

# KIC 009837659

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009837659-01	OBS	No	0.933480	131.787570	11.9	4.186	8.9	5.9	3.70	7523	1.43	67173.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009837659-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

**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.

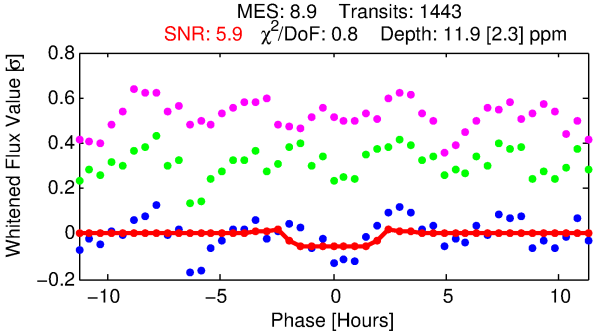
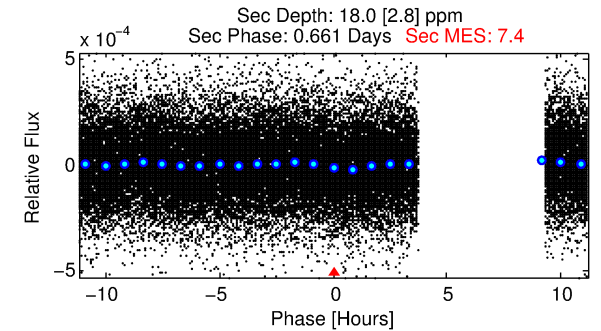
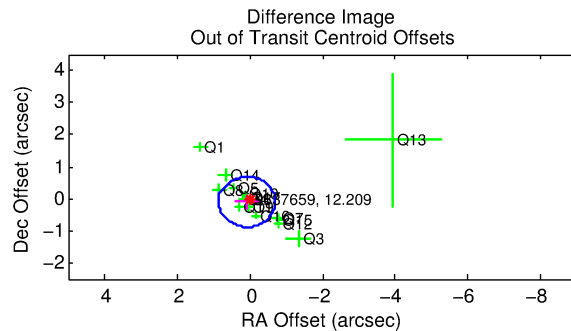
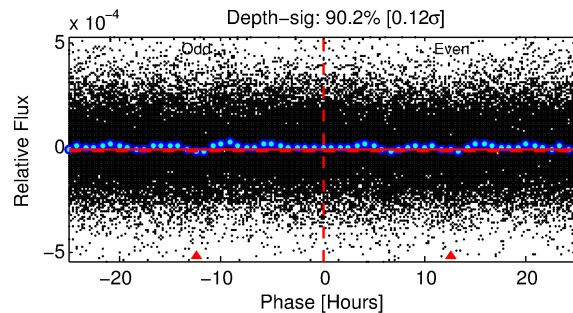
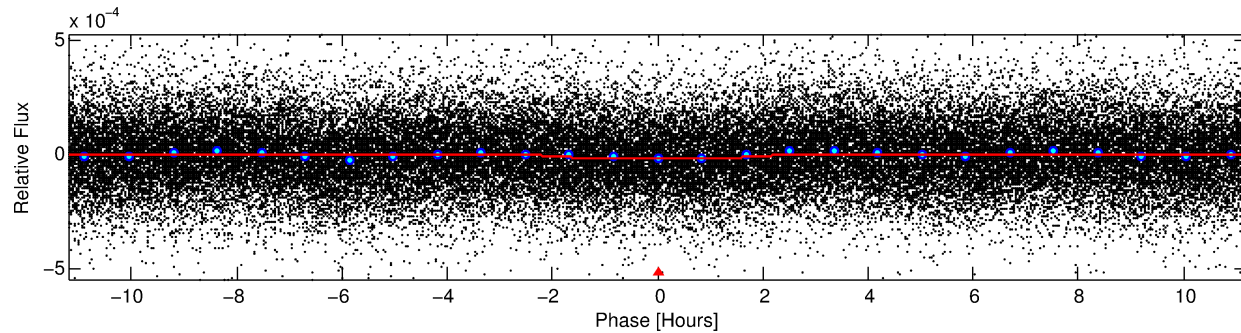
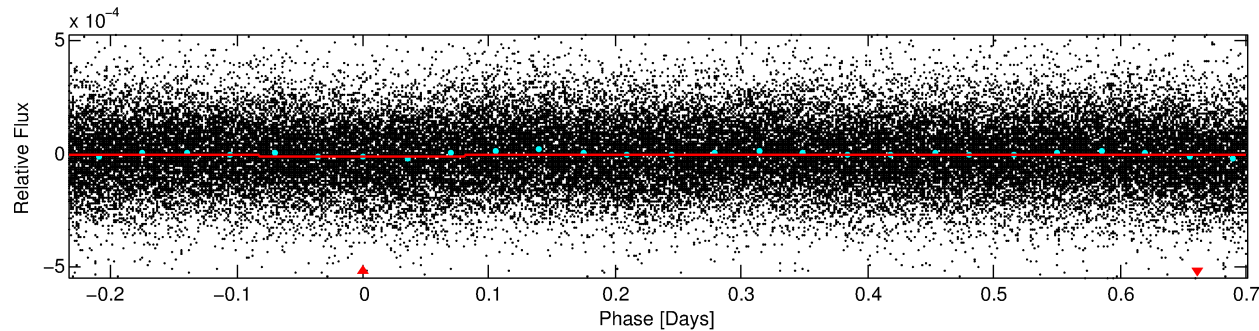
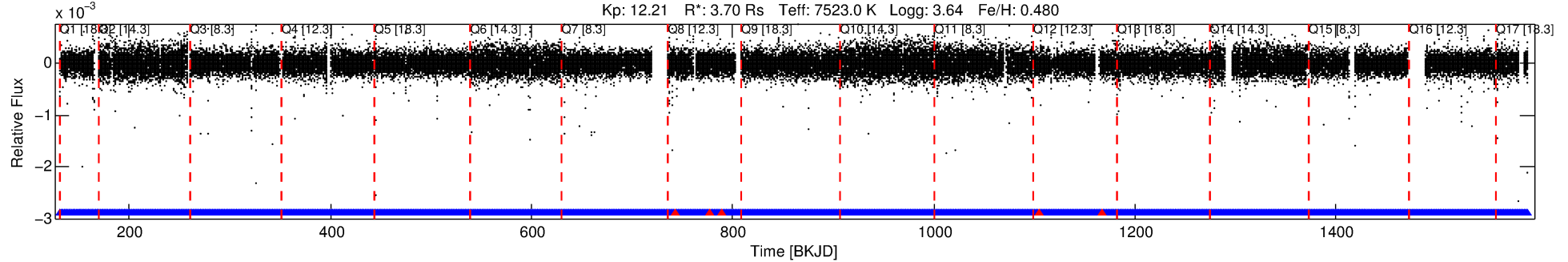
## Ephemeris Match Information For 009837659-01

No Significant Match Found

# DV One-Page Summary

KIC: 9837659 Candidate: 1 of 1 Period: 0.933 d  
KOI: K05716 Corr: No Ephemeris Match

Kp: 12.21 R\*: 3.70 Rs Teff: 7523.0 K Logg: 3.64 Fe/H: 0.480



## DV Fit Results:

Period = 0.93348 [0.00002] d  
Epoch = 131.7876 [0.0054] BKJD  
Rp/R\* = 0.0036 [0.0013]  
a/R\* = 1.30 [1.15]  
b = 0.84 [0.77]  
Seff = 67173.48 [47602.56]  
Teq = 4105 [727] K  
Rp = 1.43 [0.85] Re  
a = 0.0242 [0.0104] AU  
Ag = 2.82 [2.90] [0.63σ]  
Teffp = 8224 [1629] K [2.31σ]

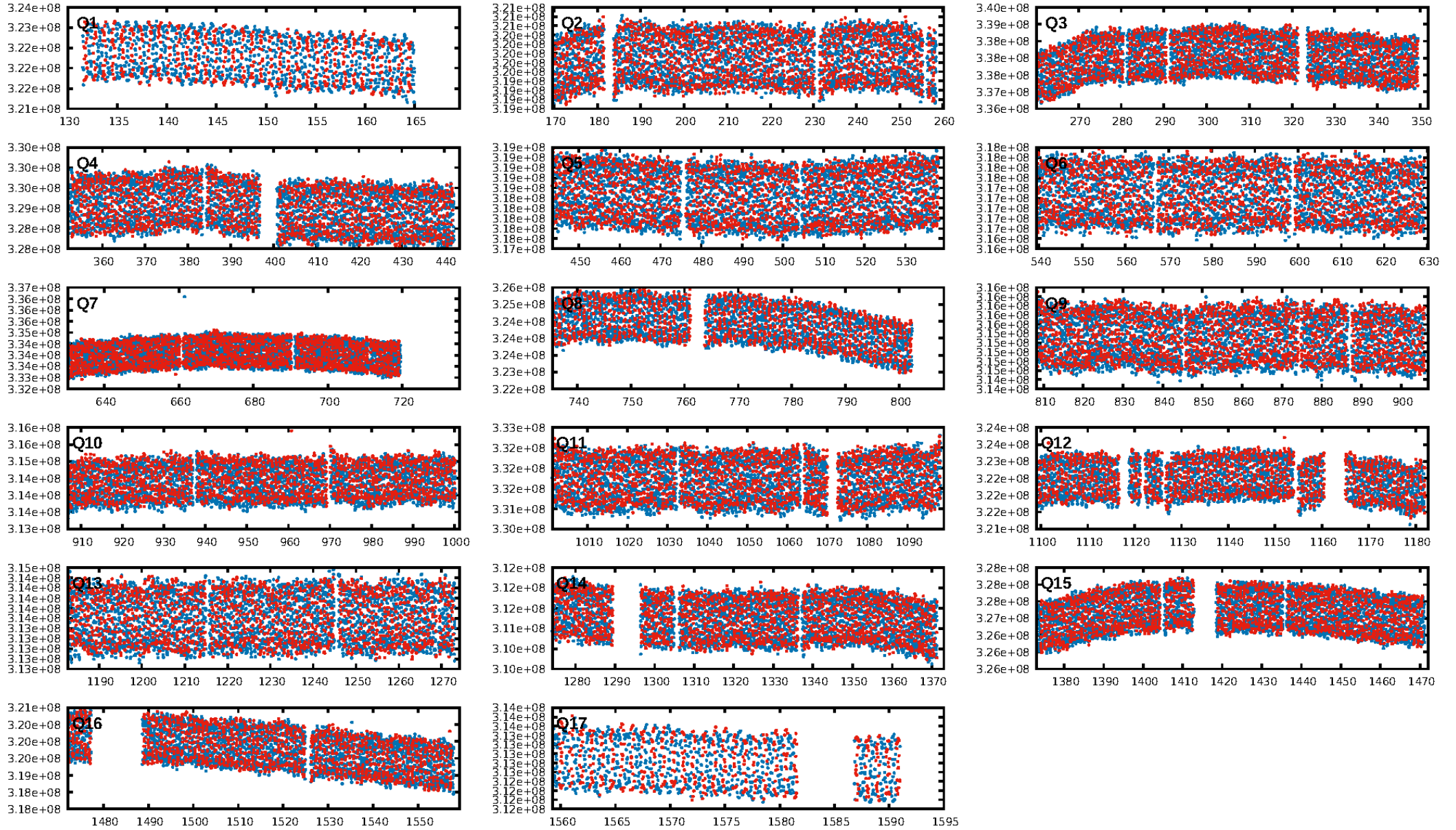
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.39e-13  
RollingBand-fgt: 1.00 [1373/1378]  
GhostDiagnostic-chr: -3.923  
Centroid-sig: 12.7%  
Centroid-so: 0.760 arcsec [1.05σ]  
OotOffset-rm: 0.129 arcsec [0.49σ]  
KicOffset-rm: 0.220 arcsec [1.06σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.38 [6/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:38:30 Z

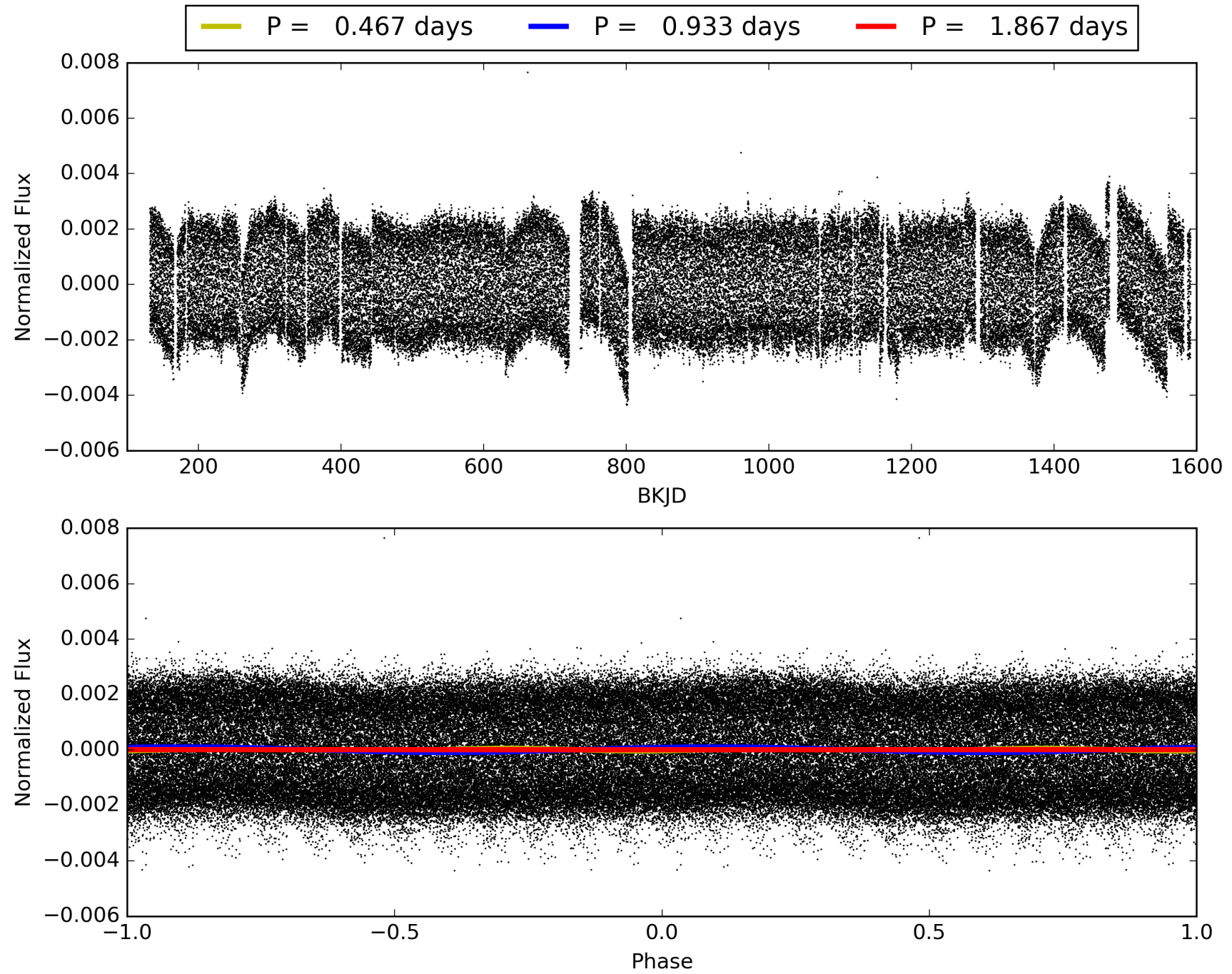
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009837659-01, PDC Light Curves



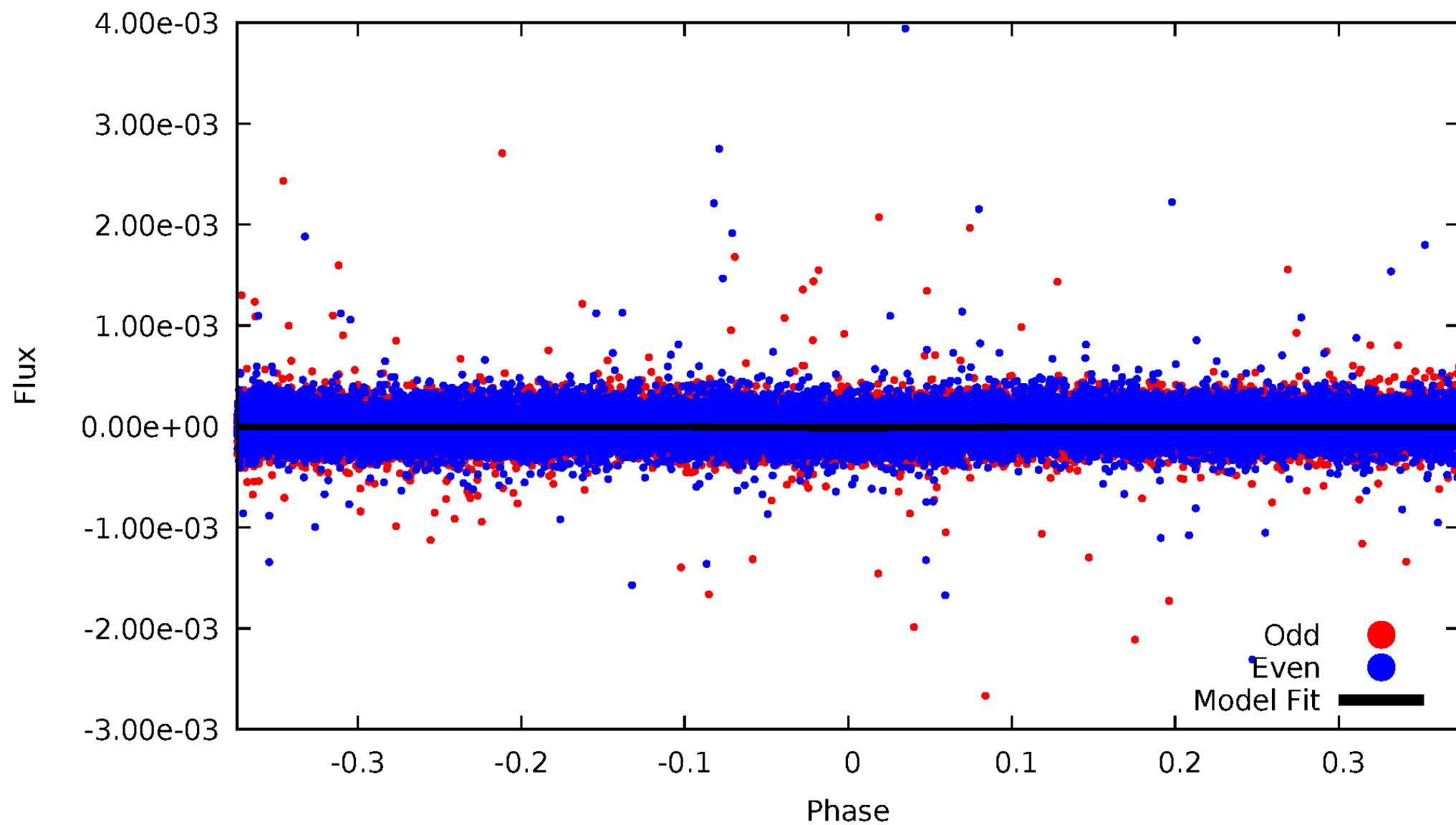


TCE 009837659-01



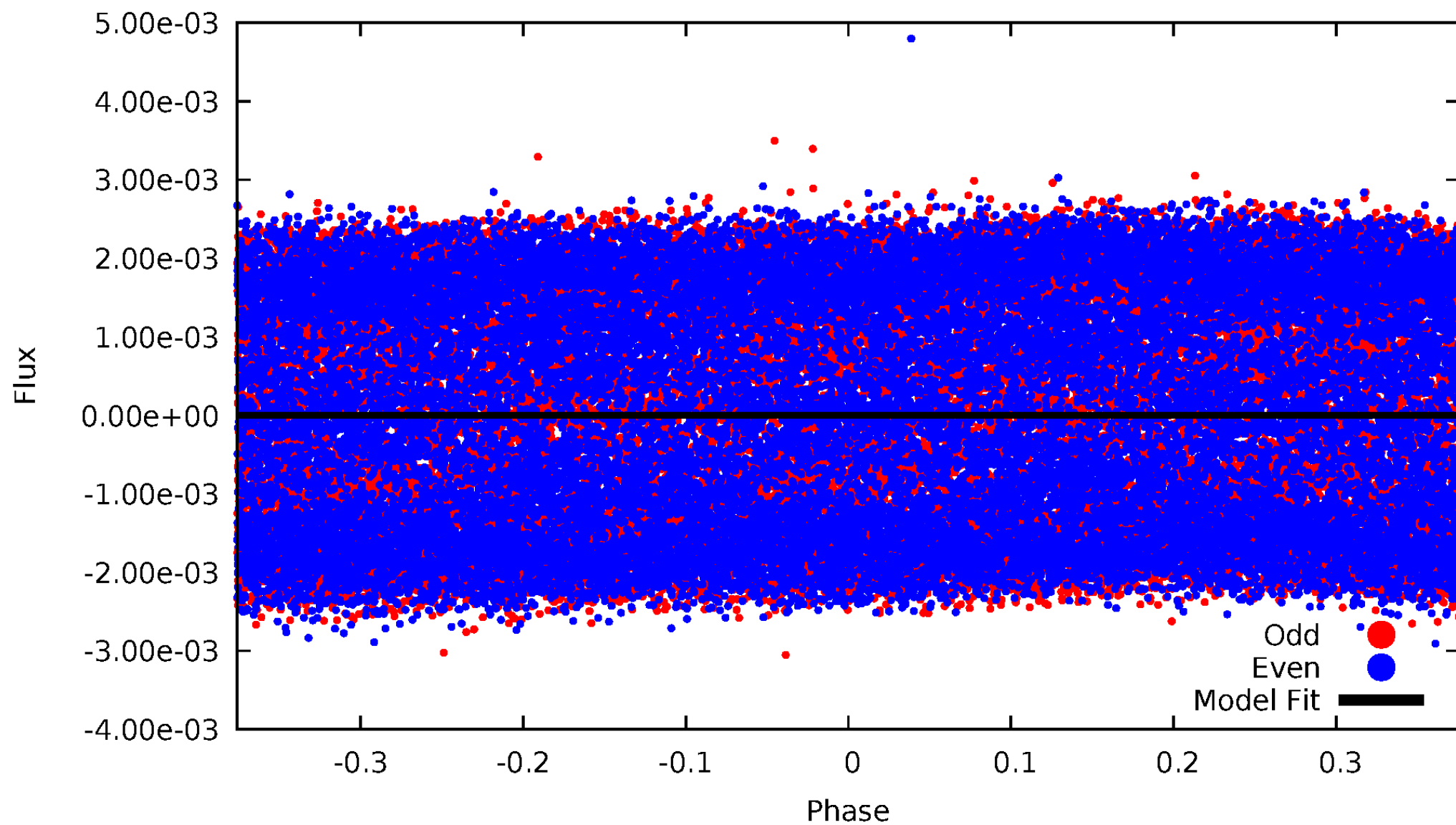
# DV Odd/Even

TCE 009837659-01



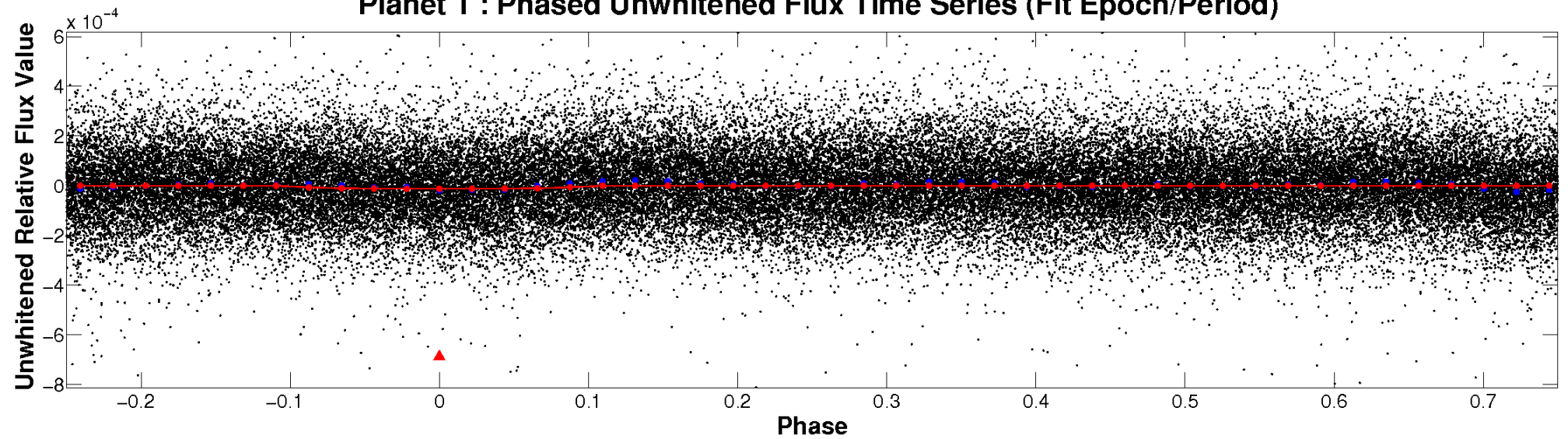
# ALT Odd/Even

TCE 009837659-01

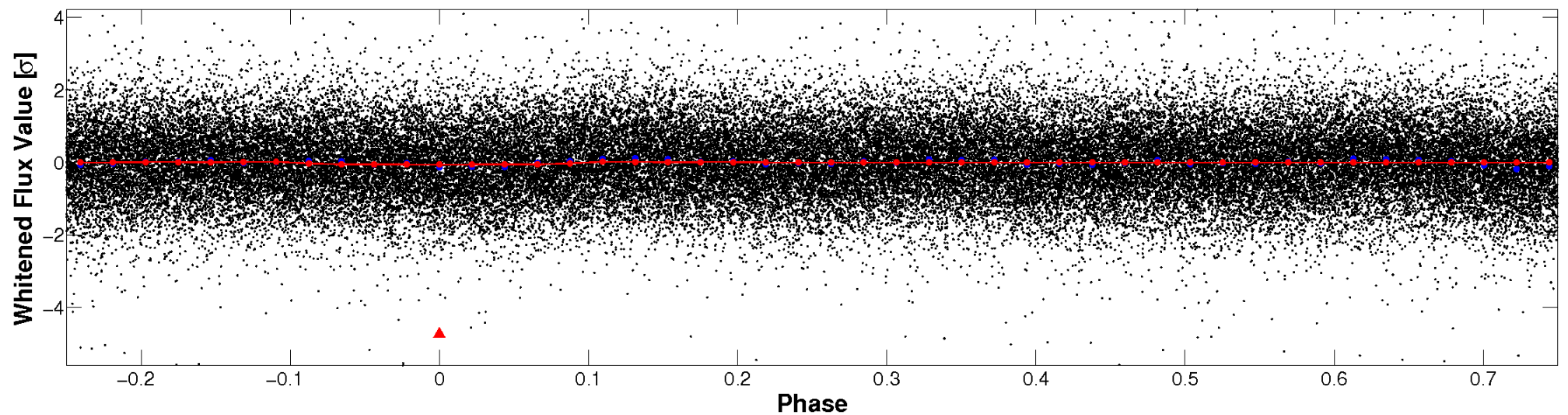


# Non-Whitened Vs. Whitened Light Curve

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



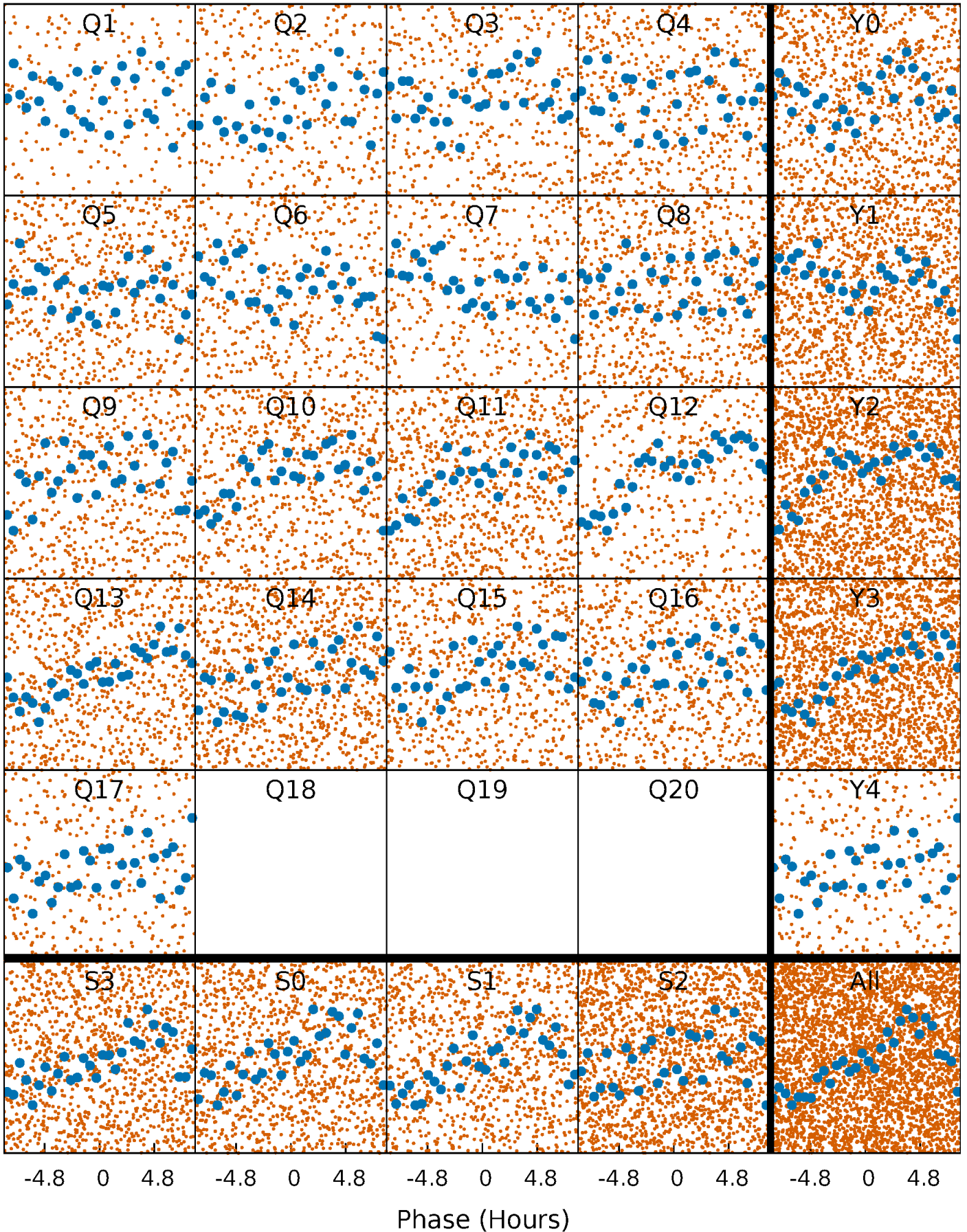
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

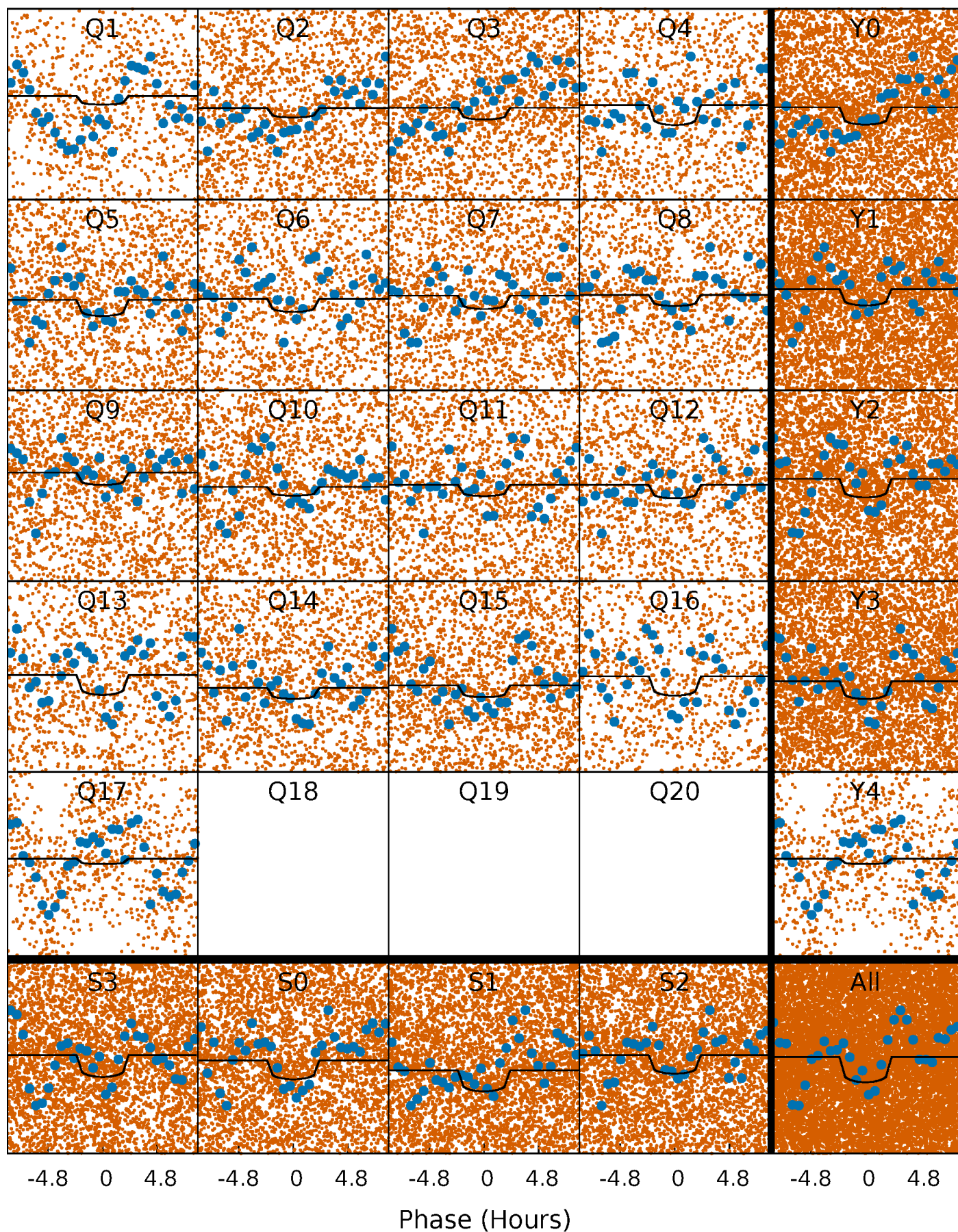
TCE 009837659-01 P= 0.933480 Days  $T_0=131.787570$  (BKJD)





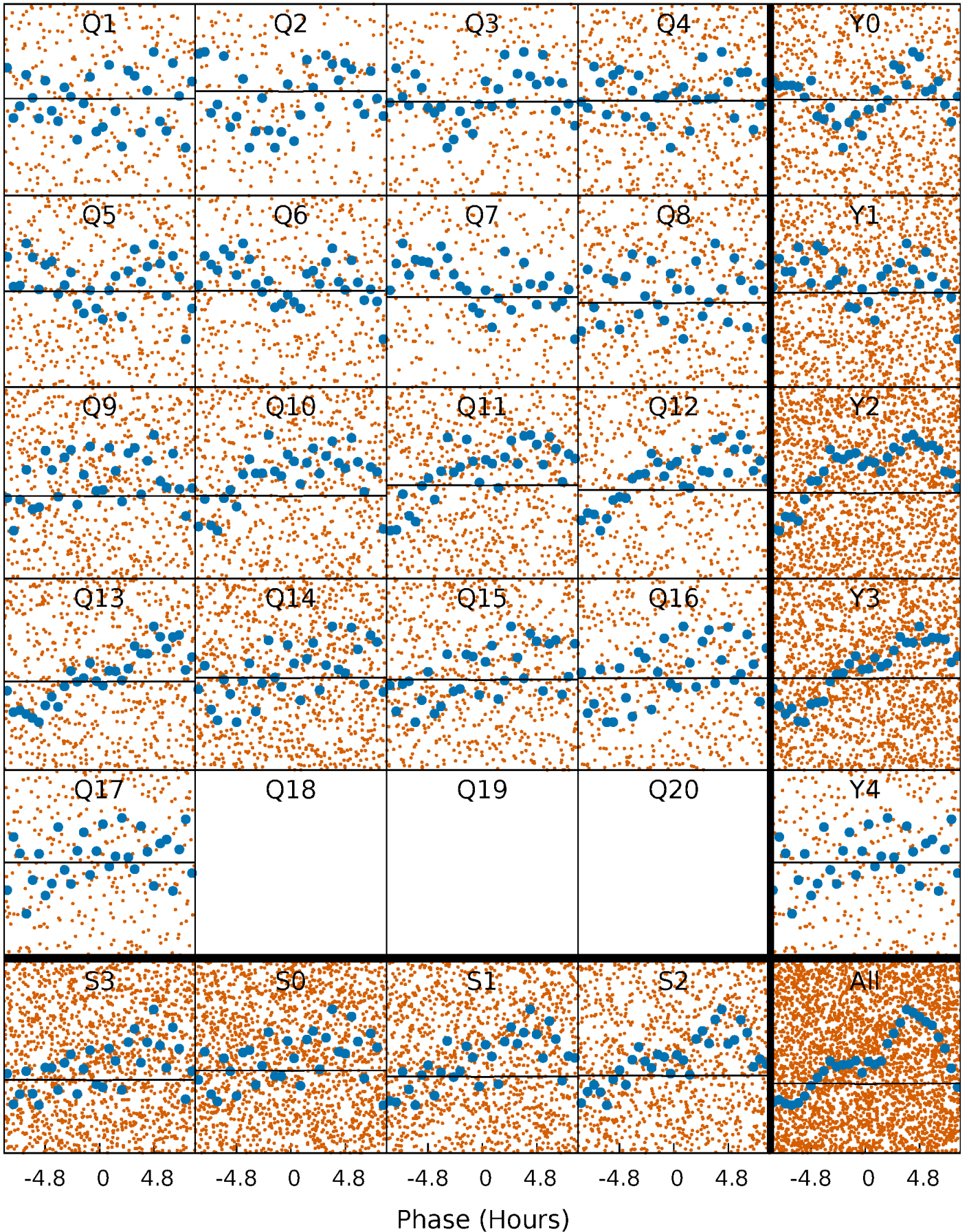
# DV Quarter-Phased Transit Curves

TCE 009837659-01 P= 0.933480 Days  $T_0=131.787570$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009837659-01 P= 0.933527 Days  $T_0=131.742463$  (BKJD)

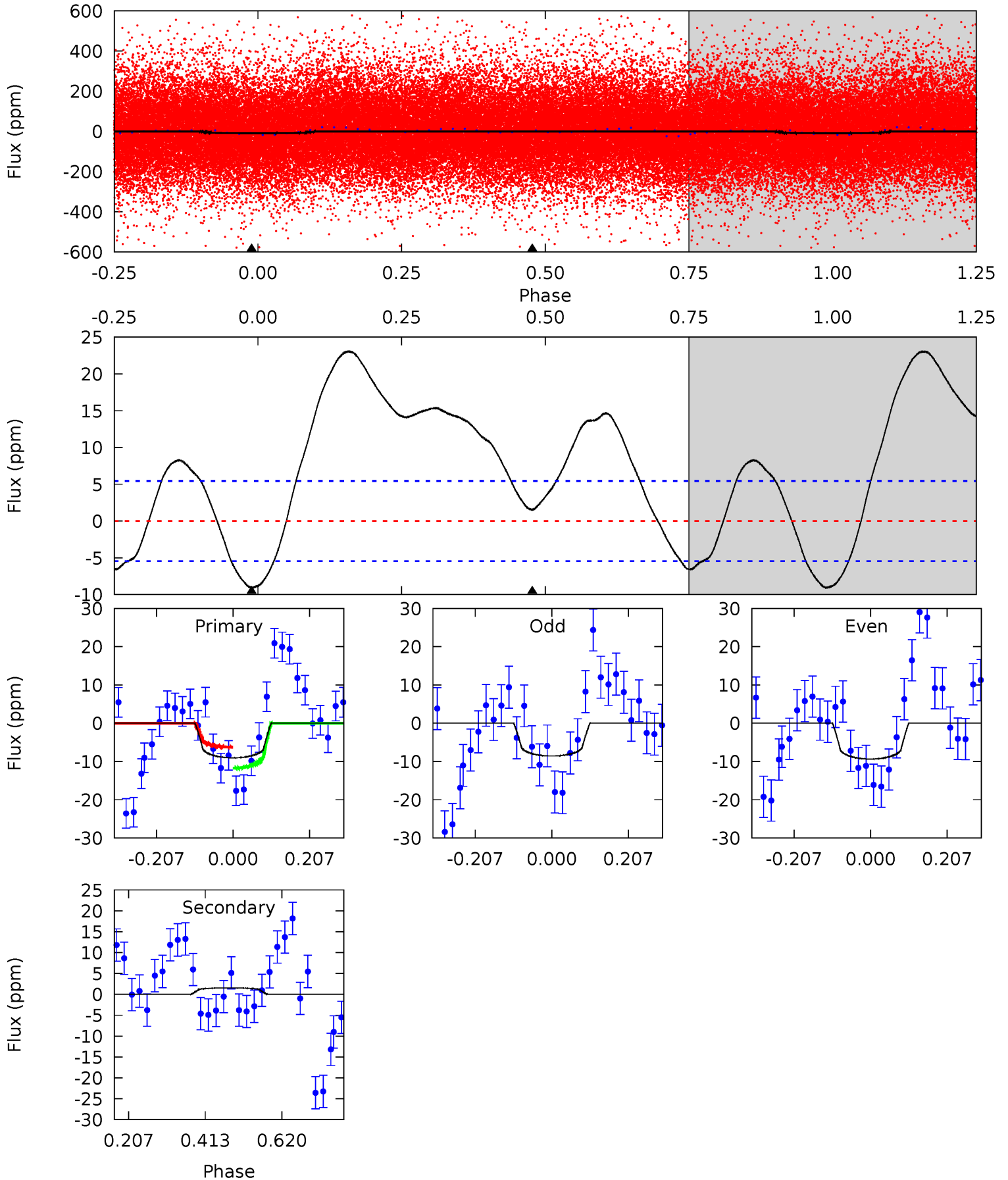




# DV Model-Shift Uniqueness Test

009837659-01, P = 0.933480 Days, E = 130.854090 Days

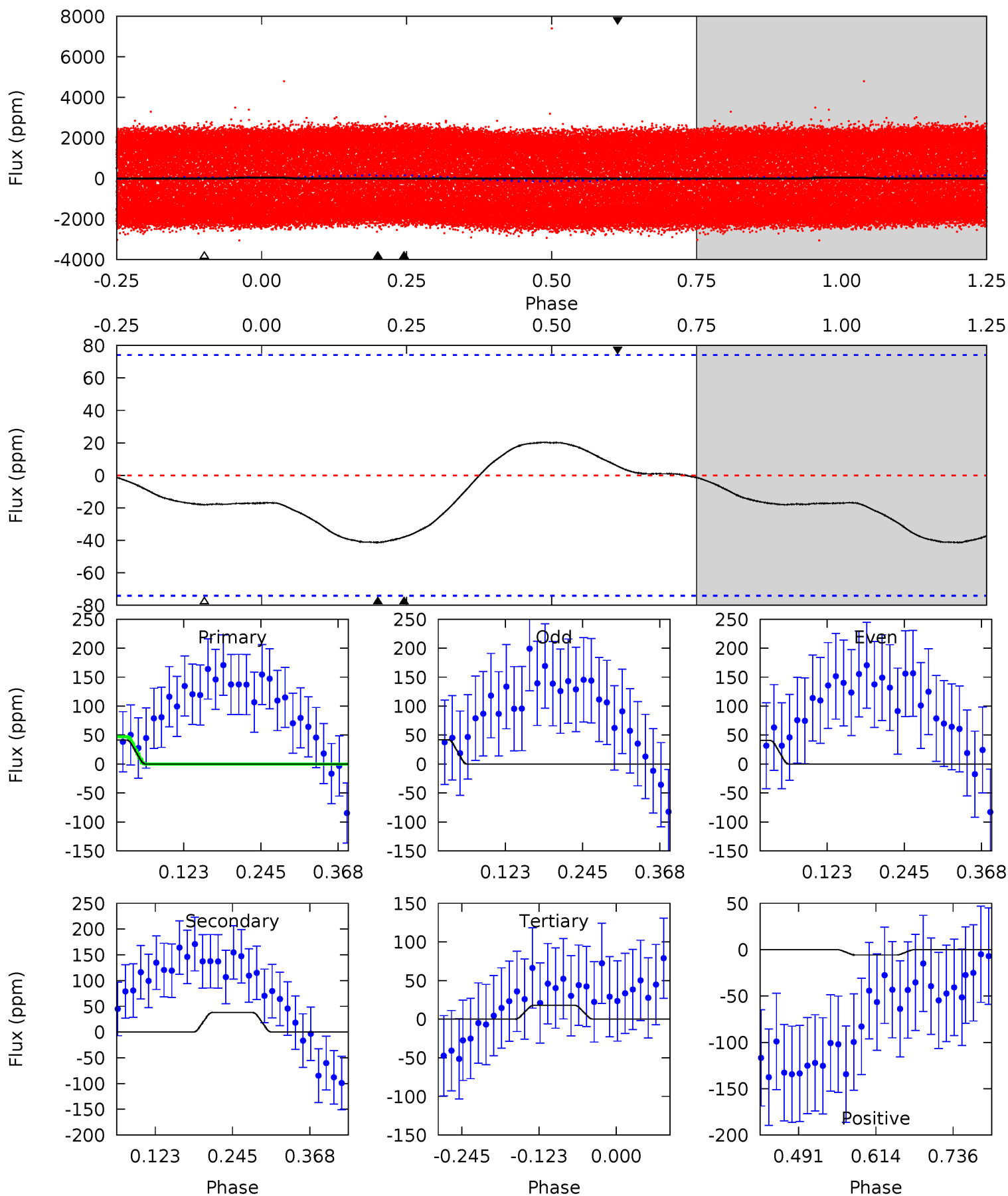
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.32	-1.25	0	0	4.41	1.26	8.12	7.32	7.32	-1.25	-1.25	0.32	0.78	0.72	2.29



# Alt Model-Shift Uniqueness Test

009837659-01, P = 0.933527 Days, E = 130.808936 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
2.52	2.31	1.10	0.35	4.52	1.54	0.86	1.41	2.17	1.21	1.96	0.04	1.07	0.33	0.35





### Stellar Parameters For KIC 009837659

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7523^{+208}_{-357}$	$3.637^{+0.398}_{-0.106}$	$0.480^{+0.050}_{-0.450}$	$3.701^{+0.725}_{-1.692}$	$2.164^{+0.279}_{-0.419}$	$0.060^{+0.207}_{-0.020}$
	+3%/-5%	+11%/-3%	+10%/-94%	+20%/-46%	+13%/-19%	+344%/-33%
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 009837659-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$2\pm 1$	$1.32^{+0.60}_{-0.52}$	$5581^{+416}_{-641}$	$-5257^{+567}_{-867}$	$-0.256^{+0.214}_{-0.620}$
Alt.	$-38\pm 16$	$0.57^{+0.47}_{-0.37}$	$5560^{+449}_{-633}$	$23697^{+95526}_{-11765}$	$36^{+259}_{-26}$

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

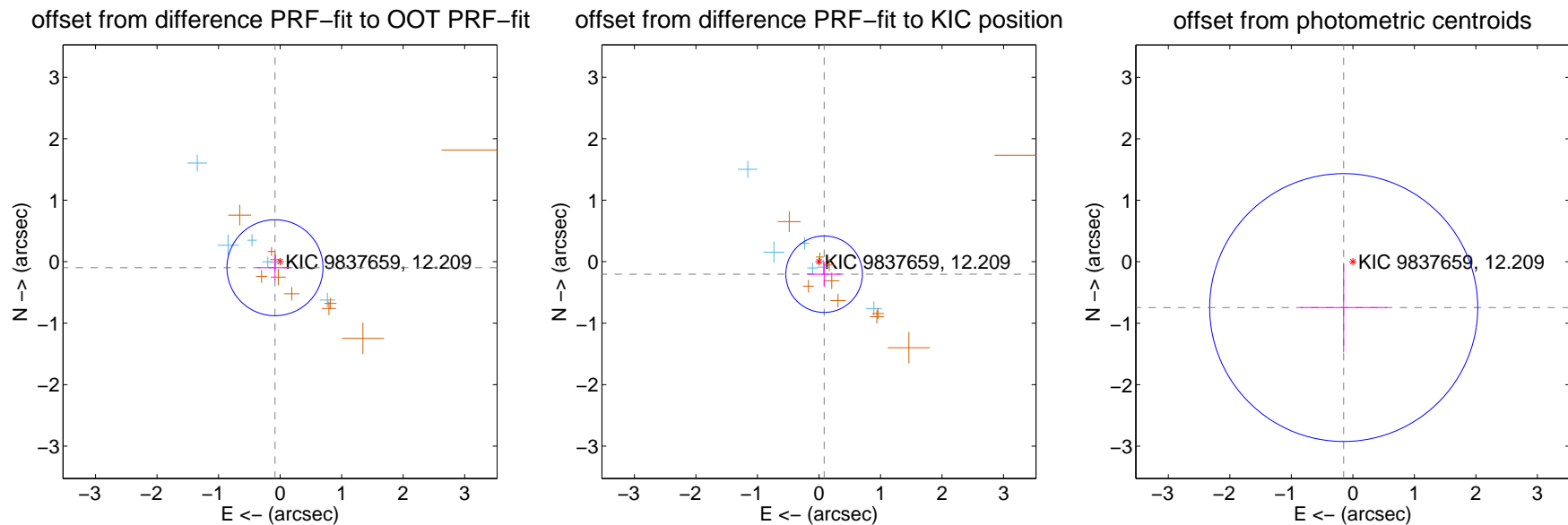
## DV Centroid Data

Supplemental centroid analysis for 009837659-01. Kepler magnitude: 12.21. Transit SNR 5.88

There are 6 quarters with good PRF difference image offsets

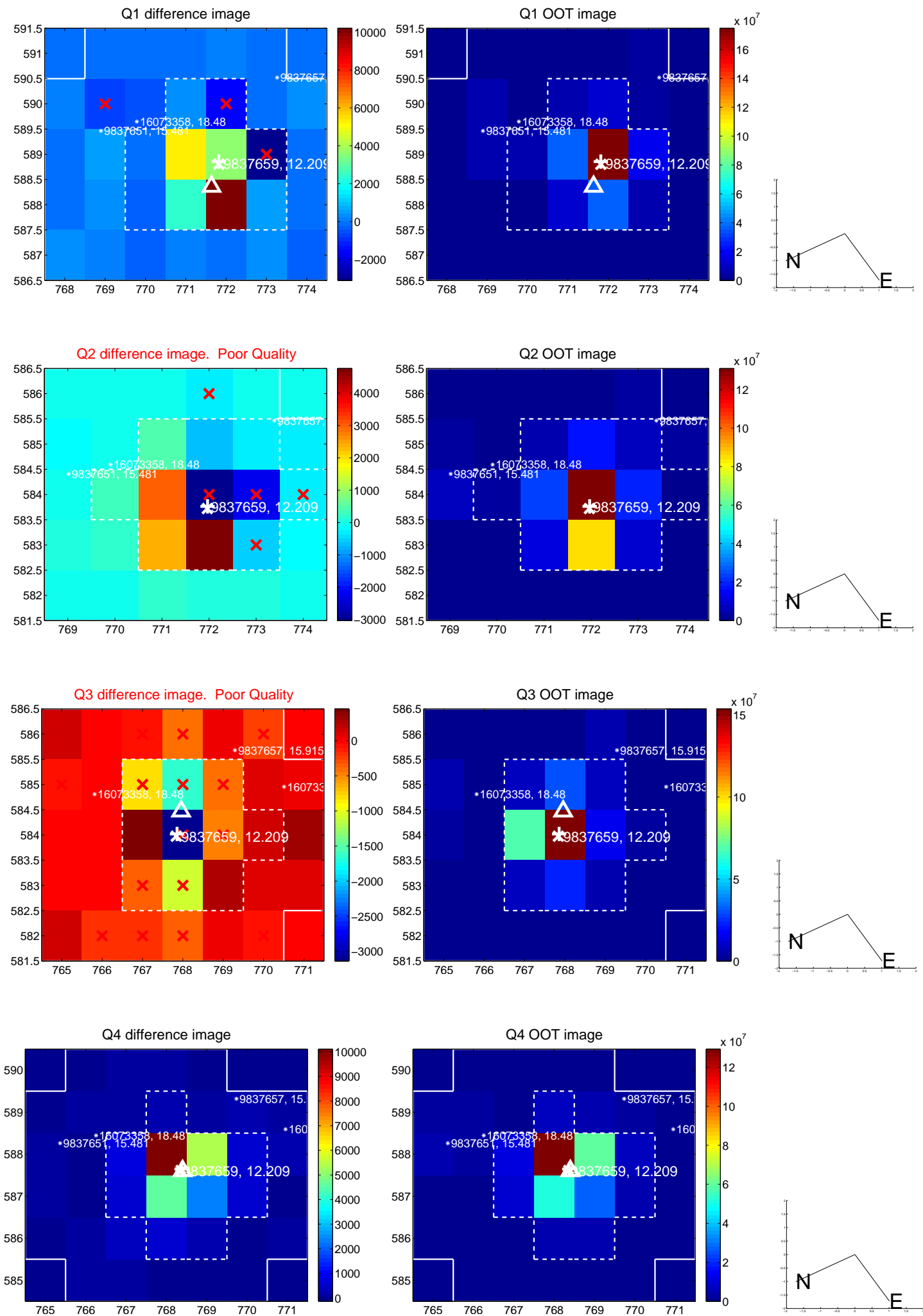
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.129 \pm 0.260$	0.49	$0.083 \pm 0.286$	$-0.098 \pm 0.203$
PRF-fit source offset from KIC position	$0.220 \pm 0.207$	1.06	$-0.083 \pm 0.275$	$-0.203 \pm 0.205$
photometric centroid source offset	$0.76 \pm 0.73$	1.05	$0.15 \pm 0.71$	$-0.75 \pm 0.73$



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.

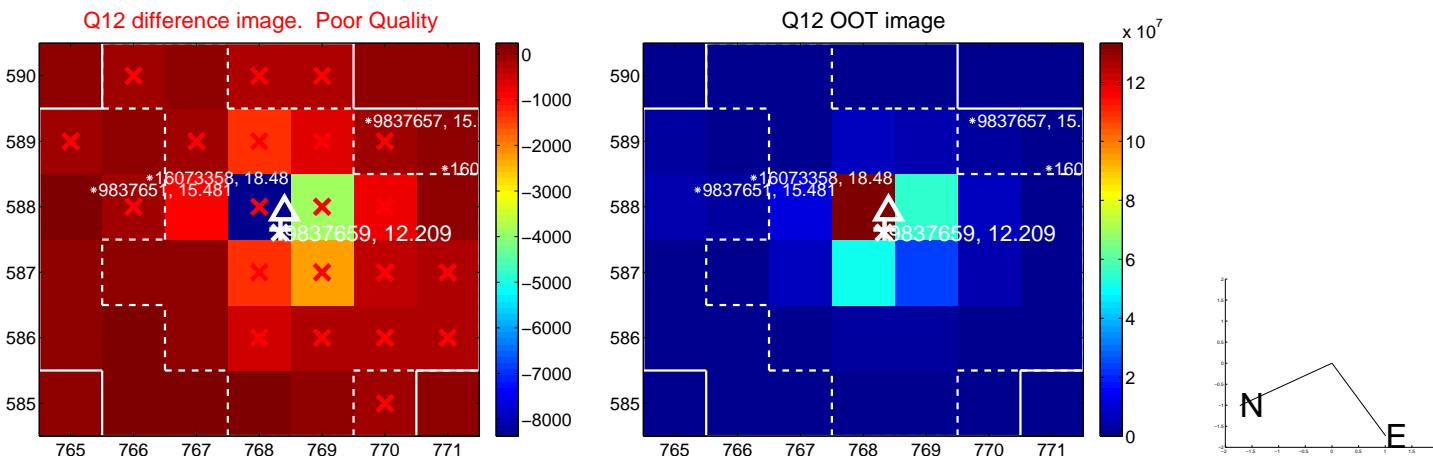
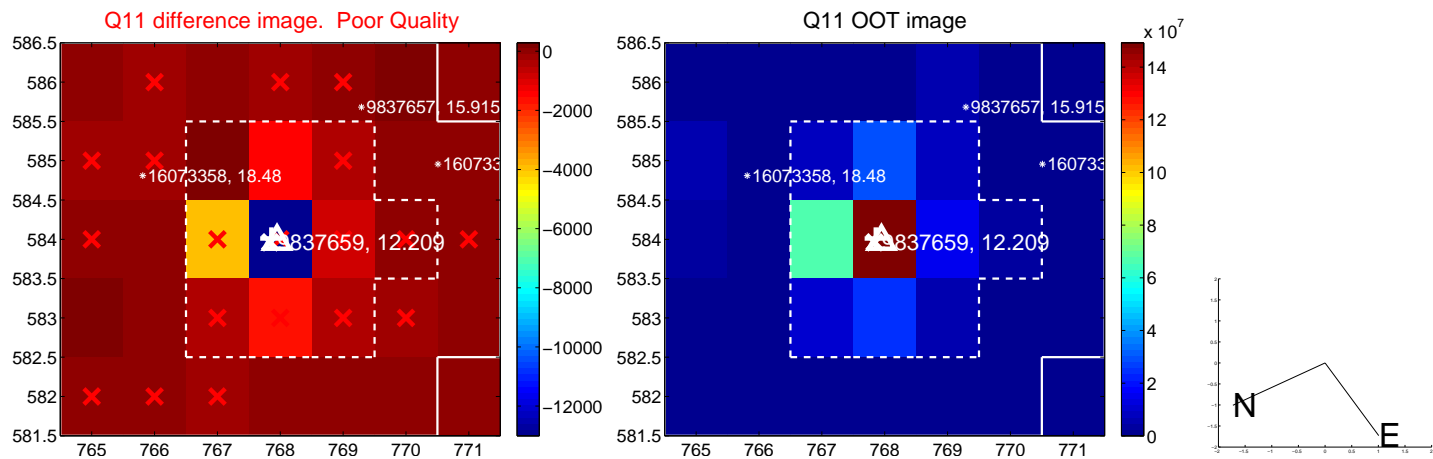
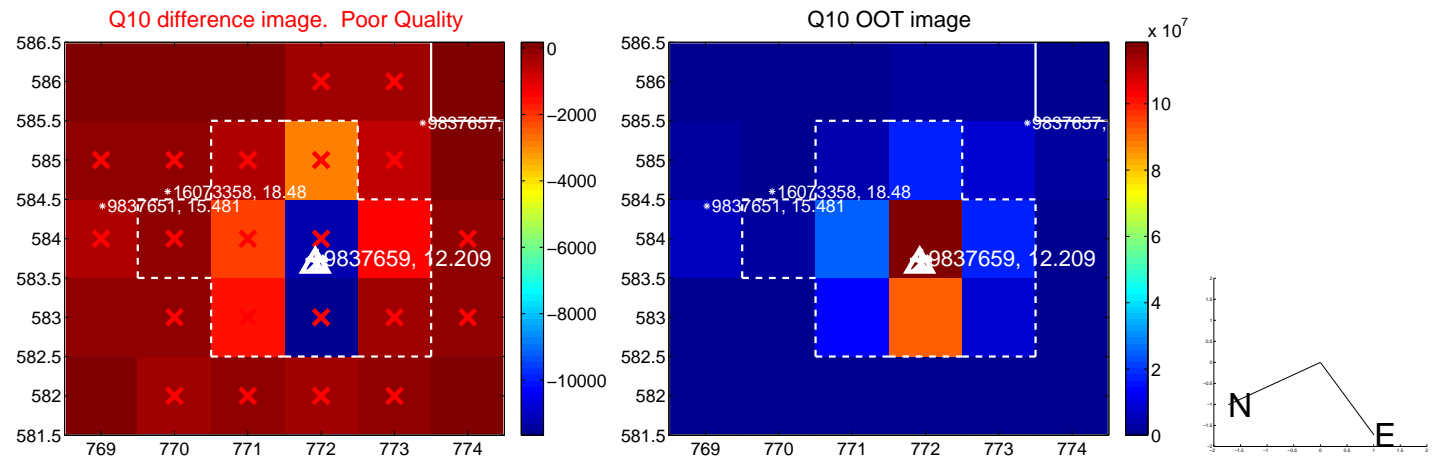
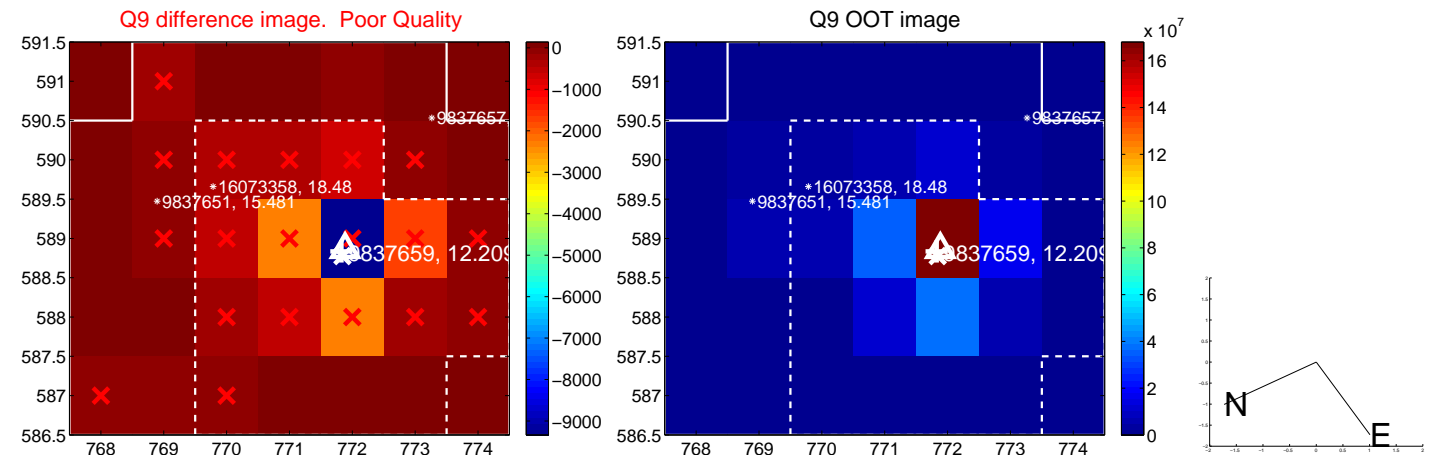
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





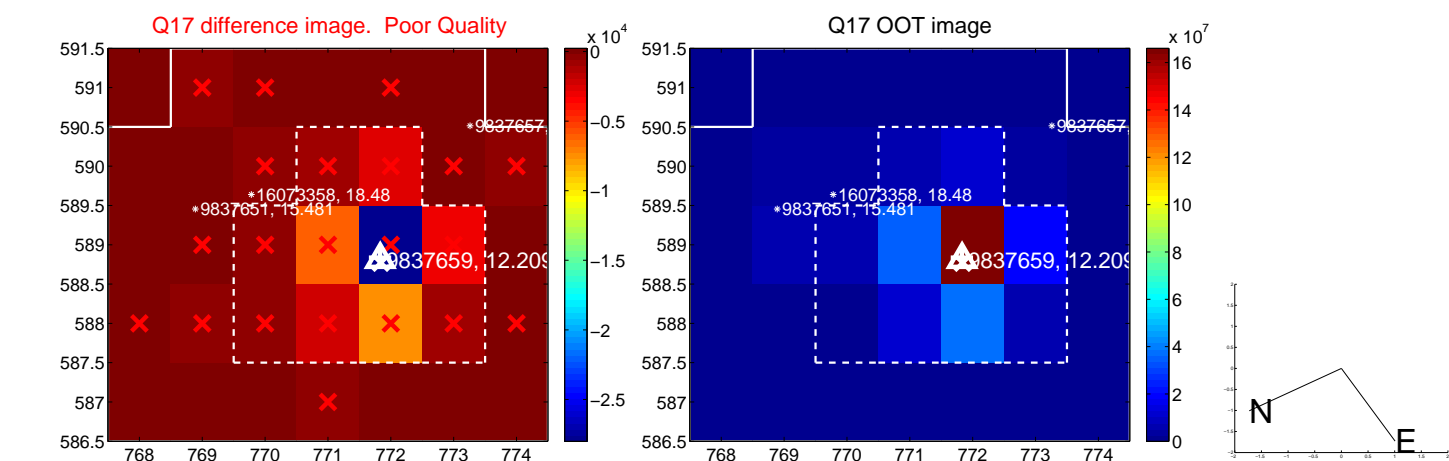


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

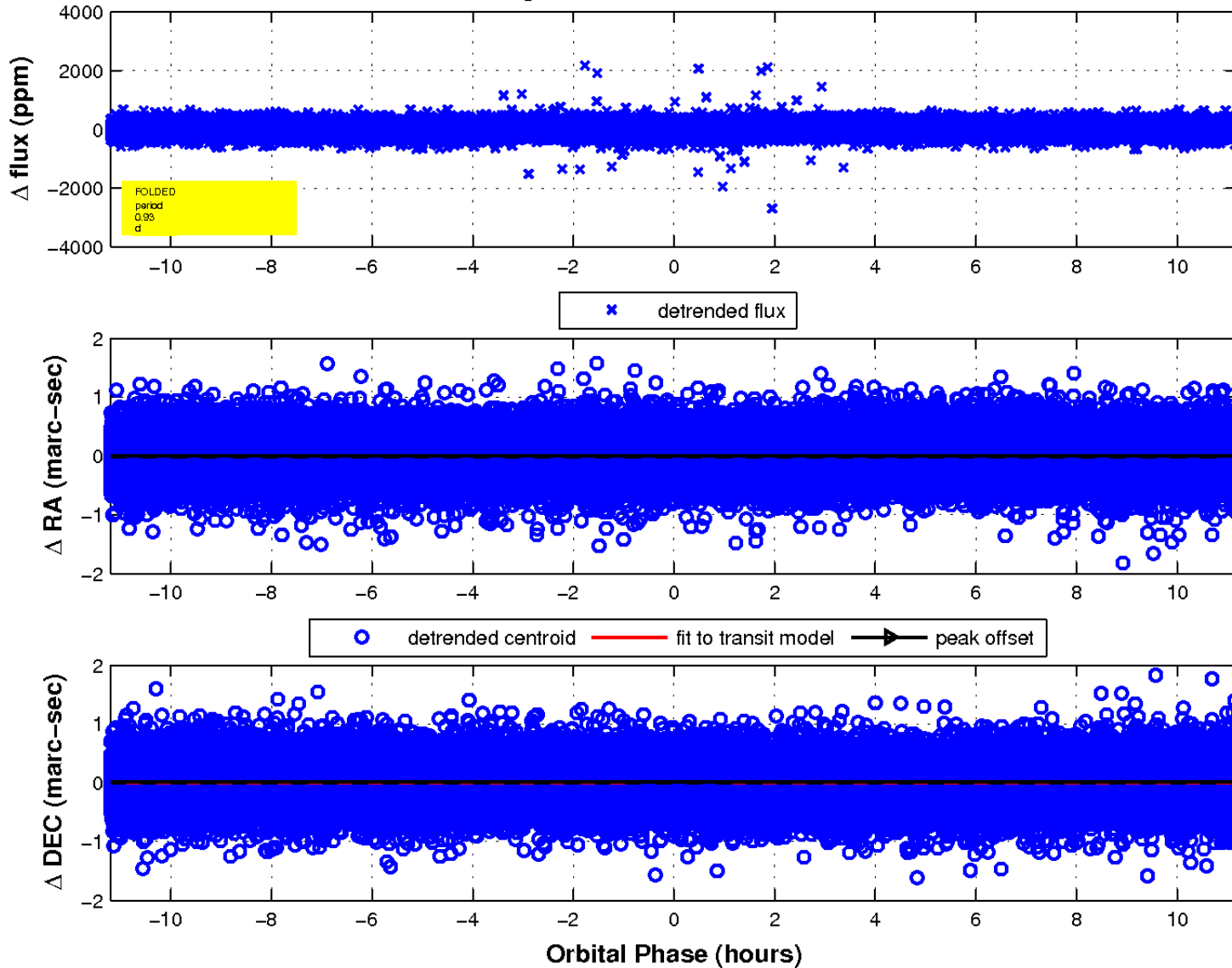




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

