

# KIC 009971071

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009971071-01	OBS	No	580.580080	376.611540	338.0	3.707	7.3	7.3	1.32	5543	2.87	0.86

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009971071-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

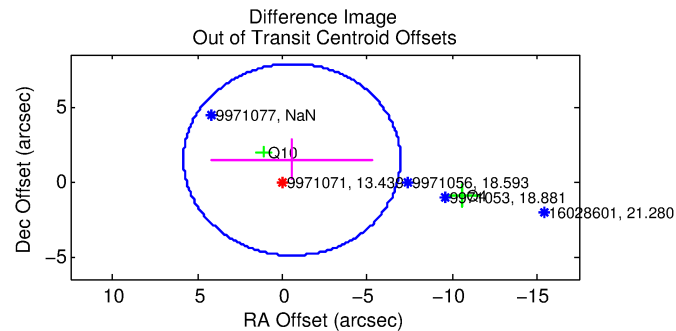
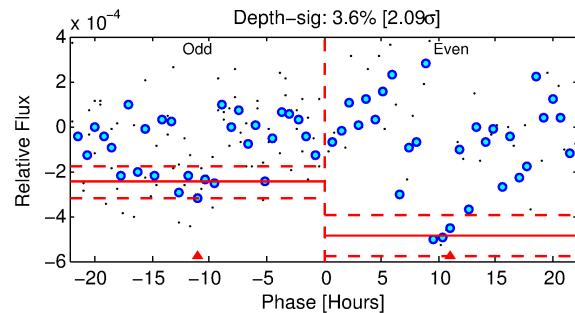
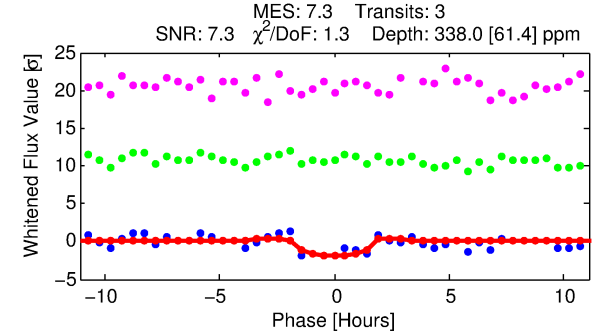
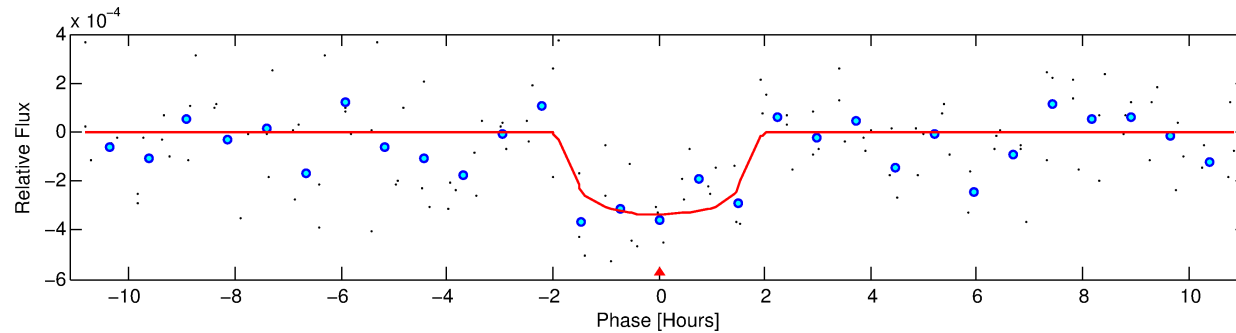
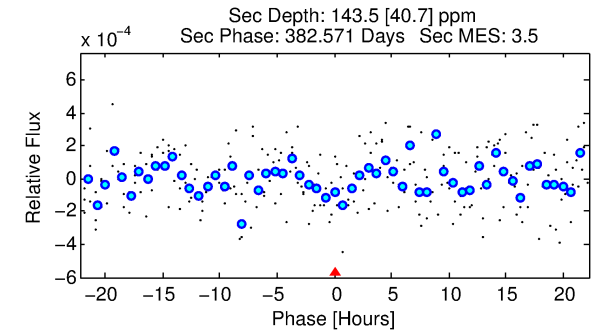
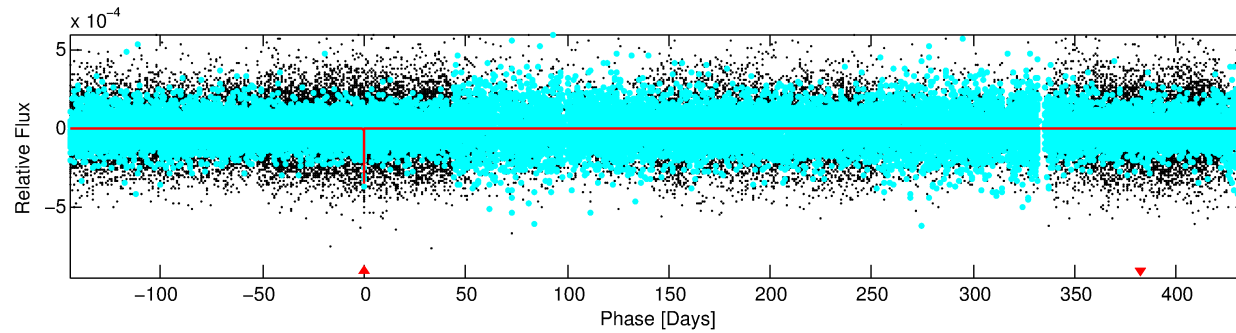
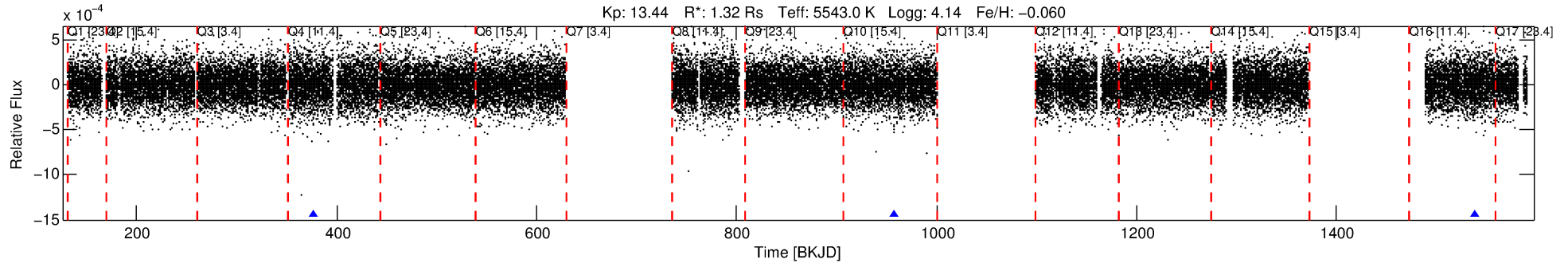
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009971071-01

No Significant Match Found

# DV One-Page Summary

KIC: 9971071 Candidate: 1 of 1 Period: 580.580 d



## DV Fit Results:

Period = 580.58008 [0.00918] d  
Epoch = 376.6115 [0.0111] BKJD  
Rp/R\* = 0.0199 [0.0111]  
a/R\* = 603.69 [1460.26]  
b = 0.89 [0.59]  
Seff = 0.86 [0.52]  
Teq = 246 [37] K  
Rp = 2.87 [1.89] Re  
a = 1.3091 [0.4653] AU  
Ag = 16426.67 [21271.78] [0.77σ]  
Teffp = 4303 [1249] K [3.25σ]

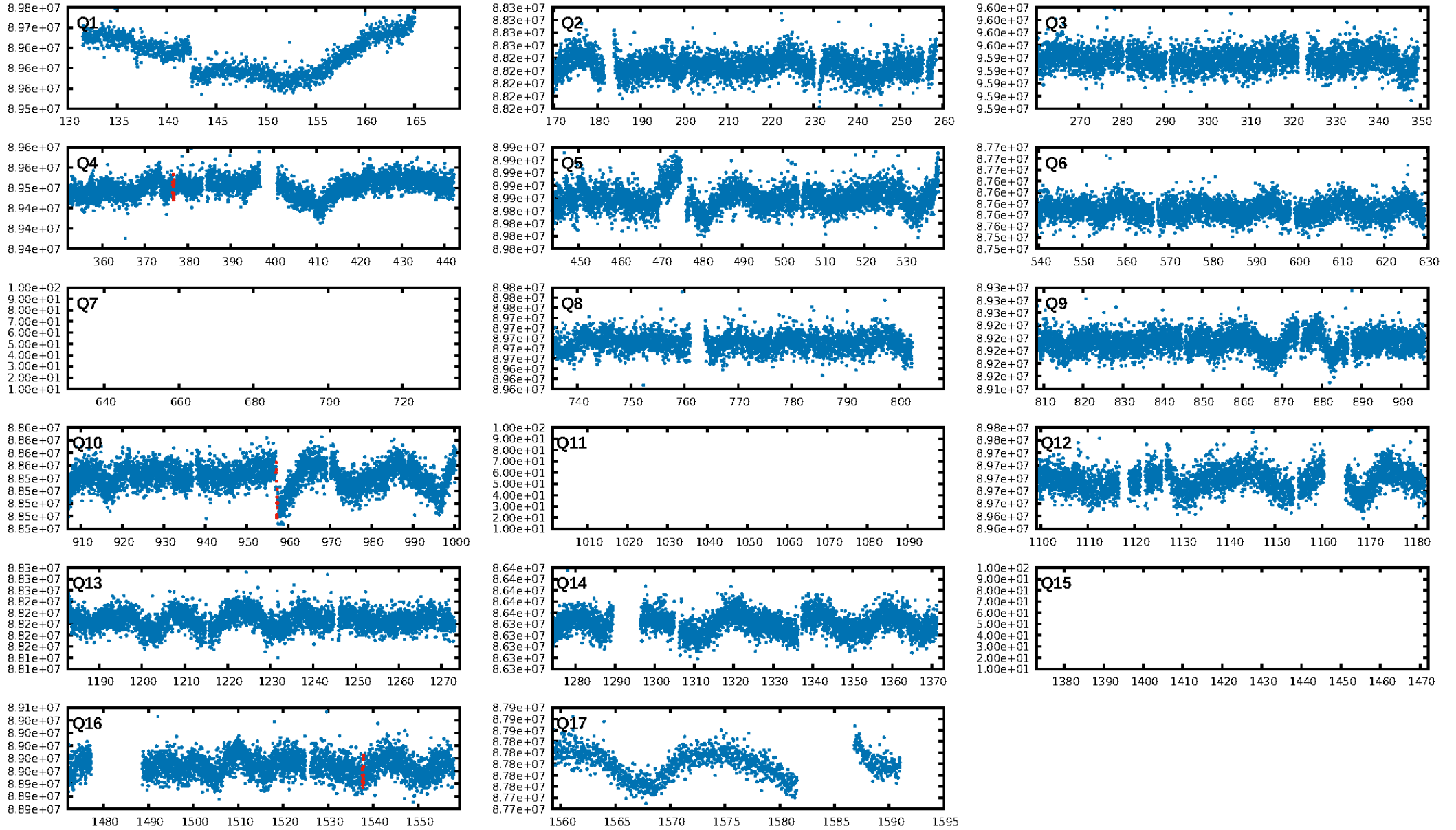
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.0%  
ModelChiSquareGof-sig: 60.2%  
**Bootstrap-pfa: 1.96e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.686  
Centroid-sig: 58.9%  
Centroid-so: 1.305 arcsec [0.80σ]  
OotOffset-rm: 1.575 arcsec [0.74σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 1.427 arcsec [0.75σ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

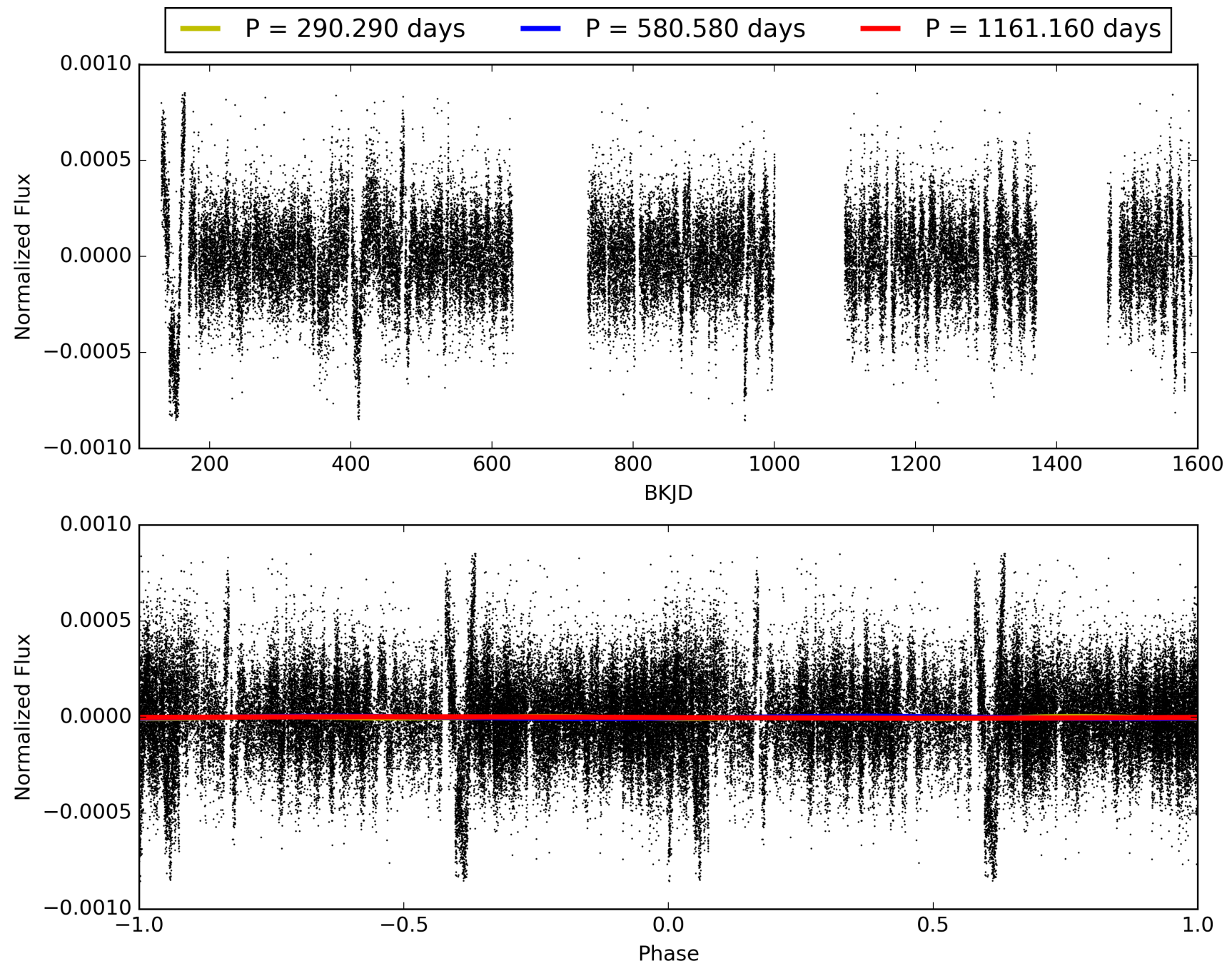
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:33:43 Z

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

# TCE 009971071-01, PDC Light Curves

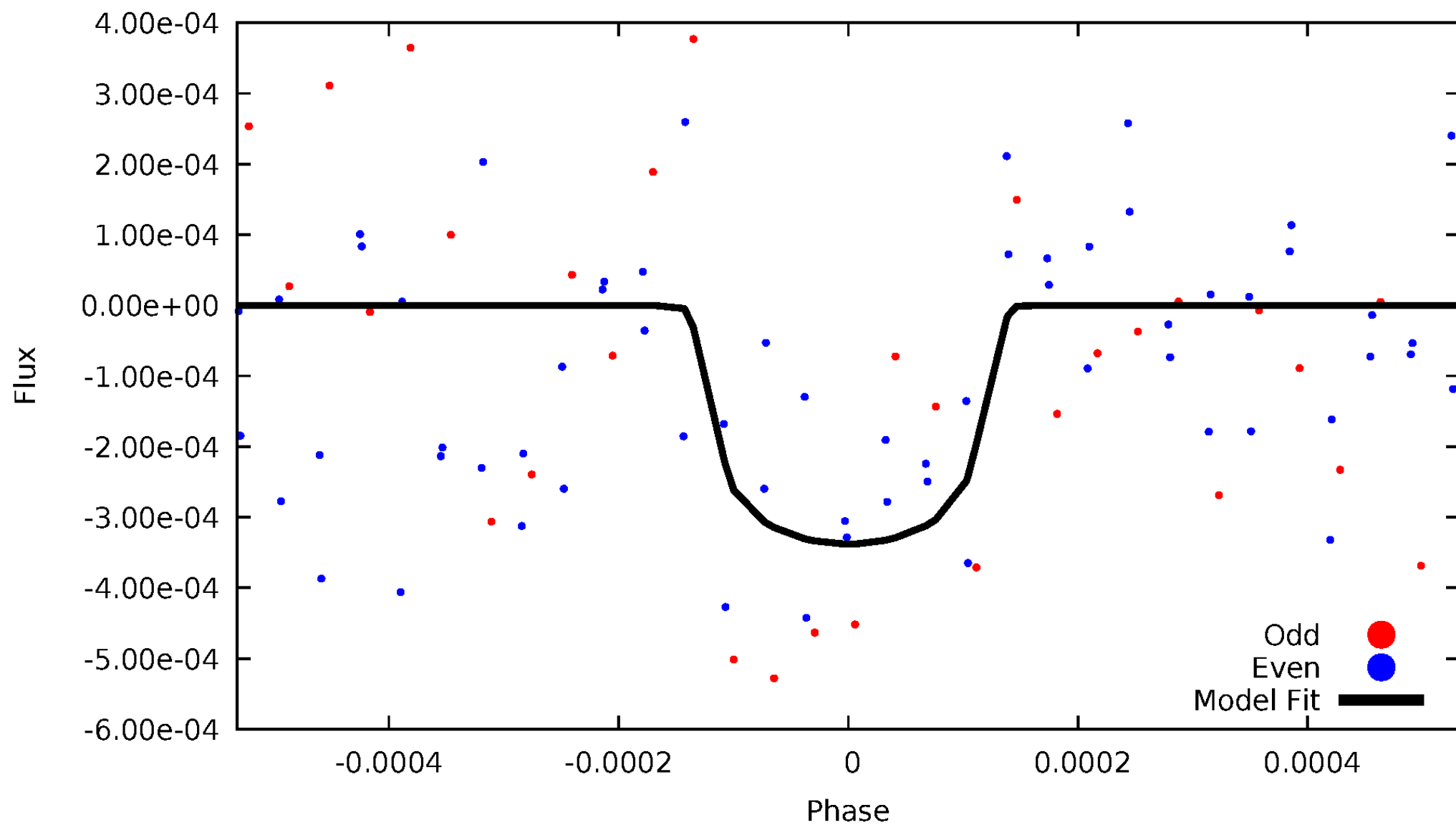


TCE 009971071-01



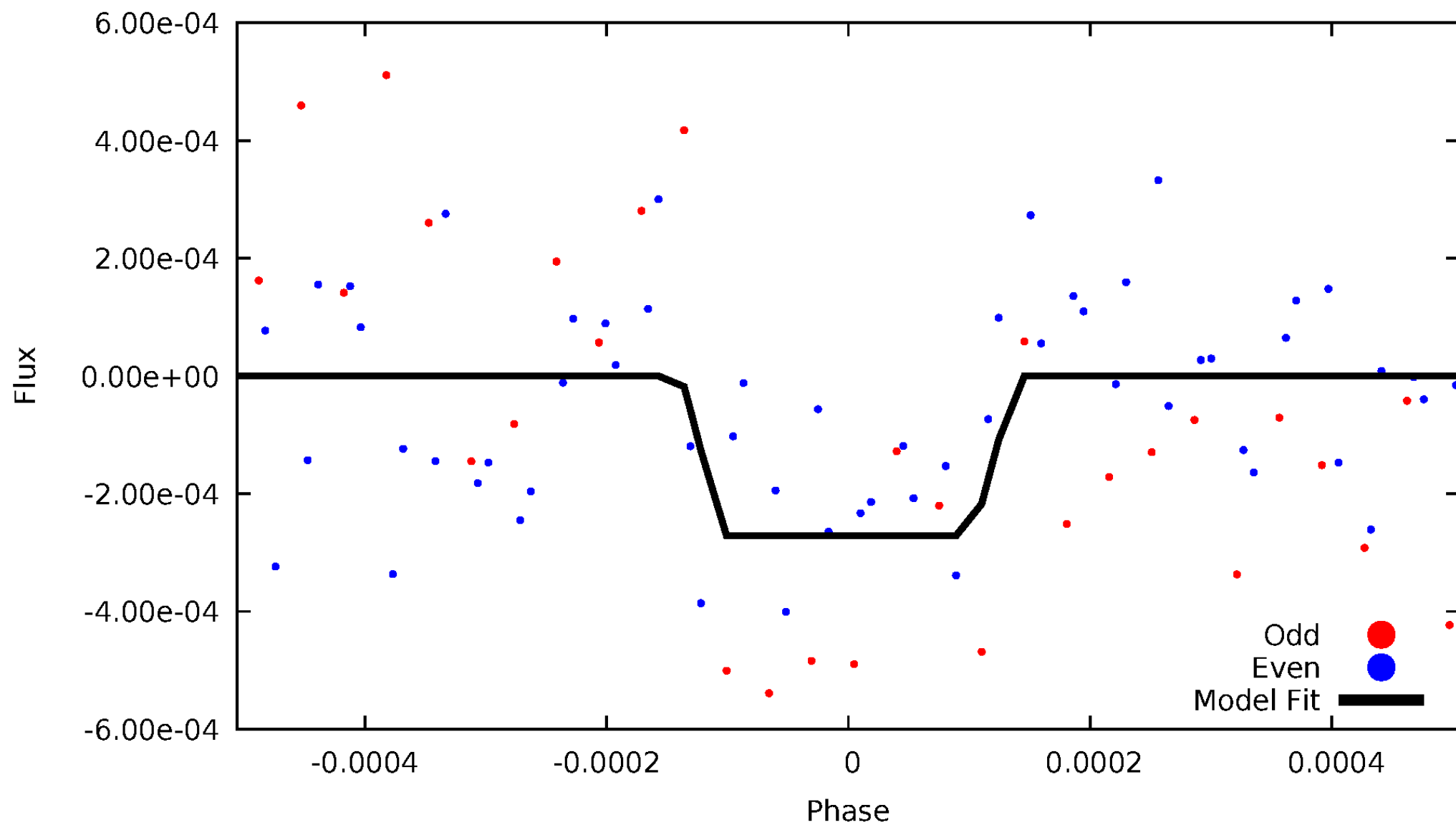
# DV Odd/Even

TCE 009971071-01



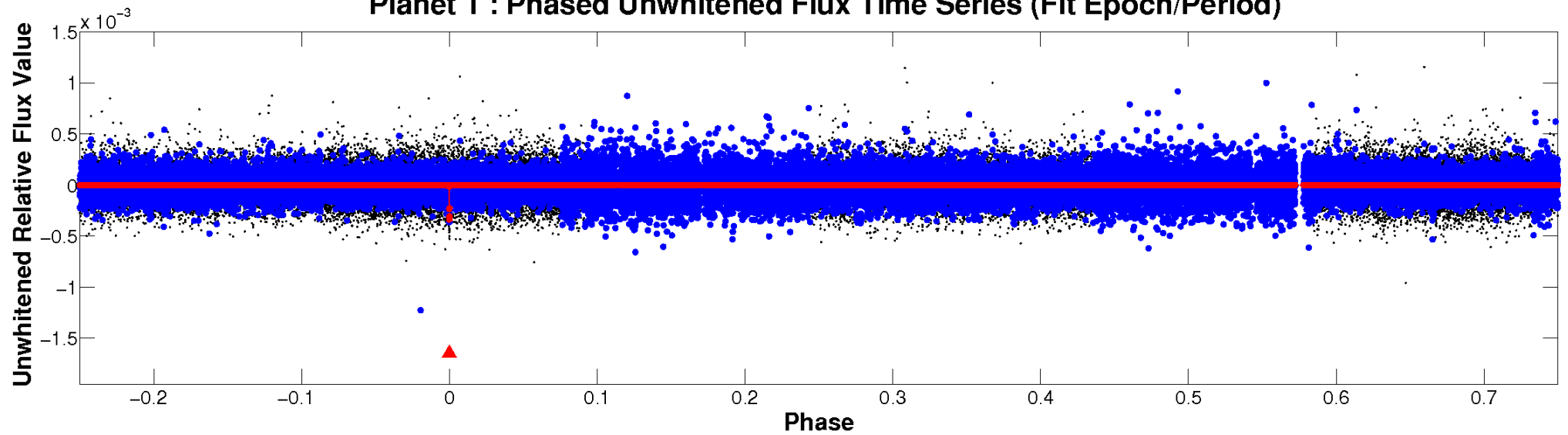
# ALT Odd/Even

TCE 009971071-01

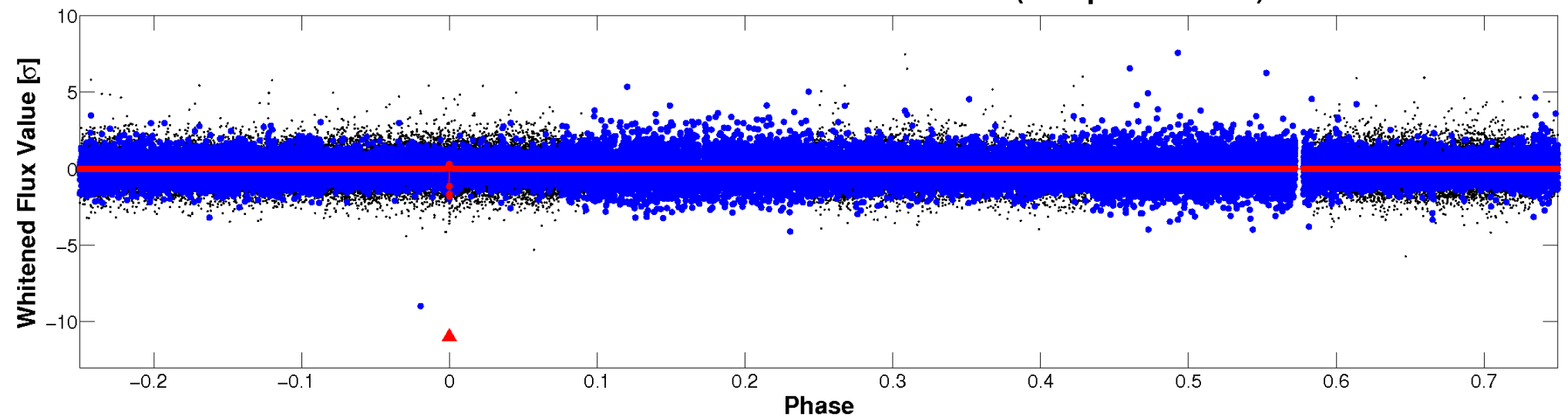


# Non-Whitened Vs. Whitened Light Curve

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

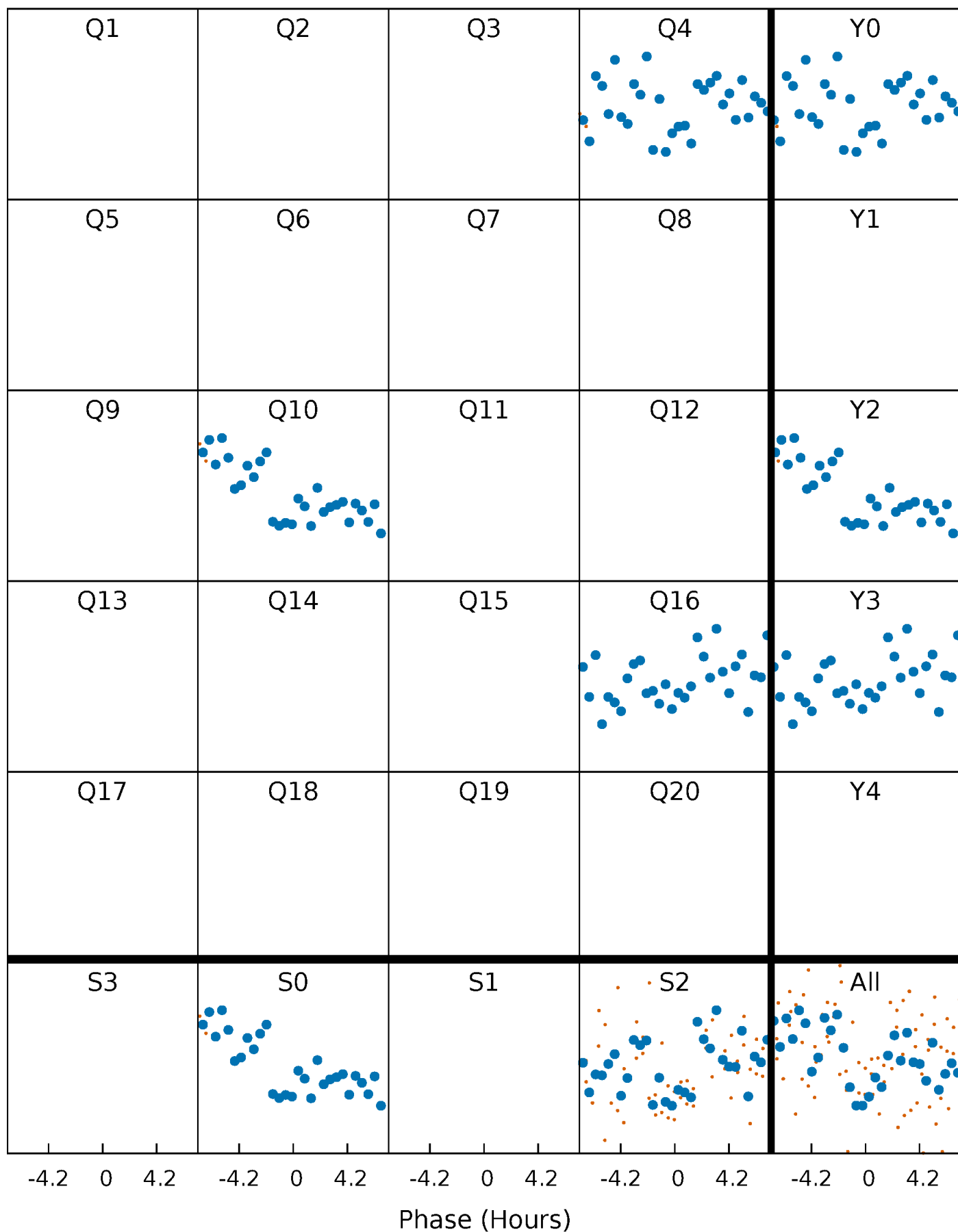


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

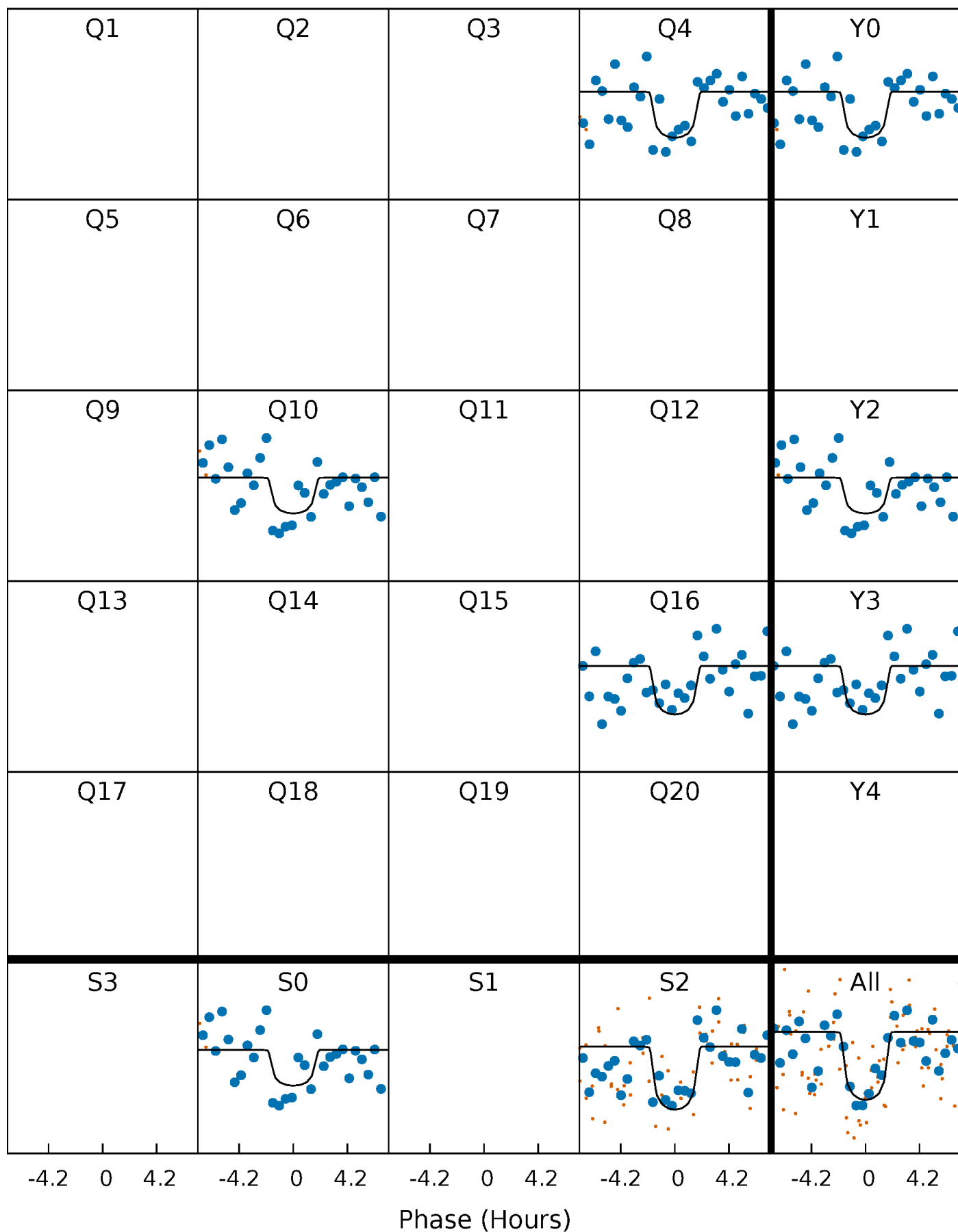
TCE 009971071-01 P=580.580080 Days  $T_0=376.611540$  (BKJD)





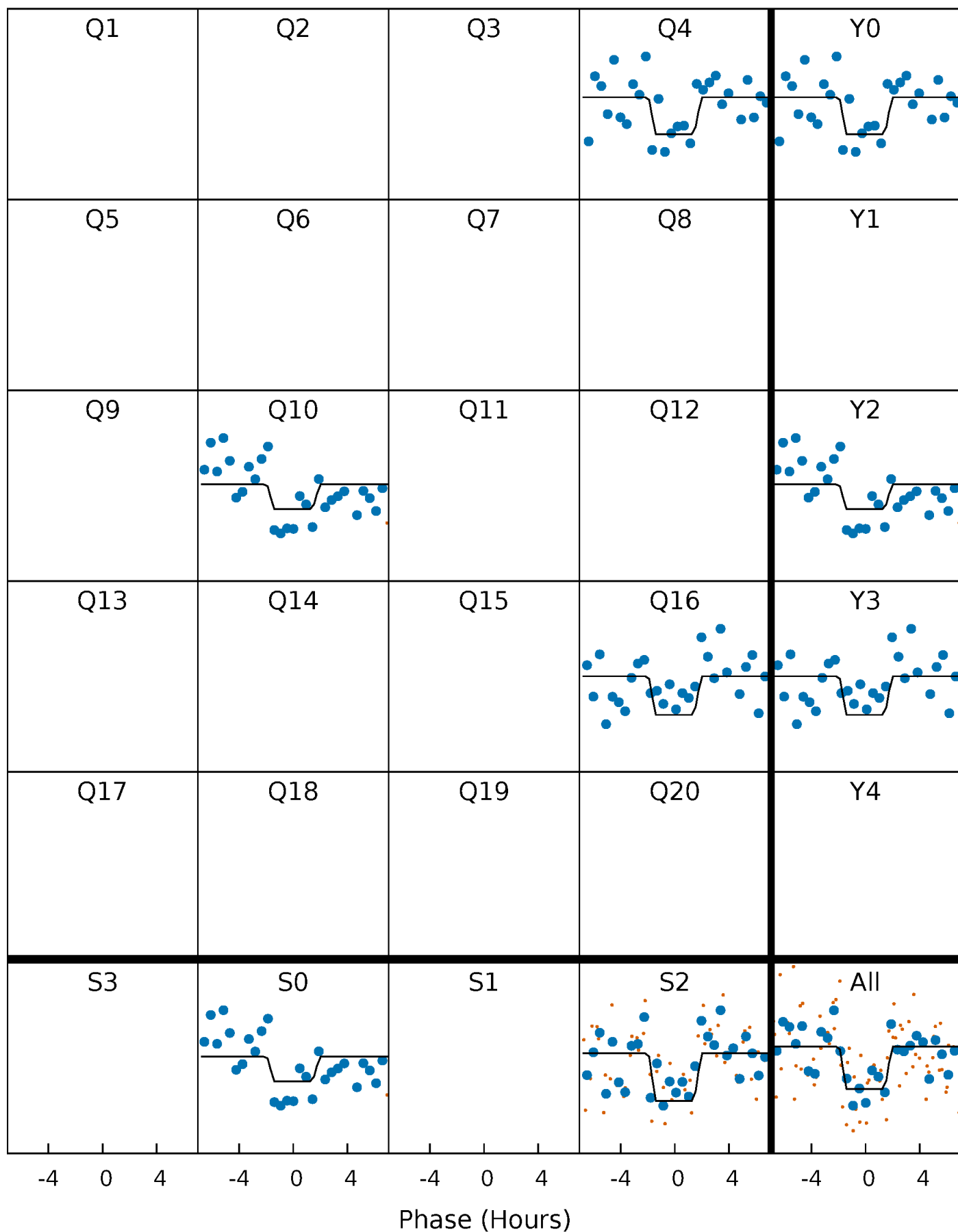
# DV Quarter-Phased Transit Curves

TCE 009971071-01 P=580.580080 Days  $T_0=376.611540$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

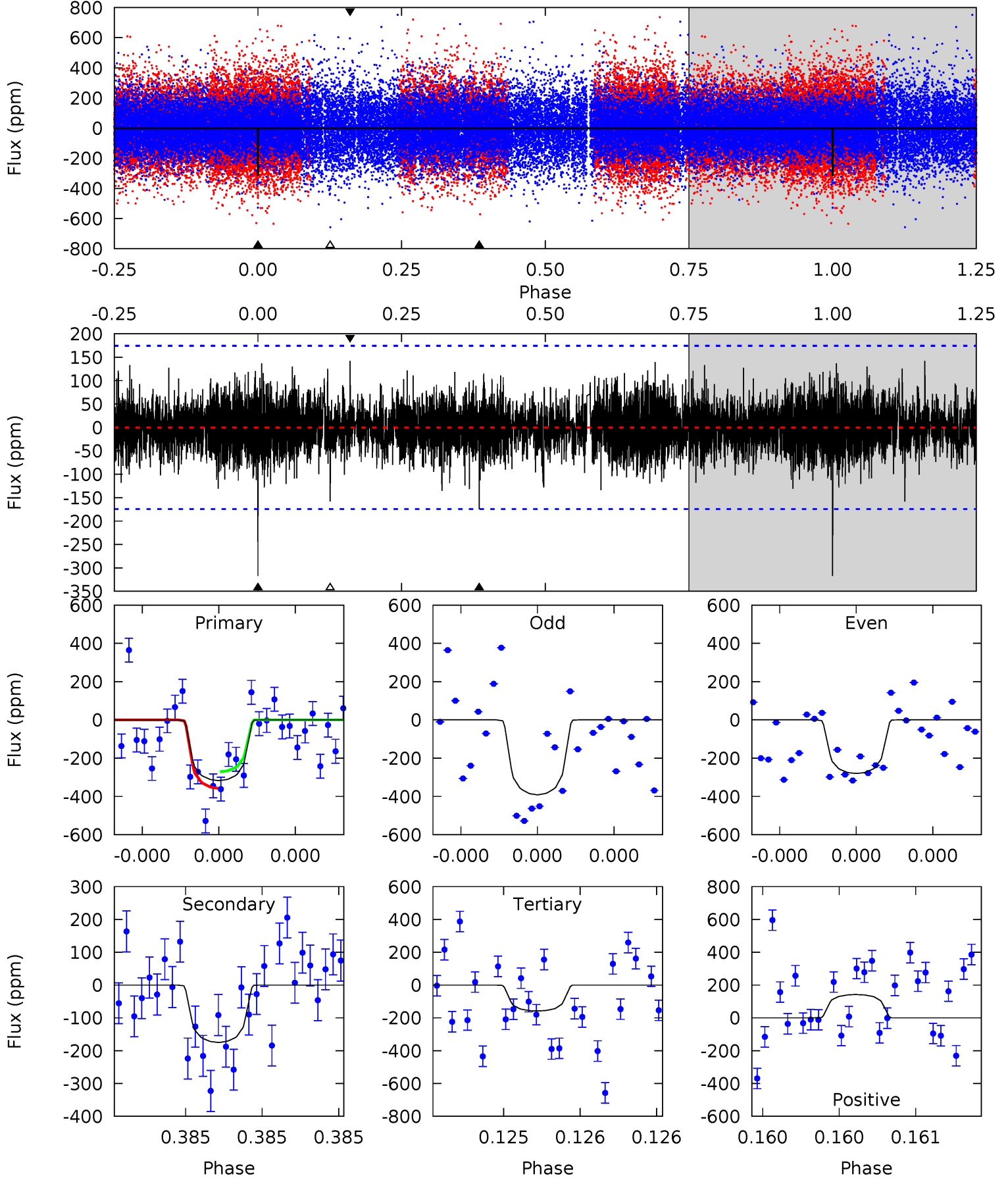
TCE 009971071-01 P=580.571929 Days  $T_0=376.620287$  (BKJD)



# DV Model-Shift Uniqueness Test

009971071-01, P = 580.580080 Days, E = 376.611540 Days

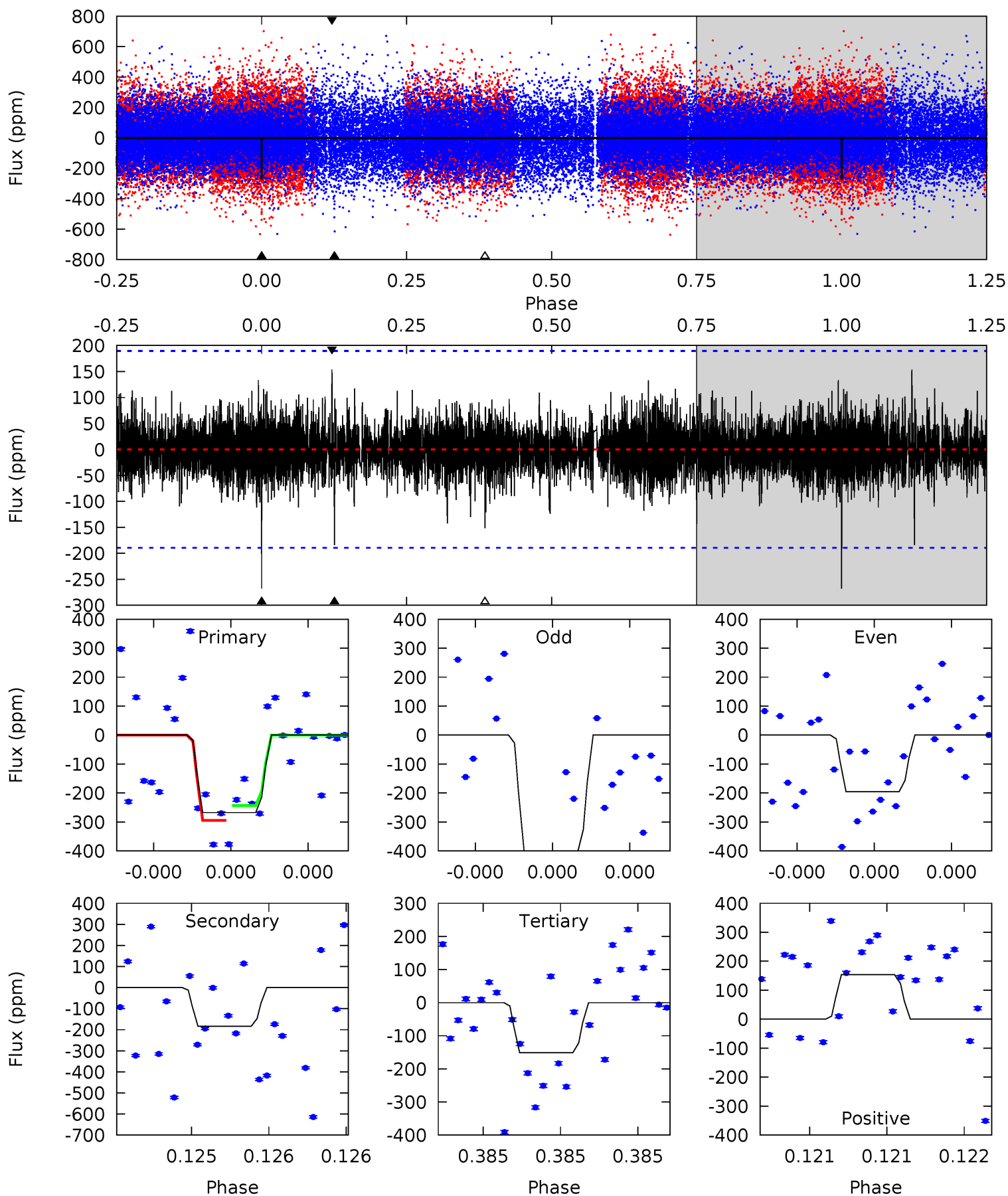
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	5.66	5.12	4.60	5.65	3.60	1.19	5.14	5.66	0.54	1.06	1.74	0.95	0.31	1.40



# Alt Model-Shift Uniqueness Test

009971071-01, P = 580.571929 Days, E = 376.620287 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
8.02	5.51	4.54	4.61	5.68	3.64	1.03	3.48	3.41	0.97	0.90	2.97	1.08	0.37	0.77



### Stellar Parameters For KIC 009971071

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5543^{+166}_{-149}$	$4.143^{+0.351}_{-0.189}$	$-0.060^{+0.300}_{-0.250}$	$1.323^{+0.376}_{-0.460}$	$0.888^{+0.111}_{-0.083}$	$0.540^{+1.298}_{-0.260}$
	+3%/-3%	+8%/-5%	+500%/-417%	+28%/-35%	+12%/-9%	+240%/-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 009971071-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-175 \pm 31$	$2.90^{+1.71}_{-1.45}$	$340^{+30}_{-34}$	$4566^{+1697}_{-675}$	$20056^{+58148}_{-12328}$
Alt.	$-184 \pm 33$	$2.35^{+1.72}_{-1.37}$	$342^{+28}_{-33}$	$5001^{+2610}_{-889}$	$30930^{+147317}_{-20016}$

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

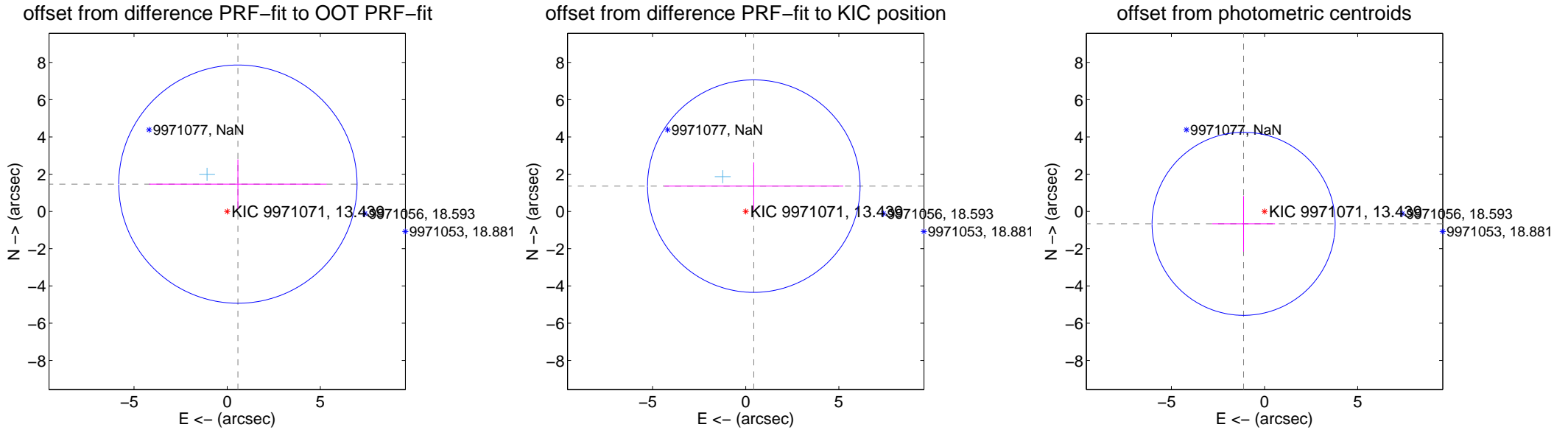
## DV Centroid Data

Supplemental centroid analysis for 009971071-01. Kepler magnitude: 13.44. Transit SNR 7.32

There are 1 quarters with good PRF difference image offsets

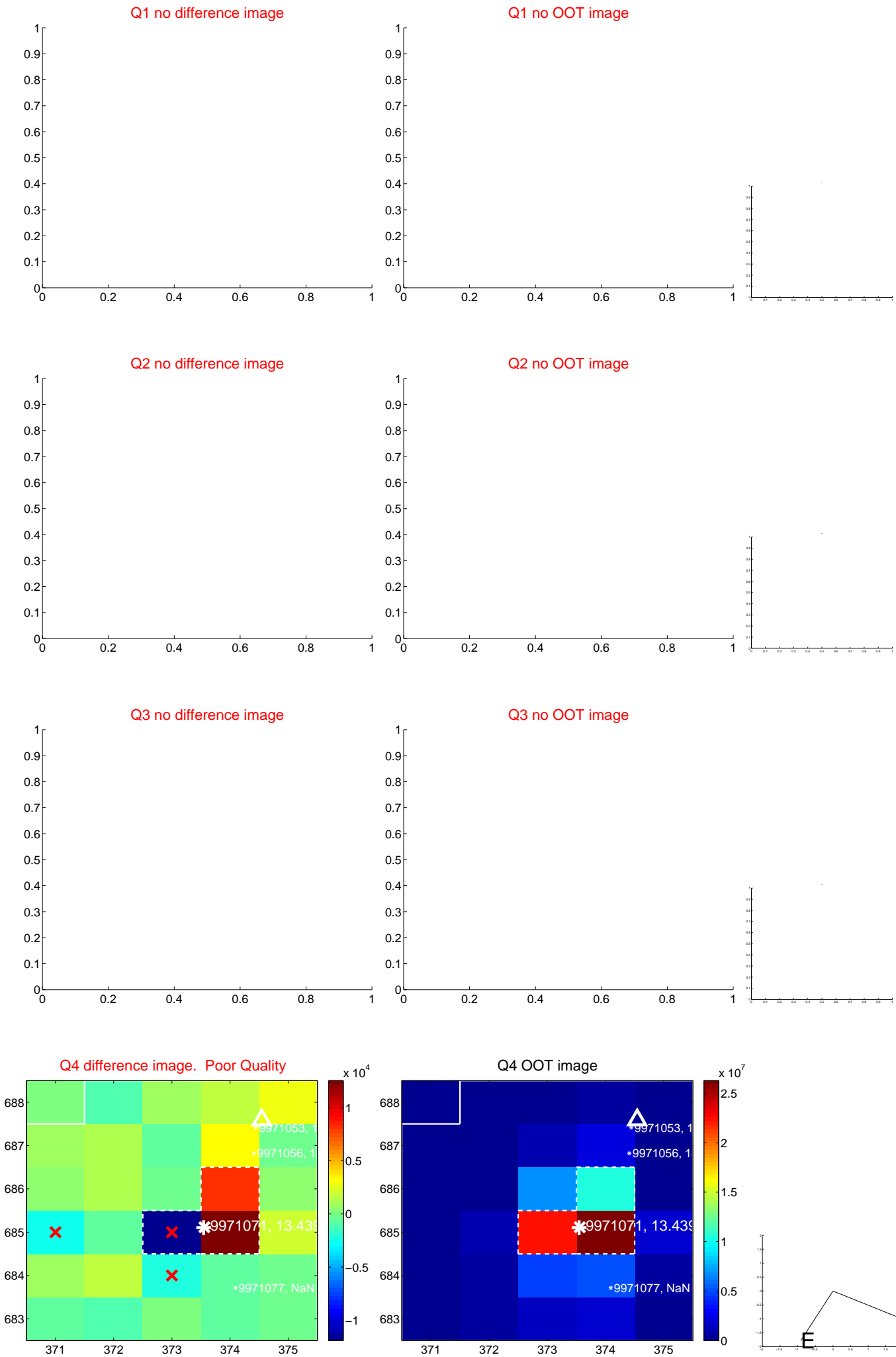
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.575 \pm 2.132$	0.74	$-0.576 \pm 4.759$	$1.466 \pm 1.322$
PRF-fit source offset from KIC position	$1.427 \pm 1.901$	0.75	$-0.434 \pm 4.800$	$1.359 \pm 1.278$
photometric centroid source offset	$1.31 \pm 1.64$	0.80	$1.12 \pm 1.69$	$-0.66 \pm 1.49$



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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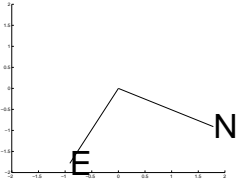
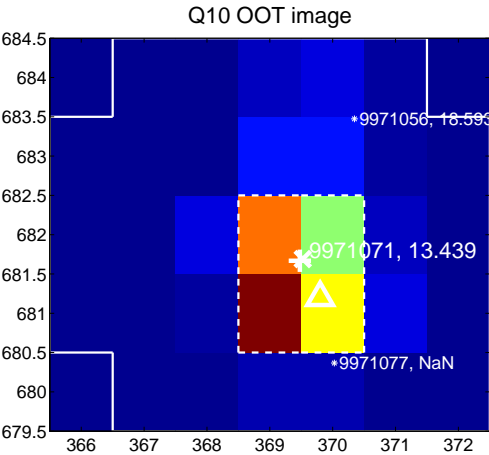
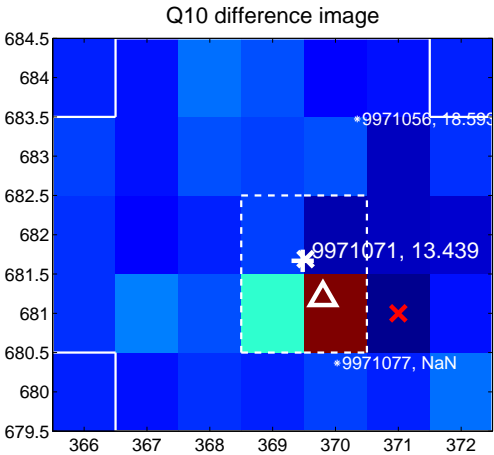


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

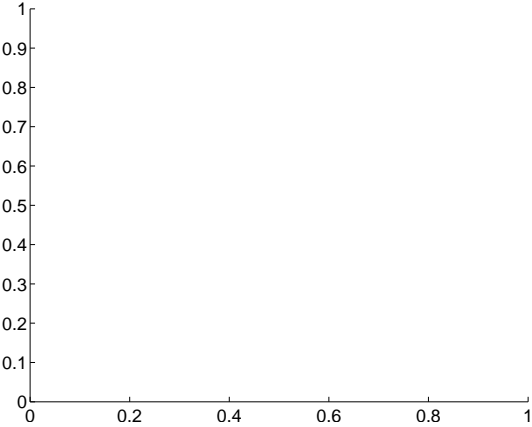
Q9 no difference image



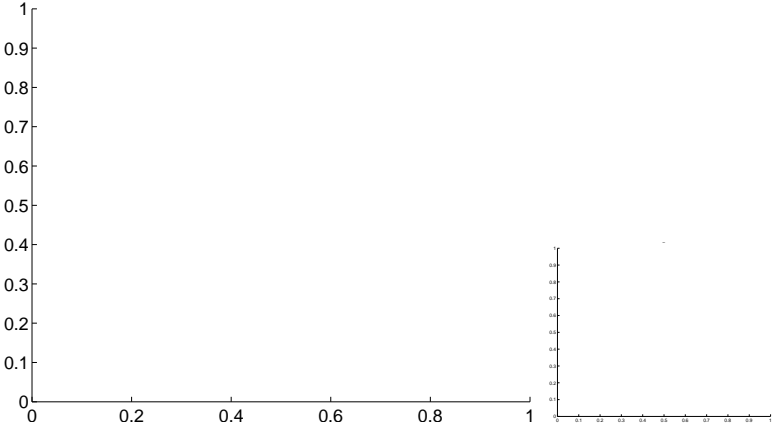
Q9 no OOT image



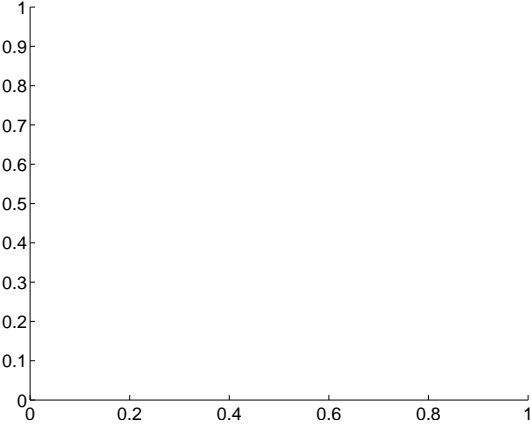
Q11 no difference image



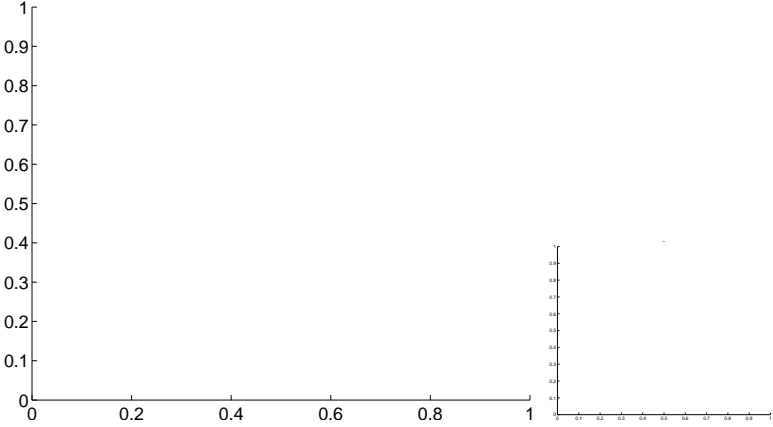
Q11 no OOT image



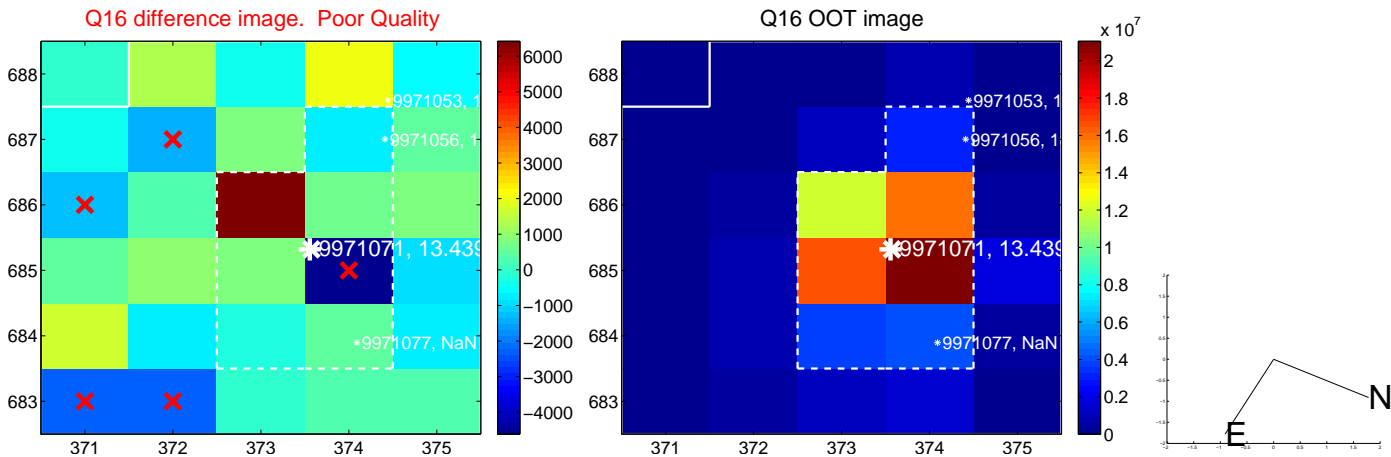
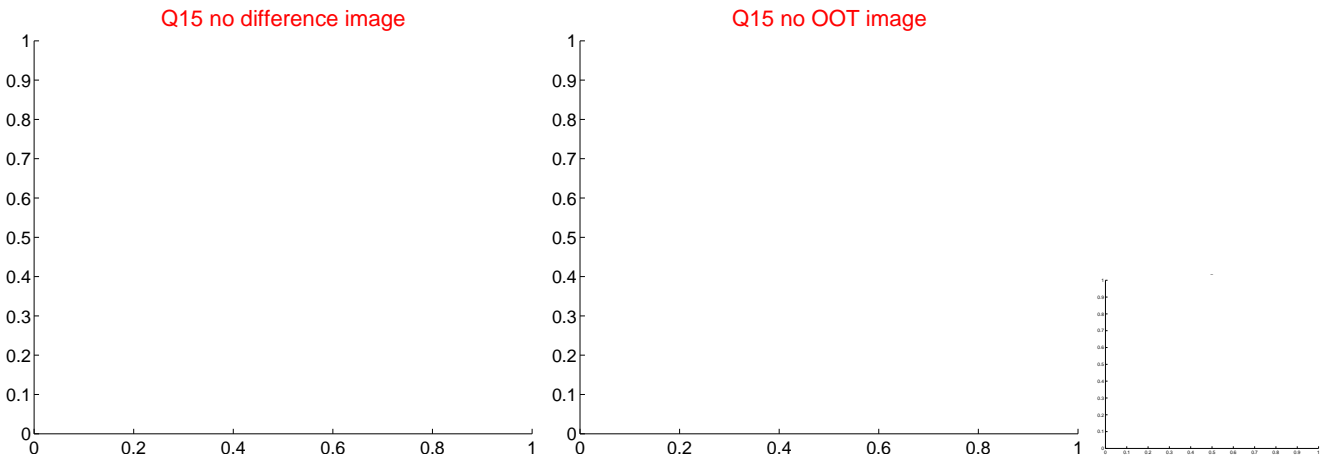
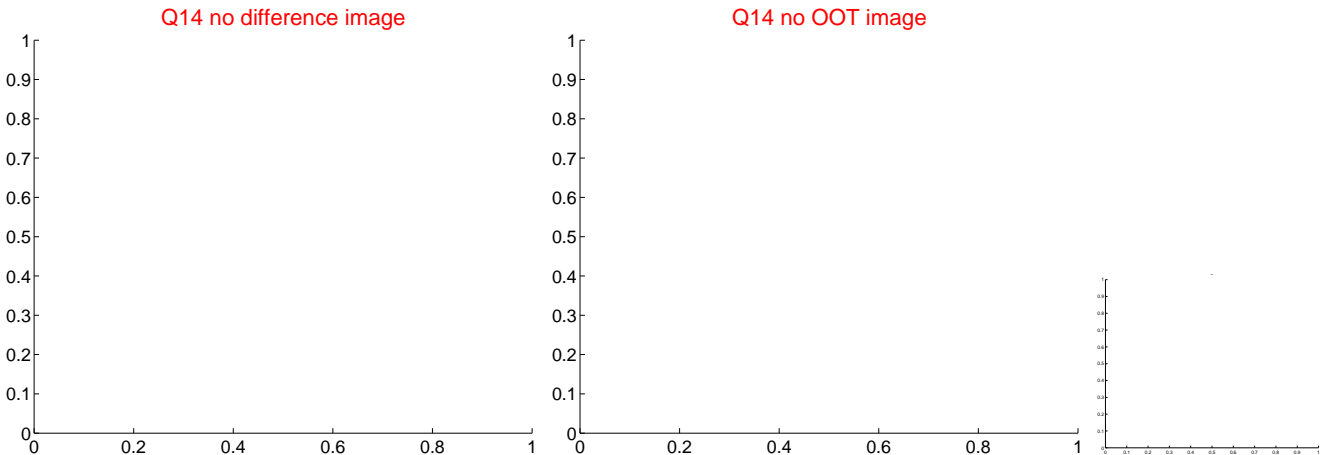
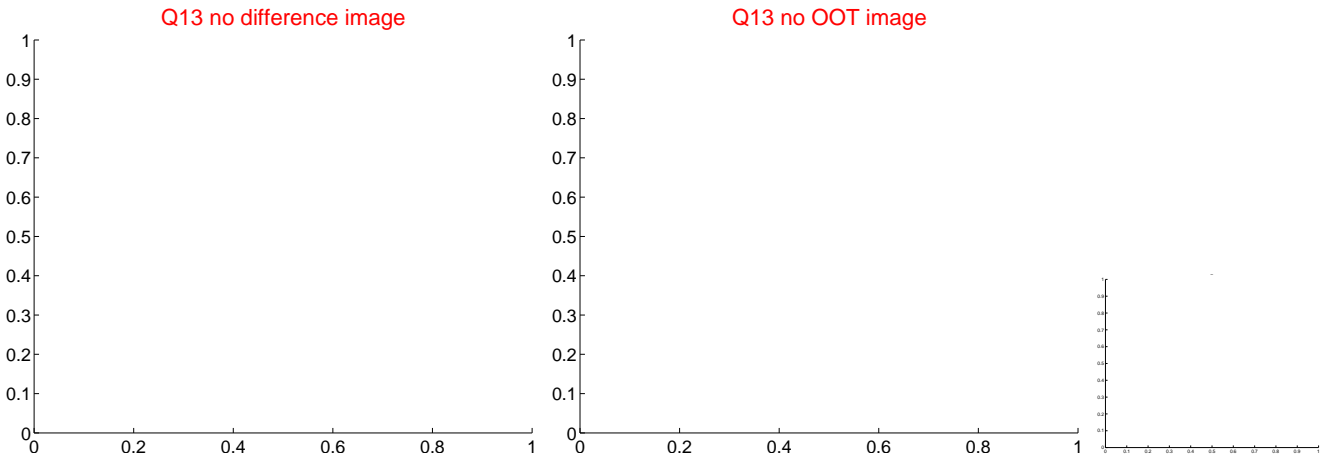
Q12 no difference image



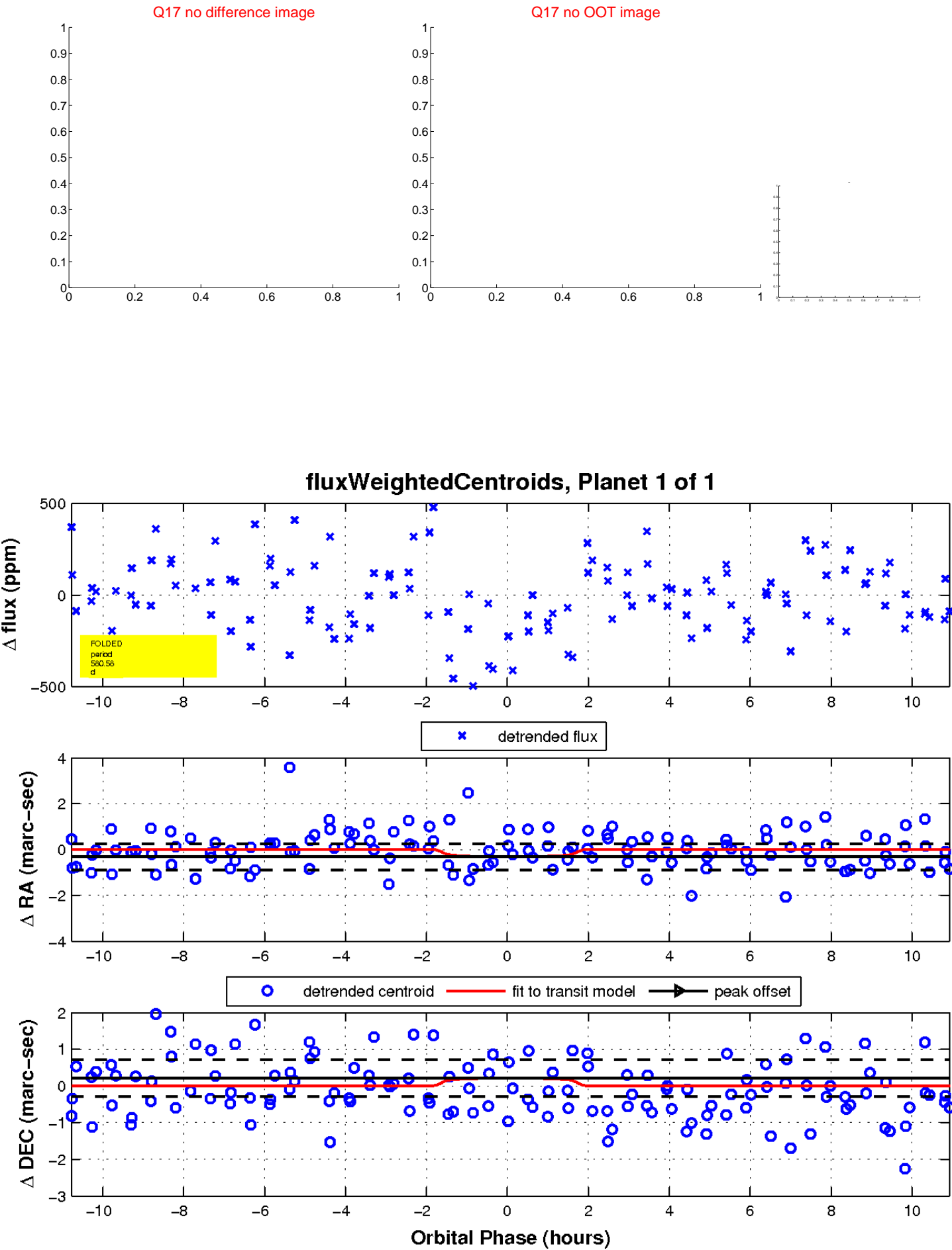
Q12 no OOT image



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.



UKIRT Image

Declination

