

# KIC 012404954

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012404954-01	OBS	0361.01	3.247548	132.307737	207.1	2.658	38.3	44.9	0.97	5703	1.71	461.21

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012404954-01	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.

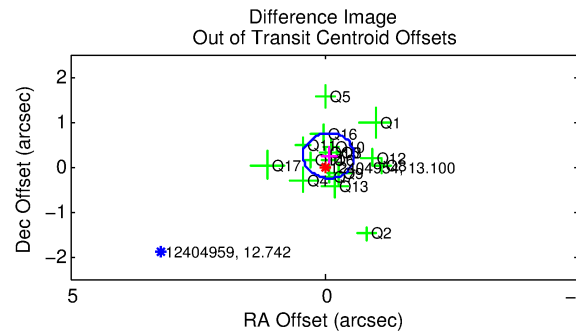
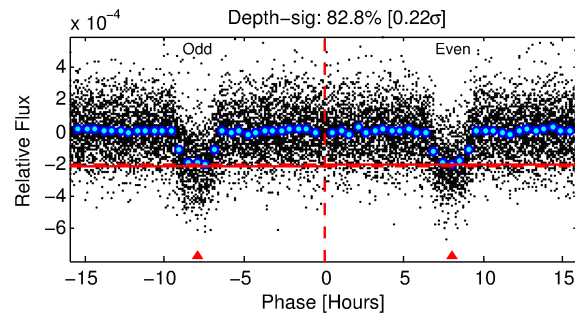
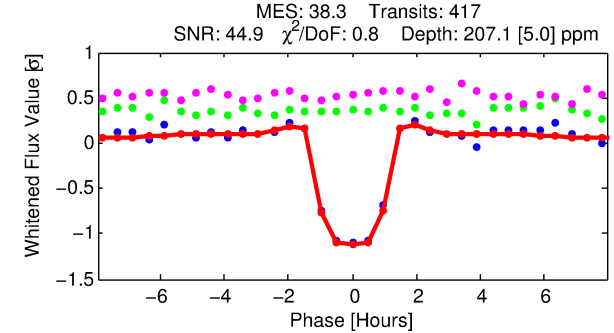
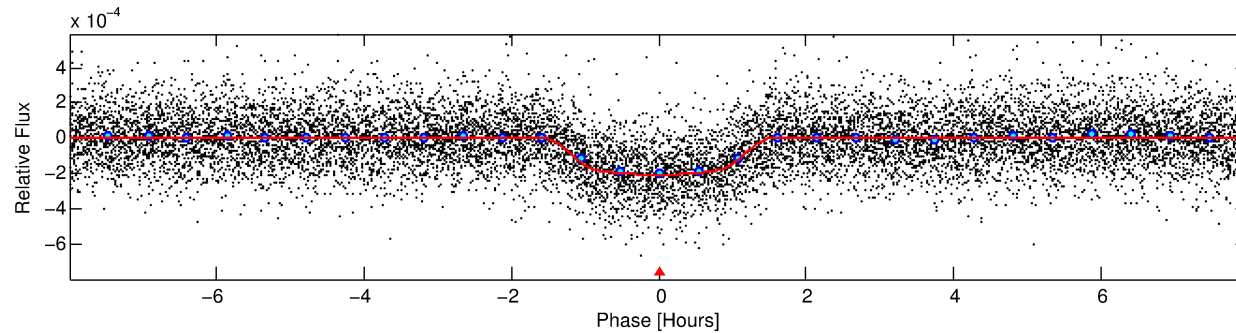
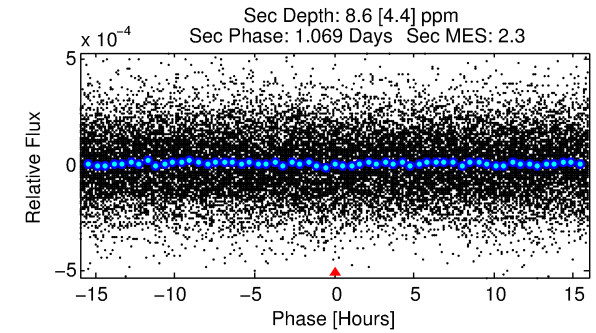
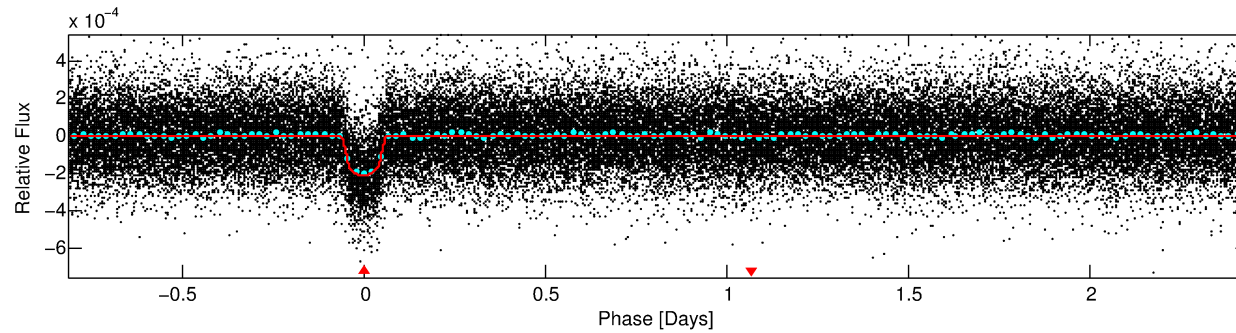
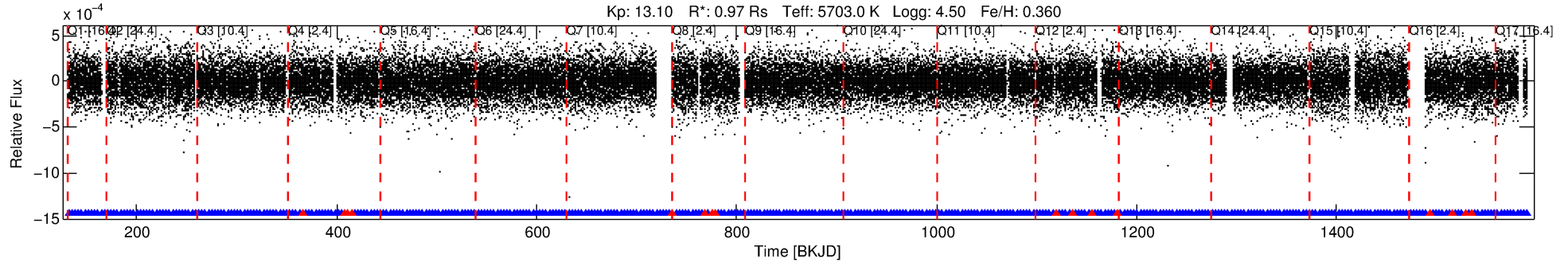
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012404954-01

No Significant Match Found

# DV One-Page Summary

KIC: 12404954 Candidate: 1 of 1 Period: 3.248 d  
KOI: K00361.01 Corr: 0.966



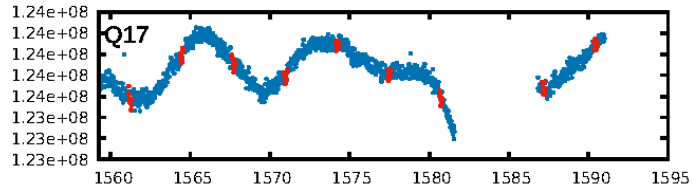
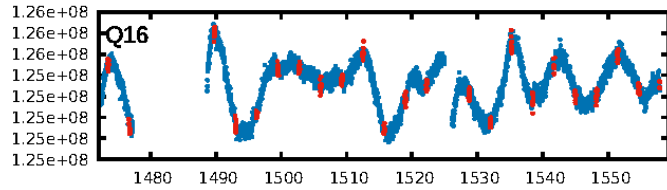
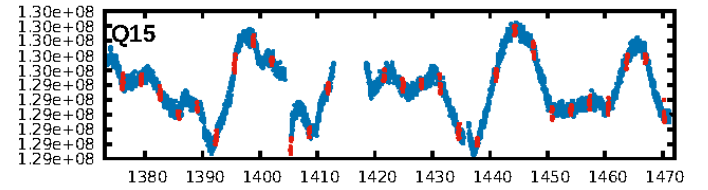
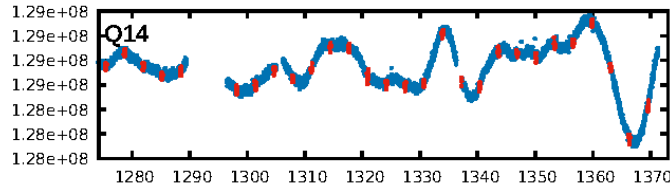
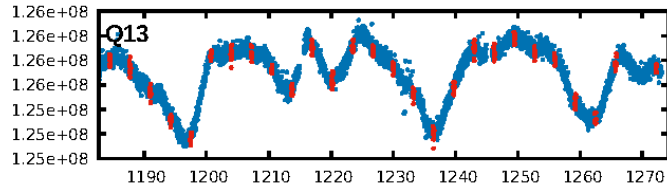
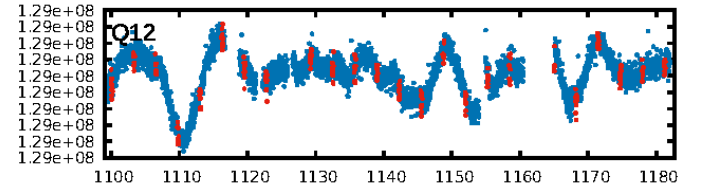
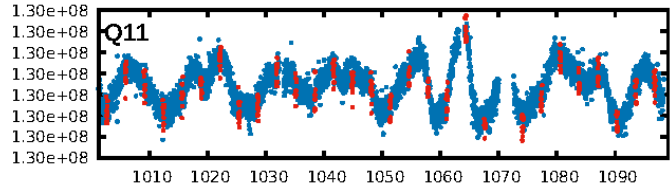
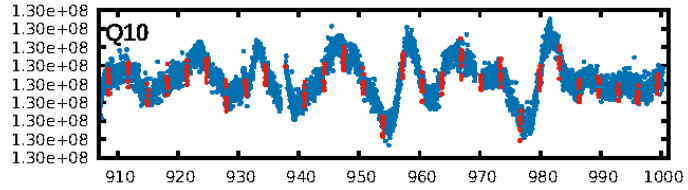
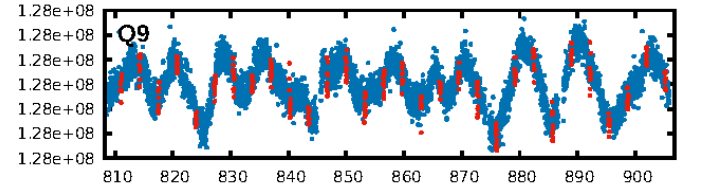
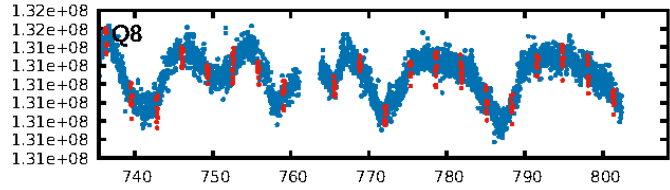
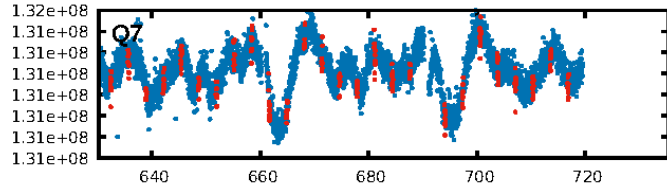
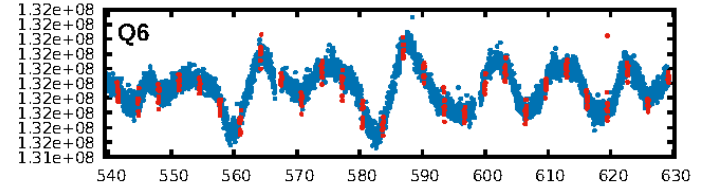
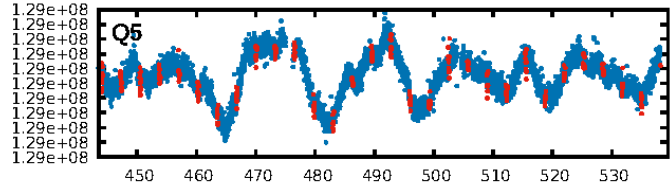
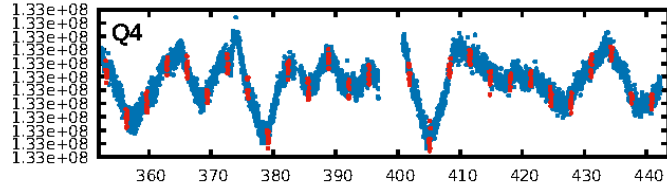
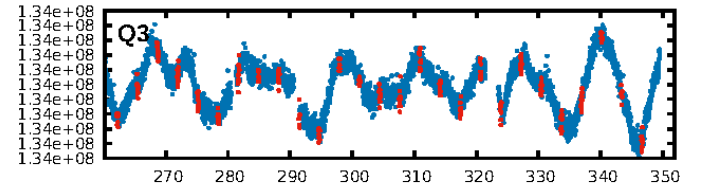
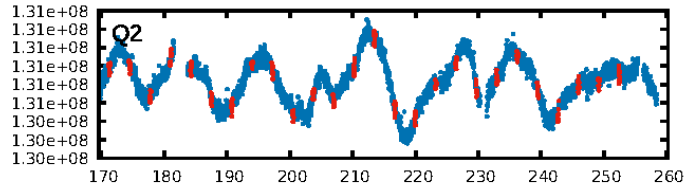
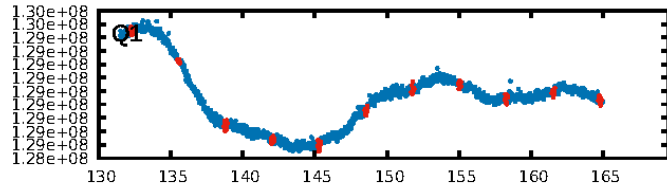
## DV Fit Results:

Period = 3.24755 [0.00000] d  
Epoch = 132.3077 [0.0008] BKJD  
Rp/R\* = 0.0160 [0.0015]  
a/R\* = 4.27 [1.70]  
b = 0.91 [0.08]  
Seff = 461.22 [103.36]  
Teq = 1182 [66] K  
Rp = 1.71 [0.29] Re  
a = 0.0442 [0.0058] AU  
Ag = 3.18 [1.85] [1.18σ]  
Teffp = 2440 [336] K [3.67σ]

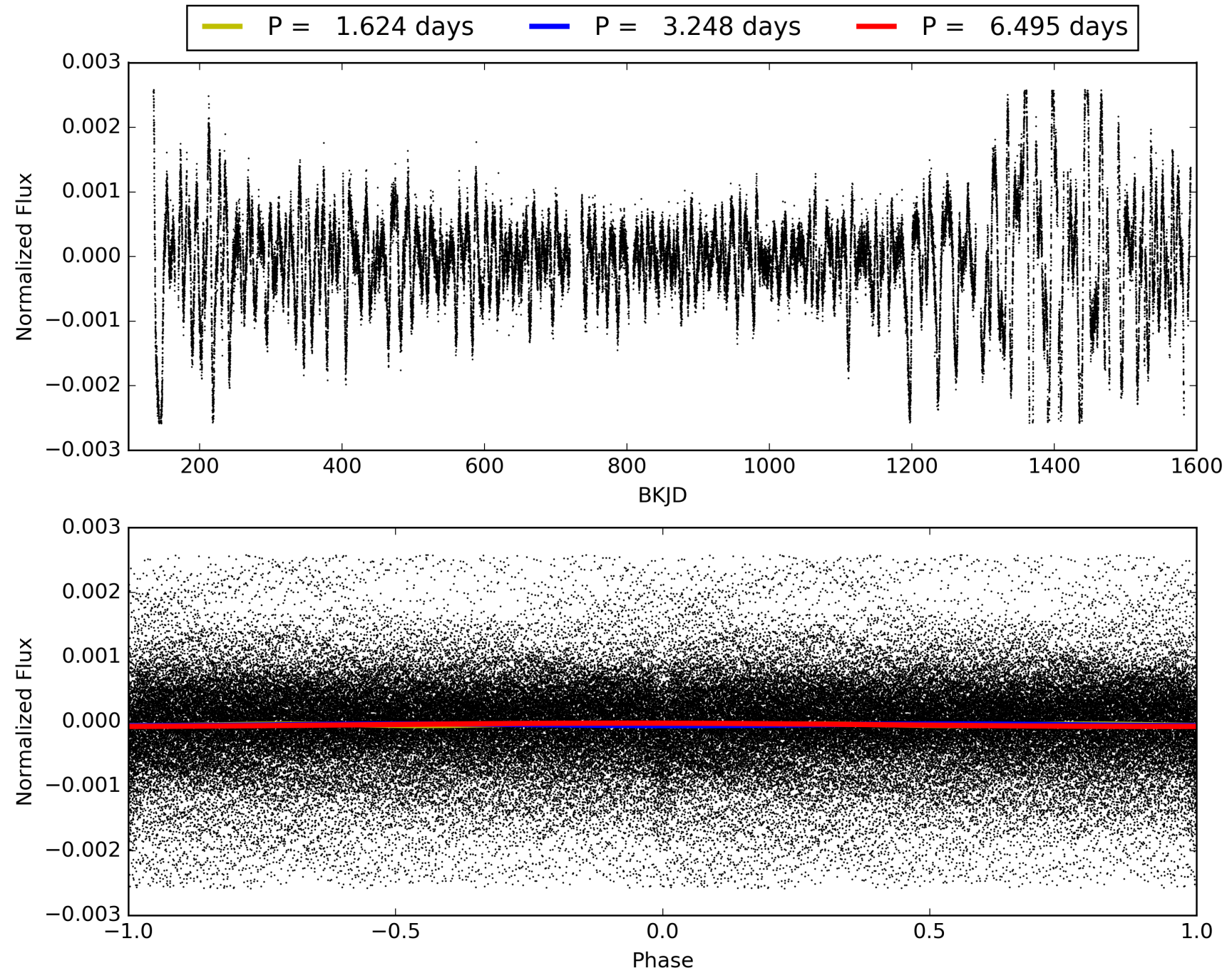
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.33e-294  
RollingBand-fgt: 0.96 [381/397]  
GhostDiagnostic-chr: 6.895  
Centroid-sig: 93.4%  
Centroid-so: 0.086 arcsec [0.34σ]  
OotOffset-rm: 0.255 arcsec [1.53σ]  
KicOffset-rm: 0.212 arcsec [1.42σ]  
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]

## TCE 012404954-01, PDC Light Curves

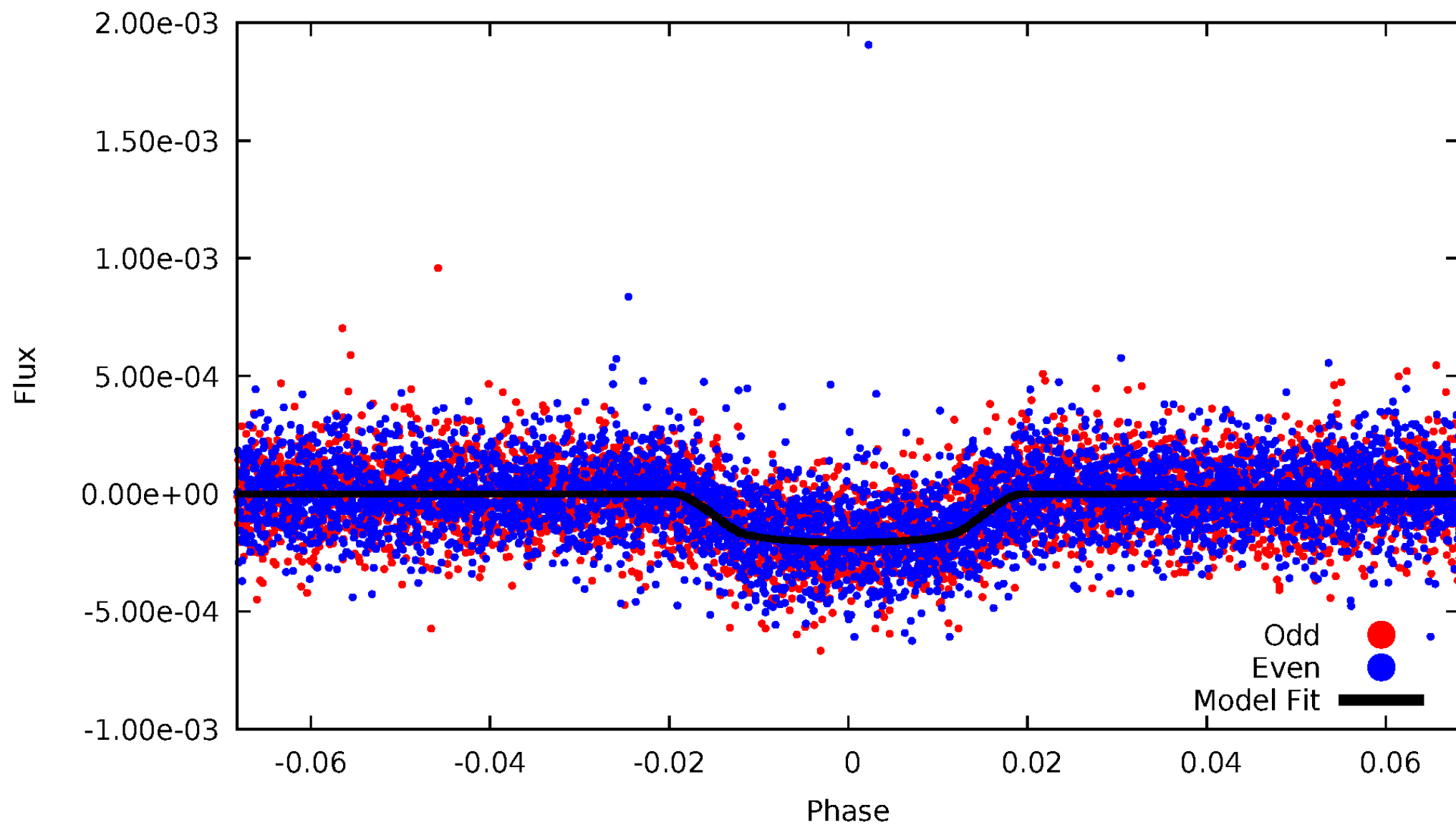


TCE 012404954-01



# DV Odd/Even

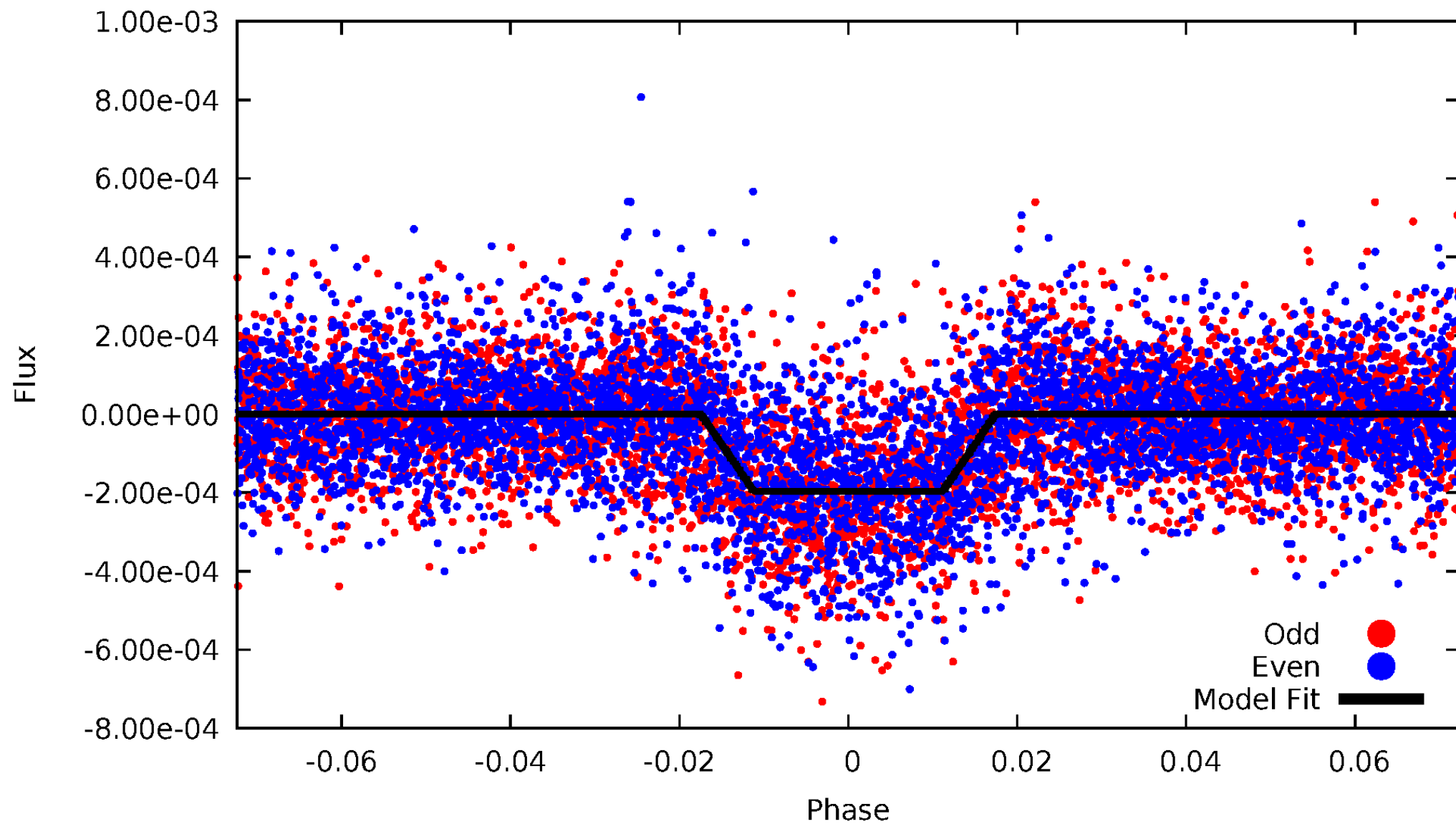
TCE 012404954-01





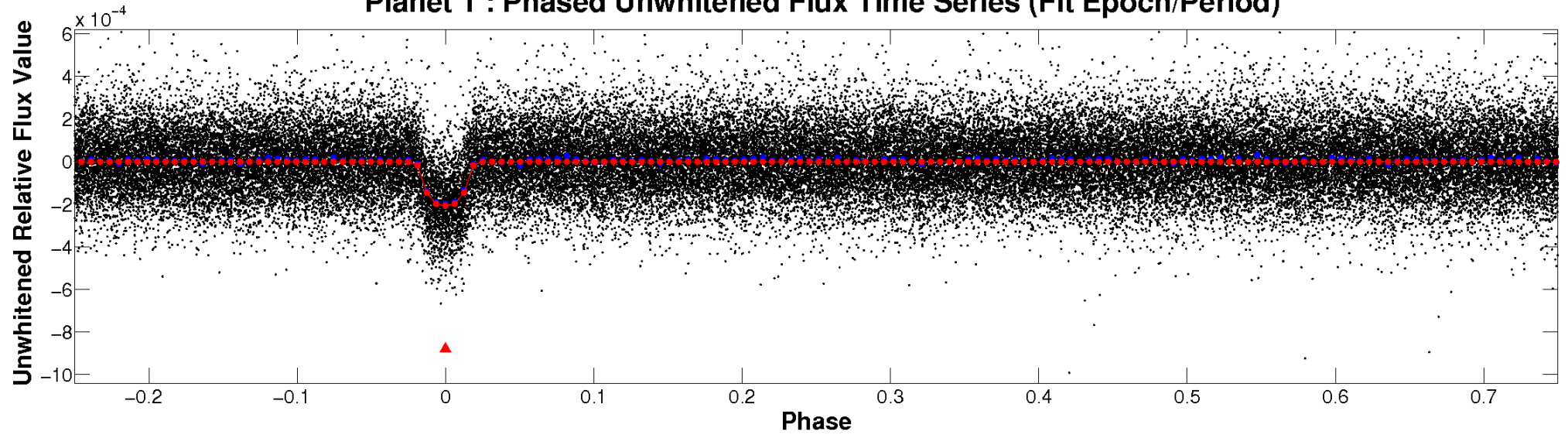
# ALT Odd/Even

TCE 012404954-01

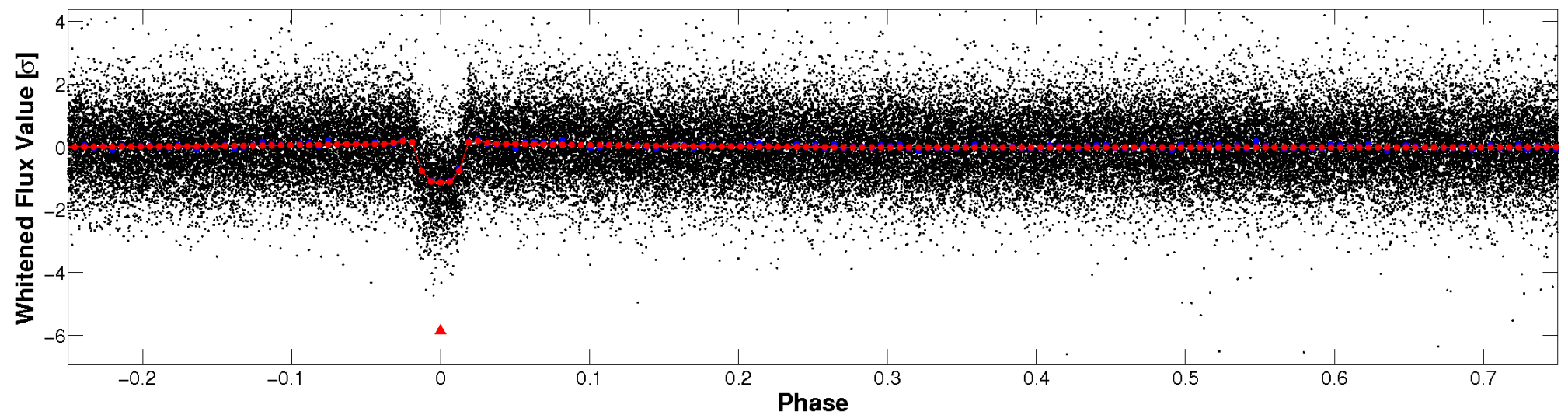


# Non-Whitened Vs. Whitened Light Curve

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

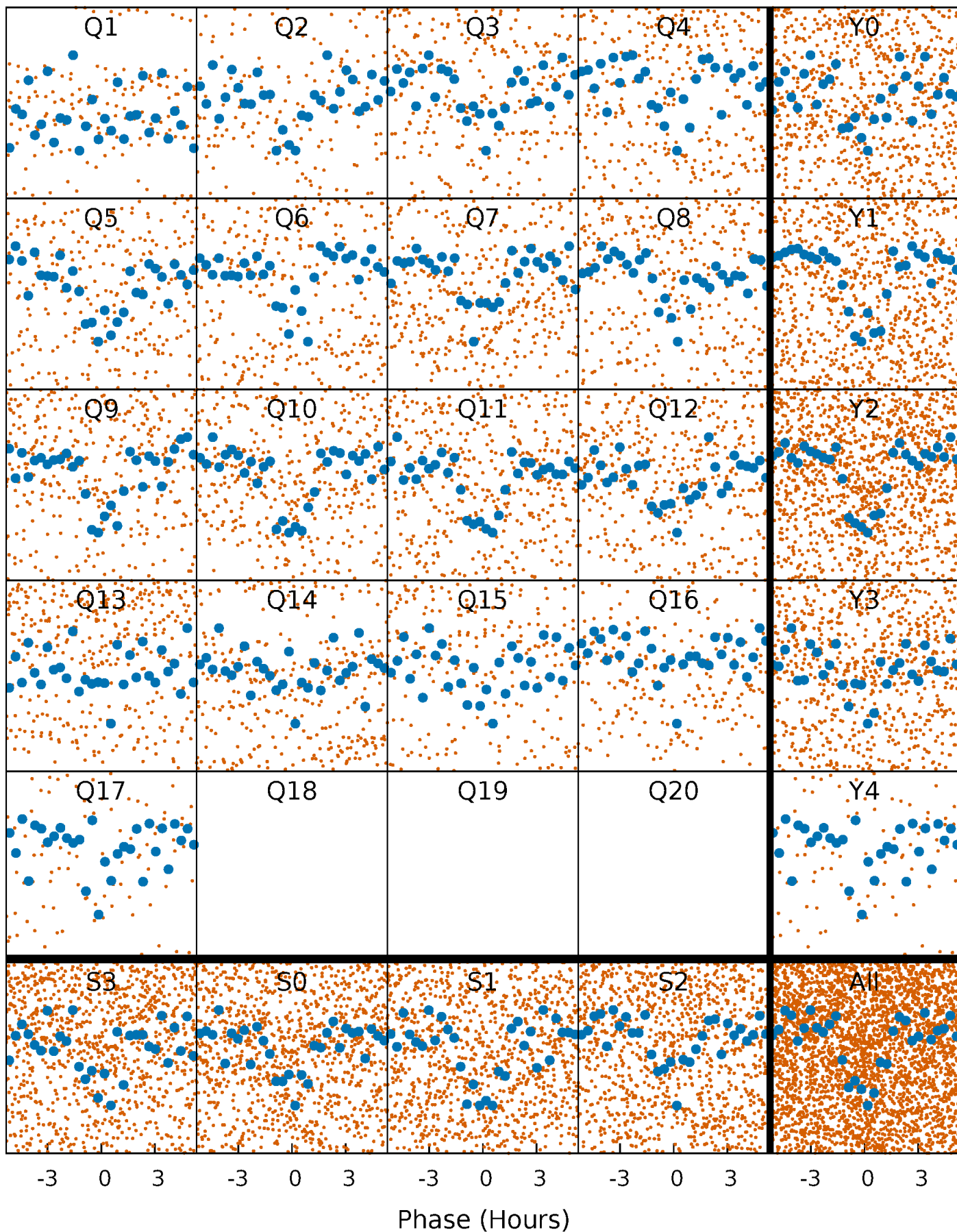


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

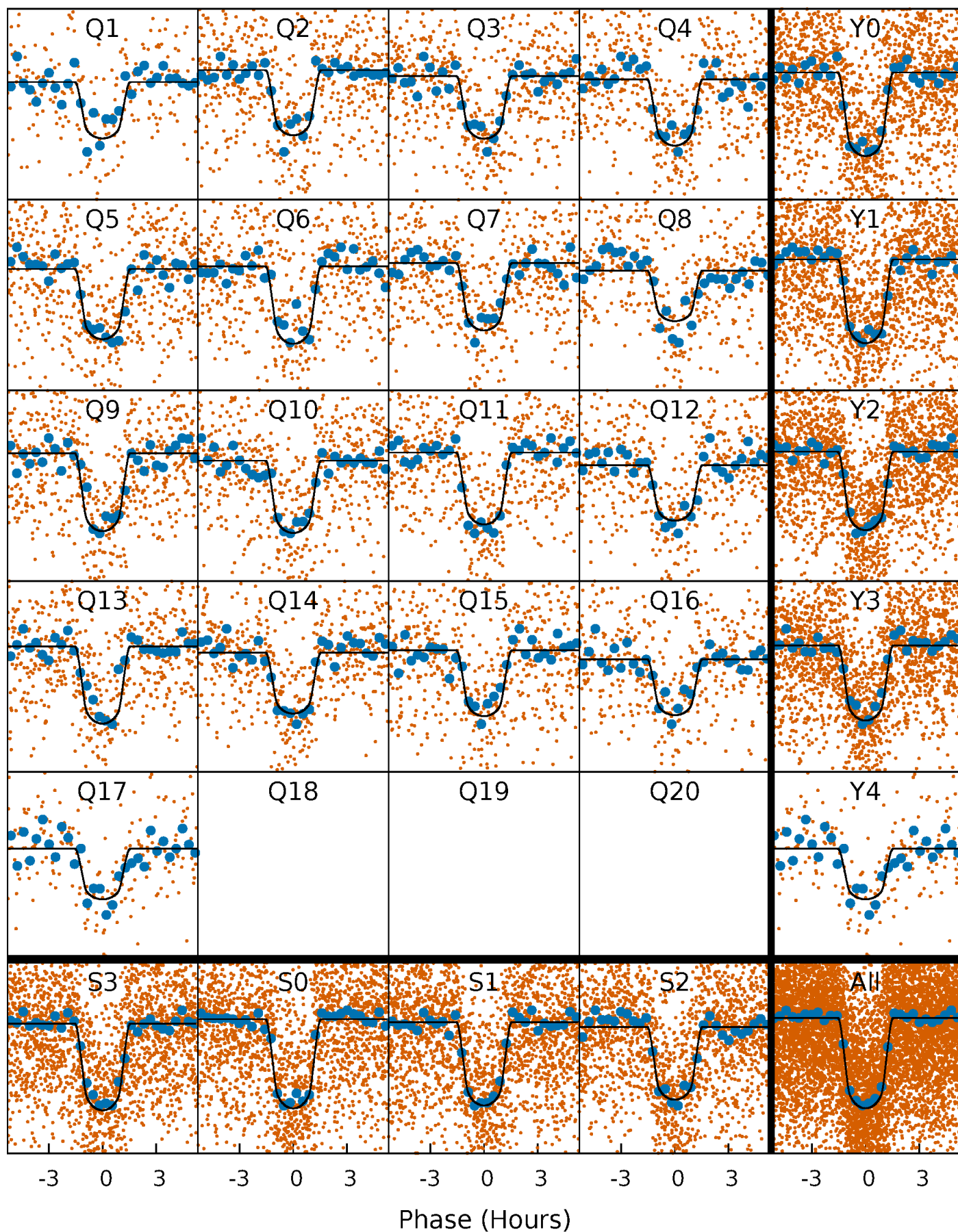
TCE 012404954-01 P= 3.247548 Days  $T_0=132.307737$  (BKJD)





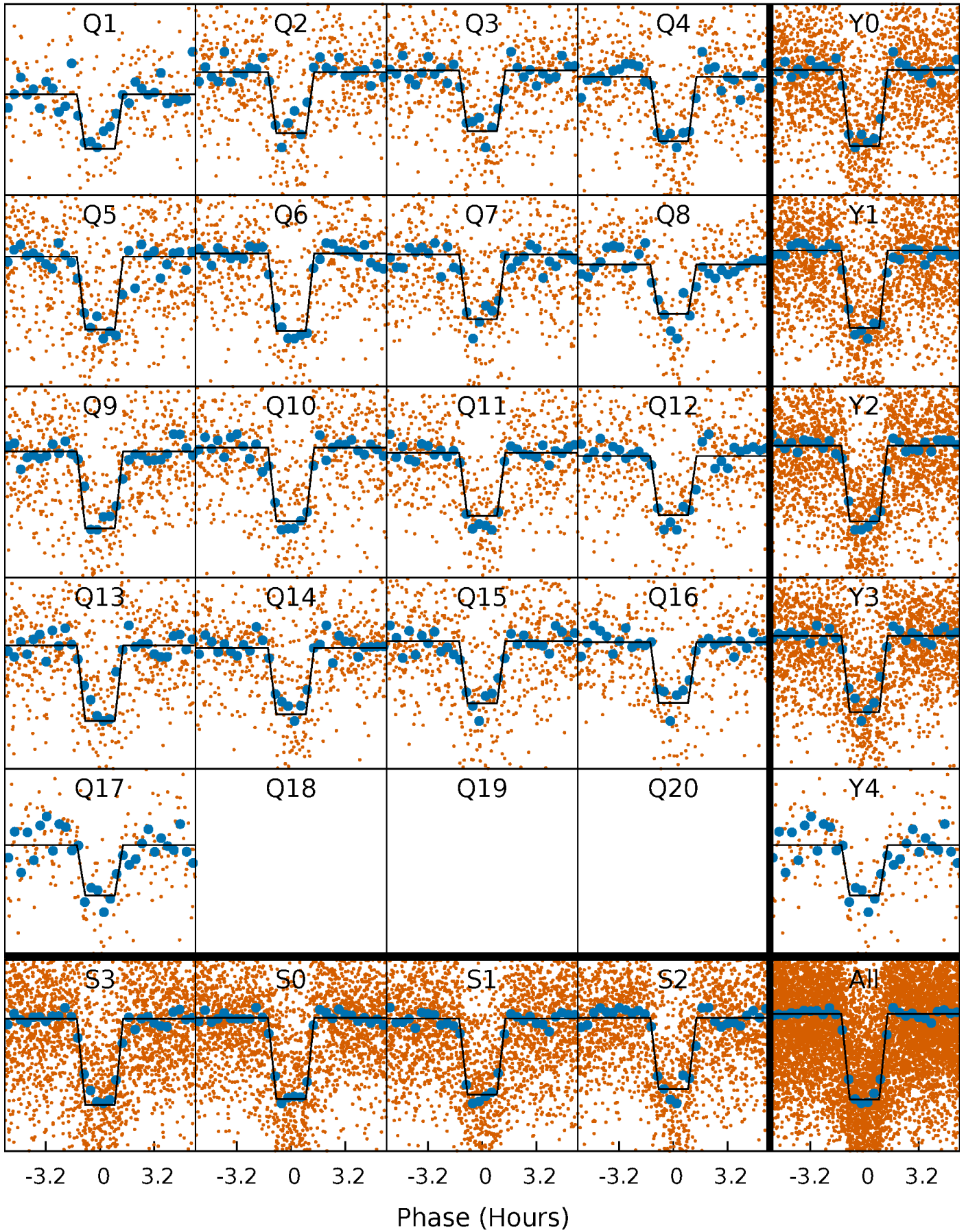
# DV Quarter-Phased Transit Curves

TCE 012404954-01   P= 3.247548 Days    $T_0=132.307737$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

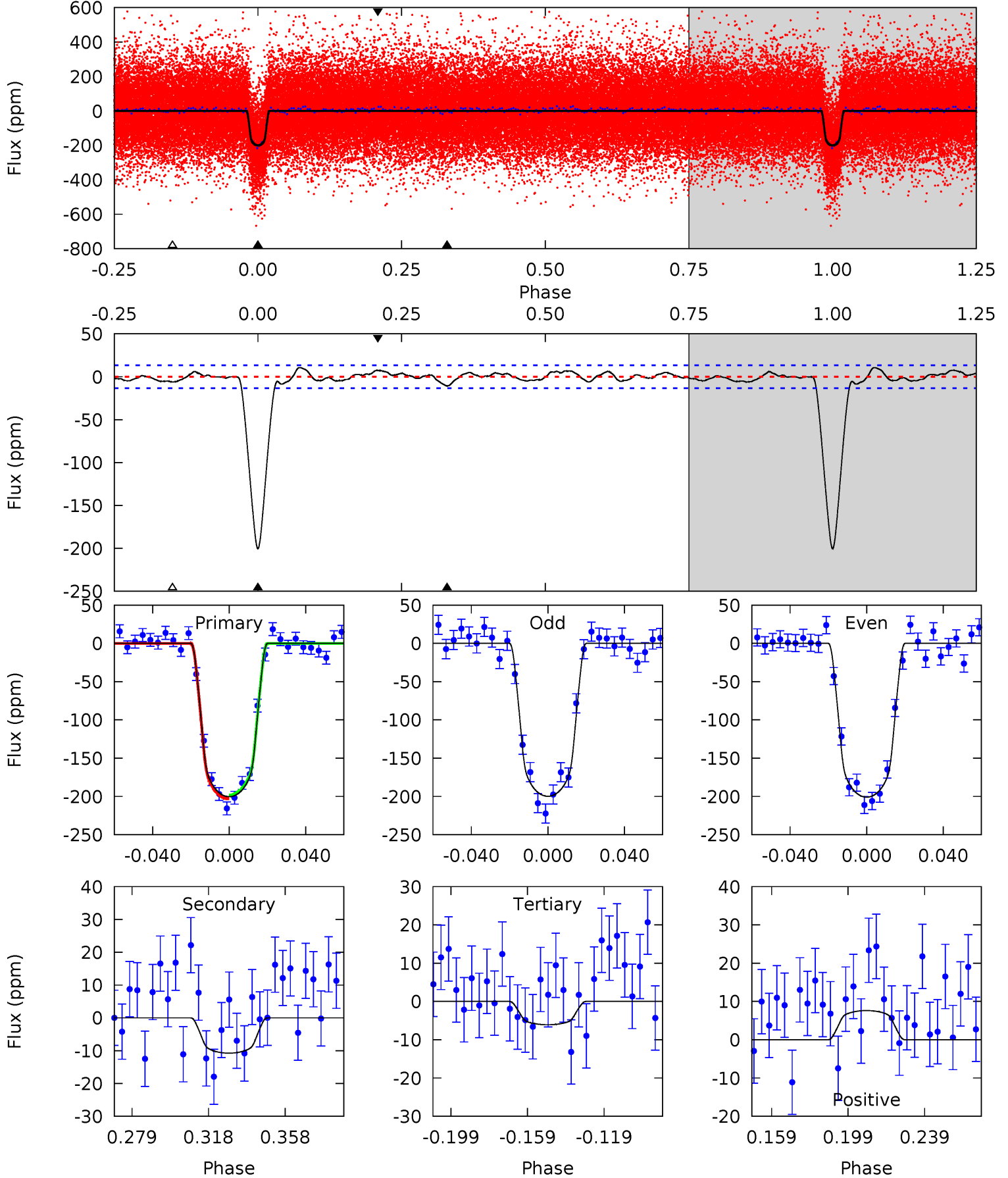
TCE 012404954-01   P= 3.247550 Days    $T_0=132.306942$  (BKJD)



# DV Model-Shift Uniqueness Test

012404954-01, P = 3.247548 Days, E = 129.060189 Days

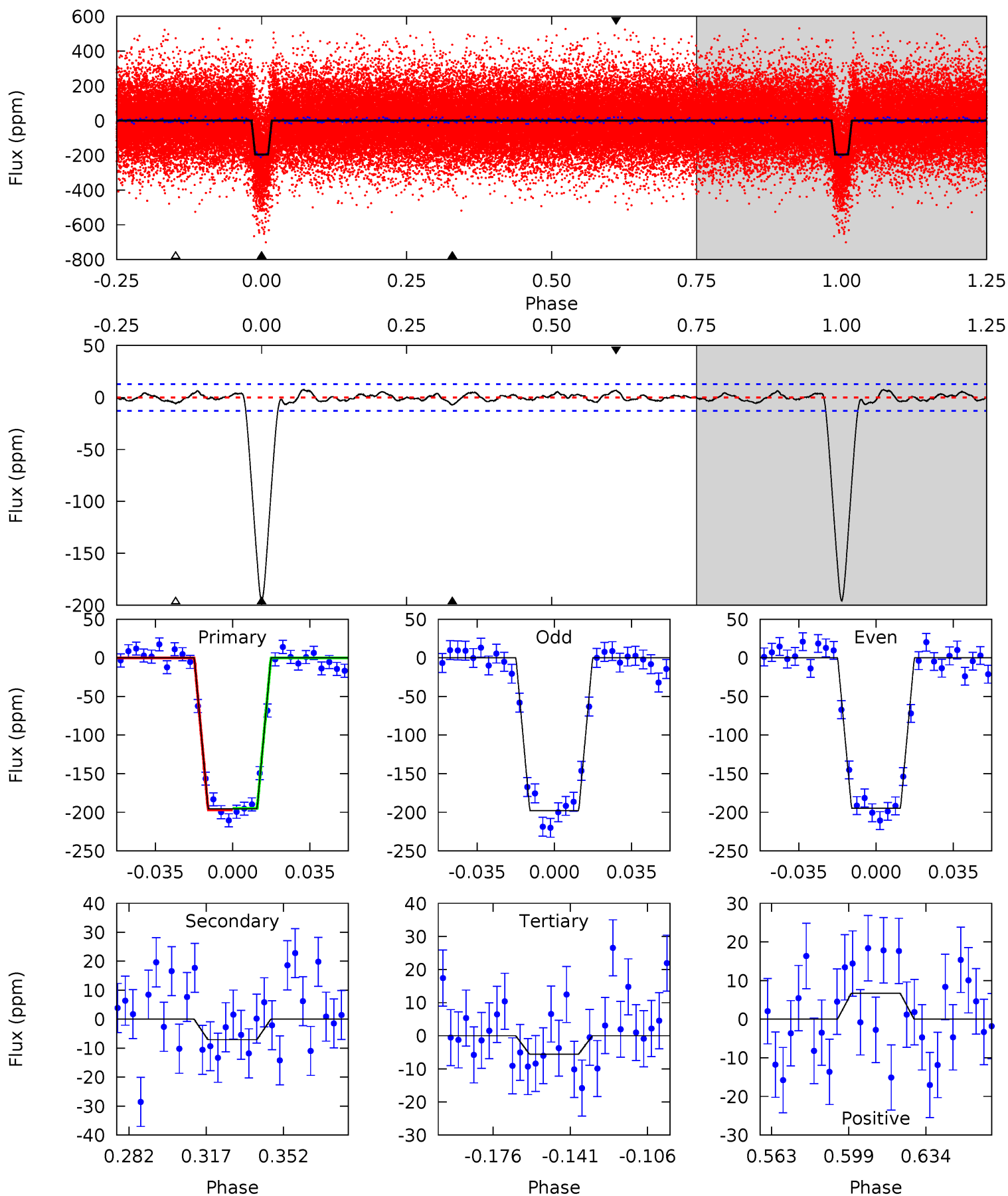
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.6	3.84	2.17	2.72	4.75	2.06	1.36	69.4	68.9	1.67	1.12	0.19	0.99	0.05	0.86



# Alt Model-Shift Uniqueness Test

012404954-01, P = 3.247550 Days, E = 129.059392 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
72.6	2.63	2.08	2.49	4.78	2.11	1.04	70.6	70.2	0.55	0.14	0.56	1.00	0.04	0.32



### Stellar Parameters For KIC 012404954

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5703^{+103}_{-125}$	$4.498^{+0.021}_{-0.119}$	$0.360^{+0.100}_{-0.150}$	$0.975^{+0.140}_{-0.047}$	$1.091^{+0.040}_{-0.086}$	$1.658^{+0.168}_{-0.557}$
	+2%/-2%	+0%/-3%	+28%/-42%	+14%/-5%	+4%/-8%	+10%/-34%
Source	SPE59	SPE59	SPE59	DSEP		

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

### Secondary Eclipse Parameters for KIC 012404954-01 / KOI 0361.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-11 \pm 3$	$1.76^{+0.21}_{-0.19}$	$1675^{+71}_{-47}$	$3129^{+159}_{-173}$	$3.580^{+1.323}_{-1.064}$
Alt.	$-7 \pm 3$	$1.53^{+0.20}_{-0.18}$	$1670^{+63}_{-45}$	$3061^{+208}_{-247}$	$3.143^{+1.717}_{-1.339}$

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



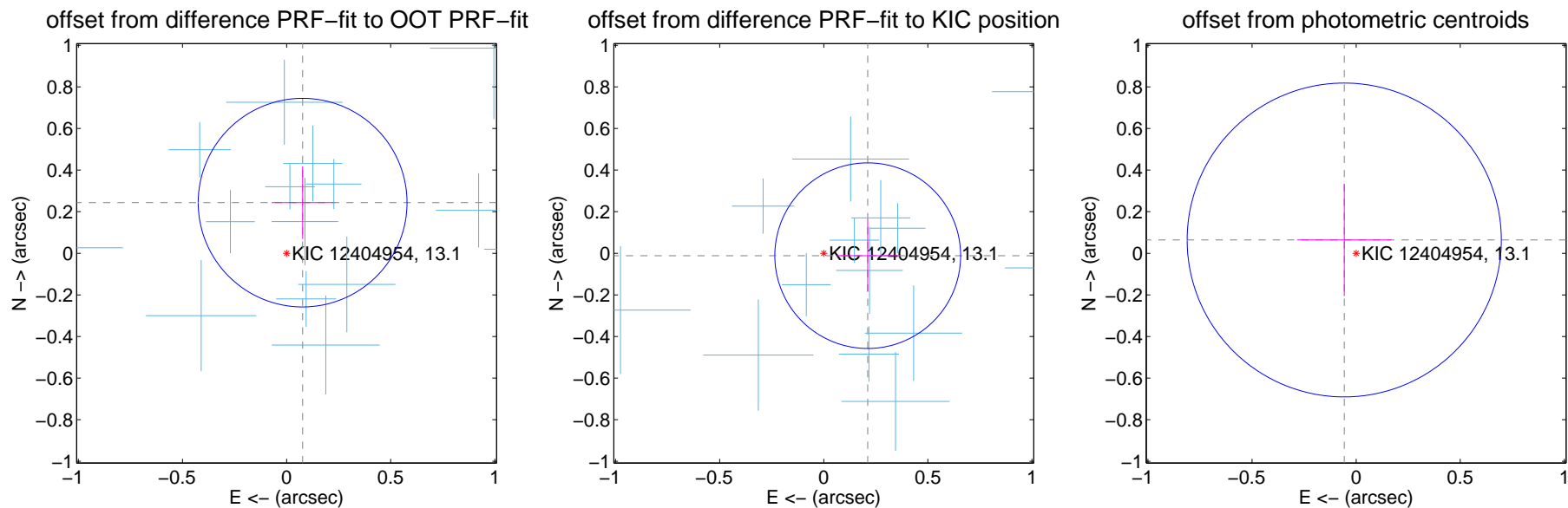
## DV Centroid Data

Supplemental centroid analysis for 012404954-01. Kepler magnitude: 13.10. Transit SNR 44.86

There are 17 quarters with good PRF difference image offsets

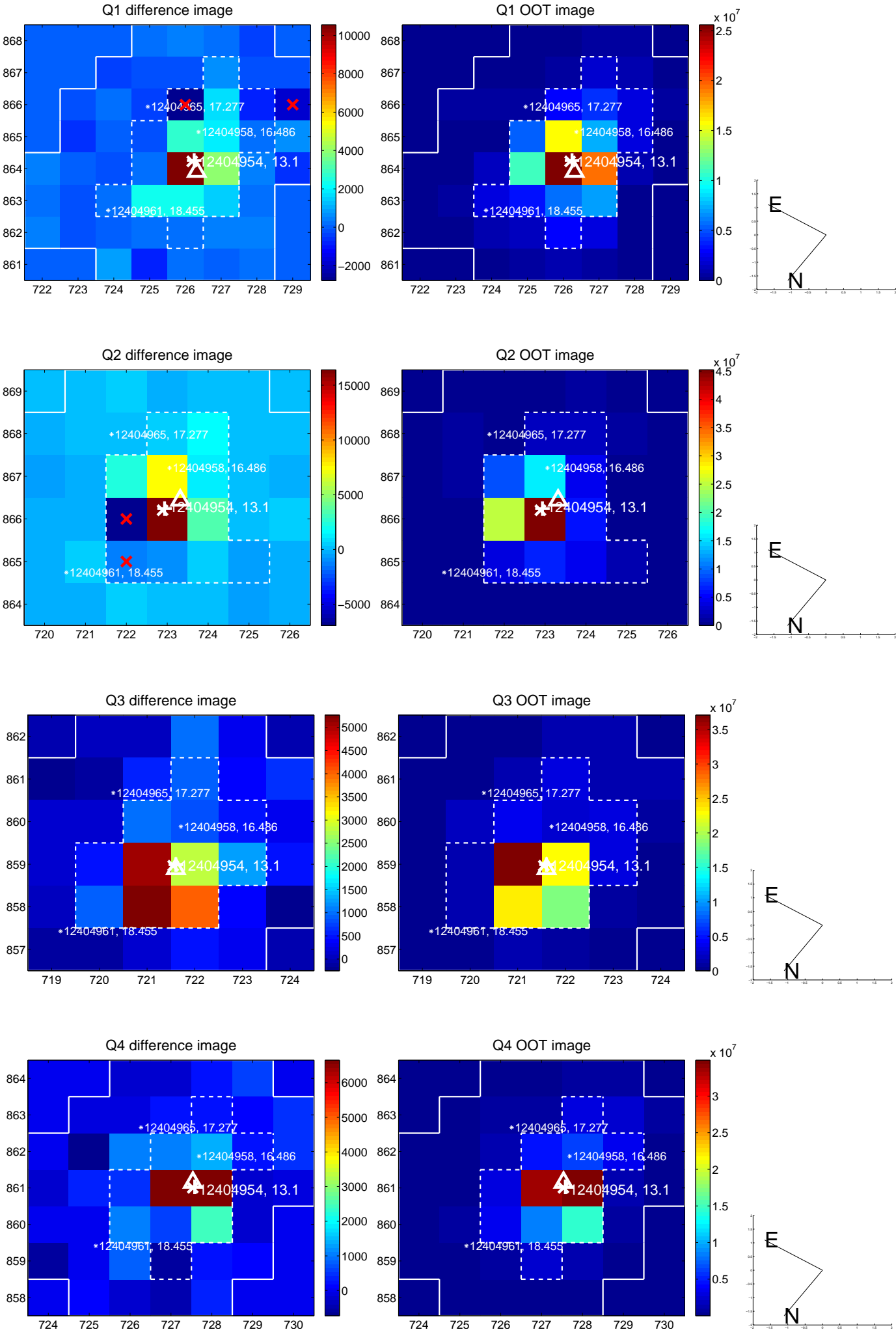
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.255 \pm 0.167$	1.53	$-0.077 \pm 0.149$	$0.244 \pm 0.174$
PRF-fit source offset from KIC position	$0.212 \pm 0.149$	1.42	$-0.211 \pm 0.148$	$-0.011 \pm 0.173$
photometric centroid source offset	$0.09 \pm 0.25$	0.34	$0.06 \pm 0.23$	$0.06 \pm 0.27$

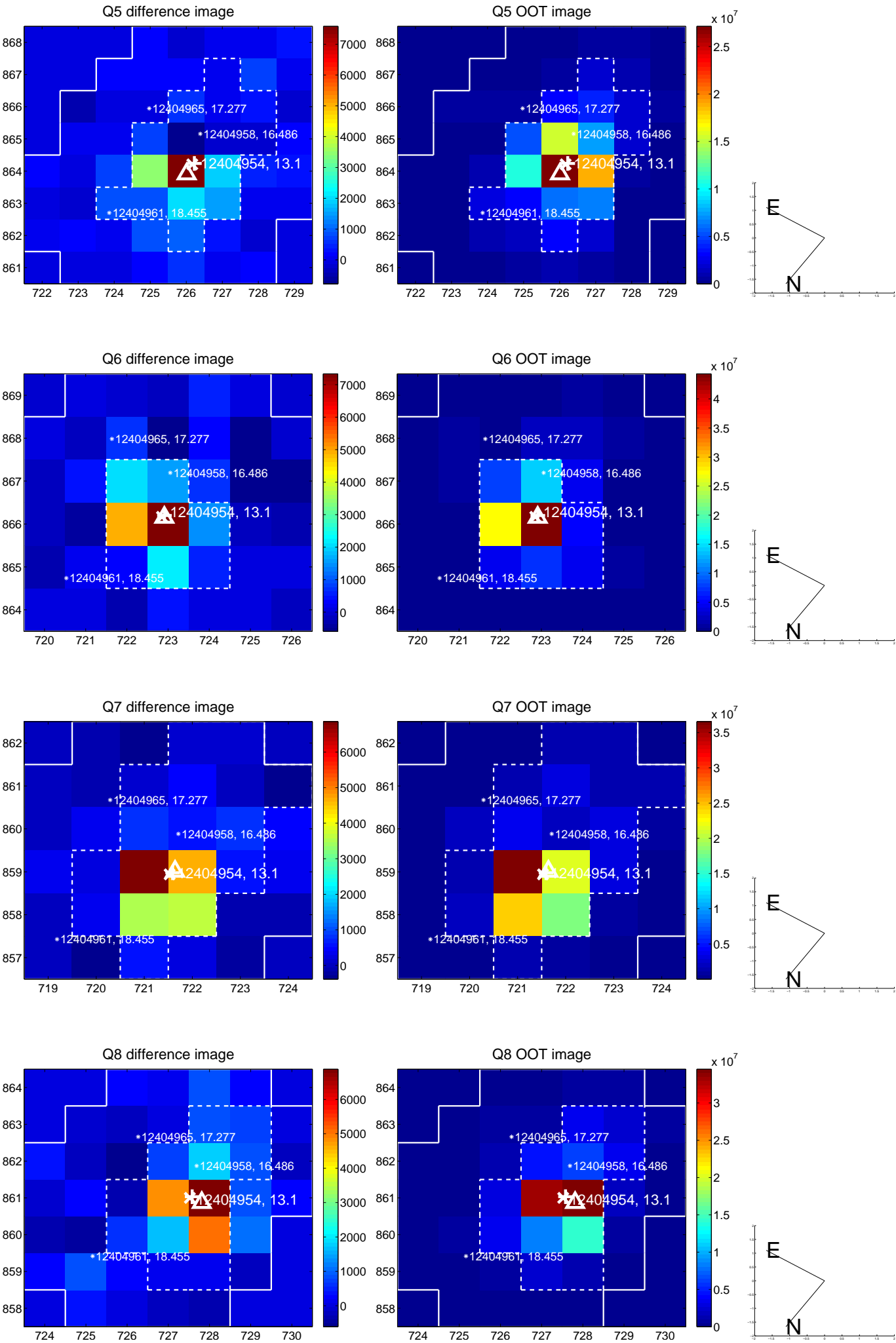


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

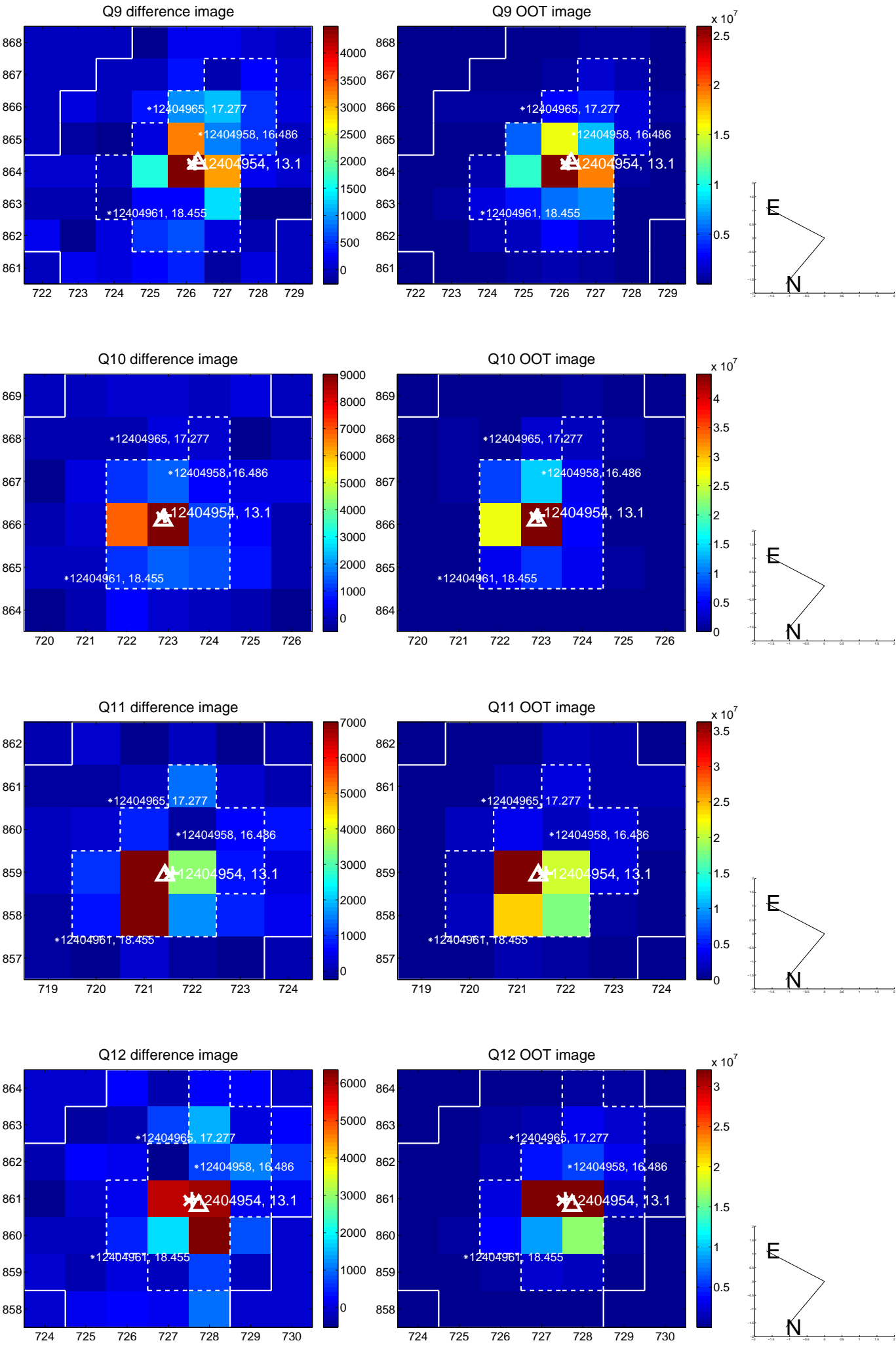
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



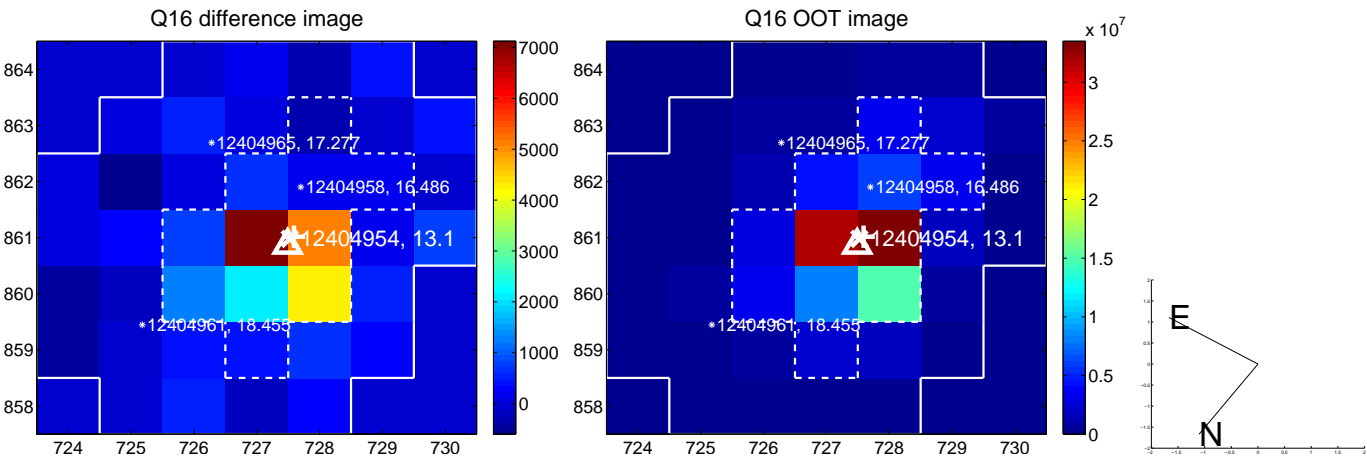
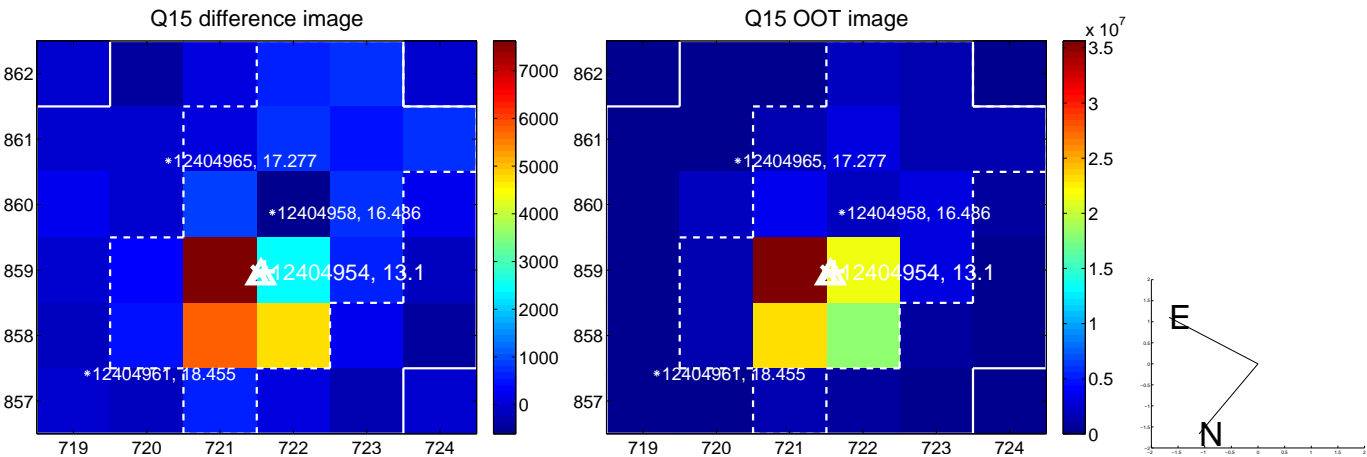
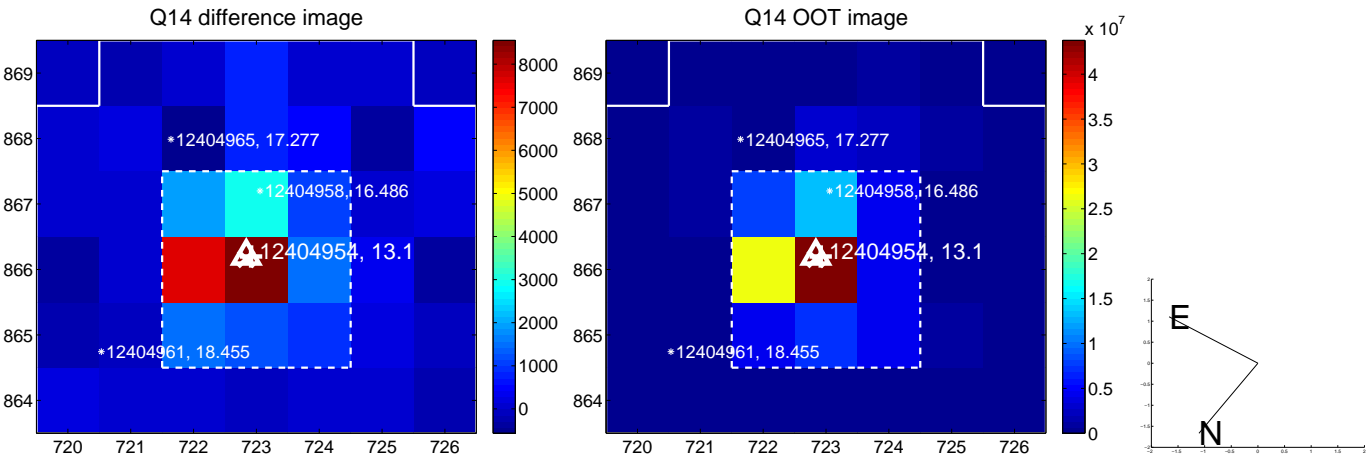
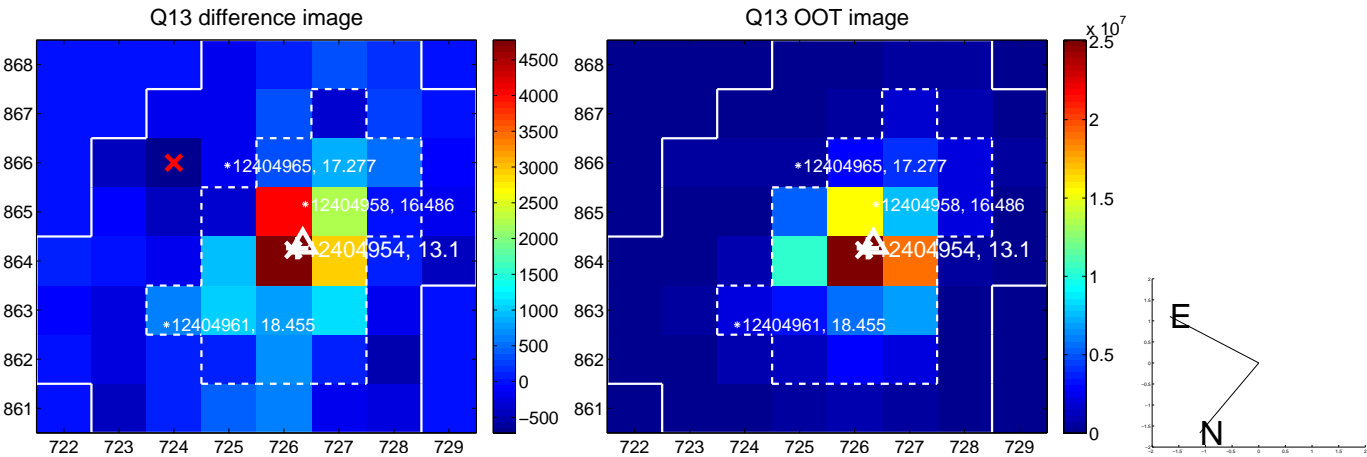
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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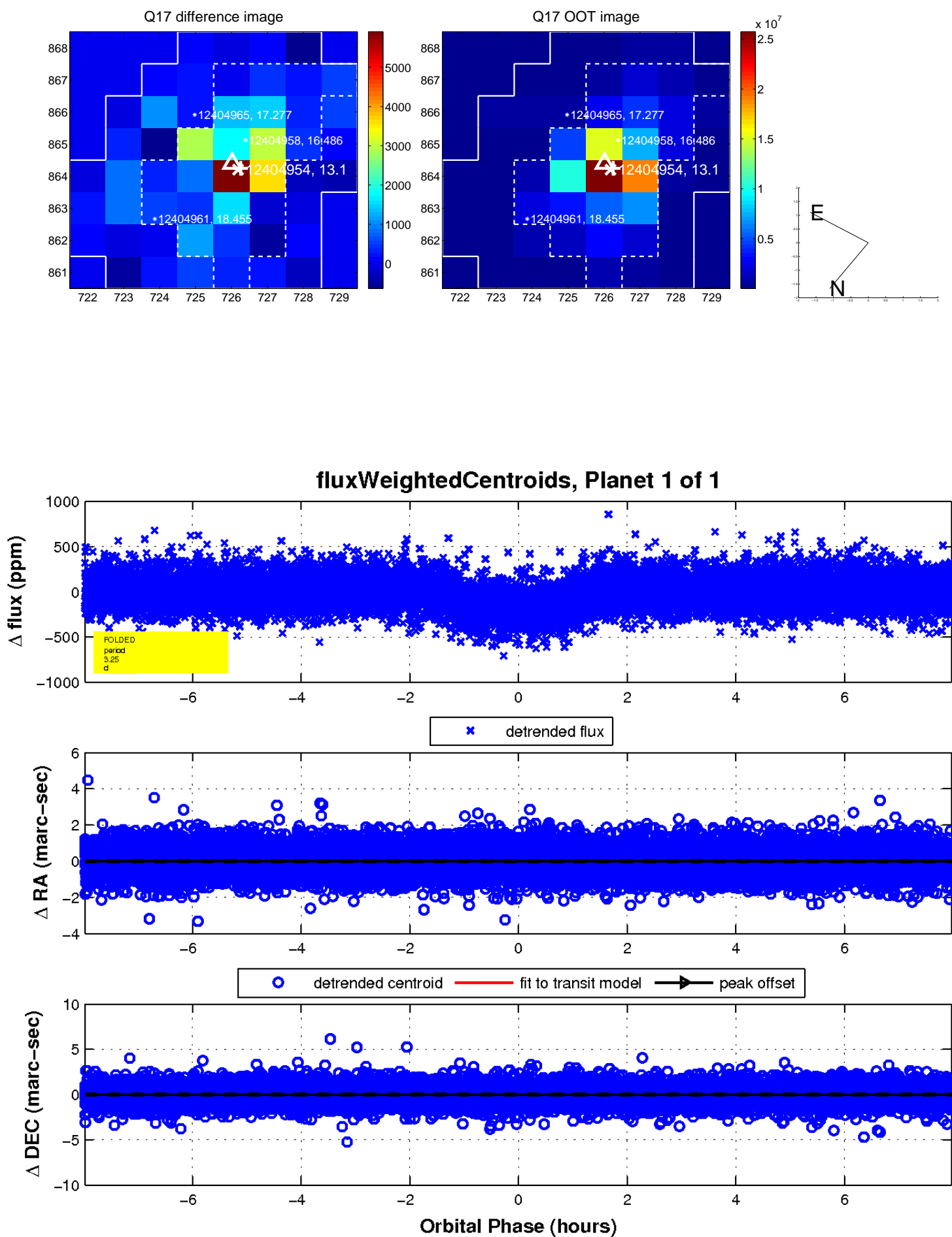


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

