

# KIC 009278725

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009278725-01	OBS	2223.01	1.104458	132.321853	423.6	1.241	31.0	37.2	0.75	5002	1.90	903.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009278725-01	OBS	PC	1.00	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 009278725-01

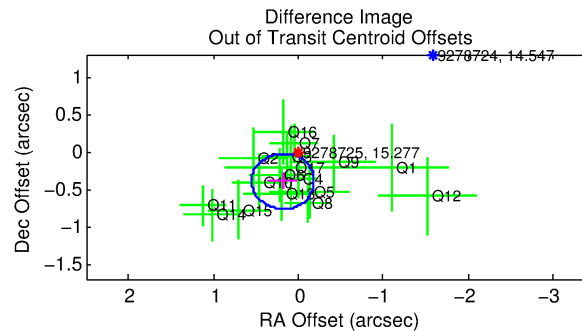
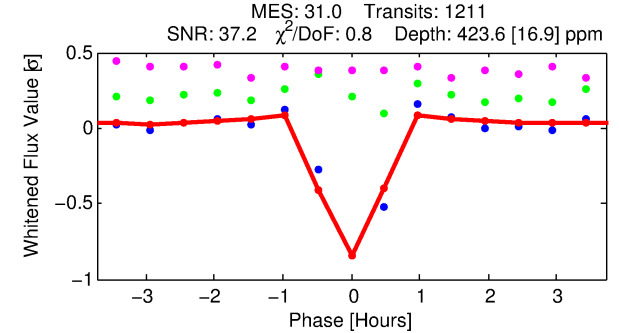
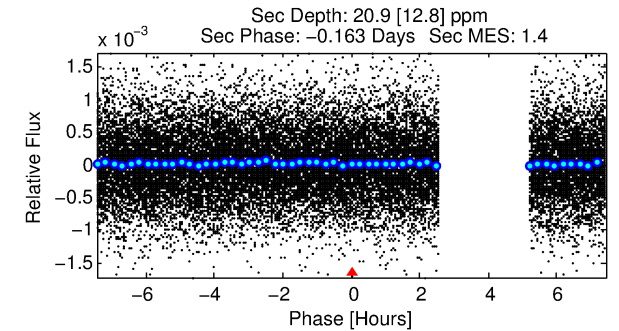
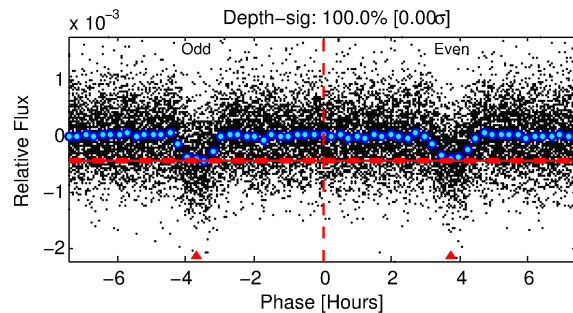
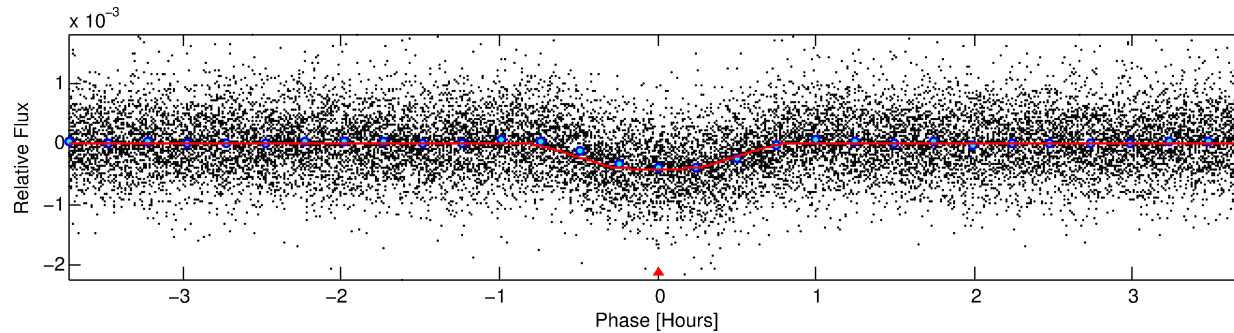
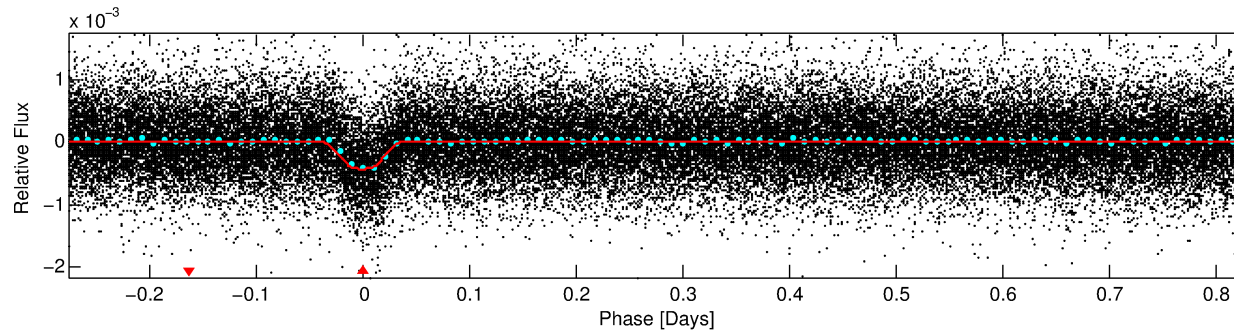
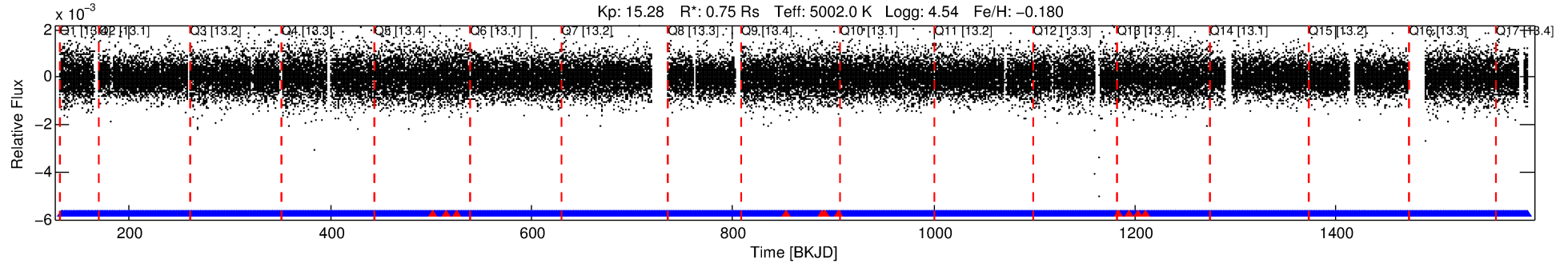
No Significant Match Found

# DV One-Page Summary

KIC: 9278725 Candidate: 1 of 1 Period: 1.104 d

KOI: K02223.01 Corr: 0.912

Kp: 15.28 R\*: 0.75 Rs Teff: 5002.0 K Logg: 4.54 Fe/H: -0.180



## DV Fit Results:

Period = 1.10446 [0.00000] d  
Epoch = 132.3219 [0.0005] BKJD  
Rp/R\* = 0.0231 [0.0050]  
a/R\* = 3.44 [2.67]  
b = 0.90 [0.19]  
Seff = 903.23 [166.08]  
Teq = 1398 [64] K  
Rp = 1.90 [0.46] Re  
a = 0.0188 [0.0017] AU  
Ag = 1.12 [0.86] [0.14σ]  
Teffp = 2225 [423] K [1.93σ]

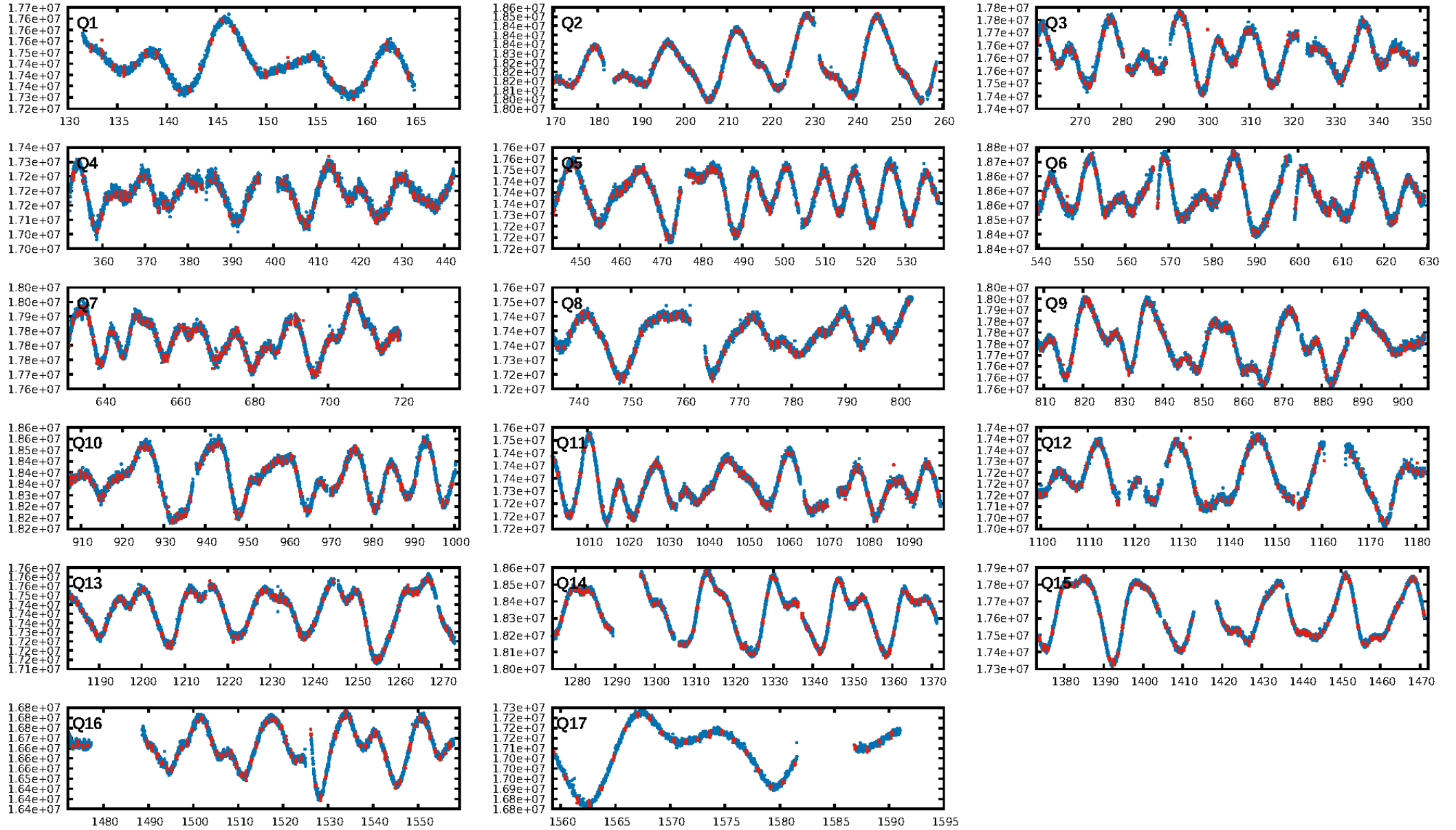
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.43e-197  
RollingBand-fgt: 0.99 [1145/1156]  
GhostDiagnostic-chr: 4.301  
Centroid-sig: 0.1%  
Centroid-so: 0.424 arcsec [1.30σ]  
OotOffset-rm: 0.436 arcsec [3.53σ]  
KicOffset-rm: 0.203 arcsec [1.77σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

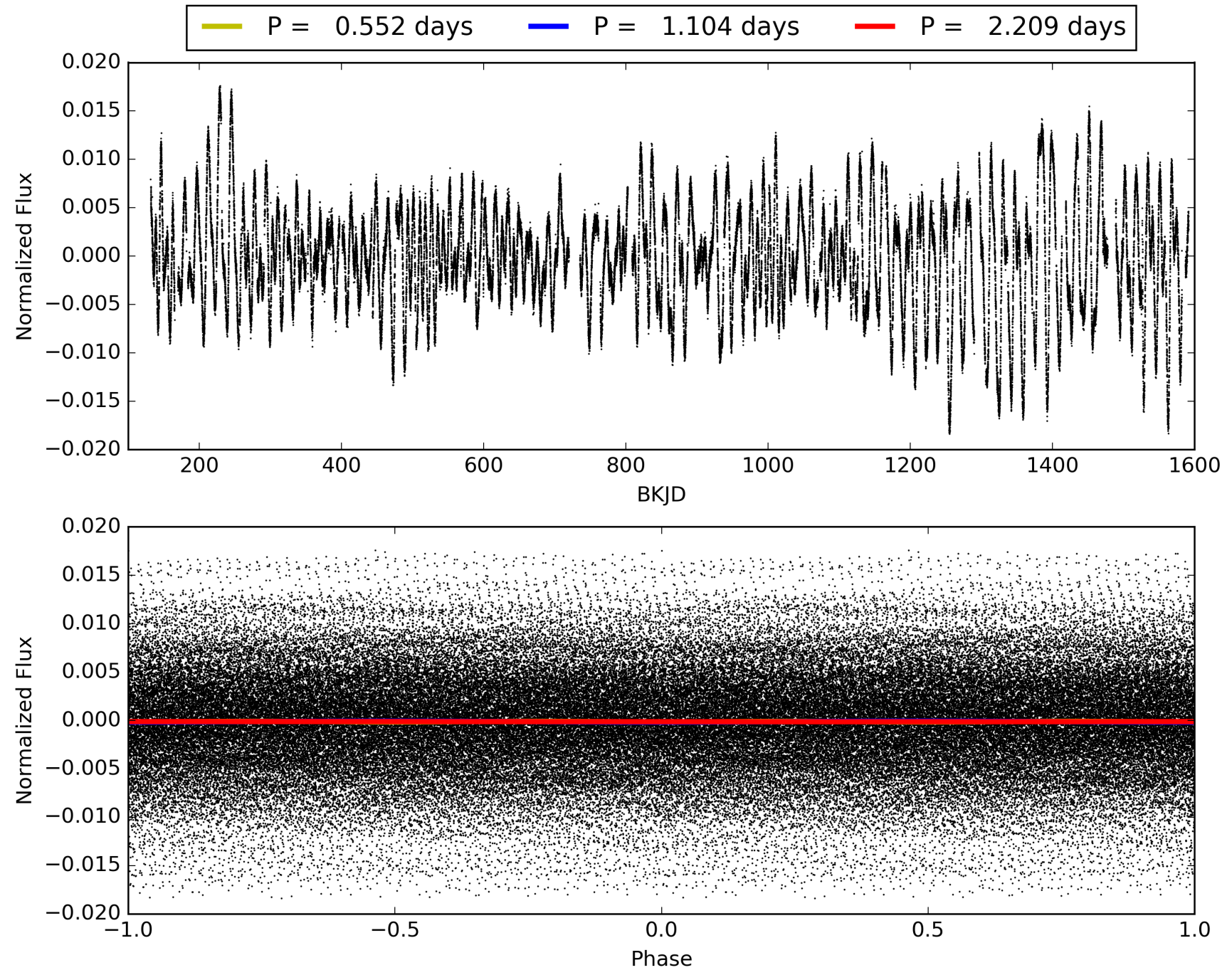
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:20:13 Z

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

# TCE 009278725-01, PDC Light Curves

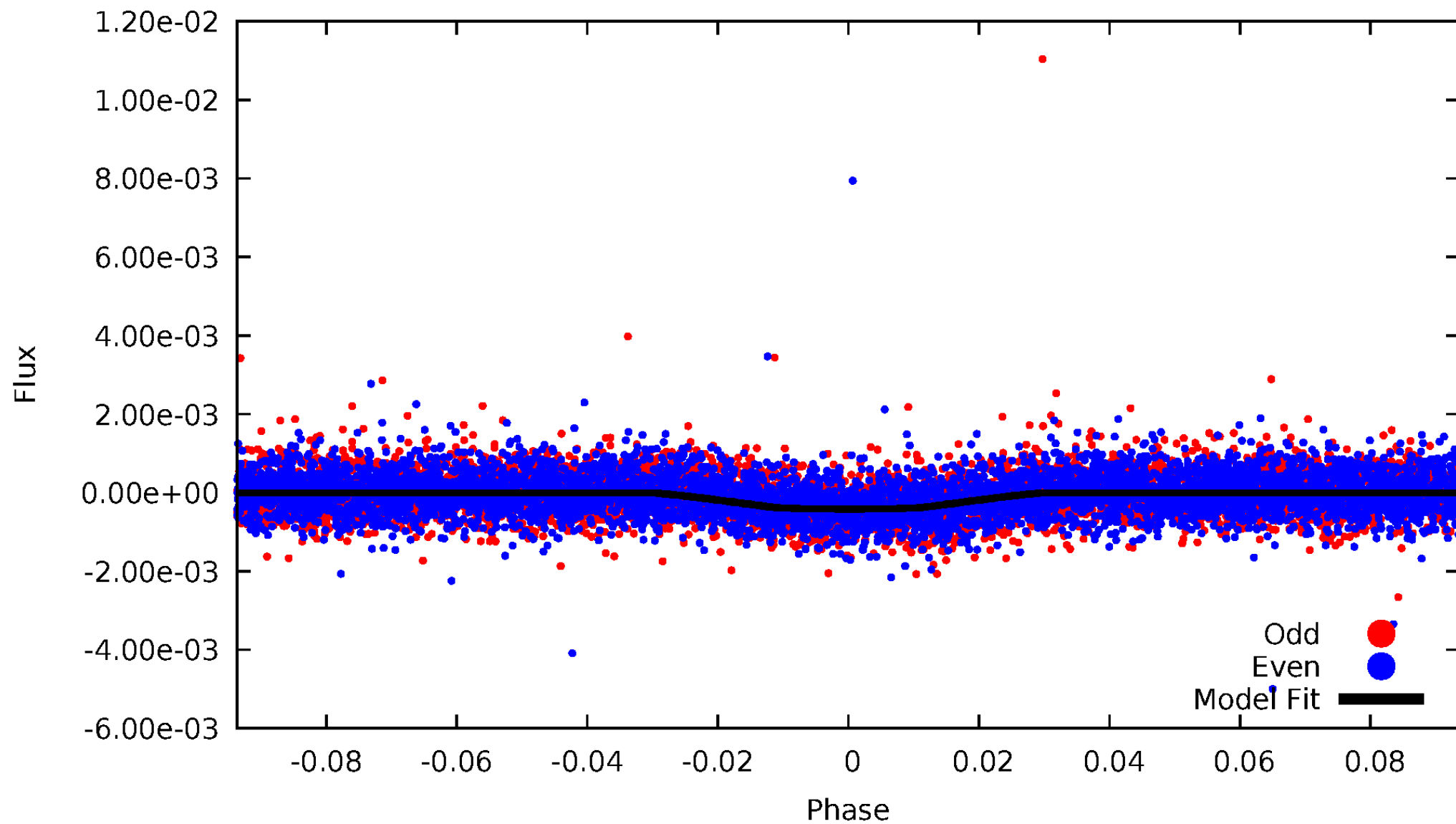


# TCE 009278725-01



# DV Odd/Even

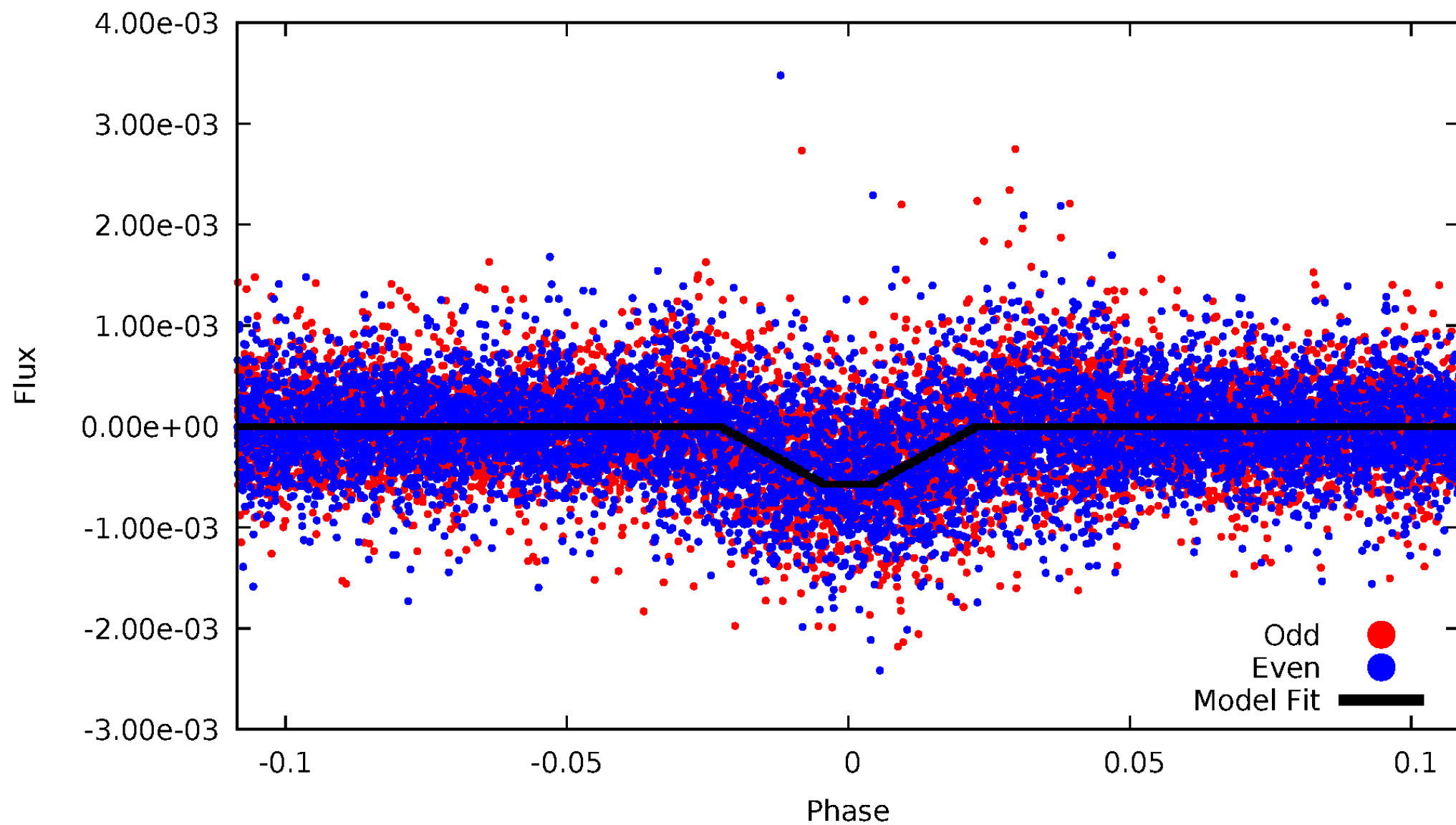
TCE 009278725-01



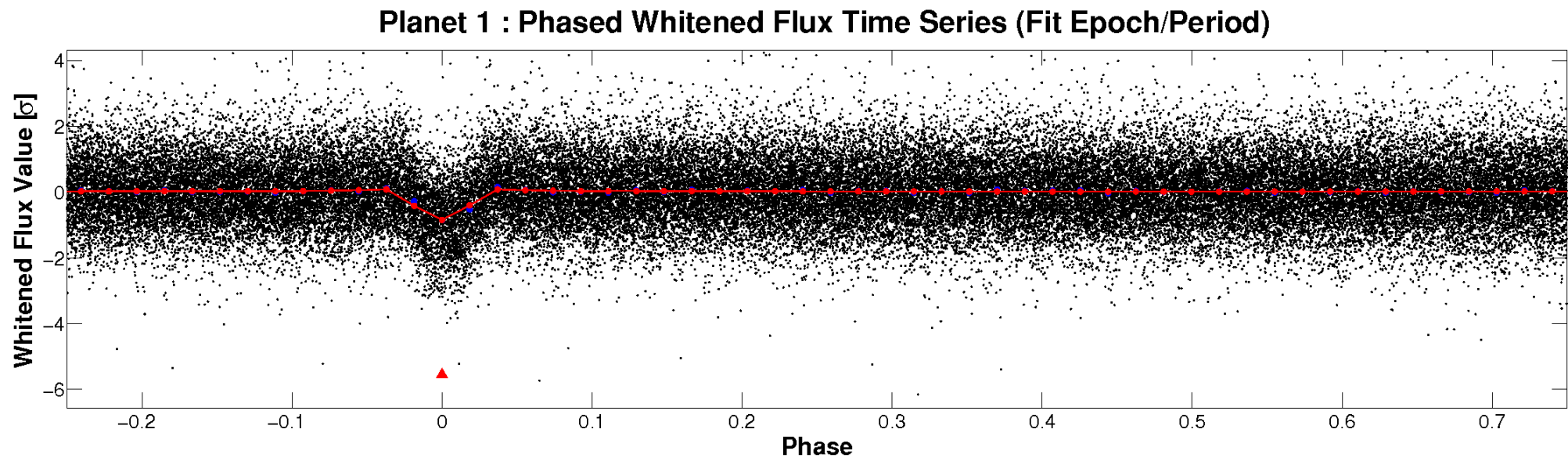
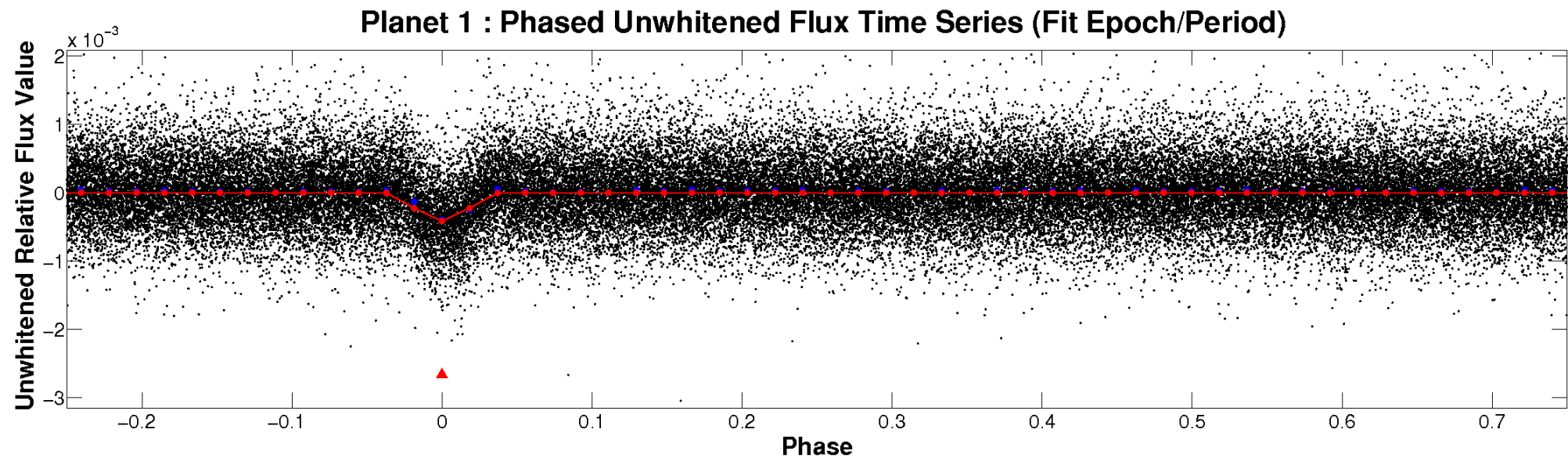


# ALT Odd/Even

TCE 009278725-01

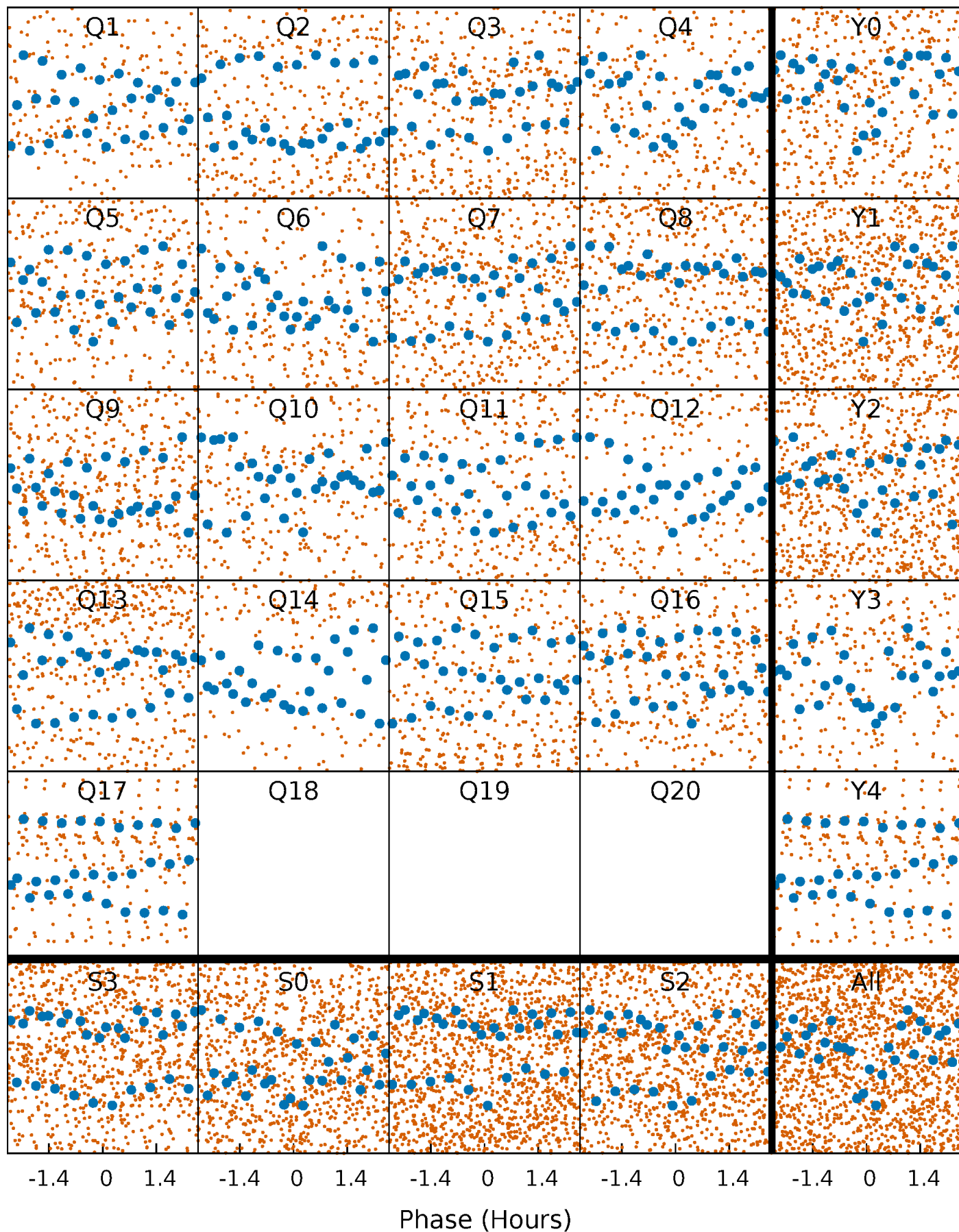


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

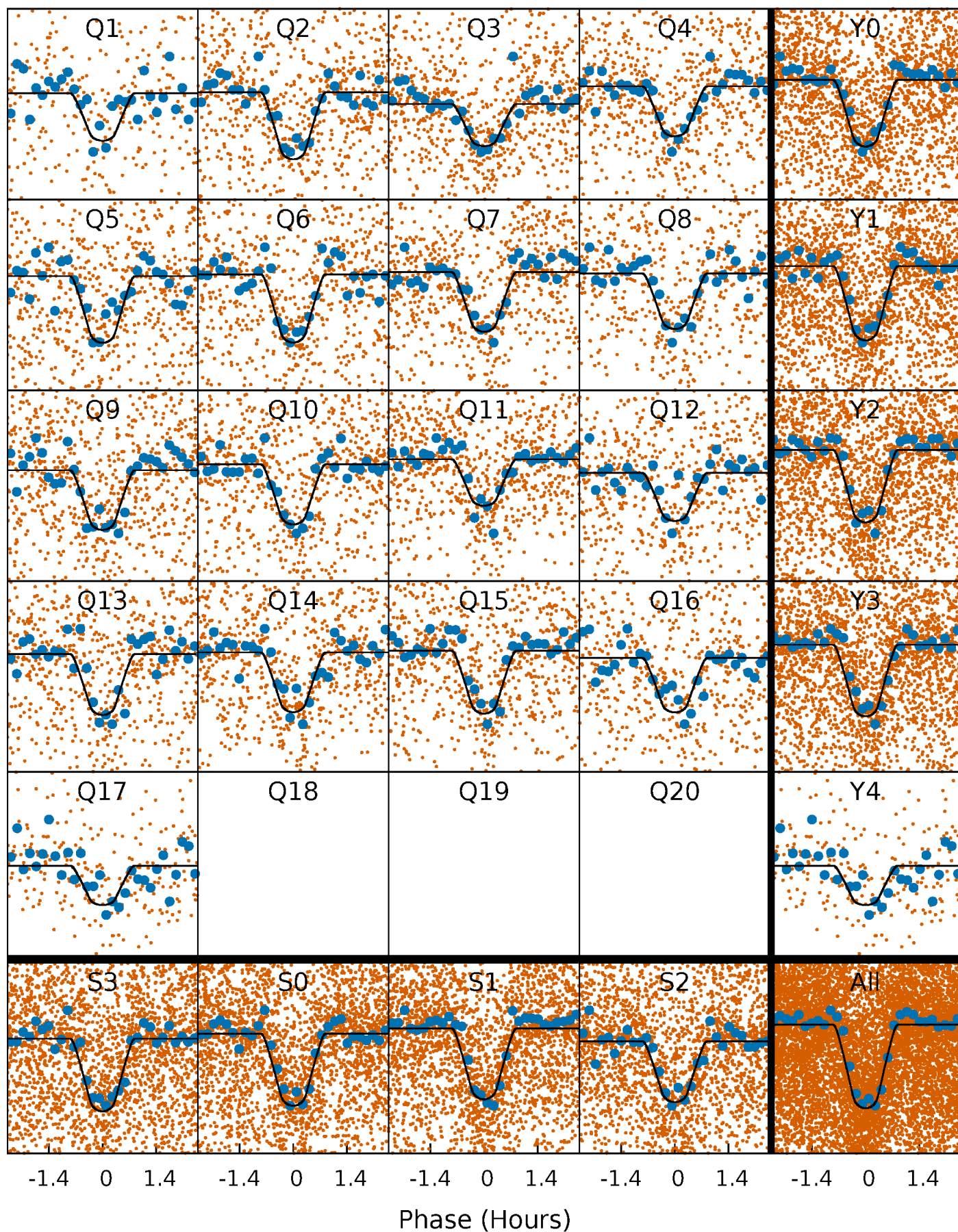
TCE 009278725-01 P= 1.104458 Days  $T_0=132.321853$  (BKJD)





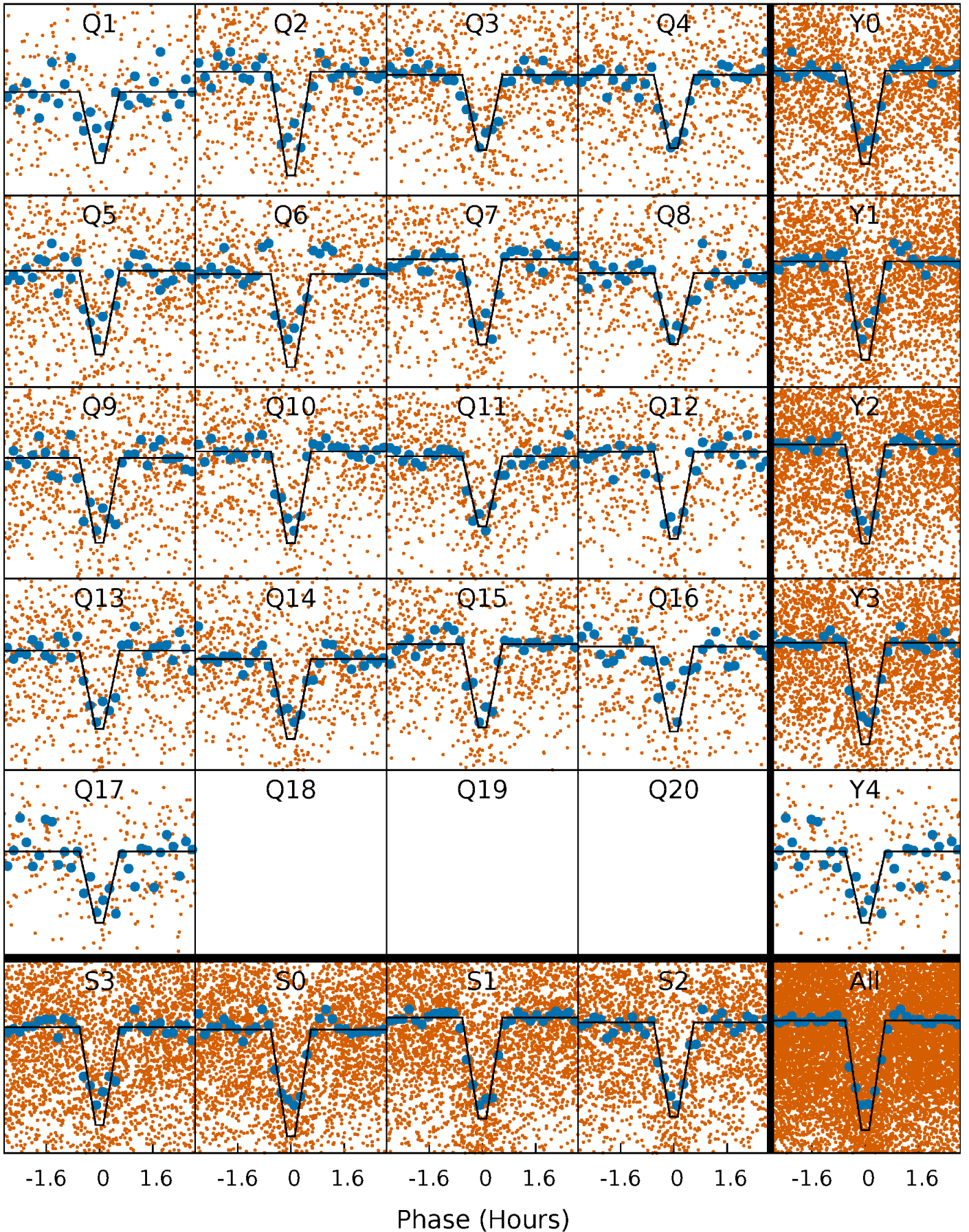
# DV Quarter-Phased Transit Curves

TCE 009278725-01 P= 1.104458 Days  $T_0=132.321853$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

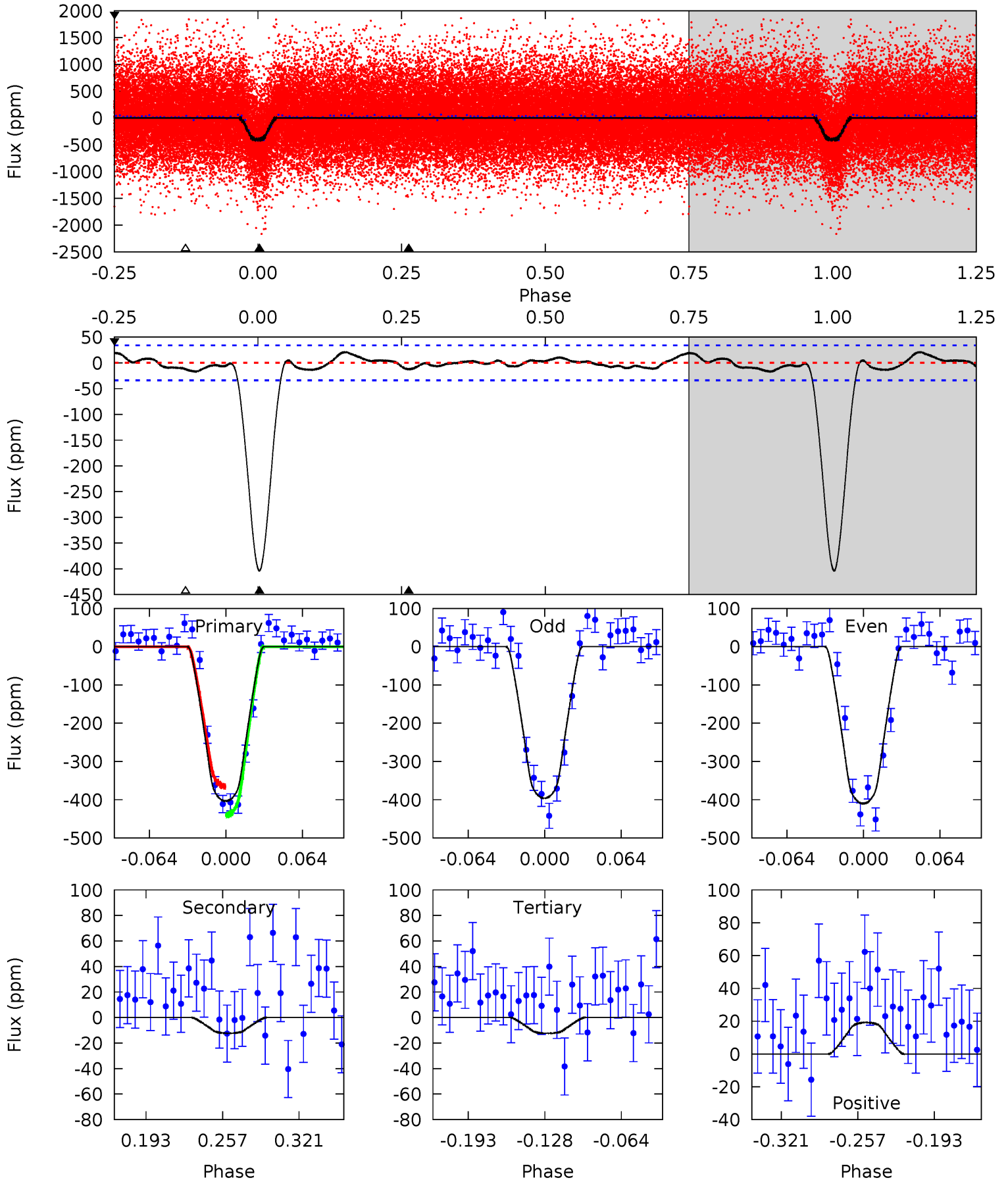
TCE 009278725-01 P= 1.104462 Days  $T_0=132.321491$  (BKJD)



# DV Model-Shift Uniqueness Test

009278725-01, P = 1.104458 Days, E = 131.217395 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
55.4	1.69	1.70	2.64	4.66	1.85	1.20	53.7	52.8	-0.01	-0.94	0.96	0.97	0.05	5.15

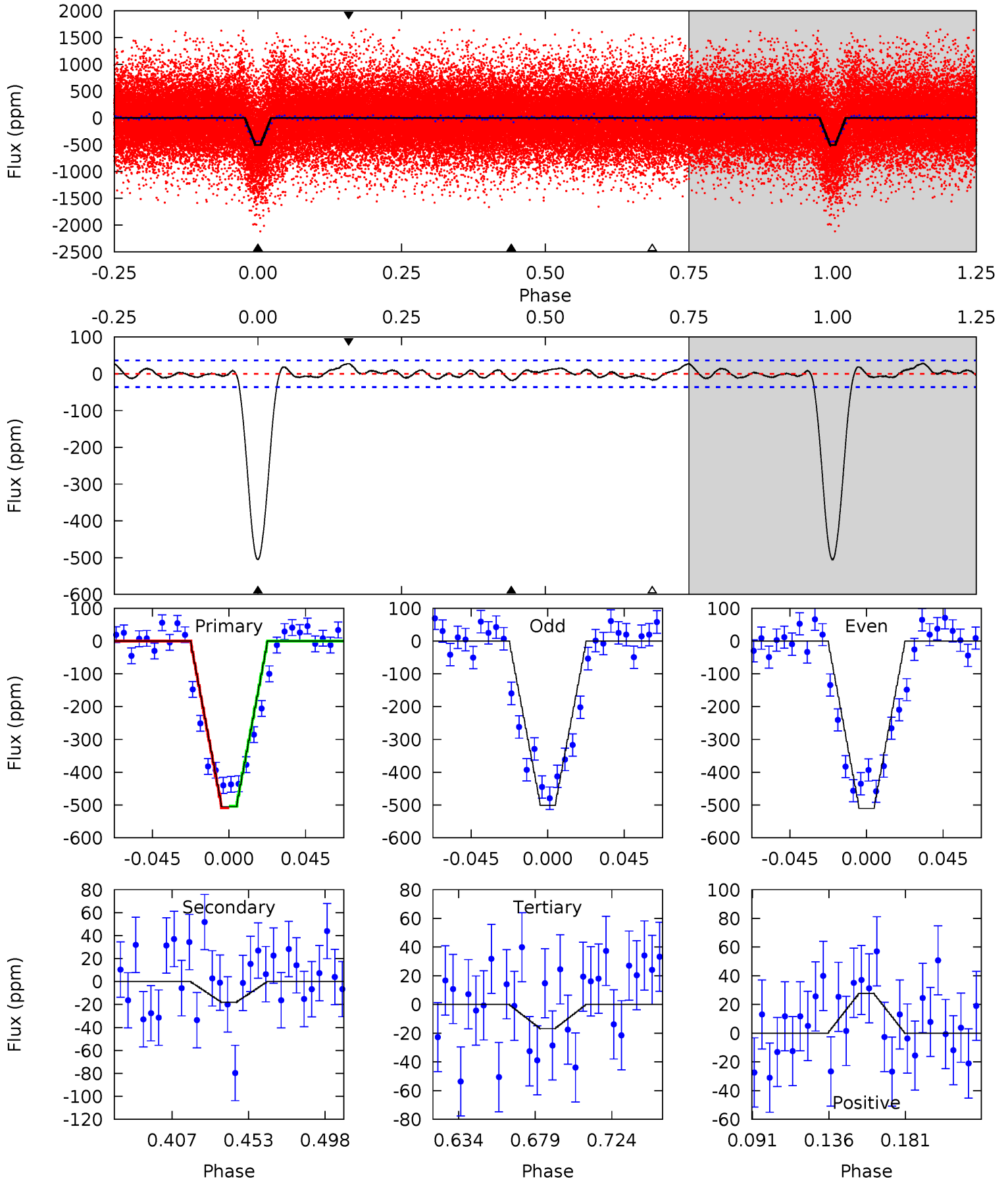




# Alt Model-Shift Uniqueness Test

009278725-01, P = 1.104462 Days, E = 131.217029 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
66.1	2.36	2.20	3.63	4.73	2.00	1.26	63.9	62.5	0.16	-1.27	0.64	0.94	0.05	0.31



### Stellar Parameters For KIC 009278725

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5002^{+151}_{-136}$	$4.543^{+0.078}_{-0.048}$	$-0.180^{+0.300}_{-0.300}$	$0.753^{+0.065}_{-0.079}$	$0.723^{+0.100}_{-0.050}$	$2.383^{+0.756}_{-0.400}$
	+3%/-3%	+2%/-1%	+167%/-167%	+9%/-10%	+14%/-7%	+32%/-17%
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 009278725-01 / KOI 2223.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-12 \pm 7$	$1.90^{+0.43}_{-0.43}$	$1944^{+71}_{-73}$	$2483^{+371}_{-4500}$	$0.637^{+0.691}_{-0.388}$
Alt.	$-18 \pm 8$	$1.96^{+0.45}_{-0.41}$	$1946^{+74}_{-74}$	$2646^{+298}_{-428}$	$0.889^{+0.728}_{-0.460}$

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



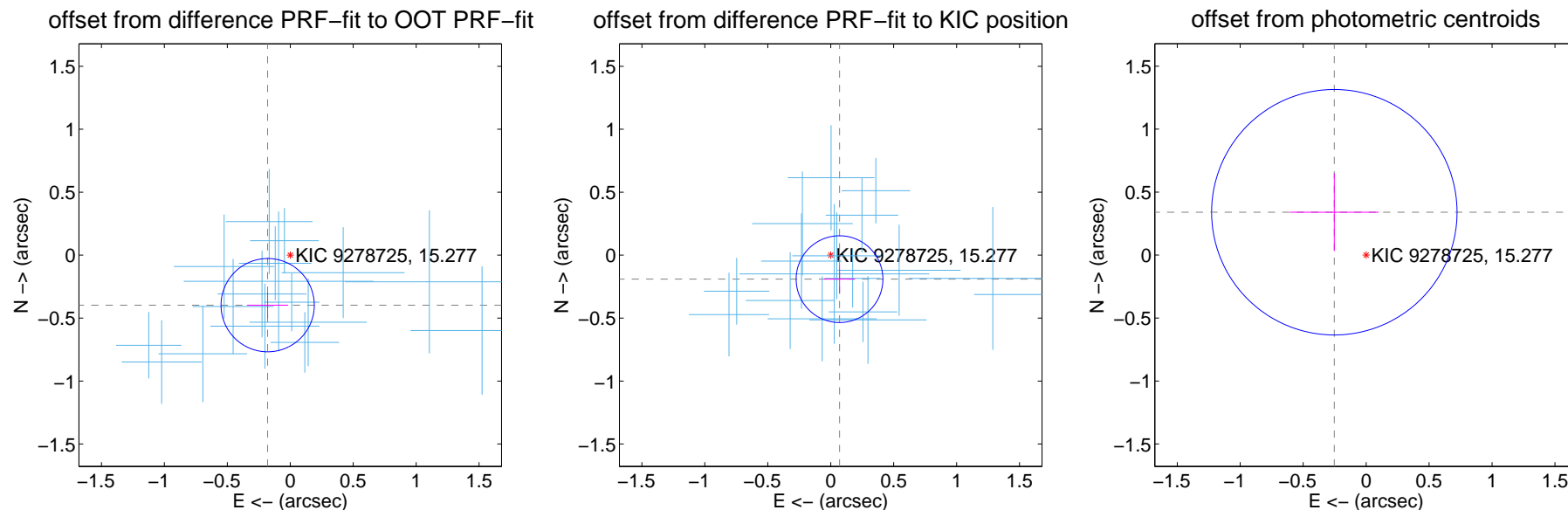
## DV Centroid Data

Supplemental centroid analysis for 009278725-01. Kepler magnitude: 15.28. Transit SNR 37.24

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

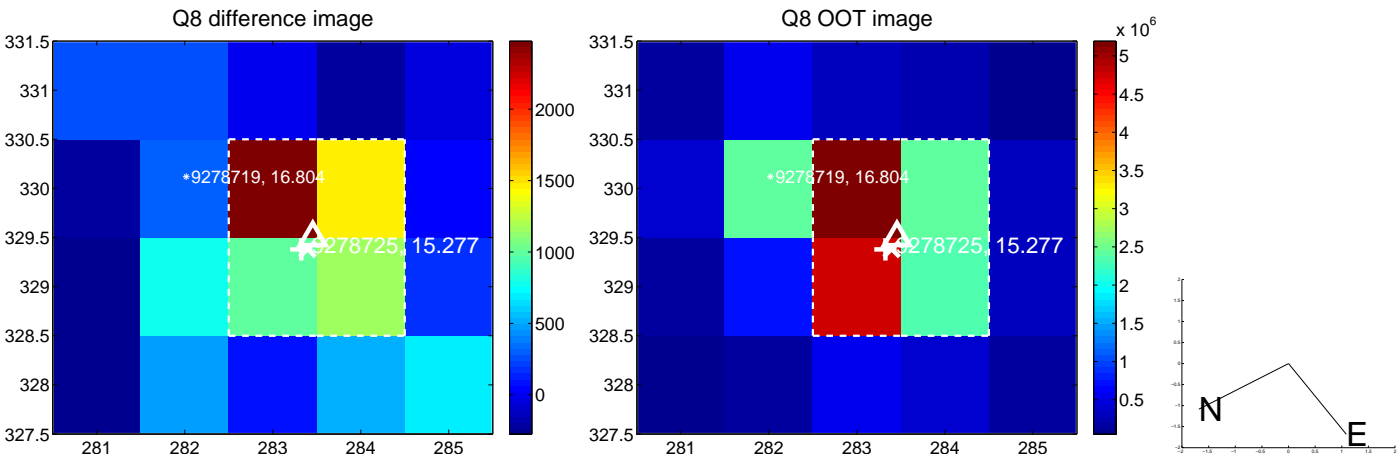
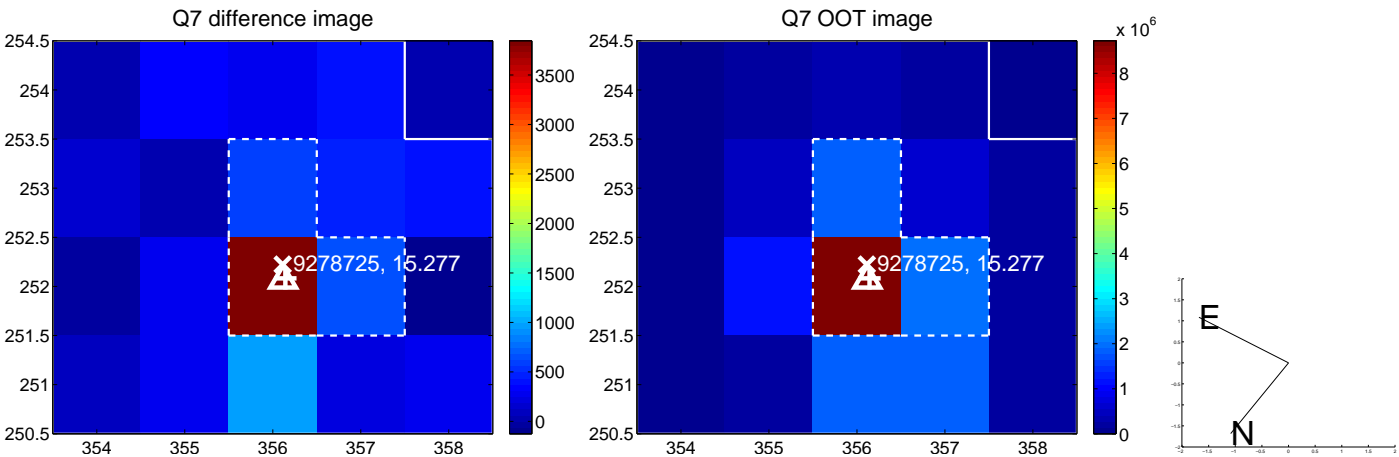
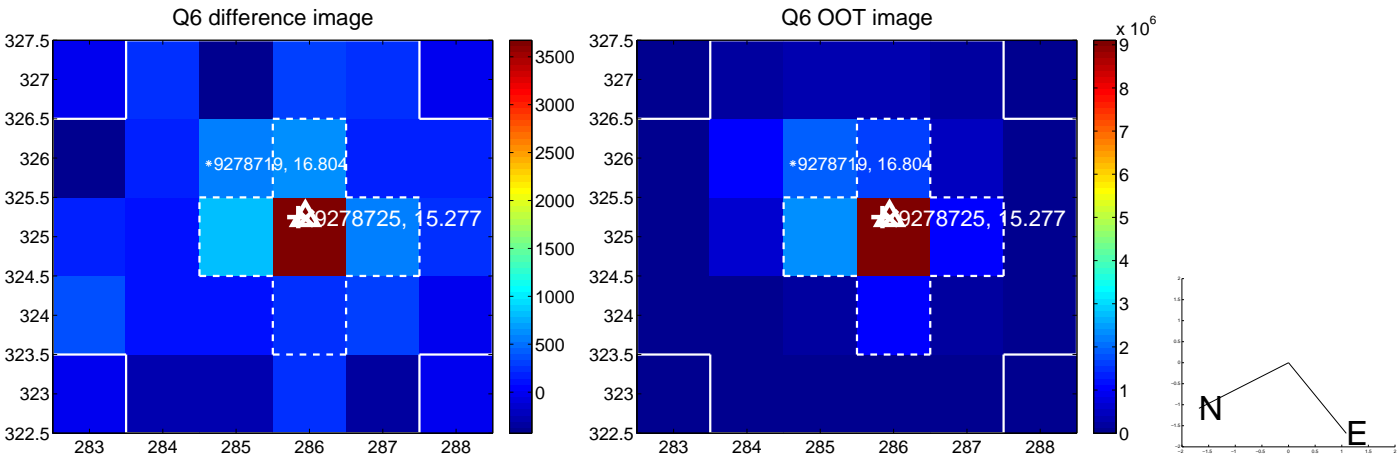
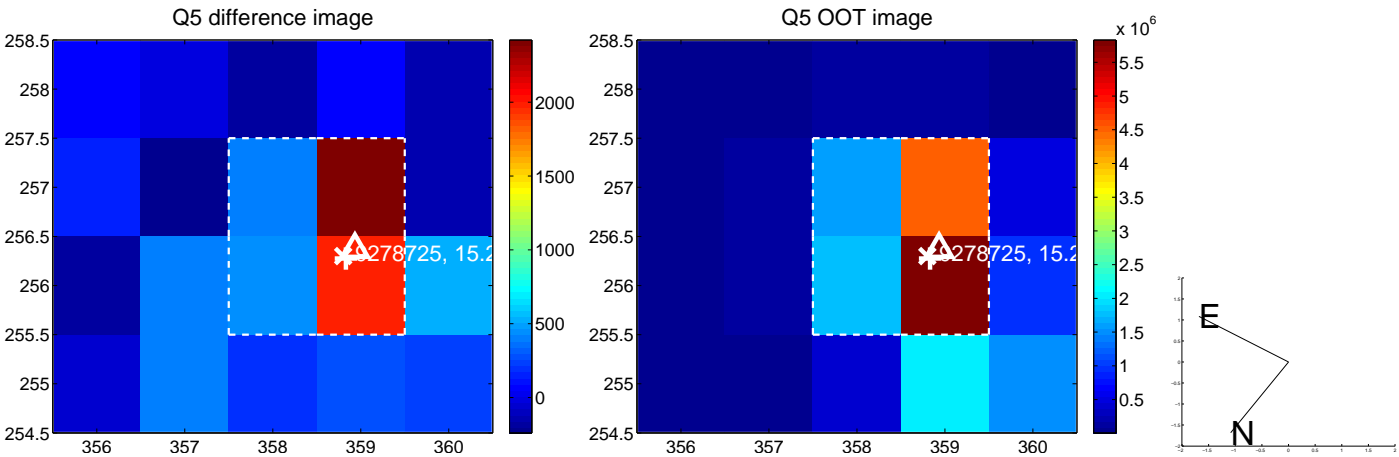
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>0.436 \pm 0.123</math></b>	<b>3.53</b>	$0.180 \pm 0.164$	$-0.397 \pm 0.102$
PRF-fit source offset from KIC position	$0.203 \pm 0.115$	1.77	$-0.070 \pm 0.123$	$-0.191 \pm 0.114$
photometric centroid source offset	$0.42 \pm 0.32$	1.30	$0.25 \pm 0.35$	$0.34 \pm 0.31$



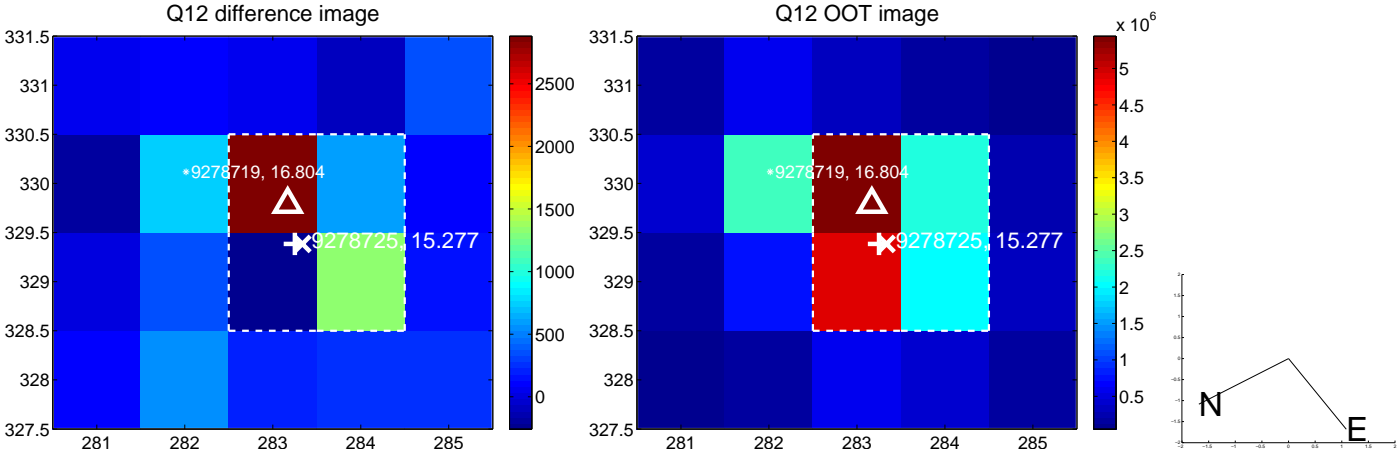
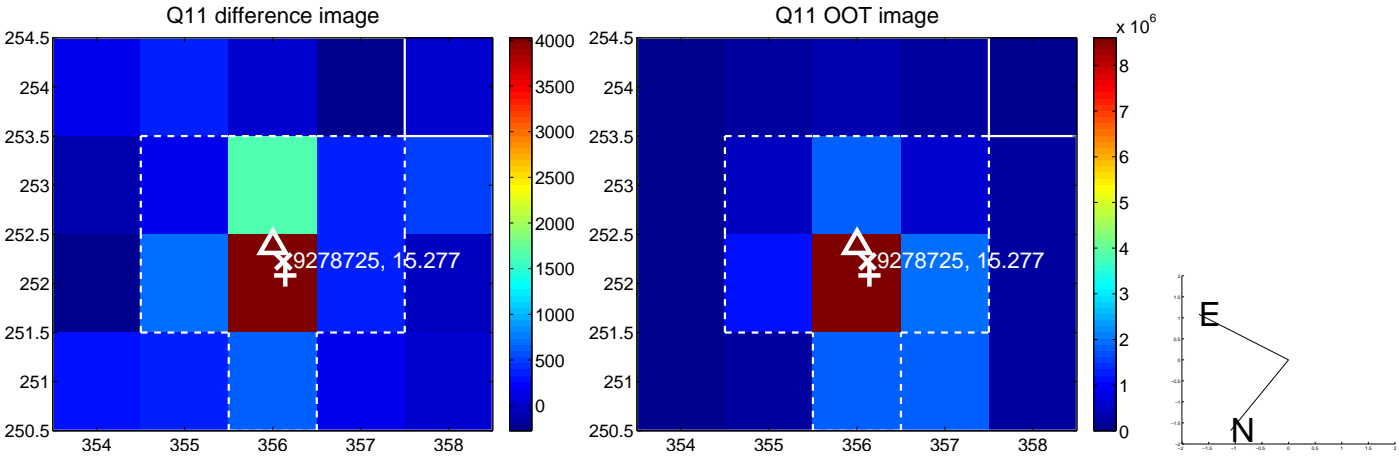
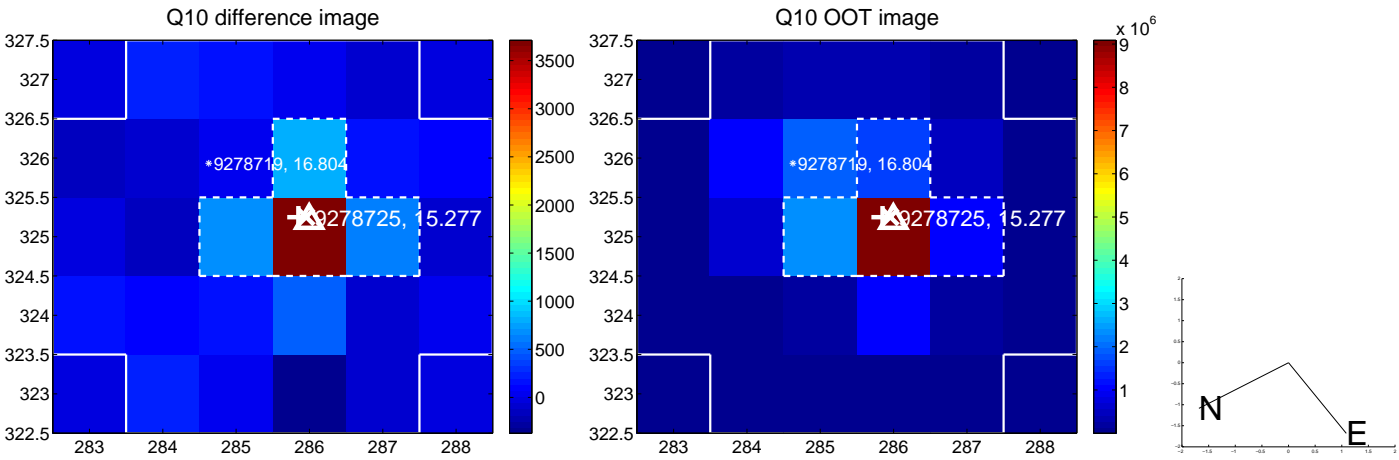
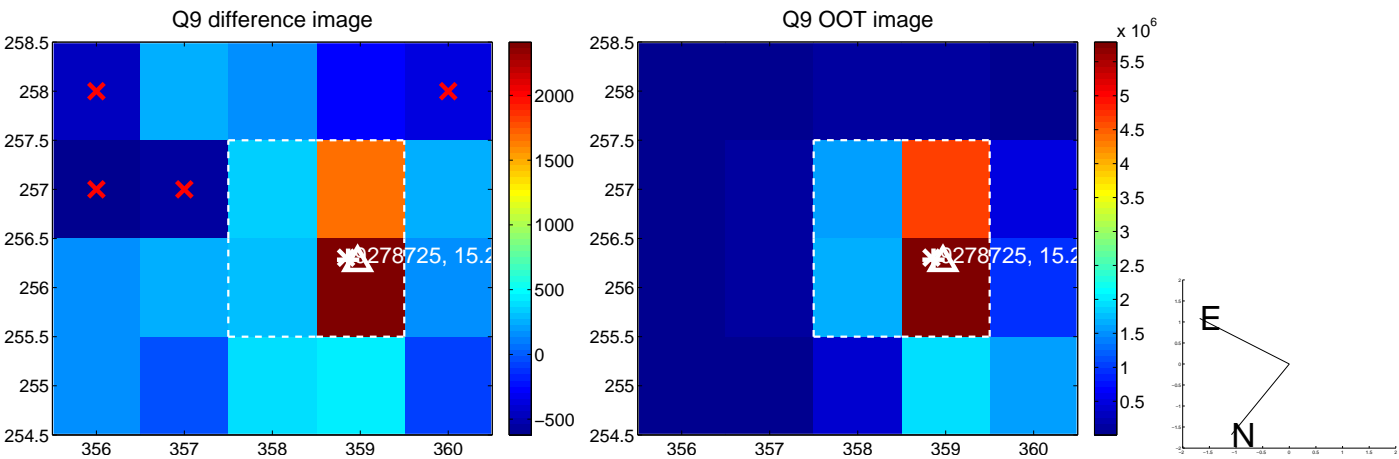
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



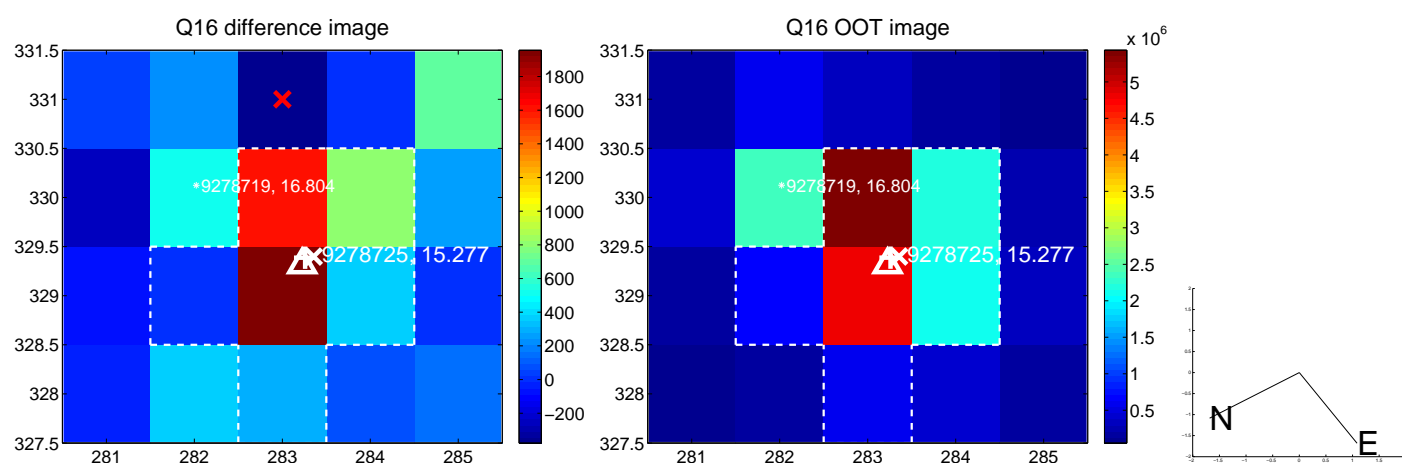
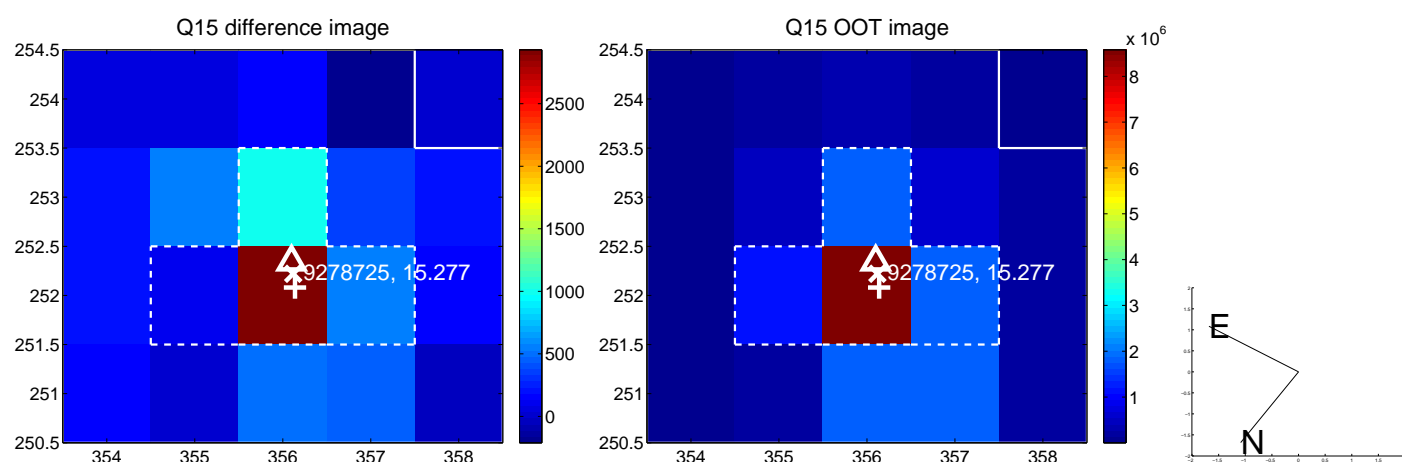
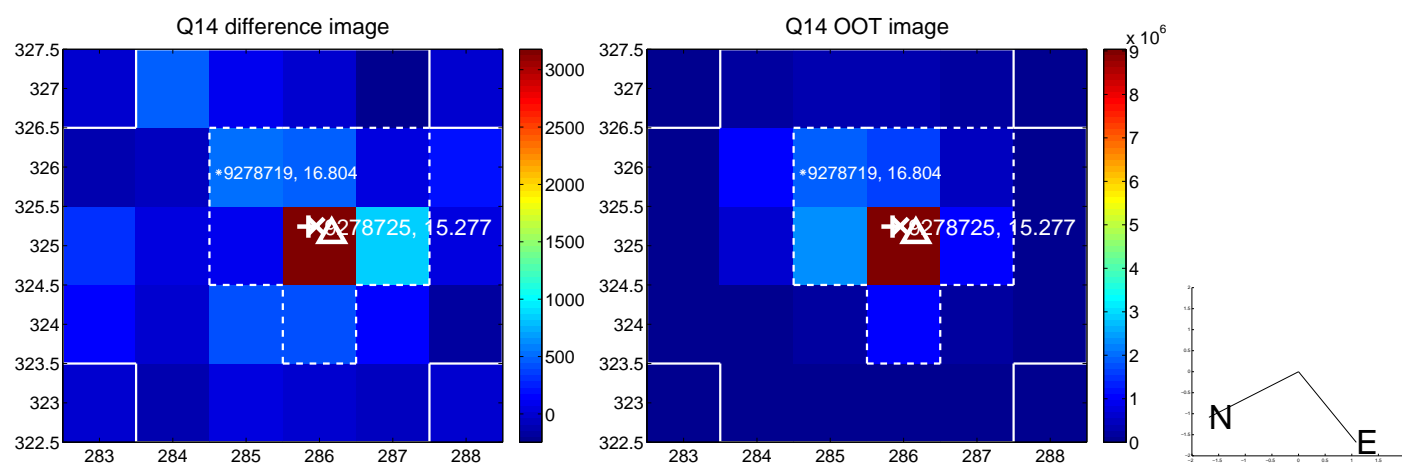
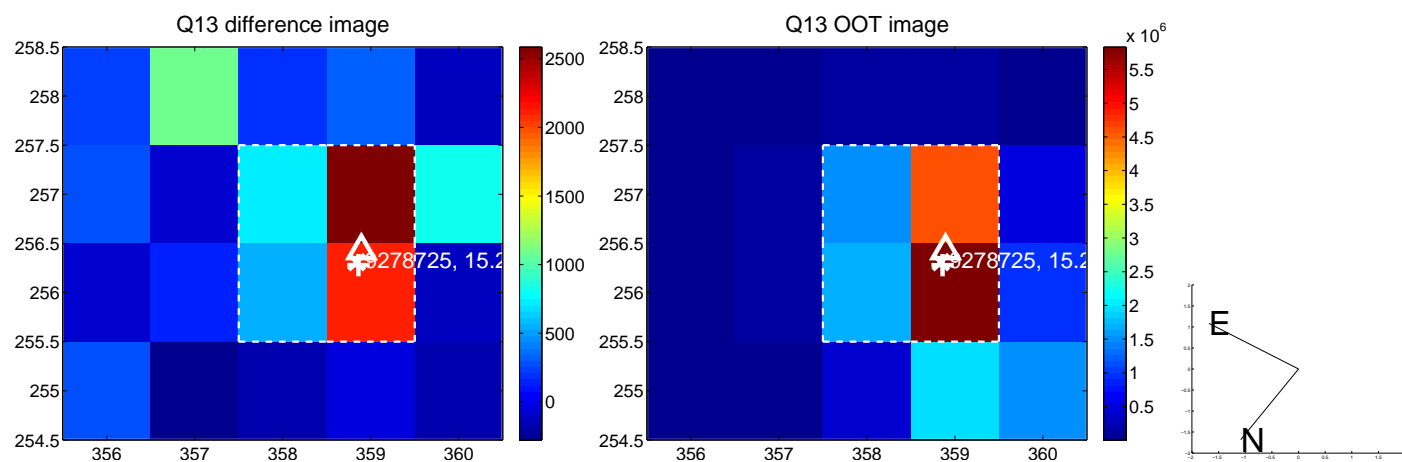
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

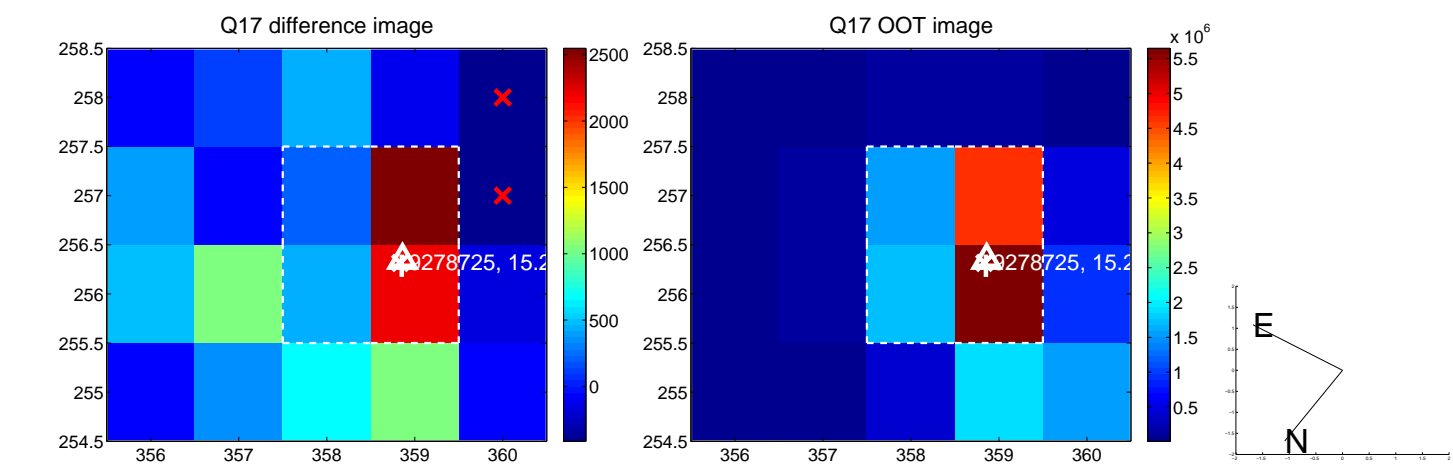


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

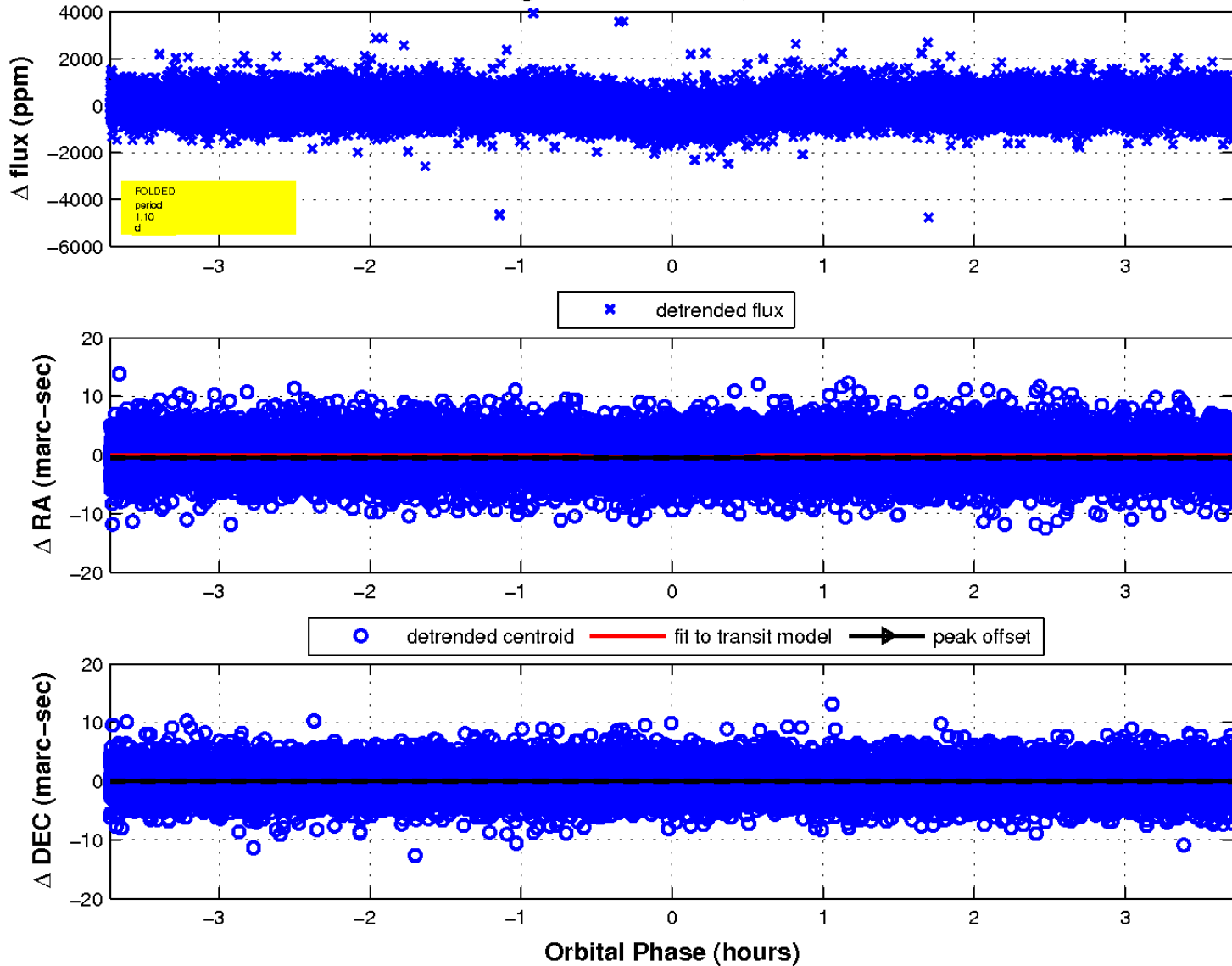




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



# UKIRT Image

Declination

