

# KIC 008380709

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008380709-01	OBS	2468.01	24.334459	147.416292	317.3	6.810	14.8	15.5	0.97	6091	1.86	41.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008380709-01	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.

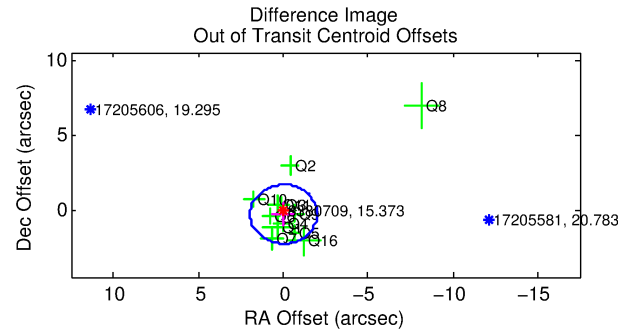
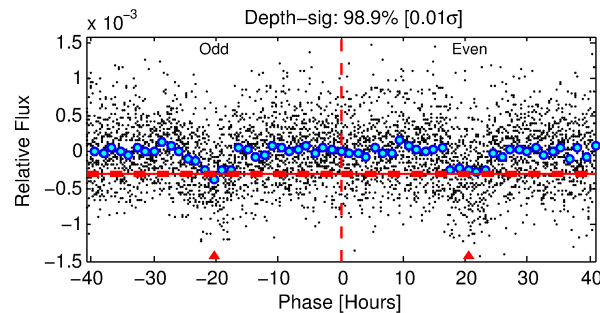
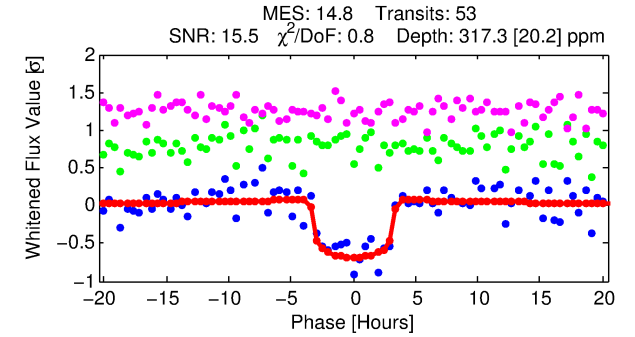
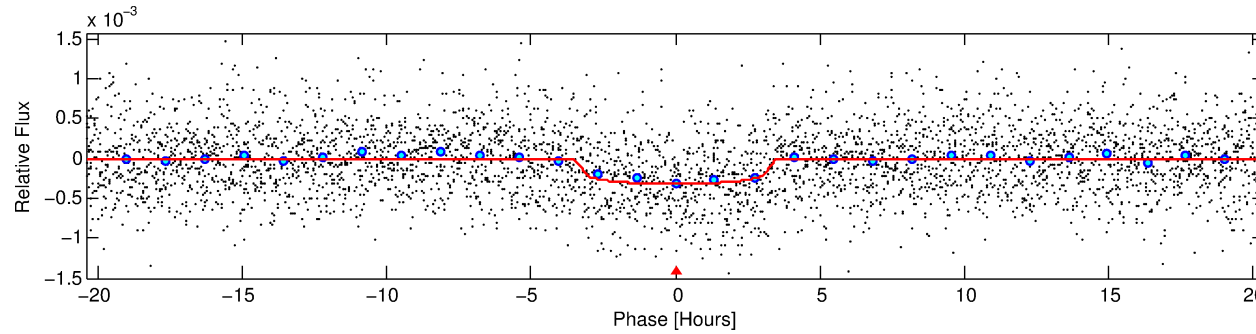
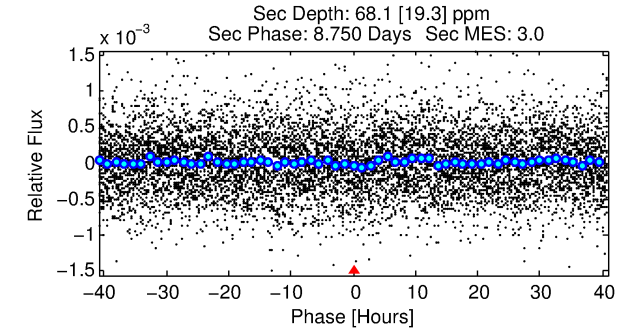
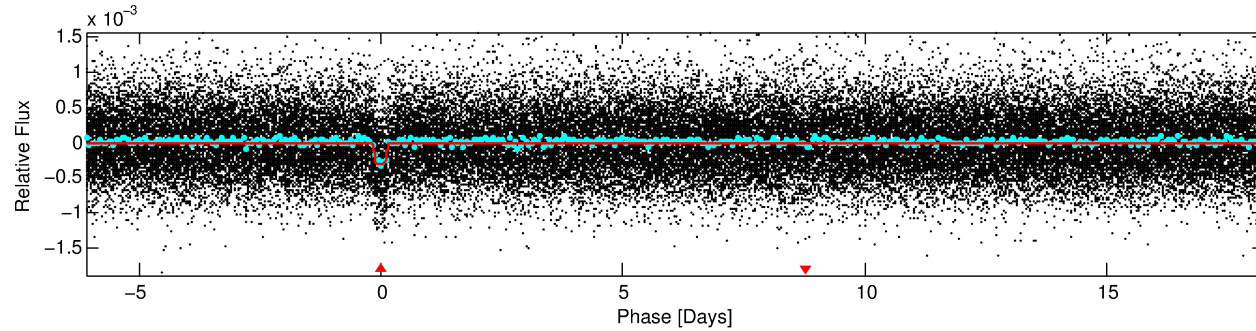
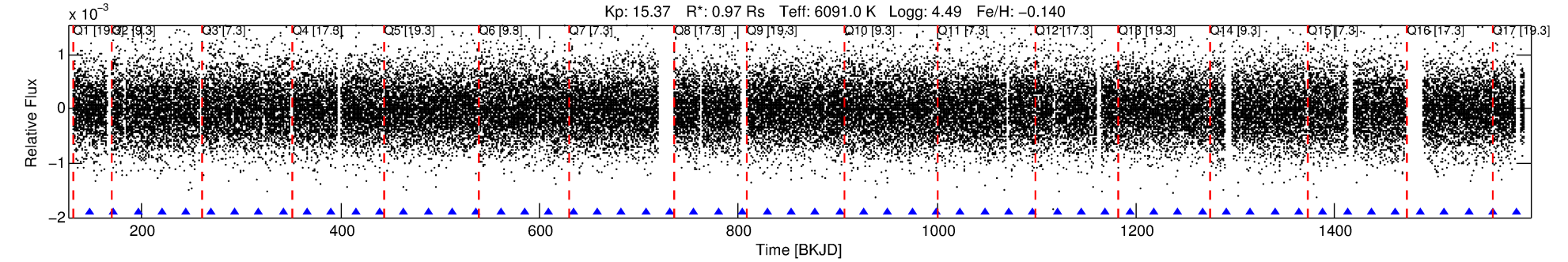
## Ephemeris Match Information For 008380709-01

No Significant Match Found

# DV One-Page Summary

KIC: 8380709 Candidate: 1 of 1 Period: 24.334 d

KOI: K02468.01 Corr: 0.983



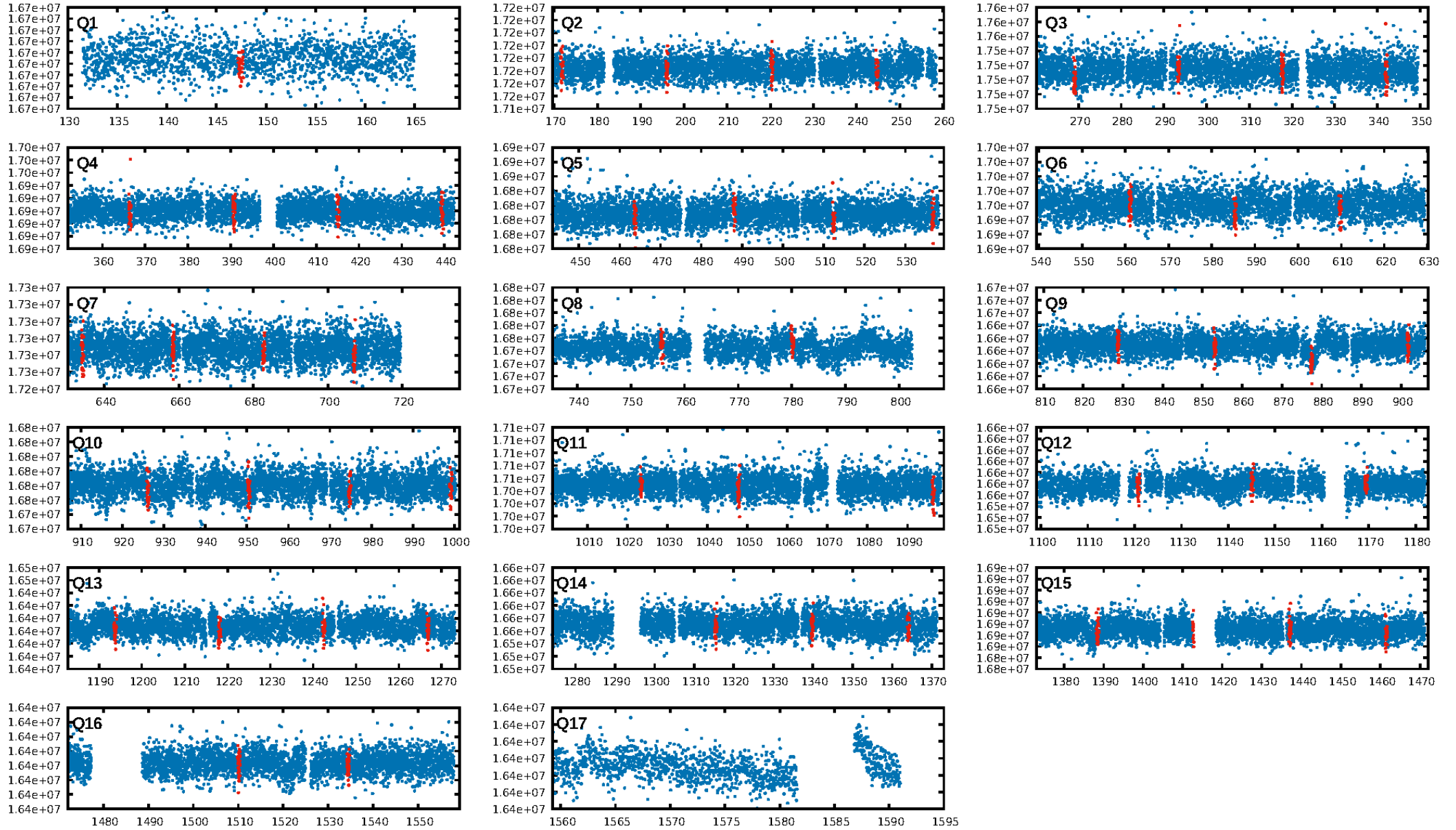
## DV Fit Results:

Period = 24.33446 [0.00022] d  
Epoch = 147.4163 [0.0073] BKJD  
Rp/R\* = 0.0176 [0.0068]  
a/R\* = 19.23 [36.74]  
b = 0.73 [1.21]  
Seff = 41.40 [16.13]  
Teff = 647 [63] K  
Rp = 1.86 [0.90] Re  
a = 0.1669 [0.0415] AU  
Ag = 301.59 [271.44] [1.11σ]  
Teffp = 4167 [870] K [4.04σ]

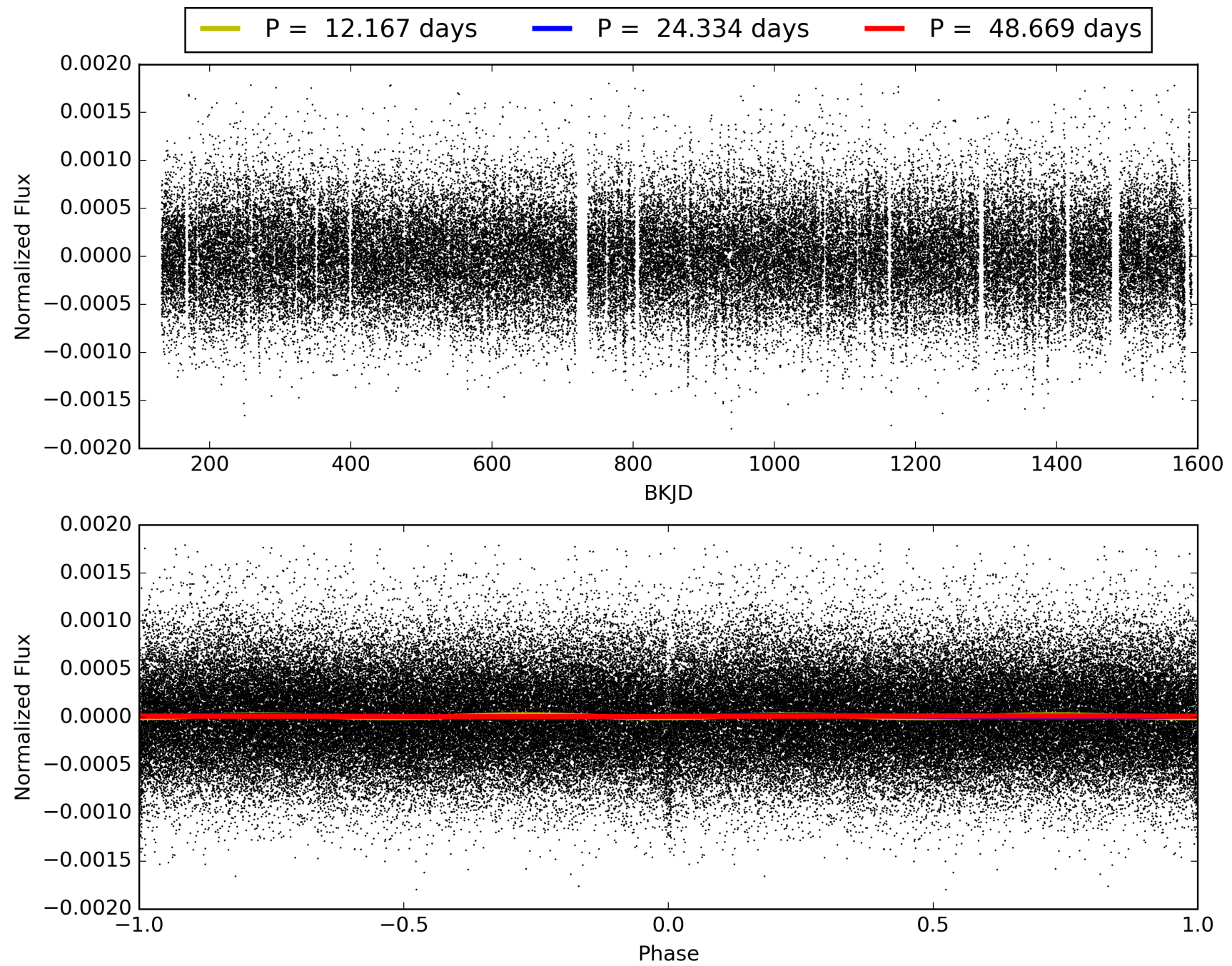
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.09e-48  
RollingBand-fgt: 1.00 [52/52]  
GhostDiagnostic-chr: 6.681  
Centroid-sig: 0.0%  
Centroid-so: 2.356 arcsec [2.94σ]  
OotOffset-rm: 0.313 arcsec [0.48σ]  
KicOffset-rm: 0.399 arcsec [0.56σ]  
OotOffset-st: 3/3/3/3 [12]  
KicOffset-st: 3/3/3/3 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 1.00 [16/16]

# TCE 008380709-01, PDC Light Curves



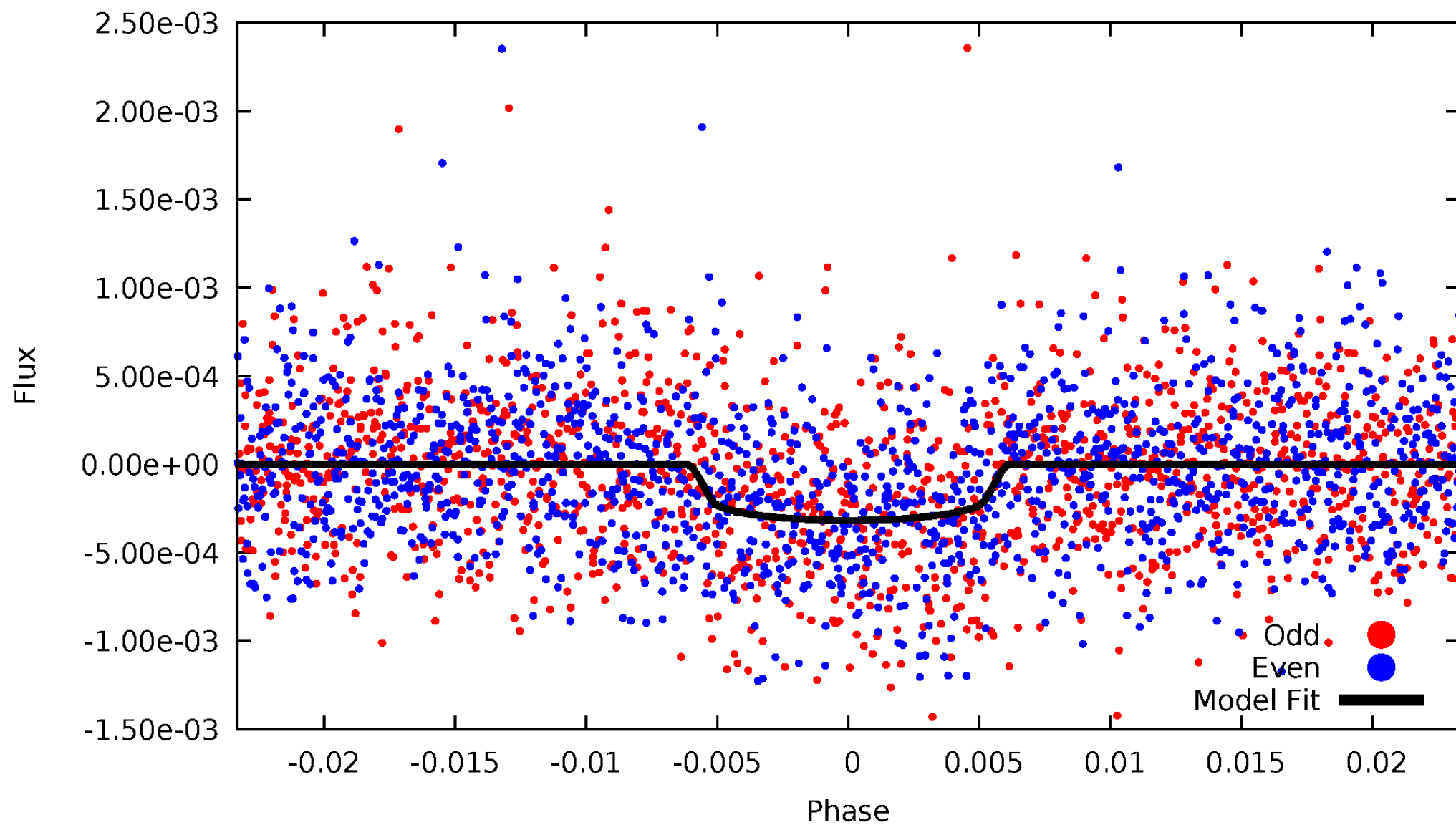
TCE 008380709-01





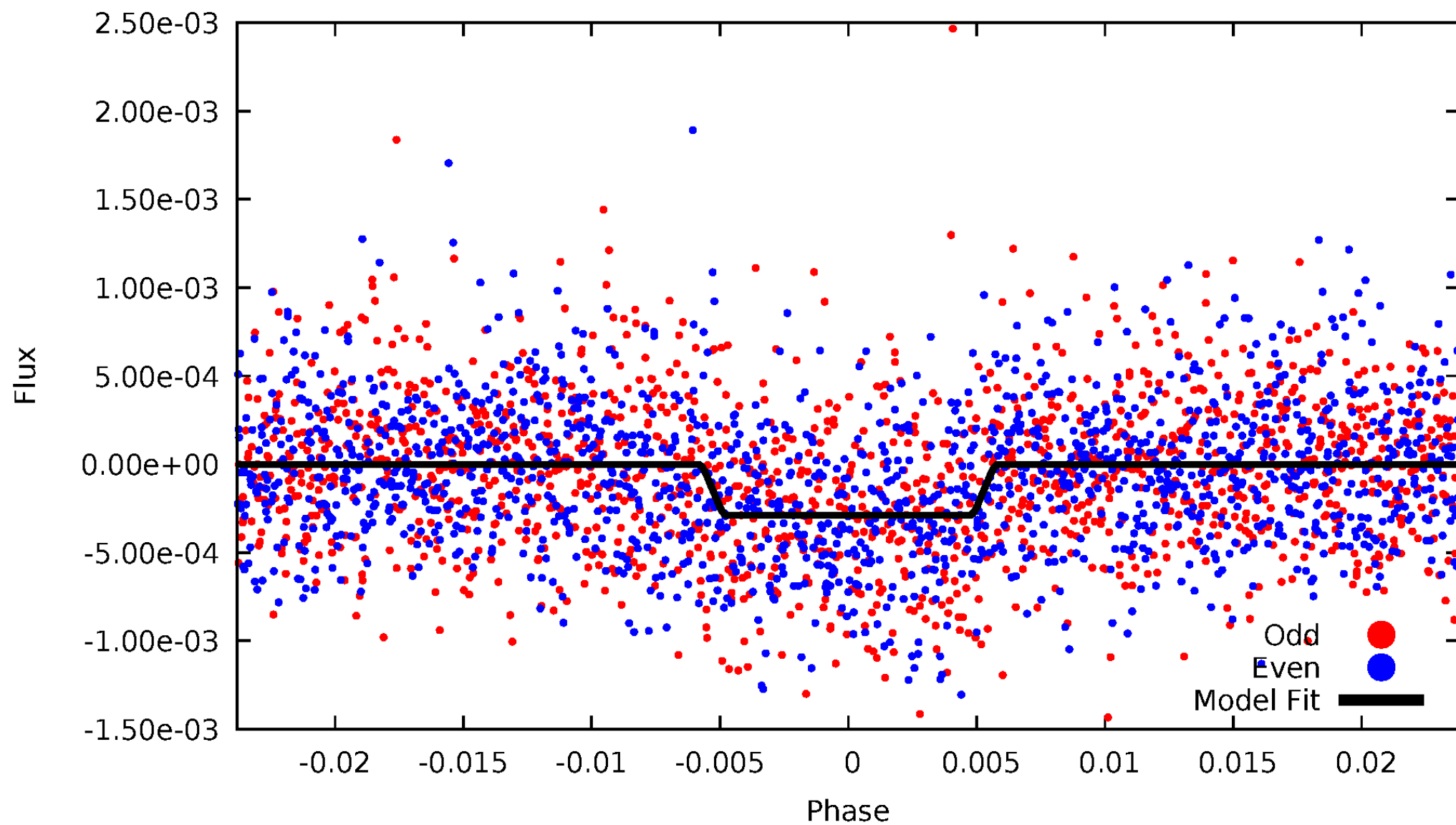
# DV Odd/Even

TCE 008380709-01



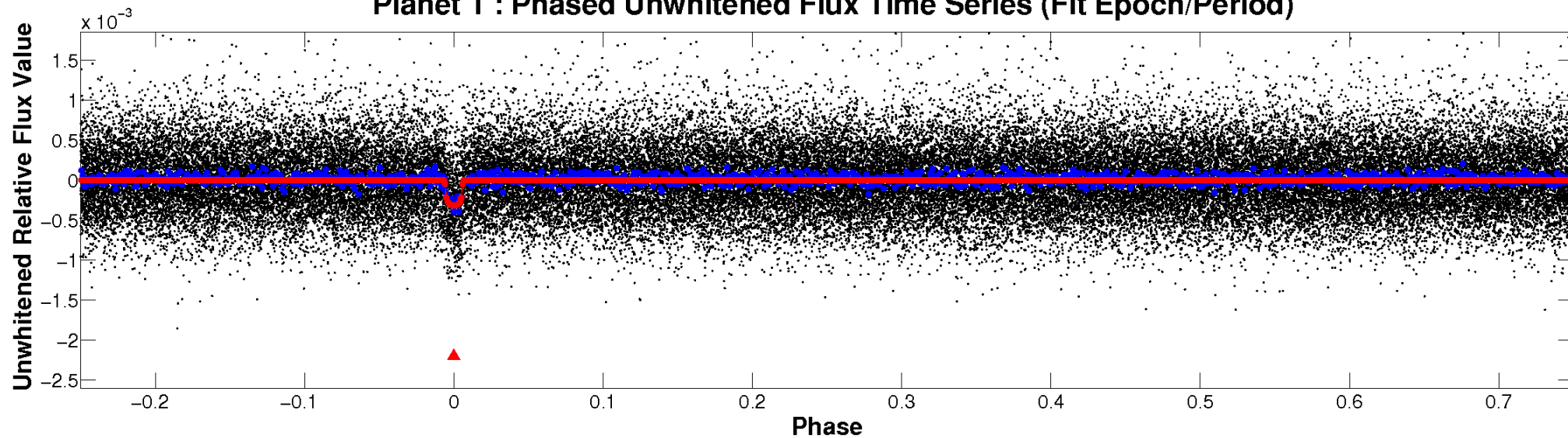
# ALT Odd/Even

TCE 008380709-01

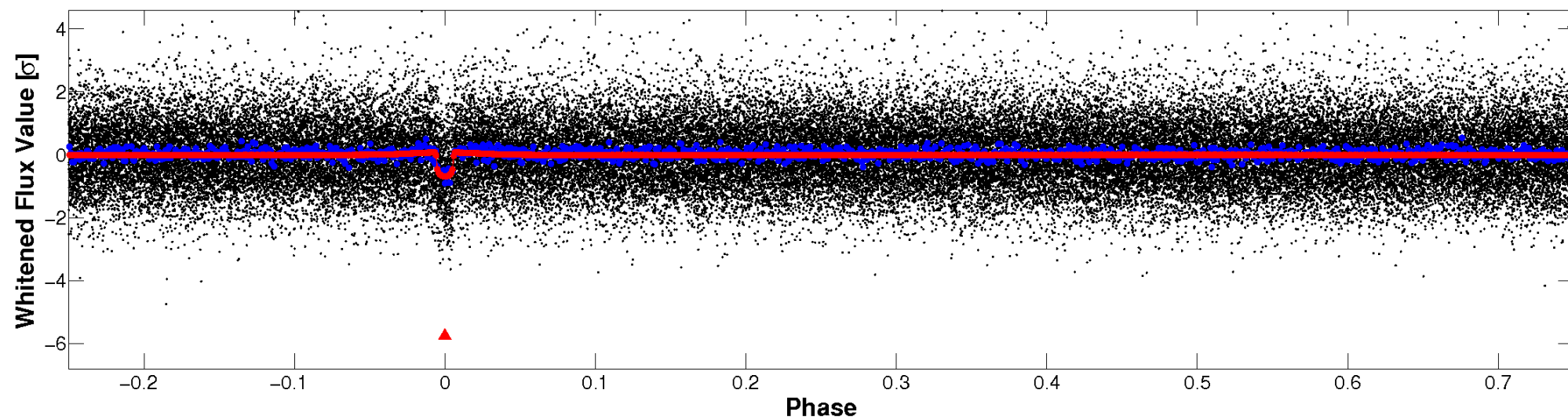


# Non-Whitened Vs. Whitened Light Curve

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

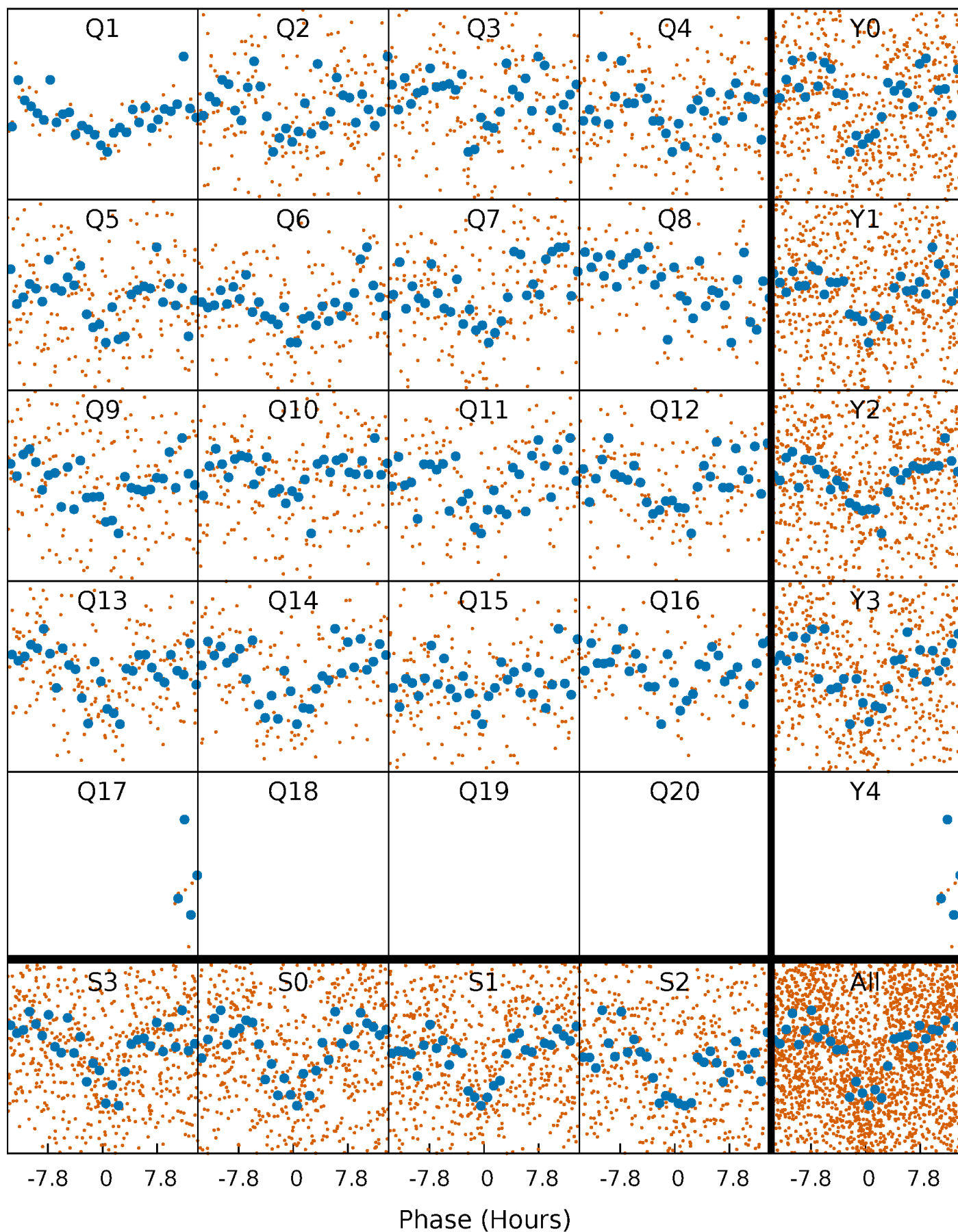


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

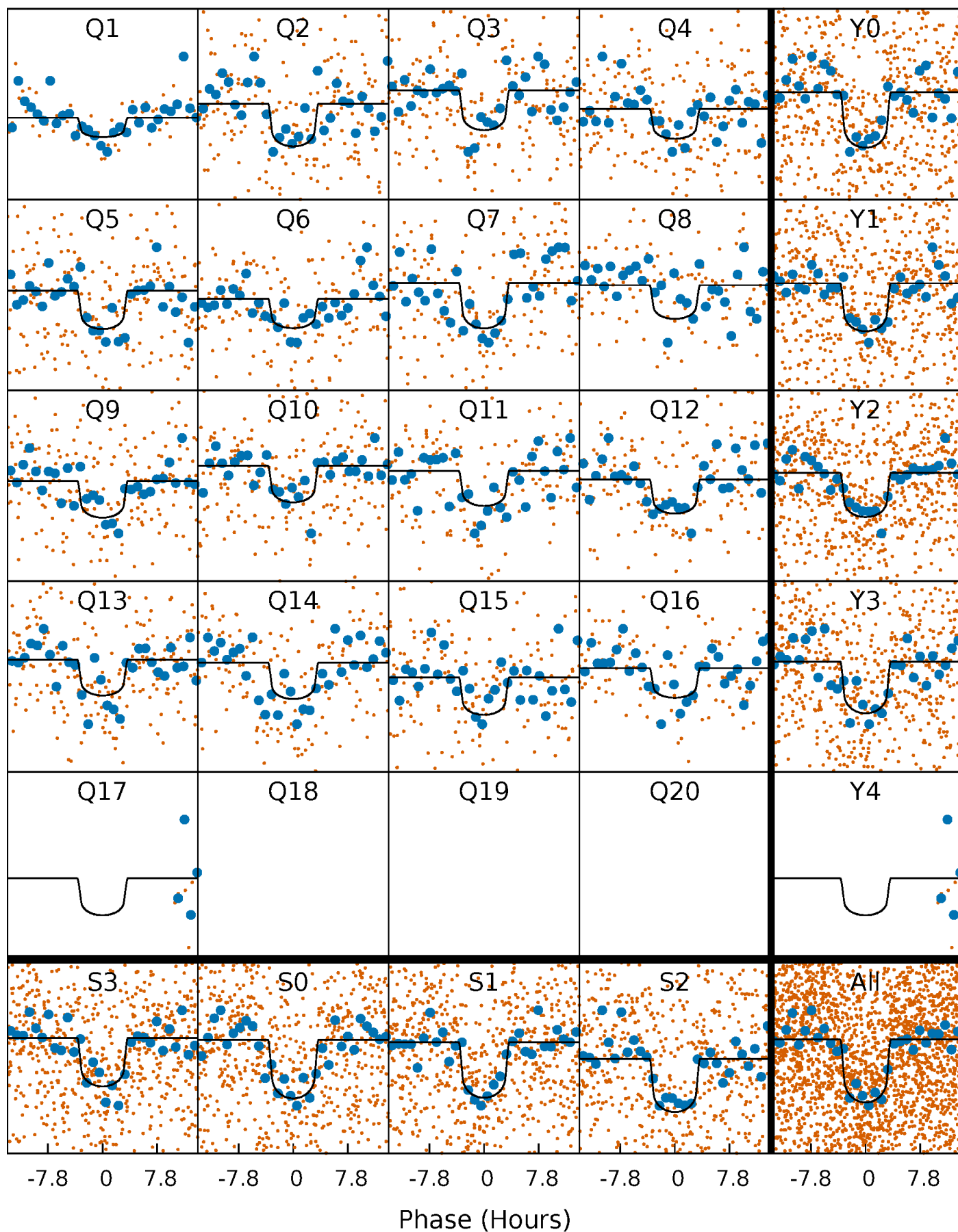
TCE 008380709-01 P= 24.334459 Days  $T_0=147.416292$  (BKJD)





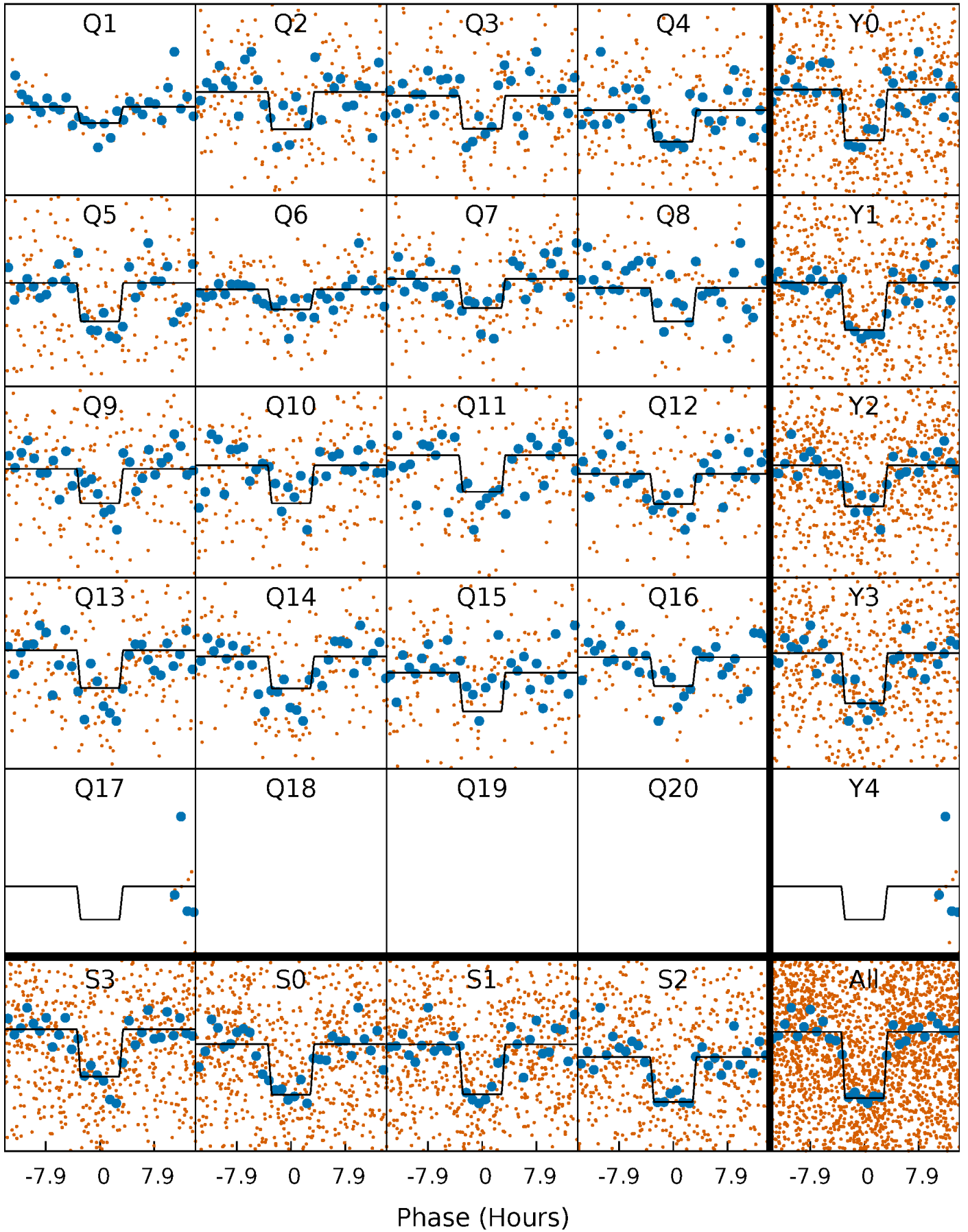
# DV Quarter-Phased Transit Curves

TCE 008380709-01 P= 24.334459 Days  $T_0=147.416292$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

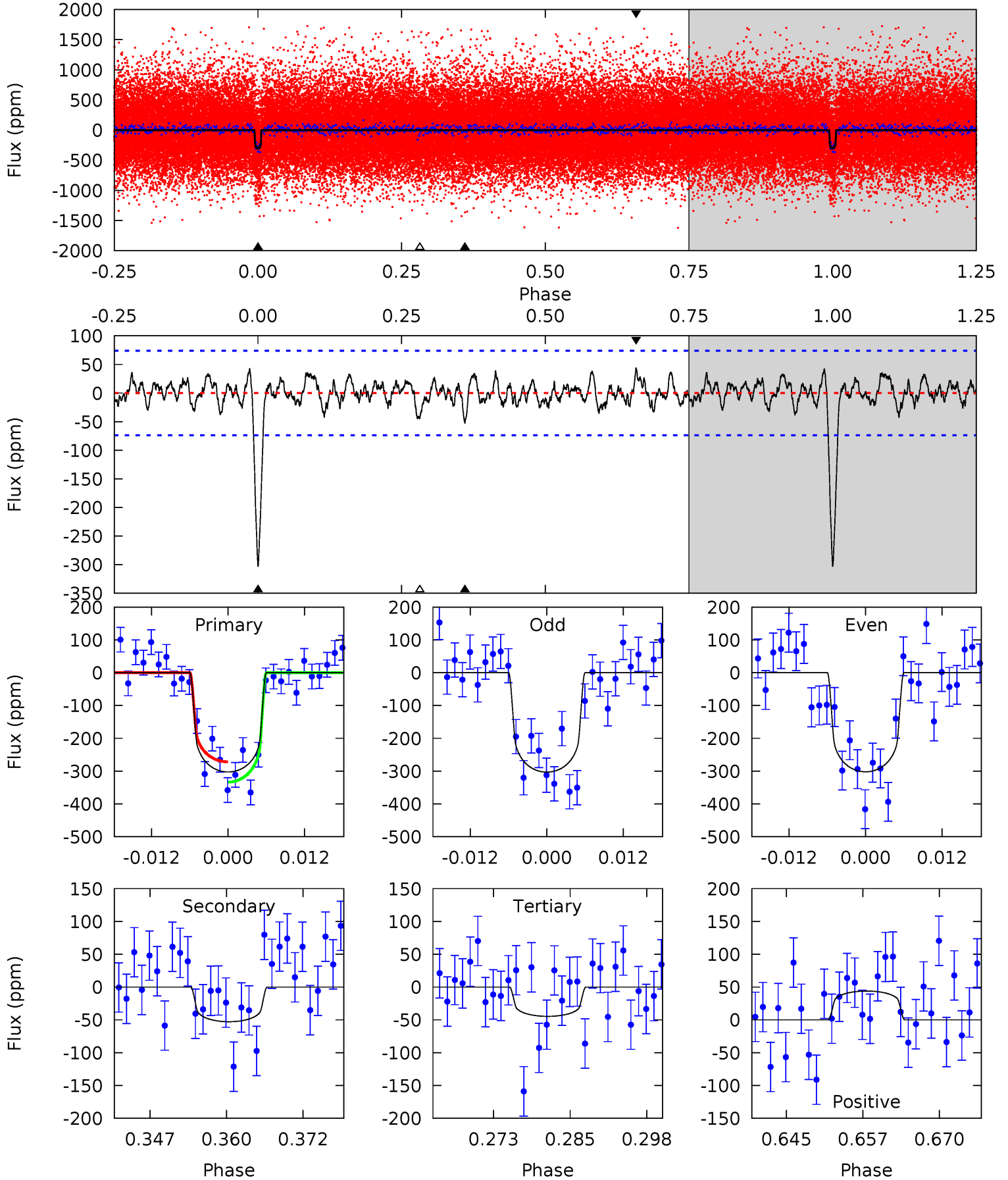
TCE 008380709-01 P= 24.334171 Days  $T_0=147.430428$  (BKJD)



# DV Model-Shift Uniqueness Test

008380709-01,  $P = 24.334459$  Days,  $E = 123.081833$  Days

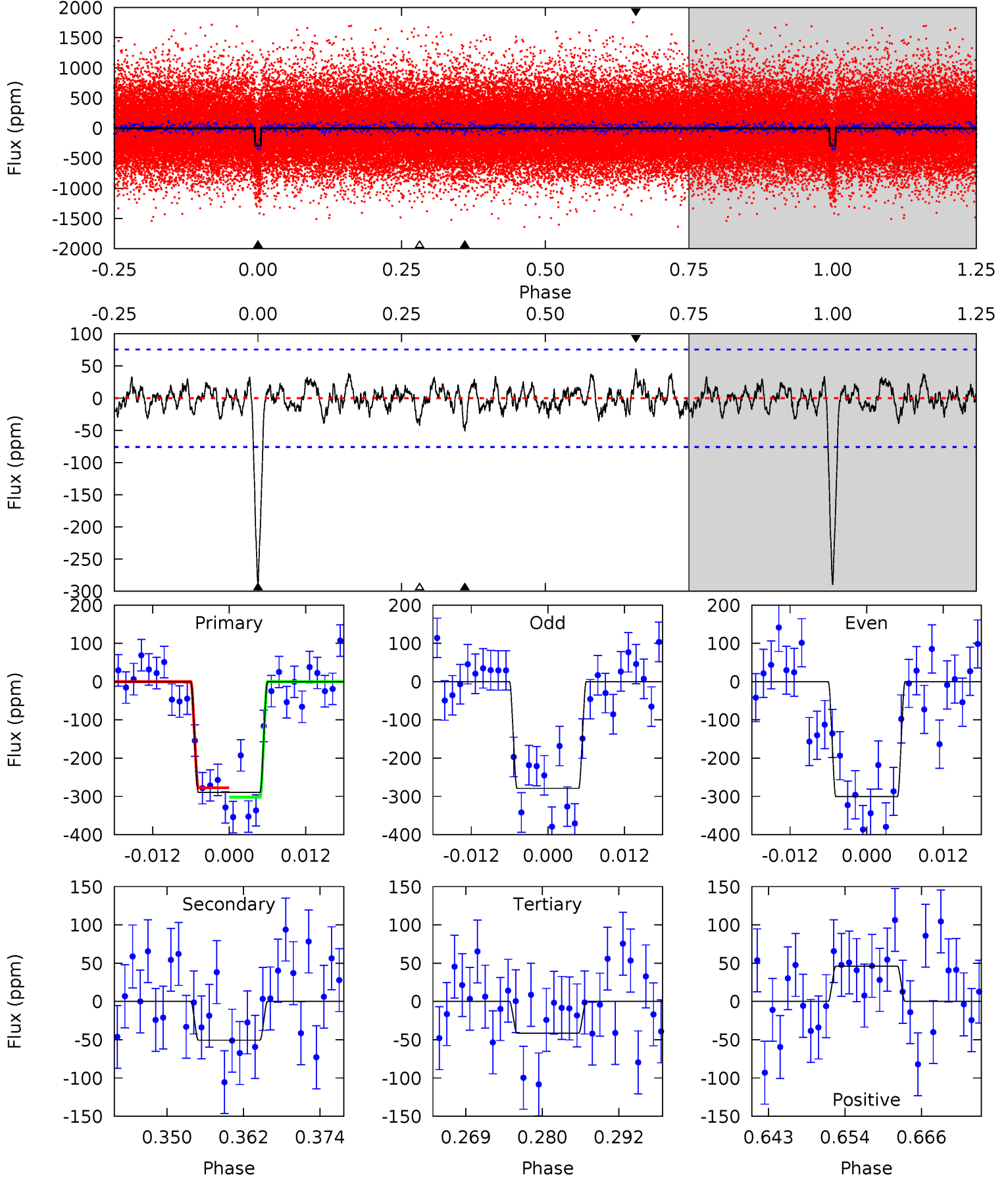
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	3.56	3.01	2.96	4.98	2.50	1.08	17.4	17.5	0.55	0.60	0.03	0.97	0.13	2.09



# Alt Model-Shift Uniqueness Test

008380709-01, P = 24.334171 Days, E = 123.096257 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
19.1	3.33	2.72	3.03	5.00	2.52	0.97	16.4	16.1	0.61	0.30	0.70	0.96	0.14	0.81



### Stellar Parameters For KIC 008380709

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6091^{+169}_{-211}$	$4.487^{+0.050}_{-0.200}$	$-0.140^{+0.250}_{-0.350}$	$0.967^{+0.284}_{-0.101}$	$1.045^{+0.126}_{-0.140}$	$1.627^{+0.423}_{-0.807}$
	+3%/-3%	+1%/-4%	+179%/-250%	+29%/-10%	+12%/-13%	+26%/-50%
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 008380709-01 / KOI 2468.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-53 \pm 15$	$1.94^{+0.85}_{-0.73}$	$925^{+64}_{-46}$	$4145^{+912}_{-482}$	$204^{+342}_{-109}$
Alt.	$-51 \pm 15$	$1.89^{+0.84}_{-0.75}$	$925^{+65}_{-46}$	$4141^{+959}_{-498}$	$198^{+385}_{-105}$

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



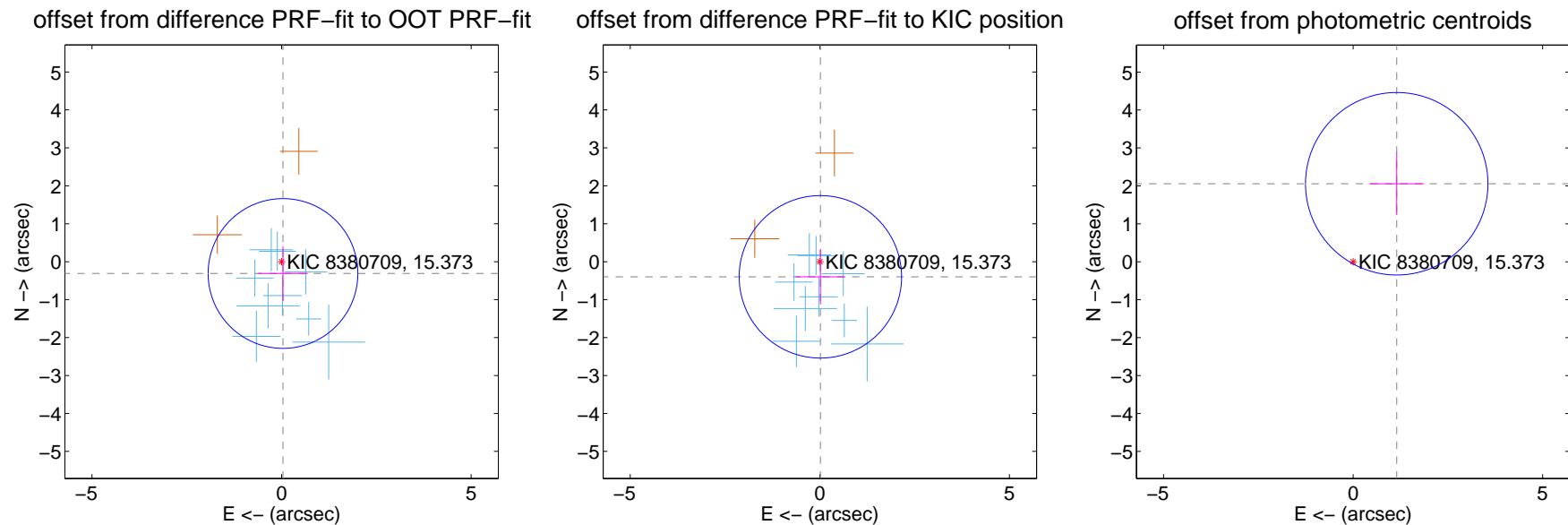
## DV Centroid Data

Supplemental centroid analysis for 008380709-01. Kepler magnitude: 15.37. Transit SNR 15.53

There are 9 quarters with good PRF difference image offsets

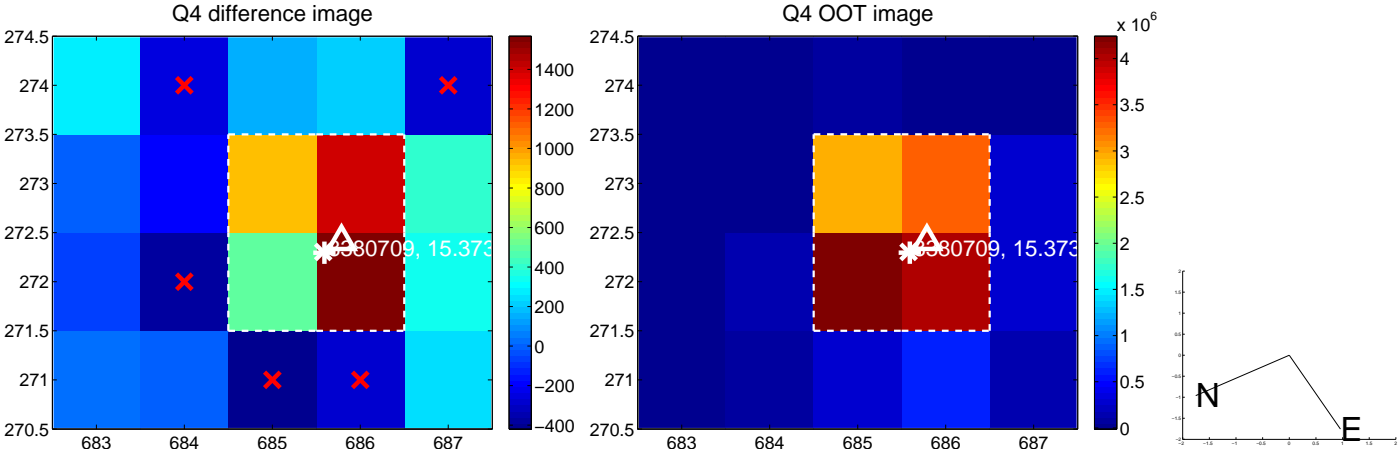
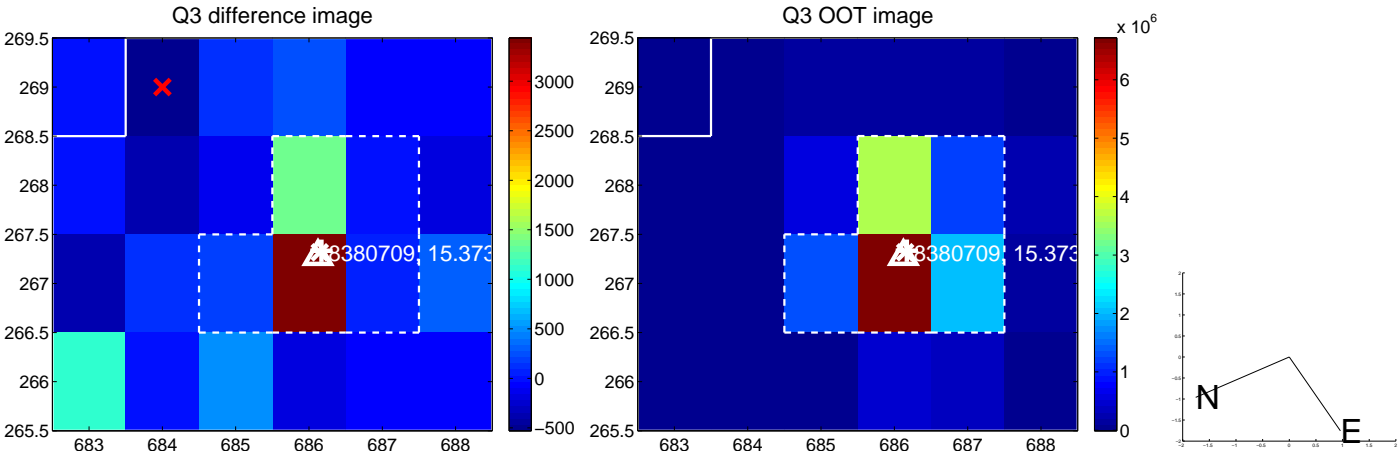
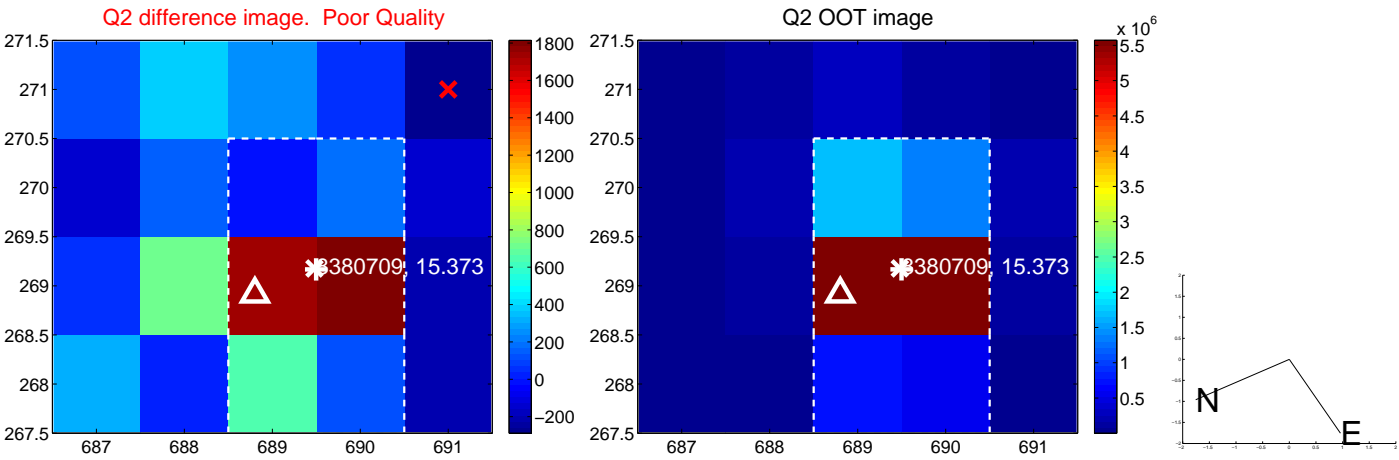
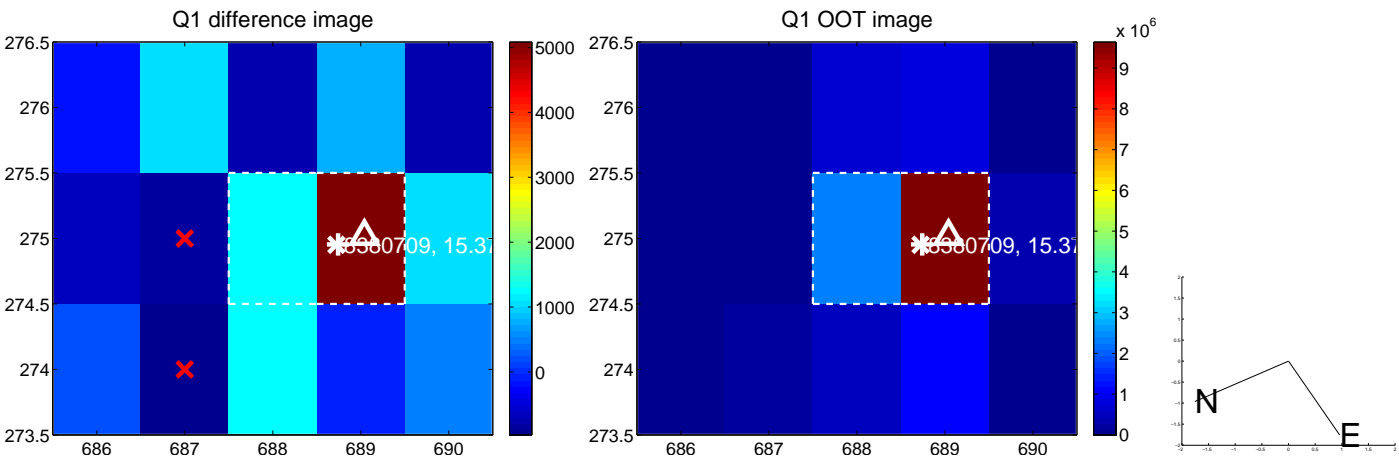
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.313 \pm 0.658$	0.48	$-0.037 \pm 0.655$	$-0.311 \pm 0.717$
PRF-fit source offset from KIC position	$0.399 \pm 0.714$	0.56	$-0.014 \pm 0.653$	$-0.399 \pm 0.731$
photometric centroid source offset	$2.36 \pm 0.80$	2.94	$-1.15 \pm 0.72$	$2.06 \pm 0.82$

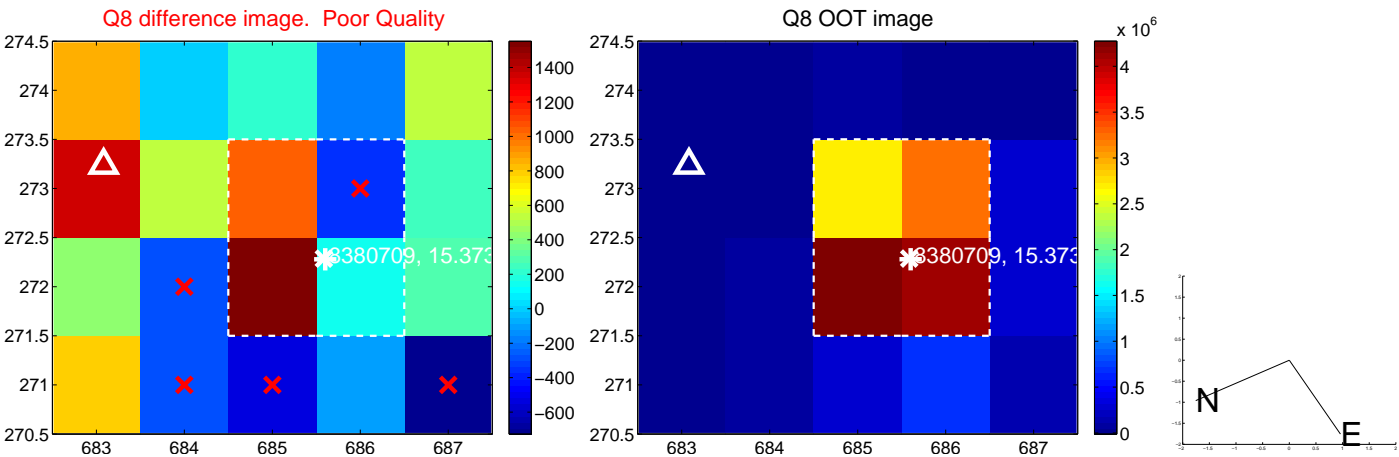
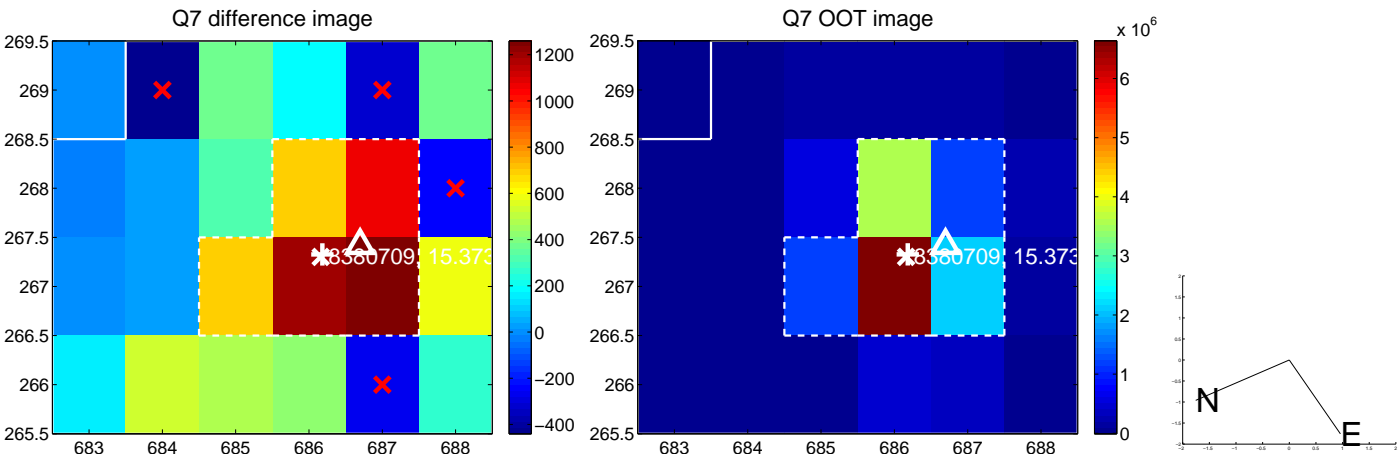
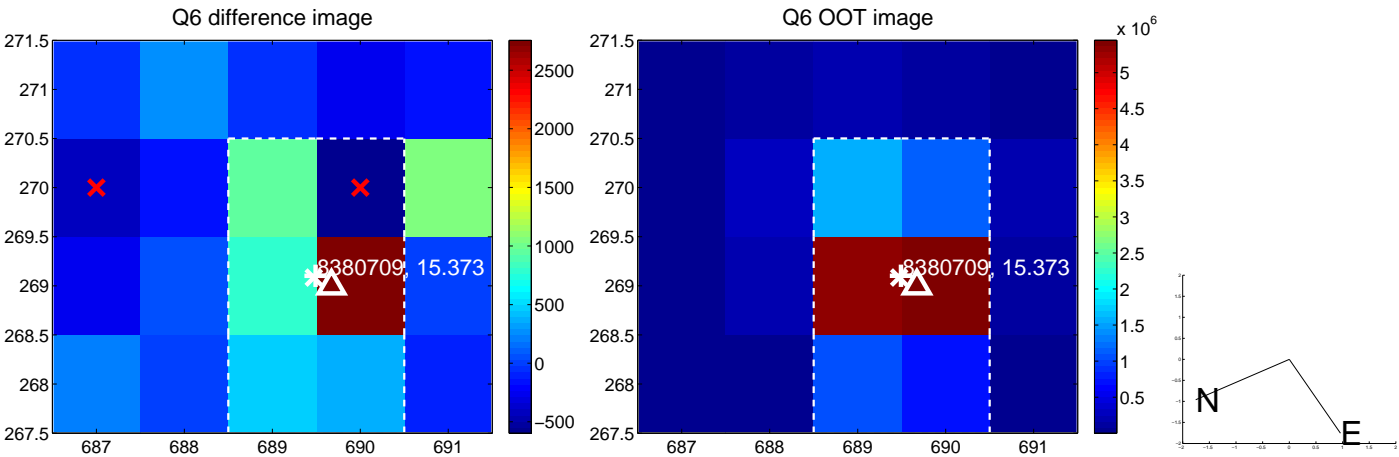
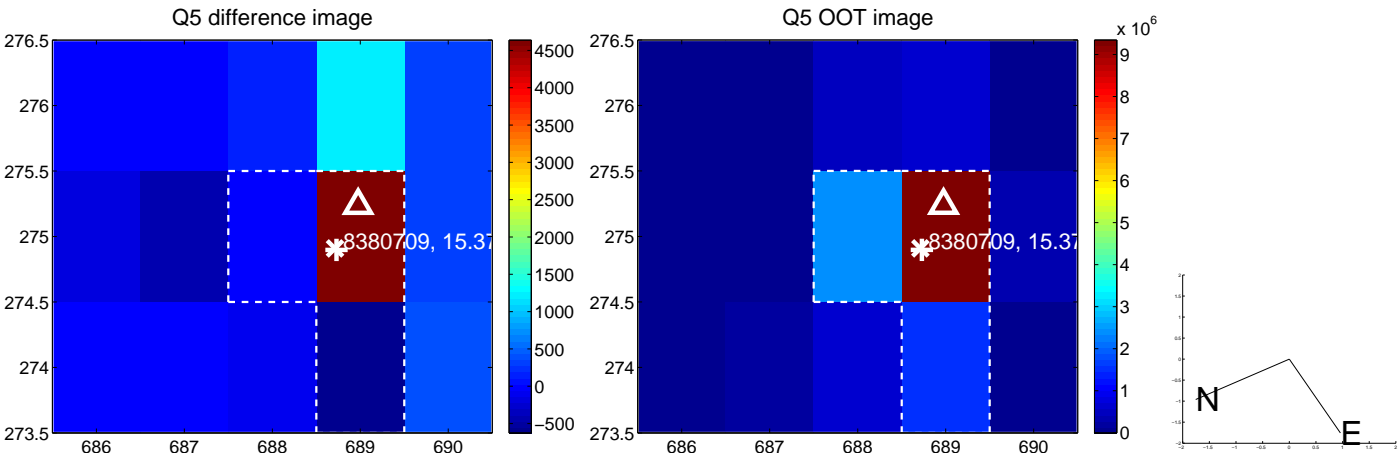


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

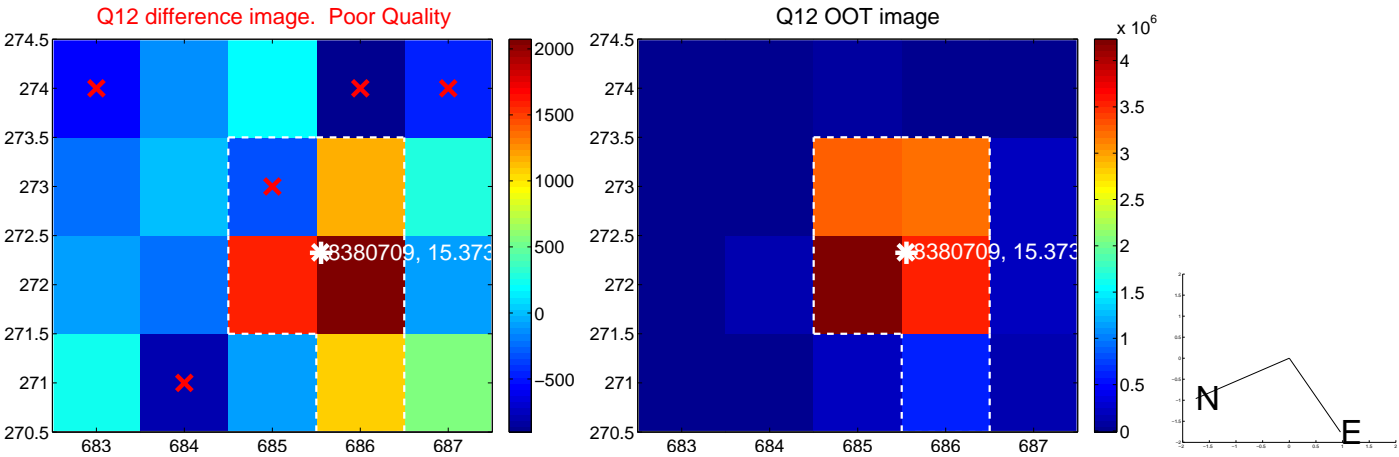
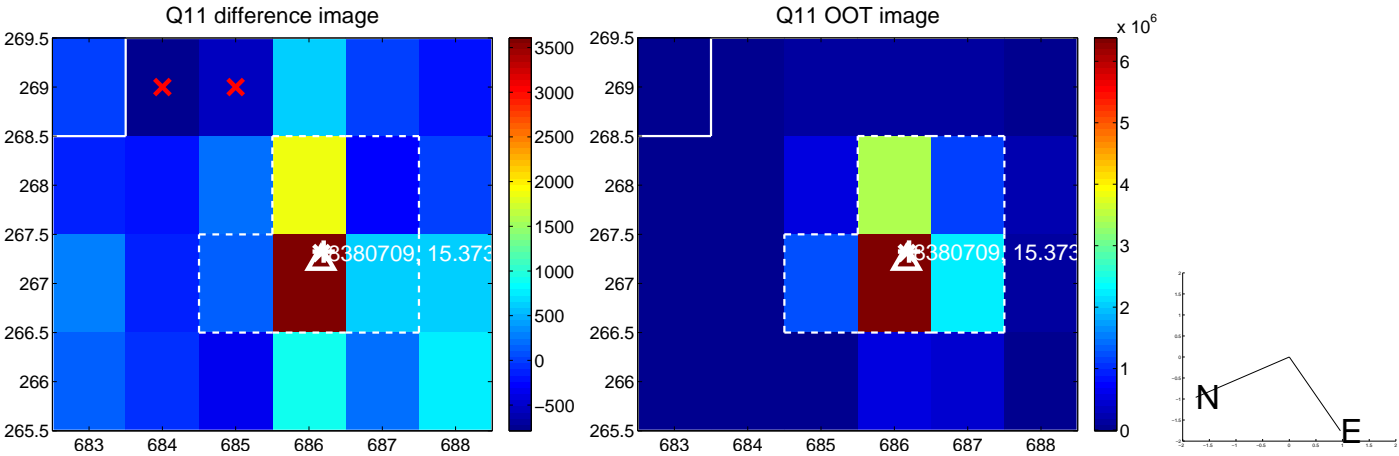
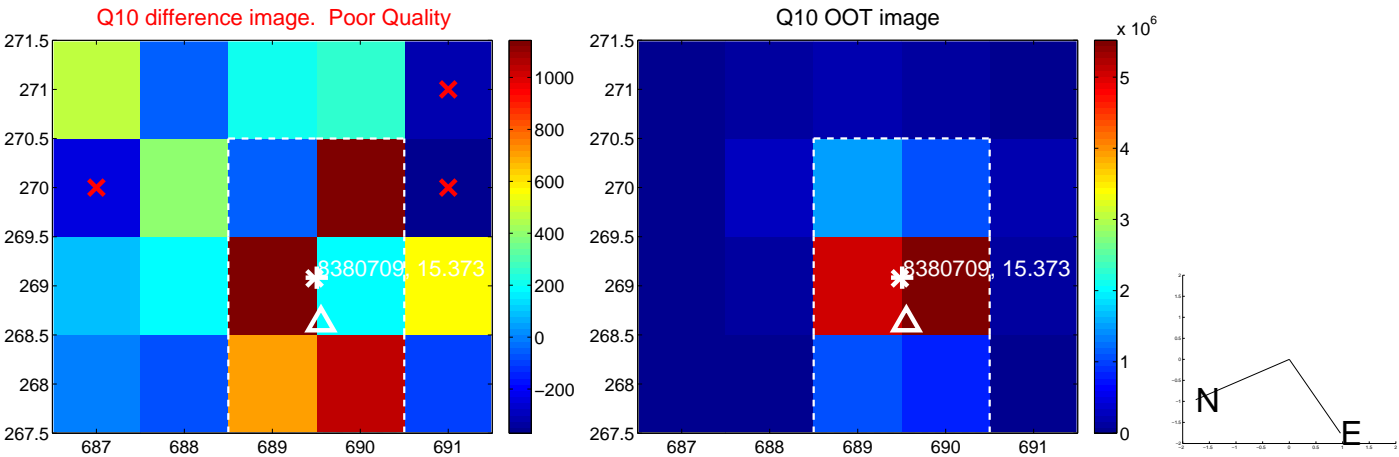
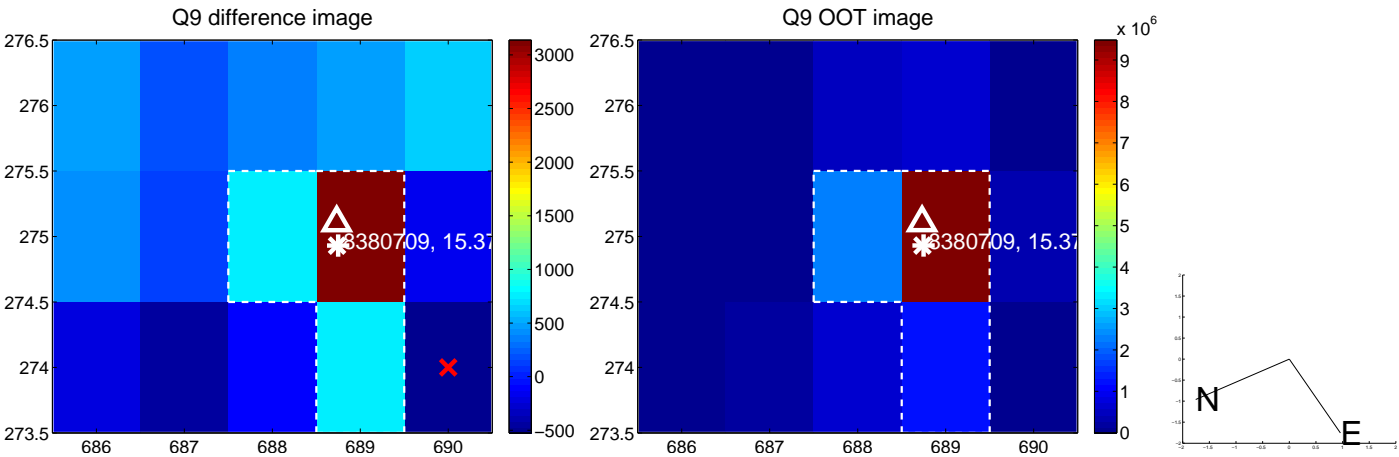
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



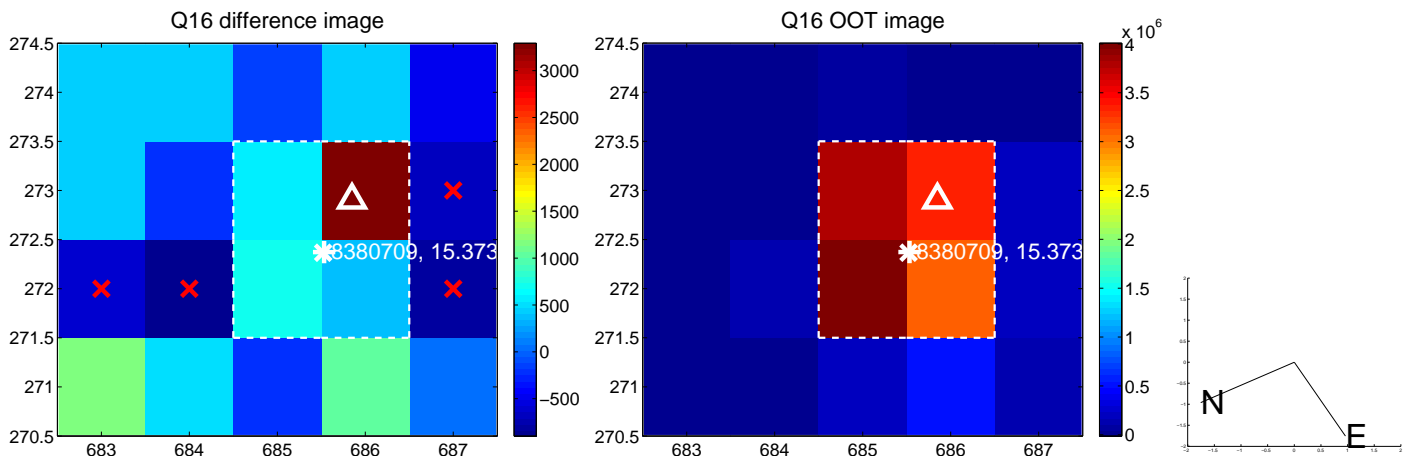
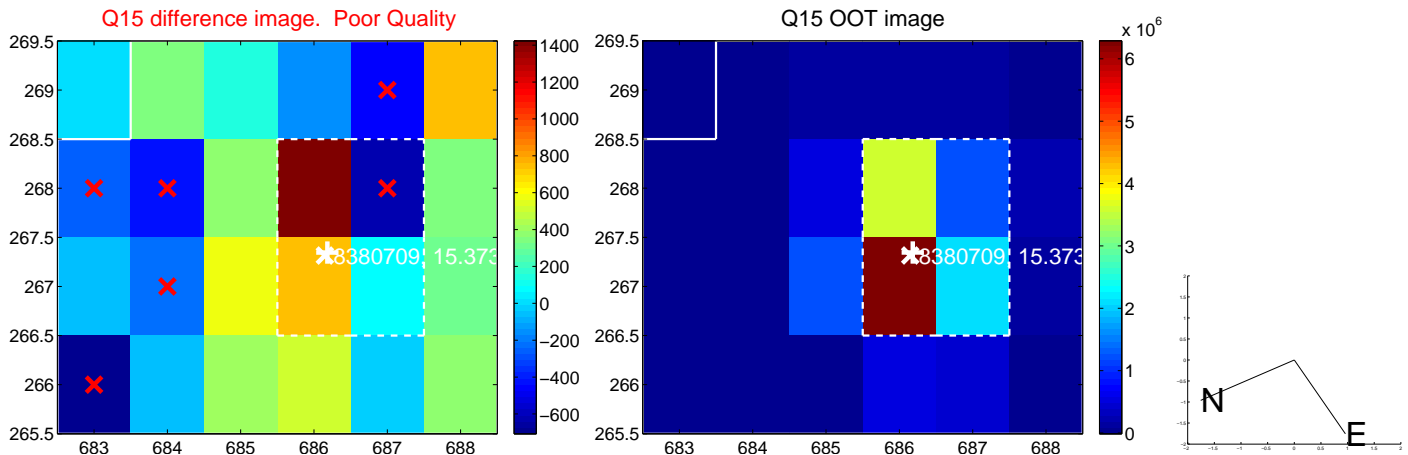
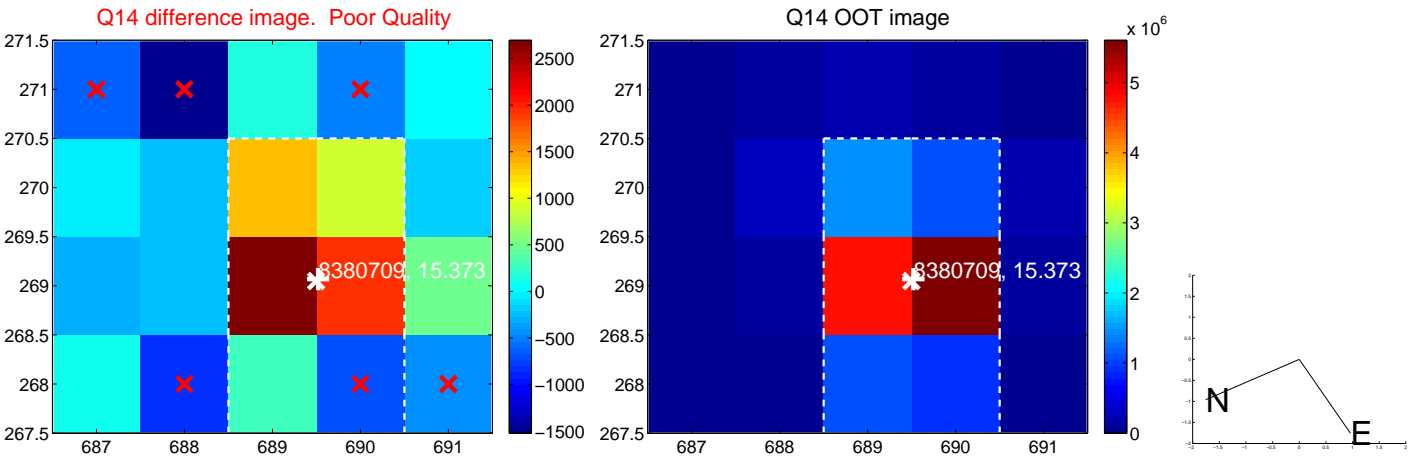
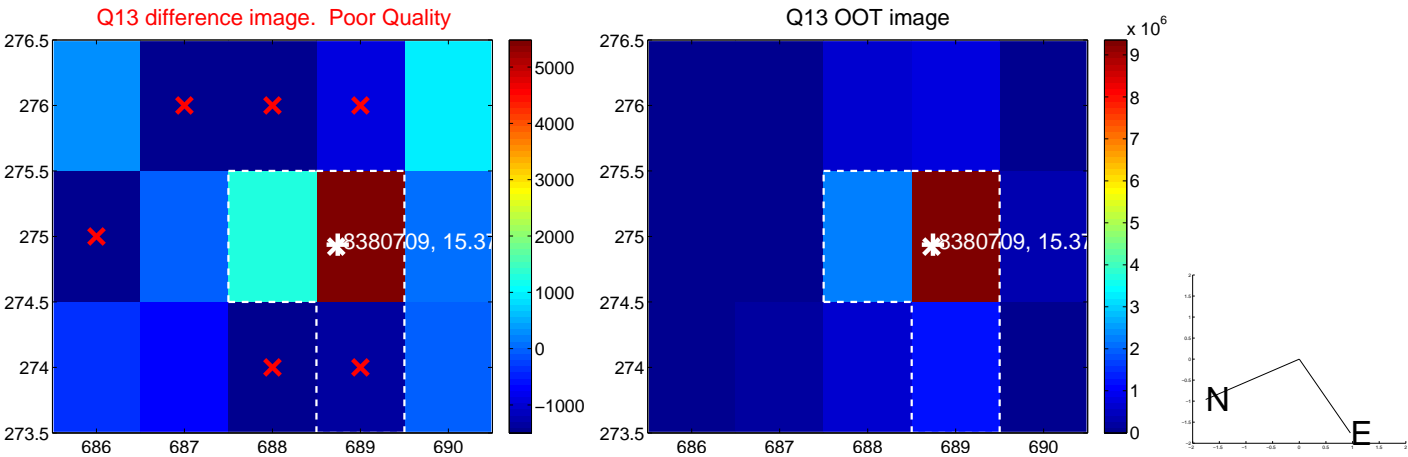
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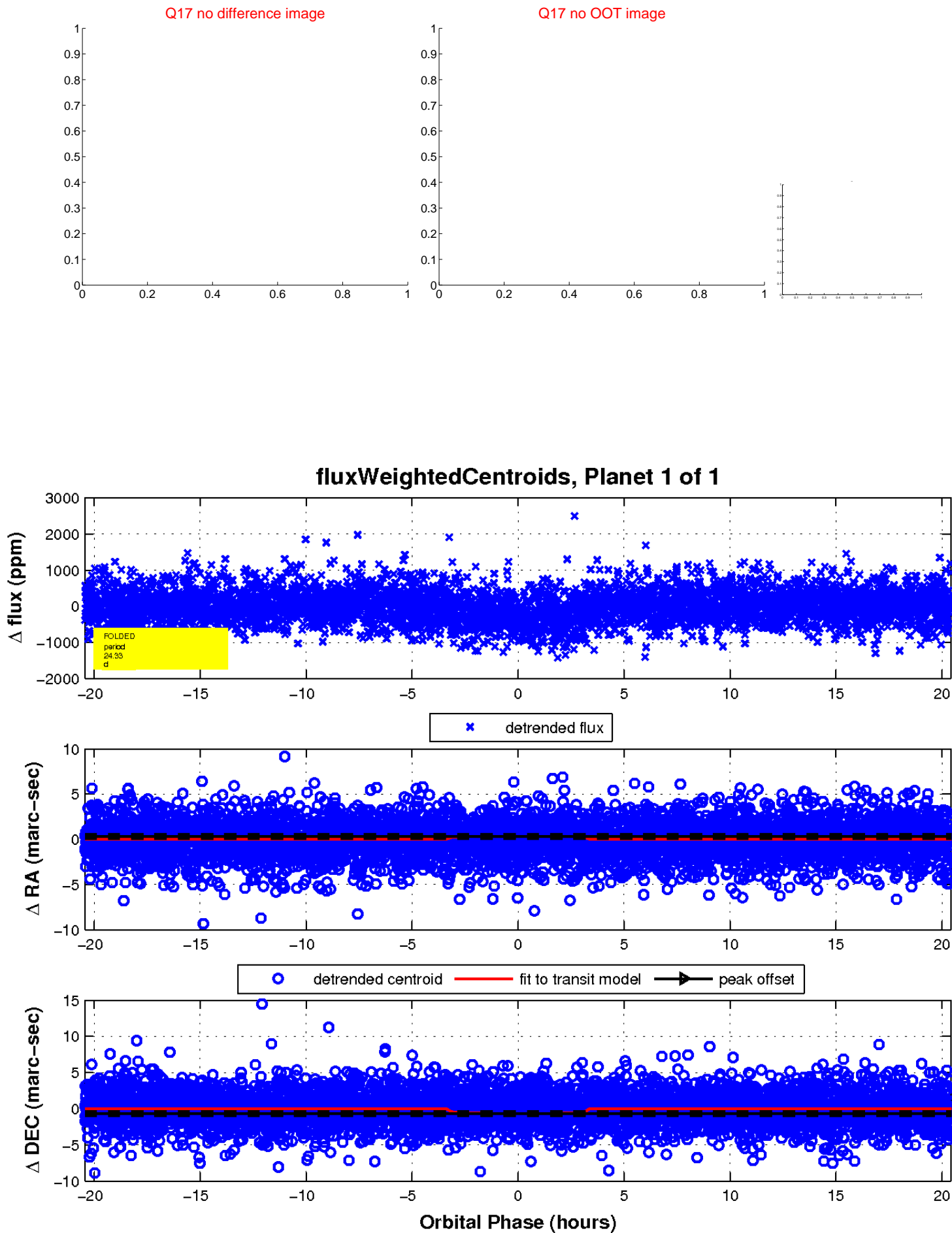


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

