

# KIC 004989057

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004989057-01	OBS	1923.01	7.234030	137.674607	466.1	2.327	30.2	33.7	0.85	5411	2.23	112.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004989057-01	OBS	PC	1.00	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.

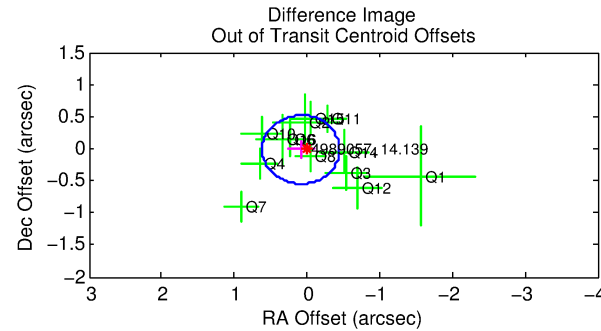
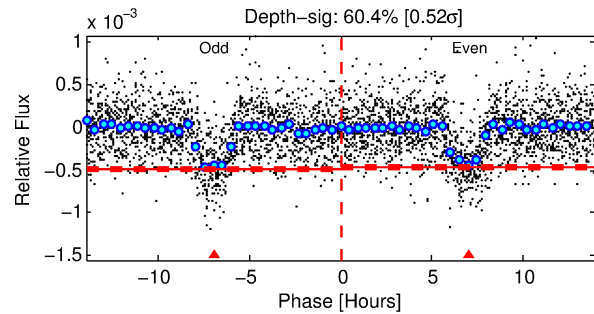
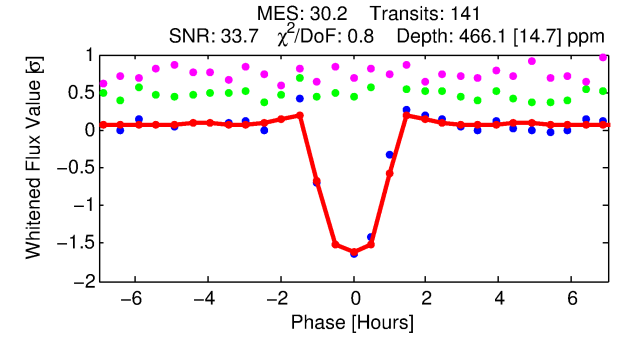
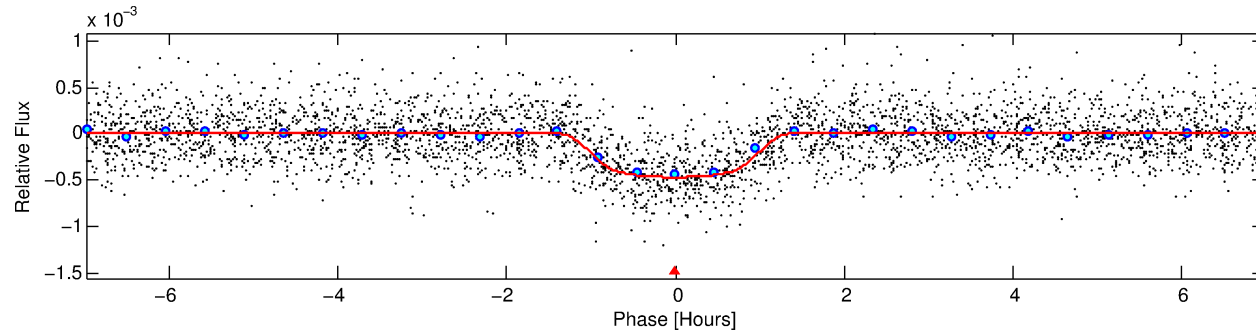
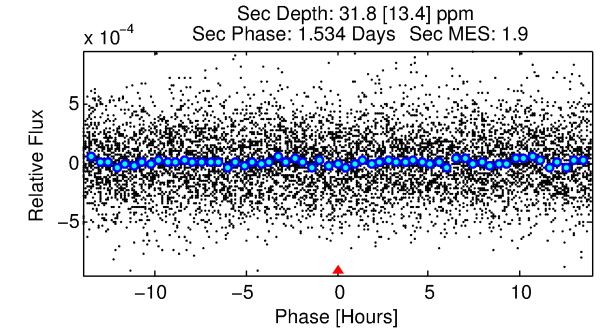
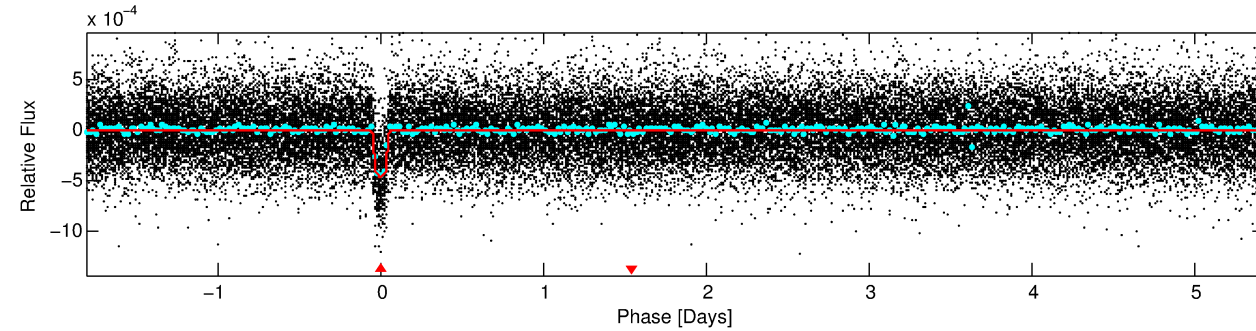
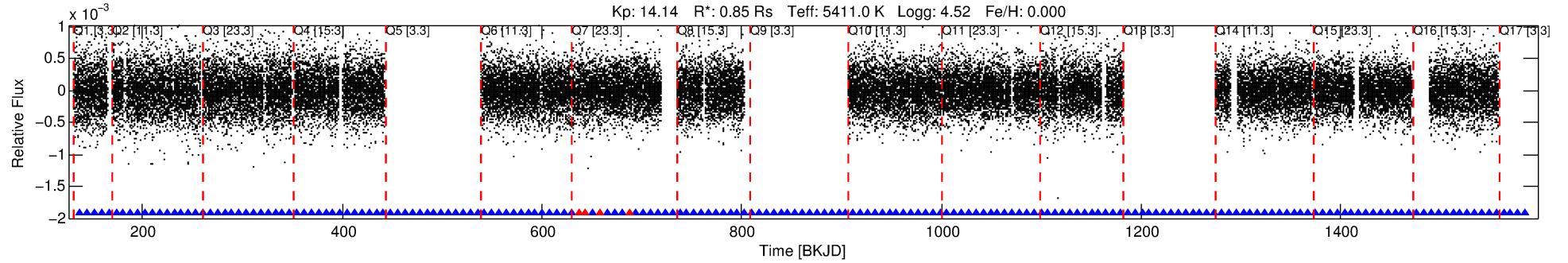
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004989057-01

No Significant Match Found

# DV One-Page Summary

KIC: 4989057 Candidate: 1 of 1 Period: 7.234 d  
KOI: K01923.01 Corr: 0.965



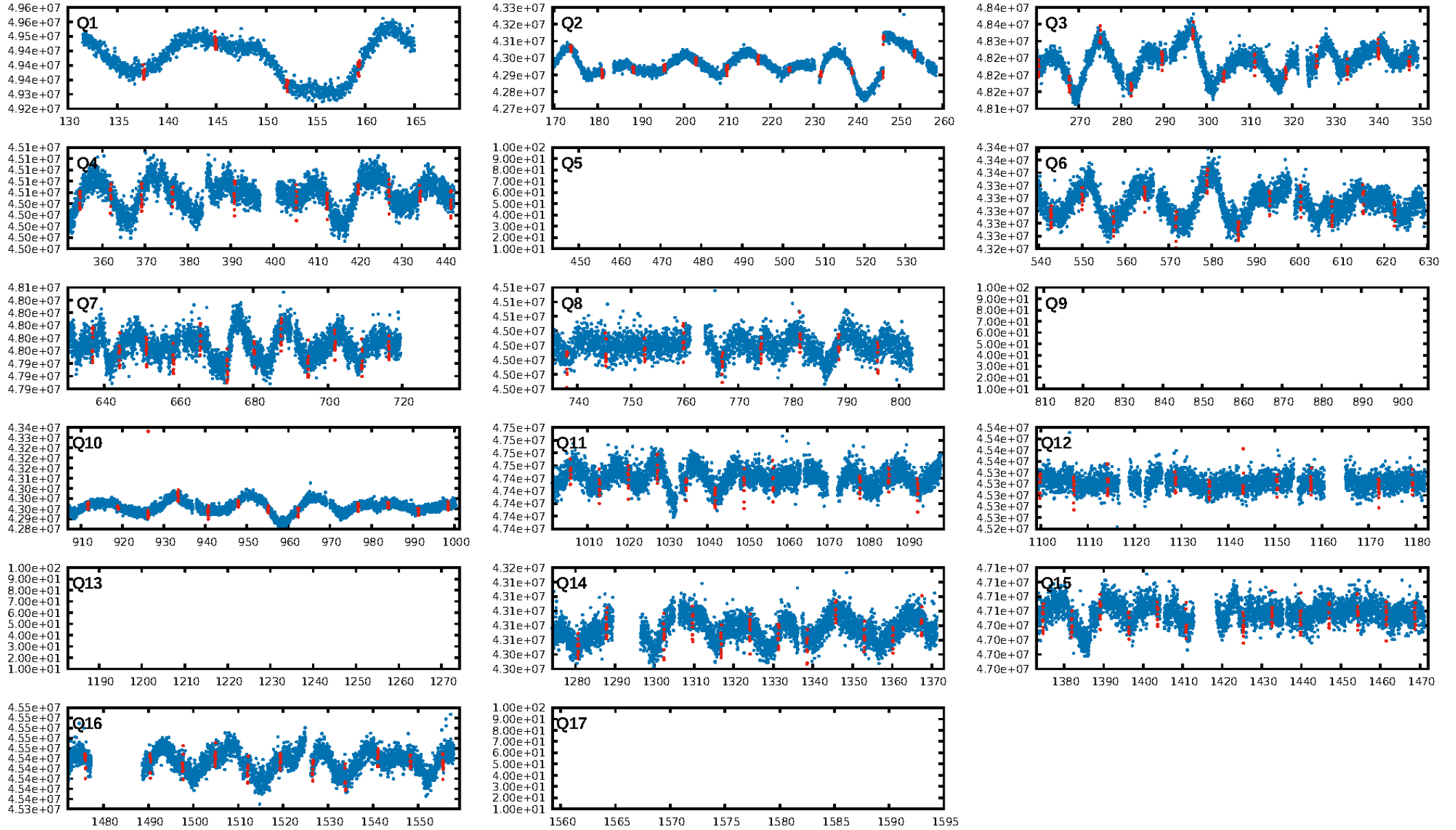
## DV Fit Results:

Period = 7.23403 [0.00001] d  
Epoch = 137.6746 [0.0013] BKJD  
Rp/R\* = 0.0240 [0.0027]  
a/R\* = 11.32 [5.24]  
b = 0.91 [0.09]  
Seff = 112.83 [18.87]  
Teff = 831 [35] K  
Rp = 2.23 [0.34] Re  
a = 0.0701 [0.0067] AU  
Ag = 17.36 [8.63] [1.89σ]  
Teffp = 2623 [316] K [5.64σ]

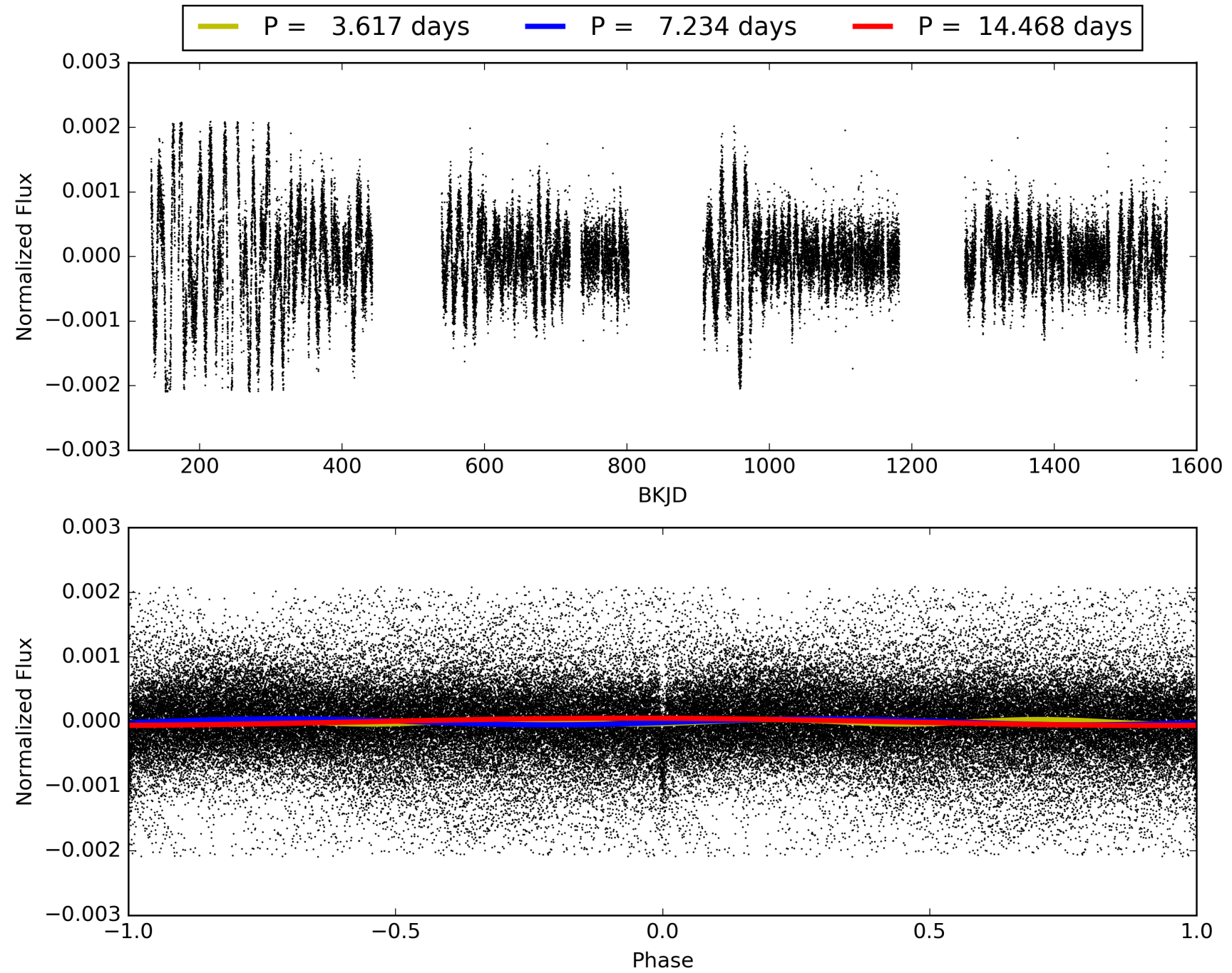
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.30e-191  
RollingBand-fgt: 0.97 [133/137]  
GhostDiagnostic-chr: 5.982  
Centroid-sig: 15.9%  
Centroid-so: 0.150 arcsec [0.39σ]  
OotOffset-rm: 0.087 arcsec [0.49σ]  
KicOffset-rm: 0.277 arcsec [1.75σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 004989057-01, PDC Light Curves

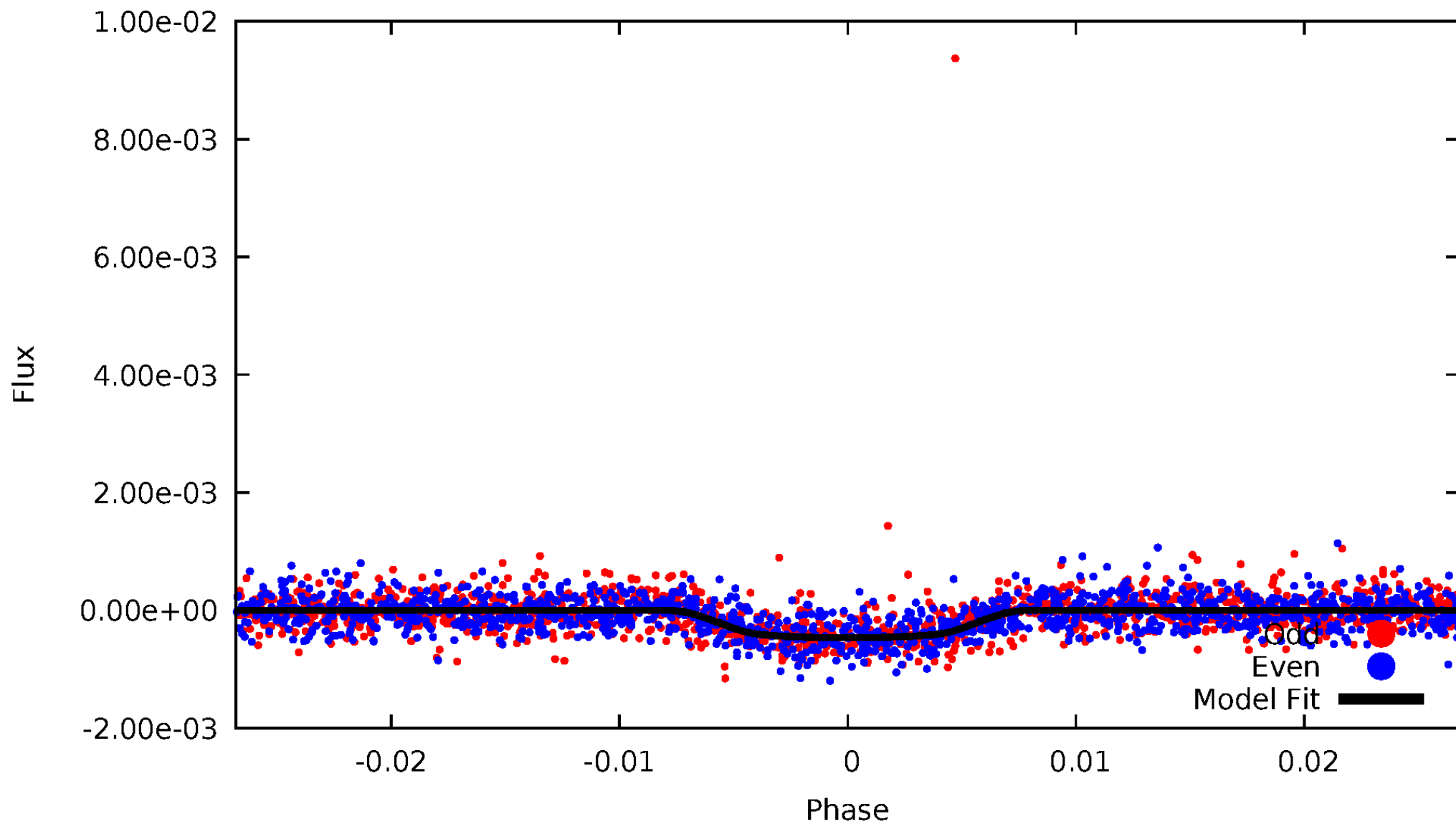


TCE 004989057-01



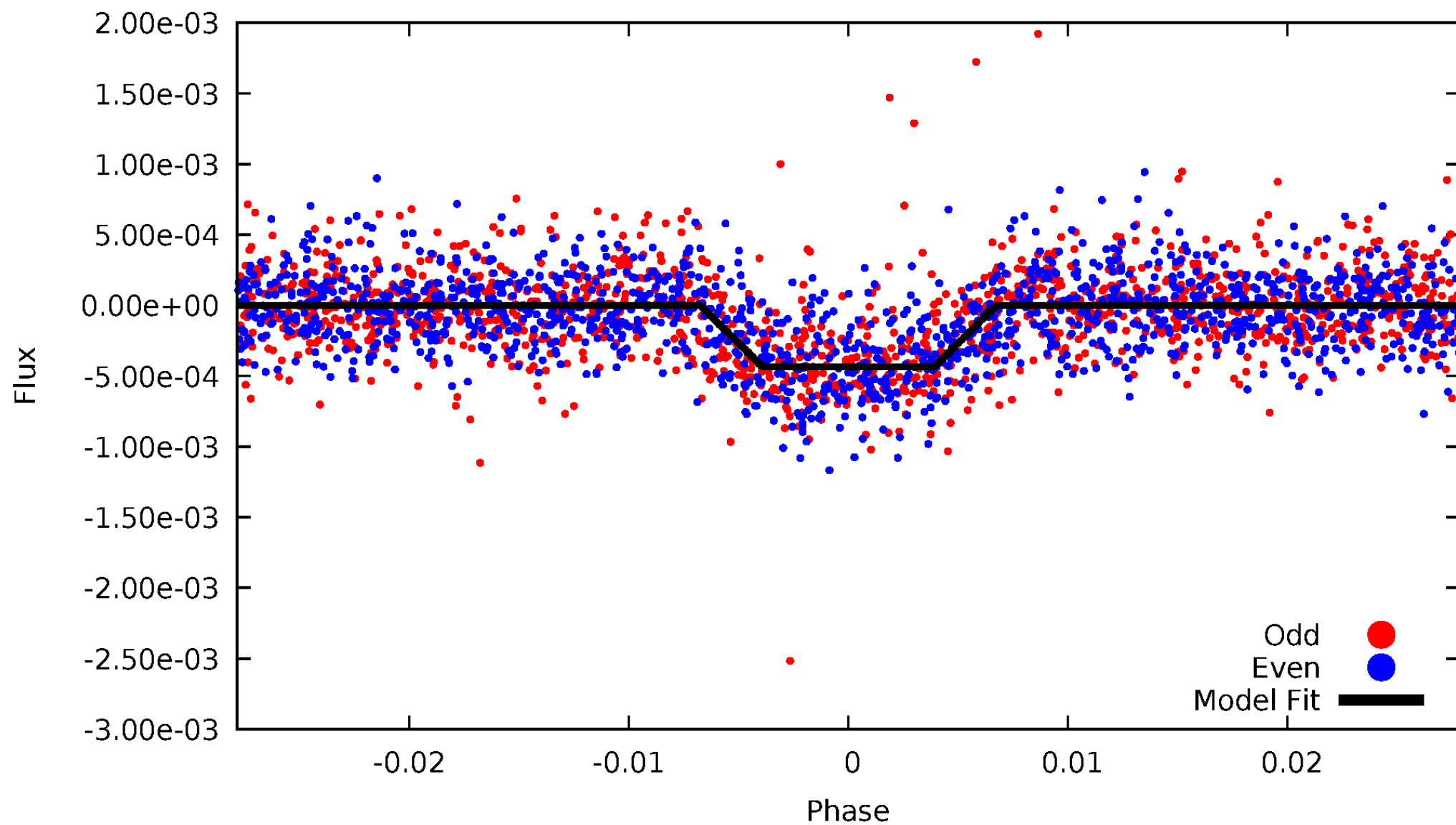
# DV Odd/Even

TCE 004989057-01



# ALT Odd/Even

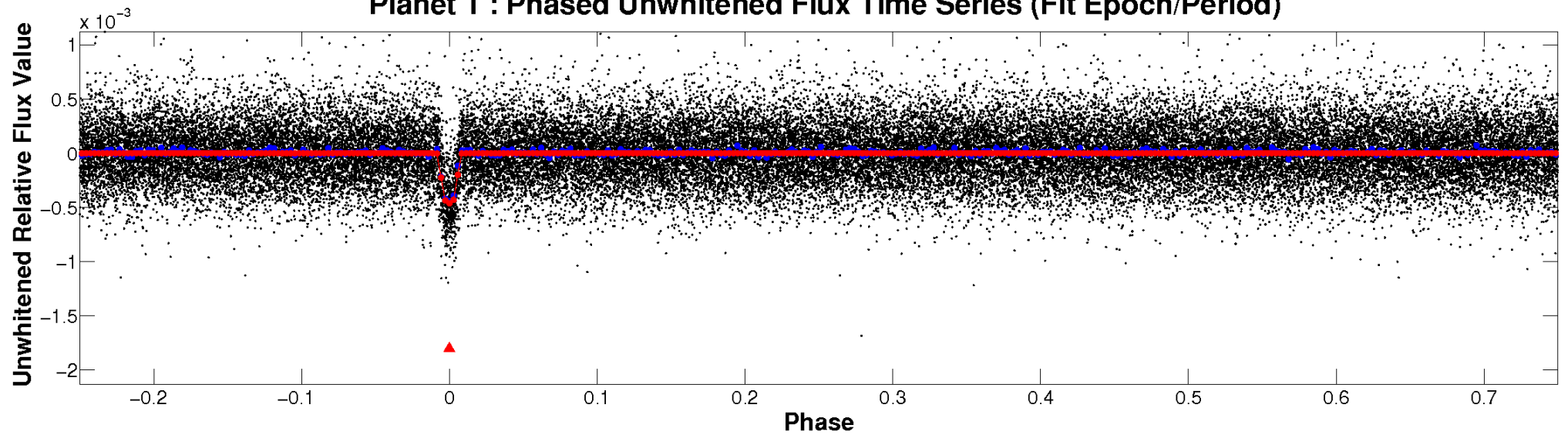
TCE 004989057-01



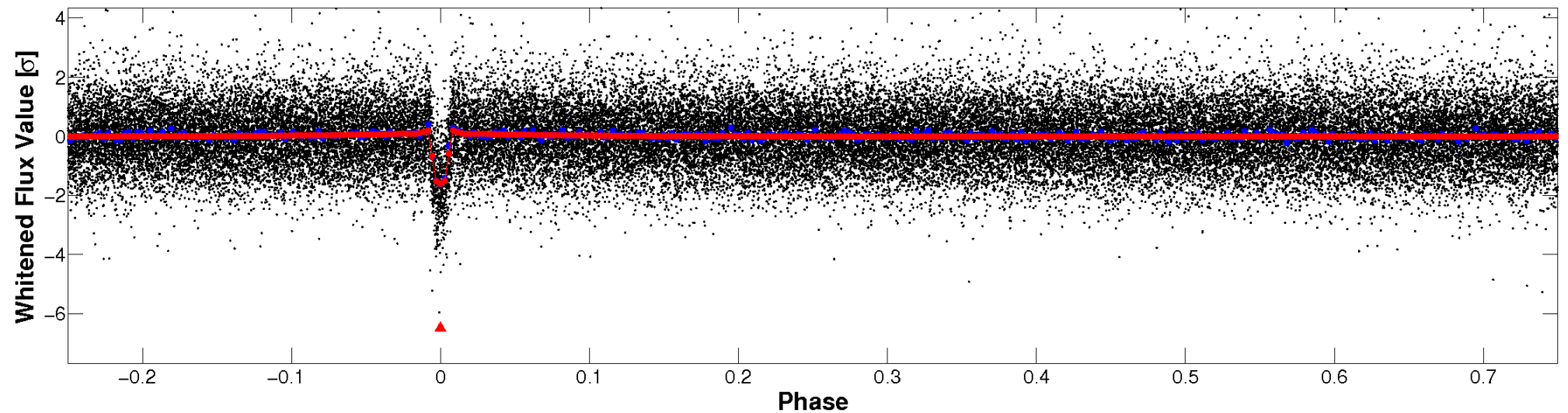


# Non-Whitened Vs. Whitened Light Curve

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

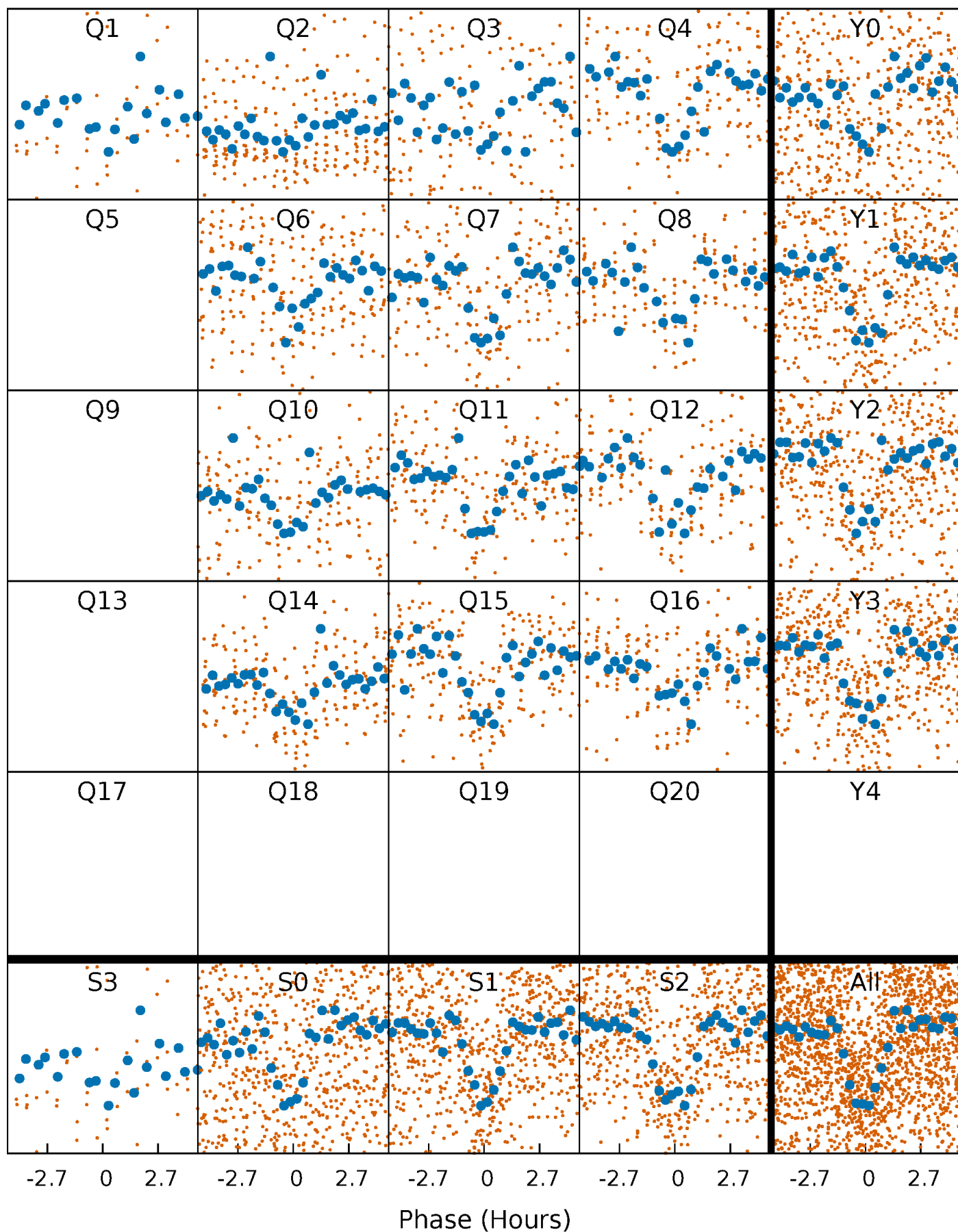


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

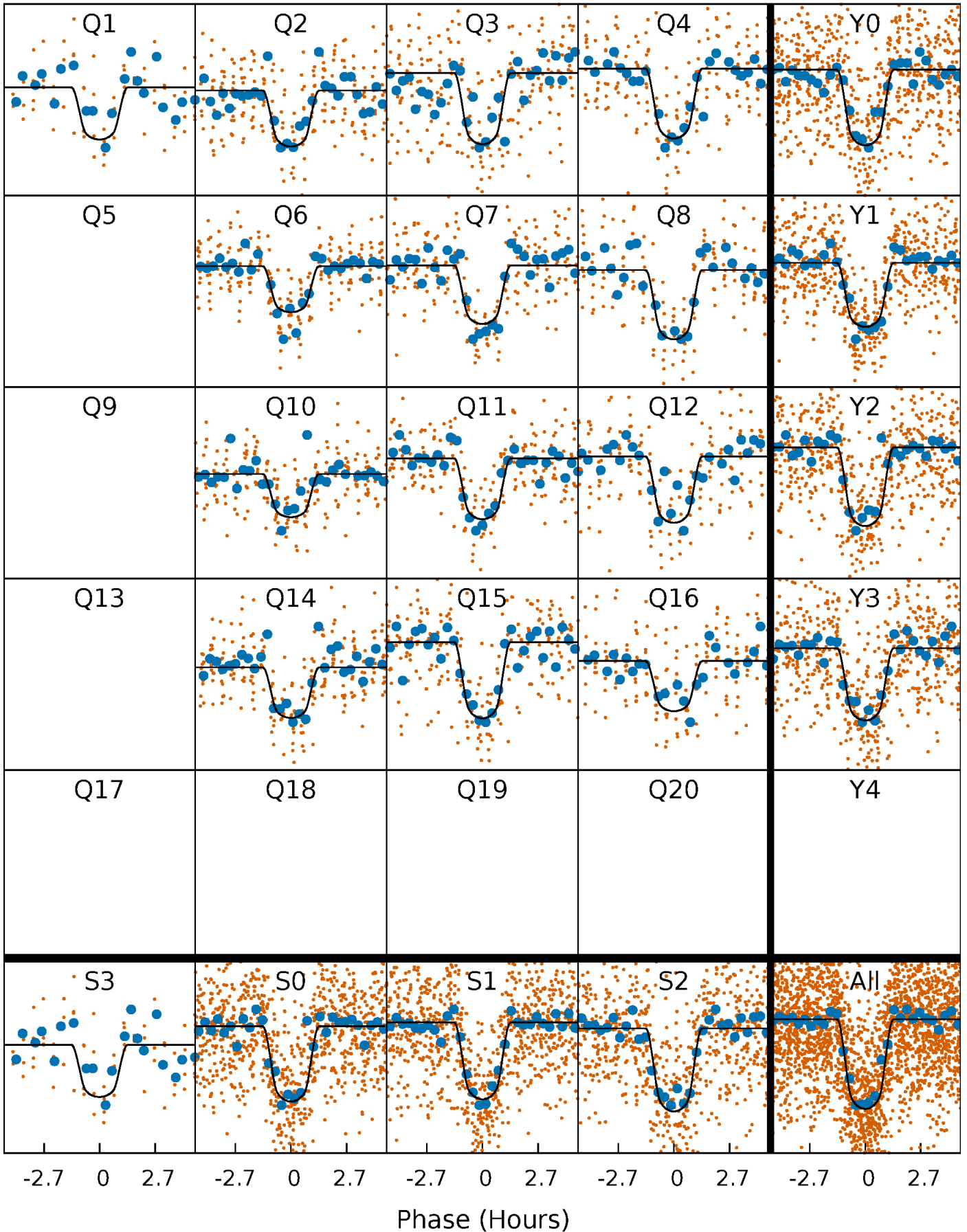
TCE 004989057-01     $P = 7.234030$  Days     $T_0 = 137.674607$  (BKJD)





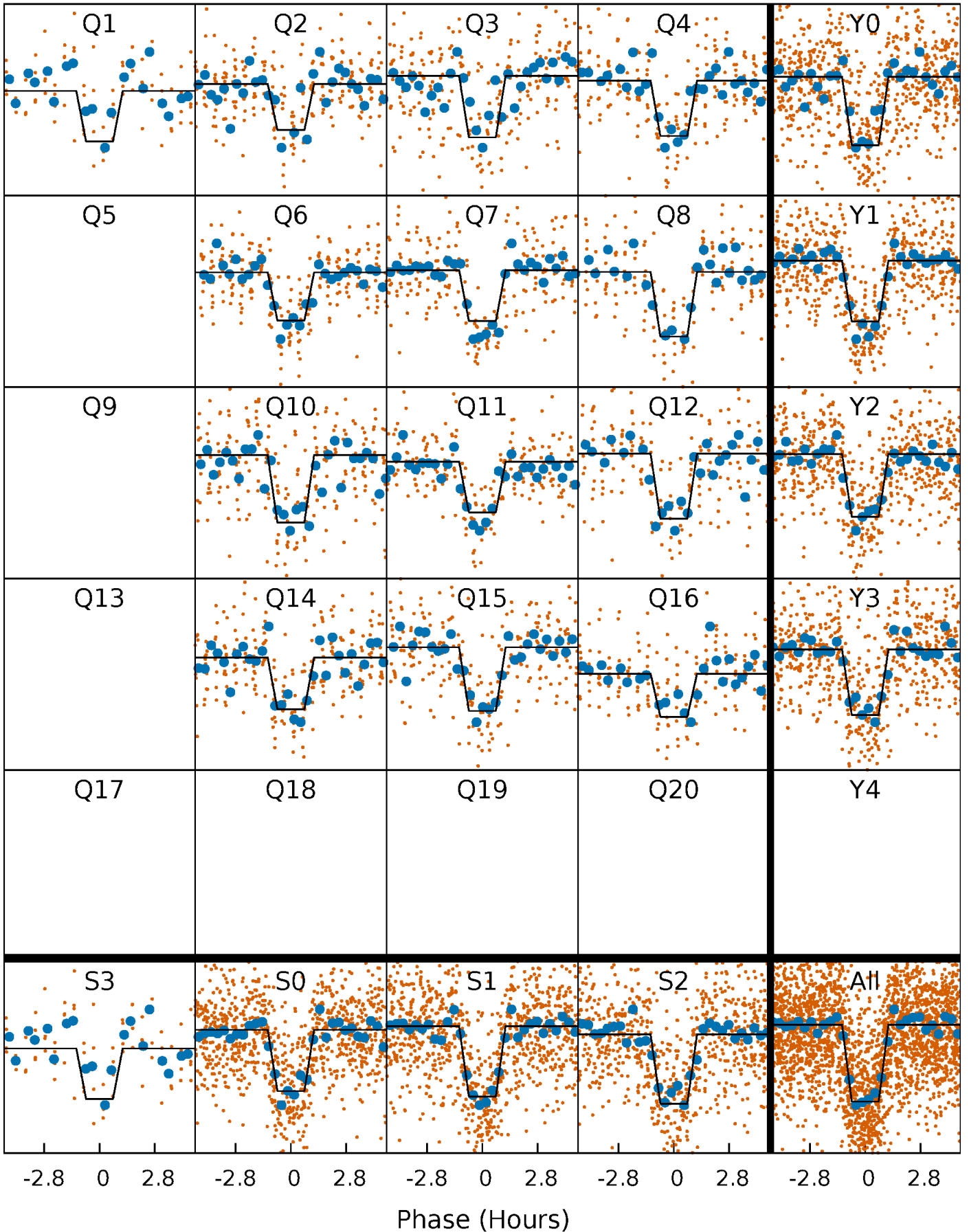
# DV Quarter-Phased Transit Curves

TCE 004989057-01   P= 7.234030 Days    $T_0=137.674607$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

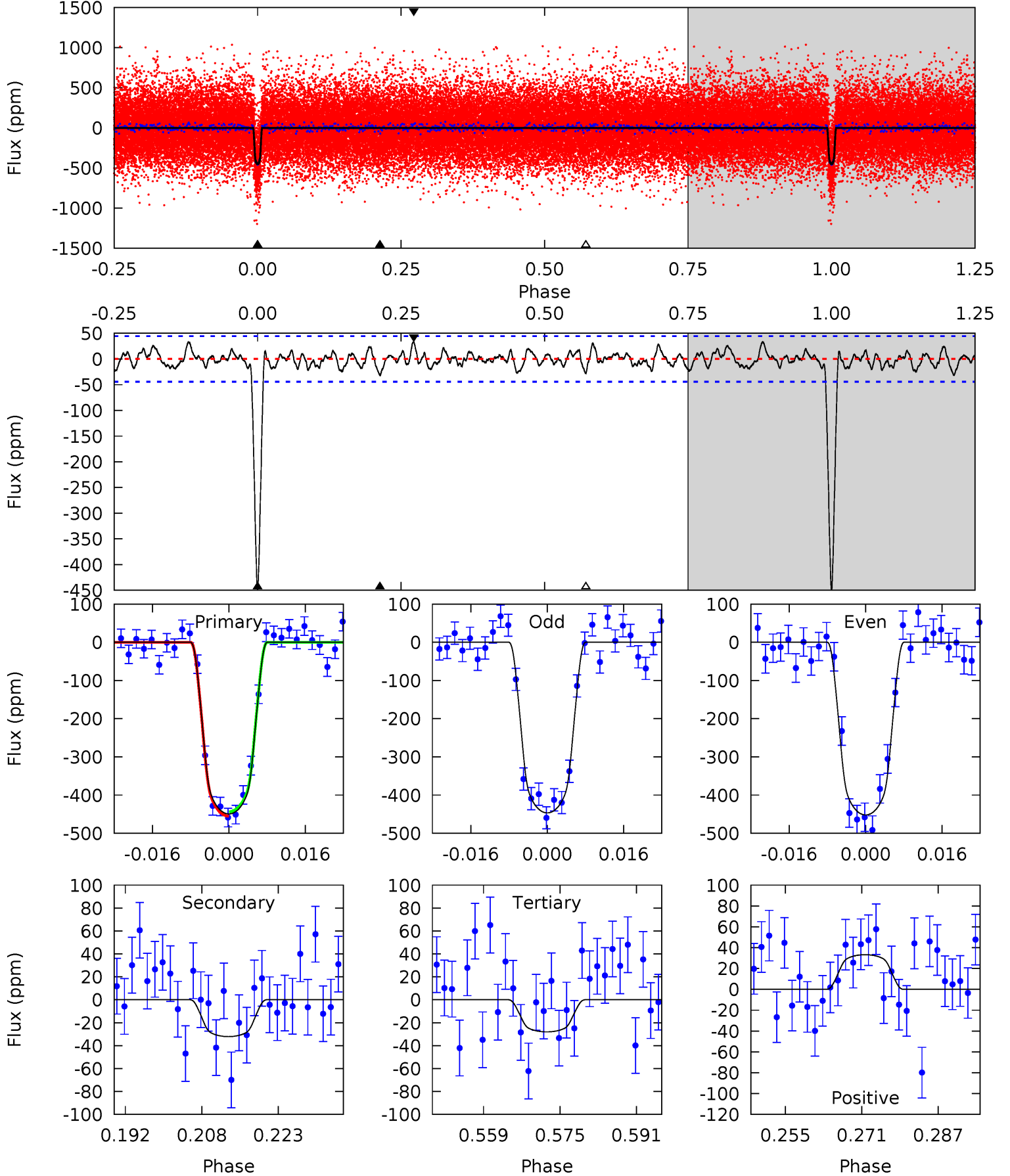
TCE 004989057-01 P= 7.234017 Days  $T_0=137.675564$  (BKJD)



# DV Model-Shift Uniqueness Test

004989057-01, P = 7.234030 Days, E = 130.440577 Days

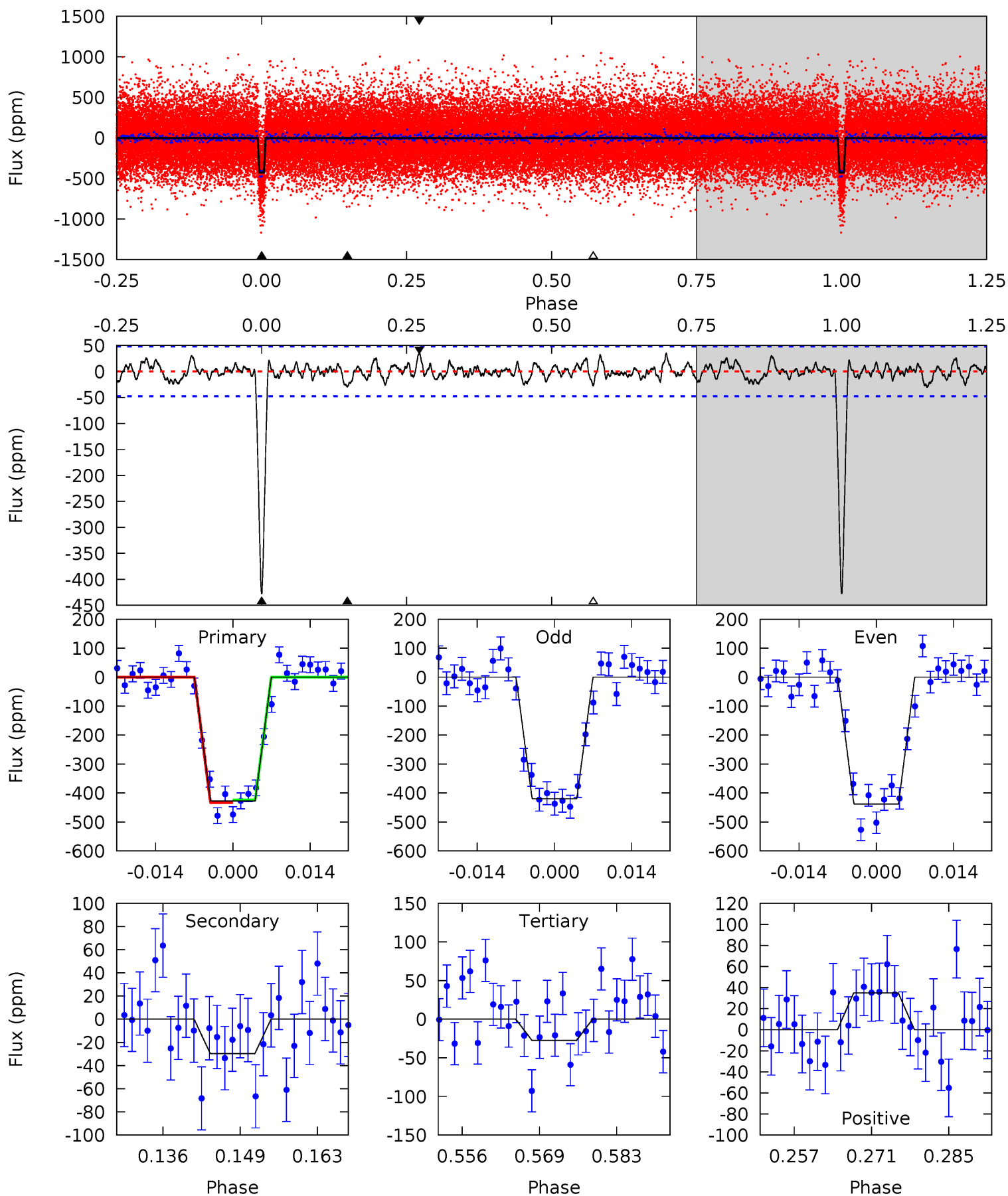
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
49.9	3.57	3.11	3.69	4.94	2.41	1.28	46.8	46.2	0.46	-0.12	0.31	0.90	0.07	0.65



# Alt Model-Shift Uniqueness Test

004989057-01, P = 7.234017 Days, E = 130.441547 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
44.4	3.08	2.84	3.63	4.97	2.47	1.14	41.6	40.8	0.23	-0.55	0.94	0.94	0.08	0.50



### Stellar Parameters For KIC 004989057

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5411^{+107}_{-107}$	$4.523^{+0.042}_{-0.084}$	$0.000^{+0.150}_{-0.150}$	$0.850^{+0.091}_{-0.045}$	$0.879^{+0.049}_{-0.054}$	$2.017^{+0.316}_{-0.509}$
	+2%/-2%	+1%/-2%	+inf%/-inf%	+11%/-5%	+6%/-6%	+16%/-25%
Source	SPE57	SPE57	SPE57	DSEP		

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

### Secondary Eclipse Parameters for KIC 004989057-01 / KOI 1923.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-32 \pm 9$	$2.25^{+0.28}_{-0.25}$	$1169^{+36}_{-33}$	$3200^{+169}_{-186}$	$17^{+7}_{-6}$
Alt.	$-30 \pm 10$	$1.95^{+0.27}_{-0.25}$	$1169^{+34}_{-32}$	$3293^{+209}_{-219}$	$21^{+10}_{-7}$

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

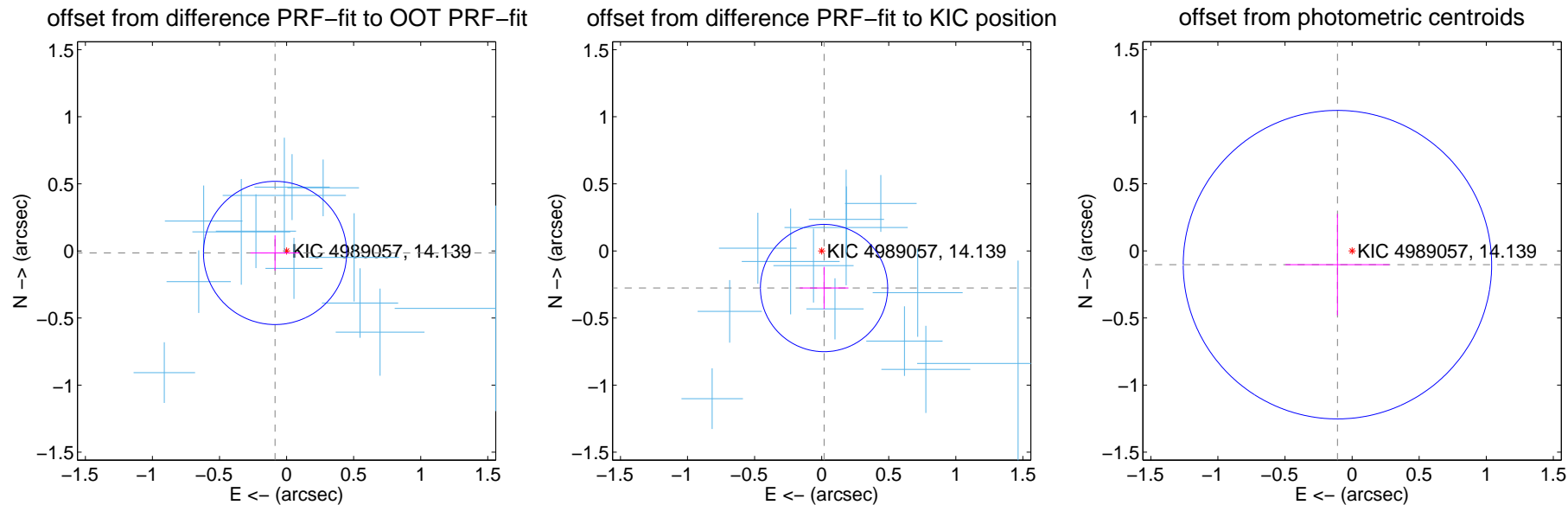
## DV Centroid Data

Supplemental centroid analysis for 004989057-01. Kepler magnitude: 14.14. Transit SNR 33.67

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

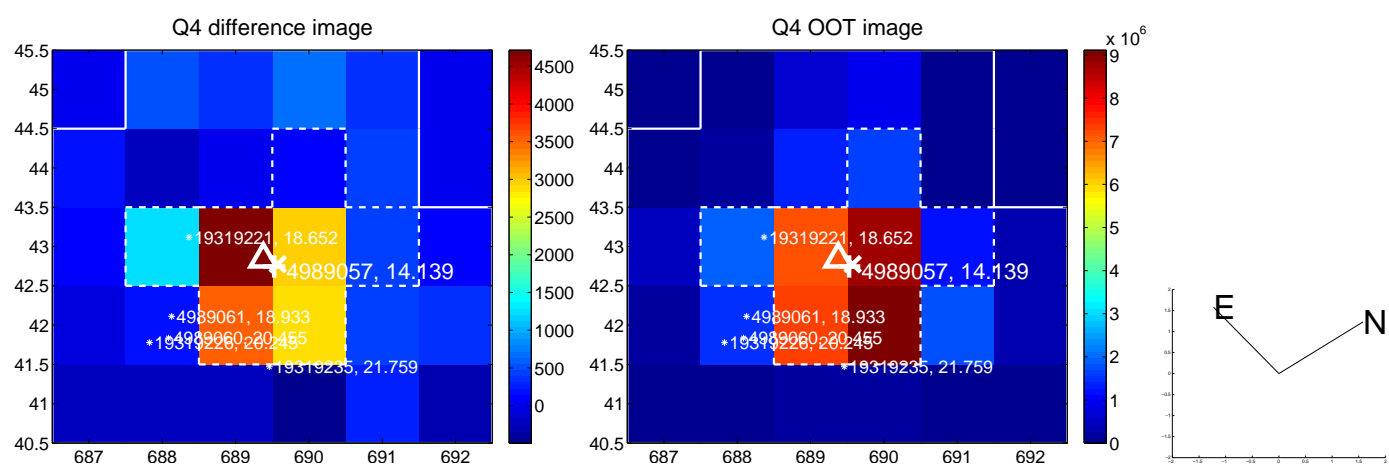
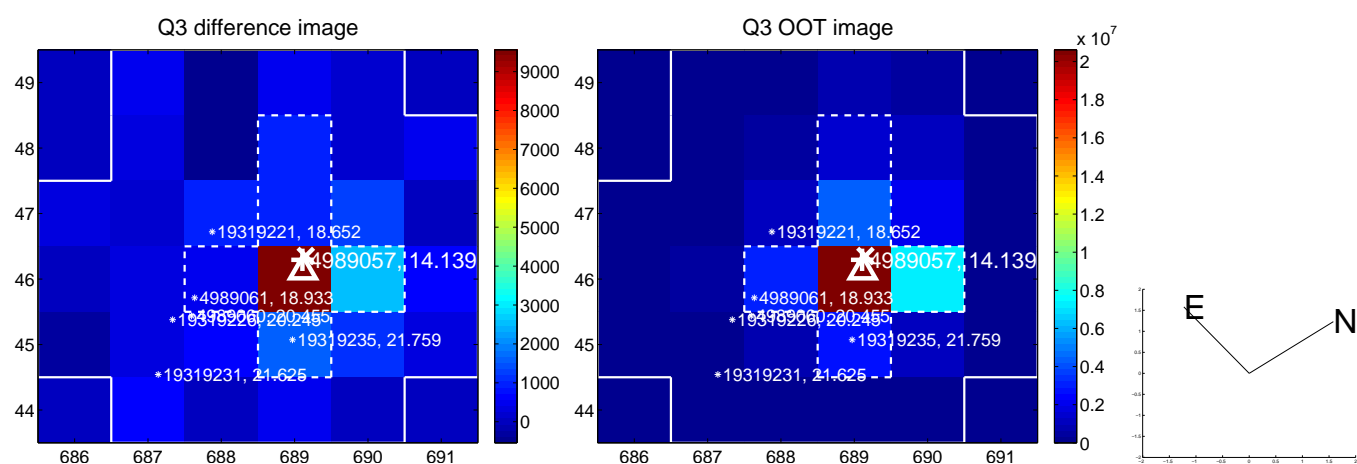
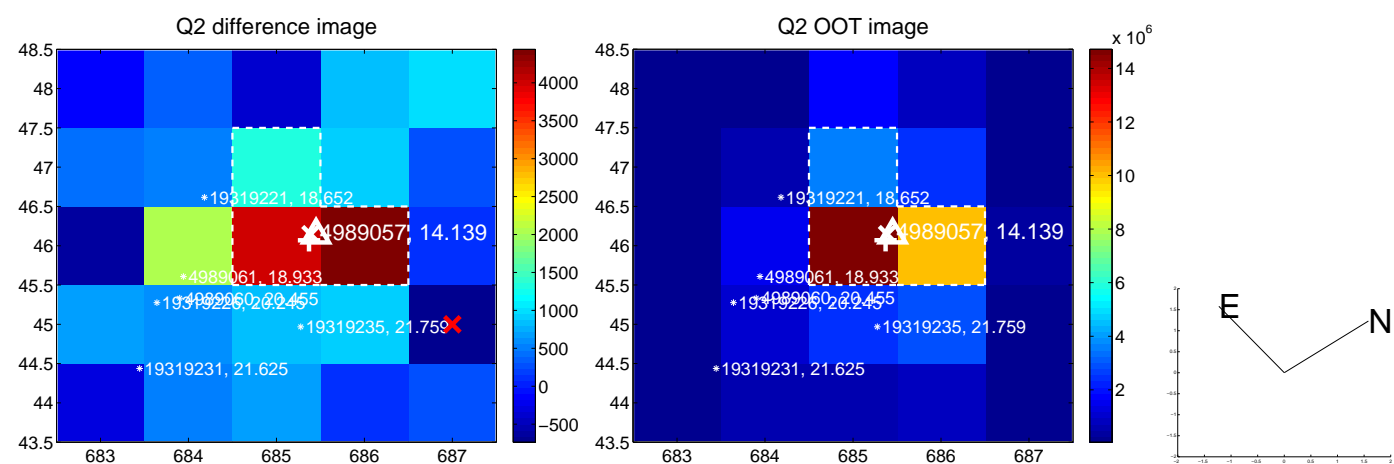
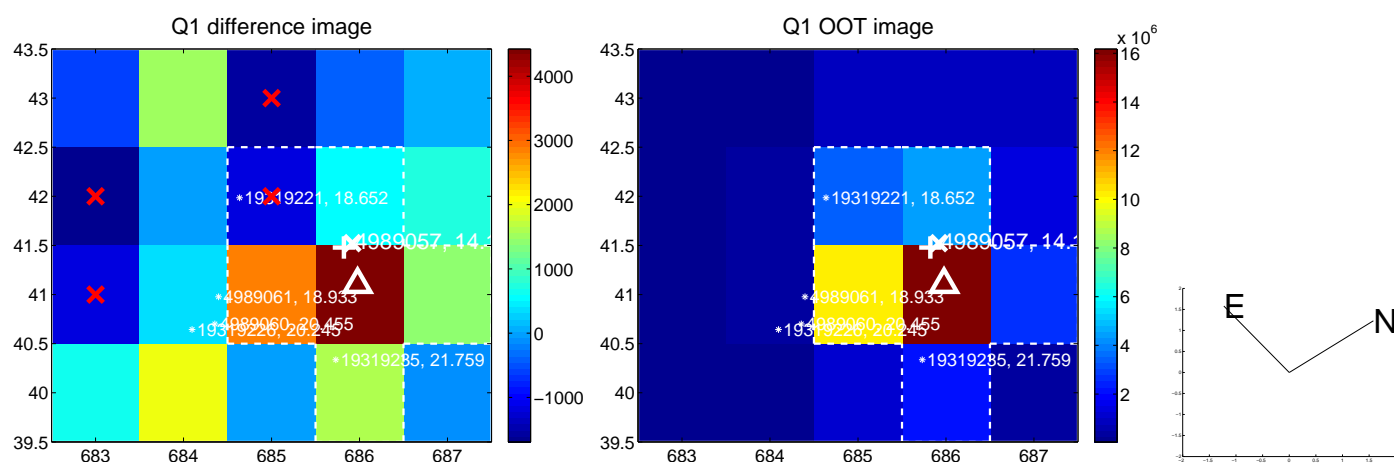
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.087 \pm 0.178$	0.49	$0.086 \pm 0.184$	$-0.015 \pm 0.131$
PRF-fit source offset from KIC position	$0.277 \pm 0.158$	1.75	$-0.018 \pm 0.182$	$-0.277 \pm 0.158$
photometric centroid source offset	$0.15 \pm 0.38$	0.39	$0.11 \pm 0.39$	$-0.10 \pm 0.38$



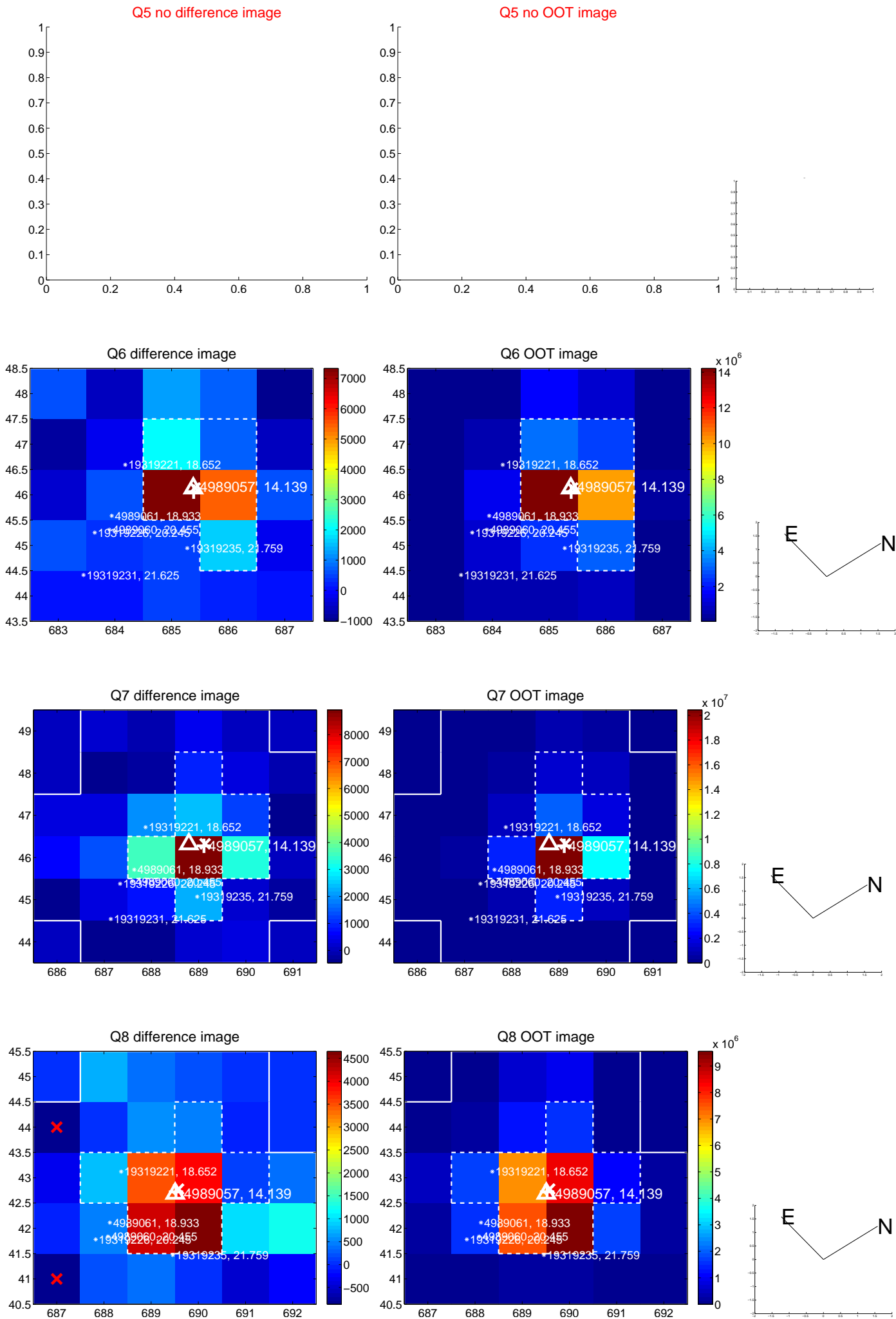
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



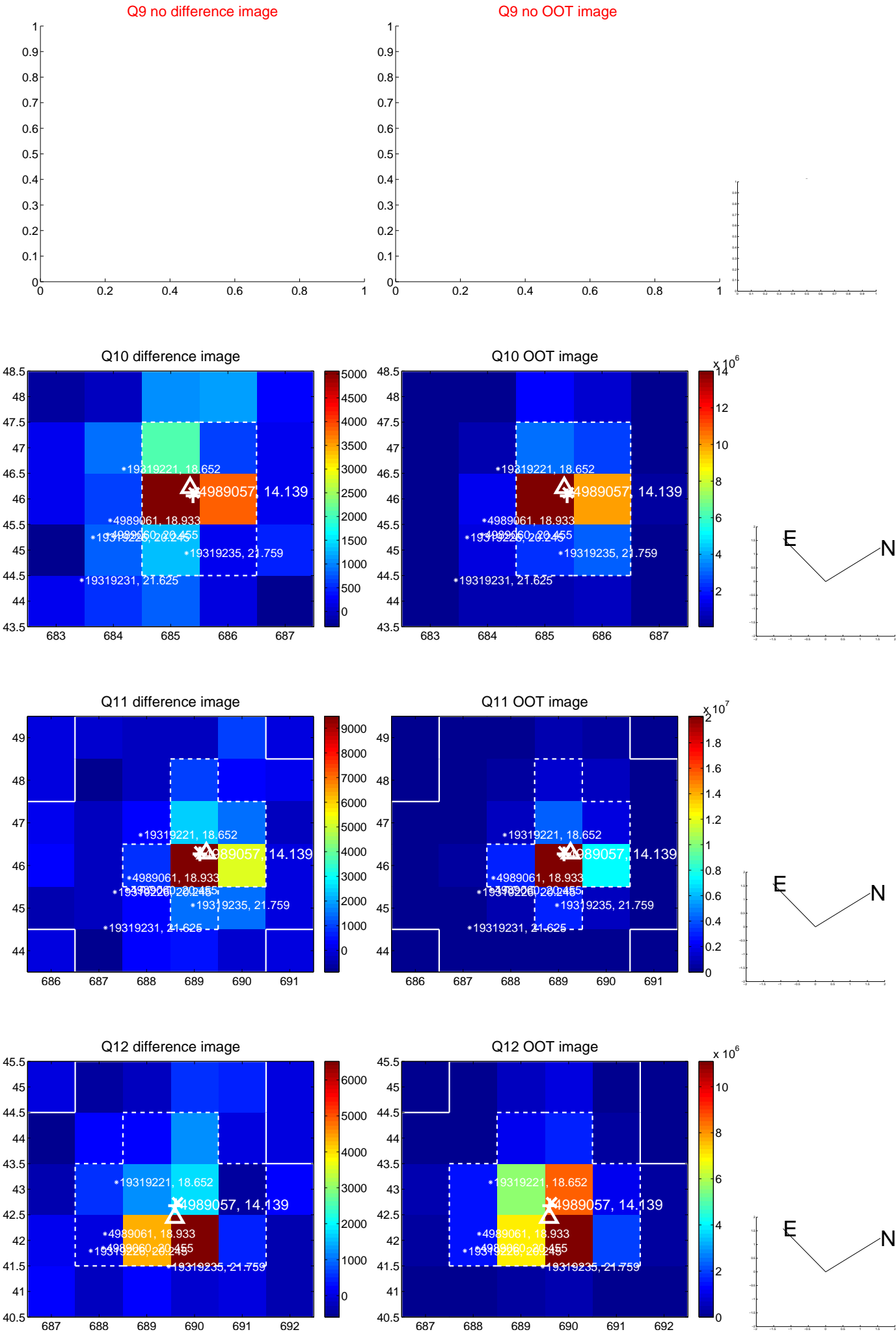
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



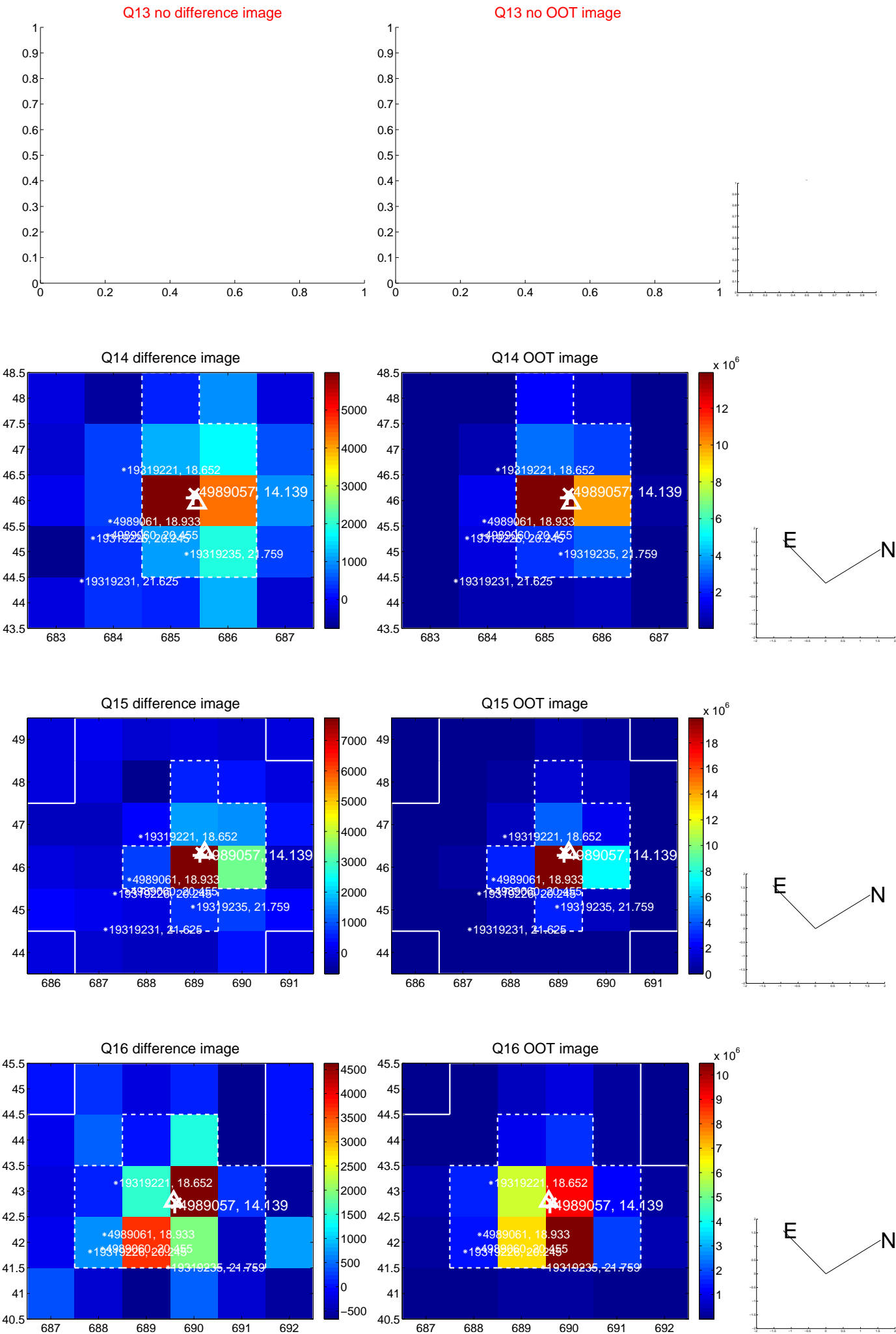
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



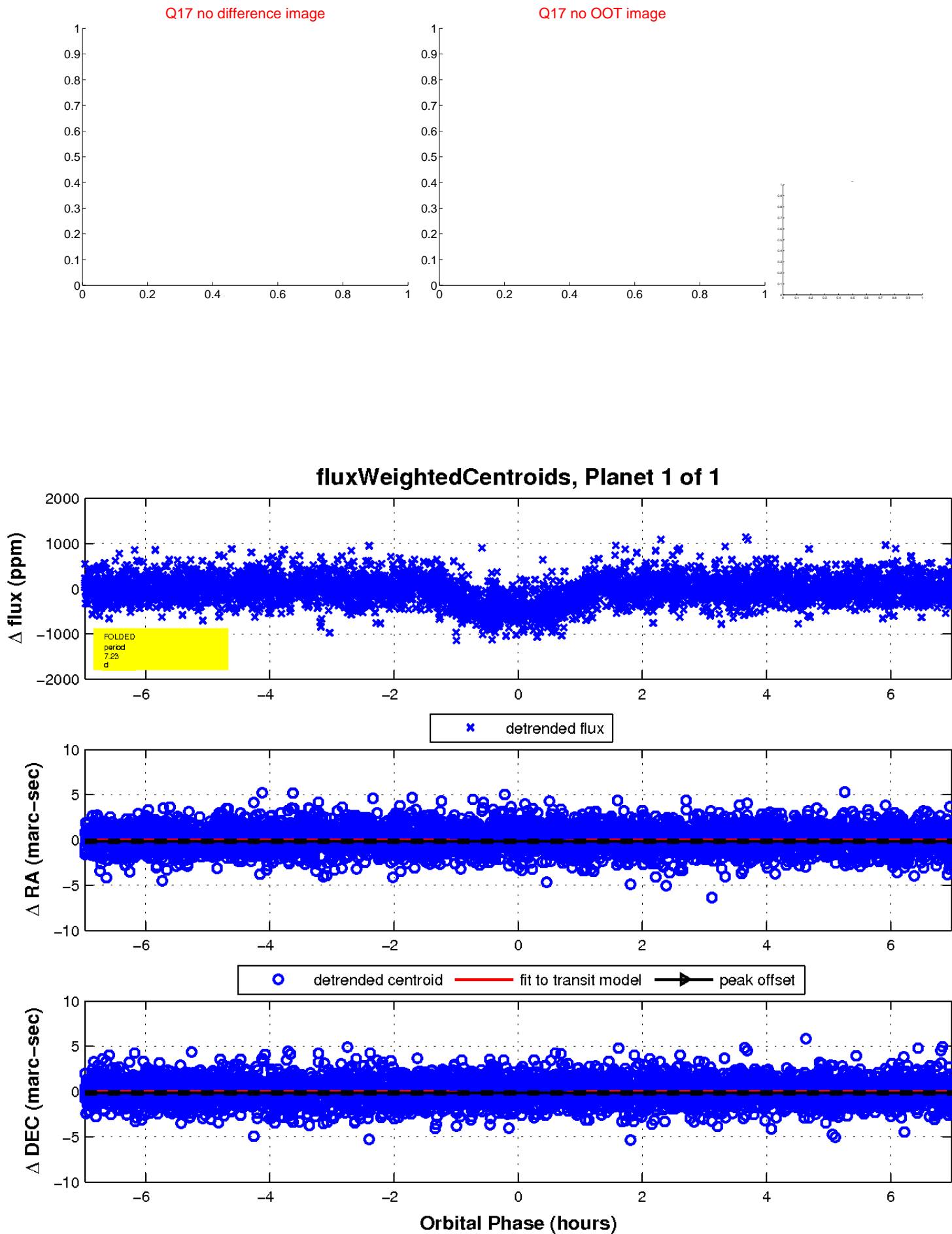
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

