

# KIC 009140662

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009140662-01	OBS	No	20.968380	145.834609	202.5	39.453	9.2	14.8	1.15	6625	3.19	92.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009140662-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED

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

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

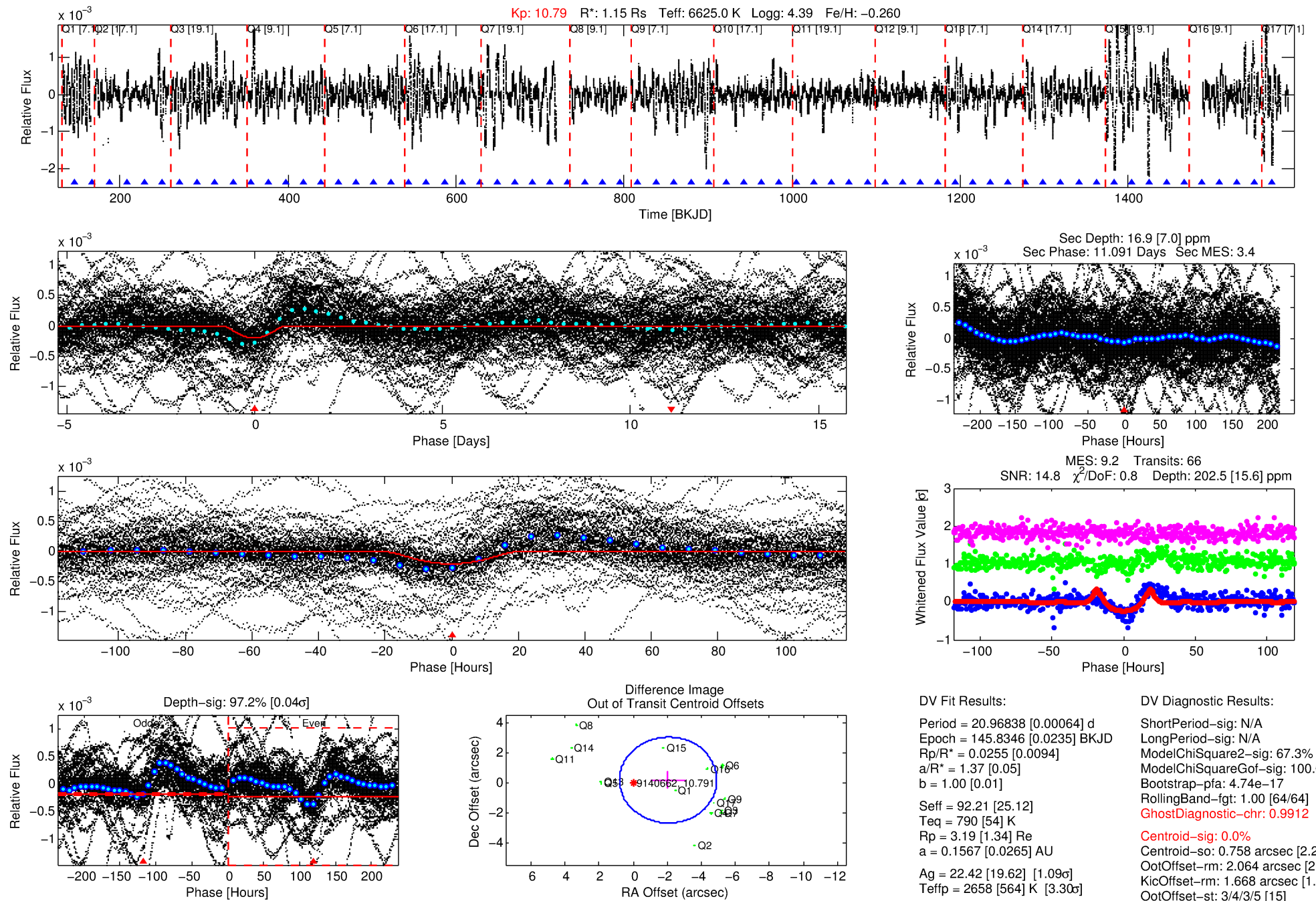
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009140662-01

No Significant Match Found

# DV One-Page Summary

KIC: 9140662 Candidate: 1 of 1 Period: 20.968 d



## DV Fit Results:

Period = 20.96838 [0.00064] d  
Epoch = 145.8346 [0.0235] BKJD  
 $R_p/R^* = 0.0255$  [0.0094]  
 $a/R^* = 1.37$  [0.05]  
 $b = 1.00$  [0.01]  
 $\text{Seff} = 92.21$  [25.12]  
 $T_{\text{eq}} = 790$  [54] K  
 $R_p = 3.19$  [1.34]  $R_e$   
 $a = 0.1567$  [0.0265] AU  
 $A_g = 22.42$  [19.62] [1.09 $\sigma$ ]  
 $T_{\text{eff}} = 2658$  [564] K [3.30 $\sigma$ ]

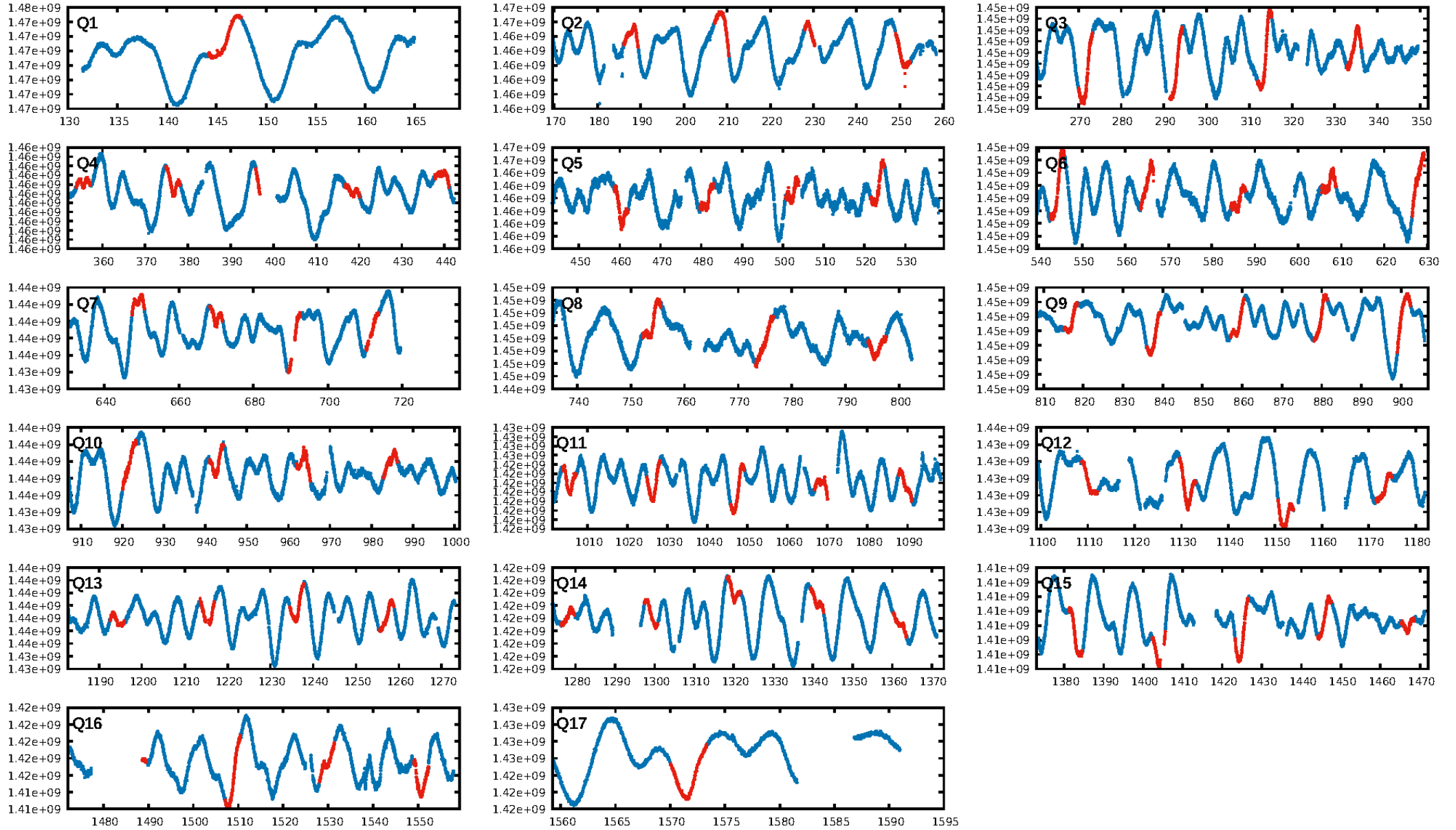
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 67.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.74e-17  
RollingBand-fgt: 1.00 [64/64]  
**GhostDiagnostic-chr: 0.9912**  
Centroid-sig: 0.0%  
Centroid-so: 0.758 arcsec [2.21 $\sigma$ ]  
OotOffset-rm: 2.064 arcsec [2.16 $\sigma$ ]  
KicOffset-rm: 1.668 arcsec [1.76 $\sigma$ ]  
OotOffset-st: 3/4/3/5 [15]  
KicOffset-st: 3/4/3/5 [15]  
DiffImageQuality-fgm: 0.60 [9/15]  
DiffImageOverlap-fno: 1.00 [16/16]

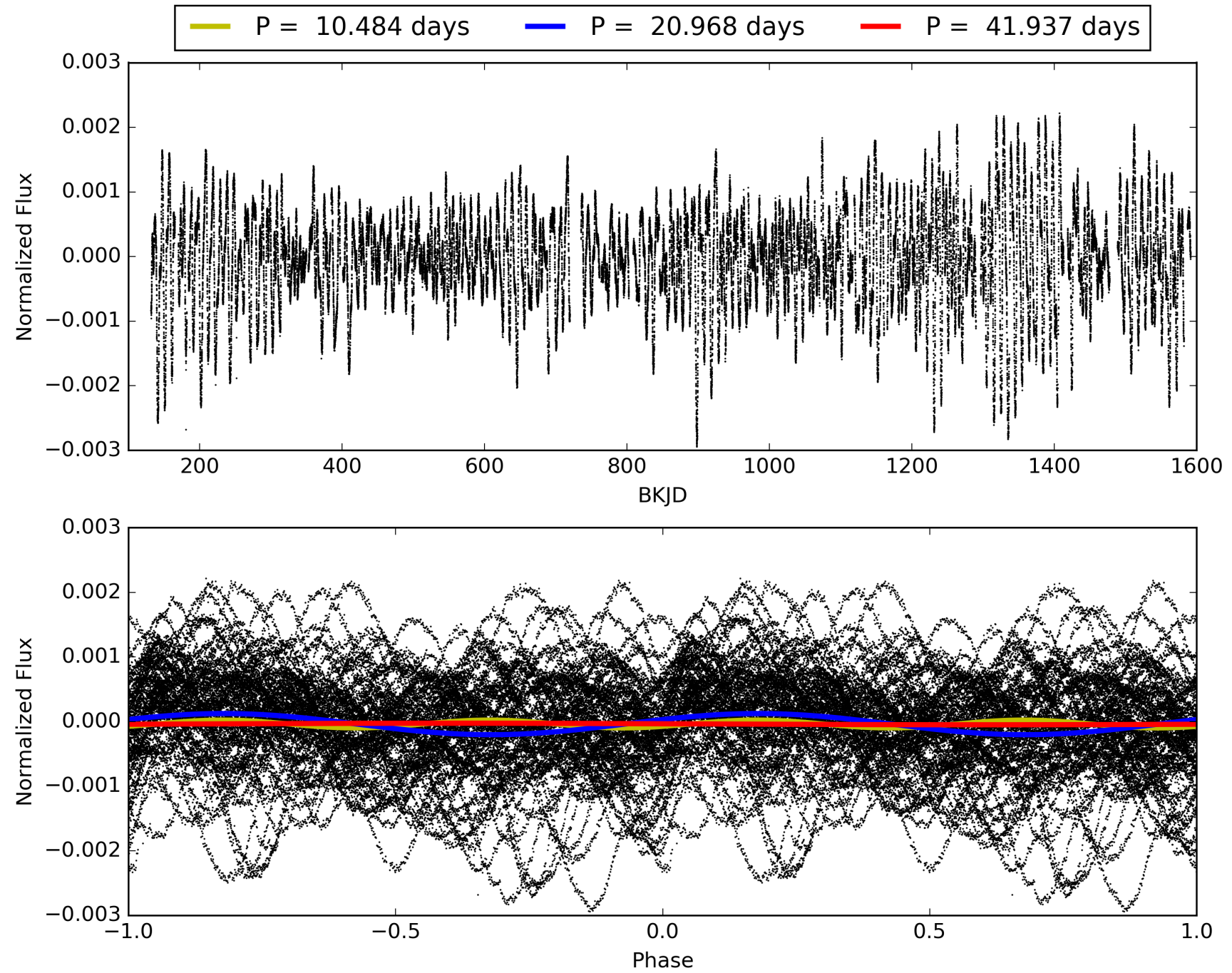
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:08:44 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009140662-01, PDC Light Curves

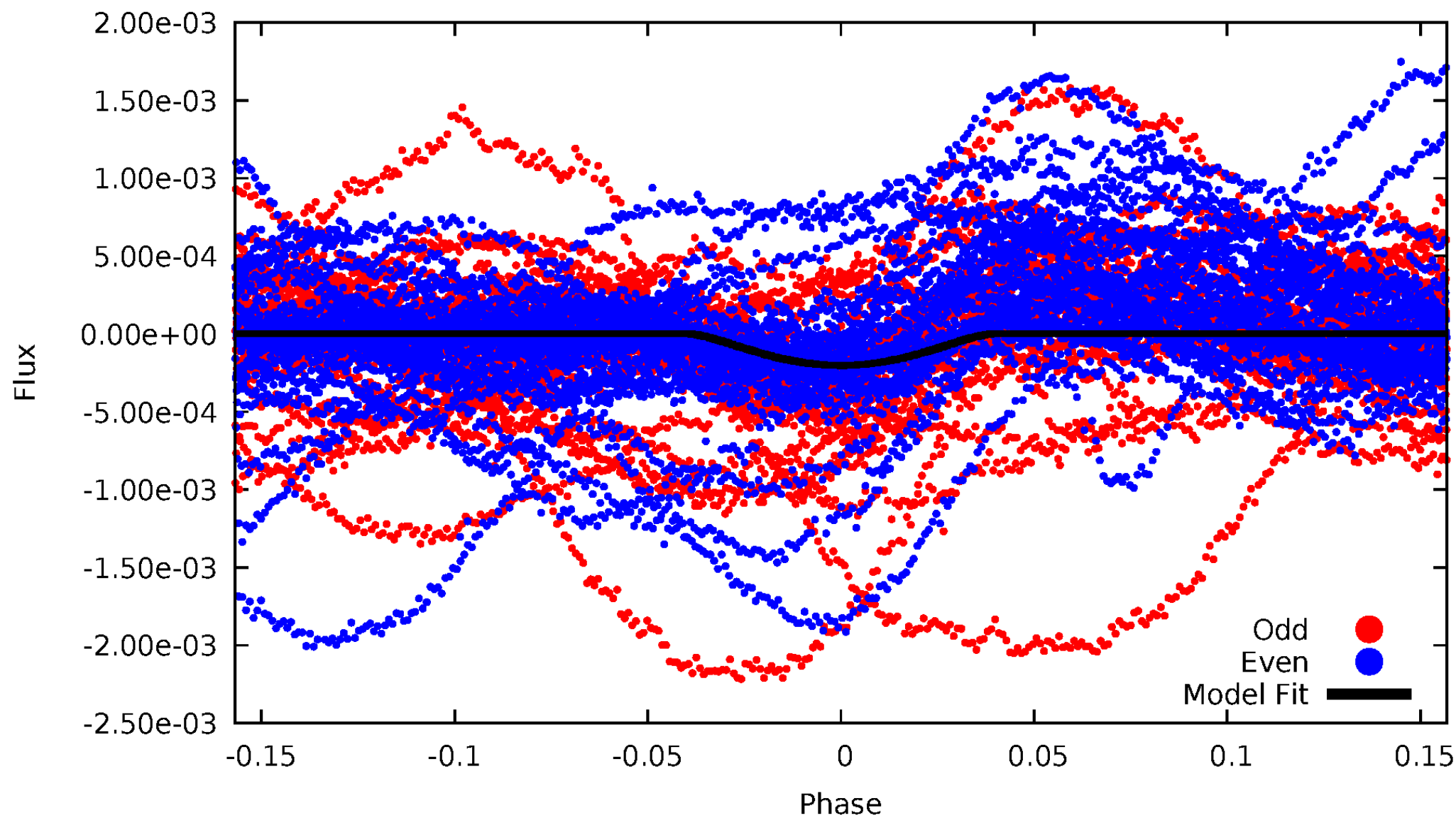


TCE 009140662-01



# DV Odd/Even

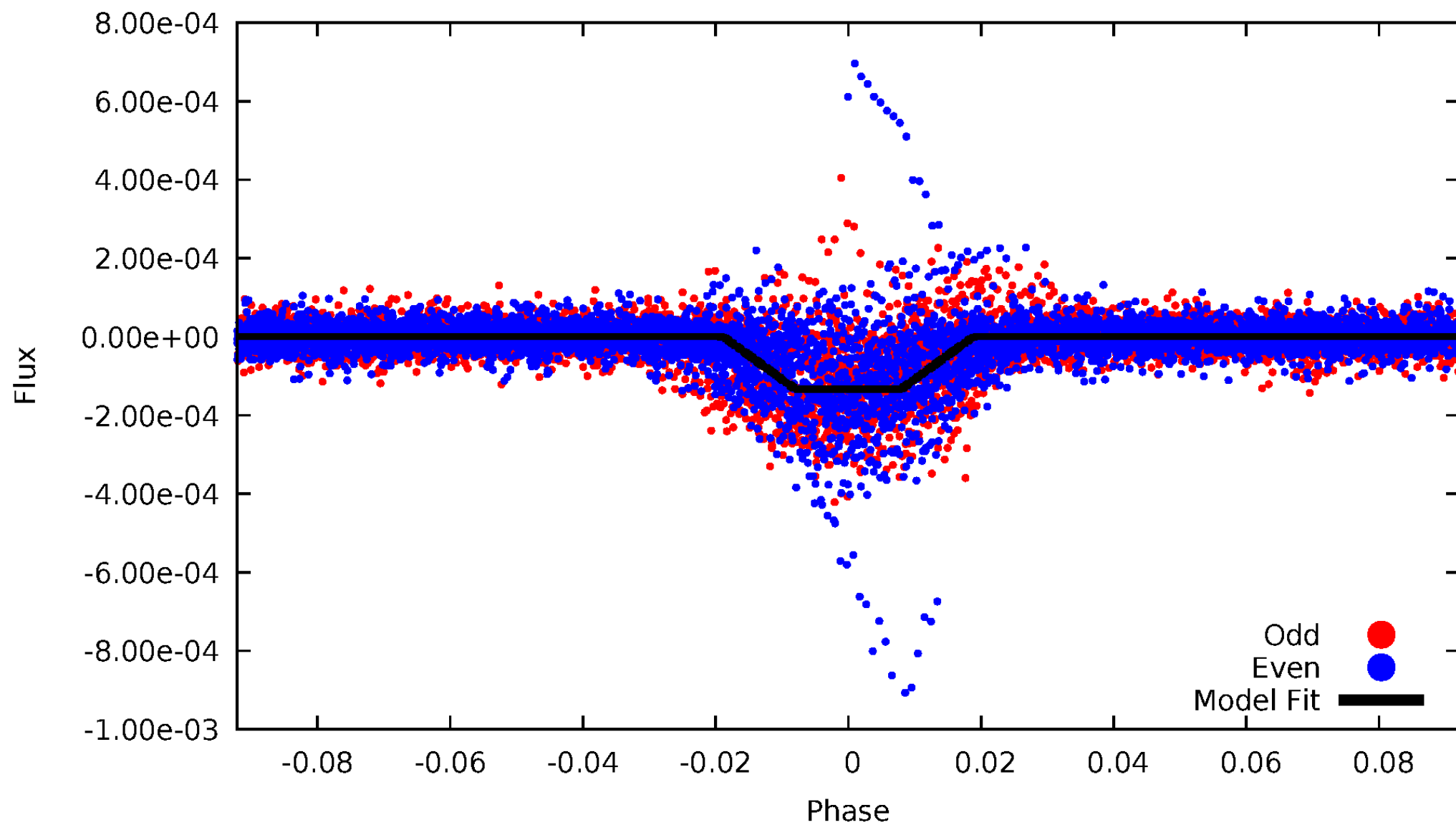
TCE 009140662-01





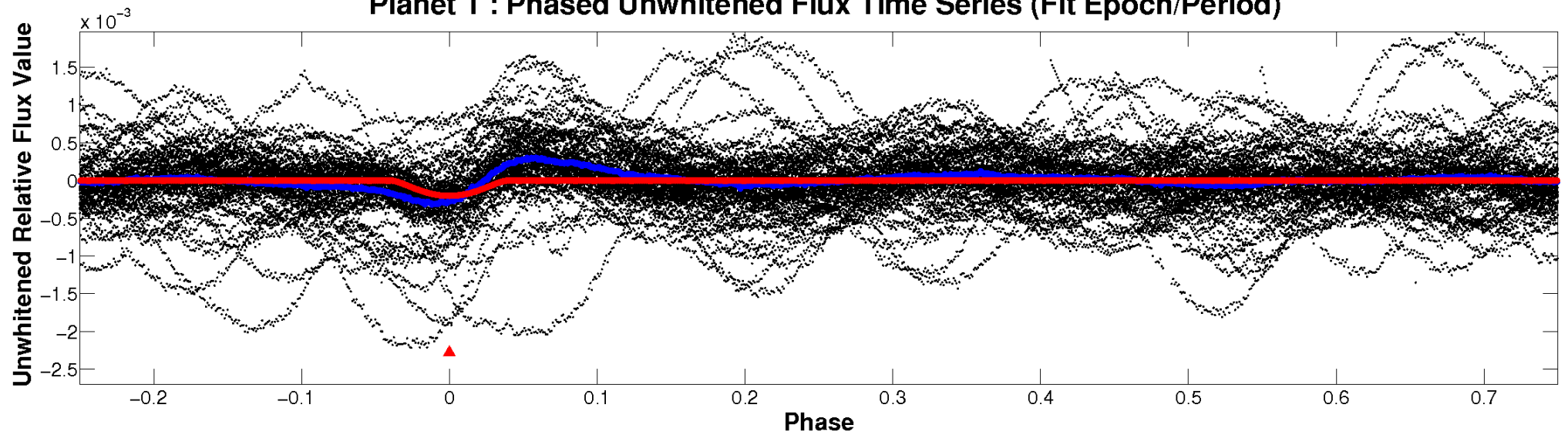
# ALT Odd/Even

TCE 009140662-01

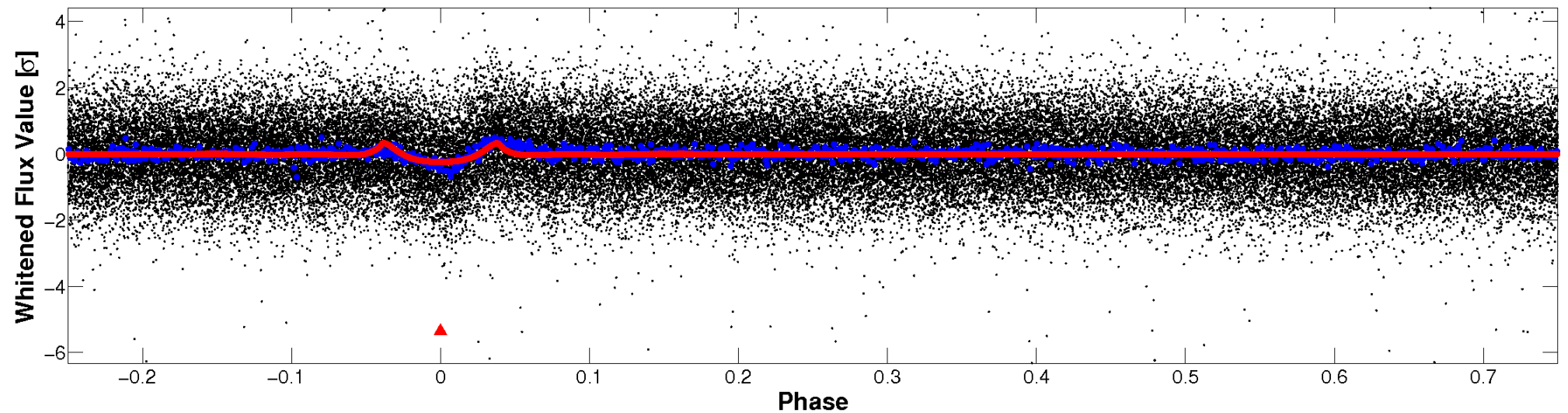


# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

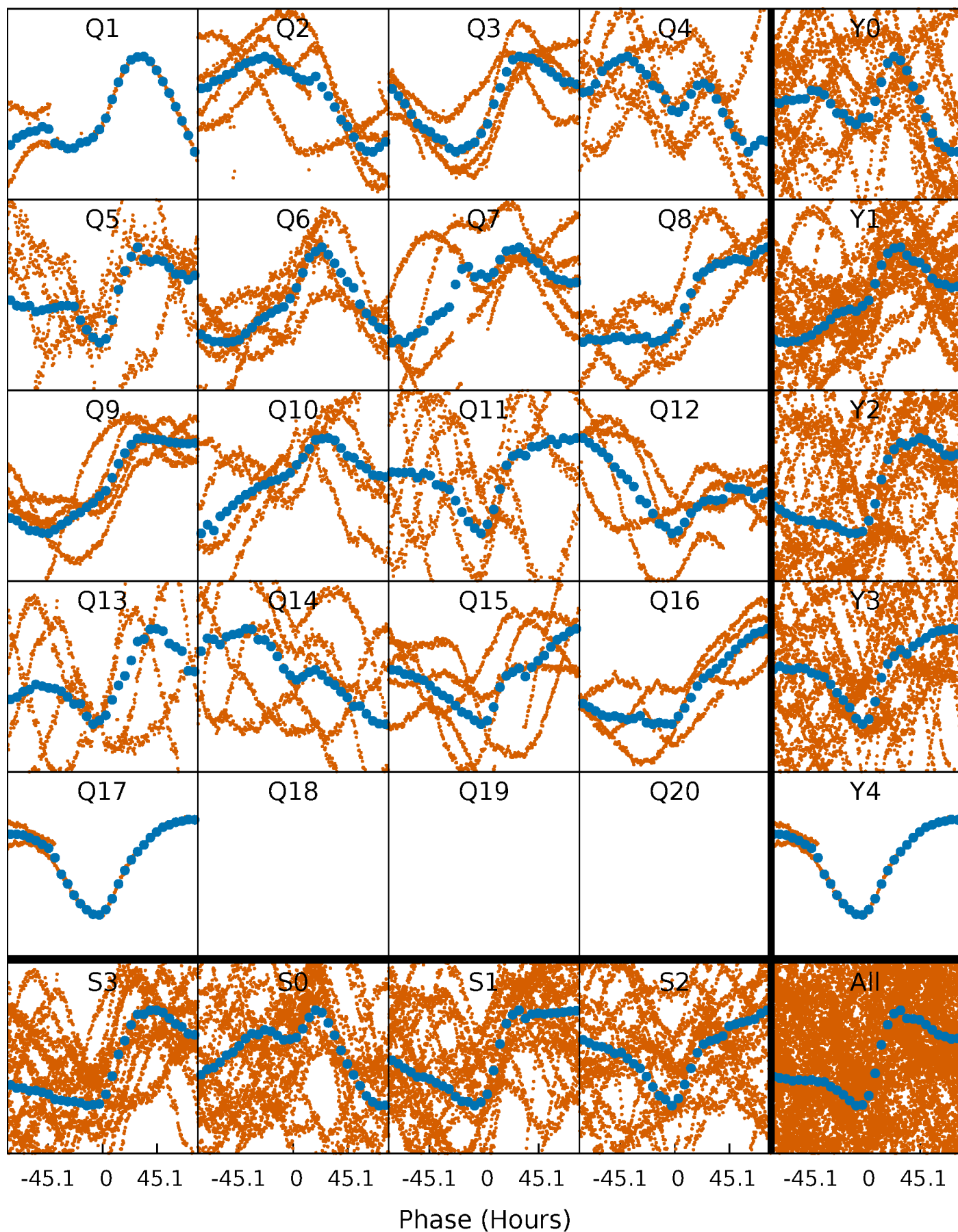


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

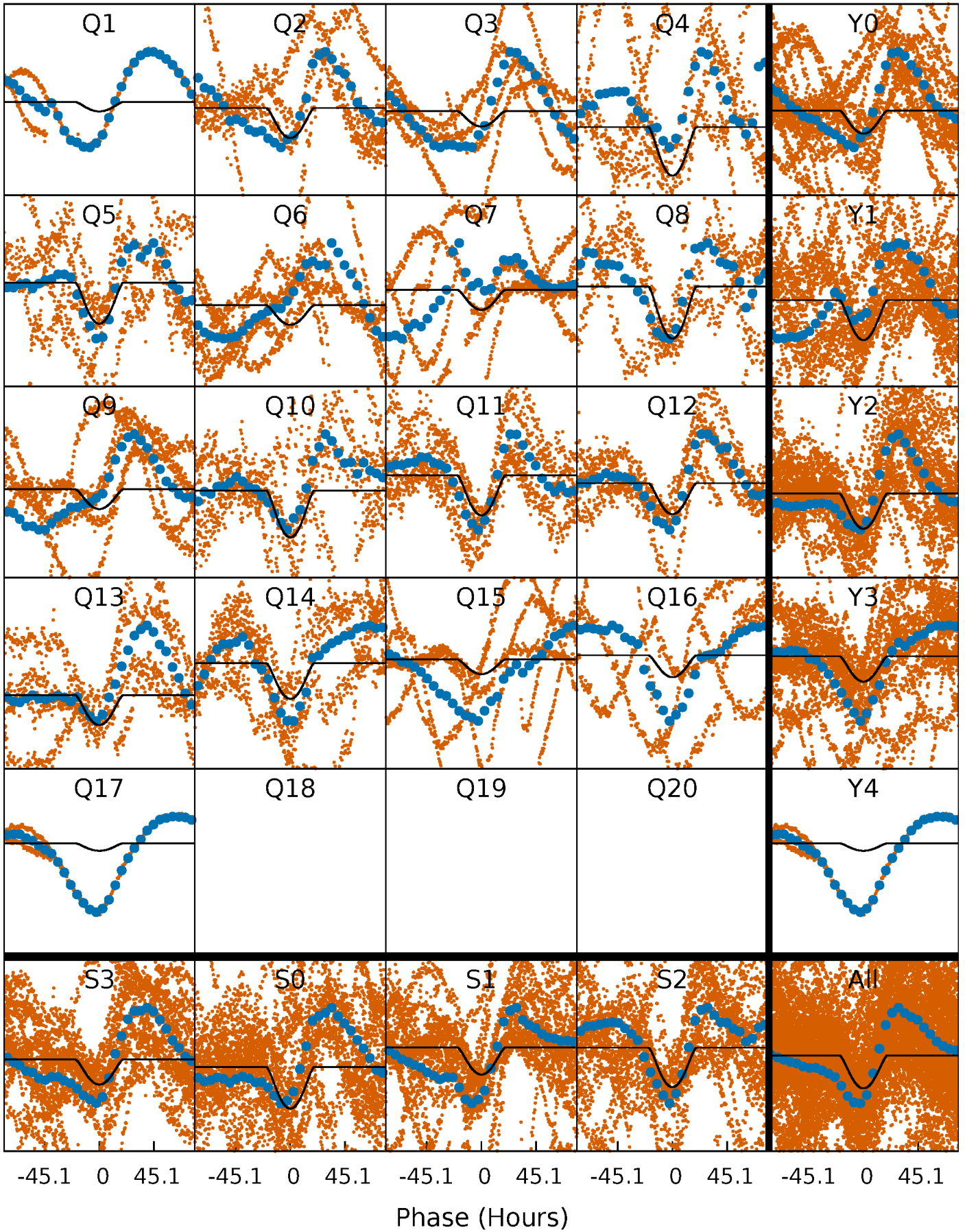
TCE 009140662-01 P= 20.968380 Days  $T_0=145.834609$  (BKJD)





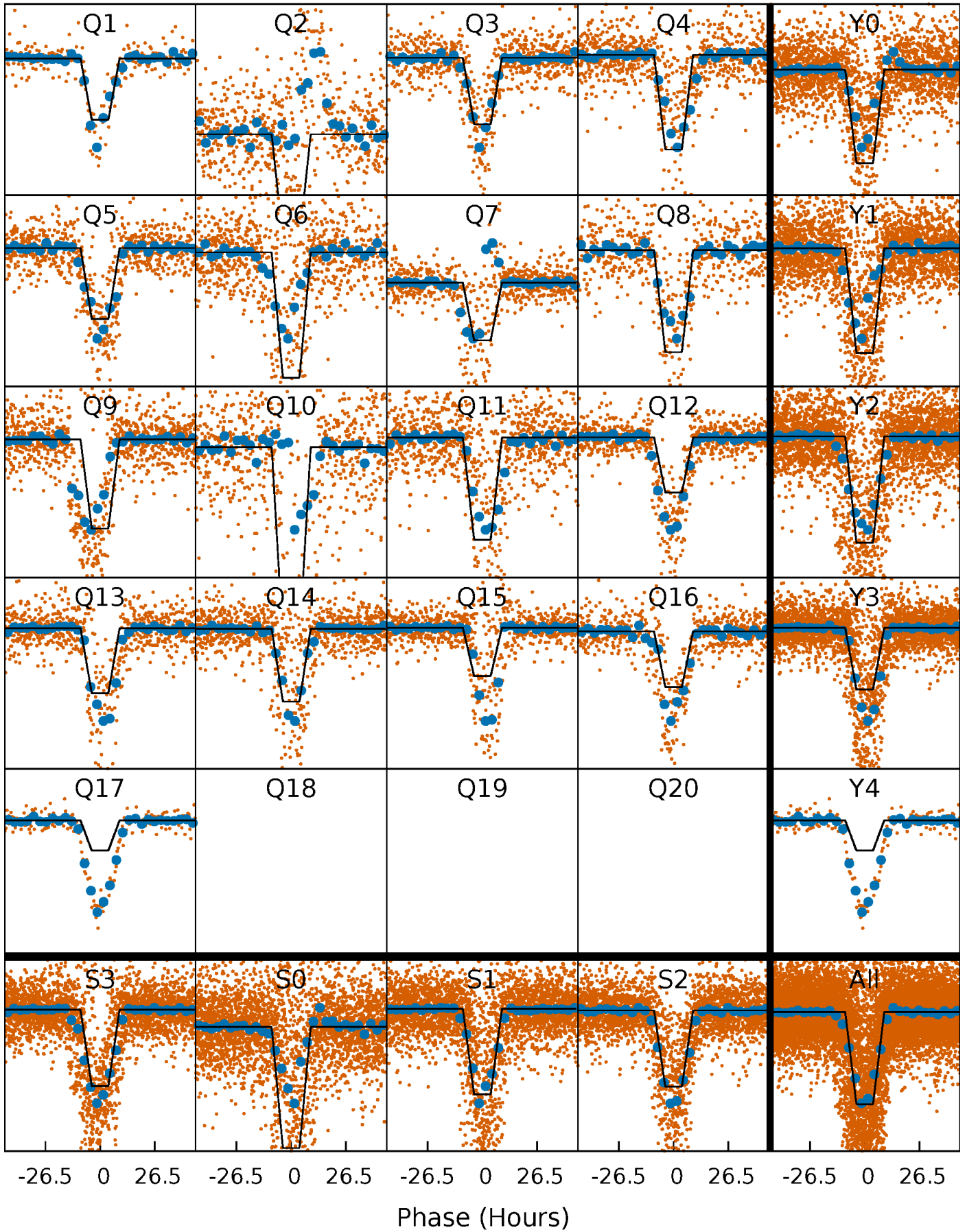
# DV Quarter-Phased Transit Curves

TCE 009140662-01 P= 20.968380 Days  $T_0=145.834609$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

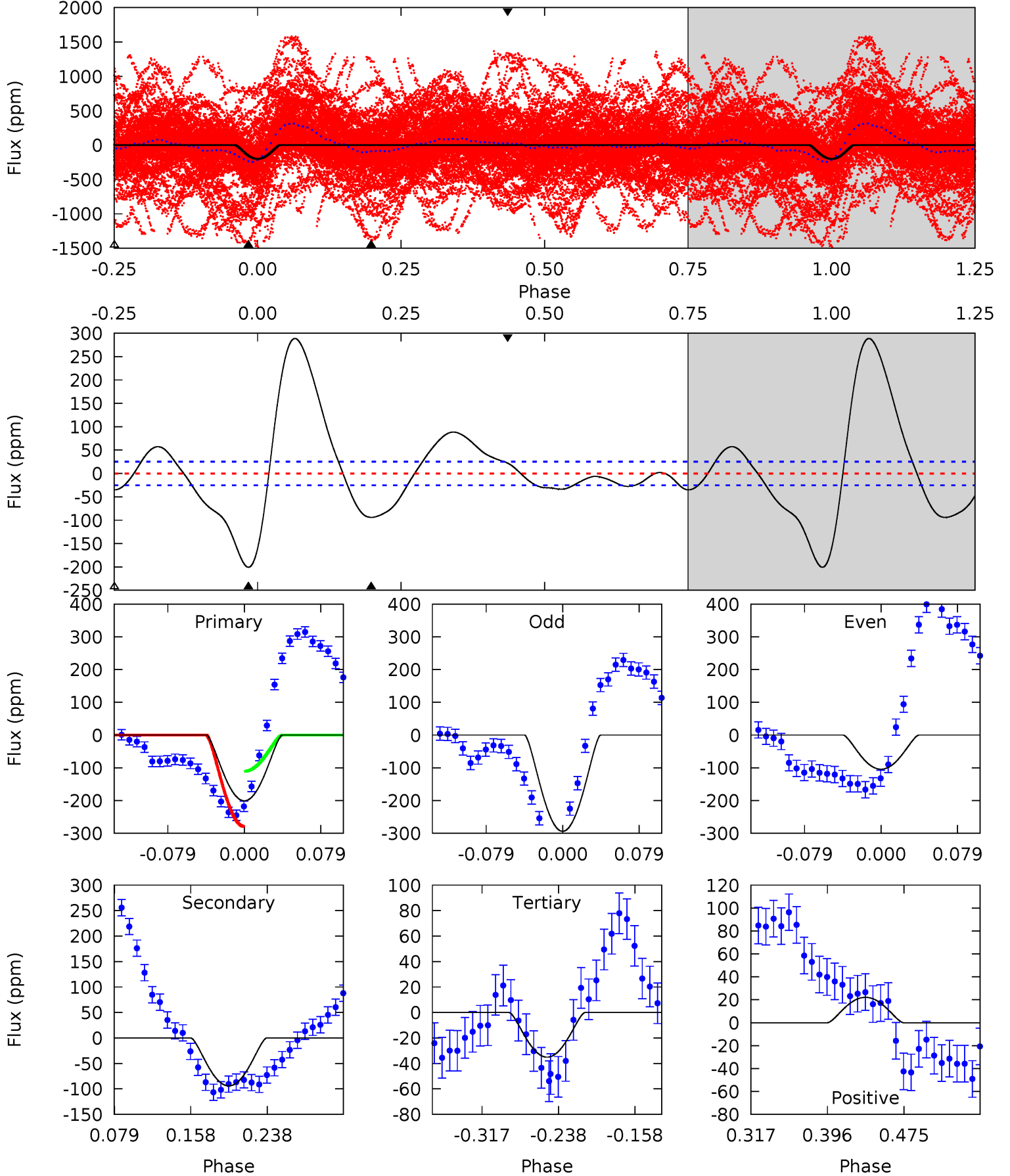
TCE 009140662-01 P= 20.966838 Days  $T_0=146.008915$  (BKJD)



# DV Model-Shift Uniqueness Test

009140662-01, P = 20.968380 Days, E = 124.866229 Days

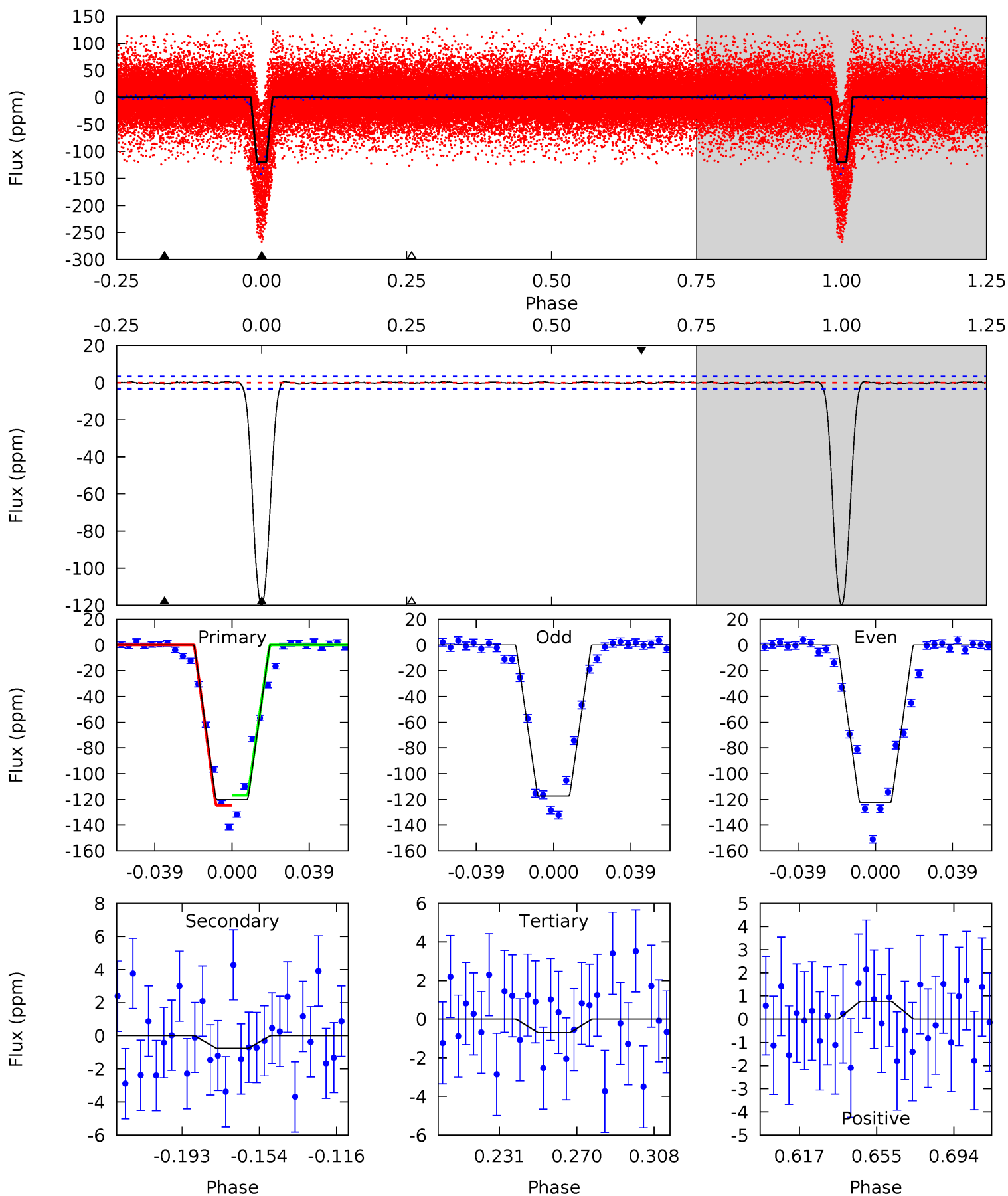
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.6	17.1	6.39	4.03	4.61	1.76	12.6	30.2	32.6	10.8	13.1	17.3	1.49	0.59	0



# Alt Model-Shift Uniqueness Test

009140662-01, P = 20.966838 Days, E = 125.042077 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
169.9	1.07	0.98	1.08	4.76	2.07	0.44	169.0	168.9	0.09	-0.01	3.41	0.94	0.01	5.47



### Stellar Parameters For KIC 009140662

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6625^{+132}_{-198}$	$4.387^{+0.057}_{-0.133}$	$-0.260^{+0.250}_{-0.300}$	$1.145^{+0.232}_{-0.125}$	$1.166^{+0.125}_{-0.153}$	$1.095^{+0.328}_{-0.420}$
	+2%/-3%	+1%/-3%	+96%/-115%	+20%/-11%	+11%/-13%	+30%/-38%
Source	PHO1	FLK73	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 009140662-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-94 \pm 5$	$3.15^{+1.31}_{-1.15}$	$1113^{+55}_{-41}$	$4347^{+849}_{-501}$	$125^{+188}_{-60}$
Alt.	$-1 \pm 1$	$1.64^{+1.14}_{-0.91}$	$1113^{+53}_{-44}$	$2436^{+714}_{-4106}$	$2.939^{+16.008}_{-2.702}$

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



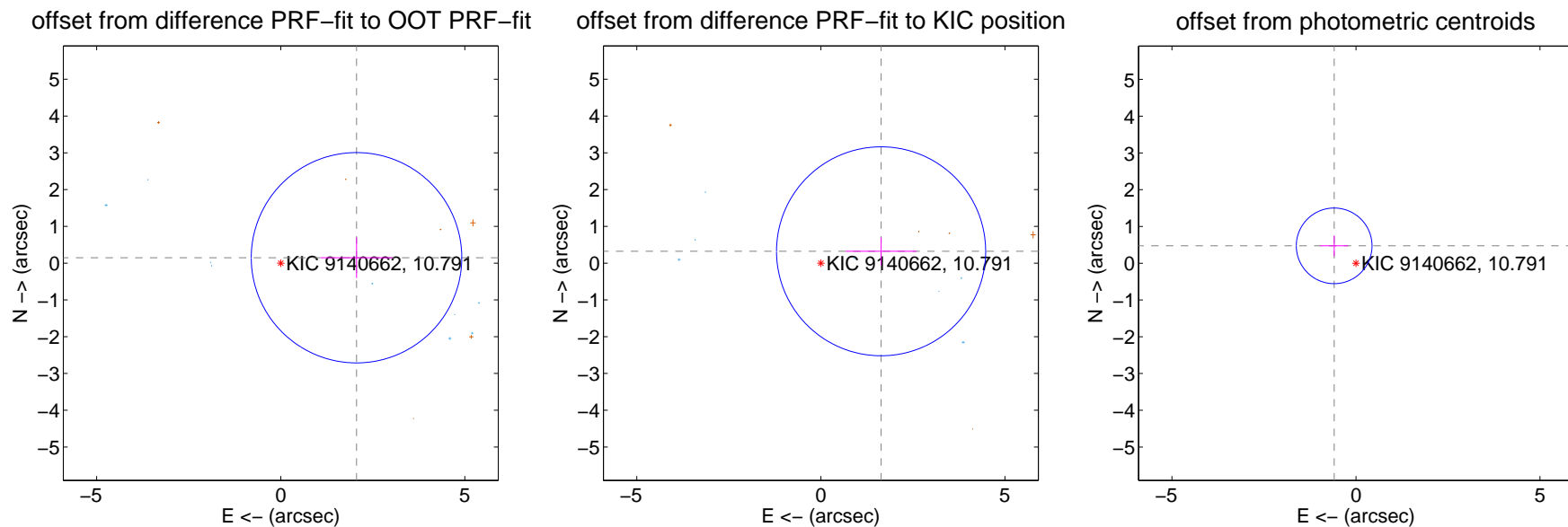
## DV Centroid Data

Supplemental centroid analysis for 009140662-01. **Kepler magnitude: 10.79.** Transit SNR 14.77

There are 9 quarters with good PRF difference image offsets

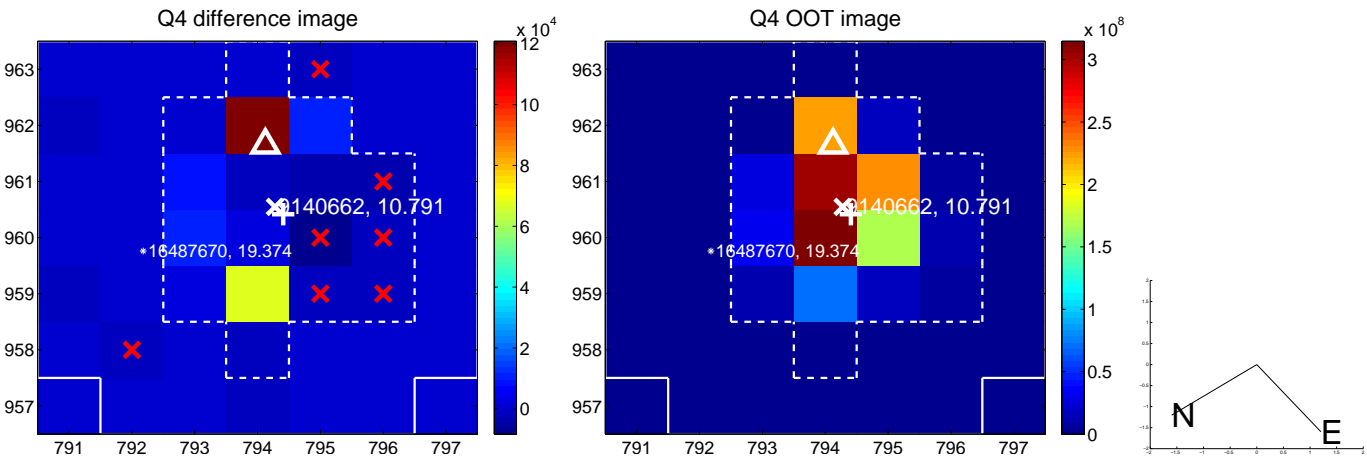
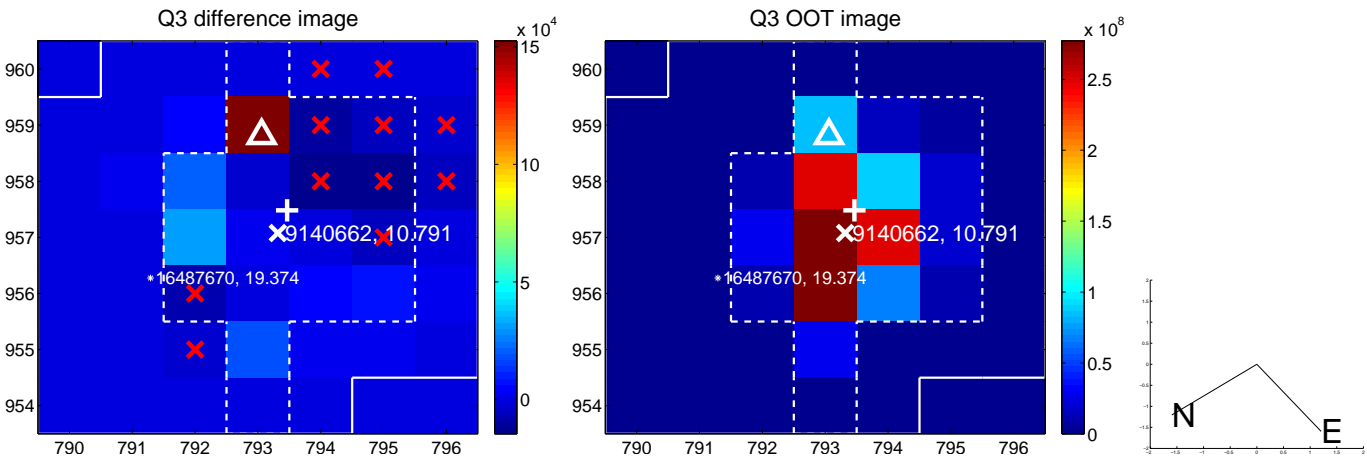
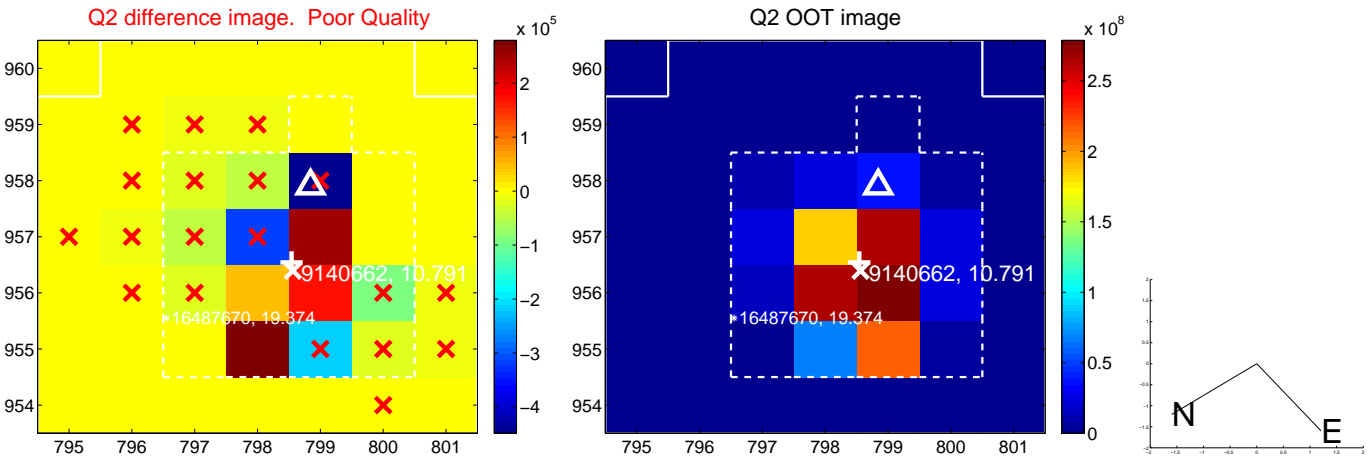
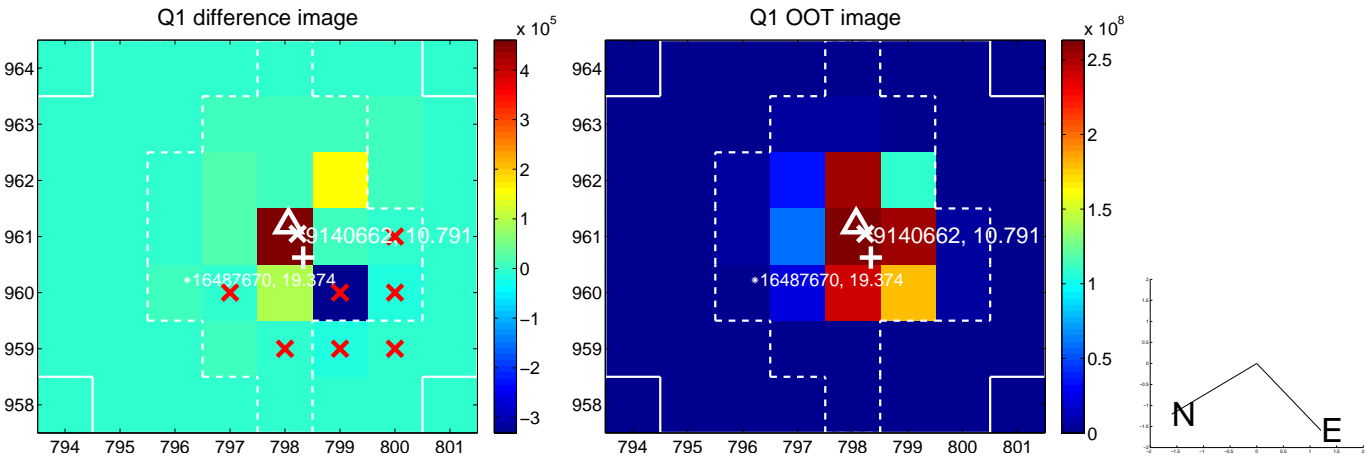
The direct PRF centroid is offset from the target star catalog position by about 1.65 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.064 \pm 0.953$	2.16	$-2.059 \pm 0.978$	$0.147 \pm 0.550$
PRF-fit source offset from KIC position	$1.668 \pm 0.947$	1.76	$-1.636 \pm 0.962$	$0.322 \pm 0.374$
photometric centroid source offset	$0.76 \pm 0.34$	2.21	$0.59 \pm 0.38$	$0.47 \pm 0.28$

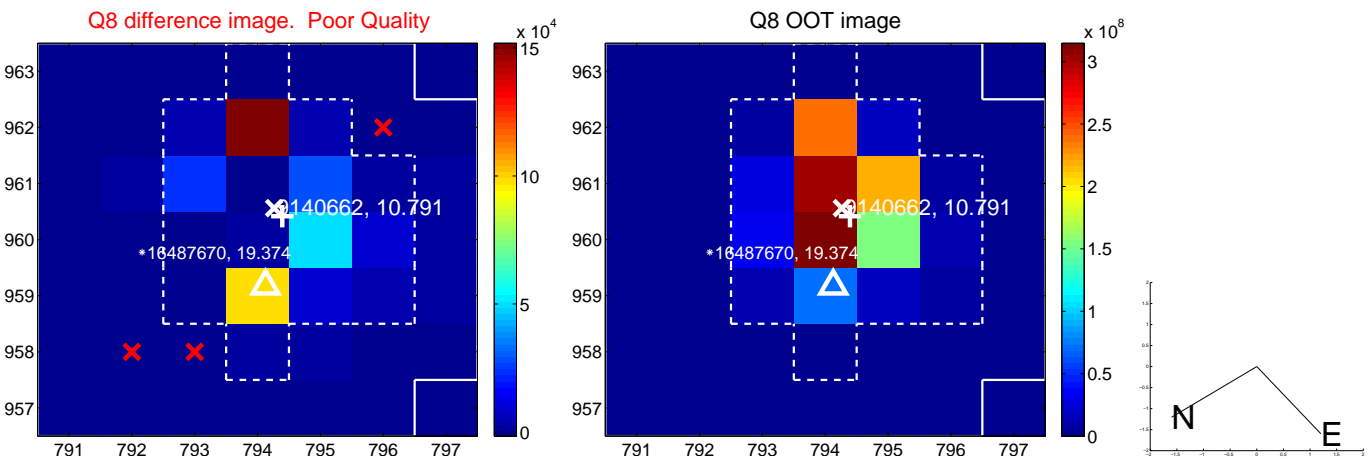
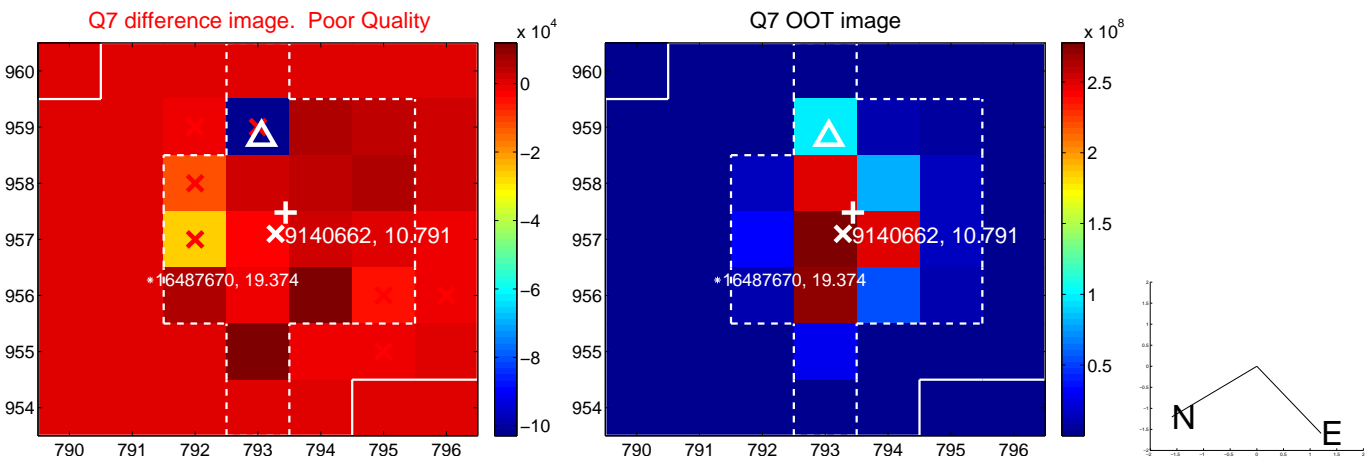
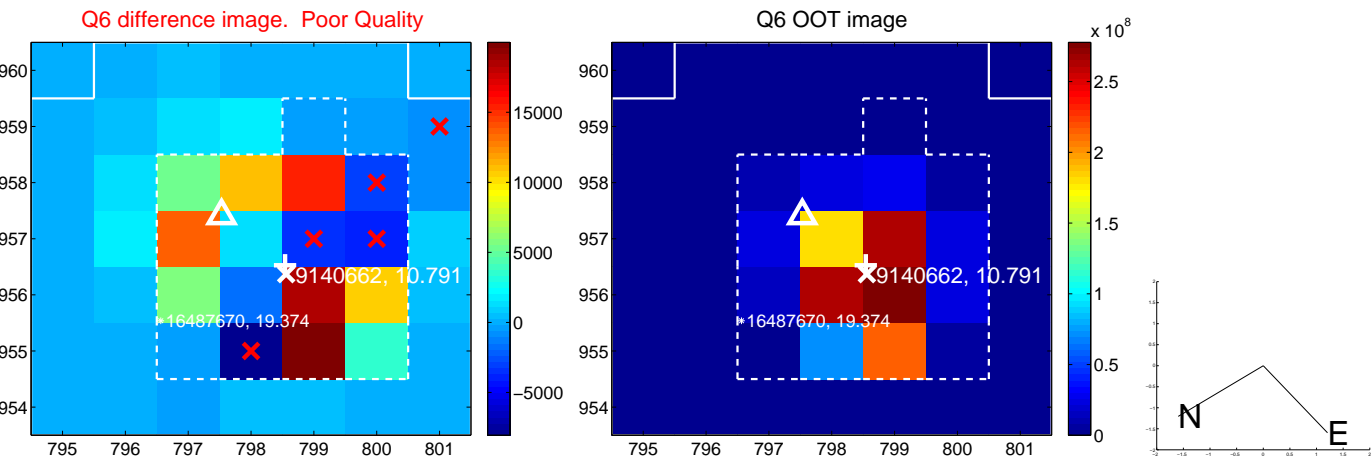
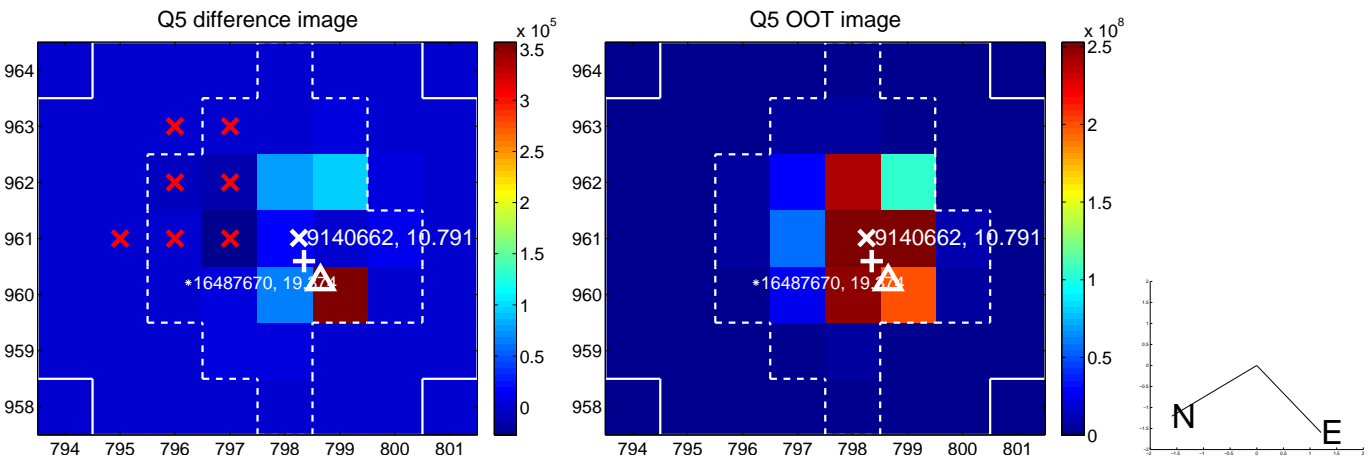


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

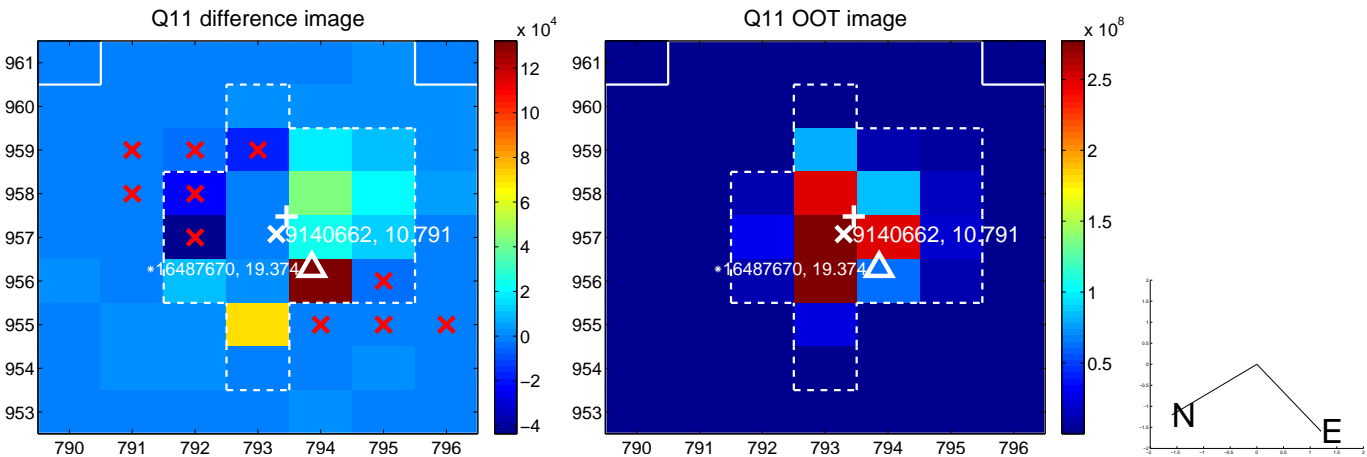
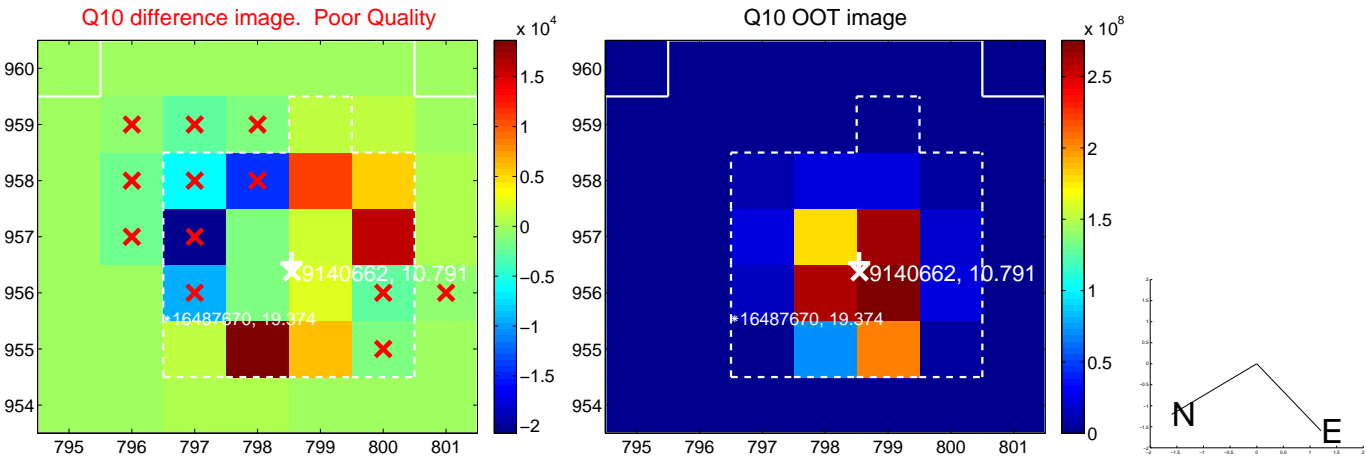
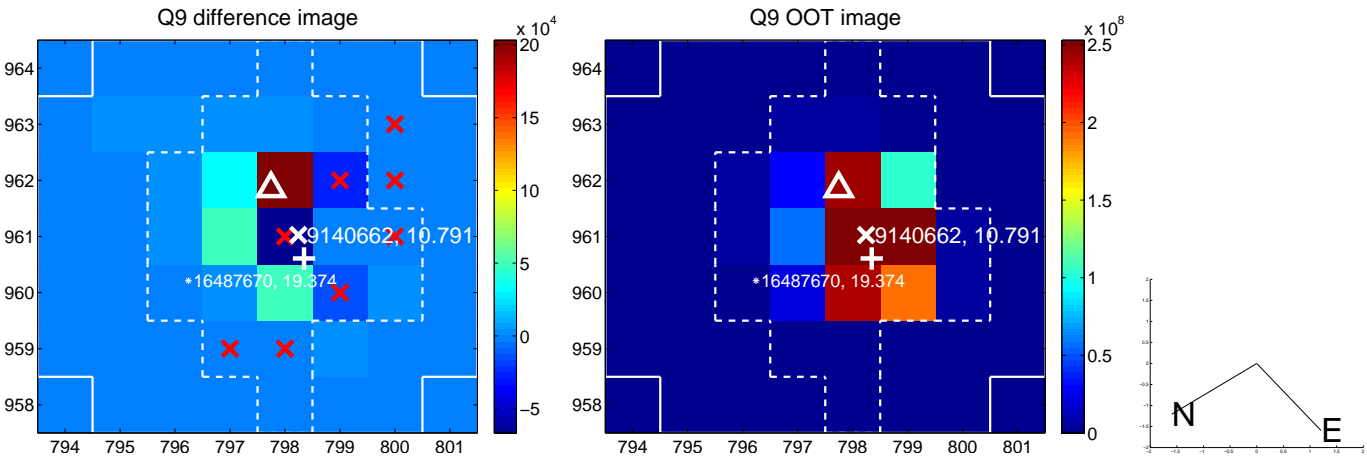
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



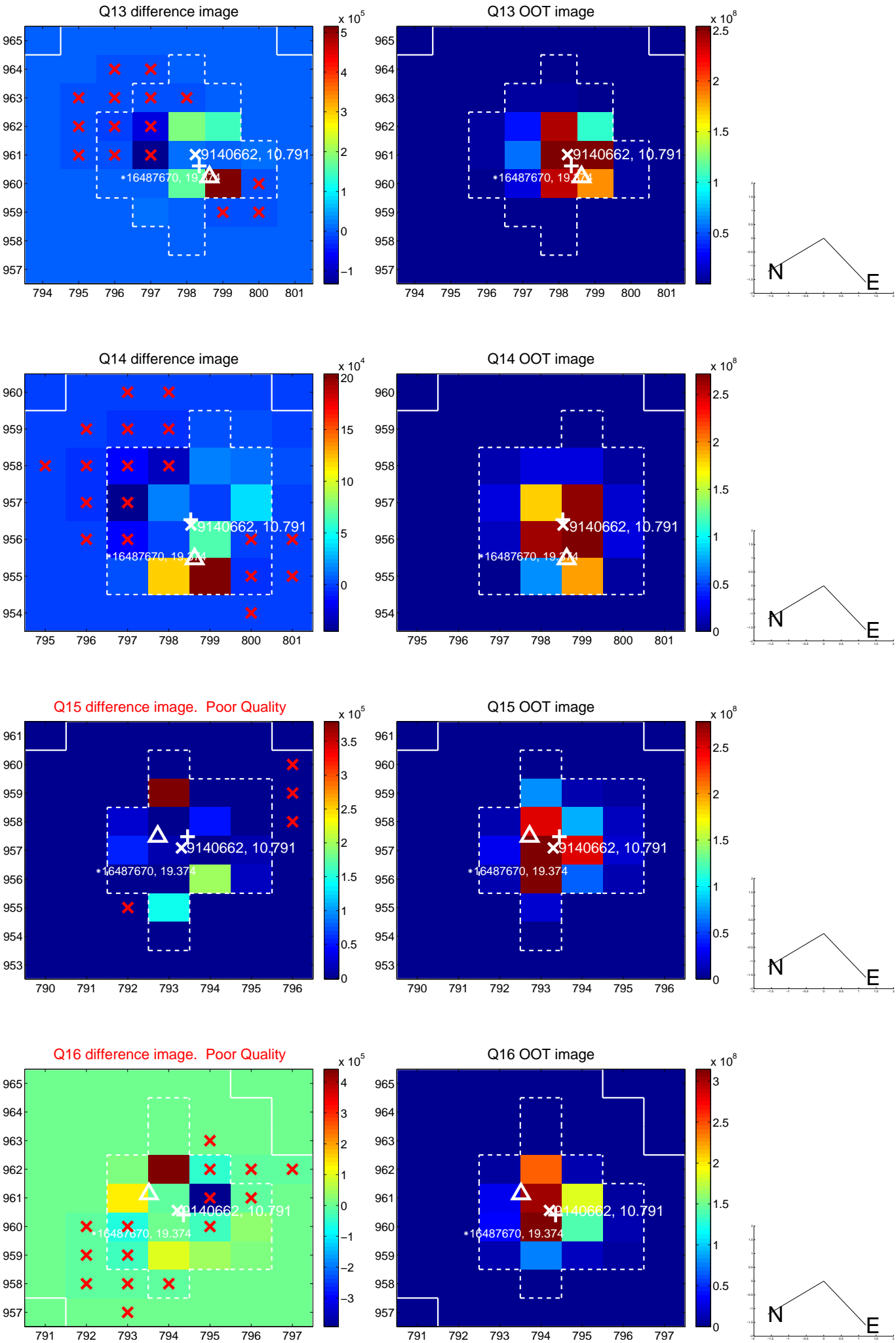
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

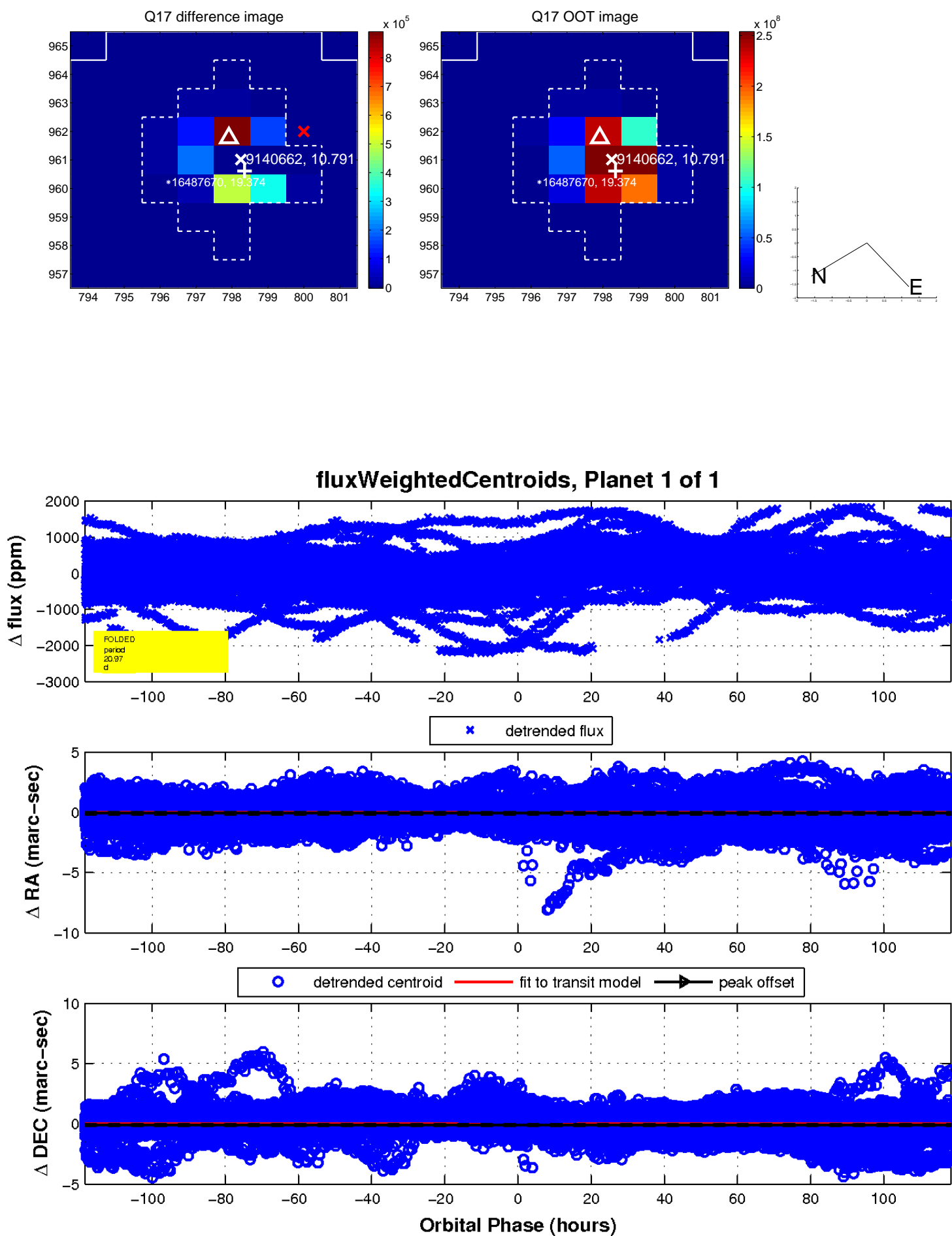


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

