

# KIC 004160006

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004160006-01	OBS	5045.01	1.018434	131.582027	73714.0	3.000	4579.6	-1.0	1.46	6160	39.91	6649.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004160006-01	OBS	FP	0.00	0	1	0	0	SWEET_EB—MOD_ODDEVEN_ALT—CENT_NOFITS

**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 004160006-01

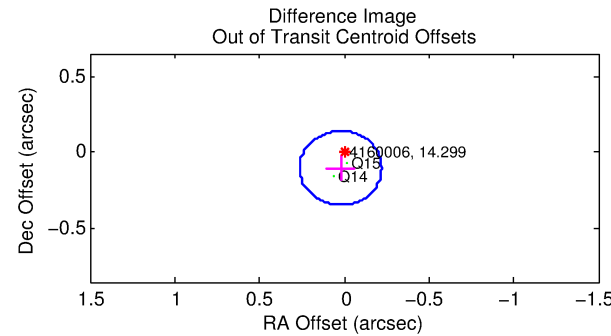
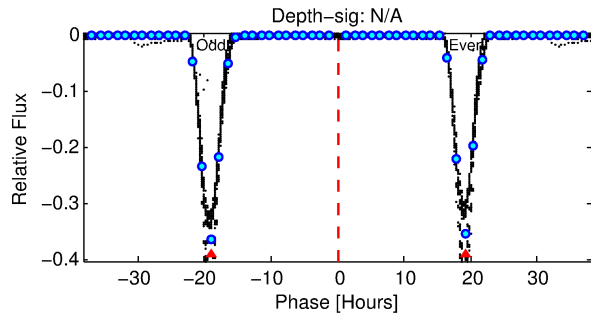
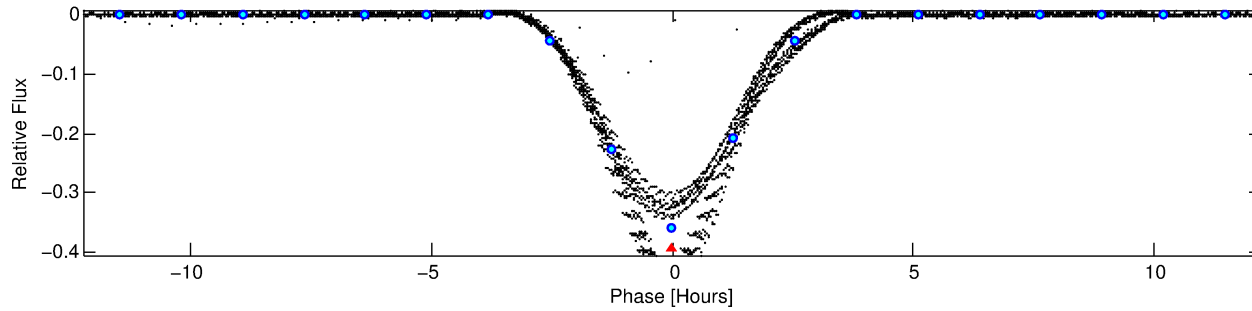
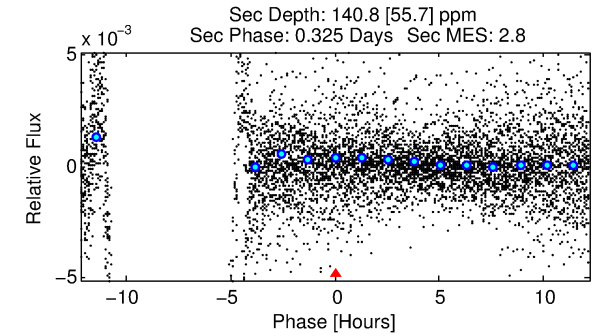
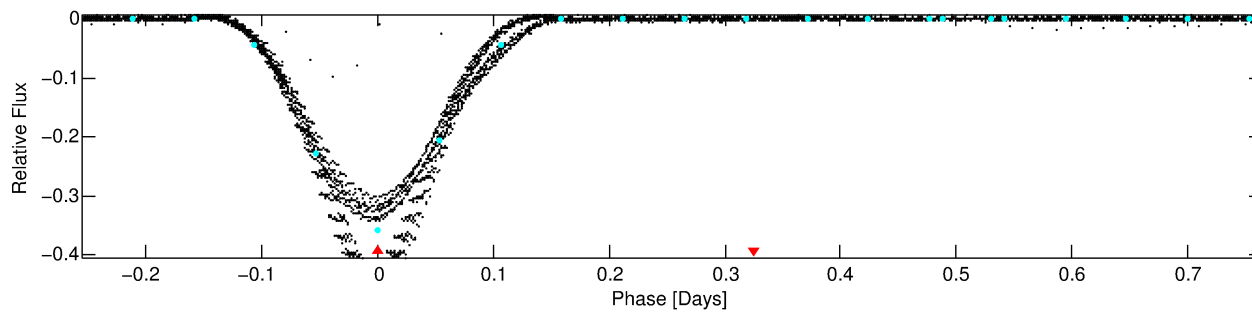
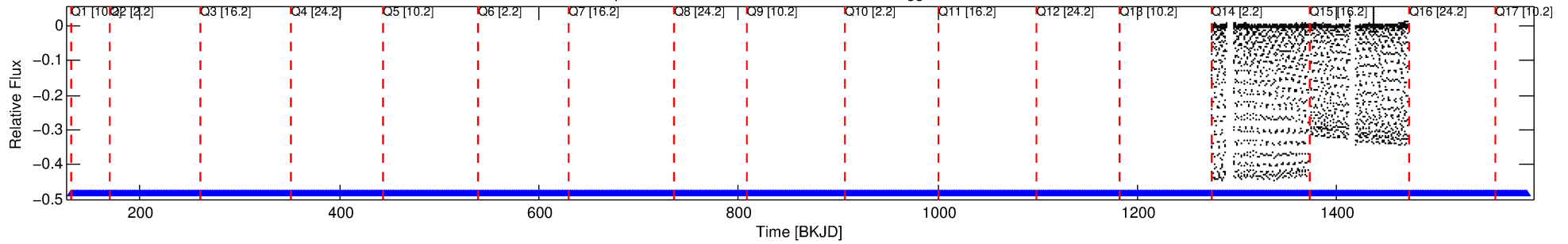
No Significant Match Found

# DV One-Page Summary

KIC: 4160006 Candidate: 1 of 1 Period: 1.018 d

KOI: K05045 Corr: No Ephemeris Match

Kp: 14.30 R\*: 1.46 Rs Teff: 6160.0 K Logg: 4.14 Fe/H: -0.120



TPS TCE Results:

Period = 1.01843 d  
Epoch = 131.5820 BKJD

DV fit results are unavailable

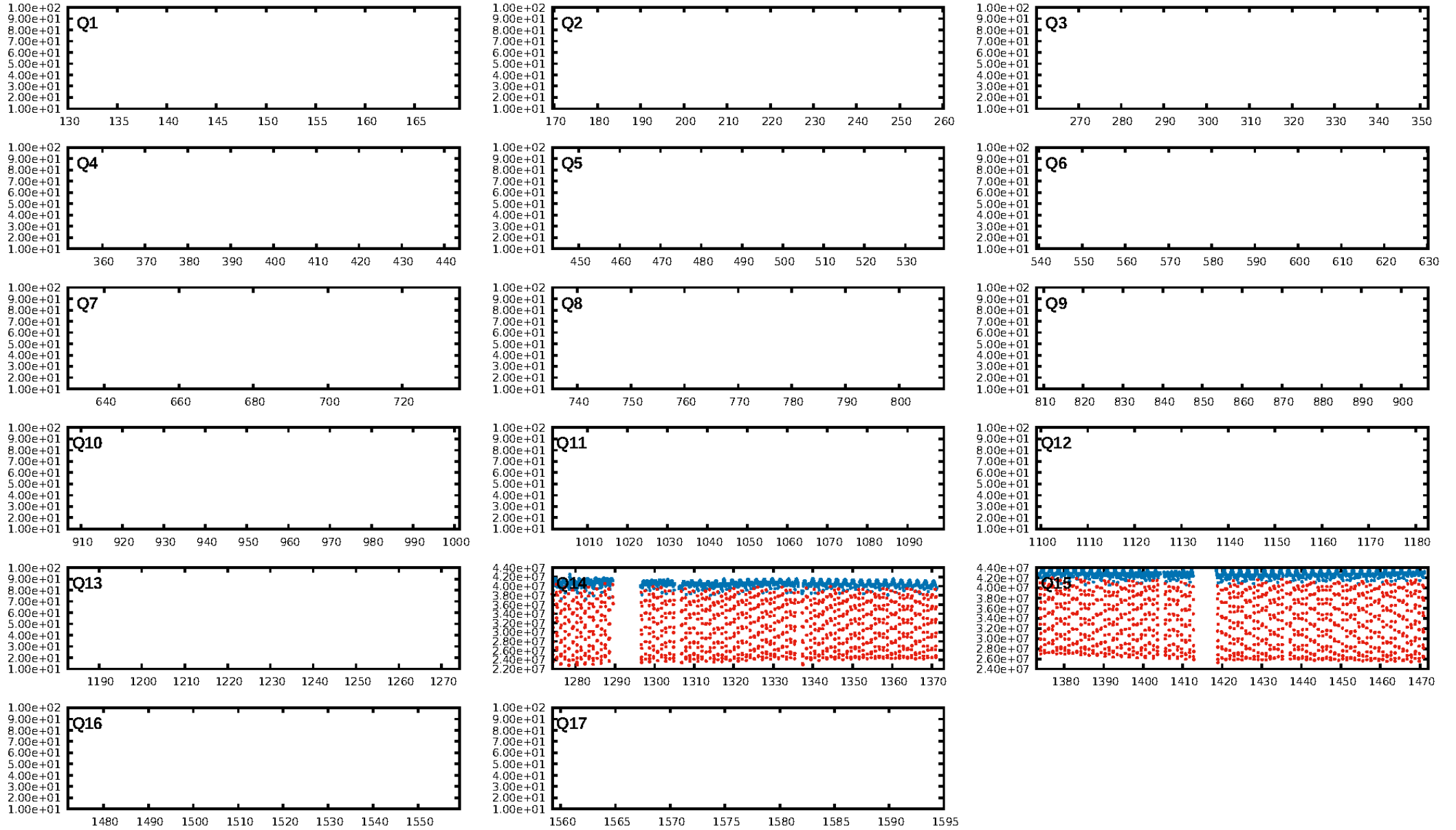
DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [179/179]  
GhostDiagnostic-chr: 0.346  
Centroid-sig: N/A  
Centroid-so: 0.221 arcsec [177.43σ]  
OotOffset-rm: 0.104 arcsec [1.29σ]  
KicOffset-rm: 0.116 arcsec [1.69σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

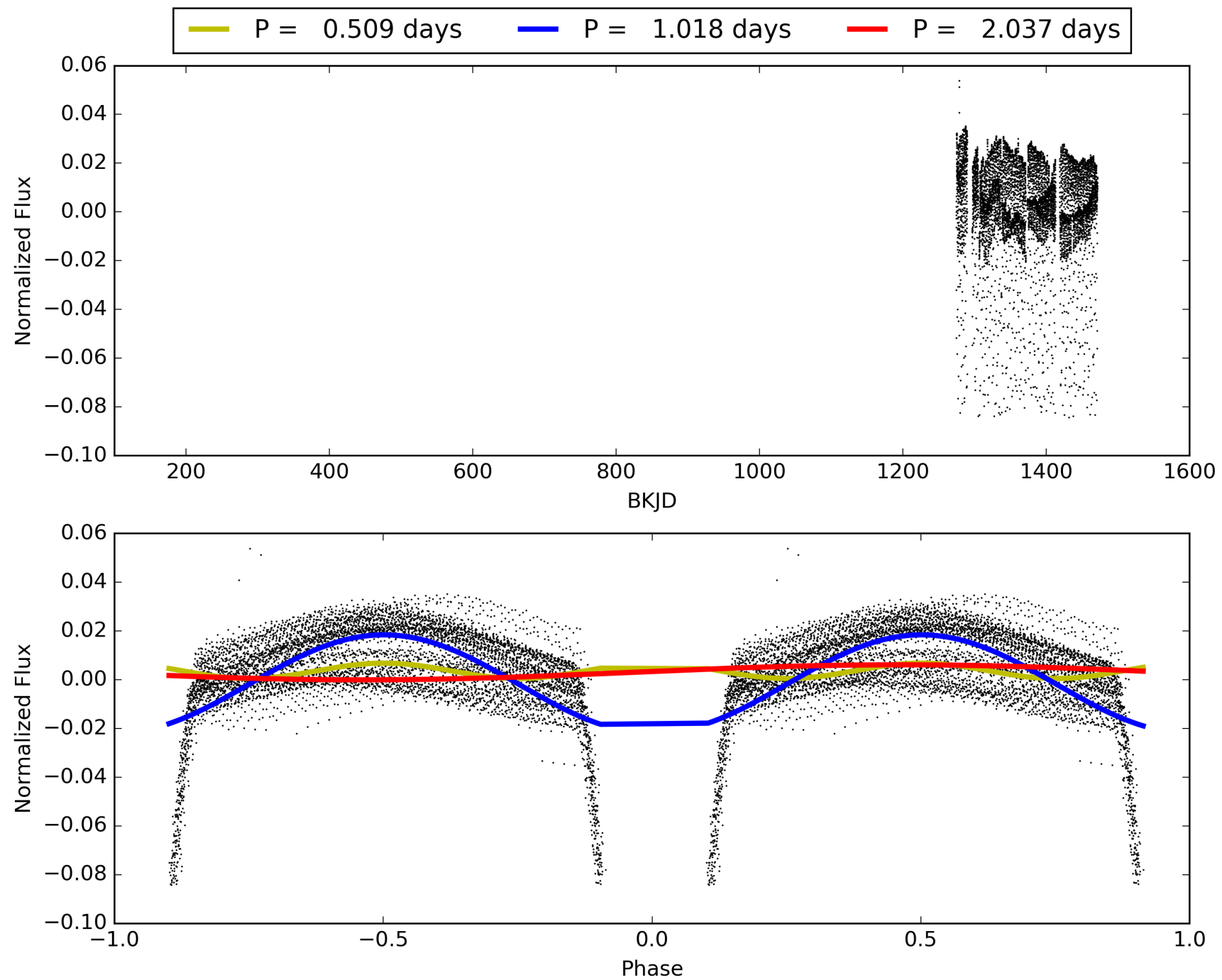
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:49:37 Z

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

# TCE 004160006-01, PDC Light Curves

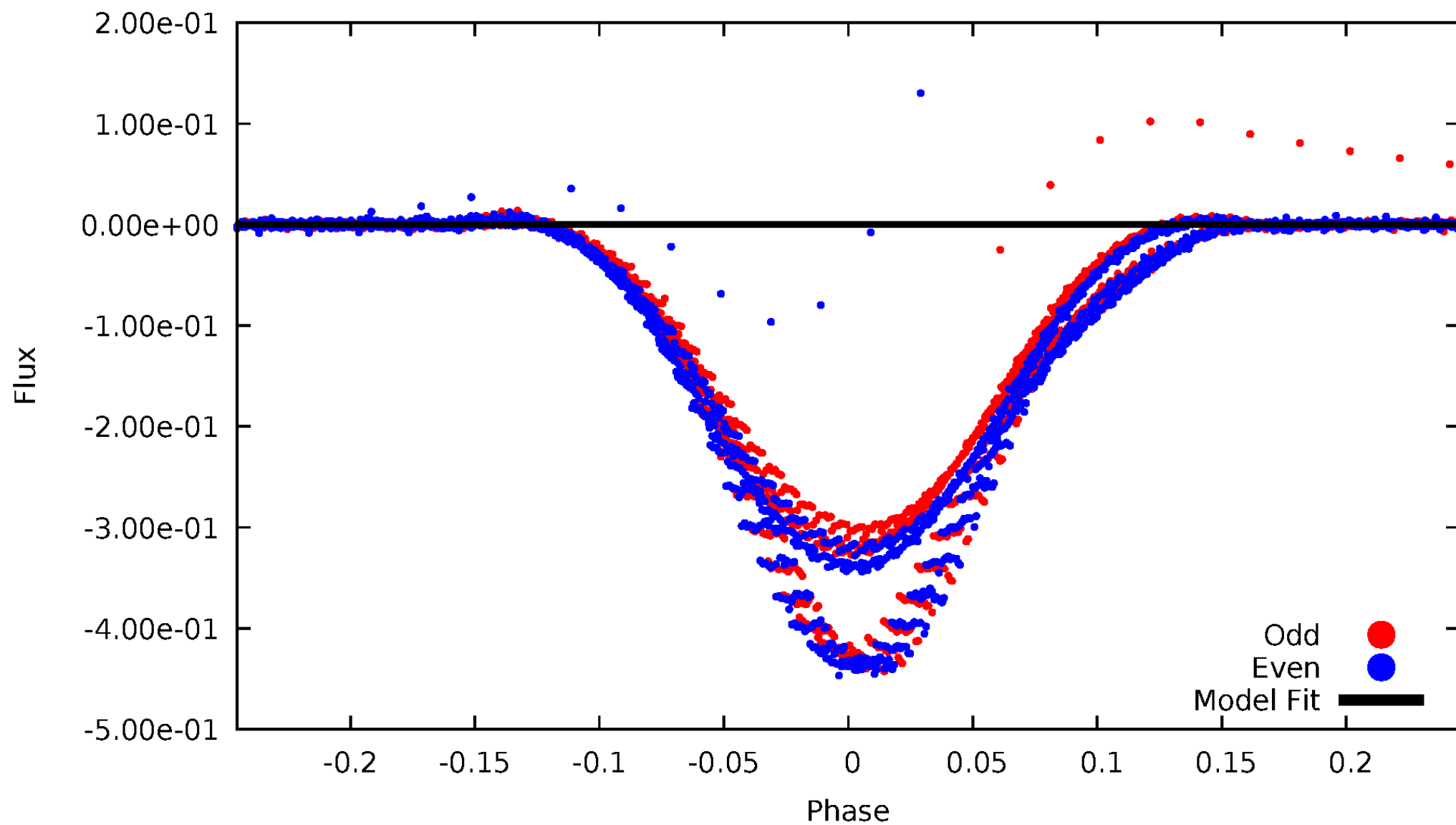


TCE 004160006-01



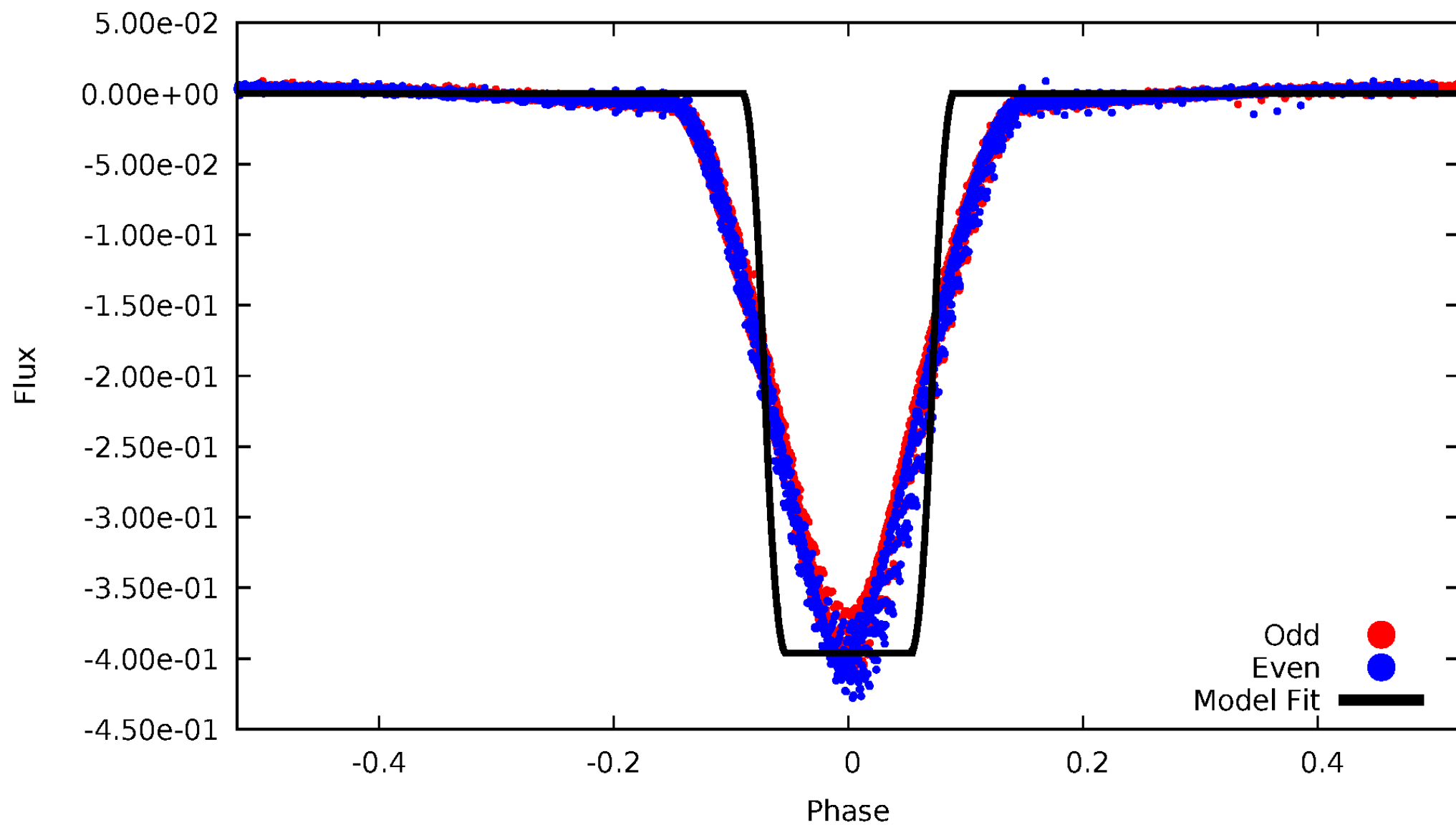
# DV Odd/Even

TCE 004160006-01



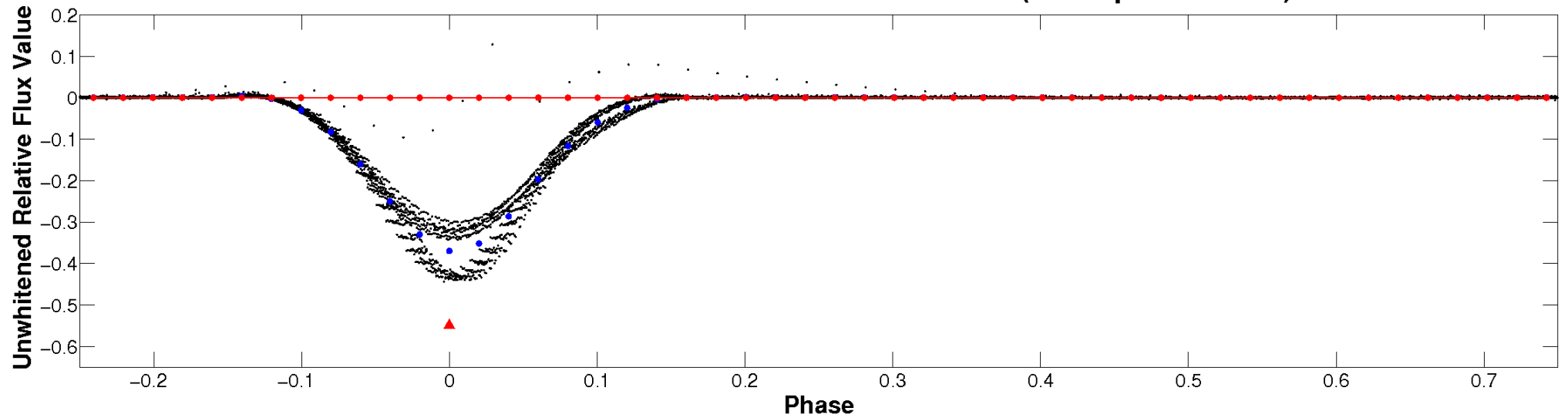
# ALT Odd/Even

TCE 004160006-01



# Non-Whitened Vs. Whitened Light Curve

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

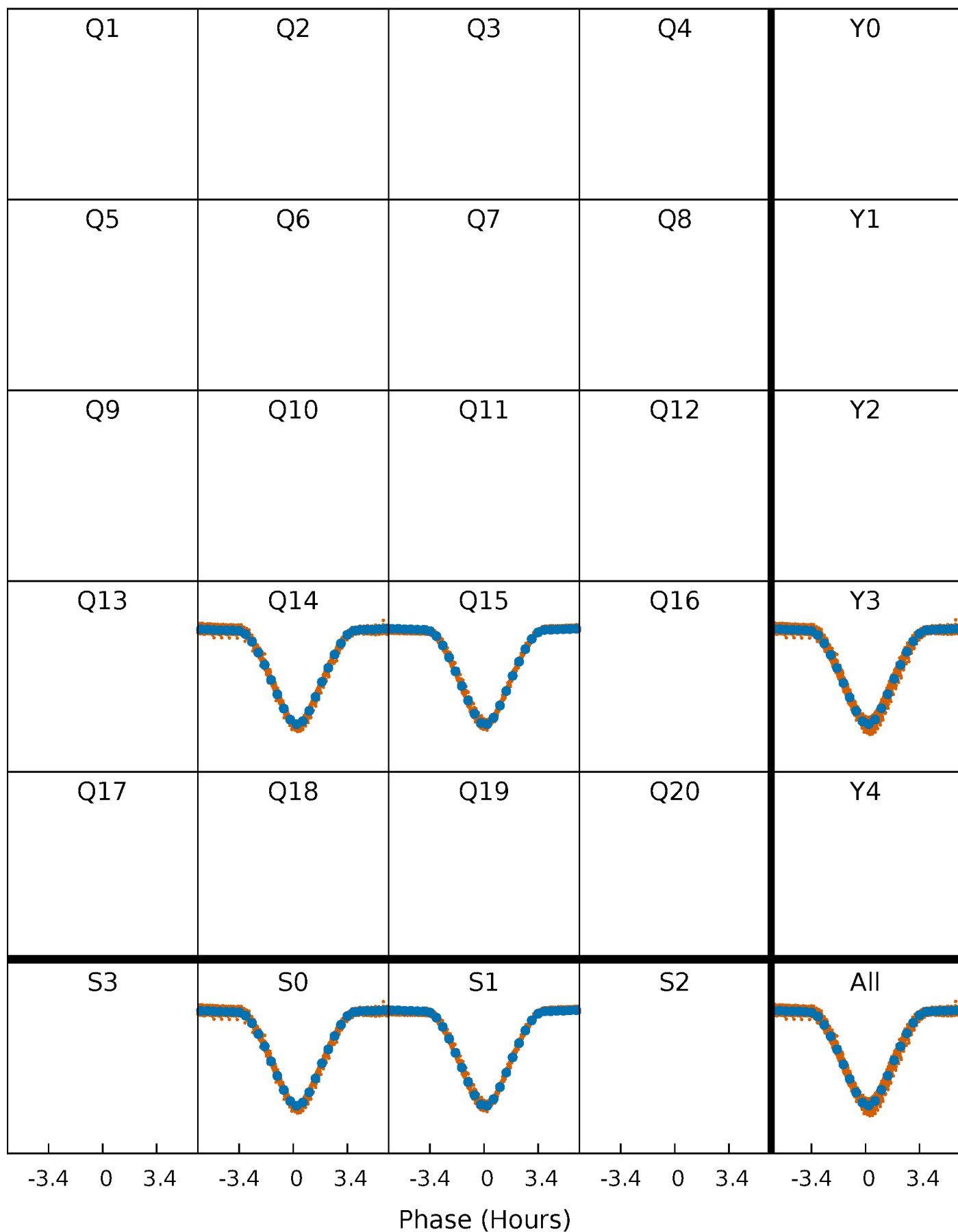


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

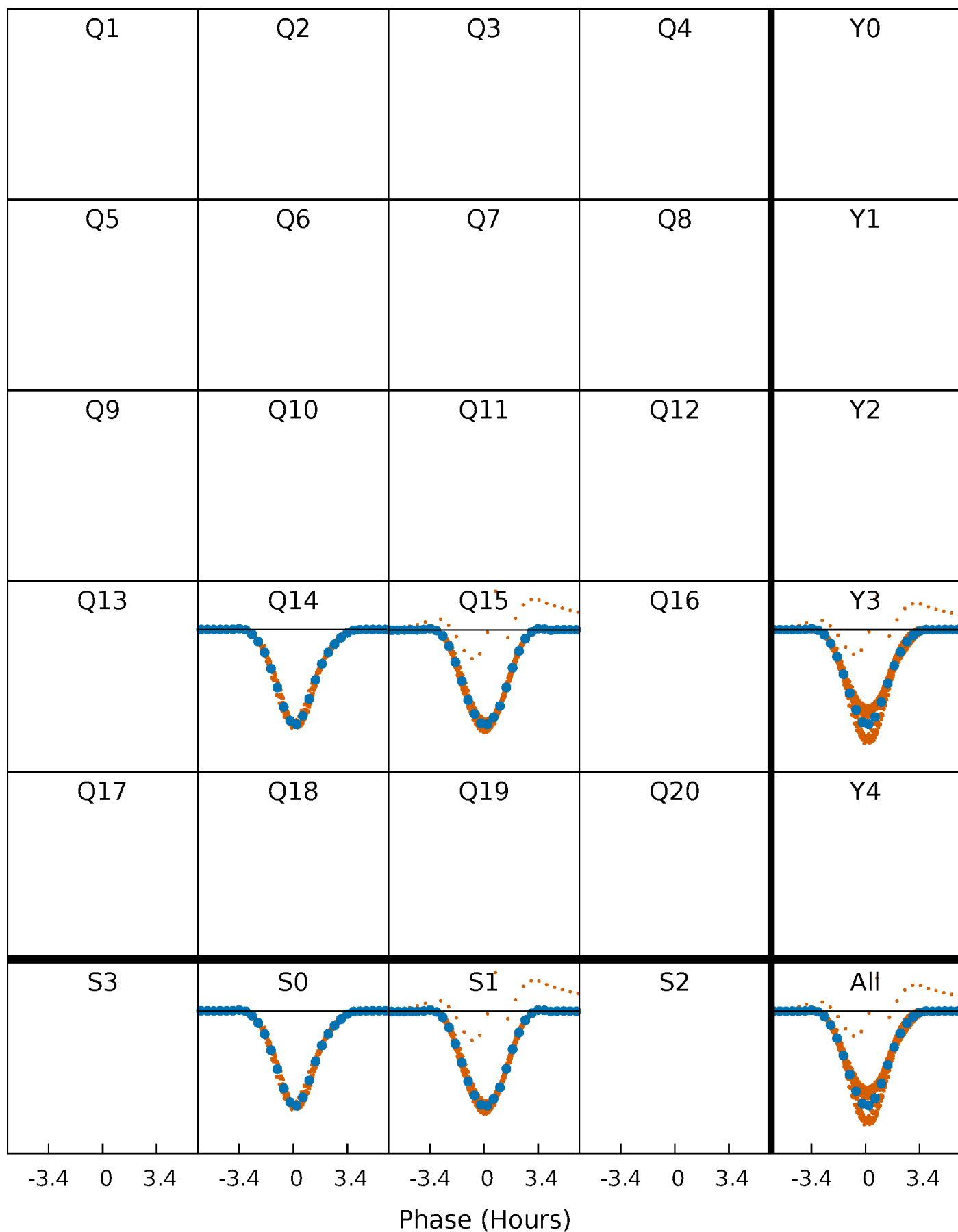
TCE 004160006-01 P= 1.018434 Days  $T_0=131.582027$  (BKJD)





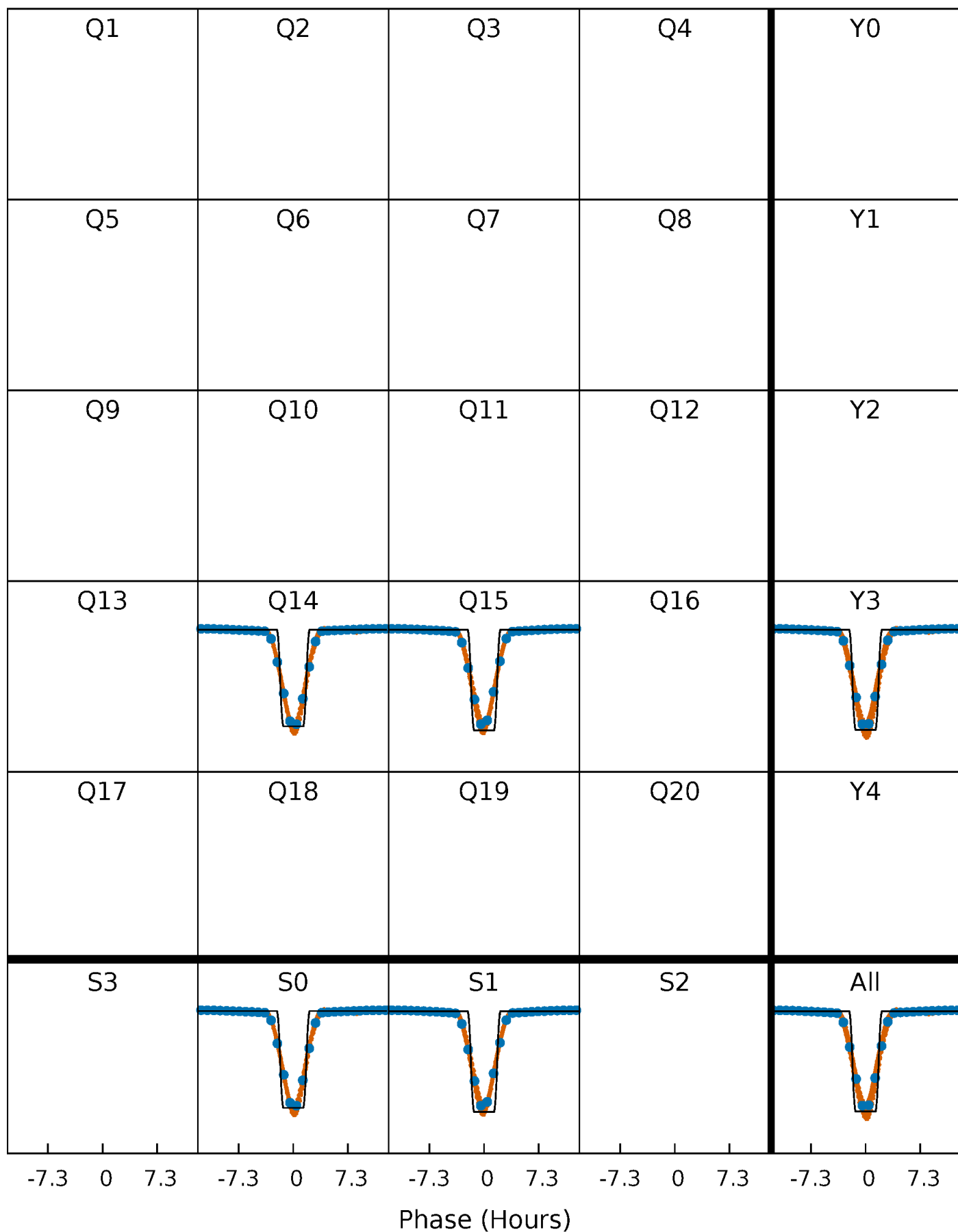
# DV Quarter-Phased Transit Curves

TCE 004160006-01   P= 1.018434 Days    $T_0=131.582027$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

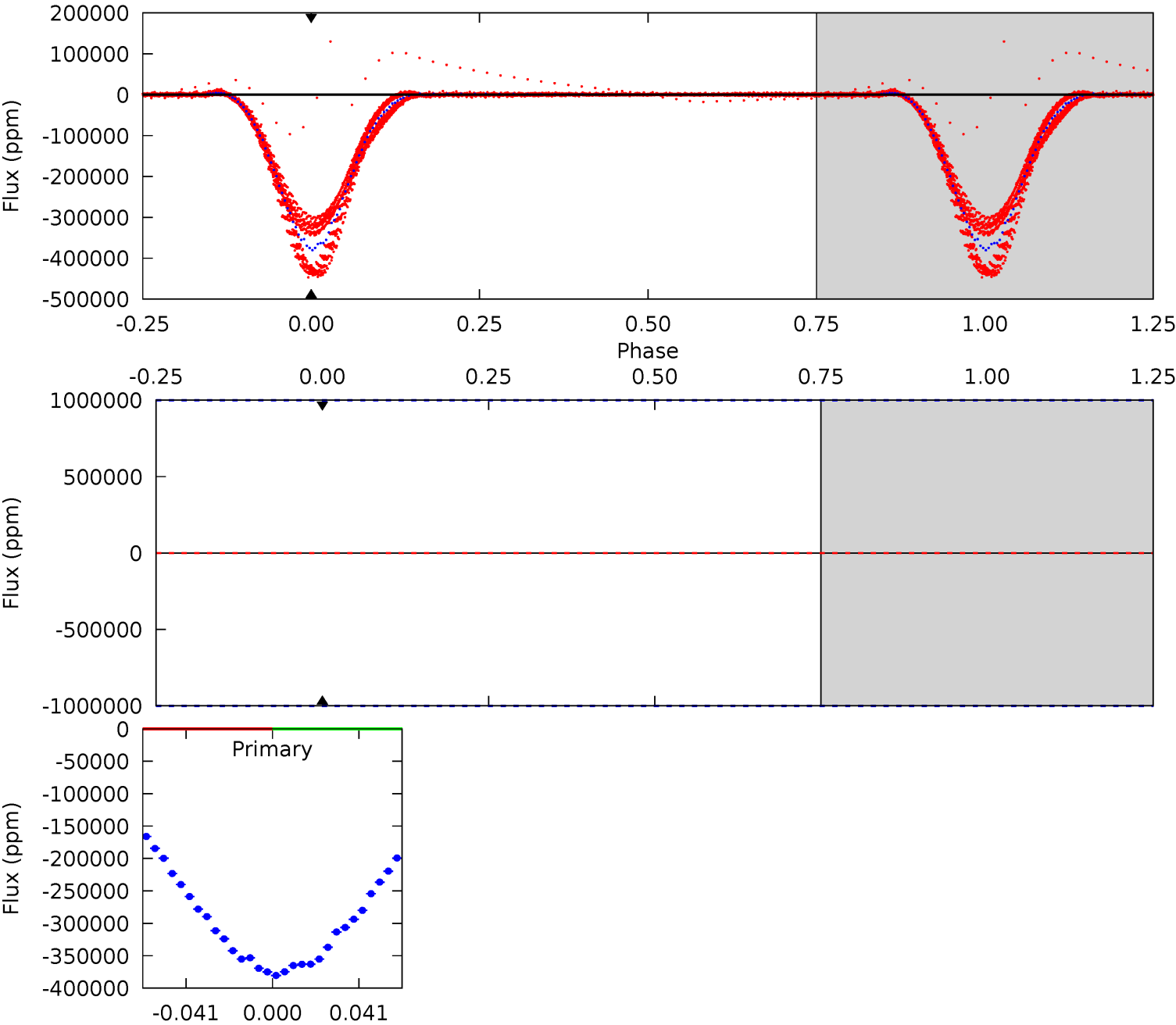
TCE 004160006-01   P= 1.018434 Days    $T_0=131.588840$  (BKJD)



DV Model-Shift Uniqueness Test

004160006-01, P = 1.018434 Days, E = 131.582027 Days

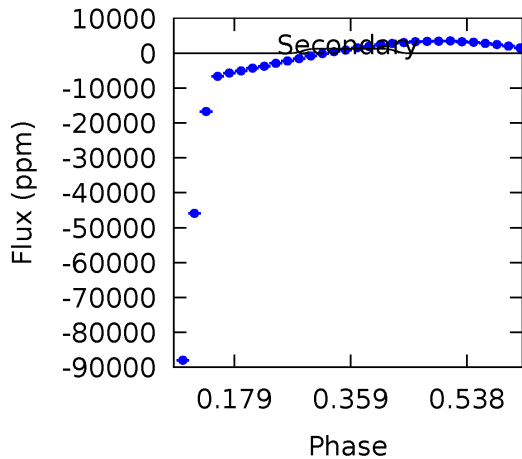
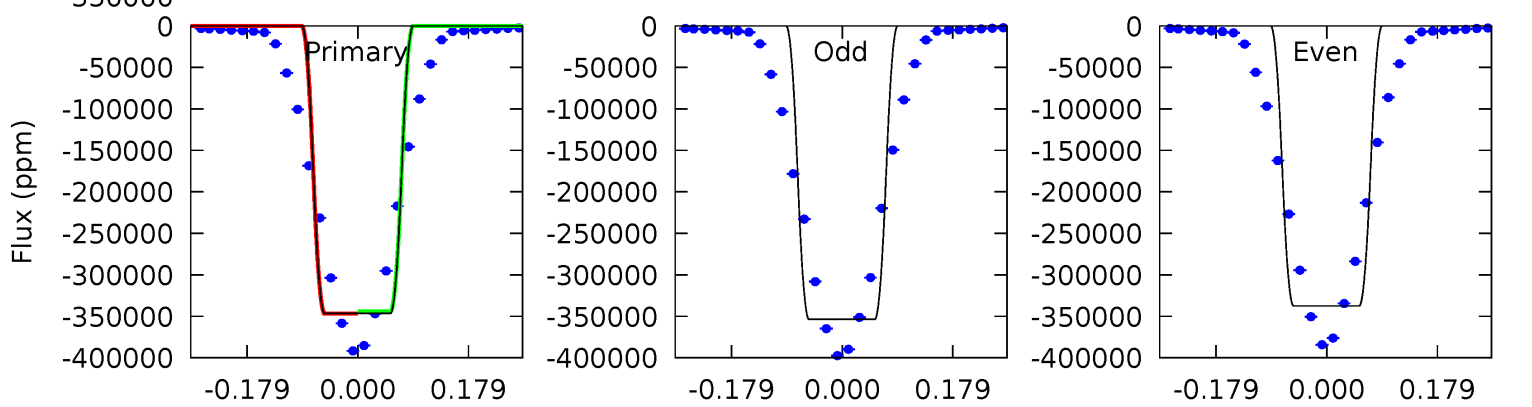
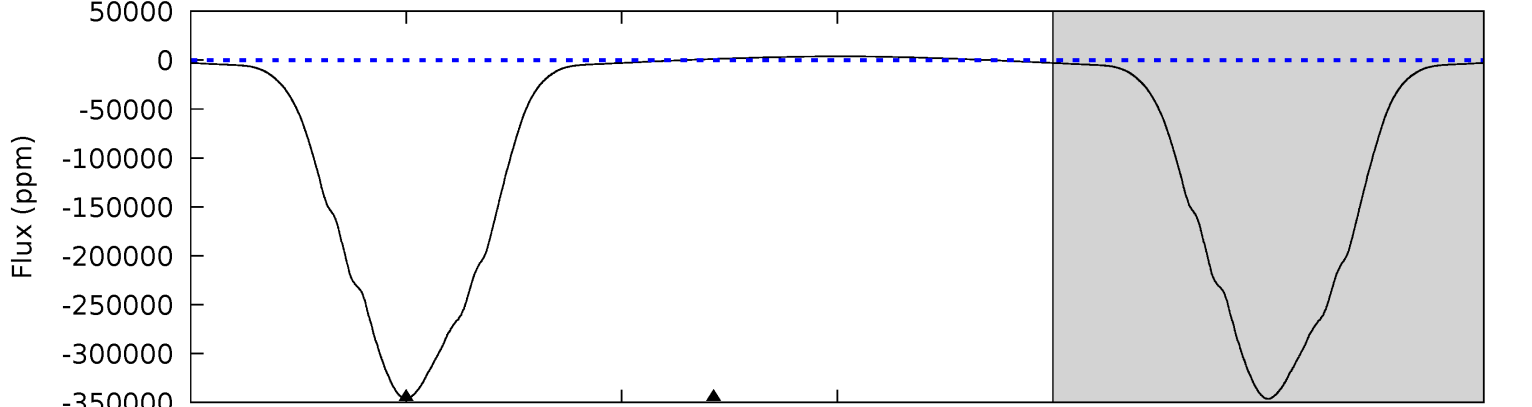
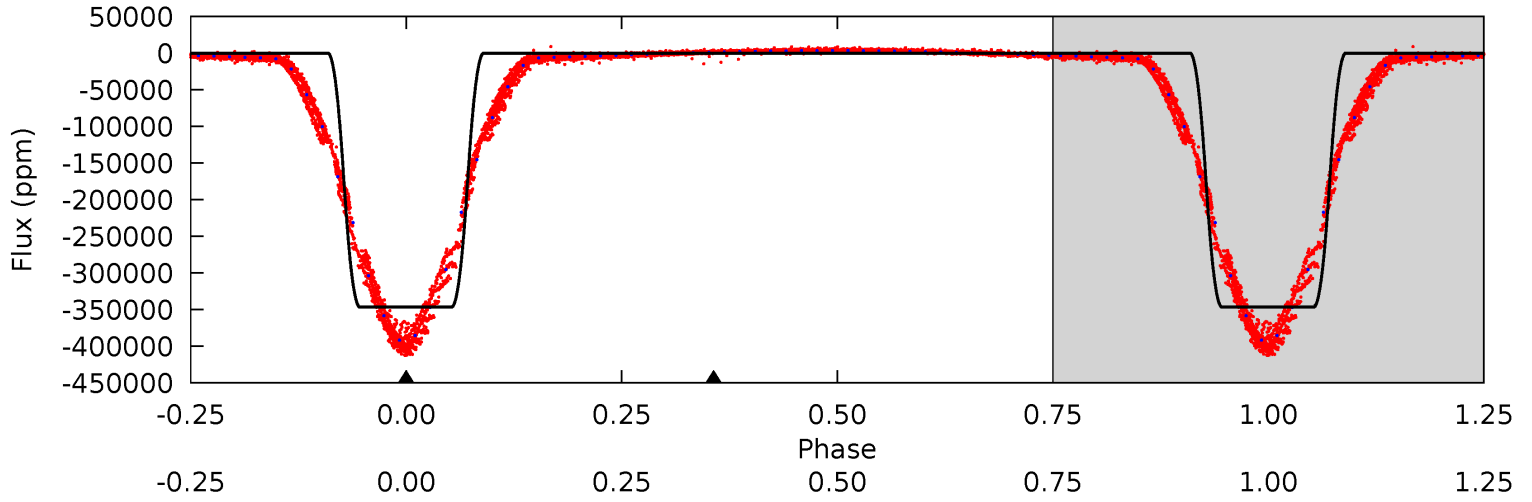
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004160006-01, P = 1.018434 Days, E = 131.588840 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
3595	-12.6	0	0	4.44	1.34	30.1	3595	3595	-12.6	-12.6	84.8	1.00	0.01	11.1



### Stellar Parameters For KIC 004160006

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6160^{+216}_{-237}$	$4.144^{+0.273}_{-0.168}$	$-0.120^{+0.250}_{-0.300}$	$1.463^{+0.419}_{-0.419}$	$1.087^{+0.181}_{-0.148}$	$0.489^{+0.777}_{-0.232}$
	+4%/-4%	+7%/-4%	+208%/-250%	+29%/-29%	+17%/-14%	+159%/-48%
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 004160006-01 / KOI 5045.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$39.15^{+17.94}_{-15.40}$	$3189^{+261}_{-286}$	$-2975^{+10480}_{-4101}$	$0.123^{+19.158}_{-16.559}$
Alt.	$1211 \pm 96$	$97.97^{+23.75}_{-21.69}$	$3179^{+250}_{-265}$	$-3244^{+152}_{-145}$	$-0.029^{+0.010}_{-0.018}$

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

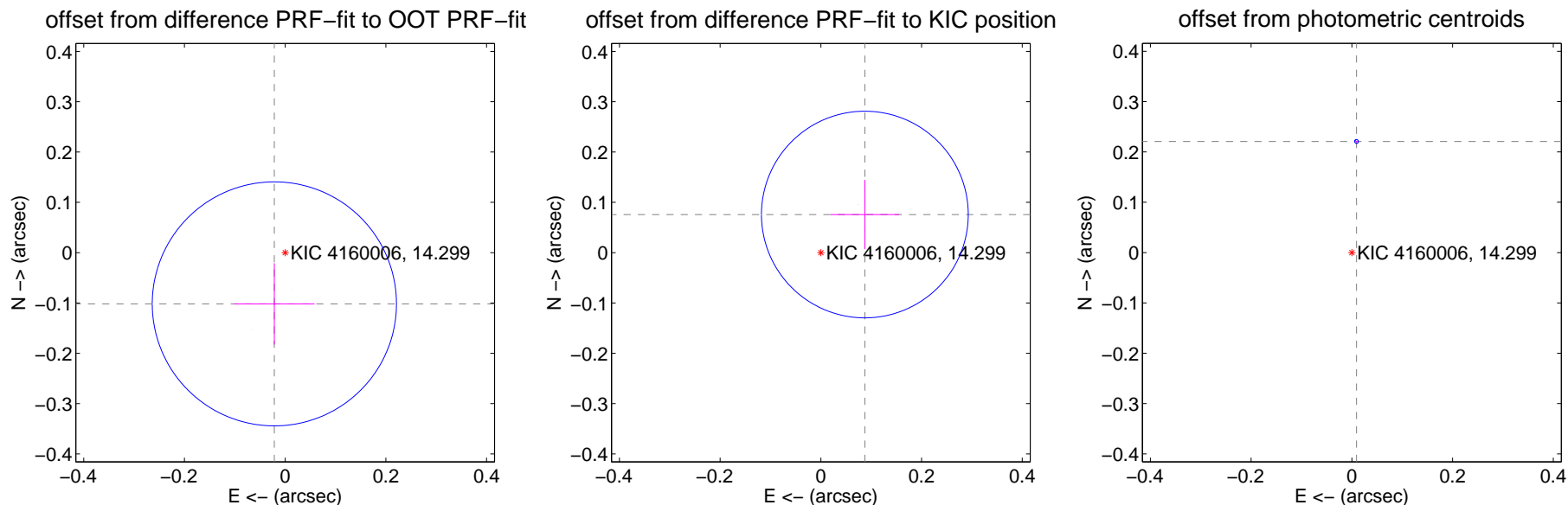
## DV Centroid Data

Supplemental centroid analysis for 004160006-01. Kepler magnitude: 14.30. Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.104 \pm 0.081$	1.29	$0.021 \pm 0.080$	$-0.102 \pm 0.081$
PRF-fit source offset from KIC position	$0.116 \pm 0.068$	1.69	$-0.087 \pm 0.068$	$0.076 \pm 0.069$
photometric centroid source offset	$0.22 \pm 0.00$	177.43	$-0.01 \pm 0.00$	$0.22 \pm 0.00$



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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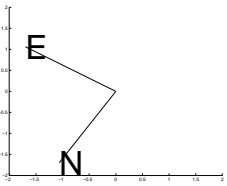
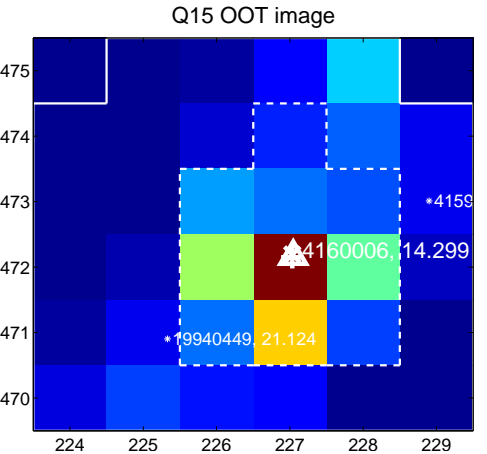
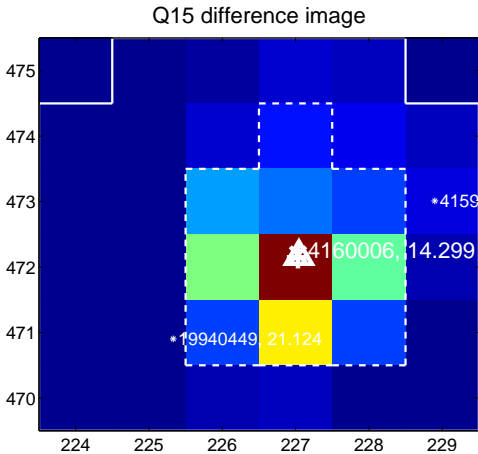
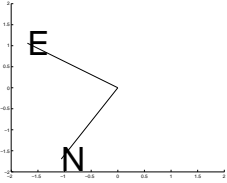
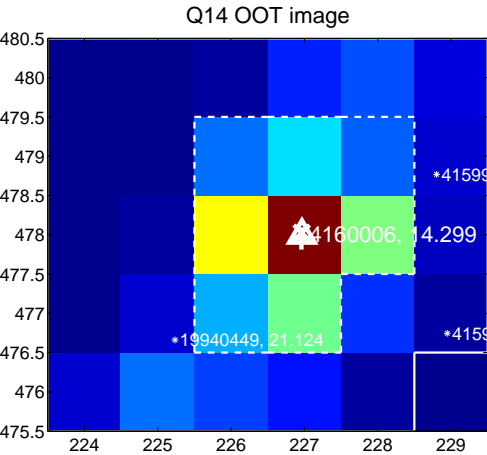
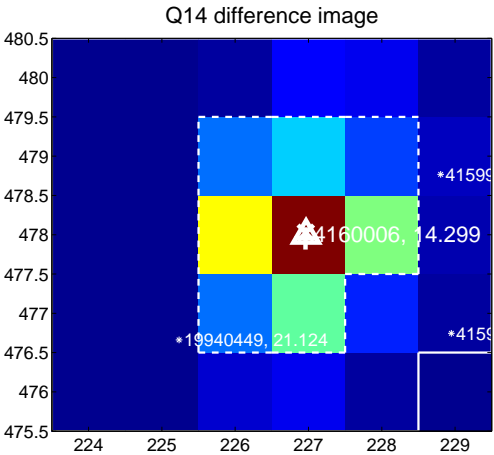


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

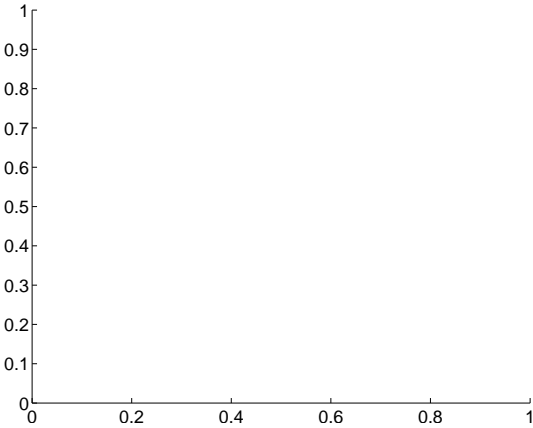
Q13 no difference image



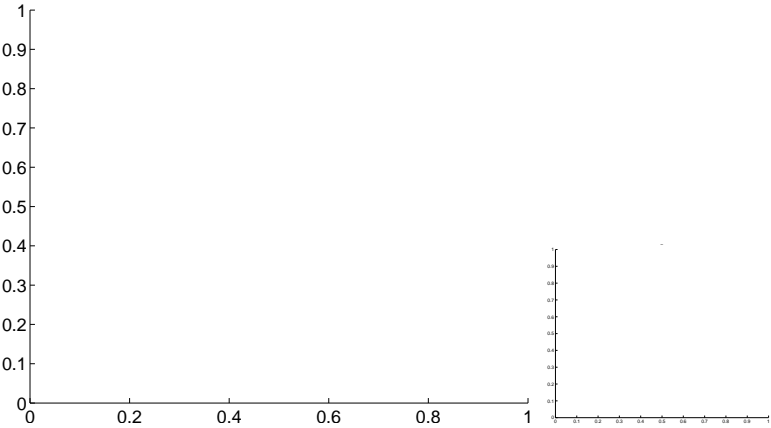
Q13 no OOT image



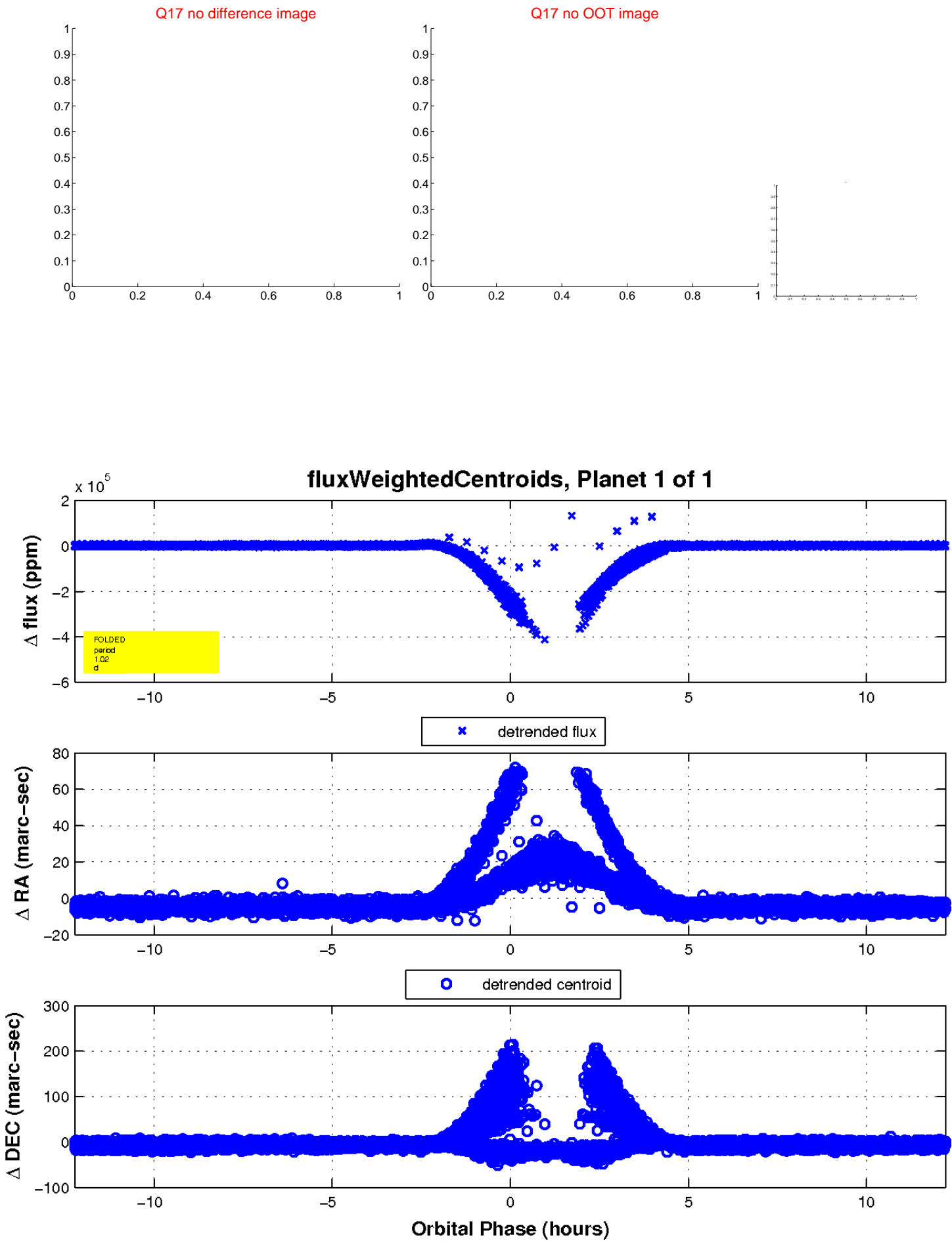
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

