

# KIC 009447166

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009447166-01	OBS	3296.01	62.870511	166.004805	334.7	5.761	11.6	13.0	0.78	4762	1.80	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009447166-01	OBS	PC	0.96	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.

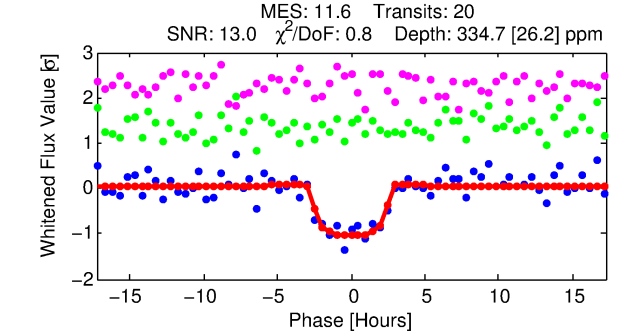
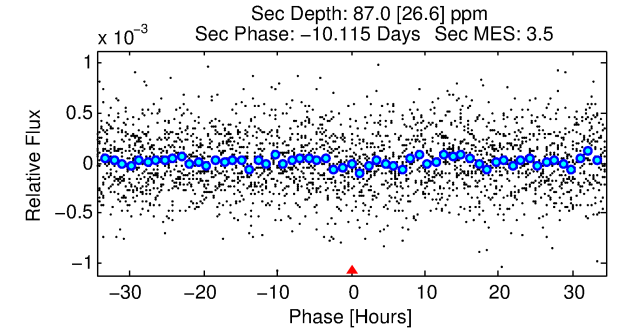
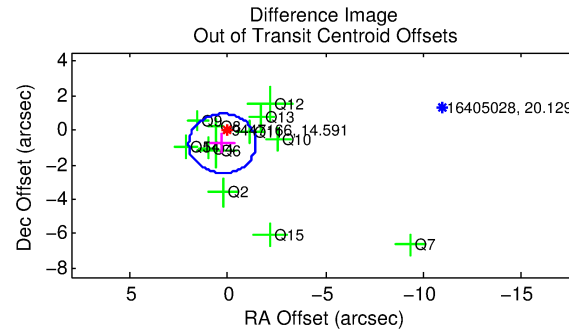
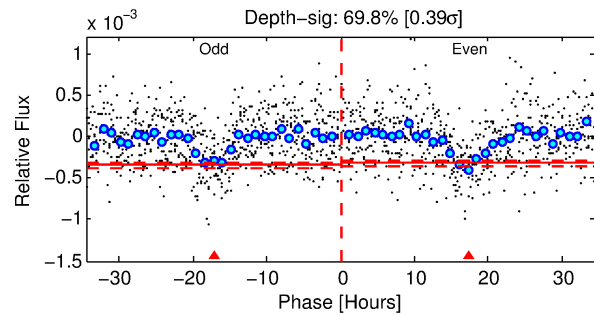
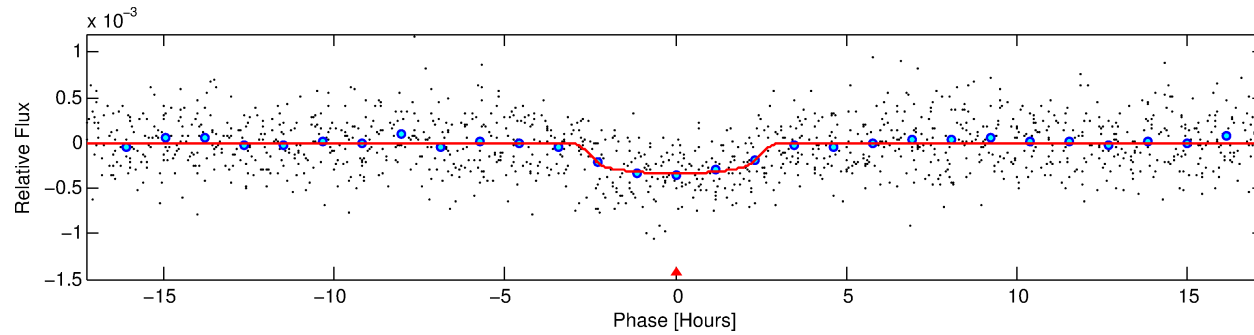
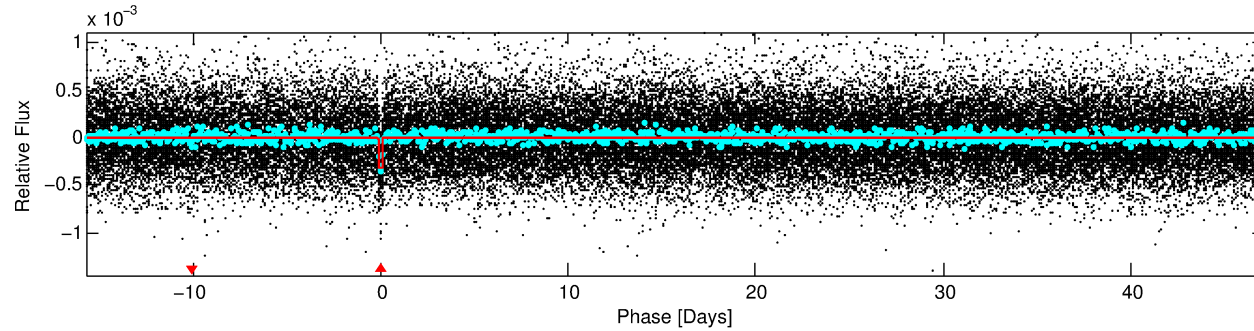
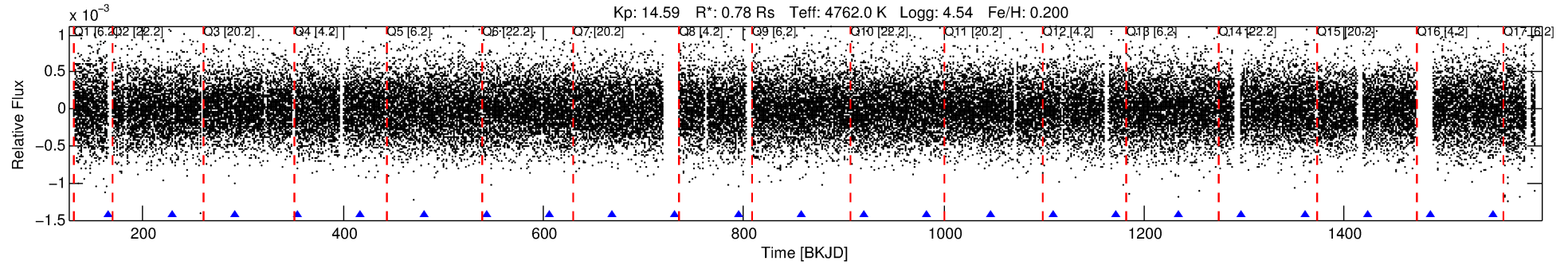
## Ephemeris Match Information For 009447166-01

No Significant Match Found

# DV One-Page Summary

KIC: 9447166 Candidate: 1 of 1 Period: 62.871 d

KOI: K03296.01 Corr: 0.968



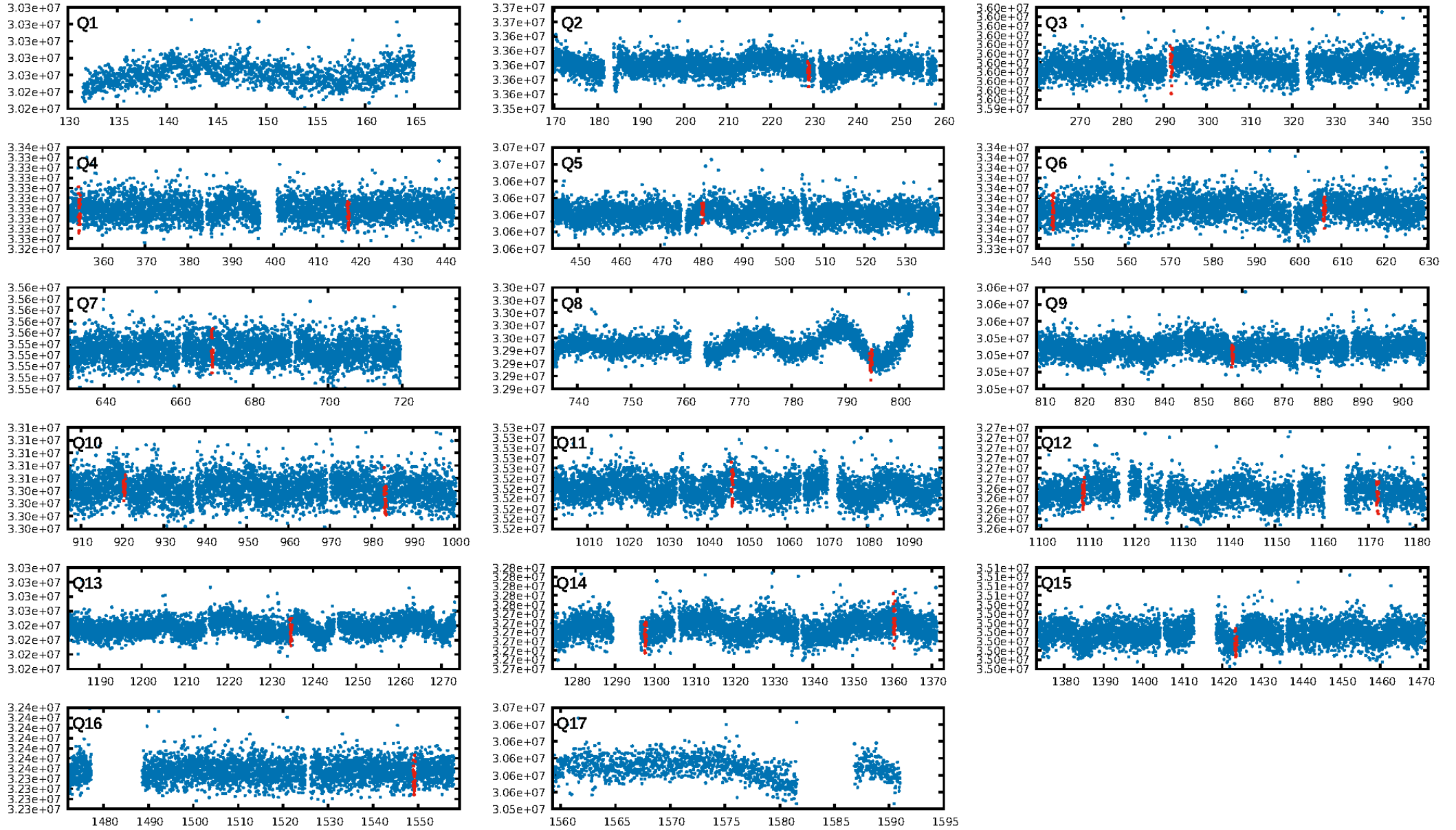
## DV Fit Results:

Period = 62.87051 [0.00071] d  
Epoch = 166.0048 [0.0088] BKJD  
Rp/R\* = 0.0211 [0.0032]  
a/R\* = 37.16 [20.49]  
b = 0.92 [0.10]  
Seff = 3.51 [0.42]  
Teq = 349 [10] K  
Rp = 1.80 [0.29] Re  
a = 0.2828 [0.0163] AU  
Ag = 1180.25 [518.31] [2.28 $\sigma$ ]  
Teffp = 3164 [344] K [8.18 $\sigma$ ]

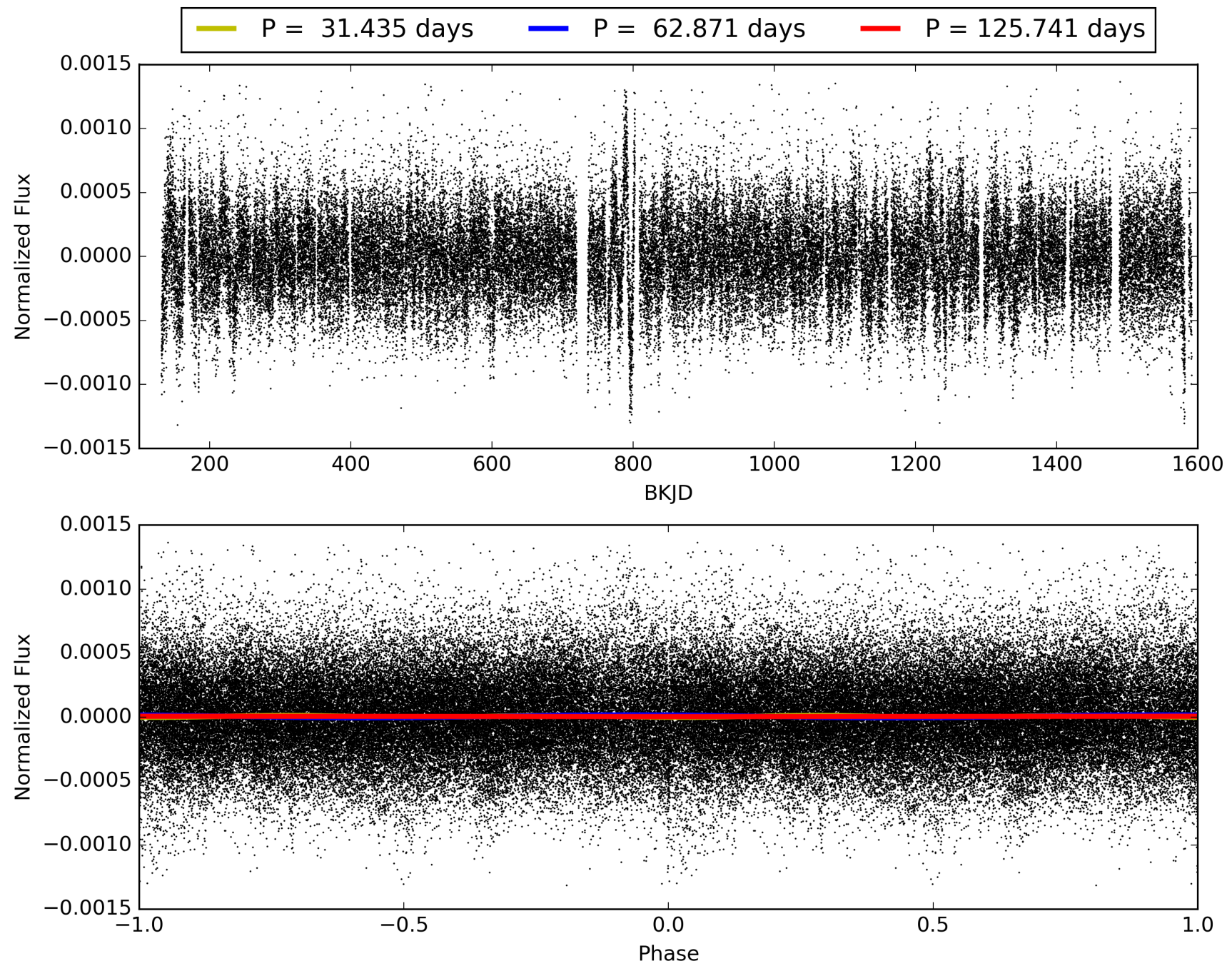
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 98.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.35e-31  
RollingBand-fgt: 1.00 [20/20]  
GhostDiagnostic-chr: 2.531  
Centroid-sig: 0.0%  
Centroid-so: 3.444 arcsec [2.80 $\sigma$ ]  
OotOffset-rm: 0.822 arcsec [1.43 $\sigma$ ]  
KicOffset-rm: 0.849 arcsec [1.32 $\sigma$ ]  
OotOffset-st: 4/3/3/3 [13]  
KicOffset-st: 4/3/3/3 [13]  
DiffImageQuality-fgm: 0.62 [8/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 009447166-01, PDC Light Curves

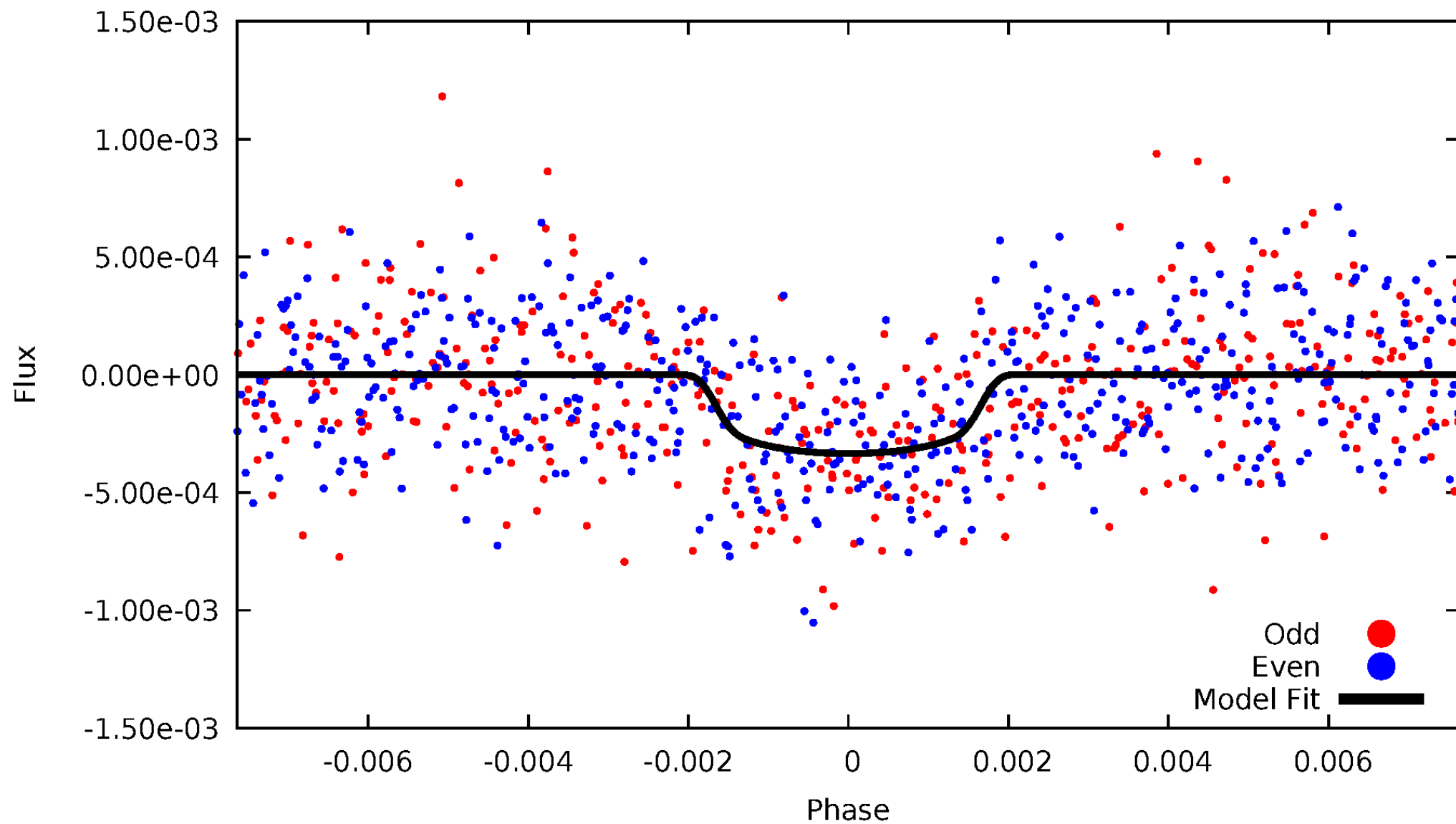


TCE 009447166-01



# DV Odd/Even

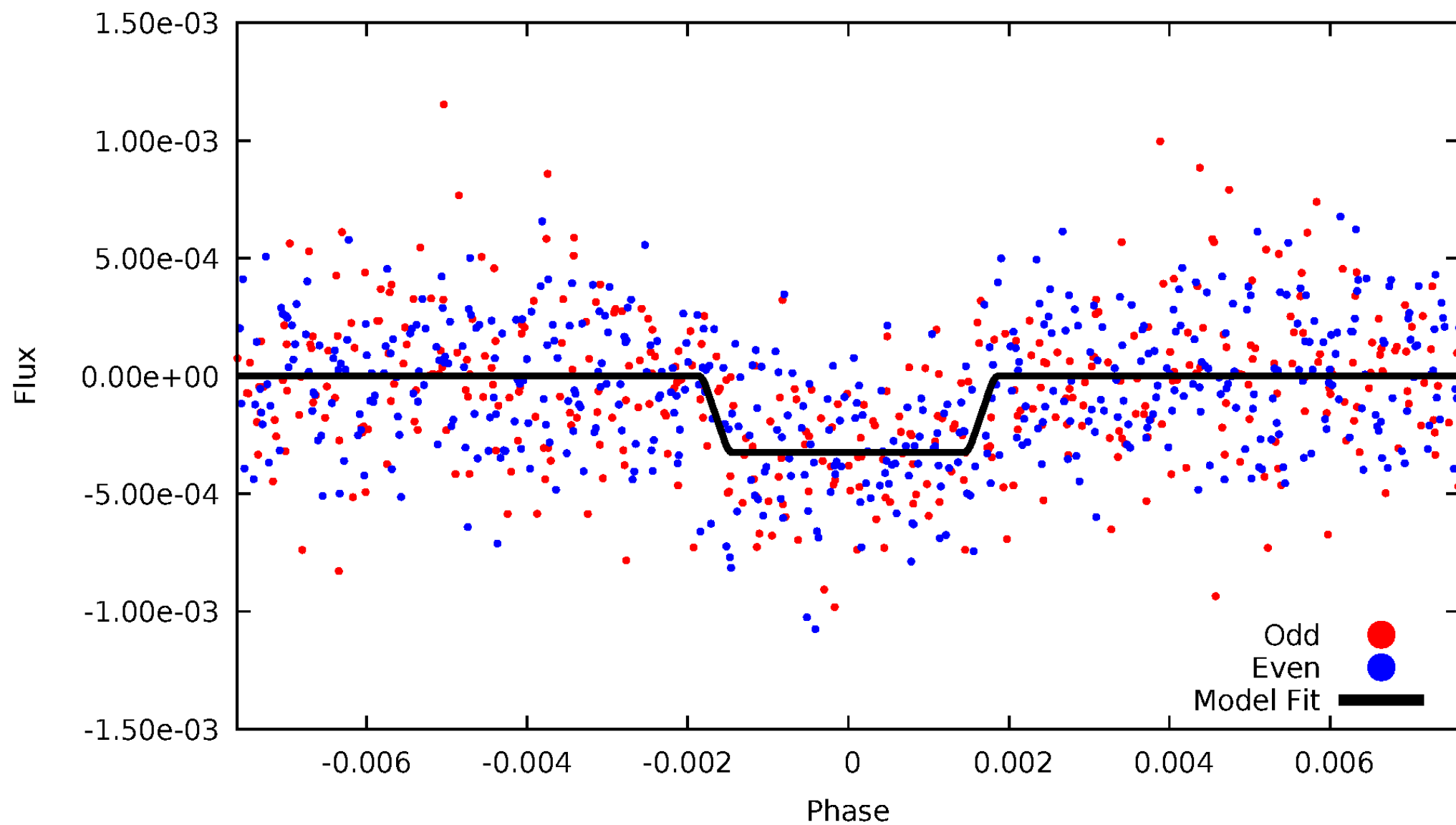
TCE 009447166-01



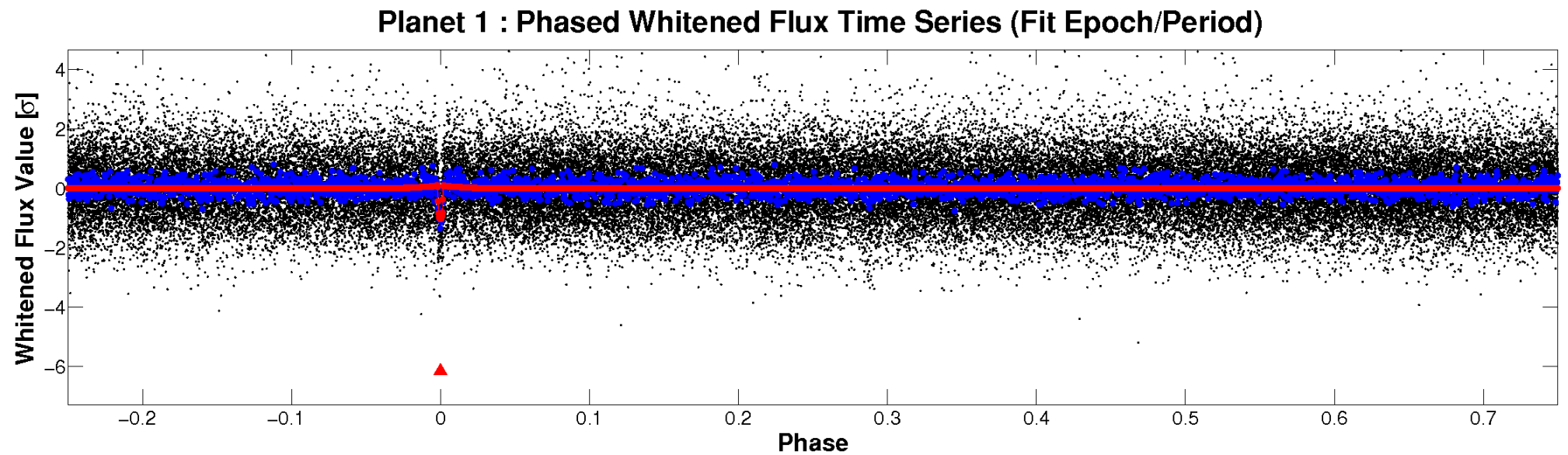
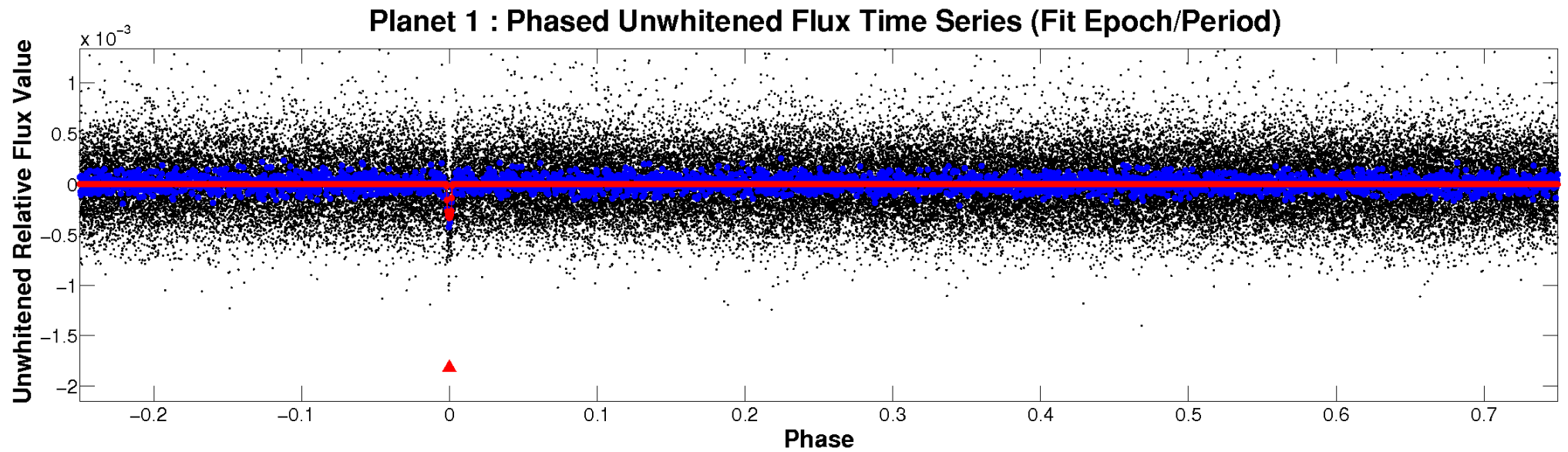


# ALT Odd/Even

TCE 009447166-01

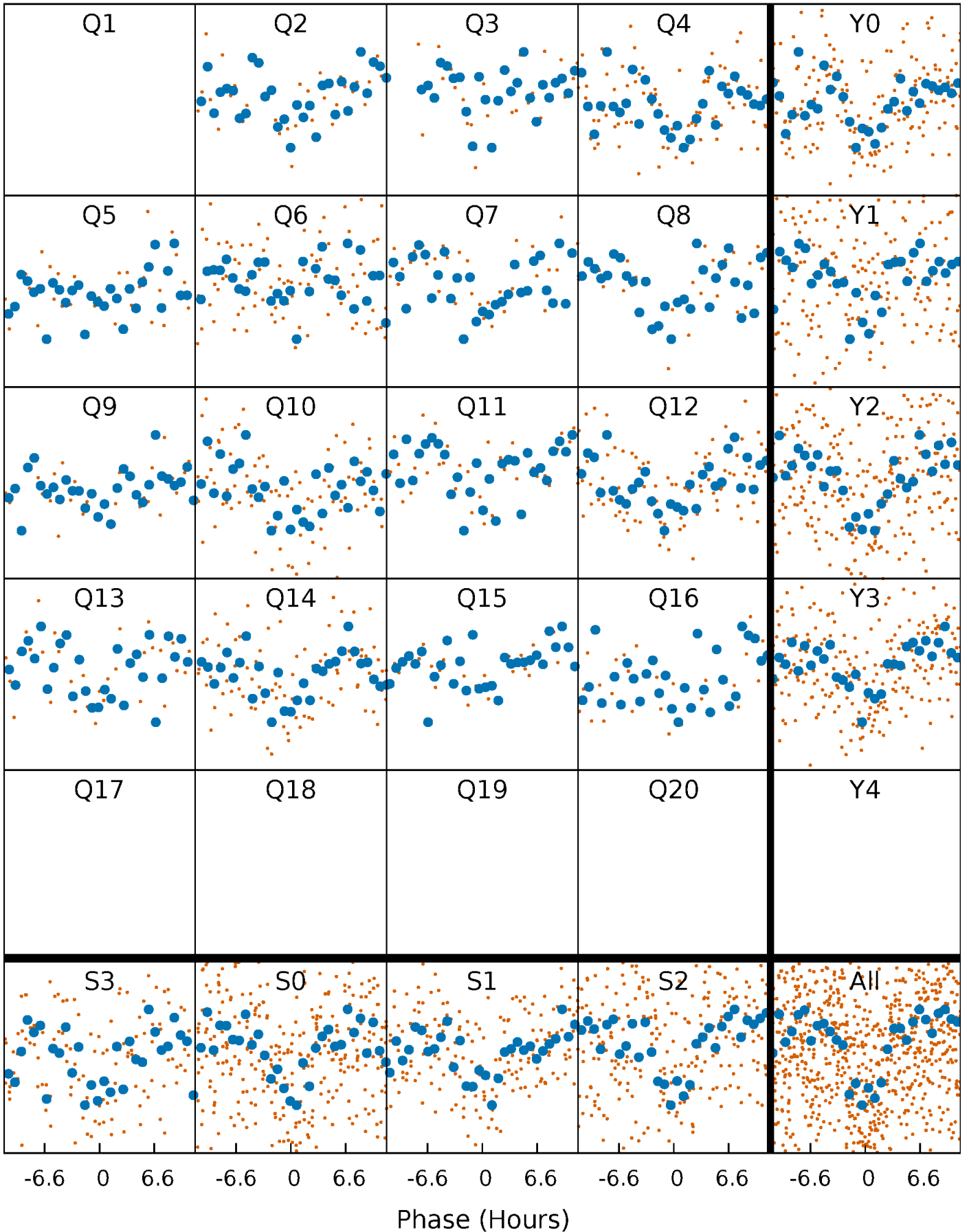


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

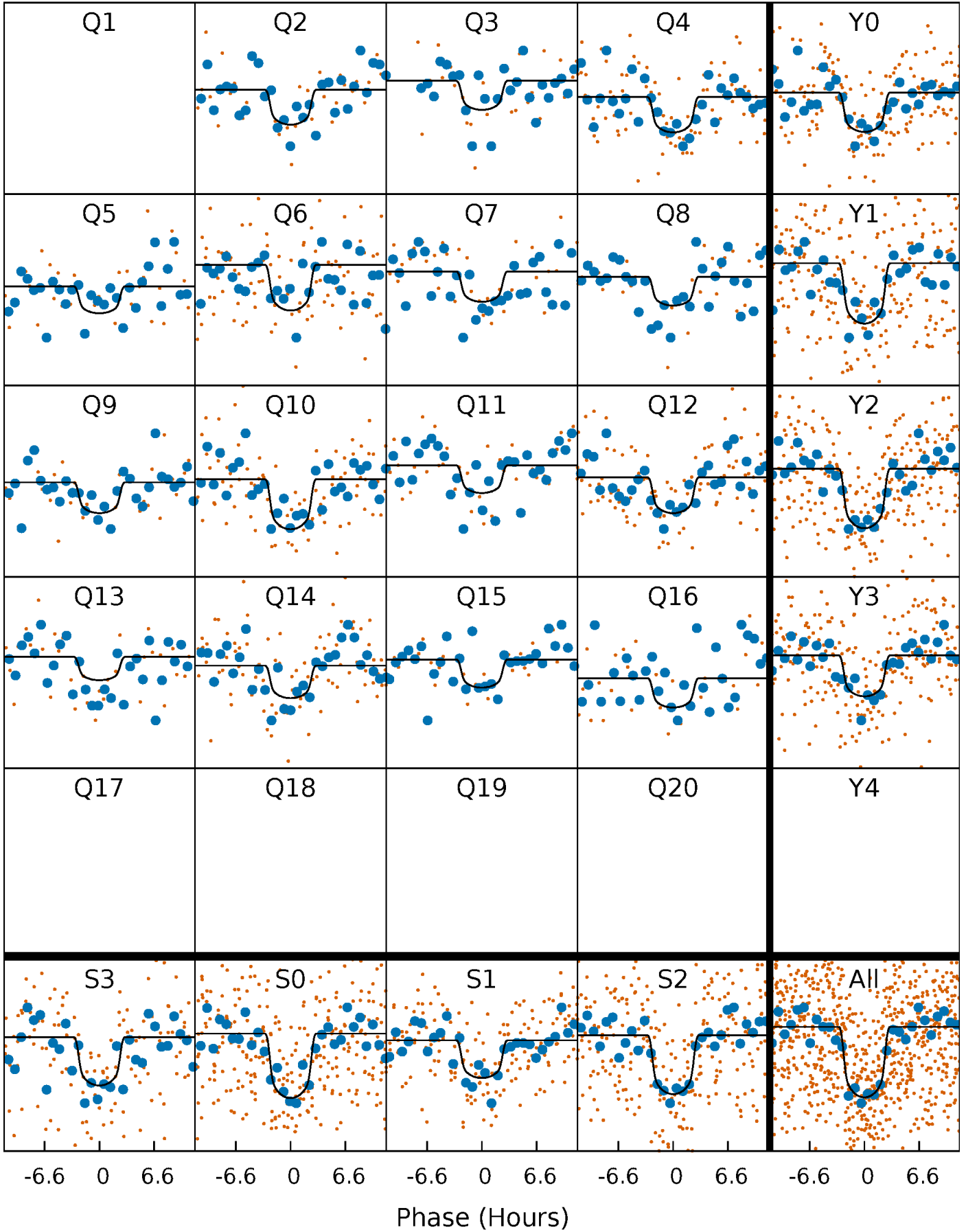
TCE 009447166-01 P= 62.870511 Days  $T_0=166.004805$  (BKJD)





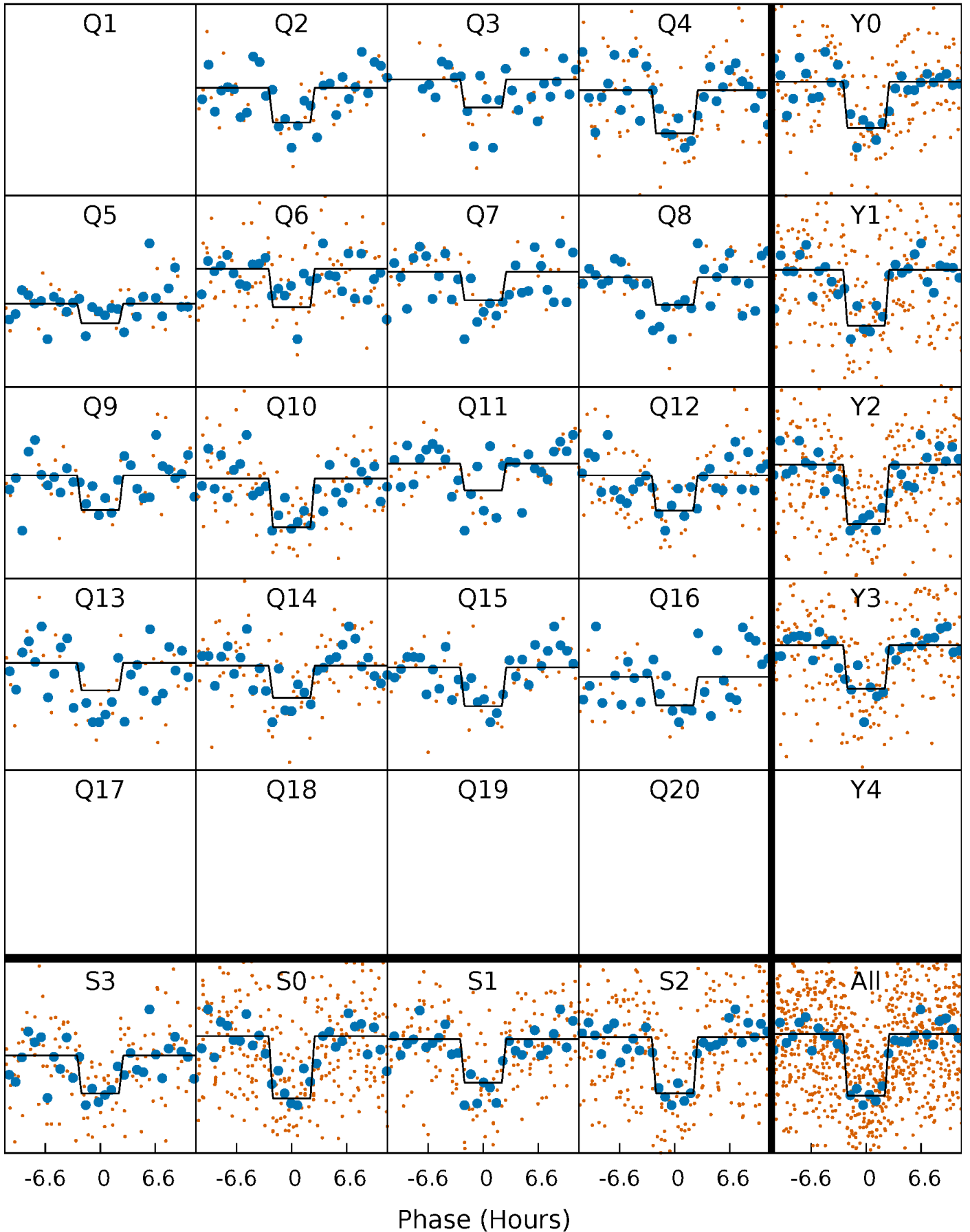
# DV Quarter-Phased Transit Curves

TCE 009447166-01 P= 62.870511 Days  $T_0=166.004805$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

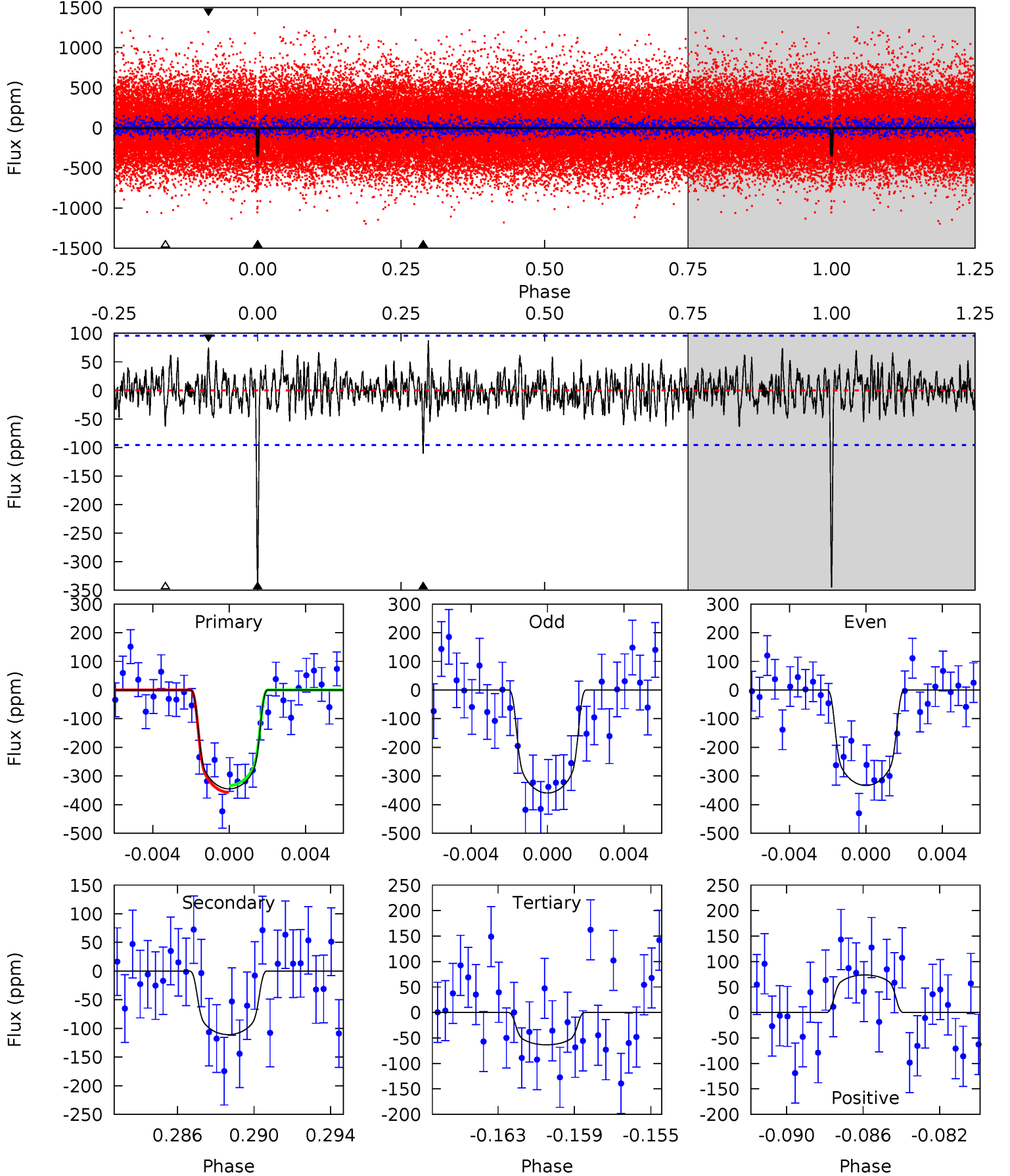
TCE 009447166-01 P= 62.870594 Days  $T_0=166.002468$  (BKJD)



# DV Model-Shift Uniqueness Test

009447166-01,  $P = 62.870511$  Days,  $E = 103.134294$  Days

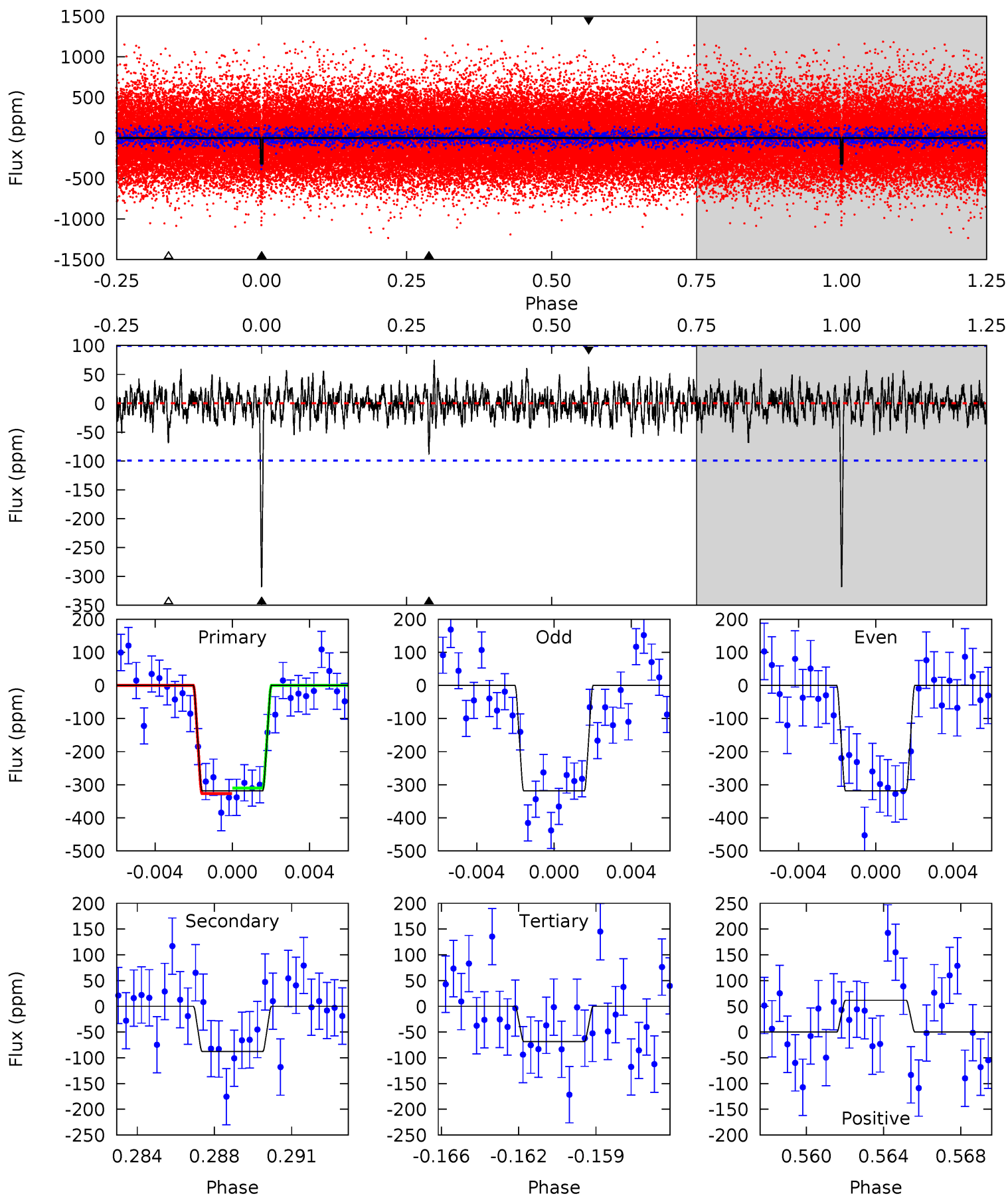
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	6.02	3.45	4.00	5.20	2.87	1.20	15.3	14.7	2.58	2.02	0.72	1.04	0.20	0.65



# Alt Model-Shift Uniqueness Test

009447166-01, P = 62.870594 Days, E = 103.131874 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
16.7	4.60	3.61	3.24	5.21	2.90	1.02	13.1	13.5	1.00	1.36	0.01	1.05	0.19	0.43



### Stellar Parameters For KIC 009447166

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4762^{+85}_{-76}$	$4.535^{+0.056}_{-0.016}$	$0.200^{+0.150}_{-0.150}$	$0.781^{+0.026}_{-0.045}$	$0.762^{+0.042}_{-0.027}$	$2.251^{+0.470}_{-0.165}$
	+2%/-2%	+1%/-0%	+75%/-75%	+3%/-6%	+6%/-4%	+21%/-7%
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 009447166-01 / KOI 3296.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-111 \pm 18$	$1.76^{+0.29}_{-0.27}$	$485^{+10}_{-10}$	$3711^{+227}_{-220}$	$1589^{+631}_{-485}$
Alt.	$-88 \pm 19$	$1.52^{+0.28}_{-0.29}$	$484^{+10}_{-10}$	$3736^{+300}_{-248}$	$1691^{+903}_{-586}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$



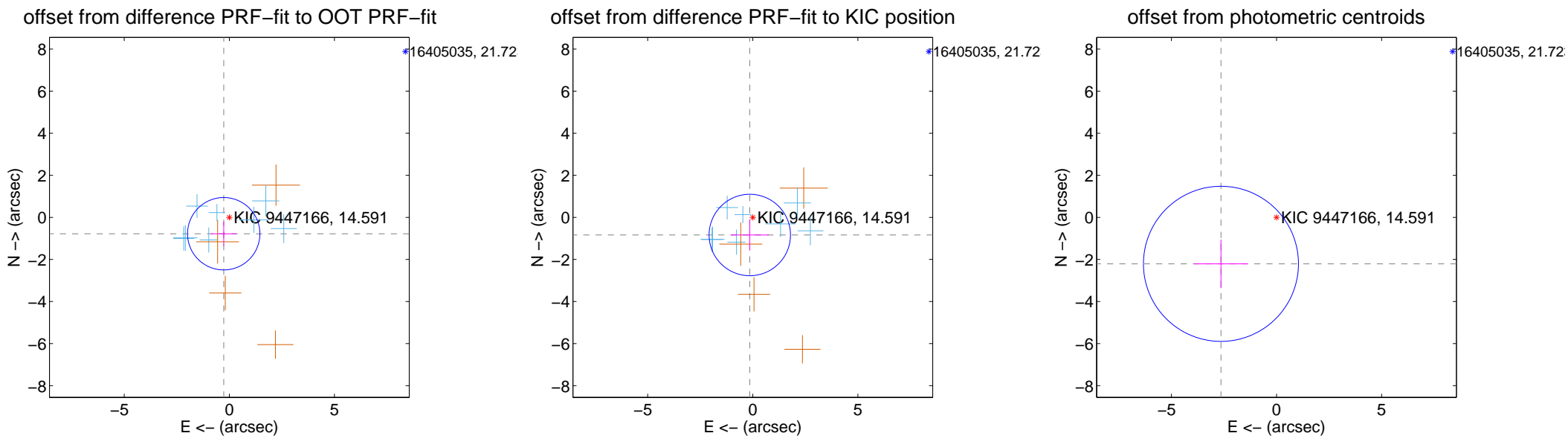
## DV Centroid Data

Supplemental centroid analysis for 009447166-01. Kepler magnitude: 14.59. Transit SNR 13.01

There are 8 quarters with good PRF difference image offsets

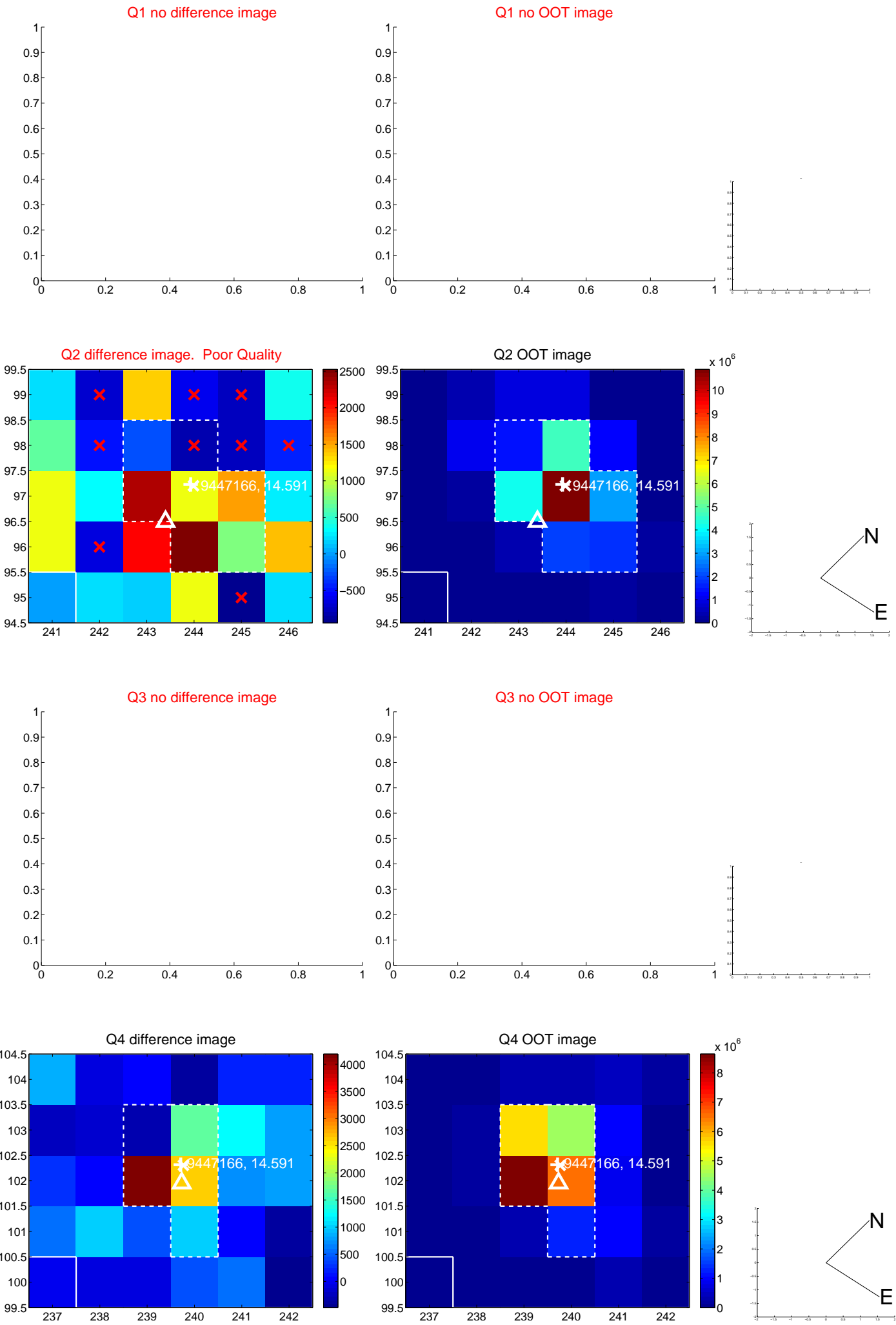
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.822 \pm 0.573$	1.43	$0.267 \pm 0.605$	$-0.778 \pm 0.570$
PRF-fit source offset from KIC position	$0.849 \pm 0.645$	1.32	$0.142 \pm 0.902$	$-0.837 \pm 0.734$
photometric centroid source offset	$3.44 \pm 1.23$	2.80	$2.64 \pm 1.28$	$-2.21 \pm 1.15$

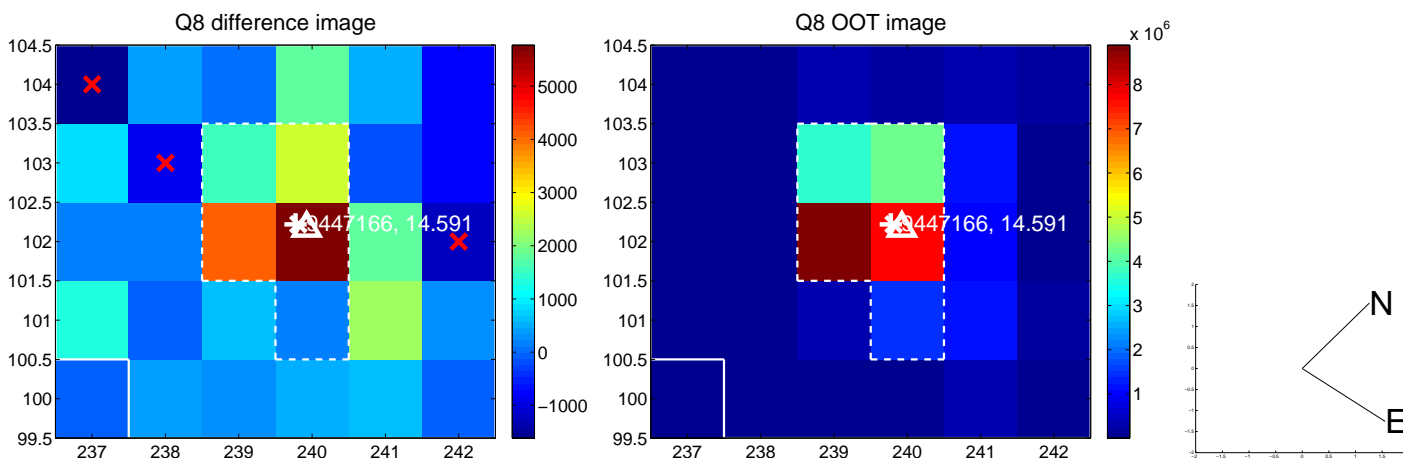
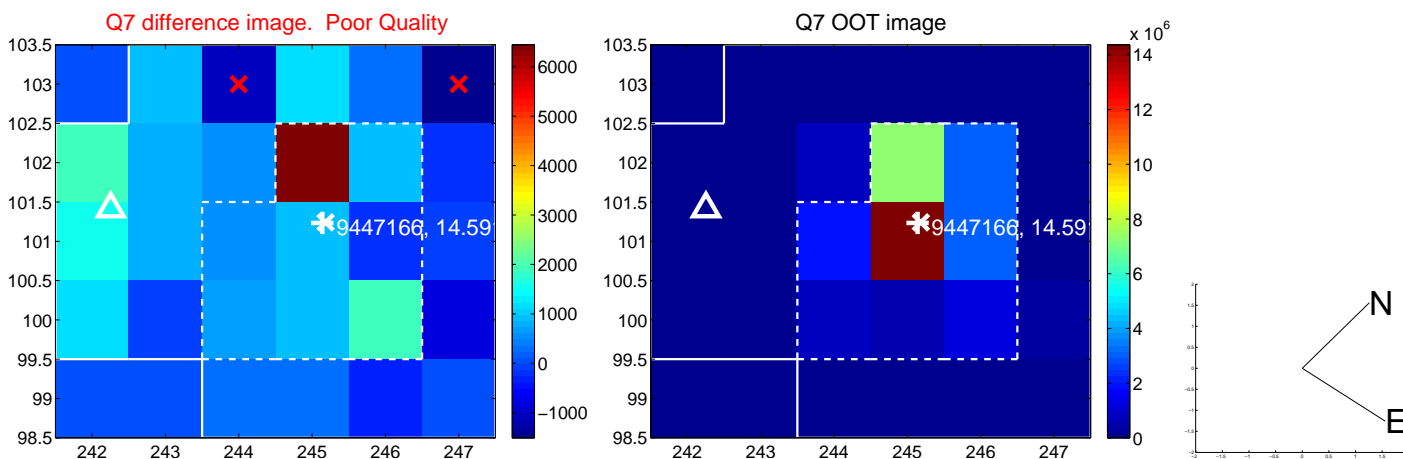
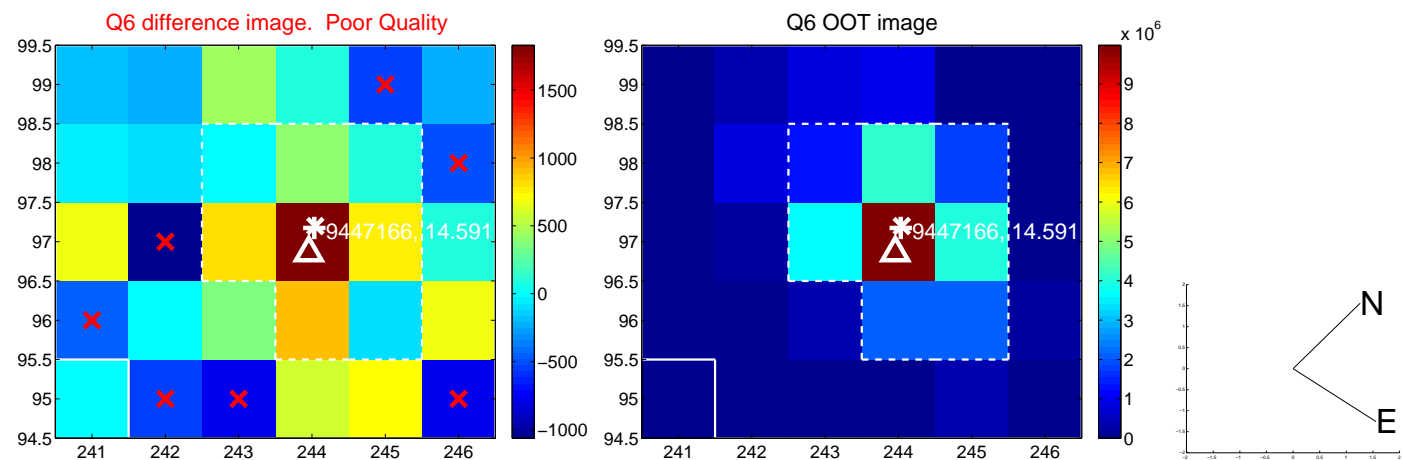
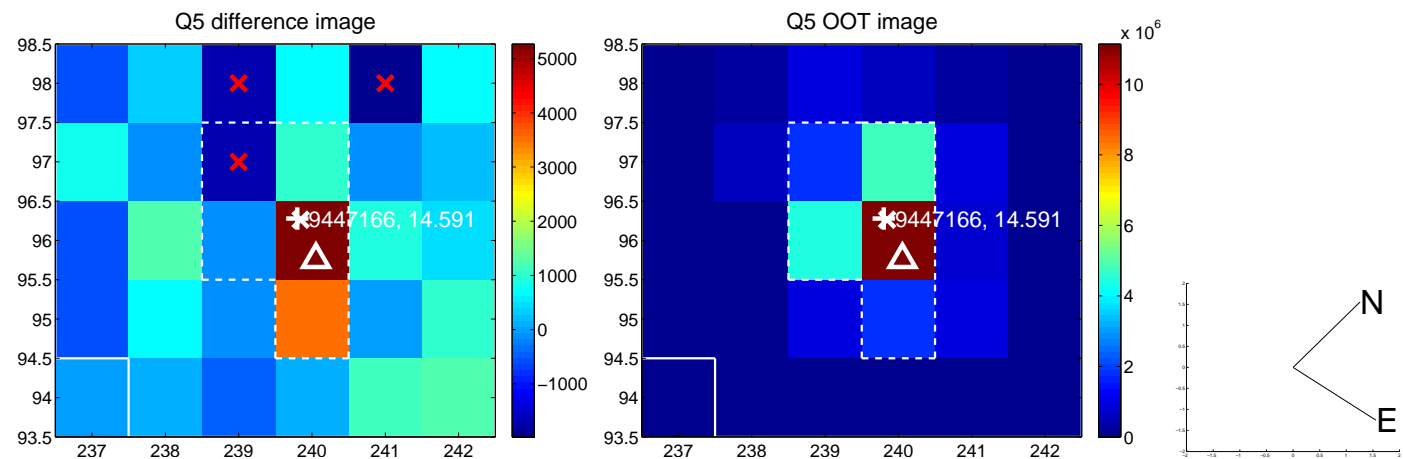


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

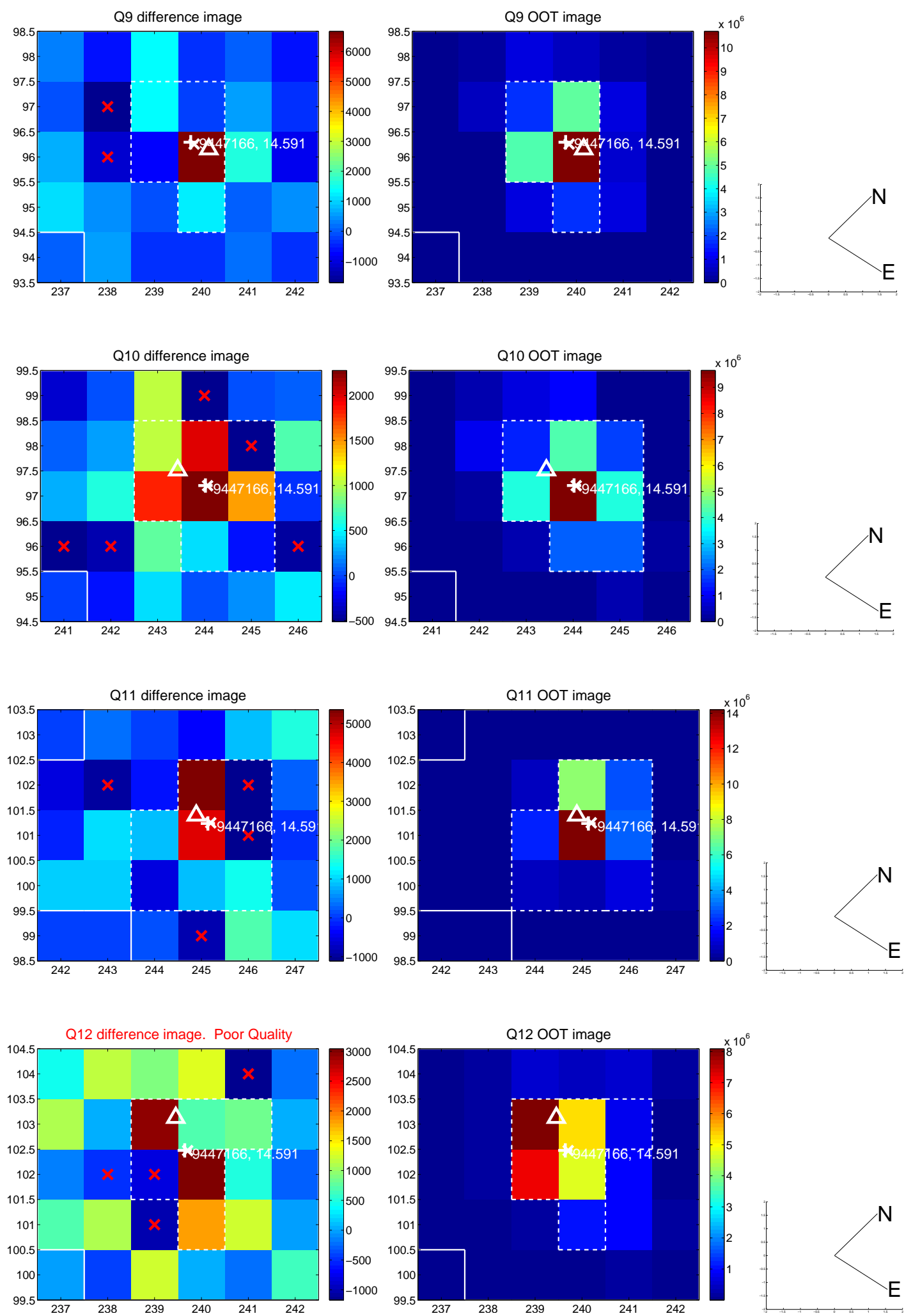
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



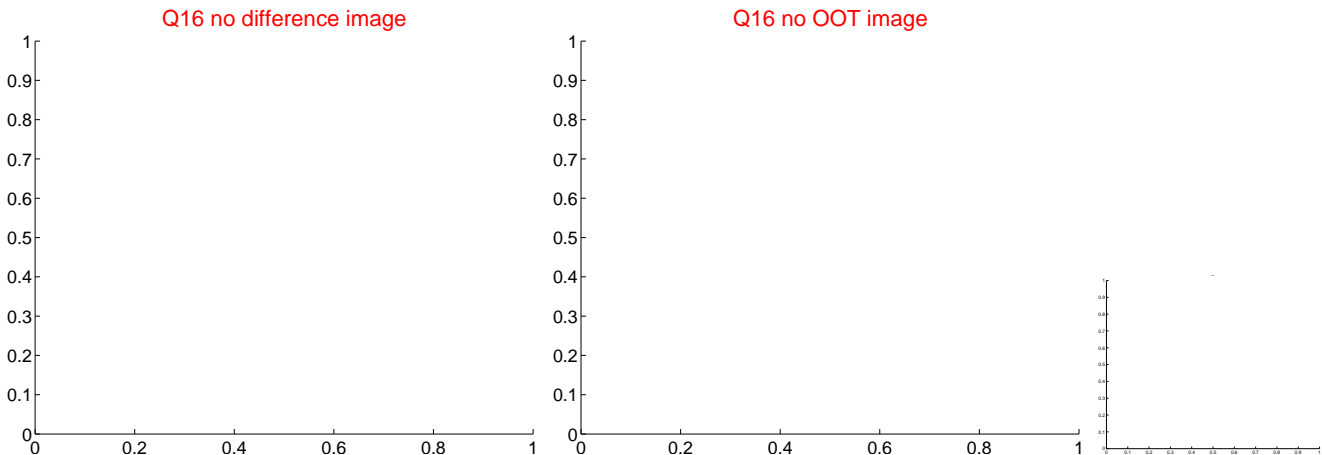
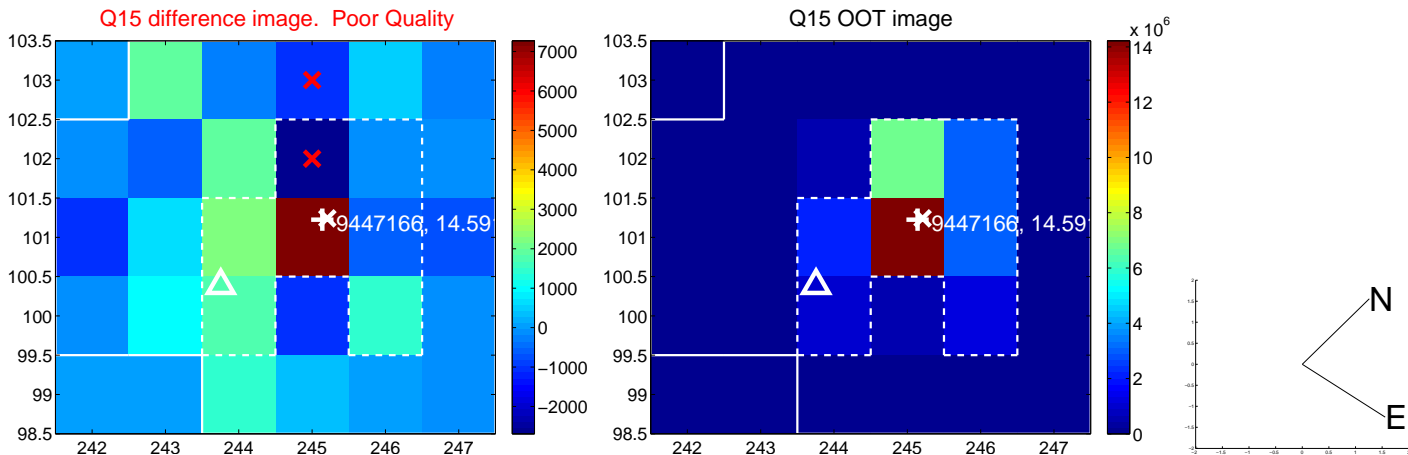
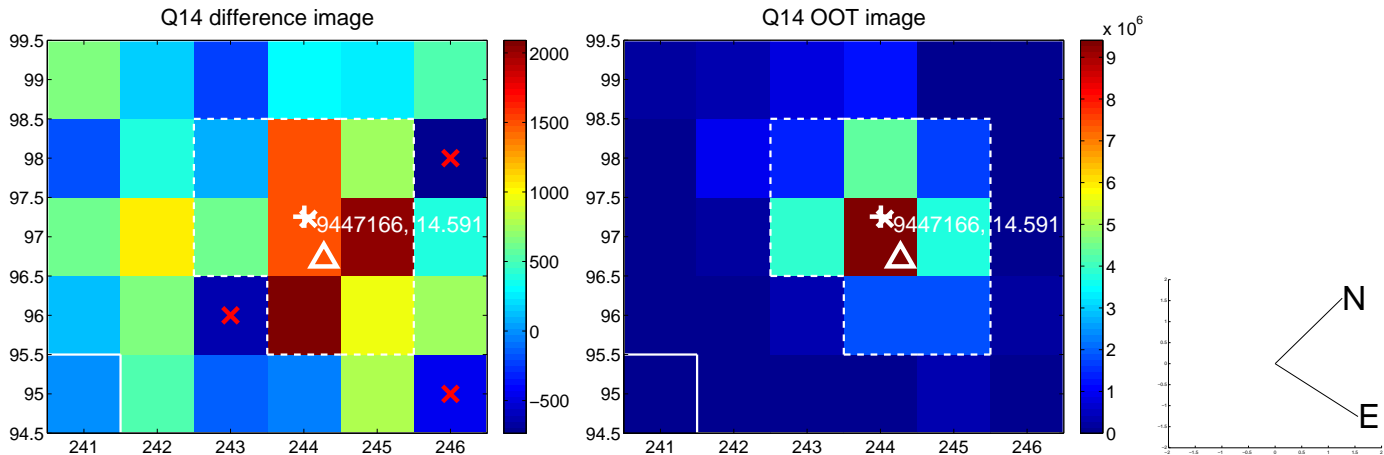
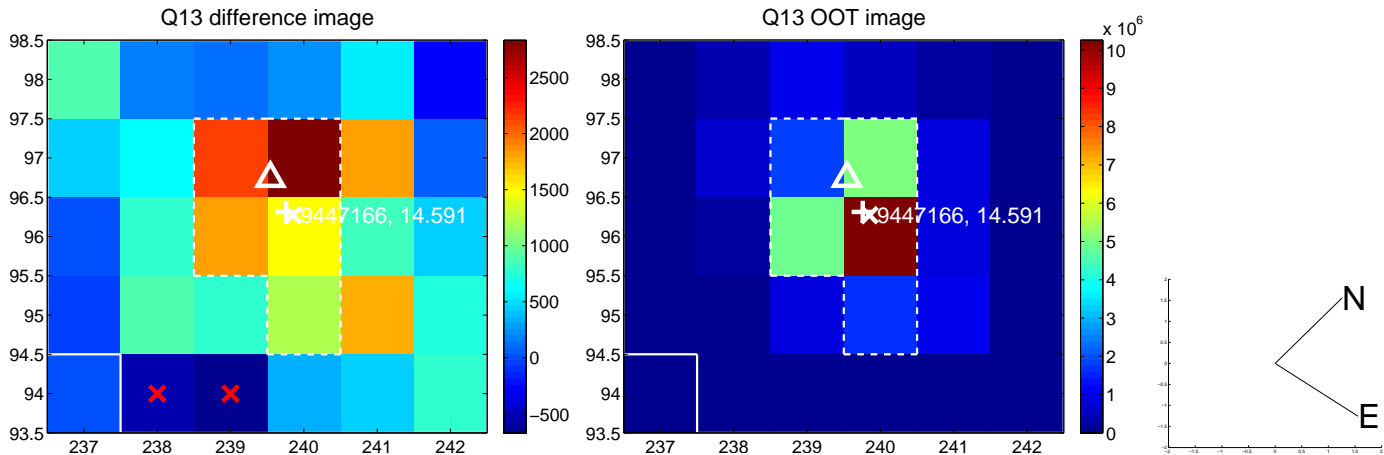
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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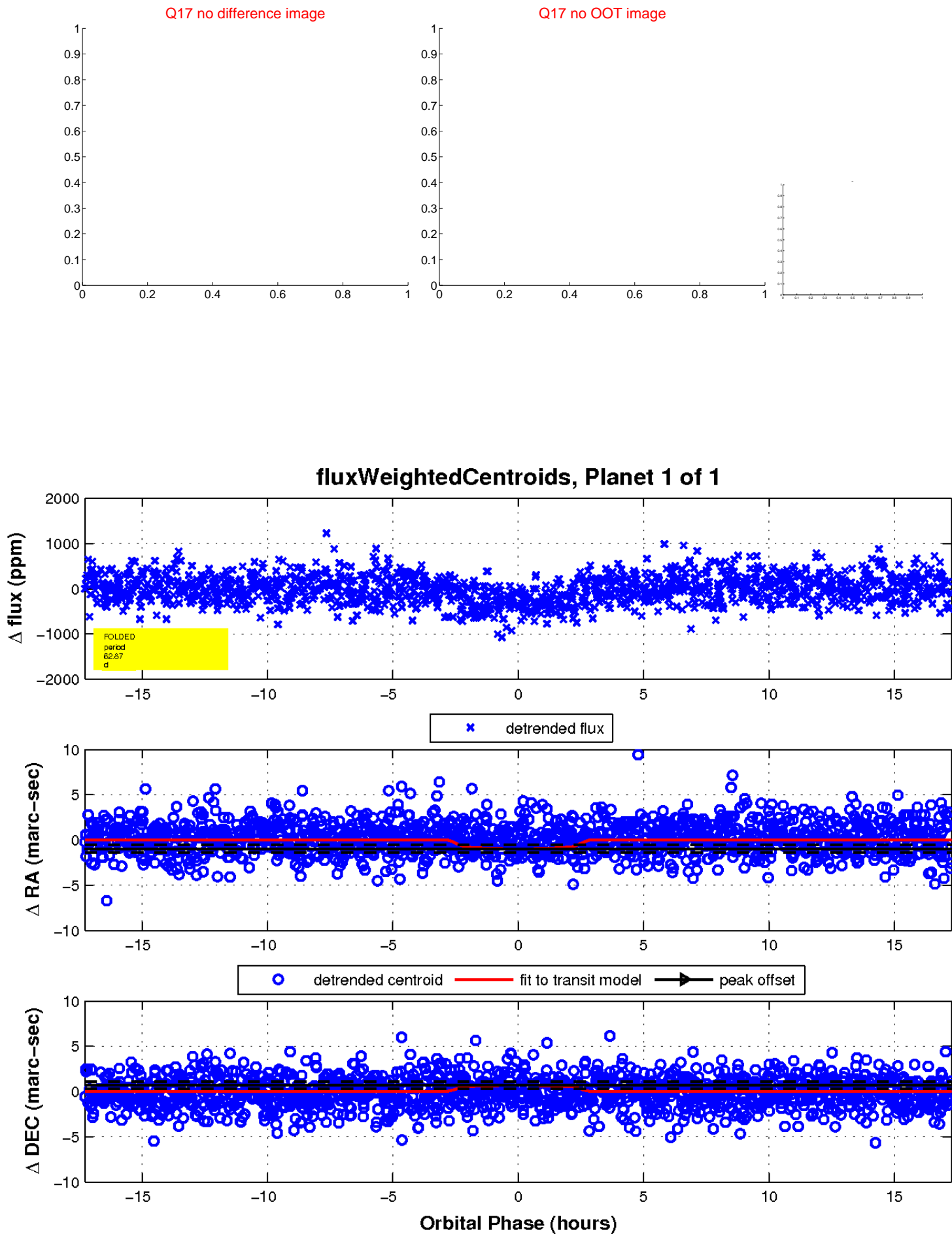


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

