

# KIC 009408183

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009408183-01	OBS	No	49.691548	146.476787	162.0	17.717	7.2	7.1	6.63	5113	10.65	228.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009408183-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_POS_DV

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

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

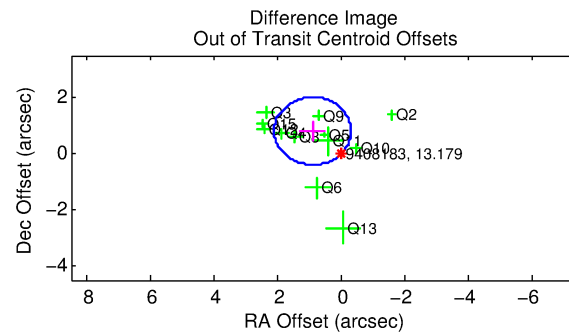
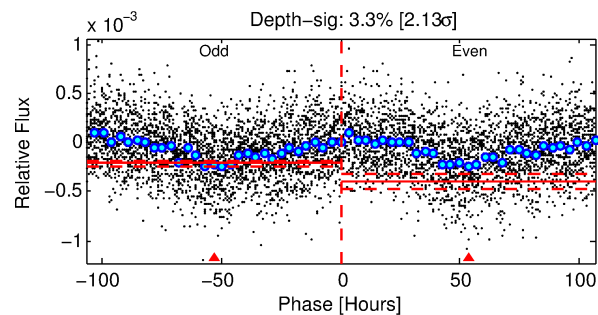
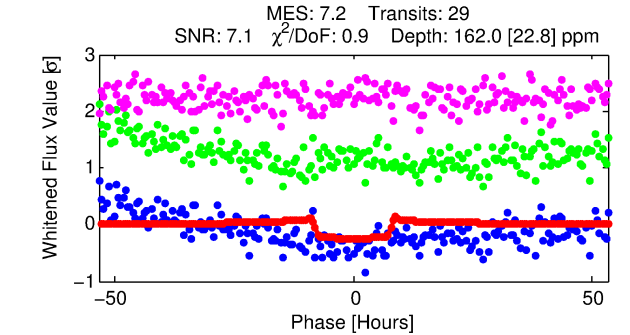
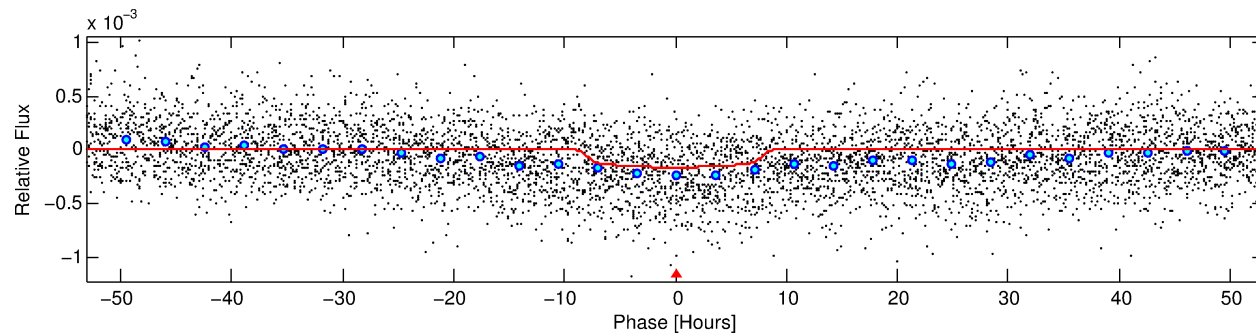
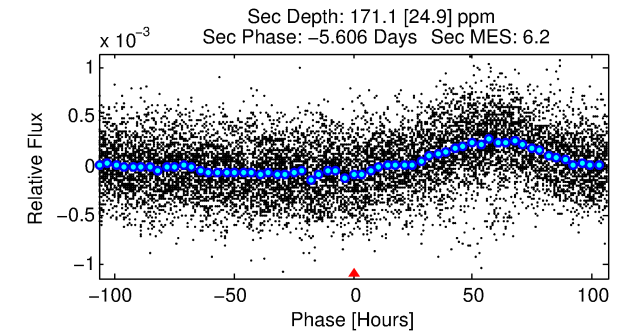
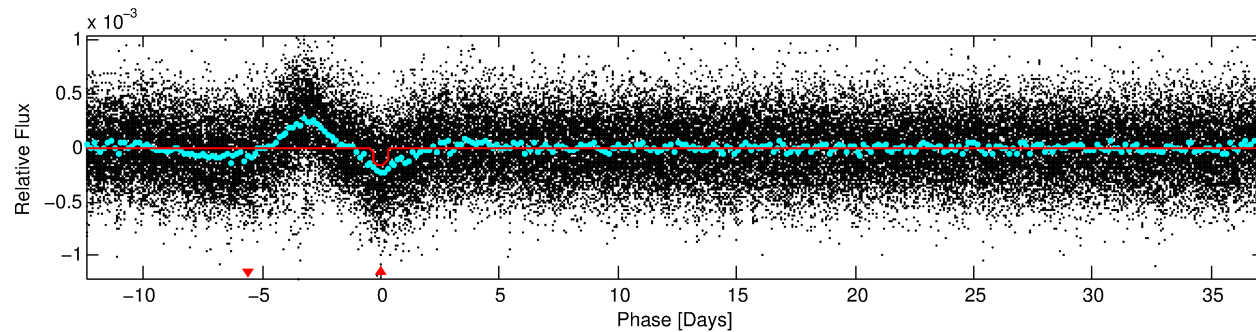
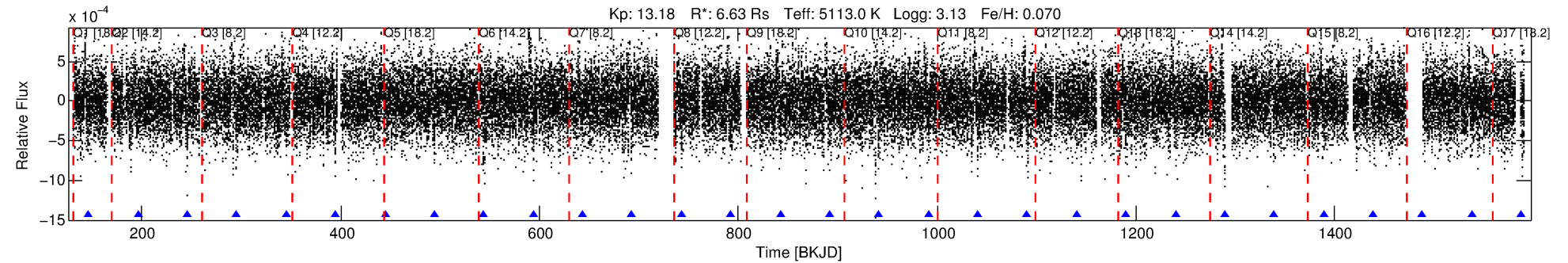
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009408183-01

No Significant Match Found

# DV One-Page Summary

KIC: 9408183 Candidate: 1 of 1 Period: 49.692 d



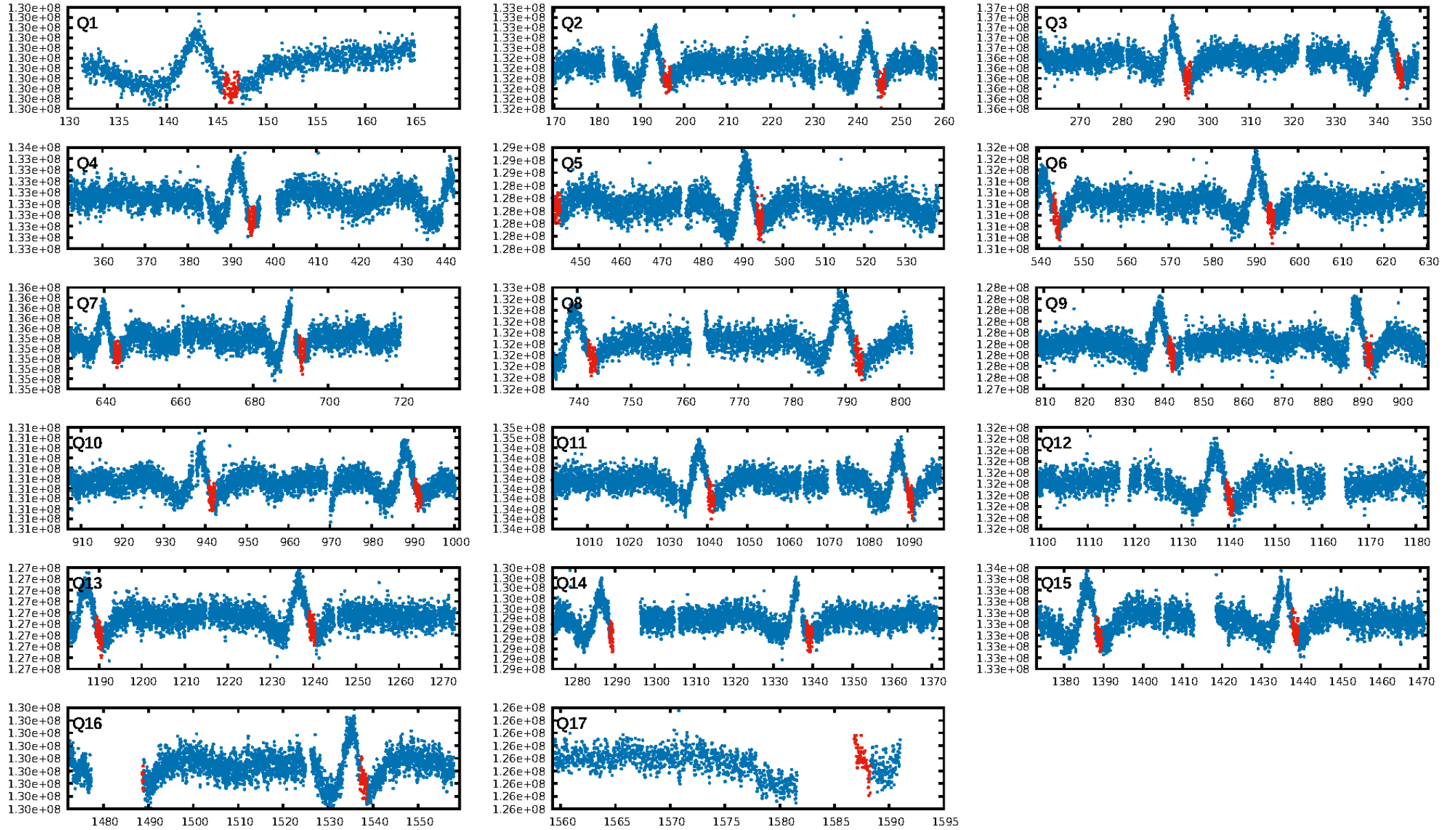
## DV Fit Results:

Period = 49.69155 [0.00169] d  
Epoch = 146.4768 [0.0277] BKJD  
Rp/R\* = 0.0147 [0.0015]  
a/R\* = 8.71 [2.74]  
b = 0.93 [0.05]  
Seff = 228.22 [58.37]  
Teff = 991 [63] K  
Rp = 10.65 [3.26] Re  
a = 0.3436 [0.0664] AU  
Ag = 97.93 [31.52] [3.07 $\sigma$ ]  
Teffp = 4820 [364] K [10.37 $\sigma$ ]

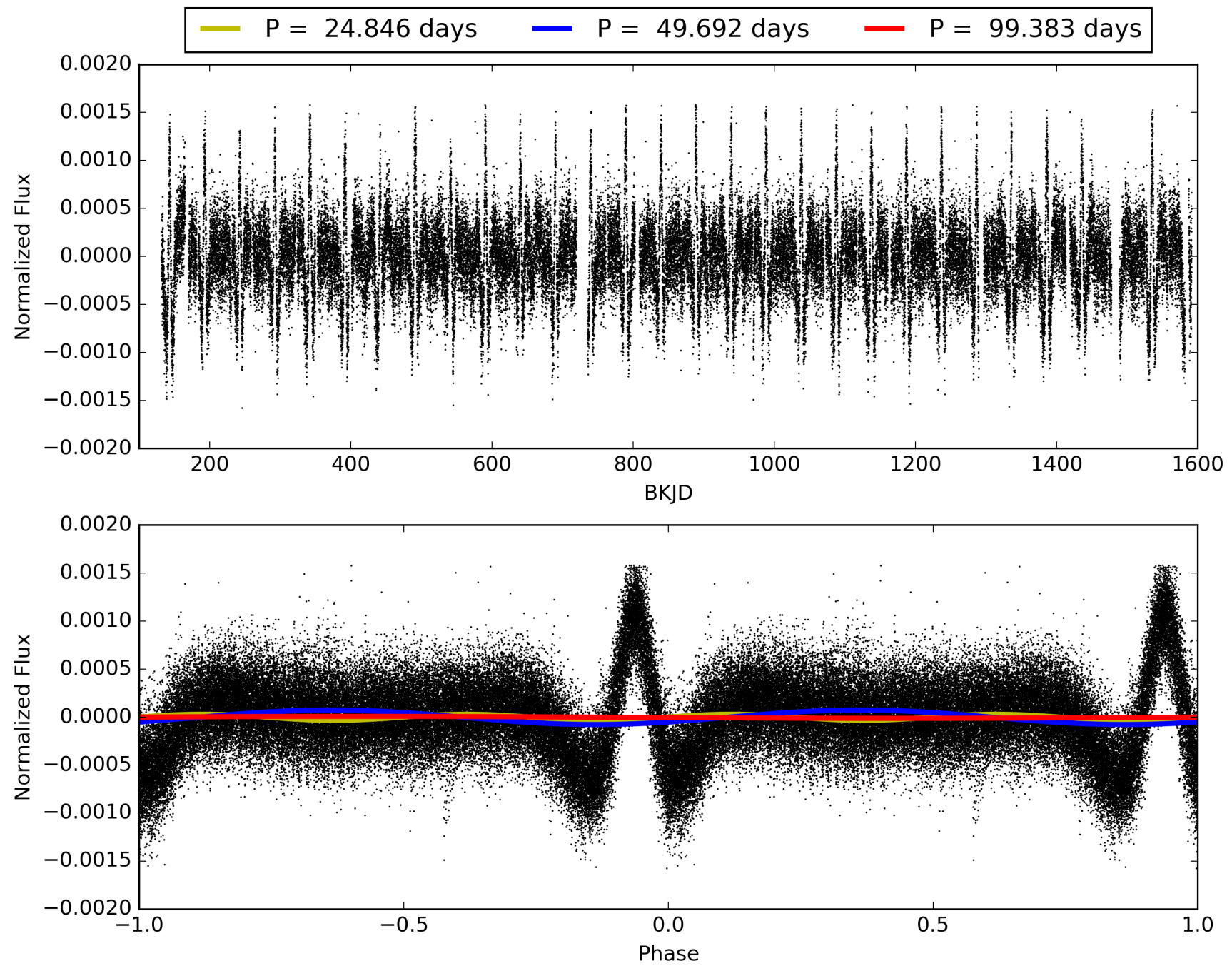
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 45.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.27e-13  
RollingBand-fgt: 1.00 [27/27]  
GhostDiagnostic-chr: -16.04  
Centroid-sig: 0.1%  
Centroid-so: 0.944 arcsec [2.06 $\sigma$ ]  
OotOffset-rm: 1.215 arcsec [3.03 $\sigma$ ]  
KicOffset-rm: 1.308 arcsec [3.40 $\sigma$ ]  
OotOffset-st: 3/3/3 [12]  
KicOffset-st: 3/3/3 [12]  
DiffImageQuality-fgm: 0.92 [11/12]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 009408183-01, PDC Light Curves

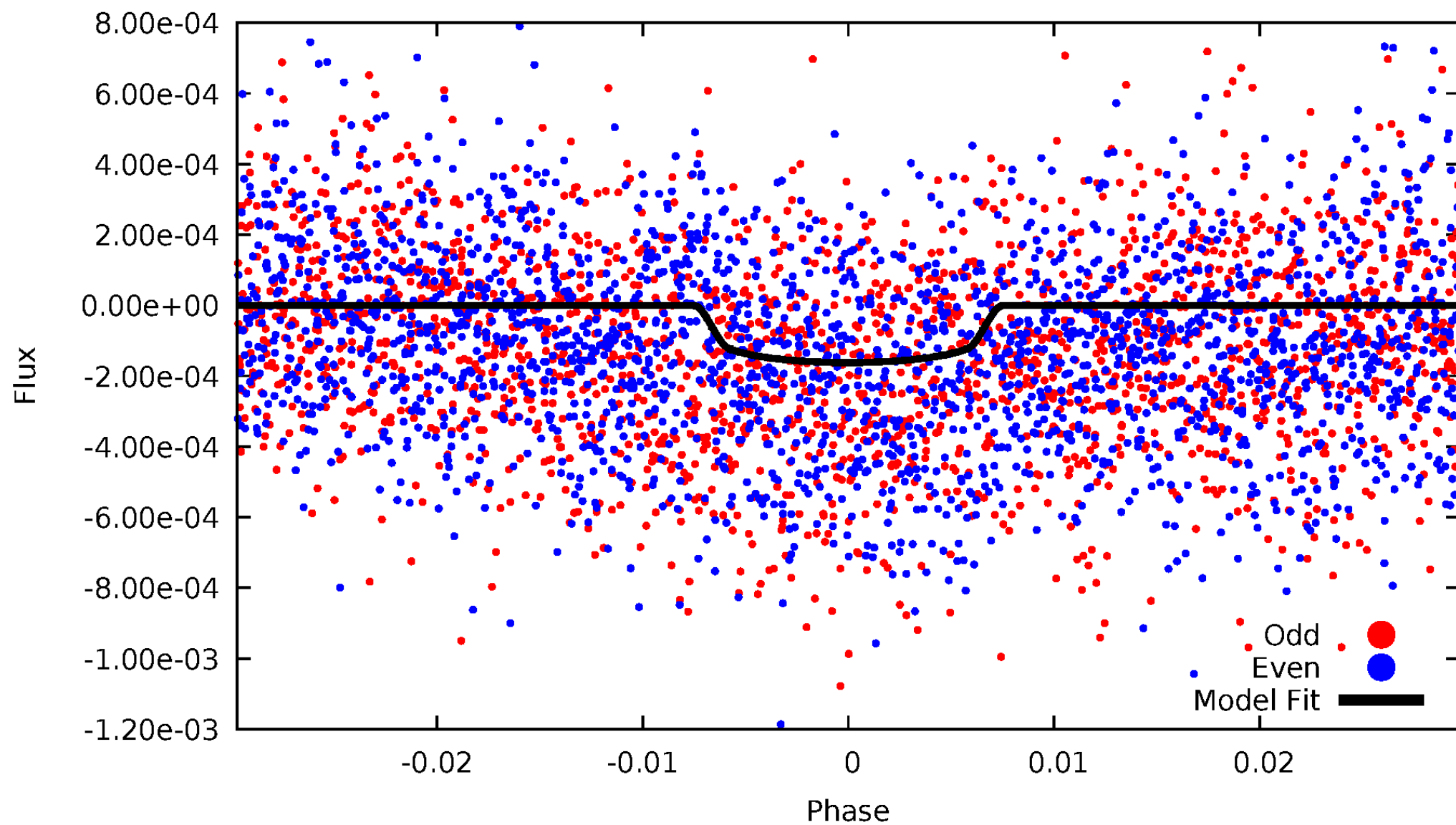


TCE 009408183-01



# DV Odd/Even

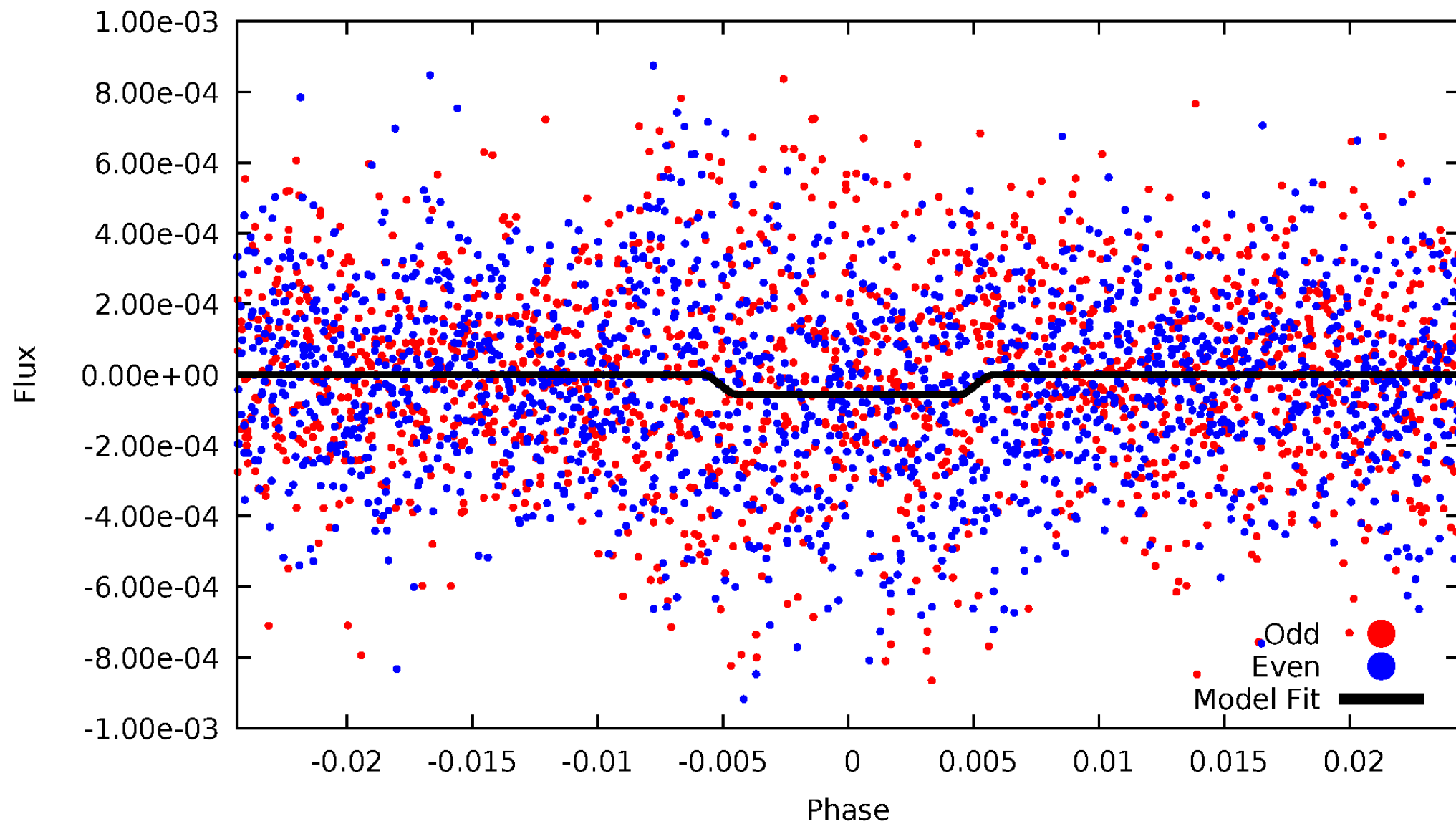
TCE 009408183-01



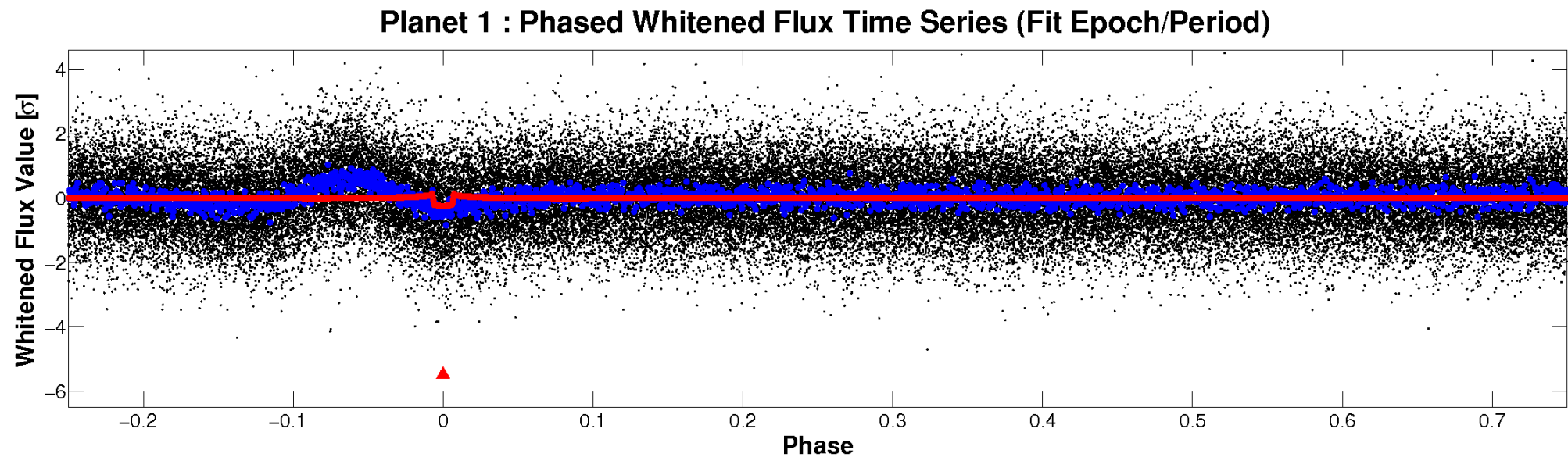
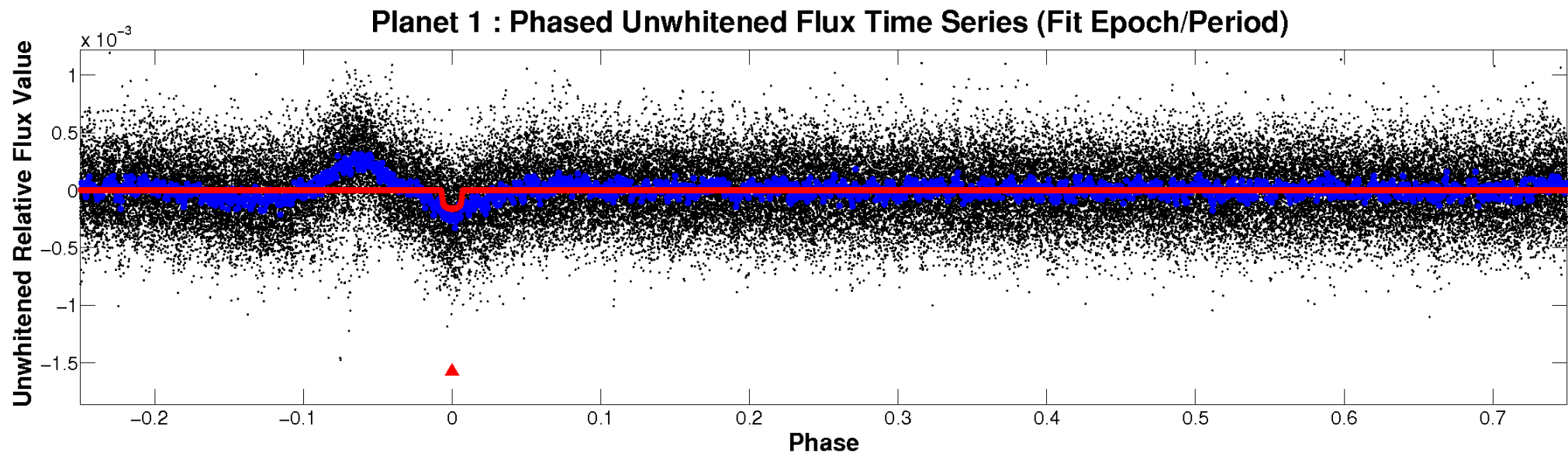


# ALT Odd/Even

TCE 009408183-01

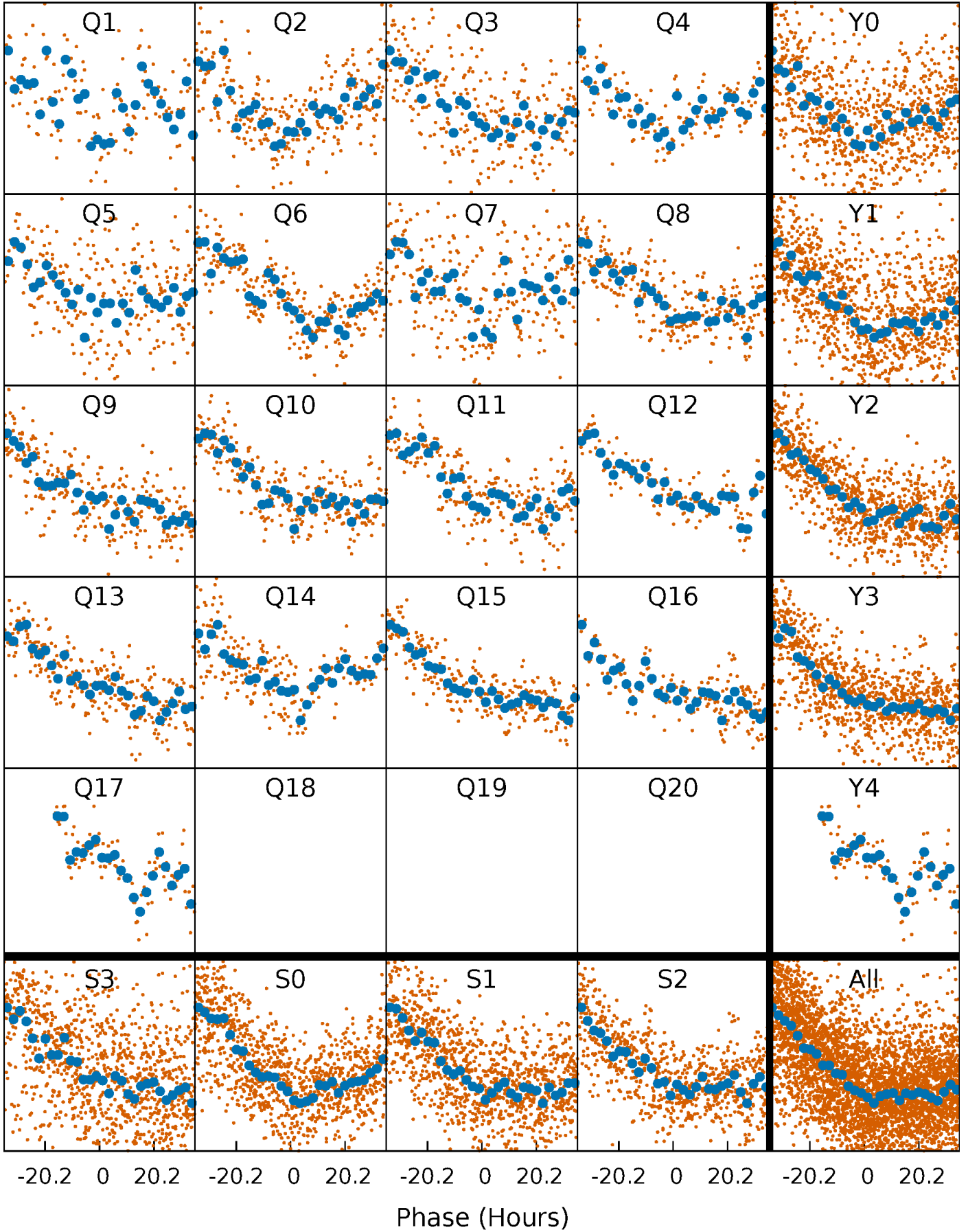


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

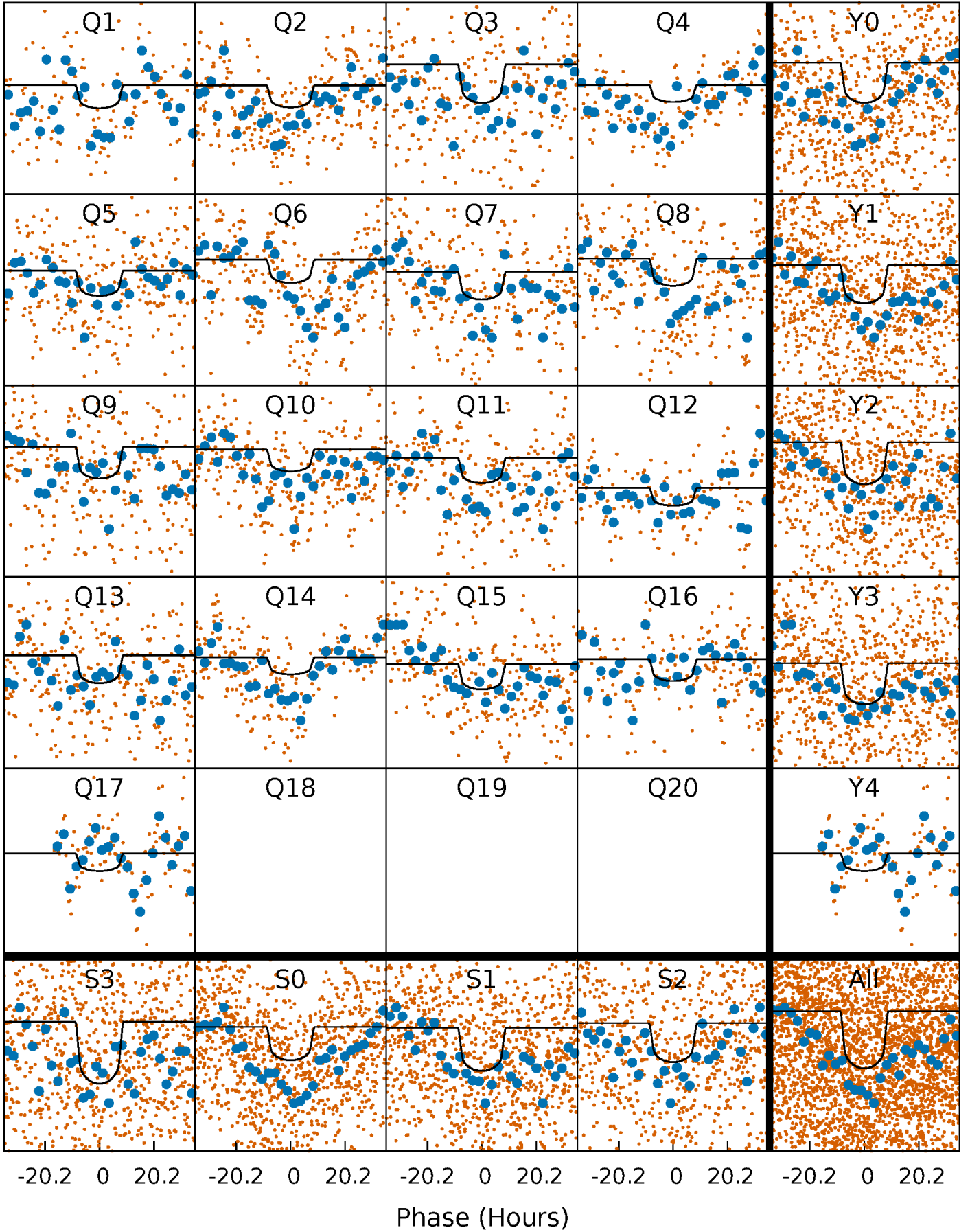
TCE 009408183-01   P= 49.691548 Days    $T_0=146.476787$  (BKJD)





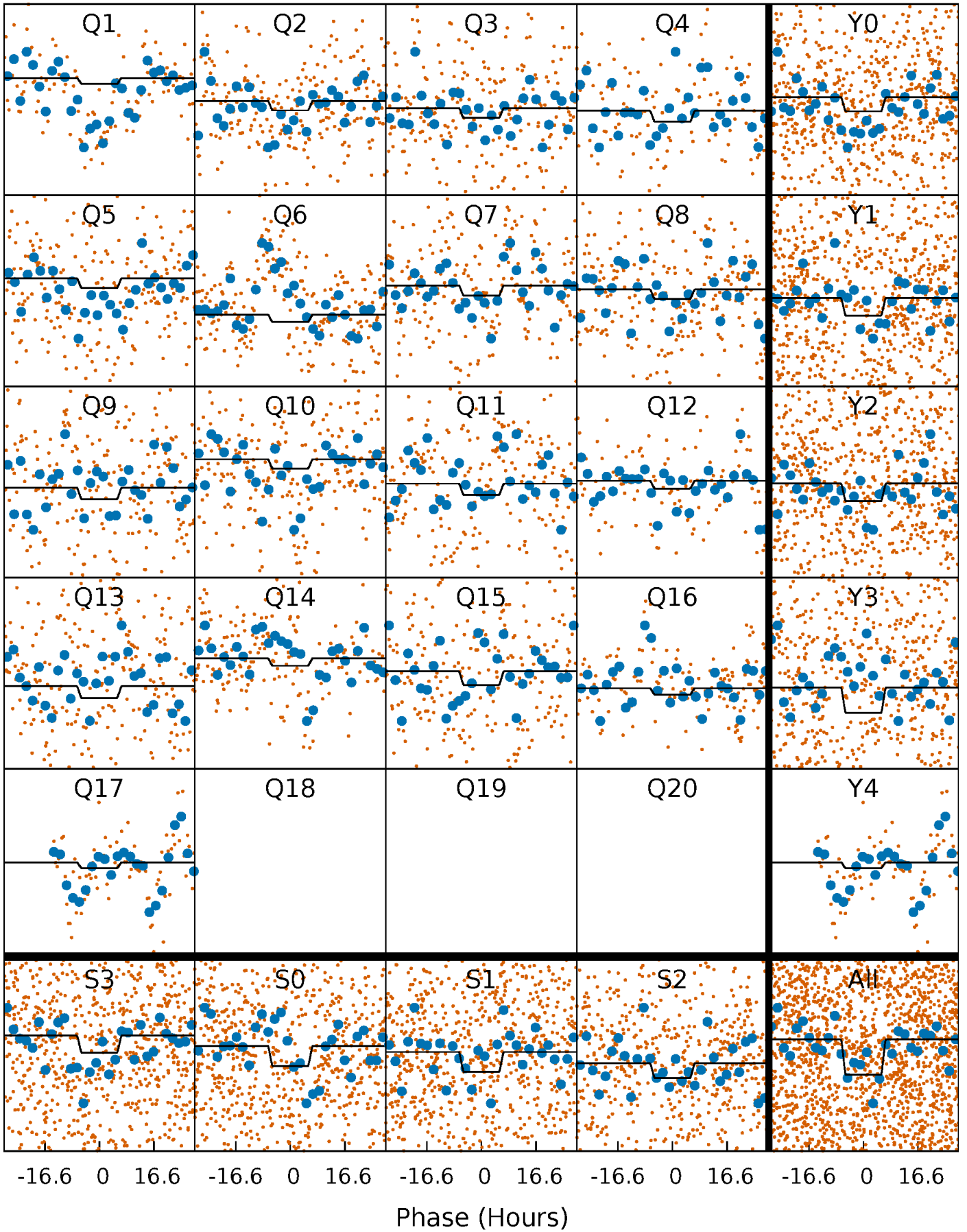
# DV Quarter-Phased Transit Curves

TCE 009408183-01     $P = 49.691548$  Days     $T_0 = 146.476787$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

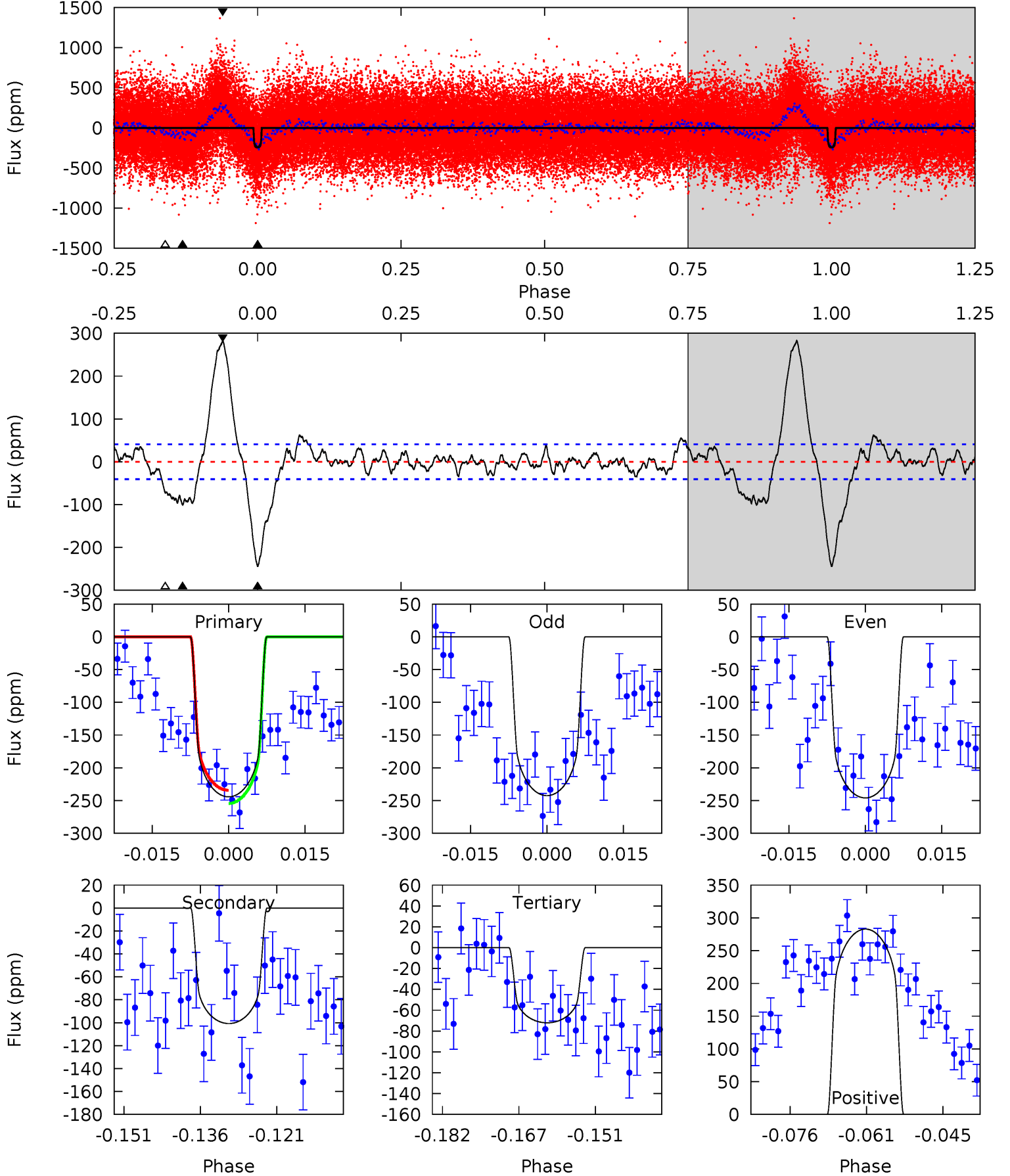
TCE 009408183-01 P= 49.686848 Days  $T_0=146.530612$  (BKJD)



# DV Model-Shift Uniqueness Test

009408183-01, P = 49.691548 Days, E = 96.785239 Days

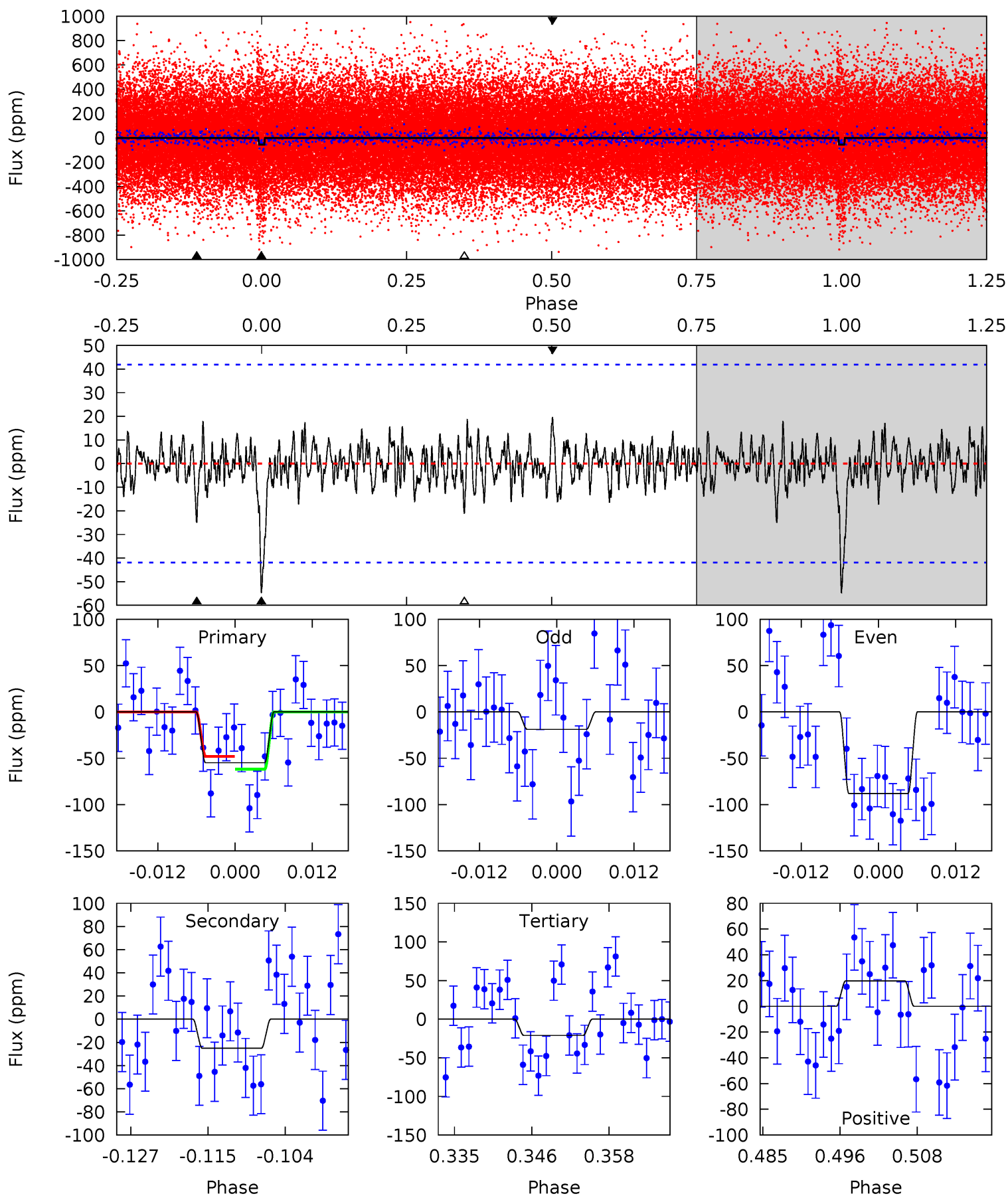
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.7	12.2	8.77	34.4	4.95	2.43	6.70	20.9	-4.69	3.48	-22.1	0.21	1.10	0.54	1.22



# Alt Model-Shift Uniqueness Test

009408183-01, P = 49.686848 Days, E = 96.843764 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
6.54	2.99	2.52	2.35	5.00	2.53	0.78	4.03	4.19	0.47	0.64	4.13	1.15	0.26	0.82



### Stellar Parameters For KIC 009408183

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5113^{+59}_{-208}$	$3.135^{+0.030}_{-0.030}$	$0.070^{+0.150}_{-0.400}$	$6.633^{+0.212}_{-1.909}$	$2.189^{+0.190}_{-1.079}$	$0.011^{+0.005}_{-0.001}$
	+1%/-4%	+1%/-1%	+214%/-571%	+3%/-29%	+9%/-49%	+45%/-6%
Source	PHO1	AST9	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 009408183-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-101 \pm 8$	$10.78^{+1.23}_{-1.42}$	$1379^{+25}_{-51}$	$4332^{+242}_{-190}$	$57^{+18}_{-11}$
Alt.	$-25 \pm 8$	$5.37^{+1.21}_{-1.11}$	$1379^{+30}_{-53}$	$4300^{+501}_{-434}$	$55^{+39}_{-24}$

$T_{\text{max}}$  = 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

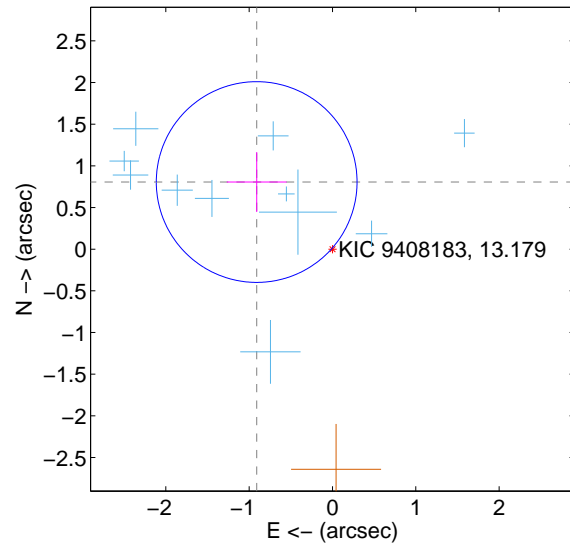
Supplemental centroid analysis for 009408183-01. Kepler magnitude: 13.18. Transit SNR 7.15

There are 11 quarters with good PRF difference image offsets

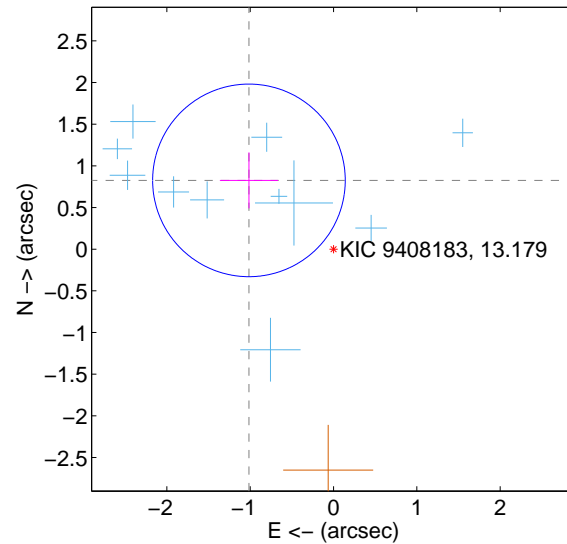
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.215 <math>\pm</math> 0.401</b>	<b>3.03</b>	0.909 $\pm$ 0.360	0.805 $\pm$ 0.360
PRF-fit source offset from KIC position	<b>1.308 <math>\pm</math> 0.385</b>	<b>3.40</b>	1.015 $\pm$ 0.349	0.825 $\pm$ 0.336
photometric centroid source offset	0.94 $\pm$ 0.46	2.06	-0.27 $\pm$ 0.43	-0.90 $\pm$ 0.46

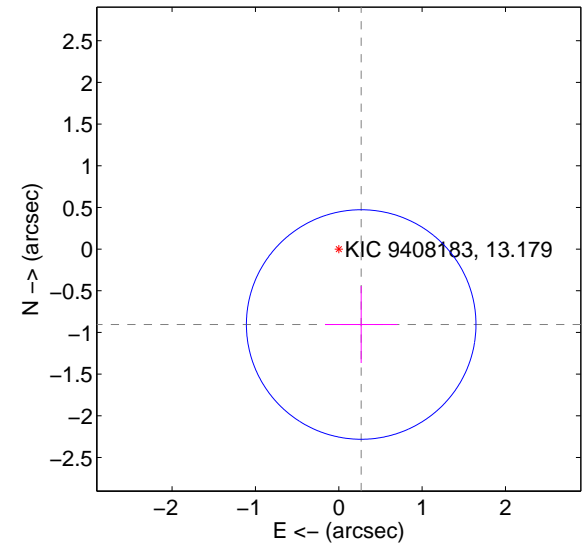
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

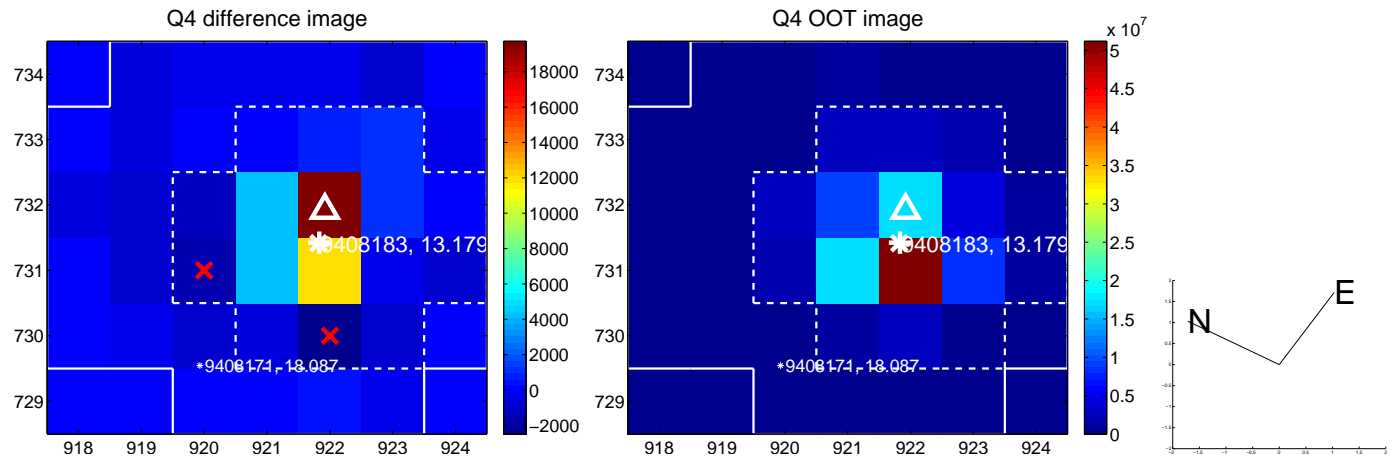
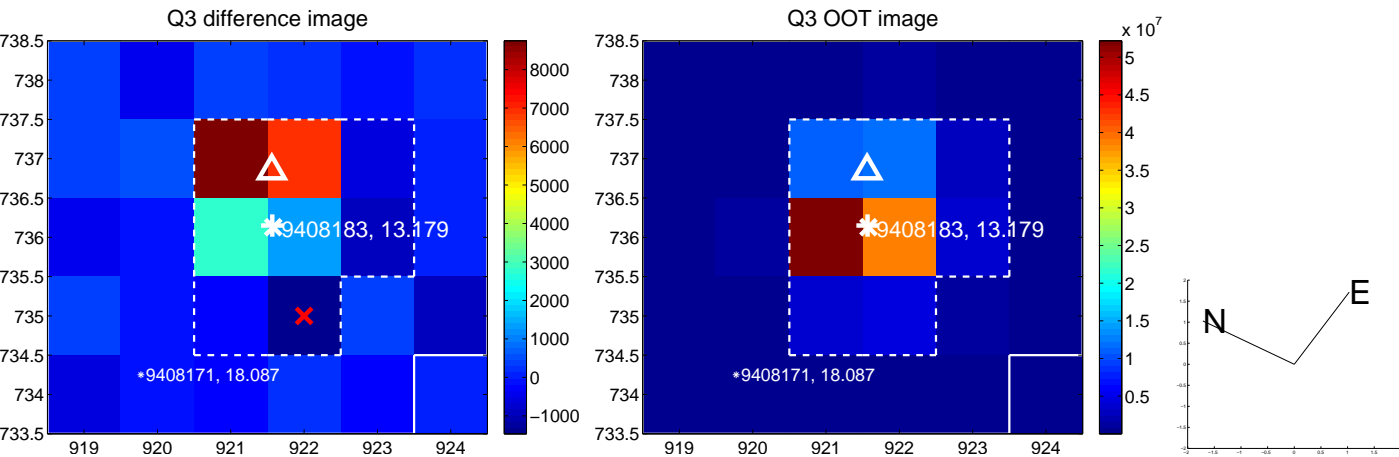
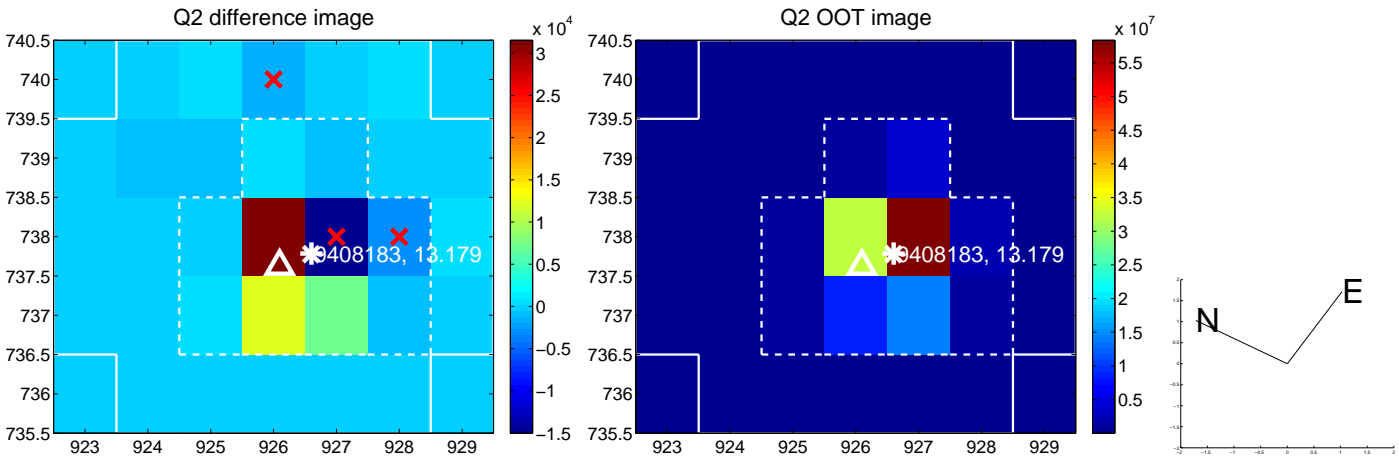
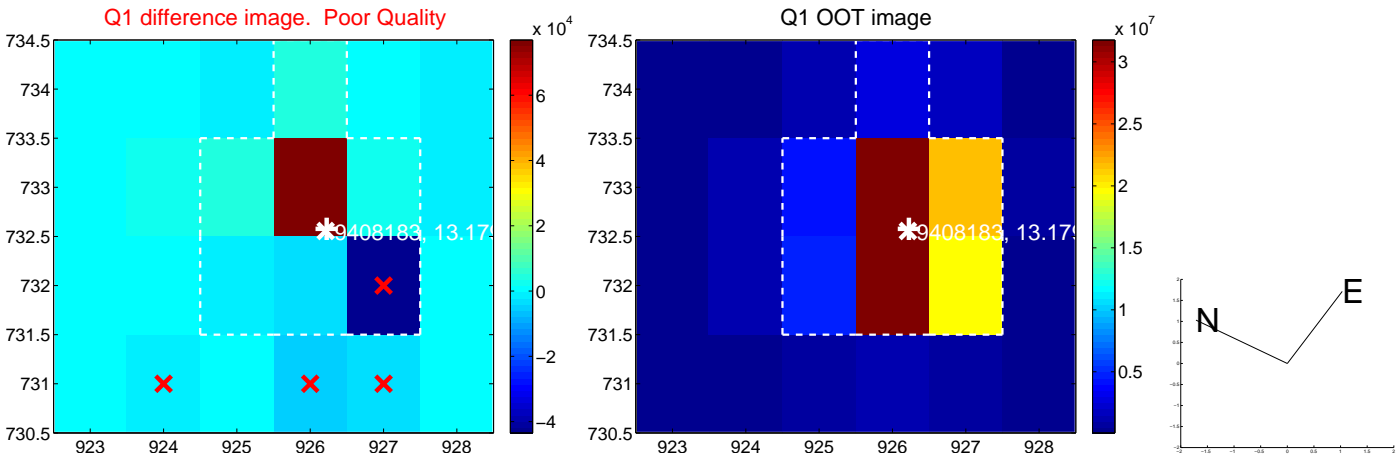


offset from photometric centroids

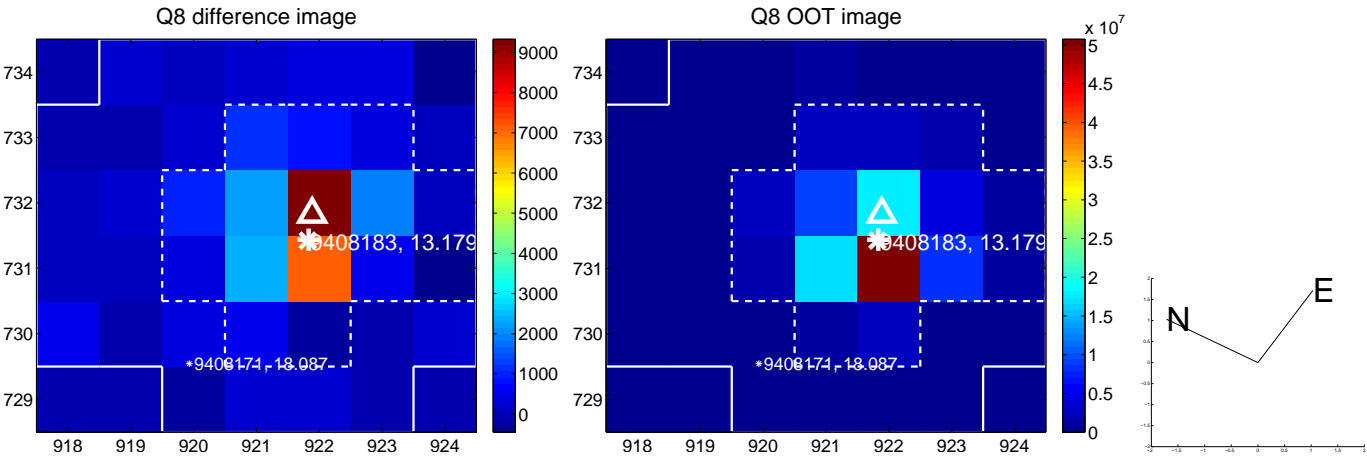
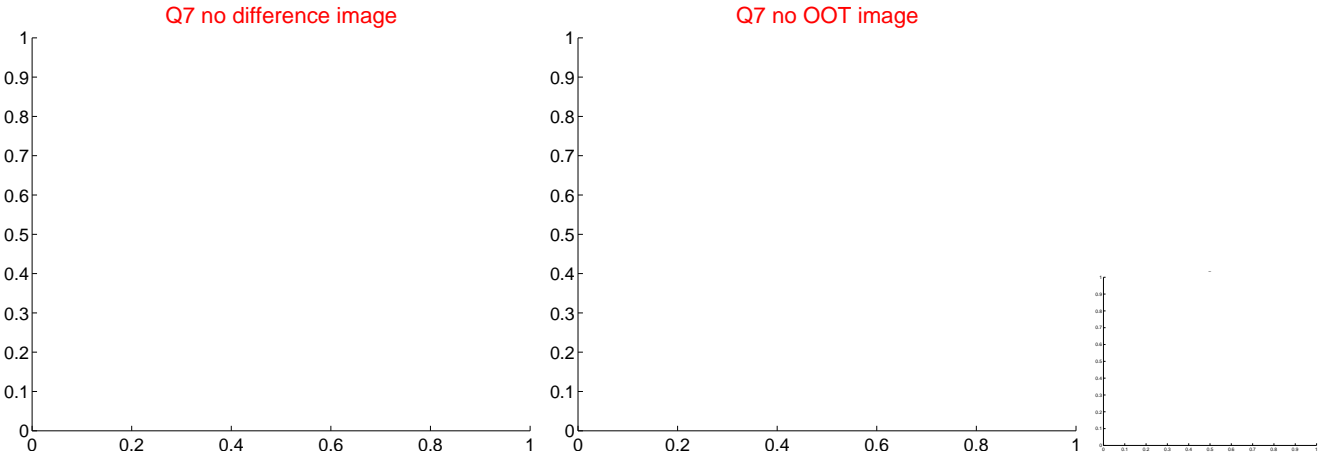
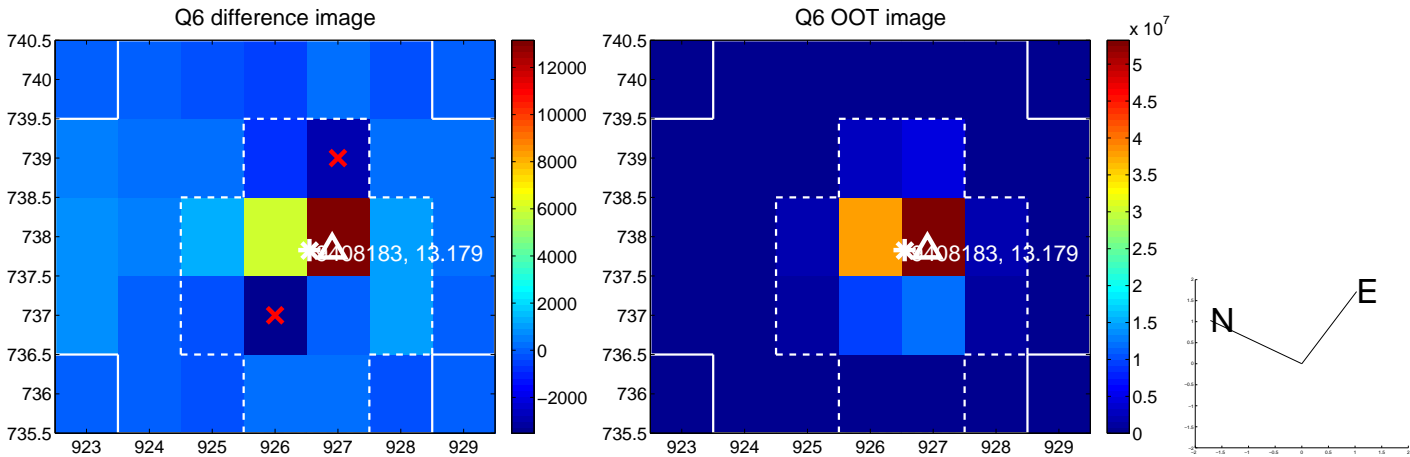
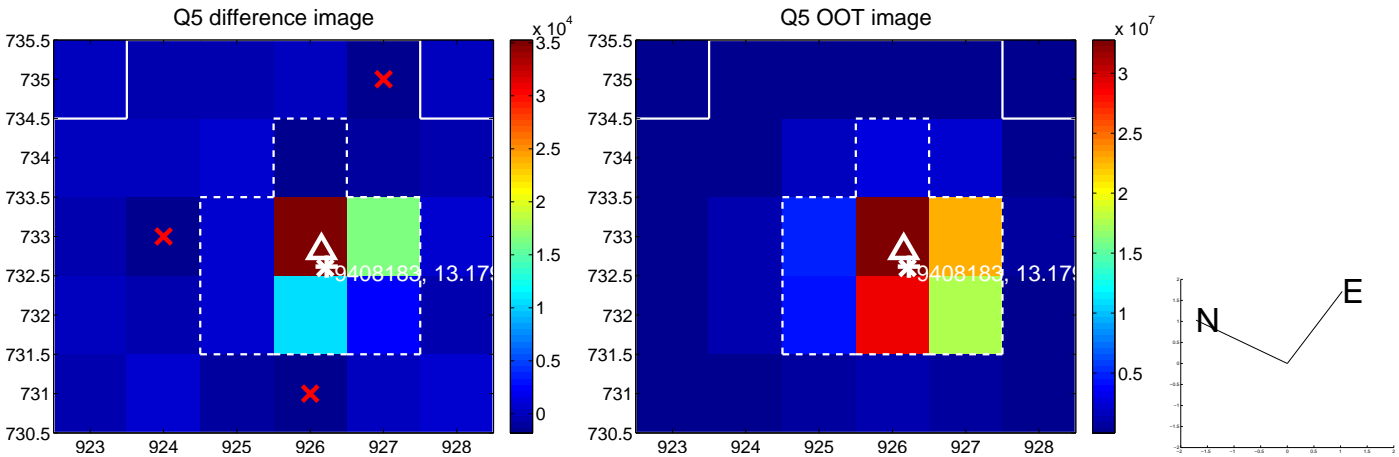


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

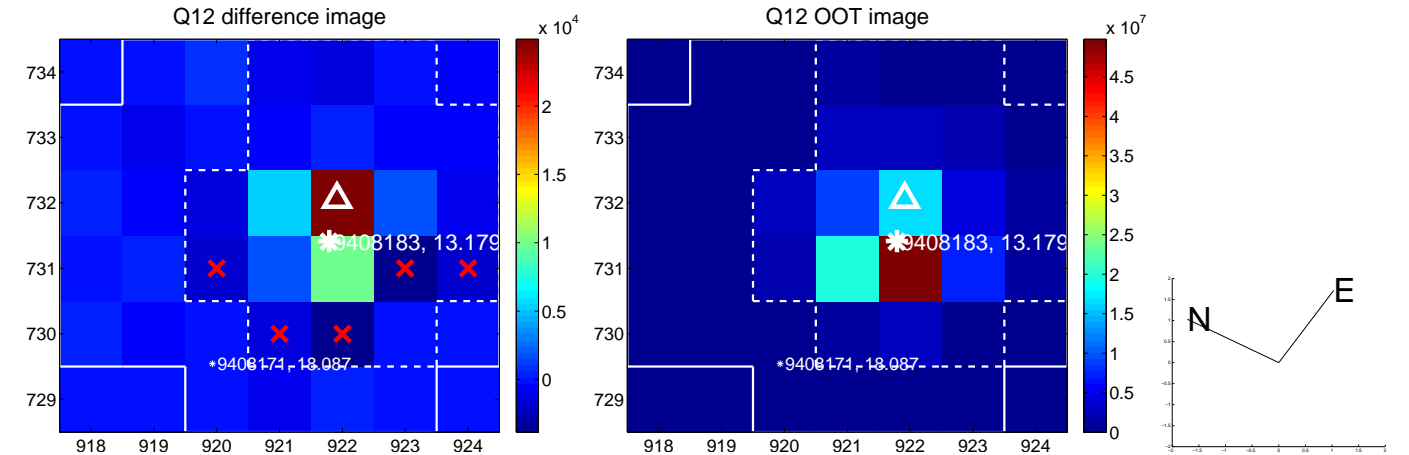
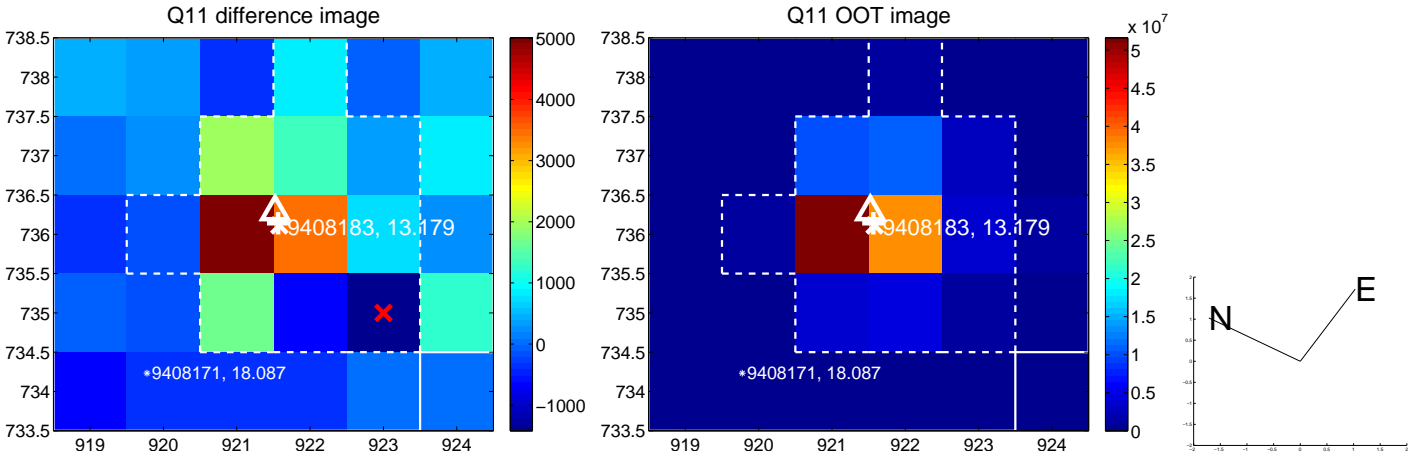
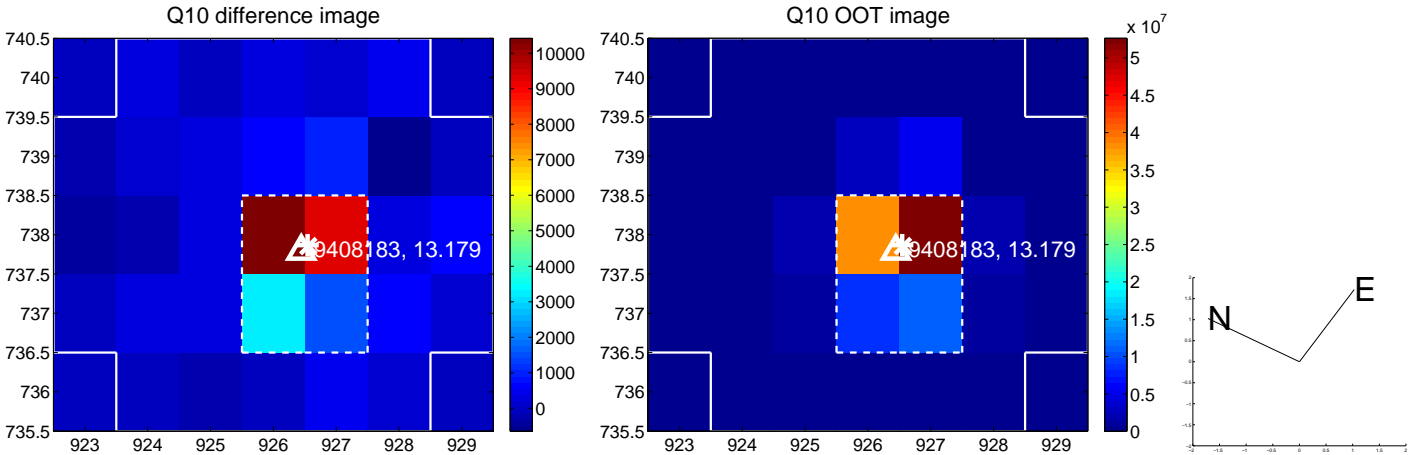
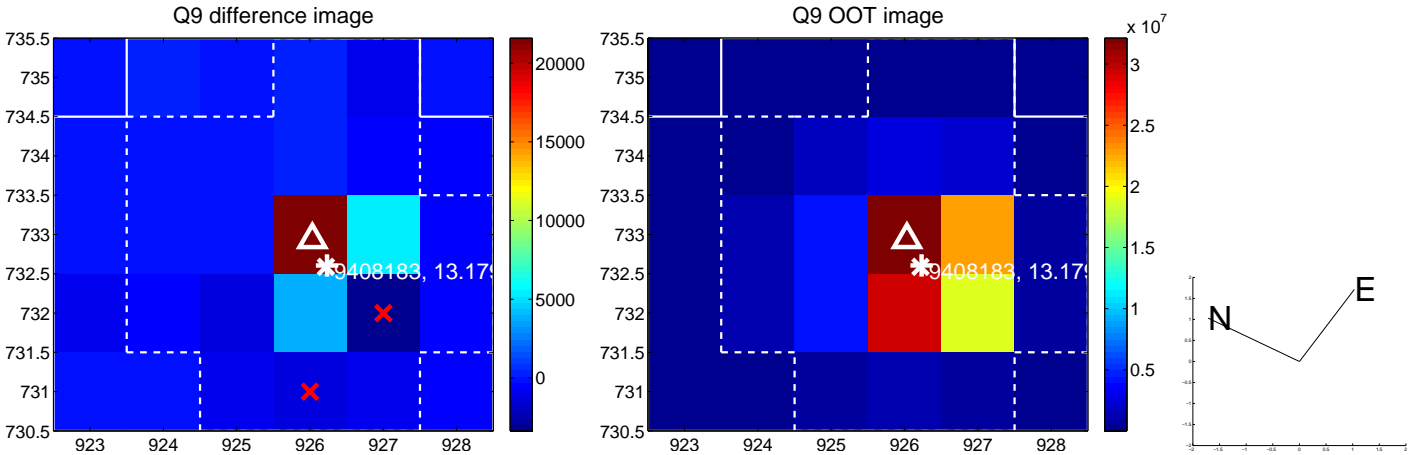
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



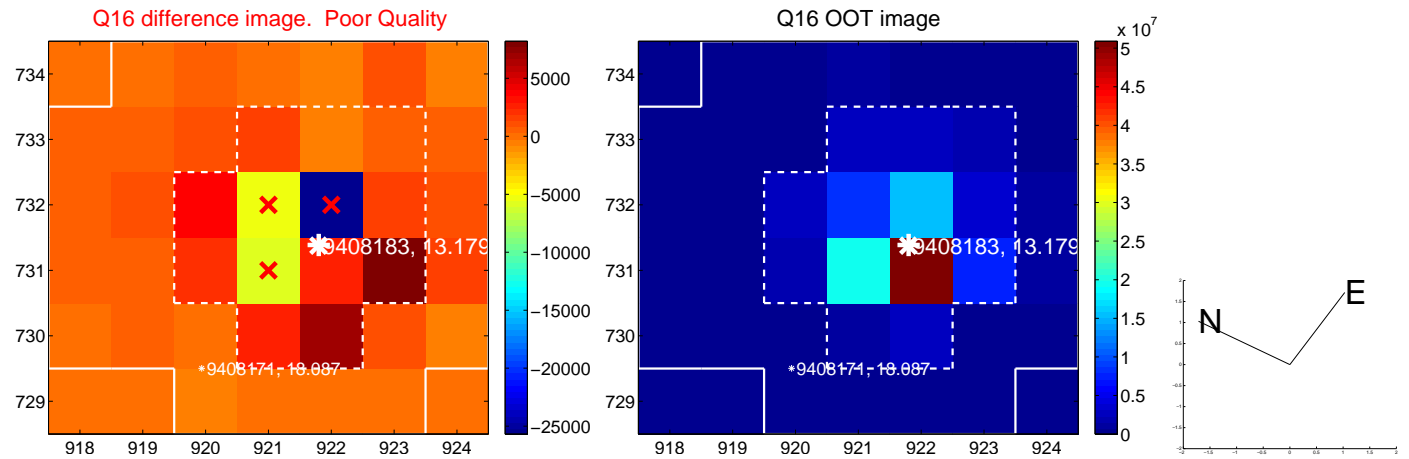
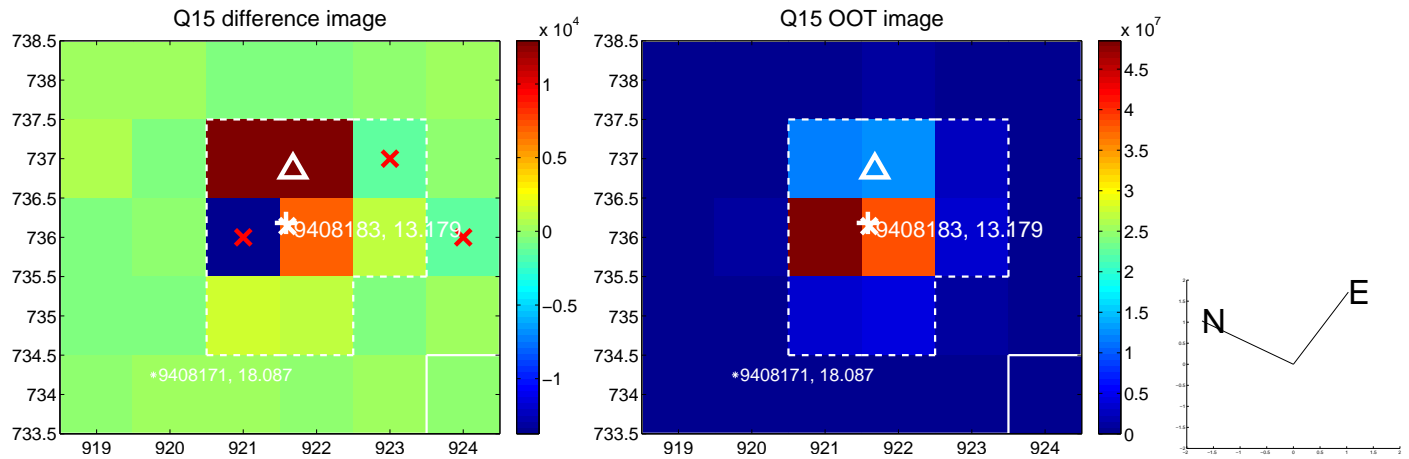
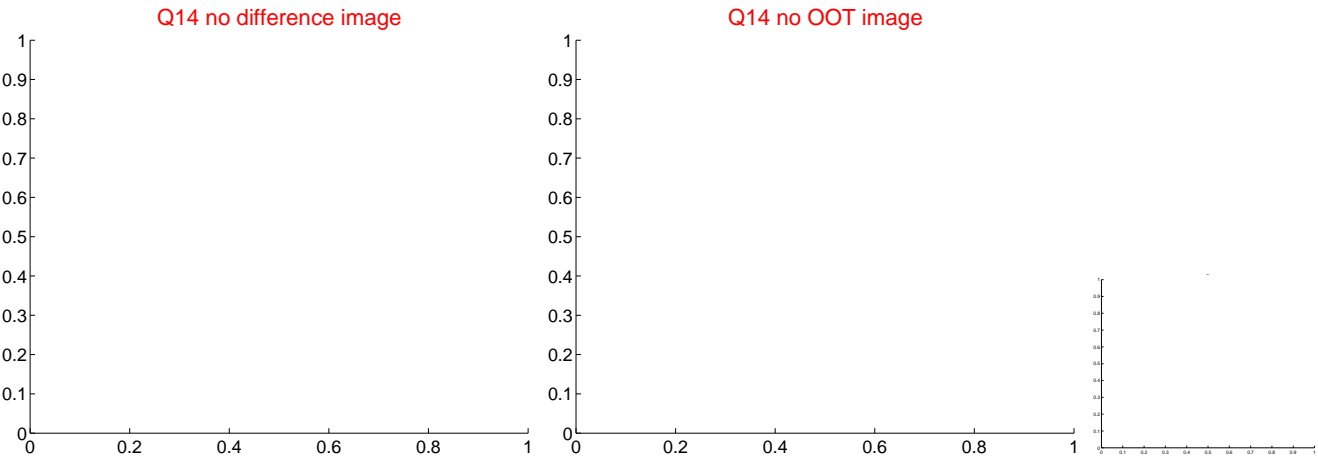
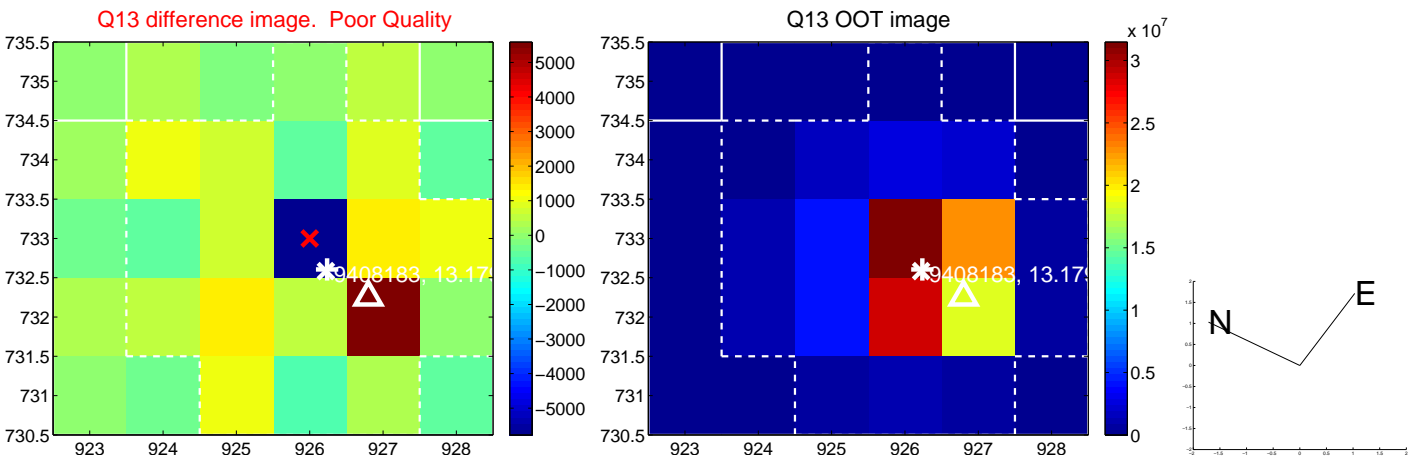
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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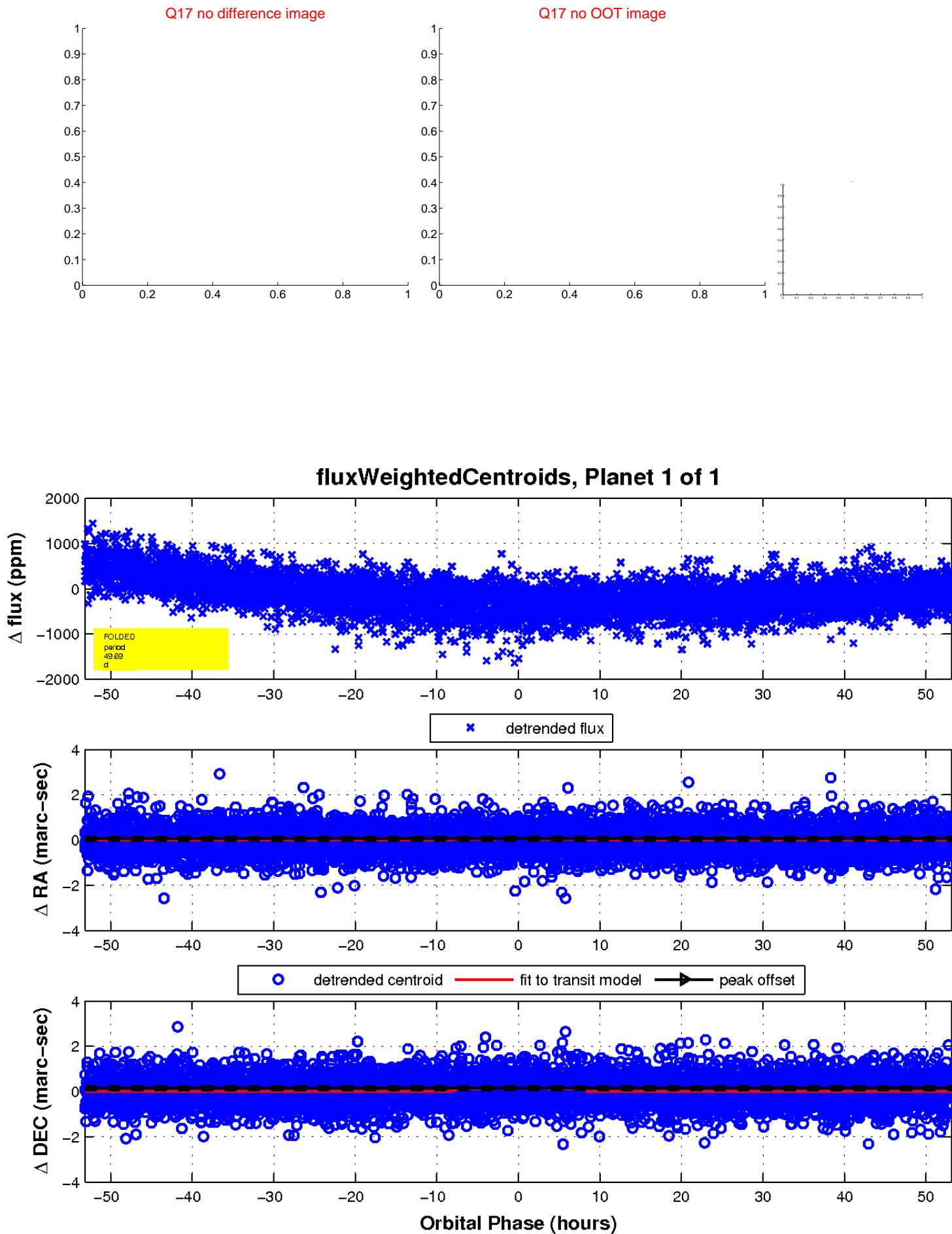


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

