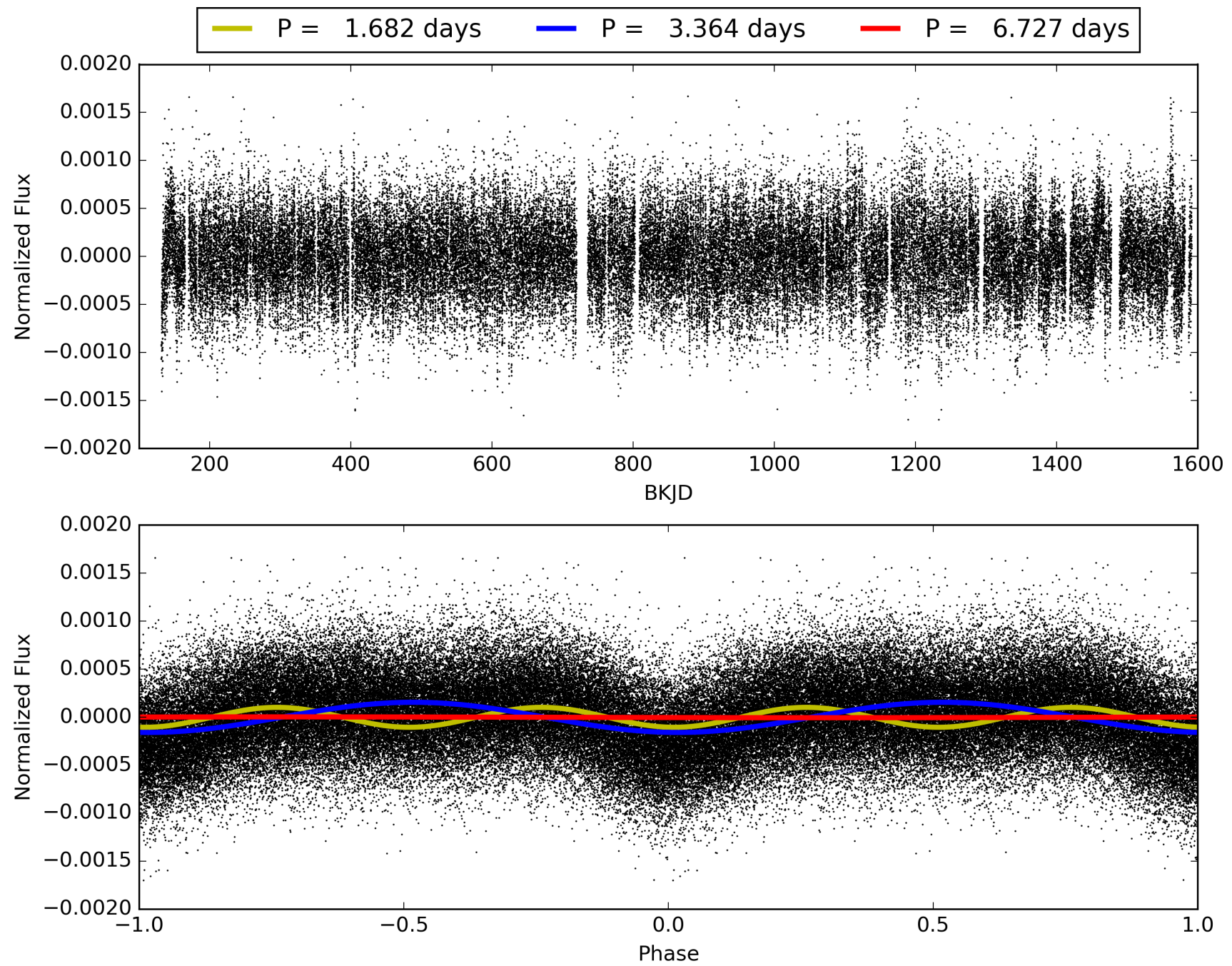
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.20e-19  
RollingBand-fgt: 1.00 [381/382]  
GhostDiagnostic-chr: 1.268  
Centroid-sig: 1.8%  
Centroid-so: 1.715 arcsec [2.25 $\sigma$ ]  
OotOffset-rm: 0.255 arcsec [0.80 $\sigma$ ]  
KicOffset-rm: 0.236 arcsec [0.96 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 004953173-01, PDC Light Curves



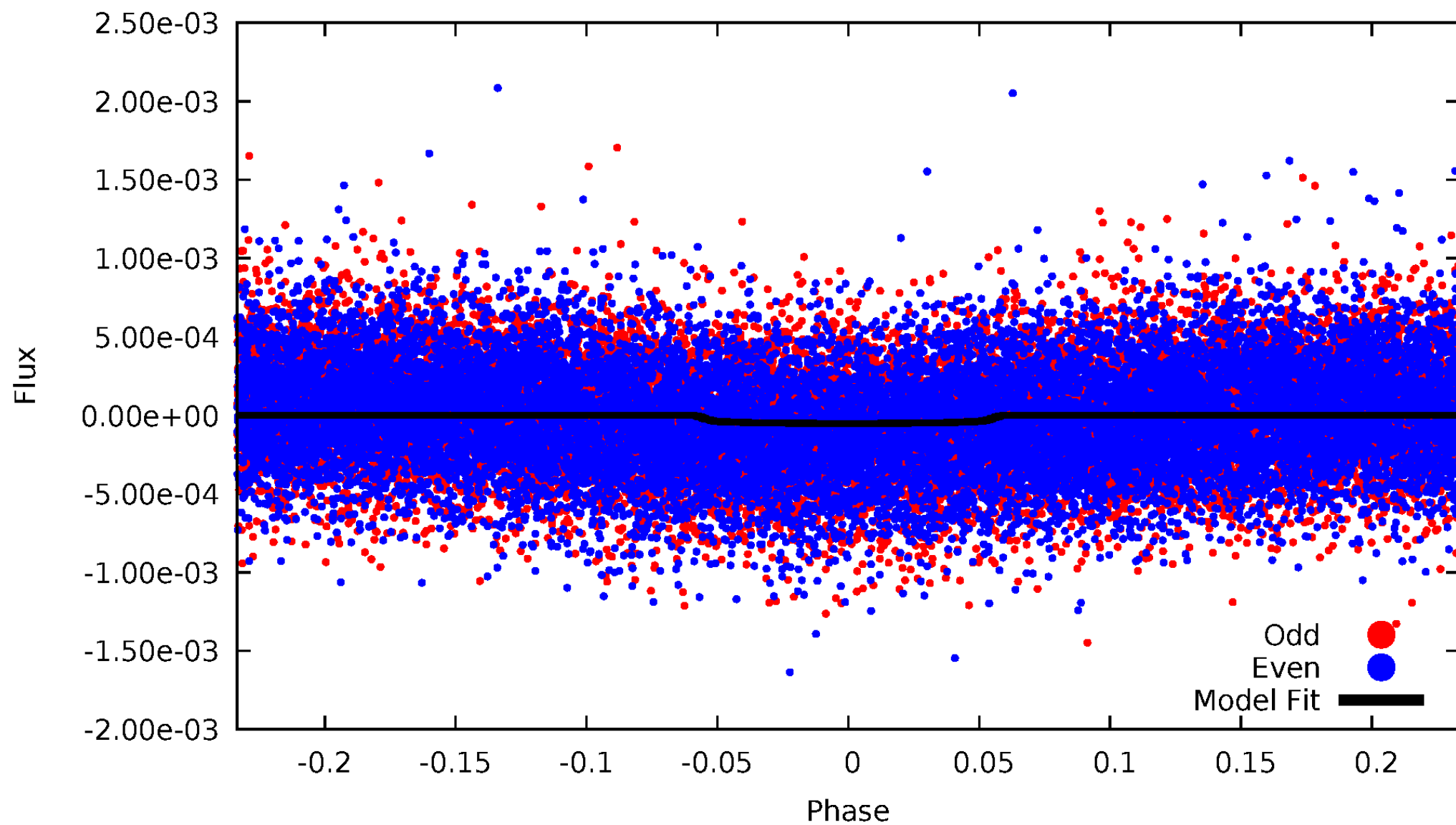
TCE 004953173-01





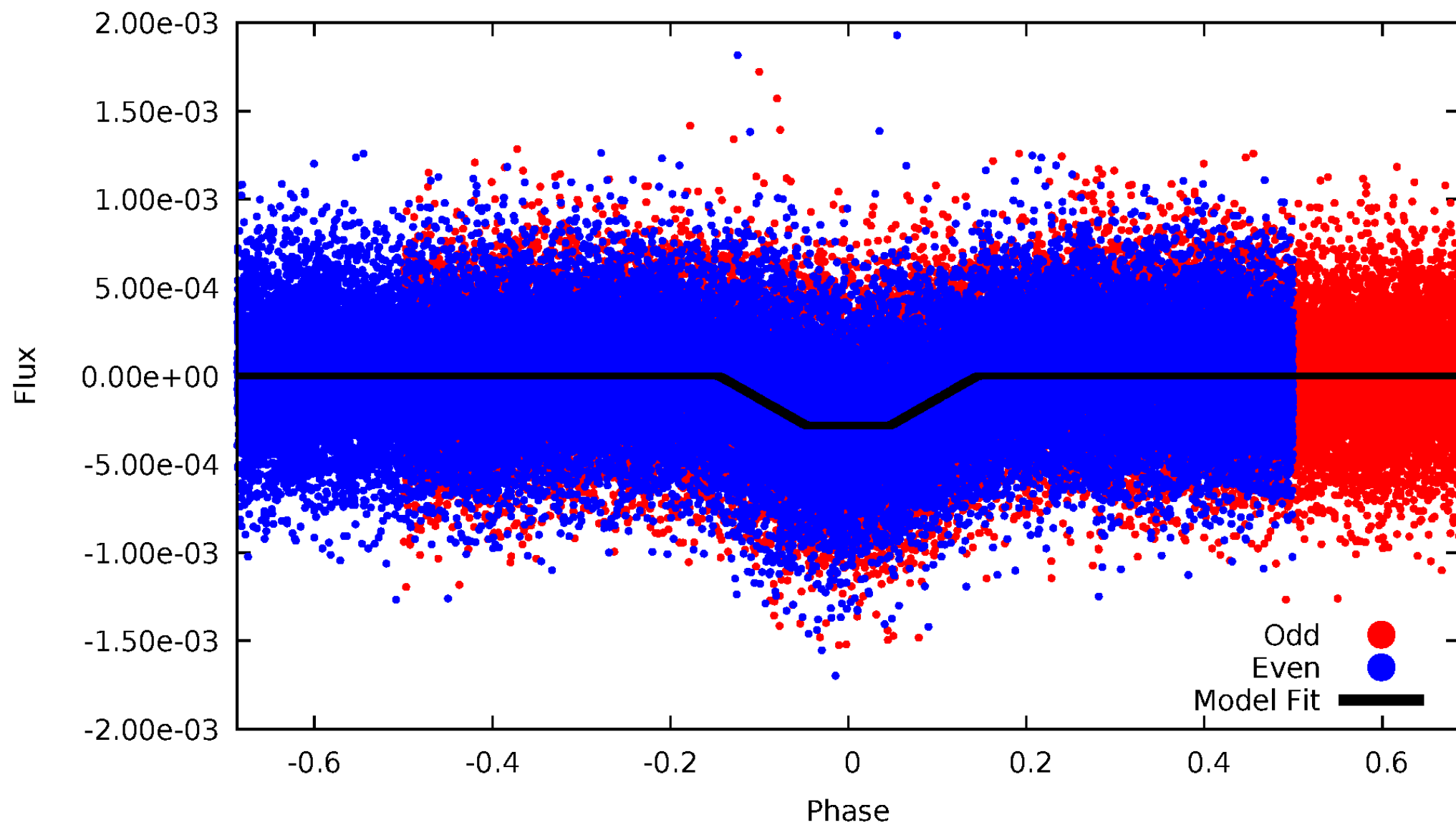
# DV Odd/Even

TCE 004953173-01

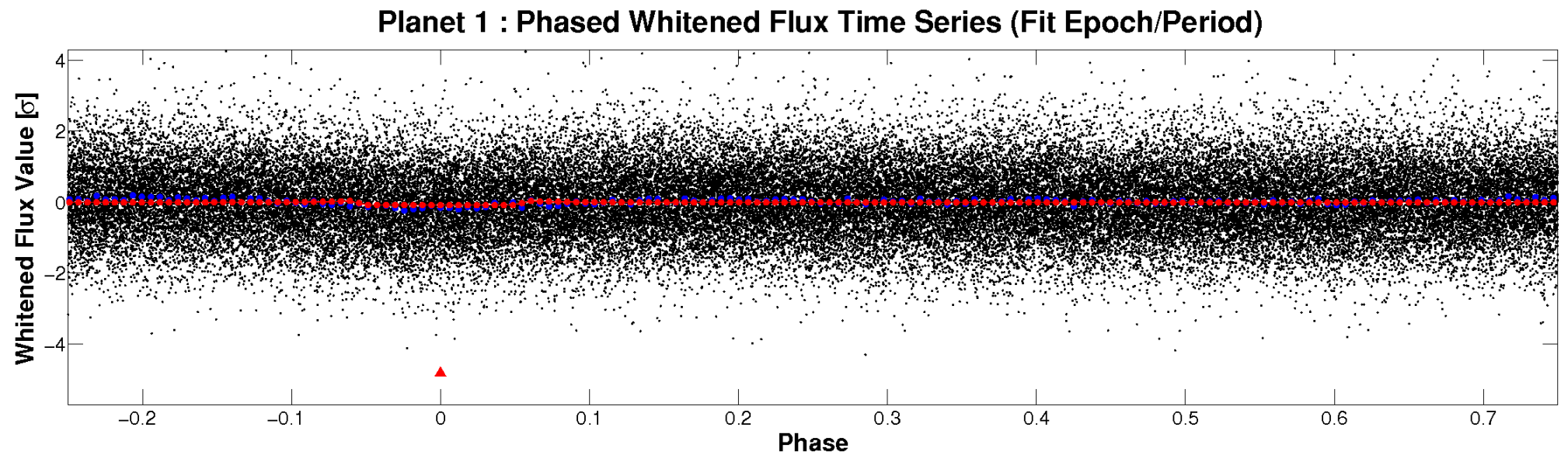
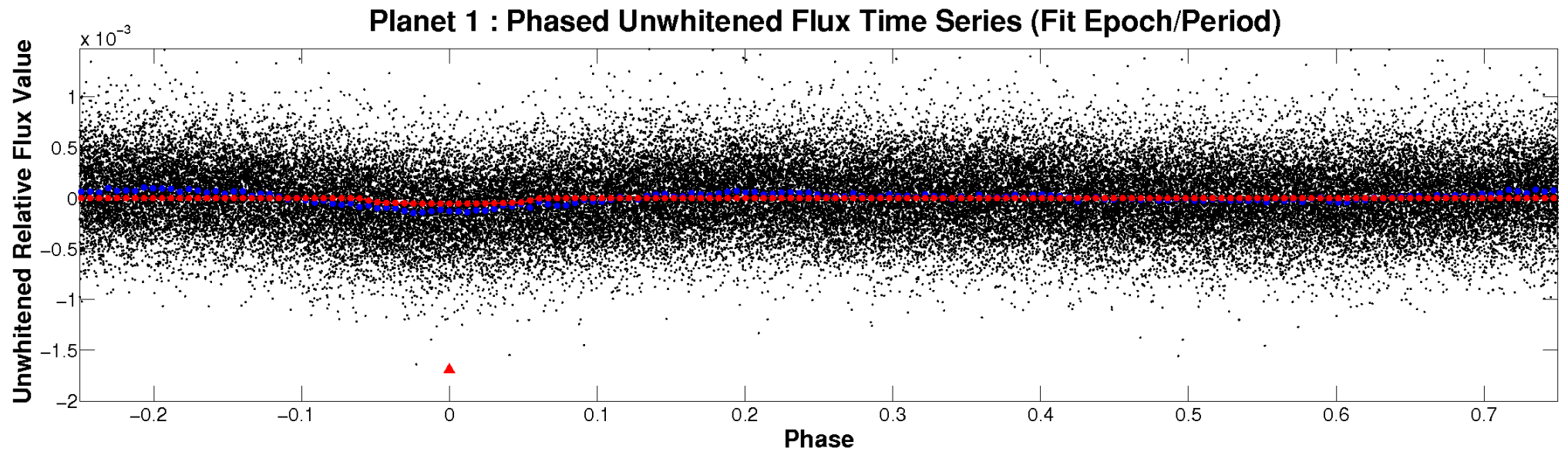


# ALT Odd/Even

TCE 004953173-01

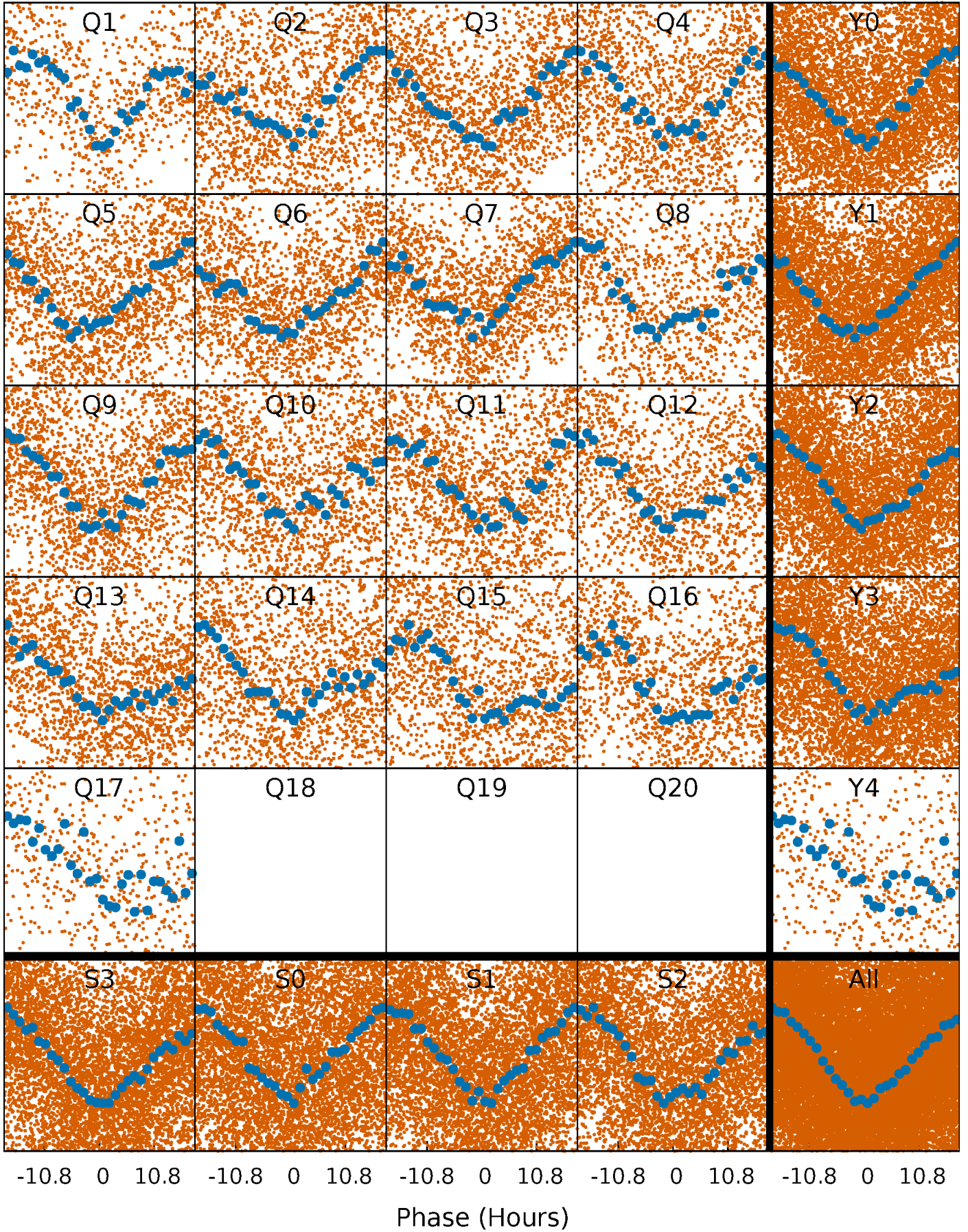


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

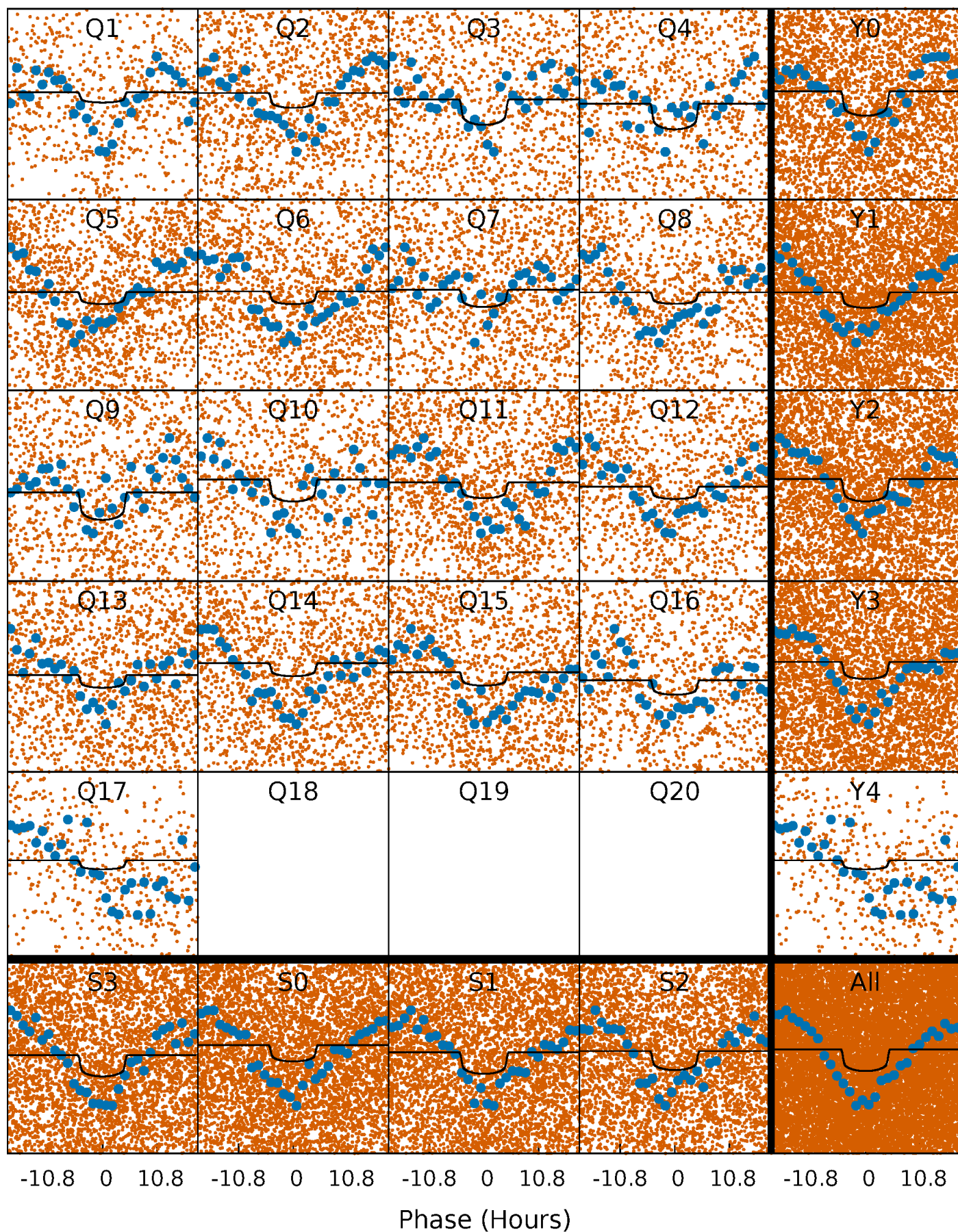
TCE 004953173-01   P= 3.363718 Days    $T_0=132.936766$  (BKJD)





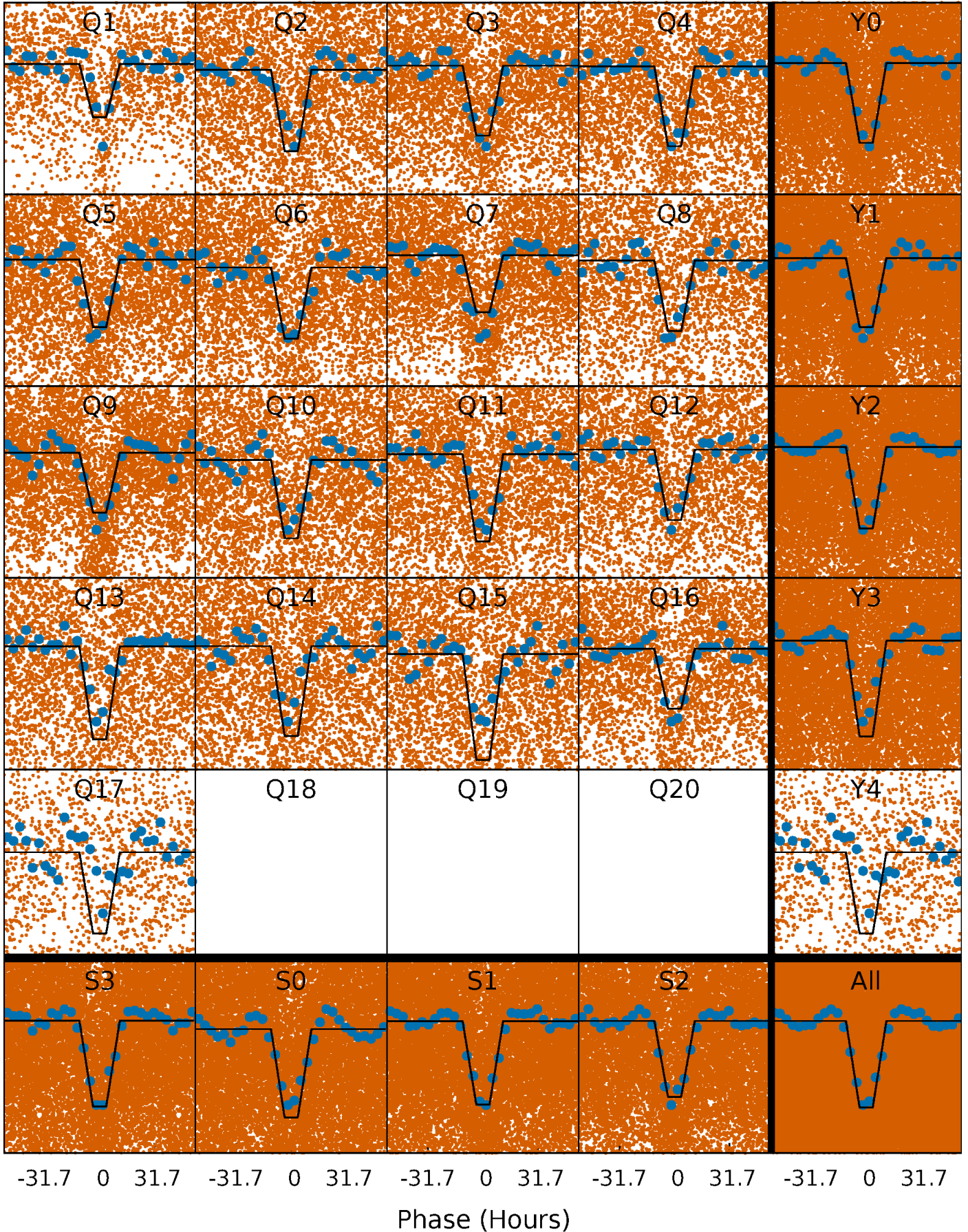
# DV Quarter-Phased Transit Curves

TCE 004953173-01 P= 3.363718 Days  $T_0=132.936766$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004953173-01 P= 3.363962 Days  $T_0=132.872335$  (BKJD)

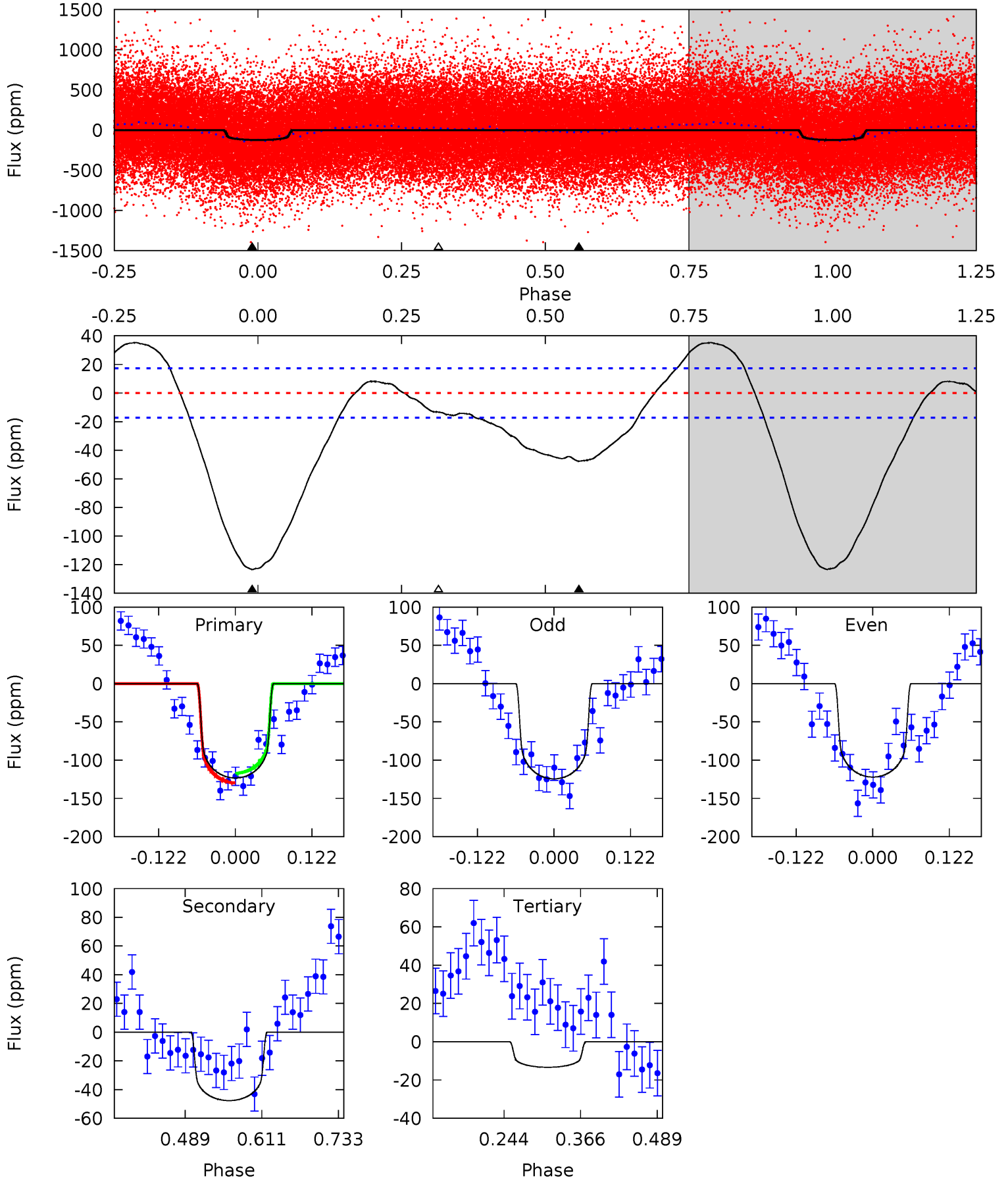




# DV Model-Shift Uniqueness Test

004953173-01, P = 3.363718 Days, E = 129.573048 Days

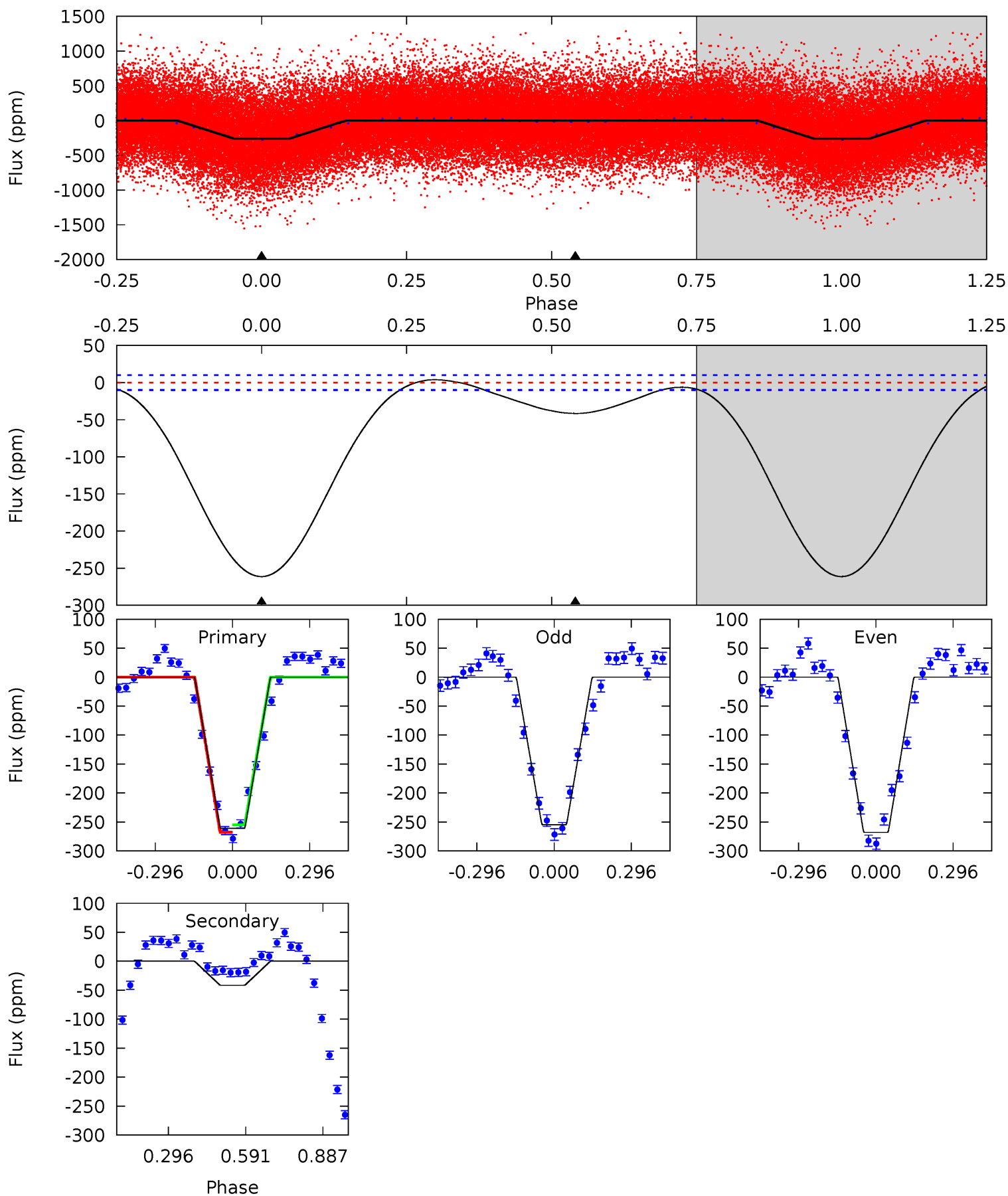
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.4	12.5	3.50	0	4.52	1.55	5.02	28.9	32.4	9.01	12.5	0.30	0.97	0.22	1.66



# Alt Model-Shift Uniqueness Test

004953173-01, P = 3.363962 Days, E = 129.508373 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
112.6	17.9	0	0	4.33	1.05	3.12	112.6	112.6	17.9	17.9	2.86	1.04	0.01	2.62





### Stellar Parameters For KIC 004953173

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5947^{+214}_{-214}$	$3.814^{+0.504}_{-0.126}$	$0.180^{+0.200}_{-0.300}$	$2.407^{+0.507}_{-1.268}$	$1.378^{+0.181}_{-0.363}$	$0.139^{+0.744}_{-0.051}$
	+4%/-4%	+13%/-3%	+111%/-167%	+21%/-53%	+13%/-26%	+535%/-37%
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 004953173-01 / KOI 4676.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-48 \pm 4$	$1.86^{+0.60}_{-0.57}$	$2486^{+212}_{-320}$	$5554^{+700}_{-507}$	$18^{+19}_{-8}$
Alt.	$-42 \pm 2$	$4.17^{+0.89}_{-1.07}$	$2508^{+226}_{-324}$	$3938^{+211}_{-181}$	$3.223^{+2.304}_{-1.050}$

$T_{\text{max}}$  = 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

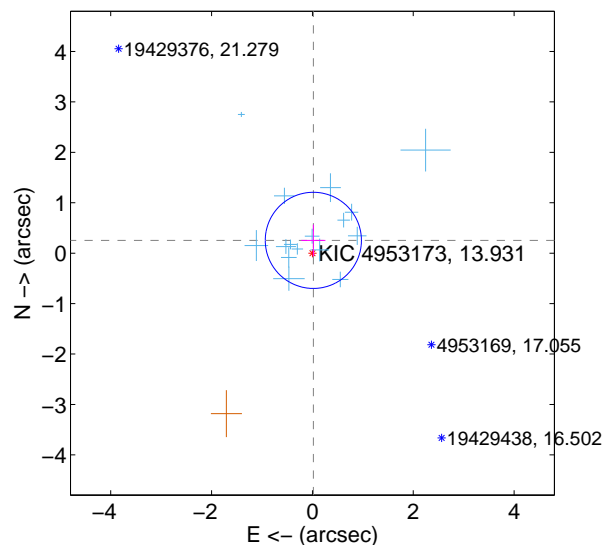
Supplemental centroid analysis for 004953173-01. Kepler magnitude: 13.93. Transit SNR 6.95

There are 16 quarters with good PRF difference image offsets

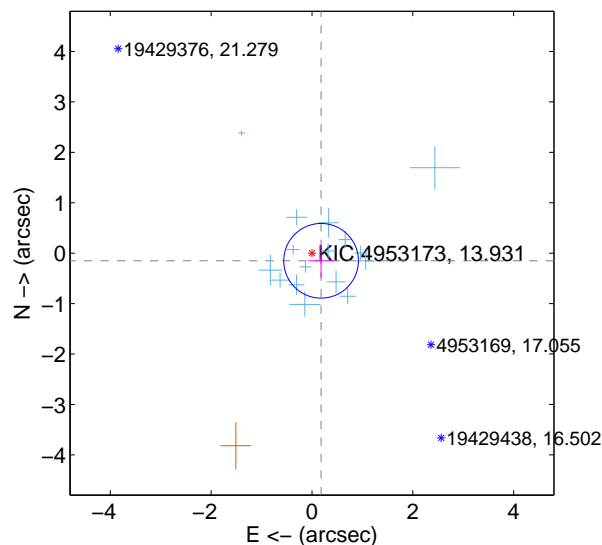
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.255 \pm 0.318$	0.80	$-0.018 \pm 0.240$	$0.254 \pm 0.311$
PRF-fit source offset from KIC position	$0.236 \pm 0.247$	0.96	$-0.181 \pm 0.256$	$-0.151 \pm 0.330$
photometric centroid source offset	$1.72 \pm 0.76$	2.25	$1.68 \pm 0.76$	$-0.36 \pm 0.75$

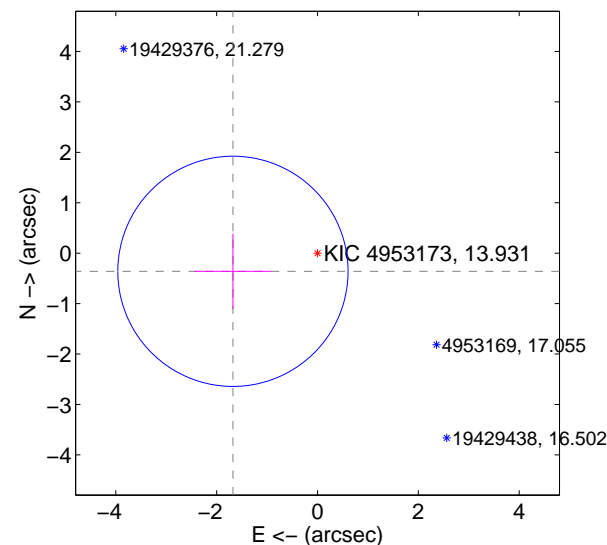
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

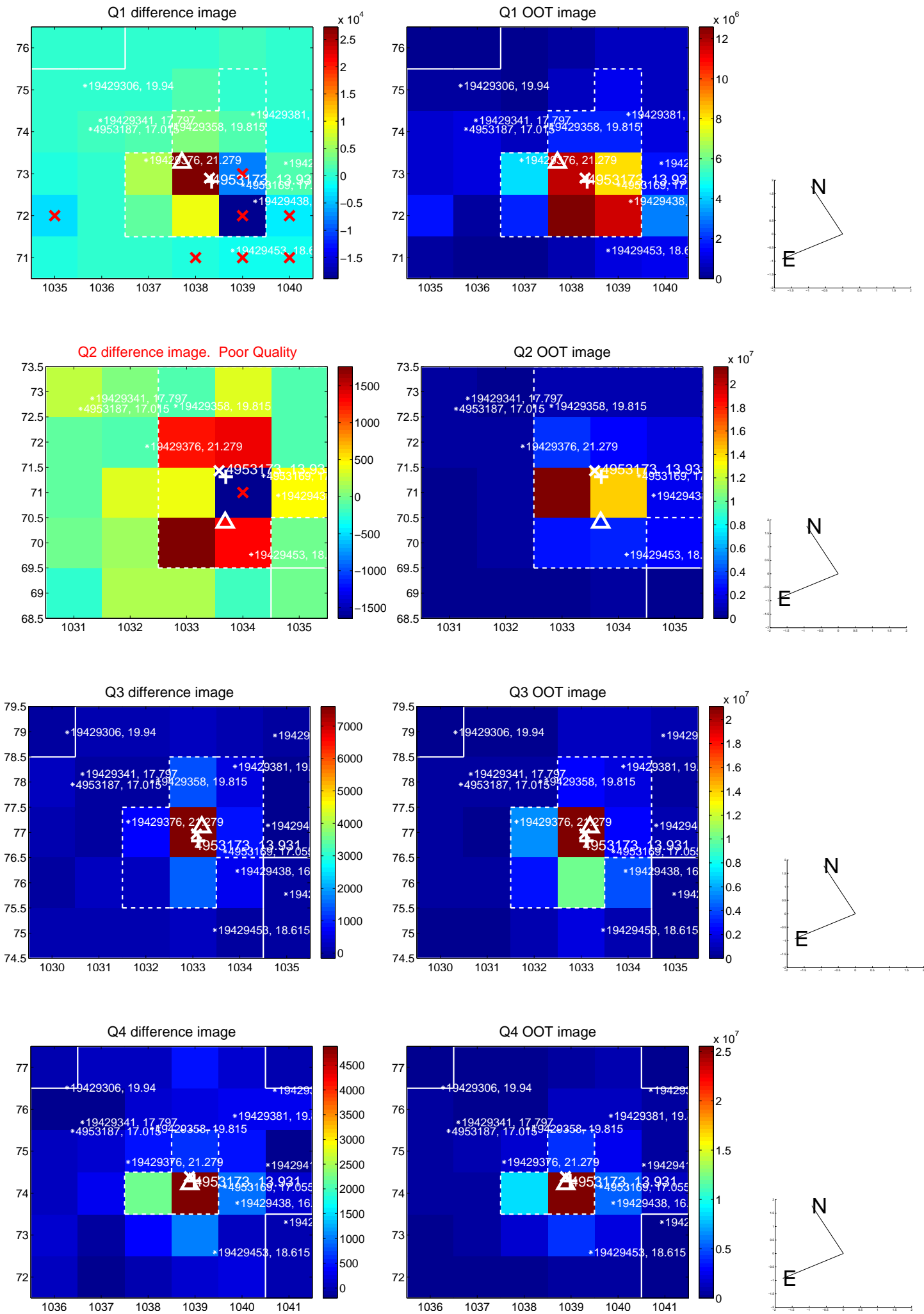


offset from photometric centroids

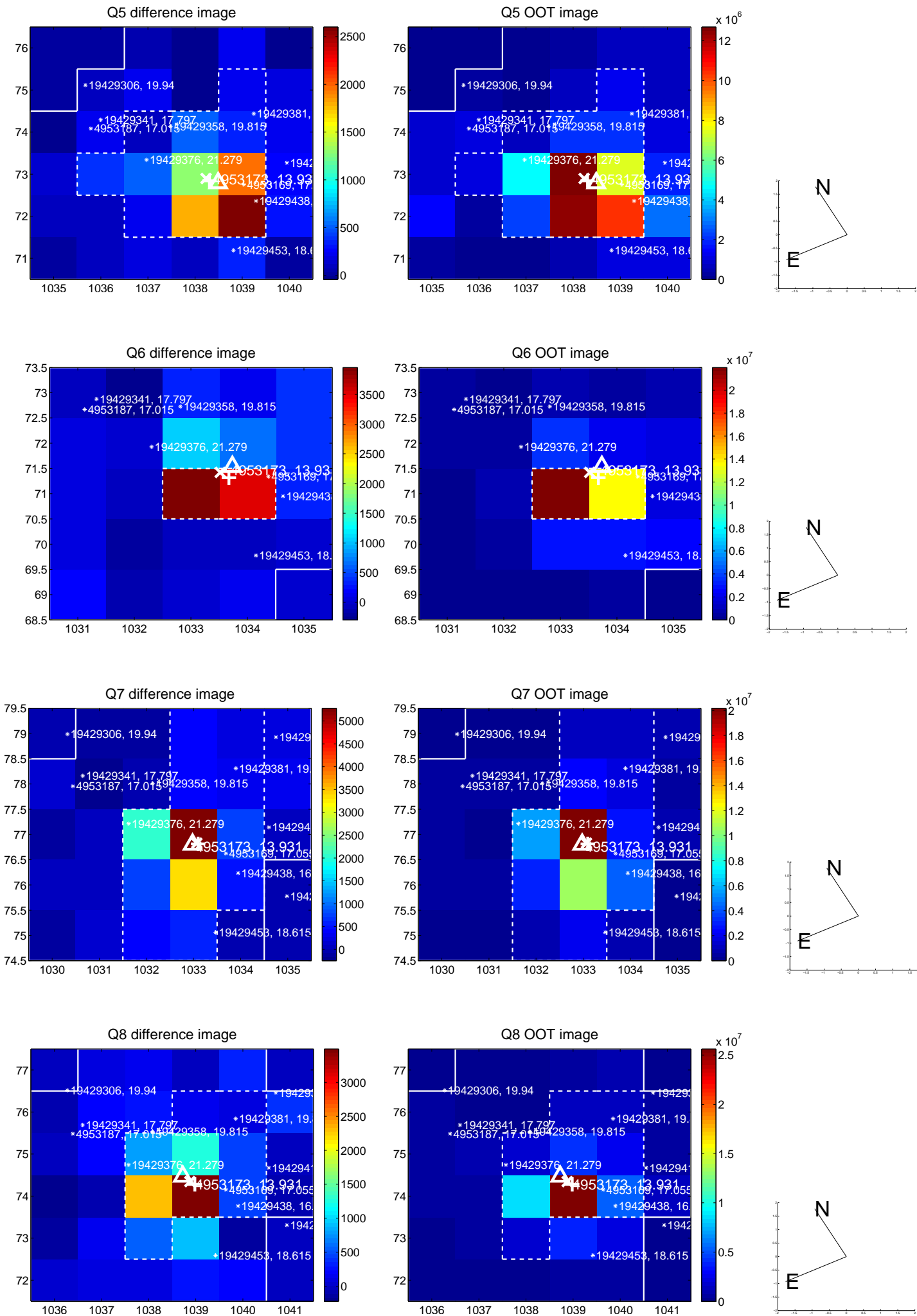


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

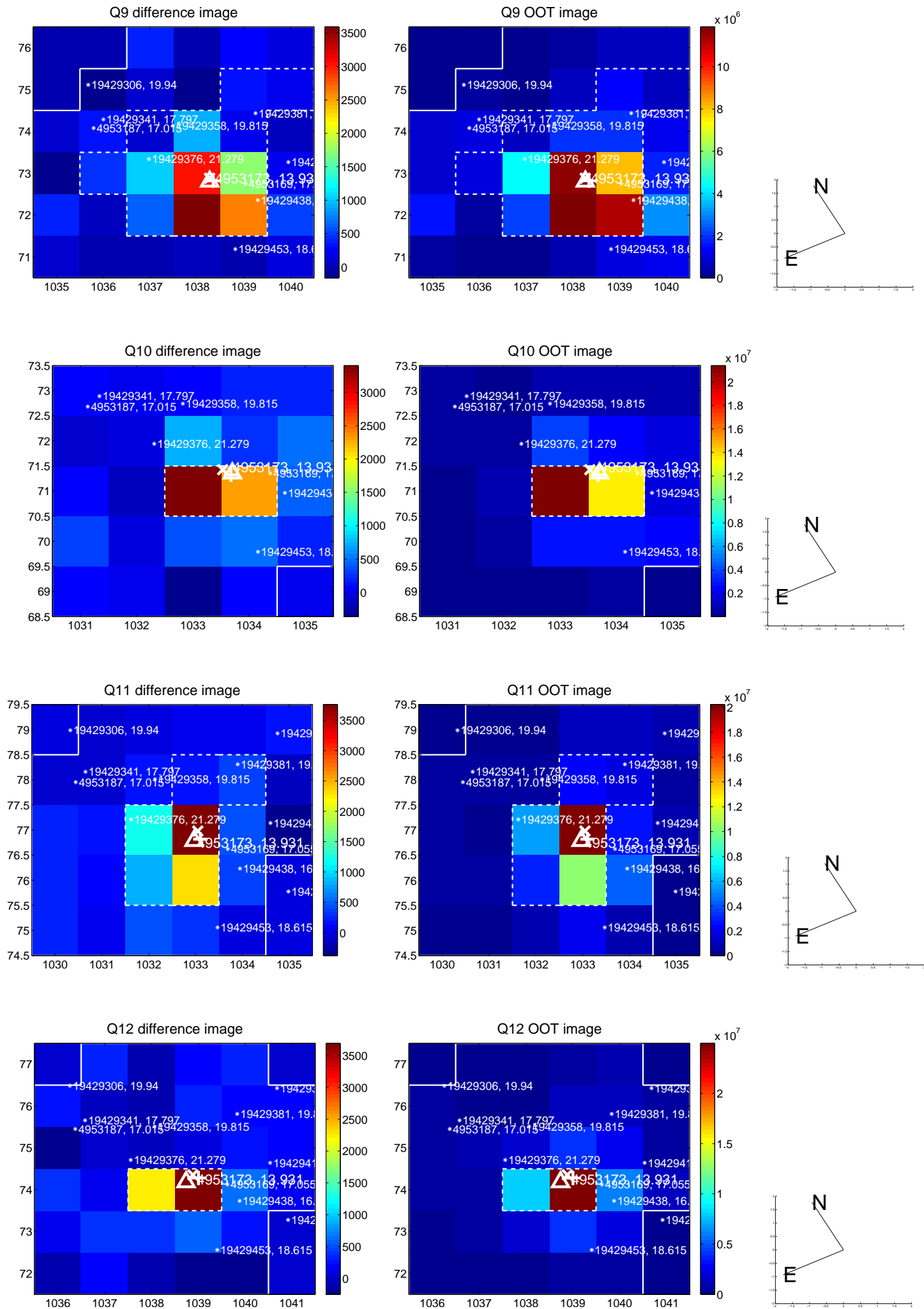


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

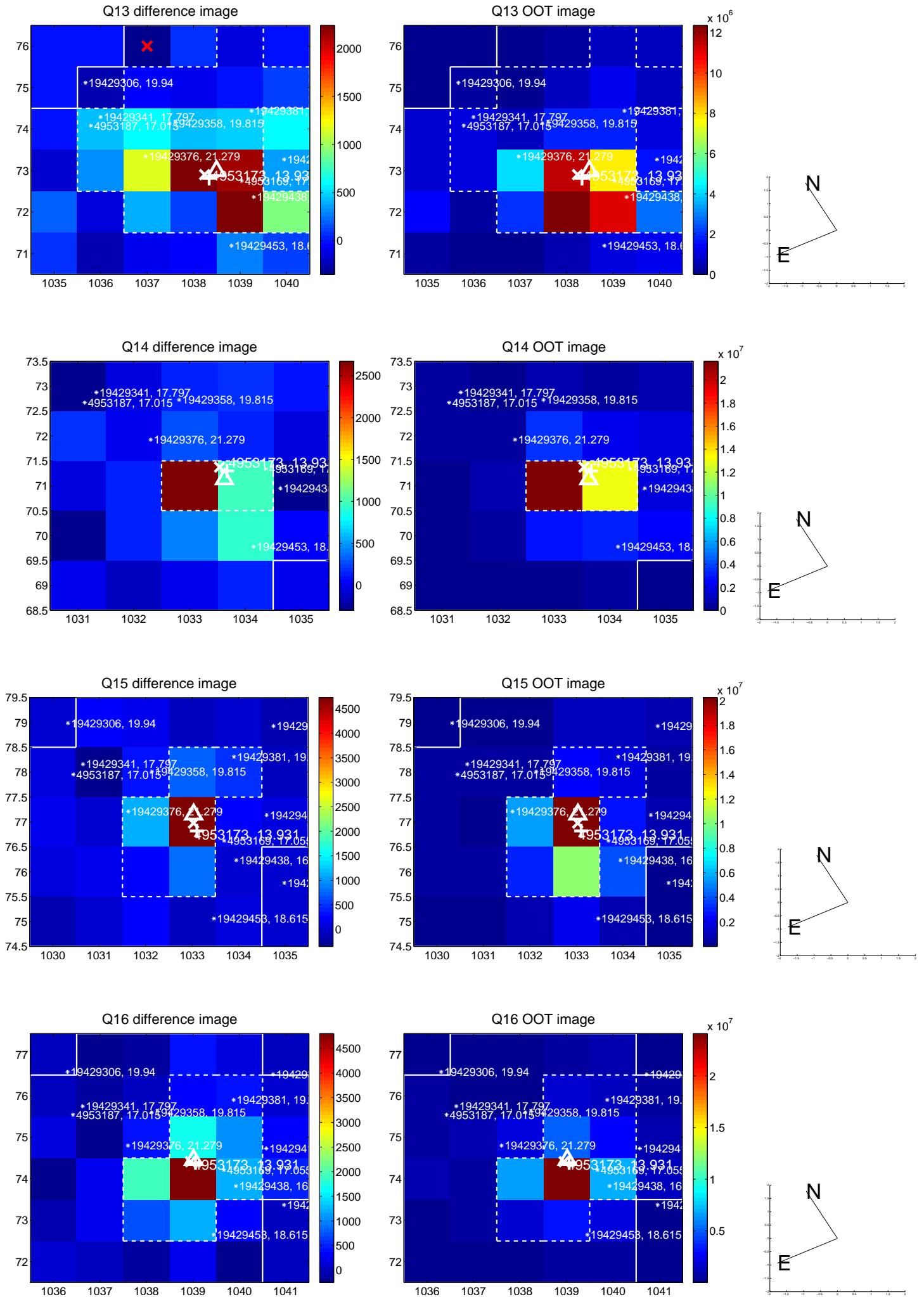




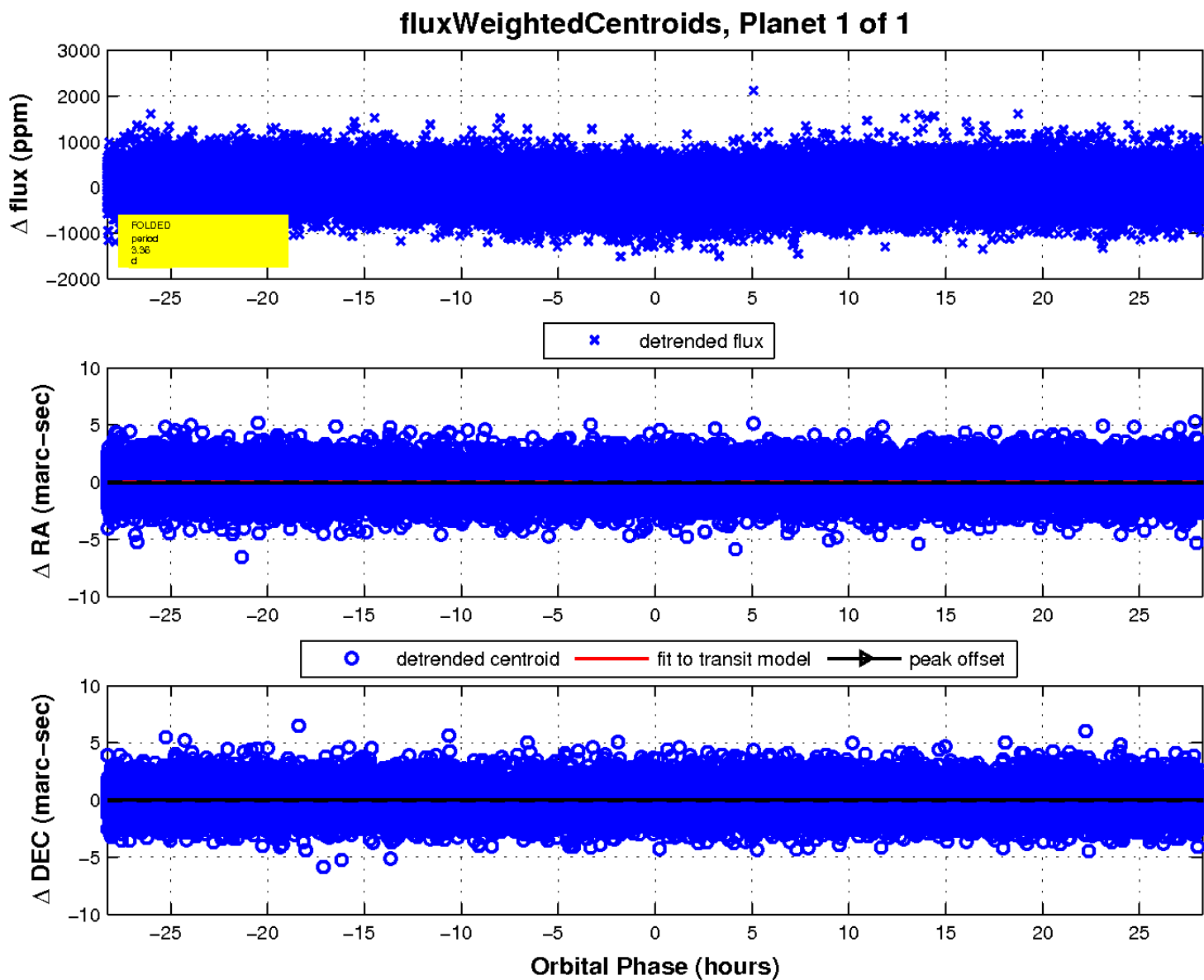
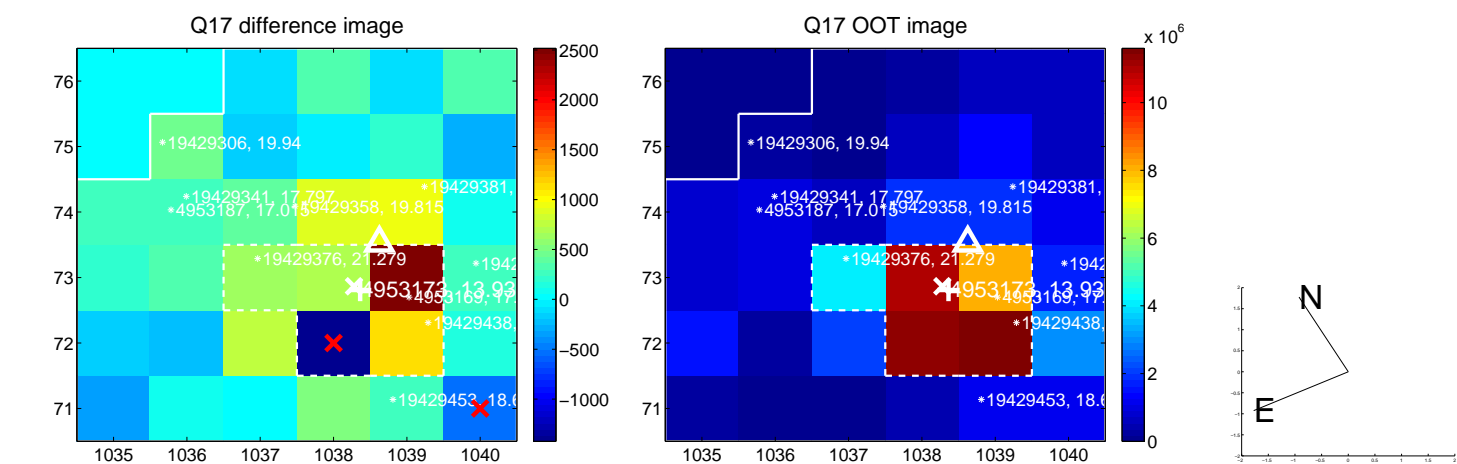
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

