

# KIC 009766218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009766218-01	OBS	No	0.563604	131.781350	6.0	5.028	7.8	2.9	1.91	6809	0.48	28690.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009766218-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_FEW_DIFFS

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

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

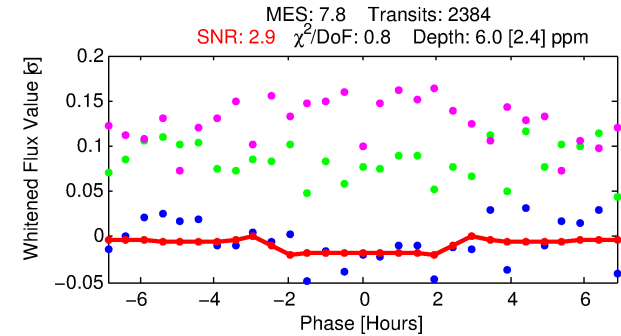
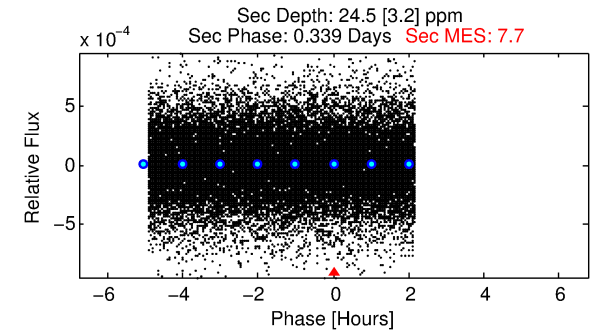
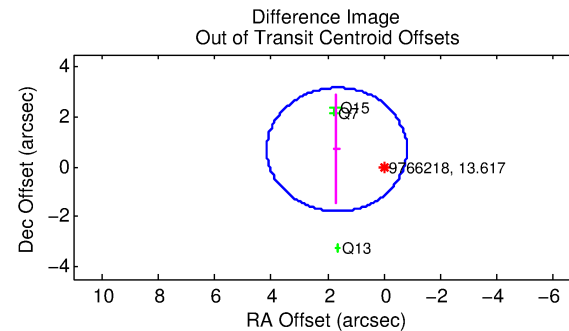
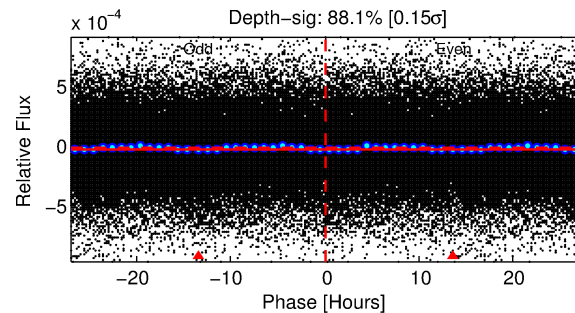
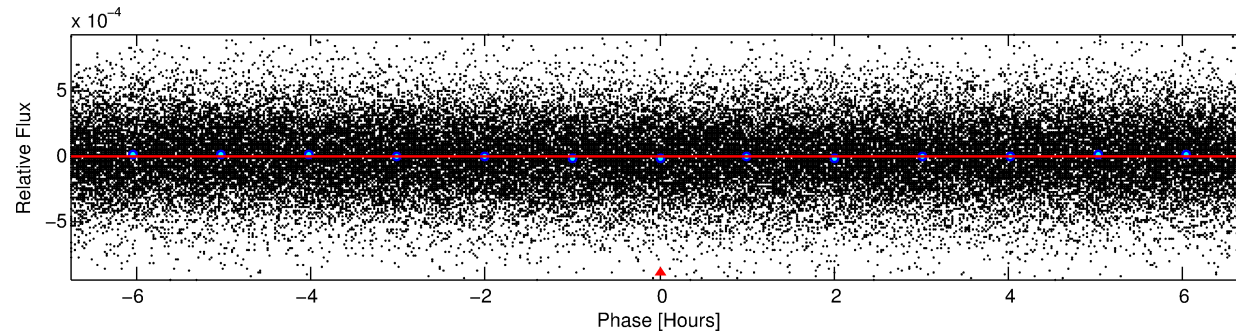
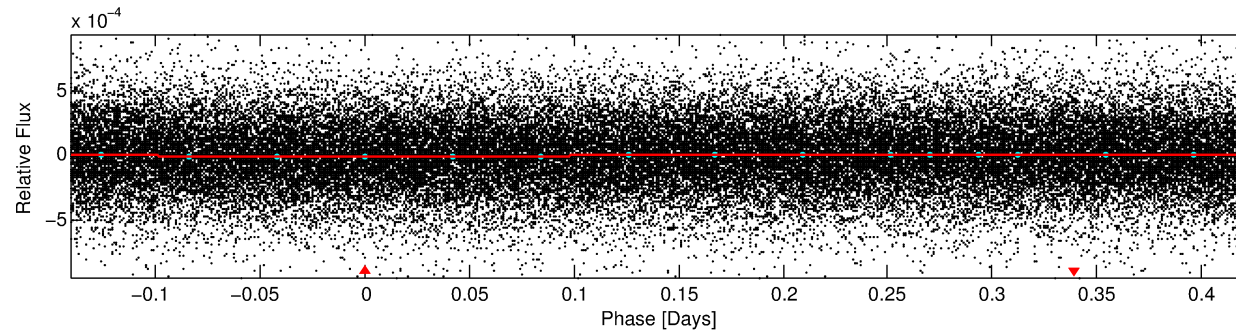
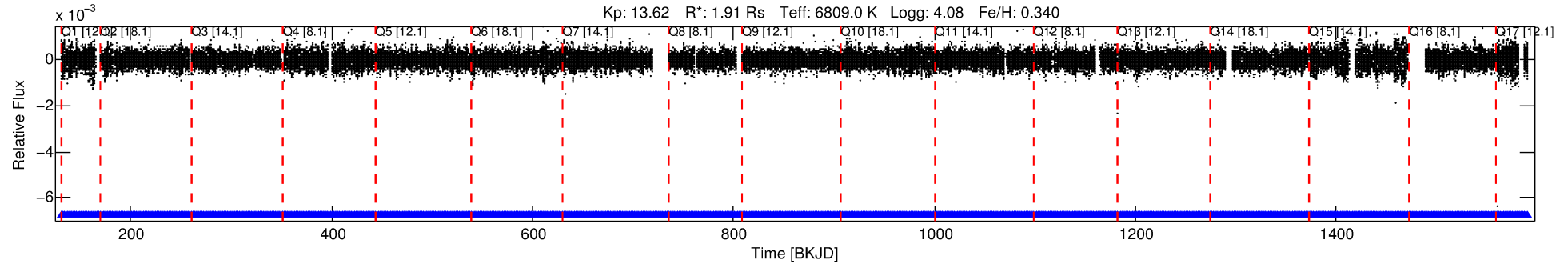
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009766218-01

No Significant Match Found

# DV One-Page Summary

KIC: 9766218 Candidate: 1 of 1 Period: 0.564 d



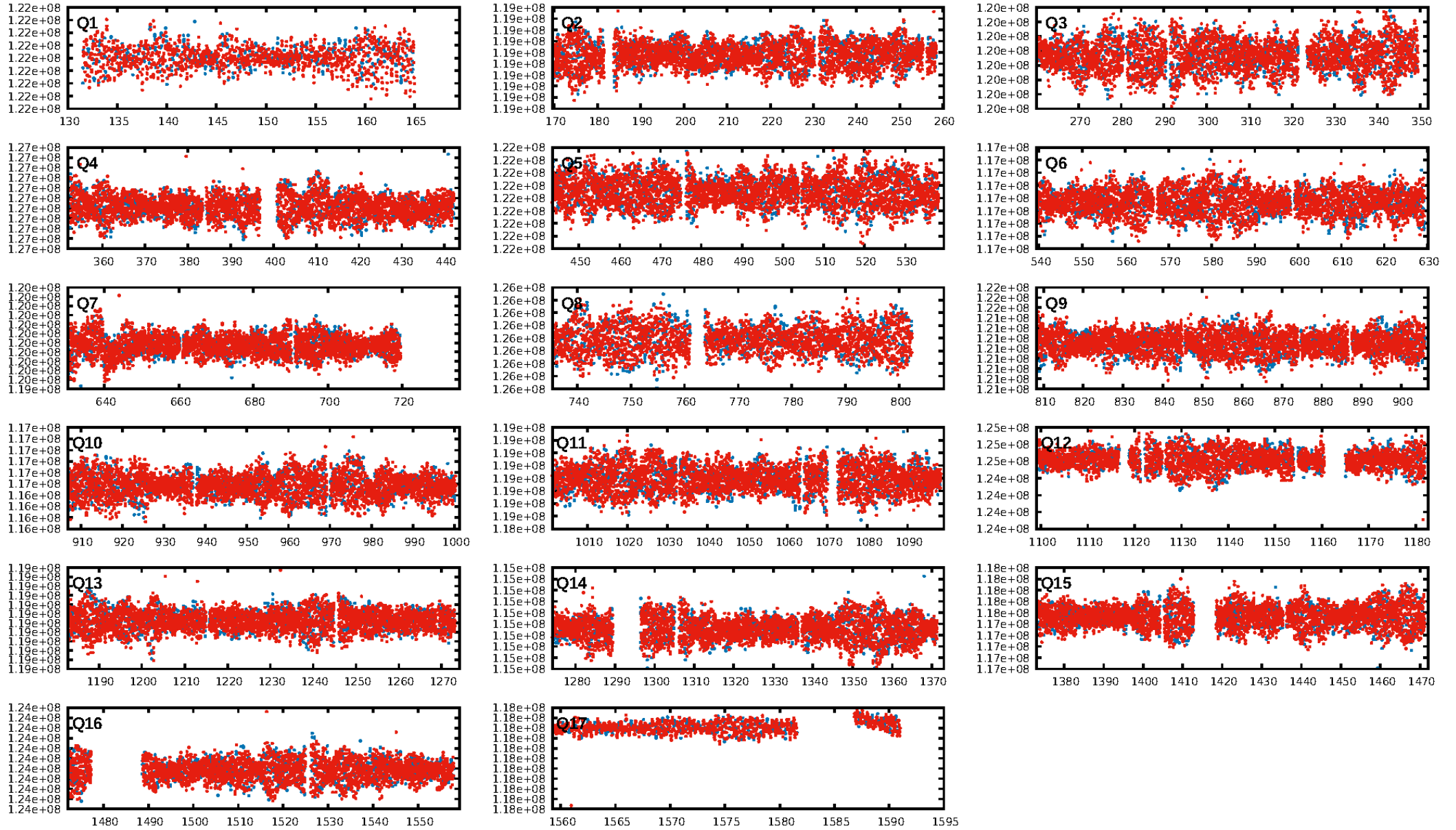
## DV Fit Results:

Period = 0.56360 [0.00004] d  
Epoch = 131.7813 [0.0125] BKJD  
Rp/R\* = 0.0023 [0.0055]  
a/R\* = 1.07 [1.87]  
b = 0.45 [24.23]  
Seff = 28690.53 [11166.56]  
Teq = 3319 [323] K  
Rp = 0.48 [1.16] Re  
a = 0.0157 [0.0038] AU  
Ag = 14.33 [68.51] [0.19 $\sigma$ ]  
Teffp = 9982 [11910] K [0.56 $\sigma$ ]

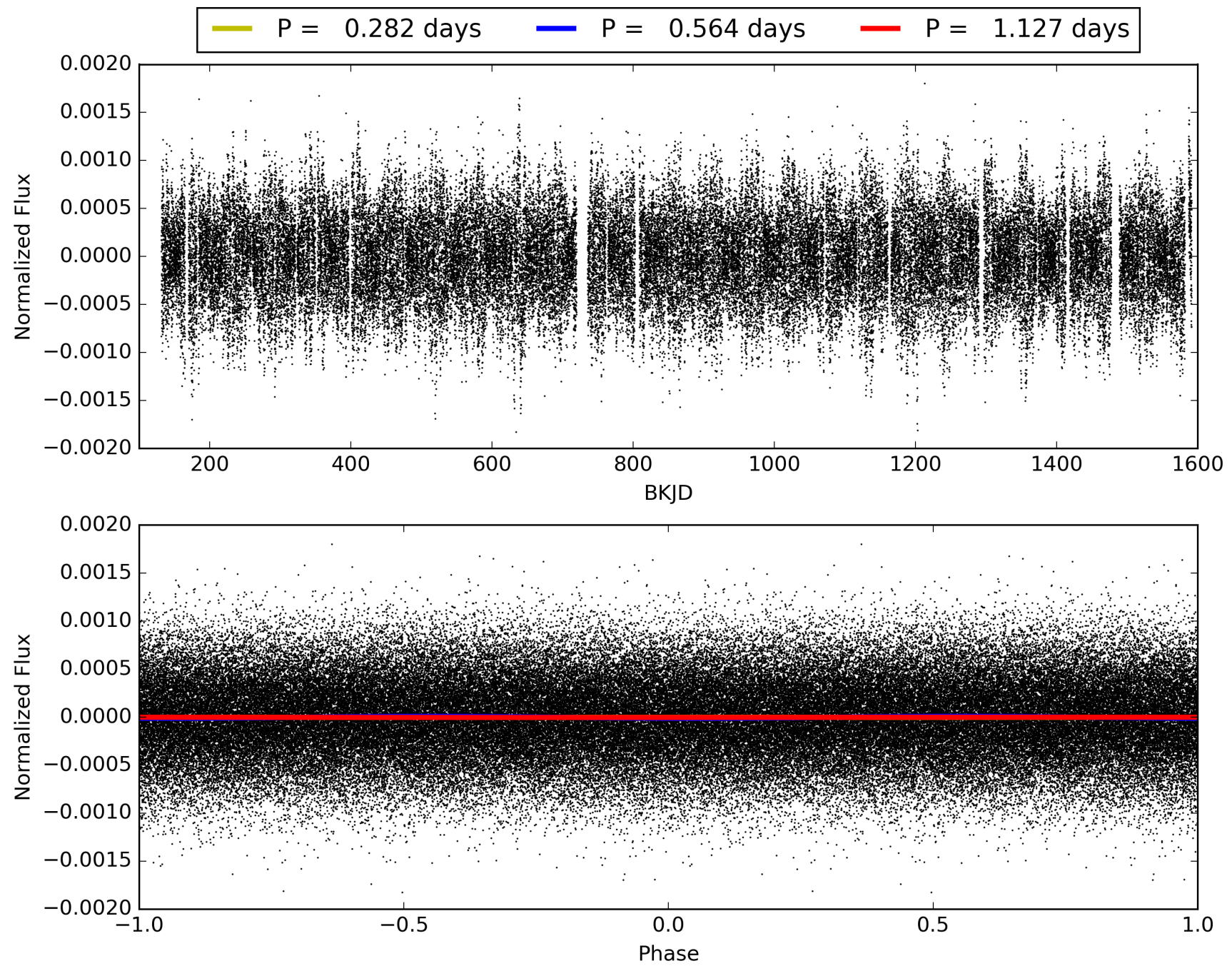
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2276/2276]  
GhostDiagnostic-chr: 6.974  
Centroid-sig: N/A  
Centroid-so: 1.459 arcsec [0.71 $\sigma$ ]  
OotOffset-rm: 1.805 arcsec [2.19 $\sigma$ ]  
KicOffset-rm: 1.766 arcsec [2.19 $\sigma$ ]  
OotOffset-st: 0/2/0/1 [3]  
KicOffset-st: 0/2/0/1 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009766218-01, PDC Light Curves



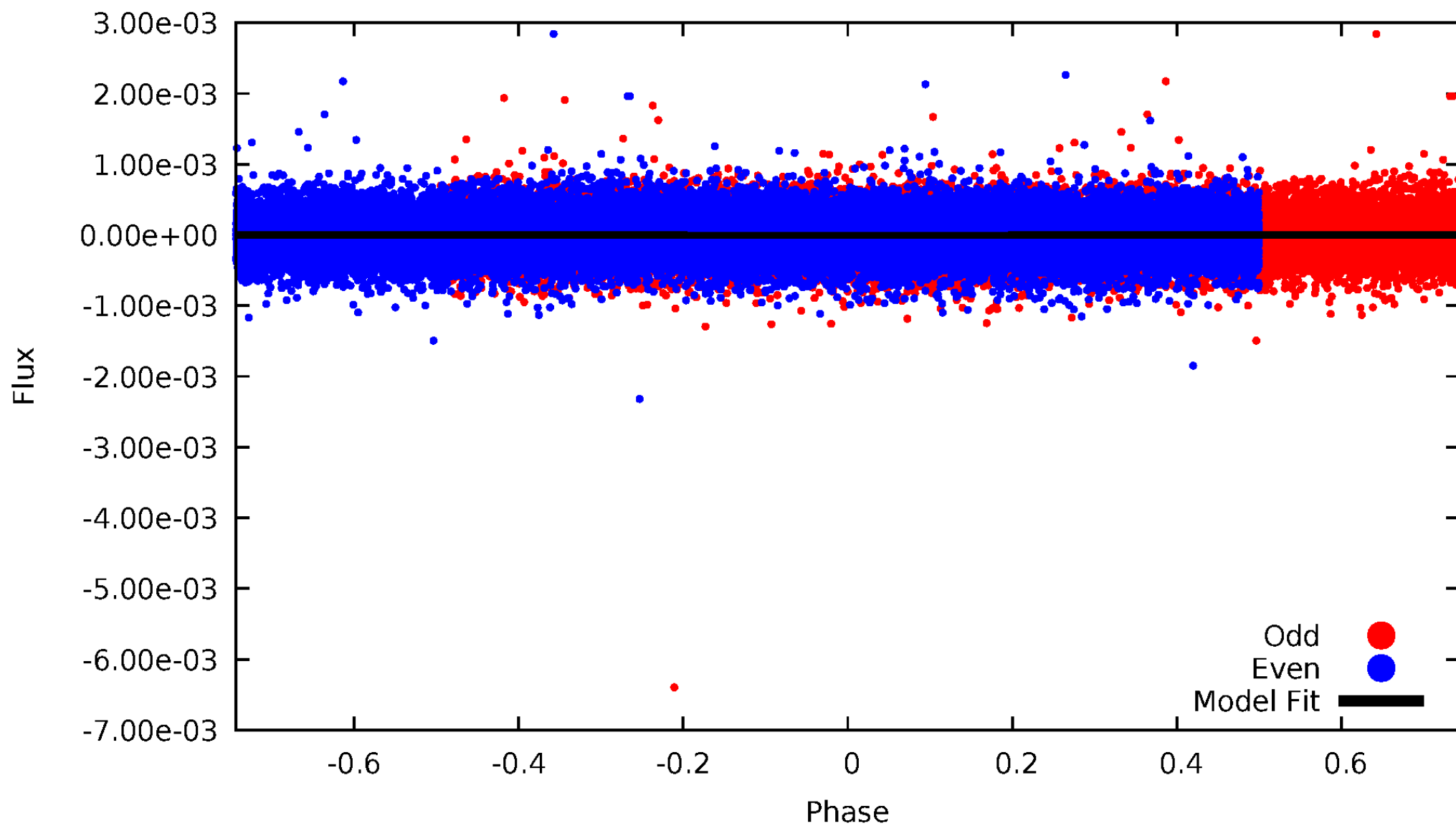
TCE 009766218-01





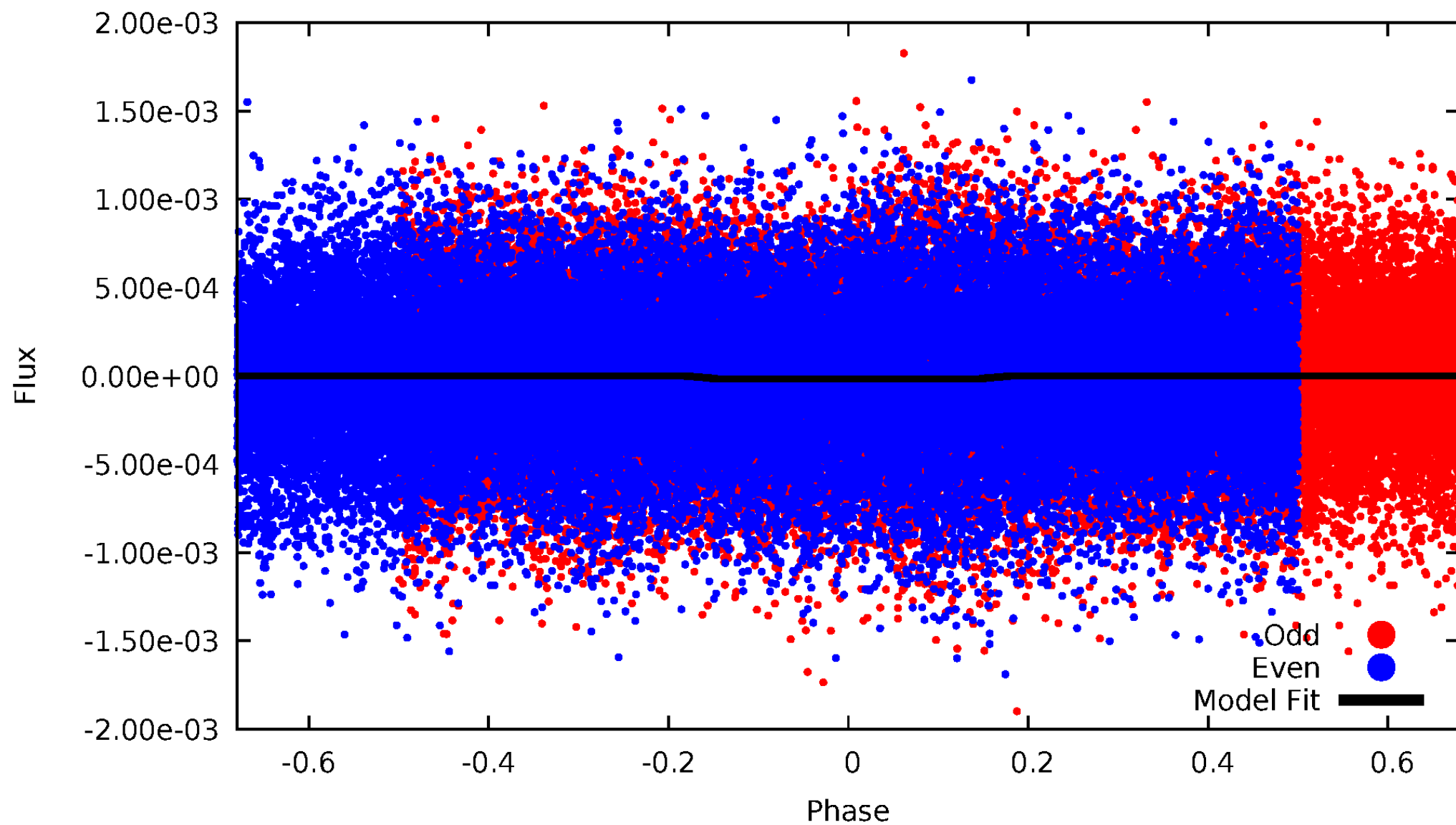
# DV Odd/Even

TCE 009766218-01

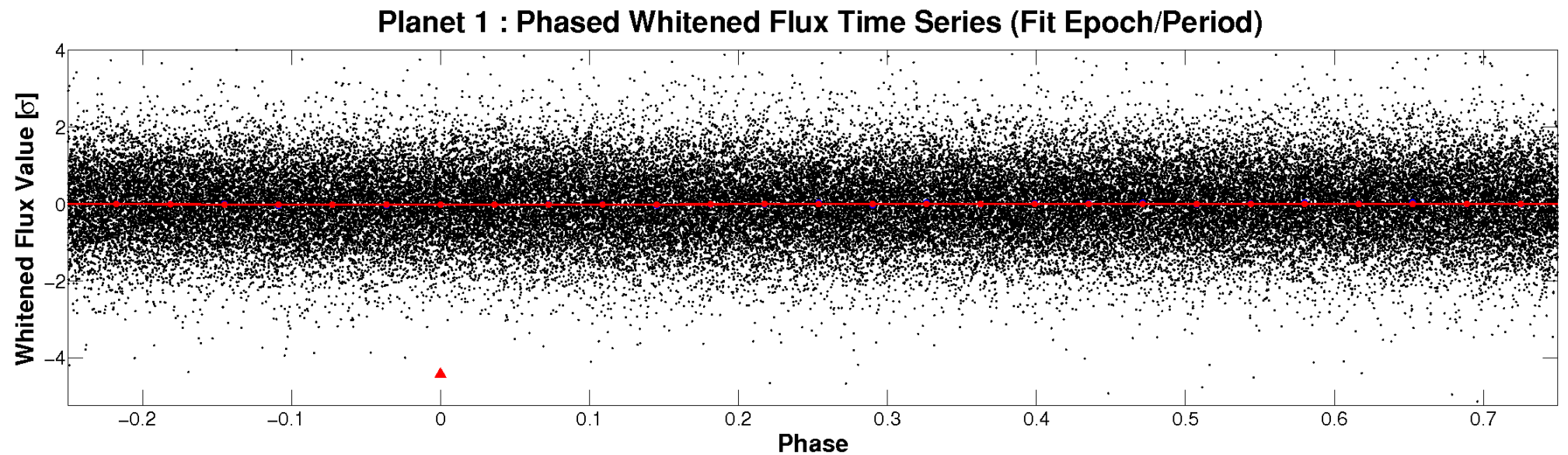
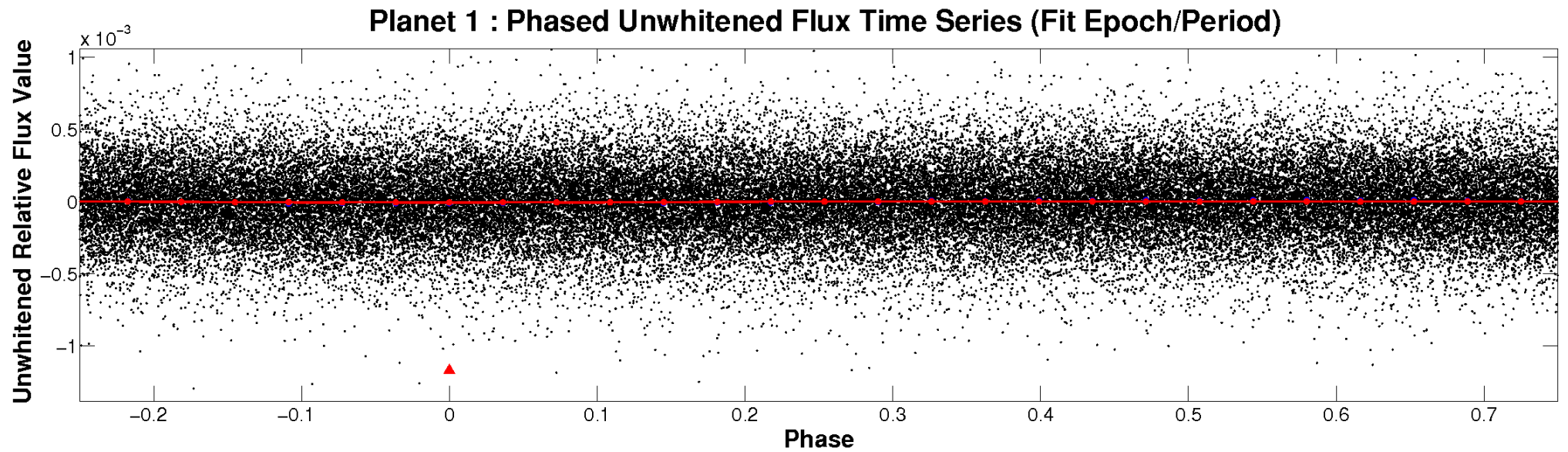


# ALT Odd/Even

TCE 009766218-01

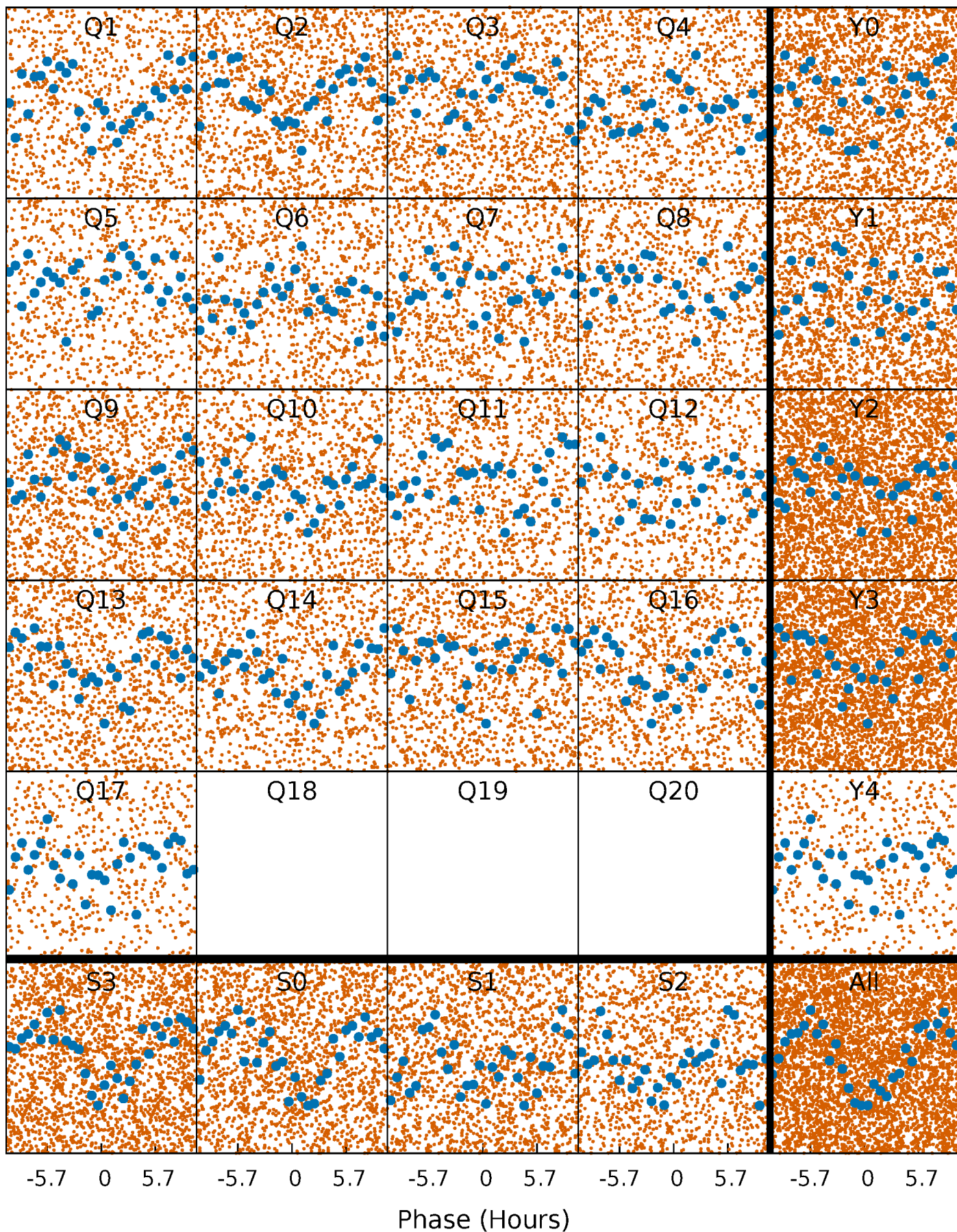


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

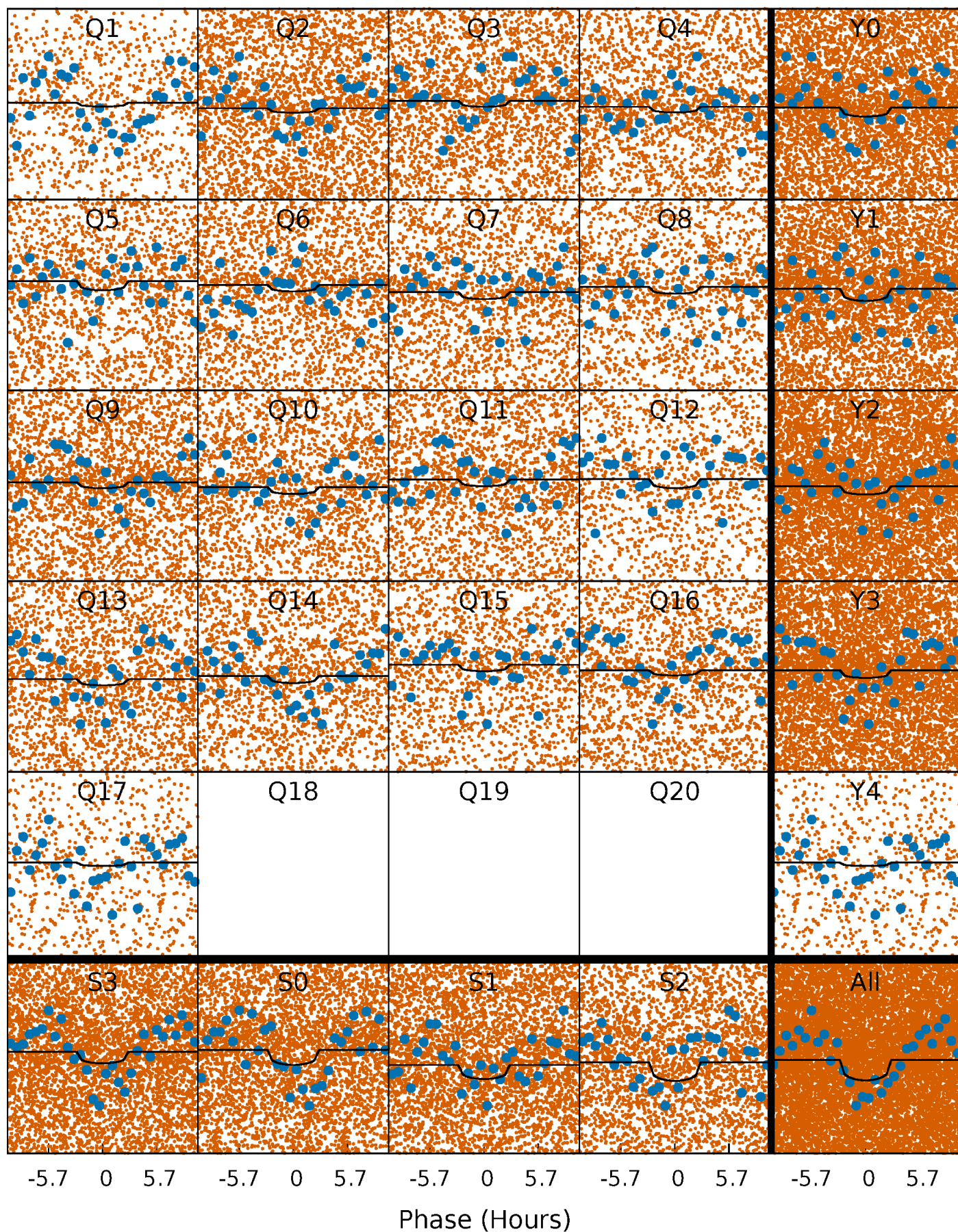
TCE 009766218-01 P= 0.563604 Days  $T_0=131.781350$  (BKJD)





# DV Quarter-Phased Transit Curves

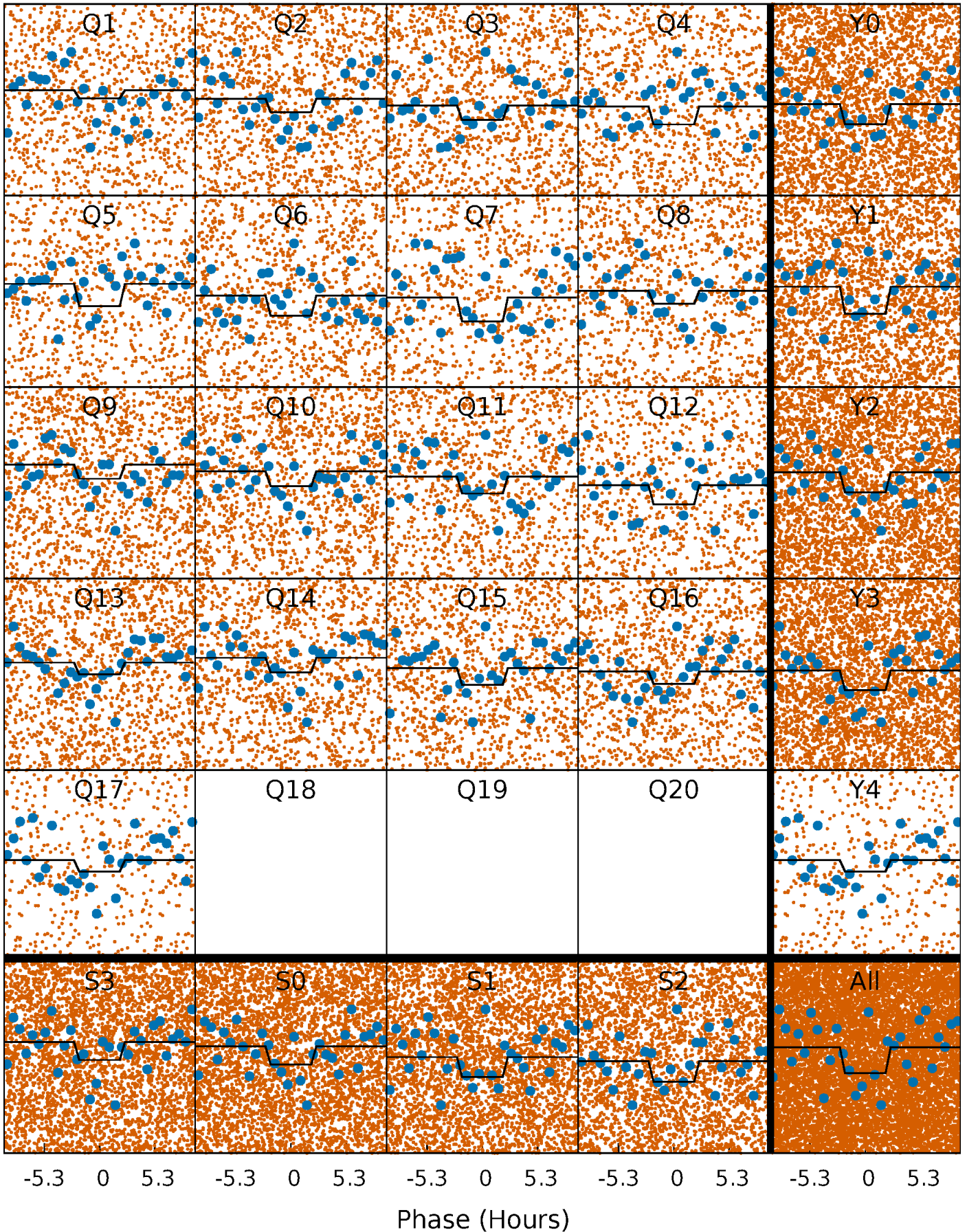
TCE 009766218-01 P= 0.563604 Days  $T_0=131.781350$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

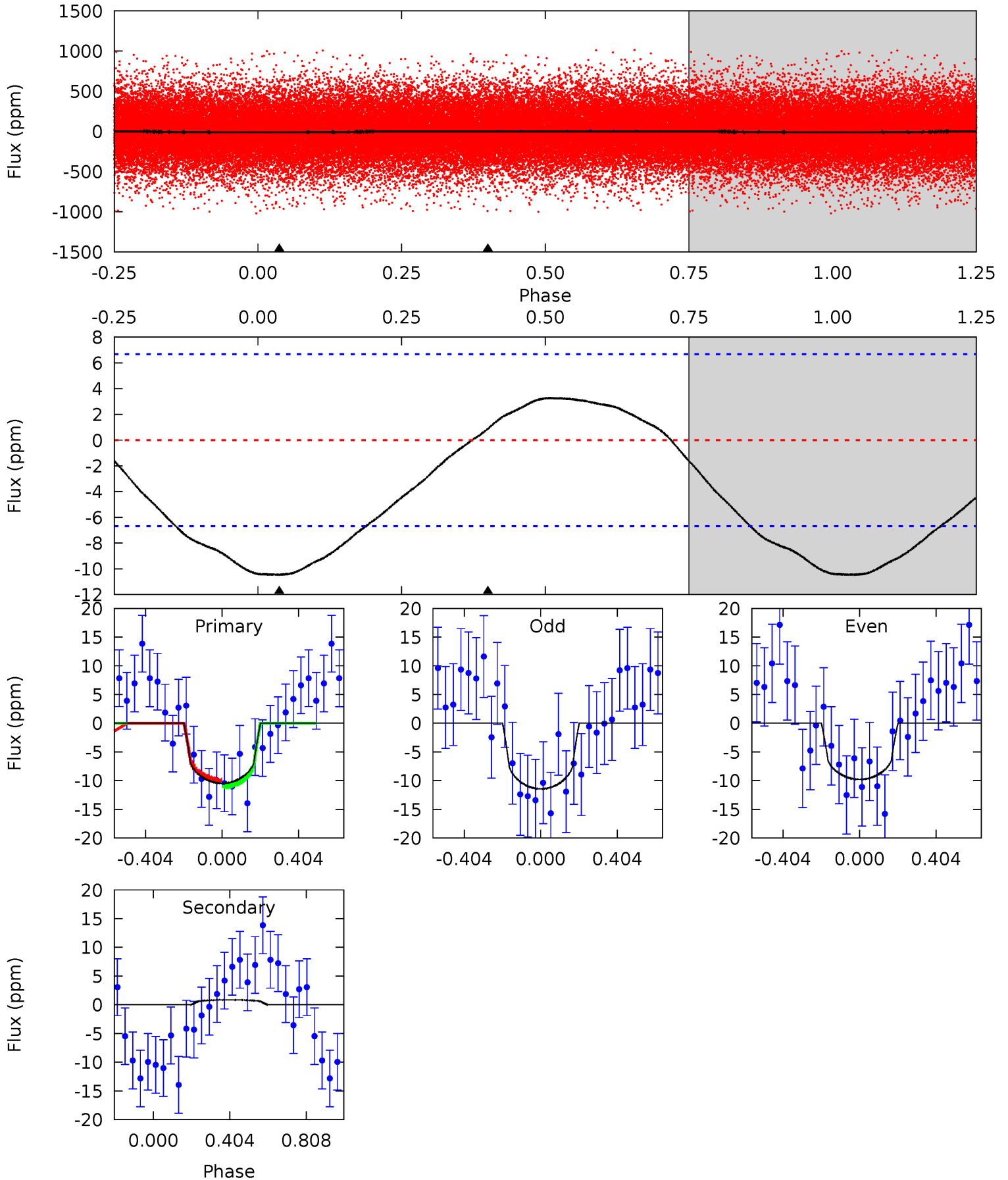
TCE 009766218-01 P= 0.563643 Days  $T_0=131.755872$  (BKJD)



# DV Model-Shift Uniqueness Test

009766218-01, P = 0.563604 Days, E = 131.217746 Days

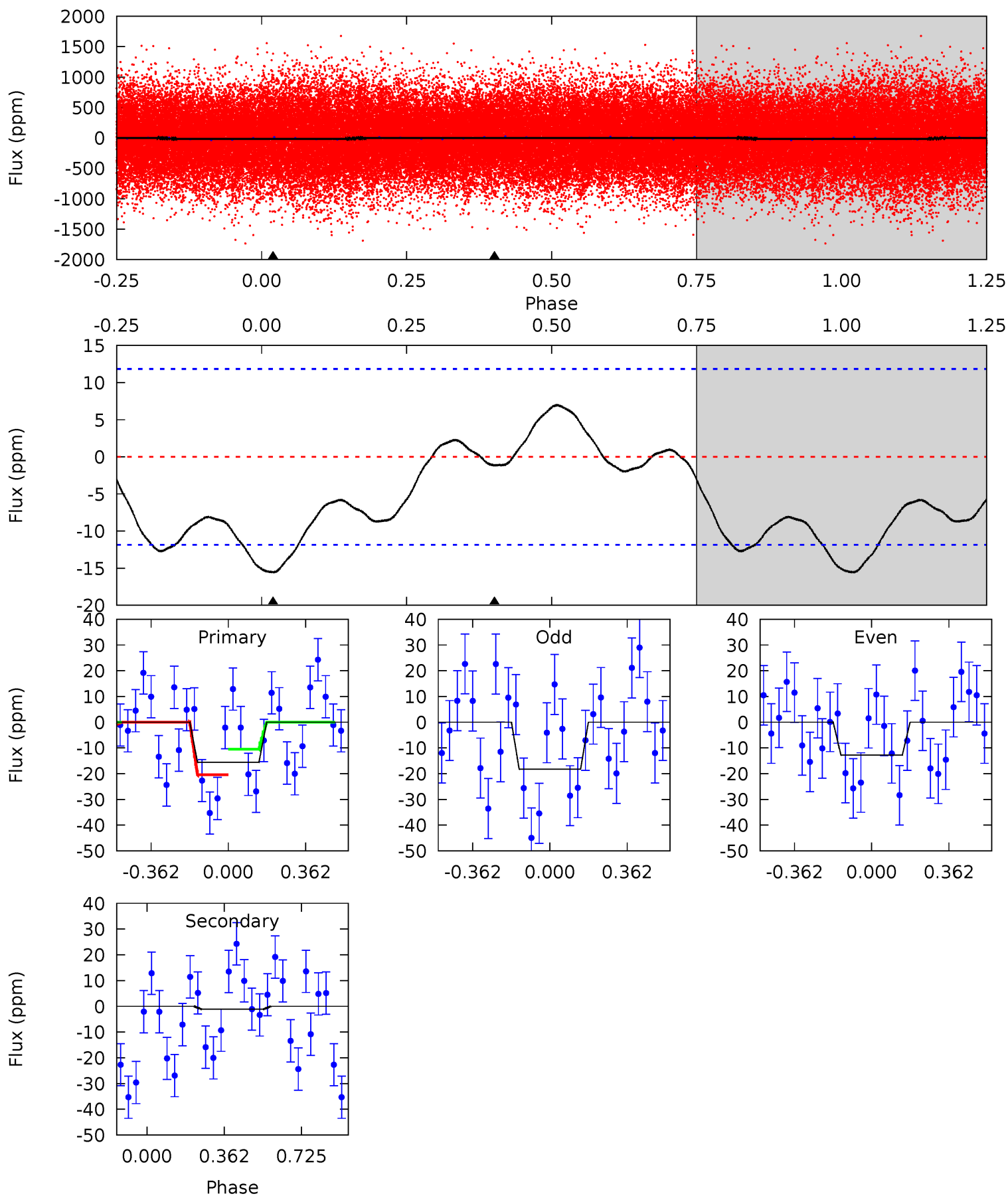
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.68	-0.55	0	0	4.26	0.83	0.82	6.68	6.68	-0.55	-0.55	0.53	1.41	0.24	0.33



# Alt Model-Shift Uniqueness Test

009766218-01, P = 0.563643 Days, E = 131.192229 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
5.63	0.42	0	0	4.29	0.91	0.55	5.63	5.63	0.42	0.42	1.03	0.94	0.31	1.89





### Stellar Parameters For KIC 009766218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6809^{+185}_{-301}$	$4.083^{+0.153}_{-0.187}$	$0.340^{+0.100}_{-0.350}$	$1.913^{+0.558}_{-0.406}$	$1.613^{+0.197}_{-0.263}$	$0.325^{+0.262}_{-0.168}$
	+3%/-4%	+4%/-5%	+29%/-103%	+29%/-21%	+12%/-16%	+81%/-52%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 009766218-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$1 \pm 2$	$0.98^{+0.93}_{-0.66}$	$4647^{+375}_{-336}$	$-4304^{+613}_{-1163}$	$-0.072^{+0.190}_{-0.974}$
Alt.	$-1 \pm 3$	$1.14^{+1.02}_{-0.76}$	$4640^{+347}_{-322}$	$-3885^{+8572}_{-635}$	$0.066^{+0.907}_{-0.206}$

$T_{max}$  = 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

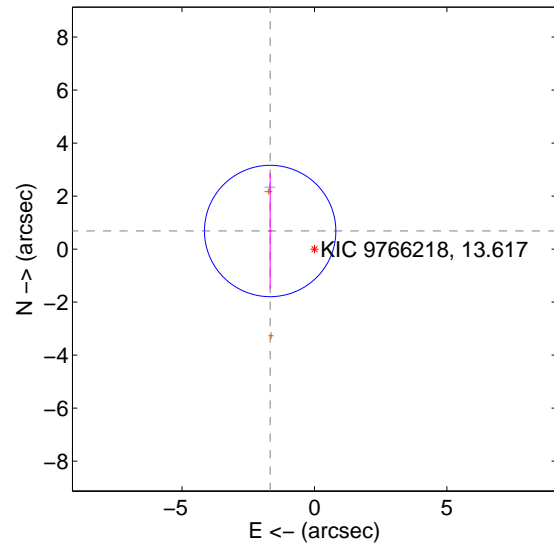
Supplemental centroid analysis for 009766218-01. Kepler magnitude: 13.62. Transit SNR 2.95

There are 1 quarters with good PRF difference image offsets

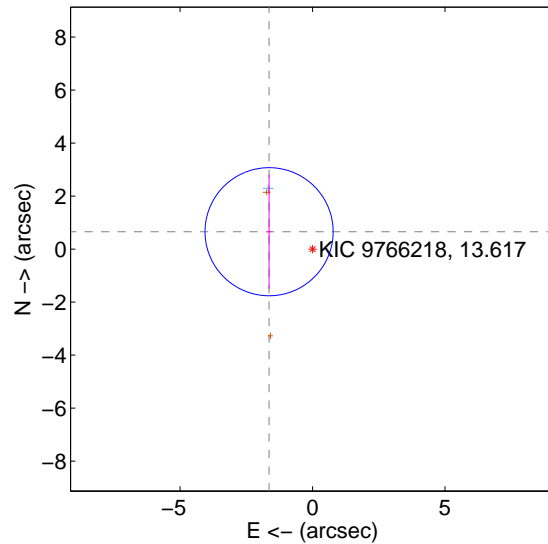
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.805 \pm 0.826$	2.19	$1.671 \pm 0.075$	$0.683 \pm 2.175$
PRF-fit source offset from KIC position	$1.766 \pm 0.806$	2.19	$1.639 \pm 0.082$	$0.656 \pm 2.159$
photometric centroid source offset	$1.46 \pm 2.05$	0.71	$1.11 \pm 2.09$	$-0.95 \pm 2.00$

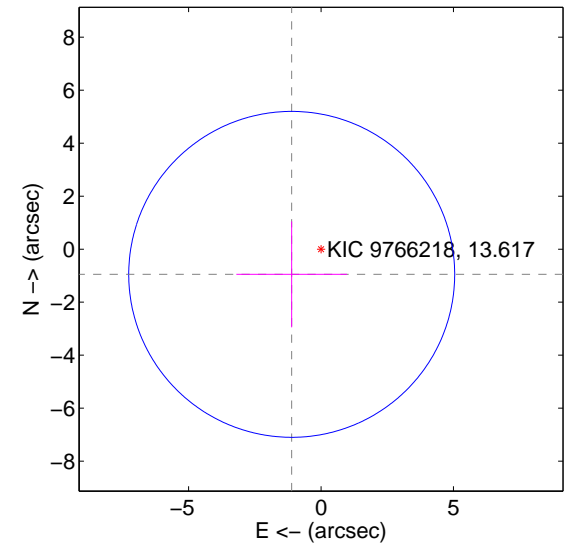
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

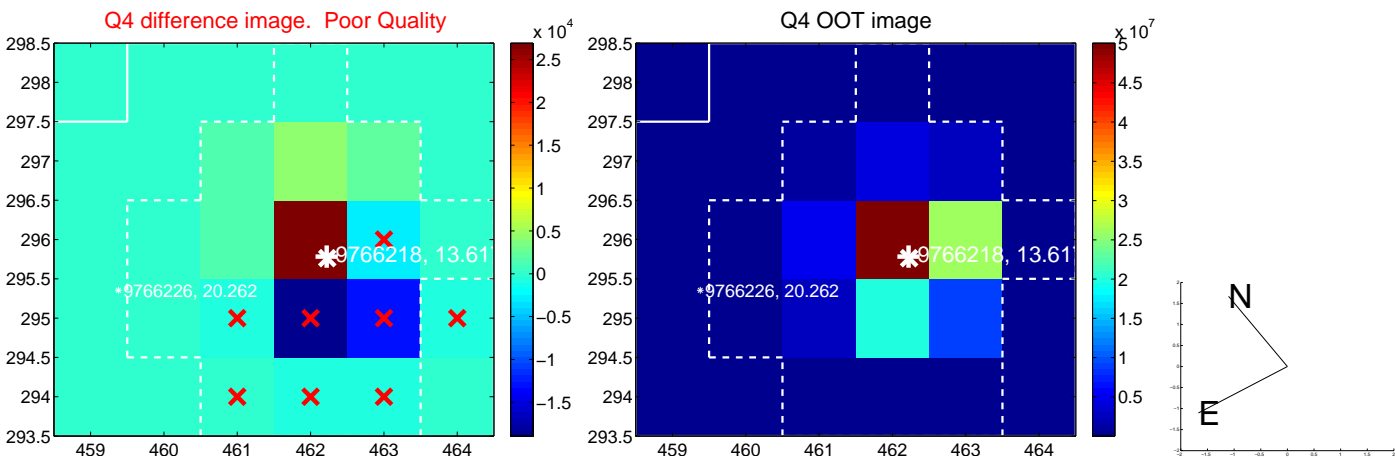
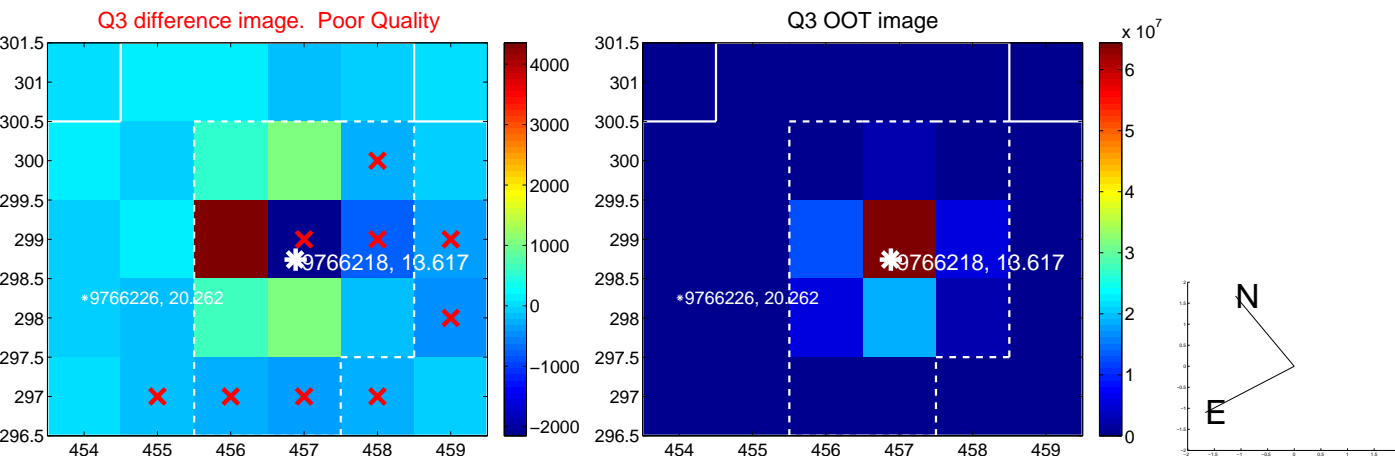
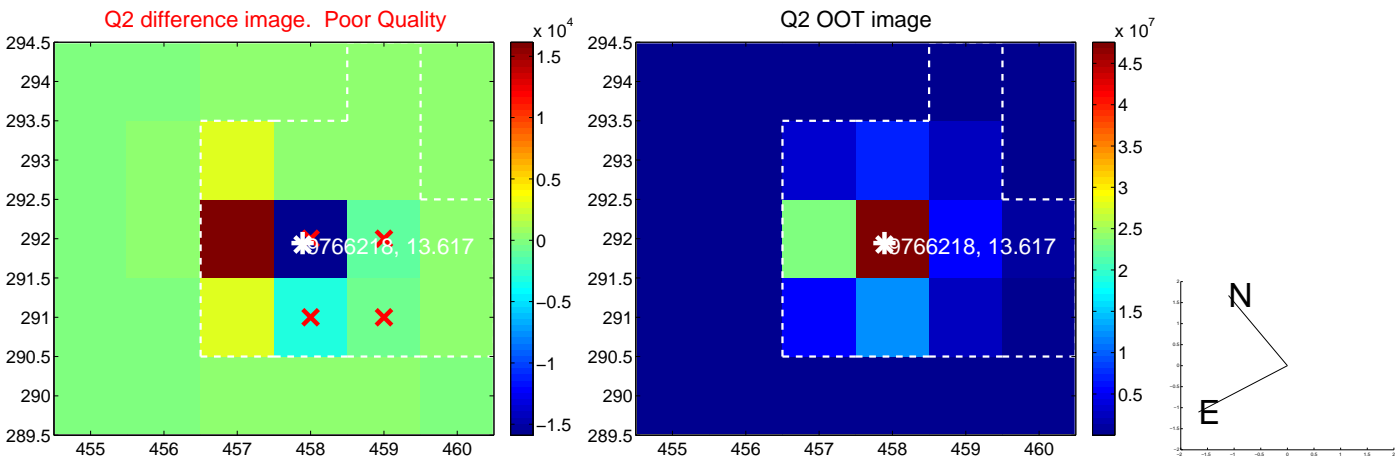
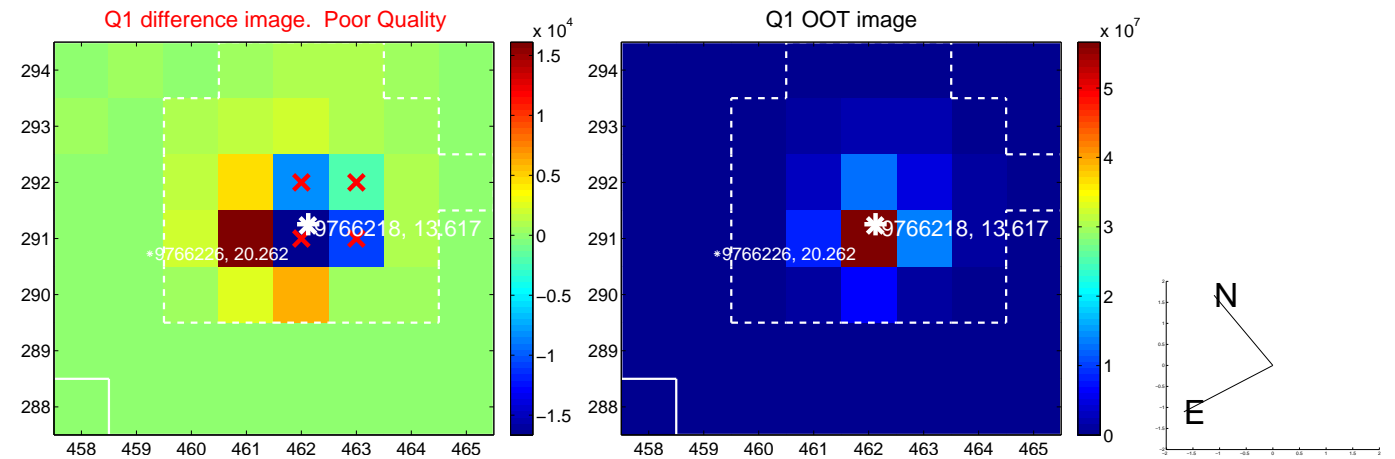


offset from photometric centroids

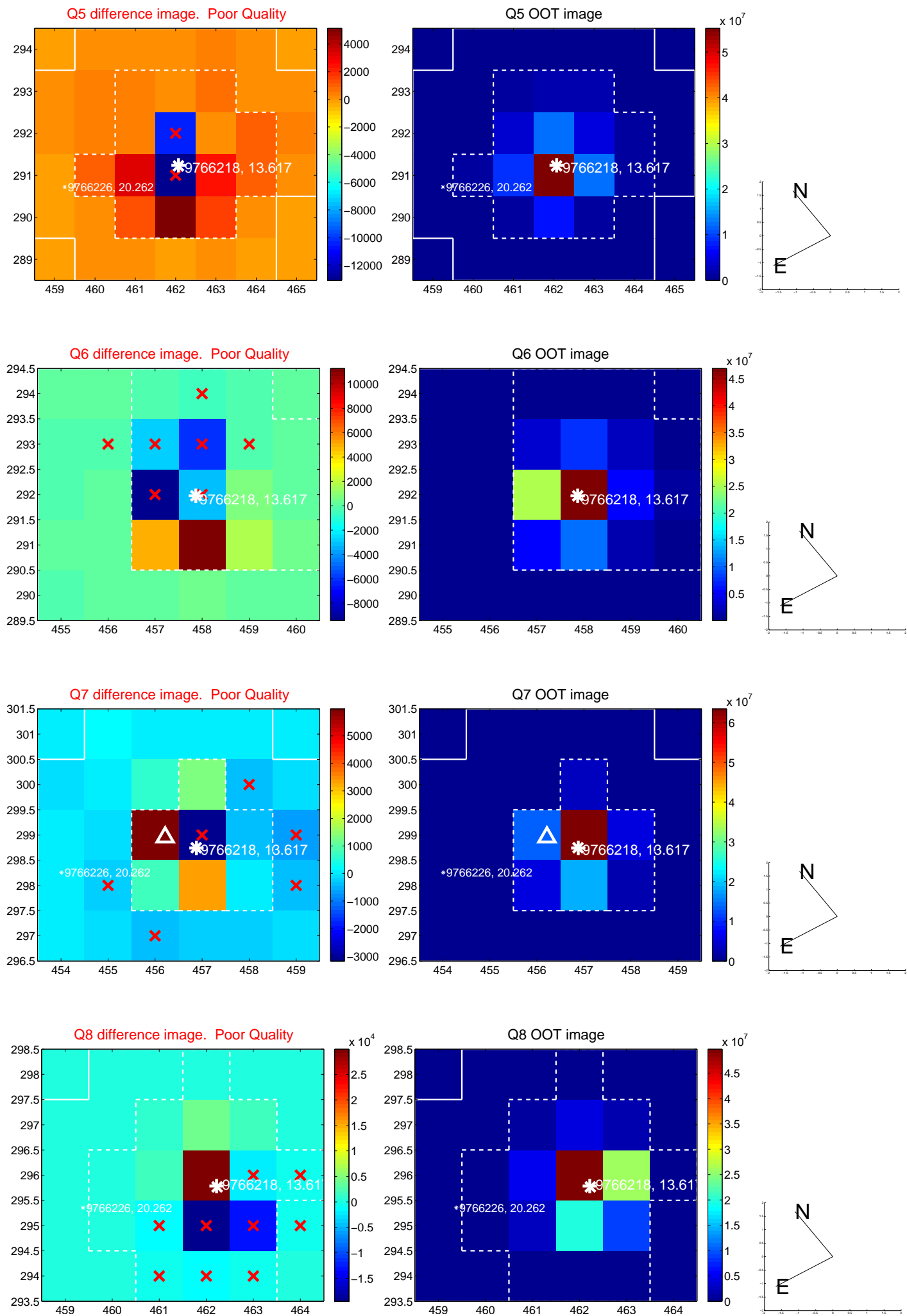


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

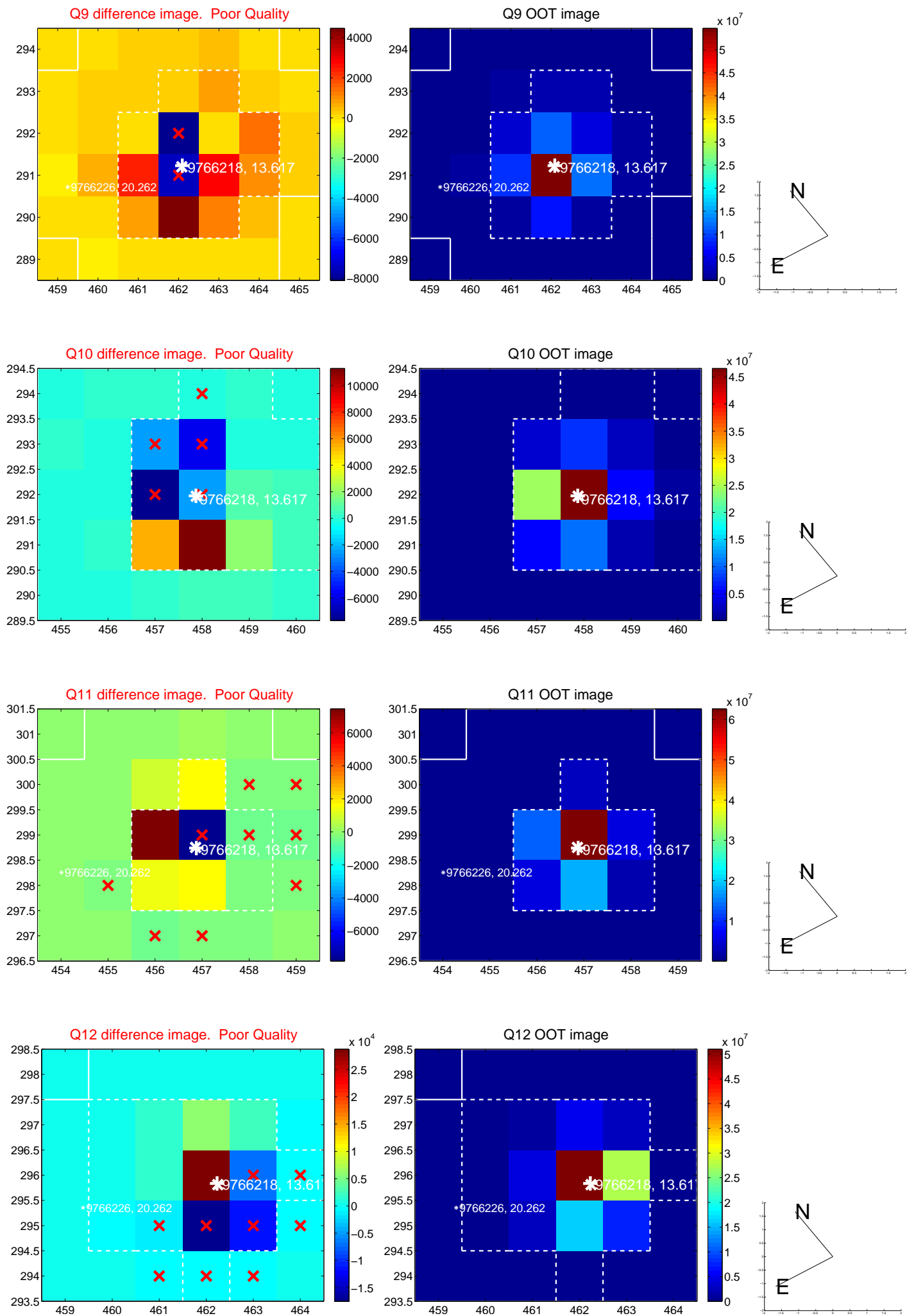


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

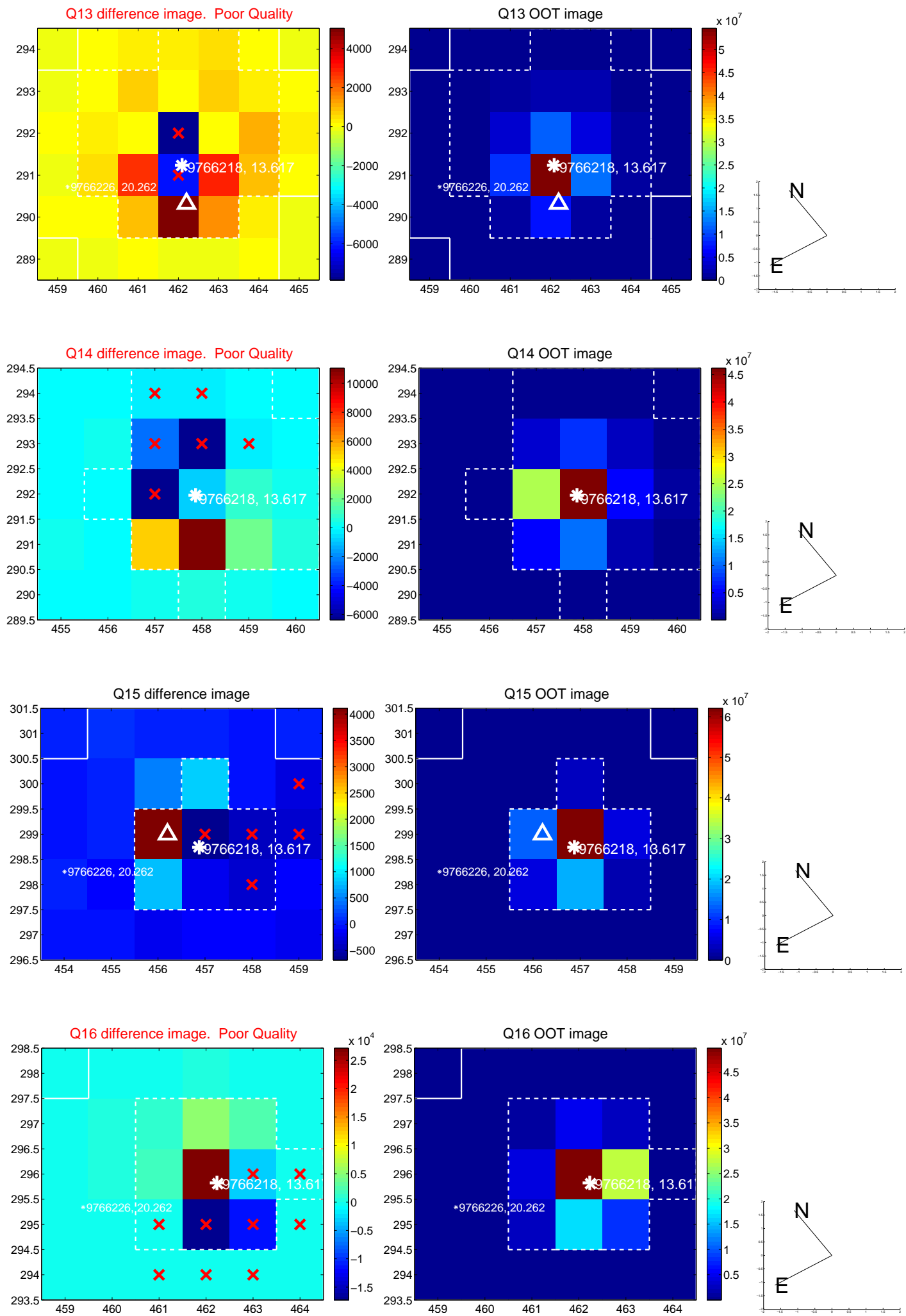




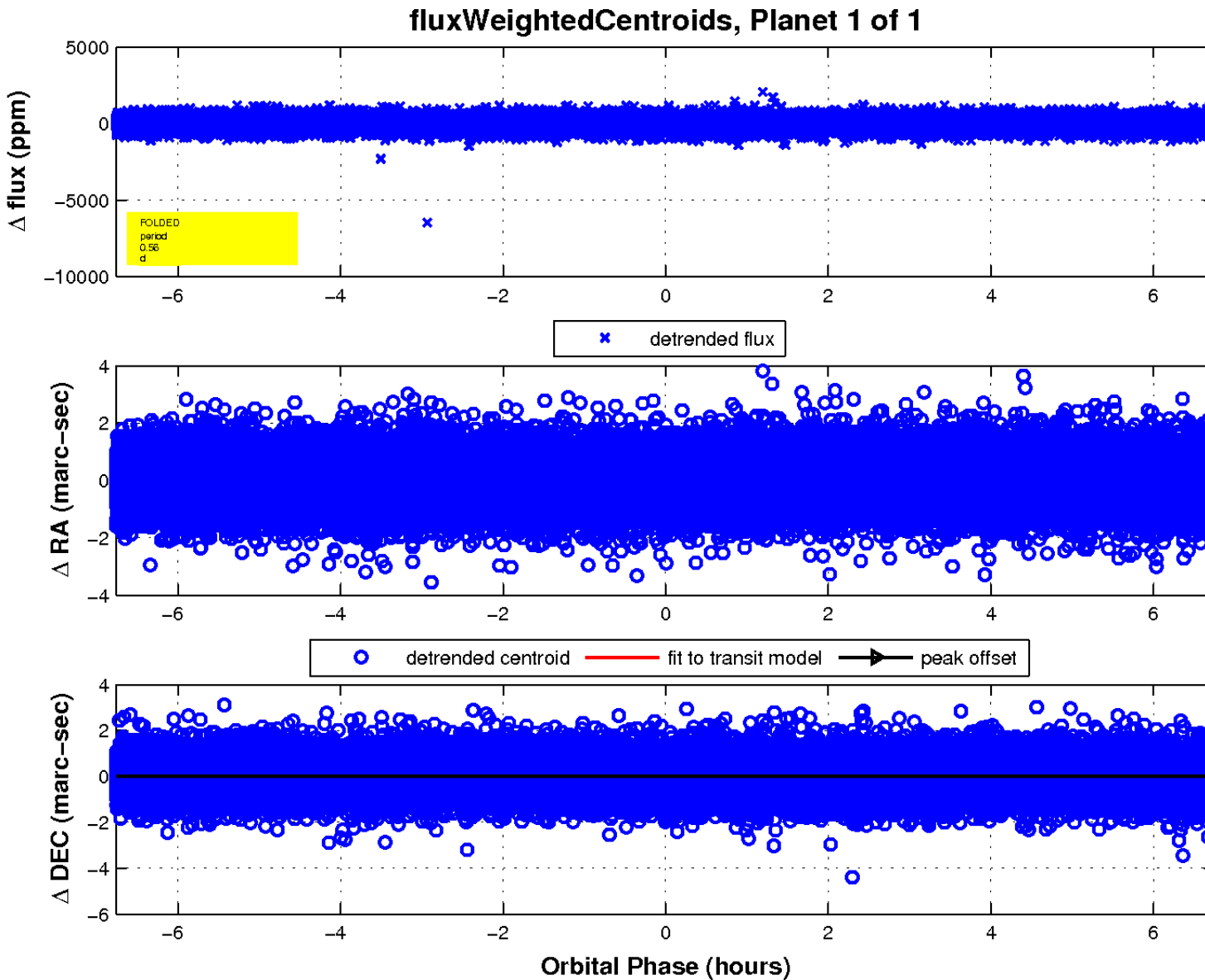
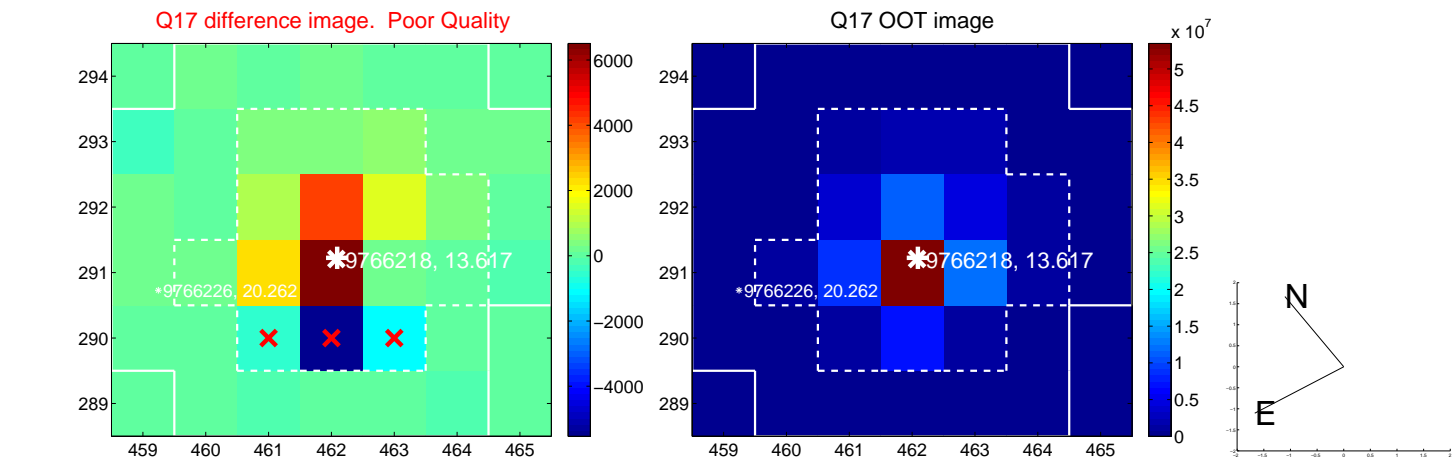
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

