

# KIC 010735331

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010735331-01	OBS	3720.01	213.399020	274.209564	13858.3	6.482	272.5	273.4	1.83	6960	34.44	11.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010735331-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED

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

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

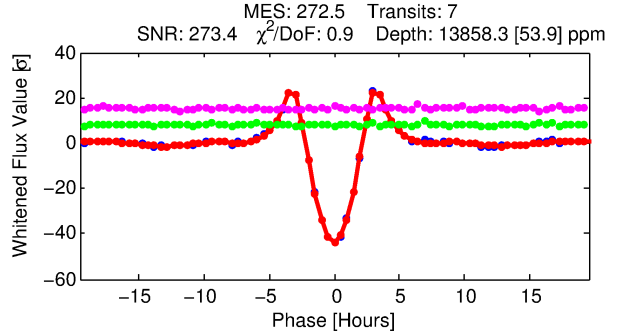
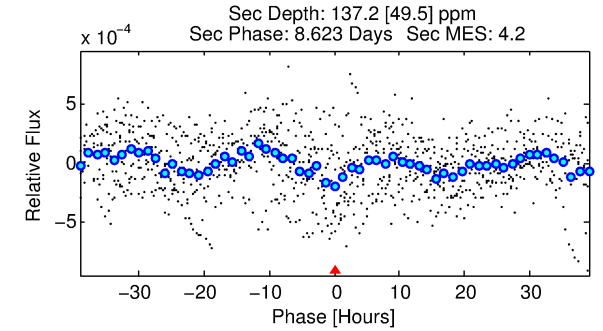
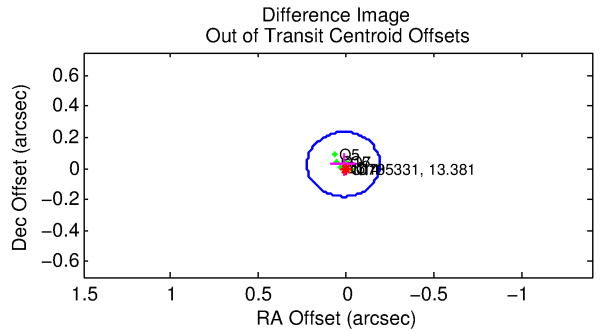
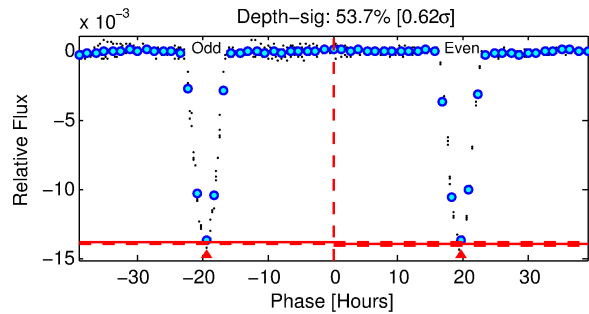
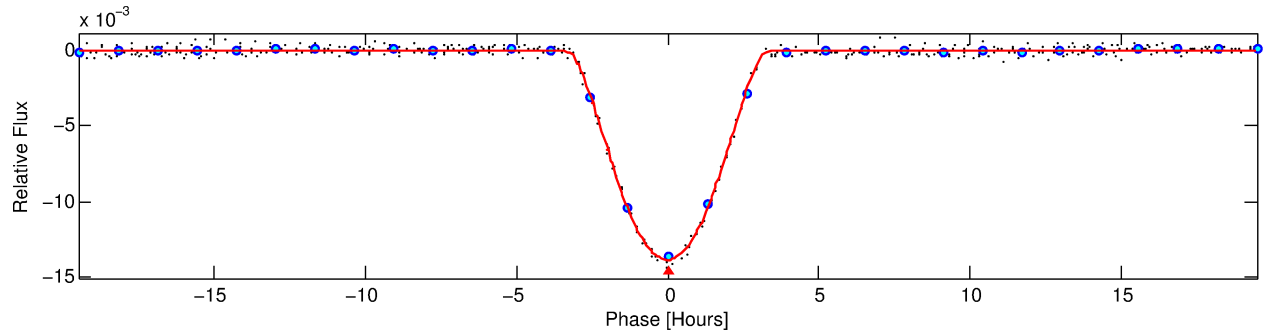
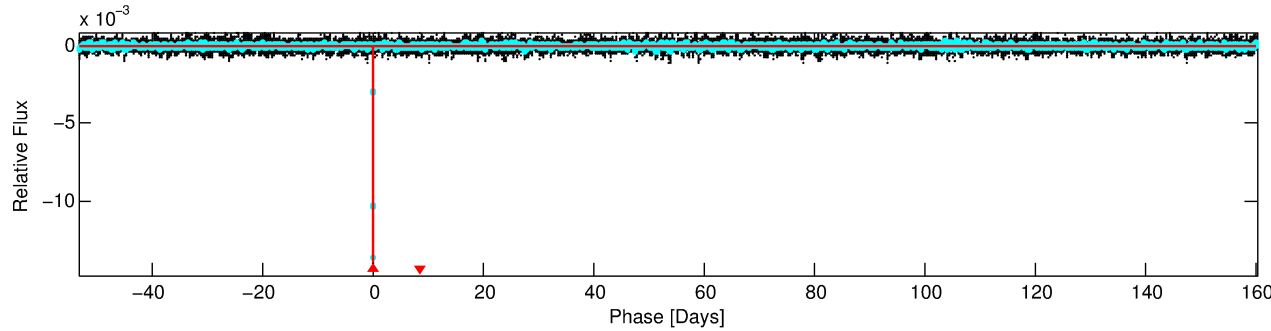
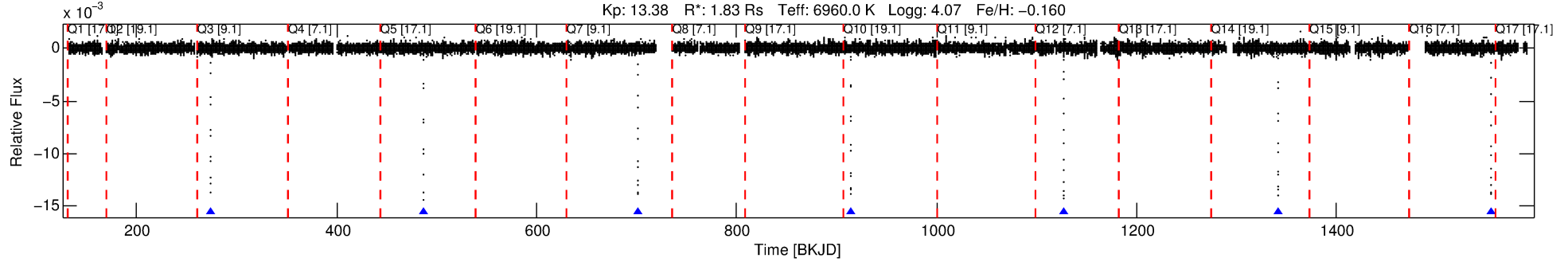
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010735331-01

No Significant Match Found

# DV One-Page Summary

KIC: 10735331 Candidate: 1 of 1 Period: 213.399 d  
KOI: K03720.01 Corr: 0.999



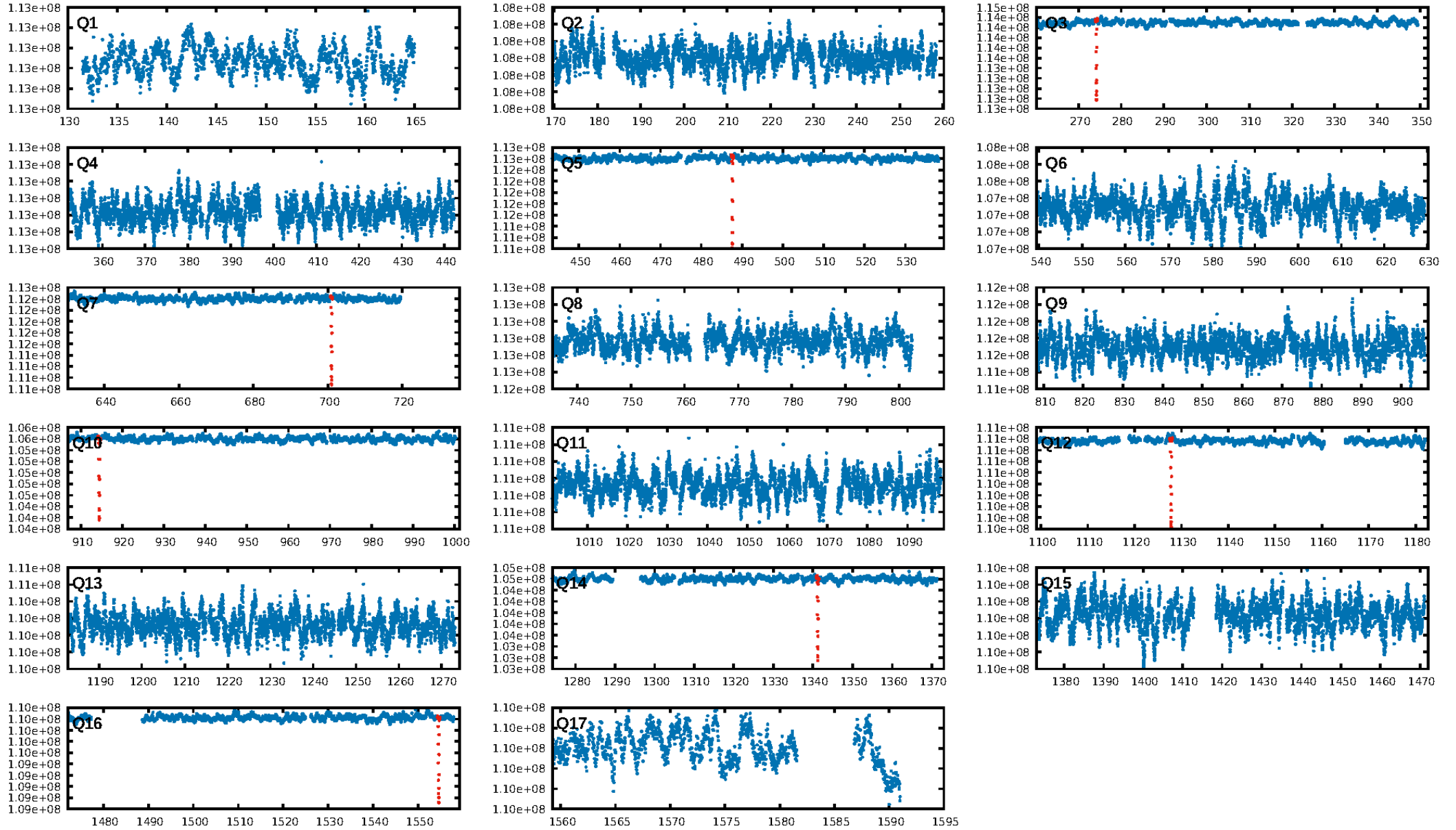
## DV Fit Results:

Period = 213.39902 [0.00009] d  
Epoch = 274.2096 [0.0003] BKJD  
Rp/R\* = 0.1724 [0.0104]  
a/R\* = 162.85 [1.68]  
b = 0.98 [0.02]  
Seff = 11.34 [4.02]  
Teff = 468 [41] K  
Rp = 34.44 [9.07] Re  
a = 0.7879 [0.1716] AU  
Ag = 39.50 [19.62] [1.96 $\sigma$ ]  
Teffp = 1814 [186] K [7.07 $\sigma$ ]

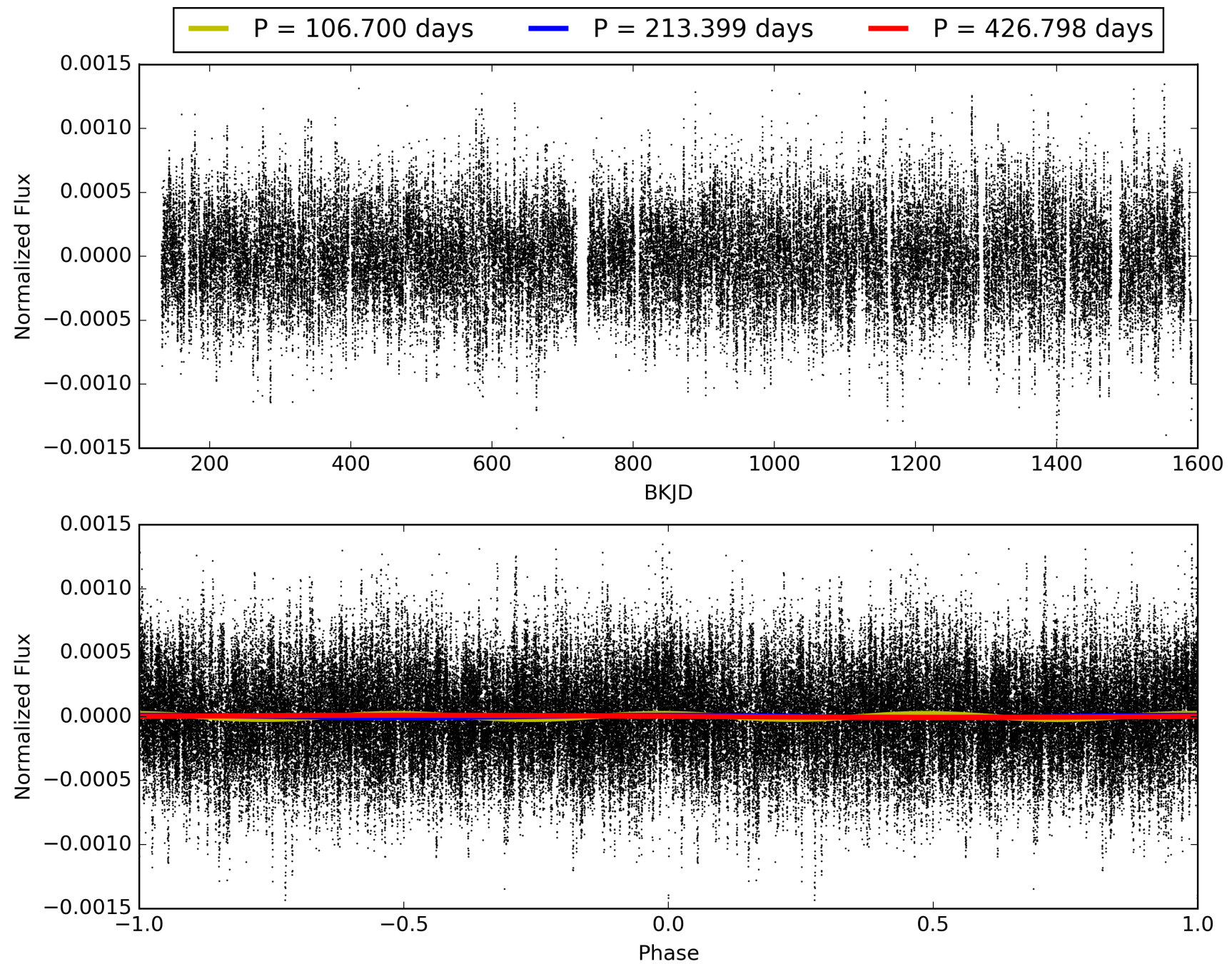
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 68.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 3.854  
Centroid-sig: 12.1%  
Centroid-so: 0.231 arcsec [13.85 $\sigma$ ]  
OotOffset-rm: 0.032 arcsec [0.46 $\sigma$ ]  
KicOffset-rm: 0.235 arcsec [2.95 $\sigma$ ]  
OotOffset-st: 2/2/1/1 [6]  
KicOffset-st: 2/2/1/1 [6]  
DiffImageQuality-fgm: 1.00 [6/6]  
DiffImageOverlap-fno: 1.00 [6/6]

# TCE 010735331-01, PDC Light Curves

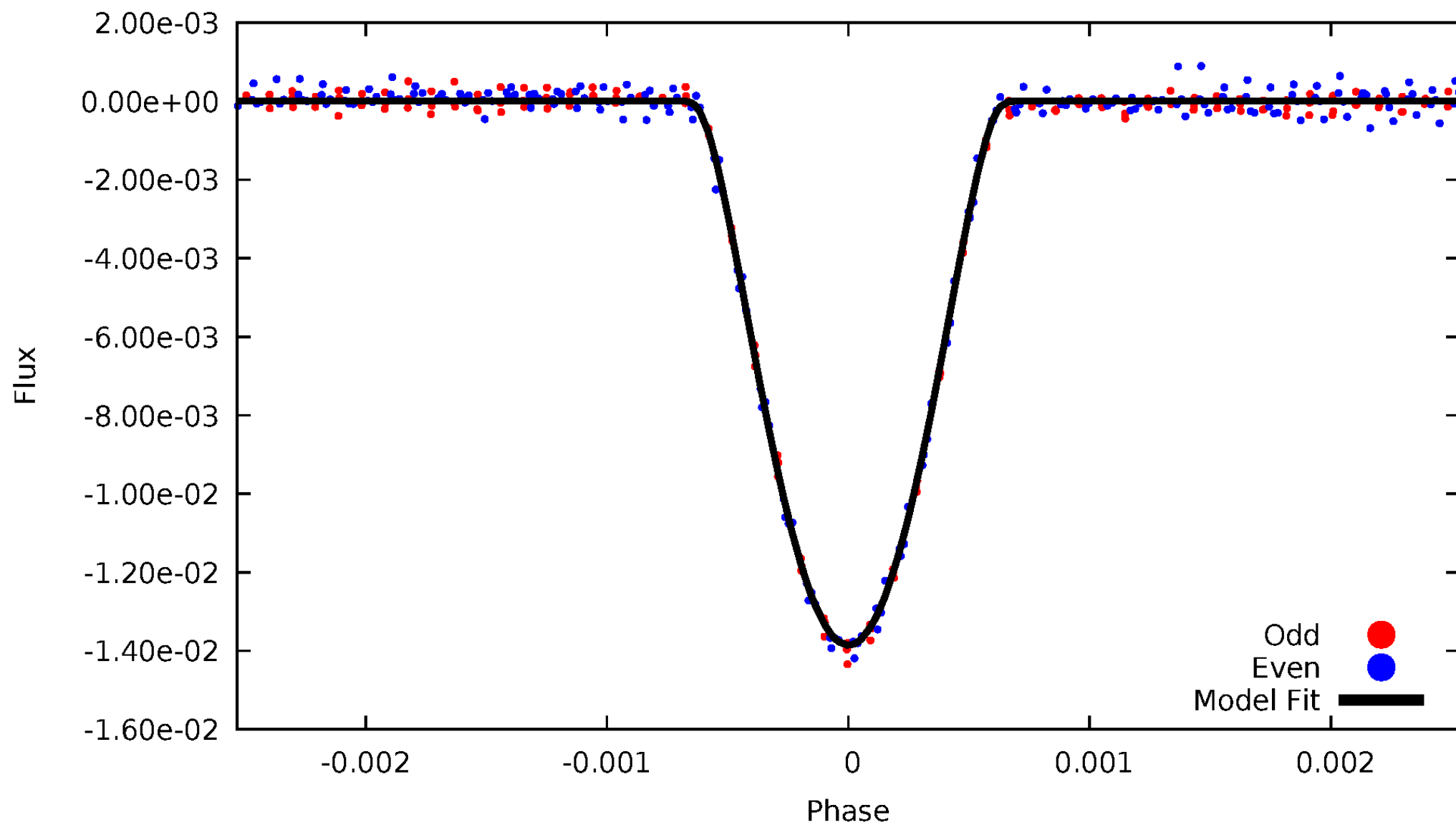


# TCE 010735331-01



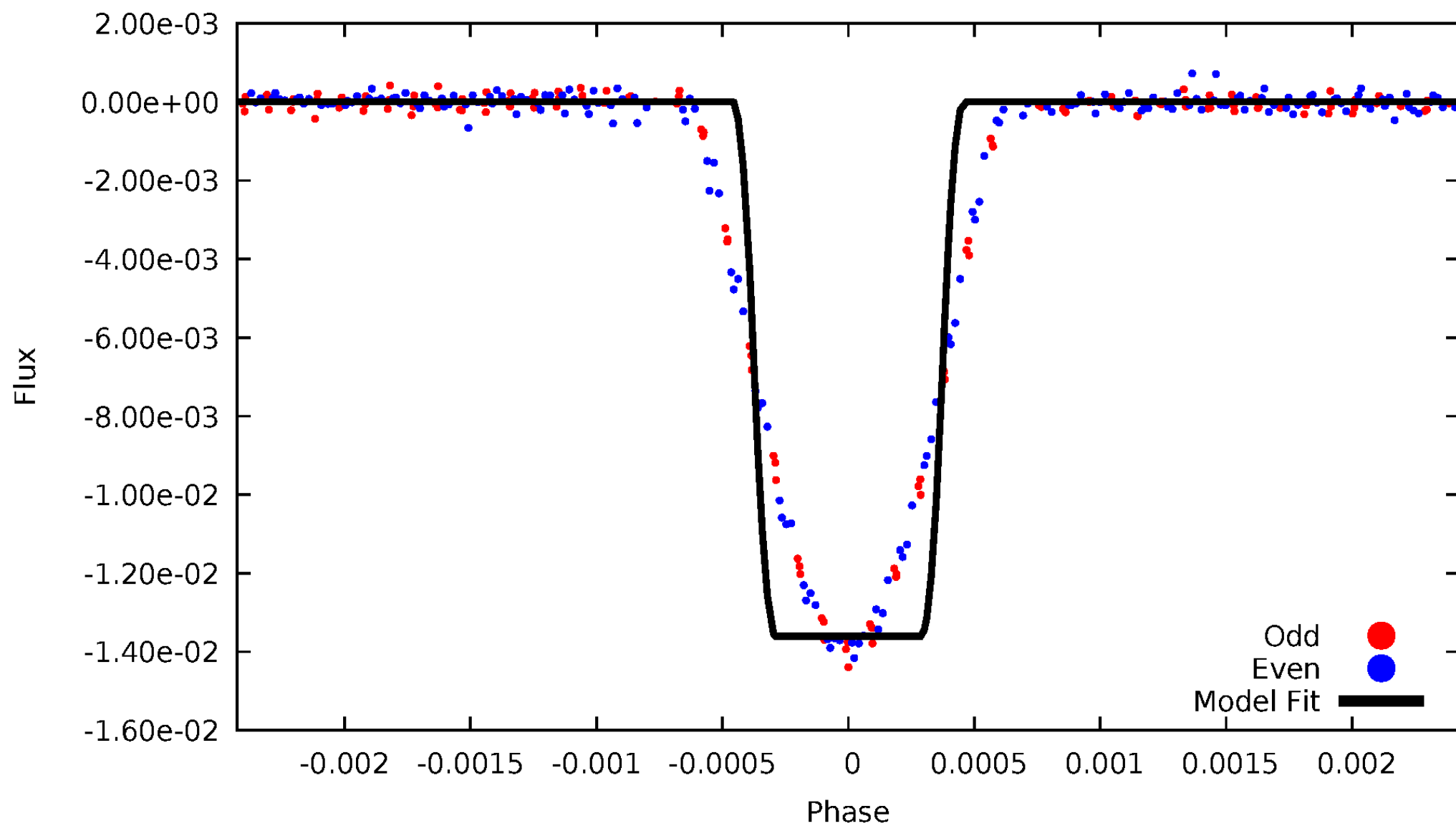
# DV Odd/Even

TCE 010735331-01

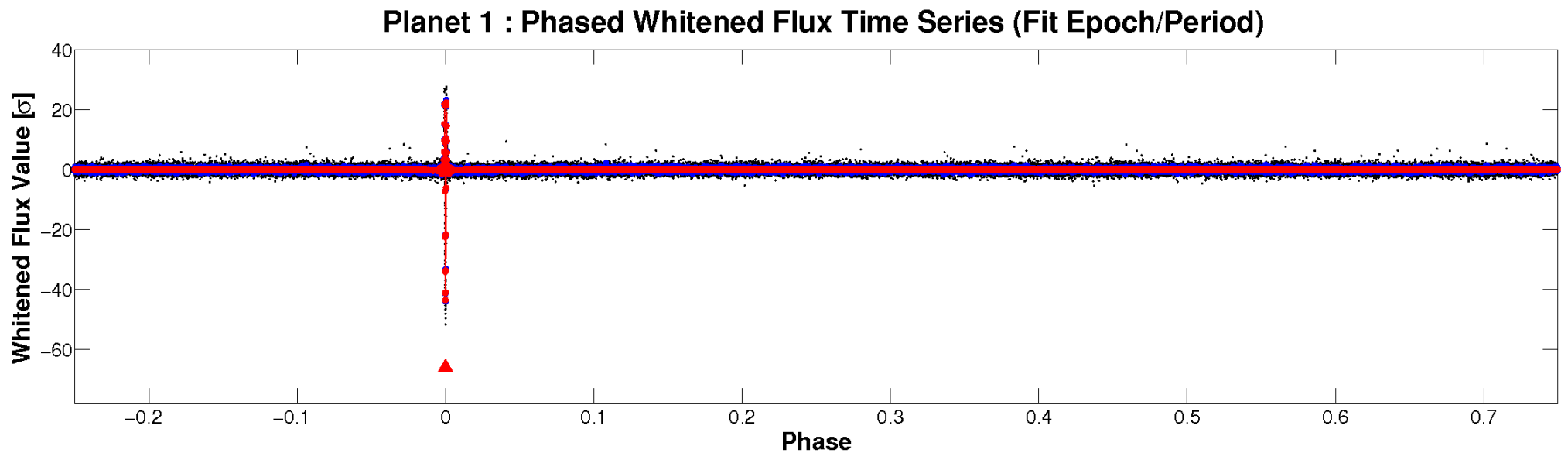
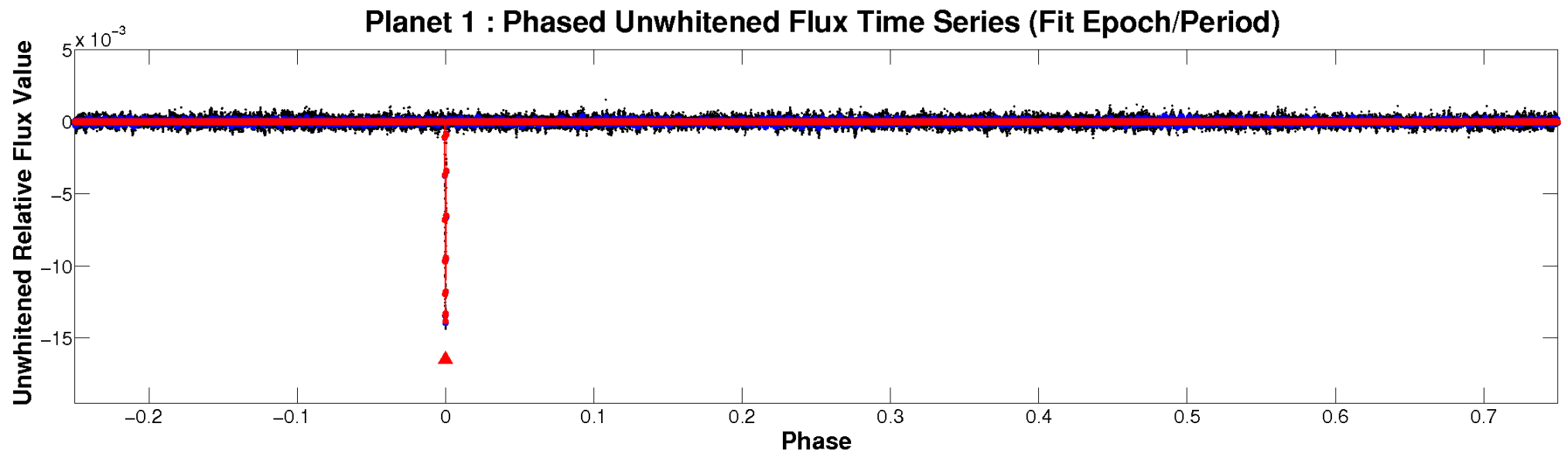


# ALT Odd/Even

TCE 010735331-01

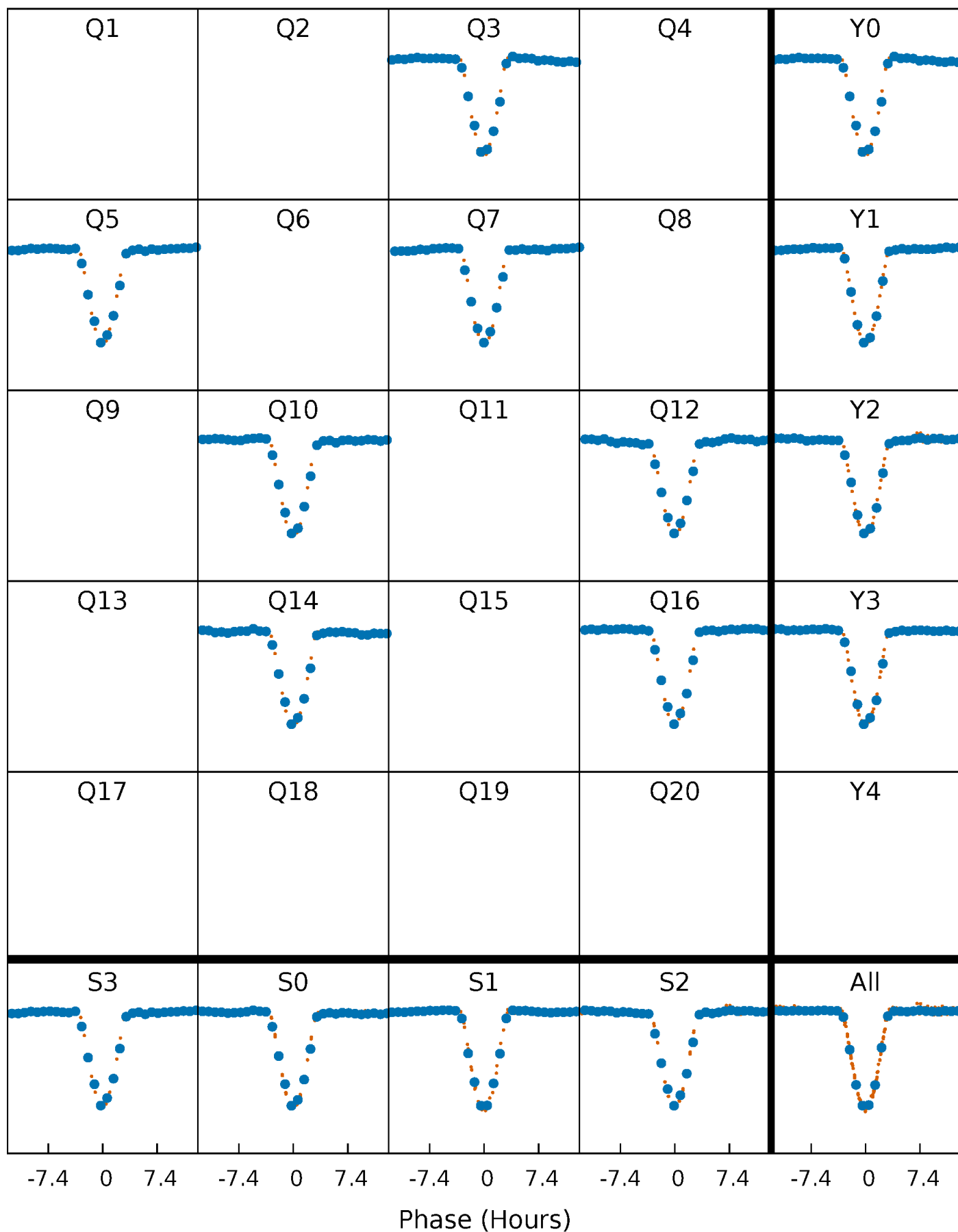


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

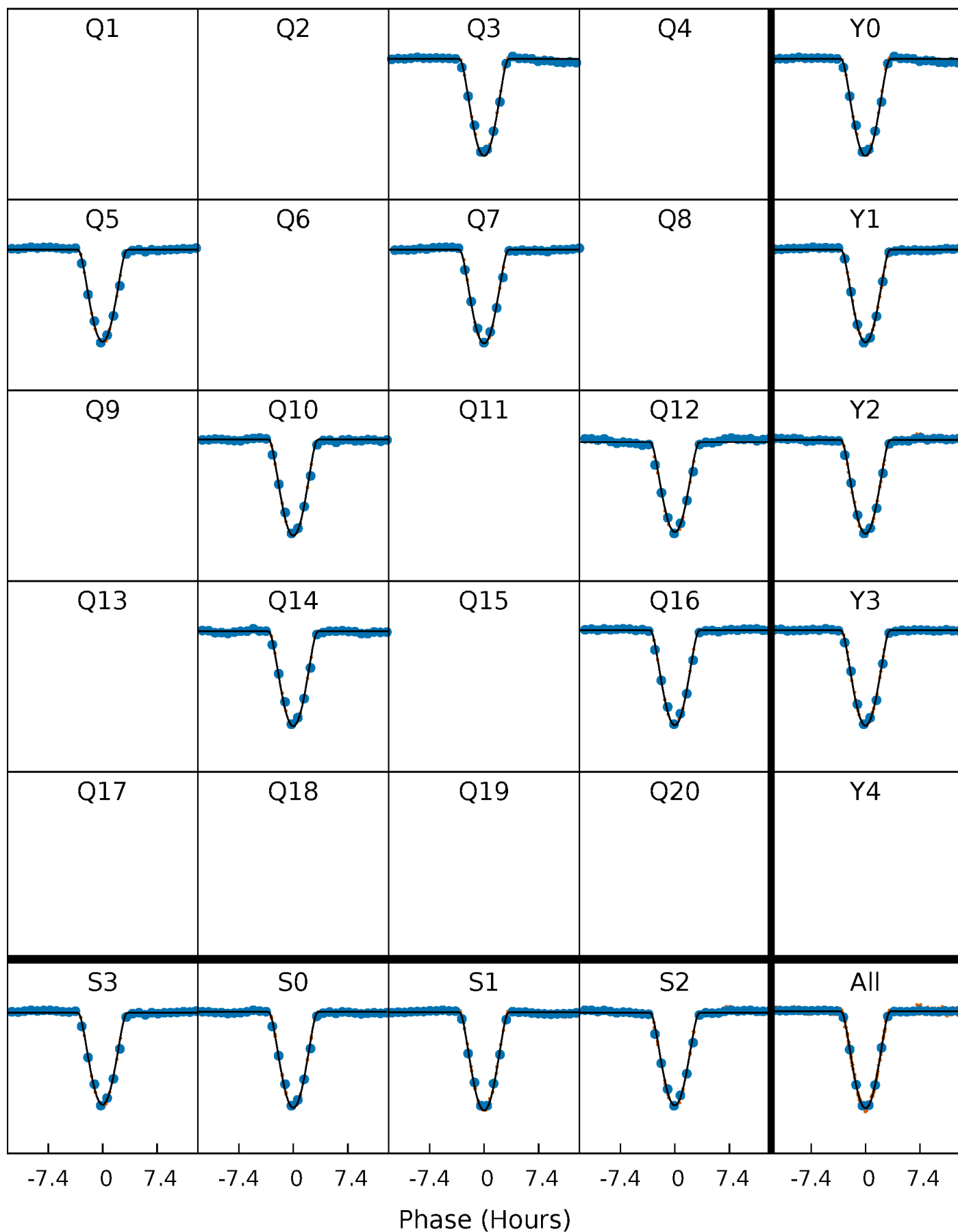
TCE 010735331-01 P=213.399020 Days  $T_0=274.209564$  (BKJD)





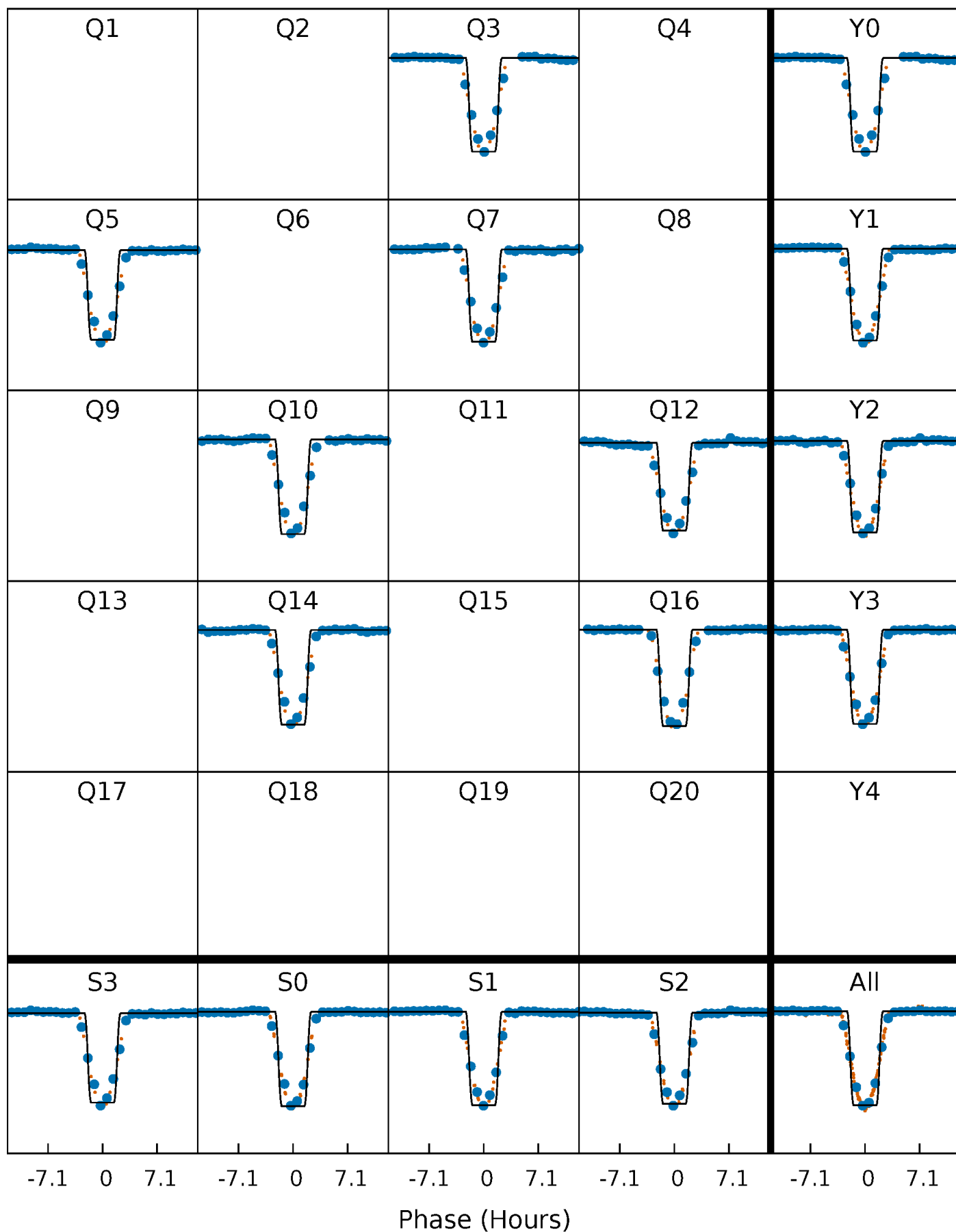
# DV Quarter-Phased Transit Curves

TCE 010735331-01 P=213.399020 Days  $T_0=274.209564$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

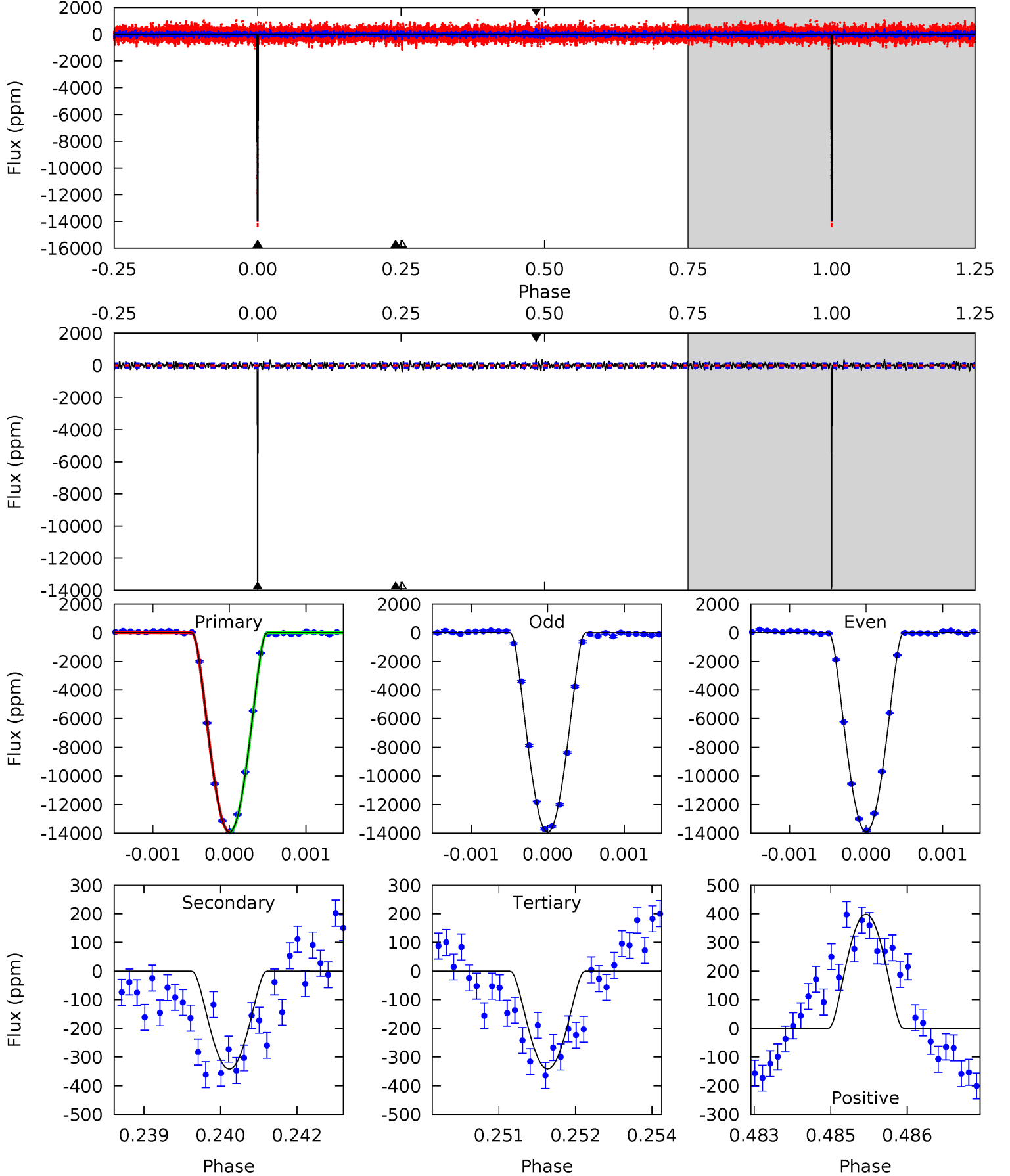
TCE 010735331-01 P=213.399429 Days  $T_0=274.208332$  (BKJD)



# DV Model-Shift Uniqueness Test

010735331-01, P = 213.399020 Days, E = 60.810544 Days

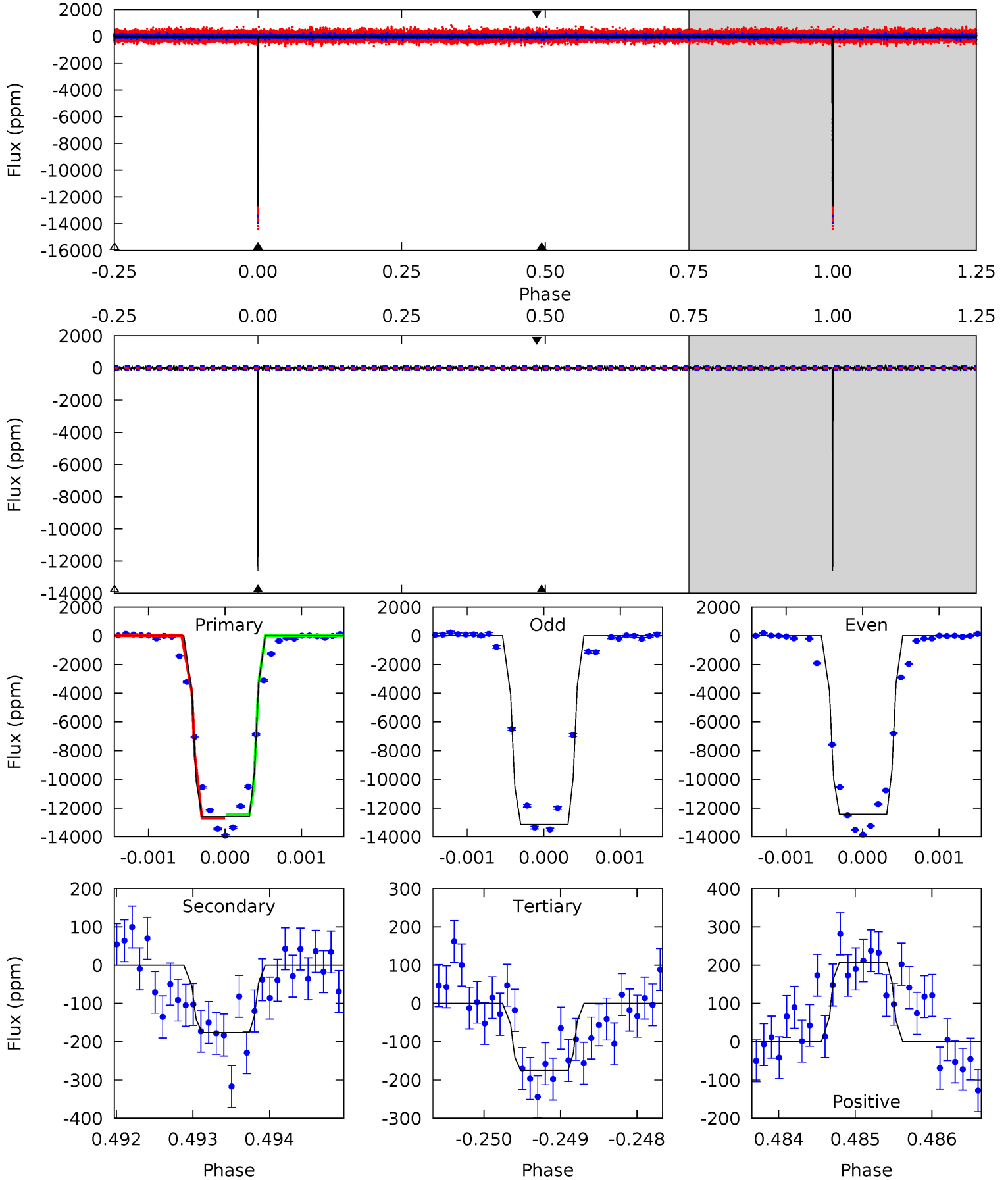
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
568.0	13.9	13.9	16.3	5.40	3.21	4.15	554.1	551.7	0.02	-2.33	0.46	1.00	0.03	0.44



# Alt Model-Shift Uniqueness Test

010735331-01, P = 213.399429 Days, E = 60.808903 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
510.9	7.13	7.10	8.42	5.47	3.32	2.11	503.8	502.5	0.03	-1.29	14.1	1.00	0.02	5.03



### Stellar Parameters For KIC 010735331

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6960^{+194}_{-267}$	$4.069^{+0.176}_{-0.144}$	$-0.160^{+0.250}_{-0.350}$	$1.830^{+0.384}_{-0.469}$	$1.435^{+0.173}_{-0.238}$	$0.330^{+0.310}_{-0.139}$
	+3%/-4%	+4%/-4%	+156%/-219%	+21%/-26%	+12%/-17%	+94%/-42%
Source	PHO1	FLK73	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 010735331-01 / KOI 3720.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-342 \pm 25$	$34.44^{+4.90}_{-5.20}$	$652^{+43}_{-46}$	$2949^{+76}_{-78}$	$99^{+35}_{-24}$
Alt.	$-176 \pm 25$	$23.21^{+3.79}_{-3.62}$	$654^{+40}_{-49}$	$3003^{+103}_{-107}$	$111^{+48}_{-29}$

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

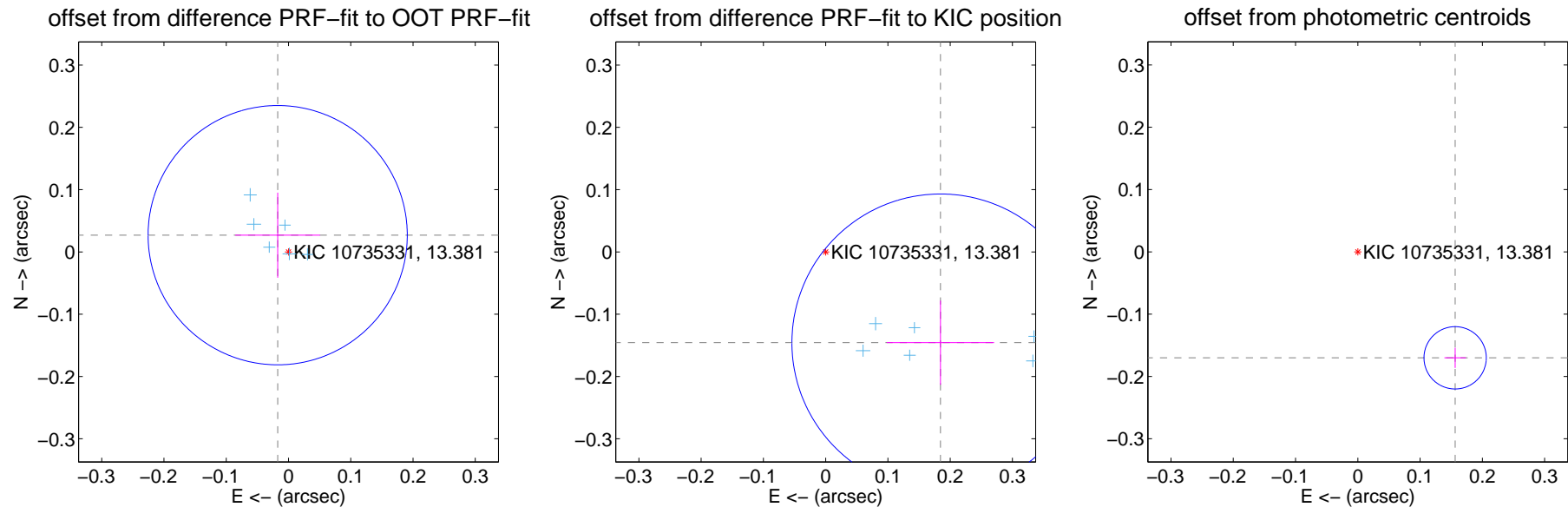
## DV Centroid Data

Supplemental centroid analysis for 010735331-01. Kepler magnitude: 13.38. Transit SNR 273.35

There are 6 quarters with good PRF difference image offsets

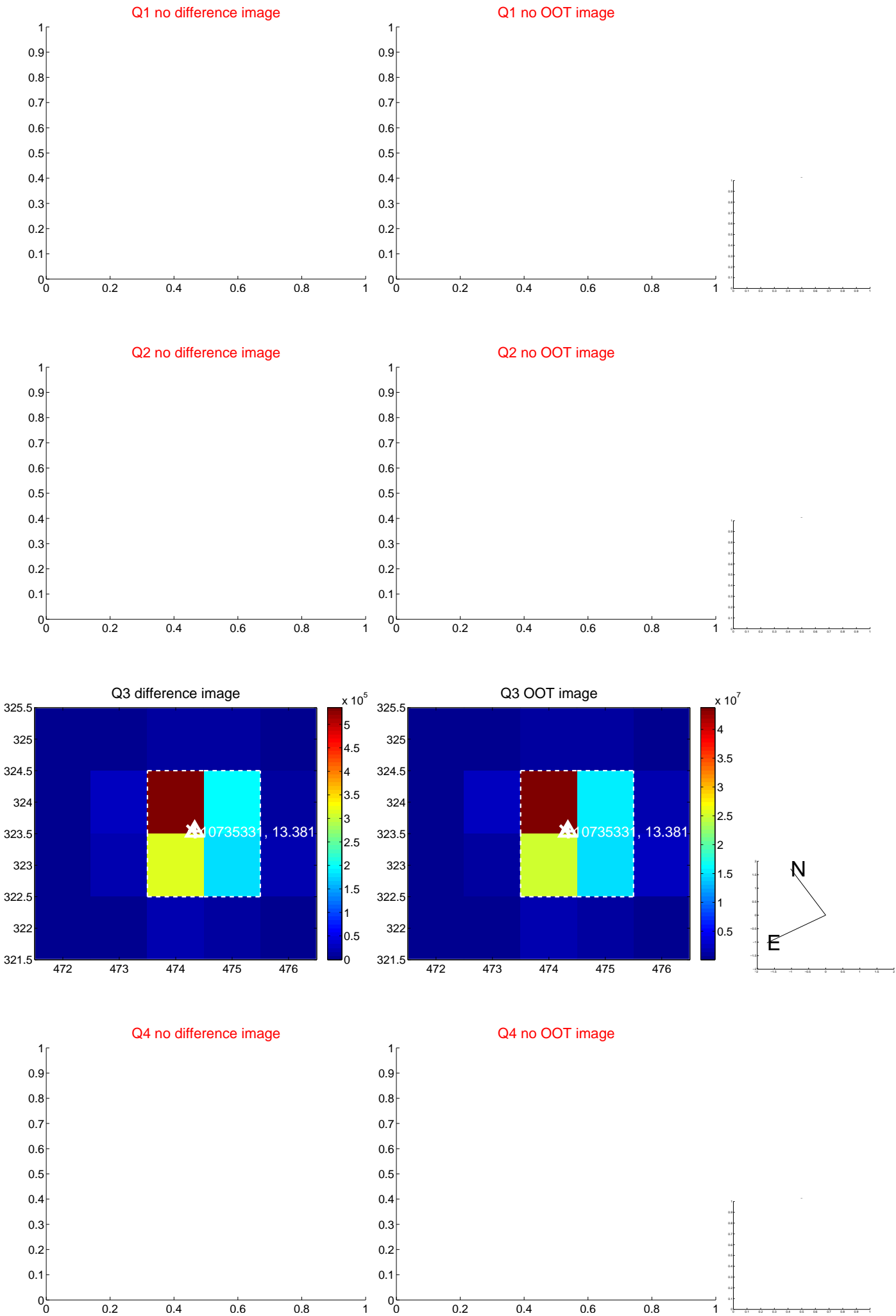
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.032 \pm 0.069$	0.46	$0.017 \pm 0.068$	$0.027 \pm 0.068$
PRF-fit source offset from KIC position	$0.235 \pm 0.080$	2.95	$-0.184 \pm 0.086$	$-0.146 \pm 0.068$
photometric centroid source offset	$0.23 \pm 0.02$	13.85	$-0.16 \pm 0.02$	$-0.17 \pm 0.02$

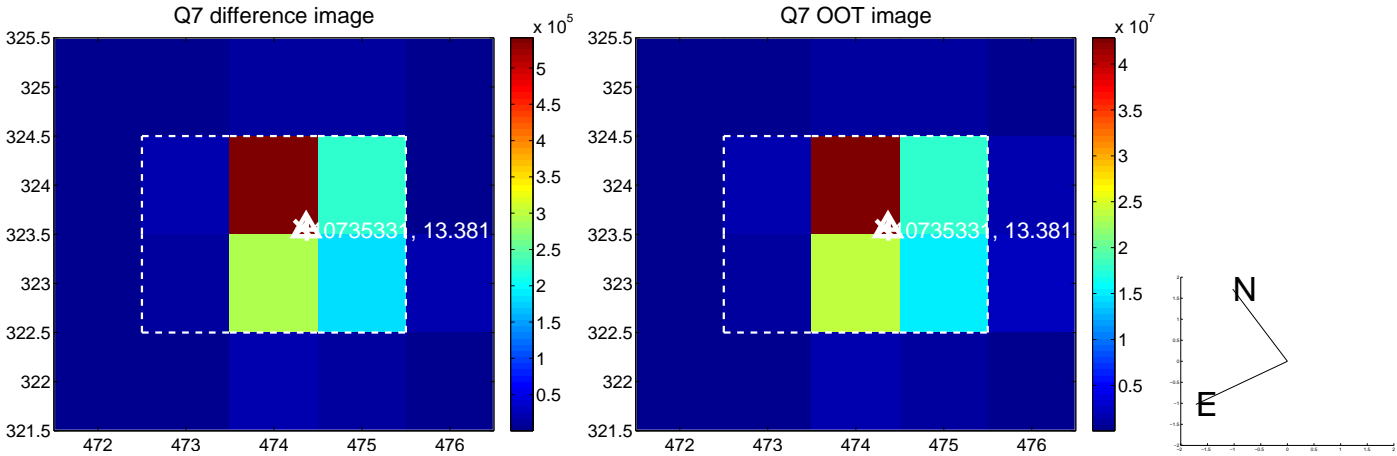
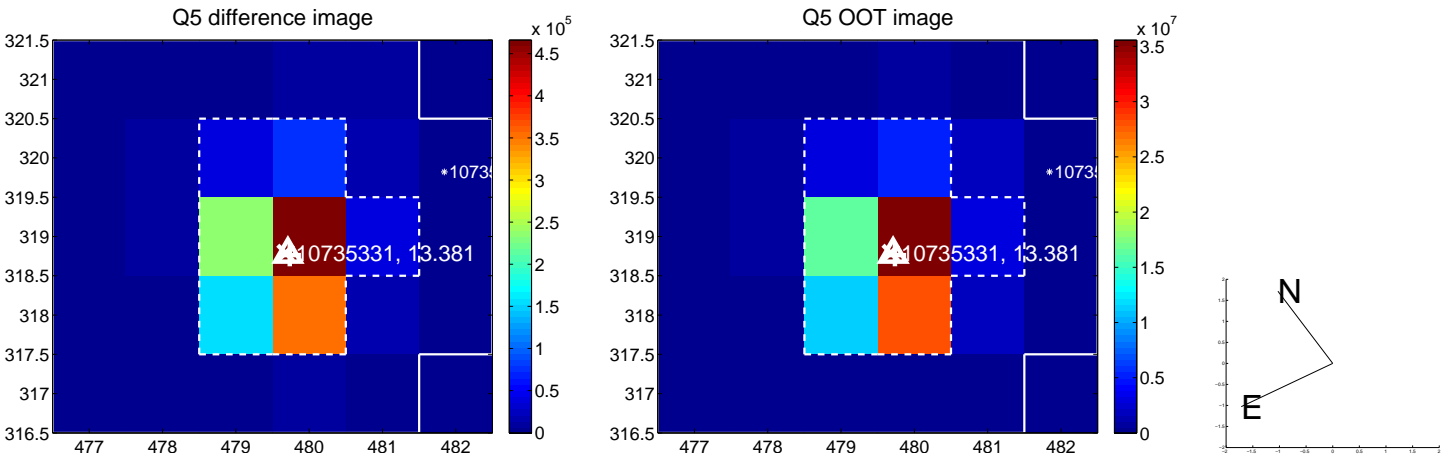


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

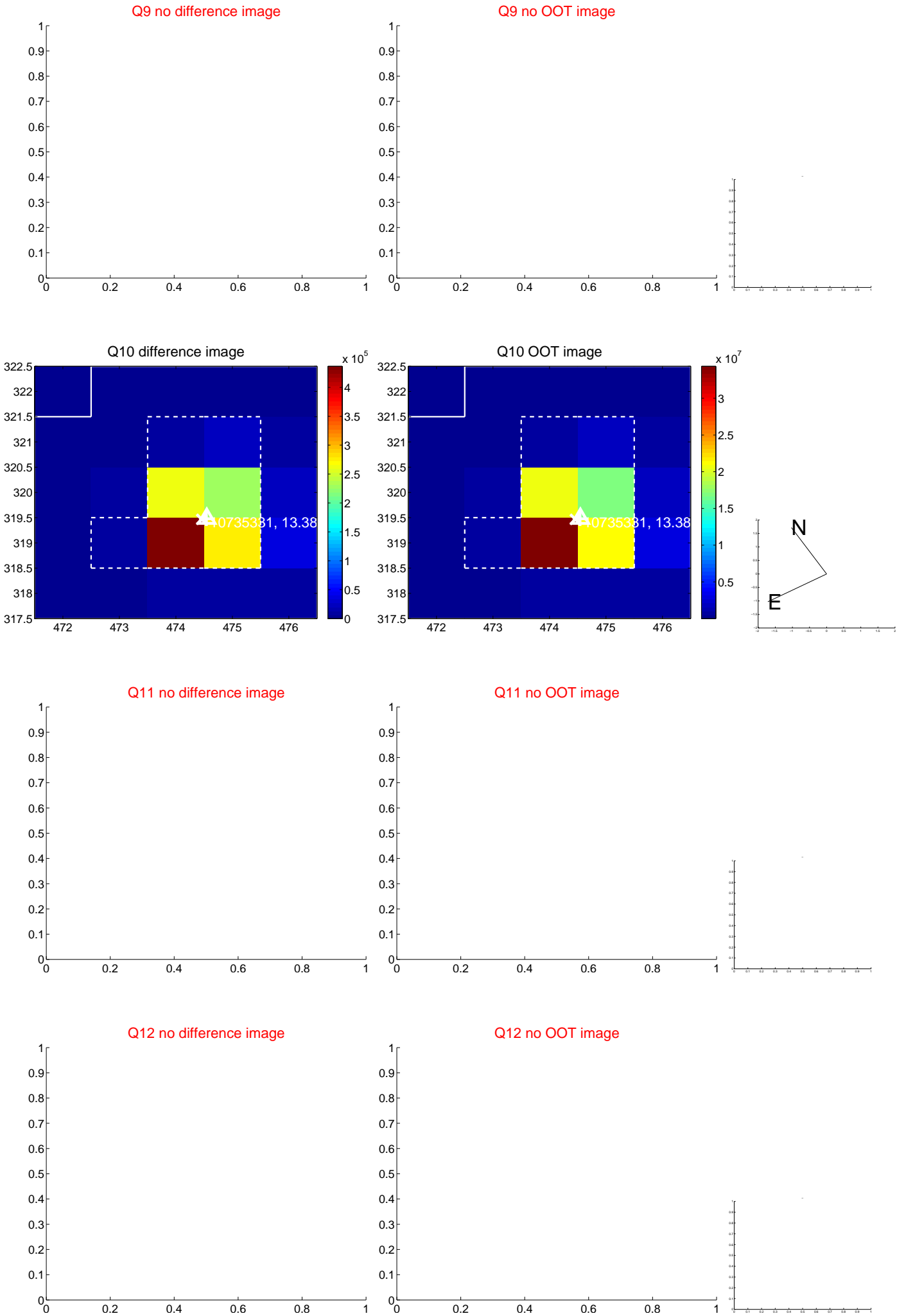


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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.

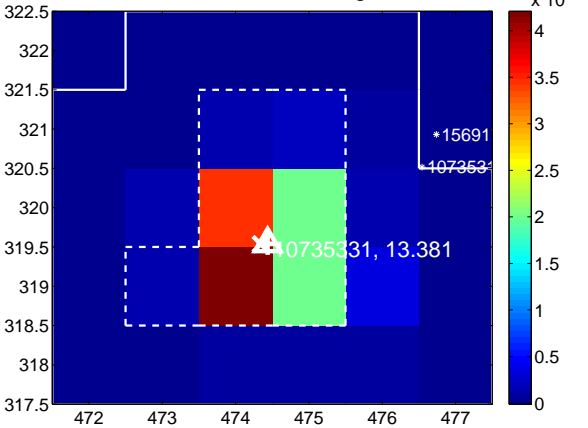
Q13 no difference image



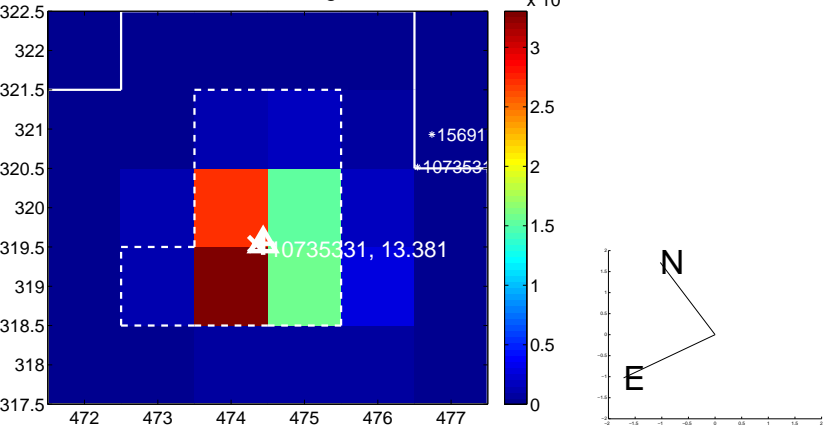
Q13 no OOT image



Q14 difference image



Q14 OOT image



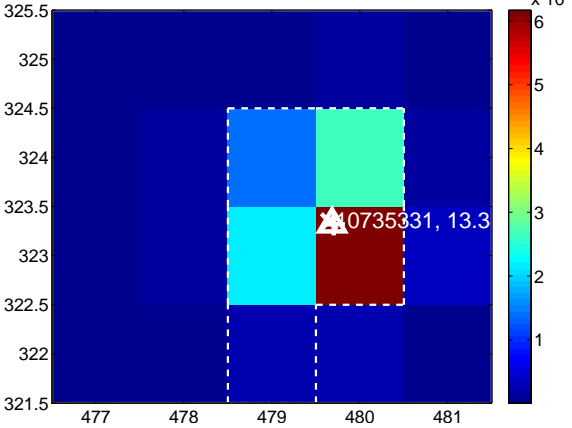
Q15 no difference image



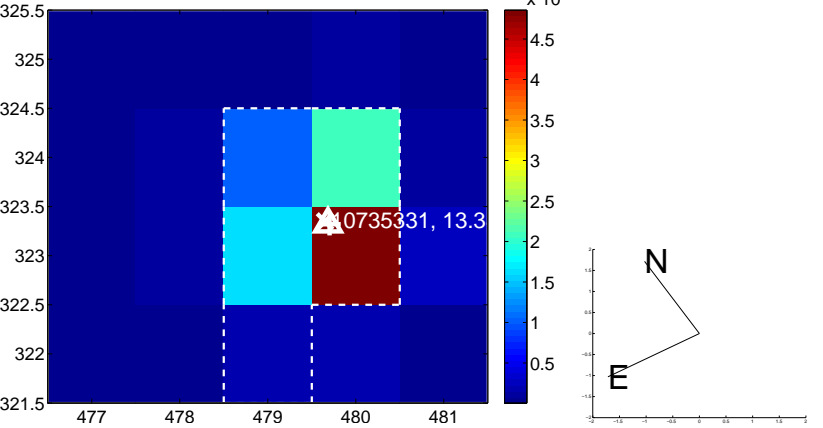
Q15 no OOT image



Q16 difference image



Q16 OOT image



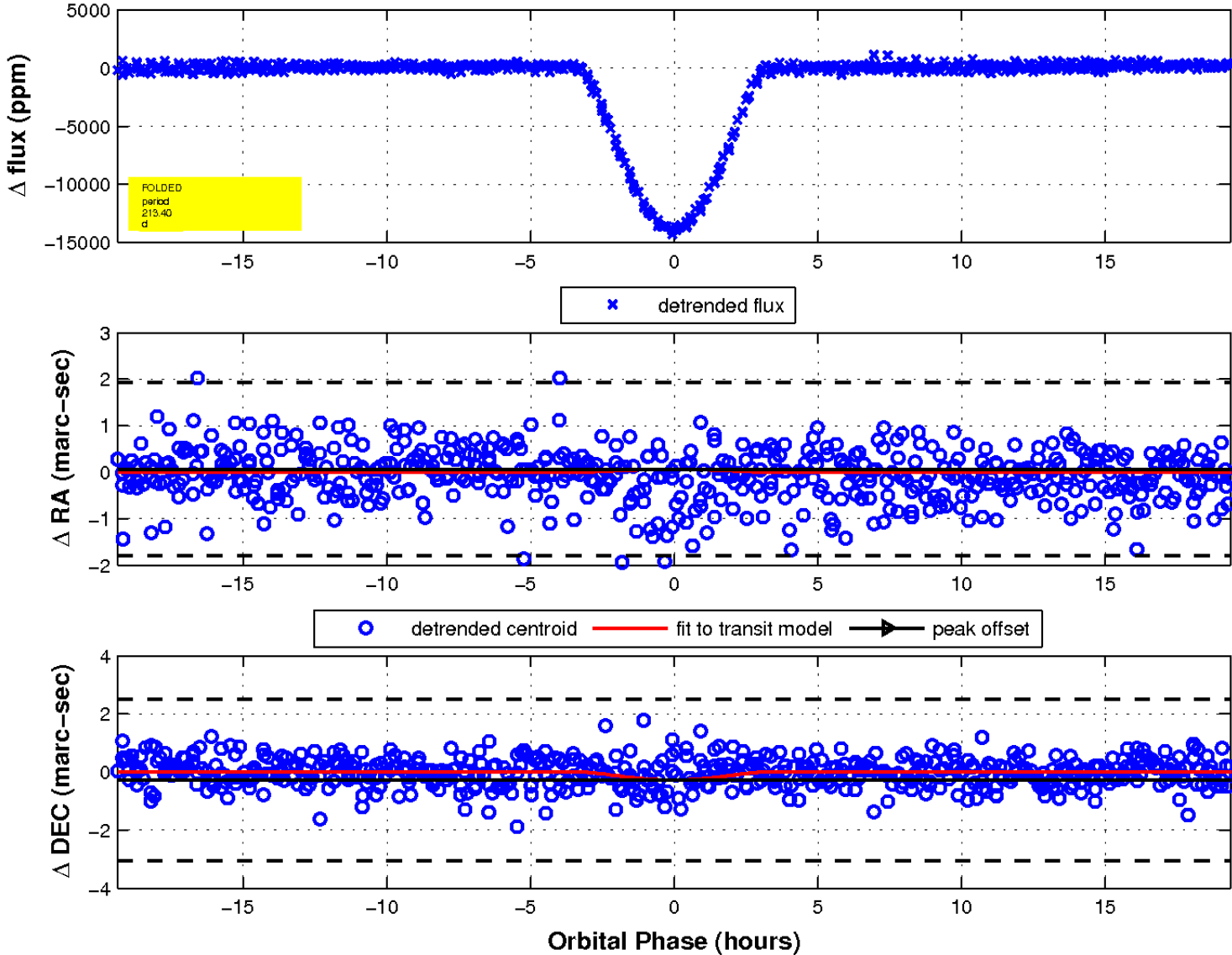
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

