

# KIC 010018233

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010018233-01	OBS	2655.01	16.296066	133.904659	377.4	2.224	14.1	15.4	0.96	5495	2.22	49.94

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010018233-01	OBS	PC	0.89	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.

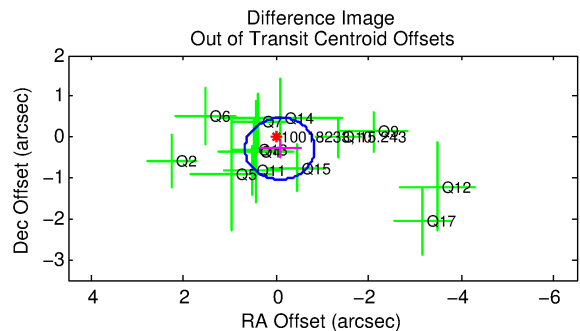
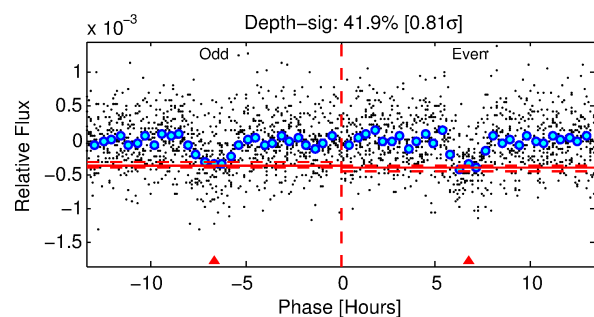
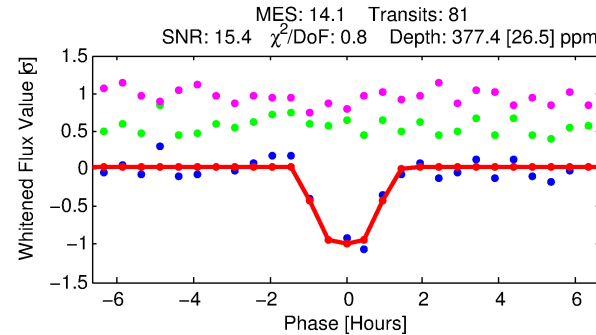
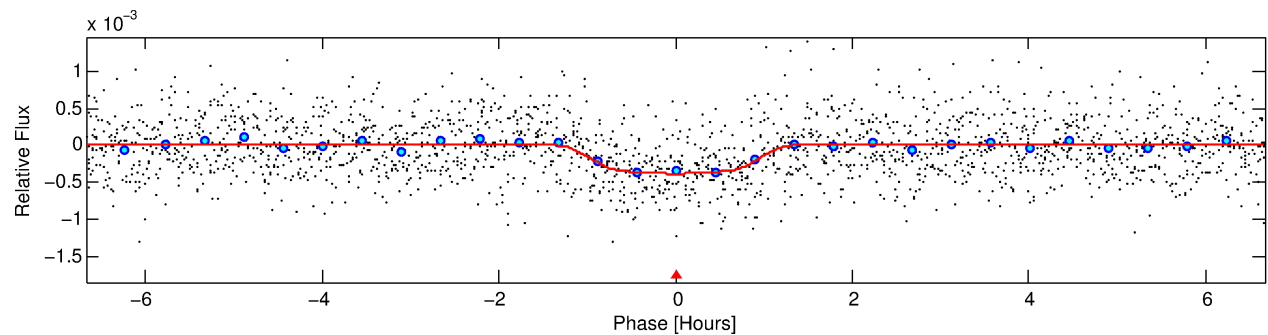
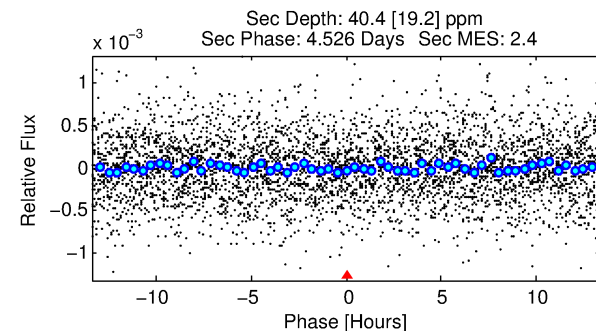
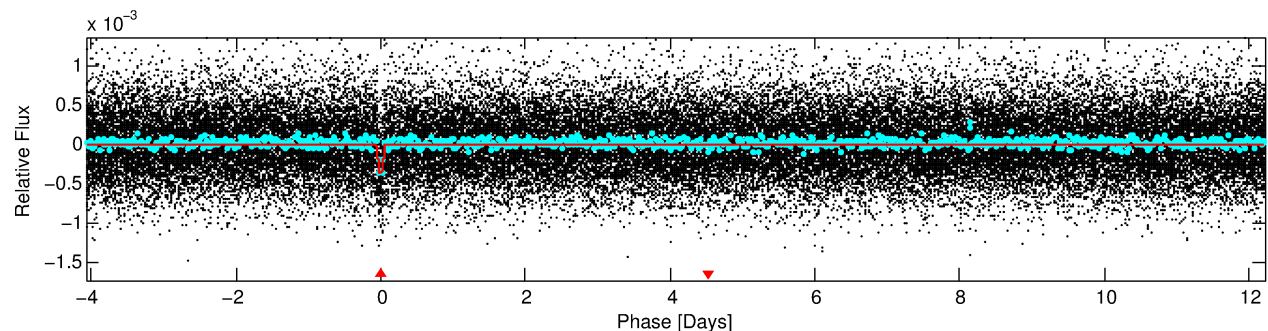
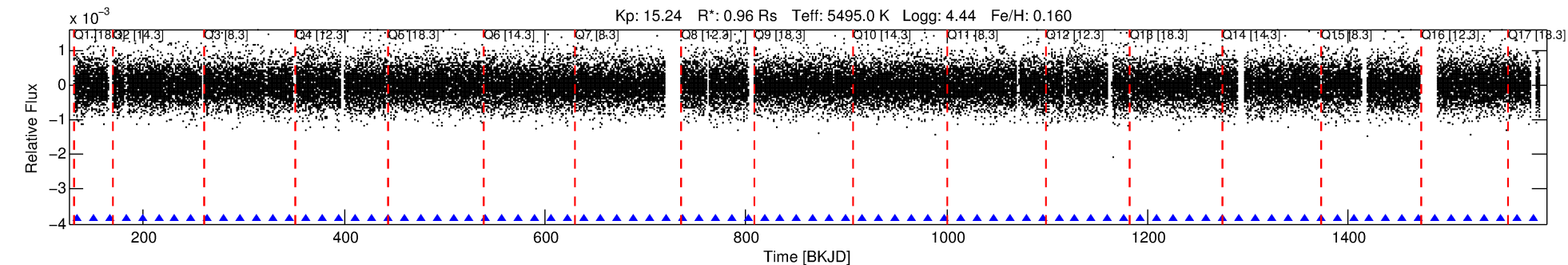
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010018233-01

No Significant Match Found

# DV One-Page Summary

KIC: 10018233 Candidate: 1 of 1 Period: 16.296 d  
KOI: K02655.01 Corr: 0.968



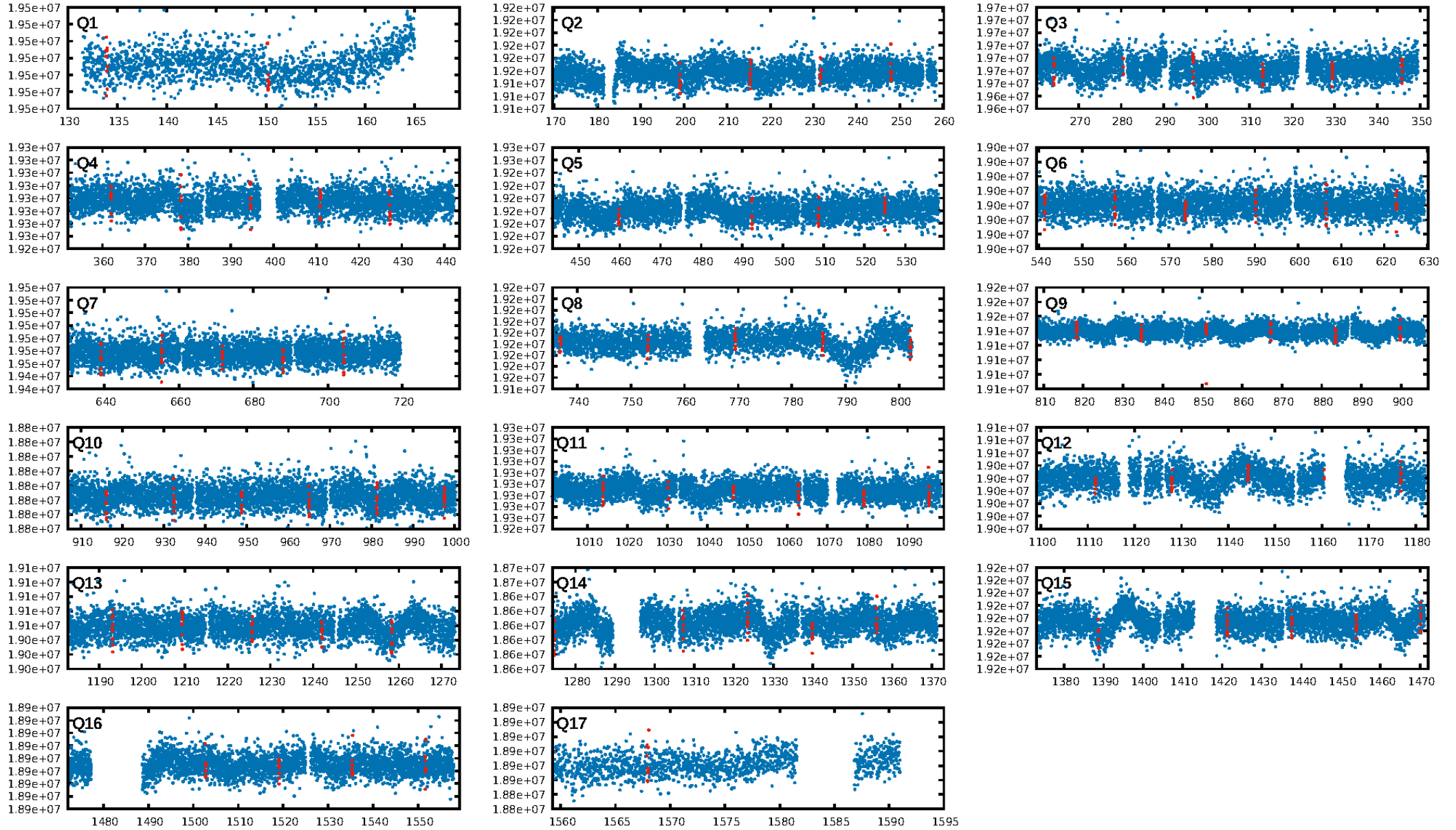
## DV Fit Results:

Period = 16.29607 [0.00008] d  
Epoch = 133.9047 [0.0038] BKJD  
Rp/R\* = 0.0212 [0.0094]  
a/R\* = 28.01 [53.12]  
b = 0.89 [0.45]  
Seff = 49.94 [9.08]  
Teq = 678 [31] K  
Rp = 2.22 [1.03] Re  
a = 0.1229 [0.0135] AU  
Ag = 67.78 [69.41] [0.96σ]  
Teffp = 3007 [760] K [3.06σ]

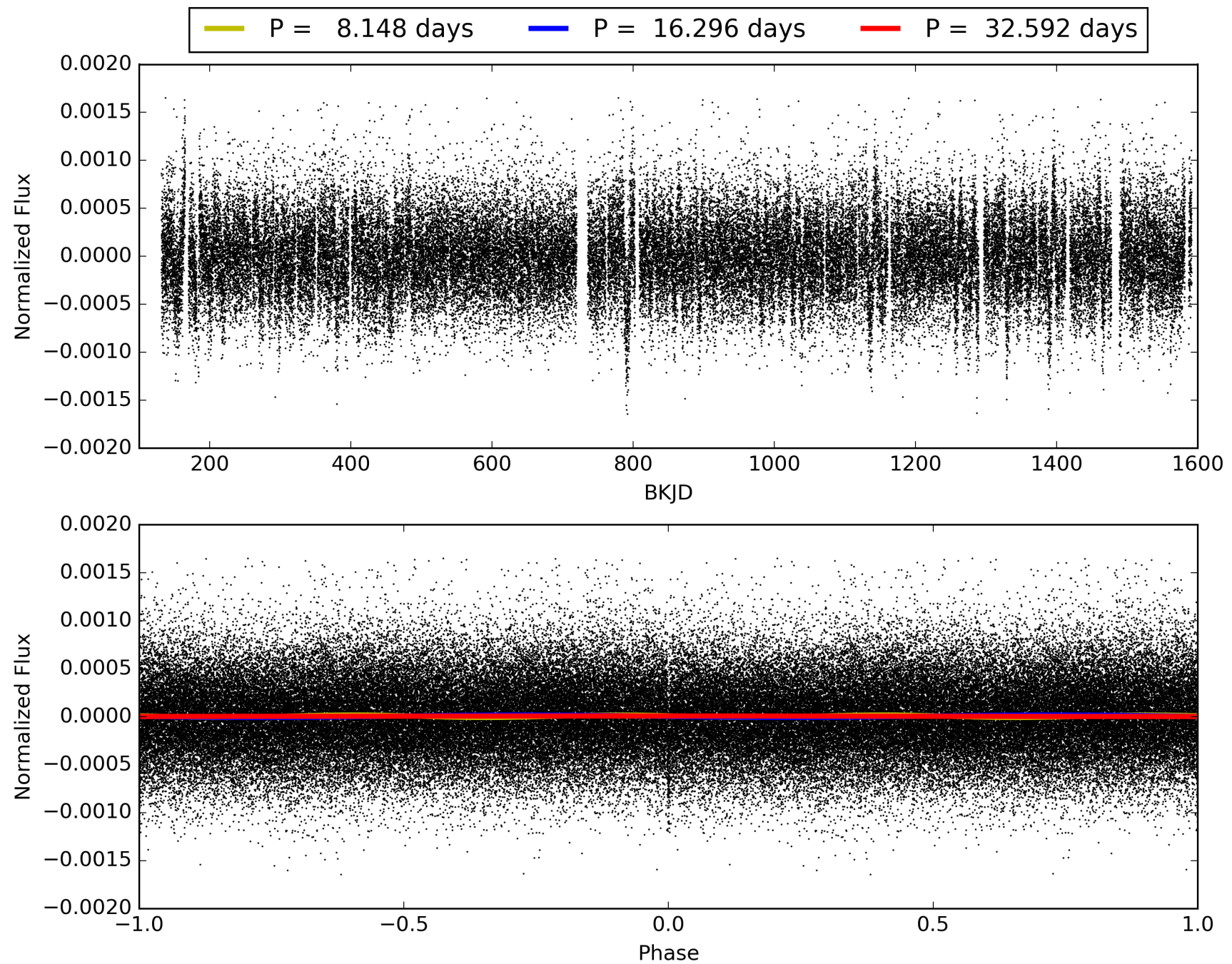
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.34e-45  
RollingBand-fgt: 1.00 [78/78]  
GhostDiagnostic-chr: 2.005  
Centroid-sig: 37.7%  
Centroid-so: 1.042 arcsec [1.17σ]  
OotOffset-rm: 0.296 arcsec [1.18σ]  
KicOffset-rm: 0.258 arcsec [1.06σ]  
OotOffset-st: 4/3/2/4 [13]  
KicOffset-st: 4/3/2/4 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 010018233-01, PDC Light Curves

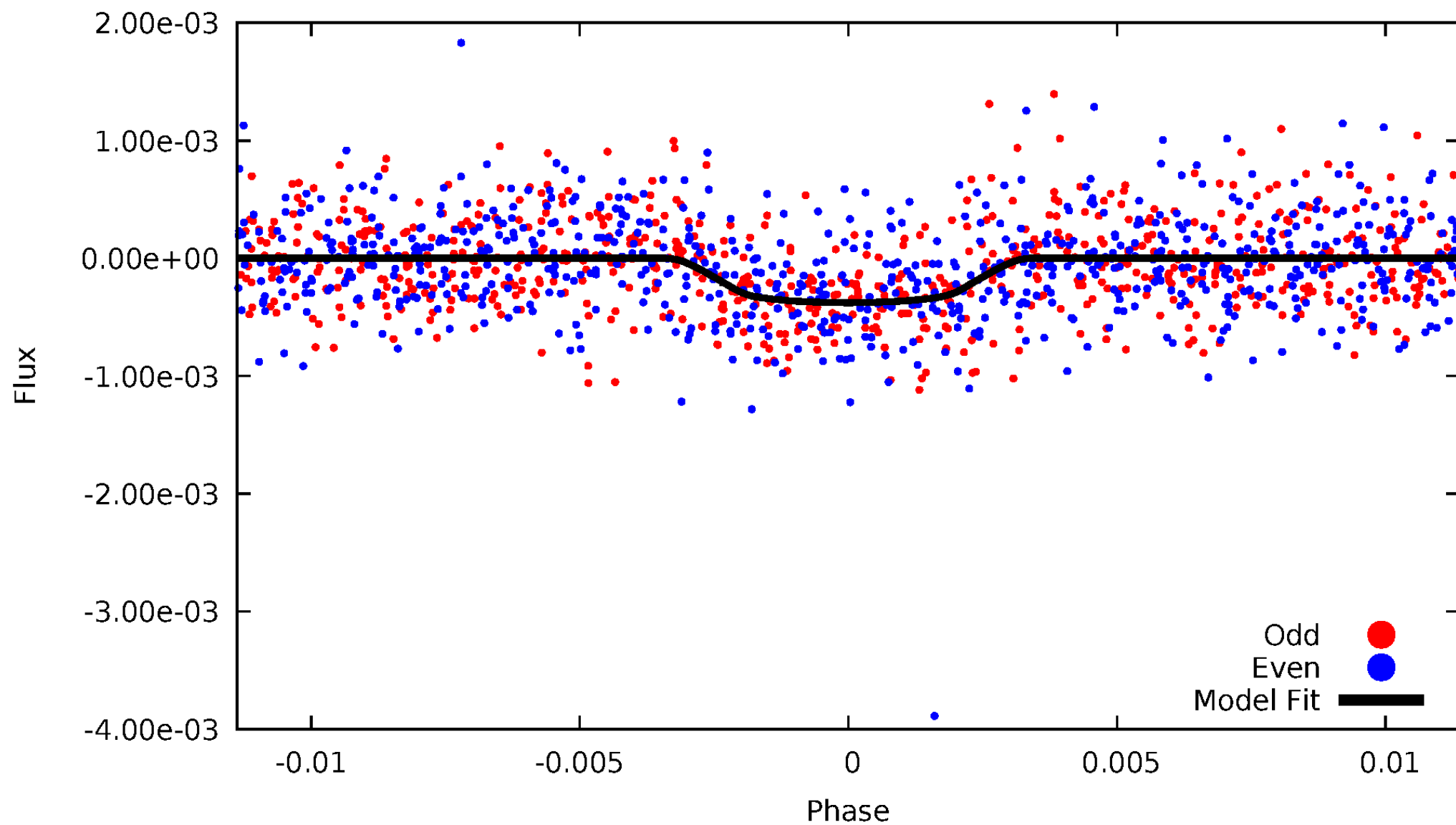


# TCE 010018233-01



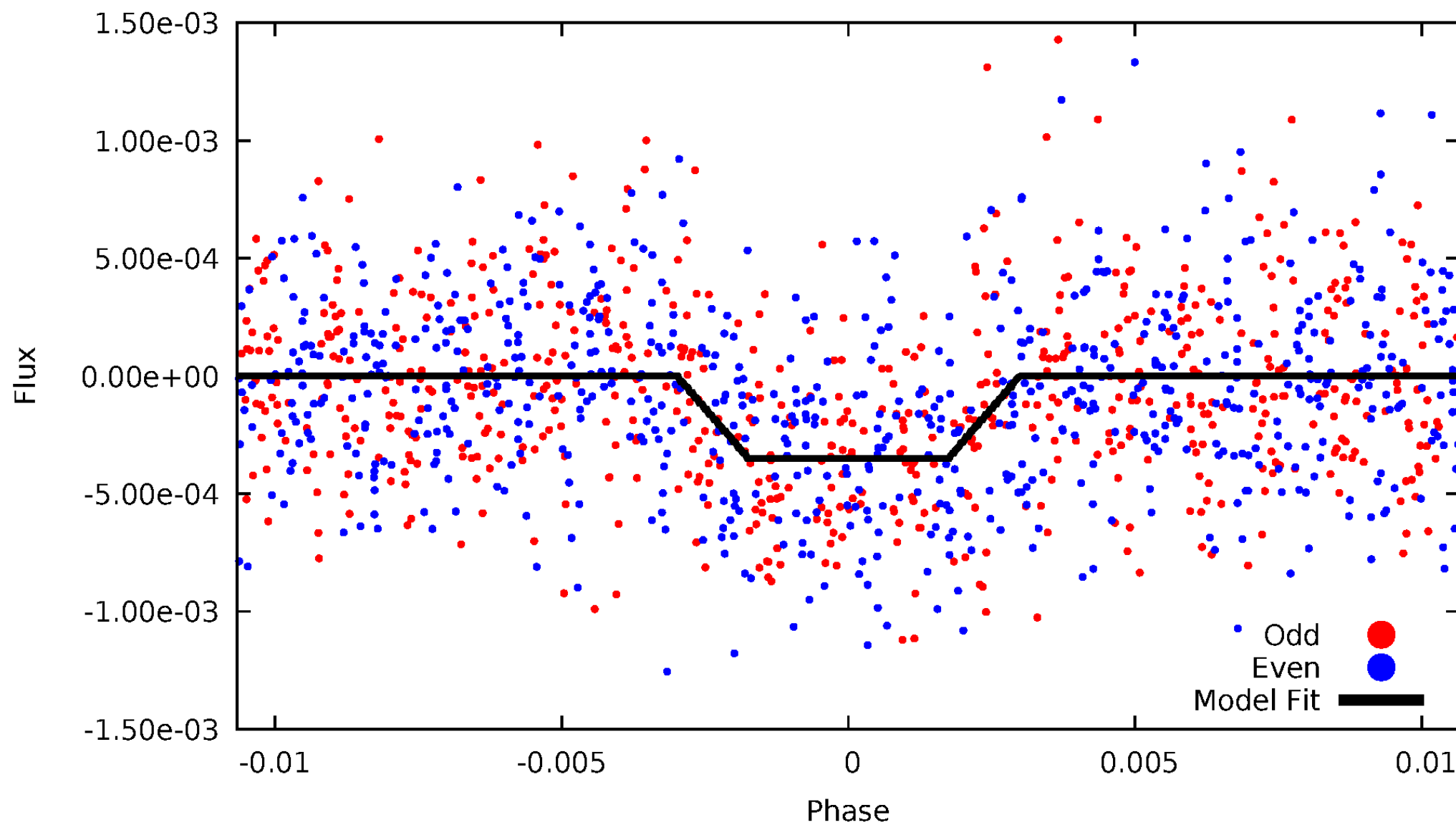
# DV Odd/Even

TCE 010018233-01



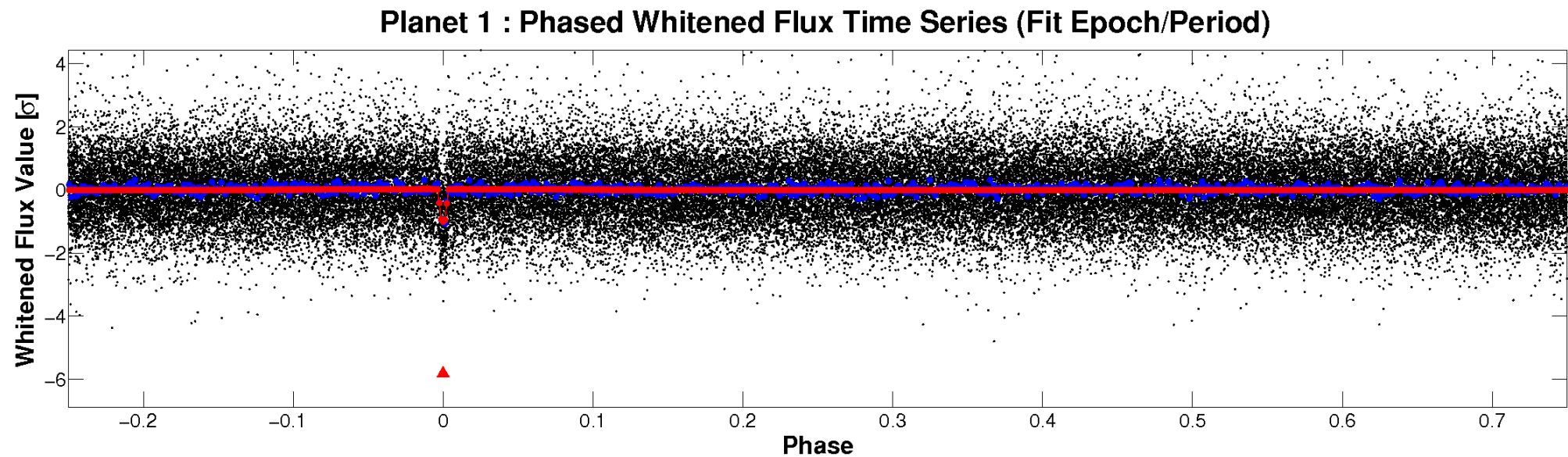
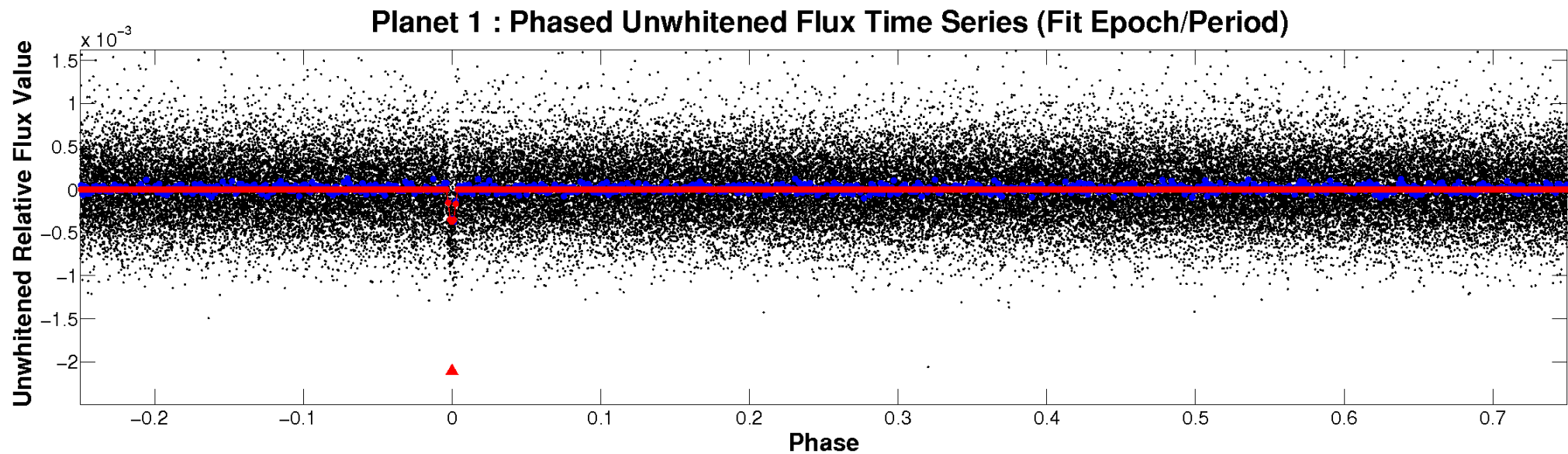
# ALT Odd/Even

TCE 010018233-01



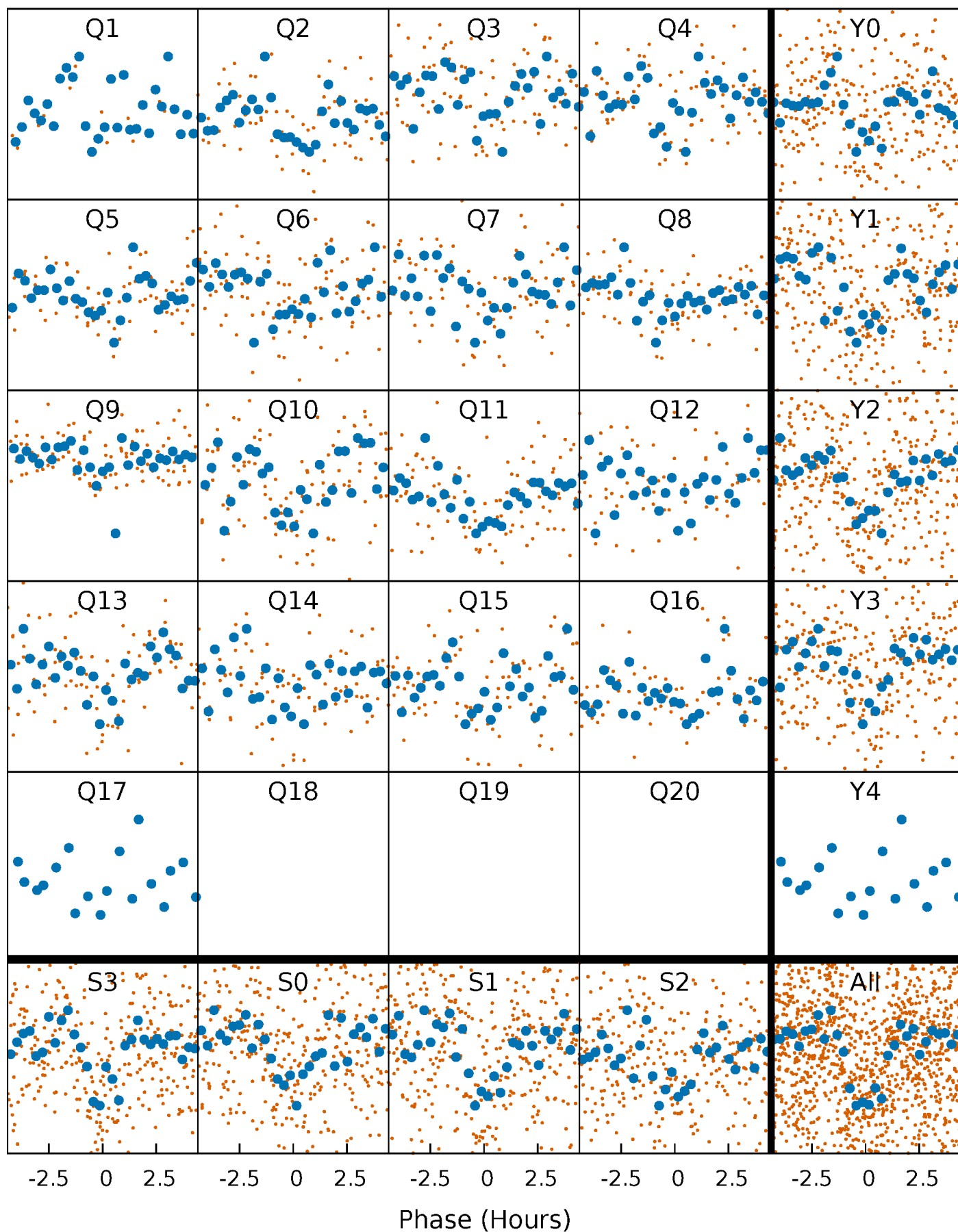


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

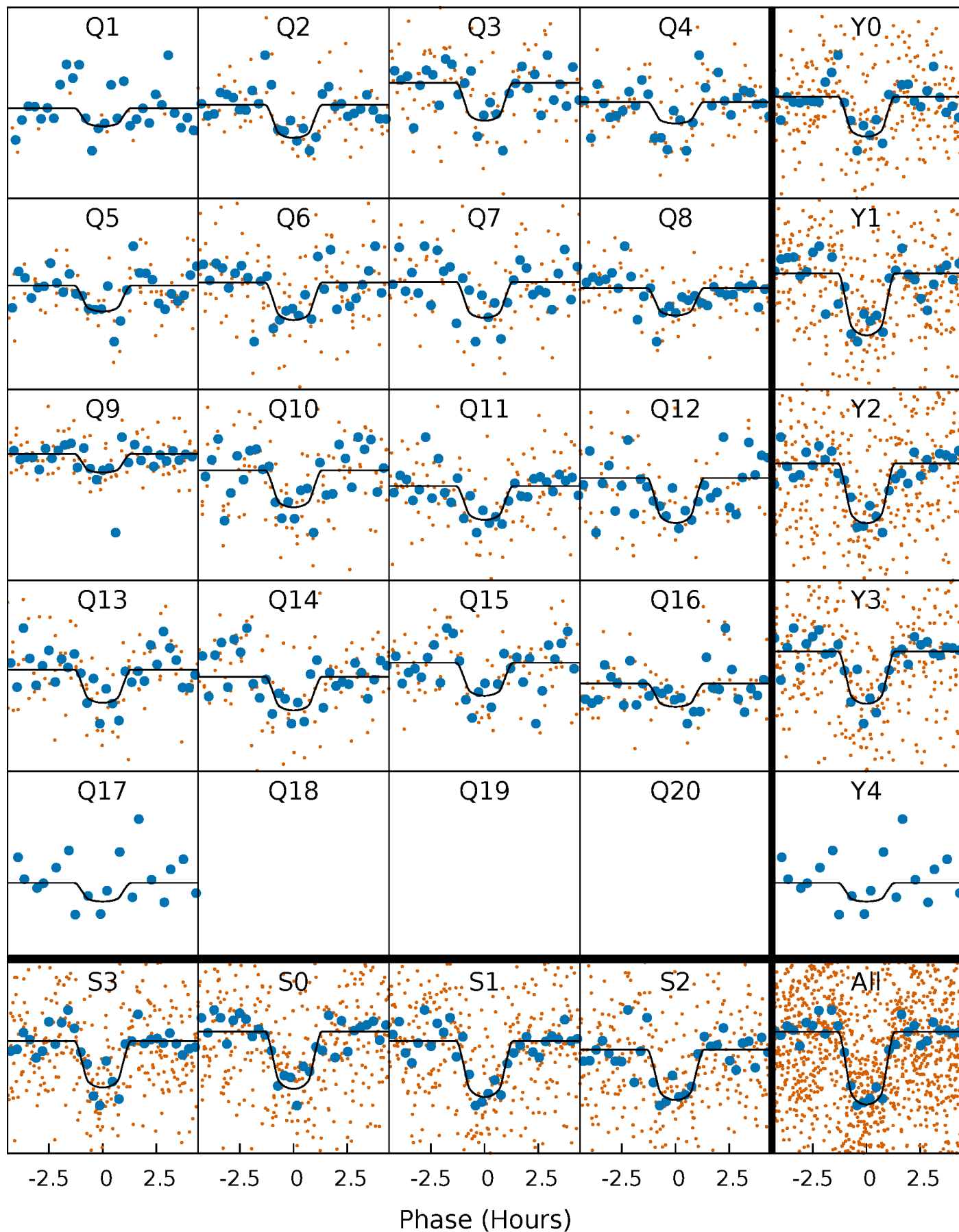
TCE 010018233-01 P= 16.296066 Days  $T_0=133.904659$  (BKJD)





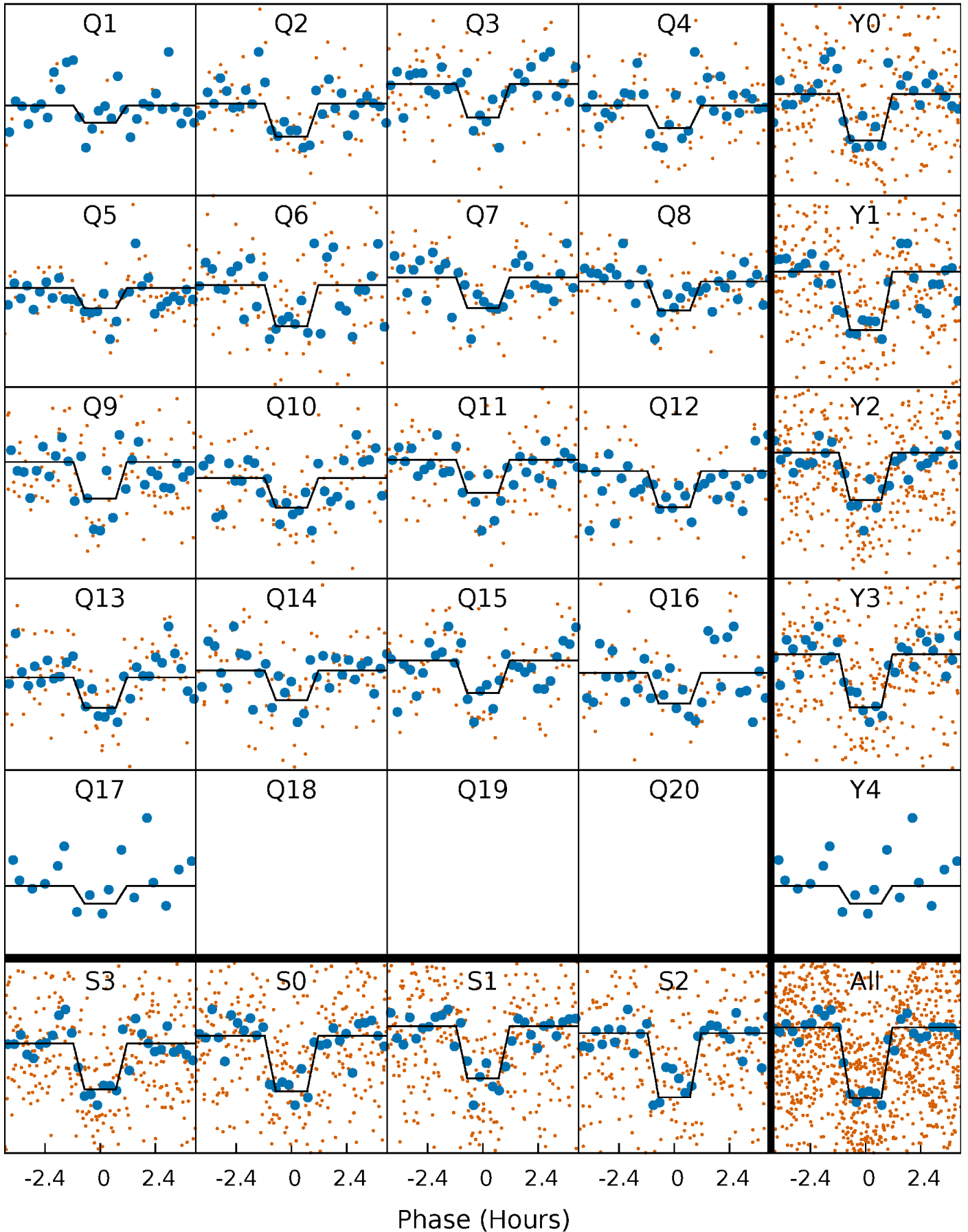
# DV Quarter-Phased Transit Curves

TCE 010018233-01 P= 16.296066 Days  $T_0=133.904659$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

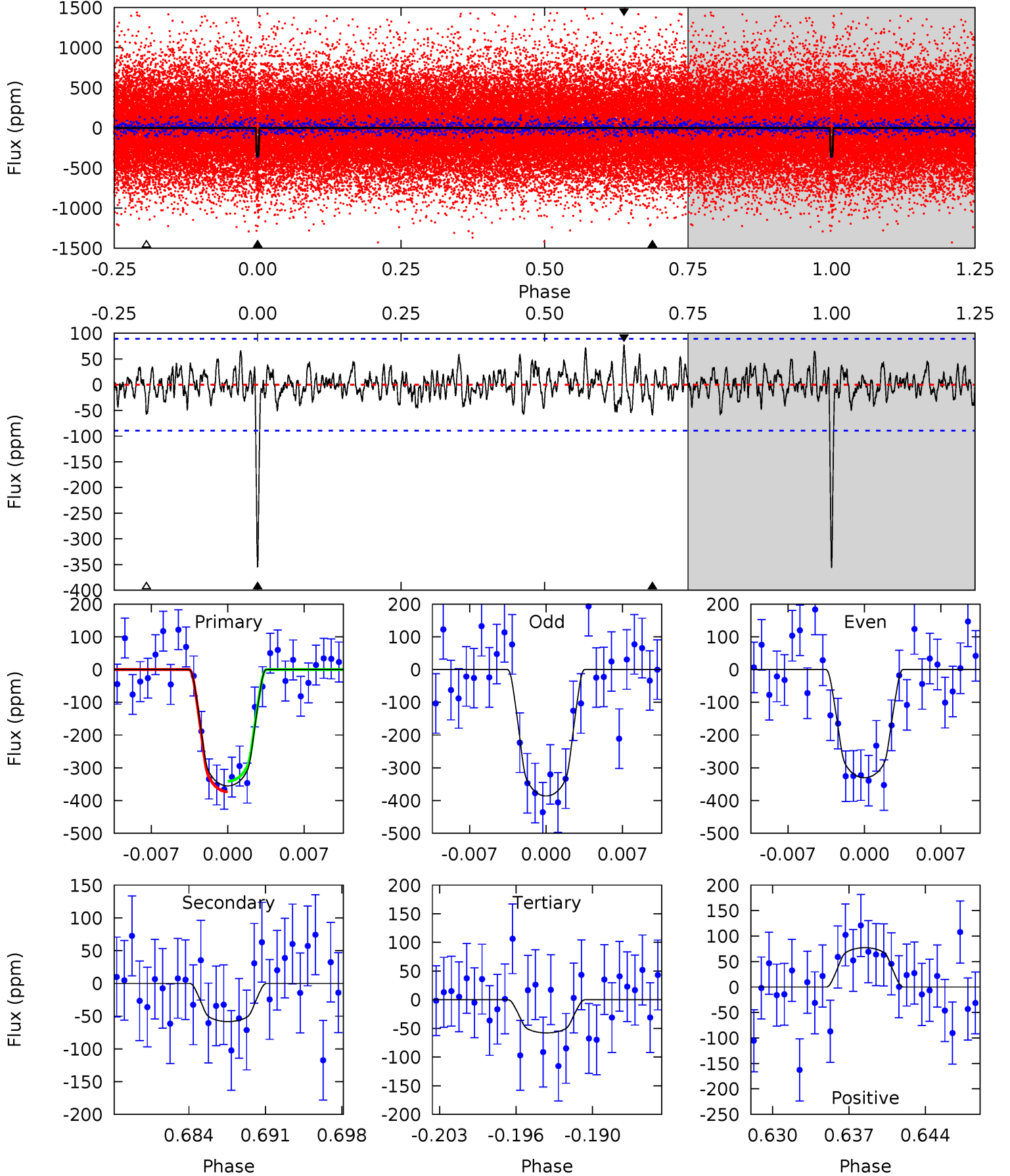
TCE 010018233-01 P= 16.295927 Days  $T_0=133.910044$  (BKJD)



# DV Model-Shift Uniqueness Test

010018233-01, P = 16.296066 Days, E = 117.608593 Days

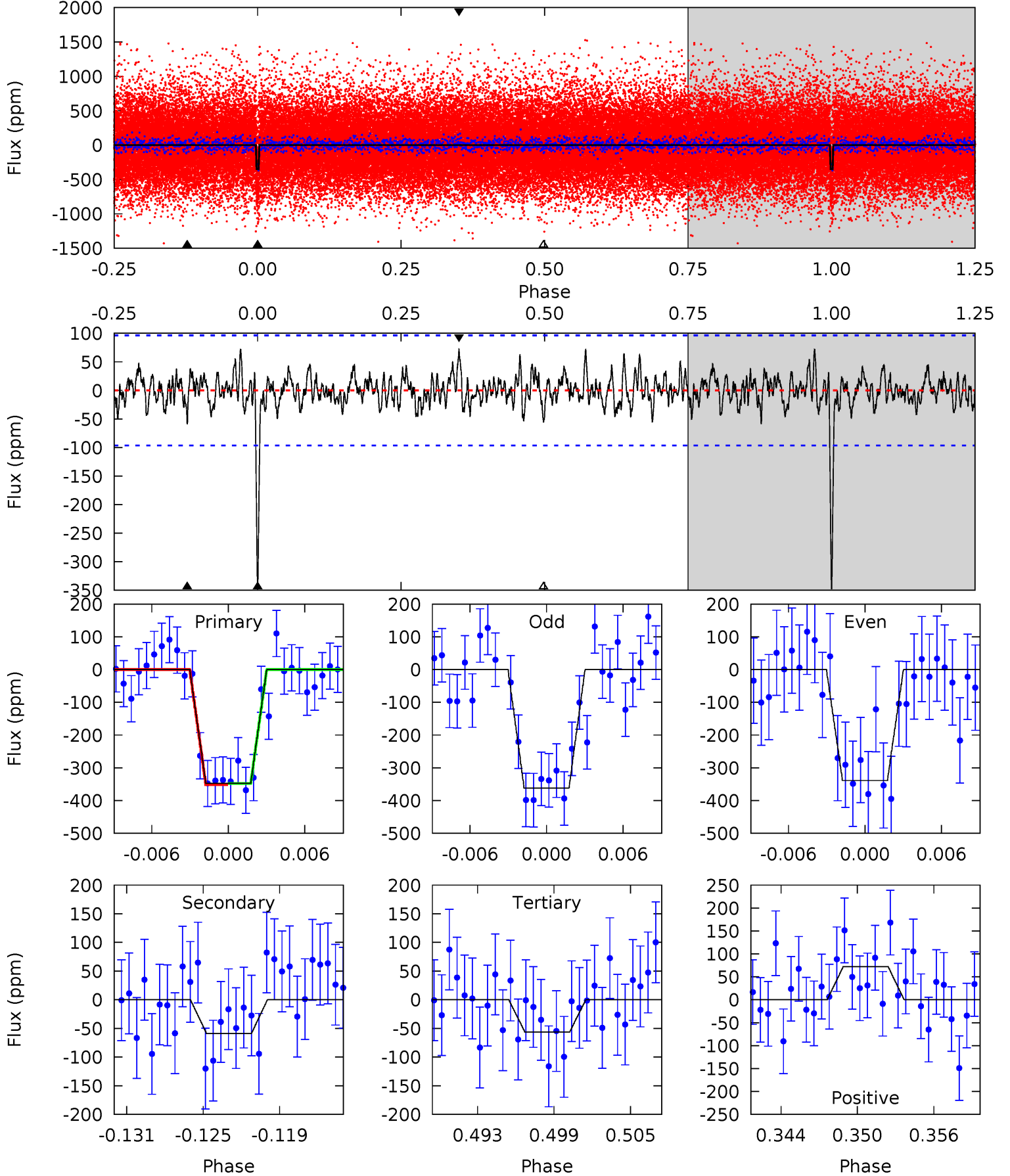
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	3.34	3.30	4.41	5.10	2.71	1.24	17.0	15.9	0.03	-1.08	1.59	1.02	0.18	0.92



# Alt Model-Shift Uniqueness Test

010018233-01,  $P = 16.295927$  Days,  $E = 117.614117$  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
18.5	3.13	2.99	3.85	5.13	2.75	1.15	15.5	14.6	0.14	-0.71	0.61	1.01	0.17	0.10



### Stellar Parameters For KIC 010018233

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5495^{+74}_{-82}$	$4.442^{+0.072}_{-0.099}$	$0.160^{+0.150}_{-0.150}$	$0.961^{+0.115}_{-0.086}$	$0.932^{+0.052}_{-0.047}$	$1.478^{+0.404}_{-0.450}$
	+1%/-1%	+2%/-2%	+94%/-94%	+12%/-9%	+6%/-5%	+27%/-30%
Source	SPE90	SPE90	SPE90	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 010018233-01 / KOI 2655.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-58 \pm 17$	$2.25^{+0.97}_{-0.96}$	$949^{+32}_{-30}$	$3675^{+836}_{-431}$	$94^{+208}_{-53}$
Alt.	$-59 \pm 19$	$2.02^{+0.98}_{-0.91}$	$951^{+32}_{-30}$	$3815^{+980}_{-484}$	$116^{+288}_{-66}$

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



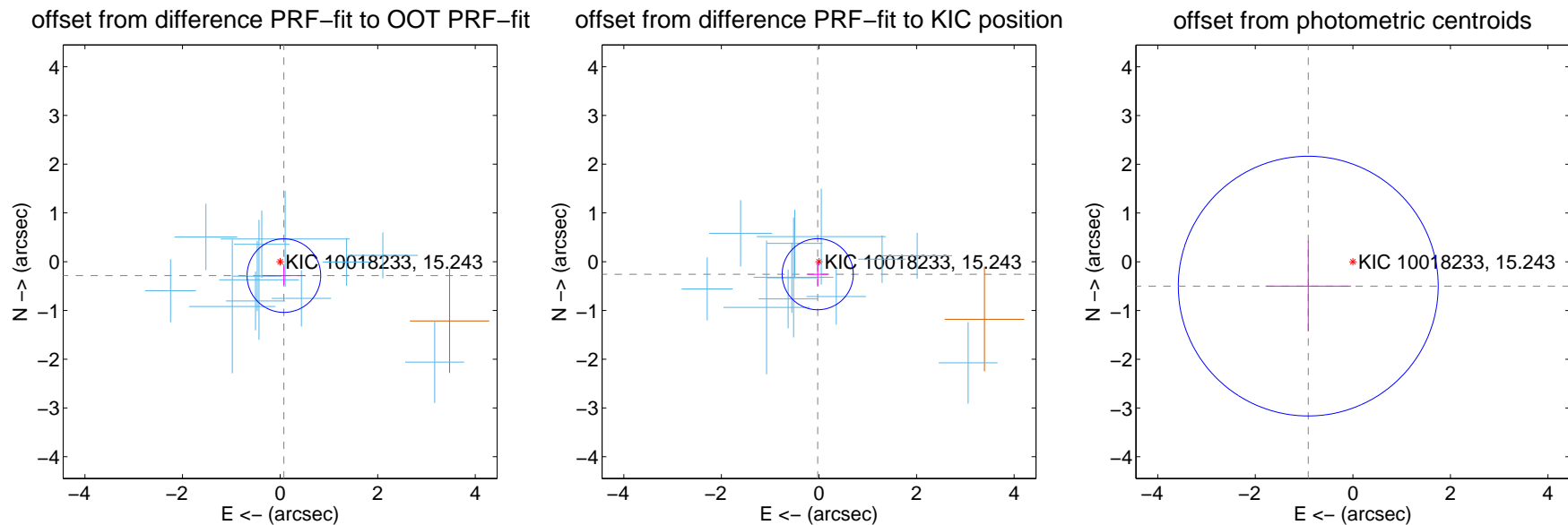
## DV Centroid Data

Supplemental centroid analysis for 010018233-01. Kepler magnitude: 15.24. Transit SNR 15.37

There are 12 quarters with good PRF difference image offsets

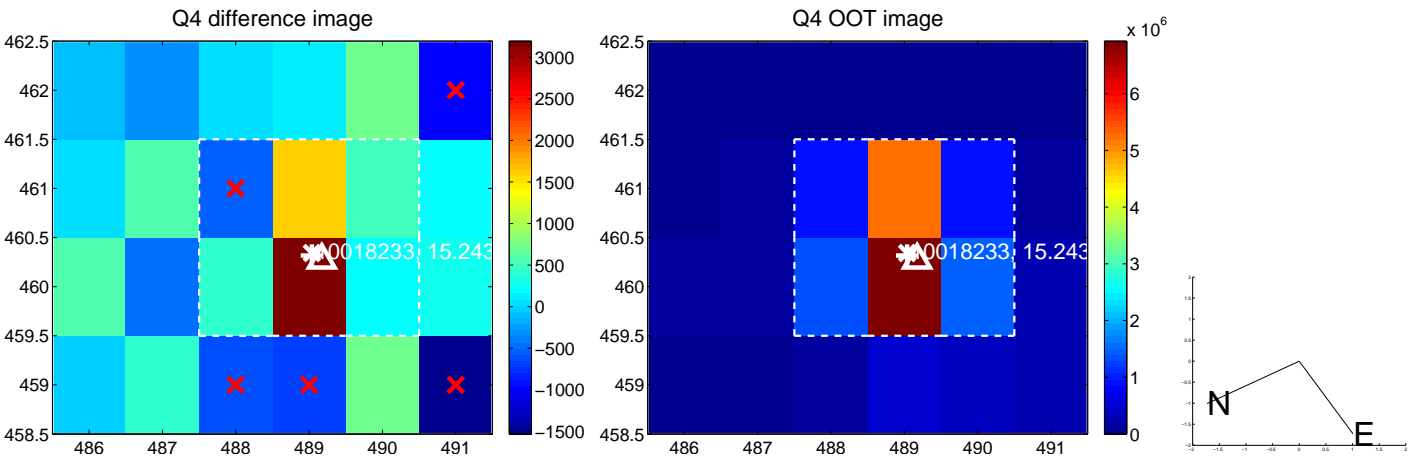
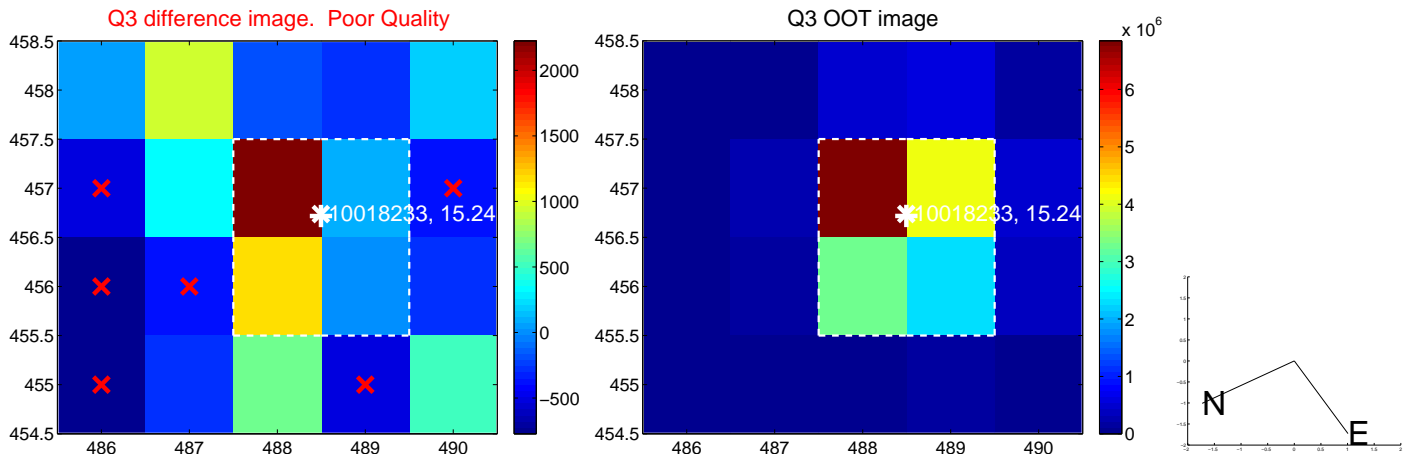
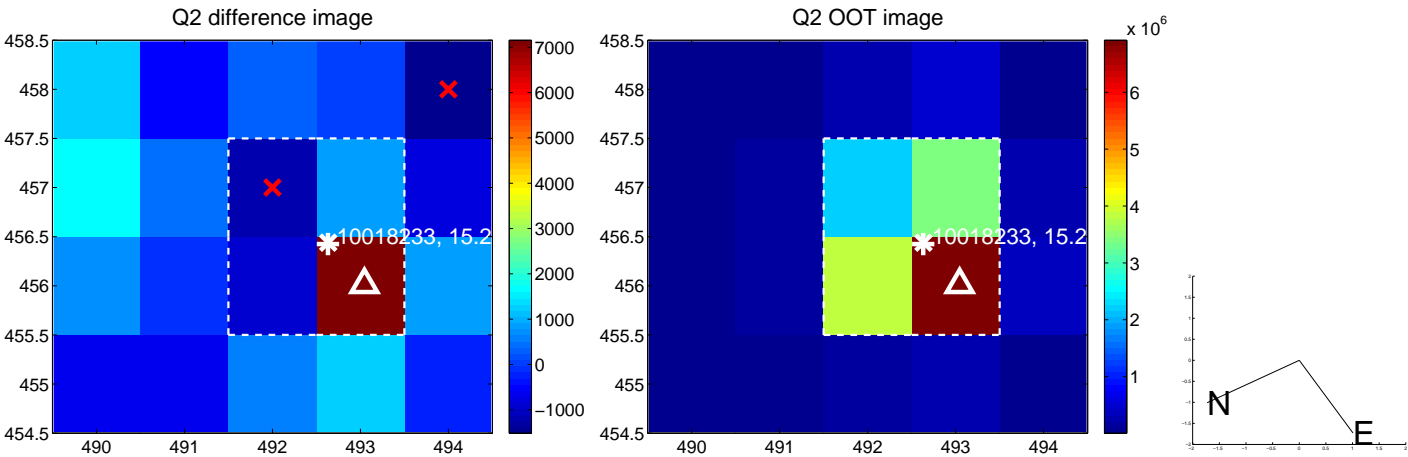
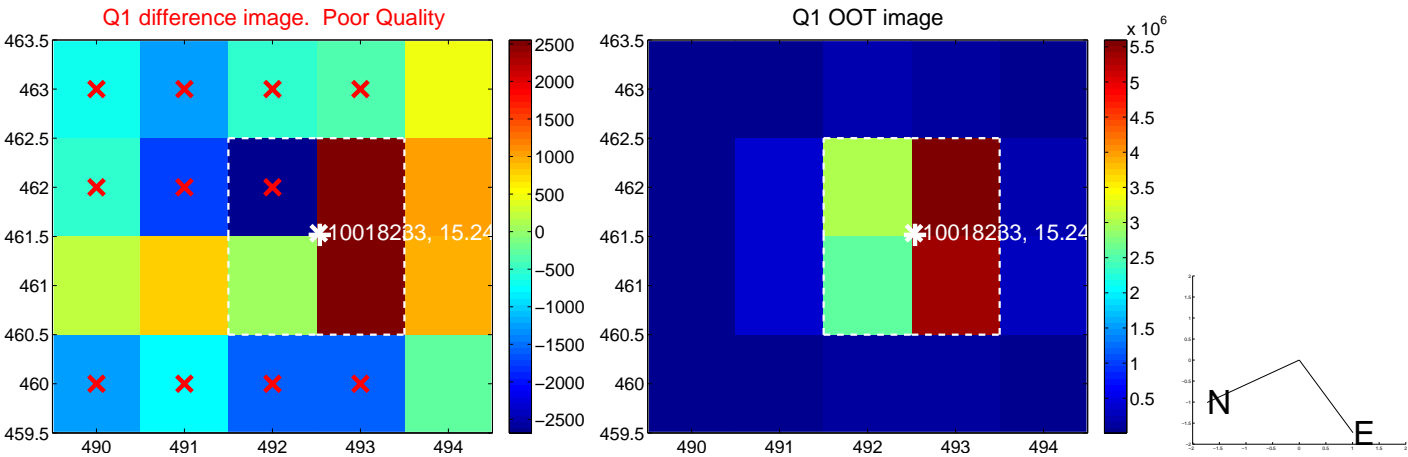
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.296 \pm 0.252$	1.18	$-0.077 \pm 0.446$	$-0.285 \pm 0.194$
PRF-fit source offset from KIC position	$0.258 \pm 0.243$	1.06	$0.026 \pm 0.214$	$-0.257 \pm 0.243$
photometric centroid source offset	$1.04 \pm 0.89$	1.17	$0.91 \pm 0.88$	$-0.50 \pm 0.93$

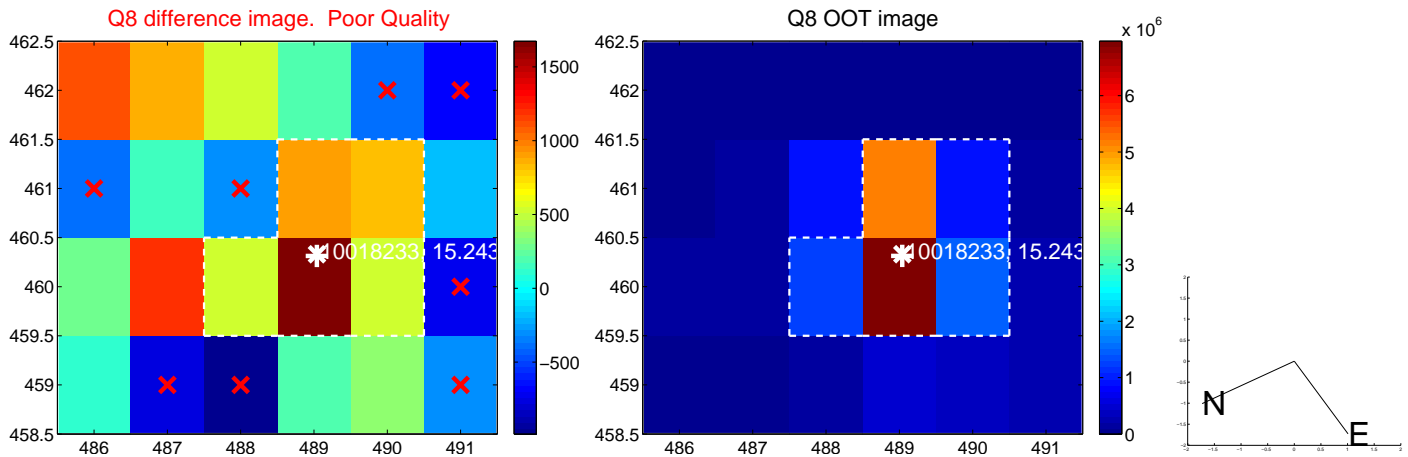
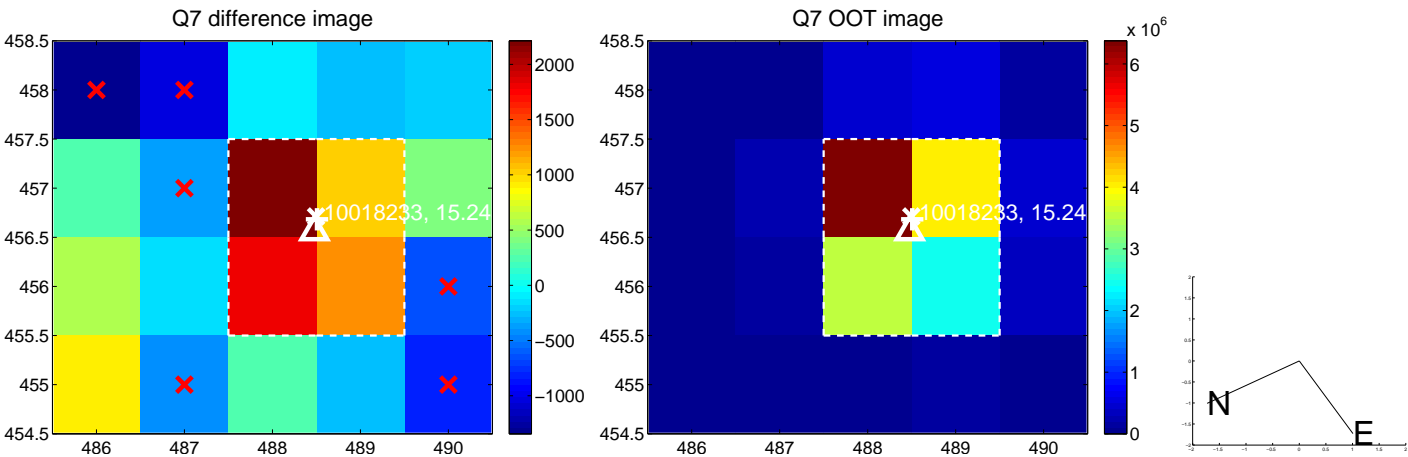
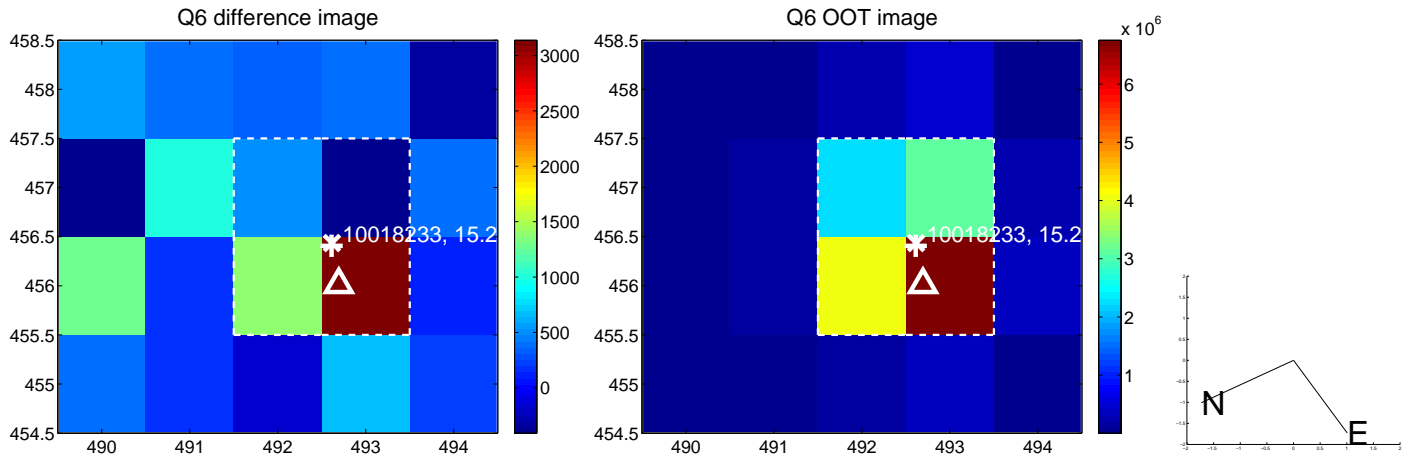
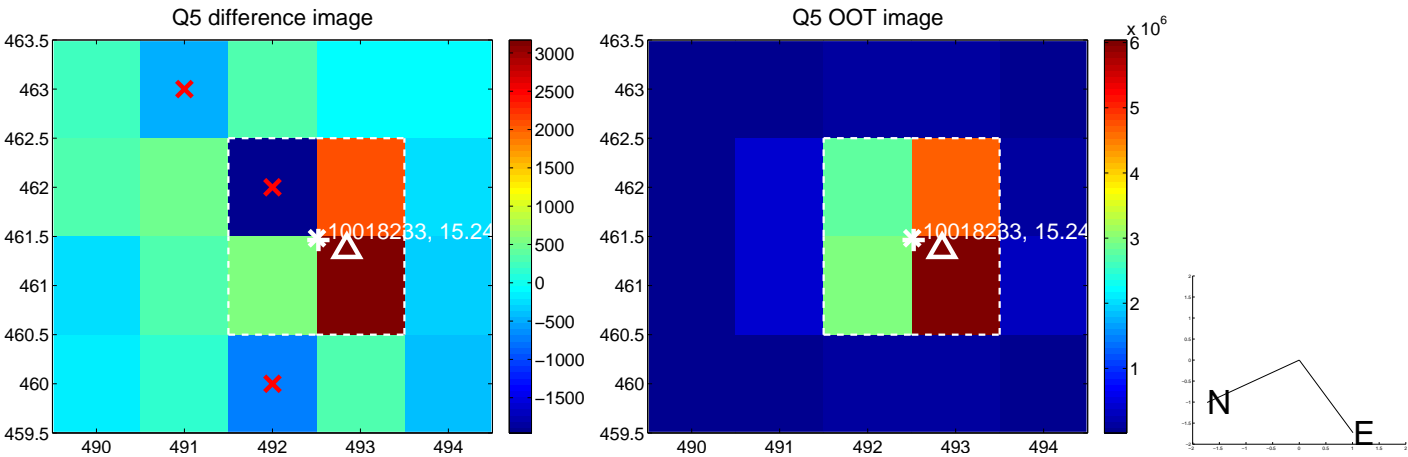


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

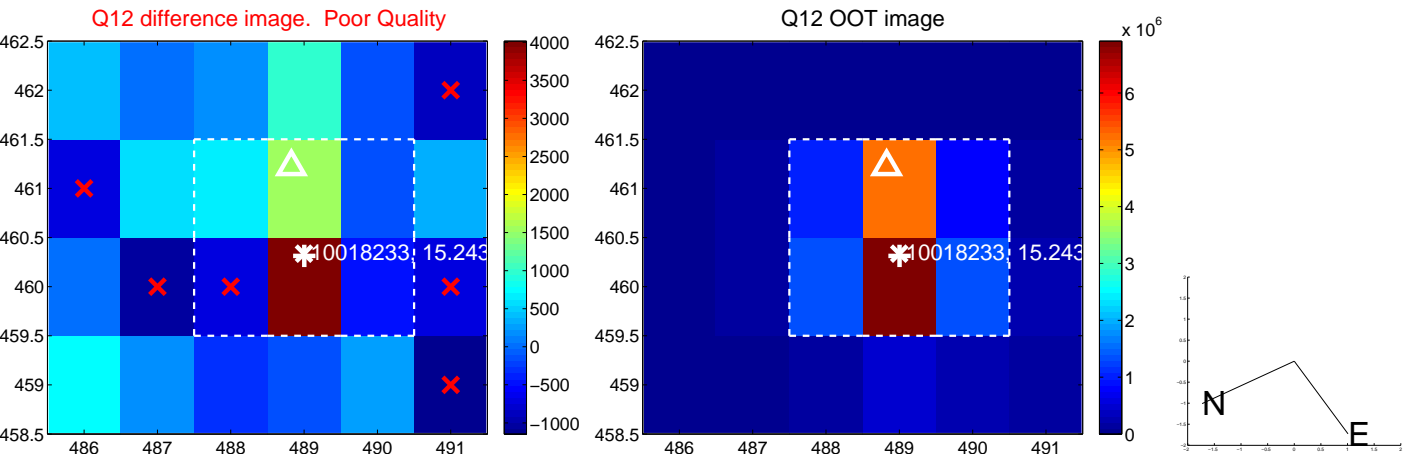
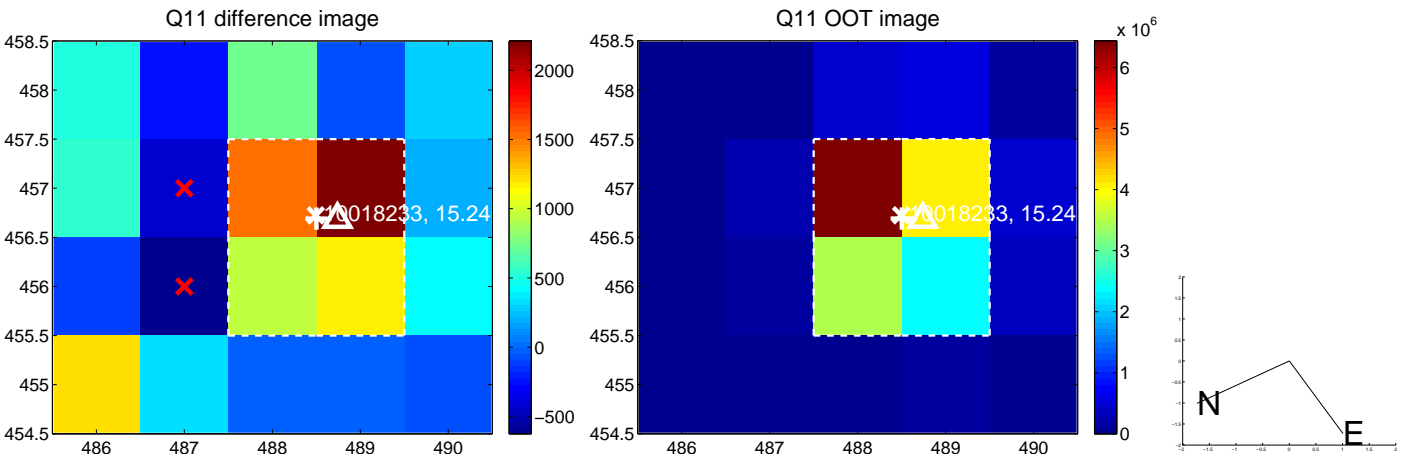
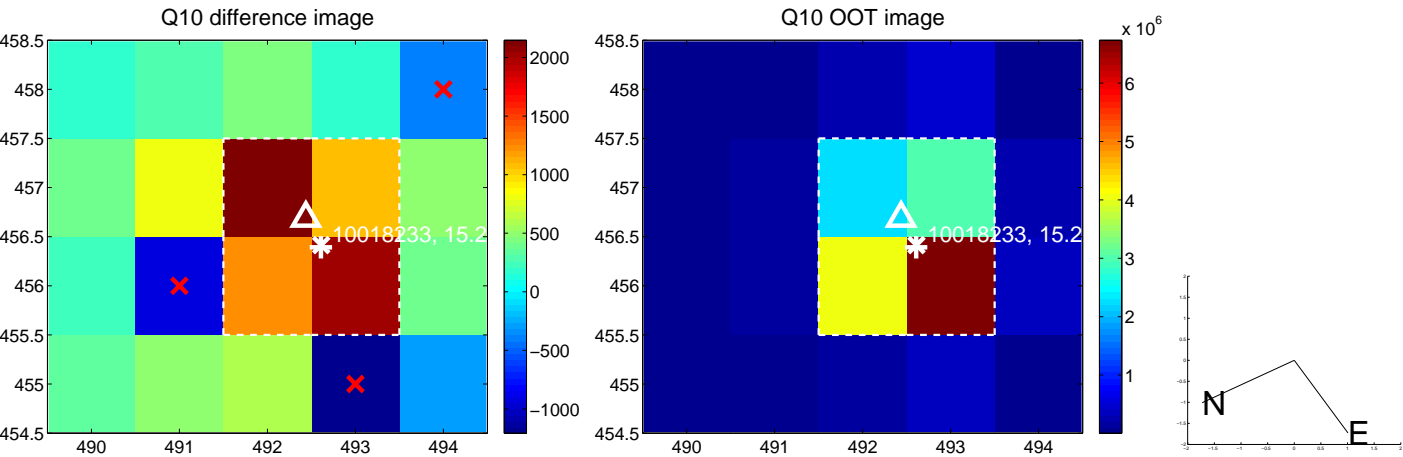
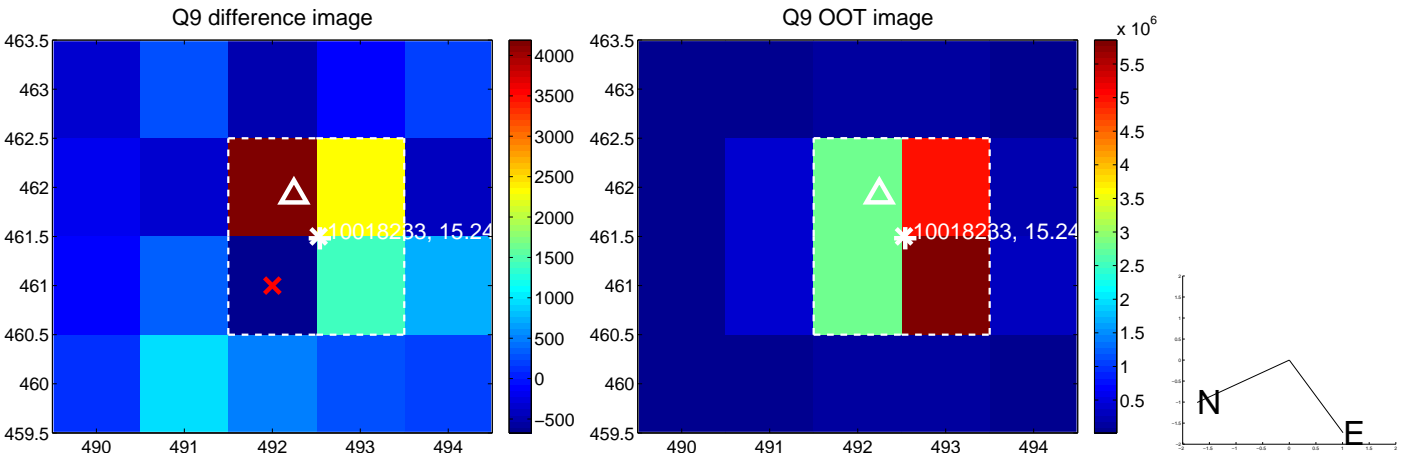
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



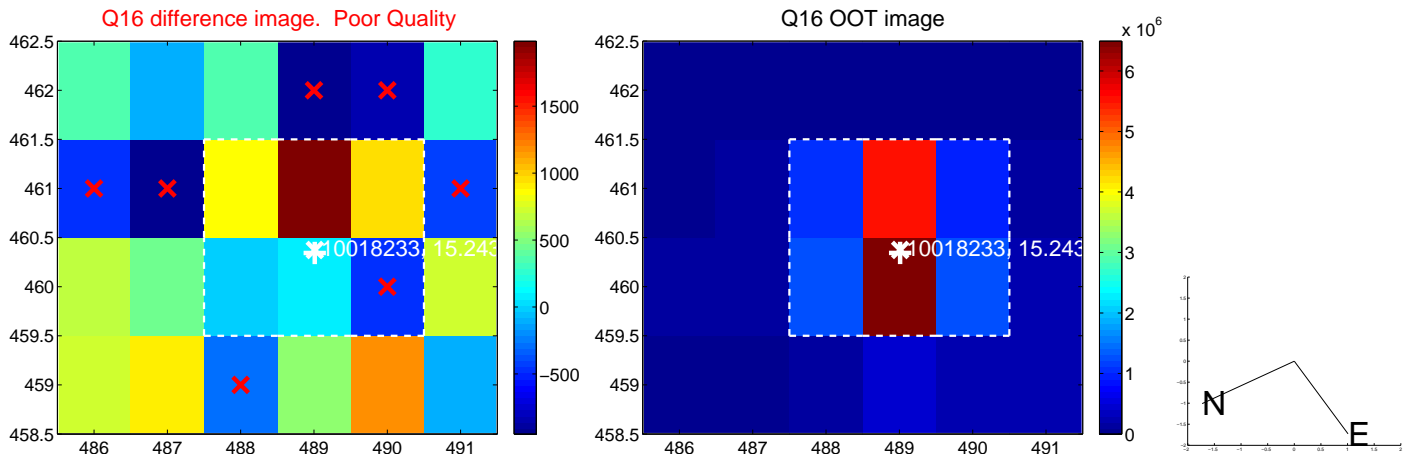
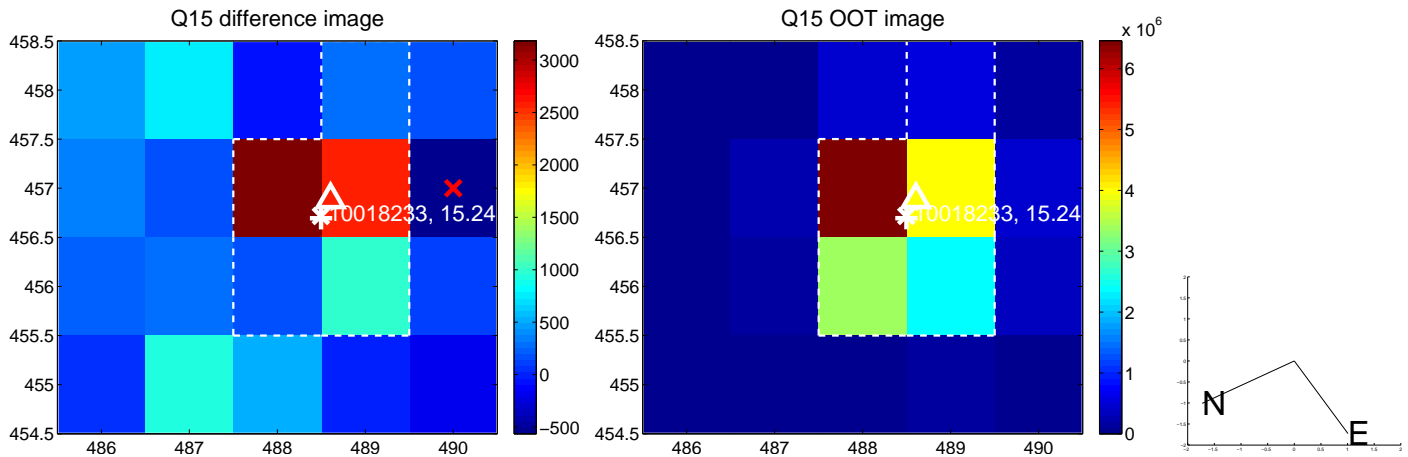
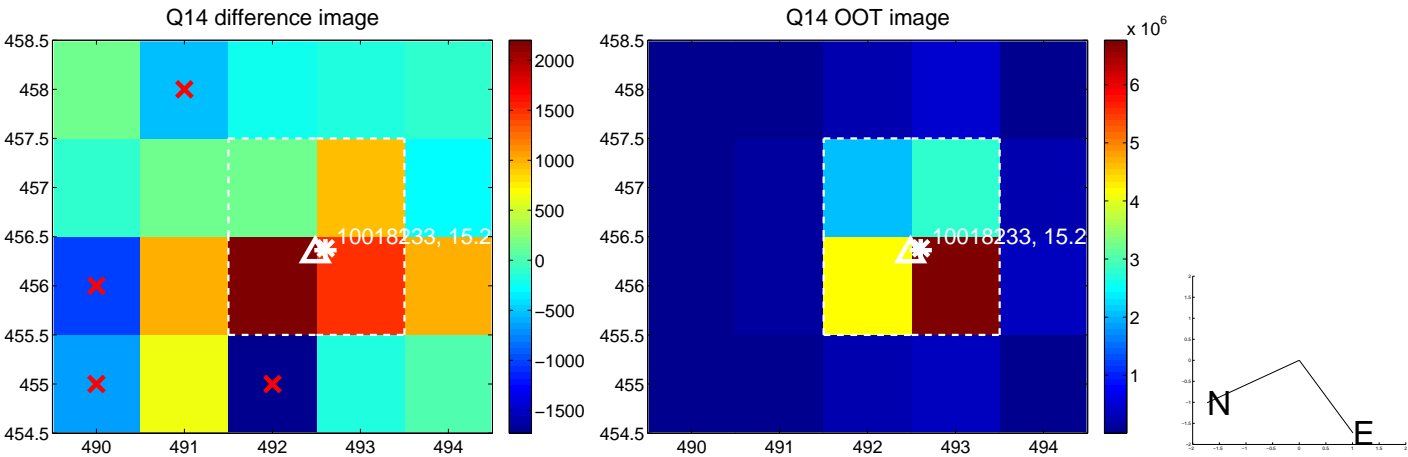
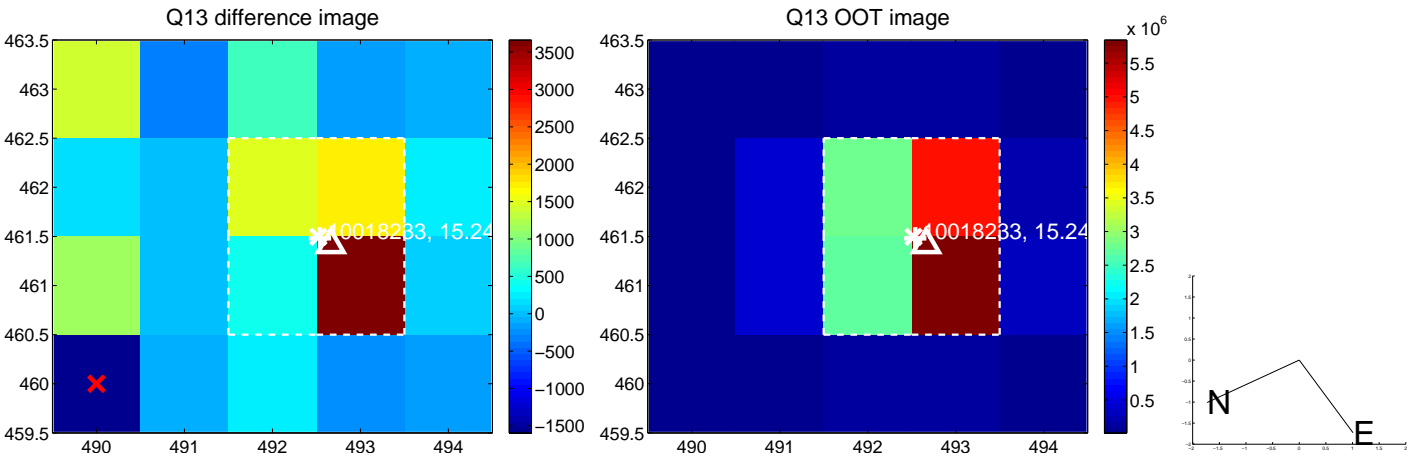
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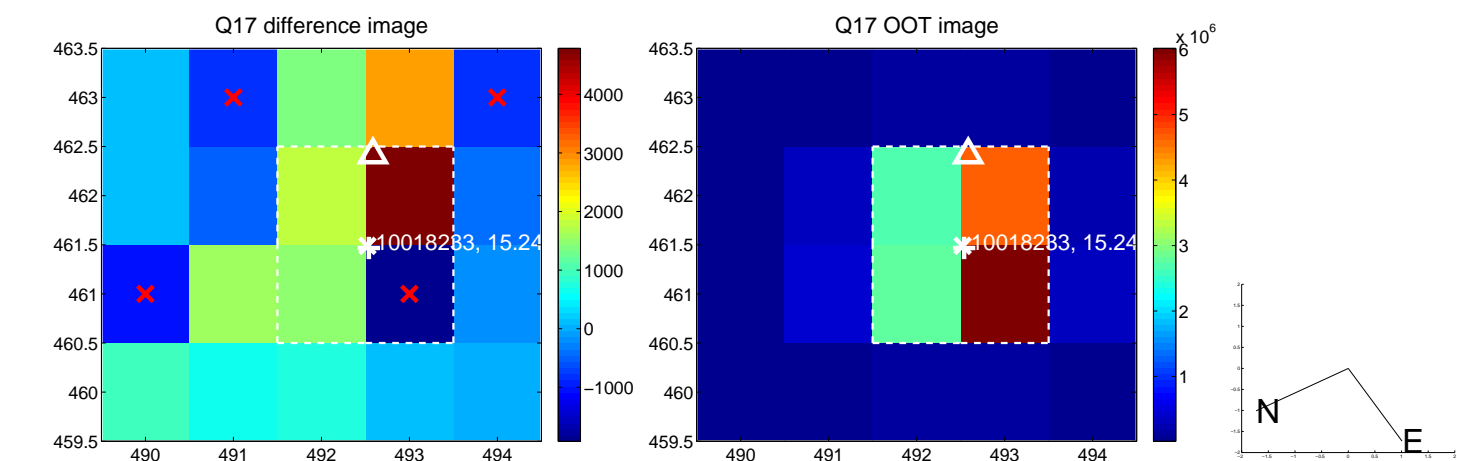


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

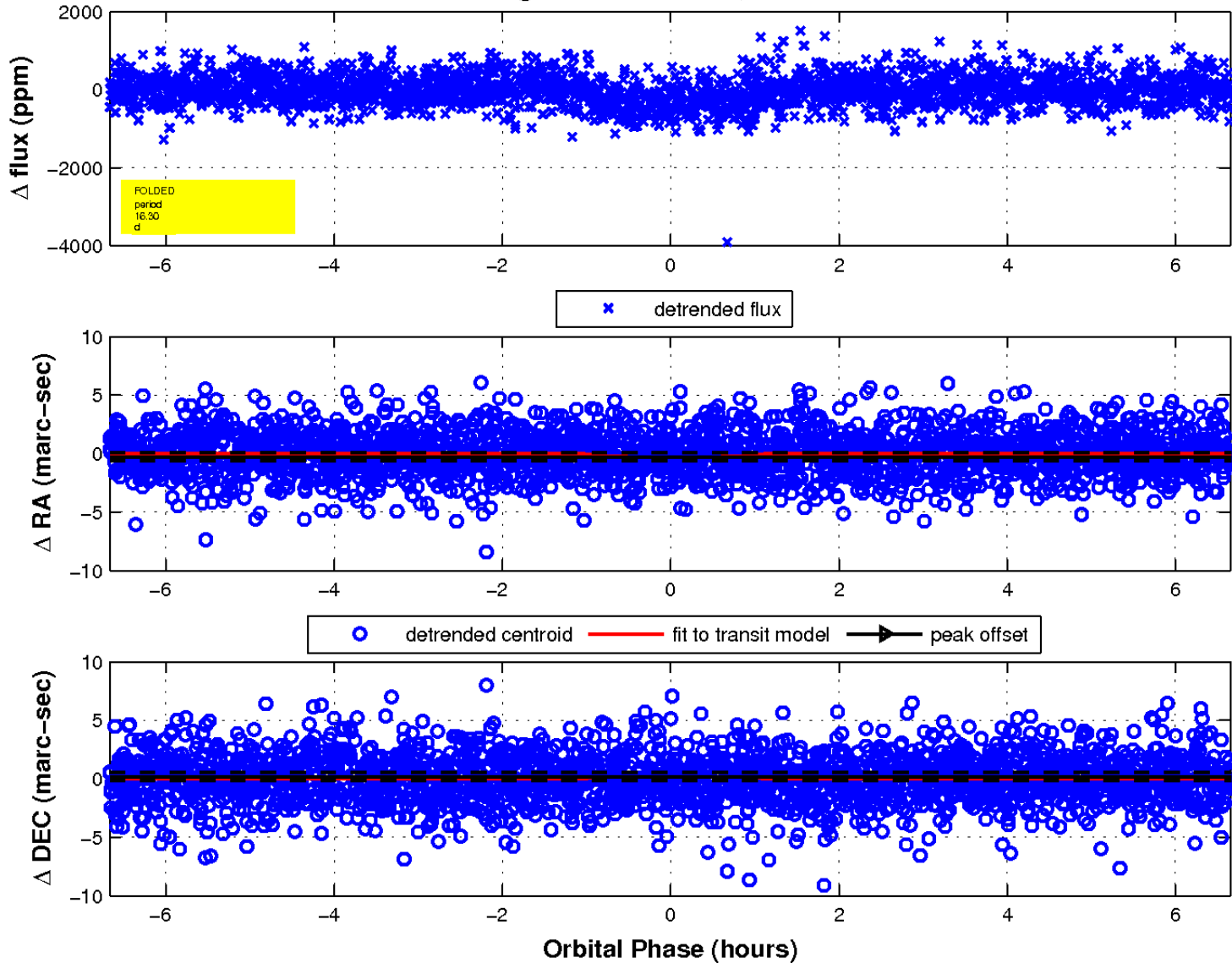




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

