

# KIC 009107951

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009107951-01	OBS	No	367.596301	175.837155	581.7	16.273	8.1	7.2	0.48	4531	1.22	0.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009107951-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE--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.

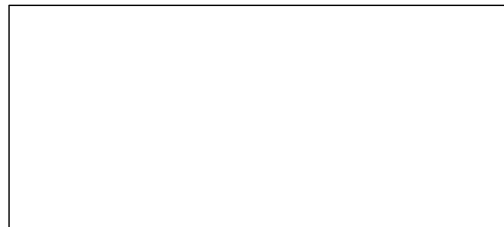
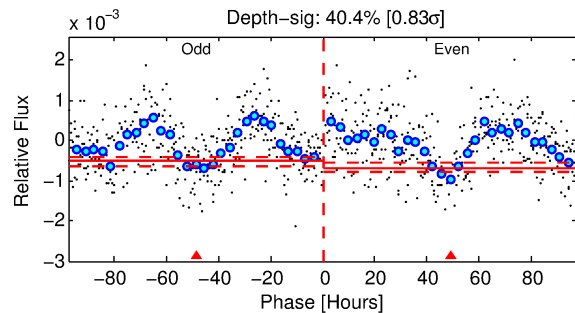
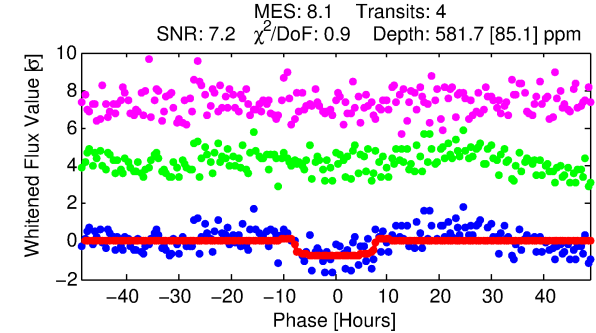
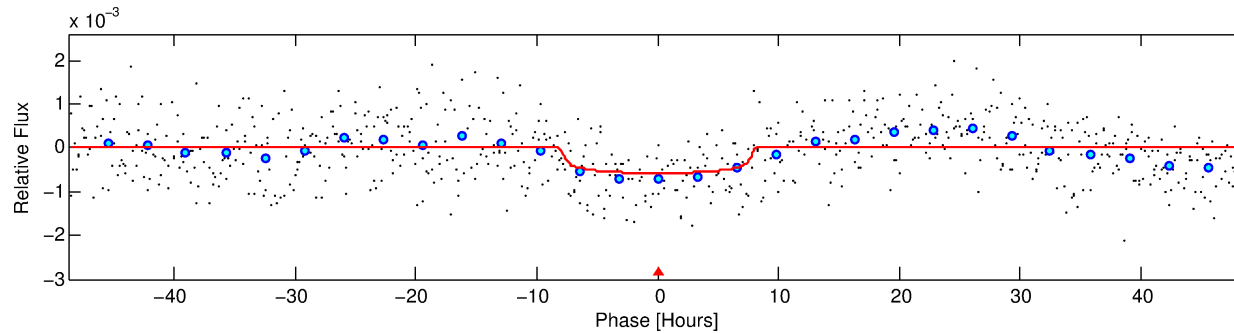
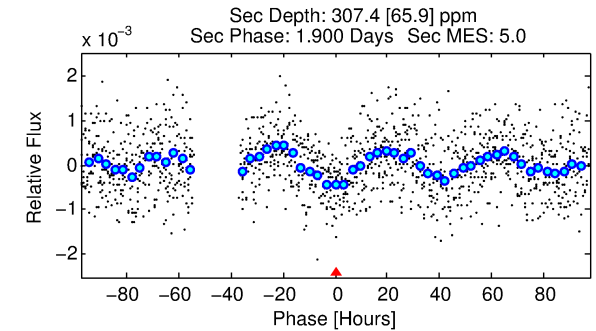
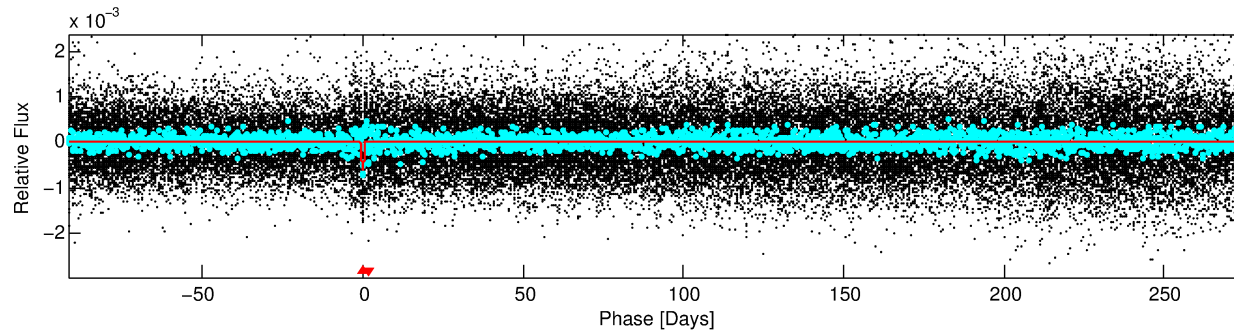
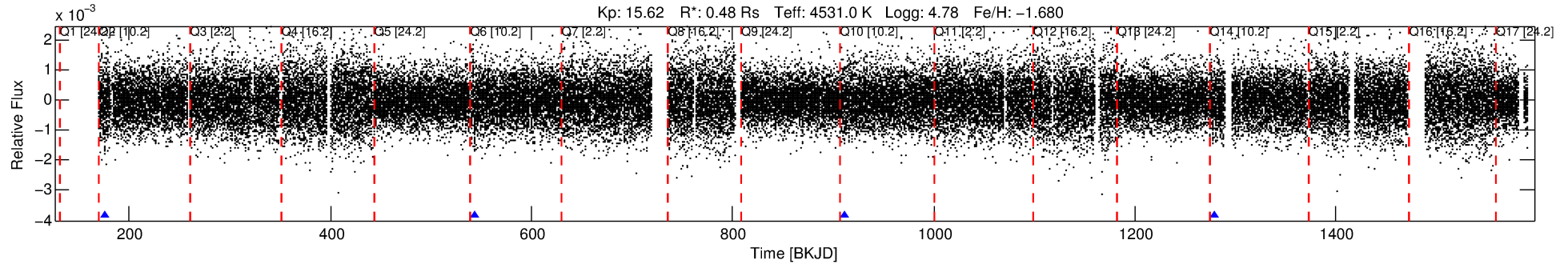
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009107951-01

No Significant Match Found

# DV One-Page Summary

KIC: 9107951 Candidate: 1 of 1 Period: 367.596 d



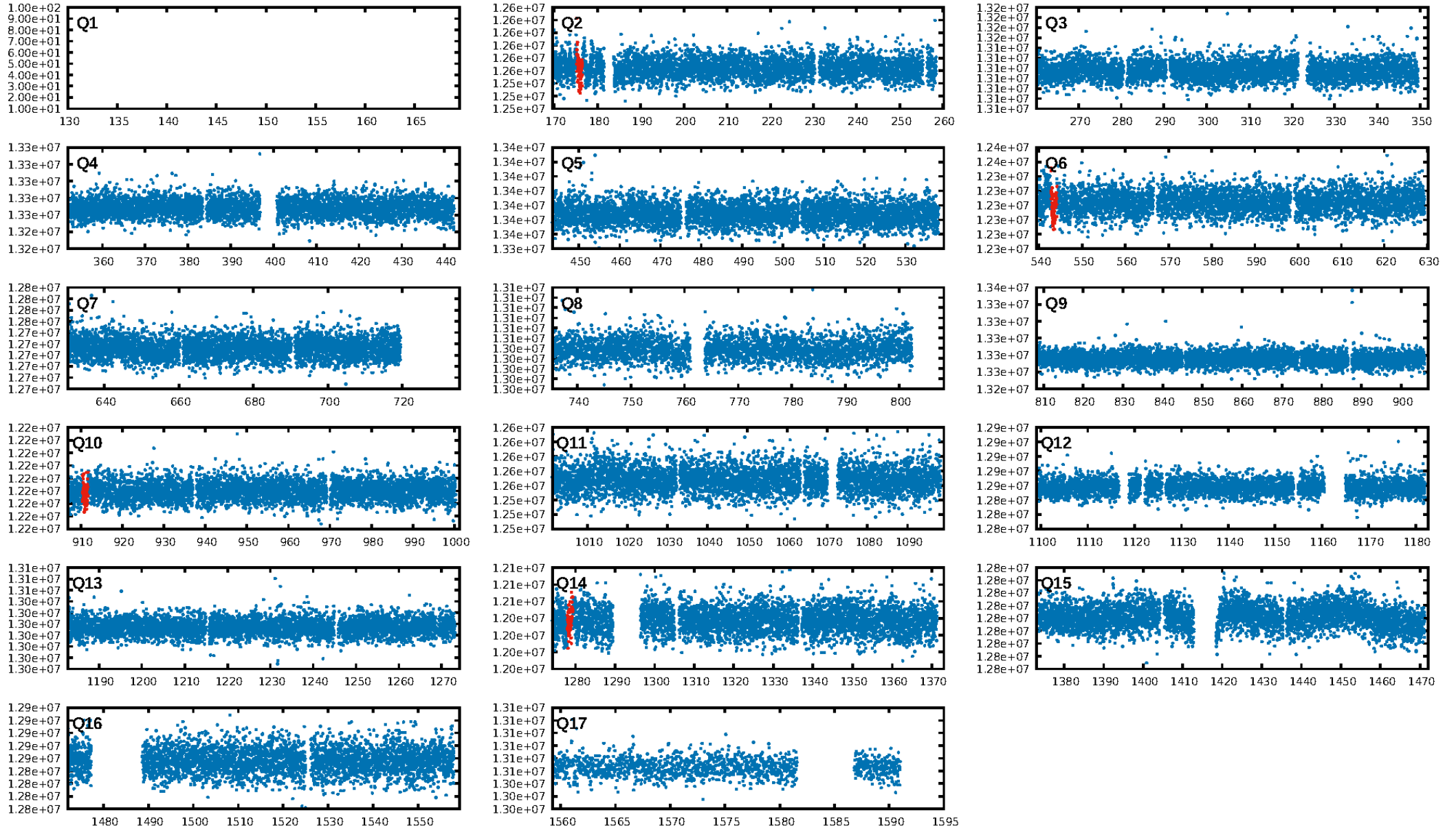
## DV Fit Results:

Period = 367.59630 [0.01371] d  
Epoch = 175.8372 [0.0257] BKJD  
Rp/R\* = 0.0234 [0.0093]  
a/R\* = 133.69 [247.46]  
b = 0.67 [1.54]  
Seff = 0.14 [0.02]  
Teq = 155 [6] K  
Rp = 1.22 [0.49] Re  
a = 0.7955 [0.0505] AU  
Ag = 72147.20 [59488.10] [1.21σ]  
Teffp = 3922 [814] K [4.63σ]

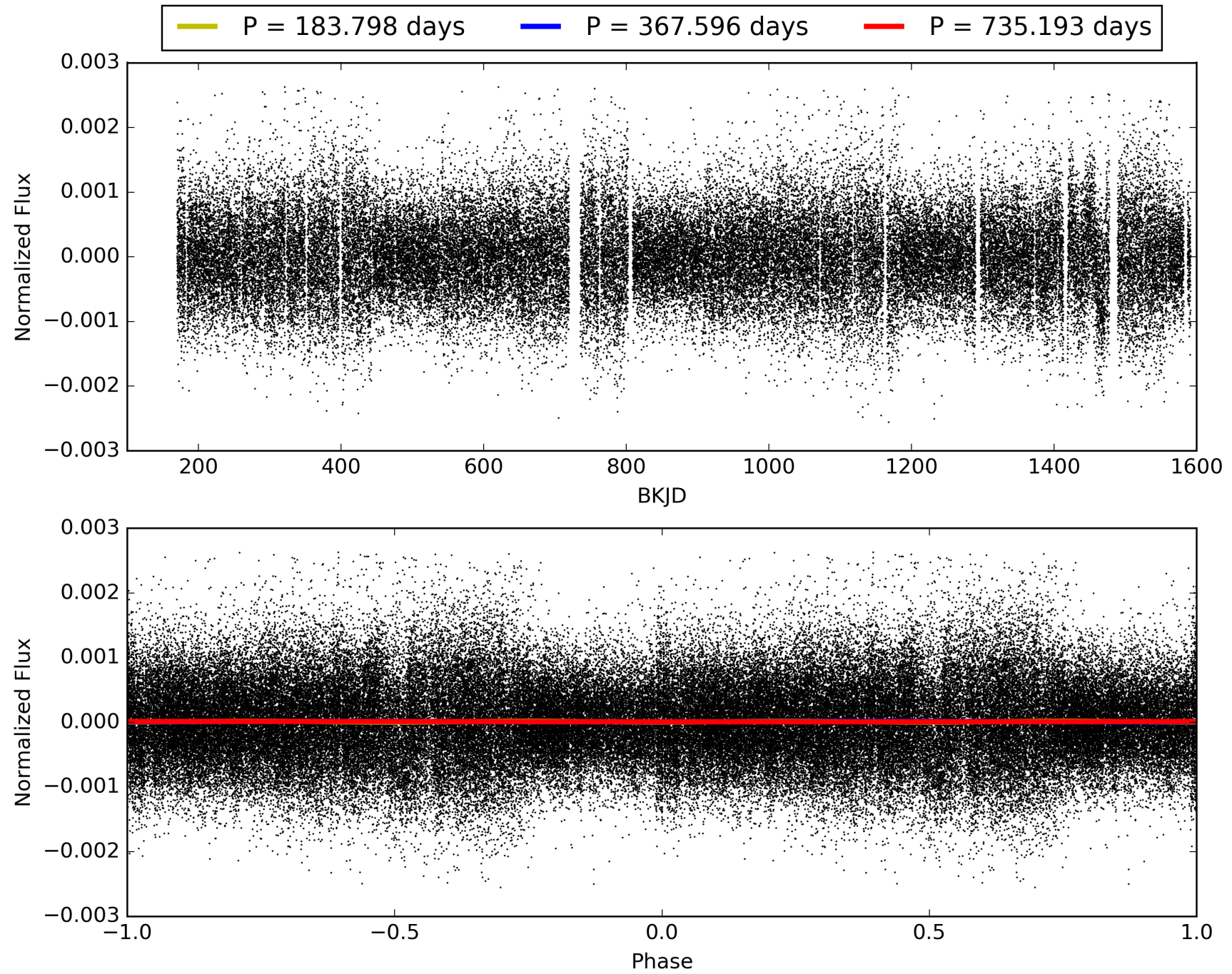
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.12e-14  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.758  
Centroid-sig: 0.0%  
Centroid-so: 7.510 arcsec [3.12σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 009107951-01, PDC Light Curves

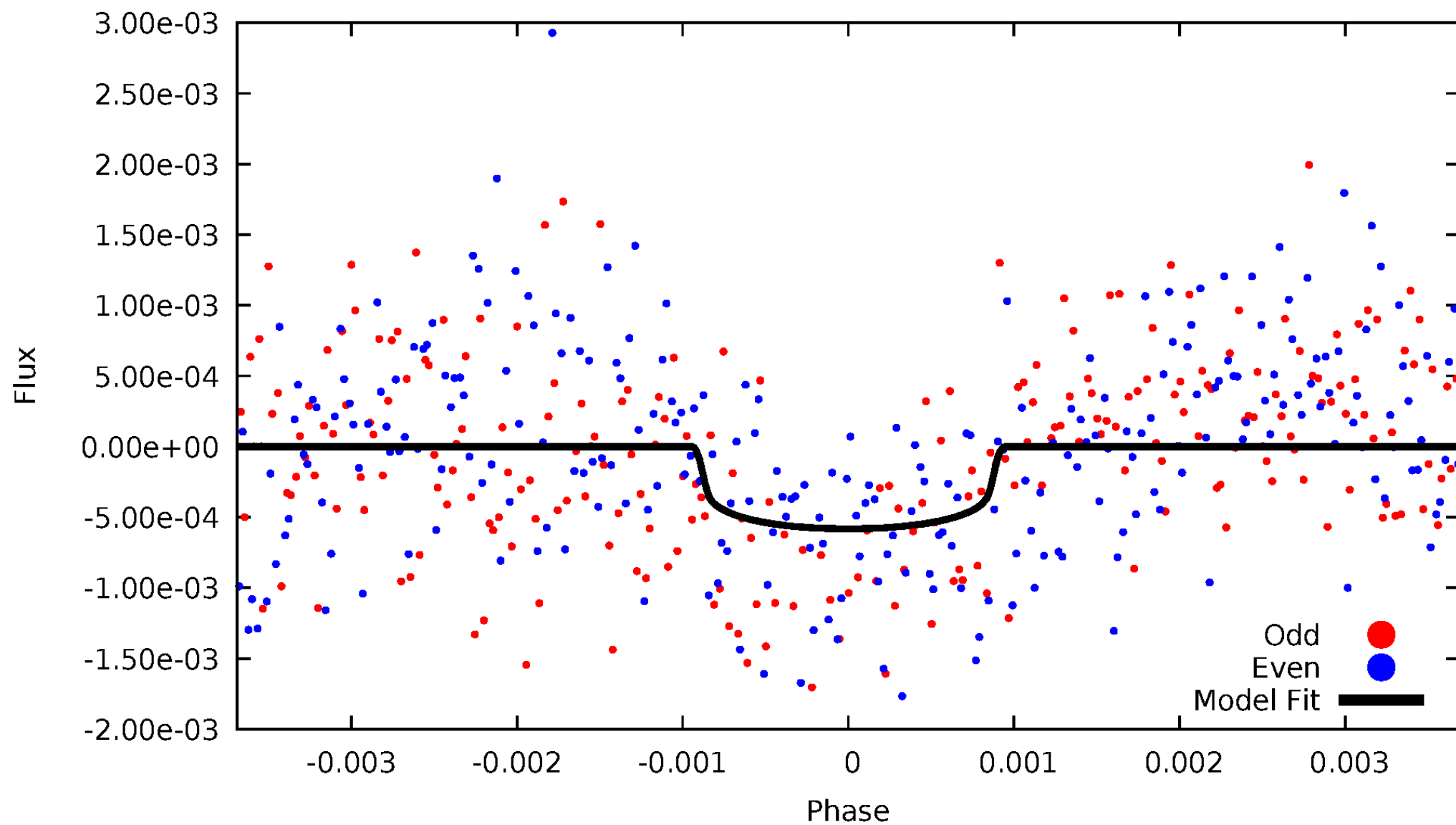


TCE 009107951-01



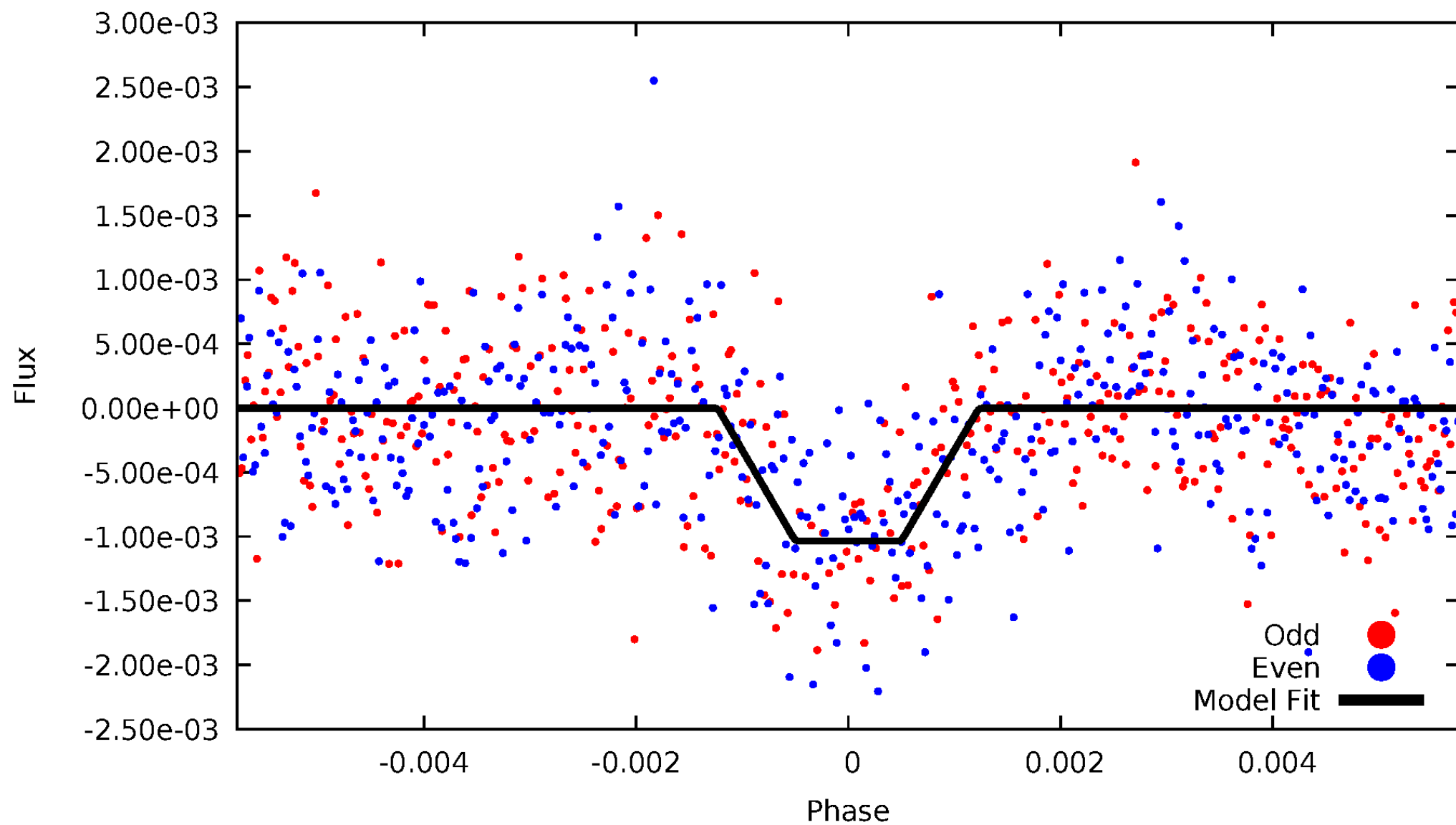
# DV Odd/Even

TCE 009107951-01



# ALT Odd/Even

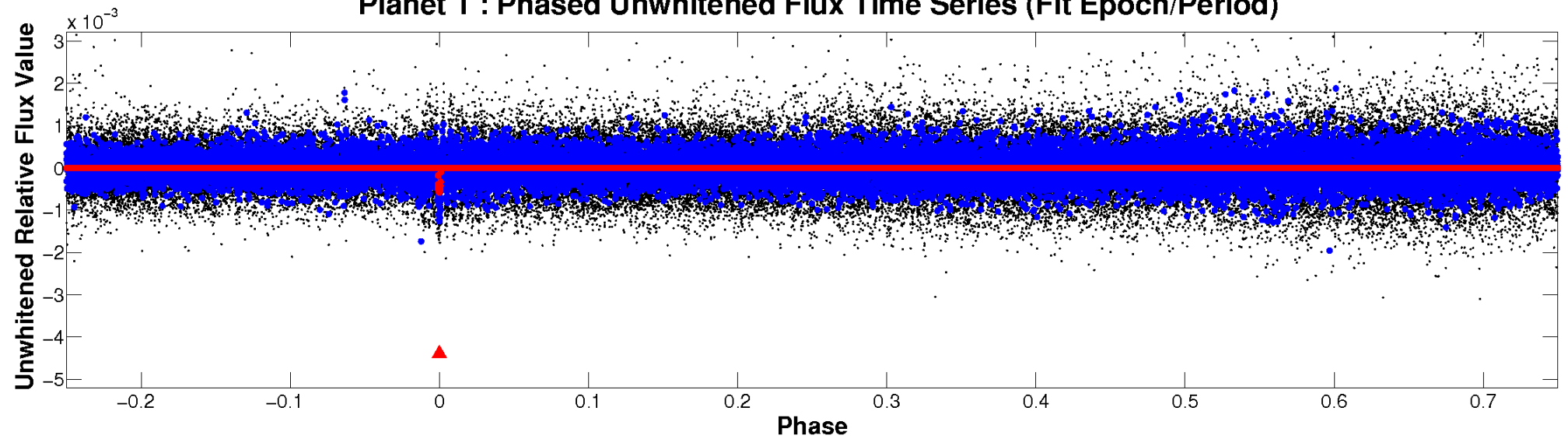
TCE 009107951-01



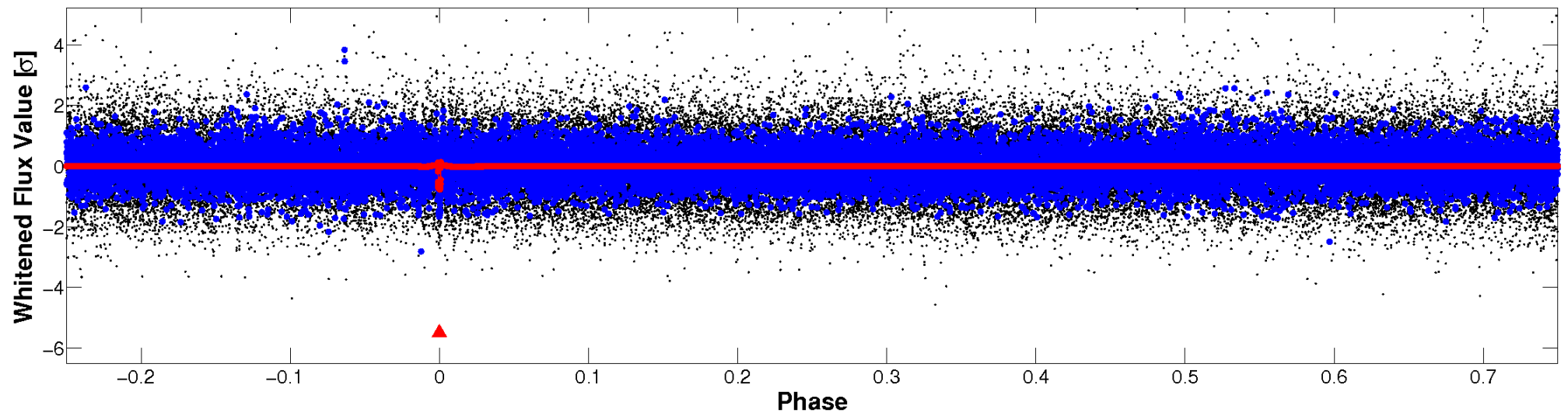


# Non-Whitened Vs. Whitened Light Curve

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

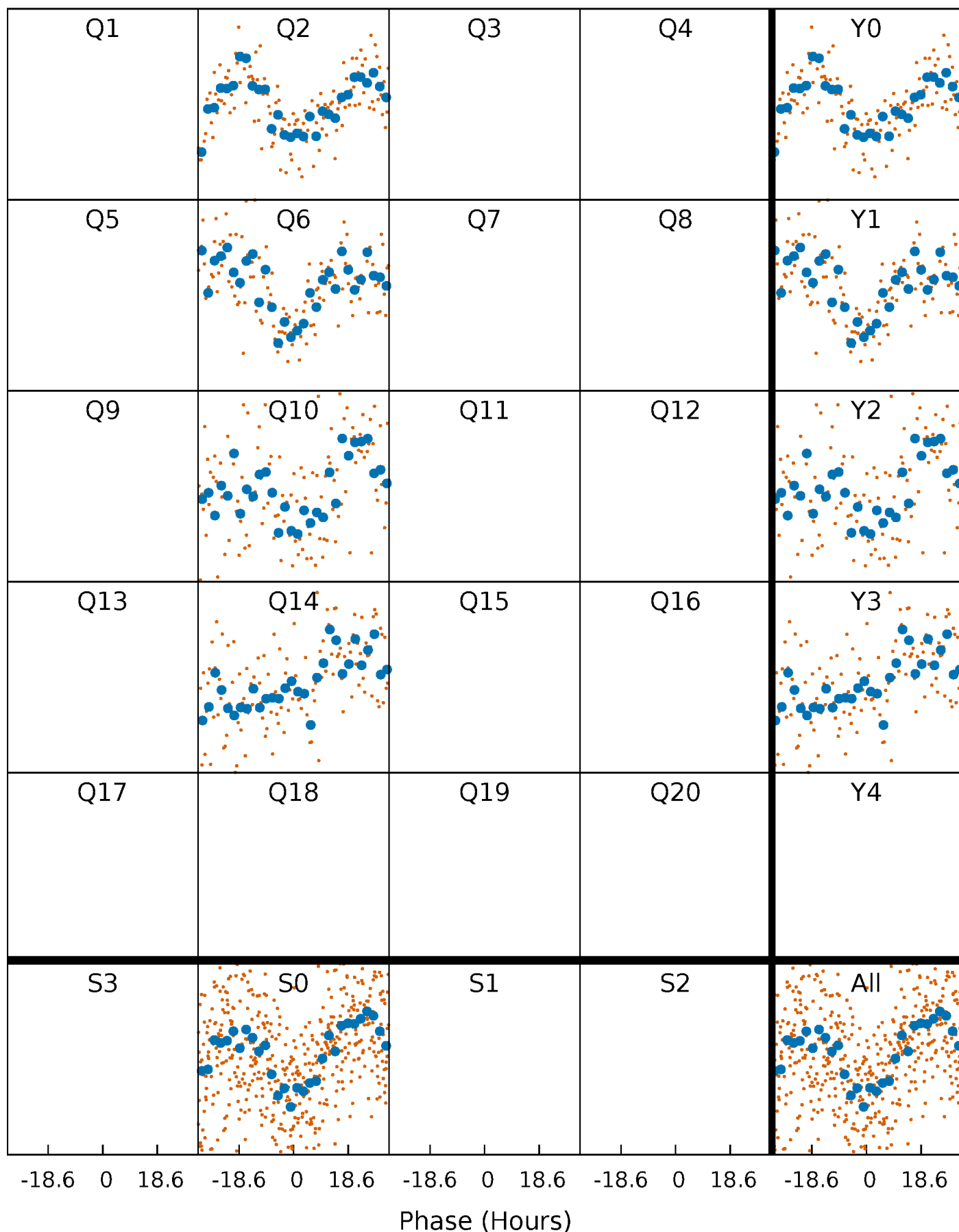


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

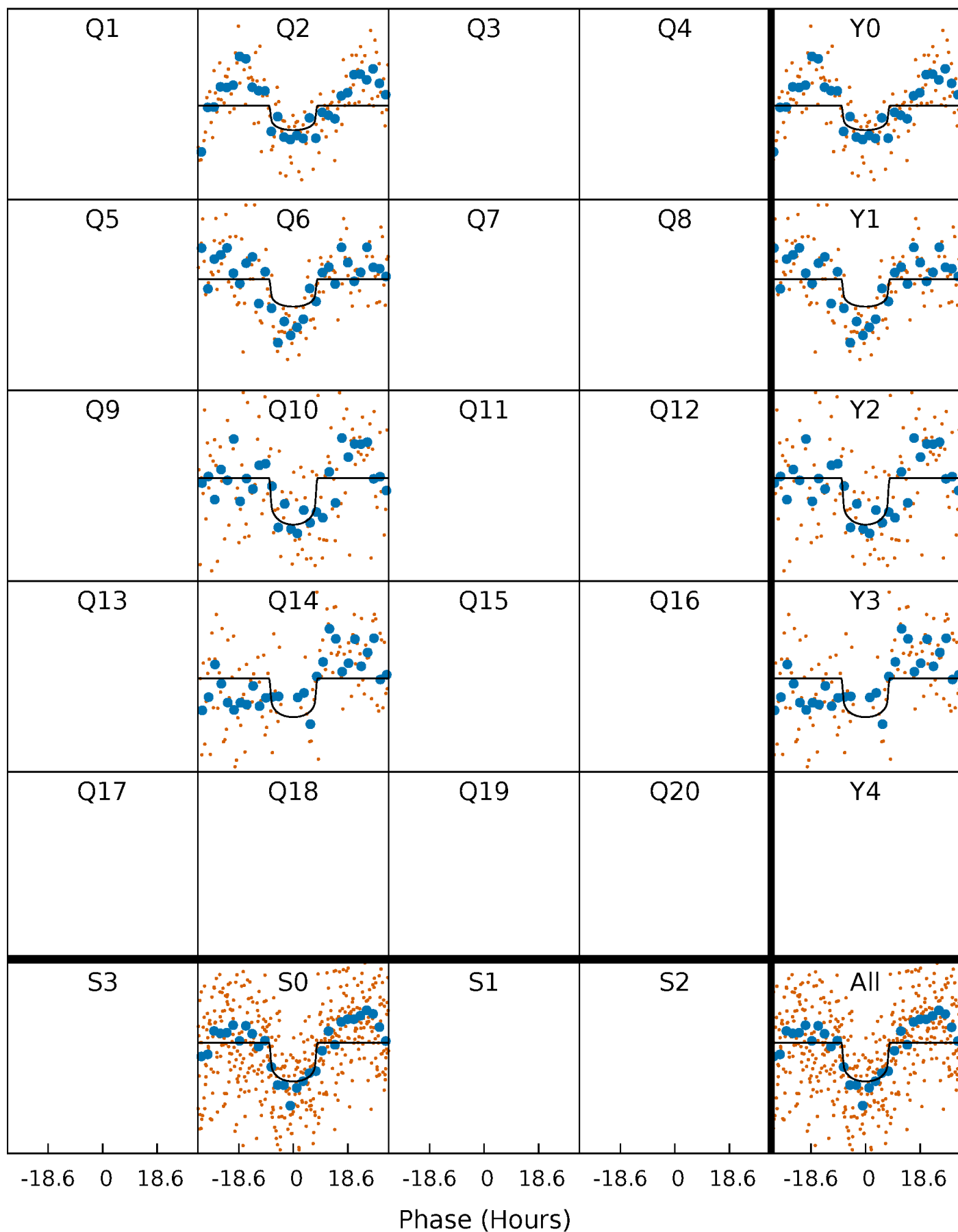
TCE 009107951-01 P=367.596301 Days  $T_0=175.837155$  (BKJD)





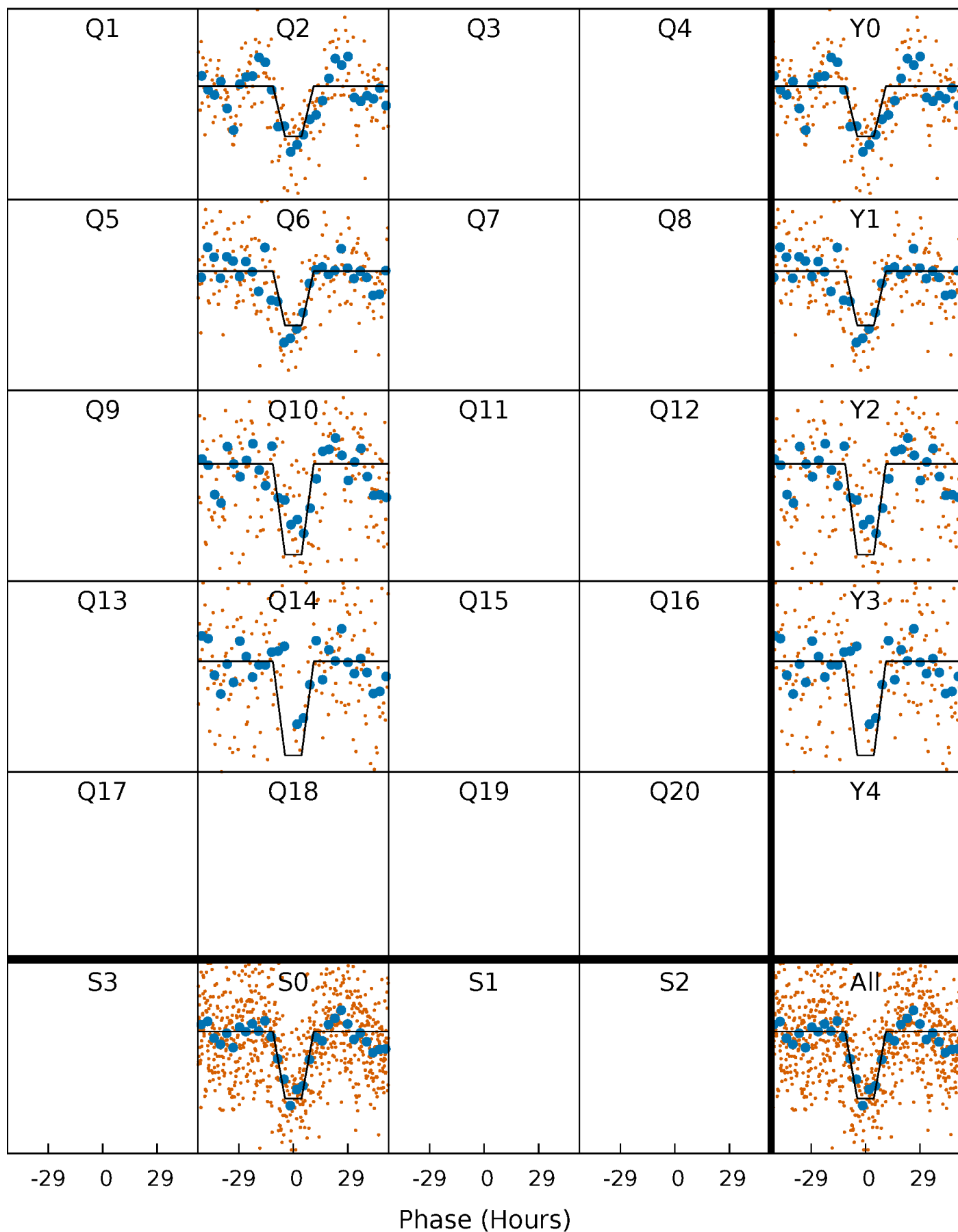
# DV Quarter-Phased Transit Curves

TCE 009107951-01 P=367.596301 Days  $T_0=175.837155$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

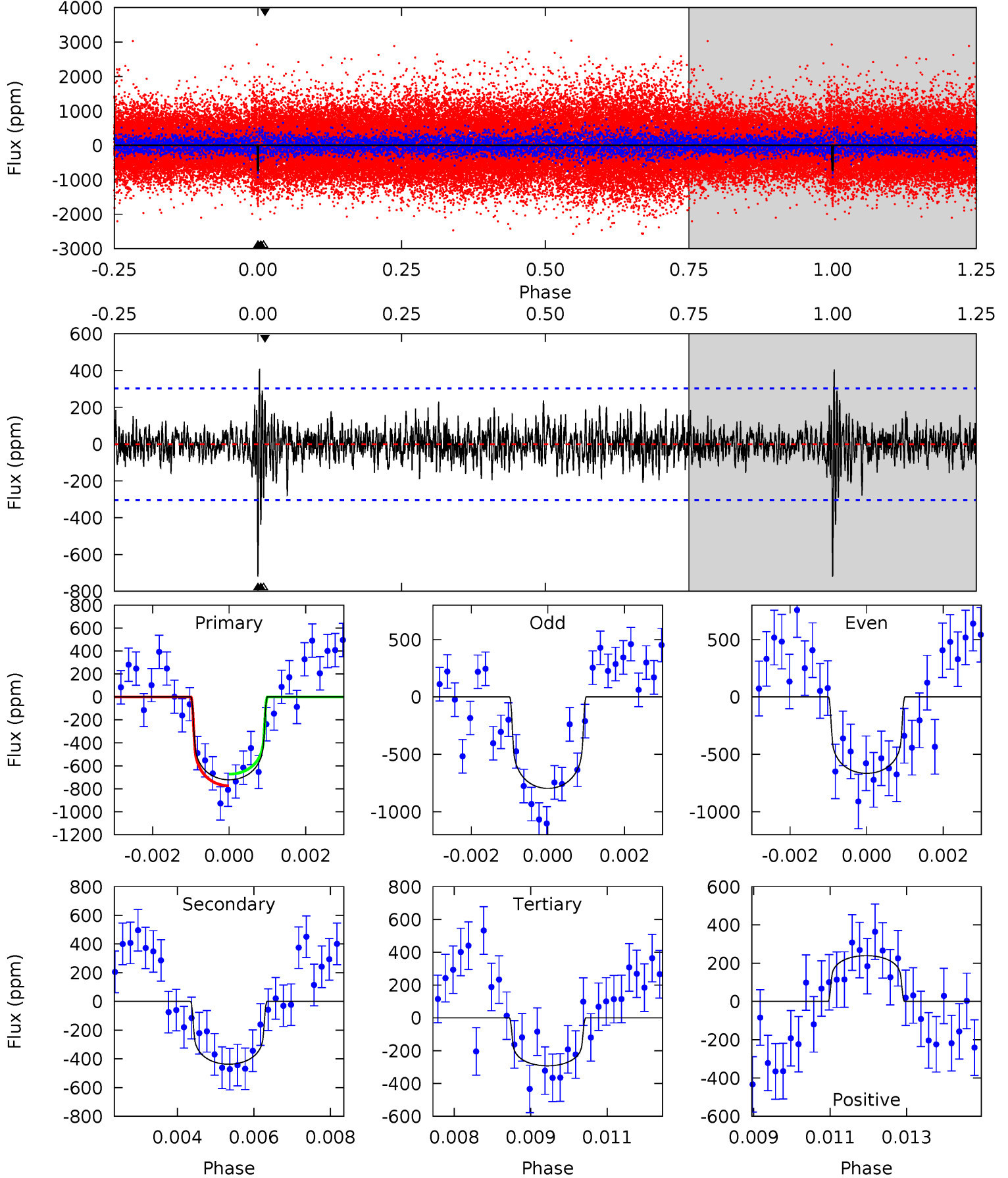
TCE 009107951-01 P=367.606556 Days  $T_0=175.853877$  (BKJD)



# DV Model-Shift Uniqueness Test

009107951-01, P = 367.596301 Days, E = 175.837155 Days

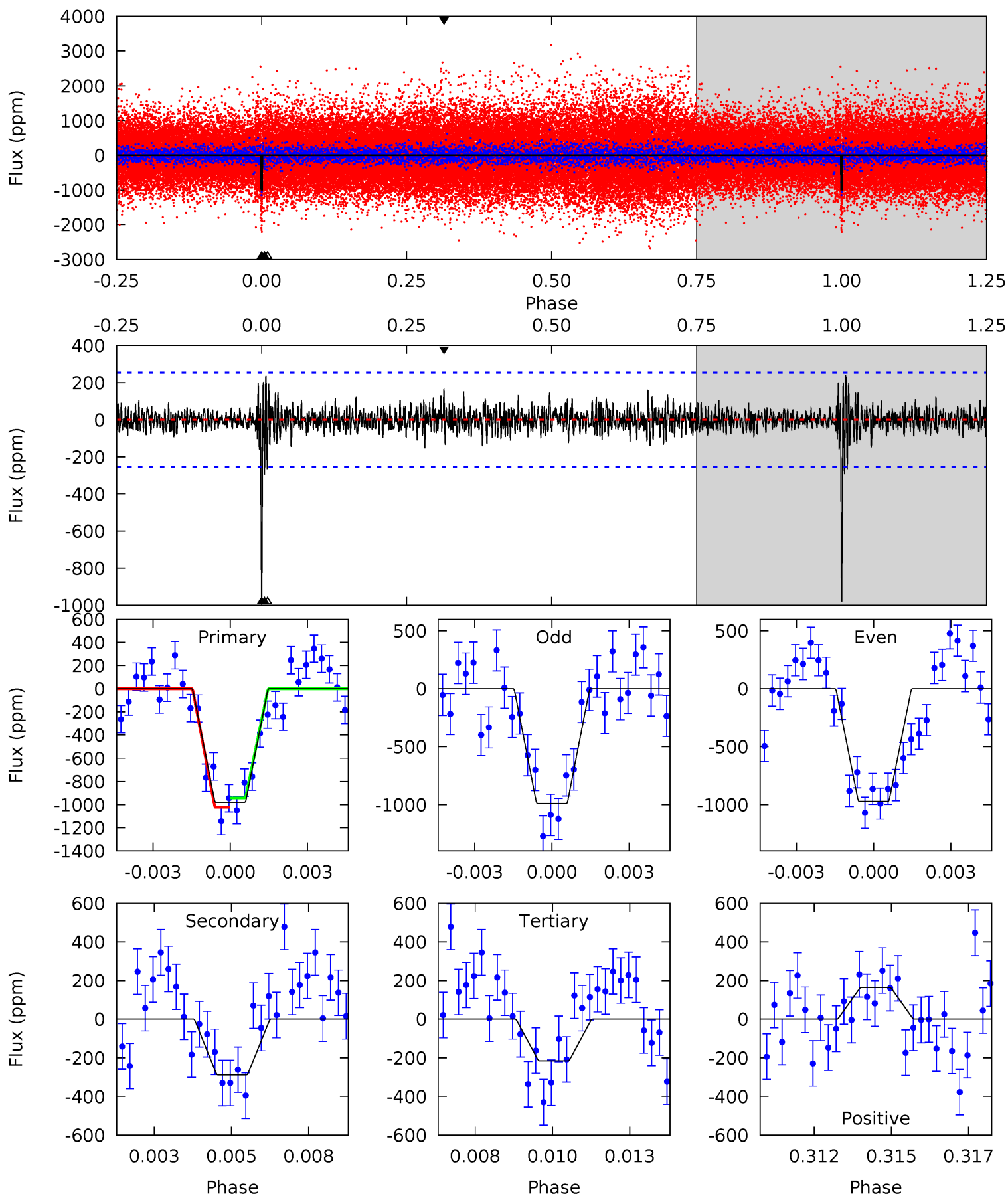
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	7.70	5.15	4.21	5.34	3.11	1.24	7.56	8.50	2.55	3.49	1.15	1.02	0.36	0.89



# Alt Model-Shift Uniqueness Test

009107951-01, P = 367.606556 Days, E = 175.853877 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
20.4	6.00	4.48	3.40	5.28	3.02	0.99	15.9	17.0	1.52	2.61	0.20	0.98	0.19	0.84



### Stellar Parameters For KIC 009107951

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4531^{+137}_{-151}$	$4.777^{+0.048}_{-0.028}$	$-1.680^{+0.300}_{-0.200}$	$0.477^{+0.027}_{-0.037}$	$0.495^{+0.034}_{-0.028}$	$6.441^{+1.274}_{-0.730}$
	+3%/-3%	+1%/-1%	+18%/-12%	+6%/-8%	+7%/-6%	+20%/-11%
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 009107951-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-437 \pm 57$	$1.21^{+0.49}_{-0.47}$	$215^{+7}_{-8}$	$4334^{+935}_{-525}$	$103272^{+165847}_{-51063}$
Alt.	$-288 \pm 48$	$1.64^{+0.48}_{-0.43}$	$215^{+8}_{-8}$	$3622^{+392}_{-324}$	$37309^{+31346}_{-16420}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

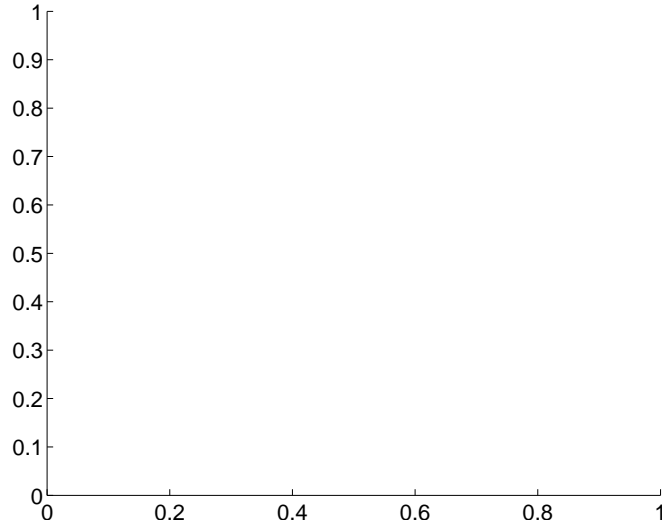
Supplemental centroid analysis for 009107951-01. Kepler magnitude: 15.62. Transit SNR 7.17

There are 0 quarters with good PRF difference image offsets

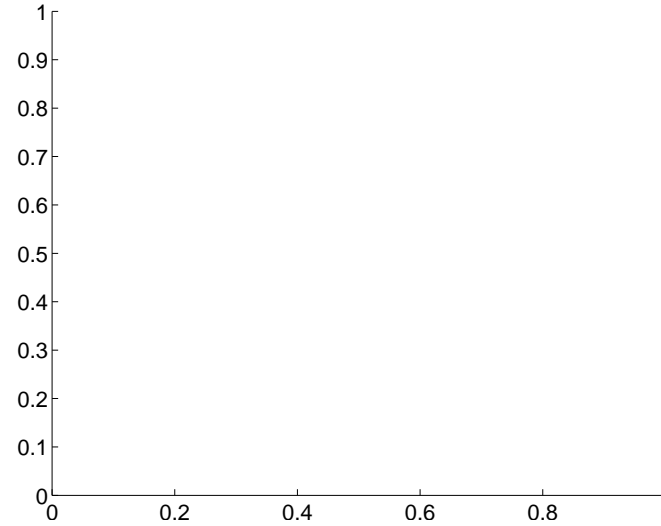
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$7.51 \pm 2.40$	$3.12$	$-6.18 \pm 2.31$	$-4.26 \pm 2.60$

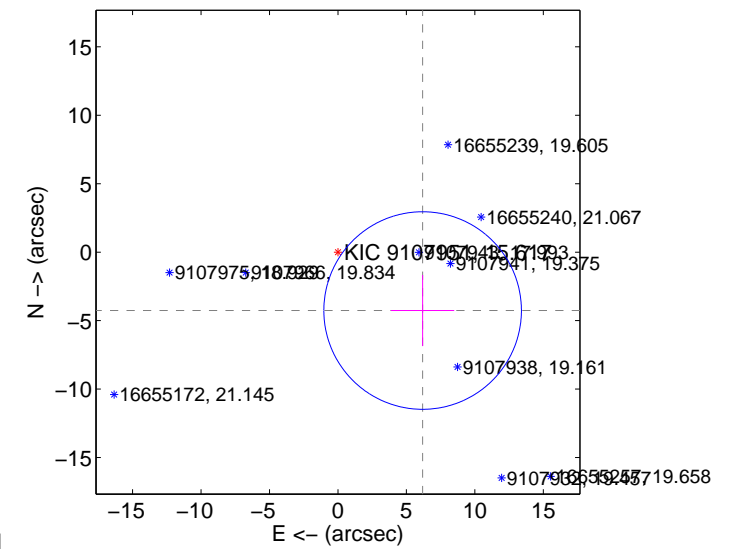
There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



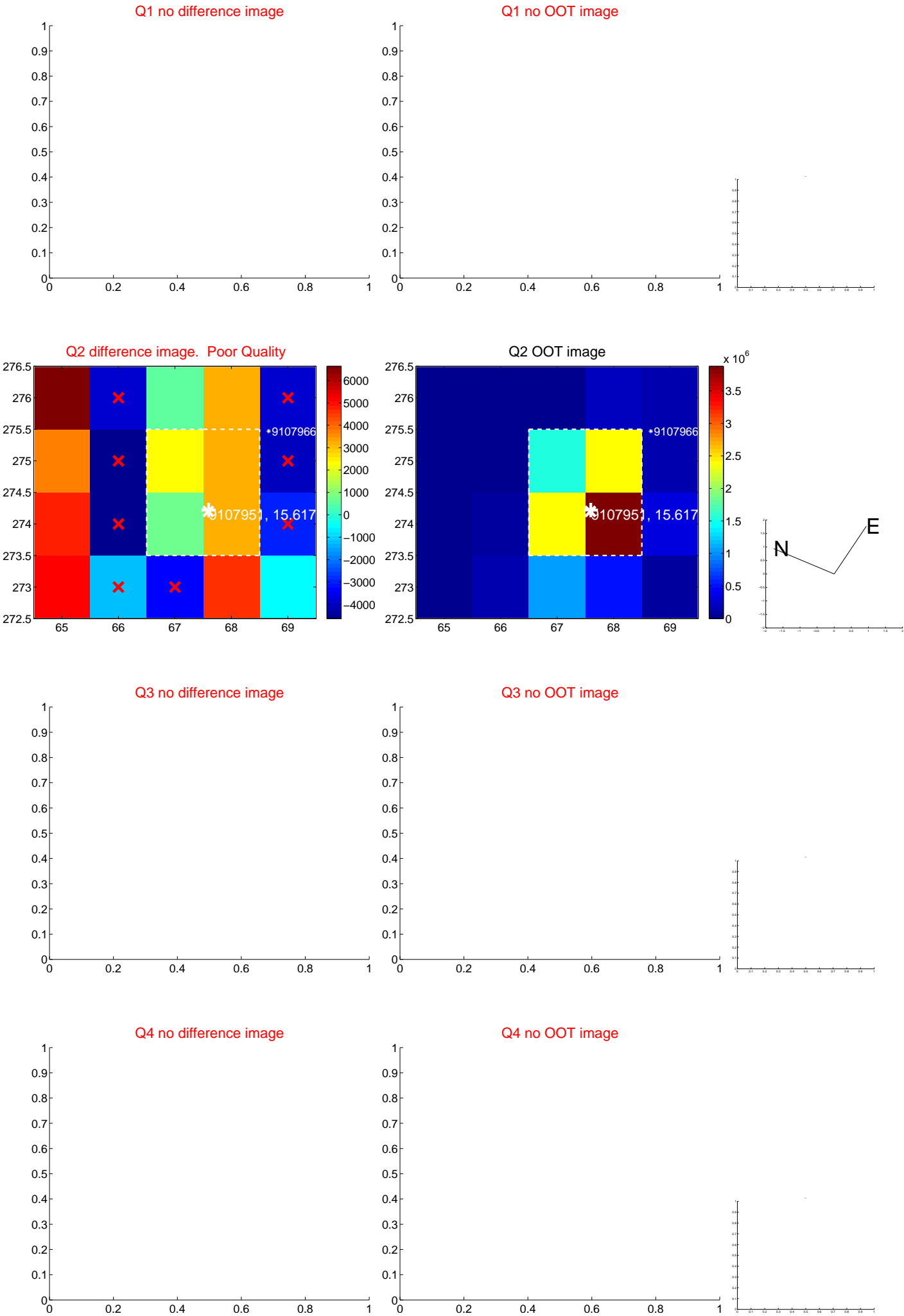
offset from photometric centroids



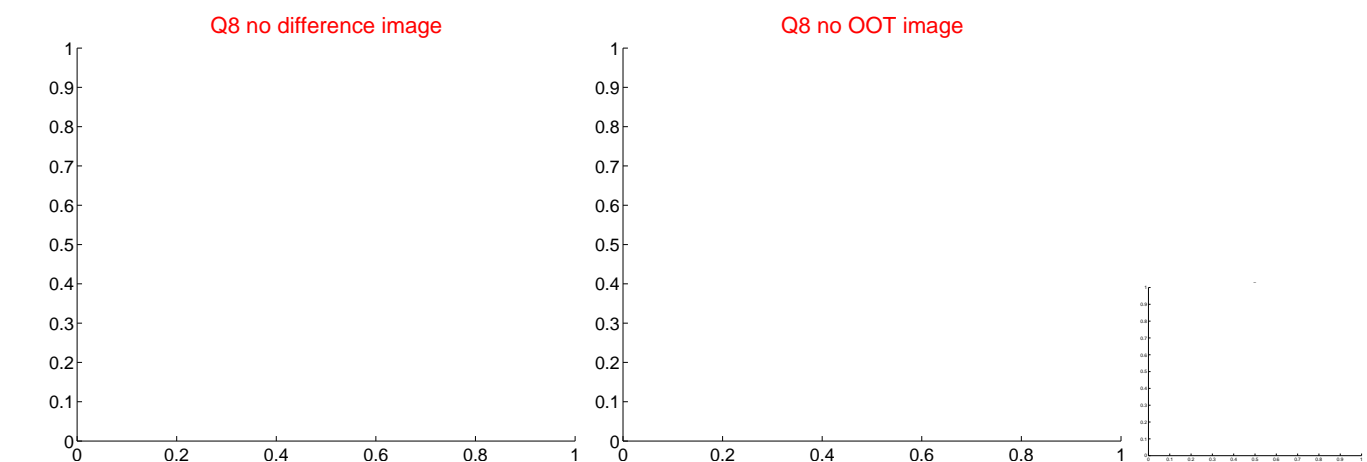
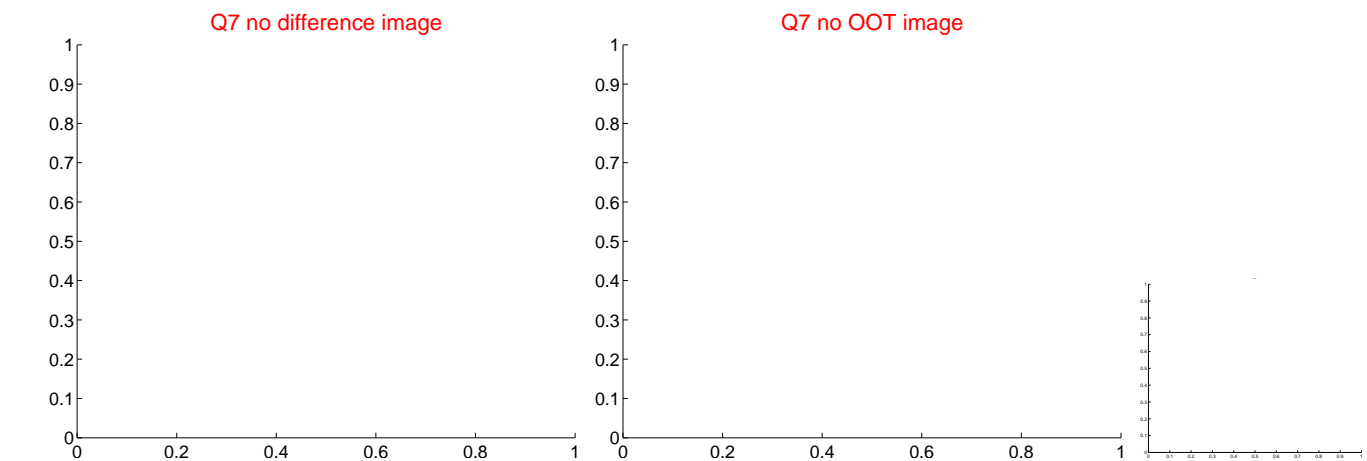
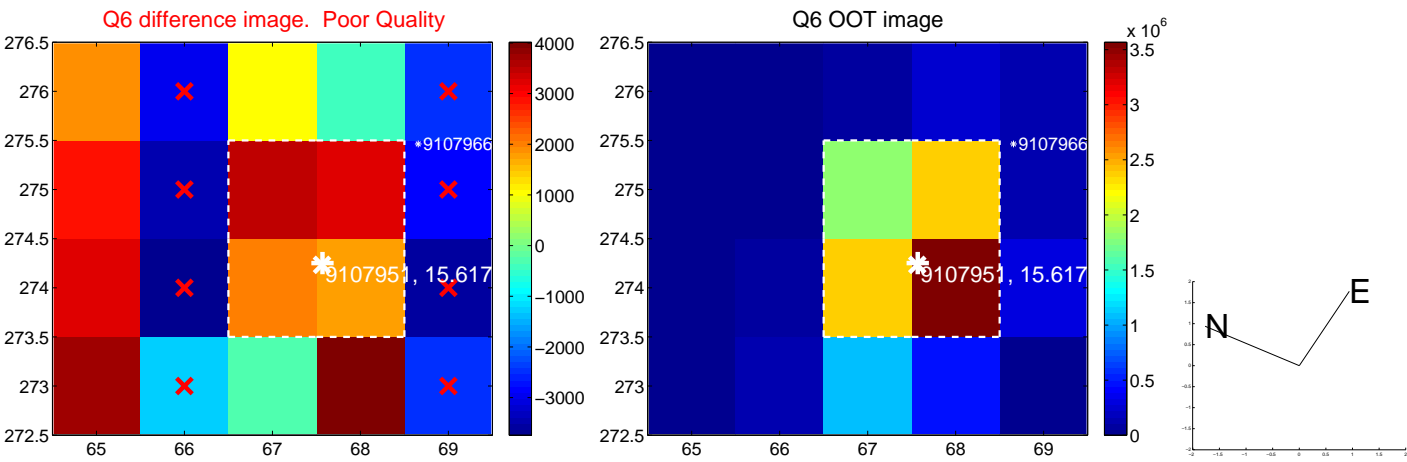
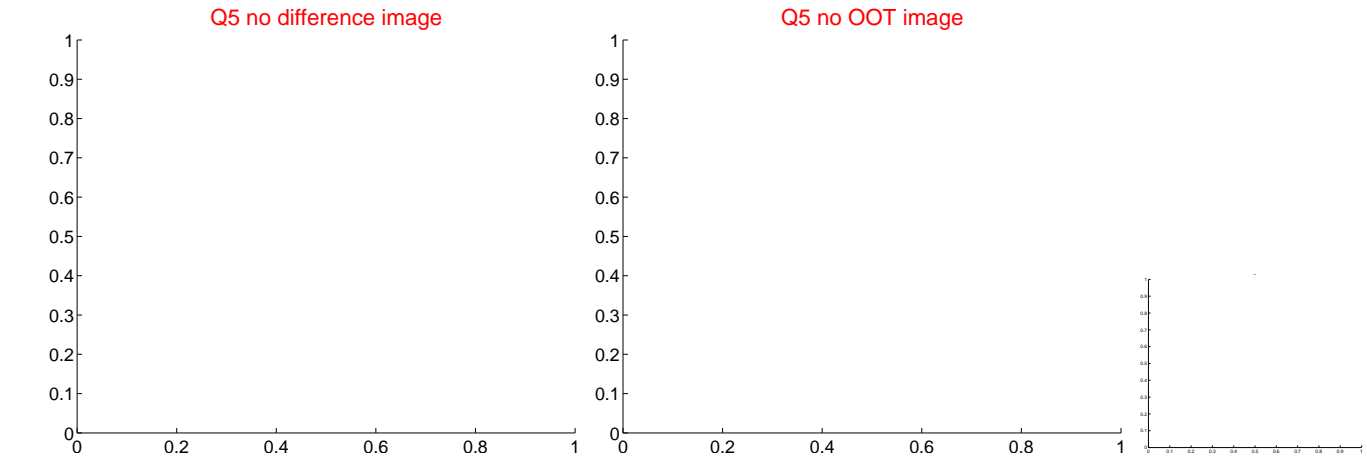
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



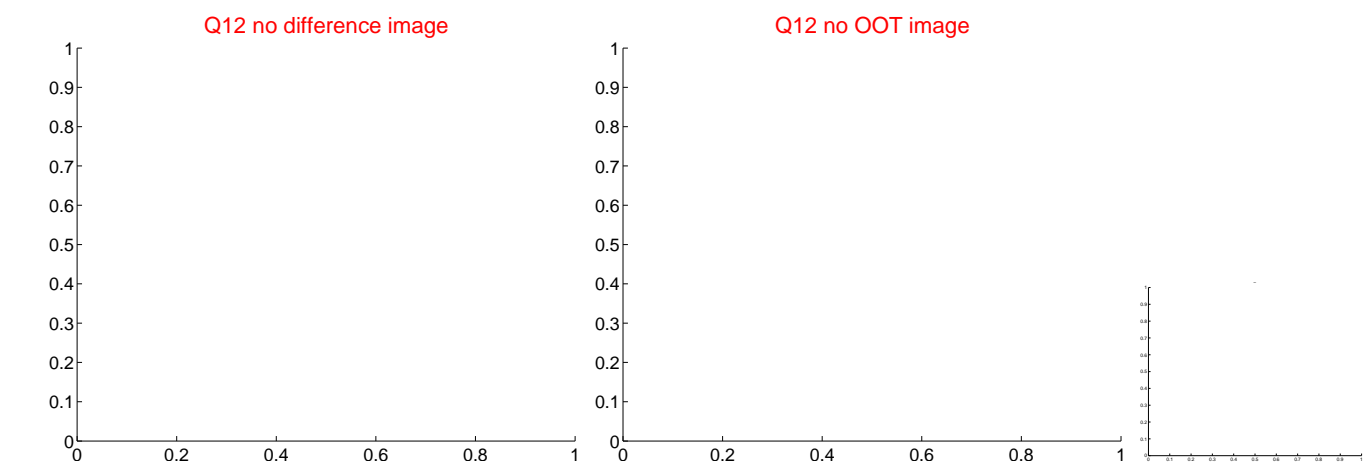
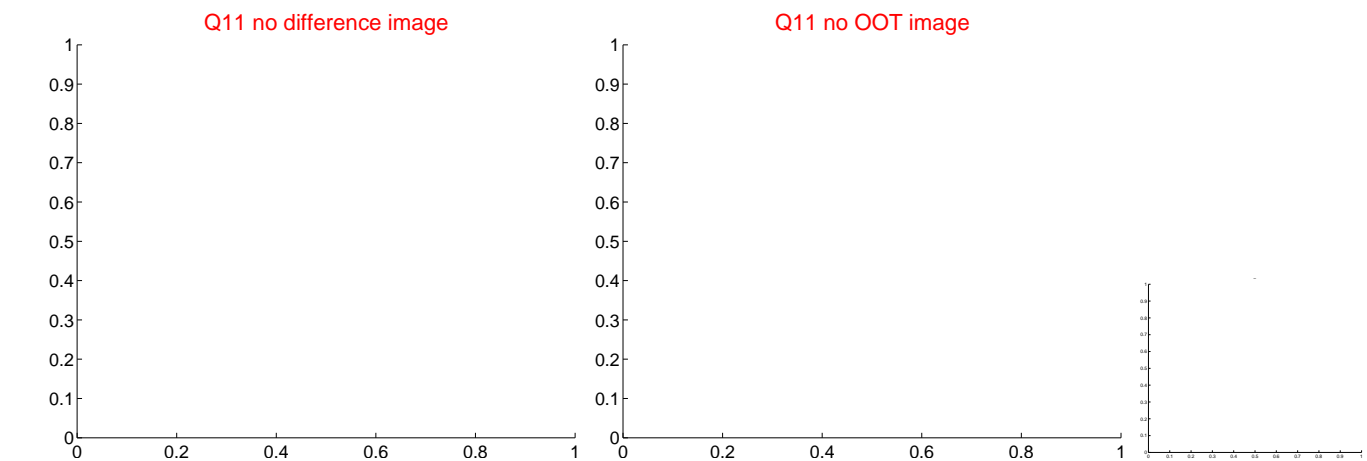
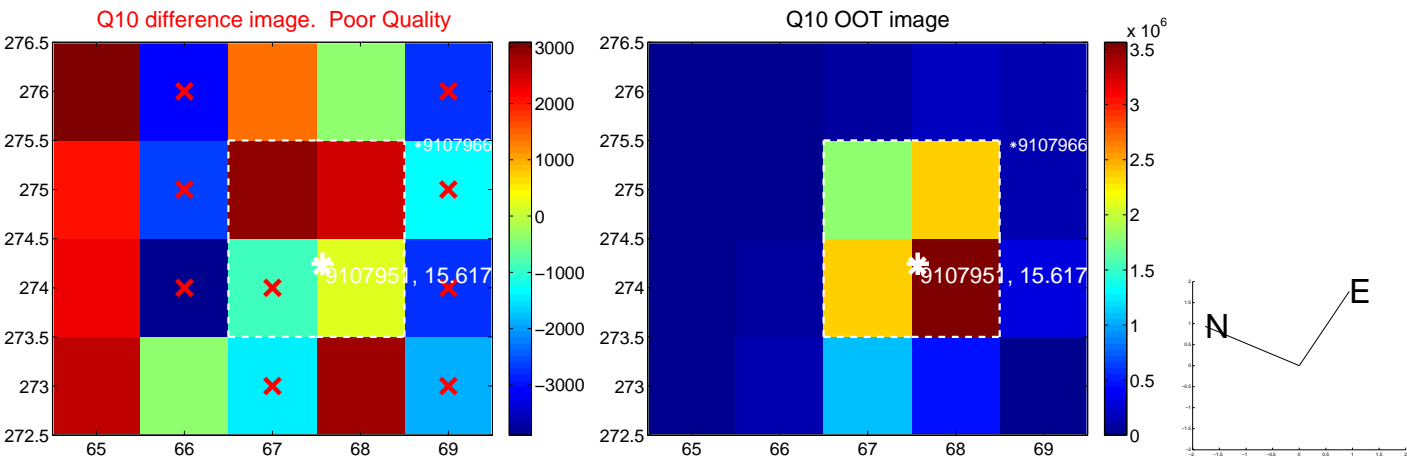
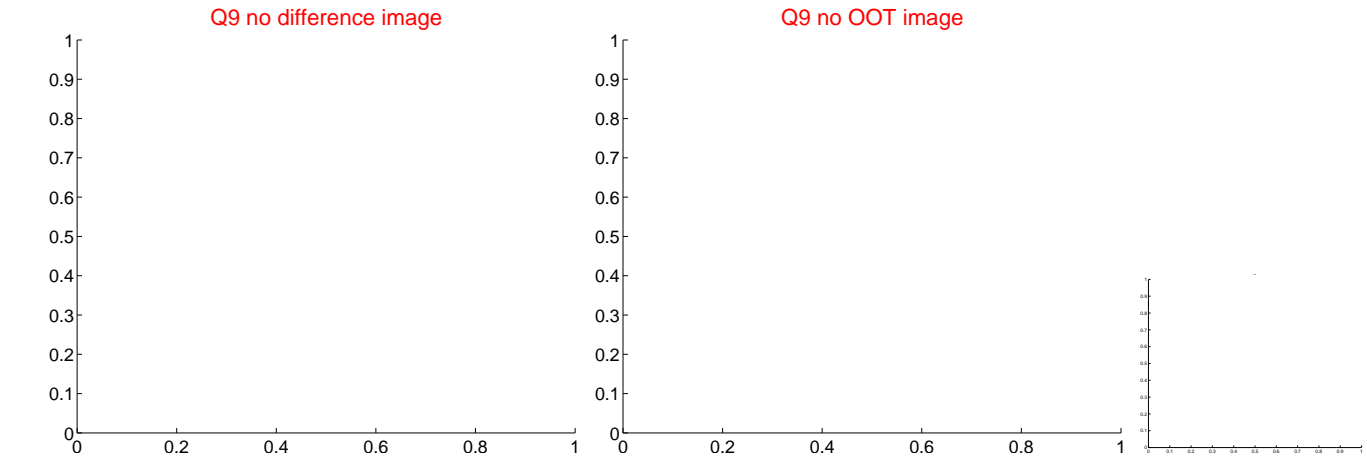
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



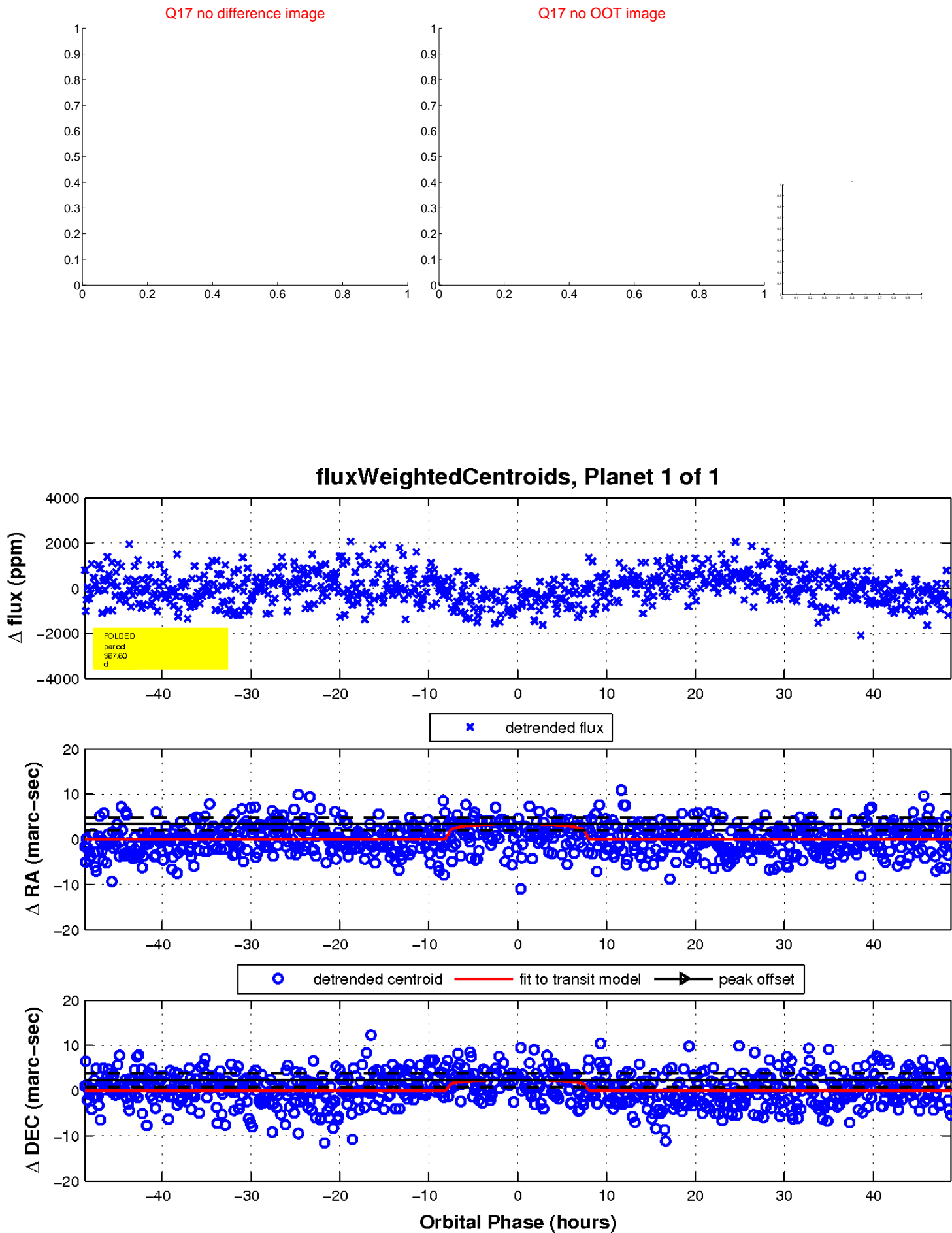
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



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



UKIRT Image

Declination

