

# KIC 008107473

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008107473-01	OBS	No	369.030982	232.889712	597.6	20.766	8.2	9.8	1.01	6166	3.02	1.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008107473-01	OBS	FP	0.00	1	0	1	1	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—CENT_FEW_DIFFS—HALO_GHOST—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.

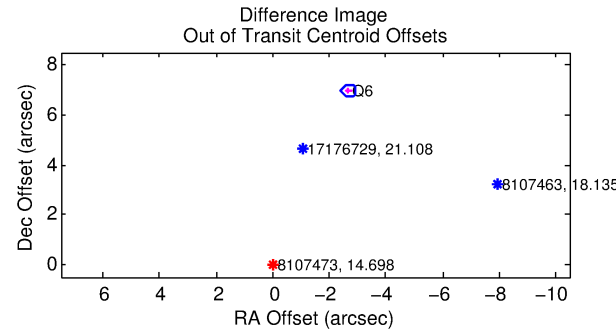
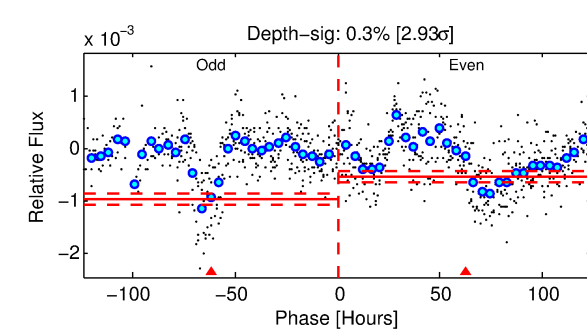
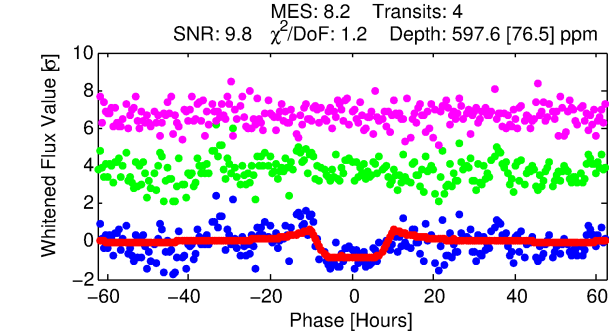
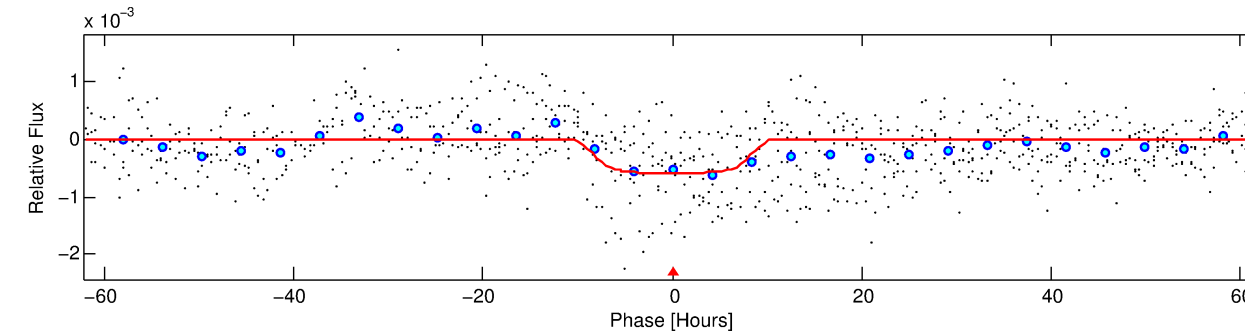
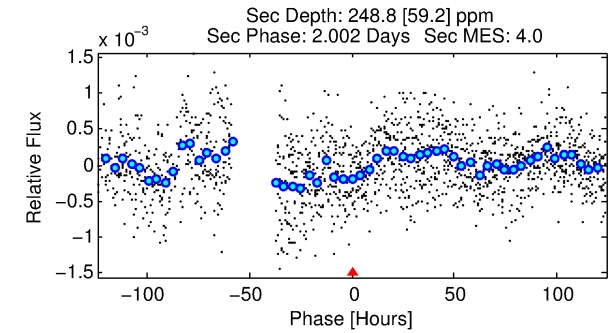
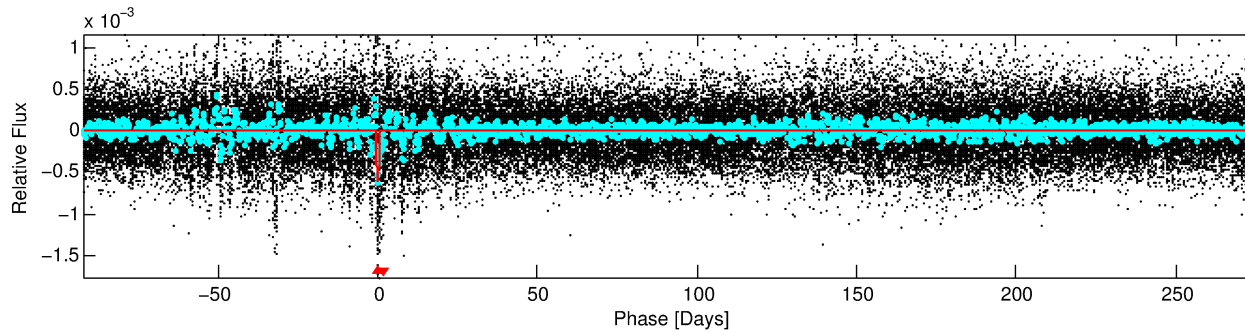
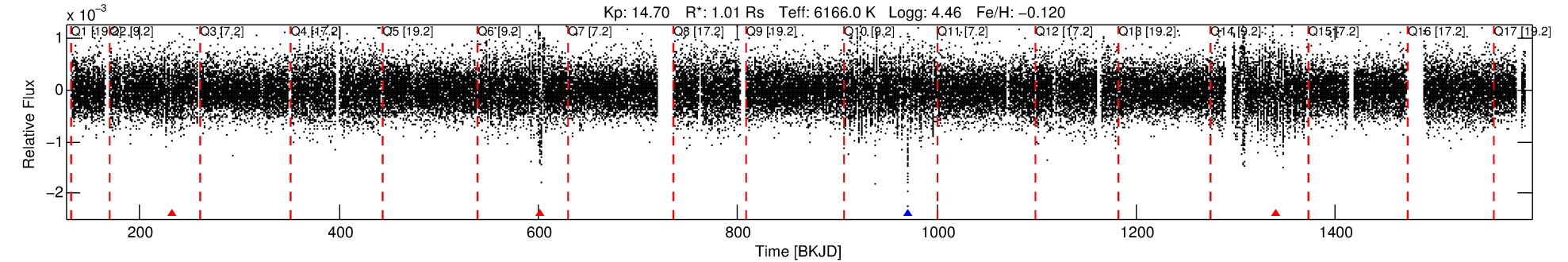
## Ephemeris Match Information For 008107473-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\prime$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008107473-01	8107473	007968859-01	7968859	1:1	1004.6	252	5	14.55	14.69	0.96	Col-Anomaly	1	3.19	0.54

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 8107473 Candidate: 1 of 1 Period: 369.031 d



## DV Fit Results:

Period = 369.03098 [0.01553] d  
Epoch = 232.8897 [0.0277] BKJD  
Rp/R\* = 0.0275 [0.0023]  
a/R\* = 56.55 [12.06]  
b = 0.94 [0.03]  
Seff = 1.23 [0.51]  
Teq = 269 [28] K  
Rp = 3.02 [1.00] Re  
a = 1.0322 [0.2732] AU  
Ag = 15946.88 [7577.65] [2.10σ]  
Teffp = 4668 [390] K [11.26σ]

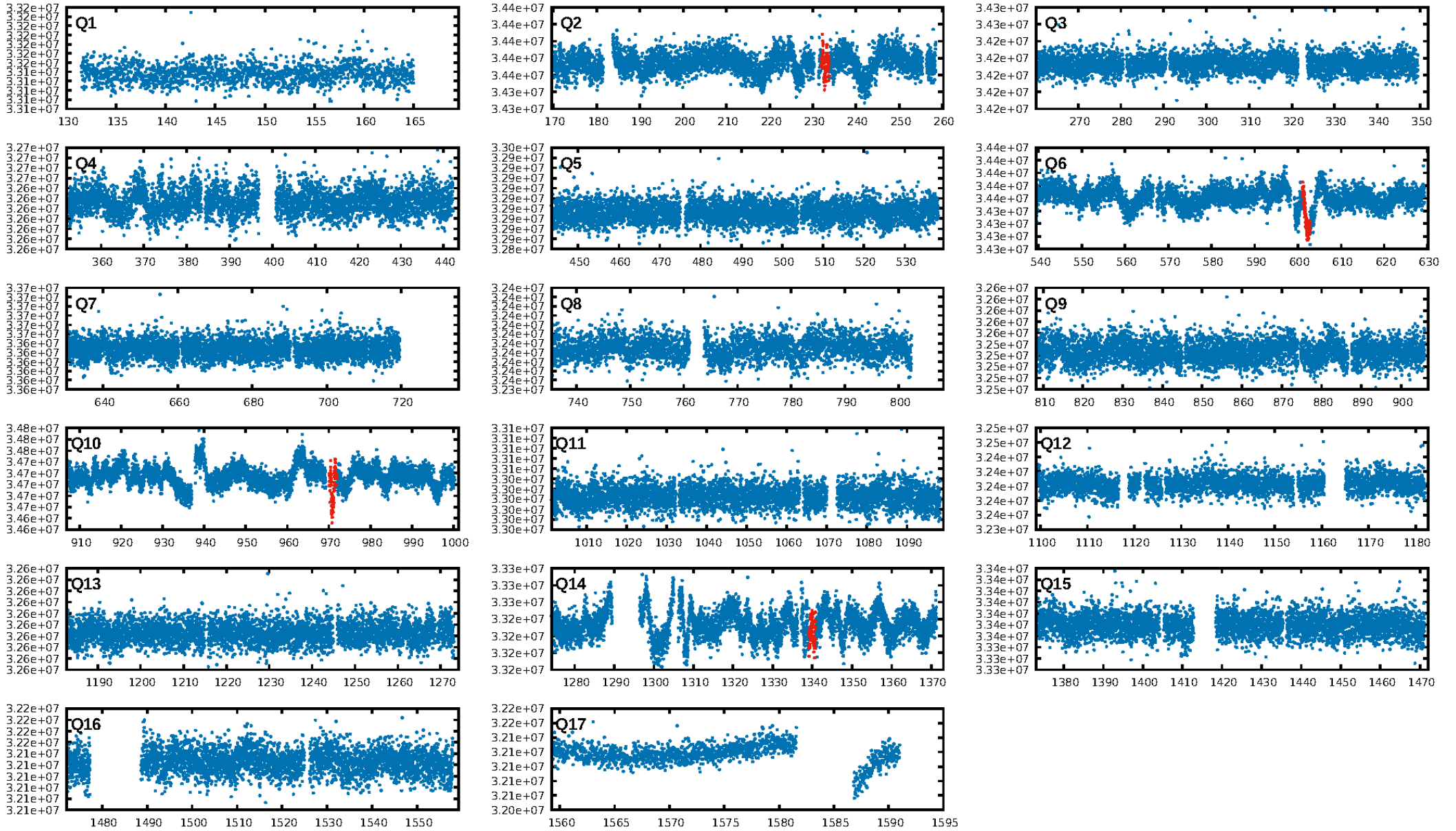
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 75.9%  
Bootstrap-pfa: 9.68e-11  
RollingBand-figt: 0.25 [1/4]  
GhostDiagnostic-chr: -0.1078  
Centroid-sig: 54.0%  
Centroid-so: 1.193 arcsec [0.78σ]  
OotOffset-rm: 7.464 arcsec [88.50σ]  
KicOffset-rm: 7.026 arcsec [83.31σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

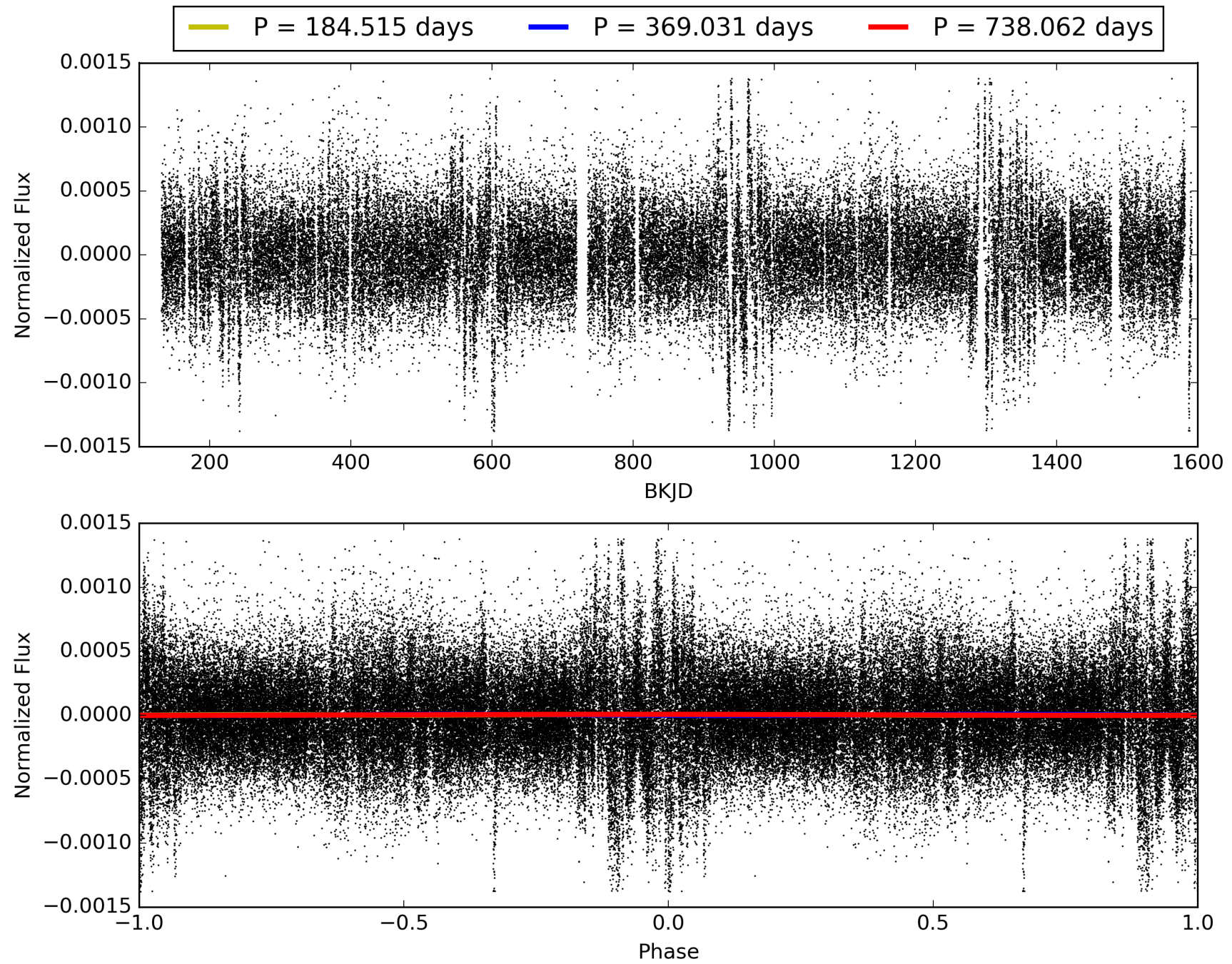
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:39:15 Z

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

# TCE 008107473-01, PDC Light Curves

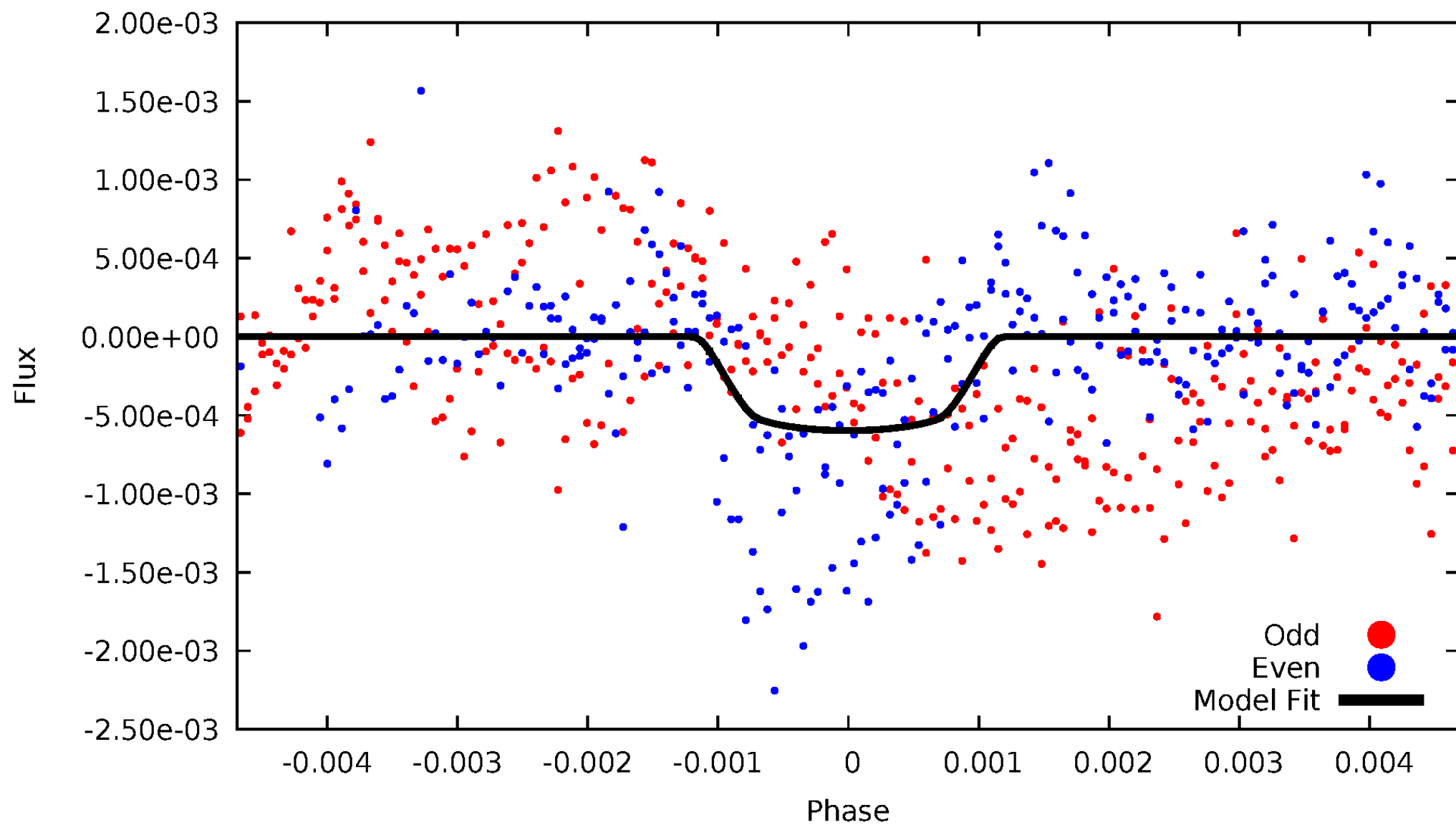


TCE 008107473-01



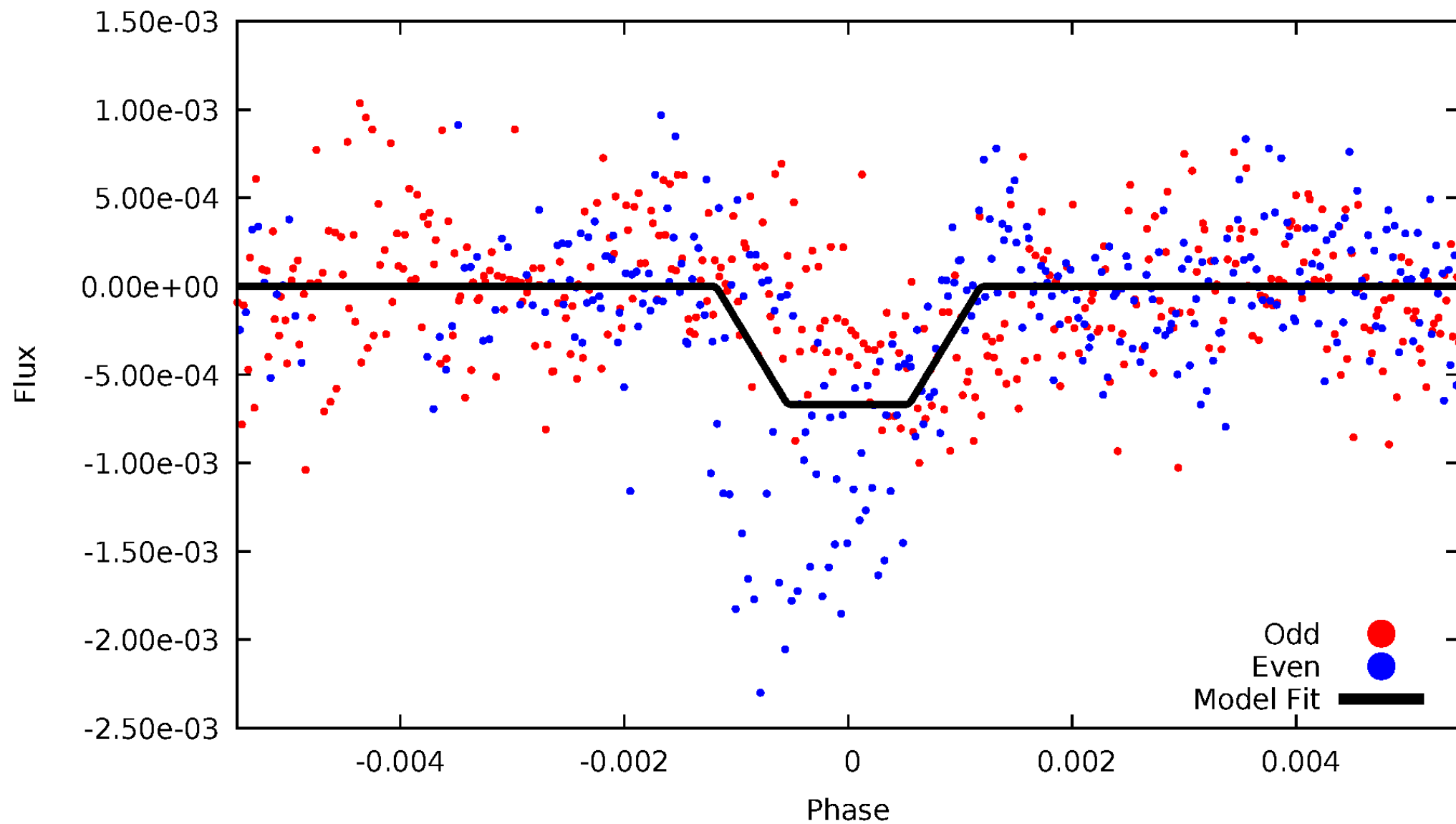
# DV Odd/Even

TCE 008107473-01



# ALT Odd/Even

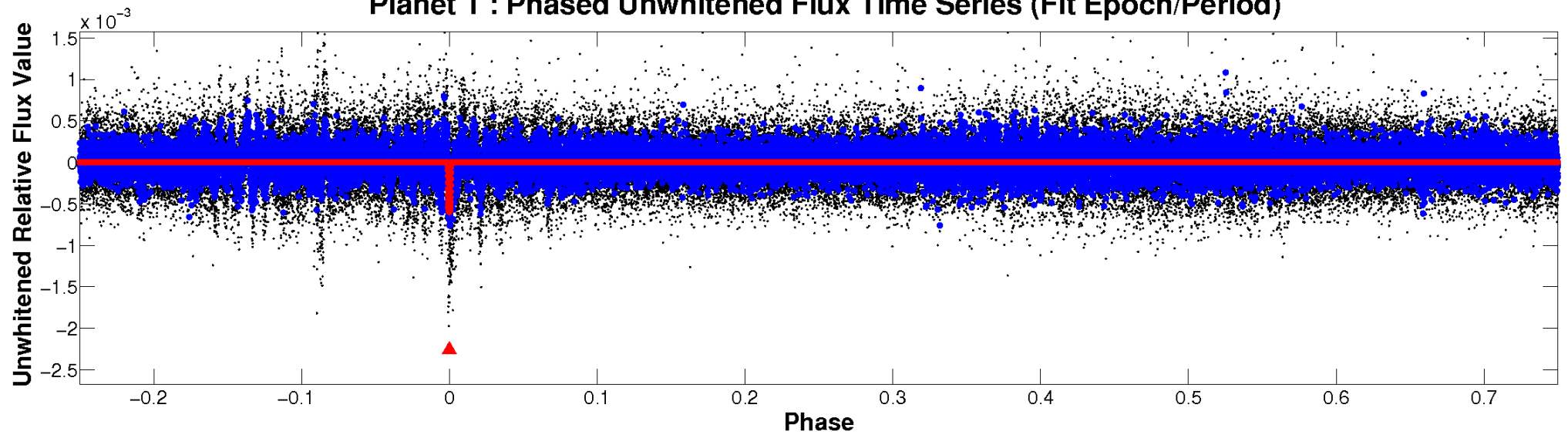
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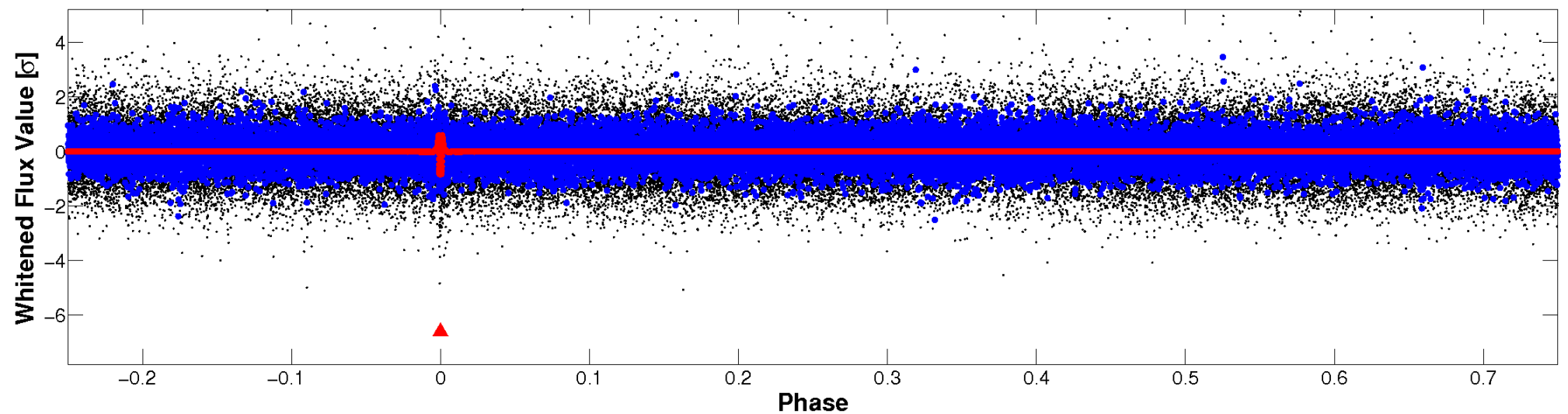


# Non-Whitened Vs. Whitened Light Curve

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

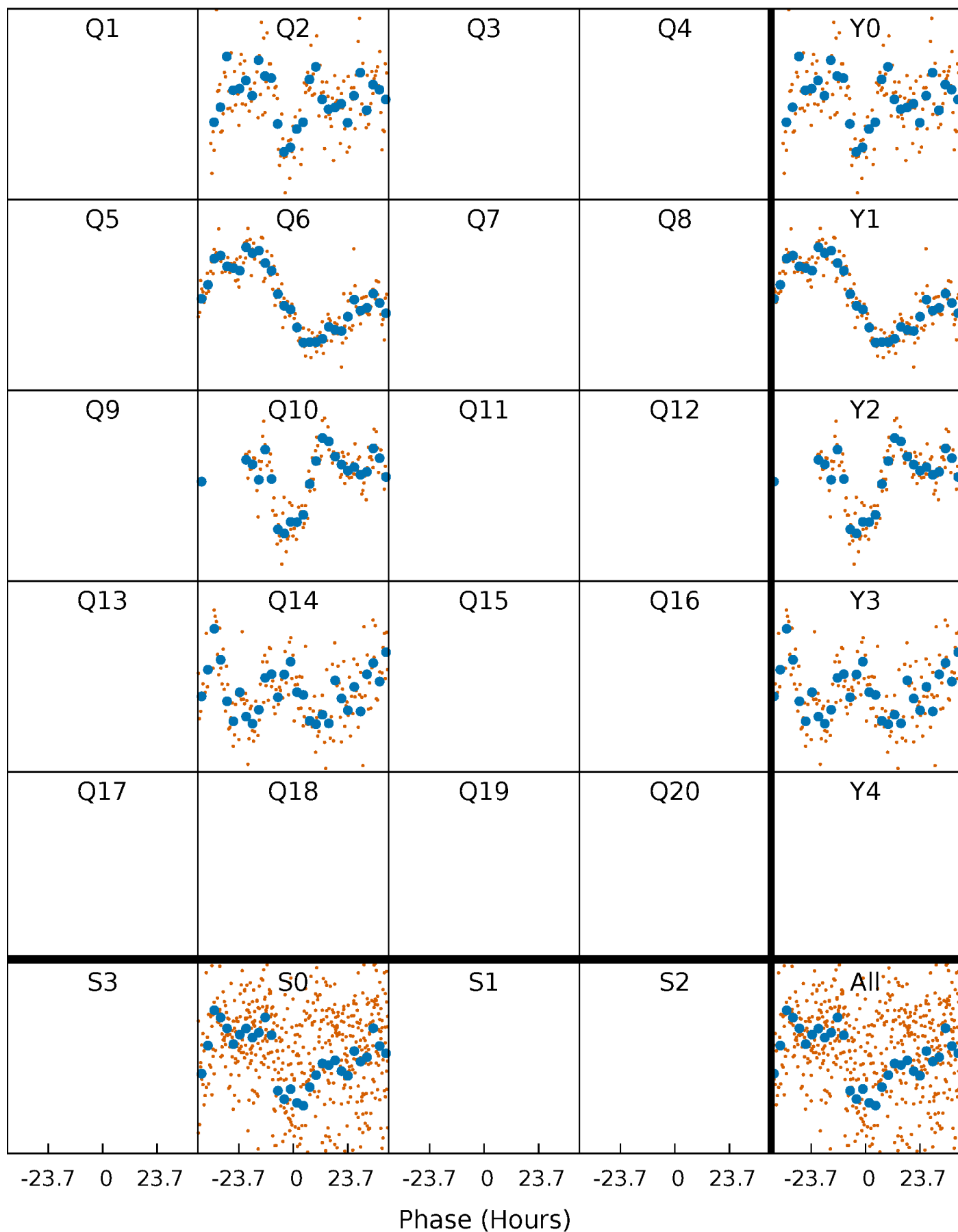


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

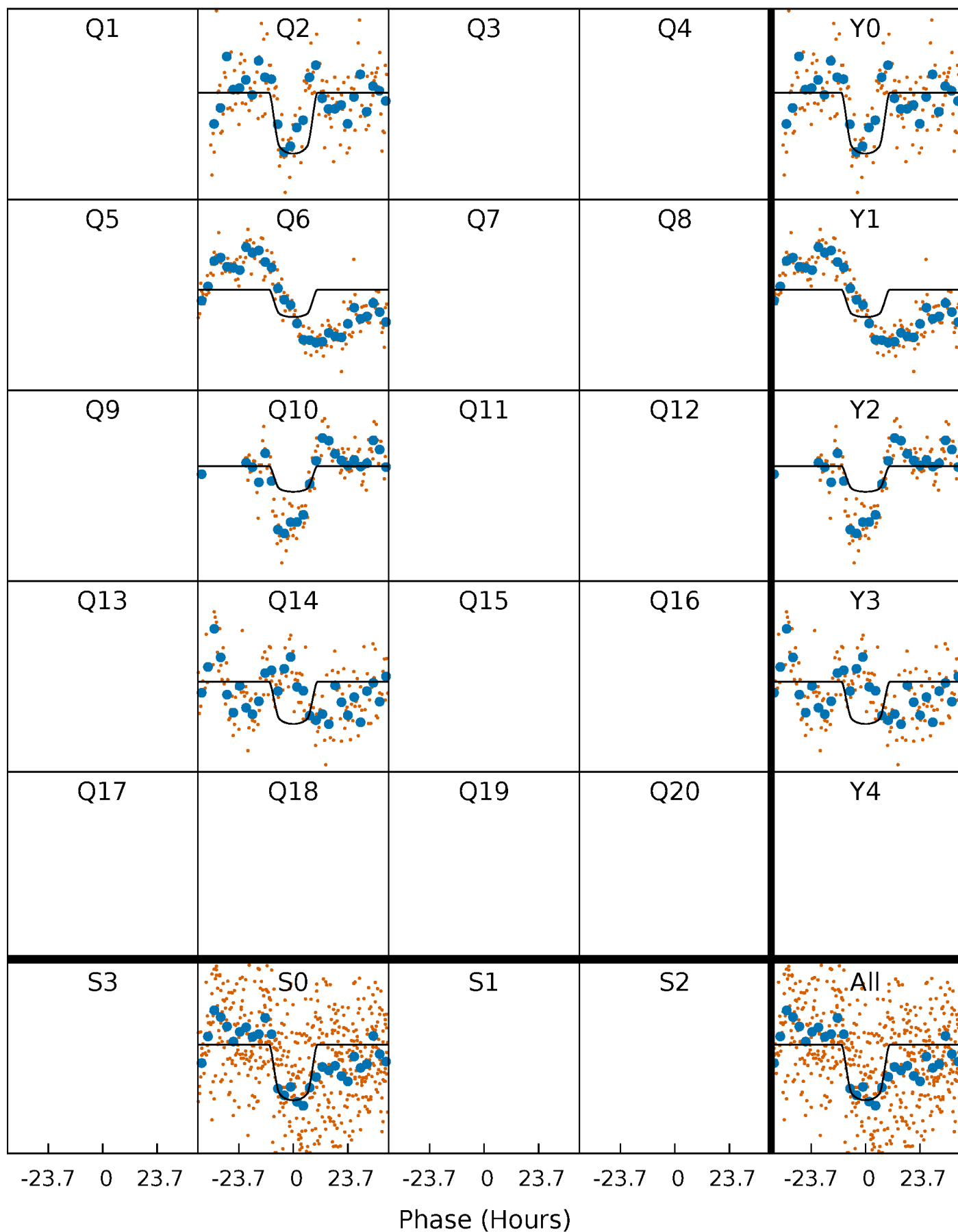
TCE 008107473-01 P=369.030982 Days  $T_0=232.889712$  (BKJD)





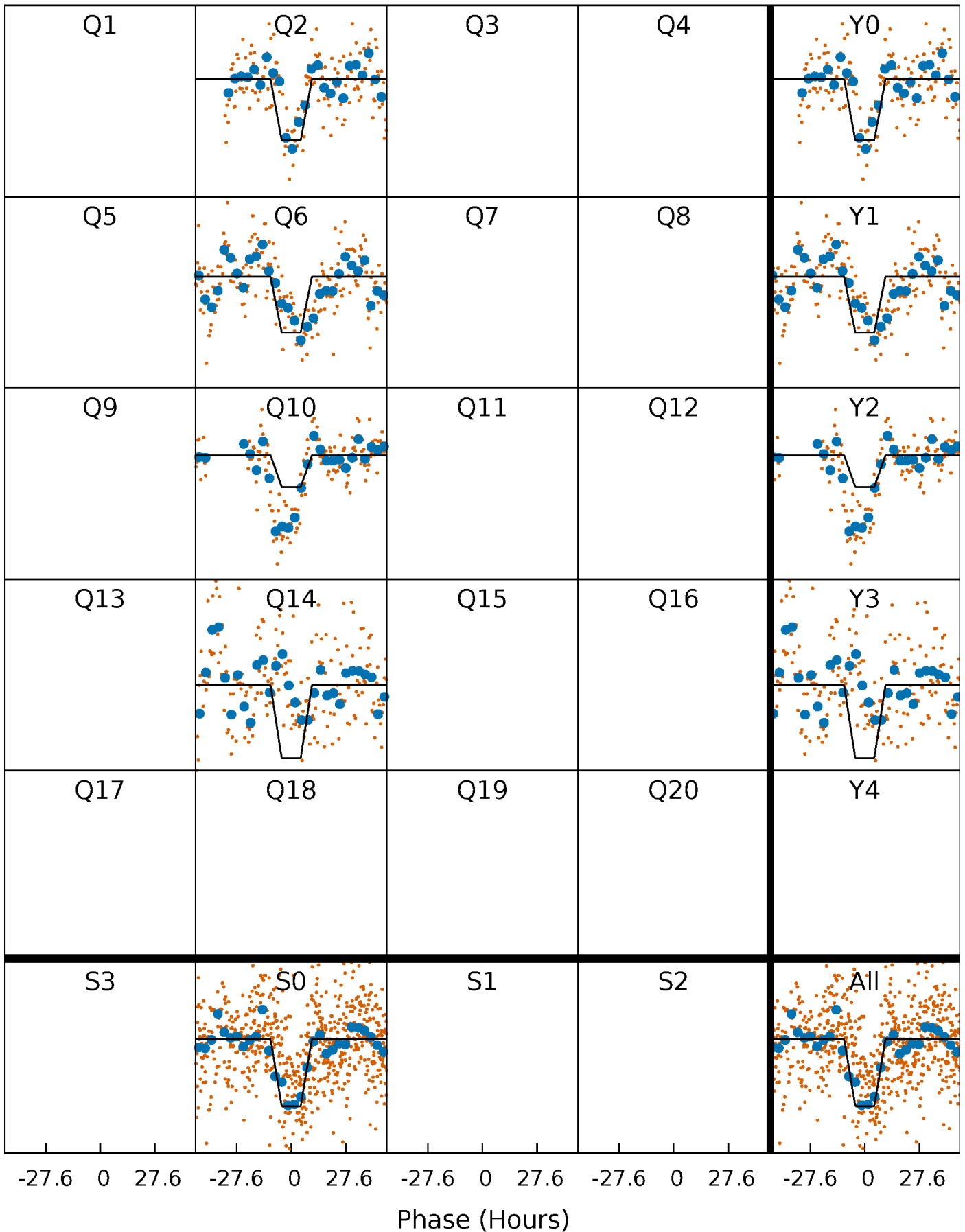
# DV Quarter-Phased Transit Curves

TCE 008107473-01 P=369.030982 Days  $T_0=232.889712$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

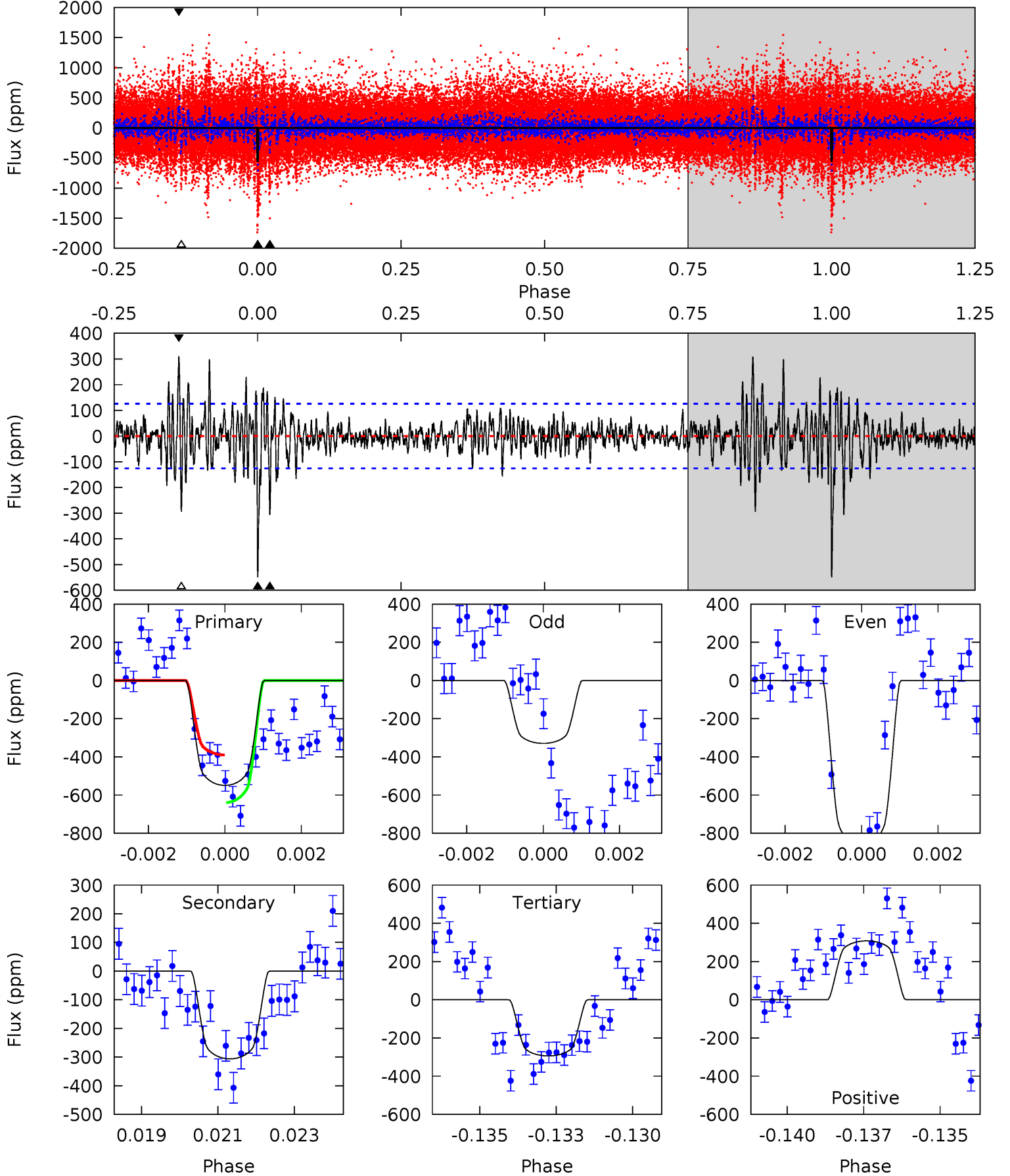
TCE 008107473-01 P=369.125450 Days  $T_0=232.781343$  (BKJD)



# DV Model-Shift Uniqueness Test

008107473-01, P = 369.030982 Days, E = 232.889712 Days

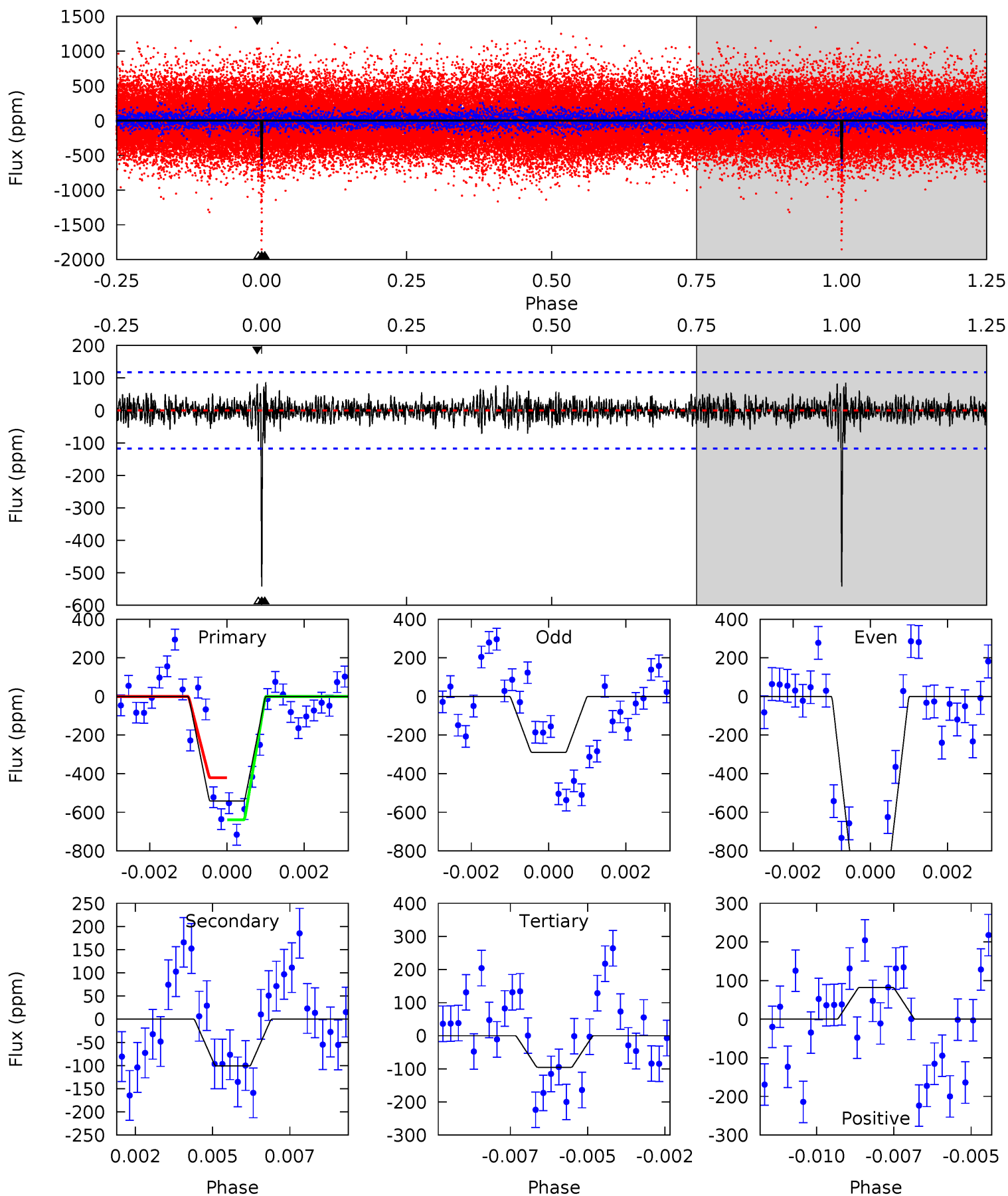
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	12.9	12.4	13.0	5.30	3.05	2.43	10.8	10.2	0.51	-0.08	11.5	1.22	0.36	5.20



# Alt Model-Shift Uniqueness Test

008107473-01, P = 369.125450 Days, E = 232.781343 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
24.4	4.54	4.29	3.69	5.30	3.04	0.95	20.1	20.7	0.25	0.85	15.0	1.22	0.14	4.86



### Stellar Parameters For KIC 008107473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6166^{+214}_{-257}$	$4.464^{+0.054}_{-0.202}$	$-0.120^{+0.300}_{-0.300}$	$1.007^{+0.324}_{-0.108}$	$1.077^{+0.151}_{-0.151}$	$1.485^{+0.430}_{-0.794}$
	+3%/-4%	+1%/-5%	+250%/-250%	+32%/-11%	+14%/-14%	+29%/-53%
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 008107473-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-306 \pm 24$	$3.13^{+0.55}_{-0.38}$	$383^{+28}_{-21}$	$4992^{+278}_{-255}$	$17775^{+5092}_{-4614}$
Alt.	$-101 \pm 22$	$2.94^{+0.51}_{-0.38}$	$382^{+28}_{-20}$	$4118^{+244}_{-229}$	$6593^{+2615}_{-2117}$

$T_{max}$  = 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

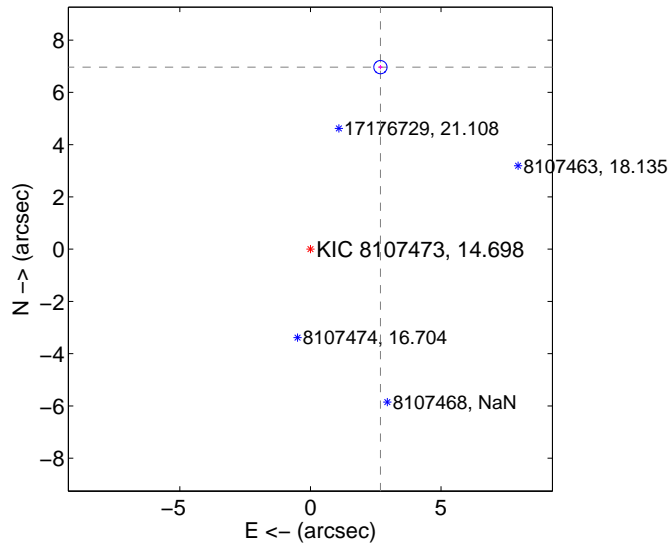
Supplemental centroid analysis for 008107473-01. Kepler magnitude: 14.70. Transit SNR 9.79

There are 0 quarters with good PRF difference image offsets

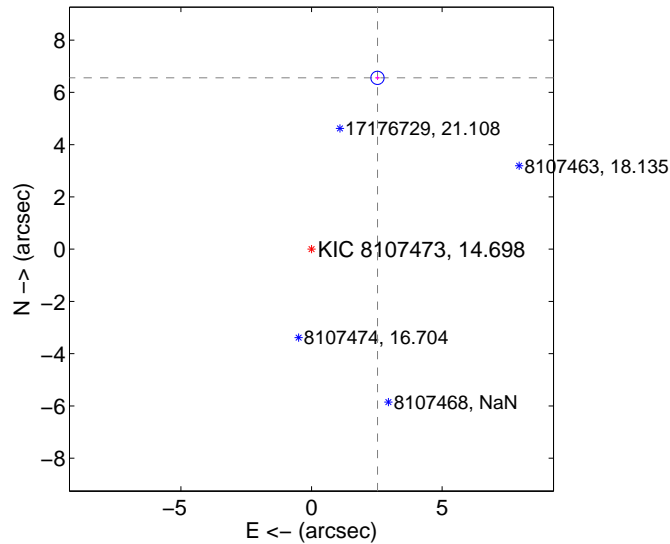
The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	7.464 $\pm$ 0.084	88.50	-2.679 $\pm$ 0.090	6.967 $\pm$ 0.084
PRF-fit source offset from KIC position	7.026 $\pm$ 0.084	83.31	-2.524 $\pm$ 0.090	6.557 $\pm$ 0.084
photometric centroid source offset	1.19 $\pm$ 1.53	0.78	1.00 $\pm$ 1.44	-0.65 $\pm$ 1.71

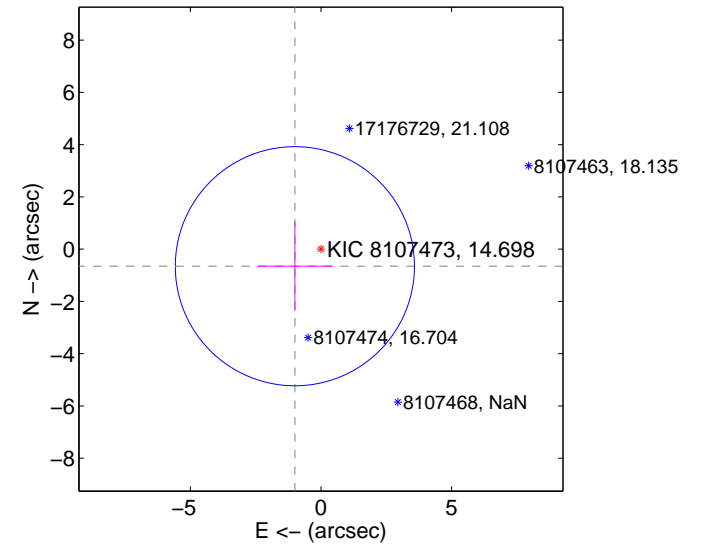
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



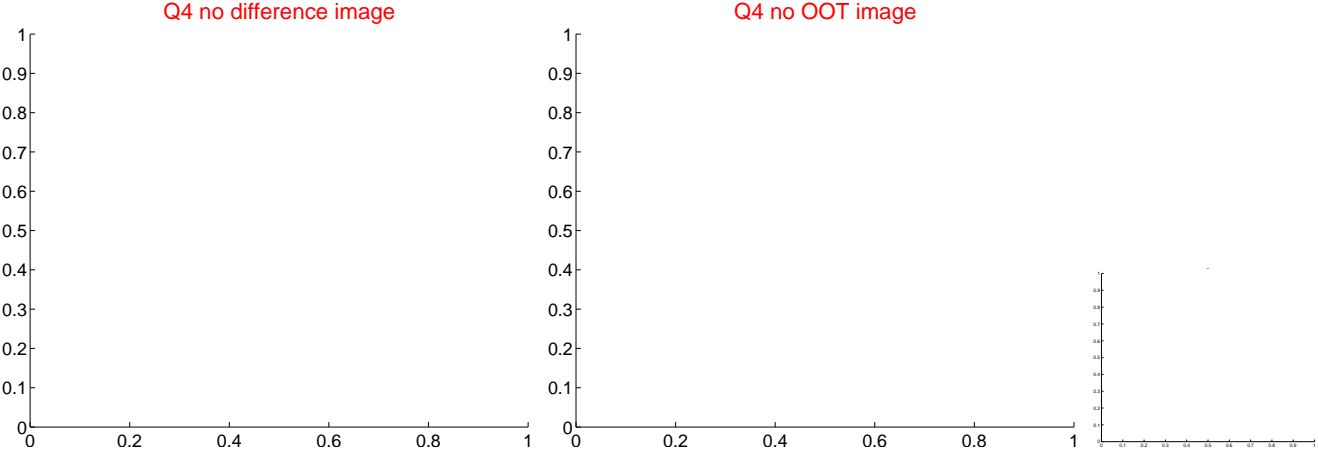
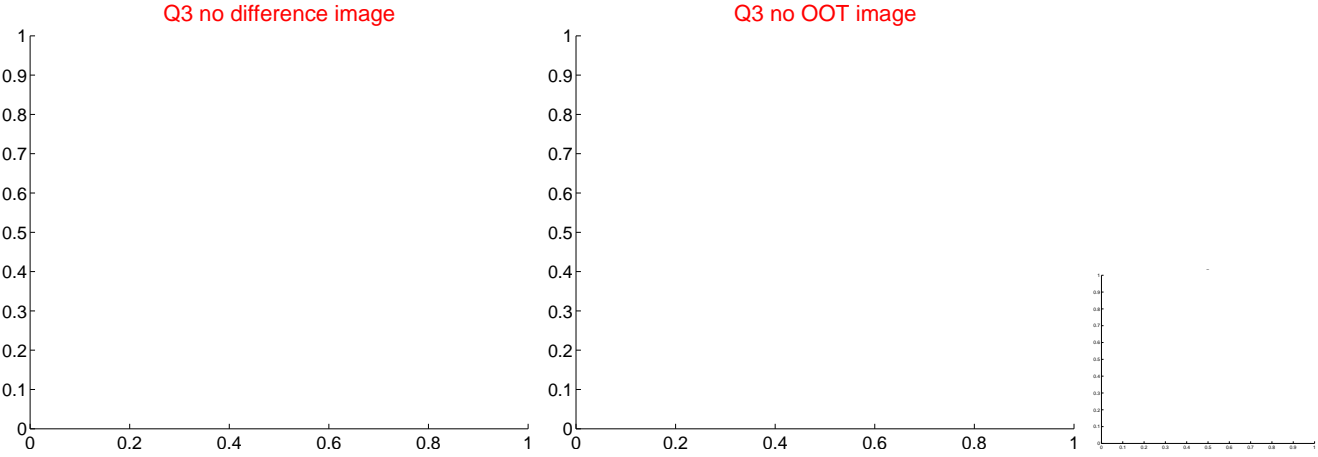
offset from photometric centroids



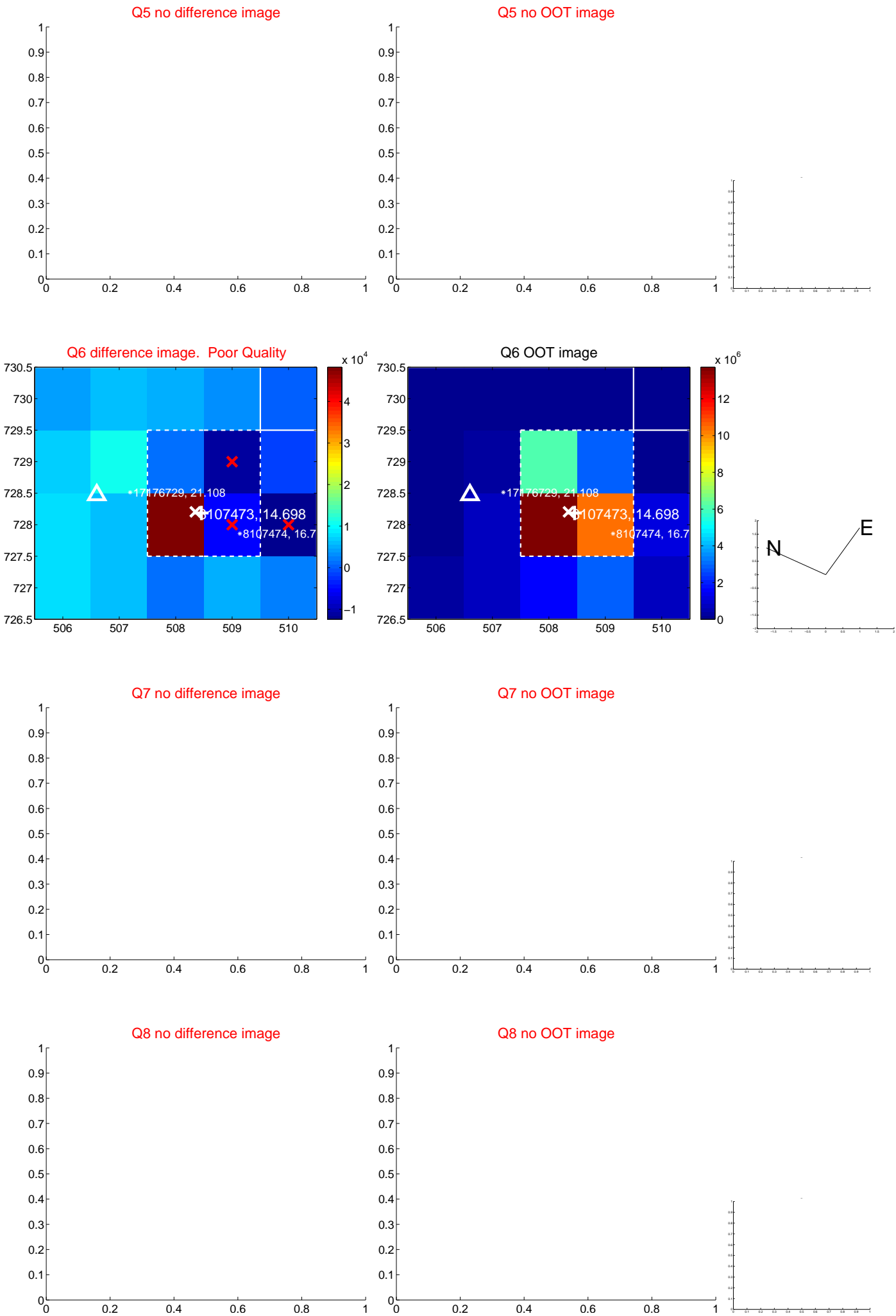
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



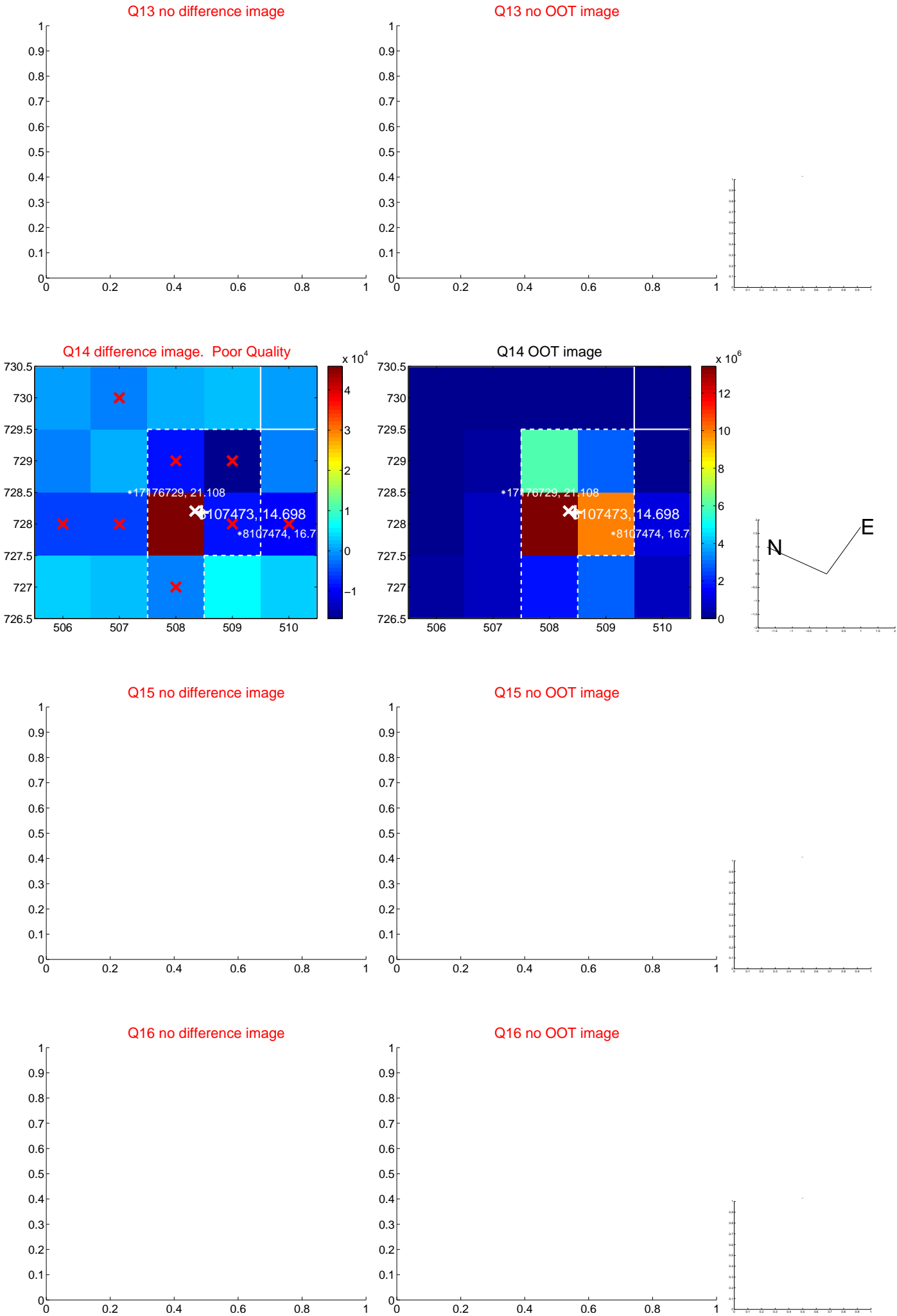
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



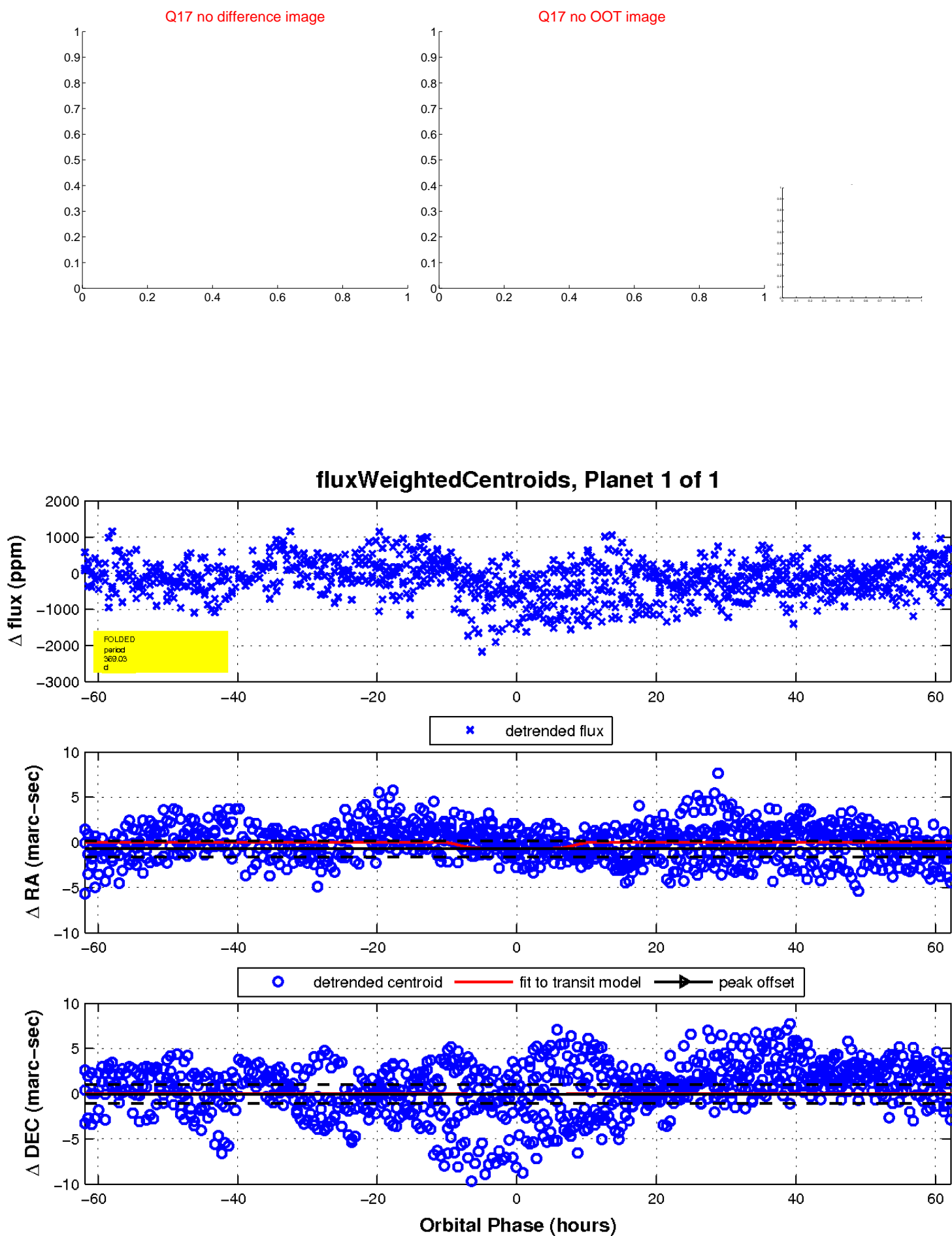
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

