

# KIC 010874215

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010874215-01	OBS	2305.01	31.032487	152.274201	728.8	3.698	14.2	14.6	0.93	5841	3.00	23.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010874215-01	OBS	PC	0.99	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 010874215-01

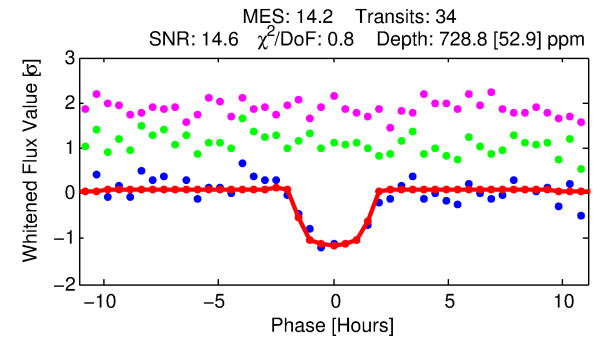
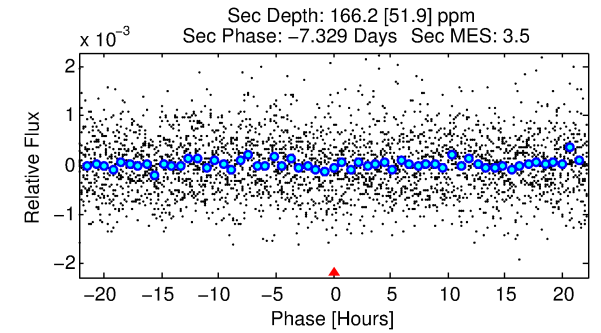
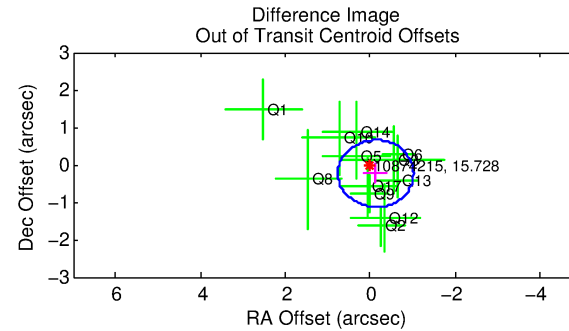
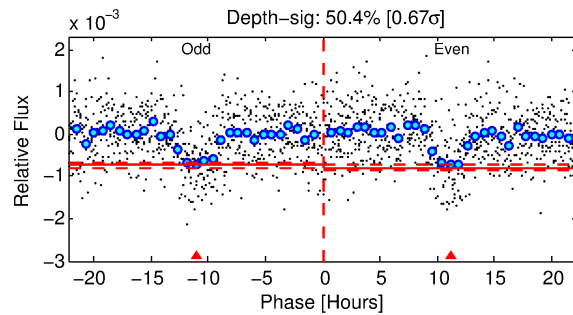
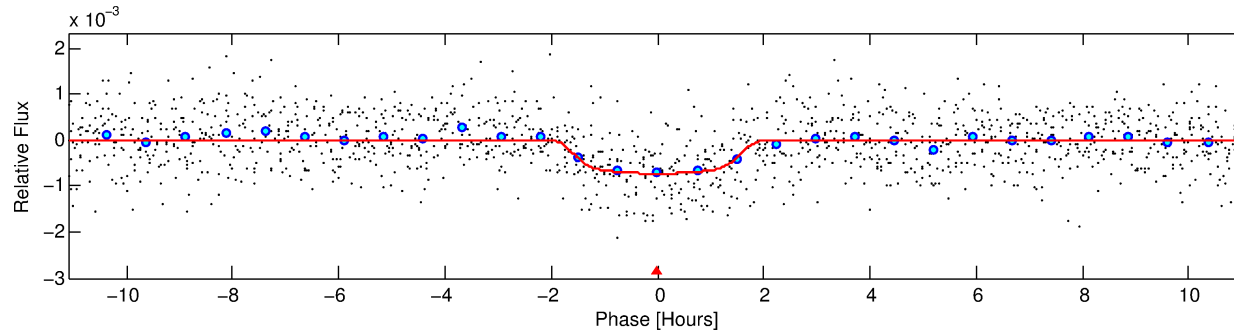
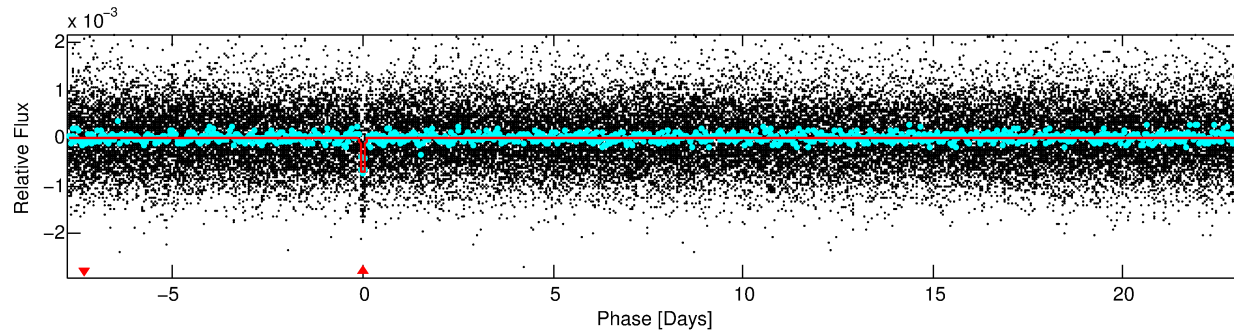
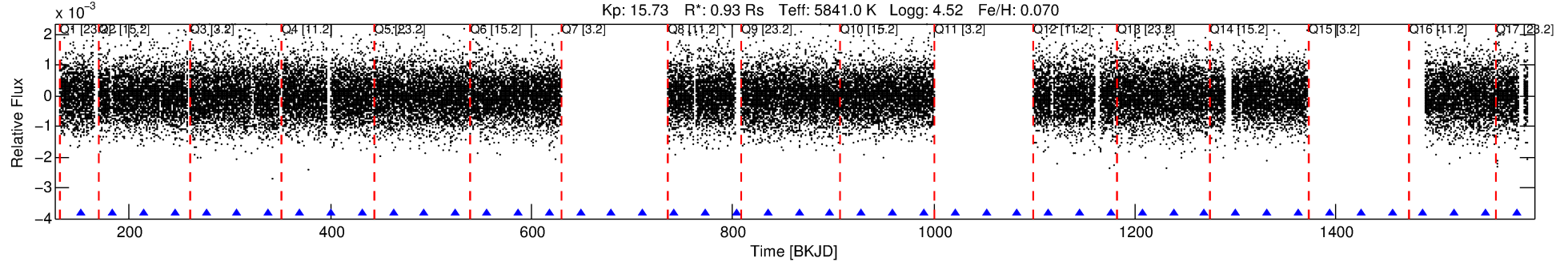
No Significant Match Found

# DV One-Page Summary

KIC: 10874215 Candidate: 1 of 1 Period: 31.032 d

KOI: K02305.01 Corr: 0.959

Kp: 15.73 R\*: 0.93 Rs Teff: 5841.0 K Logg: 4.52 Fe/H: 0.070



## DV Fit Results:

Period = 31.03249 [0.00020] d  
Epoch = 152.2742 [0.0053] BKJD  
Rp/R\* = 0.0295 [0.0038]  
a/R\* = 31.69 [17.28]  
b = 0.90 [0.11]  
Seff = 23.46 [8.68]  
Teq = 561 [52] K  
Rp = 3.00 [0.91] Re  
a = 0.1963 [0.0455] AU  
Ag = 391.72 [206.09] [1.90σ]  
Teffp = 3860 [417] K [7.86σ]

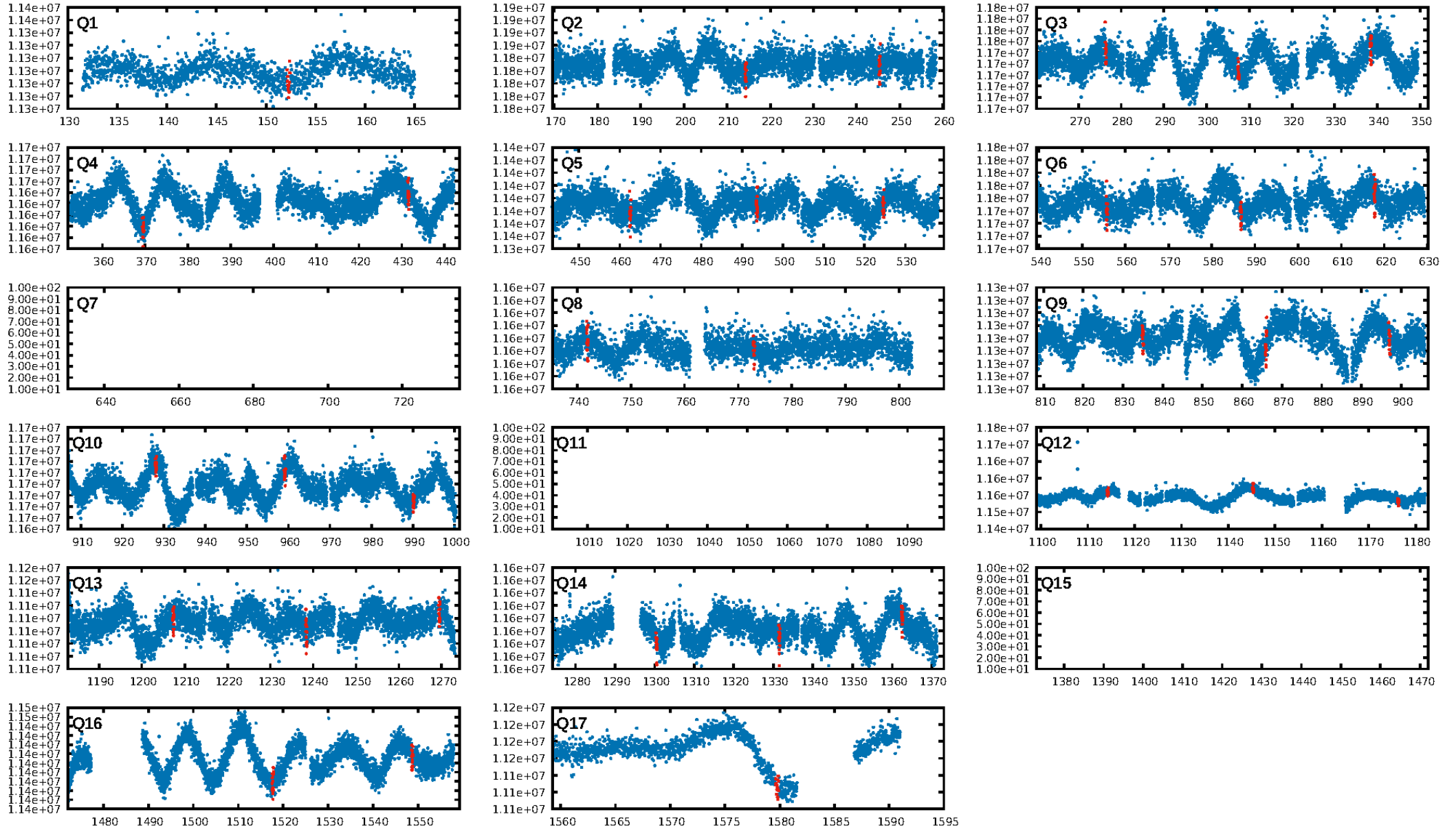
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 97.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.57e-43  
RollingBand-fgt: 1.00 [32/32]  
GhostDiagnostic-chr: -8.779  
Centroid-sig: 0.6%  
Centroid-so: 2.417 arcsec [2.48σ]  
OotOffset-rm: 0.274 arcsec [0.92σ]  
KicOffset-rm: 0.150 arcsec [0.54σ]  
OotOffset-st: 4/1/2/5 [12]  
KicOffset-st: 4/1/2/5 [12]  
DiffImageQuality-fgm: 0.83 [10/12]  
DiffImageOverlap-fno: 1.00 [14/14]

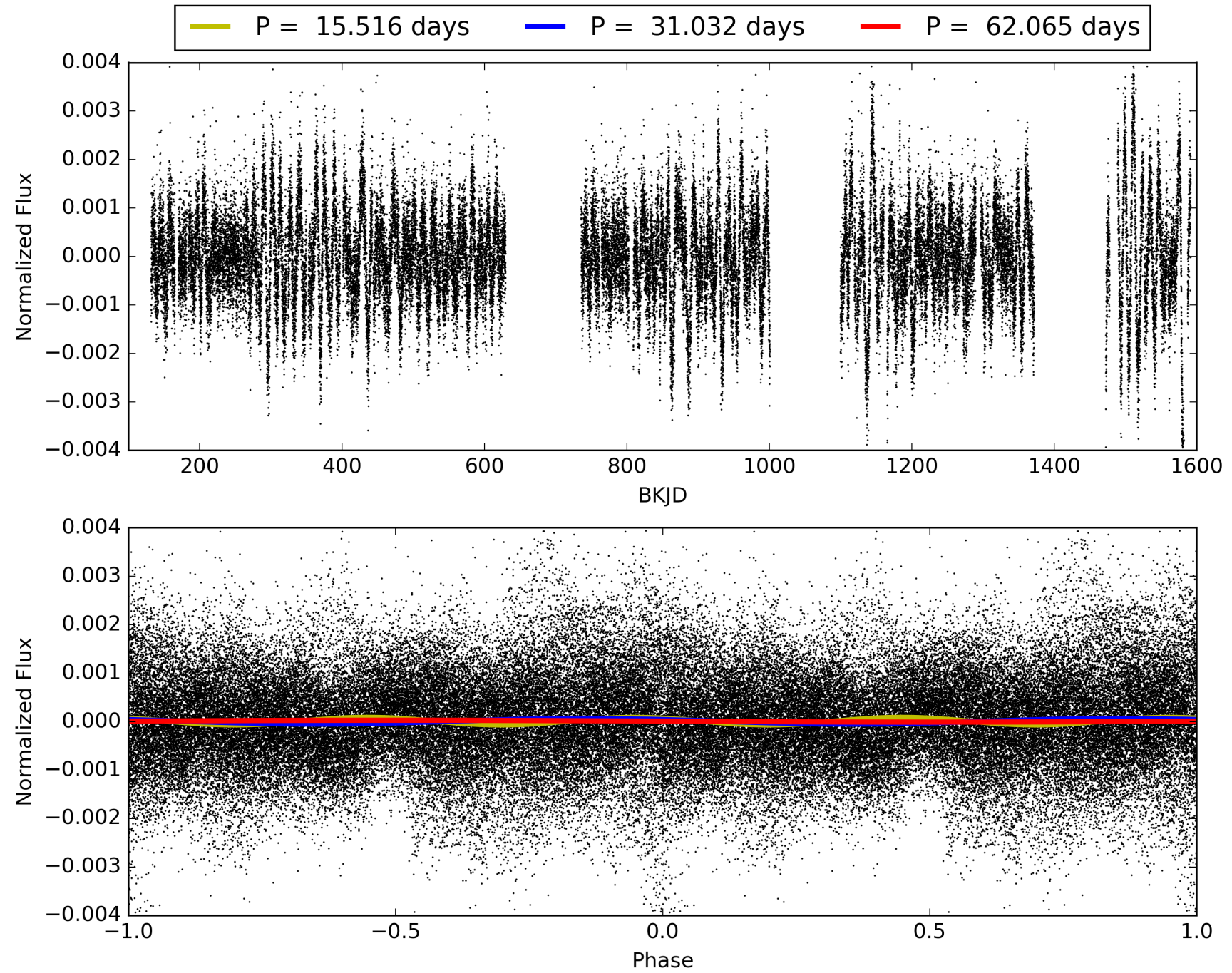
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 28-Jan-2016 21:05:11 Z

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

# TCE 010874215-01, PDC Light Curves

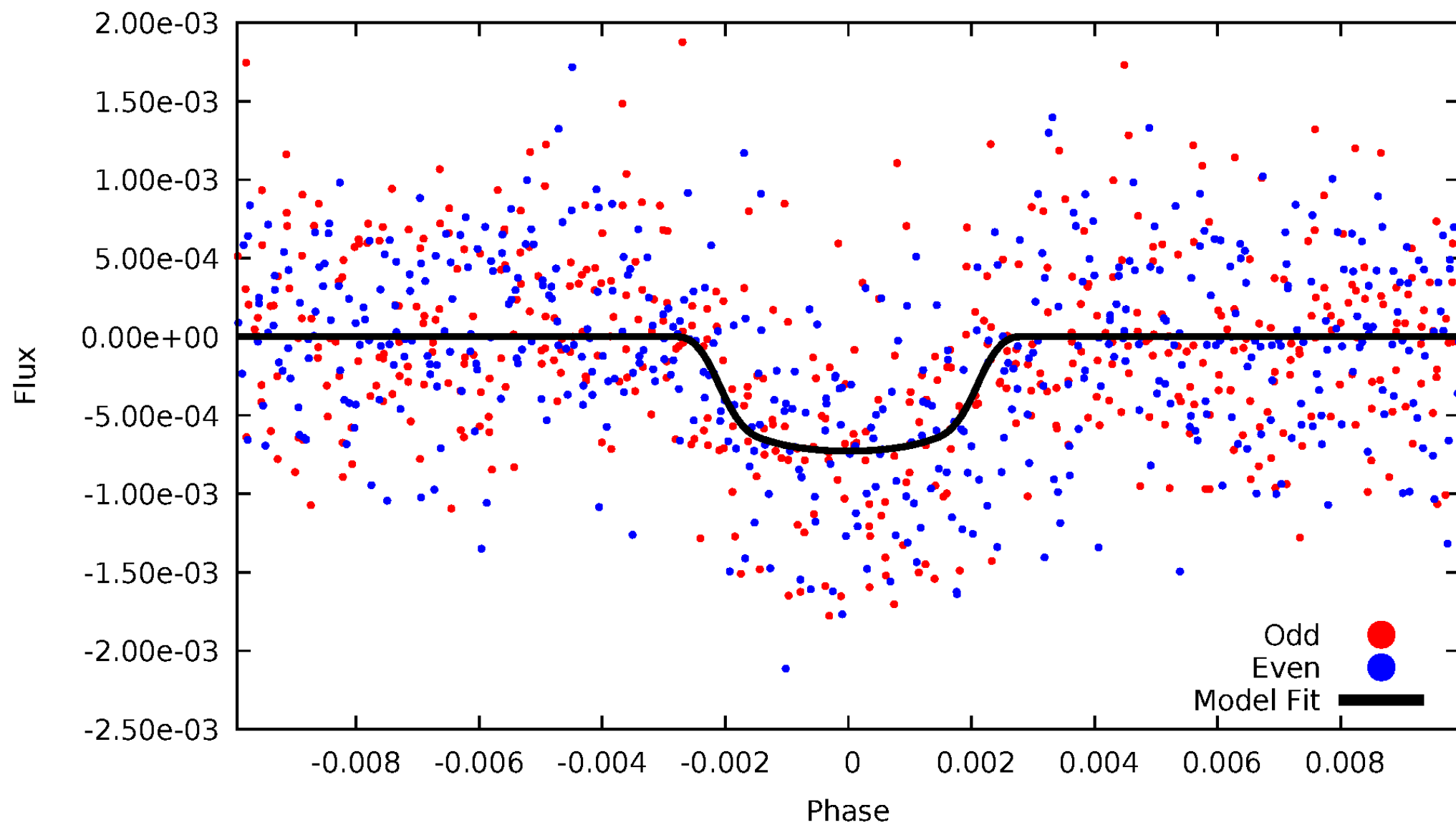


TCE 010874215-01



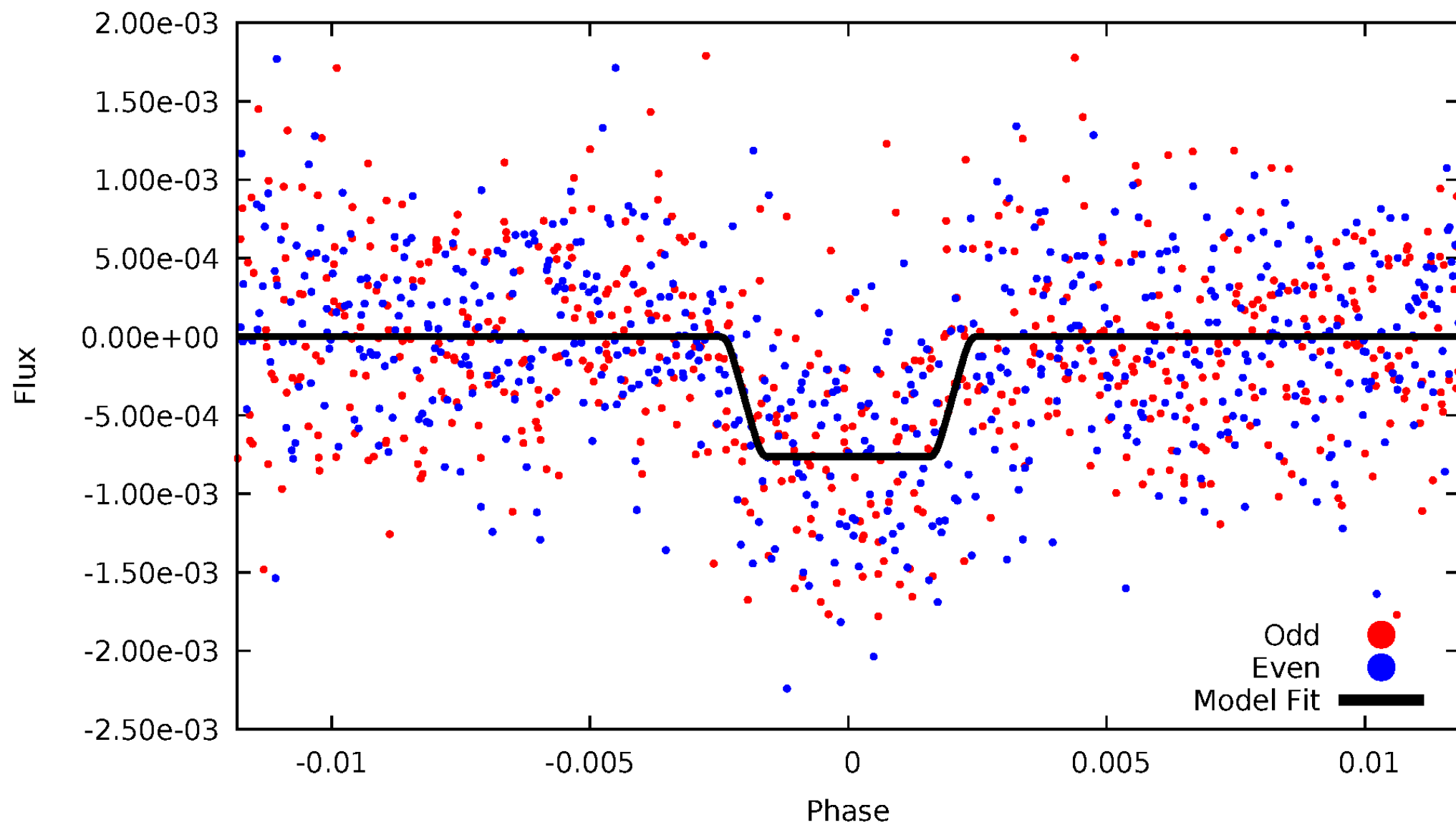
# DV Odd/Even

TCE 010874215-01



# ALT Odd/Even

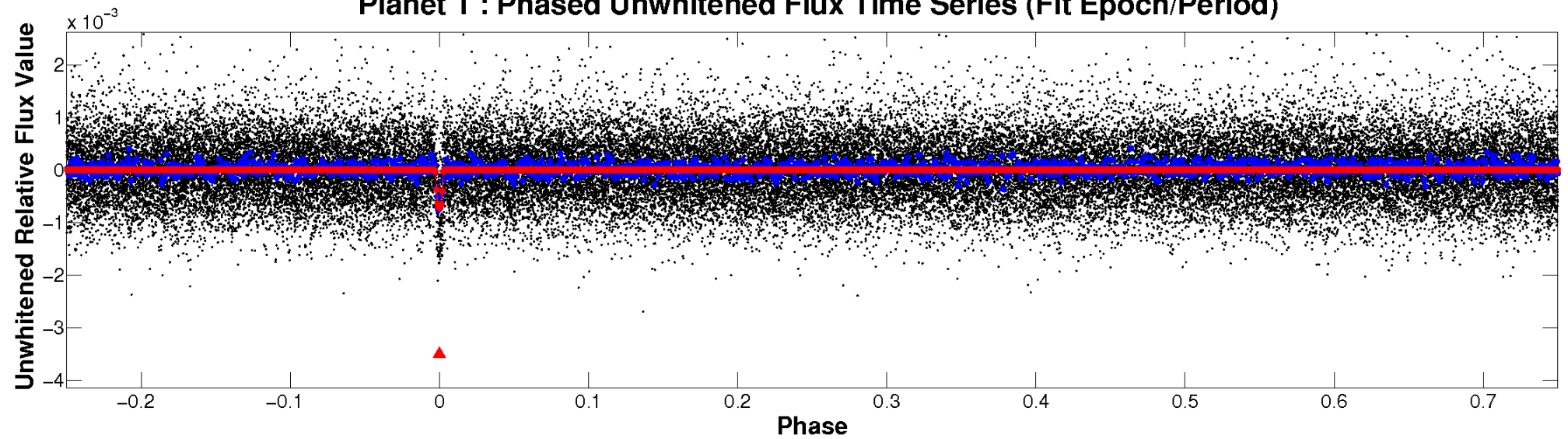
TCE 010874215-01



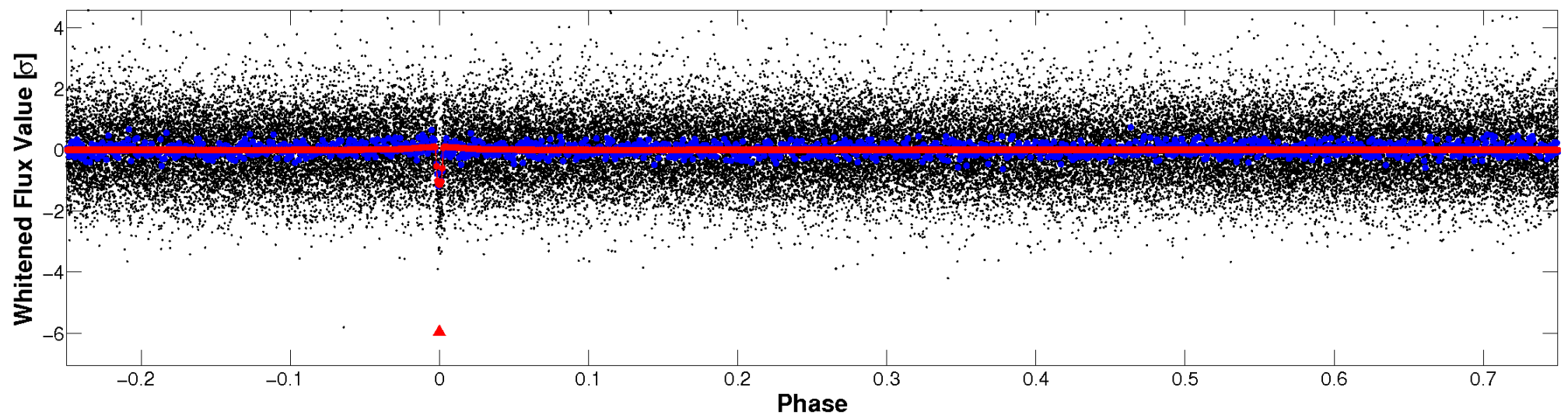


# Non-Whitened Vs. Whitened Light Curve

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

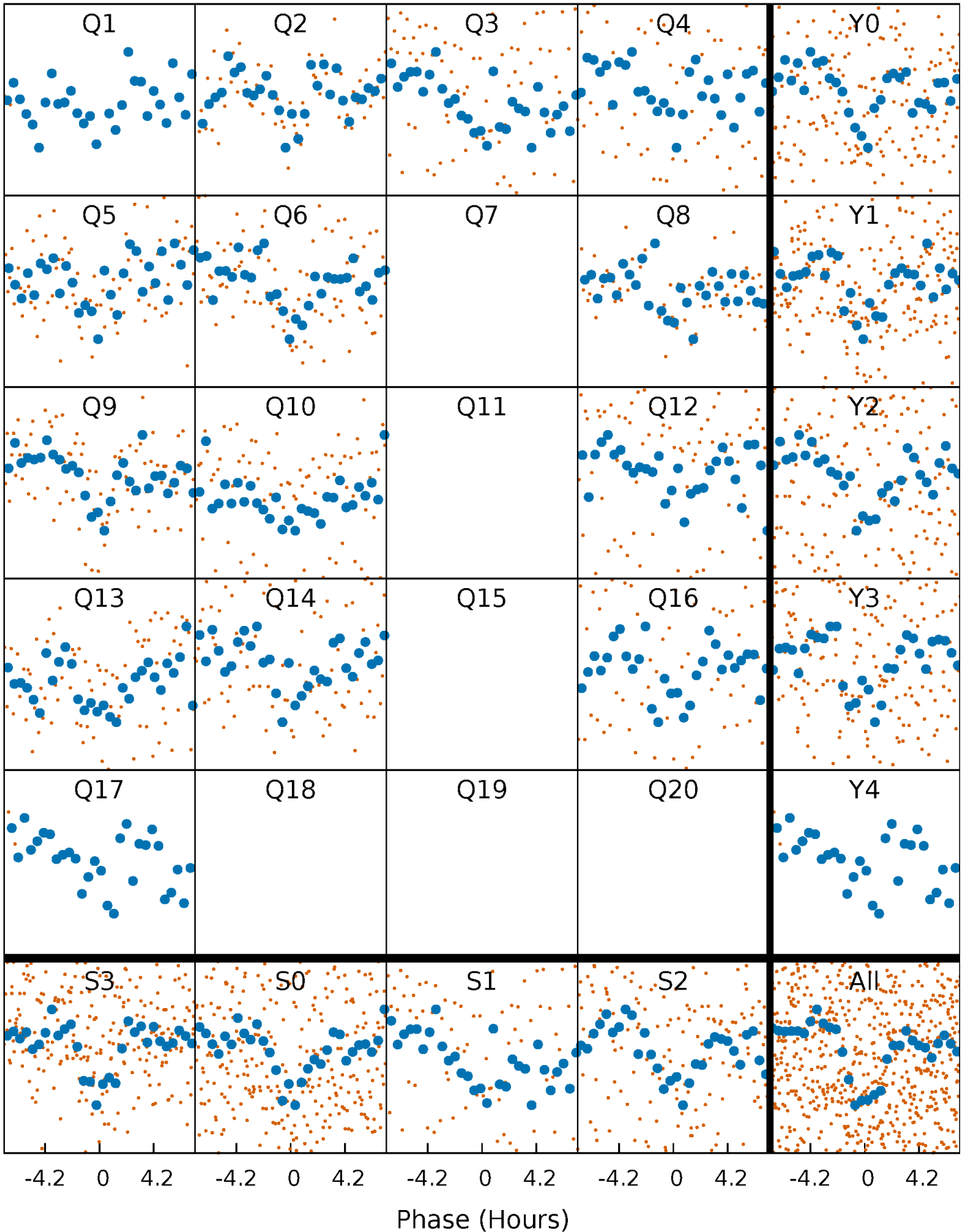


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

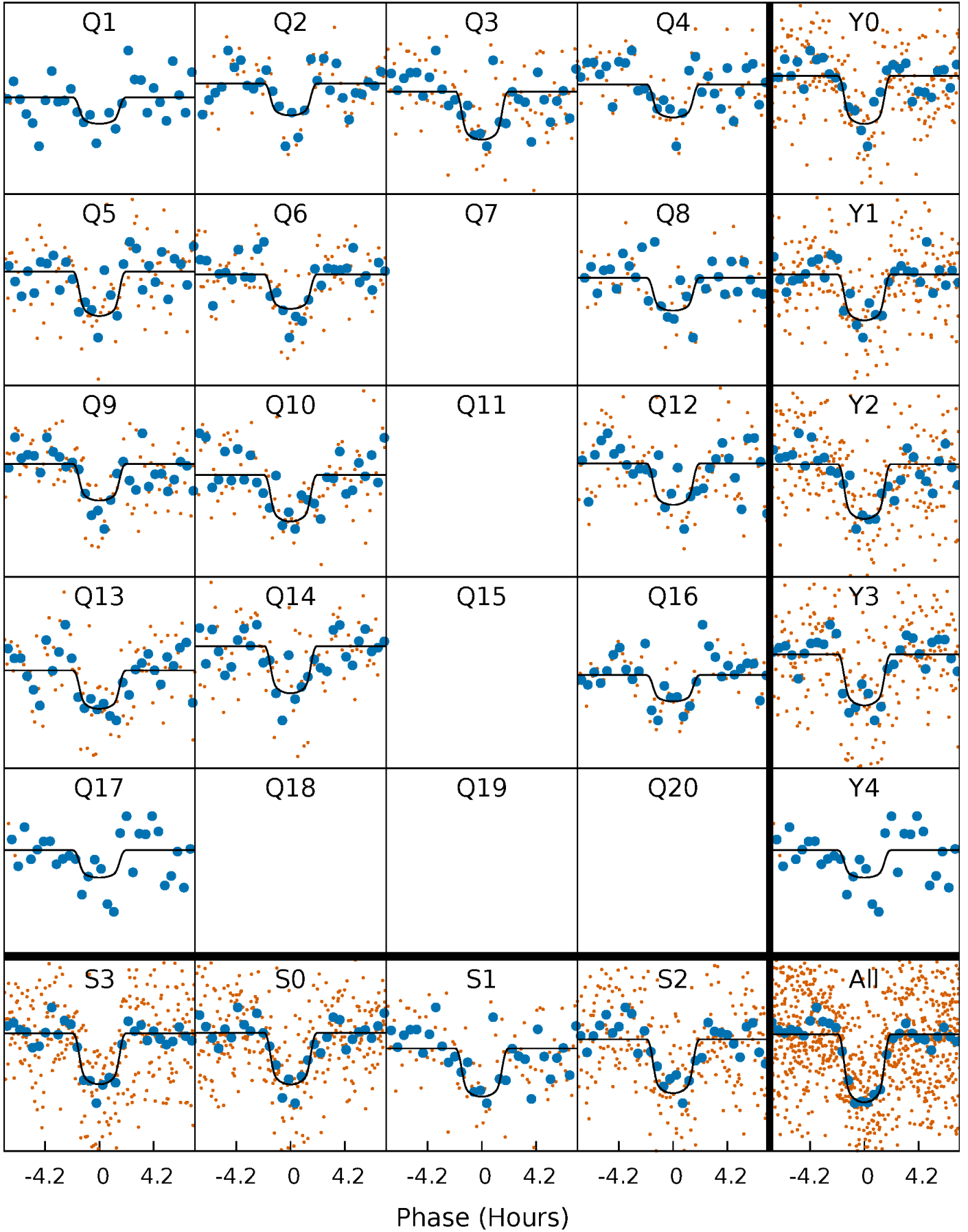
TCE 010874215-01 P= 31.032487 Days  $T_0=152.274201$  (BKJD)





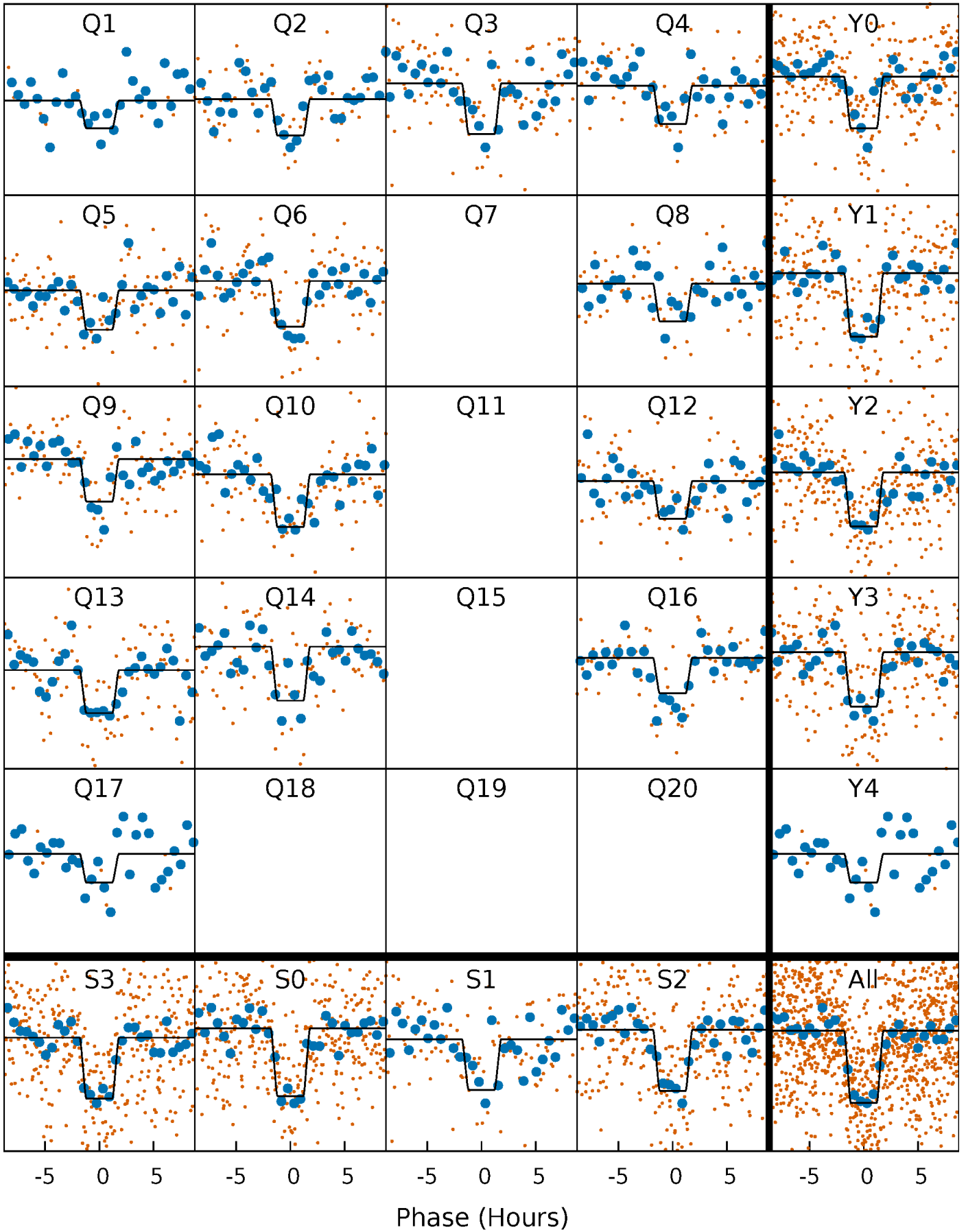
# DV Quarter-Phased Transit Curves

TCE 010874215-01 P= 31.032487 Days  $T_0=152.274201$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

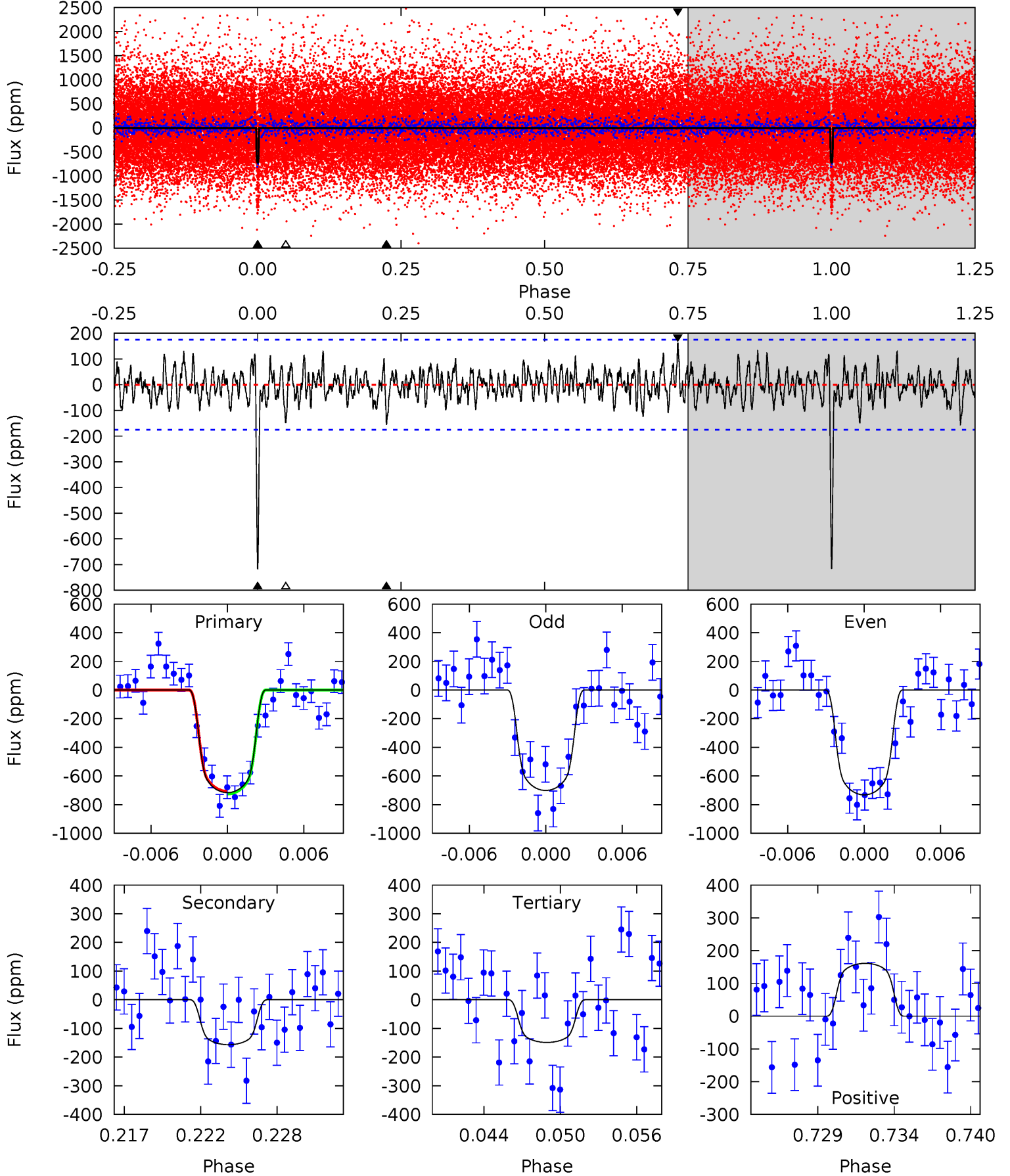
TCE 010874215-01 P= 31.032624 Days  $T_0=152.274276$  (BKJD)



# DV Model-Shift Uniqueness Test

010874215-01,  $P = 31.032487$  Days,  $E = 121.241714$  Days

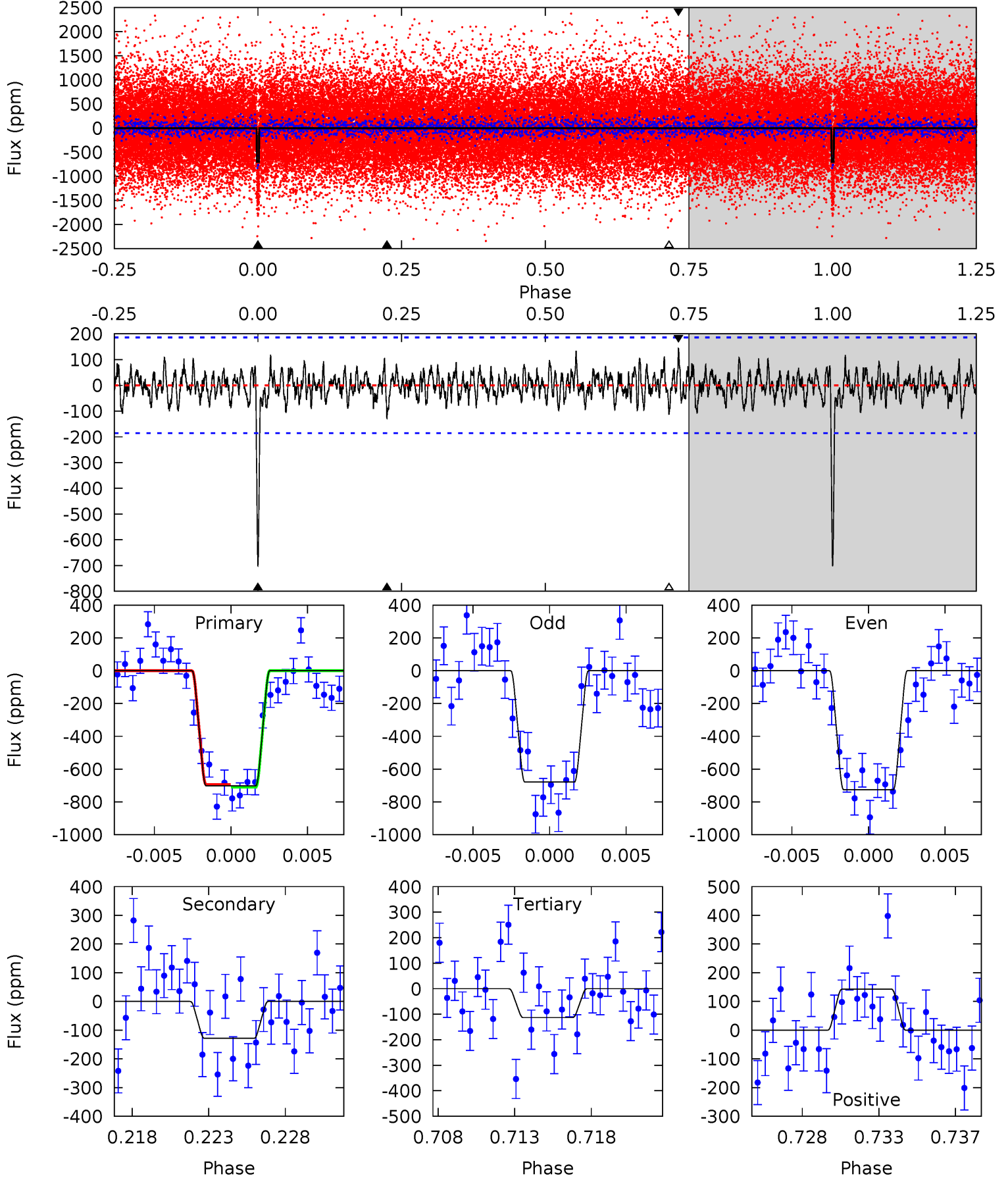
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	4.60	4.37	4.74	5.14	2.77	1.36	16.7	16.3	0.23	-0.13	0.45	0.99	0.18	0.27



# Alt Model-Shift Uniqueness Test

010874215-01,  $P = 31.032624$  Days,  $E = 121.241652$  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
19.5	3.57	3.14	3.96	5.16	2.82	1.15	16.4	15.5	0.43	-0.39	0.65	1.00	0.17	0.21



### Stellar Parameters For KIC 010874215

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5841^{+182}_{-223}$	$4.520^{+0.046}_{-0.184}$	$0.070^{+0.250}_{-0.300}$	$0.931^{+0.257}_{-0.086}$	$1.047^{+0.112}_{-0.137}$	$1.828^{+0.426}_{-0.886}$
	+3%/-4%	+1%/-4%	+357%/-429%	+28%/-9%	+11%/-13%	+23%/-48%
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 010874215-01 / KOI 2305.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-157 \pm 34$	$3.10^{+0.55}_{-0.47}$	$800^{+50}_{-43}$	$4087^{+290}_{-255}$	$333^{+157}_{-105}$
Alt.	$-129 \pm 36$	$2.89^{+0.58}_{-0.47}$	$799^{+46}_{-41}$	$4043^{+311}_{-264}$	$319^{+163}_{-120}$

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

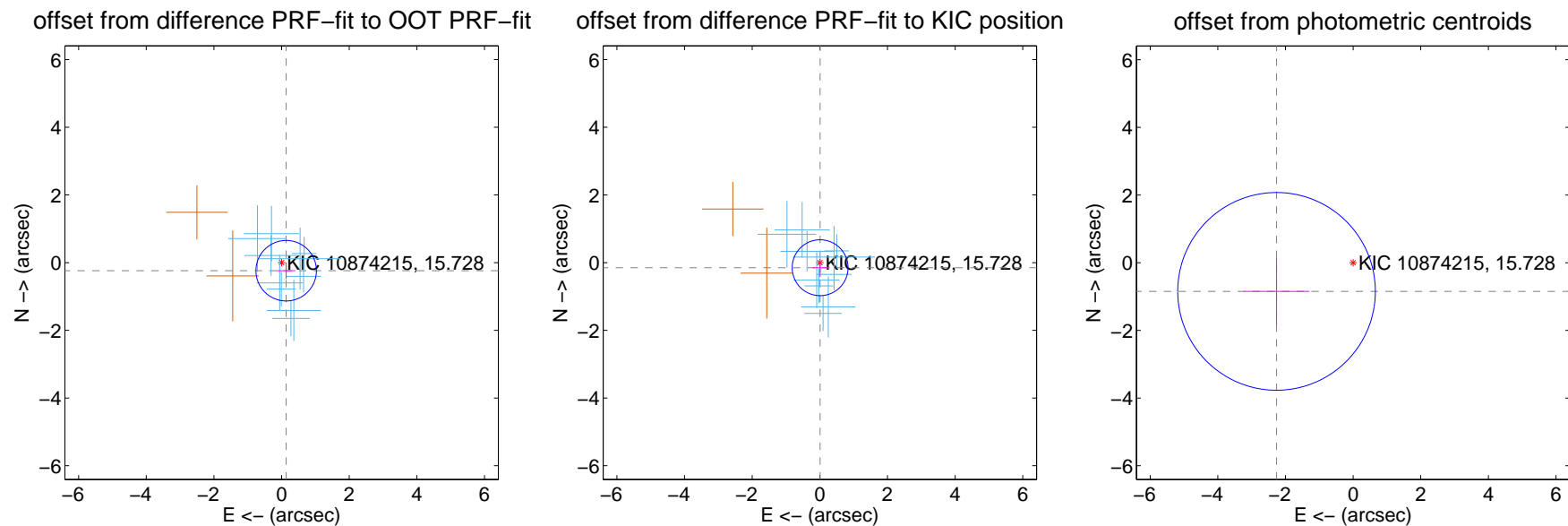
## DV Centroid Data

Supplemental centroid analysis for 010874215-01. Kepler magnitude: 15.73. Transit SNR 14.59

There are 10 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

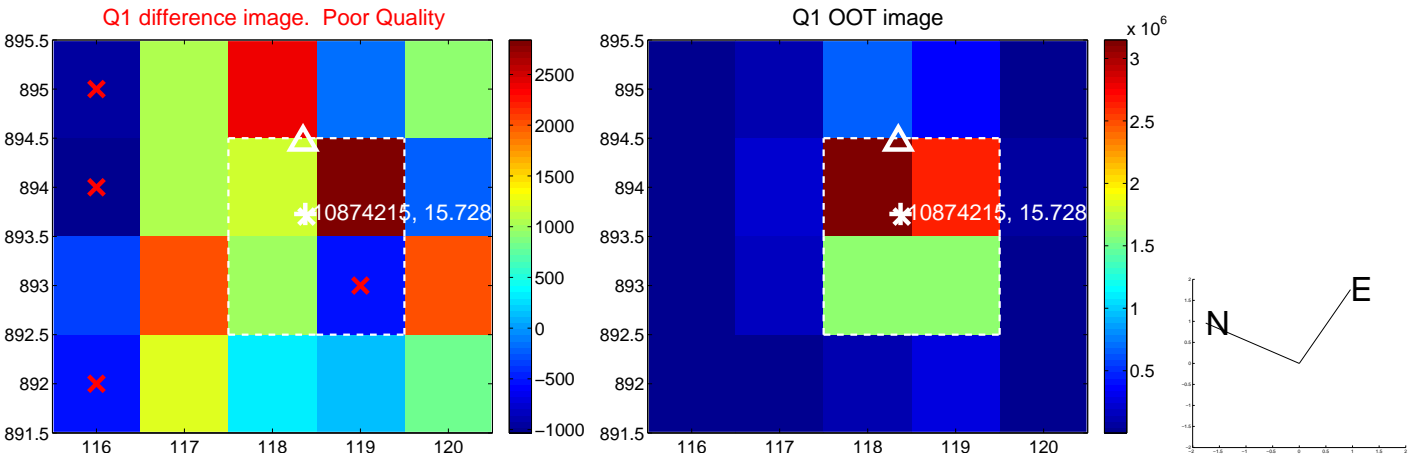
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.274 \pm 0.298$	0.92	$-0.136 \pm 0.271$	$-0.238 \pm 0.244$
PRF-fit source offset from KIC position	$0.150 \pm 0.275$	0.54	$-0.008 \pm 0.221$	$-0.149 \pm 0.275$
photometric centroid source offset	$2.42 \pm 0.97$	2.48	$2.26 \pm 0.97$	$-0.85 \pm 0.99$



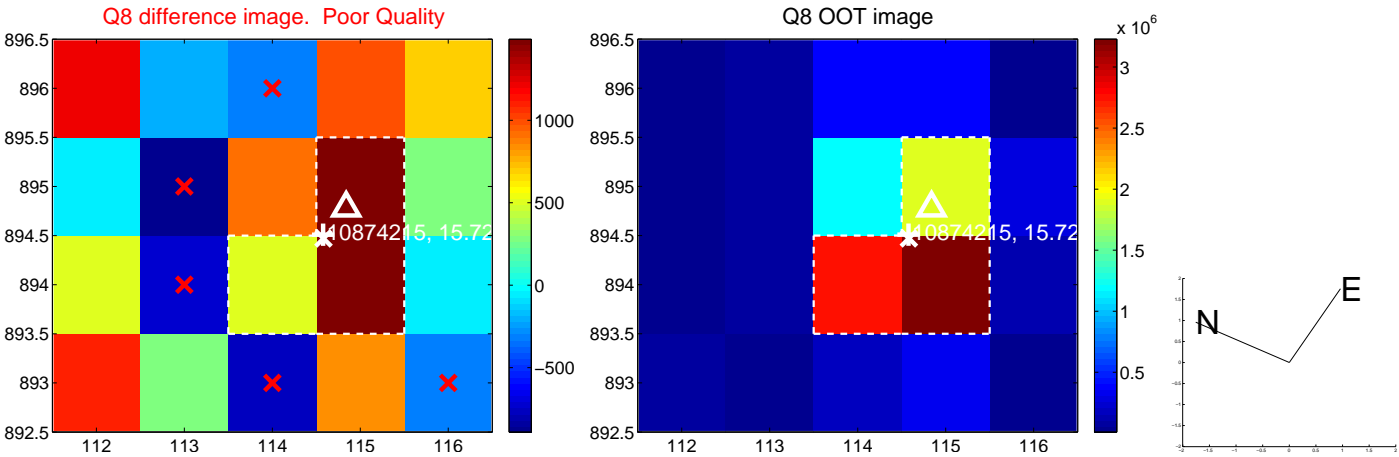
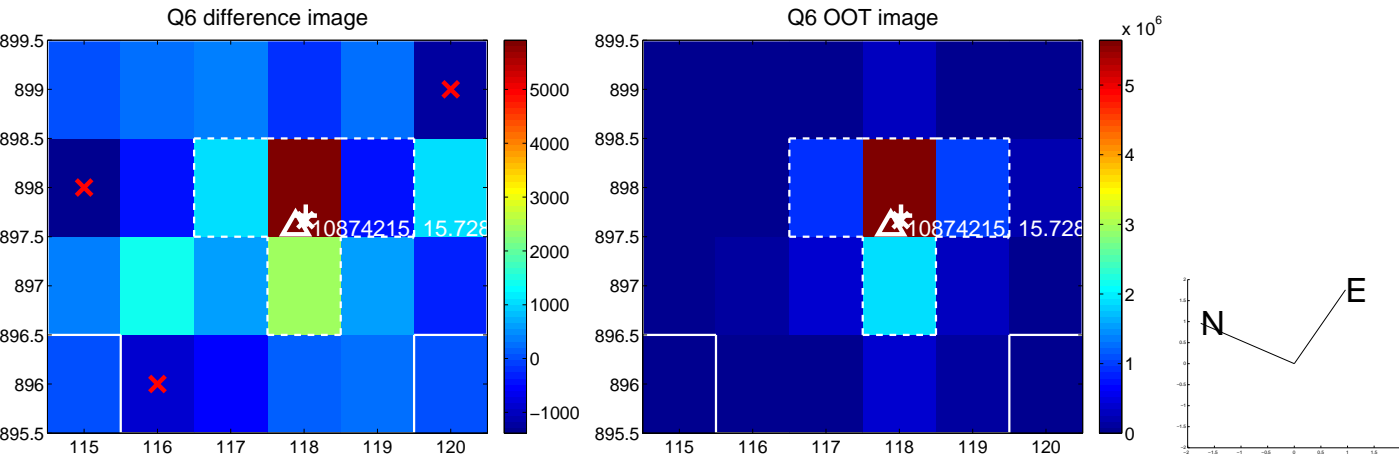
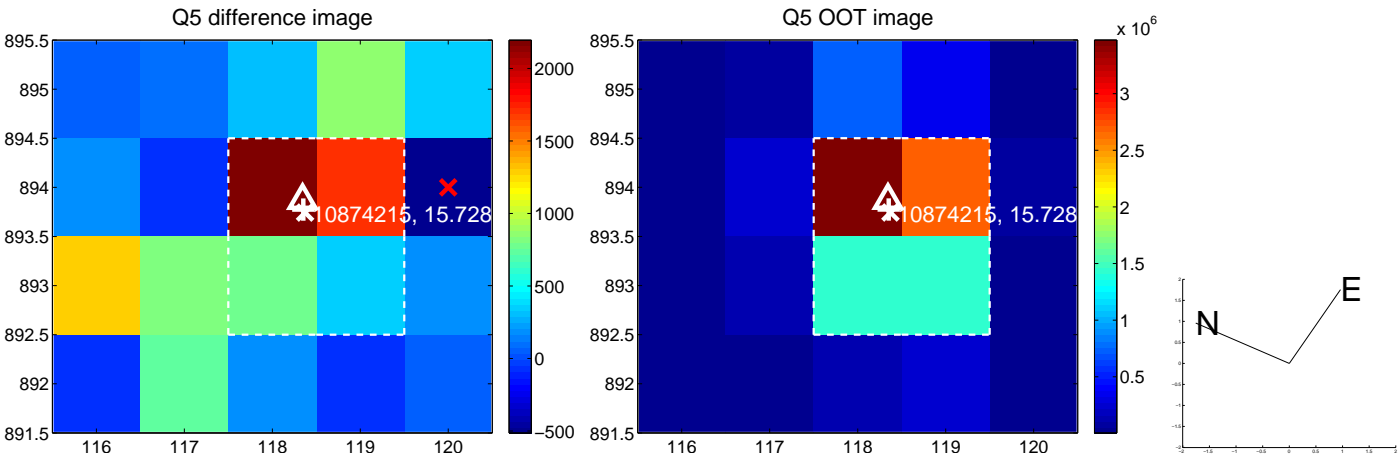
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



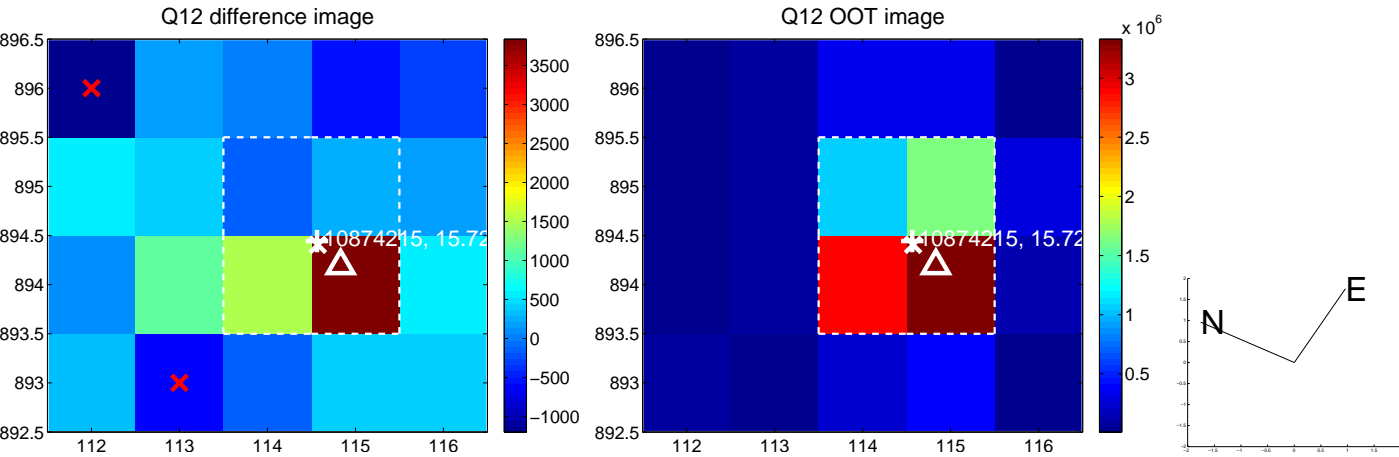
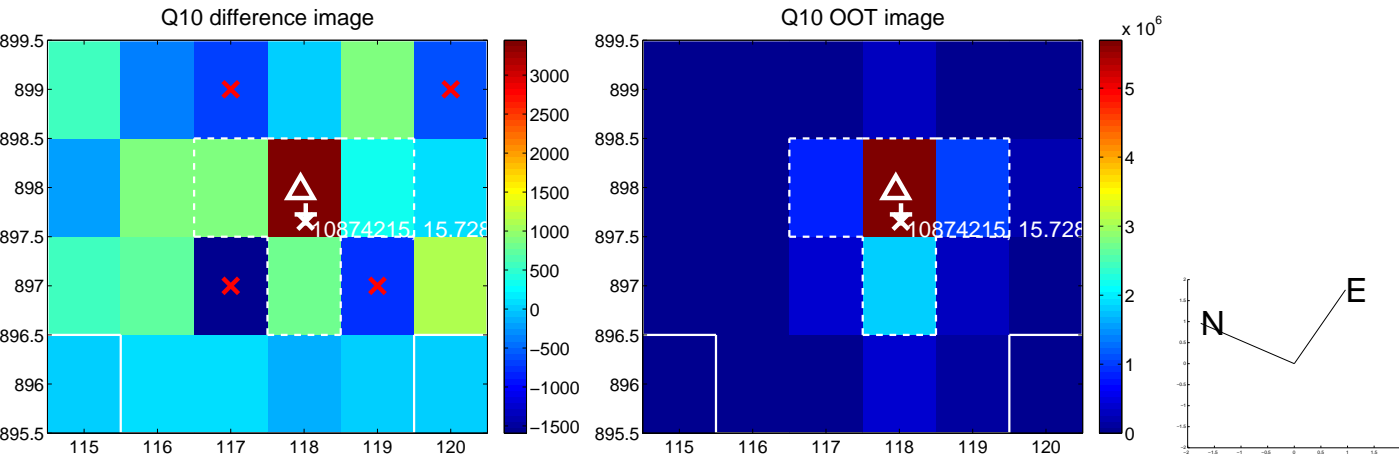
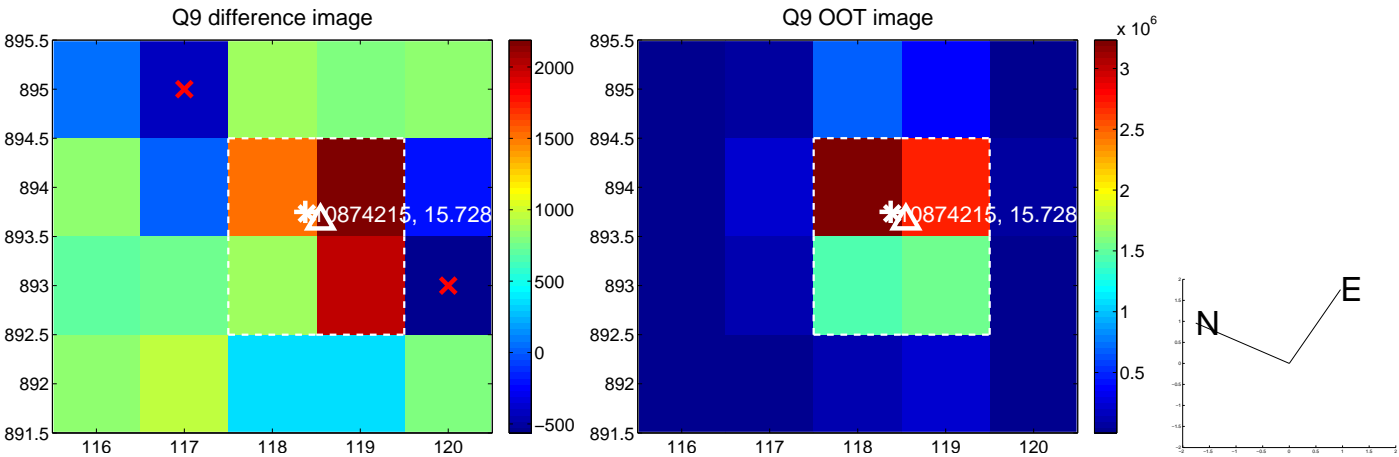
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



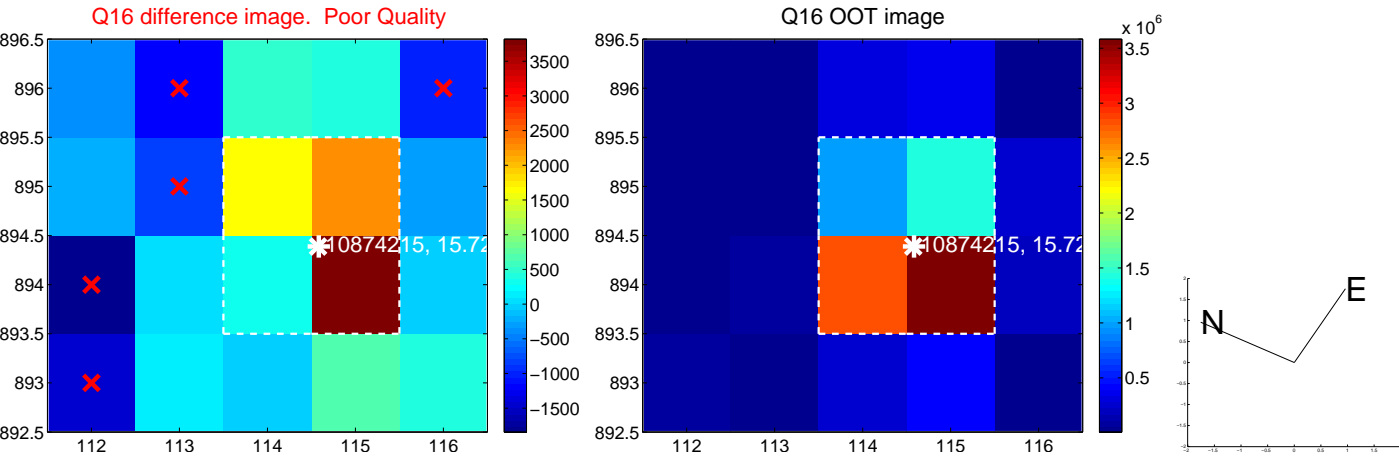
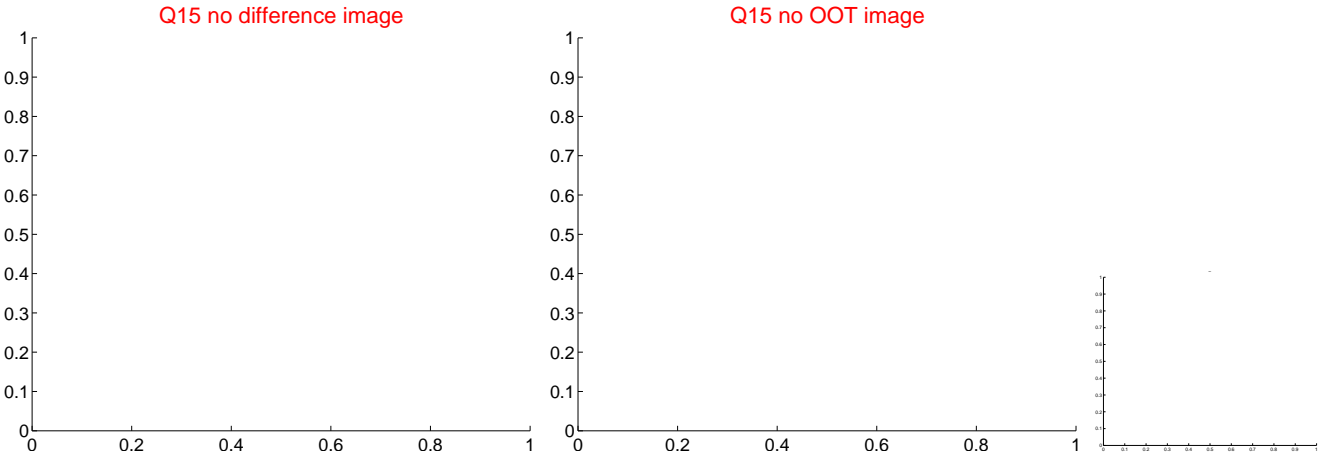
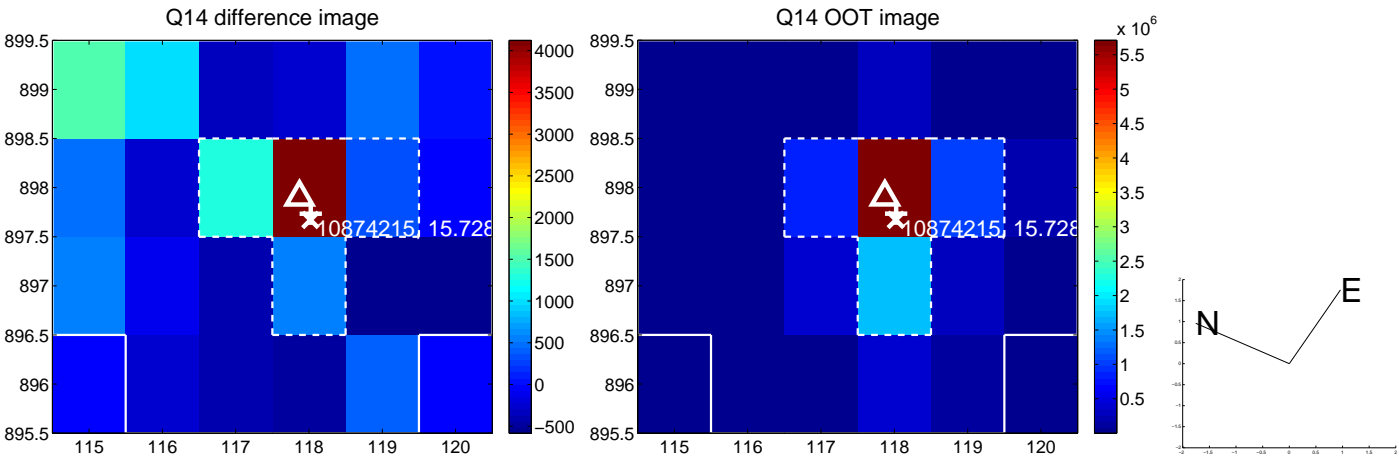
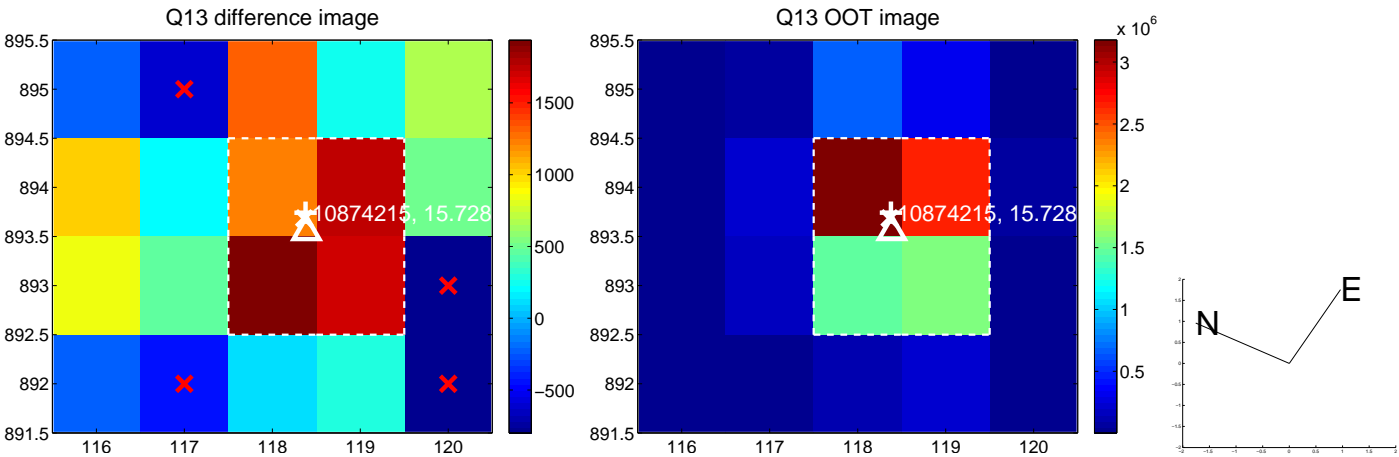
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



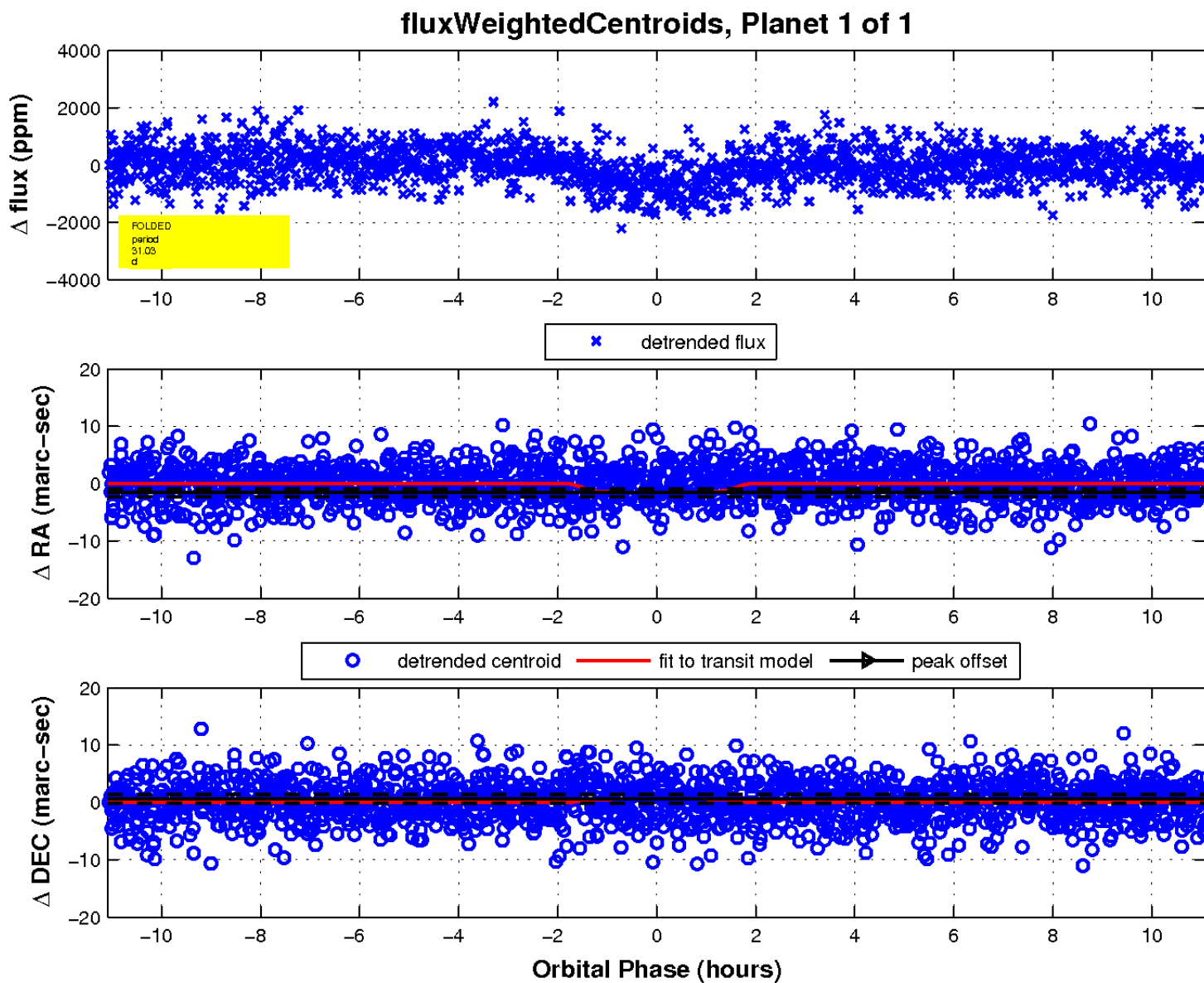
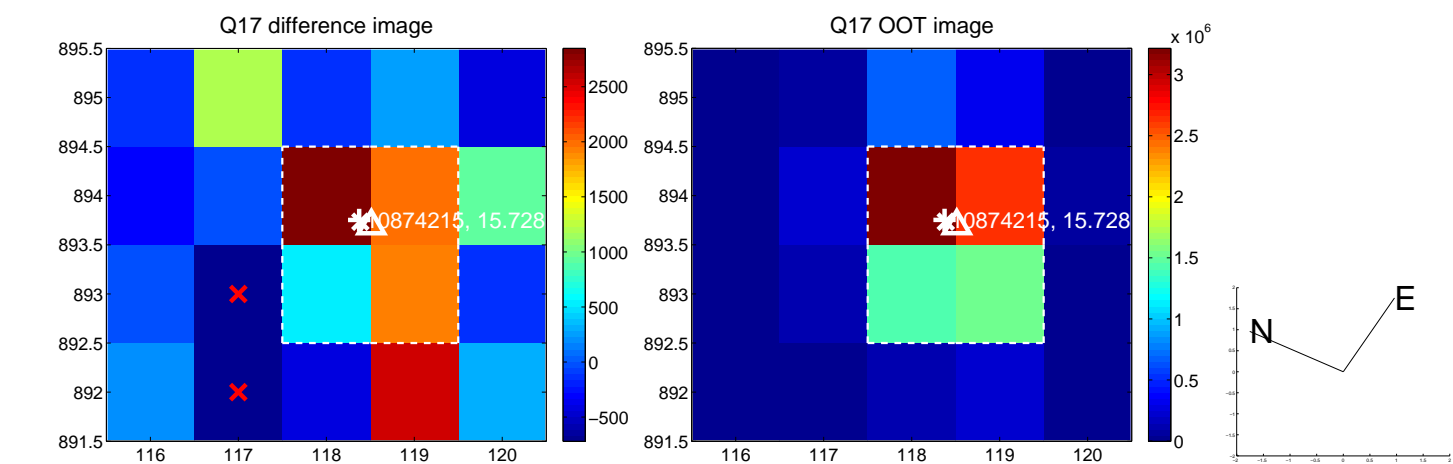
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

