

# KIC 008110757

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008110757-01	OBS	7865.01	0.518039	131.999517	1784.2	1.602	64.3	86.0	1.77	5405	8.98	17241.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008110757-01	OBS	PC	0.97	0	1	0	0	MOD_SEC_DV—PLANET_OCCULT_DV—MOD_SEC_ALT—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.

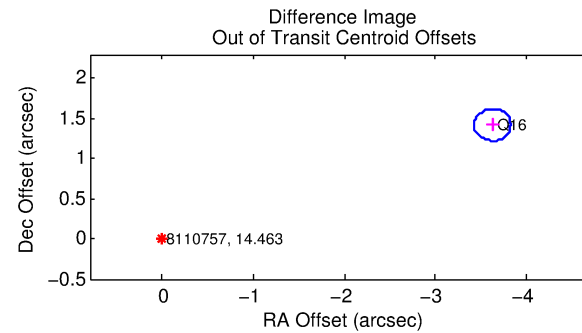
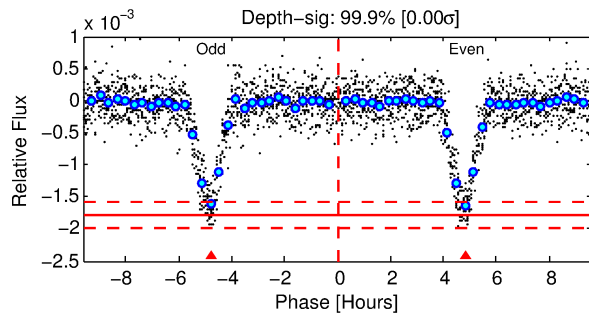
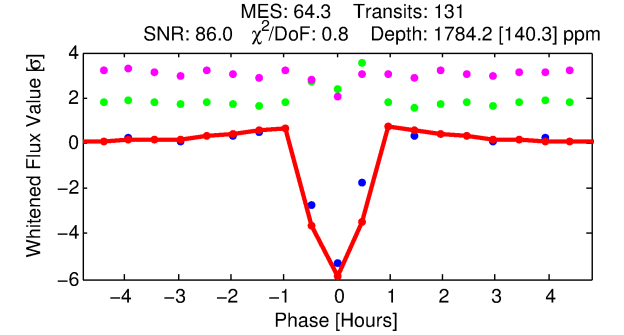
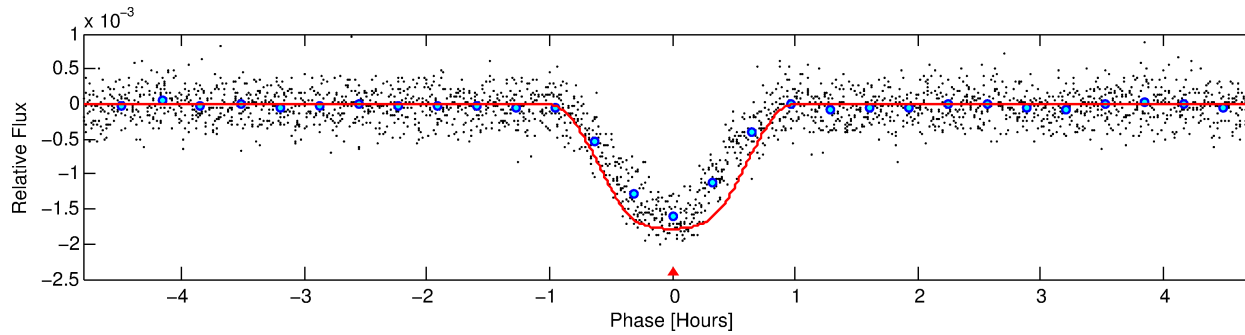
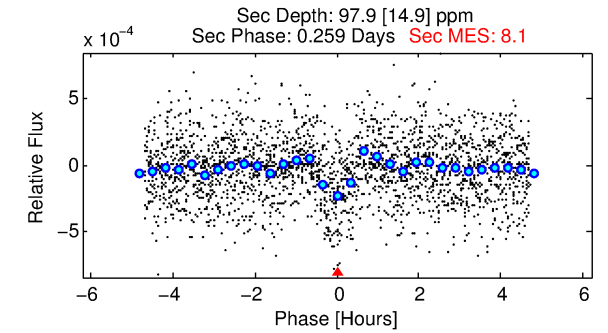
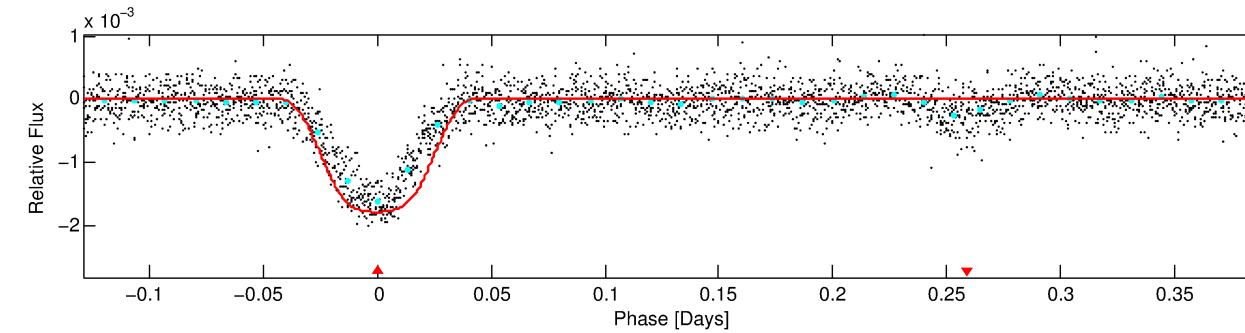
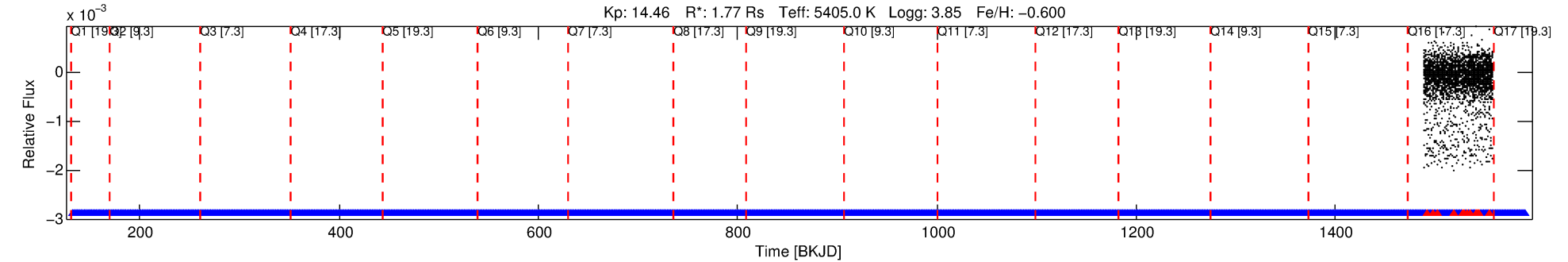
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008110757-01

No Significant Match Found

# DV One-Page Summary

KIC: 8110757 Candidate: 1 of 1 Period: 0.518 d



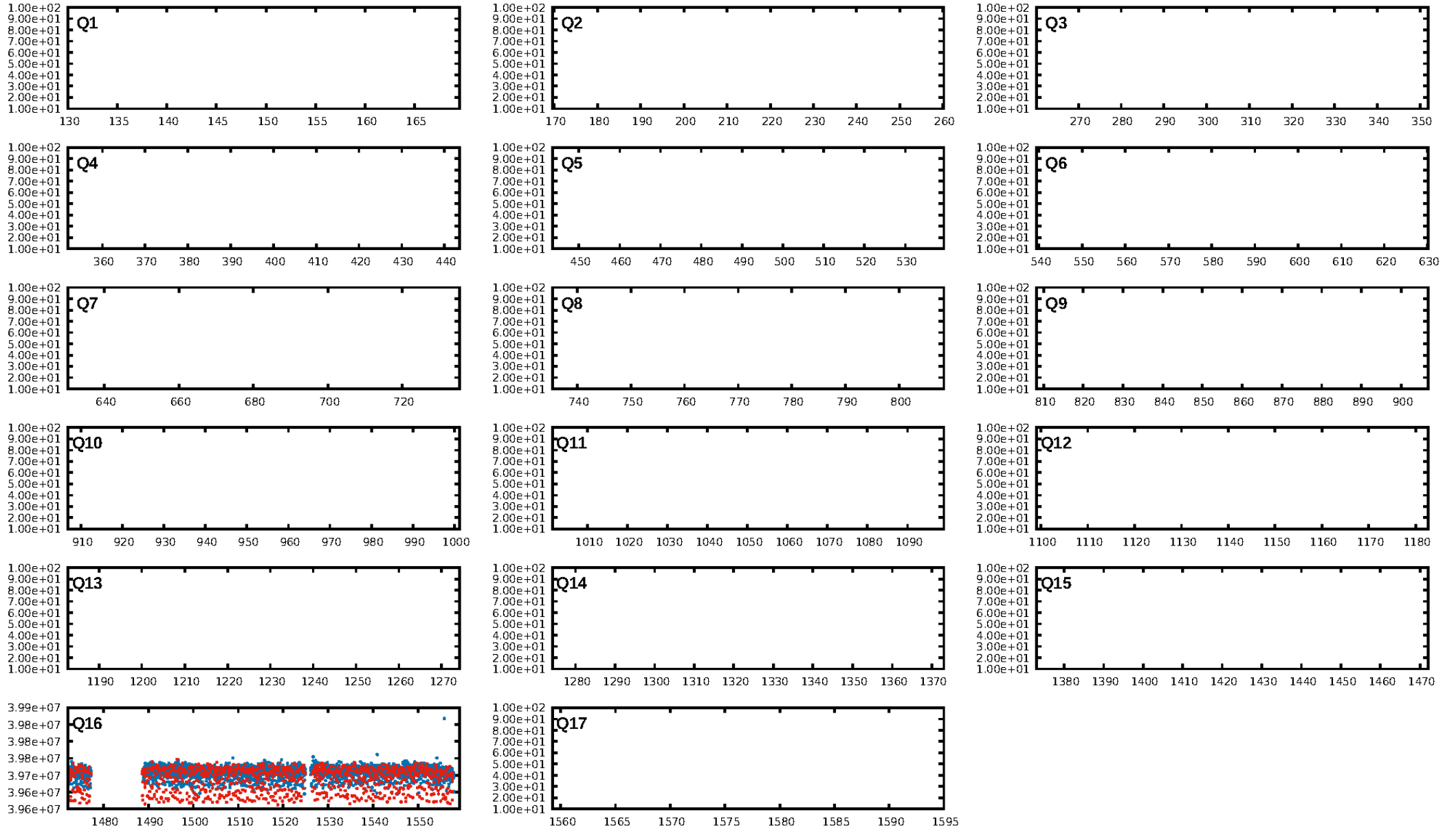
## DV Fit Results:

Period = 0.51804 [0.00001] d  
Epoch = 131.9995 [0.0002] BKJD  
Rp/R\* = 0.0464 [0.0020]  
a/R\* = 1.63 [0.10]  
b = 0.90 [0.02]  
Seff = 17241.26 [21803.95]  
Teq = 2922 [924] K  
Rp = 8.98 [5.70] Re  
a = 0.0118 [0.0086] AU  
Ag = 0.09 [0.12] [-7.69σ]  
Teffp = 2495 [145] K [-0.46σ]

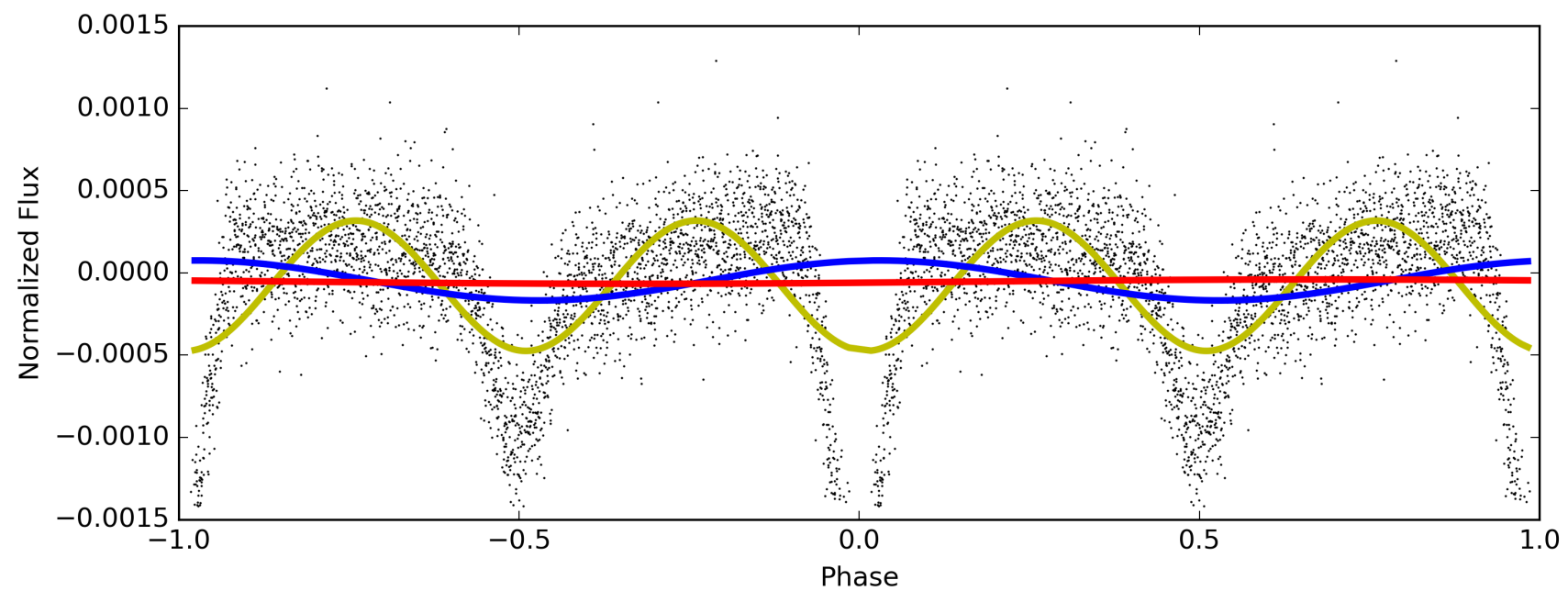
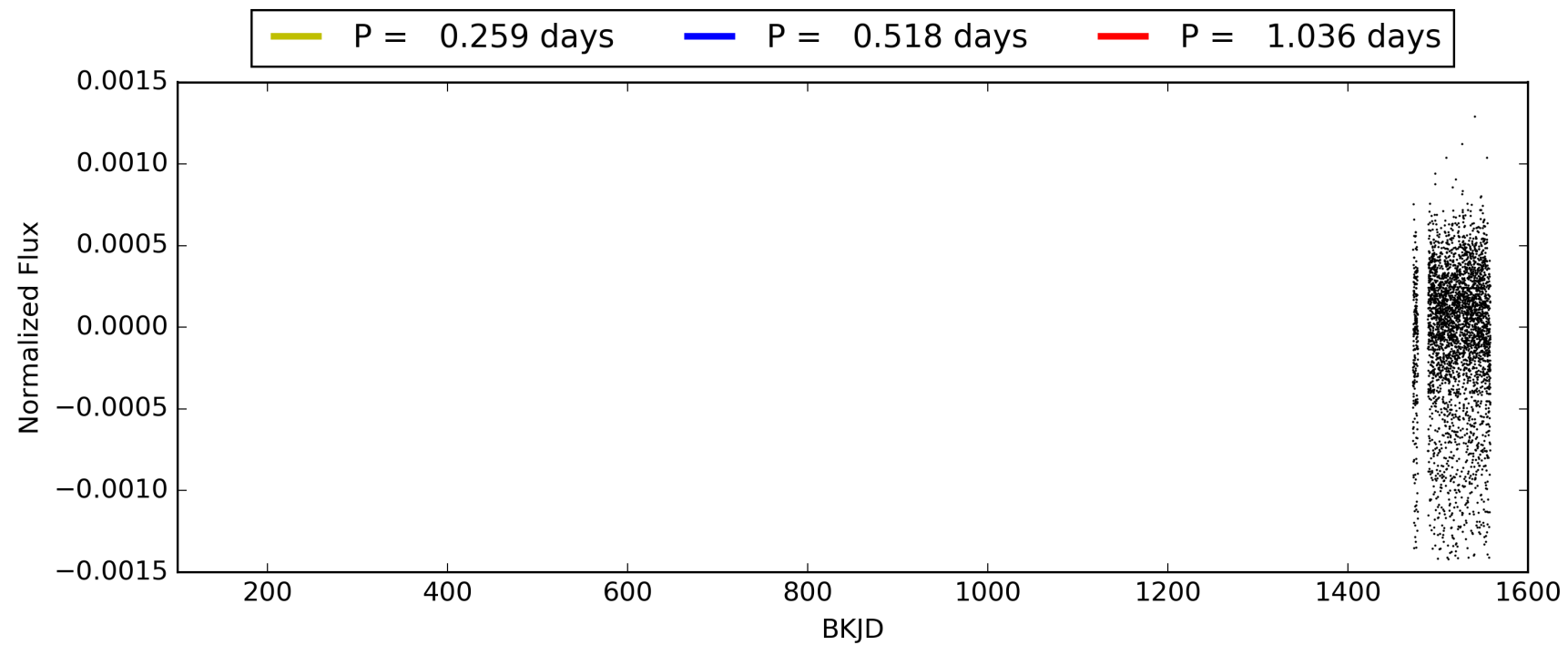
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.90 [118/131]  
**GhostDiagnostic-chr: -0.9268**  
Centroid-sig: 0.0%  
Centroid-so: 11.831 arcsec [84.40σ]  
OotOffset-rm: 3.901 arcsec [58.41σ]  
KicOffset-rm: 5.637 arcsec [84.34σ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

# TCE 008110757-01, PDC Light Curves

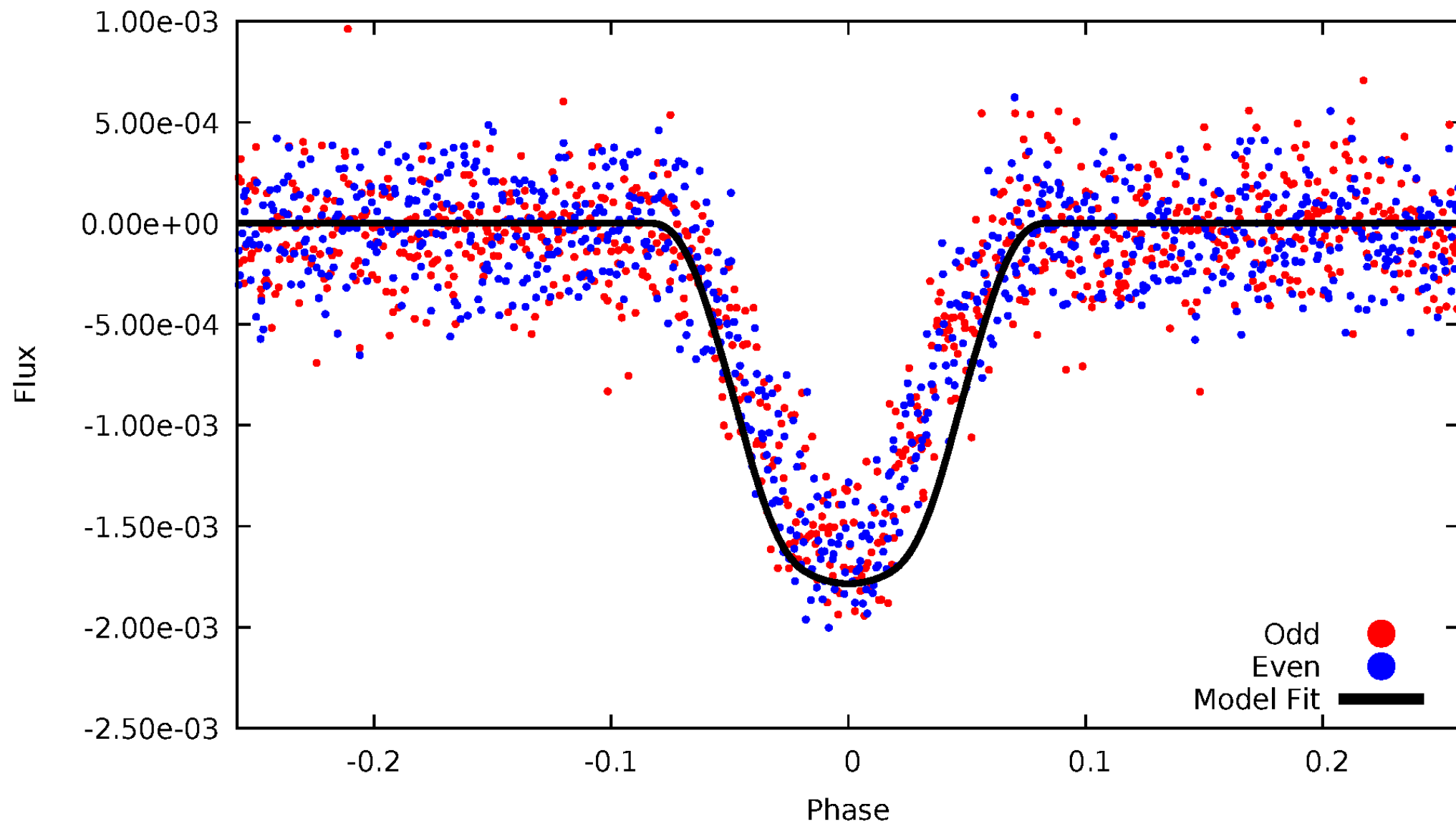


# TCE 008110757-01



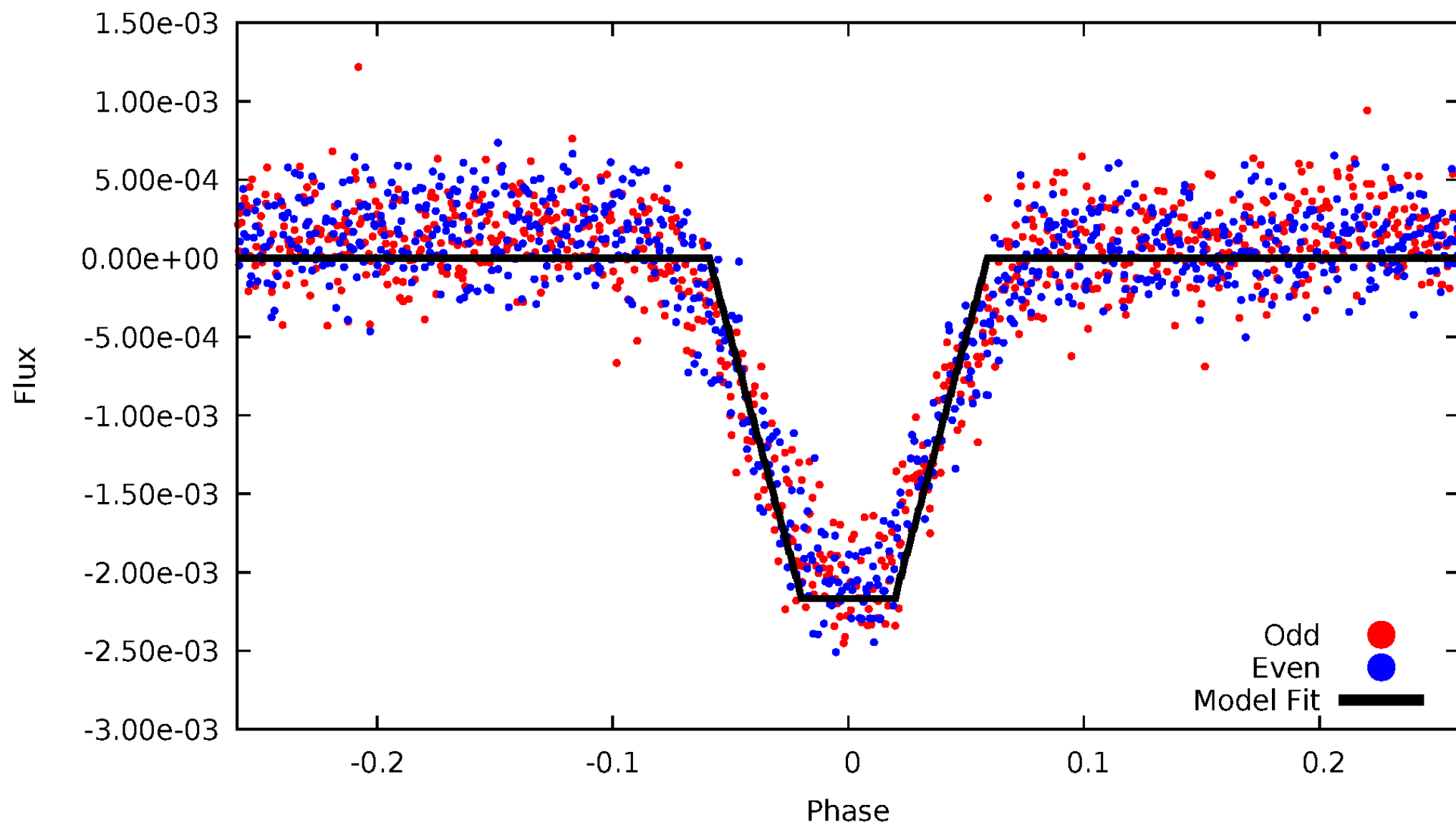
# DV Odd/Even

TCE 008110757-01



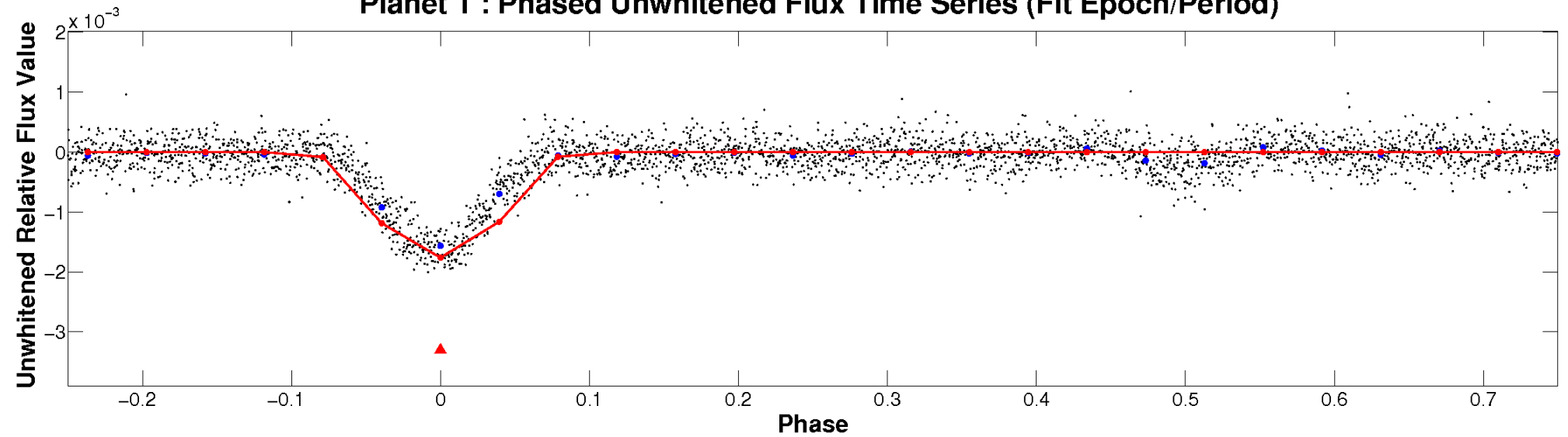
# ALT Odd/Even

TCE 008110757-01

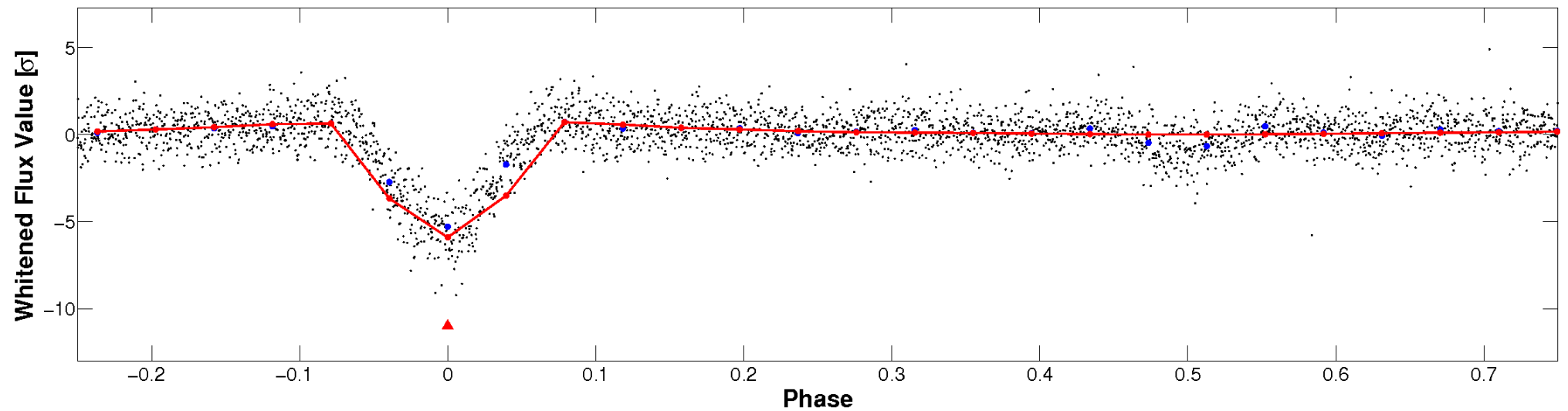


# Non-Whitened Vs. Whitened Light Curve

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

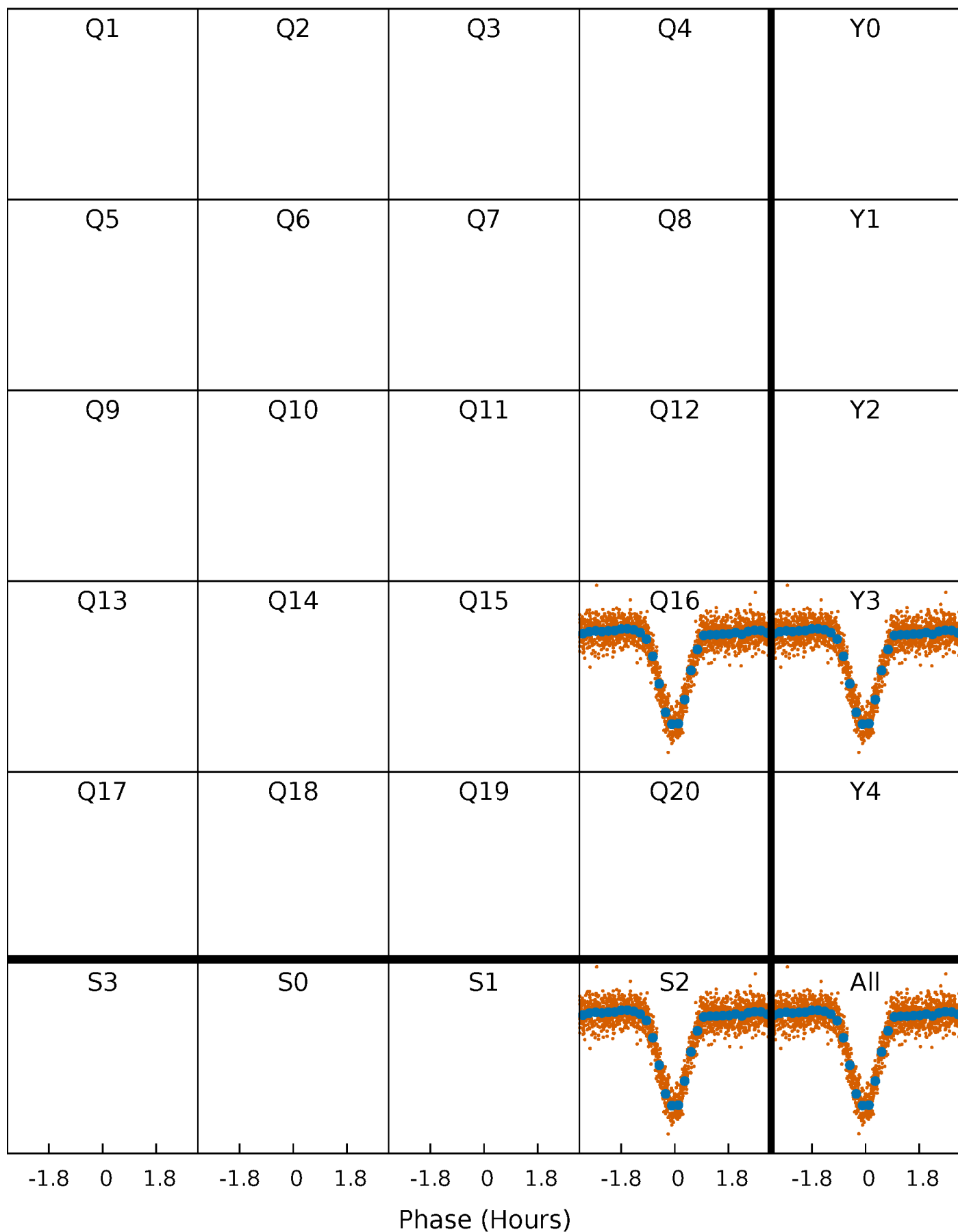


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

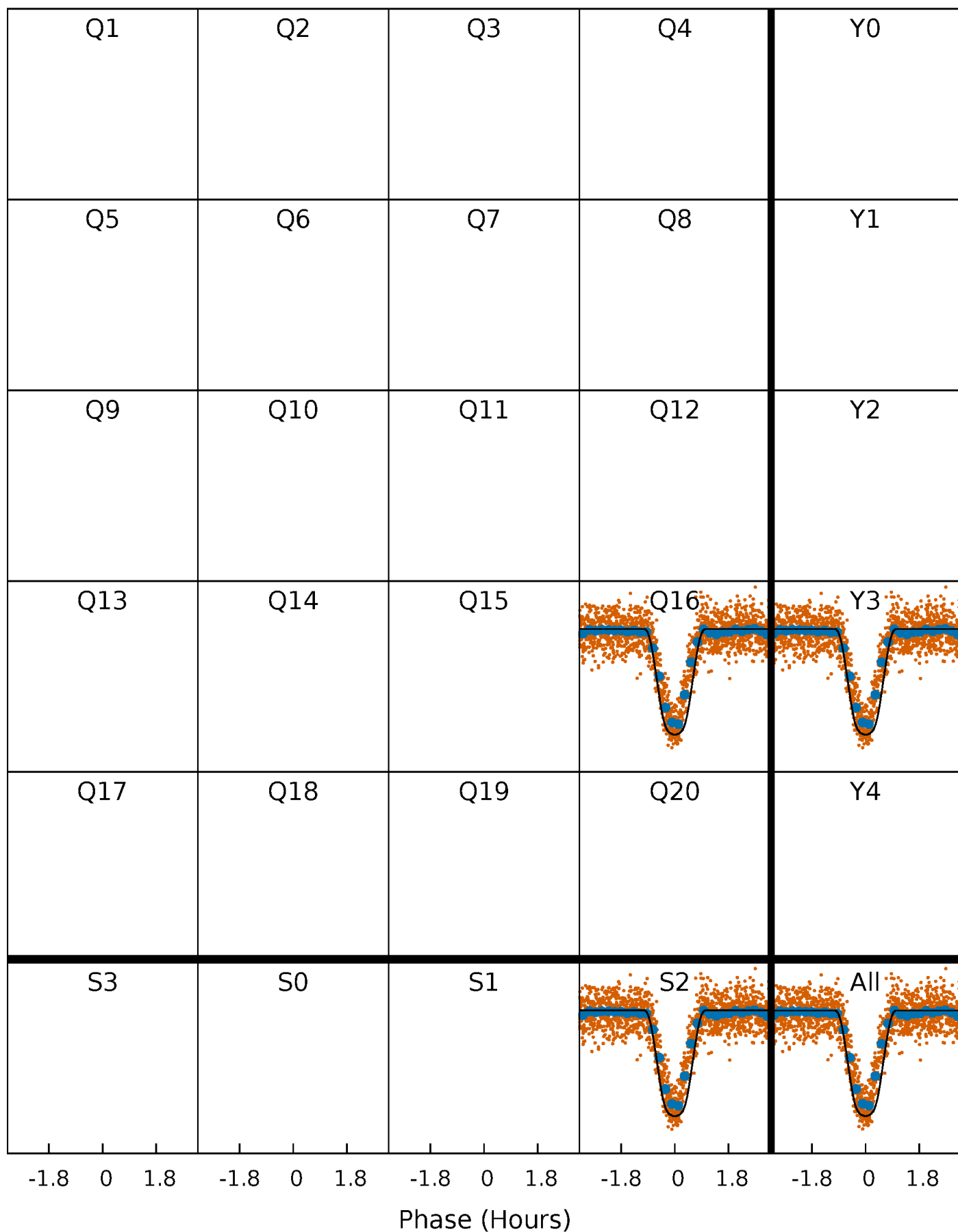
TCE 008110757-01 P= 0.518040 Days  $T_0=131.999517$  (BKJD)





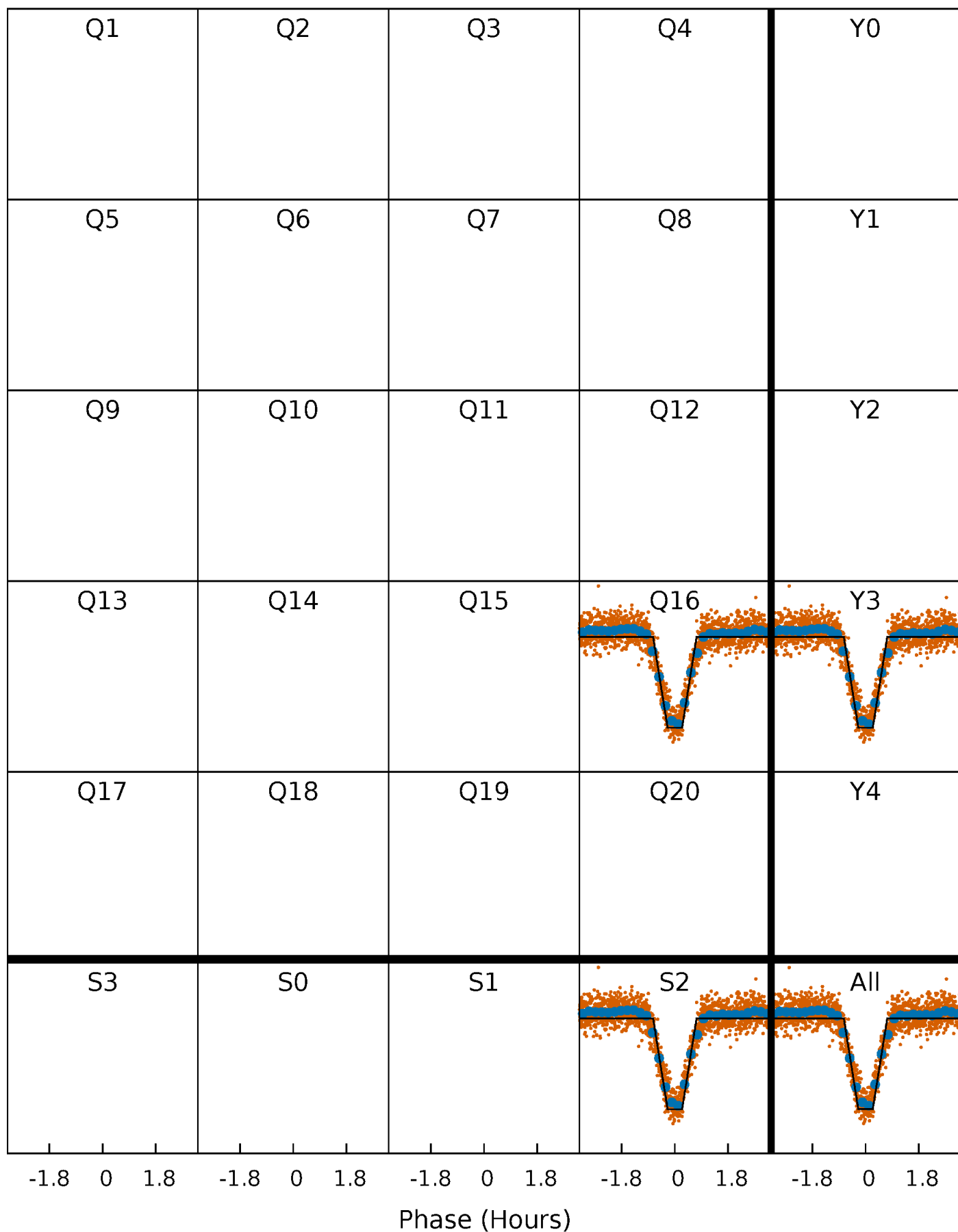
# DV Quarter-Phased Transit Curves

TCE 008110757-01   P= 0.518040 Days    $T_0=131.999517$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

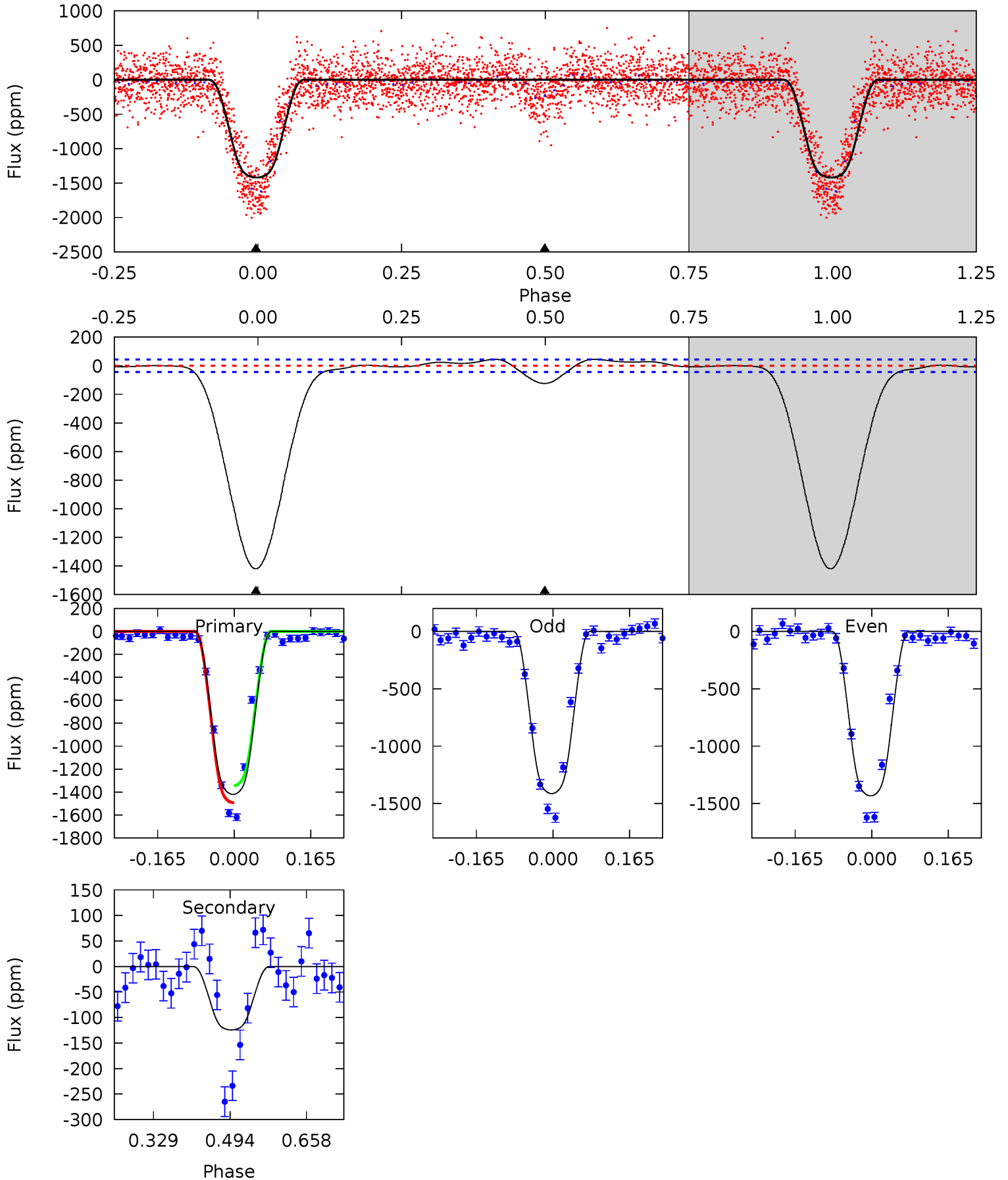
TCE 008110757-01 P= 0.518039 Days  $T_0=131.999515$  (BKJD)



# DV Model-Shift Uniqueness Test

008110757-01, P = 0.518040 Days, E = 131.999517 Days

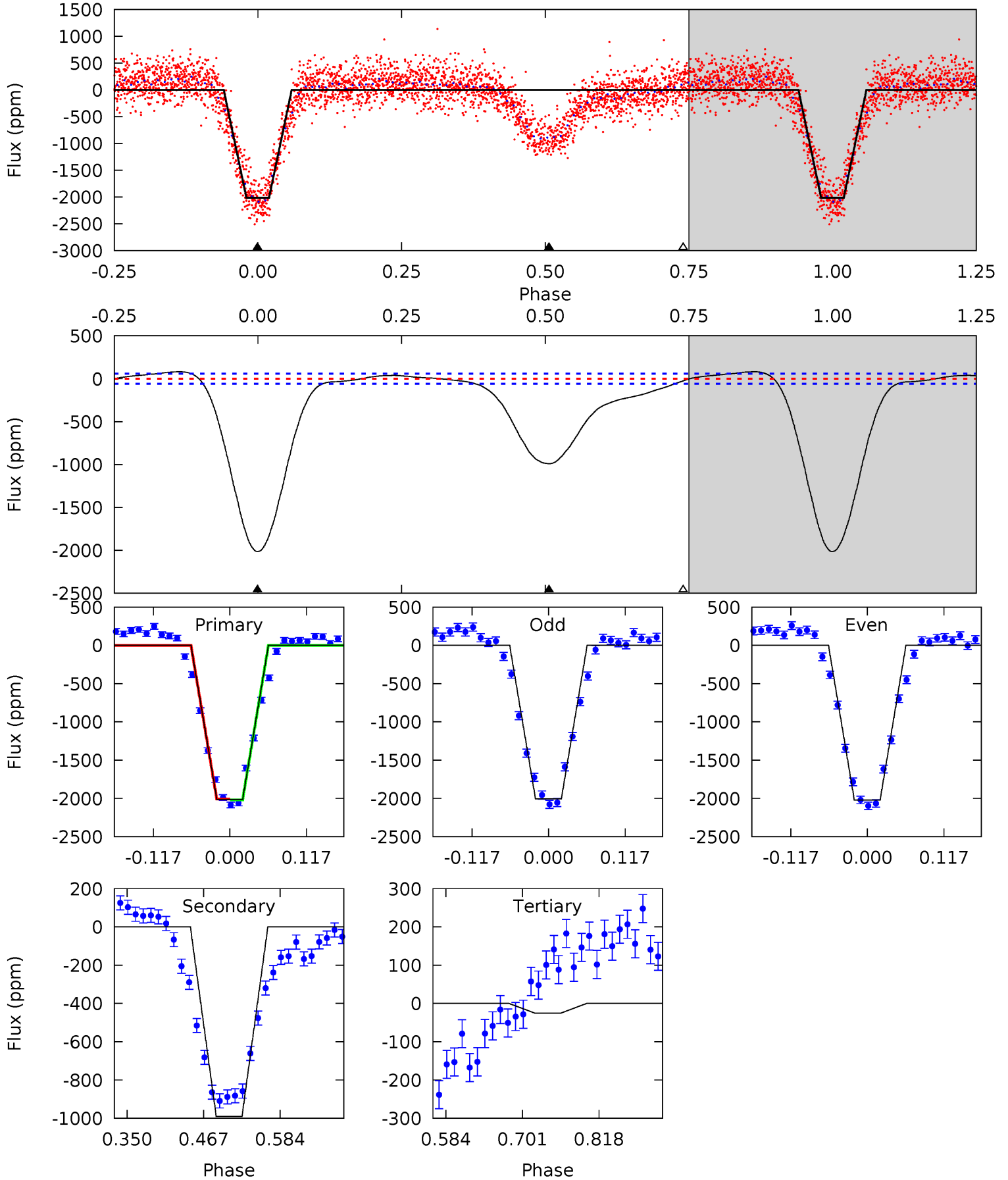
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
144.7	12.7	0	0	4.46	1.39	1.24	144.7	144.7	12.7	12.7	1.01	0.98	0.03	7.36



# Alt Model-Shift Uniqueness Test

008110757-01, P = 0.518039 Days, E = 131.999515 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
151.7	74.6	1.91	0	4.53	1.57	6.16	149.7	151.7	72.7	74.6	0.54	1.00	0.04	0.35



### Stellar Parameters For KIC 008110757

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5405^{+208}_{-170}$	$3.853^{+0.770}_{-0.330}$	$-0.600^{+0.350}_{-0.250}$	$1.772^{+1.123}_{-1.123}$	$0.816^{+0.161}_{-0.108}$	$0.207^{+2.649}_{-0.164}$
	+4%/-3%	+20%/-9%	+58%/-42%	+63%/-63%	+20%/-13%	+1282%/-79%
Source	KIC0	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 008110757-01 / KOI 7865.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-124 \pm 10$	$8.70^{+3.06}_{-3.01}$	$3995^{+709}_{-730}$	$-3367^{+1253}_{-562}$	$0.126^{+0.165}_{-0.057}$
Alt.	$-990 \pm 13$	$8.98^{+2.98}_{-2.95}$	$4056^{+645}_{-755}$	$4242^{+268}_{-300}$	$0.951^{+1.158}_{-0.399}$

$T_{\text{max}}$  = 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

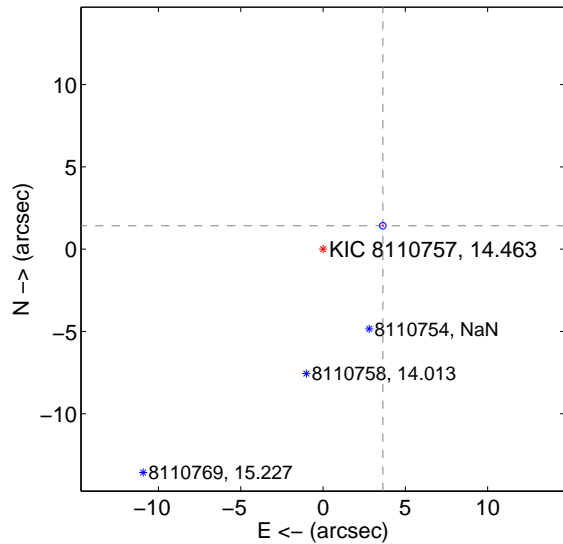
Supplemental centroid analysis for 008110757-01. Kepler magnitude: 14.46. Transit SNR 85.99

There are 1 quarters with good PRF difference image offsets

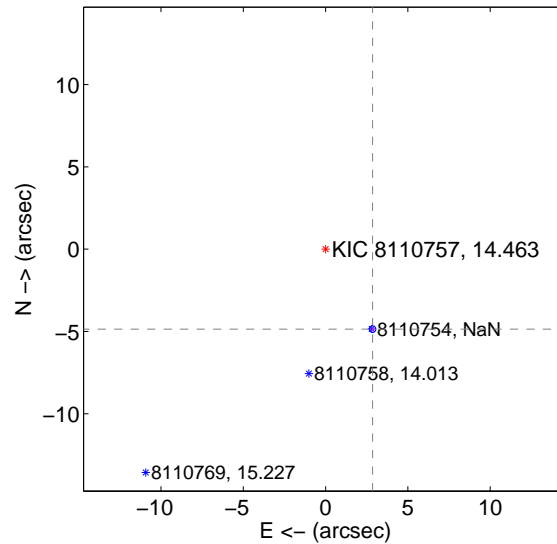
The OOT PRF centroid is offset from the target star catalog position by about 6.33 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.901 \pm 0.067$	58.41	$-3.632 \pm 0.067$	$1.423 \pm 0.067$
PRF-fit source offset from KIC position	$5.637 \pm 0.067$	84.34	$-2.856 \pm 0.067$	$-4.861 \pm 0.067$
photometric centroid source offset	$11.83 \pm 0.14$	84.40	$-8.97 \pm 0.17$	$-7.72 \pm 0.09$

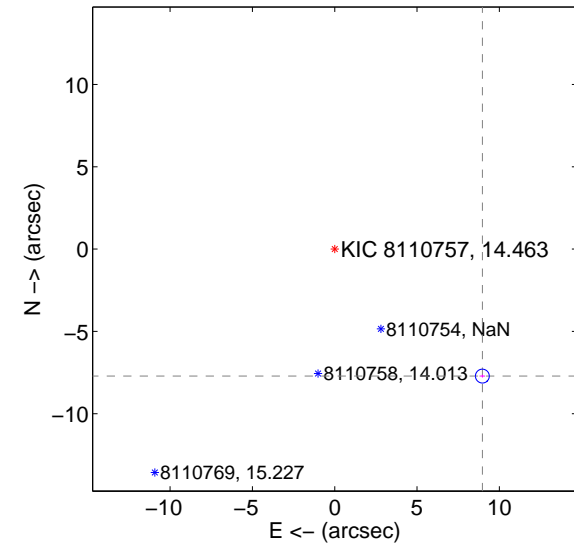
offset from difference PRF-fit to OOT PRF-fit



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.

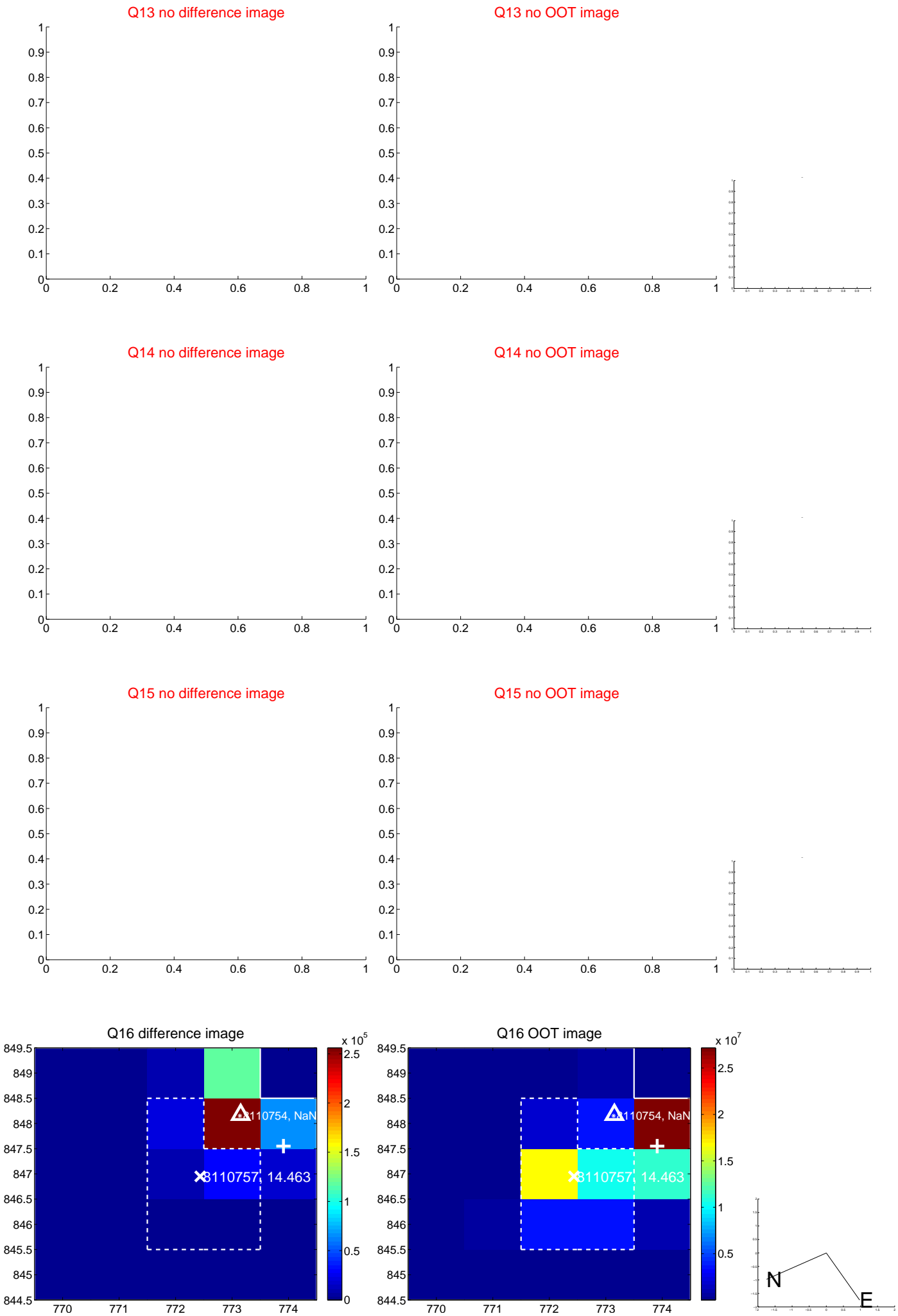




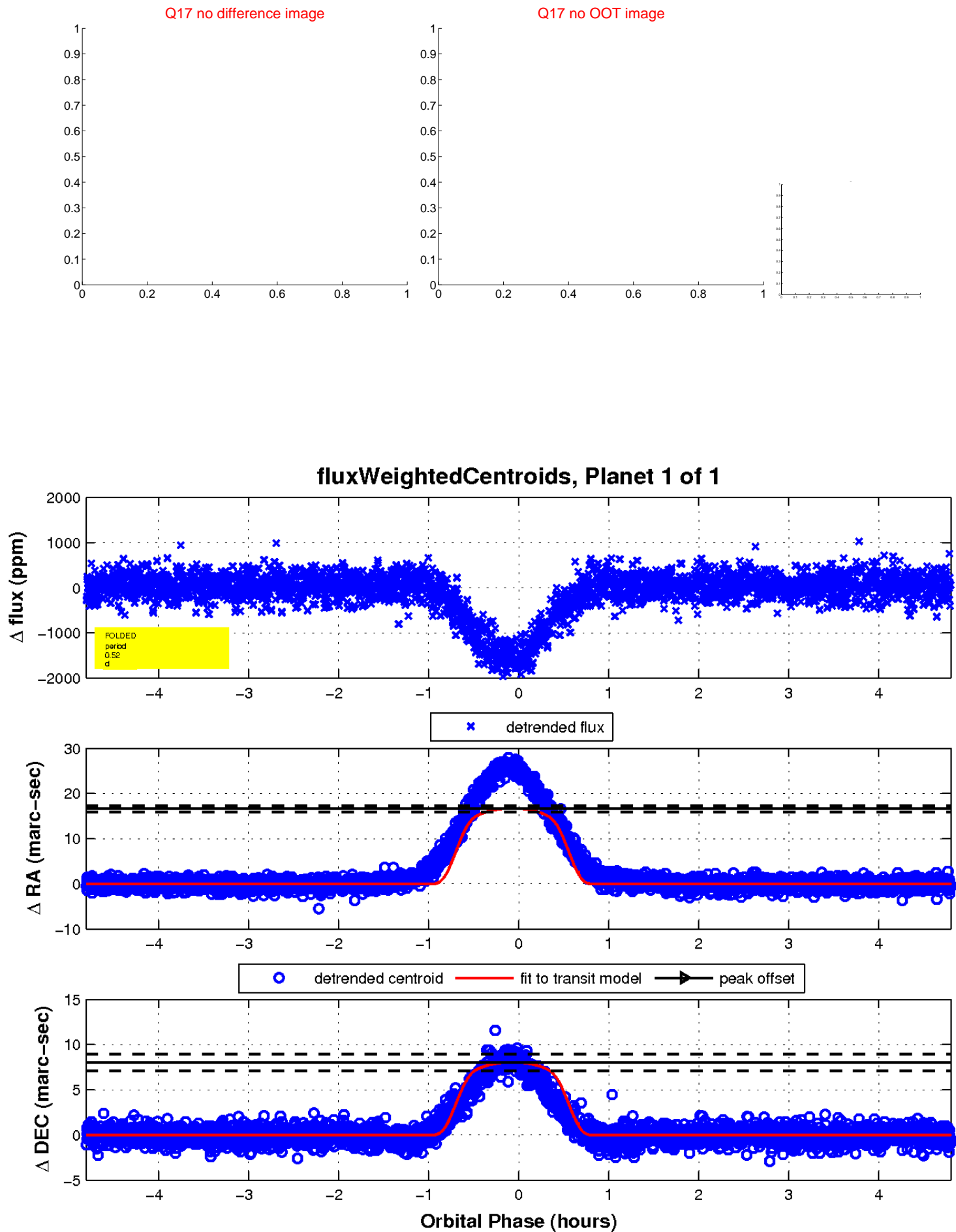
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

