

# KIC 010471174

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	R <sub>★</sub> (R <sub>☉</sub> )	T <sub>★</sub> (K)	R <sub>p</sub> (R <sub>⊕</sub> )	S <sub>p</sub> (S <sub>⊕</sub> )
010471174-01	OBS	7613.01	0.933636	131.634837	64.7	4.440	8.4	7.9	0.84	5619	0.67	1888.53

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471174-01	OBS	FP	0.00	0	0	0	1	EPHEM_MATCH

**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.

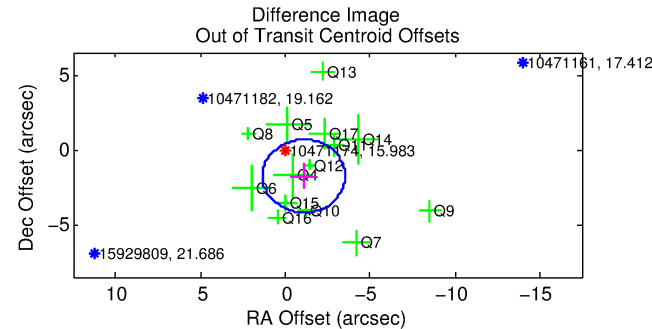
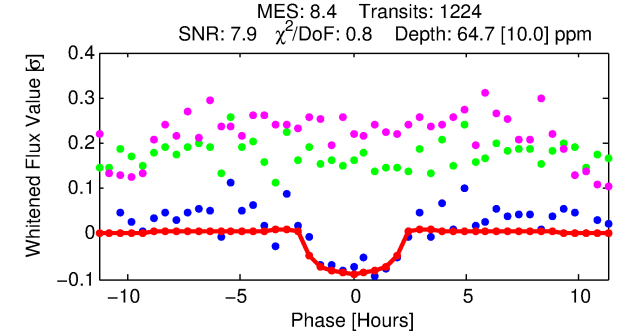
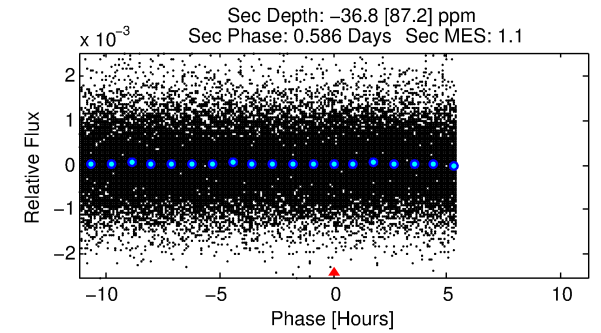
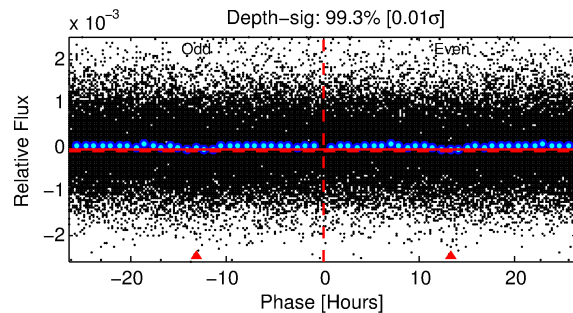
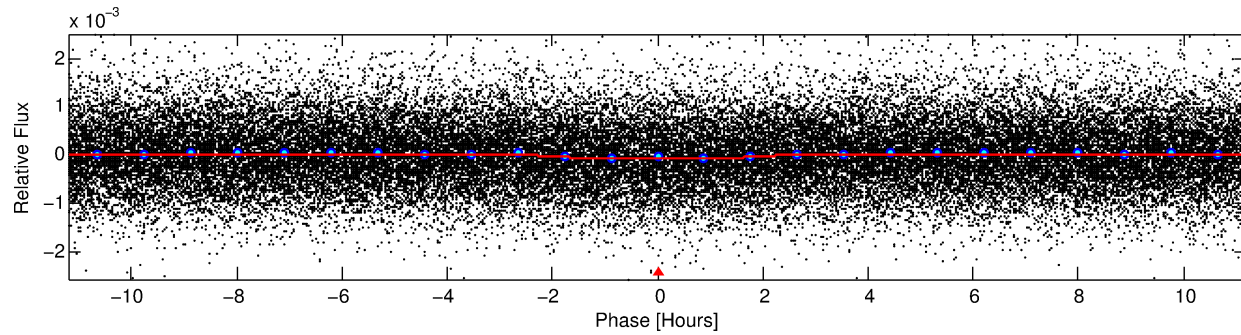
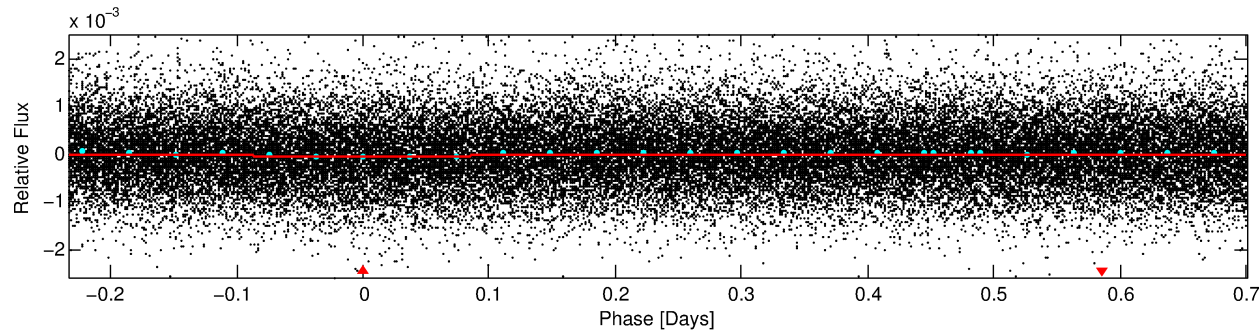
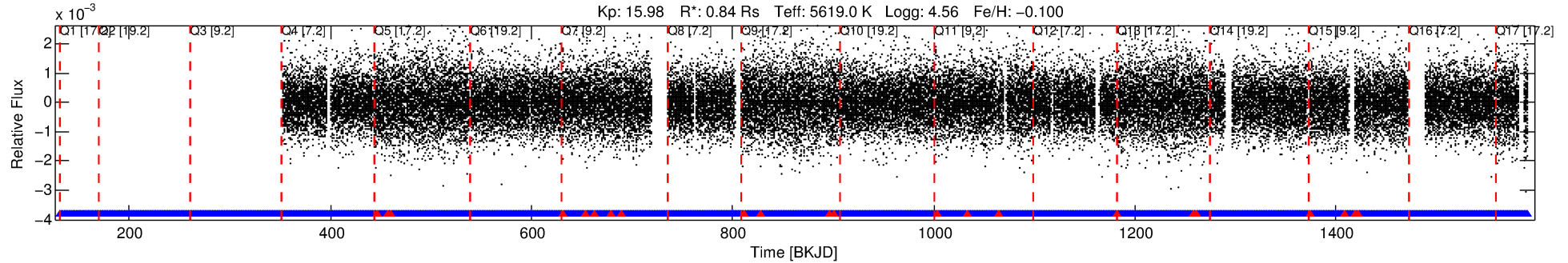
## Ephemeris Match Information For 010471174-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist (″)	ΔRow	ΔCol	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	σ <sub>P</sub>	σ <sub>T</sub>
010471174-01	10471174	010471167-01	10471167	1:1	103.3	-23	-12	13.01	15.99	0.88	Direct-PRF	1	3.81	1.98

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds. ΔRow and ΔCol are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's. σ<sub>P</sub> and σ<sub>T</sub> are the significance of the match in period and epoch. For a match to be considered significant σ<sub>P</sub> < 5.0 and σ<sub>T</sub> < 5.0. Matches which have σ<sub>P</sub> and σ<sub>T</sub> very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10471174 Candidate: 1 of 1 Period: 0.934 d  
KOI: K07613.01 Corr: 0.910



## DV Fit Results:

Period = 0.93364 [0.00002] d  
Epoch = 131.6348 [0.0066] BKJD  
Rp/R\* = 0.0073 [0.0158]  
a/R\* = 1.73 [10.58]  
b = 0.07 [140.00]  
Seff = 1888.53 [657.35]  
Teq = 1681 [146] K  
Rp = 0.67 [1.46] Re  
a = 0.0182 [0.0040] AU  
Ag = N/A  
Teffp = N/A

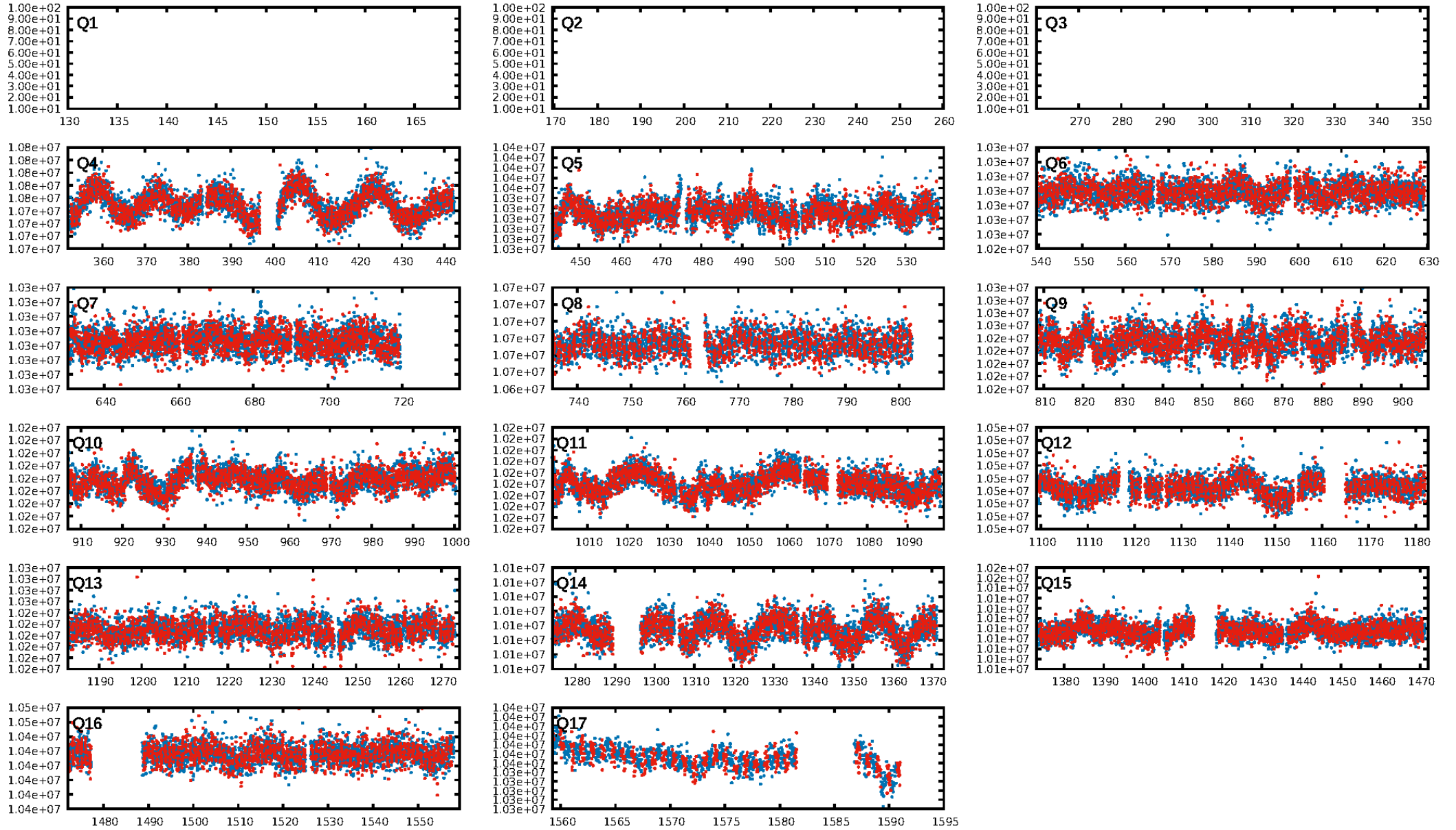
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.22e-16  
RollingBand-fgt: 0.98 [1171/1194]  
**GhostDiagnostic-chr: 0.3787**  
Centroid-sig: 39.4%  
Centroid-so: 1.287 arcsec [0.89 $\sigma$ ]  
OotOffset-rm: 2.078 arcsec [2.56 $\sigma$ ]  
KicOffset-rm: 1.909 arcsec [2.38 $\sigma$ ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.14 [2/14]  
DiffImageOverlap-fno: 1.00 [14/14]

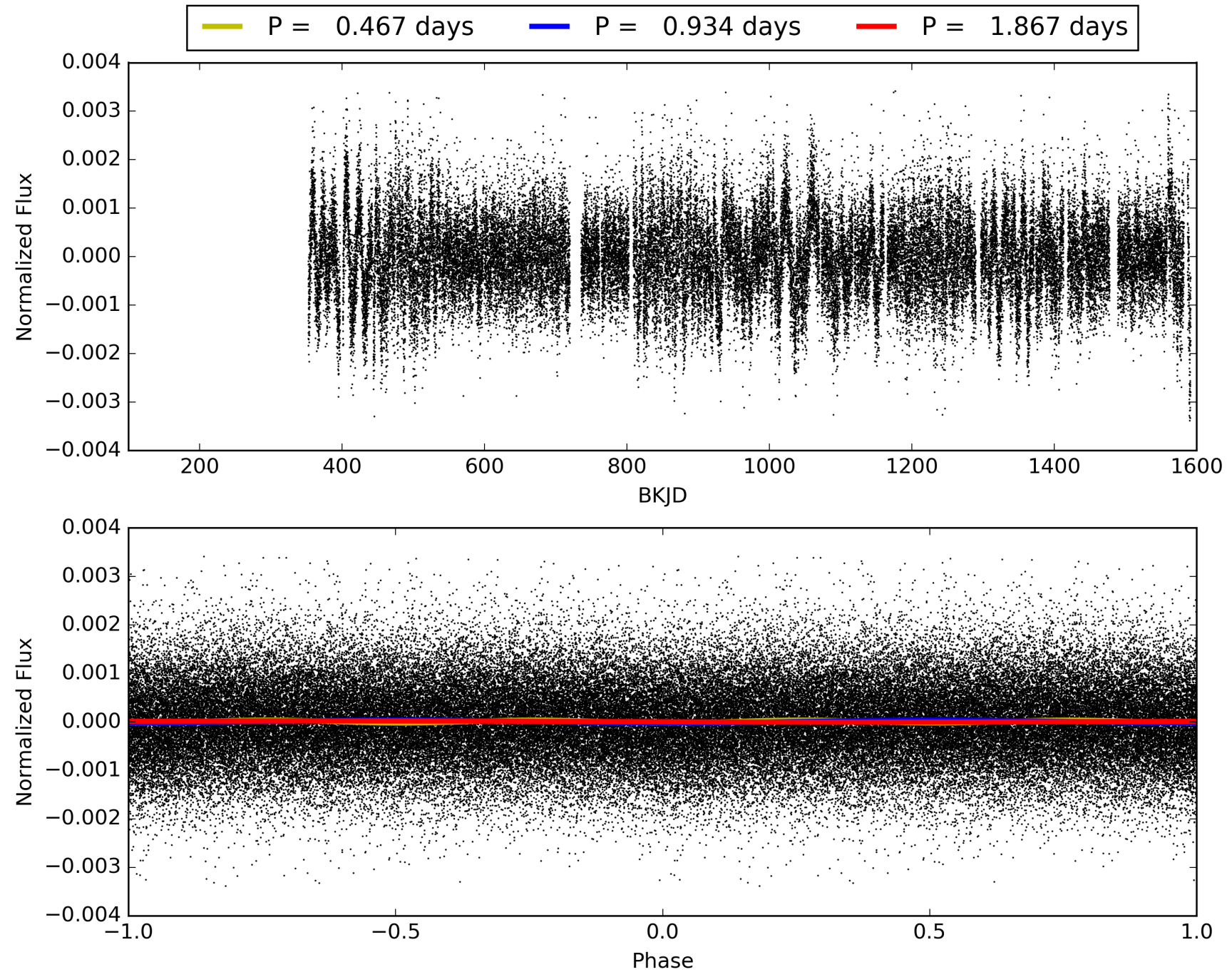
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 00:27:53 Z

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

# TCE 010471174-01, PDC Light Curves



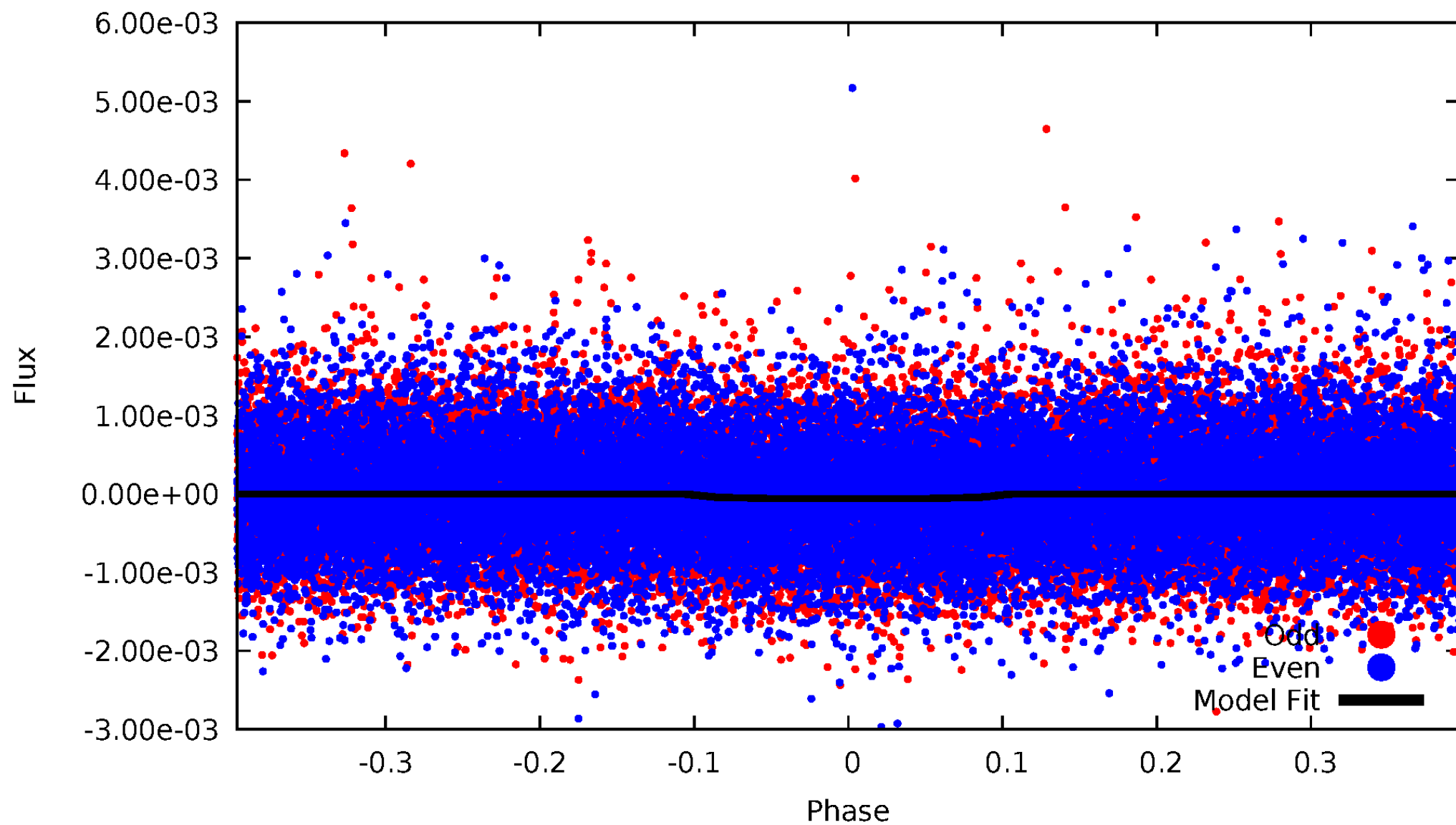
TCE 010471174-01





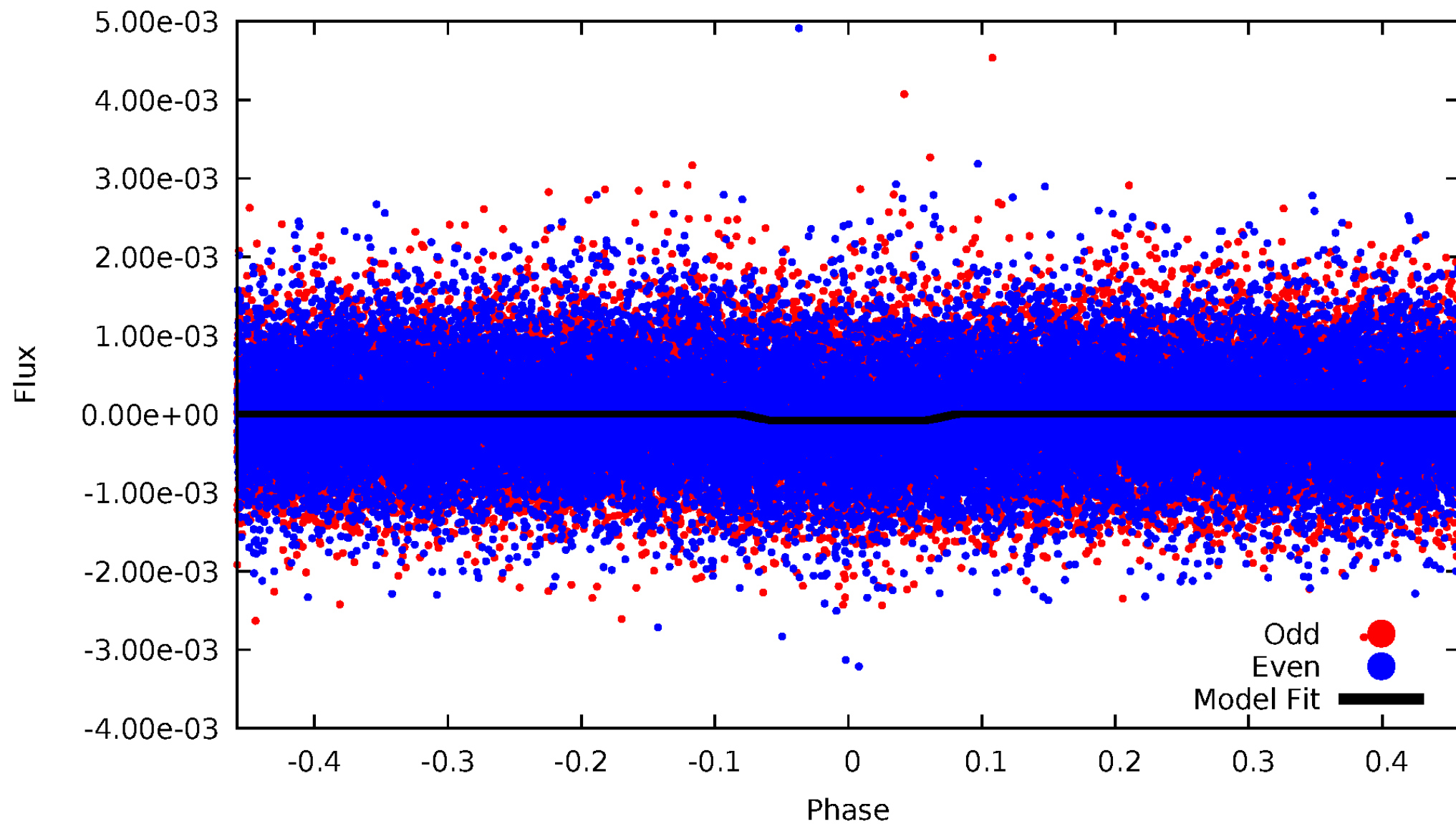
# DV Odd/Even

TCE 010471174-01



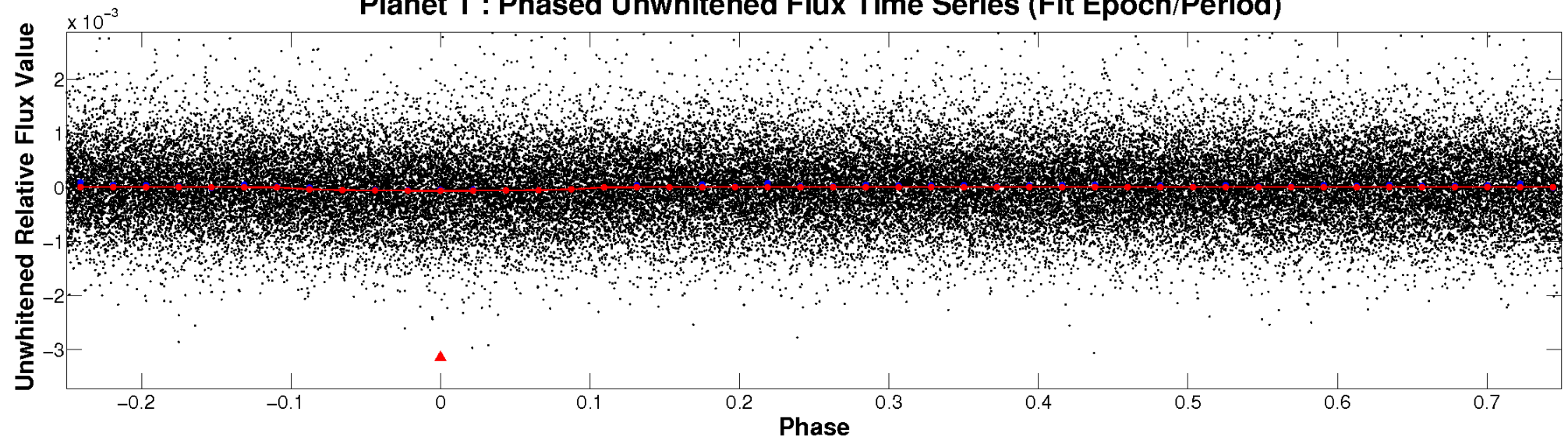
# ALT Odd/Even

TCE 010471174-01

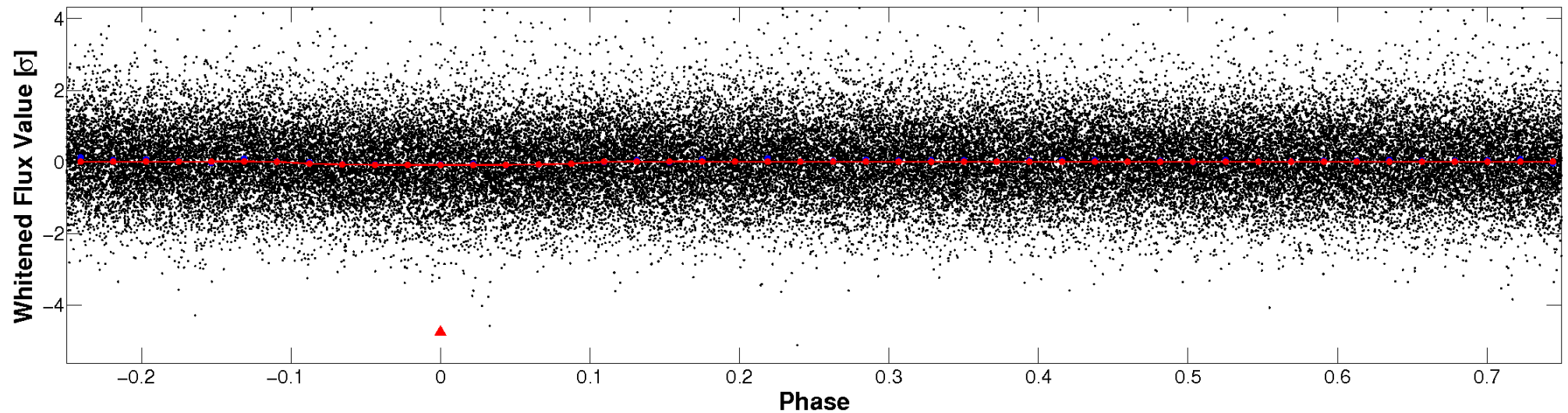


# Non-Whitened Vs. Whitened Light Curve

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

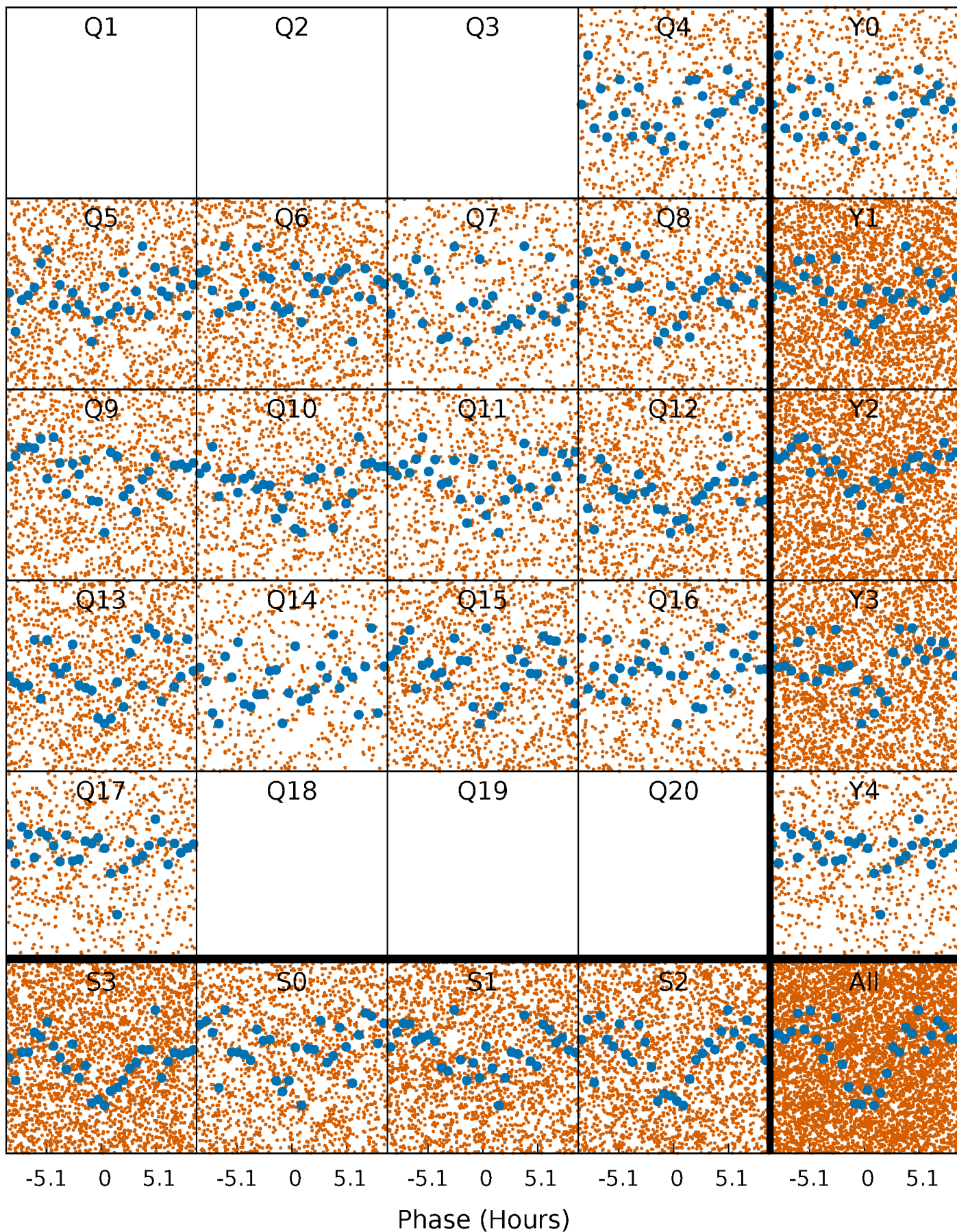


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

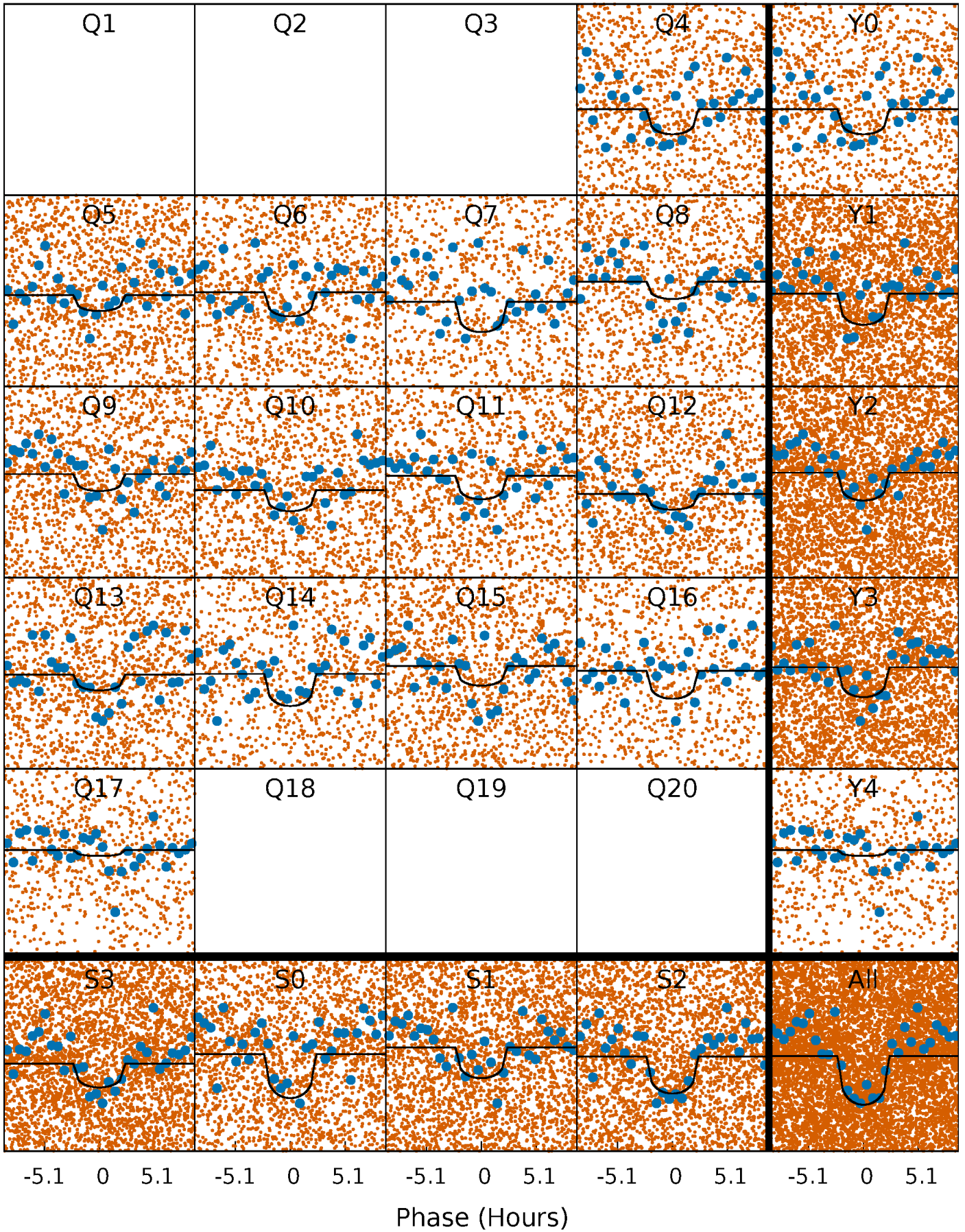
TCE 010471174-01 P= 0.933636 Days  $T_0=131.634837$  (BKJD)





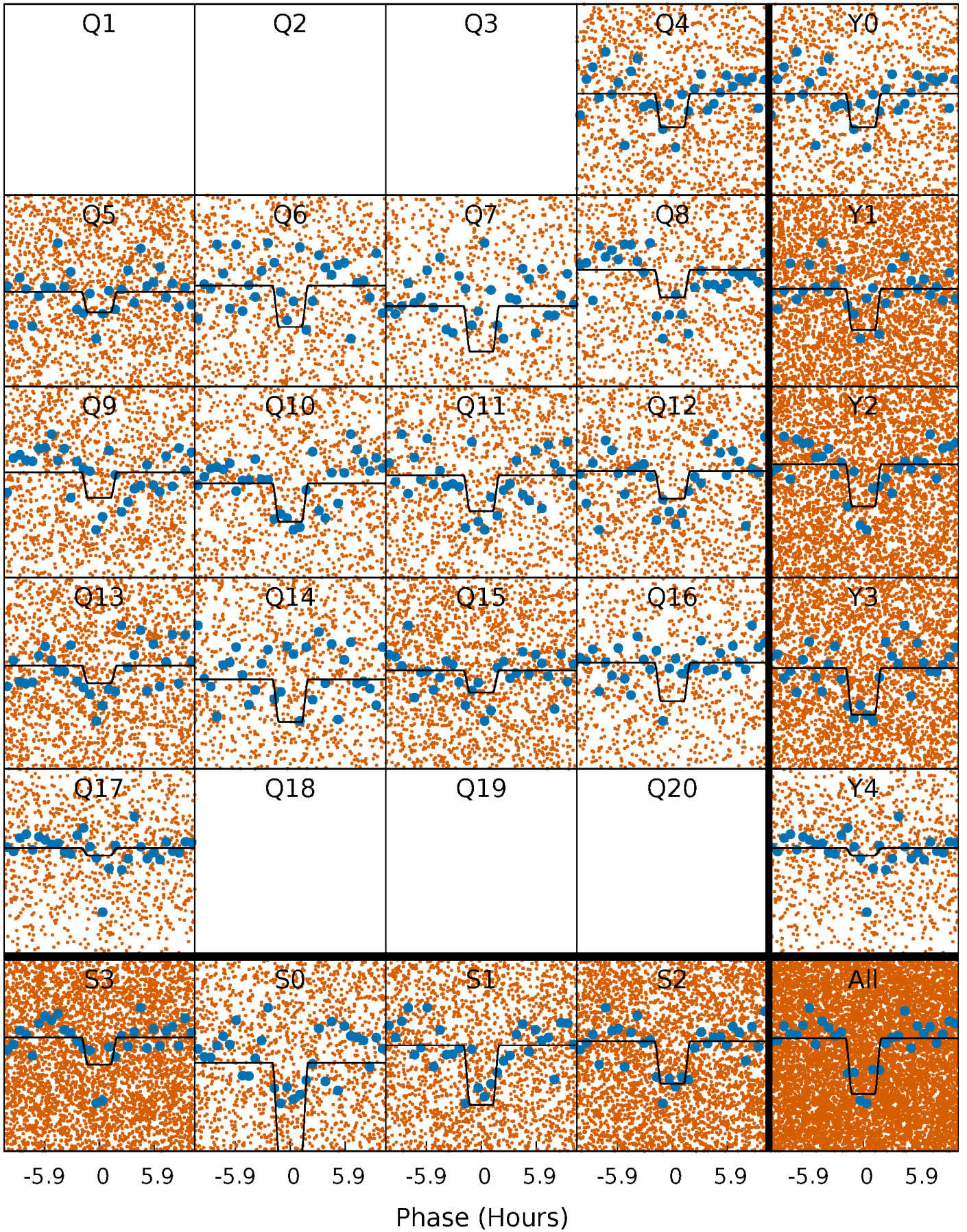
# DV Quarter-Phased Transit Curves

TCE 010471174-01 P= 0.933636 Days  $T_0=131.634837$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010471174-01 P= 0.933703 Days  $T_0=131.576876$  (BKJD)

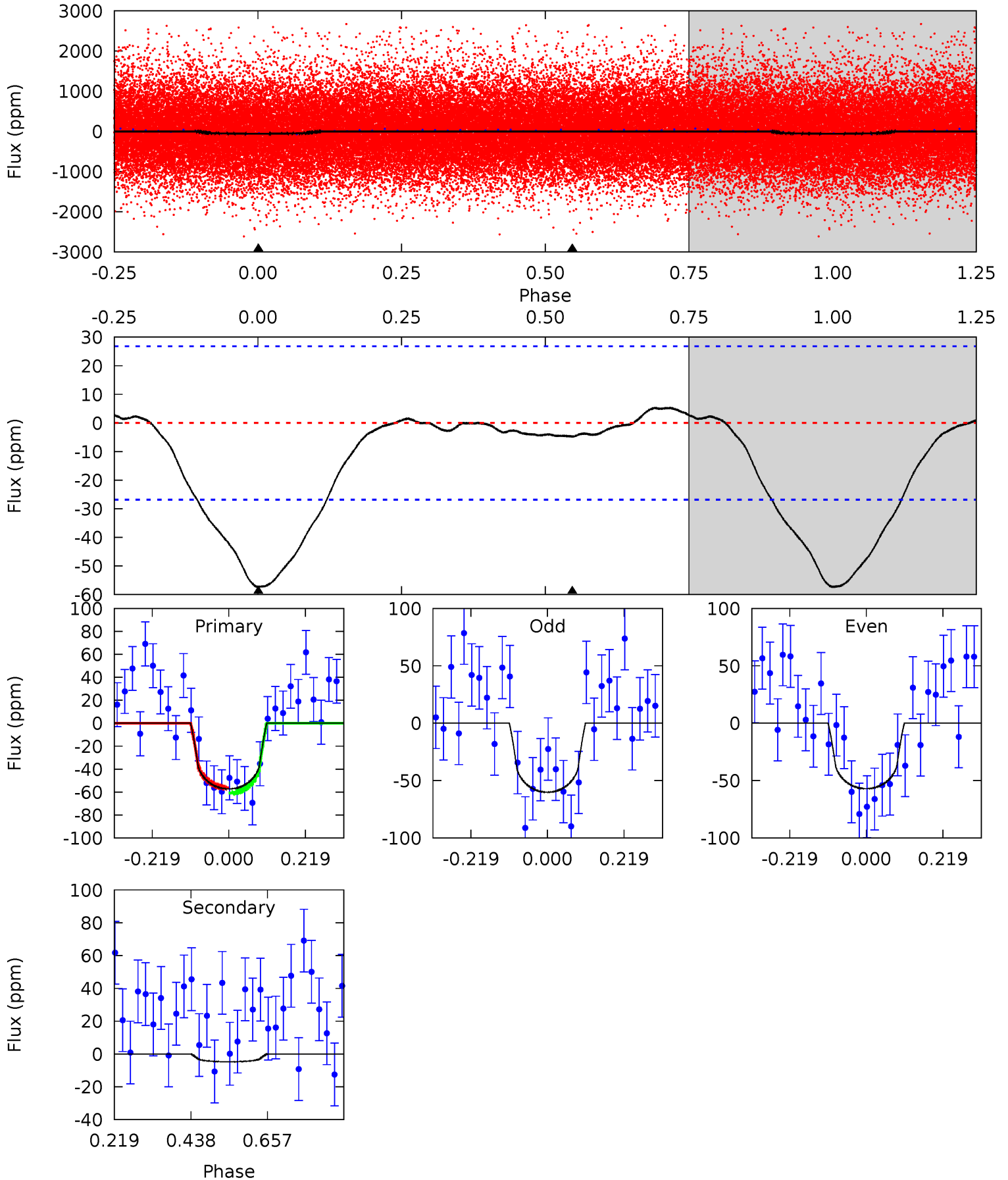




# DV Model-Shift Uniqueness Test

010471174-01, P = 0.933636 Days, E = 131.634837 Days

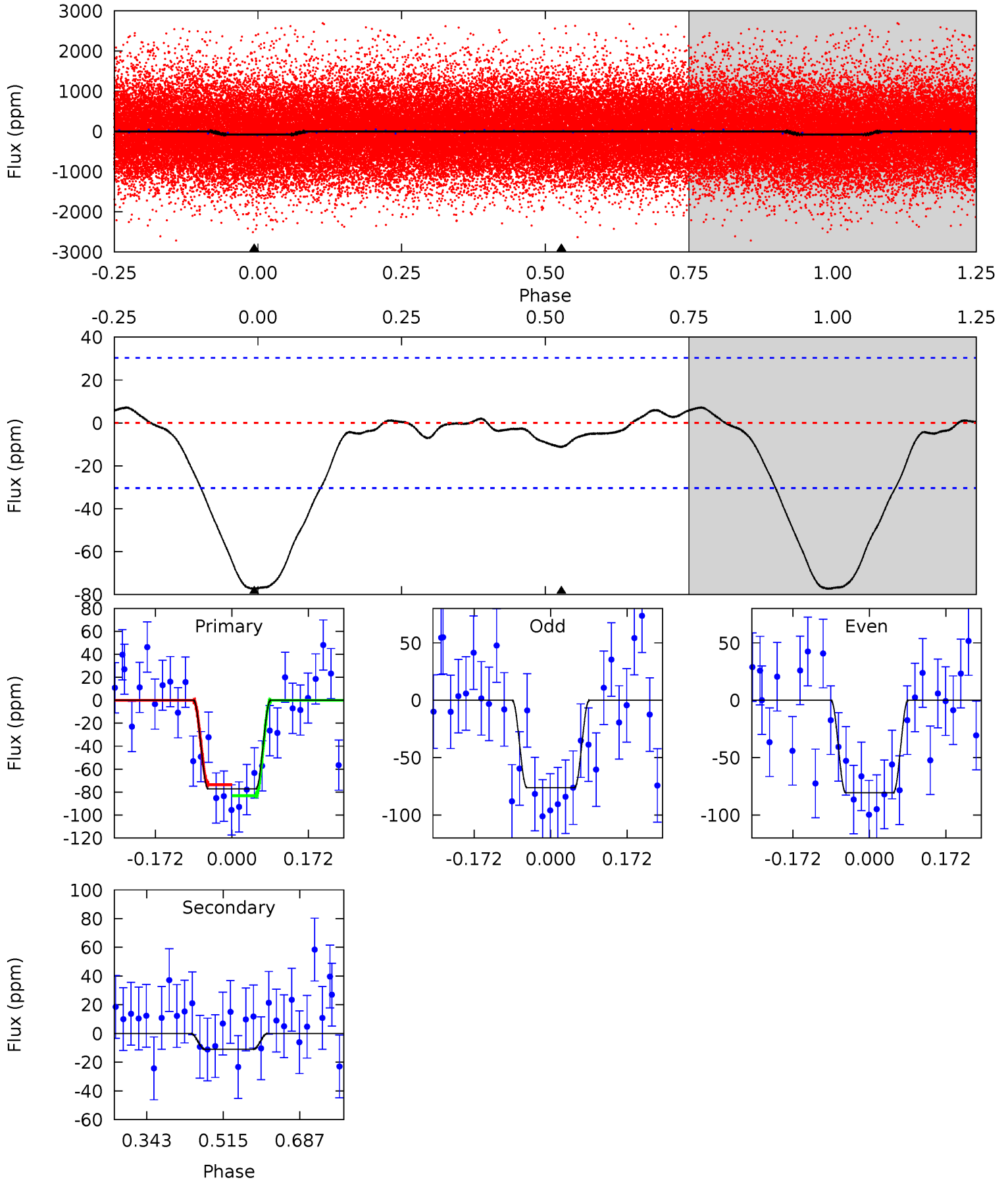
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.40	0.78	0	0	4.40	1.23	0.20	9.40	9.40	0.78	0.78	0.25	0.98	0.08	0.36



# Alt Model-Shift Uniqueness Test

010471174-01, P = 0.933703 Days, E = 131.576876 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
11.3	1.63	0	0	4.45	1.37	0.57	11.3	11.3	1.63	1.63	0.33	0.94	0.09	0.70





### Stellar Parameters For KIC 010471174

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5619^{+169}_{-186}$	$4.558^{+0.033}_{-0.176}$	$-0.100^{+0.300}_{-0.300}$	$0.838^{+0.220}_{-0.073}$	$0.927^{+0.094}_{-0.104}$	$2.222^{+0.400}_{-1.075}$
	+3%/-3%	+1%/-4%	+300%/-300%	+26%/-9%	+10%/-11%	+18%/-48%
Source	KIC0	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 010471174-01 / KOI 7613.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-5 \pm 6$	$1.29^{+1.35}_{-0.82}$	$2400^{+158}_{-105}$	$2253^{+1906}_{-5077}$	$0.365^{+4.415}_{-0.404}$
Alt.	$-11 \pm 7$	$1.45^{+1.31}_{-0.96}$	$2406^{+163}_{-105}$	$2941^{+1502}_{-5452}$	$0.819^{+6.159}_{-0.661}$

$T_{max}$  = 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

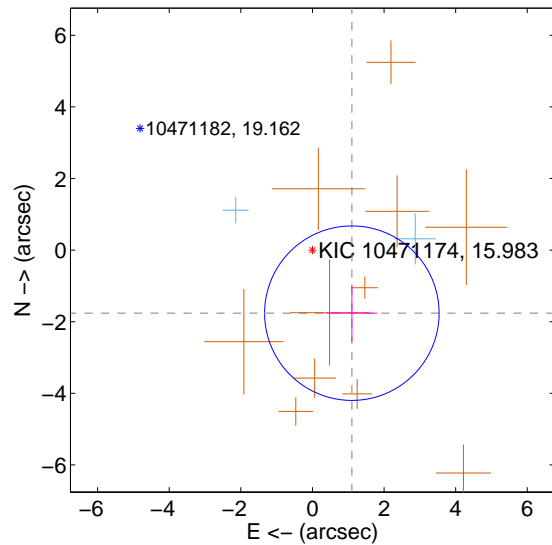
Supplemental centroid analysis for 010471174-01. Kepler magnitude: 15.98. Transit SNR 7.87

There are 2 quarters with good PRF difference image offsets

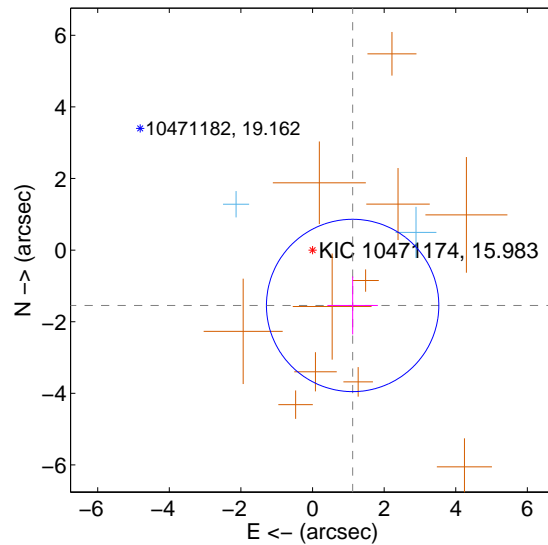
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.078 \pm 0.812$	2.56	$-1.101 \pm 0.709$	$-1.762 \pm 0.798$
PRF-fit source offset from KIC position	$1.909 \pm 0.802$	2.38	$-1.120 \pm 0.706$	$-1.546 \pm 0.810$
photometric centroid source offset	$1.29 \pm 1.45$	0.89	$0.56 \pm 1.47$	$1.16 \pm 1.44$

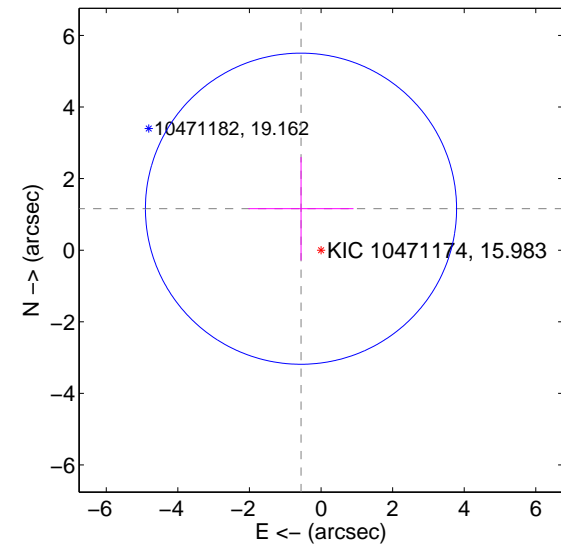
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

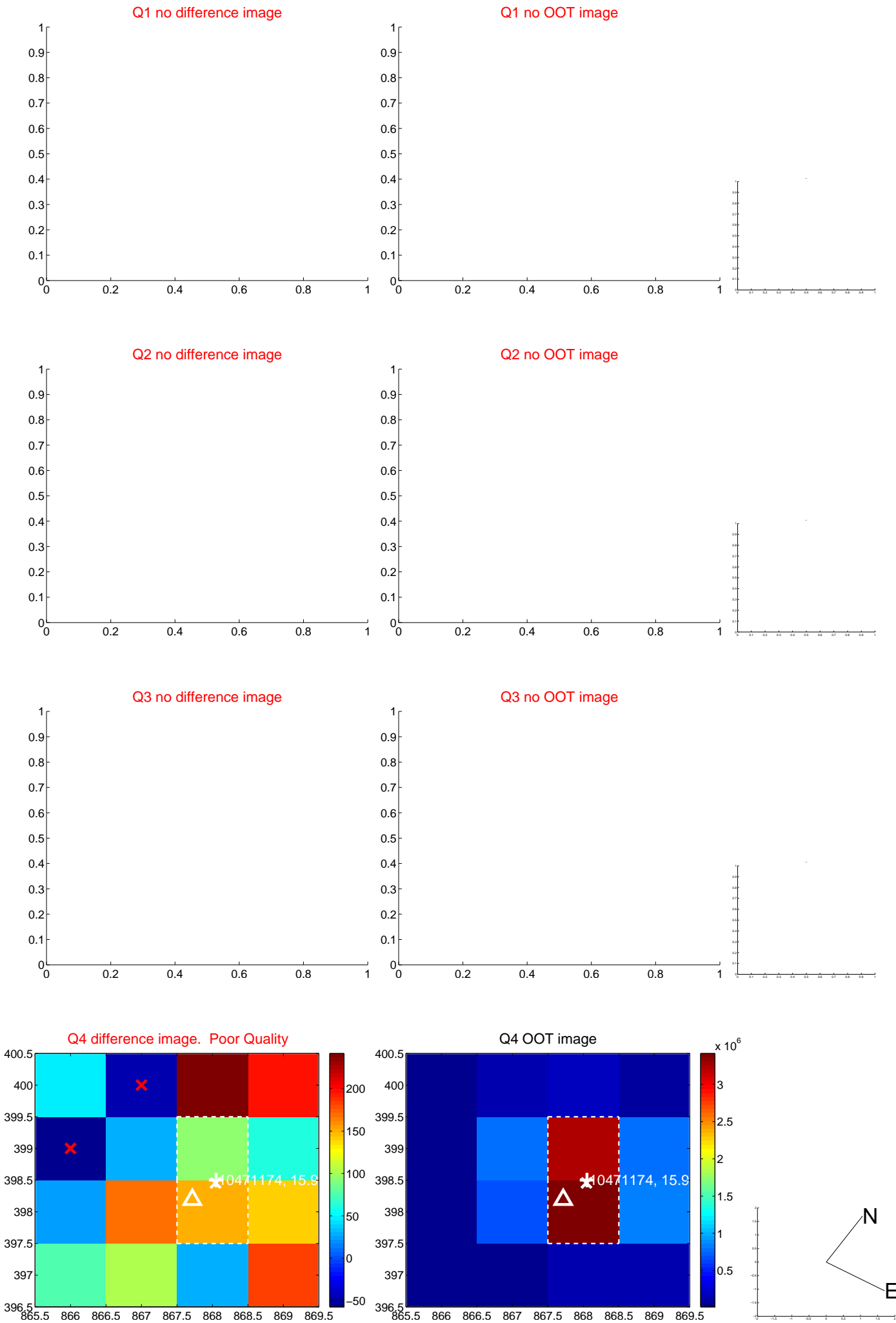


offset from photometric centroids

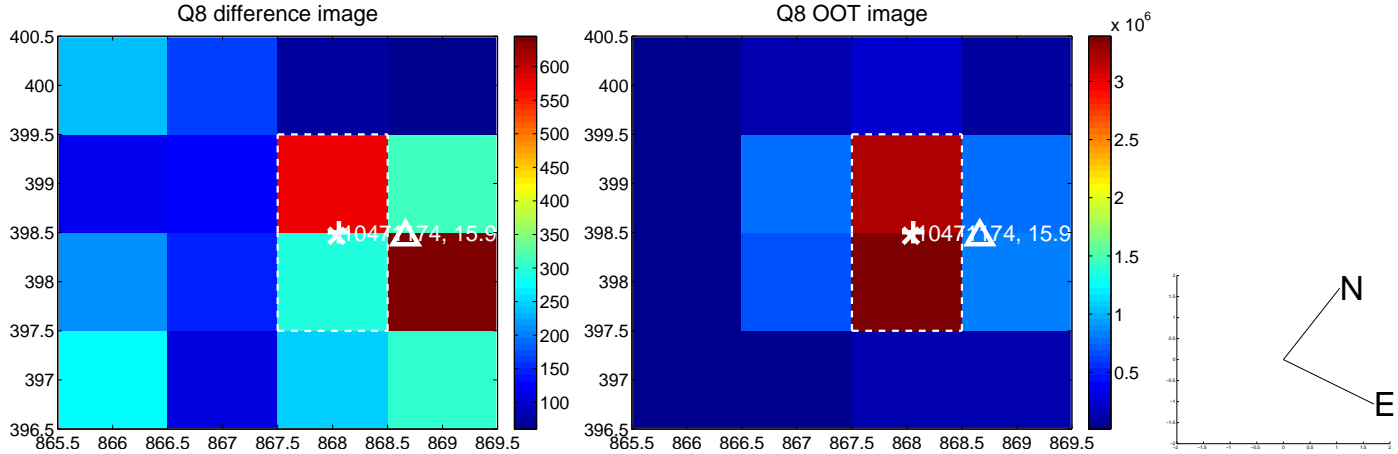
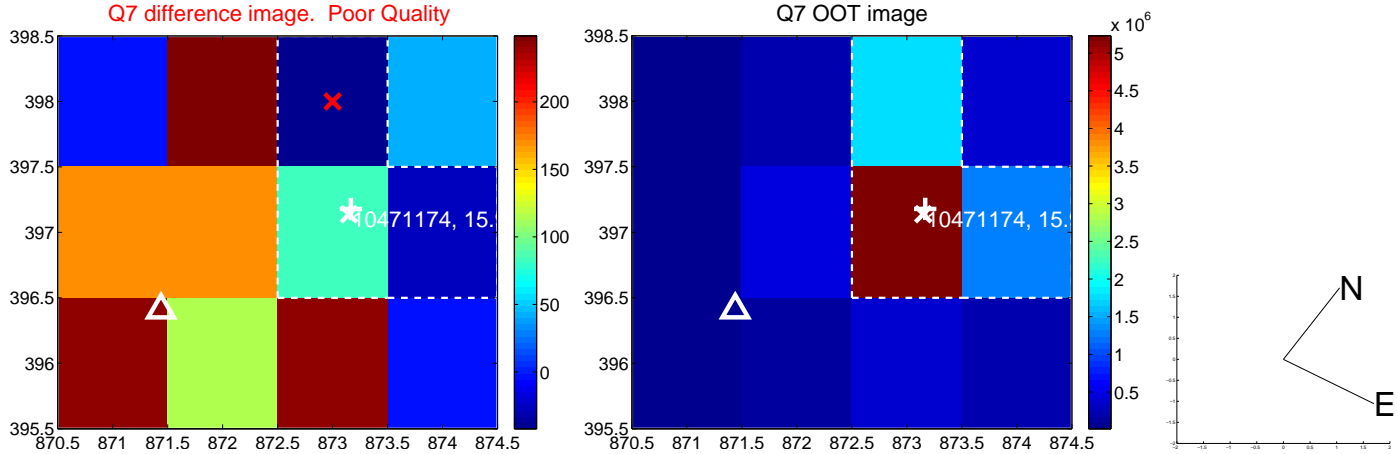
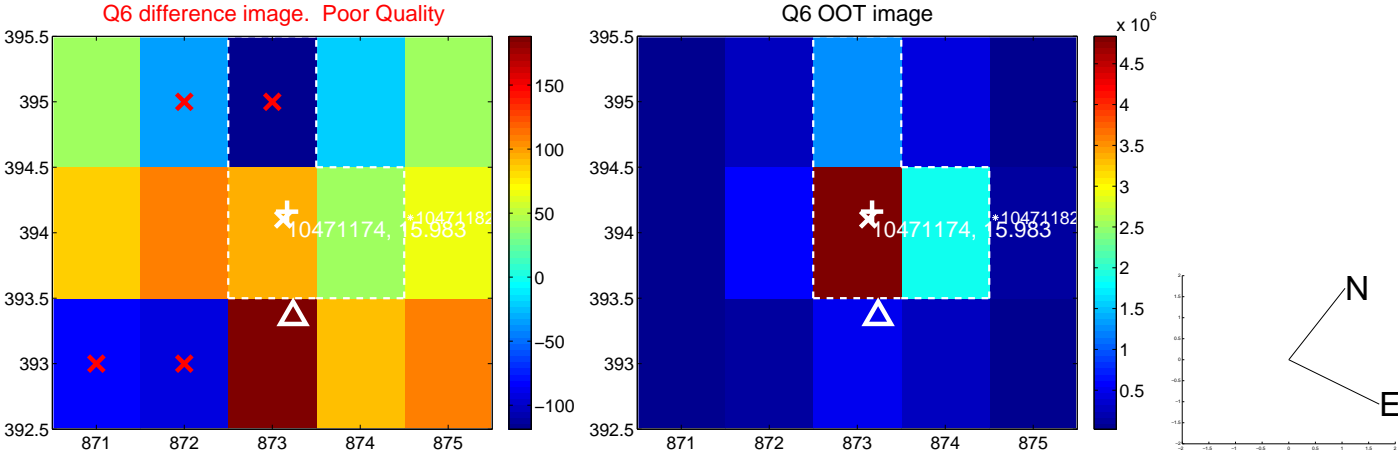
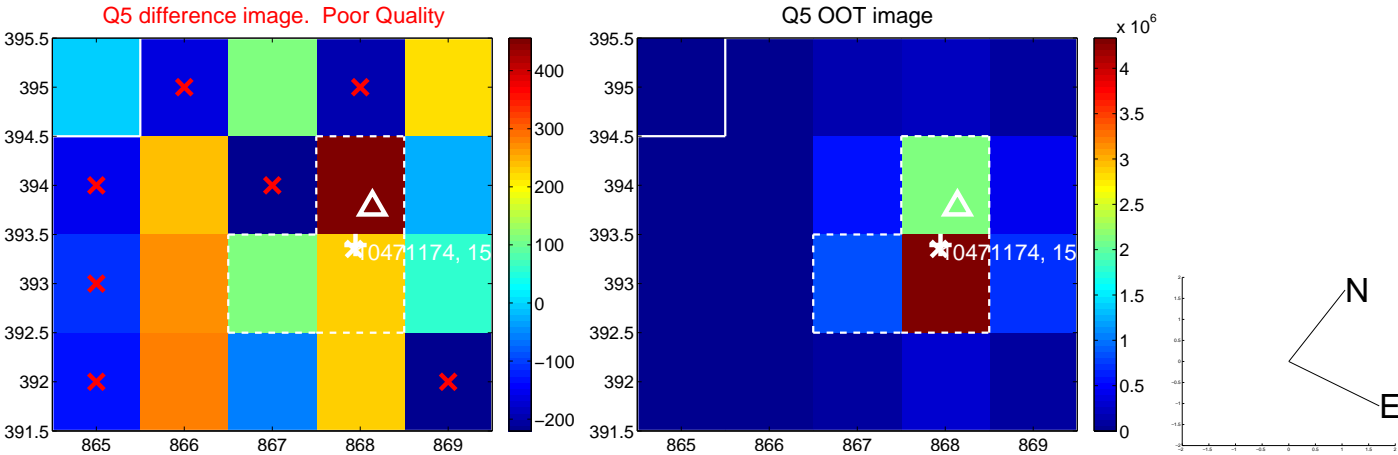


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

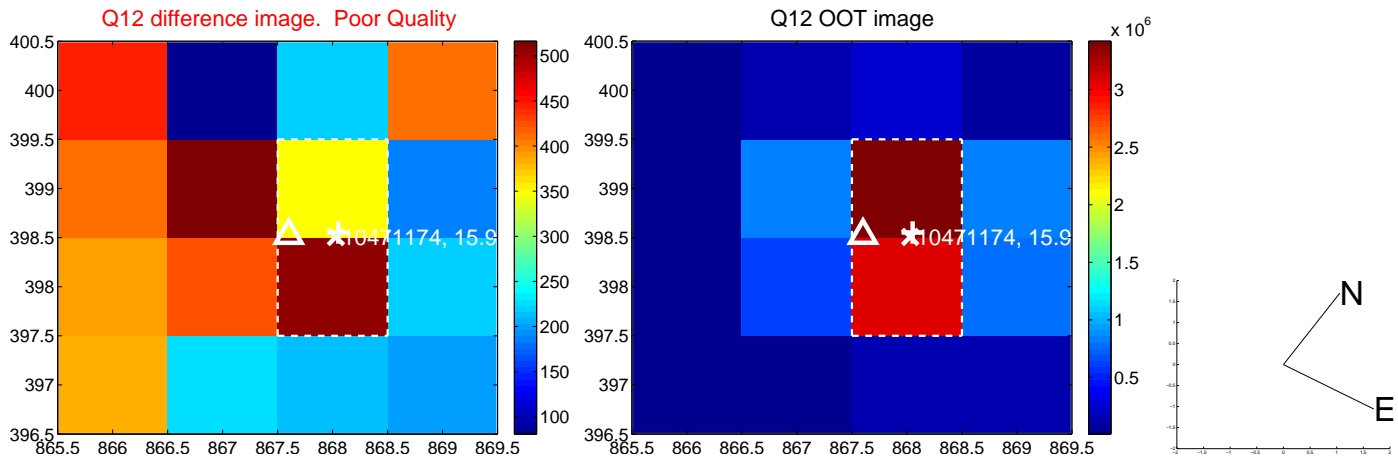
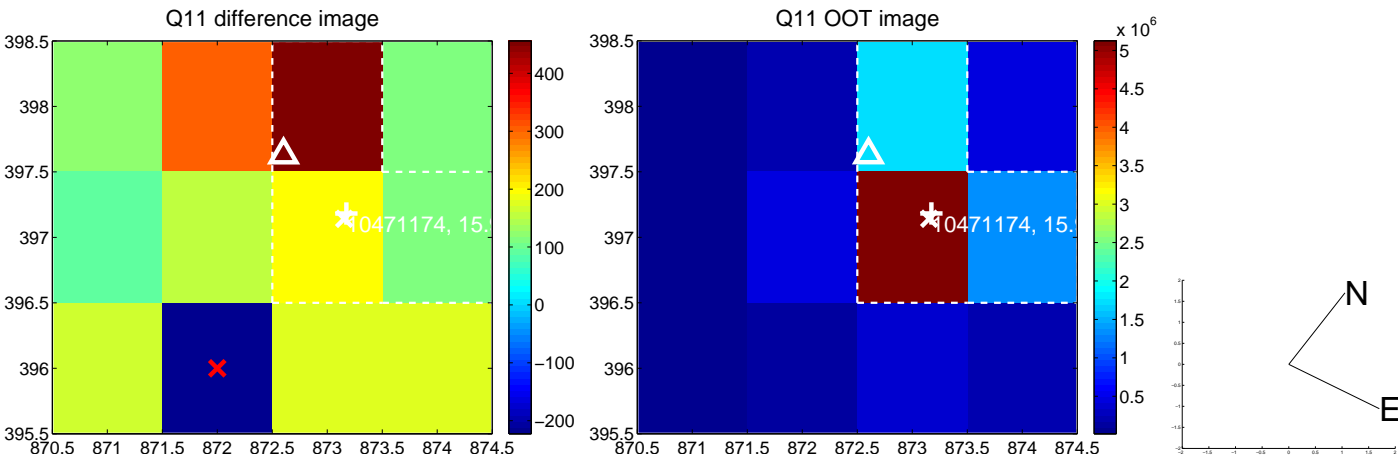
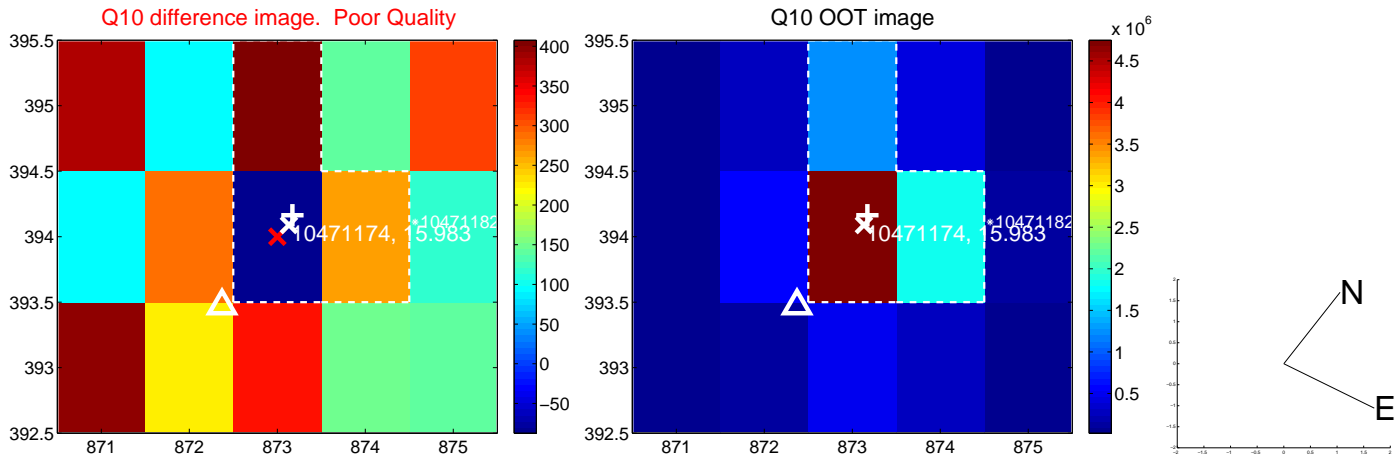
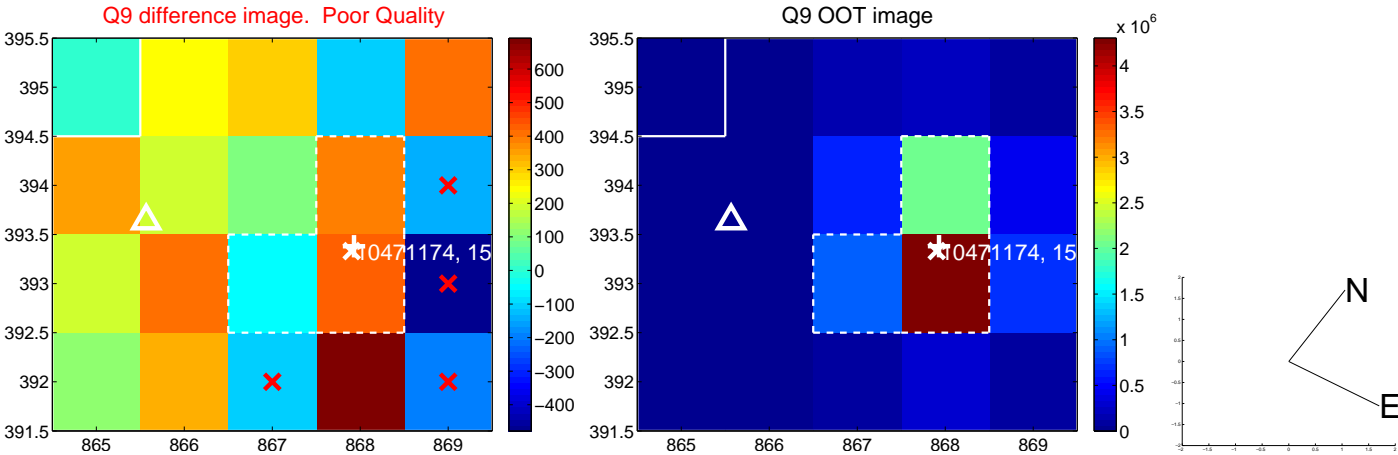


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

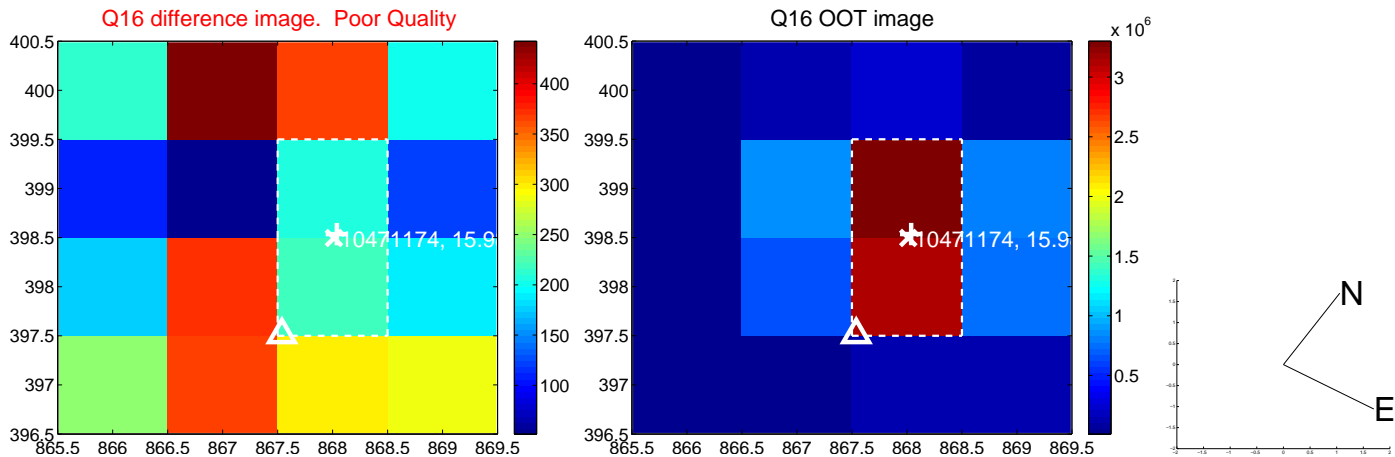
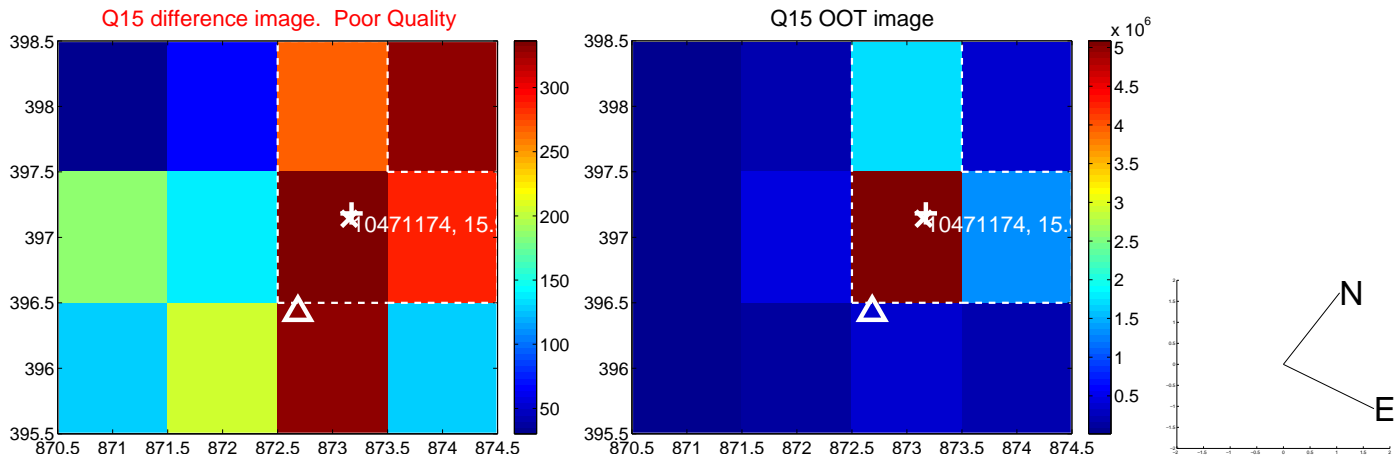
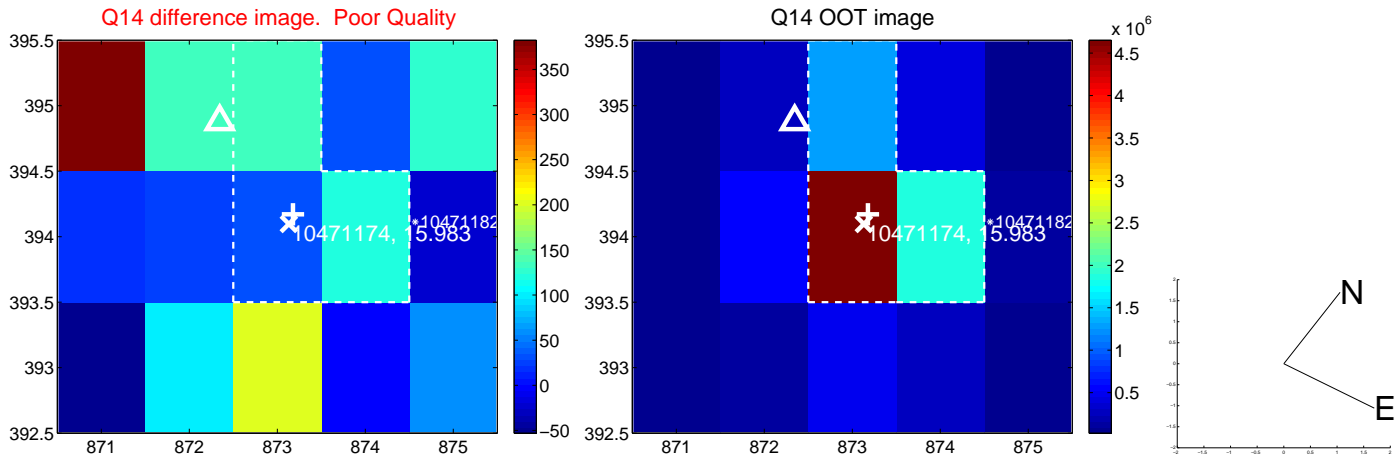
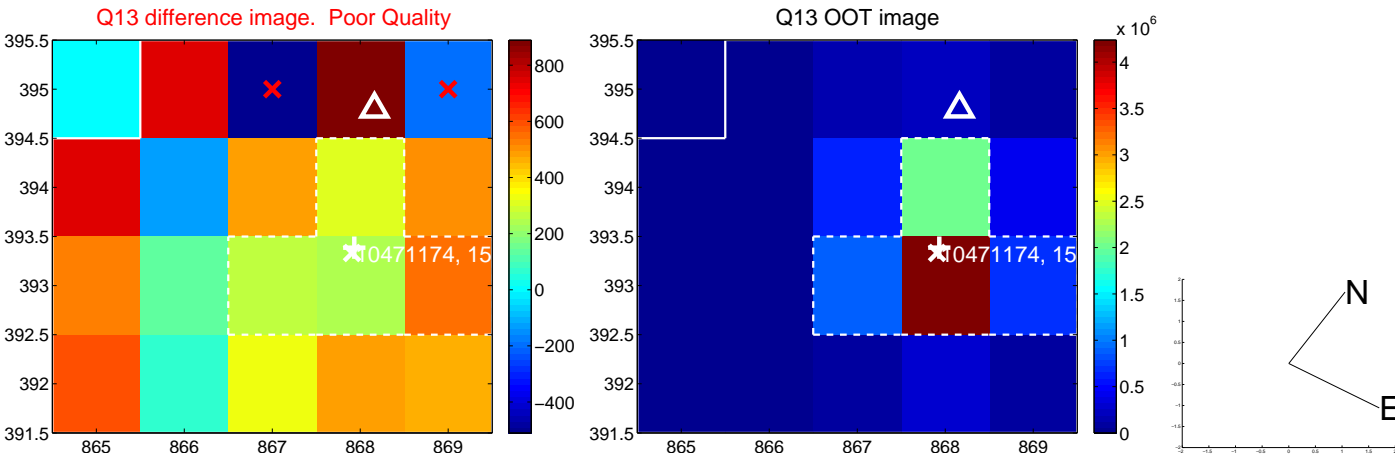




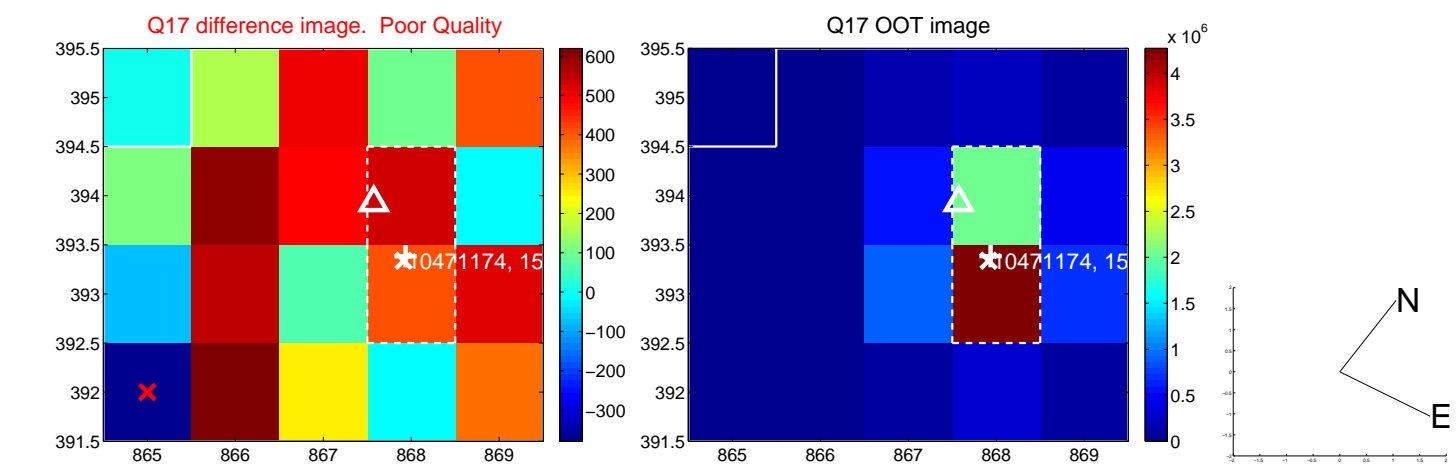
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



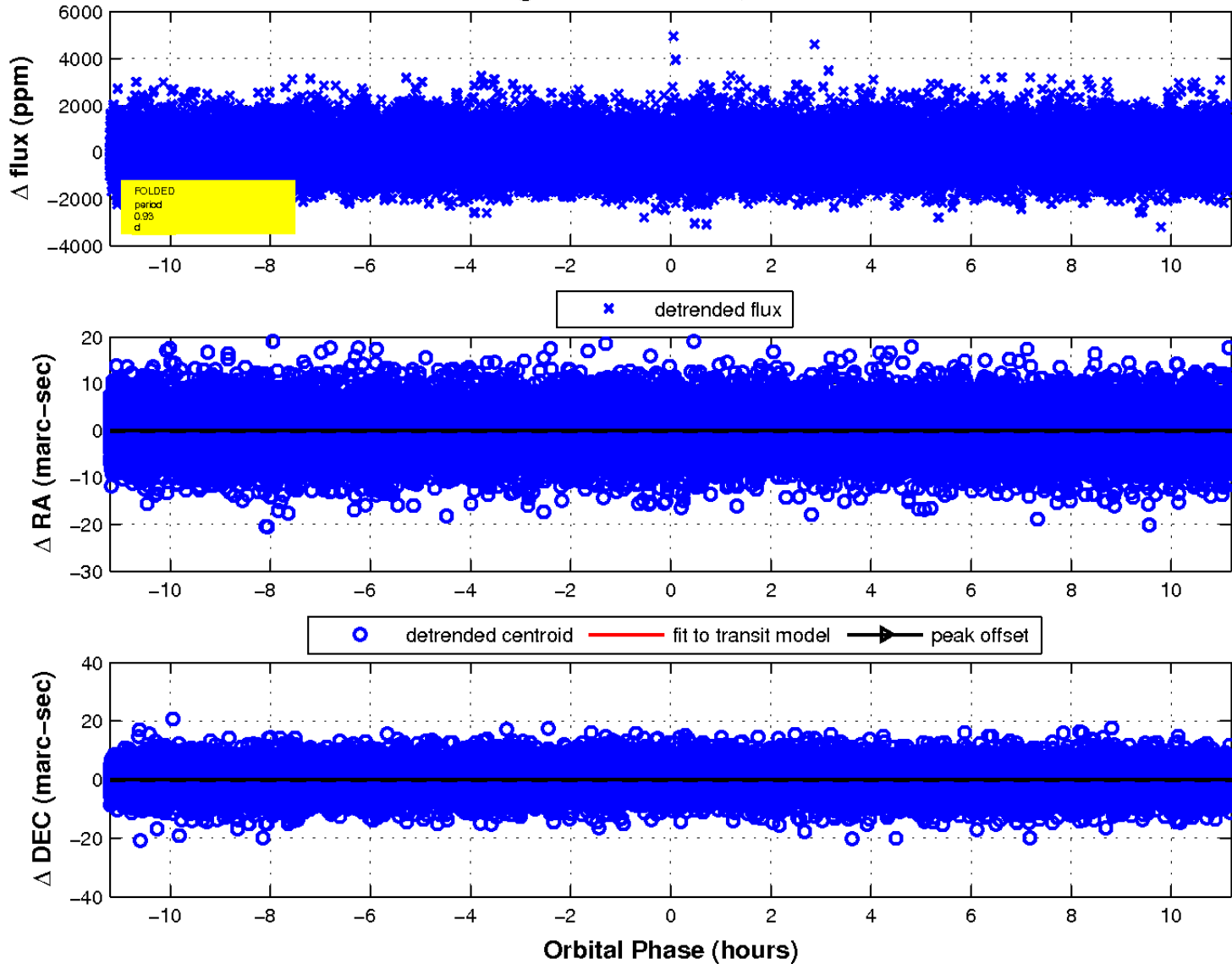
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

