

# KIC 003240159

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003240159-01	OBS	3515.01	82.137600	196.122564	208619.2	6.155	9588.6	5133.6	2.01	6395	102.62	39.62

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003240159-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—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.

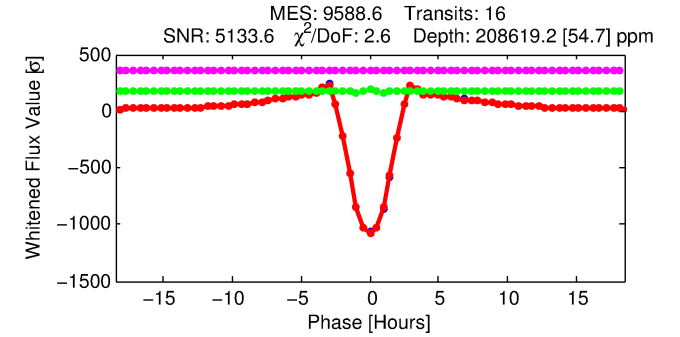
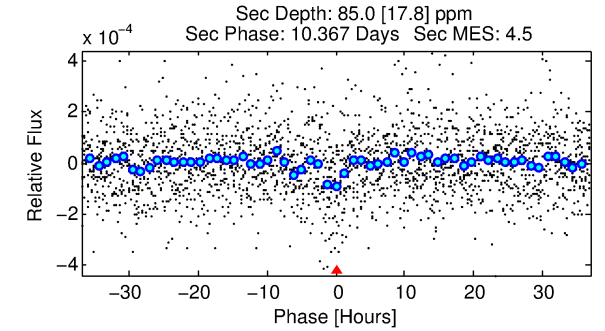
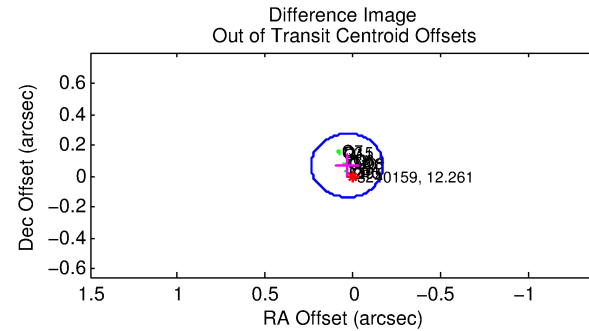
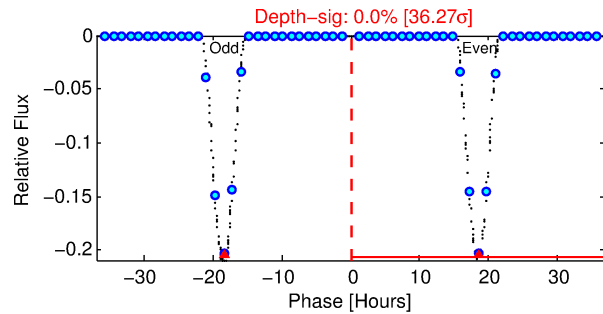
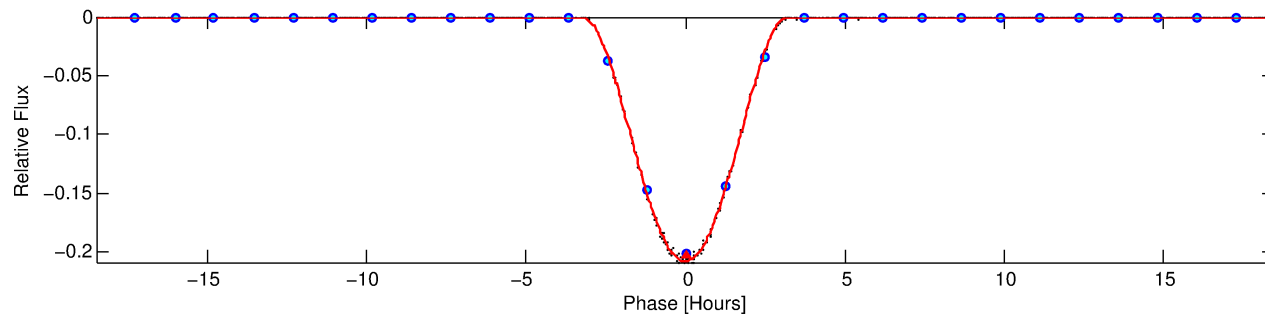
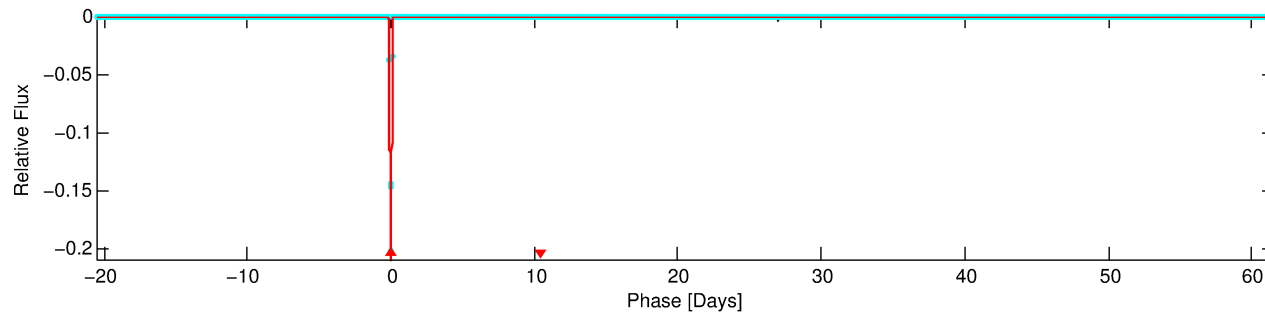
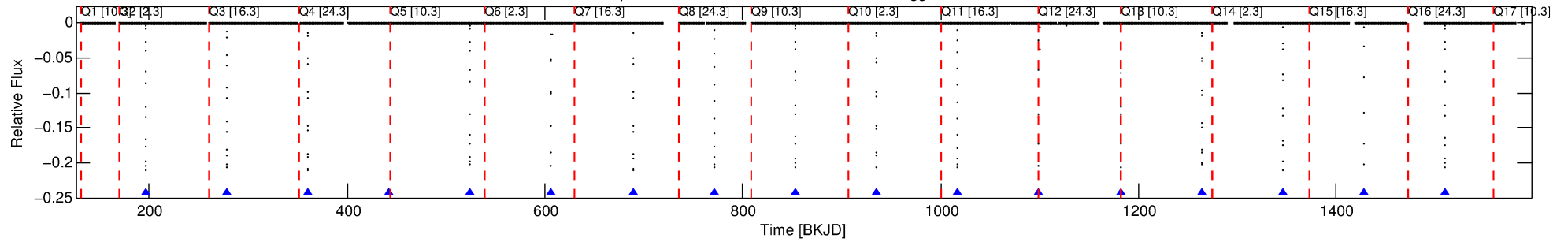
## Ephemeris Match Information For 003240159-01

No Significant Match Found

# DV One-Page Summary

KIC: 3240159 Candidate: 1 of 1 Period: 82.138 d  
KOI: K03515.01 Corr: 0.950

Kp: 12.26 R\*: 2.01 Rs Teff: 6395.0 K Logg: 3.90 Fe/H: -0.360



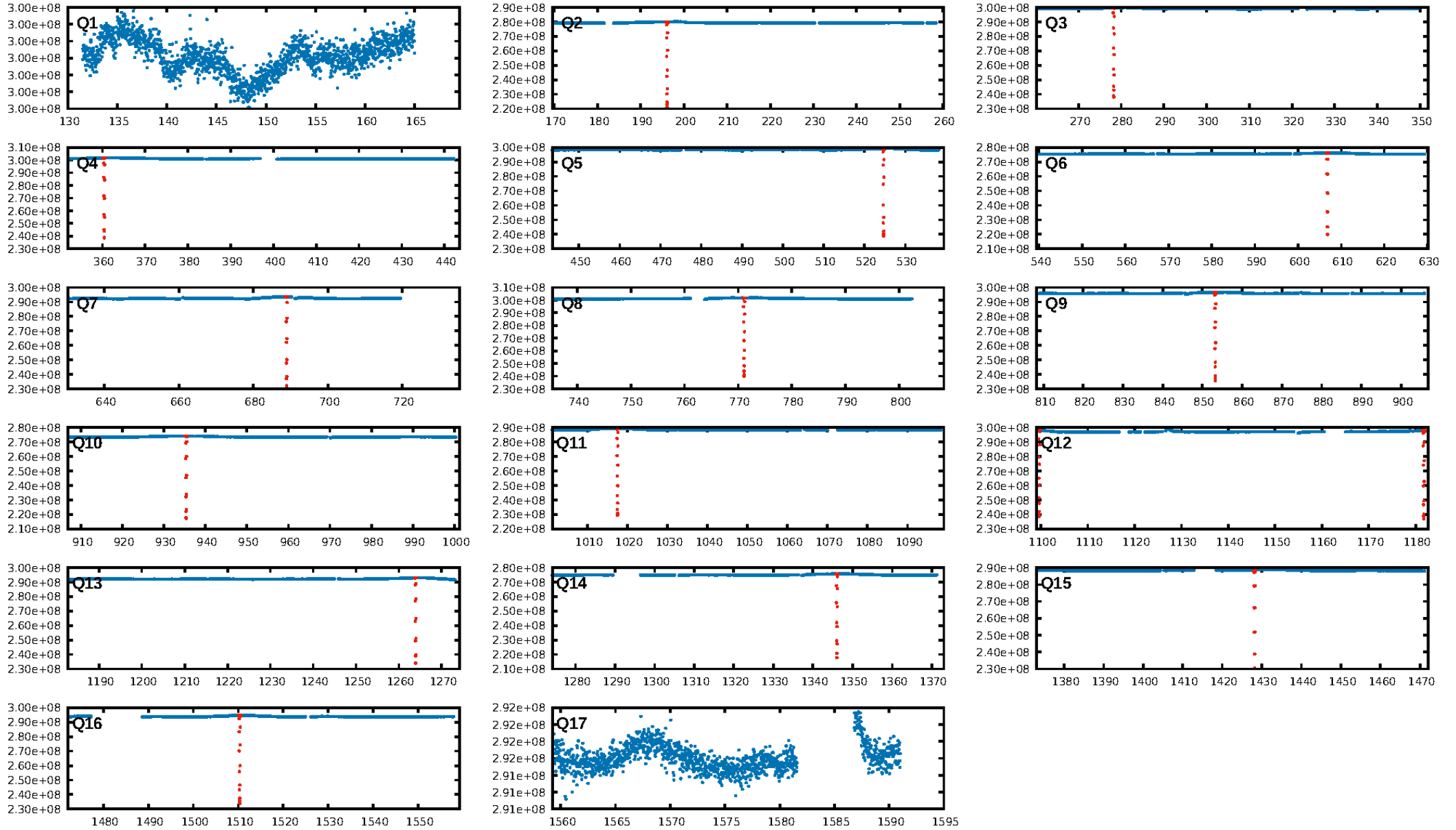
## DV Fit Results:

Period = 82.13760 [0.00000] d  
Epoch = 196.1226 [0.0000] BKJD  
Rp/R\* = 0.4674 [0.0006]  
a/R\* = 135.43 [0.03]  
b = 0.62 [0.00]  
Seff = 39.62 [21.27]  
Teff = 640 [86] K  
Rp = 102.62 [36.37] Re  
a = 0.3913 [0.1306] AU  
Ag = 0.68 [0.39] [-0.83σ]  
Teffp = 898 [52] K [2.57σ]

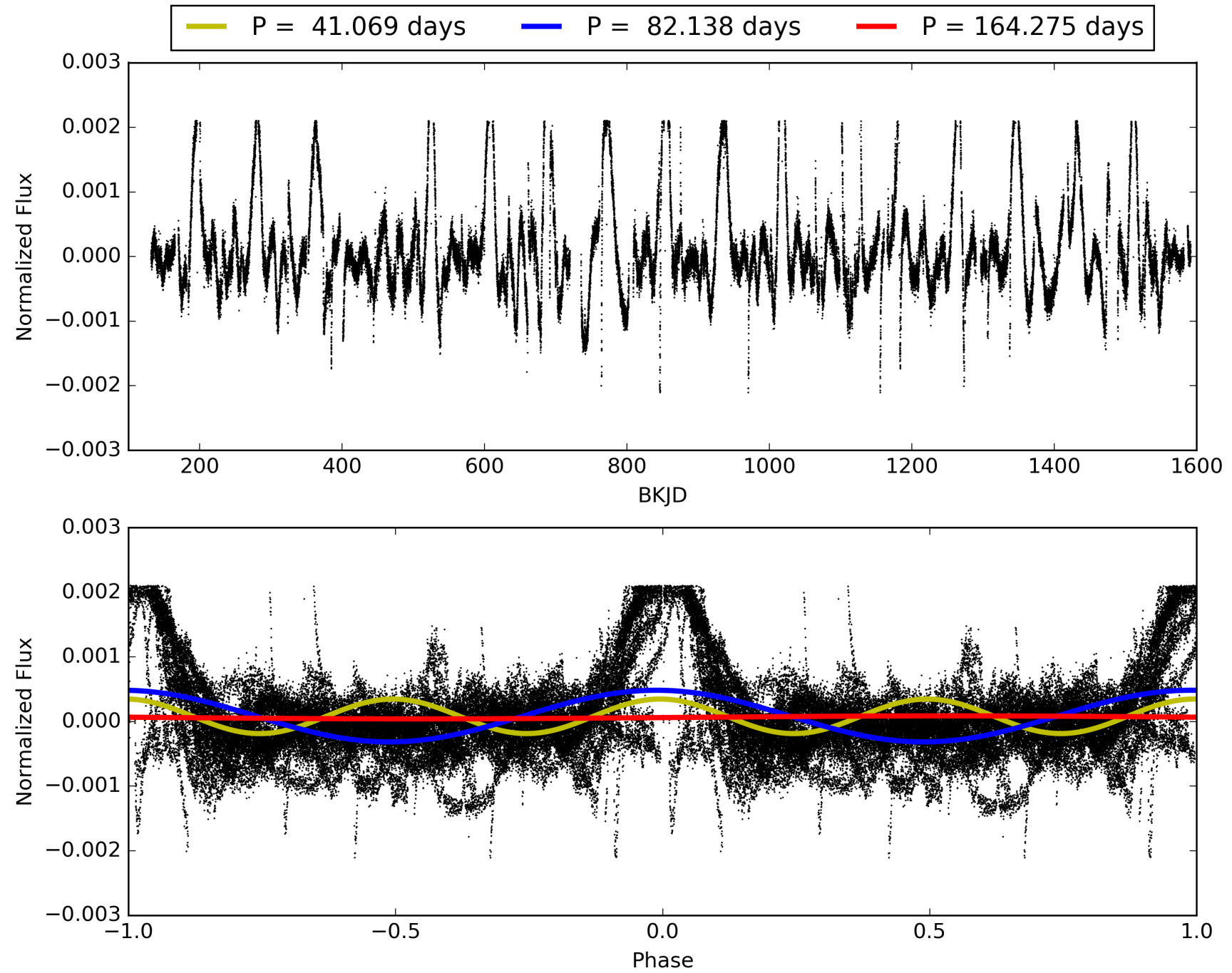
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: 17.8  
Centroid-sig: 0.0%  
Centroid-so: 0.174 arcsec [196.10σ]  
OotOffset-rm: 0.078 arcsec [1.14σ]  
KicOffset-rm: 0.165 arcsec [2.43σ]  
OotOffset-st: 4/4/2/3 [13]  
KicOffset-st: 4/4/2/3 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

# TCE 003240159-01, PDC Light Curves

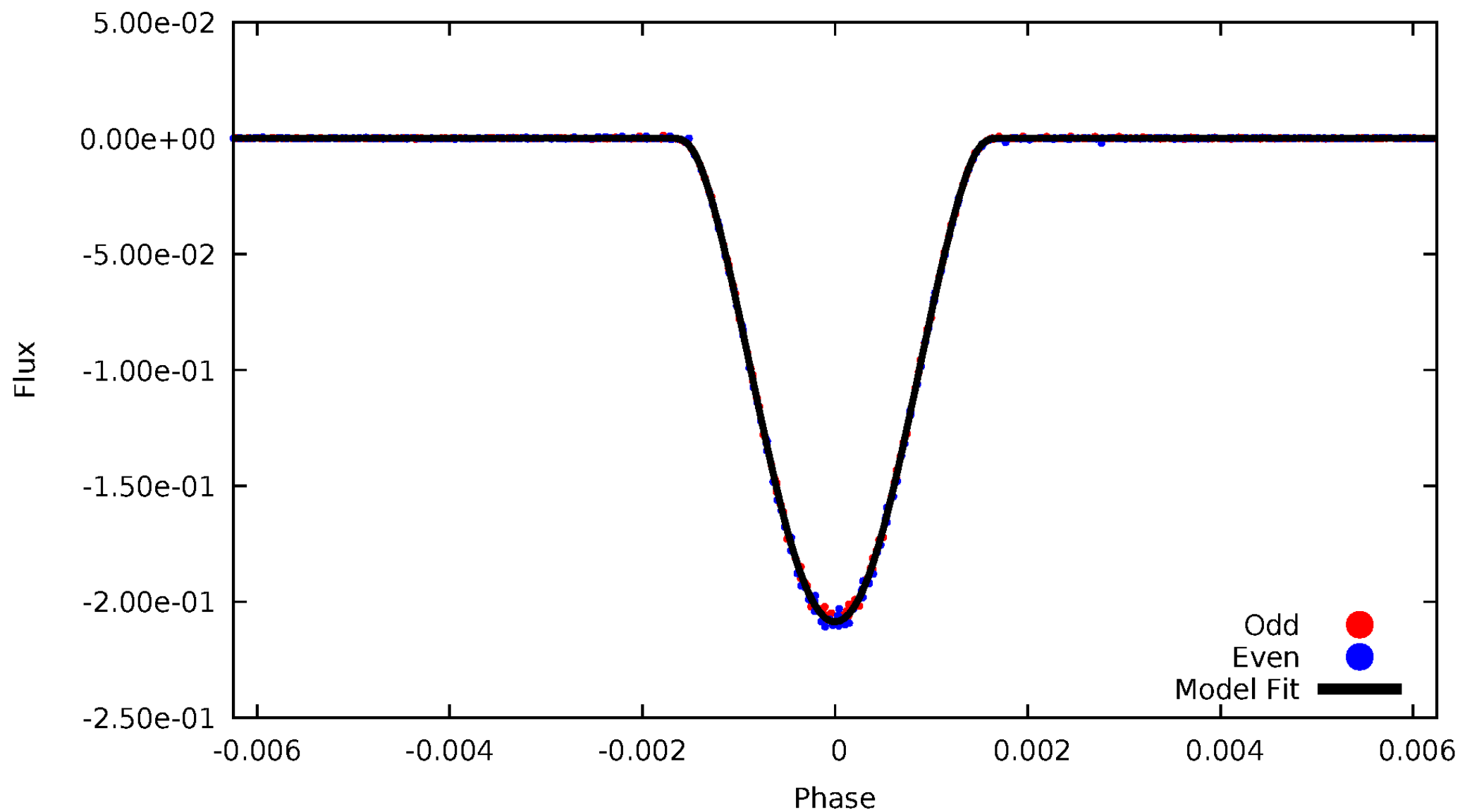


TCE 003240159-01



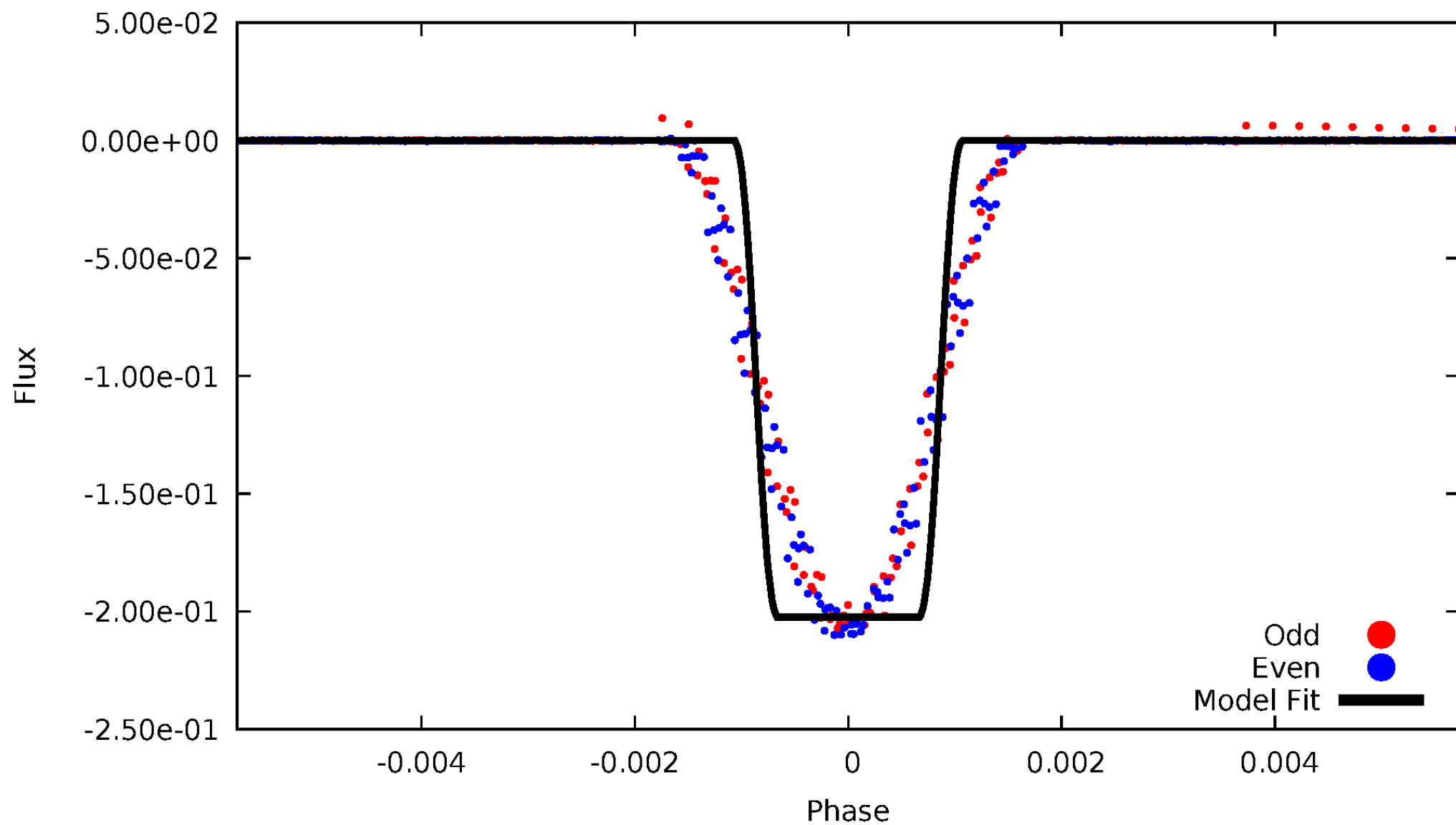
# DV Odd/Even

TCE 003240159-01



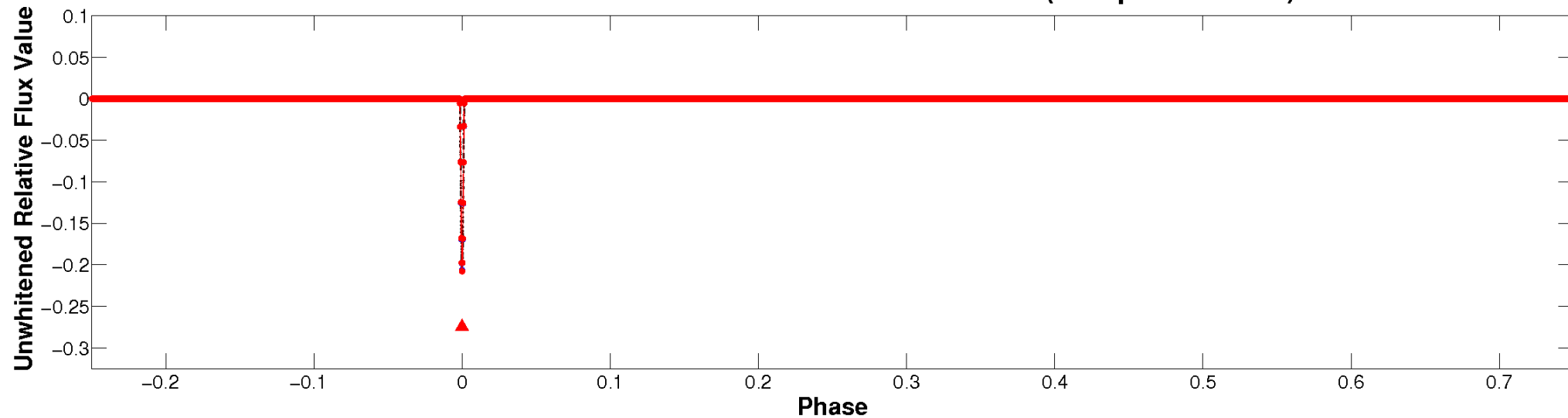
# ALT Odd/Even

TCE 003240159-01

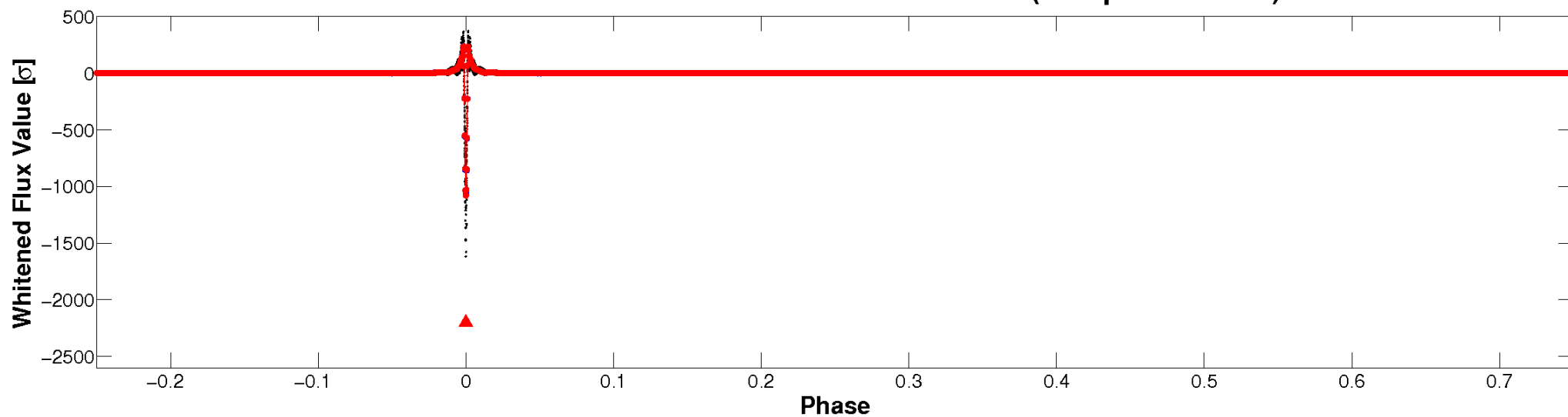


# Non-Whitened Vs. Whitened Light Curve

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

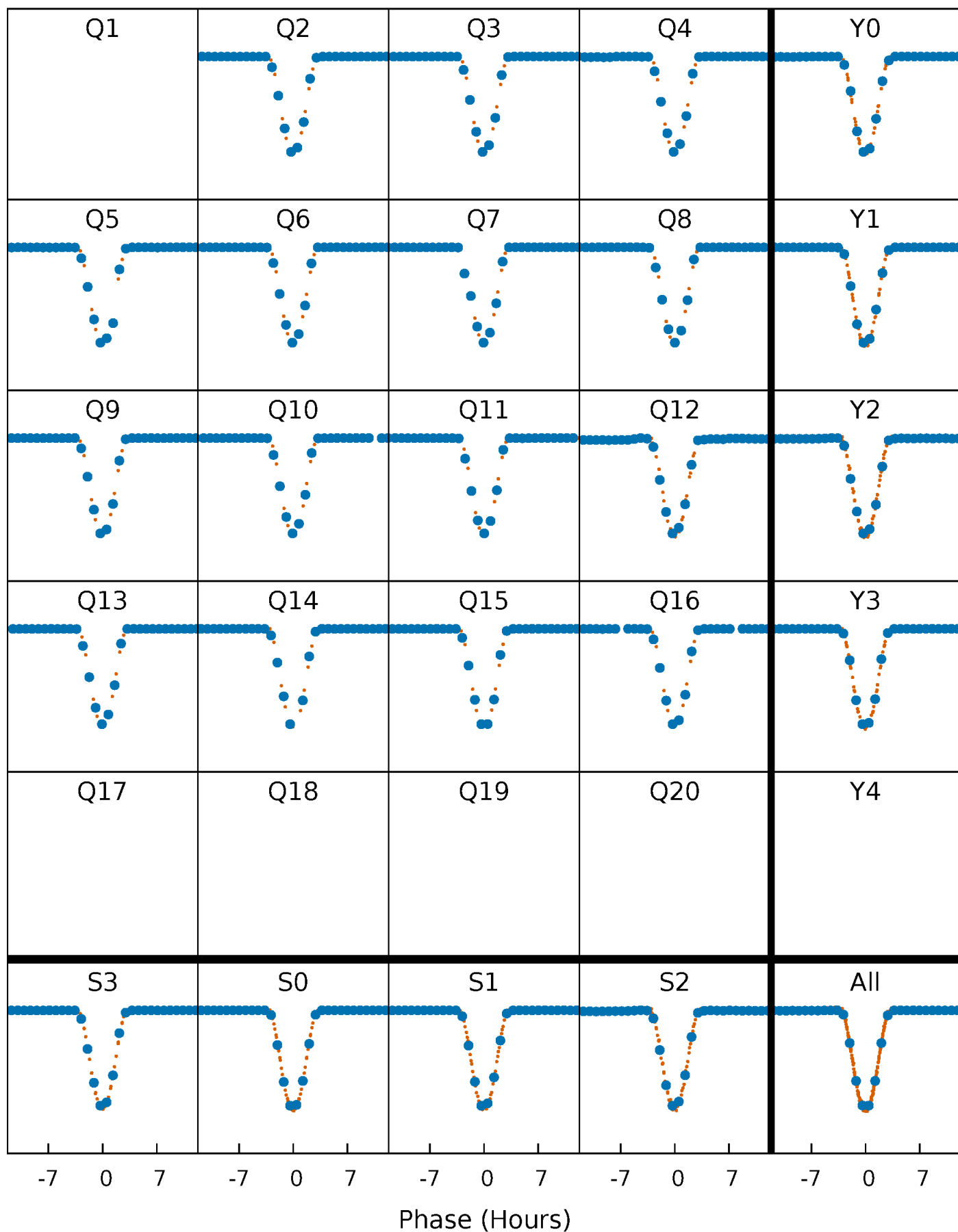


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

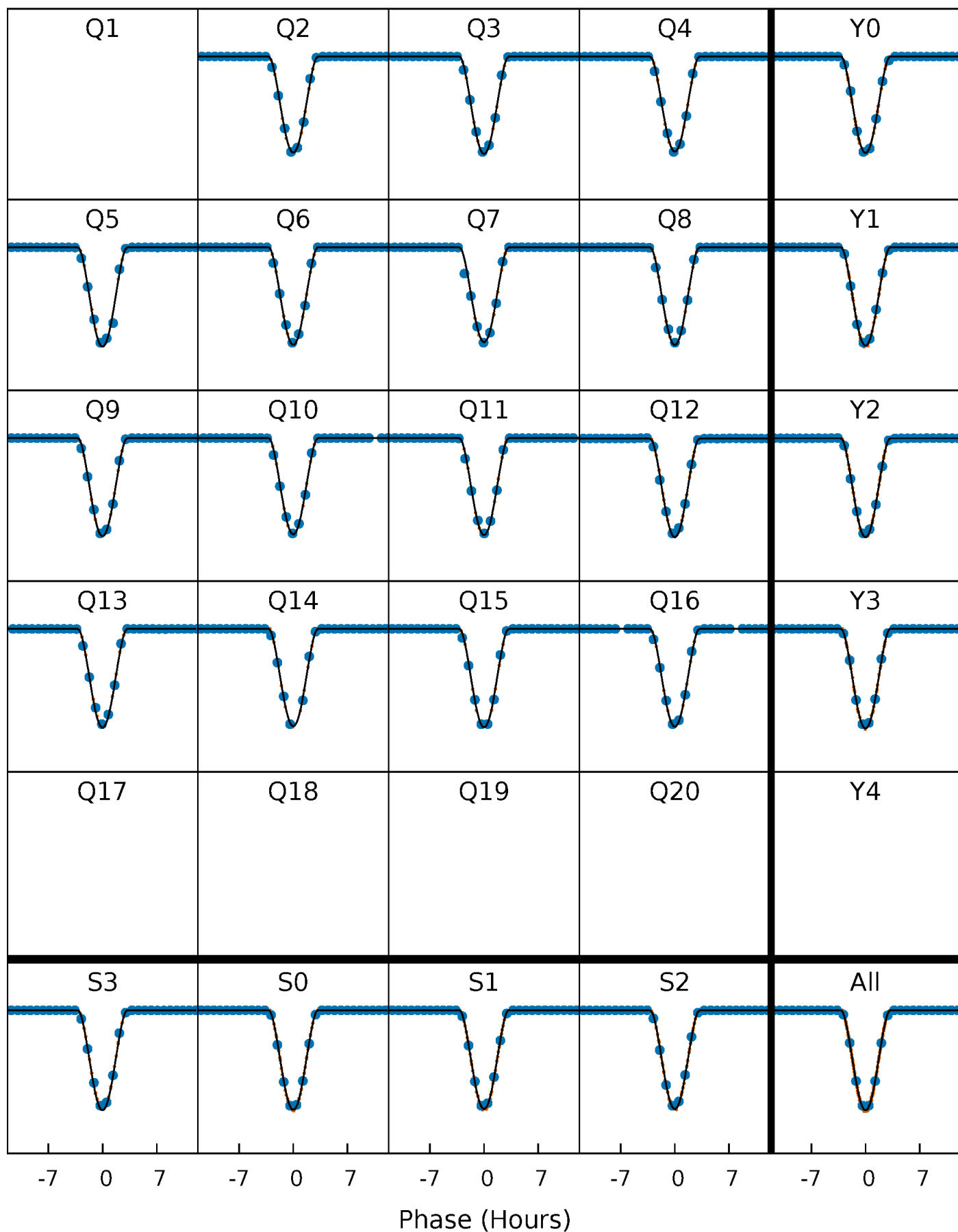
TCE 003240159-01 P= 82.137600 Days  $T_0=196.122564$  (BKJD)





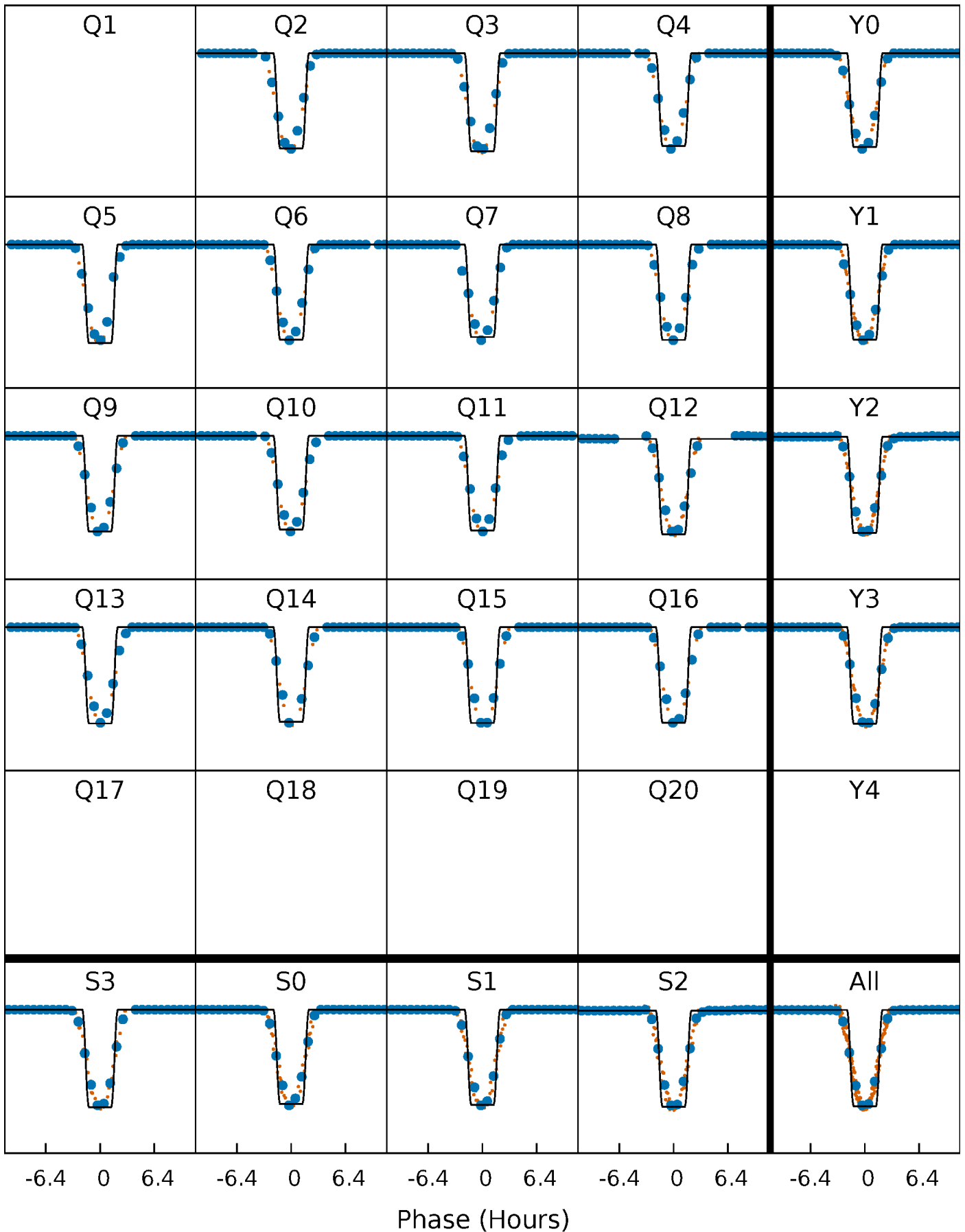
# DV Quarter-Phased Transit Curves

TCE 003240159-01 P= 82.137600 Days  $T_0=196.122564$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

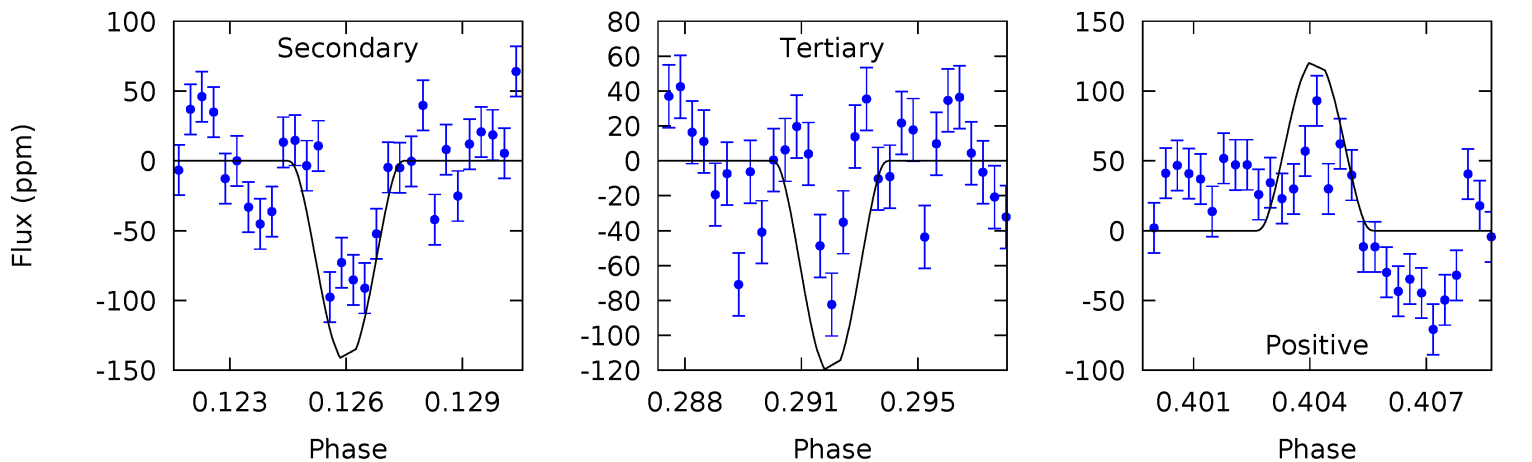
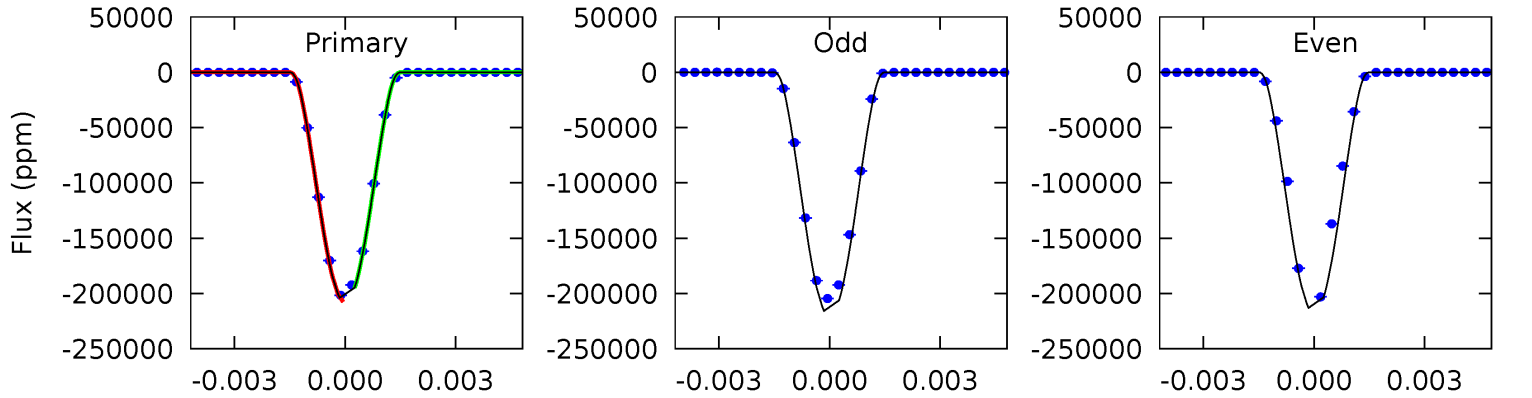
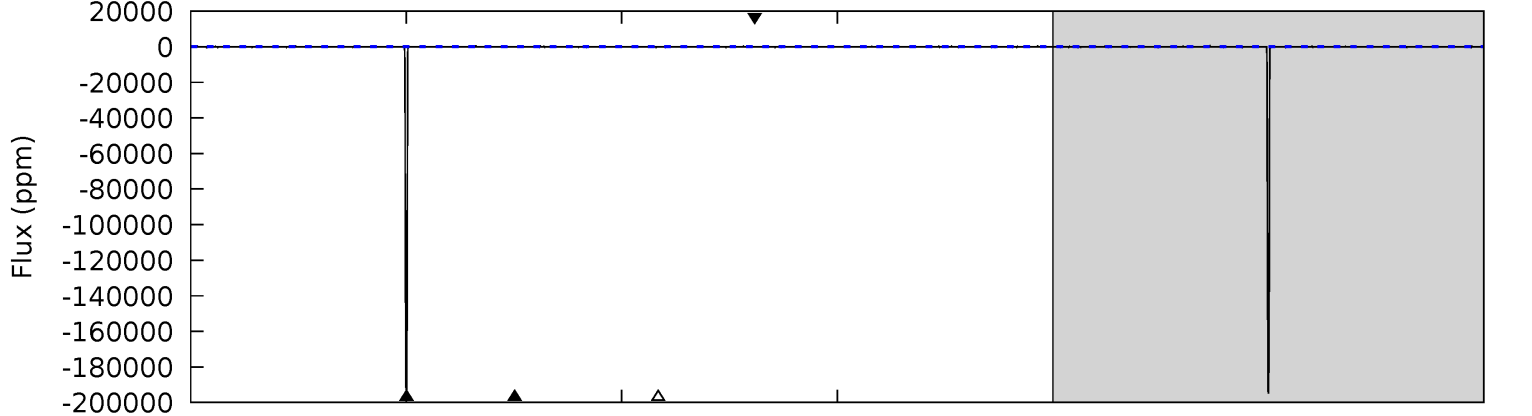
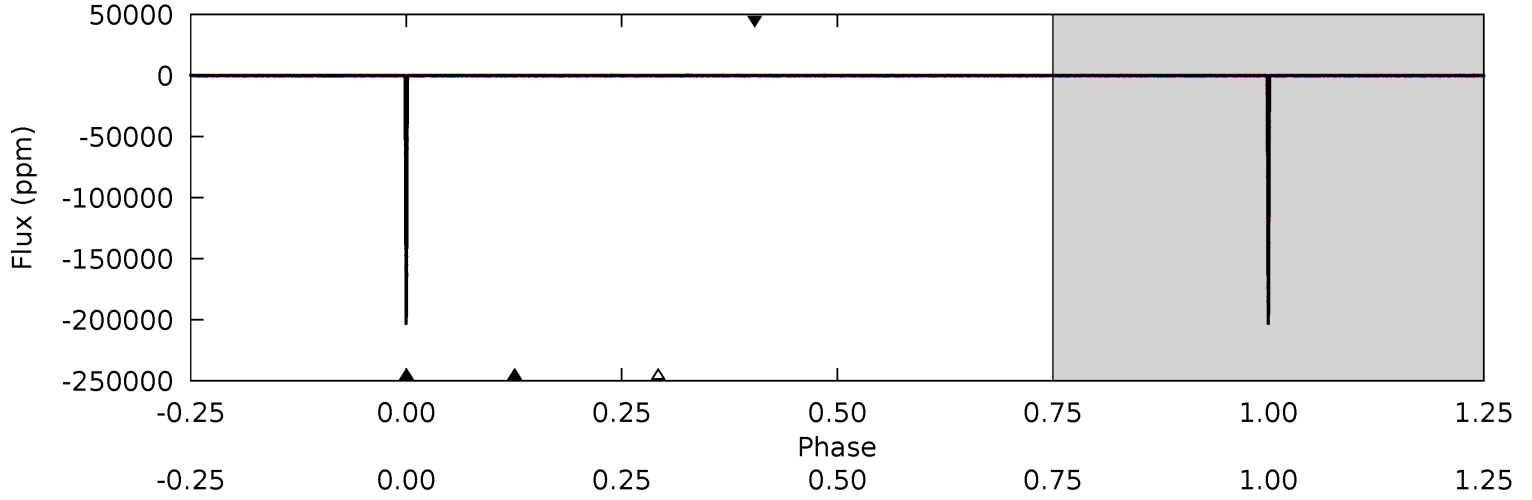
TCE 003240159-01 P= 82.136517 Days  $T_0=196.131432$  (BKJD)



# DV Model-Shift Uniqueness Test

003240159-01, P = 82.137600 Days, E = 113.984964 Days

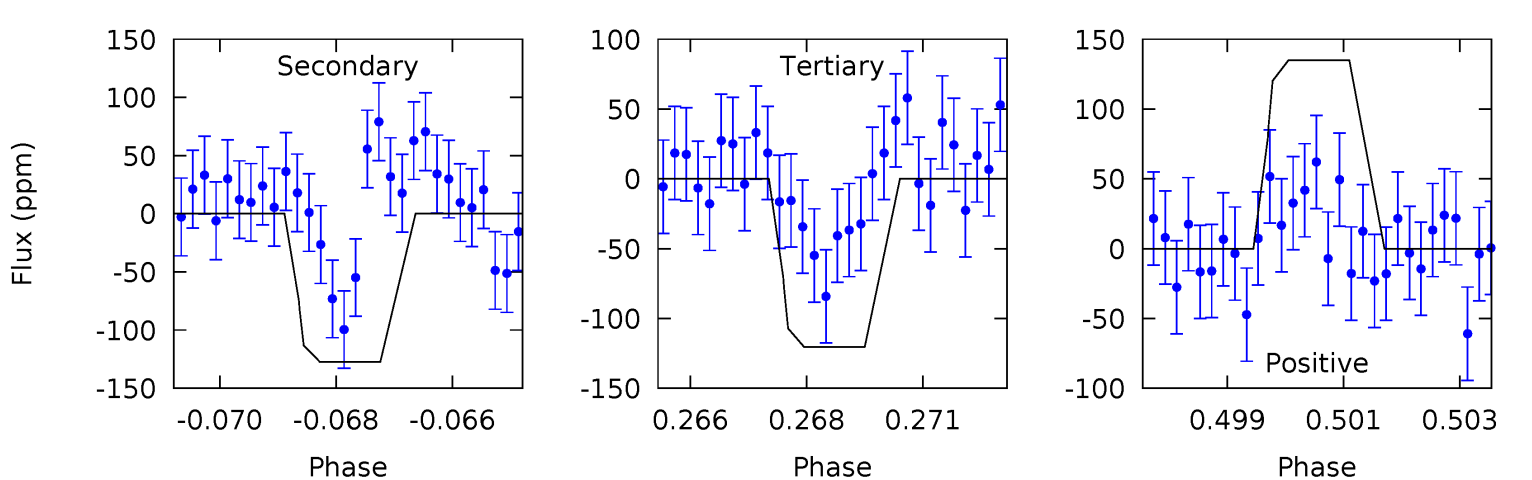
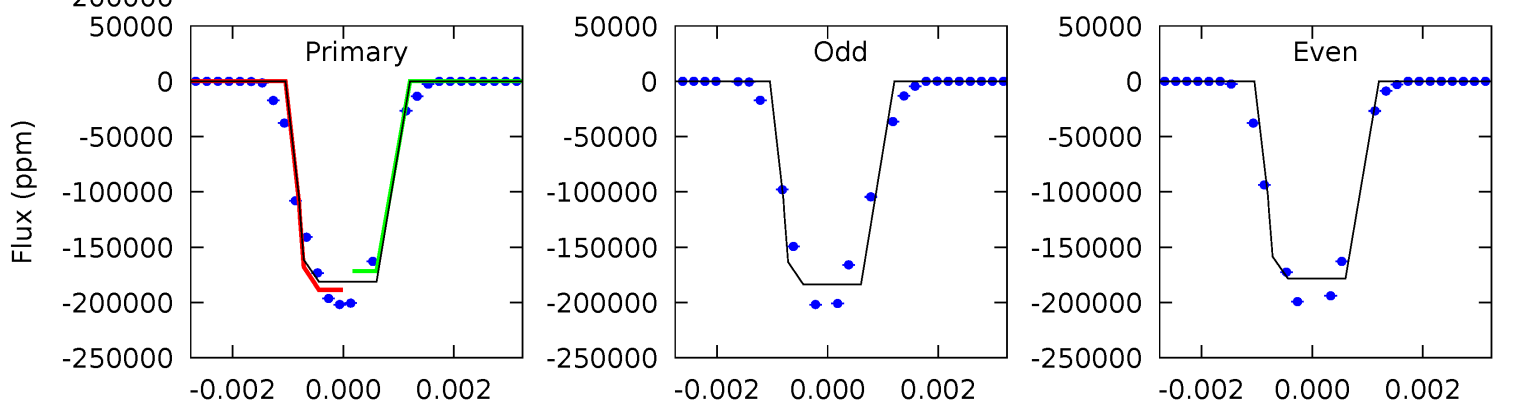
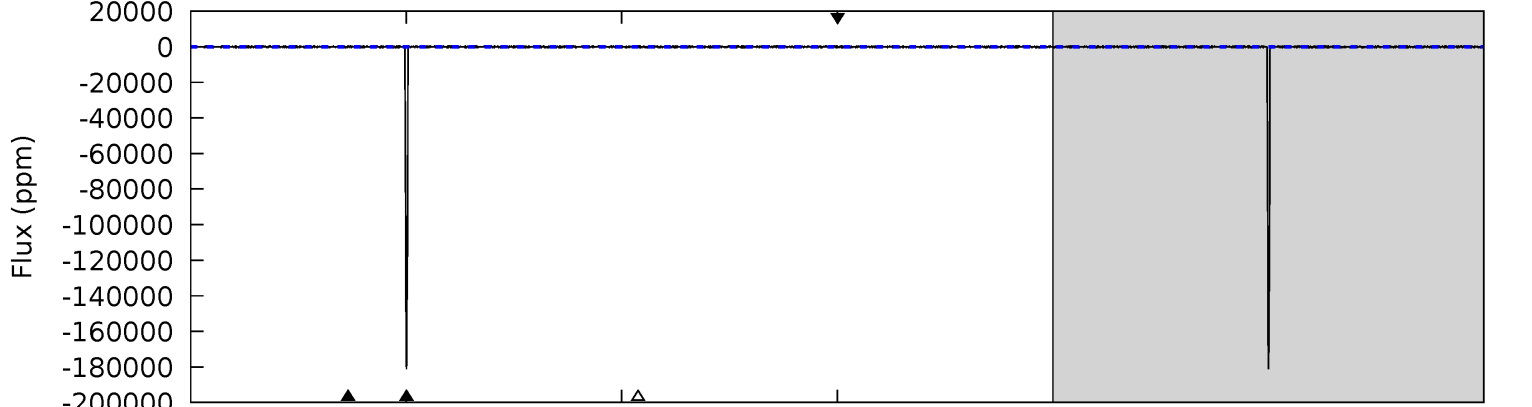
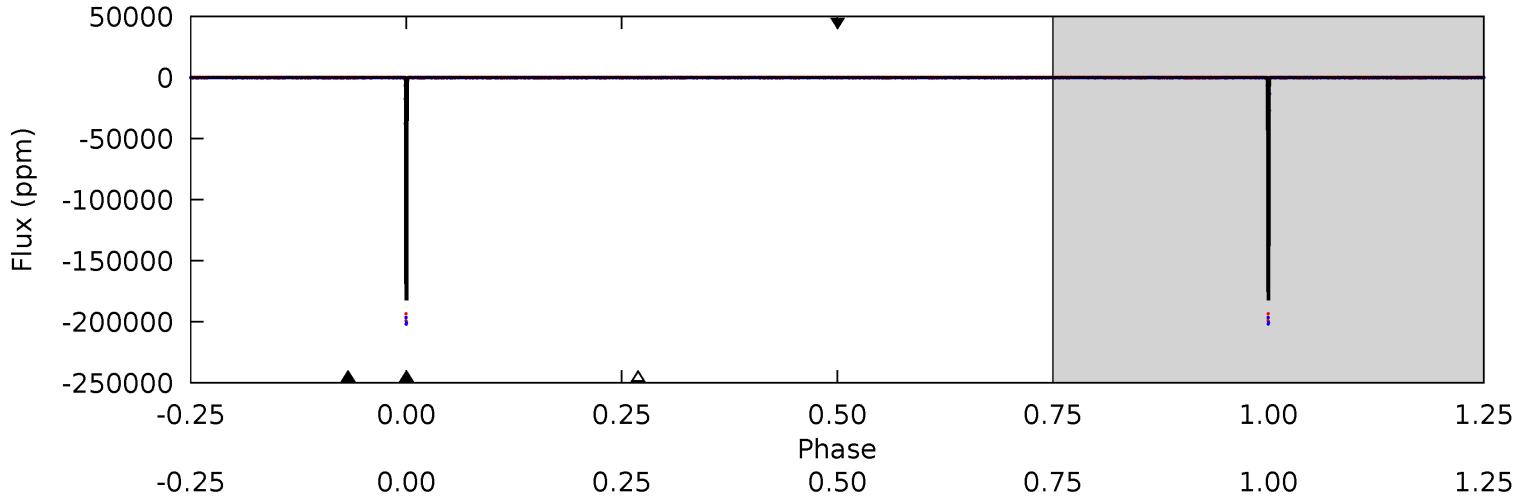
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16568	11.5	9.71	9.77	5.23	2.94	2.83	16558	16558	1.76	1.70	105.6	1.00	0.00	0



# Alt Model-Shift Uniqueness Test

003240159-01, P = 82.136517 Days, E = 113.994915 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
6120	4.30	4.07	4.56	5.32	3.07	1.08	6116	6116	0.23	-0.26	118.0	1.00	0.00	0



### Stellar Parameters For KIC 003240159

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6395^{+162}_{-162}$	$3.904^{+0.307}_{-0.102}$	$-0.360^{+0.300}_{-0.250}$	$2.012^{+0.439}_{-0.713}$	$1.183^{+0.221}_{-0.201}$	$0.205^{+0.382}_{-0.074}$
	+3%/-3%	+8%/-3%	+83%/-69%	+22%/-35%	+19%/-17%	+187%/-36%
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 003240159-01 / KOI 3515.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-135 \pm 12$	$101.97^{+11.71}_{-20.31}$	$877^{+56}_{-76}$	$1948^{+36}_{-39}$	$1.138^{+0.519}_{-0.245}$
Alt.	$-127 \pm 30$	$96.20^{+12.66}_{-17.06}$	$872^{+57}_{-75}$	$1954^{+57}_{-82}$	$1.183^{+0.593}_{-0.352}$

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

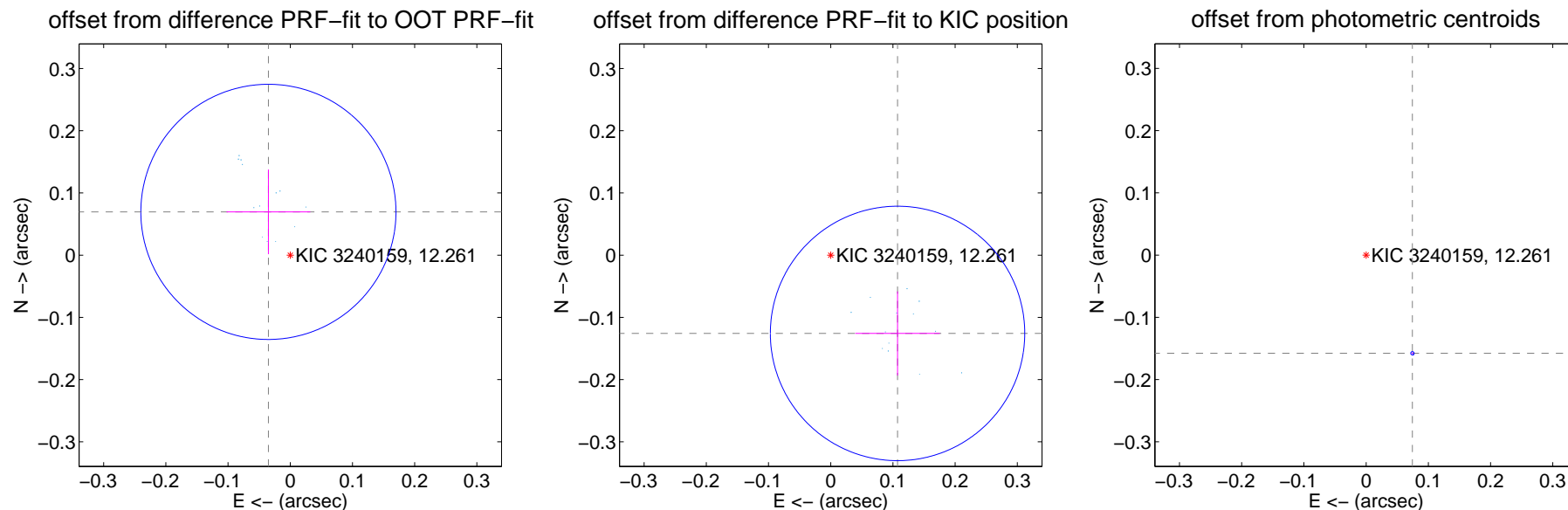
## DV Centroid Data

Supplemental centroid analysis for 003240159-01. Kepler magnitude: 12.26. Transit SNR 5133.60

There are 13 quarters with good PRF difference image offsets

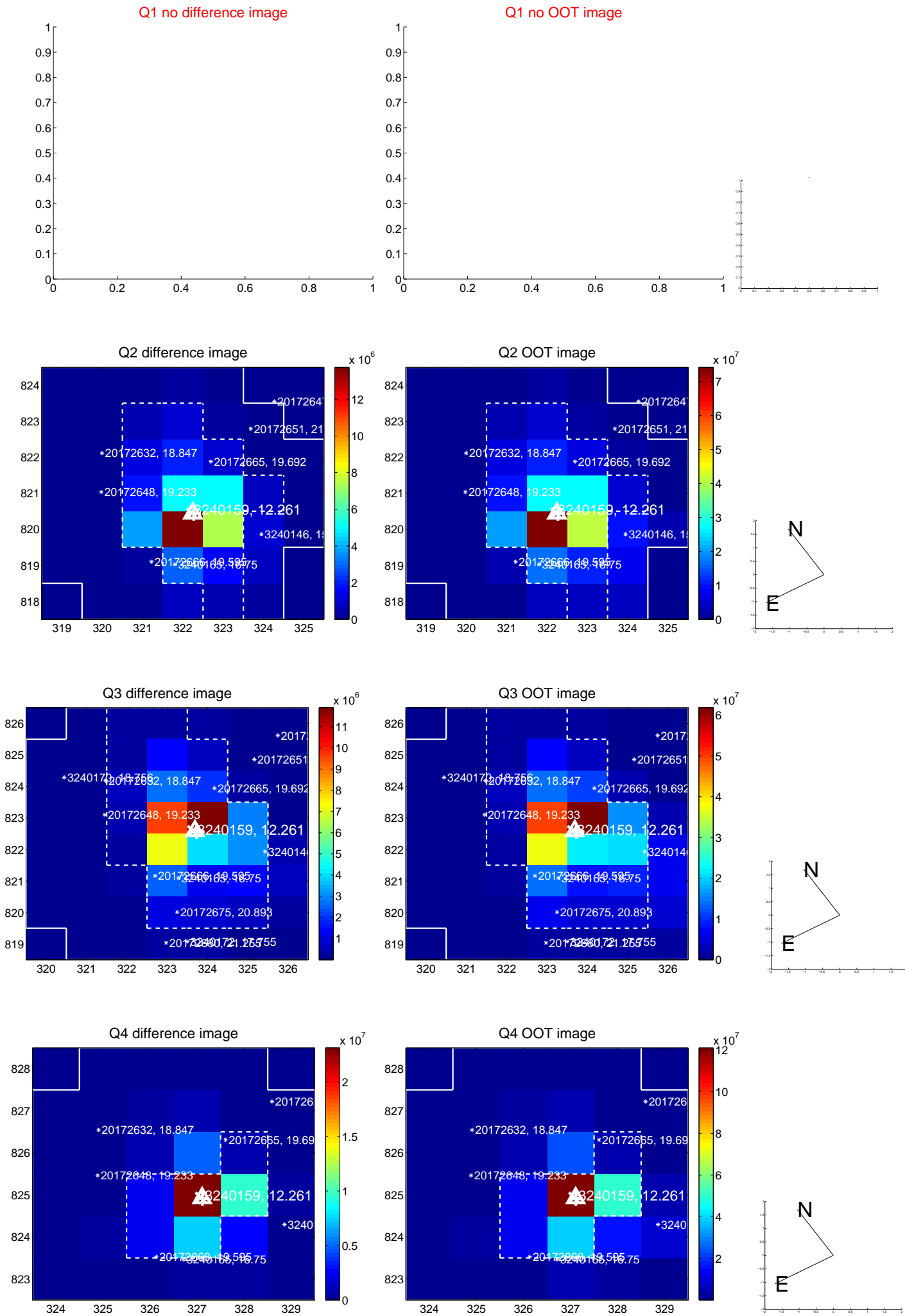
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.078 \pm 0.068$	1.14	$0.035 \pm 0.067$	$0.070 \pm 0.068$
PRF-fit source offset from KIC position	$0.165 \pm 0.068$	2.43	$-0.107 \pm 0.068$	$-0.126 \pm 0.068$
photometric centroid source offset	$0.17 \pm 0.00$	196.10	$-0.07 \pm 0.00$	$-0.16 \pm 0.00$

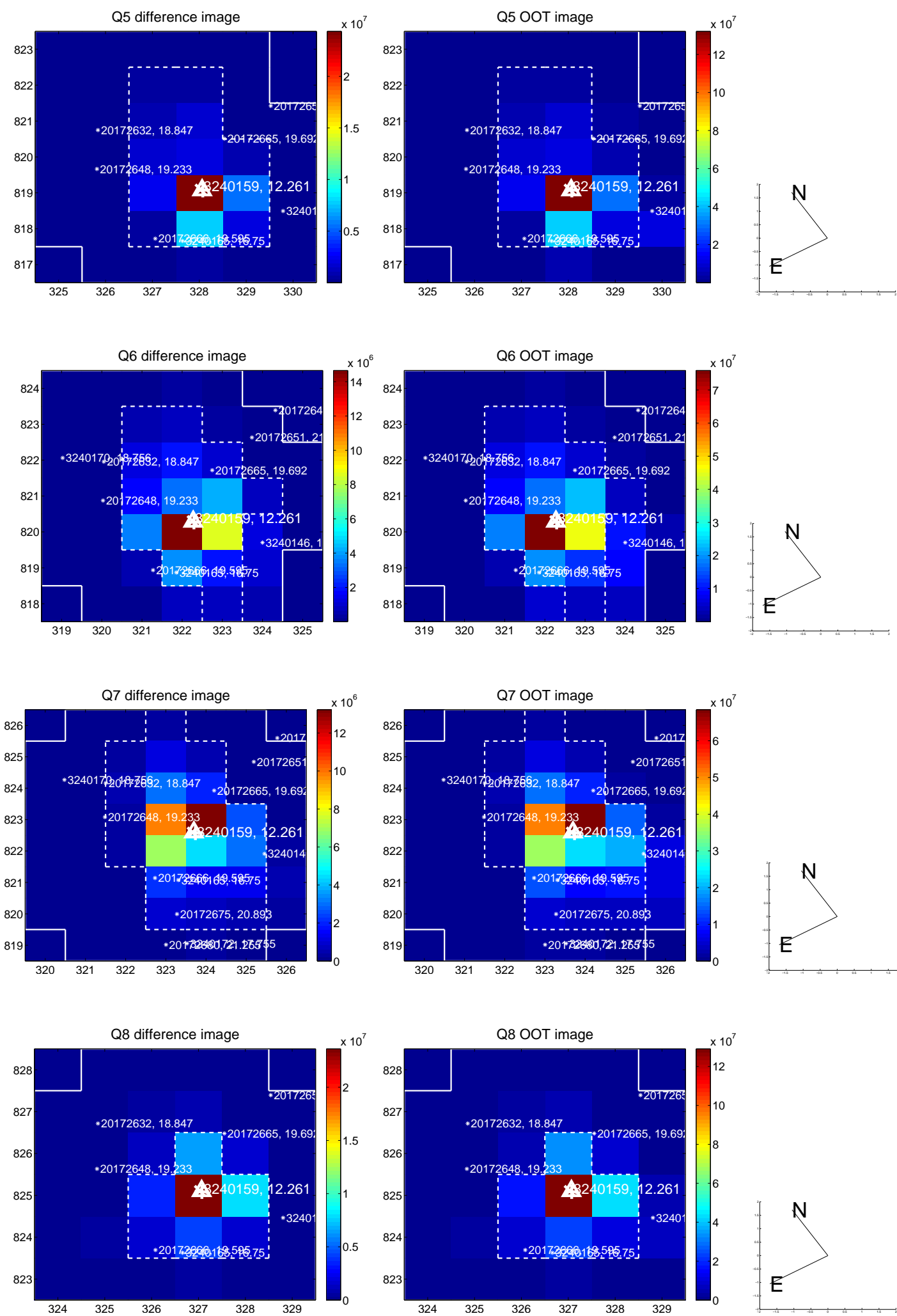


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

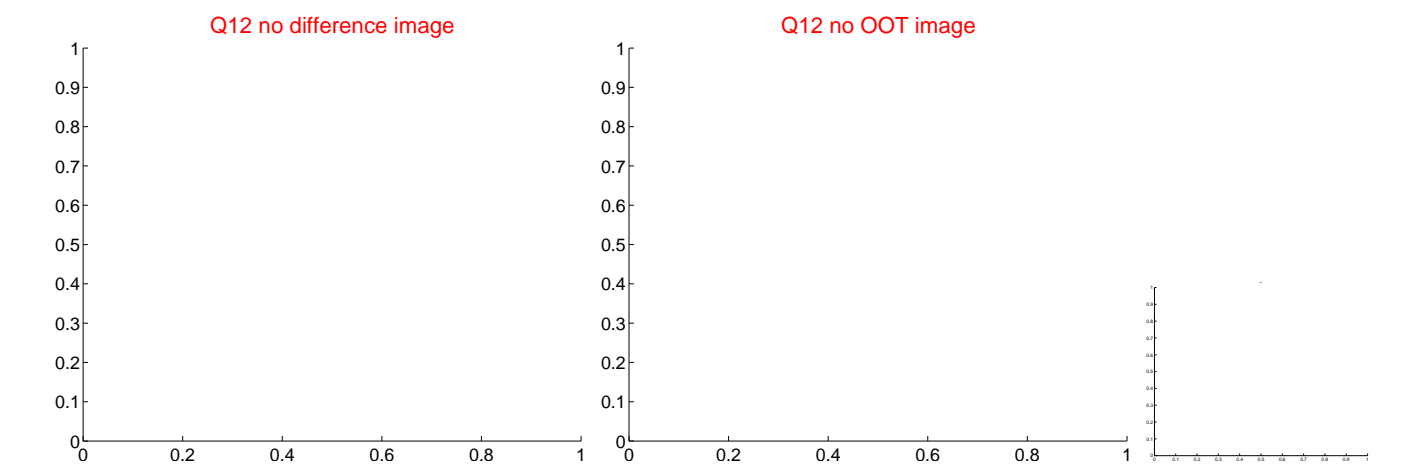
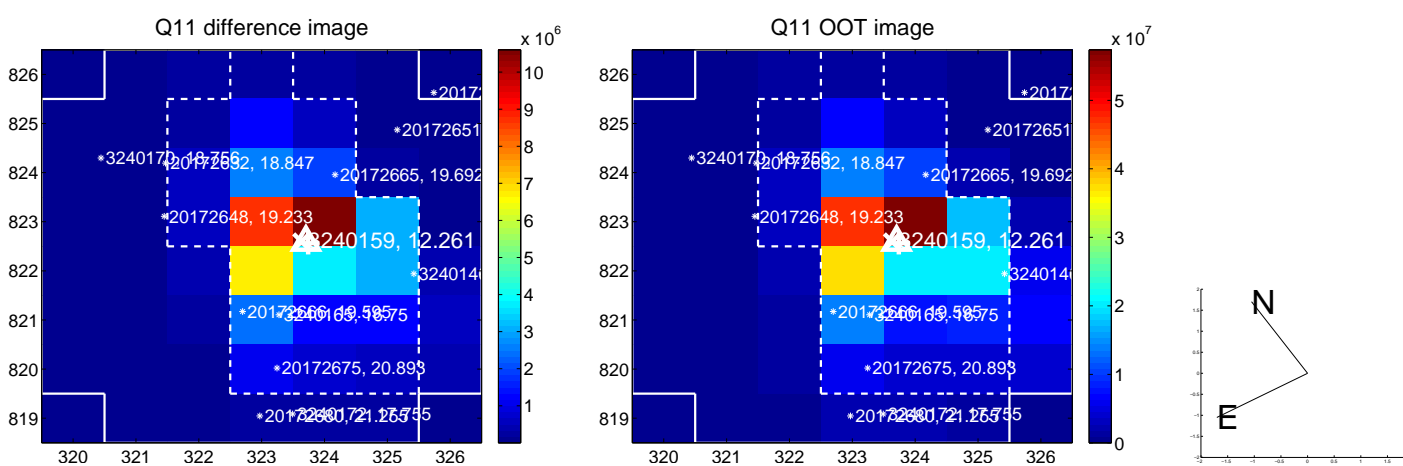
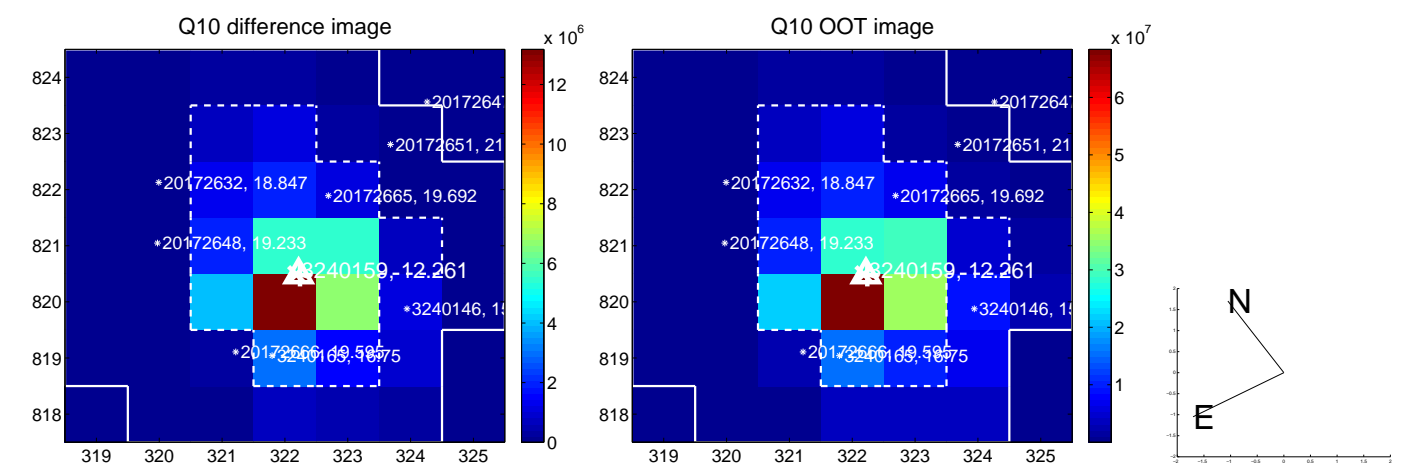
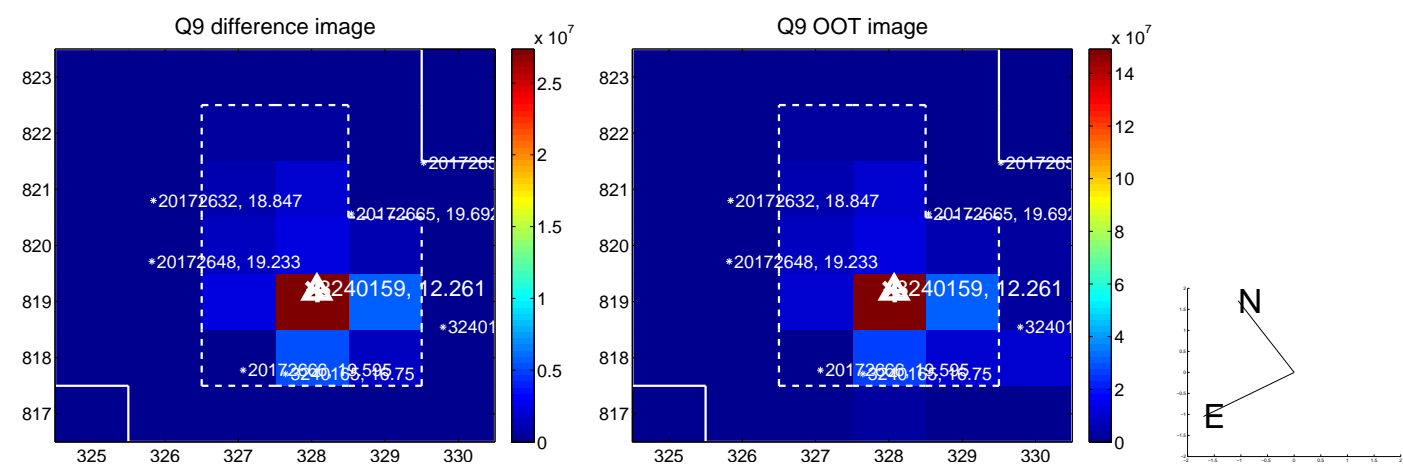


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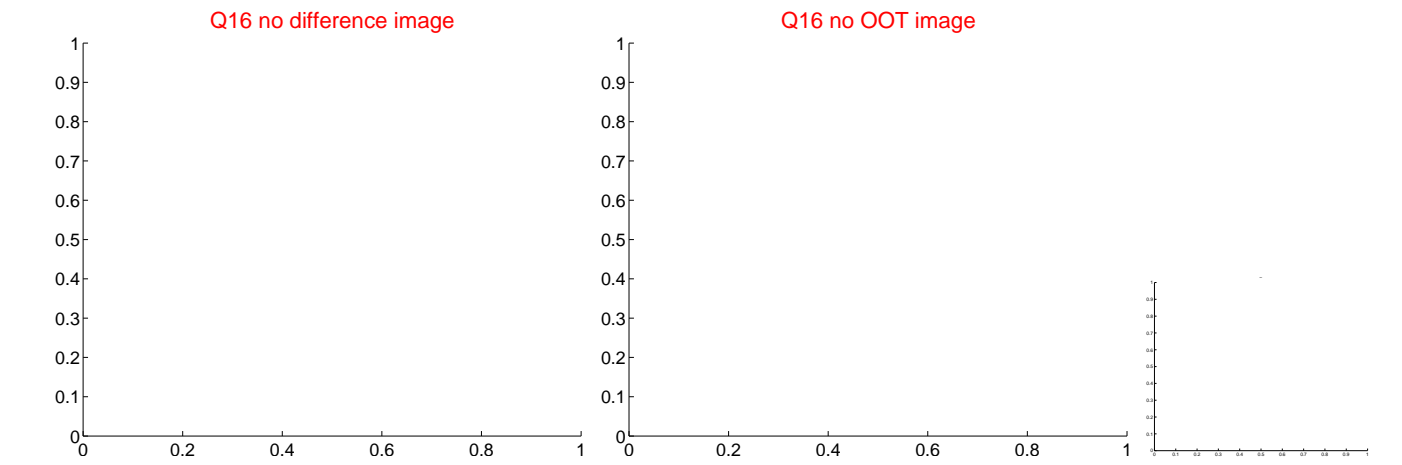
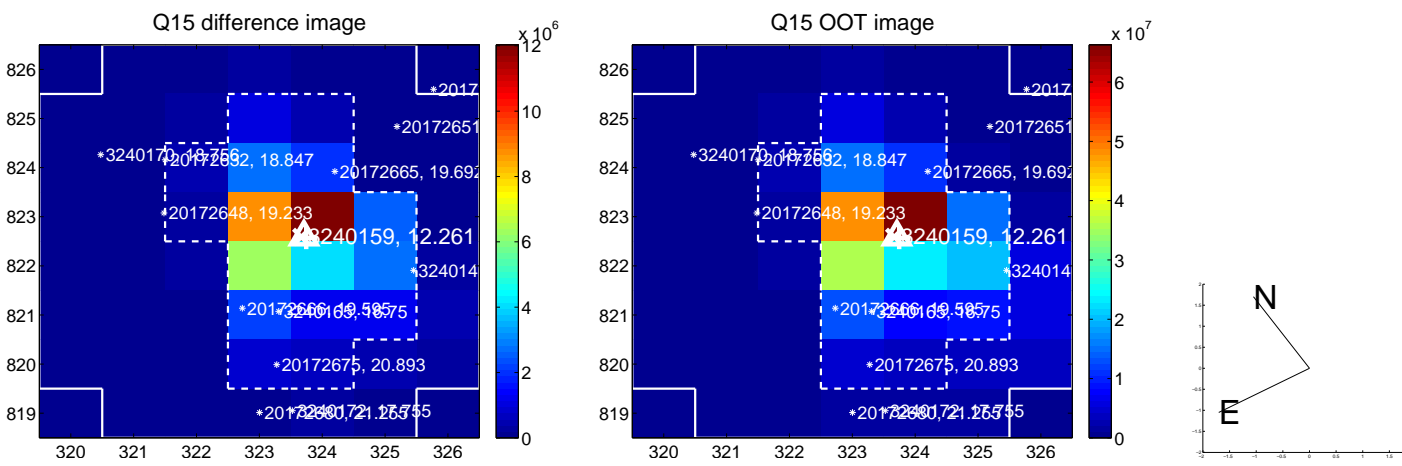
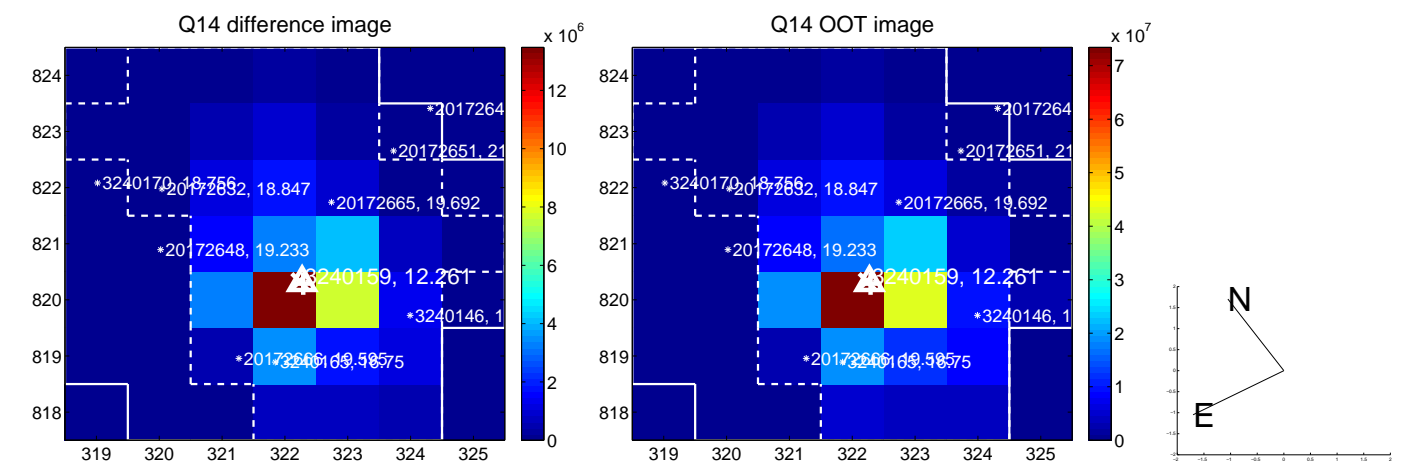
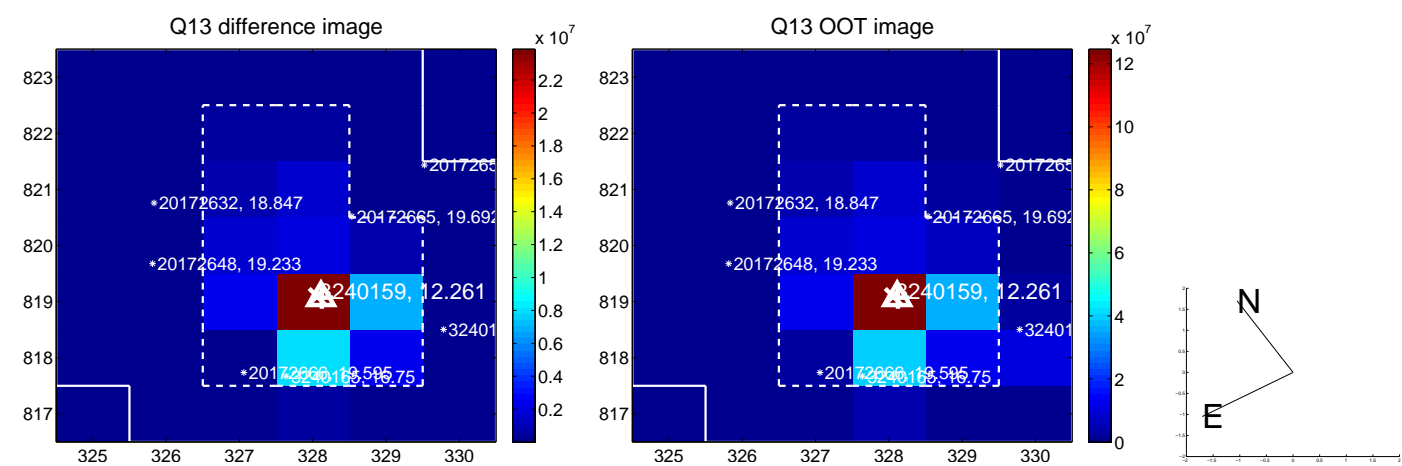




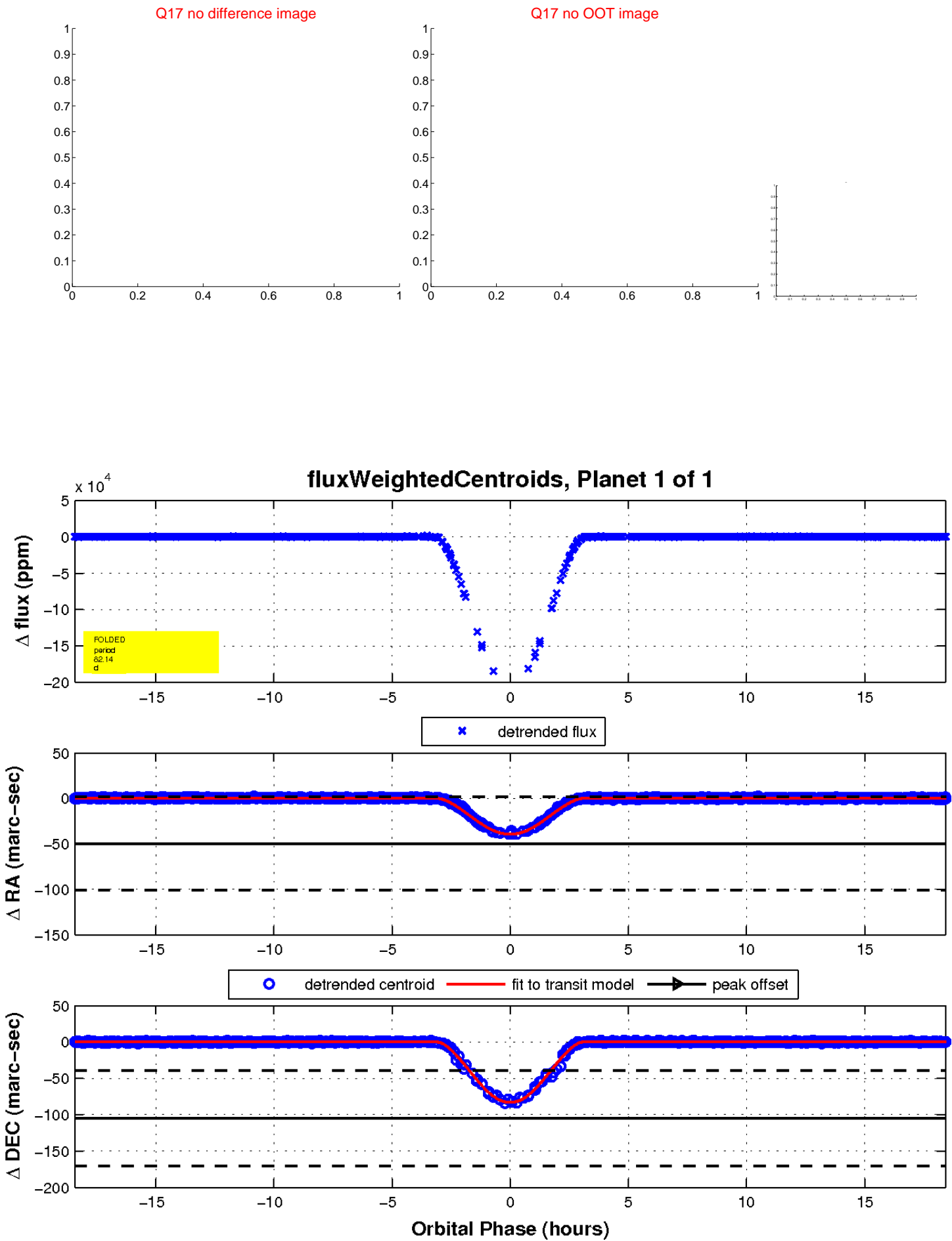
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

