

# KIC 007870032

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007870032-01	OBS	1818.01	16.877265	138.648121	793.7	3.880	48.8	51.3	0.87	5497	2.67	40.18

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007870032-01	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.

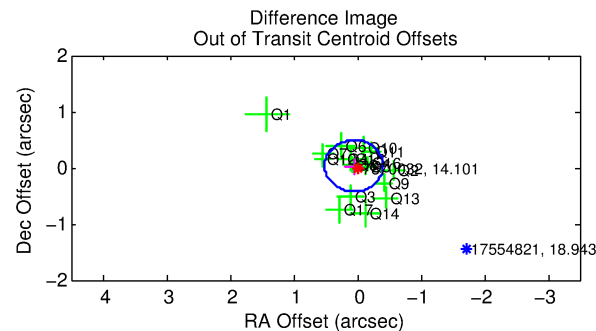
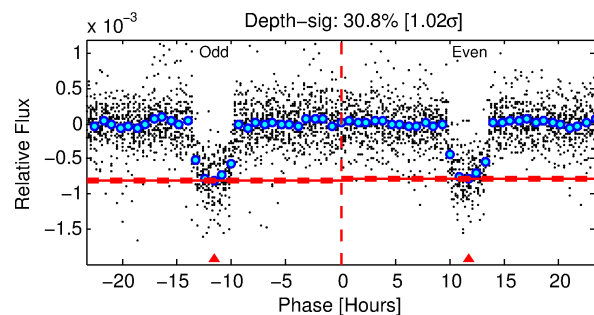
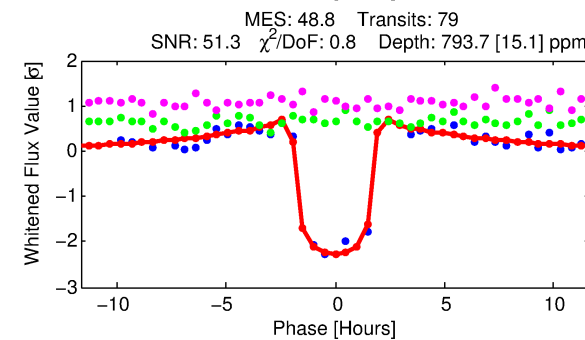
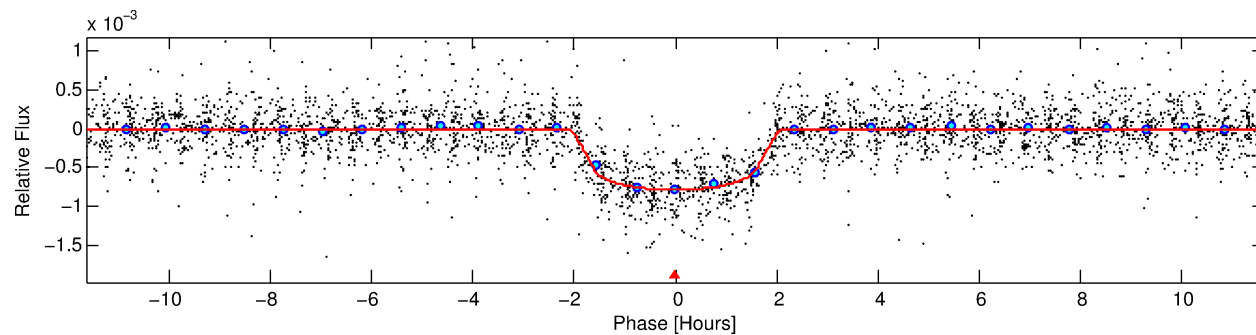
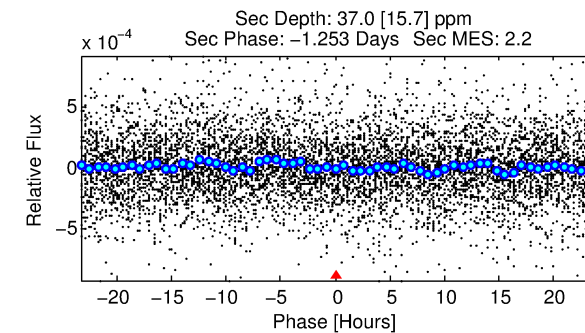
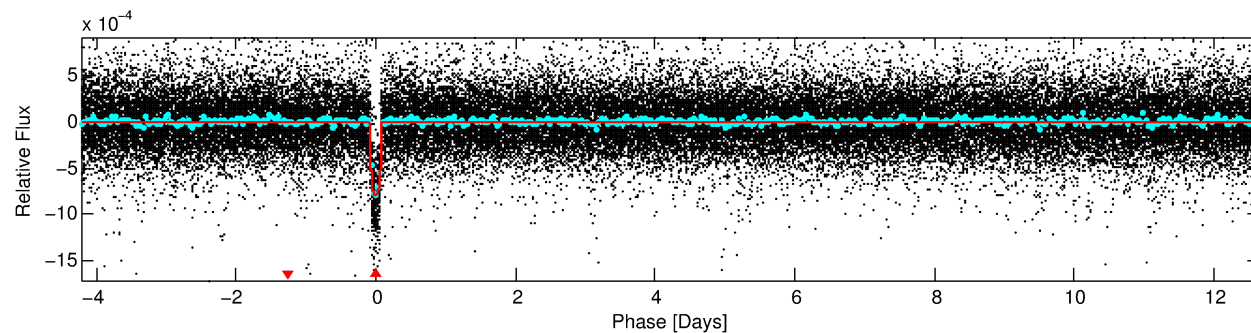
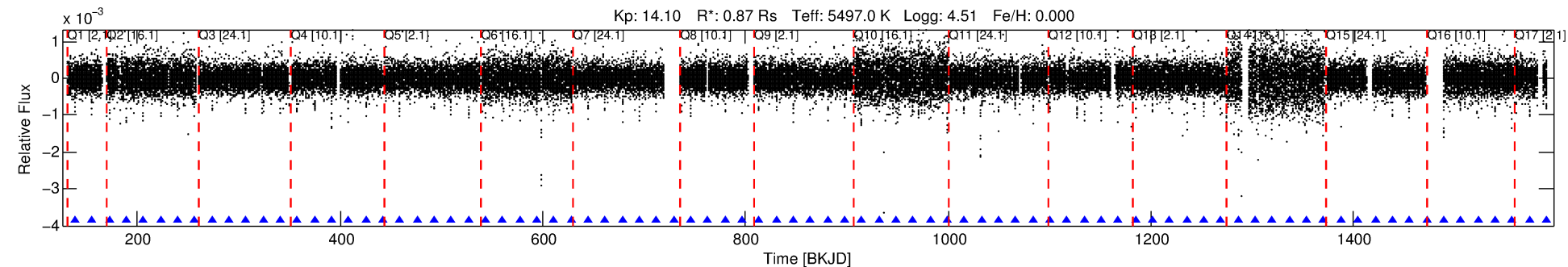
## Ephemeris Match Information For 007870032-01

No Significant Match Found

# DV One-Page Summary

KIC: 7870032 Candidate: 1 of 1 Period: 16.877 d

KOI: K01818.01 Corr: 0.988



## DV Fit Results:

Period = 16.87727 [0.00003] d  
Epoch = 138.6481 [0.0014] BKJD  
Rp/R\* = 0.0280 [0.0040]  
a/R\* = 23.60 [13.38]  
b = 0.74 [0.35]  
Seff = 40.18 [7.12]  
Teff = 642 [28] K  
Rp = 2.67 [0.48] Re  
a = 0.1244 [0.0127] AU  
Ag = 44.35 [23.69] [1.83 $\sigma$ ]  
Teffp = 2562 [331] K [5.79 $\sigma$ ]

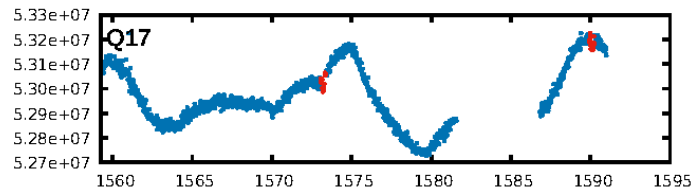
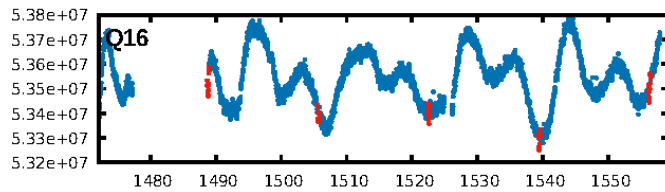
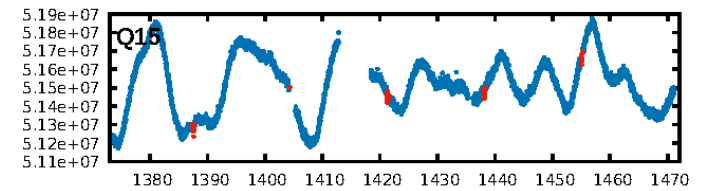
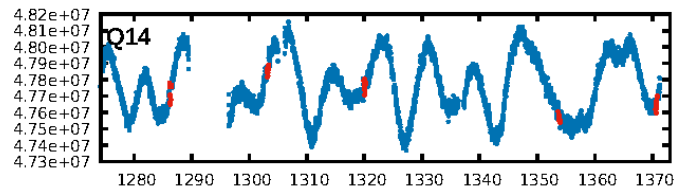
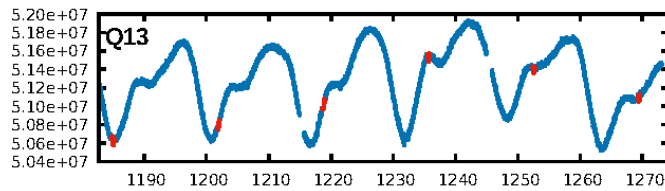
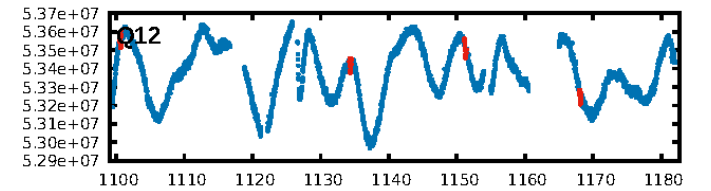
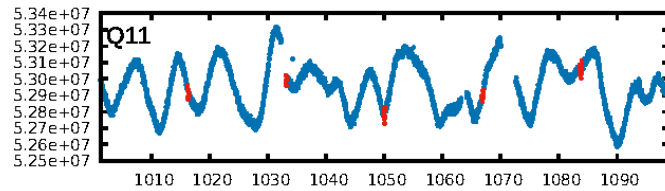
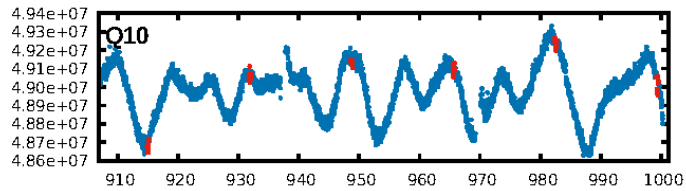
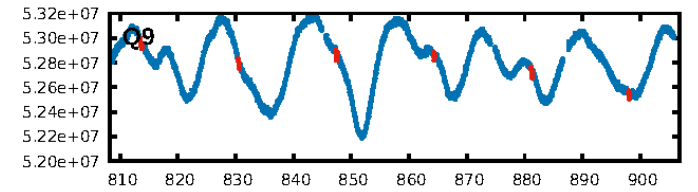
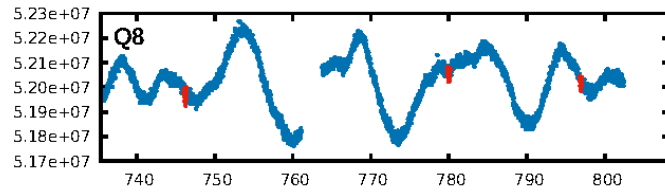
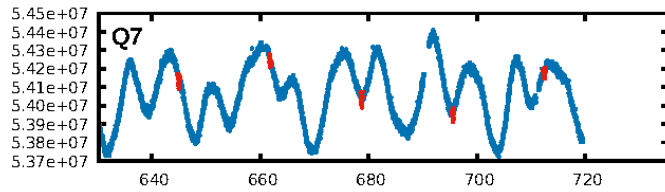
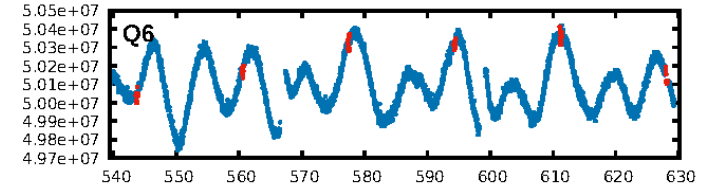
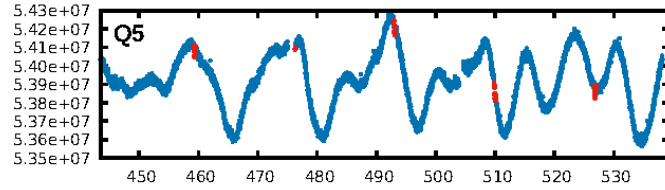
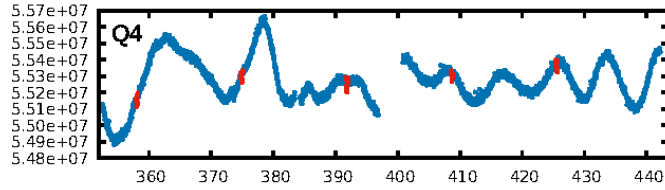
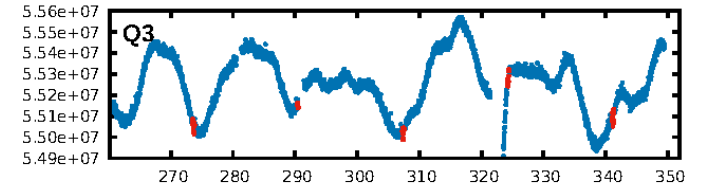
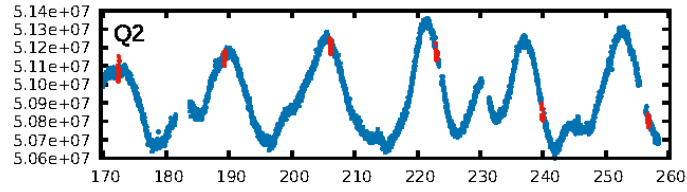
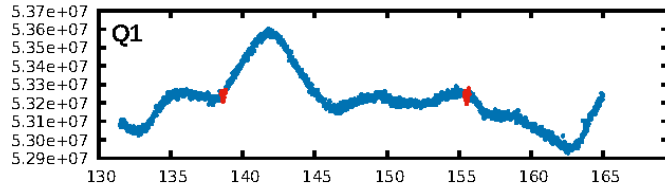
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 33.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [75/75]  
GhostDiagnostic-chr: 2.431  
Centroid-sig: 2.9%  
Centroid-so: 0.349 arcsec [1.76 $\sigma$ ]  
OotOffset-rm: 0.063 arcsec [0.41 $\sigma$ ]  
KicOffset-rm: 0.286 arcsec [1.86 $\sigma$ ]  
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]

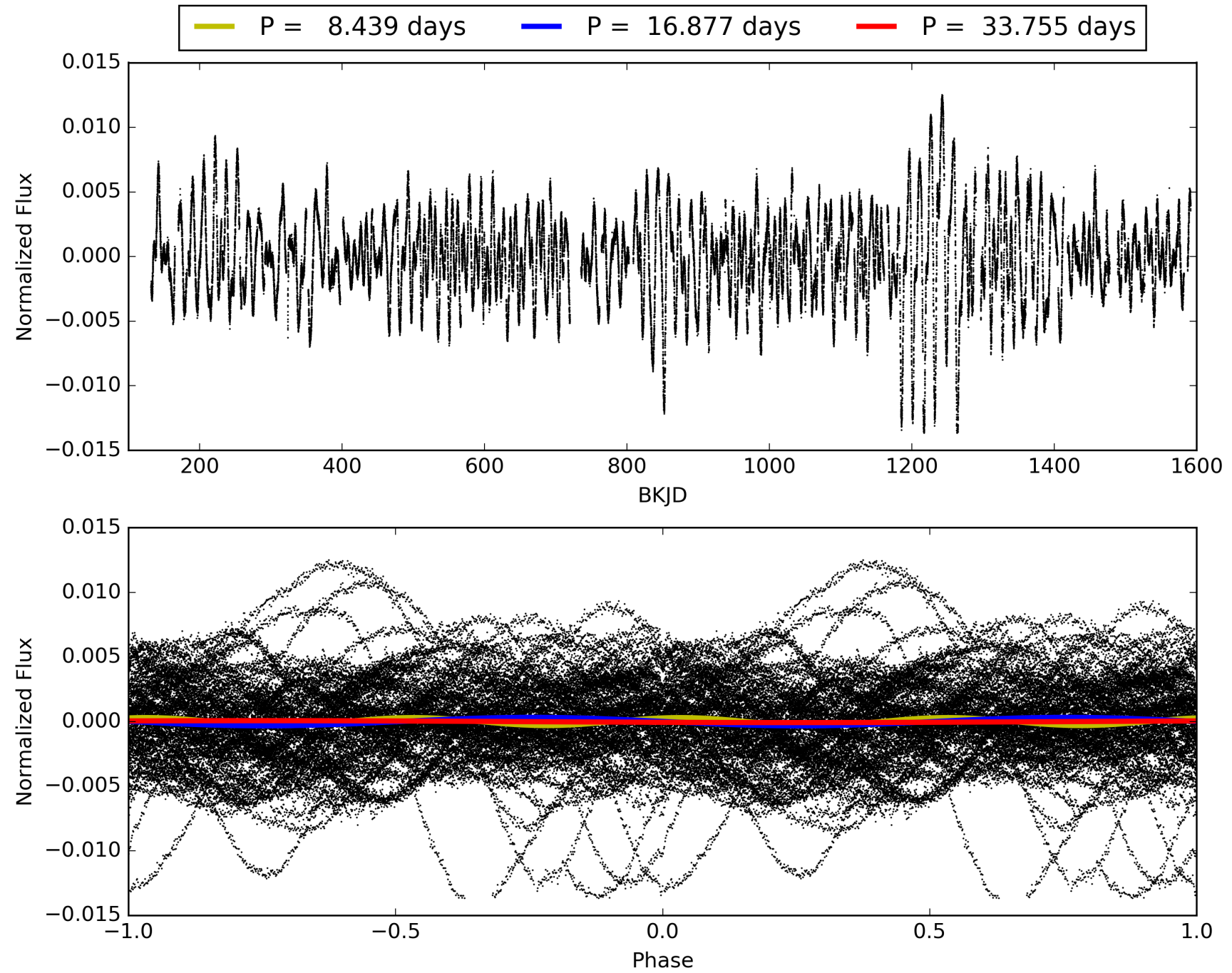
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:40:17 Z

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

# TCE 007870032-01, PDC Light Curves

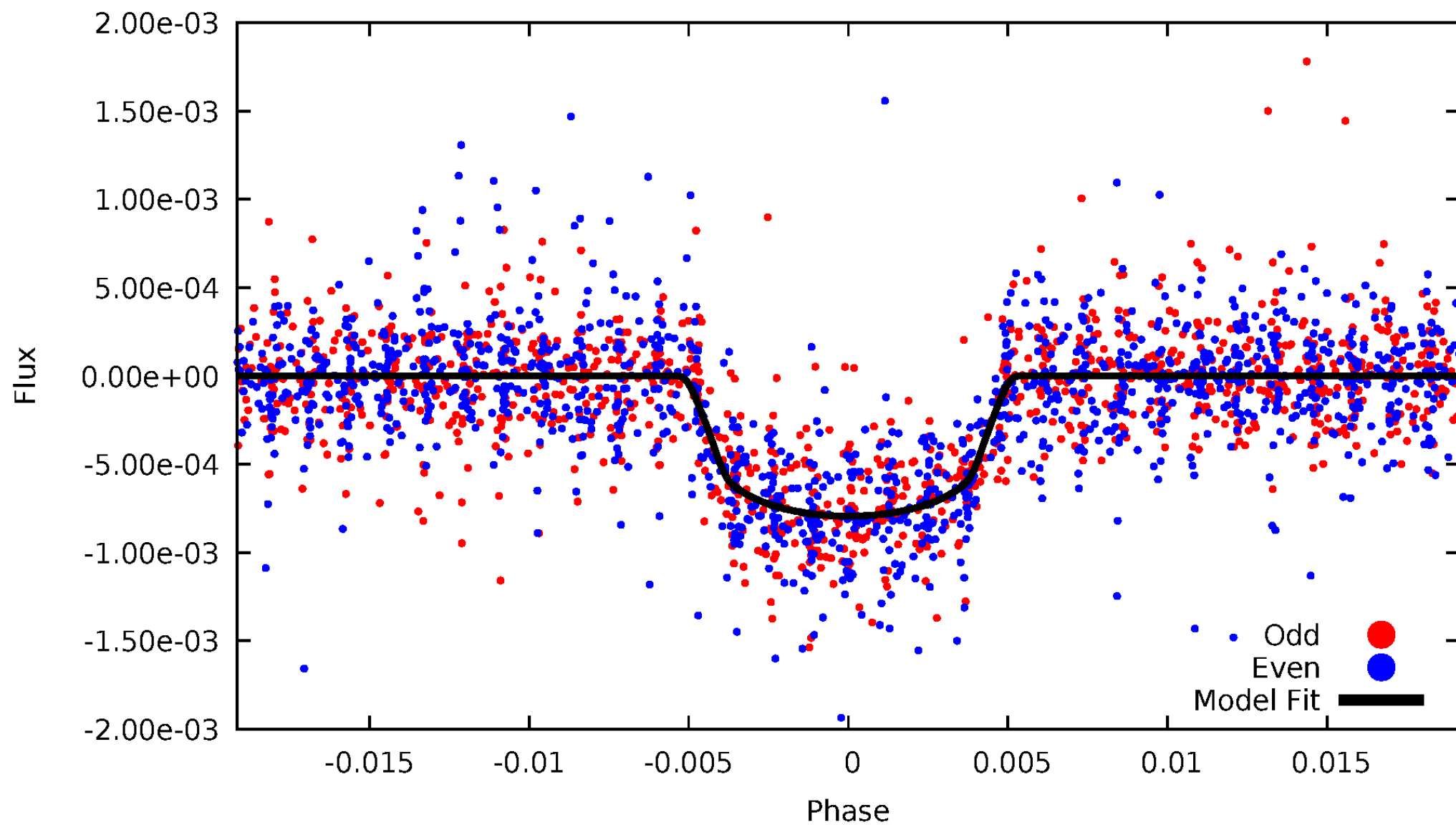


TCE 007870032-01



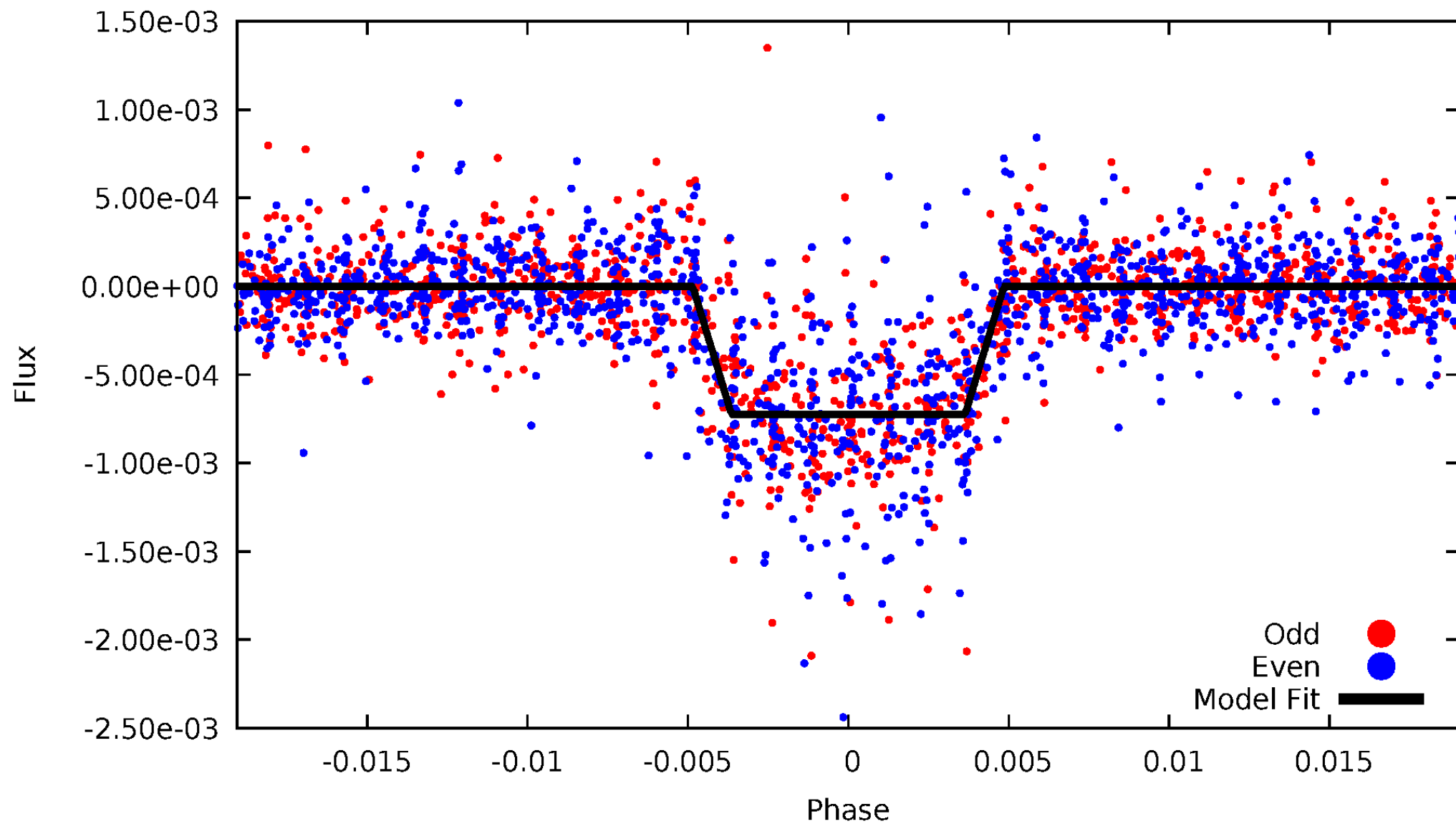
# DV Odd/Even

TCE 007870032-01



# ALT Odd/Even

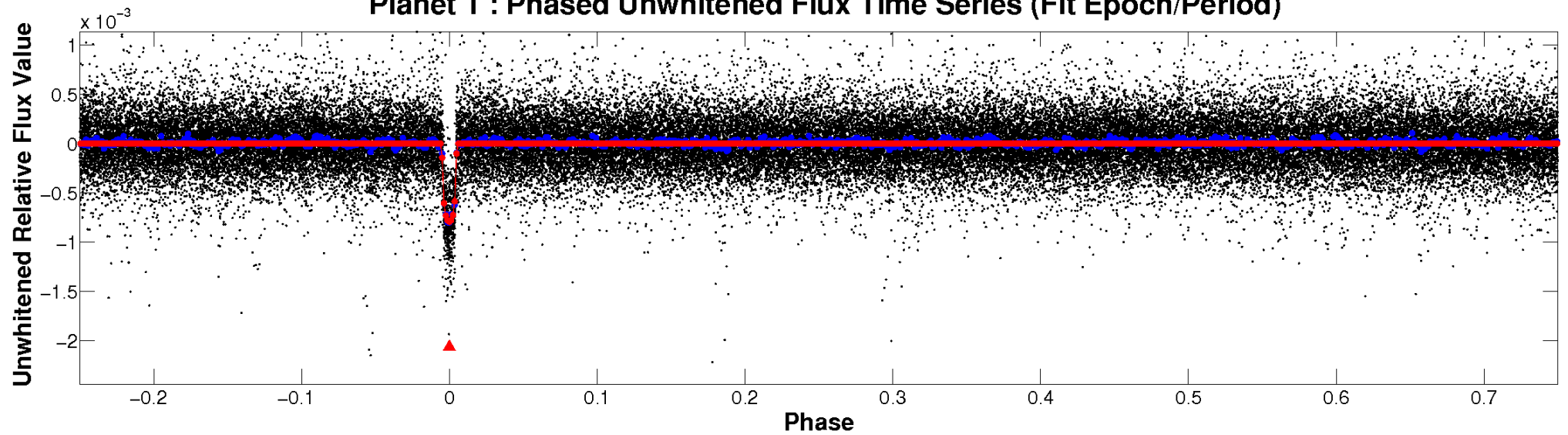
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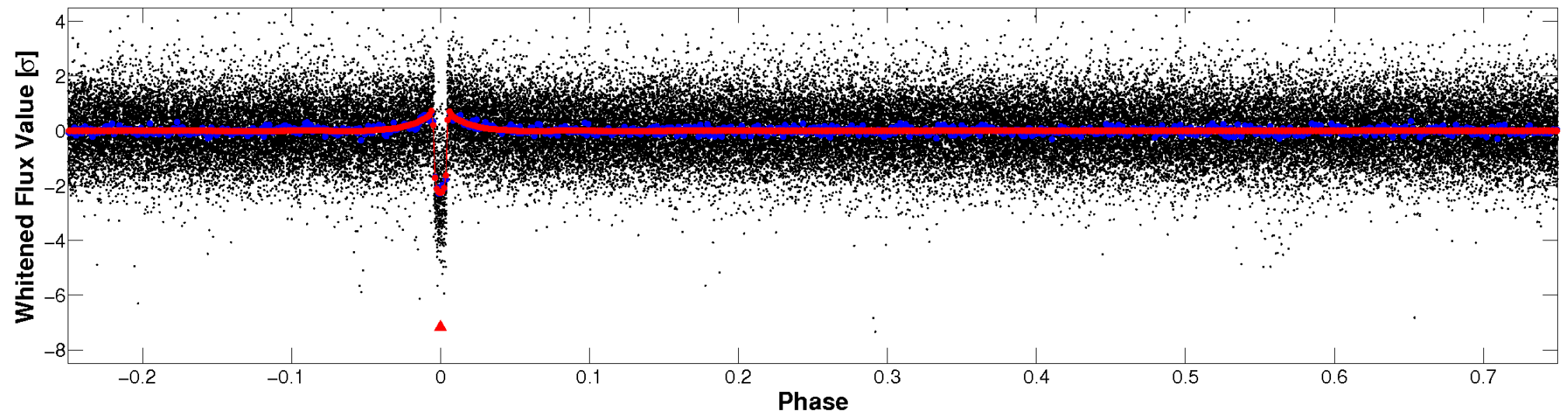


# Non-Whitened Vs. Whitened Light Curve

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

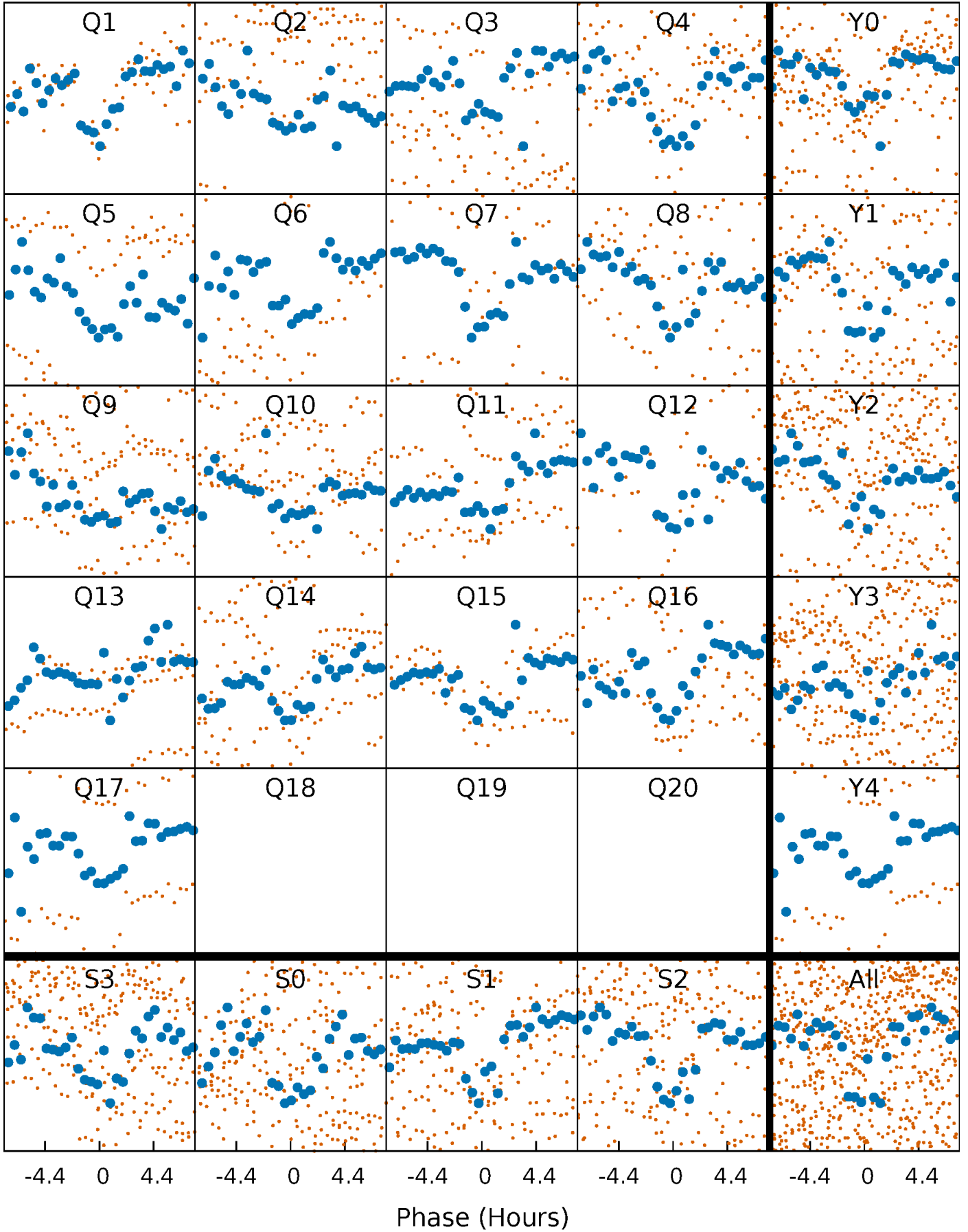


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

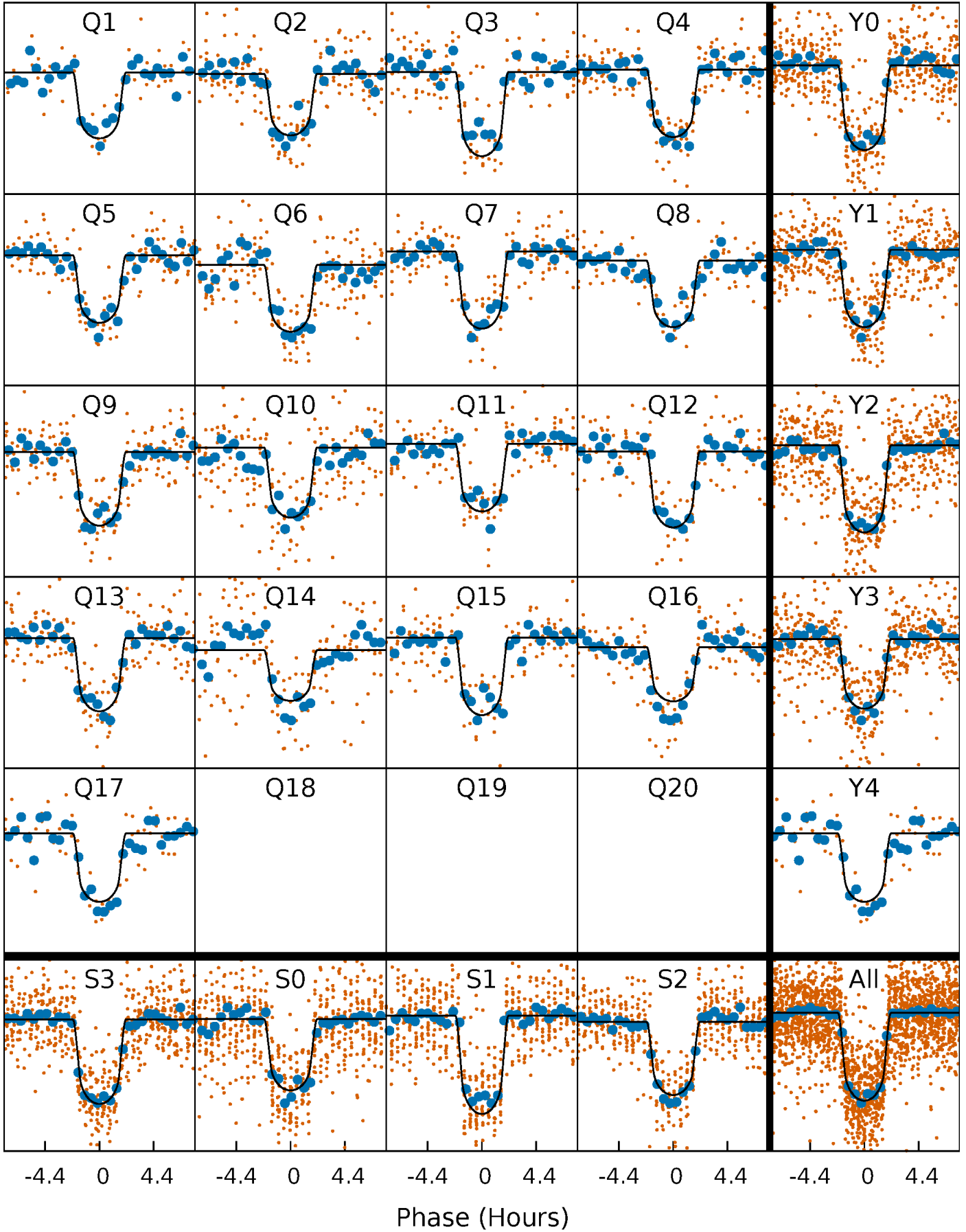
TCE 007870032-01 P= 16.877265 Days  $T_0=138.648121$  (BKJD)





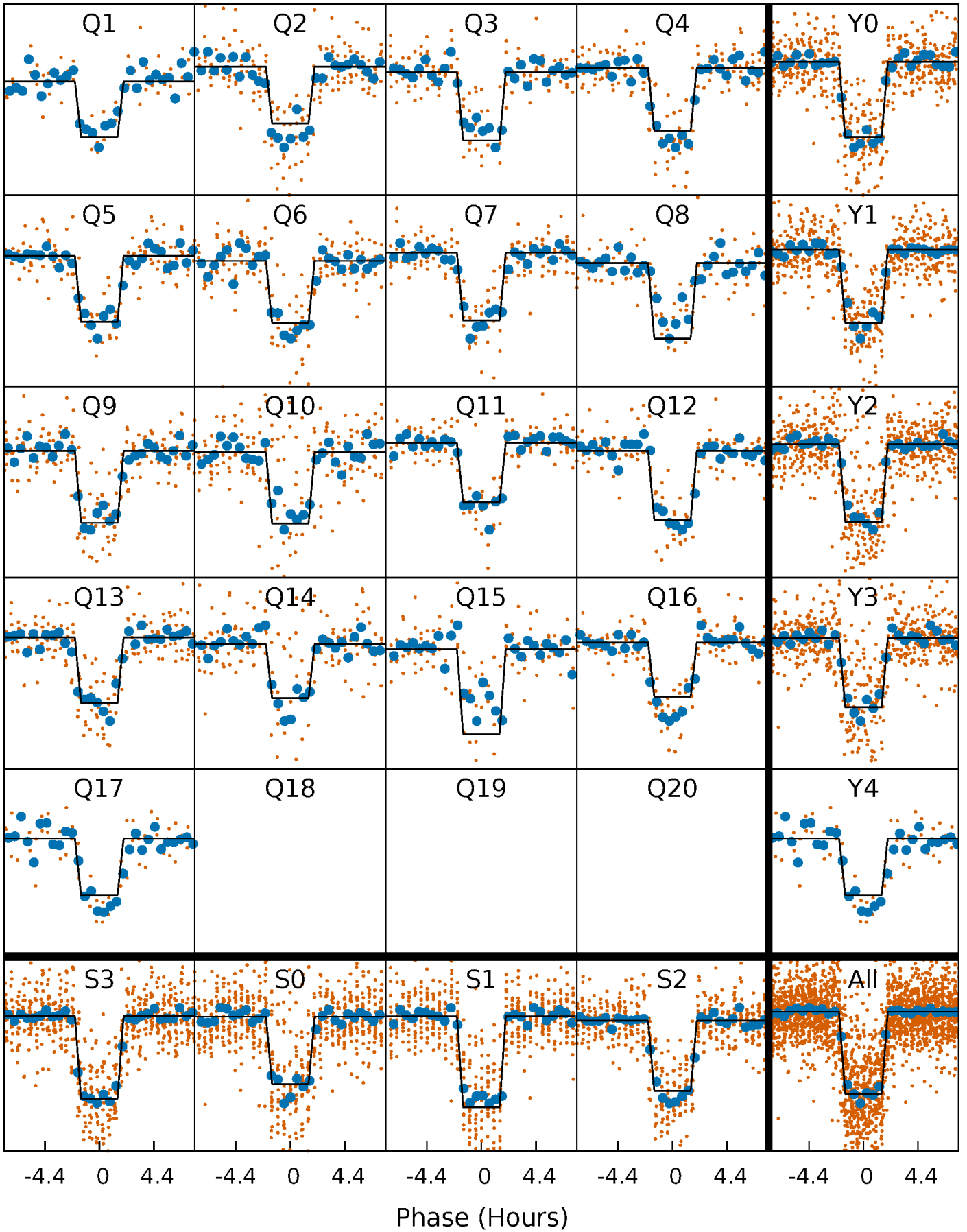
# DV Quarter-Phased Transit Curves

TCE 007870032-01 P= 16.877265 Days  $T_0=138.648121$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

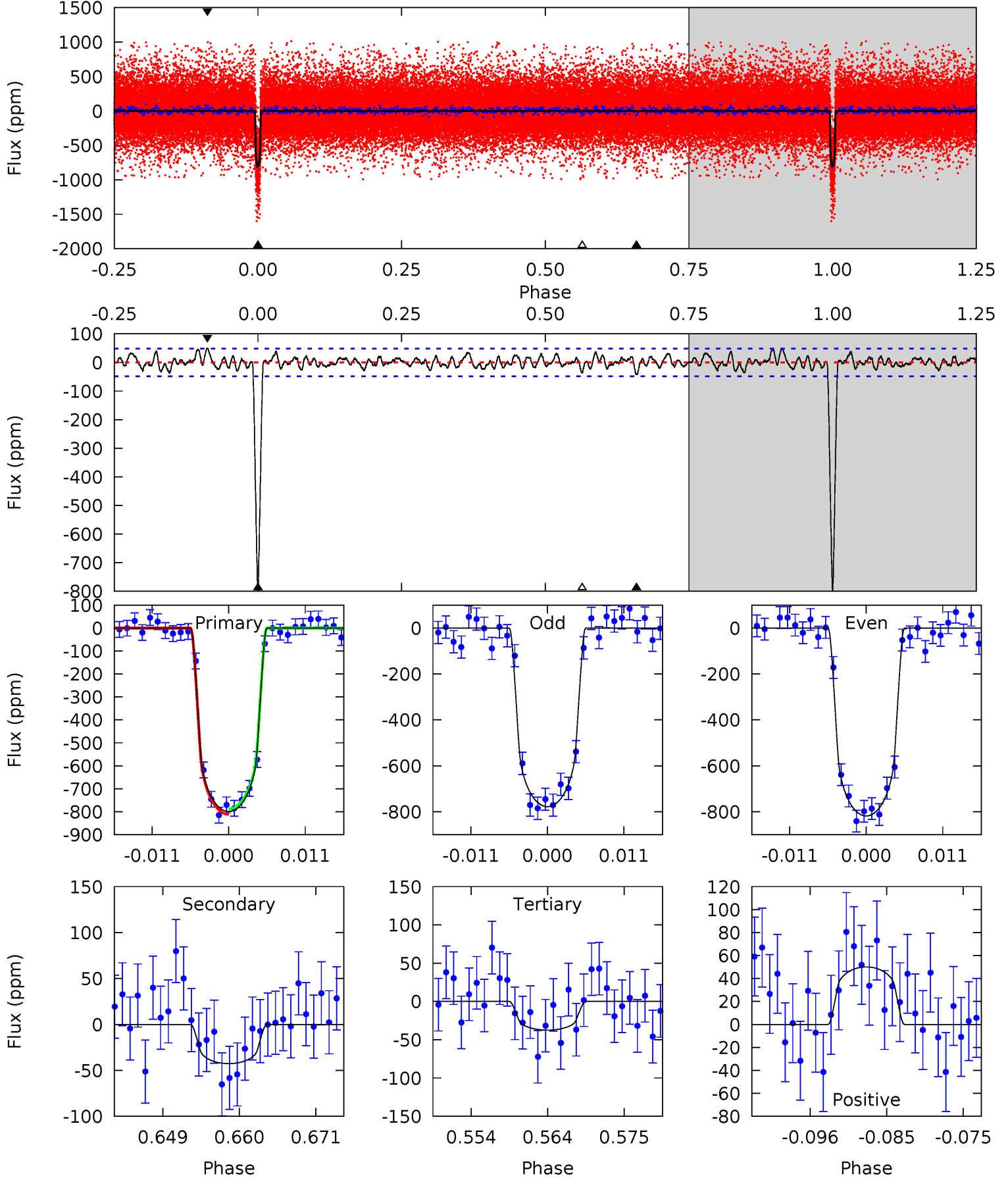
TCE 007870032-01 P= 16.877214 Days  $T_0=138.650524$  (BKJD)



# DV Model-Shift Uniqueness Test

007870032-01, P = 16.877265 Days, E = 121.770856 Days

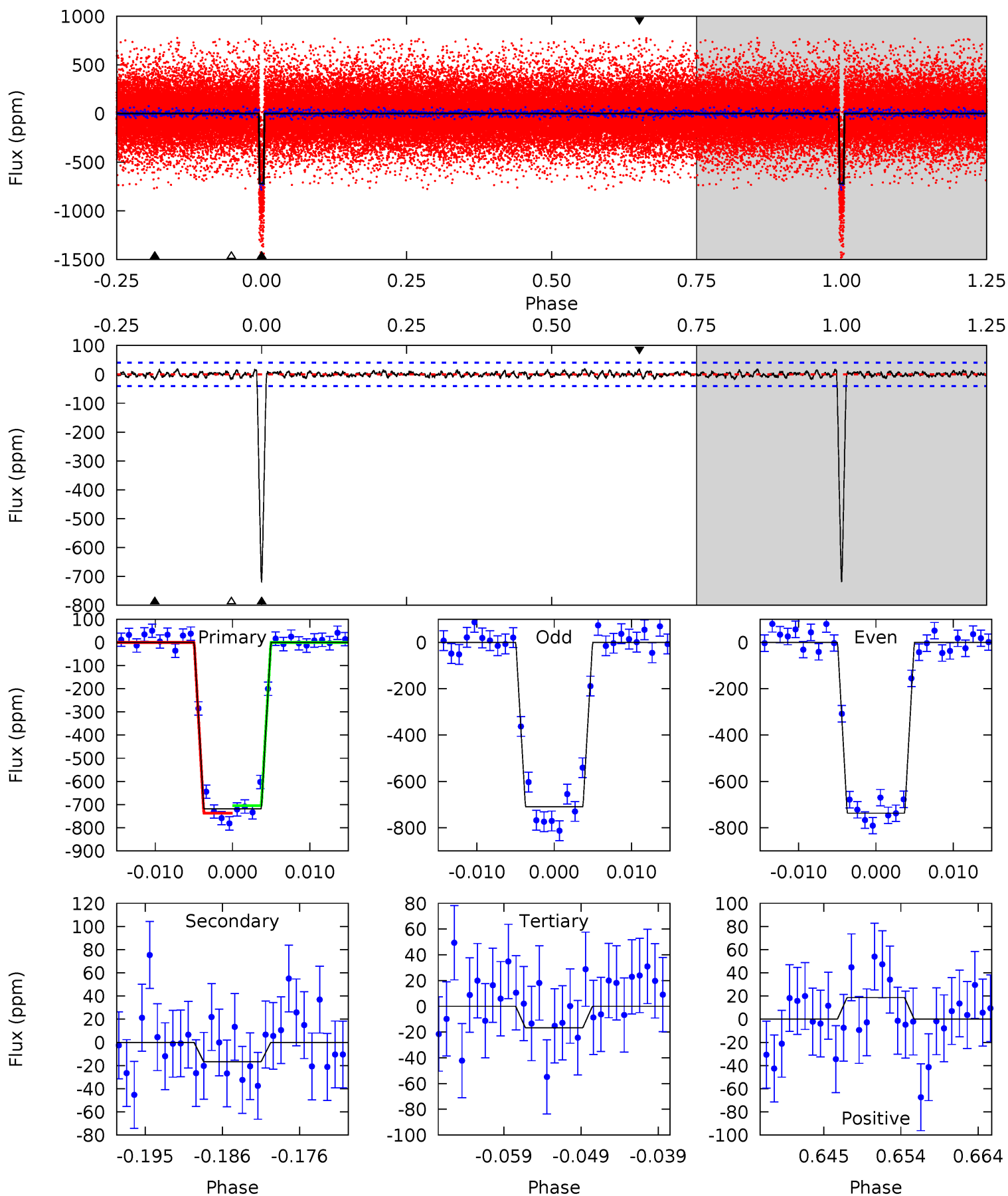
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.7	4.42	3.87	5.18	5.01	2.55	1.54	78.8	77.5	0.54	-0.76	2.12	1.01	0.06	1.19



# Alt Model-Shift Uniqueness Test

007870032-01, P = 16.877214 Days, E = 121.773310 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
89.1	2.06	2.05	2.31	5.03	2.58	0.75	87.0	86.8	0.01	-0.24	1.76	1.02	0.03	2.00



### Stellar Parameters For KIC 007870032

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5497^{+109}_{-109}$	$4.512^{+0.042}_{-0.091}$	$0.000^{+0.150}_{-0.150}$	$0.872^{+0.098}_{-0.053}$	$0.901^{+0.055}_{-0.055}$	$1.917^{+0.352}_{-0.515}$
	+2%/-2%	+1%/-2%	+inf%/-inf%	+11%/-6%	+6%/-6%	+18%/-27%
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 007870032-01 / KOI 1818.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-43 \pm 10$	$2.69^{+0.42}_{-0.38}$	$903^{+32}_{-27}$	$3227^{+196}_{-192}$	$49^{+24}_{-16}$
Alt.	$-17 \pm 8$	$2.61^{+0.40}_{-0.42}$	$904^{+30}_{-27}$	$2848^{+208}_{-250}$	$21^{+14}_{-11}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

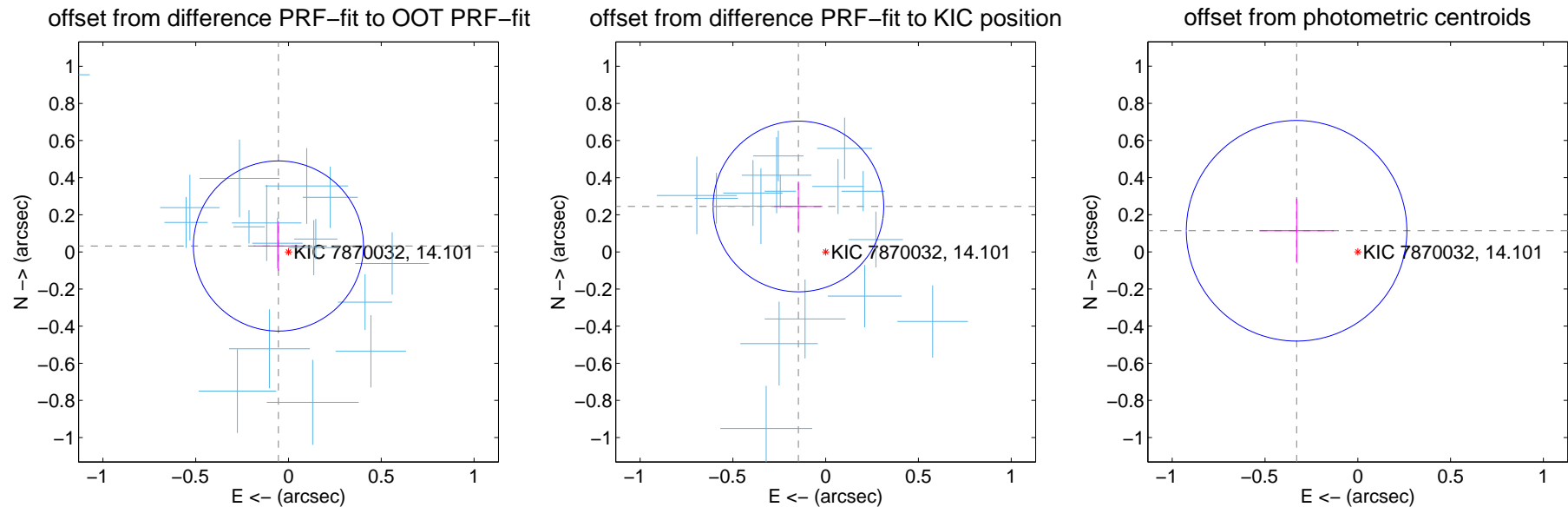
## DV Centroid Data

Supplemental centroid analysis for 007870032-01. Kepler magnitude: 14.10. Transit SNR 51.34

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

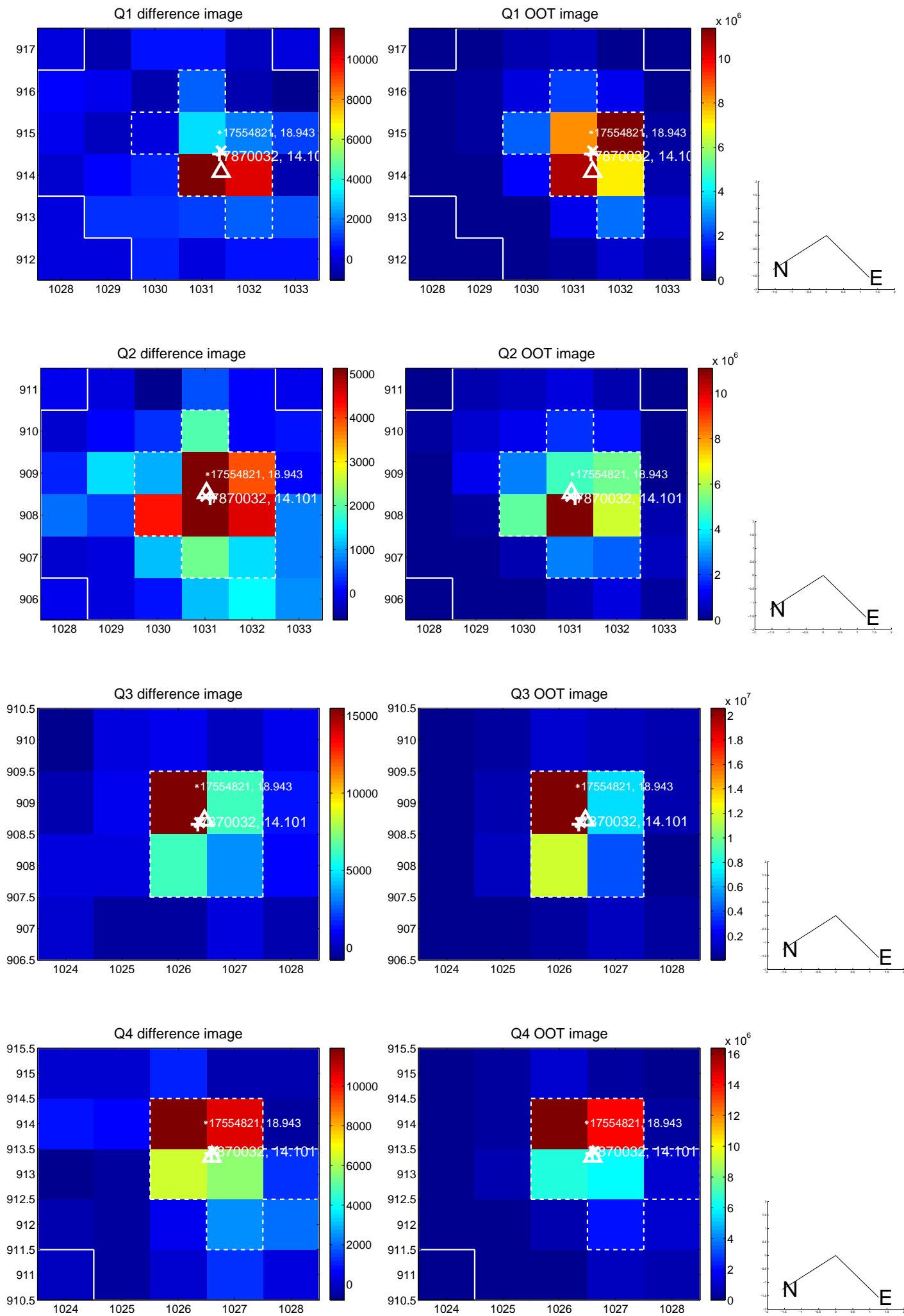
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.153$	0.41	$0.054 \pm 0.133$	$0.032 \pm 0.134$
PRF-fit source offset from KIC position	$0.286 \pm 0.153$	1.86	$0.147 \pm 0.129$	$0.245 \pm 0.134$
photometric centroid source offset	$0.35 \pm 0.20$	1.76	$0.33 \pm 0.20$	$0.11 \pm 0.17$



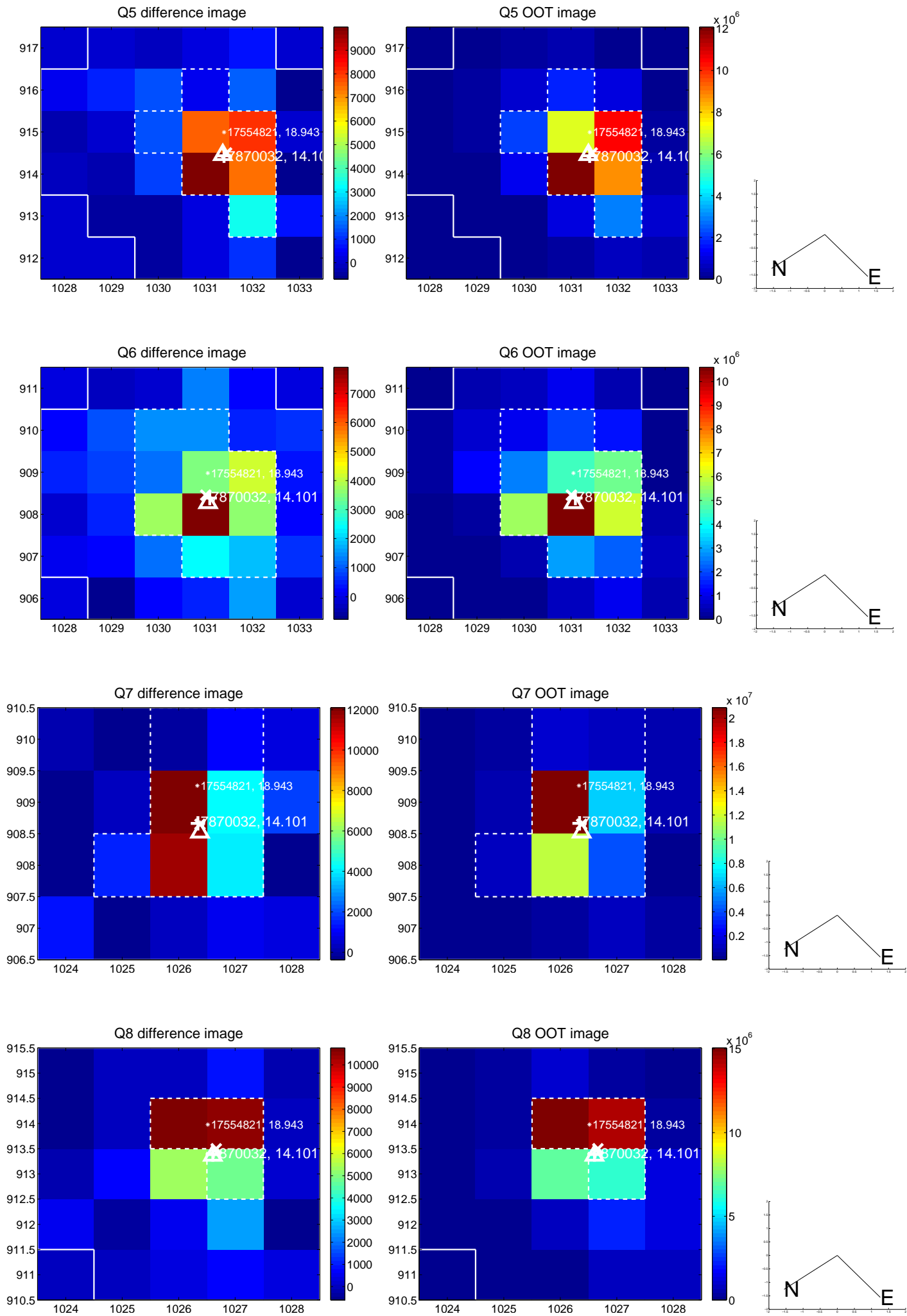
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



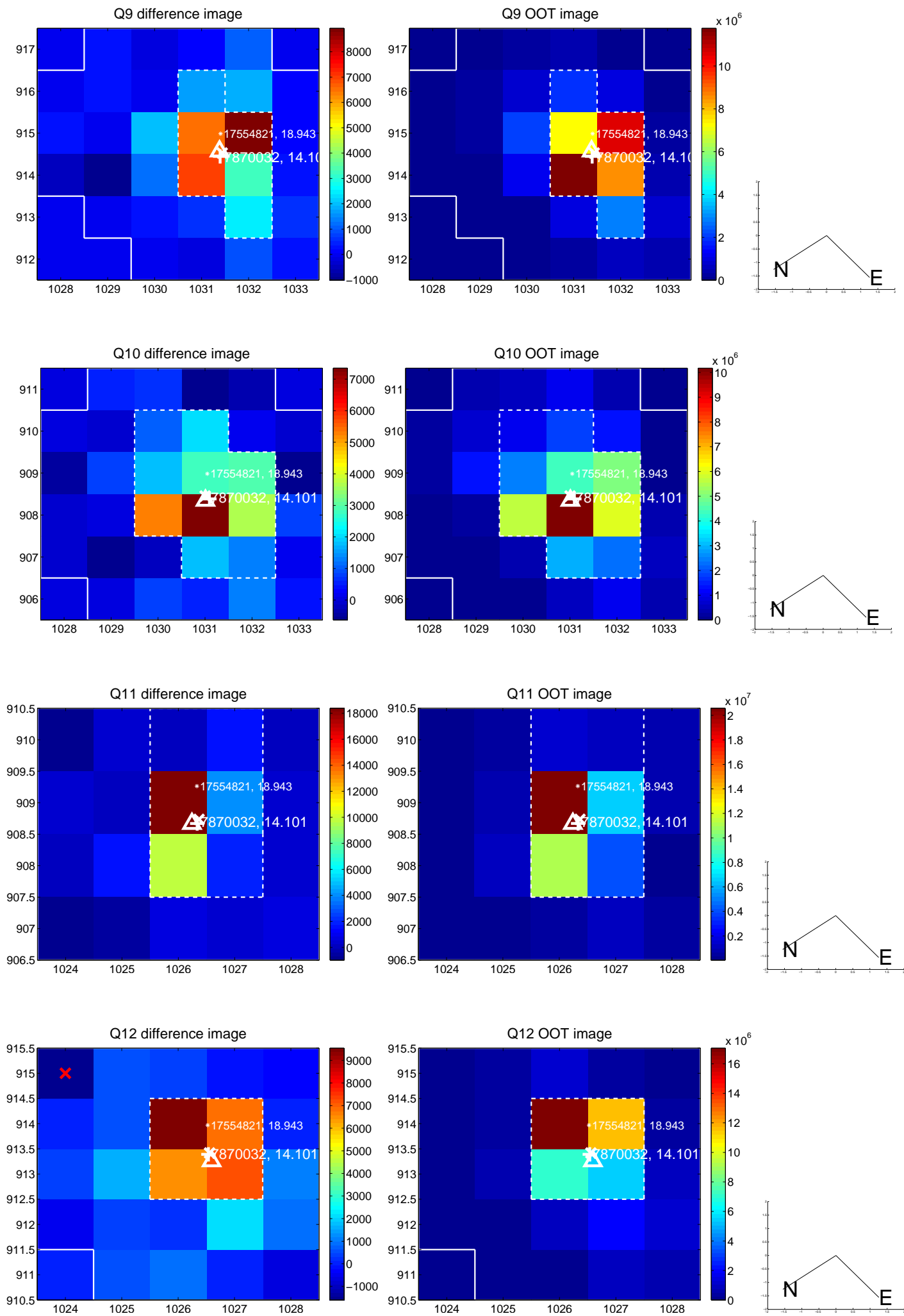
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



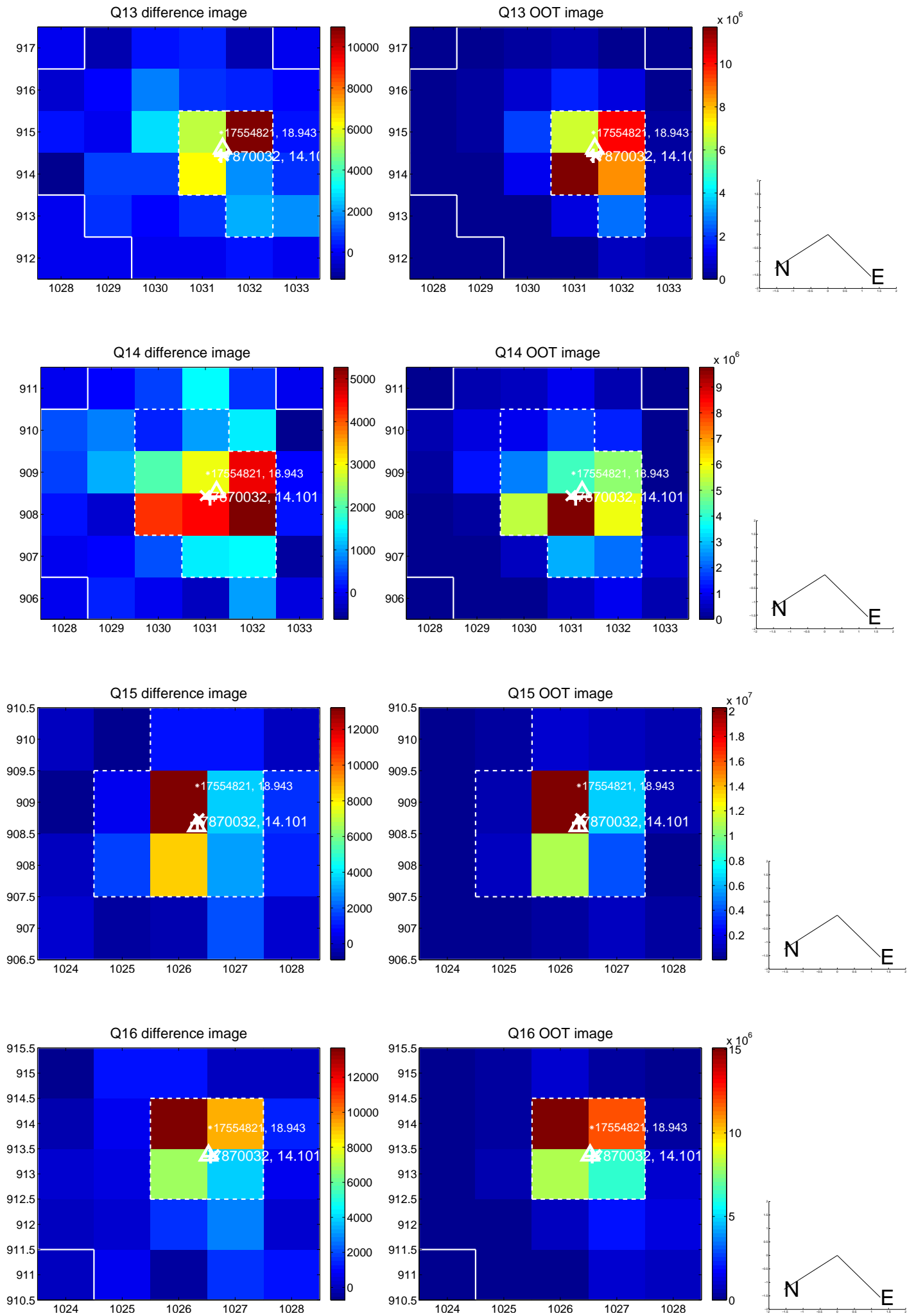
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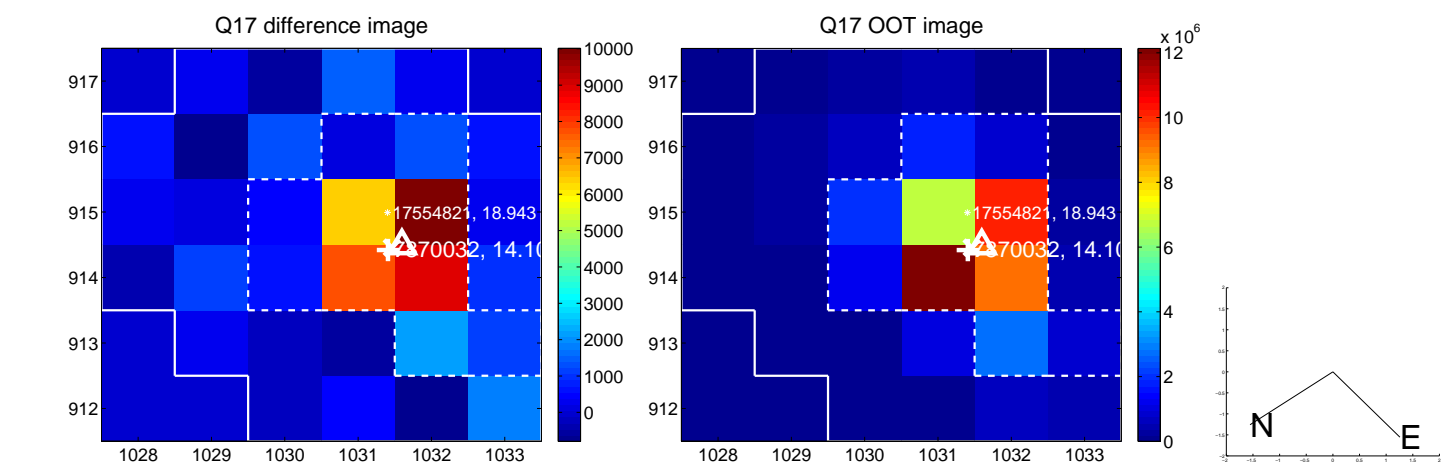
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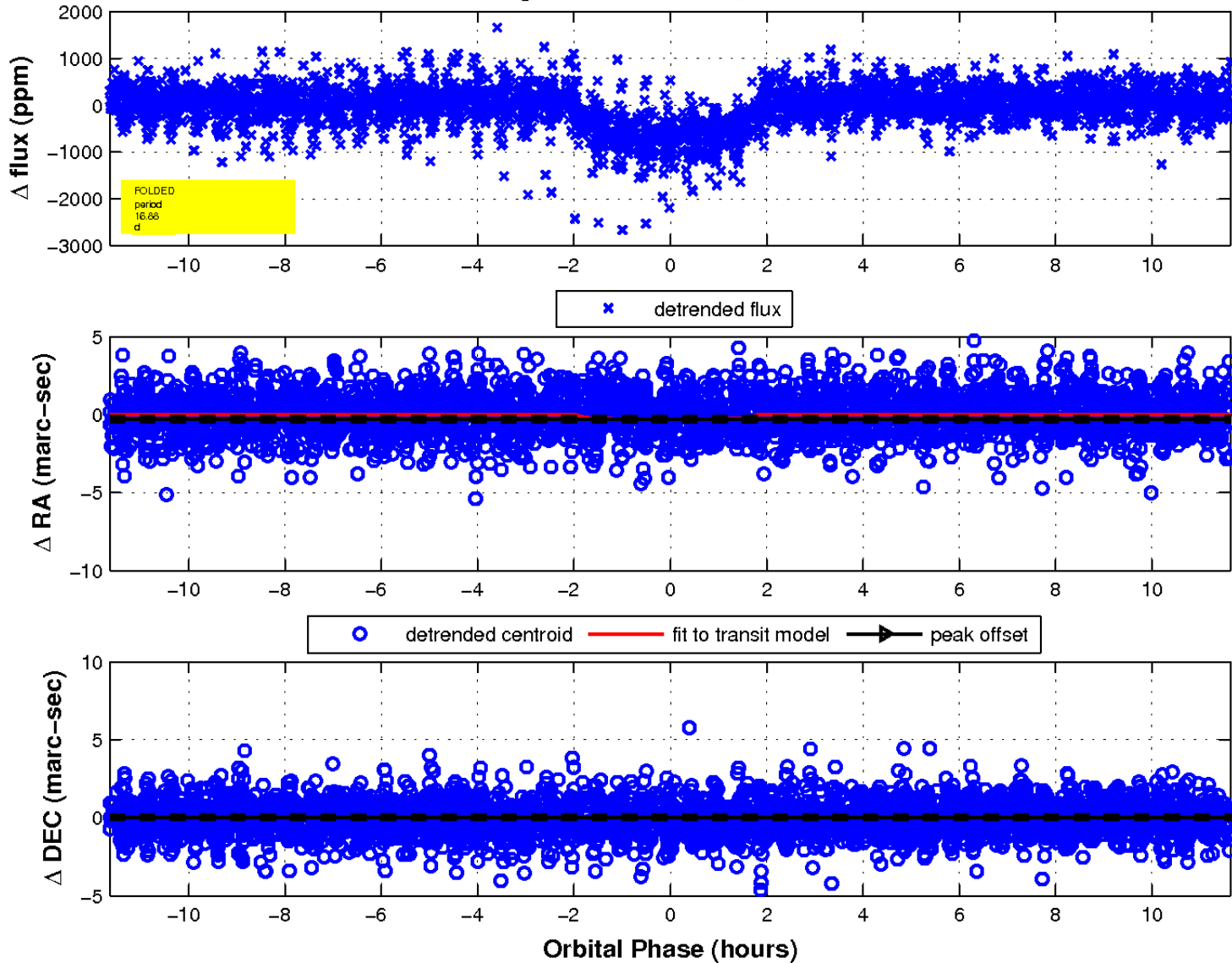
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

