

# KIC 009940565

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009940565-01	OBS	1548.01	2.139325	132.923036	7714.2	2.779	617.2	605.6	0.67	4765	10.45	243.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009940565-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—CENT_KIC_POS

**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.

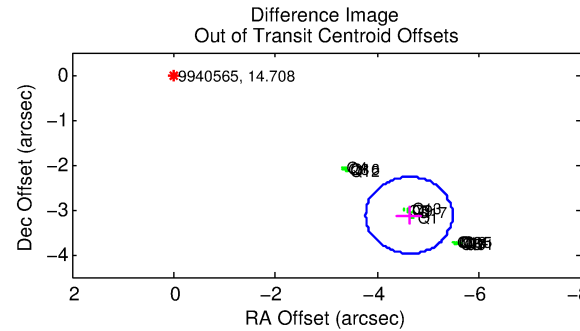
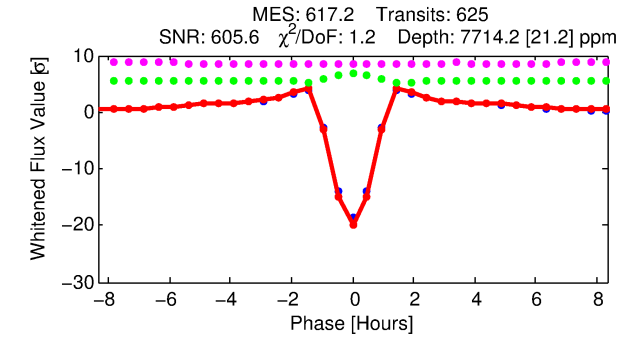
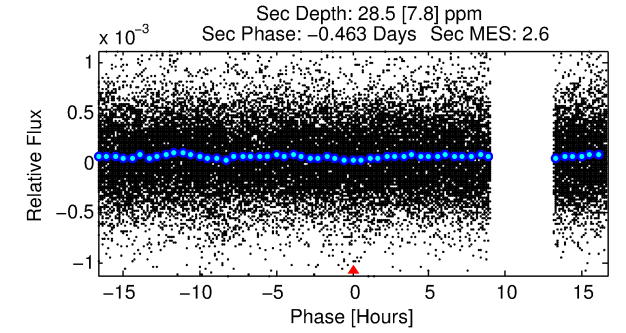
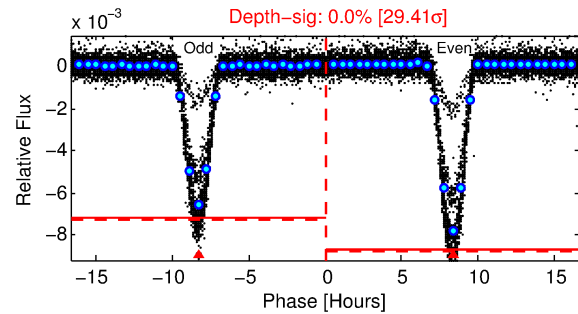
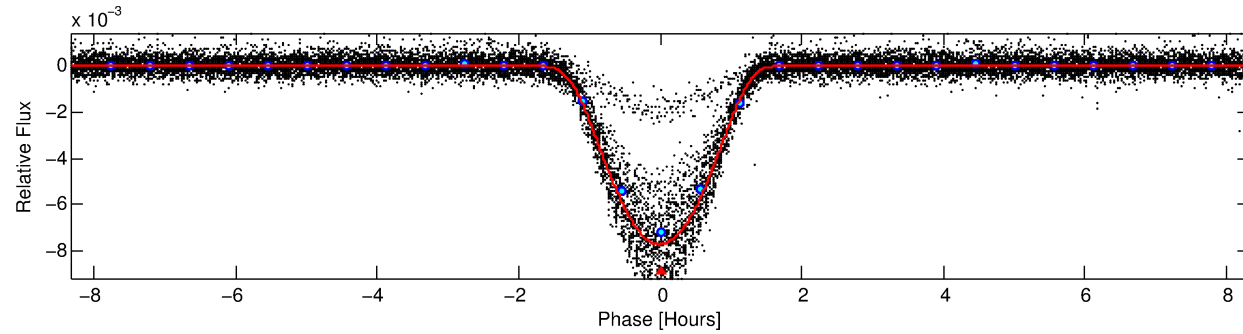
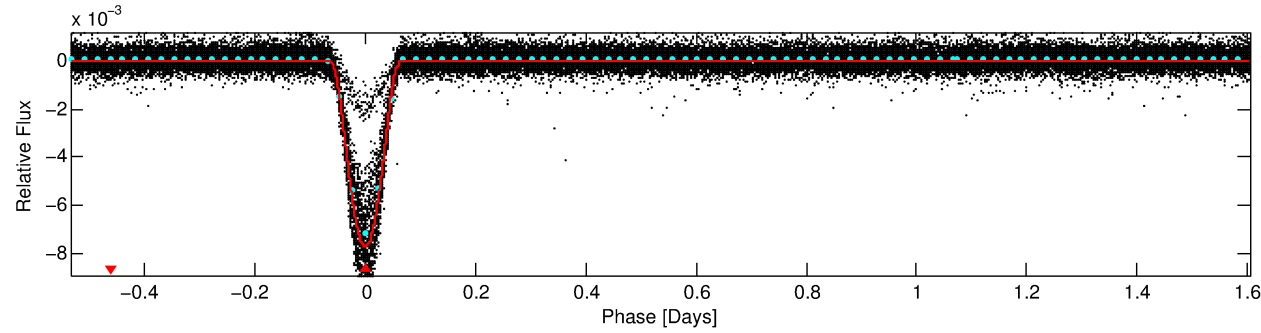
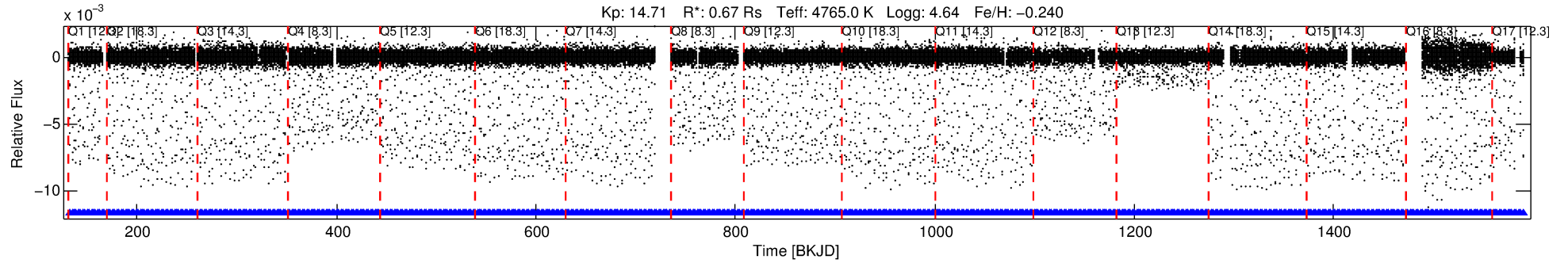
## Ephemeris Match Information For 009940565-01

No Significant Match Found

# DV One-Page Summary

KIC: 9940565 Candidate: 1 of 1 Period: 2.139 d

KOI: K01548.01 Corr: 0.994



## DV Fit Results:

Period = 2.13933 [0.00000] d  
Epoch = 132.9230 [0.0001] BKJD  
Rp/R\* = 0.1437 [0.0095]  
a/R\* = 3.56 [0.03]  
b = 0.99 [0.01]  
Seff = 243.83 [36.69]  
Teff = 1008 [38] K  
Rp = 10.44 [1.25] Re  
a = 0.0290 [0.0022] AU  
Ag = 0.12 [0.04] [-22.68 $\sigma$ ]  
Teffp = 918 [74] K [-1.07 $\sigma$ ]

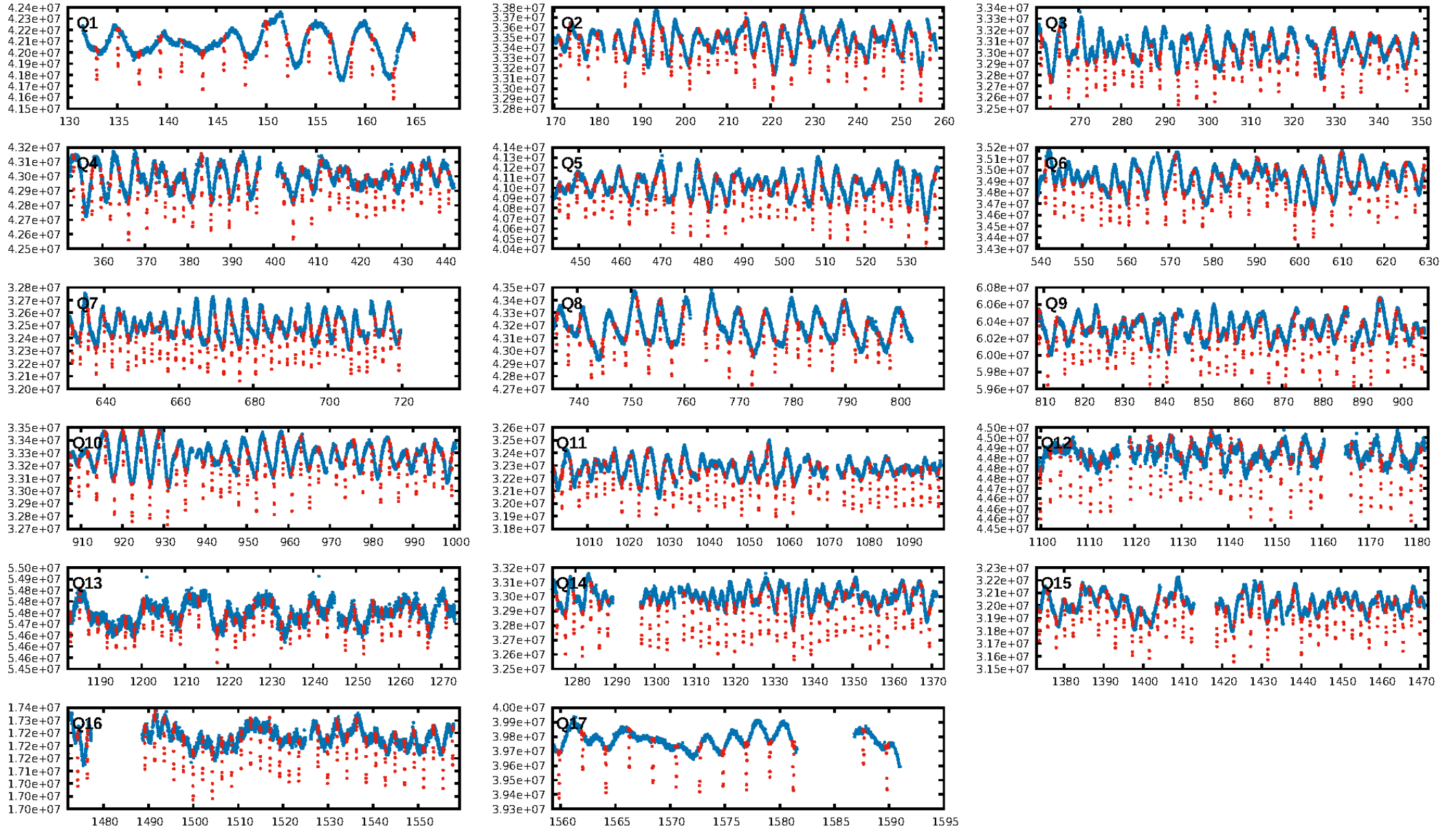
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [596/596]  
GhostDiagnostic-chr: 3.409  
Centroid-sig: 0.0%  
Centroid-so: 1.456 arcsec [153.17 $\sigma$ ]  
OotOffset-rm: 5.581 arcsec [19.65 $\sigma$ ]  
KicOffset-rm: 0.724 arcsec [10.11 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

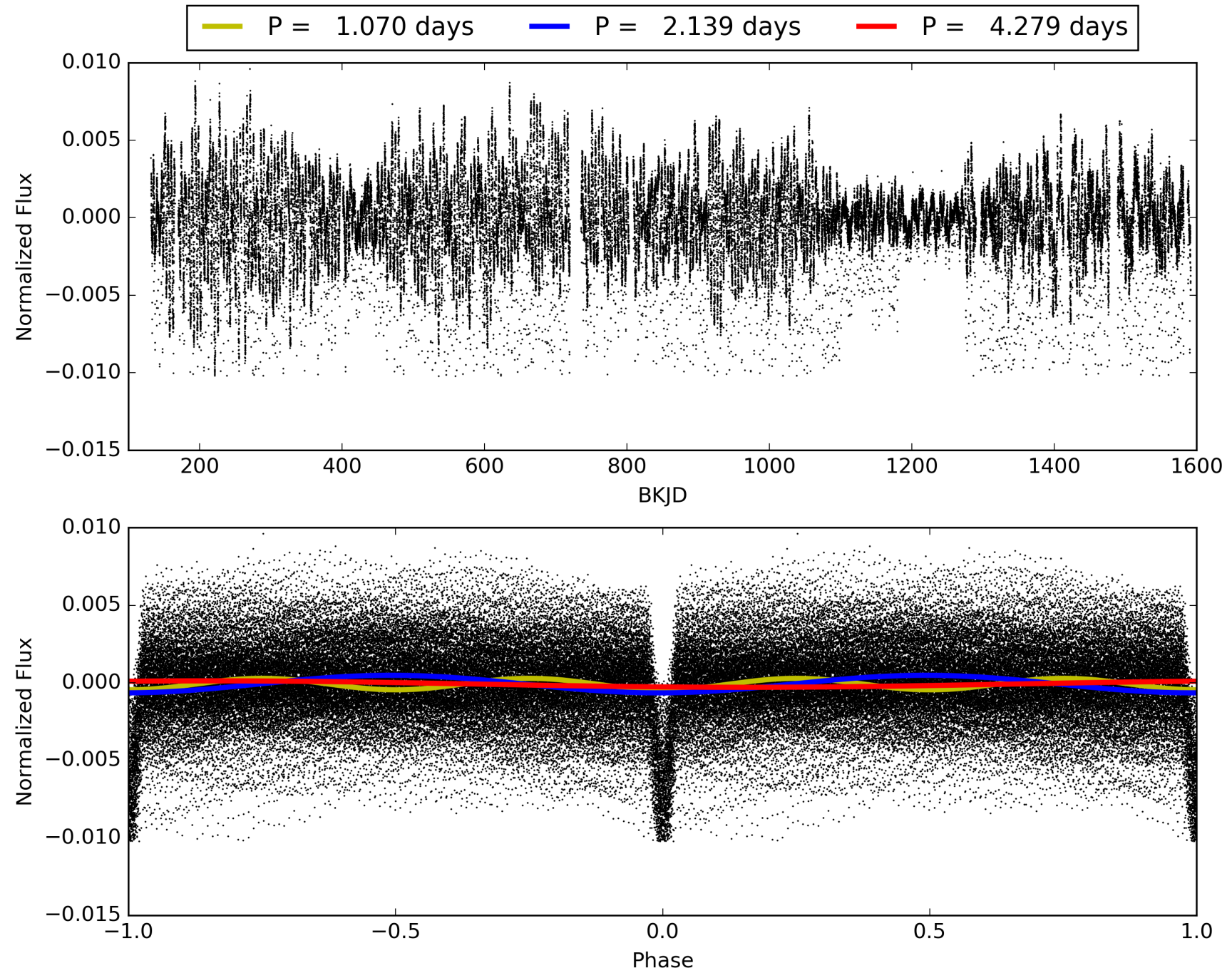
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:15:42 Z

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

# TCE 009940565-01, PDC Light Curves

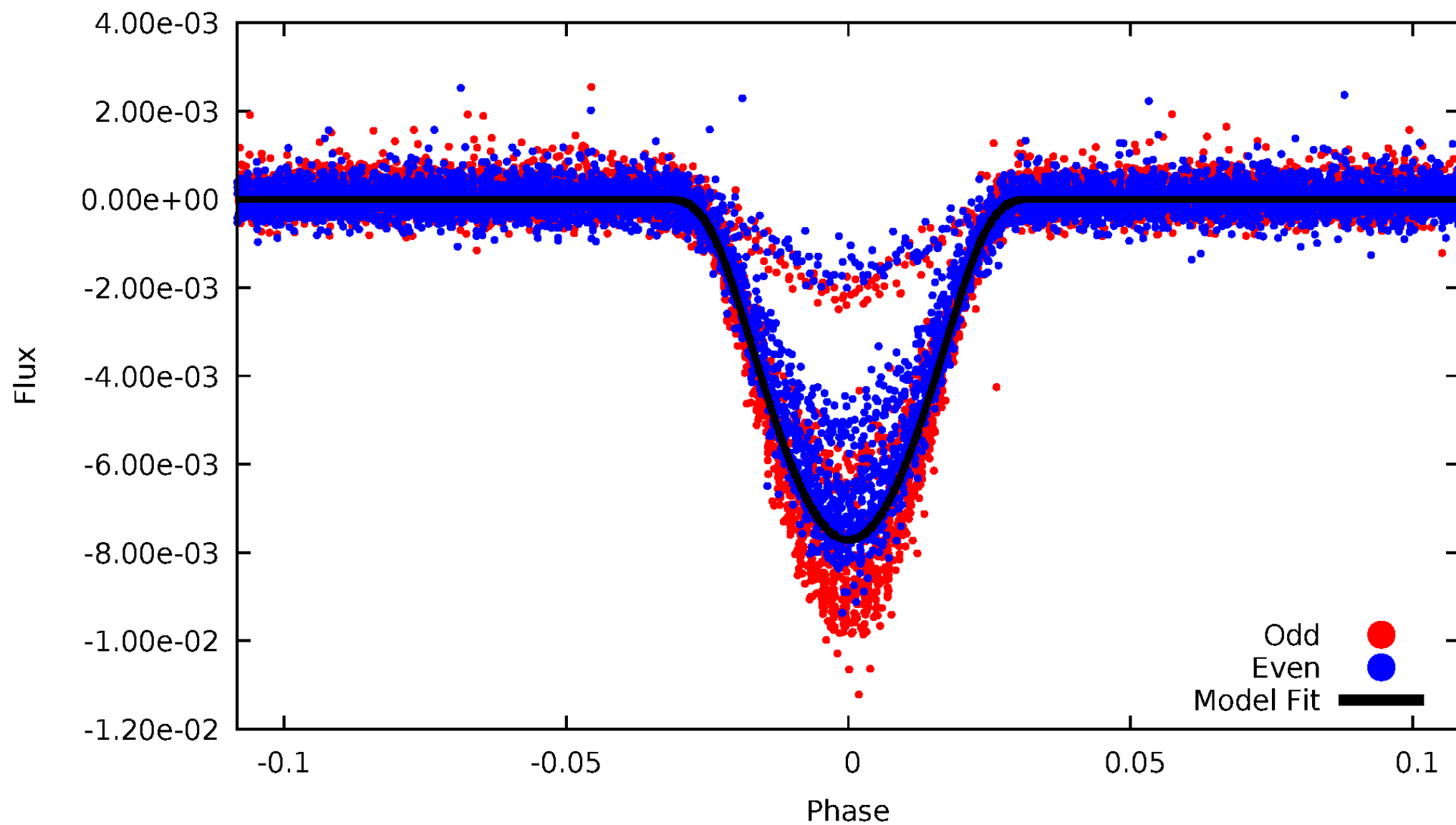


TCE 009940565-01



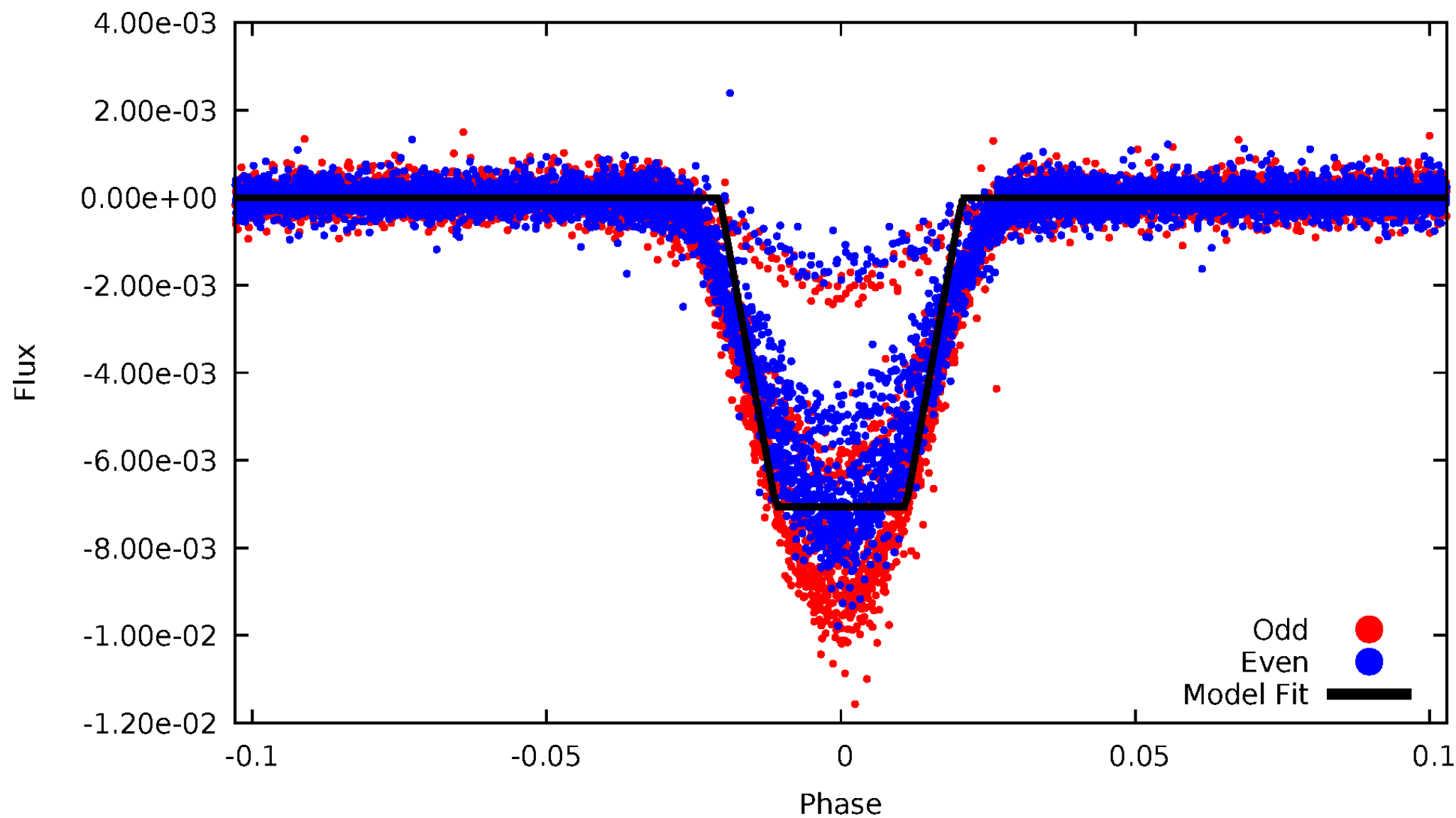
# DV Odd/Even

TCE 009940565-01



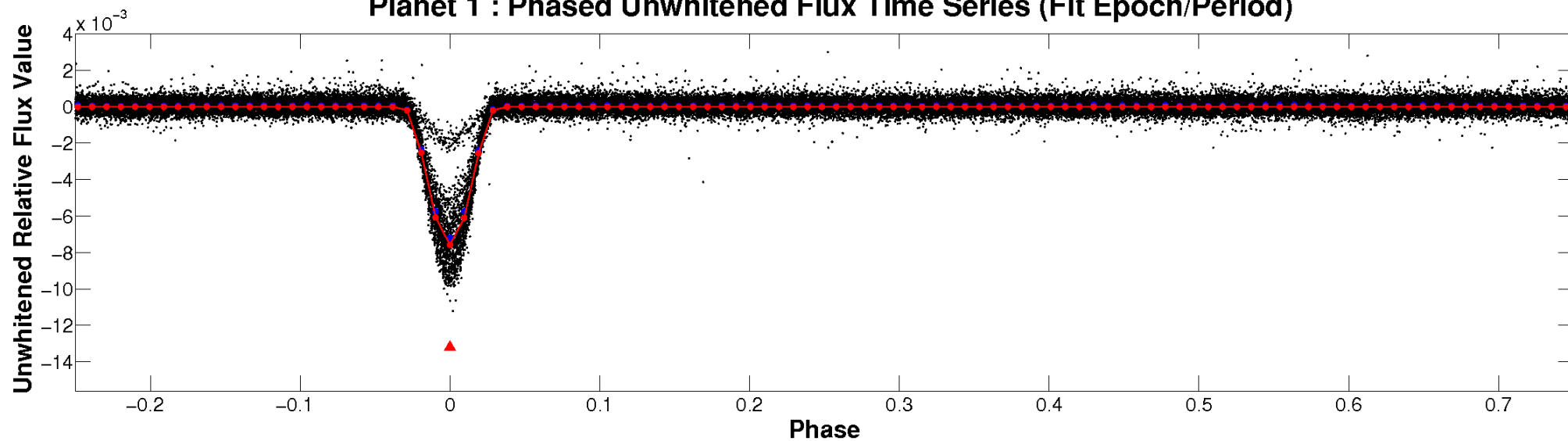
# ALT Odd/Even

TCE 009940565-01

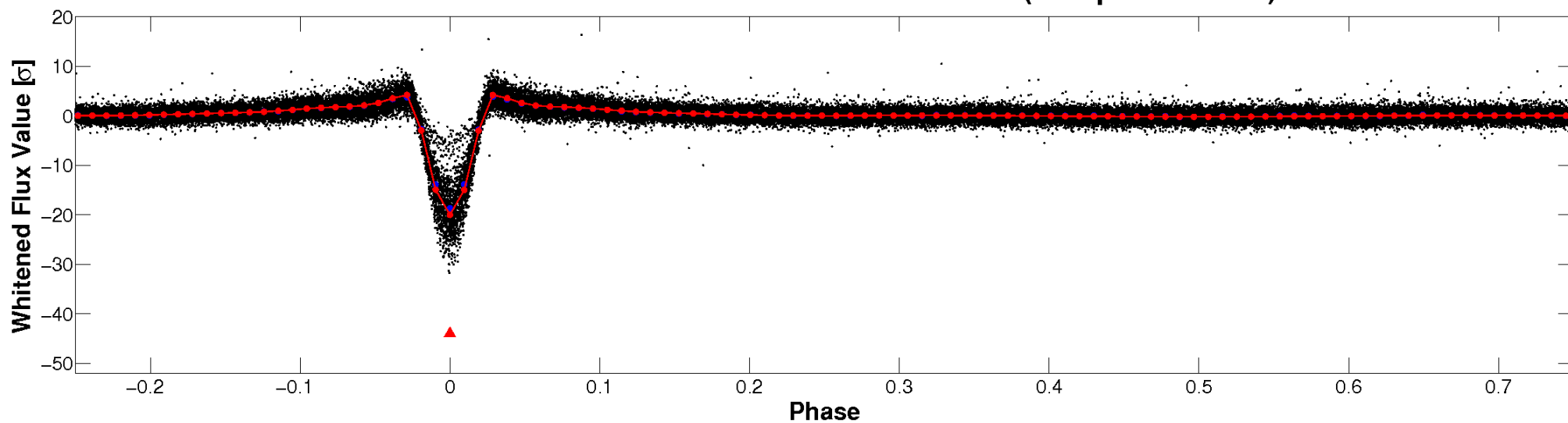


# Non-Whitened Vs. Whitened Light Curve

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



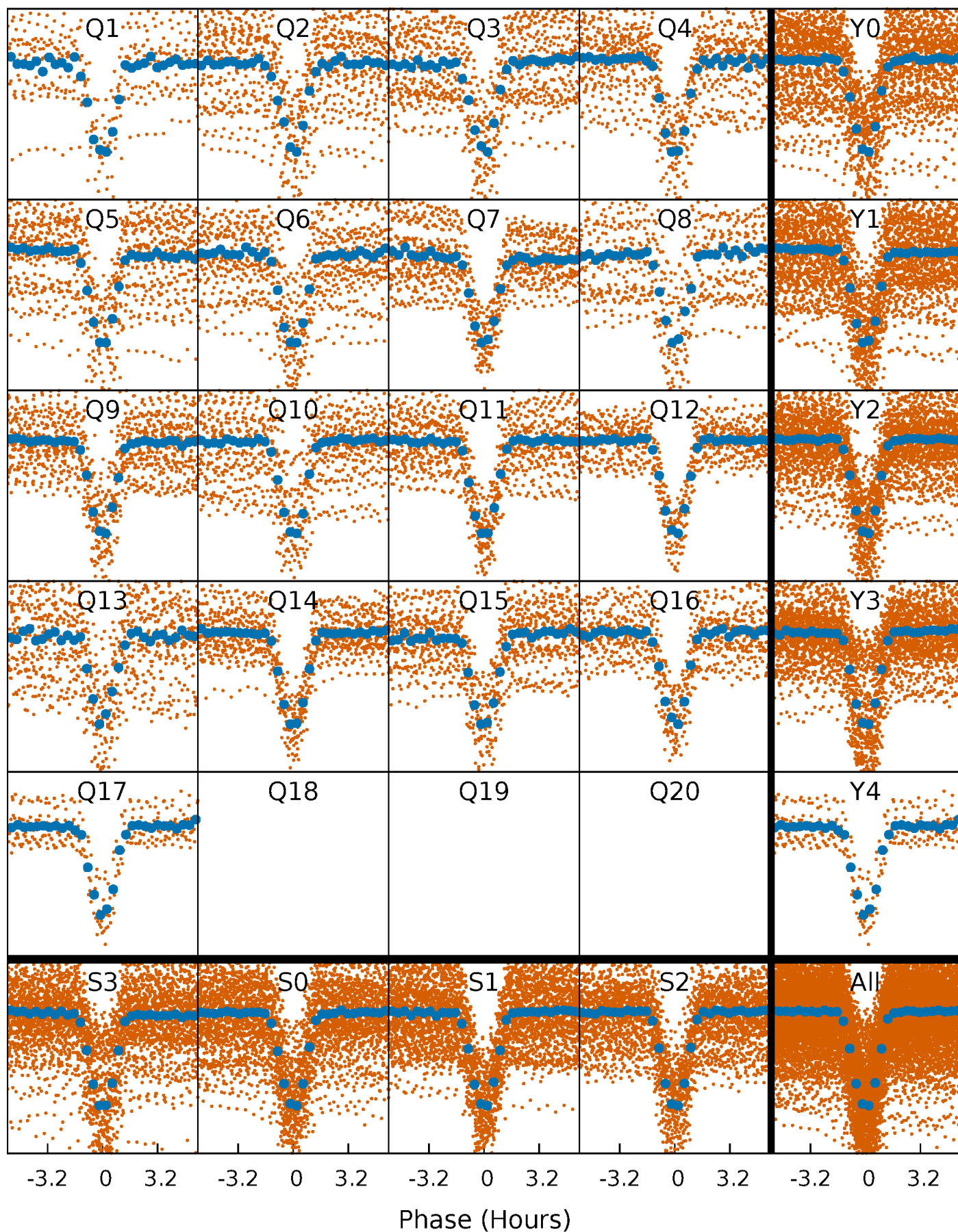
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

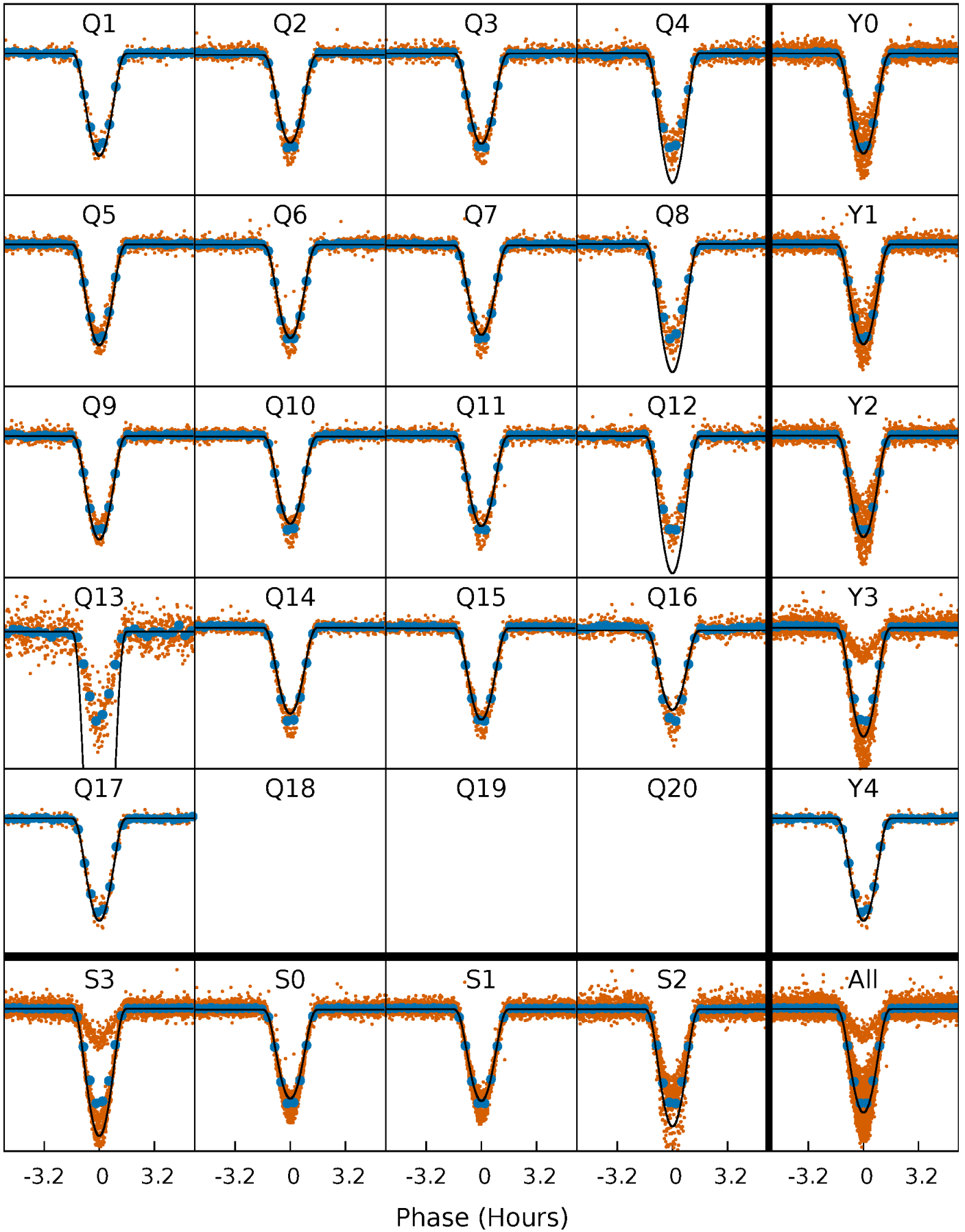
TCE 009940565-01 P= 2.139325 Days  $T_0=132.923036$  (BKJD)





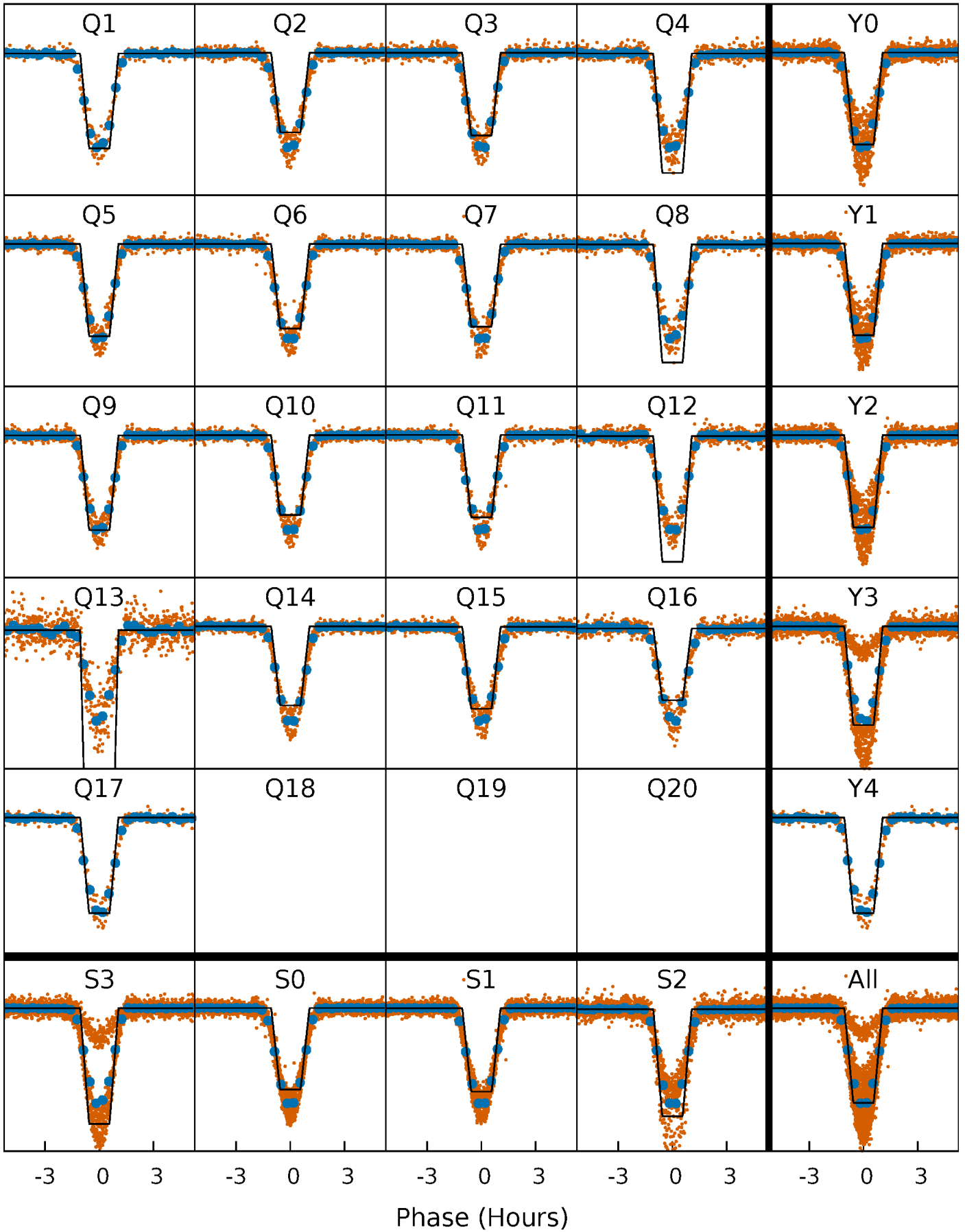
# DV Quarter-Phased Transit Curves

TCE 009940565-01   P= 2.139325 Days    $T_0=132.923036$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

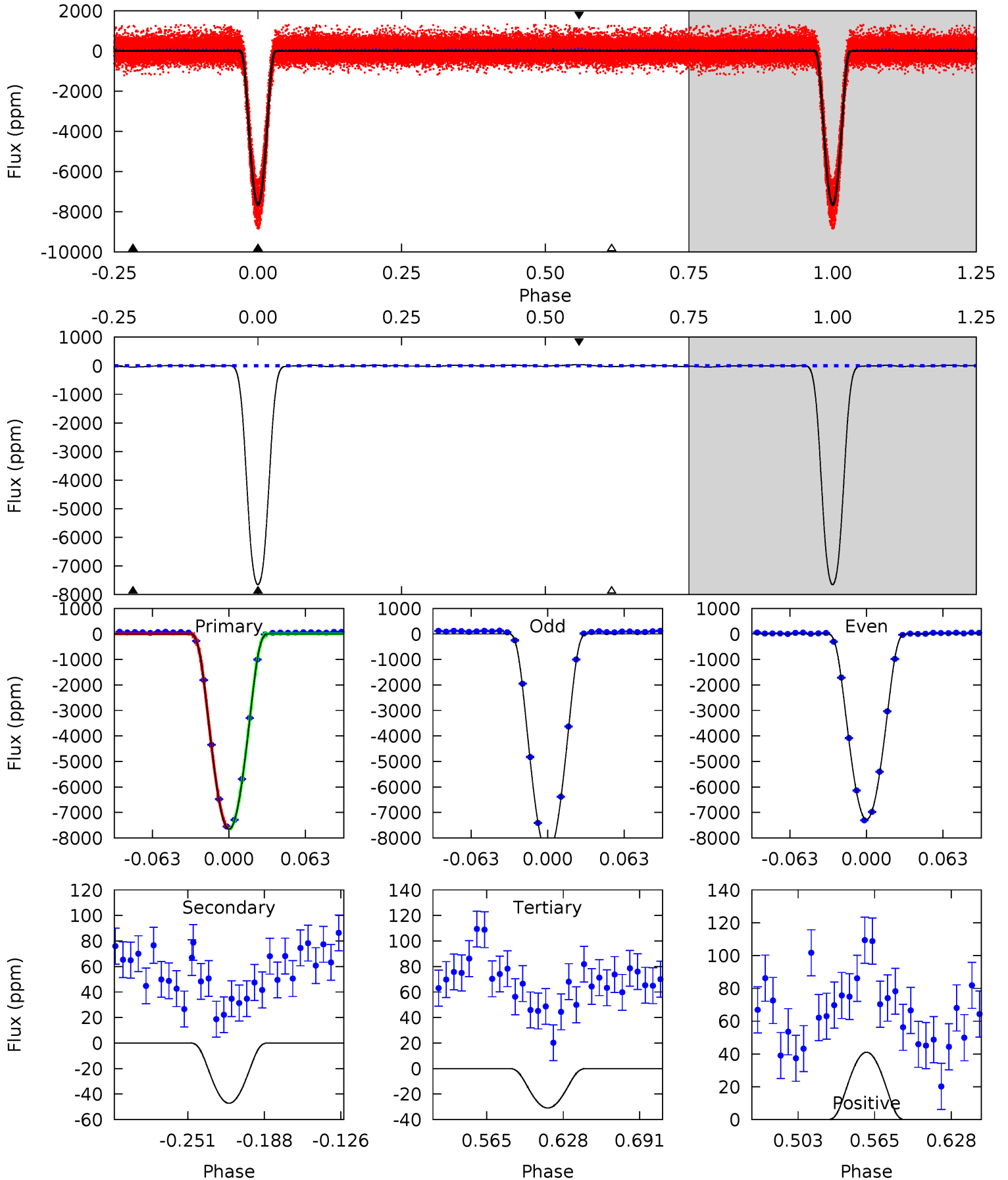
TCE 009940565-01 P= 2.139322 Days  $T_0=132.924076$  (BKJD)



# DV Model-Shift Uniqueness Test

009940565-01, P = 2.139325 Days, E = 130.783711 Days

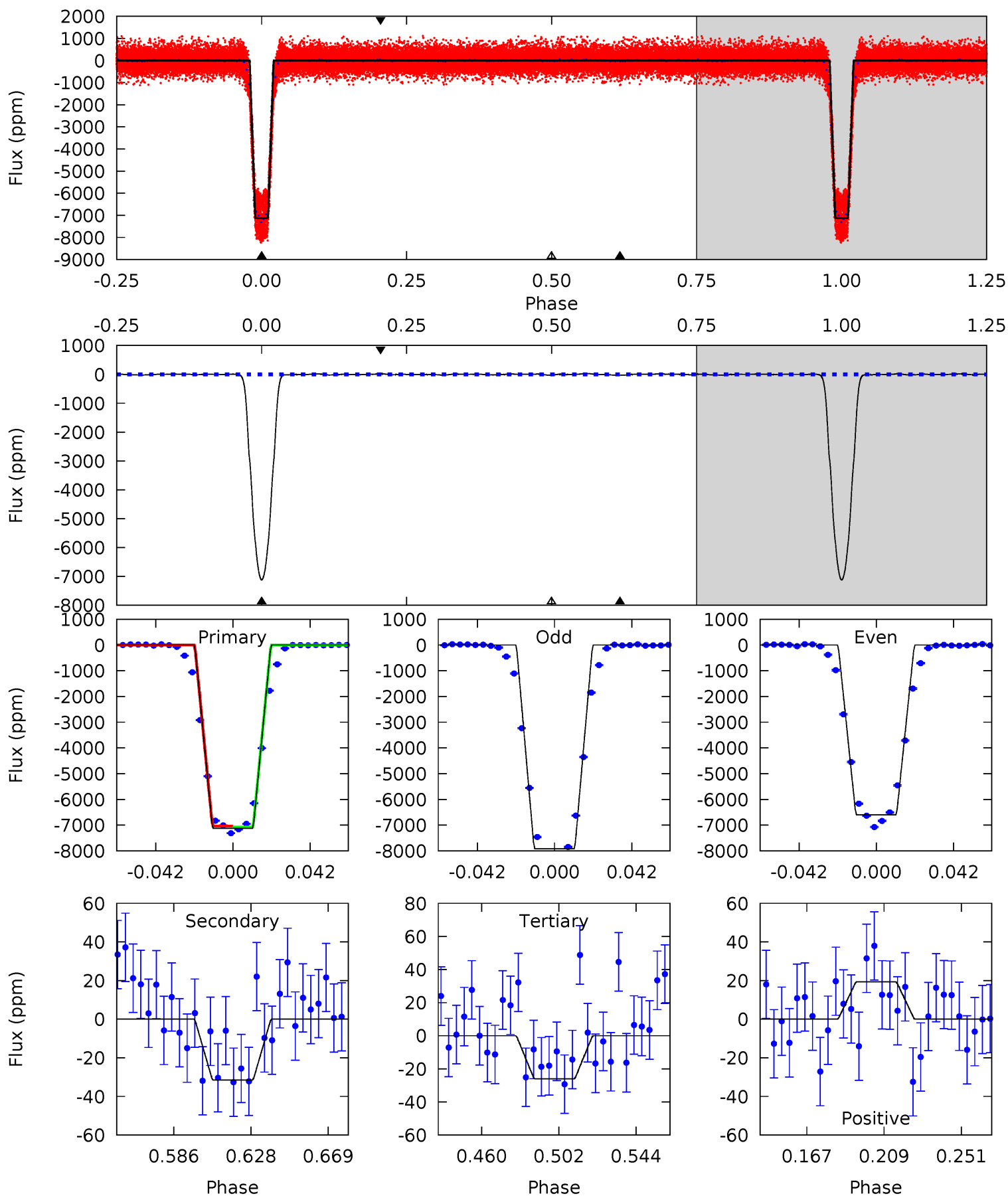
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1424	8.78	5.75	7.64	4.66	1.86	2.52	1418	1416	3.03	1.14	127.3	0.95	0.01	3.09



# Alt Model-Shift Uniqueness Test

009940565-01, P = 2.139322 Days, E = 130.784754 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
1054	4.67	3.86	2.86	4.74	2.04	1.50	1050	1051	0.81	1.81	100.1	0.95	0.00	2.39



### Stellar Parameters For KIC 009940565

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4765^{+130}_{-130}$	$4.642^{+0.032}_{-0.052}$	$-0.240^{+0.300}_{-0.300}$	$0.666^{+0.066}_{-0.054}$	$0.717^{+0.066}_{-0.072}$	$3.411^{+0.507}_{-0.688}$
	+3%/-3%	+1%/-1%	+125%/-125%	+10%/-8%	+9%/-10%	+15%/-20%
Source	PHO1	KIC0	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 009940565-01 / KOI 1548.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-47 \pm 5$	$10.54^{+0.92}_{-0.86}$	$1413^{+47}_{-43}$	$-1890^{+95}_{-65}$	$0.196^{+0.040}_{-0.035}$
Alt.	$-32 \pm 7$	$6.23^{+0.77}_{-0.78}$	$1416^{+53}_{-47}$	$1839^{+200}_{-3496}$	$0.380^{+0.145}_{-0.105}$

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

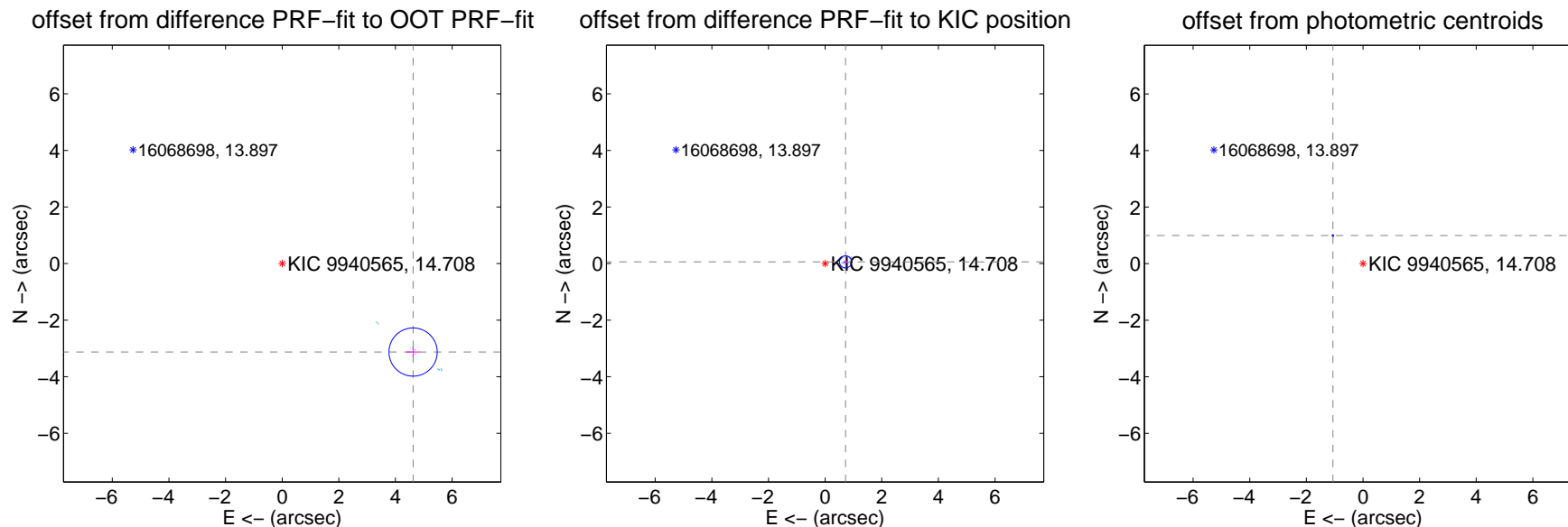
## DV Centroid Data

Supplemental centroid analysis for 009940565-01. Kepler magnitude: 14.71. Transit SNR 605.60

There are 17 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 5.04 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

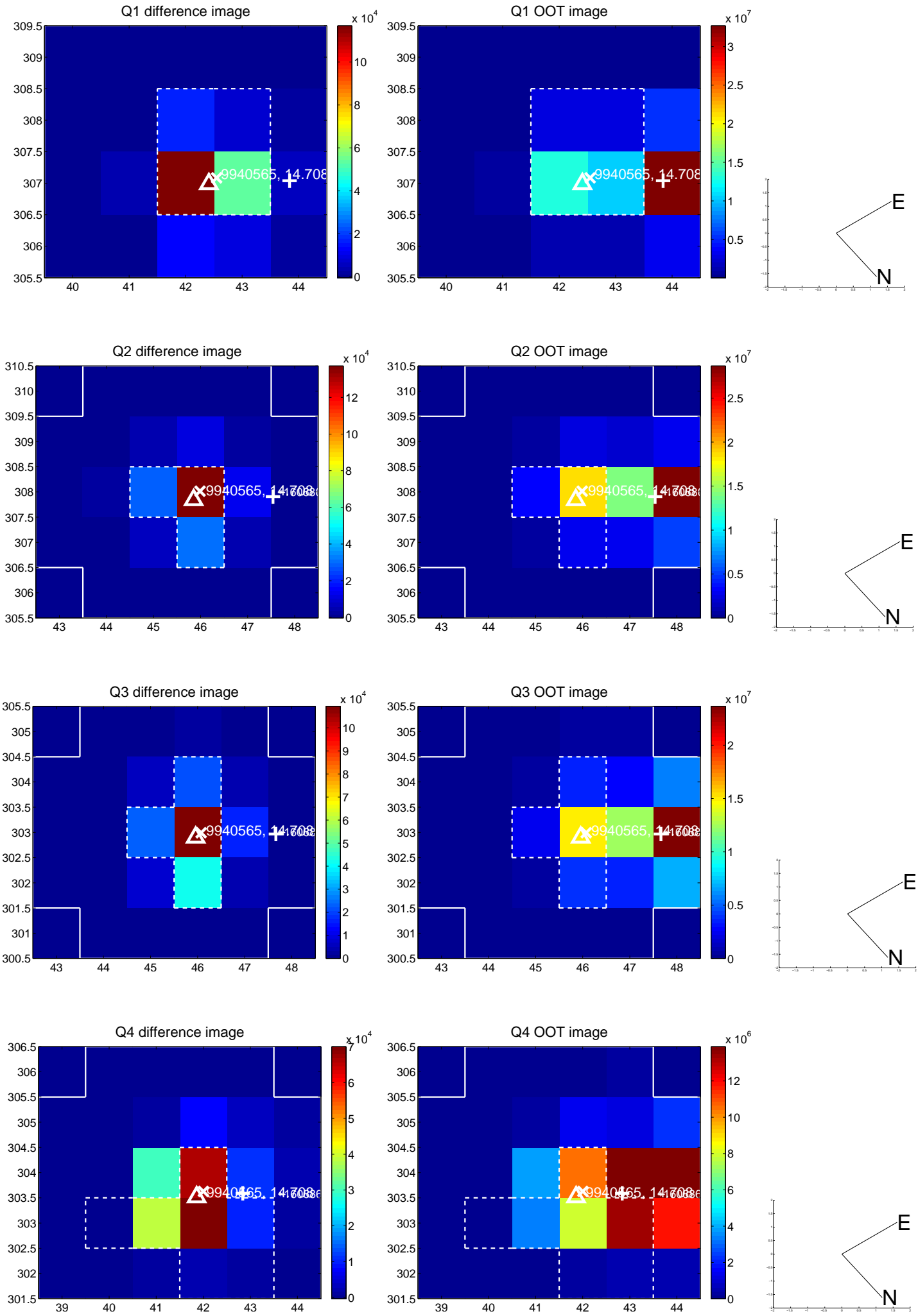
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.581 \pm 0.284$	19.65	$-4.623 \pm 0.232$	$-3.127 \pm 0.178$
PRF-fit source offset from KIC position	$0.724 \pm 0.072$	10.11	$-0.722 \pm 0.071$	$0.061 \pm 0.070$
photometric centroid source offset	$1.46 \pm 0.01$	153.17	$1.06 \pm 0.01$	$1.00 \pm 0.01$



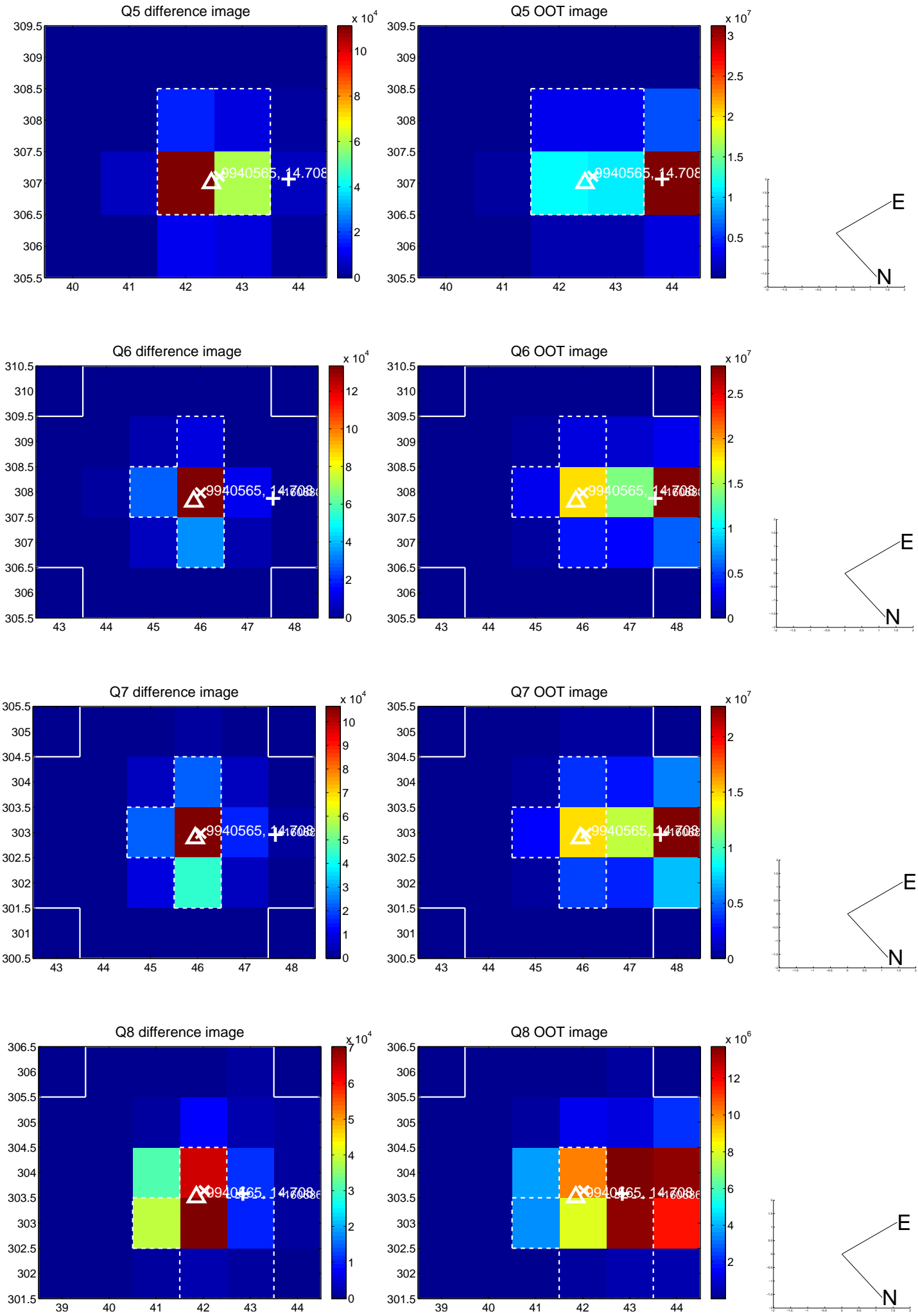
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



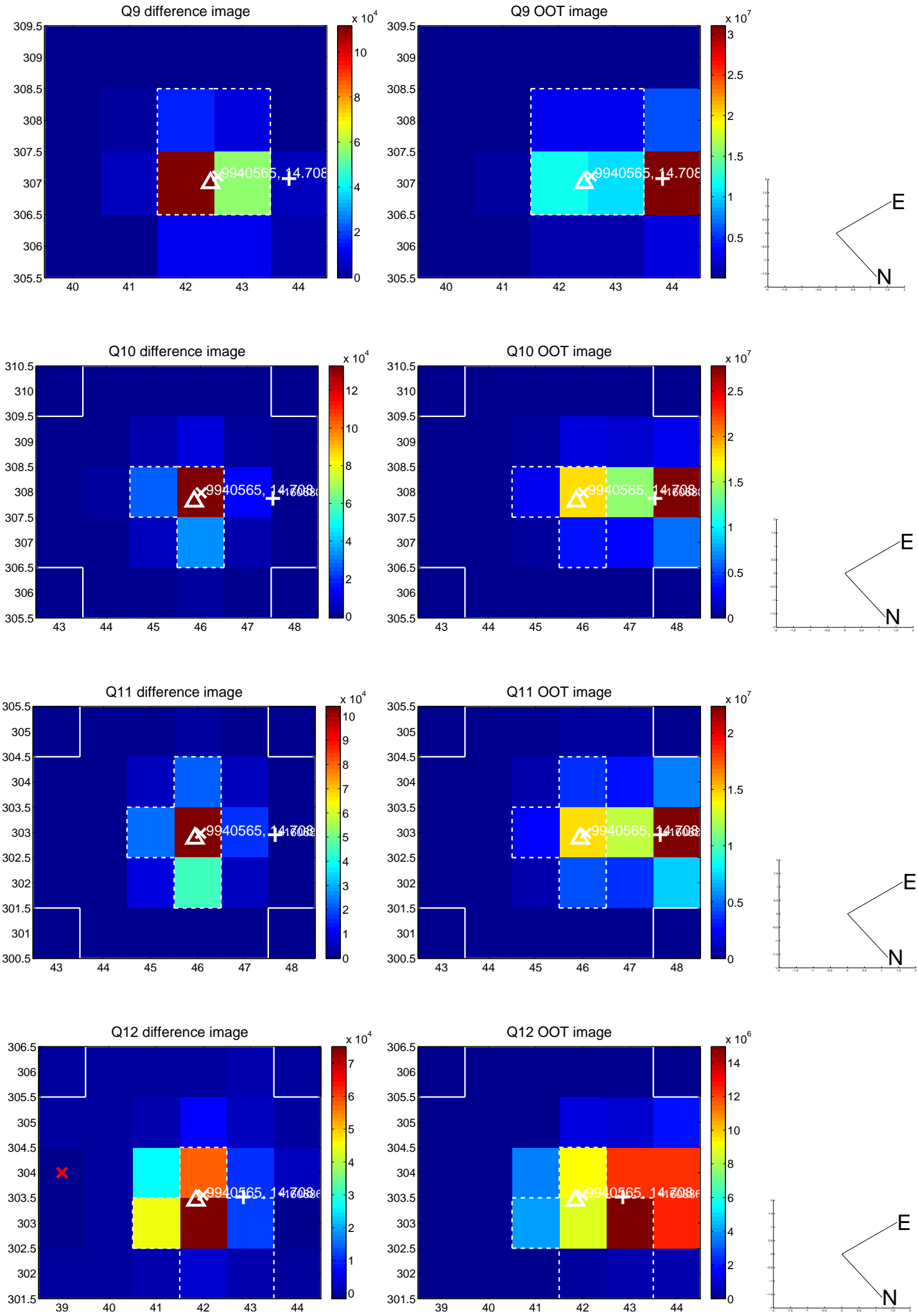
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



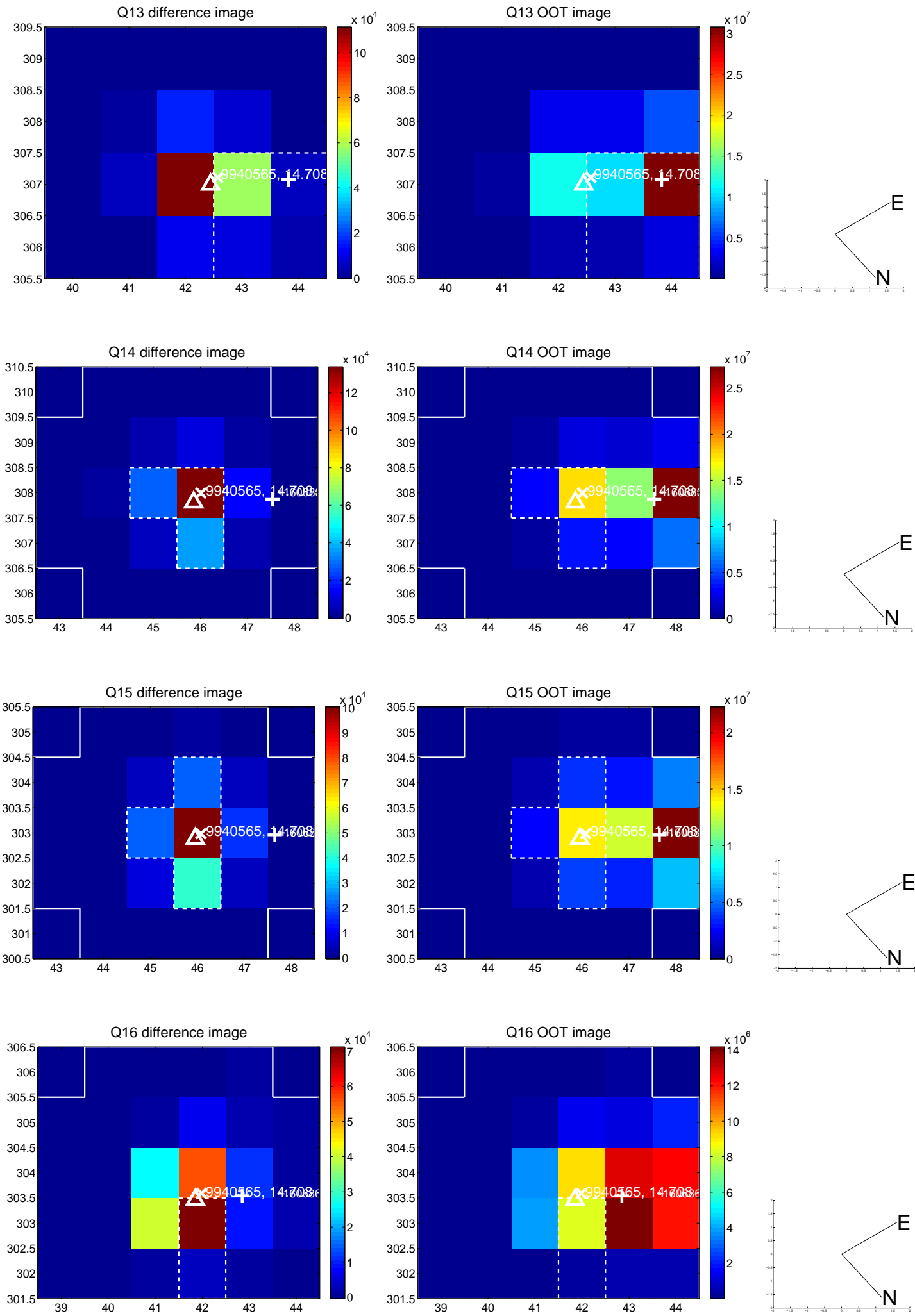
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



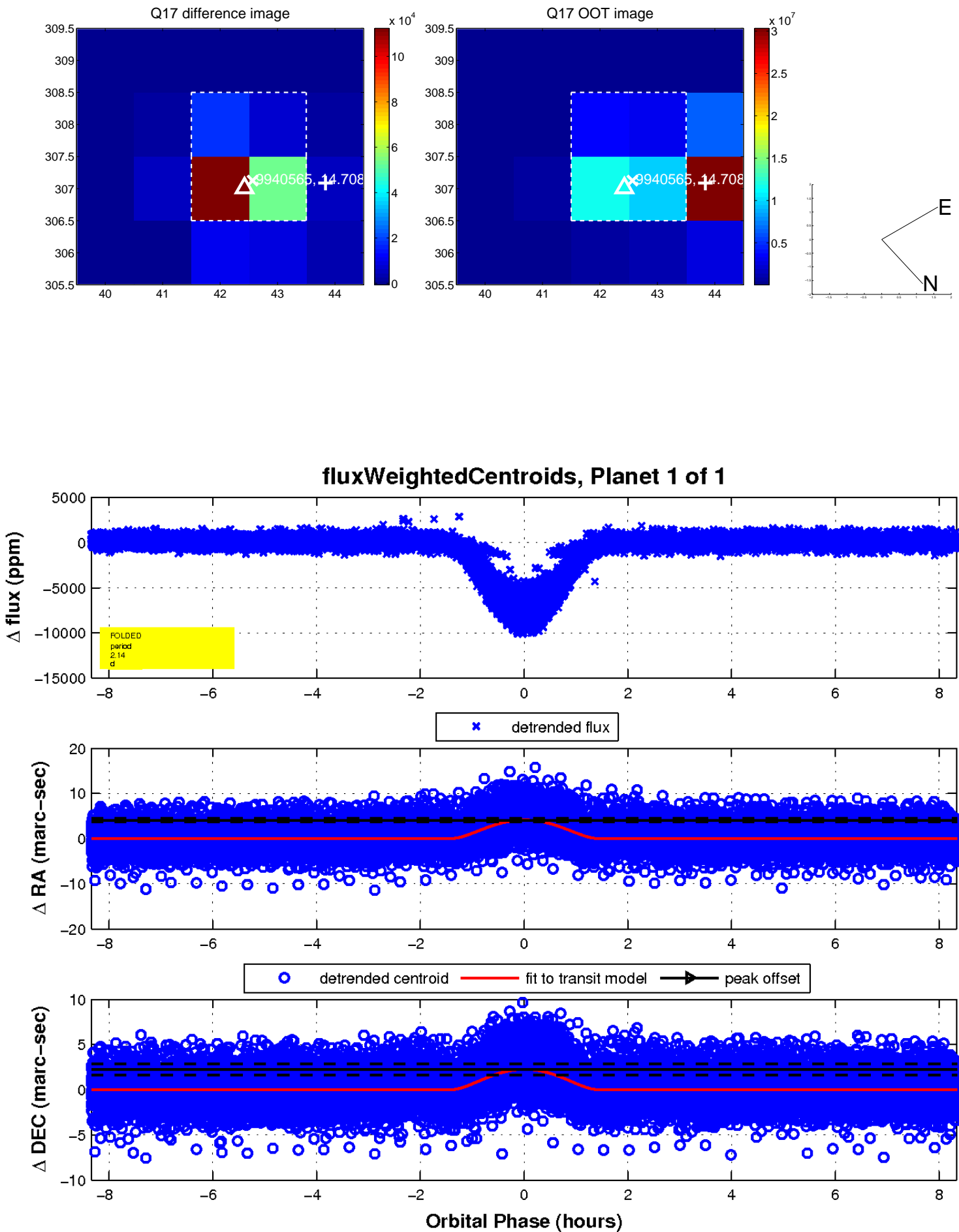
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

