

# KIC 008964659

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008964659-01	OBS	No	386.163565	346.756879	987.0	18.807	10.8	10.9	1.00	5780	3.14	0.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008964659-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

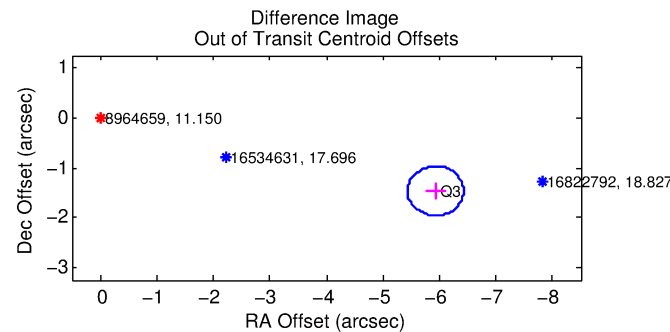
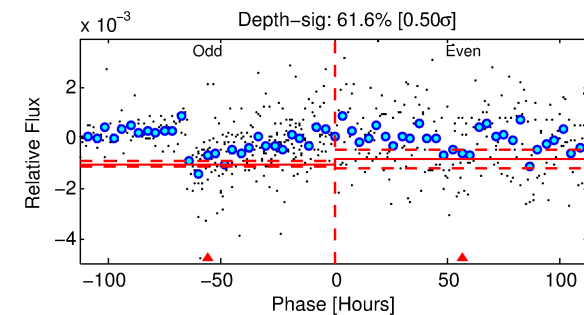
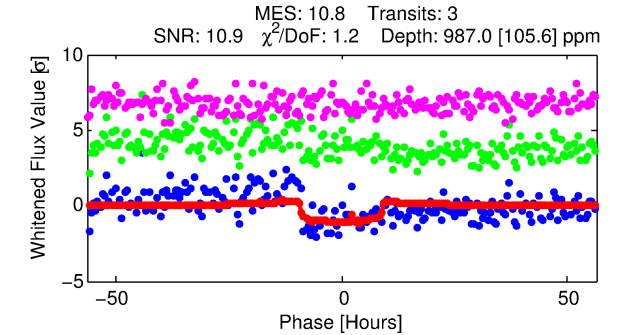
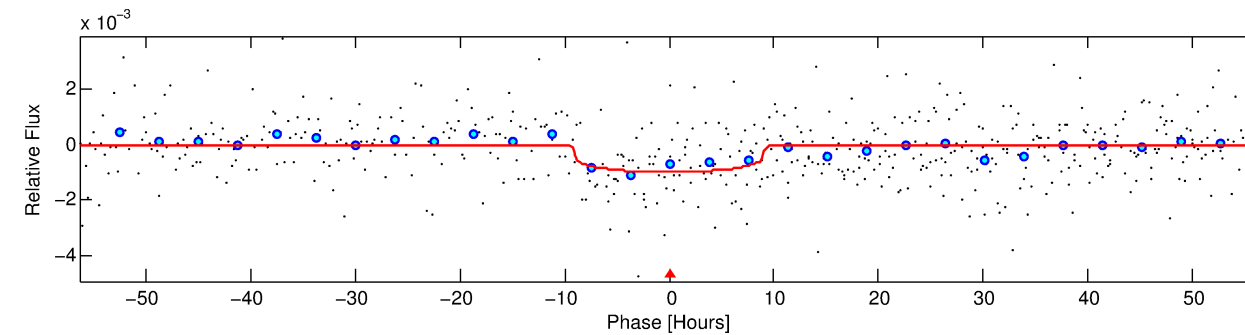
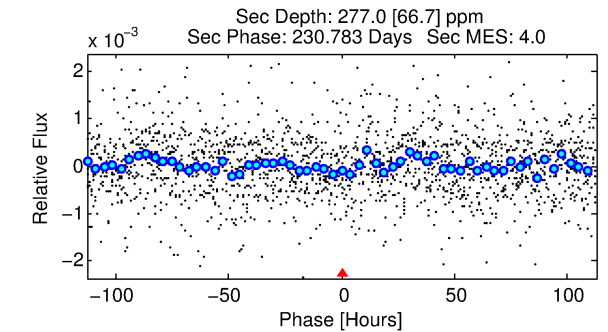
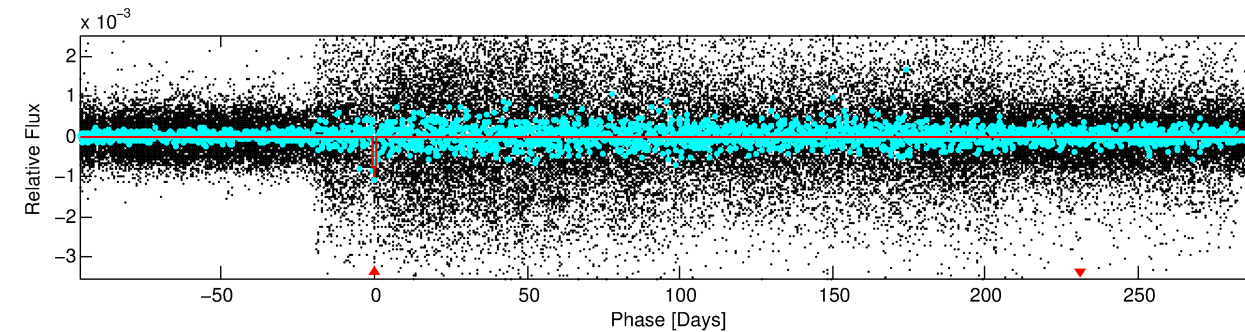
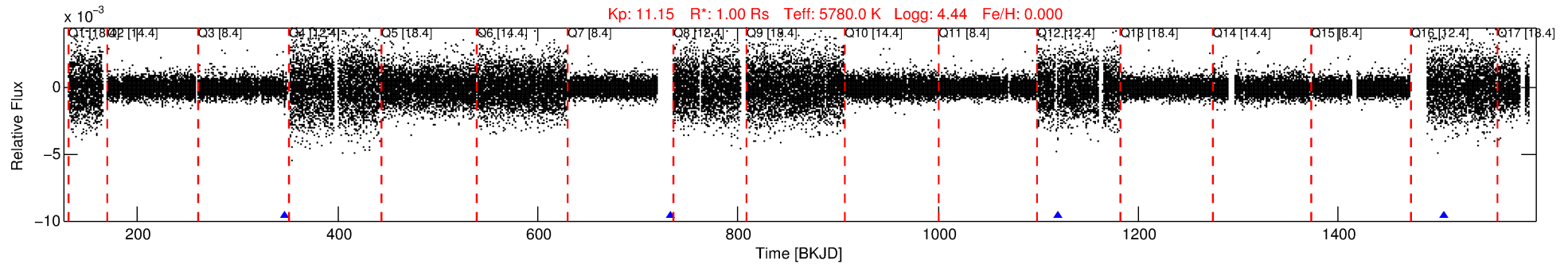
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008964659-01

No Significant Match Found

# DV One-Page Summary

KIC: 8964659 Candidate: 1 of 1 Period: 386.164 d



## DV Fit Results:

Period = 386.16356 [0.01396] d  
Epoch = 346.7569 [0.0164] BKJD  
Rp/R\* = 0.0288 [0.0133]  
a/R\* = 153.45 [305.57]  
b = 0.32 [5.65]  
Seff = 0.93 [0.00]  
Teq = 250 [0] K  
Rp = 3.14 [1.45] Re  
a = 1.0380 [0.0000] AU  
Ag = 16605.93 [15823.68] [1.05σ]  
Teffp = 4393 [1046] K [3.96σ]

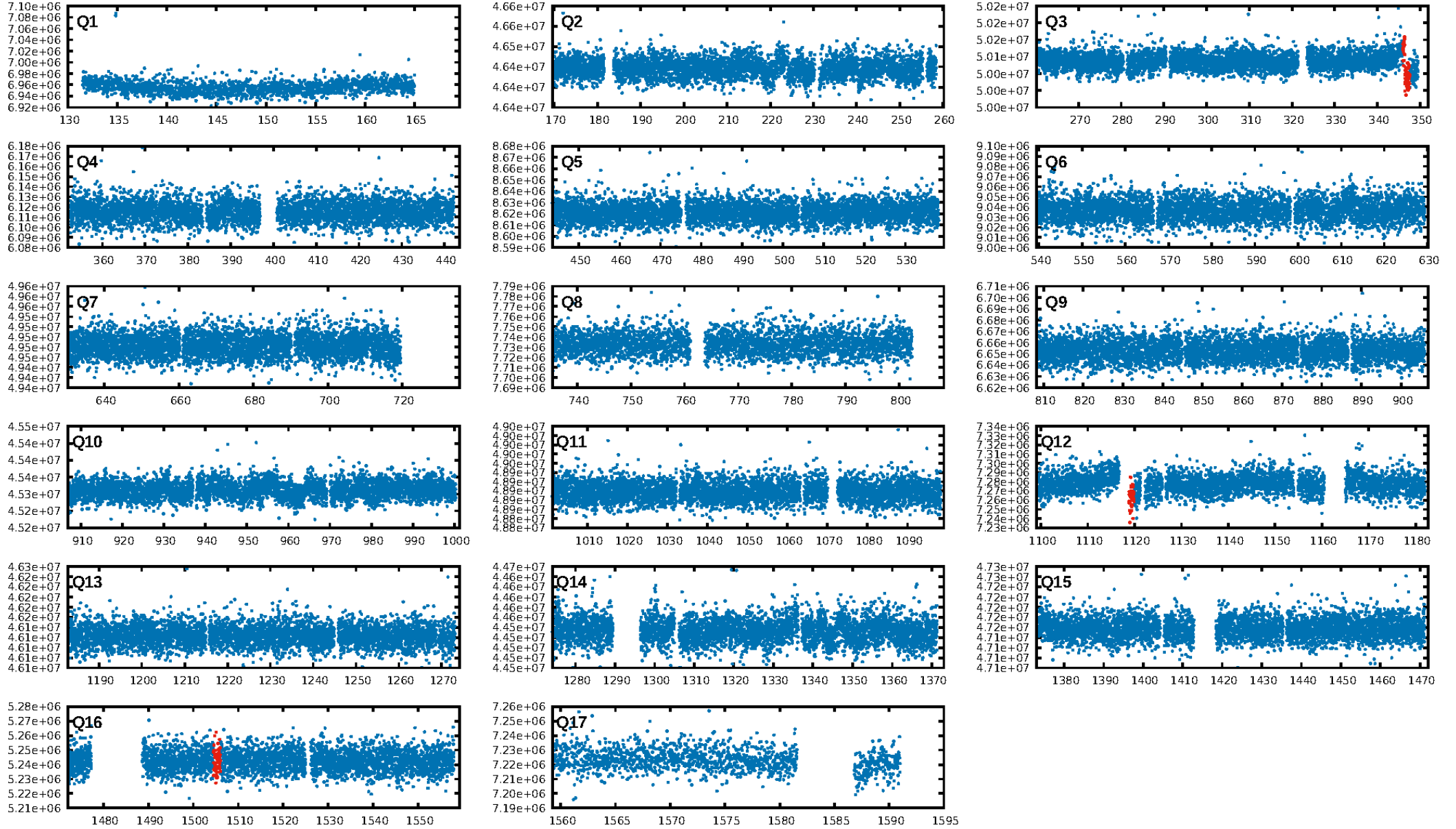
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.5%  
ModelChiSquareGof-sig: 98.5%  
Bootstrap-pfa: 5.13e-22  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -5.482  
Centroid-sig: 4.7%  
Centroid-so: 0.824 arcsec [1.83σ]  
OotOffset-rm: 6.108 arcsec [36.97σ]  
KicOffset-rm: 7.310 arcsec [44.50σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

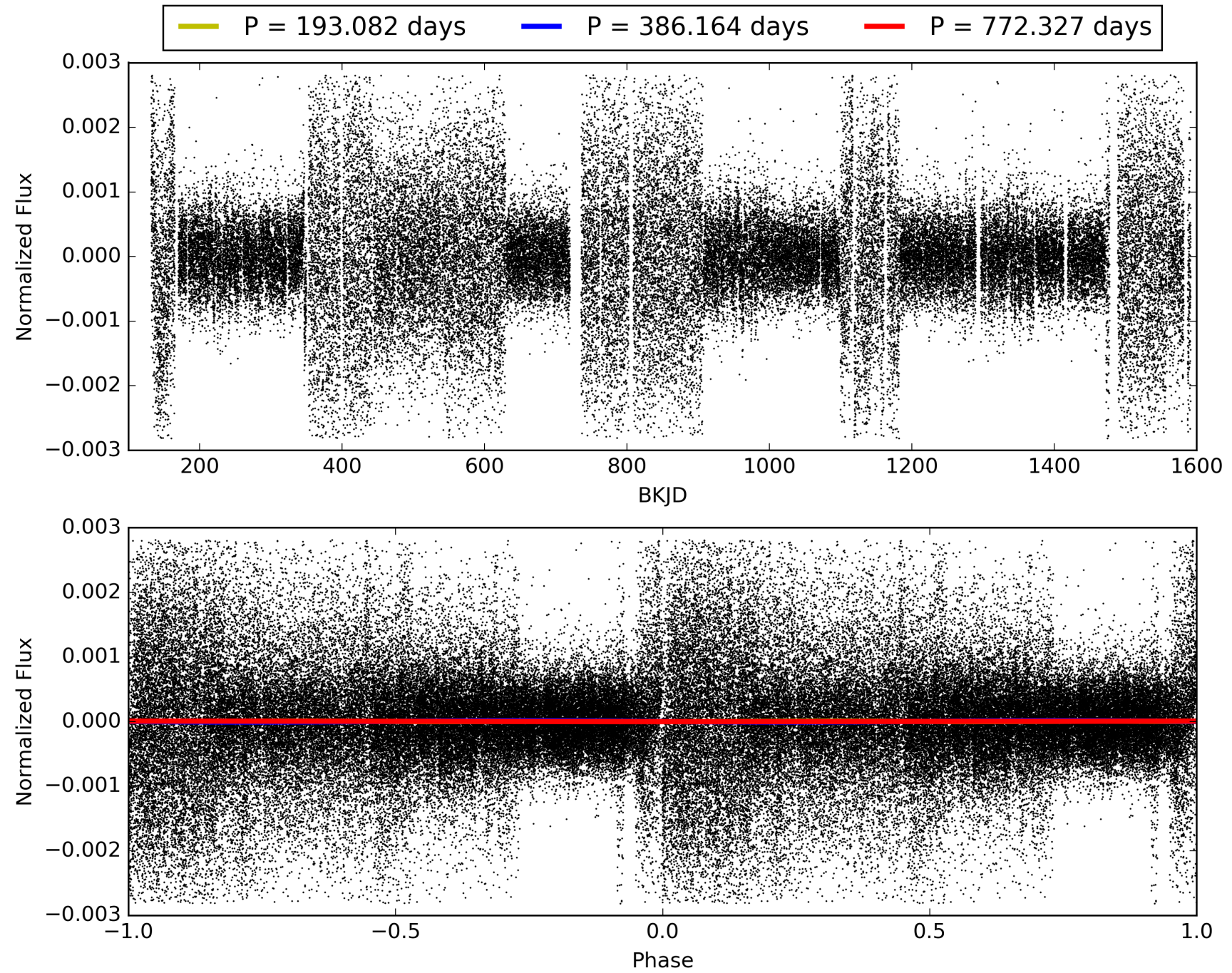
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:40:58 Z

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

# TCE 008964659-01, PDC Light Curves

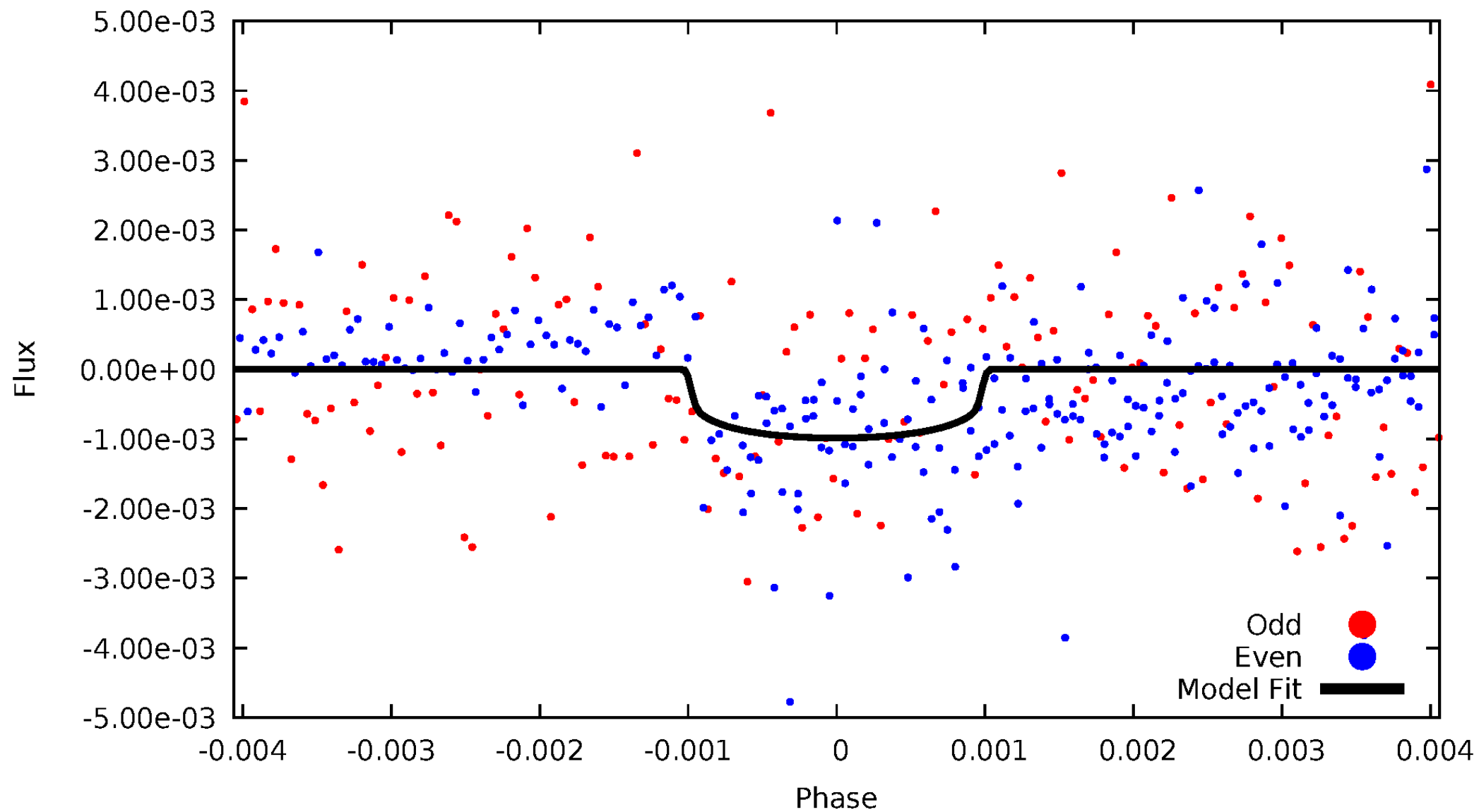


TCE 008964659-01



# DV Odd/Even

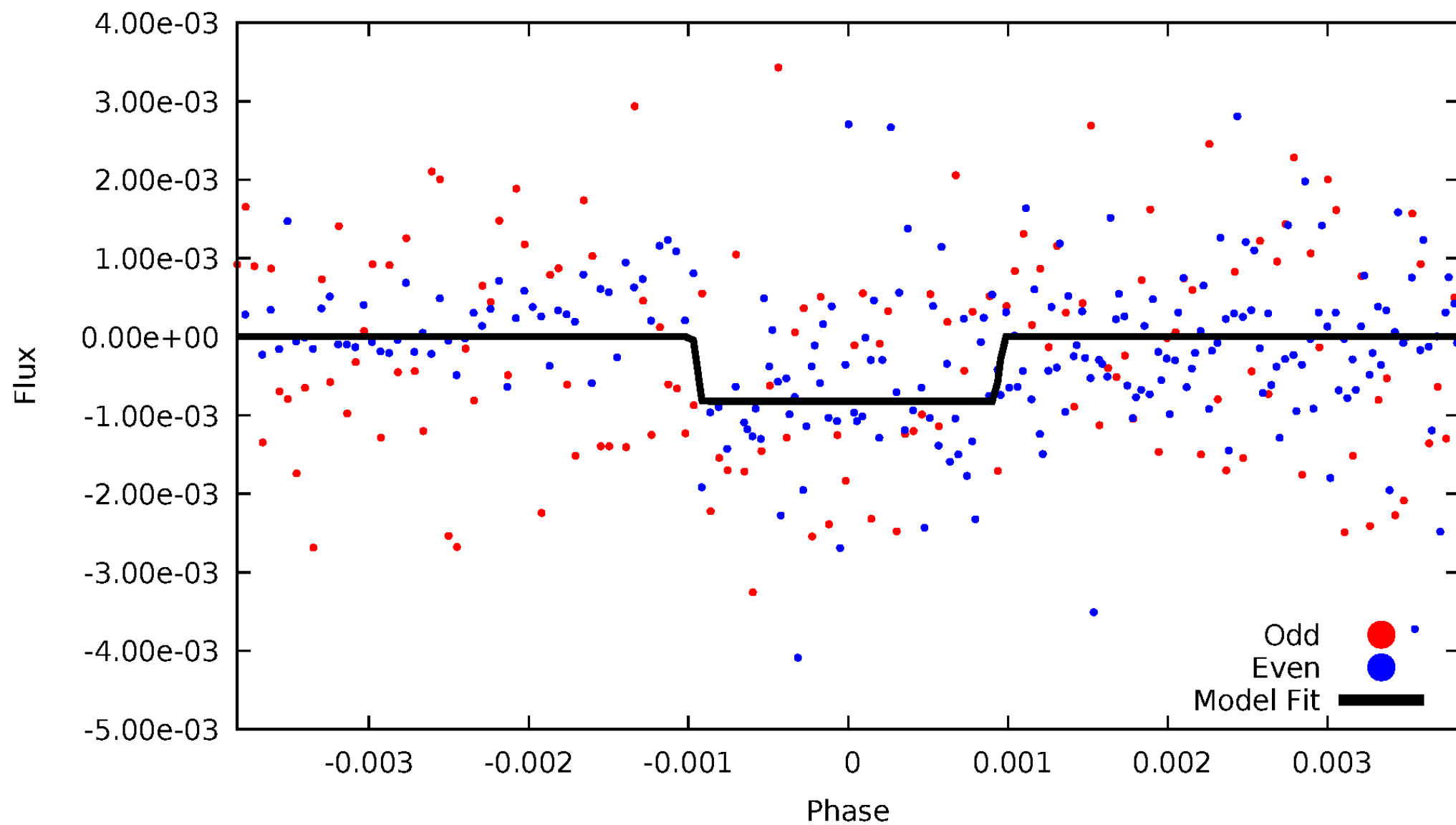
TCE 008964659-01





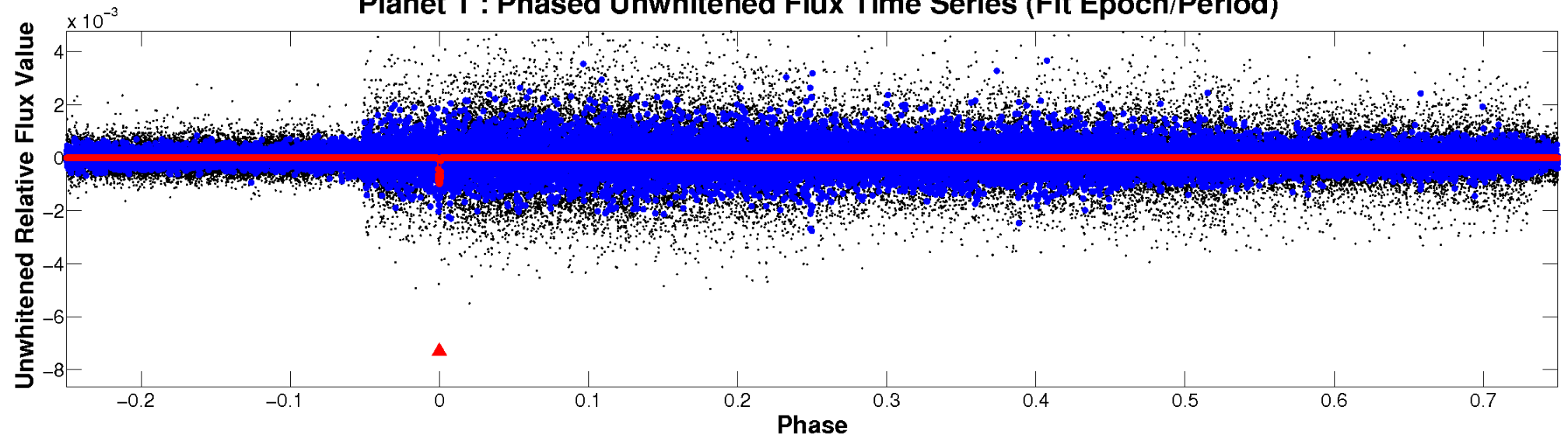
# ALT Odd/Even

TCE 008964659-01

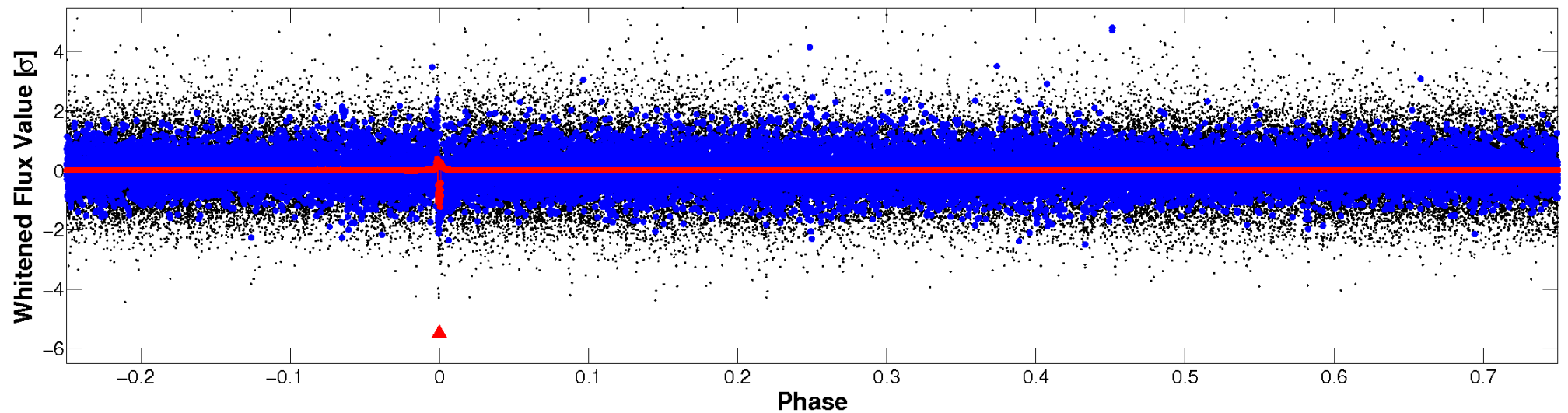


# Non-Whitened Vs. Whitened Light Curve

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

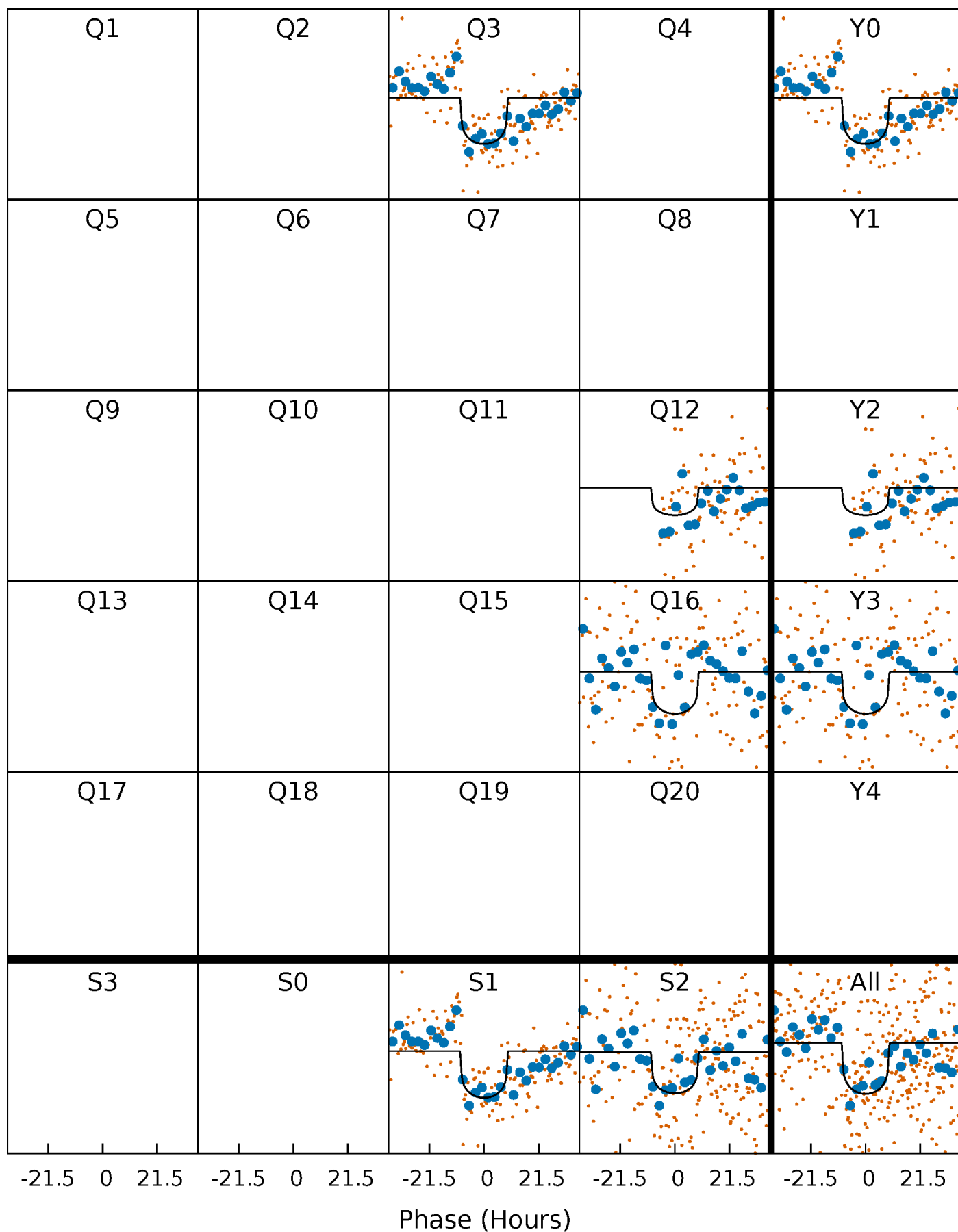
TCE 008964659-01 P=386.163565 Days  $T_0=346.756879$  (BKJD)





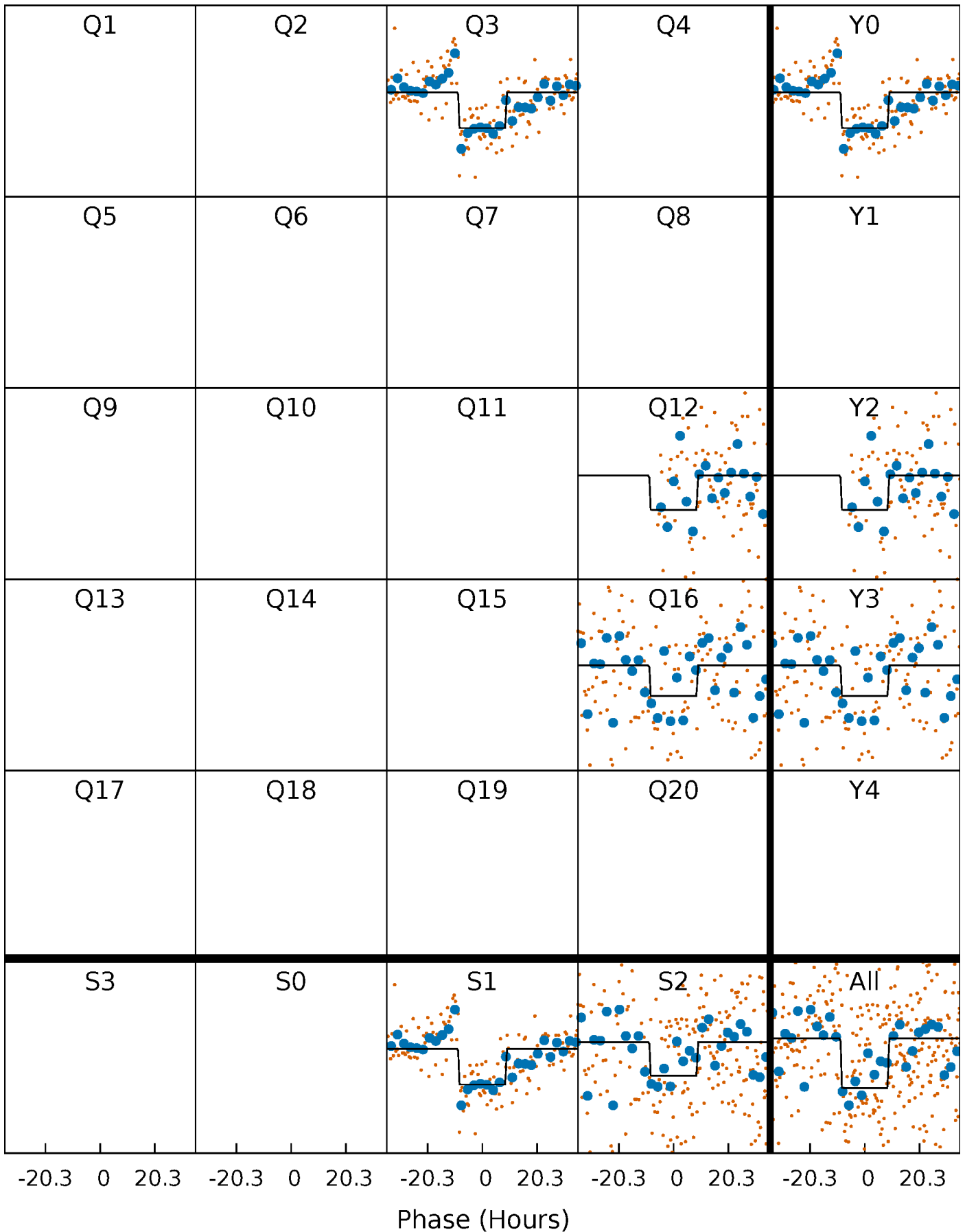
# DV Quarter-Phased Transit Curves

TCE 008964659-01 P=386.163565 Days  $T_0=346.756879$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

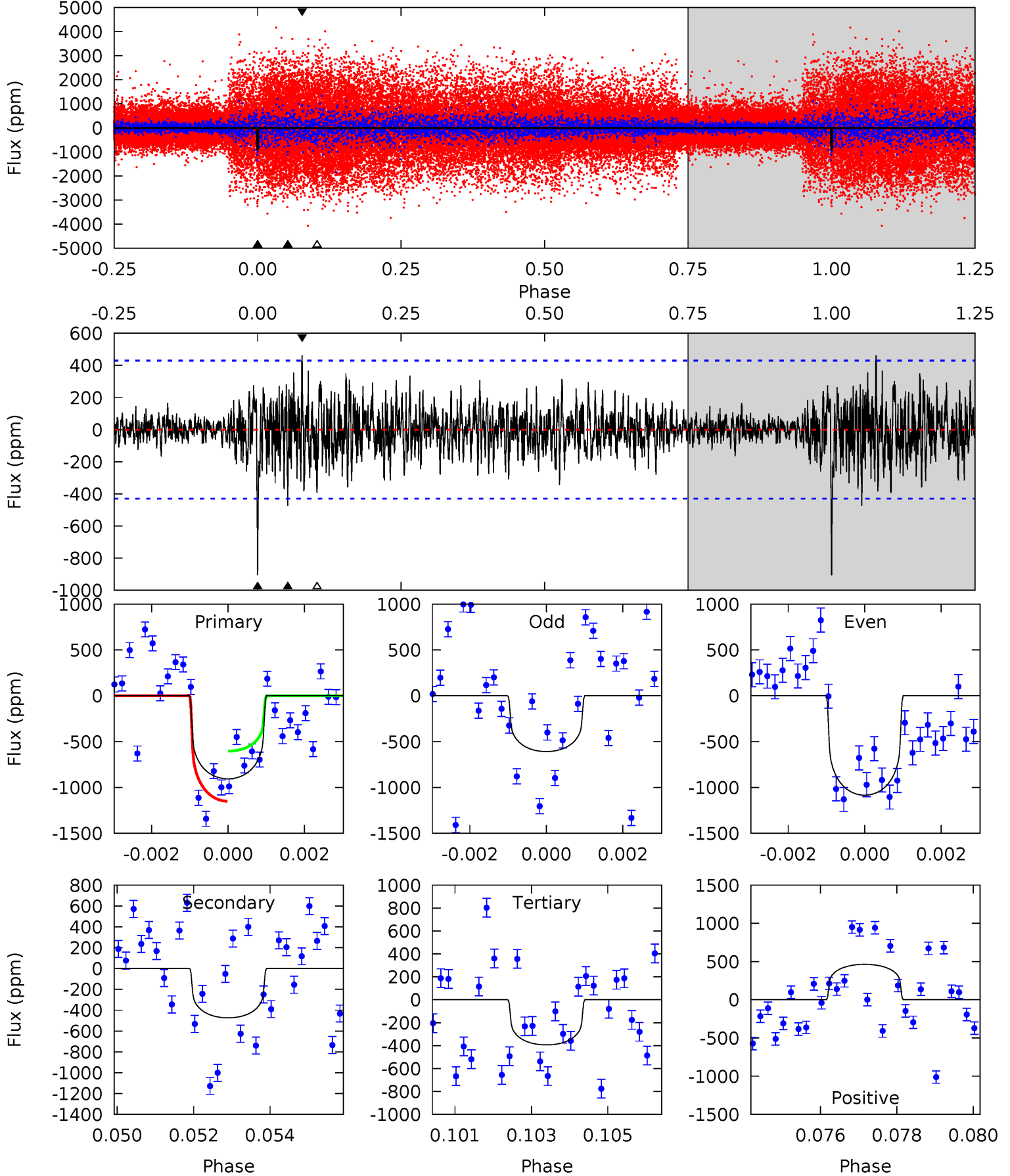
TCE 008964659-01 P=386.160228 Days  $T_0=346.764895$  (BKJD)



# DV Model-Shift Uniqueness Test

008964659-01,  $P = 386.163565$  Days,  $E = 346.756879$  Days

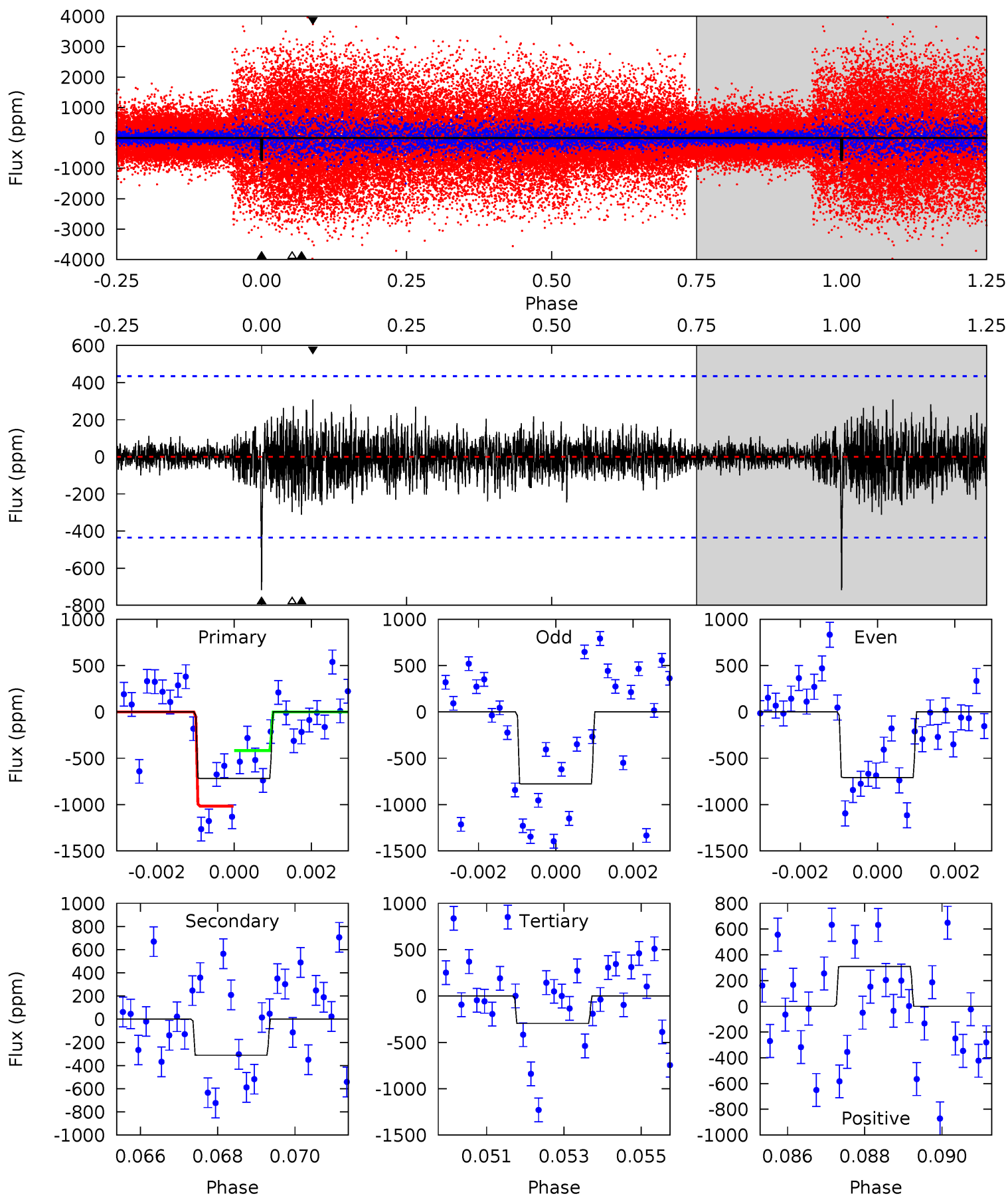
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	5.86	4.88	5.74	5.32	3.08	1.28	6.34	5.48	0.99	0.12	2.67	0.87	0.34	3.24



# Alt Model-Shift Uniqueness Test

008964659-01, P = 386.160228 Days, E = 346.764895 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
8.79	3.81	3.63	3.79	5.33	3.10	0.83	5.16	5.01	0.18	0.03	0.39	1.01	0.30	3.51



### Stellar Parameters For KIC 008964659

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5780^{+1}_{-1}$	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008964659-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-473 \pm 81$	$3.08^{+1.62}_{-1.33}$	$350^{+16}_{-17}$	$5083^{+1747}_{-760}$	$28817^{+65898}_{-16144}$
Alt.	$-311 \pm 82$	$3.21^{+1.54}_{-1.50}$	$350^{+17}_{-16}$	$4625^{+1509}_{-673}$	$17595^{+45633}_{-10116}$

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

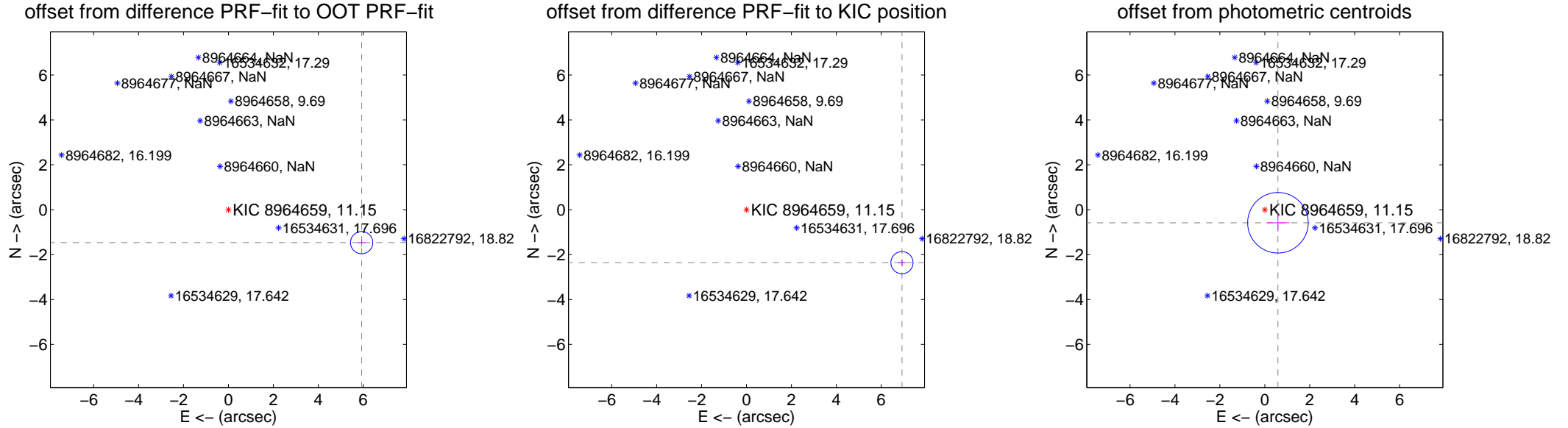
## DV Centroid Data

Supplemental centroid analysis for 008964659-01. **Kepler magnitude: 11.15.** Transit SNR 10.95

**There are 1 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>6.108 \pm 0.165</math></b>	<b>36.97</b>	$-5.929 \pm 0.166$	$-1.465 \pm 0.145$
PRF-fit source offset from KIC position	<b><math>7.310 \pm 0.164</math></b>	<b>44.50</b>	$-6.920 \pm 0.166$	$-2.358 \pm 0.145$
photometric centroid source offset	$0.82 \pm 0.45$	1.83	$-0.58 \pm 0.51$	$-0.58 \pm 0.38$

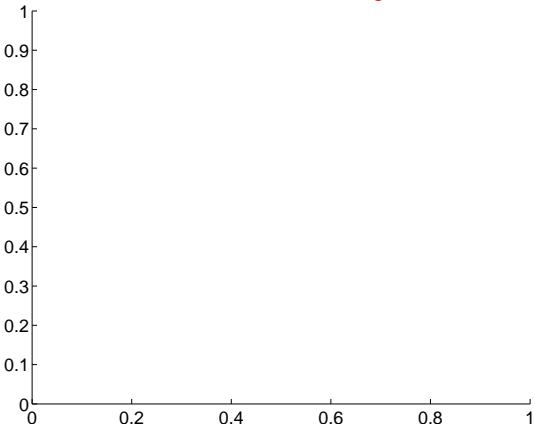


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

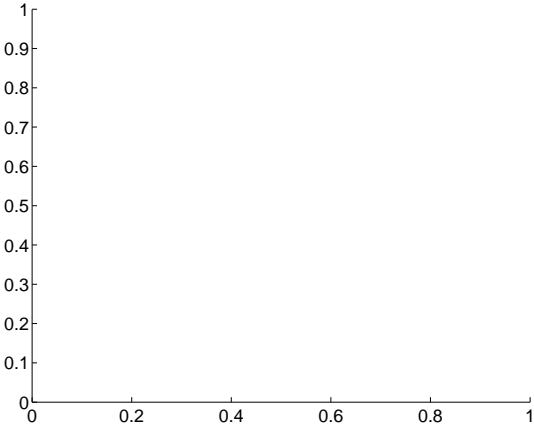
Q1 no difference image



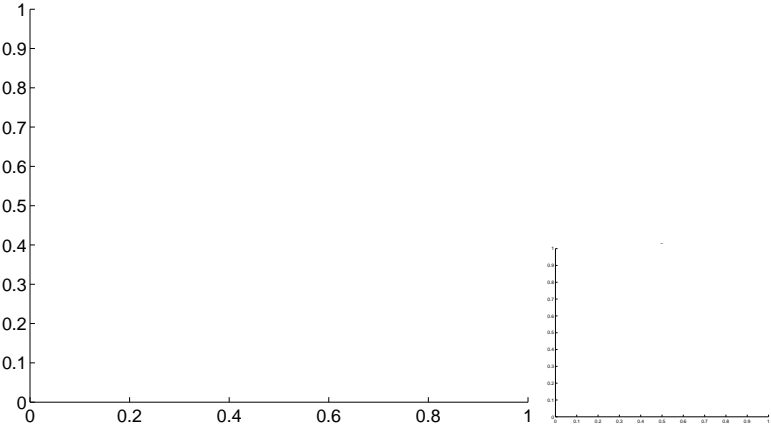
Q1 no OOT image



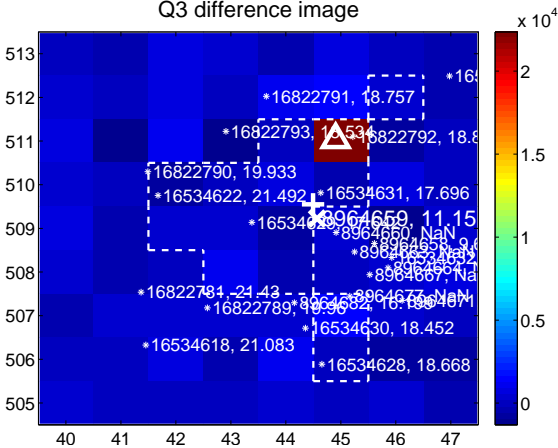
Q2 no difference image



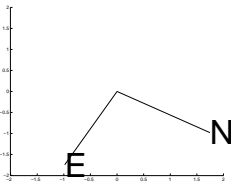
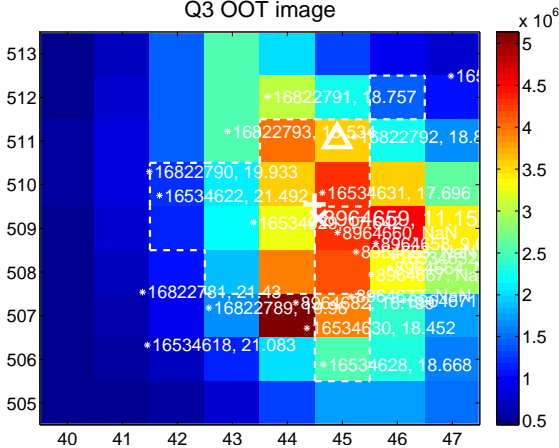
Q2 no OOT image



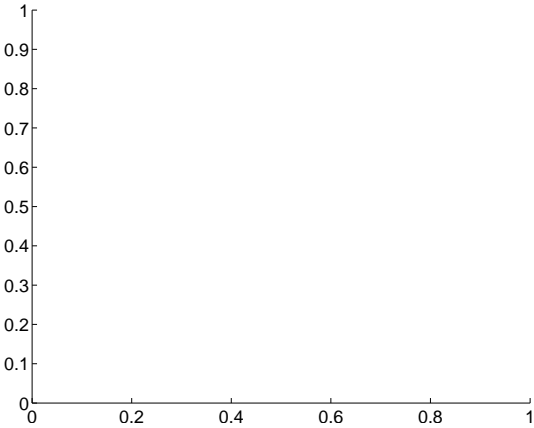
Q3 difference image



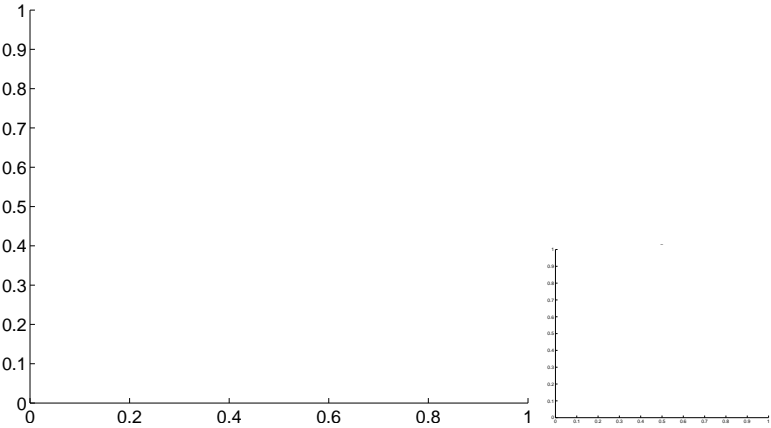
Q3 OOT image



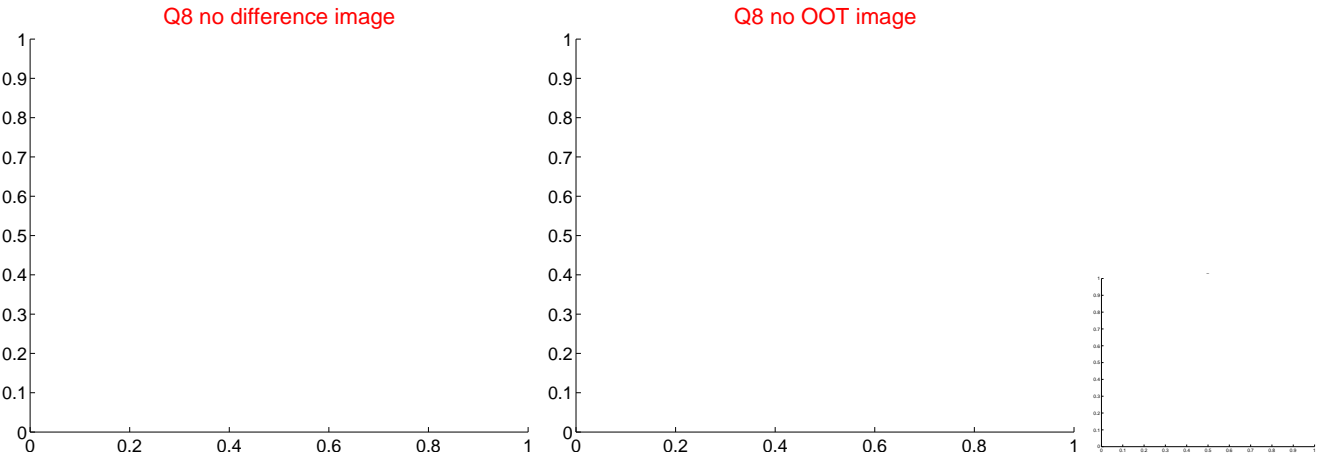
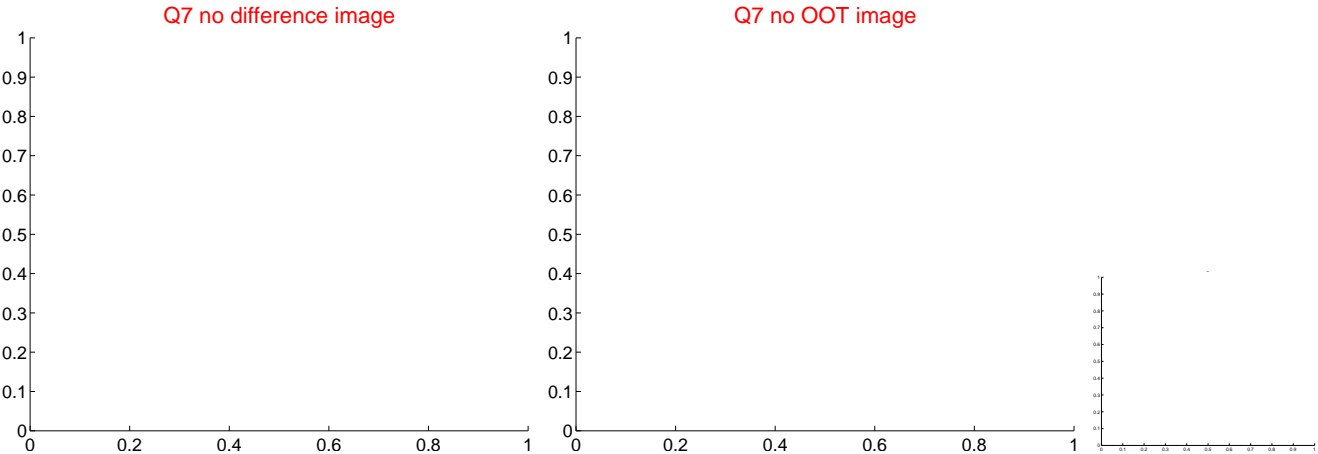
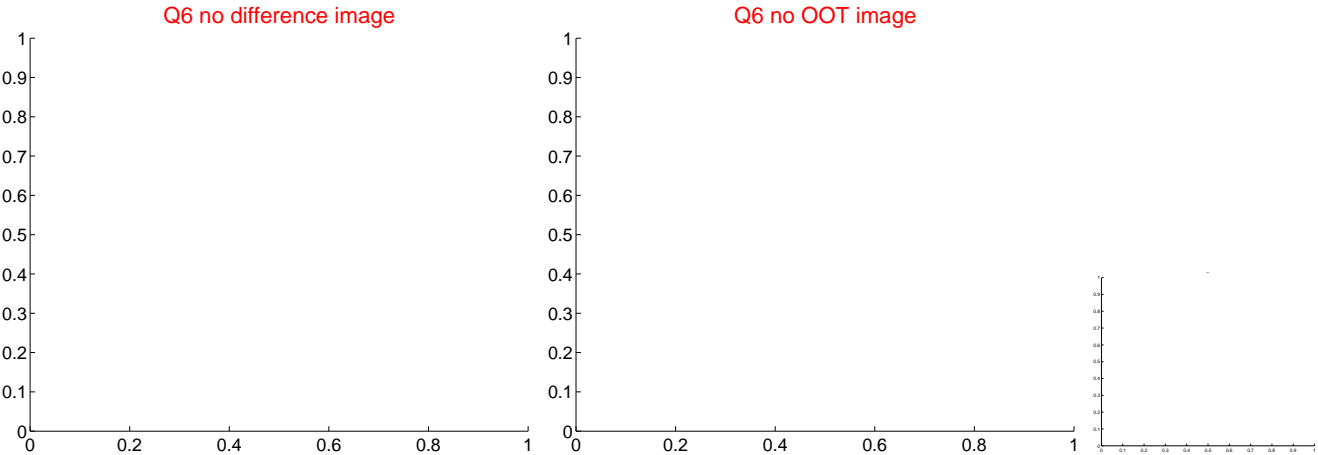
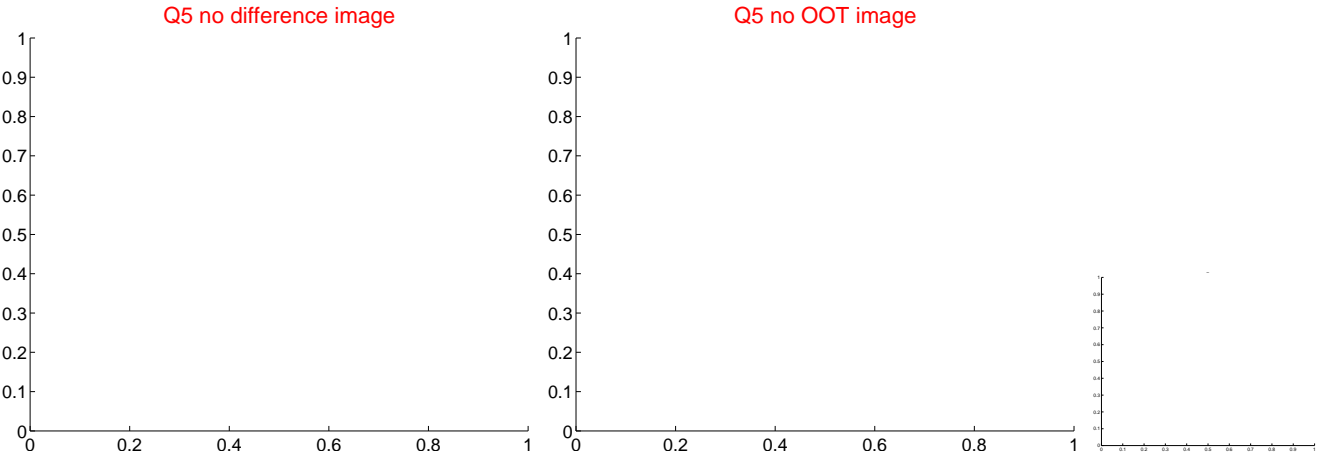
Q4 no difference image



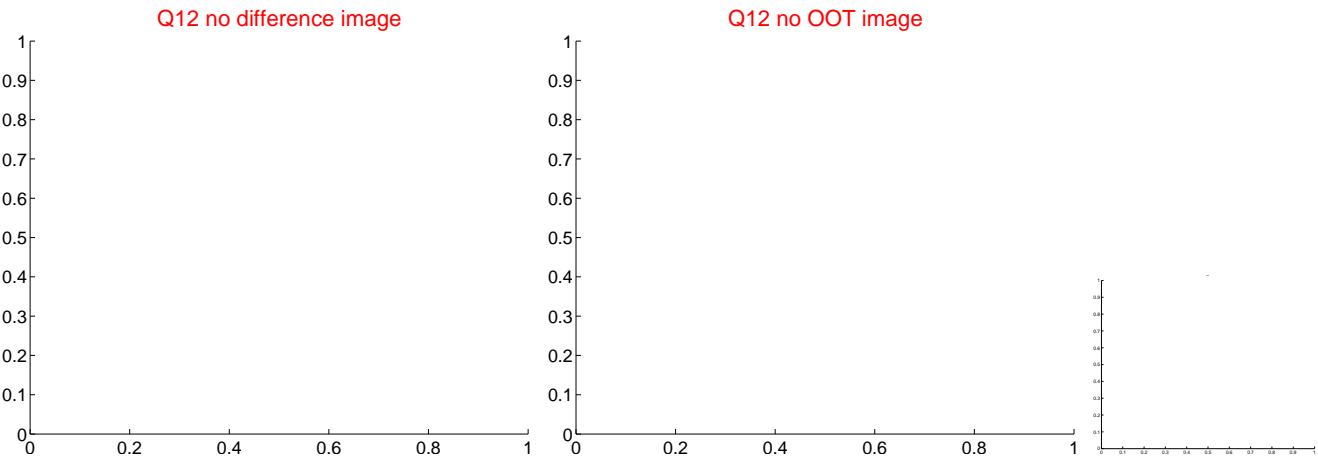
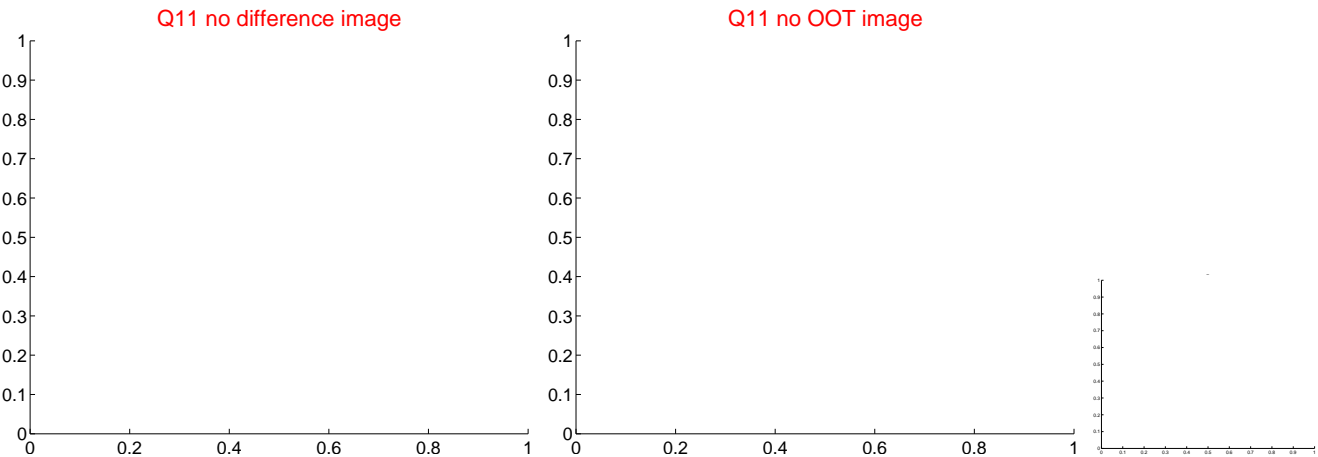
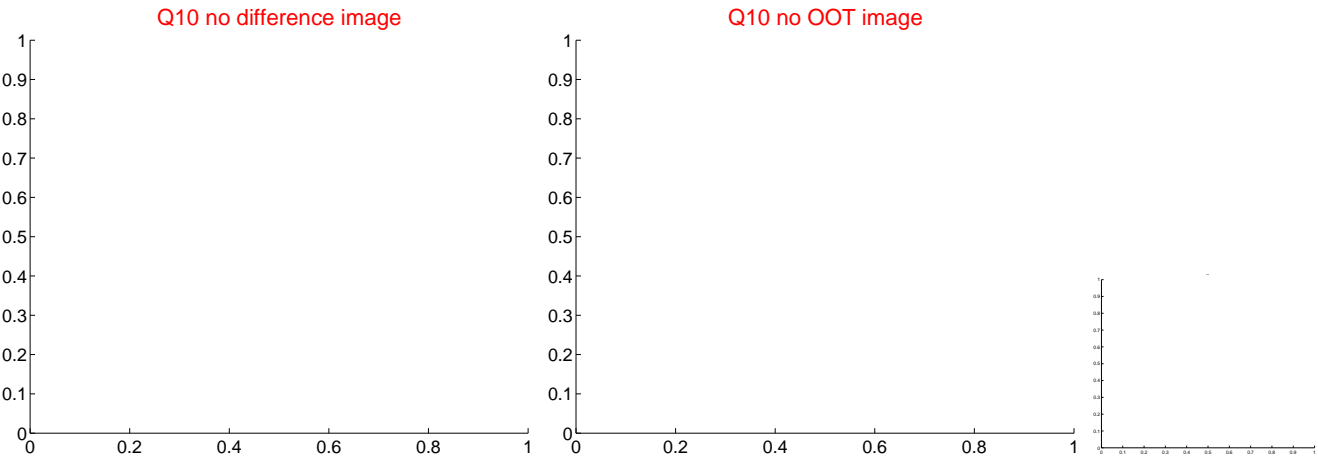
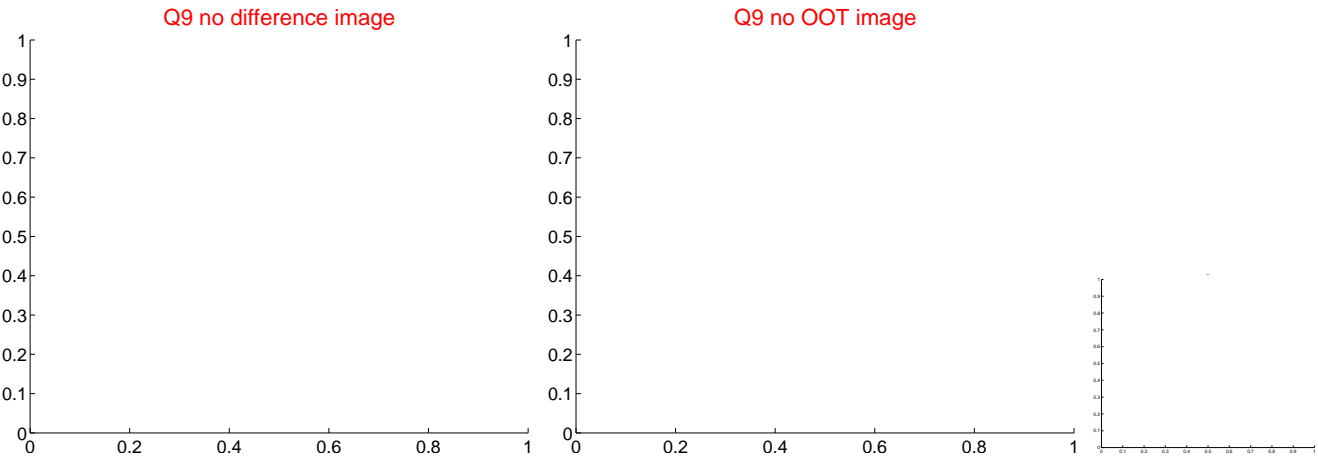
Q4 no OOT image



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



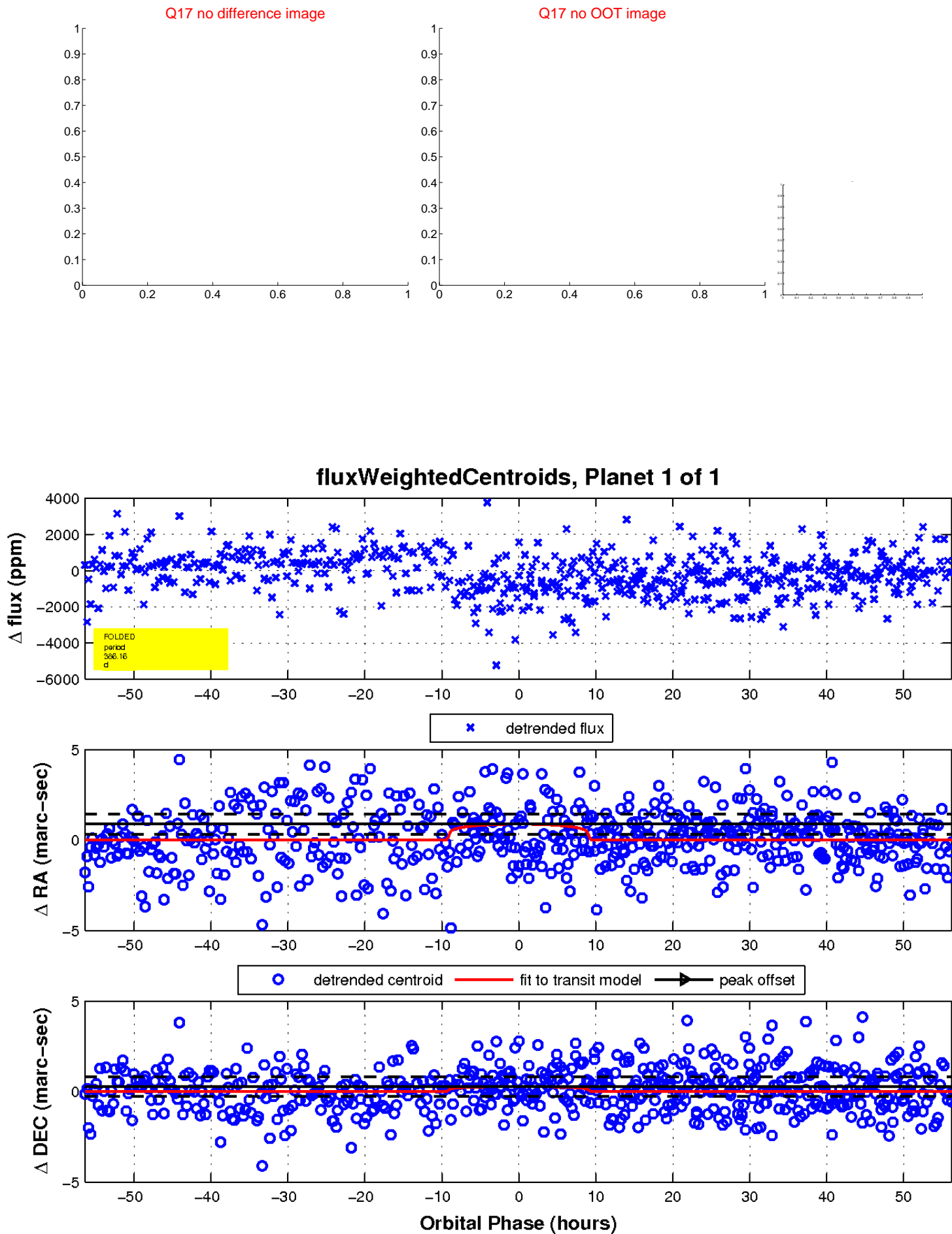
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

