

# KIC 009664276

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009664276-01	OBS	3460.01	62.596507	185.994886	203.5	11.581	11.8	12.5	1.51	5934	2.35	23.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009664276-01	OBS	PC	0.99	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.

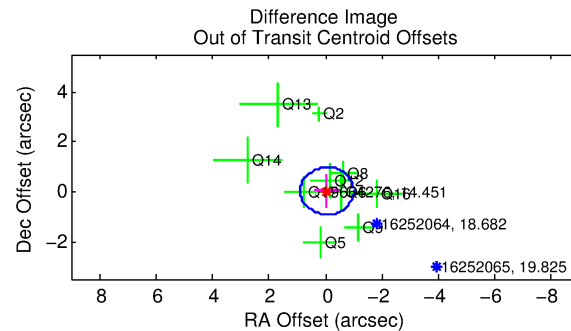
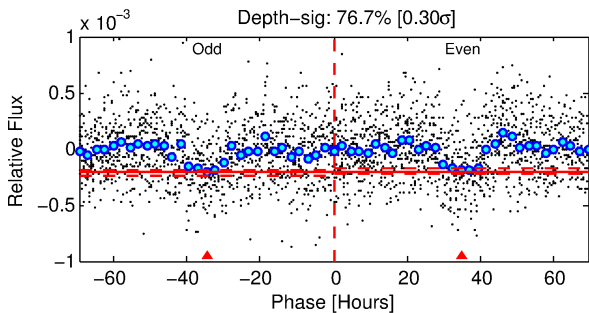
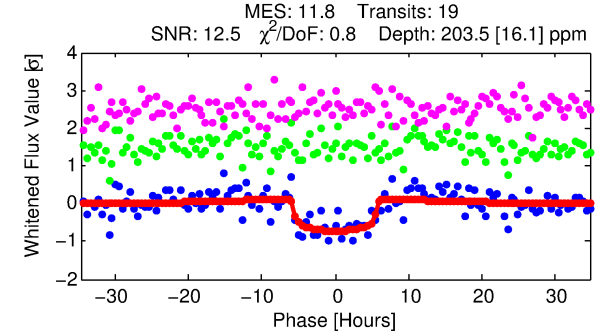
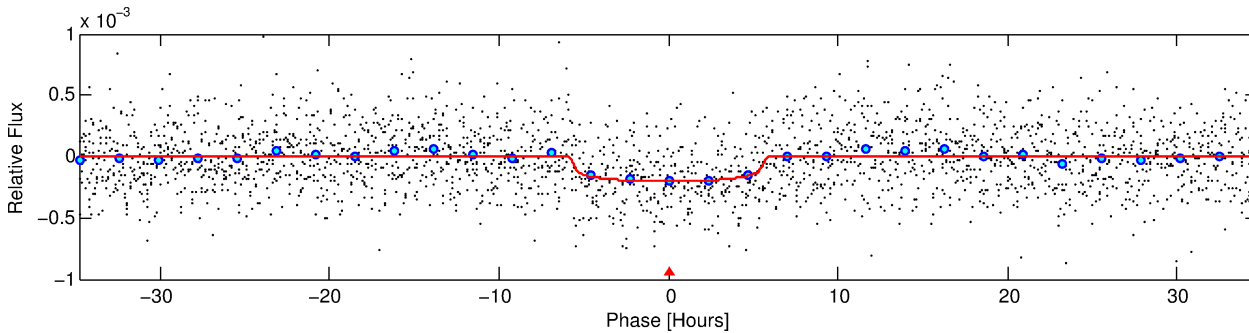
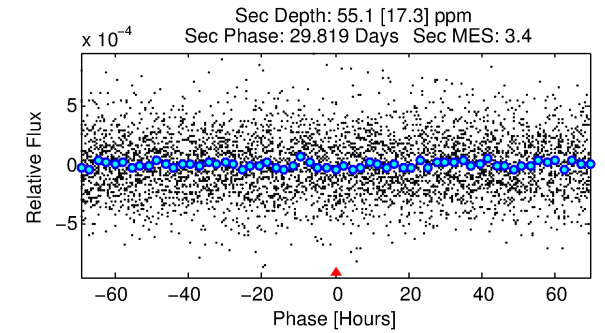
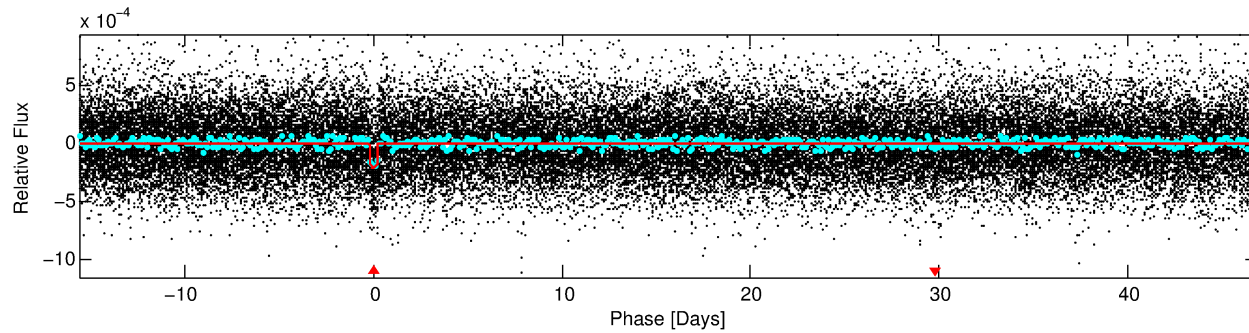
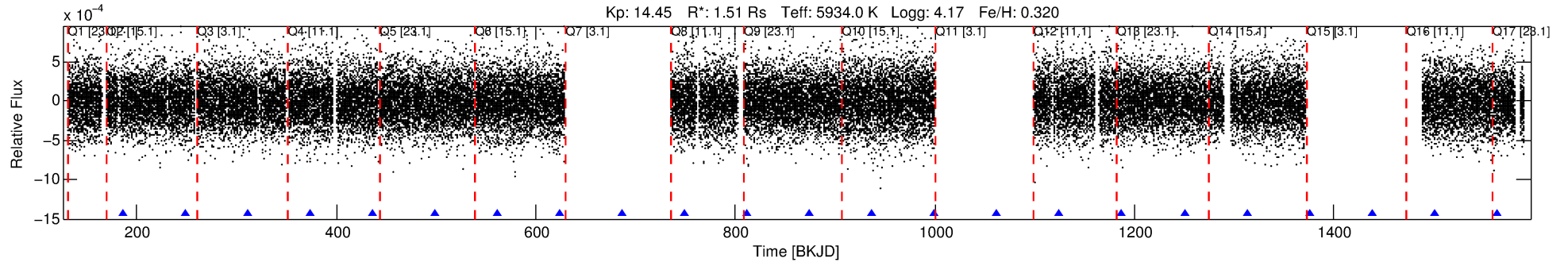
## Ephemeris Match Information For 009664276-01

No Significant Match Found

# DV One-Page Summary

KIC: 9664276 Candidate: 1 of 1 Period: 62.597 d

KOI: K03460.01 Corr: 0.960



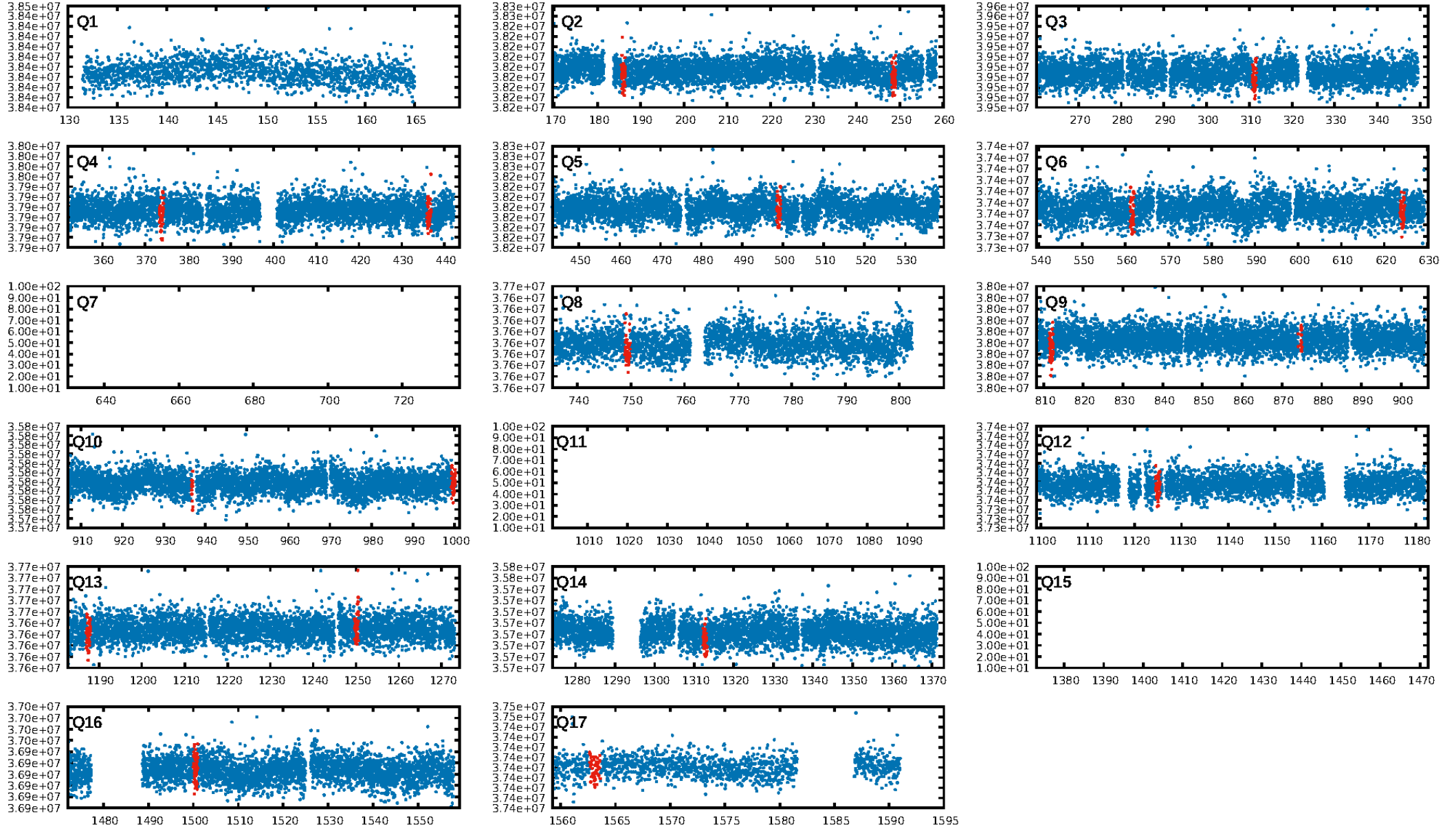
## DV Fit Results:

Period = 62.59651 [0.00100] d  
Epoch = 185.9949 [0.0124] BKJD  
Rp/R\* = 0.0143 [0.0054]  
a/R\* = 27.53 [46.36]  
b = 0.76 [0.93]  
Seff = 23.05 [6.71]  
Teff = 559 [41] K  
Rp = 2.35 [1.01] Re  
a = 0.3313 [0.0624] AU  
Ag = 602.45 [519.52] [1.16σ]  
Teffp = 4280 [872] K [4.26σ]

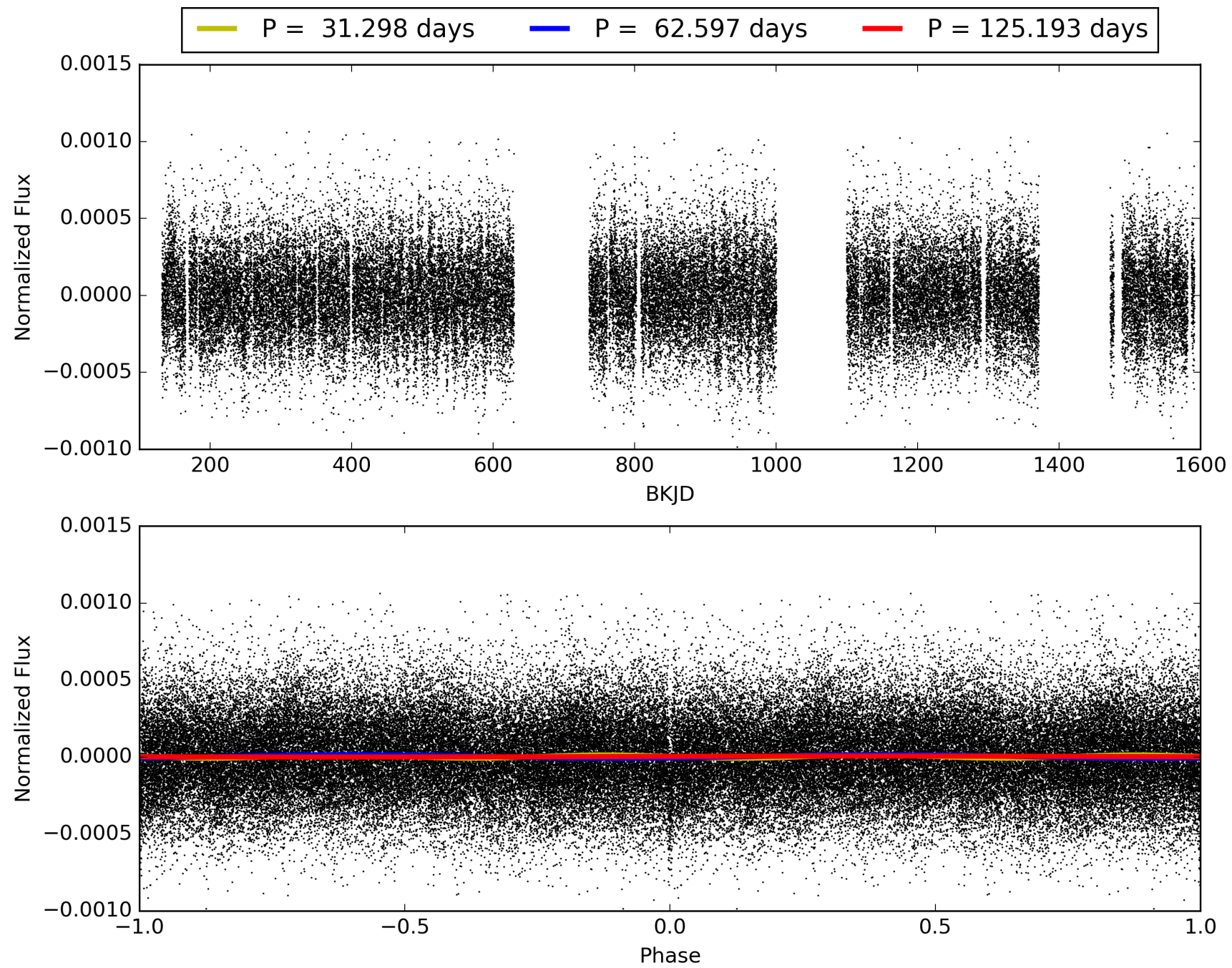
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 57.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.96e-31  
RollingBand-fgt: 1.00 [18/18]  
GhostDiagnostic-chr: -7.479  
Centroid-sig: 3.7%  
Centroid-so: 1.847 arcsec [1.70σ]  
OotOffset-rm: 0.059 arcsec [0.19σ]  
KicOffset-rm: 0.175 arcsec [0.36σ]  
OotOffset-st: 3/0/3/4 [10]  
KicOffset-st: 3/0/3/4 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 1.00 [11/11]

# TCE 009664276-01, PDC Light Curves

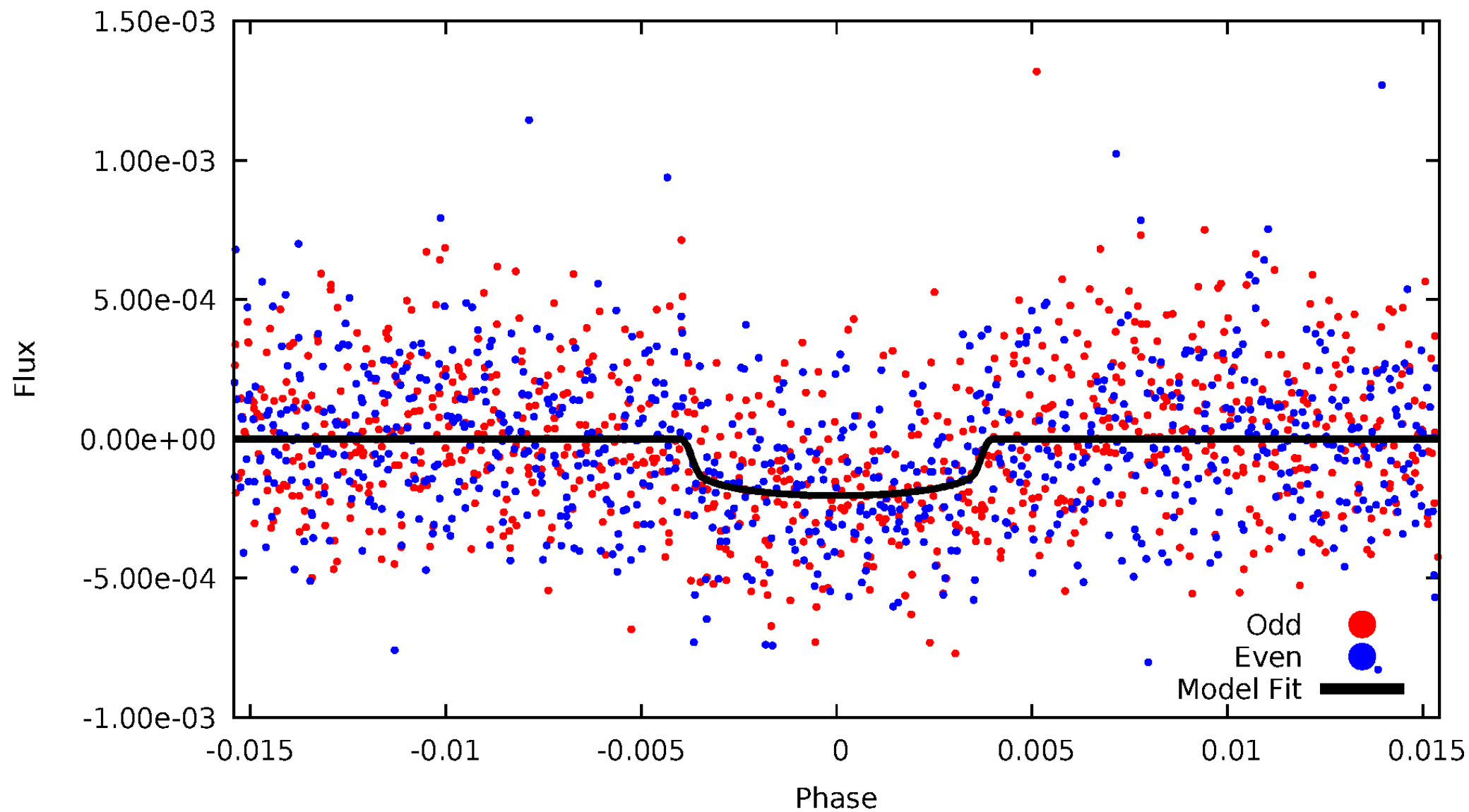


TCE 009664276-01



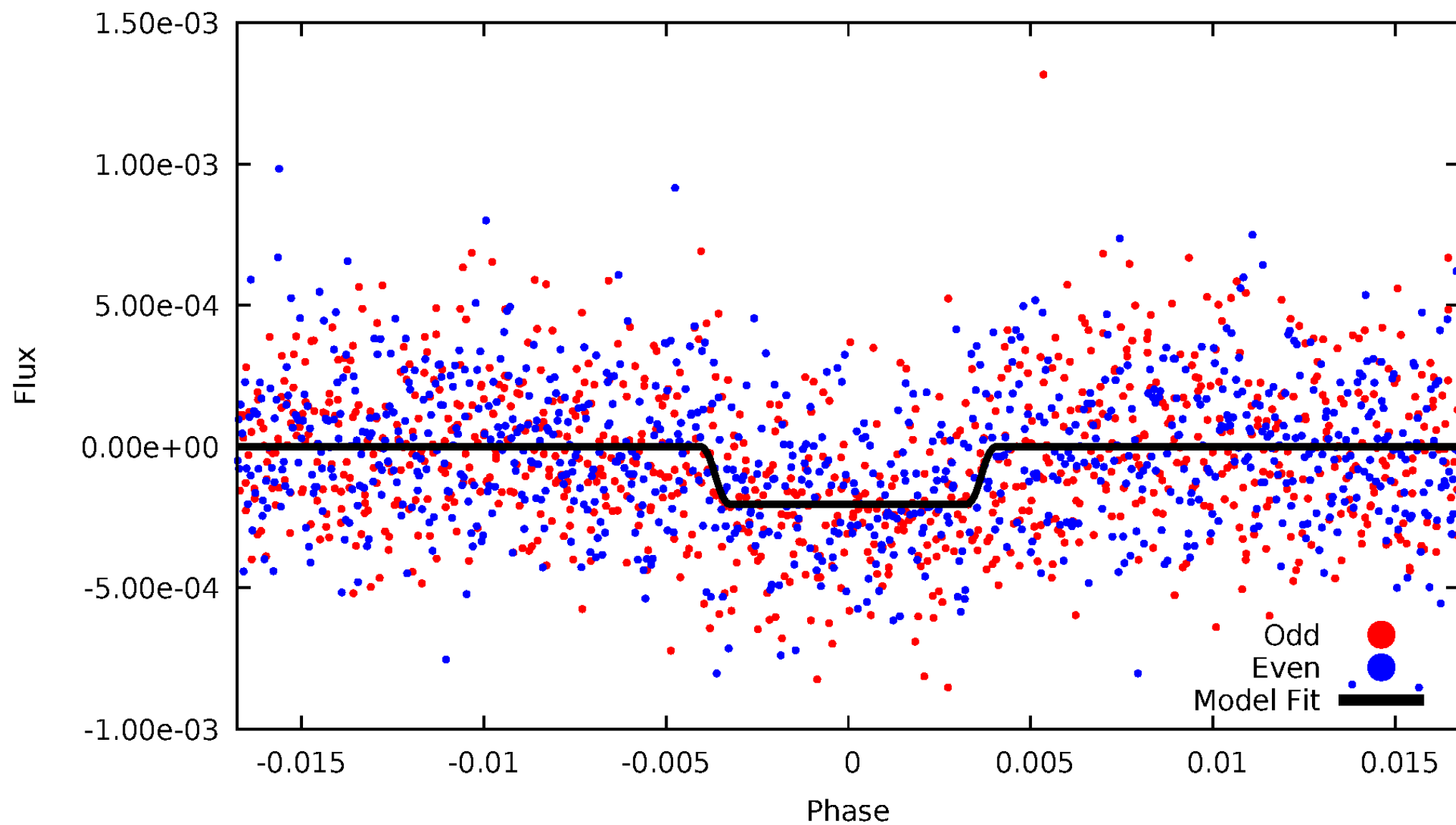
# DV Odd/Even

TCE 009664276-01



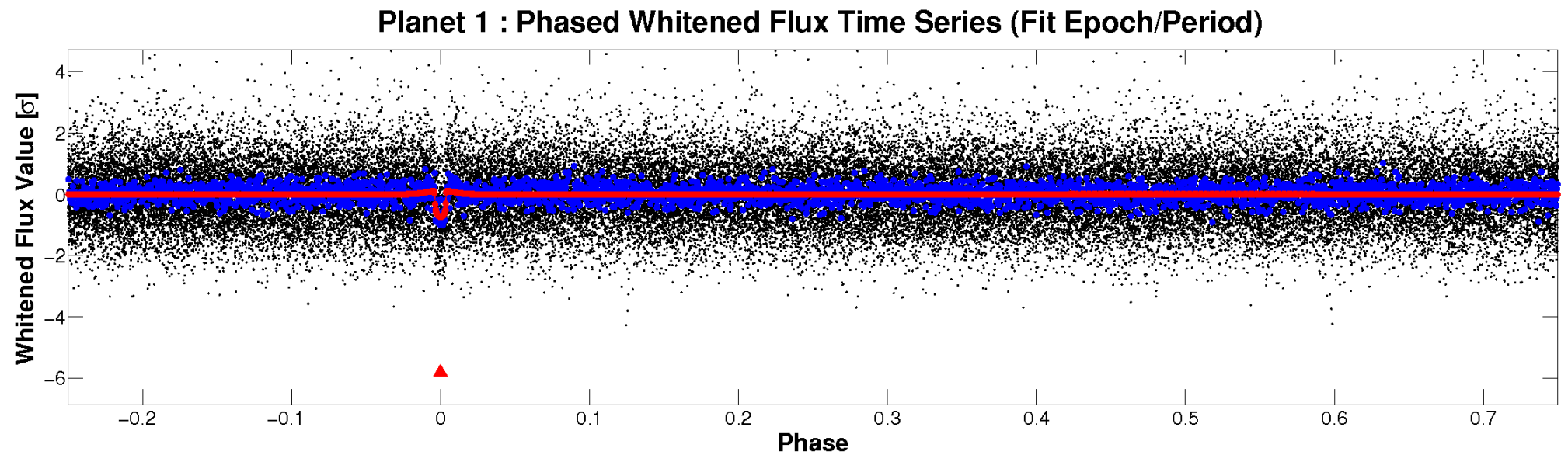
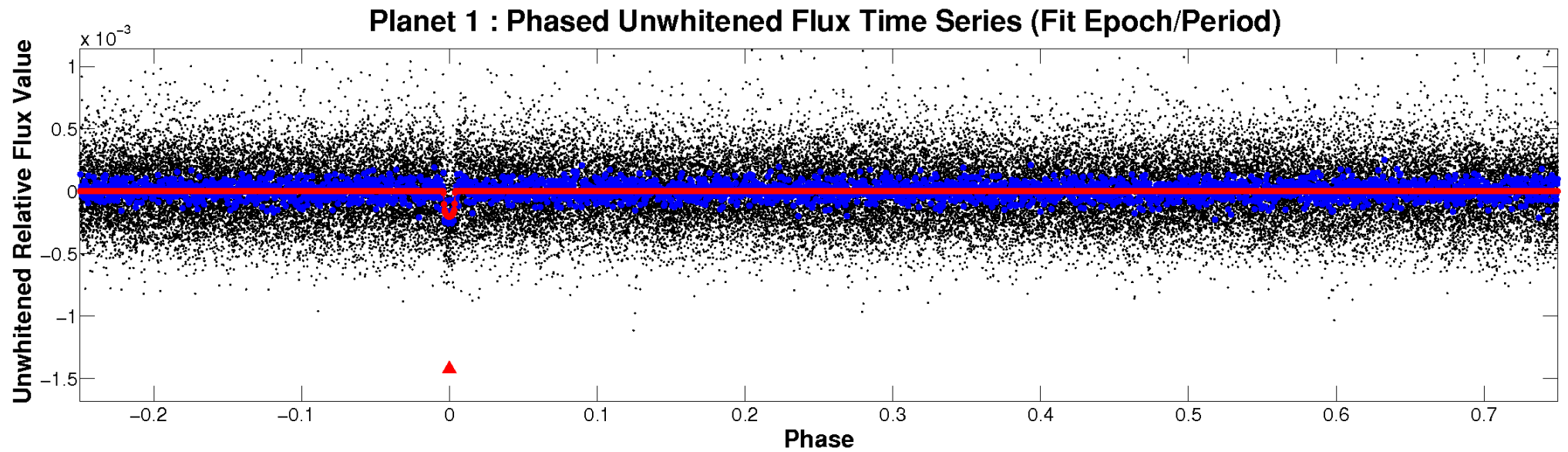
# ALT Odd/Even

TCE 009664276-01



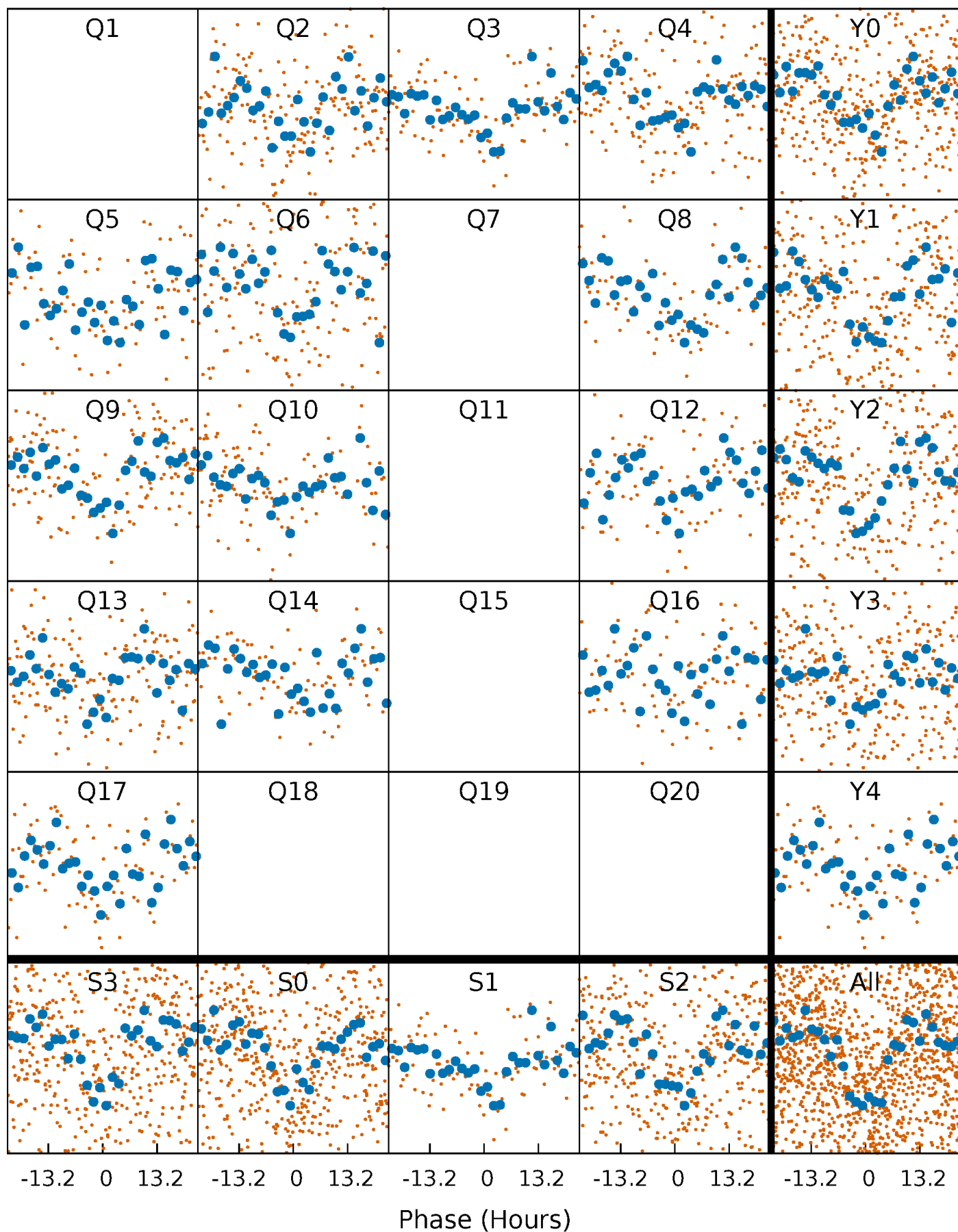


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

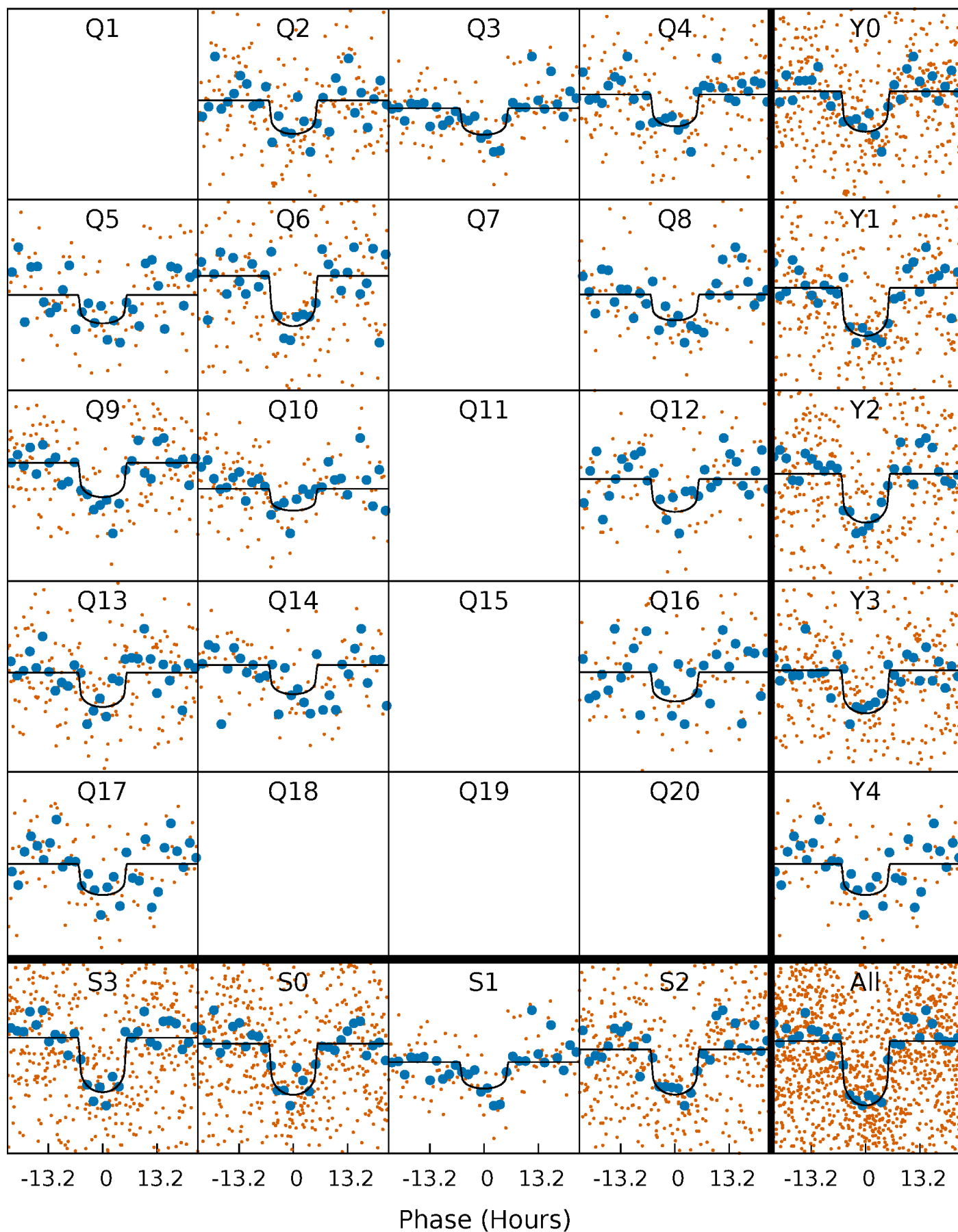
TCE 009664276-01 P= 62.596507 Days  $T_0=185.994886$  (BKJD)





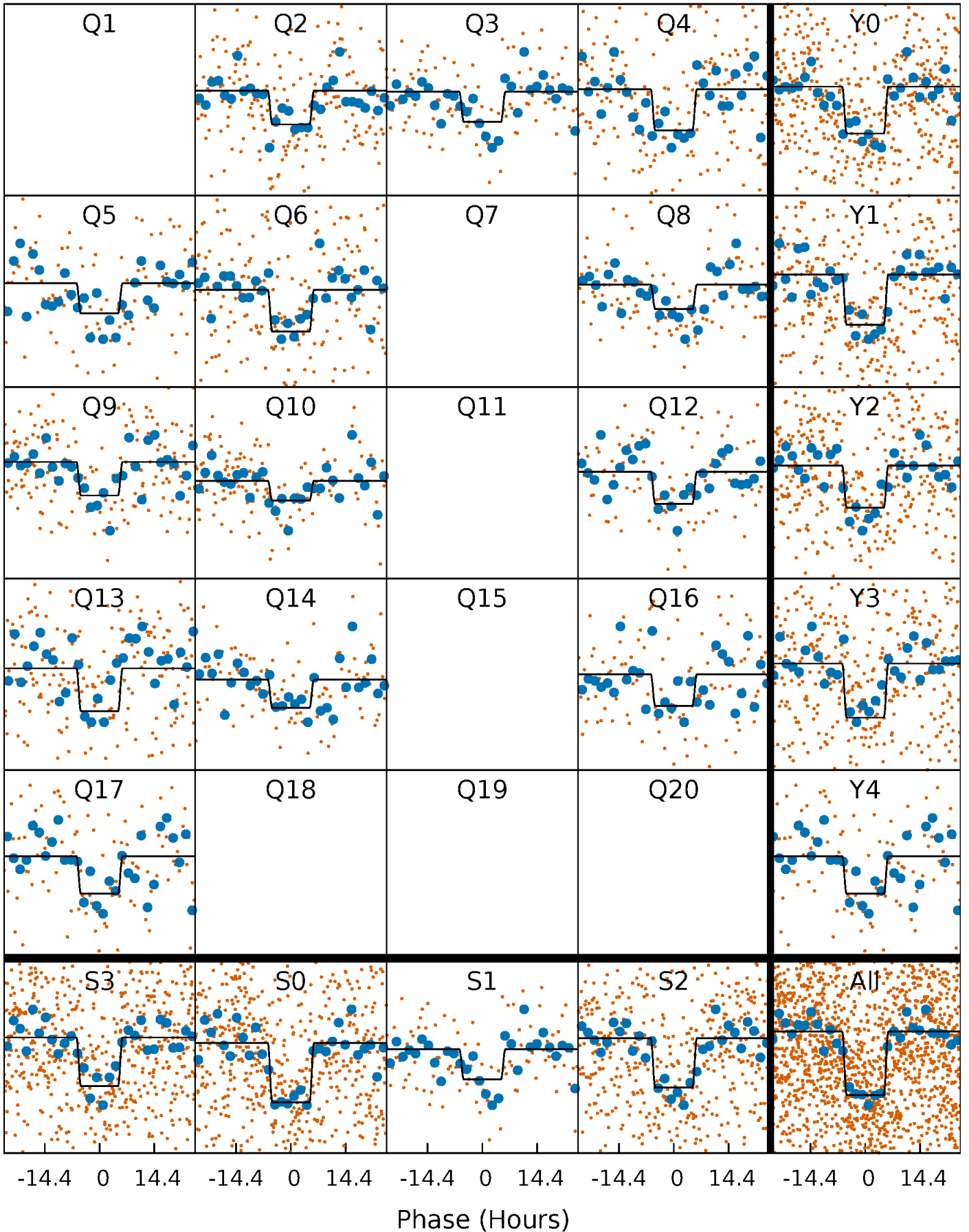
# DV Quarter-Phased Transit Curves

TCE 009664276-01 P= 62.596507 Days  $T_0=185.994886$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

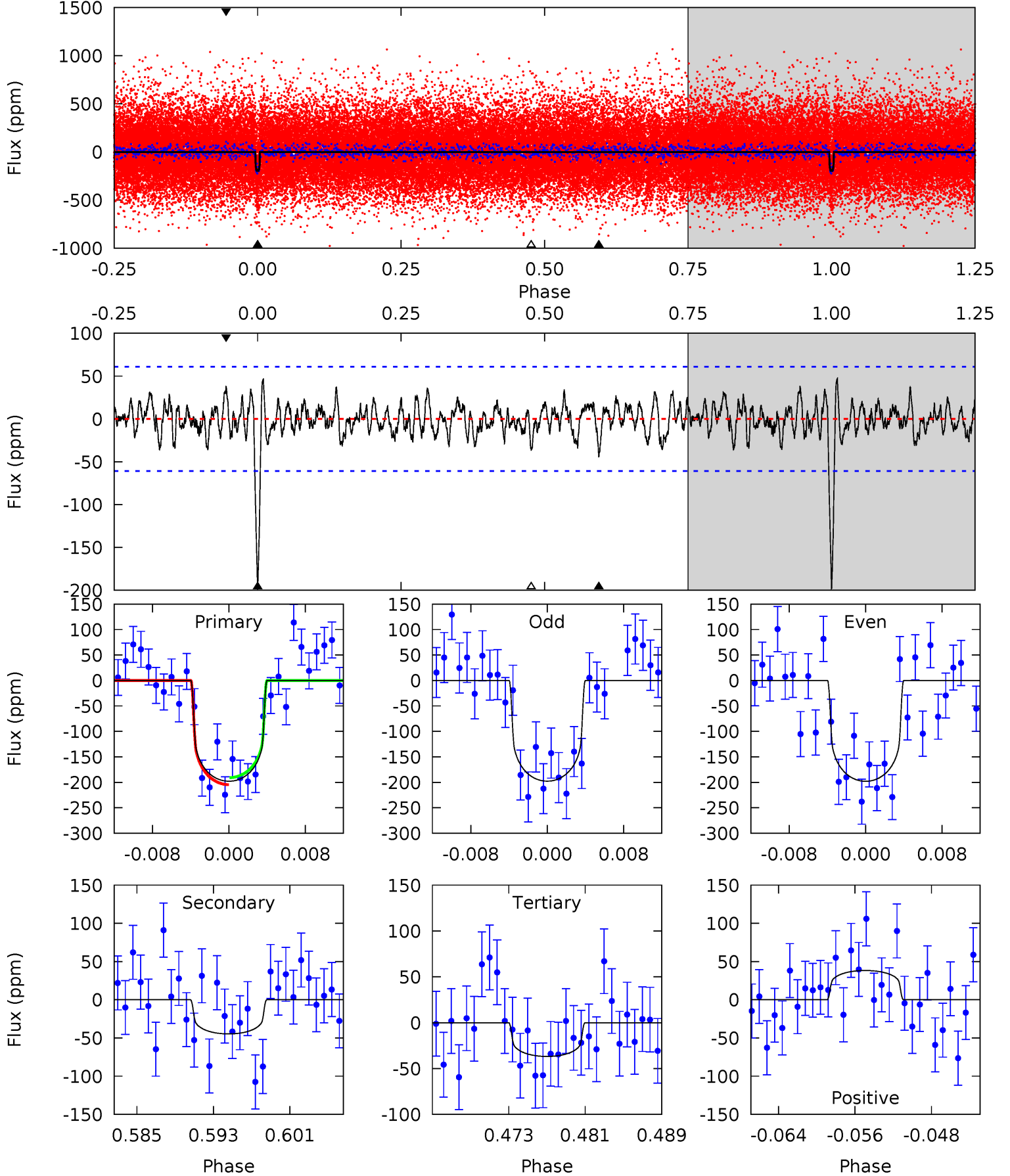
TCE 009664276-01 P= 62.594101 Days  $T_0=186.021267$  (BKJD)



# DV Model-Shift Uniqueness Test

009664276-01, P = 62.596507 Days, E = 123.398379 Days

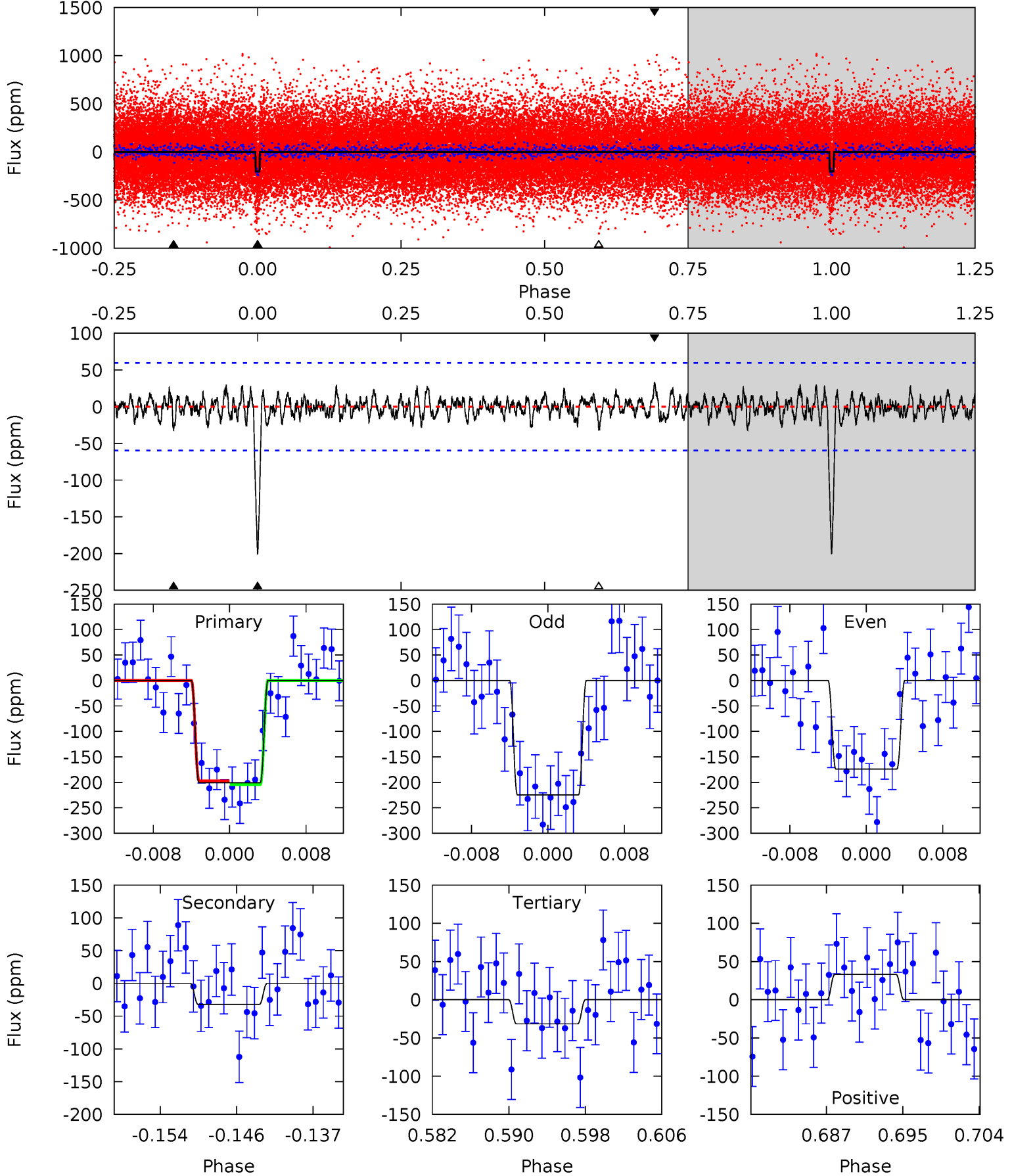
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	3.72	3.07	3.19	5.07	2.65	1.22	13.4	13.3	0.66	0.54	0.01	1.23	0.19	0.57



# Alt Model-Shift Uniqueness Test

009664276-01, P = 62.594101 Days, E = 123.427166 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
17.0	2.72	2.68	2.82	5.07	2.65	0.92	14.4	14.2	0.04	-0.09	2.16	1.13	0.14	0.30



### Stellar Parameters For KIC 009664276

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5934^{+80}_{-80}$	$4.173^{+0.162}_{-0.122}$	$0.320^{+0.150}_{-0.150}$	$1.509^{+0.262}_{-0.320}$	$1.237^{+0.099}_{-0.109}$	$0.507^{+0.429}_{-0.169}$
	+1%/-1%	+4%/-3%	+47%/-47%	+17%/-21%	+8%/-9%	+85%/-33%
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 009664276-01 / KOI 3460.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-45 \pm 12$	$2.37^{+0.95}_{-0.90}$	$781^{+37}_{-40}$	$4269^{+800}_{-486}$	$498^{+733}_{-267}$
Alt.	$-32 \pm 12$	$2.33^{+0.95}_{-0.85}$	$780^{+40}_{-42}$	$3995^{+865}_{-486}$	$328^{+613}_{-180}$

$T_{max}$  = 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

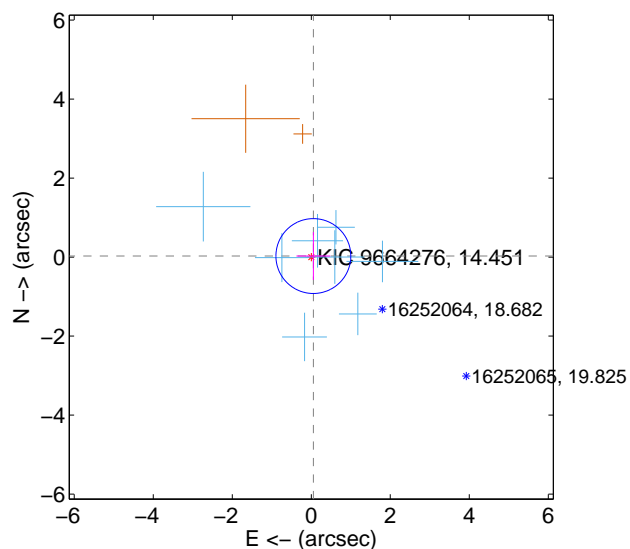
Supplemental centroid analysis for 009664276-01. Kepler magnitude: 14.45. Transit SNR 12.51

There are 8 quarters with good PRF difference image offsets

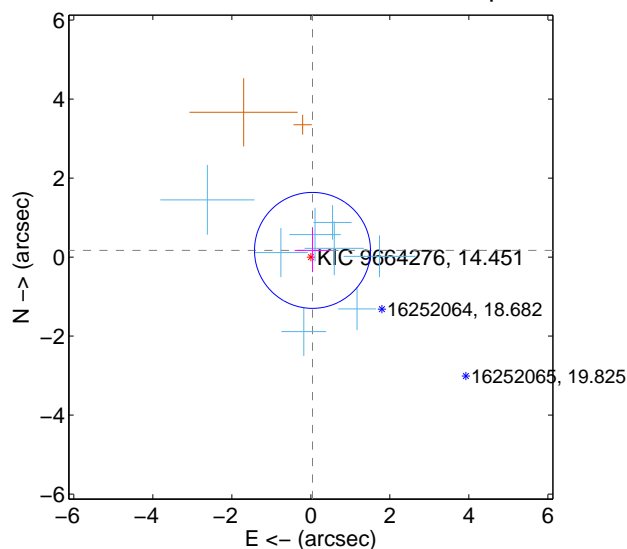
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.059 \pm 0.316$	0.19	$-0.053 \pm 0.428$	$0.026 \pm 0.606$
PRF-fit source offset from KIC position	$0.175 \pm 0.489$	0.36	$-0.042 \pm 0.453$	$0.170 \pm 0.552$
photometric centroid source offset	$1.85 \pm 1.09$	1.70	$-1.44 \pm 1.04$	$-1.15 \pm 1.16$

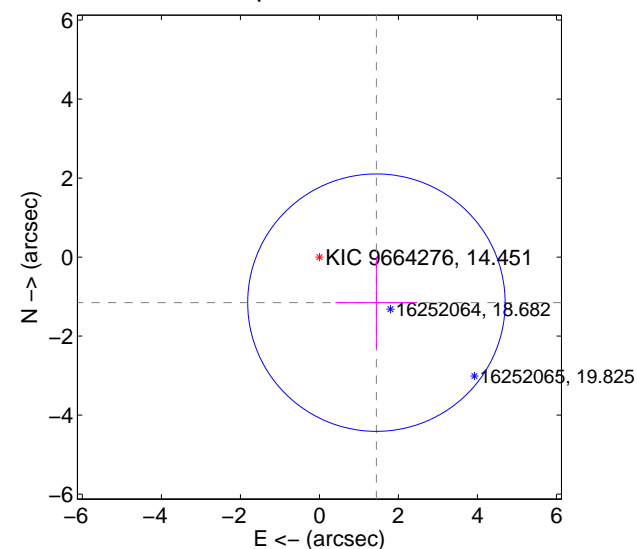
offset from difference PRF-fit to OOT PRF-fit



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.

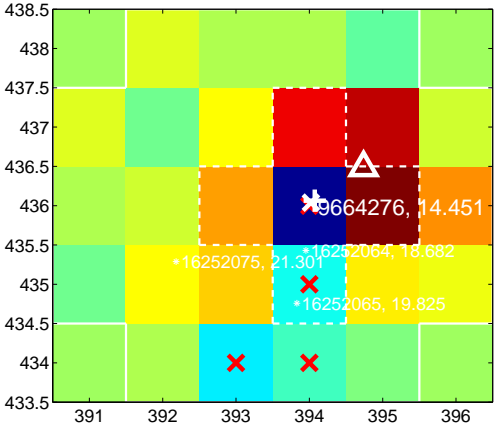
Q1 no difference image



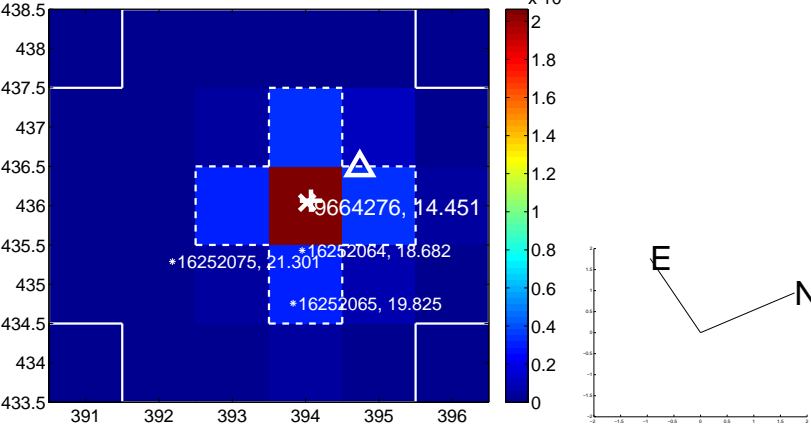
Q1 no OOT image



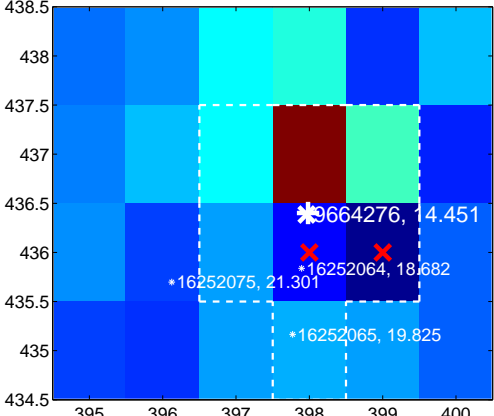
Q2 difference image. Poor Quality



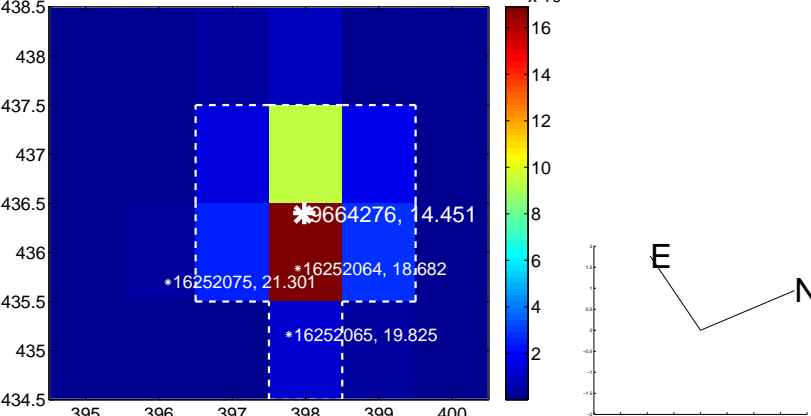
Q2 OOT image



Q3 difference image. Poor Quality



Q3 OOT image



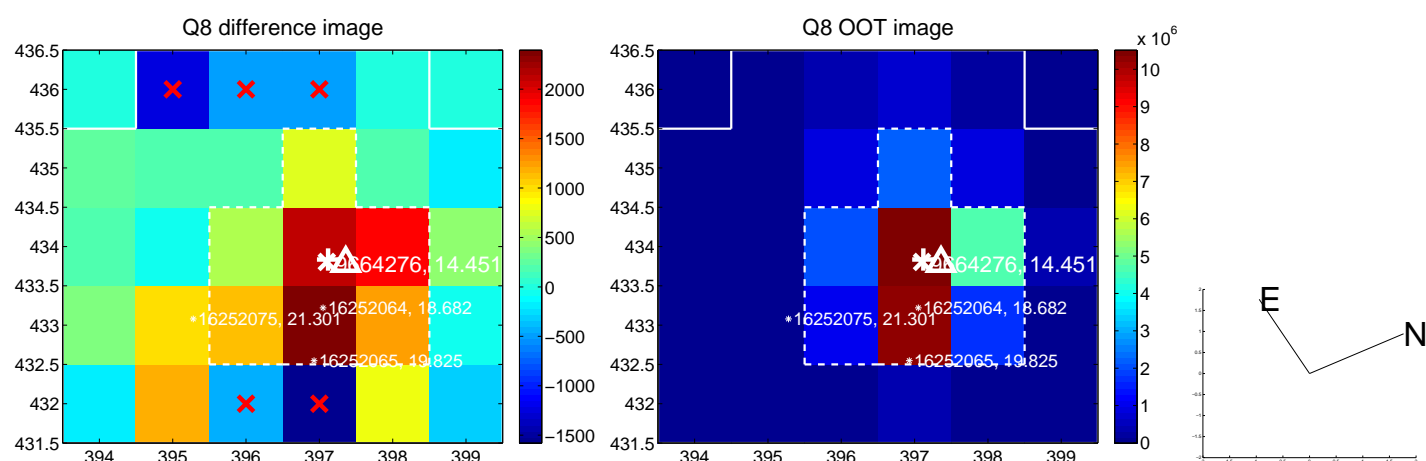
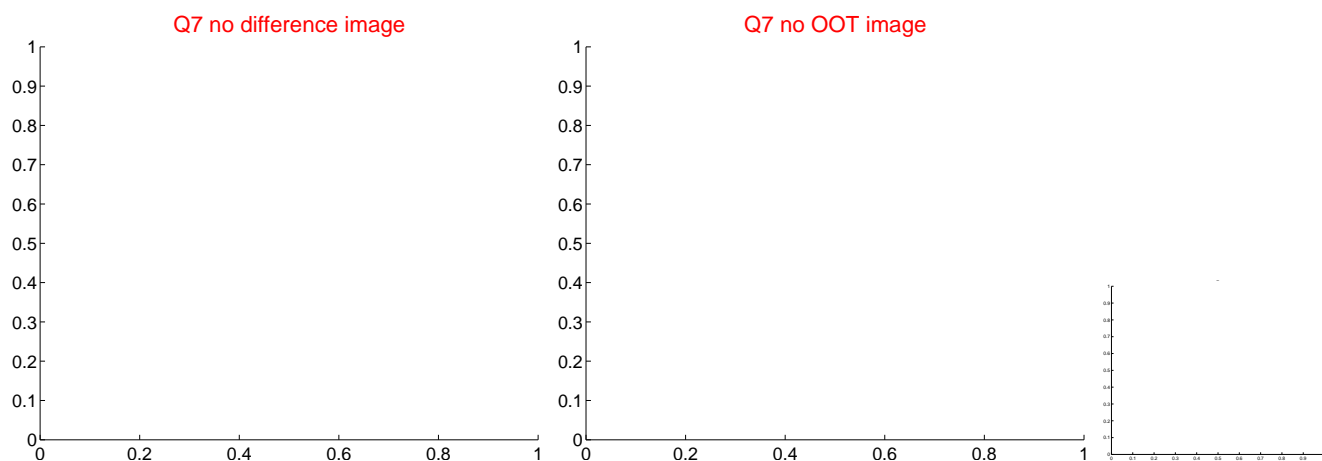
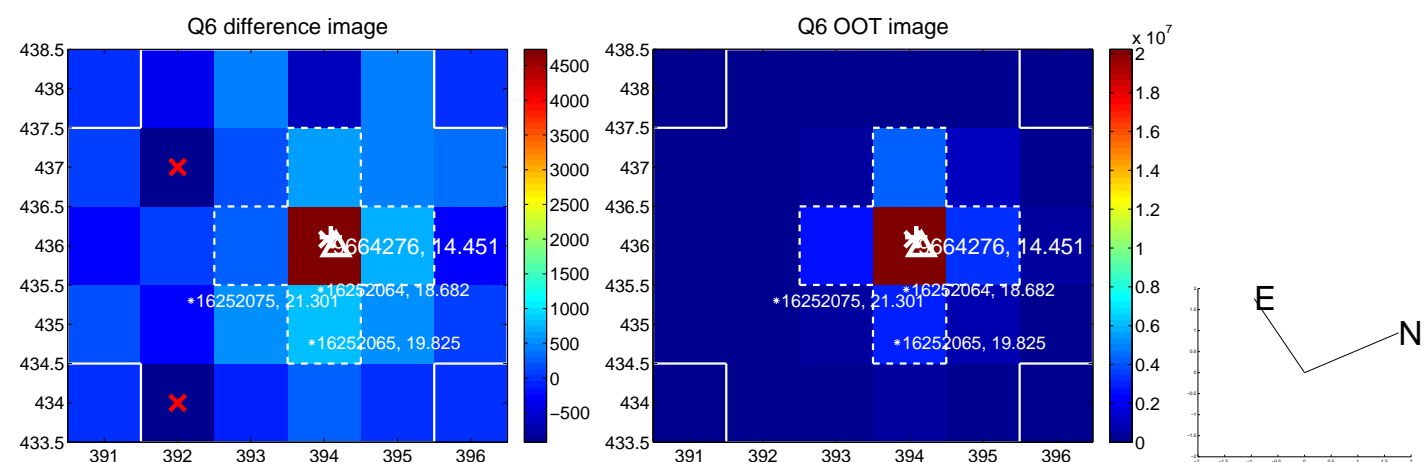
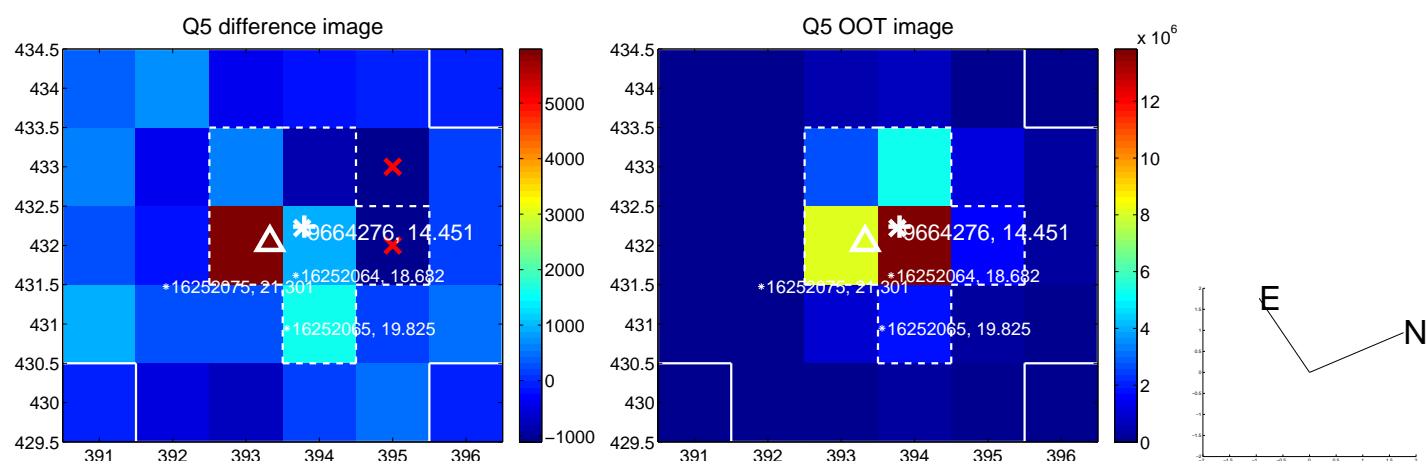
Q4 no difference image



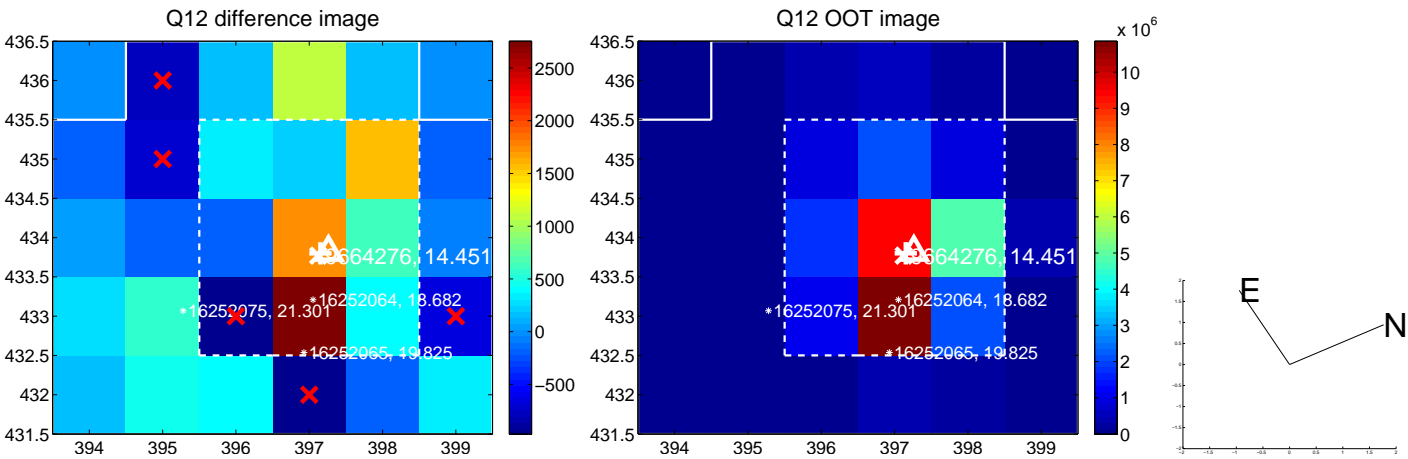
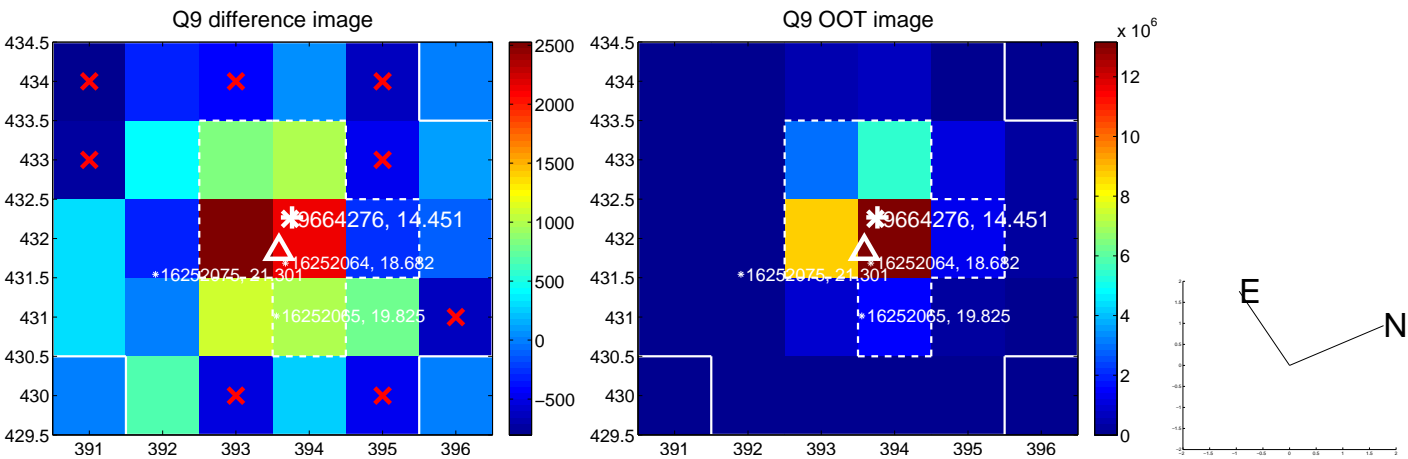
Q4 no OOT image



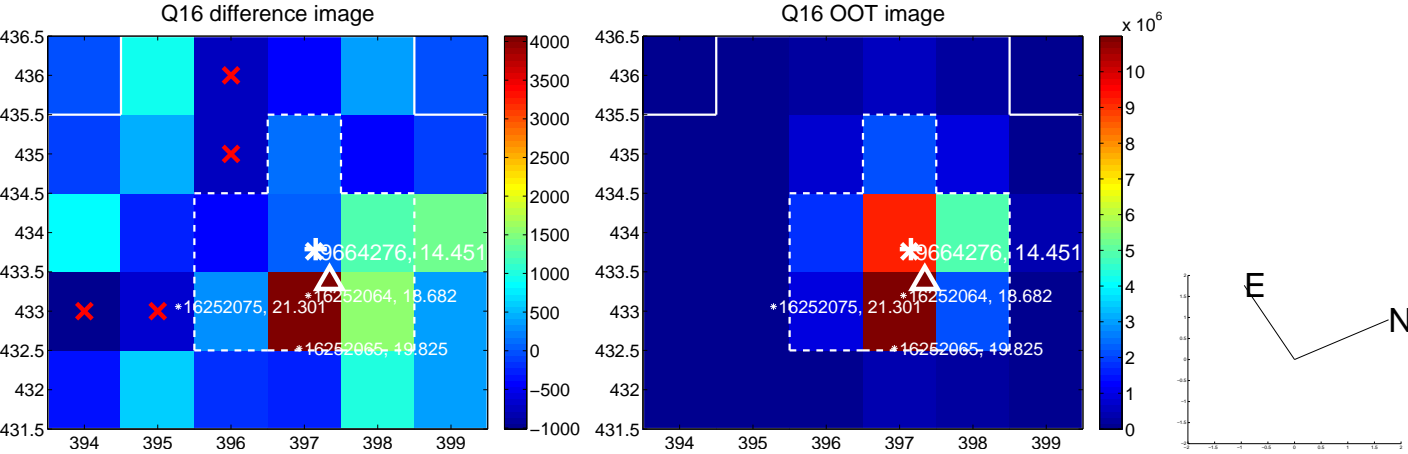
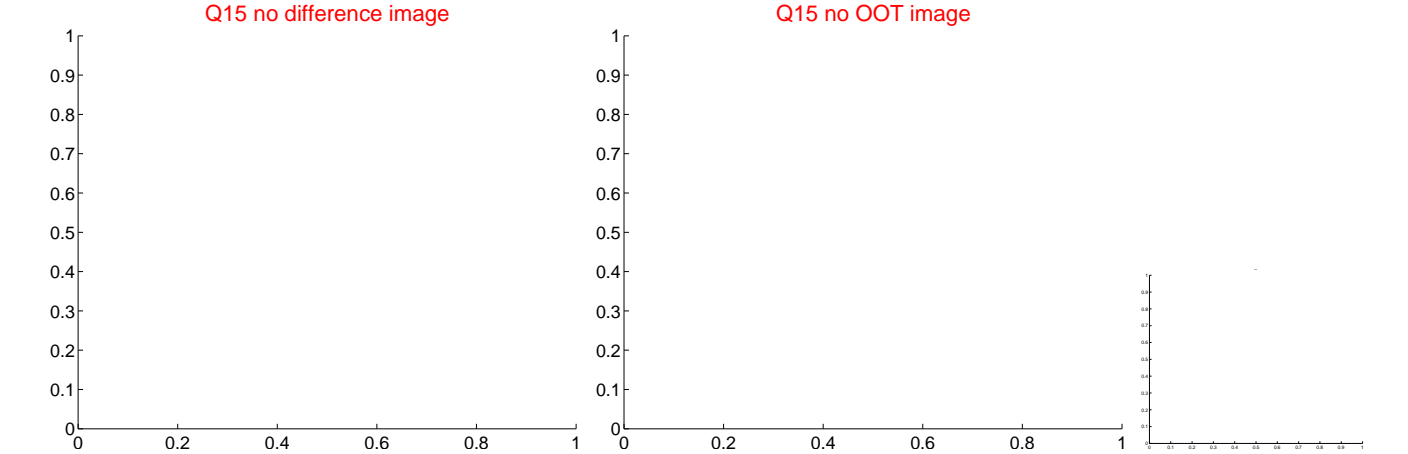
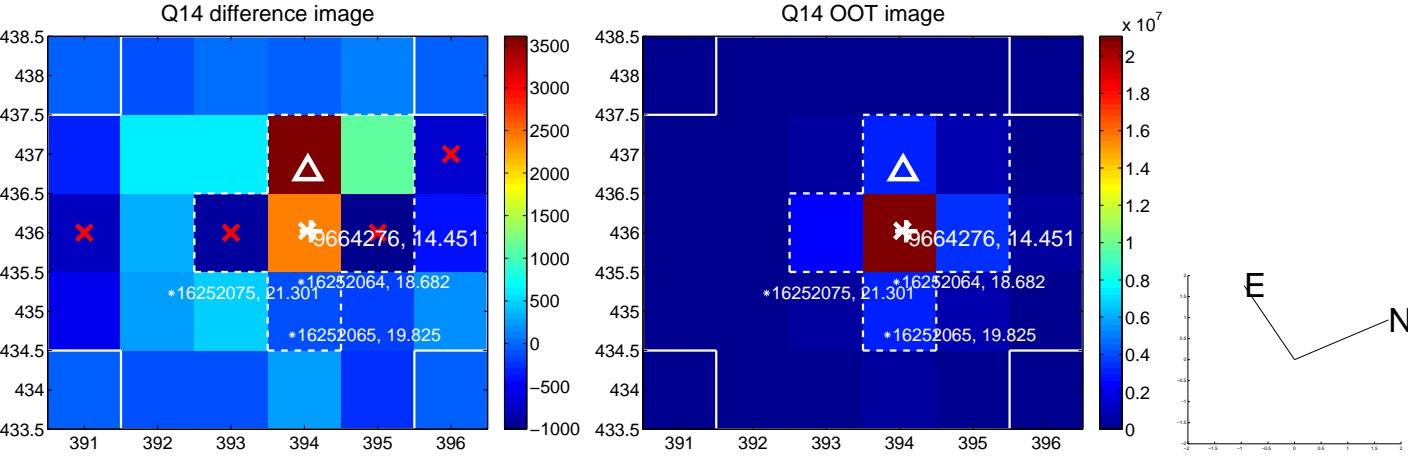
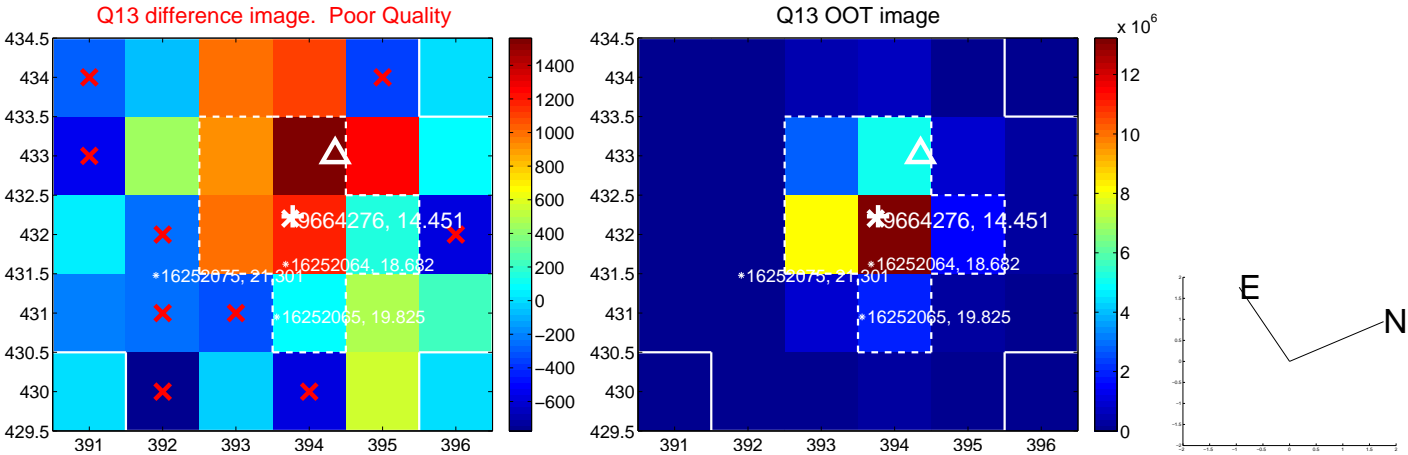
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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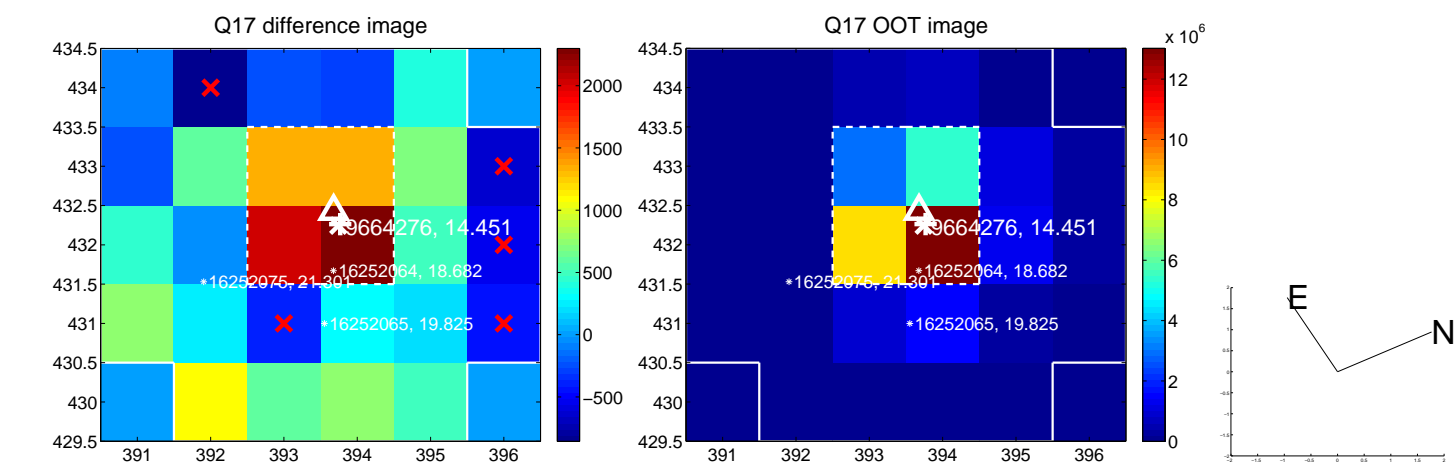


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

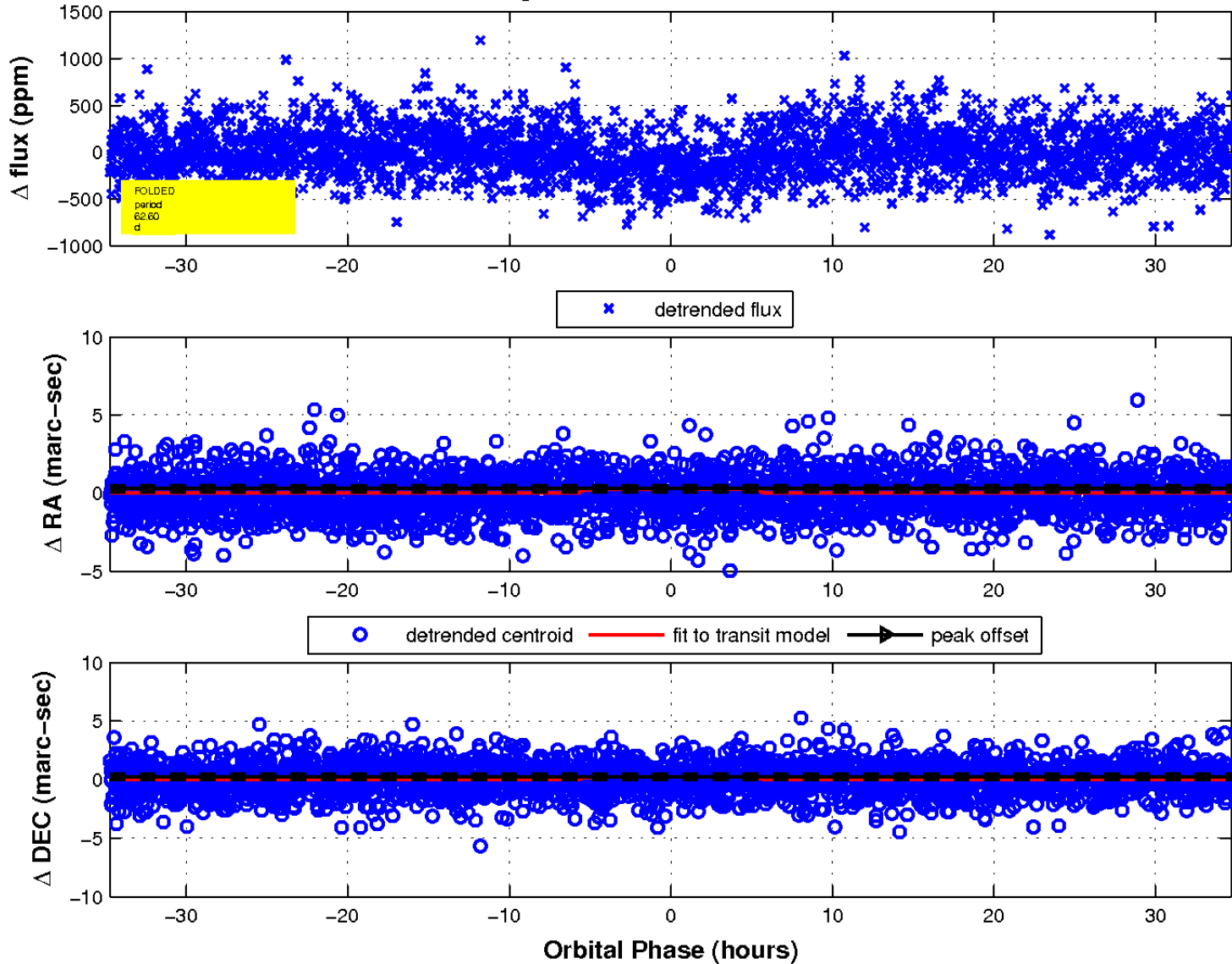




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

