

# KIC 009702006

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009702006-01	OBS	4372.01	6.245656	137.161492	216.3	2.624	10.8	11.2	0.71	4858	1.25	67.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009702006-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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

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

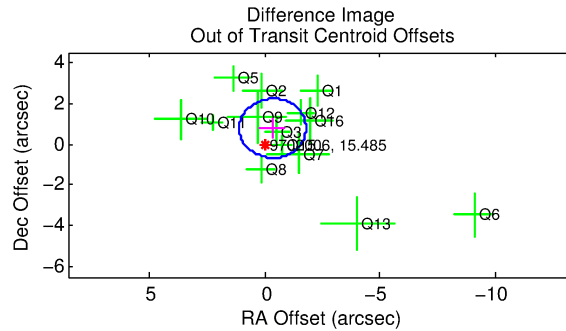
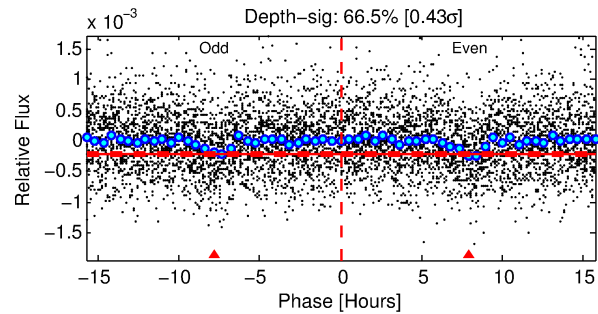
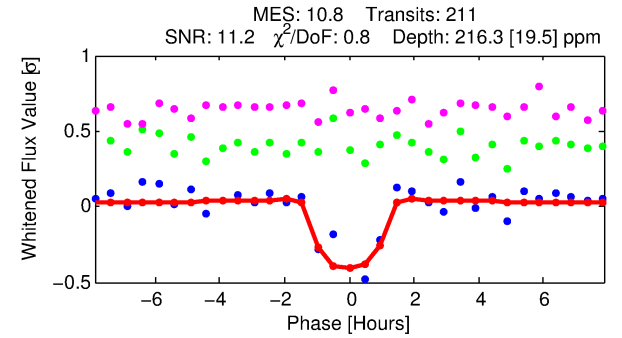
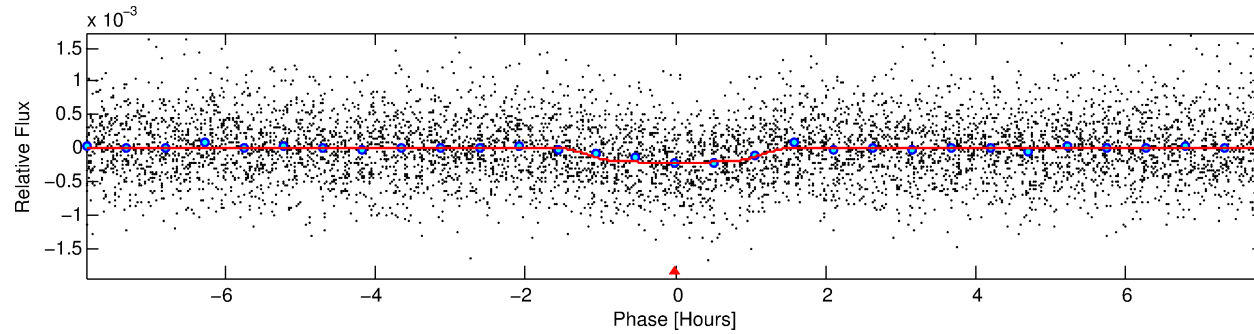
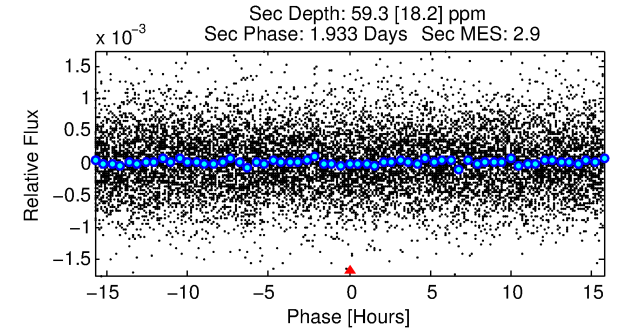
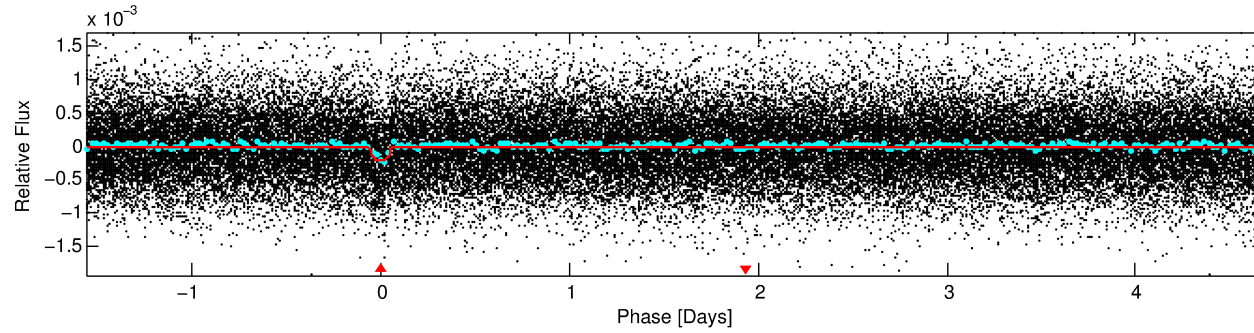
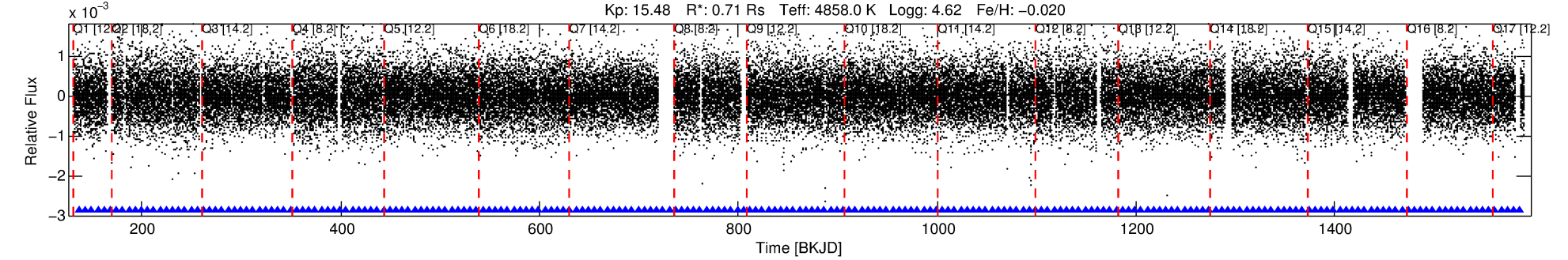
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009702006-01

No Significant Match Found

# DV One-Page Summary

KIC: 9702006 Candidate: 1 of 1 Period: 6.246 d  
KOI: K04372.01 Corr: 0.951



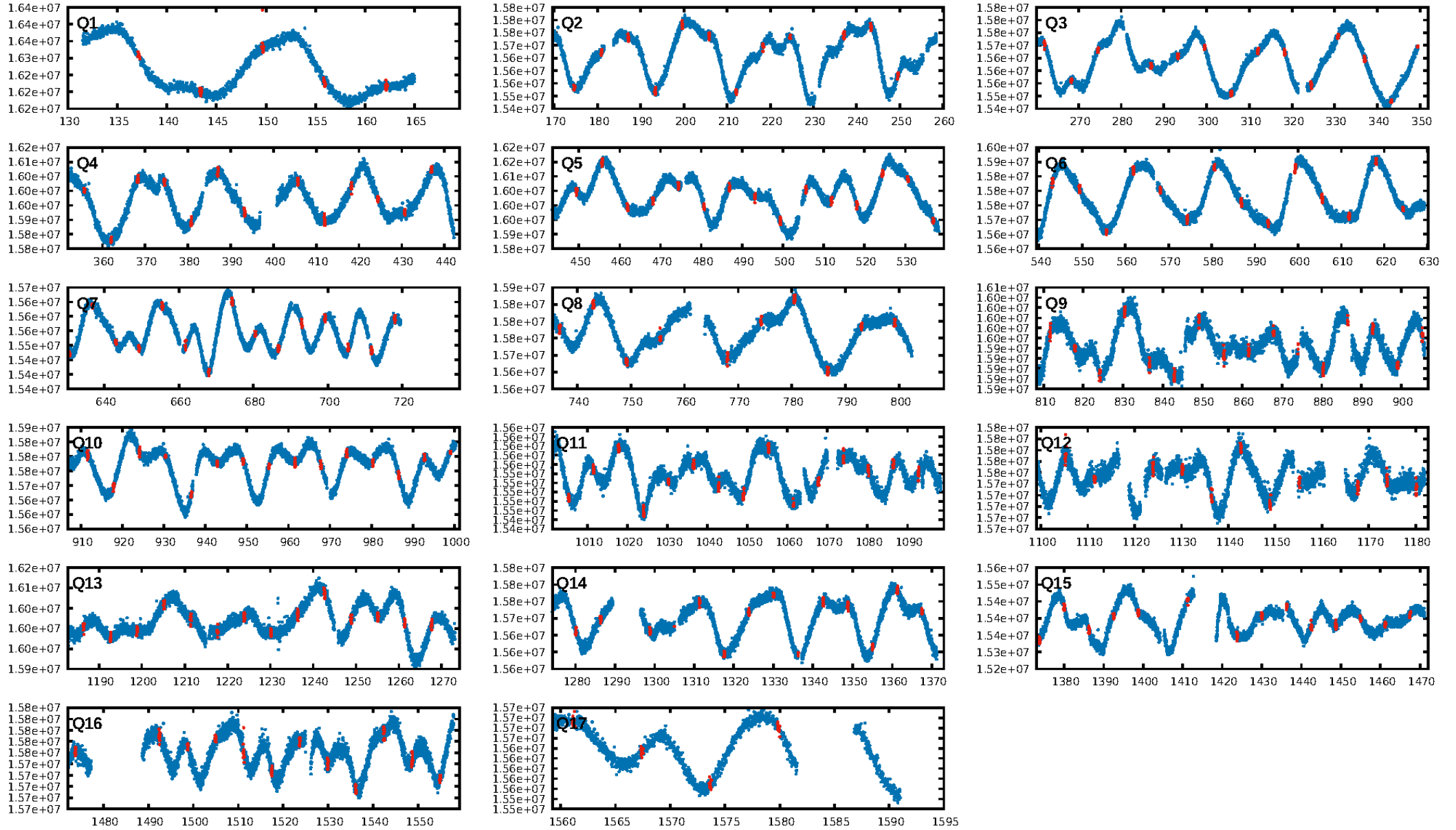
## DV Fit Results:

Period = 6.24566 [0.00004] d  
Epoch = 137.1615 [0.0043] BKJD  
Rp/R\* = 0.0162 [0.0108]  
a/R\* = 9.09 [22.85]  
b = 0.89 [0.64]  
Seff = 67.75 [12.02]  
Teff = 732 [32] K  
Rp = 1.25 [0.85] Re  
a = 0.0607 [0.0053] AU  
Ag = 76.42 [105.13] [0.72σ]  
Teffp = 3344 [1151] K [2.27σ]

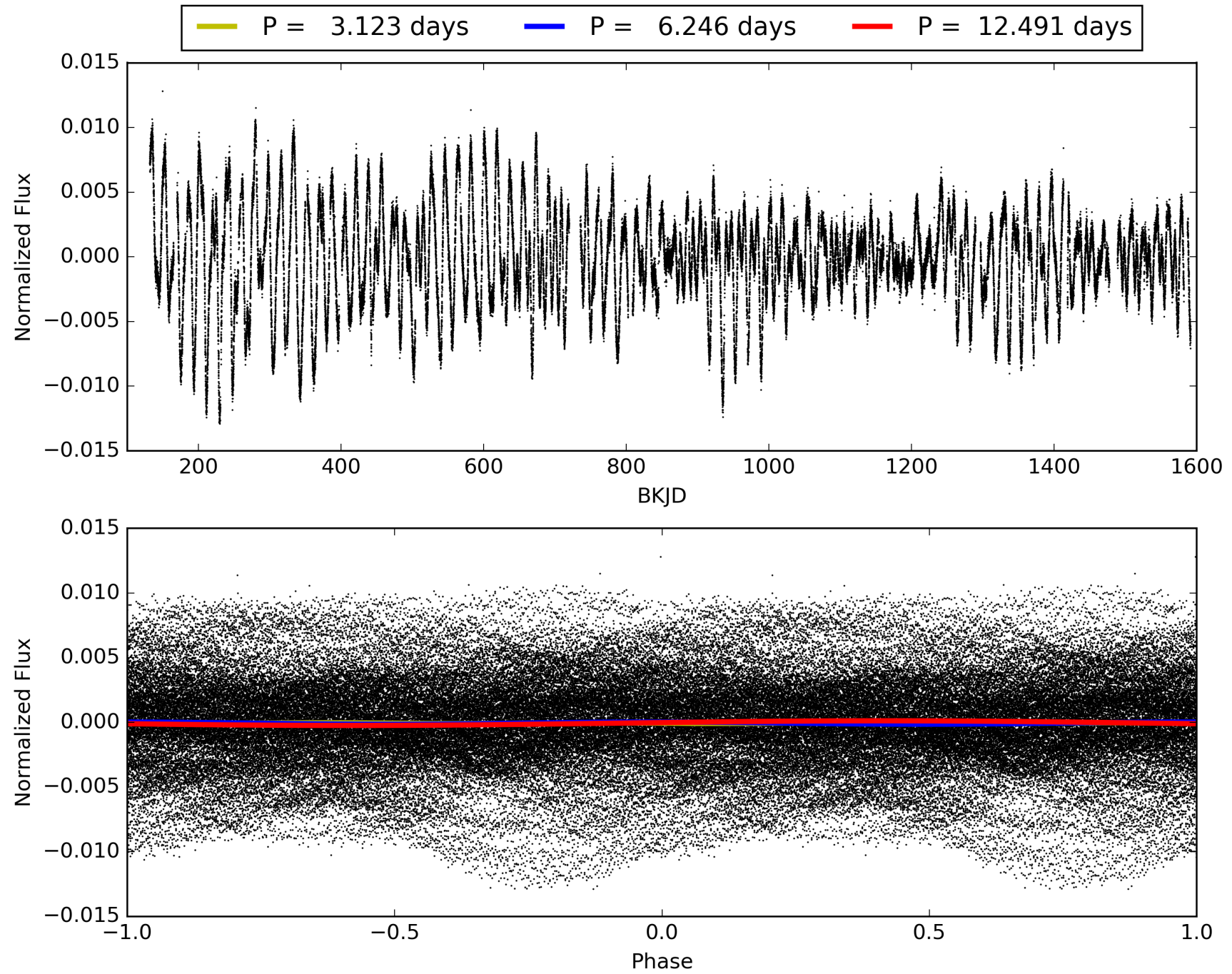
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.70e-26  
RollingBand-fgt: 1.00 [202/202]  
GhostDiagnostic-chr: 7.539  
Centroid-sig: 41.9%  
Centroid-so: 1.062 arcsec [0.84σ]  
OotOffset-rm: 0.853 arcsec [1.77σ]  
KicOffset-rm: 0.969 arcsec [1.99σ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009702006-01, PDC Light Curves

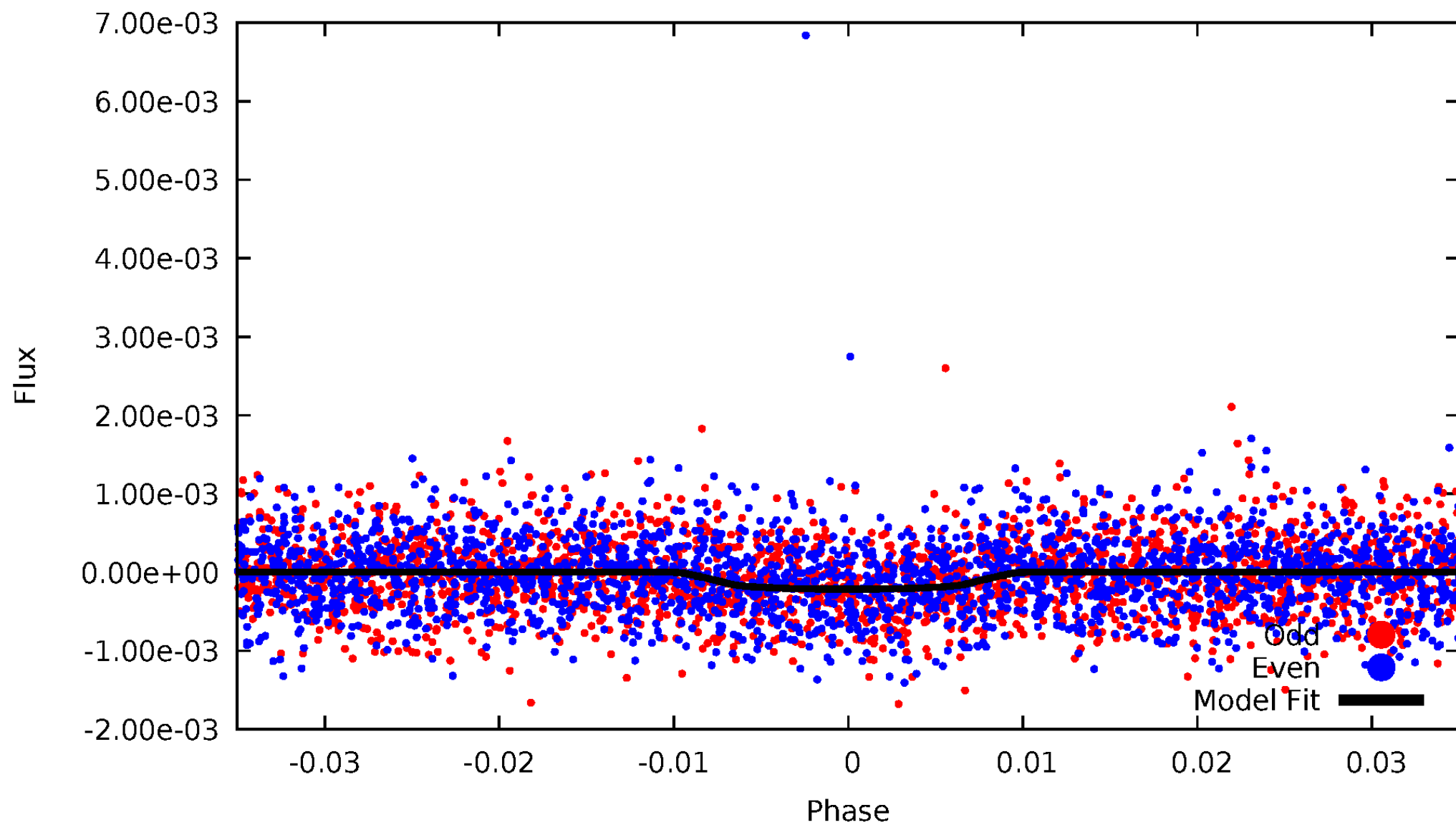


TCE 009702006-01



# DV Odd/Even

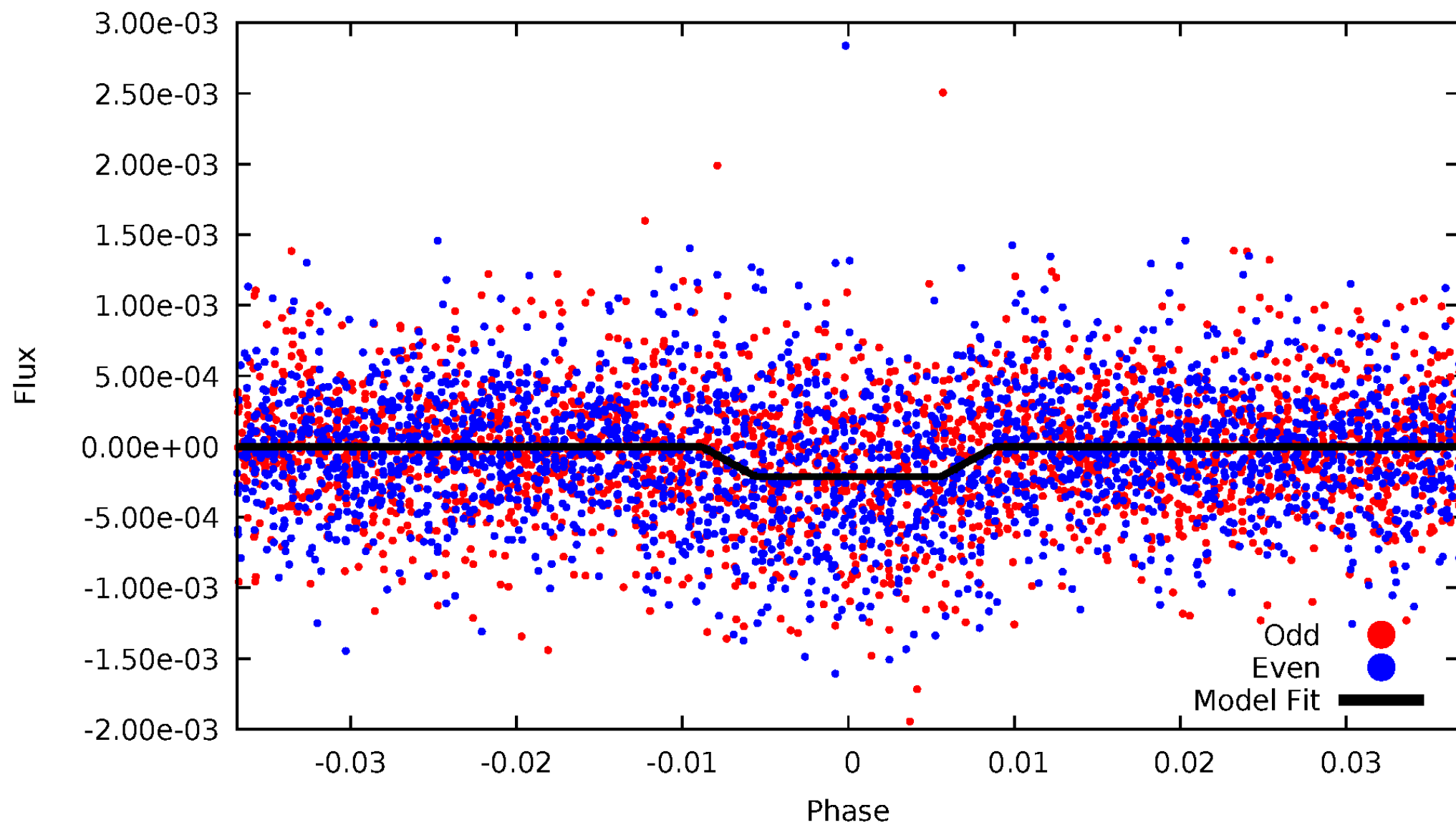
TCE 009702006-01





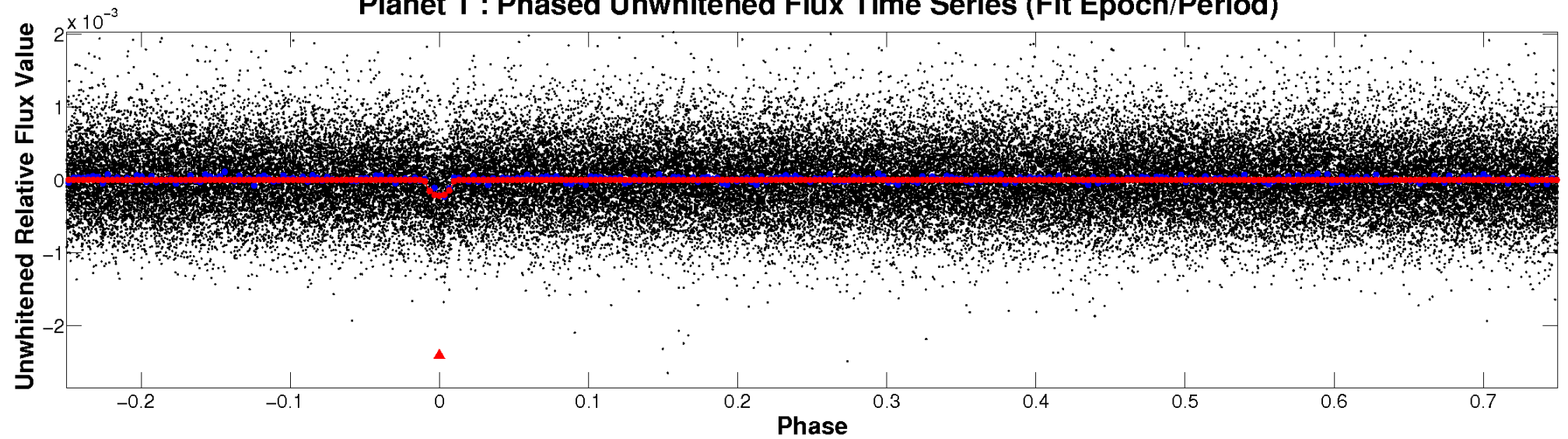
# ALT Odd/Even

TCE 009702006-01

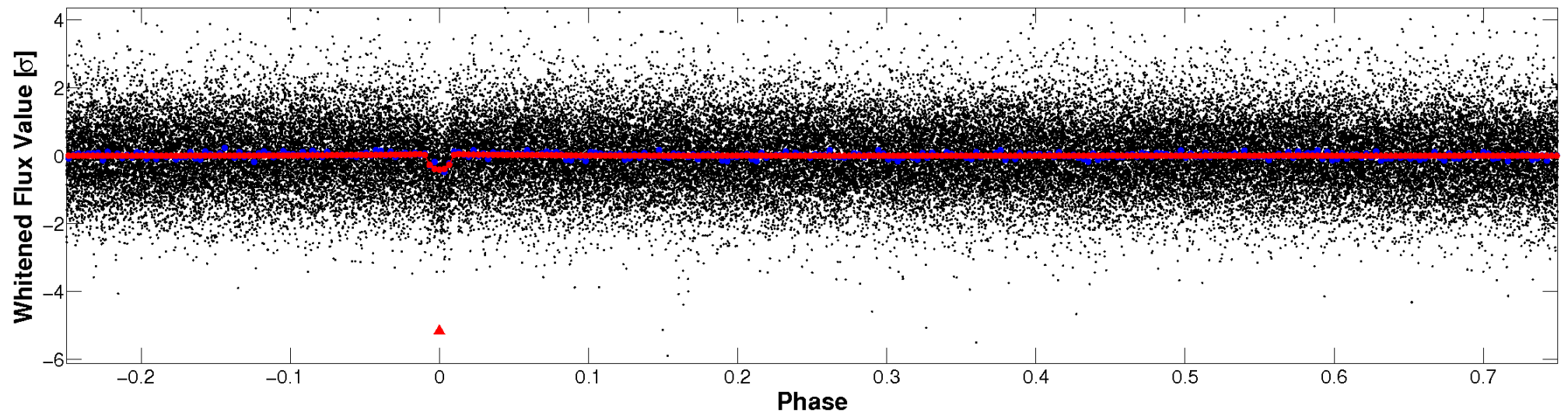


# Non-Whitened Vs. Whitened Light Curve

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

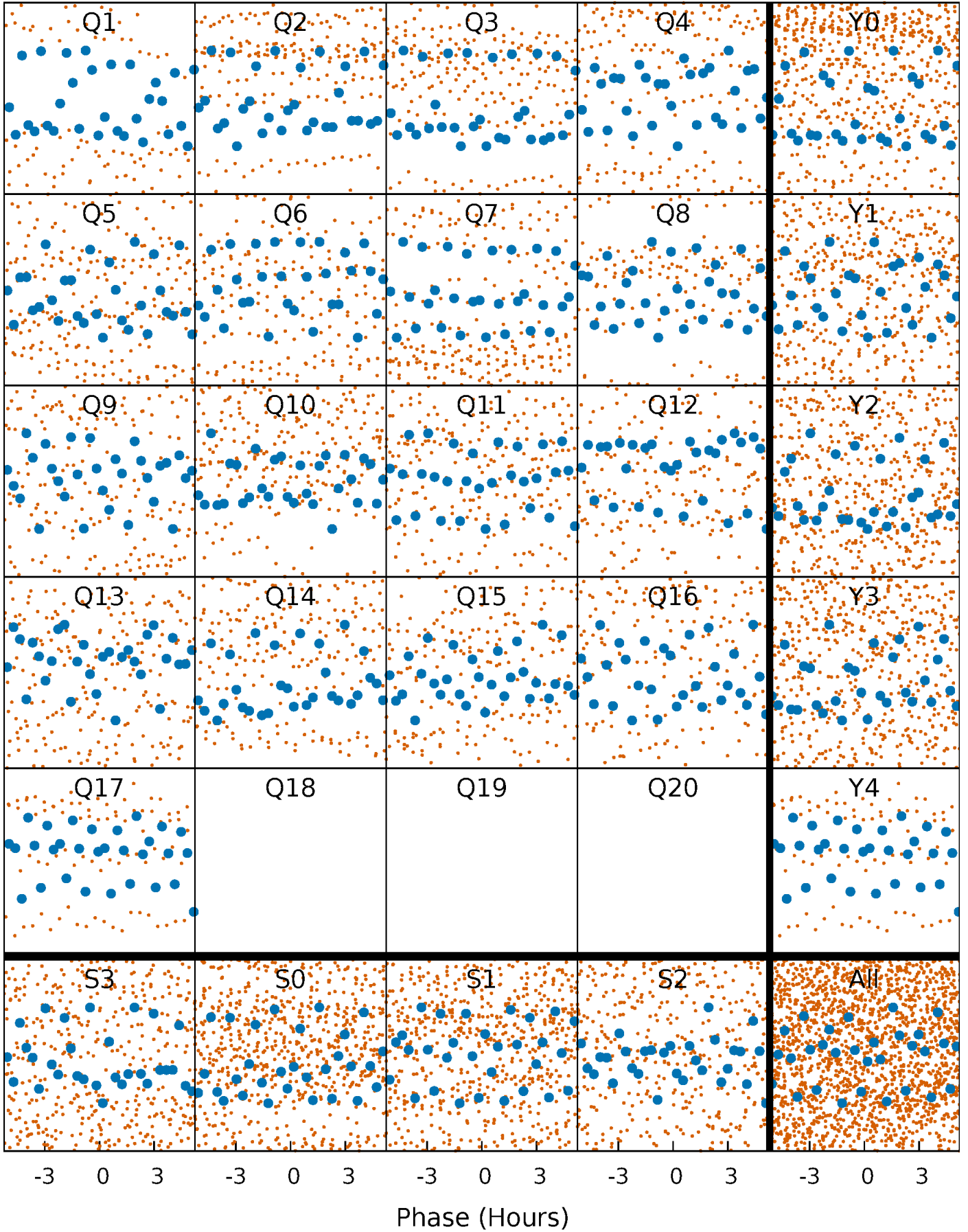


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

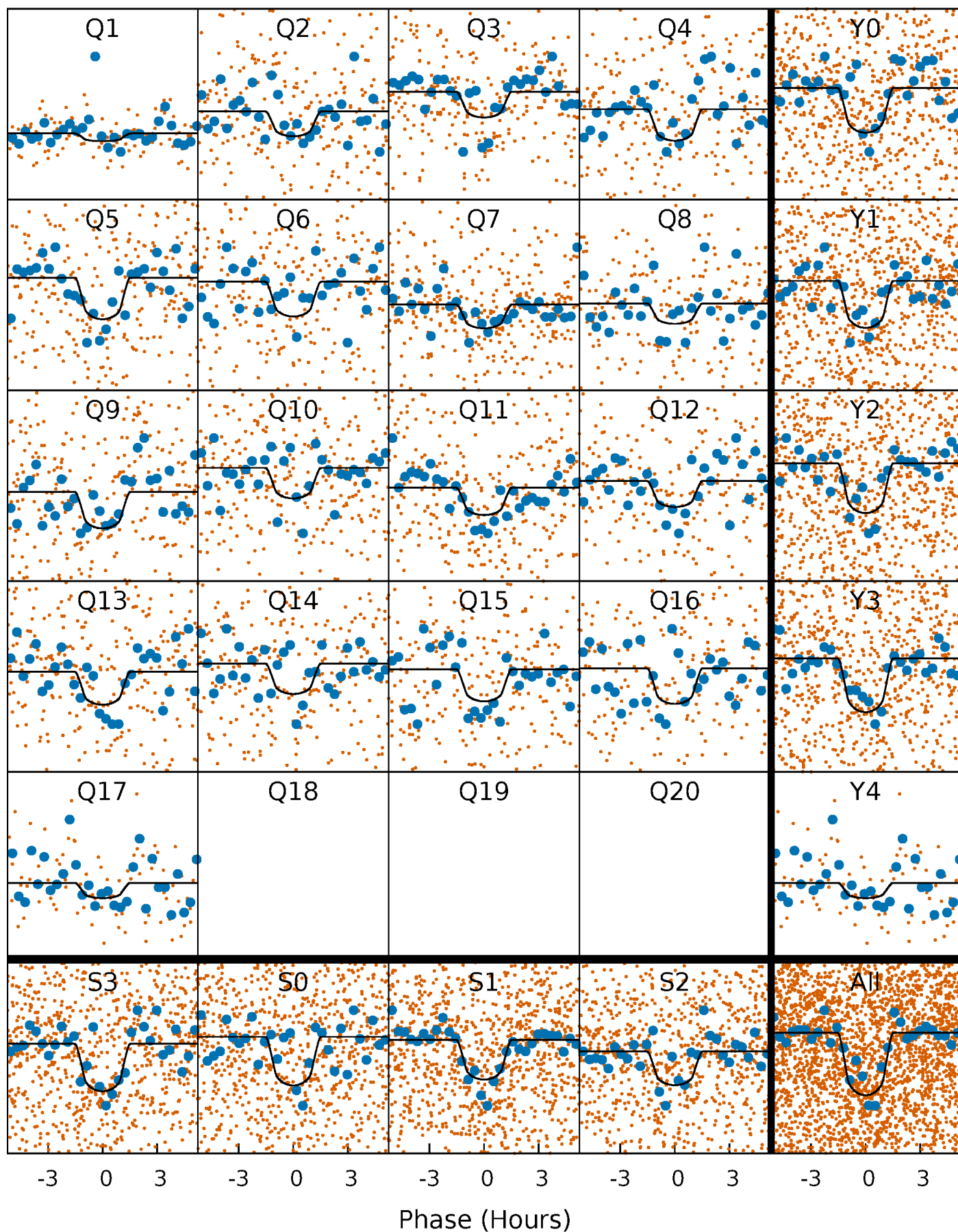
TCE 009702006-01 P= 6.245656 Days  $T_0=137.161492$  (BKJD)





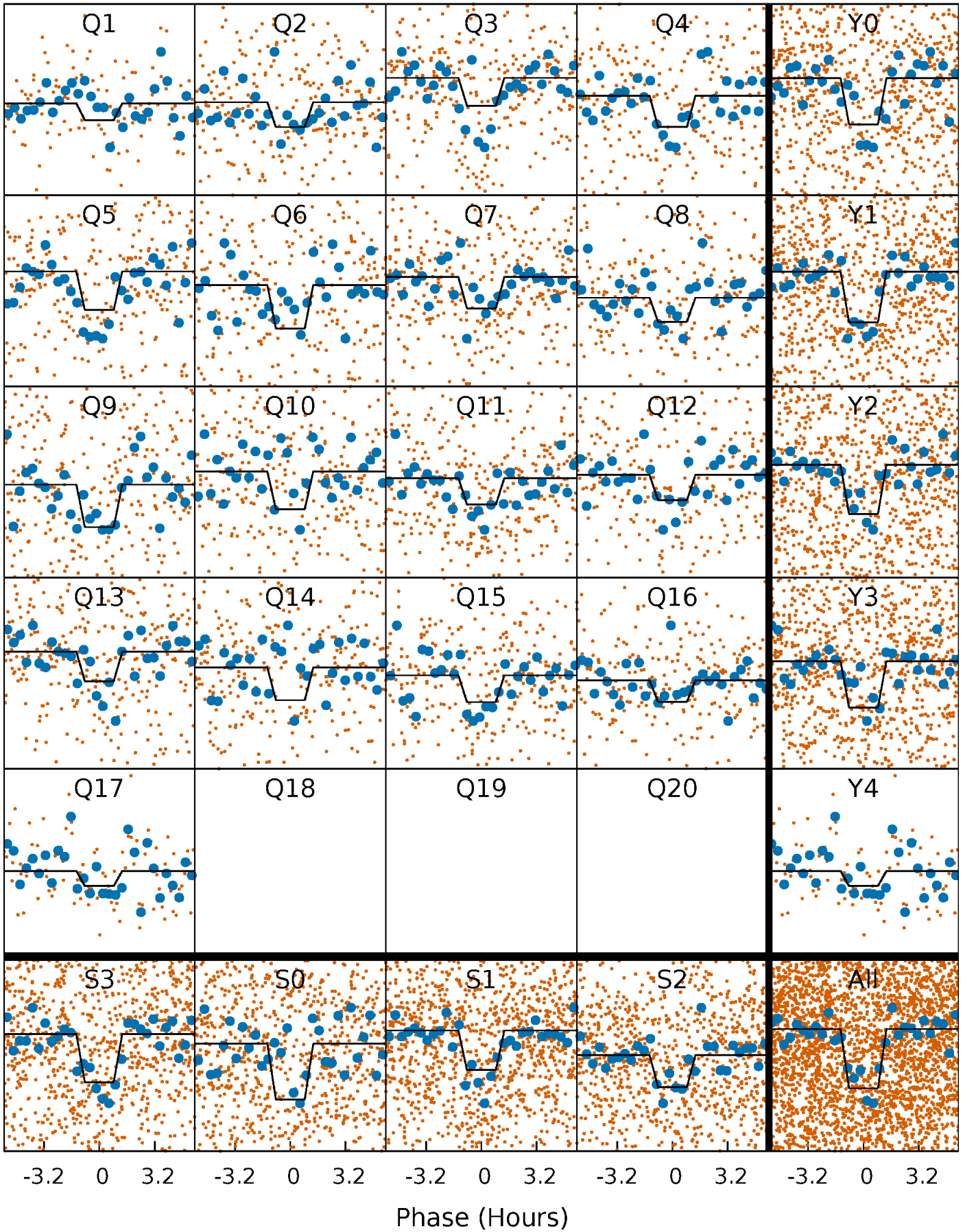
# DV Quarter-Phased Transit Curves

TCE 009702006-01 P= 6.245656 Days  $T_0=137.161492$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

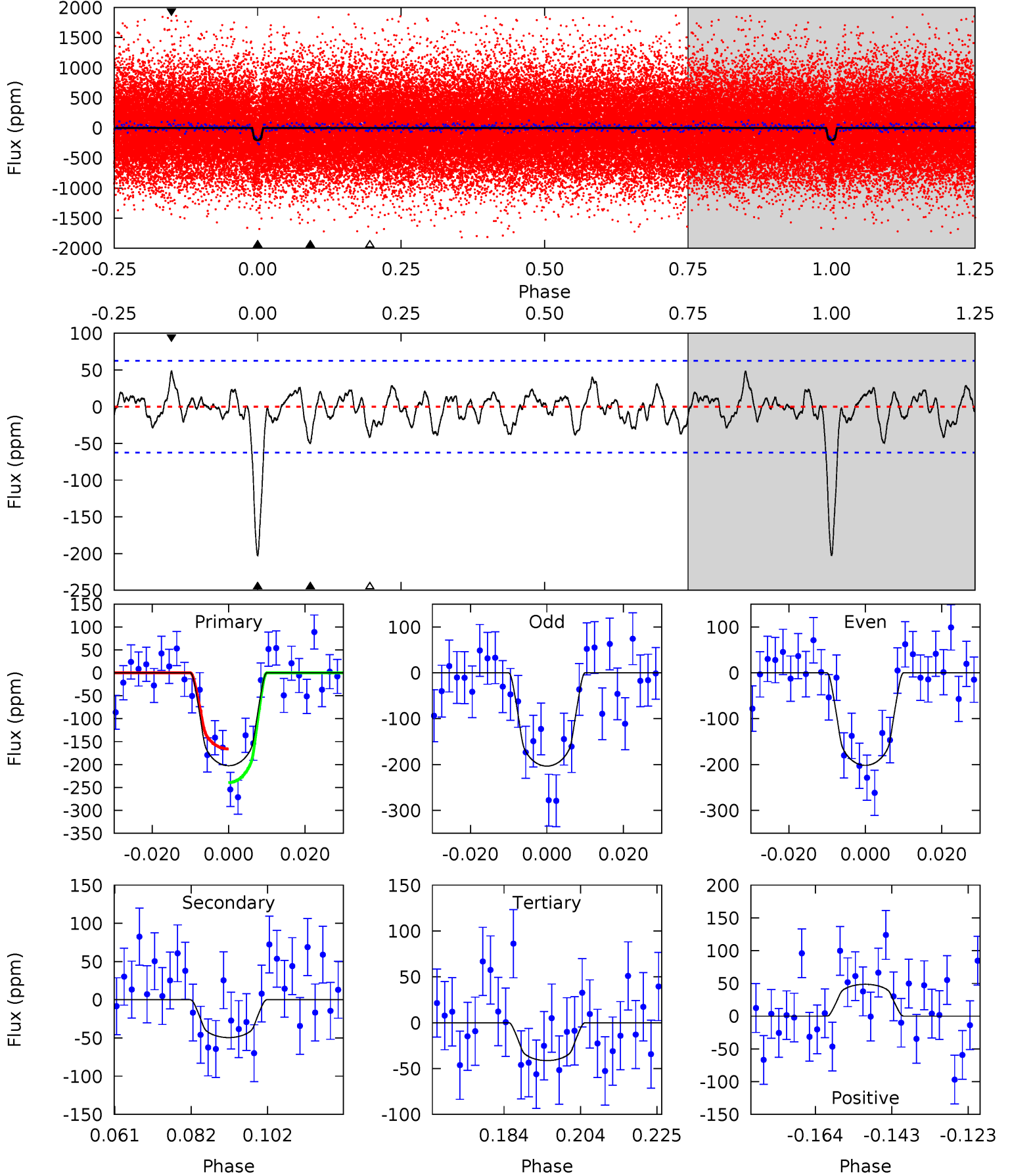
TCE 009702006-01 P= 6.245696 Days  $T_0=137.154504$  (BKJD)



# DV Model-Shift Uniqueness Test

009702006-01, P = 6.245656 Days, E = 130.915836 Days

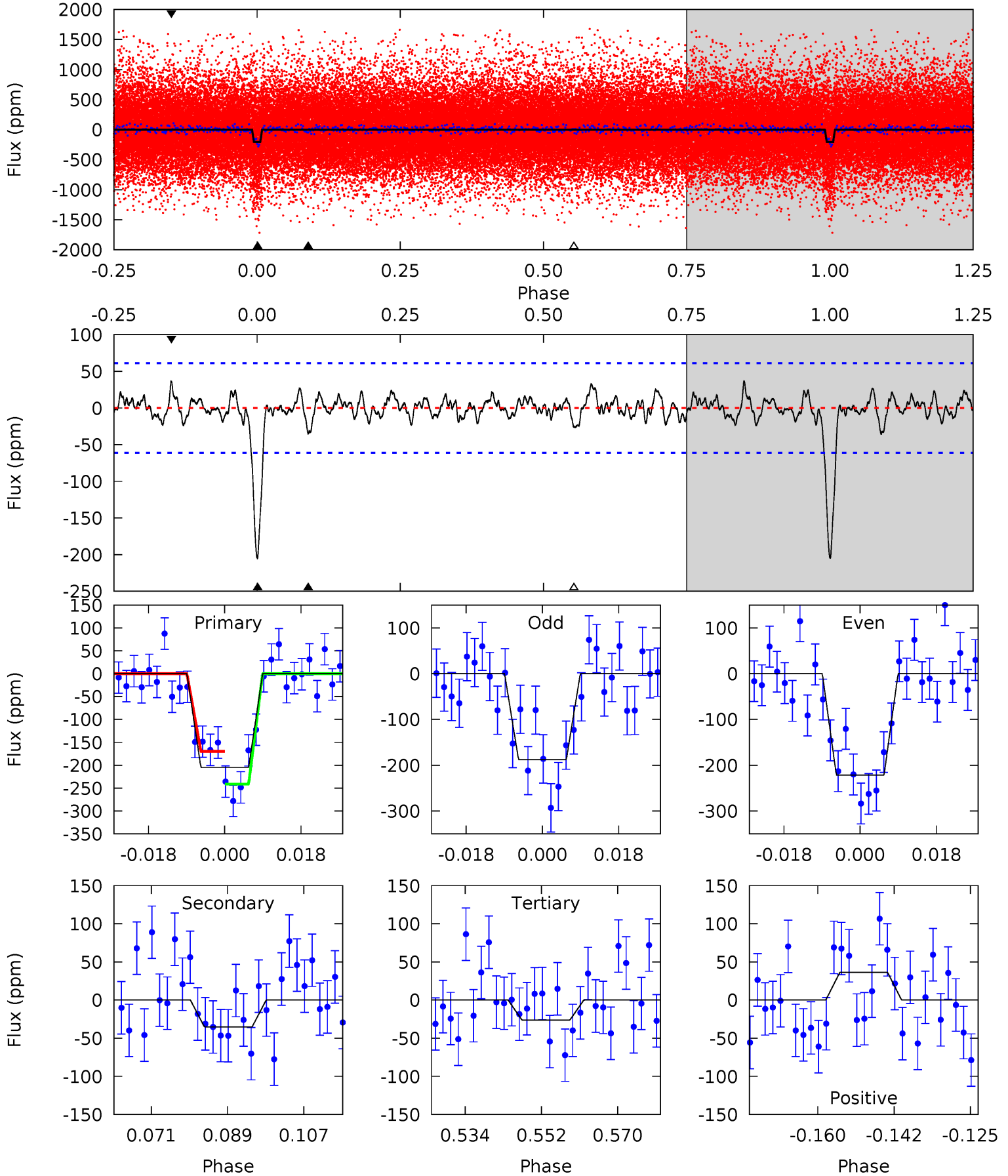
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	3.87	3.23	3.80	4.89	2.32	1.29	12.6	12.0	0.64	0.07	0.06	0.89	0.19	2.88



# Alt Model-Shift Uniqueness Test

009702006-01, P = 6.245696 Days, E = 130.908808 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
16.5	2.83	2.12	2.93	4.91	2.37	0.89	14.4	13.6	0.71	-0.10	1.35	0.88	0.15	2.88



### Stellar Parameters For KIC 009702006

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4858^{+161}_{-161}$	$4.622^{+0.027}_{-0.059}$	$-0.020^{+0.300}_{-0.300}$	$0.707^{+0.080}_{-0.049}$	$0.786^{+0.054}_{-0.081}$	$3.134^{+0.459}_{-0.702}$
	+3%/-3%	+1%/-1%	+1500%/-1500%	+11%/-7%	+7%/-10%	+15%/-22%
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 009702006-01 / KOI 4372.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-50 \pm 13$	$1.31^{+0.81}_{-0.71}$	$1031^{+44}_{-38}$	$3517^{+1166}_{-483}$	$55^{+235}_{-33}$
Alt.	$-35 \pm 12$	$1.17^{+0.82}_{-0.66}$	$1031^{+39}_{-38}$	$3459^{+1246}_{-555}$	$49^{+218}_{-33}$

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



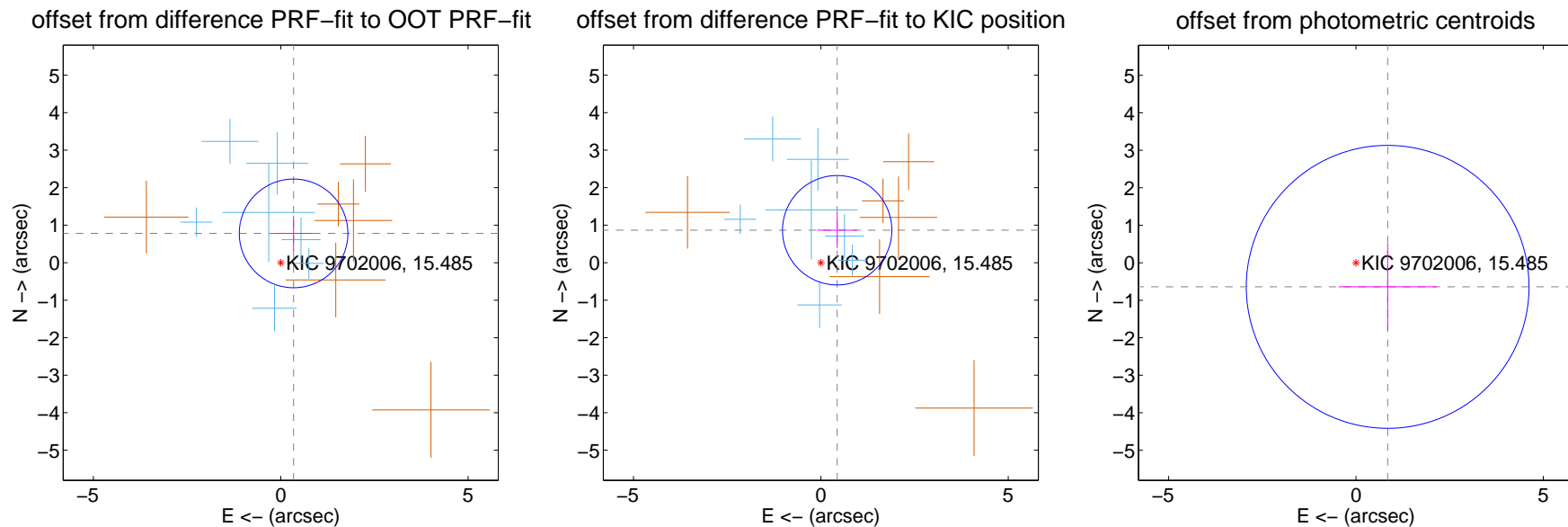
## DV Centroid Data

Supplemental centroid analysis for 009702006-01. Kepler magnitude: 15.48. Transit SNR 11.19

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

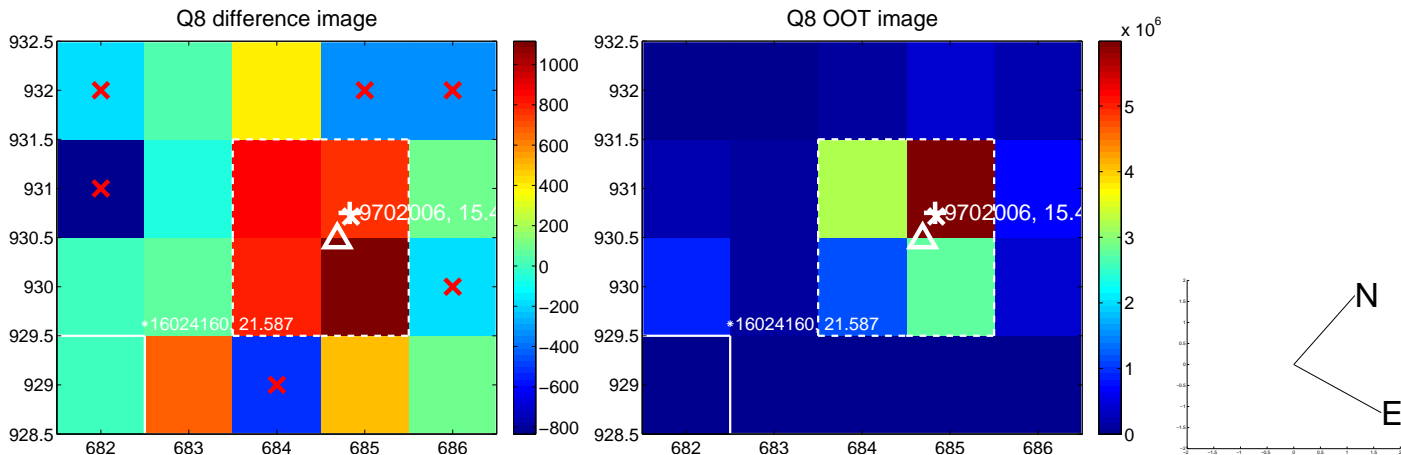
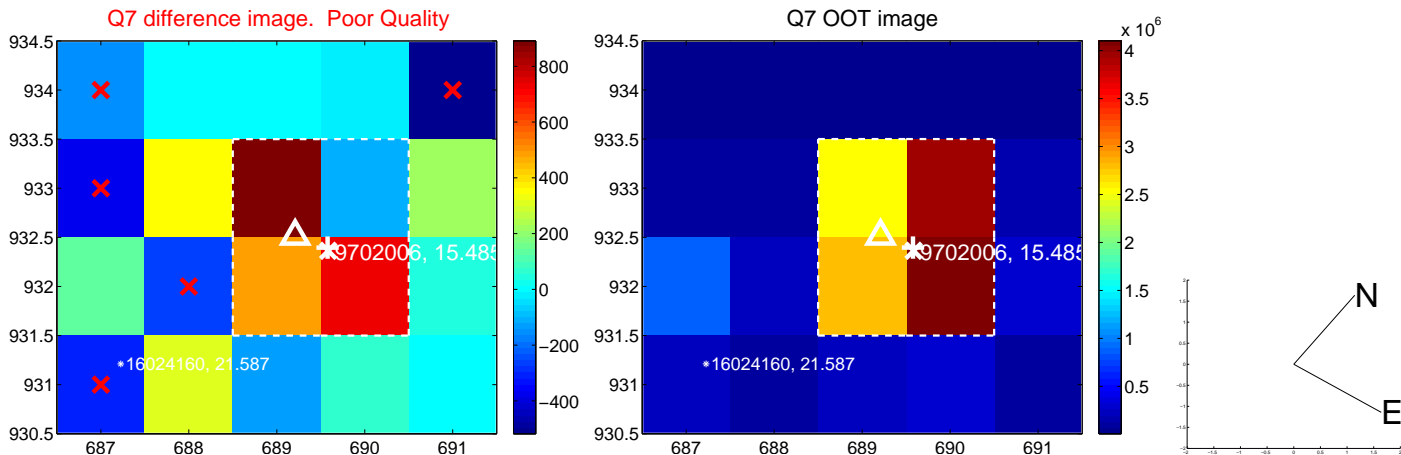
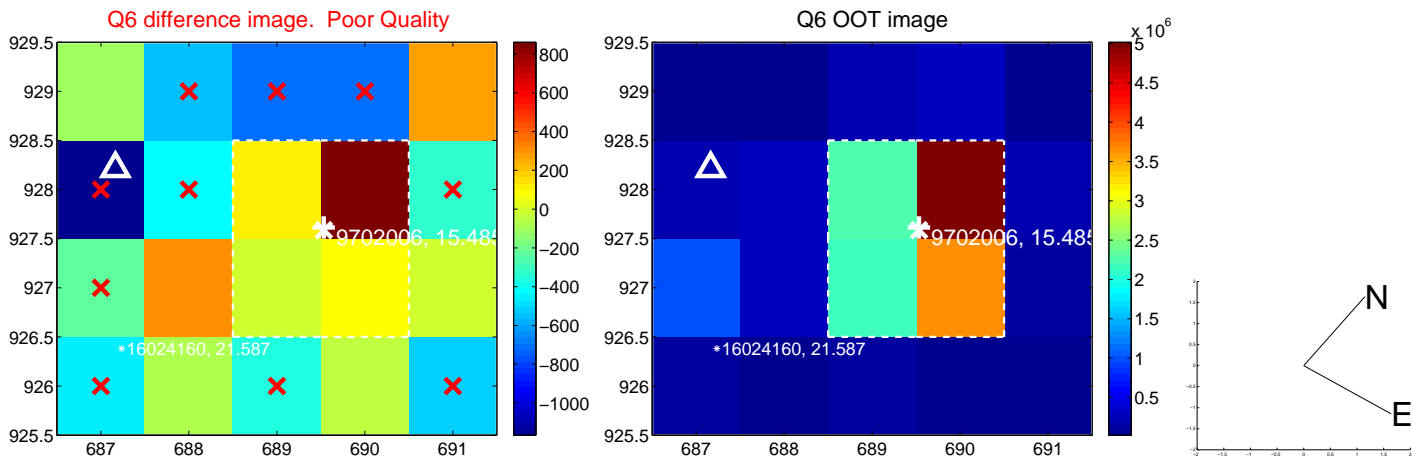
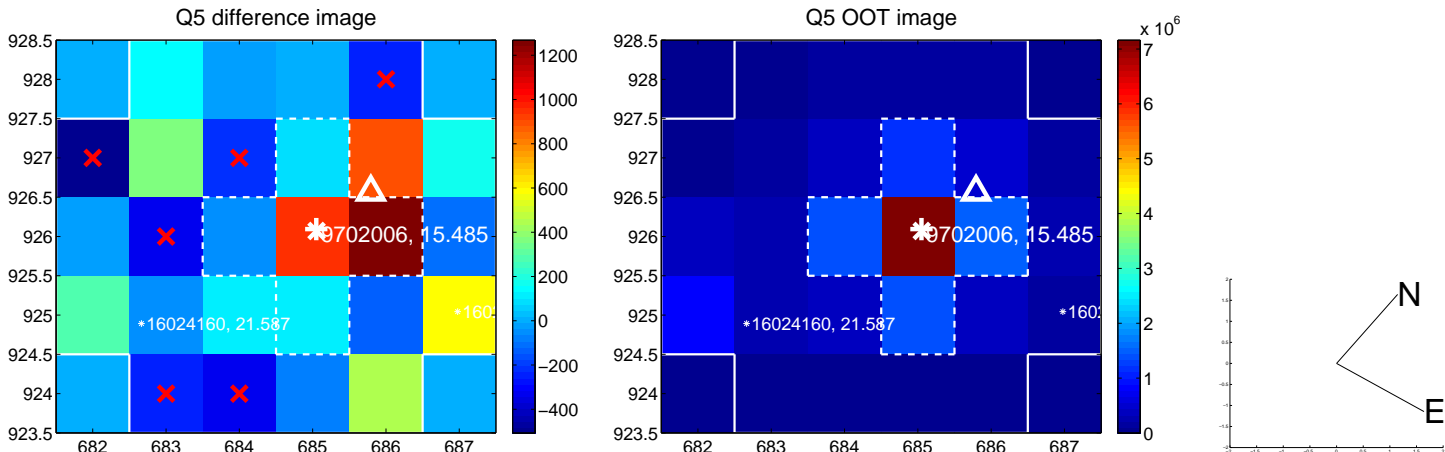
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.853 \pm 0.483$	1.77	$-0.342 \pm 0.526$	$0.781 \pm 0.474$
PRF-fit source offset from KIC position	$0.969 \pm 0.486$	1.99	$-0.435 \pm 0.533$	$0.865 \pm 0.474$
photometric centroid source offset	$1.06 \pm 1.26$	0.84	$-0.85 \pm 1.31$	$-0.64 \pm 1.16$



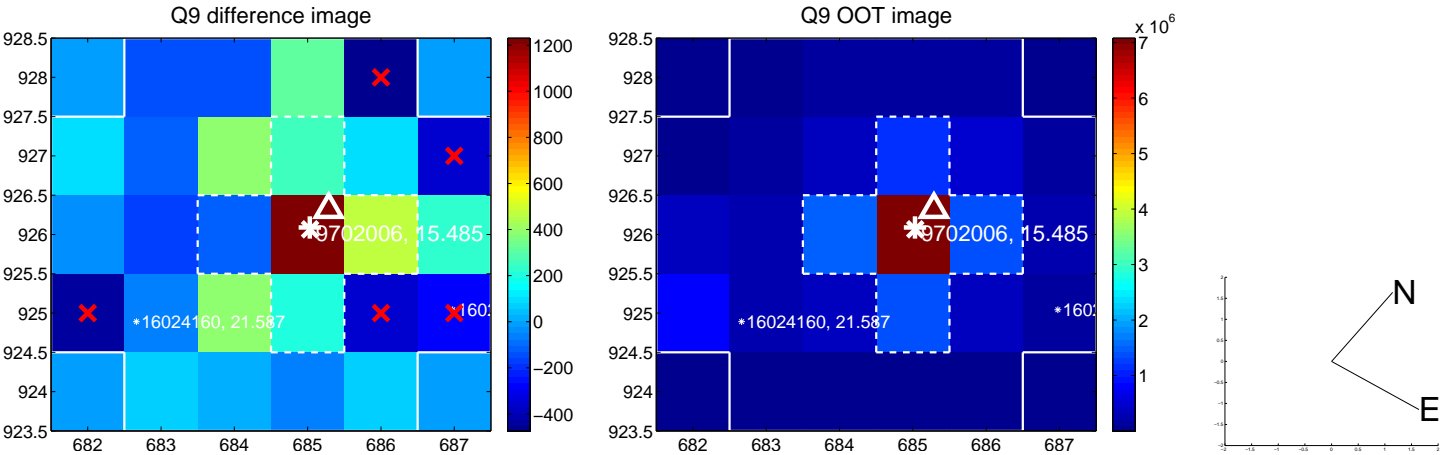
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



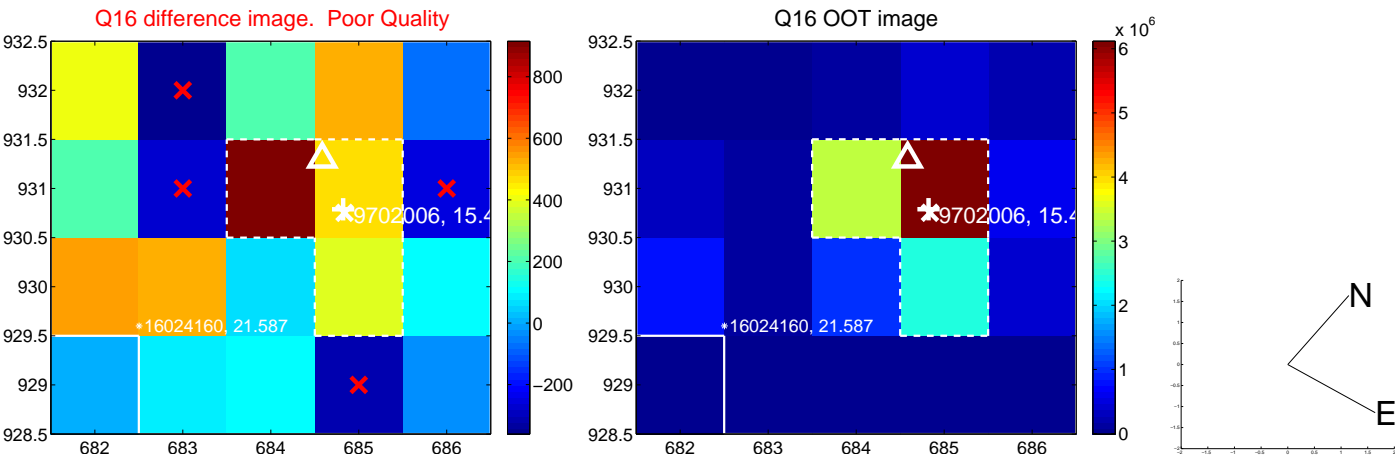
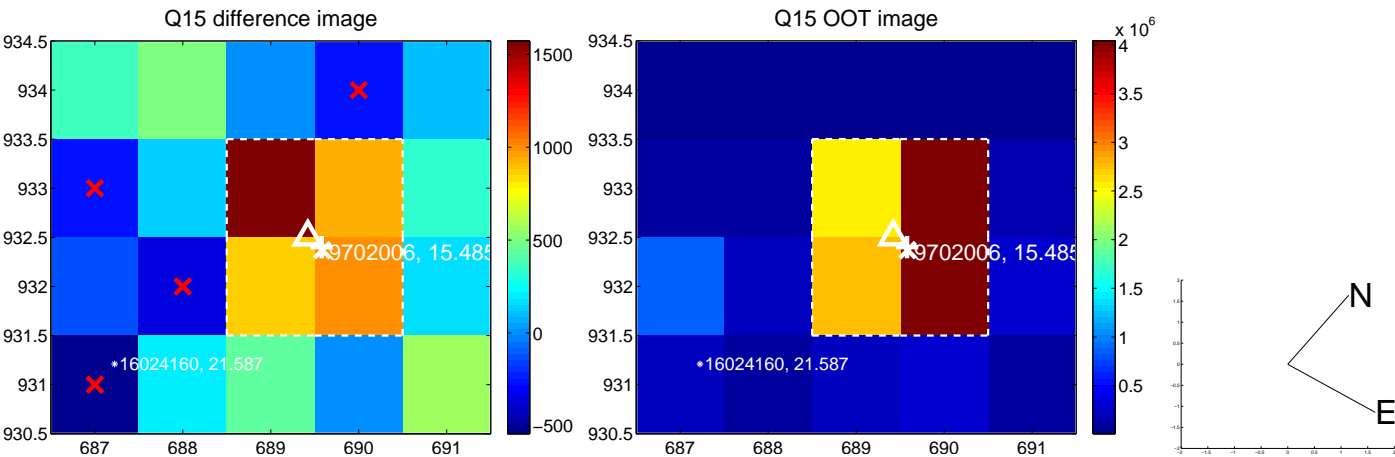
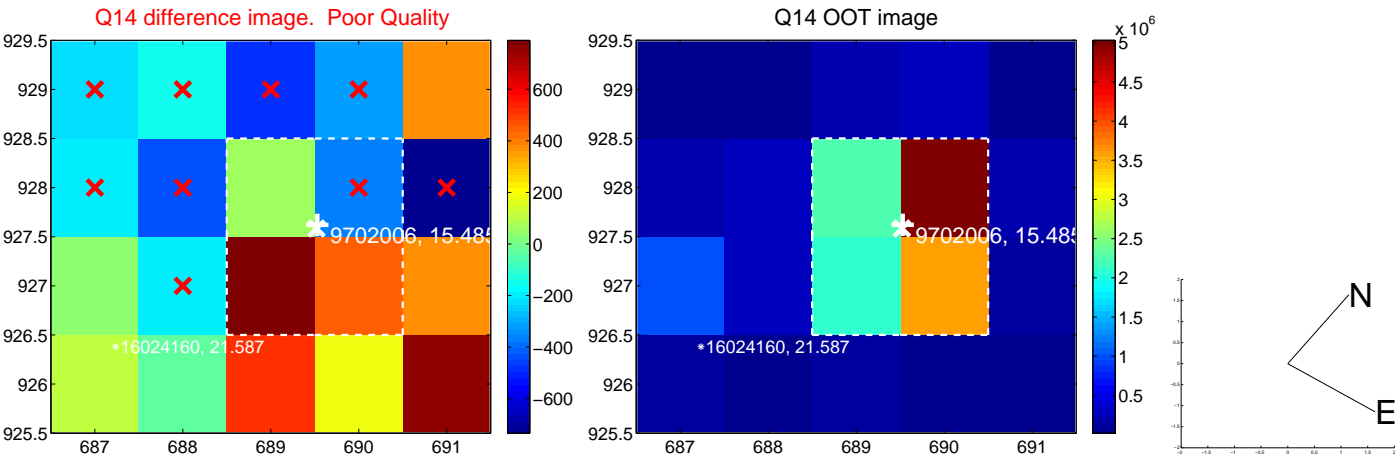
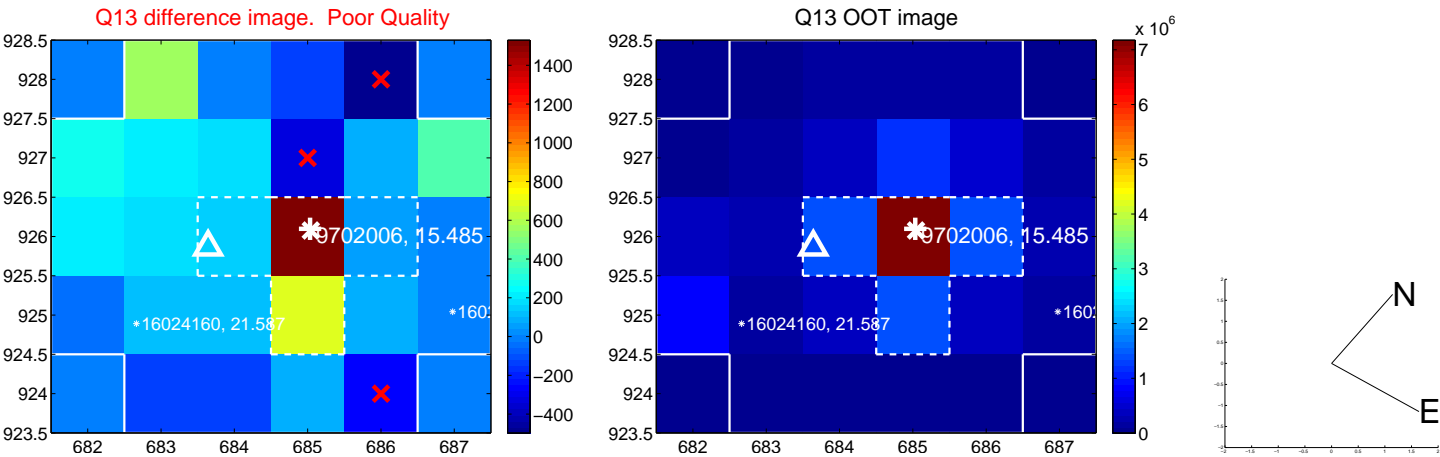
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.







# UKIRT Image

Declination

