

# KIC 008022718

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008022718-01	OBS	No	452.728317	551.123839	927.3	21.544	11.1	12.2	1.10	6268	3.43	1.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008022718-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—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.

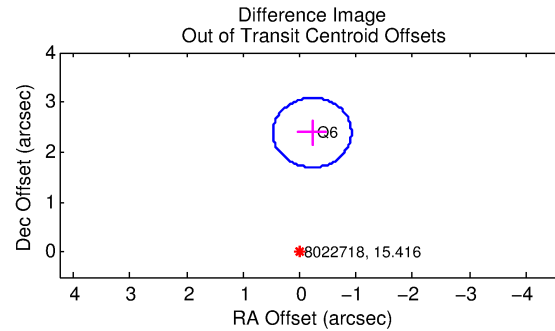
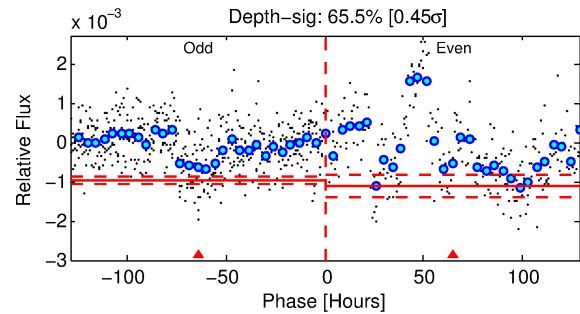
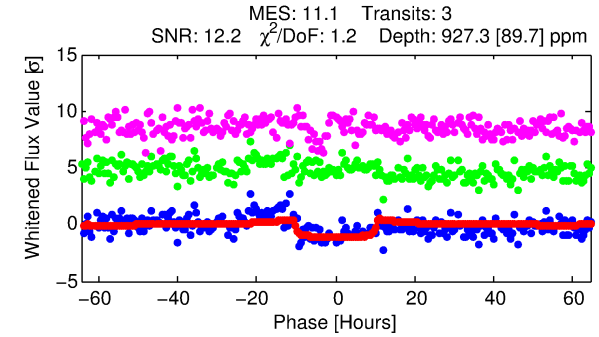
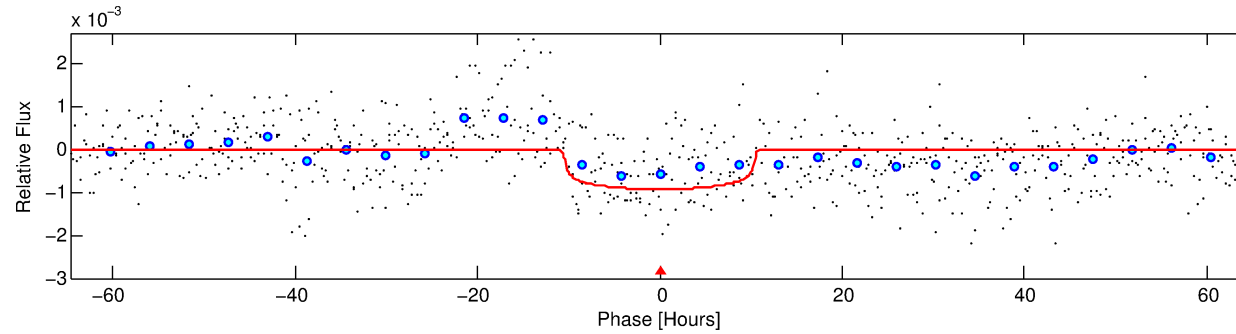
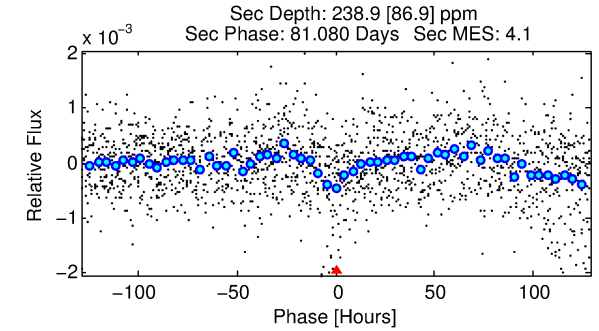
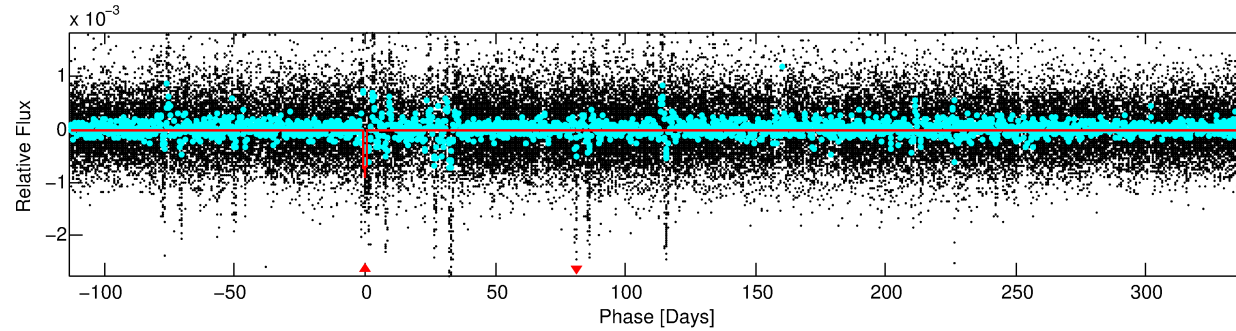
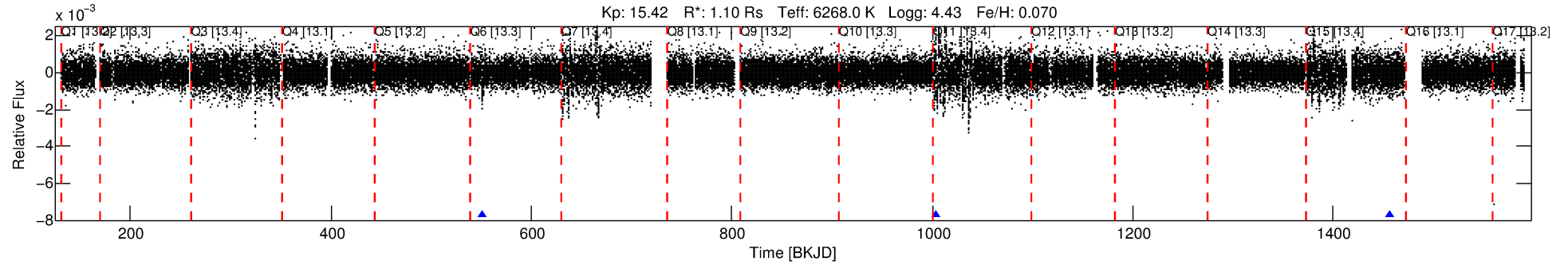
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008022718-01

No Significant Match Found

# DV One-Page Summary

KIC: 8022718 Candidate: 1 of 1 Period: 452.728 d



## DV Fit Results:

Period = 452.72832 [0.01332] d  
Epoch = 551.1238 [0.0161] BKJD  
Rp/R\* = 0.0286 [0.0065]  
a/R\* = 146.42 [159.44]  
b = 0.48 [1.78]  
Seff = 1.12 [0.46]  
Teq = 262 [27] K  
Rp = 3.43 [1.35] Re  
a = 1.2214 [0.3260] AU  
Ag = 16623.14 [11600.17] [1.43σ]  
Teff = 4607 [693] K [6.26σ]

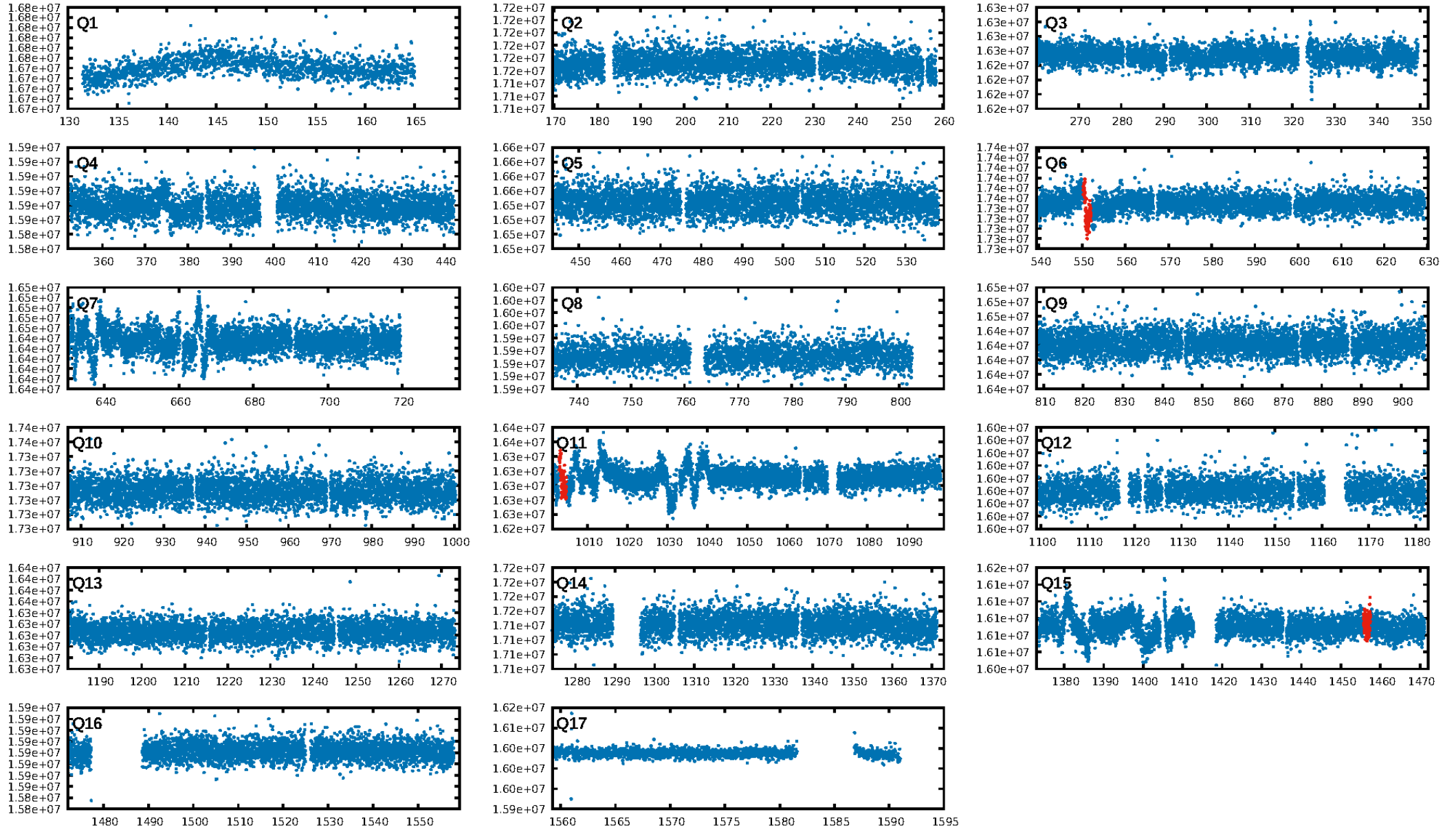
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGoF-sig: 95.6%  
Bootstrap-pfa: 4.95e-12  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 12.01  
Centroid-sig: 48.7%  
Centroid-so: 0.674 arcsec [0.69σ]  
OotOffset-rm: 2.402 arcsec [10.36σ]  
KicOffset-rm: 2.359 arcsec [10.17σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [2/2]

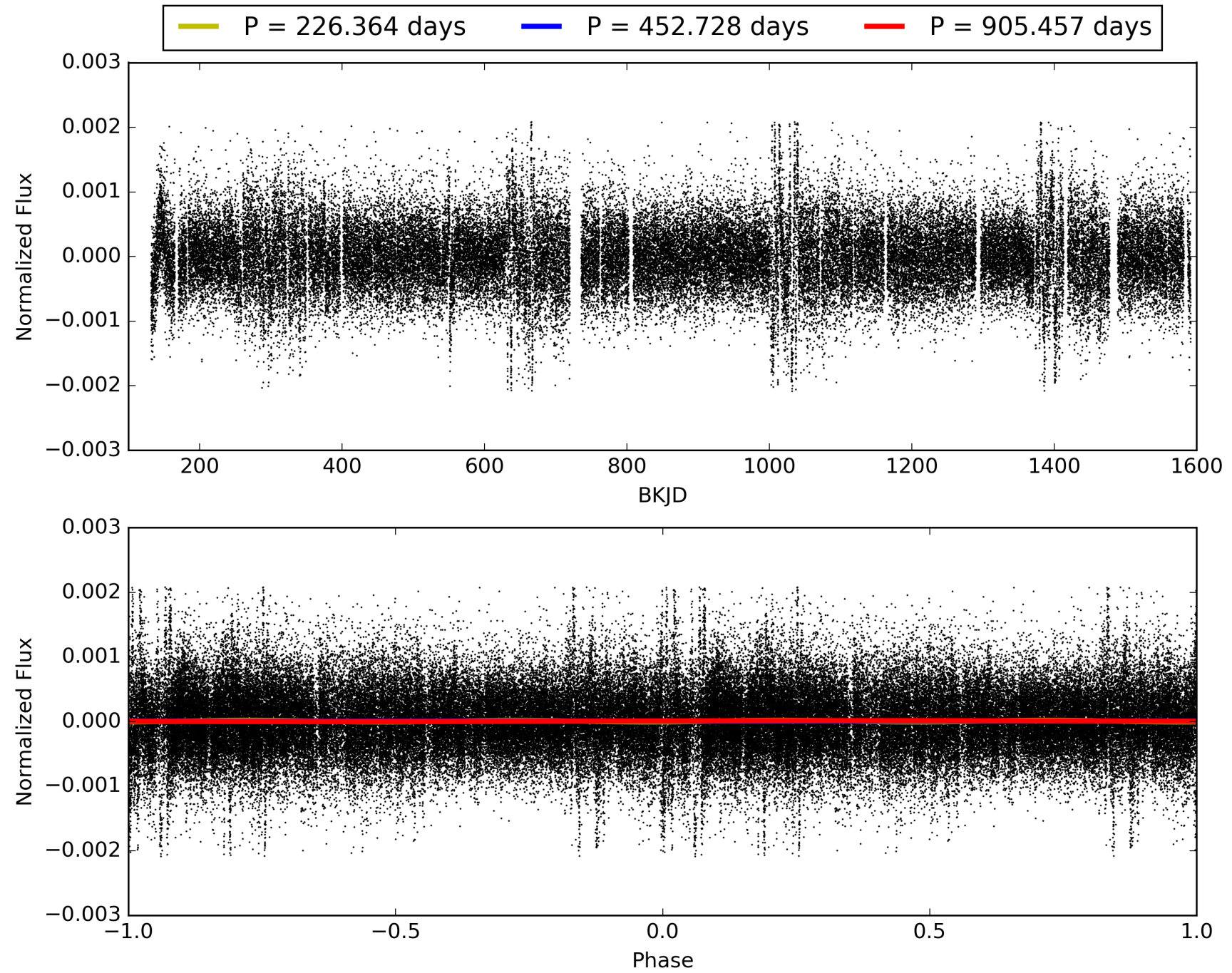
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 15:01:16 Z

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

# TCE 008022718-01, PDC Light Curves

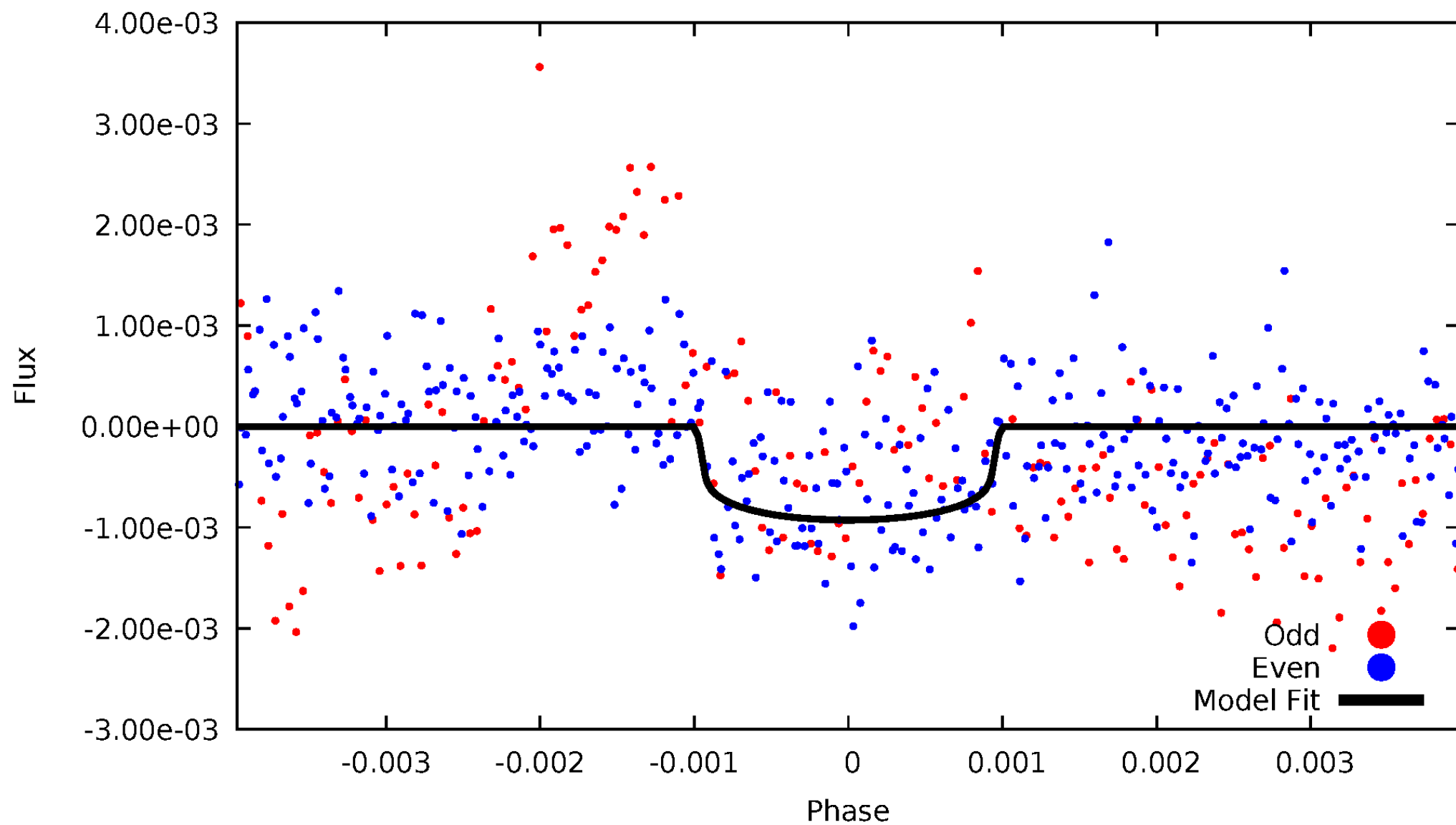


TCE 008022718-01



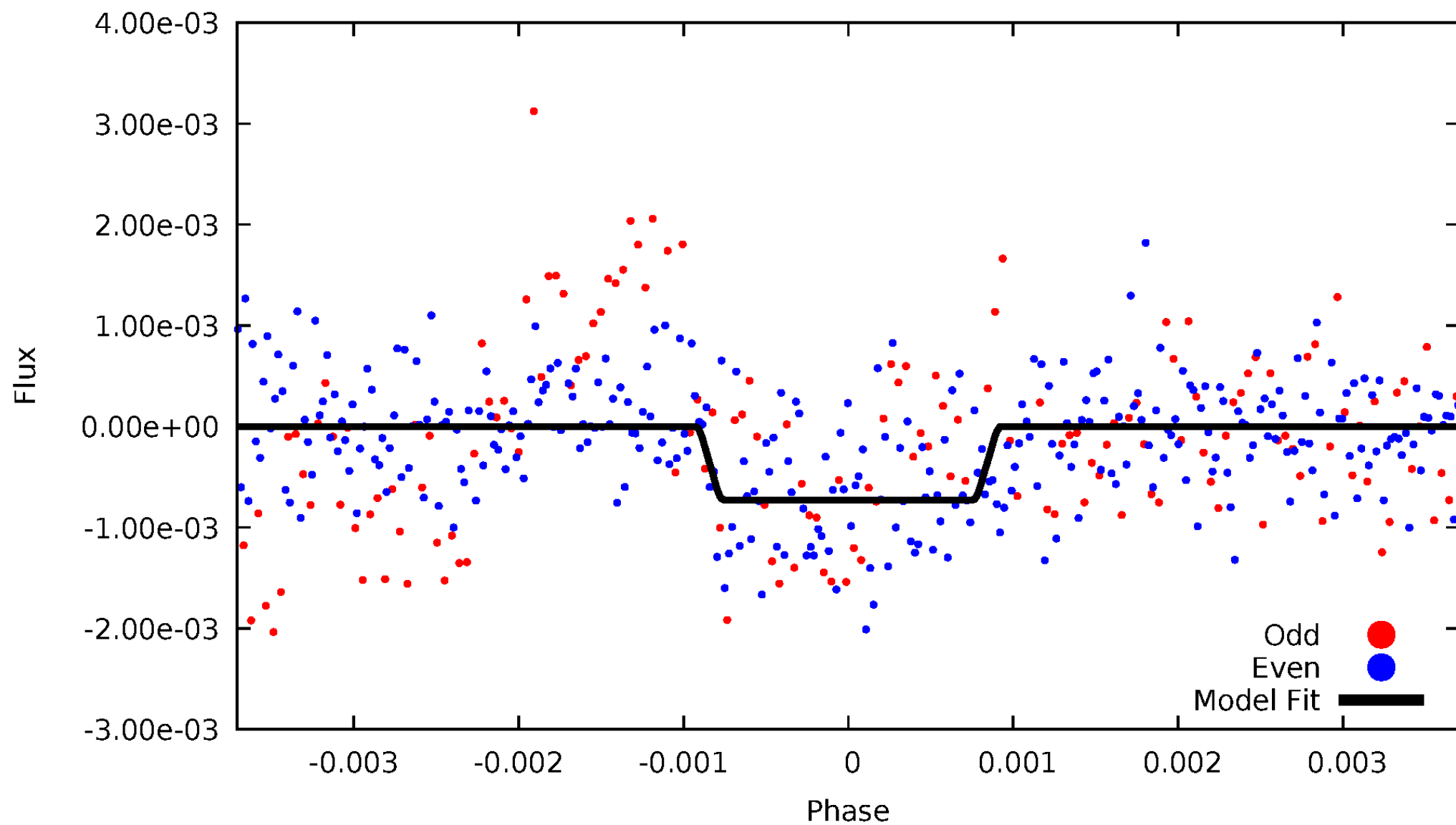
# DV Odd/Even

TCE 008022718-01

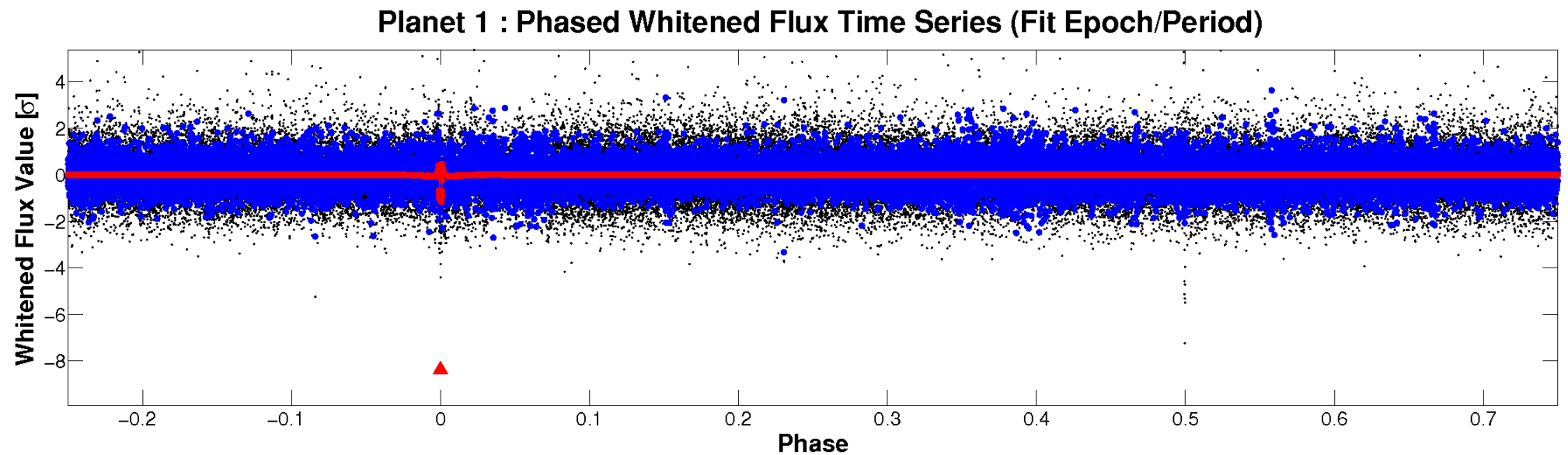
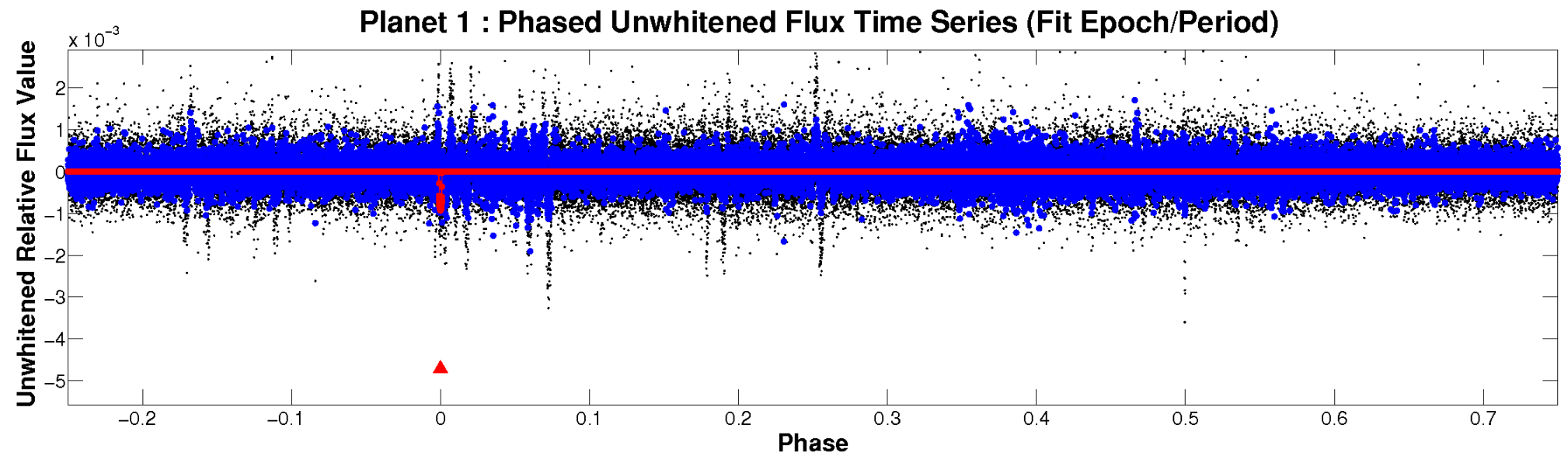


# ALT Odd/Even

TCE 008022718-01



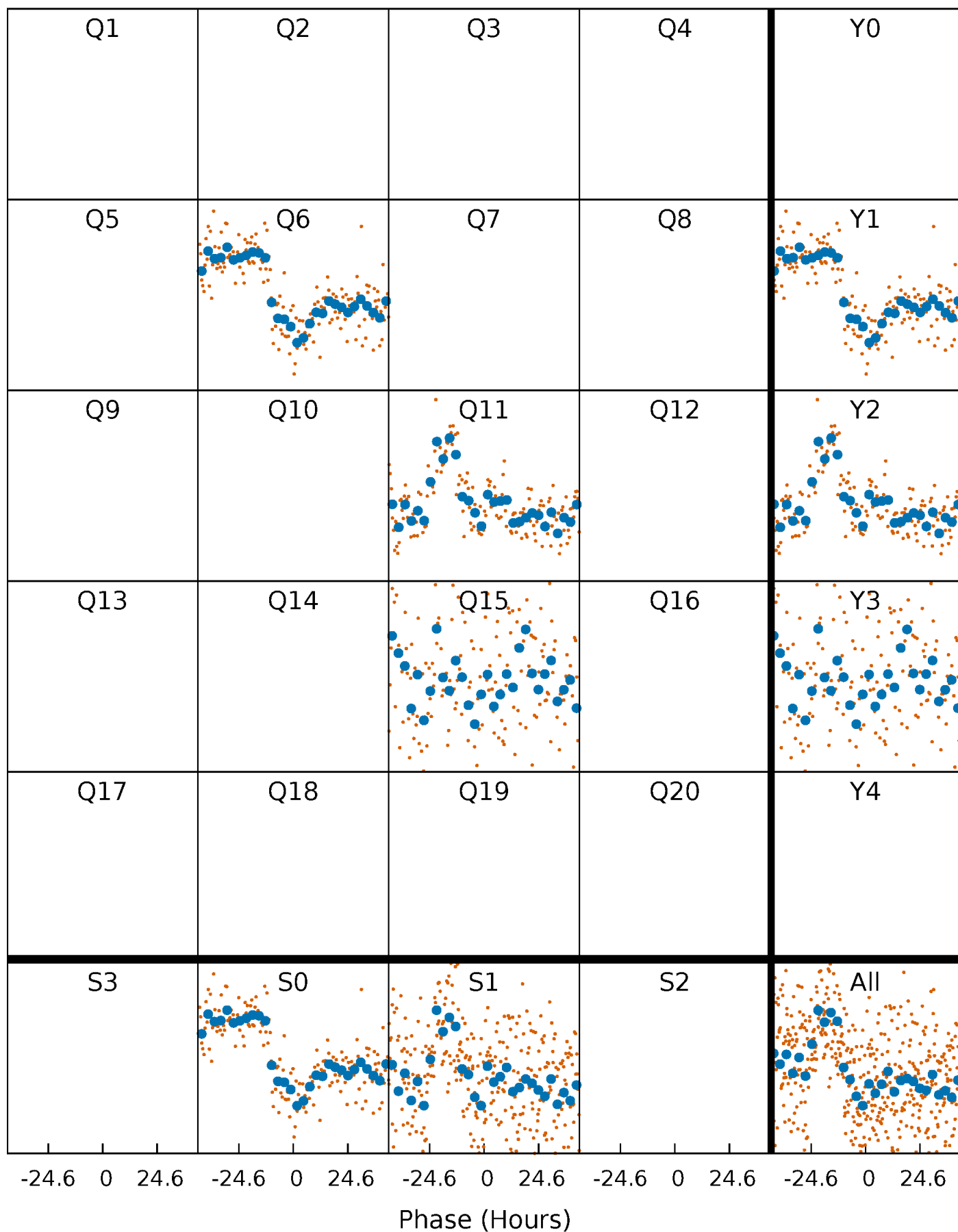
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

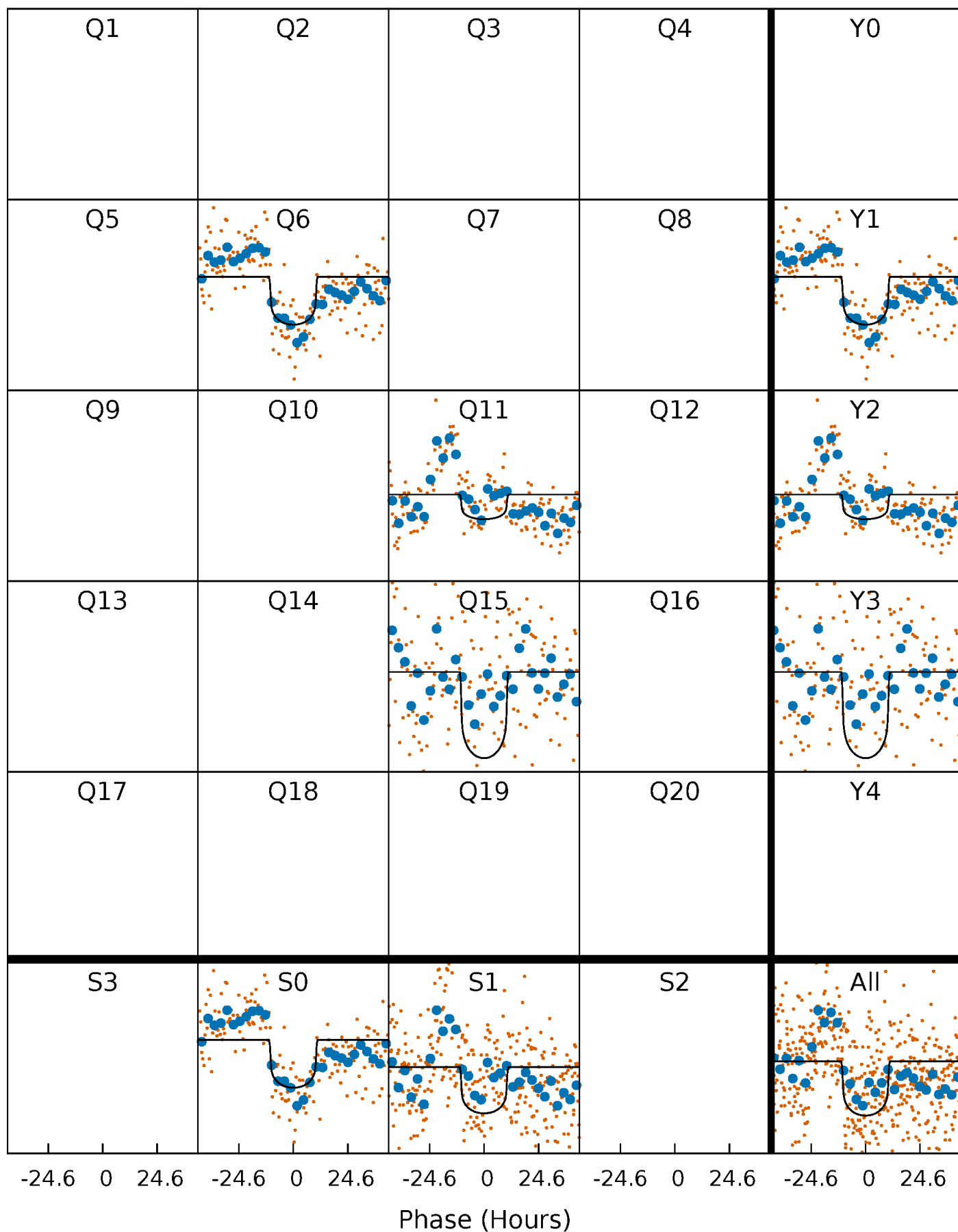
TCE 008022718-01 P=452.728317 Days  $T_0=551.123840$  (BKJD)





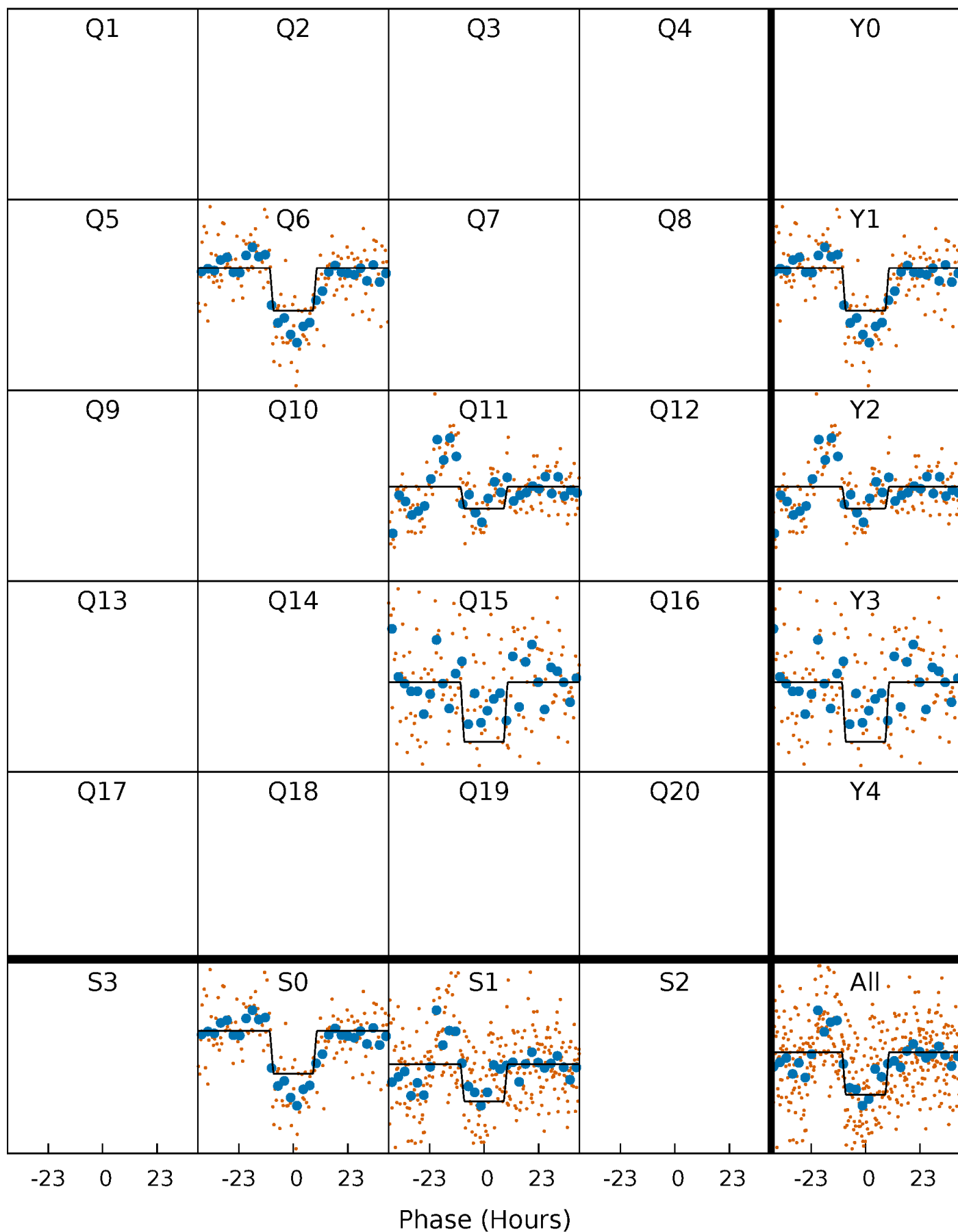
# DV Quarter-Phased Transit Curves

TCE 008022718-01 P=452.728317 Days  $T_0=551.123840$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

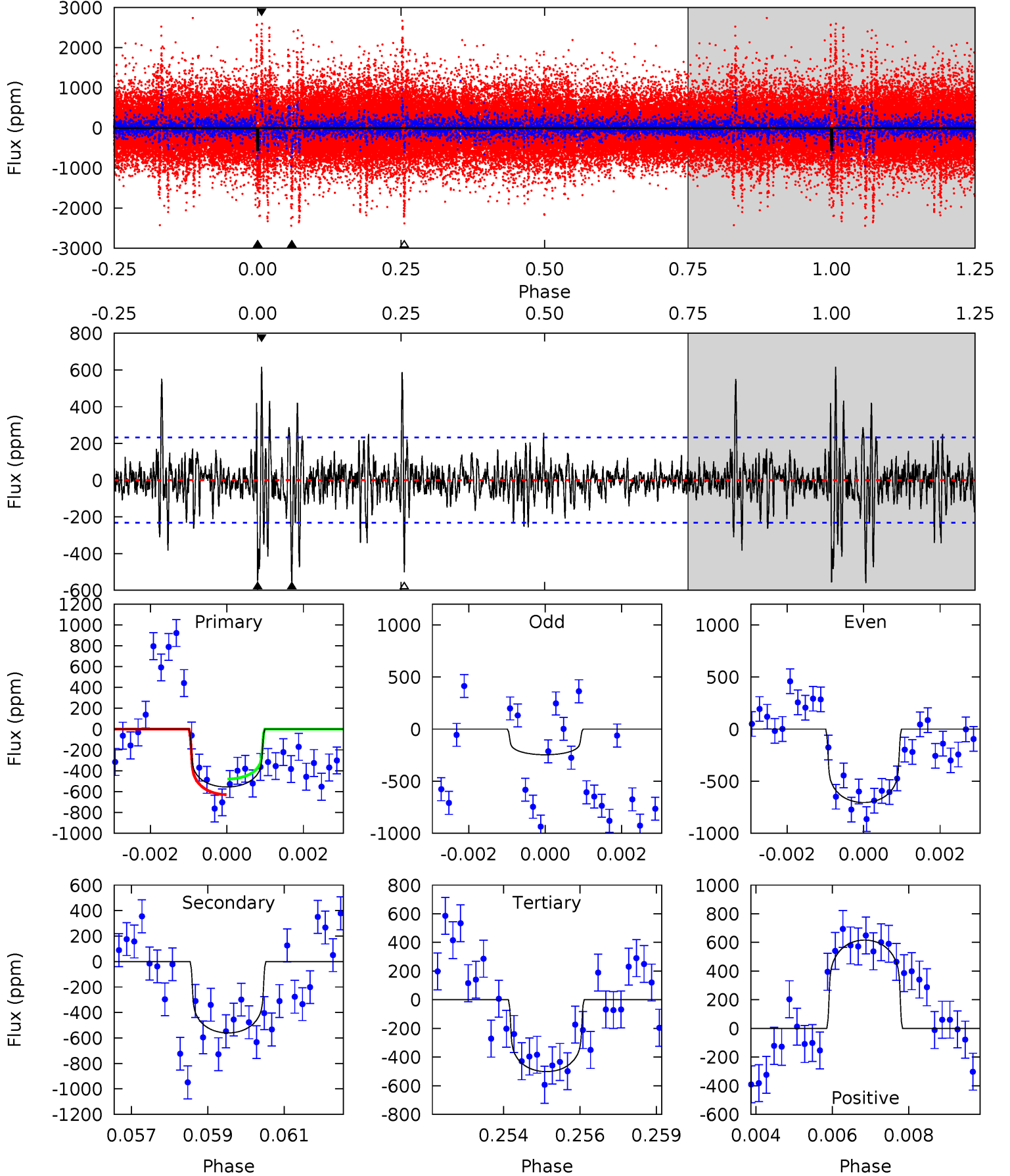
TCE 008022718-01 P=452.719144 Days  $T_0=551.089728$  (BKJD)



# DV Model-Shift Uniqueness Test

008022718-01, P = 452.728317 Days, E = 98.395523 Days

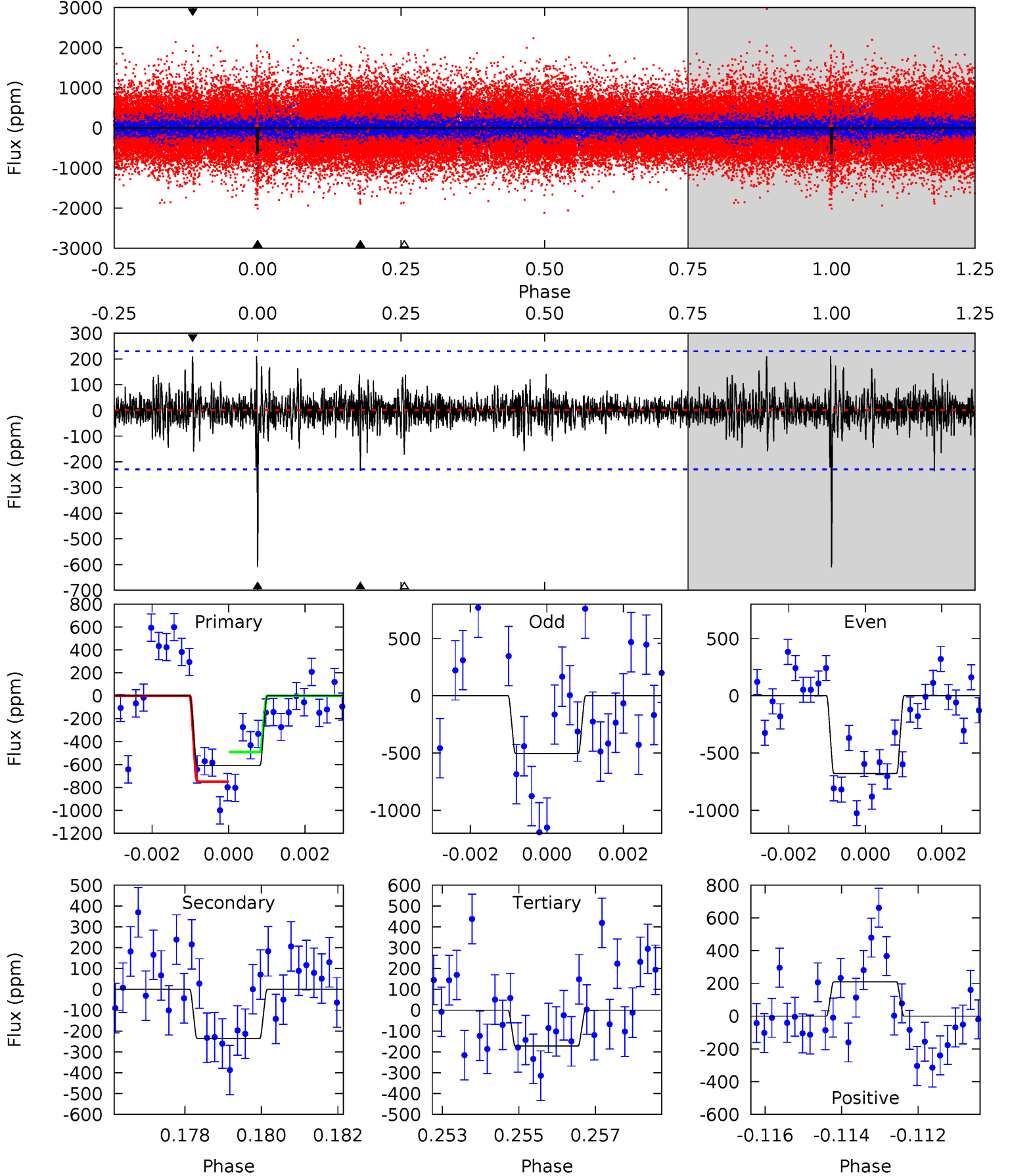
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	12.8	11.5	14.1	5.32	3.09	2.27	1.24	-1.39	1.35	-1.28	4.90	1.66	0.52	1.72



# Alt Model-Shift Uniqueness Test

008022718-01, P = 452.719144 Days, E = 98.370584 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
14.2	5.48	4.00	4.88	5.34	3.12	0.92	10.2	9.33	1.48	0.60	1.89	1.20	0.26	3.02



### Stellar Parameters For KIC 008022718

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6268^{+174}_{-239}$	$4.429^{+0.052}_{-0.208}$	$0.070^{+0.250}_{-0.300}$	$1.100^{+0.353}_{-0.118}$	$1.188^{+0.157}_{-0.157}$	$1.257^{+0.346}_{-0.646}$
	+3%/-4%	+1%/-5%	+357%/-429%	+32%/-11%	+13%/-13%	+28%/-51%
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 008022718-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-560 \pm 44$	$3.56^{+1.03}_{-0.89}$	$373^{+29}_{-20}$	$5721^{+863}_{-581}$	$34978^{+27729}_{-13417}$
Alt.	$-235 \pm 43$	$3.36^{+1.05}_{-0.87}$	$375^{+26}_{-20}$	$4847^{+656}_{-463}$	$16499^{+14015}_{-7052}$

$T_{max}$  = 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

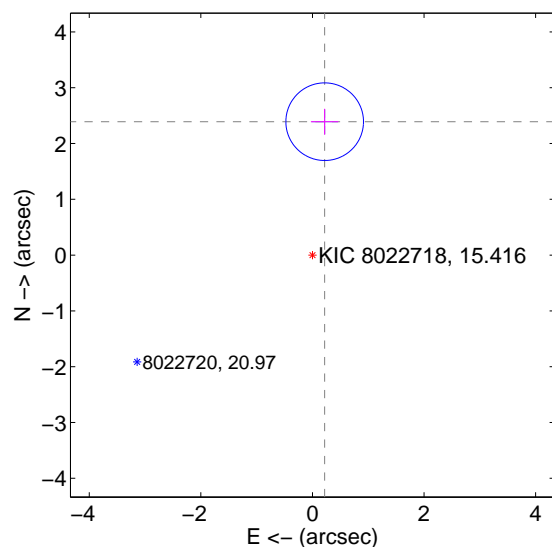
Supplemental centroid analysis for 008022718-01. Kepler magnitude: 15.42. Transit SNR 12.16

There are 1 quarters with good PRF difference image offsets

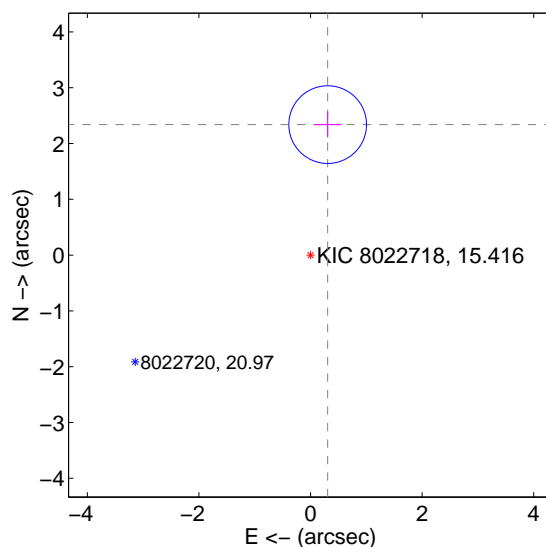
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.402 \pm 0.232$	10.36	$-0.219 \pm 0.247$	$2.392 \pm 0.232$
PRF-fit source offset from KIC position	$2.359 \pm 0.232$	10.17	$-0.307 \pm 0.247$	$2.339 \pm 0.232$
photometric centroid source offset	$0.67 \pm 0.98$	0.69	$-0.05 \pm 0.99$	$0.67 \pm 0.98$

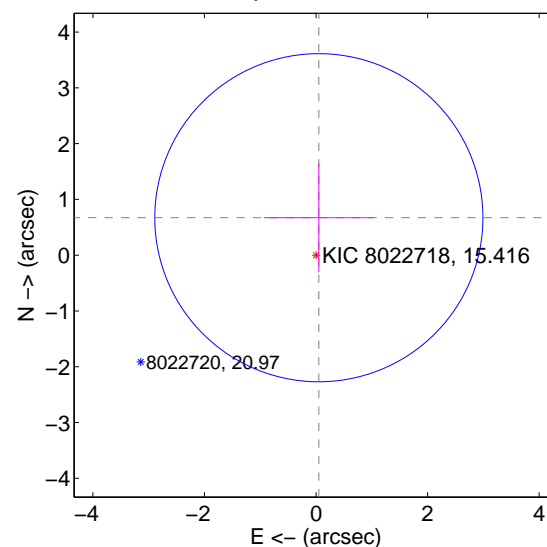
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



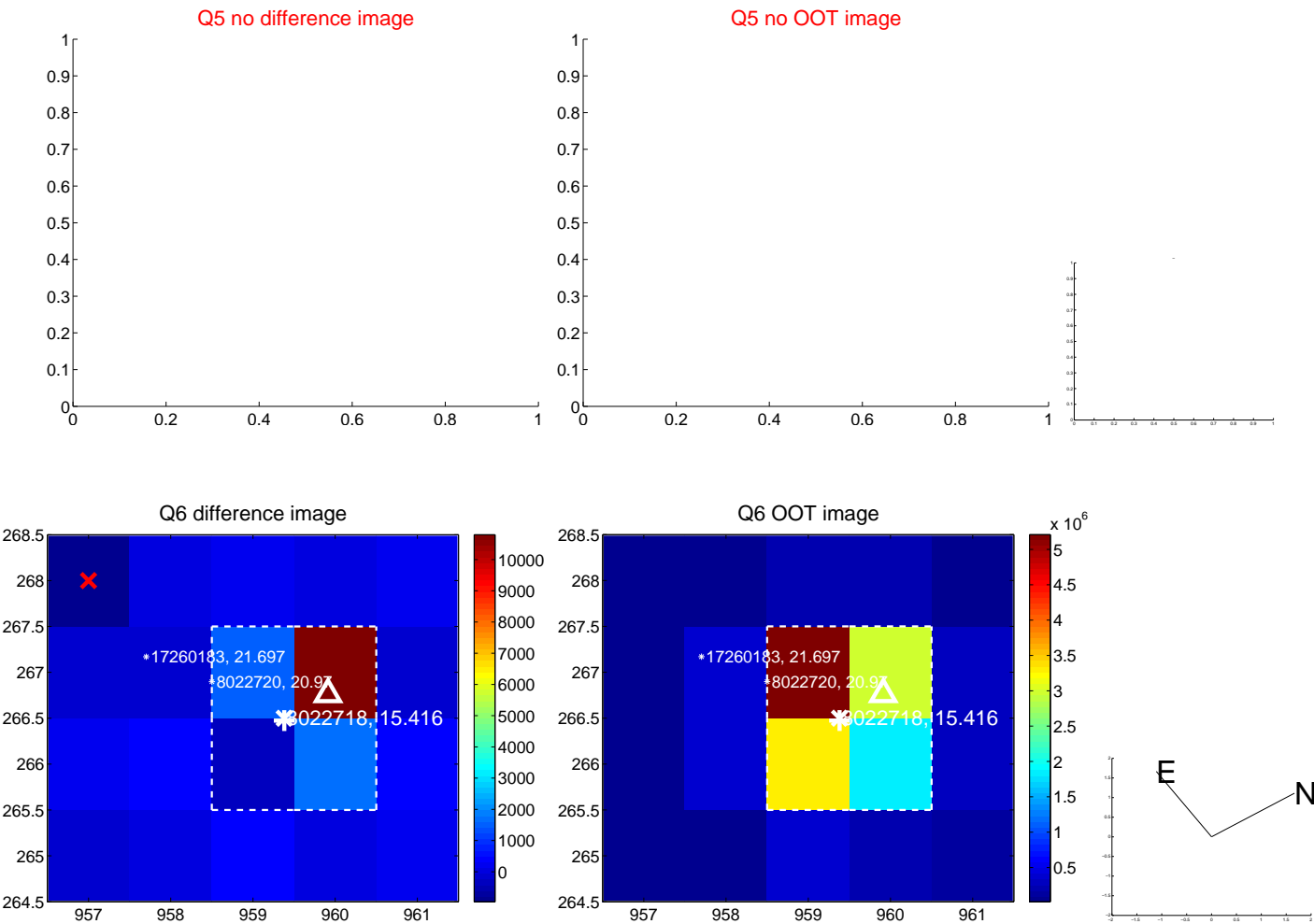
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





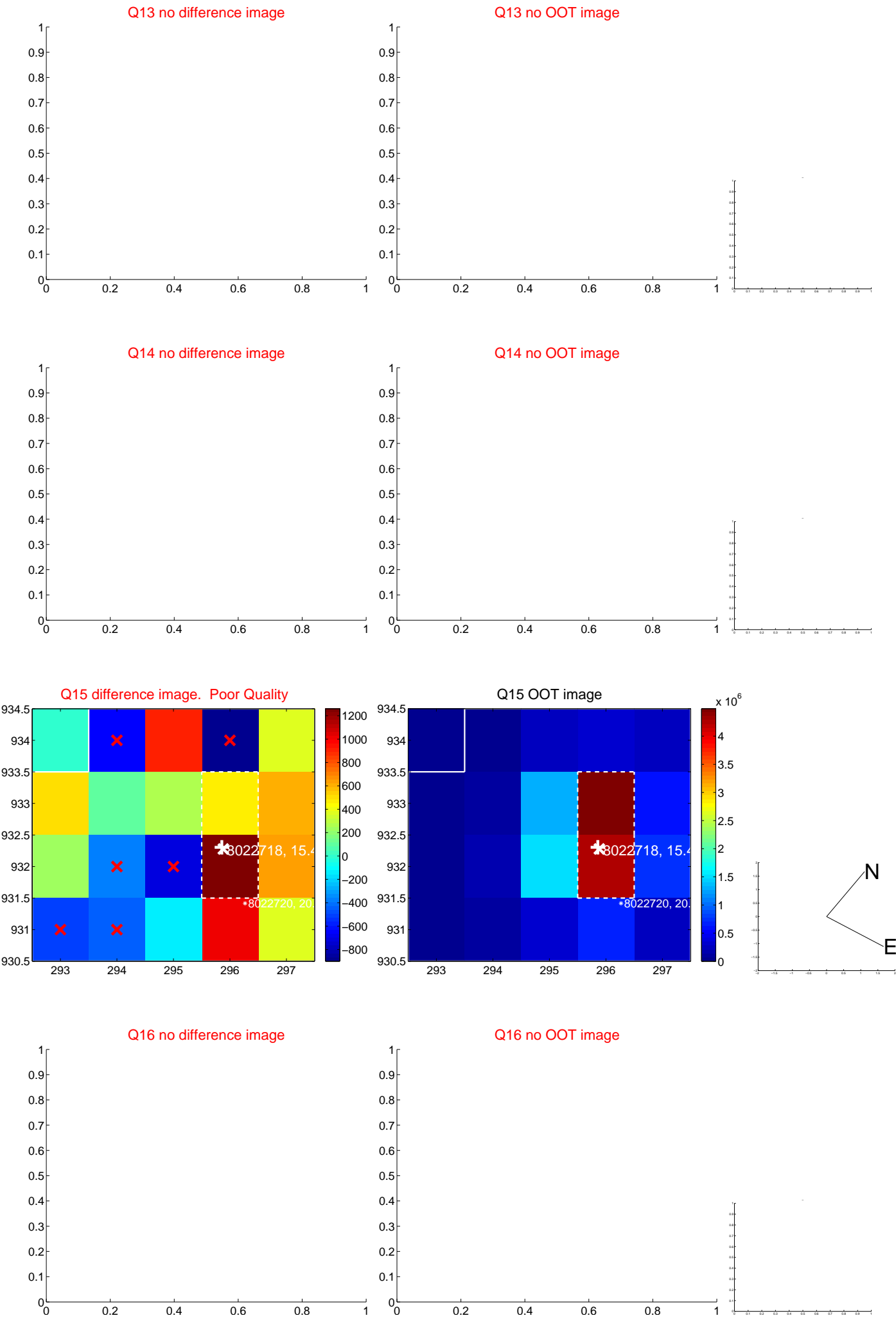
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



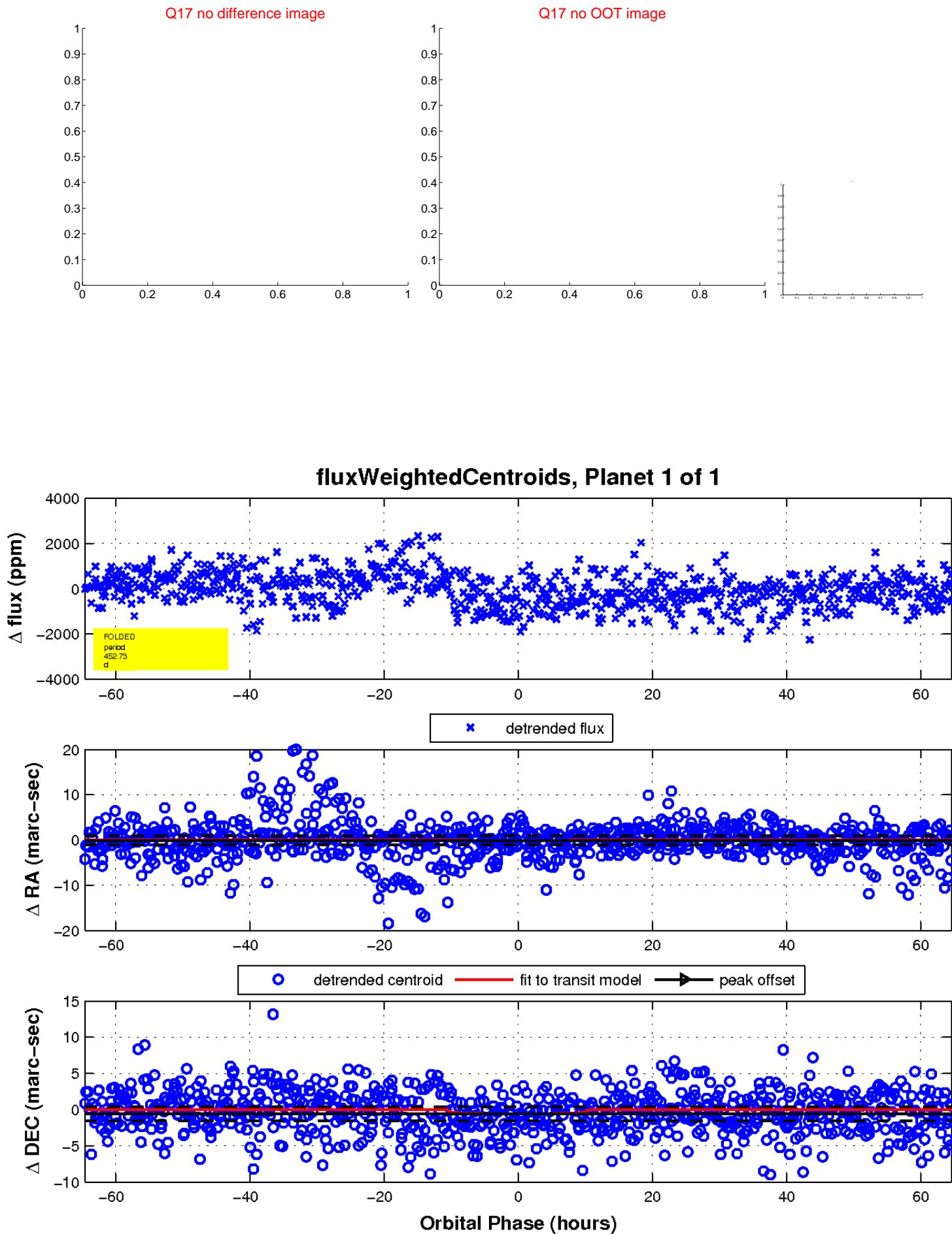
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: 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.



UKIRT Image

